REPORT NUMBER TR-P28001-04-NC

NEW CAR ASSESSMENT PROGRAM
FRONTAL BARRIER IMPACT TEST

TOYOTA MOTOR CORPORATION
2008 LEXUS IS 250
4-DOOR SEDAN

NHTSA NUMBER: M85104

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

OCTOBER 2, 2007

FINAL REPORT

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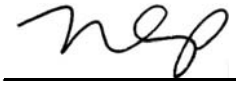
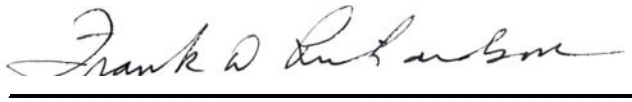
Prepared by:  Date: October 2, 2007

Mr. Kelsey A. Chiu, Project Engineer
KARCO Engineering, LLC

Reviewed by:  Date: October 2, 2007

Mr. Michael Dunlap, Director of Operations
KARCO Engineering, LLC

Approved by:  Date: October 2, 2007

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

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7. Authors
Mr. Kelsey A. Chiu, Project Engineer, Karco
Mr. Frank Richardson, Program Manager, Karco

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Karco Engineering, LLC
9270 Holly Rd.
Adelanto, CA, 92301

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16. Abstract

A 35 mph (56.3 km/h) frontal barrier impact was conducted on a 2008 Lexus IS 250 4-Door Sedan at Karco Engineering, LLC on Ocotber 2, 2007. This test was conducted to obtain data indicant of FMVSS 208, 212, 219 (partial), 301, and footwell intrusion performance. The impact velocity was 56.29 km/h. The ambient temperature at the barrier face at the time of impact was 22.8 degrees Celcius. The vehicle's maximum post-test static crush is 473 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	383.0	364.6
Max. Chest Accel. (3 msec Clip)	G's	60	47.7	47.6
Left Femur Force	Newtons	10008	-2030.3	-1467.3
Right Femur Force	Newtons	10008	-2049.7	-1991.1

17. Key Words
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SECTION 1

PURPOSE AND SUMMARY OF TEST M85104

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 36 load cells was impacted by a 2008 Lexus IS 250 4-Door Sedan at a velocity of 56.29 km/h. The test was performed at Karco Engineering, LLC on October 2, 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. 035) and the right-front passenger (position 2) ATD (Serial No. 034) 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 473 mm at the vehicle's centerline. 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. The head also contacted the headrest. The abdomen had no contact. Both the left and right knees contacted the knee airbag.

The passenger's visible contact points were as follows: The passenger ATD's head and chest contacted the airbag. The abdomen had no contact. Both knees contacted the knee airbag.

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	383.0	47.7	-27.0	-2030.3	-2049.7
Passenger	364.6	47.6	-21.0	-1467.3	-1991.1

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

Test Vehicle: 2008 Lexus IS 250 4-Door Sedan NHTSA No.: M85104

Test Program: 2007 NHTSA 35mph NCAP Test Date: 10/02/07

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	^oF	^oC	=(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 Lexus IS 250 4-Door Sedan NHTSA No.: M85104

Test Program: 2007 NHTSA 35mph NCAP Test Date: 10/02/07

PRIMARY IMPACT DATA

Measured Parameter	Units	Value
Velocity at Impact	km/h	56.29
Test Weight	kg	1766
Impact Angle	degrees	0
Average Rebound	mm	566
Maximum Static Crush	mm	473

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. 035	50% Male Hybrid III No. 034
Head Contact	Airbag, Headrest	Airbag
Chest Contact	Airbag	Airbag
Abdomen Contact	None	None
Left Knee Contact	Knee Airbag	Knee Airbag
Right Knee Contact	Knee Airbag	Knee Airbag

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	36
Total	132

DATA SHEET NO. 2

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2008 Lexus IS 250 4-Door Sedan NHTSA No.: M85104

Test Program: 2007 NHTSA 35mph NCAP Test Date: 10/02/07

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	M85104	Anti-Lock Brakes	Yes
Make	Lexus	All Wheel Drive	No
Model	IS 250	Power Steering	Yes
Body Style	4-Door Sedan	Driver Front Airbag	Yes
Vin No.	JTHBK262785052276	Driver Side Airbag	Yes
Color	Silver	Driver Head Airbag	No
Delivery Date	9/17/2007	Driver Curtain Airbag	Yes
Odometer (Miles)	65.0	Pass. Airbag	Yes
Dealer	Lexus of Riverside	Pass. Side Airbag	Yes
Transmission	6-Speed Automatic	Pass. Head Airbag	No
Final Drive	Rear	Pass. Curtain Airbag	Yes
Type/No. Cyl.	V6	Pre-Tensioners	Yes
Engine Disp. (L)	2.5	Load Limiters	Yes
Engine Placement	Longitudinal	Bucket Seats	Yes
Roof Rack	No	Air. Cond.	Yes
Sunroof/T-Top	Yes	AM/FM CD	Yes
Tinted Glass	No	Tilt Steering	Yes
Traction Control	No	Automatic Door Locks	Yes
Power Brakes	Yes	Power Windows	Yes
Front Disc	Yes	Power Seats	Yes
Rear Disc	Yes	Other	Knee Airbags

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

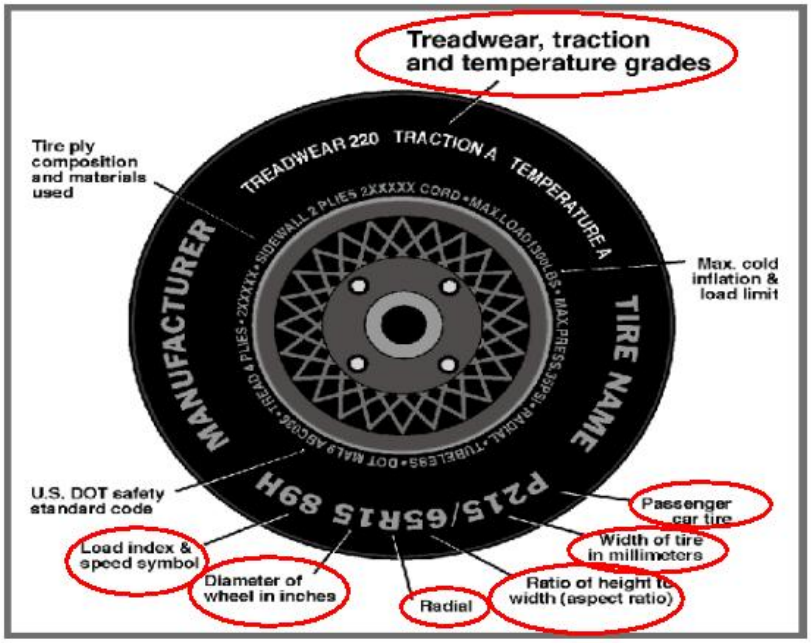
DATA FROM MANUFACTURER

Manufactured By	Toyota Motor Corporation	GVWR (kg)	2007
		GAWR Front (kg)	1120
Date of Manufacture	Aug-07	GAWR Rear (kg)	1102

VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Bench		
Number of Occupants	2	3		5
Capacity Weight (VCW) (kg)				375
Cargo Weight (RCLW) (kg)				34

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)	357	357
Cold Pressure (kpa)	240	260
Recommended Tire Size	225/40R18	255/40R18
Tire Size on Vehicle	225/40R18	255/40R18
Tire Manufacturer	Bridgestone	Bridgestone
Treadwear	140	140
Traction	A	A
Temperature Grades	A	A
Tire Plies Sidewall	3 Polyester	3 Polyester
Tire Plies Body	2 Polyester, 2 Steel, 1 Polyester	2 Polyester, 2 Steel, 1 Polyester
Load Index/Speed Symbol	95Y	95Y
Tire Material	Polyester, Steel	Polyester, Steel
DOT Safety Code Right	EL T7 DAN 3107	EL 3A DAN 3107
DOT Safety Code Left	EL T7 DAN 3007	EL 3A DAN 3107

DATA SHEET NO. 2…(CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2008 Lexus IS 250 4-Door Sedan NHTSA No.: M85104

Test Program: 2007 NHTSA 35mph NCAP Test Date: 10/02/07

TEST VEHICLE WEIGHTS

	Units	As Delivered Weights (UVW)			As Tested Weights (ATW)		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	412	386	798	433	458	891
Right	kg	426	362	788	443	432	875
Ratio	%	52.8%	47.2%	100.0%	49.6%	50.4%	100.0%
Totals	kg	838	748	1586	876	890	1766

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1586
Weight of 2 P572 ATD's	kg	152
Rated Cargo/Luggage Wt. (RCLW)	kg	34
Calculated Vehicle Target Wt. (TVTW)	kg	1772

TEST VEHICLE ATTITUDE AND CG

	Units	LF	RF	LR	RR	CG (aft of front axle)
As Delivered	mm	677	688	691	702	1286
As Tested	mm	664	671	667	679	1374

Vehicle Wheel Base (mm): 2726

Weight of Ballast Secured in cargo area (kg): 0

Weight of Items Removed (kg): 120

Vehicle Components Removed: Rear door panels, rear window, tail lights, rear hatch door spare tire, exhaust

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

FUEL SYSTEM DATA

Fuel System Capacity From Owners Manual (L): 65.10

Actual Test Volume with entire fuel System Filled (L): 60.56

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 Lexus IS 250 4-Door Sedan NHTSA No.: M85104

Test Program: 2007 NHTSA 35mph NCAP Test Date: 10/02/07

SPEED TRAP DATA

Measured Parameter	Units	Requirement	Value
Trap No.1 Velocity (Primary)	km/h	55.51 to 57.12	56.29
Trap No.2 Velocity (Redun.)	km/h	55.51 to 57.12	56.27

VEHICLE STATIC CRUSH

Measured Parameter	Units	Pre-Test	Post-Test	Difference
Left Side	mm	4405	4095	-310
Center	mm	4555	4082	-473
Right Side	mm	4405	4053	-352

VEHICLE REBOUND FROM BARRIER

Measured Parameter	Units	Value
Left Side	mm	592
Center	mm	515
Right Side	mm	592
Average	mm	566

DATA SHEET NO. 4

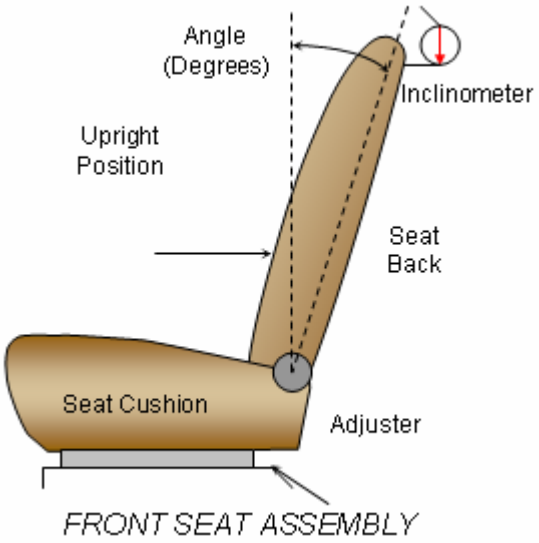
TEST VEHICLE INFORMATION

Test Vehicle: 2008 Lexus IS 250 4-Door Sedan NHTSA No.: M85104

Test Program: 2007 NHTSA 35mph NCAP Test Date: 10/02/07

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

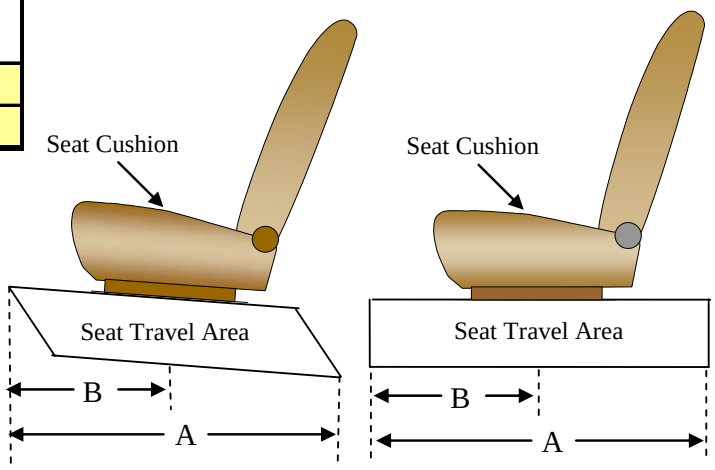
	Deg.
Driver w/seated Dummy	3.0 @ Headrest
Passenger w/seated Dummy	3.0 @ Headrest

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	260 mm	130 mm
Passenger Seat	260 mm	130 mm



SEAT BELT UPPER ANCHORAGE

Position number one (1) is the uppermost position.

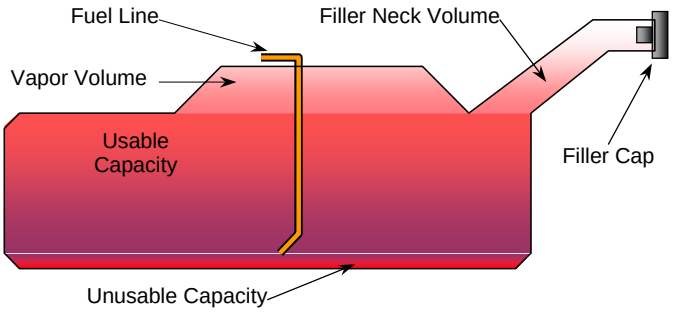
SEAT BELT UPPER ANCHORAGE

	Total # of Positions	Placed in Position #
Driver Seat	4	2
Passenger Seat	4	2

FUEL TANK CAPACITY

	Liters
Usable Capacity of "Standard Tank"	65.10
Usable Capacity of "Optional" Tank	
Usable Capacity used for FMVSS 301	59.80 to 61.32
Actual Amount of Solvent used	60.56

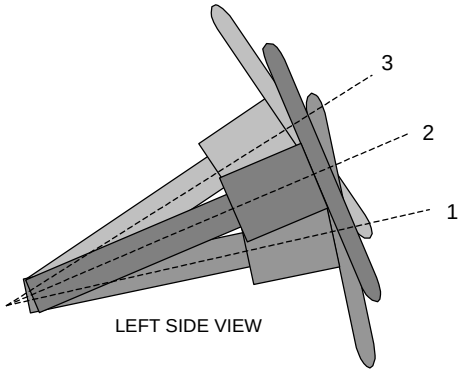
The test vehicle is equipped with an electric fuel pump. The fuel pump operates for approximately two seconds after the ignition is placed in the "ON" position, after which the fuel pump automatically shuts off. The fuel filler door is located on the left rear fender. The standard fuel tank occupies 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 positon No. 1	26.0	0.0
Geometric center position No. 2	24.5	22.5
Uppermost position No. 3	26.0	45.0

DATA SHEET NO. 5

DUMMY POSITIONING IN VEHICLE

Test Vehicle: 2008 Lexus IS 250 4-Door Sedan NHTSA No.: M85104

Test Program: 2007 NHTSA 35mph NCAP Test Date: 10/02/07

TEST DUMMY POSITION MEASUREMENTS

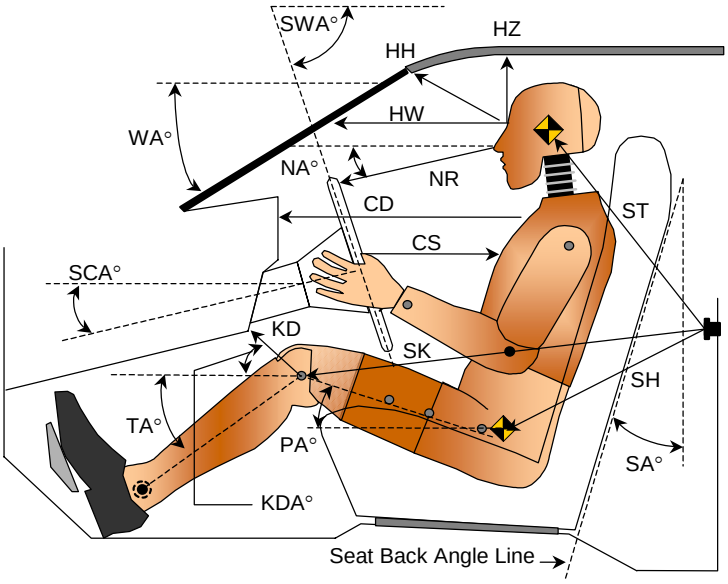
Code	Measurement Description	Driver		Passenger	
		Length (mm)	Angle (deg)	Length (mm)	Angle (deg)
WA	Windshield Angle		27.0		
SWA	Steering Wheel Angle		66.5		
SCA	Steering Column Angle		23.5		
SA	Seat Back Angle		3.0 @ Headrest		3.0 @ Headrest
HZ	Head to Roof (Z)	160	90.0	165	90.0
HH	Head to Header	336		367	
HW	Head to Windshield	548		552	
HR	Head to Side Header (Y)	238		252	
NR	Nose to Rim	391	9.2		
CD	Chest to Dash	530		530	
CS	Chest to Steering Hub	315			
RA	Rim to Abdomen	217			
KDL	Left Knee to Dash	190	22.1	180	
KDR	Right Knee to Dash	170		172	16.6
PA	Pelvic Angle		16.2		22.5
TA	Tibia Angle		74.2		40.4
KK	Knee to Knee (Y)	285		275	
SK	Striker to Knee	608	16.2	615	14.0
ST	Striker to Head	423	74.2	403	80.8
SH	Striker to H-Point	182	0.0	178	0.0
SHY	Striker to H-Point (Y)	220		219	
HS	Head to Side Window	312		310	
HD	H-Point to Door (Y)	145		142	
AD	Arm to Door (Y)	110		60	

DATA SHEET NO. 5…(CONTINUED)

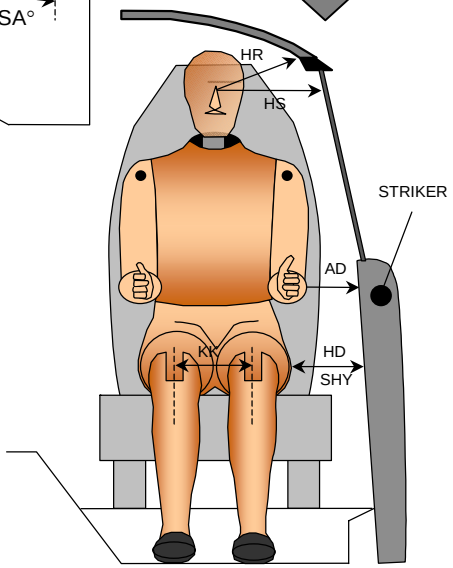
DUMMY POSITIONING IN VEHICLE

Test Vehicle: 2008 Lexus IS 250 4-Door Sedan NHTSA No.: M85104

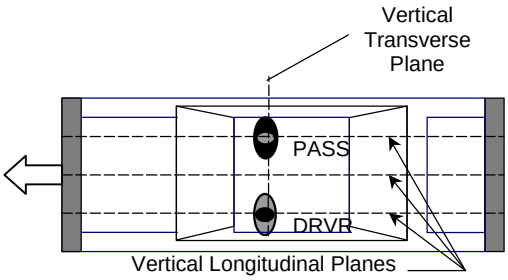
Test Program: 2007 NHTSA 35mph NCAP Test Date: 10/02/07



AD	Arm to Door
HD	H-Point to Door
HR	Head to Side Header
HS	Head to Side Window
KK	Knee to Knee
SHY	Striker to H-Point (Y Axis)



CD	Chest to Dash
CS	Chest to Steering Wheel Hub
HH	Head to Header
HW	Head to Windshield
HZ	Head to Roof
KDA	Knee to Dash Angle
KDL	Left Knee to Dash
KDR	Right Knee to Dash
NA	Nose to Rim Angle
NR	Nose to Rim
PA	Pelvic Angle
RA	Rim to Abdomen
SA	Seat Back Angle
SCA	Steering Column Angle
SH	Striker to H-Point
SK	Striker to Knee
ST	Striker to Head
SWA	Steering Wheel Angle
TA	Tibial Angle
WA	Windshield Angle



DUMMY MEASUREMENTS FOR FRONT SEAT OCCUPANTS

DATA SHEET NO. 6

SEAT BELT POSITIONING DATA

Test Vehicle: 2008 Lexus IS 250 4-Door Sedan NHTSA No.: M85104

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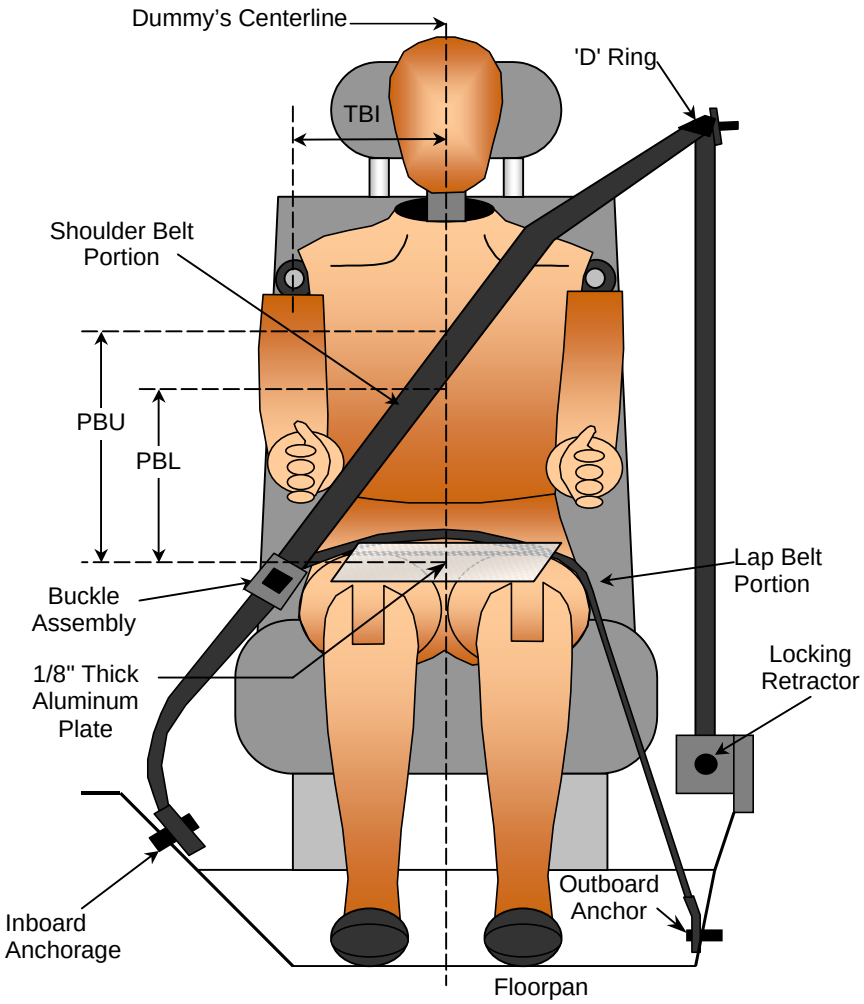


SEAT BELT POSITIONING MEASUREMENTS

Measured Parameter	Units	Driver	Passenger
TBI - Dummy C/L to Lap/Shoulder Belt Intersect	mm	260	260
PBU - Top Surface of reference to belt upper edge	mm	330	350
PBL - Top Surface of reference to belt lower edge	mm	262	280
Lap Belt Tension	Newtons	10	10
Shoulder Belt Tension	N/A	Retractor	Retractor

DATA SHEET NO. 7
VEHICLE ACCELEROMETER LOCATION

Test Vehicle: 2008 Lexus IS 250 4-Door Sedan Test Date: 10/2/07

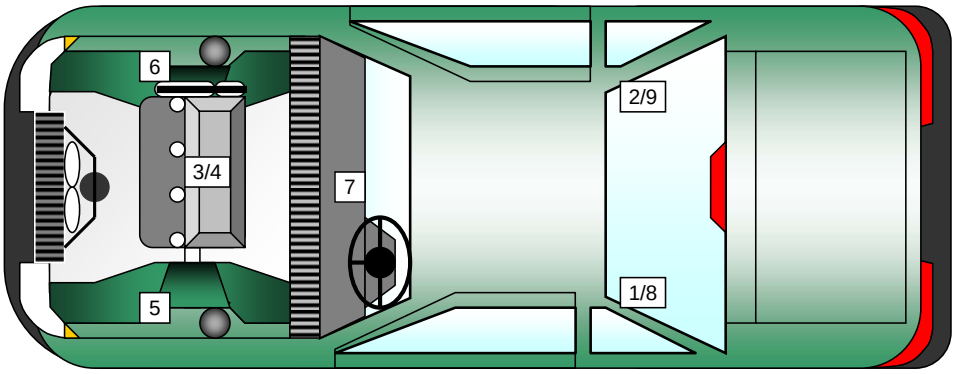
Test Program: NHTSA 35mph NCAP NHTSA No.: M85104

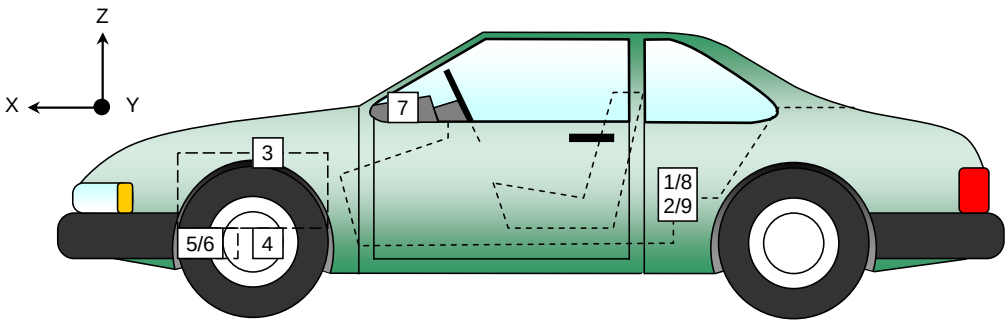
VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

No.	Accelerometer Location	Measurements (mm)		
		X	Y	Z
1	Left Rear X-Member	1745	-700	350
2	Right Rear X-Member	1750	700	350
3	Engine Top	3770	175	800
4	Engine Bottom	3590	85	145
5	Left Brake Caliper	3635	-690	310
6	Right Brake Caliper	3635	690	310
7	Instrument Panel			[1]
8	Left Rear X-Member (Z-Axis)	1745	-700	350
9	Right Rear X-Member (Z-Axis)	1745	700	350

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 Lexus IS 250 4-Door Sedan NHTSA No.: M85104

Test Program: 2007 NHTSA 35mph NCAP Test Date: 10/02/07

SEAT BELT POSITIONING MEASUREMENTS

Measurement Description	Units	Driver	Passenger
Retractor Reel to "D" ring	mm	705	705
Shoulder Belt length as measured on ATD	mm	865	868
Lap Belt length as measured on ATD	mm	840	810
Remainder of belt on reel	mm	820	872
Total belt length for continuous webbing systems	mm	3230	3255

SHOULDER BELT SPOOL-OFF DATA

Measurement Description	Units	Driver	Passenger
As determined mechanically	mm	135	90
As determined electronically	mm	215	108

BELT STRETCH DATA

Measuerment 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 Lexus IS 250 4-Door Sedan NHTSA No.: M85104

Test Program: 2007 NHTSA 35mph NCAP Test Date: 10/02/07

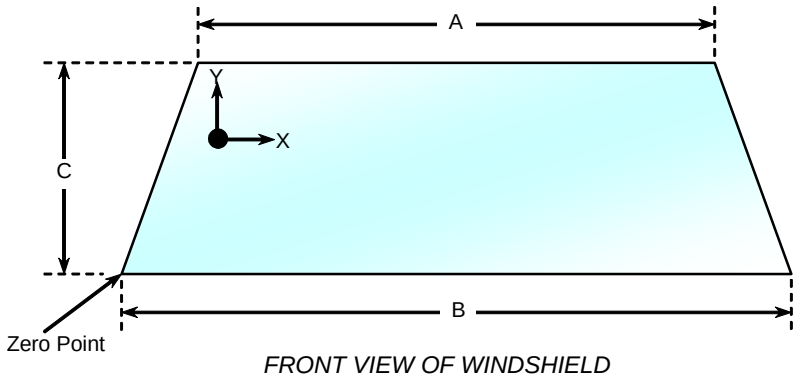
Windshield Mounting Details: Windshield glass is secured to the vehicle frame with a rubber type adhesive, and rubber and plastic molding.

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: 22.8 °C

WINDSHIELD PERIPHERY MEASUREMENTS

Measurement	Pre-Test(mm)	Post-Test(mm)	% of Retention
Left Side	1920	1920	100
Right Side	1920	1920	100
Total	3840	3840	100



FRONT VIEW OF WINDSHIELD

WINDSHIELD DIMENSIONS

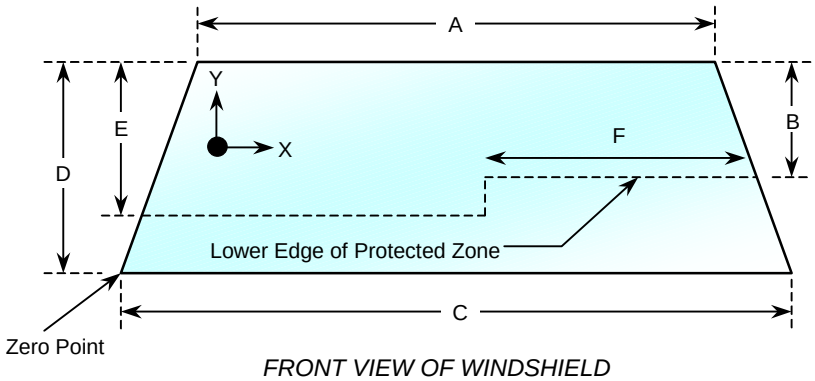
Item	Units	Segment Length	Molding Width
A	mm	1130	n/a
B	mm	1320	10
C-Left	mm	695	20
C-Right	mm	695	20

DATA SHEET NO. 10

WINDSHIELD ZONE INTRUSION FMVSS 219 DATA (PARTIAL)

Test Vehicle: 2008 Lexus IS 250 4-Door Sedan NHTSA No.: M85104

Test Program: 2007 NHTSA 35mph NCAP Test Date: 10/02/07



FRONT VIEW OF WINDSHIELD

WINDSHIELD AND PROTECTED ZONE

Item	Units	Value
A	mm	1130
B	mm	390
C	mm	1320
D	mm	695
E	mm	460
F	mm	540

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 Lexus IS 250 4-Door Sedan NHTSA No.: M85104

Test Program: 2007 NHTSA 35mph NCAP Test Date: 10/02/07

Test Time: 11:37 AM Temperature: 22.8 ° 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)

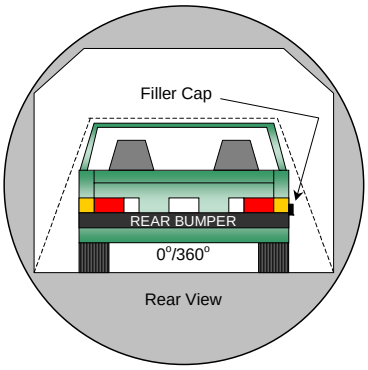
D. Spillage Location Details: No leakage occurred

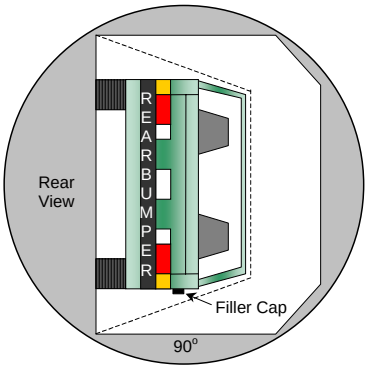
DATA SHEET NO. 12

FMVSS 301 STATIC ROLLOVER DATA

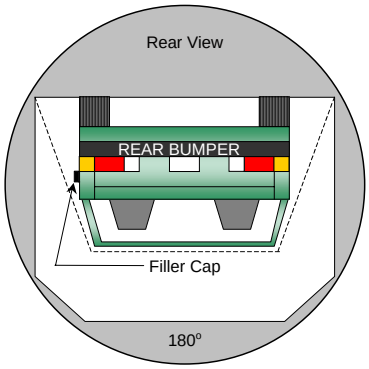
Test Vehicle: 2008 Lexus IS 250 4-Door Sedan NHTSA No.: M85104

Test Program: 2007 NHTSA 35mph NCAP Test Date: 10/02/07

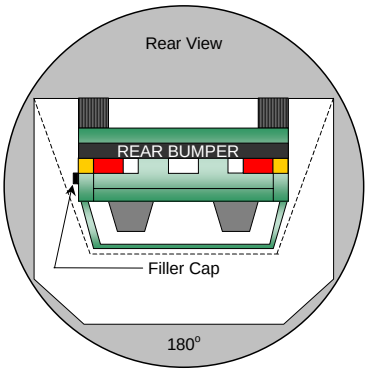




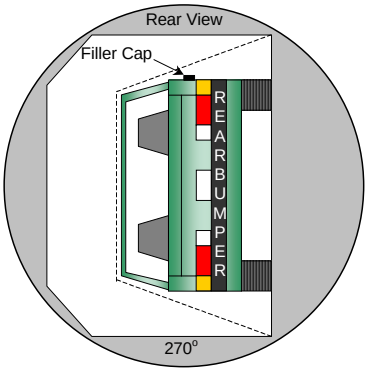
0° to 90°

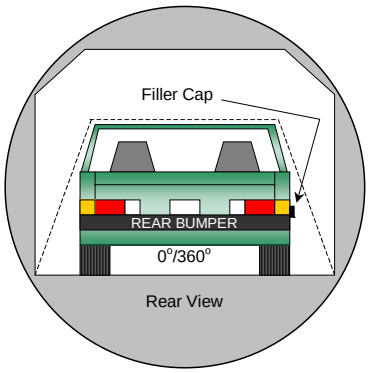


90° to 180°



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 Lexus IS 250 4-Door Sedan NHTSA No.: M85104

Test Program: 2007 NHTSA 35mph NCAP Test Date: 10/02/07

SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0° to 90°	4	302	306
90° to 180°	78	307	385
180° to 270°	78	301	379
270° to 360°	83	308	391

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 Lexus IS 250 4-Door Sedan NHTSA No.: M85104

Test Program: 2007 NHTSA 35mph NCAP Test Date: 10/02/07

VEHICLE MEASUREMENT TABLE

No.	Measurement Description	Units	Pre-Test	Post-Test	Diff.
1	Total length of vehicle at centerline	mm	4555	4082	-473
2	RSOV to front of engine	mm	3965	3793	-172
3	RSOV to firewall centerline	mm	3395	3320	-75
4	RSOV to leading edge of right door	mm	3174	3180	6
5	RSOV to leading edge of left door	mm	3175	3180	5
6	RSOV to lower leading edge of right door	mm	3132	3130	-2
7	RSOV to lower leading edge of left door	mm	3132	3134	2
8	RSOV to upper trailing edge of right door	mm	2075	2080	5
9	RSOV to upper trailing edge of left door	mm	2075	2080	5
10	RSOV to lower trailing edge of right door	mm	2035	2036	1
11	RSOV to lower trailing edge of left door	mm	2038	2040	2
12	RSOV to bottom of right 'A' pillar	mm	3132	3131	-1
13	RSOV to bottom of left 'A' pillar	mm	3116	3121	5
14	RSOV to firewall on right side	mm	3352	3280	-72
15	RSOV to firewall on left side	mm	3395	3323	-72
16	RSOV to steering column	mm	2724	2720	-4
17	Center of steering column to left 'A' pillar	mm	360	343	-17
18	Center of steering column to headlining	mm	420	450	30
19	RSOV to right side of front bumper	mm	4405	4053	-352
20	RSOV to left side of front bumper	mm	4405	4095	-310
21	Length of engine block	mm	580	580	0
RD	RSOV to right side of dash panel	mm	2870	2876	6
CD	RSOV to center of dash panel	mm	2878	2868	-10
LD	RSOV to left side of dash panel	mm	2870	2876	6

DATA SHEET NO. 13…(CONTINUED)

VEHICLE STRUCTURAL MEASUREMENTS

Test Vehicle: 2008 Lexus IS 250 4-Door Sedan NHTSA No.: M85104

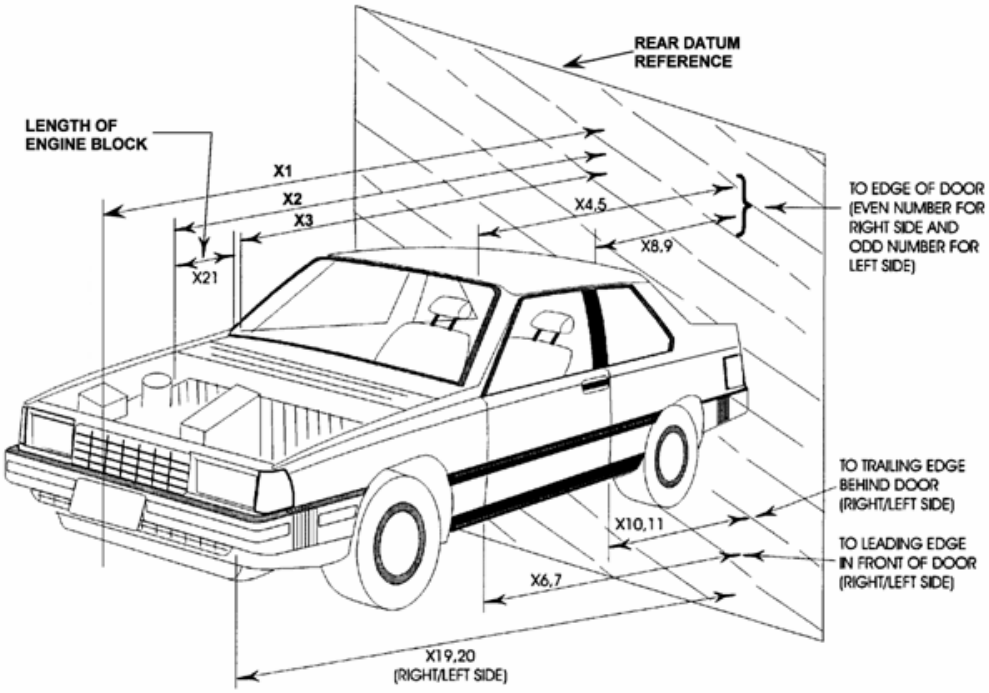
Test Program: 2007 NHTSA 35mph NCAP Test Date: 10/02/07

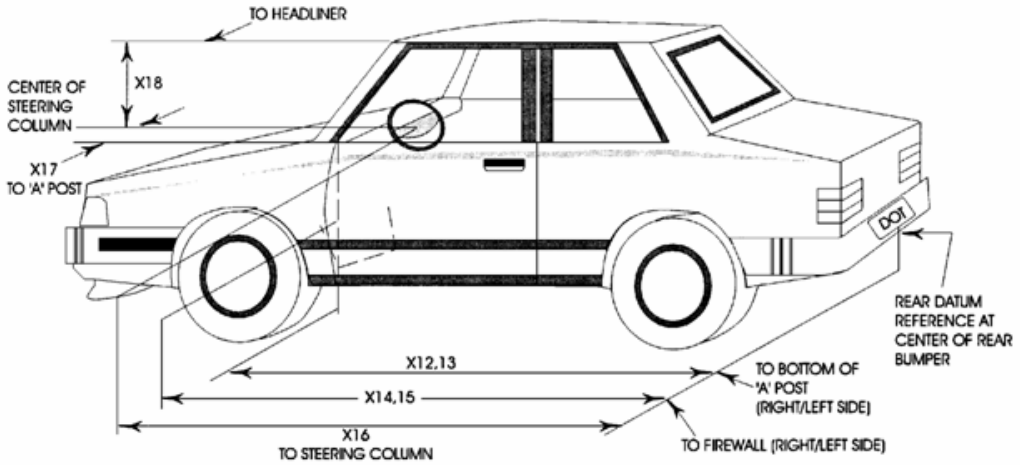
VEHICLE STRUCTURAL MEASUREMENT TABLE

No.	Measurement Description	Units	Pre-Test	Post-Test	Diff.
1	Total length	mm	4555	4082	-473
2	Total width	mm	1732	1729	-3
3	Bumper top height	mm	600	540	-60
4	Bumper bottom height	mm	165	142	-23
5	Longitudinal member top height	mm	424	545	121
6	Longitudinal member bottom height	mm	218	339	121
7	Distance between longitudinal members	mm	680	702	22
8	Longitudunal member width	mm	125	125	0
9	Engine top height	mm	806	842	36
10	Engine bottom height	mm	150	148	-2
11	Engine and gear box width	mm	640	640	0
12	Front bumper to engine distance	mm	590	300	-290
13	Front shock absorber fixing width	mm	711	780	69
14	Bonnet leading edge height	mm	667	810	143
15	Front shock absorber fixing width	mm	925	867	-58
16	Front bumper to front axle distance	mm	810	540	-270
17	Front axle to 'A' pillar distance	mm	570	530	-40
18	'A' pillar to 'B' pillar distance	mm	1103	1103	0
19	'B' pillar to rear axle distance	mm	1050	1052	2
20	'B' pillar to 'C' pillar distance	mm	987	991	4
21	Roof sill bottom height	mm	1276	1260	-16
22	Roof sill top height	mm	1392	1380	-12
23	Floor sill bottom height	mm	188	160	-28
24	Floor sill top height	mm	300	280	-20

Test Vehicle: 2008 Lexus IS 250 4-Door Sedan NHTSA No.: M85104

Test Program: 2007 NHTSA 35mph NCAP Test Date: 10/02/07





DATA SHEET NO. 14

CAMERA LOCATIONS

Test Vehicle: 2008 Lexus IS 250 4-Door Sedan NHTSA No.: M85104

Test Program: 2007 NHTSA 35mph NCAP Test Date: 10/02/07

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	9475	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		12mm	1000
13	Passenger Front View	381	445	-2548	-34		12mm	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 Cross View	-2900	350	-1380	-2		12mm	1000
17	Passenger Side Cross View	-2900	-330	1412	2		12mm	1000
18	Real Time Driver	-1926	-8089	-1704	-1			30
19	Real Time Passenger	-1433	8047	-1704	-1			30

All measurements are relative to the point of impact.

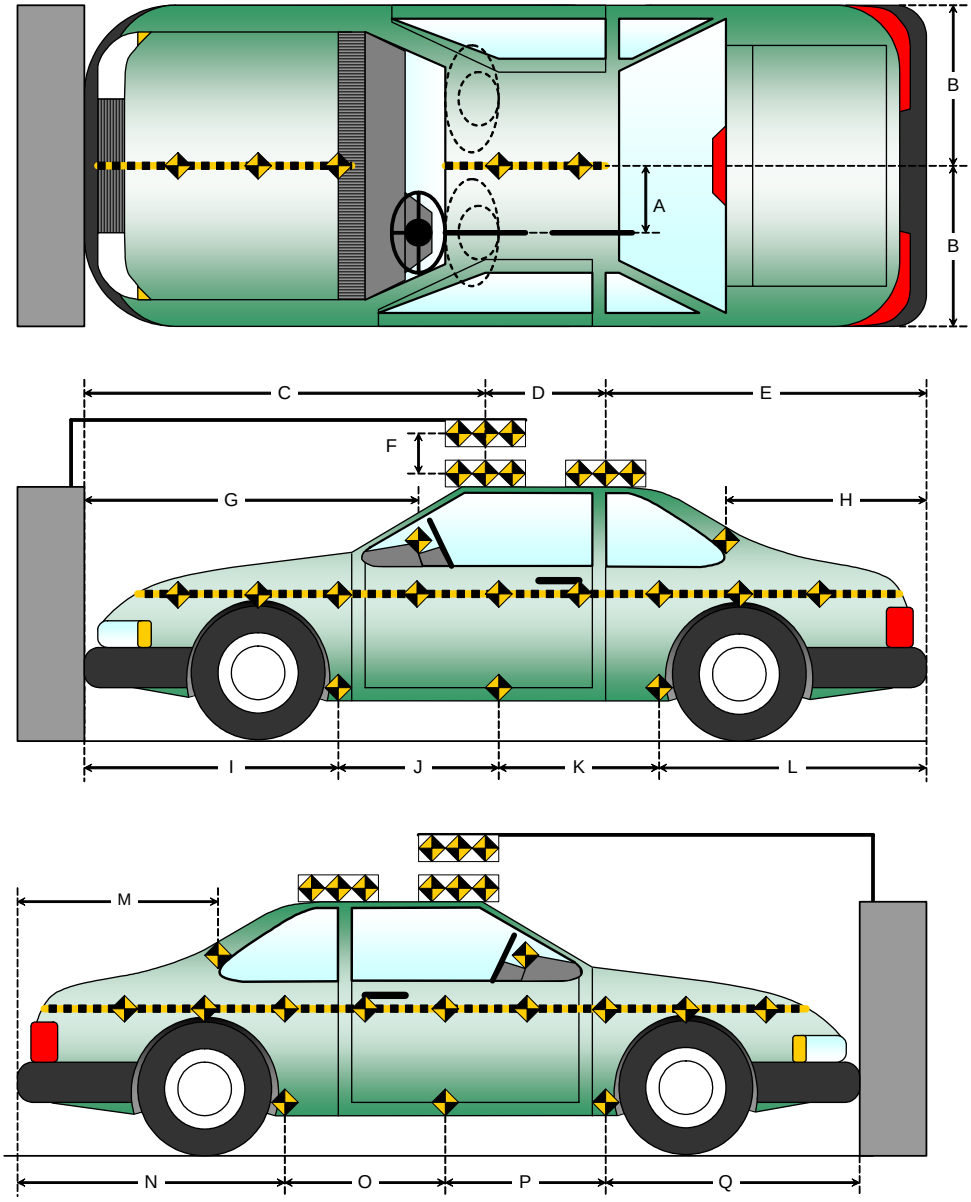
DATA SHEET NO. 15

PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Test Vehicle: 2008 Lexus IS 250 4-Door Sedan NHTSA No.: M85104

Test Program: 2007 NHTSA 35mph NCAP Test Date: 10/02/07

All Dimensions in (mm)	
Item	Value
A	n/a
B	866
C	n/a
D	n/a
E	n/a
F	n/a
G	900
H	1005
I	1253
J	942
K	942
L	1447
M	1005
N	1447
O	942
P	942
Q	1253



DATA SHEET NO. 16

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2008 Lexus IS 250 4-Door Sedan NHTSA No.: M85104

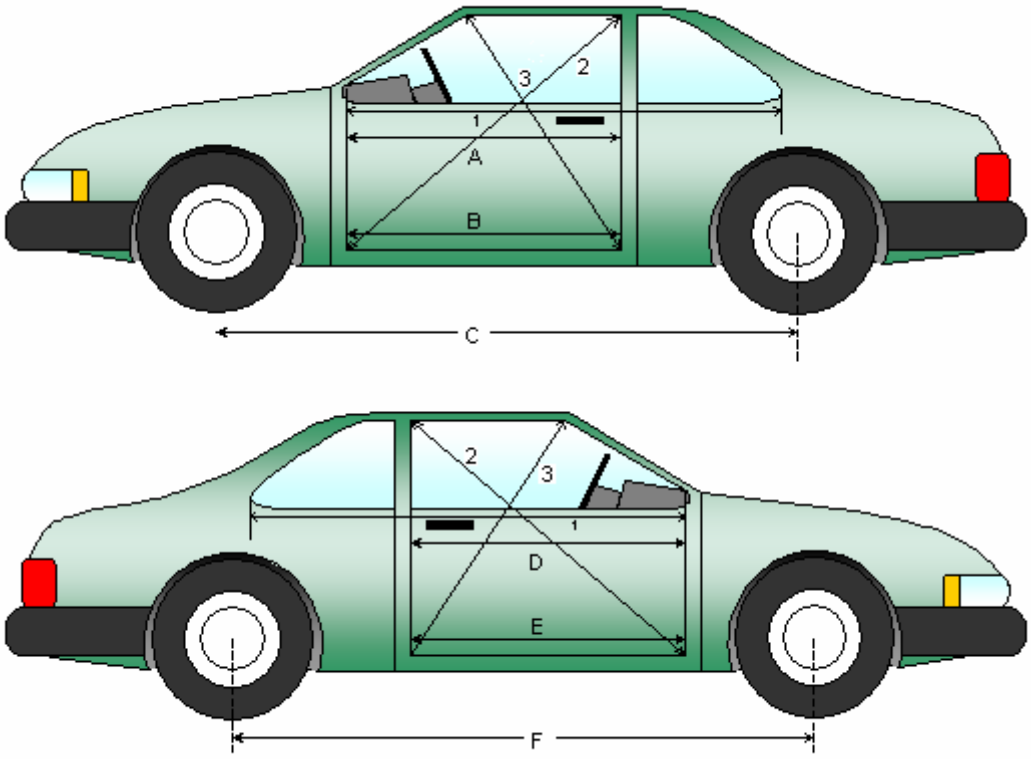
Test Program: 2007 NHTSA 35mph NCAP Test Date: 10/02/07

DOOR OPENING WIDTH TABLE

Item	Description	Units	Pre-Test	Post-Test	Diff.
1L	Left Side	mm	1103	1102	-1
2L	Left Side (Diagonally)	mm	1456	1456	0
3L	Left Side (Diagonally)	mm	976	976	0
1R	Right Side	mm	1103	1102	-1
2R	Right Side (Diagonally)	mm	1456	1456	0
3R	Right Side (Diagonally)	mm	976	975	-1

WHEELBASE MEASUREMENT TABLE

Item	Description	Units	Pre-Test	Post-Test	Diff.
C	Left Side Wheel Base	mm	2726	2660	-66
F	Right Side Wheel Base	mm	2726	2640	-86



DATA SHEET NO. 16…(CONTINUED)

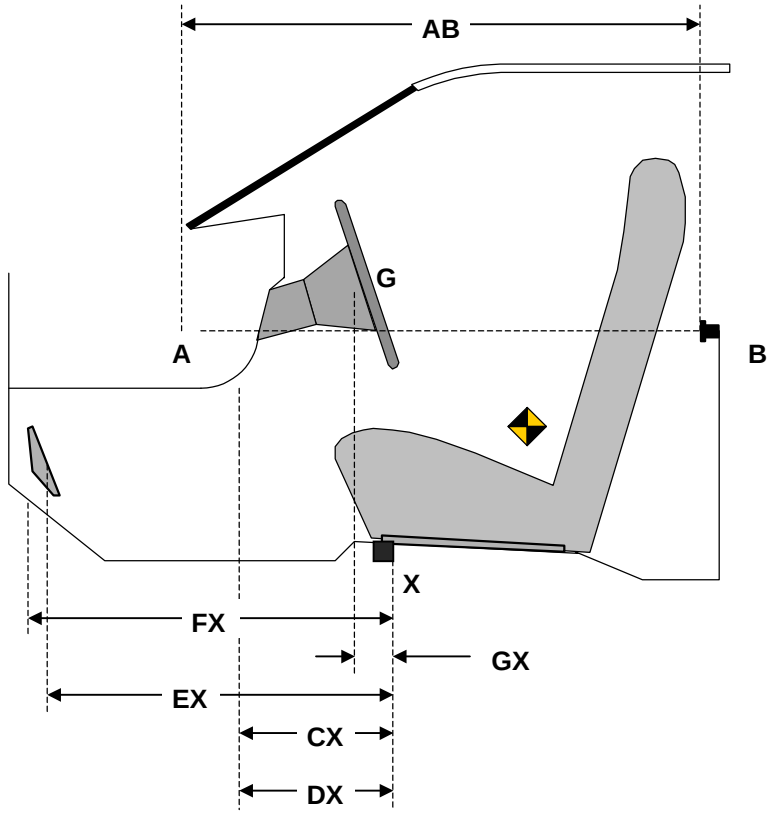
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2008 Lexus IS 250 4-Door Sedan NHTSA No.: M85104

Test Program: 2007 NHTSA 35mph NCAP Test Date: 10/02/07

DRIVER COMPARTMENT INTRUSION TABLE

Item	Description	Units	Pre-Test	Post-Test	Diff.
AB	Door Opening (Inside window jam)	mm	1103	1103	0
CX	Left Knee Bolster to X	mm	304	294	-10
DX	Right Knee Bolster to X	mm	298	290	-8
EX	Brake Pedal to X	mm	590	606	16
FX	Foot Rest to X	mm	630	620	-10
GX	Center of Steering Wheel Hub to X	mm	130	140	10

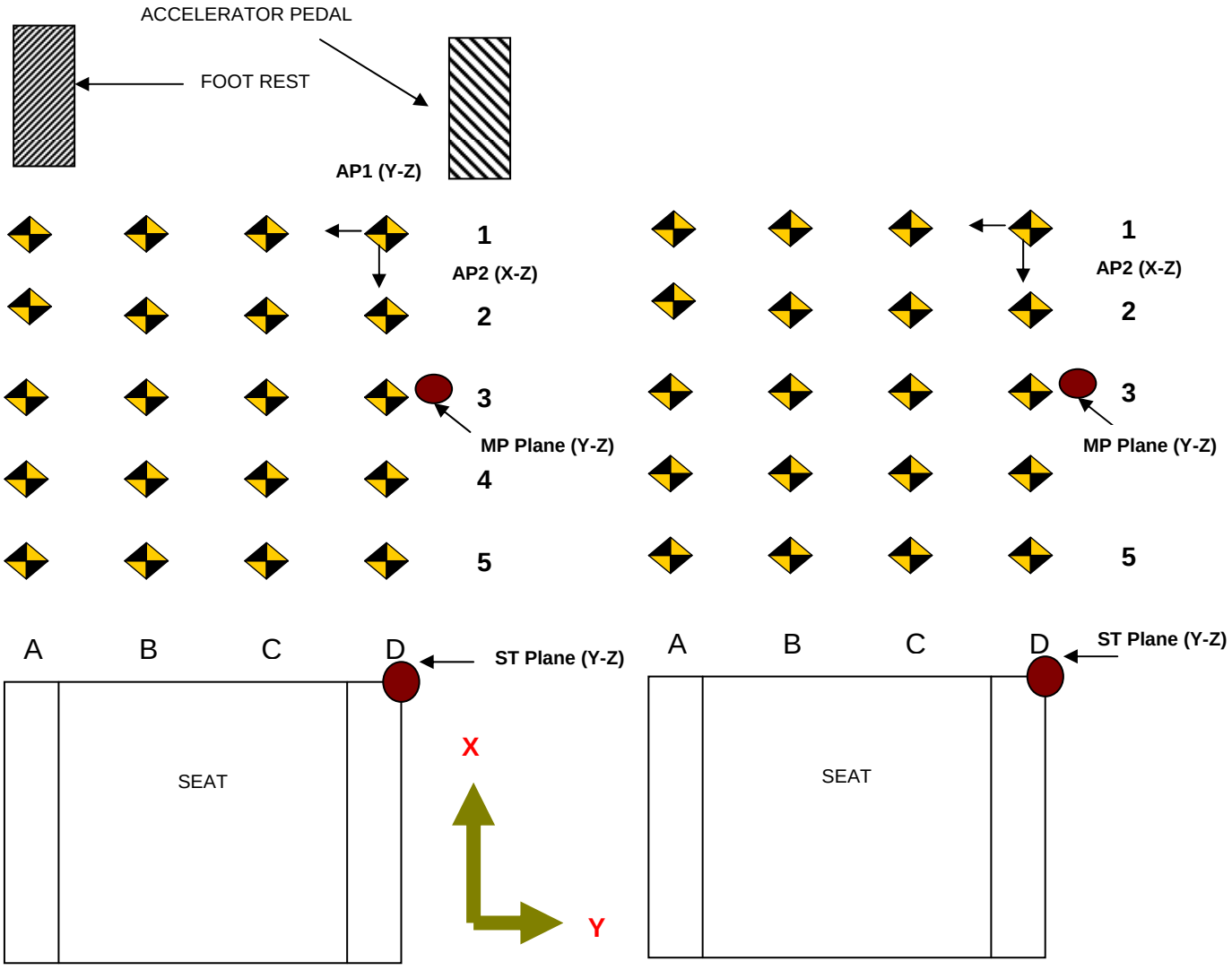


DATA SHEET NO. 16…(CONTINUED)

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2008 Lexus IS 250 4-Door Sedan NHTSA No.: M85104

Test Program: 2007 NHTSA 35mph NCAP Test Date: 10/02/07



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 Lexus IS 250 4-Door Sedan NHTSA No.: M85104

Test Program: 2007 NHTSA 35mph NCAP Test Date: 10/02/07

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	738	731	715	698	615	670	654	651	-123	-61	-61	-47
2	628	637	623	626	546	535	537	537	-82	-102	-86	-89
3	526	521	516	507	445	424	429	419	-81	-97	-87	-88
4	415	407	399	389	324	328	317	303	-91	-79	-82	-86
5	295	288	287	284	205	192	185	174	-90	-96	-102	-110

DRIVER FLOOR PAN Y-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	6	111	207	345	52	171	258	444	46	60	51	99
2	8	107	207	354	51	158	266	443	43	51	59	89
3	10	111	209	355	34	147	260	439	24	36	51	84
4	7	108	208	354	40	150	265	437	33	42	57	83
5	4	104	210	353	50	146	255	430	46	42	45	77

DRIVER FLOOR PAN Z-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	2	-1	-15	-24	-85	-35	-39	-10	-87	-34	-24	14
2	70	78	60	48	28	41	22	54	-42	-37	-38	6
3	113	103	93	84	50	56	37	67	-63	-47	-56	-17
4	112	109	93	82	65	57	46	77	-47	-52	-47	-5
5	111	116	90	75	48	81	47	87	-63	-35	-43	12

DATA SHEET NO. 16…(CONTINUED)

VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2008 Lexus IS 250 4-Door Sedan NHTSA No.: M85104

Test Program: 2007 NHTSA 35mph NCAP Test Date: 10/02/07

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	687	699	697	697	700	693	715	652	13	-6	18	-45
2	591	591	588	585	600	598	586	585	9	7	-2	0
3	461	464	472	472	496	488	480	478	35	24	8	6
4	349	356	359	362	383	374	365	360	34	18	6	-2
5	228	233	234	239	257	247	239	237	29	14	5	-2

PASSENGER FLOOR PAN Y-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	-371	-271	-145	-6	-379	-274	-159	-24	-8	-3	-14	-18
2	-369	-270	-150	-7	-378	-277	-164	0	-9	-7	-14	7
3	-361	-265	-148	-9	-387	-276	-174	-7	-26	-11	-26	2
4	-358	-261	-150	-8	-392	-283	-182	-12	-34	-22	-32	-4
5	-356	-256	-142	-10	-405	-295	-195	-16	-49	-39	-53	-6

PASSENGER FLOOR PAN Z-AXIS

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
1	-9	5	11	23	-53	-59	-64	-101	-44	-64	-75	-124
2	79	78	80	93	45	37	20	29	-34	-41	-60	-64
3	83	95	95	108	58	49	32	36	-25	-46	-63	-72
4	81	98	100	105	60	49	41	51	-21	-49	-59	-54
5	73	103	103	105	71	52	60	71	-2	-51	-43	-34

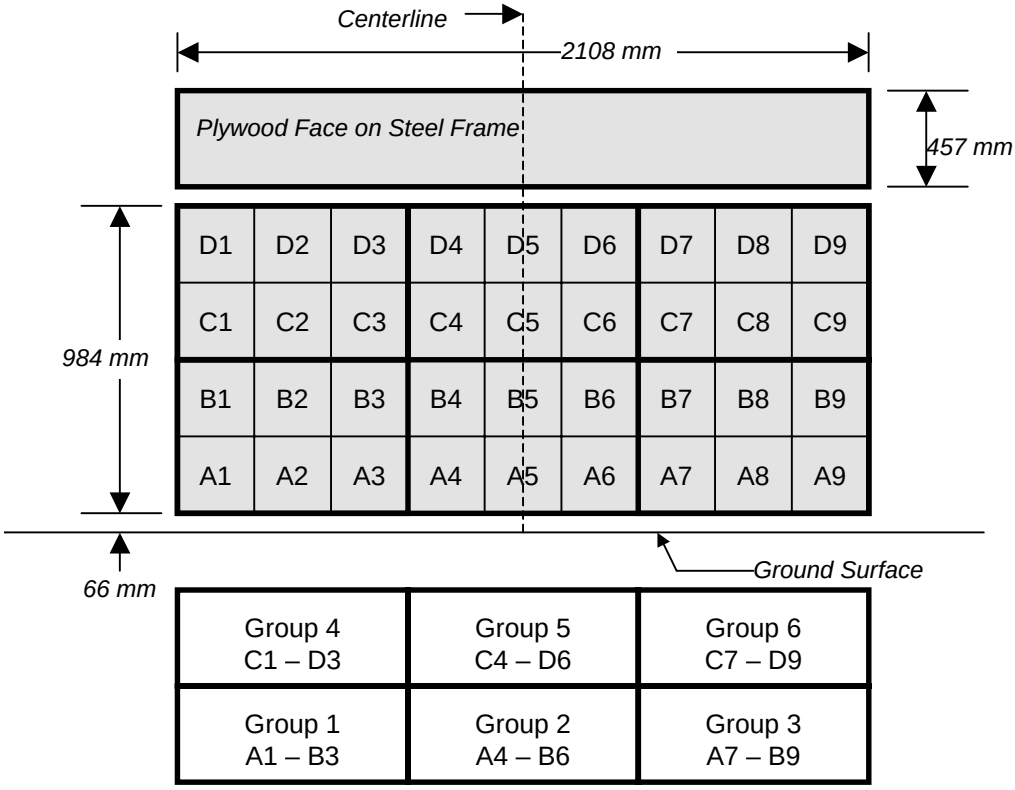
DATA SHEET NO. 17

FIXED BARRIER LOAD CELL LOCATIONS

Test Vehicle: 2008 Lexus IS 250 4-Door Sedan NHTSA No.: M85104

Test Program: 2007 NHTSA 35mph NCAP Test Date: 10/02/07

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



6 Groups of 6 Load Cells Each

DATA SHEET NO. 18

ACCIDENT INVESTIGATION DIVISION DATA

Test Vehicle: 2008 Lexus IS 250 4-Door Sedan NHTSA No.: M85104

Test Program: 2007 NHTSA 35mph NCAP Test Date: 10/02/07

VEHICLE INFORMATION

VIN: JTHBK262785052276 Wheel base (mm): 2726

Vehicle Size Category: 4-Door Sedan Test Weight (kg): 1766

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): 56.29

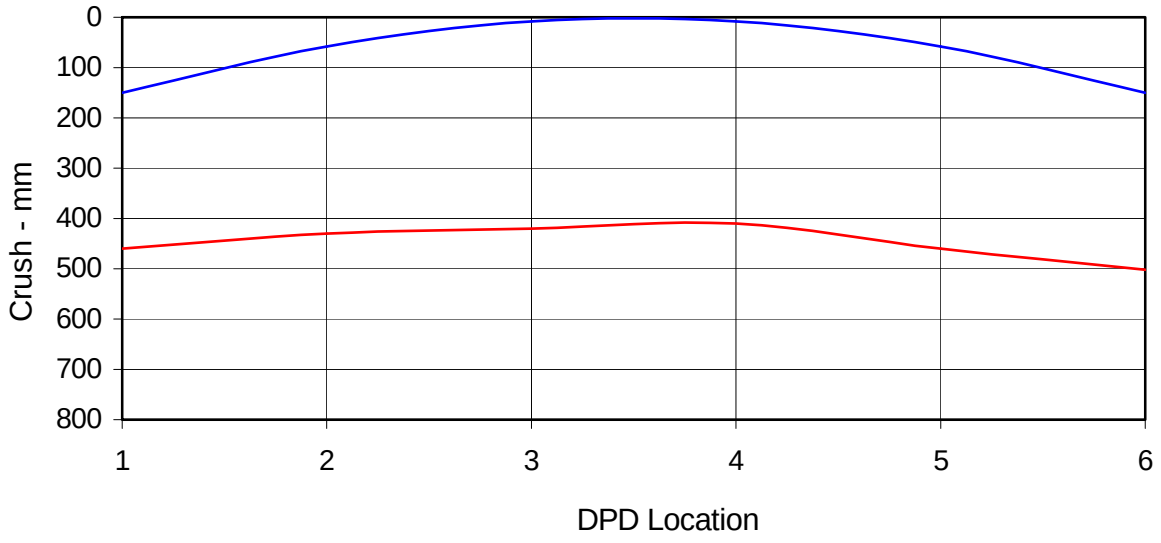
Velocity Change (km/h): 64.9 Time of Separation (msec): 66.4

CRUSH PROFILE

Collision Deformation Classification: 12FDEW6 Midpoint of Damage: Vehicle Centerline

Damage Region Length (mm): 1732 Impact Mode: Full Frontal

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush zone 1 at left side	mm	150	460	-310
C2	Crush zone 2 on left side	mm	58	430	-372
C3	Crush zone 3 on left side	mm	8	420	-412
C4	Crush zone 4 on right side	mm	8	410	-402
C5	Crush zone 5 on right side	mm	58	460	-402
C6	Crush zone 6 at right side	mm	150	502	-352

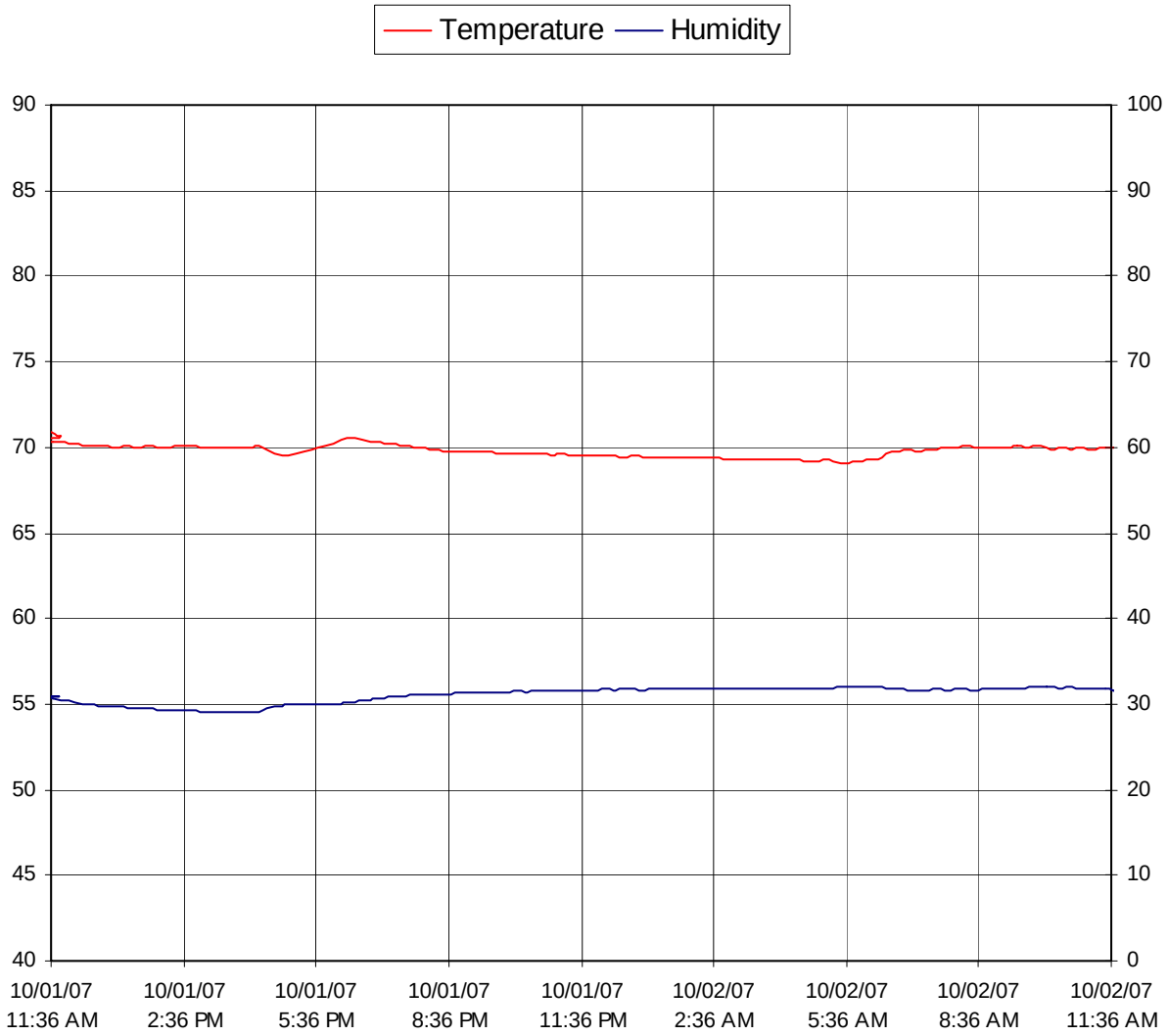


DATA SHEET NO. 19

DUMMY/VEHICLE TEMPERATURE STABILIZATION

Test Vehicle: 2008 Lexus IS 250 4-Door Sedan NHTSA No.: M85104

Test Program: 2007 NHTSA 35mph NCAP Test Date: 10/02/07



APPENDIX A
PHOTOGRAPHS

LIST OF PHOTOGRAPHS

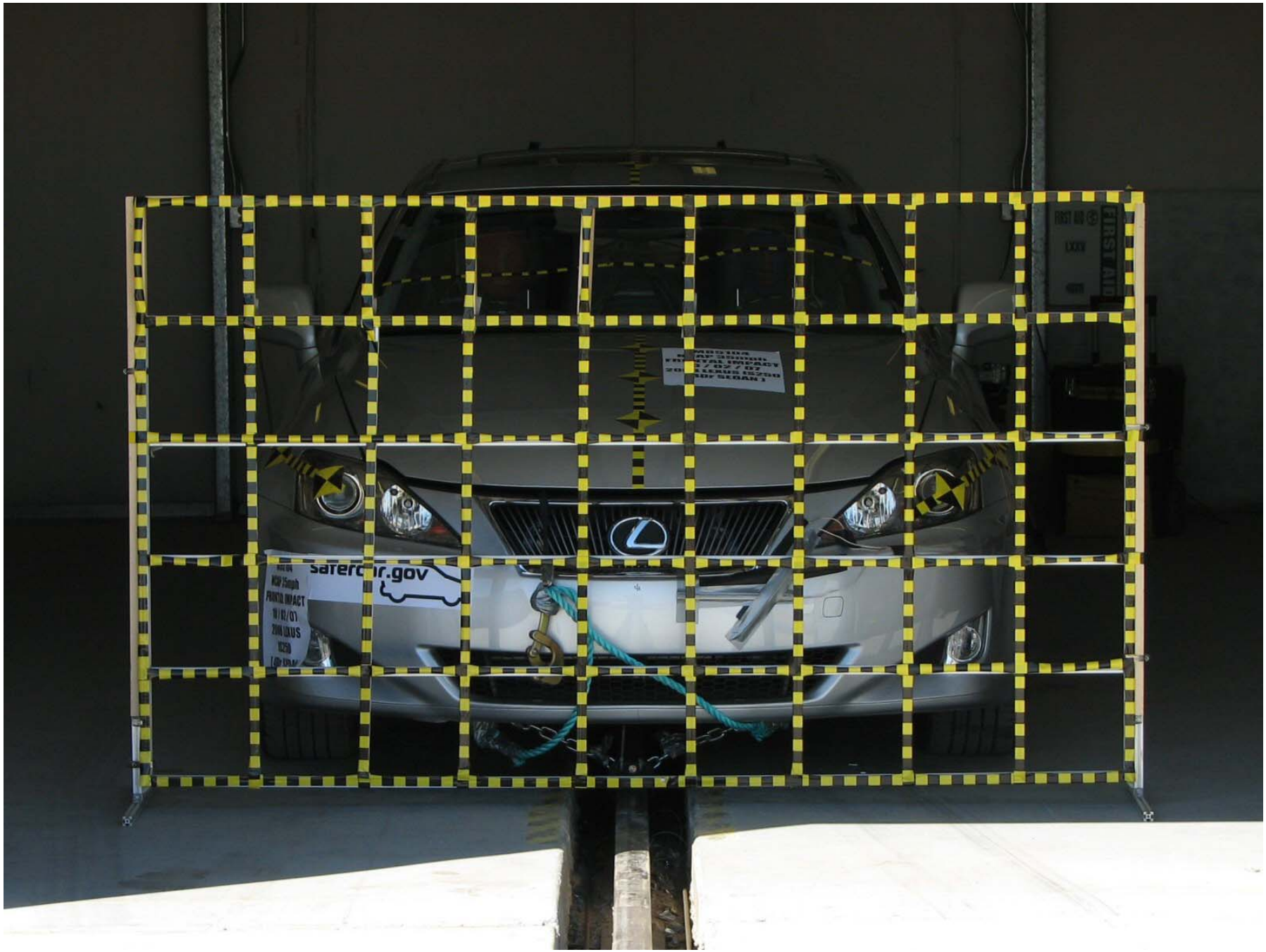


Figure A-1: Load Cell Location

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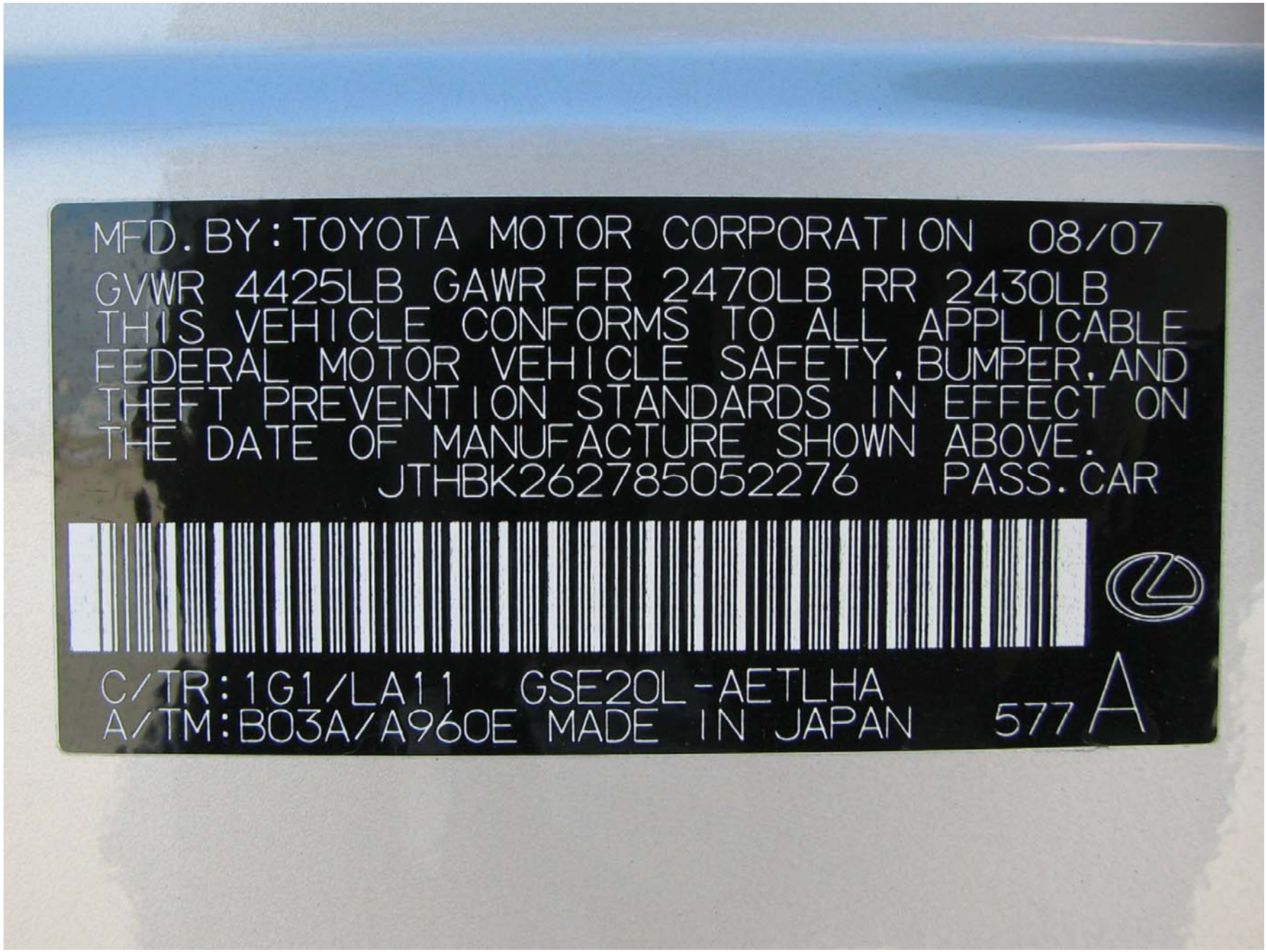


Figure A-2: Manufacturer's Label

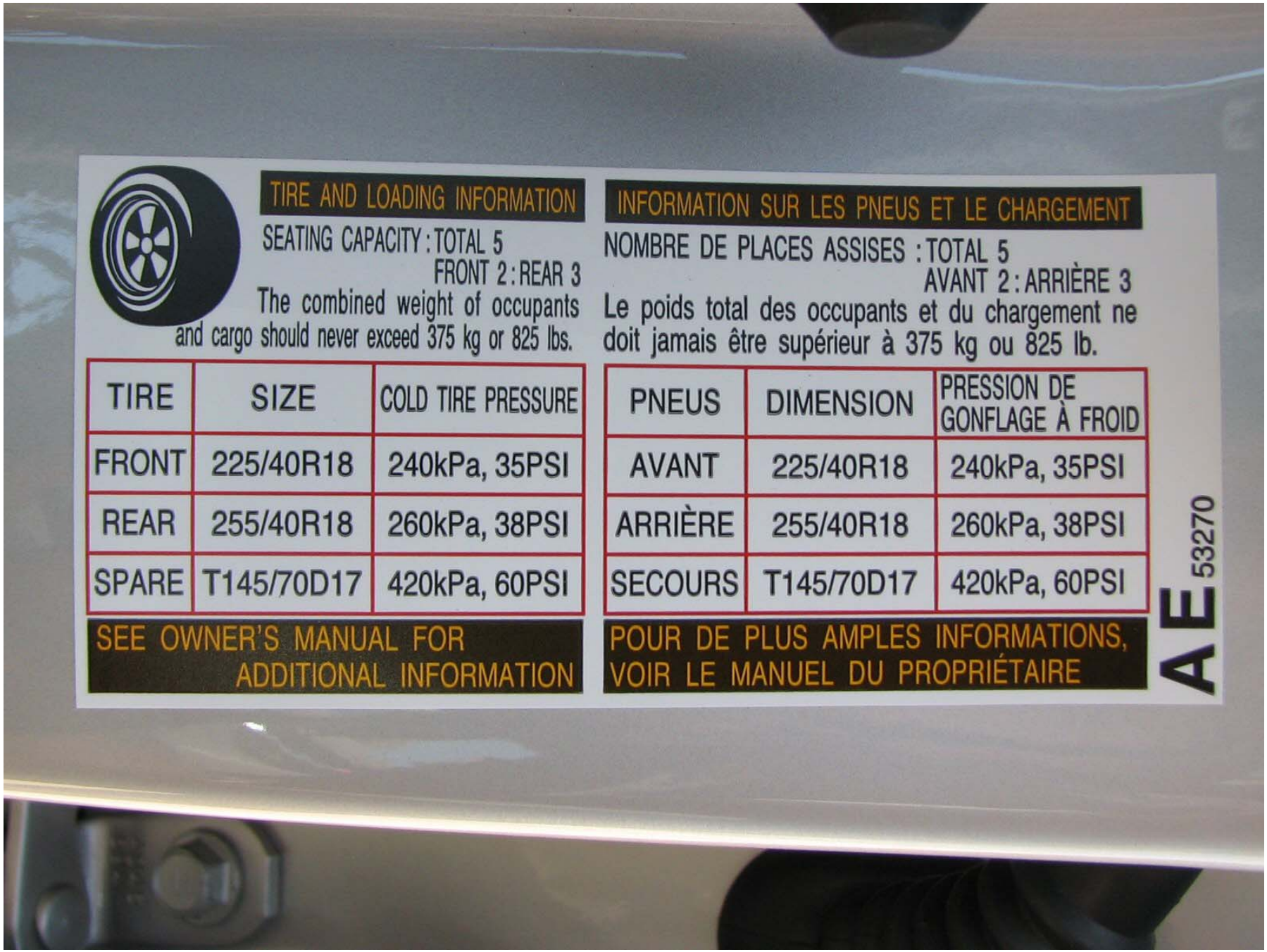


Figure A-3: Tire Placard

Figure A-4: Right Front ¾ View, As Received

Figure A-5: Left Rear ¾ View, as Received

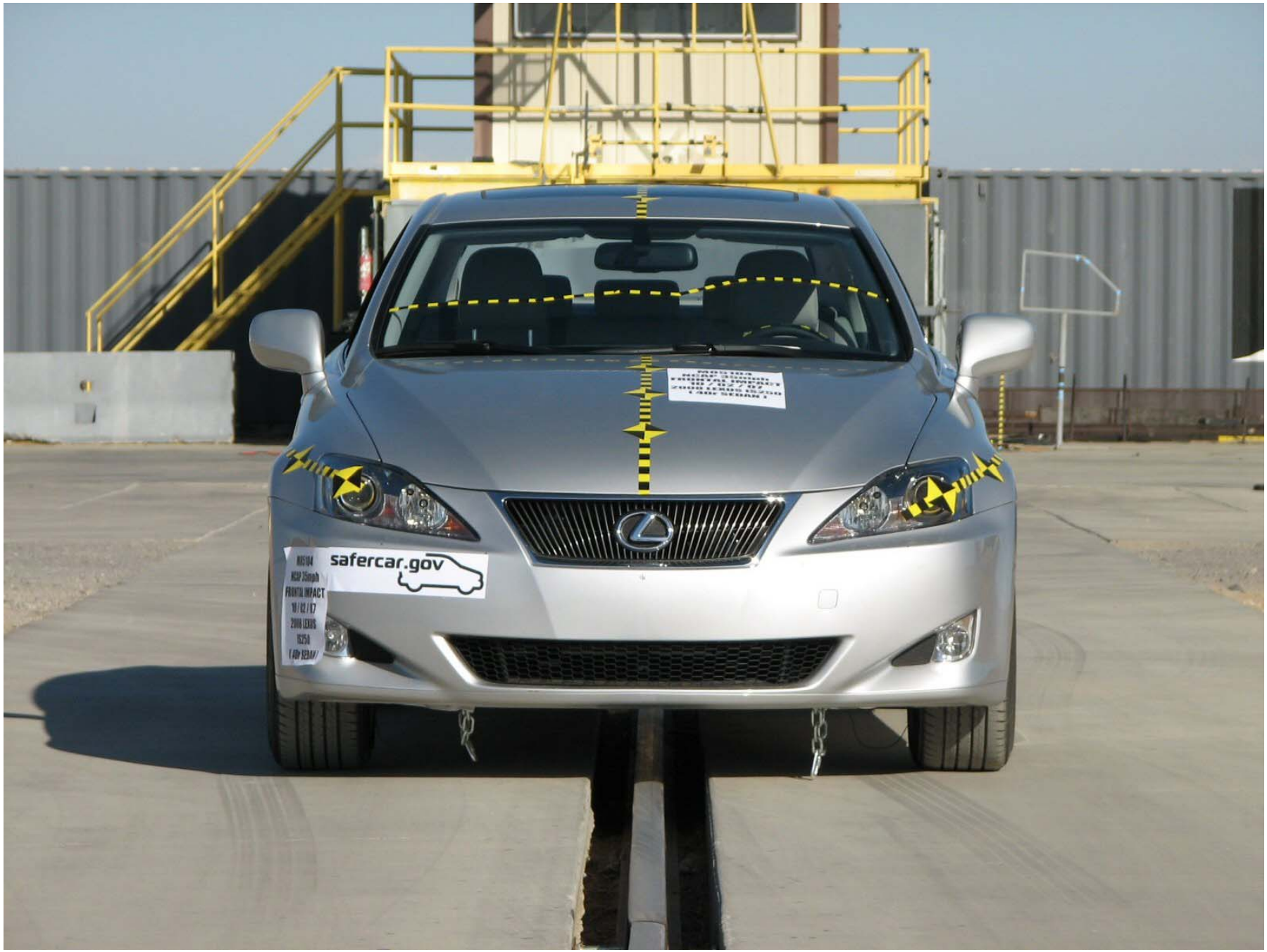


Figure A-6: Pre-Test Front View

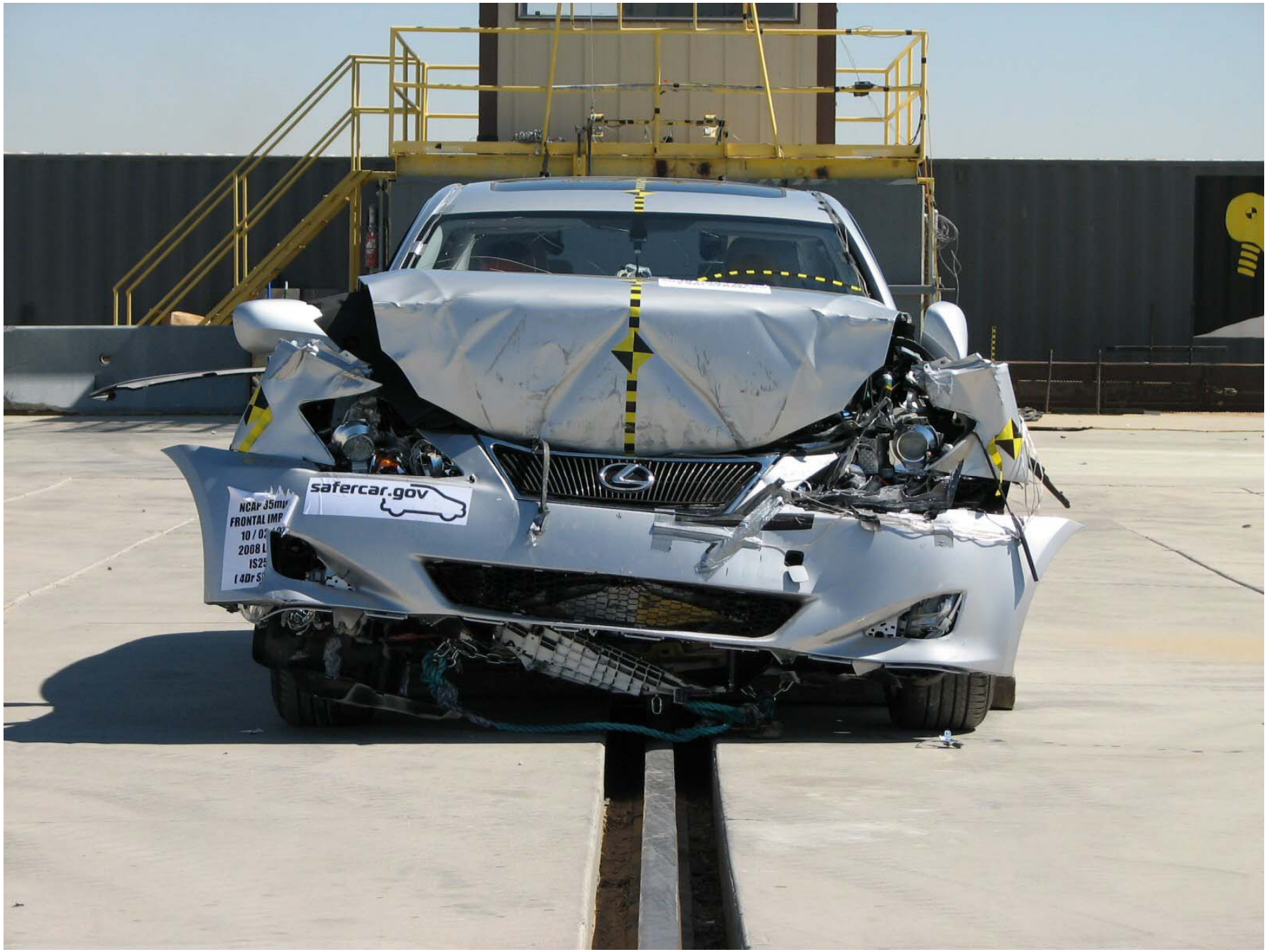


Figure A-7: Post-Test Front View (Vehicle Moved)

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 ¾ View

Figure A-15: Post-Test Left Rear ¾ View

Figure A-16: Post-Test Left Side ¾ View of Doors After Impact

Figure A-17: Post-Test Right Side ¾ View of Doors After Impact

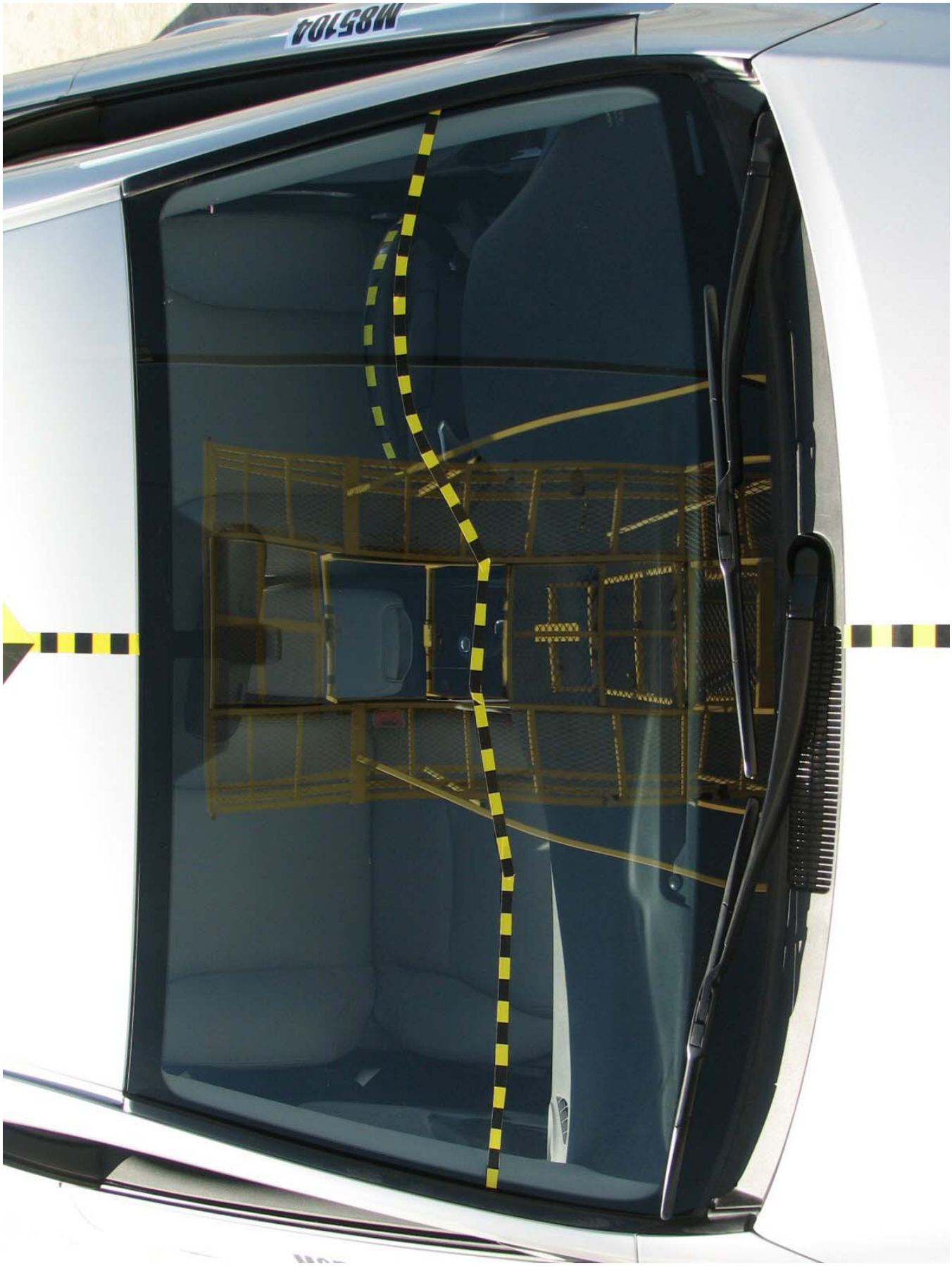


Figure A-18: Pre-Test Windshield

Figure A-19: Post-Test Windshield

Figure A-20: Pre-Test Engine Compartment

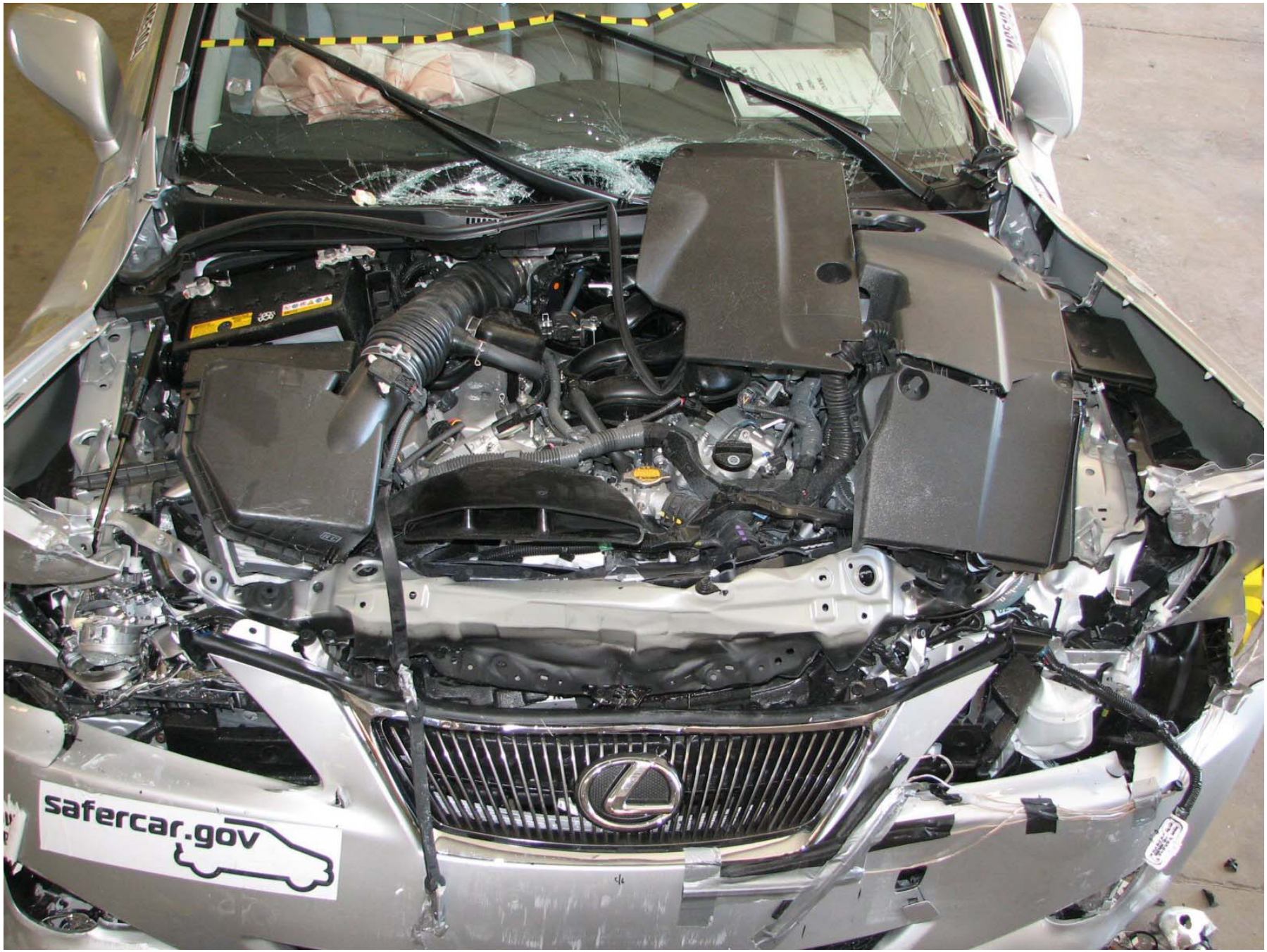


Figure A-21: Post-Test Engine Compartment (Vehicle Moved)

Figure A-22: Pre-Test Fuel Cap

Figure A-23: Post-Test Fuel Cap

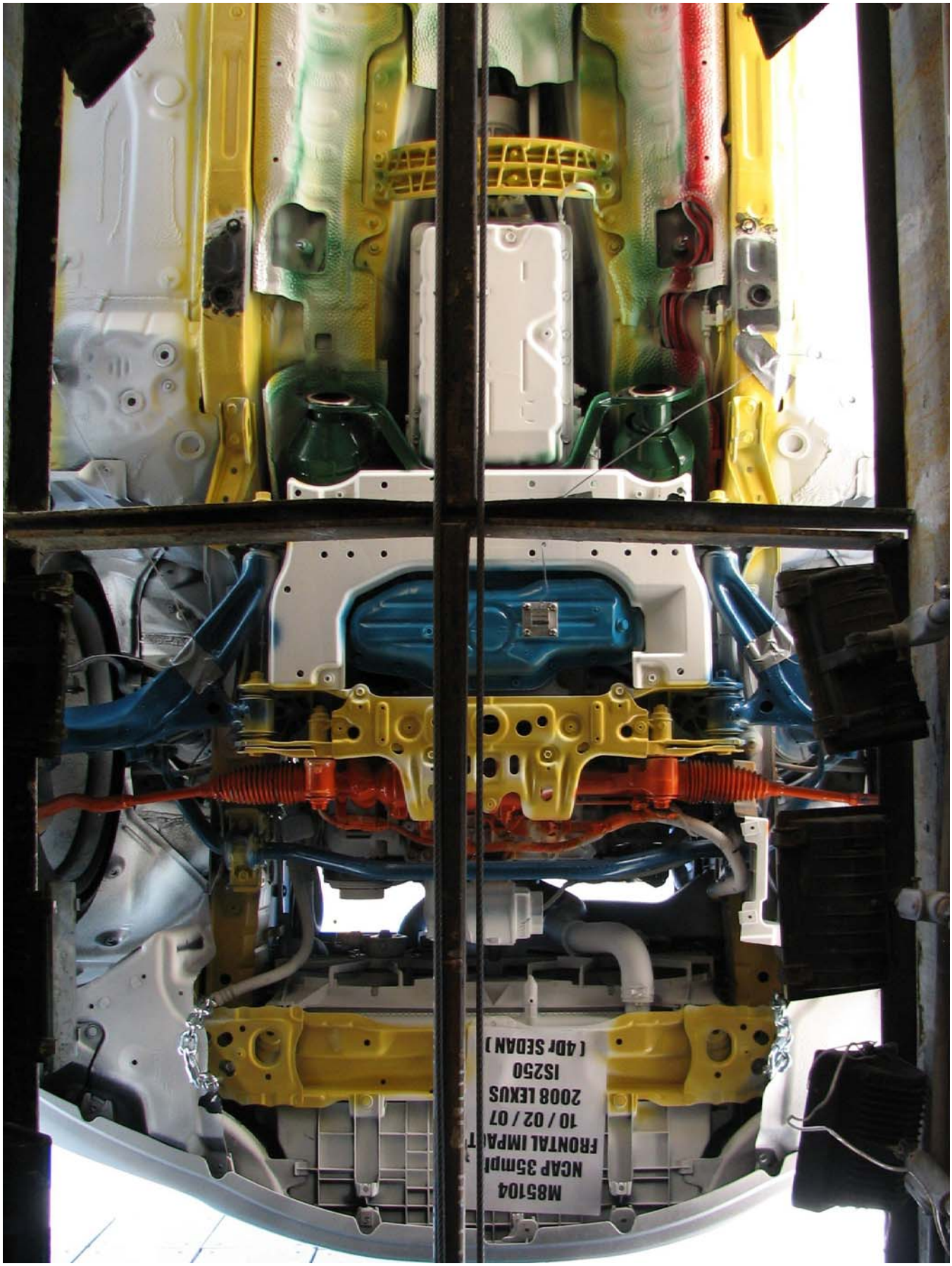


Figure A-24: Pre-Test Front Underbody

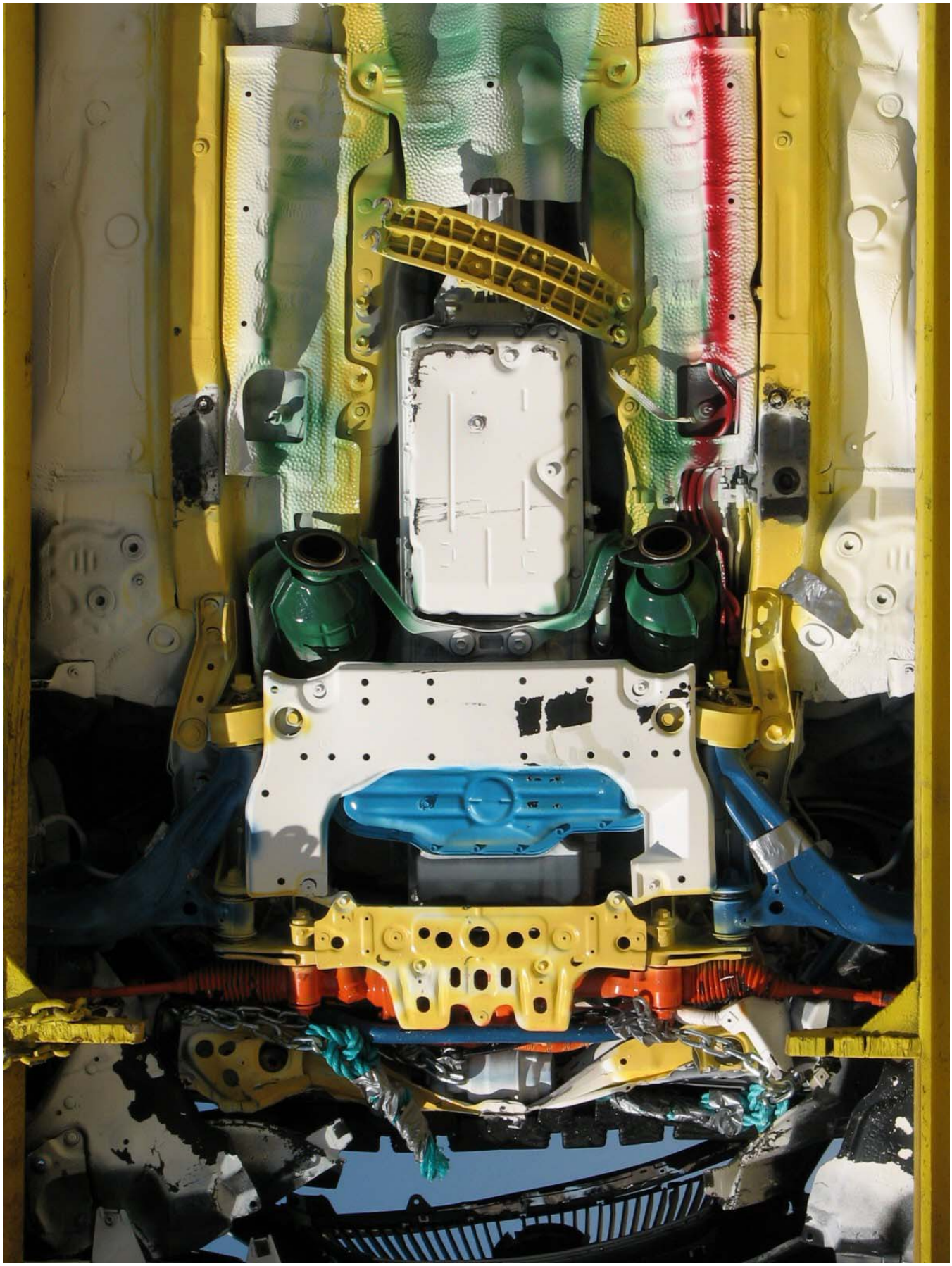


Figure A-25: Post-Test Front Underbody

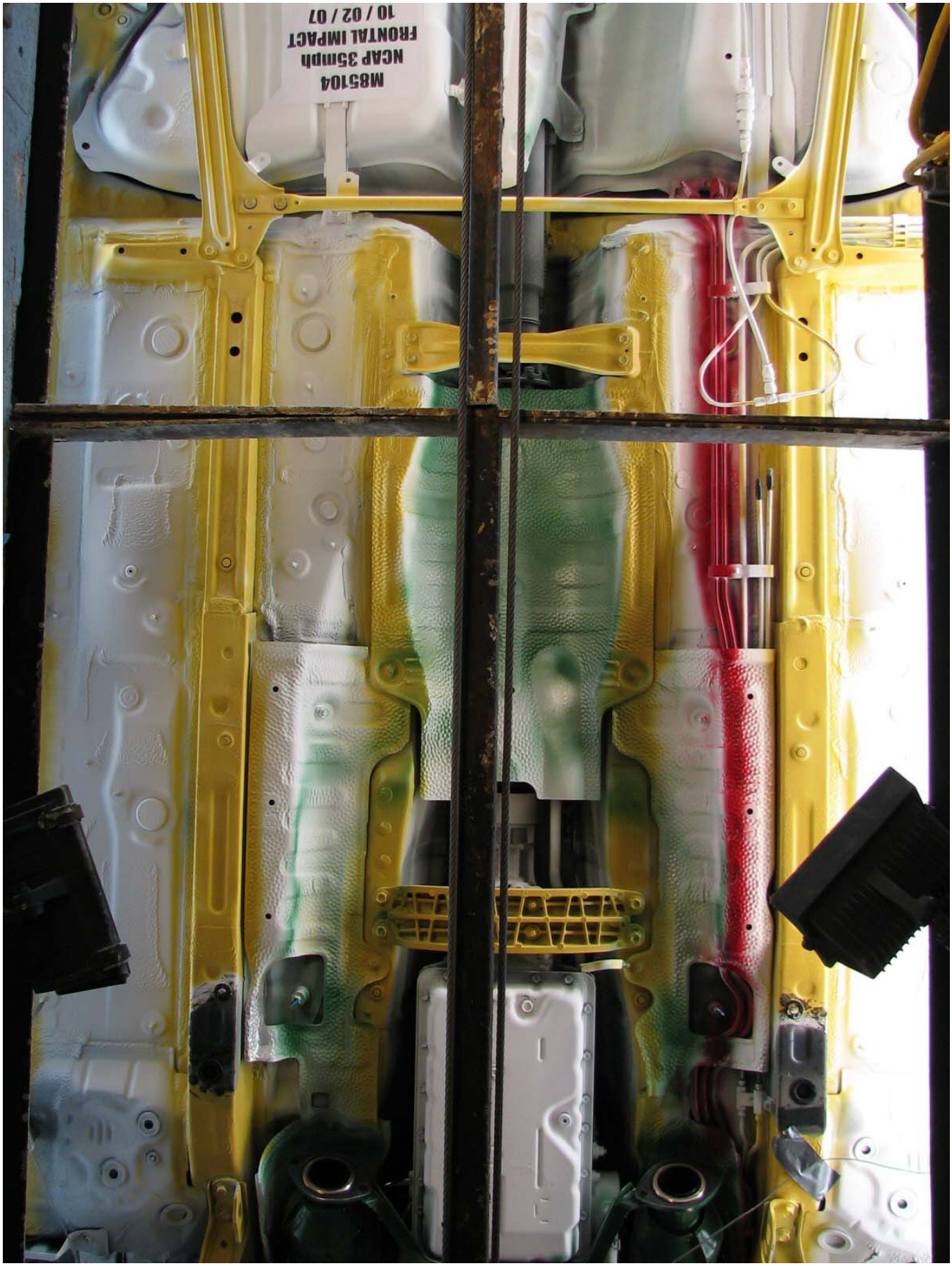


Figure A-26: Pre-Test Mid Underbody

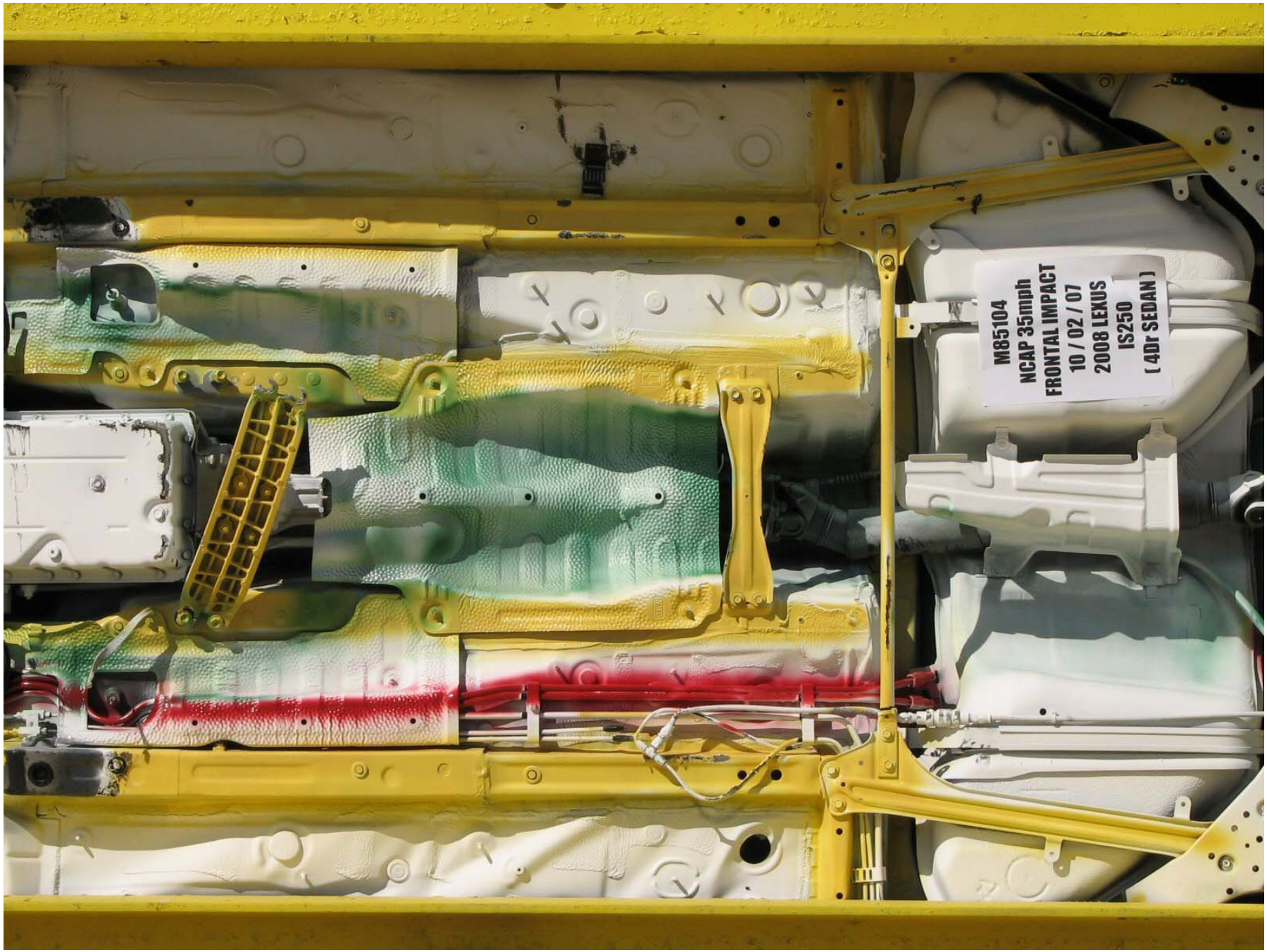


Figure A-27: Post-Test Mid Underbody

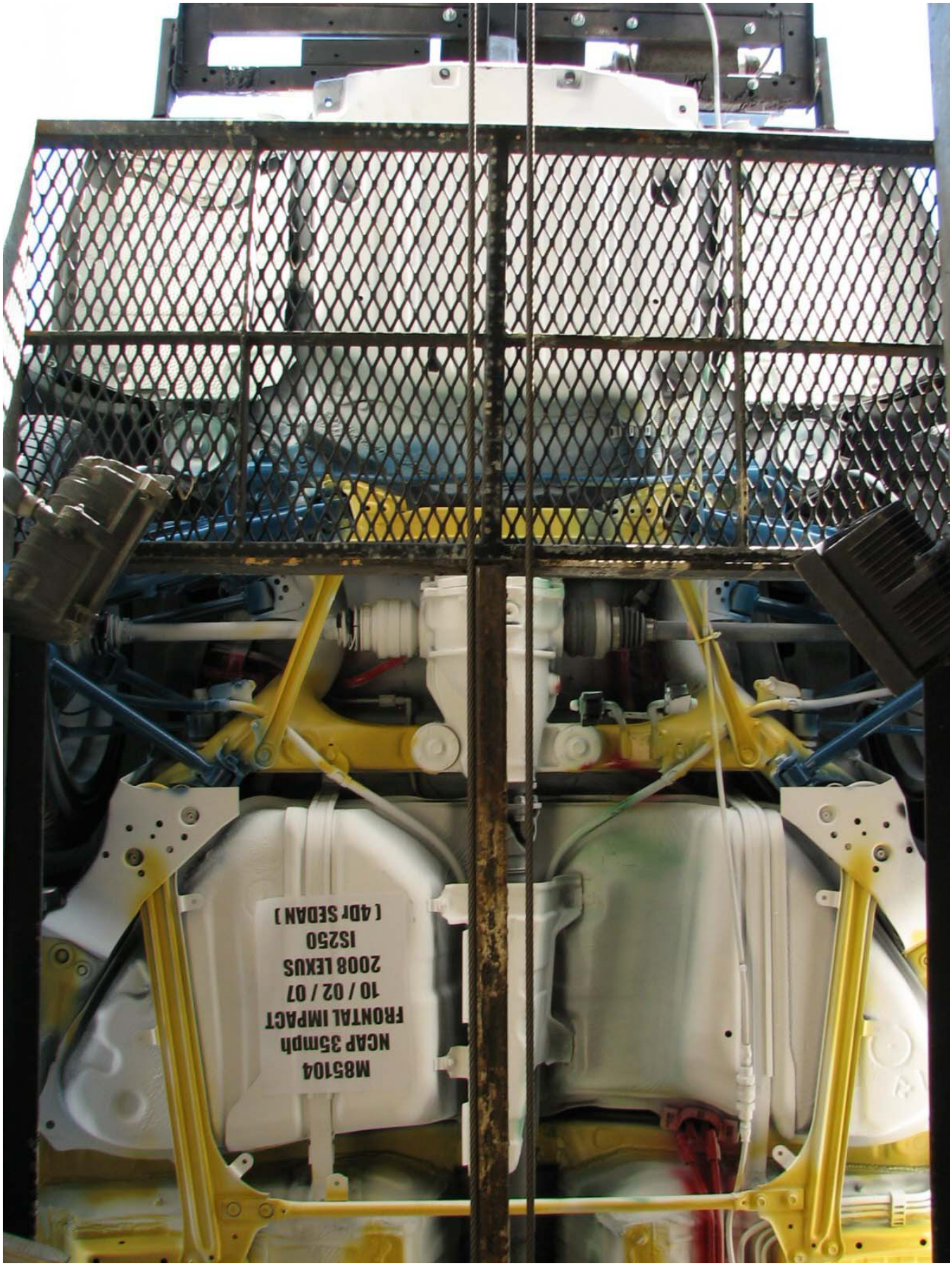


Figure A-28: Pre-Test Rear Underbody

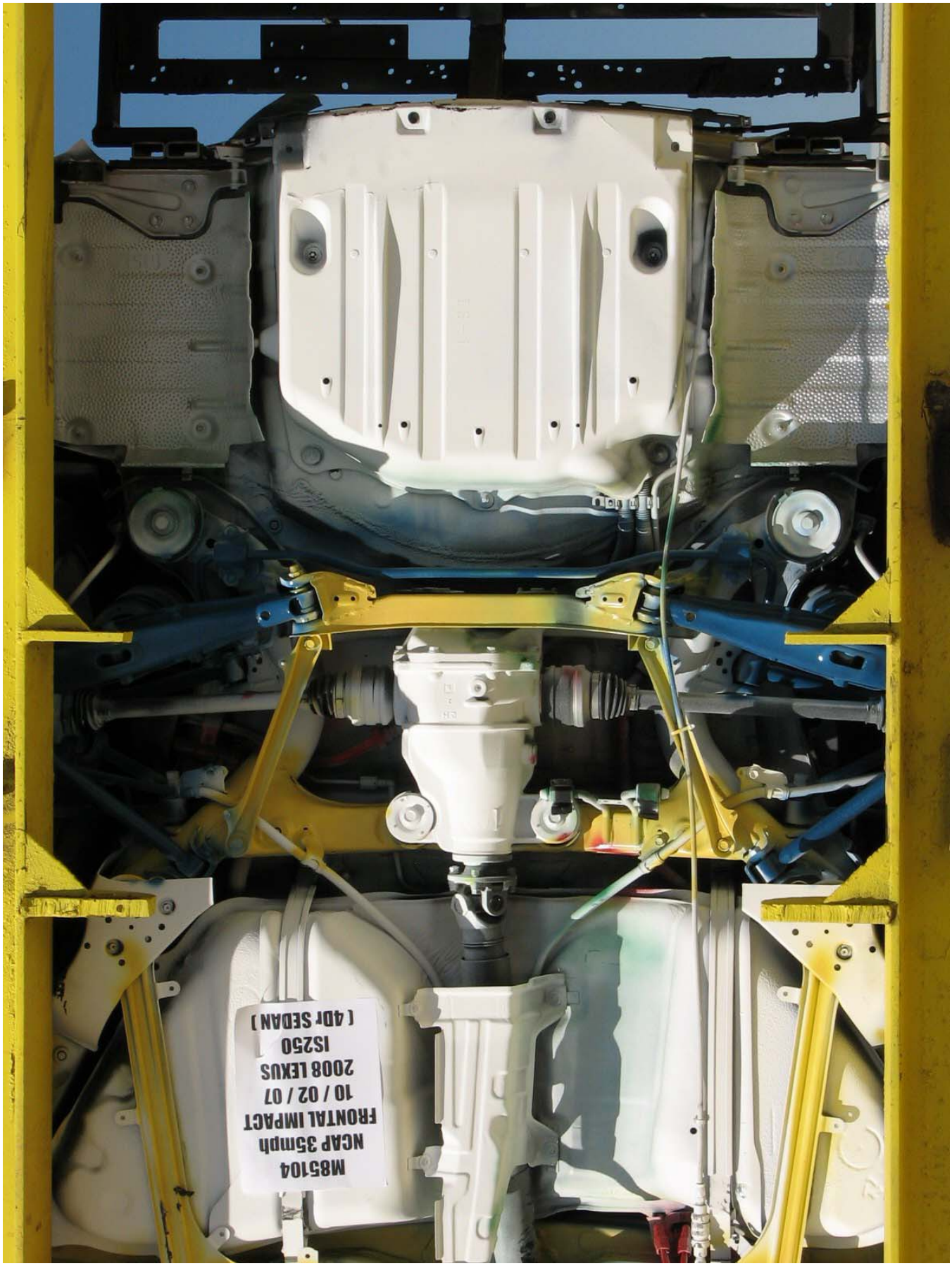


Figure A-29: Post-Test Rear Underbody

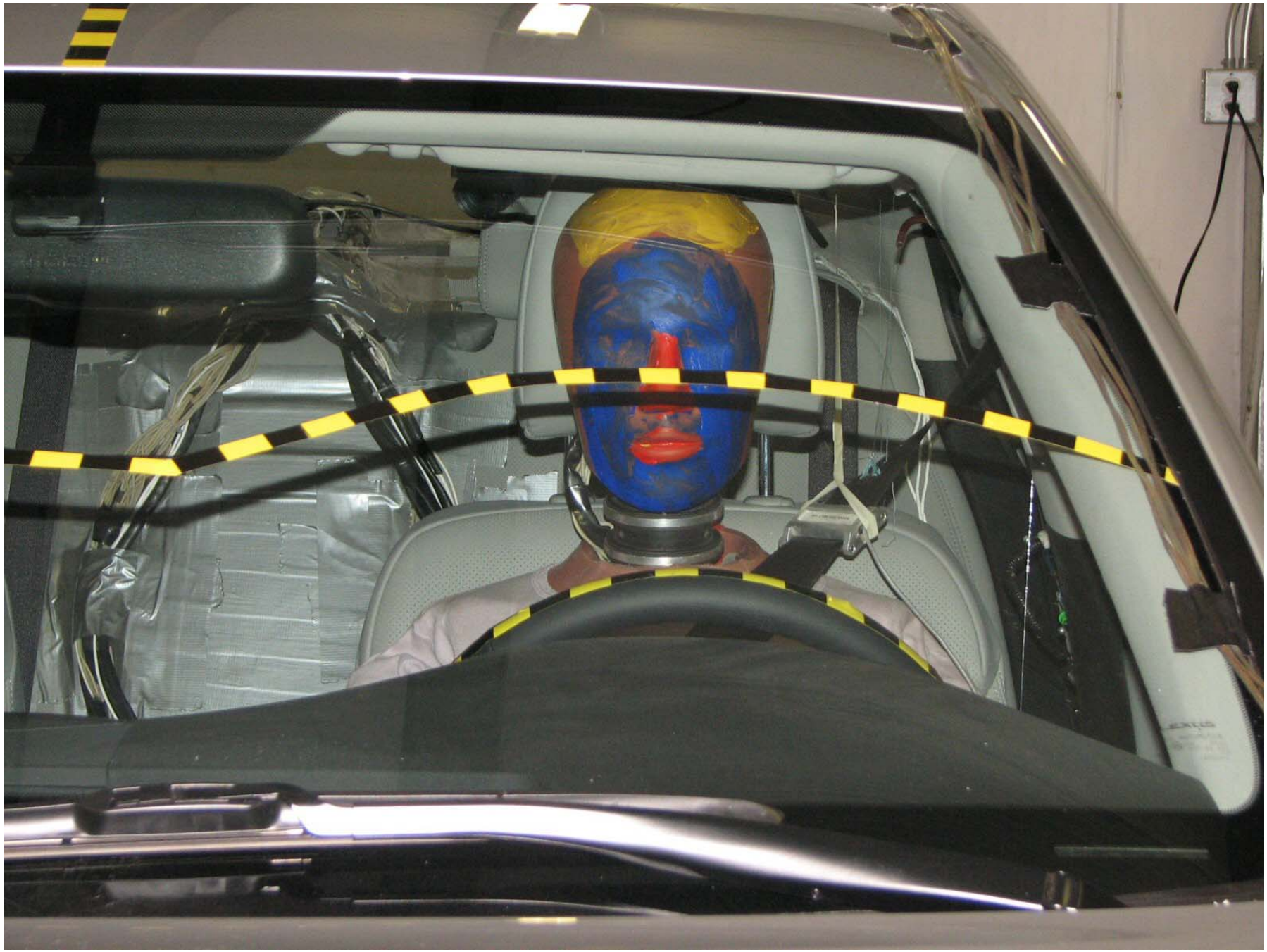


Figure A-30: Pre-Test Driver Dummy Front View (Head Position)

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)

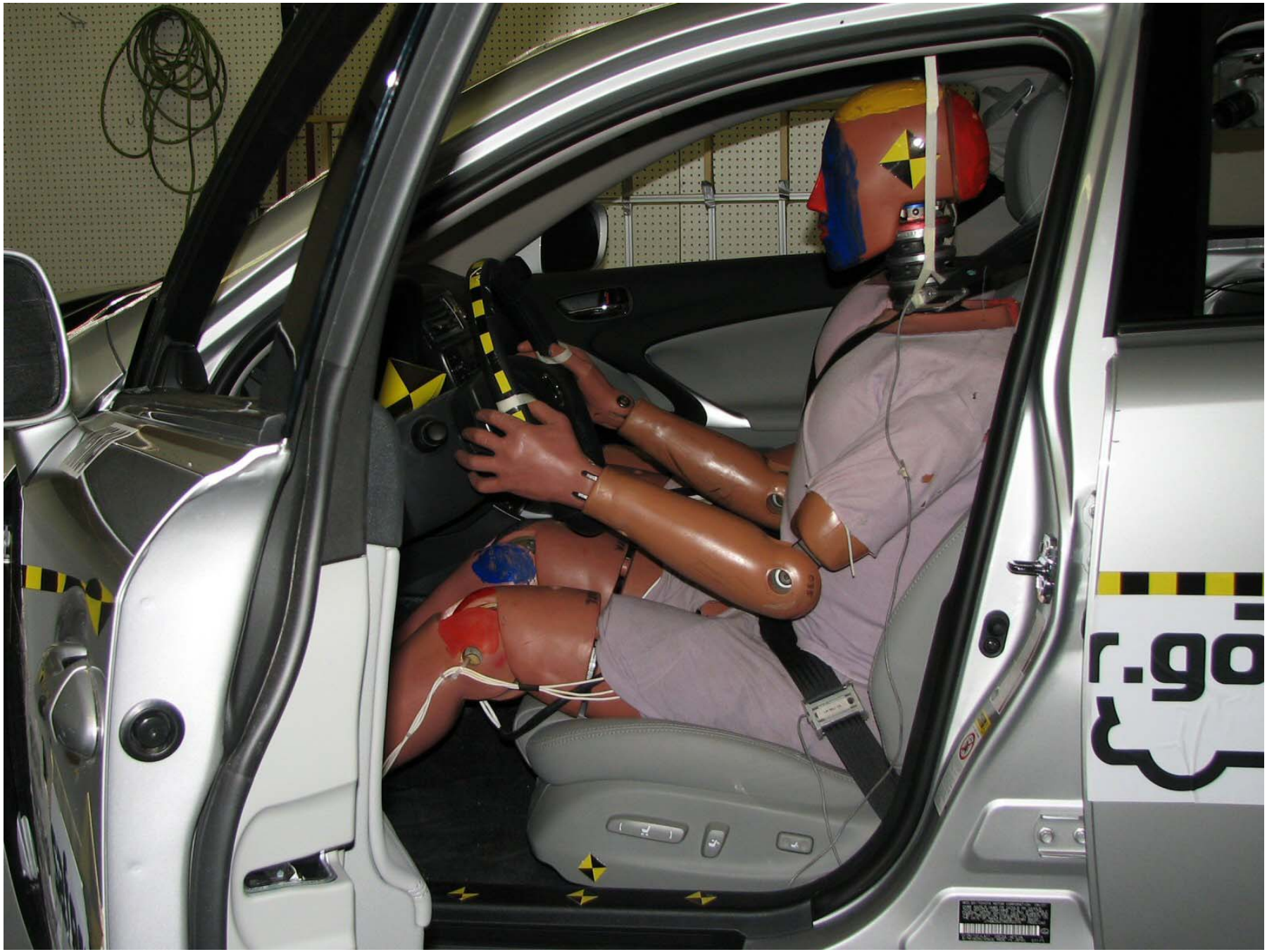


Figure A-34: Pre-Test Driver Dummy (Door Open)

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

Figure A-36: Pre-Test Driver Dummy Feet

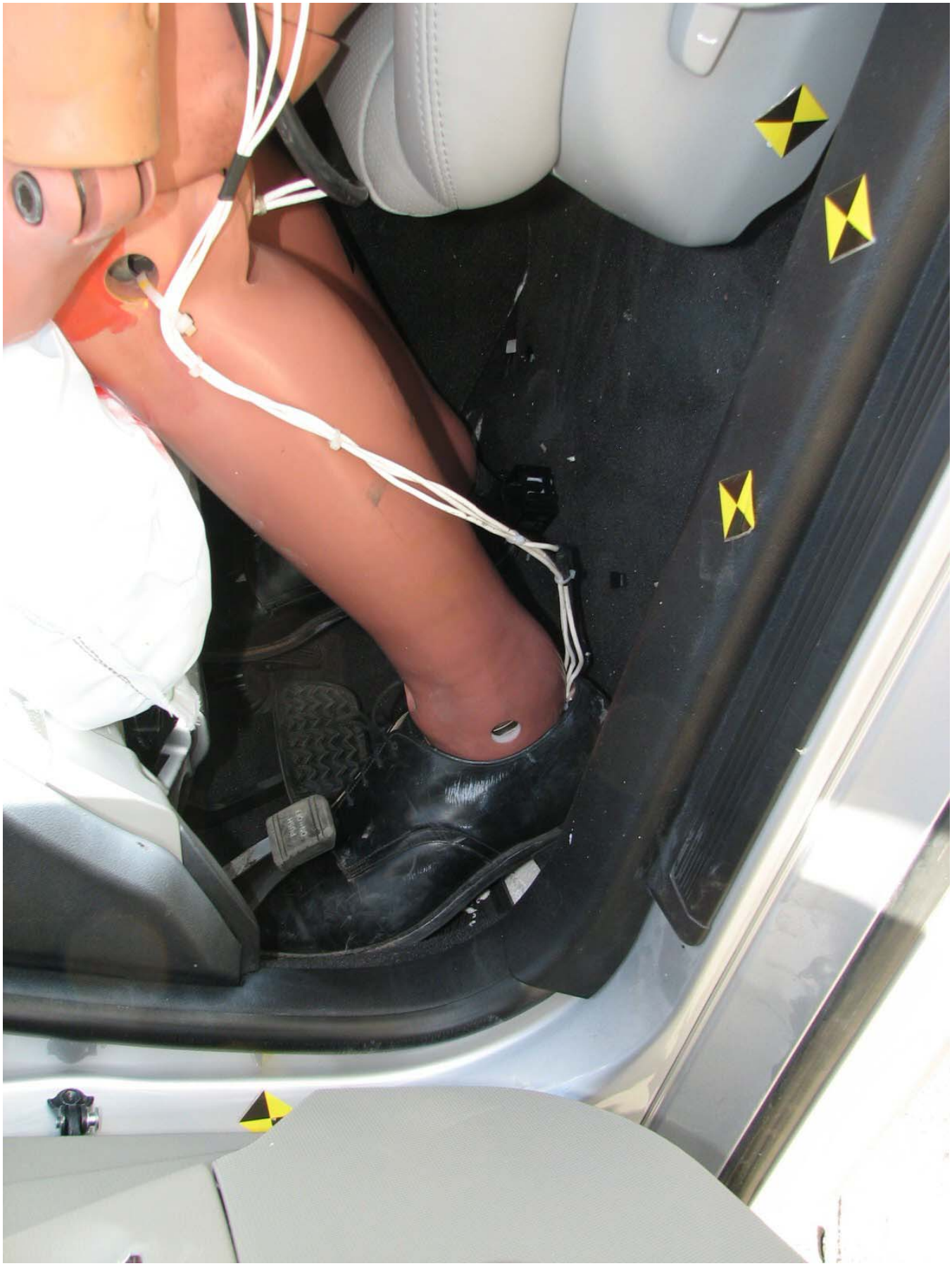


Figure A-37: Post-Test Driver Dummy Feet

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

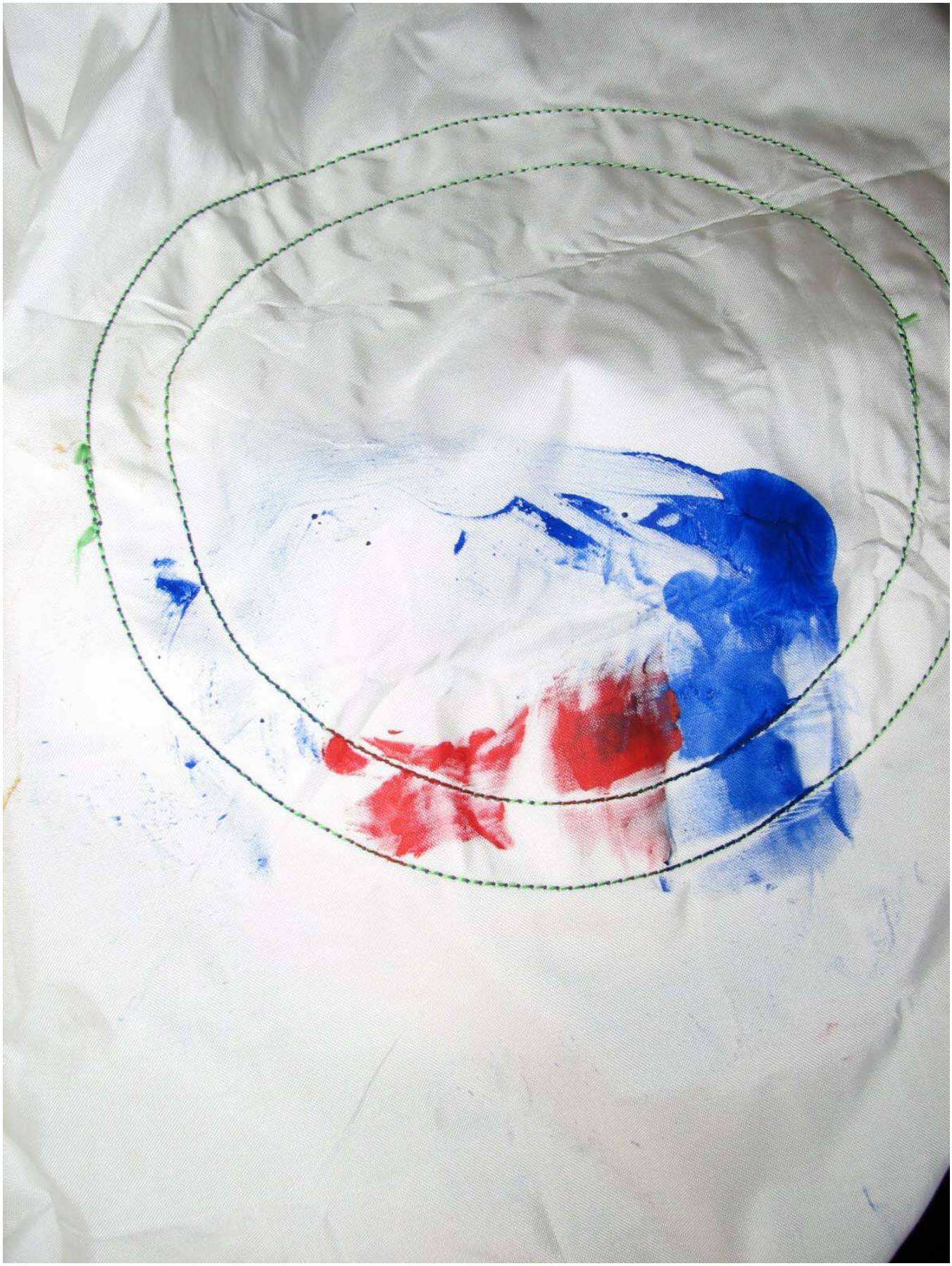


Figure A-43: Post-Test Driver Dummy Airbag Contact

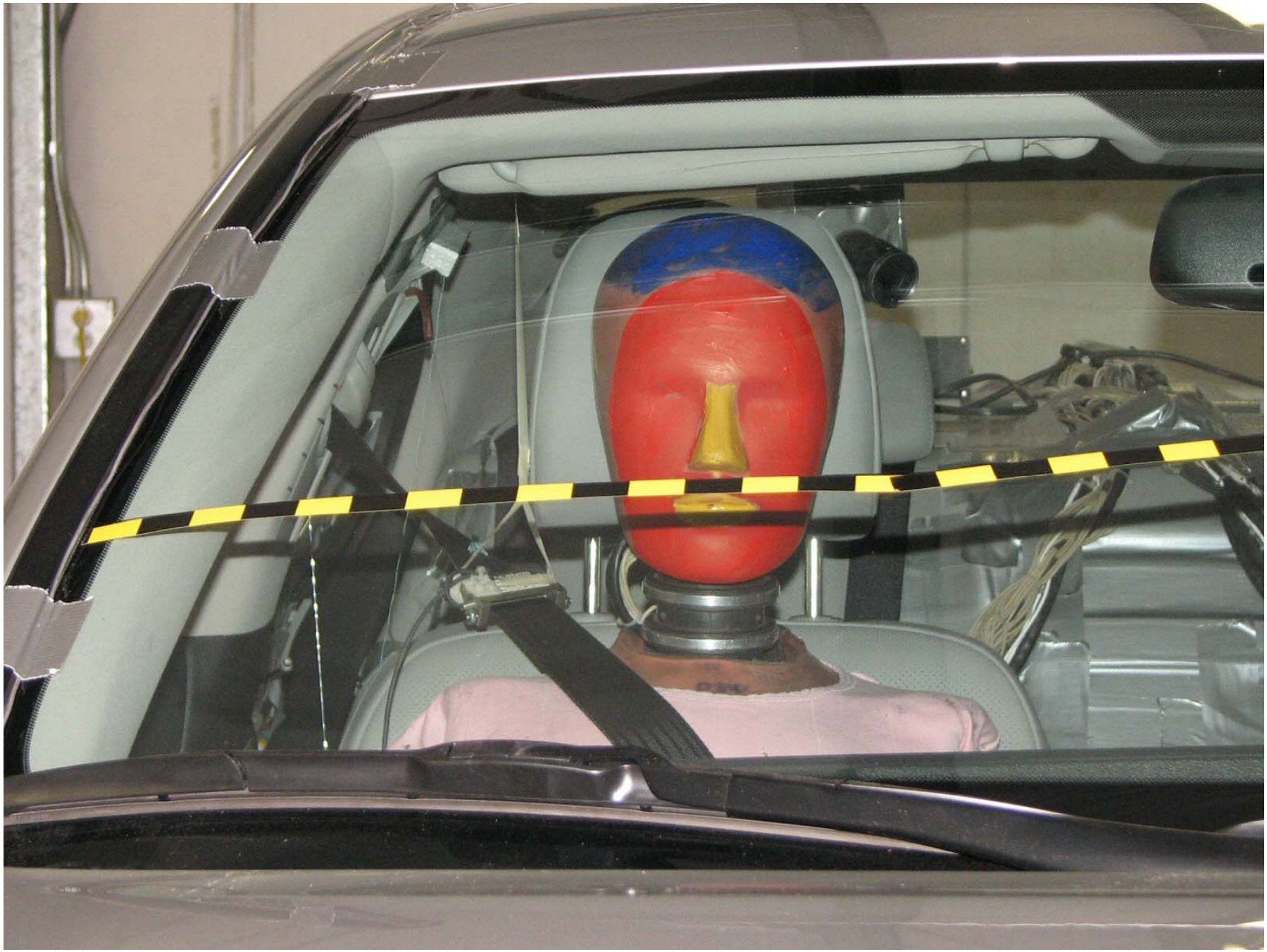


Figure A-44: Pre-Test Passenger Dummy Front View (Head Position)

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°)

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

Figure A-62: Vehicle Impact

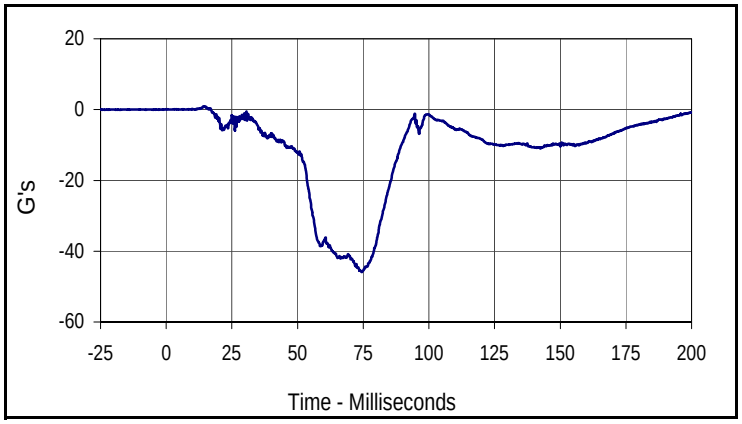
APPENDIX B
DATA PLOTS

LIST OF DATA PLOTS

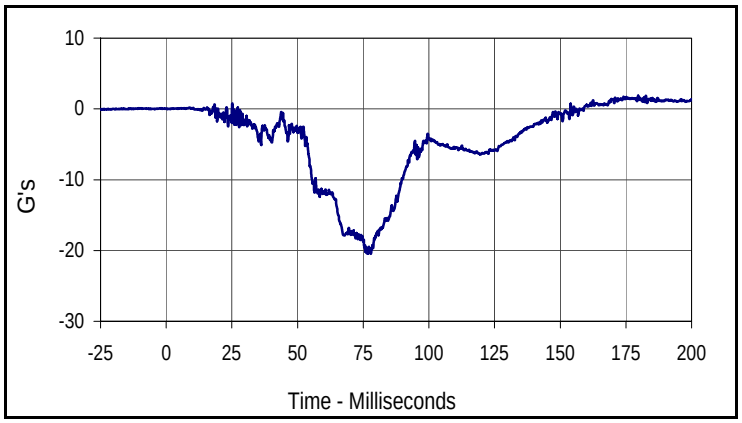
The following additional data plots for this test can be obtained from the research and development section of the NHTSA website. The website can be found at www.NHTSA.dot.gov.

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

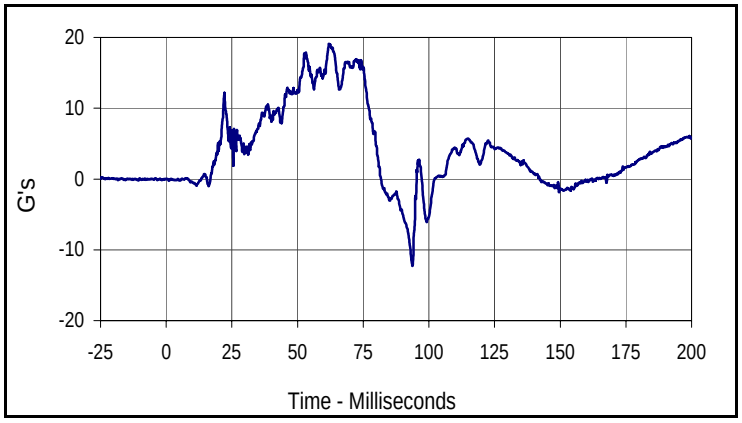
Test Vehicle:	2008 Lexus IS 250 4-Door Sedan	Test Date:	10/2/07
Test Program:	NHTSA 35mph NCAP	NHTSA No.:	M85104



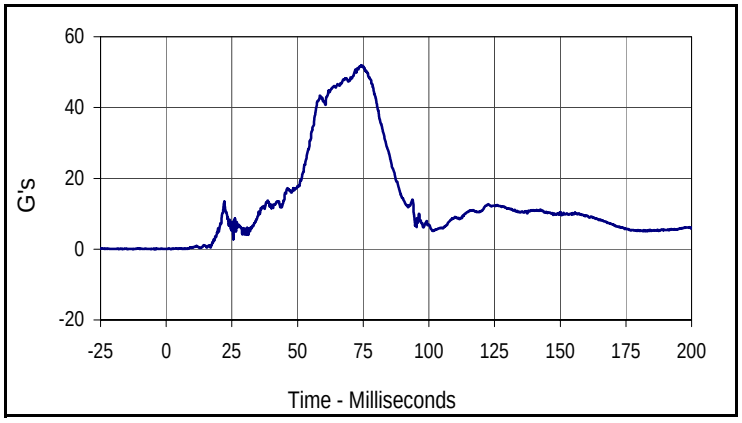
Curve Description			
Driver Head Primary X			
CURNO	Type	SAE Class	Units
001	FIL	1000	G's
Max	Time	Min	Time
0.9	14.2	-45.9	74.5



Curve Description			
Driver Head Primary Y			
CURNO	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
1.9	182.6	-20.5	77.9

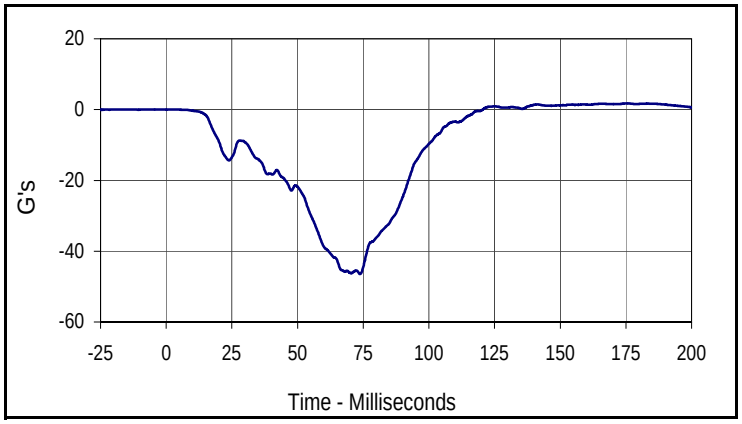


Curve Description			
Driver Head Primary Z			
CURNO	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
19.1	62.0	-12.3	93.8

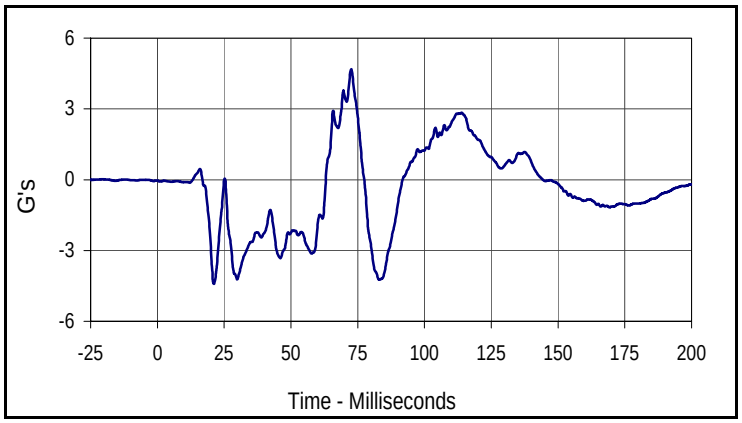


Curve Description			
Driver Head Resultant Primary			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
52.0	74.4	0.0	1.9

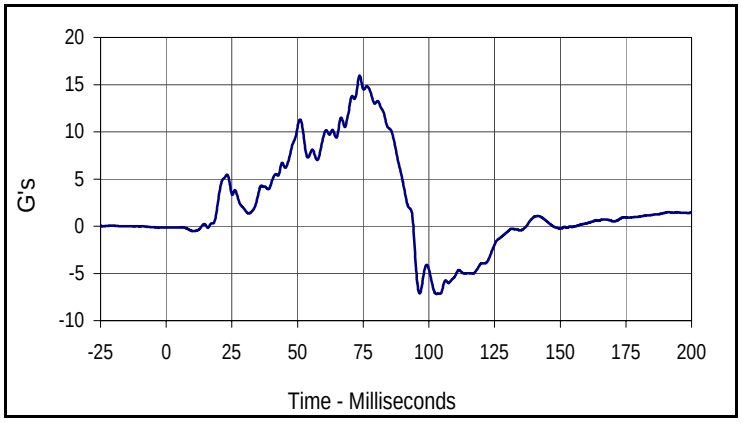
Test Vehicle:	2008 Lexus IS 250 4-Door Sedan	Test Date:	10/2/07
Test Program:	NHTSA 35mph NCAP	NHTSA No.:	M85104



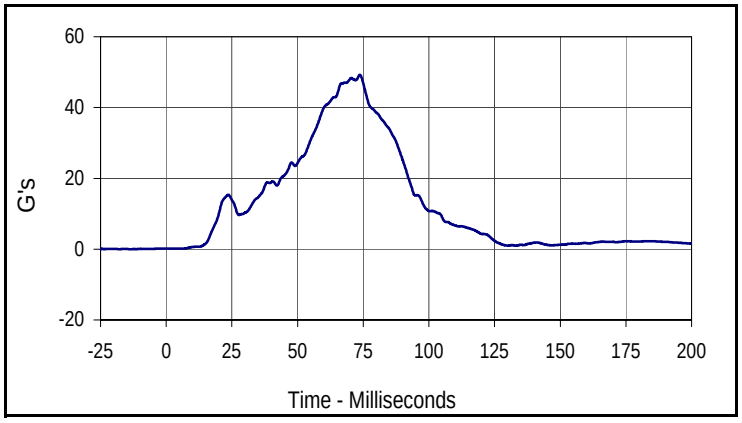
Curve Description			
Driver Chest Primary X			
CURNO	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
1.8	175.3	-46.4	73.7



Curve Description			
Driver Chest Primary Y			
CURNO	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
4.7	72.6	-4.4	21.1

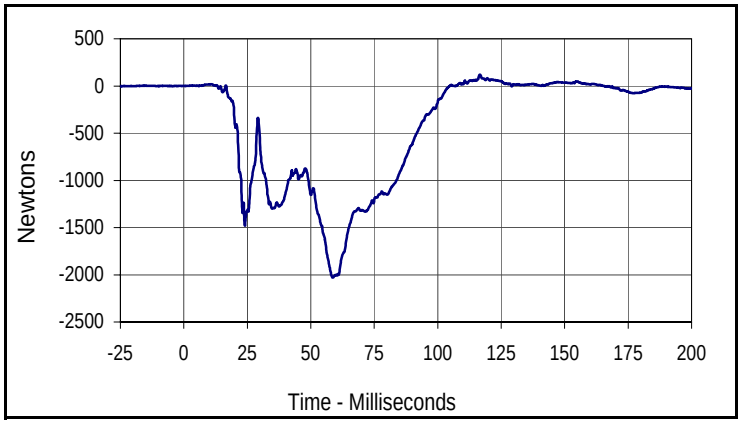


Curve Description			
Driver Chest Primary Z			
CURNO	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
16.0	73.6	-7.2	102.8

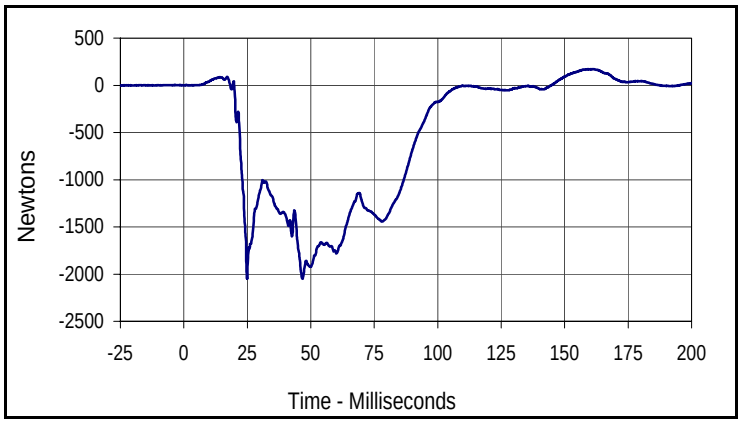


Curve Description			
Driver Chest Resultant Primary			
CURNO	Type	SAE Class	Units
004	RES	180	G's
Max	Time	Min	Time
49.3	73.7	0.1	2.6

Test Vehicle:	2008 Lexus IS 250 4-Door Sedan	Test Date:	10/2/07
Test Program:	NHTSA 35mph NCAP	NHTSA No.:	M85104

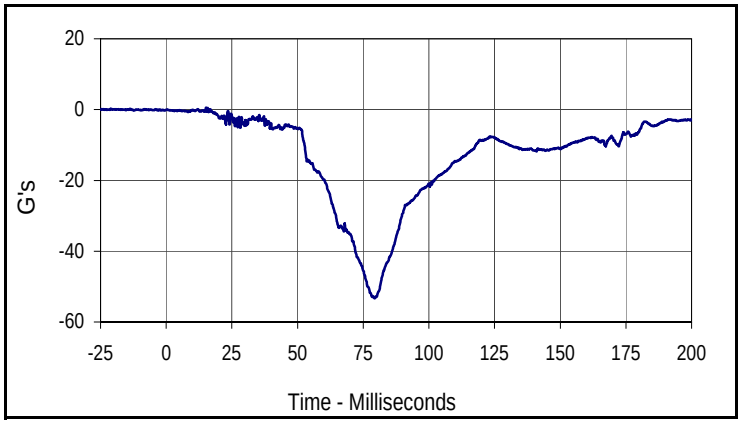


Curve Description			
Driver Left Femur Force Z			
CURNO	Type	SAE Class	Units
007	FIL	600	Newtons
Max	Time	Min	Time
122.0	116.6	-2030.3	58.6

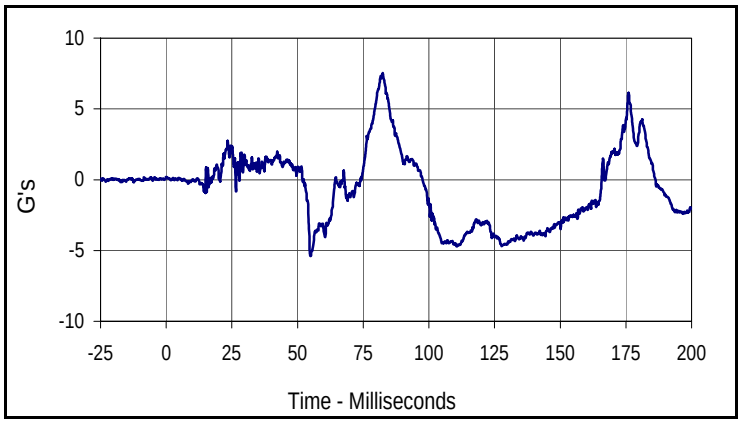


Curve Description			
Driver Right Femur Force Z			
CURNO	Type	SAE Class	Units
008	FIL	600	Newtons
Max	Time	Min	Time
171.9	161.5	-2049.7	24.9

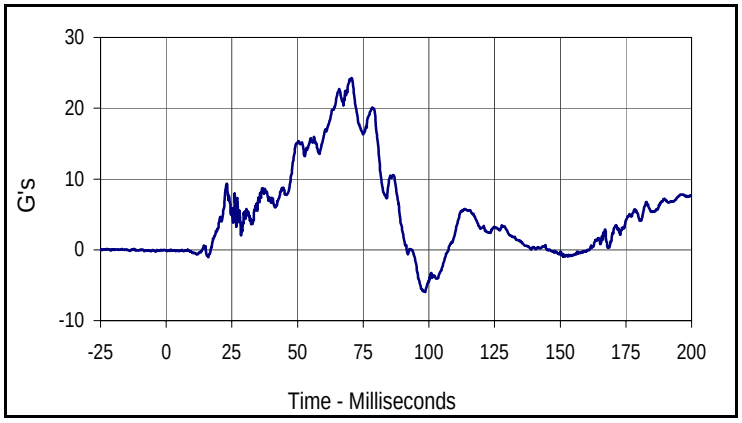
Test Vehicle:	2008 Lexus IS 250 4-Door Sedan	Test Date:	10/2/07
Test Program:	NHTSA 35mph NCAP	NHTSA No.:	M85104



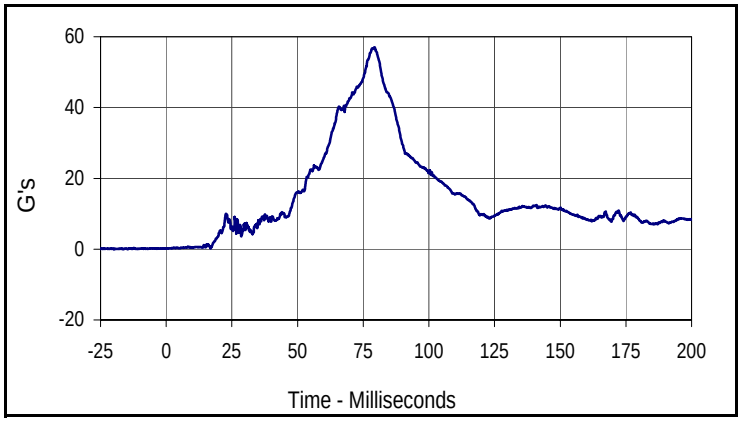
Curve Description			
Passenger Head Primary X			
CURNO	Type	SAE Class	Units
009	FIL	1000	G's
Max	Time	Min	Time
0.5	15.2	-53.3	79.3



Curve Description			
Passenger Head Primary Y			
CURNO	Type	SAE Class	Units
010	FIL	1000	G's
Max	Time	Min	Time
7.5	82.4	-5.4	54.9

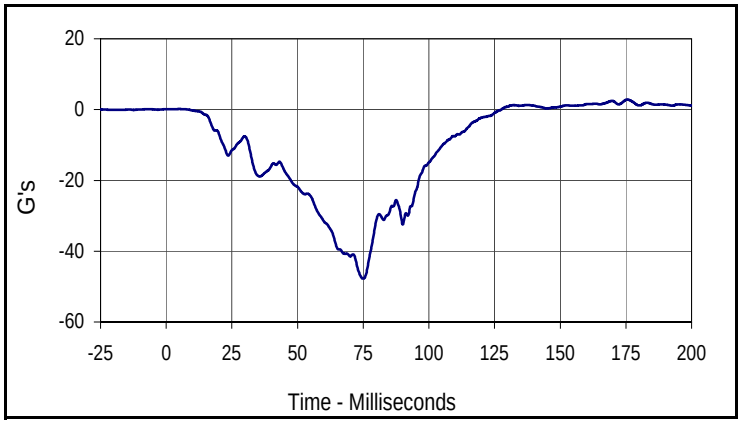


Curve Description			
Passenger Head Primary Z			
CURNO	Type	SAE Class	Units
011	FIL	1000	G's
Max	Time	Min	Time
24.3	70.5	-6.0	98.6

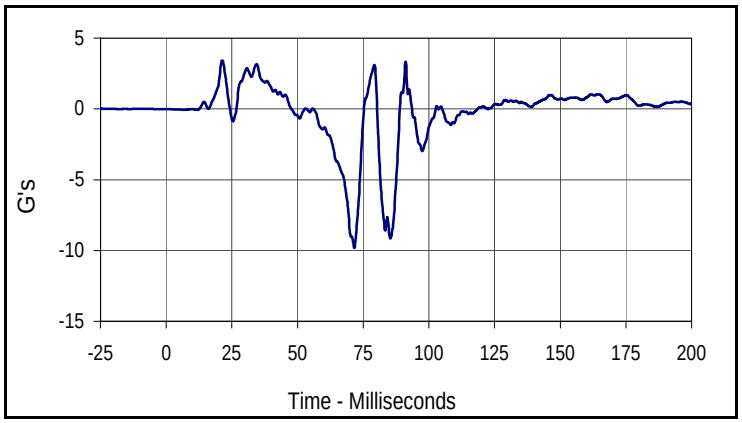


Curve Description			
Passenger Head Resultant Primary			
CURNO	Type	SAE Class	Units
009	RES	1000	G's
Max	Time	Min	Time
57.1	79.3	0.2	0.5

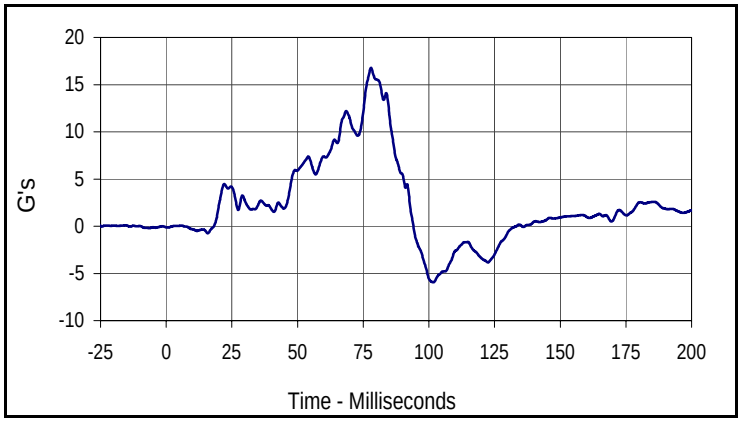
Test Vehicle:	2008 Lexus IS 250 4-Door Sedan	Test Date:	10/2/07
Test Program:	NHTSA 35mph NCAP	NHTSA No.:	M85104



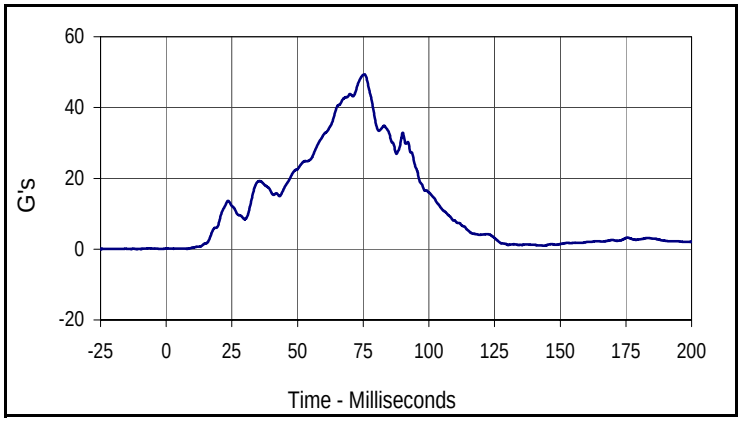
Curve Description			
Passenger Chest Primary X			
CURNO	Type	SAE Class	Units
012	FIL	180	G's
Max	Time	Min	Time
2.9	175.6	-47.7	75.0



Curve Description			
Passenger Chest Primary Y			
CURNO	Type	SAE Class	Units
013	FIL	180	G's
Max	Time	Min	Time
3.4	21.3	-9.8	71.6

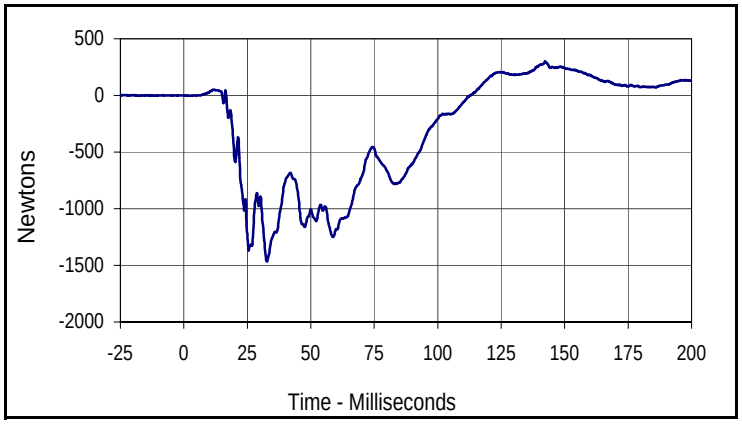


Curve Description			
Passenger Chest Primary Z			
CURNO	Type	SAE Class	Units
014	FIL	180	G's
Max	Time	Min	Time
16.8	77.9	-5.9	101.7

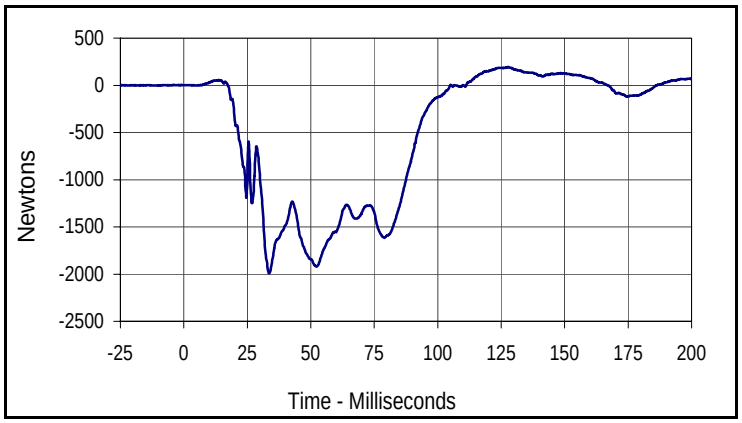


Curve Description			
Passenger Chest Resultant Primary			
CURNO	Type	SAE Class	Units
012	RES	180	G's
Max	Time	Min	Time
49.4	75.4	0.1	8.0

Test Vehicle:	2008 Lexus IS 250 4-Door Sedan	Test Date:	10/2/07
Test Program:	NHTSA 35mph NCAP	NHTSA No.:	M85104



Curve Description			
Passenger Left Femur Force Z			
CURNO	Type	SAE Class	Units
015	FIL	600	Newtons
Max	Time	Min	Time
302.2	142.3	-1467.3	32.7



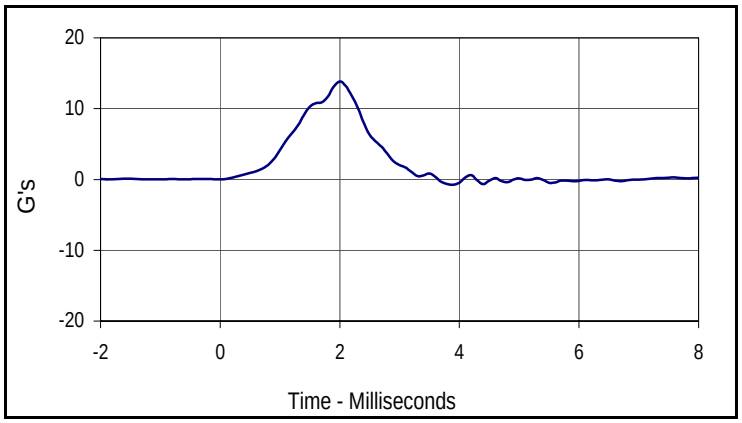
Curve Description			
Passenger Right Femur Force Z			
CURNO	Type	SAE Class	Units
016	FIL	600	Newtons
Max	Time	Min	Time
193.3	127.8	-1991.1	33.6

APPENDIX C
DUMMY CALIBRATION DATA

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

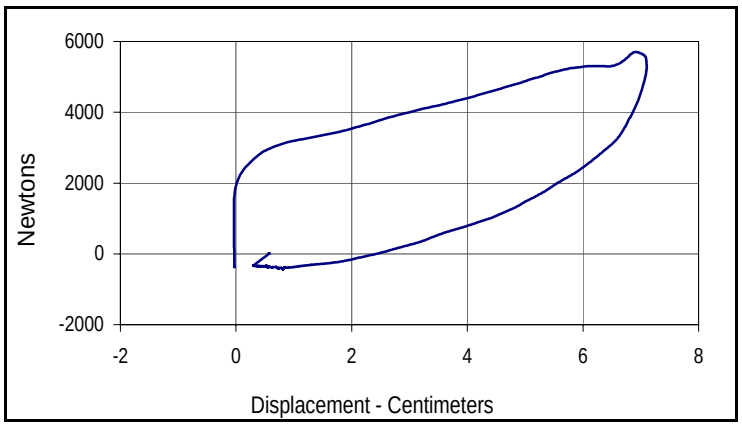
Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
248.2	1.9	0.5	-1.0



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

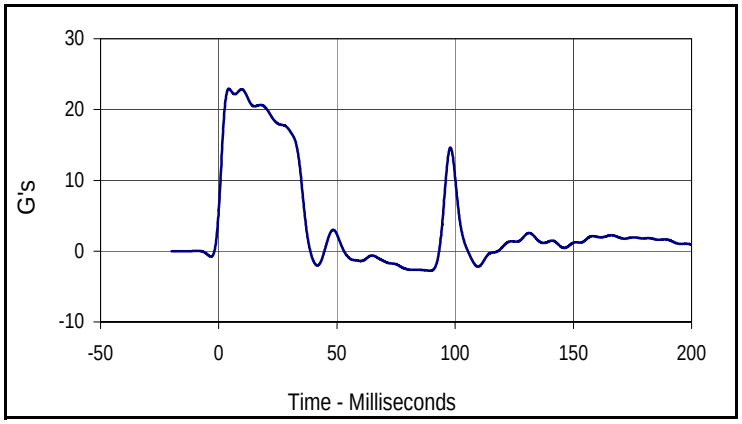
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	6.58 to 6.82	6.66	Pass
Peak Probe Force	Newtons	5159 to 5893	5704	Pass
Peak Sternum Deflection	CM	6.35 to 7.26	7.10	Pass
Internal Hysterysis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



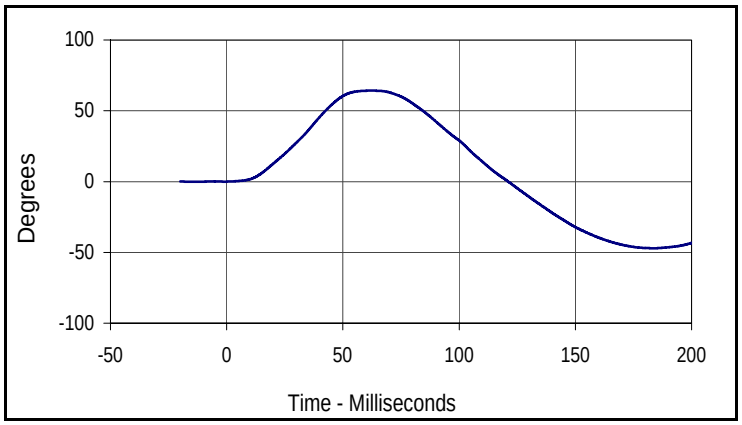
Curve Description			
Probe Force vs. Chest Deflection			
CURNO	Type	SAE Class	Hysterysis
001	FIL	180	75.7
Peak Probe Force		Peak Chest Deflection	
5704		7.10	

Test Program:	Hybrid III 50th Percentile Male Neck Flexion Test	Test Date:	9/17/07
ATD Serial No.:	035	Test I.D.:	NF09C

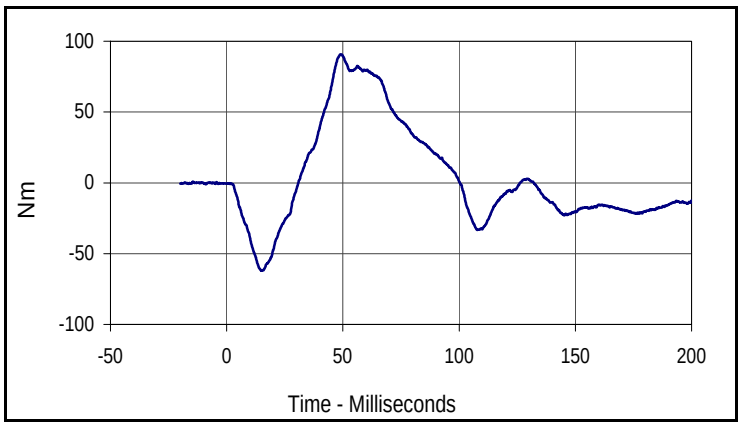
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	6.89 to 7.13	6.99	Pass
Pendulum Deceleration	10 Msec.	G's	22.5 to 27.5	22.8	Pass
	20 Msec.	G's	17.6 to 22.6	20.2	Pass
	30 Msec.	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



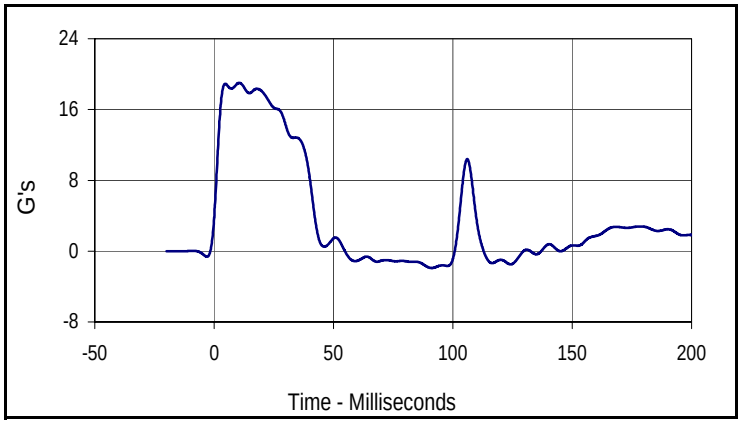
Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
64.2	62.0	-47.1	183.7



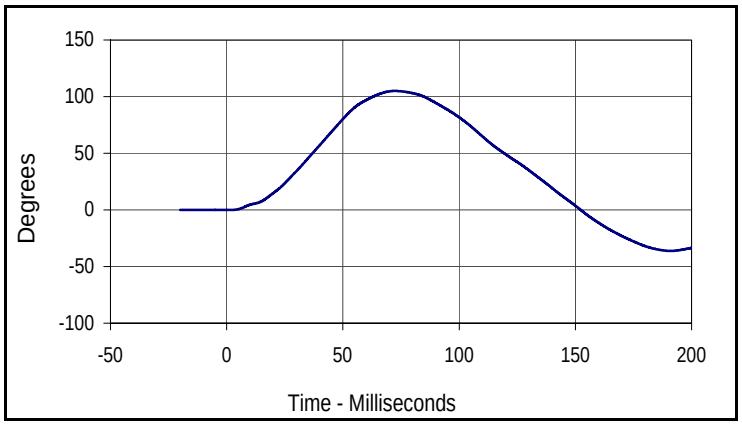
Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
90.8	48.9	-61.9	15.0

Test Program:	Hybrid III 50th Percentile Male Neck Extension Test	Test Date:	9/17/07
ATD Serial No.:	035	Test I.D.:	NE09C

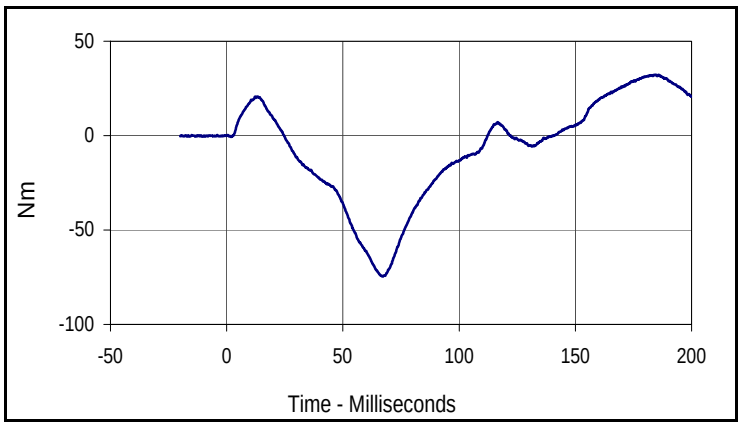
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.94 to 6.19	6.16	Pass
Pendulum Deceleration	10 Msec.	G's	17.2 to 21.2	19.0	Pass
	20 Msec.	G's	14.0 to 19.0	18.1	Pass
	30 Msec.	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

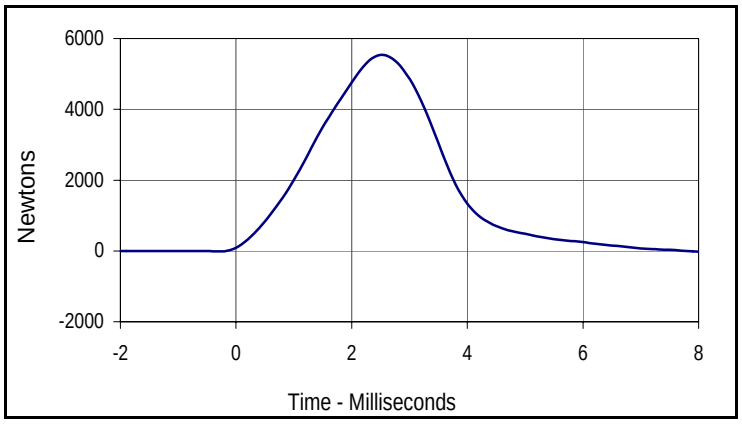
Left Knee

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



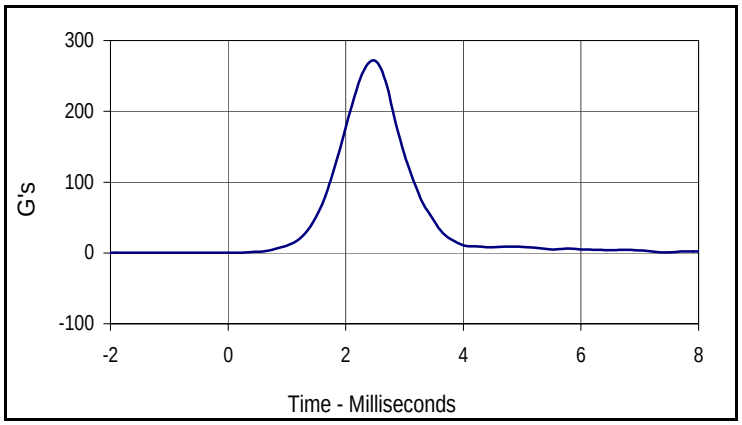
Curve Description			
Right Knee Probe Force			
CURNO	Type	SAE Class	Units
002	FIL	600	Newtons
Max	Time	Min	Time
5536.4	2.5	-32.5	8.7

Test Program:	Hybrid III 50th Percentile Male External Measurements	Test Date:	9/17/07
ATD Serial No.:	035	Test I.D.:	N/A

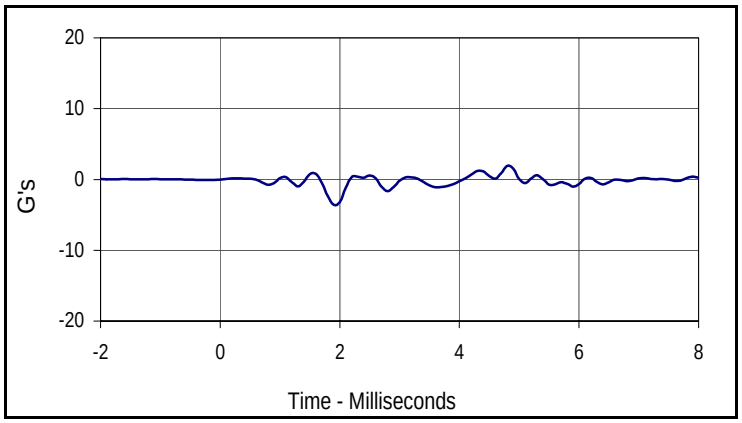
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
A - Total sitting height	mm	879 to 889	884	Pass
B - Shoulder pivot height	mm	505 to 521	510	Pass
C - "H" point height	mm	84 to 89	86	Pass
D - "H" point 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 - Poplipteal length	mm	429 to 455	441	Pass
M - Knee pivot height	mm	485 to 500	498	Pass
N - Buttock poplipteal 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:	Hybrid III 50th Percentile Male Head Drop Test	Test Date:	9/17/07
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



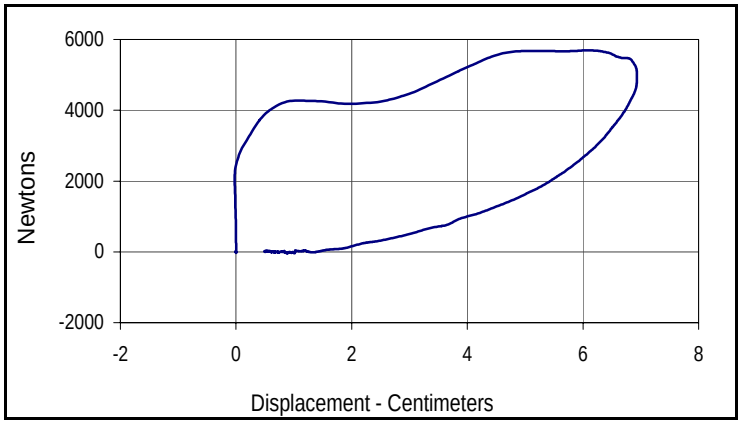
Curve Description			
Head Resultant			
CURNO	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
271.6	2.5	0.4	0.2



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

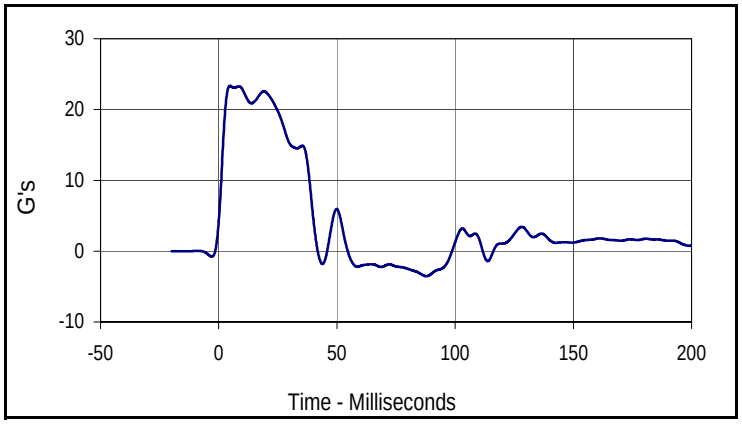
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	30	Pass
Probe Velocity	m/s	6.58 to 6.82	6.63	Pass
Peak Probe Force	Newtons	5159 to 5893	5694	Pass
Peak Sternum Deflection	CM	6.35 to 7.26	6.93	Pass
Internal Hysterysis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



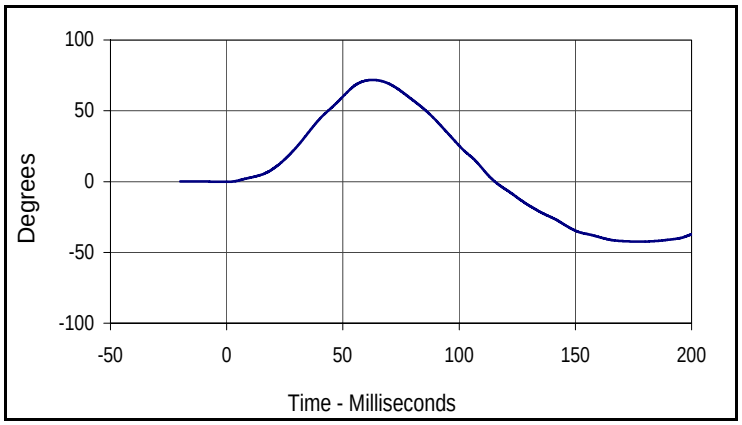
Curve Description			
Probe Force vs. Chest Deflection			
CURNO	Type	SAE Class	Hysterysis
001	FIL	180	76.8
Peak Probe Force		Peak Chest Deflection	
5694		6.93	

Test Program:	Hybrid III 50th Percentile Male Neck Flexion Test	Test Date:	9/17/07
ATD Serial No.:	034	Test I.D.:	NF09D

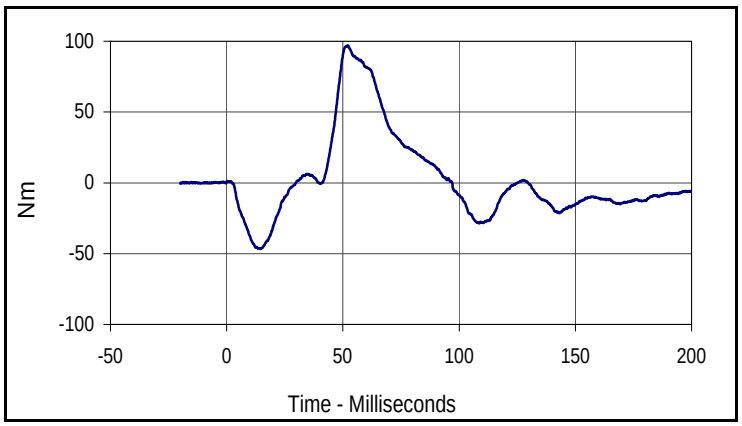
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	6.89 to 7.13	7.10	Pass
Pendulum Deceleration	10 Msec.	G's	22.5 to 27.5	22.9	Pass
	20 Msec.	G's	17.6 to 22.6	22.5	Pass
	30 Msec.	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



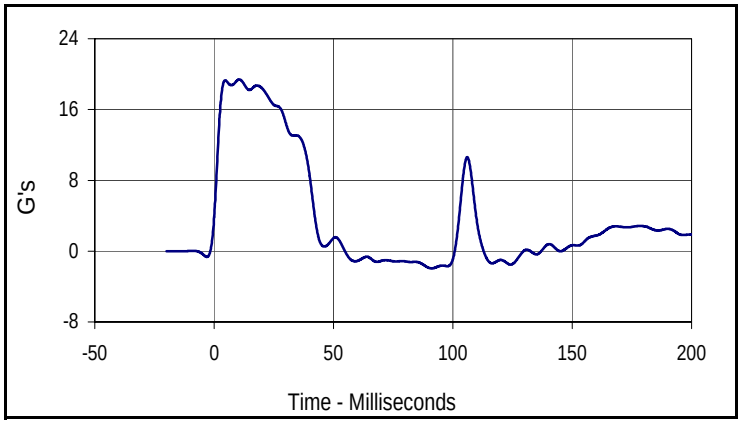
Curve Description			
"D" Plane Rotation			
CURNO	Type	SAE Class	Units
003	FIL	60	Degrees
Max	Time	Min	Time
71.9	62.7	-42.4	178.6



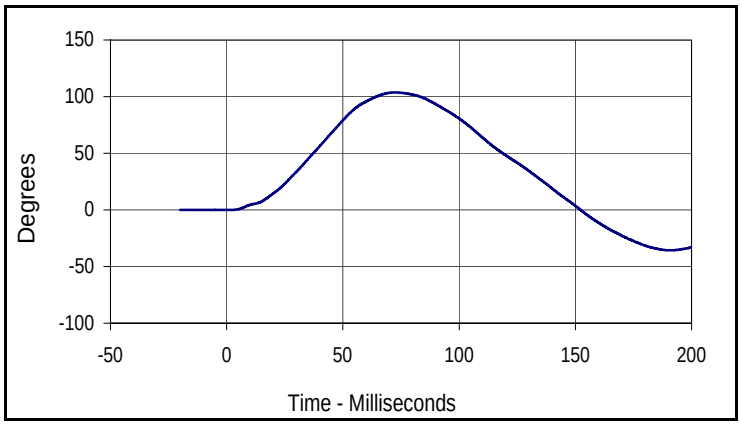
Curve Description			
Moment About Occipital Condyle			
CURNO	Type	SAE Class	Units
004	FIL	600	Nm
Max	Time	Min	Time
97.0	52.1	-46.6	14.7

Test Program:	Hybrid III 50th Percentile Male Neck Extension Test	Test Date:	9/17/07
ATD Serial No.:	034	Test I.D.:	NE09D

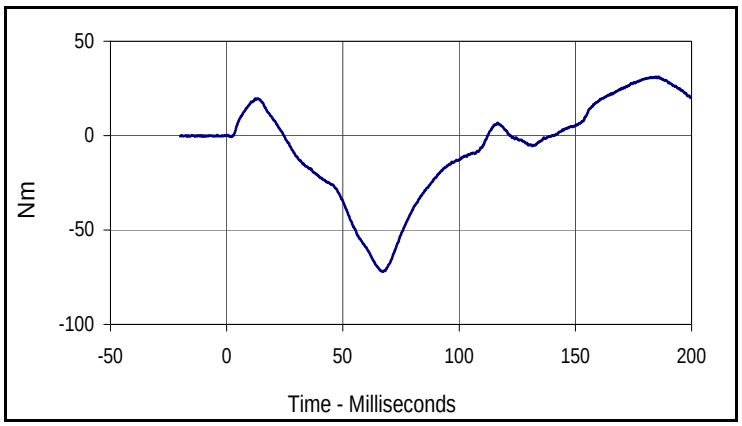
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.1	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
Pendulum Velocity		m/s	5.94 to 6.19	6.04	Pass
Pendulum Deceleration	10 Msec.	G's	17.2 to 21.2	19.4	Pass
	20 Msec.	G's	14.0 to 19.0	18.4	Pass
	30 Msec.	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

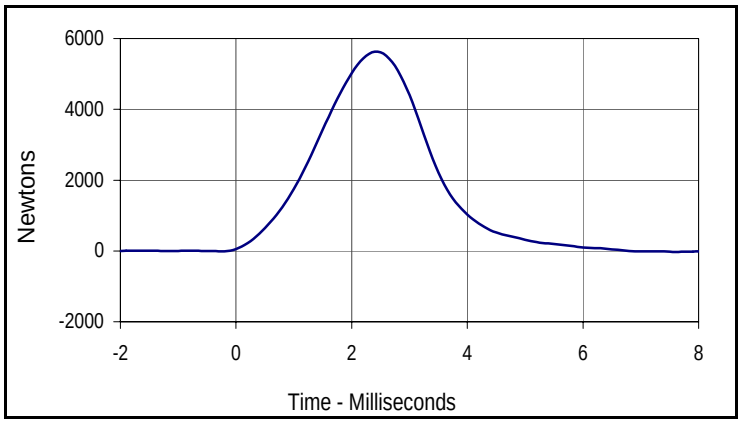
Left Knee

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 - Poplipteal length	mm	429 to 455	450	Pass
M - Knee pivot height	mm	485 to 500	486	Pass
N - Buttock poplipteal 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:	Dummy Damage Checklist	Test Date:	9/17/07
ATD Serial No.:	035	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	Test Date:	9/17/07
ATD Serial No.:	034	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: