

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

**CAMI AUTOMOTIVE INC. CANADA
2007 SUZUKI XL7
5-DOOR MPV**

NHTSA NUMBER: M70512

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



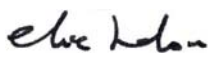
DECEMBER 20, 2006

FINAL REPORT

**PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
RULEMAKING
OFFICE OF CRASHWORTHINESS STANDARDS
MAIL CODE: NVS-111
400 SEVENTH STREET, SW, ROOM 5311
WASHINGTON, D.C. 20590**

This final test report was prepared for the U.S. Department of Transportation, National Highway Traffic Safety Administration, in response to Contract Number DTNH22-06-D-00027

This publication is distributed by the U.S. Department of Transportation, National Highway Traffic Safety Administration, in the interest of information exchange. The opinions, findings and conclusions expressed in this publication are those of the author(s) and not necessarily those of the Department of Transportation or the National Highway Traffic Safety Administration. The United States Government assumes no liability for its contents or use thereof. If trade or manufacturers' names or products are mentioned, it is only because they are considered essential to the object of the publication and should not be construed as an endorsement. The United States Government does not endorse products or manufacturers.

Prepared by:  Date: December 20, 2006
Mr. Elie W. Helou, Project Engineer
KARCO Engineering, LLC

Reviewed by:  Date: December 20, 2006
Mr. Michael Dunlap, Test & Evaluation Manager
KARCO Engineering, LLC

Approved by:  Date: December 20, 2006
Mr. Frank D. Richardson, Program Manager
KARCO Engineering, LLC

FINAL REPORT ACCEPTED BY:

Manager, New Car Assessment Program

Date of Acceptance

COTR, NCAP Frontal Impact Program

Date of Acceptance

Technical Report Documentation Page

1. Report No. TR-P27001-06-NC		2. Government Accession No.		3. Recipients Catalog No.	
4. Title and Subtitle Final Report of New Car Assessment Program Testing of a 2007 Suzuki XL7 5-Door MPV NHTSA No. M70512				5. Report Date December 20, 2006	
				6. Performing Organization Code KAR	
7. Authors Mr. Elie Helou, Project Engineer, Karco Mr. Frank Richardson, Program Manager, Karco				8. Performing Organization Report No. TR-P27001-06-NC	
9. Performing Organization Name and Address Karco Engineering, LLC 9270 Holly Rd. Adelanto, CA, 92301				10. Work Unit No.	
				11. Contract or Grant No. DTNH22-06-D-00027	
12. Sponsoring Agency Name and Address U. S. Department of Transportation National Highway Traffic Safety Administration Rulemaking Office of Crashworthiness Standards Mail Code NVS-111 400 Seventh Street, SW, Room 5311 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 35 mph (56.30 km/h) frontal barrier impact was conducted on a 2007 Suzuki XL7 5-Door MPV at Karco Engineering, LLC on 12/20/06. This test was conducted to obtain data indicant of FMVSS 208, 212, 219 (partial), 301, and footwell intrusion performance. The impact velocity is 56.19 km/h. The ambient temperature at the barrier face at the time of impact is 10.0 degrees Celcius. The vehicle's maximum post-test static crush is 555 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	423.0	414.4
Max. Chest Accel. (3 msec Clip)		G's	60	44.8	44.1
Left Femur Force		Newtons	10008	-2086.6	-4370.7
Right Femur Force		Newtons	10008	-5422.1	-2937.4
17. Key Words 56.3 km/h NCAP Frontal Barrier Impact Test New Car Assessment Program (NCAP) 2007 Suzuki XL7 5-Door MPV NHTSA No. M70512				18. Distribution of Statement Copies of this report available from: NHTSA Technical Reference Division National Highway Traffic Safety Admin. 400 Seventh St., SW, Room 5108 Washington, D.C. 20590	
19. Security Classification (this report) Unclassified		20. Security Classification (this page) Unclassified		21. No. of Pages 130	22. Price

TABLE OF CONTENTS

Section	Description	Page
1	Purpose and Summary of Test M70512	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

SECTION 1

PURPOSE AND SUMMARY OF TEST M70512

1.1 PURPOSE

This 35 mph (56.30 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 (48.30 km/h) requirements.

The 35 mph (56.30 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 May 2006. 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 was impacted by a 2007 Suzuki XL7 5-Door MPV at a velocity of 56.19 km/h. The test was performed at Karco Engineering, LLC on December 20, 2006.

Three (3) real-time and sixteen (16) 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 also placed on the driver's and passenger's lap and shoulder belts to measure dummy torso and pelvic section loading. Also, shoulder belt spool-off was measured for the driver and passenger dummy. The driver (position 1) ATD (Serial No. 34) and the right-front passenger (position 2) ATD (Serial No. 35) were calibrated one test prior to this test.

One hundred and thirty two (132) 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 and Appendix C contains the Dummy Calibration data.

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 555 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 and chest contacted the airbag and the abdomen had no contact. Both knees contacted the knee bolster.

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

Occupant injury data is contained in table below.

OCCUPANT DATA SUMMARY

ATD Position	HIC 36	Clip (g)	Chest Defl. (mm)	Left Femur (N)	Right Femur (N)
Driver	423.0	44.8	-18.0	-2086.6	-5422.1
Passenger	414.4	44.1	-21.1	-4370.7	-2937.4

SECTION 2
OCCUPANT AND VEHICLE INFORMATION/DATA SHEETS

Test Vehicle: 2007 Suzuki XL7 5-Door MPV

NHTSA No.: M70512

Test Program: 2007 NHTSA 35 MPH NCAP

Test Date: 12/20/06

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	lb/in ²	kPa	7.0
Volume	Liquid	gal	liter	3.785
Temperature	General Use	°F	°C	=(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: 2007 Suzuki XL7 5-Door MPV
Test Program: 2007 NHTSA 35 MPH NCAP

NHTSA No.: M70512
Test Date: 12/20/06

PRIMARY IMPACT DATA

Measured Parameter	Units	Value
Velocity at Impact	km/h	56.19
Test Weight	kg	2085
Impact Angle	degrees	0
Average Rebound	mm	1535
Maximum Static Crush	mm	555

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. 34	50% Male Hybrid III No. 35
Head Contact	Airbag	Airbag
Chest Contact	Airbag	Airbag
Abdomen Contact	None	Airbag
Left Knee Contact	Knee Bolster	Knee Bolster
Right Knee Contact	Knee Bolster	Knee Bolster

MOVIE COVERAGE

Cameras	Standard	Additional
High Speed	13	3
Real Time	1	2
Total	14	5

DATA CHANNELS

Driver ATD Sensors	40
Passenger ATD Sensors	40
Belt Assessment Sensors	8
Vehicle Structure Accelerometers	8
Rigid Barrier Load Cells	36
Total	132

DATA SHEET NO. 2
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2007 Suzuki XL7 5-Door MPV
 Test Program: 2007 NHTSA 35 MPH NCAP

NHTSA No.: M70512
 Test Date: 12/20/06

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	M70512
Make	Suzuki
Model	XL7
Body Style	5-Door MPV
Vin No.	2S3DB217976104525
Color	Gray
Delivery Date	11/28/2006
Odometer (Miles)	21.0
Dealer	Victorville Suzuki
Transmission	Automatic
Final Drive	Front
Type/No. Cyl.	V6
Engine Disp. (L)	3.7
Engine Placement	Transverse
Roof Rack	Yes
Sunroof/T-Top	No
Tinted Glass	Yes
Traction Control	Yes
Power Brakes	Yes
Front Disc	Yes
Rear Disc	Yes

Anti-Lock Brakes	Yes
All Wheel Drive	No
Power Steering	Yes
Driver Front Airbag	Yes
Driver Side Airbag	No
Driver Head Airbag	No
Driver Curtain Airbag	Yes
Pass. Airbag	Yes
Pass. Side Airbag	No
Pass. Head Airbag	No
Pass. Curtain Airbag	Yes
Pre-Tensioners	Yes
Load Limiters	Yes
Bucket Seats	Yes
Air. Cond.	Yes
AM/FM CD player	Yes
Tilt Steering	Yes
Automatic Door Locks	Yes
Power Windows	Yes
Power Seats	No
Other	None

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

No

DATA FROM MANUFACTURER

Manufactured By	Cami Automotive Inc. Canada
Date of Manufacture	Oct-06

GVWR (kg)	2475
GAWR Front (kg)	1175
GAWR Rear (kg)	1325

VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

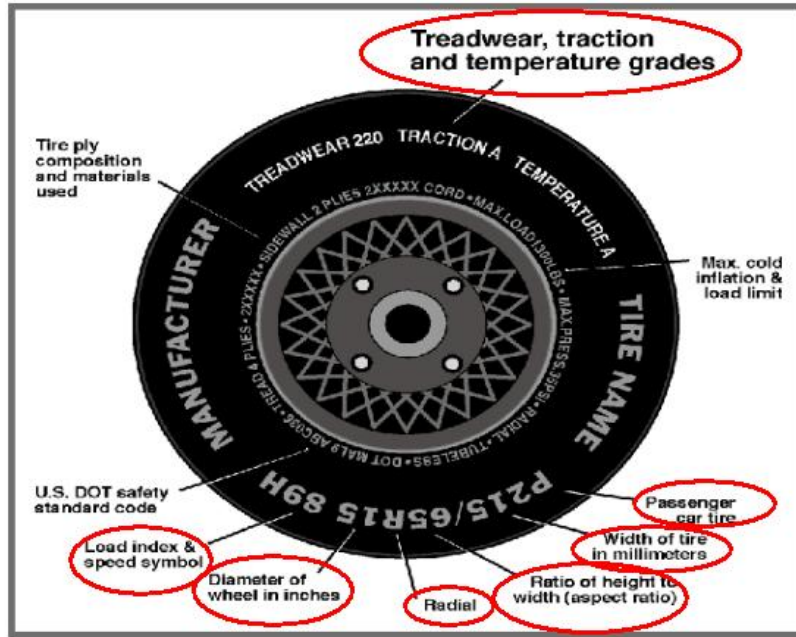
Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Bucket	Bucket	
Number of Occupants	2	3	2	7
Capacity Weight (VCW) (kg)				622
Cargo Weight (RCLW) (kg)				136

DATA SHEET NO. 2...(CONTINUED)
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2007 Suzuki XL7 5-Door MPV
Test Program: 2007 NHTSA 35 MPH NCAP

NHTSA No.: M70512
Test Date: 12/20/06

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



Measured Parameter	Front	Rear
Max. Tire Pressure (kpa)	240	240
Cold Pressure (kpa)	210	210
Recommended Tire Size	P235/65R16	P235/65R16
Tire Size on Vehicle	P235/65R16	P235/65R16
Tire Manufacturer	Bridgestone	Bridgestone
Treadwear	360	360
Traction	B	B
Temperature Grades	B	B
Tire Plies Sidewall	2 Polyester	2 Polyester
Tire Plies Body	2 Polyester + 2 Steel + 2 Nylon	2 Polyester + 2 Steel + 2 Nylon
Load Index/Speed Symbol	101S	101S
Tire Material	Polyester, Steel, Nylon	Polyester, Steel, Nylon
DOT Safety Code Right	DOT OB74 BD2	DOT OB74 BD2
DOT Safety Code Left	DOT OB74 BD2	DOT OB74 BD2

DATA SHEET NO. 2...(CONTINUED)
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2007 Suzuki XL7 5-Door MPV
 Test Program: 2007 NHTSA 35 MPH NCAP

NHTSA No.: M70512
 Test Date: 12/20/06

TEST VEHICLE WEIGHTS

	Units	As Delivered Weights (UVW)			As Tested Weights (ATW)		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	501	412	913	556	497	1053
Right	kg	499	394	893	549	483	1032
Ratio	%	55.4	44.6	100	53.0	47.0	100
Totals	kg	1000	806	1806	1105	980	2085

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1806
Weight of 2 P572 ATD's	kg	152
Rated Cargo/Luggage Wt. (RCLW)	kg	136
Calculated Vehicle Target Wt. (TVTW)	kg	2094

TEST VEHICLE ATTITUDE AND CG

	Units	LF	RF	LR	RR	CG (aft of front axle)
As Delivered	mm	825	829	848	853	1284
As Tested	mm	807	815	835	826	1354

Vehicle Wheel Base (mm) 2880

Weight of Ballast Secured in cargo area (kg) 0

Weight of Items Removed (kg) 53

Vehicle Components Removed 3rd row seats, rear bumper, spare tire changing tools,
rear storage bin, rear carpet

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

FUEL SYSTEM DATA

Fuel System Capacity From Owners Manual (L) 70.02

Actual Test Volume with entire fuel System Filled (L) 65.14

Test Fluid Type: Stoddard Solvent

Kinematic Viscosity: as per ASTM Standard D484-71 Purple

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 for 3 seconds when ignition is in "on" position.

DATA SHEET NO. 3
POST-TEST IMPACT DATA

Test Vehicle: 2007 Suzuki XL7 5-Door MPV
Test Program: 2007 NHTSA 35 MPH NCAP

NHTSA No.: M70512
Test Date: 12/20/06

SPEED TRAP DATA

Measured Parameter	Units	Requirement	Value
Trap No.1 Velocity (Primary)	km/h	55.51 to 57.12	56.19
Trap No.2 Velocity (Redun.)	km/h	55.51 to 57.12	56.20

VEHICLE STATIC CRUSH

Measured Parameter	Units	Pre-Test	Post-Test	Difference
Left Side	mm	4670	4414	-256
Center	mm	4995	4440	-555
Right Side	mm	4670	4369	-301

VEHICLE REBOUND FROM BARRIER

Measured Parameter	Units	Value
Left Side	mm	1590
Center	mm	1500
Right Side	mm	1515
Average	mm	1535

DATA SHEET NO. 4 **TEST VEHICLE INFORMATION**

Test Vehicle: 2007 Suzuki XL7 5-Door MPV
Test Program: 2007 NHTSA 35 MPH NCAP

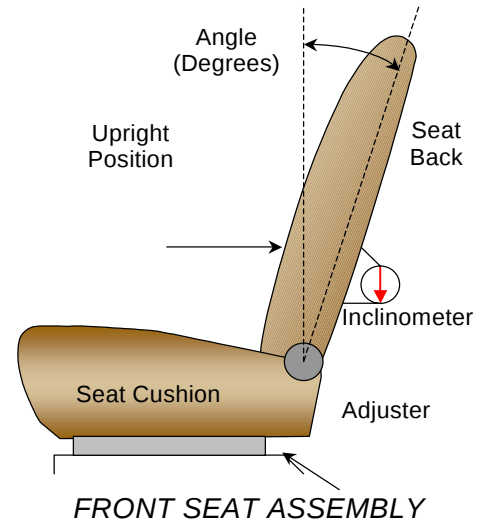
NHTSA No.: M70512
Test Date: 12/20/06

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 back using a digital inclinometer.

SEAT BACK ANGLES

	Deg.
Driver w/seated Dummy	3.8 @ headrest
Passenger w/seated Dummy	4.0 @ headrest

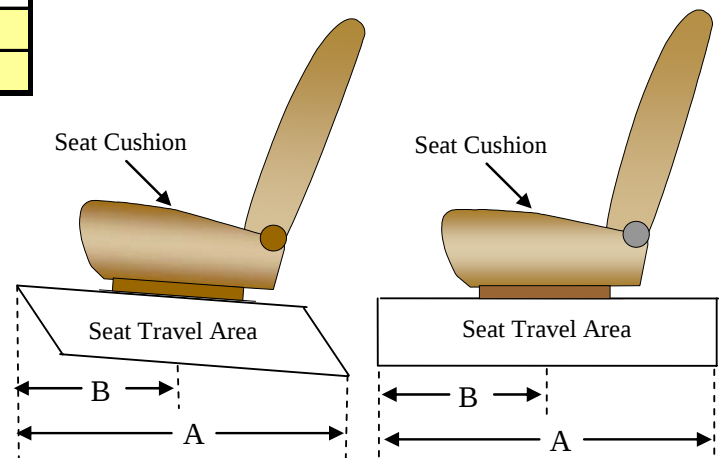


SEAT FORE/AFT POSITIONS

The total seat travel was measured from forward most position at the highest vertical seat height to rearmost position at the lowest vertical seat height. The seat was set at the longitudinal mid position with the vertical adjustment at the lowest position obtainable for the driver and passenger.

SEAT FORE/AFT POSITIONING

	Total Fore/Aft Travel (Detent)	Placed in Position (Detent)
Driver Seat	25	13
Passenger Seat	25	13



SEAT BELT UPPER ANCHORAGE

Position number one (1) is the uppermost position.

SEAT BELT UPPER ANCHORAGE

	Total # of Positions	Placed in Position #
Driver Seat	4	3
Passenger Seat	4	3

DATA SHEET NO. 4...(CONTINUED)
TEST VEHICLE INFORMATION

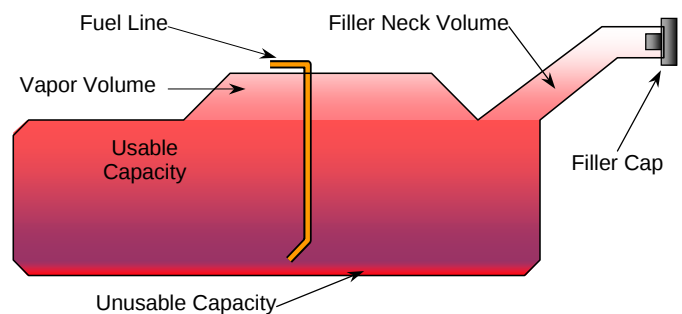
Test Vehicle: 2007 Suzuki XL7 5-Door MPV
 Test Program: 2007 NHTSA 35 MPH NCAP

NHTSA No.: M70512
 Test Date: 12/20/06

FUEL TANK CAPACITY

	Liters
Usable Capacity of "Standard Tank"	70.03
Usable Capacity of "Optional" Tank	
Usable Capacity used for FMVSS 301	64.42 to 65.82
Actual Amount of Solvent used	65.14

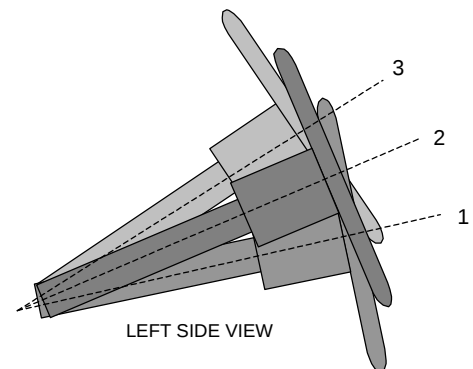
The test vehicle is equipped with an electric fuel pump. The fuel pump operates for approximately two seconds after the ignition is placed in the "ON" position, after which the fuel pump automatically shuts off. The fuel filler door is located on the right rear fender. The standard fuel tank occupies 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 positon No. 1	22.9	
Geometric center position No. 2	24.2	
Uppermost position No. 3	26.7	

DATA SHEET NO. 5
DUMMY POSITIONING IN VEHICLE

Test Vehicle: 2007 Suzuki XL7 5-Door MPV
Test Program: 2007 NHTSA 35 MPH NCAP

NHTSA No.: M70512
Test Date: 12/20/06

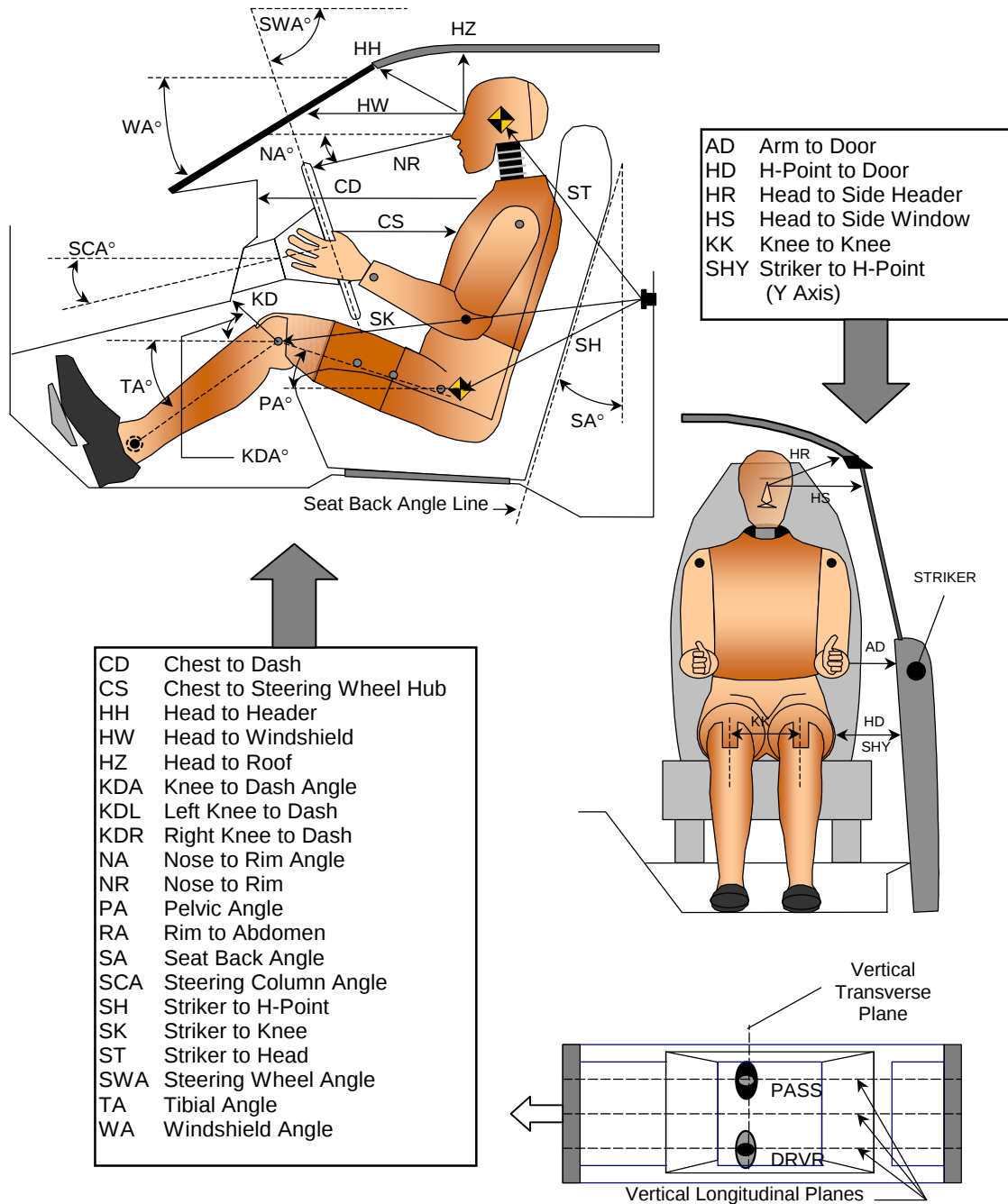
TEST DUMMY POSITION MEASUREMENTS

Code	Measurement Description	Driver		Passenger	
		Length (mm)	Angle (deg)	Length (mm)	Angle (deg)
WA	Windshield Angle		34.0		
SWA	Steering Wheel Angle		63.8		
SCA	Steering Column Angle		24.2		
SA	Seat Back Angle		3.8 @ headrest		4.0 @ headrest
HZ	Head to Roof (Z)	255	90.0	210	90.0
HH	Head to Header	430		400	
HW	Head to Windshield	690		700	
HR	Head to Side Header (Y)	310		280	
NR	Nose to Rim	410	8.0		
CD	Chest to Dash	610		600	
CS	Chest to Steering Hub	310			
RA	Rim to Abdomen	220			
KDL	Left Knee to Dash	160	25.4	113	
KDR	Right Knee to Dash	110		150	17.2
PA	Pelvic Angle		22.5		23.2
TA	Tibia Angle		47.7		47.2
KK	Knee to Knee (Y)	285		277	
SK	Striker to Knee	565	3.9	590	1.5
ST	Striker to Head	580	82.0	580	79.0
SH	Striker to H-Point	195	35.0	205	22.0
SHY	Striker to H-Point (Y)	225		220	
HS	Head to Side Window	330		310	
HD	H-Point to Door (Y)	130		140	
AD	Arm to Door (Y)	30		10	

DATA SHEET NO. 5...(CONTINUED) **DUMMY POSITIONING IN VEHICLE**

Test Vehicle: 2007 Suzuki XL7 5-Door MPV
 Test Program: 2007 NHTSA 35 MPH NCAP

NHTSA No.: M70512
 Test Date: 12/20/06

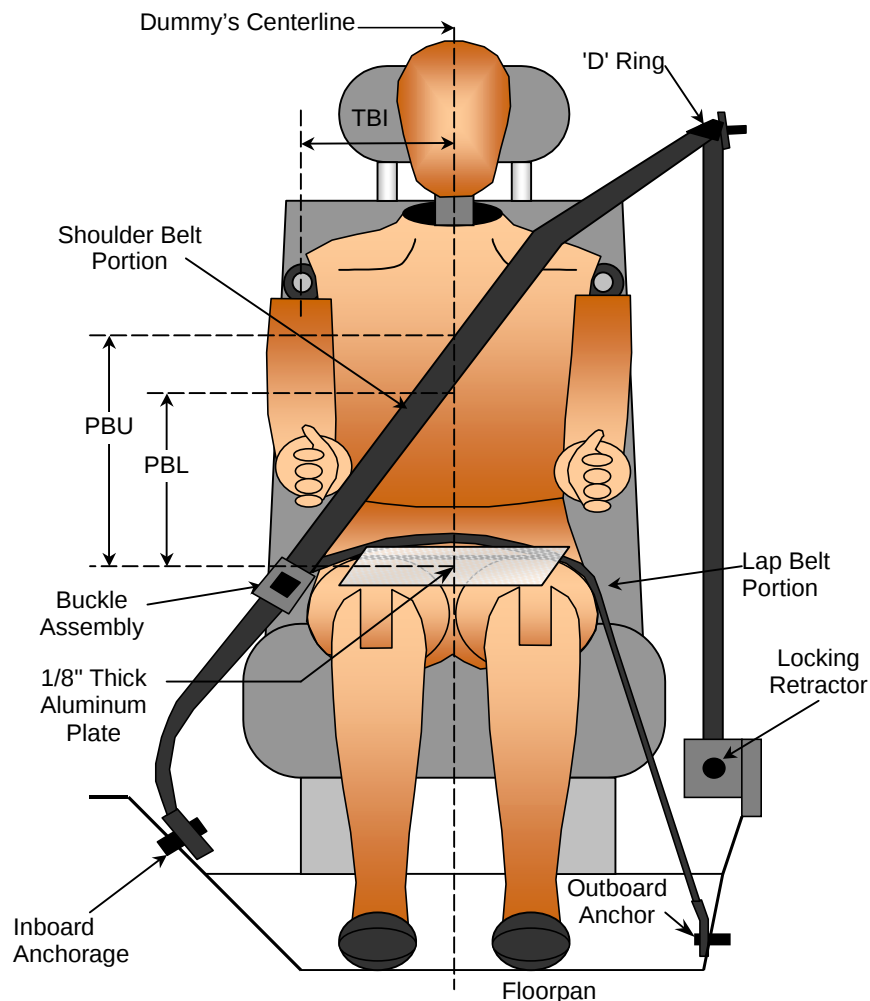


DUMMY MEASUREMENTS FOR FRONT SEAT OCCUPANTS

DATA SHEET NO. 6 **SEAT BELT POSITIONING DATA**

Test Vehicle: 2007 Suzuki XL7 5-Door MPV
 Test Program: 2007 NHTSA 35 MPH NCAP

NHTSA No.: M70512
 Test Date: 12/20/06



SEAT BELT POSITIONING MEASUREMENTS

Measured Parameter	Units	Driver	Passenger
TBI - Dummy C/L to Lap/Shoulder Belt Intersect	mm	220	220
PBU - Top Surface of reference to belt upper edge	mm	300	200
PBL - Top Surface of reference to belt lower edge	mm	230	275
Lap Belt Tension	Newtons	10	10
Shoulder Belt Tension	N/A	Retractor	Retractor

DATA SHEET NO. 7
VEHICLE ACCELEROMETER LOCATION

Test Vehicle: 2007 Suzuki XL7 5-Door MPV
Test Program: 2007 NHTSA 35 MPH NCAP

NHTSA No.: M70512
Test Date: 12/20/06

DATA SHEET NO. 8
SEAT BELT ASSESSMENT TEST DATA

Test Vehicle: 2007 Suzuki XL7 5-Door MPV
 Test Program: 2007 NHTSA 35 MPH NCAP

NHTSA No.: M70512
 Test Date: 12/20/06

SEAT BELT POSITIONING MEASUREMENTS

Measurement Description	Units	Driver	Passenger
Retractor Reel to "D" ring	mm	800	800
Shoulder Belt length as measured on ATD	mm	800	820
Lap Belt length as measured on ATD	mm	590	600
Remainder of belt on reel	mm	1200	1125
Total belt length for continuous webbing systems	mm	3390	3345

SHOULDER BELT SPOOL-OFF DATA

Measurement Description	Units	Driver	Passenger
As determined mechanically	mm	140	100
As determined electronically	mm	0	213

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: 2007 Suzuki XL7 5-Door MPV
 Test Program: 2007 NHTSA 35 MPH NCAP

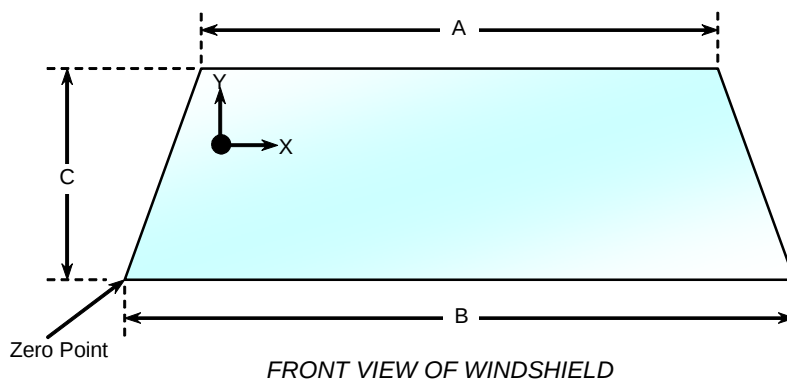
NHTSA No.: M70512
 Test Date: 12/20/06

Windshield Mounting Details: Windshield glass is secured to the vehicle frame with a rubber type adhesive. No molding covers the windshield periphery at any point.

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

Measurement	Pre-Test(mm)	Post-Test(mm)	% of Retention
Left Side	2195	2195	100
Right Side	2195	2195	100
Total	4390	4390	100



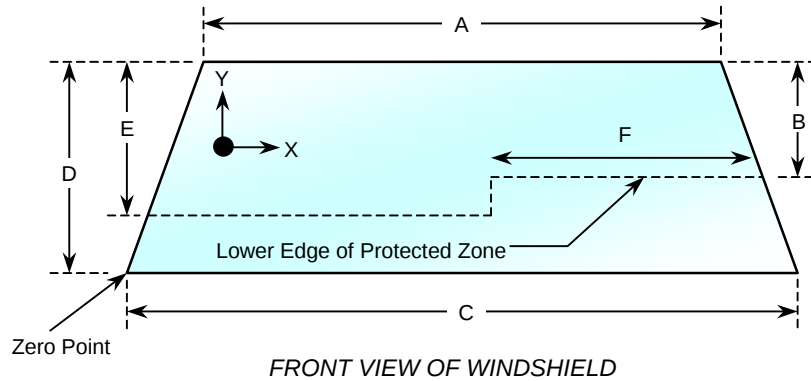
WINDSHIELD DIMENSIONS

Item	Units	Segment Length	Molding Width
A	mm	1185	20
B	mm	1475	18
C-Left	mm	865	0
C-Right	mm	865	0

DATA SHEET NO. 10
WINDSHIELD ZONE INTRUSION FMVSS 219 DATA (PARTIAL)

Test Vehicle: 2007 Suzuki XL7 5-Door MPV
 Test Program: 2007 NHTSA 35 MPH NCAP

NHTSA No.: M70512
 Test Date: 12/20/06



**WINDSHIELD AND
PROTECTED ZONE**

Item	Units	Value
A	mm	1185
B	mm	575
C	mm	1475
D	mm	865
E	mm	585
F	mm	375

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: 2007 Suzuki XL7 5-Door MPV

NHTSA No.: M70512

Test Program: 2007 NHTSA 35 MPH NCAP

Test Date: 12/20/06

Test Time: 12:15 PM

Temperature: 10.0 Deg. 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.

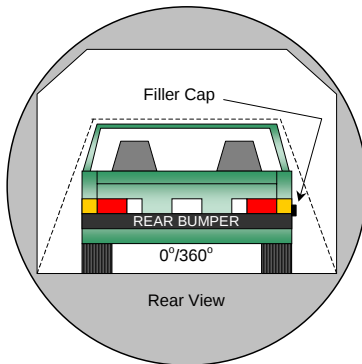
(Maximum Allowable = 1 oz./minute)

D. Spillage Location Details: No leakage occurred

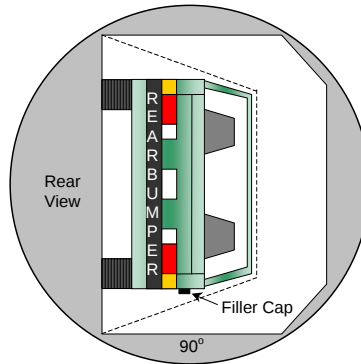
DATA SHEET NO. 12
FMVSS 301 STATIC ROLLOVER DATA

Test Vehicle: 2007 Suzuki XL7 5-Door MPV
Test Program: 2007 NHTSA 35 MPH NCAP

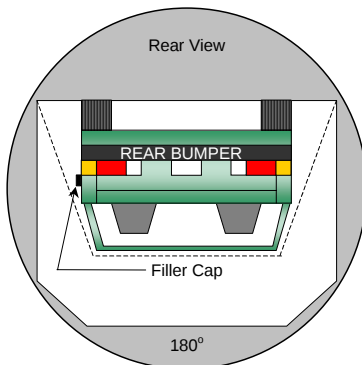
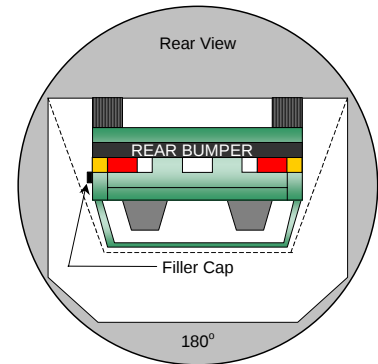
NHTSA No.: M70512
Test Date: 12/20/06



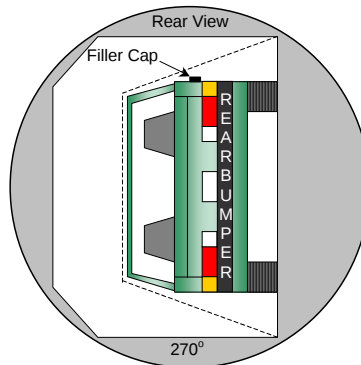
0° to 90°



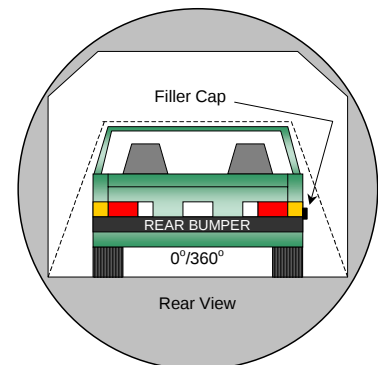
90° to 180°



180° to 270°



270° to 360°



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

DATA SHEET NO. 12...(CONTINUED)
FMVSS 301 STATIC ROLLOVER DATA

Test Vehicle: 2007 Suzuki XL7 5-Door MPV
 Test Program: 2007 NHTSA 35 MPH NCAP

NHTSA No.: M70512
 Test Date: 12/20/06

SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0° to 90°	84	300	384
90° to 180°	77	300	377
180° to 270°	79	300	379
270° to 360°	78	300	378

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: 2007 Suzuki XL7 5-Door MPV
Test Program: 2007 NHTSA 35 MPH NCAP

NHTSA No.: M70512
Test Date: 12/20/06

VEHICLE MEASUREMENT TABLE

No.	Measurement Description	Units	Pre-Test	Post-Test	Diff.
1	Total length of vehicle at centerline	mm	4995	4440	-555
2	RSOV to front of engine	mm	4345	4030	-315
3	RSOV to firewall centerline	mm	3967	3875	-92
4	RSOV to leading edge of right door	mm	3455	3460	5
5	RSOV to leading edge of left door	mm	3450	3458	8
6	RSOV to lower leading edge of right door	mm	3422	3420	-2
7	RSOV to lower leading edge of left door	mm	3430	3425	-5
8	RSOV to upper trailing edge of right door	mm	2418	2421	3
9	RSOV to upper trailing edge of left door	mm	2412	2419	7
10	RSOV to lower trailing edge of right door	mm	2433	2420	-13
11	RSOV to lower trailing edge of left door	mm	2442	2430	-12
12	RSOV to bottom of right 'A' pillar	mm	3423	3440	17
13	RSOV to bottom of left 'A' pillar	mm	3419	3431	12
14	RSOV to firewall on right side	mm	3903	3862	-41
15	RSOV to firewall on left side	mm	3905	3870	-35
16	RSOV to steering column	mm	3050	3092	42
17	Center of steering column to left 'A' pillar	mm	430	336	-94
18	Center of steering column to headlining	mm	460	468	8
19	RSOV to right side of front bumper	mm	4670	4369	-301
20	RSOV to left side of front bumper	mm	4670	4414	-256
21	Length of engine block	mm	540	540	0
RD	RSOV to right side of dash panel	mm	3315	3308	-7
CD	RSOV to center of dash panel	mm	3265	3208	-57
LD	RSOV to left side of dash panel	mm	3310	3315	5

DATA SHEET NO. 13...(CONTINUED)
VEHICLE STRUCTURAL MEASUREMENTS

Test Vehicle: 2007 Suzuki XL7 5-Door MPV
 Test Program: 2007 NHTSA 35 MPH NCAP

NHTSA No.: M70512
 Test Date: 12/20/06

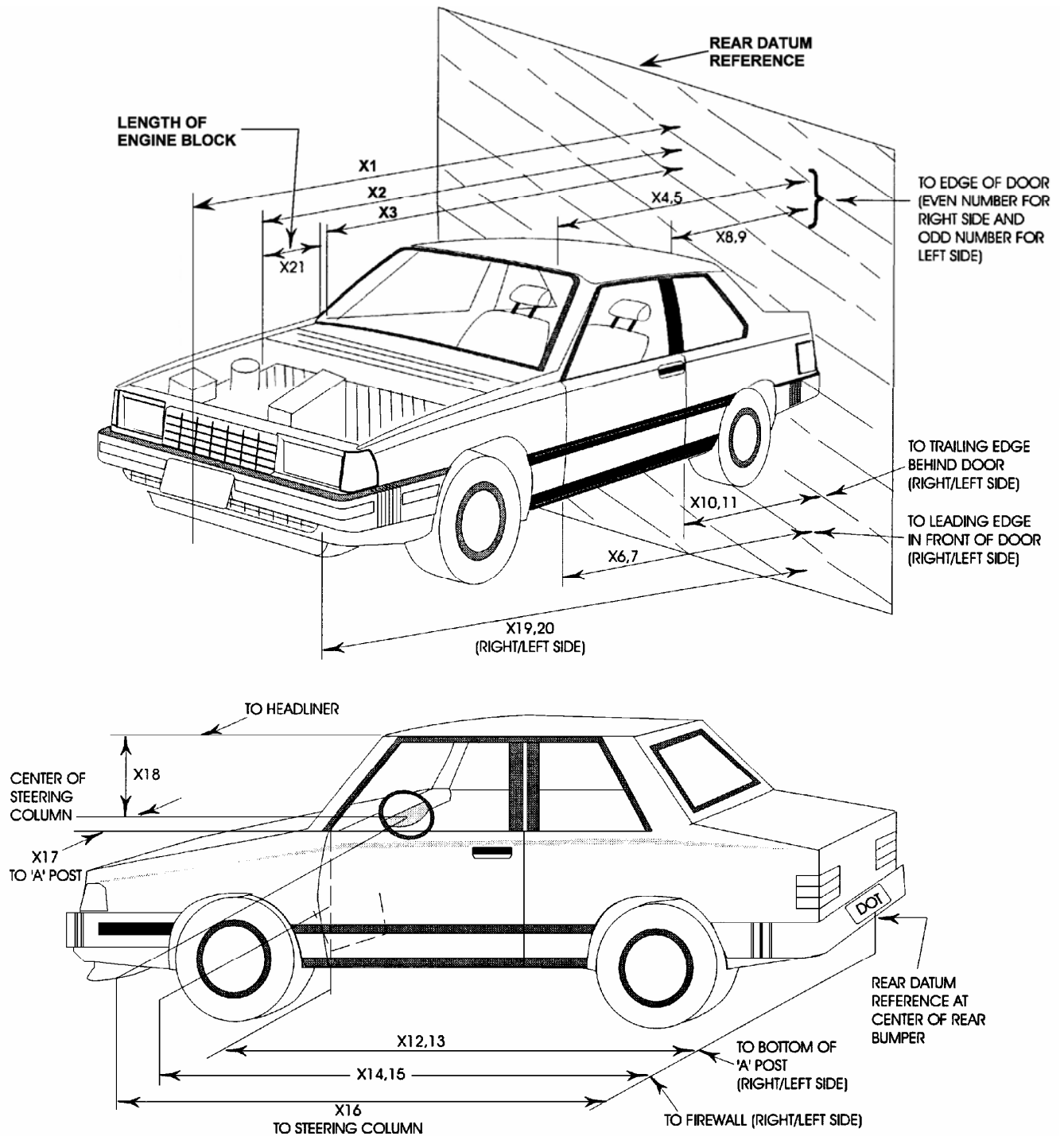
VEHICLE STRUCTURAL MEASUREMENT TABLE

No.	Measurement Description	Units	Pre-Test	Post-Test	Diff.
1	Total length	mm	4995	4440	-555
2	Total width	mm	1650	1770	120
3	Bumper top height	mm	630	573	-57
4	Bumper bottom height	mm	283	265	-18
5	Longitudinal member top height	mm	679	715	36
6	Longitudinal member bottom height	mm	673	645	-28
7	Distance between longitudinal members	mm	920	1040	120
8	Longitudinal member width	mm	100	90	-10
9	Engine top height	mm	997	978	-19
10	Engine bottom height	mm	206	213	7
11	Engine and gear box width	mm	875	873	-2
12	Front bumper to engine distance	mm	642	469	-173
13	Front shock absorber fixing width	mm	995	997	2
14	Bonnet leading edge height	mm	922	980	58
15	Front shock absorber fixing width	mm	1165	1090	-75
16	Front bumper to front axle distance	mm	965	487	-478
17	Front axle to 'A' pillar distance	mm	580	565	-15
18	'A' pillar to 'B' pillar distance	mm	1028	1041	13
19	'B' pillar to rear axle distance	mm	1275	1272	-3
20	'B' pillar to 'C' pillar distance	mm	1020	1100	80
21	Roof sill bottom height	mm	1490	1490	0
22	Roof sill top height	mm	1700	1650	-50
23	Floor sill bottom height	mm	263	238	-25
24	Floor sill top height	mm	450	420	-30

DATA SHEET NO. 13...(CONTINUED)
VEHICLE MEASUREMENTS

Test Vehicle: 2007 Suzuki XL7 5-Door MPV
 Test Program: 2007 NHTSA 35 MPH NCAP

NHTSA No.: M70512
 Test Date: 12/20/06



DATA SHEET NO. 14
CAMERA LOCATIONS

Test Vehicle: 2007 Suzuki XL7 5-Door MPV
Test Program: 2007 NHTSA 35 MPH NCAP

NHTSA No.: M70512
Test Date: 12/20/06

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)	-16589	-7485	-1475	0			30
2	Overall Left Side	-2458	-7598	-1208	0	8324	20mm	1000
3	Closeup Left Side	-1682	-7487	-1247	0	8239	50mm	1000
4	Driver and Interior View	-8696	-12562	-4511	-17	15570	ZOOM	1000
5	Steering Column (Bottom)	-1631	-8234	-2682	-13	9453	35mm	1000
6	Steering Column (Top)	-1663	-8153	-3078	-13	9549	35mm	1000
7	Overall Right Side	-2985	3981	-1123	0	4391	20mm	1000
8	Closeup Right Side	-2194	6598	-1167	0	6680	50mm	1000
9	Passenger and Interior View	-5330	9365	-2407	-10	10211	ZOOM	1000
10	Right Side View	-2006	6967	-1463	-6	7134	ZOOM	1000
11	Windshield View	-589	0	-5556	-90		24mm	1000
12	Driver Front View	378	-286	-2438	-34		25mm	1000
13	Passenger Front View	375	413	-2439	-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	Driver Side O.B.	-2481	358	-1221	-7		12mm	1000
17	Passenger Side O.B.	-2481	-346	-1221	-7		12mm	1000
18	Real Time Driver	-2458	-7598	1301	-1			30
19	Real Time Passenger	-2985	3981	-1284	-1			30

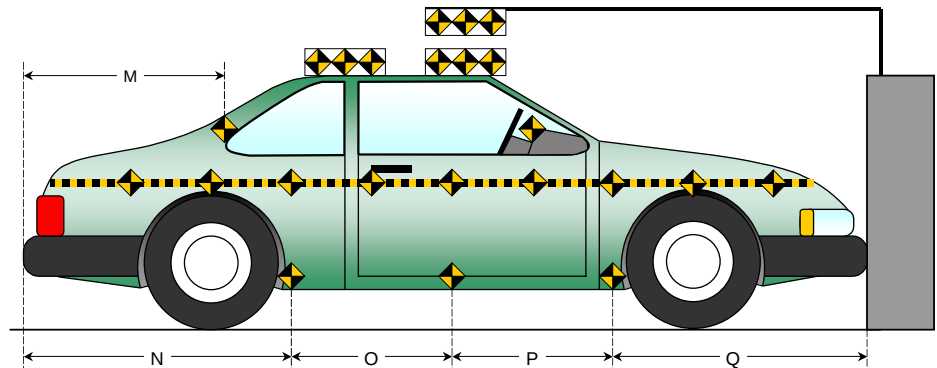
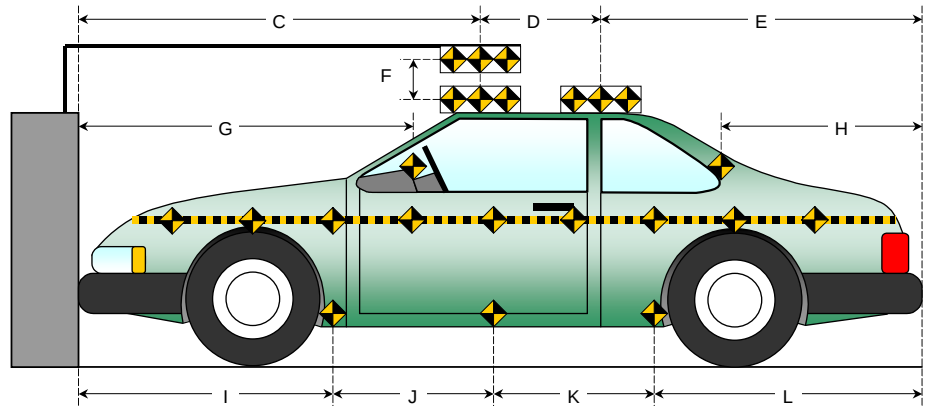
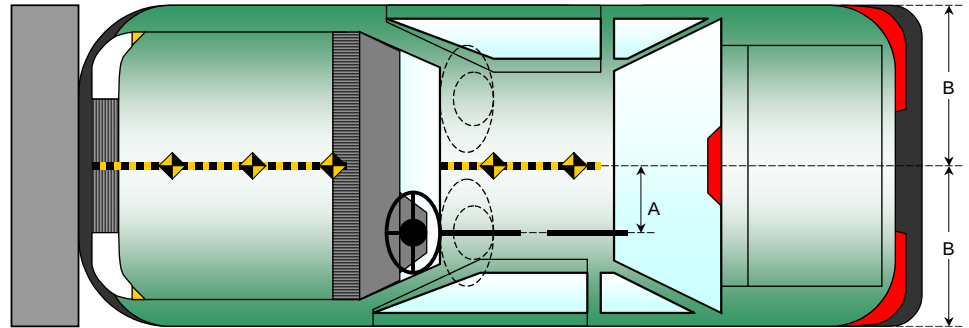
All measurements are made relative to the point of impact.

DATA SHEET NO. 15 **PHOTOGRAPHIC REFERENCE TARGET LOCATIONS**

Test Vehicle: 2007 Suzuki XL7 5-Door MPV
 Test Program: 2007 NHTSA 35 MPH NCAP

NHTSA No.: M70512
 Test Date: 12/20/06

All Dimensions in (mm)	
Item	Value
A	360
B	825
C	2380
D	615
E	2232
F	155
G	35
H	1473
I	1475
J	940
K	940
L	1657
M	1473
N	1657
O	940
P	940
Q	1475



DATA SHEET NO. 16
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2007 Suzuki XL7 5-Door MPV
 Test Program: 2007 NHTSA 35 MPH NCAP

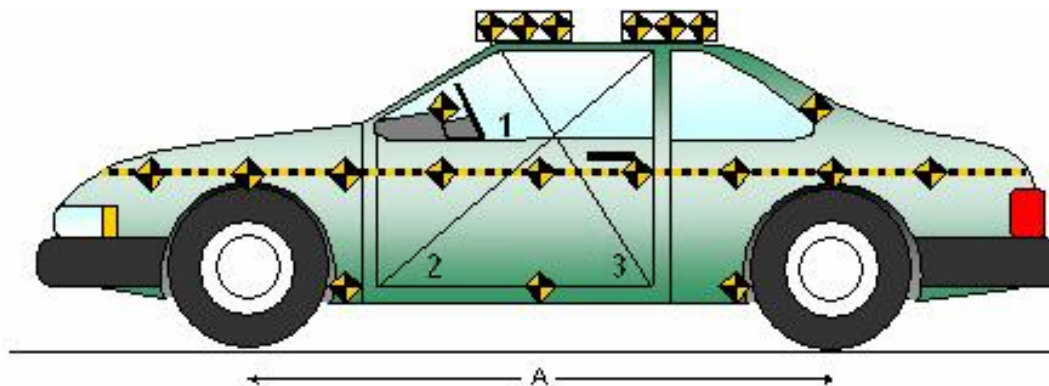
NHTSA No.: M70512
 Test Date: 12/20/06

DOOR OPENING WIDTH TABLE

Item	Description	Units	Pre-Test	Post-Test	Diff.
R1	Passenger side upper opening	mm	861	855	-6
R2	Passenger side diagonal opening	mm	1392	1430	38
R3	Passenger side diagonal opening	mm	1004	1060	56
L1	Passenger side upper opening	mm	861	930	69
L2	Passenger side upper opening	mm	1388	1440	52
L3	Passenger side upper opening	mm	1005	1020	15

WHEELBASE MEASUREMENT TABLE

Item	Description	Units	Pre-Test	Post-Test	Diff.
A	Left Side Wheel Base	mm	2880	2805	-75
A	Right Side Wheel Base	mm	2880	2795	-85



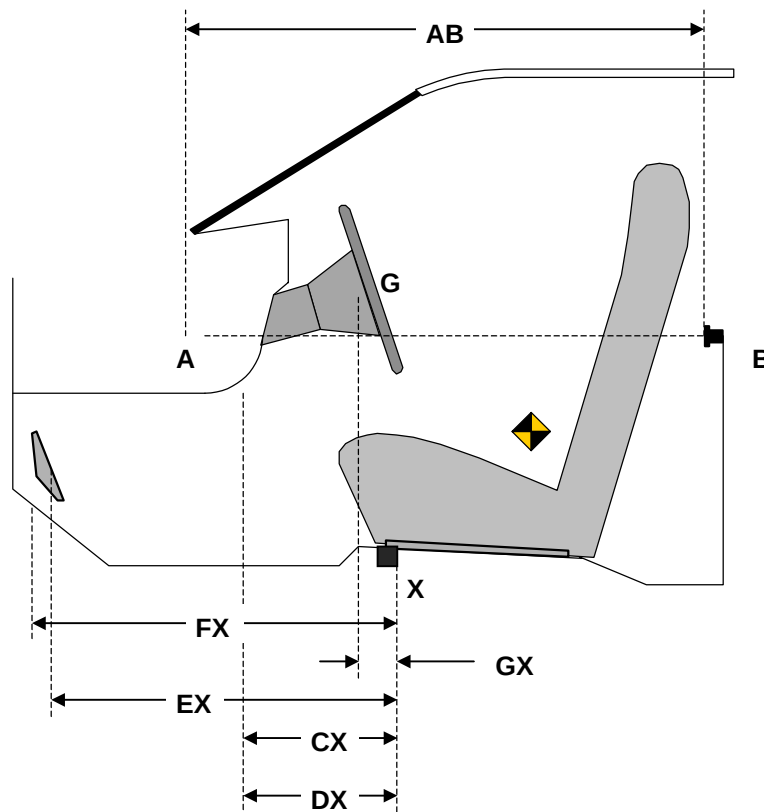
DATA SHEET NO. 16...(CONTINUED)
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2007 Suzuki XL7 5-Door MPV
 Test Program: 2007 NHTSA 35 MPH NCAP

NHTSA No.: M70512
 Test Date: 12/20/06

DRIVER COMPARTMENT INTRUSION TABLE

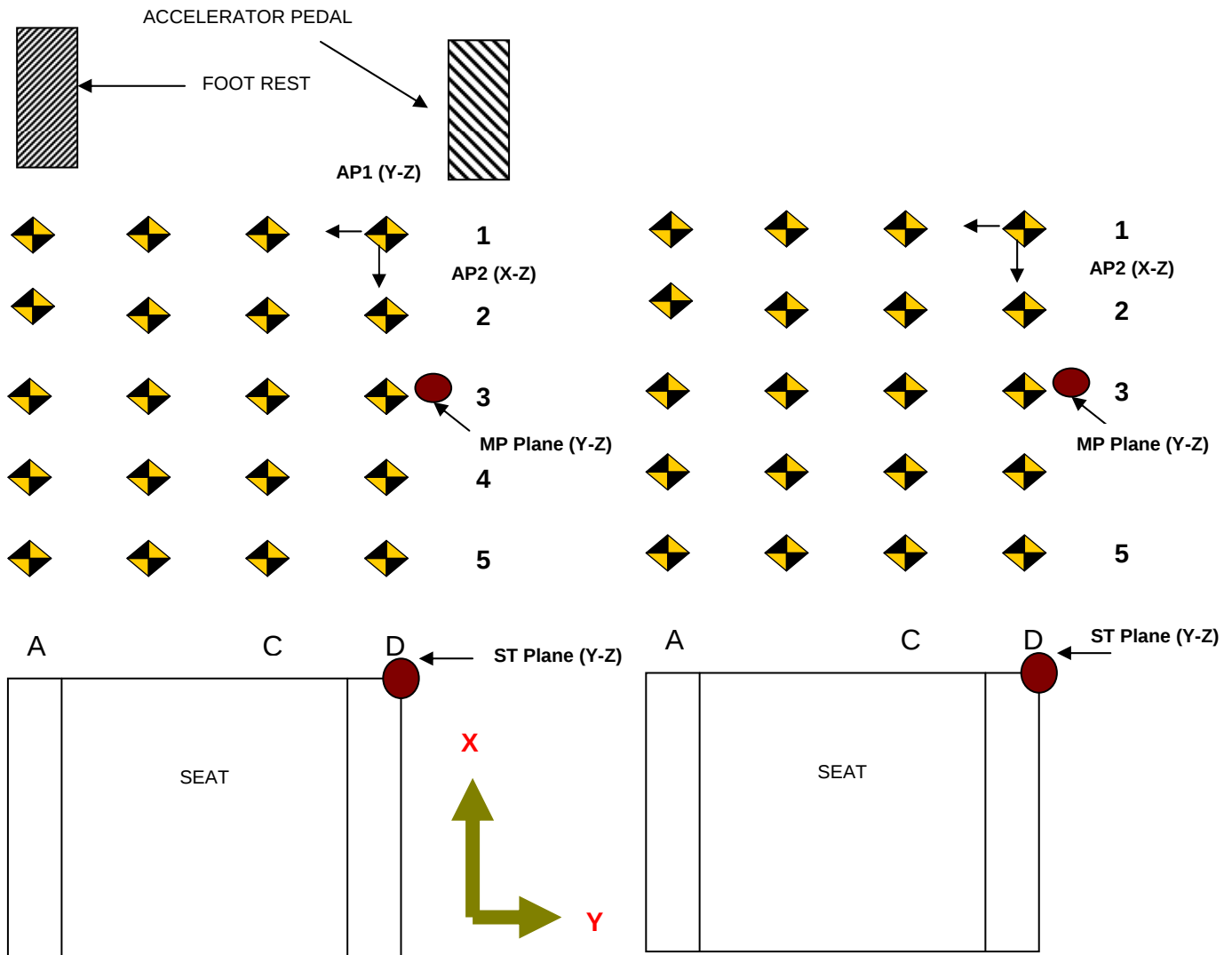
Item	Description	Units	Pre-Test	Post-Test	Diff.
AB	Door Opening (Inside window jam)	mm	926	935	9
CX	Left Knee Bolster to X	mm	340	335	-5
DX	Right Knee Bolster to X	mm	320	305	-15
EX	Brake Pedal to X	mm	567	595	28
FX	Foot Rest to X	mm	675	685	10
GX	Center of Steering Wheel Hub to X	mm	193	180	-13



DATA SHEET NO. 16...(CONTINUED)
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2007 Suzuki XL7 5-Door MPV
 Test Program: 2007 NHTSA 35 MPH NCAP

NHTSA No.: M70512
 Test Date: 12/20/06



- 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: 2007 Suzuki XL7 5-Door MPV
 Test Program: 2007 NHTSA 35 MPH NCAP

NHTSA No.: M70512
 Test Date: 12/20/06

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	666	729	738	761	543	652	718	787	-123	-77	-20	26
2	610	660	664	684	501	600	664	751	-109	-60	0	67
3	544	564	573	584	457	525	593	682	-87	-39	20	98
4	457	466	474	481	377	447	515	598	-80	-19	41	117
5	350	362	372	382	291	361	435	519	-59	-1	63	137

DRIVER FLOOR PAN Y-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	-380	-296	-225	-87	-352	-268	-183	-78	28	28	42	9
2	-354	-249	-198	-84	-324	-239	-144	-50	30	10	54	34
3	-333	-224	-138	-30	-292	-191	-98	0	41	33	40	30
4	-239	-175	-77	87	-230	-133	-38	61	9	42	39	-26
5	-205	-102	0	145	-166	-84	18	119	39	18	18	-26

DRIVER FLOOR PAN Z-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	-33	19	16	-78	-78	2	6	7	-45	-17	-10	85
2	33	76	78	15	-4	66	75	96	-37	-10	-3	81
3	83	116	116	118	53	125	128	124	-30	9	12	6
4	116	118	119	119	105	115	120	125	-11	-3	1	6
5	112	116	120	120	94	113	121	124	-18	-3	1	4

DATA SHEET NO. 16...(CONTINUED)
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2007 Suzuki XL7 5-Door MPV
 Test Program: 2007 NHTSA 35 MPH NCAP

NHTSA No.: M70512
 Test Date: 12/20/06

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	625	598	420	287	603	517	411	277	-22	-81	-9	-10
2	594	501	389	265	587	488	376	231	-7	-13	-13	-34
3	587	468	365	204	563	457	343	198	-24	-11	-22	-6
4	540	435	325	206	532	423	310	183	-8	-12	-15	-23
5	510	398	298	164	504	392	281	151	-6	-6	-17	-13

PASSENGER FLOOR PAN Y-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	542	597	651	690	512	583	617	680	-30	-14	-34	-10
2	484	539	597	657	474	526	569	631	-10	-13	-28	-26
3	435	445	526	590	412	457	506	559	-23	12	-20	-31
4	354	398	431	480	328	371	413	467	-26	-27	-18	-13
5	264	297	350	380	237	278	319	369	-27	-19	-31	-11

PASSENGER FLOOR PAN Z-AXIS

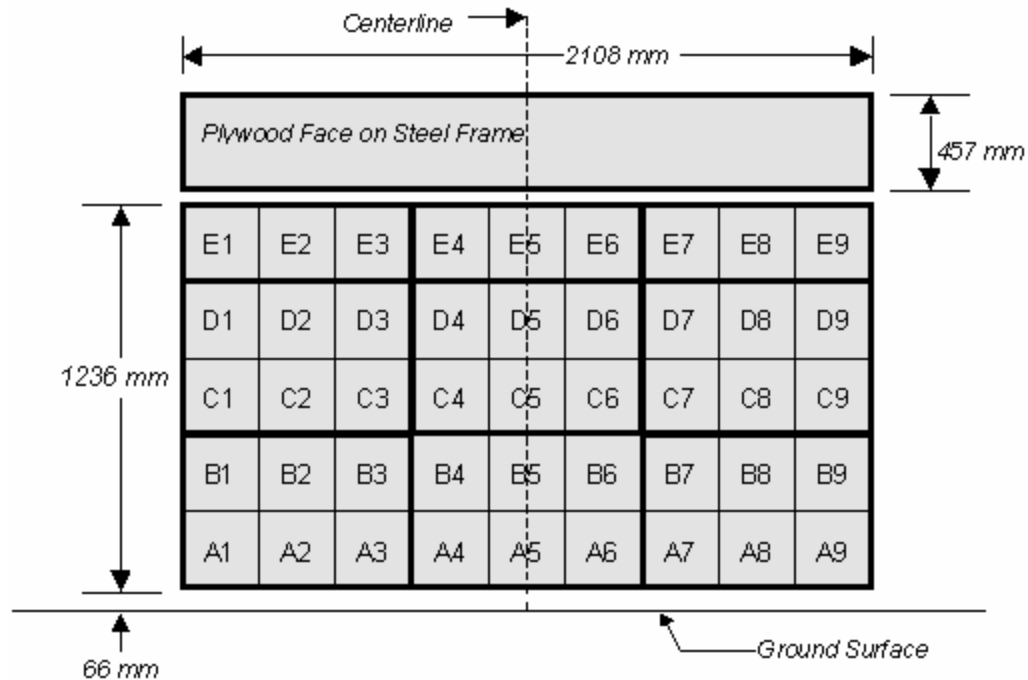
	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	-18	-14	-18	-43	5	-11	-35	-59	23	3	-17	-16
2	52	51	49	50	68	71	61	34	16	20	12	-16
3	99	104	104	101	140	135	121	97	41	31	17	-4
4	120	118	119	108	157	147	131	90	37	29	12	-18
5	119	119	118	107	148	141	127	88	29	22	9	-19

DATA SHEET NO. 17
FIXED BARRIER LOAD CELL LOCATIONS

Test Vehicle: 2007 Suzuki XL7 5-Door MPV
 Test Program: 2007 NHTSA 35 MPH NCAP

NHTSA No.: M70512
 Test Date: 12/20/06

45 Load Cell Rigid Barrier (NTHSA 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

ACCIDENT INVESTIGATION DIVISION DATA

Test Vehicle: 2007 Suzuki XL7 5-Door MPV
Test Program: 2007 NHTSA 35 MPH NCAP

NHTSA No.: M70512
Test Date: 12/20/06

VEHICLE INFORMATION

VIN: 2S3DB217976104525
Vehicle Size Category: 5-Door

Wheel base (mm): 2880
Test Weight (kg): 2085

ACCELEROMETER DATA

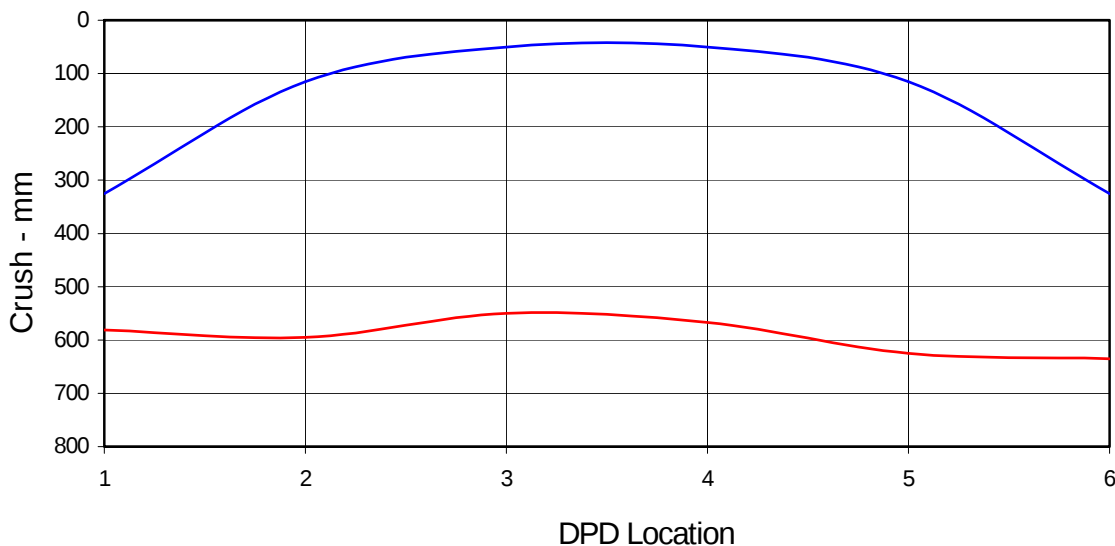
Accelerometer Location: Left rear cross member
Cal. Procedure/Interval: 6 months / drop test
Integration Algorithm: NHTSA Standard
Impact Velocity (km/h): 56.19
Velocity Change (km/h): 65.7

Linearity: Good
Time of Separation (msec): 75.4

CRUSH PROFILE

Collision Deformation Classification: 12FDEW6 Midpoint of Damage: Vehicle Centerline
Damage Region Length (mm): 1500 Impact Mode: Full Frontal

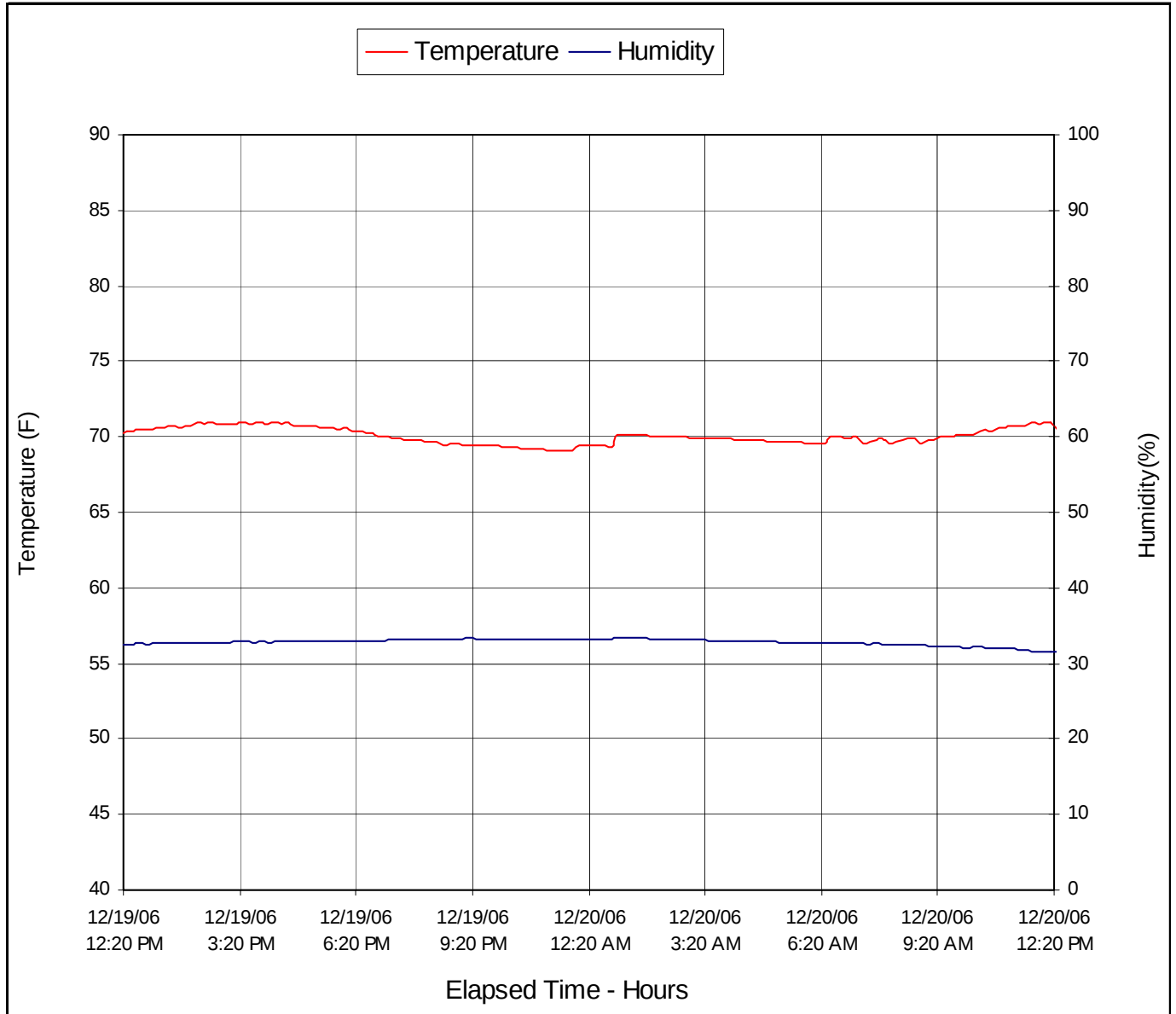
No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush zone 1 at left side	mm	325	581	-256
C2	Crush zone 2 on left side	mm	115	595	-480
C3	Crush zone 3 on left side	mm	50	550	-500
C4	Crush zone 4 on right side	mm	50	567	-517
C5	Crush zone 5 on right side	mm	115	625	-510
C6	Crush zone 6 at right side	mm	325	635	-310



DATA SHEET NO. 19
DUMMY/VEHICLE TEMPERATURE STABILIZATION

Test Vehicle: 2007 Suzuki XL7 5-Door MPV
Test Program: 2007 NHTSA 35 MPH NCAP

NHTSA No.: M70512
Test Date: 12/20/06



APPENDIX A
PHOTOGRAPHS

LIST OF PHOTOGRAPHS

<u>Figure</u>		<u>Page</u>
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

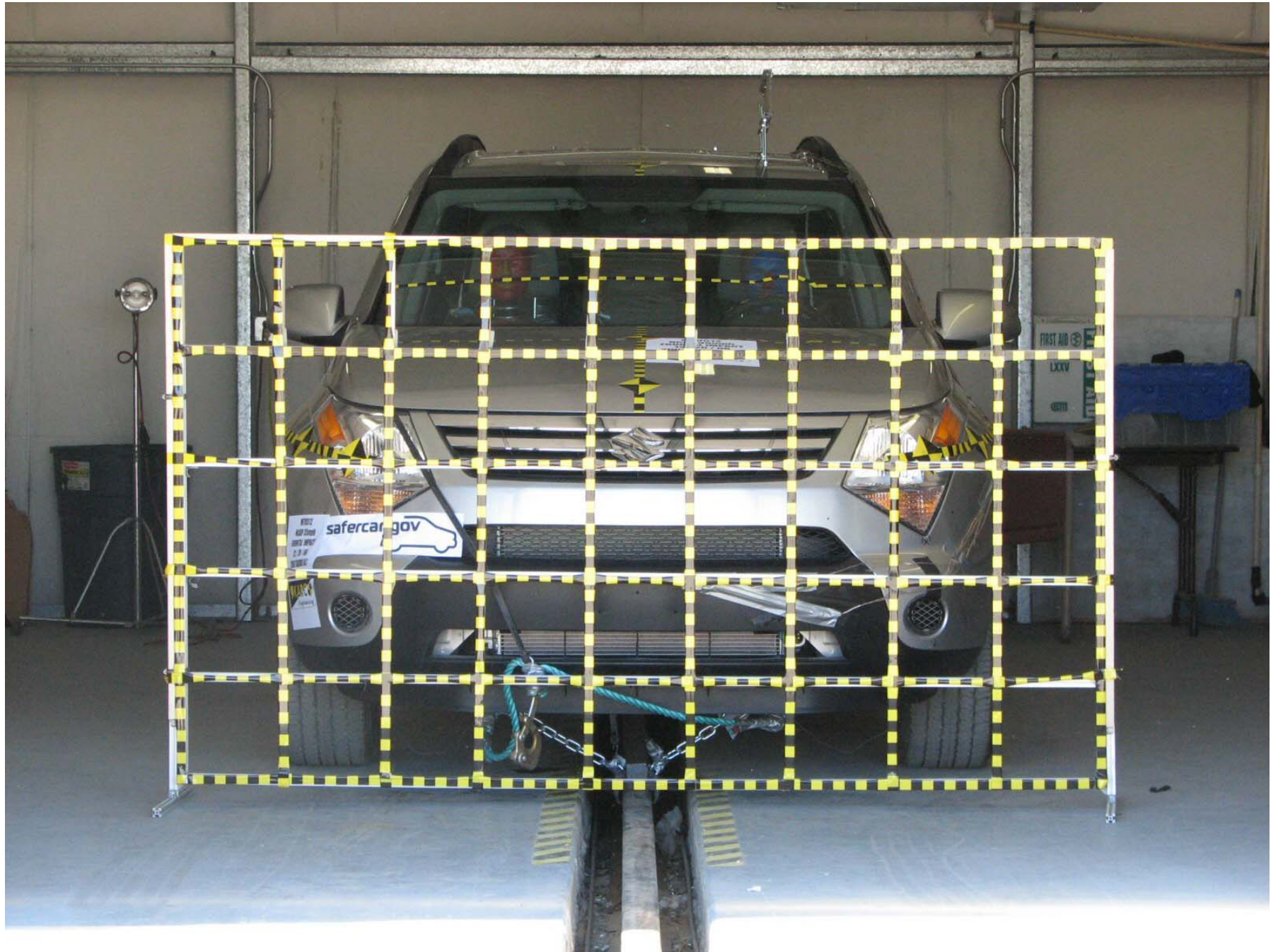


Figure A-1: Load Cell Location

This Space Intentionally Left Blank

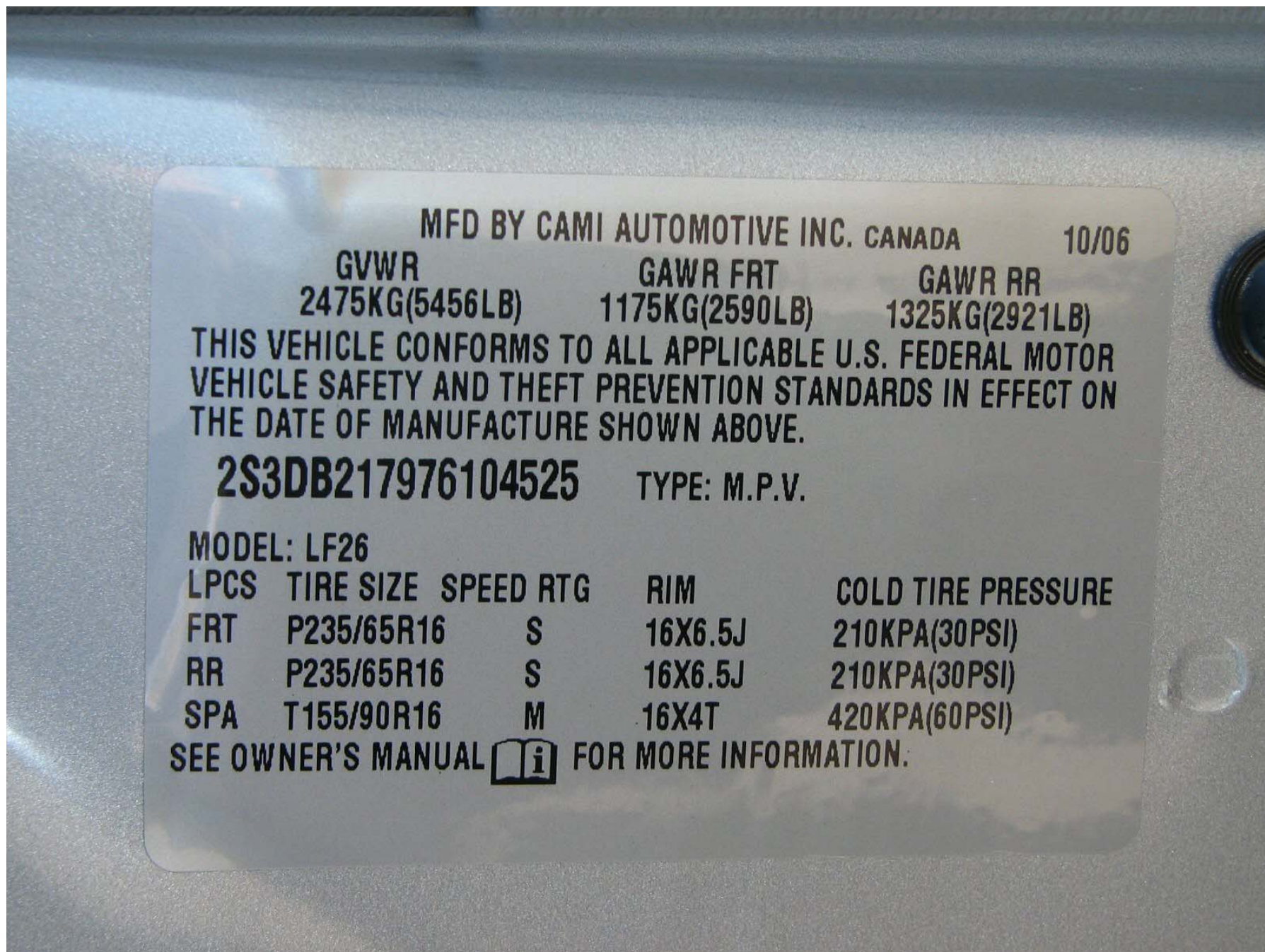


Figure A-2: Manufacturer's Label

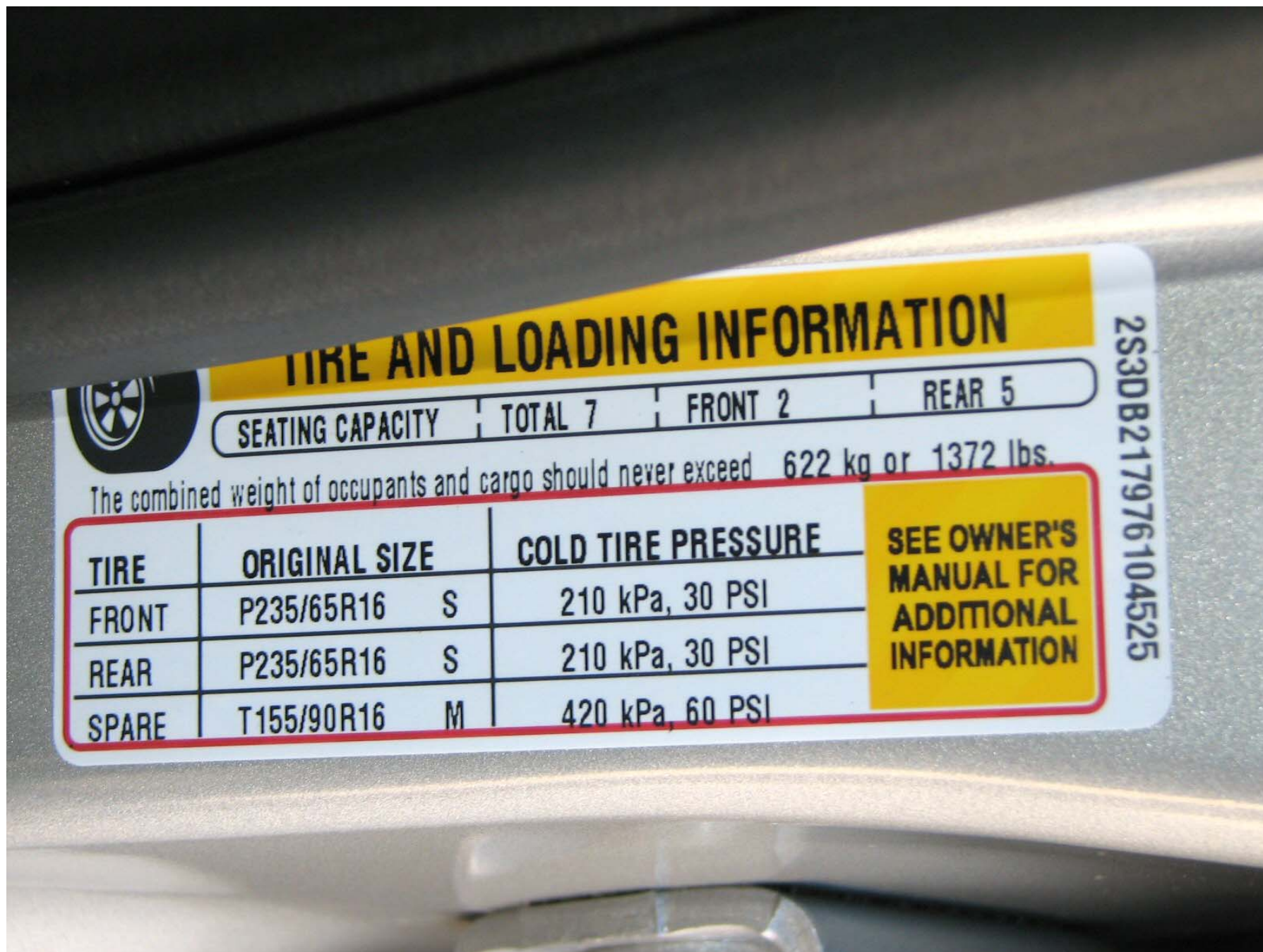


Figure A-3: Tire Placard



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

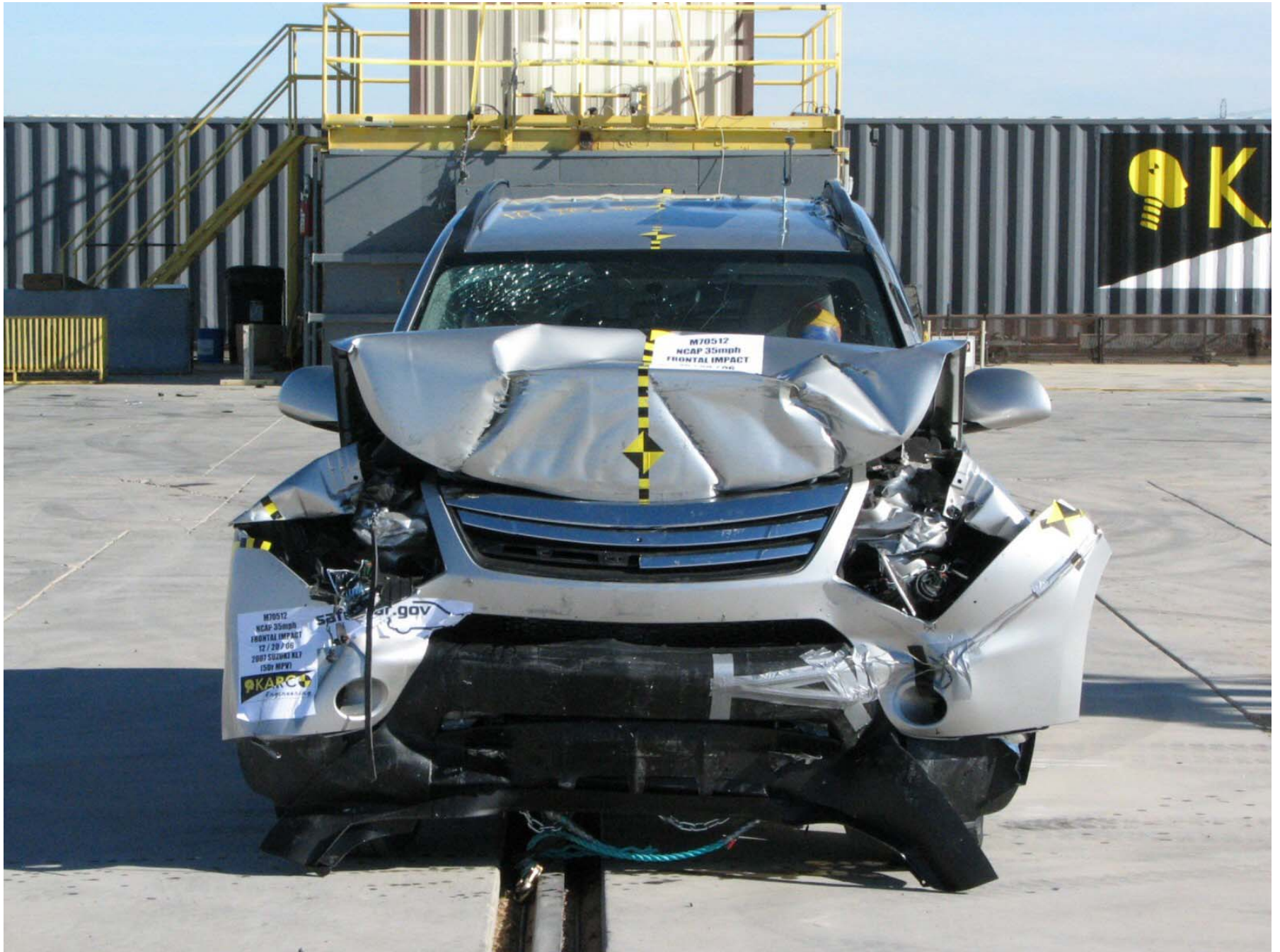


Figure A-7: Post-Test Front View (Vehicle Moved)



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 3/4 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

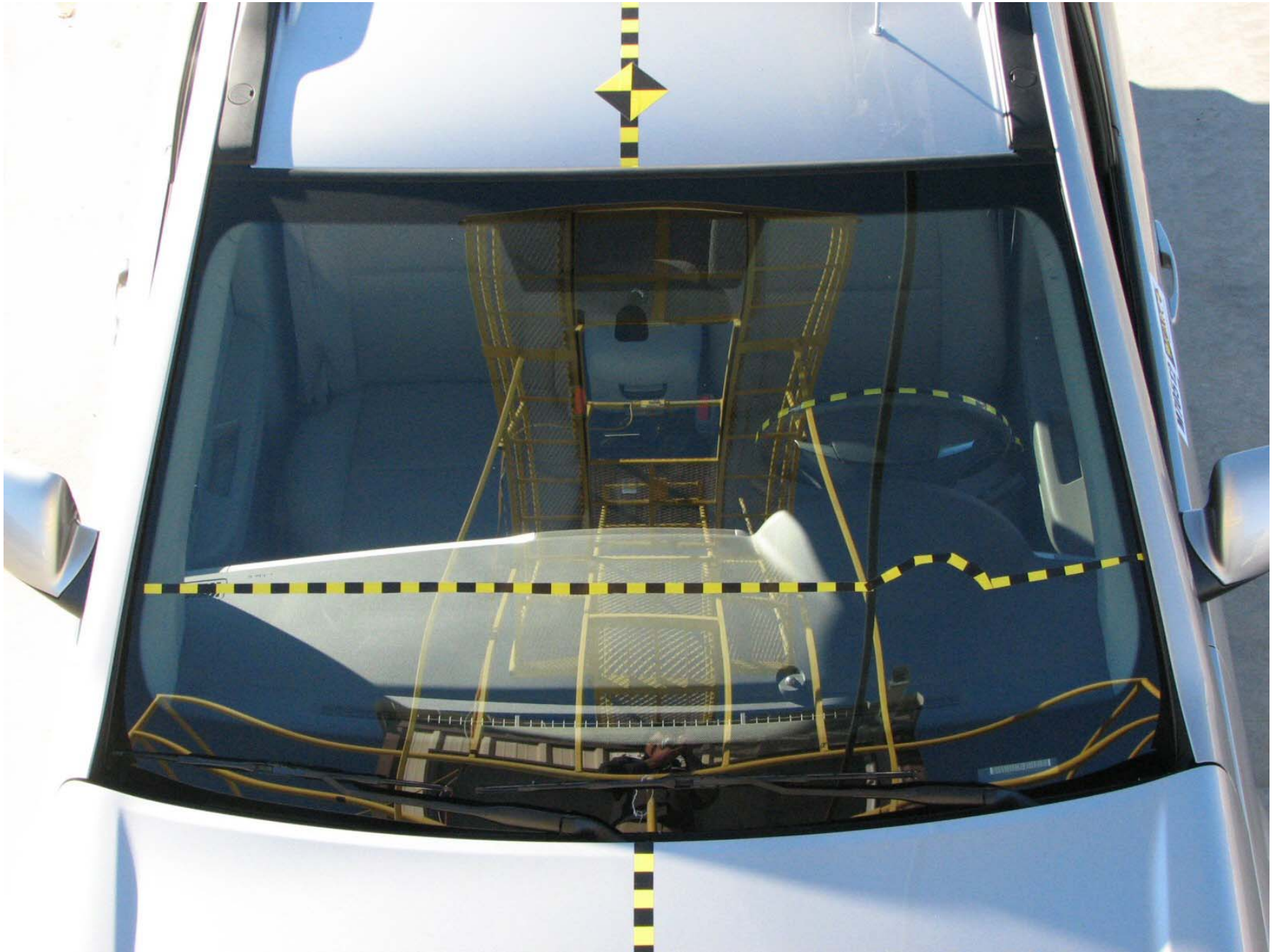


Figure A-18: Pre-Test Windshield



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

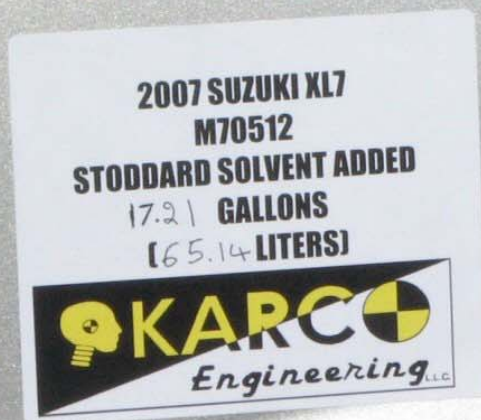


Figure A-23: Post-Test Fuel Cap

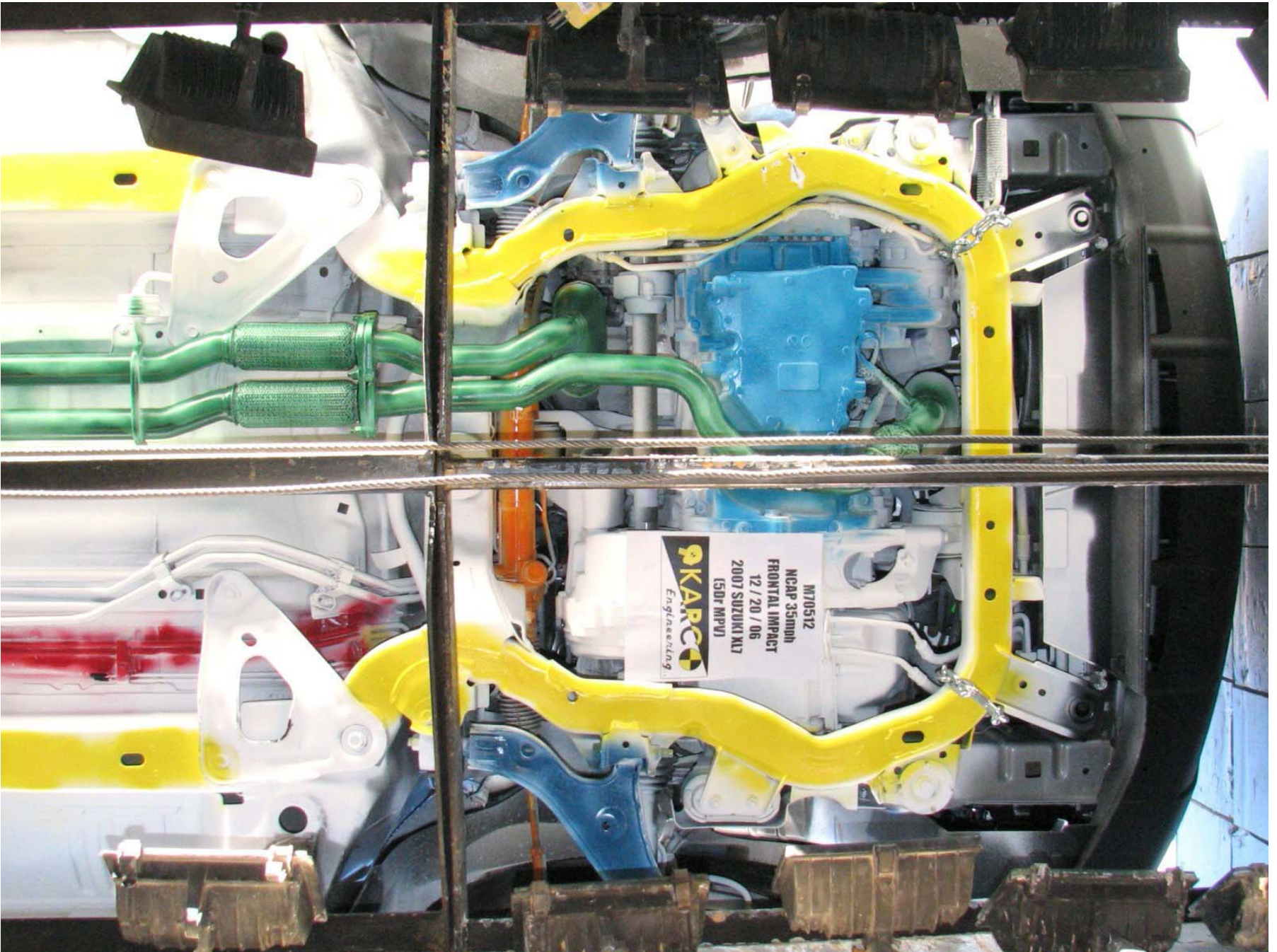


Figure A-24: Pre-Test Front Underbody

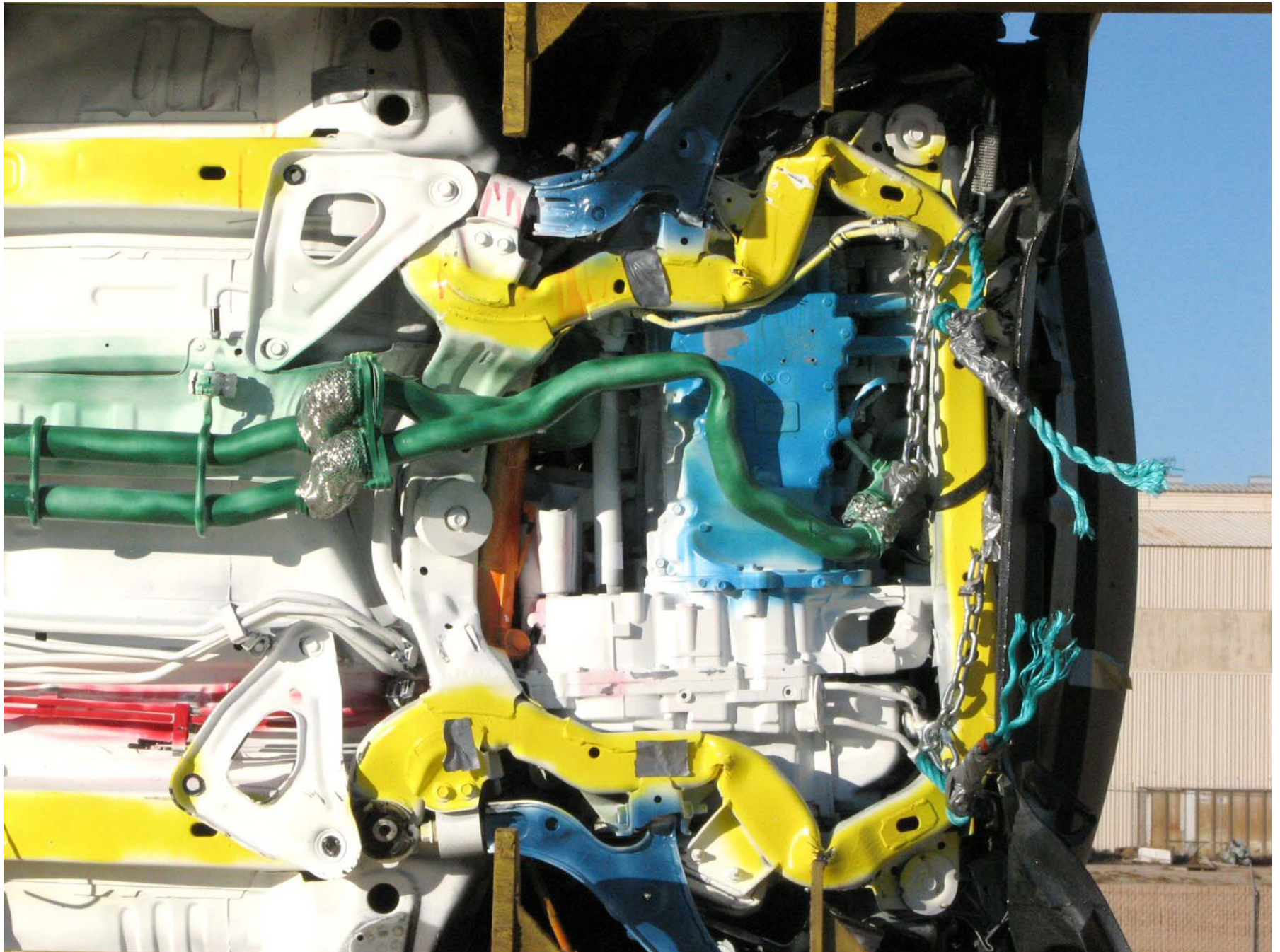


Figure A-25: Post-Test Front Underbody

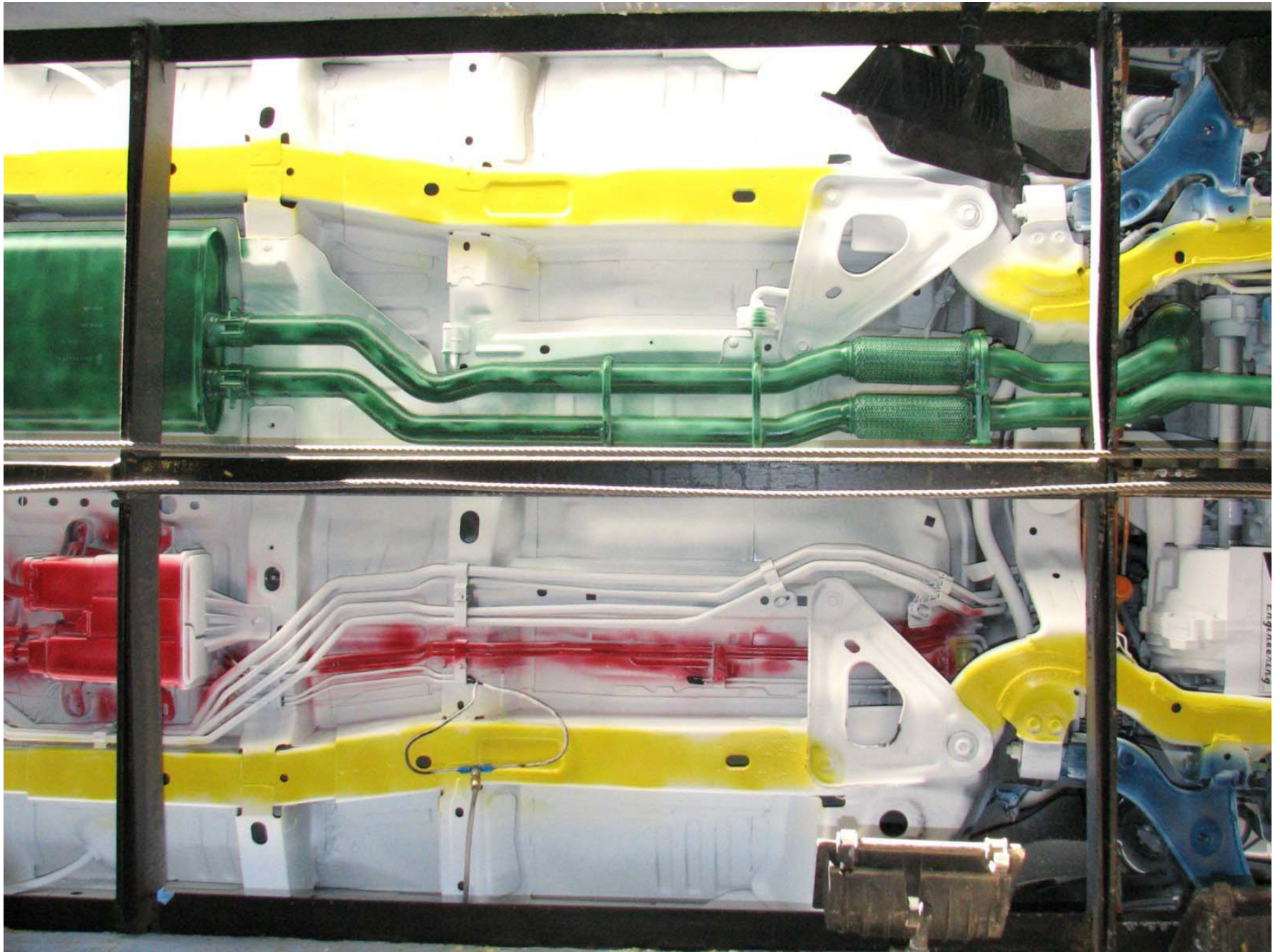


Figure A-26: Pre-Test Mid Underbody

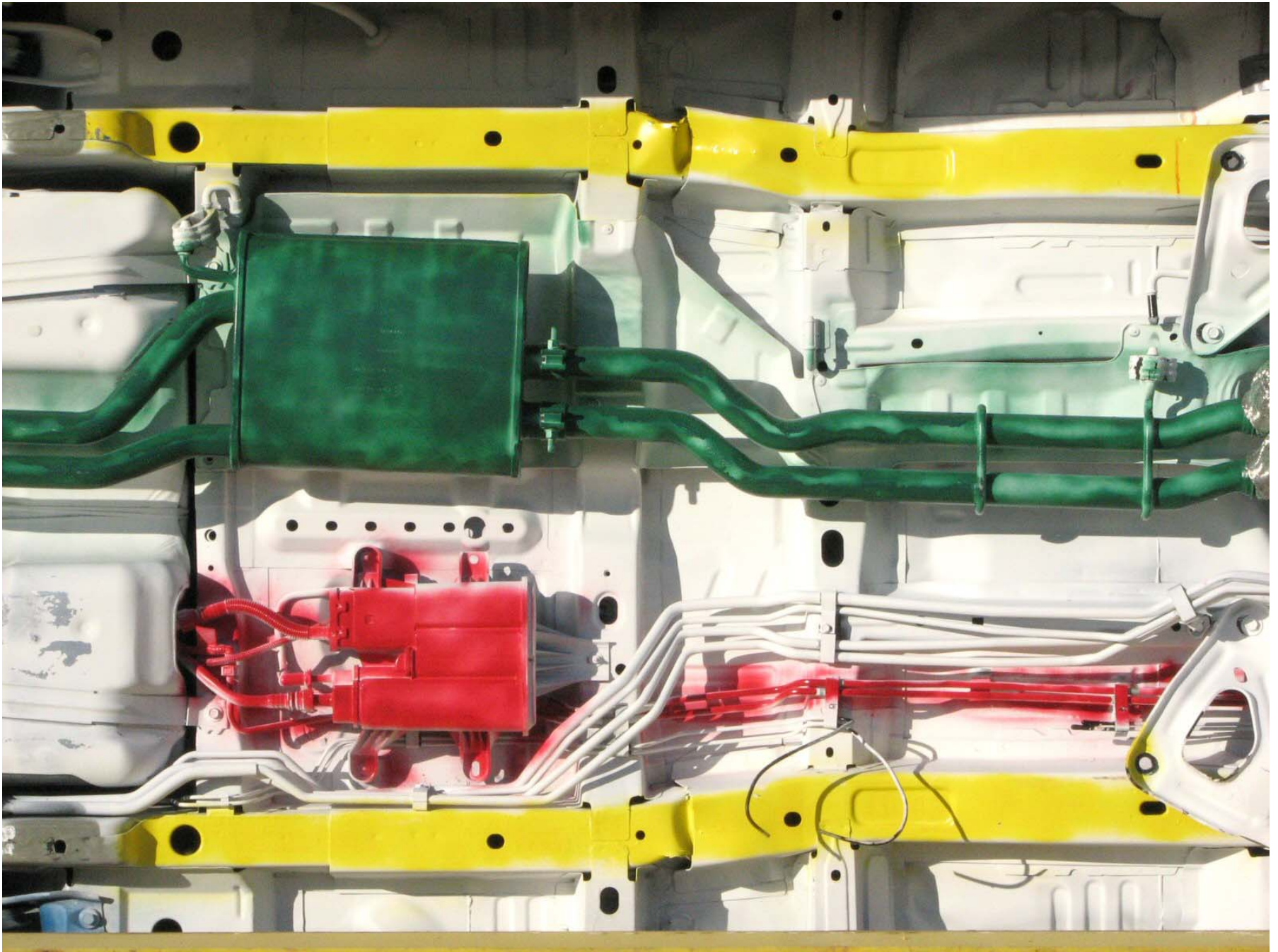


Figure A-27: Post-Test Mid Underbody

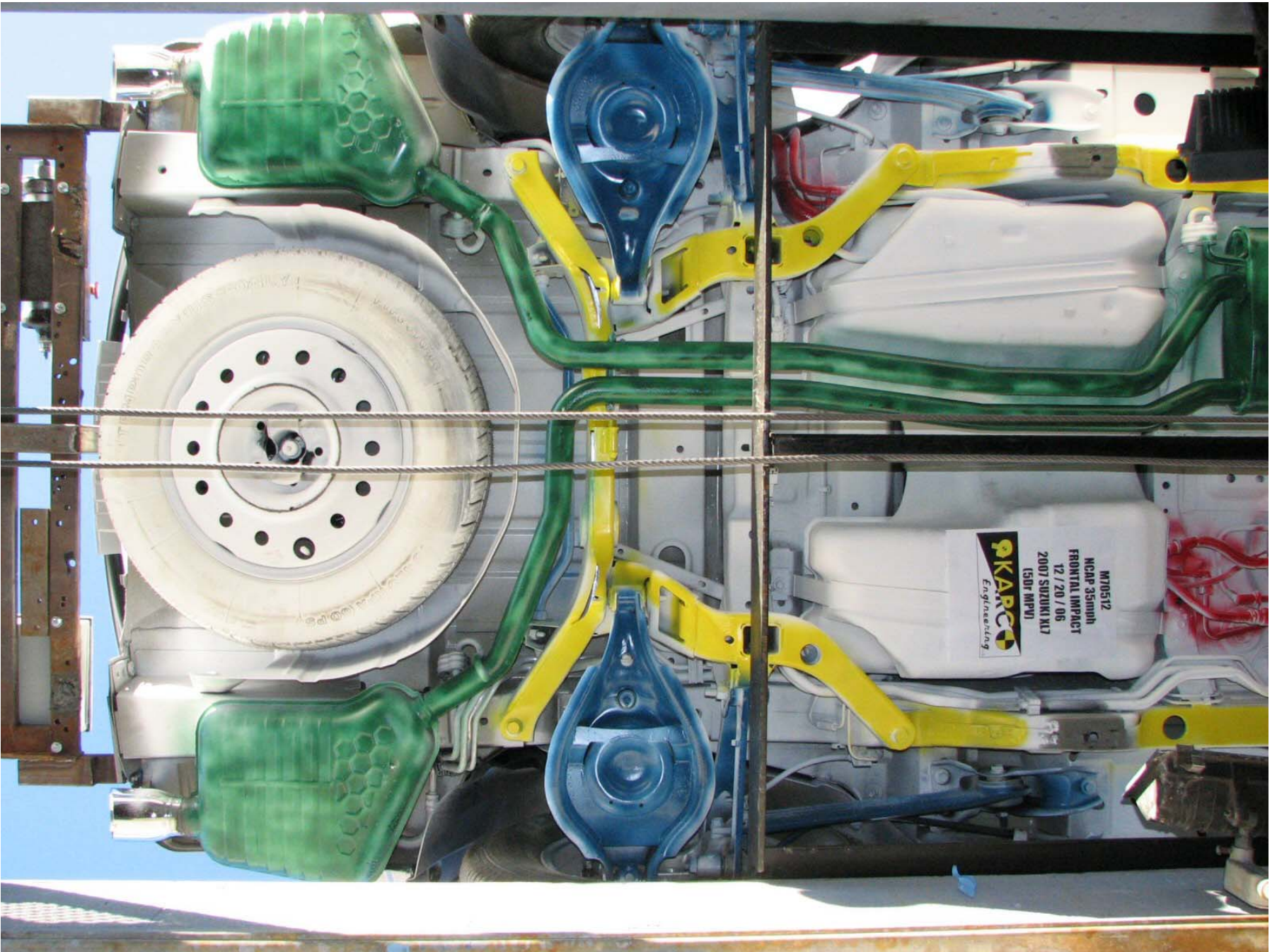


Figure A-28: Pre-Test Rear Underbody

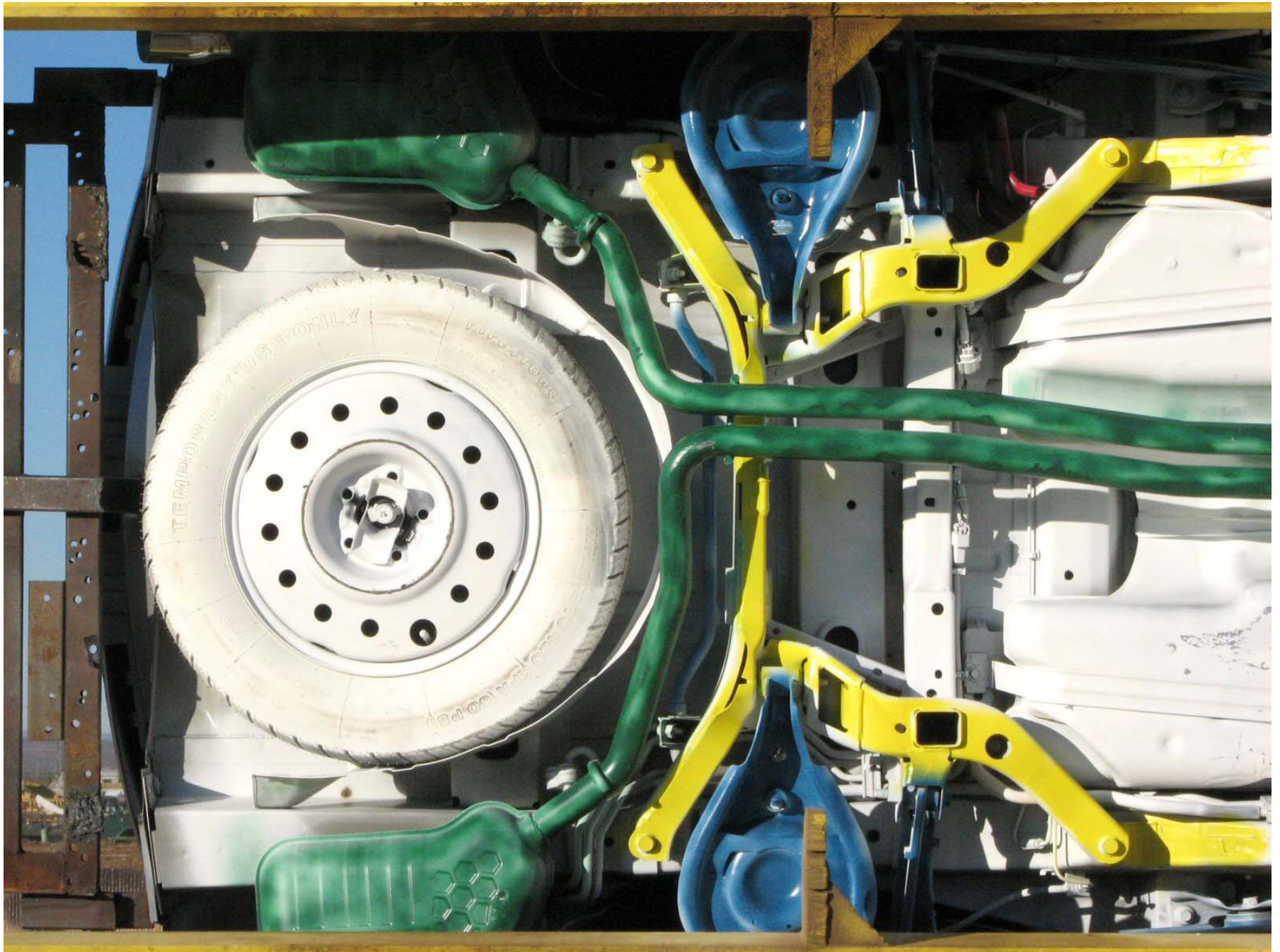


Figure A-29: Post-Test Rear Underbody



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

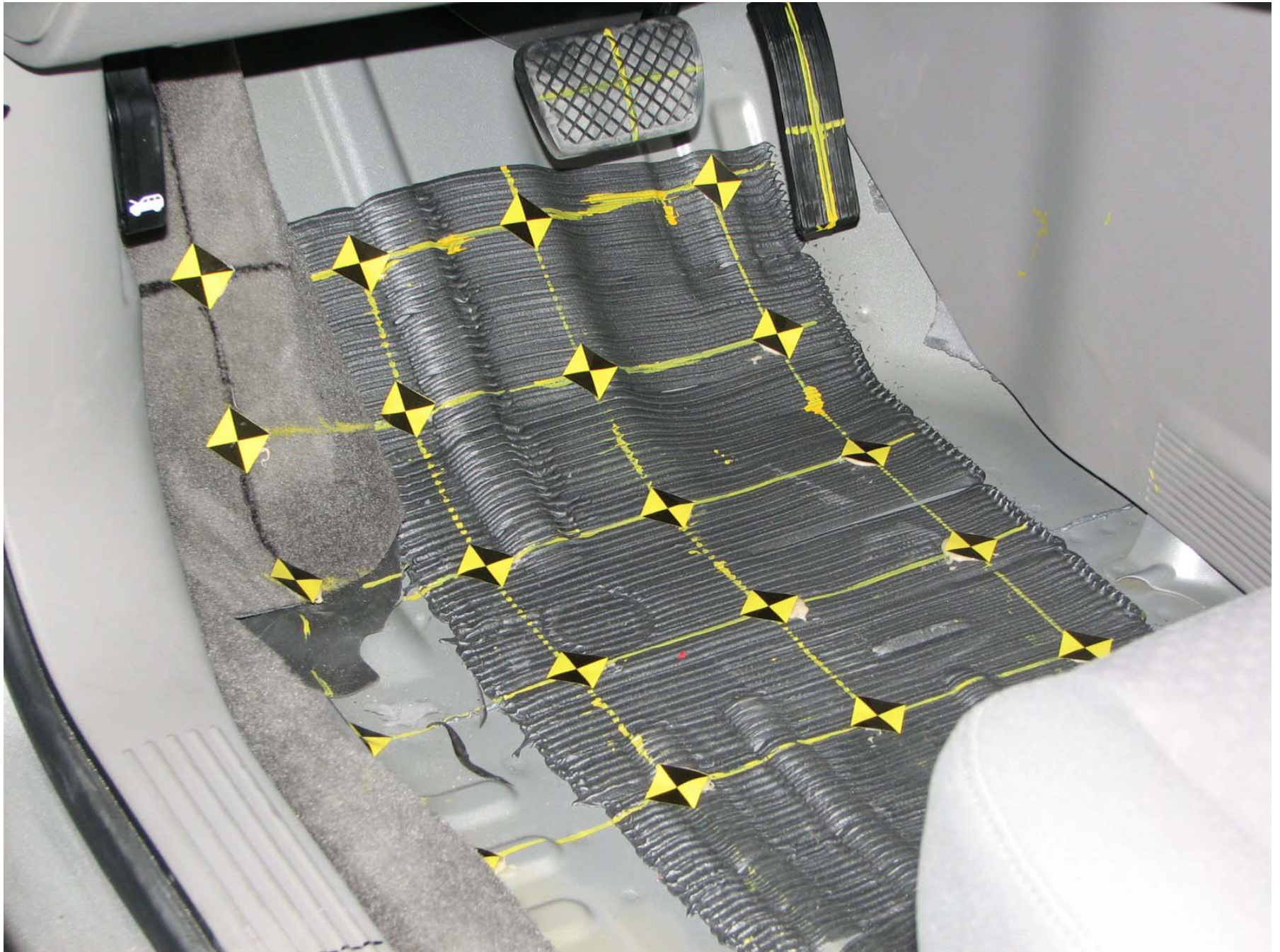


Figure A-40: Pre-Test Driver Side Floor Pan



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)





M70512 **PKARC**
Engineering

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

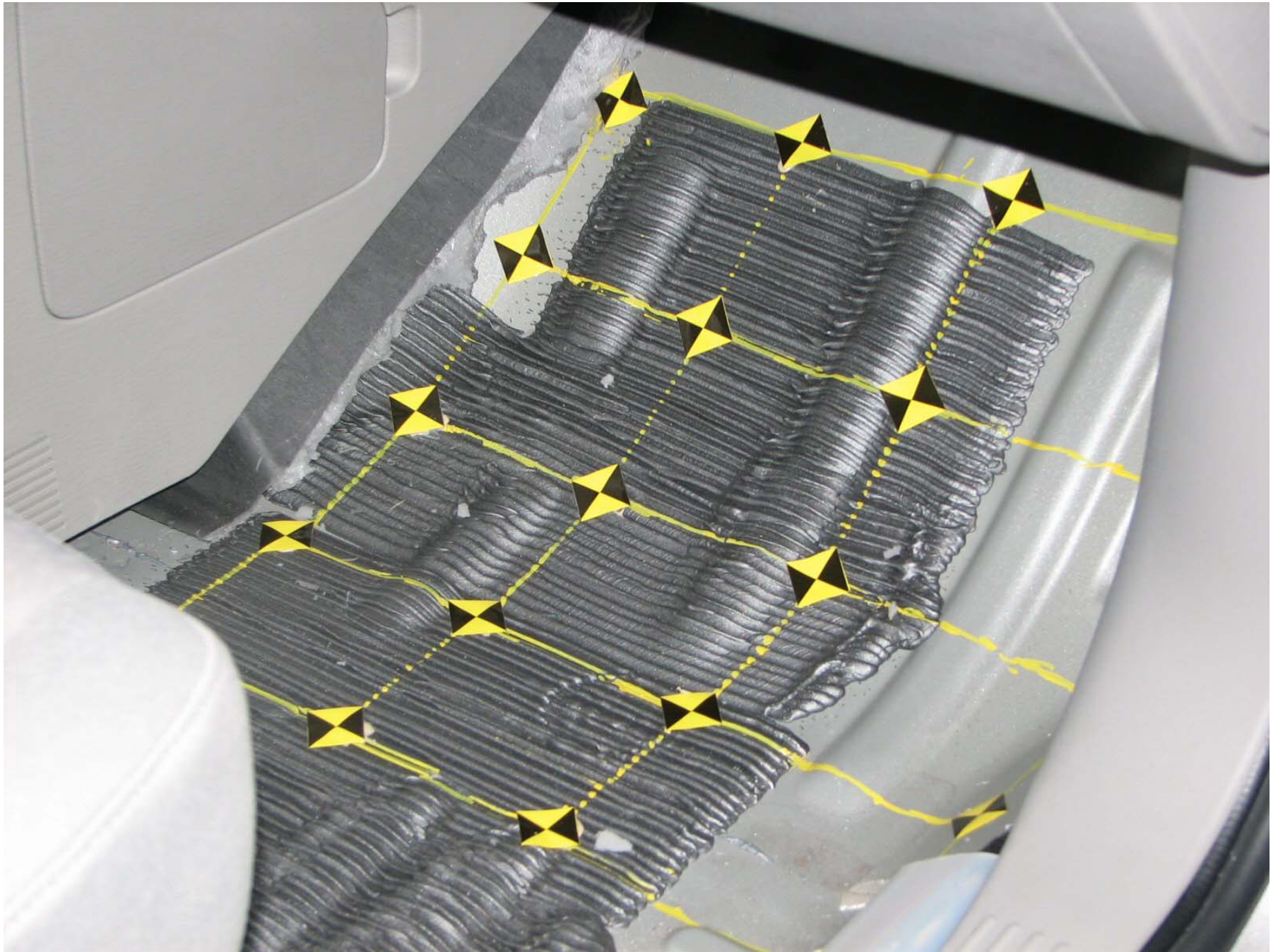


Figure A-54: Pre-Test Passenger Side Floor Pan



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°)

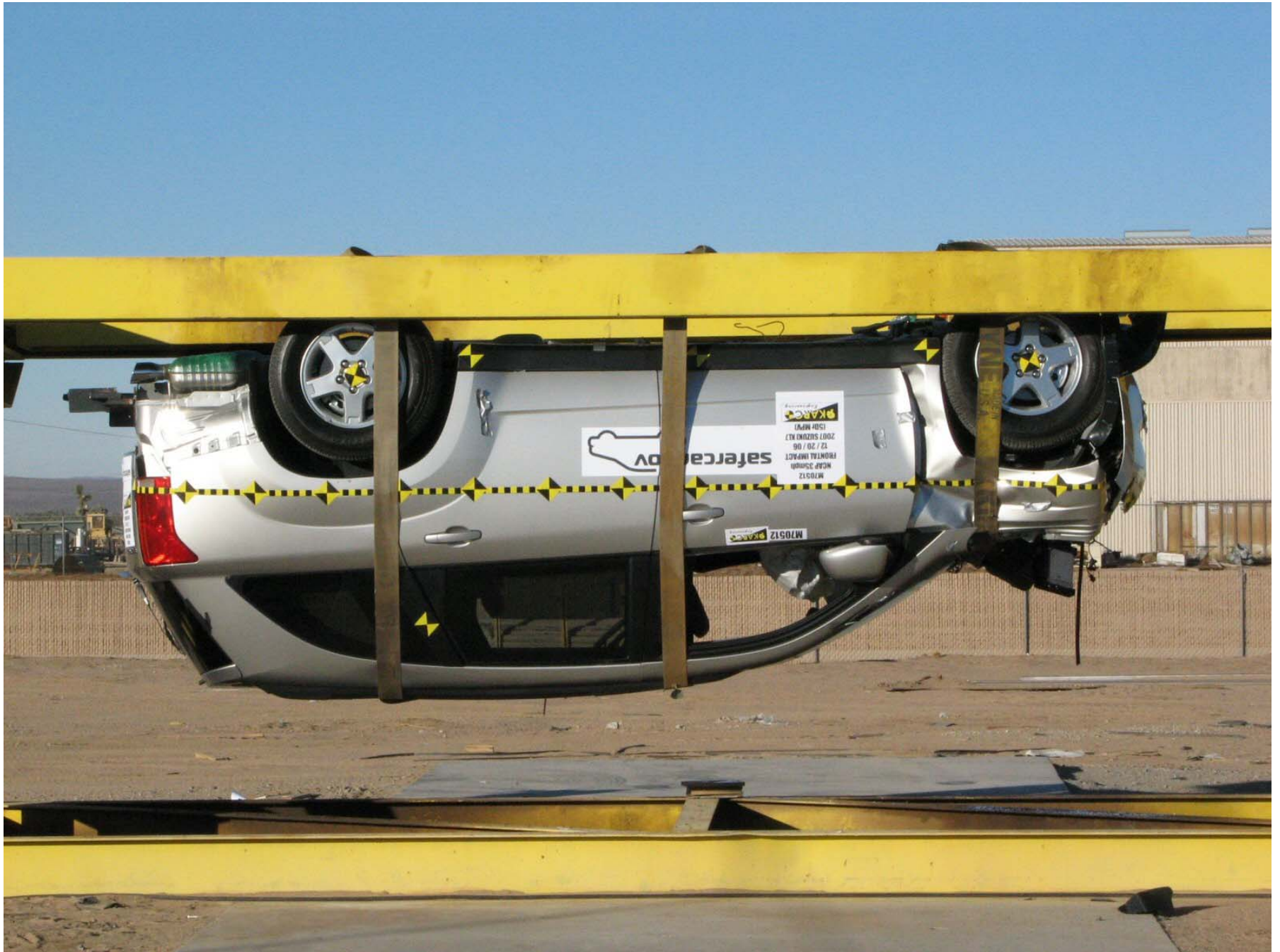


Figure A-60: Vehicle on Rollover Device (180°)

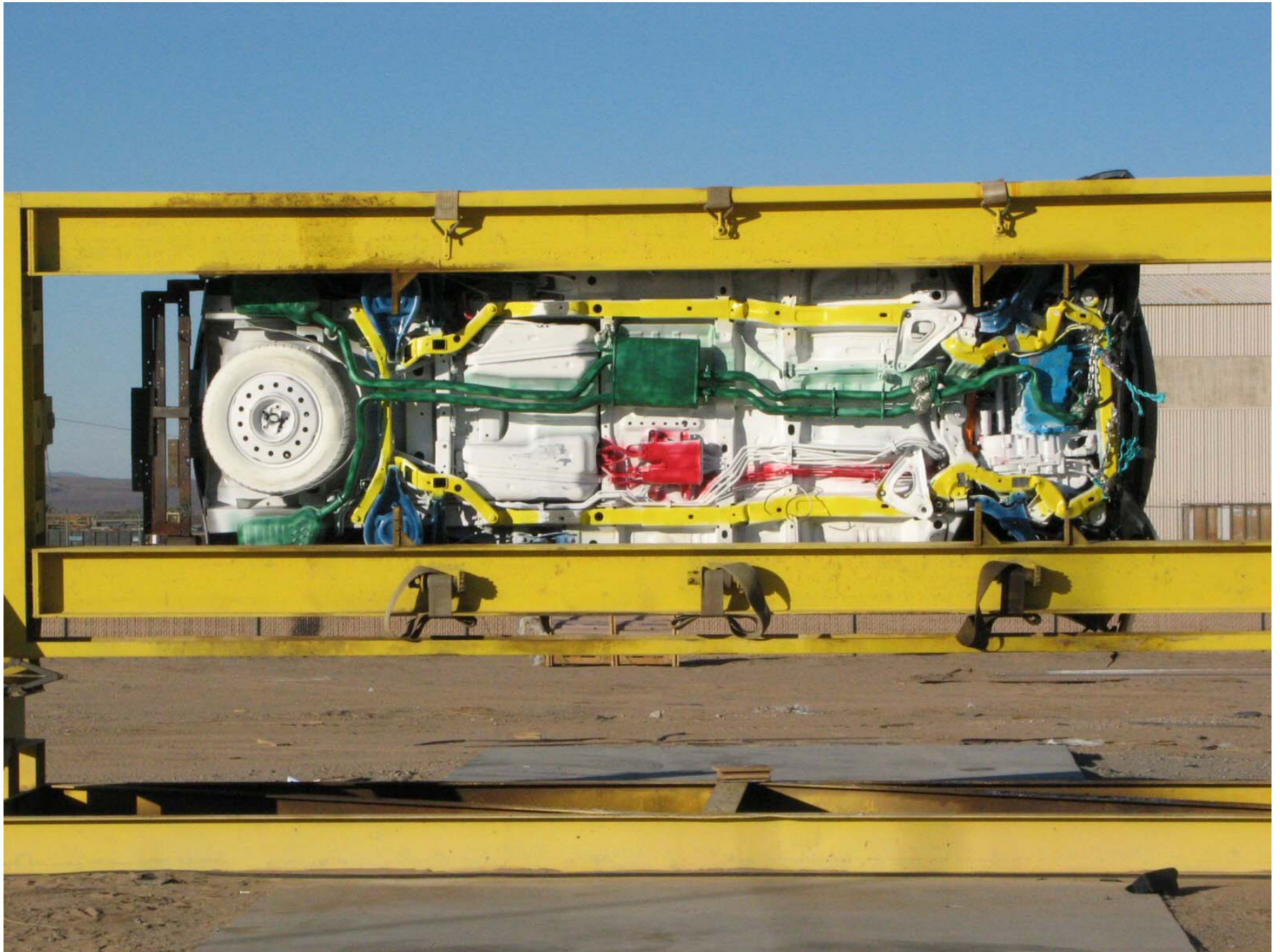


Figure A-61: Vehicle on Rollover Device (270°)



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)

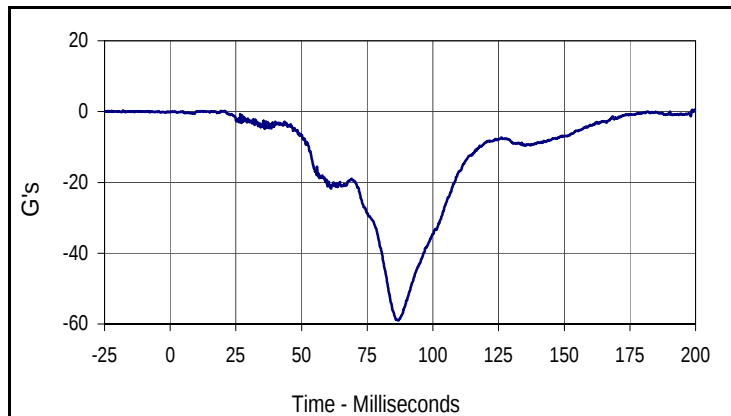
Passenger Chest Redundant Y
Passenger Chest Redundant Z
Passenger Chest Resultant Redundant
Passenger Chest Redundant X Velocity
Passenger Chest Redundant X Displacement
Passenger Chest Displacement
Passenger Pelvis X
Passenger Pelvis Y
Passenger Pelvis Z
Passenger Pelvis Resultant
Passenger Pelvis X 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)

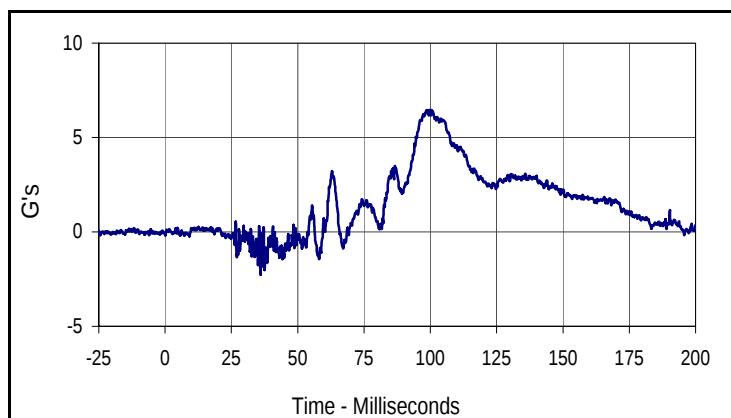
Vehicle Left Rear X Displacement
Vehicle Right Rear X
Vehicle Right Rear X Velocity
Vehicle Right Rear X Displacement
Vehicle Engine Top
Vehicle Engine Top Velocity
Vehicle Engine Top Displacement
Vehicle Engine Bottom
Vehicle Engine Bottom Velocity
Vehicle Engine Bottom Displacement
Vehicle Left Brake 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: 2007 Suzuki XL7 5-Door MPV
 Test Program: 2007 NHTSA 35mph NCAP

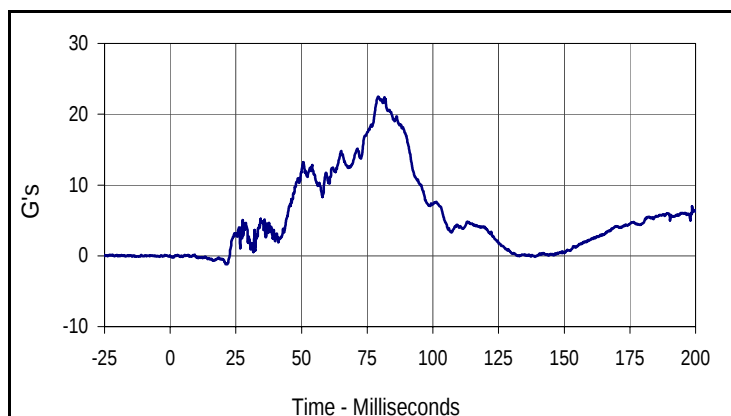
Test Date: 12/20/06
 NHTSA No.: M70512



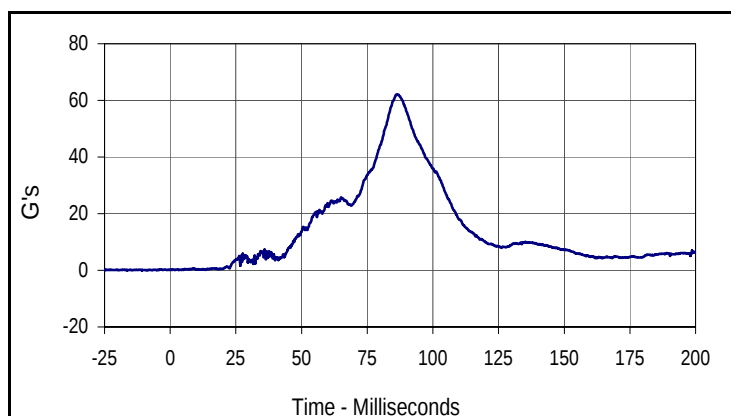
Curve Description			
Driver Head Primary X			
CURNO	Type	SAE Class	Units
001	FIL	1000	G's
Max	Time	Min	Time
0.5	199.5	-59.0	86.8



Curve Description			
Driver Head Primary Y			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
6.5	100.5	-2.3	36.0



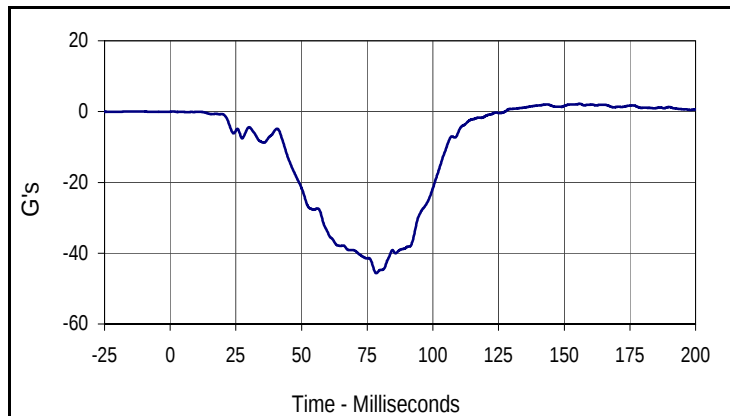
Curve Description			
Driver Head Primary Z			
CURNO	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
22.5	79.2	-1.2	21.7



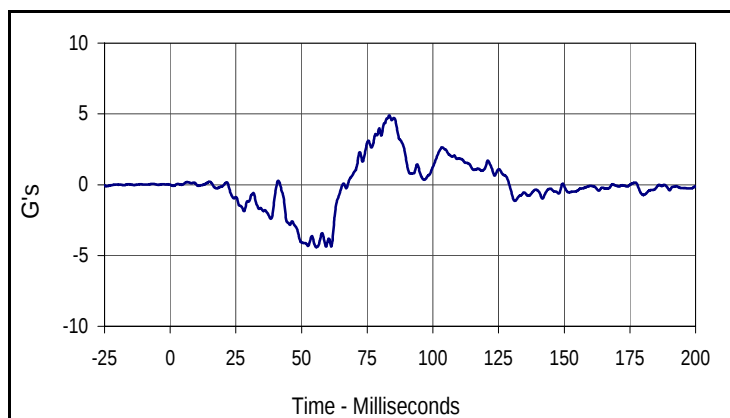
Curve Description			
Driver Head Resultant Primary			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
62.1	86.7	0.1	2.0

Test Vehicle: 2007 Suzuki XL7 5-Door MPV
 Test Program: 2007 NHTSA 35mph NCAP

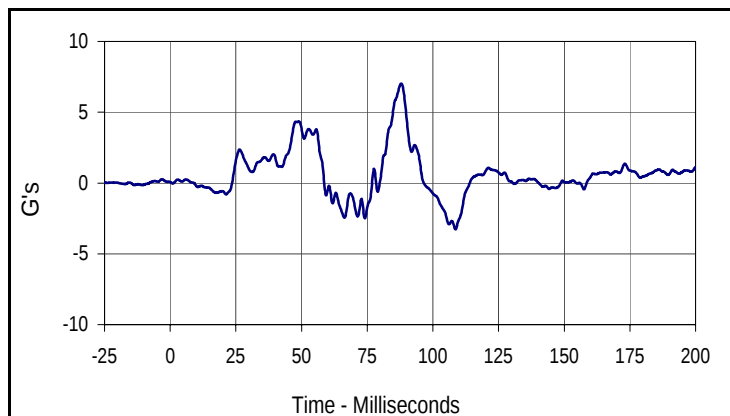
Test Date: 12/20/06
 NHTSA No.: M70512



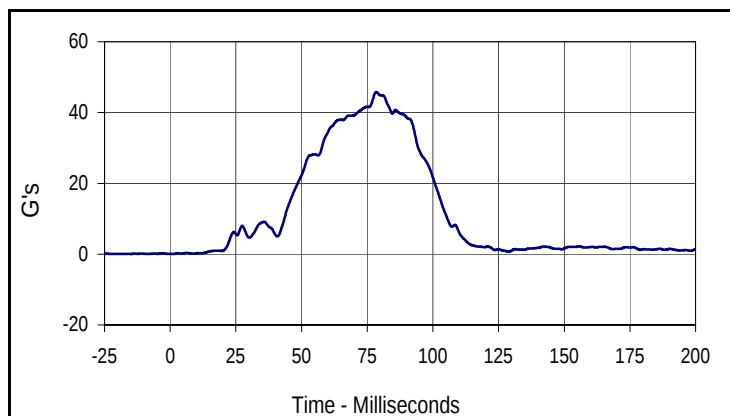
Curve Description			
Driver Chest Primary X			
CURNO	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
2.2	156.0	-45.7	78.4



Curve Description			
Driver Chest Primary Y			
CURNO	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
4.9	83.4	-4.4	55.6



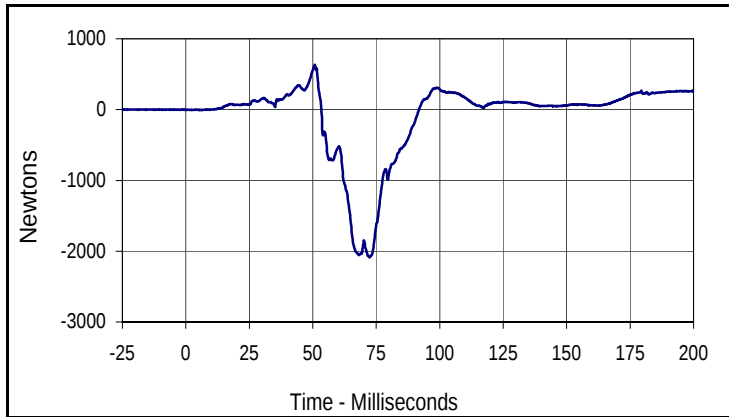
Curve Description			
Driver Chest Primary Z			
CURNO	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
7.0	88.0	-3.3	108.6



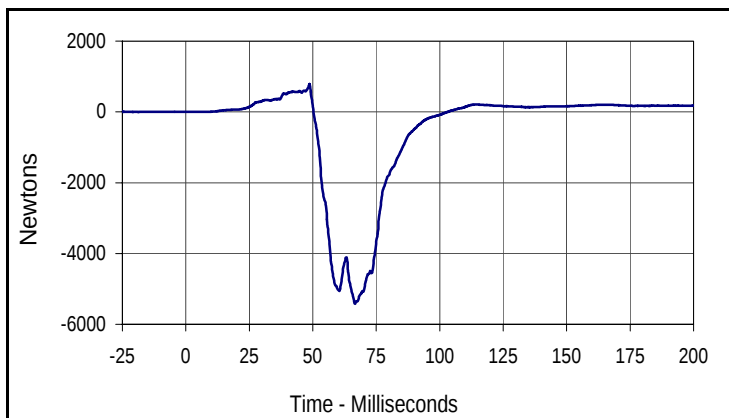
Curve Description			
Driver Chest Resultant Primary			
CURNO	Type	SAE Class	Units
004	RES	180	G's
Max	Time	Min	Time
45.8	78.4	0.0	0.4

Test Vehicle: 2007 Suzuki XL7 5-Door MPV
 Test Program: 2007 NHTSA 35mph NCAP

Test Date: 12/20/06
 NHTSA No.: M70512



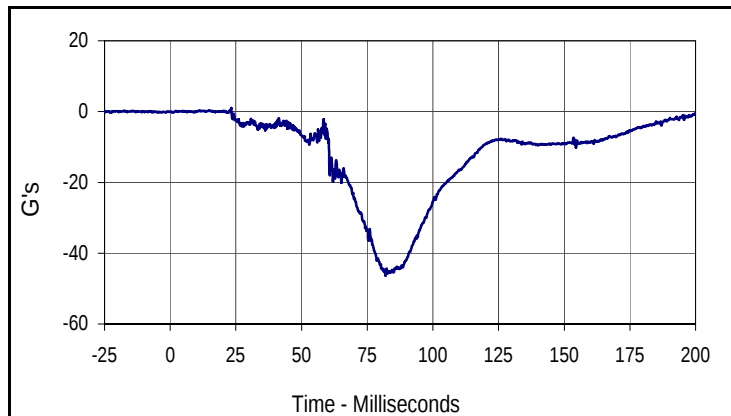
Curve Description			
Driver Left Femur Force Z			
CURNO	Type	SAE Class	Units
007	FIL	600	Newtons
Max	Time	Min	Time
634.9	50.8	-2086.6	72.3



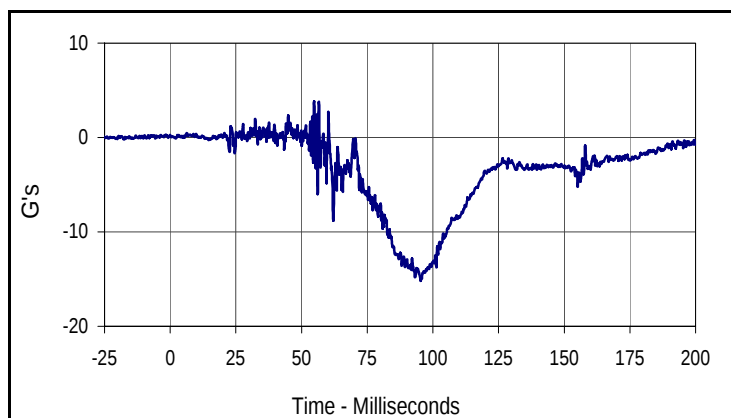
Curve Description			
Driver Right Femur Force Z			
CURNO	Type	SAE Class	Units
008	FIL	600	Newtons
Max	Time	Min	Time
784.8	48.7	-5422.1	66.7

Test Vehicle: 2007 Suzuki XL7 5-Door MPV
 Test Program: 2007 NHTSA 35mph NCAP

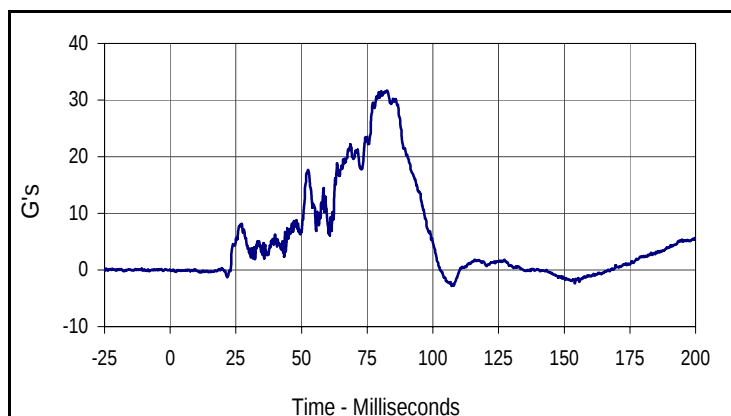
Test Date: 12/20/06
 NHTSA No.: M70512



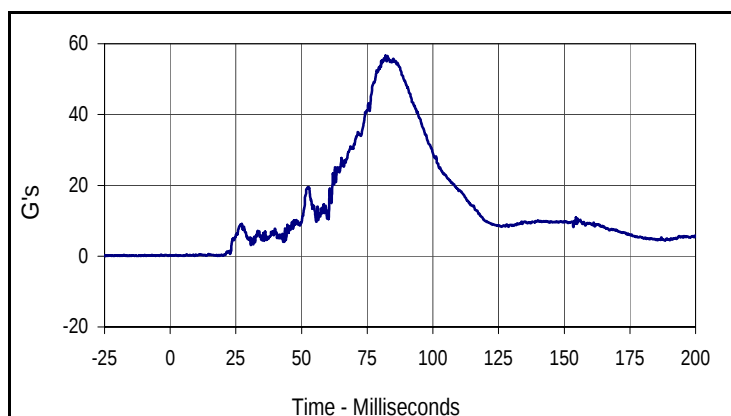
Curve Description			
Passenger Head Primary X			
CURNO	Type	SAE Class	Units
009	FIL	1000	G's
Max	Time	Min	Time
1.0	23.2	-46.3	82.0



Curve Description			
Passenger Head Primary Y			
CURNO	Type	SAE Class	Units
010	FIL	1000	G's
Max	Time	Min	Time
3.8	54.8	-15.2	95.4



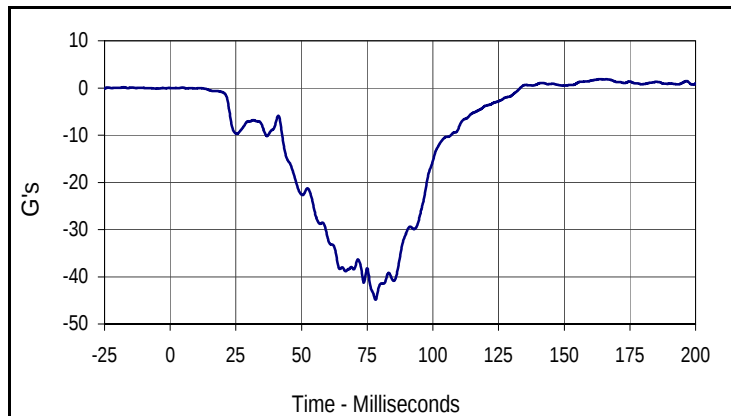
Curve Description			
Passenger Head Primary Z			
CURNO	Type	SAE Class	Units
011	FIL	1000	G's
Max	Time	Min	Time
31.7	82.6	-2.8	107.1



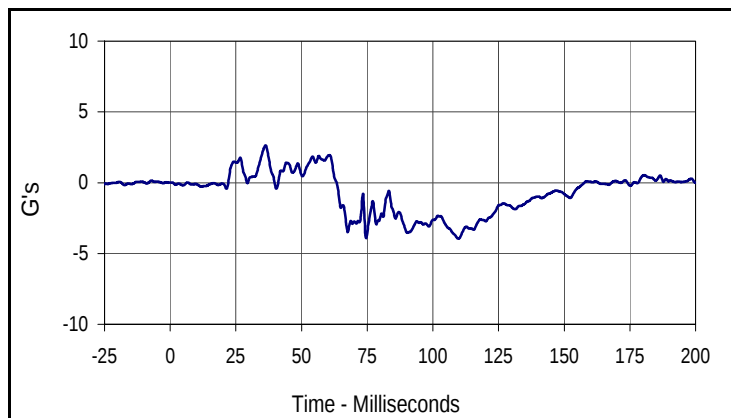
Curve Description			
Passenger Head Resultant Primary			
CURNO	Type	SAE Class	Units
009	RES	1000	G's
Max	Time	Min	Time
56.6	82.0	0.1	18.9

Test Vehicle: 2007 Suzuki XL7 5-Door MPV
 Test Program: 2007 NHTSA 35mph NCAP

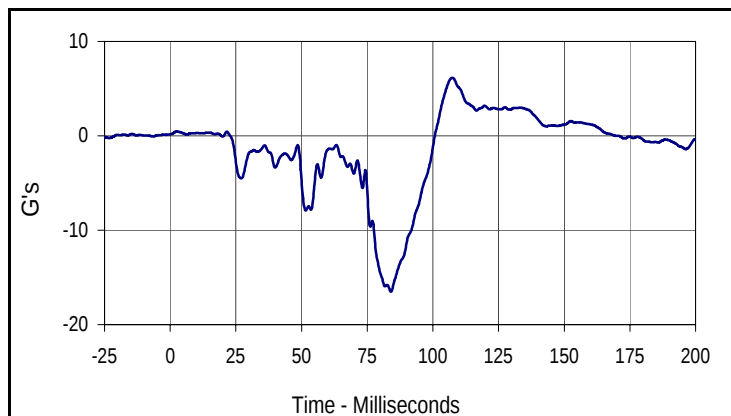
Test Date: 12/20/06
 NHTSA No.: M70512



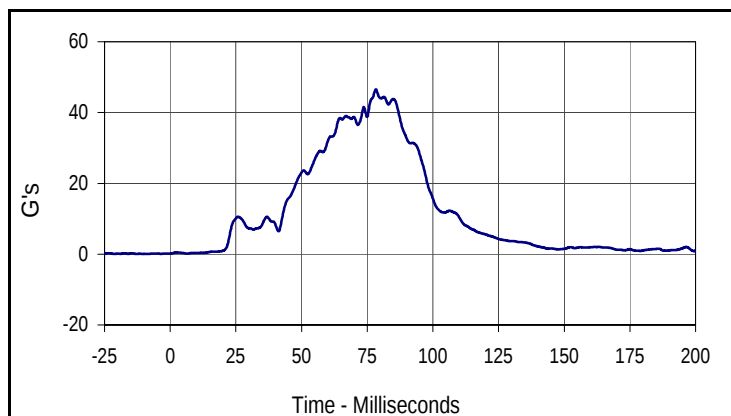
Curve Description			
Passenger Chest Primary X			
CURNO	Type	SAE Class	Units
012	FIL	180	G's
Max	Time	Min	Time
1.9	163.5	-44.9	78.2



Curve Description			
Passenger Chest Primary Y			
CURNO	Type	SAE Class	Units
013	FIL	180	G's
Max	Time	Min	Time
2.6	36.3	-3.9	109.6



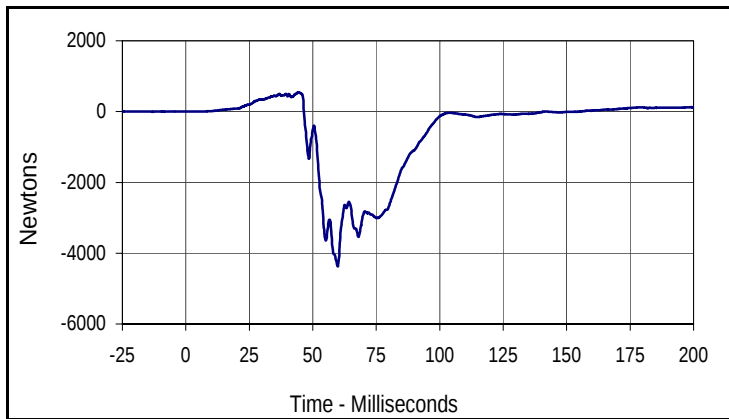
Curve Description			
Passenger Chest Primary Z			
CURNO	Type	SAE Class	Units
014	FIL	180	G's
Max	Time	Min	Time
6.2	107.4	-16.5	84.0



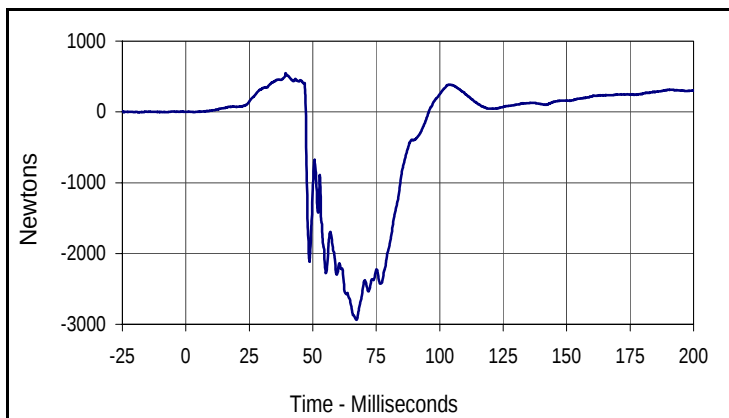
Curve Description			
Passenger Chest Resultant Primary			
CURNO	Type	SAE Class	Units
012	RES	180	G's
Max	Time	Min	Time
46.6	78.3	0.2	6.4

Test Vehicle: 2007 Suzuki XL7 5-Door MPV
 Test Program: 2007 NHTSA 35mph NCAP

Test Date: 12/20/06
 NHTSA No.: M70512



Curve Description			
Passenger Left Femur Force Z			
CURNO	Type	SAE Class	Units
015	FIL	600	Newtons
Max	Time	Min	Time
542.9	44.3	-4370.7	59.8



Curve Description			
Passenger Right Femur Force Z			
CURNO	Type	SAE Class	Units
016	FIL	600	Newtons
Max	Time	Min	Time
546.8	39.3	-2937.4	67.2

APPENDIX C
DUMMY CALIBRATION DATA

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

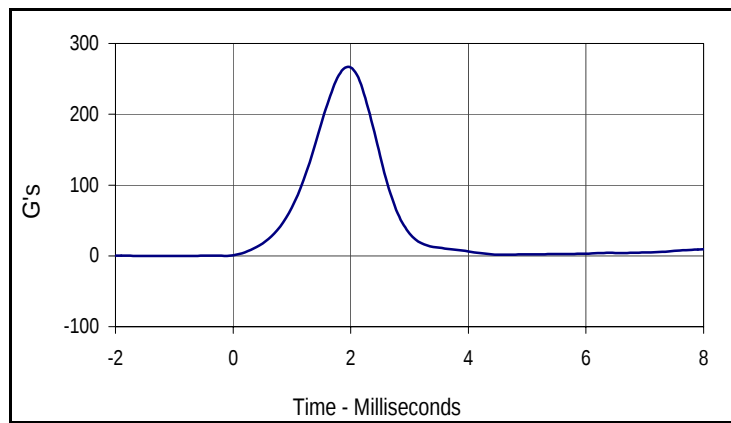
Test Date: 12/4/06

ATD Serial No.: 034

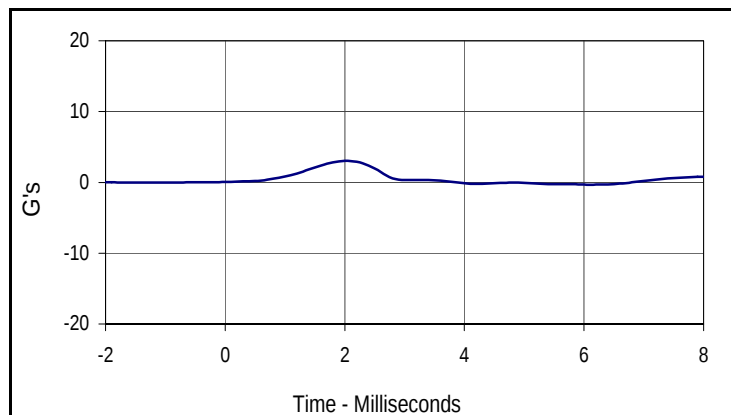
Test I.D.: HD12C



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	266.1	Pass
Peak Lateral Acceleration	G's	≤15.0	3.0	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
266.1	2.0	0.0	-0.7



Curve Description			
Head Y			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
3.0	2.0	-0.3	6.0

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

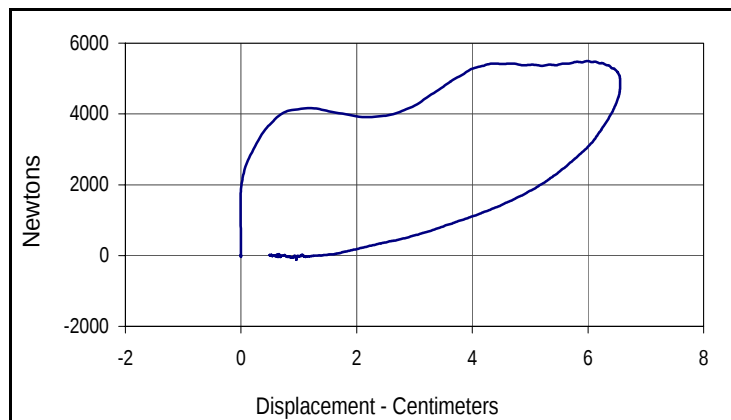
Test Date: 12/1/06

ATD Serial No.: 034

Test I.D.: CH12D



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	6.76	Pass
Peak Probe Force	Newtons	5159 to 5893	5493	Pass
Peak Sternum Deflection	CM	6.35 to 7.26	6.56	Pass
Internal Hysteresis	%	69 to 85	76.3	Pass
Overall Test Results				Pass



Curve Description			
Probe Force vs. Chest Deflection			
CURNO	Type	SAE Class	Hysteresis
001	FIL	180	76.3
Peak Probe Force		Peak Chest Deflection	
5493		6.56	

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

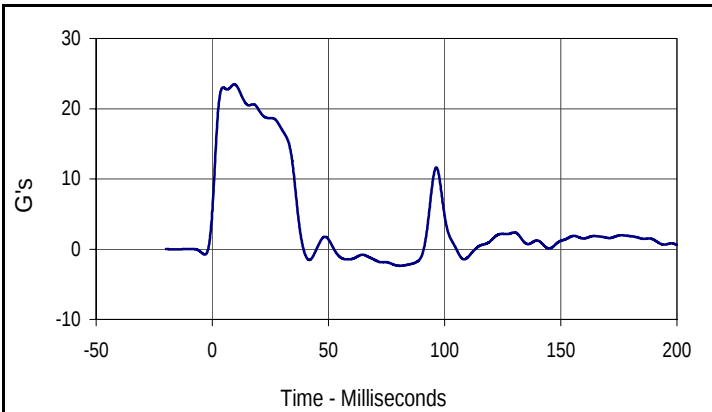
Test Date: 12/1/06

ATD Serial No.: 034

Test I.D.: NF12D



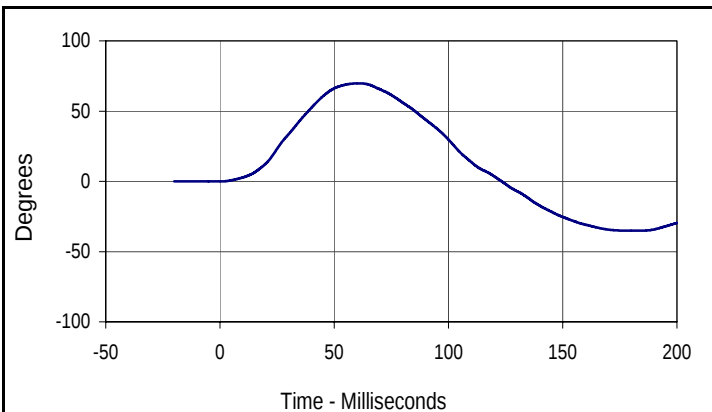
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	6.89 to 7.13	6.96	Pass
Pendulum Deceleration	10 Msec.	G's	22.5 to 27.5	23.4	Pass
	20 Msec.	G's	17.6 to 22.6	19.8	Pass
	30 Msec.	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	36.9	Pass
Maximum "D" Plane Rotation	Max	Degrees	64.0 to 78.0	69.8	Pass
	Time	Msec.	57.0 to 64.0	60.9	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	113.0 to 128.0	123.3	Pass
Moment About Occ. Condyle	Max	Nm	84.1 to 108.5	90.6	Pass
	Time	Msec.	47.0 to 58.0	47.7	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	97.0 to 107.0	97.8	Pass
			Overall Test Results		Pass



Curve Description

Pendulum Deceleration

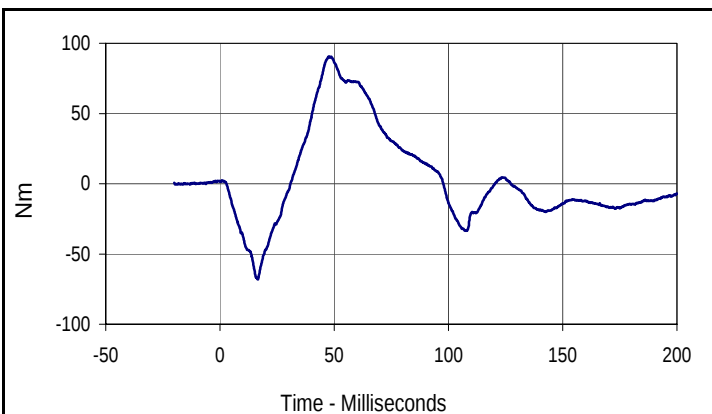
CURNO	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
23.5	9.5	-2.4	80.8



Curve Description

"D" Plane Rotation

CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
69.8	60.9	-35.1	183.5



Curve Description

Moment About Occipital Condyle

CURNO	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
90.6	47.7	-68.2	16.5

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

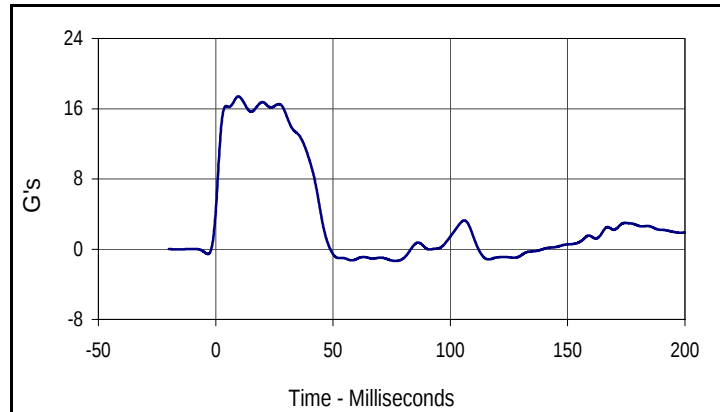
Test Date: 12/1/06

ATD Serial No.: 034

Test I.D.: NE12B



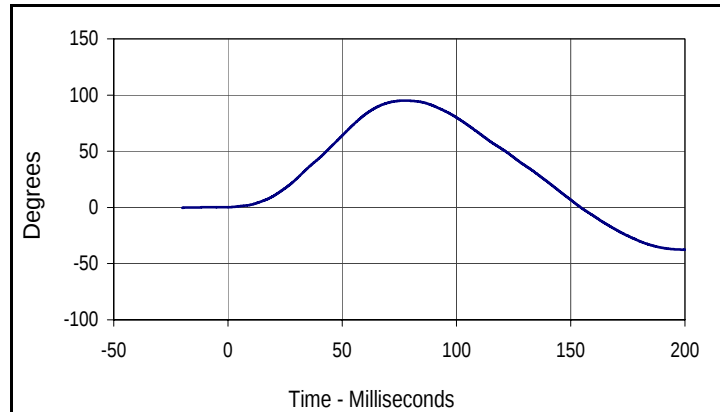
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.94 to 6.19	5.98	Pass
Pendulum Deceleration	10 Msec.	G's	17.2 to 21.2	17.4	Pass
	20 Msec.	G's	14.0 to 19.0	16.8	Pass
	30 Msec.	G's	11.0 to 16.0	15.3	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 22.0	15.3	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	38.0 to 46.0	44.2	Pass
Maximum "D" Plane Rotation	Max	Degrees	81.0 to 106.0	95.1	Pass
	Time	Msec.	72.0 to 82.0	77.4	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	147.0 to 174.0	154.4	Pass
Moment About Occ. Condyle	Max	Nm	-52.9 to- 79.9	-75.1	Pass
	Time	Msec.	65.0 to 79.0	67.9	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	120.0 to 148.0	143.7	Pass
			Overall Test Results		Pass



Curve Description

Pendulum Deceleration

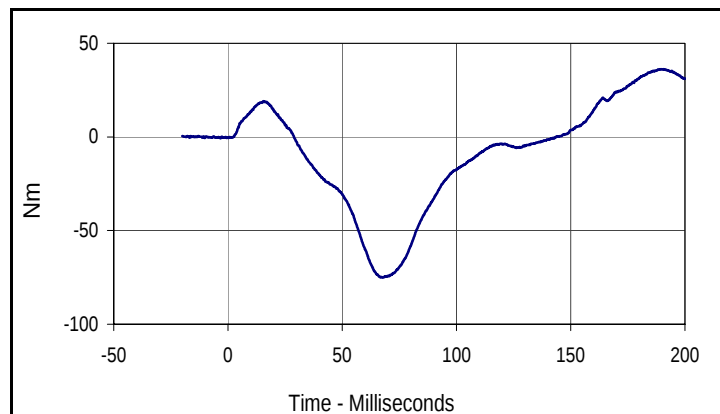
CURNO	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
17.4	9.6	-1.3	76.6



Curve Description

"D" Plane Rotation

CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
95.1	77.4	-37.6	200.0



Curve Description

Moment About Occipital Condyle

CURNO	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
36.2	189.5	-75.1	67.9

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

Test Date: 12/4/06

ATD Serial No.: 034

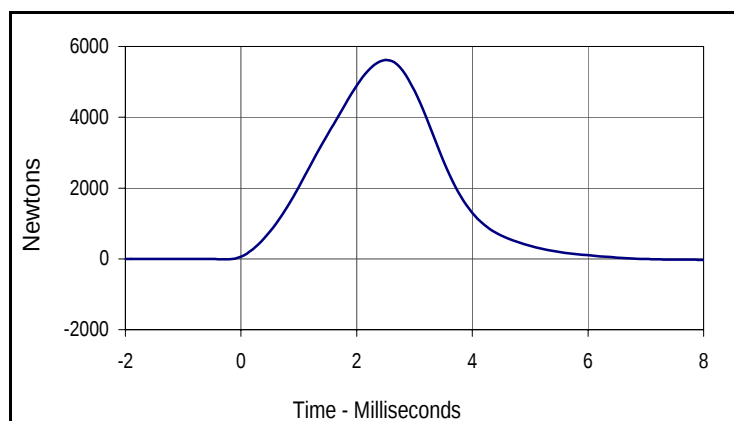
Test I.D.: LK01B , RK01B

**Left Knee**

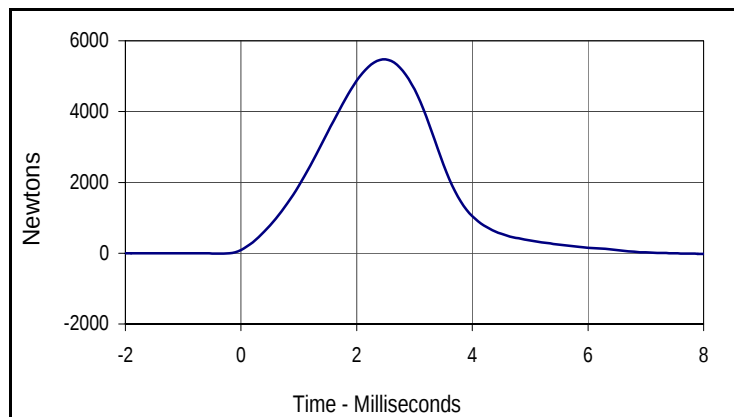
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.09	Pass
Peak Probe Force	Newtons	4715 to 5782	5622	Pass
Overall Test Results				Pass

Right Knee

Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.08	Pass
Peak Probe Force	Newtons	4715 to 5782	5478	Pass
Overall Test Results				Pass

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

CURNO	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
5622.2	2.5	-25.5	9.5

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

CURNO	Type	SAE Class	Units
002	FIL	600	Newtons
Max	Time	Min	Time
5478.4	2.5	-25.3	8.9

Test Program: Hybrid III 50th Percentile Male External Measurements

Test Date: 12/4/06

ATD Serial No.: 034

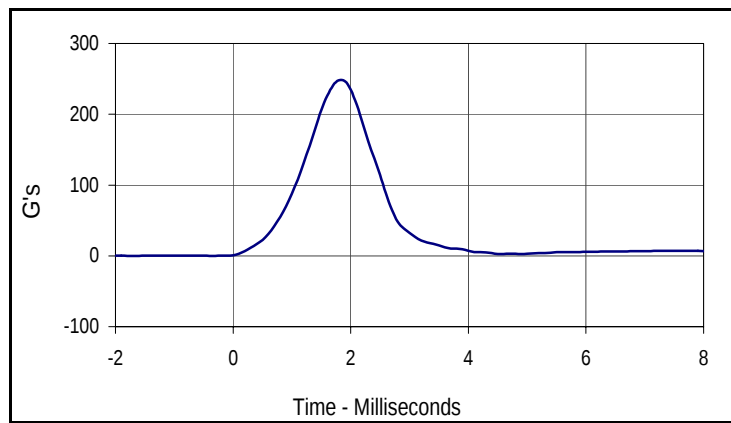
Test I.D.: N/A



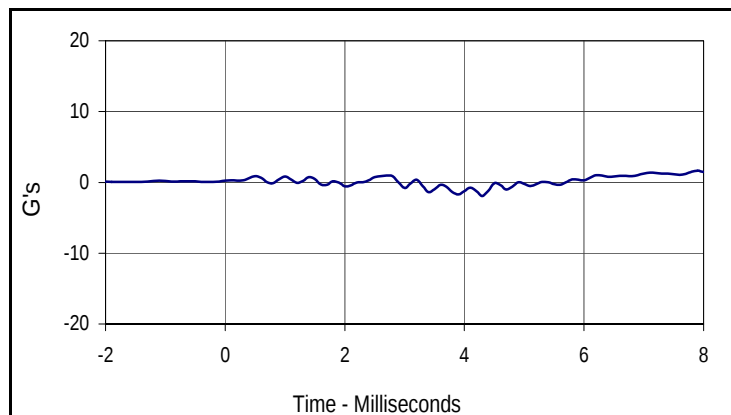
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
A - Total sitting height	mm	879 to 889	886	Pass
B - Shoulder pivot height	mm	505 to 521	513	Pass
C - "H" point height	mm	84 to 89	85	Pass
D - "H" point from seat back	mm	135 to 140	136	Pass
E - Shoulder pivot from back	mm	84 to 94	85	Pass
F - Thigh clearance	mm	140 to 155	151	Pass
G - Elbow back to wrist pivot	mm	290 to 305	301	Pass
H - Skull cap to back line	mm	41 to 46	44	Pass
I - Shoulder to elbow length	mm	330 to 345	336	Pass
J - Elbow rest height	mm	190 to 211	209	Pass
K - Buttock to knee length	mm	579 to 604	600	Pass
L - Popliteal length	mm	429 to 455	446	Pass
M - Knee pivot height	mm	485 to 500	490	Pass
N - Buttock popliteal length	mm	452 to 477	475	Pass
O - Chest depth	mm	213 to 229	225	Pass
P - Foot length	mm	251 to 267	255	Pass
V - Shoulder breadth	mm	422 to 437	435	Pass
W - Foot breadth	mm	91 to 107	105	Pass
Y - Chest circumference	mm	970 to 1001	985	Pass
Z - Waist circumference	mm	836 to 866	851	Pass
AA - Location for chest circumference	mm	429 to 434	431	Pass
BB - Location for waist circumference	mm	226 to 231	228	Pass
Overall Test Results				Pass

Test Program: Hybrid III 50th Percentile Male Head Drop TestTest Date: 12/4/06ATD Serial No.: 035Test I.D.: HD12A

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	1.9	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	1.8	0.1	-1.8



Curve Description			
Head Y			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
1.0	2.7	-1.9	4.3

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

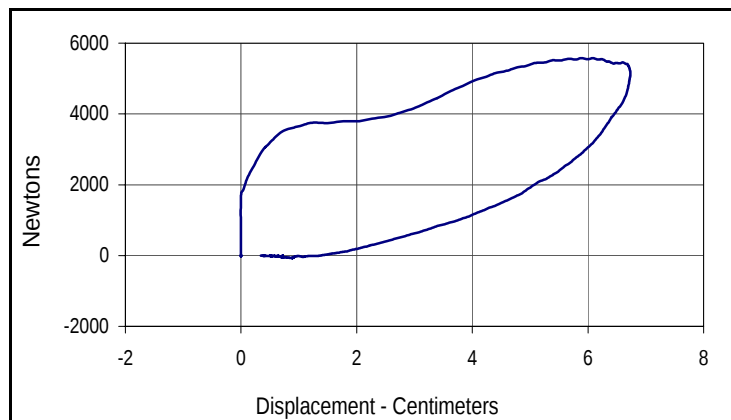
Test Date: 12/1/06

ATD Serial No.: 035

Test I.D.: CH12A



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	6.81	Pass
Peak Probe Force	Newtons	5159 to 5893	5575	Pass
Peak Sternum Deflection	CM	6.35 to 7.26	6.73	Pass
Internal Hysteresis	%	69 to 85	73.1	Pass
Overall Test Results				Pass



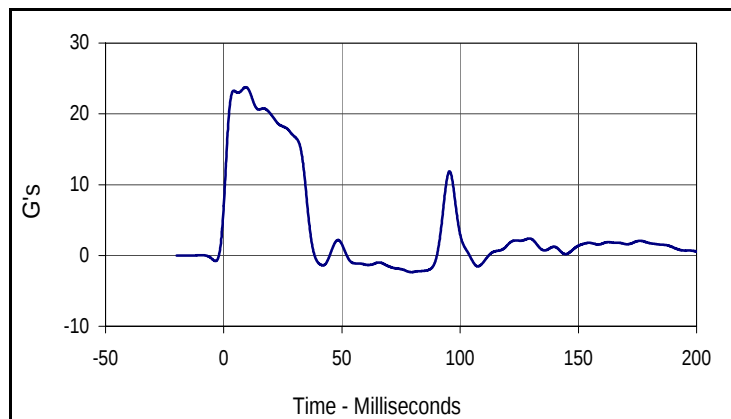
Curve Description			
Probe Force vs. Chest Deflection			
CURNO	Type	SAE Class	Hysteresis
001	FIL	180	73.1
Peak Probe Force		Peak Chest Deflection	
5575		6.73	

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

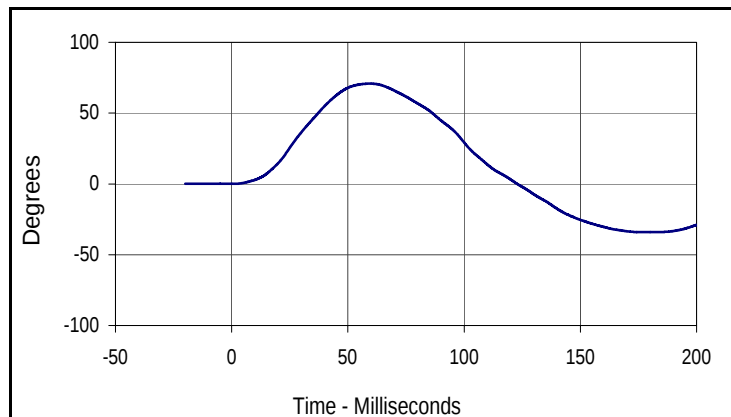
Test Date: 12/1/06
 Test I.D.: NF12A



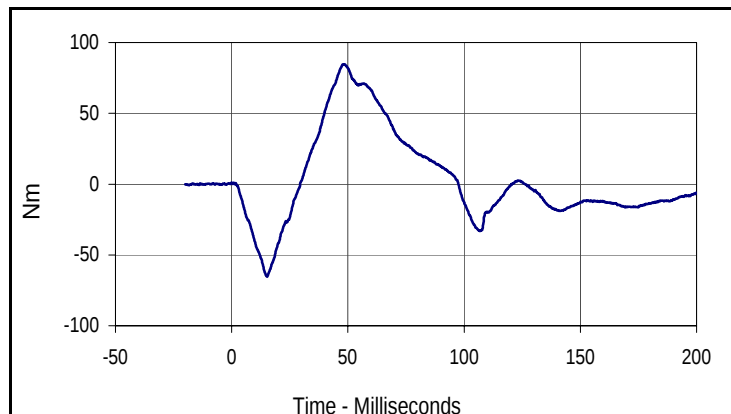
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	6.89 to 7.13	7.04	Pass
Pendulum Deceleration	10 Msec.	G's	22.5 to 27.5	23.7	Pass
	20 Msec.	G's	17.6 to 22.6	19.9	Pass
	30 Msec.	G's	12.5 to 18.5	16.8	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 29.0	16.8	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	34.0 to 42.0	36	Pass
Maximum "D" Plane Rotation	Max	Degrees	64.0 to 78.0	70.8	Pass
	Time	Msec.	57.0 to 64.0	59.4	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	113.0 to 128.0	122.9	Pass
Moment About Occ. Condyle	Max	Nm	84.1 to 108.5	84.7	Pass
	Time	Msec.	47.0 to 58.0	48.0	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	97.0 to 107.0	97.6	Pass
Overall Test Results				Pass	



Curve Description			
Pendulum Deceleration			
CURNO	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
23.8	9.3	-2.4	79.4



Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
70.8	59.4	-34.1	177.0



Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
84.7	48.0	-65.3	15.2

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

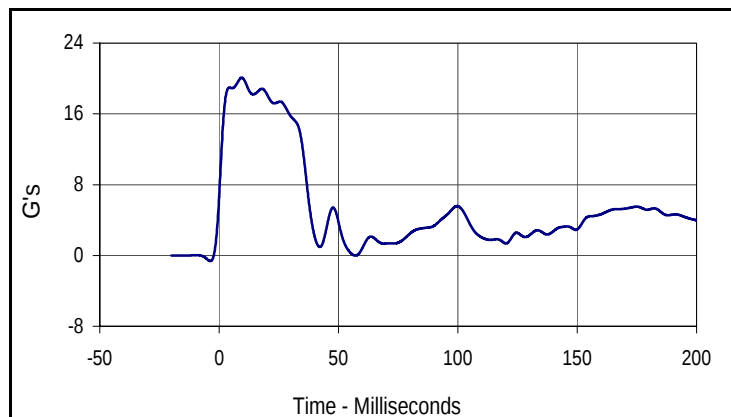
Test Date: 12/1/06

ATD Serial No.: 035

Test I.D.: NE12A



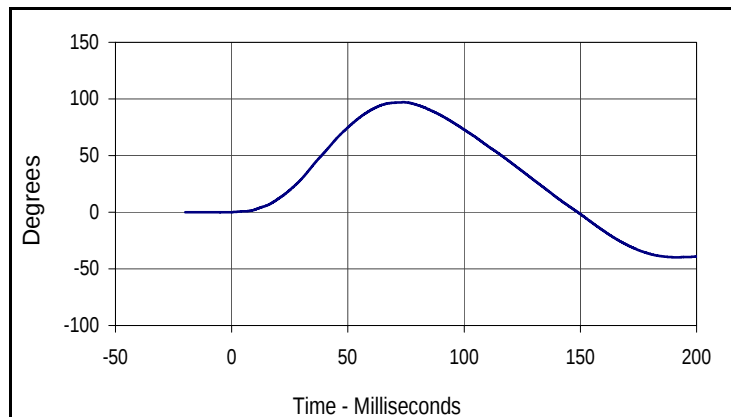
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.94 to 6.19	6.13	Pass
Pendulum Deceleration	10 Msec.	G's	17.2 to 21.2	20.0	Pass
	20 Msec.	G's	14.0 to 19.0	18.2	Pass
	30 Msec.	G's	11.0 to 16.0	15.7	Pass
Peak Pendulum Decel. after 30 Msec.		G's	≤ 22.0	15.7	Pass
Deceleration Decay, Time to Cross 5 G's		Msec.	38.0 to 46.0	38.2	Pass
Maximum "D" Plane Rotation	Max	Degrees	81.0 to 106.0	97.1	Pass
	Time	Msec.	72.0 to 82.0	74.0	Pass
"D" Plane Rotation Decay, Time To Zero Crossing		Msec.	147.0 to 174.0	148.9	Pass
Moment About Occ. Condyle	Max	Nm	-52.9 to- 79.9	-77.5	Pass
	Time	Msec.	65.0 to 79.0	65.6	Pass
Positive Moment Decay, Time To Zero Crossing		Msec.	120.0 to 148.0	136.0	Pass
Overall Test Results				Pass	



Curve Description

Pendulum Deceleration

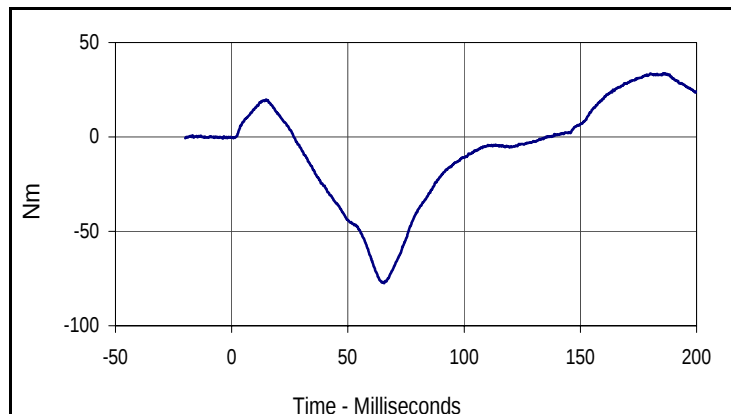
CURNO	Type	SAE Class	Units
001	FIL	60	G's
Max	Time	Min	Time
20.1	9.5	-0.6	-3.7



Curve Description

"D" Plane Rotation

CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
97.1	74.0	-39.7	190.9



Curve Description

Moment About Occipital Condyle

CURNO	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
33.7	185.7	-77.5	65.6

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

Test Date: 12/4/06

ATD Serial No.: 035

Test I.D.: LK01B , RK01B

**Left Knee**

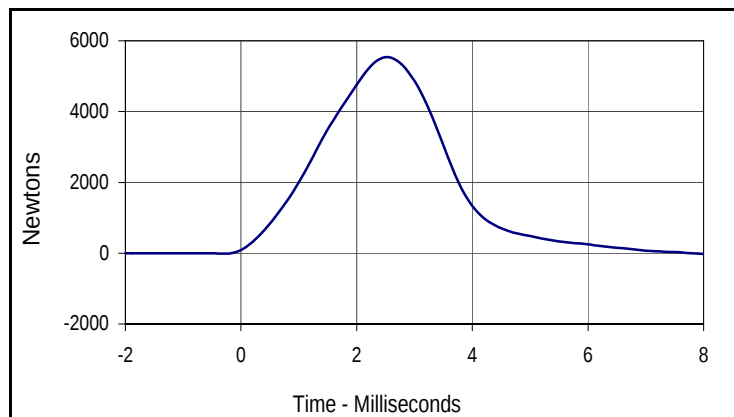
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.09	Pass
Peak Probe Force	Newtons	4715 to 5782	5574	Pass
Overall Test Results				Pass

Right Knee

Pendulum Velocity at T=0	m/sec	2.07 to 2.13	2.08	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
5573.6	2.3	-23.7	7.1

**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: 12/4/06

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	885	Pass
B - Shoulder pivot height	mm	505 to 521	512	Pass
C - "H" point height	mm	84 to 89	86	Pass
D - "H" point from seat back	mm	135 to 140	139	Pass
E - Shoulder pivot from back	mm	84 to 94	85	Pass
F - Thigh clearance	mm	140 to 155	152	Pass
G - Elbow back to wrist pivot	mm	290 to 305	299	Pass
H - Skull cap to back line	mm	41 to 46	45	Pass
I - Shoulder to elbow length	mm	330 to 345	335	Pass
J - Elbow rest height	mm	190 to 211	204	Pass
K - Buttock to knee length	mm	579 to 604	600	Pass
L - Popliteal length	mm	429 to 455	451	Pass
M - Knee pivot height	mm	485 to 500	489	Pass
N - Buttock popliteal length	mm	452 to 477	474	Pass
O - Chest depth	mm	213 to 229	226	Pass
P - Foot length	mm	251 to 267	254	Pass
V - Shoulder breadth	mm	422 to 437	436	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	851	Pass
AA - Location for chest circumference	mm	429 to 434	430	Pass
BB - Location for waist circumference	mm	226 to 231	228	Pass
Overall Test Results				Pass

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

Test Date: 12/4/06
 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: 12/4/06
 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:
