

## Newly Released Documents and Data Highlight Explorer Rollover Problems

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Six years ago, Ford Motor Company laid the blame for Explorer rollovers on defective Firestone tires, but newly available data shows that even with replacement tires, tire-related rollover crashes in

Explorers are growing and internal documents unearthed during recent litigation show that the popular SUV's stability problems are also rooted in vehicle design.

Documents and test reports introduced recently in an Oxford, Mississippi case (*Love, et al V. Ford Motor Company*) showed that Ford-approved replacement tires for the Explorer during the Firestone recall period actually increased the likelihood the vehicle would rollover. In its ADAMS computer model simulated J-turn test—the company's long-standing minimum resistance to rollover standard—Goodyear, Continental-General, Cooper and Uniroyal models in 15- and 16-inch sizes experienced in two-wheel lift in the simulation. Despite evidence that these tires increased vehicle rollover propensity and the combinations failed Ford's minimum safety requirements, the company added several of the Goodyears and a General tire model to the "approved" tire replacement list.

According to the testimony of Ford's representative Thomas Nilles, introduced in the Love trial, Ford's J-turn ADAMS model requirements only apply to original equipment tires. Replacement tires don't have to meet the company standard, Nilles testified. Presiding U.S. Magistrate, Jerry Davis, instructed the jury that Ford management approved replacement tires for the Explorer that did not pass all of Ford's stability tests.

The deposition and documents introduced in the Love case were first obtained by attorney James Gilbert in *Don Jackson v. Ford Motor Company* after nearly a year-long struggle, because Ford claimed it no longer had the ADAMS testing data. But in deposition testimony, Greg Dabkowski, one of Ford's engineers who evaluated the replacement tires following the recall, admitted having possession of boxes of documents and to the existence of a laptop, which had gone missing, with the data. Shortly after releasing the documents Ford settled the Jackson case.

Ford's knowledge of the Explorer's handling sensitivity to certain tires goes back to its initial introduction 15 years ago. In 1990, Ford issued a highly unusual bulletin and owner's manual instruction warning that all-season, high-performance, or larger tires can "adversely affect the handling of the vehicle and make it easier to lose control and roll over which could result in serious injury." In other words, simply changing the *type* of tire could increase rollover propensity.

Subsequent ADAMS testing on the second-generation Explorer continued to show that the vehicle was very sensitive to minor changes in tire properties. Firestone also examined these sensitivities in the early 1990s during its development of a tire for the Explorer. According to Dean Tener, Firestone's ADAMS specialist who ran the Explorer simulations for Ford, even modest changes in the force and moment properties of the tires

resulted in significant change in the J-turn results for this vehicle making it pass one test and fail another.

Gilbert said that the documents and testing uncovered in the Jackson case show “Ford’s replacement program simply swapped tires with tread separation problems for tires that increased your chance of rollover.”

Questions about the veracity of the ADAMS model have been lingering for years. Many wonder whether ADAMS could safely serve as Ford’s required sign-off, or whether the vehicle’s handling margin was as small as it appeared in the simulation—or both.

A recent statistical analysis by Randy Whitfield of Quality Control Systems Corp. shows continuing fatalities related to tire failures in Explorers even after the defective Firestone tires were replaced, raising more questions about the Explorer’s handling and stability margins.

Whitfield’s crash data analysis, which he submitted to a NHTSA docket (12150) on their Early Warning Reporting data, examines accidents involving tire factors found in the Fatality Analysis Reporting System (FARS), a dataset of fatal crashes in the U.S. based on police accident reports. The data do not contain information on the specific tire factor—such as defect, puncture, maintenance—involved in the accident, nor do they note the tire manufacturer. But the data can show trends and comparisons between vehicle models that provide important insight.

The QCS report found an upward trend in occupant deaths in Explorers with reported tire failures beginning in the mid 1990s, with a peak in 2000 followed by a significant drop in 2001 (i.e., following the recall). However, by 2003, deaths increased considerably, reaching pre-recall levels. The number of deaths continued to rise in 2004, although at a lesser rate.

Data from 2002 to 2004 show that occupant deaths in Explorers are disproportionately represented in tire-related crashes compared to peer SUVs. Explorers accounted for 33% of all persons killed in the entire fleet of mid-size SUVs and 52% of all persons killed in tire related crashes of midsize SUVs.

The analysis also shows that tire failures in fatal rollovers are strongly associated with the speed of the crash. Again, the Explorer stands out among peer SUVs, particularly as the speed limit increases to 70 mph.

One theory expressed by some experts is that high-speed rollovers may be related to a handling anomaly found in Hotchkiss rear suspensions, like those on the Explorer, which Ford characterizes as rear axle “skate.” Testing by both plaintiffs and defense experts has demonstrated controllability problems in the Explorer (i.e., oversteer) when a tire disablement excites the natural resonance of the rear axle, particularly at higher speeds. During the Firestone recall in Venezuela, Ford also replaced the stock (U.S.) shock

absorbers with those it used in Australia, because they had a higher damping level that helped reduce the skate problem. U.S. owners were not offered the shock replacement.

The QCS analysis highlights the need for additional research to determine the types of tire failures and why the Explorer tire-related fatal crashes continue to grow. But it is unlikely that NHTSA will help solve the mystery. Whitfield notes that the agency is hampering further research by withholding Early Warning Reporting data that could provide vital information. Despite initial agency statements that it would make death, injury, and property damage information available, the agency has refused to release the data, until a lawsuit filed by the Rubber Manufacturers Association to keep the information secret is resolved.