

crashes remains to be demonstrated by crash statistics.

For the present time, we will retain the use of five stars to express rollover resistance ratings. Focus groups consistently find that presentation understandable. However, the NAS and a number of commenters were in favor of presentations that are able to show smaller differences between vehicles, contrast the range of ratings between types of vehicles and show the relative position of a vehicle's rating among other vehicles of the same type. NHTSA is performing additional consumer research to determine the best approach to providing consumers with more detailed information to supplement the star ratings. Several presentation methods are being tested, and we will consider those test results and propose appropriate changes to how we present rollover information to consumers.

B. Dynamic Testing

The Fishhook maneuver test will be conducted according to the procedure in Appendix I, and we will discontinue the J-Turn maneuver test. This decision is a consequence of the logistic regression analysis of the crash data, SSF and results of the J-Turn and Fishhook tests at two load conditions for 25 vehicles. From a statistical point of view, the J-Turn test results were redundant in the presence of the Fishhook test results. The J-Turn test also seems to be more sensitive to irregularities in pavement surface and friction and changes in ambient temperature than the Fishhook test. It also causes more concern about tire wear effects than the Fishhook, and it was criticized by some commenters as less representative of "real-world" driving situations.

We have decided to change the heavy load condition from an anthropomorphic dummy (water dummy) in every rear seating position (along with the test driver and instruments of approximately a passenger weight in the front) to a standard load representing five occupants in all vehicles capable of at least that loading. During the test of the 25 vehicles, it became obvious that heavy load tests were being run at very

unequal conditions especially between vans and other vehicles (two water dummies in some vehicles but six water dummies in others). While very heavy passenger loads can certainly reduce rollover resistance and potentially cause special problems, crashes at those loads are too few to greatly influence the overall rollover rate of vehicles. Over 94% of van rollovers in our 293,000 crash database occurred with five or fewer occupants, and over 99% of rollovers of other vehicles occurred with five or fewer occupants. The average passenger load of vehicles in our crash database was less than two: 1.81 for vans; 1.54 for SUVs; 1.48 for cars; and 1.35 for pickup trucks. In order to use the maneuver tests to predict real-world rollover rates rather than investigate possible poor performance at high occupancy levels, it is not useful to test the vehicles under widely differing loadings while there is much less loading variation represented in the crash statistics. Consequently, the maneuver test data used in the logistic regression analysis involving the 25 dynamic test vehicles in the heavy load condition represented performance with a 5-occupant loading (obtained using three water dummies in the rear seating positions) for all vehicles capable of carrying at least that load.

The use of dynamic maneuver tests creates the need for a policy regarding tire de-beading. The tests are conducted using the tire pressure recommended by the vehicle manufacturer and labeled on the vehicle. We have experienced a number of instances in which the tire bead became unseated from the rim, resulting in total air loss and rim contact with the paved surface. This causes damage to the test facility and the possibility of a rollover of the test vehicle. For at least a year, we have been using inner tubes in all tires placed on rollover test vehicles. This action reduces the instances of total de-beading, but does not eliminate them entirely. In some instances, a tire with a tube that is not pinched during the process can experience a partial de-bead in which the rim makes contact with the pavement surface and then the tire becomes remounted on the rim by the

pressure of the tube. It has been NHTSA's experience on the test track that if a maneuver results in rim contact without destroying the tube, the next run at a higher speed will destroy the tube and cause a complete de-beading of the tire and hard contact of the rim with risk to the driver, test surface and vehicle.

In the case of rim contact without total de-beading, it is a near certainty that total de-beading would have occurred without the tube, and total de-beading despite the tube is highly likely at the next speed increment. Thus, we consider rim contact to indicate de-beading, and it will be NHTSA's policy to terminate the test if rim contact with the pavement is observed even if the tube prevents total de-beading.

The vehicle did not actually tip up in the maneuver if the test is terminated as a result of rim contact indicating tire de-beading. However, de-beading is a bad outcome for the test because tire de-beading is associated with on-road tripped rollovers that actually outnumber on-road untripped rollovers. Therefore, it would be improper to ignore tire de-beading and predict the vehicle's rollover rate as if it had completed the test without tip-up or de-beading. The only alternative in the case of rim contact is to simply not compute a rollover resistance rating of the vehicle because the test was not completed. It will be reported that the dynamic test could not be completed because of tire de-beading, but the SSF measurement will be retained in the detailed consumer information.

C. Demonstration Program

In April 2003, NHTSA's VRTC began the Demonstration Test program at TRC of Ohio using the test protocol of Appendix I for Fishhook maneuver tests of 18 new vehicles. Table 5 lists the vehicles in this group. We will verify tip-ups using new tires as explained in our answer to Ford's comments in Section VII. Unless we discover serious procedural problems, these vehicles will be given 2004 NCAP rollover resistance ratings according to the system established in this final notice.

TABLE 5.—VEHICLES INCLUDED IN DEMONSTRATION TEST

	Make	Model	Bodystyle
1	Chevrolet	Silverado 4x2	PU ext. cab.
2	Chevrolet	Silverado 4x4	PU ext. cab.
3	Chevrolet	Trailblazer 4x2	4-dr Utility.
4	Chevrolet	Trailblazer 4x4	4-dr Utility.
5	Ford	Explorer 4x2	4-dr Utility.
6	Ford	Explorer 4x4	4-dr Utility.
7	Ford	Explorer SportTrac 4x2	4-dr Utility.
8	Ford	Explorer SportTrac 4x4	4-dr Utility.