



U.S. Department
of Transportation

**National Highway
Traffic Safety
Administration**

SEP 29 2011

1200 New Jersey Avenue SE.
Washington, DC 20590

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Jan Urbahn, General Manager
Safety Engineering and Intelligent Transportation Systems
BMW of North America, LLC
P.O. Box 1227
Westwood, NJ 07675-1227

NVS213dlr
PE11-025

Dear Mr. Urbahn:

This letter is to inform you that the Office of Defects Investigation (ODI) of the National Highway Traffic Safety Administration (NHTSA) has opened a Preliminary Evaluation (PE11-025) to investigate allegations of vehicle rollaway in model year (MY) 2002 through 2008 BMW 7-Series sedans manufactured by BMW for sale in the United States, and to request certain information.

This office has received two complaints from consumers, and has identified additional incidents in Early Warning Report (EWR) data submitted to this office by BMW, related to incidents of vehicle rollaway in the subject vehicles which are equipped with shift-by-wire technology. Some of the data reports vehicle crashes into other objects (i.e. garage doors and other vehicles) before coming to a rest. Copies of the two complaints received by ODI are enclosed for your information.

Unless otherwise stated in the text, the following definitions apply to these information requests:

- **Subject vehicles:** all MY 2002 through 2008 BMW 7-Series vehicles manufactured for sale or lease in the United States, including "states" as defined in 49 U.S.C. 30102(a)(10).
- **Subject system:** Shift-by-wire system, including the engine Start/Stop button, controlling software and associated communication busses.
- **BMW:** BMW of North America, LLC, including its parent company (collectively BMW) all of its past and present officers and employees, whether assigned to its principal offices or any of its field or other locations, including all of its divisions, subsidiaries (whether or not incorporated) and affiliated enterprises and all of their headquarters, regional, zone and other offices and their employees, and all agents, contractors, consultants, attorneys and law firms and other persons engaged directly or indirectly (e.g., employee of a consultant) by or under the control of BMW (including all business units and persons



previously referred to), who are or, in or after January 1, 2000, were involved in any way with any of the following related to the alleged defect in the subject vehicles:

- a. Design, engineering, analysis, modification or production (e.g. quality control);
 - b. Testing, assessment or evaluation;
 - c. Consideration, or recognition of potential or actual defects, reporting, record-keeping and information management, (e.g., complaints, field reports, warranty information, part sales), analysis, claims, or lawsuits; or
 - d. Communication to, from or intended for zone representatives, fleets, dealers, or other field locations, including but not limited to people who have the capacity to obtain information from dealers.
- **Alleged defect:** Any one or more of the following symptoms or conditions:
 - Vehicle rollaway;
 - Any complaints alleging that the shift-by-wire system shifted to Neutral when the operator attempted or expected a shift to Park; or
 - Any other complaints alleging failure of the shift-by-wire system to shift to Park when the engine is turned off using the engine Start/Stop button.
 - **Document:** "Document(s)" is used in the broadest sense of the word and shall mean all original written, printed, typed, recorded, or graphic matter whatsoever, however produced or reproduced, of every kind, nature, and description, and all non-identical copies of both sides thereof, including, but not limited to, papers, letters, memoranda, correspondence, communications, electronic mail (e-mail) messages (existing in hard copy and/or in electronic storage), faxes, mailgrams, telegrams, cables, telex messages, notes, annotations, working papers, drafts, minutes, records, audio and video recordings, data, databases, other information bases, summaries, charts, tables, graphics, other visual displays, photographs, statements, interviews, opinions, reports, newspaper articles, studies, analyses, evaluations, interpretations, contracts, agreements, jottings, agendas, bulletins, notices, announcements, instructions, blueprints, drawings, as-builts, changes, manuals, publications, work schedules, journals, statistical data, desk, portable and computer calendars, appointment books, diaries, travel reports, lists, tabulations, computer printouts, data processing program libraries, data processing inputs and outputs, microfilms, microfiches, statements for services, resolutions, financial statements, governmental records, business records, personnel records, work orders, pleadings, discovery in any form, affidavits, motions, responses to discovery, all transcripts, administrative filings and all mechanical, magnetic, photographic and electronic records or recordings of any kind, including any storage media associated with computers, including, but not limited to, information on hard drives, floppy disks, backup tapes, and zip drives, electronic communications, including but not limited to, the Internet and shall include any drafts or revisions pertaining to any of the foregoing, all other things similar to any of the foregoing, however denominated by BMW, any other data compilations from which information can be obtained, translated if necessary, into a usable form and any other documents. For purposes of this request, any document which contains any note, comment, addition, deletion, insertion, annotation, or otherwise comprises a non-identical copy of another document shall be treated as a separate document subject to

production. In all cases where original and any non-identical copies are not available, "document(s)" also means any identical copies of the original and all non-identical copies thereof. Any document, record, graph, chart, film or photograph originally produced in color must be provided in color. Furnish all documents whether verified by BMW or not. If a document is not in the English language, provide both the original document and an English translation of the document.

- **Other Terms:** To the extent that they are used in these information requests, the terms "claim," "consumer complaint," "dealer field report," "field report," "fire," "fleet," "good will," "make," "model," "model year," "notice," "property damage," "property damage claim," "rollover," "type," "warranty," "warranty adjustment," and "warranty claim," whether used in singular or in plural form, have the same meaning as found in 49 CFR 579.4.

In order for my staff to evaluate the alleged defect, certain information is required. Pursuant to 49 U.S.C. § 30166, please provide numbered responses to the following information requests. Insofar as BMW has previously provided a document to ODI, BMW may produce it again or identify the document, the document submission to ODI in which it was included and the precise location in that submission where the document is located. When documents are produced, the documents shall be produced in an identified, organized manner that corresponds with the organization of this information request letter (including all individual requests and subparts). When documents are produced and the documents would not, standing alone, be self-explanatory, the production of documents shall be supplemented and accompanied by explanation.

Please repeat the applicable request verbatim above each response. After BMW's response to each request, identify the source of the information and indicate the last date the information was gathered.

1. State, by model and model year, the number of subject vehicles BMW has manufactured for sale or lease in the United States. Separately, for each subject vehicle manufactured to date by BMW, state the following:
 - a. Vehicle identification number (VIN);
 - b. Make;
 - c. Model;
 - d. Model Year;
 - e. Ignition key technology (i.e. Comfort Access equipped);
 - f. Version of shift-by-wire control software installed at delivery;
 - g. Date of manufacture;
 - h. Date warranty coverage commenced; and
 - i. The State in the United States where the vehicle was originally sold or leased (or delivered for sale or lease).

Provide the table in Microsoft Access 2003 or 2007, or a compatible format, entitled "PE11-025 PRODUCTION DATA." See Enclosure Data Collection Disc, for a pre-formatted table that provides further details regarding this submission.

2. State the number of each of the following, received by BMW, or of which BMW is otherwise aware, which relate to, or may relate to, the alleged defect in the subject vehicles:
 - a. Consumer complaints, including those from fleet operators;
 - b. Field reports, including dealer field reports;
 - c. Reports involving a crash, injury, or fatality, based on claims against the manufacturer involving a death or injury, notices received by the manufacturer alleging or proving that a death or injury was caused by a possible defect in a subject vehicle, property damage claims, consumer complaints, or field reports;
 - d. Property damage claims; and
 - e. Third-party arbitration proceedings where BMW is or was a party to the arbitration; and
 - f. Lawsuits, both pending and closed, in which BMW is or was a defendant or codefendant.

For subparts "a" through "d," state the total number of each item (e.g., consumer complaints, field reports, etc.) separately. Multiple incidents involving the same vehicle are to be counted separately. Multiple reports of the same incident are also to be counted separately (i.e., a consumer complaint and a field report involving the same incident in which a crash occurred are to be counted as a crash report, a field report and a consumer complaint).

In addition, for items "c" through "f," provide a summary description of the alleged problem and causal and contributing factors and BMW's assessment of the problem, with a summary of the significant underlying facts and evidence. For items "e" and "f" identify the parties to the action, as well as the caption, court, docket number, and date on which the complaint or other document initiating the action was filed.

3. Separately, for each item (complaint, report, claim, notice, or matter) within the scope of your response to Request No. 2, state the following information:
 - a. BMW's file number or other identifier used;
 - b. The category of the item, as identified in Request No. 2 (i.e., consumer complaint, field report, etc.);
 - c. Vehicle owner or fleet name (and fleet contact person);
 - d. Vehicle owner address, city, and state;
 - e. Vehicle owner telephone number;
 - f. Vehicle owner email address;
 - g. Vehicle's VIN;
 - h. Vehicle's make, model and model year;
 - i. Vehicle's mileage at time of incident;
 - j. Incident date;
 - k. Report or claim date;
 - l. Whether a crash is alleged;
 - m. Whether property damage is alleged;
 - n. Number of alleged injuries, if any; and
 - o. Number of alleged fatalities, if any.

Provide this information in Microsoft Access 2003 or 2007, or a compatible format, entitled "PE11-025 REQUEST NUMBER TWO DATA." See Enclosure, Data Collection Disc, for a pre-formatted table that provides further details regarding this submission.

4. Produce copies of all documents related to each item within the scope of Request No. 2. Organize the documents separately by category (i.e., consumer complaints, field reports, etc.) and describe the method BMW used for organizing the documents.
5. For each MY 2002 through 2003 incident vehicle within the scope of Request No. 2, provide copies of service histories related to vehicle software reprogramming/reflashing prior to the incident date and the state what level of shift-by-wire control strategy software was installed at the time of the incident (i.e., the shift logic when engine Start/Stop button is pressed).
6. Describe all modifications or changes made by, or on behalf of, BMW in the design, material composition, manufacture, quality control, supply, or installation of the subject system (including hardware and software), from the start of production to date, which relate to, or may relate to, the alleged defect in the subject vehicles. For each such modification or change, provide the following information:
 - a. The date or approximate date on which the modification or change was incorporated into vehicle production;
 - b. A detailed description of the modification or change;
 - c. The reason(s) for the modification or change;
 - d. The part number(s) (service and engineering) or software version number(s) of the original component or software, the part description (including acronyms), and the supplier;
 - e. The part number(s) (service and engineering) or software version number(s) of the modified component or software;
 - f. Whether the original unmodified component or software version was withdrawn from production and/or sale, and if so, when;
 - g. When the modified component or software revision was made available as a service component or service reflash/reprogram; and
 - h. Whether the modified component or software version can be interchanged or reflashed/reprogrammed with earlier production components.
7. Describe all assessments, analyses, tests, test results, studies, surveys, simulations, investigations, inquiries and/or evaluations (collectively, "actions") that relate to the alleged defect in the subject vehicles that have been conducted, are being conducted, are planned, or are being planned by, or for, BMW. For each such action, provide the following information:
 - a. Action title or identifier;
 - b. The actual or planned start date;
 - c. The actual or expected end date;
 - d. Brief summary of the subject and objective of the action;
 - e. Engineering group(s)/supplier(s) responsible for designing and for conducting the action; and
 - f. A brief summary of the findings and/or conclusions resulting from the action.

For each action identified, provide copies of all documents related to the action, regardless of whether the documents are in interim, draft, or final form. Organize the documents chronologically by action.

8. Provide the following information regarding all versions of the subject system and the engine Start/Stop button used in the subject vehicles:
 - a. Describe the functionality of engine Start/Stop button, also including the control logic for the engine Start/Stop button when the vehicle is moving *and* when the vehicle is stopped;
 - b. Describe all software and hardware filtering (including that related to debounce) and built-in fault maturity mechanisms for ignition/gear shifter signals on both the ignition/gear shifter assemblies and the Transmission Control Module (TCM);
 - c. Provide a synopsis of system (software and hardware) verification strategies including any online (real-time)/offline (algorithm) hardware-in-the-loop (HIL) simulations and list any model interoperability across different platforms; and
 - d. Provide an overview of all differences between in the BMW 7-series TCM, ignition switch, and gear selector software and the software used in other BMW products equipped with shift-by-wire and/or Comfort Access technologies. Include a discussion of modeling language, software reusability and maintainability, fault tolerance and modularity. List both platform independent and platform specific software functions, development tools and any associated pieces of hardware.
9. Furnish BMW's assessment of the alleged defect in the subject vehicles for each version of engine Start/Stop button control software used and for vehicles with and without Comfort Access, including:
 - a. All circumstances BMW has identified that could result in the subject system shifting to, or remaining in, Neutral when the driver presses the engine Start/Stop button to stop the engine;
 - b. All vehicle design and human factors causal or contributory factor(s) related to the potential for unintentional/unexpected shift to Neutral when a driver is attempting to park a subject vehicle, include specific event sequence diagrams for the operator control actions/inputs necessary for each scenario described;
 - c. BMW's assessment of the reason(s) for variability in the subject system shifting depending on how the engine Start/Stop button is pressed;
 - d. State whether variability discussed in item "c" is a result of design intent and, if so, provide copies of relevant engineering documentation;
 - e. The risk to motor vehicle safety that it poses, including BMW's assessment of the causes and contributing factors for all crash reports submitted in response to this information request;
 - f. What warnings, if any, the operator of the vehicle would have that the alleged defect was occurring or subject system was malfunctioning, and
 - g. The reports included with this inquiry.

This letter is being sent to BMW pursuant to 49 U.S.C. § 30166, which authorizes NHTSA to conduct any investigation that may be necessary to enforce Chapter 301 of Title 49 and to

request reports and the production of things. It constitutes a new request for information. BMW's failure to respond promptly and fully to this letter could subject BMW to civil penalties pursuant to 49 U.S.C. § 30165 or lead to an action for injunctive relief pursuant to 49 U.S.C. § 30163. (Other remedies and sanctions are available as well.) Section 5(a) of the TREAD Act, codified at 49 U.S.C. § 30165(b), provides for civil penalties of up to \$6,000 per day, with a maximum of \$16,375,000 for a related series of violations, for failing or refusing to perform an act required under 49 U.S.C. § 30166. *See* 49 CFR 578.6 (as amended by 71 Fed. Reg. 28279 (May 16, 2006)). This includes failing to respond to ODI information requests.

If BMW cannot respond to any specific request or subpart(s) thereof, please state the reason why it is unable to do so. If on the basis of attorney-client, attorney work product, or other privilege, BMW does not submit one or more requested documents or items of information in response to this information request, BMW must provide a privilege log identifying each document or item withheld, and stating the date, subject or title, the name and position of the person(s) from, and the person(s) to whom it was sent, and the name and position of any other recipient (to include all carbon copies or blind carbon copies), the nature of that information or material, and the basis for the claim of privilege and why that privilege applies.

BMW's response to this letter, in duplicate, together with a copy of any confidentiality request, must be submitted to this office by October 21, 2011. **All business confidential information must be submitted directly to the Office of Chief Counsel as described in the following paragraph and should not be sent to this office.** In addition, do not submit any business confidential information in the body of the letter submitted to this office. Please refer to PE11-025 in BMW's response to this letter and in any confidentiality request submitted to the Office of Chief Counsel. If BMW finds that it is unable to provide all of the information requested within the time allotted, BMW must request an extension from me at (202) 366-5207 no later than five business days before the response due date. If BMW is unable to provide all of the information requested by the original deadline, it must submit a partial response by the original deadline with whatever information BMW then has available, even if an extension has been granted.

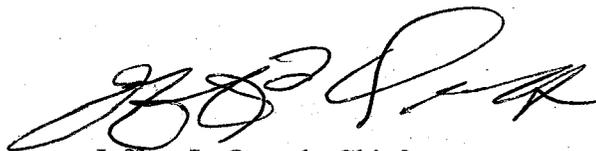
If BMW claims that any of the information or documents provided in response to this information request constitute confidential commercial material within the meaning of 5 U.S.C. § 552(b)(4), or are protected from disclosure pursuant to 18 U.S.C. § 1905, BMW must submit supporting information together with the materials that are the subject of the confidentiality request, in accordance with 49 CFR Part 512, as amended, to the Office of Chief Counsel (NCC-111), National Highway Traffic Safety Administration, Room W41-227, 1200 New Jersey Avenue, S.E., Washington, D.C. 20590. BMW is required to **submit two copies of the documents containing allegedly confidential information (except only one copy of blueprints) and one copy of the documents from which information claimed to be confidential has been deleted.** Please remember that the word "CONFIDENTIAL BUSINESS INFORMATION" must appear at the top of each page containing information claimed to be confidential, and the information must be clearly identified in accordance with 5 U.S.C. § 512.6. If you submit a request for confidentiality for all or part of your response to this IR, that is in an electronic format (e.g., CD-ROM), your request and associated submission must conform to the new requirements in NHTSA's Confidential Business Information Rule regarding submissions in

electronic formats (49 CFR 512.6(c)). See Federal Register, volume 72, page 59434 (October 19, 2007).

Please send email notification to **Derek Rinehardt** (derek.rinehardt@dot.gov) and to ODI_IRresponse@dot.gov when BMW sends its response to this office and indicate whether there is confidential information as part of BMW response.

If you have any technical questions concerning this matter, please call Derek Rinehardt of my staff at (202) 366-3642.

Sincerely,



Jeffrey L. Quandt, Chief
Vehicle Control Division
Office of Defects Investigation

Enclosure, one CD ROM titled Data Collection Disc containing three (3) files:

“PE11-025 PRODUCTION DATA.accdb”

“PE11-025 REQUEST NUMBER TWO DATA.accdb”

“PE11-025 VOQs.pdf” (containing VOQs 10185770 and 10419177)