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**DEPARTMENT OF TRANSPORTATION**

**National Highway Traffic Safety Administration**

**49 CFR Part 575**

**Docket No. NHTSA-2013-0076**

**New Car Assessment Program (NCAP)**

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

**ACTION:** Final decision notice.

**SUMMARY:** This document announces the agency's decision to implement (with minor modifications) the planned update to the U.S. New Car Assessment Program (NCAP) that the agency announced in its June 26, 2013 request for comments (78 FR 38266). As we discussed in that notice, this update will enhance the program's ability to recommend to consumers vehicle models that have rearview video systems that the agency believes (based on currently available data) will decrease the risk of backover crashes. Further, the program will no longer list electronic stability control (ESC) as a Recommended Advanced Technology Feature because ESC is now required for all light vehicles. For many years, NCAP has provided comparative information on the safety of new vehicles to assist consumers with vehicle purchasing decisions. NCAP was most recently upgraded for model year 2011 to include recommended crash avoidance technologies. Those updates, along with today's updates to NCAP, allow consumers

to better distinguish not only which vehicle models have advanced crash avoidance safety features but also which of these advanced features are best able to help them avoid crashes.

**DATES:** These changes to the New Car Assessment Program are effective immediately.

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**SUPPLEMENTARY INFORMATION:**

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**I. Executive Summary**

This document announces the agency's decision to update the U.S. New Car Assessment Program (NCAP) to include recommendations to motor vehicle consumers on vehicle models that have rearview video systems that can substantially enhance the driver's ability to avoid a

backover crash. This update would substitute rearview video systems for electronic stability control (ESC) as a Recommended Advanced Technology Feature on our website, [www.safercar.gov](http://www.safercar.gov). NCAP provides comparative information on the safety performance and features of new vehicles to assist consumers with their vehicle purchasing decisions.

With some variations, we will implement the plan that was the subject of our June 26, 2013 request for comments.<sup>1</sup> While the agency will remove ESC as a Recommended Advanced Technology Feature from NCAP starting in Model Year 2014, the agency will be moving swiftly to incorporate rearview video systems in its place. In order to provide as much information to consumers as quickly as possible, we will be implementing our plan to update NCAP in two phases.

- Phase 1: The agency will immediately begin to list rearview video systems in the Safety Features section of [www.safercar.gov](http://www.safercar.gov) for each vehicle model that has this safety feature available.
- Phase 2: As soon as the agency is able to verify that the vehicle model has a rearview video system meeting certain basic criteria (as further discussed below), the agency will recognize those vehicle models as having a Recommended Advanced Technology Feature on the [www.safercar.gov](http://www.safercar.gov) website.

While we have made some modifications to our initial plan for Phase 2 in response to the comments, we believe that the original timing and the three criteria (field of view, image size, and response time) remain appropriate for the purposes of ensuring that rearview video systems that become listed as Recommended Advanced Technology Features on [www.safercar.gov](http://www.safercar.gov) are designed to assist drivers in avoiding backover crashes. After considering the comments we

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<sup>1</sup> 78 FR 38266 (June 26, 2013) (Docket No. NHTSA-2013-0076).

received, we have clarified our plans for both Phase 1 and 2 in this document and the docketed test procedures that the agency will be using to evaluate rearview video systems for the purposes of Phase 2.<sup>2</sup>

While the agency generally received supportive comments to its plan to update NCAP, various commenters expressed concern over certain details in implementing this plan. Namely, commenters requested clarification on the phased approach that the agency plans to use to implement the change and expressed various concerns over how the agency plans to test rearview video systems to evaluate whether they are systems that can address the safety risk. As discussed further, below, we believe that the issues raised by the commenters can be resolved with some clarification, minor adjustments to the agency's original plan, and the test procedures that the agency is docketing along with this notice.<sup>3</sup> Thus, the agency believes that it is appropriate at this time to begin implementing its planned update to NCAP.

Separately, it is important to reiterate the agency's statement in the June 26, 2013 request for comments that the agency's planned update to NCAP is separate from the agency's ongoing efforts to amend FMVSS No. 111 pursuant to the requirements of the Cameron Gulbransen Kids Transportation Safety Act of 2007 ("K.T. Safety Act"). Today's final decision notice announces the agency's decision with regard to updating NCAP to provide information to consumers about rearview video systems. However, this notice is not a resolution to the agency's rulemaking action to amend FMVSS No. 111, it does not replace the agency's efforts in that area, nor is this notice an alternative to completing that rulemaking process.

The agency believes that there will be significant advantages in incorporating rearview video systems into NCAP before completing a final rule amending FMVSS No. 111. Also, we

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<sup>2</sup> Docket No. NHTSA-2013-0076.

<sup>3</sup> Docket No. NHTSA-2013-0076.

believe that NCAP is an important consumer information program that not only educates consumers about the potential benefits of advanced safety technologies, but also supports the provision of these potentially life-saving technologies to the American public. By updating NCAP now, the agency believes that consumers will receive important information relating to the backover risk and manufacturers will receive advance recognition for designing and installing rearview video systems on their vehicles to mitigate that risk. Even after the agency promulgates a final rule to amend FMVSS No. 111, consumers and manufacturers will continue to benefit from this consumer information program during the final rule's phase-in period.<sup>4</sup>

## **II. Background**

### **A. NCAP and the Recommended Advanced Technology Features**

As stated above, NCAP is a consumer information program that provides comparative information on the safety of new vehicles to assist consumers with vehicle purchasing decisions and to encourage motor vehicle manufacturers to make safety improvements. In the area of crashworthiness safety (how well the vehicle protects occupants in the event of a crash), NCAP uses the 5-Star Safety Rating system to communicate the relative performance of vehicles to consumers. The program was most recently upgraded for model year 2011 to include (among other changes) recommended crash avoidance technologies (technologies that help driver avoid crashes). These changes indicate to consumers which vehicles have Recommended Advanced Technology Features and which do not.

The purpose of recommending to consumers advanced crash avoidance technologies is to provide consumers an easy way for identifying those technologies that data show will address a major safety risk. To this end, the agency uses three prerequisites to determine which

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<sup>4</sup> The current proposal to amend FMVSS No. 111 included a phase-in period covering three model years. *See* 75 FR 76185, 76188 (December 7, 2010) (Docket No. NHTSA-2010-0162).

technologies it should include as Recommended Advanced Technology Features: (1) it is a technology that addresses a major crash problem; (2) data exists to estimate its potential effectiveness; and (3) tests are available to ensure a level of performance so that the technology will address the safety problem.

As we described in the request for comments, rearview video systems meet these prerequisites that the agency established for determining whether a technology should be considered a Recommended Advanced Technology Feature on [www.safercar.gov](http://www.safercar.gov) and no commenter provided any information to the contrary. Rearview video systems can address backover crashes, which constitute a major safety problem. Backover crashes cause a significant number of fatalities and injuries each year because drivers cannot see the area behind the vehicle where pedestrians can be located. The currently available information indicates that vehicles with a gross vehicle weight rating (GVWR) of 10,000 pounds or less alone are involved in approximately 210 fatalities and 15,000 injuries per year.<sup>5</sup> Further, the currently available experimental data from the research summarized in the Notice of Proposed Rulemaking (NPRM) to amend FMVSS No. 111 lead the agency to believe that rearview video systems will decrease the risk of backover crashes.<sup>6</sup> Finally, since the agency has developed test procedures to assess rearview video systems to ensure that they are designed so as to address the backover safety risk, we believe that rearview video systems are suitable for incorporation into NCAP as a Recommended Advanced Technology Feature.

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<sup>5</sup> This data include the latest information on the target population from the Fatality Analysis Reporting System (FARS) and the General Estimates System (GES). These two sources, in conjunction with the Not in Traffic Surveillance (NiTS) data, form the basis for our estimates of the annual fatalities and injuries that are caused by backover crashes.

<sup>6</sup> 75 FR 76185.

## **B. Summary of the June 26, 2013 Request for Comments**

Our request for comments outlined our plan to update NCAP to include rearview video systems. We stated that, in order to accomplish the goal of providing information to consumers as quickly as possible, we would leverage different sections of [www.safercar.gov](http://www.safercar.gov) and update NCAP in two phases. Currently, the agency provides information on [www.safercar.gov](http://www.safercar.gov) for each vehicle model concerning the vehicle's 5-Star Safety Ratings, stating whether the vehicle model has a Recommended Advanced Technology Feature, and listing the major safety features available on the vehicle model. Thus, we designed the two-phase implementation approach for rearview video systems as follows:

- Phase 1: The agency would immediately begin to list rearview video systems in the Safety Features section for each vehicle model on [www.safercar.gov](http://www.safercar.gov) that has this safety feature available.
- Phase 2: As soon as the agency is able to verify that the vehicle model has a rearview video system meeting certain basic criteria (as further discussed below) the agency would recognize those vehicle models as having a Recommended Advanced Technology Feature on the [www.safercar.gov](http://www.safercar.gov) website.

As stated in our request for comments, this two-phase approach enables the agency to minimize the amount of time needed for the agency to begin providing information to consumers (Phase 1). Further, this approach maximizes the usefulness of the consumer information in the long run by ensuring that the rearview video systems listed as a Recommended Advanced Technology Feature are systems that are designed to address the backover safety problem (Phase 2).

Towards achieving this goal in Phase 2, we outlined three criteria that the agency would use to evaluate rearview video systems for the purposes of listing them as a Recommended Advanced Technology Feature. We stated that to address the backover safety problem, rearview video systems need to (at a minimum):

- (1) show a visual image of a minimum area behind the vehicle that is associated with the greatest crash risk,
- (2) show this area at a sufficient size so as to enable the driver to make judgments about the objects behind the vehicle, and
- (3) show this area quickly enough to provide the driver with the relevant information before he/she begins the backing maneuver.

To ensure that rearview video systems recommended in Phase 2 can accomplish those three goals, we stated in the request for comments our plan to incorporate (with one modification) the field of view, image size, and response time requirements and test procedures that we proposed in the NPRM to amend FMVSS No. 111. These requirements would become the criteria for determining which rearview video systems would qualify as a Recommended Advanced Technology Feature.

We planned to incorporate the field of view and image size requirements because those criteria apply to the most basic functions that the rearview video system needs to perform. As discussed in the NPRM to amend FMVSS No. 111, the field of view criterion for a 20-foot by 10-foot zone directly behind the vehicle covers the areas behind the vehicle that are associated with the greatest backover crash risk.<sup>7</sup> Further, the available research indicates that the image size criterion (that the test objects contained in the rearview image subtend to a visual angle of at

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<sup>7</sup> See 75 FR 76185, 76227.

least 5 minutes of arc<sup>8</sup>) will help ensure that drivers are able to make judgments about the objects contained in the rearview image.<sup>9</sup> We also stated that we planned to utilize the test procedures proposed in the NPRM to evaluate conformity with these criteria for the purposes of NCAP.

Further, we planned to adopt the 2.0 second response time requirement from the NPRM to amend FMVSS No. 111 as a criterion for listing a rearview video system as a Recommended Advanced Technology Feature. The agency believes that this requirement is especially important because, regardless of the quality of the image shown to the driver, if the image is not shown before a driver begins a backing maneuver, then it is unlikely that the rearview video system will be able to assist the driver in avoiding a backover crash. As the agency explained in the FMVSS No. 111 NPRM, we believe the 2.0-second limit is appropriate given the amount of time necessary for rearview video systems to conduct the necessary system checks and the activation times that are achievable by liquid crystal displays.<sup>10</sup>

In order to evaluate conformity with the 2.0 second response time criterion for the purposes of NCAP, we recognized in the request for comments that it is important to establish the state of the vehicle prior to testing for response time. Thus, we planned to include the following vehicle conditioning procedure when assessing conformity with the NCAP response time criterion.

Image response time test procedure. The temperature inside the vehicle during this test is any temperature between 15°C and 25°C. Immediately prior to commencing the actions listed in subparagraphs (a) – (c) of this paragraph, all components of the rearview video system are in a powered off state. Then:

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<sup>8</sup> The NPRM to amend FMVSS No. 111 proposed two requirements relating to image size. *See id.* First, the horizontal width of the 3 test objects in the last row along the 20-foot by 10-foot zone subtend to an average visual angle of 5 minutes of arc. Second, for each of those test objects, the subtended angle must not subtend to any angle less than 3 minutes of arc. We plan to continue to use this approach in evaluating conformity with the NCAP rearview video system criteria.

<sup>9</sup> The available research cited in the NPRM to amend FMVSS No. 111 states that a driver can make judgments about an object if the object is shown at a subtended angle of 5 minutes of arc. *See* 75 FR 76185, 76229.

<sup>10</sup> *See* 75 FR 76185, 76230.

- (a) open the driver's door,
- (b) activate the starting system using the key,<sup>11</sup> and
- (c) place the vehicle in reverse at any time not less than 4 seconds after the driver's door is opened.

Immediately after the vehicle is conditioned in accordance with the above procedure, the agency would select the reverse gear in the vehicle and measure the 2.0-second response time. As mentioned previously, we believe that this conditioning procedure appropriately balanced the need for vehicle conditioning prior to testing conformity with this NCAP criterion and the need to ensure that the rearview image is available to the driver at a time that is appropriate for a driver relying on it to avoid a backover crash. Our naturalistic driving data<sup>12</sup> indicate that approximately 90 percent of the time drivers do not select the reverse gear to begin the backing maneuver less than 4.25 seconds after opening the vehicle's door. In other words, only approximately 10 percent of the time drivers enter their vehicle and select the reverse gear in less than 4.25 seconds. Thus, the vehicle conditioning procedure shown above reasonably approximates the real-world conditions under which drivers would use these systems and a vehicle conforming to the 2.0 second criteria under those test conditions would have the rearview image available for the driver in a timely fashion.

### **C. Summary of the Comments Received**

In response, the agency received comments from a variety of organizations including manufacturers, trade associations, and advocacy groups. The trade associations included the Alliance of Automotive Manufacturers (Alliance), the Association of Global Automakers, Inc.

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<sup>11</sup> The terms "starting system" and "key" have the same meanings that these terms have in FMVSS No. 114, *Theft protection and rollaway prevention*. See 49 CFR Part 571.114.

<sup>12</sup> These data are information NHTSA prepared in support of the research report titled "On-Road Study of Drivers' Use of Rearview Video Systems." See Mazzae, E. N., et al. (2008). On-Road Study of Drivers' Use of Rearview Video Systems (ORSURV), National Highway Traffic Safety Administration, DOT HS 811 024. A summary of these naturalistic driving data prepared for that study (as it pertains to the length of time drivers take to select the reverse gear) is available in Docket No. NHTSA-2010-0162-0227.

(Global Automakers), the Motor and Equipment Manufacturers Association (MEMA) and the Automotive Safety Council (ASC). The vehicle and equipment manufacturers included General Motors, LLC (GM), Honda Motor Co., Ltd. (Honda), BMW AG, BMW of North America, LLC (BMW), Ford Motor Company (Ford), Tesla Motors, Inc. (Tesla), and Delphi. The advocacy groups submitting comments included the Insurance Institute for Highway Safety (IIHS), the American Motorcyclist Association (AMA), and the Advocates for Highway Safety (the Advocates). In general, the comments supported the agency's plan to update NCAP to include rearview video systems as opposed to ESC.

The most significant concerns raised by vehicle manufacturers focused on the criteria that the agency would use to evaluate systems during Phase 2 (i.e., the field of view, image size, and response time). While many of these concerns requested clarifications of the agency's test methods, others requested changes to those methods. For example, the manufacturers expressed concern with the field of view criteria and how their use of overlays in the rearview image may affect their conformity with that criterion. In another example, several manufacturers suggested different test procedures for assessing conformity with the response time criterion based on their system design.

Further, both vehicle and equipment manufacturers requested the agency provide more clarification as to the details of Phase 1 and Phase 2 implementation. Questions included the timing of each phase, and the systems that would qualify under each phase. The equipment manufacturers further commented that additional consideration should be given to autonomous vehicle controls that may prevent backover crashes and that rearview video systems should be added to the Monroney label (the label that is affixed on new vehicles offered for sale on the dealership lot).

While the advocacy groups generally supported the agency's plan to update NCAP, one advocacy group opposed including rearview video systems into NCAP unless the final rule amending FMVSS No. 111 pursuant to the K.T. Safety Act is released concurrently with the update.

### **III. Final Decision and Response to Comments**

While the agency received and reviewed the aforementioned comments, these comments do not support any significant deviation from the agency's original plan to update NCAP that it announced in the June 26, 2013 request for comments. The available information continues to support the decision to provide information to consumers about rearview video systems as soon as possible. Thus, in this final decision notice, we announce our intention to implement the plan to update NCAP from that request for comments.

Pursuant to that plan, we will remove ESC from the list of Recommended Advanced Technology Features beginning in Model Year 2014 and add rearview video systems using a two-phase process. First, we will immediately begin listing rearview video systems (for vehicle models that have these systems) in the Safety Features section of [www.safercar.gov](http://www.safercar.gov). Second, as soon as we are able to verify that vehicle models with rearview video systems meet the field of view, image size, and response time criteria, we will begin listing those vehicles as having a rearview video system that is a Recommended Advanced Technology Feature.

However, in response to the comments received, we believe it is appropriate to clarify and institute various minor adjustments to this plan. As will be discussed in greater detail below, this notice clarifies that agency's intention with regard to each phase of the two-phase implementation strategy. It further describes the various adjustments to the test procedure for evaluating conformity with the NCAP field of view, image size, and response time criteria.

These adjustments have been incorporated into the test procedures that accompany this document in the docket. The more significant changes in these procedures from the request for comments were: (1) clarified how the test procedures and performance criteria apply to rearview video systems with alternate views and overlays; (2) added a maximum time to the response time vehicle conditioning test procedure; and (3) adjusted the test reference point as suggested by the commenters. The following is our analysis and response to the comments.

#### **A. Clarification of Phase 1 and Phase 2 Implementation Schedule**

As mentioned above, the agency announced its plan to use a two-phase approach to incorporate rearview video systems as a Recommended Advanced Technology Feature in NCAP. We stated in the June 26, 2013 request for comments that we would leverage different portions of the website in order to minimize the amount of time needed before the agency can begin providing consumers information while also maximizing the usefulness of the consumer information in the long run. In response to the comments received, we are clarifying various aspects of this implementation schedule.

##### *Clarifying the Systems that Qualify for Phase 1 and the Timing of Phase 1*

In our June 26, 2013 request for comments we explained that the agency's plan during Phase 1 would be to immediately begin indicating on [www.safercar.gov](http://www.safercar.gov) which vehicle models have rearview video systems as an available safety feature. We received comments from MEMA and Global Automakers requesting clarification regarding what systems would qualify under this phase and what the timing is for this phase.

The systems that the agency would list in the Safety Features section of [www.safercar.gov](http://www.safercar.gov) for each vehicle model would be those that the manufacturers advertise (or represent through other means such as informing the agency) as a system that provides a view of

the area behind the vehicle. These systems are sometimes listed as “backup cameras” or under other similar labels. In other words, they are rearview video systems (not additional mirrors or lenses) that may be listed as a Recommended Advanced Technology Feature but have not yet been evaluated to one or more of the Phase 2 criteria. For instance, a rearview video system that does not meet the response time criterion in Phase 2, cannot not be listed among the Recommended Advanced Technology Features, but will be listed in the Safety Features section.

The intent of the Safety Features section of each vehicle model’s page on [www.safercar.gov](http://www.safercar.gov) is to provide a central location (easily accessible by consumers) with uniform lists of potential additional safety information that consumers can use to compare different vehicle models. Under Phase 1, the agency would be providing this additional information about models with rearview video systems but not evaluating the systems to determine whether they meet criteria designed to ensure that they address the backover safety problem. Since information about whether vehicle models have rearview video systems is currently available, the agency will immediately begin adding this information to the Safety Features section of [www.safercar.gov](http://www.safercar.gov) upon the publication of this document.

### *Timing for Implementing Phase 2*

In our request for comments, we did not provide a specific timetable for Phase 2. Instead, we stated our plan to begin listing rearview video systems as Recommended Advanced Technology Features as soon as the agency is able to verify that those systems meet certain basic criteria (as further discussed below) that are designed to ensure that these systems will help drivers avoid backover crashes. We received a number of comments from manufacturers and their trade associations requesting that the agency clarify the timing of Phase 2 and incorporate “lead time” into the implementation schedule for Phase 2. For example, the Alliance requested

that the Phase 2 change to NCAP be incorporated at least six months after the publication of the test procedures accompanying this document. In another example, GM commented that Phase 2 should begin on the first September 1 date that is at least six months after the publication of the test procedures.

While we acknowledge the commenters' concerns, our decision for the purposes of implementing Phase 2 of incorporating rearview video systems into NCAP as a Recommended Advanced Technology Feature remains the same. We are not convinced, as the commenters seem to suggest, that implementing Phase 2 requires a specific timetable affording manufacturers "lead time." First, unlike when the agency promulgates a new FMVSS, participation in NCAP is voluntary. Second, in the case of this particular technology, the test procedure and performance criteria for the purposes of NCAP are similar to existing procedures that have been publically available since 2010. Given the previous public availability of similar testing procedures and the voluntary nature of this program, the agency does not believe that a specific timetable is necessary for the implementation of this particular technology into NCAP. The agency will work closely with manufacturers to quickly determine whether their systems meet the Phase 2 criteria. We believe that, by working expeditiously with manufacturers, we can begin to provide information to consumers as soon as possible and encourage manufacturers to participate in this aspect of NCAP.

Thus, the agency sees no reason to delay implementing Phase 2. As we will discuss further in a later section, we will no longer be listing ESC as a Recommended Advanced Technology Feature for Model Year 2014. Thus, as soon as the agency can determine (whether through information supplied by a manufacturer or through the agency's own testing) that a certain vehicle model has rearview video systems that meet the Phase 2 criteria, the agency will

implement Phase 2 for that particular model (i.e., list the vehicle model as having the Recommended Advanced Technology Feature).

*Clarifying the Safety Feature and the Recommended Advanced Technology Feature*

In the comments from MEMA and Global Automakers, both organizations requested that the agency clarify to consumers what the difference is between a rearview video system listed in the Safety Features section of the website versus a rearview video system listed as a Recommended Advanced Technology Feature. There is concern from both organizations that it will not be apparent to consumers what the difference is when one system is listed as a safety feature whereas another may be listed as a Recommended Advanced Technology Feature.

We agree with the commenters that the agency should clarify the differences between rearview video systems that are listed as a safety feature versus those that are listed as a Recommended Advanced Technology Feature. We believe that consumers should be able to recognize that rearview video systems listed as Recommended Advanced Technology Feature are systems that have been evaluated against certain performance criteria designed to ensure that these systems can help drivers avoid backover crashes. Thus, in our implementation of Phase 1, we will note on [www.safercar.gov](http://www.safercar.gov) that rearview video systems that are listed only as safety features are systems that have not yet been evaluated to determine whether they conform to the criteria discussed in this notice.

*Listing Features as Optional or Standard*

In addition to the above comments, Global Automakers expressed concern that the agency intended to limit listing rearview video systems as safety feature or a Recommended Advanced Technology Feature only to situations where this equipment is standard. It was not our intent to list rearview video systems only in situations where they are offered as standard

equipment. Thus, for both Phase 1 and Phase 2, we will note whenever the system is offered as standard or as optional equipment.

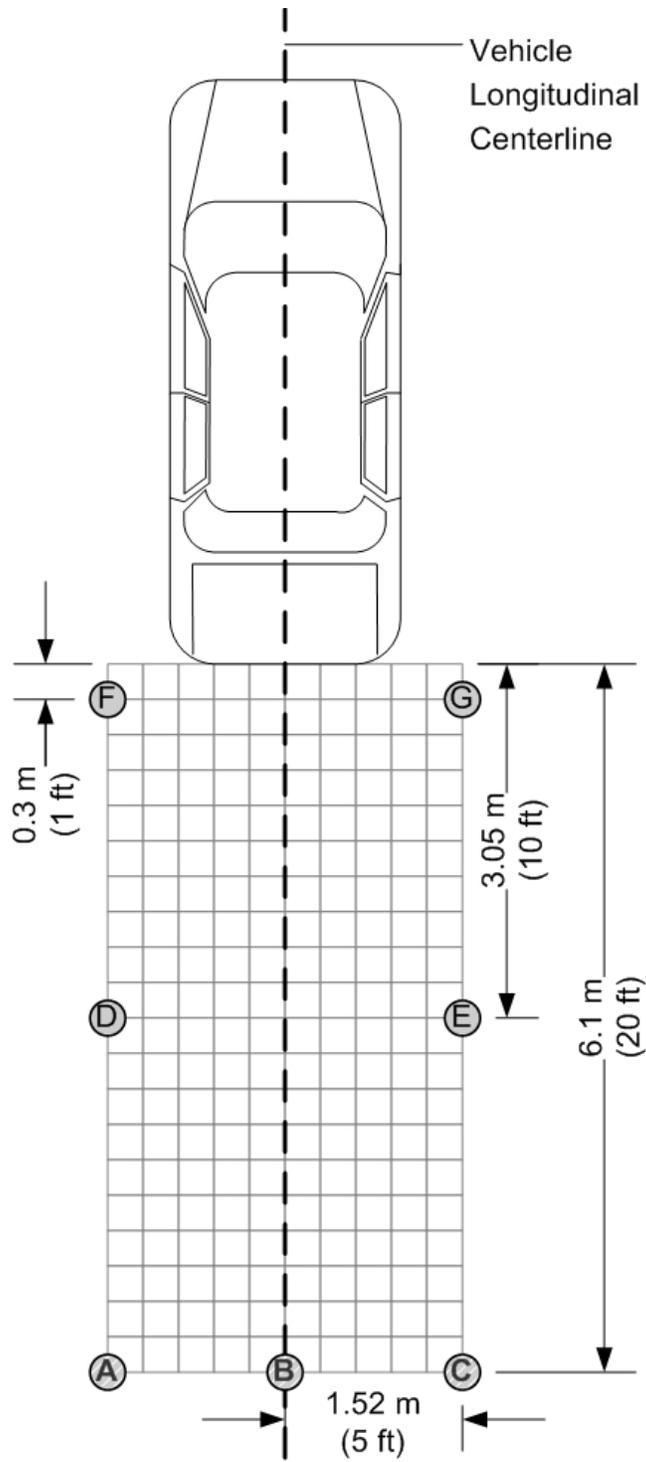
## **B. Field of View Criterion**

In our request for comments, we stated our plan to use the proposed field of view requirements and test procedures in the NPRM to amend FMVSS No. 111 as a criterion for the purposes of Phase 2 of this update to NCAP. We stated that a field of view criterion for a 20-foot by 10-foot zone directly behind the vehicle (as measured by the test procedures in the NPRM to amend FMVSS No. 111) would cover the areas behind the vehicle that are associated with the greatest backover crash risk. While the commenters raised various concerns with this planned criterion, we believe that the following clarifications of the agency's test procedures will address their concerns. We continue to believe that the field of view criterion is important and appropriate for determining which rearview video systems the program should list as a Recommended Advanced Technology Feature. The following were the concerns raised by the commenters and our responses to those concerns.

### *Placement of Test Objects F and G and Low Rear Height Vehicles*

As proposed in the NPRM to amend FMVSS No. 111, the test procedure to evaluate the field of view (which covers 5 feet from either side of the vehicle center line to 20 feet longitudinally from the vehicle's rear bumper) would use seven test objects placed along the perimeter of the 10-foot by 20-foot zone behind the vehicle. *See* Figure 1, below. To meet the field of view criterion for the purposes of NCAP, a rearview video system would need to show the entirety of test objects A through E (the test objects greater than 10 feet behind the vehicle bumper) and show at minimum a width of 5.9 inches (150 mm) along any point of test objects F and G (the test objects only 1 foot behind the vehicle bumper). While manufacturers raised

concerns with this criterion, we believe that it is appropriate to incorporate it (unaltered) into NCAP for the purposes of assessing rearview video systems in Phase 2.



**Figure 1**

Certain manufacturers expressed two concerns with this test procedure to evaluate the field of view criterion. First, both the Alliance and Global Automakers assert that test objects F and G should be placed in a location that is proportional to the vehicle width (as opposed to 5 feet to the left and right of the vehicle centerline). They contend that vehicles using a 130 degree camera would not cover the required portions of test objects F and G (in their current locations). Second, the Alliance stated that certain vehicles with a low rear height (i.e., a vehicle that is not high off the ground) has less height flexibility for mounting a camera. Thus, the Alliance suggests that vehicles with an upper protected surface of the rearmost body structure of 750 mm or less be required to show only a minimum height of 0.4 meters (half the height) of test objects A through E (objects greater than 10 feet from the vehicle bumper).

We disagree with the manufacturers that this procedure for evaluating the field of view criterion does not accommodate vehicles with rearview video systems using a 130 degree camera or vehicles with a low rear height. When we originally developed this test procedure for the NPRM to amend FMVSS No. 111, we specifically designed this test procedure to be able to accommodate these types of vehicle designs. In response to the manufacturers' first concern, it seems clear that if we take into account three-dimensional nature of a camera's field of view, a 130 degree camera will cover the specified areas of all the test objects even if the vehicle has a low rear height. In tests conducted by the agency, the vast majority of vehicles equipped with rearview video systems were capable of meeting the field of view requirements as proposed in the NPRM.<sup>13</sup> Thus, we are unaware of any camera that has a vertical angle limitation which would prevent it from easily being mounted at a pitch which covers the full height of test objects A through E.

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<sup>13</sup> See Docket No. NHTSA-2010-0162-0133, Vehicle Rearview Image Field of View and Image Quality Measurement.

In response to the manufacturers' second concern, we note that the portions of the F and G test objects that must be shown are measured by width only in order to accommodate vehicles of varying height and width. Thus, we disagree with the manufacturers that a 130-degree camera is unable to cover the width parameters for test objects F and G. We believe that the diagrams presented by the commenters regarding the inability of the 130-degree camera to cover test objects F and G fail to consider the three-dimensional properties of a camera's viewing angles. As Magna, a rearview video system manufacturer, stated in their comments to the NPRM to amend FMVSS No. 111, a 130-degree camera can readily cover the 5.9-inch (150-mm) width parameters of test objects F and G when mounting height and camera pitch is considered.<sup>14</sup>

Since the available information indicates that existing systems either already conform to (or can be easily adjusted to conform to) the field of view criterion from the June 26, 2013 request for comments, we believe there is no reason to adjust this criterion to reduce the field of view below the 10-foot by 20-foot zone where there is the highest risk of a backover crash.

#### Default View

The second concern from manufacturers was a question regarding alternative views of the area behind the vehicle that manufacturers provide with their systems. In their comments, Honda described an alternate view called "top-view" where the rearview video system displays a focused view of the area immediately behind the vehicle for the purposes of assisting in trailer hitching. Honda notes that this view would not conform to the field of view criterion we described in the request for comment. Honda stated that this mode is only active when a driver intentionally switches to that mode and that the rearview video reverts to a default view that conforms to the field of view criterion upon each new ignition cycle. Similar to Honda's

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<sup>14</sup> See Comments from Magna Mirrors, April 5, 2011. Docket No. NHTSA-2010-0162.

comment, BMW also stated its belief that drivers should have the ability to switch to alternative views that may not meet the field of view criterion and that rearview video systems can default to the NCAP field of view.

While the agency is concerned that drivers may permanently or accidentally deactivate the rearview safety feature, the agency does not intend to preclude this design flexibility for the purposes of NCAP because those features also have the potential to afford drivers benefits in other contexts. However, we believe that the field of view criterion and the test procedure accompanying this document address these concerns from Honda and BMW by balancing our safety concerns with the commenters' request for design flexibility. The test procedure that the agency would use to verify conformity with the field of view criterion does not include any procedure that selects an alternate view. The test uses the initial (or default after each ignition cycle) view that appears after the vehicle's starting systems is activated and the vehicle is placed into reverse.

By defining these conditions in the test procedure, the agency would evaluate the initial/default view of a rearview video system for the purposes of assessing conformity to the NCAP field of view criterion. Thus, vehicles with rearview video systems that are Recommended Advanced Technology Features will provide drivers with a view that covers the greatest areas of backover risks during a backing maneuver. However, manufacturers would not be precluded from offering drivers additional convenience features when designing vehicles to conform to the NCAP field of view criterion.

### Overlays

The third concern raised by the manufacturers was the effect of overlays on a rearview video system's ability to conform with the field of view criteria. For example, GM commented

that they currently provide two types of overlays in their vehicles' rearview video displays. The first type is a wire frame that indicates the path of the vehicle. GM asserted that these provide distance and predicted path information that can assist a driver when reversing the vehicle. The second type is target warnings. GM stated that these are a crash avoidance feature that can identify objects that are potentially in the path of the vehicle and warn the driver about the presence of these objects. Similar to GM's comment on overlays, the Alliance stated that elements such as guidelines, arrows, icons, and warning messages (e.g., "Check Surroundings for Safety") may not meet the NCAP field of view criterion. Both commenters requested that the NCAP field of view criterion include provisions that allow the use of overlays.

The agency agrees with the commenters that video image overlays may have the potential to add safety-related features to rearview video systems by drawing drivers' attention to potential hazards behind the vehicle. This is especially true if rearview video systems are designed to warn drivers of the presence of pedestrians behind the vehicle. However, the agency is conscious that overlays (whether they are object detection warnings, path prediction guidelines, warning statements such as "Check Surroundings for Safety," etc.) can be potentially applied to the rearview image in both safe and unsafe manners. Depending on their size, location, and orientation, overlays have the potential to create unsafe blind zones in the rearview image and to mask small obstacles, such as children. Without further research, the agency is not currently aware of a practicable and objective method of discriminating between safe and unsafe applications of overlays.

Thus, the test procedure and the field of view performance criteria for the purposes of Phase 2 of incorporating rearview video systems into NCAP will not limit the use of overlays so long as the overlays do not cover the portions of the test objects specified in the field of view

performance criterion and test procedures. In other words, systems with overlays will still be required to meet the field of view criterion so long as those overlays do not obscure any portion of the test object. However, as discussed earlier, the test procedures published with this document assess conformity with the Phase 2 criteria based on the default (or initial) view after each ignition cycle that the vehicle shows in the rearview image. Therefore, overlays would conform to the field of view criterion (even when they obscure portions of the test objects) if they are manually activated by the driver.

However, we note that on-screen overlays (such as guidelines) may react to driver use of the steering wheel and that the steering wheel position can affect a vehicle's conformity to the field of view criterion. Thus, in order to ensure test repeatability, the test procedures that accompany this document will clarify the steering wheel test condition by stating that the steering wheel is in a position where the longitudinal centerline of all vehicle tires are parallel to the vehicle longitudinal centerline. This steering wheel position simulates the straight ahead steering wheel position, which most likely simulates the conditions drivers experience when conducting a backing maneuver along a straight driveway.

At the moment, we believe this is the most appropriate balance for ensuring that rearview video systems that are listed as Recommended Advanced Technology Features can address the backover safety risk and still have the flexibility to incorporate advanced object detection functions. The agency encourages manufacturers to develop systems that detect and highlight pedestrians and we note that such overlays would not affect a rearview video system's conformity to the NCAP field of view criterion because such a system would not activate an overlay during our field of view test. However, the agency remains cautious that overlays may have the potential to operate unsafely depending on their size, orientation, and placement in the

rearview image. Although the agency is currently unaware of a practicable and objective method of distinguishing safe overlays from unsafe overlays at this time, we expect that manufacturers will design overlays conscious of the fact that the rearview video systems that are part of NCAP are systems that address an important safety purpose.

### **C. Image Size Criterion**

As mentioned above, the June 26, 2013 request for comments indicated that the agency planned to incorporate the proposed image size requirement set forth in the NPRM to amend FMVSS No. 111 as a criterion for the purposes of NCAP. We cited the available research that indicates that showing the test objects in the rearview image at a subtended visual angle of at least 5 minutes of arc will help ensure that drivers are able to make judgments about the objects contained in the rearview image. The agency continues to believe that it is appropriate to include image size as a criterion for listing a rearview video system as a Recommended Advanced Technology Feature as it received no comments in opposition to this criterion.

However, we acknowledge the concern from Global Automakers that certain rearview displays may have a curved or transparent outer lens that may affect the ability to affix a ruler to the rearview display as described the test procedure proposed in the NPRM to amend FMVSS No. 111. Depending on the specific situation, we note that it may be necessary to remove the transparent cover or use an alternative method to obtain the measurement of the subtended angle. The agency believes that, as long as the measurement of the subtended angle is valid, accommodating rearview video systems with transparent covers over the rearview display in the performance of the test will not alter the test results. Thus, the test procedure (accompanying this document) that we will use to evaluate conformity with the image size criterion for the

purposes of NCAP is the proposed test procedure set forth in the NPRM to amend FMVSS No. 111.

#### **D. Response Time Criterion**

As mentioned above, the agency indicated in its June 26, 2013 request for comments that it plans to evaluate the response time of rearview video systems before listing them as a Recommended Advanced Technology Feature. We stated that the 2.0-second limit is appropriate given the amount of time necessary for rearview video systems to conduct the necessary system checks and the activation times that are achievable by liquid crystal displays. Because the availability of the rearview image at the beginning of the backing maneuver is critical to realizing the safety benefits of this technology, we believe that it is appropriate for these systems to activate as soon as possible.

However, we acknowledged the concerns of manufacturers that the 2.0 second response time requirement that was proposed as a part of the NPRM to amend FMVSS No. 111 did not specify the vehicle condition prior to testing. Based on the comments received from the NPRM to amend FMVSS No. 111, we believe that the vehicle's state can affect the results of the test. Thus, we indicated in our June 26, 2013 request for comments that our plan for NCAP would be to use a test procedure to condition the vehicle prior to testing the response time criterion. To that end, we indicated that we would use the following procedure:

Image response time test procedure. The temperature inside the vehicle during this test is any temperature between 15°C and 25°C. Immediately prior to commencing the actions listed in subparagraphs (a) – (c) of this paragraph, all components of the rearview video system are in a powered off state. Then:

- (a) open the driver's door,
- (b) activate the starting system using the key,<sup>15</sup> and

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<sup>15</sup> The terms "starting system" and "key" have the same meanings that these terms have in FMVSS No. 114. See 49 CFR Part 571.114.

- (c) place the vehicle in reverse at any time not less than 4 seconds after the driver's door is opened.

The manufacturers and their trade associations had additional concerns in response to the new test procedure that we announced in the request for comments. We address those concerns in the sections that follow and have made the appropriate adjustments in the test procedures accompanying this document in the docket.

#### Two-Second Response Time Criterion

Various commenters stated that the response time criterion should be greater than 2.0 seconds. Without additional reasoning, the Alliance stated that it supported a 3.0 second response time criterion so long as the vehicle is preconditioned according to the test procedure specified in the request for comments. Similarly, GM stated a 2.5 second maximum response time is more appropriate in order to accommodate the various types of displays that rearview video systems may use because integrated console displays require additional time to activate when compared to in-mirror displays. Separately, Global Automakers stated that some systems are designed to begin system activation when the ignition is on and the engine is running. Thus, they suggest that the vehicle conditioning begin when the vehicle's ignition is turned to the on position (as opposed to when the door is opened).

While we have considered the concerns expressed by the commenters, they do not compel us to change the response time criterion of 2.0 seconds for the purposes of NCAP. The agency believes very strongly that this criterion is as important as the field of view and image size criteria. As we stated before, a rearview image that shows the appropriate areas behind the vehicle at the appropriate size will still be unable to help the driver avoid a crash if it does not appear in a timely fashion (i.e., before the driver begins the backing maneuver). When we began

the rulemaking process to amend FMVSS No. 111 by issuing an ANPRM in March of 2009, we recognized this important safety concern and proposed a 1.25 second response time.

However, in the NPRM, we proposed a 2.0 second requirement for the purposes of amending FMVSS No. 111. We cited two technological limitations that necessitated a longer maximum response time. First, a need for additional tolerances for certain systems to produce the required image in part because those systems conduct image quality control checks before displaying the image. Both GM and Gentex stated in their comments that a required image response time of 1.25 may adversely affect the image quality displayed in those systems.

Second, the agency noted that liquid crystal displays (LCDs) require time to warm-up before they can display an image and that this time may vary depending on the location of the visual display. The agency acknowledged that in-mirror displays (which are only activated when the reverse gear is selected) may require additional warm-up time when compared to in-dash displays (which may be already in use for other purposes such as route navigation). For these reasons, the proposed rule in the NPRM extended the image response time requirement to 2.0 seconds. The agency was not aware of any rationale that justified extending the response time requirement beyond 2.0 seconds.

For the purposes of evaluating conformity of the response time criterion in NCAP, we see no reason to deviate from what we proposed as appropriate for FMVSS No. 111. Further, we are still concerned that a slow-responding rearview video system will fail to present the rearview image to the driver in time to assist the driver in avoiding a backover crash. The agency recognizes that, in order to reduce the risk of a backover crash, the countermeasure needs to be available when the risk is present. It seems clear from the available information that the backover risk exists as soon as the vehicle begins moving in reverse.

While we acknowledge GM's comment that our response time criterion is based (in part) on the timing that is technically feasible for rearview video systems that use in-mirror displays, we disagree that integrated console displays will necessarily have longer response times. In deciding to propose the 2.0 second response time for the purposes of FMVSS No. 111, we reasoned that in-mirror systems would take longer to initialize than integrated console systems due to their generally powered-off state during normal vehicle operation. Without additional data (or some technical reason) demonstrating a rationale that explains why integrated console systems now require more time than we believed was necessary for in-mirror displays, we are not convinced that it is not technically possible for rearview video systems to achieve a 2.0 response time criterion for the purposes of NCAP. We note that manufacturers using integrated console screens with their rearview video systems may always initialize their screens at an earlier time before the vehicle is shifted into reverse in order to further minimize their response time.

We have also considered Global Automakers' comment that some vehicles initialize their rearview video system when the ignition is activated and the engine is running. We note that this is permissible and nothing in the test procedure precludes such a system for the purposes of being considered a Recommended Advanced Technology Feature in NCAP. However, for the reasons mentioned above, we decline to adjust the NCAP rearview video system test conditioning procedure to include additional time from when the driver opens the vehicle door (as suggested by Global Automakers) or extend the response time to 3.0 seconds (as suggested by the Alliance). Given the severity of the potential safety risk of not presenting the rearview image to the driver in a timely fashion, neither commenter presented a rationale that supports extending the response time criterion or its conditioning procedure.

As noted above, we believe that there are simple strategies available that would enable manufacturers to significantly reduce their response time (e.g., initializing a console screen earlier). Thus, in order to recommend to consumers rearview video systems as Recommended Advanced Technology Features that adequately address the backover safety risk, we do not believe it is appropriate to adjust the test procedure in the manner suggested by the commenters for the purposes of NCAP.

#### Maximum Test Procedure Time

In addition, various commenters stated that, in order save power, electronic systems in vehicles will initiate sleep mode if the vehicle is inactive for a given period of time. Thus, these commenters expressed concern with the fact that the vehicle conditioning test procedure that we specified in the request for comments has a minimum procedure time but not a maximum procedure time. In other words, while the agency would not place the vehicle into reverse less than 4.0 seconds after the door is opened, the commenters are concerned that the agency would wait much longer than 4.0 seconds before placing the vehicle into reverse and testing for the response time criterion. Thus, for example, GM recommended that the procedure specify that the vehicle is shifted into reverse a maximum 60 seconds after the vehicle is started. Using similar reasoning, Ford suggested a 5 second maximum time for activating the starting system (as measured from a new item in the vehicle conditioning procedure where the vehicle door is closed after it is opened).

We agree with the commenters that this part of the vehicle conditioning procedure is unspecified and that it should be specified for the purposes of evaluating conformity with the NCAP response time criterion. Thus, we have included a maximum vehicle conditioning procedure time in addition to the original minimum time of 4.0 seconds in the test procedures

that accompany this document in the docket. For the purposes of the NCAP conformity test, we have chosen to include a maximum procedure time of 6.0 seconds because our intent is to test the rearview video system response time at a point in time that is close to 4.0 seconds after the vehicle door is opened. As we mentioned in our request for comments, we believe that a response time of 2.0 seconds (as measured in accordance with a condition procedure that lasts 4.0 seconds) will cover the vast majority of potential driving behavior and ensure that the rearview image is available to the driver at the appropriate time.<sup>16</sup>

#### Other Response Time Test Procedure Issues

GM and the Alliance commented that the NCAP criterion does not indicate how to determine that the shift to reverse has been accomplished. They suggested that an easy and reliable method for determining that reverse has been selected is to observe the backup lamps.

We have considered these comments regarding using the backup lamp(s) as a reference point for the start of the response time criteria (reverse has been selected). While it is possible that on many vehicles measuring the activation of the backup lamps is a reasonable proxy for determining when the reverse has been selected, it is not the only means for determining that this item in the test procedure is complete. Although it is important that the agency conduct the test and determine the point in time that the driver (or test engineer) selects reverse, any valid means for achieving this goal will produce a valid test under the test procedures accompany this document in the docket. Thus, the test procedure accompanying this document in the docket does not specify a specific method of determining when reverse is selected.

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<sup>16</sup> We note that the test procedure accompanying this document in the docket specifies that the vehicle is placed in reverse at any time that is between 4.0 seconds and 6.0 seconds from when the vehicle door was opened. In other words, the rearview video system must be able to achieve the response time of 2.0 seconds when the vehicle is conditioned using a procedure that lasts any amount of time between 4.0 and 6.0 seconds to qualify as a Recommended Advanced Technology Feature in NCAP.

However, we believe it is helpful to clarify the point in time at which we begin measuring the 2.0 second response time. As mentioned above, the vehicle conditioning procedure specified in the June 26, 2013 request for comments specified that the vehicle is placed in reverse within a specified range of time. We intended this aspect of the vehicle conditioning procedure to refer to the selection of the reverse direction by the driver (or test engineer). Thus, the test procedures accompanying this document in the docket clarifies this aspect of the vehicle conditioning procedure by specifying that reverse is selected within a specified range of time (as opposed to specifying that the vehicle is placed in reverse within a specified range of time).

#### **E. Minor Test Procedure Comments**

In addition to the above comments, certain manufacturers also raised a few points regarding the test procedures for assessing conformity with the Phase 2 criteria that require clarification. We agree with the commenters that these points should be clarified and respond to them as follows:

##### *Orientation of Test Objects F and G*

We acknowledge the Alliance's concern regarding whether test objects F and G can be rotated in order to aim the 150-mm-vertical stripe towards the camera. We note that the test procedure and the field of view criteria adopted for the purposes of NCAP in this document merely requires that a 150-mm width (along the circumference) of test objects F and G be visible and does not restrict the orientation of the vertical stripe on those test objects. The criterion is that the 150-mm wide circumference is visible. Thus, it is permissible to rotate test objects F and G in order to facilitate measuring that part of the field of view criterion.

### Test Loading Conditions

The Alliance also commented that the vehicle loading test conditions in the proposal to amend FMVSS No. 111 differed from the loading conditions for the other requirements in FMVSS No. 111. The Alliance recommended that the loading requirements be harmonized for both the rearview mirror and rearview video system tests at the average occupant weight of 68 kg. Unlike in the other requirements in FMVSS No. 111, the loading conditions in the test procedure proposed for rearview video systems in the NPRM to amend FMVSS No. 111 separate the occupant weight load (68 kg) into two portions (45 kg on the seat pan and 23 kg on the floorboard) for a driver and four passengers in their designated seating positions.

We disagree with the Alliance that the same loading conditions should be applied to the rearview video system test (for the purposes of NCAP) and the other requirements of FMVSS No. 111. We are concerned that in some cases that a different weight distribution may impact the vehicle's pitch in a way that modifies the outcome of the rearview video system test. Unlike the mirror requirements of FMVSS No. 111, rearview video systems that are Recommended Advanced Technology Features under NCAP would not necessarily be adjustable in the horizontal and vertical direction. Therefore, the potential impacts of vehicle pitch (because of weight) are more critical than in the mirror provisions of FMVSS No. 111. Furthermore, the agency believes that splitting the weight about the seat and floor pan more accurately simulates an actual vehicle occupant. Accordingly, we continue to believe that the test procedure loading conditions from the NPRM to amend FMVSS No. 111 is more appropriate for evaluating rearview video systems in the context of the Phase 2 criteria for NCAP.

However, we believe that the test procedure could be improved by more clearly stating how the vehicle would be loaded if it has more than 5 designated seating positions. Thus, we

have clarified the test procedures accompanying this document in the docket by specifying that when a vehicle has more than 5 designated seating positions, the weights that add up to 68 kg simulating each of the five occupants shall be placed in the driver's designated seating position and any other available designated seating position in the vehicle.

### Test Reference Point

By incorporating the test procedures proposed in the NPRM to amend FMVSS No. 111, we planned to use a test reference point simulating the eye point of a 50th percentile male driver for the purposes of evaluating conformity with the Phase 2 criteria. The procedure establishes a test reference point where an image is taken to evaluate conformity with the field of view and image size criteria in NCAP. The procedure identifies an initial forward-looking eye midpoint of the driver ( $M_f$ ) that is 632 mm above the H point (a defined location on the driver seat) and 96 mm aft of the H point. The procedure also establishes a head/neck joint center (J) 100 mm rearward of the forward-looking eye midpoint and 588 mm vertically above the H point. A point of rotation ( $J_2$ ) is then determined by drawing an imaginary horizontal line between the forward-looking eye midpoint ( $M_f$ ) and a point vertically above the head/neck joint center (J). Finally, the procedure locates the test reference point ( $M_r$ ) by rotating the forward-looking eye midpoint about the aforementioned point of rotation until the straight-line distance between the test reference point and the center of the visual display reaches the shortest possible value. The locations of these points are visually represented in the NPRM proposing to amend FMVSS No. 111.<sup>17</sup>

The Alliance commented to one specific aspect of this procedure. They stated that while the forward looking eye midpoint of the driver ( $M_f$ ) is located 632 mm vertically above the H

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<sup>17</sup> See 75 FR 76185, 76233.

point in the proposed rule, FMVSS No. 104, *Windshield wiping and washing systems*, references a horizontal plane 635 mm vertically above the H point. In order to increase consistency across the various standards, the Alliance requested that we use a forward looking eye midpoint of the driver ( $M_f$ ) that is 635 mm above the H point.

We agree that the requirements of FMVSS No. 104 and today's decision for the purposes of NCAP should be harmonized. We believe that a 3 mm testing height modification from the requirements proposed in the NPRM would not have any significant impact on the test results. We analyzed what the potential difference in test results could be for different eye points and found that (between a 5<sup>th</sup> percentile female and a 95<sup>th</sup> percentile male) the difference in apparent image size was only 0.03 minutes of arc (a small amount compared to the 5 minutes arc image size criterion). Thus, we agree with the Alliance that it is appropriate to use the eye point that is 635 mm above the H point for the purposes of evaluating rearview video systems in NCAP.

#### Driver Seating Position

By incorporating the driver seating position test conditions from the NPRM to amend FMVSS No. 111, our plan in the request for comments was to use a driver seating position that is adjusted to: (1) the midpoint of the longitudinal adjustment range, (2) the lowest point along the vertical adjustment range, and (3) have a seat back angle at the vertical portion of the H-point machine's torso weight hanger at 25 degrees. In its comments, the Alliance suggested that the driver seating position condition in the proposed test procedure be harmonized with the test procedure in FMVSS No. 208, *Occupant crash protection*. In other words, the Alliance recommends that the longitudinal adjustment for the driver seating condition can be the closest adjustment point to the rear of the midpoint if no adjustment point exists at the midpoint. They

also recommend that the condition specify that seat backs are adjusted to the “manufacturer’s nominal design riding position” recommended by the manufacturer.

The agency has considered these comments regarding the driver seating position. We agree with the Alliance that this test procedure (for the purposes of NCAP) should clarify the longitudinal adjustment setting of the driver seat should no adjustment position exist at the exact longitudinal midpoint. We agree with the Alliance’s recommendation that in this situation, the closest adjustment position to the rear of the longitudinal midpoint should be used. Thus, the test procedures accompanying this document in the docket will address this change.

However, we decline to adopt the manufacturer’s recommended nominal seat back position test condition as proposed by the Alliance. Unlike in FMVSS No. 208, we believe it is necessary to specify the seating position when testing rearview video systems for the purposes of NCAP because these tests address different safety concerns. While FMVSS No. 208 regulates crash protection, FMVSS No. 111 regulates rear visibility. Unlike in FMVSS No. 208, variations in the seat back position can significantly affect the eye point used to evaluate conformity with the NCAP criteria (particularly with respect to the possibility that certain interior features of the vehicle’s cabin can become obstacles between the specified eye point in the test procedure and the rearview image). Thus, the test procedures accompanying this document in the docket do not adopt a nominal seat back position test condition as requested by the commenter. Instead, it will continue to use a seat back angle at the vertical portion of the H-point machine’s torso weight hanger at 25 degrees.

#### **F. Removing Electronic Stability Control from NCAP**

In the June 26, 2013 request for comments, we stated that we will remove ESC as a Recommended Advanced Technology Feature from NCAP. We received no comments opposed

to our plan. We continue to believe that listing ESC as a recommended technology is no longer useful information to consumers seeking comparative information about different vehicle models because ESC is now a required safety feature on vehicles with GVWR of 10,000 pounds or less. Thus, in implementing this update to NCAP, we will be substituting rearview video systems for ESC on [www.safercar.gov](http://www.safercar.gov). Therefore, we will not continue to list ESC as a Recommended Advance Technology Feature beginning with the current Model Year 2014.

## **G. Other Issues**

### *Monroney Label*

A number of commenters (Delphi, ASC, and MEMA) suggested that the agency incorporate all of the safety technology information onto the Monroney Label (the label that is affixed on new vehicles offered for sale on the dealership lot). The commenters suggested that placing this information on the Monroney Label would more quickly and effectively achieve the goal of informing consumers about the potential safety benefits of rearview video systems. We agree with these commenters that exploring additional ways to promote NCAP safety information on the Monroney Label would be useful. We reiterate our statements from the request for comment that we are currently considering whether to incorporate additional advanced crash avoidance technologies (beyond rearview video systems) into NCAP.<sup>18</sup> When we have determined which additional technologies will be incorporated, we will also consider whether we should initiate a rulemaking to determine whether and how the incorporated advanced technologies should be included on the Monroney label.

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<sup>18</sup> See 78 FR 20597, Request for Comments, April 5, 2013.

### Other Technologies beyond Rearview Video Systems

Other commenters (Delphi, AMA, ASC, and Tesla) also recommended that the agency consider other advanced crash avoidance technologies for NCAP and not preclude the potential for these other technologies to be added to NCAP. We agree with the commenters that additional technologies should be considered for incorporation into NCAP. As mentioned above, we are considering what additional technologies to incorporate into NCAP. We published a request for comments notice on April 5, 2013 suggesting various new technologies for incorporation into NCAP. We will continue to explore additional improvements to NCAP in addition to the update announced by this document.

### Forthcoming Publication of UMTRI Research

The Alliance and General Motors both commented that a forthcoming study from the University of Michigan Transportation Research Institute (UMTRI) may indicate that rearview video systems are already having a significant impact on reducing crashes. They asserted that, if this is the case, then Phase 2 may not be necessary. While the agency is encouraged that organizations continue to devote resources to researching backover crashes (and how to avoid these crashes), the information is currently unavailable. Thus, the agency is unable to utilize this information to further refine the performance criteria established by this document for the purposes of NCAP. However, regardless of the results of the UMTRI research, minimum performance criteria are still necessary in order to ensure that the systems recommended to consumers by NCAP are systems designed to assist drivers in avoiding backover crashes. Even if the currently available equipped systems are suitable for helping drivers avoid backover crashes, NCAP would not be able to ensure that future systems that it recommends would be similarly suitable for avoiding backover crashes without some minimum performance criteria.

Concerns about the K.T. Safety Act and the Final Rule to Amend FMVSS No. 111

Two commenters expressed concerns about the K.T. Safety Act and our ongoing efforts to amend FMVSS No. 111 pursuant to requirements of the K.T. Safety Act. First, the Advocates commented that NHTSA should not update NCAP to include rearview video systems without concurrently issuing a final rule amending FMVSS No. 111 because the update to NCAP does not fulfill the requirements of the K.T. Safety Act. Second, Global Automakers commented that the agency should ensure that the requirements in the final rule do not deviate from the criteria that are established in today's document updating NCAP.

In response to the Advocates, we agree that this document does not fulfill the requirements of the K.T. Safety Act. We agree that this document announcing the agency's decision to update NCAP is not a substitute for the agency's obligation under the K.T. Safety Act to expand the required field of view to enable drivers of motor vehicles to avoid backover crashes. As we discussed previously, this document is not a resolution to the rulemaking action to amend FMVSS No. 111. However, we cannot agree with the Advocates that it is unreasonable to pursue this update to NCAP prior to the promulgation of a final rule amending FMVSS No. 111 pursuant to the K.T. Safety Act. As we mentioned above, we believe that this update to NCAP will immediately help inform consumers about the risks of backover crashes, the potential safety benefit of rearview video systems by helping drivers avoid such crashes, and the vehicle models that are equipped with these systems. These goals can be achieved independent prior to the promulgation of a final rule to amend FMVSS No. 111 and during the phase-in period after its promulgation. Thus, we see no reason to delay this decision to update NCAP.

In response to Global Automakers, we cannot rule out the possibility that the administrative record for the rulemaking to amend FMVSS No. 111 may require the agency to conclude in a manner that is inconsistent with today's final decision notice on updating NCAP. While we agree in principle with Global Automakers that the criteria for evaluating rearview video systems in NCAP should not be different from the requirements eventually established in a final rule amending FMVSS No. 111, that rulemaking action is still pending and the agency's decisions in that rulemaking will need to be based on that rulemaking's administrative record. As we explained in our response to the Advocates' comment, this document is not a resolution to the issues presented in the ongoing rulemaking to amend FMVSS No. 111. The requirements that are appropriate for a final rule amending FMVSS No. 111 must be considered in the context of establishing a Federal regulation. Thus, while the agency understands the concern expressed by Global Automakers, the outcome of this final decision notice to update NCAP is separate from our rulemaking action to amend FMVSS No. 111 and cannot be determinative of the outcome of that action.

*Request for Additional Public Consultation*

Additionally, Global Automakers suggested that the agency hold a technical workshop to help increase public dialogue on the NCAP rearview video system criteria. Separately, MEMA contended in their comments that NHTSA should provide additional public consultation and dialogue (e.g., a public workshop or an additional request for comments in the Federal Register) because adopting the criteria from the NPRM to amend FMVSS No. 111 creates a "de facto final rule and compliance standard."

In response to MEMA, we disagree that this document creates a de facto final rule and compliance standard. NCAP is a voluntary program where the agency provides comparative

safety information about vehicle models to motor vehicle consumers. It is not a rule that applies to any particular person or entity. Instead, the essence of the program is the agency publishing the available comparative safety information on various vehicle models that are available for sale to help consumers make informed purchasing decisions. The agency has published a notice to the public and solicited comments regarding its plans to update NCAP in the interests of designing a program that serves the interests of consumers making vehicle purchase decisions. Through our June 26, 2013 request for comments and today's final decision notice responding to those comments, we believe that we have provided ample opportunity for public consultation and dialogue on the matter and believe that any further consultation is likely to further delay providing this useful information to motor vehicle consumers without any significant improvements to the program.

#### *IIHS Research*

IIHS commented that they support NHTSA's efforts to promote countermeasures that assist drivers in avoiding backover crashes. They also agreed that promoting rearview video systems through NCAP is a useful step toward addressing the backover safety problem. IIHS noted that all the available data show that rearview video systems greatly increase visibility behind the vehicle and should create a measureable effect on reducing backing crashes.

However, they stated that their preliminary data has yet to suggest these systems are preventing crashes and reducing loss. They cite their Highway Loss Data Institute compared insurance claim frequencies for physical damage to the at-fault vehicle (collision coverage) and physical damage to a struck vehicle or property (property damage liability coverage) in select Mazda and Mercedes-Benz vehicle models with and without rearview video systems. They stated that, for these models, the claim frequencies were directionally inconsistent across

coverage types and they did not observe statistically significant reductions in claim frequencies. The authors of the study of Mercedes-Benz vehicles further noted that the transmission status was unknown meaning that all crashes were considered—including those for which backup cameras have no ability to prevent. Finally, the authors of the study of Mazda vehicles noted that there was a reduction in bodily injury claims, which was statistically significant for paid claims of high severity and that this suggests that the cameras may be reducing some non-occupant crashes.

As always, the agency appreciates the data that the IIHS provided. Our recent experimental research on the effectiveness of rearview video systems has focused primarily on the crash problems directly addressed in the K.T. Safety Act, which are backover crashes involving vulnerable populations such as those involving young children. While the IIHS data is not focused specifically on these types of crashes, the agency expects data on crashes resulting in a severe injury or death may resemble the direction and magnitude of effectiveness found in our experimental research. In other words, even though the IIHS data examines all crashes (not just backover crashes) considering only data on crashes that resulted in severe injuries or deaths may reveal a correlation between rearview video systems and these types of injuries.

The agency understands that these types of crashes occur much less frequently than property damage crashes, which makes it more difficult to find statistical significance using the Highway Loss Data Institute methodology. In the IIHS analysis of crash data for Mercedes-Benz vehicles with and without rearview video systems, the organization did not find a statistically significant difference (which may be partially attributable to the data's wide confidence interval). However, in their analysis of Mazda data the organization found a statistically significant reduction (22.2 percent) in high severity bodily injury crashes. As IIHS

stated in their comments, this data is still preliminary data. Further, this data is not designed to isolate the effect of rearview video systems on the specific type of crashes that we are addressing in this document—backover crashes. However, when considering these studies as well as the other available studies completed by NHTSA and other organizations, including all the limitations within the methodologies, the agency continues to believe that the installation of rearview video systems will decrease the risk of pedestrian backover crashes.

#### **IV. Conclusion**

For all the reasons stated above, we believe that it is appropriate to update NCAP to substitute rearview video systems for ESC at this time. We believe that this two-phased approach is the most suitable approach for maximizing not only how quickly the agency can begin providing information to consumers, but also the quality of information that will be provided. As we stated previously, this final decision notice covers only the agency's planned update to NCAP to incorporate rearview video systems. This document does not serve as a resolution to the agency's ongoing rulemaking to amend FMVSS No. 111 and does not substitute the agency's efforts in that area. We remain committed to completing the rulemaking to amend FMVSS No. 111 pursuant to the requirements of the K.T. Safety Act.

(Authority: 49 U.S.C. §§ 32302, 30117, 30166, 30181, and 30182; delegation of authority at 49 CFR 1.95.)

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David L. Strickland

Administrator

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