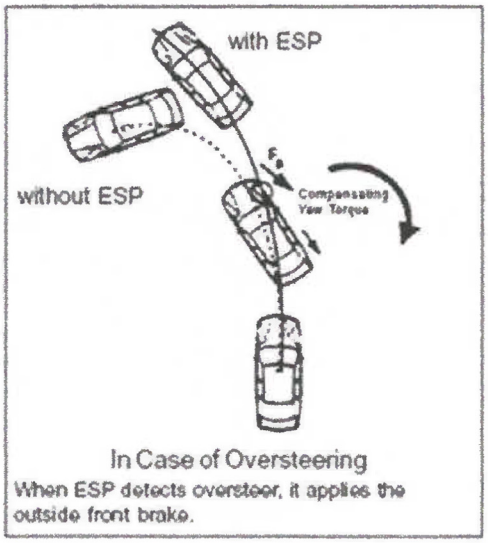
Advanced Automotive Technology | **Fact Sheet 10.2** Content Information

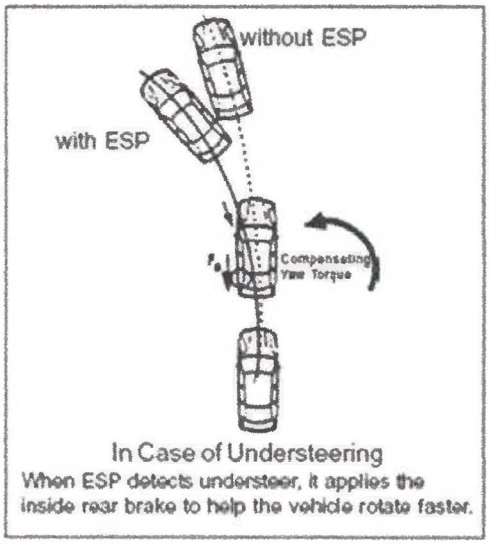
Automotive Technology

New vehicle technology aids the driver in maintaining vehicle control when performing avoidance maneuvers and increased protection should a crash occur. Enhanced control is provided through technologies such as the following:

- **Anti-lock brakes** which are designed to allow steering and simultaneous braking without losing vehicle balance. Anti-lock brakes do not necessarily shorten stopping distance on dry pavement, but generally shorten stopping distances on wet surfaces where traction loss can be a serious problem.
- **Traction control** is designed to activate brake sensors which do not allow the wheels to spin. The process is basically the reverse of anti-lock brakes. The device allows acceleration input without loss of vehicle balance.
- **Suspension control** adjusts vehicle balance at struts or shock absorbers through adjustment of fluid or air pressure when too much weight is suddenly transferred to a given shock or strut.
- **Electronic Stability Program (ESP)** compares where a driver is steering the vehicle with where the vehicle is actually going. When ESP senses a disparity between the two, it selectively applies any one of the vehicle's brakes to reduce the discrepancy and help the driver retain control and stability. This program can help prevent conditions that lead to a rollover.



In Case of Oversteering
When ESP detects oversteer, it applies the outside front brake.



In Case of Understeering
When ESP detects understeer, it applies the inside rear brake to help the vehicle rotate faster.

Advanced Automotive Technology	Fact Sheet 10.2 continued Content Information

Automotive Technology

Other enhanced automotive technology includes:

- **Active passive integrated approach system (APIA)** combines both active and passive safety equipment to help drivers maintain control and avoid crashes. This system relies on data interchange between active and passive safety systems that collect information on the activities and inputs of the driver, the behavior of the vehicle, and the status of the driving environment.
  - For example, when a vehicle with APIA is not a safe distance away from a vehicle ahead, the system warns the driver with a visual message displayed on the instrument panel or a vibrating pedal. If the vehicles approach closer, seat belts are tightened and side windows are closed and the system actively applies light pressure on the brakes.
- **Crumple zones and side impact panels** protect occupants by allowing structures to collapse at different rates, reducing the risk of penetration into the passenger compartment or spreading forces over a wider area.
- **Improved door latches and locks** are designed to stay closed under the most severe conditions, unlike door fasteners of the early 1960s that resembled the fasteners found in the interior of the typical home, and generally flew open in a crash.
- **Tempered glass** in motor vehicles has literally eliminated the facial disfigurement associated with partial ejection through laminated plate glass formerly used in windshields.
- **Headlights** have undergone dramatic improvement in terms of level of illumination, focus and reliability over the past 15 years.

