



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

# ODI RESUME

Investigation: EA 06-019  
 Prompted By: Consumer Complaints  
 Date Opened: 11/22/2006      Date Closed: 11/07/2007  
 Principal Investigator: Ali Motamedamin  
 Subject: Headlight Failure

Manufacturer: DaimlerChrysler Corporation  
 Products: 2002-2003 Dodge Neon  
 Population: 247,936

Problem Description: Alleged failure of the multifunction switch and/or its wiring harness, resulting in loss of headlights.

## FAILURE REPORT SUMMARY

	ODI	Manufacturer	Total
Complaints:	25	94	119
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	1559	1559

Description of Other: Warranty Claims

Action: This Engineering Analysis (EA) is closed.

Engineer: Ali Motamedamin A.M.  
 Div. Chief: Thomas Z. Cooper  
 Office Dir.: Kathleen C. DeMeter

Date: 11/07/2007  
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Summary: This EA was opened after receiving reports that the multifunction switch on these vehicles would fail, causing a loss of headlight illumination. Some complainants report loss of headlight function while for others temporary lighting was available by pulling on the multifunction switch stalk to illuminate high beam lighting. Analysis of the complaint and warranty data shows a low and declining failure trend. Further use of agency resources does not appear to be warranted; accordingly, this investigation is closed. The closing of this investigation does not constitute a finding by NHTSA that no safety-related defect exists. The agency reserves the right to take further action if warranted by the circumstances.

## **BACKGROUND:**

The National Highway Traffic Safety Administration's (NHTSA) investigation of headlight failures in the subject vehicles began when Preliminary Evaluation (PE 06-028) was opened on July 28, 2006. This PE examined all model year (MY) 2002-2003 Dodge Neon vehicles. Consumers alleged that multifunction switch failures caused loss of illumination of both the headlights and fog lamps. During the PE investigation ODI observed that the failure experiences for vehicles equipped with fog lamps was greater than it was for vehicles without fog lamps. The PE was upgraded to an Engineering Analysis (EA06-019) on November 22, 2006.

## **VEHICLE POPULATION:**

DaimlerChrysler Corporation (DCC) sold 247,936 subject vehicles in the U.S. The population of the subject vehicles equipped with optional fog lamps is 92,039 or 37.1% of the total population.

## **DESCRIPTION OF COMPONENT OR VEHICLE SYSTEM:**

The subject component is the subject vehicles' multifunction switch, which is located on the steering column (Figure 1). The multifunction switch has an external stalk on each side and a button on top for hazard light illumination. The left stalk provides control of exterior parking lights, low beam headlights, high beam headlights, interior lighting operation with a variable dimmer setting, fog lamp operation (only operative when the low beam headlights are active) and turn signal operation. The right stalk provides variable and non-variable wiper controls and washer fluid spray control.

The back of the multifunction switch contains a set of 20 pin contacts (Figure 2) that attach to a connector and a wiring harness located within the steering column (Figure 3). Figure 4 identifies the function of each pin connector.



Figure 1: Multifunction Switch

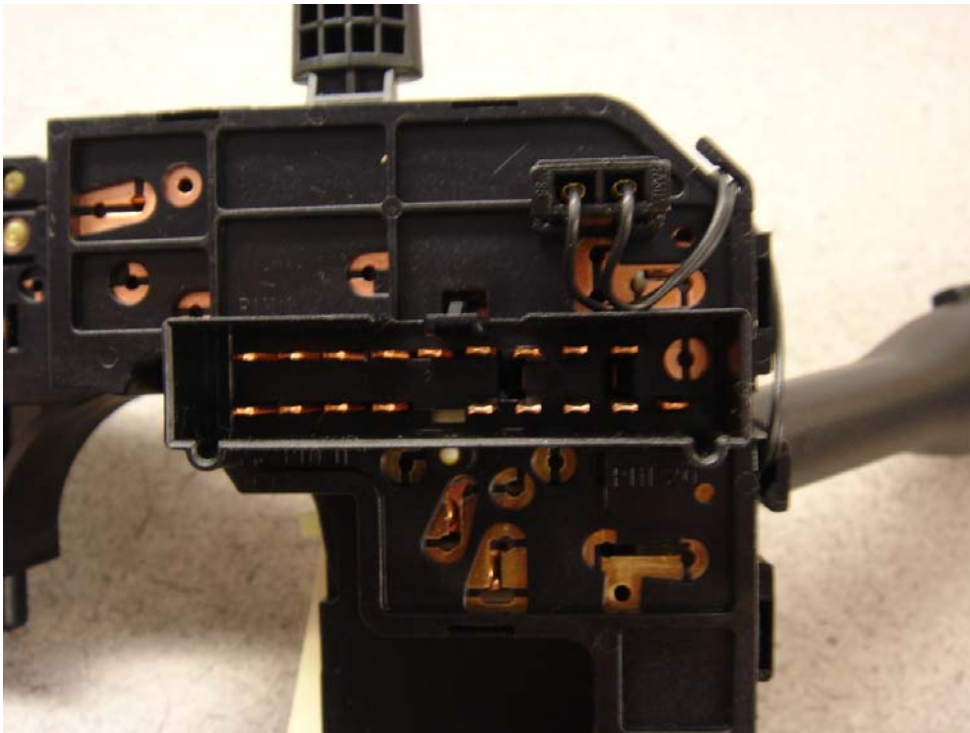


Figure 2: 20 Pin Contacts

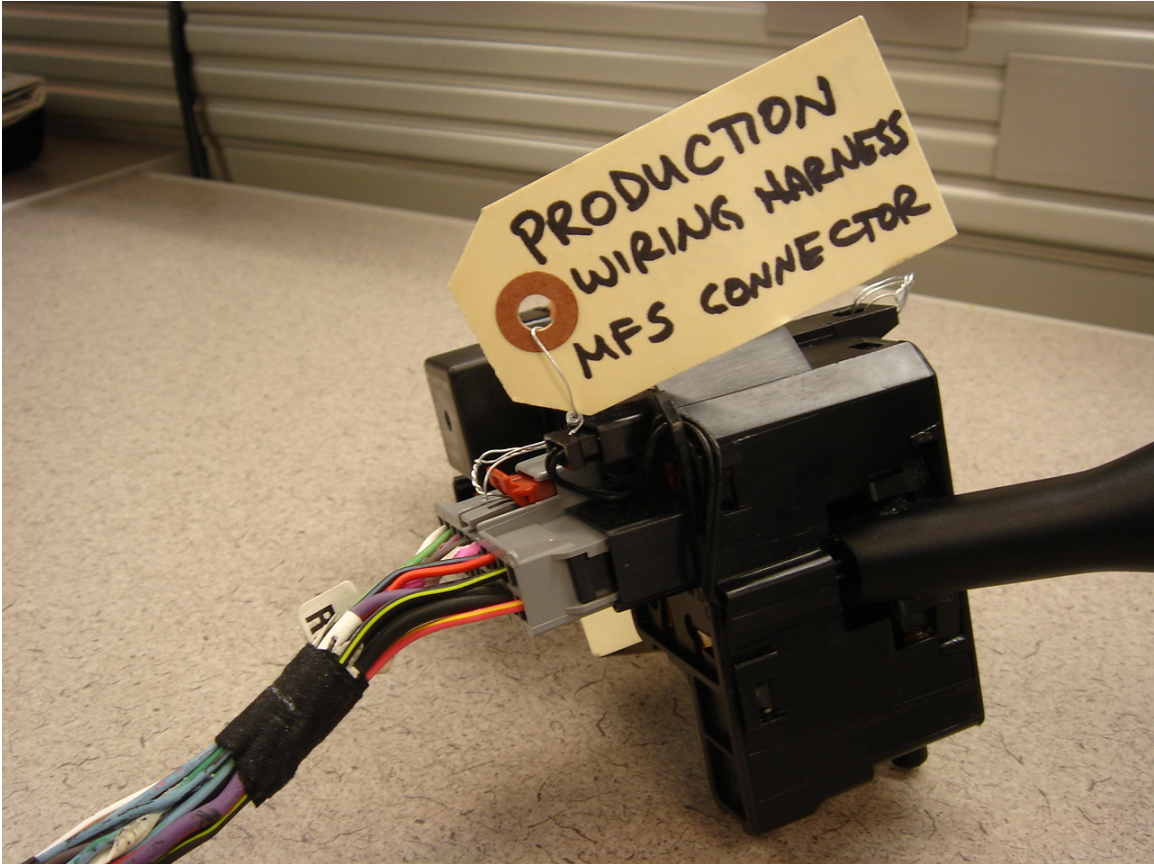


Figure 3: Multifunction Switch with attached connector from wiring harness

MULTI-FUNCTION SWITCH - GRAY 20 WAY

CAV	CIRCUIT	FUNCTION
1	L50 18WT/TN (EXCEPT EXPORT)	BRAKE LAMP SWITCH OUTPUT
2	L61 18LG	LEFT TURN SIGNAL
2	L61 18LG (EXPORT)	LEFT TURN SIGNAL
3	L6 20RD/WT	FUSED IGNITION SWITCH OUTPUT (RUN-ACC)
4	L63 18DG/RD	LEFT TURN SIGNAL
4	L63 18DG/RD (EXPORT)	LEFT TURN SIGNAL
5	L62 18BR/RD	RIGHT TURN SIGNAL
5	L62 18BR/RD (EXPORT)	RIGHT TURN SIGNAL
6	L60 18TN	RIGHT TURN SIGNAL
6	L60 18TN (EXPORT)	RIGHT TURN SIGNAL
7	Z3 20BK/OR	GROUND
8	E19 22RD	PANEL LAMPS DIMMER SIGNAL
9	L7 18BK/YL	HEADLAMP SWITCH OUTPUT
10	-	-
11	A15 18WT	FUSED B(+)
12	L38 16BR/WT (EXPORT)	REAR FOG LAMP FEED
12	L38 16BR/WT (EXPORT)	REAR FOG LAMP FEED
13	L4 14VT/WT (EXCEPT EXPORT)	DIMMER SWITCH LOW BEAM OUTPUT
13	F61 16WT/OR (EXPORT)	FUSED B(+)
14	F39 14PK/LG (EXCEPT EXPORT)	FRONT FOG LAMP SWITCH OUTPUT
14	L39 16LB (EXPORT)	FRONT FOG LAMP SWITCH OUTPUT
14	L39 16LB (EXPORT)	FRONT FOG LAMP SWITCH OUTPUT
15	-	-
16	L4 12VT/WT	DIMMER SWITCH LOW BEAM OUTPUT
17	L33 14LG/BR	DIMMER SWITCH HIGH BEAM OUTPUT
18	F3 12LB/OR	FUSED B(+)
19	F3 12LB/OR	FUSED B(+)
20	F33 18PK/RD	FUSED B(+)

Figure 4: Schematic of 20 Pin Connector

**THE ALLEGED DEFECT:**

The alleged defect is the failure or unsatisfactory performance of the multifunction switch, its wiring harness, and/or the harness connector resulting in lost proper headlight illumination of one or both headlights.

### **Failure/Malfunction Modes**

The primary cause of headlight failure is excessive heat at the 20 pin connector where the multifunction switch connects to the wiring harness inside the steering column.

According to information submitted by DCC, the addition of fog lamps increases the current draw through the multifunction switch connector pin number 16 from 8.6 amperes to 15.6 amperes. This increased current causes the grease coating on the contacts for pin 16 to dissipate and can lead to overheating and failure of the multifunction switch. DCC explained the problem as follows: “Temporary higher resistance in the lighting system is caused by dissipation of the electrical grease on the 20 pin connector when the fog lamps are on. In some cases higher resistance can affect headlight operation.”

### **DESIGN, MATERIAL AND/OR PRODUCTION MODIFICATIONS:**

There was one production modification made to the multifunction switch. The contact plating material of the 20 pin connection was originally made of copper. In May 2003, DCC changed the contact plating material to silver (Mod 1) to minimize grease dissipation and to reduce the possibility of overheating circuits.

### **SERVICE BULLETINS:**

DCC did not issue any Technical Service Bulletins regarding the replacement of the entire multifunction switch. However, on December 1, 2006, DCC issued two “Tech Tips” advising technicians to use MOPAR service kit part # 05183442AA, which contains a new connector and wiring kit. This allows technicians to replace the connector on the end of the wiring harness without replacing the entire harness in the steering column.

**COMPLAINTS:**

<u>Problem Experience</u>	<u>Fog Lamps Not Equipped</u>			<u>Fog Lamps Equipped</u>		
	<u>ODI</u>	<u>MFR</u>	<u>Total</u>	<u>ODI</u>	<u>MFR</u>	<u>Total</u>
<u>Owner/Field Reports</u>	8	10	18	17	84	101

Rate Comparison

<u>No Fog Lamps</u> <u>Complaint rate per 100,000</u> <u>vehicles</u>	<u>Fog Lamps Equipped</u> <u>Complaint rate per 100,000</u> <u>vehicles</u>
11.5	109.7

The complaint rate for the subject vehicles equipped with fog lamps is nearly 10 times greater than for subject vehicles without fog lamps. Accordingly, ODI concentrated its review of this issue on the subject vehicles with fog lamps. The data discussed in the rest of this report concerns those vehicles equipped with fog lamps.

**WARRANTY:**

The standard warranty coverage for the subject vehicles is three years or 36,000 miles. DCC received 1,225 claims from December 2001 to January 2007. See Figure 5, which shows the number of warranty claims by repair date. The chart shows that increasing repairs occur during the winter months (shorter daylight hours). Aside from the seasonal rise the chart shows the absence of any overall upward trend. At this point in time, the subject vehicles are beyond normal warranty coverage. However, dealers may offer “goodwill” coverage beyond the normal warranty.

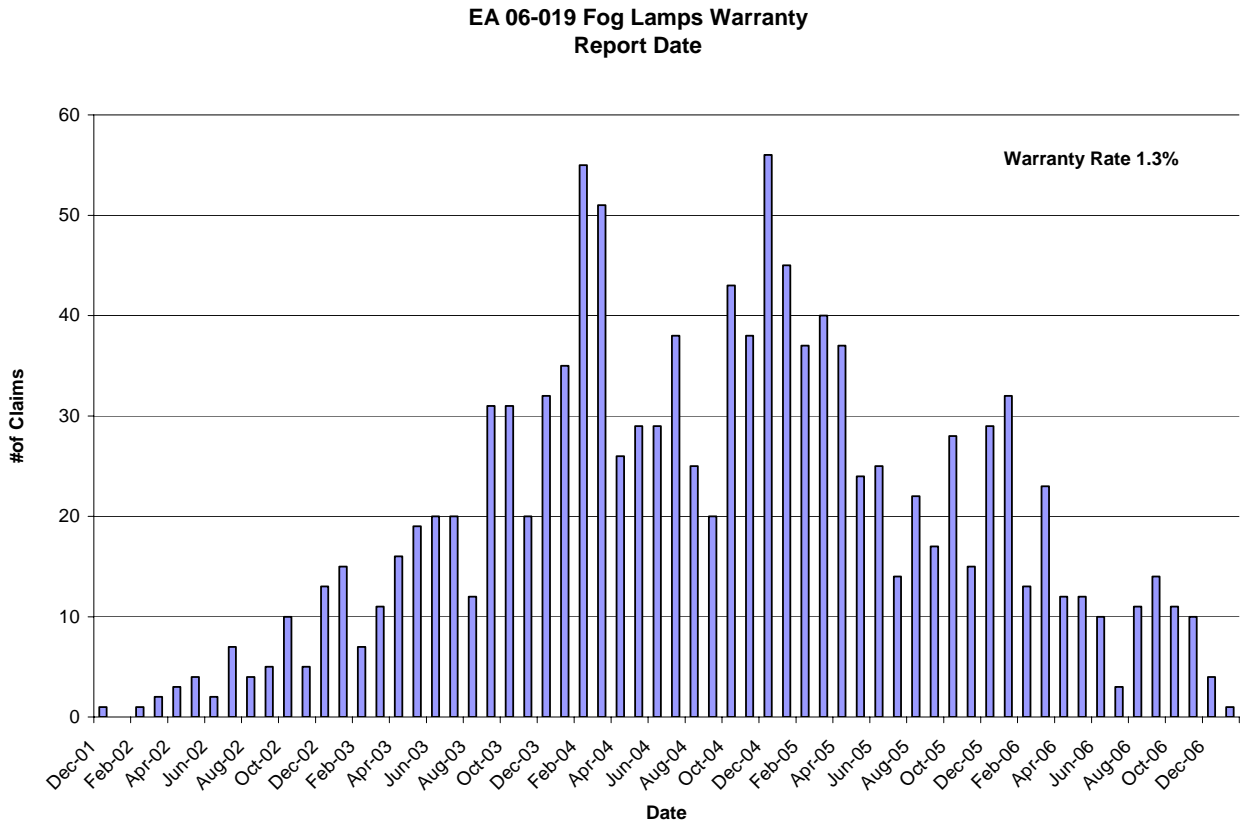


Figure 5: Warranty Claims by Repair Date

Figure 6 below shows both warranty time to failure (TTF) and the number of claims per months in service (MIS). DCC began to receive warranty claims on this issue early in the vehicle’s product life. Warranty claims continued at a relatively constant level for most of the warranty timeframe. Most of the vehicle population is beyond warranty coverage. The steep drop in claims (TTF) at 36 months supports this observation.



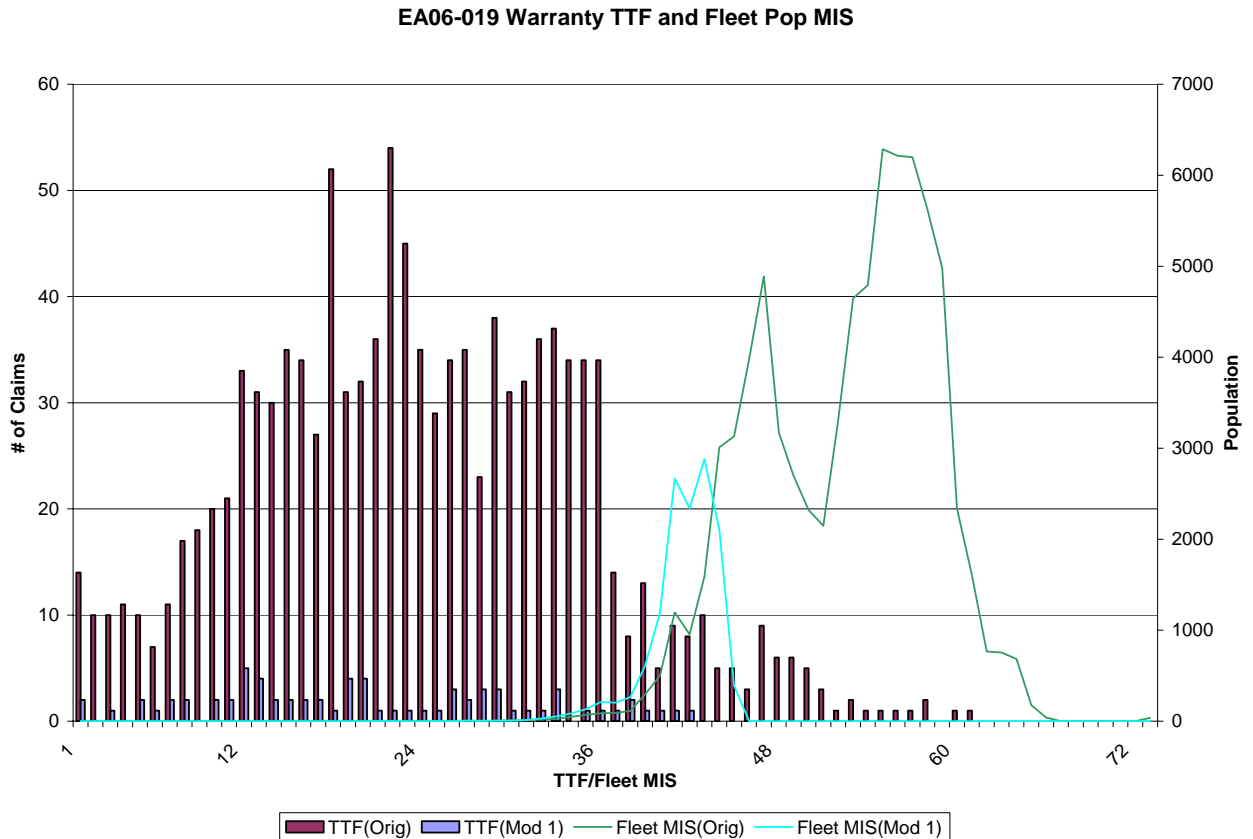


Figure 6: Warranty TTF and Fleet MIS

**MANUFACTURER’S EVALUATION OF ALLEGED DEFECT:**

According to DCC, “the alleged condition may influence customer satisfaction but is not a safety defect. The primary concern of consumers is the cost issue of repairing the switch and its associated wiring harness. This cost issue has been addressed with a service wiring connector kit.” The primary factor that leads to a failure of the multifunction switch - the loss of coating of grease applied to the contact to dissipate heat - has been addressed by a production modification in May 2003.

DCC claims that warning symptoms are exhibited when the multifunction switch begins to fail. The top of the steering column starts to get warm and in some cases smoke can be

seen coming out of that area. Further, DCC asserts that “some form of noticeable exterior lighting variation is present and is sufficient for the operator to take proper corrective action.” In addition, DCC points out that “no fires, injuries, deaths, crashes or property damage have been reported especially since these vehicles have been in the field for several years.”

### **ODI ANALYSIS:**

#### **Complaint/Incident Reports:**

ODI is aware of 101 complaints for vehicles equipped with fog lamps. ODI conducted a phone survey of 20 of those complainants. Complainants were asked additional details about their experience. Some complainants reported the complete loss of both headlights while for others there was some available lighting. Malfunction of the multifunction switch (headlights) occurred both while vehicles were being driven or were parked. Some of the incidents occurred during daylight. Those owners who encountered the condition at night were either able to temporarily regain lighting by pulling the stalk toward them and holding it in that position or reported no apparent safety issues associated with the malfunction.

#### **Vehicle Miles at Failure:**

Figure 7 shows the breakdown of complaints by vehicle mileage. The majority of the complaints (72%) are between 10,000 and 49,000 miles. The average mileage at failure for all known complaint vehicles is 33,518.

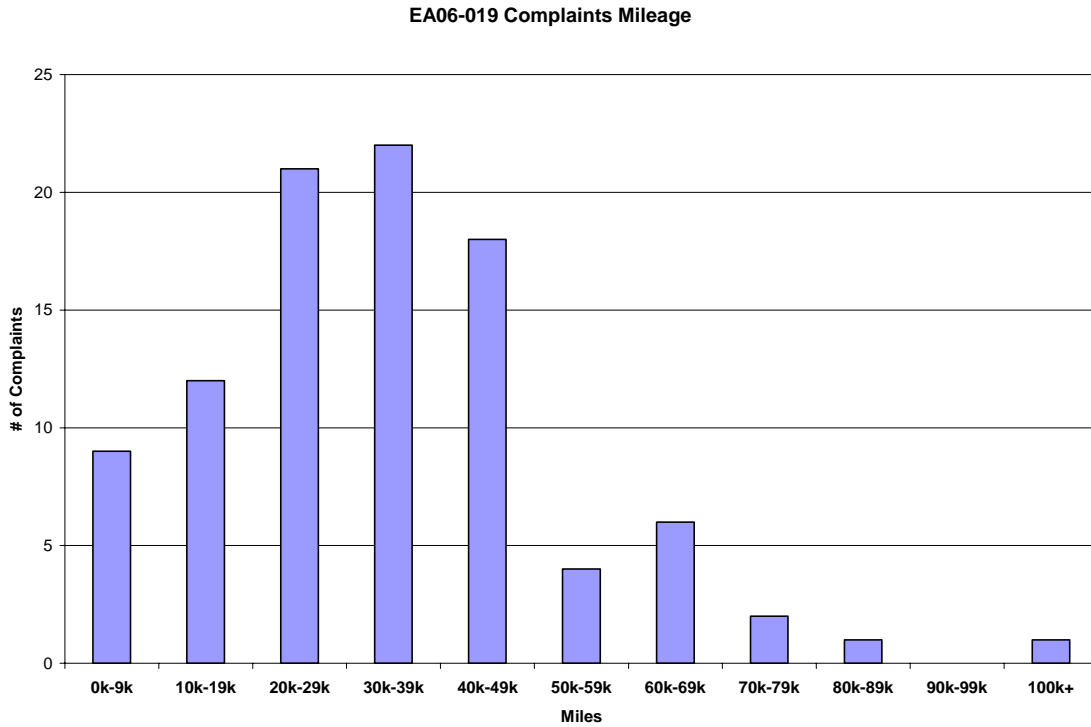


Figure 7: Complaints by Miles Traveled

### **Complaint Trend**

The large majority of the complaints (92%) occurred prior to the last 12 months. See Figure 8. ODI has received only 8 complaints since October 2006. Even though these vehicles are beyond warranty coverage (the loss of warranty coverage and the expense of repairing the connector to the multifunction switch might be motivation for one to complain), the trend in complaints appears to be diminishing. There are no indications from the data given to ODI that the declining complaint trend is likely to reverse.

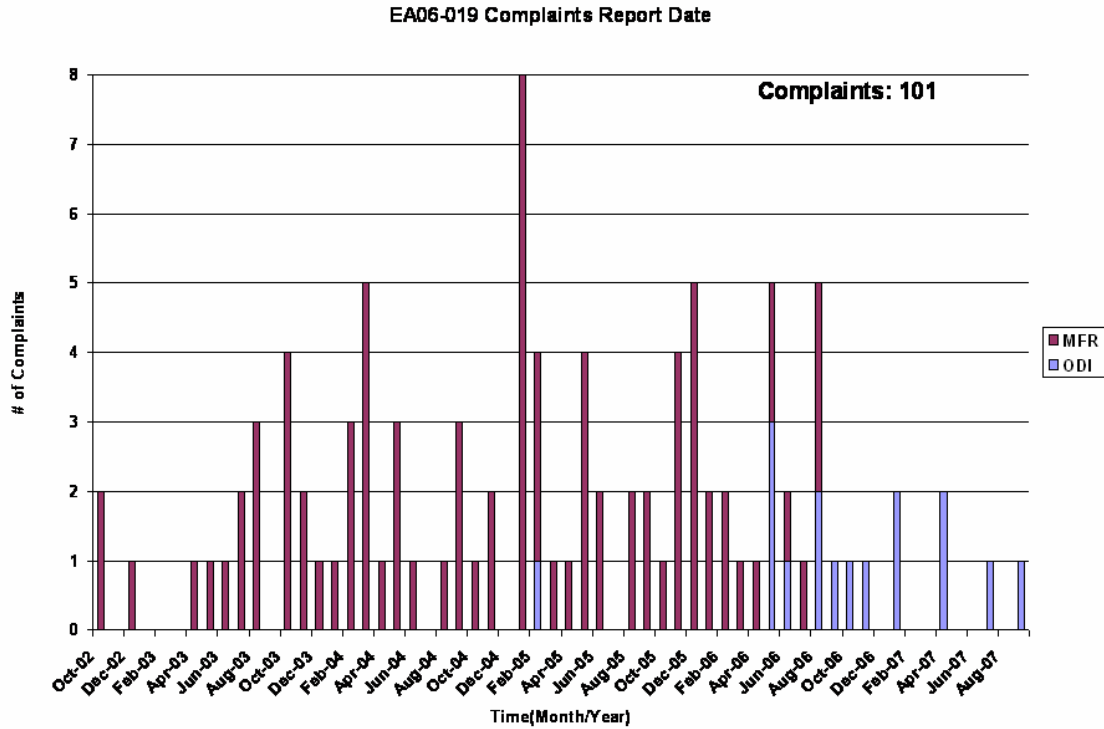


Figure 8: Incidents by Calendar Month

**REASON FOR CLOSING:**

Although the agency is very concerned whenever failures occur in an item of safety equipment such as headlights, a safety-related defect trend has not been identified at this time. Review of the complaint and warranty data indicates that failures of the subject components are low and are declining and many of the switches involved have been repaired. Given the preceding conditions, further use of agency resources does not appear to be warranted; accordingly, this investigation is closed. The closing of this investigation does not constitute a finding by NHTSA that no safety-related defect exists. The agency reserves the right to take further action if warranted by the circumstances.