

**NEW CAR ASSESSMENT PROGRAM
FRONTAL BARRIER IMPACT TEST**

**NISSAN MOTOR COMPANY, LTD.
2008 NISSAN ARMADA SE
5-DOOR MPV**

NHTSA NUMBER: M85205

**PREPARED BY:
KARCO ENGINEERING, LLC
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ADELANTO, CALIFORNIA 92301**



SEPTEMBER 25, 2007

FINAL REPORT

**PREPARED FOR:
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Technical Report Documentation Page

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16. Abstract A 35 mph (56.3 km/h) frontal barrier impact was conducted on a 2008 Nissan Armada SE 5-Door MPV at Karco Engineering, LLC on September 25, 2007. This test was conducted to obtain data indicant of FMVSS 208, 212, 219 (partial), 301, and footwell intrusion performance. The impact velocity is 56.53 km/h. The ambient temperature at the barrier face at the time of impact is 24.4 degrees Celcius. The vehicle's maximum post-test static crush is 480 mm at the vehicle's centerline. The test vehicle is equipped with a 3-point continuous belt system and second generation supplemental airbags in both front outboard seating positions. With respect to FMVSS 208 "Occupant Crash Protection", the occupant injury criteria summary is as follows:					
Measurement Description		Units	Threshold	Driver ATD	Passenger ATD
Head Injury Criteria (HIC)		N/A	1000	441.3	642.8
Max. Chest Accel. (3 msec Clip)		G's	60	40.8	45.8
Left Femur Force		Newtons	10008	-3444.2	-3169.3
Right Femur Force		Newtons	10008	-3228.8	-2347.8
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TABLE OF CONTENTS

Section	Description	Page
1	Purpose and Summary of Test M85205	1
2	Occupant and Vehicle Information/Data Sheets	3

Data Sheet	Description	Page
1	Crash Test Summary	4
2	General Test and Vehicle Parameter Data	5
3	Post-Test Impact Data	8
4	Test Vehicle Information	9
5	Dummy Positioning in Vehicle	11
6	Seat Belt Positioning Data	13
7	Vehicle Accelerometer Location	14
8	Seat Belt Assessment Test Data	15
9	Summary of FMVSS 212 Data	16
10	Windshield Zone Intrusion FMVSS 219 Data (Partial)	17
11	FMVSS 301 Fuel System Integrity Post-Impact Data	18
12	FMVSS 301 Static Rollover Data	19
13	Vehicle Measurements	21
14	Camera Locations	24
15	Photographic Reference Target Locations	25
16	Vehicle Intrusion Measurements	26
17	Fixed Barrier Load Cell Locations	31
18	Accident Investigation Division Data	32
19	Dummy/Vehicle Temperature Stabilization	33

Appendix	Description	Appendix
A	Photographs	A
B	Data Plots	B
C	Dummy Calibration Data	C
D	Child Restraint System	D

SECTION 1

PURPOSE AND SUMMARY OF TEST M85205

1.1 PURPOSE

This 35 mph (56.3 km/h) frontal barrier impact test is part of the New Car Assessment Program (NCAP) sponsored by the National Highway Traffic Safety Administration (NHTSA) under Contract No. DTNH22-06-D-00027. The purpose of this test was to obtain vehicle crashworthiness and occupant restraint system performance data for an impact speed in excess of the current 30 mph (48.3 km/h) requirements.

The 35 mph (56.3 km/h) frontal barrier impact test was conducted in accordance with the Office of Crashworthiness Standards (OCS) New Car Assessment Program (NCAP) Laboratory Indicant Test Procedure, dated July 2005. Data was obtained indicant of FMVSS 208 "Occupant Crash Protection", FMVSS 212, "Windshield Retention", FMVSS 219, "Windshield Zone Intrusion (Partial)", and FMVSS 301 "Fuel System Integrity", performance. Procedures for receiving, inspection, testing and reporting of test results are described in the test procedures and are not repeated in this report.

1.2 SUMMARY

A load cell barrier consisting of 45 load cells was impacted by a 2008 Nissan Armada SE 5-Door MPV at a velocity of 56.53 km/h. The test was performed at Karco Engineering, LLC on September 25, 2007.

Three (3) real-time and fourteen (14) high-speed cameras were used to document the frontal barrier impact event. Camera locations and other pertinent camera information can be found in Data Sheet number 14 (page number 24) of this report.

Two Part 572E, 50th percentile male anthropomorphic test devices (ATDs), were placed in the driver and right-front passenger seating positions according to dummy placement instructions specified in the Laboratory Indicant Test Procedure.

Both ATDs were fully instrumented with head (primary and redundant), chest (primary and redundant) and pelvis triaxial accelerometers, chest displacement potentiometers, six-axis upper neck transducers, right/left femur load cells, and lower leg instrumentation. Seat belt load cells were placed on the driver's and passenger's lap and shoulder belts to measure dummy torso and pelvic section loading. Shoulder belt spool-off was measured for the driver and passenger dummies. The driver (position 1) ATD (Serial No. 034) and the right-front passenger (position 2) ATD (Serial No. 035) were calibrated one test prior to this test.

One hundred and forty-one (141) channels of data were recorded using a TDAS data acquisition system. Appendix A contains Pre and Post-Test Photographs, Appendix B contains the Dummy Response data traces, Appendix C contains the Dummy Calibration data, and Appendix D contains the Child Restraint System Report.

There was 100 percent windshield retention and there was no intrusion into the protected zone of the windshield during the impact event. There was no stoddard solvent leakage after the event or during any phase of the static rollover.

The maximum static crush of the vehicle was 480 mm at the vehicle's centerline and both the driver and the passenger side doors remained closed and latched during the impact event, and were operable after the impact.

The driver's visible contact points were as follows: The driver ATD's head, chest and abdomen contacted the airbag. The head also contacted the headrest. Both the left and right knees contacted the knee bolster.

The passenger's visible contact points were as follows: The passenger ATD's head contacted the airbag and headrest. The chest also contacted the airbag. Both knees contacted the glove box.

Occupant injury data is contained in table below.

OCCUPANT DATA SUMMARY					
ATD Position	HIC	3 msec Clip (g)	Chest Defl. (mm)	Left Femur (N)	Right Femur (N)
Driver	441.3	40.8	-24.4	-3444.2	-3228.8
Passenger	642.8	45.8	-29.2	-3169.3	-2347.8

Additional data plots for this test are available in the research and development section of the NHTSA website. The website can be found at: www.NHTSA.Dot.Gov

SECTION 2

OCCUPANT AND VEHICLE INFORMATION/DATA SHEETS

Test Vehicle: 2008 Nissan Armada SE 5-Door MPV

NHTSA No.: M85205

Test Program: 2007 NHTSA 35mph NCAP

Test Date: 9/25/07

CONVERSION FACTORS USED IN THIS REPORT*

Quantity	Typical Application	Std Units	Metric Unit	Multiply By
Mass	Vehicle Weight	lb	kg	0.4536
Linear Velocity	Impact Velocity	miles/hr	km/hr	1.609
Length or Distance	Measurements	in	mm	25.4
Volume	Fuel Systems	gal	liter	3.785
Volume	Small Fluids	oz	mL	29.573
Pressure	Tire Pressures	lbf/in ²	kPa	7.0
Volume	Liquid	gal	liter	3.785
Temperature	General Use	°F	°C	$=(\text{tf} - 32)/1.8$
Force	Dynamic Forces	lbf	N	4.448
Moment	Torque	lbf/ft	Nm	1.355

* Based on the Recommended Practice in SAE J916, May 85

DATA SHEET NO. 1
CRASH TEST SUMMARY

Test Vehicle: 2008 Nissan Armada SE 5-Door MPV
Test Program: 2007 NHTSA 35mph NCAP

NHTSA No.: M85205
Test Date: 9/25/07

PRIMARY IMPACT DATA

Measured Parameter	Units	Value
Velocity at Impact	km/h	56.53
Test Weight	kg	2763
Impact Angle	degrees	0
Average Rebound	mm	720
Maximum Static Crush	mm	480

DOOR OPENING AND SEAT TRACK INFORMATION

Description	Driver	Passenger
Front Door opening	Remained closed and latched, opened w/o tools	Remained closed and latched, opened w/o tools
Rear Door Opening	Remained closed and latched, opened w/o tools	Remained closed and latched, opened w/o tools
Seat Track Shift (mm)	None	None
Seat Back Failure	No	No

TEST DUMMY INFORMATION

Description	Driver	Passenger
Dummy Type/ Serial No.	50% Male Hybrid III No. 034	50% Male Hybrid III No. 035
Head Contact	Airbag, Headrest	Airbag, Headrest
Chest Contact	Airbag	Airbag
Abdomen Contact	Airbag	None
Left Knee Contact	Bolster	Glovebox
Right Knee Contact	Bolster	Glovebox

MOVIE COVERAGE

Cameras	Standard	Additional
High Speed	14	0
Real Time	1	2
Total	15	2

DATA CHANNELS

Driver ATD Sensors	40
Passenger ATD Sensors	40
Belt Assessment Sensors	8
Vehicle Structure Accelerometers	8
Rigid Barrier Load Cells	45
Total	141

DATA SHEET NO. 2

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2008 Nissan Armada SE 5-Door MPV

NHTSA No.: M85205

Test Program: 2007 NHTSA 35mph NCAP

Test Date: 9/25/07

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	M85205	Anti-Lock Brakes	Yes
Make	Nissan	All Wheel Drive	Yes
Model	Armada SE	Power Steering	Yes
Body Style	5-Door MPV	Driver Front Airbag	Yes
Vin No.	5N1AA08C88N605085	Driver Side Airbag	Yes
Color	Grey	Driver Head Airbag	No
Delivery Date	9/12/2007	Driver Curtain Airbag	Yes
Odometer (Miles)	71.0	Pass. Airbag	Yes
Dealer	Valley Hi Nissan	Pass. Side Airbag	Yes
Transmission	5-Speed Automatic	Pass. Head Airbag	No
Final Drive	4 Wheel Drive	Pass. Curtain Airbag	Yes
Type/No. Cyl.	V8	Pre-Tensioners	Yes
Engine Disp. (L)	5.6	Load Limiters	Yes
Engine Placement	Longitudinal	Bucket Seats	Yes
Roof Rack	Yes	Air. Cond.	Yes
Sunroof/T-Top	No	AM/FM CD	Yes
Tinted Glass	Yes	Tilt Steering	Yes
Traction Control	Yes	Automatic Door Locks	No
Power Brakes	Yes	Power Windows	Yes
Front Disc	Yes	Power Seats	Yes
Rear Disc	Yes	Other	n/a

Does Owners Manual provide instructions to turn off automatic door locks.

n/a

DATA FROM MANUFACTURER

Manufactured By	Nissan Motor Co., Ltd.	GVWR (kg)	3288
Date of Manufacture	May-07	GAWR Front (kg)	1678
		GAWR Rear (kg)	1950

VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Bench	Bench	
Number of Occupants	2	3	3	8
Capacity Weight (VCW) (kg)				650
Cargo Weight (RCLW) (kg)				106

DATA SHEET NO. 2...(CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

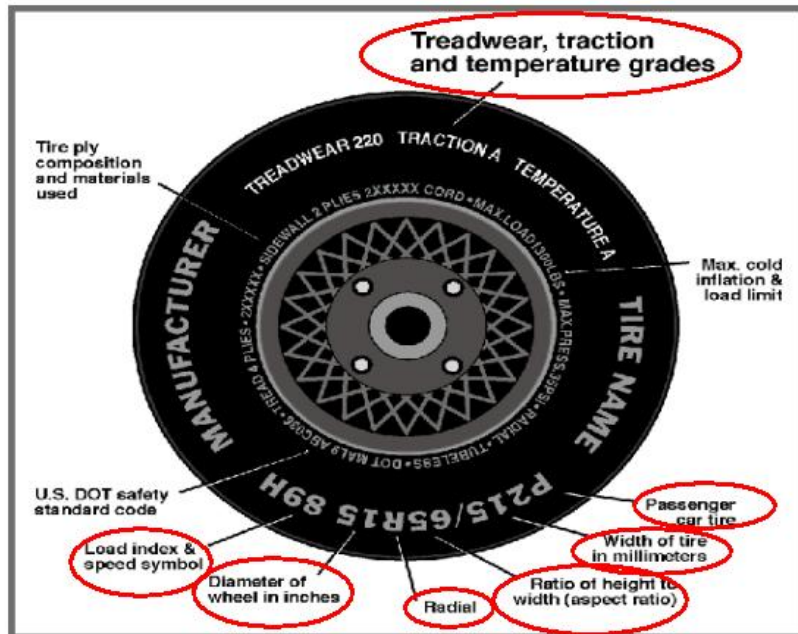
Test Vehicle: 2008 Nissan Armada SE 5-Door MPV

NHTSA No.: M85205

Test Program: 2007 NHTSA 35mph NCAP

Test Date: 9/25/07

Collect year, make, model, VIN, items circled in red, and tire manufacturer and tire name.



TIRE INFORMATION

Measured Parameter	Front	Rear
Max. Tire Pressure (kpa)	308	308
Cold Pressure (kpa)	240	240
Recommended Tire Size	P265/70R18	P265/70R18
Tire Size on Vehicle	P265/70R18	P265/70R18
Tire Manufacturer	Continental	Continental
Treadwear	520	520
Traction	A	A
Temperature Grades	B	B
Tire Plies Sidewall	2 Polyester	2 Polyester
Tire Plies Body	2 Polyester, 2 Steel, 1 Nylon	2 Polyester, 2 Steel, 1 Nylon
Load Index/Speed Symbol	114S	114S
Tire Material	Polyester, Steel, Nylon	Polyester, Steel, Nylon
DOT Safety Code Right	A37B 3PY	A37B 3PY
DOT Safety Code Left	A37B 3PY	A37B 3PY

DATA SHEET NO. 2...(CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2008 Nissan Armada SE 5-Door MPV

NHTSA No.: M85205

Test Program: 2007 NHTSA 35mph NCAP

Test Date: 9/25/07

TEST VEHICLE WEIGHTS

	Units	As Delivered Weights (UVW)			As Tested Weights (ATW)		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	664	598	1262	702	698	1401
Right	kg	655	595	1250	673	690	1363
Ratio	%	52.5%	47.5%	100.0%	49.8%	50.2%	100.0%
Totals	kg	1319	1193	2512	1375	1388	2763

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	2512
Weight of 2 P572 ATD's	kg	152
Rated Cargo/Luggage Wt. (RCLW)	kg	106
Calculated Vehicle Target Wt. (TVTW)	kg	2770

TEST VEHICLE ATTITUDE AND CG

	Units	LF	RF	LR	RR	CG (aft of front axle)
As Delivered	mm	945	947	943	955	1491
As Tested	mm	933	936	917	924	1577

Vehicle Wheel Base (mm) 3140

Weight of Ballast Secured in cargo area (kg) 15

Weight of Items Removed (kg) 68

Vehicle Components Removed Third row seat, rear tail lights

* Ballast weight does not include cameras, instrumentation and brake abort system.

FUEL SYSTEM DATA

Fuel System Capacity From Owners Manual (L) 105.98

Actual Test Volume with entire fuel System Filled (L) 98.43

Test Fluid Type: Stoddard Solvent

Kinematic Viscosity: as per ASTM Standard D484-71 Red

Is Vehicle Fuel Pump Electric or Mechanical? Electric

If electric, does pump operate with ignition switch "On" & engine "OFF" Yes

Fuel System Particulars: Electric fuel pump. Activated when electrical system is activated.
Fuel pump will run during the operation of the engine.

DATA SHEET NO. 3**POST-TEST IMPACT DATA**Test Vehicle: 2008 Nissan Armada SE 5-Door MPVNHTSA No.: M85205Test Program: 2007 NHTSA 35mph NCAPTest Date: 9/25/07**SPEED TRAP DATA**

Measured Parameter	Units	Requirement	Value
Trap No.1 Velocity (Primary)	km/h	55.51 to 57.12	56.53
Trap No.2 Velocity (Redun.)	km/h	55.51 to 57.12	56.61

VEHICLE STATIC CRUSH

Measured Parameter	Units	Pre-Test	Post-Test	Difference
Left Side	mm	5091	4747	-344
Center	mm	5266	4786	-480
Right Side	mm	5091	4799	-292

VEHICLE REBOUND FROM BARRIER

Measured Parameter	Units	Value
Left Side	mm	770
Center	mm	700
Right Side	mm	690
Average	mm	720

DATA SHEET NO. 4

TEST VEHICLE INFORMATION

Test Vehicle: 2008 Nissan Armada SE 5-Door MPV

NHTSA No.: M85205

Test Program: 2007 NHTSA 35mph NCAP

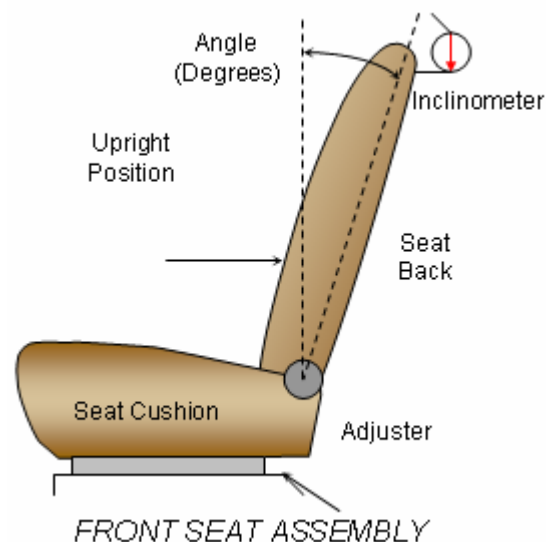
Test Date: 9/25/07

NOMINAL DESIGN RIDING POSITION

The driver and passenger seat backs are positioned to the manufacturer's designated angle. The procedure is as follows: Seat back angle was measured at the headrest of the seat using a digital inclinometer.

SEAT BACK ANGLES

	Deg.
Driver w/seated Dummy	11.0 @ Headrest
Passenger w/seated Dummy	11.0 @ Headrest

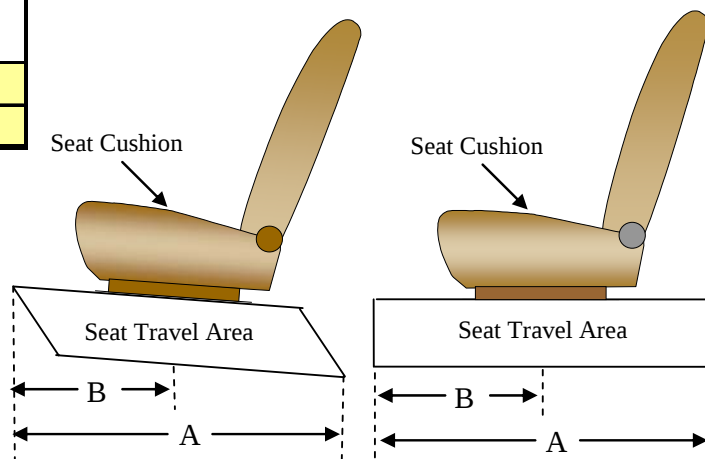


SEAT FORE/AFT POSITIONS

The total seat travel was measured from forward most position to rearmost position, irrespective of vertical seat height in those positions. The seat was set at the longitudinal mid position. There were vertical adjustments on the seats that were equipped with the vehicle. They were placed at the lowermost position.

SEAT FORE/AFT POSITIONING

	Total Fore/Aft Travel	Placed in Position
Driver Seat	233 mm	117 mm
Passenger Seat	21 Detents	10th Detent



SEAT BELT UPPER ANCHORAGE

Position number one (1), the uppermost position.

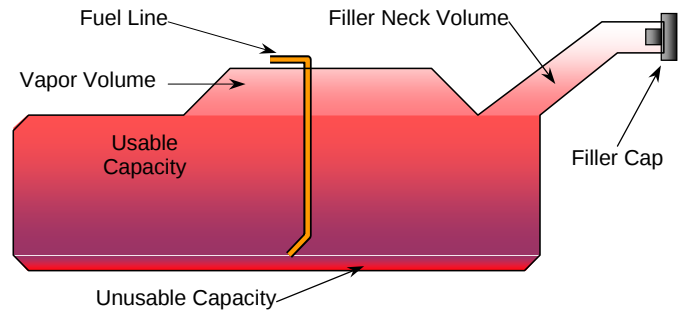
SEAT BELT UPPER ANCHORAGE

	Total # of Positions	Placed in Position #
Driver Seat	4	1
Passenger Seat	4	1

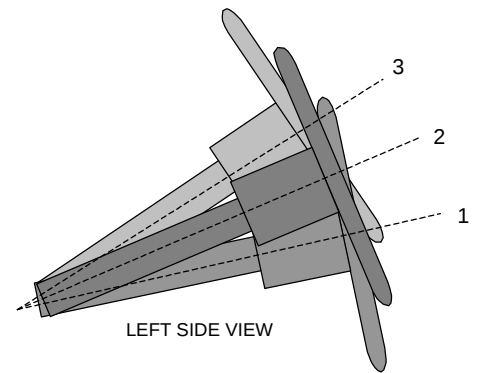
DATA SHEET NO. 4...(CONTINUED)**TEST VEHICLE INFORMATION**Test Vehicle: 2008 Nissan Armada SE 5-Door MPVNHTSA No.: M85205Test Program: 2007 NHTSA 35mph NCAPTest Date: 9/25/07**FUEL TANK CAPACITY**

	Liters
Usable Capacity of "Standard Tank"	105.98
Usable Capacity of "Optional" Tank	
Usable Capacity used for FMVSS 301	97.35 to 99.62
Actual Amount of Solvent used	98.43

The test vehicle is equipped with an electric fuel pump. The fuel pump operates for approximately two seconds after the ignition is placed in the "ON" position, after which the fuel pump automatically shuts off. The fuel filler door is located on the left rear fender. The standard fuel tank occupies the area under the rear seat.

**VEHICLE FUEL TANK ASSEMBLY****STEERING COLUMN ADJUSTMENT**

Steering wheel and column adjustments are made so that the steering wheel hub is at the geometric center of the locus it describes when moved through its full range of motion. An aluminum plate is placed across the rim of the steering wheel, an inclinometer is placed on the plate and the angle is measured.

**STEERING COLUMN ASSEMBLY****STEERING COLUMN POSITIONS**

	Degrees	Fore/Aft Position (mm)
Lowermost position No. 1	19.6	
Geometric center position No. 2	25.0	
Uppermost position No. 3	34.9	

DATA SHEET NO. 5

DUMMY POSITIONING IN VEHICLE

Test Vehicle: 2008 Nissan Armada SE 5-Door MPV

NHTSA No.: M85205

Test Program: 2007 NHTSA 35mph NCAP

Test Date: 9/25/07

TEST DUMMY POSITION MEASUREMENTS

Code	Measurement Description	Driver		Passenger	
		Length (mm)	Angle (deg)	Length (mm)	Angle (deg)
WA	Windshield Angle		30.3		
SWA	Steering Wheel Angle		65.0		
SCA	Steering Column Angle		25.0		
SA	Seat Back Angle		11.0 @ Headrest		11.0 @ Headrest
HZ	Head to Roof (Z)	265	90.0	260	90.0
HH	Head to Header	452		452	
HW	Head to Windshield	737		700	
HR	Head to Side Header (Y)	320		320	
NR	Nose to Rim	392	14.0		
CD	Chest to Dash	535		548	
CS	Chest to Steering Hub	277			
RA	Rim to Abdomen	172			
KDL	Left Knee to Dash	140	23.2	140	
KDR	Right Knee to Dash	112		143	11.2
PA	Pelvic Angle		20.3		22.2
TA	Tibia Angle		50.2		50.1
KK	Knee to Knee (Y)	322		285	
SK	Striker to Knee	710	2.1	715	2.3
ST	Striker to Head	640	74.0	640	77.2
SH	Striker to H-Point	310	13.6	310	8.7
SHY	Striker to H-Point (Y)	38		34	
HS	Head to Side Window	325		348	
HD	H-Point to Door (Y)	180		190	
AD	Arm to Door (Y)	128		40	

DATA SHEET NO. 5...(CONTINUED)

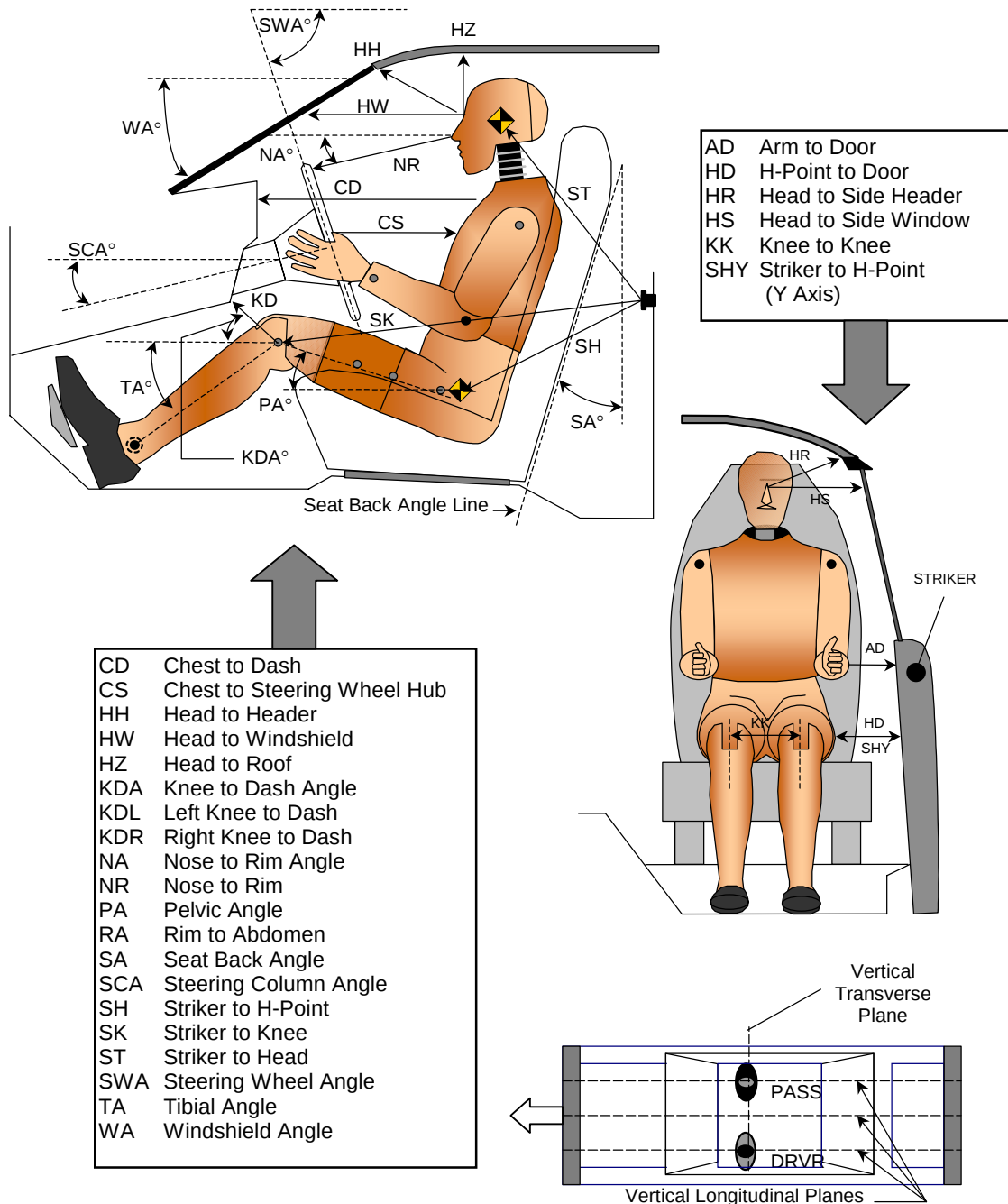
DUMMY POSITIONING IN VEHICLE

Test Vehicle: 2008 Nissan Armada SE 5-Door MPV

NHTSA No.: M85205

Test Program: 2007 NHTSA 35mph NCAP

Test Date: 9/25/07



DUMMY MEASUREMENTS FOR FRONT SEAT OCCUPANTS

DATA SHEET NO. 6

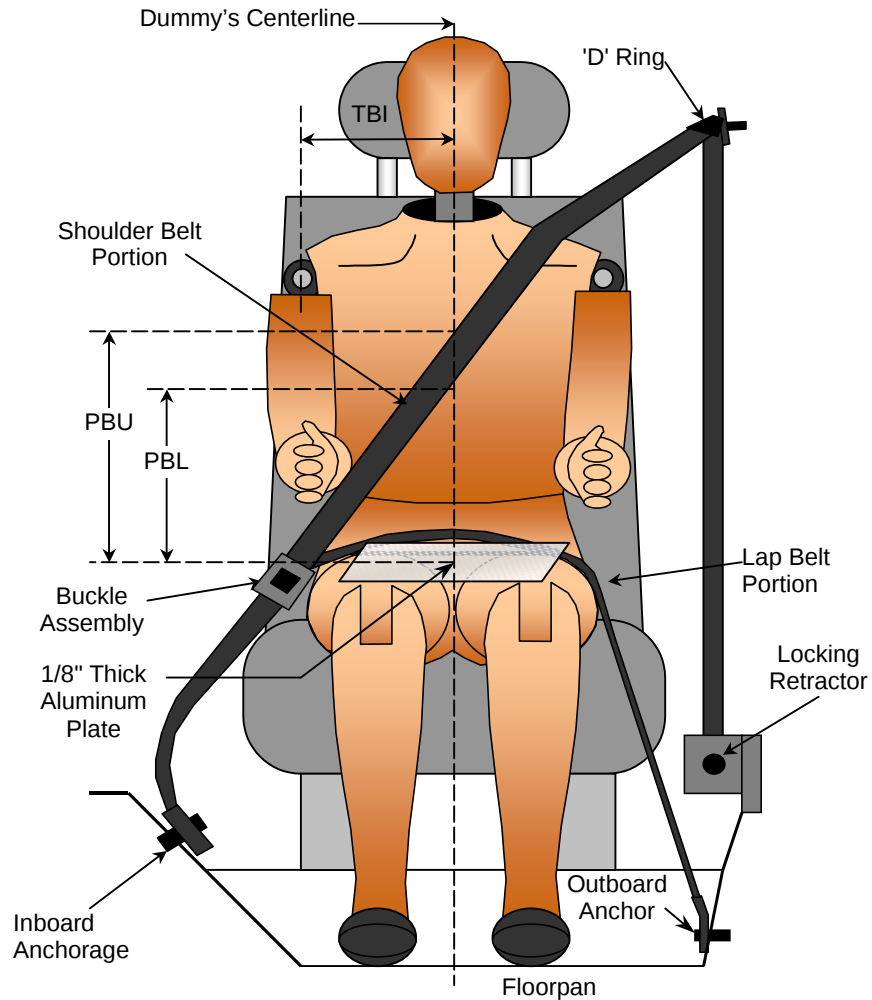
SEAT BELT POSITIONING DATA

Test Vehicle: 2008 Nissan Armada SE 5-Door MPV

NHTSA No.: M85205

Test Program: 2007 NHTSA 35mph NCAP

Test Date: 9/25/07



SEAT BELT POSITIONING MEASUREMENTS

Measured Parameter	Units	Driver	Passenger
TBI - Dummy C/L to Lap/Shoulder Belt Intersect	mm	220	210
PBU - Top Surface of reference to belt upper edge	mm	360	330
PBL - Top Surface of reference to belt lower edge	mm	290	250
Lap Belt Tension	Newtons	10	10
Shoulder Belt Tension	N/A	Retractor	Retractor

DATA SHEET NO. 7
VEHICLE ACCELEROMETER LOCATION

Test Vehicle: 2008 Nissan Armada SE 5-Door MPV

Test Date: 9/25/07

Test Program: NHTSA 35mph NCAP

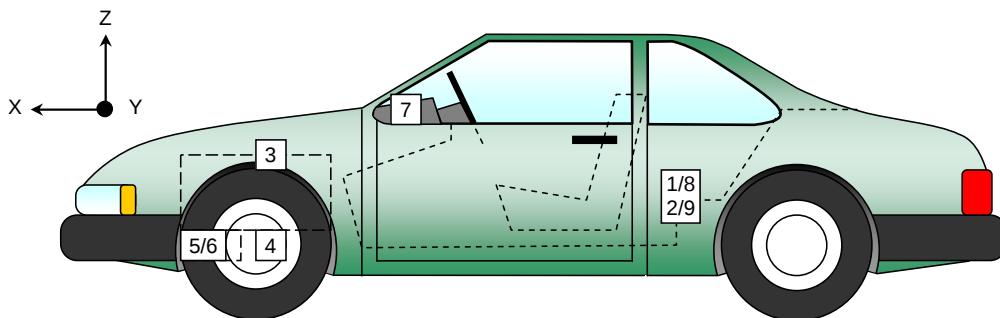
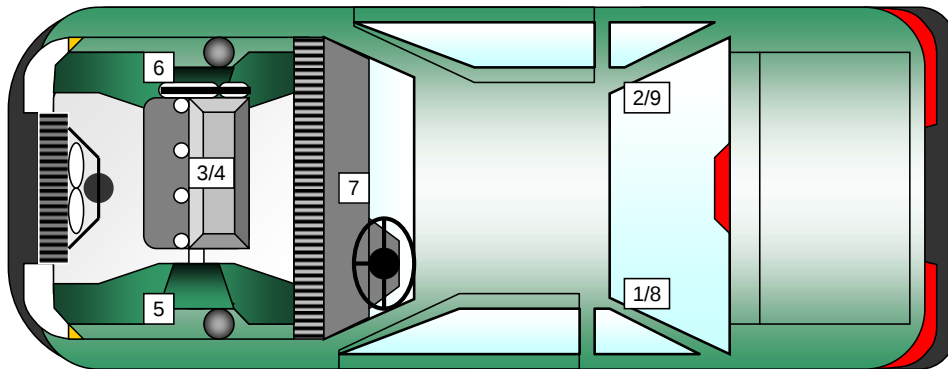
NHTSA No.: M85205

VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

No.	Accelerometer Location	Measurements (mm)		
		X	Y	Z
1	Left Rear X-Member	2255	-760	505
2	Right Rear X-Member	2250	760	505
3	Engine Top	4545	65	1080
4	Engine Bottom	4300	200	270
5	Left Brake Caliper	4215	830	370
6	Right Brake Caliper	4215	830	375
7	Instrument Panel			
8	Left Rear X-Member (Z-Axis)	2255	-760	505
9	Right Rear X-Member (Z-Axis)	2250	760	505

Reference Planes: X=From Rear Surface of Vehicle, Y=Vehicle Centerline, Z=Ground Plane

1.) Instrument Panel no longer used by NHTSA



DATA SHEET NO. 8**SEAT BELT ASSESSMENT TEST DATA**Test Vehicle: 2008 Nissan Armada SE 5-Door MPVNHTSA No.: M85205Test Program: 2007 NHTSA 35mph NCAPTest Date: 9/25/07**SEAT BELT POSITIONING MEASUREMENTS**

Measurement Description	Units	Driver	Passenger
Retractor Reel to "D" ring	mm	915	916
Shoulder Belt length as measured on ATD	mm	935	950
Lap Belt length as measured on ATD	mm	950	900
Remainder of belt on reel	mm	670	725
Total belt length for continuous webbing systems	mm	3470	3491

SHOULDER BELT SPOOL-OFF DATA

Measurement Description	Units	Driver	Passenger
As determined mechanically	mm	105	135
As determined electronically	mm	159	237

BELT STRETCH DATA

Measurement Description	Units	Driver	Passenger
Electronically between belt load cell and "D" ring	mm/cm	*	*
Mechanically	mm/cm		

* Not used with shoulder belt pre-tensioner systems

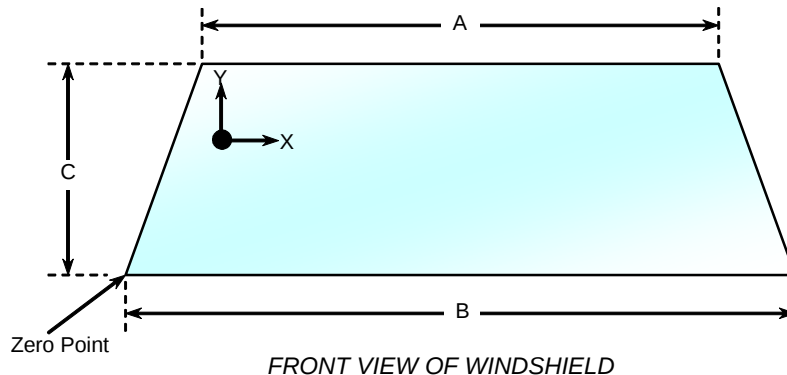
DATA SHEET NO. 9**SUMMARY OF FMVSS 212 DATA**Test Vehicle: 2008 Nissan Armada SE 5-Door MPVNHTSA No.: M85205Test Program: 2007 NHTSA 35mph NCAPTest Date: 9/25/07

Windshield Mounting Details: Windshield glass is secured to the vehicle frame with a rubber type adhesive, and rubber molding.

The standard requires that the post-test retention measurement be a minimum of 75 percent of the pretest total periphery measurement for vehicles not equipped with occupant passive restraints and 50 percent for each side of the windshield for vehicles that are equipped with occupant passive restraints.

Temperature of windshield molding during test: 21.1 °C**WINDSHIELD PERIPHERY MEASUREMENTS**

Measurement	Pre-Test(mm)	Post-Test(mm)	% of Retention
Left Side	2258	2258	100
Right Side	2258	2258	100
Total	4516	4516	100

**WINDSHIELD DIMENSIONS**

Item	Units	Segment Length	Molding Width
A	mm	1390	12
B	mm	1615	10
C-Left	mm	755	10
C-Right	mm	755	10

DATA SHEET NO. 10

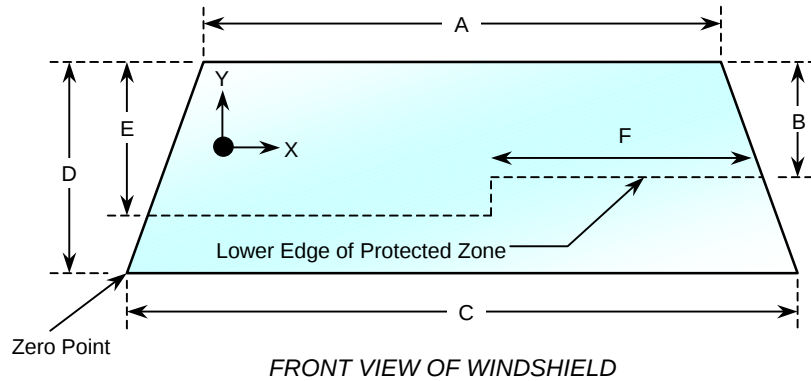
WINDSHIELD ZONE INTRUSION FMVSS 219 DATA (PARTIAL)

Test Vehicle: 2008 Nissan Armada SE 5-Door MPV

NHTSA No.: M85205

Test Program: 2007 NHTSA 35mph NCAP

Test Date: 9/25/07



WINDSHIELD AND PROTECTED ZONE

Item	Units	Value
A	mm	1390
B	mm	500
C	mm	1615
D	mm	755
E	mm	485
F	mm	405

AREA OF PROTECTED ZONE FAILURES

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

X	Y

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

X	Y

DATA SHEET NO. 11

FMVSS 301 FUEL SYSTEM INTEGRITY POST-IMPACT DATA

Test Vehicle: 2008 Nissan Armada SE 5-Door MPV NHTSA No.: M85205
Test Program: 2007 NHTSA 35mph NCAP Test Date: 9/25/07

Test Time: 12:15 PM

Temperature: 24.4 ° C

STODDARD SOLVENT SPILLAGE MEASUREMENTS

- A. From impact until vehicle motion ceases: 0.0 oz.
(Maximum Allowable = 1 ounce)
- B. For the 5 minute period after motion ceases: 0.0 oz.
(Maximum Allowable = 5 ounces)
- C. For the following 25 minutes: 0.0 oz.
(Maximum Allowable = 1 oz./minute)
- D. Spillage Location Details: No leakage occurred

DATA SHEET NO. 12

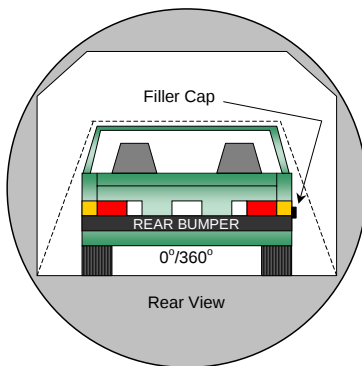
FMVSS 301 STATIC ROLLOVER DATA

Test Vehicle: 2008 Nissan Armada SE 5-Door MPV

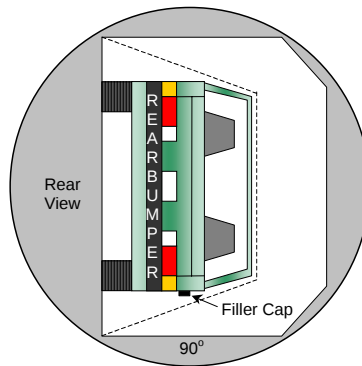
NHTSA No.: M85205

Test Program: 2007 NHTSA 35mph NCAP

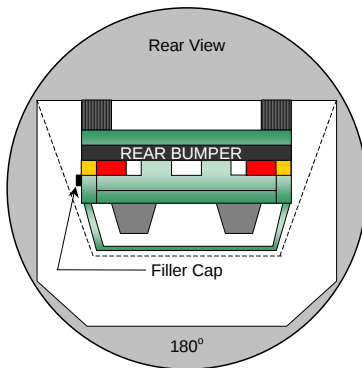
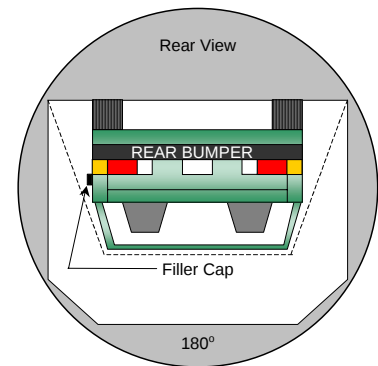
Test Date: 9/25/07



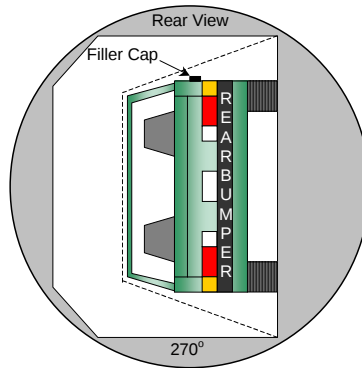
0° to 90°



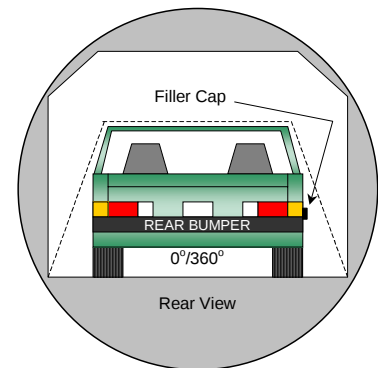
90° to 180°



180° to 270°



270° to 360°



1. The specified fixture rollover rate for each 90° of rotation is 60 to 120 seconds.
2. The position hold time at each position is 300 seconds (minimum).
3. No solvent leakage occurred during rollover.

DATA SHEET NO. 12...(CONTINUED)**FMVSS 301 STATIC ROLLOVER DATA**Test Vehicle: 2008 Nissan Armada SE 5-Door MPVNHTSA No.: M85205Test Program: 2007 NHTSA 35mph NCAPTest Date: 9/25/07**SOLVENT COLLECTION TIME TABLE IN SECONDS**

Test Phase	Rotation Time	Hold Time	Total Time
0° to 90°	85	303	388
90° to 180°	84	301	385
180° to 270°	77	311	388
270° to 360°	82	308	390

FMVSS 301 SPILLAGE TABLE REQUIREMENT (oz.)

First 5 Minutes	5.0
Sixth Minute	1.0
Seventh Minute	1.0
Eighth Minute	1.0

ACTUAL TEST VEHICLE SOLVENT SPILLAGE TABLE (oz.)

Test Phase	First 5 Minutes	Sixth Minute	Seventh Minute	Eighth Minute
0° to 90°	0	0	0	0
90° to 180°	0	0	0	0
180° to 270°	0	0	0	0
270° to 360°	0	0	0	0

SOLVENT SPILLAGE LOCATION TABLE

Test Phase	Spillage Location
0° to 90°	None
90° to 180°	None
180° to 270°	None
270° to 360°	None

DATA SHEET NO. 13**VEHICLE MEASUREMENTS**Test Vehicle: 2008 Nissan Armada SE 5-Door MPVNHTSA No.: M85205Test Program: 2007 NHTSA 35mph NCAPTest Date: 9/25/07**VEHICLE MEASUREMENT TABLE**

No.	Measurement Description	Units	Pre-Test	Post-Test	Diff.
1	Total length of vehicle at centerline	mm	5266	4786	-480
2	RSOV to front of engine	mm	4581	4481	-100
3	RSOV to firewall centerline	mm	4306	4291	-15
4	RSOV to leading edge of right door	mm	3767	3821	54
5	RSOV to leading edge of left door	mm	3758	3808	50
6	RSOV to lower leading edge of right door	mm	3730	3744	14
7	RSOV to lower leading edge of left door	mm	3723	3733	10
8	RSOV to upper trailing edge of right door	mm	2583	2640	57
9	RSOV to upper trailing edge of left door	mm	2576	2626	50
10	RSOV to lower trailing edge of right door	mm	2562	2580	18
11	RSOV to lower trailing edge of left door	mm	2554	2565	11
12	RSOV to bottom of right 'A' pillar	mm	3733	3756	23
13	RSOV to bottom of left 'A' pillar	mm	3728	3746	18
14	RSOV to firewall on right side	mm	4261	4306	45
15	RSOV to firewall on left side	mm	4283	4316	33
16	RSOV to steering column	mm	3330	3345	15
17	Center of steering column to left 'A' pillar	mm	420	400	-20
18	Center of steering column to headlining	mm	440	470	30
19	RSOV to right side of front bumper	mm	5091	4799	-292
20	RSOV to left side of front bumper	mm	5091	4747	-344
21	Length of engine block	mm	625	625	0
RD	RSOV to right side of dash panel	mm	3557	3610	53
CD	RSOV to center of dash panel	mm	3445	3465	20
LD	RSOV to left side of dash panel	mm	3547	3609	62

DATA SHEET NO. 13...(CONTINUED)

VEHICLE STRUCTURAL MEASUREMENTS

Test Vehicle: 2008 Nissan Armada SE 5-Door MPV

NHTSA No.: M85205

Test Program: 2007 NHTSA 35mph NCAP

Test Date: 9/25/07

VEHICLE STRUCTURAL MEASUREMENT TABLE

No.	Measurement Description	Units	Pre-Test	Post-Test	Diff.
1	Total length	mm	5266	4786	-480
2	Total width	mm	1980	1980	0
3	Bumper top height	mm	785	918	133
4	Bumper bottom height	mm	275	220	-55
5	Longitudinal member top height	mm	630	625	-5
6	Longitudinal member bottom height	mm	500	495	-5
7	Distance between longitudinal members	mm	865	840	-25
8	Longitudinal member width	mm	80	80	0
9	Engine top height	mm	1165	1015	-150
10	Engine bottom height	mm	306	276	-30
11	Engine and gear box width	mm	695	695	0
12	Front bumper to engine distance	mm	685	366	-319
13	Front shock absorber fixing width	mm	850	851	1
14	Bonnet leading edge height	mm	1085	1252	167
15	Front shock absorber fixing width	mm	1100	1100	0
16	Front bumper to front axle distance	mm	935	580	-355
17	Front axle to 'A' pillar distance	mm	580	537	-43
18	'A' pillar to 'B' pillar distance	mm	1081	1180	99
19	'B' pillar to rear axle distance	mm	1365	1360	-5
20	'B' pillar to 'C' pillar distance	mm	863	984	121
21	Roof sill bottom height	mm	1734	1670	-64
22	Roof sill top height	mm	1800	1760	-40
23	Floor sill bottom height	mm	475	320	-155
24	Floor sill top height	mm	515	430	-85

DATA SHEET NO. 13...(CONTINUED)

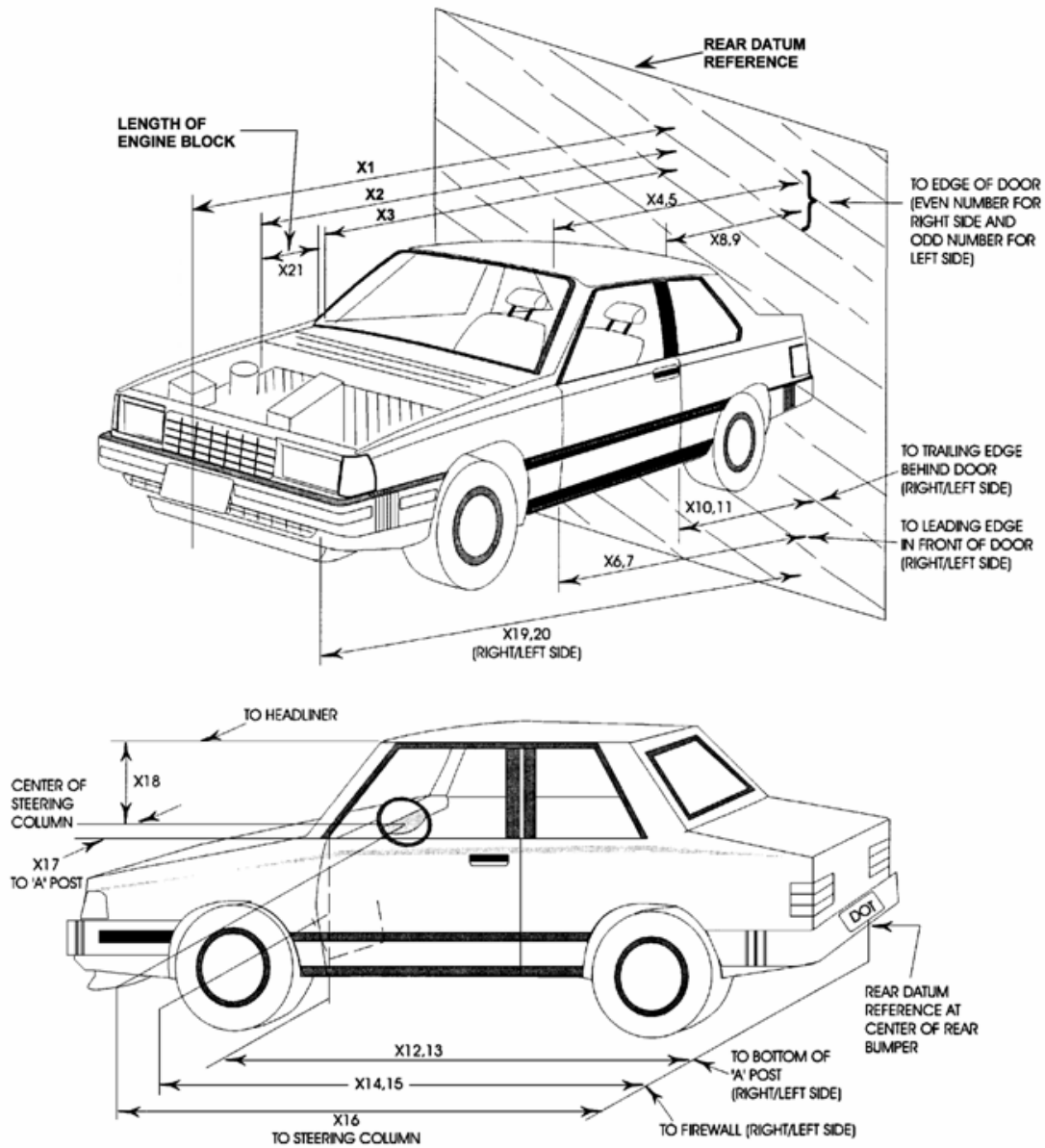
VEHICLE MEASUREMENTS

Test Vehicle: 2008 Nissan Armada SE 5-Door MPV

NHTSA No.: M85205

Test Program: 2007 NHTSA 35mph NCAP

Test Date: 9/25/07



DATA SHEET NO. 14**CAMERA LOCATIONS**Test Vehicle: 2008 Nissan Armada SE 5-Door MPVNHTSA No.: M85205Test Program: 2007 NHTSA 35mph NCAPTest Date: 9/25/07**VEHICLE CAMERA MEASUREMENT TABLE**

No.	Camera View	Location (mm)			Angle (deg.)	Film Plane to Head	Lens (mm)	Speed (fps)
		X	Y	Z				
1	Real Time Camera (Panning)	-11412	-8150	-1484	0			30
2	Overall Left Side	-3018	-8081	-1288	0	8846	20mm	1000
3	Closeup Left Side	-2161	-7410	-1009	0	8082	50mm	1000
4	Driver and Interior View	-6696	-10949	-4730	-17	13557	ZOOM	1000
5	Steering Column (Bottom)	-1972	-8184	-2829	-13	9456	35mm	1000
6	Steering Column (Top)	-1966	-8141	-3258	-13	9610	35mm	1000
7	Overall Right Side	-2603	8214	-1088	0	8199	20mm	1000
8	Closeup Right Side	-1597	7016	-1225	0	7115	50mm	1000
9	Passenger and Interior View	-5136	9516	-2460	-10	10306	ZOOM	1000
10	Right Side View	-1582	7995	-1713	-6	8201	ZOOM	1000
11	Windshield View	-354	0	-5749	-90		24mm	1000
12	Driver Front View	363	-543	-2548	-34		25mm	1000
13	Passenger Front View	381	445	-2548	-34		25mm	1000
14	Pit View of Engine	-756	0	1495	90		12mm	1000
15	Pit View of Fuel Tank	-3398	0	1495	90		8mm	1000
16	Real Time Driver	-1926	-8089	-1704	-1			30
17	Real Time Passenger	-1433	8047	-1704	-1			30

All measurements are made relative to the point of impact.

DATA SHEET NO. 15

PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

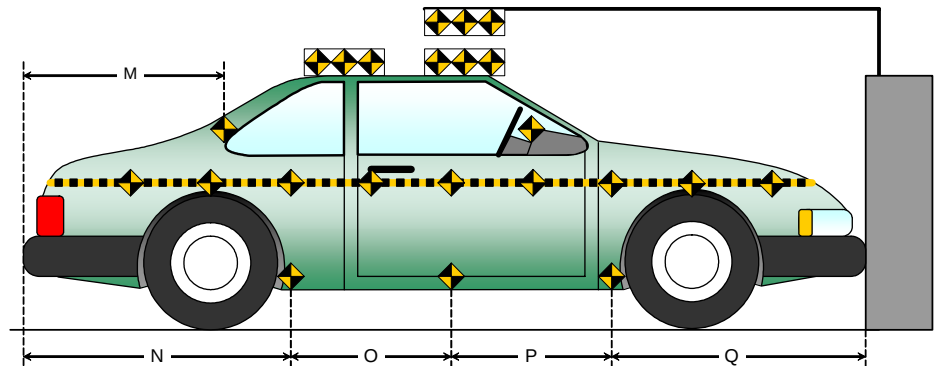
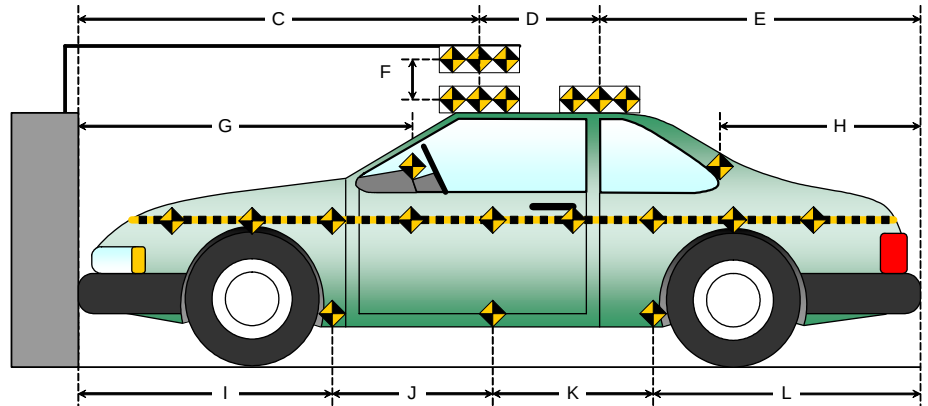
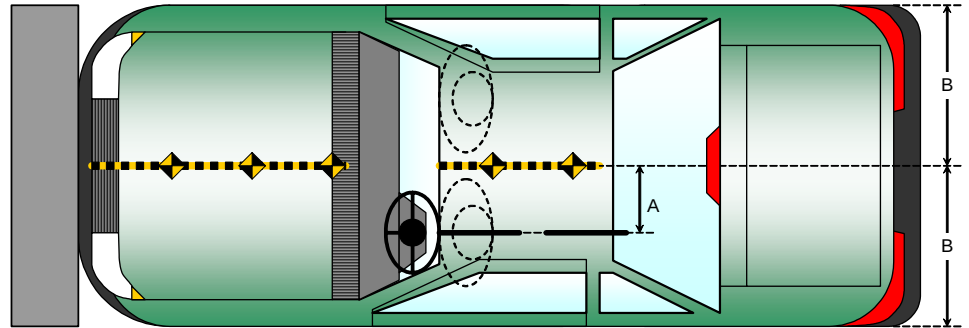
Test Vehicle: 2008 Nissan Armada SE 5-Door MPV

NHTSA No.: M85205

Test Program: 2007 NHTSA 35mph NCAP

Test Date: 9/25/07

All Dimensions in (mm)	
Item	Value
A	470
B	990
C	2210
D	615
E	2535
F	1554
G	3485
H	1445
I	1430
J	1050
K	1050
L	1730
M	1445
N	1730
O	1050
P	1050
Q	1430



DATA SHEET NO. 16

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2008 Nissan Armada SE 5-Door MPV

NHTSA No.: M85205

Test Program: 2007 NHTSA 35mph NCAP

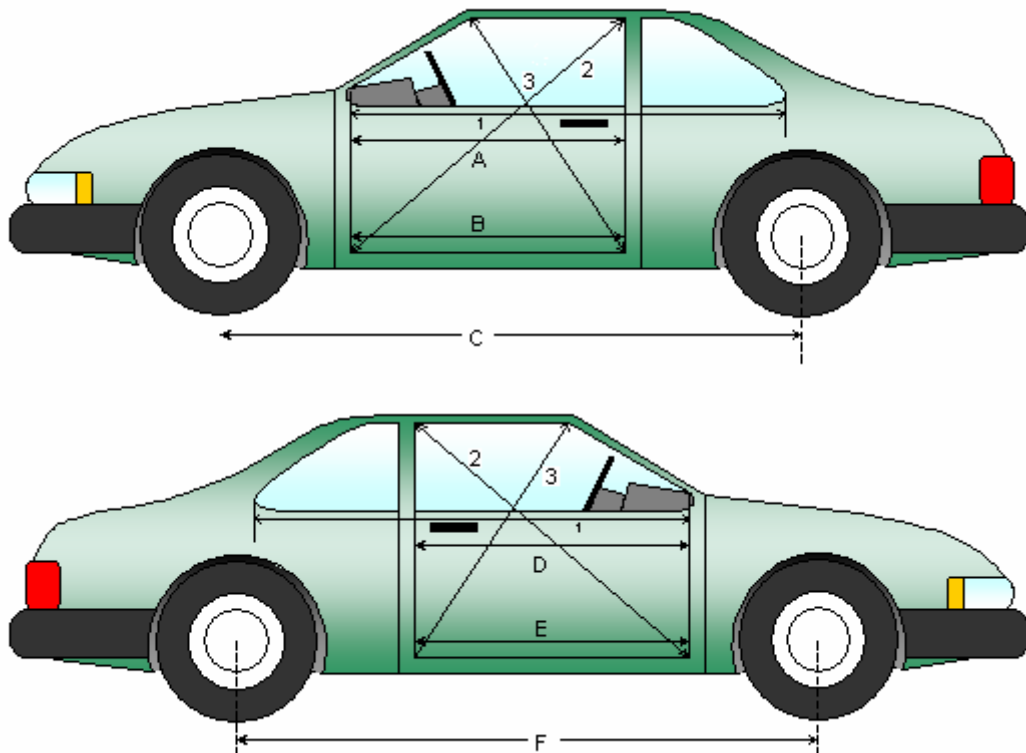
Test Date: 9/25/07

DOOR OPENING WIDTH TABLE

Item	Description	Units	Pre-Test	Post-Test	Diff.
1L	Left Side	mm	1081	1081	0
2L	Left Side (Diagonally)	mm	1525	1525	0
3L	Left Side (Diagonally)	mm	1237	1237	0
1R	Right Side	mm	1081	1081	0
2R	Right Side (Diagonally)	mm	1525	1525	0
3R	Right Side (Diagonally)	mm	1237	1237	0

WHEELBASE MEASUREMENT TABLE

Item	Description	Units	Pre-Test	Post-Test	Diff.
C	Left Side Wheel Base	mm	3140	3090	-50
F	Right Side Wheel Base	mm	3140	3090	-50



DATA SHEET NO. 16...(CONTINUED)

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2008 Nissan Armada SE 5-Door MPV

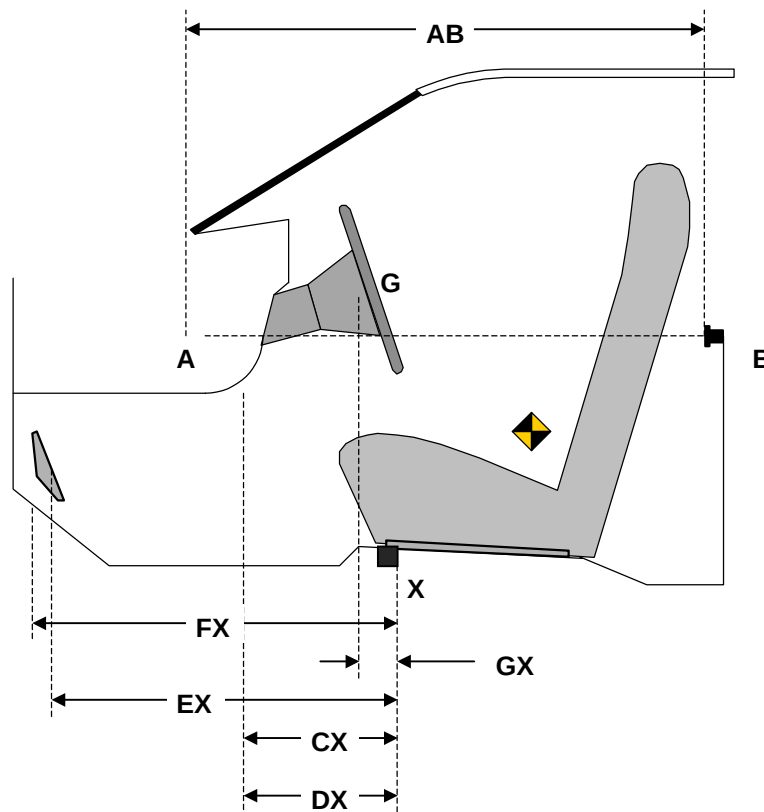
NHTSA No.: M85205

Test Program: 2007 NHTSA 35mph NCAP

Test Date: 9/25/07

DRIVER COMPARTMENT INTRUSION TABLE

Item	Description	Units	Pre-Test	Post-Test	Diff.
AB	Door Opening (Inside window jam)	mm	1081	1046	-35
CX	Left Knee Bolster to X	mm	260	340	80
DX	Right Knee Bolster to X	mm	262	340	78
EX	Brake Pedal to X	mm	505	486	-19
FX	Foot Rest to X	mm	560	556	-4
GX	Center of Steering Wheel Hub to X	mm	25	120	95



DATA SHEET NO. 16...(CONTINUED)

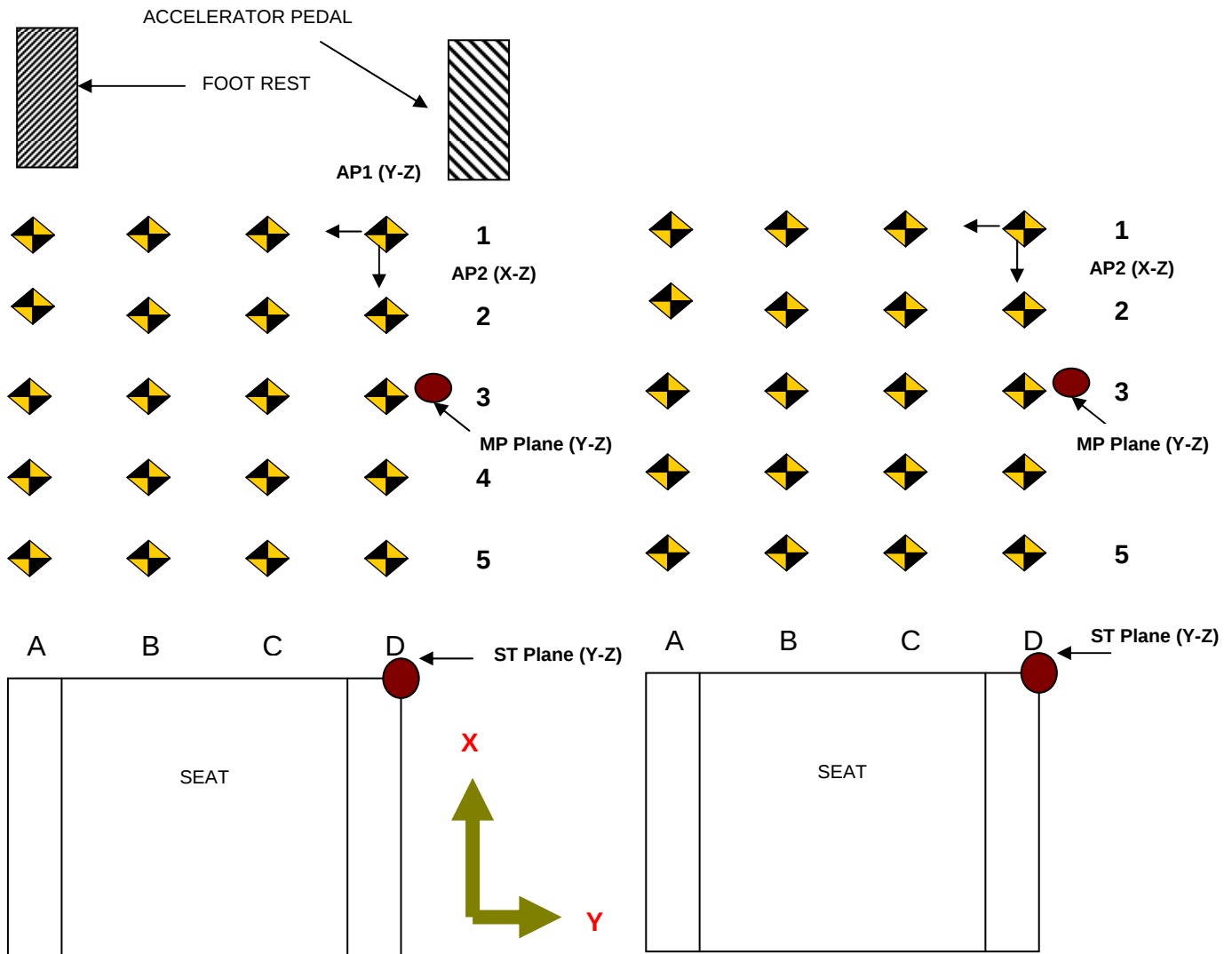
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2008 Nissan Armada SE 5-Door MPV

NHTSA No.: M85205

Test Program: 2007 NHTSA 35mph NCAP

Test Date: 9/25/07



AP1: Y-Z Plane passing through D1

AP2: X-Z Plane passing through D1

AP3: X-Y plane passing through D1

MP: Y-Z plane, halfway between the ST plane and AP1 plane

CF Plane: X-Z plane passes through center of footrest.

BP Plane: X-Z plane passes through center of brake pedal

TP Plane: Y-Z plane, intersection of BP Plane and the intersection of the toe pan and floorboard

Column A: intersection of vehicle and CF plane

Column D: Intersection of vehicle and AP2 plane

Row 1: intersection of the vehicle and the AP3 Plane

Row 3: intersection of the vehicle and TP plane

Row 5: intersection of the vehicle and MP plane

Row 2: evenly spaced between row 1 and 3

Row 4: evenly spaced between row 3 and 5

DATA SHEET NO. 16...(CONTINUED)

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2008 Nissan Armada SE 5-Door MPV

NHTSA No.: M85205

Test Program: 2007 NHTSA 35mph NCAP

Test Date: 9/25/07

All measurements in mm

DRIVER FLOOR PAN X-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	596	649	645	644	597	630	607	599	1	-19	-38	-45
2	512	510	515	513	504	498	493	508	-8	-12	-22	-5
3	367	363	366	365	358	353	352	359	-9	-10	-14	-6
4	213	219	217	218	206	213	204	204	-7	-6	-13	-14
5	82	80	84	86	75	73	69	78	-7	-7	-15	-8

DRIVER FLOOR PAN Y-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	-12	135	271	442	-1	147	272	442	11	12	1	0
2	-11	129	271	451	-2	140	281	443	9	11	10	-8
3	-12	131	272	440	-3	139	279	437	9	8	7	-3
4	-11	131	270	447	-3	137	279	449	8	6	9	2
5	-12	127	269	439	-4	132	276	441	8	5	7	2

DRIVER FLOOR PAN Z-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	-66	-5	-1	-4	7	65	35	14	73	70	36	18
2	48	32	50	56	115	108	122	72	67	76	72	16
3	50	35	57	38	99	89	105	45	49	54	48	7
4	50	54	63	45	81	86	81	34	31	32	18	-11
5	54	57	66	33	65	61	57	7	11	4	-9	-26

DATA SHEET NO. 16...(CONTINUED)

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2008 Nissan Armada SE 5-Door MPV

NHTSA No.: M85205

Test Program: 2007 NHTSA 35mph NCAP

Test Date: 9/25/07

All measurements in mm

PASSENGER FLOOR PAN X-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	614	648	665	661	691	694	707	660	77	46	42	-1
2	464	490	518	545	542	533	539	529	78	43	21	-16
3	293	321	343	387	379	377	367	364	86	56	24	-23
4	132	170	198	219	220	218	215	209	88	48	17	-10
5	8	28	56	84	87	80	74	73	79	52	18	-11

PASSENGER FLOOR PAN Y-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	-496	-389	-235	-59	-380	-252	-112	67	116	137	123	126
2	-498	-351	-211	-35	-389	-251	-107	70	109	100	104	105
3	-467	-333	-187	-19	-402	-266	-117	59	65	67	70	78
4	-460	-311	-171	-1	-423	-273	-124	49	37	38	47	50
5	-432	-295	-138	25	-427	-279	-130	43	5	16	8	18

PASSENGER FLOOR PAN Z-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	-90	-77	-88	-97	-7	-4	15	-1	83	73	103	96
2	-21	18	12	30	53	99	98	107	74	81	86	77
3	-3	22	17	46	46	91	77	96	49	69	60	50
4	12	37	34	56	48	80	76	81	36	43	42	25
5	22	45	47	62	35	57	59	67	13	12	12	5

DATA SHEET NO. 17

FIXED BARRIER LOAD CELL LOCATIONS

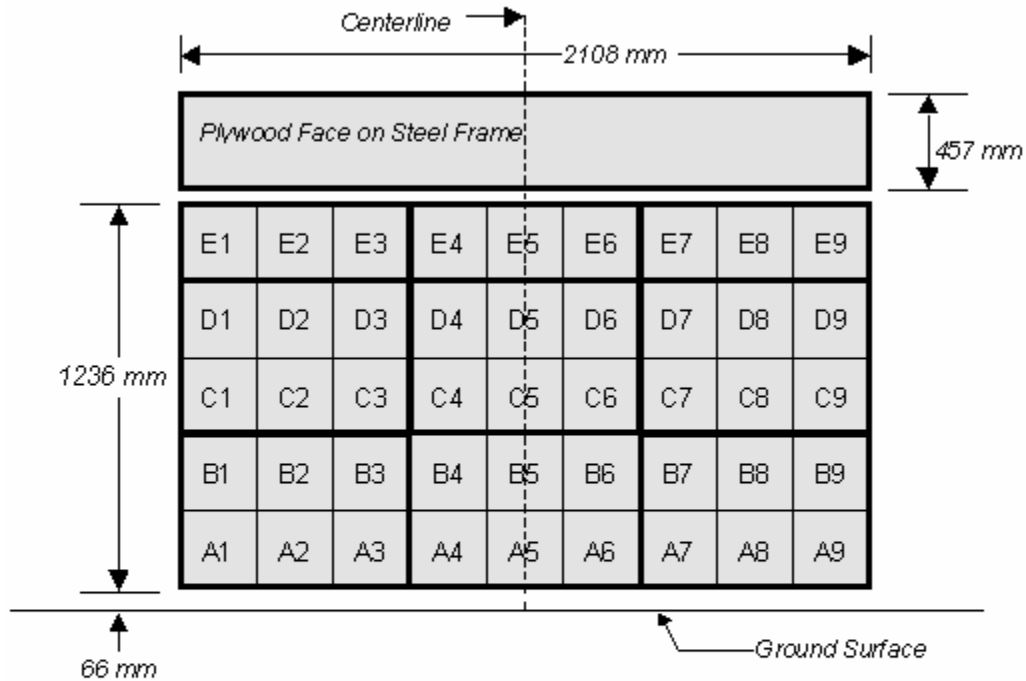
Test Vehicle: 2008 Nissan Armada SE 5-Door MPV

NHTSA No.: M85205

Test Program: 2007 NHTSA 35mph NCAP

Test Date: 9/25/07

45 Load Cell Rigid Barrier (NHTSA Standard) Load Cell Locations on Fixed Barrier



Group 4 C1 – D3	Group 5 C4 – D6	Group 6 C7 – D9	R&D Additional Group E1– E9
Group 1 A1 – B3	Group 2 A4 – B6	Group 3 A7 – B9	

6 Groups of 6 Load Cells Each

DATA SHEET NO. 18

ACCIDENT INVESTIGATION DIVISION DATA

Test Vehicle: 2008 Nissan Armada SE 5-Door MPV

NHTSA No.: M85205

Test Program: 2007 NHTSA 35mph NCAP

Test Date: 9/25/07

VEHICLE INFORMATION

VIN: 5N1AA08C88N60585

Wheel base (mm): 3140

Vehicle Size Category: 5-Door MPV

Test Weight (kg): 2793

ACCELEROMETER DATA

Accelerometer Location: Left rear cross member

Cal. Procedure/Interval: 6 months / drop test

Integration Algorithm: NHTSA Standard

Linearity: Good

Impact Velocity (km/h): 56.53

Velocity Change (km/h): 64.2

Time of Separation (msec): 65.8

CRUSH PROFILE

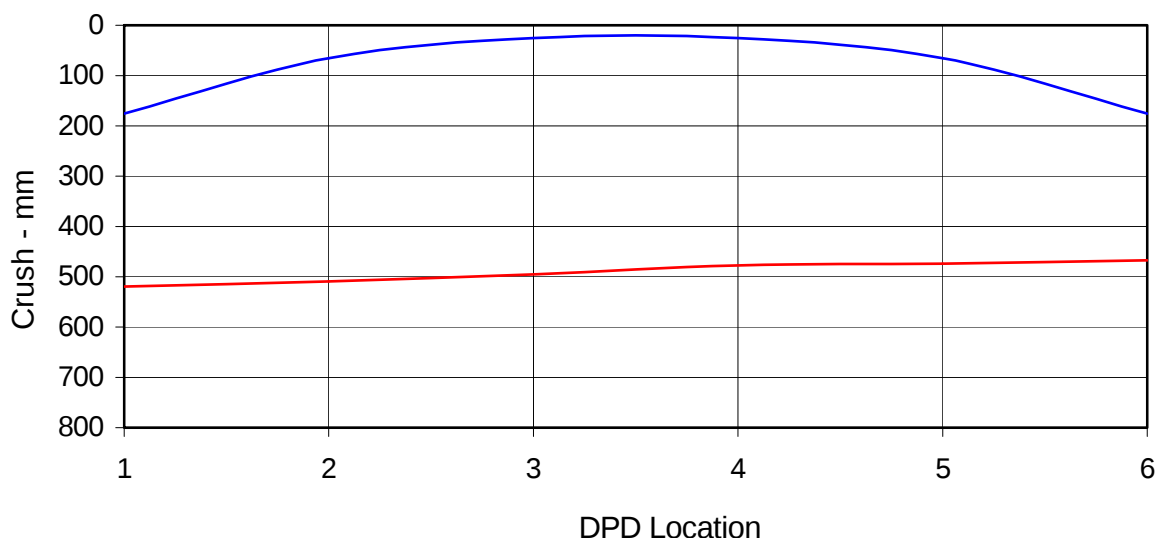
Collision Deformation Classification: 12FDEW6

Midpoint of Damage: Vehicle Centerline

Damage Region Length (mm): 1980

Impact Mode: Full Frontal

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush zone 1 at left side	mm	175	519	-344
C2	Crush zone 2 on left side	mm	65	509	-444
C3	Crush zone 3 on left side	mm	25	495	-470
C4	Crush zone 4 on right side	mm	25	477	-452
C5	Crush zone 5 on right side	mm	65	474	-409
C6	Crush zone 6 at right side	mm	175	467	-292



DATA SHEET NO. 19

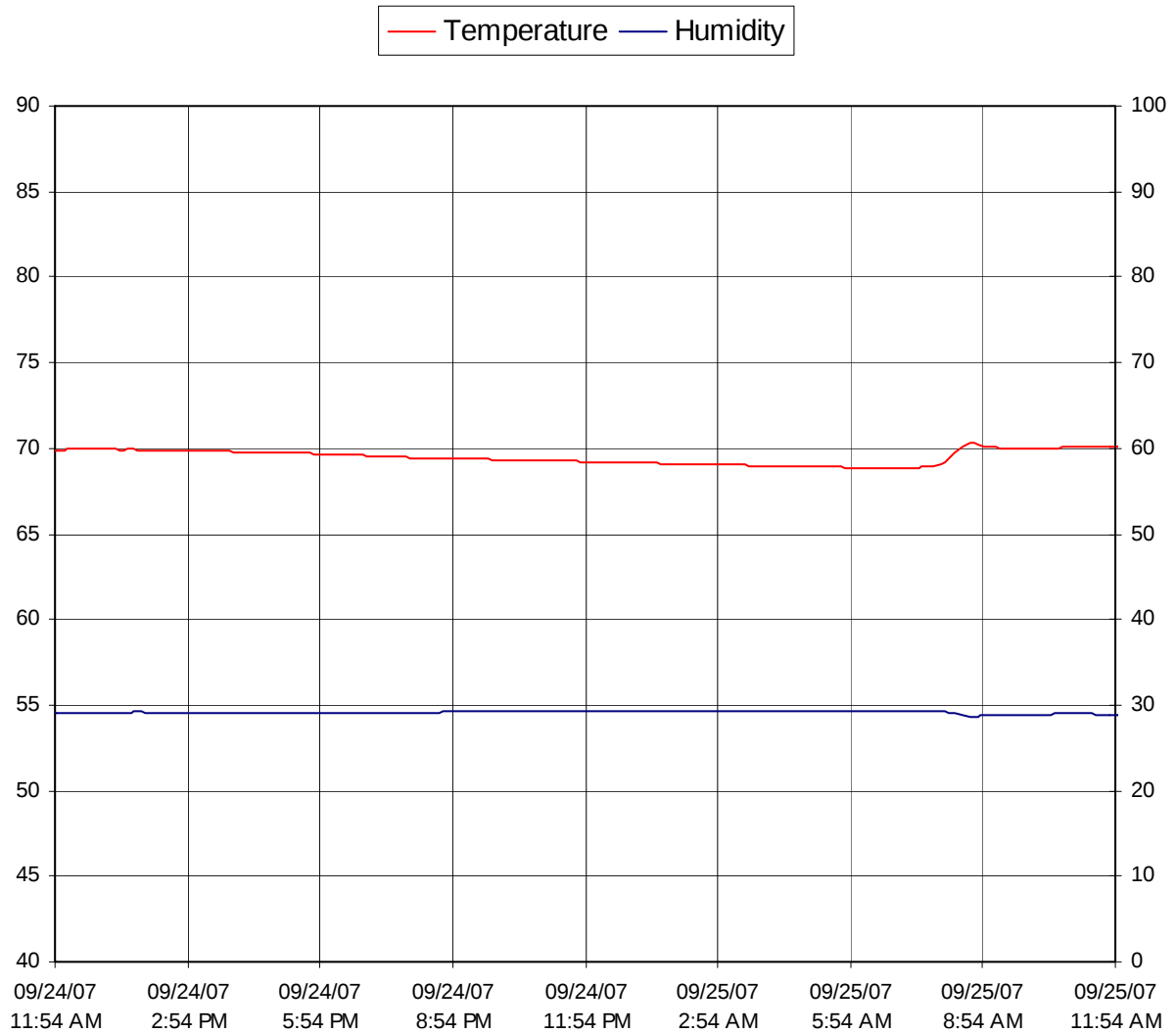
DUMMY/VEHICLE TEMPERATURE STABILIZATION

Test Vehicle: 2008 Nissan Armada SE 5-Door MPV

NHTSA No.: M85205

Test Program: 2007 NHTSA 35mph NCAP

Test Date: 9/25/07



APPENDIX A
PHOTOGRAPHS

LIST OF PHOTOGRAPHS

Figure		Page
A-1	Load Cell Location	A-1
A-2	Manufacturer's Label	A-2
A-3	Tire Placard	A-3
A-4	Right Front $\frac{3}{4}$ View, As Received	A-4
A-5	Left Rear $\frac{3}{4}$ View, As Received	A-5
A-6	Pre-Test Front View	A-6
A-7	Post-Test Front View	A-7
A-8	Pre-Test Left Side View	A-8
A-9	Post-Test Left Side View	A-9
A-10	Pre-Test Right Side View	A-10
A-11	Post-Test Right Side View	A-11
A-12	Pre-Test Right Front $\frac{3}{4}$ View	A-12
A-13	Post-Test Right Front $\frac{3}{4}$ View	A-13
A-14	Pre-Test Left Rear $\frac{3}{4}$ View	A-14
A-15	Post-Test Left Rear $\frac{3}{4}$ View	A-15
A-16	Post-Test Left Side $\frac{3}{4}$ View of Doors After Impact	A-16
A-17	Post-Test Right Side $\frac{3}{4}$ View of Doors After Impact	A-17
A-18	Pre-Test Windshield	A-18
A-19	Post-Test Windshield	A-19
A-20	Pre-Test Engine Compartment	A-20
A-21	Post-Test Engine Compartment (Vehicle Moved)	A-21
A-22	Pre-Test Fuel Cap	A-22
A-23	Post-Test Fuel Cap	A-23
A-24	Pre-Test Front Underbody	A-24
A-25	Post-Test Front Underbody	A-25
A-26	Pre-Test Mid Underbody	A-26
A-27	Post-Test Mid Underbody	A-27
A-28	Pre-Test Rear Underbody	A-28
A-29	Post-Test Rear Underbody	A-29
A-30	Pre-Test Driver Dummy Front View (Head Position)	A-30
A-31	Post-Test Driver Dummy Front View (Head Position)	A-31
A-32	Pre-Test Driver Dummy (Through Window)	A-32
A-33	Post-Test Driver Dummy (Through Window)	A-33
A-34	Pre-Test Driver Dummy (Door Open)	A-34
A-35	Post-Test Driver Dummy (Door Open)	A-35

LIST OF PHOTOGRAPHS...(CONTINUED)

Figure		Page
A-36	Pre-Test Driver Dummy Feet	A-36
A-37	Post-Test Driver Dummy Feet	A-37
A-38	Pre-Test Driver Side Knee Bolster	A-38
A-39	Post-Test Driver Side Knee Bolster	A-39
A-40	Pre-Test Driver Side Floor Pan	A-40
A-41	Post-Test Driver Side Floor Pan	A-41
A-42	Post-Test Driver Dummy Head	A-42
A-43	Post-Test Driver Dummy Airbag Contact	A-43
A-44	Pre-Test Passenger Dummy Front View (Head Position)	A-44
A-45	Post-Test Passenger Dummy Front View (Head Position)	A-45
A-46	Pre-Test Passenger Dummy Front (Through Window)	A-46
A-47	Post-Test Passenger Dummy Front (Through Window)	A-47
A-48	Pre-Test Passenger Dummy (Door Open)	A-48
A-49	Post-Test Passenger Dummy (Door Open)	A-49
A-50	Pre-Test Passenger Dummy Feet	A-50
A-51	Post-Test Passenger Dummy Feet	A-51
A-52	Pre-Test Passenger Side Glove Box	A-52
A-53	Post-Test Passenger Side Glove Box	A-53
A-54	Pre-Test Passenger Side Floor Pan	A-54
A-55	Post-Test Passenger Side Floor Pan	A-55
A-56	Post-Test Passenger Dummy Head	A-56
A-57	Post-Test Passenger Dummy Airbag Contact	A-57
A-58	Vehicle on Rollover Device (0°)	A-58
A-59	Vehicle on Rollover Device (90°)	A-59
A-60	Vehicle on Rollover Device (180°)	A-60
A-61	Vehicle on Rollover Device (270°)	A-61
A-62	Vehicle Impact	A-62



Figure A-1: Load Cell Location

MFD BY NISSAN MOTOR CO., LTD.

DATE 05/07

GVWR 7249 LB

GAWR FR. 3699 LB

WITH P265/70R18 TIRES

18X8.0 RIMS AT 35 PSI

COLD SINGLE

GAWR RR. 4299 LB

WITH P265/70R18 TIRES

18X8.0 RIMS AT 35 PSI

COLD SINGLE

THIS VEHICLE CONFORMS TO
ALL APPLICABLE FEDERAL
MOTOR VEHICLE SAFETY
STANDARDS IN EFFECT ON
THE DATE OF MANUFACTURE
SHOWN ABOVE.

SEE OWNERS MANUAL FOR
ADDITIONAL INFORMATION.

5N1AA08C88N 605085

TYPE: MPV 668

MODEL: TPKWLTk-EUA 0Z000

COLOR TRIM TRANS

K11 I G IRE5R05A

AXLE ENGINE

RD29 I VK56DE 5552CC



Figure A-2: Manufacturer's Label



TIRE AND LOADING INFORMATION PNEU ET INFORMATION DE CHARGEMENT

SEATING CAPACITY
NOMBRE DE PLACES

TOTAL
TOTAL

8

FRONT
AVANT

2

REAR
ARRIÈRE

6

THE COMBINED WEIGHT OF OCCUPANTS AND CARGO SHOULD NEVER EXCEED 1433 lbs OR 650 kg
LE POIDS COMBINÉ D'OCCUPANTS ET DE CARGAISON NE DEVRAIT JAMAIS EXCÉDER 1433 lbs OU 650 kg

TIRE PNEU	ORIGINAL TIRE SIZE TAILLE DU PNEU D'ORIGINE	COLD TIRE PRESSURE PRESSION DE GONFLAGE À FROIDS
FRONT AVANT	P265/70R18	240 kPa (35 psi)
REAR ARRIÈRE	P265/70R18	240 kPa (35 psi)
SPARE TIRE ROUE DE SECOURS	P265/70R18	240 kPa (35 psi)

SEE OWNER'S MANUAL
FOR ADDITIONAL
INFORMATION.

POUR D'AUTRES
DÉTAILS, SE REPORTER
AU MANUEL DU
CONDUCTEUR.

605085 668

Figure A-3: Tire Placard



Figure A-4: Right Front $\frac{3}{4}$ View, As Received



Figure A-5: Left Rear $\frac{3}{4}$ View, as Received



Figure A-6: Pre-Test Front View



Figure A-7: Post-Test Front View (Vehicle Moved)



Figure A-8: Pre-Test Left Side View



Figure A-9: Post-Test Left Side View



Figure A-10: Pre-Test Right Side View



Figure A-11: Post-Test Right Side View



Figure A-12: Pre-Test Right Front ¾ View



Figure A-13: Post-Test Right Front ¾ View (Vehicle Moved)



Figure A-14: Pre-Test Left Rear $\frac{3}{4}$ View



Figure A-15: Post-Test Left Rear $\frac{3}{4}$ View



Figure A-16: Post-Test Left Side $\frac{3}{4}$ View of Doors After Impact



Figure A-17: Post-Test Right Side $\frac{3}{4}$ View of Doors After Impact

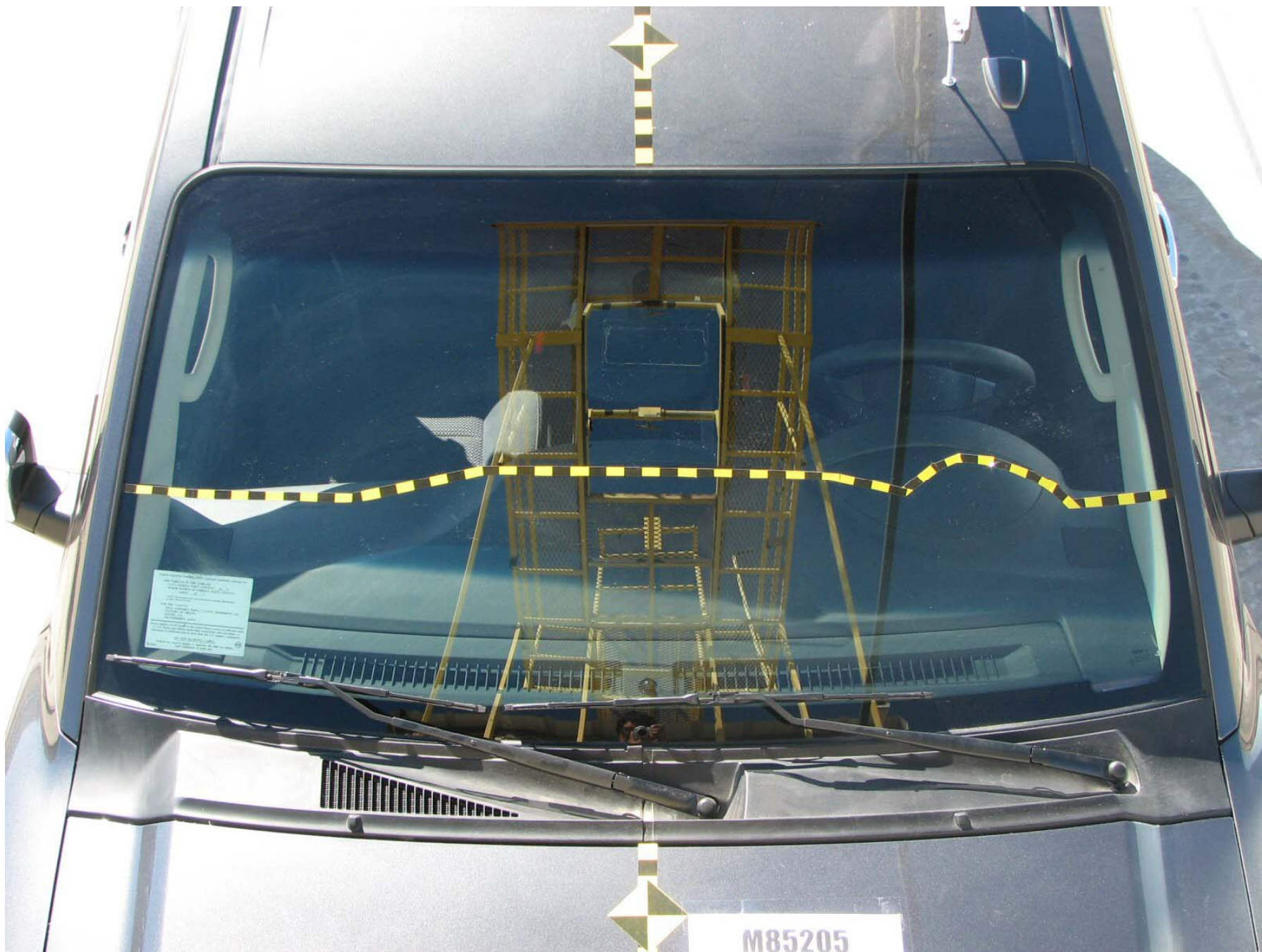


Figure A-18: Pre-Test Windshield



Figure A-19: Post-Test Windshield



Figure A-20: Pre-Test Engine Compartment



Figure A-21: Post-Test Engine Compartment (Vehicle Moved)



Figure A-22: Pre-Test Fuel Cap



Figure A-23: Post-Test Fuel Cap

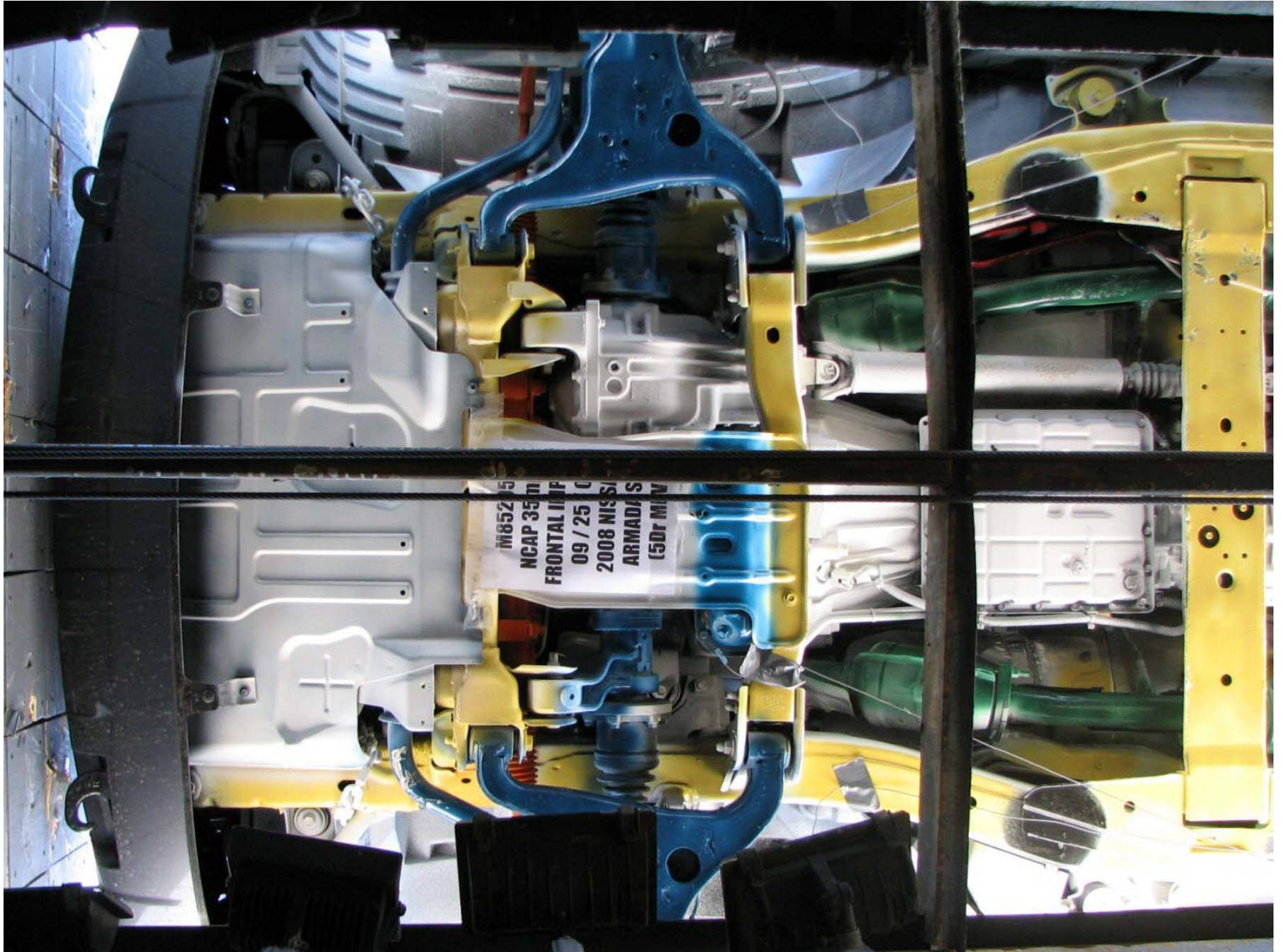


Figure A-24: Pre-Test Front Underbody

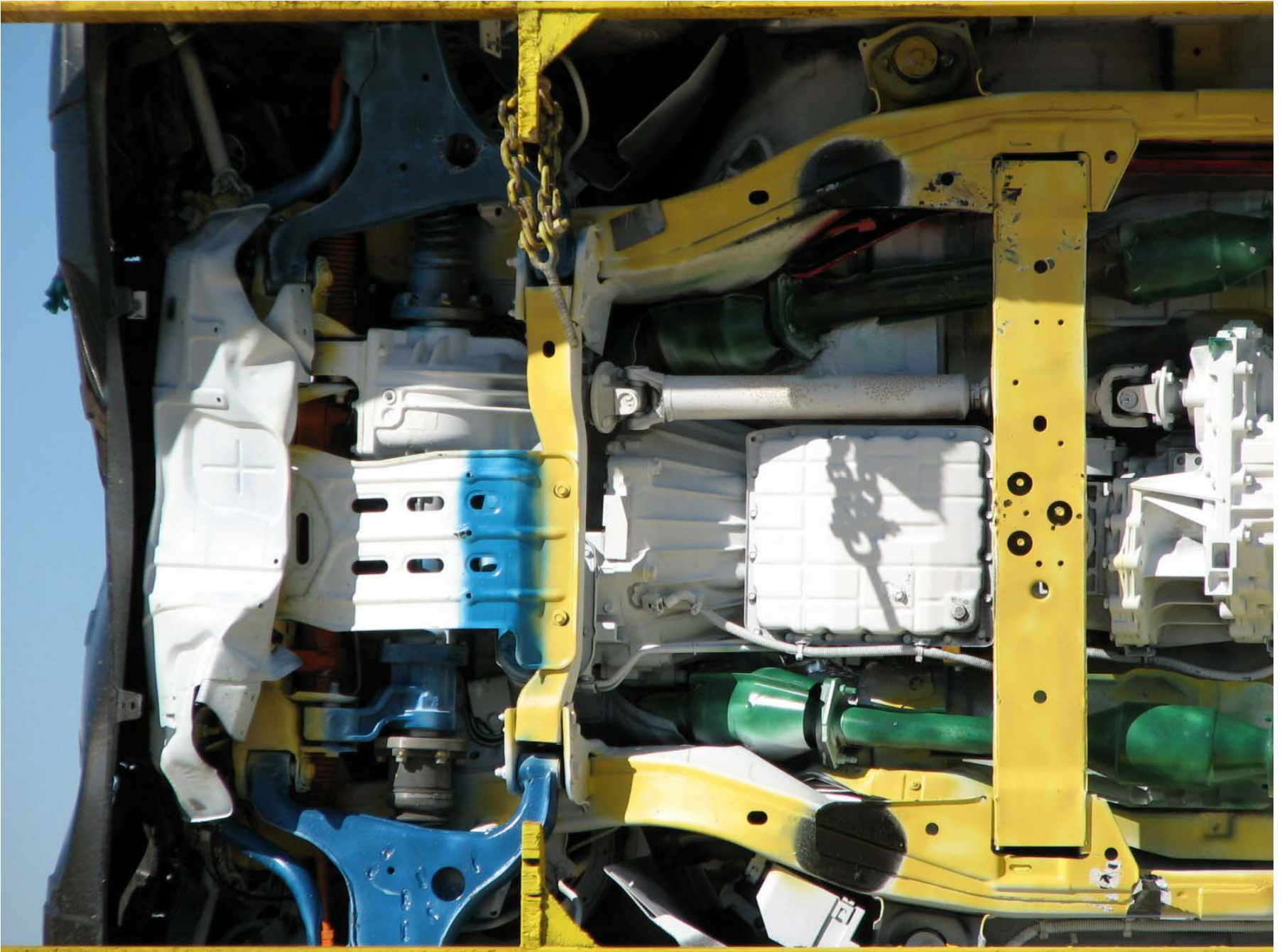


Figure A-25: Post-Test Front Underbody

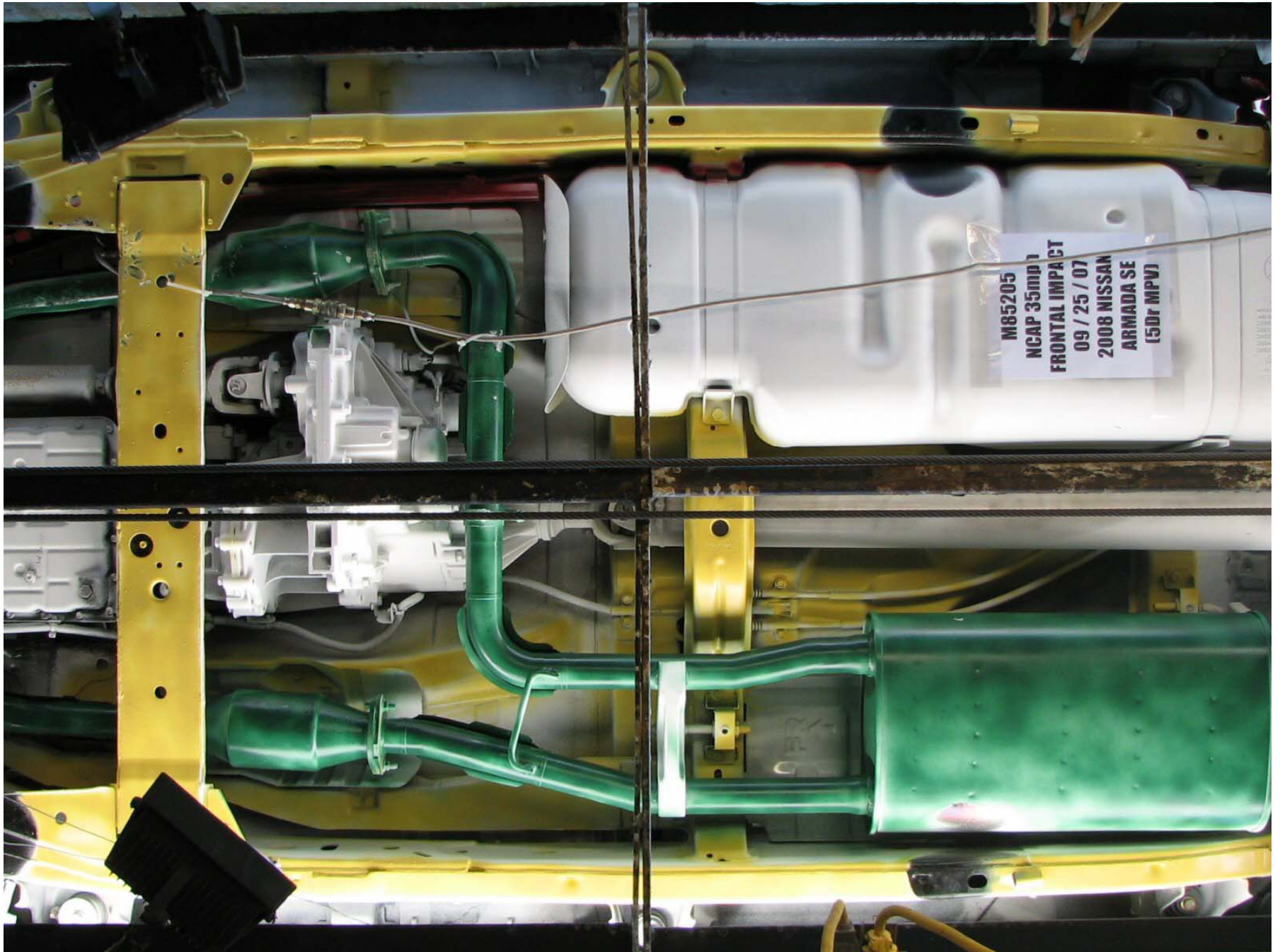


Figure A-26: Pre-Test Mid Underbody



Figure A-27: Post-Test Mid Underbody

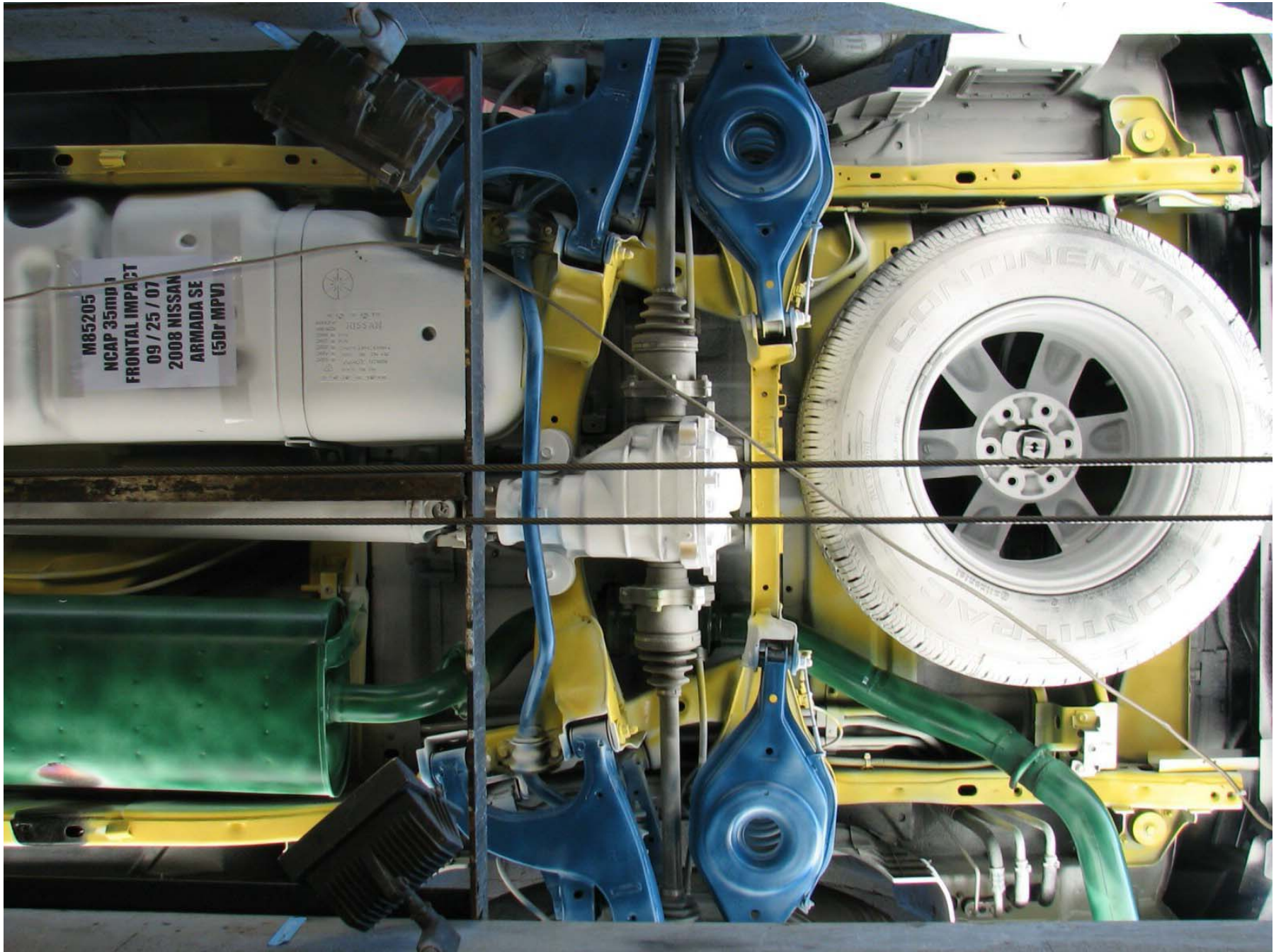


Figure A-28: Pre-Test Rear Underbody

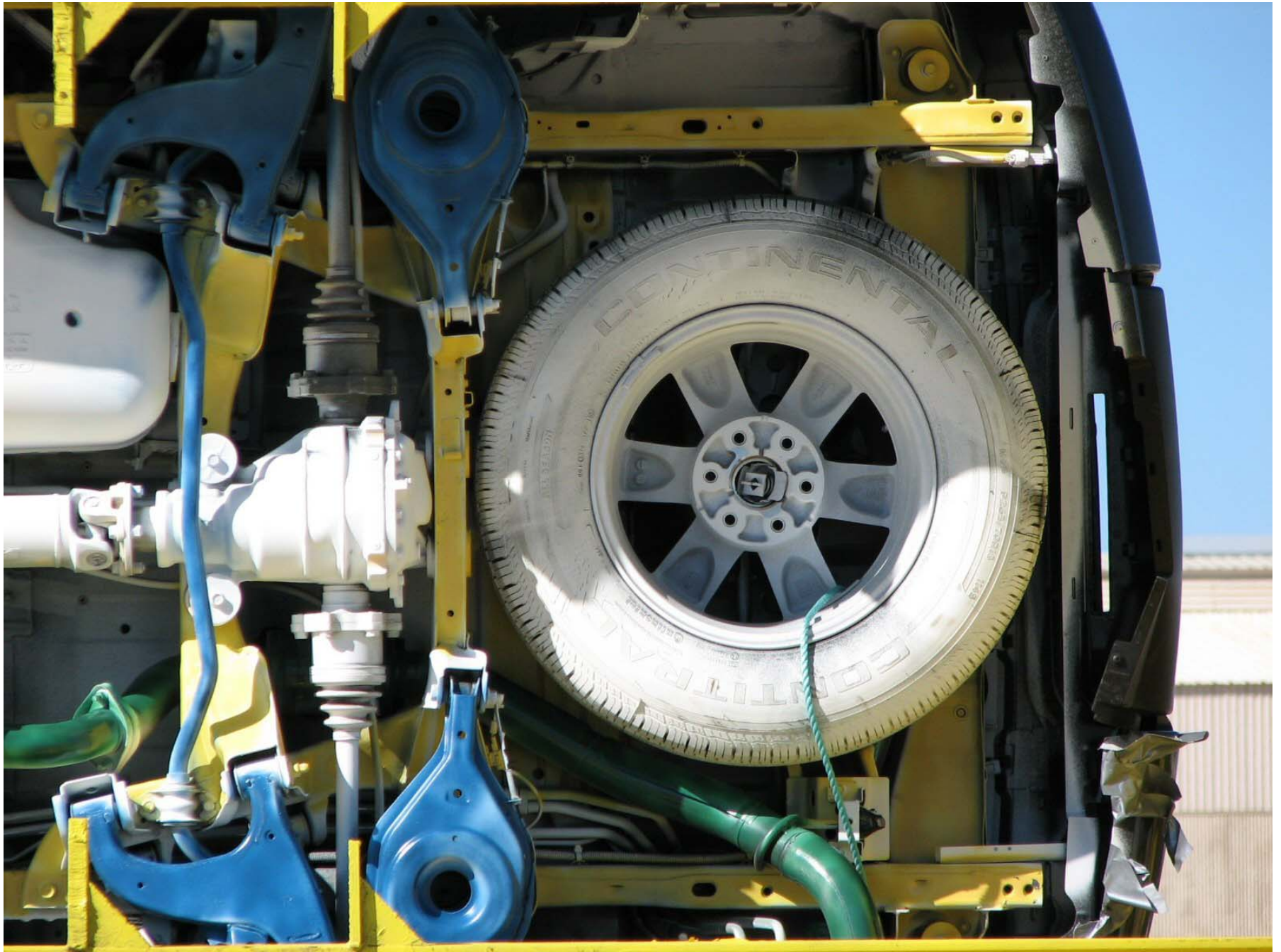


Figure A-29: Post-Test Rear Underbody



Figure A-30: Pre-Test Driver Dummy Front View (Head Position)



Figure A-31: Post-Test Driver Dummy Front View (Head Position)



Figure A-32: Pre-Test Driver Dummy (Through Window)



Figure A-33: Post-Test Driver Dummy (Through Window)



Figure A-34: Pre-Test Driver Dummy (Door Open)



Figure A-35: Post-Test Driver Dummy (Door Open)



Figure A-36: Pre-Test Driver Dummy Feet

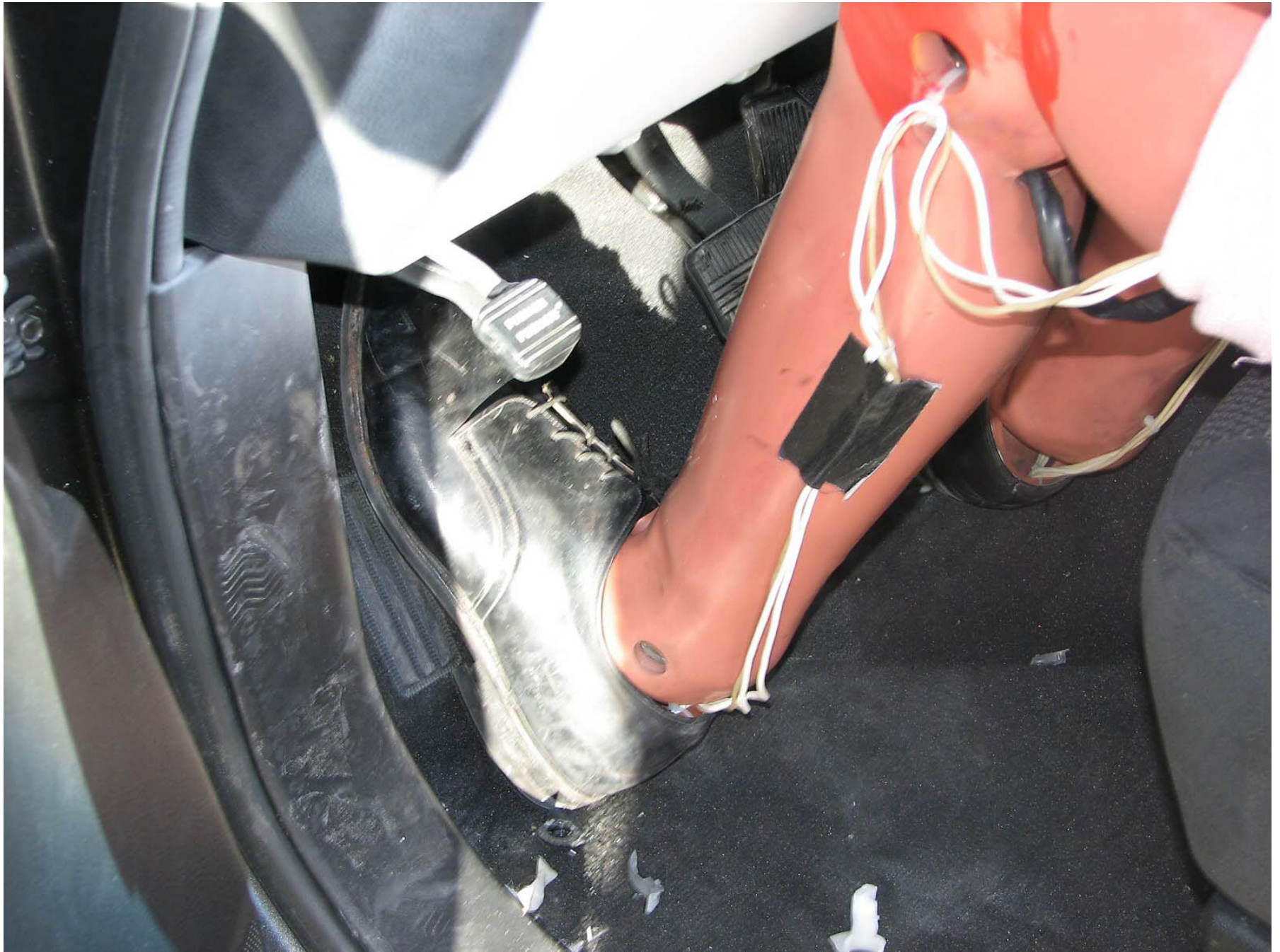


Figure A-37: Post-Test Driver Dummy Feet



Figure A-38: Pre-Test Driver Side Knee Bolster



Figure A-39: Post-Test Driver Side Knee Bolster



Figure A-40: Pre-Test Driver Side Floor Pan



Figure A-41: Post-Test Driver Side Floor Pan



Figure A-42: Post-Test Driver Dummy Head



Figure A-43: Post-Test Driver Dummy Airbag Contact



Figure A-44: Pre-Test Passenger Dummy Front View (Head Position)



Figure A-45: Post-Test Passenger Dummy Front View (Head Position)



Figure A-46: Pre-Test Passenger Dummy (Through Window)



Figure A-47: Post-Test Passenger Dummy (Through Window)



Figure A-48: Pre-Test Passenger Dummy (Door Open)



Figure A-49: Post-Test Passenger Dummy (Door Open)



Figure A-50: Pre-Test Passenger Dummy Feet



Figure A-51: Post-Test Passenger Dummy Feet



Figure A-52: Pre-Test Passenger Side Glove Box



Figure A-53: Post-Test Passenger Side Glove Box



Figure A-54: Pre-Test Passenger Side Floor Pan



Figure A-55: Post-Test Passenger Side Floor Pan



Figure A-56: Post-Test Passenger Dummy Head

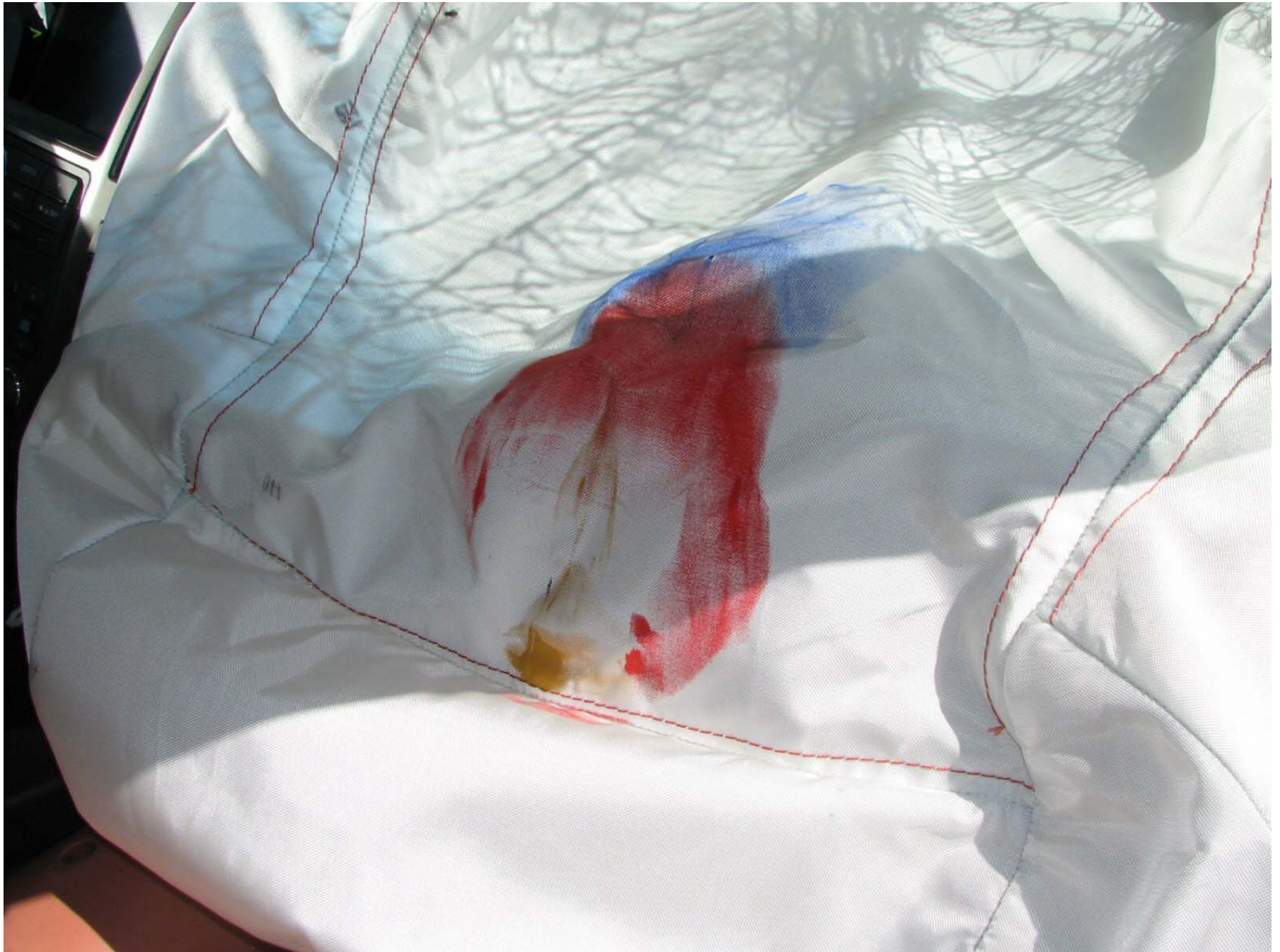


Figure A-57: Post-Test Passenger Dummy Airbag Contact



Figure A-58: Vehicle on Rollover Device (0°)



Figure A-59: Vehicle on Rollover Device (90°)



Figure A-60: Vehicle on Rollover Device (180°)

**Photograph Not
Available**

Figure A-61: Vehicle on Rollover Device (270°)



Figure A-62: Vehicle Impact

APPENDIX B
DATA PLOTS

LIST OF DATA PLOTS

Data Plot	Page
B-1	Driver Head Primary X
	Driver Head Primary Y
	Driver Head Primary Z
	Driver Head Resultant Primary
B-2	Driver Chest Primary X
	Driver Chest Primary Y
	Driver Chest Primary Z
	Driver Chest Resultant Primary
B-3	Driver Left Femur Force Z
	Driver Right Femur Force Z
B-4	Passenger Head Primary X
	Passenger Head Primary Y
	Passenger Head Primary Z
	Passenger Head Resultant Primary
B-5	Passenger Chest Primary X
	Passenger Chest Primary Y
	Passenger Chest Primary Z
	Passenger Chest Resultant Primary
B-6	Passenger Left Femur Force Z
	Passenger Right Femur Force Z

LIST OF DATA PLOTS...(CONTINUED)

The following additional data plots for this test can be obtained from the research and development section of the NHTSA website. The website can be found at www.NHTSA.dot.gov.

- Driver Head Primary X Velocity
- Driver Head Primary X Displacement
- Driver Head Redundant X
- Driver Head Redundant Y
- Driver Head Redundant Z
- Driver Head Resultant Redundant
- Driver Head Redundant X Velocity
- Driver Head Redundant X Displacement
- Driver Upper Neck Force X
- Driver Upper Neck Force Y
- Driver Upper Neck Force Z
- Driver Upper Neck Force Resultant
- Driver Upper Neck Moment X
- Driver Upper Neck Moment Y
- Driver Upper Neck Moment Z
- Driver Upper Neck Moment Resultant
- Driver Chest Primary X Velocity
- Driver Chest Primary X Displacement
- Driver Chest Redundant X
- Driver Chest Redundant Y
- Driver Chest Redundant Z
- Driver Chest Resultant Redundant
- Driver Chest Redundant X Velocity
- Driver Chest Redundant X Displacement
- Driver Chest Displacement
- Driver Pelvis X
- Driver Pelvis Y
- Driver Pelvis Z
- Driver Pelvis Resultant
- Driver Pelvis X Velocity
- Driver Pelvis X Displacement
- Driver Left Upper Tibia Moment X
- Driver Left Upper Tibia Moment Y
- Driver Right Upper Tibia Moment X

LIST OF DATA PLOTS...(CONTINUED)

Driver Right Upper Tibia Moment Y
Driver Left Lower Tibia Moment X
Driver Left Lower Tibia Moment Y
Driver Left Lower Tibia Force Z
Driver Right Lower Tibia Moment X
Driver Right Lower Tibia Moment Y
Driver Right Lower Tibia Force Z
Driver Left Foot Aft X
Driver Left Foot Aft Z
Driver Left Foot Fore Z
Driver Right Foot Aft X
Driver Right Foot Aft Z
Driver Right Foot Fore Z
Driver Lap Belt Force
Driver Shoulder Belt Force
Driver Shoulder Belt Pullout
Driver Shoulder Belt Elongation
Passenger Head Primary X Velocity
Passenger Head Primary X Displacement
Passenger Head Redundant X
Passenger Head Redundant Y
Passenger Head Redundant Z
Passenger Head Resultant Redundant
Passenger Head Redundant X Velocity
Passenger Head Redundant X Displacement
Passenger Upper Neck Force X
Passenger Upper Neck Force Y
Passenger Upper Neck Force Z
Passenger Upper Neck Force Resultant
Passenger Upper Neck Moment X
Passenger Upper Neck Moment Y
Passenger Upper Neck Moment Z
Passenger Upper Neck Moment Resultant
Passenger Chest Primary X Velocity
Passenger Chest Primary X Displacement
Passenger Chest Redundant X

LIST OF DATA PLOTS...(CONTINUED)

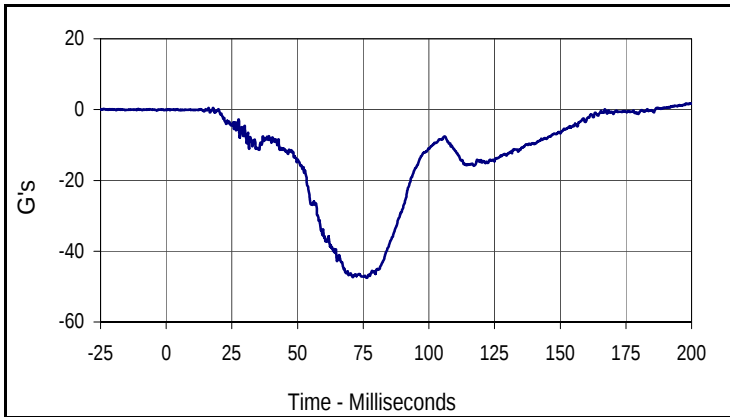
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Passenger Chest Redundant Z
Passenger Chest Resultant Redundant
Passenger Chest Redundant X Velocity
Passenger Chest Redundant X Displacement
Passenger Chest Displacement
Passenger Pelvis X
Passenger Pelvis Y
Passenger Pelvis Z
Passenger Pelvis Resultant
Passenger Pelvis X Velocity
Passenger Pelvis X Displacement
Passenger Left Femur Force
Passenger Right Femur Force
Passenger Left Upper Tibia Moment X
Passenger Left Upper Tibia Moment Y
Passenger Right Upper Tibia Moment X
Passenger Right Upper Tibia Moment Y
Passenger Left Lower Tibia Moment X
Passenger Left Lower Tibia Moment Y
Passenger Left Lower Tibia Force Z
Passenger Right Lower Tibia Moment X
Passenger Right Lower Tibia Moment Y
Passenger Right Lower Tibia Force Z
Passenger Left Foot Aft X
Passenger Left Foot Aft Z
Passenger Left Foot Fore Z
Passenger Right Foot Aft X
Passenger Right Foot Aft Z
Passenger Right Foot Fore Z
Passenger Lap Belt Force
Passenger Shoulder Belt Force
Passenger Shoulder Belt Pullout
Passenger Shoulder Belt Elongation
Vehicle Left Rear X
Vehicle Left Rear X Velocity

LIST OF DATA PLOTS...(CONTINUED)

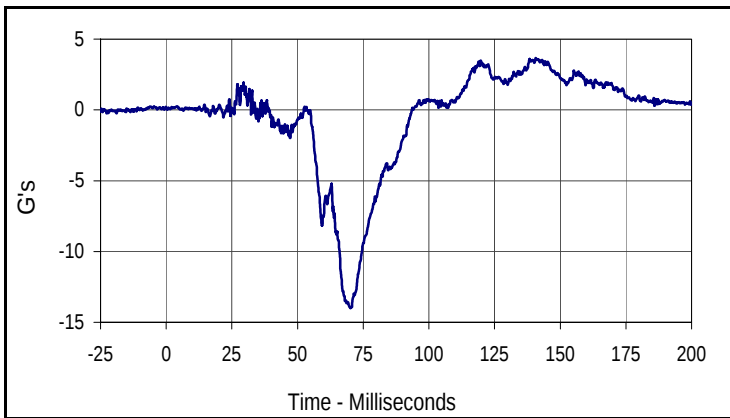
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Vehicle Right Rear X
Vehicle Right Rear X Velocity
Vehicle Right Rear X Displacement
Vehicle Engine Top
Vehicle Engine Top Velocity
Vehicle Engine Top Displacement
Vehicle Engine Bottom
Vehicle Engine Bottom Velocity
Vehicle Engine Bottom Displacement
Vehicle Left Brake Caliper
Vehicle Left Brake Caliper Velocity
Vehicle Left Brake Caliper Displacement
Vehicle Right Brake Caliper
Vehicle Right Brake Caliper Velocity
Vehicle Right Brake Caliper Displacement
Vehicle Instrument Panel
Vehicle Instrument Panel Velocity
Vehicle Instrument Panel Displacement
Vehicle Left Rear Z
Vehicle Left Rear Z Velocity
Vehicle Left Rear Z Displacement
Vehicle Right Rear Z
Vehicle Right Rear Z Velocity
Vehicle Right Rear Z Displacement

Test Vehicle: 2008 Nissan Armada SE 5-Door MPV
 Test Program: NHTSA 35mph NCAP

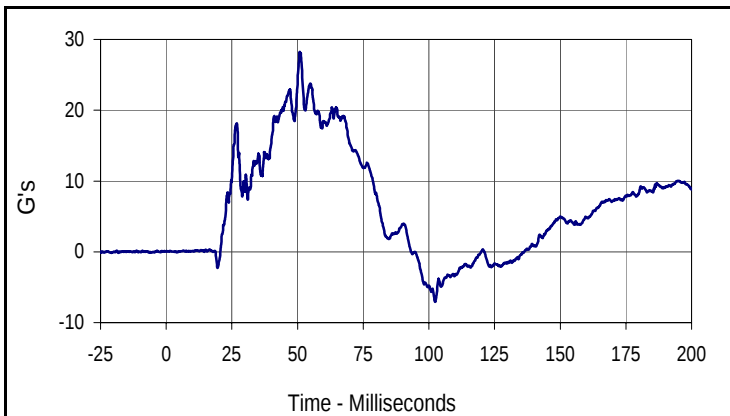
Test Date: 9/25/07
 NHTSA No.: M85205



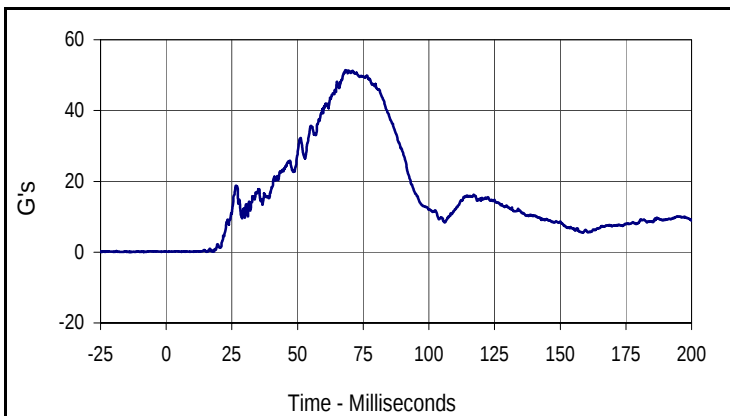
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Driver Head Primary X			
CURNO	Type	SAE Class	Units
001	FIL	1000	G's
Max	Time	Min	Time
1.7	199.4	-47.5	76.5



Curve Description			
Driver Head Primary Y			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
3.7	140.7	-14.0	70.2



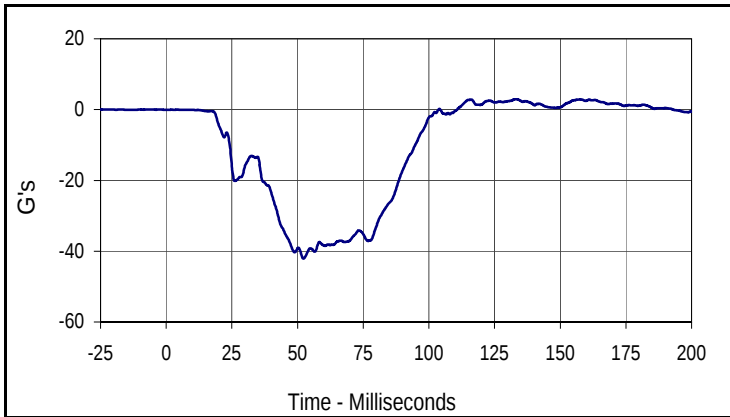
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Max	Time	Min	Time
28.2	50.9	-7.0	102.4



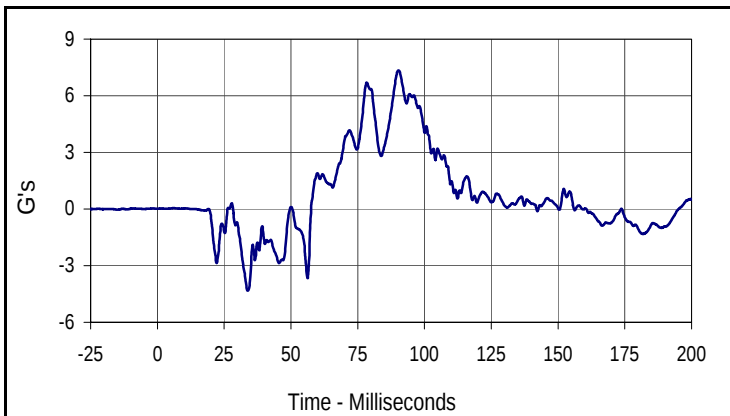
Curve Description			
Driver Head Resultant Primary			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
51.4	68.3	0.1	7.1

Test Vehicle: 2008 Nissan Armada SE 5-Door MPV
 Test Program: NHTSA 35mph NCAP

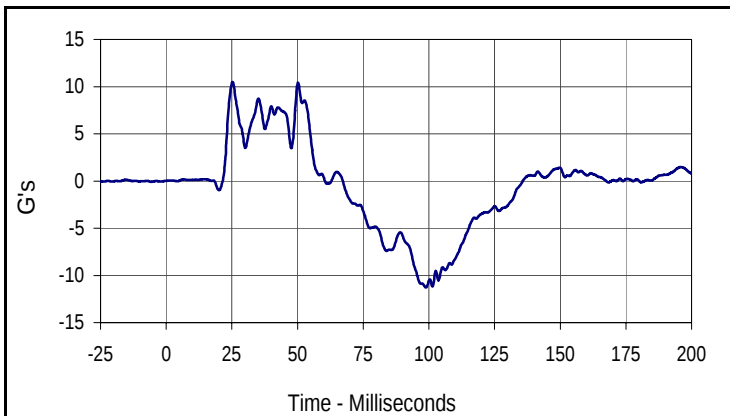
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 NHTSA No.: M85205



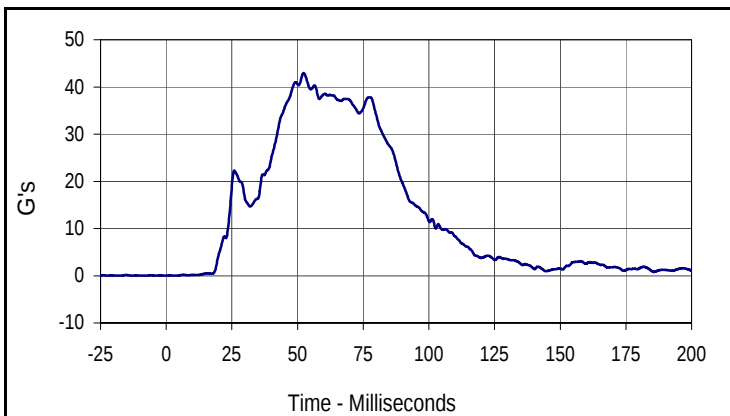
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Driver Chest Primary X			
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004	FIL	180	G's
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2.9	133.2	-42.1	52.3



Curve Description			
Driver Chest Primary Y			
CURNO	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
7.3	90.3	-4.3	33.8



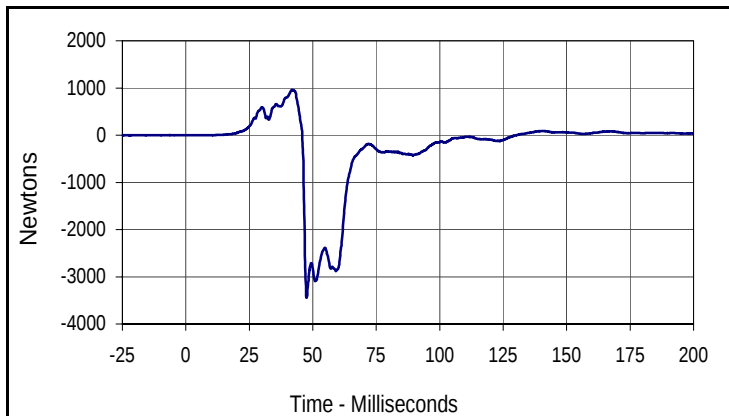
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Driver Chest Primary Z			
CURNO	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
10.5	25.3	-11.3	98.8



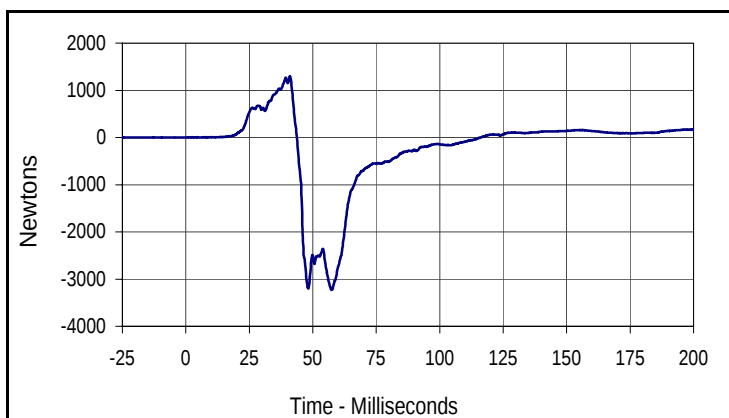
Curve Description			
Driver Chest Resultant Primary			
CURNO	Type	SAE Class	Units
004	RES	180	G's
Max	Time	Min	Time
43.0	52.3	0.0	3.8

Test Vehicle: 2008 Nissan Armada SE 5-Door MPV
 Test Program: NHTSA 35mph NCAP

Test Date: 9/25/07
 NHTSA No.: M85205



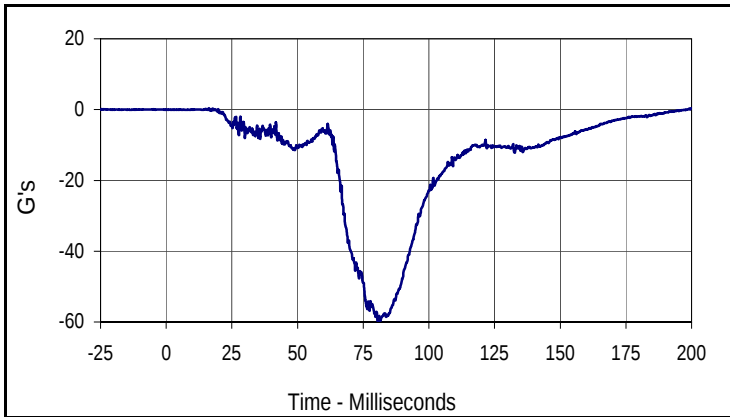
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007	FIL	600	Newtons
Max	Time	Min	Time
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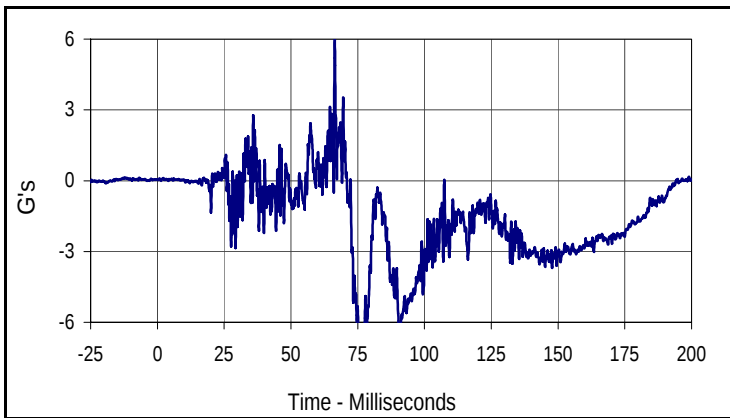
Curve Description			
Driver Right Femur Force Z			
CURNO	Type	SAE Class	Units
008	FIL	600	Newtons
Max	Time	Min	Time
1299.4	41.0	-3228.8	57.4

Test Vehicle: 2008 Nissan Armada SE 5-Door MPV
 Test Program: NHTSA 35mph NCAP

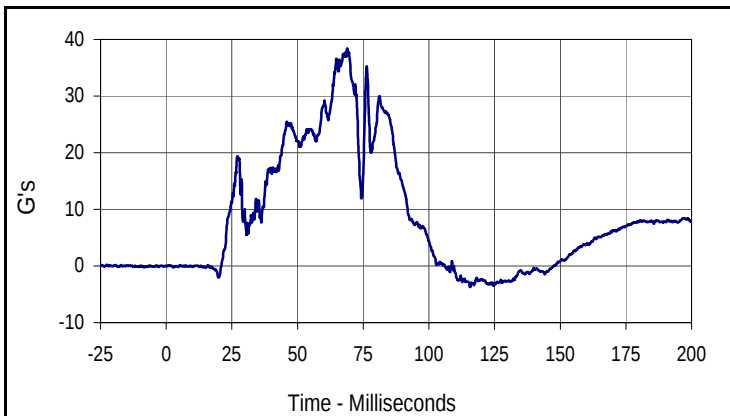
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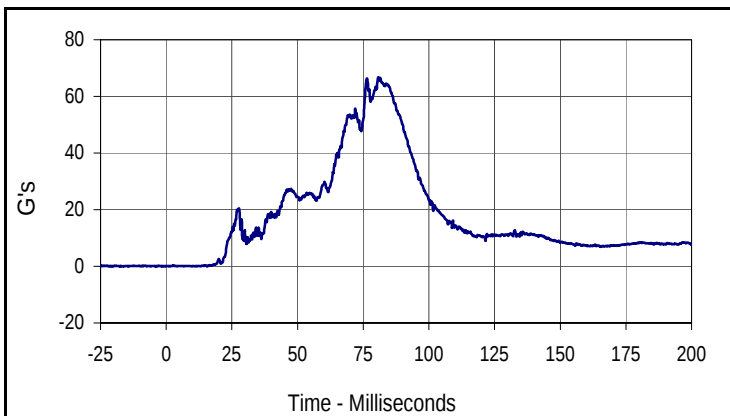
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Passenger Head Primary X			
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009	FIL	1000	G's
Max	Time	Min	Time
0.4	16.3	-60.1	80.7



Curve Description			
Passenger Head Primary Y			
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010	FIL	1000	G's
Max	Time	Min	Time
6.1	66.4	-8.1	77.3



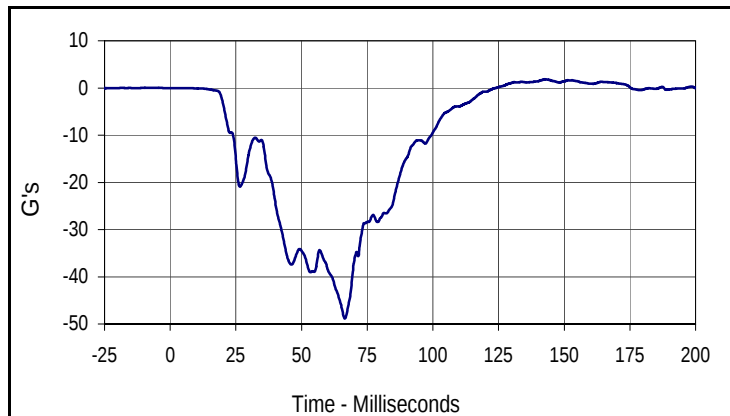
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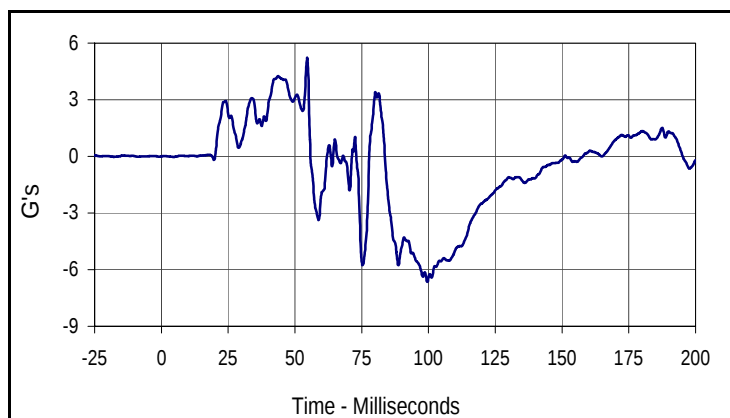
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Passenger Head Resultant Primary			
CURNO	Type	SAE Class	Units
009	RES	1000	G's
Max	Time	Min	Time
66.8	80.7	0.0	1.4

Test Vehicle: 2008 Nissan Armada SE 5-Door MPV
 Test Program: NHTSA 35mph NCAP

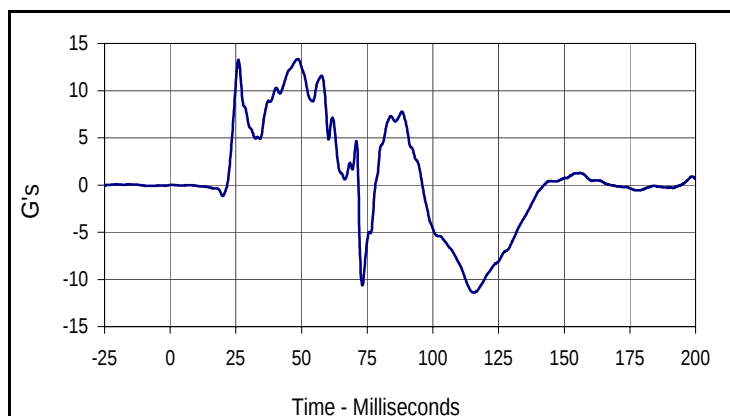
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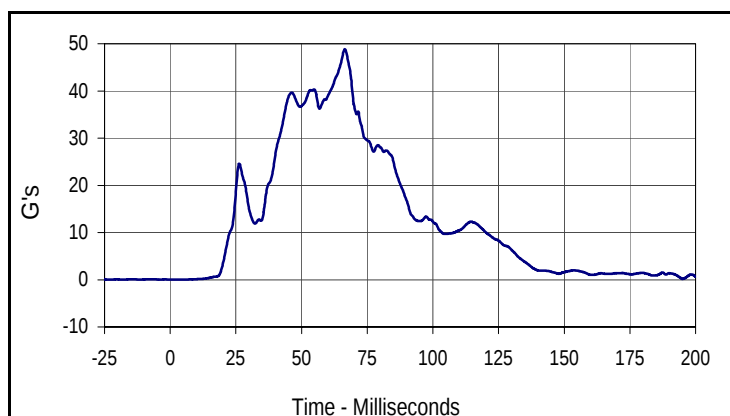
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Passenger Chest Primary X			
CURNO	Type	SAE Class	Units
012	FIL	180	G's
Max	Time	Min	Time
1.8	142.6	-48.8	66.5



Curve Description			
Passenger Chest Primary Y			
CURNO	Type	SAE Class	Units
013	FIL	180	G's
Max	Time	Min	Time
5.2	54.6	-6.6	99.6



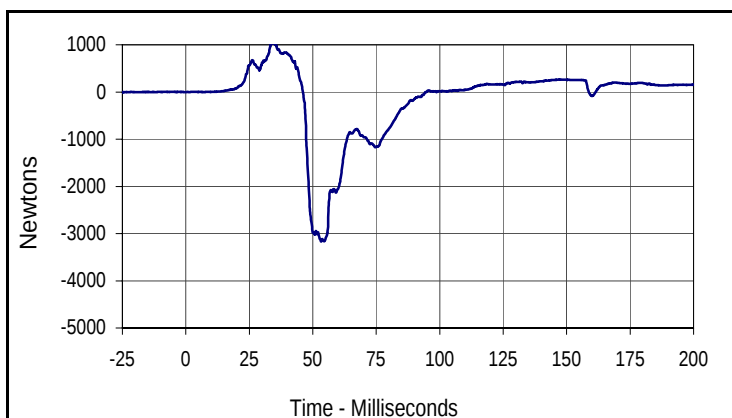
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CURNO	Type	SAE Class	Units
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Max	Time	Min	Time
13.4	48.6	-11.4	115.4



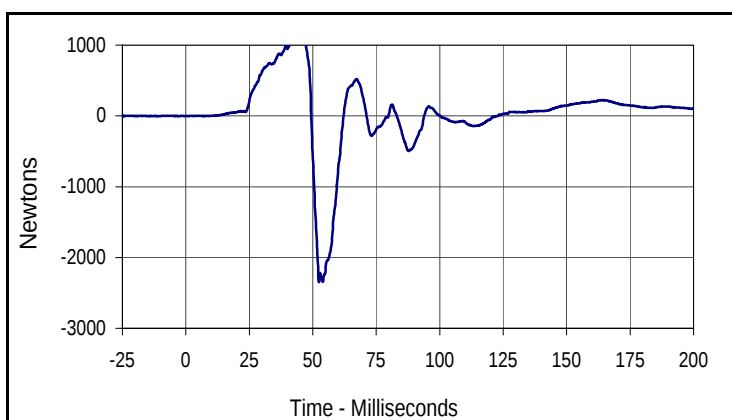
Curve Description			
Passenger Chest Resultant Primary			
CURNO	Type	SAE Class	Units
012	RES	180	G's
Max	Time	Min	Time
48.8	66.5	0.0	1.9

Test Vehicle: 2008 Nissan Armada SE 5-Door MPV
 Test Program: NHTSA 35mph NCAP

Test Date: 9/25/07
 NHTSA No.: M85205



Curve Description			
Passenger Left Femur Force Z			
CURNO	Type	SAE Class	Units
015	FIL	600	Newtons
Max	Time	Min	Time
1092.2	34.1	-3169.3	53.3



Curve Description			
Passenger Right Femur Force Z			
CURNO	Type	SAE Class	Units
016	FIL	600	Newtons
Max	Time	Min	Time
1169.9	43.2	-2347.8	52.4

APPENDIX C
DUMMY CALIBRATION DATA

Test Program: Hybrid III 50th Percentile Male Head Drop Test

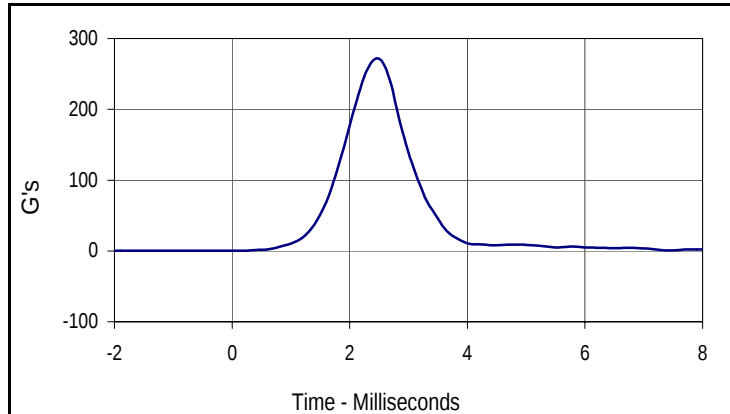
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ATD Serial No.: 034

Test I.D.: HD09D



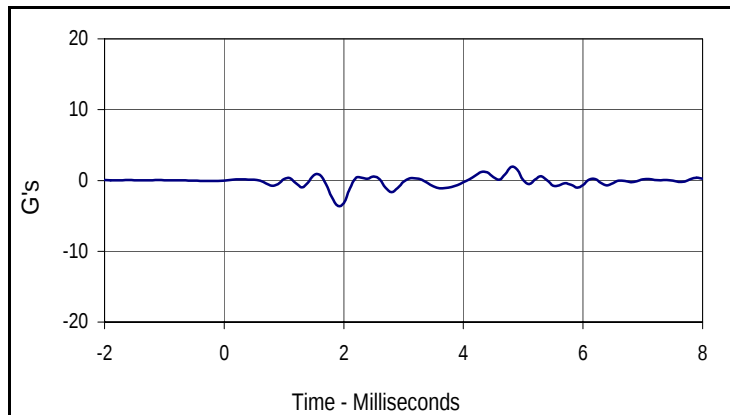
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	225.0 to 275.0	271.6	Pass
Peak Lateral Acceleration	G's	≤15.0	3.6	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass



Curve Description

Head Resultant

CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
271.6	2.5	0.4	0.2



Curve Description

Head Y

CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
1.9	4.8	-3.6	1.9

Test Program: Hybrid III 50th Percentile Male Thorax Impact Test

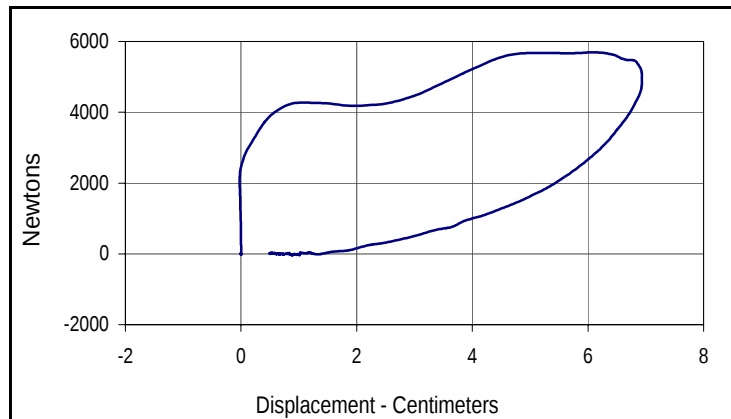
Test Date: 9/17/07

ATD Serial No.: 034

Test I.D.: CH09D



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	6.58 to 6.82	6.63	Pass
Peak Probe Force	Newtons	5159 to 5893	5694	Pass
Peak Sternum Deflection	CM	6.35 to 7.26	6.93	Pass
Internal Hysteresis	%	69 to 85	76.8	Pass
Overall Test Results				Pass



Curve Description			
Probe Force vs. Chest Deflection			
CURNO	Type	SAE Class	Hysteresis
001	FIL	180	76.8
Peak Probe Force		Peak Chest Deflection	
5694		6.93	

Test Program: Hybrid III 50th Percentile Male Neck Flexion Test

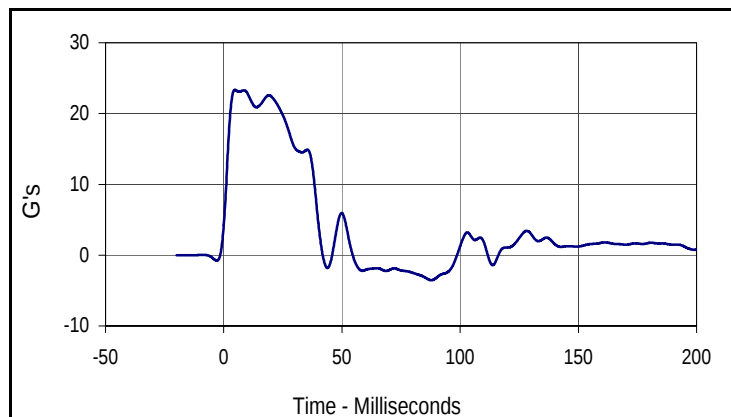
Test Date: 9/17/07

ATD Serial No.: 034

Test I.D.: NF09D



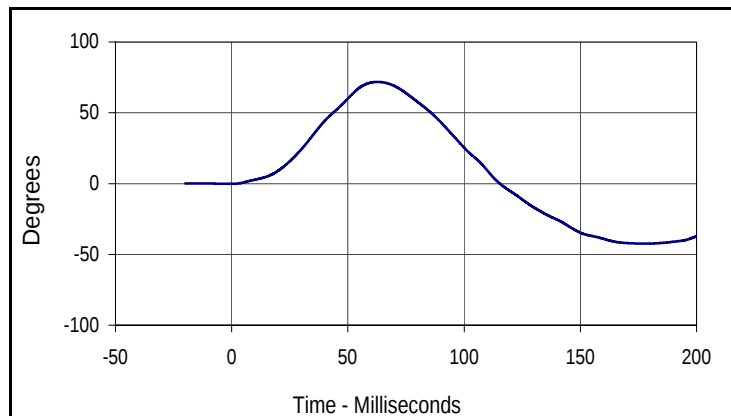
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	6.89 to 7.13	7.10	Pass
Pendulum Deceleration	10 Msec.	G's	22.5 to 27.5	22.9	Pass
	20 Msec.	G's	17.6 to 22.6	22.5	Pass
	30 Msec.	G's	12.5 to 18.5	15.2	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 29.0	15.2	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	34.0 to 42.0	39.9	Pass
Maximum "D" Plane Rotation	Max	Degrees	64.0 to 78.0	71.9	Pass
	Time	Msec.	57.0 to 64.0	62.7	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	113.0 to 128.0	115.4	Pass
Moment About Occ. Condyle	Max	Nm	84.1 to 108.5	97.0	Pass
	Time	Msec.	47.0 to 58.0	52.1	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	97.0 to 107.0	97.0	Pass
			Overall Test Results		Pass



Curve Description

Pendulum Deceleration

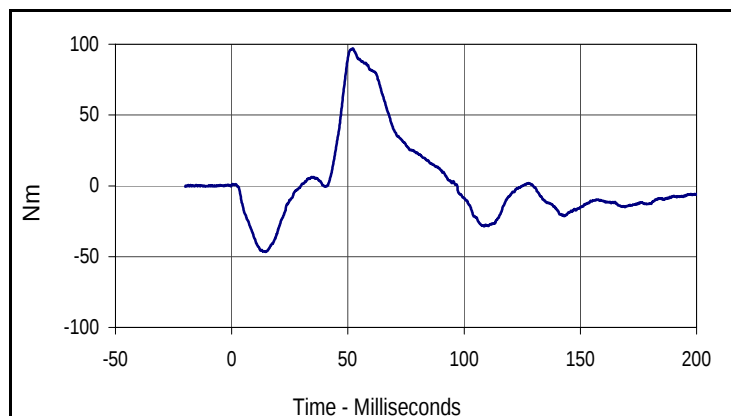
CURNO	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
23.3	4.7	-3.5	87.8



Curve Description

"D" Plane Rotation

CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
71.9	62.7	-42.4	178.6



Curve Description

Moment About Occipital Condyle

CURNO	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
97.0	52.1	-46.6	14.7

Test Program: Hybrid III 50th Percentile Male Neck Extension Test

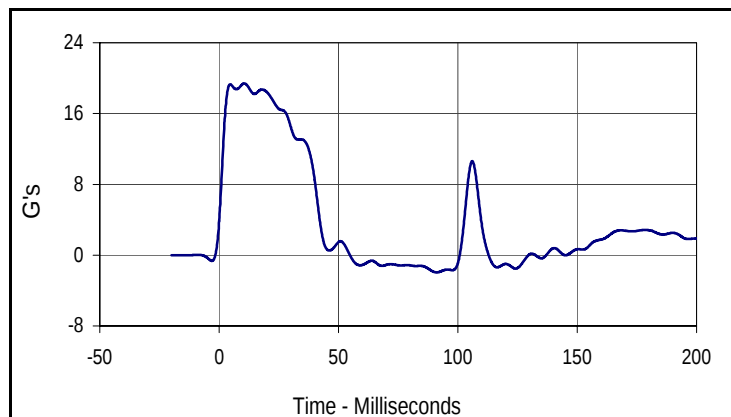
Test Date: 9/17/07

ATD Serial No.: 034

Test I.D.: NE09D



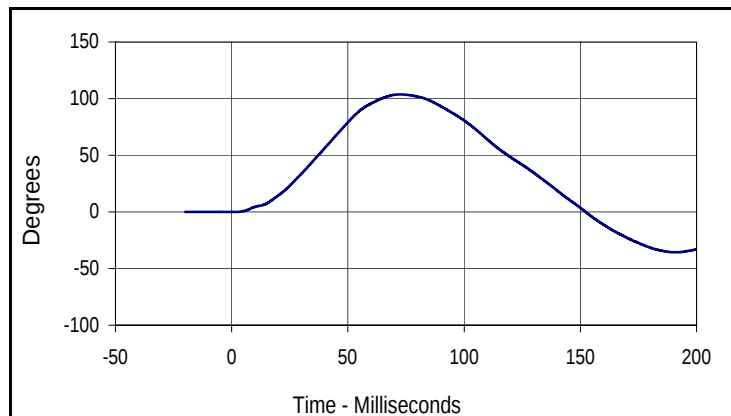
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.94 to 6.19	6.04	Pass
Pendulum Deceleration	10 Msec.	G's	17.2 to 21.2	19.4	Pass
	20 Msec.	G's	14.0 to 19.0	18.4	Pass
	30 Msec.	G's	11.0 to 16.0	14.5	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 22.0	14.5	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	38.0 to 46.0	41.7	Pass
Maximum "D" Plane Rotation	Max	Degrees	81.0 to 106.0	103.7	Pass
	Time	Msec.	72.0 to 82.0	72.3	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	147.0 to 174.0	152.3	Pass
Moment About Occ. Condyle	Max	Nm	-52.9 to- 79.9	-72.0	Pass
	Time	Msec.	65.0 to 79.0	67.0	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	120.0 to 148.0	140.7	Pass
Overall Test Results					Pass



Curve Description

Pendulum Deceleration

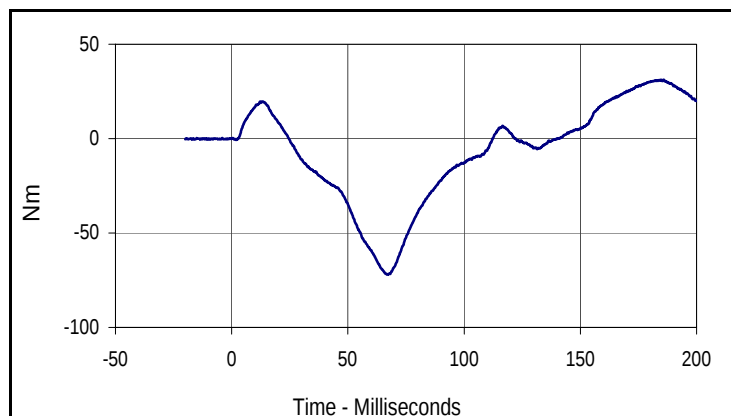
CURNO	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
19.4	10.5	-1.9	91.2



Curve Description

"D" Plane Rotation

CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
103.7	72.3	-35.7	190.8



Curve Description

Moment About Occipital Condyle

CURNO	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
31.1	184.8	-72.0	67.0

Test Program: Hybrid III 50th Percentile Male Knee Impact Test

Test Date: 9/17/07

ATD Serial No.: 034

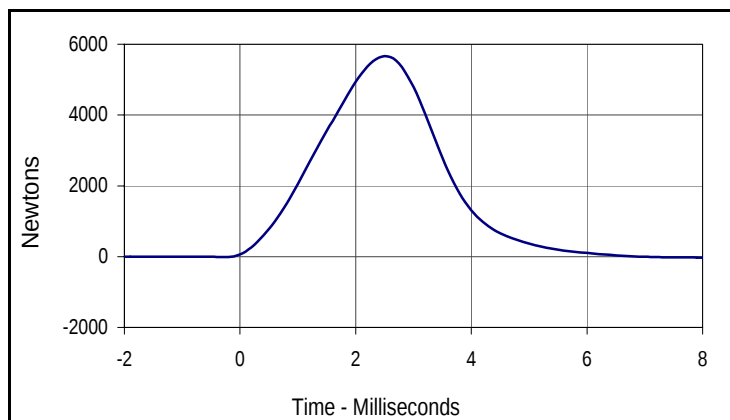
Test I.D.: LK09D , RK09D

**Left Knee**

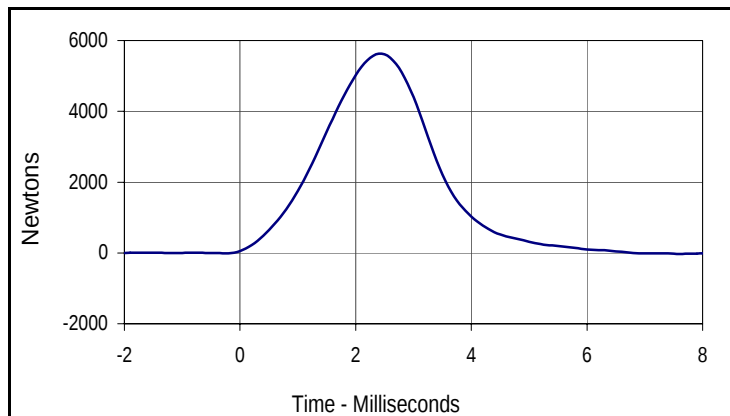
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.08	Pass
Peak Probe Force	Newtons	4715 to 5782	5668	Pass
Overall Test Results			Pass	

Right Knee

Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.10	Pass
Peak Probe Force	Newtons	4715 to 5782	5625	Pass
Overall Test Results			Pass	

**Curve Description****Left Knee Probe Force**

CURNO	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
5668.1	2.5	-25.4	8.0

**Curve Description****Right Knee Probe Force**

CURNO	Type	SAE Class	Units
002	FIL	600	Newtons
Max	Time	Min	Time
5625.1	2.4	-25.4	7.6

Test Program: Hybrid III 50th Percentile Male External Measurements

Test Date: 9/17/07

ATD Serial No.: 034

Test I.D.: N/A



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
A - Total sitting height	mm	879 to 889	881	Pass
B - Shoulder pivot height	mm	505 to 521	515	Pass
C - "H" point height	mm	84 to 89	85	Pass
D - "H" point from seat back	mm	135 to 140	137	Pass
E - Shoulder pivot from back	mm	84 to 94	90	Pass
F - Thigh clearance	mm	140 to 155	150	Pass
G - Elbow back to wrist pivot	mm	290 to 305	294	Pass
H - Skull cap to back line	mm	41 to 46	44	Pass
I - Shoulder to elbow length	mm	330 to 345	333	Pass
J - Elbow rest height	mm	190 to 211	197	Pass
K - Buttock to knee length	mm	579 to 604	593	Pass
L - Popliteal length	mm	429 to 455	450	Pass
M - Knee pivot height	mm	485 to 500	486	Pass
N - Buttock popliteal length	mm	452 to 477	459	Pass
O - Chest depth	mm	213 to 229	217	Pass
P - Foot length	mm	251 to 267	258	Pass
V - Shoulder breadth	mm	422 to 437	424	Pass
W - Foot breadth	mm	91 to 107	105	Pass
Y - Chest circumference	mm	970 to 1001	986	Pass
Z - Waist circumference	mm	836 to 866	841	Pass
AA - Location for chest circumference	mm	429 to 434	430	Pass
BB - Location for waist circumference	mm	226 to 231	229	Pass
Overall Test Results				Pass

Test Program: Hybrid III 50th Percentile Male Head Drop Test

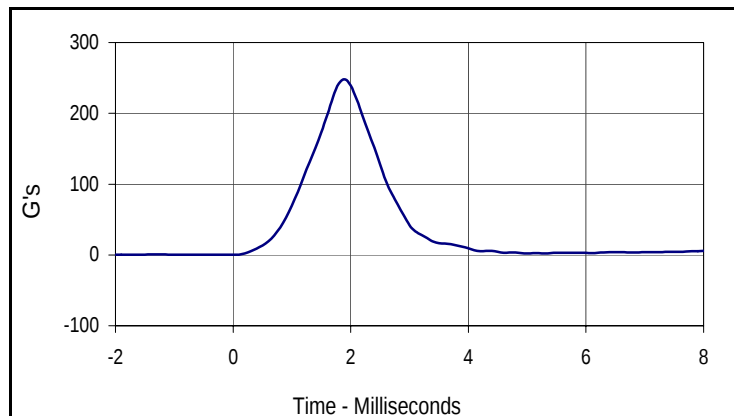
Test Date: 9/17/07

ATD Serial No.: 035

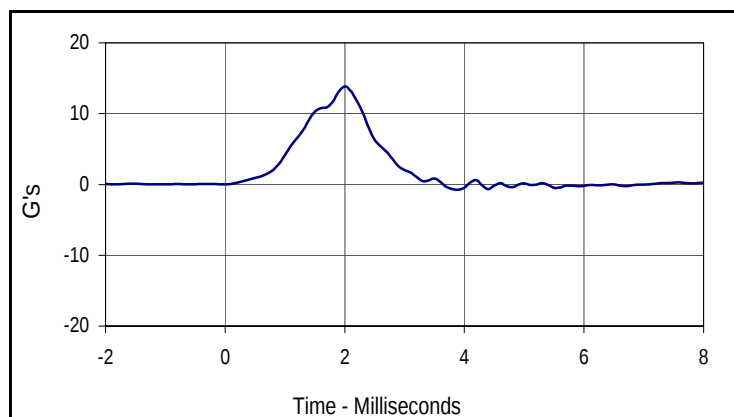
Test I.D.: HD09C



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	225.0 to 275.0	248.2	Pass
Peak Lateral Acceleration	G's	≤15.0	13.9	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results			Pass	



Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
248.2	1.9	0.5	-1.0



Curve Description			
Head Y			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
13.9	2.0	-0.7	3.9

Test Program: Hybrid III 50th Percentile Male Thorax Impact Test

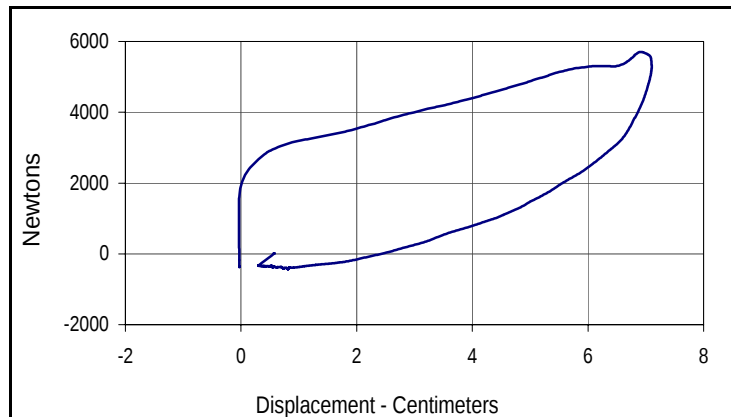
Test Date: 9/17/07

ATD Serial No.: 035

Test I.D.: CH09C



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	6.58 to 6.82	6.66	Pass
Peak Probe Force	Newtons	5159 to 5893	5704	Pass
Peak Sternum Deflection	CM	6.35 to 7.26	7.10	Pass
Internal Hysteresis	%	69 to 85	75.7	Pass
Overall Test Results				Pass



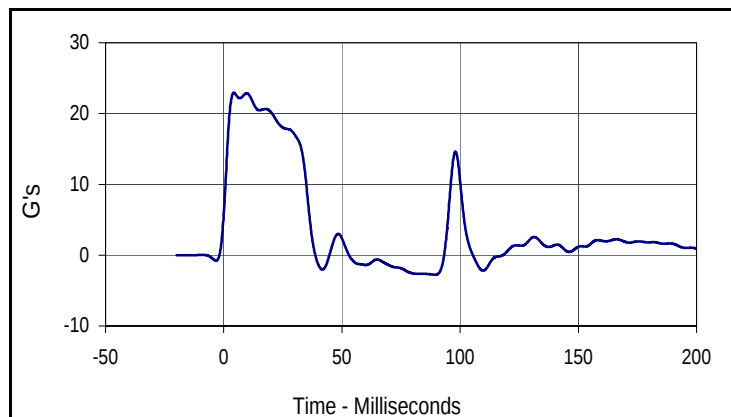
Curve Description			
Probe Force vs. Chest Deflection			
CURNO	Type	SAE Class	Hysteresis
001	FIL	180	75.7
Peak Probe Force		Peak Chest Deflection	
5704		7.10	

Test Program: Hybrid III 50th Percentile Male Neck Flexion Test
 ATD Serial No.: 035

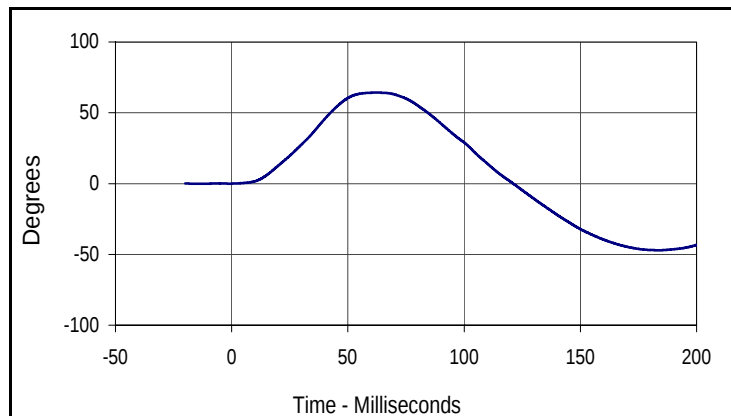
Test Date: 9/17/07
 Test I.D.: NF09C



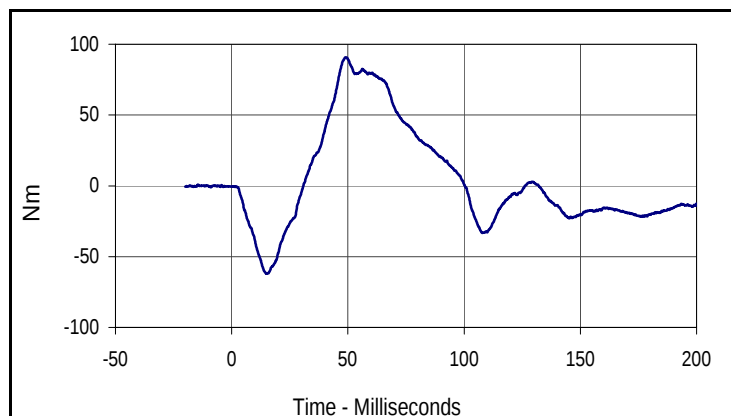
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	6.89 to 7.13	6.99	Pass
Pendulum Deceleration	10 Msec.	G's	22.5 to 27.5	22.8	Pass
	20 Msec.	G's	17.6 to 22.6	20.2	Pass
	30 Msec.	G's	12.5 to 18.5	17.0	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 29.0	17.0	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	34.0 to 42.0	36.5	Pass
Maximum "D" Plane Rotation	Max	Degrees	64.0 to 78.0	64.2	Pass
	Time	Msec.	57.0 to 64.0	62.0	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	113.0 to 128.0	121.1	Pass
Moment About Occ. Condyle	Max	Nm	84.1 to 108.5	90.8	Pass
	Time	Msec.	47.0 to 58.0	48.9	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	97.0 to 107.0	100.3	Pass
Overall Test Results					Pass



Curve Description			
Pendulum Deceleration			
CURNO	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
22.9	4.2	-2.8	89.4



Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
64.2	62.0	-47.1	183.7



Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
90.8	48.9	-61.9	15.0

Test Program: Hybrid III 50th Percentile Male Neck Extension Test

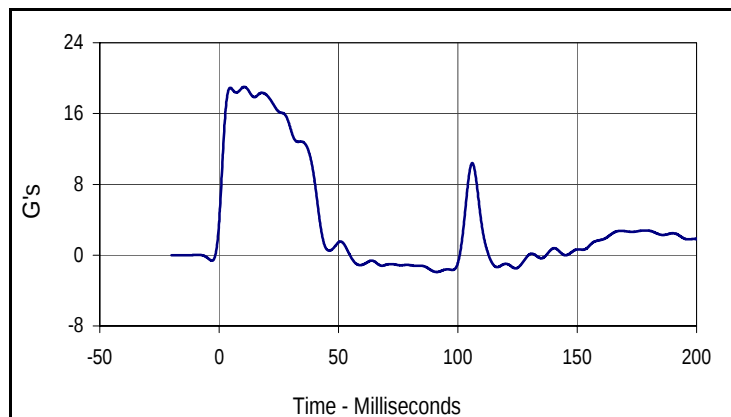
Test Date: 9/17/07

ATD Serial No.: 035

Test I.D.: NE09C



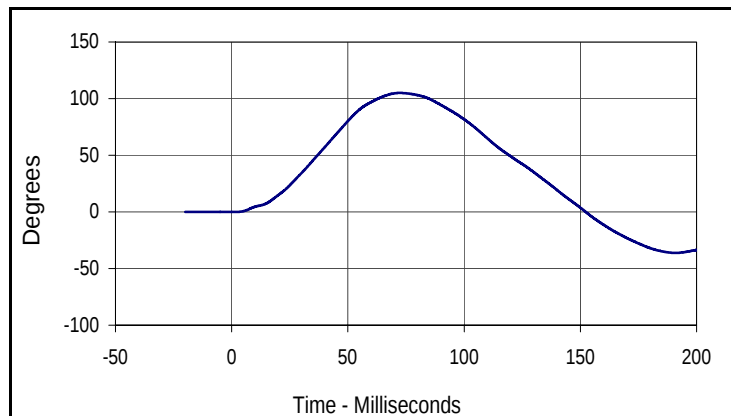
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.94 to 6.19	6.16	Pass
Pendulum Deceleration	10 Msec.	G's	17.2 to 21.2	19.0	Pass
	20 Msec.	G's	14.0 to 19.0	18.1	Pass
	30 Msec.	G's	11.0 to 16.0	14.2	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 22.0	14.2	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	38.0 to 46.0	41.6	Pass
Maximum "D" Plane Rotation	Max	Degrees	81.0 to 106.0	105.0	Pass
	Time	Msec.	72.0 to 82.0	72.3	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	147.0 to 174.0	152.3	Pass
Moment About Occ. Condyle	Max	Nm	-52.9 to- 79.9	-74.6	Pass
	Time	Msec.	65.0 to 79.0	67.0	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	120.0 to 148.0	140.7	Pass
Overall Test Results					Pass



Curve Description

Pendulum Deceleration

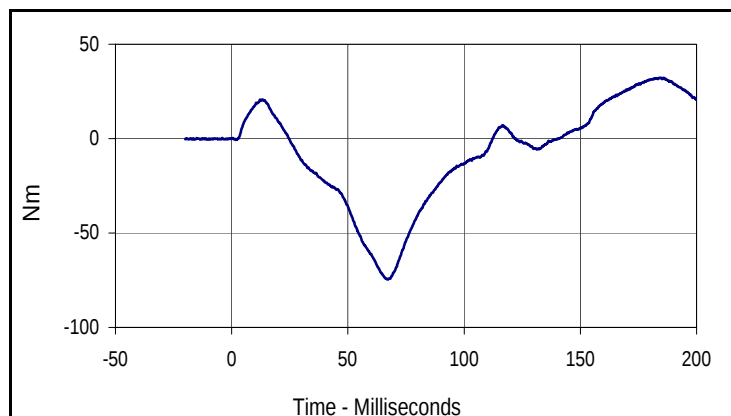
CURNO	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
19.0	10.5	-1.9	91.2



Curve Description

"D" Plane Rotation

CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
105.0	72.3	-36.2	190.9



Curve Description

Moment About Occipital Condyle

CURNO	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
32.2	184.8	-74.6	67.0

Test Program: Hybrid III 50th Percentile Male Knee Impact Test

Test Date: 9/17/07

ATD Serial No.: 035

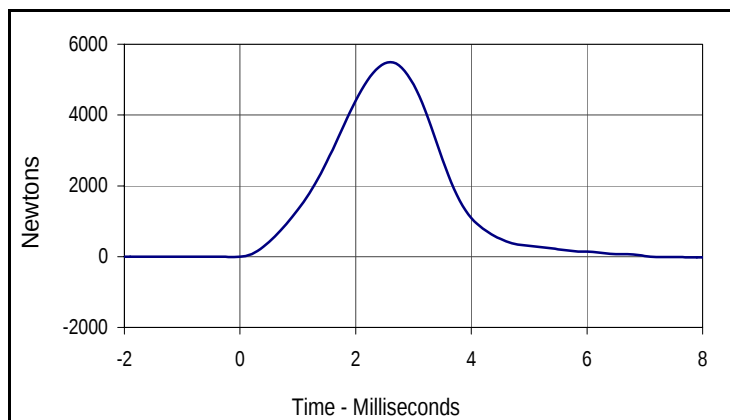
Test I.D.: LK09C , RK09C

**Left Knee**

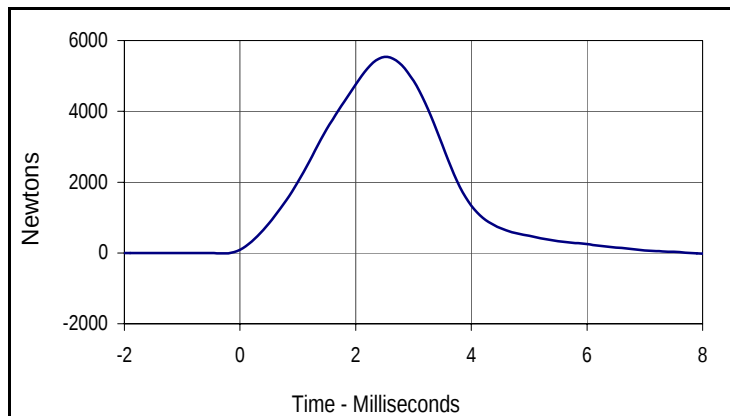
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.10	Pass
Peak Probe Force	Newtons	4715 to 5782	5498	Pass
Overall Test Results			Pass	

Right Knee

Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.10	Pass
Peak Probe Force	Newtons	4715 to 5782	5536	Pass
Overall Test Results			Pass	

**Curve Description****Left Knee Probe Force**

CURNO	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
5497.9	2.6	-28.9	9.6

**Curve Description****Right Knee Probe Force**

CURNO	Type	SAE Class	Units
002	FIL	600	Newtons
Max	Time	Min	Time
5536.4	2.5	-32.5	8.7

Test Program: Hybrid III 50th Percentile Male External Measurements

Test Date: 9/17/07

ATD Serial No.: 035

Test I.D.: N/A



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
A - Total sitting height	mm	879 to 889	884	Pass
B - Shoulder pivot height	mm	505 to 521	510	Pass
C - "H" point height	mm	84 to 89	86	Pass
D - "H" point from seat back	mm	135 to 140	137	Pass
E - Shoulder pivot from back	mm	84 to 94	89	Pass
F - Thigh clearance	mm	140 to 155	150	Pass
G - Elbow back to wrist pivot	mm	290 to 305	300	Pass
H - Skull cap to back line	mm	41 to 46	44	Pass
I - Shoulder to elbow length	mm	330 to 345	341	Pass
J - Elbow rest height	mm	190 to 211	202	Pass
K - Buttock to knee length	mm	579 to 604	580	Pass
L - Popliteal length	mm	429 to 455	441	Pass
M - Knee pivot height	mm	485 to 500	498	Pass
N - Buttock popliteal length	mm	452 to 477	465	Pass
O - Chest depth	mm	213 to 229	214	Pass
P - Foot length	mm	251 to 267	259	Pass
V - Shoulder breadth	mm	422 to 437	432	Pass
W - Foot breadth	mm	91 to 107	100	Pass
Y - Chest circumference	mm	970 to 1001	983	Pass
Z - Waist circumference	mm	836 to 866	840	Pass
AA - Location for chest circumference	mm	429 to 434	431	Pass
BB - Location for waist circumference	mm	226 to 231	229	Pass
Overall Test Results				Pass

Test Program: Dummy Damage Checklist
 ATD Serial No.: 034

Test Date: 9/17/07
 Test I.D.: N/A



GENERAL	DAMAGED	OK
Outer skin on entire dummy		X
Head ballast secure		X
Gashes, rips, general appearance, etc.		X
Neck-Broken or cracks in rubber		X
Check that upper neck bracket is firmly attached to lwr neck bracket		X
Three rubber bumpers in place		X
Spine- Broken or cracks in rubber		X
Check for looseness at the condyle joint		X
Nodding blocks- cracked or out of position		X
Ribs- Check all ribs and rib supports for damage (bent or broken)		X
Check damping material or separation or cracks		X
OTHER		
CHEST DISPLACEMENT ASSEMBLY		
Bent shaft		X
Slider arm riding correctly, in track		X
TRANSDUCER LEADS		
Torn cables		X
ACCELEROMETER MOUNTINGS		
Check for secure mounting		X
KNEES		
Check outer skin, insert and casting (without removing insert)		X
Knee sliders - Wires intact		X
Knee sliders- Rubber returned to "at rest position"		X
LIMBS		
Check for normal movement and adjustment		X
PELVIS		
Inspect for breakage, especially at iliac crest		X

Comments on repair or replacement parts:

Test Program: Dummy Damage Checklist
 ATD Serial No.: 035

Test Date: 9/17/07
 Test I.D.: N/A



GENERAL	DAMAGED	OK
Outer skin on entire dummy		X
Head ballast secure		X
Gashes, rips, general appearance, etc.		X
Neck-Broken or cracks in rubber		X
Check that upper neck bracket is firmly attached to lwr neck bracket		X
Three rubber bumpers in place		X
Spine- Broken or cracks in rubber		X
Check for looseness at the condyle joint		X
Nodding blocks- cracked or out of position		X
Ribs- Check all ribs and rib supports for damage (bent or broken)		X
Check damping material or separation or cracks		X
OTHER		
CHEST DISPLACEMENT ASSEMBLY		
Bent shaft		X
Slider arm riding correctly, in track		X
TRANSDUCER LEADS		
Torn cables		X
ACCELEROMETER MOUNTINGS		
Check for secure mounting		X
KNEES		
Check outer skin, insert and casting (without removing insert)		X
Knee sliders - Wires intact		X
Knee sliders- Rubber returned to "at rest position"		X
LIMBS		
Check for normal movement and adjustment		X
PELVIS		
Inspect for breakage, especially at iliac crest		X

Comments on repair or replacement parts:

APPENDIX D
CHILD RESTRAINT SYSTEM

**NEW CAR ASSESSMENT PROGRAM
FRONTAL BARRIER IMPACT TEST**

**NISSAN MOTOR COMPANY, LTD.
2008 NISSAN ARMADA SE
5-DOOR MPV**

NHTSA NUMBER: M85205

**PREPARED BY:
KARCO ENGINEERING, LLC
9270 HOLLY ROAD
ADELANTO, CALIFORNIA 92301**



SEPTEMBER 25, 2007

FINAL REPORT

**PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
RULEMAKING
OFFICE OF CRASHWORTHINESS STANDARDS
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1200 NEW JERSEY AVE, SE, ROOM W43-410
WASHINGTON, D.C. 20590**

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Date: September 25, 2007

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Date of Acceptance

COTR, NCAP Frontal Impact Program

Date of Acceptance

Technical Report Documentation Page

1. Report No. TR-P28001-03-NC		2. Government Accession No.		3. Recipients Catalog No.	
4. Title and Subtitle Final Report of one (1) Baby Trend Flex-Loc CRS Final Report of one (1) Graco Snugride CRS NHTSA NO. M85205				5. Report Date September 25, 2007	
				6. Performing Organization Code KAR	
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9. Performing Organization Name and Address Karco Engineering, LLC 9270 Holly Rd. Adelanto, CA, 92301				10. Work Unit No.	
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12. Sponsoring Agency Name and Address U. S. Department of Transportation National Highway Traffic Safety Administration Rulemaking Office of Crashworthiness Standards Mail Code NVS-111 1200 New Jersey Ave, SE, Room W43-410 Washington, D.C 20590				13. Type of Report and Period Covered Final Test Report Base Year	
				14. Sponsoring Agency Code DOT/NHTSA/NRM/OCS	
15. Supplementary Notes					
16. Abstract A frontal impact test was conducted on one (1) Baby Trend Flex-Loc CRS and one (1) Graco Snugride CRS in conjunction with frontal barrier impact NCAP testing on a 2008 Nissan Aramada SE 5-Door MPV and in accordance with the specifications of the Office of Crashworthiness Standards Test Procedure for the determination of CRS crashworthiness. This test was conducted at Karco Engineering, LLC on September 25, 2007.					
Measurement Description		Units	Threshold	Left Rear (P4)	Right Rear (P3)
Head Injury Criteria (HIC15)		N/A	390	326.5	348.6
3 msec. Chest Clip		G's	50	56.6	48.6
17. Key Words New Car Assessment Program (Frontal NCAP) Frontal Barrier Impact Test Final Report of a Graco Snugride CRS Final Report of a Evenflo Embrace CRS				18. Distribution of Statement Copies of this report available from: NHTSA Technical Reference Division National Highway Traffic Safety Admin. 1200 New Jersey Ave, SE, Room W43-410 Washington, D.C. 20590	
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TABLE OF CONTENTS

<u>Section</u>	<u>Description</u>	<u>Page</u>
D1	Purpose and Summary of Test M85205	D1-1 to D1-8
D2	Photographs	D2-1 to D2-36
D3	CRABI Response and CRS Data Traces	D3-1 to D3-4
D4	CRABI Calibration Information	D4-1 to D4-12

<u>Data Sheet</u>	<u>Description</u>	<u>Page</u>
1	Crash Test Summary	D1-2
2	Vehicle Parameter Data	D1-3
3	CRABI Positioning in Vehicle	D1-4
4	CRS Performance Data	D1-6
5	CRS Accelerometer Locations	D1-7
6	CRS Camera Locations and Data	D1-8

SECTION D1

PURPOSE AND SUMMARY OF TEST M85205

The purpose of this test is to obtain CRS performance data during 35 mph (56.3 km/h) frontal barrier impact NCAP test.

The frontal barrier impact NCAP test was conducted in accordance with the Office of Crashworthiness Standards (OCS) NCAP Laboratory Test Procedure.

SUMMARY

Two 12-month old CRABI's (P3 & P4) were instrumented with head, chest, and six-axis upper neck load cells. Tri-axial accelerometers were installed on both CRS's and the CRS bases.

The left rear (Serial No. 017) and right rear (Serial No. 022) CRABI's were calibrated prior to this test. CRABI calibration information is found in Section D-4.

CHILD DUMMY VALUES		
Location	HIC15 Values	3 Msec. Chest Clip
CRABI (P3)	348.6	48.6
CRABI (P4)	326.5	56.6

DATA SHEET NO.1
CRASH TEST SUMMARY

Test Vehicle: 2008 Nissan Armada SE 5-Door MPV

NHTSA No.: M85205

Test Program: 2007 NHTSA 35mph NCAP

Test Date: 9/25/07

CHILD RESTRAINT SYSTEM INFORMATION

Description	Position #3 CRS	Position #4 CRS
Manufacturer	Graco	Baby Trend
Model Name	Snugride	Flex-Loc
Serial No.	8645FMT3	CS 65 115R2 SC 000062
Type	Infant	Infant
Forward/Rearward	Rearward	Rearward

VISIBLE DUMMY CONTACT POINTS

Description	Position #3 CRS	Position #4 CRS
Head Contact	None	None
Chest Contact	None	None
Abdomen Contact	None	None
Left Knee Contact	None	None
Right Knee Contact	None	None
Left Toe Contact	None	None
Right Toe Contact	None	None

POST-TEST DOOR OPENINGS

Description	Position #3 CRS	Position #4 CRS
Right Rear Door	Remained closed and latched, opened w/o tools	Remained closed and latched, opened w/o tools

CAMERA COVERAGE

Description	Standard
High Speed	4
Real Time	0
Total	4

DATA CHANNELS

CRABI (P3 & P4) Sensors	26
Belt Sensors	4
CRS Sensors	12
Total	42

DATA SHEET NO.2**VEHICLE PARAMETER DATA**Test Vehicle: 2008 Nissan Armada SE 5-Door MPVNHTSA No.: M85205Test Program: 2007 NHTSA 35mph NCAPTest Date: 9/25/07**TEST VEHICLE WEIGHTS**

	Units	As Delivered Weights (UVW)			As Tested Weights (ATW)		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	664	598	1262	702	698	1400
Right	kg	655	595	1250	673	690	1363
Ratio	%	52.5%	47.5%	1.0	49.8%	50.2%	1.0
Totals	kg	1319	1193	2512	1375	1388	2763

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	2512
Weight of 2 P572 ATD's	kg	152
Rated Cargo/Luggage Wt. (RCLW)	kg	106
Calculated Vehicle Target Wt. (TVTW)	kg	2770

DATA SHEET NO.3

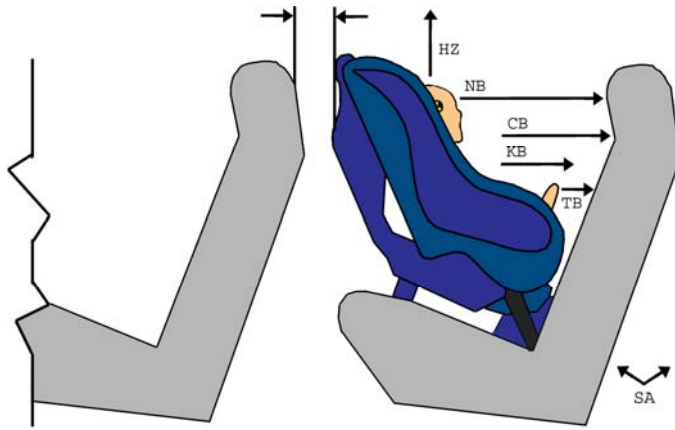
CRABI POSITIONING IN VEHICLE

Test Vehicle: 2008 Nissan Armada SE 5-Door MPV

NHTSA No.: M85205

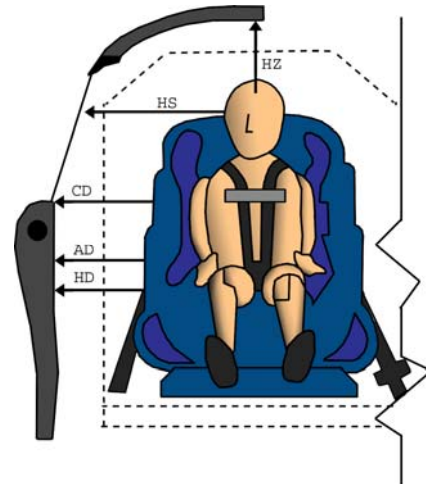
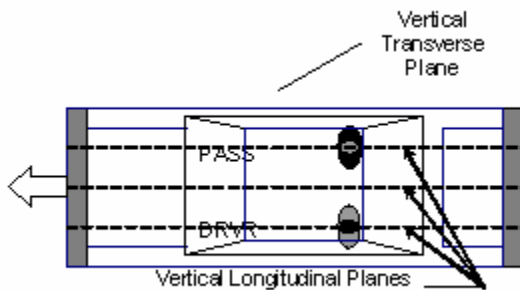
Test Program: 2007 NHTSA 35mph NCAP

Test Date: 9/25/07



AD	Arm to Door
CD	Chest to Door
HD	H-Point to Door
HS	Head to Side Window
KK	Knee to Knee
TT	Toe to Toe

CB	Chest to Seat Back
HZ	Head to Roof
KB	Knee to Seat Back
NB	Nose to Seat Back
SA	Seat Back Angle
TB	Toe to Seat Back



DUMMY MEASUREMENTS FOR REAR SEAT OCCUPANTS

DATA SHEET NO.3**CRABI POSITIONING IN VEHICLE...(CONTINUED)**Test Vehicle: 2008 Nissan Armada SE 5-Door MPVNHTSA No.: M85205Test Program: 2007 NHTSA 35mph NCAPTest Date: 9/25/07**CRABI POSITION MEASUREMENTS**

Code	Measurement	P3 (Passenger's Side)		P4 (Driver's Side)	
		Length (mm)	Angle (°)	Length (mm)	Angle (°)
SA	Seat Back Angle		69.0		68.1
HZ	Head to Roof (Z)	455		465	
CD	Chest to Door	395		390	
KK	Knee to Knee (Y)	120		125	
HS	Head to Side Window	405		400	
HD	H-Point to Door (Y)	340		310	
AD	Arm to Door	300		240	
NB	Nose to Seat Back	530		565	
CB	Chest to Seat Back	450		490	
FF	Foot to Foot	125		115	
KB-Left	Knee to Seat Back	40		215	
KB-Right	Knee to Seat Back	0		230	
TB-Left	Toe to Seat Back	70		90	
TB-Right	Toe to Seat Back	72		102	

DATA SHEET NO.4**CRS PERFORMANCE DATA**Test Vehicle: 2008 Nissan Armada SE 5-Door MPVNHTSA No.: M85205Test Program: 2007 NHTSA 35mph NCAPTest Date: 9/25/07**CRS PERFORMANCE DATA**

Location	CRS (P4)		CRS (P3)	
	Damage	Post-Test	Damage	Post-Test
Upper Tether Strap				
Upper Tether Buckle				
Upper Tether Hook				
Veh. Upper Tether Anchor				
Lower Anchor Strap				
Lower Anchor Buckle				
Lower Anchor Hooks	No	None	No	None
Veh. Lower CRS Anchors	No	None	No	None
5-Point Harness Connections	No	None	No	None
Cracks on CRS	No	None	No	None
Fabric Tears on CRS	No	None	No	None
Vehicle Seat Structure	No	None	No	None
Vehicle Seat Fabric Tears	No	None	No	None

DATA SHEET NO. 5
CRS ACCELEROMETER LOCATIONS

Test Vehicle: 2008 Nissan Armada SE 5-Door MPV

NHTSA No.: M85205

Test Program: NHTSA 35mph NCAP

Test Date: 9/25/07

CRS ACCELEROMETER PRE-TEST LOCATIONS

Loc. No.	Accelerometer Location	Measurements (mm)		
		X	Y	Z
1	CRS (P4)	2030	-540	1050
2	CRS Base (P4)	2000	-575	970
3	CRS (P3)	2230	610	1195
4	CRS Base (P3)	1990	560	950

Reference Planes: X=From Rear Surface of Vehicle, Y=Vehicle Centerline, Z=Ground Plane

DATA SHEET NO.6**CRS CAMERA LOCATIONS AND DATA**Test Vehicle: 2008 Nissan Armada SE 5-Door MPVNHTSA No.: M85205Test Program: 2007 NHTSA 35mph NCAPTest Date: 9/25/07**CAMERA LOCATIONS**

No.	Camera View	Location(mm)			Angle (Deg.)	Film Plane to Head	Lens (mm)	Speed (fps)
		X	Y	Z				
1	Driver Side Upper CRS View	-3275	806	-1705	-2		12	1000
2	Passenger Side Upper CRS View	-3275	-806	-1705	2		12	1000
3	Driver Side Lower CRS View	-2813	578	-715	-2		10	1000
4	Passenger Side Lower CRS View	-2813	-578	-715	2		12	1000

SECTION D2

PHOTOGRAPHS

LIST OF PHOTOGRAPHS

Figure		Page
1	Position 3 CRS Label	D2-1
2	Pre-Test Frontal View of Position 3 CRS	D2-2
3	Post-Test Frontal View of Position 3 CRS	D2-3
4	Pre-Test Rear View of Position 3 CRS	D2-4
5	Post-Test Rear View of Position 3 CRS	D2-5
6	Pre-Test Left Side View of Position 3 CRS	D2-6
7	Post-Test Left Side View of Position 3 CRS	D2-7
8	Pre-Test Right Side View of Position 3 CRS	D2-8
9	Post-Test Right Side View of Position 3 CRS	D2-9
10	Pre-Test Position 3 Front View (Head and Seat Belt Position)	D2-10
11	Post-Test Position 3 Front View (Head and Seat Belt Position)	D2-11
12	Pre-Test Position 3 Front View (Seat Belt Position)	D2-12
13	Post-Test Position 3 Front View (Seat Belt Position)	D2-13
14	Pre-Test Position 3 Right Side View	D2-14
15	Post-Test Position 3 Right Side View	D2-15
16	Pre-Test Position 3 Right Side View (Through Window)	D2-16
17	Post-Test Position 3 Right Side View (Through Window)	D2-17
18	Post-Test Position 3 Dummy Legs	D2-18
19	Position 4 CRS Label	D2-1
20	Pre-Test Frontal View of Position 4 CRS	D2-2
21	Post-Test Frontal View of Position 4 CRS	D2-3
22	Pre-Test Rear View of Position 4 CRS	D2-4
23	Post-Test Rear View of Position 4 CRS	D2-5
24	Pre-Test Left Side View of Position 4 CRS	D2-6
25	Post-Test Left Side View of Position 4 CRS	D2-7
26	Pre-Test Right Side View of Position 4 CRS	D2-8
27	Post-Test Right Side View of Position 4 CRS	D2-9
28	Pre-Test Position 4 Front View (Head and Seat Belt Position)	D2-10
29	Post-Test Position 4 Front View (Head and Seat Belt Position)	D2-11
30	Pre-Test Position 4 Front View (Seat Belt Position)	D2-12
31	Post-Test Position 4 Front View (Seat Belt Position)	D2-13
32	Pre-Test Position 4 Right Side View	D2-14
33	Post-Test Position 4 Right Side View	D2-15
34	Pre-Test Position 4 Right Side View (Through Window)	D2-16
35	Post-Test Position 4 Right Side View (Through Window)	D2-17
36	Post-Test Position 4 Dummy Legs	D2-18

MODEL **8645FMT3**

NAME **SNUGRIDE**

Manufactured in 072507 10

GRACO CHILDREN'S PRODUCTS, INC.
EXTON, PA 19341 1-800-345-4109
Made in U.S.A.

PB-25777

Figure D2-1: Position 3 CRS Label



Figure D2-2: Pre-Test Frontal View of Position 3 CRS



Figure D2-3: Post-Test Frontal View of Position 3 CRS



Figure D2-4: Pre-Test Rear View of Position 3 CRS



Figure D2-5: Post-Test Rear View of Position 3 CRS



Figure D2-6: Pre-Test Right Side View of Position 3 CRS



Figure D2-7: Post-Test Right Side View of Position 3 CRS



Figure D2-8: Pre-Test Left Side View of Position 3 CRS



Figure D2-9: Post-Test Left Side View of Position 3 CRS



Figure D2-10: Pre-Test Position 3 Front View (Head and Seat Belt Position)



Figure D2-11: Post-Test Position 3 Front View (Head and Seat Belt Position)



Figure D2-12: Pre-Test Position 3 Front View (Seat Belt Position)



Figure D2-13: Post-Test Position 3 Front View (Seat Belt Position)



Figure D2-14: Pre-Test Position 3 Right Side View



Figure D2-15: Post-Test Position 3 Right Side View



Figure D2-16: Pre-Test Position 3 Right Side View (Through Window)



Figure D2-17: Post-Test Position 3 Right Side View (Through Window)



Figure D2-18: Post-Test Position 3 Dummy Legs

the following US patents as well as patents
pending: 6,811,216, 6,834,915

Manufactured in: 05-22-07
Model Number: 6552



CS 65 115R2 SC 000062

Figure D2-19: Position 4 CRS Label



Figure D2-20: Pre-Test Frontal View of Position 4 CRS



Figure D2-21: Post-Test Frontal View of Position 4 CRS



Figure D2-22: Pre-Test Rear View of Position 4 CRS



Figure D2-23: Post-Test Rear View of Position 4 CRS



Figure D2-24: Pre-Test Right Side View of Position 4 CRS



Figure D2-25: Post-Test Right Side View of Position 4 CRS



Figure D2-26: Pre-Test Left Side View of Position 4 CRS



Figure D2-27: Post-Test Left Side View of Position 4 CRS



Figure D2-28: Pre-Test Position 4 Front View (Head & Seat Belt Position)



Figure D2-29: Post-Test Position 4 Front View (Head & Seat Belt Position)



Figure D2-30: Pre-Test Position 4 Front View (Seat Belt Position)



Figure D2-31: Post-Test Position 4 Front View (Seat Belt Position)



Figure D2-32: Pre-Test Position 4 Left Side View



Figure D2-33: Post-Test Position 4 Left Side View



Figure D2-34: Pre-Test Position 4 Left Side View



Figure D2-35: Post-Test Position 4 Left Side View



Figure D2-36: Post-Test Position 4 Dummy Legs

SECTION D3

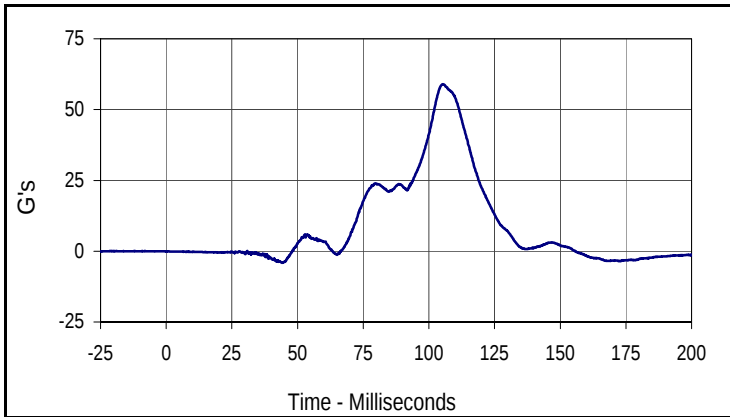
CRABI RESPONSE AND CRS DATA TRACES

LIST OF DATA PLOTS

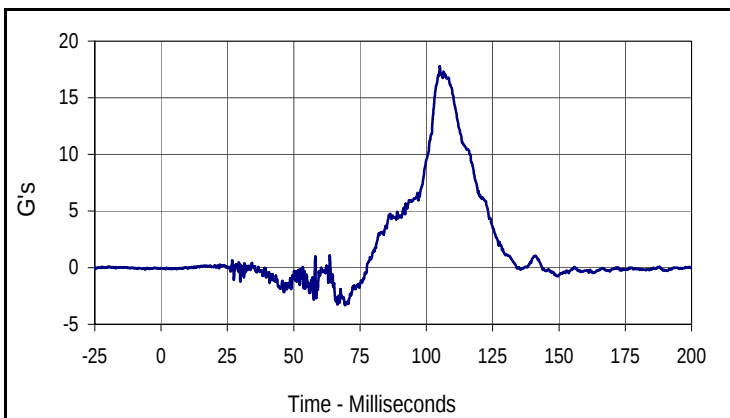
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D3-1	Right Rear CRABI (P4) Head X	D3-1
	Right Rear CRABI (P4) Head Y	D3-1
	Right Rear CRABI (P4) Head Z	D3-1
	Right Rear CRABI (P4) Head Resultant	D3-1
D3-2	Right Rear CRABI (P4) Chest X	D3-2
	Right Rear CRABI (P4) Chest Y	D3-2
	Right Rear CRABI (P4) Chest Z	D3-2
	Right Rear CRABI (P4) Chest Resultant	D3-2
D3-3	Right Rear CRABI (P3) Head X	D3-3
	Right Rear CRABI (P3) Head Y	D3-3
	Right Rear CRABI (P3) Head Z	D3-3
	Right Rear CRABI (P3) Head Resultant	D3-3
D3-4	Right Rear CRABI (P3) Chest X	D3-4
	Right Rear CRABI (P3) Chest Y	D3-4
	Right Rear CRABI (P3) Chest Z	D3-4
	Right Rear CRABI (P3) Chest Resultant	D3-4

Test Vehicle: 2008 Nissan Armada SE 5-Door MPV
 Test Program: NHTSA 35mph NCAP

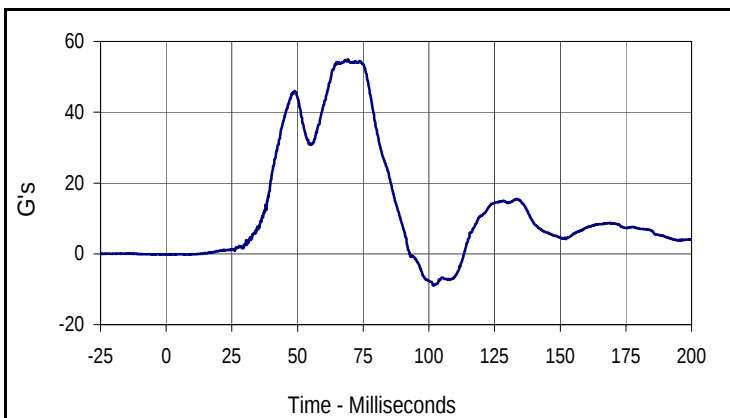
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 NHTSA No.: M85205



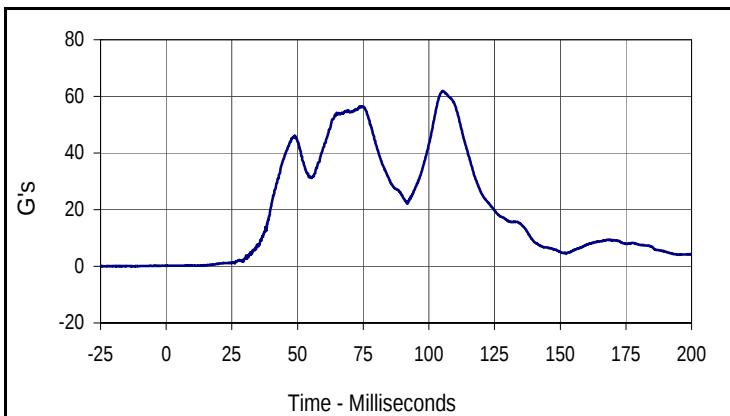
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CRABI Head X (P4)			
CURNO	Type	SAE Class	Units
142	FIL	1000	G's
Max	Time	Min	Time
58.9	105.3	-4.2	44.2



Curve Description			
CRABI Head Y (P4)			
CURNO	Type	SAE Class	Units
143	FIL	1000	G's
Max	Time	Min	Time
17.8	105.1	-3.3	69.3



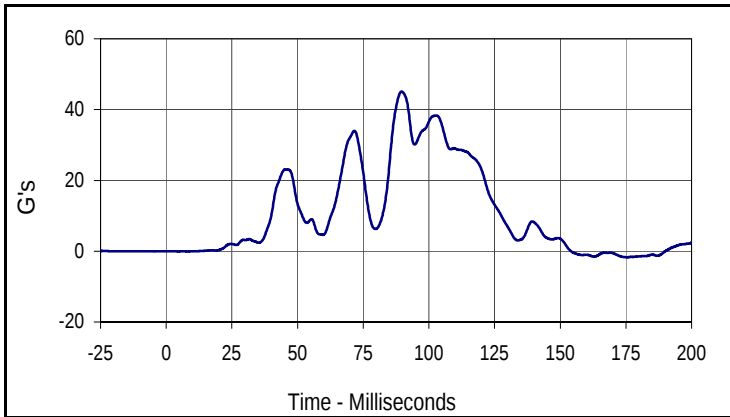
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CRABI Head Z (P4)			
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Max	Time	Min	Time
54.9	69.3	-9.0	101.8



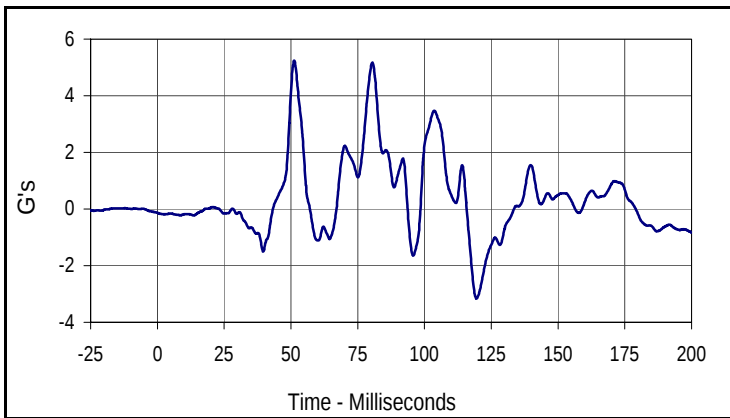
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CRABI Head Resultant (P4)			
CURNO	Type	SAE Class	Units
142	RES	1000	G's
Max	Time	Min	Time
61.9	105.2	0.2	0.4

Test Vehicle: 2008 Nissan Armada SE 5-Door MPV
 Test Program: NHTSA 35mph NCAP

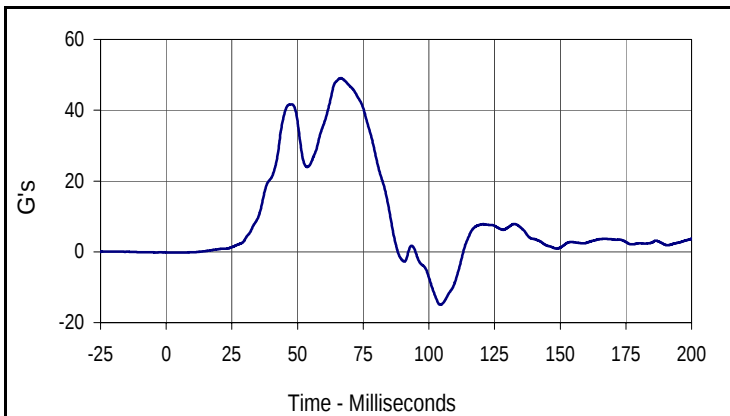
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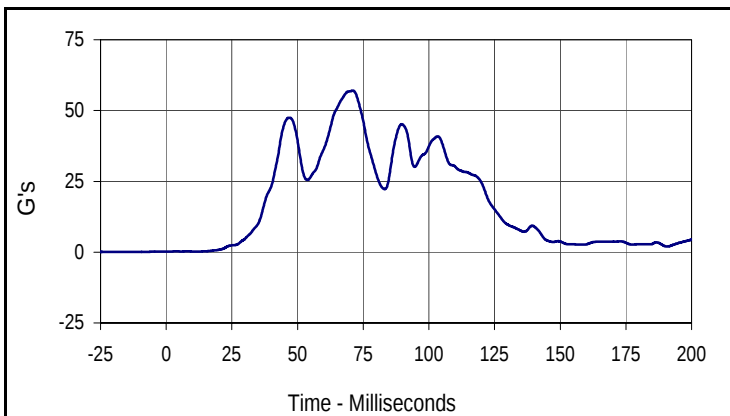
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CRABI Chest X (P4)			
CURNO	Type	SAE Class	Units
145	FIL	180	G's
Max	Time	Min	Time
45.1	89.6	-1.7	175.4



Curve Description			
CRABI Chest Y (P4)			
CURNO	Type	SAE Class	Units
146	FIL	180	G's
Max	Time	Min	Time
5.2	51.2	-3.2	119.5



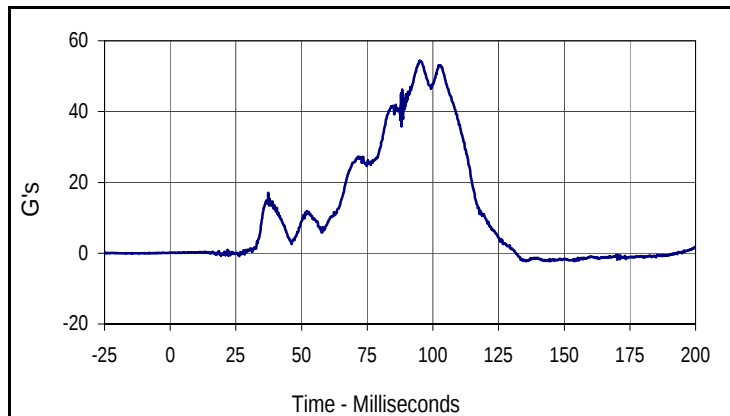
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CRABI Chest Z (P4)			
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147	FIL	180	G's
Max	Time	Min	Time
49.1	66.4	-14.9	104.3



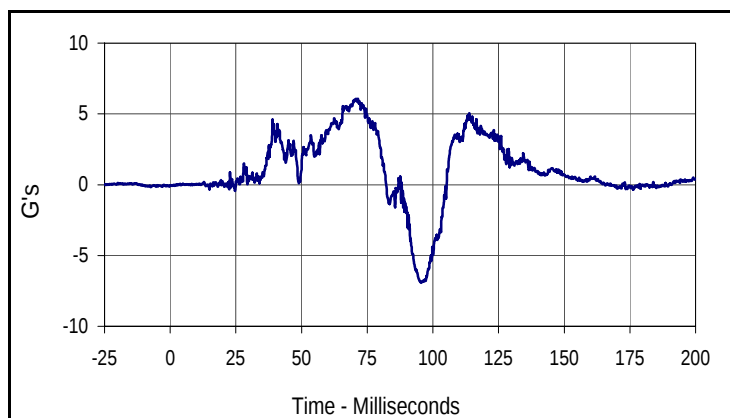
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CRABI Chest Resultant (P4)			
CURNO	Type	SAE Class	Units
145	RES	180	G's
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57.0	71.0	0.2	12.1

Test Vehicle: 2008 Nissan Armada SE 5-Door MPV
 Test Program: NHTSA 35mph NCAP

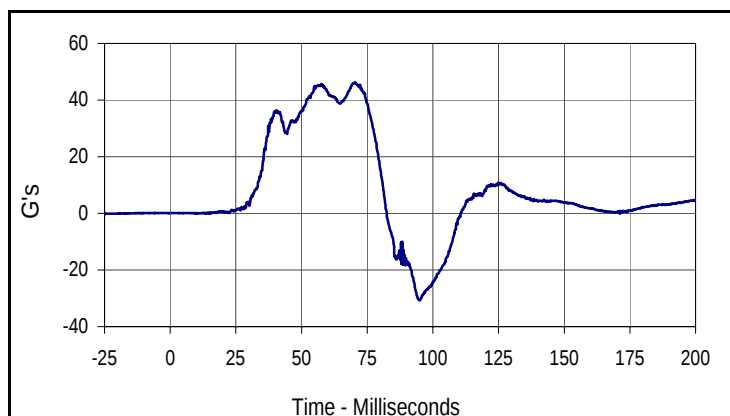
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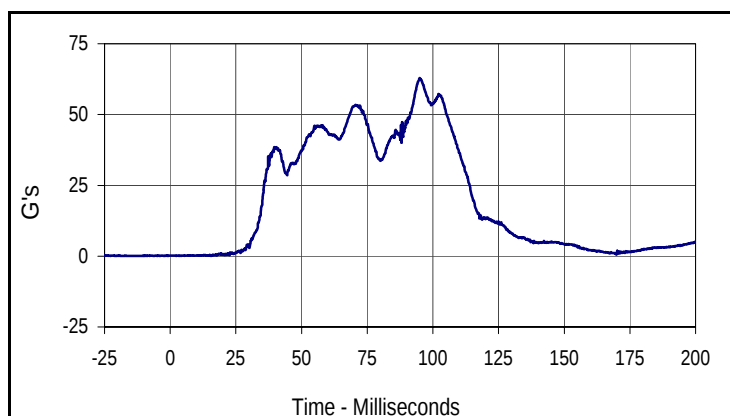
Curve Description			
CRABI Head X (P3)			
CURNO	Type	SAE Class	Units
163	FIL	1000	G's
Max	Time	Min	Time
54.4	95.0	-2.3	144.7



Curve Description			
CRABI Head Y (P3)			
CURNO	Type	SAE Class	Units
164	FIL	1000	G's
Max	Time	Min	Time
6.1	70.8	-6.9	95.5



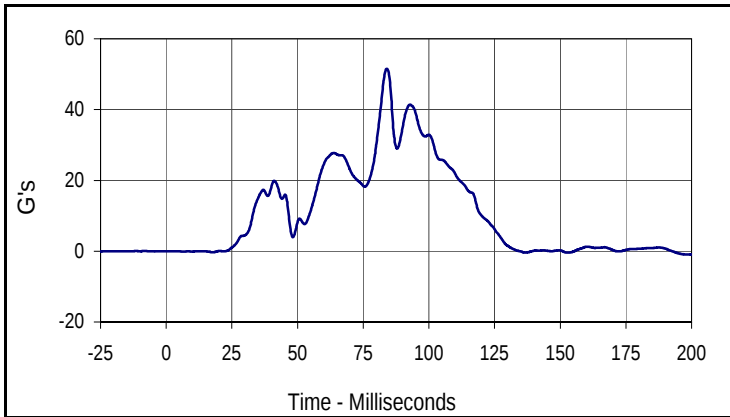
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CRABI Head Z (P3)			
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165	FIL	1000	G's
Max	Time	Min	Time
46.3	70.4	-30.7	95.0



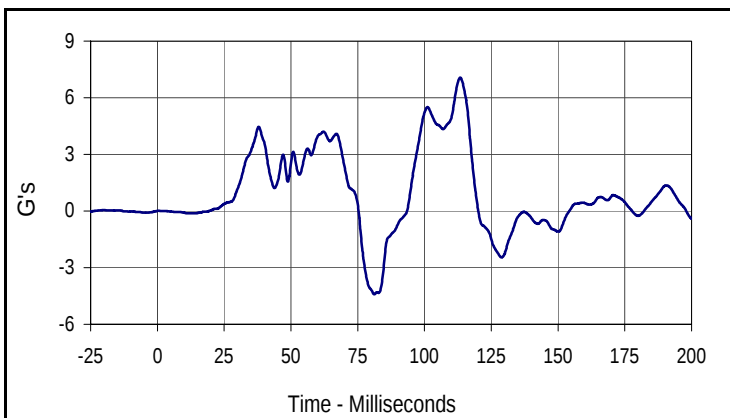
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CRABI Head Resultant (P3)			
CURNO	Type	SAE Class	Units
163	RES	1000	G's
Max	Time	Min	Time
62.9	95.0	0.0	15.5

Test Vehicle: 2008 Nissan Armada SE 5-Door MPV
 Test Program: NHTSA 35mph NCAP

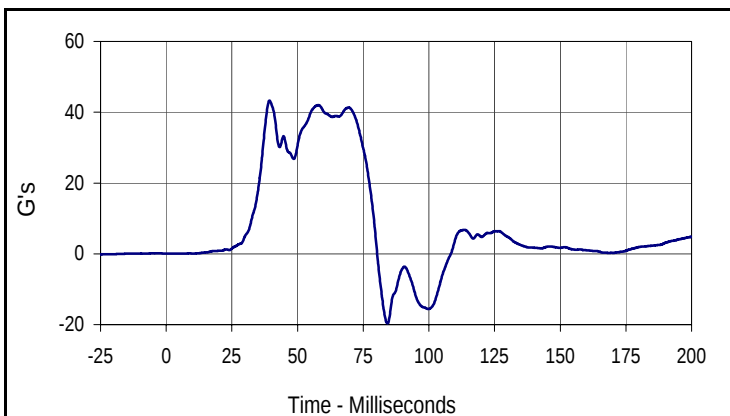
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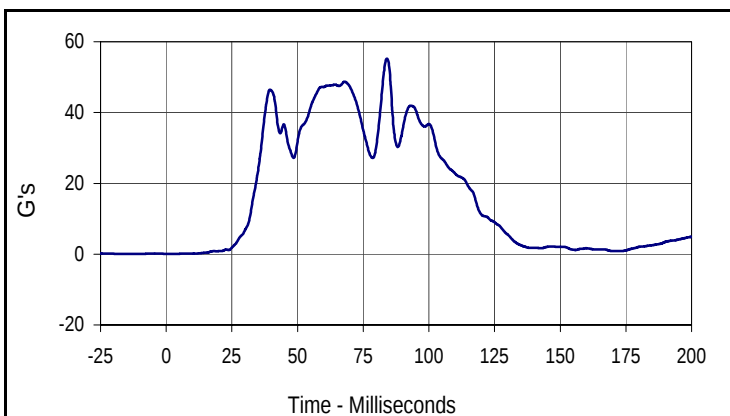
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CRABI Chest X (P3)			
CURNO	Type	SAE Class	Units
166	FIL	180	G's
Max	Time	Min	Time
51.5	84.0	-1.0	198.5



Curve Description			
CRABI Chest Y (P3)			
CURNO	Type	SAE Class	Units
167	FIL	180	G's
Max	Time	Min	Time
7.1	113.4	-4.4	81.2



Curve Description			
CRABI Chest Z (P3)			
CURNO	Type	SAE Class	Units
168	FIL	180	G's
Max	Time	Min	Time
43.3	39.3	-19.6	84.2



Curve Description			
CRABI Chest Resultant (P3)			
CURNO	Type	SAE Class	Units
166	RES	180	G's
Max	Time	Min	Time
55.2	84.0	0.1	2.2

SECTION D4

CRABI CALIBRATION INFORMATION

Test Program: CRABI 12 Month Old Frontal Head Drop Test

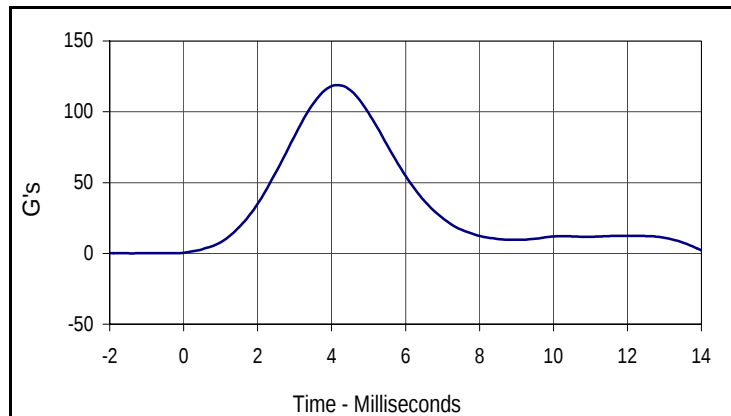
Test Date: 9/17/07

ATD Serial No.: 022

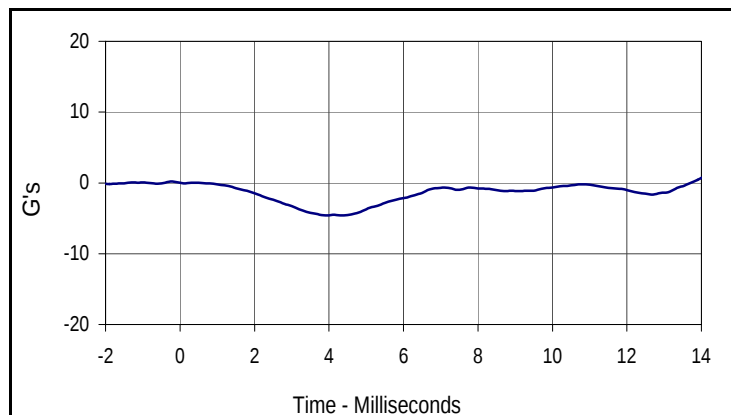
Test I.D.: FHD09E



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	100.0 to 120.0	118.9	Pass
Peak Lateral Acceleration	G's	≤15.0	4.6	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass



Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
118.9	4.2	0.0	-1.4



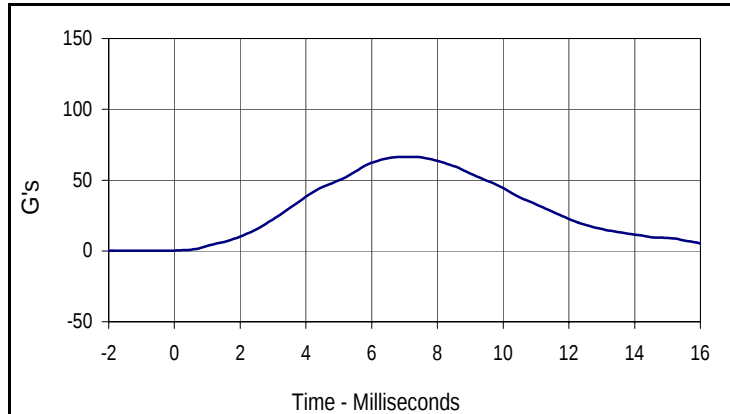
Curve Description			
Head Y			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
0.2	-0.2	-4.6	3.9

Test Program: CRABI 12 Month Old Rear Head Drop Test
 ATD Serial No.: 022

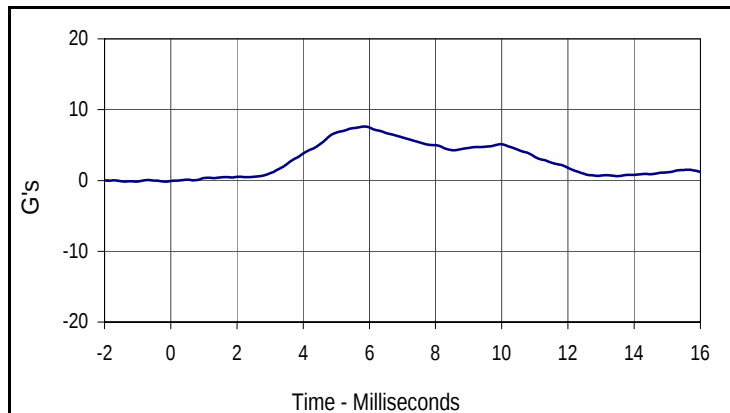
Test Date: 9/17/07
 Test I.D.: RHD09E



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	55.0 to 71.0	62.2	Pass
Peak Lateral Acceleration	G's	≤15.0	7.6	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass



Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
62.2	6.0	0.1	-0.9



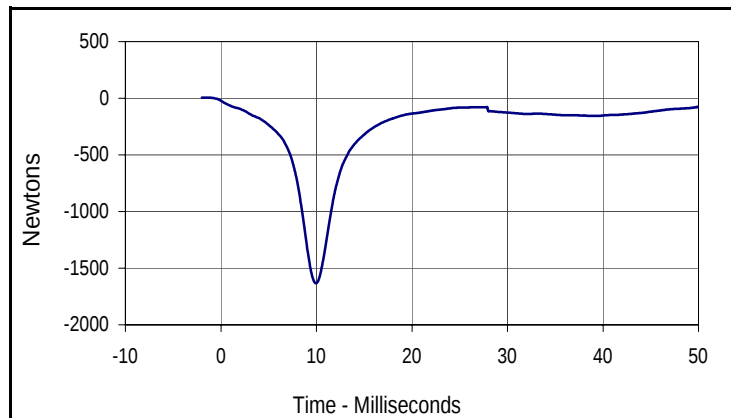
Curve Description			
Head Y			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
7.6	5.8	-0.2	-1.4

Test Program: CRABI 12 Month Old Thorax Impact Test
 ATD Serial No.: 022

Test Date: 9/17/07
 Test I.D.: CH09E



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity at T=0	m/sec	4.90 to 5.10	5.03	Pass
Peak Probe Force	Newtons	-1514 to -1796	-1633	Pass
Overall Test Results				Pass



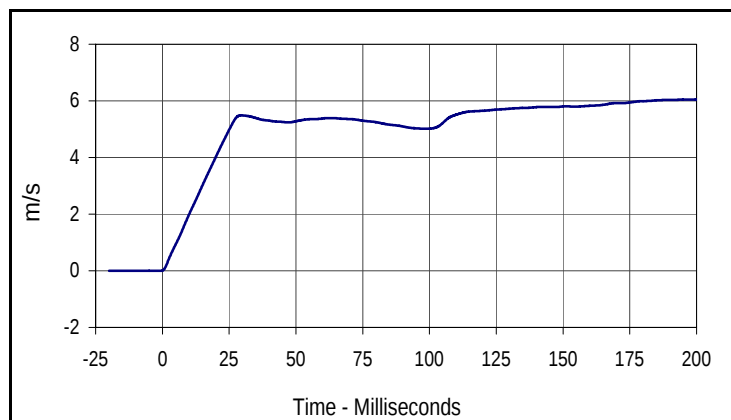
Curve Description			
Probe Force			
CURNO	Type	SAE Class	Units
001	FIL	180	Newtons
Max	Time	Min	Time
6.1	-1.7	-1633.2	10.0

Test Program: CRABI 12 Month Old Neck Flexion Test
 ATD Serial No.: 022

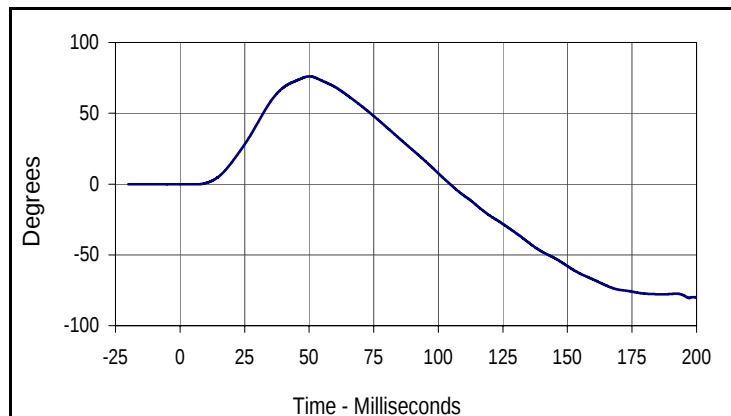
Test Date: 9/17/07
 Test I.D.: NF09E



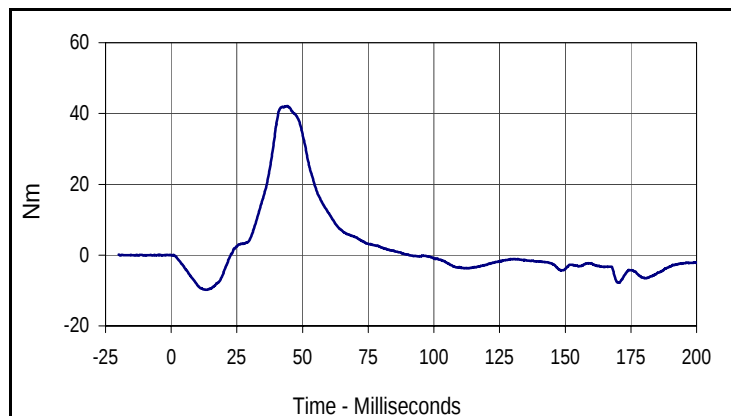
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.10 to 5.30	5.24	Pass
Pendulum Deceleration	10 Msec.	m/s	1.6 to 2.3	2.0	Pass
	20 Msec.	m/s	3.4 to 4.2	4.0	Pass
	25 Msec.	m/s	4.3 to 5.2	5.0	Pass
"D" Plane Rotation	Max	Degrees	75.0 to 86.0	76.1	Pass
Peak Moment in Rotation	Max	Nm	36.0 to 45.0	39.4	Pass
Positive Moment Decay, Time To 5 Nm		Msec.	60.0 to 80.0	70.6	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
6.0	199.3	0.0	-0.7



Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
76.1	50.1	-80.5	197.1



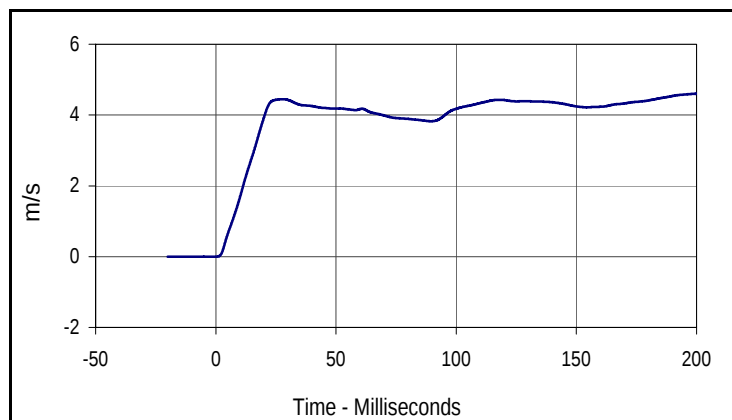
Curve Description			
Upper Neck Force Y			
CURNO	Type	SAE Class	Units
002	FIL	600	Nm
Max	Time	Min	Time
42.1	44.3	-9.8	13.5

Test Program: CRABI 12 Month Old Neck Extension Test
 ATD Serial No.: 022

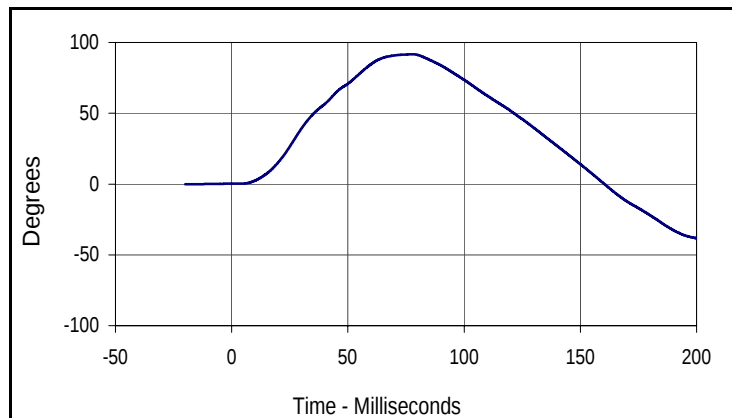
Test Date: 9/17/07
 Test I.D.: NE09E



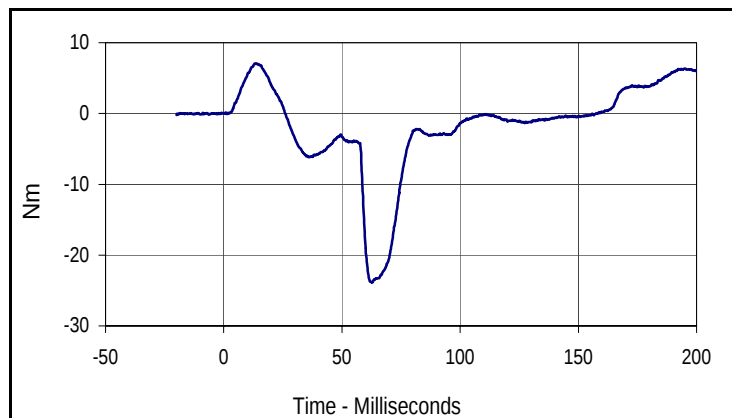
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	2.4 to 2.6	2.44	Pass
Pendulum Deceleration	6 Msec.	m/s	0.8 to 1.2	0.8	Pass
	10 Msec.	m/s	1.5 to 2.1	1.7	Pass
	14 Msec.	m/s	2.2 to 2.9	2.6	Pass
"D" Plane Rotation	Max	Degrees	80.0 to 92.0	91.7	Pass
Peak Moment in Rotation	Max	Nm	-12 to -23	-19.1	Pass
Positive Moment Decay, Time To -5 Nm		Msec.	76.0 to 90.0	77.5	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
4.6	200.0	0.0	0.1



Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
91.7	77.7	-38.2	200.0



Curve Description			
Upper Neck Moment Y			
CURNO	Type	SAE Class	Units
002	FIL	600	Nm
Max	Time	Min	Time
7.1	13.2	-23.9	62.8

Test Program: CRABI 12 Month Old External Dimensions
 ATD Serial No.: 022

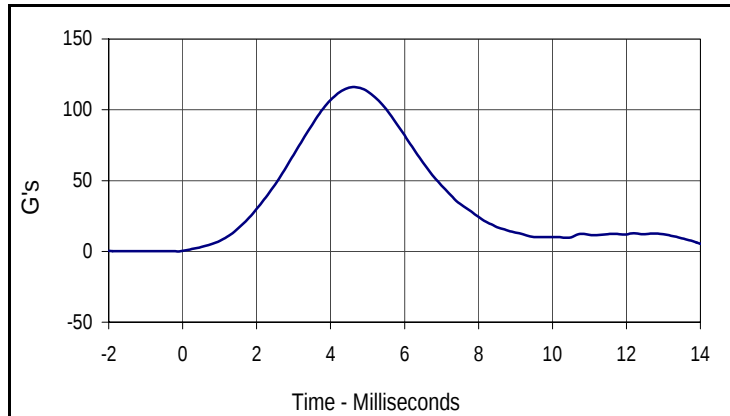
Test Date: 9/17/07
 Test I.D.: N/A



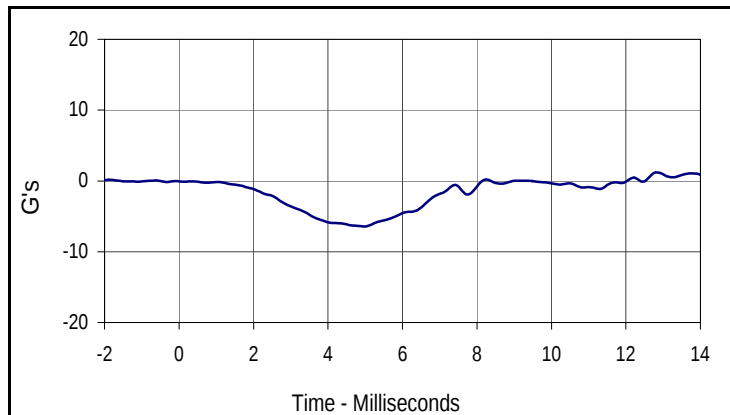
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
A - Total sitting height	mm	456.0 to 471.2	462	Pass
B - Shoulder pivot height	mm	276.6 to 291.8	279	Pass
C - "H" point height	mm	27.9 to 38.1	34	Pass
D - "H" point from backline	mm	40.1 to 50.3	47	Pass
E - Shoulder pivot from back	mm	50.3 to 60.5	56	Pass
F - Thigh clearance	mm	63.0 to 73.2	70	Pass
G - Elbow pivot to fingertip	mm	176.6 to 191.8	188	Pass
I - Shoulder pivot to elbow pivot	mm	99.1 to 114.3	104	Pass
J - Elbow rest height	mm	150.1 to 165.3	155	Pass
K - Buttock to knee length	mm	202.7 to 217.9	203	Pass
L - Popliteal length	mm	138.7 to 153.9	139	Pass
M - Knee pivot height	mm	165.1 to 180.3	167	Pass
N - Buttock popliteal length	mm	144.8 to 160.0	150	Pass
O - Chest depth with jacket	mm	107.5 to 122.7	110	Pass
P - Foot length	mm	92.4 to 102.6	99	Pass
Q- Stature	mm	727.7 to 753.1	N/A	N/A
R - Buttock to knee pivot length	mm	178.5 to 188.7	184	Pass
S - Head Breadth	mm	124.4 to 134.6	130	Pass
T - Head Depth	mm	149.9 to 165.1	150	Pass
U - Hip breadth	mm	158.5 to 173.7	163	Pass
V - Shoulder breadth	mm	200.7 to 215.9	205	Pass
W - Foot breadth	mm	39.1 to 49.3	40	Pass
Y - Chest circumference with jacket	mm	452.4 to 477.8	462	Pass
Z - Waist circumference	mm	447.0 to 472.4	458	Pass
AA - Reference location for dimension Y & O	mm	256.5 to 266.7	260	Pass
BB - Reference Location For dimension Z	mm	106.7 to 116.9	110	Pass
CC - Shoulder Height	mm	299.7 to 314.9	303	Pass
DD - Chin Height	mm	289.6 to 304.8	294	Pass
Overall Test Results			Pass	

Test Program: CRABI 12 Month Old Frontal Head Drop TestTest Date: 9/17/07ATD Serial No.: 017Test I.D.: FHD09F

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	100.0 to 120.0	116.0	Pass
Peak Lateral Acceleration	G's	≤15.0	6.4	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass



Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
116.0	4.6	0.0	-0.1



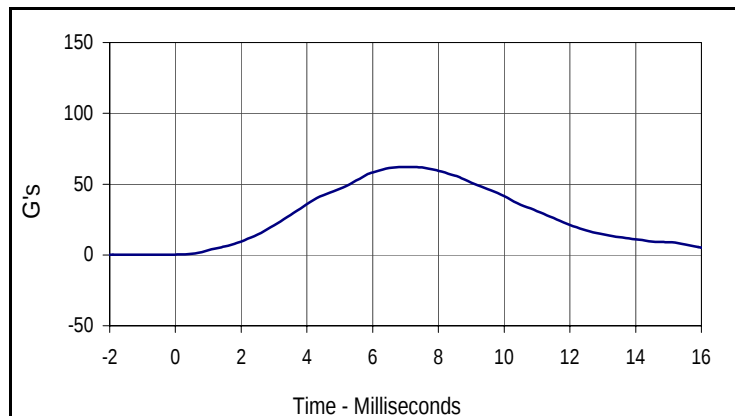
Curve Description			
Head Y			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
0.1	-1.9	-6.4	5.0

Test Program: CRABI 12 Month Old Rear Head Drop Test
 ATD Serial No.: 017

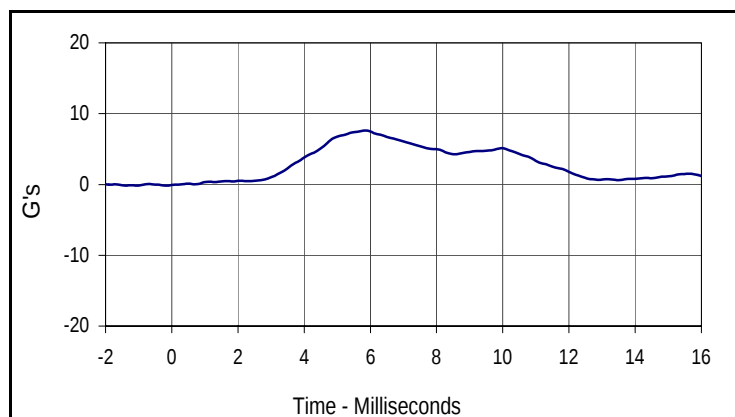
Test Date: 9/17/07
 Test I.D.: RHD09F



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Peak Resultant Acceleration	G's	55.0 to 71.0	58.3	Pass
Peak Lateral Acceleration	G's	≤15.0	7.6	Pass
Is Acceleration Unimodal?	Yes/No	Yes	Yes	Pass
Overall Test Results				Pass



Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
58.3	6.0	0.1	-0.9



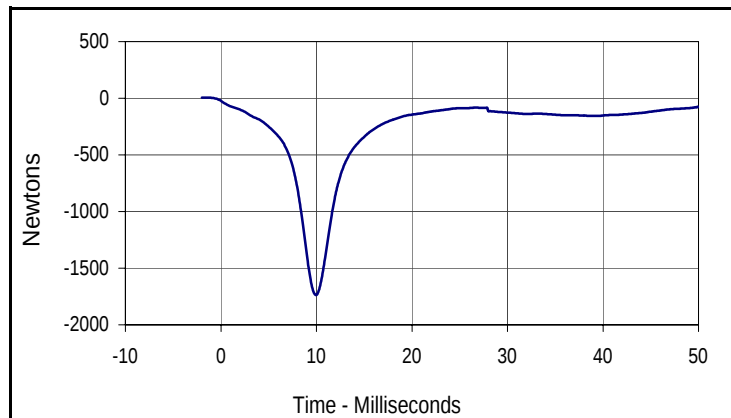
Curve Description			
Head Y			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
7.6	5.8	-0.2	-1.4

Test Program: CRABI 12 Month Old Thorax Impact Test
 ATD Serial No.: 017

Test Date: 9/17/07
 Test I.D.: CH09F



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity at T=0	m/sec	4.90 to 5.10	5.07	Pass
Peak Probe Force	Newtons	-1514 to -1796	-1736	Pass
Overall Test Results				Pass



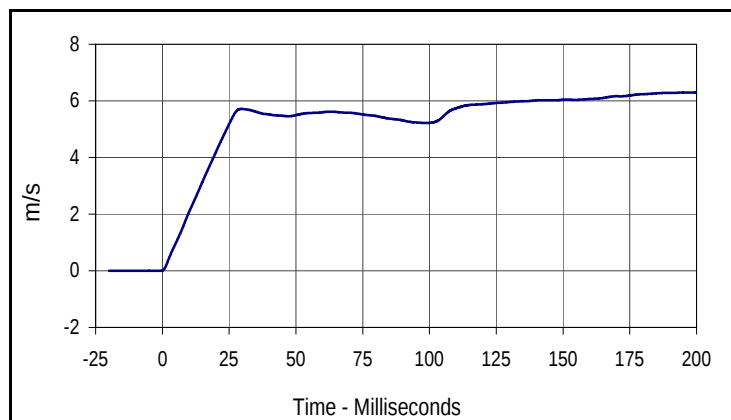
Curve Description			
Probe Force			
CURNO	Type	SAE Class	Units
001	FIL	180	Newtons
Max	Time	Min	Time
6.2	-1.6	-1736.1	10.0

Test Program: CRABI 12 Month Old Neck Flexion Test
 ATD Serial No.: 017

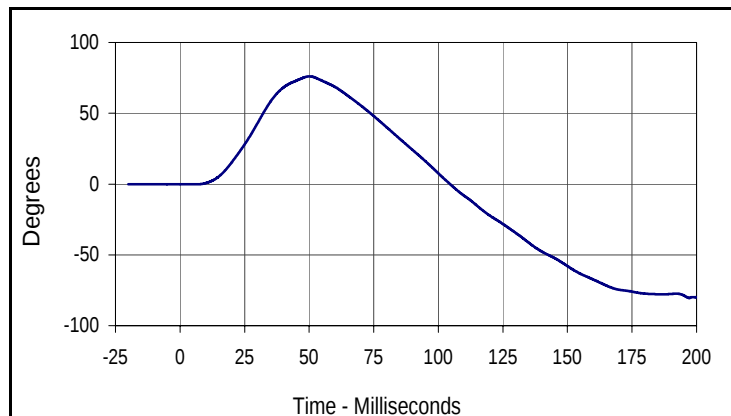
Test Date: 9/17/07
 Test I.D.: NF09F



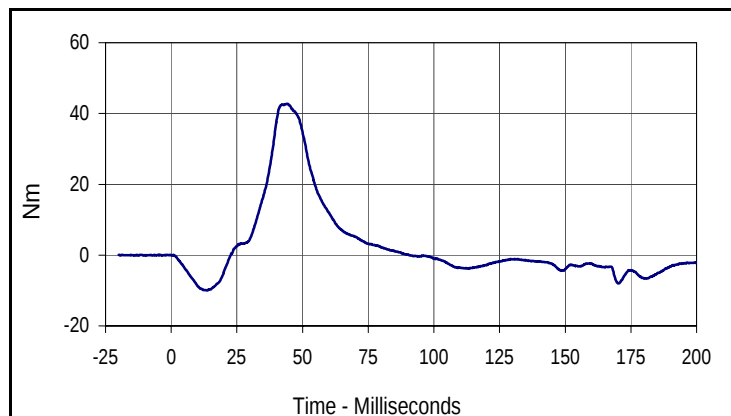
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.10 to 5.30	5.22	Pass
Pendulum Deceleration	10 Msec.	m/s	1.6 to 2.3	2.1	Pass
	20 Msec.	m/s	3.4 to 4.2	4.2	Pass
	25 Msec.	m/s	4.3 to 5.2	5.2	Pass
"D" Plane Rotation	Max	Degrees	75.0 to 86.0	76.1	Pass
Peak Moment in Rotation	Max	Nm	36.0 to 45.0	40.0	Pass
Positive Moment Decay, Time To 5 Nm		Msec.	60.0 to 80.0	70.7	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
6.3	199.3	0.0	-0.7



Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
76.1	50.1	-80.5	197.1



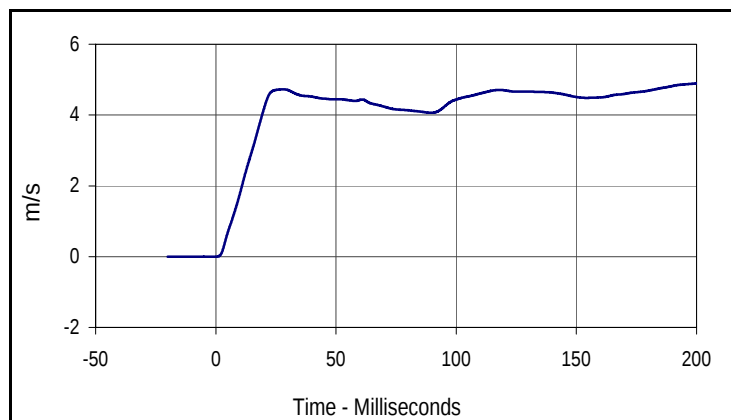
Curve Description			
Upper Neck Force Y			
CURNO	Type	SAE Class	Units
002	FIL	600	Nm
Max	Time	Min	Time
42.8	44.3	-9.9	13.5

Test Program: CRABI 12 Month Old Neck Extension Test
 ATD Serial No.: 017

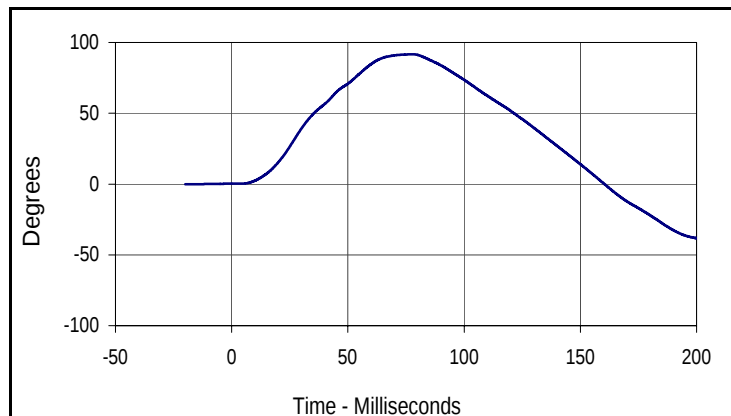
Test Date: 9/17/07
 Test I.D.: NE09F



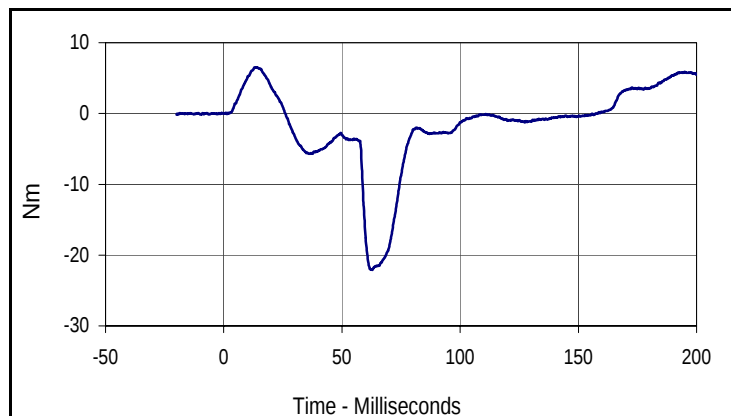
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	2.4 to 2.6	2.45	Pass
Pendulum Deceleration	6 Msec.	m/s	0.8 to 1.2	0.9	Pass
	10 Msec.	m/s	1.5 to 2.1	1.8	Pass
	14 Msec.	m/s	2.2 to 2.9	2.8	Pass
"D" Plane Rotation	Max	Degrees	80.0 to 92.0	91.7	Pass
Peak Moment in Rotation	Max	Nm	-12 to -23	-17.8	Pass
Positive Moment Decay, Time To -5 Nm		Msec.	76.0 to 90.0	77.3	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Velocity			
CURNO	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
4.9	200.0	0.0	0.1



Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
91.7	77.7	-38.2	200.0



Curve Description			
Upper Neck Moment Y			
CURNO	Type	SAE Class	Units
002	FIL	600	Nm
Max	Time	Min	Time
6.5	13.2	-22.1	62.8

Test Program: CRABI 12 Month Old External Dimensions
 ATD Serial No.: 017

Test Date: 9/17/07
 Test I.D.: N/A



Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
A - Total sitting height	mm	456.0 to 471.2	460	Pass
B - Shoulder pivot height	mm	276.6 to 291.8	277	Pass
C - "H" point height	mm	27.9 to 38.1	36	Pass
D - "H" point from backline	mm	40.1 to 50.3	44	Pass
E - Shoulder pivot from back	mm	50.3 to 60.5	59	Pass
F - Thigh clearance	mm	63.0 to 73.2	67	Pass
G - Elbow pivot to fingertip	mm	176.6 to 191.8	181	Pass
I - Shoulder pivot to elbow pivot	mm	99.1 to 114.3	100	Pass
J - Elbow rest height	mm	150.1 to 165.3	159	Pass
K - Buttock to knee length	mm	202.7 to 217.9	210	Pass
L - Popliteal length	mm	138.7 to 153.9	140	Pass
M - Knee pivot height	mm	165.1 to 180.3	175	Pass
N - Buttock popliteal length	mm	144.8 to 160.0	155	Pass
O - Chest depth with jacket	mm	107.5 to 122.7	109	Pass
P - Foot length	mm	92.4 to 102.6	98	Pass
Q- Stature	mm	727.7 to 753.1	N/A	N/A
R - Buttock to knee pivot length	mm	178.5 to 188.7	182	Pass
S - Head Breadth	mm	124.4 to 134.6	127	Pass
T - Head Depth	mm	149.9 to 165.1	159	Pass
U - Hip breadth	mm	158.5 to 173.7	164	Pass
V - Shoulder breadth	mm	200.7 to 215.9	202	Pass
W - Foot breadth	mm	39.1 to 49.3	44	Pass
Y - Chest circumference with jacket	mm	452.4 to 477.8	460	Pass
Z - Waist circumference	mm	447.0 to 472.4	453	Pass
AA - Reference location for dimension Y & O	mm	256.5 to 266.7	259	Pass
BB - Reference Location For dimension Z	mm	106.7 to 116.9	112	Pass
CC - Shoulder Height	mm	299.7 to 314.9	305	Pass
DD - Chin Height	mm	289.6 to 304.8	290	Pass
Overall Test Results				Pass