TITLE 4 CLOSES SAFETY "DESIGN GAP" WITH FEASIBLE AND AVAILABLE SOLUTIONS

Public Citizen

In spite of the absence of federal standards to improve occupant protection, there is a wide array of cost-effective safety technologies already available from automotive suppliers that could reduce deaths and injuries in crashes.

Chapter Three of this report contains supporting detail on the range of safety equipment available for 2004 model year vehicles, including: side impact airbags, laminated side-window safety glass, rearview cameras, backover prevention technologies, and rollover safety belt pretensioners.

Forty-seven percent of 2004 model-year vehicles offered head-protection side air bags, but only 27 percent offered the protection as standard equipment.[1] In the 2003 model year, 40 percent of vehicle models offered head-protection side air bags, but only 24 percent offered it standard.[2]

Of model year 2003 cars tested by NHTSA in the New Car Assessment Program (NCAP), electronic stability control (ESC) was standard on 22 percent of cars and optional on 17 percent. At least six model year 2004 cars offer a rearview camera as an option, and at least one 2004 model offers as standard a rollover safety belt pretensioner in all seating positions.

Safety technologies that are already widely available to luxury car buyers should not be limited to those consumers who can pay a premium — and requirements that enable technologies to become standard will lower prices for all consumers. A decent baseline for safety should not be available only to the rich.

CASE STUDY: THE MIRACLE OF ESC

Electronic stability control (ESC) is an active safety system that helps drivers to maintain control of the vehicle and stay on the road. The system's sensors compare the vehicle's behavior in relation to the steering wheel position. When ESC detects a discrepancy, it intervenes to bring the vehicle's direction back into line by transmitting the right commands to the antilock braking system and sometimes reducing the engine torque.

The core benefit of ESC is increased driver control, which translates into crash prevention. Studies conducted by DEKRA Automotive Research, DaimlerChrysler, Toyota, the University of Iowa and others indicate that ESC could positively influence *as much as 25 to 43 percent of fatal rollover crashes in the U.S.,* not to mention lives saved other crash types.

For example, one study showed a 27-percent reduction in fatalities in single-vehicle rollover crashes when vehicles had ESC, meaning that **installing ESC in all vehicles could save more than 2,100 lives in the U.S. annually in rollovers alone, *not* including fatalities that could be prevented in other types of crashes.**

Even with all this evidence, Title 4 allows NHTSA to draw its own conclusions on ESC, asking that NHTSA **issue** a rollover resistance standard, but merely **consider** additional technologies to improve vehicle handling, **including electronic stability control systems**.

CASE STUDY: THE FEASIBILITY OF A SUPERIOR DYNAMIC ROOF CRUSH TEST

The image above depicts the fixture used to conduct roof crush dynamic testing in a testing laboratory in Salinas, California. The road surface moves along the track, contacting the roof of the vehicle as it rotates on the spit. The test surface impacts both *sides of the roof on a single run*, imitating the first roll of a vehicle in a rollover crash. The picture shows a 1994 Chevrolet Suburban (*vehicle in white*).

The current federal test is a static test using a platen, or plate, on the roof, and measures the impact of force *on only one side of the roof* with the steady exertion of pressure.

A dynamic test is far superior because:

1) It measures the survivability of the rollover crash — the human impact;
2) It includes the lateral, or sliding, velocity of the road as it moves beneath the vehicle;
3) It tests *both sides* of the roof – the current test only tests one side, with the windshield intact. Yet research shows that passengers sitting in the seat below the second, or trailing edge, of the roll, are the ones severely injured or killed. At the second impact, the roof, already weakened, crushes downwards toward the occupants' heads.
4) It shows the harm after the windshield shatters in the first impact. Although a windshield breaks on the first impact with the roof, it typically provides up to one-third of the roof's strength in the static test.
5) The test shows the real dynamic of crush as a function of roof geometry (roundness, curvature, etc.). Because the static test is not designed to include roof geometry, it omits a major factor for survivability.

While a static test measures the strength of the roof, a dynamic test measures injury to people.

Dynamic drop tests for roof strength are repeatable. As a 2002 engineering paper states:

The automotive industry and researchers have used drop testing for years to evaluate roof strength. In the late 1960s, SAE developed a standardized procedure to perform full vehicle inverted drop testing. Many domestic and import auto manufacturers have utilized the inverted drop test technique as far back as the 1960s and 1970s to evaluate roof strength.[3]

Dynamic Tests *Are* Repeatable

The auto industry first protested the "repeatability" of dynamic tests in the late 1960's in opposition to NHTSA's then-new frontal crash barrier tests – now a standard compliance test. Industry lodged similar objections over the crash test parameters for NHTSA's New Car Assessment Program, now an accepted measurement.

In each case, the industry claimed that a repeatable dynamic test could not be formulated — and yet one was developed and used.

[1] O'Donnell, Jayne. "Study: Side Air Bags Should Shield Head." USA Today, August 26, 2003
[2] Insurance Institute for Highway Safety Status Report, Vol. 38, No. 8, Aug. 26, 2003, at 2.
[3] Brian Herbst, Stephen Forrest, Steven E. Mayer and Davis Hock, Alternative Roof Crush Resistance Testing with Production and Reinforced Roof Structures, 2002-01-2076, SAE 2002.