

Statement

of

*Ford Motor Company*

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Thank you Senator McCain for the opportunity to testify before your Committee regarding the safety and design of Sport Utility Vehicles (SUVs). My name is Susan M. Cischke and I am Vice President of Environmental and Safety Engineering for Ford Motor Company. As you may know, Ford Motor Company is the world's second largest automaker with approximately 350,000 employees, and operates in more than 200 markets on six continents. Its automotive brands include Aston Martin, Ford, Jaguar, Land Rover, Lincoln, Mazda, Mercury and Volvo.

For the past 100 years, Ford Motor Company (Ford) has recognized its responsibility to provide our customers with vehicles that have the utility they require and the safety they demand. We are committed to continuous improvement in the safety of all our vehicles and have been leaders in the introduction of safety features across all our vehicle lines. We also believe that safety is a shared responsibility between vehicle manufacturers and vehicle operators. We will continue our long-standing efforts to promote increased safety belt usage and to encourage responsible driving.

It is my privilege to share with this committee the rest of the story, about the efforts that Ford takes to ensure the safety of our SUVs, areas of Ford safety leadership, our efforts to continuously improve our vehicles, and our initiatives to encourage our customers to buckle up.

Americans value freedom – especially the freedom to make choices for themselves and their families based on what meets their individual needs. When Ford introduced the Explorer in 1991 in response to customer needs, it struck a cord with the American public. Since then the Explorer has become the SUV that more Americans have chosen than any other SUV to carry their families, friends and various types of cargo millions of miles across every kind of terrain in the country.

Customers weigh many factors when choosing a family vehicle – cost, capability and safety, to name a few. In 2002 alone, 4 million customers worldwide have found that SUVs fit the bill in these areas and more. While there are more vehicle choices in the market than ever before, the SUV segment is the fastest growing in the industry, accounting for 25 percent of all vehicles sold in the United States in 2002, up 6.3 percent from 2001.

As the leader in the SUV segment, Ford takes seriously the commitment to continuously improve these vehicles through the development of new technologies. As we move forward, we will continue our philosophy of 'no compromise' when it comes to designing features that customers want. We will give our customers the products and features that they desire – as well as improvements in safety, versatility and compatibility.

## **Safety Facts**

SUV owners demand an exceptional safety record from their vehicles – and they get it. According to data from the National Highway Traffic Safety Administration (NHTSA):

- SUVs are among the safest vehicles on the road and have contributed to the dramatic decline in our nation's fatality rate over the last decade.
- SUVs are protective of occupants in all crash modes. In 2001, roughly 3,500 SUV occupants died in crashes, compared to more than 20,000 passenger car occupants. When these numbers are normalized for the number of registered vehicles on the road, there is no discernable difference in overall fatality rates between SUVs and passenger cars. Both have been declining, but SUV fatality rates have been declining faster than those of other vehicle segments.
- SUVs are twice as protective of their occupants than any other passenger vehicle in frontal, side and rear-impact crashes, which make up 97 percent of all crashes. Ford's family of SUVs is a leader in this area, with all our vehicles scoring either four or five stars in frontal and side impacts.
- The fatality rate in the Explorer in all crash types is 27 percent lower than passenger cars overall and 17 percent lower than other SUVs, according to our analysis of data from the U.S. Department of Transportation.

## **Rollover Safety**

While SUVs do experience a higher rollover rate than passenger cars, rollovers are rare events and the rates are declining:

- Rollovers account for only 3 percent of all vehicle crashes.
- Despite the over 103 percent increase in the number of registered SUVs since 1996, rollover fatality rates per 100,000 registered passenger vehicles have declined for all vehicle body types, with SUVs exhibiting the largest decline.
- Given a rollover, SUVs are more protective of occupants in rollovers than are passenger cars. Compared to passenger cars involved in rollovers, SUVs lower the occurrence of injury by almost 20 percent. And SUV occupants incur the fewest number of rollover fatalities occurring annually, compared to passenger cars or pick-up trucks.

## **Safety Technology**

Safety technology is what keeps Ford vehicles at the forefront of protecting our customers on the road. We are proud of the fact that Ford Motor Company SUVs have the most advanced technology available today. Ford investigates both crash avoidance and crashworthiness opportunities to help improve vehicle safety for our customers.

### **Vehicle Crashworthiness:**

Customers buy our SUVs for their many attributes including the excellent protection they provide in front and side impact crashes. In general, Ford has more four and five star rated SUVs in the federal government's crash test program than any other automaker. The need for a vehicle to provide self-protection is important for all types of crashes including those with cars, other SUVs and light trucks as well as single vehicle crashes, including rollover accidents.

Ford believes the single most important safety technology in a vehicle is the safety belt. If a belted occupant is in a rollover accident, their chance of survival is ten times higher than unbelted occupants. For that reason and more, Ford developed the BeltMinder™ system to remind drivers to buckle up. Ford's BeltMinder™ system repeatedly chimes on and off for several seconds over the course of 5 minutes when the driver is not buckled up. It is standard equipment on all Ford vehicles since 2001. It was somewhat controversial for Ford to introduce this feature since it could be considered annoying to our customers. But we also knew how important it is to buckle up and that some of our customers needed a gentle reminder to wear their safety belt. We pursued our BeltMinder™ feature, not because of regulation, but because it was the right thing to do, and we now have data to show it is working! A recent study by the Insurance Institute for Highway Safety (IIHS) determined that occupants of vehicles equipped with BeltMinder™ were buckling up at a rate 5 percentage points higher than similar vehicles without BeltMinder™. NHTSA was so encouraged by this significant increase in safety belt usage that they have requested all automakers to add this feature.

While safety belts are the single best tool for keeping passengers inside the vehicle during a rollover, new side curtain air bags and rollover sensing technology supply additional occupant protection during certain types of crashes, including rollover. Ford was the first automaker to feature rollover sensors and special side curtain air bags on its SUVs, called the Safety Canopy™, which debuted on the 2002 Ford Explorer and Mercury Mountaineer.

The Safety Canopy™ air bags are designed to remain inflated for an extended period of time to provide enhanced protection especially during rollover events. The air bags have fixed attachment points at the front and rear ends of the curtain to help reduce both partial and complete ejection of vehicle occupants during rollovers. The inflatable curtain system also helps reduce the risk of head injuries for SUV occupants involved in side impacts. This feature is also currently available on the Ford Expedition, Lincoln

Aviator and Lincoln Navigator. It will also be available later this year on the 2003 Ford Explorer Sport Trac.

To reduce the risk of injuries in a side impact, the Ford Escape and Ford Excursion have seat mounted side airbags that cover both the occupant's head and thorax.

In addition, the Explorer 4-door, Expedition, Mountaineer, Aviator and Navigator have Ford's Personal Safety System™ that tailors restraint deployment to crash severity and other factors. The system comprises several features working together to help protect the driver and right-front passenger in the event of a collision. The system is able to adjust the deployment of the air bags to enhance protection for front seat occupants, depending on a number of factors. It does this with the help of several components:

- Electronic crash severity sensor
- Personal Safety System™ restraint control module
- Dual-stage driver and right-front passenger airbags
- Driver's seat position sensor
- Front outboard safety belt energy management retractors
- Front outboard safety belt pre-tensioners
- Front outboard safety belt usage sensors

### **Vehicle Crash Avoidance:**

The first step in protecting vehicle occupants, after getting them to buckle up, is to find ways to reduce the likelihood that the driver will lose control of the vehicle, keeping the vehicle on the road and avoiding the crash altogether. Ford does this through extensive vehicle tests that ensure our vehicles have consistent handling and predictable vehicle dynamics. Ford is a leader in developing emerging technologies that show great potential for helping the driver, such as Electronic Stability Control (ESC) and Roll Stability Control (RSC) systems.

Every Ford SUV goes through a proprietary set of vehicle dynamics and handling characteristics testing. We design our vehicles to handle predictably even in severe handling maneuvers. This is the vehicle handling foundation on which our vehicle performance is based. We believe that advanced technologies such as ESC and RSC have the potential to further assist drivers when conditions change suddenly or unanticipated events occur.

Ford first introduced an electronic stability (yaw) control system, called AdvanceTrac™, in August 2000. This system monitors the driver's steering, throttle and braking inputs and from the steering angle and vehicle speed determines the driver's intended course. AdvanceTrac™ also constantly monitors the vehicle's response, including vehicle motion, inferred from a yaw rate sensor, lateral accelerometer and wheel speed sensors. If the system detects a deviation of the vehicle's motion from the driver's intended path, in milliseconds it briefly brakes one or more wheels – and if necessary, retards spark timing and cuts back fuel delivery – to help the driver get the vehicle back

on its desired path. AdvanceTrac™ is available on the following vehicles: Explorer 4-door, Expedition, Mountaineer, Aviator (late availability) and Navigator.

Most ESC systems are based on yaw control – the ability to maintain control of the vehicle in a rear slide or in front plowing. Recent advances in electronic technology have made it possible to also monitor wheel lift and reduce the potential for rollover, during an extreme limit-handling maneuver such as avoiding an obstacle. Ford is the first automaker to develop and patent a Roll Stability Control system, which debuted on the new 2003 Volvo XC90 SUV. Our RSC system is designed to assist the driver in maintaining control during an obstacle avoidance event and to help reduce the likelihood of the SUV rolling over.

Ford's RSC system is an active stability enhancement system utilizing gyroscopic sensors to determine roll speed and roll angle. Terminal angle - the angle in which a rollover is imminent - is instantly calculated, thus triggering the XC90's standard electronic stability control system, called Dynamic Stability Traction Control™ (DSTC™). Once engaged, the DSTC™ system reduces power and/or brakes the necessary wheels to induce an understeer situation until driver control is regained.

Electronic stability control systems, and the added feature of roll stability control, are emerging technologies that we believe will help drivers avoid crashes. However, not all electronic stability control systems are equivalent and actual performance may vary due to different threshold strategies. Several years of careful development and untold resources have gone into creating these systems. They require careful implementation on individual vehicle platforms and must be configured to provide assistance to the driver, without being intrusive or compromising the base handling of the vehicle. While we remain cautiously optimistic as to their effectiveness, we will closely monitor the performance and actual benefits of these systems in the field.

### **Vehicle Crash Compatibility:**

Cars, as well as motorcycles and bicycles, have always shared the road with large commercial trucks, buses, cargo vans and pick-up trucks. Historically, size differences among vehicles were more pronounced in the 1970s than they are today.

While the vehicle fleet in the U.S. is changing to include more and more light trucks and vans over the last ten to fifteen years and the number of vehicle miles traveled has continued to increase, the total number of crash fatalities has stayed relatively constant.

Ford continues to be a leader in researching the factors that contribute to crash safety and compatibility, including weight, geometry and stiffness and in translating that research into enhancements to vehicle design. Ford is working with NHTSA to assess whether vehicle compatibility can be predicted by measuring average height of force, to evaluate not just "bumper alignment", but also the load path that would transmit force by the striking vehicle. By aligning the load path, it is possible to reduce harm to the struck

vehicle. The industry is working cooperatively with NHTSA and the Insurance Institute for Highway Safety to develop test methodology to address this concern.

Ford has been working to improve the safety of cars in collisions with SUVs by adding structure and lowering rail heights of SUVs. For example, in the 2003 Expedition and Navigator, the bumper beam is attached directly to the front of the frame rail, instead of being bracketed to the top. This allows the rails to more directly engage a struck object and manages the crash forces more efficiently. For example, the Expedition bumper beam and rail are compatible with the height of the bumper on a Ford Taurus or Mercury Sable. Also the frame of the 2003 Explorer and Mountaineer was lowered to be more compatible with other vehicles on the road.

In addition, Ford introduced on the 2000 Excursion, Ford's BlockerBeam™ that offers front bumper underride protection for crash compatibility with smaller vehicles. The BlockerBeam™ lowers the point of engagement for a frontal impact with an SUV to the same level as a Taurus. This helps prevent the SUV from riding over the passenger car, and transfers crash forces to engineered crumple zones on both the striking and the struck vehicles where they can be best managed.

The automotive industry in general and Ford in particular will continue to build vehicles with the utility and safety that our customers require. Nevertheless, we view vehicle safety as a partnership and where vehicle design ends, customer responsibility begins.

### **Safety is a Shared Responsibility**

Safety is an interaction between the customer, the vehicle and the environment. It is a shared responsibility and one Ford does not take lightly. We must continue efforts to increase safety belt use and encourage responsible driving. In terms of vehicle safety, the most effective technology to protect occupants is already in every vehicle on the road – a safety belt. In seconds, customers can protect themselves and their loved ones by buckling up.

Data from 2001 show that there were 42,116 fatalities, of which 31,910 were vehicle occupants and the additional 10,206 were pedestrians and bicyclists. The current belt use rate nationwide is 75 percent. It is estimated that increasing belt use from 75 percent to 90 percent would save 6,600 additional lives each year. Moreover, safety belts are 45 percent effective in preventing fatalities in passenger car crashes; they are 60 percent effective in preventing fatalities in light truck crashes and 80 percent effective in preventing fatalities in light truck rollovers. In 2001, safety belts saved over 12,000 lives. Despite the increased use of safety belts in recent years, the sad fact is that roughly 50 percent of those who die annually in traffic crashes do not use them. And in rollover crashes, some 72 percent of occupants who died weren't wearing their safety belt. The ramifications of not wearing a safety belt are clear when nearly three-quarters of those killed in rollover crashes were completely ejected from the vehicle.

Ford supports efforts to increase safety belt usage through its ongoing membership in the Air Bag and Seat Belt Safety Campaign, which provides high profile air bag education, seat belt mobilizations and promulgation of primary seat belt laws.

Ford also provides our customers with a Safety Advice Card to educate occupants regarding the important safety features included in their vehicle. The card reminds occupants that the safety belt is still the number one safety device and to buckle up properly for vehicle occupants of all ages.

Every Ford owner's guide states "All occupants of the vehicle, including the driver, should always properly wear their safety belts, even when an air bag (SRS) is provided." And "In a rollover crash, an unbelted person is significantly more likely to die than a person wearing a safety belt."

If a belted occupant is in a rollover accident, his chances of survival are ten times higher than unbelted occupants. For that reason and more, we developed the BeltMinder™ system to remind drivers to buckle up. NHTSA Administrator Dr. Jeffrey Runge recognized Ford last year in a letter to all vehicle manufacturers where he states,

"I applaud Ford for showing the initiative, leading the way to go beyond the minimum Federal requirements, and voluntarily using technology to increase seat belt use... The American people win when vehicle manufacturers demonstrate good corporate citizenship by going beyond the minimums required under safety standards. Innovation beyond the standard allows greater flexibility in product design, while allowing those products to reach consumers faster and keep them safer. "

A 2001 study by the IIHS on Ford's BeltMinder™ safety belt reminder system found that the BeltMinder™ increased belt use by 5 percentage points, which they describe as a significant increase. This increase puts belt usage in Ford vehicles close to 80 percent. It has been estimated that this 5 percent point increase in belt use would prevent more than 1,000 deaths and more than 20,000 injuries annually if it were achieved in all vehicles. BeltMinder™ is now being expanded to also include the front passenger seats, which will be phased in across all new Ford vehicles beginning with the 2004 MY.

Ford is also making this technology available at no cost to all other automakers that are interested in it. Upon request, Ford will grant automotive manufacturers and suppliers a license to use the BeltMinder™ technology so long as any enhancements made to the technology are freely granted back to the automotive industry.

## **Conclusion**

Ford strives to provide the very best personal transportation choices for our customers. We will offer our customers the products and features that they desire -- as well as improvements in safety, versatility and compatibility. We take seriously our commitment to continually improve our vehicles through the development of new technologies.

When it comes to encouraging people to buckle up, governments have a unique role to play. Primary enforcement safety belt use laws combined with highly publicized enforcement are the keys to high safety belt usage levels. No other technology has the capability to save so many lives this quickly at no cost.

Ford has taken a holistic approach to vehicle safety – and specifically SUV safety – because drivers can't choose the accidents they may experience. To further ensure the safety of all drivers on the road, Ford recommends:

- Always wear your safety belt. Research shows that for every 1 percent increase in safety belt use, 270 lives would be saved immediately.
- Never drink and drive. NHTSA estimates that alcohol was a factor in 41 percent of all fatal crashes in 2001, which resulted in 17,448 fatalities.
- Always place your child passengers in the backseat, and always use child safety seats correctly.
- Obey the speed limit, and take into account road conditions. Speeding is one of the prevalent factors contributing to traffic crashes. In 2001, speeding was a factor in 30 percent of all fatal crashes.
- Finally, read your owner's manual for SUV safe driving tips. SUVs have a higher center of gravity than passenger cars and thus require different driving techniques. Drivers should be careful not to carry more passengers than there are safety belts.

Thank you for the opportunity to testify before the Committee today. I would be happy to answer any questions.