

or in whole, shall provide clear and conspicuous notice, which takes into account the needs of persons with disabilities, to new subscribers of its non-election or partial election to provide Alert messages at the point-of-sale.

(b) The point-of-sale includes stores, kiosks, third party reseller locations, web sites (proprietary or third party), and any other venue through which the CMS provider's devices and services are marketed or sold.

(c) CMS providers electing to transmit alerts "in part" shall use the following notification:

**NOTICE REGARDING TRANSMISSION OF WIRELESS EMERGENCY ALERTS (Commercial Mobile Alert Service)**

[[CMS provider]] has chosen to offer wireless emergency alerts within portions of its service area, as defined by the terms and conditions of its service agreement, on wireless emergency alert capable devices. There is no additional charge for these wireless emergency alerts.

Wireless emergency alerts may not be available on all devices or in the entire service area, or if a subscriber is outside of the [[CMS provider]] service area. For details on the availability of this service and wireless emergency alert capable devices, please ask a sales representative, or go to [[CMS provider's URL]].

Notice required by FCC Rule 47 CFR 10.240 (Commercial Mobile Alert Service).

(d) CMS providers electing in whole not to transmit alerts shall use the following notification language:

**NOTICE TO NEW AND EXISTING SUBSCRIBERS REGARDING TRANSMISSION OF WIRELESS EMERGENCY ALERTS (Commercial Mobile Alert Service)**

[[CMS provider]] presently does not transmit wireless emergency alerts. Notice required by FCC Rule 47 CFR 10.240 (Commercial Mobile Alert Service).

**§ 10.250 Notification to Existing Subscribers of Non-Participation in CMAS.**

(a) A CMS provider that elects not to transmit CMAS Alert Messages, in part or in whole, shall provide clear and conspicuous notice, which takes into account the needs of persons with disabilities, to existing subscribers of its non-election or partial election to provide Alert messages by means of an announcement amending the existing subscriber's service agreement.

(b) For purposes of this section, a CMS provider that elects not to transmit CMAS Alert Messages, in part or in whole, shall use the notification language set forth in § 10.240 (c) or (d) respectively, except that the last line of the notice shall reference FCC Rule 47 CFR 10.250, rather than FCC Rule 47 CFR 10.240.

(c) In the case of prepaid customers, if a mailing address is available, the CMS provider shall provide the required notification via U.S. mail. If no mailing address is available, the CMS provider shall use any reasonable method at its disposal to alert the customer to a change in the terms and conditions of service and directing the subscriber to voice-based notification or to a Web site providing the required notification.

**§ 10.260 Timing of Subscriber Notification.**

A CMS provider that elects not to transmit CMAS Alert Messages, in part or in whole, must comply with §§ 10.240 and 10.250 no later than 60 days following an announcement by the Commission that the Alert Aggregator/Gateway system is operational and capable of delivering emergency alerts to participating CMS providers.

**§ 10.270 Subscribers' Right To Terminate Subscription.**

If a CMS provider that has elected to provide CMAS Alert Messages in whole or in part thereafter chooses to cease providing such alerts, either in whole or in part, its subscribers may terminate their subscription without penalty or early termination fee.

**§ 10.280 Subscribers' Right To Opt Out of CMAS Notifications.**

(a) CMS providers may provide their subscribers with the option to opt out of both, or either, the "Child Abduction Emergency/AMBER Alert" and "Imminent Threat Alert" classes of Alert Messages.

(b) CMS providers shall provide their subscribers with a clear indication of what each option means, and provide examples of the types of messages the customer may not receive as a result of opting out.

[FR Doc. E8-21946 Filed 9-19-08; 8:45 am]

BILLING CODE 6712-01-P

**DEPARTMENT OF TRANSPORTATION**

**National Highway Traffic Safety Administration**

**49 CFR Part 571**

[Docket No. NHTSA-2008-0068]

RIN 2127-AK19

**Federal Motor Vehicle Safety Standards; Electronic Stability Control Systems; Controls and Displays**

**AGENCY:** National Highway Traffic Safety Administration (NHTSA), Department of Transportation (DOT).

**ACTION:** Final rule; response to petitions for reconsideration.

**SUMMARY:** On April 6, 2007, NHTSA published a final rule establishing a new Federal motor vehicle safety standard requiring light vehicles to be equipped with electronic stability control systems. The final rule was established as part of a comprehensive plan for reducing the serious risk of rollover crashes and the risk of death and serious injury in those crashes. This document responds to several petitions for reconsideration of the final rule. After carefully considering the issues raised, the agency is granting some aspects of the petitions, and denying some aspects. This document amends the final rule accordingly. This document also fulfills the obligations of the United States with respect to initiating rulemaking in order to comply with the global technical regulation (GTR) for ESC, adopted on June 26, 2008.

**DATES:** This rule is effective October 22, 2008.

**ADDRESSES:** Petitions for reconsideration should refer to the docket number and be submitted to: Administrator, National Highway Traffic Safety Administration, 1200 New Jersey Avenue, SE., West Building, 4th Floor, Washington, DC 20590. Note that all documents received will be posted without change to the docket, including any personal information provided. Please see the Privacy Act discussion under section IV on Rulemaking Analyses and Notices below.

**FOR FURTHER INFORMATION CONTACT:** For technical issues, contact Nathaniel Beuse, Office of Crash Avoidance Standards, by telephone at (202) 366-4931, or by fax at (202) 366-7002. For legal issues, contact Rebecca Yoon, Office of the Chief Counsel, by telephone at (202) 366-2992, or by fax at (202) 366-3820.

Both persons may be reached by mail at the following address: National Highway Traffic Safety Administration, U.S. Department of Transportation, 1200 New Jersey Avenue, SE., Washington, DC 20590.

**SUPPLEMENTARY INFORMATION:**

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### I. Summary of Final Rule; Response to Petitions for Reconsideration

In this document, NHTSA responds to petitions for reconsideration of its April 2007 final rule concerning electronic stability control (ESC) systems. That rule established a new Federal Motor Vehicle Safety Standard (FMVSS) No. 126, *Electronic Stability Control Systems*, which sets forth requirements for these systems on new light vehicles, to be applicable to all light vehicles by September 1, 2011.

We are granting some of the petitions in part. In granting these petitions, today's final rule makes several changes to the regulatory text of 49 CFR 571.126, *Electronic Stability Control Systems*, and of 49 CFR 571.101, *Controls and Displays*. These are generally minor changes, all of which are consistent with agency's goal in the original final rule to encourage rapid installation of this life-saving technology. Changes to the regulatory text are summarized below.

We are denying a petition from the American Association for Justice (AAJ) to withdraw preemption language from the regulatory analysis section of the final rule, and to expand the scope of the final rule to require roll stability control in addition to ESC.

#### Summary of Changes

1. In FMVSS No. 101, to avoid confusion regarding the compliance date for ESC telltale requirements, the agency is adding "As of September 1, 2011" in the relevant places to paragraphs S5.5.2 and S5.5.5 and Table 1.

2. To clarify that related vehicle systems may use the ESC malfunction telltale and that the ESC malfunction telltale may flash to indicate operation

of related systems, the agency is slightly revising S5.3.3 and adding a new S5.3.10 to FMVSS No. 126.

3. For purposes of clarification, the agency is revising S5.3.9 in FMVSS No. 126 to remove language that might be interpreted to require the ESC malfunction telltale to illuminate to indicate a disconnection of the ESC Off control.

4. To simplify the telltale requirements, we are also allowing two-part telltales that are able to display both the "ESC malfunction" and "ESC Off" messages.

5. To avoid any potential negative safety consequences of requiring vehicles to restart in 2-wheel drive when they are using 4-wheel drive to navigate difficult terrain, the agency is expanding the exception to S5.4.1's key cycle automatic ESC reactivation requirement in FMVSS No. 126. We are revising S5.4.1 to tie the exception directly to the low-range 4-wheel drive configuration, and adding a definition for 4-wheel drive low-range configuration. For the same reason, the agency is revising S5.4.1's default mode requirement to refer to ESC modes within the same drive configuration.

6. FMVSS No. 126 requires that ESC systems meet two fundamental performance criteria, stability and responsiveness. It is possible that these performance criteria can conflict in some drive configurations,<sup>1</sup> thereby creating ambiguity with respect to the existing requirement in S5.4.1 that refers to an ESC mode that satisfies the performance requirements "by the greatest margin." To address this, the agency is revising S5.4.1 to specify that upon vehicle restart, ESC systems must revert to the manufacturer's original default mode for that drive configuration. These modes, with some exceptions as noted, must meet the stability and responsiveness requirements of the standard.

7. To clarify that ESC systems need not be operational before they have initialized, the agency is adding S7.10.2's initialization procedure to S7.10.4 and S6.3.1 of FMVSS No. 126.

8. In recognition of the fact that many current ESC system designs cannot hold

<sup>1</sup>This is a basic problem of vehicle dynamics: in order to be stable, a vehicle should experience less side-to-side movement, but in order to be responsive, a vehicle must be able to move side-to-side as necessary. Proper and safe vehicle handling, which ESC facilitates, must strike a balance between stability and responsiveness depending on the situation. Thus, it is possible that increasing stability in response to driving conditions could decrease responsiveness—yet S5.4.1 as written requires both stability and responsiveness to be satisfied by the greatest margin, which is not always possible or desirable. This is why the agency is revising this section.

a malfunction in memory when the ignition is cycled off and then back on as required, S7.10.3 of FMVSS No. 126 will not be mandatory until September 1, 2011.

9. To gain the substantial safety benefits of ESC as quickly as possible, and because we anticipate no negative safety consequences, the agency is accommodating current ESC systems by changing the low-speed cutoff for ESC operation from 15 km/h (9.3 mph) to 20 km/h (12.4 mph) and adding a brake application to all initialization procedures in FMVSS No. 126.

10. To clarify that the final rule did not prohibit multi-function ESC controls, the agency is adding language to that effect in S5.4 of FMVSS No. 126.

11. To clarify changes made to the regulatory text, the agency is adding definitions for "drive configuration" and "mode" to S4 of FMVSS No. 126.

### II. Background

#### A. Benefits of ESC

Electronic stability control, or ESC, systems use automatic computer-controlled braking of individual wheels to assist the driver in maintaining control in critical driving situations in which the vehicle is beginning to lose directional stability at the rear wheels (spin out) or directional control at the front wheels (plow out). NHTSA's crash data study of existing vehicles equipped with ESC demonstrated that these systems reduce fatal single-vehicle crashes of passenger cars by 36 percent and fatal single-vehicle crashes of sport utility vehicles (SUVs) by 63 percent.<sup>2</sup> NHTSA estimates that ESC has the potential to prevent 70 percent of the fatal passenger car rollovers and 88 percent of the fatal SUV rollovers that would otherwise occur in single-vehicle crashes.<sup>3</sup>

#### B. April 2007 Final Rule

On April 6, 2007, NHTSA published a final rule establishing the new Federal Motor Vehicle Safety Standard (FMVSS) No. 126, *Electronic Stability Control Systems*, which sets forth requirements for these systems on new light vehicles.<sup>4</sup> FMVSS No. 126 contains performance requirements that include both definitional and dynamic testing elements. These elements together ensure that ESC systems intervene

<sup>2</sup>Dang, J., *Statistical Analysis of the Effectiveness of Electronic Stability Control (ESC) Systems—Final Report*, DOT HS 810 794, U.S. Department of Transportation, Washington, DC (July 2007). Available at Docket No. NHTSA-2007-28629, item 2.

<sup>3</sup>*Id.*

<sup>4</sup>Docket No. NHTSA-2007-27662, item 1; 72 FR 17236 (Apr. 6, 2007).

properly to limit oversteer and understeer in order to provide the level of yaw (directional) stability associated with the high level of safety benefits observed in crash data studies of ESC-equipped vehicles. FMVSS No. 126 also requires a standardized set of ESC telltales and controls.

The new standard's requirements for yaw stability control (that is, the parts of the standard with the biggest potential to prevent crashes) can be met by most ESC-equipped vehicles currently being manufactured. However, none of those vehicles appear to use the exact set of telltales and controls required by the new standard. In order to provide the American public with the substantial safety benefits of ESC as soon as possible, NHTSA accelerated the phase-in schedule in the final rule as compared to the schedule proposed in the September 2006 notice of proposed rulemaking (NPRM),<sup>5</sup> but deferred the telltale and display requirements until the end of the phase-in. Thus, the final rule set the phase-in as:

- 55 percent of a manufacturer's light vehicles manufactured during the period from September 1, 2008 to August 31, 2009 are required to comply with the standard;
- 75 percent from September 1, 2009 to August 31, 2010;
- 95 percent from September 1, 2010 to August 31, 2011; and
- All light vehicles thereafter.

This compares to the NPRM's proposal for a 30/60/90/all phase-in schedule over the same time period. The agency noted in the final rule preamble that some manufacturers will have to depend on carry-forward credits for vehicles with complying ESC systems manufactured after June 5, 2007 (the effective date of the final rule) in order to meet the accelerated phase-in schedule.

Regarding the deferral of the telltale and display requirements until the end of the phase-in period, although NHTSA perceived certain advantages with standardizing these requirements, we concluded that it was not practicable to implement the necessary changes under the accelerated phase-in schedule, and we were not willing to delay the phase-in (and the expected safety benefits) for this reason alone. Accordingly, the agency prefaced many of the provisions in FMVSS No. 126 dealing with telltales and displays with the phrase "as of September 1, 2011." However, after the final rule was published, we discovered that that phrase had been inadvertently

omitted from two of the relevant provisions. NHTSA published a correction notice on June 22, 2007 to address this issue.<sup>6</sup>

### C. Summary of Petitions for Reconsideration to the Final Rule

Four parties petitioned for reconsideration of the April 6, 2007 final rule: the American Association for Justice (AAJ);<sup>7</sup> Porsche Cars North America, Inc. (Porsche);<sup>8</sup> and in a joint petition, the Alliance of Automotive Manufacturers and the Association of International Automobile Manufacturers (Alliance/AIAM).<sup>9</sup> Chrysler also submitted a letter supporting revised recommendations submitted by the Alliance/AIAM following its original petition for reconsideration.<sup>10</sup> Most of the issues presented by the manufacturer petitioners addressed details of the requirements for controls and displays and their effect on phase-in requirements. AAJ petitioned NHTSA to change language in the final rule preamble concerning the preemptive effect of Federal regulations, and also petitioned that the scope of the final rule be expanded to require roll stability control in addition to ESC that focuses on yaw stability.

The next section addresses the petitions issue by issue, and provides the agency's response for each issue.

## III. Analysis of and Response to Petitions for Reconsideration

### A. Telltale Issues

#### 1. Use of a Two-Part "ESC Off" Telltale

The final rule requires an ESC malfunction telltale identified by the ISO symbol for ESC or the abbreviation "ESC." It also requires a second telltale to identify when the ESC system has been turned off by the driver. That telltale must be identified by the ISO symbol for ESC with the word "Off" below it, or the words "ESC Off."

Porsche Cars North America, Inc. (Porsche) originally commented to the NPRM that instead of requiring two completely separate telltales for the ESC malfunction and ESC Off messages, the rule should allow for a partial telltale with just the word "Off" adjacent to the ESC malfunction telltale. The ESC Off message would be created by illuminating the "Off" telltale and the ESC malfunction telltale simultaneously. The object of this

design would be to save space on the instrument panel.

NHTSA did not include Porsche's suggested change in the final rule because we thought that allowing a partial telltale would have created a conflict with the requirement that the ESC Off status be indicated by the telltale whenever the driver has manually disabled the ESC. In the case where the ESC system detects a fault when it is in the manually disabled state, the "Off" part of the partial, two-part telltale would have to be extinguished to indicate the ESC malfunction.<sup>11</sup>

Porsche petitioned for reconsideration on NHTSA's decision on two-part telltales. Specifically, Porsche explained in its petition that "in the rare case when a malfunction occurs after the driver has manually disabled the system," its ESC system "would operate so that the malfunction event results in the manual control functionality being automatically disabled." Thus, the "ESC Off" message would no longer be correct, because the ESC would have overridden the manual disablement; and the "ESC Malfunction" message would be correct. Porsche petitioned that NHTSA clarify that a two-part telltale would not be prohibited in the situation it described, and requested that NHTSA add a footnote to Table 1 of FMVSS No. 101 that a two-part ESC Off telltale is acceptable if the parts are configured as depicted for the symbol or phrase stipulated by the table to identify the ESC Off telltale.

Porsche also requested that a footnote be added to Table 1 indicating that the "ESC Off" telltale "is mandatory only in the event that the system is manually disabled by the driver."

*Agency Response:* We are granting this petition in part and denying in part. We have considered the two-part telltale issue further and have concluded that there will be no significant safety consequences from allowing manufacturers to use a two-part telltale instead of entirely separate telltales for ESC malfunction and ESC Off. The situation that Porsche describes, where the ESC system overrides the driver's "Off" command if a malfunction occurs while the ESC system is disabled, would already meet the requirements of the final rule. This is because in that situation, it would be correct to extinguish the "Off" portion of the two-part telltale (because ESC would no longer be off), and leave only the "ESC" portion illuminated. Thus, for that particular case, a two-part telltale would satisfy NHTSA's original requirement

<sup>6</sup> Docket No. NHTSA-2007-27662, item 9; 72 FR 34409 (Jun. 22, 2007).

<sup>7</sup> *Id.*, item 6.

<sup>8</sup> *Id.*, item 4.

<sup>9</sup> *Id.*, item 5.

<sup>10</sup> Chrysler letter, *id.*, item 12; Alliance/AIAM revised recommendations, *id.*, item 10.

<sup>11</sup> See 72 FR 17236, 17276 (Apr. 6, 2007).

<sup>5</sup> Docket No. NHTSA-2006-25801, item 1; 71 FR 54712 (Sept. 18, 2006).

that the ESC malfunction message be displayed without interfering with the ESC Off message, because the ESC would no longer be manually disabled.

More generally, if an ESC system malfunction occurs after a driver has disabled ESC, requiring both telltales to illuminate at the same time, both telltales would convey essentially the same message to the driver: that ESC functionality has been reduced or eliminated. Because of this, and because we anticipate that ESC systems will likely only rarely malfunction after they have been manually disabled, upon further consideration we do not believe that requiring both messages to be presented simultaneously (and thus prohibiting two-part telltales) is necessary for safety. To build on Porsche's example, if an ESC system uses a two-part telltale that illuminates both parts to convey the "ESC Off" message, but does not override the driver's "Off" command if a malfunction occurs while ESC is disabled, the telltale would simply continue to display "ESC Off," which would indicate to the driver that ESC functionality is reduced. Because the final rule requires ESC to return to "on" with each ignition cycle, the "Off" telltale must be extinguished, and the malfunction telltale can simply be illuminated at that point. We believe that this would not present significant safety problems, since the driver would still be notified promptly upon restarting the engine that the ESC malfunction exists. There would be no period in which the two-part telltale failed to convey the basic message that ESC functionality was reduced or eliminated.

Implementing this change necessitates revision of paragraph S5.3.3 to clarify that when an ESC system uses a two-part telltale, the malfunction telltale need not illuminate if the "Off" telltale is illuminated. We are revising S5.3.3 accordingly.

However, we are denying the request to add a footnote to Table 1 of FMVSS No. 101 stating that a two-part ESC Off telltale is acceptable if the parts are simply configured as described. We do not believe that further clarification is necessary beyond what is already provided here.

Additionally, we are denying Porsche's request to add a footnote to Table 1 stating that the "ESC Off" telltale is mandatory only when the system is manually disabled by the driver. S5.4.3 of FMVSS No. 126 requires that the ESC Off telltale indicate the status of the ESC system when certain controls other than the manual ESC Off control have the

ancillary effect of turning ESC off. The suggested footnote would conflict with this requirement.

## 2. Inclusion of ESC-Related Systems in ESC Malfunction Telltale Operational Requirements

In the preamble to the ESC final rule, NHTSA agreed with commenters that a single malfunction telltale that relates generally to vehicle stability systems would be sufficiently informative for drivers, and would be effective in conveying the message that a malfunction has occurred which may require diagnosis and service by a repair facility. Thus, NHTSA included a footnote for Table 1 of FMVSS No. 101 stating, as regards the ESC malfunction telltale, that "This symbol may also be used to indicate the malfunction of related systems/function including traction control, trailer stability assist, corner brake control, and other similar functions that use throttle and/or individual torque control to operate and share common components with the ESC system."

The Alliance/AIAM petitioned NHTSA to revise paragraphs S5.3.3 and S5.3.8 of FMVSS No. 126 to clarify that the ESC malfunction telltale may be illuminated to indicate a malfunction of related systems, and also may flash to indicate operation of a related system. Petitioners expressed concern that the omission of this clarification might create an inconsistency with FMVSS No. 101.

*Agency response:* We are granting this petition in part. We agree that it would improve FMVSS No. 126's clarity to amend the regulatory text to specify that related systems may use the ESC malfunction telltale and that the ESC malfunction telltale may flash to indicate operation of a related system. Instead of revising S5.3.3 and S5.3.8 as suggested by the Alliance/AIAM petition, we are revising S5.3.3 slightly, and are adding a new S5.3.10 to address these issues. S5.3.10 will state:

Manufacturers may use the ESC malfunction telltale in a steady burning mode to indicate malfunctions of ESC-related systems/functions including traction control, trailer stability assist, corner brake control, and other similar functions that use throttle and/or individual wheel torque control to operate and share common components with the ESC system, and they may use the ESC malfunction telltale in a flashing mode to indicate operation of these ESC-related systems.

We believe this addition will address the Alliance/AIAM's concerns.

## 3. Compliance Dates for Telltale Requirements

The final rule allowed manufacturers greater lead time to standardize the presentation of ESC controls and displays, deferring many of these requirements until the end of the phase-in, *i.e.*, September 1, 2011. This was because NHTSA wanted to achieve the safety benefits of equipping vehicles with ESC as quickly as possible. Although the agency perceived certain advantages to standardizing controls and displays, it was not practicable to implement those changes in keeping with the accelerated phase-in schedule. Thus, many of the provisions of the final rule concerning controls and displays contain the phrase "as of September 1, 2011."<sup>12</sup>

The Alliance/AIAM petitioned NHTSA to include the phrase "as of September 1, 2011" in paragraphs S5.3.3 and S5.4.3 as well, since those paragraphs also concern controls and displays. Petitioners stated that "Requiring manufacturers to meet the provisions of S5.3.3 and S5.4.3 [in keeping with the phase-in] will preclude the accrual of credits and prevent manufacturers from meeting the accelerated phase-in schedule specified in the final rule."

The Alliance/AIAM petition also requested that NHTSA clarify that the changes made to FMVSS No. 101 by the ESC final rule would also be mandatory at the same time as the controls and displays requirements in FMVSS No. 126, by changing the mandatory compliance date for the FMVSS No. 101 provisions in the final rule to September 1, 2011.

*Agency response:* The petition to add the compliance date to S5.3.3 and S5.4.3 of FMVSS No. 126 is moot, because the change requested by the Alliance/AIAM has already been made in a correction notice published by NHTSA on June 22, 2007.<sup>13</sup>

We are granting the petition to add the compliance date to the provisions in question in FMVSS No. 101. As written, FMVSS No. 101 could be read to prohibit controls and displays that FMVSS No. 126 would allow prior to September 1, 2011. NHTSA did not intend this result. Thus, we are adding "As of September 1, 2011" to the provisions on ESC telltales and identifiers in S5.5.2, S5.5.5, and Table 1 of FMVSS No. 101.

<sup>12</sup> These include paragraphs S5.3.1, S5.3.2, S5.3.4, S5.4.2, S5.5.2, and S5.5.6.

<sup>13</sup> See *supra* note 5.

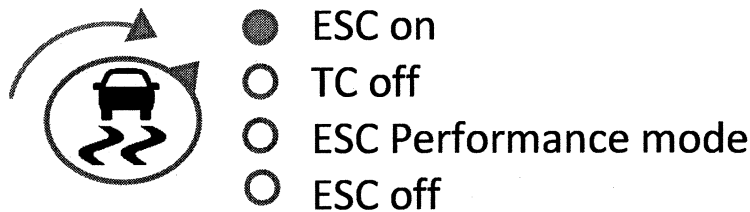
### B. Multi-Function ESC Controls

The Alliance/AIAM petitioned for clarification of paragraphs S5.4.2 and S5.4.3 regarding a control switch or button that combines several functions, which we will call a “multi-function” control for simplicity.<sup>14</sup> For background, paragraph S5.4.2 requires that an ESC control whose only purpose is to disable the ESC system or place it in a mode in which it no longer satisfies the performance requirements<sup>15</sup> be labeled either with the ESC symbol plus the word “Off” or the phrase “ESC Off.” The “ESC Off” telltale must also

illuminate when ESC is in a state in which it no longer satisfies the performance requirements. Paragraph S5.4.3 creates an exception for a control primarily for another function, such as a four-wheel drive low-range transfer case, that does not specifically control the ESC system directly, but has the ancillary effect of turning off ESC in low range. Such a control need not be labeled an “ESC Off” control, but the “ESC Off” telltale must still illuminate if ESC is put in a state in which it no longer satisfies the performance requirements.

The Alliance/AIAM offered the example of a multi-function control that could be used to turn ESC off or on, but could also be used to turn traction control off and to select an ESC “performance mode.” Because such a control could be seen as neither a control whose only purpose is to disable ESC, nor a control for another system with an ancillary effect, petitioners requested that the agency clarify that multi-function controls like the one described are not prohibited by FMVSS No. 126. Figure 1 below shows a rotary multi-function control (this example was provided in the petition).

**Figure 1. Rotary Multi-mode Control Example**



*Agency response:* We are granting the petition to clarify S5.4.3, although we note that this question was already answered in the affirmative in the agency’s response to the GM request for interpretation. FMVSS No. 126 does not prohibit multi-function ESC controls that combine the control whose only purpose is to disable the ESC system with controls used for other purposes. Paragraph S5.4 specifically allows controls whose sole purpose is to disable ESC and establishes various requirements for them. The only reason that the standard distinguishes between these controls used only for disabling ESC from those used to control systems with an ancillary effect on ESC is to express the labeling requirements for the control symbols. The multi-function control example presented by the petition combines several controls in a single piece of hardware: one control whose only purpose is to disable ESC, one unregulated control for the traction control system, and another control that places the ESC system in an intermediate “sport” or “performance” mode.”

In the rotary multi-function control example of Figure 1, the function within the control that disables ESC, because its only purpose is to disable ESC,

would be required to be identified using the symbol or text specified in FMVSS No. 101 for “ESC Off” (effective September 1, 2011) on or adjacent to that part of the control. We would not consider the precise example given by the Alliance/AIAM petition as satisfying FMVSS No. 101’s requirement that the “ESC Off” label (“identifier”) be adjacent to the control it identifies, because the telltale lamp is located between the two.<sup>16</sup> However, this problem could be solved by moving the lamp to the other side of the label.

FMVSS No. 126 does not specify requirements for the “TC off” function in the example, nor for the “ESC Performance mode” function, unless that function within the control places the ESC system in a mode in which it no longer satisfies the standard’s performance requirements. If it did, it would be considered an “ESC Off” control (because it is a control whose purpose is to place the ESC system in a mode in which it no longer satisfies the performance requirements) and would also have to be labeled accordingly.

The agency notes that in analyzing the applicability of the labeling requirement to the rotary multi-function control identified by the petition, we

additionally considered other types of multi-function controls. For example, we considered toggle buttons which must be pressed repeatedly in order to cycle through multiple functions (including ESC Off), as well as controls used to navigate through multiple functions (including ESC Off) displayed in an information center. Just as for rotary multi-function controls, these other multi-function controls must be labeled with “ESC Off” if they contain a function whose only purpose is to disable ESC or place it in a mode in which it no longer satisfies the performance requirements. NHTSA reiterates that ESC Off controls, regardless of whether they are contained within a multi-function control, must be labeled with “ESC Off.” We believe that this is necessary for the safety of the driver, and to discourage the driver from turning ESC off unless it is absolutely necessary. Unlike rotary controls, however, with a toggle button or a single button or switch for an information center, there is no obvious location for the “ESC Off” label. In these situations, we nevertheless require the control to be labeled with “ESC Off,” even if it also contains additional labels that the manufacturer believes are necessary to identify the other functions it contains.

<sup>14</sup> This question was also raised in a request for interpretation from Mr. Brian Latouf of General Motors North America, which the agency answered on August 29, 2007 (“the GM request for interpretation”).

<sup>15</sup> Of paragraphs S5.2.1, S5.2.2, and S5.2.3.

<sup>16</sup> FMVSS No. 101, S4 Definitions, defines “Adjacent” as “with respect to a control, telltale or indicator, and its identifier \* \* \* (a) The identifier is in close proximity to the control, telltale or

indicator; and (b) No other control, telltale, indicator, identifier or source of illumination appears between the identifier and the telltale, indicator, or control that the identifier identifies.”

The Alliance/AIAM also petitioned NHTSA to remove the word “only” from S5.4 and S5.4.2 of the regulatory text in order to allow multi-function controls. The agency is denying this aspect of the petition. S5.4 and S5.4.2 simply permit ESC Off controls and require them to be labeled with “ESC Off.” Paragraph S5.4 has been amended to state that “ESC Off” controls may be included in multi-function controls. Therefore, we do not believe that removing the word “only” from the regulatory text is necessary.

### C. “ESC Off” Control Labeling

As explained in this response to petitions and in the final rule, paragraph S5.4.2 requires that an ESC control whose only purpose is to disable the ESC system or place it in a mode in which it no longer satisfies the performance requirements, be labeled with either the ESC symbol plus the word “Off” or the phrase “ESC Off.” NHTSA believes that labeling these controls with “ESC Off” is necessary to ensure that drivers clearly understand that they may lose the safety benefits of ESC by using this control.

The Alliance/AIAM petitioned NHTSA to change the control labeling requirements in the final rule to require simply the label “ESC” rather than the label “ESC Off.” Petitioners argued that requiring the word “Off” on even dedicated controls “will result in customer confusion and dissatisfaction.” Petitioners also asserted that “labeling a control with ‘Off’ is unprecedented and inconsistent with the way that similar controls are handled in various Federal Motor Vehicle Safety Standards.” Therefore, they requested that the relevant provisions and table sections in FMVSS No. 101 and FMVSS No. 126 be revised to make the current ESC malfunction symbol (that is, the ESC symbol alone or the letters “ESC” alone) also the identifier for a control to be called the “ESC control” that could turn ESC off as one of its functions. The changes would retain the current ESC Off symbol as an identifier for the “ESC Off” telltale, but not for the control.

*Agency response:* We are denying this petition, because as expressed repeatedly, we believe that labeling a control that disables ESC with “ESC Off” is beneficial for safety and for driver comprehension. The final rule permitted ESC to be turned off by the driver only because there are rare circumstances in which turning ESC off could be advantageous. It did not require manufacturers to include an ESC Off control. NHTSA’s primary concern in the final rule was to minimize the

possibility of a driver turning ESC off accidentally, or being otherwise unsure of the ESC system’s status. The control was required to be labeled “ESC Off” to discourage drivers from touching the control unless they truly wanted to disable the system. NHTSA remains concerned that using simply the ESC symbol or letters “ESC” for these controls could lead drivers to think they had to use the control to select ESC operation, when they would almost always be safer not touching the control at all.

The Alliance/AIAM petition offered no new evidence that the current requirements for labeling the ESC Off control are in any way more confusing or less effective in fulfilling the agency’s goal of discouraging drivers from casually or unintentionally disabling ESC than their suggested alternatives. Consequently, we are denying this petition.

### D. Disconnection of the Optional “ESC Off” Control

In the final rule, NHTSA stated that although it would consider a disconnection of the “ESC Off” control to constitute a malfunction suitable for simulation under the standard, because it directly impacts ESC operability, until the end of the phase-in period we would allow manufacturers to not illuminate the ESC malfunction telltale for disconnection of the “ESC Off” control.<sup>17</sup> At the time, this was permitted in order to accommodate the current lack of standardization of ESC controls and displays, which would be resolved by the end of the phase-in period. The Alliance/AIAM petitioned NHTSA to clarify that there is no requirement to illuminate the malfunction telltale when the ESC control is disconnected, and in doing so, to remove the exclusion in S5.3.9 that states that “a disconnection of the “ESC Off” control need not illuminate the ESC malfunction telltale.” S5.3.9 currently reads as follows:

S5.3.9 Prior to September 1, 2011, a disconnection of the power to the ESC electronic control unit may be indicated by the ABS malfunction telltale instead of the ESC malfunction telltale and a disconnection of the “ESC Off” control need not illuminate the ESC malfunction telltale.

The Alliance/AIAM argued that because S5.3.9 provides an exception for vehicles built before September 1, 2011, a requirement is implied after that date. Petitioners further argued that it is neither necessary nor appropriate to require the malfunction telltale to illuminate when the disable control is

disconnected, because as a practical matter, a fault in the optional ESC Off control will not affect the ability of the ESC system to function. Thus, the Alliance/AIAM requested that NHTSA remove the last clause of S5.3.9, and simply clarify in the preamble that a disconnection of the “ESC Off” control need not illuminate the ESC malfunction telltale.

*Agency response:* We are granting this petition, because it appears that no vehicles currently have the means to detect an ESC Off switch disconnection, and because upon further consideration we believe that an identical safety level will be maintained. Generally speaking, when an ESC Off switch becomes disconnected, the result will be equivalent to having no ESC Off control at all—which would frequently be preferable from a safety perspective. The driver would only be aware of the disconnection if he or she attempted to use the control to disable ESC and the “ESC Off” telltale did not illuminate. The only circumstance that NHTSA can imagine in which a disconnection of the ESC Off control would be different than simply not having an ESC Off control would be if the control became disconnected *after* it had been used to turn off the system, which would affect the control signal to turn ESC back on and could thus conceivably create a safety risk. We believe, however, that this would be a very rare occurrence. Moreover, if the switch is disconnected while the ESC is off, the driver retains the warning of the status indicator, and ESC will be automatically restored as soon as the vehicle is restarted, because that function is controlled by the ESC’s electronic control unit, which is not affected by the switch’s disconnection.

Thus, we clarify that ESC Off switch disconnections that do not affect ESC operation other than in the narrow circumstance described above would not be considered an ESC system malfunction severe enough for a telltale warning. We are revising paragraph S5.3.9 to remove the text in question.

### E. Automatic Return of ESC System to “On” Mode for Each Ignition Cycle

The final rule included an ignition cycle default requirement in paragraph S5.4.1, which required the ESC system to return to a mode that satisfied the equipment and performance requirements “at the initiation of each new ignition cycle, regardless of what mode the driver had previously selected.” If the system had multiple modes that satisfied the requirements, “the default mode must be the mode that satisfies the performance requirements \* \* \* by the greatest

<sup>17</sup> 72 FR 17271 (Apr. 6, 2007).

margin.” However, the final rule included an exception for vehicles from returning to the default mode if the mode previously selected by the driver “is specifically for enhanced traction during low-speed, off-road driving and is entered by the driver using a mechanical control that cannot be automatically reset electrically.” This exception was included in response to manufacturer comments that certain low-range, speed-limited 4-wheel drive modes were accessed via use of a mechanical lever, and there was no way to move the lever back automatically to return to the default mode at the start of each new ignition cycle. Additionally, the agency agreed that there could be a safety risk if, for example, a vehicle in 4-wheel drive driving up a steep hill suddenly stalled and had to be restarted, but returned to 2-wheel drive because of the ignition cycle default requirement which required that the default mode be the one that satisfied the performance requirements by the greatest margin.

The Alliance/AIAM petitioned NHTSA to change the word “mechanical” in S5.4.1 to “manual,” essentially broadening the exclusion from the key cycle automatic ESC reactivation requirement for low-speed off-road modes that are selected by the driver using an electronic control. Petitioners argued that the safety concerns (i.e., preventing ESC from reactivating when it could be harmful, as when the vehicle is stuck in snow or negotiating rugged or steep terrain) applied the same for electrically-selected modes as for mechanically-selected modes. However, petitioners subsequently submitted revised recommendations on this issue, focusing not only on the “mechanical” versus “manual” distinction, but also more broadly on how the ignition cycle default requirement should be applied for maximum safety when a vehicle offers multiple drive configuration options (like 2-wheel drive, low-range 4-wheel drive, high-range 4-wheel drive with locked center differential, etc.). The discussion below addresses the various aspects of this issue.

*Broader exclusion of low-speed off-road modes from ignition cycle reactivation requirement:*

The Alliance/AIAM petitioned for a broader exception in S5.4.1 for all low-speed off-road modes, including those induced by non-mechanical driver-selectable controls like touch screens or push buttons. Petitioners argued that safety concerns are still relevant for these modes just as they are for the agency’s current exclusion for mechanically-selected low-speed off-road modes. For example, whether a

vehicle is placed in an alternate mode mechanically or by pressing a button on a touch screen, if the mode is used for driving up steep hills or navigating rough terrain, requiring it to revert to a mode inappropriate for those conditions if the vehicle stalls and must be restarted could create hazards for the driver.

*Agency response:* We are granting this petition by tying S5.4.1’s exception directly to the low-range configuration of 4WD vehicles actually designed for off-road capability, and defining 4WD low-range configuration to specify minimum low-range gear reduction to assure that the vehicle is limited to low-speed operation. NHTSA agrees that the safety issue raised by petitioners is valid, and believes that the safety concerns associated with allowing a vehicle to remain in low-range 4WD upon restart should be minimized, since the vehicle will be limited to low speeds.

*“Opposition” of S5.2’s two requirements of stability and responsiveness and “by the greatest margin” requirement for different drive configurations:*

The Alliance/AIAM petitioned to revise the exception language of S5.4.1 that provides that the default mode to which ESC must return must be “the mode that satisfies the performance requirements of S5.2 by the greatest margin.” Petitioners argued that S5.2’s two requirements of stability and responsiveness “are often in opposition with each other.” This is because increasing ESC intervention may increase the compliance margin for the stability requirement, but also reduce the margin for responsiveness, while the opposite will happen when ESC intervention is decreased, as in the various “ESC performance modes” that petitioners offer on their vehicles. Petitioners had no specific request on this issue, but appear to have incorporated this concern into other requests for changes to regulatory text.

Also on the issue of the S5.2 reference in S5.4.1, the Alliance/AIAM requested that the agency not require vehicles in high-range 4WD locked-differential modes to return automatically to the ESC mode with the greatest margin of compliance with S5.2’s requirements. Petitioners argued that this requirement complicates compliance, and thus potential credit earnings, for vehicles with a high-range 4WD mode with a locked center differential, because ESC algorithms must be adjusted to accommodate those modes, so that they intervene differently in those contexts. Thus, even if the ESC system could meet S5.2 in these modes, it might not

meet it by the greatest margin as required by S5.4.1, so it would have to be shifted back to 2WD.

Petitioners argued that this result is a problem for several reasons. First, none of the systems on vehicles with high-range 4WD modes with locked center differential are currently capable of automatically switching back to 2WD mode (and unlocking the center differential) with the ignition cycle alone. Second, as for all restarts in a new drive configuration mode, it can conceivably create a safety hazard or severe inconvenience for the driver—a vehicle in 4WD may stall in mud or snow and end up deeply dug in before the driver realizes that it restarted in 2WD. And third, as addressed in the final rule, vehicles that use mechanical controls to access the high-range 4WD mode with locked center differential have no practical way of reverting automatically to 2WD at a new ignition cycle.

*Agency response:* We are granting these requests by revising S5.4.1’s default mode requirement to refer to ESC modes within the same drive configuration mode, and by removing the “by the greatest margin” requirement. Unlike in the case of low-range 4WD with a locked center differential, ESC continues to operate in the corresponding high-range mode. However, because 4WD vehicles are not designed to be driven on dry pavement with a locked center differential,<sup>18</sup> there is little information about their results in the FMVSS No. 126 performance test, which is conducted on dry pavement. It is possible that vehicles may pass the test in 4WD with a locked center differential, but the test is much more representative of what the vehicle encounters when operated in 2WD mode. If the vehicle does not pass the test in 4WD with a locked center differential, it would be required to

<sup>18</sup> By way of background, high-range 4WD with locked center differential is designed for driving in snow or on unpaved roads, where there is no particular need to drive slowly, so it is not speed-limited by low gear ratios. “Locked center differential” means that the drive gears at the front and rear axles are locked together, so they do not move independently like they ordinarily would. With a locked center differential, tires that would have no traction (when, for example, passing over an ice patch) are able to “slip” due to the locked axles and continue moving, so the vehicle avoids getting stuck. Tire slippage can be helpful when a driver is negotiating slippery surfaces like packed snow, but it creates large forces and causes rapid tire wear when the tires are forced to slip on dry pavement, because the axles are essentially fighting one another. Thus, vehicles are capable of driving on regular dry pavement in high-range 4WD with locked center differential, but the driver would probably not want to remain in that mode for long.

revert automatically to 2WD mode at a new ignition cycle.

However, NHTSA realizes that this result would not be beneficial in some of the situations described by petitioners, such as when the vehicle is operating in loose sand or snow and could get dug in by restarting in 2WD. Additionally, we realize that vehicles with mechanical controls cannot automatically revert to another mode when the ignition is cycled. It was not the agency's intent to require these results. Moreover, as a practical matter, the ESC performance test is conducted with the vehicle coasting, so a locked center differential will cause considerable longitudinal wheel slip and slow the vehicle quickly during the test, aiding its stability. For these reasons, NHTSA is revising S5.4.1's default mode requirement to refer to ESC modes within the same drive configuration mode.

However, because ESC can remain operative in high-range 4WD with locked center differential, and may be able to meet FMVSS No. 126's stability performance requirements, we are specifying that a vehicle in high-range 4WD with locked center differential need not revert to 2WD with the next ignition cycle if it can meet the stability performance requirements of S5.2.1 and S5.2.2. As stated, locking the vehicle's center differential will likely result in increased understeer. This will have the inherent effect of improving lateral stability, but at the expense of some responsiveness degradation. However, in the driving situations appropriate for use of the high-range 4-wheel drive configuration with locked center differential mode (i.e., snow- or ice-covered roads, or on unpaved roads), we believe the benefits of improved lateral stability outweigh the ancillary effect of reduced responsiveness. Therefore, for vehicles placed in a high-range 4WD with locked center differential mode, we are only requiring the ESC system to revert at each ignition cycle to a mode that can meet the stability performance requirements. We believe that this solution resolves petitioners' concerns about vehicles not being able to meet both stability and responsiveness requirements in high-range 4WD with locked center differential.

Additionally, we are removing the sentence at the end of S5.4.1 that includes the "by the greatest margin" language, and are instead specifying that the default mode must be the "manufacturer's original" default mode. The "by the greatest margin" language was originally included in FMVSS No. 126 to ensure that the ignition cycle default mode was always the mode that

provided the maximum level of safety, particularly if the ESC system included modes that were more "sporty" and had a lower compliance margin, even if they met the performance requirements. However, upon further consideration, the agency believes it is highly unlikely that manufacturers would choose to offer ESC systems with default modes that were not the modes with the highest compliance margins. Therefore, we are simply requiring that vehicles return to the manufacturer's original default mode at the next ignition cycle. By "manufacturer's original default mode," the agency means the basic ESC mode for the drive configuration, that is not a driver-selectable mode, that meets the final rule's performance requirements (or in the case of high-range 4WD with locked center differential, that meets the stability performance requirements).

*Request to allow technical documentation in lieu of meeting performance requirements:*

In their revised recommendations the Alliance/AIAM also argued that ESC modes induced by selecting high-range 4WD with locked center differential should not be required to satisfy S5.1 and S5.2 at the next ignition cycle as called for by S5.4.1. Petitioners requested that NHTSA instead require manufacturers to document, per the "ESC System Technical Documentation" provision of S5.6, that a control algorithm appropriate to high-range 4WD operation with a locked center differential is operational above 20 km/h in that drive configuration. With such documentation, the vehicle would not be required to change ESC modes or drive configuration at the initiation of a new ignition cycle.

*Agency response:* We are denying this request. The situation presented by high-range 4WD with locked center differential is not suited to a documentation solution in the way that understeer mitigation is, which is what S5.6 was intended to address. Unlike understeer mitigation, it is possible to perform the test established by the standard even with the vehicle in high-range 4WD with locked center differential, and the test procedure should still be useful to demonstrate objectively that ESC remains functional in this drive configuration without the need to rely on documentation, as discussed above. The agency notes that a docket submission by Chrysler on September 26, 2007 supports the idea that ESC modes available with a locked center differential should be expected to satisfy the stability criteria (S5.2.1 and

S5.2.2) of the ESC test used in FMVSS No. 126.<sup>19</sup>

We do not expect that vehicles tested with a locked center differential will meet the responsiveness criterion (S5.2.3) in a similar manner. However, responsiveness on a high coefficient of friction surface in a mode with the center differential locked is not relevant to evaluating the operation of ESC. Any lack of responsiveness in the test would not be the result of ESC operation, but rather the consequence of the front and rear drive axles creating high opposing forces, which cannot be resolved by tire slippage on dry pavement the way they would be on a surface like packed snow. As discussed above, the agency believes that in the case of vehicles in high-range 4WD with locked center differential, which are used primarily for safe handling on slippery surfaces like packed snow and dirt, vehicle stability is a more important property to demonstrate than vehicle responsiveness. Thus, manufacturers would have no obligation to ensure that vehicles in this drive configuration could meet S5.2.3.

*Whether the "ESC Off" indicator must be illuminated for driver selection of alternate operating modes:*

Finally, on the subject of driver-selectable operating modes, the Alliance/AIAM requested that NHTSA remove the requirement in S5.4.3 that the "ESC Off" indicator be illuminated whenever a driver-selectable operating mode renders the vehicle incapable of meeting the performance requirements of S5.2. Petitioners expressed concern that, if putting the vehicle in 4WD illuminates the ESC Off telltale, drivers might be discouraged from using 4WD because they might think that ESC is not working even though it has been optimized for that mode, or might seek unnecessary vehicle service for what appears to be a malfunction in their ESC system.

*Agency response:* This issue is addressed by the agency's revision of S5.4.1 to require vehicles in particular 4WD modes to meet only the stability performance requirements of S5.2.1 and S5.2.2 and not the responsiveness requirement of S5.2.3 as well. If the ESC mode for a high-range 4WD with locked center differential drive configuration is capable of satisfying the stability criteria, it should not be considered as turning ESC off. Thus, there would be no reason to illuminate the ESC Off telltale. NHTSA is revising S5.4.4 and S5.5.4 to clarify this point.

The table below summarizes the ignition cycle default requirements for

<sup>19</sup> Docket No. NHTSA-2007-27662-12.



manually-activated ESC modes in different drive configurations and the required ESC Off telltale response:

SAMPLE OF IGNITION CYCLE DEFAULT REQUIREMENTS OF S5.4.1 WITH TELLTALE STATUS REQUIREMENTS (LIST IS NOT ALL-INCLUSIVE)

Drive configuration	Mode	Meets stability & responsiveness requirements	“Off Telltale” status	ESC default setting (ignition cycle)	“Off Telltale” status
2WD (3 selections avail.).	2WD .....	yes .....	off .....	2WD default meets stability and responsiveness requirements.	off.
	Performance 1 .....	yes .....	off .....	2WD default meets stability and responsiveness requirements.	off.
	Performance 2 .....	no .....	on .....	2WD default meets stability and responsiveness requirements.	off.
AWD/4WD Auto (1 selection avail.).	AWD/4WD Auto .....	no (neither) .....	on .....	Default to some mode that meets stability and responsiveness requirements.	off.
	AWD/4WD Auto .....	no (stability—yes) (responsiveness—no).	on .....	Default to some mode that meets stability and responsiveness requirements.	off.
	AWD/4WD Auto .....	yes .....	off .....	Default to some mode that meets stability and responsiveness requirements.	off.
4WD Hi Locked (1 selection avail.).	Locked .....	no (neither) .....	on .....	Default to some mode that meets stability requirements.	off.
	Locked .....	no (stability—yes) (responsiveness—no).	off .....	Default to some mode that meets stability requirements.	off.
	Locked .....	yes (both) .....	off .....	Default to some mode that meets stability requirements.	off.
4WD Low .....	Low .....	no .....	on .....	Normal low .....	on.
Any Above .....	“ESC OFF” Control activated.	no .....	on .....	Default to applicable mode within existing drive configuration that meets appropriate performance requirements.	off.

F. Low-Speed Threshold for ESC Operation

The final rule, in both the paragraph S4 definition of an ESC system and in paragraph S5.1.2 as part of the equipment requirements, requires ESC to operate at all speeds above 15 km/h (9.3 mph). NHTSA included a low-speed threshold for ESC operation as a result of comments to the NPRM. 15 km/h (9.3 mph) was chosen largely because that speed was the typical threshold for ABS operation, and ABS shares a number of components with ESC.<sup>20</sup>

The Alliance and AIAM petitioned the agency to remove the low-speed threshold in the ESC system definition of paragraph S4, and to allow the manufacturer to determine the low-speed threshold and initialization period and conditions until the end of the phase-in period in paragraph S5.1.2. The Alliance/AIAM argued that “Many current vehicles have a design cut-off threshold speed higher than the 15 km/h (9.3 mph) specified in FMVSS 126,” and that the different initialization periods required by different ESC systems may result in some systems not working until the vehicle has reached 32 km/h (20 mph).<sup>21</sup> Petitioners further argued that the 15 km/h (9.3 mph) low-speed threshold would interfere with

manufacturers’ ability to accrue carry-forward and phase-in credits.<sup>22</sup>

In a supplemental document to its petition for reconsideration, the Alliance/AIAM requested a specific low-speed threshold of 20 km/h (12.4 mph), but also that the agency still allow the manufacturer to determine the initialization period and conditions before the end of the phase-in period in S5.1.2.<sup>23</sup> The petitioners stated that they had conducted additional research, and determined that their “member vehicles” could manage this revised low-speed threshold recommendation.

*Agency response:* We are granting this petition in part, although we are not adopting the exact language offered by the Alliance/AIAM. Regarding the low-speed threshold, the original proposed language of S4 as contained in the NPRM stated that ESC must be operational “over the full speed range of the vehicle (except below a low-speed threshold where loss of control is unlikely).” As stated above, NHTSA included a specific speed designation for the low-speed threshold in the final rule in response to comments, but our goal has always been to avoid requiring ESC to operate at speeds below which loss of control is not a significant concern. NHTSA agrees that a low-speed threshold of 20 km/h (12.4 mph),

consistent with the apparent capabilities of most of the existing ESC-equipped fleet, constitutes a limit for ESC operation below which loss of control is unlikely. Thus, the low-speed threshold is revised accordingly in S4 and S5.1.2 of the regulatory text.

Additionally, the Alliance/AIAM petition requested that NHTSA allow manufacturers to determine their own initialization periods until the end of the phase-in period. NHTSA is denying this petition because we are revising S4 and S5.1.2 to clarify that ESC need not be operational during system initialization. This point was already made in our letter of interpretation to GM, but we believe that this minor clarification should also be made to the regulatory text to avoid any further confusion.

G. Fault Detection and Cancellation Test Procedures

The need of the ESC system to initialize affects provisions of FMVSS No. 126 in addition to the definition of ESC system in S4 and the description of the required equipment in S5.1.2. For example, if the system has not completed initialization and is not yet operational, it likely cannot detect malfunctions in the system—a problem which relates to the requirements for ESC malfunction telltales and for their testing. Paragraph S5.3 establishes the requirement for a malfunction telltale

<sup>20</sup> *Id.*, at 17264.

<sup>21</sup> Alliance petition at 5.

<sup>22</sup> *Id.* at 6.

<sup>23</sup> Docket No. NHTSA–2007–27662–10, at 8.

for ESC systems and specifies a number of attributes for the telltale. Paragraph S7.10 of the standard sets forth a test procedure for the malfunction telltale, and S7.10.2 accounts for the need for the vehicle to be driven for up to two minutes to allow the ESC system to initialize and conduct diagnostics in order for it to be able to detect a malfunction.

The Alliance/AIAM petition asked the agency to clarify that the initialization procedure necessary for the system to find a malfunction and illuminate the telltale (in S7.10.2) is also applied to the vehicle when the telltale is tested for extinguishment after the fault is corrected (S7.10.4).<sup>24</sup> Petitioners further requested that the ESC malfunction telltale test procedure be referenced in S5.3 to assure that the test procedures are reflected in the ESC malfunction requirements section of the standard. Additionally, petitioners argued that most current ESC systems require a brake application in order to detect some ESC system malfunctions, and petitioned the agency to include a requirement for a brake application in the initialization procedure.

*Agency response:* We are granting these requests. As discussed above, the agency did not intend to require ESC to operate when it is still initializing. For a system that needs to initialize before it can discover a malfunction and illuminate the malfunction telltale, like the majority of the ESC systems currently on the market, the system cannot discover that the malfunction is no longer present and extinguish the telltale without completing the same initialization procedure. Therefore, the agency is including the same initialization procedure in S7.10.4 as is already specified in S7.10.2. Similarly, to clarify that the vehicle must be initialized before testing begins, we are including the same initialization procedure in S6.3.1, as part of the test conditions. Additionally, after considering the petitions, we consider the inclusion of a brake application in the initialization procedure requirements to be a very minor amendment. We are revising the regulatory text to reflect these changes.

In considering these requests, the agency also noted that S7.10.3 of the ESC malfunction detection procedure requires that the telltale illuminate immediately when the engine is restarted following an ignition cycle in which a malfunction was detected. In other words, the ESC system must hold the existence of a malfunction in

memory, rather than rediscovering it with the new ignition cycle. Some ESC systems currently on the market must initialize before they can identify some specific types of malfunctions, which means that they are unable to hold the existence of a malfunction in memory. For these systems, we recognize that this requirement simply cannot be met, although it may be possible for other ESC systems that do not need to initialize to recognize a malfunction. In order to be consistent with the other provisions of S7.10, the agency is making S7.10.3 effective at the end of the phase-in, and will revise the regulatory text accordingly. However, we note that after the phase-in, all ESC systems must be able to hold malfunctions in memory and illuminate the malfunction telltale immediately upon engine restart if the malfunction still exists.

#### *H. Effective Dates for Amended Procedures and Requirements*

The Alliance/AIAM petitioned that the revisions they requested to the final rule be made retroactive to June 5, 2007 (the effective date of the final rule), so that carry-forward credits for complying vehicles built after that date could be used by manufacturers in satisfying the phase-in schedule for that standard.

*Agency response:* We are granting this petition, to the extent to which we are making the revisions requested in the petition. In the April 2007 final rule, NHTSA provided that manufacturers may earn credits for vehicles manufactured on or after June 5, 2007, that comply with the new ESC standard. In today's final rule, we are making a number of minor amendments to that standard, many of which are of a clarifying nature and none of which affect safety benefits.

Given our decision in the April 2007 final rule to permit manufacturers to earn credits for complying vehicles manufactured on or after June 5, 2007 and given the minor nature of today's amendments, it is our position that manufacturers may earn credits for vehicles manufactured on or after that date if the vehicles comply with the standard as amended by today's rule. We believe it is sufficient to make that point in this preamble.

We are making this final rule effective 30 days after publication. The amendments do not impose new requirements but instead provide clarification and additional flexibility in appropriate areas. We accordingly find good cause for making the rule effective in this timeframe.

#### *I. Inclusion of Roll Stability Control in the Scope of the Final Rule*

AAJ petitioned NHTSA to reconsider its decision not to address the need for roll stability control in the final rule. It argued that the agency's statement in the final rule that "There is currently an insufficient body of data to judge the efficacy of [these] systems"<sup>25</sup> was incorrect, because "the agency may be able to obtain the appropriate information through its authority to institute a rulemaking or to issue a subpoena."<sup>26</sup> It also argued that if NHTSA declines to reconsider the final ESC rule on this basis, "the agency must establish a rulemaking to address RSC immediately," because doing so "would develop the statistics to demonstrate the efficacy of such systems."<sup>27</sup>

*Agency response:* We are denying this petition. While we may consider establishing requirements for roll stability control in the future, we reiterate that insufficient data currently exists for the agency to establish such requirements as part of FMVSS No. 126, as we discussed at length in the final rule.<sup>28</sup> In explaining the basis of our decision, we will first explain the difference between the yaw stability control that ESC produces and roll stability control, and then explain briefly why we did not include roll stability control as part of the ESC final rule.

"Yaw stability control" is the technical term for the action of ESC which keeps the vehicle pointed in the direction the driver is steering through the automatic reduction of engine power and automatic application of braking at individual wheels to turn the vehicle, in order to help drivers avoid imminent loss-of-control situations.<sup>29</sup> "Roll stability control," in contrast, prevents vehicle tip-up by sensing the vehicle's body roll angle and applying a high brake force to the outside front wheel to straighten the vehicle's path and reduce lateral acceleration if the roll angle indicates probable tip-up. Put differently, yaw stability control is based on the vehicle's sensing loss of control on the horizontal plane, and roll stability control is based on the vehicle's sensing loss of control on the vertical plane, although both use brake forces at individual wheels to make the path correction. Additionally, yaw

<sup>25</sup> 72 FR 17236, 17239 (Apr. 6, 2007).

<sup>26</sup> AAJ petition at 1, available at Docket No. NHTSA-2007-27662, item 6.

<sup>27</sup> *Id.* at 2.

<sup>28</sup> See 72 FR 17236 at 17253, 17258 (Apr. 6, 2007).

<sup>29</sup> The final rule contains a much more thorough description of how ESC uses yaw stability control. See *id.* at 17243-44 (Apr. 6, 2007).

<sup>24</sup> This point was also answered in the GM letter of interpretation.

stability control must be temporarily overridden to allow roll stability control to change the path of the vehicle to reduce lateral acceleration.

NHTSA did not include requirements for roll stability control in the final rule for several reasons. First, roll stability control involved relatively new technology, and none of the vehicles examined in NHTSA's crash data study which proved the substantial safety benefits of yaw stability control also had roll stability control. We do not currently have sufficient information on the effectiveness of roll stability control as a safety technology to include it as part of this safety standard. Moreover, because roll stability control in theory functions by temporarily disabling yaw stability control, NHTSA cannot judge its overall effect without real-world crash data.

Our highest priority is ensuring that the ESC systems required by FMVSS No. 126 are present on all vehicles as soon as possible. Just because the final rule did not include roll stability control as part of FMVSS No. 126, however, does not mean that the agency does not acknowledge that the technology may eventually demonstrate safety benefits. We stated in the final rule that "The agency will track the rollover rate of vehicles equipped with roll stability control through analysis of State-generated crash data and evaluate its effectiveness once a sufficient sample size becomes available (*i.e.*, approximately three to four years)." <sup>30</sup> Further, FMVSS No. 126 does not preclude manufacturers from equipping vehicles with roll stability control.

Finally, we are denying AAJ's request that "the agency \* \* \* establish a rulemaking to address [roll stability control] immediately" if it denies the petition for reconsideration. As discussed above, NHTSA will continue monitoring roll stability control as a safety technology. We are undertaking our own research on RSC, and are collecting comparative crash data on RSC-equipped vehicles from the states. We will consider initiating rulemaking as we gather more information regarding its practicability and the safety benefits that it provides. As the final rule stated,

\* \* \* because our data study showed yaw stability control reducing rollovers of SUVs by 84% by reducing and mitigating road departures, and because on-road untripped rollovers are much less common events, the target population of crashes that roll stability control could possibly prevent may be very small. If and when roll stability control can be shown to be cost-effective, then it could

be a candidate for inclusion in the standard in subsequent rulemaking.<sup>31</sup>

AAJ provided no additional facts or information in its petition for reconsideration/rulemaking that contributes to the agency's understanding of whether a roll stability control safety standard is necessary or helpful at this time, or whether requiring manufacturers to provide the information on roll stability control that AAJ suggests would, in fact, be necessary or helpful. Therefore, we are denying its request.

#### *J. NHTSA's Discussion of Implied Preemption*

AAJ objected to the agency's general statement in the final rule preamble that, in *Geier v. American Honda Motor Co.*, the Supreme Court recognized the possibility that state tort law can create an obstacle to a NHTSA safety standard and could therefore be impliedly preempted. AAJ interpreted that statement as a claim by the agency that the ESC rule itself impliedly preempts state tort law and requested that the agency eliminate that statement. (Since the agency cannot "eliminate" a discussion in the preamble of an already published final rule, we assume that AAJ is asking that the agency "disavow" the discussion.) AAJ argued that "Geier is an unusual, fact-driven case which cannot be used to establish preemption of state tort law for all NHTSA motor vehicle safety rules." Based on its view that the agency had made a claim of preemption, AAJ further argued that, under the Administrative Procedure Act, "any claim of conflict preemption must be preceded by notice and comment as to whether a direct conflict exists between state law and the electronic stability control rule."

*Agency response:* The agency does not consider this portion of AAJ's submission to be a petition for reconsideration, as NHTSA's preemption discussion is not a rule.<sup>32</sup> Accordingly, we are treating this portion as a simple request to disavow the discussion in the final rule preamble.

We provided the general discussion of implied preemption and Geier in accordance with the directive of Executive Order 13132, Federalism, for agencies to analyze the federalism

implications of their rulemakings. In that discussion, the agency explained that NHTSA's safety standards can preempt state laws in at least two ways: Either expressly, through the express preemption provision of the Vehicle Safety Act, or impliedly, if State requirements create a conflict and thus stand as an obstacle to the accomplishment and execution of a NHTSA safety standard.<sup>33</sup> Per the Order, we considered the nature of the ESC standard and its objectives and whether there might be specific conflicts between the standard and anticipated State tort law. We did not detect any conflicts.<sup>34</sup> Without a conflict, there is no implied preemption. However, we could not then, and cannot now, completely rule out the possibility that such a conflict might become apparent in the future through subsequent experience with the standard. Even if the agency had identified what it believed to be a conflict, the issue of whether there was a conflict and, if so, whether State tort law action would be impliedly preempted would ultimately be a matter for the courts to decide. For the aforementioned reasons, the agency declines to remove the *Geier* language from its discussion of preemption law.

#### *K. International Harmonization and the Global Technical Regulation for ESC*

The April 2007 final rule described NHTSA's intent to begin formal work to develop a global technical regulation (GTR) on ESC in that year. Over the course of several meetings of the United Nations' Economic Commission for Europe (UNECE) World Forum for the Harmonization of Vehicle Regulations (WP.29) during 2007 and 2008, the agency participated in successful efforts that culminated in the establishment of the ESC GTR under the 1998 Global Agreement.<sup>35</sup> The U.S., as a Contracting Party of the 1998 Agreement that voted in favor of establishing this GTR, is obligated under the Agreement to initiate the process for adopting the provisions of the GTR.<sup>36</sup> The issuance of this response to petitions for reconsideration fulfills the obligation of

<sup>33</sup> See the "Federalism" discussion at 72 FR 17300-01 (Apr. 6, 2007).

<sup>34</sup> *Id.*

<sup>35</sup> Although commonly referred to as the 1998 Global Agreement, this provision is more formally titled the "1998 Agreement Concerning the Establishing of Global Technical Regulations for Wheeled Vehicles, Equipment and Parts which can be Fitted and/or be Used on Wheeled Vehicles."

<sup>36</sup> While the 1998 Agreement obligates such Contracting Parties to initiate rulemaking within one year of the establishment of the GTR, it leaves the ultimate decision of whether to adopt the GTR into their domestic law to the parties themselves.

<sup>30</sup> 72 FR 17236, 17258 (Apr. 6, 2007).

<sup>31</sup> 72 FR 17236, 17258 (Apr. 6, 2007).

<sup>32</sup> See 49 CFR § 553.35, "Petitions for Reconsideration," paragraph (a), which states that "Any interested person may petition the Administrator for reconsideration of any rule issued under this part. \* \* \* The petition must contain a brief statement of the complaint and an explanation as to why compliance with the rule is not practicable, is unreasonable, or is not in the public interest." (Emphasis added.)

the U.S. to initiate that process. The regulatory text of the April 2007 final rule, as amended by this document, is consistent with that of the GTR.

#### IV. Rulemaking Analyses and Notices

This rule makes several minor changes to the regulatory text of FMVSS No. 126, and does not increase the regulatory burden of manufacturers. The agency has discussed the relevant requirements of the Vehicle Safety Act, Executive Order 12866, the Department of Transportation's regulatory policies and procedures, the Regulatory Flexibility Act, Executive Order 13132 (Federalism), Executive Order 12988 (Civil Justice Reform), Executive Order 13045 (Protection of Children from Environmental Health and Safety Risks), the Paperwork Reduction Act, the National Technology Transfer and Advancement Act, the Unfunded Mandates Reform Act, and the National Environmental Policy Act in the April 2007 final rule cited above. Those discussions are not affected by these changes.

#### *Privacy Act*

Please note that any one is able to search the electronic form of all

documents received into any of our dockets by the name of the individual submitting the document (or signing the document, if submitted on behalf of an association, business, labor union, etc.). You may review DOT's complete Privacy Act Statement in the **Federal Register** published on April 11, 2000 (Volume 65, Number 70; Pages 19477–78), or you may visit <http://www.dot.gov/privacy.html>.

#### V. Regulatory Text

##### List of Subjects in 49 CFR Parts 571 and 585

Imports, Motor vehicle safety, Report and recordkeeping requirements, Tires.

■ In consideration of the foregoing, NHTSA is amending 49 CFR part 571 as follows:

##### **PART 571—FEDERAL MOTOR VEHICLE SAFETY STANDARDS**

■ 1. The authority citation for part 571 continues to read as follows:

**Authority:** 49 U.S.C. 322, 30111, 30115, 30117, and 30166; delegation of authority at 49 CFR 1.50.

■ 2. In Section 571.101, revise S5.5.2, S5.5.5, and Table 1 to read as follows:

##### **§ 571.101 Standard No. 101; Controls and displays.**

\* \* \* \* \*

S5.5.2 The telltales for any brake system malfunction required by Table 1 to be red, air bag malfunction, low tire pressure, electronic stability control malfunction (as of September 1, 2011), passenger air bag off, high beam, turn signal, and seat belt must not be shown in the same common space.










\* \* \* \* \*

S5.5.5 In the case of the telltale for a brake system malfunction, air bag malfunction, side air bag malfunction, low tire pressure, electronic stability control malfunction (as of September 1, 2011), passenger air bag off, high beam, turn signal, or seat belt that is designed to display in a common space, that telltale must displace any other symbol or message in that common space while the underlying condition for the telltale's activation exists.




\* \* \* \* \*

**BILLING CODE 4910–59–P**









**Table 1  
Controls, Telltales, and Indicators  
With Illumination or Color Requirements<sup>1</sup>**

Column 1 ITEM	Column 2 SYMBOL	Column 3 WORDS OR ABBRE- VIATIONS	Column 4 FUNCTION	Column 5 ILLUMIN- ATION	Column 6 COLOR
Highbeam  2	 3,5	—	Telltale	—	Blue or Green <sup>4</sup>
Turn signals  2	 3,6	—	Control	—	—
		—	Telltale	—	Green <sup>4</sup>
Hazard warning signal	 3	Hazard	Control	Yes	—
		—	Telltale <sup>7</sup>	—	—
Position, side marker, end-outline marker, identification, or clearance lamps	 3 8	Marker Lamps or MK Lps <sup>8</sup>	Control	Yes	—
Windshield wiping system		Wiper or Wipe	Control	Yes	—
Windshield washing system		Washer or Wash	Control	Yes	—
Windshield washing and wiping system combined		Washer-Wiper or Wash-Wipe	Control	Yes	—
Windshield defrosting and defogging system		Defrost, Defog or Def.	Control	Yes	—
Rear window defrosting and defogging system		Rear Defrost, Rear Defog, Rear Def., or R-Def.	Control	Yes	—


**Table 1**  
**Controls, Telltales, and Indicators**  
**With Illumination or Color Requirements<sup>1</sup>**

Column 1 ITEM	Column 2 SYMBOL	Column 3 WORDS OR ABBRE- VIATIONS	Column 4 FUNCTION	Column 5 ILLUMIN- ATION	Column 6 COLOR
Brake system malfunction	—	Brake	Telltale	—	Red <sup>4</sup>
Antilock brake system malfunction for vehicles subject to FMVSS 105 or 135	—	Antilock, Anti-lock, or ABS <sub>9</sub>	Telltale	—	Yellow
Malfunction in Variable Brake Proportioning System	—	Brake Proportioning <sub>9</sub>	Telltale	—	Yellow
Regenerative brake system malfunction	—	RBS or ABS/RBS <sub>9</sub>	Telltale	—	Yellow
Malfunction in antilock system for vehicles other than trailers subject to FMVSS 121	—	ABS or Antilock <sub>9</sub>	Telltale	—	Yellow
Antilock brake system trailer fault for vehicles subject to FMVSS 121		Trailer ABS or Trailer Antilock	Telltale	—	Yellow
Brake Pressure (for vehicles subject to FMVSS 105 or 135)	—	Brake Pressure <sub>9</sub>	Telltale	—	Red <sup>4</sup>
Low brake fluid condition (for vehicles subject to FMVSS 105 or 135)	—	Brake Fluid <sub>9</sub>	Telltale	—	Red <sup>4</sup>
Parking brake applied (for vehicles subject to FMVSS 105 or 135)	—	Park or Parking Brake <sub>9</sub>	Telltale	—	Red <sup>4</sup>
Brake lining wear-out condition (for vehicles subject to FMVSS 135)	—	Brake Wear <sub>9</sub>	Telltale	—	Red <sup>4</sup>
Electronic Stability Control System Malfunction (manufacturer may use this telltale in flashing mode to indicate ESC operation. See FMVSS 126.) <sub>10</sub>		ESC <sub>11</sub>	Telltale	—	Yellow
Electronic Stability Control System "OFF" <sub>10</sub>		ESC OFF	Control	Yes	—
			Telltale	—	Yellow

**Table 1**  
**Controls, Telltales, and Indicators**  
**With Illumination or Color Requirements<sup>1</sup>**

Column 1 ITEM	Column 2 SYMBOL	Column 3 WORDS OR ABBRE- VIATIONS	Column 4 FUNCTION	Column 5 ILLUMIN- ATION	Column 6 COLOR
Fuel Level	 or 	Fuel	Telltale	—	—
			Indicator	Yes	—
Engine oil pressure	 <small>12</small>	Oil	Telltale	—	—
			Indicator	Yes	—
Engine coolant temperature	 <small>12</small>	Temp	Telltale	—	—
			Indicator	Yes	—
Electrical charge		Volts or Charge or Amp	Telltale	—	—
			Indicator	Yes	—
Engine stop	—	Engine Stop <small>13</small>	Control	Yes	—
Automatic vehicle speed (cruise control)	—	—	Control	Yes	—
Speedometer	—	MPH, or MPH and km/h <small>14</small>	Indicator	Yes	—
Heating and Air conditioning system	—	—	Control	Yes	—
Automatic transmission control position <i>(park)</i> <i>(reverse)</i> <i>(neutral)</i> <i>(drive)</i>	—	<b>P R N D</b> <small>15</small>	Indicator	Yes	—
Heating and/or air conditioning fan	 or 	Fan	Control	Yes	—
Low Tire Pressure (including malfunction) (See FMVSS 138)	 <small>16</small>	Low Tire <small>16</small>	Telltale	—	Yellow

**Table 1**  
**Controls, Telltales, and Indicators**  
**With Illumination or Color Requirements<sup>1</sup>**

Column 1 ITEM	Column 2 SYMBOL	Column 3 WORDS OR ABBRE- VIATIONS	Column 4 FUNCTION	Column 5 ILLUMIN- ATION	Column 6 COLOR
Low Tire Pressure (including malfunction) that identifies involved tire (See FMVSS 138)	 16	Low Tire  16	Telltale	—	Yellow
Tire Pressure Monitoring System Malfunction (See FMVSS 138) <sup>17</sup>	—	TPMS  16, 18	Telltale	—	Yellow

*Notes:*

1. An identifier is shown in this table if it is required for a control for which an illumination requirement exists or if it is used for a telltale for which a color requirement exists. If a line appears in column 2 and column 3, the control, telltale or indicator is required to be identified, however the form of the identification is the manufacturer's option. Telltales are not considered to have an illumination requirement, because by definition the telltale must light when the condition for its activation exists.
2. Additional requirements in FMVSS 108.
3. Framed areas of the symbol may be solid; solid areas may be framed.
4. Blue may be blue-green. Red may be red-orange.
5. Symbols employing four lines instead of five may also be used.
6. The pair of arrows is a single symbol. When the controls or telltales for left and right turn operate independently, however, the two arrows may be considered separate symbols and be spaced accordingly.
7. Not required when arrows of turn signal telltales that otherwise operate independently flash simultaneously as hazard warning telltale.
8. Separate identification not required if function is combined with master lighting switch.
9. Refer to FMVSS 105 or FMVSS 135, as appropriate, for additional specific requirements for brake telltale labeling and color. If a single telltale is used to indicate more than one brake system condition, the brake system malfunction identifier must be used.
10. Requirement effective September 1, 2011.
11. This symbol may also be used to indicate the malfunction of related systems/functions, including traction control, trailer stability assist, corner brake control, and other similar functions that use throttle and/or individual wheel torque control to operate and share common components with ESC.
12. Combination of the engine oil pressure symbol and the engine coolant temperature symbol in a single telltale is permitted.
13. Use when engine control is separate from the key locking system.
14. If the speedometer is graduated in both miles per hour and in kilometers per hour, the scales must be identified "MPH" and "km/h", respectively, in any combination of upper- and lowercase letters.
15. The letters 'P', 'R', 'N', and 'D' are considered separate identifiers for the individual gear positions. Their locations within the vehicle, and with respect to each other, are governed by FMVSS 102. The letter 'D' may be replaced by another alphanumeric character or symbol chosen by the manufacturer.
16. Required only for FMVSS 138 compliant vehicles.
17. Alternatively, either low tire pressure telltale may be used to indicate a TPMS malfunction. See FMVSS 138.
18. Required only for vehicles manufactured on or after September 1, 2007.



■ 3. In Section 571.126, revise S4, S5.1.2, S5.3, S5.3.3, S5.3.9, S5.4, S5.4.1, S5.4.2, S5.4.3, S5.5.1, S5.5.4, S6.3.1, S7.10.2, S7.10.3, and S7.10.4 to read as follows; add S5.3.10, S5.4.2, and S5.5.10 to read as follows; and redesignate S5.4.2 and S5.4.3 to S5.4.3 and S5.4.4, respectively to read as follows:

**§ 571.126 Standard No. 126; Electronic stability control systems**

\* \* \* \* \*

**S4. Definitions.**

*Ackerman Steer Angle* means the angle whose tangent is the wheelbase divided by the radius of the turn at a very low speed.

*Drive configuration* means the driver-selected, or default, condition for distributing power from the engine to the drive wheels (examples include, but are not limited to, 2-wheel drive, front-wheel drive, rear-wheel drive, all-wheel drive, 4-wheel drive high gear with locked differential, and 4-wheel drive low gear).

*Electronic stability control system or ESC system* means a system that has all of the following attributes:

- (1) That augments vehicle directional stability by applying and adjusting the vehicle brake torques individually to induce a correcting yaw moment to a vehicle;
- (2) That is computer-controlled with the computer using a closed-loop algorithm to limit vehicle oversteer and to limit vehicle understeer;
- (3) That has a means to determine the vehicle's yaw rate and to estimate its side slip or side slip derivative with respect to time;
- (4) That has a means to monitor driver steering inputs;
- (5) That has an algorithm to determine the need, and a means to modify engine torque, as necessary, to assist the driver in maintaining control of the vehicle; and
- (6) That is operational over the full speed range of the vehicle (except at vehicle speeds less than 20 km/h (12.4 mph), when being driven in reverse, or during system initialization).

*Lateral acceleration* means the component of the vector acceleration of a point in the vehicle perpendicular to the vehicle's x-axis (longitudinal) and parallel to the road plane.

*Low-range four-wheel drive configuration* means a drive configuration that has the effect of locking the drive gears at the front and rear axles together and providing an additional gear reduction between the engine speed and vehicle speed of at least 2.0.

*Mode* means an ESC performance algorithm, whether driver-selected or

not (examples include, but are not limited to, standard (default) mode, performance mode, snow or slippery road mode, or Off mode).

*Oversteer* means a condition in which the vehicle's yaw rate is greater than the yaw rate that would occur at the vehicle's speed as a result of the Ackerman Steer Angle.

*Side slip or side slip angle* means the arctangent of the lateral velocity of the center of gravity of the vehicle divided by the longitudinal velocity of the center of gravity.

*Understeer* means a condition in which the vehicle's yaw rate is less than the yaw rate that would occur at the vehicle's speed as a result of the Ackerman Steer Angle.

*Yaw rate* means the rate of change of the vehicle's heading angle measured in degrees/second of rotation about a vertical axis through the vehicle's center of gravity.

\* \* \* \* \*

S5.1.2 Is operational during all phases of driving including acceleration, coasting, and deceleration (including braking), except when the driver has disabled ESC, the vehicle speed is below 20 km/h (12.4 mph), the vehicle is being driven in reverse, or during system initialization

\* \* \* \* \*

S5.3 *ESC Malfunction.* The vehicle must be equipped with a telltale that provides a warning to the driver of the occurrence of one or more malfunctions that affect the generation or transmission of control or response signals in the vehicle's electronic stability control system. When tested according to S7.10, the ESC malfunction telltale:

\* \* \* \* \*

S5.3.3 As of September 1, 2011, except as provided in paragraphs S5.3.4, S5.3.5, S5.3.8, and S5.3.10, the ESC malfunction telltale must illuminate only when a malfunction(s) of the ESC system exists and must remain continuously illuminated under the conditions specified in S5.3 for as long as the malfunction(s) exists (unless the "ESC malfunction" and "ESC Off" telltales are combined in a two-part telltale and the "ESC Off" telltale is illuminated), whenever the ignition locking system is in the "On" ("Run") position; and

\* \* \* \* \*

S5.3.9 Prior to September 1, 2011, a disconnection of the power to the ESC electronic control unit may be indicated by the ABS malfunction telltale instead of the ESC malfunction telltale.

S5.3.10 Manufacturers may use the ESC malfunction telltale in a steady-

burning mode to indicate malfunctions of ESC-related systems and functions including traction control, trailer stability assist, corner brake control, and other similar functions that use throttle and/or individual wheel torque control to operate and share common components with the ESC system, and may use the ESC malfunction telltale in a flashing mode to indicate operation of these ESC-related systems.

S5.4 *ESC Off and Other System Controls.* The manufacturer may include an "ESC Off" control whose only purpose is to place the ESC system in a mode or modes in which it will no longer satisfy the performance requirements of S5.2.1, S5.2.2, and S5.2.3. An "ESC Off" control may be combined with other controls in a multi-function control. Manufacturers may also provide controls for other systems that have an ancillary effect upon ESC operation. Controls of either kind that place the ESC system in a mode in which it will no longer satisfy the performance requirements of S5.2.1, S5.2.2, and S5.2.3 are permitted, provided that:

S5.4.1 The vehicle's ESC system must always return to the manufacturer's original default ESC mode that satisfies the requirements of S5.1 and S5.2 at the initiation of each new ignition cycle, regardless of what ESC mode the driver had previously selected, unless (a) the vehicle is in a low-range four-wheel drive configuration selected by the driver on the previous ignition cycle that is designed for low-speed, off-road driving, or (b) the vehicle is in a four-wheel drive configuration selected by the driver on the previous ignition cycle that is designed for operation at higher speeds on snow-, sand-, or dirt-packed roads and that has the effect of locking the drive gears at the front and rear axles together, provided that the vehicle meets the stability performance requirements of S5.2.1 and S5.2.2 in this mode.

S5.4.2 In addition to the requirements of S5.4.1, if the vehicle's ESC system has more than one ESC mode that satisfies the requirements of S5.1 and S5.2 within the drive configuration selected for the previous ignition cycle, the system must return to the manufacturer's original default ESC mode.

S5.4.3 As of September 1, 2011, a control whose only purpose is to place the ESC system in a mode or modes in which it will no longer satisfy the performance requirements of S5.2.1, S5.2.2, and S5.2.3 must be identified by the symbol shown for "ESC Off" in Table 1 of Standard No. 101 (49 CFR

571.101), or the text, "ESC Off" as listed under "Word(s) or Abbreviations" in Table 1 of Standard No. 101 (49 CFR 571.101).

S5.4.4 A control for another system that has the ancillary effect of placing the ESC system in a mode in which it no longer satisfies the performance requirements of S5.2.1, S5.2.2, and S5.2.3 need not be identified by the "ESC Off" identifiers in Table 1 of Standard No. 101 (49 CFR 571.101), but the ESC status must be identified by the "ESC Off" telltale in accordance with S5.5, as of September 1, 2011, except if the vehicle is in a 4-wheel drive high gear configuration that has the effect of locking the drive gears at the front and rear axles together provided the vehicle meets the stability performance criteria of S5.2.1 and S5.2.2.

\* \* \* \* \*

S5.5.1 Except as provided in S5.5.10, the vehicle manufacturer must provide a telltale indicating that the vehicle has been put into a mode that renders it unable to satisfy the requirements of S5.2.1, S5.2.2 and S5.2.3, if such a mode is provided.

\* \* \* \* \*

S5.5.4 Except as provided in paragraph S5.4.4, the "ESC Off" telltale must remain continuously illuminated for as long as the ESC is in a mode that renders it unable to satisfy the

requirements of S5.2.1, S5.2.2, and S5.2.3, and

\* \* \* \* \*

S5.5.10 The "ESC Off" telltale need not illuminate when the vehicle is in a 4-wheel drive high gear locked differential configuration that has the effect of locking the drive gears at the front and rear axles together provided the vehicle meets the stability performance requirements of S5.2.1 and S5.2.2.

\* \* \* \* \*

S6.3.1 The ESC system is enabled for all testing, except when it is turned off directly or by simulating a malfunction in accordance with S7.3 and S7.10, respectively. The ESC system shall be initialized as follows: Place the vehicle in a forward gear and obtain a vehicle speed of  $48 \pm 8$  km/h ( $30 \pm 5$  mph). Drive the vehicle for at least two minutes including at least one left and one right turning maneuver and at least one application of the service brake.

\* \* \* \* \*

S7.10.2 With the vehicle initially stationary and the ignition locking system in the "Lock" or "Off" position, activate the ignition locking system to the "Start" position and start the engine. Place the vehicle in a forward gear and obtain a vehicle speed of  $48 \pm 8$  km/h ( $30 \pm 5$  mph). Drive the vehicle for at least two minutes including at least one left and one right turning maneuver and at least one application of the service

brake. Verify that within two minutes after obtaining this vehicle speed the ESC malfunction indicator illuminates in accordance with S5.3.

S7.10.3 As of September 1, 2011, stop the vehicle, deactivate the ignition locking system to the "Off" or "Lock" position. After a five-minute period, activate the vehicle's ignition locking system to the "Start" position and start the engine. Verify that the ESC malfunction indicator again illuminates to signal a malfunction and remains illuminated as long as the engine is running or until the fault is corrected.

S7.10.4 Deactivate the ignition locking system to the "Off" or "Lock" position. Restore the ESC system to normal operation, activate the ignition system to the "Start" position and start the engine. Place the vehicle in a forward gear and obtain a vehicle speed of  $48 \pm 8$  km/h ( $30 \pm 5$  mph). Drive the vehicle for at least two minutes including at least one left and one right turning maneuver and at least one application of the service brake. Verify that within two minutes after obtaining this vehicle speed that the ESC malfunction indicator has extinguished.

\* \* \* \* \*

Issued: September 16, 2008.

**David Kelly,**

*Acting Administrator.*

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