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EXECUTIVE SECRETARIAT

2011 SEP -8 P 3:15

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September 2, 2011

Honorable David Strickland, Administrator
National Highway Traffic Safety Administration
1200 New Jersey Avenue, SE
Washington, D.C. 20590

Dear Administrator Strickland:

Attached please find the Center for Auto Safety's September 1, 2011 letter to Chrysler CEO Sergio Marchionne. This letter contains a detailed analysis of fuel system failures in the Jeep Grand Cherokee, currently the subject of NHTSA Investigation PE10-031.

We ask that this letter be placed in the investigatory file for PE10-031. For your convenience and that of the docket administrators, an electronic copy in full color is available at the following URL:

http://www.autosafety.org/sites/default/files/imce_staff_uploads/MarchionneLetter.pdf

Please do not hesitate to contact us if you have any questions.

Sincerely,

Michael Brooks
Staff Attorney

ES11-005751

CENTER FOR AUTO SAFETY

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September 1, 2011

Sergio Marchionne, Chairman
Chrysler Group LLC
1000 Chrysler Drive
Auburn Hills MI 48321-8004

Dear Chairman Marchionne:

On May 8, 2011, you gave a commencement address at the University of Toledo in which you stressed social responsibility. You charged: "I believe that the future is not just the responsibility of governments. It's an individual and collective responsibility. It's a challenge that calls for a concerted and shared commitment. Closing our eyes, or thinking that finding a solution is someone else's role, makes us part of the problem."

How apt that you made this address in Toledo the home of the Jeep and where the Grand Cherokee is made because the terrible and rising fire death toll of the 1993-2004 Grand Cherokee represents the largest social responsibility facing Chrysler today. Like a toxic waste site, these vehicles are legacy of the old Chrysler which the new Chrysler is called upon to clean up. As you told the Toledo graduates, "The essence of leadership, when all is said and done, is the personal assumption of the moral duty to be proactive in building our future." The future of the new Chrysler lies in not only the marketability of its new models but also how it handles the legacy of its older models, particularly the toxic 1993-2004 Jeep Grand Cherokee depicted in the hauntingly surreal photo of the burned out hulk of the 1997 Grand Cherokee that terribly burned the [REDACTED] sisters and burned [REDACTED] to death. Note the lack of structural damage showing there would have been no injuries but for the fire.



Picture 1 - [REDACTED] Crash Post Accident Photos

The Safety Problem

The 1993-2004 Jeep Grand Cherokee is a modern day Pinto for soccer moms. As with the Pinto, the fuel tank is located behind the rear axle: a dangerously vulnerable area in the rear impact crush zone. The tank is made of plastic and has a fuel filler hose that is vulnerable to separation in a rear crash. The tank itself has no valve that would ensure containment of fuel in the event of such a separation. In the United States alone from 1993 through 2009, there have been 184 fatal fire crashes in Jeep Grand Cherokees that have resulted in 269 deaths and numerous burn injuries. At least 78 of the deaths are due to fire according to available medical and government records with the real number of fire deaths higher.

In 2005, under pressure from its merger partner Daimler-Benz, Chrysler moved the fuel tank forward of the rear axle to the safer location used almost universally in light motor vehicles. Despite the fuel tank not only being behind the rear axle but also extending below the rear bumper, a 3 mm fuel tank shield or skid plate produced by Chrysler was not made standard on any 1993-2004 Grand Cherokee. The 1999-2004 Grand Cherokees had an inadequate 1 mm brush guard that did no more than what its name implied – guarded the tank from brush.

In 1978, Chrysler Automotive Safety Manager L.L. Baker laid out the basic principles for fuel system safety for Chrysler cars and trucks based on the Ford Pinto which included moving the fuel tank ahead of the rear axle and ensuring the filler neck, cap and tube remained attached to the fuel tank to avoid fuel leakage.¹ In SUVs, Baker recommended a protective impact deflection system for the fuel tank recognizing the mismatch between bumpers that allow lower passenger car to come under and impact the fuel tank if it could not be relocated forward of the rear axle in an SUV. Yet none of these recommendations were carried out in the 1993-2004 Grand Cherokee. If they had, many Grand Cherokee crash fire victims would have lived.

The vulnerability of the fuel tank is exacerbated by the dangerous design of the fuel filler hose. In 1993-1998 Grand Cherokees, the filler hose goes through the frame rail unlike any other passenger vehicle. In the event of a rear impact, the filler hose is likely to be pulled out of the fuel tank as the frame rail bends upward. In 1999-2004 Grand Cherokees, Chrysler relocated the filler hose under a redesigned, solid frame rail and improved the connection between the tank and filler hose. With this revised design, the filler hose became vulnerable to separating from the filler cap housing and inlet pipe at its upper end. The plastic fuel tank itself is vulnerable to puncture from sharp objects that are part of either vehicle in a rear impact crash. None of the 1993-2004 models has an effective check valve in the fuel tank to stop fuel flow when the filler hose is pulled loose. Other similar vehicles at that time such as the Ford Explorer and Oldsmobile Bravada had check valves that prevent fuel flow if the filler hose pulled loose from either the tank or the filler neck.

¹ "Fuel System Design – Chrysler Passenger Cars And Trucks," Memo from L.L. Baker, Manager Automotive Safety, to R.M. Sinclair, Director International Product Development, August 24, 1978. See http://www.autosafety.org/sites/default/files/imce_staff_uploads/BakerFuelMemo1978.pdf



Picture 2 – Ineffective Grand Cherokee Check Valve



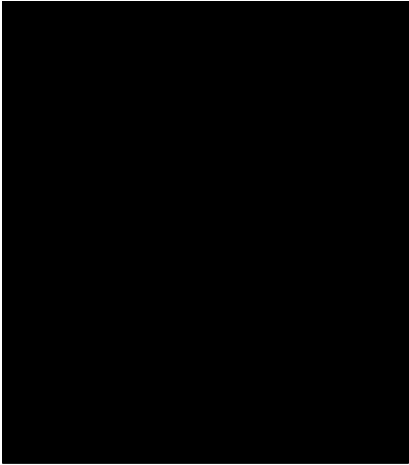
Picture 3 – 2002 Ford Explorer Check Valve

Grand Cherokee Has Highest Fire Death Rate of Similar SUV's – 20 Times Explorer

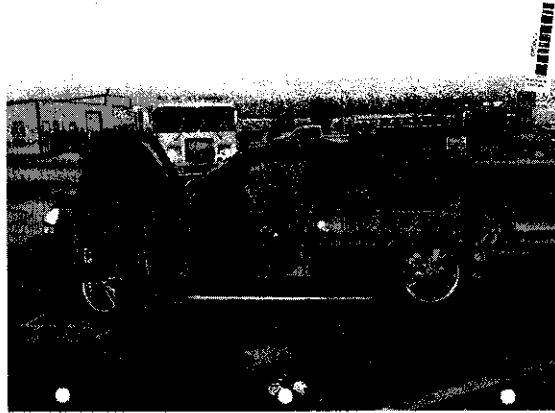
Chrysler's own analysis of rear impact fire deaths in NHTSA's Fatal Accident Reporting System database (FARS) shows the Jeep Grand Cherokee to have by far the worst fire death rate of any SUV with more than one fire death. Chrysler's FARS analysis shows 22 fatal rear crashes in nine different 1993-2004 SUVs with fire as the Most Harmful Event - 12 of them in 1993-2004 Jeep Grand Cherokee's. Three of the nine SUVs have no fatal rear MHE fire crashes and three have only one fatal rear MHE fire crash. The Jeep Grand Cherokee with a MHE fire death rate of 0.44 per million vehicle years of use is by far the worst performing SUV in rear impact fire crashes. The Grand Cherokee's biggest competitor, the Ford Explorer with a fuel tank in front of the rear axle had a MHE fire death rate of only 0.02 per million vehicle years of use, making the Grand Cherokee twenty times higher than the Explorer.²

The Grand Cherokee fire death rate would be even higher if Chrysler had included the three other rear fire crashes identified by CAS where an occupant of a Grand Cherokee died by fire. And still higher yet if deaths to the occupant in the striking vehicle were included as NHTSA did in the FMVSS 301 rulemaking and the GM Pickup Defect Investigation. Chrysler's FARS analysis did not include Jose Sierra's burn death because he was in the striking vehicle. (See Picture 1.) Nor did it include the burn death of 4 year old Cassidy Jarmon even though Chrysler confidentially settled the case.

² See Chrysler presentation to NHTSA, "1993-2004 MY Grand Cherokee Chrysler's Analysis of FARS Data" <http://www-odi.nhtsa.dot.gov/acms/docserver/Artemis/Public/Pursuits/2010/PE/INME-PE10031-46240P.pdf> and Center for Auto Safety letter to NHTSA Administrator David Strickland: https://docs.google.com/viewer?a=v&pid=explorer&chrome=true&srcid=0B08yVa_bKjAVODZhNjMzYzYtODQ2Ny00MDM4LTk4OWMtNGVhNDc4ZDIxYmI4&hl=en_US



Picture 4 –



Picture 5 – Crash Photo

Old Chrysler's Defect Knowledge

Chrysler engineers knew about the deadly defects in the Jeep Grand Cherokee early on. Crash tests conducted by the company demonstrated failures of the fuel tank, frame rail and filler hose connections coupled with fuel flow from the tank unstemmed by any effective check valve. For example, Chrysler Test 5380 had the fuel filler pull out of the fuel tank with a massive leak unstemmed by an effective check valve used by other manufacturers.³

Chrysler engineer Judson Estes discussed the problems of both filler hose and fuel tank location in a deposition in [REDACTED] v. Chrysler.⁴ Mr. [REDACTED] deposition showed throughout that the behind the rear axle location of the fuel tank in the crush zone led to repeated contact with transmission and suspension components in crash tests. (Id. at 72, 75.) Mr. [REDACTED] also testified that in crash test 5380 the connection plug holding the fuel hose and vent lines pulled loose from the fuel tank allowing the fuel to flow out of the tank. He attributed this to a failure of the ultrasonic weld securing the plug fitting to the fuel tank. (Id. at 101-04.) This is precisely the failure mode shown in the FHWA crash test depicted below.

³ See [http://www.autosafety.org/sites/default/files/imce_staff_uploads/\[REDACTED\]%20Deposition%20Exhibit%207.pdf](http://www.autosafety.org/sites/default/files/imce_staff_uploads/[REDACTED]%20Deposition%20Exhibit%207.pdf)

⁴ A copy of the deposition is posted at <http://www-odi.nhtsa.dot.gov/acms/docservlet/Artemis/Public/Pursuits/2009/DP/INME-DP09005-39045P.pdf>



Picture 6 – Fuel Filler/Emission Control Line Plate Failure

Mr. [REDACTED] went on to testify that the frame rail bent upward and closed on the fuel hose and vent line pulling them away from the tank. (Passim 60-101.) Mr. [REDACTED] testified that a frame rail reinforcement bracket was added to keep the frame rail from closing on the fuel lines. (Id. at 117.) The reinforcement bracket added to strengthen the frame rail is shown below.



Picture 7 – Reinforcement Bracket

FHWA and CAS Vehicle to Vehicle Crash Tests

Three recent crash tests of various models of these vehicles conducted by the George Washington University for the Federal Highway Administration (FHWA) and by the Center for Auto Safety have confirmed and demonstrated that the design flaws and vulnerabilities of the fuel tank and its connections result in major fuel spills and fire in rear impacts.⁵ All three crash tests were vehicle to vehicle 30% offset rear impacts similar to new Federal Motor Vehicle Safety Standard (FMVSS) 301 with the striking vehicle being a Ford Taurus. Two of the tests were run at the 50 mph impact velocity in FMVSS 301 while the third was run at only 40 mph.

On the earlier models (through the 1998 model year) the filler and the vent hoses are routed through the left rear frame rail while in the later models, they are routed under the left rear frame rail. The earlier models had no standard shield protecting the fuel tank. On the later models, there is either a 1 mm brush guard or a 3 mm skid plate covering the underside of the tank. The skid plate is bolted to the rear frame rails so that the two hoses entering the tank are effectively tied to the frame rail. If the frame rail and fuel tank do not move together in a crash, this forces a separation of the filler hose from the tank. If they do move together, the filler hose can pull lose from the fuel filler inlet.



Picture 8 – Grand Cherokee Fuel Lines Routed through Frame Rail

When these vehicles were marketed, they were among a very few that continued to place the fuel tank behind the rear axle, and they are the only known vehicles that route the fuel filler

⁵ See <http://www.autosafety.org/jEEP-grand-cherokee-crash-tests>

through the frame rail. Manufacturing the tank out of plastic also makes it vulnerable, in the event of a fuel fire, to being melted or burned so that it can no longer contain any fuel.

The crash tests conducted at the FHWA Turner-Fairbank facility and at KARCO Engineering highlighted significant shortcomings of the Grand Cherokee fuel tank design beyond its location and the routing of fuel lines. The tank has no effective check valve at the entry point of the fuel filler hose that would seal the tank and prevent fuel leakage in the event of a separation of the fuel filler hose from the tank. While it does have a check valve that can prevent backflow into the filler line if the pressure in the tank is greater than atmospheric pressure, that check valve will open once the pressure on either side of the valve is equalized.

Thus, in the first of the KARCO Engineering tests, this valve opened once the vehicle was rolled in the spit test required by FMVSS 30, permitting all of the fuel (actually Stoddard fluid used for testing because it is not flammable) in the tank to flow out. (See Picture 2 for Chrysler check valve.)



Picture 9 – Stoddard Fluid Leaking from Fuel Tank

The fuel filler and vent lines are attached to a small plastic plate that is “welded” to the tank. In the Turner-Fairbank test of a 1995 Grand Cherokee equipped with the optional 3 mm skid plate, this “welding” failed completely and the entire plate came free of the tank. (See

Picture 6.) This is precisely the failure mode identified by Chrysler in crash test 5380 and discussed by Chrysler engineer Judson Estes. The back pressure check valve came out along with the attached hoses. This failure left a large hole in the left side of the tank permitting massive loss of fuel during the impact. The Delta V (change of speed experienced by the Grand Cherokee in the crash) was 23 mph, far below the 35 mph Delta V in NHTSA's New Car Assessment Program which vehicle occupants survive. But for fire, these tests show the occupants should easily survive the crash forces in 50 mph rear impacts.

In the first KARCO Engineering test at 50 mph 30% offset rear impact, the upper end of the fuel filler hose of the 1999 Grand Cherokee came off its attachment to the fuel filler inlet tube. (See Picture 10 below.) When the vehicle was rolled in the spit test required by FMVSS 301, the fuel was free to flow out through the filler tube as shown in Picture 9. In this test, the Delta V was 26 miles/hour. Like the FHWA test, this vehicle was equipped with the 3 mm skid plate.



Picture 10 – Fuel Filler Detachment

Rollover fires are all too common in Jeep Grand Cherokees with the FARS database showing 23 deaths in 15 fatal fire crashes involving rollover of 1993-2004 Grand Cherokees. Of these, 21 were coded by FARS as MHE fire which undercounts actual fire deaths. For example, [REDACTED] was burned to death according to the autopsy report in the rollover of the 2002 Grand Cherokee which is shown in Picture 11 below. The lack of an effective check valve used by other manufacturers in their SUV's could have prevented many of these fire deaths.



Picture 11 – [REDACTED] Crash

The second KARCO Engineering test of a 1996 Grand Cherokee was conducted at a substantially reduced impact velocity of 40 mph to demonstrate the vulnerability of Grand Cherokees with fuel tanks behind the rear axle in lower speed impacts. This Grand Cherokee was the standard vehicle without the optional plate under the tank. The Delta V was only 21 mph which is a clearly survivable crash if there were no fire. The filler hose remained attached to the tank and to the filler inlet but the tank ruptured and spilled its entire fuel content immediately. (See Pictures 12 & 13 below showing the ruptured tank and the fuel pouring out of the tank into collection containers.).



Picture 12 – 1996 Grand Cherokee Punctured Fuel Tank



Picture 13 – Fuel Leakage from Fuel Tank

The 1993-2004 Jeep Grand Cherokee designed by the old Chrysler Corporation and corrected by relocation of the fuel tank in 2005 by DaimlerChrysler has and will continue to claim a terrible toll of burn victims. As the CEO of the new Chrysler Group LLC who has spoken out about the social responsibility of leaders not to close their eyes to problems but to find solutions, the Center for Auto Safety and the families of victims call on you to recall all 1993-04 Jeep Grand Cherokees and remedy the defects in their fuel systems so this defect does not claim any more victims.

Sincerely,

A handwritten signature in cursive script, appearing to read "Clarence Ditlow".

Clarence Ditlow
Executive Director