



U.S. Department  
of Transportation

**National Highway  
Traffic Safety  
Administration**

# ODI RESUME

**Investigation:** EA 10-007  
**Prompted by:** PE10-026  
**Date Opened:** 12/20/2010  
**Investigator:** Kerrin Bressant                      **Reviewer:** Jeff Quandt  
**Approver:** Richard Boyd  
**Subject:** Front Subframe Corrosion Failures

## MANUFACTURER & PRODUCT INFORMATION

**Manufacturer:** FORD MOTOR COMPANY  
**Products:** 1999-2003 Ford Windstar in Salt Belt states  
**Population:** 550,000 (Estimated)  
**Problem Description:** Excessive corrosion of the front subframe may result in failure of the rear attachment bracket for the right-front lower control arm or failure of the right-side rear body mount for the front subframe. Either failure may affect vehicle steering control.

## FAILURE REPORT SUMMARY

|                            | ODI | Manufacturer | Total |
|----------------------------|-----|--------------|-------|
| <b>Complaints:</b>         | 218 | 165          | 334** |
| <b>Crashes/Fires:</b>      | 1   | 2            | 3     |
| <b>Injury Incidents:</b>   | 1   | 0            | 1     |
| <b>Number of Injuries:</b> | 1   | 0            | 1     |
| <b>Fatality Incidents:</b> | 0   | 0            | 0     |
| <b>Other*:</b>             | 54  | 42           | 79**  |

\*Description of Other: Right-front lower control arm separation incidents.

\*\* Count indicates duplicate reports received by ODI and manufacturer.

## ACTION / SUMMARY INFORMATION

**Action:** An Engineering Analysis has been opened.

### Summary:

The Office of Defects Investigation (ODI) has identified 346 complaints to ODI and Ford alleging fracture, cracking and or excessive corrosion of the front subframes in model year (MY) 1999 through 2003 Ford Windstar vehicles. Approximately 97 percent of these complaints (334) involve vehicles that have been operated in Salt Belt states, which make up approximately 60 percent of the subject vehicle sales in the United States.

The front subframe, sometimes referred to as the engine cradle, is a structural component of the Windstar vehicles that carries the engine, transaxle, steering rack and certain front suspension components (e.g., lower control arm). For complaints with sufficient information to identify the location of the failure, most describe problems with the rear mounting bracket for the front passenger-side lower control arm with some related to the rear body mount attachment located in the same general area of the subframe (right-rear section near the front passenger wheel). The remainder of the reports allege fracture of the front subframe at other or, most often, unspecified locations. Almost all of the complaints that specified the side of the vehicle indicated that the problem occurred on the right/passenger side (106), with only a few indicating the left/driver side (2) or both sides (3) were affected. Ford and several complainants attributed the right-side failures to the routing of the air-conditioning lines above the front subframe on that side of the vehicle, further noting that condensation has been observed dripping onto the front subframe in the area of the affected components (the A/C drain tube is also located on the right side, near the front subframe).

ODI has identified 93 complaints related to lower control arm attachments, including 80 that appear to involve complete separations. All but one of these involved vehicles from Salt Belt states. All three crash incidents appear to be related to lower control arm separations, including one road departure into a road-side sign resulting in a totalled

vehicle and a lane departure into another vehicle. Almost half of the ODI complaints related to control arm separation occurred at speeds greater than 20 mph and about a quarter occurred at highway speeds. Three-quarters of these complaints allege experiencing difficulty controlling the vehicle and about 40 percent appear to have resulted in departures from the intended lane of travel. Testing by both Ford and NHTSA have demonstrated that lower control arm separation from the rear attachment bracket results in significant toe out of the affected wheel, which affects the driver's ability to control vehicle direction. According to Ford, moderate braking improved vehicle controllability by reducing the amount of toe out, possibly explaining incidents that did not allege a loss of control.

ODI's analysis of complaints related to the rear body mount identified 41 complaints (ODI only). These complaints generally report experiencing progressively worsening noise concerns when turning, accelerating or braking. Although, some of the complaints that appeared to involve a complete separation of the body mount alleged difficulty steering, the effects on vehicle control from this failure mode do not appear to be as great as those resulting from control arm separation. However, ODI is seeking more information regarding two complaints which alleged that body mount failure resulted in disconnection of the steering wheel from the steering rack (one occurred during vehicle service).

This investigation has been upgraded to an Engineering Analysis for subject vehicles sold or currently registered in Salt Belt states to further assess the scope, frequency and safety consequences of the alleged defect in these vehicles. ODI will continue to gather information about vehicles outside the Salt Belt as well.