CENTER FOR AUTO SAFETY
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October 2, 2009

Ronald Medford, Acting Deputy Administrator
National Highway Traffic Safety Administration
1200 New Jersey Avenue SE
Washington DC 20590

PETITION

Dear Deputy Administrator Medford:

The Center for Auto Safety (CAS) petitions the National Highway Traffic Safety Administration (NHTSA) to initiate a defect investigation into and recall all 1993-2004 Jeep Grand Cherokee with a fuel tank located behind the rear axle. Unlike the earlier Jeep Cherokee, the fuel tank of the Grand Cherokee is plastic and extends below the rear bumper so there is nothing to protect the tank from a direct hit in a rollover or by a vehicle with a low front profile or one lowered by pre-impact braking.

The design is so bad that Chrysler frequently settles lawsuits without extensive discovery and subject to confidentiality agreements. A search of NHTSA's FARS files for fatal fire crashes where there was a fire occurrence in a 1993-2004 Jeep Grand Cherokee from calendar year 1992 through 2008 found 172 fatal fire crashes with 254 fatalities. (Attachment A.) With an additional known fatal fire crash in 2009, there have been at least 44 crashes with 64 fatalities where the Most Harmful Event is fire.[1] (Attachment B.) In comparison, NHTSA reported a total of 38 fire crashes involving only 26 fire deaths in the Ford Pinto when it issued its initial defect report in May 1978. (Attachment C.)

The fuel system in the 1993-04 Grand Cherokee is defectively designed in that it contains a plastic fuel tank subject to rupture, degrades in performance over time, a fuel filler neck that tears off in a range of crashes, a hostile environment with sharp objects such as suspension bolts that can puncture the tank, extends below the bumper and is unshielded although Chrysler offers a optional 3/16" steel shield as a "skid plate" for off road use which would protect the tank in rear impacts where there is pre-crash braking of the striking vehicle. Similar shields are offered in the aftermarket by companies like Quadratec and take advantage of OEM holes in the frame rail to mount the shields.[2]

With funding from General Motors, the Motor Vehicle Fire Research Institute (MVFRI) has performed detailed technical assignments of the fuel tanks and fuel systems in motor vehicles. As pointed out in the assessment of the 2003 Grand Cherokee, the rear sway bar link bolt is only

[1] This excludes FARS Case 60718 on March 16, 1996 in California involving a crash between a 1996 Grand Cherokee and a classic 1971 Ford Mustang which also had a known fuel tank hazard.

[2] http://www.quadratec.com/products/12500_301.htm

3 centimeters away from the plastic tank and could easily puncture the tank in a crash.[3] MVFRI also found that plastic fuel tanks, particularly those like the 1993-04 Grand Cherokee located behind the rear axle, degraded in performance over time and were more subject to leakage in crashes.[4]

After it became a merged company with Mercedes, DaimlerChrysler moved the fuel tank in board of the rear axle in 2005 and shielded it. Since the relocation of the fuel tank in 2005 and later Grand Cherokees, there has only been one fatal fire crash in the redesigned vehicle. And that fire occurred after both occupants had been ejected in a rollover of a 2008 Grand Cherokee so that the deaths were not caused by fire.

Due to confidential settlements, the details of most lawsuits are not available. What is available demonstrates the existence of a safety defect in this vehicle. In Smith v Chrysler, the attorneys identified a common hazard as the location of the tank and a filler neck that easily torn off in a crash as fire hazards. In this case, a 2001 Grand Cherokee was beginning to go through a green light when it was struck in the rear by a Town Car traveling at only 20 to 25 miles per hour. (Attachment E.) In FARS case 360720 in Long Island NY on September 1, 1999, a stopped 1997 Grand Cherokee was struck from behind by a braking Toyota MR2. Two sisters in the back of the Grand Cherokee were severely burned when they could not get out of the Jeep due to jammed doors. The driver of the MR2, a gardener from Whitmore's, was fatally burned as he was enveloped by the burning fuel from the ruptured tank of the Grand Cherokee.

Susan Kline of New Jersey was in a 1996 Grand Cherokee when it was struck from behind by a 2004 Toyota Sienna. The doors on the Jeep jammed in the impact. Mrs. Kline climbed from the driver side to the passenger side trying to get out of the burning vehicle but was unsuccessful. Her skeletal body was found in the passenger seat. (Attachment F.) This crash and the Long Island crash both demonstrate the unique hazards of an unshielded tank extending below the rear bumper where it can be engaged by the lowered front of a striking vehicle and shoved up into the structure of the vehicle above the tank and ruptured. The low hanging, exposed fuel tank of the 1993-04 Grand Cherokee is also particular vulnerable in rollover crashes where it can strike fixed objects as it rolls. Later model Grand Cherokees have a 1milimeter brush guard that is cosmetic and offers no protection. The optional skid plate offered by Chrysler and aftermarket manufacturers is three times as thick and provides protection in such crashes.

Just like the 1971-76 Ford Pinto and 1973-87 General Motors in which NHTSA made initial determinations of safety defects despite both vehicles meeting FMVSS 301, the Grand Cherokee purportedly met FMVSS 301 although early 2002 models were subject to a non-compliance recall, 02V-032. However, as show above the Grand Cherokee contains safety defects not covered by the performance requirements of FMVSS 301 and should be recalled.

Ironically, New Chrysler tried to escape liability for all future Grand Cherokee crashes occurring after the bankruptcy where the vehicle was sold before the bankruptcy. Just days after the bankruptcy, Rodney Wood was killed in his 2004 Grand Cherokee on July 10, 2009 when it was

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[3] www.mvfri.org/Contracts/Final%20Reports/Biokinetics-Phase-II/ReportTool/vehiclefiles/index.html#2.

[4] K Digges, et al, "Fire Safety Performance in Crashes," ESV Conference 2003. (Attachment D.)

hit by a transit bus.[5] The autopsy showed he died by fire, not by the trauma of the impact. Under intense public pressure, New Chrysler relented and agreed to cover future product liability losses. (Attachment H.) However New Chrysler still refused to accept responsibility for victims like Susan Klein whose tragic crashes occurred prior to the bankruptcy.

The 1993-04 Grand Cherokee has a fatal crash fire occurrence rate that is about four times higher than SUVs made by other companies. Comparing the 1993-04 Grand Cherokee with the exposed rear fuel tank to the 2005 and later Grand Cherokee with the shielded fuel tank in front of rear axle in the first five years of use for both vehicles so that it's an apples to apples comparison, the defective old Grand Cherokee has a fatal fire rate six times higher than the new Grand Cherokee.

To protect the public from more fire deaths and injuries in the 1993-04 Grand Cherokee as they continue to crash and burn, the Center for Auto Safety requests an immediate recall.

Respectfully submitted,

Clarence M. Ditlow

[5] Attachment G is a copy of the initial police report.

Attachment A
MY 1993-2008 Jeep Grand Cherokee Fatal Fire Crashes, 1992-2008

MY 1993-2008 Jeep Grand Cherokee Fatal Fire Crashes, 1992-2008

This table includes known fire crashes obtained from NHTSA's Fatal Analysis Crash System (FARS) for Calendar Years 1992-2008 and from public records for other years and for crashes not listed in FARS. Where FARS indicates fire is the most harmful event, that is indicated. Where FARS indicates vehicle in transport, striking tree or other object, that is indicated.

Crash Date by State	Name	City/County	Road	Deaths	Make/Model/Year	FARS #
Alabama						
09/26/01**	FARS (overturn)	Blount Co.	US-SR74	2	2000 Grand Cherokee	10627
04/12/06[F]	FARS	Montgomery	5466	1	2004 Grand Cherokee	10243
04/25/07[F]	FARS	Macon Co.	I-85	1	1993 Grand Cherokee	10270
Alaska						
10/12/02*	FARS	Kenai Peninsula	I-A3-2 Seward	2	2000 Grand Cherokee	20053
Arizona						
02/01/98[F]	FARS	Gila Co.	Old Dripping Springs	1	1993 Grand Cherokee	40059
08/18/98**	FARS (bridge rail)	Mohave Co.	I-15	1	1995 Grand Cherokee	40506
03/13/01[F]	FARS	Mohave Co.	I-40	2	1994 Grand Cherokee	40104
11/26/06*†(1)	FARS	Surprise	US-60 R.H. Johnson Blvd.	1	1995 Grand Cherokee	40874
Arkansas						
09/14/04*†(1)	FARS	Carroll Co.	US-62-05	2	1999 Grand Cherokee	50451
California						
03/06/96*†(1)	FARS	Indio	Country Club Dr.	2	1993 Grand Cherokee	60665
03/16/96[F]†(5)	FARS	Carson	91	5	1996 Grand Cherokee	60718
07/07/96[F]†(1)	FARS	Poway	Espola Rd.	1	1993 Grand Cherokee	61698
06/14/98**†(1)	FARS (barrier)	Victorville	I-15	1	1993 Grand Cherokee	60918
10/27/99[F]	Young Sup Lee	Los Angeles	SR-170	1	1998 Grand Cherokee	62795
05/07/00[F]	FARS	Orange Co.	SR-241	1	1993 Grand Cherokee	60499
07/20/01[F]	FARS	San Bernardino Co.	I-10	1	1994 Grand Cherokee	61708
08/07/01**	FARS (tree)	Los Gatos	SR-17	1	1998 Grand Cherokee	62067
03/23/02*†(1)	FARS	Sutter Co.	SR-99	2	1995 Grand Cherokee	61045
07/13/02**	FARS	San Luis Obispo Co.	Orcutt Rd.	1	2000 Grand Cherokee	60896
08/30/02[F]	FARS	Bakersfield	SR-58	1	1993 Grand Cherokee	62653
10/11/02**	FARS (overturn)	Fresno Co.	I-5	1	1993 Grand Cherokee	62779
10/04/03*	FARS	Anaheim	S. Harbor Blvd.	2	2004 Grand Cherokee	62897
11/27/03**	FARS (utility pole)	Commerce	Slauson Ave.	1	1996 Grand Cherokee	63251
02/05/04*	FARS	San Bernardino Co.	I-15	1	1995 Grand Cherokee	60339
05/26/04**†(2)	FARS (overturn)	Vacaville	I-80	4	2004 Grand Cherokee	61401
06/08/04**	FARS (parked vehicle)	Riverside Co.	I-10	1	1997 Grand Cherokee	61466
08/18/05[F]	James Lindskog	Oceanside	Vista Way	1	1994 Grand Cherokee	63236
05/24/06[F]†(1)	FARS	Orange Co.	SR-241	2	2001 Grand Cherokee	61349

Crash Date by State	Name	City/County	Road	Deaths	Make/Model/Year	FARS #
06/25/06**	FARS (tree)	Sonoma Co.	Petrified Forest Rd. Sharp Rd.	1	1993 Grand Cherokee	62934
Colorado						
07/24/94*	FARS	Denver	Martin Luther King Blvd.	1	1994 Grand Cherokee	80258
09/02/02**	FARS (overturn)	Douglas Co.	SR-470	1	1993 Grand Cherokee	80460
01/10/05[F]	FARS	Mesa Co.	Rim Rock Dr.	1	2004 Grand Cherokee	80025
07/06/08**	FARS (boulder)	Garfield Co.	US-6	1	1997 Grand Cherokee	80229
Connecticut						
04/10/97**	FARS (tree)	Washington	199	1	1994 Grand Cherokee	90062
04/19/02**	FARS (tree)	Hamden	New Rd.	1	1994 Grand Cherokee	90113
Delaware						
09/11/03*	FARS	Sussex Co.	CR321	1	1993 Grand Cherokee	100090
D.C.						
Florida						
11/16/98*†(2)	FARS	Hillsborough Co.	SR580	2	1998 Grand Cherokee	122093
11/17/01**	FARS (overturn)	Jacksonville	I-295	1	1996 Grand Cherokee	122302
09/05/07[F]	FARS	N/A	SR-944 32nd Ave.	2	1998 Grand Cherokee	122577
Georgia						
12/04/97*	FARS	Wilkes Co.	SR10	1	1997 Grand Cherokee	131268
07/14/98*	FARS	Echols Co.	US-SR89	3	1993 Grand Cherokee	130723
12/13/98**	FARS (tree)	Forsyth Co.	SR-371	1	1996 Grand Cherokee	131315
05/30/99**	FARS (embankment)	Jones Co.	US-129(SR-11)	2	1994 Grand Cherokee	130444
08/13/01**	FARS (barrier)	DeKalb Co.	I-20 (SR 402)	1	1998 Grand Cherokee	130795
10/30/04*†(4)	FARS	Tift Co.	I-75	4	1999 Grand Cherokee	131171
03/08/05[F]	FARS	Paulding Co.	N/A	1	1999 Grand Cherokee	130196
03/09/05[F]	FARS	Macon Co.	SR-49	1	1997 Grand Cherokee	130197
03/24/05*	FARS	Barrow Co.	SR-11	1	1993 Grand Cherokee	130251
06/20/06*	FARS	Polk	SR-101	1	2003 Grand Cherokee	130713
09/04/07**	FARS (overturn)	McDuffie Co.	SR-223	1	1998 Grand Cherokee	130958
Illinois						
09/04/00[F]	Nguyen, Bui, Vo, Prith	Chicago	I-90/94	6	1993 Grand Cherokee	170827
03/02/01*	FARS	Elk Grove Village	Thorndale Ave.	1	1998 Grand Cherokee	170153
08/12/02**	FARS (tree)	Barrington Hills	Spring Creek Rd.	1	1998 Grand Cherokee	170755
03/16/03*	FARS	Livingston Co.	SR-17	1	1994 Grand Cherokee	170248

Crash Date by State	Name	City/County	Road	Deaths	Make/Model/Year	FARS #
10/11/03*†(1)	FARS	Union Co.	I-57	2	1996 Grand Cherokee	171040
02/16/04*	FARS	Kankakee Co.	SR-113 7000 West	2	1999 Grand Cherokee	170112
06/02/05*†(1)	FARS	Coles Co.	SR-16	2	1999 Grand Cherokee	170556
10/23/05*†(1)	FARS	Iroquois Co.	I-57	1	1998 Grand Cherokee	170921
01/04/06*†(1)	FARS	South Elgin	SR-25	2	2001 Grand Cherokee	170006
03/18/07**	FARS (overturn)	Du Page Co.	I-290 WB Ramp to 355S	2	1995 Grand Cherokee	170143
10/16/07[F]	FARS	La Salle Co.	I-39	2	1993 Grand Cherokee	170830
Indiana						
04/27/98*†(1)	FARS	Clay Co.	I-70	3	1997 Grand Cherokee	180232
09/16/04[F]	FARS	Warrick Co.	I-64	1	2004 Grand Cherokee	180705
11/13/04[F]	FARS	Noble Co.	US-33	4	1997 Grand Cherokee	180723
10/10/08**	FARS (tree)	Taylorsville	I-65	1	1994 Grand Cherokee	180552
Iowa						
09/07/01**	FARS (overturn)	Patterson	US-92	1`	2001 Grand Cherokee	190254
Kentucky						
02/13/00[F]	FARS	Bourbon Co.	Vemont Ln.	1	1997 Grand Cherokee	210052
08/07/06*†(1)	FARS	Boone Co.	SR-536	1	1998 Grand Cherokee	210489
Louisiana						
08/31/00*	FARS	Livingston Co.	I-12	1	1997 Grand Cherokee	220509
12/10/00*	FARS	St. Martin Co.	I-10	2	1997 Grand Cherokee	220771
07/20/03[F]†(3)	FARS	St. Martin Co.	I-10	5	2000 Grand Cherokee	220401
07/16/04**	FARS (utility pole)	Bossier City	US-80 SR-72	2	1999 Grand Cherokee	220414
10/09/04**	FARS (tree)	Franklin Co.	SR-4 School St.	1	1995 Grand Cherokee	220625
Maryland						
11/29/98*	FARS	Baltimore Co.	SR-147	2	1993 Grand Cherokee	240486
Massachusetts						
03/04/07**	FARS (overturn)	Centerville	SR-28 Harrison Road	2	2004 Grand Cherokee	250100
04/29/07**	FARS (tree)	South Easton	SR-106	1	1993 Grand Cherokee	250070
Michigan						
12/04/97*	FARS	Dickinson Co.	95	1	1994 Grand Cherokee	261050
01/03/03**	FARS (tree)	Ottawa Co.	Lakewood Blvd.	1	1993 Grand Cherokee	260036
04/30/05[F]†(1)	FARS	Oakland Co.	I-75	3	2004 Grand Cherokee	260239
08/16/08**	FARS (overturn)	Kalkaska Co.	Plum Valley Rd.	1	1996 Grand Cherokee	260547

Crash Date by State	Name	City/County	Road	Deaths	Make/Model/Year	FARS #
Minnesota						
02/09/98*	FARS	Carlton Co.	SR-33	1	1994 Grand Cherokee	270039
11/15/98*†(1)	FARS	Maple Grove	I-94	1	1993 Grand Cherokee	270520
11/03/02*	FARS	Scott Co.	I-35	1	2001 Grand Cherokee	270542
04/15/03*	FARS	Aitkin Co.	28	1	2000 Grand Cherokee	270128
07/14/03*†(1)	FARS	Maple Grove	I-94	1	1993 Grand Cherokee	270274
12/29/03**	FARS (overturn)	Lac Qui Parle Co.	T-148	1	1995 Grand Cherokee	270511
06/06/04**	FARS (overturn)	Washington Co.	T92	1	1999 Grand Cherokee	270160
05/24/05**	FARS (overturn)	Carver Co.	13	4	1994 Grand Cherokee	270148
01/27/06*	FARS	Brown Co.	25	1	2004 Grand Cherokee	270038
03/21/08*†(1)	FARS	St. Louis Co.	SR-169 CR88	2	1995 Grand Cherokee	270070
Mississippi						
12/27/99*	FARS	Hancock Co.	I-10	3	1995 Grand Cherokee	280793
10/08/05**	FARS (tree)	Tishomingo Co.	US-72	1	1999 Grand Cherokee	280587
Missouri						
11/13/98**	FARS (overturn)	Gasconade Co.	SR-KK	1	1996 Grand Cherokee	290877
01/23/00*†(7)	FARS	Platte Co.	I-29	10	1996 Grand Cherokee	290069
12/03/00**	FARS (tree)	Greene Co.	SR-13	3	1995 Grand Cherokee	290907
08/02/02*†(1)	FARS	Camden Co.	SR-C	1	1996 Grand Cherokee	290600
09/04/02*†(1)	FARS	Maryland Heights	I-270	1	1997 Grand Cherokee	290695
11/17/02**	FARS (tree)	Kansas City	63rd St.	1	1995 Grand Cherokee	290923
06/05/04**	FARS (overturn)	St. Louis	Lee Ave. Fair Ave.	1	1995 Grand Cherokee	290473
06/14/06*	FARS	Kennett	US-412	1	1997 Grand Cherokee	290392
02/01/08*†(1)	FARS	Osage Co.	US-50	1	1997 Grand Cherokee	290069
Nebraska						
12/19/06[F]†(1)	FARS	Pierce Co.	553 Ave. 849 Rd.	1	2000 Grand Cherokee	310215
06/24/08**	FARS (overturn)	Dawes Co.	Slim Buttes Rd.	1	1998 Grand Cherokee	310085
Nevada						
New Hampshire						
07/21/00*†(1)	FARS	Hampton	SR-101	1	1994 Grand Cherokee	330066
New Jersey						
01/05/01**	FARS (other object)	Gloucester Co.	Cedar Swamp Rd.	1	1996 Grand Cherokee	340016

Crash Date by State	Name	City/County	Road	Deaths	Make/Model/Year	FARS #
09/23/05**	FARS (parked veh.)	Union	I-78	1	1998 Grand Cherokee	340462
03/31/06*	FARS	Mansfield	US-130	1	1999 Grand Cherokee	340144
02/24/07[F]	FARS	Parsippany	I-287	1	1996 Grand Cherokee	340080
New Mexico						
03/08/02*†(7)	FARS	Guadalupe Co.	I-40	7	1999 Grand Cherokee	350350
New York						
08/21/99[F]	FARS	Henrietta	I-390	1	1996 Grand Cherokee	360956
09/01/99*†(1)	FARS	Southampton	SR-27	1	1997 Grand Cherokee	360720
09/02/99**	FARS (overturn)	East Moriches	SR-27	1	1997 Grand Cherokee	360153
12/19/02**	FARS (parked veh.)	Yonkers	I-87	1	2002 Grand Cherokee	361116
03/14/04*†(1)	FARS	Wyoming Co.	CR-13 CR-16	1	1993 Grand Cherokee	360170
08/14/04**†(1)	FARS (overturn)	Palmyra	SR-21	1	1994 Grand Cherokee	360847
12/17/06[F]	FARS	Greenfield Center	SR-9	1	1996 Grand Cherokee	361158
08/15/07[F]	FARS	Duanesburg	I-88	1	1993 Grand Cherokee	360655
06/19/08[F]	FARS	Churubusco	River Rd.	1	2004 Grand Cherokee	360417
North Carolina						
12/19/99**	FARS (tree)	Columbus Co.	US-74-76	1	1994 Grand Cherokee	371297
03/09/02*†(2)	FARS	Nash Co.	US-64	2	1998 Grand Cherokee	370211
North Dakota						
07/24/06**	FARS (overturn)	Stark Co.	SR-10 114th Ave. SW	1	1993 Grand Cherokee	380051
Ohio						
07/30/95**	FARS (culvert)	Hilliard	Hayden Run Road	1	1993 Grand Cherokee	390650
09/26/97[F]	FARS	Wood Co.	SR65	1	1993 Grand Cherokee	390948
09/05/98*	FARS	Delaware Co.	US-42	1	1996 Grand Cherokee	390810
12/17/98*	FARS	Guernsey Co.	I-70	1	1993 Grand Cherokee	391178
11/23/99*†(2)	FARS	Tuscarawas Co.	I-77	2	1996 Grand Cherokee	391139
03/24/01**	FARS (tree)	Chillicothe	Belleview Ave.	1	1996 Grand Cherokee	390067
06/29/02*	FARS	Sandusky Co.	SR-600	1	1997 Grand Cherokee	390544
05/28/03*†(1)	FARS	Lawrence Co.	SR-378	1	1998 Grand Cherokee	390409
11/29/03*	FARS	Lakeview	US-33	1	1999 Grand Cherokee	391018
Oklahoma						
05/26/01[F]†(1)	FARS	Oklahoma City	S. Choctaw Rd.	2	1993 Grand Cherokee	400185

Crash Date by State	Name	City/County	Road	Deaths	Make/Model/Year	FARS #
Oregon						
09/22/95*	FARS	Grant Co.	5	1	1993 Grand Cherokee	410353
09/20/97**	FARS (overturn)		205/DOT440	2	1994 Grand Cherokee	410303
Pennsylvania						
10/24/98**	FARS (tree)	Franklin Co.	I-76	2	1998 Grand Cherokee	421049
03/05/00[F]	FARS	Bucks Co.	SR-309	1	1993 Grand Cherokee	420157
09/21/03*†(1)	FARS	Clinton Co.	SR-120	2	1994 Grand Cherokee	421054
02/27/04*	FARS	York Co.	I-83	2	2000 Grand Cherokee	420293
07/03/05**	FARS (tree)	Philadelphia	SR-4013	1	1993 Grand Cherokee	420613
04/05/06**	FARS (overturn)	Clarion Co.	Nickleville Rd.	1	1995 Grand Cherokee	420249
11/30/06*	FARS	Warren Co.	SR-0059	1	1995 Grand Cherokee	421006
11/12/07*†(1)	FARS	Lackawanna Co.	SR-435	1	2000 Grand Cherokee	421144
02/16/08**	FARS (tree)	Erie Co.	SR-5	1	2002 Grand Cherokee	420105
Rhode Island						
07/12/02**	FARS (tree)	Scituate	SR-116	1	1998 Grand Cherokee	440023
South Carolina						
08/06/99[F]	FARS	Marlboro Co.	259	2	1993 Grand Cherokee	450527
05/21/00[F]	FARS	Hampton	SR-68	1	1994 Grand Cherokee	450396
04/25/05*	FARS	Richland Co.	I-20 SR-277	1	1998 Grand Cherokee	450360
07/07/08[F]	FARS	Georgetown Co.	US-17 545	1	1996 Grand Cherokee	450425
South Dakota						
03/23/07**	FARS (overturn)	Moody Co.	SR-34	1	1998 Grand Cherokee	460021
Tennessee						
08/31/01[F]	FARS	Jackson	McClellan Rd.	1	1999 Grand Cherokee	470731
08/31/02[F]	FARS	Lawrence Co.	Old Jackson Hwy.	1	1994 Grand Cherokee	470669
05/29/04[F]	FARS	Germantown	Stout Rd.	1	1996 Grand Cherokee	471036
08/01/05**	FARS (bridge pier)	Kingsport	I-181	1	1997 Grand Cherokee	471107
11/18/06*†(1)	FARS	Wilson Co.	Saundersville Rd. Cedar Creek Village	1	1998 Grand Cherokee	471136
12/16/06**	FARS (tree)	Mount Juliet	South Greenhill Rd.	1	1999 Grand Cherokee	470904
Texas						

Crash Date by State	Name	City/County	Road	Deaths	Make/Model/Year	FARS #
06/22/97*	FARS	Cass Co.	59	1	1996 Grand Cherokee	481932
01/16/98[F]	FARS	Brazoria Co.	SR-288	1	1994 Grand Cherokee	480087
11/11/00**	FARS (tree)	Gonzales Co.	SR-97	1	1997 Grand Cherokee	482644
06/09/04[F]	FARS	Victoria Co.	US-77	1	2002 Grand Cherokee	481205
12/12/04*†(1)	FARS	Dallas	I-35E	1	1998 Grand Cherokee	483248
08/06/05[F]	FARS	Bullard	FM344	1	1996 Grand Cherokee	481685
04/28/06*	FARS	Dallas	I-30	2	2000 Grand Cherokee	480867
Vermont						
04/10/00*	FARS	Swanton	I-89	1	1998 Grand Cherokee	500019
09/11/08*	FARS	Waterbury	SR-100	1	1998 Grand Cherokee	500049
Virginia						
08/08/03*	FARS	Washington Co.	SR-75	1	1998 Grand Cherokee	510627
Washington						
03/15/06**	FARS (tree)	Auburn	SR-164	2	1995 Grand Cherokee	530101
West Virginia						
12/06/03**	FARS (tree)	Kanawha Co.	US-60	1	1994 Grand Cherokee	540342
09/30/06[F]	FARS	Charleston	Hickory Rd. Overbrook Rd.	1	1998 Grand Cherokee	540269
Wisconsin						
05/18/03[F]	FARS	Grant Co.	SR-133	1	1996 Grand Cherokee	550248
07/03/04**	FARS (tree)	Columbia	Hopkins Rd.	1	1995 Grand Cherokee	550318
07/03/07[F]	FARS	Nashotah	SR-16	1	2001 Grand Cherokee	550300
09/09/07**	FARS (overturn)	Greenfield	I-43	1	1994 Grand Cherokee	550455
Wyoming						
04/04/03*	FARS	Converse Co.	I-25	1	1993 Grand Cherokee	560022

[F] Indicated in FARS as most harmful: "fire/explosion."
*** Indicated in FARS as most harmful: "motor vehicle in transport" or "motor vehicle in transport in other roadway."**
**** Item in parentheses is most harmful event as indicated in FARS.**
[F-A] Fire listed as cause of in autopsy report or certificate
[F-L] Fire indicated as cause of in litigation.
[F-R] Fire indicated as cause of in accident report.
† Fatality(s) (#) occurred in bullet vehicle

Attachment B
MY 1993-2008 Jeep Grand Cherokee Fatal Fire Crashes with Fire/Explosion as Most Harmful Event, 1992-2008

MY 1993-2008 Jeep Grand Cherokee Fatal Fire Crashes with Most Harmful Event as Fire/Explosion, 1992-2008

This table includes known fire crashes where fire/explosion is listed as Most Harmful Event, obtained from NHTSA's Fatal Analysis Crash System (FARS) for Calendar Years 1992-2008 and from public records for other years and for crashes not listed in FARS.

Crash Date by State	Name	City/County	Road	Deaths	Make/Model/Year	FARS #
Alabama						
04/12/06[F]	FARS	Montgomery	5466	1	2004 Grand Cherokee	10243
04/25/07[F]	FARS	Macon Co.	I-85	1	1993 Grand Cherokee	10270
Arizona						
02/01/98[F]	FARS	Gila Co.	Old Dripping Springs	1	1993 Grand Cherokee	40059
03/13/01[F]	FARS	Mohave Co.	I-40	2	1994 Grand Cherokee	40104
California						
03/16/96[F]†(5)	FARS	Carson	91	5	1996 Grand Cherokee	60718
07/07/96[F]†(1)	FARS	Poway	Espola Rd.	1	1993 Grand Cherokee	61698
10/27/99[F]	FARS	Los Angeles	SR-170	1	1998 Grand Cherokee	62795
05/07/00[F]	FARS	Orange Co.	SR-241	1	1993 Grand Cherokee	60499
07/20/01[F]	FARS	San Bernardino Co.	I-10	1	1994 Grand Cherokee	61708
08/30/02[F]	FARS	Bakersfield	SR-58	1	1993 Grand Cherokee	62653
08/18/05[F]	FARS	Oceanside	Vista Way	1	1994 Grand Cherokee	63236
05/24/06[F]†(1)	FARS	Orange Co.	SR-241	2	2001 Grand Cherokee	61349
Colorado						
01/10/05[F]	FARS	Mesa Co.	Rim Rock Dr.	1	2004 Grand Cherokee	80025
Florida						
09/05/07[F]	FARS	N/A	SR-944 32nd Ave.	2	1998 Grand Cherokee	122577
Georgia						
03/08/05[F]	FARS	Paulding Co.	N/A	1	1999 Grand Cherokee	130196
03/09/05[F]	FARS	Macon Co.	SR-49	1	1997 Grand Cherokee	130197
Illinois						
09/04/00[F]	FARS	Chicago	I-90/94	6	1993 Grand Cherokee	170827
10/16/07[F]	FARS	La Salle Co.	I-39	2	1993 Grand Cherokee	170830
Indiana						
09/16/04[F]	FARS	Warrick Co.	I-64	1	2004 Grand Cherokee	180705
11/13/04[F]	FARS	Noble Co.	US-33	4	1997 Grand Cherokee	180723
Kentucky						
02/13/00[F]	FARS	Bourbon Co.	Vemont Ln.	1	1997 Grand Cherokee	210052

Crash Date by State	Name	City/County	Road	Deaths	Make/Model/Year	FARS #
Louisiana						
07/20/03[F]†(3)	FARS	St. Martin Co.	I-10	5	2000 Grand Cherokee	220401
Michigan						
04/30/05[F]†(1)	FARS	Oakland Co.	I-75	3	2004 Grand Cherokee	260239
Nebraska						
12/19/06[F]†(1)	FARS	Pierce Co.	553 Ave. 849 Rd.	1	2000 Grand Cherokee	310215
New Jersey						
02/24/07[F]	FARS	Parsippany	I-287	1	1996 Grand Cherokee	340080
New York						
08/21/99[F]	FARS	Henrietta	I-390	1	1996 Grand Cherokee	360956
12/17/06[F]	FARS	Greenfield Center	SR-9	1	1996 Grand Cherokee	361158
08/15/07[F]	FARS	Duanesburg	I-88	1	1993 Grand Cherokee	360655
06/19/08[F]	FARS	Churubusco	River Rd.	1	2004 Grand Cherokee	360417
Ohio						
09/26/97[F]	FARS	Wood Co.	SR65	1	1993 Grand Cherokee	390948
Oklahoma						
05/26/01[F]†(1)	FARS	Oklahoma City	S. Choctaw Rd.	2	1993 Grand Cherokee	400185
Pennsylvania						
03/05/00[F]	FARS	Bucks Co.	SR-309	1	1993 Grand Cherokee	420157
South Carolina						
08/06/99[F]	FARS	Marlboro Co.	259	2	1993 Grand Cherokee	450527
05/21/00[F]	FARS	Hampton	SR-68	1	1994 Grand Cherokee	450396
07/07/08[F]	FARS	Georgetown Co.	US-17 545	1	1996 Grand Cherokee	450425
Tennessee						
08/31/01[F]	FARS	Jackson	McClellan Rd.	1	1999 Grand Cherokee	470731
08/31/02[F]	FARS	Lawrence Co.	Old Jackson Hwy.	1	1994 Grand Cherokee	470669
05/29/04[F]	FARS	Germantown	Stout Rd.	1	1996 Grand Cherokee	471036
Texas						

Crash Date by State	Name	City/County	Road	Deaths	Make/Model/Year	FARS #
01/16/98[F]	FARS	Brazoria Co.	SR-288	1	1994 Grand Cherokee	480087
06/09/04[F]	FARS	Victoria Co.	US-77	1	2002 Grand Cherokee	481205
08/06/05[F]	FARS	Bullard	FM344	1	1996 Grand Cherokee	481685
West Virginia						
09/30/06[F]	FARS	Charleston	Hickory Rd. Overbrook Rd.	1	1998 Grand Cherokee	540269
Wisconsin						
05/18/03[F]	FARS	Grant Co.	SR-133	1	1996 Grand Cherokee	550248
07/03/07[F]	FARS	Nashotah	SR-16	1	2001 Grand Cherokee	550300
				68		

[F] Indicated in FARS as most harmful: "fire/explosion."

† Fatality(s) (#) occurred in other vehicle(s).

Attachment C
Ford Pinto Investigation Report

INVESTIGATION REPORT

PHASE I

C7 - 38

ALLEGED FUEL TANK AND FILLER NECK DAMAGE IN REAR-END COLLISION OF SUBCOMPACT PASSENGER CARS

1971 - 1976 FORD PINTO
1975 - 1976 MERCURY BOBCAT

OFFICE OF DEFECTS INVESTIGATION
ENFORCEMENT
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

MAY 1978

A PORTION OF THIS REPORT HAS BEEN WITHHELD FROM THE PUBLIC FILE PURSUANT TO 5 U.S.C. 552(b)(4).

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I. BACKGROUND

A. BASIS FOR INVESTIGATION:

A formal defect investigation case was initiated on September 13, 1977, based upon allegations that the design and location of the fuel tank in the Ford Pinto make it highly susceptible to damage on rear impact at low to moderate closing speeds.

On August 10, 1977, a press conference was held in Washington, D.C., to announce the release of an article entitled, "Pinto Madness", which was published in the September/October issue of Mother Jones magazine. The article made several allegations concerning the safety of the Pinto fuel tank. The most significant of these charges as related to the National Highway Traffic Safety Administration's (NHTSA) defect investigation are as follows:

1. That the Pinto fuel tank is designed and located so that in rear-impact collisions at low to moderate speeds, it is displaced forward until it impacts the differential housing on the rear axle, resulting in tank cuts and/or puncture. The leakage of gasoline thus presents a significant fire hazard.

2. That the Ford Motor Company had knowledge of this "defect" during the developmental phase of the Pinto through its own test programs, but concluded that it was more cost-effective to produce the vehicle without modifications which would have corrected the problem but added to the production cost.

Investigation was initiated to determine whether the alleged problem constitutes a safety-related defect within the meaning of the National Traffic and Motor Vehicle Safety Act of 1966.

B. DESCRIPTION AND FUNCTION:

The Pinto fuel tank is of sheet metal construction and is attached to the undercarriage of the vehicle by means of two metal straps. In addition, the fuel filler tube extends into the top left side of the tank in a sliding fit through a gasketed opening. At its other end the fuel filler tube is affixed to the inner side of the left rear quarter panel by means of a bracket which is firmly attached to the quarter panel surface.

The fuel tank is the resevoir which holds the supply of gasoline required for engine operation. In the Pinto and Bobcat of model years in question, the tank capacity is approximately 11 gallons.

C. ANALYSIS OF THE ALLEGED PROBLEM:

MODE:

Allegedly, rear impact of the Pinto by another vehicle at low to moderate closing speed displaces the fuel tank forward until it is cut or punctured by the differential housing, or its bolts. Fuel tank filler necks pull out of the tank as well. The resulting fuel spillage may then be ignited, creating a fire hazard of obvious significance.

SYMPTOMS:

There are no symptoms to indicate the existence of the alleged safety hazard. The alleged problem addresses the rear impact crashworthiness of the Pinto and Bobcat which is exhibited only under collision conditions.

D. INVESTIGATIVE INPUTS AND ACTIONS:

Following public release of the article, "Pinto Madness", the NHTSA initiated, on August 11, 1977, a preliminary evaluation of the alleged safety defect, and on September 13, a formal defect investigation case. The following activities were undertaken in these efforts.

A. The author of the magazine article, Mark Dowie, was asked to make available to the NHTSA, documentation and evidence upon which his article was based.

B. Consumer letters, including Congressional inquiries on behalf of constituents, were received and appropriately processed.

C. The National Center for Statistics and Analysis conducted a search of the Fatal Accident Reporting System (FARS) files, to compile relevant fatal accident statistics and data.

D. The Ford Motor Company was requested to provide various technical and legal data concerning the matter.

E. Contact was established and maintained with the Canadian Ministry of Transport (CMOT), which also initiated an investigation of the "Pinto Madness" charges.

F. A test program of staged vehicle-to-vehicle rear-end collisions was developed and a contract awarded for the performance of these tests.

The details of the aforementioned sources of information, as well as NHTSA actions taken and the findings which resulted, are detailed in subsequent sections of this report.

II. PROBLEMS ALLEGED

A. REPORTS FROM CONSUMERS:

Since public release of the Mother Jones article, the NHTSA has received over 900 inquires from the public concerning this matter. The defect investigation case file contains 54 letters and telephone contacts, including 18 Congressional inquiries on behalf of constituents. The Office of Public Affairs and Consumer Participation has received approximately 540 inquiries from Pinto and other vehicle owners concerning this matter, in addition to an estimated 30 inquiries from the media, and several inquiries from various consumer groups. The Auto Safety Hotline reported that an estimated 250 telephone inquiries have been received with no further contacts made with these consumers. In addition, over 40 telephone contacts have been made by ODI Staff personnel with various consumers, media representatives and with NHTSA representatives in Regional Offices. These contacts were generally non-contributory to the investigation in terms of furnishing factual data, and are not documented in the record.

Of the consumer letters and other inquires, only one involved an actual report of a fire occurrence in a Pinto vehicle upon rear-end impact, not previously reported to the NHTSA through other sources. This particular instance involved a parked Pinto sedan of unknown model year which was rear-ended by a 1969 Pontiac Firebird in a residential area. The incident resulted in fire damage to both the Pinto and other real property, but no bodily injuries and/or fatalities were sustained.

B. REPORTS FROM FORD MOTOR COMPANY (FORD):

In response to the NHTSA's requests, Ford provided information concerning the number and nature of known incidents in which rear impact of a Pinto vehicle reportedly caused fuel tank damage, fuel system leakage or fire occurrence. This information disclosed the following:

Total Number Rear Impact/Fuel Leakage/Fire cases reported: 35
Lawsuits/Liability Claims: 29

Total Number injuries, including fatalities, reported in all vehicles: 107

Total Number injuries, including fatalities, sustained by Pinto occupants: 57

Total Number fatalities reported: 26

Number fatalities sustained by Pinto occupants: 25

Lawsuits/Liability Claims: 29
(Cases involving fires/burn injuries or claims of defective/dangerous fuel tank/negligence in fuel system design)

Number burn injuries: 23

Number fatalities reported (non-impact): 21

Number cases settled out of court or by judgement against Ford/defendants: 8

Number cases pending trial: 19

Cases settled in favor of Ford/under investigation: 2

C. REPORTS FROM CANADIAN MINISTRY OF TRANSPORT (CMOT):

Since the initiation of this defect investigation case, two incidents have been reported to the NHTSA by the CMOT, involving rear-impact collisions of Ford Pintos which resulted in fires. These incidents resulted in one fatality, and two impact/burn injury cases.

D. SUMMARY OF PROBLEM REPORTS:

In total, the NHTSA is aware of 38 cases in which rear-end collisions of Pinto vehicles have resulted in fuel tank damage, fuel system leakage and/or ensuing fire. These cases have resulted in a total of 27 fatalities sustained by Pinto occupants, of which one is reported to have resulted from impact injuries. In addition, 24 occupants of these Pinto vehicles have sustained non-fatal burn injuries.

III. TECHNICAL DATA

The following technical data acquired from Ford and other sources has relevance to the design, materials, construction or performance aspect of the fuel tank installed in the 1971-1976 Pinto and 1975-1976 Bobcat.

1. The Pinto two-door sedan was introduced for sale in the United States on September 11, 1970, as a 1971 model year vehicle. A 1971 model year Pinto three-door version was introduced in February 1971. The station wagon model was introduced as a 1972 model year vehicle on March 17, 1972.

2. Production statistics for the pre-1977 Pinto are as follows:

Model Year	2-Door Sedan	3-Door Sedan	Station Wagon	Totals
1971	267,694	59,173	0	326,867
1972	171,616	187,657	96,221	455,494
1973	109,080	141,440	204,514	455,034
1974	120,911	159,999	217,351	498,261
1975	58,697	63,129	83,137	204,963
1976	86,842	87,101	99,138	273,081
Totals	814,840	698,499	700,361	2,213,700

3. Based upon R.L. Polk and Company statistics of vehicle registration as of July 1, 1976, it is estimated that 1.9 million Pintos of 1971-1976 model years are currently in use. These Pinto vehicles accounted for 2.0% of all registered cars as of July 1, 1976.

4. The 1971-1976 Pinto fuel tank is of sheet steel construction and is attached to the vehicle's rear undercarriage by two metal straps, with mounting brackets. The tank is located aft of the rear axle which, in the Pinto, may be one of two types; 6 3/4 - inch ring gear with integral carrier, or 8 - inch ring gear with removeable carrier. The rear differential cover on the 8 - inch axle is welded on, and employs no mechanical fasteners. The 6 3/4 - inch axle differential cover is attached by eight 5/16 - 18x0.62 hex head locking screws. The differential cover dome protrudes further aft than do the the screw heads, as follows:

	Height of Fastener Head Relative to Adjacent Cover	Distance of Fastener Head Forward of Cover Dome Surface
S.O.P. 1971 -	.314/.246	1.954/1.827
Approx. 3/71 - Model Year 1977	.313/.293	1.907/1.827

The outer edge of the differential cover dome also protrudes aft approximately 1/8 - inch, the apparent result of the dome forming process.

In answering NHTSA questions, Ford provided information concerning nominal distances from the forward surface of the fuel tank to the aft surface of the differential cover. While the true distance from the fuel tank body to the nearest point on the rear axle varies from one model year to another and from sedan to station wagon models, the 1971-1976 Pinto with the 6 3/4 - inch axle maintained this distance at approximately 3 inches. In the 1977 model year, this distance was increased by a minimum of 1 inch. It was also disclosed that the left shock absorber is located approximately equidistant from the fuel tank as the rear axle.

In this investigation, the fuel filler neck is considered to be an integral part of the tank. The filler neck is firmly attached by a flange with mounting screws, to the inner side of the left rear quarter panel. At its other end, the filler neck extends into the fuel tank through a gasketed opening in the left side of the tank.

Ford initiated 82 post-introduction engineering changes in the Pinto fuel tank, fuel filler neck, and associated hardware utilized for attaching the fuel tank to the vehicle underbody. Review of these data disclosed the following changes with potential relevance to the rear-impact crash performance of the fuel tank.

. 1973 Station Wagon filler pipe - length of fuel filler pipe reduced by 0.50 inches at tank attachment end. Initiated at Job #1.

. 1977 Sedan and Station Wagon fuel tank shield - plastic shield added between fuel tank and straps. Initiated at Job #1.

. 1977 Sedan filler pipe assembly - filler pipe assembly lengthened to reduce fuel capacity by 1.3 gallons and vehicle weight by 8 pounds.

. Other engineering changes involved various items including tank capacity, filler pipe flange and seals, and tank straps and brackets.

5. According to Ford, <u>Mercury Bobcat</u> vehicles "... utilize essentially the same structures as Pintos of contemporary manufacture and their fuel systems and related components are identical to those employed in such Pintos."

Production statistics for the pre-1977 Mercury Bobcat are as follows:

Model Year	3-Door Runabout	Station Wagon	Totals
1975	14,605	17,851	32,456
1976	20,212	21,207	41,419
Totals	34,817	39,058	73,875

6. Prior to initial introduction of the Pinto for sale, Ford performed four rear impact barrier crash tests which included "...assessment of the post-impact condition of the fuel tank and/or filler pipe." These tests were reportedly conducted on "...experimental vehicles equipped with differing rear structure and fuel system designs proposed from time to time for incorporation in the Pinto..." Ford further reported that "...none of the tested vehicles employed structure or fuel system designs representative of structures and fuel systems incorporated in the Pinto as introduced in September 1970." These tests were conducted May 1969 through November 1969, utilizing a vehicle identified as a "Special Maverick."

Following initial introduction of the Pinto for sale, Ford continued a program of rear barrier impact tests on Pintos which included assessment of the post impact condition of the fuel tank and/or filler pipe. Reports of 55 rear barrier crash tests conducted "... on both production vehicles and vehicles with experimental components and/or modified structures..." were provided, including tests of Mercury Bobcats. While these tests were reportedly performed, in part, in connection with proposed NHTSA rulemaking activities, three items developed a history of consistent results:

a. At impact speeds as low as 21.5 miles per hour with a fixed barrier (Crash Test No. 1616), the fuel tank was punctured by contact with the differential housing and/or its bolts, or with some other underbody structure.

b. Under similar test conditions as (a), above, the fuel filler neck was pulled out of the tank completely.

c. Again, under similar test conditions as (a), above, structural and/or sheet metal damage to the vehicle was sufficient to jam one, or both of the passenger doors closed.

Among the experimental and other modifications studied in these tests were:

- Use of rubber bladder with locally reinforced textured nylon patches in "puncture prone areas", installed inside steel tank

- Modification of filler pipe attachment to the left rear quarter panel and fuel tank to prevent pull-out during impact.
- Installation of plastic shields on the fuel tank immediately aft of the differential housing.
- Modified exhaust system with muffler located behind the rear axle.
- Fuel tank made of molded polyethylene.
- Increased length of fuel filler neck extending inside the tank.
- Modified rear underbody structure and reinforced rear quarter panels.

Review of the test reports in question suggested that Ford had studied several alternative solutions to the numerous instances in which fuel tank deformation, damage or leakage occurred during or after impact.

IV. MAJOR NHTSA INVESTIGATIVE ACTIONS

A. EXAMINATION OF ACCIDENT STATISTICS:

A search of the NHTSA's Fatal Accident Reporting System (FARS) file was conducted by the National Center for Statistics and Analysis, Research and Development. Search of the automated FARS file provided information on fatal accidents for approximately 2 1/2 years of data collection. A purpose of the search was to determine whether Pintos had been involved in rear-end fatal crashes with fires.

In terms of the purely quantitative data, the following tabulations specifically applicable to the Pinto were disclosed by the FARS examination (covering 1975, 1976 and approximately half of 1977):

. Total Number Fatal Pinto Accidents Due to All Causes, 1975-1977	1,626
. Total Number Pinto Occupant Fatalities in Accidents Due to All Causes, 1975-1977	1,417
. Total Number Fatal Pinto Accidents with Fire, 1975-1977	33
. Total Number Pinto Occupant Fatalities in Accidents with Fire, 1975-1977	41
. Total Number Fatal Pinto Accidents with Rear End Collision, 1975-1977	95
. Total Number Pinto Occupant Fatalities in Accidents with Rear End Collision, 1975-1977	72
. Total Number Fatal Pinto Accidents with Rear End Collision and Fire, 1975-1977	11
. Total Number Pinto Occupant Fatalities in Accidents Rear End Collision and Fire, 1975-1977	17

The data show that rear-end collisions of Pinto vehicles have resulted in fires and fatalities. This fact is substantiated by the historical details of various litigation cases.

VII. CONCLUSIONS

Based upon the information either developed or acquired during this investigation, the following conclusions have been reached:

1. 1971-1976 Ford Pintos have experienced moderate speed, rear-end collisions that have resulted in fuel tank damage, fuel leakage, and fire occurrences that have resulted in fatalities and non-fatal burn injuries.

2. Rear-end collision of Pinto vehicles can result in puncture and other damage of the fuel tank and filler neck, creating substantial fuel leakage, and in the presence of external ignition sources fires can result.

3. The dynamics of fuel spillage are such that when impacted by a full size vehicle, the 1971-1976 Pinto exhibits a "fire threshold" at closing speeds between 30 and 35 miles per hour.

4. Relevant product liability litigation and previous recall campaigns further establish that fuel leakage is a significant hazard to motor vehicle safety, including such leakage which results from the crashworthiness characteristics of the vehicle.

5. The fuel tank design and structural characteristics of the 1975-1976 Mercury Bobcat which render it identical to contemporary Pinto vehicles, also render it subject to like consequences in rear impact collisions.

B. NHTSA CRASH TEST PROGRAM

On September 30, 1977, a Request for Proposals was issued in order to select a contractor to perform a series of staged vehicle-to-vehicle crash tests at moderate speeds. The program was designed to generate data and to document the results of specified rear impact collisions under actual driving conditions. The stationary vehicles were specified as Pintos, Chevrolet Vegas, and full size sedans, with the moving vehicles to be identical full size sedans. The program required that the fuel tanks of the stationary vehicles be filled to at least 95% of rated capacity, and that the engines of both stationary and moving vehicles be running and at normal operating temperature at the time of impact. In addition, the brake lights were illuminated on the stationary vehicle at impact. Other test variables included:

- Speed and attitude of the moving vehicle
- Illumination of headlights on the moving vehicle
- Angle and parallelism of vehicles at impact

The contract was awarded to Dynamic Science, Incorporated, in Phoenix, Arizona, and testing commenced on February 1, 1978. As orginally designed, the test program involved 6 Pintos, 6 Vegas, and 3 full size vehicles for use as stationary cars. The program was subsequently amended to include 4 Pintos of 1974-1976 model years and 2 Pinto Station Wagons. Other changes in test requirements were made as the program progressed; these are identified in the matrix of test results attached as Figure 2, to this report. In its final form, the program entailed:

11 Full size vehicles/Pinto tests

1 Pinto/fixed barrier test (tank fulled with Stoddard solvent)

5 Full size vehicle/Vega tests

1 Vega/fixed barrier test (tank filled with Stoddard solvent)

1 Full size vehicle/Full size vehicle test

19 Total tests

The results of the tests are summarized in Figure 1 .Therein, it is noted that in two Pinto tests with the full size vehicle travelling at 35 miles per hour, fires resulted. In similar tests at 30 miles per hour, significant leakage of the Pinto fuel tanks resulted without fire. A significant finding in the test program was the fact that the design of the Pinto fuel filler pipe resulted in its being completely dislodged from the tank in some cases. Impacts sufficient to result in puncture/tearing of the fuel tank generally resulted in leakage of fuel in a pouring fashion. Separation of the filler neck from the tank provided a fuel spillage mechanism in a wide dispersion fashion.

No fires were produced by the tests involving Vegas and full size vehicles as stationary cars.

All of the tests were documented by high-speed and normal speed color motion pictures, as well as by still photography following impacts.

V. OTHER NHTSA ACTIONS

The following are other actions taken by the NHTSA.

A. MEDIA AND CONSUMER GROUPS:

On August 11, 1977, the first of several letters was sent to Mr. Mark Dowie, author of the Mother Jones article, requesting that he make available to the NHTSA, documentation and evidence upon which his article was based.

Because of the sensitivity and widespread media attention given to the Mother Jones article, as well as to the settlements of two related lawsuits during the course of this investigation, specific requests to various media and consumer organizations for information were generally not made. Efforts were expended, however, in cooperating with the media and consumer groups to advise them of the nature, scope and status of the NHTSA's investigation. Included among the organizations contacted were the Center for Auto Safety, ABC-TV Evening News, and various television stations and newspapers.

B. RECORDS CHECKS:

1. Vehicle Owner Letter File

The NHTSA's motor vehicle owner letter file, initiated in September 1966, contains all letters and telephone contacts received from all sources reporting defects and other problems with motor vehicles. At present, approximately 2,500 documents enter this file each month.

All letters received by the NHTSA in specific reference to this investigation were noted in Section II.A., of this report.

2. NHTSA Motor Vehicle Defect Recall Campaign Log

The log contains the make, model, year and a brief description of the defect for all safety defect recall campaigns reported to the NHTSA by manufacturers in accordance with the Act of 1966.

A check of the Campaign Log disclosed that at least 17 previous recalls have been conducted for correction of various specific problems that could allow fuel leakage from the fuel tank/filler neck/cap. Of note is Campaign No. 77V048, in which General Motors recalled 128,700 1968-1970 Opel Kadetts for correction of an uncovered tail-light mounting bolt which could puncture the fuel tank in low speed right rear impacts.

In Campaign No. 77V114, the Ford Motor Company recalled 642 1977 Pintos for replacement of an erroneously installed U-nut on the inboard rear attachment of the rear bumper isolator. The edge of the U-bolt could possibly contact and puncture the fuel tank.

3. Technical Reference Library

A search of the Technical Reference Library filed was conducted for information and publications relevant to this investigation. This search disclosed that previously cited Pinto recall campaign (77V114), as well as three others which could involve possible fuel leakage and fire potential.

A review of all Pinto Standards Enforcement Tests disclosed that a 1976 Pinto Pony MPG failed to meet the requirements of FMVSS 301, Fuel Systems Integrity.

4. Canadian Ministry of Transport (CMOT)

On September 30, 1977, a 1974 Pinto was involved in a rear-impact, fatal fire accident in Windsor, Ontario, Canada. The Pinto was impacted by a 1976 Chevrolet Impala in a braking attitude and forced into the rear of a 1976 Mercury Monarch. The fuel tank of the Pinto was punctured or torn in several locations, the filler neck pulled out completely, and the vehicle was completely engulfed by fire. One of the two Pinto occupants sustained fatal injuries.

The CMOT acquired possession of the Pinto and performed a thorough inspection of the vehicle on November 29 and 30. This inspection was attended by NHTSA and Ford representatives.

On Febraury 24, 1978, the CMOT reported the occurrence of a rear impact with fire incident involving a 1973 Pinto. The single Pinto occupant was attempting engine repairs when the vehicle was struck by a 1976 Plymouth Volare reportedly travelling at 35 miles per hour. A report of the incident, with photographs taken within seconds after the collision by a nearby pedestrian, was furnished to the NHTSA on March 30, 1978.

VI. OBSERVATIONS

The fuel tank and filler pipe assembly installed in the 1971-1976 Ford Pinto is subject to damage which results in fuel spillage and fire potential in rear impact collisions by other vehicles at moderate closing speeds.

When impacted from the rear by other vehicles at moderate closing speeds, the Pinto fuel tank may be punctured, cut or torn, by contact with the rear axle differential housing assembly, the left shock absorber and/or its lower bracket, or by other vehicle rear underbody components.

In nine staged collision tests of 1971-1976 Pinto 2-door sedans and 3-door runabouts impacted by 1971 Chevrolet Impalas at closing speeds of 30 and 35 miles per hour, two tests resulted in fires. In all of the remaining seven tests, fuel tank damage occurred with fuel leakage rates ranging from 6 to 700 ounces per minute, with an average rate in excess of 240 ounces per minute.

In one test of a 1972 Pinto towed rearward into a fixed barrier at 21.5 miles per hour, the fuel tank sustained damage and the filler pipe pulled out of the tank. Fuel leakage was measured to exceed 12 ounces per minute.

In tests of 1 ea., 1972 and 1976 Pinto station wagons, no significant fuel leakage rates were measured. Similarly, no punctures or tears of the fuel tanks were caused, and the fuel filler pipes did not completely pull out of the tanks.

Data from the Ford Motor Company indicates that at least 35 rear-end collisions of 1971-1976 Pintos have occurred in the United States, in which fuel tank damage and/or fuel leakage and/or fires have resulted. These incidents have resulted in at least 25 fatalities and 23 cases of non-fatal burn injuries.

Data from the Fatal Accident Reporting System disclosed that from January 1975 through approximately June 1977, 33 fatal Pinto accidents occurred that involved fire, and resulted in 41 Pinto occupant fatalities. During this same period of time, 11 fatal accidents occurred in which Pintos were impacted from the rear and fires resulted; 17 Pinto occupants sustained fatal injuries in these cases.

Since initiation of this investigation, two cases have occurred in Canada involving rear impact of Pintos which resulted in fuel tank fires. These occurrences resulted in 1 fatality and 1 burn injury case.

In the history of product liability actions filed against Ford and other co-defendants involving rear impact of Pintos with fuel tank damage/fuel leakage/fire occurrences, nine cases have been settled. Of these, the plaintiffs have been compensated in 8 cases, either by jury awards or out of court settlements.

These data were recognized to be subject to qualifications and amplifications. Basically pertinent among these are the following:

- Make/model information in FARS comes from two sources: vehicle registration data and automated decoding of the Vehicle Identification Number. Therefore, a particular car was identified where either one of these two sources indicated it to be the make/model in question.

- Fire/explosion is not a standard data element on most police reporting forms, unless a non-collision fire caused an accident. Thus, FARS coding of fire is due primarily to its specific mention, if any, in the officer's accident description. In addition, FARS data do not indicate the origin of the fire.

- If a death due to burns occurred sometime after the crash, it is less likely that it would be reported on the officer's accident report.

- FARS does not record the cause of death, only its fact; it does not distinguish between deaths due to impact and those caused by the fire.

- The FARS cases examined disclosed limited availability of data necessary to establish accurate pre-impact closing speeds.

Attachment D
Fire Safety Performance of Motor Vehicles in Crashes

FIRE SAFETY PERFORMANCE OF MOTOR VEHICLES IN CRASHES

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Paper Number 422

ABSTRACT

The research reported in this paper is a follow-on to a five year research program conducted by General Motors in accordance with an administrative Settlement Agreement reached with the US Department of Transportation. In lieu of a vehicle recall to reduce vehicle vulnerability to post-crash fires, a research program was undertaken to provide knowledge to assist reducing the fire vulnerability for all future vehicles.

In this follow-on research project, GM agreed fund more than $4.1 million in fire related research over the period 2001-2004. This paper summarizes the projects undertaken and the preliminary results.

Research projects that have been initiated include the following: (1) statistical analysis of field data; (2) assessment of state-of-the-art in fuel safety technology; (3) test and evaluation of fuel tanks exposed to fire and impact; (4) development of recommended practices for the fire safety of 42-volt electrical systems.

For the year 2001, there were a total of 1,657 fatal crashes in which there was a fire. This is about 2.9% of all fatal crashes. Analysis of FARS data indicates that the fire rates in cars has dropped by 43.7% and LTVs (pick-ups, vans and SUVs) by 59.7% since the 1979. In 2000, the fire rate for passenger cars was 5.14 fires/million vehicle years, compared to 6.39 for light trucks.

For the years 1997-2000 the NASS/CDS contains 228 cases with fires. In these cases, frontal crashes accounted for 51.3% followed by rollover (24.1%) and side (18.4). Rear impacts accounted for the smallest fraction – 6.1%. The most frequent origin for the fire was the engine compartment, accounting for 64.5%. The fuel tank accounted for 11.4%. There were a relatively large number of unknown sources – 17.1%. The most frequent object impacted before the fire occurred was another vehicle (41.2%). However, a variety of roadside objects made up 48.7%. Narrow objects such as poles and trees contributed more than 25%.

Plastic tanks of three different shapes were evaluated to fire and impact testing as required by ECE R34, Annex 5 and US CFR 393.67 (e)(1). The ECE R34 fire test appeared to produce repeatable results and all tanks demonstrated the capability to withstand the test. All tanks passed the ECE R34 impact test. The US CFR 393.67 (e)(1) requires the tank containing water equal to its rated weight of fuel to be dropped on its corner from a height of 30 ft. All new tanks passed the test. However, two of three tanks that had been in service for three years failed the test.

Research is now underway to identify state-of-the-art technologies in present day motor vehicles. Other research is oriented to developing test methods to assure the fire safety of materials used in vehicles with 42-volt electrical systems. The results of this research will be made public as it progresses.

INTRODUCTION

On March 7, 1995, the U.S. Department of Transportation (DOT) and General Motors Corporation (GM) entered into an administrative agreement, which settled an investigation that was being conducted by the National Highway Traffic Safety Administration (NHTSA) regarding an alleged defect related to fires in GM C/K pickup trucks [NHTSA 1994 and 2001].

Under the GM/DOT Settlement Agreement, GM agreed to provide support to NHTSA's effort to enhance the current Federal Motor Vehicle Safety Standard (FMVSS) No. 301, regarding fuel system integrity, through a public rulemaking process. GM also agreed to expend $51.355 million over a five-year period to support projects and activities that would further vehicle and highway safety. Ten million dollars of the funding was devoted to fire safety research [NHTSA 2001].

Subsequent to the GM/DOT Settlement, GM agreed to fund an additional $4.1 million in research related to impact induced fires. This latter research project was included under the terms of a judicial settlement. The fuel safety project objectives are defined by the White, Monson and Cashiola vs. General Motors Agreement dated June 27, 1996 [Judicial District Court 1996]. All research under the project will be made public for use by the safety community. The purpose of this paper is to provide an initial public report on the projects that have been funded under this research program, along with results to date.

Research projects that have been initiated include the following:

1. A statistical analysis of field data to determine the frequency of fuel leaks and fires by model year and by other crash attributes.
2. A case by case study of fuel leaks and fires in NASS/CDS and an assessment of opportunities for reduction of vulnerability.
3. The assessment of the state-of-the-art technology to reduce the frequency of fires in motor vehicles and/or to delay the time for fires to propagate to the fuel or the interior of the occupant compartment.
4. The evaluation of fuel tanks of various shapes when subjected to fire and impact testing required by ECE or other government standards.
5. The development of recommended practices for the prevention of fires in vehicles equipped with 42-volt electrical systems.

The status and results of each of the above projects is summarized in the sections to follow.

STATISTICAL ANALYSIS OF VEHICLE FIRES

The occurrence of serious injuries and fatalities from fires has remained virtually unchanged over the past ten years. Based on data published by the NHTSA for the year 2000, there were a total of 1,657 (2.9%) fatal and approximately 5,000 (0.1%) injury crashes in which there was a fire [NHTSA 2002]. Of these, 328 crashes, totaling 552 fatalities, coded fire/explosion as the most harmful event. Between 1991 and 2000, the percentage of fire related fatal crashes has continued to range between 2.6 - 2.9% of all fatal crashes, and 0.1 – 0.2% of all injury crashes. Although driving exposure has increased over this time period, the occurrence of these fatalities and serious injuries warrants a more detailed investigation into the nature of these crashes.

Previous work has focused on the seriousness or severity of fire related casualties, including injury and fatality frequencies during impact induced car fires. Additionally, impact induced fuel leakage has also been studied, which may be another indicator of the performance and crashworthiness of fuel systems. Due to the continued occurrence of these events, there appears to be a necessity to reevaluate this topic as it applies to the current U.S. vehicle fleet. This includes looking at the effects of model year, crash severity, fuel leak hazard, impact modes, and vehicle types. Previous studies have not focused on the vehicle mix, which has changed dramatically over the past decade. Of particular interest is the increasing population of light trucks (pick-ups, vans, and SUVs).

Several resources were used to determine the factors related to the actual occurrence and impact of fires in light passenger vehicles. These factors included (1) an investigation into the availability of fire related data from state, federal, private, and international sources, (2) a statistical analysis of national data from 1975-present, (3) a statistical analysis of selected state accident records from 1978-present. Results from item (2) will be presented here. Work under item (1) and (3) is still underway and results will be published at a later date, along with updates in the other areas.

<u>**Analysis of State and National Data from 1975-Present**</u>

Previously, Malliaris examined FARS 1975-1987 to understand certain trends in accidents associated with fire events [Malliaris, 1991]. The analysis reported in this paper further extends the Malliaris work to include the present vehicle fleet and provide a differentiation by vehicle type.

Malliaris also examined Michigan state data for the years 1978-1984 to assess fire rates and fuel leakage rates in police reported crashes [Malliaris 1991]. At present the state data study is being updated and applied to states other than Michigan. In 1990, Michigan discontinued reporting fuel leakage. Consequently, this condition could not be updated. Initial studies have confirmed a number of findings initially reported by Malliaris. The extension of the analysis to later years in now underway and will be reported when completed.

<u>**Fire Rates in Vehicles 0-4 Years Old Involved in Fatal Accidents**</u>

Figure 1 shows the fire occurrence for vehicles 0 to 4 years old at the time they were involved in fatal accidents. To be counted, a fire had to occur in the vehicle after the crash and a fatality had to occur in the crash. The fatality may or may not have been in that particular vehicle or caused by the fire. Figure 2 displays the same data adjusted for vehicle exposure. The exposure metric used in the figure is the number of registered vehicle years by vehicle class, given as million vehicle years or MVY.

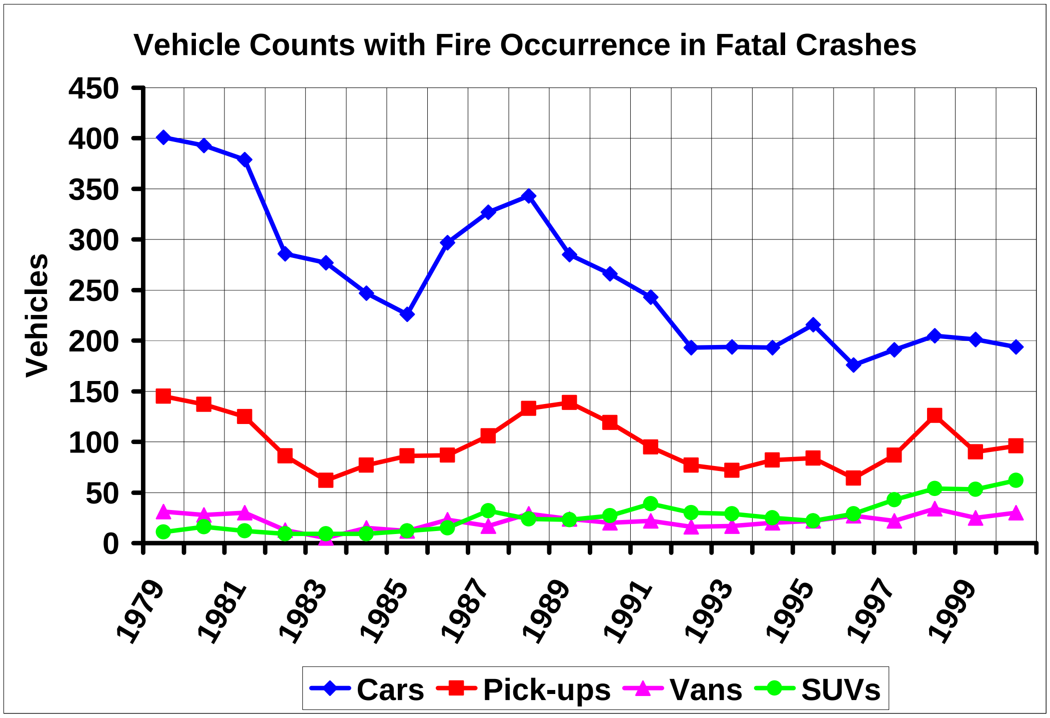

Figure 1. Frequency counts of vehicles involved in fatal crashes where a fire occurred in that particular vehicle (fatality did not necessarily occur in the vehicle with the fire). Data is from FARS 1979-2000, vehicle age is 0-4 years, and distributions are by vehicle type.

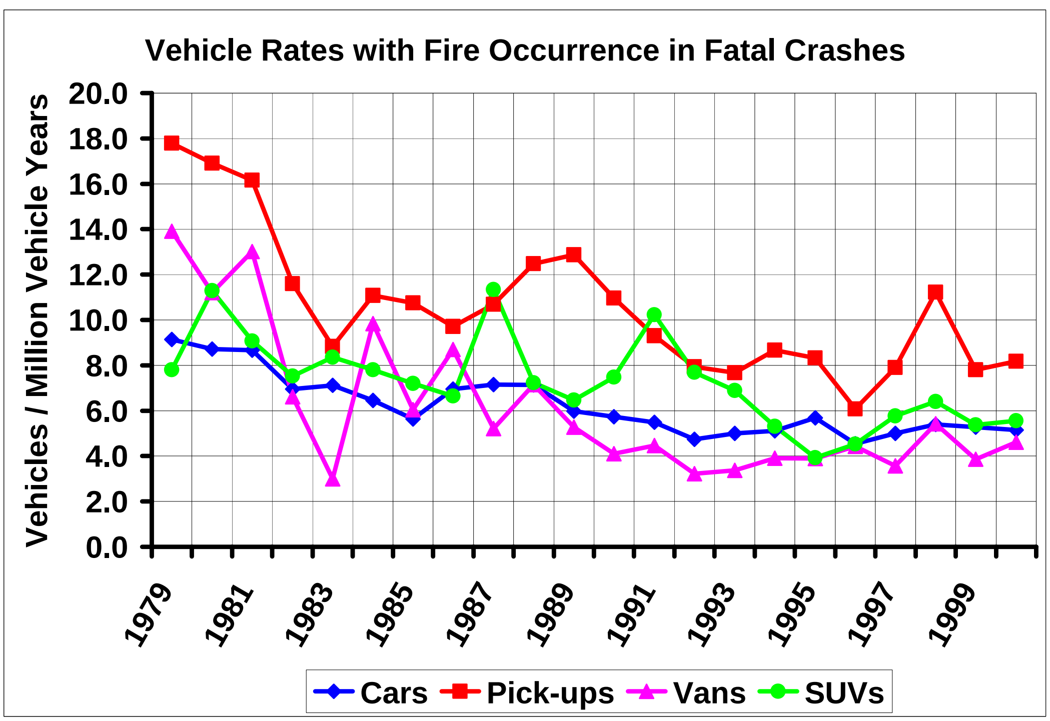

Figure 2. Rates per million vehicle registered years of vehicles involved in fatal crashes where a fire occurred in that particular vehicle (fatality did not necessarily occur in the vehicle with the fire). Data is from FARS 1979-2000, vehicle age is 0-4 years, and distributions are by vehicle type.

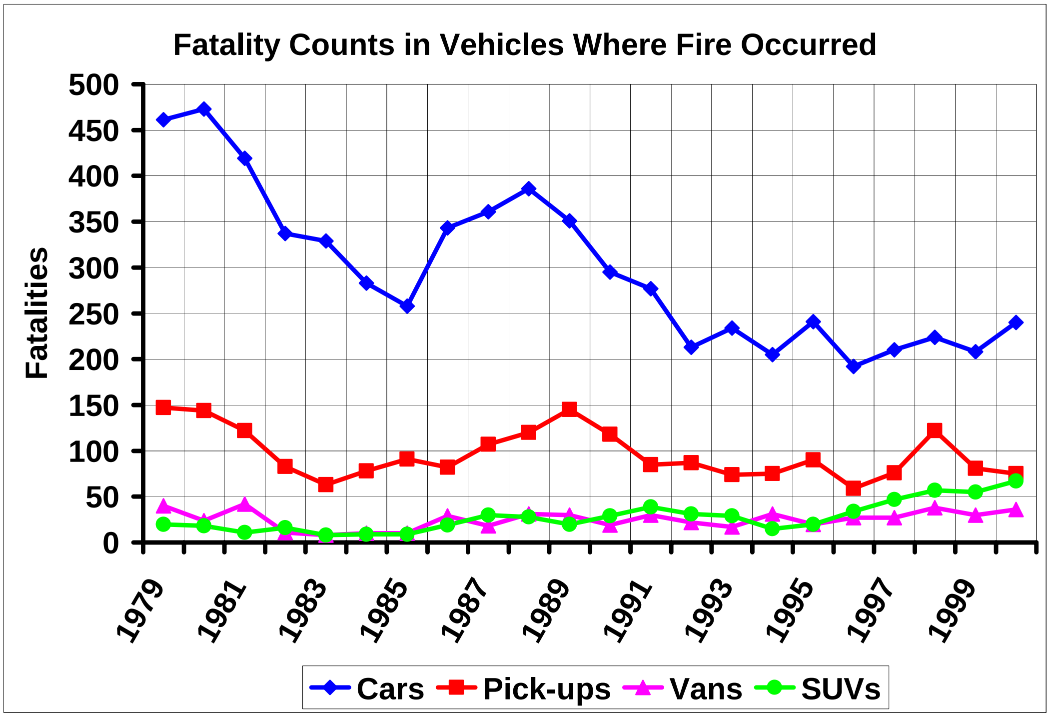

Figure 3. Fatality counts in vehicles where there was the occcurence of a fire/explosion (fatalty is not necessarily attributed to the fire event). Data is from FARS 1979-2000, vehicle age is 0-4 years, and distributions are by vehicle type.

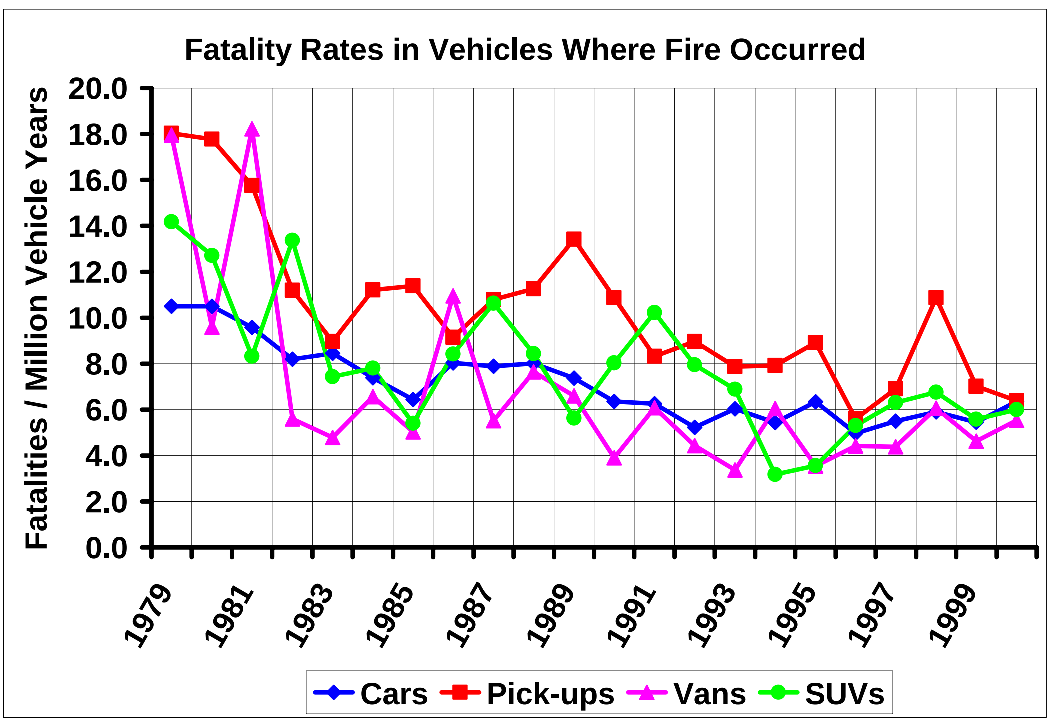

Figure 4. Fatality rates per million vehicle registered years in vehicles where there was the occcurence of a fire/explosion (fatalty is not necessarily attributed to the fire event). Data is from FARS 1979-2000, vehicle age is 0-4 years, and distributions are by vehicle type.

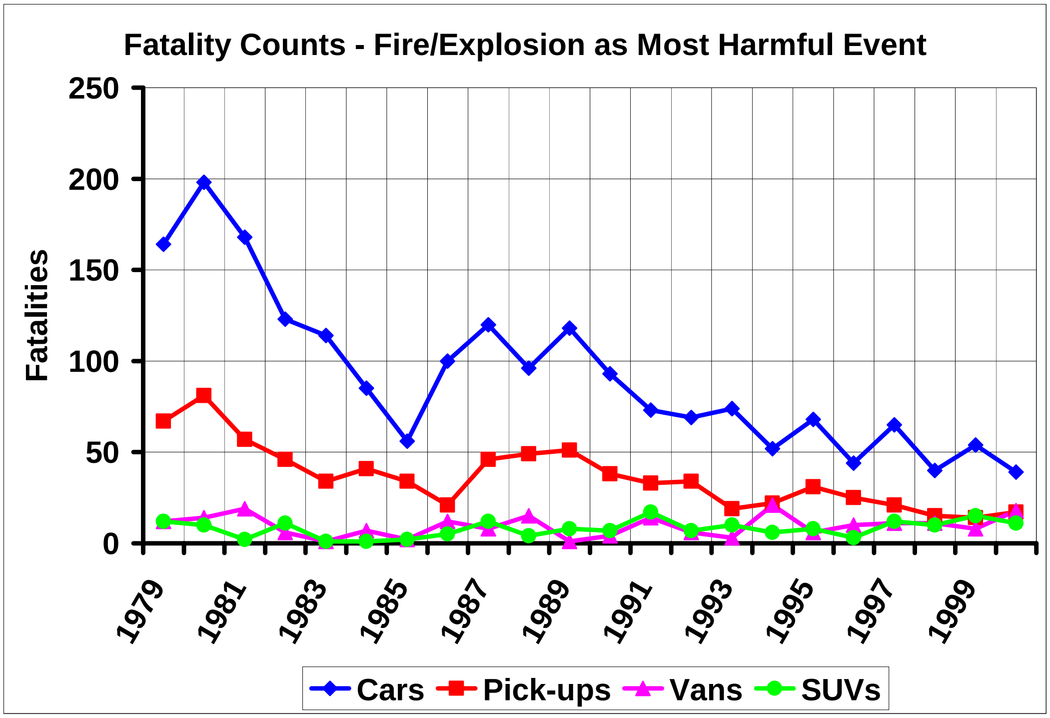

Figure 5. Fatality counts in vehicles where there was the occcurence of a fire/explosion and the fire event has been coded as the most harful event (i.e. cause of death). Data is from FARS 1979-2000, vehicle age is 0-4 years, and distributions are by vehicle type.

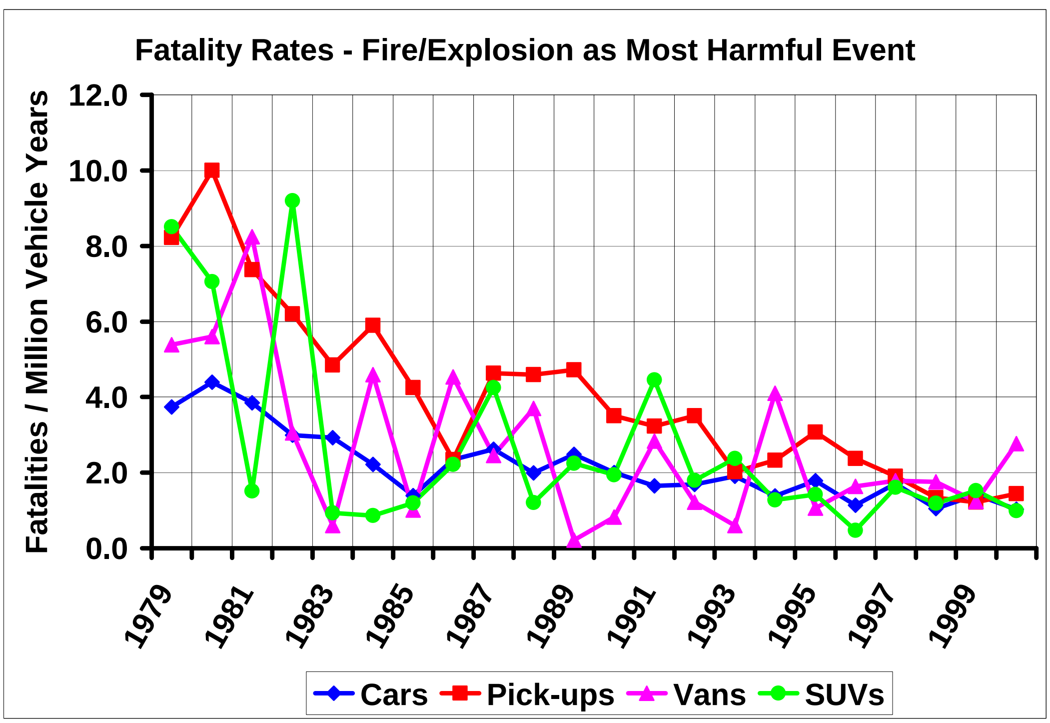

Figure 6. Fatality rates per million vehicle registered years in vehicles where there was the occcurence of a fire/explosion and the fire event has been coded as the most harful event (i.e. cause of death). Data is from FARS 1979-2000, vehicle age is 0-4 years, and distributions are by vehicle type.

This study looks at vehicles of age 0-4 years; therefore, FARS year 2000 includes models years 1996-2000. A significant occurrence took place during model year 1976 with the introduction of the FMVSS 301 standard for fuel system integrity. Based on data in these figures, FARS year 1981 would be the first year with all vehicles FMVSS 301 compliant.

Figures 3 and 4 provide the fatality counts and rates for fatal crashes in which the fatality occurred in the vehicle where there was a fire. In these figures the fatality was not necessarily attributed to the fire event. Figures 5 and 6 relate the number and rate of fatalities to the fire event. In these figures, the fire event has been coded as the most harmful event, indicating it was the cause of the fatality. Often times it may be difficult to discern the cause of the fatality in these crashes (biomechanical trauma vs. fire trauma). This distinction was not investigated and the coding was taken directly from FARS. Previous studies have attempted to investigate the uncertainty and difficulty in coding fire as the most harmful event [Davies 2002].

It is positive to note that fire occurrence rates and fatality rates, including most harmful event rates, have declined since 1979 for all vehicle classes. With regard to fire occurrence counts and fatality counts, passenger cars and pick-up trucks have shown significant declines since 1979. Vans have remained relatively constant, while SUVs have shown a slight increase in recent years. The rise in SUVs is offset by the increased number of vehicle registrations over the same time period. SUV registrations have increased by 790% since 1979, and by over 300% since the early 1990's. Even with the increased exposure, rates have declined.

Passenger cars have shown the greatest decline in fire occurrence counts (207 fires - 51.6%), while pick-up trucks have the largest rate decline (9.62 fires/MVY). Pick-ups still maintain the highest rate for vehicle fires at 8.17 fires/MVY. In 2000, the fire rate for passenger cars was 5.14 fires/MVY, compared to 6.39 fires/MVY for light trucks. When looking at the overall decline in fire rates, cars have dropped by 43.7% and LTVs (pick-ups, vans, SUVs) by 59.7%. More importantly fatality rates by most harmful event have declined by 72.3% for cars and 79.7% for LTVs. Tables 1 and 2 display data from 1979 and 2000 for fire occurrence rates and fatality (most harmful event) rates respectively.

Table 1. Fire occurrence rates, vehicles age 0-4 in FARS

	Cars	Pick-ups	Vans	SUVs	All LTVs	All Vehicles
1979	9.13	17.79	13.91	7.79	15.86	10.56
2000	5.14	8.17	4.61	5.56	6.39	5.69
Change	4.00	9.62	9.30	2.23	9.47	4.87
Percent	43.7%	54.1%	66.9%	28.7%	59.7%	46.1%

Table 2. Fatality rates by most harmful event, vehicles age 0-4

	Cars	Pick-ups	Vans	SUVs	All LTVs	All Vehicles
1979	3.74	8.22	5.39	8.50	7.72	4.58
2000	1.03	1.45	2.77	0.99	1.56	1.27
Change	2.70	6.77	2.62	7.52	6.15	3.31
Percent	72.3%	82.4%	48.6%	88.4%	79.7%	72.4%

This FARS data is also being reviewed for such variables as crash mode (frontal, rear, rollover, etc.), impacting object, and more. Certain vehicle characteristics may reveal trends; however the relatively low number of fire events may prevent significant findings as the data is further categorized.

CASE REVIEWS OF VEHICLE FIRES

For the first phase of this study, the National Automotive Sampling System – Crashworthiness Data System (NASS/CDS) was used as the source of data in the analysis of detailed case studies. There have been two primary tasks completed to this stage. These include 1) the development of a NASS analysis tool for fire and fuel leakage cases, and 2) the application of this tool toward the study of NASS/CDS cases.

A crash query and case summary reporting tool is currently under development to help researchers review historical crash cases collected through NASS/CDS. The web based query page allows a user to select a specific subset of crashes from the database, based on desired crash conditions. It has been further enhanced to identify cases based on fire/fuel leakage variables.

The NASS/CDS tool performs a query based on a series of limiting conditions, and then returns two sets of information. First, data relating to the generated subset of crashes is available in tabular form. Since a large set of crash variables may be returned, a user is able to perform sorting and scanning on the data to look for trends and relationships between variables not evident during the initial query.

The second piece of information returned is a list of all cases that meet the query criteria. A user can select a case for further investigation. Following case selection, an automated summary sheet(s) is generated with significant crash variables presented along with applicable pictures and scene diagram.

This query tool was used to identify and summarize 228 cases from 1997-2000 NASS/CDS in which there was a fire occurrence. These cases have been further analyzed to identify certain attributes of the crashes, which include:

- Investigate crash mode distribution in these cases (frontal, side, rear, rollover, etc.).
- Identify the ignition sources of the fires, along with fire location within the vehicle.
- Investigate accidents of similar severity and impact mode in which there was no fire, looking at injury distribution comparisons.

Although this study is ongoing, some initial results are available. It should be noted that NASS/CDS weighting factors were not used in this study due to the complexity and relative randomness of fire events. It was felt that the weighting factors could not be definitively applied to the fire events.

When looking at impact direction, the cases were divided into categories of impact that would be associated with the fire event. For example, if a frontal impact occurred with another vehicle followed by a side impact to a tree, and the tree impact was the source of a ruptured fuel tank, this would be classified as a side impact for this study. Based on this criterion, frontal impacts accounted for 117 cases (51.3%), side impacts 42 cases (18.4%), rear impacts 14 cases (6.1%), and rollovers 55 cases (24.1%). These results can be seen in Figure 7. It is interesting to note that rear impacts had the lowest frequency of fire events.

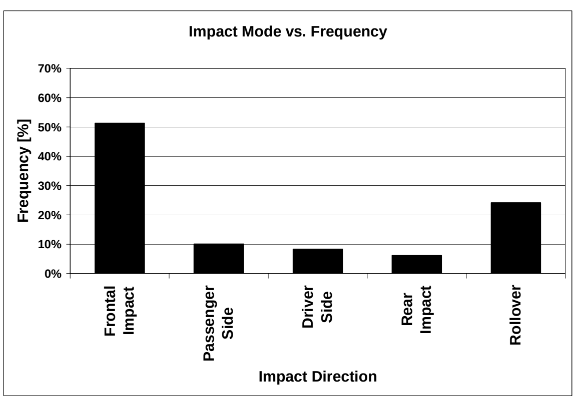

Figure 7. Distribution of fire events by impact direction.

Each impact mode is being further investigated to identify any possible trends. This includes impact mode in combination with impacting object and origin of the fire. Rollover events are being reviewed to understand the various contributions of the role events. This includes roll severity (number of ¼ turns), roll direction, and fire origin relative to roll events.

The location and/or origin of the fire can provide useful information to researchers looking to further improve vehicle design and prevent fire events. The distribution of the fire origin within these NASS/CDS cases is shown in Figure 8. Of particular interest is that a large majority of fires (147 cases – 64.5%) initiated inside the engine compartment. In 26 cases (11.4%) it could be definitively determined that the fuel tank was the source of the fire. Often times it is difficult or impossible to determine the fire origin. This typically occurs in cases in which the vehicle was completely engulfed. There were 39 cases (17.1%) with unknown fire origins. This distribution is similar to previous studies and warrants further investigation into specific sources of fire initiation within the engine compartment.

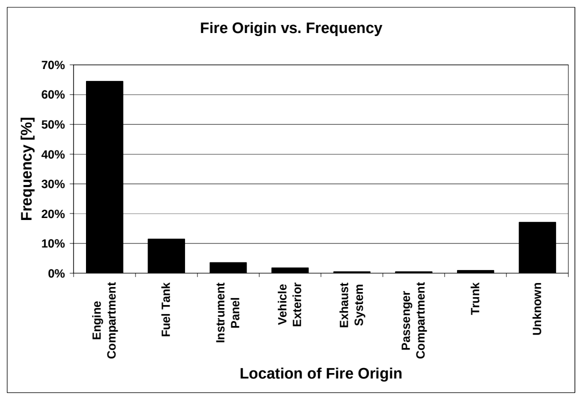

Figure 8. Distribution of fire origin/location.

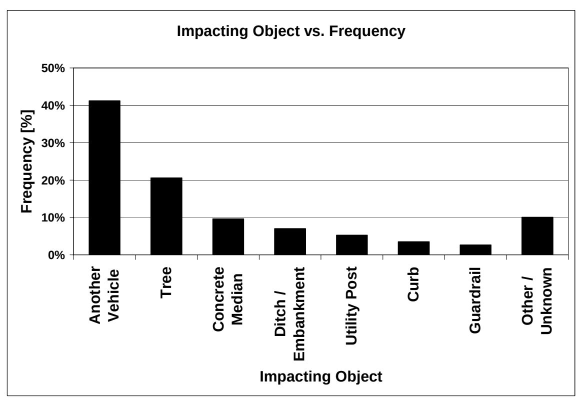

Figure 9. Distribution of fire events by impacting object.

This initial review of the data also identified the distribution of impacting objects for fire events (Figure 9). In 94 cases (41.2%) another vehicle was the impacting object that was associated with the fire event. Although Figure 9 shows a more detailed breakdown of the impacting object, it can be seen that in 111 cases (48.7%) a fixed roadside object was the source of impact and the fire event. In a majority of these cases the fixed object is narrow and results in significant penetration at concentrated locations along the vehicle. Though further investigation is warranted and ongoing, impacts with fixed narrow objects account for a larger portion of the fuel tank related fires.

Of particular importance in any vehicle safety investigation is to study the relationships with occupant injury and fatality. While it is interesting to look at injury distributions within a particular type of event, it is also necessary to gage the relative importance of the findings. For this study, it can be done by comparing all crash events with fire events. Injury distributions based on MAIS is shown in Figure 10. The data is displayed for all fire event cases along side all non-fire cases. It should be noted that the MAIS for the fire cases is associated with the fire event. For example, if the crash victim had an AIS 5 associated with steering wheel contact, and an AIS 2 associated with the fire event, the case is classified as MAIS 2 for this study. This attempts to normalize to a certain extent for the fire event, but it should be noted that it is often difficult to discern these injuries at higher severities.

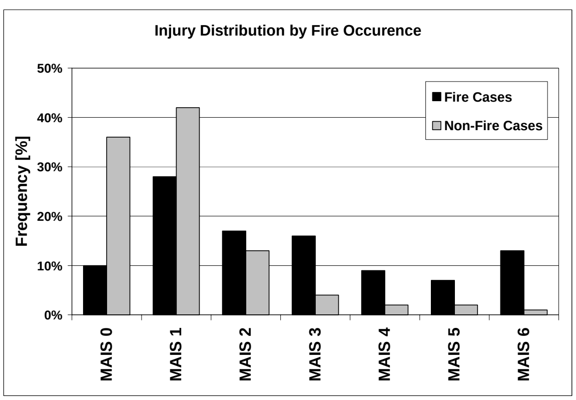

Figure 10. Injury distribution by MAIS for fire and non-fire cases.

Results show some interesting initial findings. Fire events tend to have a significantly greater percentage of MAIS 3+ associated injuries. While fire events are relatively infrequent, their occurrence tends to have greater associated harm. Further investigation into the injuries within each case is ongoing.

SURVEY OF STATE-OF-THE-ART IN FIRE SAFETY TECHNOLOGY

An investigation of the state-of-the-art in fuel systems has been undertaken with a focus on identifying fuel system fire safety technologies for preventing and/or mitigating post-crash fuel fires that may be in use today. An extensive survey will be conducted with in-vehicle evaluation and documentation of the various systems. Additionally, major fuel system components, such as the fuel tank itself, will be evaluated. The project is divided into two phases:

- Phase 1 defines the overall scope of the investigation and establishes procedures for carrying out the more specific review of individual systems. Included is a review of existing automotive fuel system standards.
- Phase 2 comprises the in-depth evaluation of the fuel systems from vehicles identified in Phase 1.

The work performed under Phase 1 of the project is discussed herein.

Forty two different fuel system performance standards from world wide standards agencies and governing bodies were reviewed as part of the investigation into the state-of-the-art in fuel systems. These standards have been summarized and reported previously [Fournier 2001].

Various design strategies or technologies associated with the fuel system, which includes the evaporative emissions hardware, have been identified as potential countermeasures for preventing or mitigating the likelihood of post-crash vehicle fires. These strategies or technologies, which may already be employed in existing vehicles, include:

- <u>Filler check valve</u>: If the filler hose is torn from the tank a check valve located at the spout on the tank would prevent excessive fuel loss.
- <u>Shielding</u>: Shields may be used to increase the fuel system's resistance to damage resulting from direct contact and debris by providing an additional layer of protection.
- <u>Tank materials, thickness</u>: The choice of tank materials (plastic vs. metal) and its thickness will affect the resistance to punctures, tearing or bursting.
- <u>Multiple layered tanks</u>: Although principally used to address emission issues, multiple layered constructions may improve robustness.
- <u>Tank bladders</u>: Compliant and tear resistant bladders contained inside a tank prevent fuel

leaks if the rigid outer shell of the tank system is compromised.

- Tear away fuel line connections with check valves: These connections are designed to disengage and seal if excessive tension is applied to the fuel lines.
- Fire shields/blankets: Fire retardant shields, affixed to the hood fall into place to smother engine compartment fires.
- Anti-siphoning: The routing of fuel lines are such that if severed they would not continue to siphon fuel from the tank.
- EFI Fuel Pump shut off: The fuel pump would be deactivated if a crash is detected.
- Active fire suppression systems: Fire detectors would trigger the release of fire suppressant chemicals.
- Tank additives: Reticulate materials placed inside the tank to prevent explosions of the tank.
- Location, tank environment and routing of fill and delivery lines: Placement of fuel system components relative to potentially intrusive or aggressive components to minimize damage in the event of a collision.
- Slip-in-tube drive shaft: In a frontal collision of a rear wheel drive vehicle, the drive shaft would collapse along its length to minimize damage to a rear mounted tank.

The North American fleet comprises over three hundred makes and models of vehicles, not including variations within a model. The inspection of each one is beyond the current scope of the review which intends to gain a cross-section view of the best practices in fuel system fire safety design. A subset of these vehicles has been proposed and consists of a cross section of vehicle type (car, SUV, truck, etc.), manufacturer, price range, country of origin, etc. Also, vehicles with known technology implementations will be reviewed.

Information on each vehicle is collected and input into a Microsoft Access© database. This includes, but is not limited to:

- Tank shape and placement
- Presence of technologies listed previously
- Routing of fuel lines and components associated with the fuel delivery system
- Type and location of batteries and power sources
- Proximity of potentially "aggressive" structural components

In addition to visual inspections, vehicle brochures and user manuals will be reviewed, along with repair and maintenance manuals. Accompanying digital photos are also placed in the database.

A sample vehicle inspection has been completed as part of phase 1 of this study. Phase 2 – the inspection of 70 vehicles – is underway and all data will enter the public domain upon completion.

EVALUATION OF PLASTIC FUEL TANKS OF VARIOUS SHAPES

The purpose of this program is to conduct comparison evaluations of existing plastic fuel tanks to performance standards applied in Europe and also to standards applied to tanks for trucks in the US. The tests also examined degradation in service. Two ages of tanks were tested; 1) "conditioned" tanks, not older than four years, and 2) "new" tanks, from original equipment manufacturers (OEMs). The conditioned tanks were from vehicles that have been operated in a warm climate in the vicinity of San Antonio, Texas. The new tanks were purchased from the OEM supply and not from an after market supplier. The project evaluated three different tank design shapes.

The three tank design shapes are as follows: 1) a "pancake" tank typical of tanks in front wheel drive cars with a thin shape mounted to an underbody near the rear seat area and in front of the rear axle; 2) a "long" tank with a narrow shape mounted inside the frame rail and in front of the rear axle; and 3) a "square" tank mounted behind the rear axle. The three types of tanks are shown in Figures 11-13.

Three types of tests were conducted for new and conditioned tanks for each of the three tank shapes. The tests were: fire resistance, concentrated energy cold impact, and high energy impact.

The fire resistance tests were conducted in accordance with the European Standard for plastic fuel tanks, ECE R 34, Annex 5, Fire Resistance Section. This standard requires the plastic tank to withstand a pool fire for two minutes without leaking. In this test, the tank is mounted on the actual vehicle and filled with gasoline to 50% of capacity. For one minute, the vehicle and tank were subjected to the full intensity of a fuel-fed pool fire positioned directly beneath the tank. For the second minute, the intensity of the fire was mitigated by covering the fire pan with a screen. If the tank survives for two minutes it is said to "pass."

In the research testing conducted under this project, a third condition was imposed. In this third condition, the screen was removed and the high intensity fire was continued until tank leakage occurred. Once

Figure 11. "Pancake" shaped tank pre-test.

Figure 12. "Long" shaped tank pre-test.

Figure 13. "Square" shaped tank pre-test.

Figure 14. "Pancake" tank after fire test.

Figure 15. "Long" tank after fire test.

Figure 16. "Square" tank after fire test.

leakage was observed, the fire was extinguished quickly by fire suppressants. The results reported in Table 3 shows the number of seconds after removal of the screen at 2 minutes until the tank leakage occurred

In these fire tests, all of the conditioned tanks were the original tanks installed on the 1998 model year vehicles that were subjected to the burn tests. These conditioned tanks were tested before the "new" tanks were installed on the same vehicle. In all cases, the fire exposure caused some loss of body material from the vehicle. Consequently, added area for ventilation might exist in the second test. To reduce the effects of differences in ventilation, the vehicle with the "pancake" tank was rebuilt for the second test. The other vehicles suffered less degradation and were not rebuilt. The second test of the "square" tank resulted in tank leakage at 101 seconds – 19 seconds short of the requirement. This difference could be explained by the increased ventilation permitted by the test buck.

Table 3. Number of Seconds After Removal of Fire Screen Until Tank Leakage Occurred

Tank Type	New	Conditioned
Pancake	90	90
Long	38	21
Square	-19	10

Other observations made from the tests included the location and size of the initial leak that occurred before the fire was extinguished. The two pancake tanks leaked at the same place – the bottom left rear corner. In both cases, the leaks were very small. The two square tanks both leaked in locations that were associated with loading by the mounting strap. Both tanks also leaked or were severely weakened at the front right top corner due to sagging of the tank. The rate of leakage from the square tank was greater than for the pancake tank. The two long tanks both leaked due to sagging of the front part of the tank that overhung the mounting straps. The leakage occurred at the front of the tank or at the straps. The rate of leakage was greater than the square tank. The post test deformation of the "pancake" tank, the "long" tank, and the "square" tank are shown in Figures 14 through 16.

Impact resistance was conducted on three new and three seasoned tanks. The impact tests were of two types. First tests were conducted in accordance with the European Standard for plastic fuel tanks, ECE R 34, Annex 5, Section 1 "Impact Resistance". Second, tests were conducted in accordance with 49 CFR 393.67, "Liquid Fuel Tanks".

For the ECE R 34 impact resistance test, the tanks are filled to rated capacity and chilled to -40 degrees C. At this temperature, they are impacted by a pyramid shaped 15 kg mass at an energy level of 30.1 Nm. In the research tests, tanks were impacted at the right front corner at energy levels ranging from 30.1 Nm to 43.6 Nm. No leakage occurred in any of the tests.

Federal Motor Carrier Safety Regulation CFR 393.67 "Liquid Fuel Tanks" requires an impact test condition that has not been applied to passenger vehicles. Section (e) (1) of the standard applies to side-mounted tanks and requires a drop test of the tank. In this test, the tank is filled with water to a weight equal to the rated weight of fuel and dropped on its corner from a height of 30 ft. onto an unyielding surface. The standard limits the allowable leakage after the test to 1 oz per minute.

Table 4. Leakage rate in oz. per minute for Three Types of Tanks After 30 ft Drop Test per CFR 393.67 (e) (1)

Tank Type	New	Conditioned
Pancake	<1	<1
Long	<1	150
Square	<1	900

The results of the 30 ft drop tests are shown in Table 4. All of the new tanks and the seasoned pancake tank passed the test. However, both of the other seasoned tanks ruptured at the pinch-off separation. A typical breach of the tank is shown in Figure 17.

Figure 17. Seasoned "Long" Tank Post Drop Test

This limited research indicates that the tested tanks performed in a repeatable manner when subjected to ECE R 34, Annex 5, "Fire Resistance" Section. However, considerable difference in the margin for passing the test was present for the three tank types. In addition, the amount of leakage that occurred once the leak was initiated was vastly different. The behind the axle location of the "square" tank permitted the greatest amount of ventilation, and consequently may have been the most severe environment. The overhang of the long tank beyond the supporting straps appeared to be the most vulnerable feature of that tank shape. There was no identifiable difference between the performance of new and seasoned tanks in these tests.

All three tanks performed satisfactorily when subjected to the ECE R 34 Impact Resistance test, even when subjected to an impact with approximately

50% more energy than required by the test. No degradation was noted in the seasoned tanks.

All three new tanks performed satisfactorily when subjected to the Federal Motor Carrier Safety Regulation CFR 393.67 (e)(1) 30 ft. drop test. However, the seasoned "long" and "square" tanks leaked excessively after the drop. This result suggests some degradation of the resistance to severe impact with aging for these tanks.

DEVELOPMENT OF RECOMMENDED PRACTICE IN 42-VOLT APPLICATIONS

Major auto manufacturers are currently developing electrical systems that operate on 36-volt architectures, transitioning from the current 12-volt systems (14 volts when charging) typically used today. The 36 volt architecture charges at 42 volts, with possible voltage peaks as high as 58 volts. Current best practice and recommendations from ISO restrict the ability for human interface with voltages above 60 volts, thus the selection of the 36-volt architecture. Because the normal operating range is 42-volts, they are typically referred to as 42-volt systems.

There are several reasons why this transition is taking place. Power demands have been growing at about 6% per year for the last 15-20 years [SAE 2002, TOPTEC 2002, Intertech 2002]. Modern cars consume between one and three kilowatts of power. They are near the limit of what can be done with the 12-volt architecture. This growth in power demand results from the expanding use of electronics in autos: radio and hi-fi systems, navigation systems, use of electrical outlets for plug-in computers, etc. In the future, there are many conventional systems that can be driven electronically. Electrically assisted power steering is now on the market. Electric brakes, electric rear wheel steering, electric suspension and stability control, electric drive for water and oil pumps, advanced automatic crash notification (ACN) systems, electric air conditioning and heating systems, and 110 volt AC outlets are all new applications which may be attractive after 42 volts becomes available. Some of these new components have fuel economy, emissions, and/or safety benefits.

Another major trend is toward "mild hybrids," where the engine is shut off when stopped in traffic, and other systems, such as the air conditioning continue to operate. This technology is commonly referred to as an integrated starter generator and can provide approximately a 10% fuel economy improvement in city driving.

Even at 14-volts, there are fires caused by shorts and other malfunctions in the electrical systems. As was shown previously in the data analysis, more fires occur in frontal impacts, and initiate within the engine compartment. Since batteries are typically mounted in that region of the vehicle, and most of the under-hood fluids are flammable (including the engine coolant), there is reason to suspect that the battery may contribute to many under-hood fires. Batteries contain a great deal of energy (~ 3 million Joules for an 85 Ampere-hour battery). A short can dissipate hundreds of Watts, and can ignite surrounding flammable materials. A crushed battery can create either external or internal shorts and begin a heat release that can ignite the plastic battery case, and then spread to other under-hood materials.

If a circuit is broken with a 14-volt circuit, some sparking may occur, but not a sustained arc. With a 42-volt system there is likely to be a sustained arc when a circuit opens or there is a short to ground. This arc has tremendous power associated with it. It can easily produce 1000 Watts of power and release 1000 Joules per second. The temperature of the plasma can be 6000 C. This level of power can ignite most materials and can burn holes in sheet steel.

There is also another phenomenon called "Carbon Tracking" which can be present at 14 volts, but will be more common at 42 volts. It is caused by an electric field across an "insulator." "Insulators" can conduct small amounts of electricity and gradually convert the hydrocarbons in the plastic to carbon - which is a good conductor. After considerable time (i.e. 10-15 years of a vehicle lifetime), this deposit of carbon can grow until it is capable of conducting a large amount of current. Shortly after the current builds up, the material will effectively short and cause an arc, and the material can flash into flame.

This process is accelerated by having conducting liquids or solids on the surface of the conductor. Oil, dirt, grime and moisture, which are readily available in the engine compartment, can get on the plastic electrical components and speed-up the process. Road salt (and battery acid released in a crash) are also conductors which can exacerbate the situation. 42-volt systems (with associated voltage margins) will be more susceptible to this phenomenon.

MVFRI is working with the USCAR 42-volt Working Group to fund a 42-volt research project at Underwriter's Laboratories (UL). The purpose of this effort is to investigate Carbon Tracking phenomena with 25 different plastic samples that are representative of materials used in connectors, terminal strips, and wire insulation. A 5% salt solution, typical of spray from salted roads in winter conditions, will be used to stress the material. One calibrated drop will fall every 30-seconds. After 50 drops (~25 minutes) the material is said to "pass." Some materials will be tested for 500 drops to validate that 50 drops is an acceptable stopping point.

The second effort under consideration will be to test a selection of materials to determine their flammability after being exposed to arcs likely to be created by 42-volt systems. These arcs are very high intensity and most materials will ignite if exposed long enough. The distinguishing factor is how much energy they can absorb before igniting. The number of materials is potentially much larger in number than for the carbon tracking testing. Any material that could be exposed to arcing needs to be tested - including some of the flammable under-hood fluids.

Results from these studies will be published at a later date and it is expected that these works may form the basis for recommended best practice and/or test standards associated with 42-volt systems.

CONCLUSIONS

For the year 2001, there were a total of 1,657 fatal crashes in which there was a fire. This is about 2.9% of all fatal crashes. Analysis of FARS data indicates that the fire rates in cars has dropped by 43.7% and LTVs (pick-ups, vans and SUVs) by 59.7% since the 1979. In 2000, the fire rate for passenger cars was 5.14 fires/million vehicle years, compared to 6.39 for light trucks.

For the years 1997-2000 the NASS/CDS contains 228 cases with fires. In these cases, frontal crashes accounted for 51.3% followed by rollover (24.1%) and side (18.4). Rear impacts accounted for the smallest fraction – 6.1%. The most frequent origin for the fire was the engine compartment, accounting for 64.5%. The fuel tank accounted for 11.4%. There were a relatively large number of unknown sources – 17.1%. The most frequent object impacted before the fire occurred was another vehicle (41.2%). However, a variety of roadside objects made up 48.7%. Narrow objects such as poles and trees contributed more than 25%.

Plastic tanks of three different shapes were evaluated to fire and impact testing as required by ECE R34, Annex 5 and US CFR 393.67 (e)(1). The ECE R34 fire test appeared to produce repeatable results and all tanks demonstrated the capability to withstand the test. All tanks passed the ECE R34 impact test. The US CFR 393.67 (e)(1) requires the tank containing water equal to its rated weight of fuel to be dropped on its corner from a height of 30 ft. All new tanks passed the test. However, two of three tanks that had been in service for three years failed the test. In both cases the failure was pinch off separation, suggesting a possible deterioration of this junction with time.

Research is now underway to identify state-of-the-art technologies in present day motor vehicles. Other research is oriented to developing test methods to assure the fire safety of materials used in vehicles with 42-volt electrical systems. The results of this research will be made public as it progresses.

ACKNOWLEDGMENTS

The authors would like to recognize that funding for this research was provided by General Motors in accordance with the White, Monson and Cashiola vs. General Motors Settlement Agreement.

The authors would also like to recognize the contributions of several researchers and/or organizations that provided technical input to this paper. This includes: Friedman Research Corporation for the statistical data analysis, Biokinetics and Associates Ltd. for the survey of the state-of-the-art technology, Southwest Research Institute for the evaluation of plastic fuel tanks, and the George Washington University for the NASS/CDS case study reviews. Further details of research and progress associated with this work may be obtained at the following internet address: *www.mvfri.org*.

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Attachment E

Smith v. DaimlerChrysler

RICCI~LEOPOLD

DaimlerChrysler Settles Suit Of Exploding Jeep Grand Cherokee Yet Makes No Design Changes To Remedy Problem

July 30th, 2002 (WEST PALM BEACH, Fla.) - Kenneth Smith's life changed in a mere blink of an eye on the morning of October 6, 2001. As his 1995 Jeep Grand Cherokee began traveling through an intersection with a green light his vehicle was rear-ended by a Lincoln Town Car. Immediately upon impact the Jeep burst into flames. Smith, a resident of Jacksonville, Florida, suffered burns to his abdomen, right hand and arm. He has undergone two skin graphs, and must wear special garments to protect his arm and hand.

Ken Smith was unaware, as are probably countless other individuals, that the 1995 Jeep Grand Cherokee (as well as the current models of the Grand Cherokee and Jeep Liberty) was unsafe because the fuel tank and filler neck was designed and installed in a location that is susceptible to rupture or puncture in a rear-end collision. In an accident the Jeep's fuel tank will often times rupture and allow gasoline to escape. This almost always presents a high risk of fire and explosion, which will lead to severe injury or death to the vehicle's occupants.

"This vehicle was a virtual time bomb poised to explode," said attorney, Ted Leopold, of Ricci~Leopold, P.A. , West Palm Beach. "The fuel tank of the 1995 model was located behind the rear axle. This puts the tank in a position that leaves it vulnerable to explosion if impacted by another vehicle. DaimlerChrysler could have located the fuel tank forward of the rear axle, as almost all of its competitors do. This would have provided greater protection to the fuel tank, and the occupants of the vehicle in the event of a rear impact collision. If nothing else the company should have at least provided a shield that would protect the fuel tank from rupture."

Today, Ken Smith is making great progress in his recovery from this horrendous accident. Ironically, one would think that the car that hit the back of Smith's Jeep, was

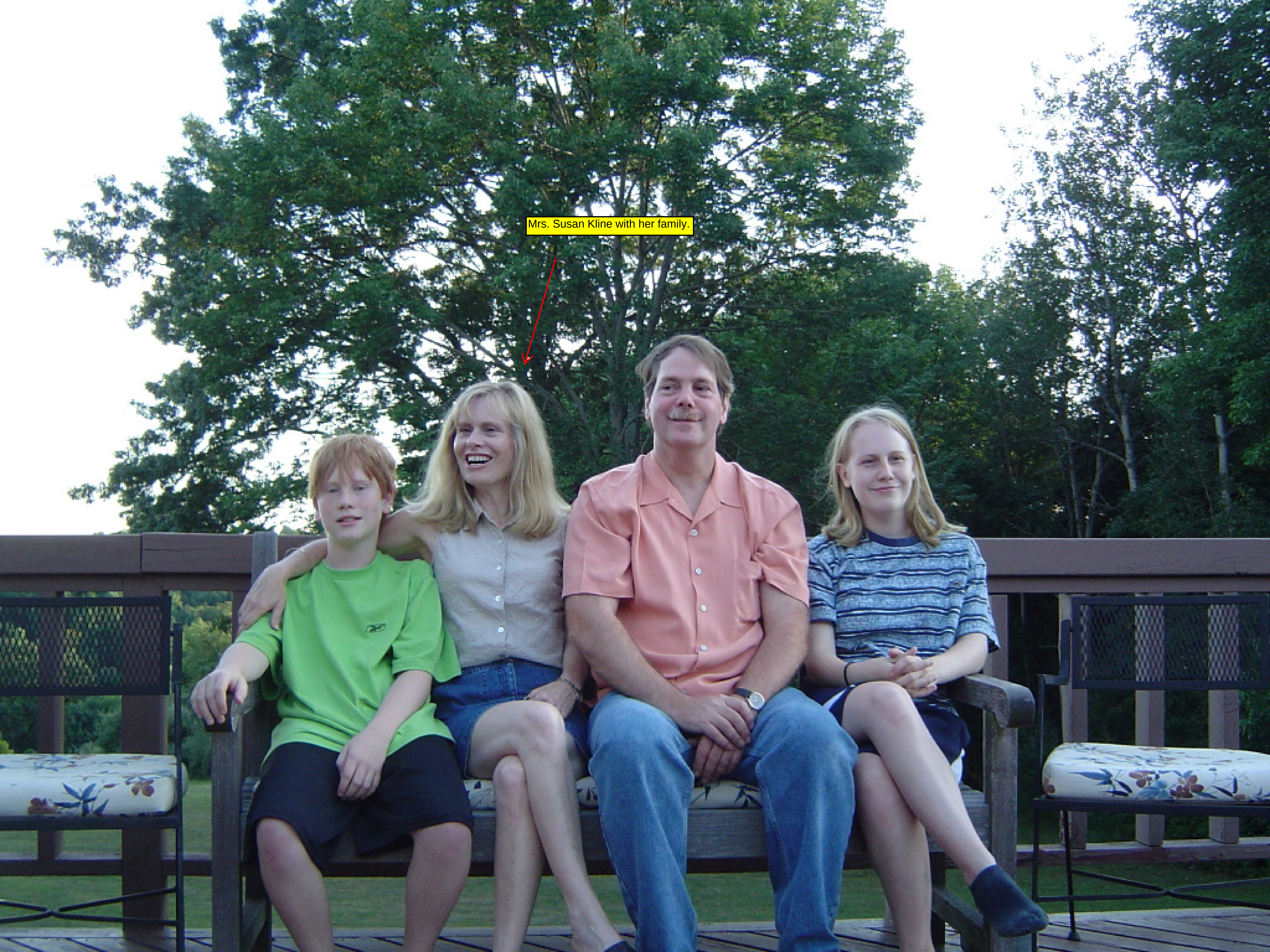
traveling at a high rate of speed. It was not! The vehicle was traveling 20-25 miles per hour at the time of impact.

DaimlerChrysler, settled with Smith for an undisclosed sum of money. However, this was no victory for consumers. Today, anyone can walk on to a DaimlerChrylser lot and purchase a new Grand Cherokee or Jeep Liberty and be at risk for this same type explosion. The fuel tank remains in a location that is susceptible to rupture, puncture or other damage that could cause a failure and allow fuel to escape. In addition, the fuel tank was designed with material that is susceptible to rupture and the fuel filler neck of the Jeeps are routed in such a way that they are susceptible to being torn away, pulled off, punctured or damaged in the event of an accident.

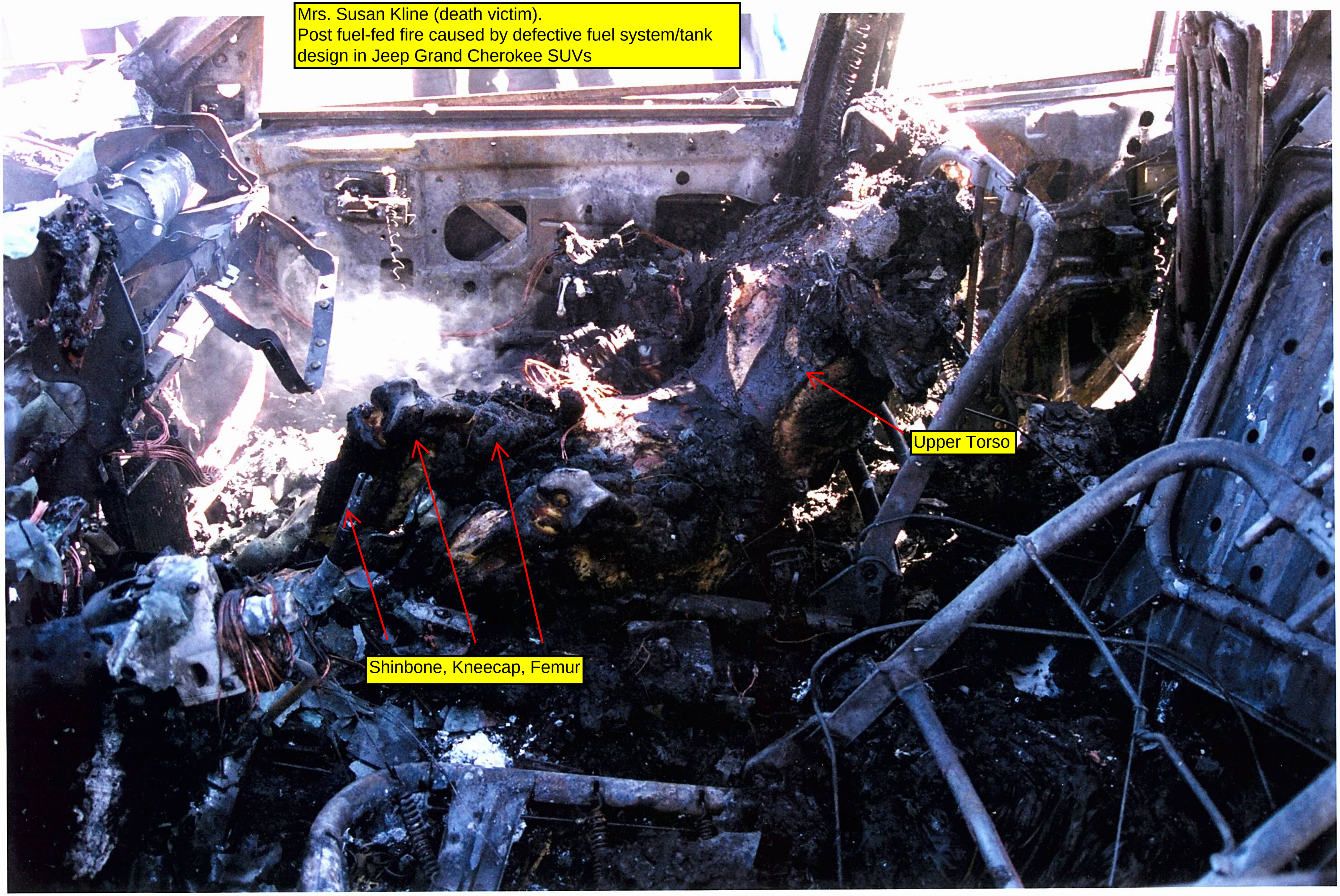
"Justice for Ken Smith was our first order of business in this case," said Leopold. "However, I am disappointed and horrified to see that DaimlerChrysler continues to manufacture these vehicles in this manner. Sadly, we are bound to see many more children and adults riding in these vehicles who will undoubtedly suffer severe burn injuries and even death from horrific car fires."

Founded in 1982, Ricci~Leopold, P.A., has built a reputation as one of the most successful personal injury law firms in the Southeast. The firm represents individuals who have been wrongfully injured in matters involving automotive crashworthiness, managed care litigation, insurance bad faith and coverage disputes, and personal injury. Ricci~Leopold, P.A. headquartered in West Palm Beach, Florida, has seven attorneys representing clients as well as an experienced and skilled research and investigative staff. For additional information, please visit the firm's website at http://www.riccilaw.com

Attachment F
Susan Kline Accident


Mrs. Susan Kline with her family.


Skull


Mrs. Susan Kline (death victim).
Post fuel-fed fire caused by defective fuel system/tank
design in Jeep Grand Cherokee SUVs
Upper Torso
Shinbone, Kneecap, Femur

Attachment G
Rodney Wood Accident Report

Law Enforcement and TxDOT Use ONLY

☒ FATAL ☐ CMV INVOLVED ☐ SCHOOL BUS RELATED ☐ RAILROAD RELATED ☐ MEDICAL ADVISORY BOARD ☐ HIT AND RUN ☐ AMENDMENT/SUPPLEMENT

Texas Department of Transportation

Texas Peace Officer's Crash Report

Form CR-3
(Rev. 03/09)
Page 1 of 2

Submission of Crash Records: This report may be submitted via the CRIS Web Portal, electronically submitted via XML, or by mailing to the Texas Department of Transportation, Crash Records, PO Box 149349, Austin, TX 78714. Questions? Call: 512/486-5780

PLACE WHERE CRASH OCCURRED

COUNTY: TARRANT — CITY OR TOWN: FORT WORTH

LOC #: 09-076903
ORI #:
TxDOT #:

IF CRASH WAS OUTSIDE CITY LIMITS INDICATE FROM NEAREST TOWN: ____ MILES ☐N ☐S ☐E ☐W OF ____

ROAD ON WHICH CRASH OCCURRED: BLOCK NUMBER: 2350 — STREET OR ROAD NAME: NE LOOP 820 — ROUTE NUMBER OR STREET CODE:
CONSTRUCTION ZONE ☐ YES ☐ NO — WORKERS PRESENT ☐ YES ☐ NO — SPEED LIMIT: 65

INTERSECTING STREET OR RR X'ING NUMBER: BLOCK NUMBER: — STREET OR ROAD NAME: — ROUTE NUMBER OR STREET CODE:
CONSTRUCTION ZONE ☐ YES ☐ NO — WORKERS PRESENT ☐ YES ☐ NO — SPEED LIMIT:

NOT AT INTERSECTION: 100 ☒ FT. ☐ MI. ☐N ☐S ☐E ☒W OF 5300 MARK IV PARKWAY
(SHOW MILEPOST OR NEAREST INTERSECTING NUMBERED HIGHWAY. IF NONE, SHOW NEAREST INTERSECTING STREET OR REFERENCE POINT)

MILEPOST: — LATITUDE: — LONGITUDE:

DATE OF CRASH: MONTH: JULY — DAY: 10 — YEAR: 2009 — DAY OF WEEK: FRIDAY — HOUR: 5:35 ☐ AM ☒ PM (IF EXACTLY NOON OR MIDNIGHT, SO STATE)

UNIT # 1 — 1 (1-MOTOR VEHICLE 2-TRAIN 3-PEDALCYCLIST 4-PEDESTRIAN 5-MOTORIZED CONVEYANCE 6-TOWED 7-NON-CONTACT 8-OTHER)
VIN #: 1VH2B1E20Y6200129 — ALTERED VEHICLE HEIGHT ☐ YES ☒ NO

YEAR MODEL: 00 — COLOR & MAKE: WHITE - ORION — MODEL NAME: BUS — BODY STYLE: — LICENSE PLATE: YEAR: EXMP STATE: TX NUMBER: 869182

DRIVER'S NAME: LAST: WARE FIRST: RONNIE M.I.: D — ADDRESS (STREET, CITY, STATE, ZIP): 4008 HILLDALE FTWORTH, TX 76119 — PHONE NUMBER: 817-449-9925

DRIVER'S LICENSE: STATE: TX — NUMBER: 14869672 — CLASS/TYPE: B-CDL — ENDORSEMENTS: — RESTRICTIONS: — DATE OF BIRTH: 12/06/1970 — LICENSE STATUS: 1 (1-VALID 2-NOT VALID 3-SUSPENDED/REVOKED 4-CANCELLED/DENIED 5-EXPIRED 6-UNKNOWN)

DRIVER'S ETHNICITY: 3 (1-WHITE 2-HISPANIC 3-BLACK 4-ASIAN 5-OTHER) — DRIVER'S SEX: ☒ MALE ☐ FEMALE — DRIVER'S OCCUPATION: BUS DRIVER — POLICE, FIREFIGHTER, EMS, ON EMERGENCY ☐ IF CHECKED, PLEASE EXPLAIN IN NARRATIVE

TYPE OF ALCOHOL SPECIMEN TAKEN (1-BREATH 2-BLOOD 3-URINE 4-NONE 5-REFUSED): 4 — TEST RESULTS: — TYPE OF DRUG SPECIMEN TAKEN (1-BLOOD 2-URINE 3-NONE 4-REFUSED): 3 — TEST RESULTS: — DRUG CATEGORY 1. 2.

☐ LESSEE ☒ OWNER: FT WORTH TRANSIT AUTH — ADDRESS: 1600 E LANCASTER FTW TX 76102
(NAME (ALWAYS SHOW LESSEE IF LEASED, OTHERWISE SHOW OWNER))

LIABILITY INSURANCE: ☒ YES ☐ NO ☐ EXP — INSURANCE COMPANY: — POLICY NUMBER: — VEHICLE DAMAGE RATING: 12-VB-7-FD-3

UNIT # 2 — 1 (1-MOTOR VEHICLE 2-TRAIN 3-PEDALCYCLIST 4-PEDESTRIAN 5-MOTORIZED CONVEYANCE 6-TOWED 7-NON-CONTACT 8-OTHER)
VIN #: 1J4GX48S94C249693 — ALTERED VEHICLE HEIGHT ☐ YES ☒ NO

YEAR MODEL: 04 — COLOR & MAKE: BLK / JEEP — MODEL NAME: GRAND CHEROKEE — BODY STYLE: SUV — LICENSE PLATE: YEAR: 09 STATE: TX NUMBER: X34BBC

DRIVER'S NAME: LAST: WOOD FIRST: RODNEY M.I.: R — ADDRESS (STREET, CITY, STATE, ZIP): 16125 HOLLYHILL CT JUSTIN TX 76247 — PHONE NUMBER:

DRIVER'S LICENSE: STATE: TX — NUMBER: 19721212 — CLASS/TYPE: CM — ENDORSEMENTS: — RESTRICTIONS: — DATE OF BIRTH: 12/12/1972 — LICENSE STATUS: 1 (1-VALID 2-NOT VALID 3-SUSPENDED/REVOKED 4-CANCELLED/DENIED 5-EXPIRED 6-UNKNOWN)

DRIVER'S ETHNICITY: W (1-WHITE 2-HISPANIC 3-BLACK 4-ASIAN 5-OTHER) — DRIVER'S SEX: ☒ MALE ☐ FEMALE — DRIVER'S OCCUPATION: — POLICE, FIREFIGHTER, EMS, ON EMERGENCY ☐ IF CHECKED, PLEASE EXPLAIN IN NARRATIVE

TYPE OF ALCOHOL SPECIMEN TAKEN (1-BREATH 2-BLOOD 3-URINE 4-NONE 5-REFUSED): 4 — TEST RESULTS: — TYPE OF DRUG SPECIMEN TAKEN (1-BLOOD 2-URINE 3-NONE 4-REFUSED): 3 — TEST RESULTS: — DRUG CATEGORY 1. 2.

☐ LESSEE ☒ OWNER: SAME AS DRIVER — ADDRESS:
(NAME (ALWAYS SHOW LESSEE IF LEASED, OTHERWISE SHOW OWNER))

LIABILITY INSURANCE: ☒ YES ☐ NO ☐ EXP — INSURANCE COMPANY: PROGRESSIVE INS — POLICY NUMBER: 62491286 — VEHICLE DAMAGE RATING: 06-BD7-FD4-VB7

DAMAGE TO PROPERTY OTHER THAN VEHICLES:

OBJECT — NAME AND ADDRESS OF OWNER — FEET FROM CURB — $ DAMAGE ESTIMATE

IN YOUR OPINION, DID THIS CRASH RESULT IN AT LEAST $1,000.00 DAMAGE TO ANY ONE PERSON'S PROPERTY? ☒ YES ☐ NO

CHARGES FILED

NAME: — CHARGE: — CITATION #:

NAME: — CHARGE: — CITATION #:

TIME NOTIFIED OF CRASH: DATE: 07/10/09 HOUR: 6:23PM — HOW: POLICE RADIO — TIME ARRIVED AT SCENE: DATE: 07/10/09 HOUR: 6:53PM — DATE OF REPORT: 07/11/09

TYPED OR PRINTED NAME OF INVESTIGATOR: DETECTIVE TDP DAVIS — ID #: 1965 — AGENCY: FWPD — DIST/AREA: D13 — REPORT COMPLETE ☐ YES ☒ NO

SEAT POSITION	SOLICITATION	EJECTED	RESTRAINT USED	AIRBAG	HELMET USE	INJURY SEVERITY
1-FRONT LEFT 2-FRONT CENTER 3-FRONT RIGHT 4-SECOND SEAT LEFT 5-SECOND SEAT CENTER 6-SECOND SEAT RIGHT 7-THIRD SEAT LEFT 8-THIRD SEAT CENTER 9-THIRD SEAT RIGHT 10-CARGO AREA 11-OUTSIDE VEHICLE 12-UNKNOWN	INDICATES A PERSON'S DESIRE TO RECEIVE CONTACT FROM PERSONS SEEKING PROFESSIONAL EMPLOYMENT AS/FOR AN ATTORNEY, CHIROPRACTOR, PHYSICIAN, SURGEON, PRIVATE INVESTIGATOR, OR ANY OTHER PERSON REGISTERED OR LICENSED BY A HEALTH CARE REGULATORY AGENCY (Y=SOLICIT, N=NO SOLICIT)	1-NO 2-YES 3-YES, PARTIAL 4-NOT APPLICABLE 5-UNKNOWN	1-SHOULDER & LAP BELT 2-SHOULDER BELT ONLY 3-LAP BELT ONLY 4-CHILD SEAT, FACING FORWARD 5-CHILD SEAT, FACING REAR 6-CHILD SEAT, UNKNOWN 7-BOOSTER SEAT 8-NONE 9-OTHER 10-UNKNOWN	1-NOT APPLICABLE 2-NOT DEPLOYED 3-DEPLOYED, FRONT 4-DEPLOYED, SIDE 5-DEPLOYED, OTHER 6-UNKNOWN	1-WORN, DAMAGED 2-WORN, NOT DAMAGED 3-WORN, UNK. DAMAGE 4-NOT WORN 5-UNKNOWN IF WORN	K-KILLED A-INCAPACITATING INJURY B-NON INCAPACITATING INJURY C-POSSIBLE INJURY N-NOT INJURED U-UNKNOWN

UNIT # 1 — TOWED DUE TO DISABLING DAMAGE ☒ YES ☐ NO — VEHICLE REMOVED TO 1600 E LANCASTER BY ABC WRECKER

COMPLETE ALL DATA ON ALL OCCUPANT'S NAMES, POSITIONS, RESTRAINTS USED, ETC. HOWEVER, IT IS NOT NECESSARY TO SHOW ADDRESSES UNLESS KILLED OR INJURED.

ITEM #	SEAT POSITION	NAME (LAST, FIRST, MI) ADDRESS	SOL	EJECTED	RESTRAINT USED	AIRBAG	HELMET	AGE	SEX	INJURY CODE
1	1	SEE FRONT	N	1	1	2	4	38	M	B
2	3	RAGLAND,GARY 4601 GOLD ROCK FTW,TX. 76137	N	1	9	1	4	45	M	C
3										
4										
5										

UNIT # 2 — TOWED DUE TO DISABLING DAMAGE ☒ YES ☐ NO — VEHICLE REMOVED TO 1301 E NORTHSIDE DR BY FORT WORTH WRECKER

COMPLETE ALL DATA ON ALL OCCUPANT'S NAMES, POSITIONS, RESTRAINTS USED, ETC. HOWEVER, IT IS NOT NECESSARY TO SHOW ADDRESSES UNLESS KILLED OR INJURED.

ITEM #	SEAT POSITION	NAME (LAST, FIRST, MI) ADDRESS	SOL	EJECTED	RESTRAINT USED	AIRBAG	HELMET	AGE	SEX	INJURY CODE
6	1	SEE FRONT	N	1	1	6	4	36	M	K
7										
8										
9										
10										

PED., PEDAL, MOT. CONVEY. ETC.	COMPLETED IF CASUALTIES NOT IN MOTOR VEHICLE — CASUALTY NAME (LAST, FIRST, MI) ADDRESS	SOL	ALCOHOL SPECIMEN TAKEN	RESULT	DRUG SPECIMEN TAKEN	RESULT	HELMET	AGE	SEX	INJURY CODE

DISPOSITION OF KILLED OR INJURED — IF AMBULANCE USED, SHOW

ITEM #'S	TAKEN TO	BY	TIME NOTIFIED	TIME ARRIVED AT SCENE	AMBULANCE UNIT #	# OF ATTENDANTS INCLUDING DRIVER	# OF PERSONS TRANSPORTED FOR TREATMENT
1	HARRIS DOWTOWN	MED-STAR 49	5:38P	5:43P	49	2	
6	TCME OFFICE	WL LAWSON FOUNDATIO	1930	2000		2	1

COMPLETE THIS SECTION IF PERSON KILLED (If a driver or occupant dies within 30 days of the crash, please complete this area and mail the supplement to the Crash Records Bureau)

ITEM #	DATE OF DEATH	TIME OF DEATH	ITEM #	DATE OF DEATH	TIME OF DEATH	ITEM #	DATE OF DEATH	TIME OF DEATH	ITEM #	DATE OF DEATH	TIME OF DEATH
6	071009	1735									

INVESTIGATOR'S NARRATIVE OPINION OF WHAT HAPPENED (ATTACH ADDITIONAL SHEETS IF NECESSARY)

Unit 1 was E/B 2350 NE Loop 820 in left lane. Driver 1 said unit 2 slammed on brakes. Unit 2 was struck by unit 1. Unit 2 then struck unit 3. Unit 5 states unit 4 who was behind him was driving fast and he tried to move out of the way and was then rear ended by unit 4. Driver unit 2 was deceased on the scene.

DIAGRAM

INDICATE NORTH

1-TWO-WAY, NOT DIVIDED
2-TWO-WAY, DIVIDED, UNPROTECTED MEDIAN
3-TWO-WAY, DIVIDED, PROTECTED BARRIER
4-ONE WAY
9-UNKNOWN

FACTORS AND CONDITIONS LISTED ARE THE INVESTIGATOR'S OPINION

UNIT #	FACTORS/CONDITIONS CONTRIBUTING 1	2	3	OTHER FACTORS/CONDITIONS MAY OR MAY NOT HAVE CONTRIBUTED 1	2	3	VEHICLE DEFECTS CONTRIBUTING 1	2	VEHICLE DEFECTS MAY HAVE CONTRIBUTED 1	2
1	22									

1-ANIMAL ON ROAD - DOMESTIC
2-ANIMAL ON ROAD - WILD
3-BACKED WITHOUT SAFETY
4-CHANGED LANE WHEN UNSAFE
5-13 SEE VEHICLE DEFECTS
14-DISABLED IN TRAFFIC LANE
15-DISREGARD STOP AND GO SIGNAL
16-DISREGARD STOP SIGN OR LIGHT
17-DISREGARD TURN MARKS AT INTERSECTION
18-DISREGARD WARNING SIGN AT CONSTRUCTION
19-DISTRACTION IN VEHICLE
20-DRIVER INATTENTION
21-DROVE WITHOUT HEADLIGHTS
22-FAILED TO CONTROL SPEED
23-FAILED TO DRIVE IN SINGLE LANE
24-FAILED TO GIVE HALF OF ROADWAY
25-FAILED TO HEED WARNING SIGN
26-FAILED TO PASS TO LEFT SAFELY
27-FAILED TO PASS TO RIGHT SAFELY
28-FAILED TO GIVE SIGNAL OR WRONG SIGNAL
29-FAILED TO STOP AT PROPER PLACE
30-FAILED TO STOP FOR SCHOOL BUS
31-FAILED TO STOP FOR TRAIN
32-FAILED TO YIELD ROW - EMERGENCY VEHICLE
33-FAILED TO YEILD ROW - OPEN INTERSECTION
34-FAILED TO YIELD ROW - PRIVATE DRIVE
35-FAILED TO YIELD ROW - STOP SIGN
36-FAILED TO YIELD ROW - TO PEDESTRIAN
37-FAILED TO YIELD ROW - TURNING LEFT
38-FAILED TO YIELD ROW - TURN ON RED
39-FAILED TO YIELD ROW - YIELD SIGN
40-FATIGUED OR ASLEEP
41-FAULTY EVASIVE ACTION
42-FIRE IN VEHICLE
43-FLEEING OR EVADING POLICE
44-FOLLOWED TOO CLOSELY
45-HAD BEEN DRINKING
46-HANDICAPPED DRIVER (EXP. IN NARRATIVE)
47-ILL (EXP. IN NARRATIVE)
48-IMPAIRED VISIBILITY (EXP. IN NARRATIVE)
49-IMPROPER START FROM PARKED POSITION
50-LOAD NOT SECURED
51-OPENED DOOR INTO TRAFFIC LANE
52-OVERSIZE VEHICLE OR LOAD
53-OVERTAKE AND PASS INSUFFICIENT CLEARANCE
54-PARKED AND FAILED TO SET BRAKES
55-PARKED IN TRAFFIC LANE
56-PARKED WITHOUT LIGHTS
57-PASSED IN NO PASSING ZONE
58-PASSED ON RIGHT SHOULDER
59-PED/PEDAL MOT. CON. FTYROW TO VEHICLE
60-SPEEDING-UNSAFE (UNDER LIMIT)
61-SPEEDING OVER LIMIT
62-TAKING MEDICATION (EXP. IN NARRATIVE)
63-TURNED IMPROPERLY - CUT CORNER ON LEFT
64-TURNED IMPROPERLY - WIDE RIGHT
65-TURNED IMPROPERLY - WRONG LANE
66-TURNED WHEN UNSAFE
67-UNDER INFLUENCE - ALCOHOL
68-UNDER INFLUENCE - DRUG
69-WRONG SIDE APPROACH OR IN INTERSECTION
70-WRONG SIDE-NOT PASSING
71-WRONG WAY - ONE WAY ROAD
72-CELL/MOBILE PHONE USE
73-ROAD RAGE
74-OTHER FACTOR (WRITE ON LINE)

VEHICLE DEFECTS

5-DEFECTIVE OR NO HEADLAMPS
6-DEFECTIVE OR NO STOP LAMPS
7-DEFECTIVE OR NO TAIL LAMPS
8-DEFECTIVE OR NO TURN SIG. LAMPS
9-DEFECTIVE OR NO TRAILER BRAKES
10-DEFECTIVE OR NO VEHICLE BRAKES
11-DEFECTIVE OR NO STEERING MECH
12-DEFECTIVE OR SLICK TIRES
13-DEFECTIVE TRAILER HITCH

TRAFFIC CONTROL: 1-NONE, 2-INOPERATIVE, 3-OFFICER, 4-FLAGMAN, 5-SIGNAL LIGHT, 6-FLASHING RED LIGHT, 7-FLASHING YELLOW LIGHT, 8-STOP SIGN, 9-YIELD SIGN, 10-WARNING SIGN, 11-CENTER STRIPE/DIVIDER, 12-NO PASSING ZONE, 13-RR GATE/SIGNAL, 14-SCHOOL ZONE, 15-CROSSWALK, 16-BIKE LANE, 17-OTHER — **11**

ROADWAY RELATION: 1-ON ROADWAY, 2-OFF ROADWAY, 3-SHOULDER, 4-MEDIAN — **1**

PART OF ROADWAY: 1-MAIN LANE, 2-SERVICE ROAD, 3-ENTRANCE RAMP, 4-EXIT RAMP, 5-CONNECTOR, 6-DETOUR, 7-OTHER — **1**

ROADWAY ALIGNMENT: 1-STRAIGHT, LEVEL, 2-STRAIGHT, GRADE, 3-STRAIGHT, HILLCREST, 4-CURVE, LEVEL, 5-CURVE, GRADE, 6-CURVE, HILLCREST, 7-OTHER, 8-UNKNOWN — **3**

LIGHT CONDITION: 1-DAYLIGHT, 2-DARK, NOT LIGHTED, 3-DARK, LIGHTED, 4-DARK, UNK LIGHTED, 5-DAWN, 6-DUSK, 8-OTHER, 9-UNKNOWN — **1**

TYPE OF ROAD SURFACE: 1-CONCRETE, 2-BLACKTOP, 3-BRICK, 4-GRAVEL, 5-DIRT, 6-OTHER, 7-UNKNOWN — **2**

WEATHER: 1-CLEAR/CLOUDY, 2-RAIN, 3-SLEET/HAIL, 4-SNOW, 5-FOG, 6-BLOWING SAND/SNOW, 7-SEVERE CROSSWINDS, 8-OTHER, 9-UNKNOWN — **1**

SURFACE CONDITION: 1-DRY, 2-WET, 3-STANDING WATER, 4-SNOW, 5-SLUSH, 6-ICE, 7-SAND, MUD, DIRT, 8-OTHER, 9-UNK — **1**

Law Enforcement and TxDOT Use ONLY

☒ FATAL ☐ CMV INVOLVED ☐ SCHOOL BUS RELATED ☐ RAILROAD RELATED ☐ MEDICAL ADVISORY BOARD ☐ HIT AND RUN ☐ AMENDMENT/SUPPLEMENT

Texas Department of Transportation

Texas Peace Officer's Crash Report

Form CR-3 (Rev. 03/09) Page 1 of 2

Submission of Crash Records: This report may be submitted via the CRIS Web Portal, electronically submitted via XML, or by mailing to the Texas Department of Transportation, Crash Records, PO Box 149349, Austin, TX 78714. Questions? Call: 512/486-5780

PLACE WHERE CRASH OCCURRED

COUNTY TARRANT CITY OR TOWN FORT WORTH

LOC # 09-076903

ORI #

TxDOT #

IF CRASH WAS OUTSIDE CITY LIMITS INDICATE FROM NEAREST TOWN ____ MILES ☐N ☐S ☐E ☐W OF ____

ROAD ON WHICH CRASH OCCURRED: BLOCK NUMBER 2350 STREET OR ROAD NAME NE LOOP 820 ROUTE NUMBER OR STREET CODE ____

CONSTRUCTION ZONE ☐ YES ☐ NO WORKERS PRESENT ☐ YES ☐ NO SPEED LIMIT 65

INTERSECTING STREET OR RR X'ING NUMBER: BLOCK NUMBER ____ STREET OR ROAD NAME ____ ROUTE NUMBER OR STREET CODE ____

CONSTRUCTION ZONE ☐ YES ☐ NO WORKERS PRESENT ☐ YES ☐ NO SPEED LIMIT ____

NOT AT INTERSECTION 100 ☒ FT. ☐ MI. ☐N ☐S ☐E ☒W OF 5300 MARK IV PARKWAY

SHOW MILEPOST OR NEAREST INTERSECTING NUMBERED HIGHWAY. IF NONE, SHOW NEAREST INTERSECTING STREET OR REFERENCE POINT

MILEPOST ____ LATITUDE ____ LONGITUDE ____

DATE OF CRASH: MONTH JULY DAY 10 YEAR 2009 DAY OF WEEK FRIDAY HOUR 5:35 ☐ AM ☒ PM (IF EXACTLY NOON OR MIDNIGHT, SO STATE)

UNIT # 3

1 (1-MOTOR VEHICLE 2-TRAIN 3-PEDALCYCLIST 4-PEDESTRIAN 5-MOTORIZED CONVEYANCE 6-TOWED 7-NON-CONTACT 8-OTHER)

VIN # 2CNDL63F966034560 ALTERED VEHICLE HEIGHT ☐ YES ☒ NO

YEAR MODEL 06 COLOR & MAKE MAROON - CHEVY MODEL NAME EQUNOX BODY STYLE SUV LICENSE PLATE YEAR 09 STATE TX NUMBER BMN903

DRIVER'S NAME: LAST HORN FIRST PAUL M.I. D ADDRESS (STREET, CITY, STATE, ZIP) 9025 BAYARD ST KELLER, TX. 76248 PHONE NUMBER ____

DRIVER'S LICENSE: STATE TX NUMBER 19640406 CLASS/TYPE CM ENDORSEMENTS ____ RESTRICTIONS ____ DATE OF BIRTH 04/06/1964

LICENSE STATUS 1 (1-VALID 2-NOT VALID 3-SUSPENDED/REVOKED 4-CANCELLED/DENIED 5-EXPIRED 6-UNKNOWN)

DRIVER'S ETHNICITY 1 (1-WHITE 2-HISPANIC 3-BLACK 4-ASIAN 5-OTHER) DRIVER'S SEX ☒ MALE ☐ FEMALE DRIVER'S OCCUPATION ____ POLICE, FIREFIGHTER, EMS, ON EMERGENCY ☐ IF CHECKED, PLEASE EXPLAIN IN NARRATIVE

TYPE OF ALCOHOL SPECIMEN TAKEN (1-BREATH 2-BLOOD 3-URINE 4-NONE 5-REFUSED) 4 TEST RESULTS ____ TYPE OF DRUG SPECIMEN TAKEN (1-BLOOD 2-URINE 3-NONE 4-REFUSED) 3 TEST RESULTS ____ DRUG CATEGORY 1. ____ 2. ____

☐ LESSEE ☒ OWNER SAME AS DRIVER

NAME (ALWAYS SHOW LESSEE IF LEASED, OTHERWISE SHOW OWNER) ADDRESS (STREET, CITY, STATE, ZIP)

LIABILITY INSURANCE ☒ YES ☐ NO ☐ EXP INSURANCE COMPANY PROGRESSIVE INS POLICY NUMBER 62491286 VEHICLE DAMAGE RATING 06,VB7,BD4,FD4

UNIT # 4

1 (1-MOTOR VEHICLE 2-TRAIN 3-PEDALCYCLIST 4-PEDESTRIAN 5-MOTORIZED CONVEYANCE 6-TOWED 7-NON-CONTACT 8-OTHER)

VIN # 1D7HA16K62J219983 ALTERED VEHICLE HEIGHT ☐ YES ☒ NO

YEAR MODEL 02 COLOR & MAKE BLUE - DODGE MODEL NAME 1500 BODY STYLE P/U LICENSE PLATE YEAR 09 STATE TX NUMBER 55RFT2

DRIVER'S NAME: LAST DIAL FIRST TRACY M.I. N ADDRESS (STREET, CITY, STATE, ZIP) 1235 GILLILAND RD SPRINGTOWN, TX. 76082 PHONE NUMBER 817-614-0608

DRIVER'S LICENSE: STATE TX NUMBER 13714203 CLASS/TYPE C ENDORSEMENTS ____ RESTRICTIONS ____ DATE OF BIRTH 12/20/1984

LICENSE STATUS 1 (1-VALID 2-NOT VALID 3-SUSPENDED/REVOKED 4-CANCELLED/DENIED 5-EXPIRED 6-UNKNOWN)

DRIVER'S ETHNICITY 1 (1-WHITE 2-HISPANIC 3-BLACK 4-ASIAN 5-OTHER) DRIVER'S SEX ☐ MALE ☒ FEMALE DRIVER'S OCCUPATION ____ POLICE, FIREFIGHTER, EMS, ON EMERGENCY ☐ IF CHECKED, PLEASE EXPLAIN IN NARRATIVE

TYPE OF ALCOHOL SPECIMEN TAKEN (1-BREATH 2-BLOOD 3-URINE 4-NONE 5-REFUSED) 4 TEST RESULTS ____ TYPE OF DRUG SPECIMEN TAKEN (1-BLOOD 2-URINE 3-NONE 4-REFUSED) 3 TEST RESULTS ____ DRUG CATEGORY 1. ____ 2. ____

☐ LESSEE ☒ OWNER SAME AS DRIVER

NAME (ALWAYS SHOW LESSEE IF LEASED, OTHERWISE SHOW OWNER) ADDRESS (STREET, CITY, STATE, ZIP)

LIABILITY INSURANCE ☒ YES ☐ NO ☐ EXP INSURANCE COMPANY STATE FARM POLICY NUMBER 4332595686002 VEHICLE DAMAGE RATING 06,BD3,FD,2,RP2

DAMAGE TO PROPERTY OTHER THAN VEHICLES ____

OBJECT ____ NAME AND ADDRESS OF OWNER ____ FEET FROM CURB ____ $ ____ DAMAGE ESTIMATE

IN YOUR OPINION, DID THIS CRASH RESULT IN AT LEAST $1,000.00 DAMAGE TO ANY ONE PERSON'S PROPERTY? ☒ YES ☐ NO

CHARGES FILED

NAME ____ CHARGE ____ CITATION # ____

NAME ____ CHARGE ____ CITATION # ____

TIME NOTIFIED OF CRASH: DATE 07/10/09 HOUR 6:23P HOW POLICE RADIO TIME ARRIVED AT SCENE: DATE 07/10/09 HOUR 6:53P DATE OF REPORT 07/11/09

TYPED OR PRINTED NAME OF INVESTIGATOR DETECTIVE TDP DAVIS ID # 1965 AGENCY FWOP DIST/AREA D13 REPORT COMPLETE ☐ YES ☒ NO

SEAT POSITION	SOLICITATION	EJECTED	RESTRAINT USED	AIRBAG	HELMET USE	INJURY SEVERITY
1-FRONT LEFT 2-FRONT CENTER 3-FRONT RIGHT 4-SECOND SEAT LEFT 5-SECOND SEAT CENTER 6-SECOND SEAT RIGHT 7-THIRD SEAT LEFT 8-THIRD SEAT CENTER 9-THIRD SEAT RIGHT 10-CARGO AREA 11-OUTSIDE VEHICLE 12-UNKNOWN	INDICATES A PERSON'S DESIRE TO RECEIVE CONTACT FROM PERSONS SEEKING PROFESSIONAL EMPLOYMENT AS/FOR AN ATTORNEY, CHIROPRACTOR, PHYSICIAN, SURGEON, PRIVATE INVESTIGATOR, OR ANY OTHER PERSON REGISTERED OR LICENSED BY A HEALTH CARE REGULATORY AGENCY (Y=SOLICIT, N=NO SOLICIT)	1-NO 2-YES 3-YES, PARTIAL 4-NOT APPLICABLE 5-UNKNOWN	1-SHOULDER & LAP BELT 2-SHOULDER BELT ONLY 3-LAP BELT ONLY 4-CHILD SEAT, FACING FORWARD 5-CHILD SEAT, FACING REAR 6-CHILD SEAT, UNKNOWN 7-BOOSTER SEAT 8-NONE 9-OTHER 10-UNKNOWN	1-NOT APPLICABLE 2-NOT DEPLOYED 3-DEPLOYED, FRONT 4-DEPLOYED, SIDE 5-DEPLOYED, OTHER 6-UNKNOWN	1-WORN, DAMAGED 2-WORN, NOT DAMAGED 3-WORN, UNK. DAMAGE 4-NOT WORN 5-UNKNOWN IF WORN	K-KILLED A-INCAPACITATING INJURY B-NON INCAPACITATING INJURY C-POSSIBLE INJURY N-NOT INJURED U-UNKNOWN

UNIT # 3 TOWED DUE TO DISABLING DAMAGE ☒ YES ☐ NO VEHICLE REMOVED TO 1301 E NORTHSIDE DR BY WESTLOOP TOWING

COMPLETE ALL DATA ON ALL OCCUPANT'S NAMES, POSITIONS, RESTRAINTS USED, ETC. HOWEVER, IT IS NOT NECESSARY TO SHOW ADDRESSES UNLESS KILLED OR INJURED

ITEM #	SEAT POSITION	NAME (LAST, FIRST, MI)	ADDRESS	SOL	EJECTED	RESTRAINT USED	AIRBAG	HELMET	AGE	SEX	INJURY CODE
1	1	SEE FRONT		N	1	1	6	4	44	M	B
2											
3											
4											
5											

UNIT # 4 TOWED DUE TO DISABLING DAMAGE ☒ YES ☐ NO VEHICLE REMOVED TO 1301 E NORTHSIDE DR BY ABC WRECKER

COMPLETE ALL DATA ON ALL OCCUPANT'S NAMES, POSITIONS, RESTRAINTS USED, ETC. HOWEVER, IT IS NOT NECESSARY TO SHOW ADDRESSES UNLESS KILLED OR INJURED

ITEM #	SEAT POSITION	NAME (LAST, FIRST, MI)	ADDRESS	SOL	EJECTED	RESTRAINT USED	AIRBAG	HELMET	AGE	SEX	INJURY CODE
6	1	SEE FRONT		N	1	1	2	4	23	F	B
7	3	PARKS, SHAWNA		N	1	1	2	4		F	B
8											
9											
10											

COMPLETED IF CASUALTIES NOT IN MOTOR VEHICLE

PED., PEDAL., MOT. CONVEY, ETC.	CASUALTY NAME (LAST, FIRST, MI)	ADDRESS	SOL	ALCOHOL SPECIMEN TAKEN	RESULT	DRUG SPECIMEN TAKEN	RESULT	HELMET	AGE	SEX	INJURY CODE

DISPOSITION OF KILLED OR INJURED — IF AMBULANCE USED, SHOW

ITEM #'S	TAKEN TO	BY	TIME NOTIFIED	TIME ARRIVED AT SCENE	AMBULANCE UNIT #	# OF ATTENDANTS INCLUDING DRIVER	# OF PERSONS TRANSPORTED FOR TREATMENT
1	HARRIS HOSPITAL	MED STAR	5:46P	5:52P	60	2	
6&7	PARKLAND MEM HOSP	MED STAR	5:45P	5:49P	43	2	3

COMPLETE THIS SECTION IF PERSON KILLED (If a driver or occupant dies within 30 days of the crash, please complete this area and mail the supplement to the Crash Records Bureau)

ITEM #	DATE OF DEATH	TIME OF DEATH	ITEM #	DATE OF DEATH	TIME OF DEATH	ITEM #	DATE OF DEATH	TIME OF DEATH	ITEM #	DATE OF DEATH	TIME OF DEATH

INVESTIGATOR'S NARRATIVE OPINION OF WHAT HAPPENED (ATTACH ADDITIONAL SHEETS IF NECESSARY)

DIAGRAM

INDICATE NORTH

1-TWO-WAY, NOT DIVIDED
2-TWO-WAY, DIVIDED, UNPROTECTED MEDIAN
3-TWO-WAY, DIVIDED, PROTECTED BARRIER
4-ONE WAY
9-UNKNOWN

FACTORS AND CONDITIONS LISTED ARE THE INVESTIGATOR'S OPINION

UNIT #	FACTORS/CONDITIONS CONTRIBUTING 1	2	3	OTHER FACTORS/CONDITIONS MAY OR MAY NOT HAVE CONTRIBUTED 1	2	3	VEHICLE DEFECTS CONTRIBUTING 1	2	VEHICLE DEFECTS MAY HAVE CONTRIBUTED 1	2

1-ANIMAL ON ROAD - DOMESTIC
2-ANIMAL ON ROAD - WILD
3-BACKED WITHOUT SAFETY
4-CHANGED LANE WHEN UNSAFE
5-13 SEE VEHICLE DEFECTS
14-DISABLED IN TRAFFIC LANE
15-DISREGARD STOP AND GO SIGNAL
16-DISREGARD STOP SIGN OR LIGHT
17-DISREGARD TURN MARKS AT INTERSECTION
18-DISREGARD WARNING SIGN AT CONSTRUCTION
19-DISTRACTION IN VEHICLE
20-DRIVER INATTENTION
21-DROVE WITHOUT HEADLIGHTS
22-FAILED TO CONTROL SPEED
23-FAILED TO DRIVE IN SINGLE LANE
24-FAILED TO GIVE HALF OF ROADWAY
25-FAILED TO HEED WARNING SIGN
26-FAILED TO PASS TO LEFT SAFELY
27-FAILED TO PASS TO RIGHT SAFELY
28-FAILED TO GIVE SIGNAL OR WRONG SIGNAL
29-FAILED TO STOP AT PROPER PLACE
30-FAILED TO STOP FOR SCHOOL BUS
31-FAILED TO STOP FOR TRAIN
32-FAILED TO YIELD ROW - EMERGENCY VEHICLE
33-FAILED TO YEILD ROW - OPEN INTERSECTION
34-FAILED TO YIELD ROW - PRIVATE DRIVE
35-FAILED TO YIELD ROW - STOP SIGN
36-FAILED TO YIELD ROW - TO PEDESTRIAN
37-FAILED TO YIELD ROW - TURNING LEFT
38-FAILED TO YIELD ROW - TURN ON RED
39-FAILED TO YIELD ROW - YIELD SIGN
40-FATIGUED OR ASLEEP
41-FAULTY EVASIVE ACTION
42-FIRE IN VEHICLE
43-FLEEING OR EVADING POLICE
44-FOLLOWED TOO CLOSELY
45-HAD BEEN DRINKING
46-HANDICAPPED DRIVER (EXP. IN NARRATIVE)
47-ILL (EXP. IN NARRATIVE)
48-IMPAIRED VISIBILITY (EXP. IN NARRATIVE)
49-IMPROPER START FROM PARKED POSITION
50-LOAD NOT SECURED
51-OPENED DOOR INTO TRAFFIC LANE
52-OVERSIZE VEHICLE OR LOAD
53-OVERTAKE AND PASS INSUFFICIENT CLEARANCE
54-PARKED AND FAILED TO SET BRAKES
55-PARKED IN TRAFFIC LANE
56-PARKED WITHOUT LIGHTS
57-PASSED IN NO PASSING ZONE
58-PASSED ON RIGHT SHOULDER
59-PED/PEDAL MOT. CON. FTYROW TO VEHICLE
60-SPEEDING-UNSAFE (UNDER LIMIT)
61-SPEEDING OVER LIMIT
62-TAKING MEDICATION (EXP. IN NARRATIVE)
63-TURNED IMPROPERLY - CUT CORNER ON LEFT
64-TURNED IMPROPERLY - WIDE RIGHT
65-TURNED IMPROPERLY - WRONG LANE
66-TURNED WHEN UNSAFE
67-UNDER INFLUENCE - ALCOHOL
68-UNDER INFLUENCE - DRUG
69-WRONG SIDE APPROACH OR IN INTERSECTION
70-WRONG SIDE-NOT PASSING
71-WRONG WAY - ONE WAY ROAD
72-CELL/MOBILE PHONE USE
73-ROAD RAGE
74-OTHER FACTOR (WRITE ON LINE)

VEHICLE DEFECTS

5-DEFECTIVE OR NO HEADLAMPS
6-DEFECTIVE OR NO STOP LAMPS
7-DEFECTIVE OR NO TAIL LAMPS
8-DEFECTIVE OR NO TURN SIG. LAMPS
9-DEFECTIVE OR NO TRAILER BRAKES
10-DEFECTIVE OR NO VEHICLE BRAKES
11-DEFECTIVE OR NO STEERING MECH
12-DEFECTIVE OR SLICK TIRES
13-DEFECTIVE TRAILER HITCH

TRAFFIC CONTROL: 11
1-NONE, 2-INOPERATIVE, 3-OFFICER, 4-FLAGMAN, 5-SIGNAL LIGHT, 6-FLASHING RED LIGHT, 7-FLASHING YELLOW LIGHT, 8-STOP SIGN, 9-YIELD SIGN, 10-WARNING SIGN, 11-CENTER STRIPE/DIVIDER, 12-NO PASSING ZONE, 13-RR GATE/SIGNAL, 14-SCHOOL ZONE, 15-CROSSWALK, 16-BIKE LANE, 17-OTHER

ROADWAY RELATION: 1
1-ON ROADWAY, 2-OFF ROADWAY, 3-SHOULDER, 4-MEDIAN

PART OF ROADWAY: 1
1-MAIN LANE, 2-SERVICE ROAD, 3-ENTRANCE RAMP, 4-EXIT RAMP, 5-CONNECTOR, 6-DETOUR, 7-OTHER

ROADWAY ALIGNMENT: 3
1-STRAIGHT, LEVEL, 2-STRAIGHT, GRADE, 3-STRAIGHT, HILLCREST, 4-CURVE, LEVEL, 5-CURVE, GRADE, 6-CURVE, HILLCREST, 7-OTHER, 8-UNKNOWN

LIGHT CONDITION: 1
1-DAYLIGHT, 2-DARK, NOT LIGHTED, 3-DARK, LIGHTED, 4-DARK, UNK LIGHTED, 5-DAWN, 6-DUSK, 8-OTHER, 9-UNKNOWN

TYPE OF ROAD SURFACE: 2
1-CONCRETE, 2-BLACKTOP, 3-BRICK, 4-GRAVEL, 5-DIRT, 6-OTHER, 7-UNKNOWN

WEATHER: 1
1-CLEAR/CLOUDY, 2-RAIN, 3-SLEET/HAIL, 4-SNOW, 5-FOG, 6-BLOWING SAND/SNOW, 7-SEVERE CROSSWINDS, 8-OTHER, 9-UNKNOWN

SURFACE CONDITION: 1
1-DRY, 2-WET, 3-STANDING WATER, 4-SNOW, 5-SLUSH, 6-ICE, 7-SAND, MUD, DIRT, 8-OTHER, 9-UNK

Law Enforcement and TxDOT Use ONLY

☒ FATAL ☐ CMV INVOLVED ☐ SCHOOL BUS RELATED ☐ RAILROAD RELATED ☐ MEDICAL ADVISORY BOARD ☐ HIT AND RUN ☐ AMENDMENT/SUPPLEMENT

Texas Department of Transportation

Texas Peace Officer's Crash Report

Form CR-3 (Rev. 03/09) Page 1 of 2

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PLACE WHERE CRASH OCCURRED

COUNTY TARRANT CITY OR TOWN FORT WORTH

LOC # 09-076903

ORI #

TxDOT #

IF CRASH WAS OUTSIDE CITY LIMITS INDICATE FROM NEAREST TOWN ____ MILES ☐N ☐S ☐E ☐W OF ____

ROAD ON WHICH CRASH OCCURRED: 2350 (BLOCK NUMBER) NE LOOP 820 (STREET OR ROAD NAME) ____ (ROUTE NUMBER OR STREET CODE)

CONSTRUCTION ZONE ☐ YES ☐ NO WORKERS PRESENT ☐ YES ☐ NO SPEED LIMIT 65

INTERSECTING STREET OR RR X'ING NUMBER: ____ (BLOCK NUMBER) ____ (STREET OR ROAD NAME) ____ (ROUTE NUMBER OR STREET CODE)

CONSTRUCTION ZONE ☐ YES ☐ NO WORKERS PRESENT ☐ YES ☐ NO SPEED LIMIT ____

NOT AT INTERSECTION 100 ☒FT. ☐MI. ☐N ☐S ☐E ☒W OF 5300 MARK IV PARKWAY

SHOW MILEPOST OR NEAREST INTERSECTING NUMBERED HIGHWAY IF NONE, SHOW NEAREST INTERSECTING STREET OR REFERENCE POINT

MILEPOST ____ LATITUDE ____ LONGITUDE ____

DATE OF CRASH JULY (MONTH) 10 (DAY) 2009 (YEAR) DAY OF WEEK FRIDAY HOUR 5:35 ☐ AM ☒ PM IF EXACTLY NOON OR MIDNIGHT, SO STATE

UNIT # 5 1 — 1-MOTOR VEHICLE 2-TRAIN 3-PEDALCYCLIST 4-PEDESTRIAN 5-MOTORIZED CONVEYANCE 6-TOWED 7-NON-CONTACT 8-OTHER

VIN # 2C3LA63H26H336630 ALTERED VEHICLE HEIGHT ☐ YES ☒ NO

YEAR MODEL 06 COLOR & MAKE BLACK CHRY MODEL NAME 300 C BODY STYLE 4DR LICENSE PLATE 10 (YEAR) TX (STATE) 919KKG (NUMBER)

DRIVER'S NAME ZAVALA (LAST) ROBERT JR (FIRST) ____ (M.I.) 2501 DURINGER RD FORT WORTH, TX 76133 (ADDRESS (STREET, CITY, STATE, ZIP)) ____ (PHONE NUMBER)

DRIVER'S LICENSE TX (STATE) 16346783 (NUMBER) C (CLASS/TYPE) ____ (ENDORSEMENTS) ____ (RESTRICTIONS) 07/05/1976 (DATE OF BIRTH) LICENSE STATUS 1 — 1-VALID 2-NOT VALID 3-SUSPENDED/REVOKED 4-CANCELLED/DENIED 5-EXPIRED 6-UNKNOWN

DRIVER'S ETHNICITY 2 — 1-WHITE 2-HISPANIC 3-BLACK 4-ASIAN 5-OTHER DRIVER'S SEX ☒ MALE ☐ FEMALE DRIVER'S OCCUPATION ____ POLICE, FIREFIGHTER, EMS, ON EMERGENCY ☐ IF CHECKED, PLEASE EXPLAIN IN NARRATIVE

TYPE OF ALCOHOL SPECIMEN TAKEN 1-BREATH 2-BLOOD 3-URINE 4-NONE 5-REFUSED 4 TEST RESULTS ____ TYPE OF DRUG SPECIMEN TAKEN 1-BLOOD 2-URINE 3-NONE 4-REFUSED 3 TEST RESULTS ____ DRUG CATEGORY 1. ____ 2. ____

☐ LESSEE ☒ OWNER DANIEL MARTINEZ (NAME (ALWAYS SHOW LESSEE IF LEASED, OTHERWISE SHOW OWNER)) 3601 FULLER FT WORTH, TX 76133 (ADDRESS (STREET, CITY, STATE, ZIP))

LIABILITY INSURANCE ☒ YES ☐ NO ☐ EXP FARMERS TX COUNTY MUTUAL (INSURANCE COMPANY) 68759945 (POLICY NUMBER) VEHICLE DAMAGE RATING 06,BD-2

UNIT # ____ ☐ — 1-MOTOR VEHICLE 2-TRAIN 3-PEDALCYCLIST 4-PEDESTRIAN 5-MOTORIZED CONVEYANCE 6-TOWED 7-NON-CONTACT 8-OTHER

VIN # ____ ALTERED VEHICLE HEIGHT ☐ YES ☐ NO

YEAR MODEL ____ COLOR & MAKE ____ MODEL NAME ____ BODY STYLE ____ LICENSE PLATE ____ (YEAR) ____ (STATE) ____ (NUMBER)

DRIVER'S NAME ____ (LAST) ____ (FIRST) ____ (M.I.) ____ (ADDRESS (STREET, CITY, STATE, ZIP)) ____ (PHONE NUMBER)

DRIVER'S LICENSE ____ (STATE) ____ (NUMBER) ____ (CLASS/TYPE) ____ (ENDORSEMENTS) ____ (RESTRICTIONS) ____ (DATE OF BIRTH) LICENSE STATUS ____ 1-VALID 2-NOT VALID 3-SUSPENDED/REVOKED 4-CANCELLED/DENIED 5-EXPIRED 6-UNKNOWN

DRIVER'S ETHNICITY ____ 1-WHITE 2-HISPANIC 3-BLACK 4-ASIAN 5-OTHER DRIVER'S SEX ☐ MALE ☐ FEMALE DRIVER'S OCCUPATION ____ POLICE, FIREFIGHTER, EMS, ON EMERGENCY ☐ IF CHECKED, PLEASE EXPLAIN IN NARRATIVE

TYPE OF ALCOHOL SPECIMEN TAKEN 1-BREATH 2-BLOOD 3-URINE 4-NONE 5-REFUSED ____ TEST RESULTS ____ TYPE OF DRUG SPECIMEN TAKEN 1-BLOOD 2-URINE 3-NONE 4-REFUSED ____ TEST RESULTS ____ DRUG CATEGORY 1. ____ 2. ____

☐ LESSEE ☐ OWNER ____ (NAME (ALWAYS SHOW LESSEE IF LEASED, OTHERWISE SHOW OWNER)) ____ (ADDRESS (STREET, CITY, STATE, ZIP))

LIABILITY INSURANCE ☐ YES ☐ NO ☐ EXP ____ (INSURANCE COMPANY) ____ (POLICY NUMBER) VEHICLE DAMAGE RATING ____

DAMAGE TO PROPERTY OTHER THAN VEHICLES ____

OBJECT ____ NAME AND ADDRESS OF OWNER ____ FEET FROM CURB ____ $ ____ DAMAGE ESTIMATE

IN YOUR OPINION, DID THIS CRASH RESULT IN AT LEAST $1,000.00 DAMAGE TO ANY ONE PERSON'S PROPERTY? ☒ YES ☐ NO

CHARGES FILED

NAME ____ CHARGE ____ CITATION # ____

NAME ____ CHARGE ____ CITATION # ____

TIME NOTIFIED OF CRASH 07/10/09 (DATE) 6:23P (HOUR) HOW POLICE RADIO TIME ARRIVED AT SCENE 07/10/09 (DATE) 6:53P (HOUR) DATE OF REPORT 07/11/09

TYPED OR PRINTED NAME OF INVESTIGATOR DETCTIVE TDP DAVIS ID # 1965 AGENCY FWPD DIST/AREA D13 REPORT COMPLETE ☐ YES ☒ NO

SEAT POSITION	SOLICITATION	EJECTED	RESTRAINT USED	AIRBAG	HELMET USE	INJURY SEVERITY
1-FRONT LEFT 2-FRONT CENTER 3-FRONT RIGHT 4-SECOND SEAT LEFT 5-SECOND SEAT CENTER 6-SECOND SEAT RIGHT 7-THIRD SEAT LEFT 8-THIRD SEAT CENTER 9-THIRD SEAT RIGHT 10-CARGO AREA 11-OUTSIDE VEHICLE 12-UNKNOWN	INDICATES A PERSON'S DESIRE TO RECEIVE CONTACT FROM PERSONS SEEKING PROFESSIONAL EMPLOYMENT AS/FOR AN ATTORNEY, CHIROPRACTOR, PHYSICIAN, SURGEON, PRIVATE INVESTIGATOR, OR ANY OTHER PERSON REGISTERED OR LICENSED BY A HEALTH CARE REGULATORY AGENCY (Y=SOLICIT, N=NO SOLICIT)	1-NO 2-YES 3-YES, PARTIAL 4-NOT APPLICABLE 5-UNKNOWN	1-SHOULDER & LAP BELT 2-SHOULDER BELT ONLY 3-LAP BELT ONLY 4-CHILD SEAT, FACING FORWARD 5-CHILD SEAT, FACING REAR 6-CHILD SEAT, UNKNOWN 7-BOOSTER SEAT 8-NONE 9-OTHER 10-UNKNOWN	1-NOT APPLICABLE 2-NOT DEPLOYED 3-DEPLOYED, FRONT 4-DEPLOYED, SIDE 5-DEPLOYED, OTHER 6-UNKNOWN	1-WORN, DAMAGED 2-WORN, NOT DAMAGED 3-WORN, UNK. DAMAGE 4-NOT WORN 5-UNKNOWN IF WORN	K-KILLED A-INCAPACITATING INJURY B-NON INCAPACITATING INJURY C-POSSIBLE INJURY N-NOT INJURED U-UNKNOWN

UNIT # 5 — TOWED DUE TO DISABLING DAMAGE ☐ YES ☒ NO — VEHICLE REMOVED TO DRIVEN AWAY BY DRIVER

COMPLETE ALL DATA ON ALL OCCUPANT'S NAMES, POSITIONS, RESTRAINTS USED, ETC HOWEVER, IT IS NOT NECESSARY TO SHOW ADDRESSES UNLESS KILLED OR INJURED.

ITEM #	SEAT POSITION	NAME (LAST, FIRST, MI)	ADDRESS	SOL	EJECTED	RESTRAINT USED	AIRBAG	HELMET	AGE	SEX	INJURY CODE
1	1	SEE FRONT		N	1	1	2	4	32	M	N
2											
3											
4											
5											

UNIT # — TOWED DUE TO DISABLING DAMAGE ☐ YES ☐ NO — VEHICLE REMOVED TO ____ BY ____

COMPLETE ALL DATA ON ALL OCCUPANT'S NAMES, POSITIONS, RESTRAINTS USED, ETC. HOWEVER, IT IS NOT NECESSARY TO SHOW ADDRESSES UNLESS KILLED OR INJURED.

ITEM #	SEAT POSITION	NAME (LAST, FIRST, MI)	ADDRESS	SOL	EJECTED	RESTRAINT USED	AIRBAG	HELMET	AGE	SEX	INJURY CODE
6											
7											
8											
9											
10											

COMPLETED IF CASUALTIES NOT IN MOTOR VEHICLE

PED., PEDAL., MOT. CONVEY, ETC.	CASUALTY NAME (LAST, FIRST, MI)	ADDRESS	SOL	ALCOHOL SPECIMEN TAKEN	RESULT	DRUG SPECIMEN TAKEN	RESULT	HELMET	AGE	SEX	INJURY CODE

DISPOSITION OF KILLED OR INJURED — IF AMBULANCE USED, SHOW

ITEM #'S	TAKEN TO	BY	TIME NOTIFIED	TIME ARRIVED AT SCENE	AMBULANCE UNIT #	# OF ATTENDANTS INCLUDING DRIVER	# OF PERSONS TRANSPORTED FOR TREATMENT

COMPLETE THIS SECTION IF PERSON KILLED (If a driver or occupant dies within 30 days of the crash, please complete this area and mail the supplement to the Crash Records Bureau)

ITEM #	DATE OF DEATH	TIME OF DEATH	ITEM #	DATE OF DEATH	TIME OF DEATH	ITEM #	DATE OF DEATH	TIME OF DEATH	ITEM #	DATE OF DEATH	TIME OF DEATH

INVESTIGATOR'S NARRATIVE OPINION OF WHAT HAPPENED (ATTACH ADDITIONAL SHEETS IF NECESSARY)

DIAGRAM

INDICATE NORTH

☐ 1-TWO-WAY, NOT DIVIDED
2-TWO-WAY, DIVIDED, UNPROTECTED MEDIAN
3-TWO-WAY, DIVIDED, PROTECTED BARRIER
4-ONE WAY
9-UNKNOWN

FACTORS AND CONDITIONS LISTED ARE THE INVESTIGATOR'S OPINION

UNIT #	FACTORS/CONDITIONS CONTRIBUTING			OTHER FACTORS/CONDITIONS MAY OR MAY NOT HAVE CONTRIBUTED			VEHICLE DEFECTS CONTRIBUTING		VEHICLE DEFECTS MAY HAVE CONTRIBUTED	
	1	2	3	1	2	3	1	2	1	2
	1	2	3	1	2	3	1	2	1	2

1-ANIMAL ON ROAD - DOMESTIC
2-ANIMAL ON ROAD - WILD
3-BACKED WITHOUT SAFETY
4-CHANGED LANE WHEN UNSAFE
5-13 SEE VEHICLE DEFECTS
14-DISABLED IN TRAFFIC LANE
15-DISREGARD STOP AND GO SIGNAL
16-DISREGARD STOP SIGN OR LIGHT
17-DISREGARD TURN MARKS AT INTERSECTION
18-DISREGARD WARNING SIGN AT CONSTRUCTION
19-DISTRACTION IN VEHICLE
20-DRIVER INATTENTION
21-DROVE WITHOUT HEADLIGHTS
22-FAILED TO CONTROL SPEED
23-FAILED TO DRIVE IN SINGLE LANE
24-FAILED TO GIVE HALF OF ROADWAY
25-FAILED TO HEED WARNING SIGN
26-FAILED TO PASS TO LEFT SAFELY
27-FAILED TO PASS TO RIGHT SAFELY
28-FAILED TO GIVE SIGNAL OR WRONG SIGNAL
29-FAILED TO STOP AT PROPER PLACE
30-FAILED TO STOP FOR SCHOOL BUS
31-FAILED TO STOP FOR TRAIN
32-FAILED TO YIELD ROW - EMERGENCY VEHICLE
33-FAILED TO YEILD ROW - OPEN INTERSECTION
34-FAILED TO YIELD ROW - PRIVATE DRIVE
35-FAILED TO YIELD ROW - STOP SIGN
36-FAILED TO YIELD ROW - TO PEDESTRIAN
37-FAILED TO YIELD ROW - TURNING LEFT
38-FAILED TO YIELD ROW - TURN ON RED
39-FAILED TO YIELD ROW - YIELD SIGN
40-FATIGUED OR ASLEEP
41-FAULTY EVASIVE ACTION
42-FIRE IN VEHICLE
43-FLEEING OR EVADING POLICE
44-FOLLOWED TOO CLOSELY
45-HAD BEEN DRINKING
46-HANDICAPPED DRIVER (EXP. IN NARRATIVE)
47-ILL (EXP. IN NARRATIVE)
48-IMPAIRED VISIBILITY (EXP. IN NARRATIVE)
49-IMPROPER START FROM PARKED POSITION
50-LOAD NOT SECURED
51-OPENED DOOR INTO TRAFFIC LANE
52-OVERSIZE VEHICLE OR LOAD
53-OVERTAKE AND PASS INSUFFICIENT CLEARANCE
54-PARKED AND FAILED TO SET BRAKES
55-PARKED IN TRAFFIC LANE
56-PARKED WITHOUT LIGHTS
57-PASSED IN NO PASSING ZONE
58-PASSED ON RIGHT SHOULDER
59-PED/PEDAL MOT. CON. FTYROW TO VEHICLE
60-SPEEDING-UNSAFE (UNDER LIMIT)
61-SPEEDING OVER LIMIT
62-TAKING MEDICATION (EXP. IN NARRATIVE)
63-TURNED IMPROPERLY - CUT CORNER ON LEFT
64-TURNED IMPROPERLY - WIDE RIGHT
65-TURNED IMPROPERLY - WRONG LANE
66-TURNED WHEN UNSAFE
67-UNDER INFLUENCE - ALCOHOL
68-UNDER INFLUENCE - DRUG
69-WRONG SIDE APPROACH OR IN INTERSECTION
70-WRONG SIDE-NOT PASSING
71-WRONG WAY - ONE WAY ROAD
72-CELL/MOBILE PHONE USE
73-ROAD RAGE
74-OTHER FACTOR (WRITE ON LINE)

VEHICLE DEFECTS

5-DEFECTIVE OR NO HEADLAMPS
6-DEFECTIVE OR NO STOP LAMPS
7-DEFECTIVE OR NO TAIL LAMPS
8-DEFECTIVE OR NO TURN SIG. LAMPS
9-DEFECTIVE OR NO TRAILER BRAKES
10-DEFECTIVE OR NO VEHICLE BRAKES
11-DEFECTIVE OR NO STEERING MECH
12-DEFECTIVE OR SLICK TIRES
13-DEFECTIVE TRAILER HITCH

TRAFFIC CONTROL: 11
1-NONE
2-INOPERATIVE
3-OFFICER
4-FLAGMAN
5-SIGNAL LIGHT
6-FLASHING RED LIGHT
7-FLASHING YELLOW LIGHT
8-STOP SIGN
9-YIELD SIGN
10-WARNING SIGN
11-CENTER STRIPE/DIVIDER
12-NO PASSING ZONE
13-RR GATE/SIGNAL
14-SCHOOL ZONE
15-CROSSWALK
16-BIKE LANE
17-OTHER

ROADWAY RELATION: 1
1-ON ROADWAY
2-OFF ROADWAY
3-SHOULDER
4-MEDIAN

PART OF ROADWAY: 1
1-MAIN LANE
2-SERVICE ROAD
3-ENTRANCE RAMP
4-EXIT RAMP
5-CONNECTOR
6-DETOUR
7-OTHER

ROADWAY ALIGNMENT: 3
1-STRAIGHT, LEVEL
2-STRAIGHT, GRADE
3-STRAIGHT, HILLCREST
4-CURVE, LEVEL
5-CURVE, GRADE
6-CURVE, HILLCREST
7-OTHER
8-UNKNOWN

LIGHT CONDITION: 1
1-DAYLIGHT
2-DARK, NOT LIGHTED
3-DARK, LIGHTED
4-DARK, UNK LIGHTED
5-DAWN
6-DUSK
8-OTHER
9-UNKNOWN

TYPE OF ROAD SURFACE: 2
1-CONCRETE
2-BLACKTOP
3-BRICK
4-GRAVEL
5-DIRT
6-OTHER
7-UNKNOWN

WEATHER: 1
1-CLEAR/CLOUDY
2-RAIN
3-SLEET/HAIL
4-SNOW
5-FOG
6-BLOWING SAND/SNOW
7-SEVERE CROSSWINDS
8-OTHER
9-UNKNOWN

SURFACE CONDITION: 1
1-DRY
2-WET
3-STANDING WATER
4-SNOW
5-SLUSH
6-ICE
7-SAND, MUD, DIRT
8-OTHER
9-UNK

Commercial Motor Vehicle Enforcement Supplement to the Texas Peace Officer's Crash Report

Texas Department of Transportation

Questions? Call: 512/486-5780

☒ 10,001 LBS OR MORE ☐ HAZARDOUS MATERIAL ☒ 9 OR MORE PASSENGER CAPACITY (DRIVER INCLUDED)

CRASH INFORMATION

1. COUNTY TARRANT 2. CITY OR TOWN FORT WORTH

LOC # 09-076903

ORI #

TxDOT #

3. ROAD ON WHICH CRASH OCCURRED 2350 (BLOCK #) NE LOOP 820 (STREET OR ROAD NAME) (ROUTE #)

4. DATE OF CRASH 07/10/2009 5. HOUR 5:35 ☐ AM ☒ PM

ROADWAY ACCESS: 1 — 1-FULL ACCESS CONTROL, 2-PARTIAL ACCESS CONTROL, 3-NO ACCESS CONTROL

DRIVER INFORMATION

6. NAME WARE,RONNIE 7. DRIVER'S LICENSE CLASS 2 (1-A, 2-B, 3-C, 4-M, 5-UNK, 6-AM, 7-BM, 8-CM)

CARRIER INFORMATION

8. VEHICLE OPERATION ☐ INTERSTATE COMMERCE ☐ INTRASTATE COMMERCE ☐ NOT IN COMMERCE ☒ GOVERNMENT ☐ PERSONAL

9. CARRIER'S CORPORATE NAME FORT WORTH TRANSIT AUTHORITY

10. CARRIER'S PRIMARY ADDRESS 1600 (NUMBER) E LANCASTER (STREET) FT WORTH (CITY) TX (STATE) 76102 (ZIP)

11. CARRIER ID TYPE ☐ ICC ☐ US DOT ☐ TxDOT ☐ OTHER ☐ NONE 12. CARRIER ID NUMBER

MOTOR VEHICLE INFORMATION

13. UNIT NUMBER ON CR-3 1 14. LICENSE PLATE EXM (YEAR) TX (STATE) 869182 (NUMBER)

15. GROSS VEHICLE WEIGHT RATING (GVWR) ☐ REGISTERED GROSS VEHICLE WEIGHT (RGVW) ☒ 26000

16. VEHICLE TYPE

3

1-PASSENGER CAR (ONLY IF VEHICLE DISPLAYS HM PLACARDS)
2-LIGHT TRUCK (ONLY IF VEHICLE DISPLAYS HM PLACARDS)
3-BUS (SEATS FOR 9-15 PEOPLE, INCLUDING DRIVER)
4-BUS (SEATS FOR > 15 PEOPLE, INCLUDING DRIVER)
5-SINGLE UNIT TRUCK (2 AXLES, 6 TIRES)
6-SINGLE UNIT TRUCK (3 OR MORE AXLES)
7-TRUCK TRAILER
8-TRUCK TRACTOR (BOB TAIL)
9-TRACTOR/SEMITRAILER
10-TRACTOR/DOUBLE TRAILER
11-TRACTOR/TRIPLE TRAILER
99-UNKNOWN HEAVY TRUCK OVER 10,000 LBS (CANNOT CLASSIFY)

17. CARGO BODY STYLE

1

1-BUS (SEATS FOR 9-15 PEOPLE, INCLUDING DRIVER)
2-BUS (SEATS FOR > 15 PEOPLE, INCLUDING DRIVER)
3-VAN/ENCLOSED BOX
4-CARGO TANK
5-FLATBED
6-DUMP
7-CONCRETE MIXER
8-AUTO TRANSPORTER
9-GARBAGE/REFUSE
10-GRAIN, CHIPS, GRAVEL
11-POLE
12-NOT APPLICABLE
98-OTHER

18. HAZARDOUS MATERIAL

TRANSPORTING PLACARDABLE HAZARDOUS MATERIAL ☐ YES ☒ NO HAZARDOUS MATERIALS RELEASED OR SPILLED ☐ YES ☐ NO (DO NOT INCLUDE FUEL FROM THE VEHICLE FUEL TANK)

1 DIGIT CLASS # ☐ 4 DIGIT ID # ☐☐☐☐ 1 DIGIT CLASS # ☐ 4 DIGIT ID # ☐☐☐☐

TRAILER NUMBER 1 INFORMATION

19. LICENSE PLATE (YEAR) (STATE) (NUMBER)

20. GROSS VEHICLE WEIGHT RATING (GVWR) ☐ REGISTERED GROSS VEHICLE WEIGHT (RGVW) ☐

TRAILER TYPE: 1-FULL TRAILER, 2-SEMI TRAILER, 3-POLE TRAILER

TRAILER NUMBER 2 INFORMATION

21. LICENSE PLATE (YEAR) (STATE) (NUMBER)

22. GROSS VEHICLE WEIGHT RATING (GVWR) ☐ REGISTERED GROSS VEHICLE WEIGHT (RGVW) ☐

TRAILER TYPE: 1-FULL TRAILER, 2-SEMI TRAILER, 3-POLE TRAILER

23. SEQUENCE OF EVENTS - UNIT 1

SEQ 1	SEQ 2	SEQ 3	SEQ 4
13			

24. TOTAL NUMBER OF AXLES 2

25. TOTAL NUMBER OF TIRES 4

1-NONCOLLISION RAN OFF ROAD
2-NONCOLLISION JACKKNIFE
3-NONCOLLISION OVERTURN (ROLLOVER)
4-NONCOLLISION DOWNHILL RUNAWAY
5-NONCOLLISION CARGO LOSS OR SHIFT
6-NONCOLLISION EXPLOSION OR FIRE
7-NONCOLLISION SEPARATION OF UNITS
8-NONCOLLISION CROSS MEDIAN/CENTERLINE
9-NONCOLLISION EQUIPMENT FAILURE
10-NONCOLLISION OTHER
11-NONCOLLISION UNKNOWN
12-COLLISION INVOLVING PEDESTRIAN
13-COLLISION INVOLVING MOTOR VEHICLE IN TRANSPORT
14-COLLISION INVOLVING PARKED MOTOR VEHICLE
15-COLLISION INVOLVING TRAIN
16-COLLISION INVOLVING PEDALCYCLE
17-COLLISION INVOLVING ANIMAL
18-COLLISION INVOLVING FIXED OBJECT
19-COLLISION WITH WORK ZONE MAINTENANCE EQUIPMENT
20-COLLISION WITH OTHER MOVABLE OBJECT
21-COLLISION WITH UNKNOWN MOVABLE OBJECT
98-OTHER

26. OFFICER'S PRINTED NAME DETECTIVE TDP DAVIS 1965 **DEPT.** FT WORTH PD **DATE** 07/11/2009

GENERAL

A separate commercial supplement is to be completed on **each** commercial motor vehicle involved in a motor vehicle crash. This supplement(s) must be attached to the basic peace officer 's crash report. A commercial motor vehicle for supplemental reporting is defined as:

1. Any motor vehicle or towed vehicle with a Gross Vehicle Weight Rating (GVWR) or a Registered Gross Vehicle Weight (RGVW), whichever is greater, of 10,001 lbs. or more, or any combination of vehicles where the Gross Combined Weight Rating (GCWR) or the total RGVW of the combination is 10,001 lbs. or more.
   - 1.1 GVWR and RGVW are both defined as the weight of the fully equipped vehicle plus its net carrying capacity. The GCWR is the combined weight rating of a motor vehicle and a towed unit(s). On occasion, the GVWR and the RGVW will differ. In those situations, the greater weight value will be used to determine if this form must be completed.
   - 1.2 The GVWR of a motor vehicle normally can be found on an information plate on the driver's door or door post. The GVWR of a trailer normally can be found on an information plate near the front left portion of the trailer. If the vehicle does not have an information plate or it is illegible, use RGVW. For combination or token trailers, see 1.6 below.
   - 1.3 On vehicles registered in Texas, the RGVW is shown on the registration receipt under "gross weight." Commercial motor vehicles are required to carry the registration receipt.
   - 1.4 In the event the registration receipt is not available, RGVW can normally be obtained by a **complete** registration check. Exception: If the vehicle has exempt license plates (i.e. owned by a government entity) no RGVW will be shown. In those instances, GVWR must be used.
   - 1.5 If GVWR is used to determine the need to complete this supplement, GVWR for the motor vehicle and each trailer(s) must be obtained and shown in the appropriate blank(s).
   - 1.6 If RGVW is used to determine the need to complete this supplement, the RGVW should be obtained for each motor vehicle and trailer in the combination unless the combination is registered as a **combination/token** vehicle or as an **apportioned** vehicle. In those situations the license plates will indicate combination/token or apportioned. If the vehicle is registered as a combination/token or apportioned vehicle, the entire registered gross weight will be shown on the power unit and the trailer will not carry a RGVW. In those instances, show the RGVW of the combination in the power unit and show zero (0) on the trailer(s).
   - 1.7 RGVW for out-of-state vehicles and trailer(s) may be obtained from registration receipts issued by the licensing state, temporary permits, cab cards or other documents or as in 1.4 above.

2. Any bus, which shall include every motor vehicle with a seating capacity of nine (9) or more passengers **(including the driver)** and used for the transportation of persons. The seating capacity of a bus (excluding school buses) shall be determined by allowing one (1) passenger for each sixteen (16) inches of seat space. The seating capacity of a school bus shall be determined by allowing one (1) passenger for each thirteen (13) inches of seat space.

3. Any motor vehicle hauling hazardous materials which is required to be placarded under the Hazardous Materials Transportation Act.

INSTRUCTIONS FOR COMPLETION OF FORM CR-3C

Detailed instructions for completion of this supplement are included in the Instructions to Police for Reporting Crashes.

Check Boxes (Top of Report)

Check appropriate box indicating if the vehicle was over 10,001 pounds, Hazardous Material(s), or 9 or more passenger capacity (driver included). More than one box may be checked.

Roadway Access - Code the access control characteristics which best describes the roadway which the vehicle was traveling on at the time of the crash. Full Access Control is an expressway or freeway where the only means of entry to or exit from the roadway is by ramps connecting to other streets or highways. No Access Control is a street or highway where driveways provide access to and egress from adjacent properties and where cross streets intersect at a grade. Partial Access Control is a street or highway which does not clearly fit the above definitions.

CRASH INFORMATION (Items 1-5)

Complete the information in this section exactly as shown on the basic report (CR-3).

DRIVER INFORMATION (Items 6-7)

Complete items 6 and 7 exactly as shown on the basic report (CR-3).

CARRIER INFORMATION (Items 8-12)

Indicate whether the operation of the commercial motor vehicle at the time of this crash is defined as an interstate, intrastate, government or personal operation. An interstate operation is one where the transportation of the property originated in one state or country and passed through or terminated in another state or country. An intrastate operation is one where the transportation of the property did not cross a state or international boundary. The bill of lading origin and destination information may be one source available to make this determination. Government and Personal use will be determined through investigation. Indicate the Carrier 's corporate name and primary business address in items 9 and 10. The Carrier is defined as the entity responsible for the operation of the vehicle at the time of the crash. This may be the actual owner of the vehicle or the lessee. The information should match Owner/Lessee shown on the CR-3. Show the type of carrier identification by checking the appropriate box in item 11. Show the ID number in item 12, if applicable.

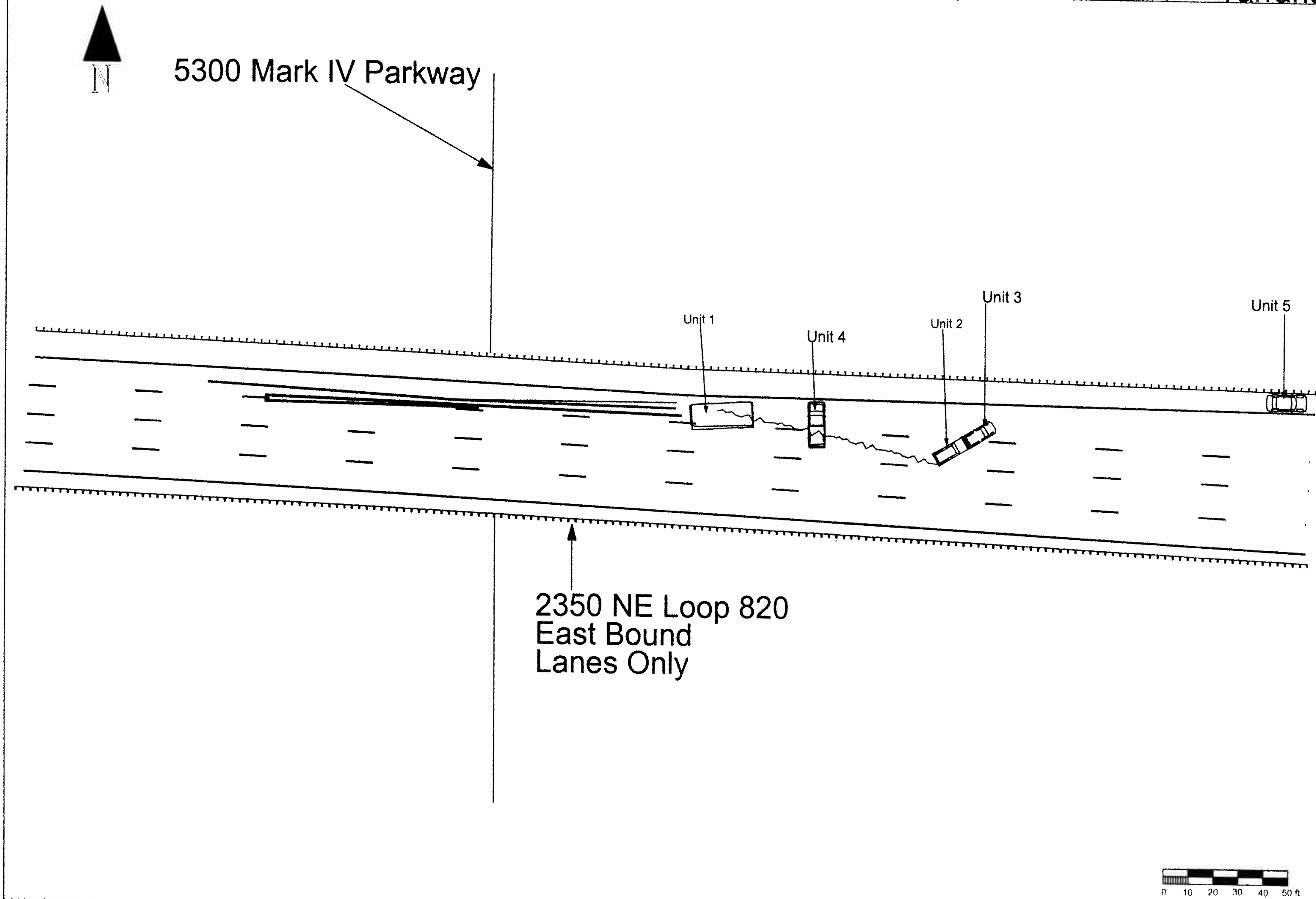
MOTOR VEHICLE INFORMATION (Items 13-18)

Enter the unit number from the CR-3 for this motor vehicle in item 13. Show the registration year, state and number in item 14. Enter the GVWR and RGVW as applicable in item 15. Indicate which, GVWR or RGVW, by checking the appropriate box.
Indicate the appropriate number in the box for Vehicle Type in item 16.
Indicate the appropriate number in the box for Cargo Body Style in item 17.
Indicate by checking the appropriate box in item 18 whether this vehicle is hauling hazardous material(s). If yes, enter the class and ID numbers of the hazardous material(s) being transported. Indicate by checking the appropriate box whether hazardous materials were released (spilled, discharged, etc.) The class and ID numbers should be obtained from the bill of lading or shipping papers. If unavailable, the class and ID numbers may be taken from the placard. The class may be located in the lower corner of the diamond shaped placard. The ID numbers may be located on the placard or on an orange label near the placard. (REFER TO DETAILED INSTRUCTIONS.)

TRAILER NUMBER 1 & 2 INFORMATION (Item 19-22)

If the commercial motor vehicle reported on this supplement is towing one trailer, complete trailer number 1 section only. If towing 2 trailers, complete both trailer number 1 and 2 sections.
Indicate the registration year, state, and number in item 19, and if applicable item 21. Show the GVWR or RGVW in item 20 and, if applicable, item 22. Indicate which, GVWR or RGVW by checking the appropriate box.
Indicate the appropriate number in the box for Trailer Type (item 20, and if applicable, item 22).
Indicate Sequence of Events (Item 23). Indicate the order and type of crash events which occurred involving this vehicle.
Indicate the Total Number of Axles (Item 24). Indicate the total number of axles on the motor vehicle.
Indicate the Total Number of Tires (Item 25). Indicate the total number of tires on the motor vehicle.
The person completing this supplement should print name, show department and the date this supplement was prepared in item 26.

Case No.:	Address1:	County:
09076903	2350 NE Loop 820 E/B	Tarrant



Officer:	Date:	Time:
Detective TDP Davis 1965 FWPD	071009	5:35 pm

Attachment H
Letter to Senator Richard Durbin from Chrysler

CHRYSLER

August 27, 2009

John T Bozzella

The Honorable Richard Durbin
United States Senate
Washington, DC 20510

Dear Senator Durbin:

We very much appreciate the support you have given to the new Chrysler Group LLC, and we understand the concerns you have raised about Chrysler Group's commitments on product liability claims.

As you know, on June 10, 2009, Chrysler Group purchased substantially all of the assets of the former Chrysler LLC (now known as "Old Carco LLC"). As part of the bankruptcy court-approved sale transaction, Chrysler Group assumed product liability claims relating solely to vehicles sold by Chrysler Group to its dealers. Chrysler Group did not assume product liability claims arising out of vehicles sold before June 10, 2009 (except to the extent required by our sales and service agreements with sustained dealers).

Today, Chrysler Group has a much better appreciation of the viability of our business than it did on June 10. As a result, we will announce today that the company will accept product liability claims on vehicles manufactured by Old Carco before June 10 that are involved in accidents on or after that date. This is in addition to our previous commitment to honor warranty claims, lemon law claims and safety recalls regarding these vehicles. As a result of today's announcement, Chrysler Group's approach is consistent with that taken by General Motors as part of its bankruptcy process.

While Chrysler Group still faces challenges, we are confident today that the future viability of the company will not be threatened if we assume these obligations. We want our customers to feel comfortable and confident buying, driving and enjoying one of our vehicles. Chrysler Group vehicles meet or exceed all applicable federal safety standards and have excellent safety records.

We appreciate your dedication to exploring this issue with us through hearings and conversations with our key executives. We hope this decision alleviates your concerns and assures you that we stand behind our products, our customers and our dealers.

Sincerely,

Cc: Chairman Patrick Leahy
Senator Arlen Specter
Senator Herb Kohl