



November 12, 2010

Mr. Scott Yon, Chief  
Vehicle Integrity Division (VID), NVS-212  
U.S. Department of Transportation  
National Highway Traffic Safety Administration (NHTSA)  
Office of Defects Investigation (ODI)  
Room W48-314  
1200 New Jersey Avenue SE  
Washington, D.C. 20590

Reference: NVS-212llh; PE10-031

Dear Mr. Yon:

Attached is Chrysler Group LLC's response to Question Nos. 5, 6, 8 and 10 of the September 3, 2010, information request. The response to Question Nos. 1 through 4, 7 and 9 were previously submitted on October 15, 2010. In performing the analysis and reaching conclusions, and by providing the information contained herein, Chrysler Group LLC is not waiving its claim to attorney work product and attorney-client privileged communications.

For reasons discussed more fully in the attached response, Chrysler Group LLC has concluded that the 1993-2004 Jeep Grand Cherokee vehicles are neither defective nor do their fuel systems pose an unreasonable risk to motor vehicle safety in rear impact collisions. Chrysler Group LLC believes this investigation should be closed.

Sincerely,

A handwritten signature in black ink that reads "David D. Dillon".

David D. Dillon

Attachment and Enclosures

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PEI

Preliminary Statement

On April 30, 2009, Chrysler LLC, the entity that manufactured, sold or was otherwise responsible for the vehicles that are the subject of this Information Request, filed a voluntary petition for relief under Chapter 11 of Title 11 of the United States Bankruptcy Code.

On June 10, 2009, Chrysler LLC sold substantially all of its assets to a newly formed company now known as Chrysler Group LLC. Pursuant to the sales transaction, Chrysler Group LLC assumed responsibility for safety recalls pursuant to the 49 U.S.C. Chapter 301 for vehicles that were manufactured and sold by Chrysler LLC prior to the June 10, 2009 asset sale.

On June 11, 2009, Chrysler LLC changed its name to Old Carco LLC. The assets of Old Carco LLC that were not purchased by Chrysler Group LLC, as well as the liabilities of Old Carco that were not assumed, remain under the jurisdiction of the United States Bankruptcy Court – Southern District of New York (*In re Old Carco LLC, et al.*, Case No. 09-50002).

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**Note: Unless indicated otherwise in the response to a question, this document contains information through Sept. 3, 2010, the date the information request was received.**

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5. Describe all assessments, analyses, tests, test results, studies, surveys, simulations, investigations, inquiries and/or evaluations (collectively, “actions”)

**that relate to, or may relate to, the alleged defect in the subject vehicles, and including all testing to Federal Motor Vehicle Safety Standard (FMVSS) No. 301, that have been conducted, are being conducted, are planned, or are being planned by, or for, Chrysler. 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. **Results and related documents for FMVSS 301 testing;**
- f. **Engineering group(s)/supplier(s) responsible for designing and for conducting the action; and**
- g. **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.**

A5.

Chrysler Group LLC (“Chrysler Group”) has searched for and reviewed the available historical design and development records for the subject vehicles in order to respond to this request. Some of the information sought by this request dates back to activities that occurred nearly twenty years ago, and many records are no longer available due to applicable document retention requirements. Chrysler Group has also interviewed its current employees who have knowledge about the information sought in this request.

The following documents and information were determined to be responsive to this request:

**A. Rear Impact 301 Testing**

Chrysler Group has searched the available historical records and identified what is believed to be a complete collection of full-vehicle dynamic rear impact testing that was used to evaluate the fuel system integrity of the subject vehicles, as well as the applicable FMVSS 301 compliance documentation. The crash test documentation relating to the FMVSS 301 compliance testing is included in Enclosure 6A – 301 Compliance Crash Tests. The crash test documentation that

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was relied upon during the development of the fuel system of the subject vehicles is included in Enclosure 6B – 301 Developmental Crash Tests Conf Bus Info, which has been submitted under separate cover to NHTSA’s Chief Counsel with a request for confidential treatment, and Enclosure 6B – 301 Developmental Crash Tests Public.

Chrysler Group has also created a chart that summarizes the information that is available about these vehicle crash tests, which is included as Enclosure 6C – Summary of 301 Crash Tests Conf Bus Info and Public. The information contained in this chart derives from the crash test documentation provided in Enclosures 6A and 6B, the available information about the test vehicle builds, and employee interviews. The FMVSS 301 compliance documentation for the subject vehicles is included in Enclosure 6D – 301 Compliance Documents. It should be noted that the compliance documentation references many, but not all, design changes that occurred from model year to model year. See Enclosures 7A-B for a more complete list of the design changes.

Chrysler Group has reviewed the historical collection of rear impact FMVSS 301 developmental and compliance testing that was conducted on the subject vehicles. Upon review of the available test documentation and based upon employee interviews, Chrysler Group has confirmed that the subject vehicles exceeded the agency’s performance requirements set forth in FMVSS 301. While FMVSS 301 allows for some measure of post-impact fuel leakage, it should be noted that the FMVSS 301 compliance crash test results in Enclosure 6A revealed that an internal performance objective of no leakage was achieved during the FMVSS 301 compliance testing.

#### **B. Field Performance**

Chrysler Group has located a statistical field data study of the fuel system performance for 1993-1998 Jeep Grand Cherokee vehicles that was prepared for a lawsuit (*Jarmon v. Chrysler LLC*), which was previously identified in Chrysler Group’s response to Questions Nos. 2 and 3. This study is included in Enclosure 6E – Jarmon Report. Also, in response to this investigation, Chrysler Group has undertaken an extensive and comprehensive study of over sixteen years of FARS data and several years of crash data in three states involving rear impact fire events in the subject and peer vehicles. This study is included in Enclosure 6F – FARS and State Crash Data Analysis.

**C. Other Studies or Evaluations**

Chrysler Group has located one other responsive fuel system integrity study from the historical records. This was a computer-aided engineering (CAE) study that was conducted during the investigation of the 2002 Jeep Grand Cherokee fuel system, which eventually led to Recall A10. (See Chrysler Group's October 15, 2010, response to Question No 7.) This CAE study was used to evaluate potential design changes. This CAE study is included in Enclosure 6G – A10 CAE Study Conf Bus Info, which has been submitted under separate cover to NHTSA's Chief Counsel with a request for confidential treatment. Enclosure 6H contains the Recall A10 573 Defect Information Report, which describes the events that led to Recall A10 and the ultimate remedy that was used in the field and in production.

The significance of the various tests and studies identified above will be discussed more fully in response to Question No. 10.

- 6. Describe all modifications or changes made by, or on behalf of, Chrysler in the design, material composition, location, routing, manufacture, quality control, supply, or installation of the subject components and other components in close proximity ("close proximity" is defined as within a 6 inch radius from the external surface of any part of the subject components), from the start of production of the subject vehicles to date, which relate to, or may relate to, the alleged defect in the subject vehicles. Include all versions, routings, placements and designs of fuel filler hoses and associated components and brackets. Also include all changes in the location, orientation or material of the fuel tank. Also include non-subject components located near the subject components which have been or could be sources of impingement, piercing, puncturing or disconnection of the subject components in a rear impact crash (including, but not limited to the chassis or frame components, suspension components such as sway bars and track bars, differentials, tow hitch components, and all associated hardware, such as bolts and brackets). 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 numbers (service and engineering) of the original component;**
  - e. The part number (service and engineering) of the modified component;**
  - f. Whether the original unmodified component was withdrawn from production and/or sale, and if so, when;**

- g. When the modified component was made available as a service component;**
- h. Whether the modified component can be interchanged with earlier production components;**
- i. The supplier of each modified component; and**
- j. The models and model years of vehicles affected by the modification.**

A6.

Chrysler Group has searched for and reviewed the available historical design records for the subject vehicles. Some of the information sought by this request dates back to activities that occurred nearly twenty years ago. Records that memorialize the design changes and modifications for the subject components (and other components within close proximity) are incomplete due to the applicable document retention requirements. Nevertheless, Chrysler Group has conducted a diligent search of the available historical records and has also interviewed current Chrysler Group employees who have knowledge about the information sought in this request.

Chrysler Group has created two enclosures in response to this request that identify the major differences between the 1993-2004 Jeep Grand Cherokee body styles (Enclosure 7A – Body Style Differences), and the engineering changes that occurred during production (Enclosure 7B - Subject Component Design History Conf Bus Info). Enclosure 7B has been submitted under separate cover to NHTSA's Chief Counsel with a request for confidential treatment.

Because of a lack of sufficient useful information and time constraints, and by agreement with ODI on October 27, 2010, Chrysler Group is not providing the service part information sought by subparts d. through j. at this time.

- 8. For each design variation of the subject vehicle, provide the following information:**
  - a. Applicable model years or other design variation details (generation number, sub-model, trim level, etc.)**
  - b. Side, rear, and top view drawings showing the placement of the subject components and related components that secure them in the vehicle;**
  - c. A bottom view drawing or photograph showing the full vehicle undercarriage in the fully built configuration including the locations of the subject components; and**
  - d. Type of material the subject fuel tank is composed of (e.g., HDPE plastic).**

A8.

Chrysler Group has searched for and reviewed the available historical design records for the subject vehicles. Some of the information sought by this request dates back to activities that occurred nearly twenty years ago. Records that memorialize each design variation of the subject vehicles are incomplete due to the applicable document retention requirements. Nevertheless, Chrysler Group has conducted a diligent search of the available historical records and has also interviewed current Chrysler Group employees who have knowledge about the information sought in this request.

Chrysler Group is providing the following in response to subparts a. through d.:

- a. Enclosure 8A – Subject Vehicle Design Variations
- b. Enclosure 8B – Subject Vehicle Graphics Conf Bus Info, which has been submitted under separate cover to NHTSA’s Chief Counsel with a request for confidential treatment. The graphics in this enclosure depict the fuel system components in relation to each other as well as their placement in the subject vehicles.
- c. Enclosure 8C – Underbody Photographs of Subject Vehicles contains photographs of the undercarriage of each model year of the subject vehicles.
- d. With respect to the fuel tank material composition, the following summarizes the materials used for the subject vehicles:

1993-1995\* : Monolayer High Density Polyethylene (HDPE)

1995-2004\* : Coextruded High Density Polyethylene (HDPE)  
constructed as follows:

Layer 1: (Inner layer): HDPE

Layer 2: Polyethylene adhesive

Layer 3: Ethylene Vinyl Alcohol (EVOH) barrier layer

Layer 4: Polyethylene adhesive

Layer 5: HDPE Regrind

Layer 6: (outside layer): HDPE

\* 1995 MY vehicles built with California emissions packages were built with coextruded HDPE tanks. 1995 MY vehicles built without California emissions packages were built with monolayer HDPE tanks

**10. Furnish Chrysler’s assessment of the alleged defect in the subject vehicles, including:**

- a. **The causal or contributory factor(s);**
- b. **The failure mechanism(s);**
- c. **The failure mode(s);**
- d. **The risks to motor vehicle safety that it poses;**
- e. **The reports included with this inquiry.**

A10.

The 1993-2004 Jeep Grand Cherokees that are the subject of this investigation, which reached almost three million units while in production, have long been regarded as one of the world's premier sport utility vehicles. By Chrysler Group's estimates, these twelve combined model years of Jeep Grand Cherokees have been driven more than *300 billion* miles over the past eighteen calendar years.

Chrysler Group has undertaken an extensive review of the design and development history of the fuel systems in the subject vehicles. What is apparent from this review is that sound engineering judgment and due care were used in the design, development and manufacture of the fuel systems. This due care is further evidenced by compliance with FMVSS 301, the standard by which fuel system integrity is measured before a new vehicle can be sold in the United States.

Chrysler Group has also studied the field performance data for the subject vehicles and their peers from a variety of different sources. What is also apparent is that the field data – from whatever the source – reveals three undeniable facts:

1. Chrysler Group has no reports of fuel leakage from a rear impact collision without a fire in the subject vehicles;
2. Rear impact events that result in fires are extremely rare and almost always involve rear impacts so severe that no fuel system design in any peer vehicle could reasonably be expected to guarantee against fuel leakage or fire; and
3. The 1993-2004 Jeep Grand Cherokee vehicles are no more likely to experience fire in a rear impact collision than the peer vehicles.

Accordingly, Chrysler Group has concluded that the 1993-2004 Jeep Grand Cherokee vehicles are neither defective nor do their fuel systems pose an unreasonable risk to motor vehicle safety in rear impact collisions. The support for reaching this conclusion is discussed in detail below.

**A. 1993-2004 Jeep Grand Cherokee Fuel System Design**

At the heart of the petitioner's criticism of the subject vehicles' fuel system designs is the placement of the fuel tank aft of the rear axle. The decision to locate the fuel tank behind the rear axle has long been recognized by NHTSA and the industry to be a reasonable design choice based on a number of factors, including vehicle use, function and packaging. Short wheelbase vehicles, like the subject vehicles, have less space between the front and rear axle for placing components such as the fuel tank. Furthermore, robust four-wheel drive vehicles require driveline components, such as front and rear propeller shafts and transfer cases, that compete for space between the front and rear axles. Off-road maneuverability, including "high centering," are important design attributes when packaging the fuel system components for sport utility vehicles. These and other factors make the decision to place the fuel tank behind the rear axle a reasonable design choice.

It is significant to note that NHTSA has examined the issue of rearward tank placement in connection with FMVSS 301 rulemaking, and rejected calls to require manufacturers to place fuel tanks ahead of the rear axle. In 2000, NHTSA expressed this conclusion during FMVSS 301 rulemaking:

*We are not proposing to require manufacturers to place each vehicle's fuel tank forward of the rear axle as suggested by Advocates. We believe such a requirement is unnecessary and would be design restrictive. We note that the fuel tank of the 1996 Ford Mustang, which passed the proposed rear impact test requirement, is located behind the rear axle. We believe that this test demonstrates that structural and component design is a more critical factor than fuel tank location in maintaining fuel system integrity.*

65 Fed. Reg. 67693, 67701, Notice of Proposed Rulemaking - Fuel System Integrity, Docket NHTSA-00-8248 (November 13, 2000)

The fuel system design strategies that were used in the 1993-2004 Jeep Grand Cherokee vehicles were not developed in a vacuum; rather, they were the result of more than a seventy year history of designing automobiles with the fuel tank aft of the rear axle. Chrysler Group notes that the overall design strategy for providing impact-related fuel system integrity is fairly represented in the graphical and photo depictions of the subject vehicles in Enclosures 8B and 8C.

The overall design strategy that was implemented in the subject vehicles to minimize fuel leakage and fire in a rear impact was validated in a series of FMVSS 301 compliance testing through the life of the subject vehicles (*see* Enclosures 6A and 6D). NHTSA established FMVSS 301 to define the

performance requirements for fuel systems in various crash modes, including rear impacts. During the relevant time, FMVSS 301 required that a vehicle's fuel system survive a 30 MPH rear impact by a 4,000 LB moving barrier. As noted in response to Question No. 6, Chrysler Group has studied the historical record of rear impact FMVSS 301 tests on the subject vehicles and confirmed that the subject vehicles exceeded the agency's rear impact performance requirements. While FMVSS 301 allows for some measure of post-impact fuel leakage, it should be noted that the FMVSS 301 compliance crash test results in Enclosure 6A revealed that an internal performance objective of no leakage was achieved during the FMVSS 301 compliance testing.

As noted in the developmental crash test reports in Enclosure 6B and in the fuel system design history in Enclosures 8A and 8B, there was a short period of time in the mid-1990s when the new federal and state emissions compliance requirements posed some challenges. Multi-layered fuel tanks, new low permeation hoses and returnless fill systems, to name a few, required fuel system modifications and additional design, development and testing activities. These challenges were met, and the FMVSS 301 compliance requirements for the subject vehicles were exceeded when the compliance test vehicles exhibited no leakage following barrier impact.

While the 1993-2004 Jeep Grand Cherokee designs evolved over time, FMVSS 301 testing continued as necessary, based on the influence the design changes might have on FMVSS 301 performance. In the fall of 2001, a developmental FMVSS 301 rear impact crash test conducted on a pre-production 2003 MY Jeep Grand Cherokee revealed a leak at the On-Board Refueling Vapor Recovery system (ORVR) control valve (located on top of the fuel tank), which was first implemented at the start of the 2002 MY. A subsequent investigation of this test result ultimately yielded an enhancement to the fuel system and voluntary recall A10 to address 71,000 2002 MY Jeep Grand Cherokee vehicles built prior to the implementation of the design enhancements (*see* Enclosure 4 to Chrysler Group's October 15, 2010 IR response and Enclosure 6H).

A review of the engineering history supports Chrysler Group's belief that sound engineering judgment and due care were used in the design, development and manufacture of the fuel systems in the subject vehicles before they were sold to the public. Simply stated, based upon a review of the historical design and development record, there is no evidence of a fuel system defect in 1993-2004 Jeep Grand Cherokee vehicles that would subject an occupant to unreasonable risk during a rear impact.

**B. Field Performance of the 1993-2004 Jeep Grand Cherokees**

The due care exercised in the design of the subject vehicles' fuel systems is further evidenced by almost two decades and over 300 billion miles of field experience. Chrysler Group has collected and analyzed almost twenty years of field data and, when available, the circumstances surrounding the rear impact post-collision fuel fed fires in the subject and peer vehicles. This information was derived from multiple sources, which include: 1) NHTSA TREAD Early Warning Reporting fatality and injury data; 2) Chrysler Group's internal field data (legal claims, field reports and customer complaints); 3) NHTSA FARS data; and 4) state crash data from Florida, Illinois and North Carolina.

An analysis of each data source revealed two common themes: 1) rear impact events that result in fires are extremely rare and almost always involve rear impacts so severe that no fuel system design in any vehicle could reasonably be expected to guarantee against fuel leakage or fire; and 2) the 1993-2004 Jeep Grand Cherokee vehicles are no more likely to experience fire in a rear impact collision than the peer vehicles.

**1. TREAD EWR Fatality and Injury Data**

Chrysler Group retrieved the available production volumes and TREAD Early Warning Reporting (EWR) death and injury data from the public record for the three peer vehicles that NHTSA has identified in this investigation. The EWR quarterly data (3Q 2003 to 2Q 2010) was filtered for TREAD Code 23 (Fire) events and included on the below chart with the equivalent TREAD EWR data for the subject vehicles.

<b>Vehicles (1993-2004 MYs)</b>	<b>Total # Fire Events</b>	<b>Production Volumes</b>	<b># Deaths</b>	<b># Injuries</b>
<b>Jeep Grand Cherokee</b>	<b>26</b>	<b>2,968,914</b>	<b>8</b>	<b>21</b>
<b>GM Blazer*</b>	<b>45</b>	<b>2,771,241</b>	<b>22</b>	<b>45</b>
<b>Ford Explorer*</b>	<b>44</b>	<b>4,014,540</b>	<b>32</b>	<b>57</b>
<b>Toyota 4Runner*</b>	<b>3</b>	<b>1,128,360</b>	<b>0</b>	<b>3</b>

\* Peer vehicles include "sister" models

TREAD Code 23 represents death and injury counts that were related to all reports of fire, including impact and non-impact related fires, fuel-fed and electrical fires, under-hood and passenger compartment fires, etc. These counts of fire events are

time-limited, in that they only count reports received after the 2<sup>nd</sup> Quarter of 2003 and do not include vehicles older than ten model years at the time of the quarterly EWR reporting period.

Chrysler Group examined the TREAD EWR data and confirmed that the 1993-2004 Jeep Grand Cherokee vehicles are not over-represented in this EWR data.

## **2. Chrysler Group's Internal Field Data**

Of the nearly 3 million subject vehicles that were produced for the U.S. market and estimated to be driven over 300 billion miles, Chrysler Group has identified 23 reported crashes from its internal records that may relate to the alleged defect. These reports were received over the past 18 years through legal claims, customer complaints, or other notices. Most of the vehicles were inspected and an investigation was conducted to determine whether the post-collision fire could be attributed to a design or manufacturing defect. In each such instance, no defect was identified. The details of each of these crashes were provided in Enclosure 3 to Chrysler Group's October 15, 2010 IR response.

A vehicle inspection occurred on 17 of the 23 vehicles reported to be involved in a rear impact fire event. In each inspection it was confirmed that a rear impact collision by another vehicle caused a rupture of the fuel tank and a fire. The remaining 6 Jeep Grand Cherokee vehicles could not be inspected and, based upon the available information, Chrysler Group is unable to confirm that a rupture of the fuel tank occurred or that the origin of the fire was at the fuel tank.

Of the 23 incidents, 21 have sufficient information to allow an identification of the striking vehicle and an analysis of the likely relative impact velocity. All of the 21 incidents were high energy rear end collisions involving severe crash forces that are substantially greater than the energy associated with the applicable FMVSS 301 standard. The table below depicts the distribution of 20 of the 21 incidents<sup>1</sup> by vehicle type (mass) and relative impact velocity.

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<sup>1</sup> One incident involved a unique set of focused crash forces when a motorcycle impacted a non-Mopar, aftermarket Class I Light Duty trailer hitch on the Jeep Grand Cherokee that punctured the fuel tank.

Vehicle Type (Mass)	Relative Impact Velocity (MPH)						
	0-30	>30-35	>35-40	>40-45	>45-50	>50-60	>60
Small							1
Mid Sized						2	
Large Car			1		1	2	1
Minivan/SUV/Truck				1		3	4
HD Truck/Bus						3	1

As the table reflects, 18 of the 20 incidents involved rear impacts with a relative impact velocity greater than 45 MPH, and 17 of the 20 occurred at a relative impact velocity greater than 50 MPH. Seventeen of the 20 incidents involved striking vehicles with a relatively large mass, including large passenger cars, trucks, SUVs, minivans, a bus and a flatbed wrecker. Also, in a number of the incidents, as a result of the initial rear impact, the Jeep Grand Cherokee was pushed into the rear of the vehicle in front of it while the striking vehicle was still in contact with the Jeep Grand Cherokee. This interposition of the Jeep Grand Cherokee between two vehicles increased the crash forces acting on the Jeep Grand Cherokee.

In short, the number of incidents of rear impact collisions of 1993-2004 Jeep Grand Cherokee vehicles resulting in fire is extremely small, especially when compared to the Jeep Grand Cherokee vehicle population (23/2,968,914 or .0000077). Of the 23 incidents that Chrysler Group has sufficient information to analyze, all involved high energy rear impact collisions generally characterized by high relative impact velocities and relatively large mass striking vehicles. Of the 17 incidents where Chrysler Group was able to inspect the Jeep Grand Cherokee after the accident, there was no evidence that the vehicle's fuel system did not perform as intended and there was no design or manufacturing defect. Because of the severe nature of crash forces, no fuel system design in any vehicle could reasonably be expected to guarantee against fuel leakage or fire.

### 3. NHTSA FARS Data

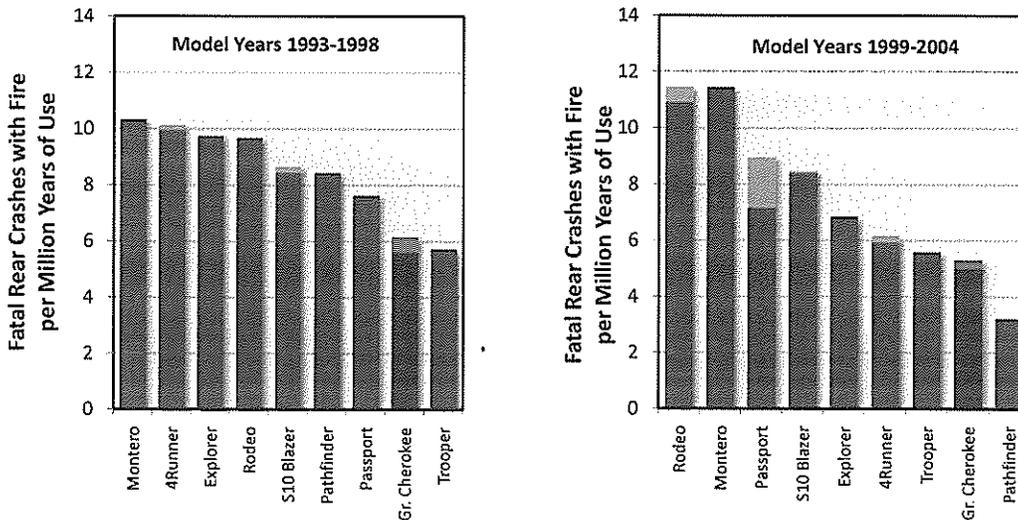
Chrysler Group has conducted an analysis of the available FARS data for calendar years 1992 through 2009, calculating the fatal crash rates in rear collisions (based on years of vehicle use) where fire was coded as the Most Harmful Event (MHE). Included in this FARS analysis are the peer vehicles selected by NHTSA in this

investigation (Blazer, Explorer and 4Runner), as well as other peer vehicles (Trooper, Passport, Montero, Rodeo and Pathfinder). An explanation of the data analysis methodology, the data charts and summary data are provided in Enclosure 6F. Enclosure 6F also includes an analysis by Chrysler Group of the FARS incidents involving the subject vehicles that were harvested from the FARS data. It should be noted that 4 of the 12 FARS incidents involving the subject vehicles appear to be unrelated to a post-collision rear impact crashes. Nevertheless, they were still included in the FARS analysis. Below is a brief summary of what the FARS data analysis reveals.

FARS incidents, which by definition involve a fatality, generally represent the most severe crash events. As noted in the chart below, the data demonstrates that fatalities in rear impact crashes are extremely rare events. The data further demonstrates that the 1993-2004 Jeep Grand Cherokee vehicles are no more likely to experience fatalities in rear impacts than the peer vehicles.

## FARS

### Fatal Rear Collisions Accompanied by Fire per Million Years of Vehicle Use

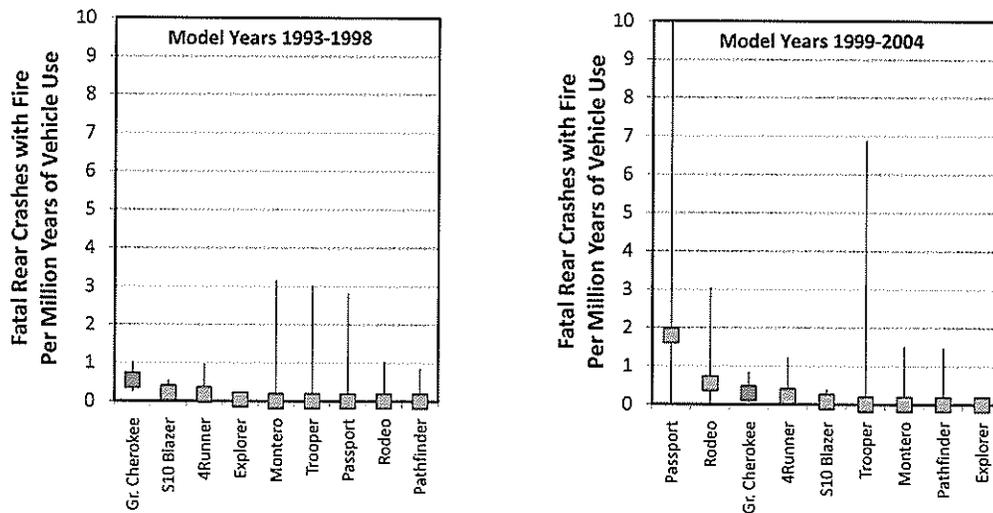


FARS data from 1992-2009. Registration data from RL Polk. Rates are not staggered. Includes crashes to the rear of the SUV, with a fatality in the SUV, and with Most Harmful Event coded as Fire. Explorer includes Mountaineer and Navajo. Montero includes Montero Sport. S10 Blazer includes T10 Blazer, Trailblazer, Jimmy, Envoy and Bravada.

Chrysler Group also analyzed the same FARS data for rear impact fatalities accompanied by fire as the most harmful event, and applied 95<sup>th</sup> percentile confidence intervals to the small number of cases reported. The below charts

demonstrate that the events are: 1) extremely rare and almost always involve rear impacts so severe that no fuel system design in any vehicle could reasonably be expected to guarantee against fuel leakage or fire; and 2) the 1993-2004 Jeep Grand Cherokee vehicles are no more likely to experience fire in a rear impact collision than the peer vehicles.

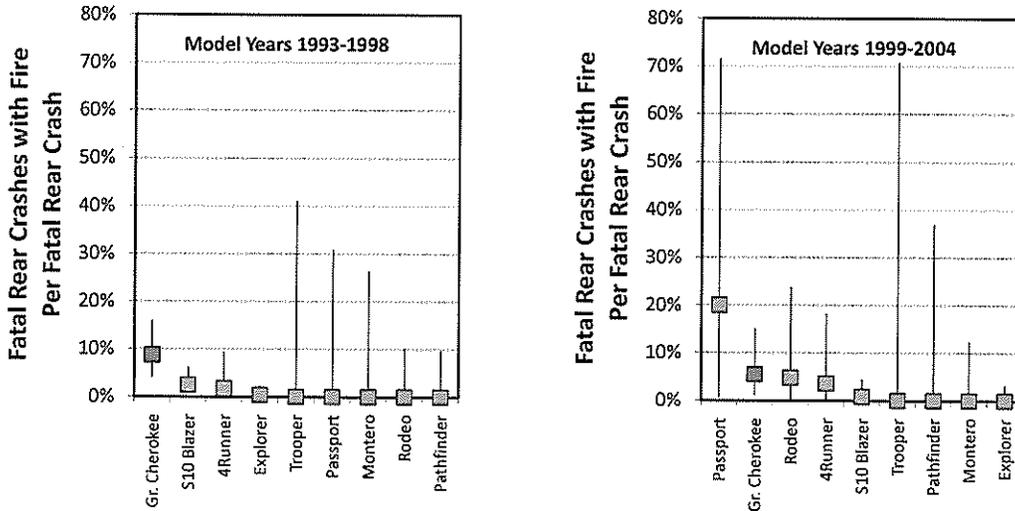
Rates of Fatal Rear Collisions Accompanied by Fire  
 Rates based on Million Years of Vehicle Use  
 With 95% Confidence Bounds Added



FARS data from 1992-2009. Registration data from RL Polk. Rates are not staggered. Includes crashes to the rear of the SUV, with a fatality in the SUV, and with Most Harmful Event coded as Fire. Explorer includes Mountaineer and Navajo. Montero includes Montero Sport. S10 Blazer includes T10 Blazer, Trailblazer, Jimmy, Envoy and Bravada. Squares are the calculated rates, and the lines are the 95% confidence intervals about the rates.

Finally, when the same FARS data is similarly assessed for the incidence of fires in fatal rear collisions, the data continues to demonstrate that fatal rear impacts involving 1993-2004 Jeep Grand Cherokee vehicles are no more likely to involve fire than fatal rear impact events in peer vehicles.

Rates of Fatal Rear Collisions Accompanied by Fire  
Rates are Percentages of Fatal Rear Collisions  
With 95% Confidence Bounds Added



FARS data from 1992-2009. Registration data from RL Polk. Rates are not staggered. Includes crashes to the rear of the SUV, with a fatality in the SUV, and with Most Harmful Event coded as Fire. Explorer includes Mountaineer and Navajo. Montero includes Montero Sport. S10 Blazer includes T10 Blazer, Trailblazer, Jimmy, Envoy and Bravada. Squares are the calculated rates, and the lines are the 95% confidence intervals about the rates.

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In summary, Chrysler Group's assessment of FARS data for calendar years 1992-2009 provides empirical evidence that fatal rear end collisions involving fire as the most harmful event are extremely rare for the subject and peer vehicles. More importantly, the above analysis of FARS incidents clearly shows that the 1993-2004 Jeep Grand Cherokee vehicles are at no greater risk of exposure to fire in fatal rear end collisions than peer vehicles.

#### 4. State Accident Data Analysis

Because FARS data involves only the most severe rear impact events and is limited to fatal crashes, it yields a relatively small sample size of accidents. Chrysler Group therefore chose to also assess multiple sets of state data for 1993-2004 Jeep Grand Cherokee and peer vehicles in rear impacts. The states selected for analysis all have the following in common: 1) their databases can be sorted by tow-away crashes, which allows analysis of significant impact events without limiting the data set to only the most severe events resulting in a fatality; 2) they have relatively large vehicle populations that would likely yield a large sample

size of rear impact events; and 3) from a certain point in time, state accident reports provide identification of fire at the vehicle level rather than only at the accident level.

An explanation of the state crash data analysis methodology, the data charts and summary data are provided in Enclosure 6F. The following is Chrysler Group's assessment of the state crash data for Florida, Illinois and North Carolina:

**a. State of Florida Crash Data Analysis:**

Chrysler Group analyzed the Florida crash database for calendar years 2002-2008. This crash data was not analyzed for accidents that occurred prior to 2002 because the data collected on those crashes did not code for fire at the vehicle level. As noted above, unlike the FARS analysis, Chrysler Group was able to analyze the subject vehicle performance in a much larger selection of higher-energy rear impact events without being limited to a fatal crash event. There were two analysis conducted: 1) high-energy events involving fatal or incapacitating injuries in the subject vehicles; and 2) rear impact tow-away events involving the subject or peer vehicles.

Fatal and Incapacitating Injury Crashes: Chrysler Group was able to mine the Florida data for rear crashes likely to involve very high-energy impacts. These Florida crashes were identified by using the following criteria applied to data from the Florida State accident databases (a total of 33 police accident reports were obtained):

- Maximum injury severity for an occupant was coded as fatal or incapacitating (2 fatal, 31 incapacitating injury crashes were identified);
- A 1993-2004 Jeep Grand Cherokee was impacted in the rear;
- Multiple-vehicle crash events where the Grand Cherokee was not parked; and
- The 1993-2004 Jeep Grand Cherokee was towed from the scene.

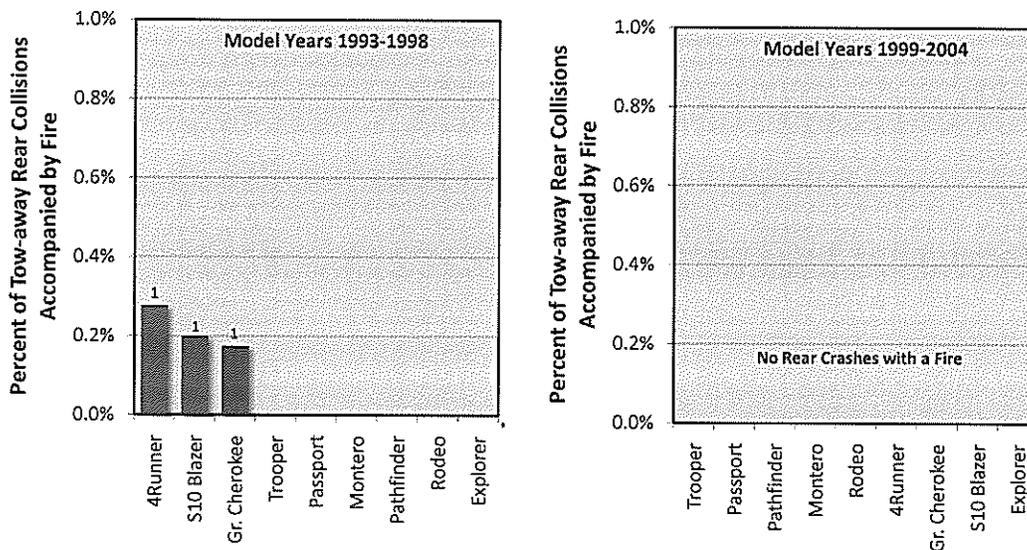
It was determined that 32 of the 33 1993-2004 Jeep Grand Cherokee crash reports made no mention of fire or fuel leakage in either the narrative or the coding. One crash report (#72772419) had a narrative that mentioned a post-collision fire in a subject vehicle, but fire was not coded in either the crash report or the Florida State database. Because this fatal crash was coded as fire in the FARS data

discussed above, Chrysler Group added this crash to the counts of fire-involved crashes included in the Florida analysis.

Rear Impact Tow-away Events: The charts below represent an analysis of 6,044 rear impact collisions severe enough to require the subject or the peer vehicles to be towed away. The subject vehicles were involved in 1,149 of these rear impact collisions. An analysis of the Florida state crash data demonstrates that: 1) rear impact events that result in fires are extremely rare and almost always involve rear impacts so severe that no fuel system design in any vehicle could reasonably be expected to guarantee against fuel leakage or fire; and 2) the 1993-2004 Jeep Grand Cherokee vehicles are no more likely to experience fire in a rear impact collision than the peer vehicles.

## Florida State Data

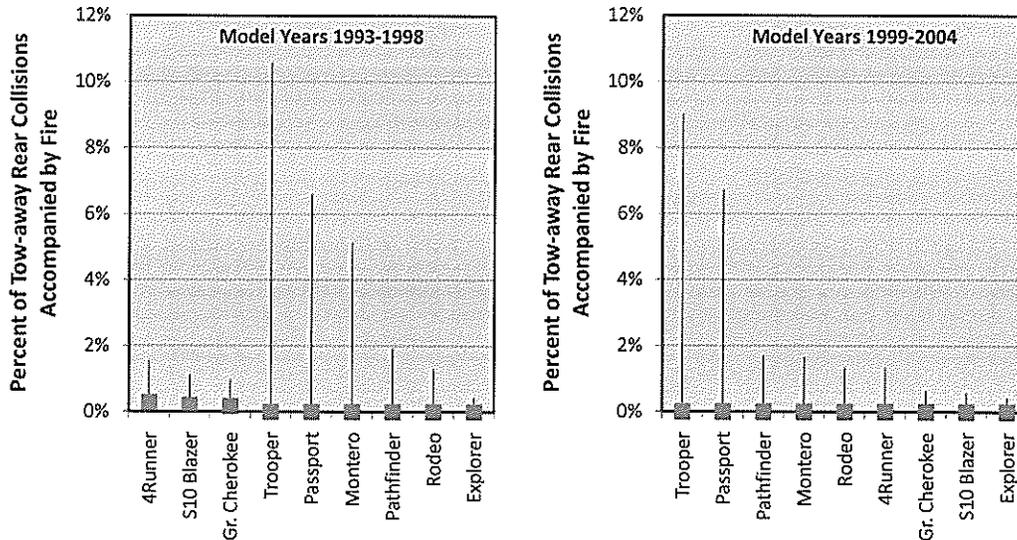
Percentage of Tow-away Rear Collisions that were Accompanied by Fire



Florida State data from 2002-2008. Includes crashes where initial impact to SUV was to the rear, and SUV required towing post-collision. Explorer includes Mountaineer and Navajo. Montero includes Montero Sport. S10 Blazer includes T10 Blazer, Trailblazer, Jimmy, Envoy and Bravada. Numbers above bars are counts of fire-involved rear collisions.

## Florida State Data

Percentage of Tow-away Rear Collisions that were Accompanied by Fire



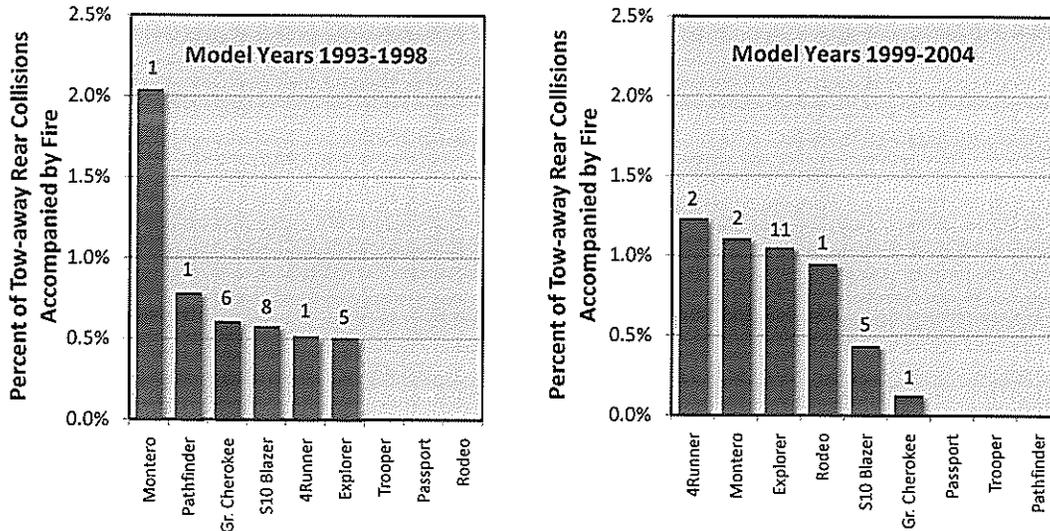
Florida State data from 2002-2008. Includes crashes where initial impact to SUV was to the rear, and SUV required towing post-collision. Explorer includes Mountaineer and Navajo. Montero includes Montero Sport. S10 Blazer includes T10 Blazer, Trailblazer, Jimmy, Envoy and Bravada. Squares are the calculated rates, and the lines are the 95% confidence intervals about those rates.

### b. State of Illinois State Crash Data Analysis:

Chrysler Group also analyzed the Illinois state crash database for calendar years 2000-2008. State crash data was not analyzed for accidents that occurred prior to 2000 because, like Florida, the data on those accidents did not code for fire at the vehicle level. The charts below represent an analysis of 7,493 rear impact collisions severe enough to require the subject or the peer vehicles to be towed away. The subject vehicles were involved in 1,747 rear impact collisions. Again, the same pattern emerges demonstrating that: 1) rear impact events that result in fires are extremely rare and almost always involve rear impacts so severe that no fuel system design in any vehicle could reasonably be expected to guarantee against fuel leakage or fire; and 2) the 1993-2004 Jeep Grand Cherokee vehicles are no more likely to experience fire in a rear impact collision than the peer vehicles.

## Illinois State Data

### Percentage of Tow-away Rear Collisions that were Accompanied by Fire

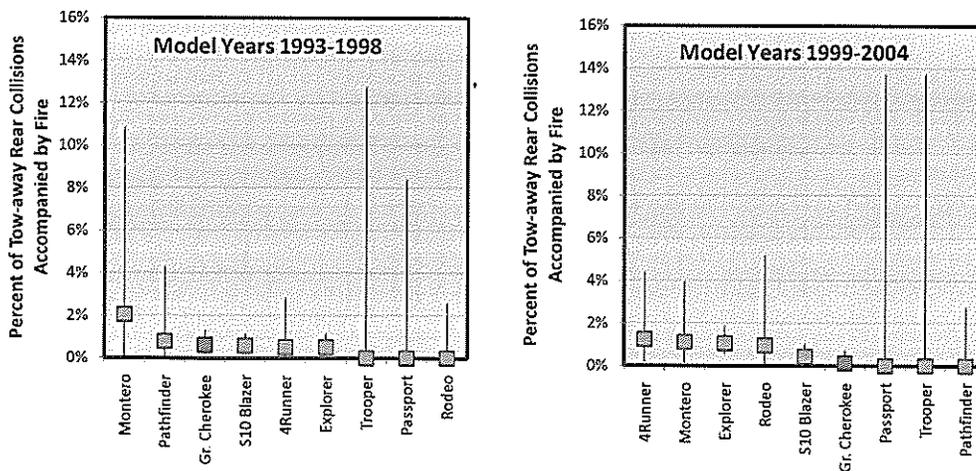


Illinois State data from 2000-2008. Includes crashes where initial impact to SUV was to the rear, and SUV required towing post-collision. Explorer includes Mountaineer and Navajo. Montero includes Montero Sport. S10 Blazer includes T10 Blazer, Trailblazer, Jimmy, Envoy and Bravada. Numbers above bars are counts of fire-involved rear collisions.

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## Illinois State Data

### Percentage of Tow-away Rear Collisions that were Accompanied by Fire



Illinois State data from 2000-2008. Includes crashes where initial impact to SUV was to the rear, and SUV required towing post-collision. Explorer includes Mountaineer and Navajo. Montero includes Montero Sport. S10 Blazer includes T10 Blazer, Trailblazer, Jimmy, Envoy and Bravada. Squares are the calculated rates, and the lines are the 95% confidence intervals about those rates.

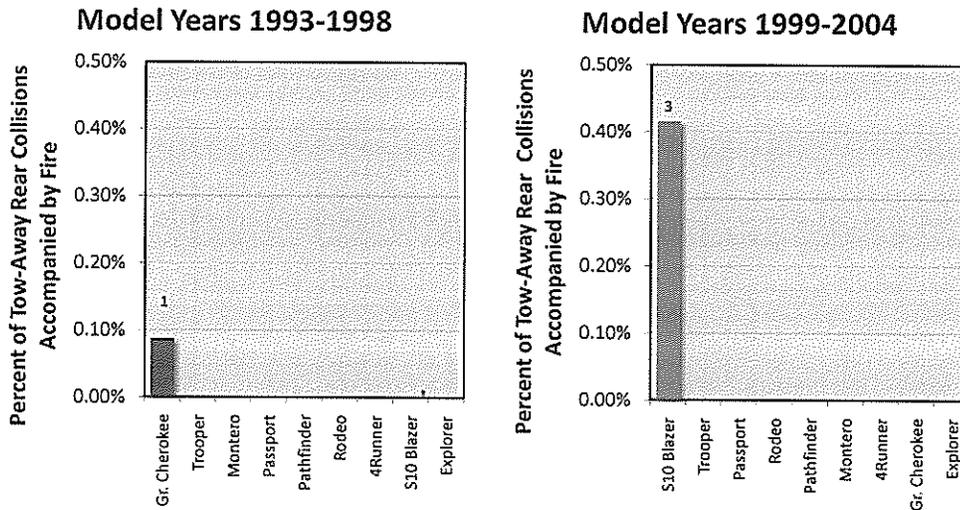
5

**c. State of North Carolina Crash Data Analysis:**

Finally, Chrysler Group analyzed the North Carolina state crash database for calendar years 2000-2008. State accident data was not analyzed for accidents that occurred prior to 2000 because the fire codes prior to that date were found to be unreliable. The charts below represent an analysis of 7,785 rear impact collisions severe enough to require the subject or the peer vehicles to be towed away. The subject vehicles were involved in 1,856 rear impact collisions. Consistent with the prior analyses, the same pattern emerges demonstrating that: 1) rear impact events that result in fires are extremely rare and almost always involve rear impacts so severe that no fuel system design in any vehicle could reasonably be expected to guarantee against fuel leakage or fire; and 2) the 1993-2004 Jeep Grand Cherokee vehicles are no more likely to experience fire in a rear impact collision than the peer vehicles.

## North Carolina Data Analyses

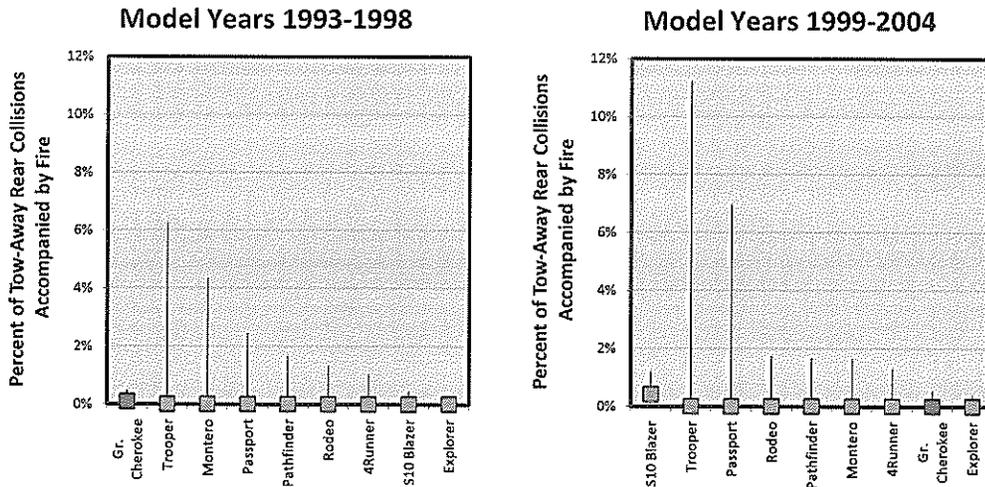
Percentage of Tow-away Rear Collisions that were Accompanied by Fire



North Carolina State data from 2000-2008. Includes crashes where at least one impact to the SUV was to the rear and the vehicle was not driven away. Explorer includes Mountaineer and Navajo. Montero includes Montero Sport. S10 Blazer includes T10 Blazer, Trailblazer, Jimmy, Envoy and Bravada. Numbers above bars are counts of fire-involved rear collisions.

## North Carolina Data Analyses

Percentage of Tow-away Rear Collisions that were Accompanied by Fire



North Carolina State data from 2000-2008. Includes crashes where at least one impact to the SUV was to the rear and the vehicle was not driven away. Explorer includes Mountaineer and Navajo. Montero includes Montero Sport. S10 Blazer includes T10 Blazer, Trailblazer, Jimmy, Envoy and Bravada. Squares are the calculated rates, and the lines are the 95% confidence intervals about those rates.

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### Summary of State Crash Data Analyses:

Chrysler Group has analyzed 21,322 crashes from three states where rear collision events resulted in a tow-away in the subject or peer vehicles. The 1993-2004 Jeep Grand Cherokee vehicles were involved in 4,752 of these crashes with only 9 reports of fire. The peer vehicles experienced similarly low rates of tow-away rear impact events involving a fire, which can be viewed in the table below.

Vehicle Family	Number of Rear Impact Tow-Away Impacts	Number Resulting in Fire	Percentage Resulting in Fire
Chevy Blazer	5216	17	0.33%
Ford Explorer	5927	16	0.27%
Toyota 4Runner	1624	4	0.25%
Jeep Grand Cherokee	4752	9	0.19%

As with the FARS data analysis, the state crash data analyses confirm that rear impact crashes resulting in a fire are extremely rare events. Moreover, the state crash data analyses are consistent with the conclusions drawn from the FARS data analysis: 1) rear impact events that result in fires are extremely rare and almost always involve rear impacts so severe that no fuel system design in any vehicle

could reasonably be expected to guarantee against fuel leakage or fire; and 2) the 1993-2004 Jeep Grand Cherokee vehicles are no more likely to experience fire in a rear impact collision than the peer vehicles.

### Conclusion

Chrysler Group's examination of the fuel system design history of the 1993-2004 Jeep Grand Cherokee vehicles supports its belief that sound engineering judgment and due care were used in the design, development and manufacture of the fuel systems of these vehicles. These vehicles were the product of many decades of fuel system design experience and were continuously tested to ensure they exceeded the applicable rear impact requirements of FMVSS 301.

The due care exercised to produce a robust fuel system did not end when the subject vehicles left the factory. The subject vehicles' fuel system performance was closely monitored in the field during the past eighteen years and over 300 billion miles driven by the subject vehicles. There were no reports of fuel leakage from a rear impact collision without a fire in the subject vehicles. Of the known rear impact events resulting in fire with sufficient information available to perform an analysis, all were high energy rear impact collisions with substantially higher energy levels than the applicable FMVSS 301 energy levels. All of the rear impact collision fires that were investigated over the past eighteen years were the result of high energy collisions and were not attributable to a design or manufacturing defect in the fuel system.

In connection with this investigation, Chrysler Group studied publicly available data involving over 21,000 rear impacts in the subject vehicles and their peers. These were rear impact events serious enough to require a tow-away, and the data allowed for the identification of the fire at the vehicle level. It is apparent from this study that:

1. Rear impacts resulting in a fire are extremely rare;
2. Rear impacts resulting in a fire occur no more often in the 1993 – 2004 Jeep Grand Cherokee vehicles than in peer vehicles; and
3. The 1993 – 2004 Jeep Grand Cherokee vehicles are at no greater risk of exposure to fire in rear end collisions than peer vehicles.

Accordingly, Chrysler Group has concluded that the 1993-2004 Jeep Grand Cherokee vehicles are neither defective nor do their fuel systems pose an unreasonable risk to motor vehicle safety in rear impact collisions. Chrysler Group believes this investigation should be closed.