



U.S. Department
of Transportation
**National Highway
Traffic Safety
Administration**

ODI RESUME

Investigation: EA07-018
 Prompted By: PE07-036
 Date Opened: 12/07/2007
 Date Closed: 12/22/08
 Principal Investigator: Andrea Noel
 Subject: Fuel Pump Failure - Stall

Manufacturer: Land Rover
 Products: 2003 Land Rover Freelander
 Population: 9,985

Problem Description: Fuel pump failure resulting in engine stall while driving with no restart.

FAILURE REPORT SUMMARY

	ODI	Manufacturer	Total
Complaints:	8	53	61
Crashes/Fires:	0	0	0
Injury Incidents:	0	0	0
# Injuries:	0	0	0
Fatality Incidents:	0	0	0
# Fatalities:	0	0	0
Other*:	0	87	87

*Description of Other: Warranty Claims related to the alleged defect.

Action: This Engineering Analysis is closed.

Engineer: Andrea Noel *A.N.*
 Div. Chief: Jeffrey Quandt
 Office Dir.: Kathleen C. DeMeter

Date: 12/22/2008
 Date: 12/22/2008
 Date: 12/22/2008

Summary:

Subject component failures found that can occur at any speed and generally result in a no restart condition. These are generally considered to be factors that increase the potential severity of stalling incidents. However, these incidents have occurred at relatively low rates in the subject vehicle population when compared with prior investigations involving similar categories of engine stall consequences. Further investigation of this matter would not be an efficient allocation of agency resources. Accordingly, this Investigation is closed. The closing of this investigation does not constitute a finding by NHTSA that a safety-related defect does not exist. The agency will continue to monitor complaints and other information relating to the alleged defect in the subject vehicles and take further action in the future if warranted.

A. Noel
12/17/09

ENGINEERING ANALYSIS CLOSING REPORT

SUBJECT: Engine stall due to fuel pump failure.

EA No: EA07-018

DATE OPENED: 07-Dec-07 **DATE CLOSED:** 22-Dec-08

SUBJECT VEHICLES: The subject vehicles are all model year (MY) 2003 Land Rover Freelander vehicles manufactured by Land Rover for sale or lease in the United States.

SUBJECT COMPONENT: All fuel pump modules manufactured for use on the subject vehicles.

ALLEGED DEFECT: The fuel pump may fail resulting in an engine stall while driving with no restart.

VEHICLE POPULATION: 9,985

BASIS OF THE INVESTIGATION: On July 17, 2007, the Office of Defects Investigation (ODI) opened a Preliminary Evaluation (PE07-033) to investigate three complaints alleging engine stall due to fuel pump failure in the subject vehicles. The investigation was upgraded to an Engineering Analysis (EA07-018) on December 7, 2007. When EA07-018 was opened, ODI had received 4 complaints related to the alleged defect in the subject vehicles and, in its response to ODI's information request letter in PE07-036, Ford had provided information about 16 complaints to Land Rover. One of the complaints to Land Rover had already been reported to ODI, resulting in a total of 19 unique complaints at the time of the upgrade. There were no allegations of crashes or injuries related to the alleged defect in the subject vehicles when the investigation was upgraded.

MANUFACTURER'S EVALUATION OF THE ALLEGED DEFECT: In response to an information request letter sent by ODI during PE07-036, Ford stated that its analysis of field data and part returns showed that the majority of the stalling-related reports and claims on the subject vehicles relate to gradual, progressive clogging of the internal fuel pump filter, resulting in some degree of reduced fuel pressure output from the fuel pump, with associated driveability symptoms. In addition, Ford indicated that a large portion of the non-stalling related claims may be related to wear or erosion of the fuel pump electric motor brushes/commutator.

Ford further stated that if the engine performance symptoms that occur as a result of progressive filter clogging or brush/commutator wear or erosion are ignored, and the engine ultimately stalls, the vehicle will not abruptly decelerate, but rather will coast. Electrical and lighting function, and foundation braking and steering function are maintained, allowing ample opportunity for the driver to other drivers via the turn signals and/or hazard flashers so they can take appropriate action.

ODI ANALYSIS: ODI analyzed complaints and warranty claims related to the subject component by failure mode, reviewed design and process changes that could be related to the alleged defect, compared rates of subject component complaints and claims related to engine stall by model year for

MY 2002 through 2005 Freelander vehicles and also conducted telephone surveys of vehicle complainants.

ODI analyzed information in the complaints to ODI and Land Rover and in the warranty claim records to determine the number of fuel pump module complaints and claims that resulted in incidents of stall while driving. Table 1 shows the percentage of warranty claims by the reported condition. The majority of warranty claims were related to “no start or hard start” and “fuel level sensor” complaints, which account for approximately 70 percent of the subject component claims. This analysis showed that 25 percent of the fuel pump module claims for the MY 2003 Freelander vehicles involved a stall while driving incident.

Condition	Warranty Claims	Percent of Claims for MY 2003 Freelander
No start or hard start	123	34.6%
Fuel level sensor problem	123	34.6%
Stalling	87	24.5%
Driveability (e.g., hesitation, reduced power)	22	6.2%

Table 1. Subject component warranty claims by condition, subject vehicles.

Information provided by Ford indicates that a new fuel pump and filter assembly was introduced into vehicle production on May 8, 2002. On February 28, 2003, fuel pump modules with a redesigned fuel pump filter were introduced to production. Though there were minor changes made throughout the production time period for the MY 2002 through MY 2005 vehicles, none of these changes corresponded with any observed changes in failure experience. Table 2 provides a breakdown of the complaints and warranty claims related to the alleged defect by model year for MY 2002 through 2005 Land Rover Freelander vehicles.

Model Year	Population	Complaints				Warranty Claims		Severity	
		ODI	Ford	Total	R/100k	Claims	% of Population	Crashes	Injuries
2002	16,285	1	71	72	442	75	0.5%	0	0
2003	9,985	8	53	61	611	87	0.9%	0	0
2004	4,775	0	25	25	524	15	0.3%	0	0
2005	2,436	0	20	20	821	29	1.2%	0	0
Total	33,481	9	169	178	532	206	0.6%	0	0

Table 2. Complaints and Warranty Claims related to the Alleged Defect by Model Year.

The complaint and warranty rates for the subject vehicles are higher than the MY 2002 and 2004 rates, but lower than for MY 2005 vehicles. Analysis of the warranty claim data shows that the rates of fuel pump failures resulting in engine stall are lower than rates that have resulted in safety recalls in other stalling investigations and similar to rates that have been observed in populations where the investigation was closed with no safety recall.

REASON FOR CLOSING: ODI’s analysis of the stalling incidents that have resulted from subject component failures found that they can occur at any speed and generally result in a no restart condition. These are generally considered to be factors that increase the severity of stalling

incidents. However, these incidents have occurred at relatively low rates in the subject vehicle population when compared with prior investigations involving similar categories of engine stall consequences. Further investigation of this matter would not be an efficient allocation of agency resources. Accordingly, this investigation is closed. The closing of this investigation does not constitute a finding by NHTSA that a safety-related defect does not exist. The agency will continue to monitor complaints and other information relating to the alleged defect in the subject vehicles and take further action in the future if warranted.

#