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Transport and Regional Services Committee
House of Representatives
Parliament House
Canberra ACT 2600

Dear Sir/Madam,

House of Representatives Standing Committee on Transport and Regional Services
Inquiry into National Road Safety

Thank you for the opportunity to provide a submission to the Transport and Regional Services Committee in relation to the abovementioned inquiry.

Ford Australia is a major national automotive manufacturer with extensive vehicle design and manufacturing facilities. It directly employs more than 5200 people, has annual sales revenue of more than $3.2 billion and has a long established commitment toward leadership in road safety.

Ford Australia's approach to road safety recognises the link between three main systems; the road environment, the vehicle and the driver. While each system can contribute individually to improving safety, the reliability of the road system depends heavily on the interactions between all three systems, with road trauma invariably being the consequence of a system interaction failure. It is Ford Australia's view that there is great potential for motor vehicle technologies to influence road safety. However, we also consider that new vehicle technologies should be developed as part of a broader approach to road safety, in conjunction with initiatives to influence, and impact upon, the driver and the road environment. Furthermore, Ford Australia stresses the importance of a national approach being taken toward vehicle design issues and one which is consistent with international standards.

This submission is largely supplied as an information background paper for Committee members. It provides a brief summary of some of Ford Australia's current road safety initiatives and explains a number of the safety features in the BA Falcon. Accordingly, the submission seeks to address the second of the terms of reference adopted by the Standing Committee, namely to identify additional measures or approaches that could and/or should be adopted by government and industry to reduce road trauma.

A. Ford Australia Road Safety Initiatives - Intelligent SafeCar Project

Ford Australia is currently involved in a collaborative research project known as the "Intelligent SafeCar" project, with the Victorian Transport Accident Commission (TAC) and the Monash University Accident Research Centre (MUARC).

The objective of the SafeCar project is to identify Intelligent Transport System (ITS) technologies that have a positive impact upon road safety, by either reducing the chance of accidents, or

reducing the trauma resulting from an accident. The term "Intelligent Transport System" refers to the application of advanced information processing, communications, sensing and computer control technologies to the driver-vehicle-road infrastructure system.

The ITS technologies used in the SafeCar project are designed to calibrate drivers and deter them from driving in an unsafe manner. The project's aim is to evaluate the effects of ITS technologies on driving performance and road safety, as well as assess driver attitudes and acceptance of these technologies.

The SafeCar project has been run in three key phases. In phase one, comprehensive research was conducted on a global scale to identify the most appropriate ITS technologies for use in the project. In phase two, Ford Australia supplied and equipped two prototype Ford Fairmont Ghias with the selected ITS technologies. These cars underwent stringent testing to confirm the successful integration of the technologies and to assess their safety potential. In the current phase three, the ITS technologies have been fitted into some 15 Ford vehicles. These vehicles have been added to a number of corporate fleets, where fleet drivers will evaluate overall performance of these technologies over a 12 to 18 month period.

Data will be collected to assess the technical operation of the chosen ITS technologies, to assess fleet driver attitudes to the technologies, and to obtain information on the long term effects of the technologies on driving performance and safety. The various systems will also be replicated in the advanced driving simulator located at MUARC to enable the examination of their effects on driving behaviour in traffic circumstances that would be too unsafe to replicate in the real world.

Set out below is a summary of the ITS technologies used in the project.

Intelligent Speed Adaptation
This system is designed to warn the driver when he or she is travelling, intentionally or inadvertently, over the posted speed limit. The system comprises a global positioning system (GPS) and a digital map of the road system that also contains a digital record of the speed limits applicable to various parts of the road system. A computer program analyses from the GPS data where the vehicle is being driven and compares the speed limit for that location with digitized speedometer input. It uses visual and auditory aids (flashing lights and a buzzer) to help the driver travel within the legal speed limit.

One variant of this system is to provide resistance through the accelerator pedal once the driver travels above the speed limit for a set period of time. A 'kick down' override facility is available if necessary.

Forward Collision Warning System
The Forward Collision Warning system is designed to warn the driver if he or she is driving too close to the vehicle in front and/or if he or she is about to collide with a stationary or moving object in front. The system uses transmitted and received radar signals to determine the distance and relative speed between the host vehicle and objects in front. It provides alerts in the form of visual and audible warnings indicating the relative distance to the object or vehicle in front and a crash warning if the driver is in immediate danger of a collision.

Breath Alcohol Detection and Advisory System
The Breath Alcohol Detection and Advisory System is designed to deter fleet drivers from driving a vehicle if they have been drinking alcohol. The system automatically detects the presence of

alcohol in the air inside the cabin of the car and, if alcohol is detected, issues an advisory message to the driver to blow into a mouthpiece to test his or her breath alcohol concentration. If the driver's blood alcohol content is greater than the pre-defined legal or corporate blood alcohol content limit, the driver is advised to stop the vehicle within 2 minutes. If the driver elects not to do so, an electronic message can be sent automatically to the fleet manager advising him/her that the driver is currently exceeding the acceptable blood alcohol content limit.

Seat Belt Reminder System
The Seat Belt Reminder System is designed to remind the driver to fasten his or her seat belt. If any person (driver or passenger) sits in the vehicle and does not fasten his/her seat belt, a visual "unbuckled" icon illuminates until the vehicle speed reaches 15 km/hour. Between 15 and 24 km/hr, the "unbuckled" icon flashes and a single audio chime is heard. Between 25 and 49 km/hr, the chime sounds repeatedly at the same rate that the visual icon flashes. When the vehicle travels at 50 km/hr or higher, the audio chime and the "unbuckled" icon sound/flash even faster.

Reverse Collision Warning System
The Reverse Collision Warning system is designed to warn the driver if he or she is likely to collide with an object behind the vehicle by activating audible alerts. The device issues audible warnings with increasing intensity at and below a rear object distance of one metre. The system fitted to the prototype vehicles is a commercially available product produced by Bosch. While this is primarily used to assist drivers to reverse park, it will also enhance pedestrian safety.

B. Safety features of the BA Falcon

The current design of the BA Falcon evidences Ford Australia's commitment to improving road safety and minimising the impact of road trauma. Through the use of Systems Engineering principles and Intelligent Safety Systems (ISS), the BA Falcon provides new levels of occupant crash protection by managing the interface between the vehicle occupants and the road environment. The ISS combines state of the art restraint systems with intelligent monitoring of crash severity and occupant positioning. This delivers significant advances in vehicle safety that cannot be achieved by traditional component-based approaches. The ISS system won the 2003 Society of Automotive Engineers' (Australasia) prestigious Gold Award for Engineering Excellence.

ISS in the BA Falcon includes the provision of:

Two-stage passenger and driver airbags to control airbag inflation pressure according to the circumstances of a crash
Sophisticated airbag technology such as this is expected to be required in the United States from 2006 when the new version of frontal crash regulation FMVSS 208, known as the Advanced Airbag Rule, is progressively phased in. Canada will adopt a similar regulation in 2007. Australian BA Falcon customers have been benefiting from ISS as standard equipment since October 2002.

These airbags contain two separately detonated inflators which enable the inflation pressure of the airbag to be tailored to the circumstances of the accident. By controlling airbag inflation, the key benefits of airbags in reducing major trauma can be delivered while minimizing the risks of minor injuries.

An additional "crash sensitivity" sensor to enable the earlier detection of a wider array of crash events

ISS provides system monitoring through the Advanced Restraints Module (ARM), which is a small but powerful computer mounted in the transmission tunnel. This computer makes vital decisions about the level of occupant protection required in just a few milliseconds. An additional satellite sensor is mounted at the front of the car to quickly detect a crash event. ISS has been demonstrated to reduce airbag trigger times by as much as 40% and thereby dramatically enhance occupant protection.

Driver's seat position sensor to enable airbag inflation to be adjusted according to the proximity of the driver to the airbag

The driver's seat incorporates a sensor which detects whether the seat is forward or rear of mid position. If the driver is positioned close to the steering wheel, it is most likely that the only first stage airbag inflator is required as the driver's head velocity prior to contact is likely to be lower. Conversely if the sear is adjusted rear of centre, the driver's head velocity is likely to be higher with both airbag stages being more likely to be required.

Seat buckle latch detection to determine if the seat belt is worn at the time of the crash

Switch contacts are fitted to the driver and front seat passenger seat belt buckles to determine if the seat belt is being worn. If the seat belt is not worn, it is most likely that both stages of inflation will be required because the occupants will need maximum protection.

The ISS is also complemented by an impressive array of occupant protection features which cater for a wide range of real-world crash events. These include:

- Head and chest protecting side airbag with an innovative deployment chute available across the entire passenger car range
- Extensive structural upgrades to optimise crash energy management and enhance the integrity of the passenger safety cell in all crash modes
- An anti-intrusion brake pedal which improves lower leg protection by decoupling the pedal in severe frontal impacts
- Shock absorbing EVA foam integrated into the steering column shroud for increased knee protection
- Seat belt Energy Management Retractors (EMRs) which keep occupant chest loads to a minimum by cleverly regulating the forces applied by the webbing in a frontal crash
- Pyrotechnic seat belt buckle pretensioners in the front outboard seating positions
- Laminated Impact Protection Panel (LIPP) in the drivers floor which maximises lower leg protection
- Refined side structure with a tuned energy management feature which delivers optimum side impact protection
- New occupant-friendly Loprefin door-trim material combined with a crushable map pocket and armrest
- Energy absorbing foam inside both front doors for enhanced side impact protection
- Fuel tank packaged forward of the sedan rear axle for optimum fuel system integrity in a rear impact
- Fuel pump inertia shut-off switch that functions in all impact directions

The Ford Falcon was the first locally manufactured passenger car to provide a driver's airbag as standard equipment. This was followed by another first with standard front passenger airbag on AU2 Falcon. The BA Falcon has again led the local industry with dual-stage front airbags as a key component of its standard Intelligent Safety System.

Consequently, the BA Falcon is the first locally produced vehicle to provide sophisticated restraint technologies which take account of crash severity and driver behaviour to deliver tailored levels of occupant protection. This combined with an extensive array of safety features delivers a truly world-class safety package to BA Falcon customers.

Please feel free to call me on (03) 9359 8506 if you have any queries or require any further information. I would be happy to arrange for Committee members to visit Ford Australia or for our key safety engineers to meet with the Committee.

Yours sincerely,

Danielle Courtney
Legal & Regulatory Affairs Manager
Ford Motor Company of Australia Limited