



RECEIVED

DEC 23 PM 9:05

OFFICE
DEFECTS INVESTIGATION

Robert H. Munson
Executive Director
Automotive Safety and Engineering Standards Office
Environmental and Safety
Engineering Staff

Ford Motor Company
330 Town Center Drive
Dearborn, Michigan 48126

December 21, 1994

Mr. Louis J. Brown, Jr. Acting Director
Office of Defects Investigation, Enforcement
National Highway Traffic Safety Administration
400 Seventh Street, S.W.
Washington, D.C. 20590

Dear Mr. Brown:

Subject: EA94-022-NEF-121hs

This is in response to your letter of November 17, 1994, requesting additional information concerning the power steering system in 1992-1994 Ford Crown Victoria vehicles equipped with the police equipment package.

The scope of the searches conducted to locate materials potentially responsive to your request included inquiries to those Ford employees in the Dearborn, Michigan area most likely to be knowledgeable with respect to the subject matter about which you inquired and reviews of those files located in Ford's central offices in which materials such as that requested normally would be expected to be found. It did not extend, nor could it reasonably have been extended to "all officers, employees, agents, contractors, and consultants of Ford Motor Company, whether assigned to its principal office or to any of its field locations, and all records maintained by the Company either in hard copy form or in electronic media." We, of course, will answer any questions you may have as to the scope or specific nature of the searches that were made.

Answers to your specific questions are presented below. After each numeric designation, we have set forth verbatim the request for information followed by our response to it.

DEC 23 1994



December 21, 1994

Request No. 1

"Provide detailed descriptions of all design, materials, and/or component changes incorporated into the suspension systems of the subject vehicles which may alter the handling characteristics from those of the baseline 1992 models. Provide this information for 1993, 1994, and 1995 model year Crown Victoria vehicles, together with descriptions or data which document the vehicle handling modifications that resulted. This information should include, but should not be limited to, any changes in original equipment manufacturer spring rates, shock absorbers, sway bars, wheels, and tires, and should include the dates that each modification was incorporated into production."

Answer

We have been advised that there have been six design changes to suspension system components of 1993-1995 model year Ford Crown Victoria vehicles equipped with the police equipment package. These changes are described below.

<u>Suspension Revisions</u>	<u>Approximate Production Incorporation Date</u>	<u>Reason for Change / Expected results</u>
Reduced the friction of the front lower ball joints by changing from a steel on steel joint design to a nylon joint	6/18/93	<ul style="list-style-type: none"> • Improve joint durability • Improve steering feel for small corrections • Improve ride quality
Points of attachment of the rear trailing arms to the frame were lowered 19 mm	3/29/93	<ul style="list-style-type: none"> • Improve on-center steering precision
The valving in the front shock absorbers was changed to alter their force velocity relationship	2/19/93	<ul style="list-style-type: none"> • Improve ride control by reducing body pitch and bounce

0201198

December 21, 1994

<u>Suspension Revisions</u>	<u>Approximate Production Incorporation Date</u>	<u>Reason for Change / Expected results</u>
Modified the front stabilizer bar shape to a "drop center" design and increased bar diameter from 28.5 mm in the 1992/1993 model years to 29.5 mm in the 1994 model year to offset loss in stiffness efficiency	10/15/93	<ul style="list-style-type: none"> Reroute the front stabilizer bar around a new engine oil cooler
Increased durometer/hardness of the bushings that attach the rear suspension upper control arms to the frame from 26,000 to 35,000 newtons per millimeter	10/15/92	<ul style="list-style-type: none"> Improve on-center steering feel
Increased durometer/hardness of the bushings that attach the rear suspension upper control arms to the axle from 26,000 to 35,000 newtons per millimeter	5/23/94	<ul style="list-style-type: none"> Improve on-center steering feel

Ford's Ride, Steering and Handling engineers initiated most of the above changes to improve on-center steering quality and owner satisfaction. On-center steering maneuvers are small steering corrections (less than +/- 10° of steering wheel input) at low lateral acceleration levels (less than +/- 0.1G).

We understand that you are specifically interested in comparing the handling of a 1992 Crown Victoria police vehicle with a 1994. In that regard, it is the opinion of Ford's Ride, Steering and Handling engineers that these suspension system changes, considered individually or as a group, would have the effect of slightly improving the handling characteristics of the 1994 model year Crown Victoria police vehicle when compared with the 1992 model year vehicle. Further, they would expect

DEC 1994

Mr. Louis J. Brown, Jr.

- 4 -

December 21, 1994

that any perceived handling differences between a 1992 and 1994 model year Ford Crown Victoria police vehicle would be more greatly affected by differences in tires (tread pattern, sidewall construction, inflation pressure, etc.), vehicle loading caused by the addition of special equipment by the operator, or differences in front end alignment settings than by the listed changes.

We trust that this information satisfactorily responds to your request.

Very truly yours,


R. H. Munson

EA\EA94-022.w51
prw/ae

JUL 1 200