

Ford Motor Company

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OFFICE OF
DEFECTS INVESTIGATION

James P. Vondale, Director
Automotive Safety Office
Environmental & Safety Engineering

February 8, 2002

Ms. Kathleen C. DeMeter, Director
Office of Defects Investigation Safety Assurance
National Highway Traffic Safety Administration
400 Seventh Street, S. W.
Washington, DC 20590

Dear Ms. DeMeter:

Subject: SQ01-014: NSA-122fsb

This is in response to the Agency's December 14, 2001 letter requesting certain information concerning fires or loss of fuel after high energy rear biased collisions on 1992 - 2001 model year Ford Crown Victoria, Mercury Grand Marquis, Lincoln Town Car vehicles, and Ford Taurus as a comparator vehicle.

The information and documents provided in this response and the excellent real world performance of the subject Crown Victoria, Grand Marquis, and Town Car vehicles over a ten-year period provide compelling evidence that there is no defect related to fuel system integrity in rear impacts in the vehicles.

All of the reported incidents involve police vehicles which were, in most instances parked or moving very slowly on the shoulder or edge of high speed, limited-access roadways. Some law enforcement agencies have indicated that their vehicles may stop along high speed roads. The Florida Highway Patrol Study suggests that law enforcement patrol vehicles may be more frequently exposed to high speed rear collisions by being parked along the shoulder more often than other vehicles.

Based upon review of available information concerning the reported incidents and investigations performed by Ford personnel and others, the rear impacts that have resulted in fuel leakage have been so severe that it is likely that similar vehicles from any manufacturer would also experience fuel leakage in similar impacts. A July 1999 report by the Florida Highway Patrol, a copy of which is provided in Appendix E, was forwarded to Ford in August 1999. That report concluded that the impacts that were resulting in fuel leakage were occurring at extremely high closing speeds, almost always above 60 miles per hour with some as high as 84 miles per hour, and frequently involved heavy and rigid vehicles, such as pick up trucks, or even larger and heavier commercial vehicles, such as dump trucks or tractor trailer vehicles. With the impact speeds and vehicle weights noted by the Florida report, the energy levels involved in these crashes were multiples of the energy level associated with FMVSS 301.

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The Florida Highway Patrol report also contains information concerning a comparable size rear wheel drive vehicle used in police service, which would thereby also be exposed to the same potential for high speed rear collisions by being parked along the shoulder. The number and rate of fires occurring in this comparable vehicle are similar to the Crown Victoria police vehicle.

We note that the Agency requested information regarding fuel leakage in rear impacts of Taurus vehicles, presumably as comparator vehicles. As the Agency is aware, these vehicles typically are used in a very different manner by police fleets and comparison of the performance is heavily influenced by this usage.

The fuel systems in the subject Crown Victoria, Grand Marquis, and Town Car vehicles substantially exceed all Federal Motor Vehicle Safety Standard (FMVSS) 301 fuel system integrity requirements. In addition to consistently exceeding the FMVSS 301 requirements, the vehicles meet Ford's 50 mile per hour car-to-car rear impact requirement, which subjects the vehicles to substantially more energy in a rear impact than the FMVSS requirements. We believe that this car-to-car requirement is unsurpassed in the automotive industry. Further, over 99% of all rear impacts occur at a deltaV significantly less than Ford's internal requirement.

Ford has examined some of the vehicles that are the subject of this inquiry. These vehicles were involved in extremely high closing speed collisions resulting in severe deformation of the entire rear structure of the vehicle. We determined that the forces may have driven components such as the hex head bolt for the parking brake cable or the down-standing tab on the stabilizer bar attaching bracket, as well as other components and/or objects carried in the trunk, into contact with the fuel tank.

While it is not practicable to completely isolate the fuel tank from contact that occurs due to the massive deformation in these kinds of extreme collisions, Ford developed Technical Service Bulletin Article No. 01-21-14 to advise dealers and police fleets of modifications that can be made that may further reduce the potential effect on the fuel tank due to severe deformation in these rare high energy crashes. In an effort to disseminate information regarding the TSB as widely and rapidly as possible, Ford has contacted law enforcement agencies directly, provided information to hundreds of agencies, and has transmitted information through law enforcement communication networks.

The examinations that led to development of the TSB also found instances in which the struck vehicle fuel system had apparently been punctured, torn, or otherwise damaged by equipment and/or items carried in the trunk of the struck vehicle. Ford is also aware that some of the equipment routinely carried or mounted in the trunk of law enforcement vehicles such as flares, guns, ammunition, radios or other electrical equipment, etc. may also pose additional risk as sources of flame initiation in the event of a high speed rear collision. In an effort to assist police fleets in reducing the number of incidents caused by these kinds of items, Ford has met with a number of police fleets and organizations and discussed practices for carrying and storing equipment which may further reduce the risk of compromising fuel system integrity in high speed rear impacts.

No vehicle or fuel system design can completely eliminate the risk of fuel leakage in extremely severe collisions. The Crown Victoria, Grand Marquis and Town Car are rear wheel drive vehicles that provide purchasers with the combination of vehicle performance, handling, and roominess required for the type of usage to which the vehicle will be subjected. Many vehicles that provide the combination of these characteristics employ architecture similar to that

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used in these vehicles and perform essentially the same in real world usage. The Crown Victoria, Grand Marquis, and Town Car are among the safest of the vehicles on the road according to real world accident statistics and are not over represented in reports of fuel leakage or fire.

Please call me if you have any questions.

Sincerely,


J. Vondale

Attachment

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FORD'S RESPONSE TO SQ01-014

Ford's response to this Service Query information request was prepared pursuant to a diligent and good faith search for the information requested. While we have employed our best good faith efforts to provide responsive information, the breadth of the Agency's request and the requirement that information be provided on an expedited basis makes this a difficult task. We nevertheless have made every effort to provide thorough and accurate information and we would be pleased to meet with Agency personnel to discuss any aspect of this investigation.

The scope of Ford's investigation conducted to locate responsive information focused on Ford employees most likely to be knowledgeable about the subject matter of this inquiry and on review of Ford files in which responsive information would be expected to be found and to which Ford normally would refer, as more fully described in this response. Ford notes that although electronic information was included within the scope of its search, Ford has not attempted to retrieve from computer storage media electronic files that were overwritten or deleted. As the Agency is aware, such files generally are unavailable to the computer user even if they still exist and are retrievable only through expert means. To the extent that the Agency's definition of Ford includes suppliers, contractors and affiliated enterprises for which Ford does not exercise day-to-day operational control, we note that information belonging to such entities ordinarily is not in Ford's possession, custody or control.

Ford understands the basis for this investigation to be Ford's Technical Service Bulletin TSB Article No. 01-21-14 concerning gasoline fueled vehicles, therefore has construed the scope of this request to include only gasoline-powered vehicles of the models and model years specified that were manufactured for sale in the United States. Accordingly, natural gas-powered Crown Victoria vehicles are not included as subject vehicles.

As agreed in a February 5, 2002 phone conversation with Mr. Frank Borris, information for Taurus vehicles is being provided only for Requests Nos. 1 and 2. If the Agency requires more information after reviewing Ford's response, we would be pleased to respond.

Answers to specific questions are set forth below. As requested, after each numeric designation, we have set forth verbatim the request for information, followed by our response. Unless otherwise stated, Ford has undertaken to provide responsive documents dated up to and including December 14, 2001, the date of your inquiry. Ford has searched business units and/or affiliates within the following divisions for responsive documents: Research Vehicle Technology; Ford Customer Service Division; Quality; Environmental and Safety Engineering; Lincoln Mercury product Development; Purchasing; Vehicle Operations; Marketing & Sales Operations; FAO Executive Offices and Business & Product Strategy, and certain litigation documents.

Request No. 1

State the total number of the subject vehicles sold in the United States by make, model, and model year. Provide the number of subject vehicles sold for law enforcement use.

Answer

The numbers of subject vehicles produced for sale in the United States by model and model year are provided in Appendix A. Also included are the numbers of subject vehicles by model and model year produced for sale as law enforcement units.

Model Year 1992 Crown Victorias and 1992 MY through 1995 MY Taurus vehicles have no unique VIN body code to designate police vehicles. Therefore Ford has identified the production numbers of these vehicles based on equipment that is unique to police vehicles, such as tire size and brand.

Request No. 2

State the number and provide copies of all documents containing the following, from all sources, of which Ford is aware and which relate, or could relate to the alleged defect in the subject vehicles:

- a. owner/fleet complaints;
- b. field reports;
- c. crash, fire, incident claims;
- d. subrogation claims;
- e. lawsuits; and
- f. third-party arbitration proceedings (where Ford is a party to the arbitration).

Please list and collate your response for each category ("a" through "f" by date of claim. Please provide for each item in this response the incident date, mileage of vehicle at time of incident (if known), approximate age of vehicle or model year, disposition of matter, and, where a fleet vehicle is involved, the name of the fleet, and the name and telephone number of a contact person at that fleet. For items "a" through "d," please provide all related information, reports, and photographs whether or not Ford has verified each one. For items "e" and "f," summaries are acceptable. Please identify in the summary the caption, court, docket number, and filing date of each lawsuit if a copy of the Complaint initiating the lawsuit is not provided.

Answer

For purposes of identifying reports of incidents potentially involving the "alleged defect" and any related documents, Ford has gathered "owner reports" and "field reports" maintained by Ford Customer Service Division ("FCSD"), and claim and lawsuit information maintained by Ford's Office of the General Counsel ("OGC") as described in detail in Appendix B.

Owner Reports: Based on a reasonable and diligent search Ford did not identify any reports of fire and/or fuel leaks after a rear-biased collision on Crown Victoria, Grand Marquis, Town Car, or Taurus vehicles.

Ford has also included owner reports which are ambiguous as to whether they meet the "alleged defect" criteria. Most of these reports describe ambiguous fires and/or ambiguous fuel leak/fuel system concerns. We have provided these ambiguous Crown Victoria/Grand Marquis/Town Car reports in Appendix C2, and ambiguous Taurus reports as Appendix C3 as "non-specific allegations" for your review because of the broad scope of the request. Based on our engineering judgment, the information in these reports is insufficient to support a determination that they pertain to the "alleged defect".

Field Reports: Based on a reasonable and diligent search Ford did not identify any reports of fire and/or fuel leak after a rear-biased collision on Crown Victoria, Grand Marquis or Town Car vehicles.

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Ford identified one report of an electrical fire on a 1993 Taurus resulting from a rear-biased collision that appears to be unrelated to the fuel system. Ford has not included this incident in a summary table as we believe this is outside of the intended scope of the inquiry even though it meets the technical definition of the "alleged defect". This report is provided in Appendix C3, report number NKLAB003.

Ford has also included field reports which are ambiguous as to whether they fully meet the "alleged defect" criteria. Most of these reports describe ambiguous fire and/or ambiguous fuel leak/fuel system concerns. We have provided these ambiguous Crown Victoria/Grand Marquis/Town Car reports in Appendix C2, and ambiguous Taurus reports as Appendix C3 as "non-specific allegations" for your review because of the broad scope of the request. Based on our engineering judgment, the information in these reports is insufficient to support a determination that they pertain to the "alleged defect".

Lawsuits and Claims: Based on a reasonable and diligent search, Ford located 16 lawsuits, claims or incidents related to a fire and/or fuel leak after a rear-biased collision on 1992-2001 Crown Victoria vehicles. All of these incidents involved law enforcement units. Known details of these lawsuits, to the extent that they are not contained only within a privileged document, are included in a summary table as requested in Appendix C1.

Appendix C1 also includes known details of three other incidents identified in NHTSA's inquiry. One of these incidents, Colburn/Noel, does not appear to be a rear biased collision according to the Officer's statement. Two of the other incidents Linen, and Ross are ambiguous as to whether they fully meet the "alleged defect" criteria. With respect to these ambiguous lawsuits and claims, Ford has not undertaken to contact outside law firms to obtain additional documentation for these lawsuits.

Ford did not identify any lawsuits, claims or consumer breach of warranty lawsuits on Grand Marquis, Town Car or Taurus vehicles related to fire and/or fuel leak after a rear-biased collision.

Based on a January 16, 2002 telephone conference with a member of my staff, Mr. Frank Borris of NHTSA ODI indicated that the Agency does not require documents from Ford's litigation files at this time. If the Agency requires more information after reviewing Ford's response, we would be pleased to respond.

Request No. 3

Furnish a summary table of all known or reported incidents pertaining to, or which may pertain to, the alleged defect in the subject vehicles, identifying the owner's name; address; and telephone number; driver (if different from owner); model; model year; VIN; build date; incident date (the date of the report if the incident date is unknown); the state or territory each incident occurred; and a brief description of any injuries associated with the incident; a brief synopsis of the incident including vehicle speeds, direction of principal force (i.e.; 5 o'clock), fuel tank failure mode (puncture, tear, burst, etc.), and bullet vehicle identification. The table should be arranged in ascending order alphabetically according to the vehicle owner's (private or commercial) last name. Where a fleet vehicle is involved, further state the name of the fleet, and the name and telephone number of a contact person at that fleet. The incidents contained in this table should include all the incidents identified in Ford's response to Question 2 above. Identify all incidents reporting a fuel tank puncture that resulted (or may have resulted) from impact with components identified in Ford's Technical Service Bulletin (Article No. 01-21-

14). If Ford has developed or is developing a similar table which contains additional information, please include that additional information in Ford's response.

Answer

Ford has provided the requested summary as Appendices C1 for Crown Victoria, Grand Marquis, and Town Car vehicles.

Based upon available information Ford has provided, to the extent it is available, the requested summary information. Because some of these incidents are the subject of current investigation, or ongoing or pending litigation, or are otherwise not yet resolved, it is possible that new information has been generated or will be generated that is not available to Ford at the time of this response.

Request No. 4

If Ford has issued any service or technical bulletins, advisories, or other communications to dealers, zone offices, or field offices pertaining to the alleged defect in the subject vehicles, provide a copy of each such document. If no such documents have been issued, so state.

Answer

For purposes of identifying communications to dealers, zone offices, or field offices pertaining, at least in part, to the "alleged defect" in the subject vehicles, Ford has reviewed the following Ford Customer Service Division ("FCSD") databases and files: The On-Line Automotive Service Information System (OASIS); Internal Service Messages contained in the Common Quality Indicator System (CQIS); and Field Review Committee files as described in Appendix B.

Based on this search, Ford has identified one responsive Technical Service Bulletin (TSB Article No. 01-21-14), provided in Appendix D, that appears to relate to the "alleged defect" in the subject vehicles. Ford understands this TSB is the basis for the opening of this SQ.

Ford assumes this request does not seek information related to electronic communications between Ford and its dealers regarding the order, delivery, or payment for replacement parts, so we did not include this information in our answer.

Request No. 5

Identify and provide copies of all documents reflecting any study, survey, demonstration, or investigation pertaining to the alleged defect that is known to Ford. Include all pertinent documents, regardless of whether they are in interim draft, or final form.

Answer

Ford is providing the responsive documentation that was located pursuant to a good faith and diligent search in Appendix E.

Ford notes that it is including in this attachment certain Computer-Aided-Engineering (CAE) related documents. Ford is not including with the production the underlying

CAE data because of the logistical difficulties associated with viewing the data without Ford's CAE software.

Request No. 6

Identify and describe all significant modifications or changes made by or on behalf of Ford in the manufacture, design, or material composition of fuel system components in the subject vehicles that relate, or could relate to the alleged defect. Ford's response to this question should also include any changes or modifications to the vehicle's body, chassis, or suspension that may affect the fuel containment capability of the fuel system during a crash. The following information must be included for each such modification or change;

- a. the date, or approximate date on which the modification or change was incorporated into production;
- b. a description of the modification or change;
- c. the reason for the modification or change;
- d. the part number of the modified part;
- e. whether the original unmodified component was withdrawn from sale, and if so, when; and
- f. whether the modified or changed components can be interchanged with earlier production components.

Answer

Because of the broad scope of this request and the timing required for our response Ford can not be absolutely certain that it was able to identify each and every change that may be related in any way to the "alleged defect" in spite of our good faith and diligent efforts. As the Agency is aware, the fuel system and its integrity in rear collisions is an extremely complex system of interactions that can be affected by many types of changes to many components. Additionally, the amount of time elapsed from the beginning of the first subject model year and the nature of the design change system makes it extremely difficult in some cases to reconstruct the complete history of any one component, much less any one system.

Ford has conducted good faith and diligent searches to identify those design changes made from the beginning of 1992 MY Crown Victoria/Grand Marquis/Town Car production through the end of 2001 model year production that were made as a result of fuel leakage after a rear-biased impact through review of documents concerning crash test development history and field service history to determine which components incorporated changes over the specified time period. The design change history of these components was then reviewed by Product Development Engineering activities in an effort to identify changes that appear to have been made as a result of fuel leakage in rear-biased impacts.

Appendix F contains a table of those design changes we have been able to identify through good faith and diligent efforts that appear to have been made as a result of fuel leakage after a rear-biased impact in 1992 through 2001 production vehicles, including rear suspension, fuel system, rear bumper, and frame systems.

Request No. 7

Furnish copies of all reports and other documents concerning tests and analyses conducted by Ford or by its contractors, suppliers or other entities, which relate, or could relate in any way to this investigation. This should include all analyses of fuel system components originally equipped in vehicles identified in response to Questions 2 or 3.

Answer

Appendix G contains copies of crash test reports concerning fuel system integrity in rear impacts of the subject vehicles. Additionally, Appendix F contains documents that may include responsive tests and analyses including documents reflecting supplier and contractor tests and analyses in Ford's possession.

Ford notes that as part of its defense of various lawsuits, it has conducted tests and analyses that are protected from disclosure by the work product immunity. Ford also notes that in some instances, the actual disclosure of the existence of such tests and analyses, in itself, may infringe upon the work product immunity. In the interests of responding to this request on a timely basis, and in accordance with the above-referenced telephone conference with Frank Borris in which the Agency opted not to require documents from Ford's litigation files at this time, Ford has not identified these documents on a privilege log.

Request No. 8

State whether Ford ever considered substituting an alternative design(s) or component(s) for the fuel system (both storage and delivery) in the subject vehicles which relate, or could relate in any way to this investigation. If so, identify and describe each such alternative design(s) or component(s), and state:

- a. the date it was first proposed;
- b. the disposition of that proposal (i.e., approved, disapproved, or still being evaluated); and
- c. the reasons for that action.

Answer

Ford has attempted to determine if alternate designs for the fuel storage or fuel delivery systems were considered for the subject Crown Victoria, Grand Marquis, or Town Car vehicles through discussions with persons who may reasonably be expected to have knowledge of the history of the fuel system of the Crown Victoria/Grand Marquis/Town Car vehicles.

Based upon these efforts Ford has not identified any alternate design fuel storage or delivery systems, other than those identified in answer to Request No. 6, which relate or could relate to fuel system integrity in a rear impact. Some personnel indicated that plastic fuel tanks may have been considered at some time before production of the subject vehicles, probably as part of a corporate-wide consideration of such materials, but no further details or documents related to such were identified or believed to be in existence.

Request No. 9

Describe in detail the differences between the passenger and law enforcement variants of the subject vehicles which affect vehicle performance with respect to crashworthiness and fuel system integrity.

Answer

Because of the broad scope of this request, the complex nature of the fuel system and crash integrity, and the timing required for our response, Ford is not able to identify differences between the passenger and law enforcement variants of the subject vehicles that affect vehicle performance with respect to crashworthiness and fuel system integrity, if any.

Ford has instead provided in Appendix H all of the differences in equipment between passenger and law enforcement variants of the 1992 – 2001 Crown Victoria vehicles as described in Ford's Program Direction Letters that were available at the time of this response.

Ford did not identify any differences between passenger and law enforcement variants of the 1992–2001 Crown Victoria vehicles that are specifically intended to alter the crashworthiness and fuel system integrity of these vehicles.

Request No. 10

Furnish Ford's assessment of the alleged defect in the subject vehicles, including:

- a. all causal or contributory factors;
- b. the failure mode;
- c. the risk to motor vehicle safety that it poses; and
- a. whether there are any circumstances that would provide vehicle operators or others with warning of its existence.

Answer

The information and documents provided in this response and the excellent real world performance of the subject Crown Victoria, Grand Marquis, and Town Car vehicles over a ten-year period provide compelling evidence that there is no defect related to fuel system integrity in rear impacts in the vehicles.

All of the reported incidents involve police vehicles which were, in most instances parked or moving very slowly on the shoulder or edge of high speed, limited-access roadways. Some law enforcement agencies have indicated that their vehicles may stop along high speed roads. The Florida Highway Patrol Study suggests that law enforcement patrol vehicles may be more frequently exposed to high speed rear collisions by being parked along the shoulder more often than other vehicles.

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Victoria, Grand Marquis, and Town Car are among the safest of the vehicles on the road according to real world accident statistics and are not over represented in reports of fuel leakage or fire.

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a. Based on 1992-2000 NHTSA NASS/CDS data.

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