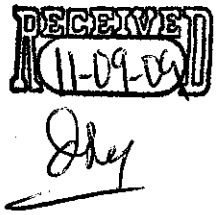
BMW Group

November 6, 2009

Scott Yon
Chief, Vehicle Integrity Division
Office of Defects Investigation
National Highway Traffic Safety Administration
1200 New Jersey Ave., S.E.
Washington, DC 20590



Re: PE09-036 (Questions 7 – 11)

Dear Mr. Yon:

With this letter, BMW is responding to NHTSA's Information Request dated September 2, 2009 in the above captioned matter. As agreed, we would be submitting our response to Questions 7 through 11 no later than November 9th. This letter, and the attachments, provides such information. As requested, BMW has repeated each question verbatim and provided our response accordingly. Our detailed responses are contained in the attachments.

Because our response to Questions 7 through 11, specifically CD No. 2, is considered by BMW to be confidential, it is not being submitted to your office. Rather, as instructed, CD No. 2 is being submitted to the Office of Chief Counsel, along with information supporting our request for confidentiality. We are attaching to this letter the non-confidential portion of our response.

Should you have any questions pertaining to the information enclosed with this letter, please contact me at (201) 571-5360, or Martin Rapaport of my staff at (201) 571-5208.

Sincerely,

Jan Urbahn
General Manager
Safety Engineering & Intelligent Transportation Systems

Attachment

Cc:

S. Wood, NHTSA (Office of Chief Counsel)

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BMW Group Company

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BMW Response
to
NHTSA PE09-036
(Questions 7 – 11)
6 Nov 09

7. **Provide electrical schematics of the 8 pin electrical connector to the rear lamp assembly and the associated harnessing/componentry involved in the rear lighting circuitry for both rear lamps including the associated ground wiring as it relates to the rear lamp assembly. The schematics requested should include the following information:**
   a. **all electrical devices involved in powering both rear lamp assemblies, including all mating connectors, pins and sockets, gang connectors, crimps, solder joints, ground points, and switches and other devices involved (i.e., anything that flows current for the rear lamps);**
   b. **where on the vehicle (the location) the circuitry and devices identified in item a above are located, and;**
   c. **which circuits and/or lamps the devices identified in item a above are involved.**

Response:

Question 7(a)

The following process can be used in order to review the applicable electrical circuitry.

First, refer to Attachment "Q(7)(a)(1)" on CD No. 2. The electrical circuitry from the light switch cluster to the rear lamp is identified by "49HL", "54L", "58HL", "58HL_2", and "31L".

Second, refer to Attachment "Q(7)(a)(2)(i)" on CD No. 2. This particular document "(i)"illustrates, as an example, the left-side electrical circuitry between the light switch cluster ("A3", "X12") and the left tail lamp ("X338", "X329"):

- X338 is the 8-pin connector (wiring 49HL, 54L, 58HL_2, 58HL_3, 31L) of the left rear lamp assembly,
- X329 is the 3-pin connector (wiring RS, 31L, 58) of the left rear lamp assembly.

Please note that at the present time, we have only translated one of the Attachment "Q(7)(a)(2)" documents, as all documents within that attachment grouping are similar. If necessary, we will provide translations for all of the documents within that attachment grouping.

Third, refer to Attachment "Q(7)(a)(3)(i)" on CD No. 2. This particular document "(i)" describes, as an example, the assembly / equipment / parts of the whole wiring harness. The codes noted above are also contained in this document, e.g., the light switch cluster "X12" (on page 1 of 29), and the 8-pin connector "X338" (on page 7 of 29), with its corresponding part no. 7 519 956. Wire "54L", for example, running between "X12" and "X338", is connected to the rear lamp by socket contact no. 1 427 607 (see page 7, X338, LTG.NR. 3800).

Please note that at the present time, we have only translated one of the Attachment "Q(7)(a)(3)" documents, as all documents within that attachment grouping are similar. If necessary, we will provide translations for all of the documents within that attachment grouping.

Fourth, refer to Attachment "Q(7)(a)(4)(i) on CD No. 2. This particular document "(i)" identifies, as an example, part no. 1 427 607, and lists the specifications of that connection element.

The process noted above can be used in order to identify each individual wiring connection of the rear lamp assembly wiring harness by using Attachments "Q(7)(a)(1)", "Q(7)(a)(2)", "Q(7)(a)(3)", and "Q(7)(a)(4)".

Attachment "Q(9)" on CD No. 2 can also be used as a reference.

Question 7(b)

Attachment "Q(7)(b)" on CD No. 2 contains the applicable technical documentation.

Question 7(c)

Please refer to the response to Question 7(a).

8. Provide the following information regarding the rear lamp 8 pin connector assembly

a. the name of the component manufacturer;
b. the part numbers for both mating halves of the connector housings;
c. the part number for the male and female terminals (pins and sockets) specified for the housings;
d. the maximum power rating the connector manufacturer recommends for the terminals and connector housing (by terminal and cavity if needed); and,
e. the typical or average power that flows through each terminal (by cavity) during normal use of the vehicle, and as specified in the lighting system design.

Response:

Question 8(a)

The manufacturer of the rear lamp assembly is:

Leopold Kostal GmbH & Co. KG
An der Bellmerei 10
D-58513 Lüdenscheid

Question 8(b)

Attachment "Q(8)(b)" on CD No. 2 contains the applicable engineering drawings that identify the part numbers for the connector housings. Attachment "Q(9)(d)" also provides further related information regarding connector housing part numbers.

Question 8(c)

Attachment "Q(8)(c)" on CD No. 2 contains the applicable engineering drawings that identify the part numbers for the male/female terminals (pins and sockets) for the connector housings.

Question 8(d)

Attachment "Q(8)(d)" on CD No. 2 contains the applicable technical documents that identify the maximum power rating recommended by the connector manufacturer for the terminals and connector housing.

Question 8(e)

Attachment "Q(8)(e)" on CD No. 2 contains the applicable technical documentation.

9. **Provide an engineering and/or mechanical drawing of the entire rear lamp assembly. The drawing should identify all circuit paths within the lighting assembly and all components within the lamp assembly that are powered (flow current), such as light bulbs, bulb holders, or buss devices, and should also identify the maximum power ratings for each circuit and component identified.**

Response:

Attachment "Q(9)" on CD No. 2 contains the applicable engineering drawings. Contained on the engineering drawings are maximum power ratings for the various rear lamp assembly components.

10. **Explain the technical rational behind the technical service bulletin (TSB) submitted to ODI during DP09-002, [BMW TSB Number SI B 63 03 06] and further explain how the TSB addresses and remedies the alleged defect. Also provide the maximum power rating and the typical power levels that occur in normal use for all components used in the repair the TSB specifies.**

Response:

In order to remedy vehicles in the field that were experiencing the issue that is the subject of this Information Request, BMW issued Service Information Bulletin (SIB) 63 06 09. The remedy contained in the SIB consisted of adding a secondary ground connection, in parallel to the primary ground connection, to the circuit of the rear lamp assembly, in addition to replacing the 8-pin connector housing. This was done in order to reduce the possibility of greater-than-specified current that might pass through the primary ground connection at the location of the 8-pin connector. With the addition of a secondary ground connection, current is divided between the primary- and secondary-ground connections (dependent upon the resistance within those circuits), and therefore, mitigates any additional current at the primary connection.

BMW believes that issuing SIB 63 03 09 is a sufficient response (field action) to this issue for all the reasons explained in our response to Question 12 of DP09-002 and repeated in response to Question 11 herein.

In brief, through system design (multiple lamp redundancies, various driver warnings, self-containment of fault), as well as, field experience (extremely low risk (no known crashes, injuries), no legal or property-damage claims, and minimal "first-level" customer complaints), the issue has presented itself as a customer satisfaction, rather than as a customer safety,

issue. Accordingly, BMW issued SIB 63 06 09, as an appropriate response, in order to address the problem.

The maximum total current that can flow through both ground cables is 5.6 A. During normal vehicle usage, (rear tail lamp illuminated (brakes not applied / turn-signals not selected)), the typical current is 2.8 A. Therefore, the maximum total current of each (primary and secondary) ground cable is 2.8 A. Similarly, during normal vehicle usage, the typical current (primary and secondary) is 1.4 A.

11. Furnish BMW's assessment of the alleged defect in the subject vehicle, including:

a. The causal or contributory factor(s);
b. The failure mechanism(s);
c. The failure mode(s);
d. The risk to motor vehicle safety that it poses;
e. What warnings, if any, the operator and the other persons both inside and outside the vehicle would have that the alleged defect was occurring or subject component was malfunctioning; and
f. The reports included with this inquiry.

Response:

Our response to Question11 is identical to that which was provided in our response to Question 12 of DP09-002, and is repeated below. Please note that references below to the attachments refer to those attachments which were a part of our response to Question 12 of DP09-002.

Question 11(a), (b), and (c)

The material combination of the subject component (connector) and the rear lamp (zinc-plated at the wiring-harness (connector) side, tin-plated at lamp side), can result, in combination with aging and environmental influences, in an increase of the resistance at the contact points. This could lead to damage at the ground terminal (location of the highest current load) of the connector. As a result, an intermittent or permanent loss of functionality of one compartment of the tail lamp (including brake and turn-signal) could occur.

Question 11(d) and (e)

BMW believes that the condition that is the focus of this Information Request does not pose an unreasonable risk to motor vehicle safety. This is supported by the system design, as well as, by the field experience, of the subject component as set forth below:

SYSTEM DESIGN

Multiple Redundancies of Vehicle Brake Lamps

If the condition is occurring in a subject vehicle, such that one of the brake lamps is rendered inoperative, multiple redundancies of the brake lamps exist so that a driver of a "following" vehicle knows that the subject vehicle is braking.

The brake lamp on the non-affected side of the vehicle remains operational.

The center high-mounted stop lamp (CHMSL) remains operational.

This is depicted in Photo 1 on Attachment "Q12 – PHOTOS".

Therefore, sufficient brake lamp illumination is available for the driver of a "following" vehicle.

Multiple Redundancies of Vehicle Tail Lamps

If the condition is occurring in a subject vehicle, such that a tail lamp is rendered inoperative in one of the rear tail lamps, multiple redundancies of tail lamps exist so that a driver of a "following" vehicle knows that there is a vehicle in front of their vehicle.

An additional tail lamp on the affected side of the vehicle remains operational. This additional tail lamp on the affected side fulfills all photometric compliance requirements with FMVSS108 by itself.

The tail lamp on the non-affected side of the subject vehicle also remains operational.

This is depicted in Photo 2 on Attachment "Q12 – PHOTOS".

Redundancy of Rear Turn Signal via Side/Lateral Turn Signal

The subject vehicles contain a side/lateral turn signal near the front wheelhouse as an added safety feature. This lamp is not required by FMVSS 108. If a subject vehicle, in which the condition is occurring, prepares to turn, the driver of the "following" vehicle will be able to view the side/lateral turn signal on the subject vehicle.

In fact, due to the design and location of the side turn signal, it will be able to be viewed almost immediately as the subject vehicle moves into position to turn.

This is depicted in Photos 3 and 4 on Attachment "Q12 – PHOTOS", as well as, in the Diagram on Attachment "Q12 – DIAGRAM".

Sufficient Warning to Driver of Subject Vehicle

A driver of a subject vehicle, in which the condition is occurring, is presented with sufficient warnings so that the driver can present the vehicle for service and repair.

If the condition is occurring, a warning lamp is illuminated in the vehicle's "message control center". The "message control center" is a small area of the instrument cluster immediately in front of the driver, where certain information is displayed, such as that described. In this particular case, a small outline of a car is shown, and, a lamp symbol at the specific location in which the condition is occurring. Therefore, the driver is presented with a warning indicator in order to have the vehicle inspected for a possible non-functioning lamp.

This is depicted in Photo 5 on Attachment "Q12 – PHOTOS".

Furthermore, during each cycle of the ignition key, if the condition is present, then an audible warning alerts the driver.

In addition, if the condition is occurring, then the visible control symbol for the turn signal in the instrument cluster flashes at double the normal frequency, alerting the driver to the presence of the condition. Also for the turn signal, if the condition is occurring, an audible warning is provided via the double frequency of the audible signal.

The warning lamp in the "message control center" would also alert the driver in the case of a bulb which has reached the end of its useful life, and therefore, the risk-level is no different.

Failure Mode is Self-Contained

If the condition is occurring in a subject vehicle, it is self-contained. If there is damage to the subject component (connector), it does not propagate beyond the lamp housing, if at all. Although plastic melting can occur, there is no risk of fire occurring to the vehicle.

This is also reflected in the field experience of the subject vehicles.

FIELD EXPERIENCE

Field Experience Indicates That the Risk is Low

BMW is not aware of any crashes, injuries, or fatalities which have occurred as a result of the condition that is the focus of this Information Request. Similarly, the subject vehicles are not over-represented in crash experience as a result of this condition.

Legal Claim Experience

BMW has not received any legal claims, involving death or injury alleged to have occurred as a result of the condition, nor notices alleging or proving that a death or injury was caused by the condition. Therefore, there are no "...reports involving a crash, injury, or fatality..." based on such legal claims or notices, because such legal claims or notices have not been received by BMW.

Most Customer Complaints are "Second-Level" Complaints

As noted within the customer complaint data, most of the complaints received were considered "second-level" complaints. In other words, these complaints were not initiated by the customers themselves and presented to BMW. Rather, these complaints were in response to post-vehicle-service telephone surveys which were conducted to assess a vehicle owner's service experience. These surveys are performed in the interest of customer satisfaction.

Pre-turn Braking Alerts a Driver of a Following Vehicle

In the vast majority of cases involving a subject vehicle preparing to turn, the driver of that vehicle applies the service brakes so that the vehicle can safely make the turn; otherwise, the driver/vehicle may not be able to "negotiate" the turn/curve.

Therefore, a driver of a "following" vehicle is alerted (warned) that some action is about to occur in the subject vehicle. In the situation described, the driver of the "following" vehicle would

typically anticipate that the subject vehicle is preparing to either a) stop, or, b) turn. In either case, the driver of the "following" vehicle should, by the presence of the subject vehicle's brake lamps, slow down in order to properly respond to the actions of the subject vehicle.

Furthermore, the side turn signal would become even more conspicuous to a driver of a "following" vehicle if the condition was occurring in the subject vehicle.

Pre-turn Movement Alerts a Driver of a Following Vehicle

In the vast majority of cases involving a vehicle preparing to turn, the driver of that vehicle starts to "position" the vehicle in anticipation of the turn. In other words, the driver, during pre-turn braking, gradually, and then, as the location of the turn approaches, more so, turns the steering wheel "into" the turn. In doing so, the vehicle starts to move in the direction of the turn. As the vehicle starts to move in the direction of the turn, the side turn signal will, almost immediately, be visible to the driver of a "following" vehicle. Therefore, a driver of a "following" vehicle can anticipate that the subject vehicle is intending to turn, and accordingly, can properly respond. Also, drivers of on-coming vehicles are not affected as all required front turn signals continue to function properly.

ADDITIONAL FACTORS

In addition to system design and field experience, there are other factors that support our belief that the condition does not pose an unreasonable risk to motor vehicle safety.

Sufficient Warning to Driver of Subject Vehicle

As described above in the section regarding system design, a driver of a subject vehicle, in which the condition is occurring, is presented with sufficient warnings so that the driver can present the vehicle for service and repair.

If the condition is occurring, a warning lamp is illuminated in the vehicle's "message control center". During each cycle of the ignition key, if the condition is present, then an audible warning alerts the driver.

Additionally, if the condition is occurring, then the visible control symbol for the turn signal in the instrument cluster flashes at double the normal frequency, alerting the driver to the presence of the condition. Also for the turn signal, if the condition is occurring, an audible warning is provided via the double frequency of the audible signal.

Comparison of PE09-036 (DP09-002) to Other NHTSA Cases

PE08-066

In PE08-066, the issue involved headlamp failure. NHTSA closed PE08-066, with no further action by Ford. NHTSA closed PE08-066 based, in part, on the fact that neither Ford, nor NHTSA, had received any reports of crashes, injuries, or fatalities. The same is true in PE09-036 (DP09-022).

PE08-059

In PE08-059, the issue involved the vehicle displaying the wrong exterior turn signal, i.e., the

"other" turn signal relative to that which was selected by the driver via the turn signal lever. NHTSA closed PE08-059 based, in part, on the fact that neither Chrysler, nor NHTSA, had received any reports of crashes, injuries, or fatalities. The same is true in PE09-036 (DP09-002).

PE02-064 / EA02-037

In PE02-064 / EA02-037, the issue involved both rear and front turn signals becoming inoperative. Furthermore, the warning indicators that alert a driver that a problem is occurring, both the visible, and the audible, indicators, also became inoperative. In PE09-036 (DP09-022), all available warning indicators, both visible, and audible, are available, function properly, and alert the driver in a situation in which the condition is occurring.