REPORT NUMBER: 208-MGA-2006-001-ODI

VEHICLE SAFETY TESTING
FOR
FMVSS 208, OCCUPANT CRASH PROTECTION
FMVSS 212, WINDSHIELD MOUNTING
FMVSS 219, WINSHIELD INTRUSION (PARTIAL)
FMVSS 301, FUEL SYSTEM INTEGRITY

Diamler Chrysler Corporation
2005 Dodge Grand Caravan
NHTSA No.: C50313

PREPARED BY:
MGA RESEARCH CORPORATION
5000 WARREN ROAD
BURLINGTON, WI 53105

Test Dates: September 12, 2006

Final Report Date: October 24, 2006

FINAL REPORT

PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
OFFICE OF ENFORCEMENT
OFFICE OF VEHICLE SAFETY COMPLIANCE
MAIL CODE: NVS-220
400 SEVENTH STREET, SW, ROOM 6115
WASHINGTON, D.C. 20590

This final test report was prepared for the U.S. Department of Transportation, National Highway Traffic Safety Administration, in response to Contract Number DTNH22-03-D-11002.

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Prepared by: Jeff Lewandowski Date: October 24, 2006
Jeff Lewandowski, Project Engineer

Reviewed by: David Winkelbauer Date: October 24, 2006
David Winkelbauer, Facility Director

FINAL REPORT ACCEPTED BY OVSC:

Accepted By: Charles R. Case

Acceptance Date: October 24, 2006

Technical Report Documentation Page

1. Report No. 208-MGA-2006-001-ODI	*2. Government Accession No.*	*3. Recipient's Catalog No.*	
4. Title and Subtitle Final Report of FMVSS 208 Testing of a 2005 Dodge Grand Caravan NHTSA No.: C50313		*5. Report Date* October 24, 2006 *6. Performing Organization Code* MGA	
7. Author(s) Jeff Lewandowski, Project Engineer		*8. Performing Organization Report No.* 208-MGA-2006-001-ODI	
9. Performing Organization Name and Address MGA Research Corporation 5000 Warren Road Burlington, WI 53105		*10. Work Unit No.* *11. Contract or Grant No.* DTNH22-03-D-11002	
12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration Office of Enforcement Office of Vehicle Safety Compliance 400 Seventh St., S.W., Room 6115 NVS-220 Washington, D.C. 20590		*13. Type of Report and Period Covered* 9/12/06 - 10/24/06 *14. Sponsoring Agency Code* NVS-220	
15. Supplementary Notes			
16. Abstract Tests were conducted on the subject 2005 Dodge Grand Caravan in accordance with the specifications of the Office of Vehicle Safety Test Procedure No. TP208-13 for the determination of FMVSS 208 performance. The left front crash sensor was disconnected for the test. Test failures identified were as follows: None The left front crash sensor was disconnected for the crash test.			
17. Key Words Frontal Impact 40 kmph Vehicle Safety Testing FMVSS 208, “Occupant Crash Protection” FMVSS 212, “Windshield Mounting” FMVSS 219, (partial), “Windshield Zone Intrusion” FMVSS 301, “Fuel System Integrity”		*18. Distribution Statement* Copies of this report are available from the following: NHTSA Technical Information Services (TIS), Mail Code: NPO-230 400 Seventh Street, S.W., Room 5108 Washington, D.C. 20590 Tel. No.: (202) 366-4946	
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SECTION 1

PURPOSE OF TEST

The tests performed are part of a program conducted for the National Highway Traffic Safety Administration (NHTSA) by MGA Research Corporation (MGA) under Contract No. DTNH22-03-D-11002. The purpose of this test was to determine whether the subject vehicle, a 2005 Dodge Grand Caravan, NHTSA No. C50313, meets certain performance requirements of FMVSS 208, "Occupant Crash Protection"; FMVSS 212, "Windshield Mounting"; FMVSS 219, "Windshield Zone Intrusion"; and FMVSS 301, "Fuel System Integrity" with the left front crash sensor disconnected. The test was conducted in accordance with OVSC Laboratory Test Procedure No. TP208-13 dated July 27, 2005.

SECTION 2

TESTS PERFORMED

Test Vehicle: 2005 Dodge Grand Caravan
Test Program: FMVSS 208

NHTSA No.: C50313
Test Dates: 9/12/2006

The following checked items indicate the tests that were performed:

- [ ] 1. Rear outboard seating position seat belts (S4.1.1.2(b) & (S4.2.4)
- [ ] 2. Air bag labels (S4.5.1)
- [ ] 3. Readiness indicator (S4.5.2)
- [ ] 4. Passenger air bag manual cut-off device (S4.5.4)
- [ ] 5. Lap belt lockability (S7.1.1.5)
- [ ] 6. Seat belt warning system (S7.3)
- [ ] 7. Seat belt contact force (S7.4.4)
- [ ] 8. Seat belt latch plate access (S7.4.4)
- [ ] 9. Seat belt retraction (S7.4.5)
- [ ] 10. Seat belt guides and hardware (S7.4.6)
- [ ] 11. Suppression tests with 12-month-old CRABI dummy (Part 572, Subpart R)
- [ ] 12. Suppression tests with newborn infant (Part 572, Subpart K)
- [ ] 13. Suppression tests with 3-year-old dummy (Part 572, Subpart P)
- [ ] 14. Suppression tests with 6-year-old dummy (Part 572, Subpart N)
- [ ] 15. Test of reactivation of the passenger air bag system with an unbelted 5th percentile female dummy
- [ ] 16. Low risk deployment test with 12-month-old dummy (Part 572, Subpart R)
- [ ] 17. Low risk deployment test with 3-year-old dummy (Part 572, Subpart P)
- [ ] 18. Low risk deployment test with 6-year-old dummy (Part 572, Subpart N)
- [ ] 19. Low risk deployment test with 5th female dummy (Part 572, Subpart O)
- [X] 20. Impact Tests
  - [X] Frontal Oblique
    - [X] Belted 50th male dummy driver and passenger (0 to 48 kmph) (S5.1.1(a))
    - [ ] Unbelted 50th male dummy driver and passenger (0 to 48 kmph) (S5.1.2(a)(1))
    - [ ] Unbelted 50th male dummy driver and passenger (32 to 40 kmph) (S5.1.2(a) (1) or S5.1.2(b))
  - [ ] Frontal 0°
    - [ ] Belted 50th male dummy driver (0 to 48 kmph) (S5.1.1.(b)(1) or S5.1.1(a))
    - [ ] Belted 50th male dummy passenger (0 to 48 kmph) (S5.1.1.(b)(1) or S5.1.1(a))
    - [ ] Belted 5th female dummy driver (0 to 48 kmph) (S16.1(a))
    - [ ] Belted 5th female dummy passenger (0 to 48 kmph) (S16.1(a))
    - [ ] Belted 50th male dummy driver and passenger (0 to 56 kmph) (S5.1.1.(b)(2))
    - [ ] Unbelted 50th male dummy driver and passenger (0 to 48 kmph) (S5.1.2(a) (1))
    - [ ] Unbelted 50th male dummy driver (32 to 40 kmph) (S5.1.2.(a)(2) or S5.1.2(b))

		Unbelted 50th male dummy passenger (32 to 40 kmph) (S5.1.2.(a)(2) or S5.1.2(b))
		Unbelted 5th female dummy driver (32 to 40 kmph) (S16.1(b))
		Unbelted 5th female dummy passenger (32 to 40 kmph) (S16.1(b))
		40% Offset 0° Belted 5th male dummy driver and passenger (0 to 40 kmph) (S18.1)
	21.	Sled Test: unbelted 50th male dummy driver and passenger (S13)
	22.	FMVSS 204 Indicant Test
X	23.	FMVSS 212 Indicant Test
X	24.	FMVSS 219 Indicant Test
X	25.	FMVSS 301 Frontal Indicant Test

For the crash tests, the vehicle was instrumented with 8 accelerometers. The accelerometer data from the vehicle and dummies were sampled at 10,000 samples per second and processed as specified in SAE J211/1 MAR95 and FMVSS 208, S4.13.

The dynamic tests were recorded using high-speed film and high-speed digital video.

The vehicle appears to meet all of the performance requirements to which it was tested.

The last front crash sensor was disconnected.

SECTION 3

INJURY RESULT SUMMARY FOR FMVSS 208 TESTS

Test Vehicle: 2005 Dodge Grand Caravan NHTSA No.: C50313
Test Program: FMVSS 208 Test Dates: 9/12/06

40 kmph Frontal Crash

Impact Angle: Zero degrees

Belted Dummies: ___Yes _X_ No
Speed Range: ___ 0 to 40 kmph _X_ 32 to 40 kmph
___ 0 to 48 kmph ___ 0 to 56 kmph

Test Speed: 39.9 kmph Test Weight: 2203.1 kg

Driver Dummy: ___5th female _X_50th male
Passenger Dummy: ___5th female _X_50th male

50th Percentile Male Frontal Crash Test
Vehicles certified to S5.1.1(b)(1), S5.1.1(b)(2), S5.1.2(a)(2), or S5.1.2(b)

Injury Criteria	Max. Allowable Injury Assessment Values	Driver	Passenger
HIC15	700	289	59
N_{te}	1.0	0.4	0.1
N_{tf}	1.0	0.2	0.3
N_{ce}	1.0	0.3	0.0
N_{cf}	1.0	0.4	0.2
Neck Tension	4170 N	2566	499
Neck Compression	4000 N	2485	699
Chest g	60 g	27	30
Chest Displacement	63 mm	22	9
Left Femur	10,000 N	3139	6640
Right Femur	10,000 N	1719	6618

SECTION 4

DISCUSSION OF TESTS

Test Vehicle: 2005 Dodge Grand Caravan NHTSA No.: C50313
Test Program: FMVSS 208 Test Date: 9/12/06

The vehicle met all performance requirements.

The vehicle was confirmed to have no air bag faults prior to preparation for testing. Just prior to towing the vehicle down the test track, the air bag left front crash sensor was disconnected causing the readiness indicator light to illuminate.

The passenger H-point was conducted without the right leg. The right leg was removed due to a wheelwell projection.

SECTION 5

TEST DATA SHEETS

Test Vehicle:	2005 Dodge Grand Caravan	NHTSA No.:	C50313
Test Program:	FMVSS 208	Test Dates:	9/12/06

DATA SHEET 1

COTR VEHICLE WORK ORDER

Test Vehicle: 2005 Dodge Grand Caravan NHTSA No.: C50313
Test Program: FMVSS 208 Test Date: 9/12/06

COTR Signature: Charles R. Case

Test to be performed for this vehicle are checked below:

- [ ] 1. Rear Outboard Seating Position Seat Belts (S4.1.2(b)) & (S4.2.4)
- [ ] 2. Air Bag Labels (S4.5.1)
- [ ] 3. Readiness Indicator (S4.5.2)
- [ ] 4. Passenger Air Bag Manual Cut-off Device (S4.5.4)
- [ ] 5. Lap Belt Lockability (S7.1.1.5)
- [ ] 6. Seat Belt Warning System (S7.3)
- [ ] 7. Seat Belt Contact Force (S7.4.4)
- [ ] 8. Seat Belt Latch Plate Access (S7.4.4)
- [ ] 9. Seat Belt Retraction (S7.4.5)
- [ ] 10. Seat Belt Guides and Hardware (S7.4.6)
- [ ] 11. Suppression tests with 12-month-old CRABI dummy (Part 572, Subpart R) using the following indicated child restraints.

Section B

[ ] Britax Handle with Care 191	[ ] Full Rearward	[ ] Mid Position	[ ] Full Forward
[ ] Century Assura 4553	[ ] Full Rearward	[ ] Mid Position	[ ] Full Forward
[ ] Century Avanta SE 41530	[ ] Full Rearward	[ ] Mid Position	[ ] Full Forward
[ ] Century Smart Fit 4543	[ ] Full Rearward	[ ] Mid Position	[ ] Full Forward
[ ] Cosco Arriva 02727	[ ] Full Rearward	[ ] Mid Position	[ ] Full Forward
[ ] Cosco Opus 35 02603	[ ] Full Rearward	[ ] Mid Position	[ ] Full Forward
[ ] Evenflo Discovery Adjust Right 212	[ ] Full Rearward	[ ] Mid Position	[ ] Full Forward
[ ] Evenflo First Choice 204	[ ] Full Rearward	[ ] Mid Position	[ ] Full Forward
[ ] Evenflo On My Way Position Right V 282	[ ] Full Rearward	[ ] Mid Position	[ ] Full Forward
[ ] Graco Infant 8457	[ ] Full Rearward	[ ] Mid Position	[ ] Full Forward

Section C

[ ] Britax Roundabout 161	[ ] Full Rearward	[ ] Mid Position	[ ] Full Forward
[ ] Century Encore 4612	[ ] Full Rearward	[ ] Mid Position	[ ] Full Forward
[ ] Century STE 1000 4416	[ ] Full Rearward	[ ] Mid Position	[ ] Full Forward
[ ] Cosco Olympian 02803	[ ] Full Rearward	[ ] Mid Position	[ ] Full Forward
[ ] Cosco Touriva 02519	[ ] Full Rearward	[ ] Mid Position	[ ] Full Forward
[ ] Evenflo Horizon V 425	[ ] Full Rearward	[ ] Mid Position	[ ] Full Forward
[ ] Evenflo Medallion 254	[ ] Full Rearward	[ ] Mid Position	[ ] Full Forward

- [ ] 12. Suppression tests with newborn infant (Part 572, Subpart K) using the following indicated child restraints.

Section A

[ ] Cosco Dream Ride 02-719	[ ] Full Rearward	[ ] Mid Position	[ ] Full Forward

- [ ] 13. Suppression tests with 3-year-old dummy (Part 572, Subpart P) using the following indicated child restraints where a child restraint is required.

Section C

Britax Roundabout 161	Full Rearward	Mid Position	Full Forward
Century Encore 4612	Full Rearward	Mid Position	Full Forward
Century STE 1000 4416	Full Rearward	Mid Position	Full Forward
Cosco Olympian 02803	Full Rearward	Mid Position	Full Forward
Cosco Touriva 02519	Full Rearward	Mid Position	Full Forward
Evenflo Horizon V 425	Full Rearward	Mid Position	Full Forward
Evenflo Medallion 254	Full Rearward	Mid Position	Full Forward

Section D

Britax Roadster 9004	Full Rearward	Mid Position	Full Forward
Century Next Step 4920	Full Rearward	Mid Position	Full Forward
Cosco High Back Booster 02-442	Full Rearward	Mid Position	Full Forward
Evenflo Right Fit 245	Full Rearward	Mid Position	Full Forward

14. Suppression tests with representative 3-year-old child using the following indicated child restraints where a child restraint is required. (Appendix H, Data Sheet 16H and 17H)

Section C

Britax Roundabout 161	Full Rearward	Mid Position	Full Forward
Century Encore 4612	Full Rearward	Mid Position	Full Forward
Century STE 1000 4416	Full Rearward	Mid Position	Full Forward
Cosco Olympian 02803	Full Rearward	Mid Position	Full Forward
Cosco Touriva 02519	Full Rearward	Mid Position	Full Forward
Evenflo Horizon V 425	Full Rearward	Mid Position	Full Forward
Evenflo Medallion 254	Full Rearward	Mid Position	Full Forward

Section D

Britax Roadster 9004	Full Rearward	Mid Position	Full Forward
Century Next Step 4920	Full Rearward	Mid Position	Full Forward
Cosco High Back Booster 02-442	Full Rearward	Mid Position	Full Forward
Evenflo Right Fit 245	Full Rearward	Mid Position	Full Forward

15. Suppression tests with 3-year-old dummy (Part 572, Subpart P) in the following Forward, Middle, and Rearward seat track positions

- Sitting on seat with back against seat back (S22.2.2.1)
- Sitting on seat with back against reclined seat back (S22.2.2.2)
- Sitting on seat with back not against seat back (S22.2.2.3)
- Sitting on seat edge, spine vertical, hands by the child's side (S22.2.2.4)
- Standing on seat, facing forward (S22.2.2.5)
- Kneeling on seat facing forward (S22.2.2.6)
- Kneeling on seat facing rearward (S22.2.2.7)
- Lying on seat (S22.2.2.8)

16. Suppression tests with representative 3-year-old child in the following positions

- Sitting on seat with back against seat back (S22.2.2.1)
- Sitting on seat with back against reclined seat back (S22.2.2.2)
- Sitting on seat with back not against seat back (S22.2.2.3)
- Sitting on seat edge, spine vertical, hands by the child's side (S22.2.2.4)
- Standing on seat, facing forward (S22.2.2.5)
- Kneeling on seat facing forward (S22.2.2.6)
- Kneeling on seat facing rearward (S22.2.2.7)
- Lying on seat (S22.2.2.8)

17. Suppression tests with 6-year-old dummy (Part 572, Subpart N) using the following indicated child restraints where a child restraint is required.

Section D

Britax Roadster 9004	Full Rearward	Mid Position	Full Forward
Century Next Step 4920	Full Rearward	Mid Position	Full Forward
Cosco High Back Booster 02-442	Full Rearward	Mid Position	Full Forward
Evenflo Right Fit 245	Full Rearward	Mid Position	Full Forward

18. Suppression tests with representative 6-year-old child using the following indicated child restraints where a child restraint is required.

Section D

Britax Roadster 9004	Full Rearward	Mid Position	Full Forward
Century Next Step 4920	Full Rearward	Mid Position	Full Forward
Cosco High Back Booster 02-442	Full Rearward	Mid Position	Full Forward
Evenflo Right Fit 245	Full Rearward	Mid Position	Full Forward

19. Suppression tests with 6-year-old dummy (Part 572, Subpart N) in the following Forward, Middle, and Rearward seat track positions

- Sitting on seat with back against seat back (S22.2.2.1)
- Sitting on seat with back against reclined seat back (S22.2.2.2)
- Sitting on seat edge, spine vertical, hands by the child's side (S22.2.2.4)
- Sitting back in the seat and leaning on the right front passenger door (S24.2.3)

20. Suppression tests with representative 6-year-old child in the following positions

- Sitting on seat with back against seat back (S22.2.2.1)
- Sitting on seat with back against reclined seat back (S22.2.2.2)
- Sitting on seat edge, spine vertical, hands by the child's side (S22.2.2.4)
- Sitting back in the seat and leaning on the right front passenger door (S24.2.3)

21. Test of Reactivation of the Passenger Air Bag System with an Unbelted 5th percentile female dummy (S20.3, 22.3, S24.3). Perform this test after the following suppression tests: After each restraint.

22. Test of Reactivation of the passenger air bag system with a representative 5th percentile female (S20.3, 22.3, S24.3). Perform this test after the following suppression tests:

23. Low risk deployment test with 12-month-old dummy (Part 572, Subpart R) using the following indicated child restraints.

Section B

Britax Handle with Care 191	Full Rearward	Mid Position	Full Forward
Century Assura 4553	Full Rearward	Mid Position	Full Forward
Century Avanta SE 41530	Full Rearward	Mid Position	Full Forward
Century Smart Fit 4543	Full Rearward	Mid Position	Full Forward
Cosco Arriva 02727	Full Rearward	Mid Position	Full Forward
Cosco Opus 35 02603	Full Rearward	Mid Position	Full Forward
Evenflo Discovery Adjust Right 212	Full Rearward	Mid Position	Full Forward
Evenflo First Choice 204	Full Rearward	Mid Position	Full Forward
Evenflo On My Way Position Right V 282	Full Rearward	Mid Position	Full Forward
Graco Infant 8457	Full Rearward	Mid Position	Full Forward

Section C

Britax Roundabout 161	Full Rearward	Mid Position	Full Forward
Century Encore 4612	Full Rearward	Mid Position	Full Forward
Century STE 1000 4416	Full Rearward	Mid Position	Full Forward
Cosco Olympian 02803	Full Rearward	Mid Position	Full Forward
Cosco Touriva 02519	Full Rearward	Mid Position	Full Forward
Evenflo Horizon V 425	Full Rearward	Mid Position	Full Forward
Evenflo Medallion 254	Full Rearward	Mid Position	Full Forward

- [ ] 24. Low risk deployment test with 3-year-old dummy (Part 572, Subpart P) in the following positions
  - [ ] Position 1
  - [ ] Position 2
- [ ] 25. Low risk deployment test with 6-year-old dummy (Part 572, Subpart N) in the following positions
  - [ ] Position 1
  - [ ] Position 2
- [ ] 26. Low risk deployment test with 5th percentile female dummy (Part 572, Subpart O) in the following positions
  - [ ] Position 1
  - [ ] Position 2
- [X] 27. Impact Tests
  - [X] Frontal Oblique – Test Speed: 39.9kmph
    - [X] Belted 50th male dummy driver and passenger (0 to 48 kmph) (S5.1.1(a))
    - [ ] Unbelted 50th male dummy driver and passenger (0 to 48 kmph) (S5.1.2(a)(1))
    - [ ] Unbelted 50th male dummy driver and passenger (32 to 40 kmph) (S5.1.2(a)(1) or S5.1.2(b))
  - [ ] Frontal 0° - Test Speed:
    - [ ] Belted 50th male dummy driver (0 to 48 kmph) (S5.1.1.(b)(1) or S5.1.1(a))
    - [ ] Belted 50th male dummy passenger (0 to 48 kmph) (S5.1.1.(b)(1) or S5.1.1(a))
    - [ ] Belted 5th female dummy driver (0 to 48 kmph) (S16.1(a))
    - [ ] Belted 5th female dummy passenger (0 to 48 kmph) (S16.1(a))
    - [ ] Belted 50th male dummy driver and passenger (0 to 56 kmph) (S5.1.1.(b)(2))
    - [ ] Unbelted 50th male dummy driver and passenger (0 to 48 kmph) (S5.1.2(a)(1))
    - [ ] Unbelted 50th male dummy driver (32 to 40 kmph) (S5.1.2.(a)(2) or S5.1.2(b))
    - [ ] Unbelted 50th male dummy passenger (32 to 40 kmph) (S5.1.2.(a)(2) or S5.1.2(b))
    - [ ] Unbelted 5th female dummy driver (32 to 40 kmph) (S16.1(b))
    - [ ] Unbelted 5th female dummy passenger (32 to 40 kmph) (S16.1(b))
  - [ ] 40% Offset 0° Belted 5th male dummy driver and passenger (0 to 40 kmph) (S18.1) – Test Speed:
- [ ] 28. Sled Test: Unbelted 50th male dummy driver and passenger (S13)
- [ ] 29. FMVSS 204 Indicant Test
- [X] 30. FMVSS 212 Indicant Test
- [X] 31. FMVSS 219 Indicant Test
- [X] 32. FMVSS 301 Frontal Indicant Test

DATA SHEET 2

REPORT OF VEHICLE CONDITION

Test Vehicle: 2005 Dodge Grand Caravan NHTSA No.: C50313
Test Program: FMVSS 208 Test Dates: 9/12/06

CONTRACT NO. DTNH22-03-D-11002 Date: 9/19/06
FROM (Lab and rep name): MGA Research Corporation
TO: NHTSA, OVSC (NVS-220)

PURPOSE: (X) Initial Receipt ( ) Received via Transfer (X) Present vehicle condition

MODEL YEAR/MAKE/MODEL/BODY STYLE:	2005 Dodge Grand Caravan		
MANUFACTURE DATE:	06/04		
NHTSA NO.	C50313	GVWR:	2586 kg (5700 lbs)
BODY COLOR:	Red	GAWR (Fr):	1293 kg (2850 lbs)
VIN:	2D4GP44L25R224618	GAWR (Rr):	1339 kg (2950 lbs)

ODOMETER READINGS:	ARRIVAL (miles):	31159	DATE:	8/25/06
	COMPLETION (miles):	31161	DATE:	9/12/06
PURCHASE PRICE: ($)	16,350			
DEALER'S NAME:	Galeana's Van Dyke Dodge; 28400 Van Dyke Ave.; Warren, MI 48093			

A. All options listed on window sticker are present on the test vehicle:
_X_Yes ___No
B. Tires and wheel rims are new and the same as listed: _X_Yes ___No
C. There are no dents or other interior or exterior flaws: _X_Yes ___No
D. The vehicle has been properly prepared and is in running condition:
_X_Yes ___No
E. Keyless remote is available and working: _X_ Yes ___No
F. The glove box contains an owner's manual, warranty document, consumer information, and extra set of keys: _X_Yes ___No
G. Proper fuel filler cap is supplied on the test vehicle: _X_Yes ___No
H. Using permanent marker, identify vehicle with NHTSA number and FMVSS test type(s) on roof line above driver door or for school buses, place a placard with NHTSA number inside the windshield and to the exterior front and rear side of bus:
_X_Yes ___No
I. Place vehicle in storage area: _X_Yes ___No
J. Inspect the vehicle's interior and exterior, including all windows, seats, doors, etc. to confirm that each system is complete and functional per the manufacturer's specifications. Any damage, misadjustment, or other unusual condition that could influence the test program or test results shall be recorded. Report any abnormal condition to the NHTSA COTR before beginning any test:
_X_Vehicle OK ___Conditions reported below

REPORT OF VEHICLE CONDITION AT THE COMPLETION OF TESTING

LIST OF FMVSS TESTS PERFORMED BY THIS LAB: FMVSS 208, 212, 219, 301

VEHICLE: 2005 Dodge Grand Caravan NHTSA NO. C50313

REMARKS:

Equipment that is no longer on the test vehicle as noted on previous page:

Storage lid and carpet behind right front passenger seat, and carpet behind third row seats

Explanation for equipment removal:

Components removed for instrumentation installation and to meet target weight.

Test Vehicle Condition:

25 mph frontal impact damage- front suspension & structure damaged, hood & front quarter panels damaged, radiator damaged, air bags & pretensioners deployed, Stoddard in fuel system

RECORDED BY: Jeff Lewandowski DATE: 9/12/2006

APPROVED BY: David Winkelbauer DATE: 9/12/2006

##########

RELEASE OF TEST VEHICLE

The vehicle described above is released from MGA to be delivered to:

Date: Time: Odometer:

Lab Rep's Signature:

Title:

Carrier/Customer Rep:

Date:

DATA SHEET 3

CERTIFICATION LABEL AND TIRE PLACARD INFORMATION

Test Vehicle: 2005 Dodge Grand Caravan
Test Program: FMVSS
Test Technician: Nick Kosinski

NHTSA No.: C50313
Test Date: 9/12/06

Certification Label	
Manufacturer:	Diamler Chrysler Corporation
Date of Manufacture:	06/04
VIN:	2D4GP44L25R224618
Vehicle Certified As (Pass. Car/MPV/Bus):	MPV
Front Axle GVWR:	1293 kg (2850 lbs)
Rear Axle GVWR:	1339 kg (2950 lbs)
Total GVWR:	2586 kg (5700 lbs)

Tire Placard	
Not applicable, vehicle is not a passenger car and does not have a tire placard.	YES (MPV)
This is not a passenger car, but all or part of this information is still contained on a vehicle label and is reported here.	YES (MPV)
Vehicle Capacity Weight:	521 kg (1150 lbs)
Designated Seating Capacity Front:	2
Designated Seating Capacity Rear:	5
Total Designated Seating Capacity:	7
Recommended Cold Tire Inflation Pressure Front:	250 kpa (36 psi)
Recommended Cold Tire Inflation Pressure Rear:	250 kpa (36 psi)
Recommended Tire Size:	P215/65R16

Signature: Nick Kosinski

Date: 9/12/06

DATA SHEET 14

MARKING OF REFERENCE POINTS FOR VARIOUS TEST POSITIONS AND POINTS

Test Vehicle: 2005 Dodge Grand Caravan NHTSA No.: C50313
Test Program: FMVSS 208 Test Date: 9/12/06
Test Technician: Eric Peschman

DATA SHEET 14.2

MARKING OF REFERENCE POINTS FOR 50TH MALE

X Driver Seat __Passenger Seat _____Other seat

X 1. Position the seat's adjustable lumbar supports so that the lumbar support is in its lowest, retracted or deflated adjustment position. (S8.1.3)
__N/A – No lumbar adjustment

X 2. Position any adjustable parts of the seat that provide additional support so that they are in the lowest or most open adjustment position. (S16.2.10.2)
X N/A – No additional support adjustment

X 3. Use all the seat controls that have any affect on the fore-aft movement of the seat to move the seat cushion to the rearmost position. **Mark** this position for future reference. (8/31/95 legal interp to Hogan and Hartson)

X 4. Use all the seat controls that have any affect on the fore-aft movement of the seat to move the seat cushion to the foremost position. **Mark** this position for future reference. (8/31/95 legal interp to Hogan and Hartson)

X 5. **Mark** each fore-aft position so that there is a visual indication when the seat is at a particular position. For manual seats, **mark** each detent. For power seats, **mark** only the rearmost, middle, and foremost positions. Label three of the positions with the following: F for foremost, M for mid-position (if there is no mid-position, label the closest adjustment position to the rear of the mid-point), and R for rearmost. Determine the mid fore-aft seat position based on the foremost and rearmost positions determined in items 3 and 4. (8/31/95 legal interp to Hogan and Hartson)

X 6. Move the seat to the mid position.

X 7. While maintaining the mid position, move the seat to its lowest position. **Mark** the height position for future reference. For seats with adjustable seat cushions, use the manufacturer's recommended seat cushion angle for determining the lowest height position.

X 8. Visually **mark** for future reference the seat back angle, if adjustable, at the manufacturer's nominal design riding position for a **50th percentile adult male** in the manner specified by the manufacturer.

__ N/A – No seat back angle adjustment
X Previously marked during Data Sheet 14.1 go to 9
Manufacturer's design seat back angle 22° on seat back or 8° from upright position

X 9. Is the seat a bucket seat?
X Previously marked during data sheet 14.1. This form is complete.
X Yes, go to 10 and skip 11
__No, go to 11 and skip 10

X 10. Bucket seats:
Locate and **mark** for future reference the longitudinal centerline of the seat cushion. The intersection of the vertical longitudinal plane that passes through the SgRP and the seat cushion upper surface determines the longitudinal centerline of a bucket seat cushion. (S10.4.1.2 and S16.3.1.10)

__11. Bench seats (complete ONLY the one that is applicable to the seat being marked):

__11.1 Driver Seat
Locate and **mark** for future reference the longitudinal line on the seat cushion that marks the intersection of the vertical longitudinal plane through the centerline of the steering wheel and the seat cushion upper surface. (S10.4.1.1)

__11.2 Passenger Seat
Locate and **mark** for future reference the longitudinal centerline of the passenger seat cushion. The longitudinal centerline is the same distance from the longitudinal centerline of the vehicle as the center of the steering wheel. (S10.4.1.1)
Record the distance from the longitudinal centerline of the vehicle to the center of the steering wheel. _____
Record the distance from the longitudinal centerline of the vehicle to the longitudinal centerline of the seat cushion. _____

I certify that I have read and performed each instruction.

9/12/06

I certify that I have read and performed each instruction. Date

DATA SHEET 14.2

MARKING OF REFERENCE POINTS FOR 50TH MALE

__ Driver Seat X Passenger Seat _____Other seat

X 1. Position the seat's adjustable lumbar supports so that the lumbar support is in its lowest, retracted or deflated adjustment position. (S8.1.3)
X N/A – No lumbar adjustment

X 2. Position any adjustable parts of the seat that provide additional support so that they are in the lowest or most open adjustment position. (S16.2.10.2)
X N/A – No additional support adjustment

X 3. Use all the seat controls that have any affect on the fore-aft movement of the seat to move the seat cushion to the rearmost position. **Mark** this position for future reference. (8/31/95 legal interp to Hogan and Hartson)

X 4. Use all the seat controls that have any affect on the fore-aft movement of the seat to move the seat cushion to the foremost position. **Mark** this position for future reference. (8/31/95 legal interp to Hogan and Hartson)

X 5. **Mark** each fore-aft position so that there is a visual indication when the seat is at a particular position. For manual seats, **mark** each detent. For power seats, **mark** only the rearmost, middle, and foremost positions. Label three of the positions with the following: F for foremost, M for mid-position (if there is no mid-position, label the closest adjustment position to the rear of the mid-point), and R for rearmost. Determine the mid fore-aft seat position based on the foremost and rearmost positions determined in items 3 and 4. (8/31/95 legal interp to Hogan and Hartson)

X 6. Move the seat to the mid position.

X 7. While maintaining the mid position, move the seat to its lowest position. **Mark** the height position for future reference. For seats with adjustable seat cushions, use the manufacturer's recommended seat cushion angle for determining the lowest height position.

X 8. Visually **mark** for future reference the seat back angle, if adjustable, at the manufacturer's nominal design riding position for a **50th percentile adult male** in the manner specified by the manufacturer.

__ N/A – No seat back angle adjustment
X Previously marked during Data Sheet 14.1 go to 9
Manufacturer's design seat back angle 18° on seat back or 4° from upright position

X 9. Is the seat a bucket seat?
X Previously marked during data sheet 14.1. This form is complete.
X Yes, go to 10 and skip 11
__No, go to 11 and skip 10

X 10. Bucket seats:
Locate and **mark** for future reference the longitudinal centerline of the seat cushion. The intersection of the vertical longitudinal plane that passes through the SgRP and the seat cushion upper surface determines the longitudinal centerline of a bucket seat cushion. (S10.4.1.2 and S16.3.1.10)

__11. Bench seats (complete ONLY the one that is applicable to the seat being marked):

__11.1 Driver Seat

Locate and **mark** for future reference the longitudinal line on the seat cushion that marks the intersection of the vertical longitudinal plane through the centerline of the steering wheel and the seat cushion upper surface. (S10.4.1.1)

__11.2 Passenger Seat

Locate and **mark** for future reference the longitudinal centerline of the passenger seat cushion. The longitudinal centerline is the same distance from the longitudinal centerline of the vehicle as the center of the steering wheel. (S10.4.1.1)

Record the distance from the longitudinal centerline of the vehicle to the center of the steering wheel. _____

Record the distance from the longitudinal centerline of the vehicle to the longitudinal centerline of the seat cushion. _____

I certify that I have read and performed each instruction.

_____ 9/12/06

I certify that I have read and performed each instruction. Date

DATA SHEET 14.3

MARKING OF REFERENCE POINTS FOR STEERING WHEEL

X 1. Is the steering wheel adjustable up and down and/or in and out?
X Yes – go to 2
__No – this form is complete

X 2. Find and **mark** for future reference each up and down position. Label three of the positions with the following: H for highest, M for mid-position (if there is no mid-position, label the next lowest adjustment position), and L for lowest.
__N/A – steering wheel is not adjustable up and down

X 3. Find and **mark** for future references each in and out position. Label three of the positions with the following: F for foremost, M for mid-position (if there is no mid-position, label the next rearmost adjustment position), and R for rearmost.
X N/A – steering wheel is not adjustable in and out.

I certify that I have read and performed each instruction.

9/12/06

I certify that I have read and performed each instruction. Date

DATA SHEET 15

H-POINT DETERMINATION FOR 50TH PERCENTILE MALE DUMMY

Test Vehicle: 2005 Dodge Grand Caravan NHTSA No.: C50313
Test Program: FMVSS 208 Test Date: 9/12/06
Test Technician: Wayne Dahlke

X Driver Designated Seating Position __Passenger Designated Seating Position

X 1. Place the seat in the mid-fore-aft position and full down position, with the head restraint full down and the seat back in the manufacturer's nominal design riding position for the 50th percentile male as determined during the completion of Data Sheet 14.2.
X 2. Place a 910 mm^2 piece of muslin cotton cloth over the seat area. (The muslin cloth shall be comparable to 48 threads/in^2 and density of 2.85 lb/yd.) Tuck the muslin cloth in a sufficient amount to prevent hammocking of the material.
X 3. Place the seat and back assembly of the H-Point machine at the centerline of the seat as determined in Data Sheet 14.1 or 14.2.
X 4. Install the lower leg, and foot segments.
X 5. Set the length of the lower leg segment at 16.3 inches and the length of the thigh bar at 15.8 inches.
X 6. Leg and foot placement
X 6.1 Driver Designated Seating Position
X 6.1.1 Insert the pin so that the foot angle is never less than 87 degrees.
X 6.1.2 Place the right foot on the undepressed accelerator pedal with the sole of the foot on the pedal and the heel as far forward as allowable. Do not place the heel on the toe board.
X 6.1.2 Adjust the left leg to be the same distance from H-point machine centerline as the right leg.
X 6.1.3 With the T-bar level, place the left foot on the toe board with the rearmost point of the heel resting on the floor pan as close as possible to the point of intersection of the planes described by the toe board and the floor pan and not on the wheelwell projection. If the foot cannot be positioned on the toe board, set it on the floor pan.
__Foot on toe board
X Foot on floor pan
__6.2 Passenger Designated Seating Position
__6.2.1 Insert the pin so that the foot angle is never less than 87 degrees.
__6.2.2 Space the lower legs 10.6 inches apart, equally spaced about the centerline of the H-point machine.
__6.2.3 With the T-bar level, place the left foot on the toe board with the rearmost point of the heel resting on the floor pan as close as possible to the point of intersection of the planes described by the toe board and the floor pan and not on the wheelwell projection. If the foot cannot be positioned on the toe board, set it on the floor pan.
__Foot on toe board
__Foot on floor pan.
__6.2.3 With the T-bar level, place the right foot on the toe board with the rearmost point of the heel resting on the floor pan as close as possible to the point of intersection of the planes described by the toe board and the floor pan and not on the wheelwell projection. If the foot cannot be positioned on the toe board, set it on the floor pan.
__Foot on toe board
__Foot on floor pan
X 7. Apply the lower leg weights.
X 8. Apply the thigh weights.

X 9. Tilt the back pan forward against the forward stop and draw the H-point machine away from the seatback using the T-bar.
X 10. Repositioning the back pan
X 10.1 Allow the H-point machine to slide rearward until a forward horizontal restraining load on the T-bar is no longer required due to the seat pan contacting the seat back.
__The seat pan does not slide rearward. Go to 10.2
__10.2 Slide the H-point machine rearward by a horizontal rearward load applied at the T-bar until the seat pan contacts the seat back.
X 11. Apply a 10 kg load at the intersection of the hip angle quadrant and the T-bar housing along a line from the above intersection to a point just above the thigh bar housing.
X 12. Again apply a 10 kg load at the intersection of the hip angle quadrant and the T-bar housing along a line from the above intersection to a point just above the thigh bar housing.
X 13. Carefully return the back pan to the seat back.
X 14. Install the right and left buttock weights.
X 15. Install the eight torso weights alternately the installation between right and left.
X 16. Tilt the back pan forward until the stop is contacted.
X 17. Rock the H-point from side to side over a 10degree arc (5 degrees to each side of the vertical centerline) for three complete cycles. Restrain the T-bar during rocking so that the seat pan does not change position. Minimize any inadvertent exterior loads applied in a vertical or fore-aft direction. The feet are free to move during this rocking motion.
X 18. Without applying a forward or lateral load lift the right foot off the floor the minimum amount necessary until no additional forward foot movement is obtained.
X 19. Lower the right foot until the heel is in contact with the floor pan and the ball of the foot is in contact with the floor, toe board, or undepressed accelerator pedal.
X 20. Without applying a forward or lateral load lift the left foot off the floor the minimum amount necessary until no additional forward foot movement is obtained.
X 21. Lower the left foot until the heel is in contact with the floor pan and the ball of the foot is in contact with the floor or toe board.
X 22. Is the seat pan level?
X Yes. Go to 24
__No. Go to 23
__23. Apply a sufficient lateral load to the top of the seatback pan to level the H-point machine seat pan on the seat.
X 24. Holding the T-bar to prevent the H-point from sliding forward on the seat cushion, return the seatback pan to the seatback.
X 25. Holding the T-bar to prevent the H-point from sliding forward on the seat cushion, apply sufficient rearward force perpendicular to the back angle bar just above the torso weights to increase the hip angle 3 degrees. Minimize the exterior downward or side forces applied to the H-point machine. Release the force. Repeat this step until the hip angle readout is identical. Complete as many force applications as necessary and record the results in the following table:

Force Application	Hip Angle
1	99
2	99
3	99
4	99
5	

X 26. Is the H-point machine level?
X Yes, go to 27.
__No, relevel. Go back to step 16 and repeat using a new data sheet.
X 27. Record the H-point location.
Describe and mark the measuring reference point.

Driver H-Point	
HP to Floor Z	350
HP to Hinge X	739
HP to Sill Y	182
HP to Striker X	344
HP to Dash X	605
HP to Header Z	771

H-Point Machine	
Left Knee	113
Right Knee	113
Left Foot Angle	84°
Right Foot Angle	87°
Left Leg	157
Right Leg	175
Hip Angle	99°
Back Angle	25°

Wayne Fahl Date 9/12/06

I certify that I have read and performed each instruction.

DATA SHEET 15

H-POINT DETERMINATION FOR 50TH PERCENTILE MALE DUMMY

Test Vehicle: 2005 Dodge Grand Caravan NHTSA No.: C50313
Test Program: FMVSS 208 Test Date: 9/12/06
Test Technician: Wayne Dahlke

__Driver Designated Seating Position X Passenger Designated Seating Position

X 1. Place the seat in the mid-fore-aft position and full down position, with the head restraint full down and the seat back in the manufacturer's nominal design riding position for the 50th percentile male as determined during the completion of Data Sheet 14.2.
X 2. Place a 910 mm^2 piece of muslin cotton cloth over the seat area. (The muslin cloth shall be comparable to 48 threads/in^2 and density of 2.85 lb/yd.) Tuck the muslin cloth in a sufficient amount to prevent hammocking of the material.
X 3. Place the seat and back assembly of the H-Point machine at the centerline of the seat as determined in Data Sheet 14.1 or 14.2.
X 4. Install the lower leg, and foot segments.
X 5. Set the length of the lower leg segment at 16.3 inches and the length of the thigh bar at 15.8 inches.
X 6. Leg and foot placement
__6.1 Driver Designated Seating Position
__6.1.1 Insert the pin so that the foot angle is never less than 87 degrees.
__6.1.2 Place the right foot on the undepressed accelerator pedal with the sole of the foot on the pedal and the heel as far forward as allowable. Do not place the heel on the toe board.
__6.1.2 Adjust the left leg to be the same distance from H-point machine centerline as the right leg.
__6.1.3 With the T-bar level, place the left foot on the toe board with the rearmost point of the heel resting on the floor pan as close as possible to the point of intersection of the planes described by the toe board and the floor pan and not on the wheelwell projection. If the foot cannot be positioned on the toe board, set it on the floor pan.
__Foot on toe board
__Foot on floor pan
X 6.2 Passenger Designated Seating Position
X 6.2.1 Insert the pin so that the foot angle is never less than 87 degrees.
X 6.2.2 Space the lower legs 10.6 inches apart, equally spaced about the centerline of the H-point machine.
X 6.2.3 With the T-bar level, place the left foot on the toe board with the rearmost point of the heel resting on the floor pan as close as possible to the point of intersection of the planes described by the toe board and the floor pan and not on the wheelwell projection. If the foot cannot be positioned on the toe board, set it on the floor pan.
X Foot on toe board
__Foot on floor pan.
X 6.2.3 With the T-bar level, place the right foot on the toe board with the rearmost point of the heel resting on the floor pan as close as possible to the point of intersection of the planes described by the toe board and the floor pan and not on the wheelwell projection. If the foot cannot be positioned on the toe board, set it on the floor pan.
__Foot on toe board
__Foot on floor pan

The right leg was removed due to a wheelwell projection. During the installation of the H-Point Machines lower leg assembly, (step 3, Data Sheet 15), the seat and back assembly of the H-Point machine could no longer be maintained at the centerline of the seat. This is due to the interference of the right lower leg with the inside wheelwell projection.

X 7. Apply the lower leg weights.
X 8. Apply the thigh weights.
X 9. Tilt the back pan forward against the forward stop and draw the H-point machine away from the seatback using the T-bar.
X 10. Repositioning the back pan
X 10.1 Allow the H-point machine to slide rearward until a forward horizontal restraining load on the T-bar is no longer required due to the seat pan contacting the seat back.
__The seat pan does not slide rearward. Go to 10.2
X 10.2 Slide the H-point machine rearward by a horizontal rearward load applied at the T-bar until the seat pan contacts the seat back.
X 11. Apply a 10 kg load at the intersection of the hip angle quadrant and the T-bar housing along a line from the above intersection to a point just above the thigh bar housing.
X 12. Again apply a 10 kg load at the intersection of the hip angle quadrant and the T-bar housing along a line from the above intersection to a point just above the thigh bar housing.
X 13. Carefully return the back pan to the seat back.
X 14. Install the right and left buttock weights.
X 15. Install the eight torso weights alternately the installation between right and left.
X 16. Tilt the back pan forward until the stop is contacted.
X 17. Rock the H-point from side to side over a 10degree arc (5 degrees to each side of the vertical centerline) for three complete cycles. Restrain the T-bar during rocking so that the seat pan does not change position. Minimize any inadvertent exterior loads applied in a vertical or fore-aft direction. The feet are free to move during this rocking motion.
X 18. Without applying a forward or lateral load lift the right foot off the floor the minimum amount necessary until no additional forward foot movement is obtained.
X 19. Lower the right foot until the heel is in contact with the floor pan and the ball of the foot is in contact with the floor, toe board, or undepressed accelerator pedal.
X 20. Without applying a forward or lateral load lift the left foot off the floor the minimum amount necessary until no additional forward foot movement is obtained.
X 21. Lower the left foot until the heel is in contact with the floor pan and the ball of the foot is in contact with the floor or toe board.
X 22. Is the seat pan level?
X Yes. Go to 24
__No. Go to 23
__23. Apply a sufficient lateral load to the top of the seatback pan to level the H-point machine seat pan on the seat.
X 24. Holding the T-bar to prevent the H-point from sliding forward on the seat cushion, return the seatback pan to the seatback.

X 25. Holding the T-bar to prevent the H-point from sliding forward on the seat cushion, apply sufficient rearward force perpendicular to the back angle bar just above the torso weights to increase the hip angle 3 degrees. Minimize the exterior downward or side forces applied to the H-point machine. Release the force. Repeat this step until the hip angle readout is identical. Complete as many force applications as necessary and record the results in the following table:

Force Application	Hip Angle
1	98
2	99
3	99
4	100
5	

X 26. Is the H-point machine level?
X Yes, go to 27.
__No, relevel. Go back to step 16 and repeat using a new data sheet.

X 27. Record the H-point location.
Describe and mark the measuring reference point.

Passenger H-Point	
HP to Floor Z	387
HP to Hinge X	734
HP to Sill Y	162
HP to Striker X	336
HP to Dash X	578
HP to Header Z	739

H-Point Machine	
Left Knee	111
Right Knee	*
Left Foot Angle	124°
Right Foot Angle	*
Left Leg	155
Right Leg	*
Hip Angle	100°
Back Angle	23°

*The Right leg was removed due to a wheelwell projection.

Wayne Fahl Date 9/12/06

I certify that I have read and performed each instruction.

DATA SHEET 32

VEHICLE WEIGHT, FUEL TANK, AND ATTITUDE DATA

Test Vehicle: 2005 Dodge Grand Caravan
Test Program: FMVSS 208
Test Technician: Nick Kosinski

NHTSA No.: C50313
Test Date: 9/12/06

IMPACT ANGLE:	Zero Degrees		
BELTED DUMMIES (YES/NO):	No		
TEST SPEED:	_X_ 32 to 40 kmph	__ 0 to 48 kmph	__ 0 to 56 kmph
DRIVER DUMMY:	__ 5th female	_X_ 50th male	
PASSENGER DUMMY:	__ 5th female	_X_ 50th male	

X	1.	Fill the transmission with transmission fluid to the satisfactory range.
X	2.	Drain fuel from vehicle
X	3.	Run the engine until fuel remaining in the fuel delivery system is used and the engine stops.
X	4.	Record the useable fuel tank capacity supplied by the COTR
X		Useable Fuel Tank Capacity supplied by COTR: 75.7 liters (20.0 gallons)
X	5.	Record the fuel tank capacity supplied in the owner's manual.
X		Useable Fuel Tank Capacity in owner's manual: 75.7 liters (20.0 gallons)
X	6.	Using purple dyed Stoddard solvent having the physical and chemical properties of Type 1 solvent or cleaning fluid, Table 1, ASTM Standard D484-71, "Standard Specifications for Hydrocarbon Dry-cleaning Solvents," or gasoline, fill the fuel tank.
X		Amount Added: 75.7 liters (20.0 gallons)
X	7.	Fill the coolant system to capacity.
X	8.	Fill the engine with motor oil to the Max. mark on the dip stick.
X	9.	Fill the brake reservoir with brake fluid to its normal level.
X	10.	Fill the windshield washer reservoir to capacity.
X	11.	Inflate the tires to the tire pressure on the tire placard. If no tire placard is available, inflate the tires to the recommended pressure in the owner's manual.

Tire placard pressure:	RF:	36psi	LF:	36psi	RR:	36psi	LR:	36psi
Owner's manual pressure:	RF:	36psi	LF:	36psi	RR:	36psi	LR:	36psi
Actual inflated pressure:	RF:	36psi	LF:	36psi	RR:	36psi	LR:	36psi

X	12.	Record the vehicle weight at each wheel to determine the unloaded vehicle weight (UVW), i.e. "as delivered" weight).

Right Front (kg):	533.4	Right Rear (kg):	459.0
Left Front (kg):	578.8	Left Rear (kg):	435.9
Total Front (kg):	1112.2	Total Rear (kg):	894.9
% Total Weight:	55.4	% Total Weight:	44.6
UVW = TOTAL FRONT PLUS TOTAL REAR (KG):			2007.1

X	13.	UVW Test Vehicle Attitude: (All dimensions in millimeters)
X	13.1	Mark a point on the vehicle above the center of each wheel.
X	13.2	Place the vehicle on a level surface.

X 13.3 Measure perpendicular to the level surface to the 4 points marked on the body and record the measurements

RF:	767	LF:	767	RR:	770	LR:	700

X 14. Calculate the Rated Cargo and Luggage Weight (RCLW): 45 kg

X 14.1 Does the vehicle have the vehicle capacity weight (VCW) on the certification label or tire placard?

X
- X Yes, go to 14.3
- ☐ No, go to 14.2

☐ 14.2 VCW = Gross Vehicle Weight – UVW

VCW = _____ - _____ = _____

X 14.3 VCW = 521 kg (1150 lbs)

X 14.4 Does the certification or tire placard contain the Designated Seating Capacity (DSC)?

- X Yes, go to 14.6
- ☐ No, go to 14.5 and skip 14.6

☐ 14.5 DSC = Total number of seat belt assemblies = _____

X 14.6 DSC = 7

X 14.7 RCLW = VCW – (68 kg x DSC) = 521 kg - (68 kg x 7) = 45 kg

X 14.8 Is the vehicle certified as an MPV or bus (see the certification label on the door jamb)?

- X Yes, if the calculated RCLW is greater than 136 kg, use 136 kg as the RCLW. (S8.1.1)
- ☐ No, use the RCLW calculated in 14.7

X 15. Fully Loaded Weight (100% fuel fill): 2208.5 kg

X 15.1 Place the appropriate test dummy in both front outboard seating positions.

Driver: __ 5th female X 50th male
Passenger: __ 5th female X 50th male

X 15.2 Load the vehicle with the RCLW from 14.7 or 14.8 whichever is applicable.

X 15.3 Place the RCLW in the cargo area. Center the load over the longitudinal centerline of the vehicle. (S8.1.1 (d))

X 15.4 Record the vehicle weight at each wheel to determine the Fully Loaded Weight.

Right Front (kg):	577.9	Right Rear (kg):	515.7
Left Front (kg):	624.6	Left Rear (kg):	490.3
Total Front (kg):	1202.5	Total Rear (kg):	1006.0
% Total Weight:	54.5	% Total Weight:	45.6
% GVW	50.0	% GVW	51.7
(% GVW = Axle GVW divided by Vehicle GVW)			
Fully Loaded Weight = Total Front Plus Total Rear (kg):			2208.5

X 16. Fully Loaded Test Vehicle Attitude: (All dimensions in millimeters)

X 16.1 Place the vehicle on a level surface.

X 16.2 Measure perpendicular to the level surface to the 4 points marked on the body (see 13.1 above) and record the measurements

RF:	747	LF:	745	RR:	743	LR:	750

X 17. Drain the fuel system

X 18. Using purple dyed Stoddard solvent having the physical and chemical properties of Type 1 solvent or cleaning fluid, Table 1, ASTM Standard D484-71, "Standard Specifications for Hydrocarbon Dry-cleaning Solvents," fill the fuel tank to 92 - 94 percent of useable capacity.

X Fuel tank capacity x .94 = 75.7 liters (20.0 gallons) x .94 = 71.2 liters (18.8 gallons)

X Amount added 71.0 liters (18.77 gallons) 93.8%

X 19. Crank the engine to fill the fuel delivery system with Stoddard solvent

X 20. Calculate the test weight range.

X 20.1 Calculated Weight = UVW (see 12 above) + RCLW (see 14 above) + 2x(dummy weight)

2208.1 kg = 2007.1 kg + 45.0 kg + 156.0 kg

X 20.2 Test Weight Range = Calculated Weight (- 4.5 kg, - 9 kg.)
Max. Test Weight = Calculated Test Weight – 4.5 kg = 2203.6 kg
Min. Test Weight = Calculated Test Weight – 9 kg = 2199.1 kg

X 21. Remove the RCLW from the cargo area.

X 22. Drain transmission fluid, engine coolant, motor oil, and windshield washer fluid from the test vehicle so that Stoddard solvent leakage from the fuel system will be evident.

X 23. Vehicle Components Removed For Weight Reduction:
None

X 24. Secure the equipment and ballast in the load carrying area and distribute it, as nearly as possible, to obtain the proportion of axle weight indicated by the gross axle weight ratings and center it over the longitudinal centerline of the vehicle.

X 25. If necessary, add ballast to achieve the actual test weight.

X N/A

Weight of Ballast:

X 26. Ballast, including test equipment, must be contained so that it will not shift during the impact event or interfere with data collection or interfere with high-speed film recordings or affect the structural integrity of the vehicle or do anything else to affect test results. Care must be taken to assure that any attachment hardware added to the vehicle is not in the vicinity of the fuel tank or lines.

X 27. Record the vehicle weight at each wheel to determine the actual test weight.

Right Front (kg):	584.2	Right Rear (kg):	511.2
Left Front (kg):	625.1	Left Rear (kg):	482.6
Total Front (kg):	1209.3	Total Rear (kg):	993.8
% Total Weight:	54.9	% Total Weight:	45.1
% GVW	50.0	% GVW	51.7
(% GVW = Axle GVW divided by Vehicle GVW)			
TOTAL FRONT PLUS TOTAL REAR (kg):			2203.1

X 28. Is the test weight between the Max. Weight and the Min. Weight (See 20.2)?

X Yes

No, explain why not.

X 29. Test Weight Vehicle Attitude: (all dimensions in millimeters)

X 29.1 Place the vehicle on a level surface

X 29.2 Measure perpendicular to the level surface to the 4 points marked on the body (see 13 above) and record the measurements

RF:	748	LF:	746	RR:	748	LR:	760

X 30. Summary of test attitude

X 30.1 AS DELIVERED:

RF:	767	LF:	767	RR:	770	LR:	770

AS TESTED:

RF:	748	LF:	746	RR:	748	LR:	760

FULLY LOADED:

RF:	747	LF:	745	RR:	743	LR:	750

X 30.2 Is the “as tested” test attitude equal to or between the “fully loaded” and “as delivered” attitude?

X Yes

No, explain why not.

REMARKS:

I certify that I have read and performed each instruction.

Signature: 

Date: 9/12/06

DATA SHEET 33

VEHICLE ACCELEROMETER LOCATION AND MEASUREMENT

Test Vehicle: 2005 Dodge Grand Caravan
Test Program: FMVSS 208
Test Technician: Nick Kosinski

NHTSA No.: C50313
Test Date: 9/12/06

IMPACT ANGLE:	Zero Degrees		
BELTED DUMMIES (YES/NO):	No		
TEST SPEED:	_X_ 32 to 40 kmph	__ 0 to 48 kmph	__ 0 to 56 kmph
DRIVER DUMMY:	__ 5th female	_X_ 50th male	
PASSENGER DUMMY:	__ 5th female	_X_ 50th male	

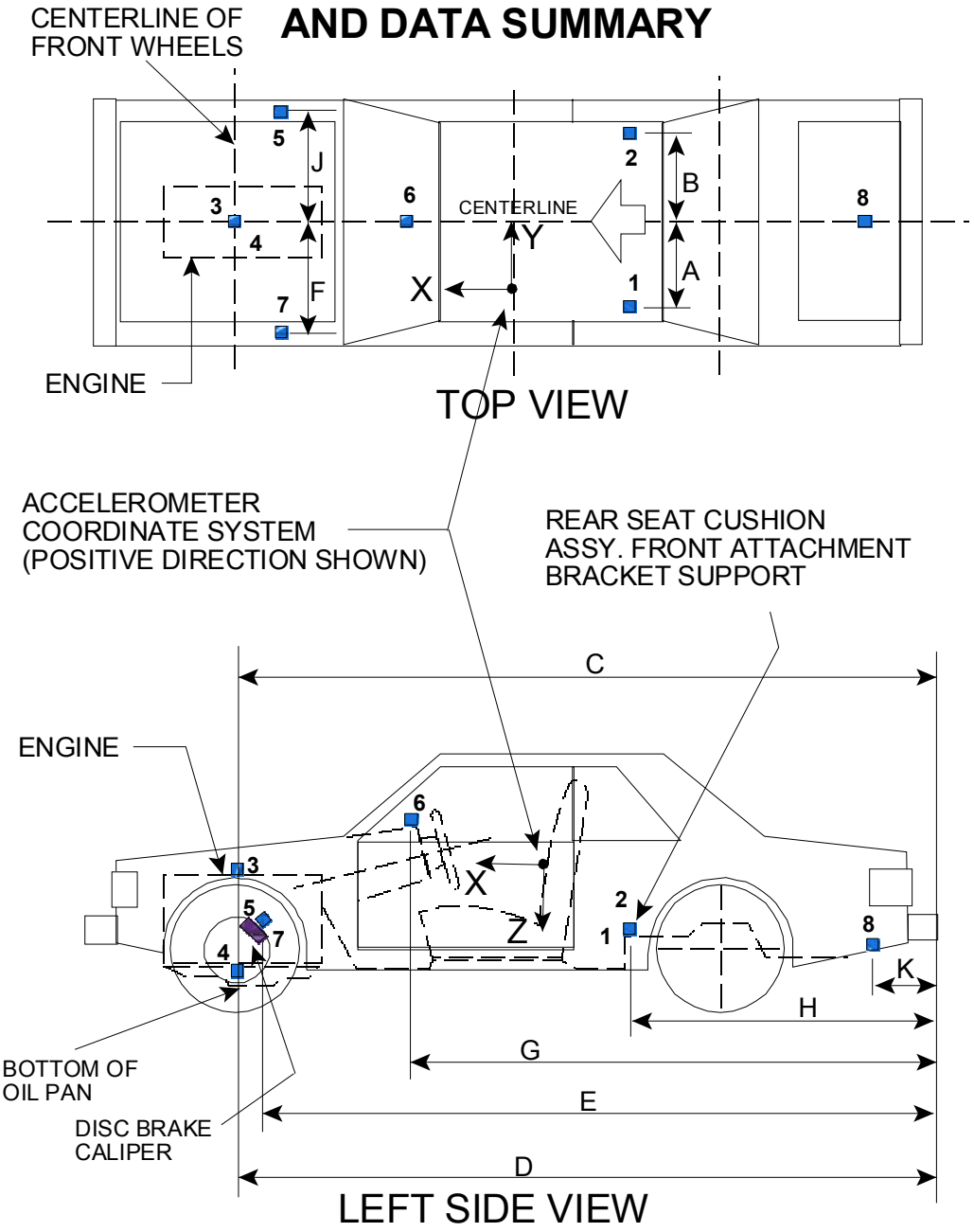
X	1.	Find the location where the vertical plane parallel to the longitudinal centerline of the vehicle and through the center of the left front outboard seating position intersects the left rear seat cross member. Install an accelerometer at this intersection on the rear seat cross member to record x-direction accelerations. Record the location on the following chart.
X	2.	Find the location where the vertical plane parallel to the longitudinal centerline of the vehicle and through the center of the right front outboard seating position intersects the right rear seat cross member. Install an accelerometer at this intersection on the rear seat cross member to record x-direction accelerations. Record the location on the following chart.
X	3.	Find the location where a vertical plane through the longitudinal centerline of the vehicle and a vertical transverse plane through the center of the two wheels on opposite sides of the engine intersect at the top of the engine. Install an accelerometer at this intersection to record x-direction accelerations. Record the location on the following chart.
X	4.	Find the location where a vertical plane through the longitudinal centerline of the vehicle and a vertical transverse plane through the center of the two wheels on opposite sides of the engine intersect the bottom of the engine. Install an accelerometer at this intersection to record x-direction accelerations. Record the location on the following chart
X	5.	Install an accelerometer on the right front brake caliper to record x-direction accelerations. Record the location on the following chart
X	6.	Find the location where a vertical plane through the longitudinal centerline of the vehicle intersects the top of the instrument panel. Install an accelerometer at this intersection to record x-direction accelerations. Record the location on the following chart
X	7.	Install an accelerometer on the left front brake caliper to record x-direction accelerations. Record the location on the following chart
X	8.	Find the location where a vertical plane through the longitudinal centerline of the vehicle intersects the floor of the trunk. Install an accelerometer on the trunk floor at this intersection to record z-direction accelerations. Record the location on the following chart

REMARKS:

I certify that I have read and performed each instruction.

Signature: Nick Kosinski Date: 9/12/06

VEHICLE ACCELEROMETER LOCATION AND DATA SUMMARY



Dimensions Corresponding To The Letters “A” Through “K” (Excluding “I”) Are Recorded In The Table On The Following Page.
Accelerometers Corresponding To The Numbers 1 Through 8 Are Specified On The Preceding Page.

DATA SHEET 33

VEHICLE ACCELEROMETER LOCATION AND MEASUREMENTS

DIMENSION	LENGTH (mm)	
PRETEST VALUES		
A (LH Rear Seat Xmbr)	123	
B (RH Rear Seat Xmbr)	123	
C (Engine Top)	4448	
D (Engine Bottom)	4315	
E (Caliper)	Right Side 4240	Left Side 4240
F (Left Caliper)	686	
G (IP)	3527	
H (Seat)	1928	
J (Right Caliper)	686	
K (Trunk)	826	
POST TEST VALUES		
A (LH Rear Seat Xmbr)	123	
B (RH Rear Seat Xmbr)	123	
C (Engine Top)	4410	
D (Engine Bottom)	4251	
E (Caliper)	Right Side 4246	Left Side 4136
F (Left Caliper)	635	
G (IP)	3541	
H (Seat)	1928	
J (Right Caliper)	726	
K (Trunk)	826	

DATA SHEET 34

PHOTOGRAPHIC TARGETS

Test Vehicle: 2005 Dodge Grand Caravan NHTSA No.: C50313
Test Program: FMVSS 208 Test Date: 9/12/06
Test Technician: Nick Kosinski

IMPACT ANGLE:	Zero Degrees		
BELTED DUMMIES (YES/NO):	No		
TEST SPEED:	_X_ 32 to 40 kmph	__ 0 to 48 kmph	__ 0 to 56 kmph
DRIVER DUMMY:	__ 5th female	_X_ 50th male	
PASSENGER DUMMY:	__ 5th female	_X_ 50th male	

X	1.	FMVSS 208 vehicle targeting requirements (See Figures 28A and 28B)
X	1.1	Targets A1 and A2 are on flat rectangular panels.
X	1.2	Three circular targets at least 90 mm in diameter and with black and yellow quadrants are mounted at the front on the outboard sides of A1 and A2. The center of each circular target is 100 mm from the one next to it.
X		Distance between targets (mm): 100 mm
X	1.3	Three circular targets at least 90 mm in diameter and with black and yellow quadrants are mounted at the back on the outboard sides of on A1 and A2. The center of each circular target is 100 mm from the one next to it.
X		Distance between targets (mm): 100 mm
X	1.4	The distance between the first circular target at the front of A1 and A2 and the last circular target at the back of A1 and A2 is at least 915 mm.
X		Distance between the first and last circular targets (mm): 915 mm
X	1.5	Firmly fix target A1 on the vehicle roof in the vertical longitudinal plane that is coincident with the midsagittal plane of the driver dummy.
X	1.6	Firmly fix target A2 on the vehicle roof in the vertical longitudinal plane that is coincident with the midsagittal plane of the passenger dummy.
X	1.7	Two circular targets (C1 and C2) at least 90 mm in diameter and with black and yellow quadrants are mounted on the outside of the driver door. The centers of each circular target are at least 610 mm apart.
X		Distance between targets (mm): 610 mm
X	1.8	Two circular targets (C1 and C2) at least 90 mm in diameter and with black and yellow quadrants are mounted on the outside of the passenger door. The centers of each circular target are at least 610 mm apart.
X		Distance between targets (mm): 610 mm
X	1.9	Place tape with squares having alternating colors on the top portion of the steering wheel.
X	1.10	Chalk the bottom portion of the steering wheel
X	1.11	Is this an offset test?
		Yes, continue with this section
X		No, go to 2.
	1.12	Measure the width of the vehicle.
		Vehicle width (mm):

	1.13	Find the centerline of the vehicle. (½ of the vehicle width)
	1.14	Find the line parallel to the centerline of the vehicle and 0.1 x vehicle width from the centerline of the vehicle.
	1.15	Apply 25 mm wide tape with alternating black and yellow squares parallel to and on each side of the line found in 1.14. The edge of each tape shall be 50 mm from the line found in 1.14. The tape shall extend from the bottom of the bumper to the front edge of the windshield. (Figure 28D
X	2.	Barrier Targeting
X	2.1	Fix two stationary targets D1 and D2 to the barrier as shown in the Figure 28A. One target is in the vertical longitudinal plane that is coincident with the midsagittal plane of the driver dummy. The other is in the vertical longitudinal plane that is coincident with the midsagittal plane of the passenger dummy
X	2.2	Targets D1 and D2 are on a rectangular panel.
X	2.3	Three circular targets at least 90 mm in diameter and with black and yellow quadrants are mounted on the sides of the rectangular panel away from the longitudinal centerline of the vehicle. The center of each circular target is 100 mm from the one next to it.
X		Distance between circular targets on D1 (mm): 100 mm
X		Distance between circular targets on D2 (mm): 100 mm
X	3.	FMVSS 208 Dummy Targeting Requirements
X	3.1	Place a circular target with black and yellow quadrants on both sides of the driver dummy head as close as possible to the center of gravity of the head in the x and z direction (relative to the measuring directions of the accelerometers).
X	3.2	Place a circular target with black and yellow quadrants on both sides of the passenger dummy head as close as possible to the center of gravity of the head in the x and z direction (relative to the measuring directions of the accelerometers).
X	3.3	Place a circular target with black and yellow quadrants on the outboard shoulder of the driver dummy. Place the target as high up on the arm as possible at the intersection of the arm and shoulder. The sleeve of the shirt on the dummy may be cut to make the target visible, but do not remove any material.
X	3.4	Place a circular target with black and yellow quadrants on the outboard shoulder of the passenger dummy. Place the target as high up on the arm as possible at the intersection of the arm and shoulder. The sleeve of the shirt on the dummy may be cut to make the target visible, but do not remove any material.
X	4.	FMVSS 204 Targeting Requirements
X	4.1	Is an FMVSS 204 indicant test ordered on the “COTR Vehicle Work Order?”
		Yes, continue with this form.
X		No, this form is complete.
	4.2	Resection panel (Figure 28C)
	4.2.1	The panel deviates no more than 6 mm from perfect flatness when suspended vertically
	4.2.2	The 8 targets on the panel are circular targets at least 90 mm in diameter and with black and yellow quadrants.
	4.2.3	The center of each of the 4 outer targets are placed within 1 mm of the corners of a square measuring 914 mm on each side.
	4.2.4	Locate another square with 228 mm sides and with the center of this square coincident with the center of the 914 mm square.
	4.2.5	The center of the 4 inner targets are placed at the midpoints of each of the 228 mm sides.

	4.3	Place a circular target at least 90 mm in diameter and with black and yellow quadrants on a material (cardboard, metal, etc.) that can be taped to the top of the steering column.
	4.4	Tape the target from 4.3 to the top of the steering column in a manner that does not interfere with the movement of the steering column in a crash

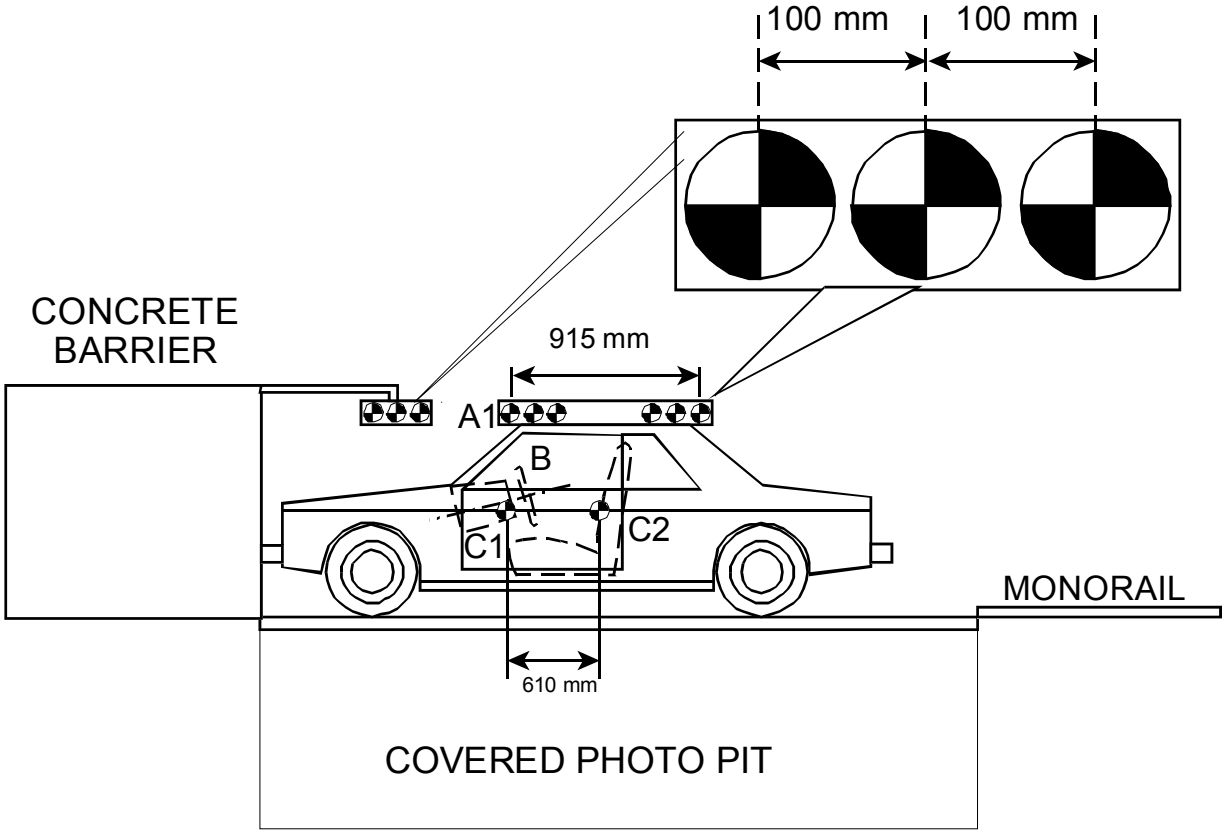
REMARKS:

I certify that I have read and performed each instruction.

Signature: 

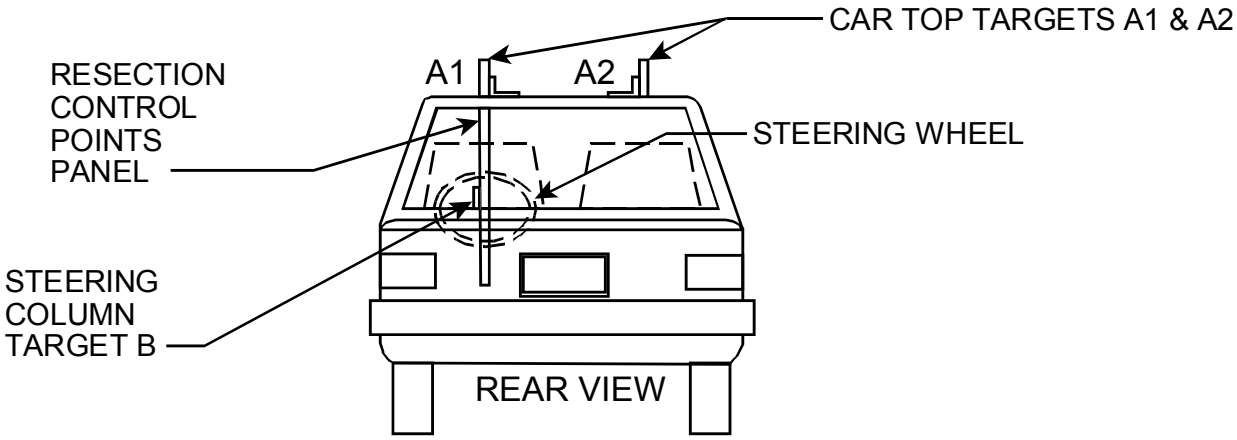
Date: 9/12/06

REFERENCE PHOTO TARGETS

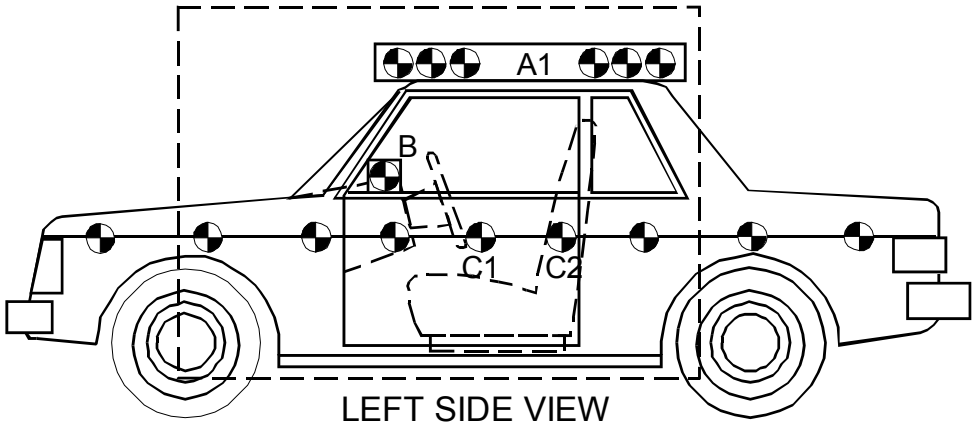


LEFT SIDE VIEW

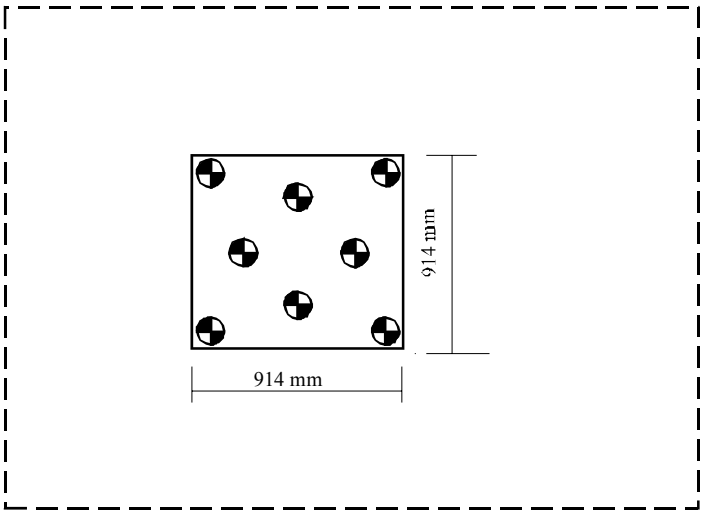
RESECTION PANEL TARGETING ALIGNMENT



TEST RUN STEERING COLUMN CAMERA VIEW OF TYPICAL TIME ZERO VEHICLE POSITION



PRE-RUN STEERING COLUMN HIGH SPEED CAMERA VIEW



LEFT SIDE VIEW

DATA SHEET 35

CAMERA LOCATIONS

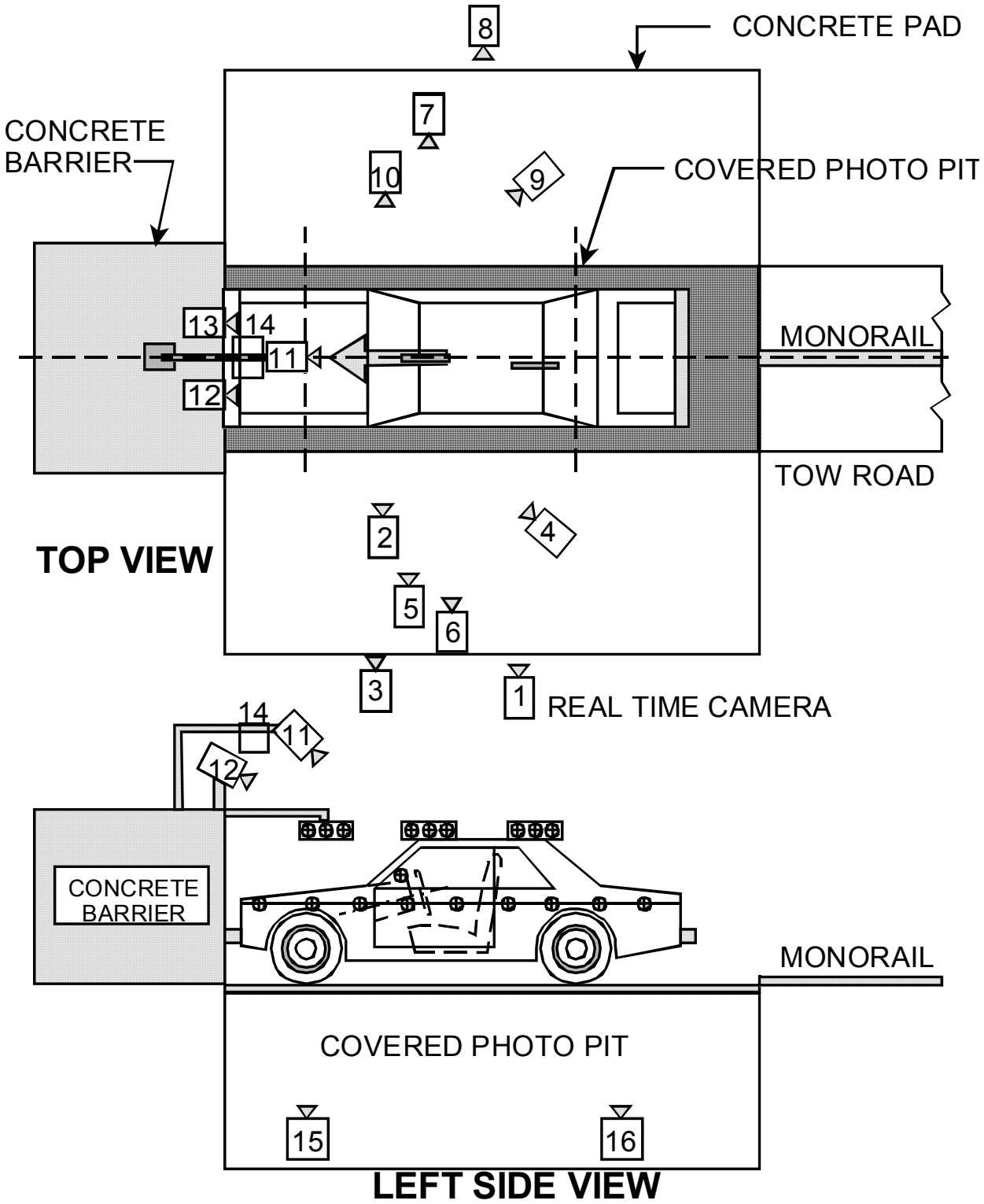
Test Vehicle: 2005 Dodge Grand Caravan
Test Program: FMVSS 208

NHTSA No.: C50313
Test Date: 9/12/06
Time: 11:15 am

CAMERA NO.	VIEW	CAMERA POSITIONS (mm) *			LENS (mm)	SPEED (fps)
		X	Y	Z		
1	Real Time Left Side View				13	24
2	Left Side View (Barrier face to front seat backs)	835	-4450	1085	24	1500
3	Left Side View (Driver)	1285	-6095	1405	35	400
4	Left Side View (B-post aimed toward center of steering wheel)	5780	-4385	2050	50	400
5	Left Side View (Steering Column)	945	-4750	1355	25	400
6	Left Side View (Steering Column)	960	-4740	910	25	400
7	Right Side View (Overall)	1320	7875	1255	19	1500
8	Right Side View (Passenger)	955	7455	1500	35	400
9	Right Side View (Angle)	5265	5715	2070	50	400
10	Right Side View (Front door)	495	6800	1120	25	1500
11	Front View Windshield	-1915	650	2690	12.5	400
12	Front View Driver	-1710	130	2280	19	1500
13	Front View Passenger	-1695	1080	2275	19	500
14	Overhead Barrier Impact View	310	650	5050	19	1500
15	Pit Camera Engine View	205	650	-3150	24	1500
16	Pit Camera Fuel Tank View	2180	650	-3150	24	1500

*COORDINATES:
+X - forward of impact plane
+Y - right of monorail centerline
+Z - above ground level

CAMERA POSITIONS FOR FMVSS 208



DATA SHEET 36

APPENDIX F
DUMMY POSITIONING PROCEDURES
FOR DRIVER TEST DUMMY CONFORMING TO SUBPART E OF PART 572

Test Vehicle: 2005 Dodge Grand Caravan NHTSA No.: C50313
Test Program: FMVSS 208 Test Date: 9/12/06
Test Technician: Eric Peschman

IMPACT ANGLE:	Zero Degrees		
BELTED DUMMIES (YES/NO):	No		
TEST SPEED:	_X_ 32 to 40 kmph	__ 0 to 48 kmph	__ 0 to 56 kmph
DRIVER DUMMY:	__ 5th female	_X_ 50th male	
PASSENGER DUMMY:	__ 5th female	_X_ 50th male	

_X_ 1. Position the seat's adjustable lumbar supports so that the lumbar support is in its lowest, retracted or deflated adjustment position. (S8.1.3)
__N/A – No lumbar adjustment

_X_ 2. Position any adjustable parts of the seat that provide additional support so that they are in the lowest or most open adjustment position. (S20.1.8.2)
X N/A – No additional support adjustment

_X_ 3. If the seat cushion adjusts fore and aft, independent of the seat back, set this adjustment to the full rearward position. (S20.1.9.3)
X N/A – No independent fore-aft seat cushion adjustment

_X_ 4. Use the seat markings determined during the completion of Data Sheet 14 to set the mid-fore-aft position, full down height position and the seat cushion angle. (S8.1.2)

_X_ 5. The seat back angle, if adjustable, is set at the manufacturer's nominal design riding position for a 50th percentile adult male in the manner specified by the manufacturer. (S4.5.4.1 (b) and S8.1.3)

__N/A – No seat back angle adjustment
Manufacturer's design seat back angle 22° on seat back or 8° from upright position
Tested seat back angle 8° from upright position or 11.7° on Head rest post

_X_ 6. If adjustable, set the head restraint at the full up and full forward position. Any adjustment of the head restraint shall be used to position it full forward. For example, if it rotates, rotate it such that the head restraint extends as far forward as possible. (S8.1.3)
__N/A – No head restraint adjustment

_X_ 7. Place any adjustable seat belt anchorages at the vehicle manufacturer's nominal design position for a 50th percentile adult male occupant (S8.1.3)
__N/A – No adjustable upper seat belt anchorage
Manufacturer's specified anchorage position. 2nd Down From Top
Tested anchorage position 2nd Down From Top (Unbelted Test)

_X_ 8. Place the adjustable accelerator pedal in the full forward position.
__N/A – the accelerator pedal is not adjustable.

X 9. Set the steering wheel hub at the geometric center of the full range of driving positions including any telescoping positions as determined in data sheet 14.

X 10. Place the dummy in the seat such that the midsagittal plane is coincident with the longitudinal seat cushion markings as determined in item 1.18 of Data Sheet 14 and the upper torso rests against the seat back. (S10.4.1.1 & S10.4.1.2)

X 11. Rest the thighs on the seat cushion. (S10.5)

X 12. Position the H-point of the dummy within 0.5 inch of the vertical dimension and 0.5 inch of the horizontal dimension of a point 0.25 inch below the H-point determined by using the equipment and procedures specified in SAE J826 (APR 1980). (S10.4.2.1) Then measure the pelvic angle with respect to the horizontal using the pelvic angle gage.

Adjust the dummy position until these three measurements are within the specifications. (S10.4.2.1 and S10.4.2.2)
.236 horizontal inches from the point 0.25 below the determined H-point (0.5 inch max.) (S10.4.2.1)
.261 vertical inches from the point 0.25 below the determined H-point (0.5 inch max.) (S10.4.2.1)
22.6° pelvic angle (20^o to 25^o)

X 13. Is the head level within $\pm$ 0.5^o? (S10.1)
X Yes, go to 14
_ No, go to 13.1

__13.1 Adjust the position of the H-point. (S10.1)

__13.2 Is the head level within $\pm$ 0.5^o? (S10.1)
__Yes, record the following, then go to 15. __No, go to 13.3
____horizontal inches from the point 0.25 below the determined H-point (0.5 inch max.) (S10.4.2.1)
____vertical inches from the point 0.25 below the determined H-point (0.5 inch max.) (S10.4.2.1)
____pelvic angle (20^o to 25^o) (S10.4.2.2)

__13.3 Adjust the pelvic angle. (S10.1)

__13.4 Is the head level within $\pm$ 0.5^o? (S10.1)
__Yes, record the following, then go to 14. __No, go to 13.5
____horizontal inches from the point 0.25 below the determined H-point (0.5 inch max.) (S10.4.2.1)
____vertical inches from the point 0.25 below the determined H-point (0.5 inch max.) (S10.4.2.1)
____pelvic angle (20^o to 25^o) (S10.4.2.2)

__13.5 Adjust the neck bracket of the dummy the minimum amount necessary from the non-adjusted "0" setting until the head is level within ± 0.5°. (S10.1)
Record the following, then go to 14 (The neck bracket was moved one notch)
__ horizontal inches from the point 0.25 below the determined H-point (0.5 inch max.) (S10.4.2.1)
__vertical inches from the point 0.25 below the determined H-point (0.5 inch max.) (S10.4.2.1)
__ pelvic angle (20° to 25°)

X 14. Set the distance between the outboard knee clevis flange surfaces at 10.6 inches.
10.6" measured distance (10.6 inches) (S10.5)

X 15. Can the right foot be placed on the accelerator?
X Yes, go to 15.1 and skip 15.2
__No, go to 15.2

X 15.1. To the extent practicable keep the right thigh and the leg in a vertical plane (S10.5) while resting the foot on the undepressed accelerator pedal with the rearmost point of the heel on the floor pan in the plane of the pedal. (S10.6.1.1)

__15.2 Initially set the foot perpendicular to the leg and then place it as far forward as possible in the direction of the pedal centerline with the rearmost point of the heel resting on the floor pan. (S10.6.1.1)

__15.2.1 Move the adjustable pedal to its most rearward position or until the right foot is flat on the pedal, whichever occurs first. (S10.6.1.1)
__N/A – the accelerator pedal is not adjustable

X 16. Does the vehicle have a foot rest?
X Yes, go to 16.1
__No, go to 17

X 16.1 With the left thigh and leg in a vertical plane, place the foot on the foot rest with the heel resting on the floor pan. (S10.6.1.2)

X 16.1.1 Is the left foot elevated above the right foot?
__Yes, go to 16.1.2 and position the foot off the foot rest
X No, go to 17

__16.1.2 Check the ONLY one of the following that applies

__The foot reaches the toeboard without adjusting the foot or leg. To the extent practicable keep the left thigh and the leg in a vertical longitudinal plane (S10.5) and place the foot on the toeboard, skip 16.1.3 (S10.6.1.2)

__The foot reaches the toeboard but contacts the brake or clutch pedal and must be rotated to avoid pedal contact. To the extent practicable keep the left thigh and the leg in a vertical longitudinal plane (S10.5) and place the foot on the toeboard. The foot was rotated about the leg to avoid pedal contact, skip 16.1.3 (S10.6.1.2)

__The foot reaches the toeboard but contacts the brake or clutch pedal and the foot and leg must be rotated to avoid pedal contact. To the extent practicable keep the left thigh and the leg in a vertical longitudinal plane (S10.5) and place the foot on the toeboard. The foot was rotated about the leg and the leg was rotated outboard about the hip the minimum distance necessary to avoid pedal contact, skip 16.1.3 (S10.6.1.2)

__N/A – the foot does not reach the toeboard, go to 16.1.3

__16.1.3 Check the ONLY one of the following that applies

__The foot did not contact the brake or clutch pedal. To the extent practicable keep the left thigh and the leg in a vertical longitudinal plane (S10.5). Set the foot perpendicular to the leg and place it as far forward as possible with the heel resting on the floor pan. (S10.6.1.2)

__The foot did contact the brake or clutch pedal and the foot was rotated to avoid contact. To the extent practicable keep the left thigh and the leg in a vertical longitudinal plane (S10.5). Set the foot perpendicular to the leg and place it as far forward as possible with the heel resting on the floor pan and rotate the foot the minimum amount to avoid pedal contact. (S10.6.1.2)

__The foot did contact the brake or clutch pedal and the foot was rotated about the leg and the leg was rotated outboard about the hip the minimum distance necessary to avoid pedal contact. Set the foot perpendicular to the leg and place it as far forward as possible with the heel resting on the floor pan and rotate the foot about the leg and the thigh and leg outboard about the hip the minimum distance necessary to avoid pedal contact. (S10.6.1.2)

X 17. Place the right upper arm adjacent to the torso with the centerline as close to a vertical plane as possible. (S10.2.1)

X 18. Is the driver seat belt used for this test?
__Yes, continue
X No, go to 19

__18.1 Fasten the seat belt around the dummy.

__18.2 Remove all slack from the lap belt portion. (S10.9)

__18.3 Pull the upper torso webbing out of the retractor and allow it to retract; repeat this four times. (S10.9)

__18.4 Apply a 2 to 4 pound tension load to the lap belt. (S10.9)
____pound load applied

__18.5 Is the belt system equipped with a tension-relieving device?
__Yes, continue
__No, go to 19

__18.6 Introduce the maximum amount of slack into the upper torso bet that is recommended by the vehicle manufacturer in the vehicle owner's manual. (S10.9).

_X_ 19. Place the left upper arm adjacent to the torso with the centerline as close to a vertical plane as possible. (S10.2.1)

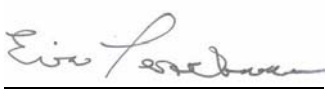
_X_ 20. Place the right hand with the palm in contact with the steering wheel at the rim's horizontal centerline and with the thumb over the steering wheel. (S10.3.1)

_X_ 21. Place the left hand with the palm in contact with the steering wheel at the rim's horizontal centerline and with the thumb over the steering wheel. (S10.3.1)

_X_ 22. Tape the thumb of each hand to the steering wheel by using masking tape with a width of 0.25 inch. The length of the tape shall only be enough to go around the thumb and steering wheel one time.

REMARKS:

I certify that I have read and performed each instruction.

Signature:  Date: 9/12/06

APPENDIX F

DUMMY POSITIONING PROCEDURES FOR PASSENGER TEST DUMMY CONFORMING TO SUBPART E OF PART 572

Test Vehicle: 2005 Dodge Grand Caravan NHTSA No.: C50313
Test Program: FMVSS 208 Test Date: 9/12/06
Test Technician: Joe Fleck

IMPACT ANGLE:	Zero Degrees		
BELTED DUMMIES (YES/NO):	No		
TEST SPEED:	_X_ 32 to 40 kmph	__ 0 to 48 kmph	__ 0 to 56 kmph
DRIVER DUMMY:	__ 5th female	_X_ 50th male	
PASSENGER DUMMY:	__ 5th female	_X_ 50th male	

X 1. The seat is a bench seat for which the adjustments have already been made for the driver and there are no independent adjustments that can be made for the passenger. Go to 7.
X N/A- the passenger seat adjusts independently of the driver seat.

X 2. Position the seat's adjustable lumbar supports so that the lumbar support is in its lowest, retracted or deflated adjustment position. (S8.1.3)
X N/A – No lumbar adjustment

X 3. Position any adjustable parts of the seat that provide additional support so that they are in the lowest or most open adjustment position. (S20.1.8.2)
X N/A – No additional support adjustment

X 4. If the seat cushion adjusts fore and aft, independent of the seat back, set this adjustment to the full rearward position. (S20.1.9.3)
X N/A – No independent fore-aft seat cushion adjustment

X 5. Use the seat markings determined during the completion of Data Sheet 14 to set the mid-fore-aft position, full down height position and the seat cushion angle. (S8.1.2)

X 6. The seat back angle, if adjustable, is set at the manufacturer's nominal design riding position for a 50th percentile adult male in the manner specified by the manufacturer. (S4.5.4.1 (b) and S8.1.3)

__N/A – No seat back angle adjustment
Manufacturer's design seat back angle 18° on seat back or 4° from upright position
Tested seat back angle 4° from upright position or 8.5° on Head rest post

X 7. If adjustable, set the head restraint at the full up and full forward position. Any adjustment of the head restraint shall be used to position it full forward. For example, if it rotates, rotate it such that the head restraint extends as far forward as possible. (S8.1.3)
__N/A – No head restraint adjustment

X 8. Place any adjustable seat belt anchorages at the vehicle manufacturer's nominal design position for a 50th percentile adult male occupant (S8.1.3)
__N/A – No adjustable upper seat belt anchorage
Manufacturer's specified anchorage position. 2nd Down From Top
Tested anchorage position 2nd Down From Top (Unbelted Test)
__ N/A - the seat does not have a fore-aft adjustment

X 9. Place the dummy in the seat such that the midsagittal plane is coincident with the longitudinal seat cushion markings as determined in item 2.19 of Data Sheet 14 and the upper torso rests against the seat back. (S10.4.1.1 & S10.4.1.2)

X 10. Rest the thighs on the seat cushion. (S10.5)

X 11. Position the H-point of the dummy within 0.5 inch of the vertical dimension and 0.5 inch of the horizontal dimension of a point 0.25 inch below the H-point determined by using the equipment and procedures specified in SAE J826 (APR 1980). (S10.4.2.1) Then measure the pelvic angle with respect to the horizontal using the pelvic angle gage.

Adjust the dummy position until these three measurements are within the specifications. (S10.4.2.1 and S10.4.2.2)
.118 horizontal inches from the point 0.25 below the determined H-point (0.5 inch max.) (S10.4.2.1)
.065 vertical inches from the point 0.25 below the determined H-point (0.5 inch max.) (S10.4.2.1)
24.2° pelvic angle (20^o to 25^o)

X 12. Is the head level within $\pm$ 0.5^o? (S10.1)
X Yes, go to 13
__No, go to 12.1

__12.1 Adjust the position of the H-point. (S10.1 and S10.4.2.1)

__12.2 Is the head level within $\pm$ 0.5^o? (S10.1)
__Yes, record the following, then go to 13. __No, go to 12.3
____horizontal inches from the point 0.25 below the determined H-point (0.5 inch max.) (S10.4.2.1)
____vertical inches from the point 0.25 below the determined H-point (0.5 inch max.) (S10.4.2.1)
____pelvic angle (20^o to 25^o) (S10.4.2.2)

__12.3 Adjust the pelvic angle. (S10.1)

__12.4 Is the head level within $\pm$ 0.5^o? (S10.1)
__Yes, record the following, then go to 13. __No, go to 12.5
____horizontal inches from the point 0.25 below the determined H-point (0.5 inch max.) (S10.4.2.1)
____vertical inches from the point 0.25 below the determined H-point (0.5 inch max.) (S10.4.2.1)
____pelvic angle (20^o to 25^o) (S10.4.2.2)

__12.5 Adjust the neck bracket of the dummy the minimum amount necessary from the non-adjusted "0" setting until the head is level within ± 0.5°. (S10.1)
Record the following, then go to 13 (The neck bracket was moved four notches)
__horizontal inches from the point 0.25 below the determined H-point (0.5 inch max.) (S10.4.2.1)
__vertical inches from the point 0.25 below the determined H-point (0.5 inch max.) (S10.4.2.1)
__pelvic angle (20° to 25°) (S10.4.2.2)

X 13. Set the distance between the outboard knee clevis flange surfaces at 10.6 inches.
10.6" measured distance (10.6 inches) (S10.5)

X 14. Check the only one of the following that applies:

__To the extent practicable keep the left thigh and leg in a vertical plane and the right thigh and leg in a vertical plane, place the feet on the toeboard with the heels resting on the floor pan as close as possible to the intersection of the floor pan and toeboard.

__The feet cannot be placed flat on the toeboard. To the extent practicable keep the left thigh and leg in a vertical plane and the right thigh and leg in a vertical plane, set the feet perpendicular to the legs and place them as far forward as possible with the heels resting on the floor pan.

X The vehicle has a wheelhouse projection. To the extent practicable keep the left thigh and leg in a vertical plane and the right thigh and leg in a vertical plane, set the feet perpendicular to the legs and place them as far forward as possible with the heels resting on the floor pan. Do not set the feet on the wheelhouse projection.

__The vehicle has a wheelhouse projection and the feet cannot be placed on the toeboard. To the extent practicable keep the left thigh and leg in a vertical plane and the right thigh and leg in a vertical plane, set the feet perpendicular to the legs and place them as far forward as possible with the heel resting on the floor pan. . Do not set the feet on the wheelhouse projection.

X 15. Place the left upper arm in contact with the seat back and side of the torso. (S10.2.2)

X 16. Is the passenger seat belt used for this test?
__Yes, continue
X No, go to 17

__16.1 Fasten the seat belt around the dummy.

__16.2 Remove all slack from the lap belt portion. (S10.9)

__16.3 Pull the upper torso webbing out of the retractor and allow it to retract; repeat this four times. (S10.9)

__16.4 Apply a 2 to 4 pound tension load to the lap belt. (S10.9)
____pound load applied

__16.5 Is the belt system equipped with a tension relieving device?
__Yes, continue
__No, go to 17

__16.6 Introduce the maximum amount of slack into the upper torso bet that is recommended by the vehicle manufacturer in the vehicle owner's manual. (S10.9). Go to 17.

X 17. Place the right upper arm in contact with the seat back and side of the torso. (S10.2.2)

X 18. Place the left hand palm in contact with the outside of the left thigh and the little finger in contact with the seat cushion. (S10.3.2)

X 19. Place the right hand palm in contact with the outside of the right thigh and the little finger in contact with the seat cushion. (S10.3.2)

REMARKS:

I certify that I have read and performed each instruction.

Signature: Joe Fleck Date: 9/12/06

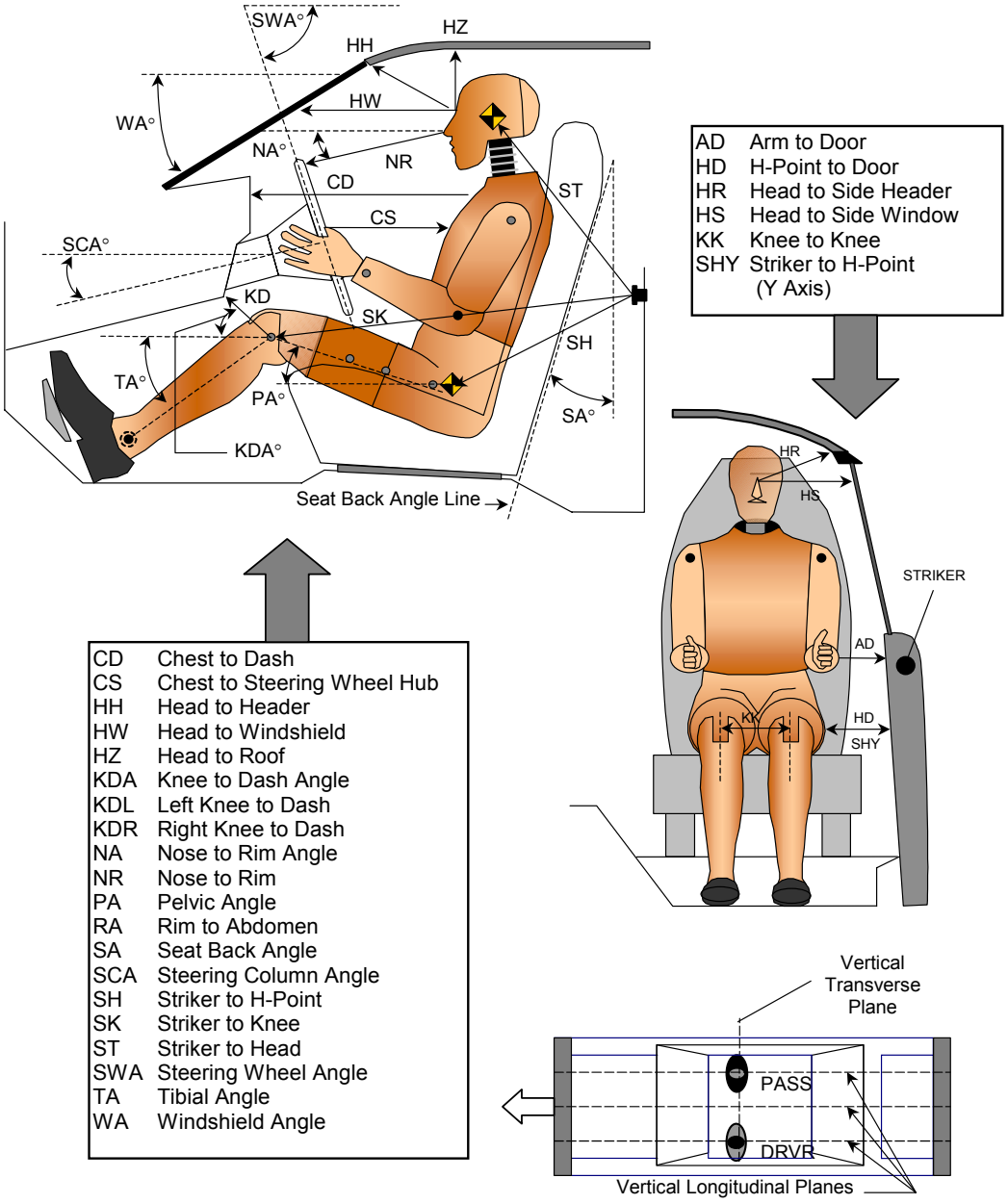
DATA SHEET 37

DUMMY MEASUREMENTS

Test Vehicle: 2005 Dodge Grand Caravan
Test Program: FMVSS 208
Test Technician: Eric Peschman

NHTSA No.: C50313
Test Date: 9/12/06

DUMMY MEASUREMENTS FOR FRONT SEAT OCCUPANTS



DATA SHEET 37

DUMMY MEASUREMENTS

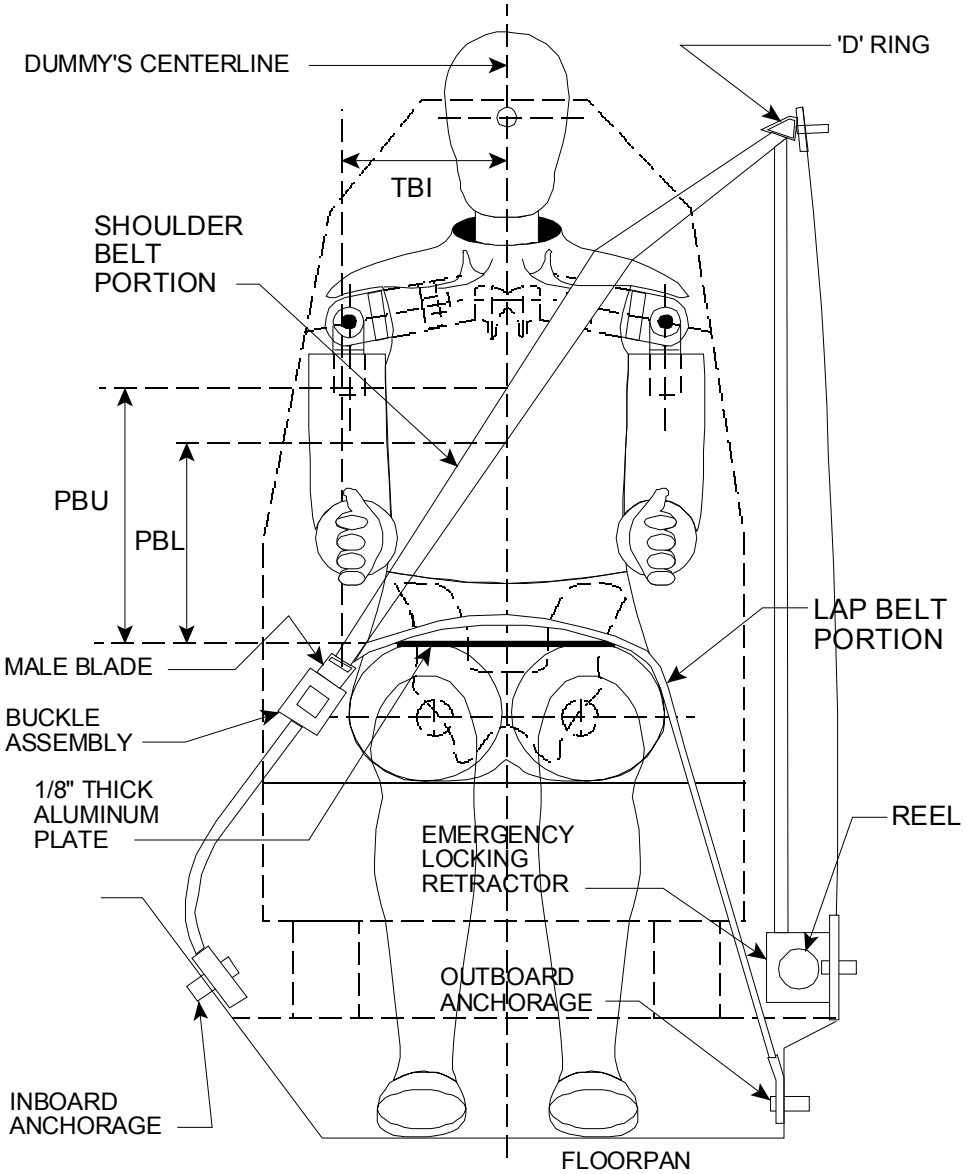
Test Vehicle: 2005 Dodge Grand Caravan
Test Program: FMVSS 208
Test Technician: Eric Peschman

NHTSA No.: C50313
Test Date: 9/12/06

TEST DUMMY POSITION MEASUREMENTS

Code	Measurement Description	Driver SN 401		Passenger SN 403	
		Length (mm)	Angle (°)	Length (mm)	Angle (°)
WA	Windshield Angle		28.9		
SWA	Steering Wheel Angle		63.8		
SCA	Steering Column Angle		25.5		
SA	Seat Back Angle (On Headrest)		11.7		8.5
HZ	Head to Roof (Z)	213		171	
HH	Head to Header	372	20.5	373	16.9
HW	Head to Windshield	628	0	540	0
HR	Head to Side Header (Y)	196		172	
NR	Nose to Rim	410	15.0		
CD	Chest to Dash	581		570	
CS	Chest to Steering Hub	370	14.5		
RA	Rim to Abdomen	164	0		
KDL	Left Knee to Dash	154	35.1	145	
KDR	Right Knee to Dash	188		143	19.9
PA	Pelvic Angle		22.6		24.2
TA	Tibia Angle		56.7		66.1
KK	Knee to Knee (Y)	290		275	
SK	Striker to Knee	621	84.1	643	79.5
ST	Striker to Head	656	8.9	696	9.7
SH	Striker to H-Point	222	83.1	237	83.4
SHY	Striker to H-Point (Y)	269		269	
HS	Head to Side Window	321		313	
HD	H-Point to Door (Y)	162		133	
AD	Arm to Door (Y)	148		152	
AA	Ankle to Ankle	276		210	

SEAT BELT POSITIONING DATA



FRONT VIEW OF DUMMY

SEAT BELT POSITIONING MEASUREMENTS

Measurement Description	Units	Driver	Passenger
PBU - Top surface of reference to belt upper edge	mm	N/A	N/A
PBL - Top surface of reference to belt lower edge	mm	N/A	N/A

DATA SHEET 38

CRASH TEST

Test Vehicle: 2005 Dodge Grand Caravan
Test Program: FMVSS 208
Test Technician: Eric Peschman

NHTSA No.: C50313
Test Date: 9/12/06

IMPACT ANGLE:	Zero Degrees		
BELTED DUMMIES (YES/NO):	No		
TEST SPEED:	_X_ 32 to 40 kmph	__ 0 to 48 kmph	__ 0 to 56 kmph
DRIVER DUMMY:	__ 5th female	_X_ 50th male	
PASSENGER DUMMY:	__ 5th female	_X_ 50th male	

X	1.	Vehicle underbody painted
X	2.	The speed measuring devices are in place and functioning.
X	3.	The speed measuring devices are 1.0 m from the barrier (spec. 1.5m) and 30 cm from the barrier (spec. is 30 cm)
X	4.	Convertible top is in the closed position.
		X N/A, not a convertible
X	5.	Instrumentation and wires are placed so the motion of the dummies during impact is not affected.
X	6.	Tires inflated to pressure on tire placard or if it does not have a tire placard because it is not a passenger car, then inflated to the tire pressure specified in the owner information.

250 kpa front left tire	250 kpa specified on tire placard or in owner information
250 kpa front right tire	250 kpa specified on tire placard or in owner information
250 kpa rear left tire	250 kpa specified on tire placard or in owner information
250 kpa rear right tire	250 kpa specified on tire placard or in owner information

X	7.	Time zero contacts on barrier in place.
X	8.	Pre test zero and shunt calibration adjustments performed and recorded
X	9.	Dummy temperature meets requirements of section 12.2 of the test procedure.
X	10.	Vehicle hood closed and latched
X	11.	Transmission placed in neutral
X	12.	Parking brake off
X	13.	Ignition in the ON position
X	14.	Doors closed and latched but not locked
X	15.	Posttest zero and shunt calibration checks performed and recorded
X	16.	Actual test speed 39.9 kmph
X	17.	Vehicle rebound from the barrier 48 cm
X	18.	Describe whether the doors open after the test and what method is used to open the doors.
		X Left Front Door: Door remained closed and latched; Door opened without tools
		X Right Front Door: Door remained closed and latched; Door opened without tools
		X Left Rear Door: Door remained closed and latched; Door opened without tools
		X Right Rear Door: Door remained closed and latched; Door opened without tools

X	19.	Describe the contact points of the dummy with the interior of the vehicle.
X		Driver Dummy: Head to A-Pillar and Air Bag; Chest to Air Bag; Knees to Knee Air Bag Bolster
X		Passenger Dummy: Head to Air Bag and Visor; Chest to Air Bag; Knees to Glove Box

REMARKS:

I certify that I have read and performed each instruction.

Signature:  Date: 9/12/06

DATA SHEET NO. 40

ACCIDENT INVESTIGATION DIVISION DATA

Test Vehicle: 2005 Dodge Grand Caravan
Test Program: FMVSS 208
Test Technician: Nick Kosinski

NHTSA No.: C50313
Test Date: 9/12/06

IMPACT ANGLE:	Zero Degrees		
BELTED DUMMIES (YES/NO):	No		
TEST SPEED:	_X_ 32 to 40 kmph	__ 0 to 48 kmph	__ 0 to 56 kmph
DRIVER DUMMY:	__ 5th female	_X_ 50th male	
PASSENGER DUMMY:	__ 5th female	_X_ 50th male	

Vehicle Year/Make/Model/Body Style:	2005 Dodge Grand Caravan
VIN:	2D4GP44L25R224618
Wheelbase:	3035 mm
Build Date:	06/04
Vehicle Size Category:	5
Test Weight:	2203.1 kg
Front Overhang:	965 mm
Overall Width:	2040 mm
Overall Length Center:	5065 mm

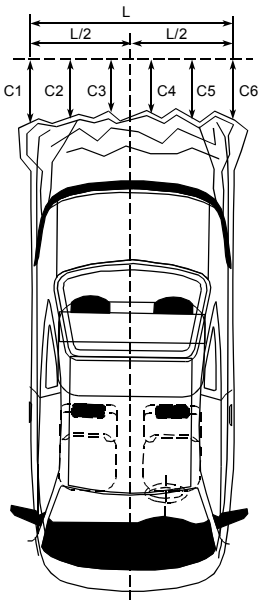
Accelerometer Data	
Location:	As per measurements on Data Sheet 31
Linearity:	>99.9%

Integration Algorithm:	Trapezoidal
Vehicle Impact Speed:	39.9 kmph
Time of Separation:	122.8 ms
Velocity Change:	40.9 kmph

CRUSH PROFILE

Collision Deformation Classification: 12FDEW6
Midpoint of Damage: Vehicle Longitudinal Centerline
Damage Region Length (mm): 1370
Impact Mode: LH Frontal Oblique Barrier

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush zone 1 at left side	mm	4913	4502	411
C2	Crush zone 2 at left side	mm	4996	4609	387
C3	Crush zone 3 at left side	mm	5050	4748	302
C4	Crush zone 4 at right side	mm	5047	4962	85
C5	Crush zone 5 at right side	mm	4996	5007	-11
C6	Crush zone 6 at right side	mm	4913	4906	7



REMARKS:

I certify that I have read and performed each instruction.

Signature: Nick Kosinski

Date: 9/12/06

DATA SHEET 41

WINDSHIELD MOUNTING (FMVSS 212)

Test Vehicle: 2005 Dodge Grand Caravan NHTSA No.: C50313
Test Program: FMVSS 208 Test Date: 9/12/06
Test Technician: Nick Kosinski

IMPACT ANGLE:	Zero Degrees		
BELTED DUMMIES (YES/NO):	No		
TEST SPEED:	_X_ 32 to 40 kmph	__ 0 to 48 kmph	__ 0 to 56 kmph
DRIVER DUMMY:	__ 5th female	_X_ 50th male	
PASSENGER DUMMY:	__ 5th female	_X_ 50th male	

1. Pre-Crash

[X] 1.1 Describe from visual inspection how the windshield is mounted and describe any trim material.

Retained with glue
Rubber trim

[X] 1.2 Mark the longitudinal centerline of the windshield

[X] 1.3 Measure pre-crash A, B, and C for the left side and record in the chart below.

[X] 1.4 Measure pre-crash C, D, and E for the right side and record in the chart below.

[X] 1.5 Measure from the edge of the retainer or molding to the edge of the windshield.
[X] Dimension G (mm): 11 mm

2. Post Crash

[X] 2.1 Can a single thickness of copier type paper (as small a piece as necessary) slide between the windshield and the vehicle body?

[X] No – Pass. Skip to the table of measurements, complete it by repeating the pre-crash measurements in the post crash column, and calculate the retention percentage, which will be 100%.

[ ] Yes, go to 2.2

[ ] 2.2 Visibly mark the beginning and end of the portions of the periphery where the paper slides between the windshield and the vehicle body.

[ ] 2.3 Measure and record post-crash A, B, C, D, E, and F such that the measurements do not include any of the parts of the windshield where the paper slides between the windshield and the vehicle body.

[ ] 2.4 Calculate and record the percent retention for the right and left side of the windshield.

[ ] 2.5 Is total right side percent retention less than 75%?

[ ] Yes, Fail

[ ] No, Pass

[ ] 2.6 Is total left side percent retention less than 75%?

[ ] Yes, Fail

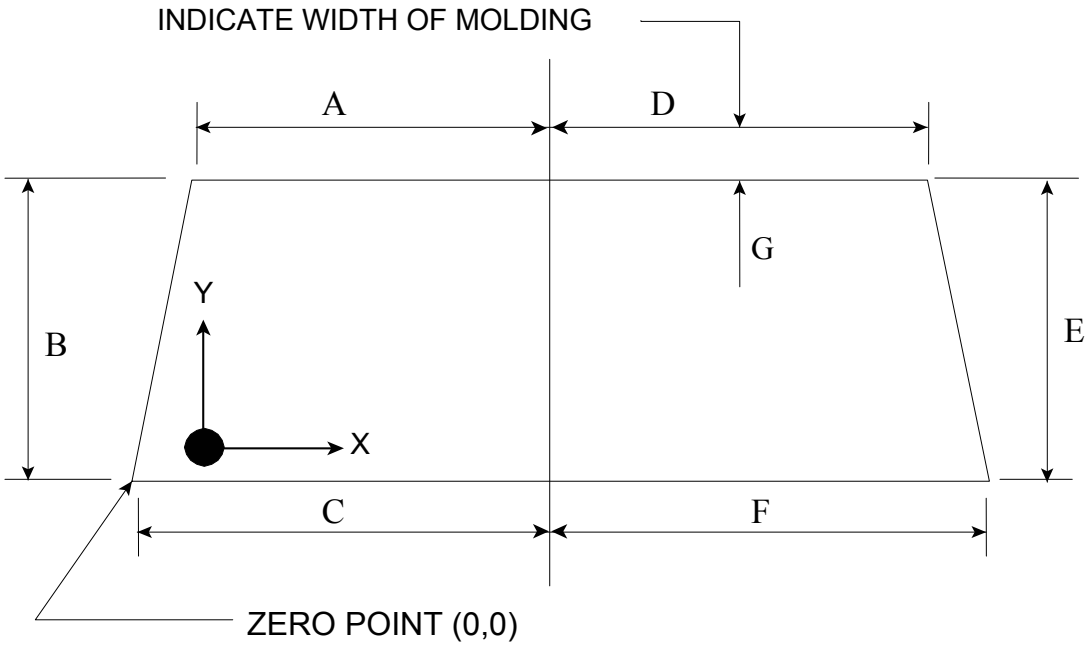
[ ] No, Pass

WINDSHIELD RETENTION MEASUREMENTS

	Dimension	Pre-Crash (mm)	Post-Crash (mm)	Percent Retention (Post-Test ÷ Pre-Crash)
Left Side	A	610	610	100%
	B	887	887	100%
	C	883	883	100%
	Total	2320	2320	100%
Right Side	D	610	610	100%
	E	887	887	100%
	F	883	883	100%
	Total	2320	2320	100%

Indicate area of mounting failure. NONE

FRONT VIEW OF WINDSHIELD



REMARKS:

I certify that I have read and performed each instruction.

Signature: Nick Kosinski

Date: 9/12/06

DATA SHEET 42

WINDSHIELD ZONE INTRUSION (FMVSS 219)

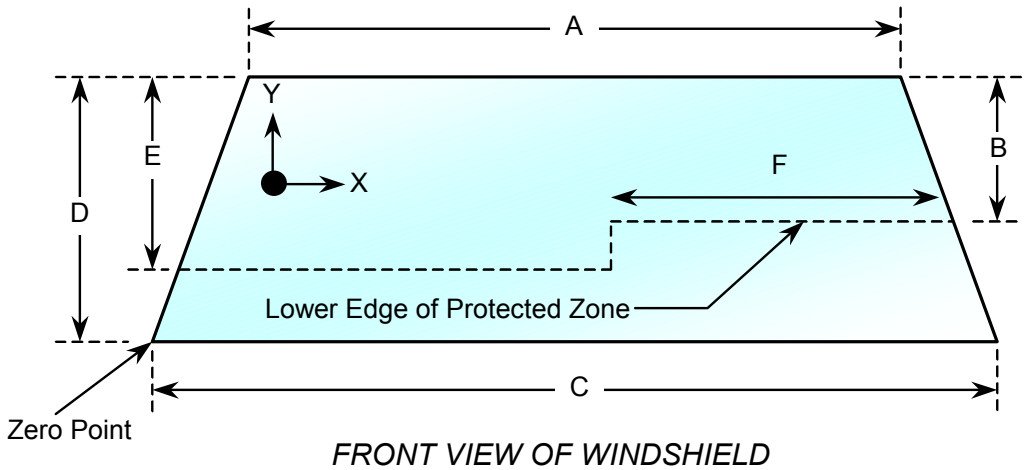
Test Vehicle: 2005 Dodge Grand Caravan
Test Program: FMVSS 208
Test Technician: Nick Kosinski

NHTSA No.: C50313
Test Date: 9/12/06

IMPACT ANGLE:	Zero Degrees		
BELTED DUMMIES (YES/NO):	No		
TEST SPEED:	_X_ 32 to 40 kmph	__ 0 to 48 kmph	__ 0 to 56 kmph
DRIVER DUMMY:	__ 5th female	_X_ 50th male	
PASSENGER DUMMY:	__ 5th female	_X_ 50th male	

X	1.	Place a 165 mm diameter rigid sphere, with a mass of 6.8 kg on the instrument panel so that it is simultaneously touching the instrument panel and the windshield. (571.219 S6.1(a))
X	2.	Roll the sphere from one side of the windshield to the other while marking on the windshield where the sphere contacts the windshield. (571.219 S6.1(b))
X	3.	From the outermost contactable points on the windshield draw a horizontal line to the edges of the windshield. (571.219 S6.1(b))
X	4.	Draw a line on the inner surface of the windshield that is 13 mm below the line determined in items 2 and 3
X	5.	After the crash test, record any points where a part of the exterior of the vehicle has marked, penetrated, or broken the windshield.

Provide all dimensions necessary to reproduce the protected area.



FRONT VIEW OF WINDSHIELD

WINDSHIELD DIMENSIONS

Item	Units	Value
A	mm	1220
B	mm	520
C	mm	1645
D	mm	887
E	mm	583
F	mm	586

AREA OF PROTECTED ZONE FAILURES:

B. Provide coordinates of the area that the protected zone was penetrated more than 0.25 inches by a vehicle component other than one which is normally in contact with the windshield.

X	Y
NONE	

C. Provide coordinates of the area beneath the protected zone template that the inner surface of the windshield was penetrated by a vehicle component.

X	Y
NONE	

REMARKS:

I certify that I have read and performed each instruction.

Signature: Nick Kosinski Date: 9/12/06

DATA SHEET 43

FUEL SYSTEM INTEGRITY (FMVSS 301)

Test Vehicle: 2005 Dodge Grand Caravan NHTSA No.: C50313
Test Program: FMVSS 208 Test Date: 9/12/06
Test Technician: Eric Peschman

TYPE OF IMPACT:	25 mph Unbelted Flat Frontal

Stoddard Solvent Spillage Measurements

A. From impact until vehicle motion ceases: 0.0 grams
(Maximum Allowable = 28 grams)

B. For the 5 minute period after motion ceases: 0.0 grams
(Maximum Allowable = 142 grams)

C. For the following 25 minutes: 0.0 grams
(Maximum Allowable = 28 grams/minute)

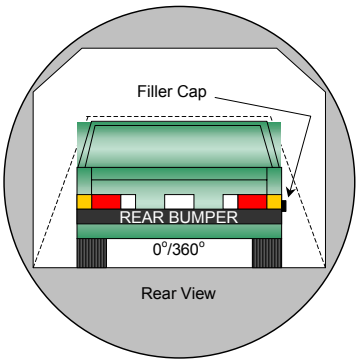
D. Spillage: NONE

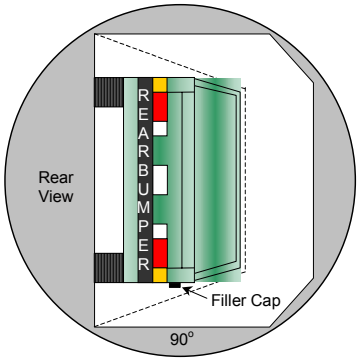
REMARKS: NO SPILLAGE

DATA SHEET NO. 43

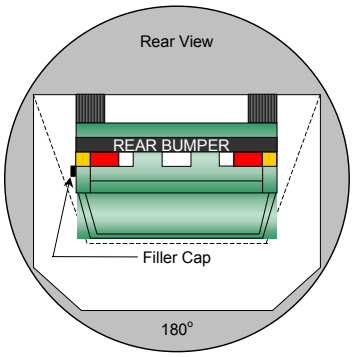
FMVSS 301 STATIC ROLLOVER DATA

Test Vehicle: 2005 Dodge Grand Caravan NHTSA No.: C50313
Test Program: FMVSS 208 Test Date: 9/12/06

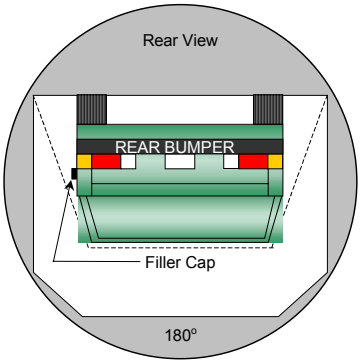




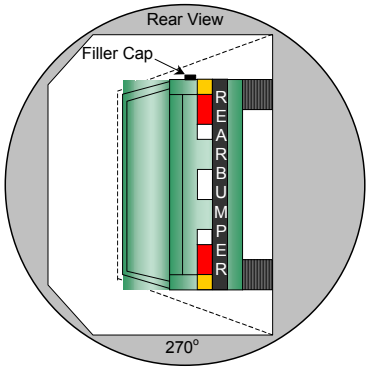
0° to 90°

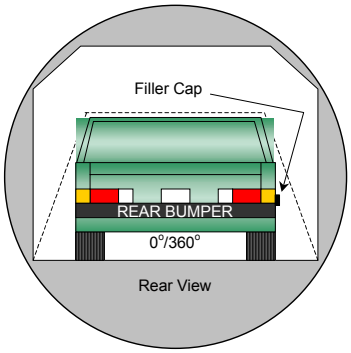


90° to 180°



180° to 270°





270° to 360°

1. The specified fixture rollover rate for each 90° of rotation is 60 to 180 seconds.
2. The position hold time at each position is 300 seconds (minimum).
3. Details of Stoddard Solvent spillage locations: **The post test FMVSS 301 rollover was not conducted at the direction of the COTR.**

Test Phase	Rotation Time (sec.)	Hold Time (sec.)	Spillage (grams)
0° to 90°			
90° to 180°			
180° to 270°			
270° to 360°			

APPENDIX A

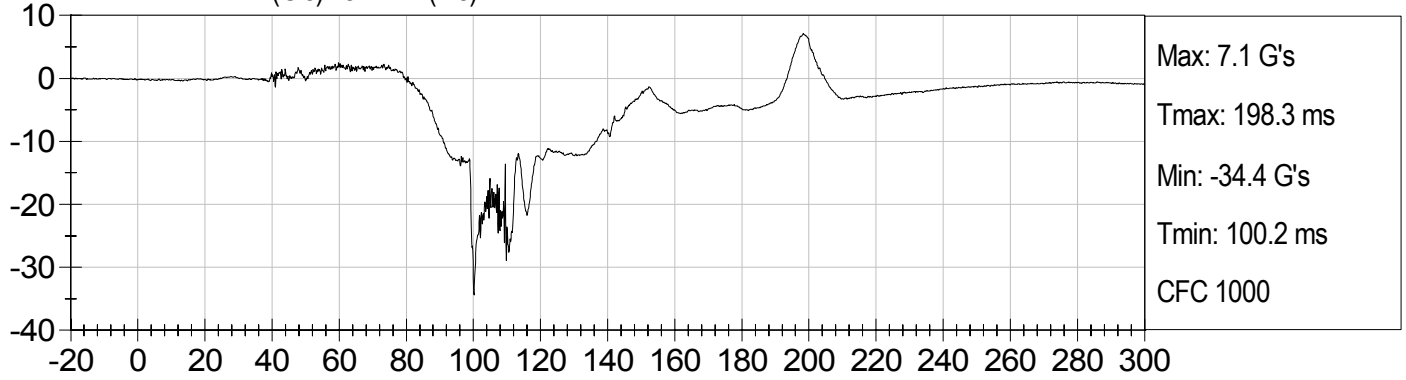
CRASH TEST DATA

TABLE OF DATA PLOTS

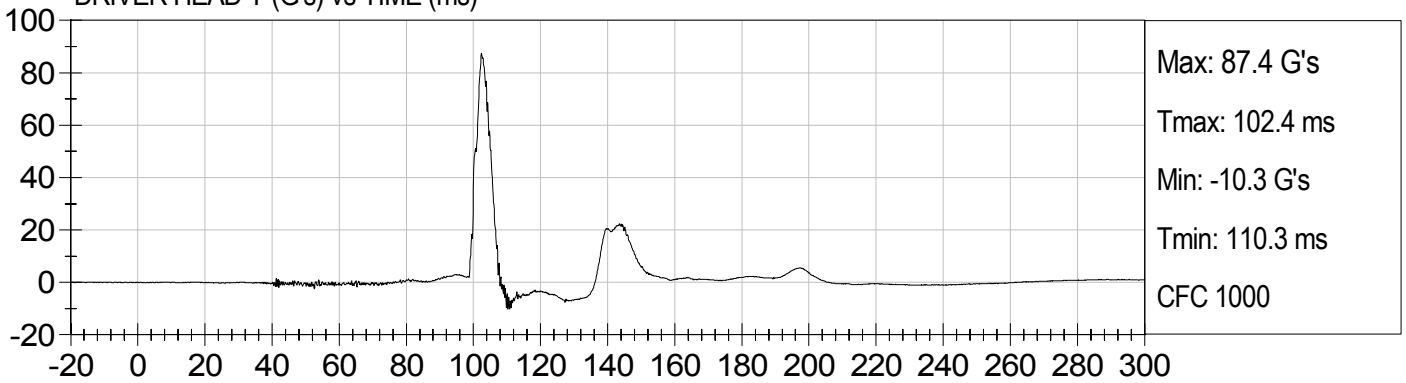
25 MPH LH OBLIQUE UNBELTED
2005 DODGE CARAVAN (C50313)

Test Date: 09/12/2006
Speed: 24.8 mph (39.9 km/h)

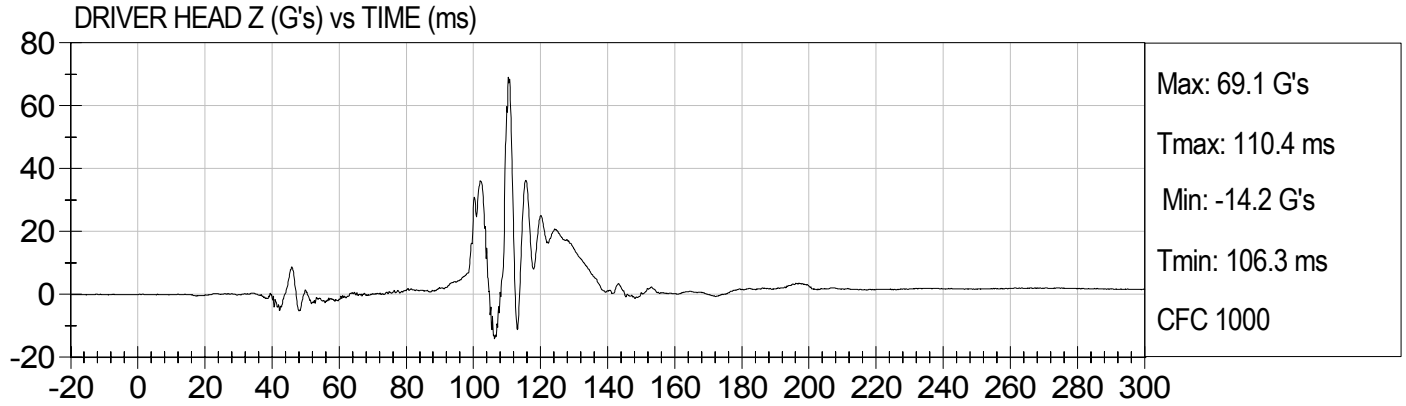
DRIVER HEAD X (G's) vs TIME (ms)



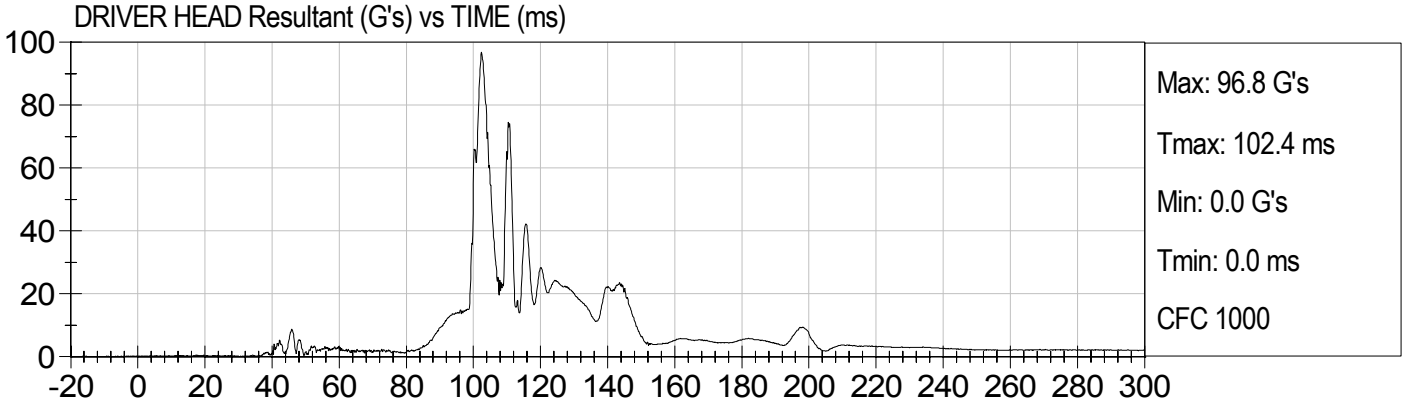
DRIVER HEAD Y (G's) vs TIME (ms)



DRIVER HEAD Z (G's) vs TIME (ms)

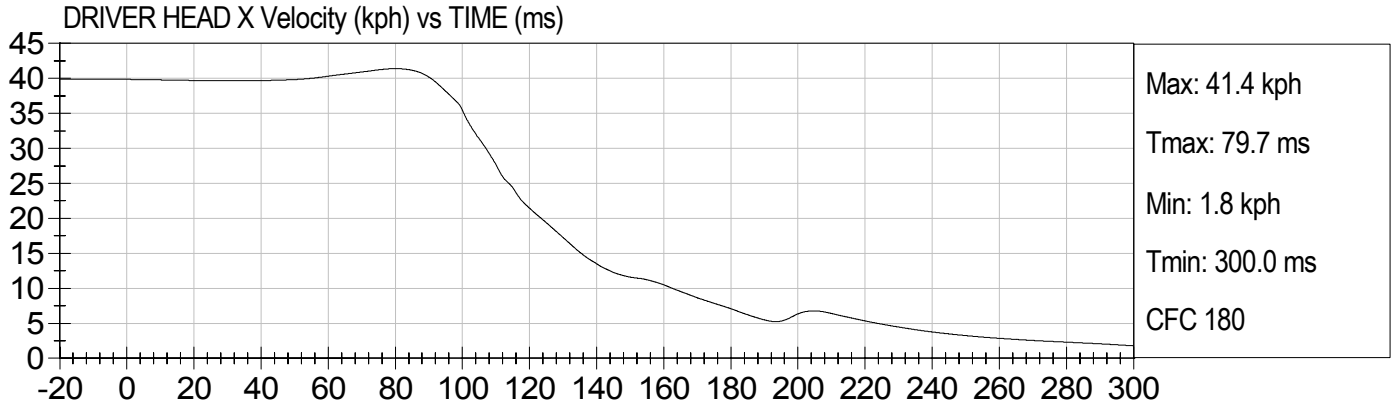


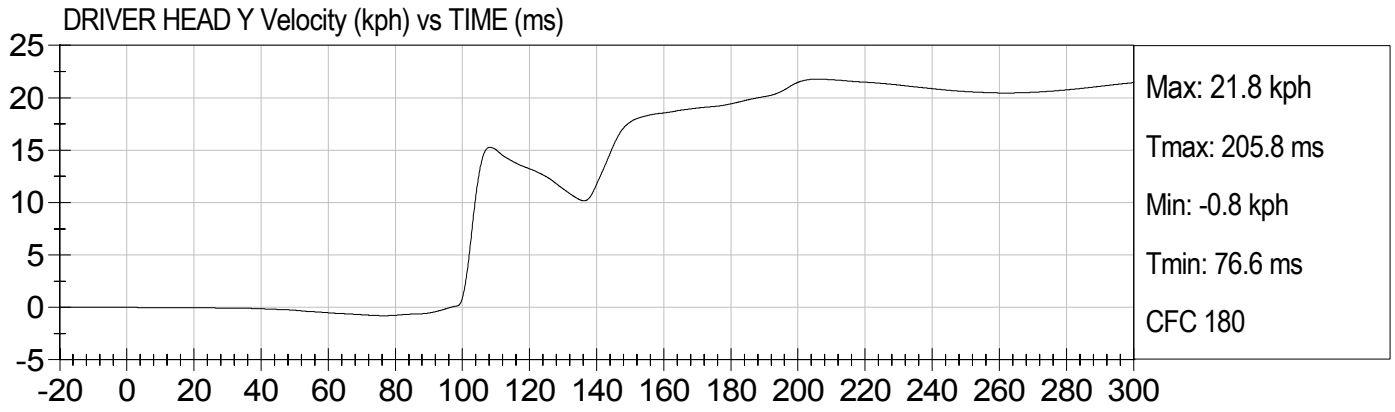
DRIVER HEAD Resultant (G's) vs TIME (ms)

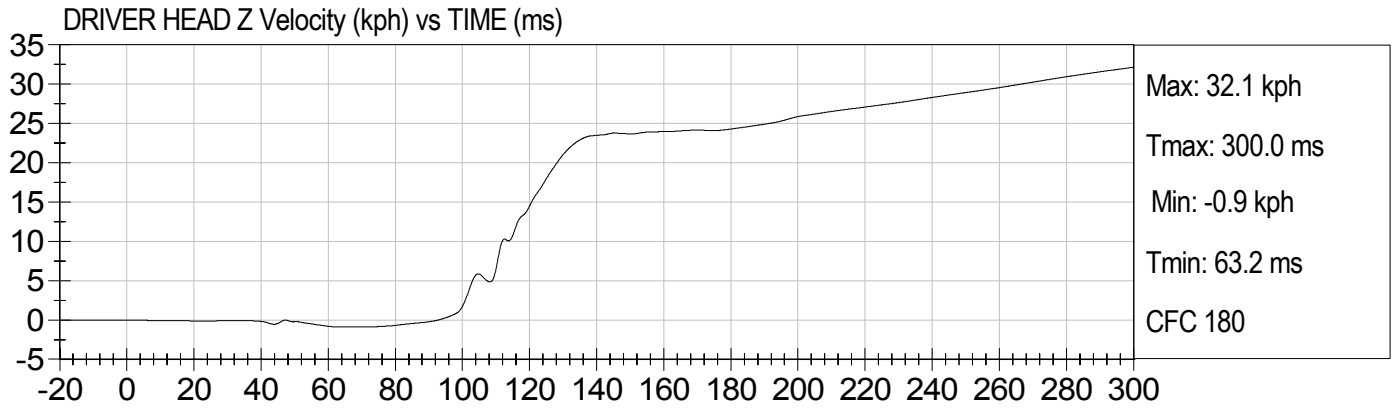


25 MPH LH OBLIQUE UNBELTED
2005 DODGE CARAVAN (C50313)

Test Date: 09/12/2006
Speed: 24.8 mph (39.9 km/h)



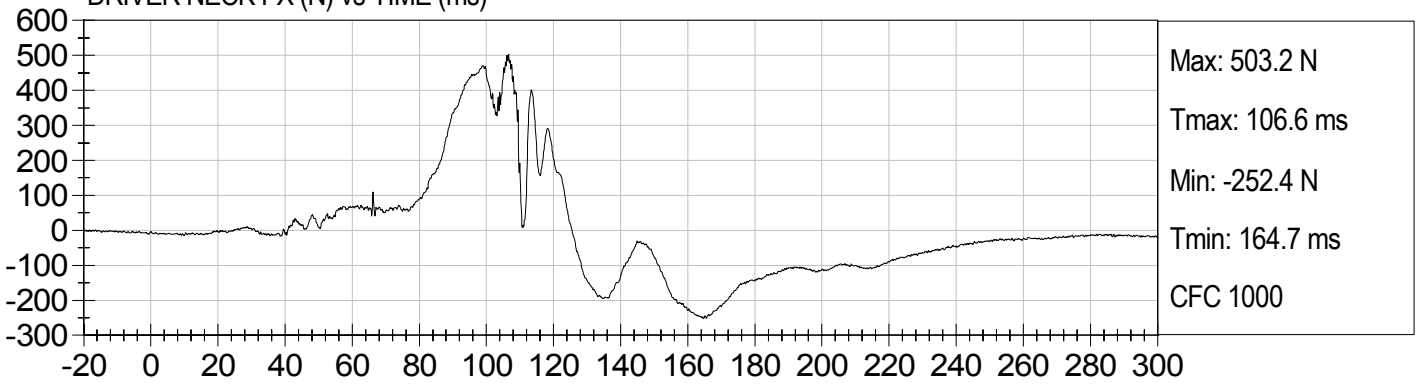




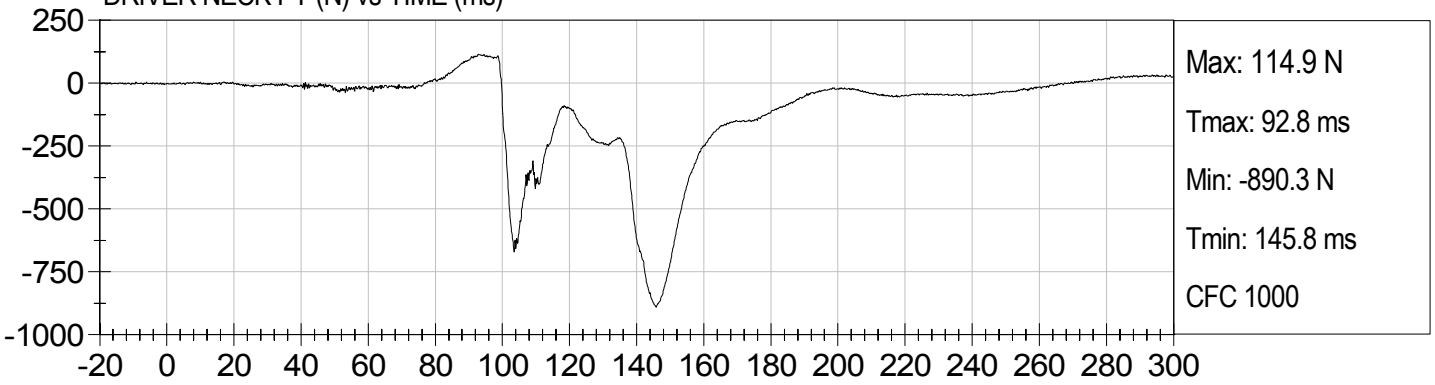
25 MPH LH OBLIQUE UNBELTED
2005 DODGE CARAVAN (C50313)

Test Date: 09/12/2006
Speed: 24.8 mph (39.9 km/h)

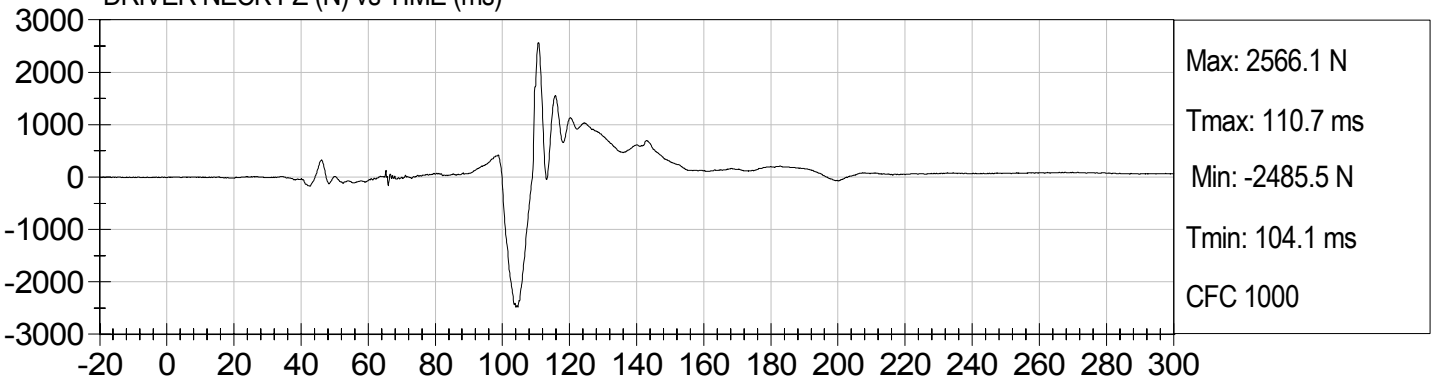
DRIVER NECK FX (N) vs TIME (ms)



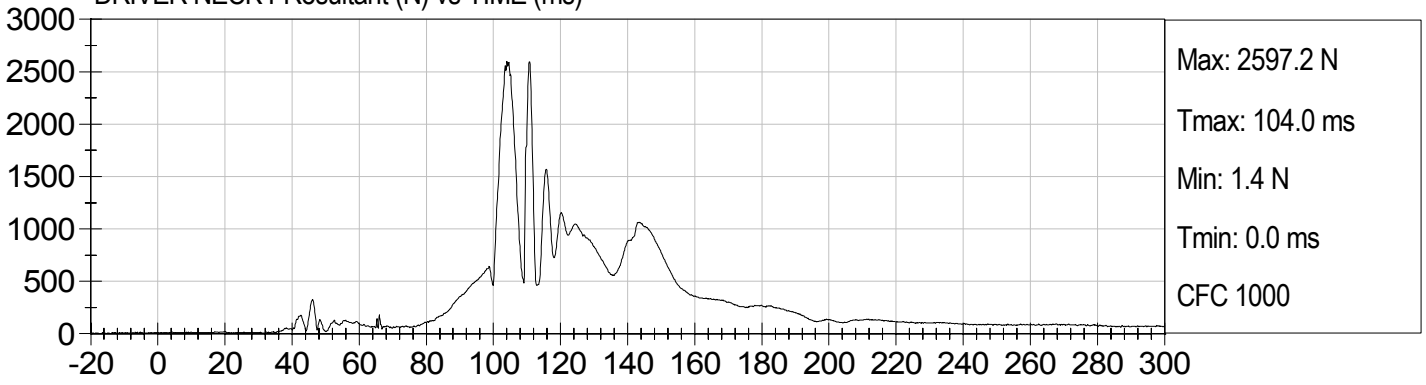
DRIVER NECK FY (N) vs TIME (ms)



DRIVER NECK FZ (N) vs TIME (ms)



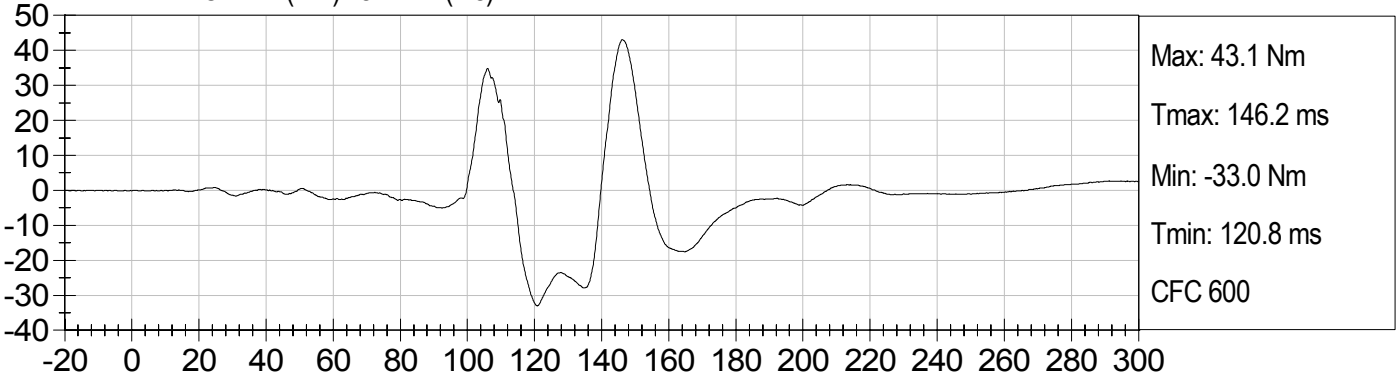
DRIVER NECK FResultant (N) vs TIME (ms)



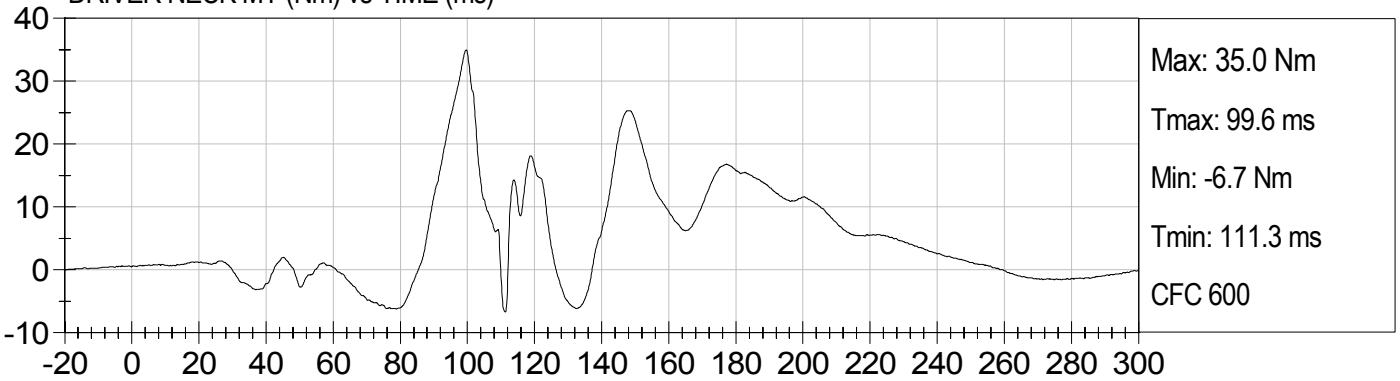
25 MPH LH OBLIQUE UNBELTED
2005 DODGE CARAVAN (C50313)

Test Date: 09/12/2006
Speed: 24.8 mph (39.9 km/h)

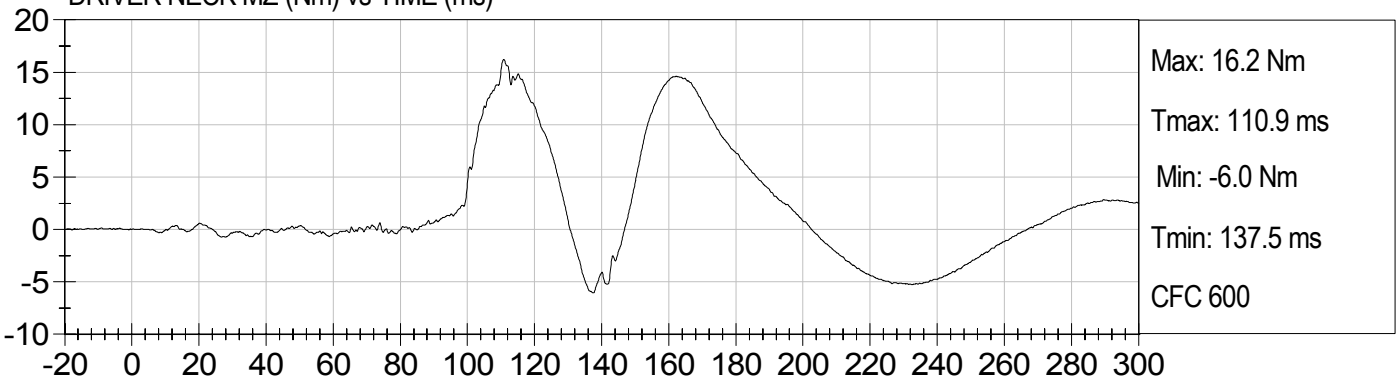
DRIVER NECK MX (Nm) vs TIME (ms)



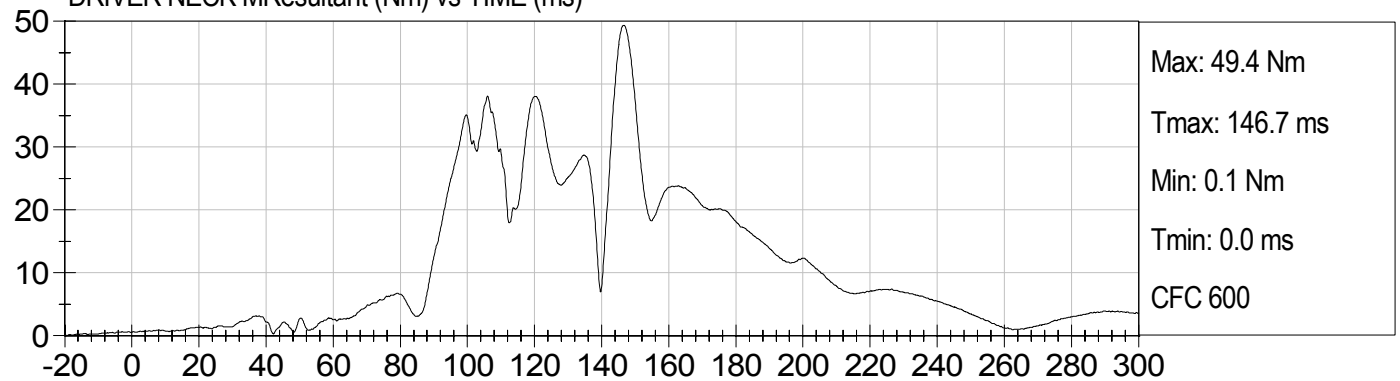
DRIVER NECK MY (Nm) vs TIME (ms)



DRIVER NECK MZ (Nm) vs TIME (ms)



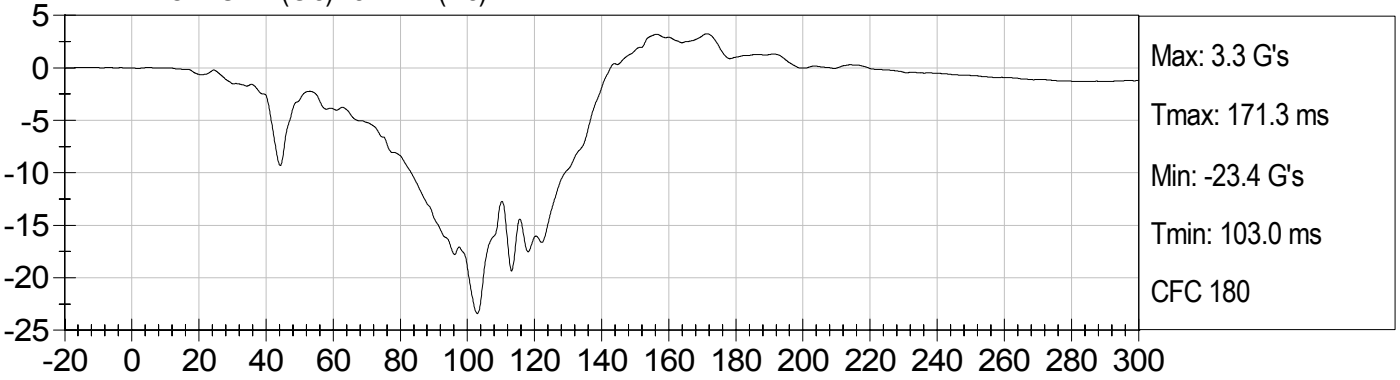
DRIVER NECK MResultant (Nm) vs TIME (ms)



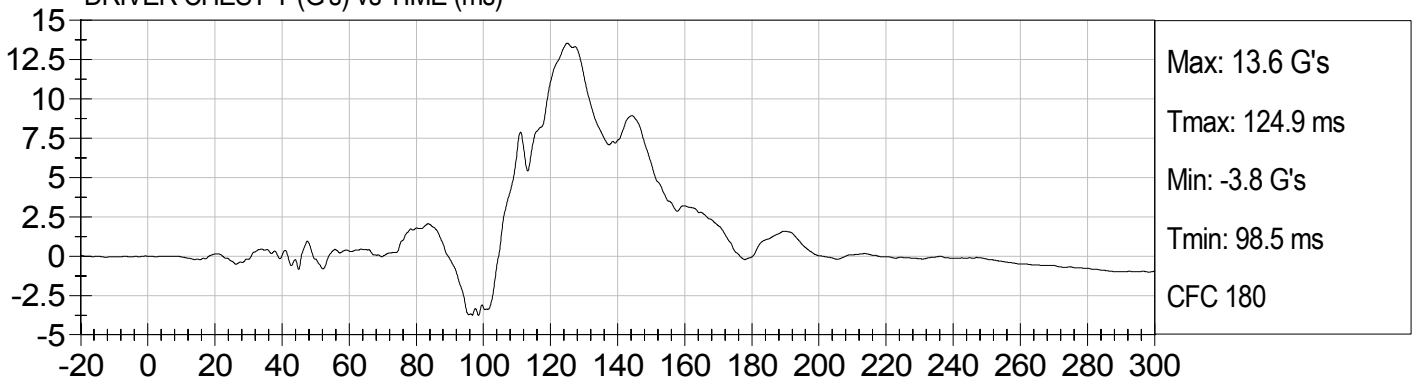
25 MPH LH OBLIQUE UNBELTED
2005 DODGE CARAVAN (C50313)

Test Date: 09/12/2006
Speed: 24.8 mph (39.9 km/h)

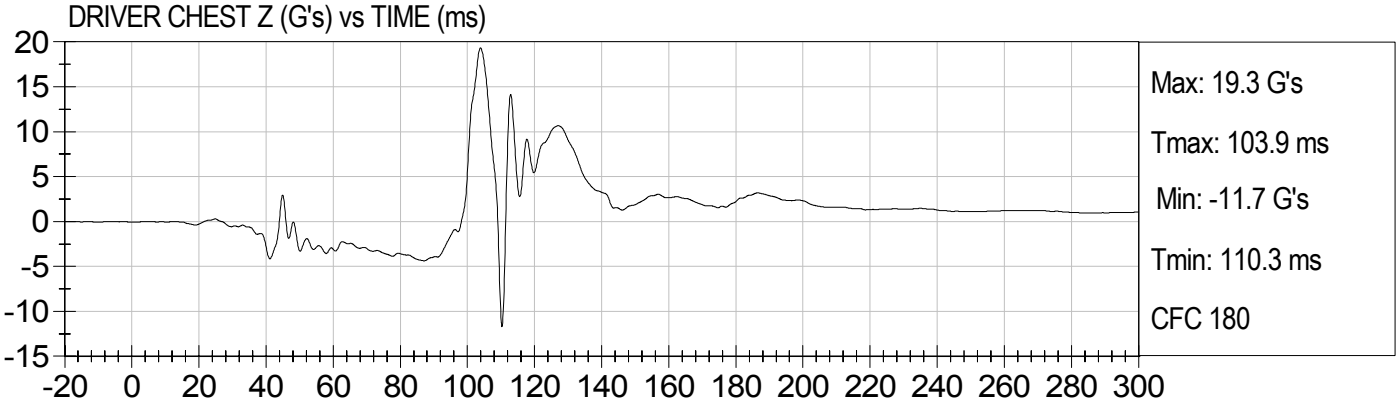
DRIVER CHEST X (G's) vs TIME (ms)



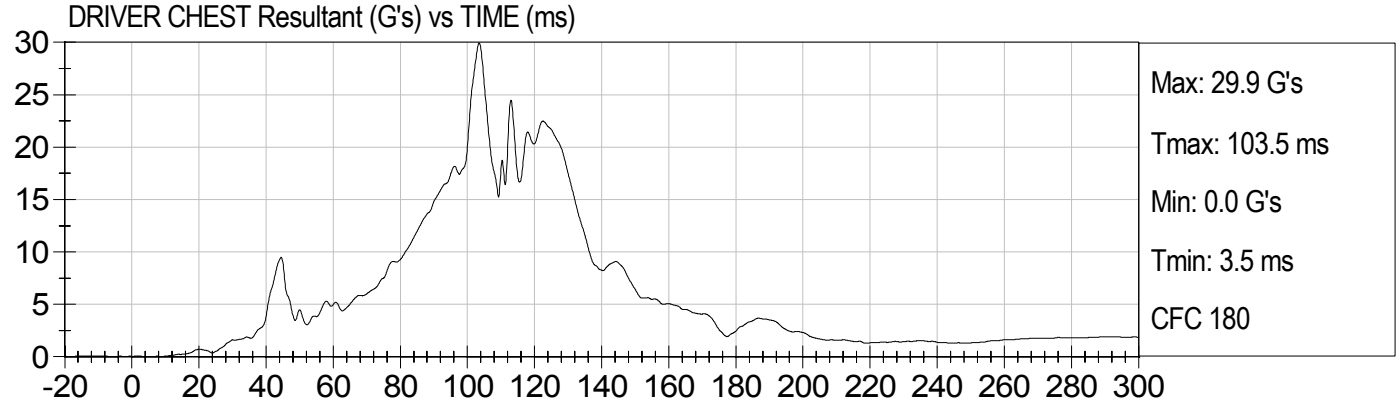
DRIVER CHEST Y (G's) vs TIME (ms)



DRIVER CHEST Z (G's) vs TIME (ms)



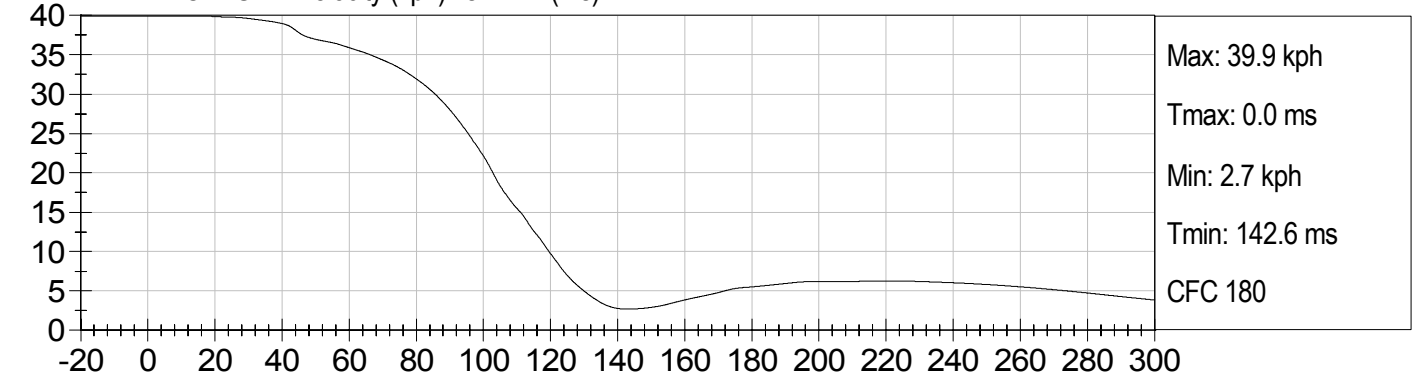
DRIVER CHEST Resultant (G's) vs TIME (ms)



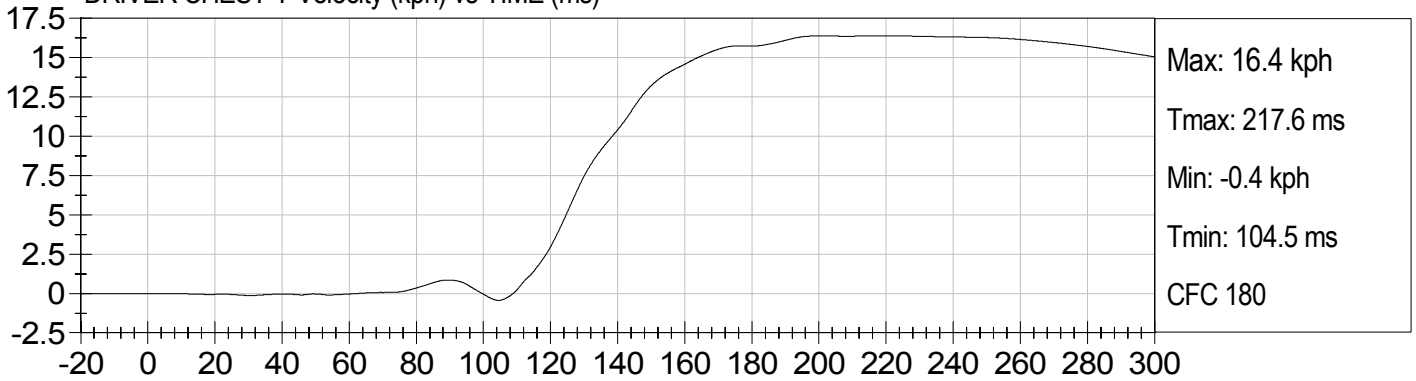
25 MPH LH OBLIQUE UNBELTED
2005 DODGE CARAVAN (C50313)

Test Date: 09/12/2006
Speed: 24.8 mph (39.9 km/h)

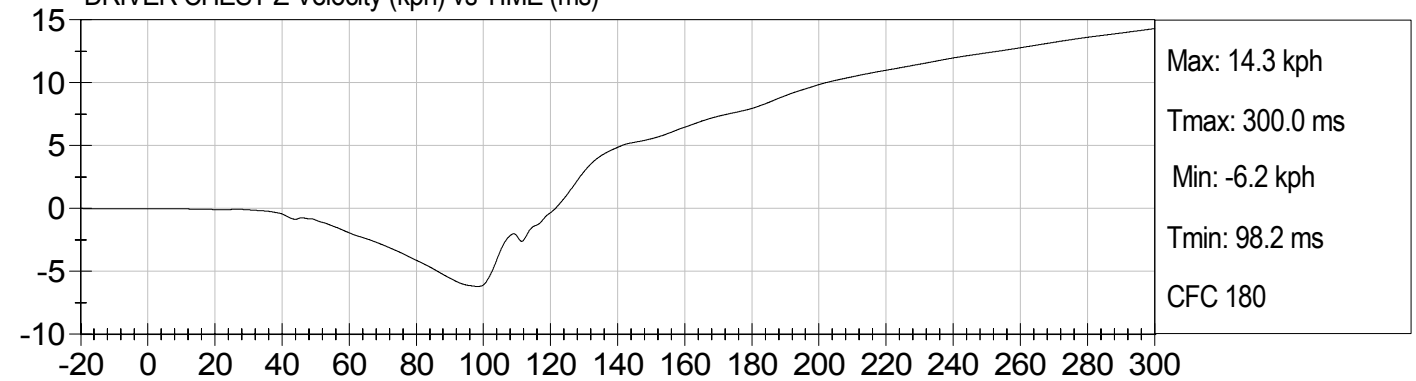
DRIVER CHEST X Velocity (kph) vs TIME (ms)



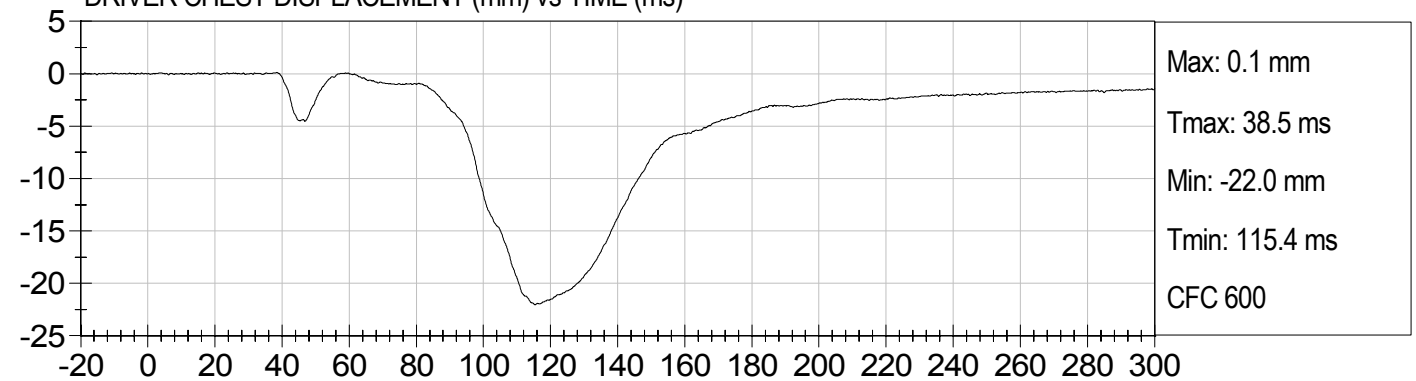
DRIVER CHEST Y Velocity (kph) vs TIME (ms)



DRIVER CHEST Z Velocity (kph) vs TIME (ms)

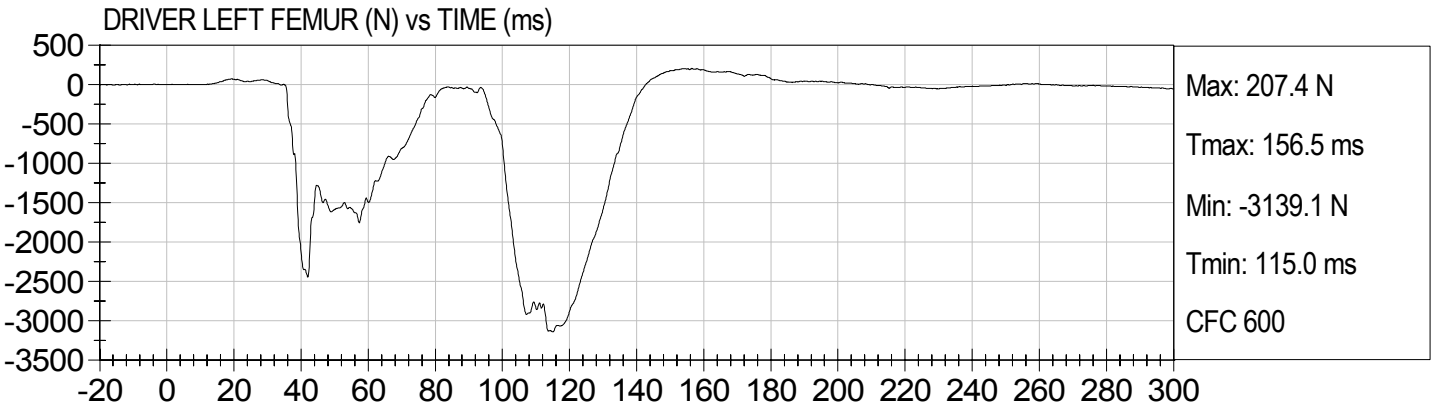


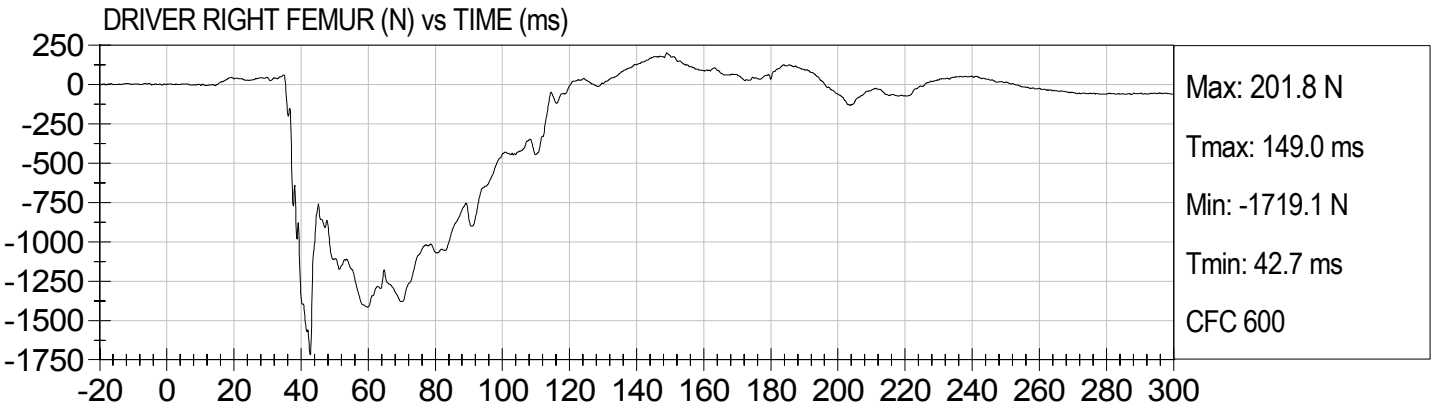
DRIVER CHEST DISPLACEMENT (mm) vs TIME (ms)



25 MPH LH OBLIQUE UNBELTED
2005 DODGE CARAVAN (C50313)

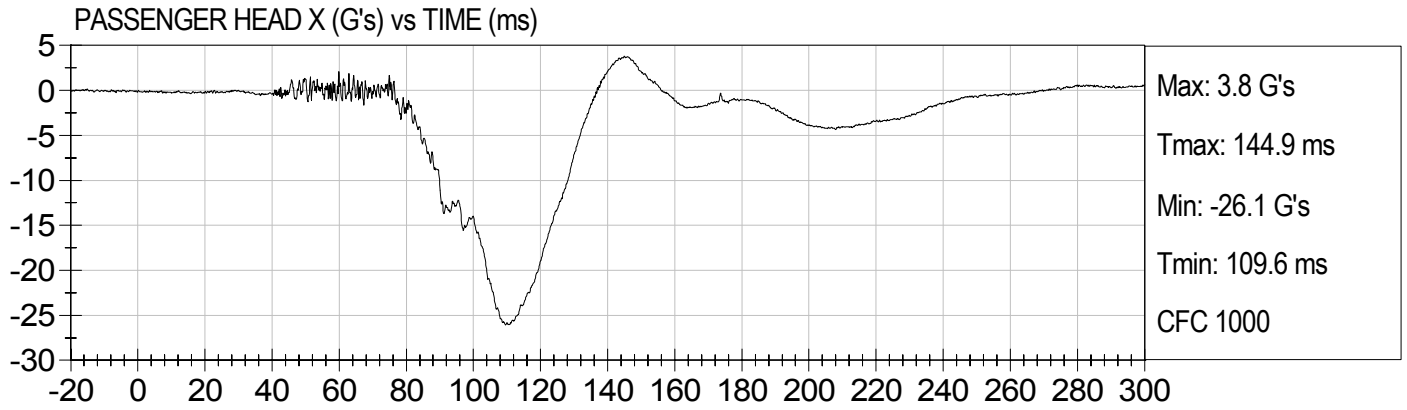
Test Date: 09/12/2006
Speed: 24.8 mph (39.9 km/h)

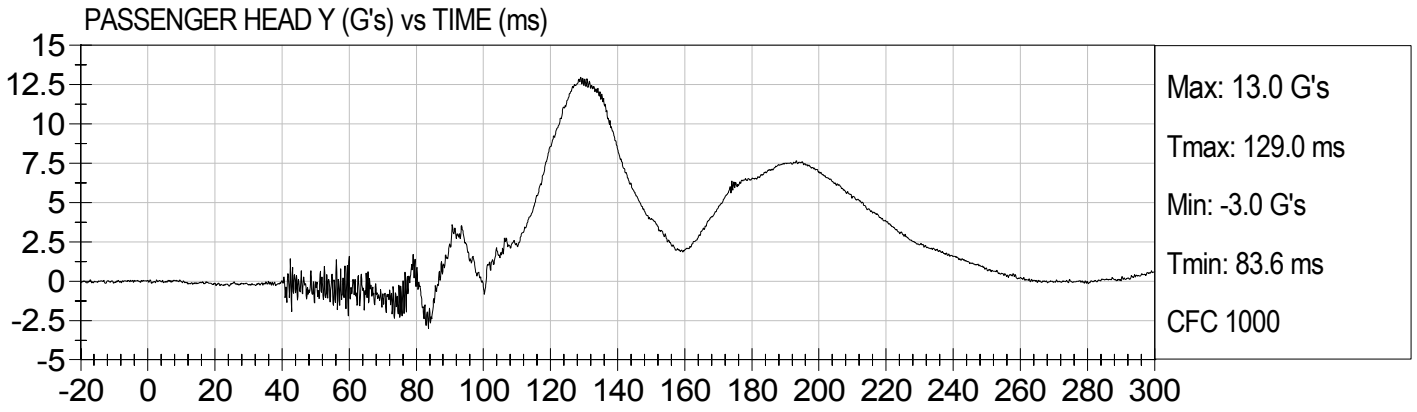


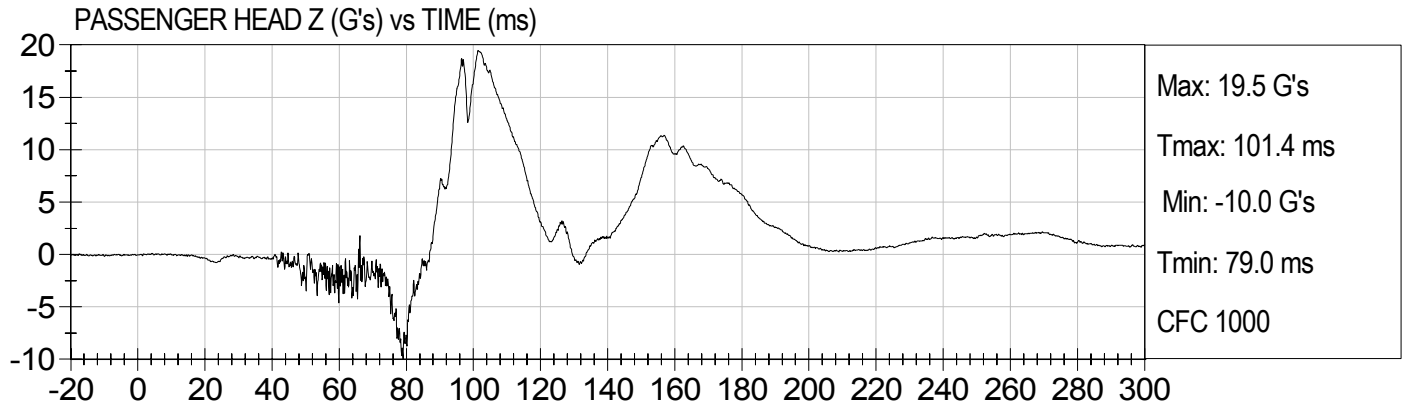


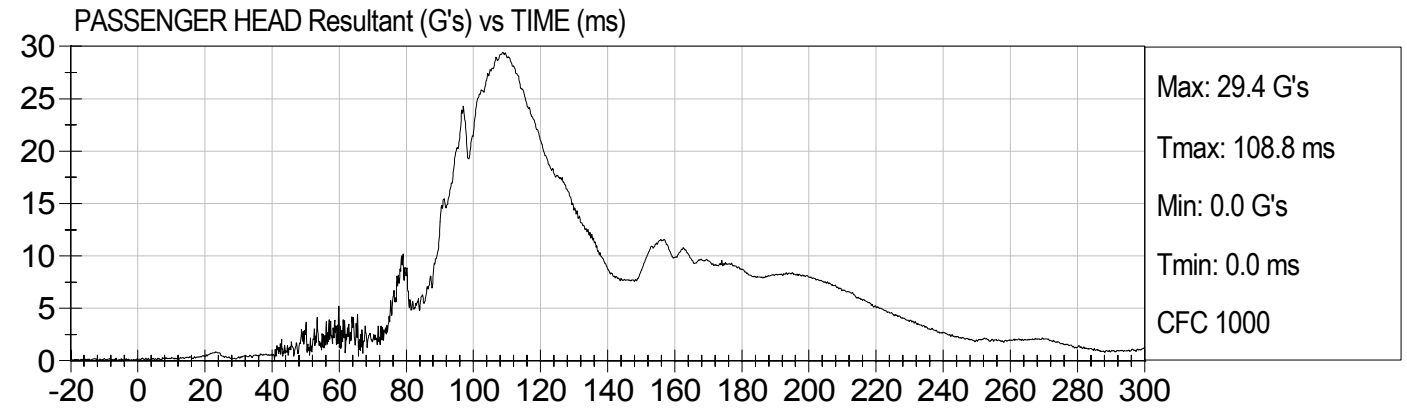
25 MPH LH OBLIQUE UNBELTED
2005 DODGE CARAVAN (C50313)

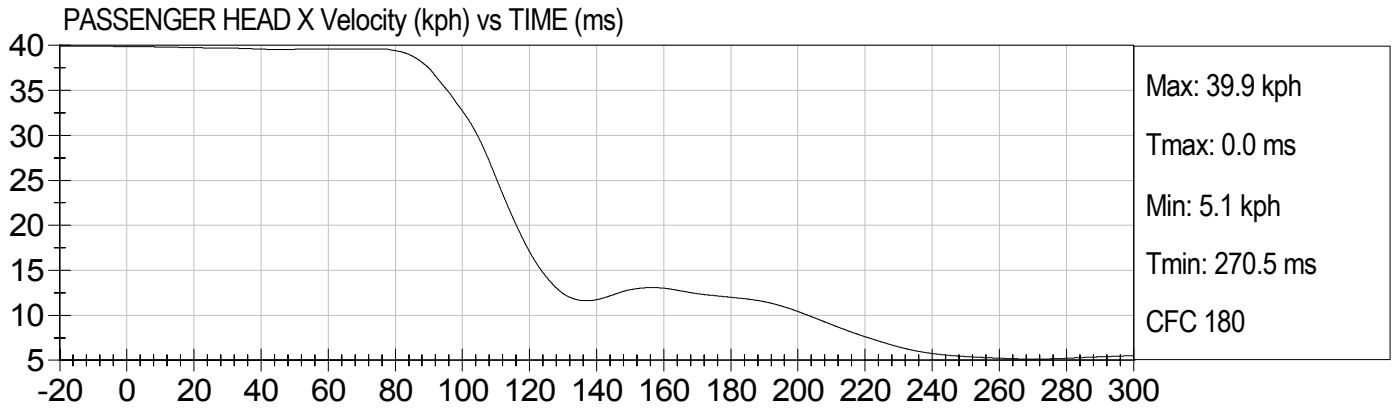
Test Date: 09/12/2006
Speed: 24.8 mph (39.9 km/h)

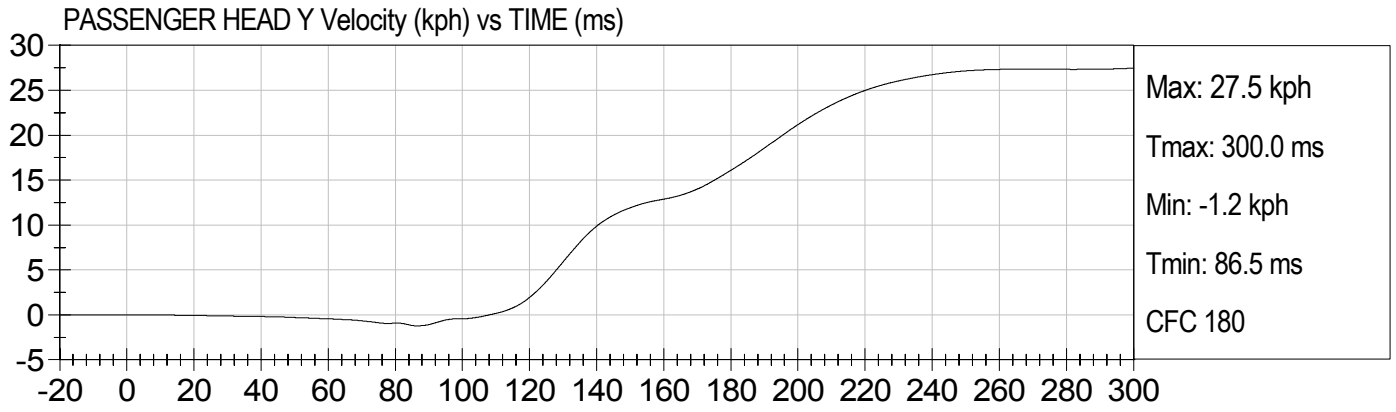


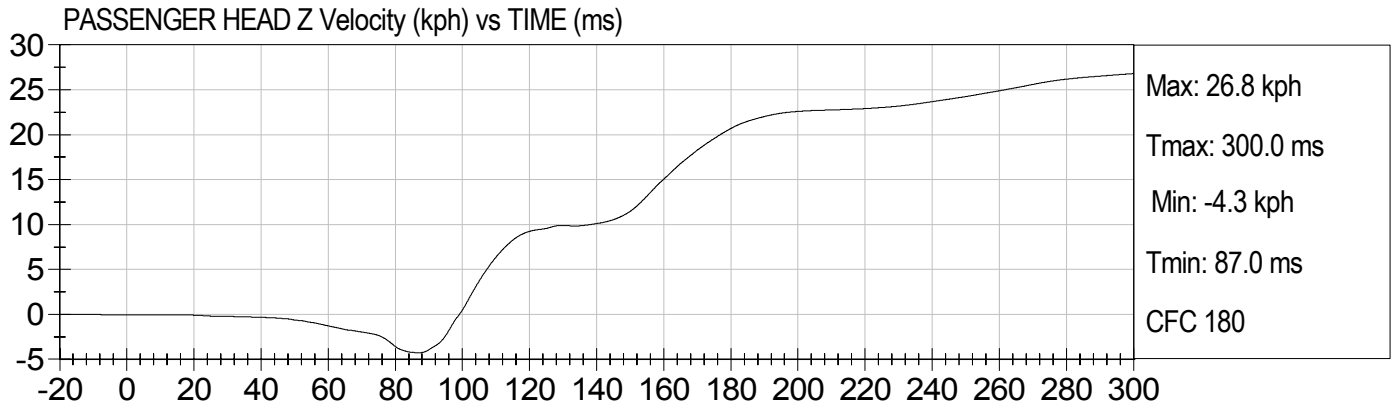







PASSENGER HEAD X Velocity (kph) vs TIME (ms)
40
35
30
25
20
15
10
5
-20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300
Max: 39.9 kph
Tmax: 0.0 ms
Min: 5.1 kph
Tmin: 270.5 ms
CFC 180

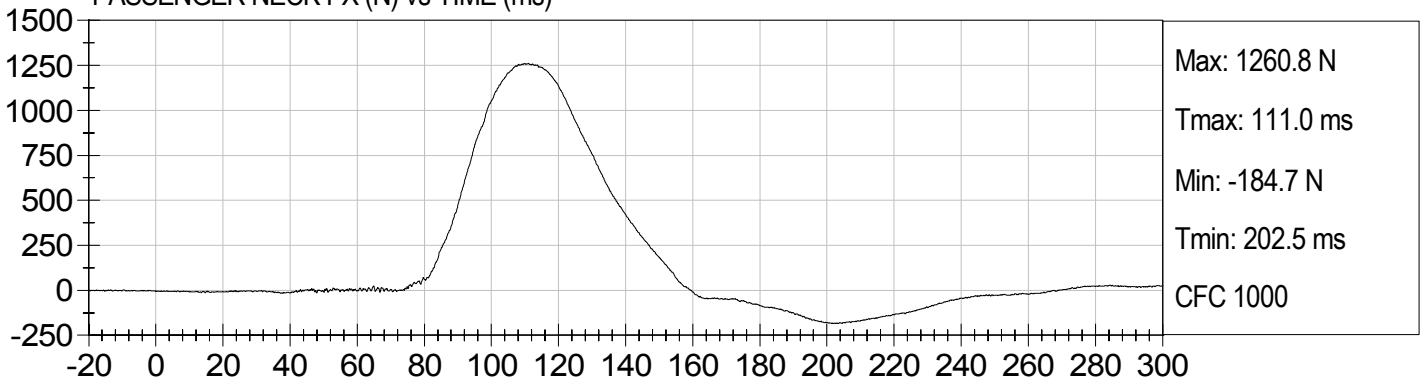

PASSENGER HEAD Y Velocity (kph) vs TIME (ms)
30
25
20
15
10
5
0
-5
-20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300
Max: 27.5 kph
Tmax: 300.0 ms
Min: -1.2 kph
Tmin: 86.5 ms
CFC 180


PASSENGER HEAD Z Velocity (kph) vs TIME (ms)
30
25
20
15
10
5
0
-5
-20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300
Max: 26.8 kph
Tmax: 300.0 ms
Min: -4.3 kph
Tmin: 87.0 ms
CFC 180

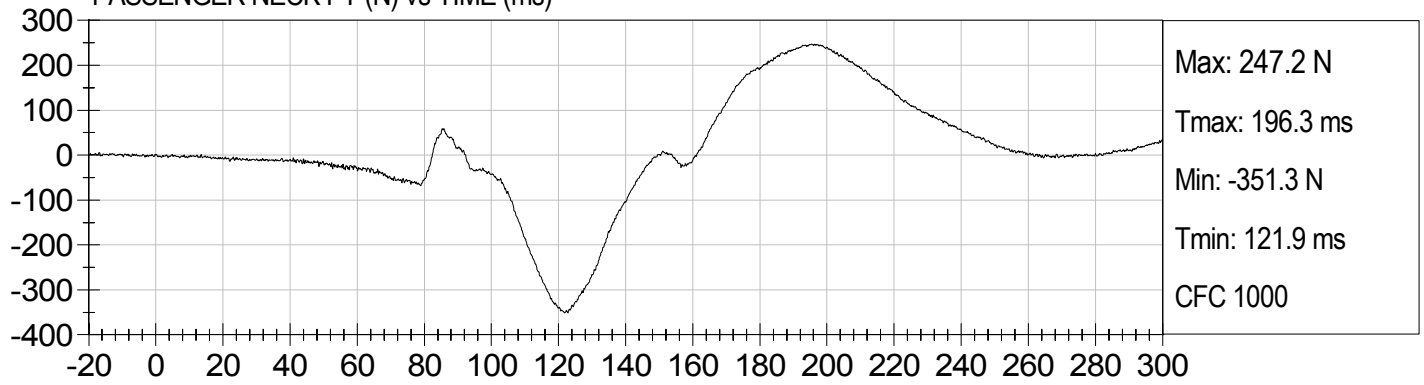
25 MPH LH OBLIQUE UNBELTED
2005 DODGE CARAVAN (C50313)

Test Date: 09/12/2006
Speed: 24.8 mph (39.9 km/h)

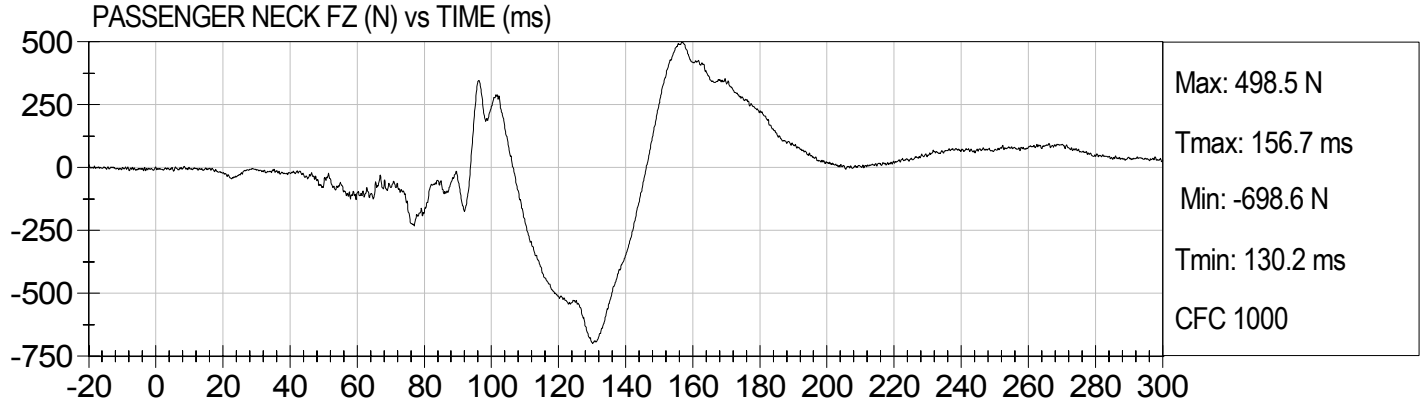
PASSENGER NECK FX (N) vs TIME (ms)



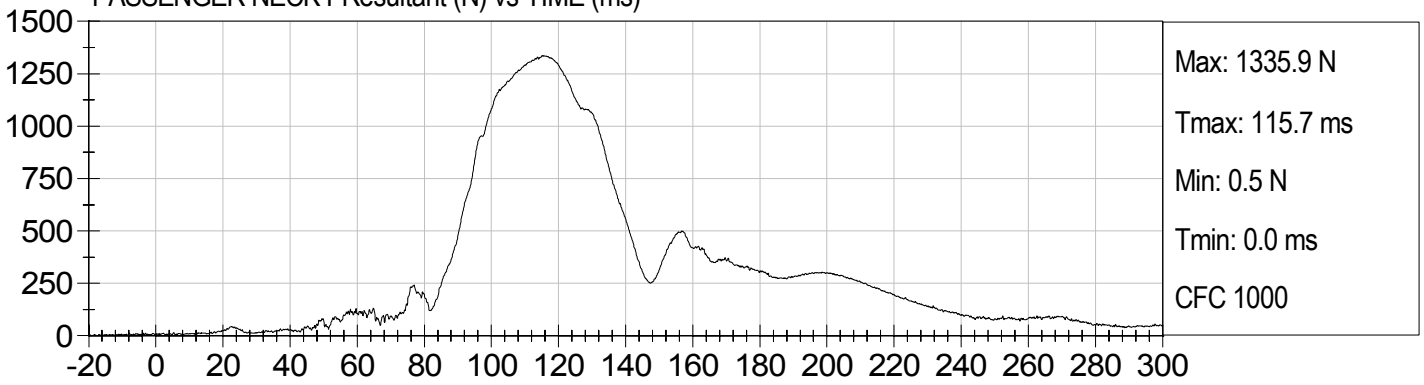
PASSENGER NECK FY (N) vs TIME (ms)



PASSENGER NECK FZ (N) vs TIME (ms)



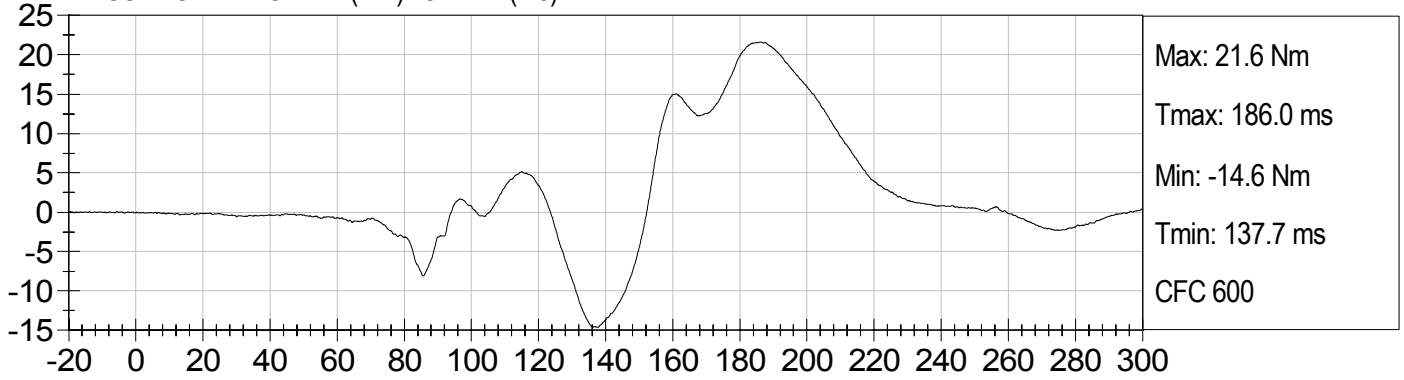
PASSENGER NECK FResultant (N) vs TIME (ms)



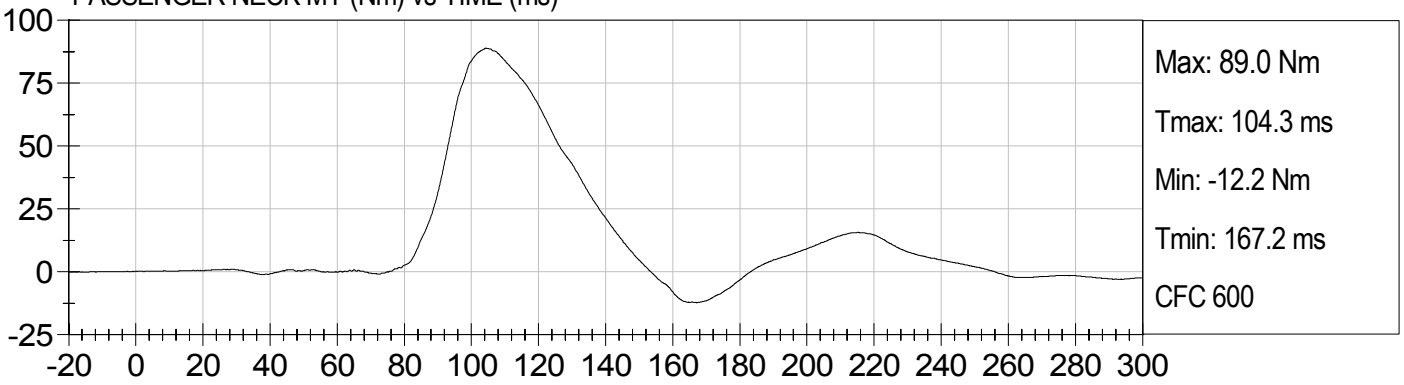
25 MPH LH OBLIQUE UNBELTED
2005 DODGE CARAVAN (C50313)

Test Date: 09/12/2006
Speed: 24.8 mph (39.9 km/h)

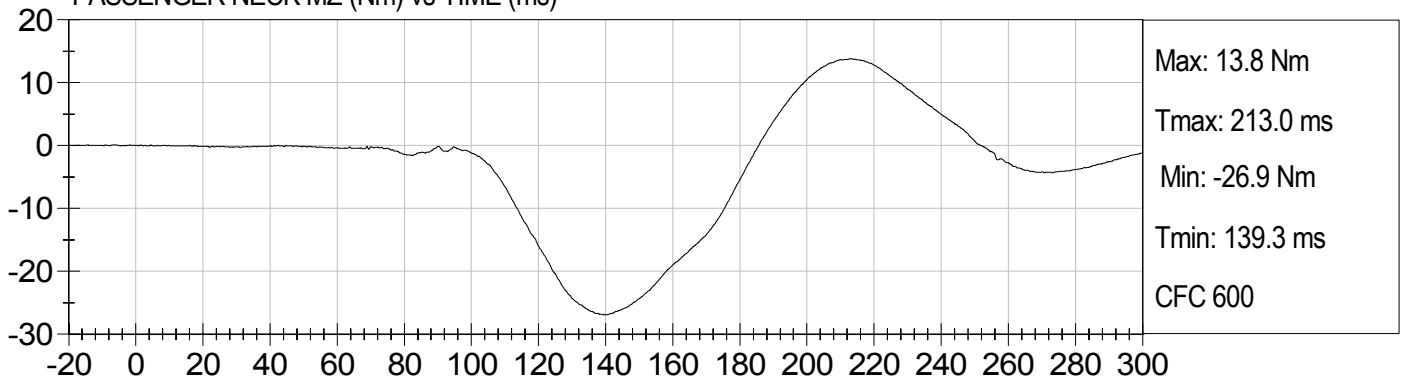
PASSENGER NECK MX (Nm) vs TIME (ms)



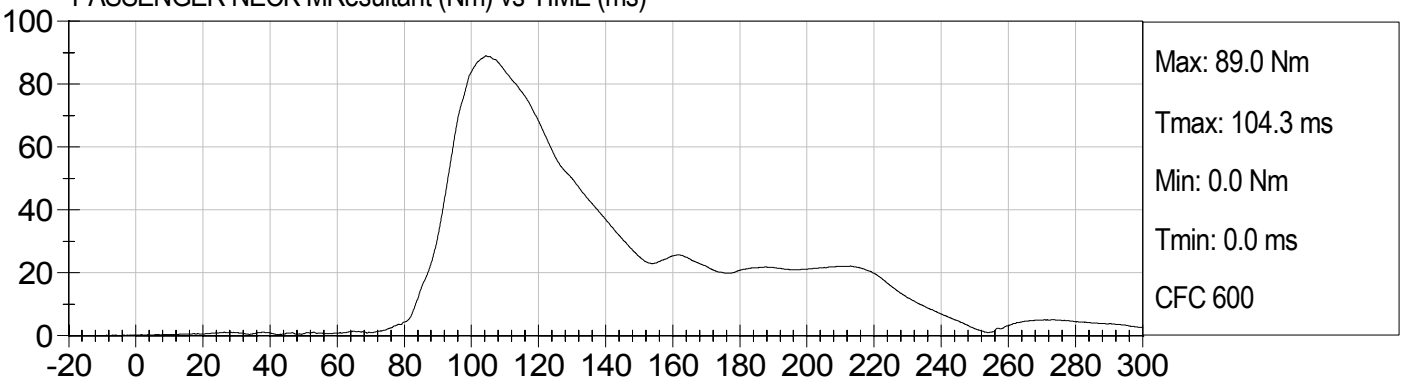
PASSENGER NECK MY (Nm) vs TIME (ms)



PASSENGER NECK MZ (Nm) vs TIME (ms)



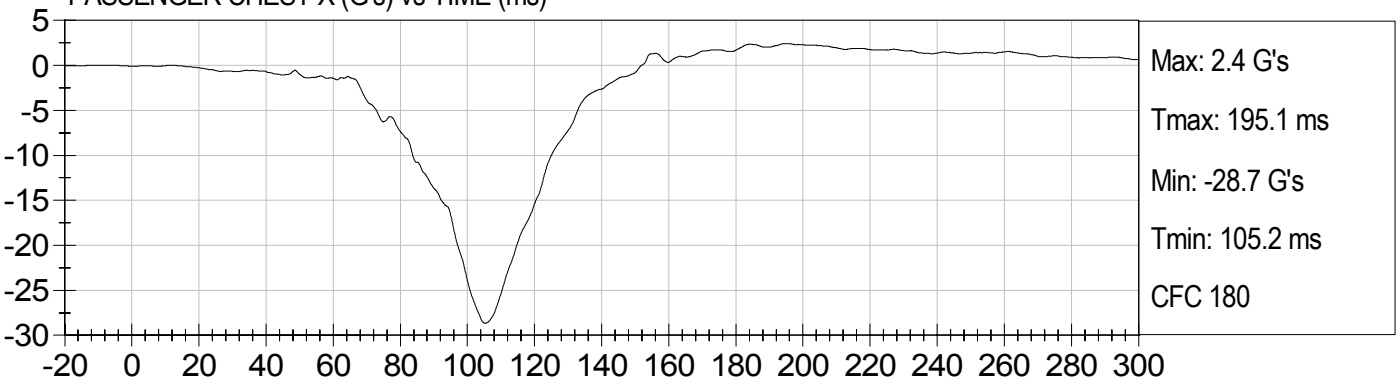
PASSENGER NECK MResultant (Nm) vs TIME (ms)



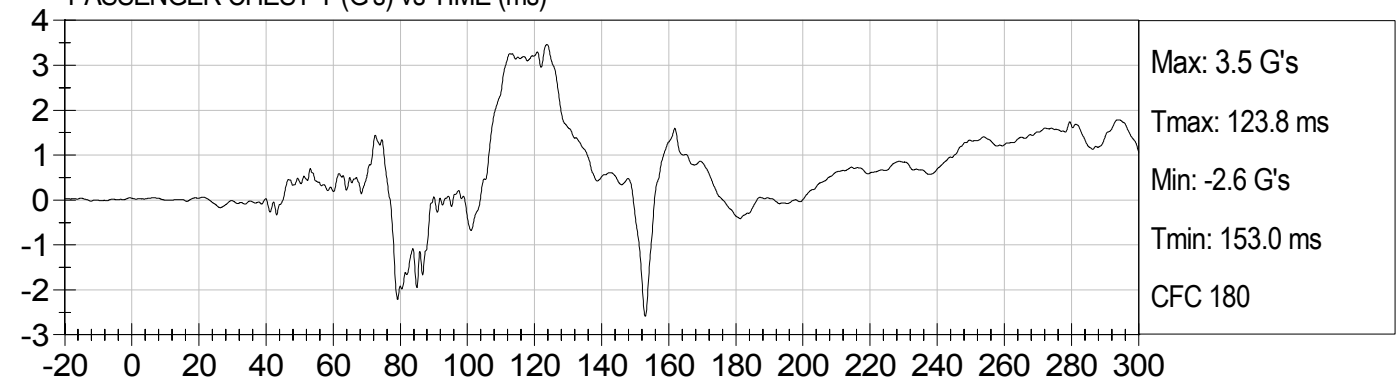
25 MPH LH OBLIQUE UNBELTED
2005 DODGE CARAVAN (C50313)

Test Date: 09/12/2006
Speed: 24.8 mph (39.9 km/h)

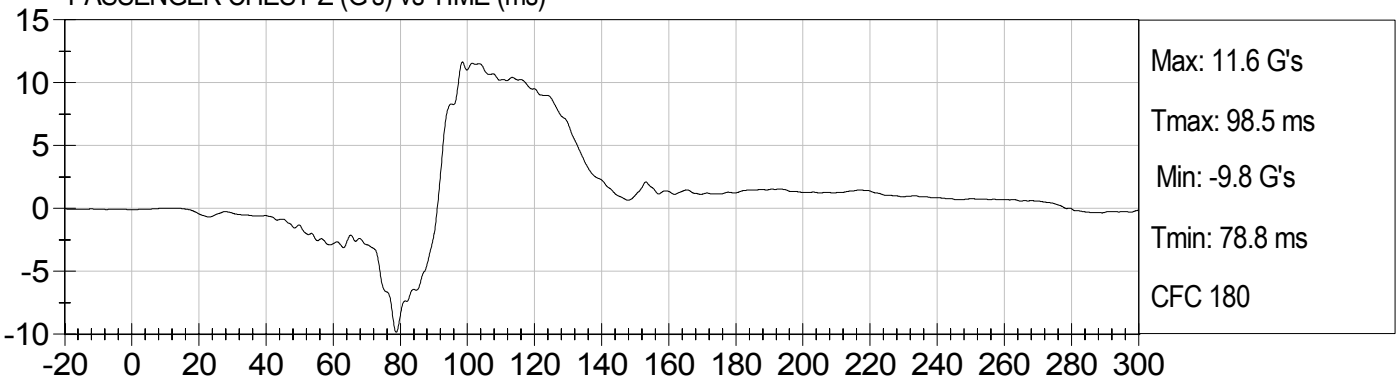
PASSENGER CHEST X (G's) vs TIME (ms)



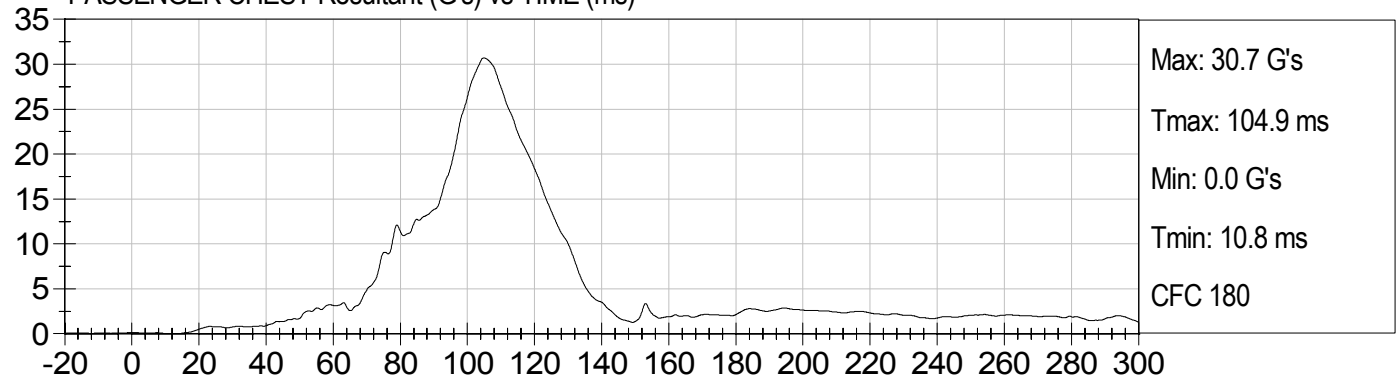
PASSENGER CHEST Y (G's) vs TIME (ms)



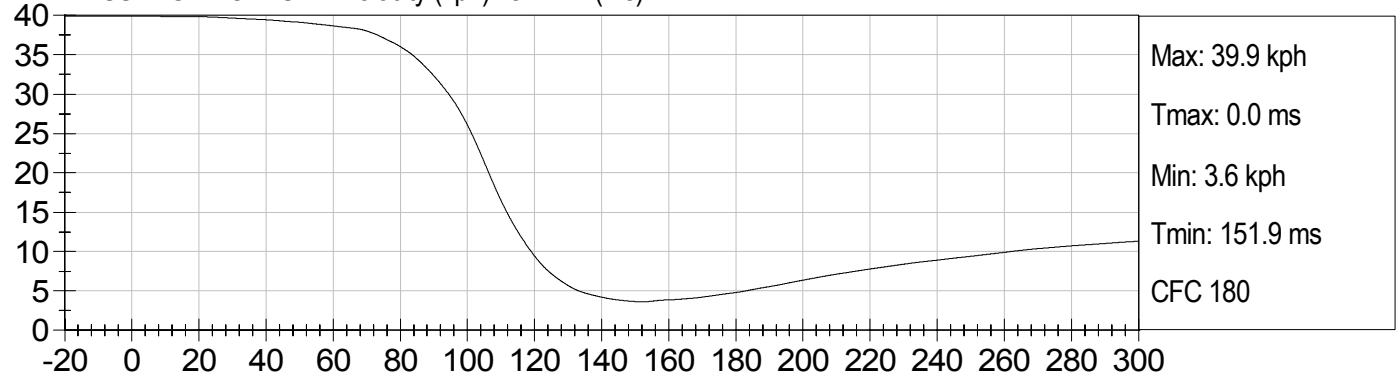
PASSENGER CHEST Z (G's) vs TIME (ms)



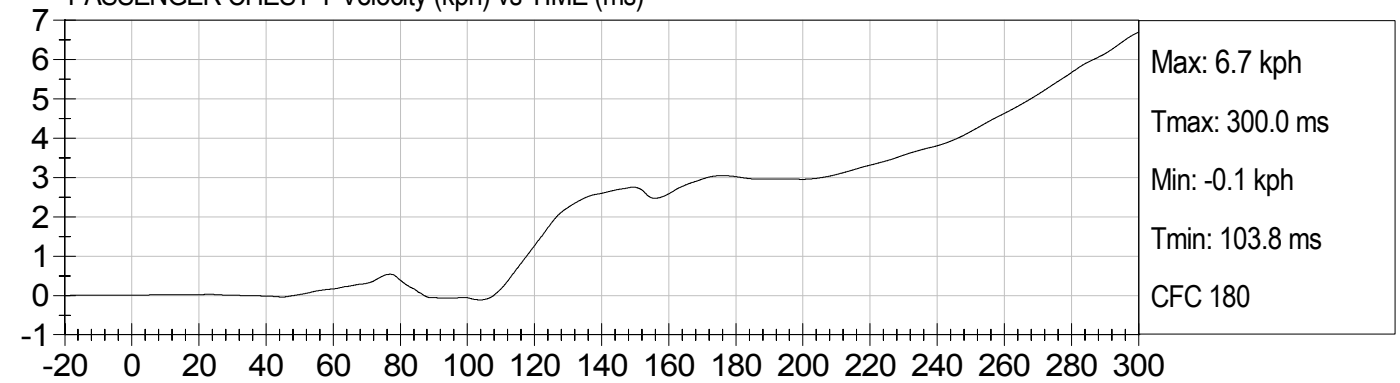
PASSENGER CHEST Resultant (G's) vs TIME (ms)



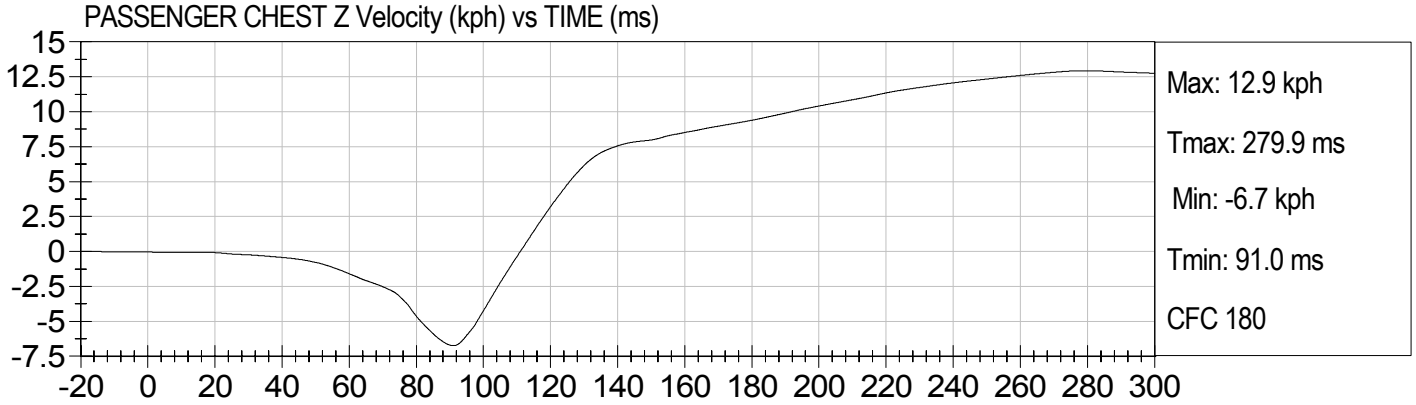
PASSENGER CHEST X Velocity (kph) vs TIME (ms)



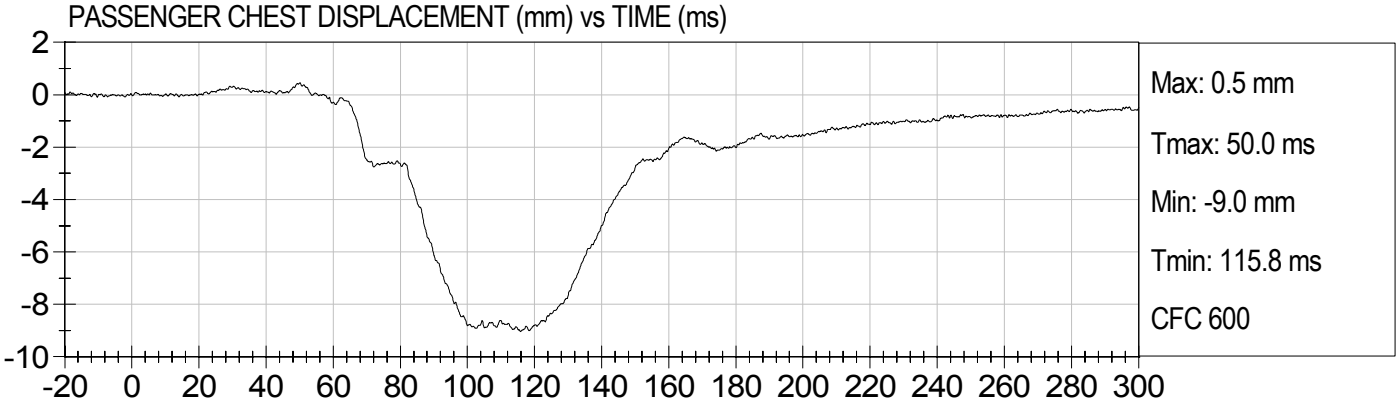
PASSENGER CHEST Y Velocity (kph) vs TIME (ms)



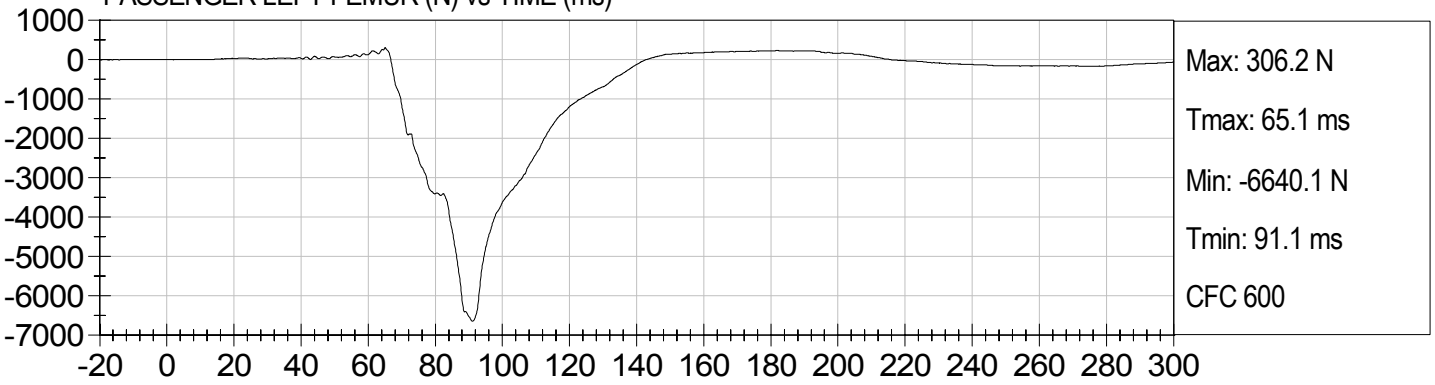
PASSENGER CHEST Z Velocity (kph) vs TIME (ms)



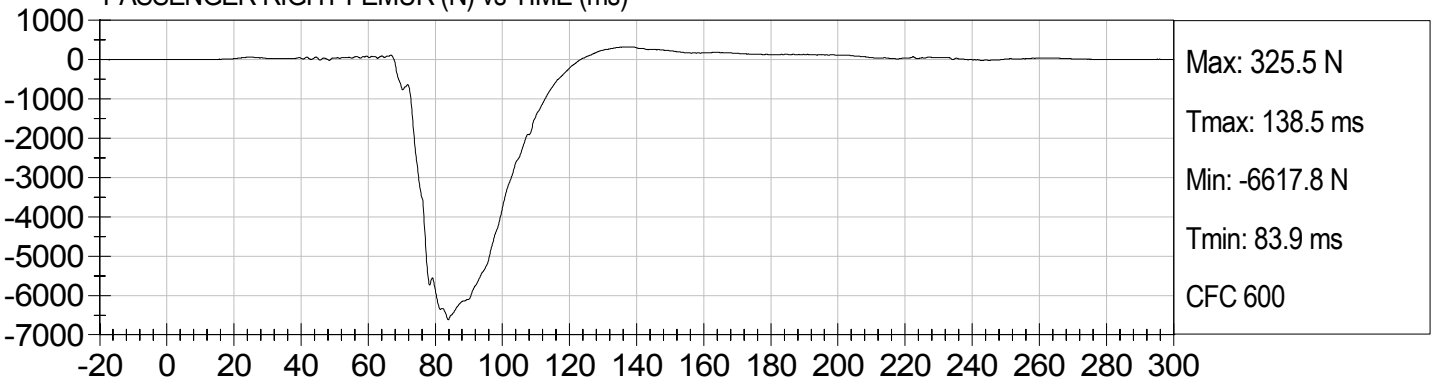
PASSENGER CHEST DISPLACEMENT (mm) vs TIME (ms)



PASSENGER LEFT FEMUR (N) vs TIME (ms)

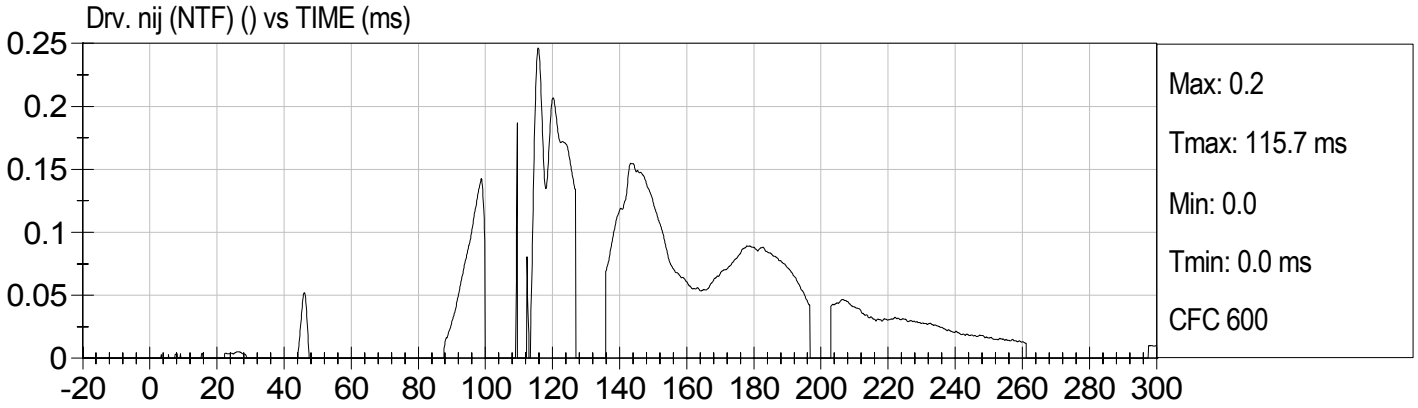


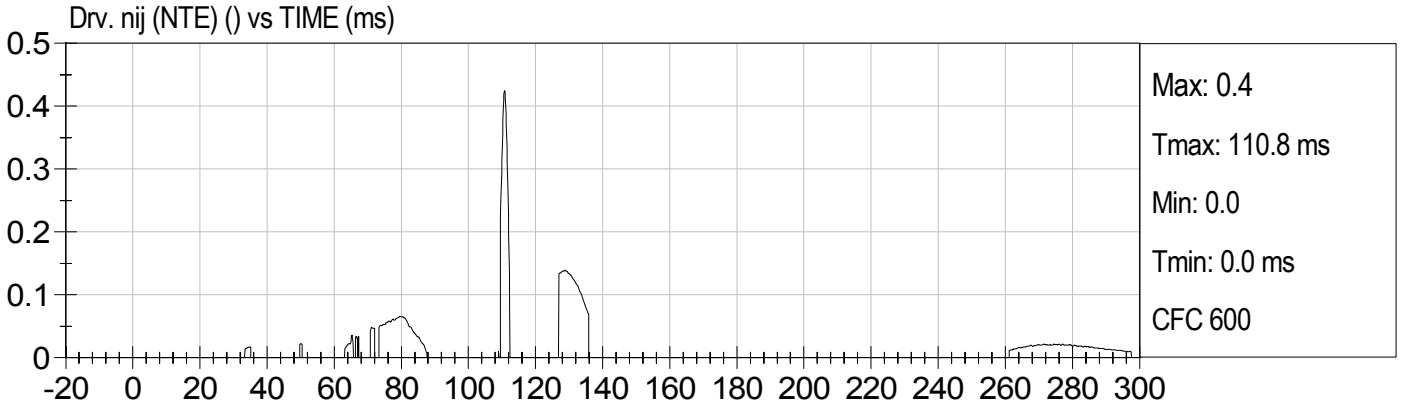
PASSENGER RIGHT FEMUR (N) vs TIME (ms)

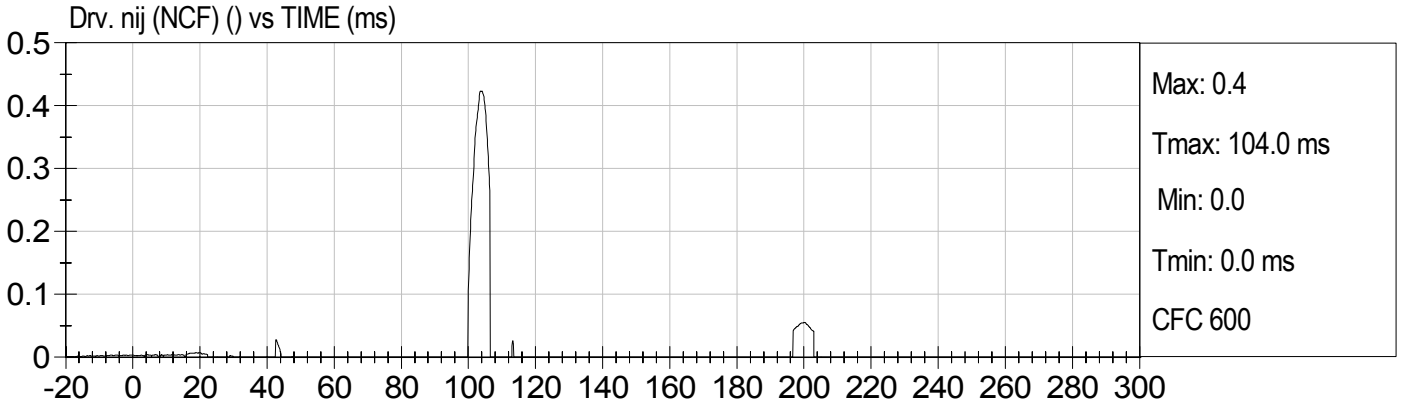


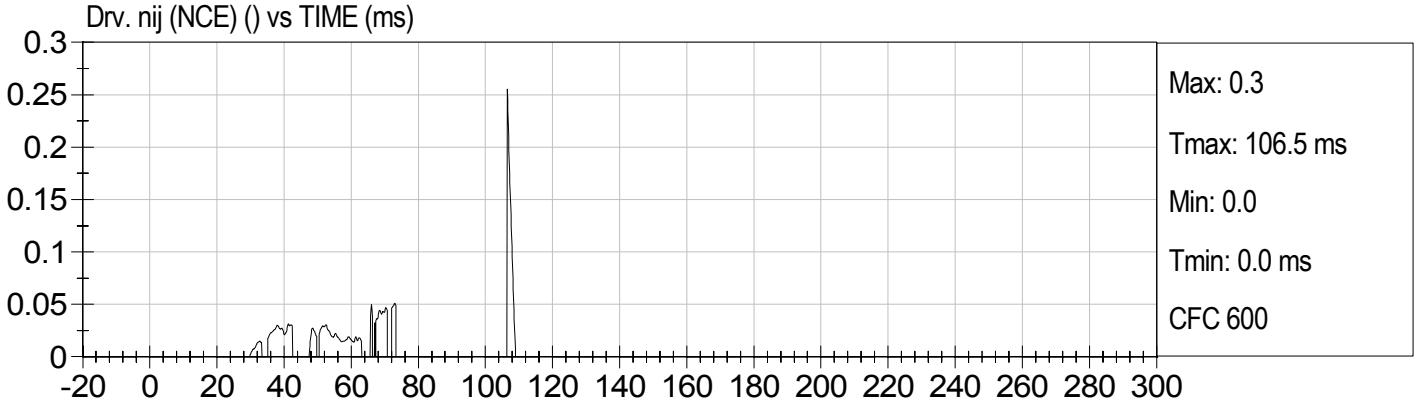
25 MPH LH OBLIQUE UNBELTED
2005 DODGE CARAVAN (C50313)

Test Date: 09/12/2006
Speed: 24.8 mph (39.9 km/h)



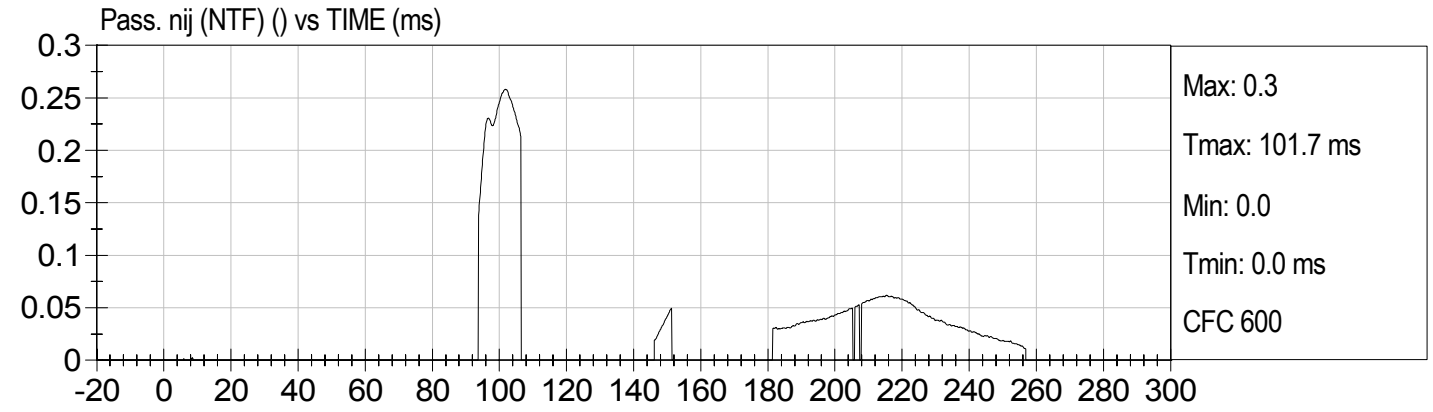


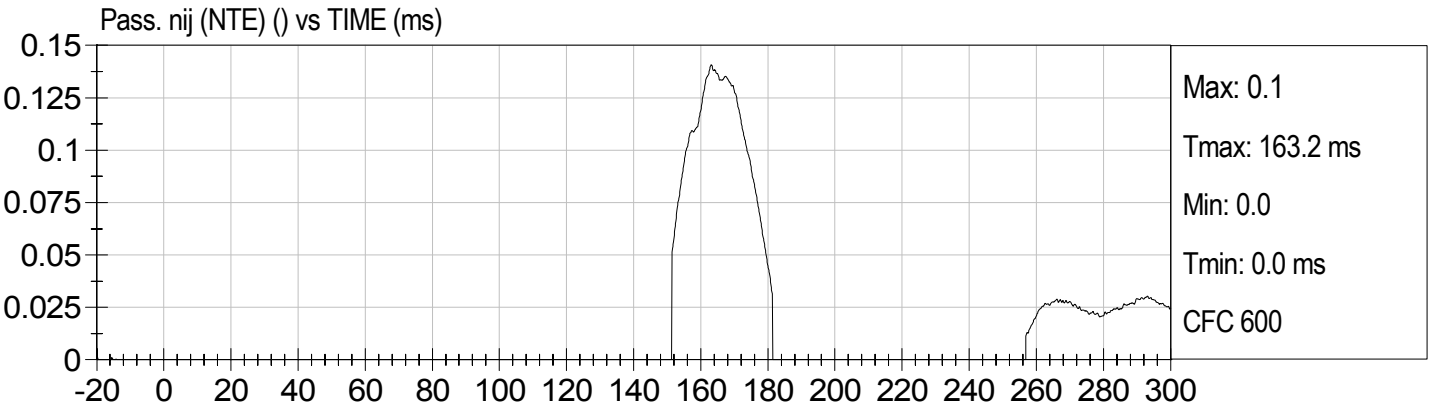


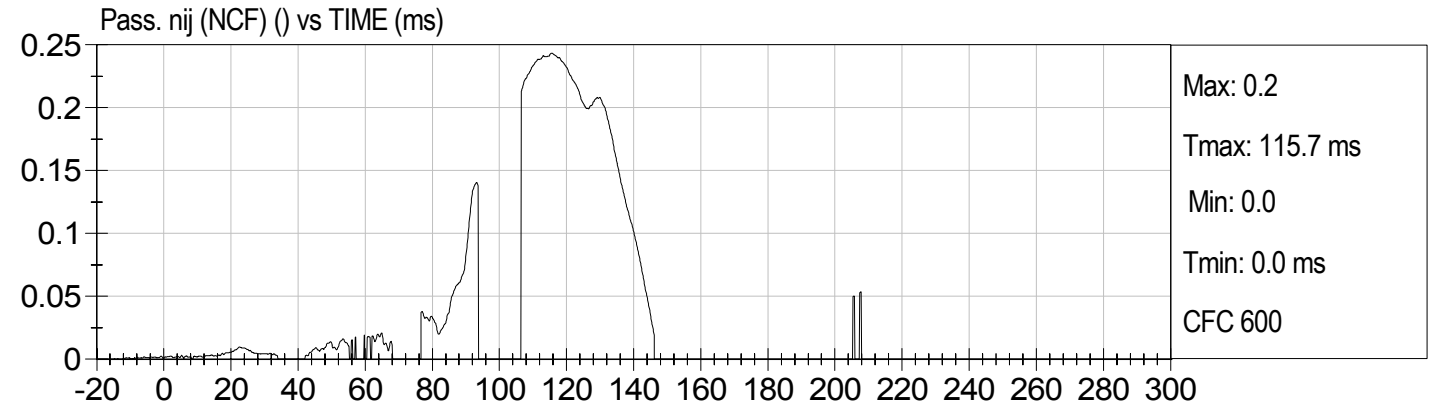


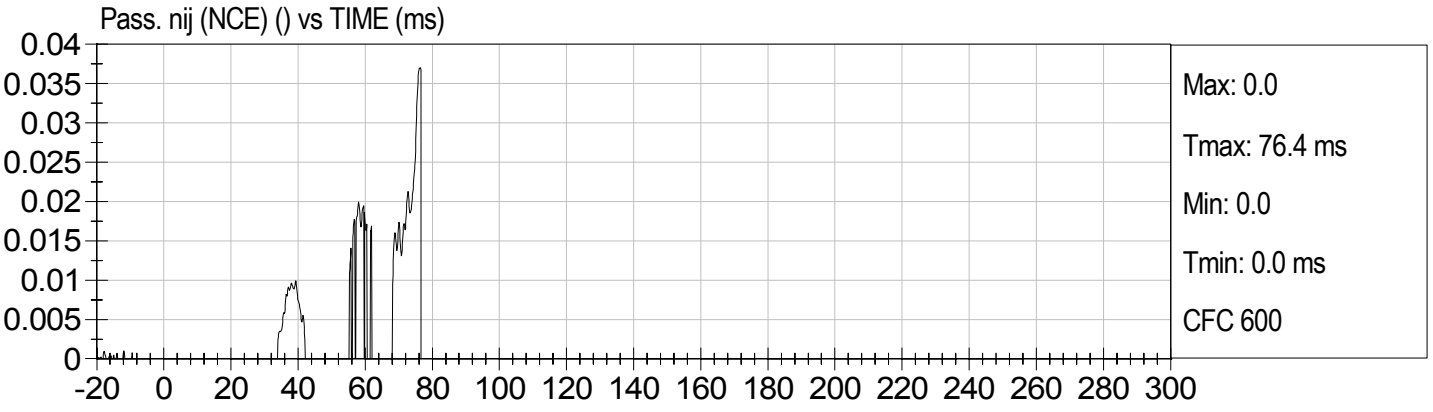
25 MPH LH OBLIQUE UNBELTED
2005 DODGE CARAVAN (C50313)

Test Date: 09/12/2006
Speed: 24.8 mph (39.9 km/h)

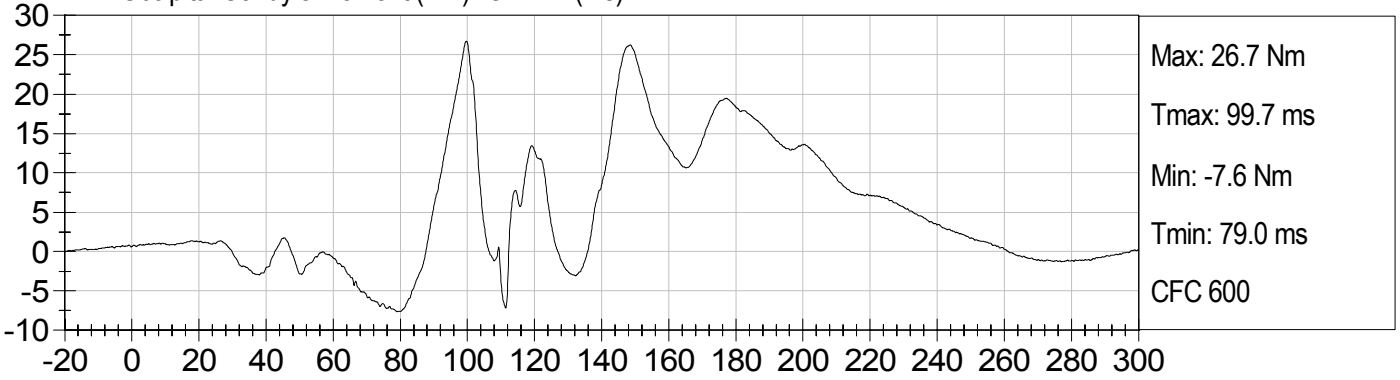




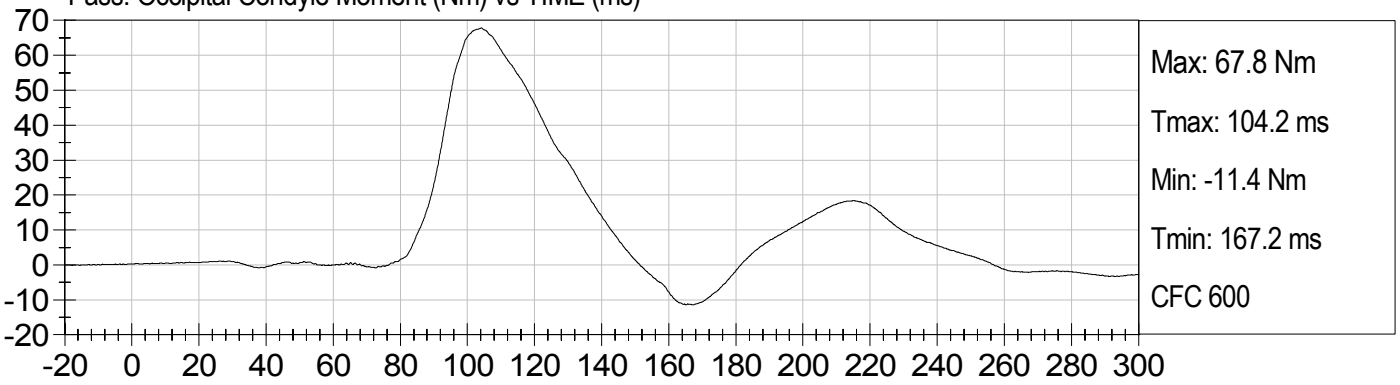




Drv. Occipital Condyle Moment (Nm) vs TIME (ms)



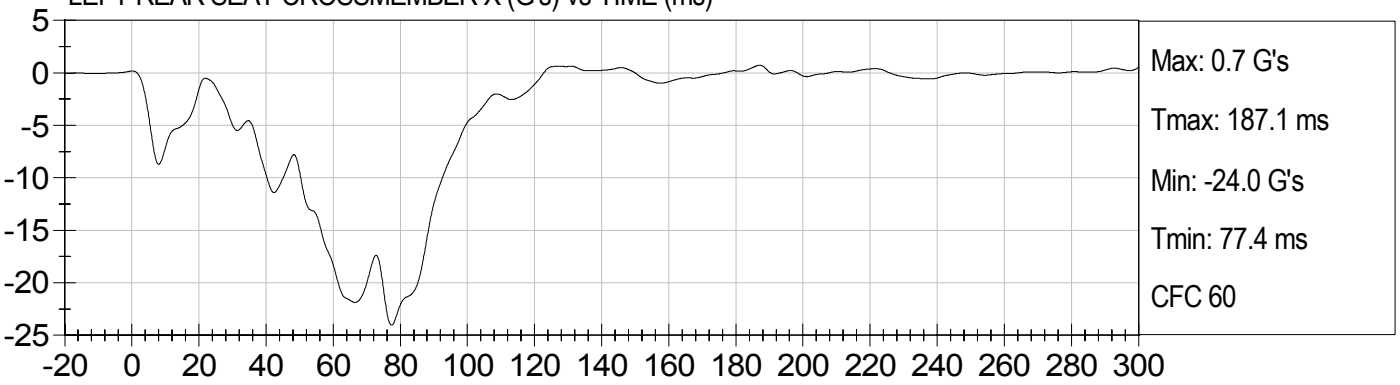
Pass. Occipital Condyle Moment (Nm) vs TIME (ms)



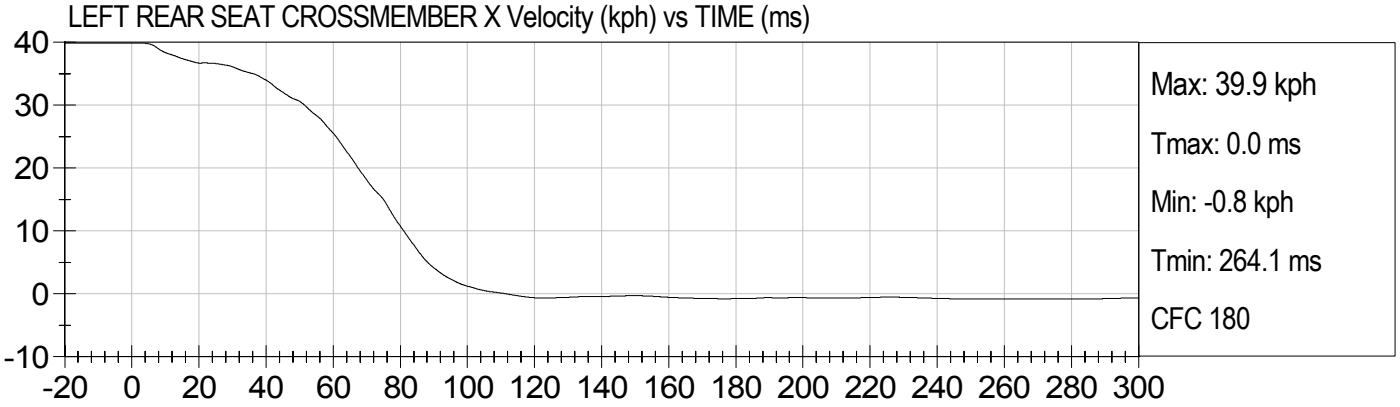
25 MPH LH OBLIQUE UNBELTED
2005 DODGE CARAVAN (C50313)

Test Date: 09/12/2006
Speed: 24.8 mph (39.9 km/h)

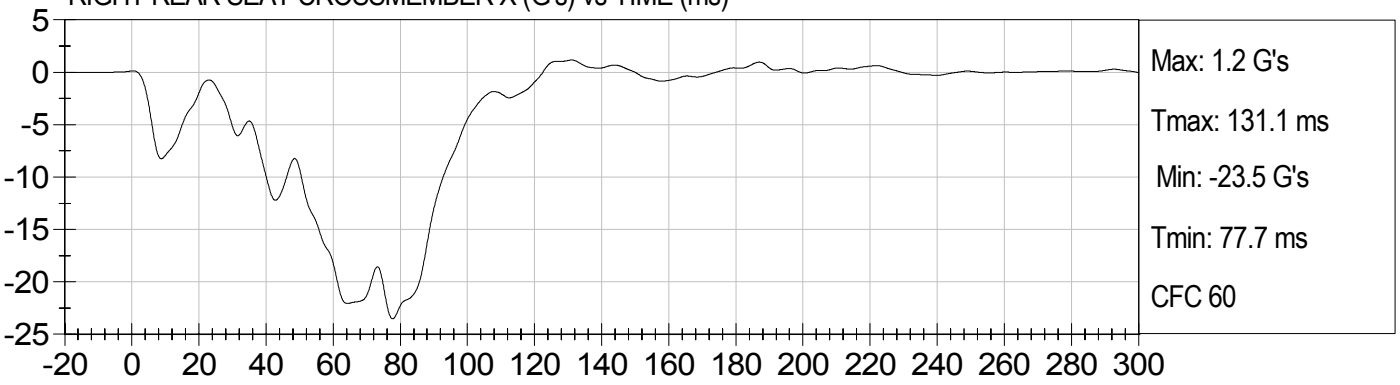
LEFT REAR SEAT CROSSMEMBER X (G's) vs TIME (ms)



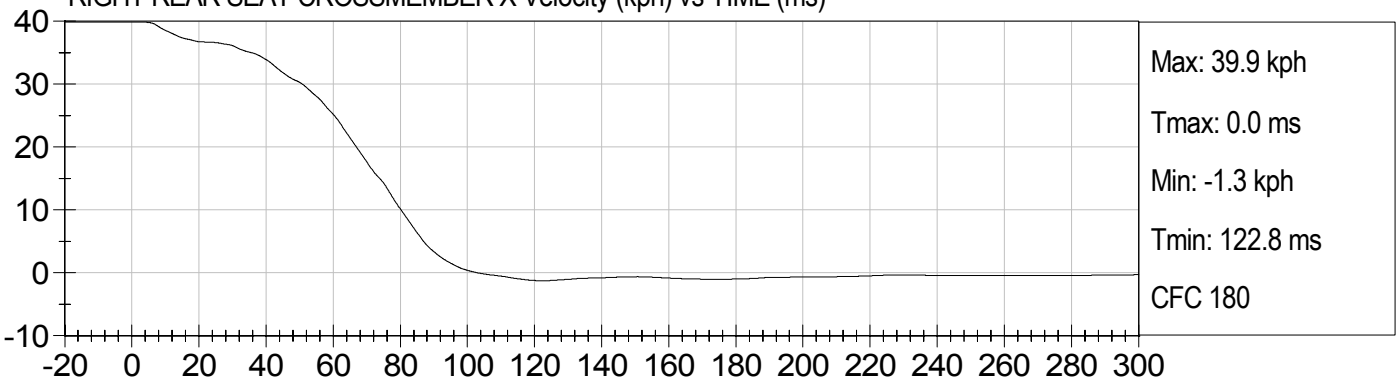
LEFT REAR SEAT CROSSMEMBER X Velocity (kph) vs TIME (ms)



RIGHT REAR SEAT CROSSMEMBER X (G's) vs TIME (ms)



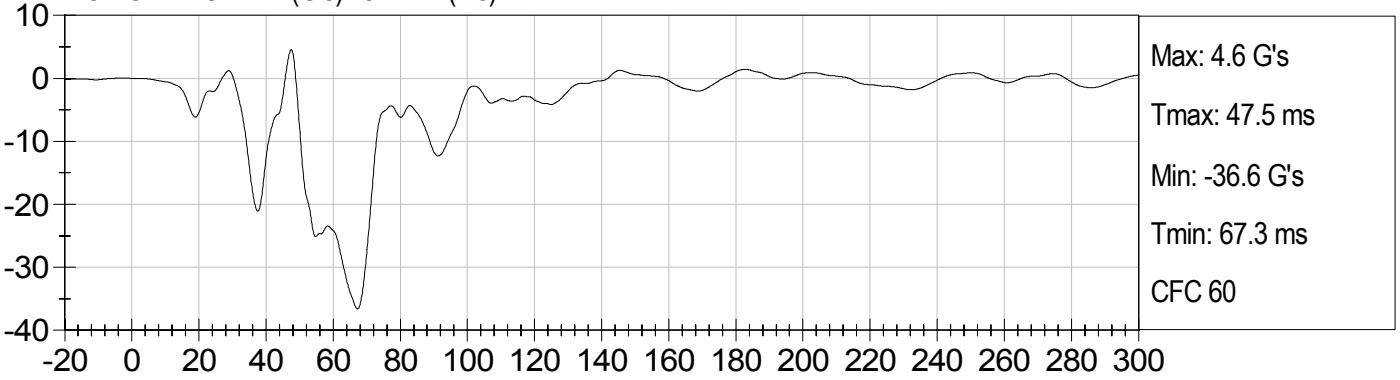
RIGHT REAR SEAT CROSSMEMBER X Velocity (kph) vs TIME (ms)



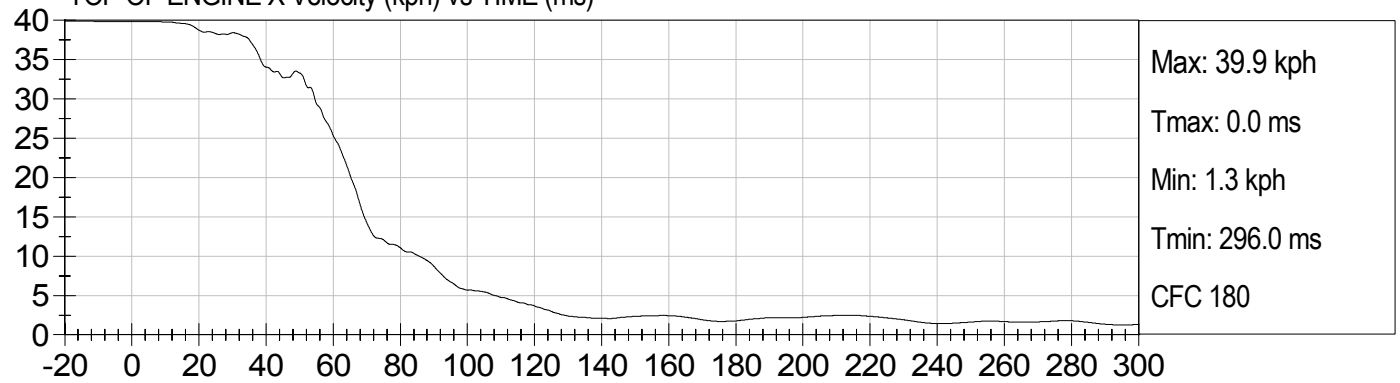
25 MPH LH OBLIQUE UNBELTED
2005 DODGE CARAVAN (C50313)

Test Date: 09/12/2006
Speed: 24.8 mph (39.9 km/h)

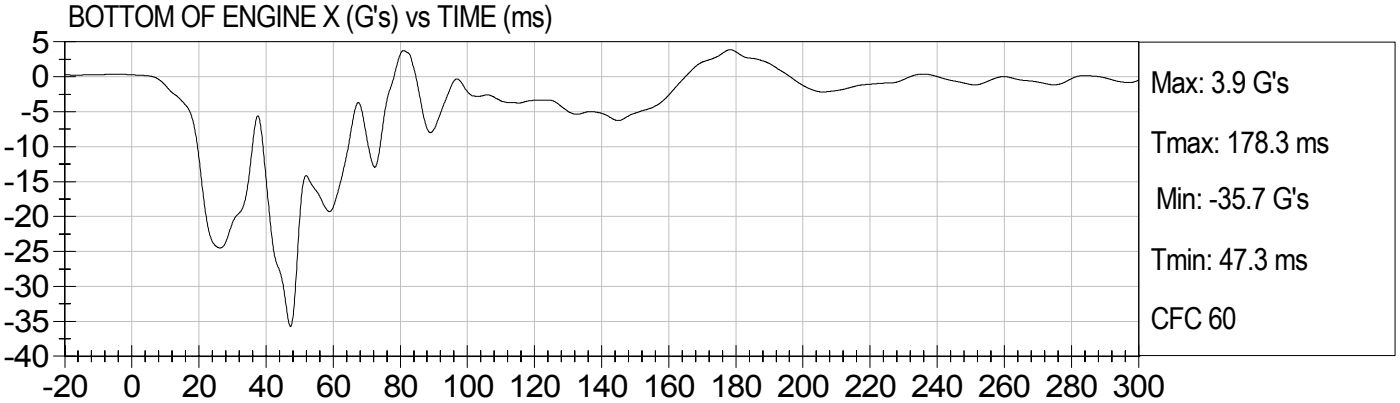
TOP OF ENGINE X (G's) vs TIME (ms)



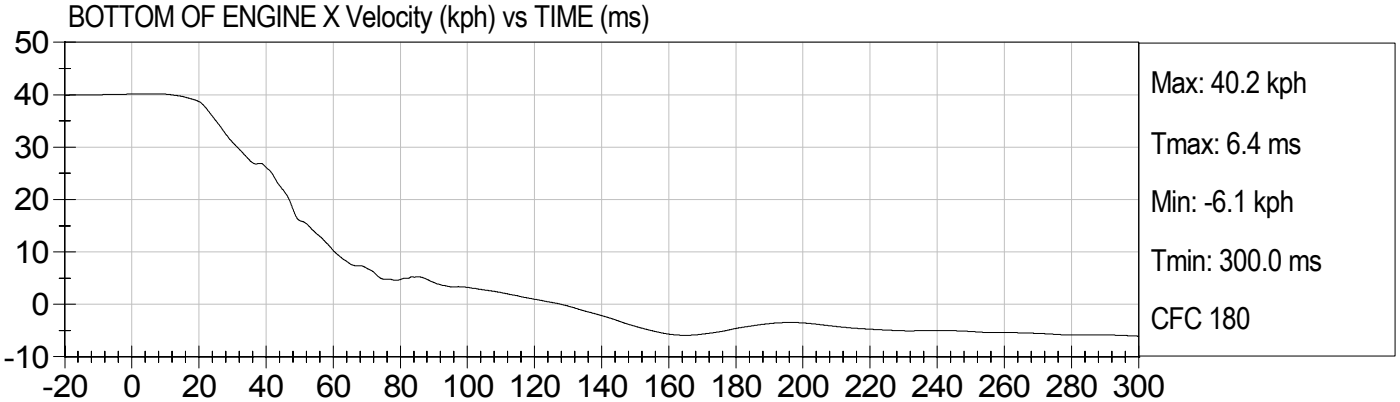
TOP OF ENGINE X Velocity (kph) vs TIME (ms)



BOTTOM OF ENGINE X (G's) vs TIME (ms)



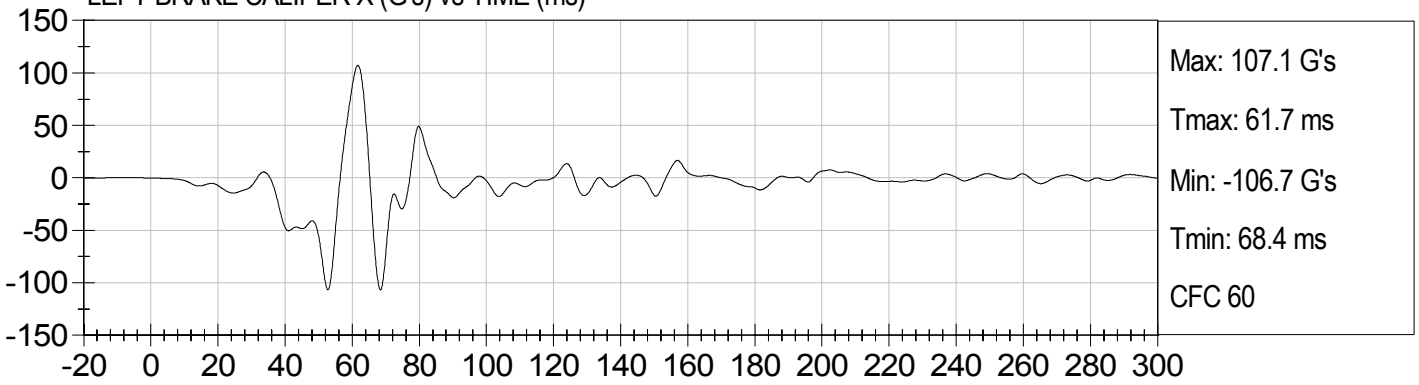
BOTTOM OF ENGINE X Velocity (kph) vs TIME (ms)



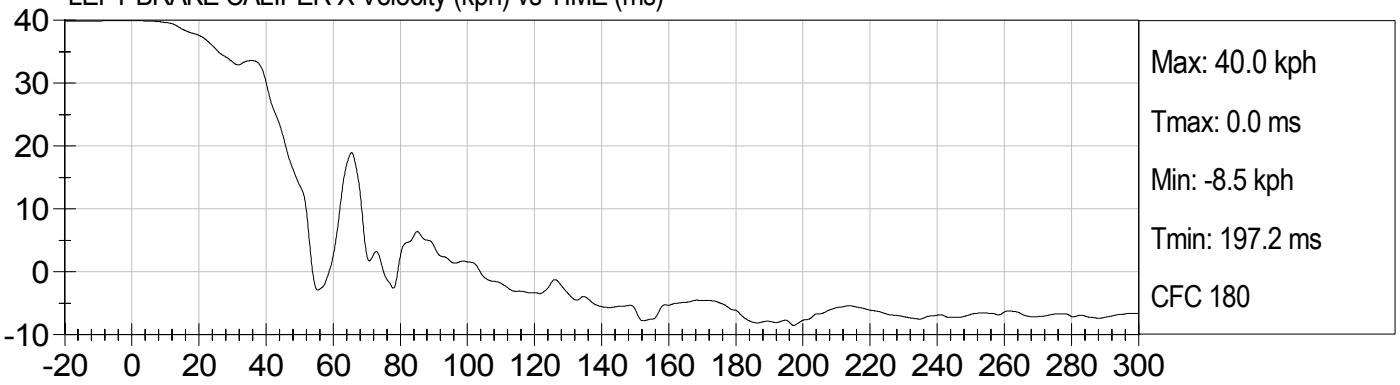
25 MPH LH OBLIQUE UNBELTED
2005 DODGE CARAVAN (C50313)

Test Date: 09/12/2006
Speed: 24.8 mph (39.9 km/h)

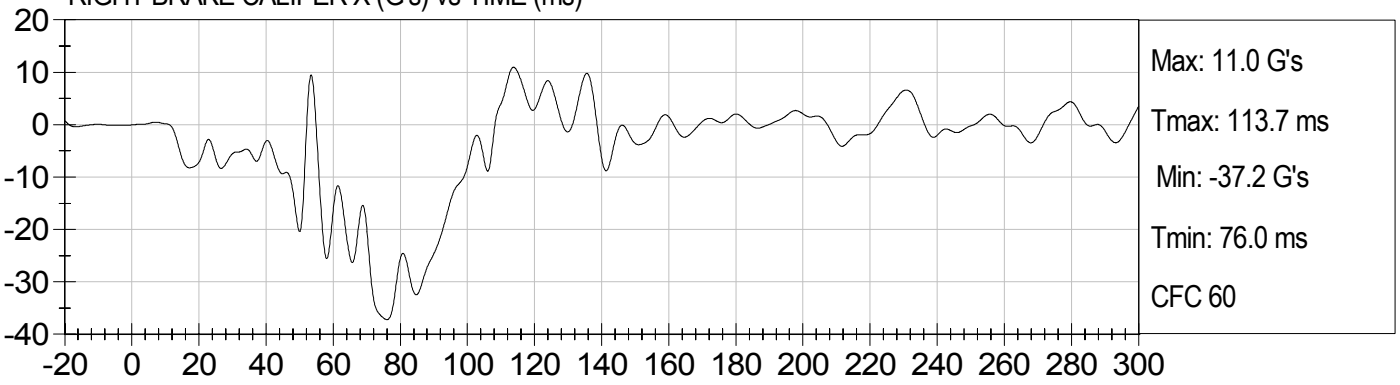
LEFT BRAKE CALIPER X (G's) vs TIME (ms)



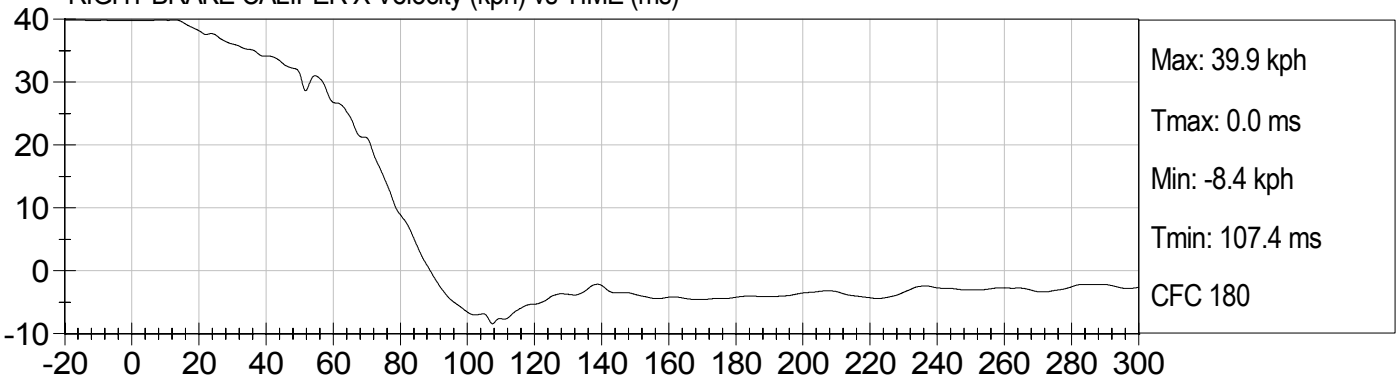
LEFT BRAKE CALIPER X Velocity (kph) vs TIME (ms)



RIGHT BRAKE CALIPER X (G's) vs TIME (ms)



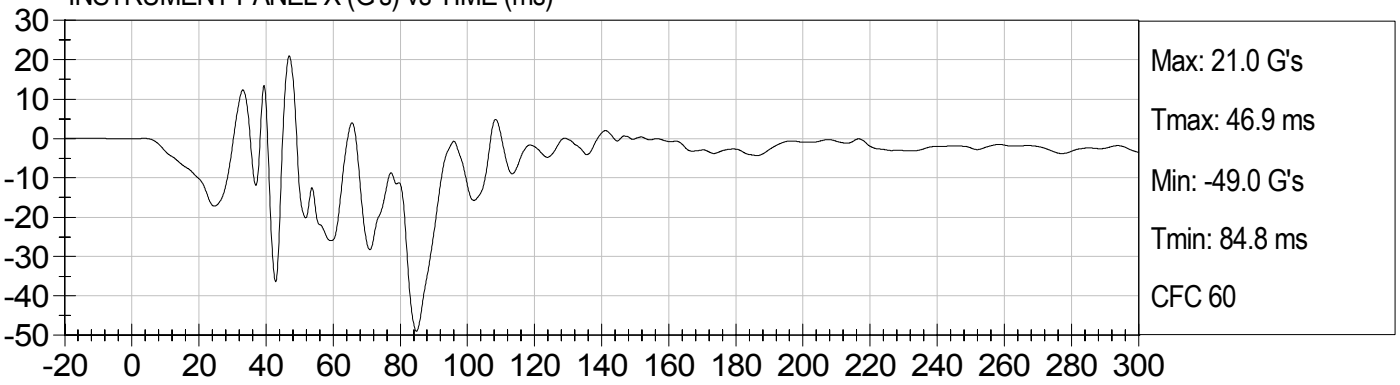
RIGHT BRAKE CALIPER X Velocity (kph) vs TIME (ms)



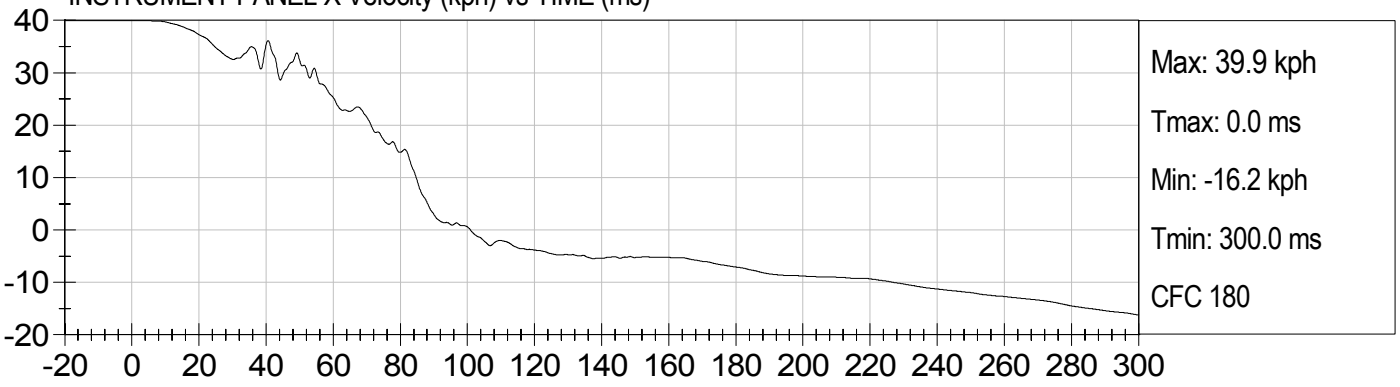
25 MPH LH OBLIQUE UNBELTED
2005 DODGE CARAVAN (C50313)

Test Date: 09/12/2006
Speed: 24.8 mph (39.9 km/h)

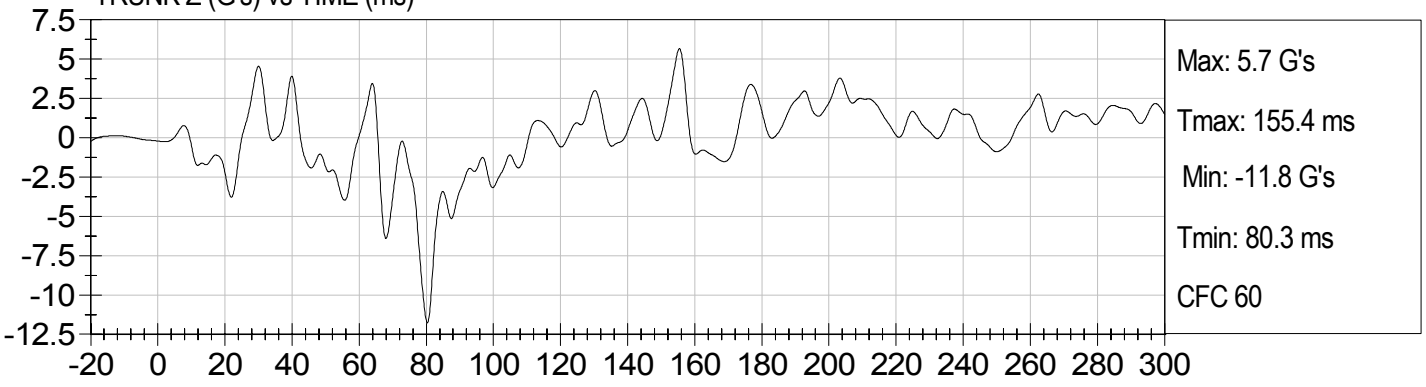
INSTRUMENT PANEL X (G's) vs TIME (ms)



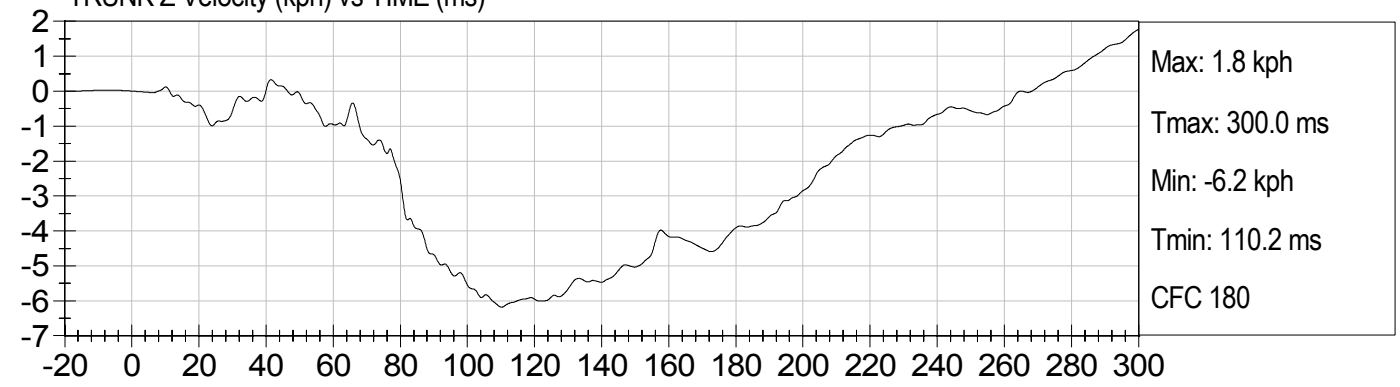
INSTRUMENT PANEL X Velocity (kph) vs TIME (ms)



TRUNK Z (G's) vs TIME (ms)



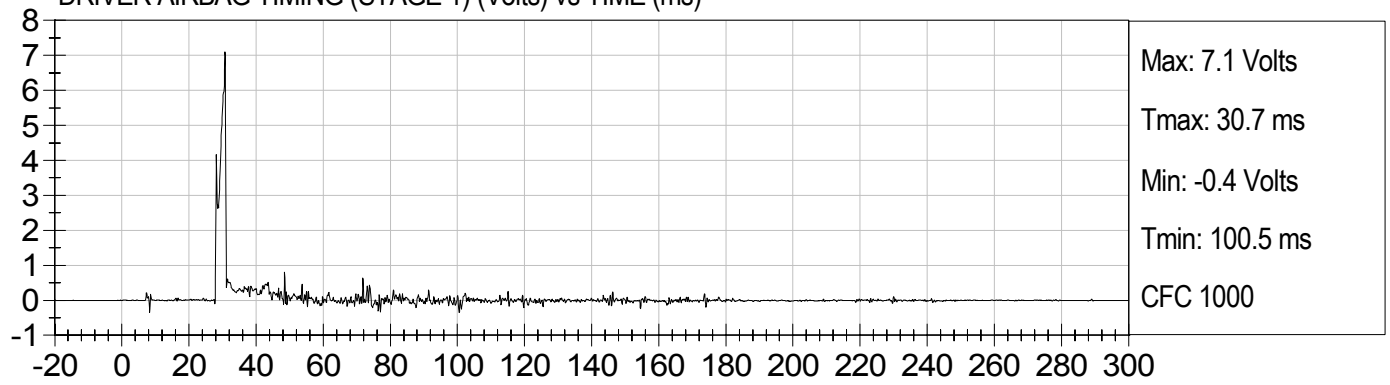
TRUNK Z Velocity (kph) vs TIME (ms)



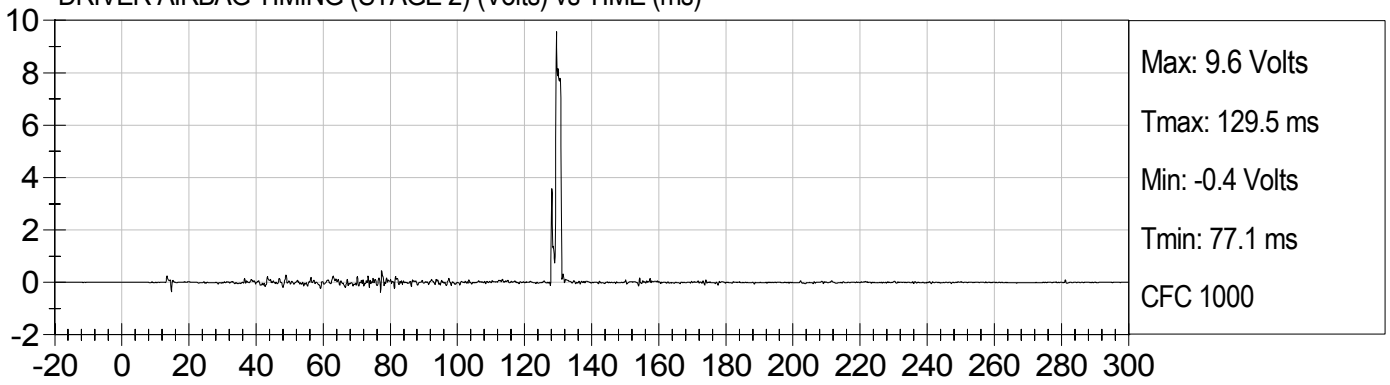
25 MPH LH OBLIQUE UNBELTED
2005 DODGE CARAVAN (C50313)

Test Date: 09/12/2006
Speed: 24.8 mph (39.9 km/h)

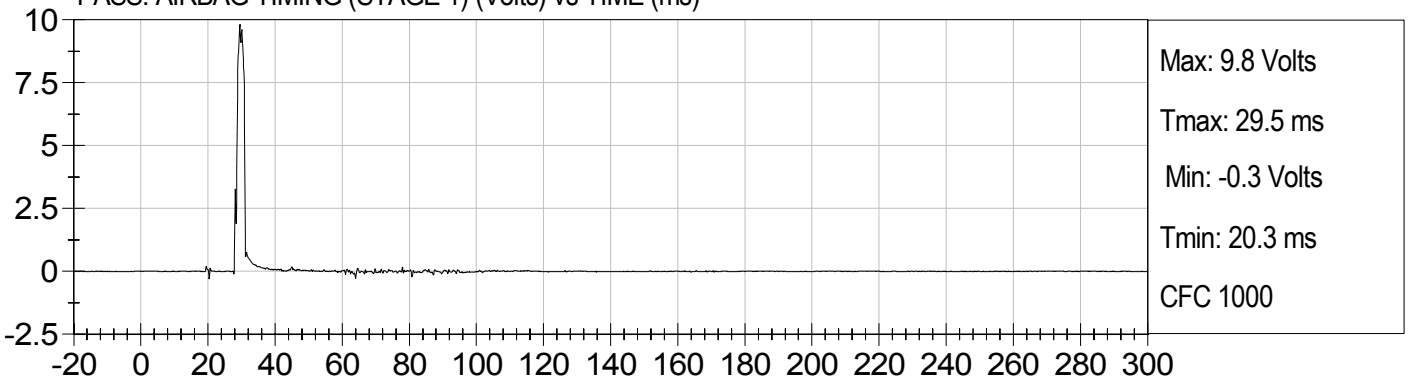
DRIVER AIRBAG TIMING (STAGE 1) (Volts) vs TIME (ms)



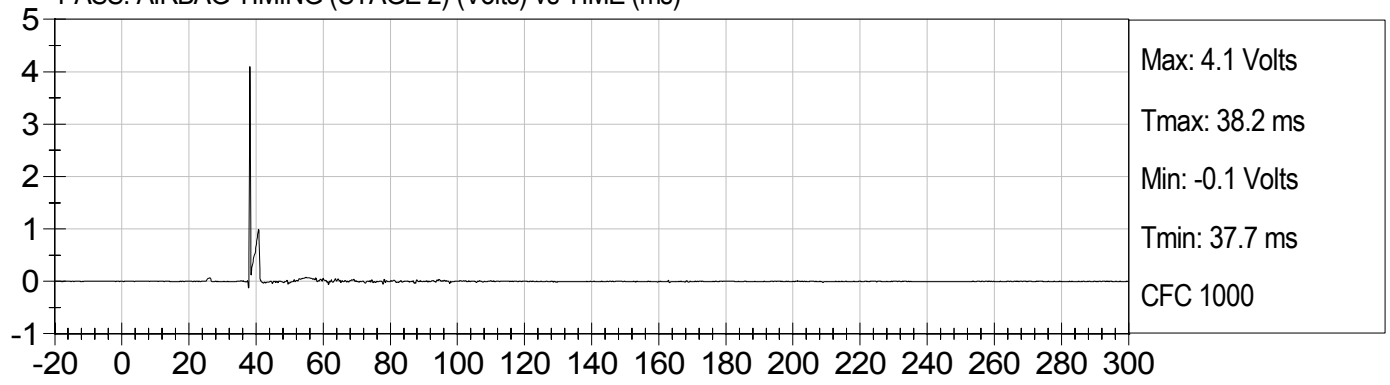
DRIVER AIRBAG TIMING (STAGE 2) (Volts) vs TIME (ms)



PASS. AIRBAG TIMING (STAGE 1) (Volts) vs TIME (ms)



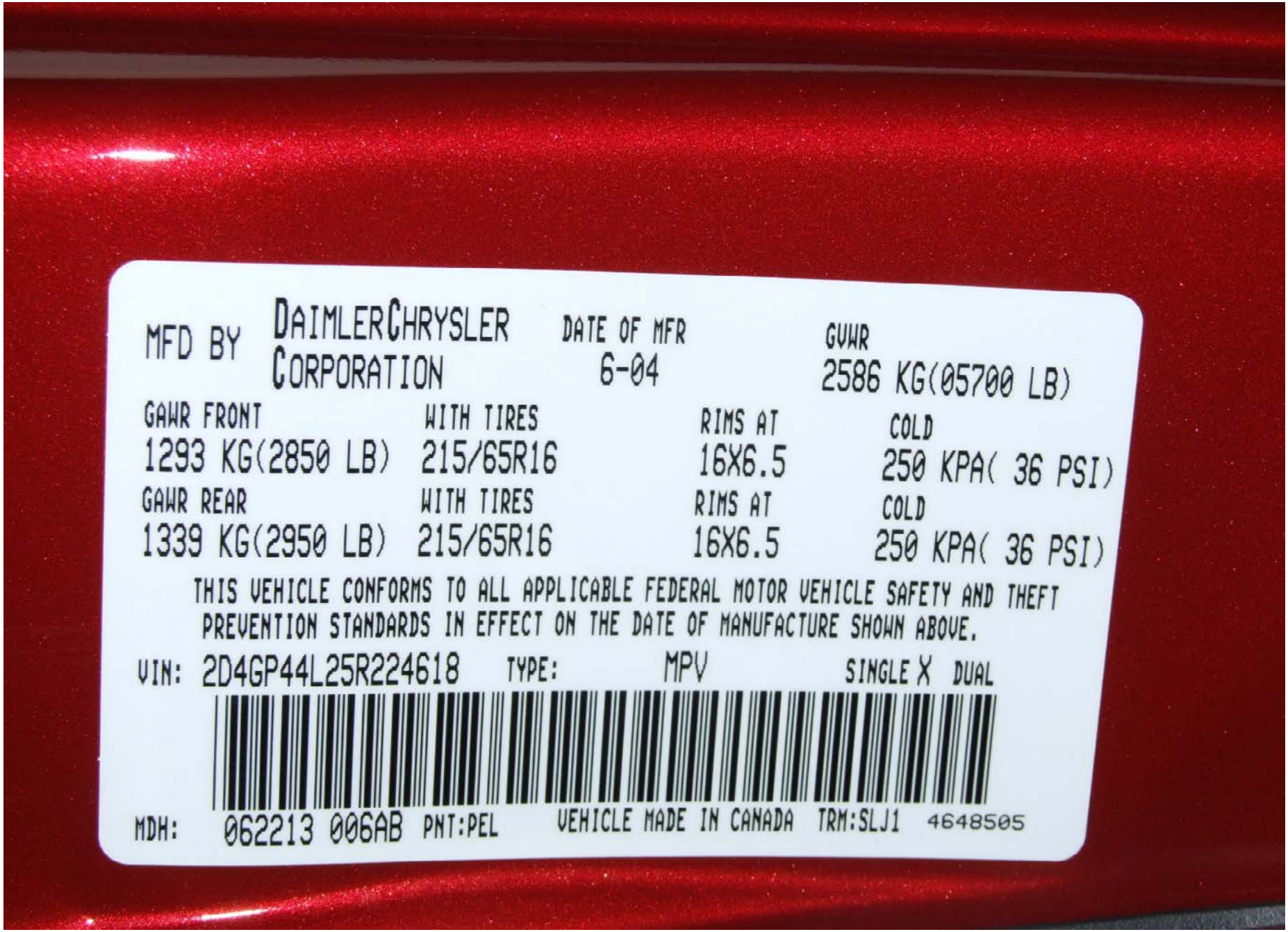
PASS. AIRBAG TIMING (STAGE 2) (Volts) vs TIME (ms)



APPENDIX B

CRASH TEST PHOTOGRAPHS

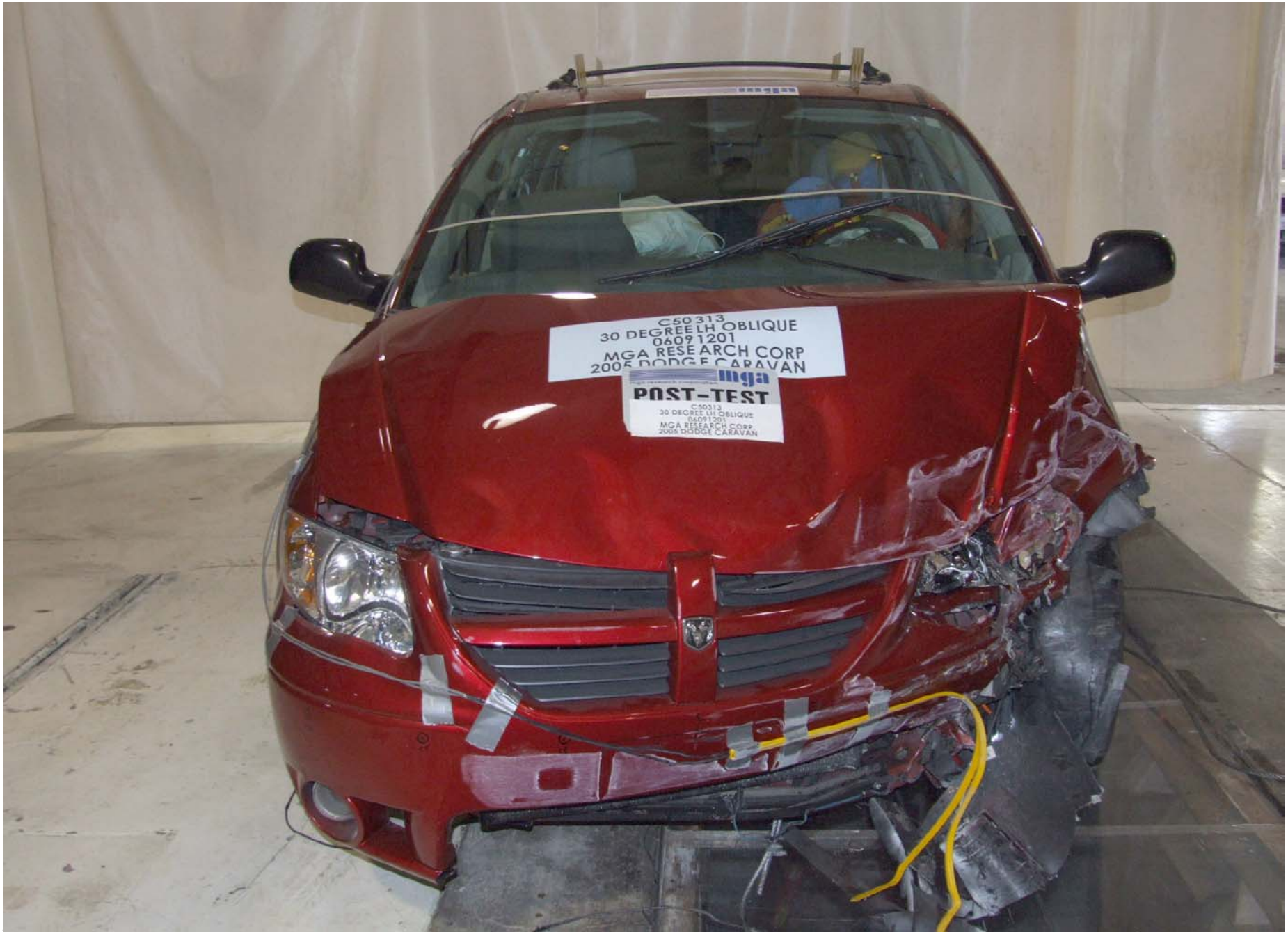
TABLE OF PHOTOGRAPHS



Vehicle Certification Label

Tire Placard

Pre-Test Front View of Test Vehicle



Post-Test Front View of Test Vehicle

Pre-Test Left Side View of Test Vehicle

Post-Test Left Side View of Test Vehicle

Pre-Test Right Side View of Test Vehicle

Post-Test Right Side View of Test Vehicle

Pre-Test Right Front Three-Quarter View of Test Vehicle

Post-Test Right Front Three-Quarter View of Test Vehicle

Pre-Test Left Front Three-Quarter View of Test Vehicle

Post-Test Left Front Three-Quarter View of Test Vehicle

Pre-Test Right Rear Three-Quarter View of Test Vehicle

Post-Test Right Rear Three-Quarter View of Test Vehicle

Pre-Test Left Rear Three-Quarter View of Test Vehicle

Post-Test Left Rear Three-Quarter View of Test Vehicle

Pre-Test Rear View of Test Vehicle

Post-Test Rear View of Test Vehicle

Pre-Test Windshield View

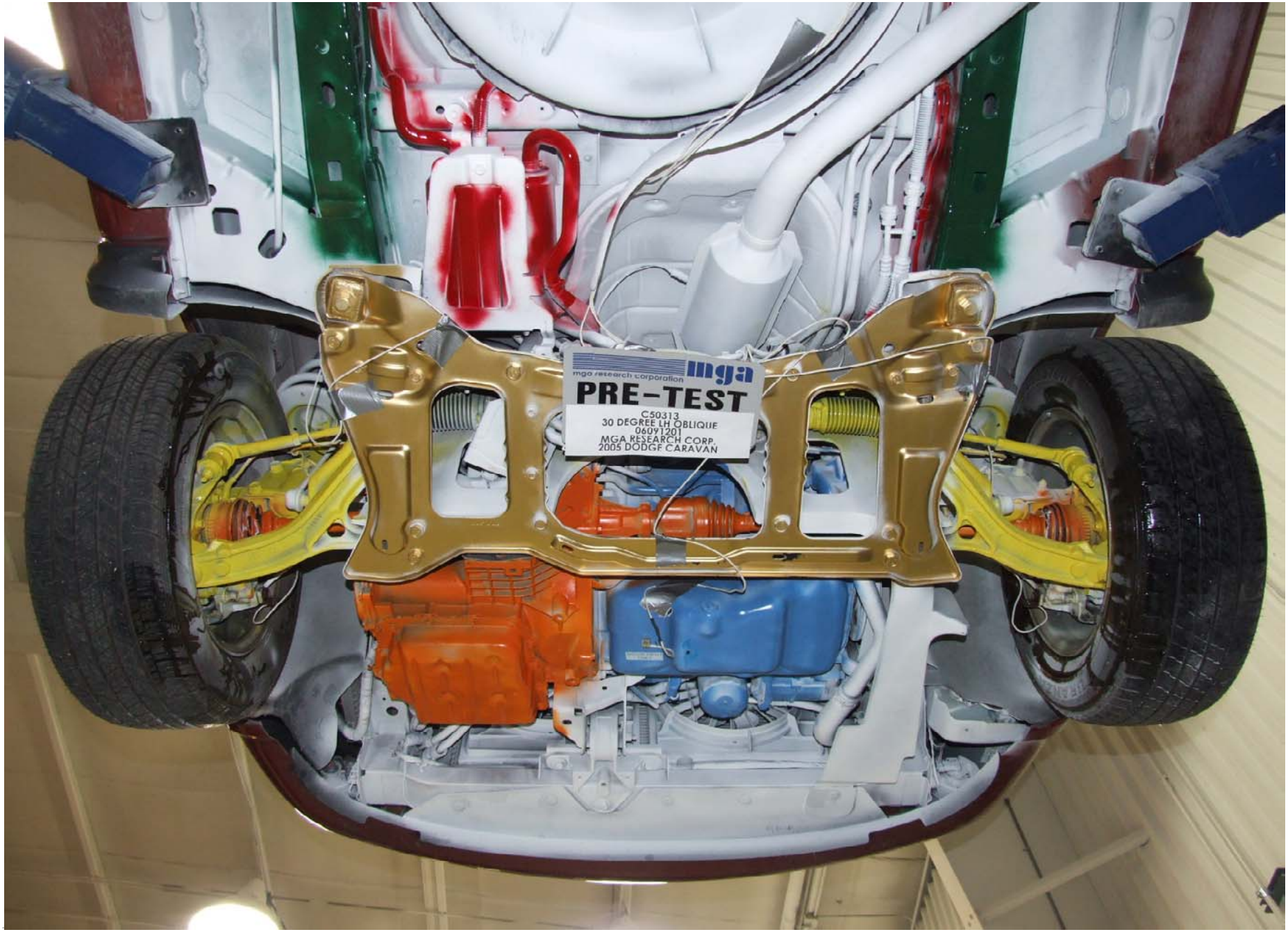
Post-Test Windshield View

Pre-Test Engine Compartment View

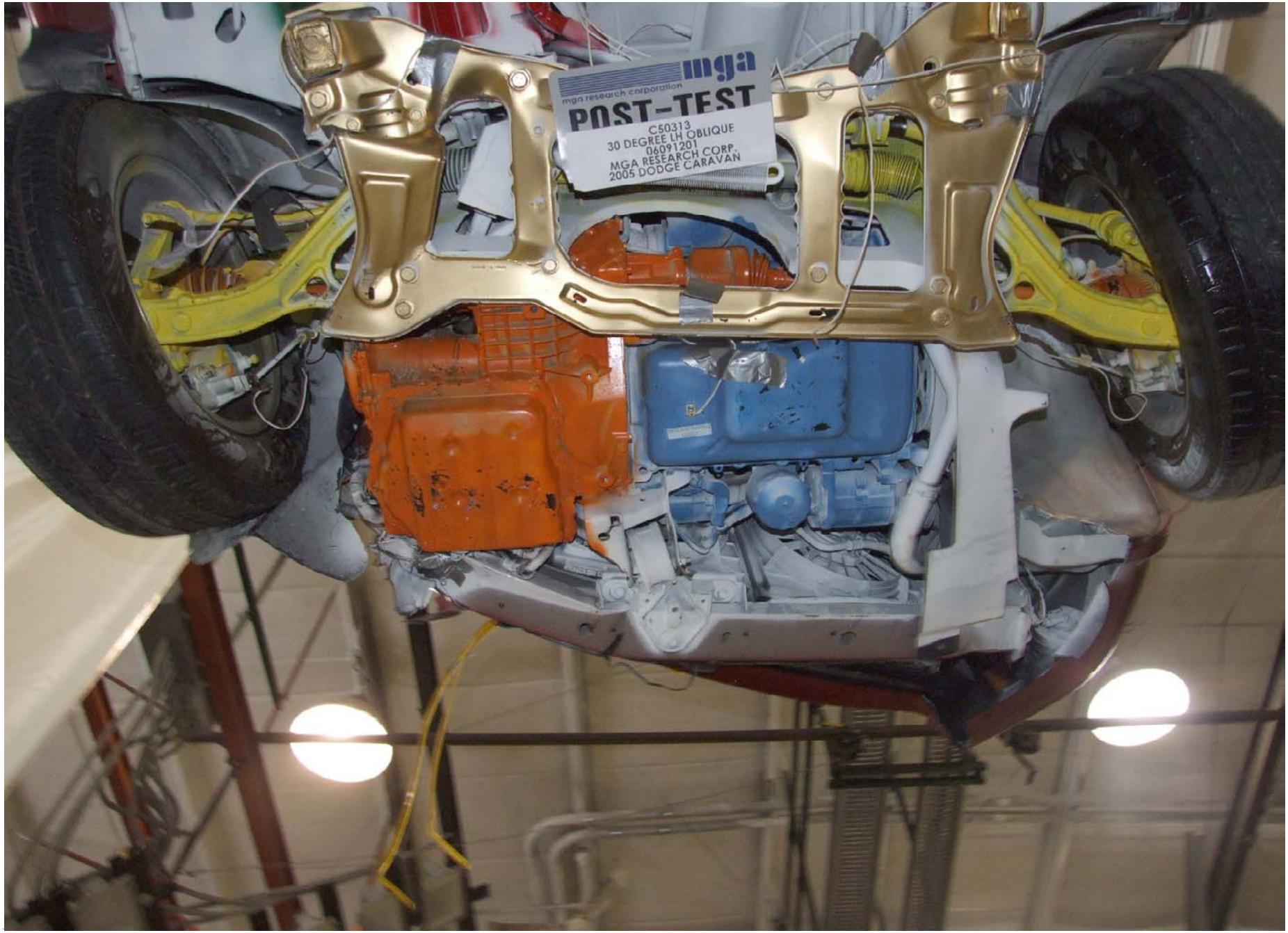
Post-Test Engine Compartment View

Pre-Test Fuel Filler Cap View

Post-Test Fuel Filler Cap View



Pre-Test Front Underbody View

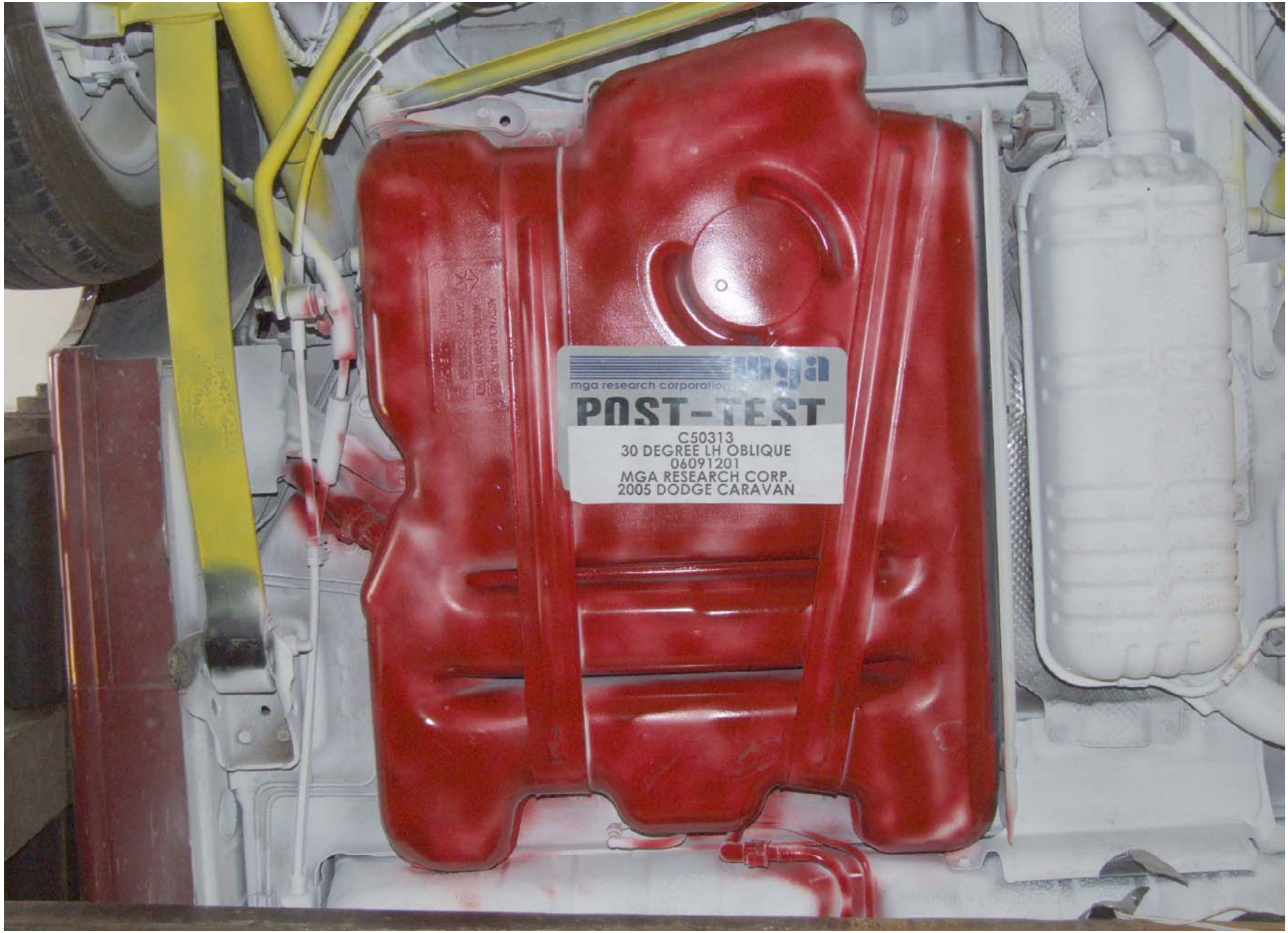


Post-Test Front Underbody View

Pre-Test Mid Underbody View

Post-Test Mid Underbody View

Pre-Test Fuel Tank View



Post-Test Fuel Tank View

Pre-Test Rear Underbody View

Post-Test Rear Underbody View

Pre-Test Driver Dummy Front View (head position)

Post-Test Driver Dummy Front View (head position)

Pre-Test Driver Dummy Position Left Side View

Post-Test Driver Dummy Position Left Side View

Pre-Test Driver Dummy Position Left Side View (Door Open)

Post-Test Driver Dummy Position Left Side View (Door Open)

Pre-Test Driver Dummy Seat Position

Post-Test Driver Dummy Seat Position

Pre-Test Driver Dummy Feet Position

Post-Test Driver Dummy Feet Position

Pre-Test Driver Side Knee Bolster View

Post-Test Driver Side Knee Bolster View

Post-Test Driver Dummy Head Contact (a-pillar) View 1

Post-Test Driver Dummy Head Contact (a-pillar) View 2

Post-Test Driver Dummy Knee Contact (door)

Post-Test Driver Dummy Knee Contact (left side view)

Post-Test Driver Dummy Knee Contact (right side view)

Post-Test Driver Dummy Airbag Contact

Pre-Test Passenger Dummy Front View (head position)

Post-Test Passenger Dummy Front View (head position)

Pre-Test Passenger Dummy Position Right Side View

Post-Test Passenger Dummy Position Right Side View

Pre-Test Passenger Dummy Position Right Side View (Door Open)

Post-Test Passenger Dummy Position Right Side View (Door Open)

Pre-Test Passenger Dummy Seat Position

Post-Test Passenger Dummy Seat Position

Pre-Test Passenger Dummy Feet Position

Post-Test Passenger Dummy Feet Position

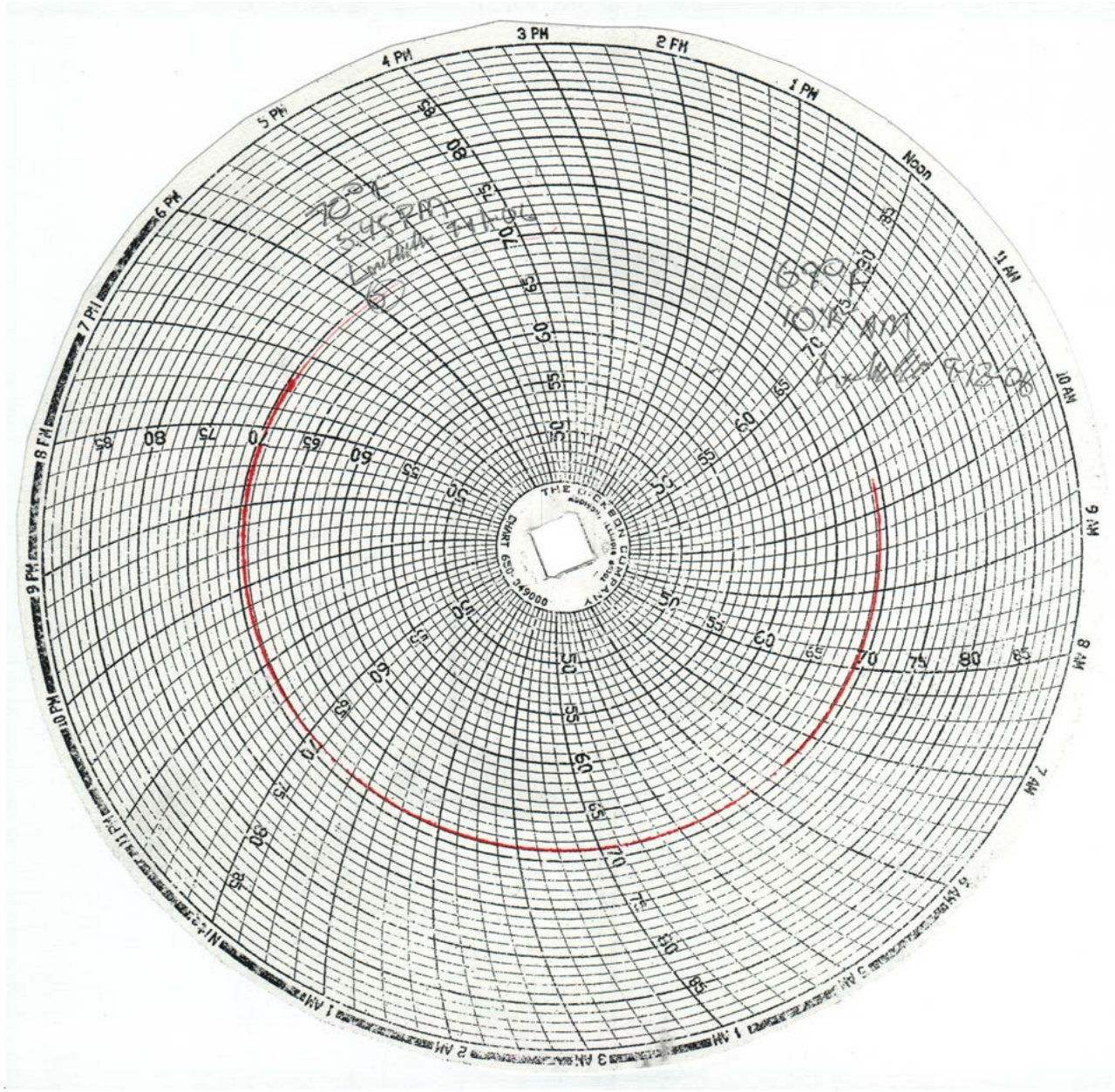
Pre-Test Passenger Side Knee Bolster View

Post-Test Passenger Side Knee Bolster View

Post-Test Passenger Dummy Head Contact View (visor)

Post-Test Passenger Dummy Knee Contact

Post-Test Passenger Dummy Airbag Contact



Temperature Plot

APPENDIX C

INSTRUMENTATION CALIBRATION

INSTRUMENTS FOR DRIVER DUMMY NO. 401

	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Head X	AGH79	Endevco	05/31/06
Head Y	AGH89	Endevco	05/31/06
Head Z	AGH55	Endevco	05/31/06
Neck Load Cell	1673	Denton	07/24/06
Chest X	AGH90	Endevco	05/31/06
Chest Y	AH467	Endevco	05/31/06
Chest Z	AH5P1	Endevco	05/31/06
Chest Displacement	401	Servo	06/02/06
Left Femur Load Cell	992	Denton	04/03/06
Right Femur Load Cell	988	Denton	04/03/06

INSTRUMENTS FOR PASSENGER DUMMY NO. 403

	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Head X	C10686	Endevco	05/31/06
Head Y	AGH74	Endevco	05/31/06
Head Z	C13046	Endevco	05/31/06
Neck Load Cell	252	Denton	07/17/06
Chest X	C13081	Endevco	05/31/06
Chest Y	C12883	Endevco	05/31/06
Chest Z	C12881	Endevco	05/31/06
Chest Displacement	403	Servo	06/02/06
Left Femur Load Cell	84	Denton	07/14/06
Right Femur Load Cell	83	Denton	07/14/06

VEHICLE INSTRUMENTS

	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Left Rear Seat Crossmember X	L02-Z34	Entran	08/03/06
Right Rear Seat Crossmember X	P49556	Endevco	08/03/06
Top of Engine X	L02-Z44	Entran	08/03/06
Bottom of Engine X	H06-L13	Entran	06/27/06
Left Brake Caliper X	L02-Z27	Entran	06/27/06
Right Brake Caliper X	G29-X11	Entran	06/27/06
Instrument Panel X	H06-L08	Entran	06/21/06
Trunk Z	H10-M18	Entran	06/21/06