REPORT NUMBER: SPNCAP-KAR-13-012

NEW CAR ASSESSMENT PROGRAM (NCAP)
SIDE IMPACT POLE TEST

NISSAN MOTOR CO., LTD.
2013 INFINITI M37 4-DOOR SEDAN

NHTSA No: ND5202

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

SEPTEMBER 11, 2012

FINAL REPORT

PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
OFFICE OF CRASHWORTHINESS STANDARDS
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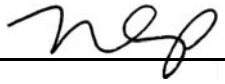
Reviewed By: 

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Approval Date: September 11, 2012

FINAL REPORT ACCEPTANCE BY OCWS:

Division Chief, New Car Assessment Program
NHTSA, Office of Crashworthiness Standards

Date:

COTR, New Car Assessment Program
NHTSA, Office of Crashworthiness Standards

Date:

TECHNICAL REPORT DOCUMENTATON PAGE

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SPNCAP-KAR-13-012		

4. Title and Subtitle	5. Report Date
Final Report of New Car Assessment Program Side Impact Pole Testing of 2013 Infiniti M37 4-Door Sedan NHTSA No. ND5202	September 11, 2012
	6. Performing Organization Code KAR
7. Authors Mr. Kelsey A. Chiu, Engineering Department Supervisor, KARCO Mr. Frank Richardson, Program Manager, KARCO	**8. Performing Organization Report No.** TR-P32112-01-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. DTNH22-09-D-00122
12. Sponsoring Agency Name and Address U. S. Department of Transportation National Highway Traffic Safety Administration Office of Crashworthiness Standards (NVS-111) 1200 New Jersey Ave., SE, Room W43-410 Washington, D.C. 20590	**13. Type of Report and Period Covered** Final Test Report, Aug 28 - Sept. 11, 2012
	14. Sponsoring Agency Code NVS-111

15. Supplementary Notes

16. Abstract

A 32.2 km/h (20 mph) 75 deg. oblique impact Side NCAP Test was conducted on the subject 2013 Infiniti M37 4-door sedan in accordance with the specifications of the Office of Crash Worthiness Standards Side NCAP Pole Laboratory Test Procedure for the generation of consumer information on vehicle side pole crash protection. The test was conducted at the KARCO Engineering, LLC. facility in Adelanto, California on August 28, 2012.

The impact velocity was 31.67 km/h and the outside ambient temperature at the struck (driver's) side of the vehicle was 36.7 deg. C. The target vehicle's maximum post-test static crush was 490 mm located at level 3. The test vehicle's occupant performance data is as follows:

Measurement Description	Driver ATD (ES-2re)		
	Units	Threshold	Result
Head Injury Criteria (HIC_{36})		1000	166.5
Resultant Lower Spine Acceleration	g	82	29.7
Total Pelvic Force (Sum of Acetabular and Iliac Forces)	N	5525	2392
Maximum Thoracic Rib Deflection	mm	38	20
Maximum Abdominal Rib Deflection	mm	45	16

The two doors on the struck side of the vehicle did not separate from the body at the hinges or latches. The opposite doors did not open during the side impact event.

17. Key Words	18. Distribution Statement
New Car Assessment Program (NCAP) Side Impact Pole Part 572V SID-IIs	Copies of this report are available from: National Highway Traffic Safety Admin. Technical Info Services Div., NPO-411 1200 New Jersey Ave., SE Washington, DC 20590 email: tis@nhtsa.dot.gov FAX: 202-493-2833

19. Security Classification of this report	20. Security Classification of this page	21. No. of Pages	22. Price
UNCLASSIFIED	UNCLASSIFIED	101	

TABLE OF CONTENTS

SECTION 1
TEST PURPOSE AND PROCEDURE

This side impact test is part of the MY 2013 New Car Assessment Program Side Impact Test Program, sponsored by the National Highway Traffic Safety Administration (NHTSA), under contract number DTNH22-09-D-00122. The purpose of this test is to generate comparative side impact performance in a 2013 Infiniti M37 4-door sedan. The side impact test was conducted in accordance with the Office of Crashworthiness Standard's Laboratory Test Procedure dated May 2012.

SECTION 2
SUMMARY OF TEST RESULTS

A rigid pole side impact test was conducted on a 2013 Infiniti M37 4-door sedan. The subject vehicle was towed into the rigid pole at an angle of 75.2° and a velocity of 31.67 km/h. The test was conducted by KARCO Engineering, LLC. in Adelanto, California on August 28, 2012. Pre- and post-test photographs of the test vehicle and side impact dummy (SID-IIs) are included in Appendix A of this report.

One Part 572V (SID-IIs) dummy was placed in the driver designated seating position according to instructions specified in the OCWS Side NCAP Pole Laboratory Test Procedure, dated August 2011. Camera locations and other pertinent camera information are included in this report.

The Part 572V (SID-IIs) was instrumented accordingly:

Head CG tri-axial accelerometers
Thorax upper, middle and lower rib displacement potentiometers
Abdomen upper and lower rib displacement potentiometers
Lower spine (12) tri-axial accelerometers
Iliac load cell
Acetabulum load cell

Appendix B contains the vehicle and dummy response data. Dummy configuration and performance verification data can be found in Appendix C of this report.

Injury readings for the SID-IIs dummy were recorded as follows:

Measurement Description	Units	Passenger ATD (SID-IIs)	
		IARV	Result
Head Injury Criteria (HIC_{36})		1000	166.5
Lower Spine (T12) Resultant Acceleration	g	82	29.7
Total Pelvic Force (sum of acetabular and iliac forces	N	5525	2392
Maximum Thoracic Rib Deflection	mm	38*	20
Maximum Abdominal Rib Deflection	mm	45*	16

**Proposed IARV*

Supplemental restraint information is given below:

Restraint Type	Left Front (Driver) Occupant Location 1		Left Rear (Passenger) Occupant Location 4	
	Mounted	Deployed	Mounted	Deployed
Frontal Airbag	Yes	No	No	
Knee Airbag	No		No	
Side Airbag 1 (Curtain)	Yes	Yes	Yes	Yes
Side Airbag 2 (Torso/Pelvis)	Yes	Yes	No	
Seat Belt Pretensioner	Yes	Yes	No	
Seat Belt Load Limiter	Yes	Yes	No	
Other				

GENERAL COMMENTS

Both the front and rear doors on the struck side of the vehicle remained closed and latched. There was no separation at the hinges or latches. Both doors on the non-struck side remained closed and latched. There were no ATD values that exceeded limits.

SECTION 3

OCCUPANT AND VEHICLE INFORMATION/DATA SHEETS

Test Vehicle: 2013 Infinti M37 4-Door Sedan NHTSA No. ND5202

Test Program: NCAP Side Pole Impact Test Test Date: 08/28/12

CONVERSION FACTORS

Quantity	Typical Application	Std Units	Metric Unit	Multiply By
Mass	Vehicle Weight	lb	kg	0.4536
Linear Velocity	Impact Velocity	miles/hr	km/hr	1.609344
Length or Distance	Measurements	in	mm	25.4
Volume	Fuel Systems	gal	liter	3.785
Volume	Small Fluids	oz	mL	29.574
Pressure	Tire Pressures	lbf/in^2	kPa	6.895
Temperature	General Use	^oF	^oC	=(Tf -32)/1.8
Force	Dynamic Forces	lbf	N	4.448
Moment	Torque	lbf-ft	N•m	1.355

DATA SHEET NO. 1

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2013 Infinti M37 4-Door Sedan NHTSA No. ND5202

Test Program: NCAP Side Pole Impact Test Test Date: 08/28/12

Body Style	4-Door Sedan
VIN	JN1BY1AP7DM510107
Body Color	Storm Front Grey
Odometer Reading (km / mi)	44.6 / 27.7
Engine Displacement (L)	3.7
Type / No. of Cylinders	V6
Engine Placement	Longitudinal
Transmission Type	Automatic
Transmission Speeds	7
Overdrive	Yes
Final Drive	Rear
Roof Rack	No
Sunroof / T-Top	Yes
Running Boards	No
Tilt Steering Wheel	Yes
Power Seats	Yes
Anti-Lock Brakes (ABS)	Yes
All Wheel Drive (AWD)	No

Other Optional Feature	None
Driver Front Airbag	Yes
Driver Curtain Airbag	Yes
Driver Head/Torso Airbag	No
Driver Torso Airbag	No
Driver Torso/Pelvis Airbag	Yes
Driver Pelvis Airbag	No
Driver Knee Airbag	No
Rear Pass. Curtain Airbag	Yes
Rear Pass. Head/Torso Airbag	No
Rear Pass. Torso Airbag	No
Rear Pass. Torso/Pelvis Airbag	No
Rear Pass. Pelvis Airbag	No
Driver Seat Belt Pretensioner	Yes
Rear Pass. Seat Belt Pretensione	No
Driver Load Limiter	Yes
Rear Pass. Load Limiter	No
Other Safety Restraint	Active Head Rest

Does Owner's Manual provide instructions to turn off automatic door locks? No

DATA FROM CERTIFICATION LABEL

Manufactured By	Nissan Motor Co., LTD.
Date of Manufacture	Jun-12
Vehicle Type	Passenger Car

GVWR (kg)	2270
GAWR Front (kg)	1108
GAWR Rear (kg)	1208

VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

Measured Parameter	Front	Rear	Third	Total	
Designated Seating Capacity	2	3		5	
Capacity Weight (VCW) (kg)				390.0	*A*
DSC x 68.04 (kg)				340.2	*B*
Cargo Weight (RCLW) (kg)				49.8	*A-B*

VEHICLE SEAT TYPE

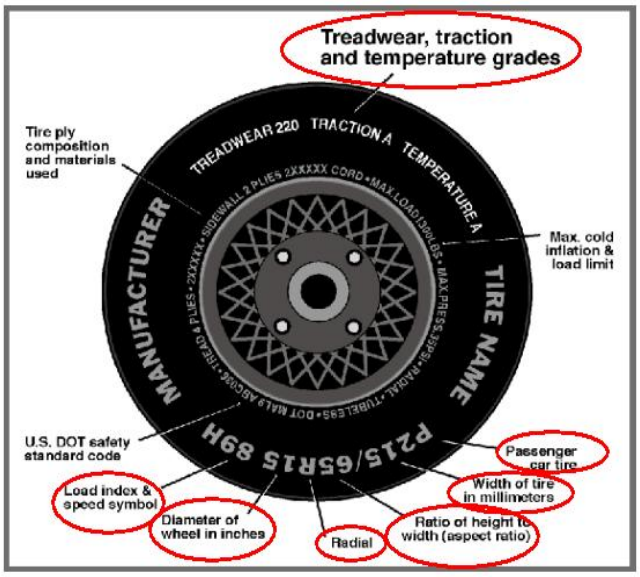
Seating Location	Type of Seat Pan				Type of Seat Back		
	Bucket	Bench	Split Bench	Contoured	Fixed	Adjustable w/ Lever	Adjustable w/ Knob
Front Seat	Yes					Yes	
Rear or Second Row Seat		Yes			Yes		
Third Row Seat							

DATA SHEET NO. 1 … (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2013 Infinti M37 4-Door Sedan NHTSA No. ND5202

Test Program: NCAP Side Pole Impact Test Test Date: 08/28/12



TIRE PLACARD INFORMATION

Measured Parameter	Front	Rear
Recommended Cold Tire Pressure (kPa)	230	230
Recommended Tire Size	P245/50R18	P245/50R18

VEHICLE TIRE INFORMATION

Measured Parameter	Front	Rear
Max. Tire Pressure (kpa)	350	350
Tire Size on Vehicle	P245/50R18	P245/50R18
Tire Manufacturer	Michelin	Michelin
Tire Name	Primacy MXM4	Primacy MXM4
Tire Type	Passenger	Passenger
Tire Width	245	245
Aspect Ratio	50	50
Radial	Yes	Yes
Wheel Diameter	18	18
Load Index/Speed Symbol	99V	99V
Treadware	500	500
Traction Grade	AA	AA
Temperature Grade	A	A
Tire Material	Polyester, Steel, Polyamide	Polyester, Steel, Polyamide

DATA SHEET NO. 1 … (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2013 Infinti M37 4-Door Sedan NHTSA No. ND5202

Test Program: NCAP Side Pole Impact Test Test Date: 08/28/12

TIRE PRESSURES

	Units	LF	RF	LR	RR
As Delivered	kPa	265	265	265	270
Tire Placard	kPa	230	230	230	230
Owner's Manual	kPa	230	230	230	230
As Tested	kPa	230	230	230	230

TEST VEHICLE AXLE WEIGHTS

		As Delivered (UVW)			As Tested (ATW)			Fully Loaded		
	Units	**Front**	**Rear**	**Total**	**Front**	**Rear**	**Total**	**Front**	**Rear**	**Total**
Left	kg	476.5	403.5		497.0	444.5		491.0	453.0	
Right	kg	467.0	408.5		466.0	440.0		464.5	447.0	
Ratio	%	53.7%	46.3%	100.0%	52.1%	47.9%	100.0%	51.5%	48.5%	100.0%
Total	kg	943.5	812.0	1755.5	963.0	884.5	1847.5	955.5	900.0	1855.5

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	1755.5	A
Actual Weight of 1 P572 O ATD Used	kg	49.0	B
Rated Cargo/Luggage Wt (RCLW)	kg	49.8	C
Calculated Vehicle Target Wt (TVTW)	kg	1854.3	A+B+C

Does the measured As Tested Vehicle Weight lie within the required weight range (i.e. Calculated Test Vehicle Target Weight -4.5 kg to -9.0 kg)? ☒ **Yes** ☐ **No**

WEIGHT OF BALLAST AND VEHICLE COMPONENTS REMOVED TO MEET TVTW

Component Description	Weight (kg)
Spare Tire Tools	3.5
Spare Tire	17.0
Rear Passenger Window	3.5
Rear Passenger Door Panel	2.5
Rear Trunk Carpeting	4.5
Front Passenger Door Panel	2.5
Ballast / Equipment Added	80.2

DATA SHEET NO. 1 … (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2013 Infinti M37 4-Door Sedan NHTSA No. ND5202

Test Program: NCAP Side Pole Impact Test Test Date: 08/28/12

TEST VEHICLE ATTITUDE AND CG

Measurement Description	Units	As Delivered	As Tested	Fully Loaded	Meets Requirement***
Driver Door Sill Angle (front-to-rear)*	°	-0.3	0.4	0.5	Yes
Front Passenger Sill Angle (front-to-rear)*	°	-0.3	-0.7	-0.7	Yes
Front Bumper-Line Angle (left-to-right)**	°	-0.6	-0.3	-0.2	Yes
Rear Bumper-Line Angle (left-to-right)**	°	0.2	0.0	0.0	Yes
Vehicle CG (Aft of Front Axle)	mm	1339	1386	1404	
Vehicle CG (Left (+)/Right (-) from Longitudinal Centerline)	mm	2	15	14	

*ND=Nose Down (-), NU=Nose Up (+) **LD=Left Down (-), LU=Left Up (+)

***The “As Tested” vehicle attitude angle measurements must be within “As Delivered” and the “Fully Loaded” vehicle attitude measurements at each location. Indicate “Yes” or “No” for “Meets Requirement”

DATA SHEET NO. 2

SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT AND FUEL SYSTEM DATA

Test Vehicle: 2013 Infinti M37 4-Door Sedan NHTSA No. ND5202

Test Program: NCAP Side Pole Impact Test Test Date: 08/28/12

SEAT POSITIONING

The driver's seat is set to the forward most position where the ATD will not contact any interior panels at the mid-height and mid-angle position. The front center seat (if applicable) and right front passenger's seat should be set in a similar manner as the driver's seat. The struck side rear passenger's seat, rear center seat, and non-struck side rear passenger's seats should be set to the rearmost, lowest, mid-angle position.

SCRL ANGLE RANGE

Seat	SCRL (°)		
	Max	Min	Mid
Driver Seat	8.9	0.0	4.5
Front Passenger Seat	8.5	0.0	4.3
Front Center Seat	Fixed	Fixed	Fixed
Struck Side Rear Seat	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Fixed
Rear Center Seat	Fixed	Fixed	Fixed

SEAT HEIGHT AND ANGLE

Seat	As Tested SCRL Angle	As Tested SCRP Height	SCRP Height Position	SCRP Height (mm)		
				Rearmost	Mid Fore/Aft	Forwardmost
Driver Seat	4.5	585	Max	577	595	613
			Mid	549	585	585
			Min	521	567	557
Front Passenger Seat	4.3	589	Max	583	600	617
			Mid	555	572	589
			Min	527	544	561
Front Center Seat			Max			
			Mid			
			Min			
Struck Side Rear Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
			Mid	Fixed	Fixed	Fixed
			Min	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
			Mid	Fixed	Fixed	Fixed
			Min	Fixed	Fixed	Fixed
Rear Center Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
			Mid	Fixed	Fixed	Fixed
			Min	Fixed	Fixed	Fixed

DATA SHEET NO. 2 … (CONTINUED)

SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT AND FUEL SYSTEM DATA

Test Vehicle: 2013 Infinti M37 4-Door Sedan NHTSA No. ND5202

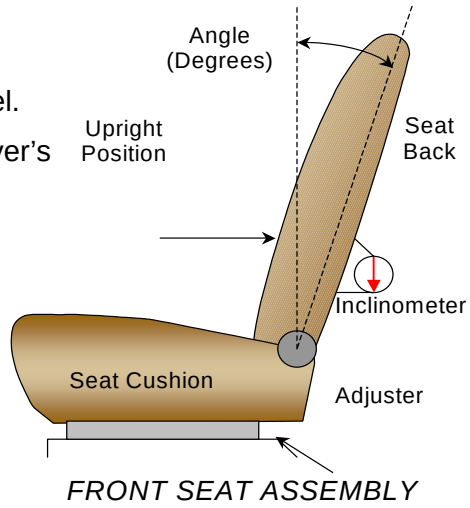
Test Program: NCAP Side Pole Impact Test Test Date: 08/28/12

SEAT FORE/AFT POSITION

Seat	Total Fore/Aft Travel		Test Position From Forwardmost Position	
	mm	Detents*	mm	Detent*
Driver Seat	260		130	
Front Passenger Seat	260		0	
Front Center Seat				
Struck Side Rear Seat	Fixed	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Fixed	Fixed
Rear Center Seat	Fixed	Fixed	Fixed	Fixed

SEAT BACK ADJUSTMENT

The driver's seat back is positioned such that the dummy's head is level. The right front passenger seat back is set to the same angle as the driver's seat. The seat back angle was measured at the seat back.



FRONT SEAT ASSEMBLY

Seat	Total Seat Back Angle Range		Test Position from Most Upright	
	Degrees	Detents*	Degree	Detent*
Driver Seat w/Seated Dummy	52.0		4.6	
Front Passenger Seat	51.6		4.6	
Front Center Seat				
Struck Side Rear Seat w/Seated Dummy	Fixed		Fixed	
Non-Struck Side Rear Seat	Fixed		Fixed	
Rear Center Seat	Fixed		Fixed	

SEAT BELT ANCHORAGE ADJUSTMENT

Seat belt anchorages are adjusted in accordance with the information provided by the manufacturer on Form No. 1. The positions are marked H, M1, … , L from top to bottom.

	Total No. of Positions	Placed in Position
Driver Seat	4	H

DATA SHEET NO. 2 … (CONTINUED)

SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT AND FUEL SYSTEM DATA

Test Vehicle: 2013 Infinti M37 4-Door Sedan NHTSA No. ND5202

Test Program: NCAP Side Pole Impact Test Test Date: 08/28/12

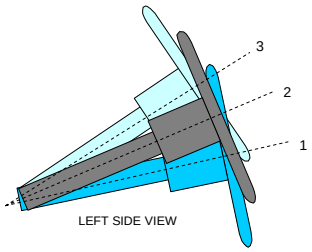
HEAD RESTRAINT ADJUSTMENT

The driver's head restraint is adjusted to the lowest and most full forward in-use position.

	Total No. of Positions	Placed in Position
Driver Seat	5	Full Down

STEERING COLUMN ADJUSTMENT

Steering wheel and column adjustments are made so that the steering wheel hub is at the center of the geometric locus it describes when it moves through its full range of motion.



STEERING COLUMN ASSEMBLY

	Degrees	Fore-Aft Position (mm)
Lowermost - Position 1	11.1	
Geometric Center - Position 2	21.15	
Uppermost - Position 3	31.2	
Telescoping Steering Wheel Travel		
Test Position	21.1	

DATA SHEET NO. 2 … (CONTINUED)

SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT AND FUEL SYSTEM DATA

Test Vehicle: 2013 Infinti M37 4-Door Sedan NHTSA No. ND5202

Test Program: NCAP Side Pole Impact Test Test Date: 08/28/12

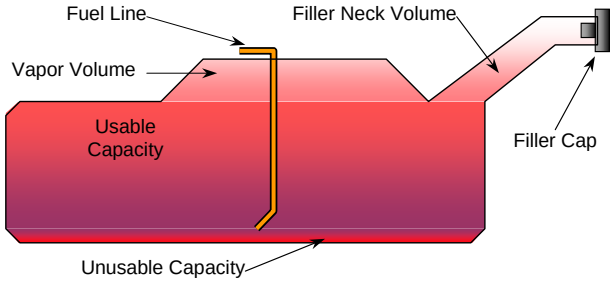
FUEL TANK CAPACITY

Description	Liters
Usable Capacity of "Standard Tank" (see Form No. 1)	74.98
Usable Capacity of "Optional Tank" (see Form No. 1)	
Usable Capacity of "Standard Tank" (see Owner's Manual)	
Usable Capacity of "Optional Tank" (see Owner's Manual)	
93% of Usable Capacity	69.73
Actual amount of Solvent Used in Test	69.73
1/3 of Usable Capacity	24.99

Is the Actual Amount of Solvent Used in the test equal to 93% ± 1% of the Usable Capacity stated in the Form No. 1? ☒ **Yes** ☐ **No**

FUEL PUMP

The vehicle is equipped with an electric fuel pump. The fuel pump is activated when the ignition is turned on.



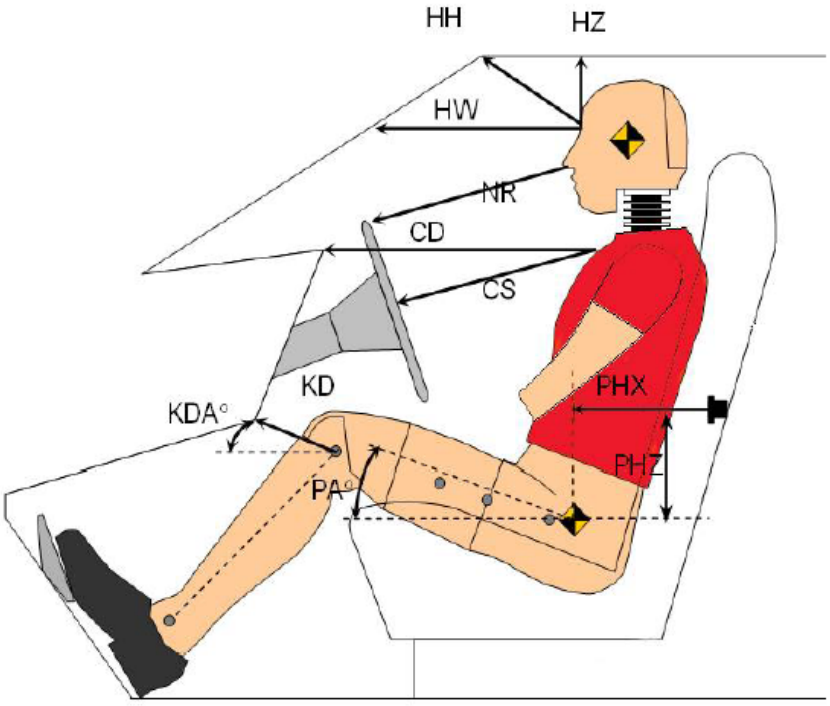
VEHICLE FUEL TANK ASSEMBLY

DATA SHEET NO. 3

DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2013 Infinti M37 4-Door Sedan NHTSA No. ND5202

Test Program: NCAP Side Pole Impact Test Test Date: 08/28/12



DUMMY LONGITUDINAL CLEARANCE DIMENSION INFORMATION

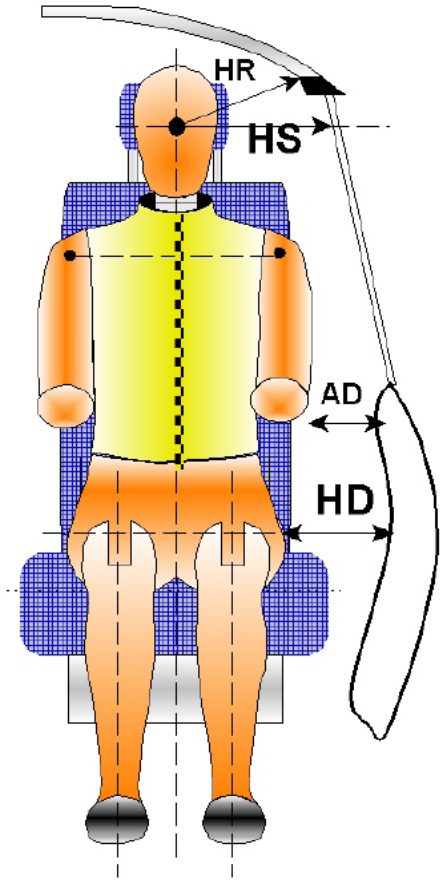
Driver Code	Description	Driver	
		Length (mm)	Angle (º)
HH	Head to Header	202	
HW	Head to Windshield	475	
HZ	Head to Roof	135	
NR	Nose to Rim	175	
CD	Chest to Dash	361	
CS	Chest to Steering Wheel	113	
KD(L)/KDA(L)°	Left Knee to Dash	80	31.1
KD(R)/KDA(R)°	Right Knee to Dash	67	31.0
PAX°	Pelvic Tilt Angle (x-axis)		18.0
PAY°	Pelvic Tilt Angle (y-axis)		0.4
PHX	Hip Point to Striker (x-axis)	432	
PHZ	Hip Point to Striker (z-axis)	160	

DATA SHEET NO. 4

DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2013 Infinti M37 4-Door Sedan NHTSA No. ND5202

Test Program: NCAP Side Pole Impact Test Test Date: 08/28/12



DUMMY LATERAL CLEARANCE DIMENSION INFORMATION

Code	Measurement Description	Units	Driver
HR	Head to Side Header	mm	126
HS	Head to Side Window	mm	348
AD	Arm to Door	mm	133
HD	H-Point to Door	mm	176

DATA SHEET NO. 5

CAMERA AND INSTRUMENTATION DATA

Test Vehicle: 2013 Infinti M37 4-Door Sedan NHTSA No. ND5202

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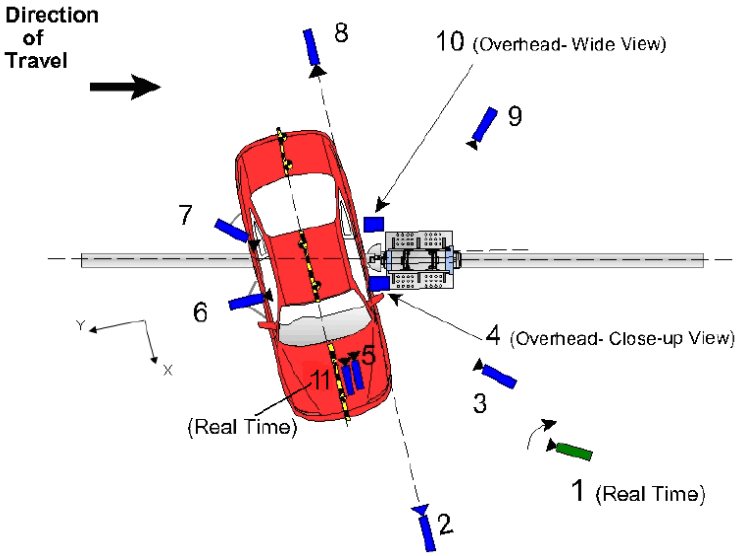


CAMERA LOCATIONS AND DATA

Camera No.	View	Coordinates (m)			Lens (mm)	Film Speed (fps)
		X*	Y*	Z*		
1	Real Time Pan View of Impact	8.89	46.57	-3.04		30
2	Front Ground Level - Impact View	8.34	-0.05	-0.93	24	1000
3	Impact Side 45° - Forward Pole View	4.10	-2.15	-1.15	8.5	1000
4	Overhead Close-Up View of Impact	0.00	0.00	-5.79	12.5	1000
5	On-Board - Dummy Front View	1.31	0.46	-1.36	24	1000
6	On-Board - Dummy Side View	-0.09	1.69	-1.13	14	1000
7	On-Board - Dummy Rear Oblique View	-1.02	1.64	-1.16	14	1000
8	Rear Ground Level - Impact View	-6.12	-6.23	-0.96	24	1000
9	Impact Side 45° - Rearward Pole View	-8.02	0.04	-1.01	35	1000
10	Overhead Wide View of Impact	-0.06	0.22	-5.79	14	1000
11	Real Time Dummy Front View	1.44	0.53	-1.39		30

Reference from Point of Impact for X and Y; from Ground for Z):
+X = Forward of Vehicle, +Y = Right of Vehicle, +Z = Down
*All measurements accurate to ±6 mm

INSTRUMENTATION

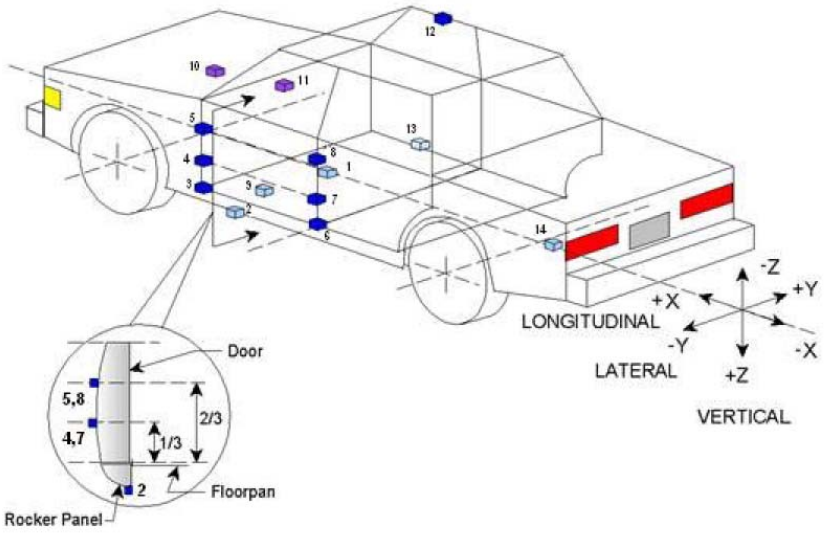
Driver Dummy Channels	16
Vehicle Structure Accelerometers	18
Pole Load Cells	8
Total	42

DATA SHEET NO. 6

TEST VEHICLE ACCELEROMETER LOCATIONS

Test Vehicle: 2013 Infinti M37 4-Door Sedan NHTSA No. ND5202

Test Program: NCAP Side Pole Impact Test Test Date: 08/28/12



VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

Loc. No.	Sensor Description	Coordinates (mm)		
		X	Y	Z
1	Vehicle CG	2068	-5	-430
2	Left Floor Sill	3115	-715	-194
3	A-Pillar Sill	3329	-796	-476
4	A-Pillar Low	3329	-796	-602
5	A-Pillar Mid	3329	-796	-789
6	B-Pillar Sill	2214	-728	-325
7	B-Pillar Low	2214	-728	-540
8	B-Pillar Mid	2214	-728	-793
9	Driver Seat Track	2475	-595	-238
10	Engine Top	4144	186	-805
11	Firewall	3588	-110	-895
12	Right Roof	2411	495	-1470
13	Right Floor Sill	2019	719	-242
14	Rear Floorpan	1105	-6	-495

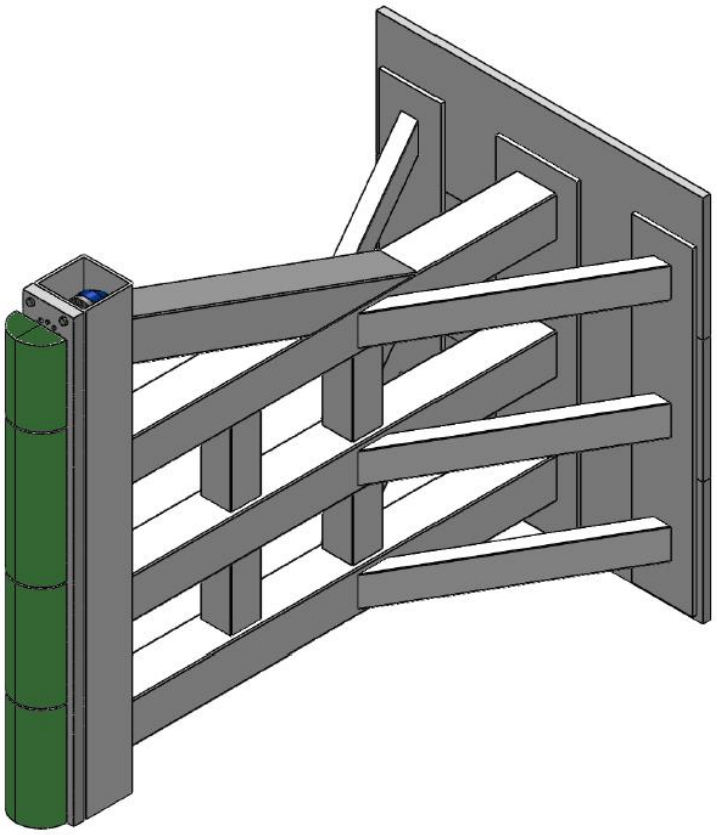
Reference: X – Rear surface of vehicle (+ forward)
Y – Vehicle centerline (+ to right)
Z – Ground plane (+ down)

DATA SHEET NO. 7

RIGID POLE LOAD CELL DATA

Test Vehicle: 2013 Infinti M37 4-Door Sedan NHTSA No. ND5202

Test Program: NCAP Side Pole Impact Test Test Date: 08/28/12



RIGID POLE LOAD CELL LOCATIONS

ID	Units	Height From Ground
1	mm	87
2	mm	468
3	mm	648
4	mm	978
5	mm	1168
6	mm	1651
7	mm	1816
8	mm	2057

DATA SHEET NO. 8

POST-TEST OBSERVATIONS

Test Vehicle: 2013 Infinti M37 4-Door Sedan NHTSA No. ND5202

Test Program: NCAP Side Pole Impact Test Test Date: 08/28/12

TEST DUMMY INFORMATION AND CONTACT POINTS

Dummy Body Part	Driver SID-IIs Dummy
Face	Curtain Airbag
Top of Head	Curtain Airbag
Left Side of Head	Curtain Airbag, Head Restraint
Back of Head	Head Restraint, Curtain Airbag
Left Shoulder	Torso/Pelvis Airbag, Seat
Upper Torso	Torso/Pelvis Airbag
Lower Torso	Seat, Torso/Pelvis Airbag
Left Hip	Seat, Torso/Pelvis Airbag, Door Panel
Left Knee	Door Panel, Right Knee

POST-TEST DOOR PERFORMANCE

Description	Struck Side		Non-Struck Side		Rear Hatch/Other Door
	Front	Rear	Front	Rear	
Remained Closed and Operational	No	No	Yes	Yes	Yes
Total Separation from Vehicle at Hinges or Latches	No	No	No	No	No
Latch or Hinge System Pulled Out of Their Anchorages	No	No	No	No	No
Disengaged from Latched Position	No	No	No	No	No
Latch Separated from Striker	No	No	No	No	No
Jammed Shut	Yes	Yes	No	No	No
If Door Opened at Striker, Record Width of Opening at Striker (mm)	n/a	n/a	n/a	n/a	n/a

POST-TEST SEAT PERFORMANCE

Description	Struck Side		Non-Struck Side	
	Front	Rear	Front	Rear
Seat Movement Along Seat Track	No	No	No	No
Seat Disengagement from Floor Pan	No	No	No	No
Seat Back Movement from Initial Position	No	No	No	No
Seat Back Collapse	No	No	No	No

POST-TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Pillar Performance	No Separation
Sill Separation	No Separation
Windshield Damage	Broken
Side Window Damage	Left Front Window Broken
Other Notable Effects	None

DATA SHEET NO. 8 … (CONTINUED)

POST-TEST OBSERVATIONS

Test Vehicle: 2013 Infinti M37 4-Door Sedan NHTSA No. ND5202

Test Program: NCAP Side Pole Impact Test Test Date: 08/28/12

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Struck Side Driver		Struck Side Rear Passenger	
	Mounted	Deployed	Mounted	Deployed
Frontal Airbag	Yes	No	No	
Knee Airbag	No		No	
Side Airbag 1 (Curtain)	Yes	Yes	Yes	Yes
Side Airbag 2 (Torso/Pelvis)	Yes	Yes	No	
Seat Belt Pretensioner	Yes	Yes	No	
Seat Belt Load Limiter	Yes	Yes	No	
Other				

IMPACT POINT LOCATION DATA

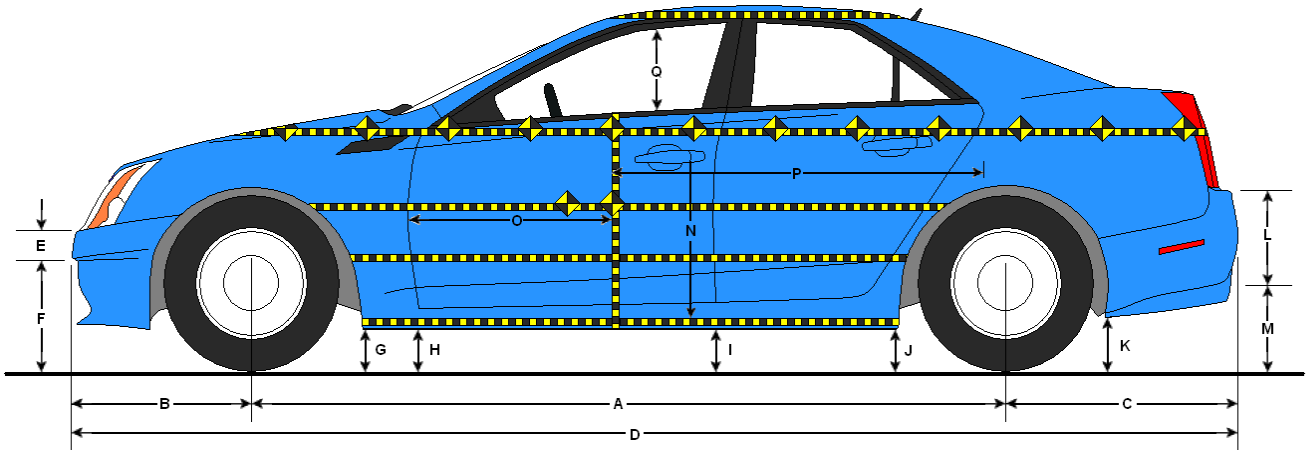
Measured Parameter	Units	Tolerance	Value
Vertical Impact Reference Line (Aft of Front Axle)(Intended Impact Point)	mm		1222
Actual Impact Point (Aft of Front Axle)	mm		1224
Horizontal Offset (+ forward / - rearward)	mm	± 38 of Intended Impact Point	-2
Angle Between Vehicle's Longitudinal Centerline and Line of Forward Motion	°	75 ± 3	75.2
Trap No. 1 Velocity (Primary)	km/h	31.4 to 33.0	31.67
Trap No. 2 Velocity (Redundant)	km/h	31.4 to 33.0	31.67

DATA SHEET NO. 9

TEST VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2013 Infinti M37 4-Door Sedan NHTSA No. ND5202

Test Program: NCAP Side Pole Impact Test Test Date: 08/28/12



LEFT SIDE VIEW

VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

Code	Description	Pre-Test	Post-Test	Difference
A	Wheelbase	2895	2793	-102
B	Front Axle to FSOV	898	921	23
C	Rear Axle to RSOV	1148	1174	26
D	Total Length at Centerline	4937	4888	-49
E	Front Bumper Thickness	115	116	1
F	Fromt Bumper Bottom to Ground	360	409	49
G	Sill Height at Front Wheel Well	170	169	-1
H	Sill Height at Front Door Leading Edge	178	168	-10
I	Sill Height at B-Pillar	213	238	25
J1	Sill Height at Rear Wheel Well	191	232	41
J2	Pinch Weld Height at Rear Wheel Well	192	216	24
K	Sill Height Aft of Rear Wheel Well	239	263	24
L	Rear Bumper Thickness	317	318	1
M	Rear Bumper Bottom to Ground	362	379	17
N	Sill Height to Bottom of Front Window Sill	605	670	65
O	Front Door Leading Edge to Impact CL	575	463	-112
P	Rear Door Trailing Edge to Impact CL	1556	1442	-114
Q	Front Window Opening	396	421	25
R	Right Side Length	3432	3452	20
S	Left Side Length	3431	3310	-121
T	Vehicle Width at B-Pillar	1842	1689	-153

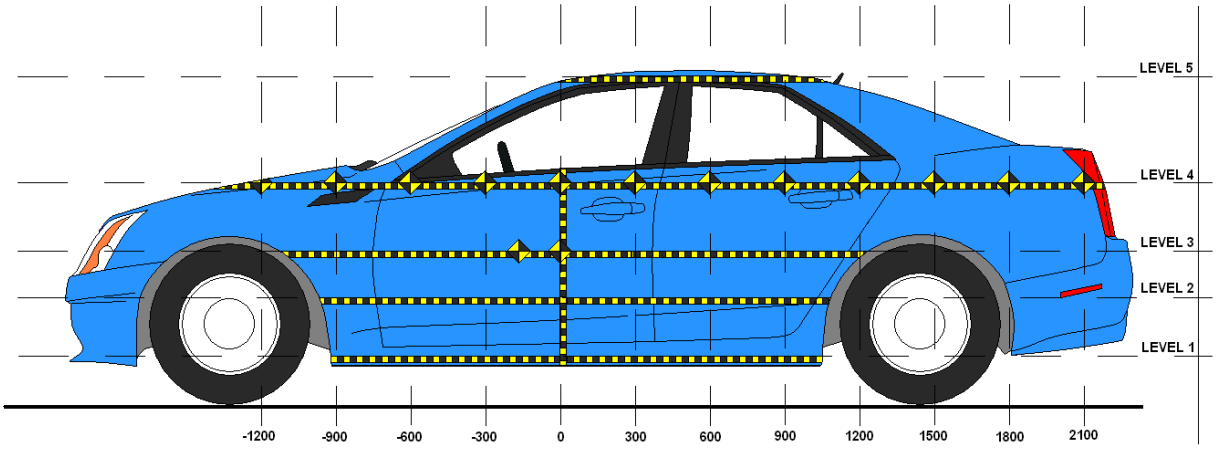
All measurements in mm with tolerance of ± 3mm

DATA SHEET NO. 10

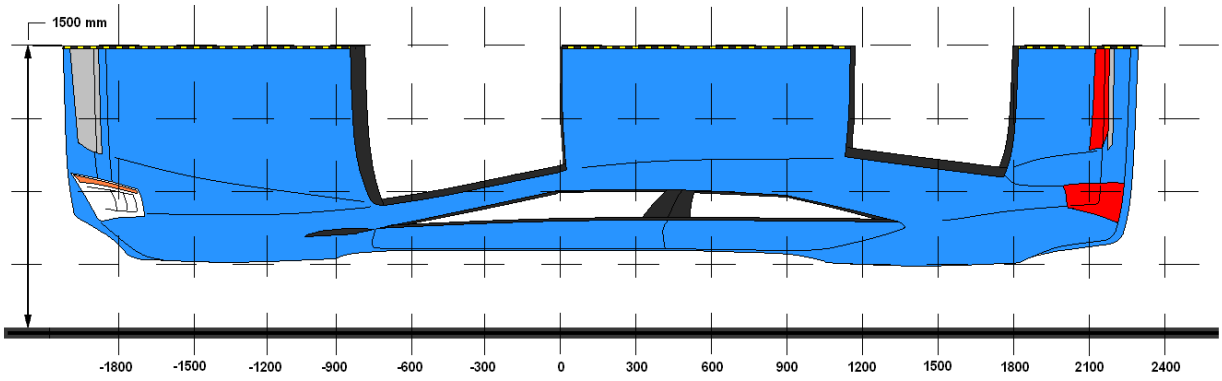
TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2013 Infinti M37 4-Door Sedan NHTSA No. ND5202

Test Program: NCAP Side Pole Impact Test Test Date: 08/28/12



LEFT SIDE VIEW



OVERHEAD VIEW

MAXIMUM EXTERIOR CRUSH MEASUREMENTS

Level	Description	Height Above Ground (mm)	Maximum Exterior Static Crush	Distance from Impact
1	Sill Top	275	414	0
2	Occupant H-Point	595	485	150
3	Mid-Door	664	490	150
4	Window Sill	957	436	150
5	Window Top	1423	244	150

DATA SHEET NO. 10 … (CONTINUED)

TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2013 Infinti M37 4-Door Sedan NHTSA No. ND5202

Test Program: NCAP Side Pole Impact Test Test Date: 08/28/12

EXTERIOR CRUSH MEASUREMENTS AT EACH LEVEL

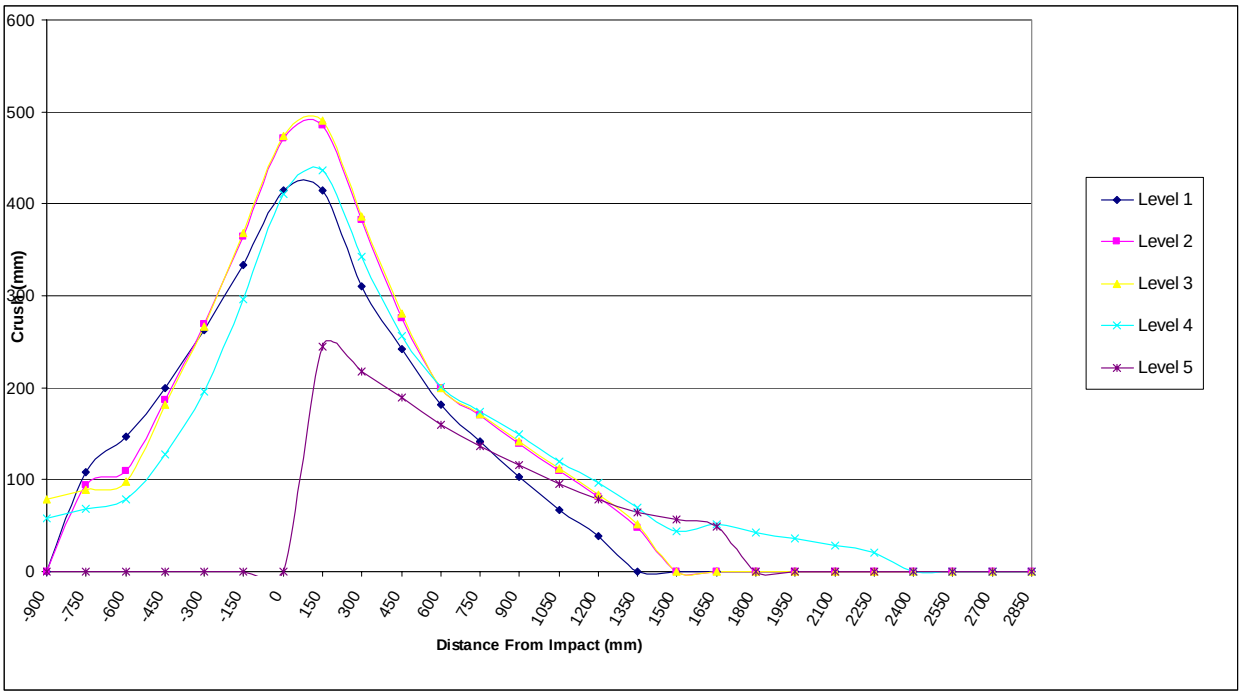
	Pre-Test (mm)					Post-Test (mm)					Difference (mm)				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-900			576	689				655	747				79	58	
-750	610	583	589	678		718	677	678	746		108	94	89	68	
-600	629	587	590	668		776	696	688	747		147	109	98	79	
-450	638	586	587	662		838	773	768	790		200	187	181	128	
-300	639	584	584	654		902	853	851	850		263	269	267	196	
-150	639	582	581	652		973	947	949	948		334	365	368	296	
0	637	580	579	646		1051	1051	1053	1057		414	471	474	411	
150	638	580	578	643	886	1052	1065	1068	1079	1130	414	485	490	436	244
300	639	580	577	641	888	949	963	963	983	1106	310	383	386	342	218
450	639	581	578	639	894	881	856	859	895	1083	242	275	281	256	189
600	638	583	580	639	900	820	783	780	840	1060	182	200	200	201	160
750	636	584	581	639	900	778	754	752	813	1037	142	170	171	174	137
900	632	586	583	637	900	735	725	724	786	1016	103	139	141	149	116
1050	621	586	585	641	902	688	696	697	761	997	67	110	112	120	95
1200	596	580	582	635	906	634	661	666	731	984	38	81	84	96	78
1350		576	575	636	912		624	627	705	976		48	52	69	64
1500				628	919				672	976				44	57
1650				631	932				682	981				51	49
1800				637					680					43	
1950				649					685					36	
2100				666					694					28	
2250				686					706					20	
2400															
2550															
2700															
2850															

DATA SHEET NO. 10 … (CONTINUED)

TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2013 Infinti M37 4-Door Sedan NHTSA No. ND5202

Test Program: NCAP Side Pole Impact Test Test Date: 08/28/12



DATA SHEET NO. 11

FMVSS NO. 301 STATIC ROLLOVER RESULTS

Test Vehicle: 2013 Infinti M37 4-Door Sedan NHTSA No. ND5202

Test Program: NCAP Side Pole Impact Test Test Date: 08/28/12

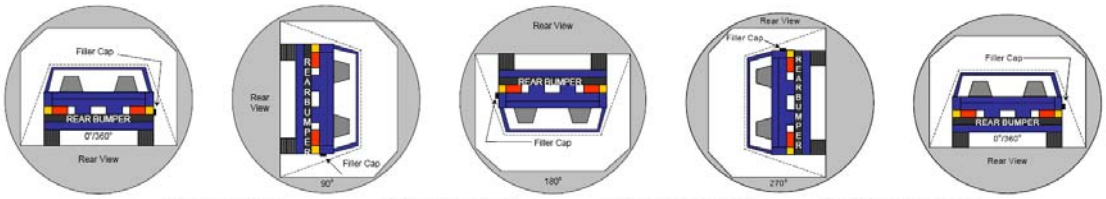
Temperature at Time of Impact: 36.7° C Test Time: 1:25 PM

A. From impact until vehicle motion ceases: 0 oz.
(Maximum allowable = 1 oz.)

B. For the 5 minute period after motion ceases: 0 oz.
(Maximum allowable = 5 oz.)

C. For the following 25 minutes: 0 oz.
(Maximum allowable = 1 oz./minute)

D. Spillage Details: No spillage occurred



0° TO 90° 90° TO 180° 180° TO 270° 270° TO 360°

SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0° To 90°	80	300	380
90° To 180°	81	300	381
180° To 270°	79	300	379
270° To 360°	82	300	382

FMVSS 301 SPILLAGE TABLE

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

SOLVENT SPILLAGE LOCATION TABLE

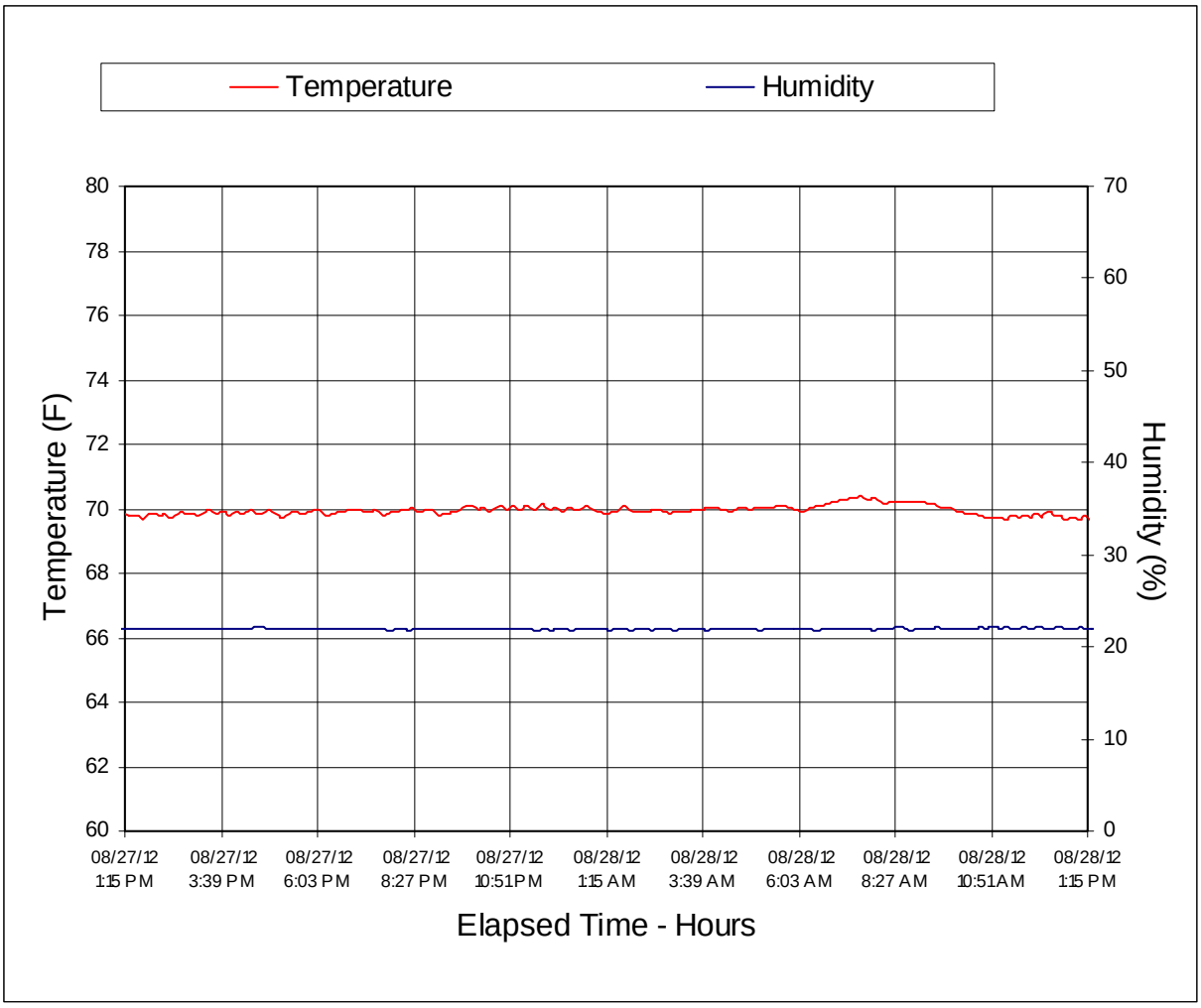
Test Phase	Spillage Location
0° To 90°	No Spillage Occurred
90° To 180°	No Spillage Occurred
180° To 270°	No Spillage Occurred
270° To 360°	No Spillage Occurred

DATA SHEET NO. 14

DUMMY/VEHICLE TEMPERATURE AND HUMIDITY STABILIZATION

Test Vehicle: 2013 Infinti M37 4-Door Sedan NHTSA No. ND5202

Test Program: NCAP Side Pole Impact Test Test Date: 08/28/12



APPENDIX A

PHOTOGRAPHS

TABLE OF PHOTOGRAPHS

TABLE OF PHOTOGRAPHS … (CONTINUED)

FIGURE 1. As-Delivered Right Front ¾ View of Test Vehicle

FIGURE 2. As-Delivered Left Rear ¾ View of Test Vehicle

FIGURE 3. Pre-Test Frontal View of Test Vehicle

FIGURE 4. Post-Test Frontal View of Test Vehicle

FIGURE 5. Pre-Test Left Front ¾ View of Test Vehicle

FIGURE 6. Post-Test Left Front ¾ View of Test Vehicle

FIGURE 7. Pre-Test Left Side View of Test Vehicle

FIGURE 8. Post-Test Left Side View of Test Vehicle

FIGURE 9. Pre-Test Left Rear ¾ View of Test Vehicle

FIGURE 10. Post-Test Left Rear ¾ View of Test Vehicle

FIGURE 11. Pre-Test Rear View of Test Vehicle

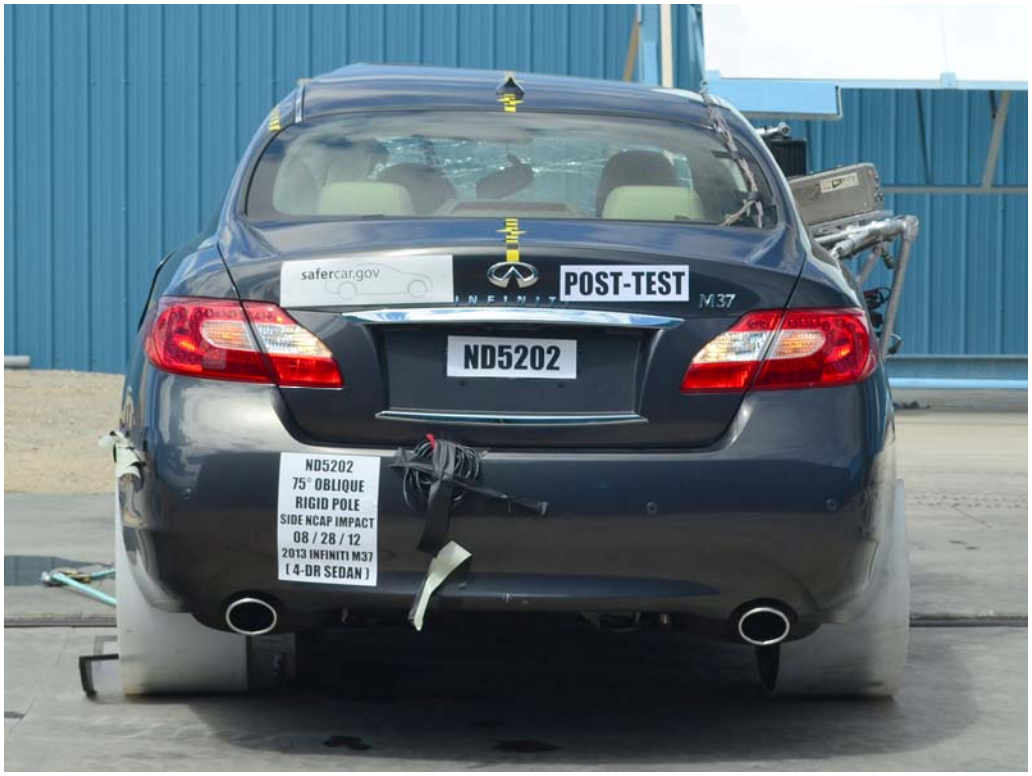


FIGURE 12. Post-Test Rear View of Test Vehicle

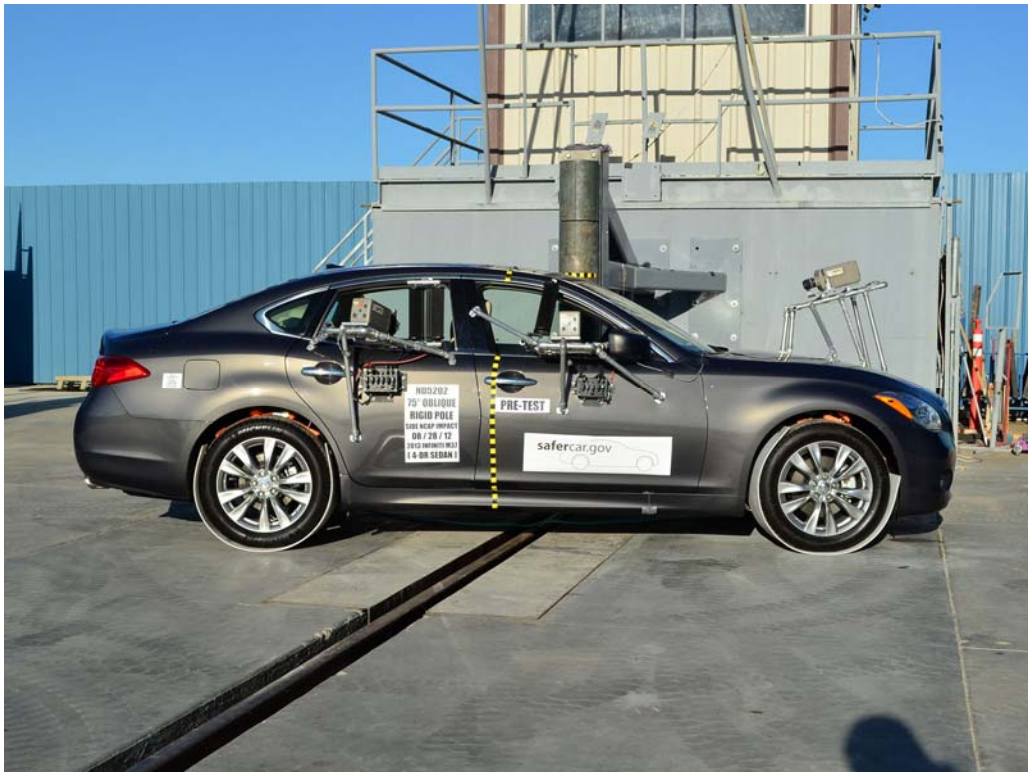


FIGURE 13. Pre-Test Right Side View of Test Vehicle

FIGURE 14. Post-Test Right Side View of Test Vehicle

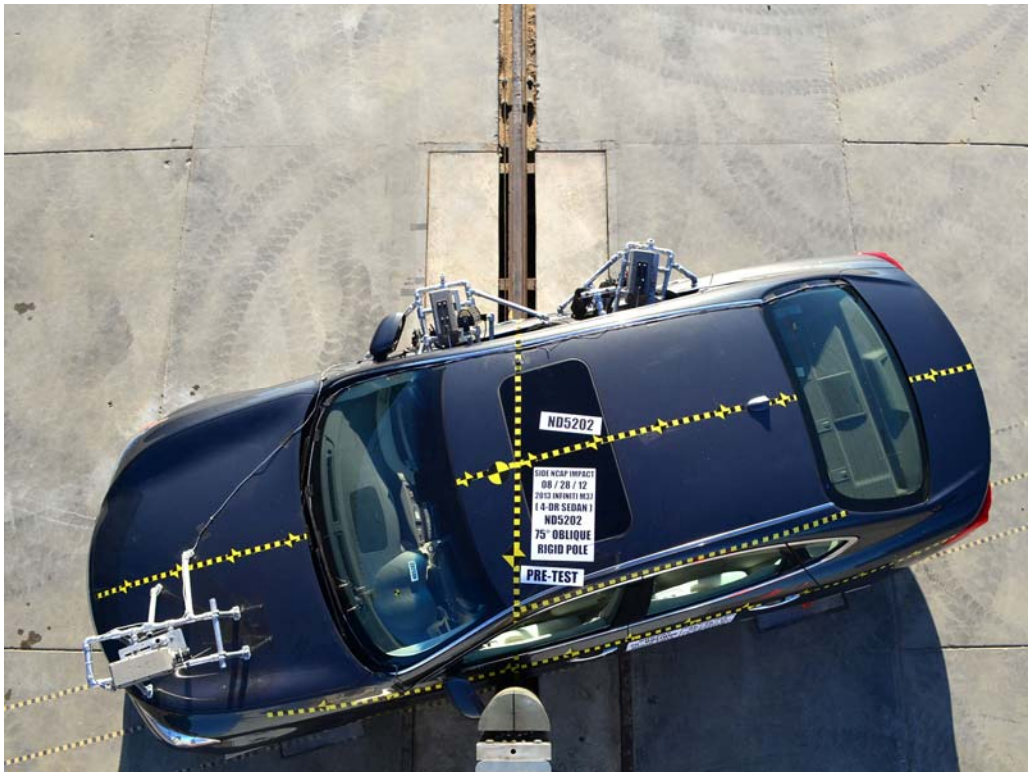


FIGURE 15. Pre-Test Overhead View of Test Vehicle and Pole

FIGURE 16. Post-Test Overhead View of Test Vehicle and Pole

FIGURE 17. Pre-Test Left Side View of Pole
Positioned Against Side of Vehicle at Impact Point

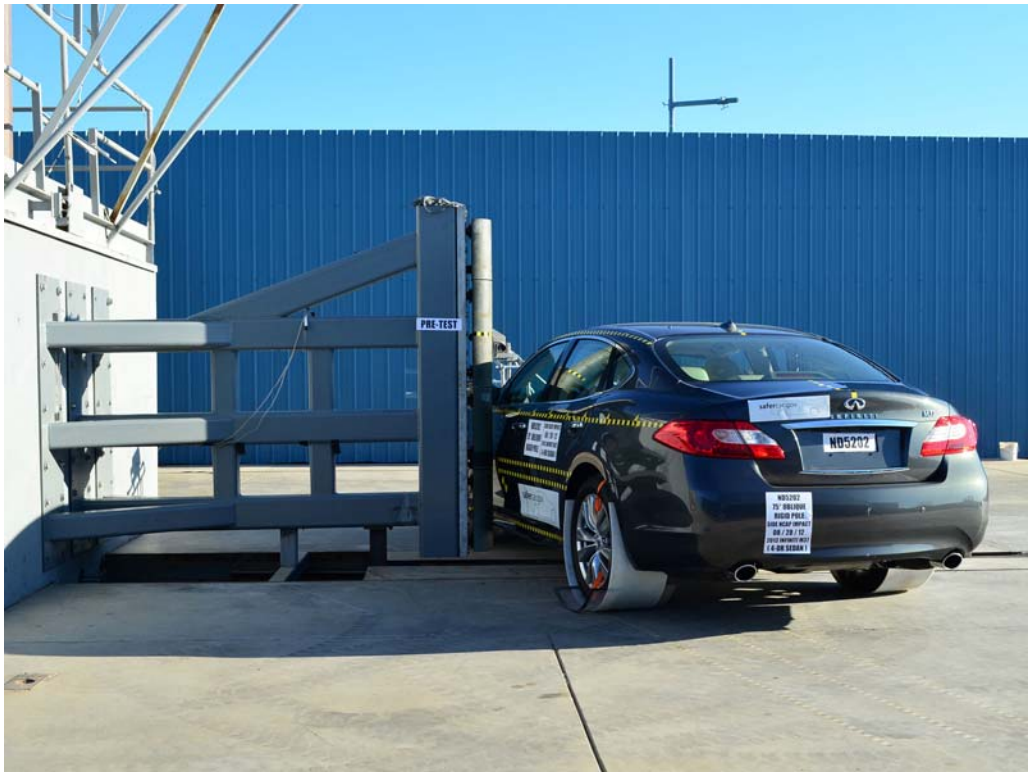


FIGURE 18. Pre-Test Right Side View of Pole
Positioned Against Side of Vehicle at Impact Point

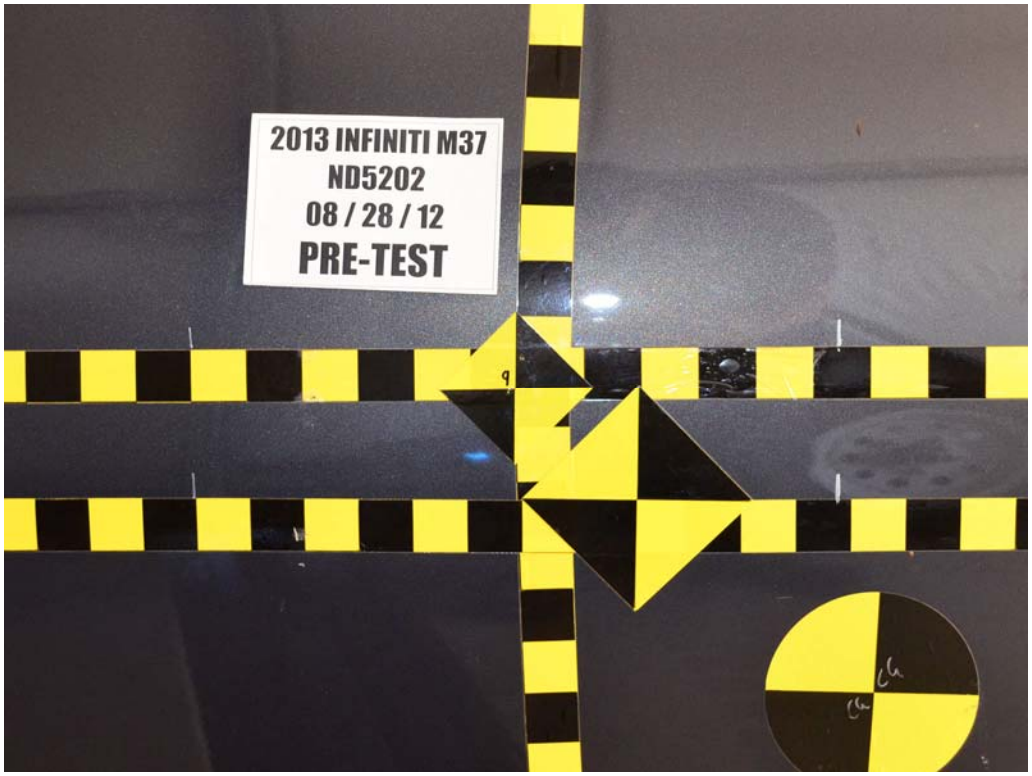


FIGURE 19. Pre-Test Close-Up View of Impact Point Target

FIGURE 20. Post-Test Close-Up View of Impact Point Target
Showing Impact Location

FIGURE 21. Pre-Test Front Close-Up View of Dummy

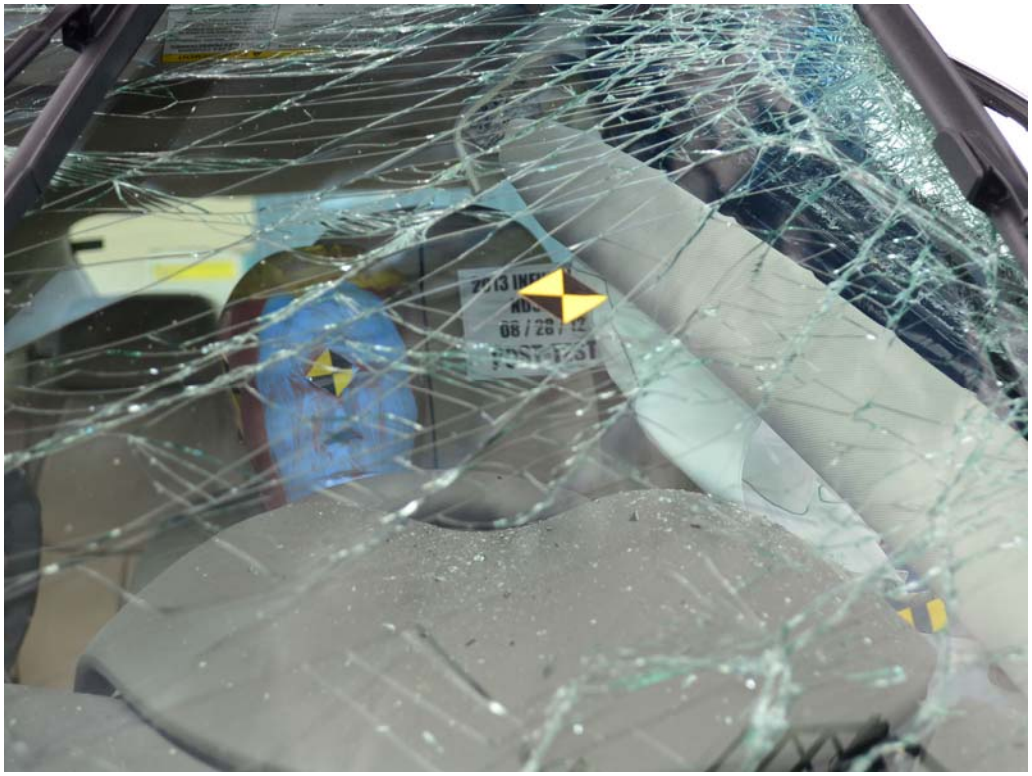


FIGURE 22. Post-Test Front Close-Up View of Dummy

FIGURE 23. Pre-Test Left Side View of Dummy
Showing Belt, Chalking, and Contact Switches

FIGURE 24. Pre-Test Left Side View of Dummy Shoulder and Door Top View

FIGURE 25. Post-Test Left Side View of Dummy Shoulder and Door Top View

FIGURE 26. Pre-Test Frontal View of Seat Back Prior to Dummy Positioning

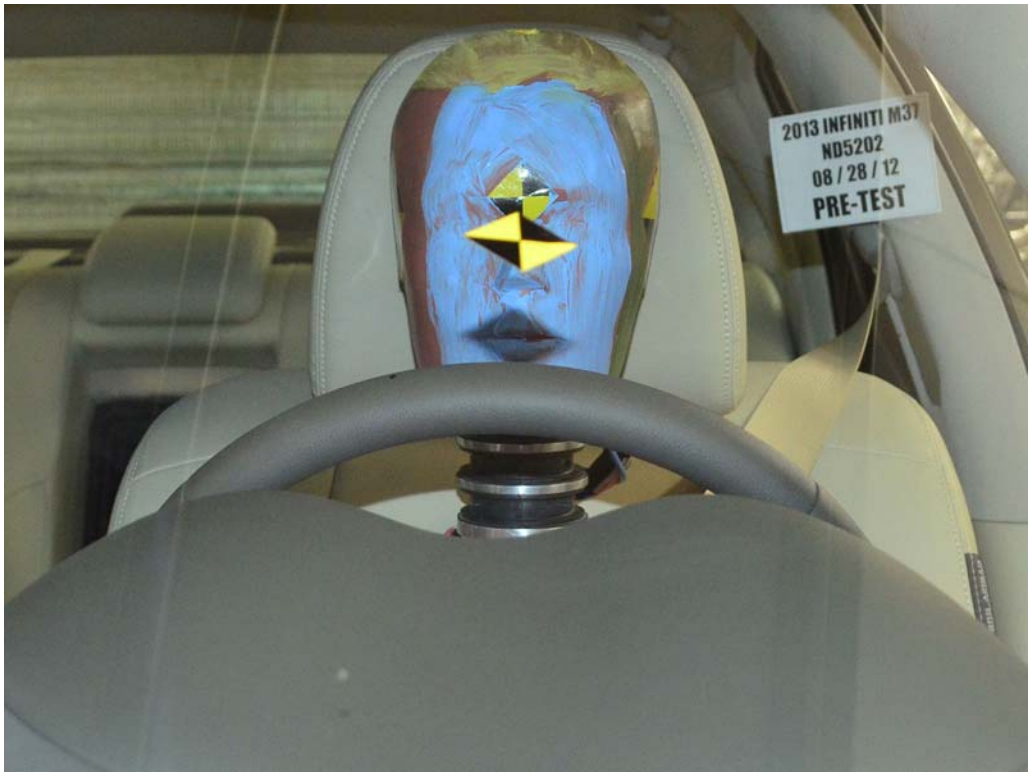


FIGURE 27. Pre-Test Frontal View of Dummy Head and Shoulders in Relation to Head Restraint

FIGURE 28. Pre-Test Frontal View of Seat Pan Prior to Dummy Positioning

FIGURE 29. Pre-Test Overhead View of Dummy Thighs on Seat Pan

FIGURE 30. Pre-Test View of Dummy's Neck Showing Position of Adjustable Neck Bracket

FIGURE 31. Pre-Test View of Dummy's Head Showing Dummy's Head Is Level

FIGURE 32. Pre-Test Placement of Dummy's Feet

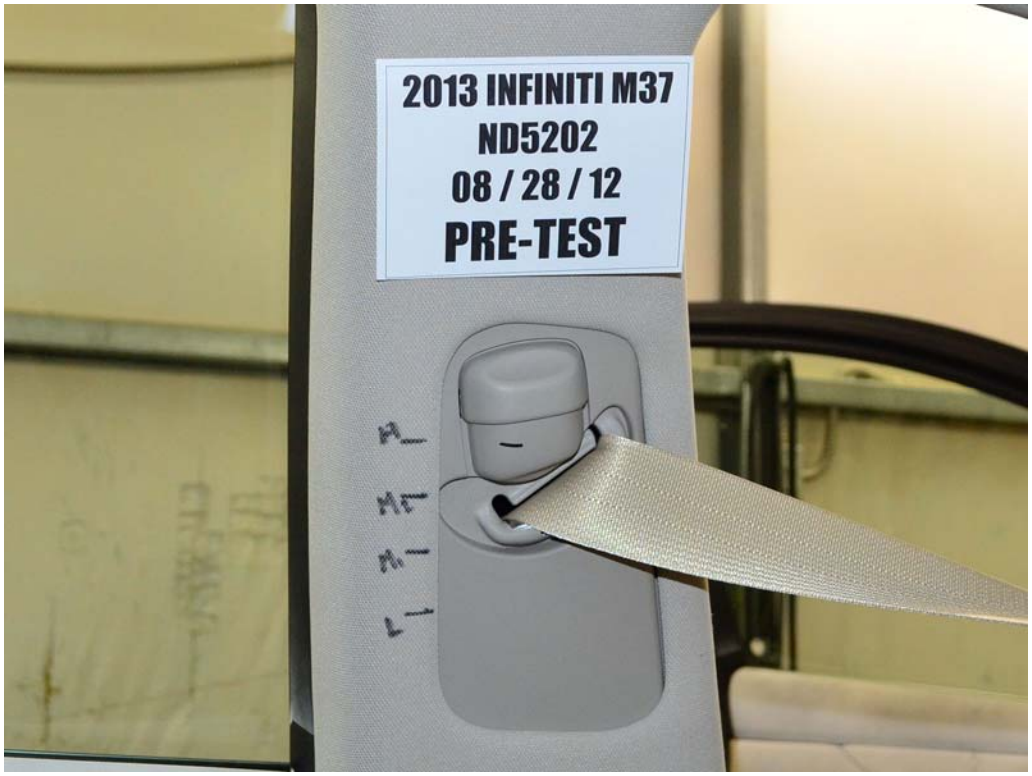


FIGURE 33. Pre-Test View of Belt Anchorage for Dummy

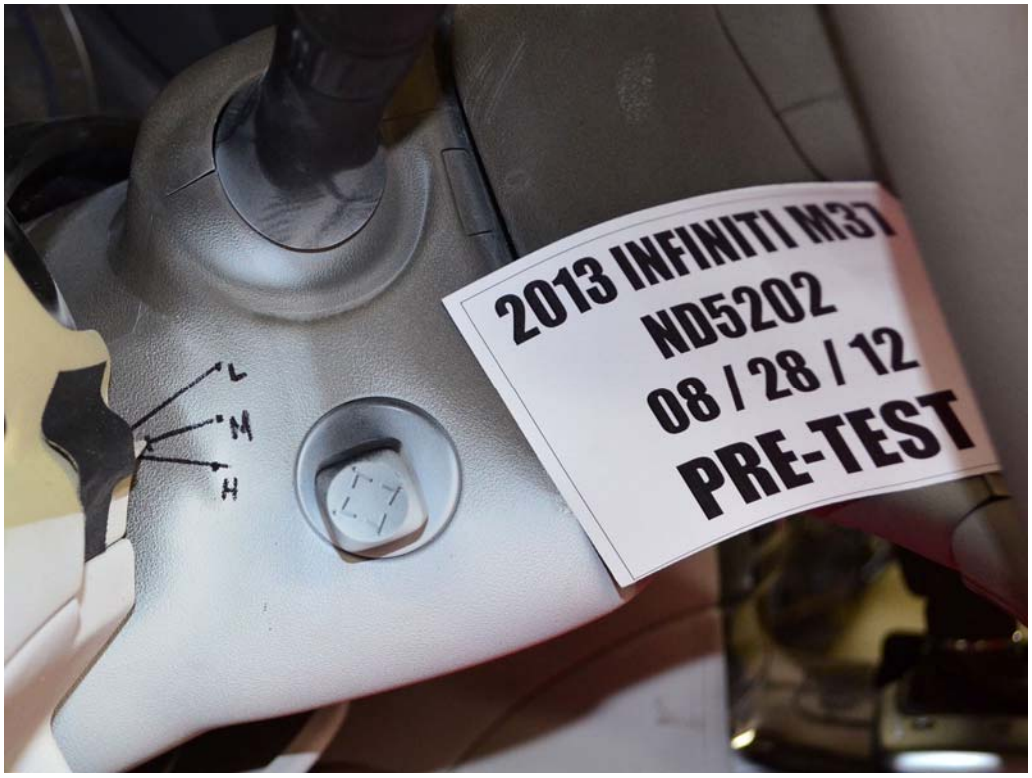


FIGURE 34. Pre-Test Left Side View of Steering Wheel

FIGURE 35. View of Disengaged Parking Brake

FIGURE 36. Pre-Test View of Parking Brake

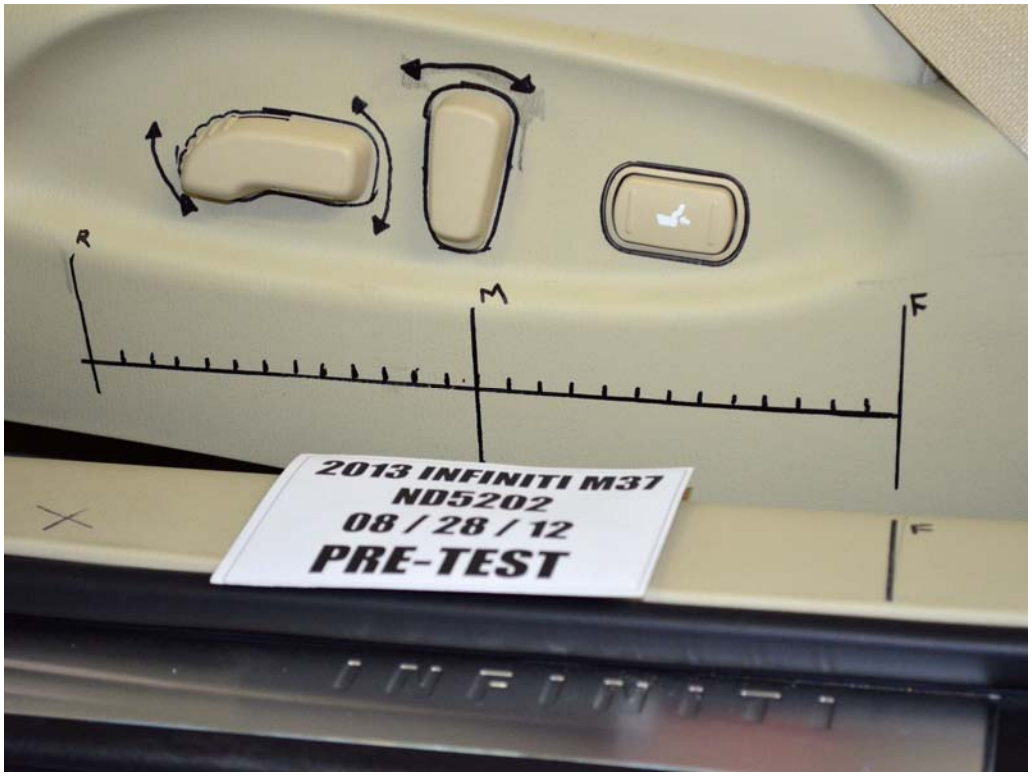


FIGURE 37. Pre-Test Close-Up Left Side View of Driver Seat Track

FIGURE 38. Pre-Test Close-Up Left Side View of Driver Seat Back

FIGURE 39. Pre-Test Close-Up View of Driver Seat Back or Head Restraint

FIGURE 40. Pre-Test Driver Dummy and Door Clearance

FIGURE 41. Post-Test Driver Dummy and Door Clearance

FIGURE 42. Pre-Test Right Side View of Dummy and Front Seat Occupant Compartment

FIGURE 43. Post-Test Right Side View of Dummy and Front Seat Occupant Compartment

FIGURE 44. Pre-Test Inner Driver Door Panel View

FIGURE 45. Post-Test Inner Driver Door Panel View
Showing Dummy Contact Locations

FIGURE 46. Post-Test Dummy Close-Up Head Contact with Vehicle Interior View

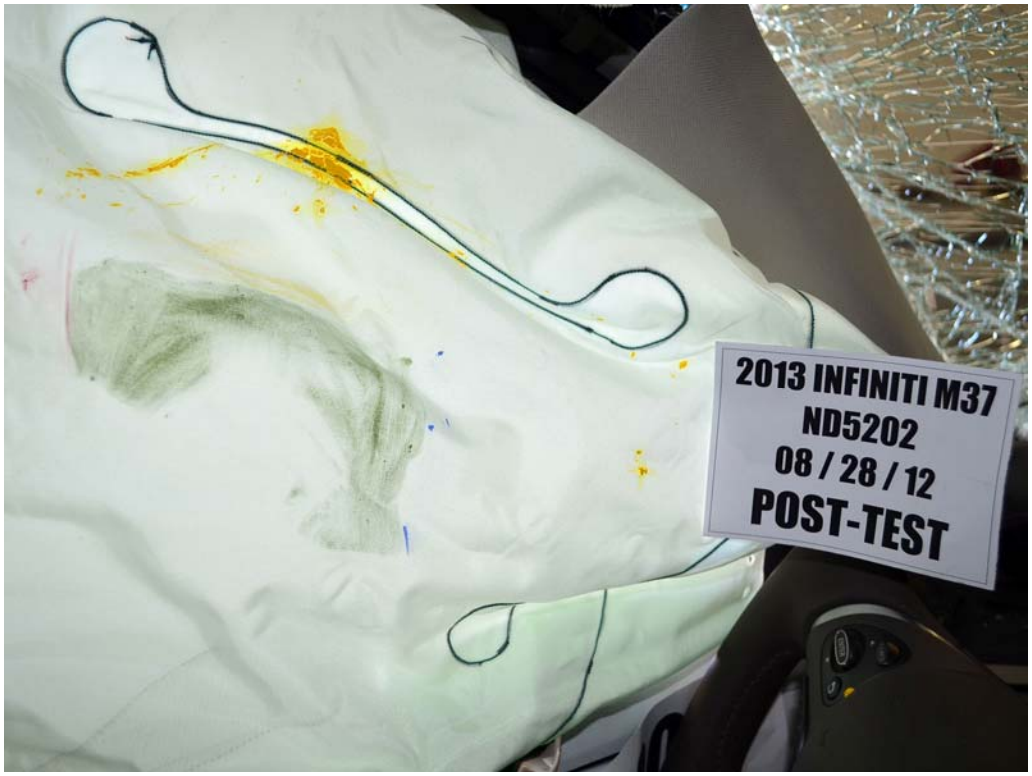


FIGURE 47. Post-Test Dummy Close-Up Head Contact with Side Airbag View

FIGURE 48. Post-Test Dummy Close-Up Torso Contact with Vehicle Interior View

FIGURE 49. Post-Test Dummy Close-Up Torso Contact with Side Airbag View

FIGURE 50. Post-Test Dummy Close-Up Pelvis Contact with Vehicle Interior View

FIGURE 51. Post-Test Dummy Close-Up Pelvis Contact with Side Airbag View

FIGURE 52. Post-Test Dummy Close-Up Knee Contact with Vehicle Interior View

FIGURE 53. Pre-Test View of Fuel Filler Cap or Fuel Filler Neck

FIGURE 54. Post-Test View of Fuel Filler Cap or Fuel Filler Neck

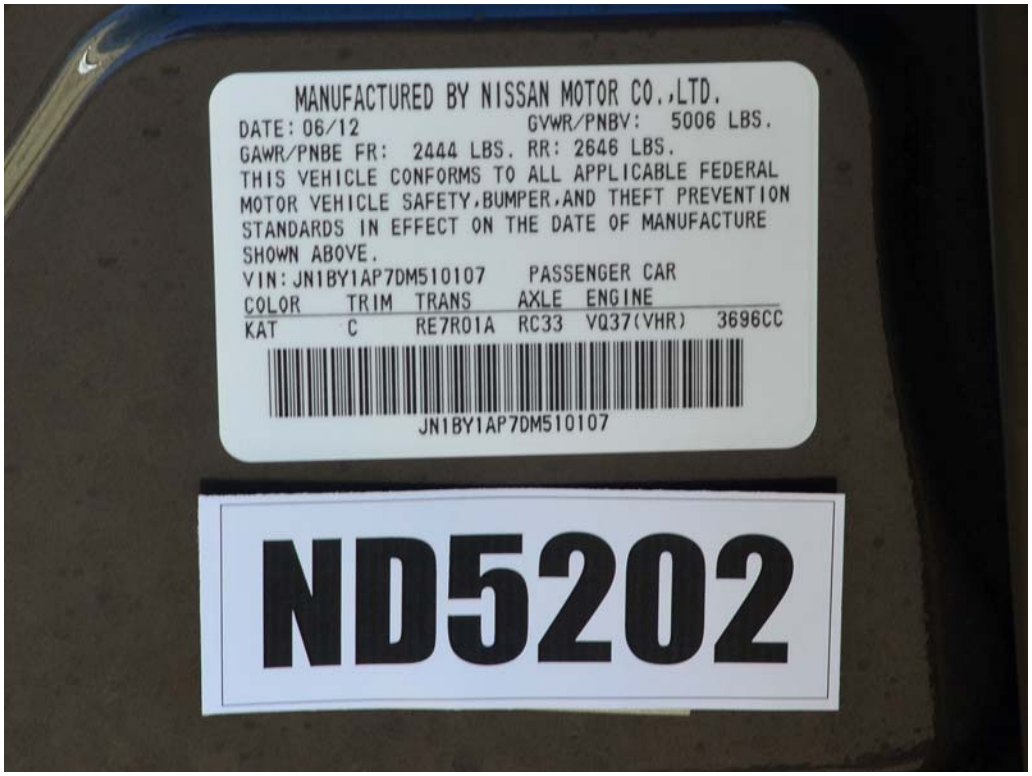


FIGURE 55. Close-Up View of Vehicle's Certification Label

FIGURE 56. Close-Up View of Vehicle's Tire Information Placard

FIGURE 57. Pre-Test Pole Barrier Front View

FIGURE 58. Post-Test Pole Barrier Front View

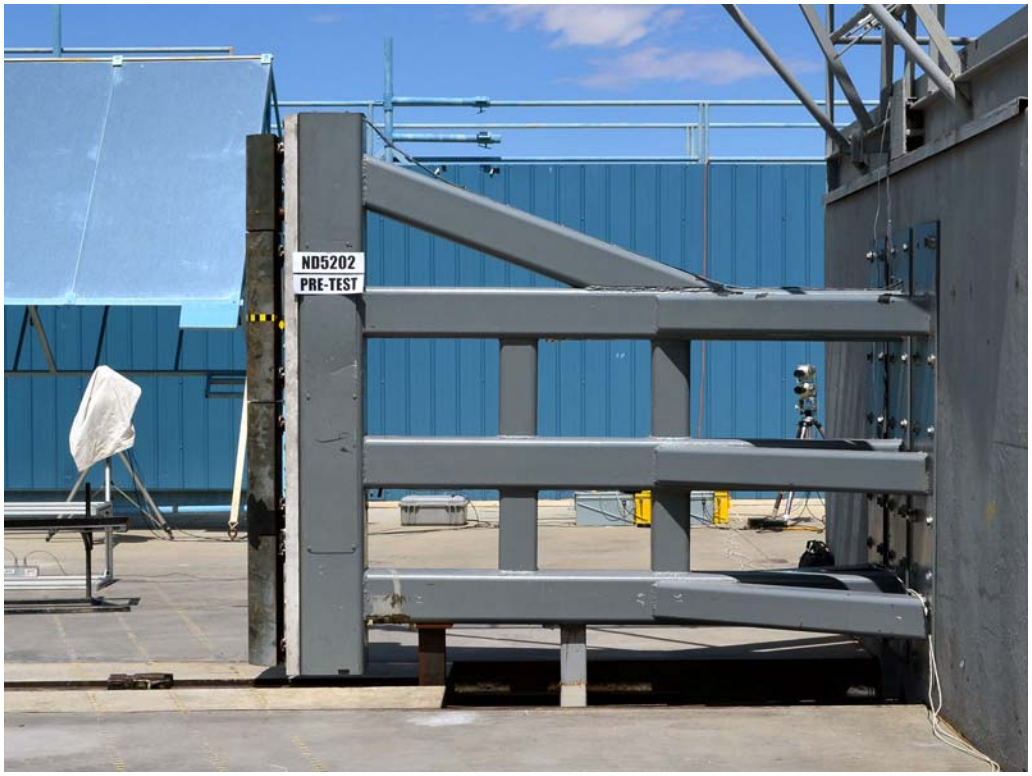


FIGURE 59. Pre-Test Pole Barrier Side View

FIGURE 60. Post-Test Pole Barrier Side View

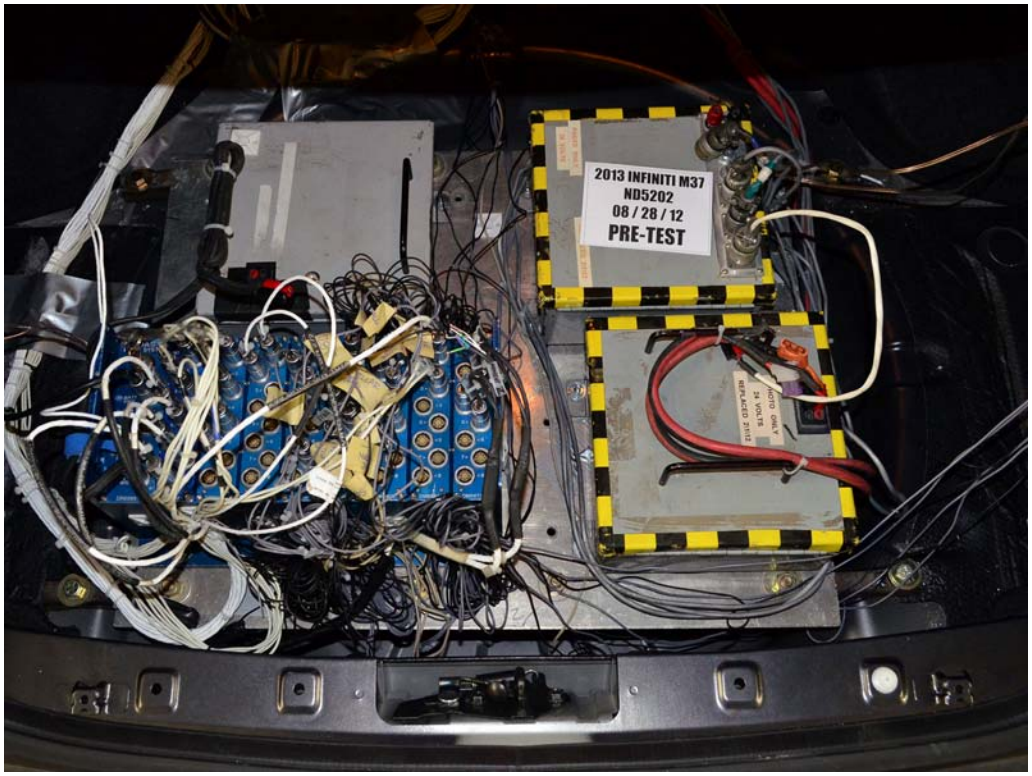


FIGURE 61. Pre-Test Ballast View

FIGURE 62. Post-Test Primary and Redundant Speed Trap Read-Out

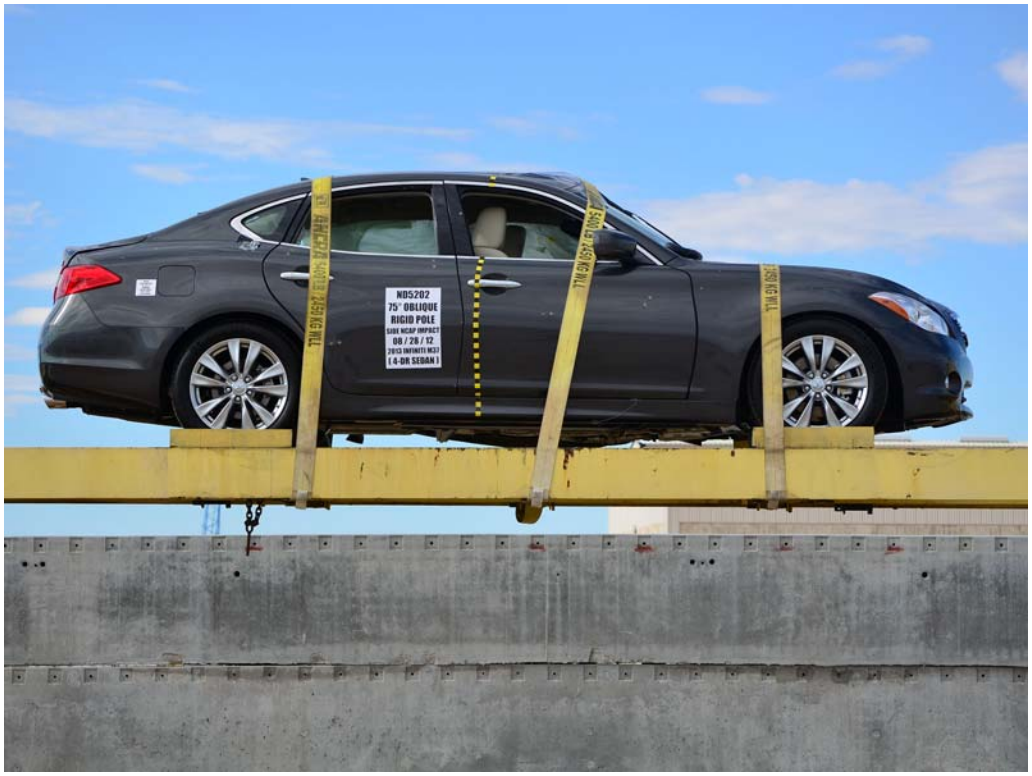


FIGURE 63. FMVSS No. 301-305 Rollover 0 Degrees

FIGURE 64. FMVSS No. 301-305 Rollover 90 Degrees

FIGURE 65. FMVSS No. 301-305 Rollover 180 Degrees

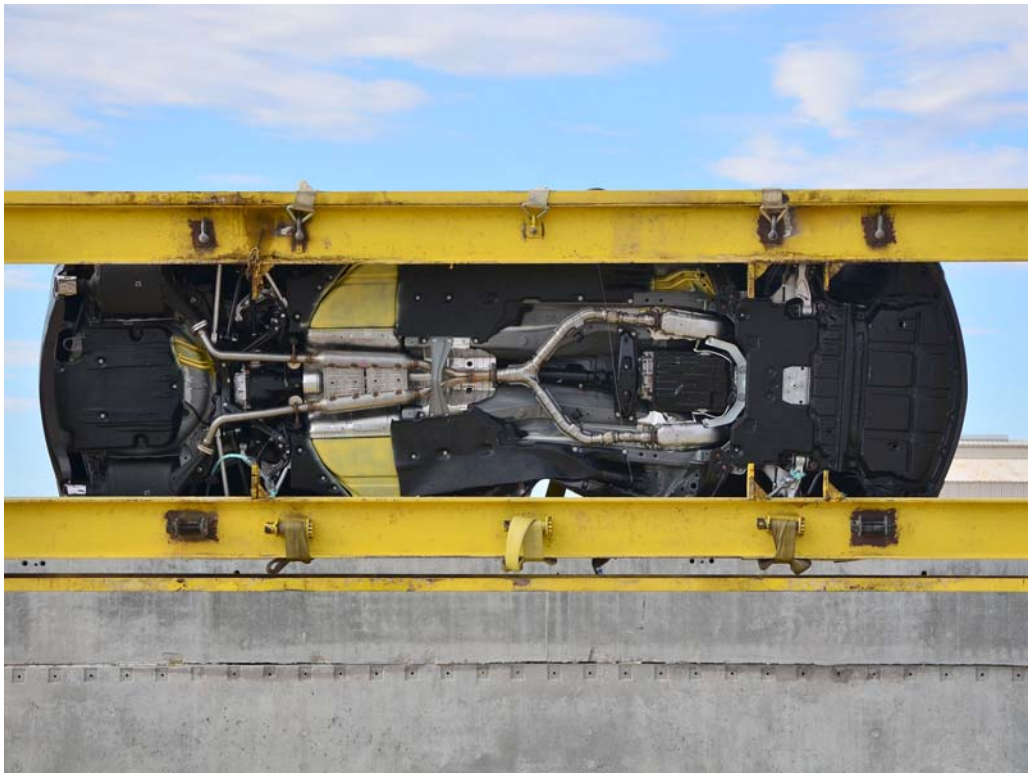


FIGURE 66. FMVSS No. 301-305 Rollover 270 Degrees

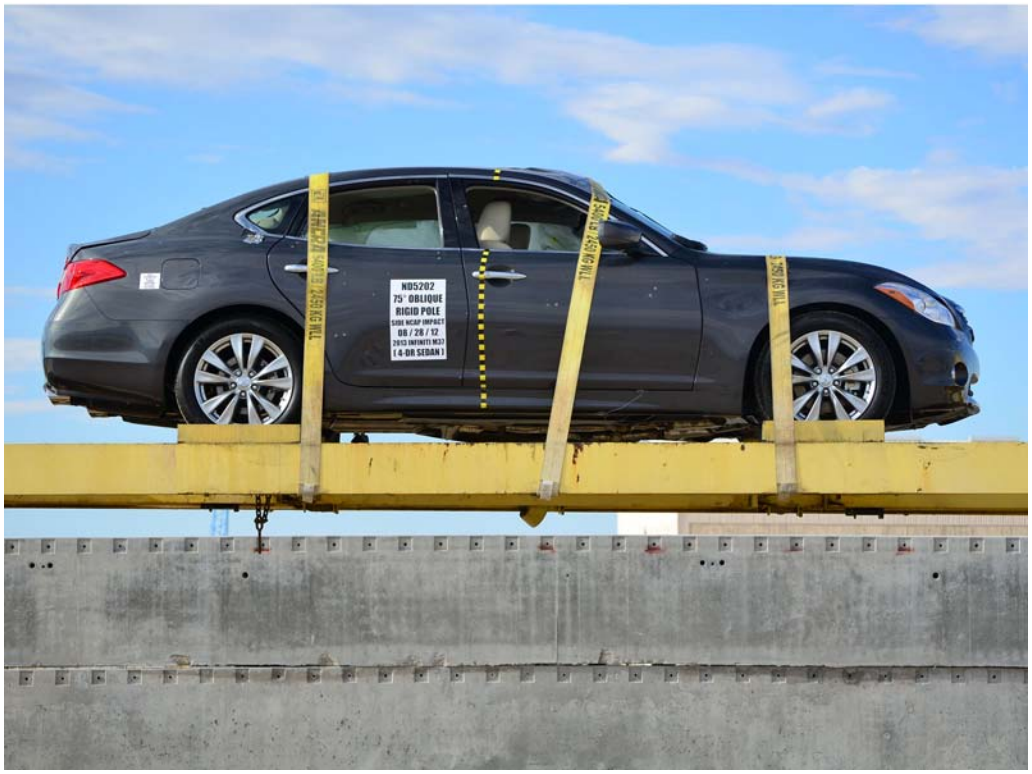


FIGURE 67. FMVSS No. 301-305 Rollover 360 Degrees

FIGURE 68. Impact Event

FIGURE 69. Monroney Label

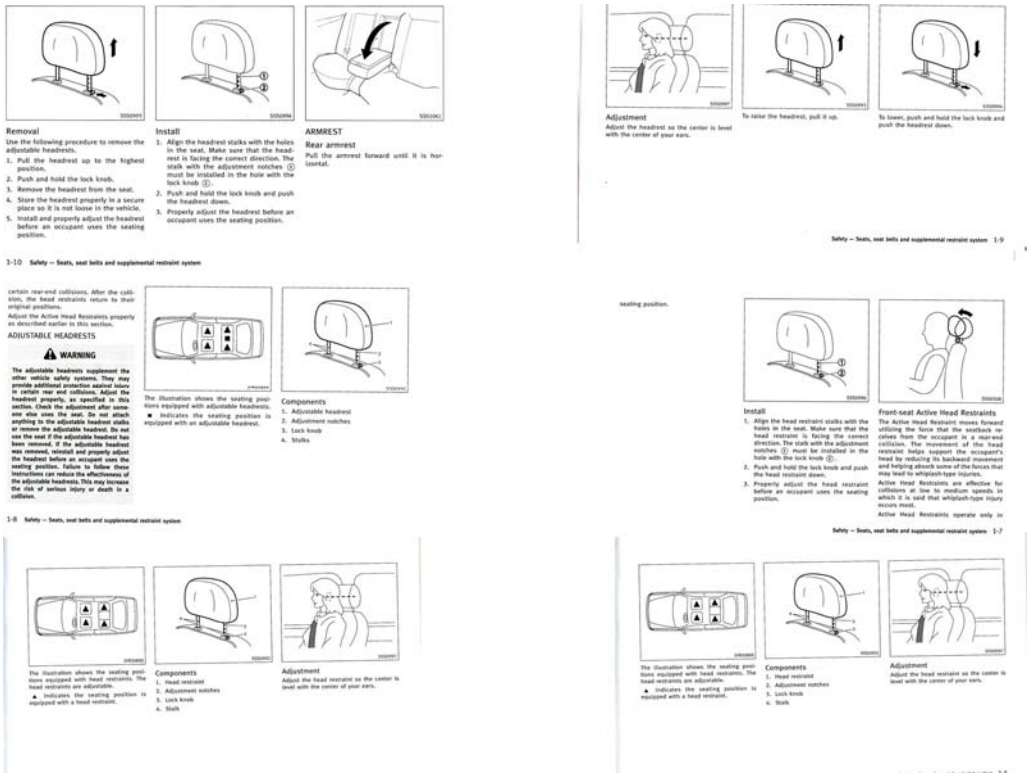


FIGURE 70. Head Restraint Use and Adjustment Information from Vehicle Manual

APPENDIX B
DUMMY RESPONSE DATA

TABLE OF DATA PLOTS

The following additional data 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

Additional Driver Dummy Instrumentation Data

Driver Head Acceleration Redundant (X)
Driver Head Acceleration Redundant (Y)
Driver Head Acceleration Redundant (Z)
Driver Upper Thorax Rib Deflection (Y)
Driver Middle Thorax Rib Deflection (Y)
Driver Lower Thorax Rib Deflection (Y)
Driver Upper Abdomen Rib Deflection (Y)
Driver Lower Abdomen Rib Deflection (Y)

Vehicle Instrumentation Data

Vehicle Center of Gravity Acceleration (X)
Vehicle Center of Gravity Acceleration (Y)
Vehicle Center of Gravity Acceleration (Z)
Left Floor Sill Acceleration (Y)
Left A-Pillar Sill Acceleration (Y)
Left Lower A-Pillar Acceleration (Y)
Left Mid A-Pillar Acceleration (Y)

Left B-Pillar Sill Acceleration

Left Lower B-Pillar Acceleration (Y)

Left Mid B-Pillar Acceleration (Y)

Driver Seat Track at Dummy Hip Point Acceleration (Y)

Engine Top Acceleration (X)

Engine Top Acceleration (Y)

Firewall Center Acceleration (Y)

Right Roof at Vertical Impact Reference Line Acceleration (Y)

Right Sill at Vertical Impact Reference Line Acceleration (Y)

Rear Floorpan Behind Rear Axle at Centerline Acceleration (X)

Rear Floorpan Behind Rear Axle at Centerline Acceleration (Y)

Pole Instrumentation Data

Load Cell Pole Barrier #1 Force (Y)

Load Cell Pole Barrier #2 Force (Y)

Load Cell Pole Barrier #3 Force (Y)

Load Cell Pole Barrier #4 Force (Y)

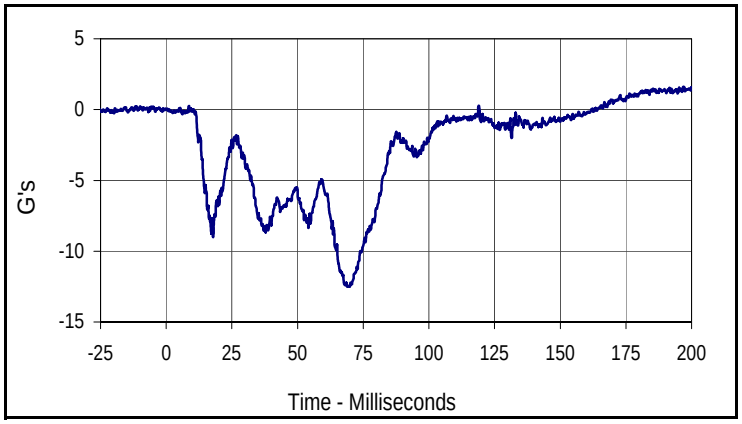
Load Cell Pole Barrier #5 Force (Y)

Load Cell Pole Barrier #6 Force (Y)

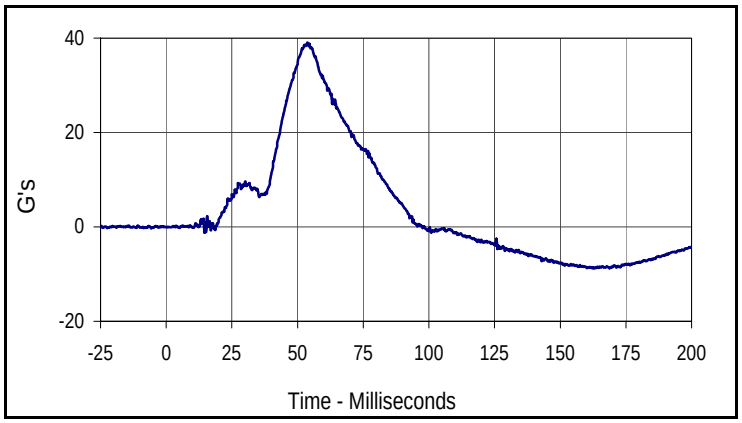
Load Cell Pole Barrier #7 Force (Y)

Load Cell Pole Barrier #8 Force (Y)

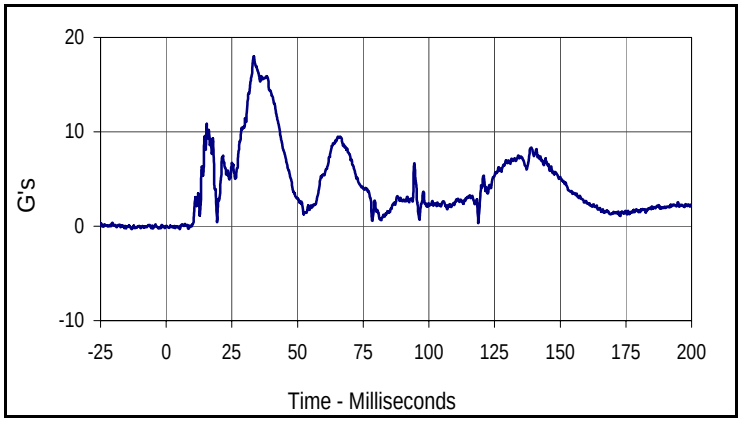
Test Vehicle:	2013 Infiniti M37 4-Door Sedan	Test Date:	8/28/12
Test Program:	32 km/h (20 mph) Side Impact NCAP 75° Rigid Pole Test	NHTSA No.:	ND5202



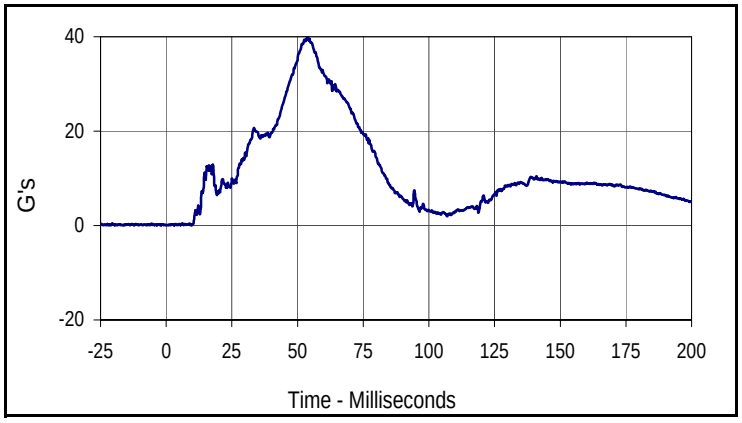
Curve Description			
Driver Head Acceleration X Primary			
Plot No.	Type	SAE Class	Units
001	FIL	1000	G's
Max	Time	Min	Time
1.6	196.8	-12.5	69.9



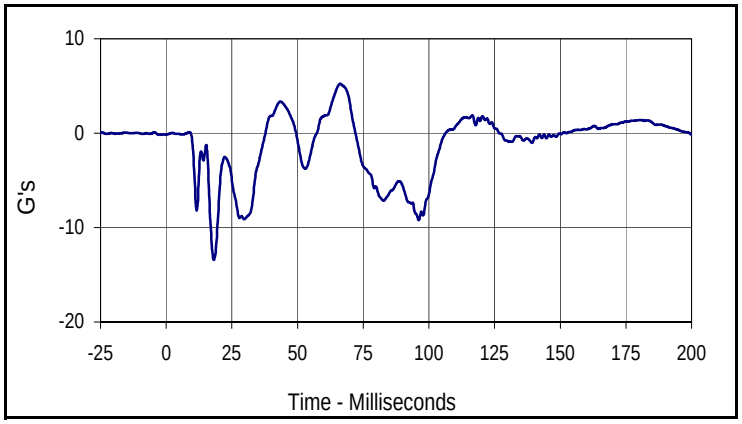
Curve Description			
Driver Head Acceleration Y Primary			
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
39.0	53.8	-8.8	162.8



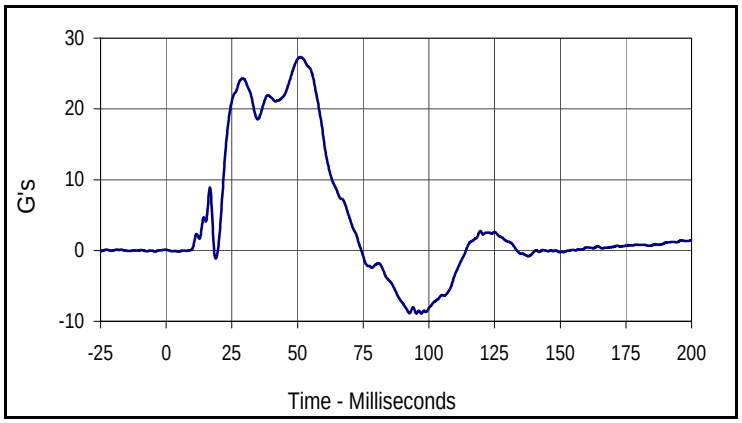
Curve Description			
Driver Head Acceleration Z Primary			
Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
18.0	33.4	-0.3	5.2



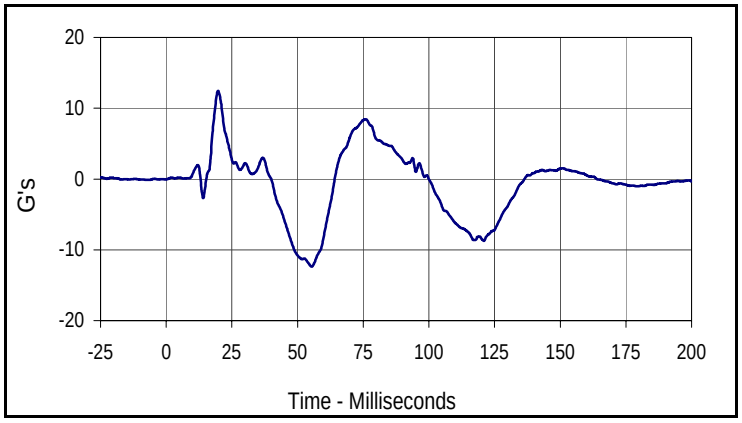
Curve Description			
Driver Head Acceleration Primary Res.			
Plot No.	Type	SAE Class	Units
004	RES	1000	G's
Max	Time	Min	Time
39.8	53.8	0.1	0.3



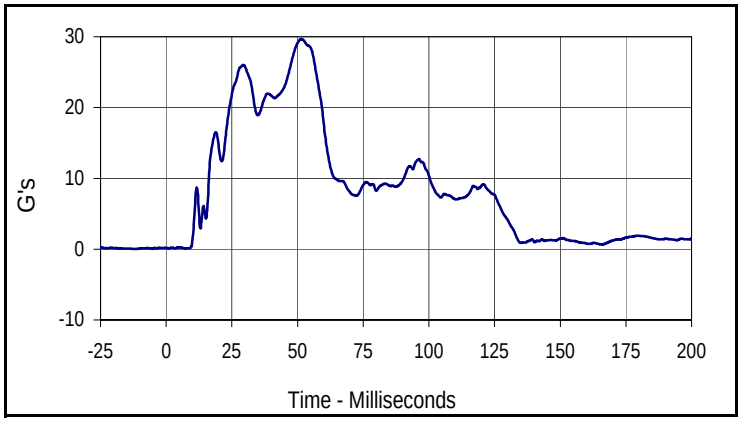
Curve Description			
Driver Lower Spine T12 Acceleration X			
Plot No.	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
5.2	66.2	-13.4	18.1



Curve Description			
Driver Lower Spine T12 Acceleration Y			
Plot No.	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
27.3	51.1	-8.9	95.2

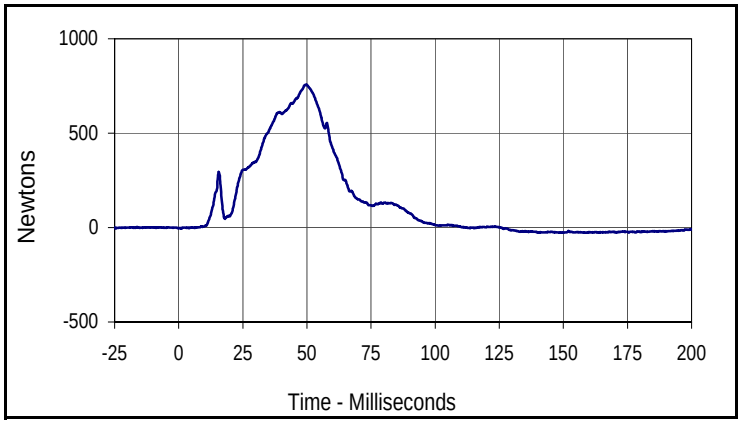


Curve Description			
Driver Lower Spine T12 Acceleration Z			
Plot No.	Type	SAE Class	Units
007	FIL	180	G's
Max	Time	Min	Time
12.4	19.7	-12.4	55.3

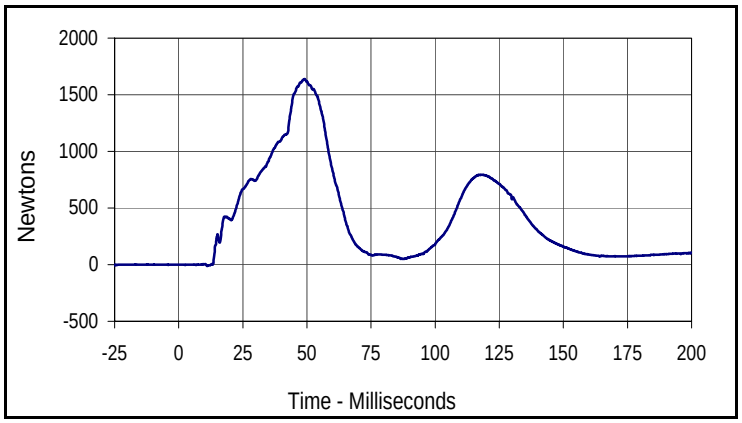


Curve Description			
Driver Lower Spine T12 Acceleration Res.			
Plot No.	Type	SAE Class	Units
008	RES	180	G's
Max	Time	Min	Time
29.7	51.5	0.1	1.0

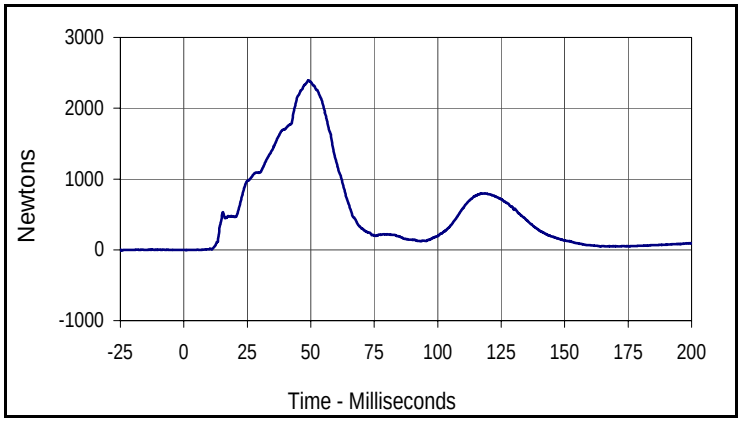
Test Vehicle:	2013 Infiniti M37 4-Door Sedan	Test Date:	8/28/12
Test Program:	32 km/h (20 mph) Side Impact NCAP 75° Rigid Pole Test	NHTSA No.:	ND5202



Curve Description			
Driver Iliac Wing Force on Impact Side Y			
Plot No.	Type	SAE Class	Units
009	FIL	600	Newtons
Max	Time	Min	Time
757.0	49.8	-27.6	163.8



Curve Description			
Driver Acetabulum Force on Impact Side Y			
Plot No.	Type	SAE Class	Units
010	FIL	600	Newtons
Max	Time	Min	Time
1638.6	49.1	-11.5	11.2



Curve Description			
Driver Total Pelvic Force on Impact Side Y			
Plot No.	Type	SAE Class	Units
011	SUM	600	Newtons
Max	Time	Min	Time
2392.3	49.1	-5.0	1.0

APPENDIX C
DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

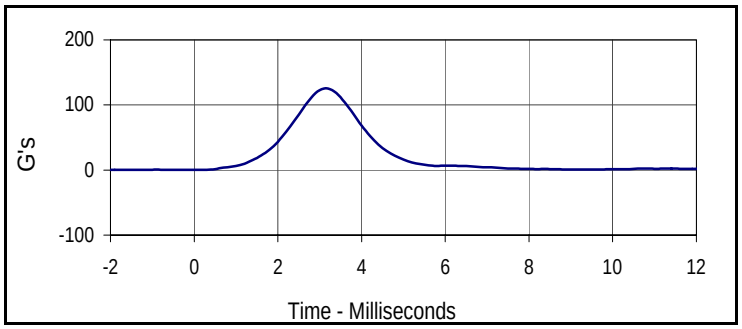
APPENDIX C
PRE-TEST / ATD CONFIGURATION AND PERFORMANCE VERIFICATION DATA

Test Program:	SID IIs External Measurements	Test Date:	8/7/12
ATD Serial No.:	299	Test I.D.:	N/A

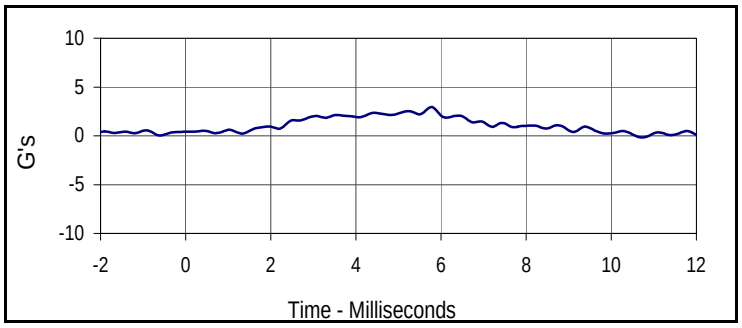
Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	21.0	Pass
Laboratory Relative Humidity		%	10 to 70	30	Pass
A	Sitting Height	mm	772 - 788	780	Pass
B	Shoulder Pivot Height	mm	437 - 453	445	Pass
C	H-Point Height	mm	79 - 89	84	Pass
D	H-Point from Seatback	mm	141 - 151	145	Pass
E	Shoulder Pivot from Backline	mm	97 - 107	103	Pass
F	Thigh Clearance	mm	119 - 135	128	Pass
G	Head Breadth	mm	140 - 148	145	Pass
H	Head Back from Backline	mm	40 - 46	43	Pass
I	Head Depth	mm	178 - 188	183	Pass
J	Head Circumference	mm	541 - 551	546	Pass
K	Buttock to Knee Length	mm	514 - 540	527	Pass
L	Popliteal Height	mm	343 - 369	350	Pass
M	Knee Pivot to Floor Height	mm	392 - 409	400	Pass
N	Buttock Popliteal Length	mm	416 - 442	430	Pass
O	Chest Depth w/o Jacket	mm	195 - 211	204	Pass
P	Foot Length	mm	216 - 232	221	Pass
Q	Hip Breadth with Pelvic Plug	mm	313 -323	318	Pass
R	Arm Length	mm	249 - 259	252	Pass
S	Knee Joint to Seatback	mm	477 - 493	483	Pass
V	Shoulder Width	mm	341 - 357	351	Pass
W	Foot Width	mm	78 - 94	89	Pass
Y	Chest Circumference with Jacket	mm	851 - 881	872	Pass
Z	Waist Circumference	mm	760 - 791	775	Pass
			Overall Test Results		Pass

Test Program:	SID IIs Head Drop Test	Test Date:	8/7/12
ATD Serial No.:	299	Test I.D.:	299HD044

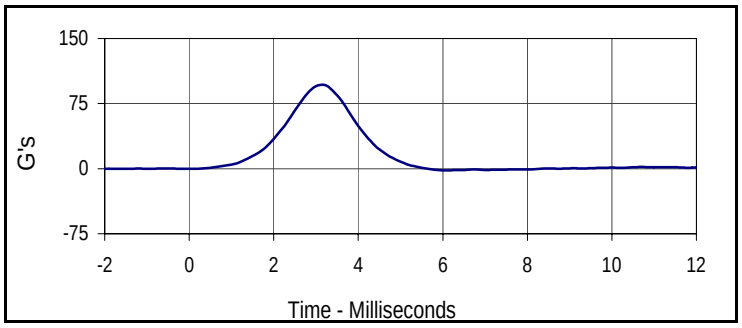
Tested Parameter		Units	Specification	Result	Pass/Fail
Head Assembly Soak Time		Minutes	≥240	255	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.7	Pass
	Min	°C		20.7	Pass
Humidity During Soak	Max	%	10.0 to 70.0	31.0	Pass
	Min	%		29.0	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	20.9	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	30.0	Pass
Peak Head Resultant Acceleration		G's	115 to 137	125.3	Pass
Peak Head X Acceleration		G's	<15	2.9	Pass
Is Acceleration Unimodal?		Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse		%	<15	3.3	Pass
			Overall Test Results		Pass



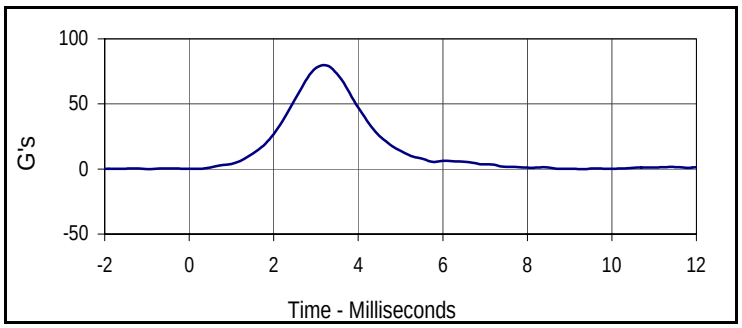
Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
125.3	3.2	0.3	-1.6



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
2.9	5.8	0.0	-0.6



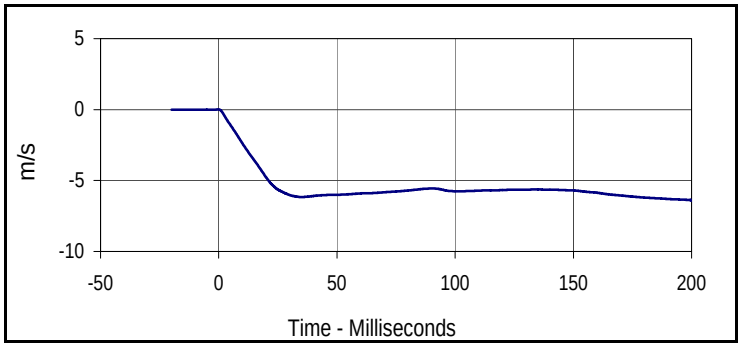
Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
96.6	3.1	-1.9	6.1



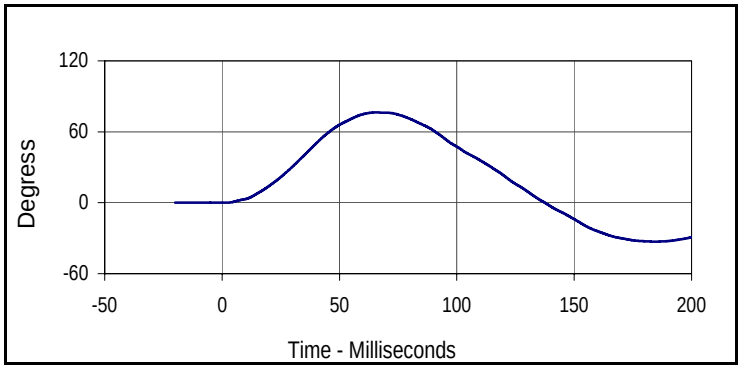
Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	G's
Max	Time	Min	Time
80.0	3.2	-0.2	9.3

Test Program:	SID IIs Neck Flexion Test	Test Date:	8/7/12
ATD Serial No.:	299	Test I.D.:	299NB044

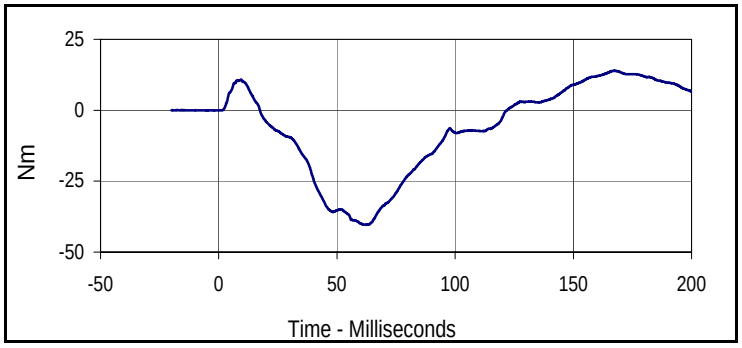
Tested Parameter		Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time		Minutes	≥240	290	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.7	Pass
	Min	°C		20.7	Pass
Humidity During Soak	Max	%	10.0 to 70.0	31.0	Pass
	Min	%		29.0	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.2	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	29.9	Pass
Pendulum Velocity		m/s	5.51 to 5.63	5.54	Pass
Pendulum Deceleration	10 msec	m/s	-2.20 to -2.80	-2.38	Pass
	15 msec	m/s	-3.30 to -4.10	-3.56	Pass
	20 msec	m/s	-4.40 to -5.40	-4.77	Pass
	25 msec	m/s	-5.40 to -6.10	-5.64	Pass
	25-100 msec	m/s	-5.50 to -6.20	-6.16	Pass
D-Plane Rotation	Max	Degrees	71 to 81	76.4	Pass
	Time	msec	50 to 70	65.4	Pass
Peak Occipital Condyle Moment		Nm	-36 to -44	-40.4	Pass
Decaying Moment Time to Cross 0 Nm		msec	102 to 126	121.9	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
0.0	-0.3	-6.4	200.0



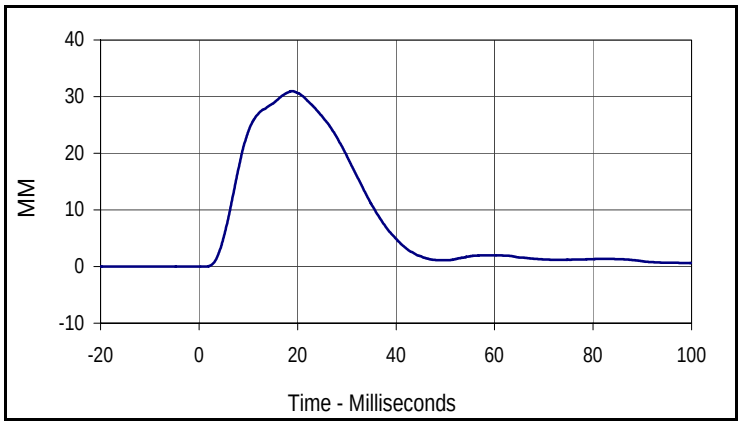
Curve Description			
Maximum Translation Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	Degress
Max	Time	Min	Time
76.4	65.4	-32.8	184.4



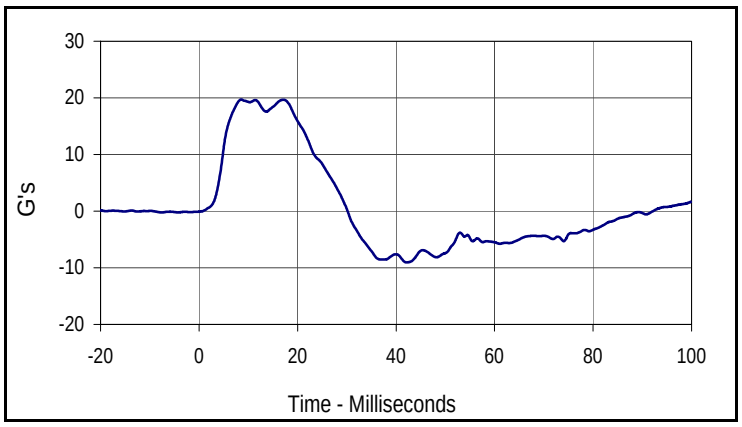
Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
13.9	167.2	-40.4	62.5

Test Program:	SID IIs Shoulder Impact Test	Test Date:	8/7/12
ATD Serial No.:	299	Test I.D.:	299SH044

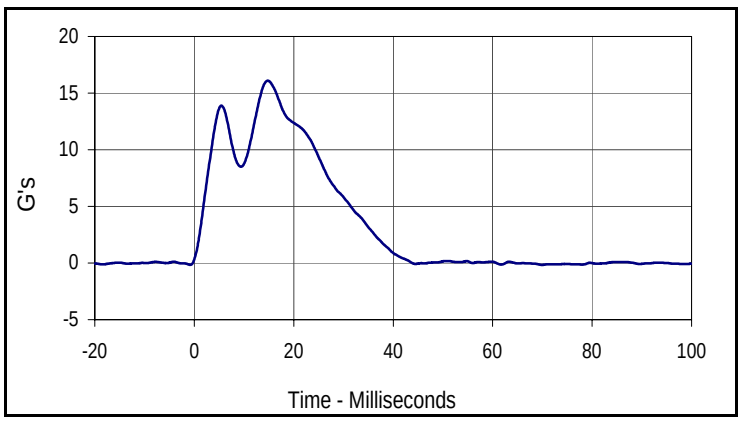
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	320	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.7	Pass
	Min	°C		20.7	Pass
Humidity During Soak	Max	%	10.0 to 70.0	31.0	Pass
	Min	%		29.0	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.3	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	28.7	Pass
Impactor Velocity		m/s	4.20 to 4.40	4.23	Pass
Peak Shoulder Deflection		mm	28 to 37	31.0	Pass
Peak Lateral Spine Acceleratrion Y		G's	17 to 22	19.7	Pass
Peak Impactor Acceleration		G's	13 to 18	16.1	Pass
			Overall Test Results		Pass



Curve Description			
Shoulder Acceleration			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
31.0	18.8	0.0	-14.6



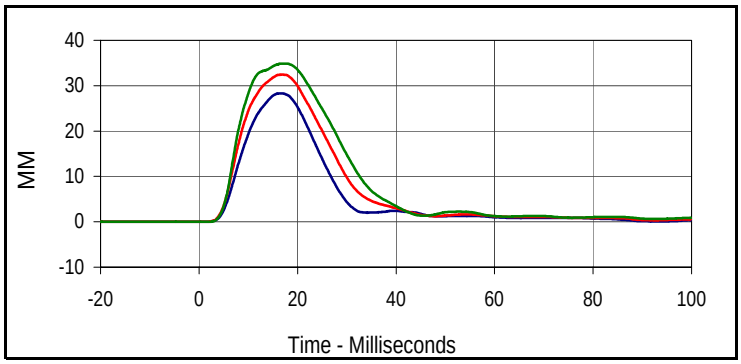
Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
19.7	8.5	-9.0	42.2



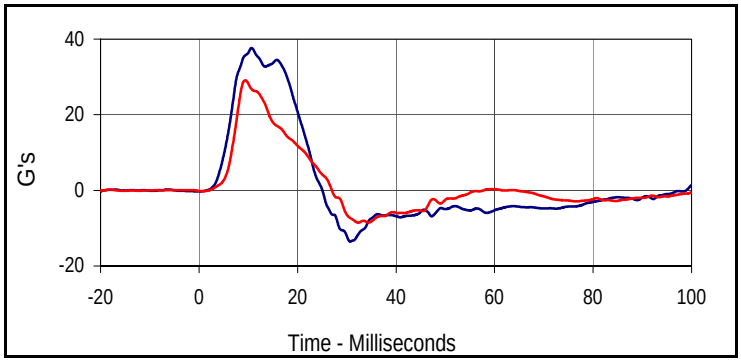
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
16.1	14.8	-0.2	69.9

Test Program:	SID IIs Thorax with Arm Impact Test	Test Date:	8/7/12
ATD Serial No.:	299	Test I.D.:	299TWA044

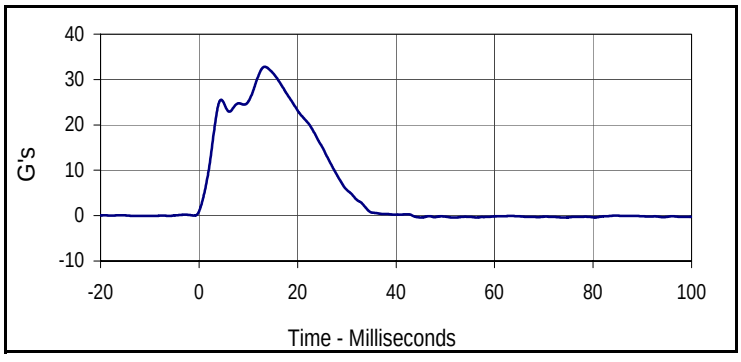
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	340	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.7	Pass
	Min	°C		20.7	Pass
Humidity During Soak	Max	%	10.0 to 70.0	31.0	Pass
	Min	%		29.0	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.1	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	28.8	Pass
Impactor Velocity		m/s	6.6 to 6.8	6.7	Pass
Peak Shoulder Deflection		mm	31 to 40	34.8	Pass
Peak Upper Thorax Rib Deflection		mm	25 to 32	28.3	Pass
Peak Middle Thorax Rib Deflection		mm	30 to 36	32.4	Pass
Peak Lower Thorax Rib Deflection		mm	32 to 38	34.9	Pass
Peak Upper Spine Y Acceleration		G's	34 to 43	37.6	Pass
Peak Lower Spine Y Acceleration		G's	29 to 37	29.1	Pass
Peak Impactor Acceleration		G's	30 to 36	32.8	Pass
			Overall Test Results		Pass



Curve Description			
Upper Thorax Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
28.3	16.4	0.0	-8.5
Middle Thorax Deflection			
Max	Time	Min	Time
32.4	16.9	0.0	-5.3
Lower Thorax Deflection			
Max	Time	Min	Time
34.9	17.4	0.0	-5.1

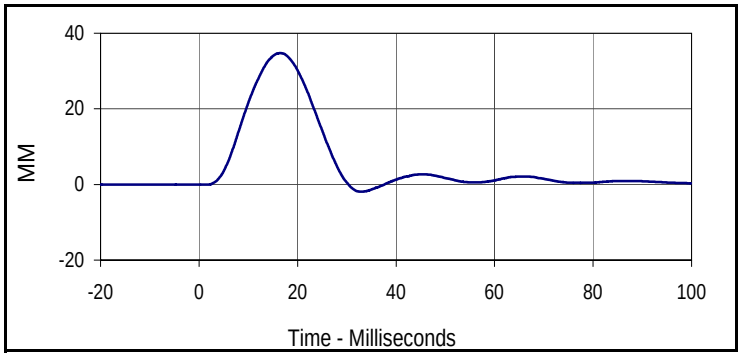


Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
37.6	10.7	-13.5	30.7
Curve Description			
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
29.1	9.4	-8.5	32.3



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
32.8	13.4	-0.4	51.8

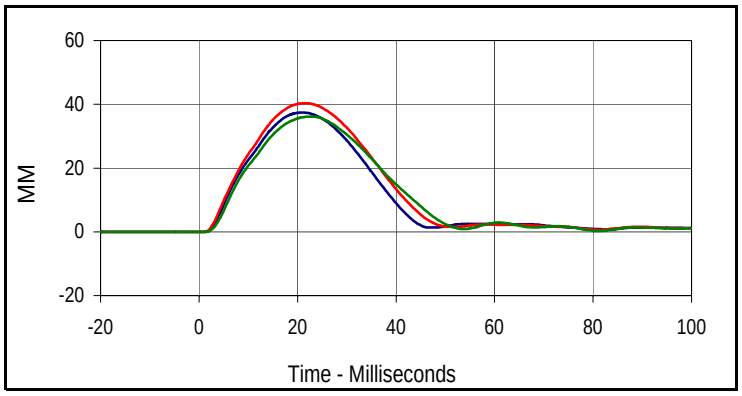
Test Program:	SID IIs Thorax with Arm Impact Test	Test Date:	8/7/12
ATD Serial No.:	299	Test I.D.:	299TWA044



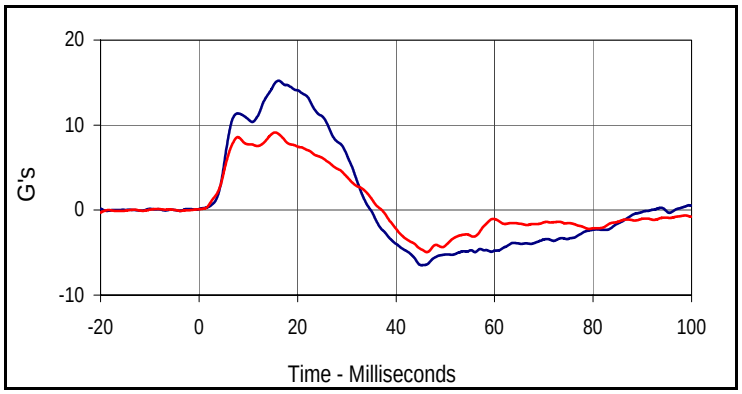
Curve Description			
Shoulder Deflection			
Plot No.	Type	SAE Class	Units
007	FIL	600	MM
Max	Time	Min	Time
34.8	16.5	-1.9	32.9

Test Program:	SID IIs Thorax without Arm Impact Test	Test Date:	8/7/12
ATD Serial No.:	299	Test I.D.:	299TWOA044

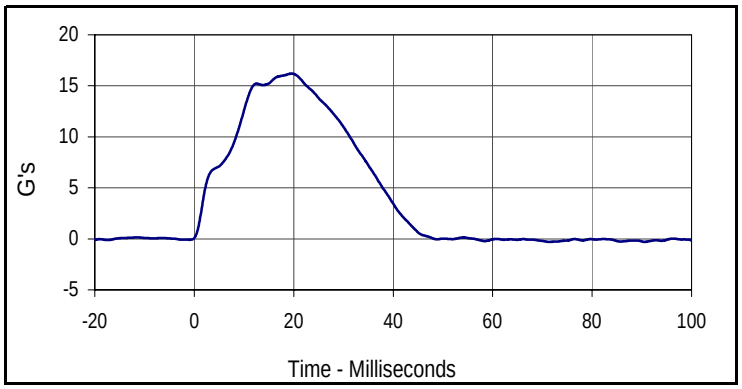
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	365	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.7	Pass
	Min	°C		20.7	Pass
Humidity During Soak	Max	%	10.0 to 70.0	31.0	Pass
	Min	%		29.0	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.0	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	30.3	Pass
Impactor Velocity		m/s	4.2 to 4.4	4.3	Pass
Peak Upper Thorax Rib Deflection		mm	32 to 40	37.4	Pass
Peak Middle Thorax Rib Deflection		mm	39 to 45	40.3	Pass
Peak Lower Thorax Rib Deflection		mm	35 to 43	36.2	Pass
Peak Upper Spine Y Acceleration		G's	13 to 17	15.2	Pass
Peak Lower Spine Y Acceleration		G's	7 to 11	9.1	Pass
Peak Impactor Acceleration		G's	14 to 18	16.2	Pass
			Overall Test Results		Pass



Curve Description			
Upper Thorax Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
37.4	20.9	0.0	-20.0
Middle Thorax Deflection			
Max	Time	Min	Time
40.3	21.6	0.0	-1.6
Lower Thorax Deflection			
Max	Time	Min	Time
36.2	22.9	0.0	0.8



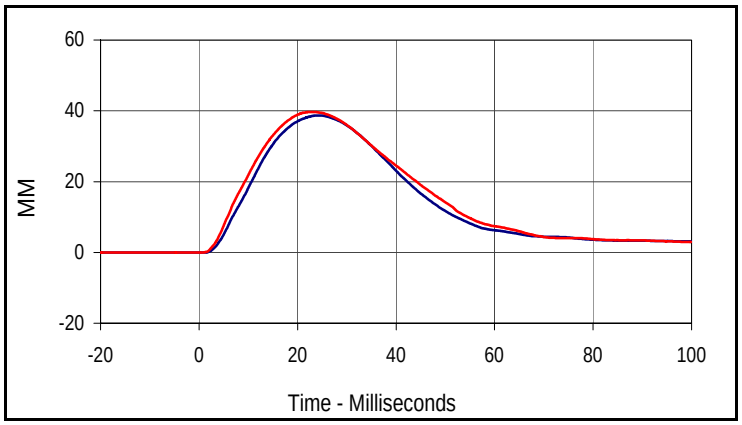
Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
15.2	16.1	-6.5	45.1
Curve Description			
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
9.1	15.4	-4.9	46.2



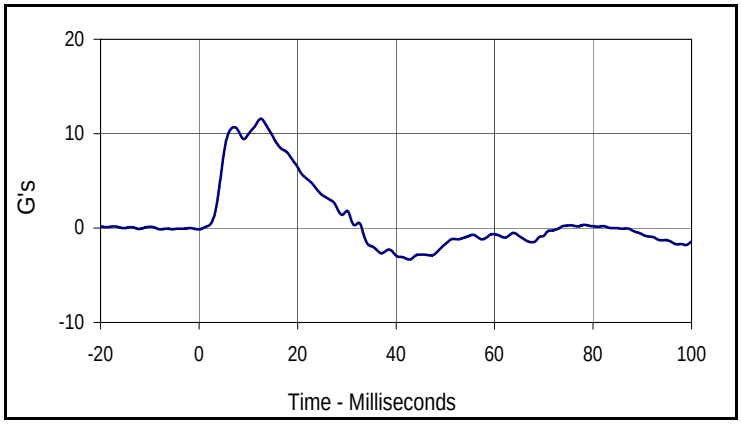
Curve Description			
Impactor Accleration			
Plot No.	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
16.2	19.6	-0.3	90.5

Test Program:	SID IIs Abdomen Impact Test	Test Date:	8/7/12
ATD Serial No.:	299	Test I.D.:	299ABD044

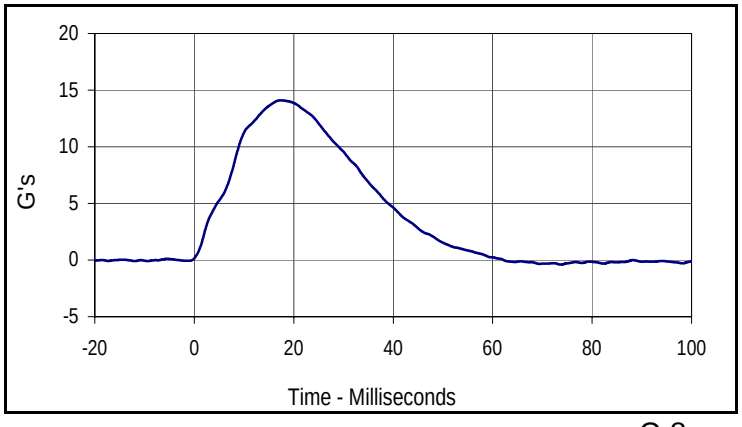
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	385	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.7	Pass
	Min	°C		20.7	Pass
Humidity During Soak	Max	%	10.0 to 70.0	31.0	Pass
	Min	%		29.0	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	20.9	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	29.9	Pass
Impactor Velocity		m/s	4.2 to 4.4	4.3	Pass
Peak Upper Abdominal Rib Deflection		mm	36 to 47	38.7	Pass
Peak Lower Abdominal Rib Deflection		mm	33 to 44	39.7	Pass
Peak Lower Spine Y Acceleration		G's	9 to 14	11.6	Pass
Peak Impactor Acceleration		G's	12 to 16	14.1	Pass
			Overall Test Results		Pass



Curve Description			
Upper Abdominal Rib Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
38.7	24.5	0.0	-12.7
Curve Description			
Lower Abdominal Rib Deflection			
Plot No.	Type	SAE Class	Units
002	FIL	600	MM
Max	Time	Min	Time
39.7	23.0	0.0	0.1



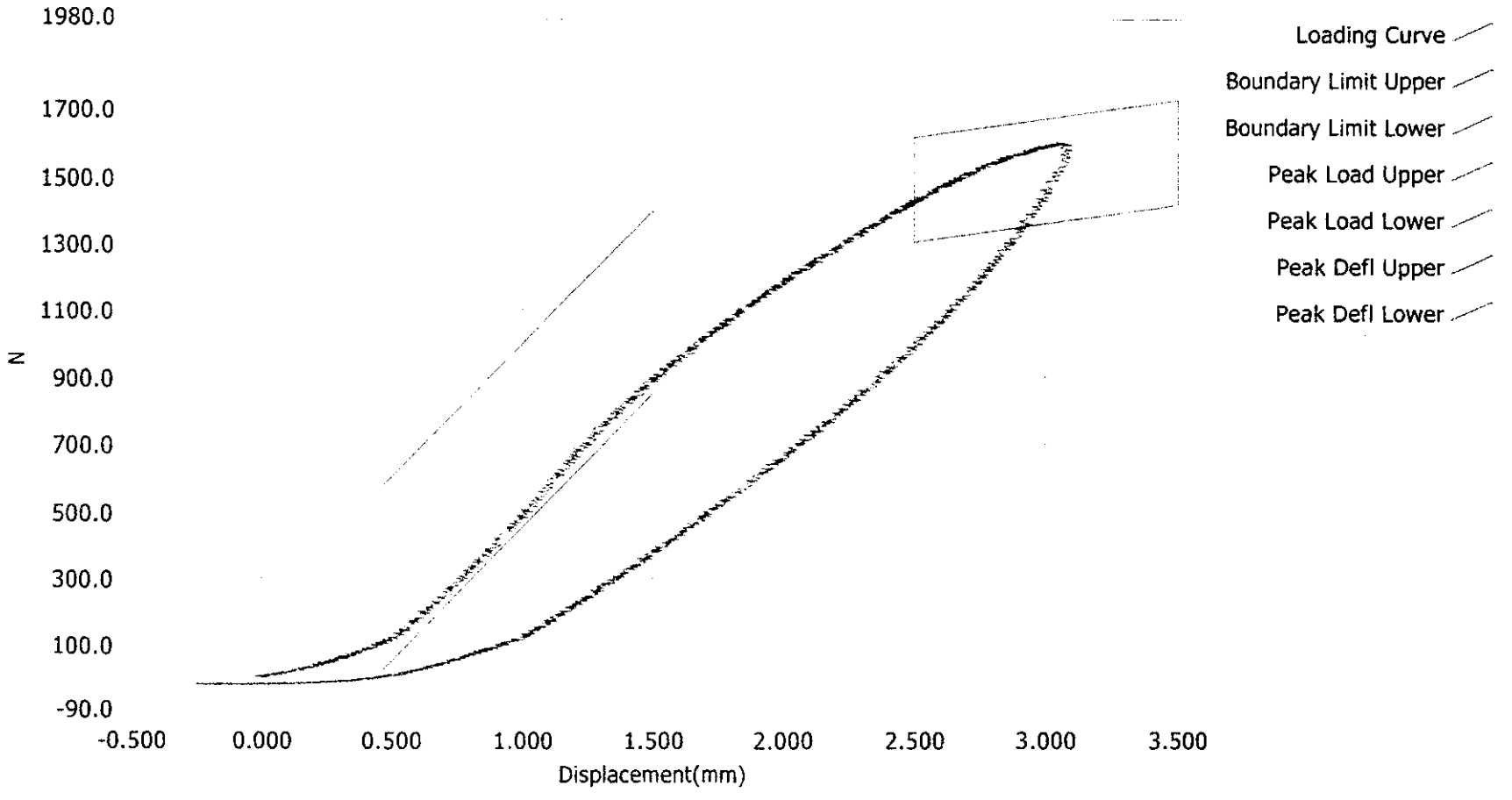
Curve Description			
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
11.6	12.5	-3.3	42.7



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
14.1	17.3	-0.4	73.7

ND5202 PRE TEST

Resultant Data - SIDIIs Plug Compression



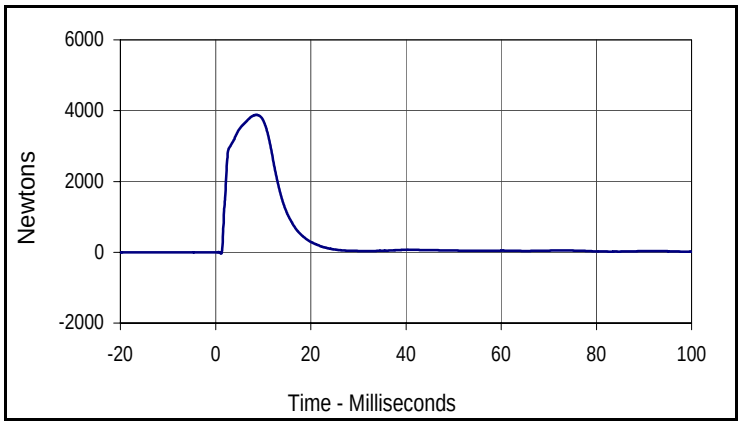
ATD Calibration Lab

Test ID	Part Serial Number	Test Date	Test Time
	46745	10/4/2011	5:03 PM
Cert ID	ATD Serial Number	ATD Type	
	N/A	SIDIIs	

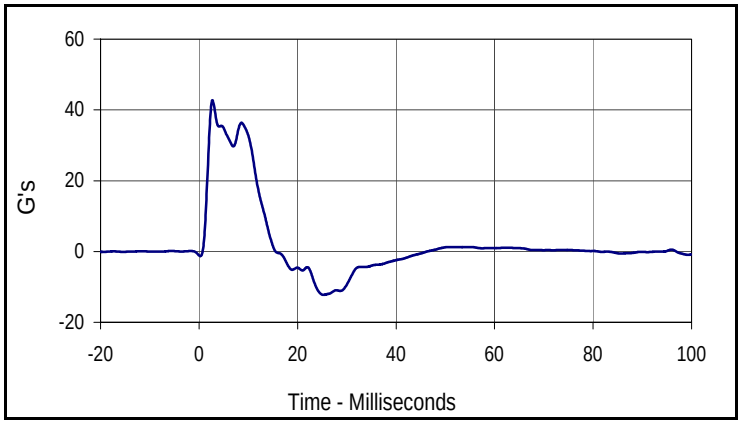
Current Date : 10/4/2011 Current Time : 17:04:06

Test Program:	SID IIs Pelvis Acetabulum Impact Test	Test Date:	8/7/12
ATD Serial No.:	299	Test I.D.:	299ACET044

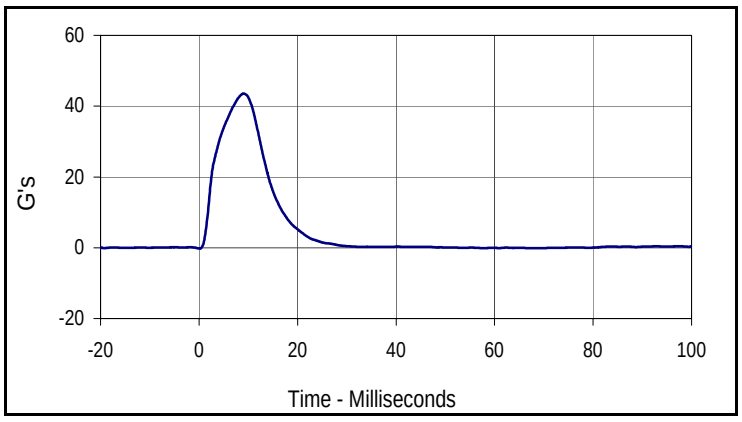
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	410	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.7	Pass
	Min	°C		20.7	Pass
Humidity During Soak	Max	%	10.0 to 70.0	31.0	Pass
	Min	%		29.0	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.4	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	29.9	Pass
Impactor Velocity		m/s	6.6 to 6.8	6.7	Pass
Peak Acetabulum Force Y		Newtons	3600 to 4300	3880.7	Pass
Peak Pelvis Y Acceleration After 6 msec.		G's	34 to 42	36.4	Pass
Peak Impactor Acceleration		G's	38 to 47	43.5	Pass
			Overall Test Results		Pass



Curve Description			
Pelvis Acetabulum Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
3880.7	8.6	-37.8	1.2



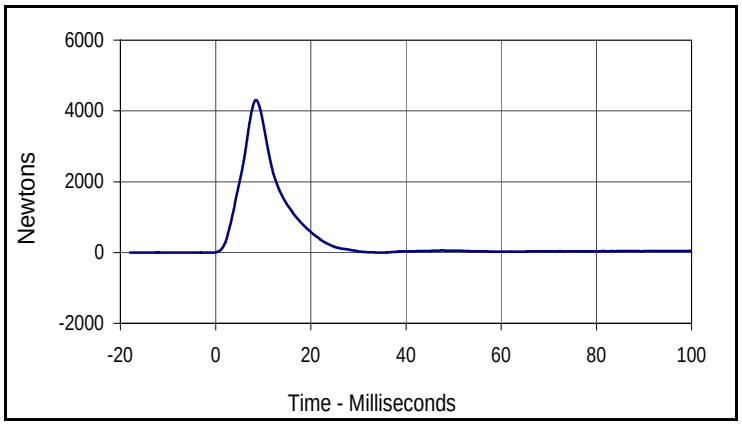
Curve Description			
Pelvis Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
42.7	2.7	-12.3	25.2



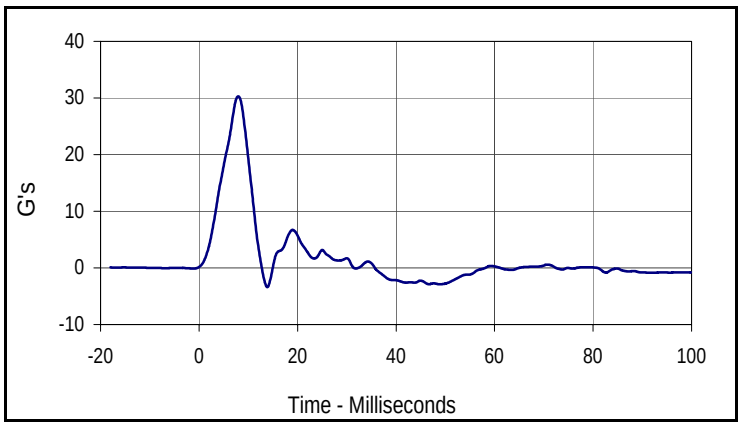
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
43.5	9.1	-0.2	0.1

Test Program:	SID IIs Pelvis Iliac Calibration	Test Date:	8/7/12
ATD Serial No.:	299	Test I.D.:	299PL044

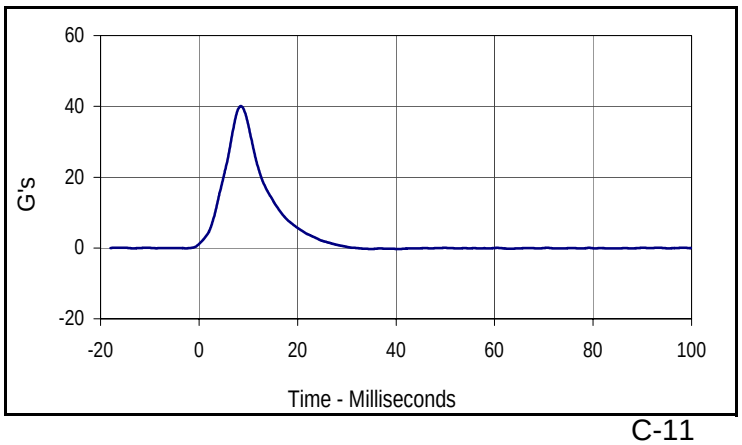
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	435	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.7	Pass
	Min	°C		20.7	Pass
Humidity During Soak	Max	%	10.0 to 70.0	31.0	Pass
	Min	%		29.0	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.5	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	29.4	Pass
Impactor Velocity		m/s	4.2 to 4.4	4.3	Pass
Peak Illiac Force		Newtons	4100 to 5100	4306.3	Pass
Peak Pelvis Y Acceleration		G's	28 to 39	30.3	Pass
Peak Impactor Acceleration		G's	36 to 45	40.1	Pass
			Overall Test Results		Pass



Curve Description			
Pelvis Iliac Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
4306.3	8.5	-3.7	34.5



Curve Description			
Pelvis Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
30.3	8.0	-3.4	13.9



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
40.1	8.5	-0.3	40.5

APPENDIX C
POST-TEST / ATD CONFIGURATION AND PERFORMANCE VERIFICATION DATA

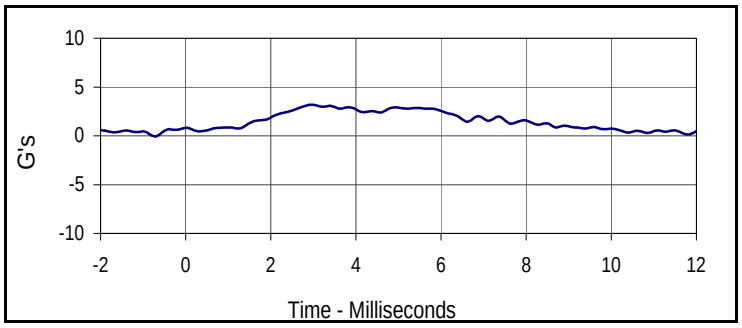
Test Program:	SID IIs External Measurements	Test Date:	8/31/12
ATD Serial No.:	299	Test I.D.:	N/A

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		°C	20.6 to 22.2	20.8	Pass
Laboratory Relative Humidity		%	10 to 70	29	Pass
A	Sitting Height	mm	772 - 788	781	Pass
B	Shoulder Pivot Height	mm	437 - 453	444	Pass
C	H-Point Height	mm	79 - 89	84	Pass
D	H-Point from Seatback	mm	141 - 151	145	Pass
E	Shoulder Pivot from Backline	mm	97 - 107	102	Pass
F	Thigh Clearance	mm	119 - 135	127	Pass
G	Head Breadth	mm	140 - 148	145	Pass
H	Head Back from Backline	mm	40 - 46	44	Pass
I	Head Depth	mm	178 - 188	183	Pass
J	Head Circumference	mm	541 - 551	546	Pass
K	Buttock to Knee Length	mm	514 - 540	526	Pass
L	Popliteal Height	mm	343 - 369	351	Pass
M	Knee Pivot to Floor Height	mm	392 - 409	401	Pass
N	Buttock Popliteal Length	mm	416 - 442	430	Pass
O	Chest Depth w/o Jacket	mm	195 - 211	204	Pass
P	Foot Length	mm	216 - 232	221	Pass
Q	Hip Breadth with Pelvic Plug	mm	313 -323	318	Pass
R	Arm Length	mm	249 - 259	252	Pass
S	Knee Joint to Seatback	mm	477 - 493	484	Pass
V	Shoulder Width	mm	341 - 357	351	Pass
W	Foot Width	mm	78 - 94	89	Pass
Y	Chest Circumference with Jacket	mm	851 - 881	872	Pass
Z	Waist Circumference	mm	760 - 791	775	Pass
			Overall Test Results		Pass

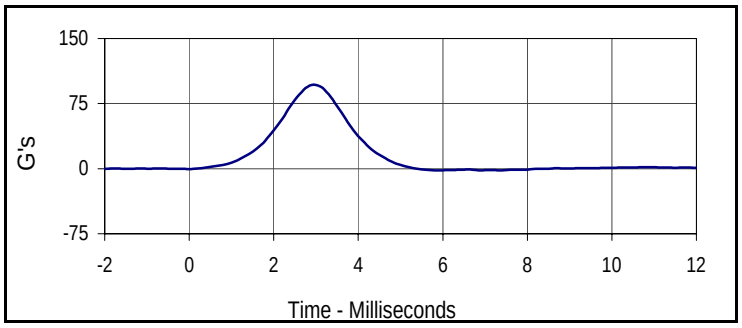
Test Program:	SID IIs Head Drop Test	Test Date:	8/31/12
ATD Serial No.:	299	Test I.D.:	299HD045

Tested Parameter		Units	Specification	Result	Pass/Fail
Head Assembly Soak Time		Minutes	≥240	250	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.7	Pass
	Min	°C		20.7	Pass
Humidity During Soak	Max	%	10.0 to 70.0	30.0	Pass
	Min	%		28.0	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	20.8	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	28.4	Pass
Peak Head Resultant Acceleration		G's	115 to 137	126.0	Pass
Peak Head X Acceleration		G's	<15	3.2	Pass
Is Acceleration Unimodal?		Yes/No	Yes	Yes	Pass
Oscillations After Main Pulse		%	<15	2.8	Pass
			Overall Test Results		Pass

Curve Description			
Head Resultant			
Plot No.	Type	SAE Class	Units
001	RES	1000	G's
Max	Time	Min	Time
126.0	3.0	0.3	-0.9



Curve Description			
Head X			
Plot No.	Type	SAE Class	Units
002	FIL	1000	G's
Max	Time	Min	Time
3.2	3.0	-0.1	-0.7

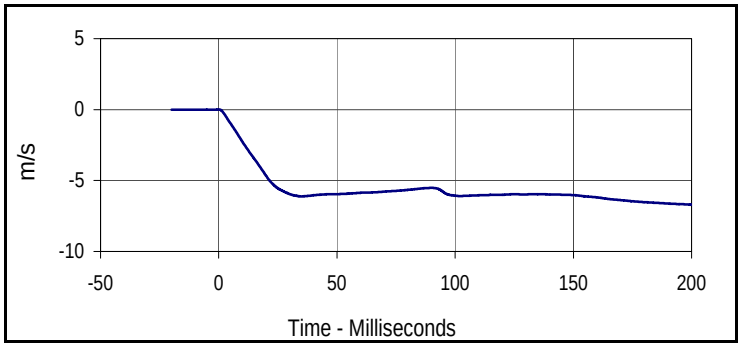


Curve Description			
Head Y			
Plot No.	Type	SAE Class	Units
003	FIL	1000	G's
Max	Time	Min	Time
96.6	3.0	-2.0	5.9

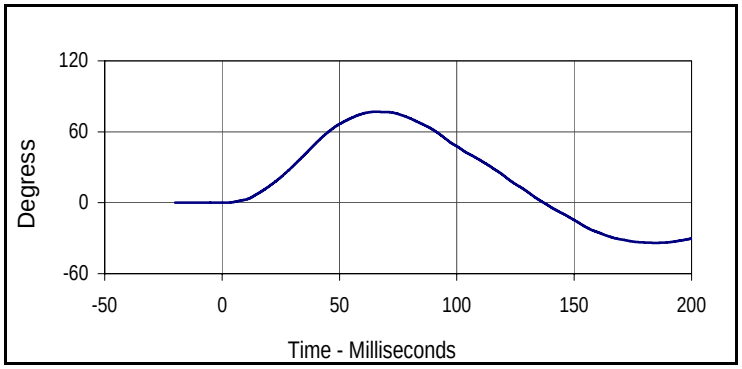
Curve Description			
Head Z			
Plot No.	Type	SAE Class	Units
004	FIL	1000	G's
Max	Time	Min	Time
80.8	3.0	-0.2	8.9

Test Program:	SID IIs Neck Flexion Test	Test Date:	8/31/12
ATD Serial No.:	299	Test I.D.:	299NB045

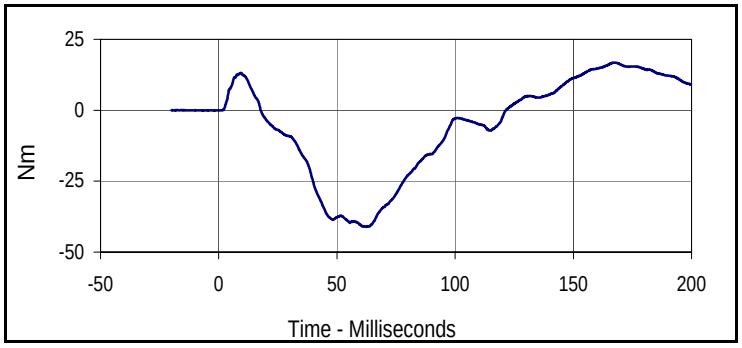
Tested Parameter		Units	Specification	Result	Pass/Fail
Neck Assembly Soak Time		Minutes	≥240	280	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.7	Pass
	Min	°C		20.7	Pass
Humidity During Soak	Max	%	10.0 to 70.0	30.0	Pass
	Min	%		28.0	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	21.0	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	29.0	Pass
Pendulum Velocity		m/s	5.51 to 5.63	5.58	Pass
Pendulum Deceleration	10 msec	m/s	-2.20 to -2.80	-2.27	Pass
	15 msec	m/s	-3.30 to -4.10	-3.45	Pass
	20 msec	m/s	-4.40 to -5.40	-4.66	Pass
	25 msec	m/s	-5.40 to -6.10	-5.55	Pass
	25-100 msec	m/s	-5.50 to -6.20	-6.12	Pass
D-Plane Rotation	Max	Degrees	71 to 81	76.9	Pass
	Time	msec	50 to 70	65.5	Pass
Peak Occipital Condyle Moment		Nm	-36 to -44	-41.1	Pass
Decaying Moment Time to Cross 0 Nm		msec	102 to 126	121.5	Pass
			Overall Test Results		Pass



Curve Description			
Pendulum Velocity			
Plot No.	Type	SAE Class	Units
001	FIL	180	m/s
Max	Time	Min	Time
0.0	-0.2	-6.7	200.0



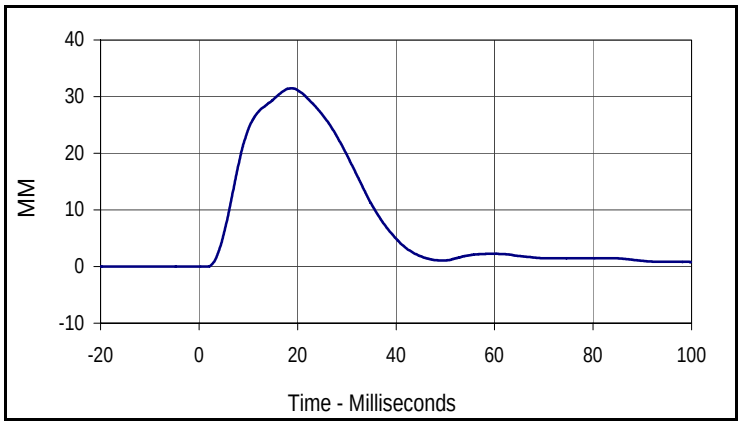
Curve Description			
Maximum Translation Rotation			
Plot No.	Type	SAE Class	Units
002	FIL	60	Degress
Max	Time	Min	Time
76.9	65.5	-33.9	184.7



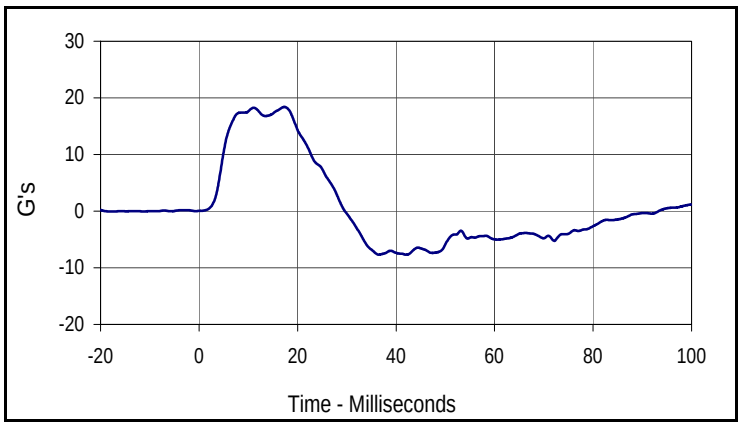
Curve Description			
Moment About Occipital Condyle			
Plot No.	Type	SAE Class	Units
003	FIL	600	Nm
Max	Time	Min	Time
16.8	167.2	-41.1	62.5

Test Program:	SID IIs Shoulder Impact Test	Test Date:	8/31/12
ATD Serial No.:	299	Test I.D.:	299SH045

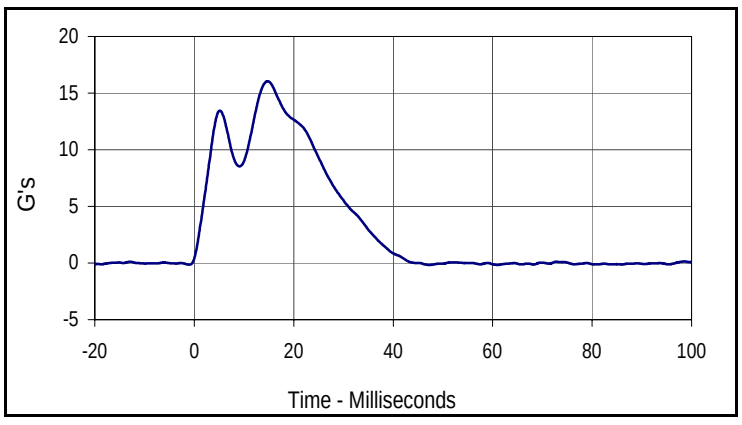
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	315	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.7	Pass
	Min	°C		20.7	Pass
Humidity During Soak	Max	%	10.0 to 70.0	30.0	Pass
	Min	%		28.0	Pass
Laboratory Temperature During Test		°C	20.6 to 22.2	20.9	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	28.7	Pass
Impactor Velocity		m/s	4.20 to 4.40	4.27	Pass
Peak Shoulder Deflection		mm	28 to 37	31.5	Pass
Peak Lateral Spine Acceleratrion Y		G's	17 to 22	18.4	Pass
Peak Impactor Acceleration		G's	13 to 18	16.1	Pass
			Overall Test Results		Pass



Curve Description			
Shoulder Acceleration			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
31.5	18.7	0.0	-2.2



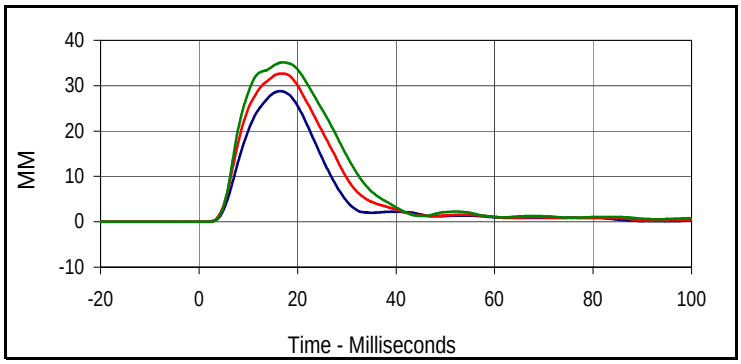
Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
18.4	17.3	-7.7	42.1



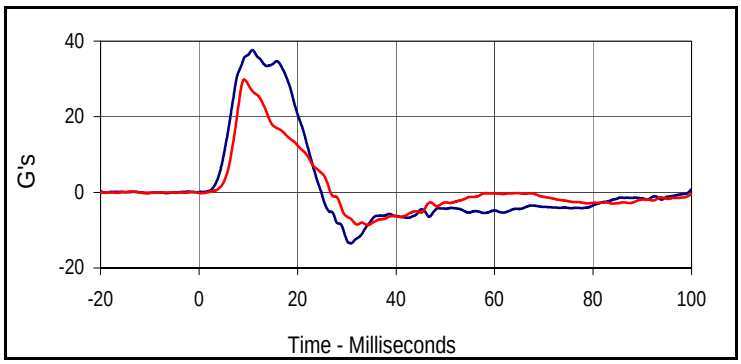
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
16.1	14.7	-0.2	47.2

Test Program:	SID IIs Thorax with Arm Impact Test	Test Date:	8/31/12
ATD Serial No.:	299	Test I.D.:	299TWA045

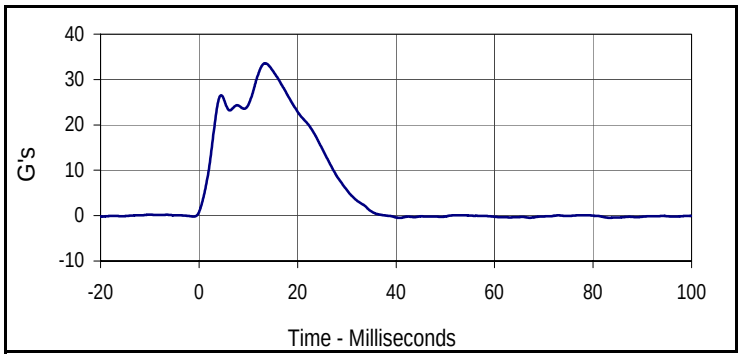
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	335	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.7	Pass
	Min	°C		20.7	Pass
Humidity During Soak	Max	%	10.0 to 70.0	30.0	Pass
	Min	%		28.0	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.0	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	28.4	Pass
Impactor Velocity		m/s	6.6 to 6.8	6.7	Pass
Peak Shoulder Deflection		mm	31 to 40	35.5	Pass
Peak Upper Thorax Rib Deflection		mm	25 to 32	28.8	Pass
Peak Middle Thorax Rib Deflection		mm	30 to 36	32.7	Pass
Peak Lower Thorax Rib Deflection		mm	32 to 38	35.1	Pass
Peak Upper Spine Y Acceleration		G's	34 to 43	37.6	Pass
Peak Lower Spine Y Acceleration		G's	29 to 37	29.8	Pass
Peak Impactor Acceleration		G's	30 to 36	33.6	Pass
			Overall Test Results		Pass



Curve Description			
Upper Thorax Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
28.8	16.4	0.0	-2.0
Middle Thorax Deflection			
Max	Time	Min	Time
32.7	16.7	0.0	-2.7
Lower Thorax Deflection			
Max	Time	Min	Time
35.1	17.0	0.0	-1.7

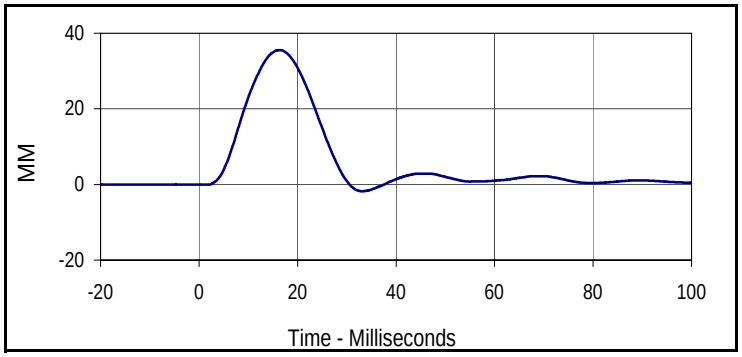


Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
37.6	10.8	-13.5	30.9
Curve Description			
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
29.8	9.2	-8.6	34.2



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
33.6	13.4	-0.5	40.7

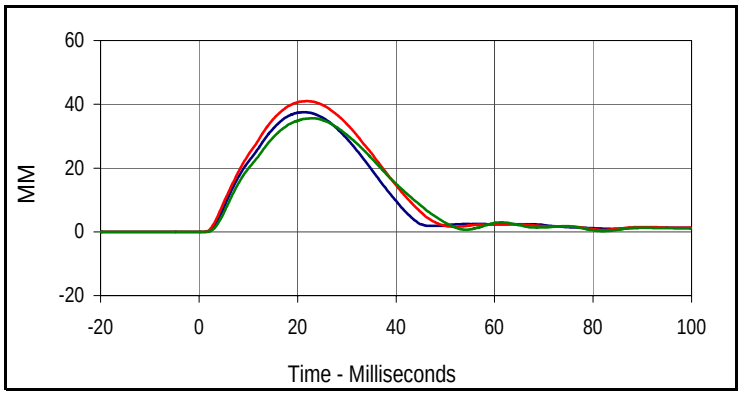
Test Program:	SID IIs Thorax with Arm Impact Test	Test Date:	8/31/12
ATD Serial No.:	299	Test I.D.:	299TWA045



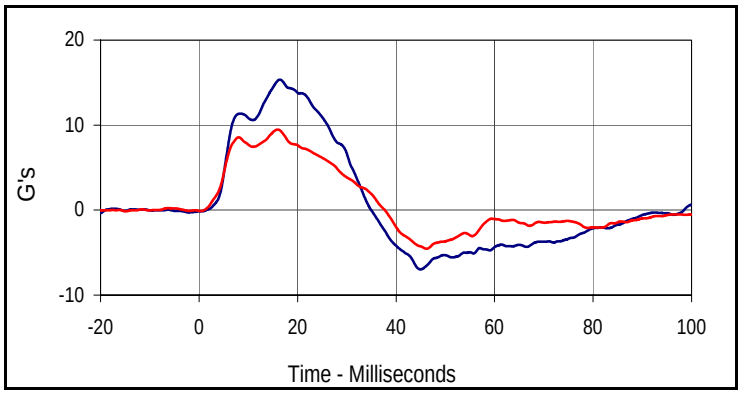
Curve Description			
Shoulder Deflection			
Plot No.	Type	SAE Class	Units
007	FIL	600	MM
Max	Time	Min	Time
35.5	16.5	-1.8	33.2

Test Program:	SID IIs Thorax without Arm Impact Test	Test Date:	8/31/12
ATD Serial No.:	299	Test I.D.:	299TWOA045

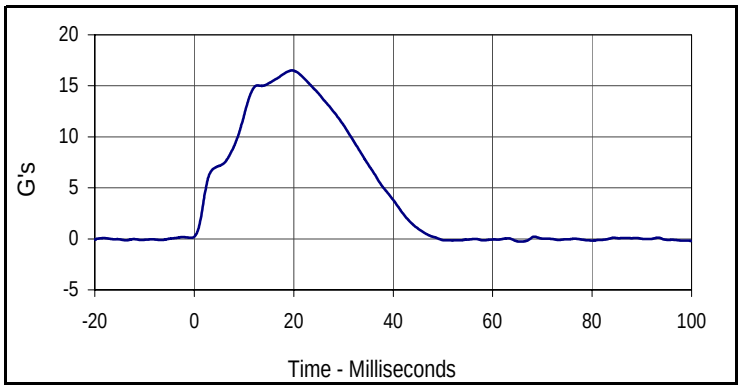
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	370	Pass
Temperature During Soak	Max	°C	18.9 to 25.6	21.7	Pass
	Min	°C		20.7	Pass
Humidity During Soak	Max	%	10.0 to 70.0	30.0	Pass
	Min	%		28.0	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.1	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	28.5	Pass
Impactor Velocity		m/s	4.2 to 4.4	4.3	Pass
Peak Upper Thorax Rib Deflection		mm	32 to 40	37.5	Pass
Peak Middle Thorax Rib Deflection		mm	39 to 45	41.0	Pass
Peak Lower Thorax Rib Deflection		mm	35 to 43	35.6	Pass
Peak Upper Spine Y Acceleration		G's	13 to 17	15.3	Pass
Peak Lower Spine Y Acceleration		G's	7 to 11	9.5	Pass
Peak Impactor Acceleration		G's	14 to 18	16.5	Pass
			Overall Test Results		Pass



Curve Description			
Upper Thorax Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
37.5	21.3	0.0	-14.5
Middle Thorax Deflection			
Max	Time	Min	Time
41.0	21.9	0.0	-6.5
Lower Thorax Deflection			
Max	Time	Min	Time
35.6	23.1	0.0	-8.7



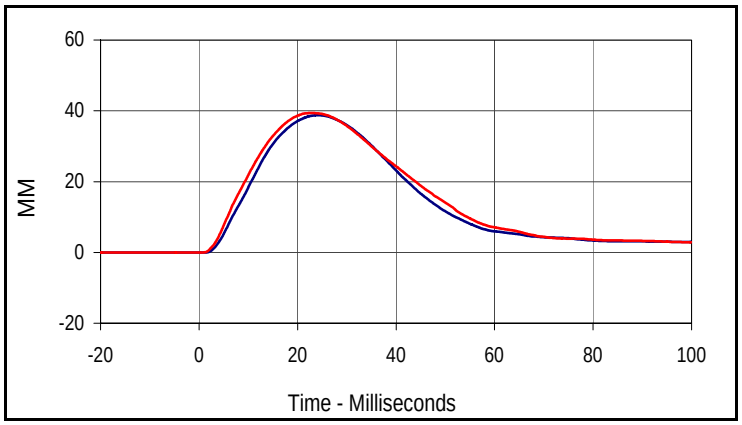
Curve Description			
Upper Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
15.3	16.4	-7.0	44.9
Curve Description			
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
005	FIL	180	G's
Max	Time	Min	Time
9.5	16.0	-4.5	46.2



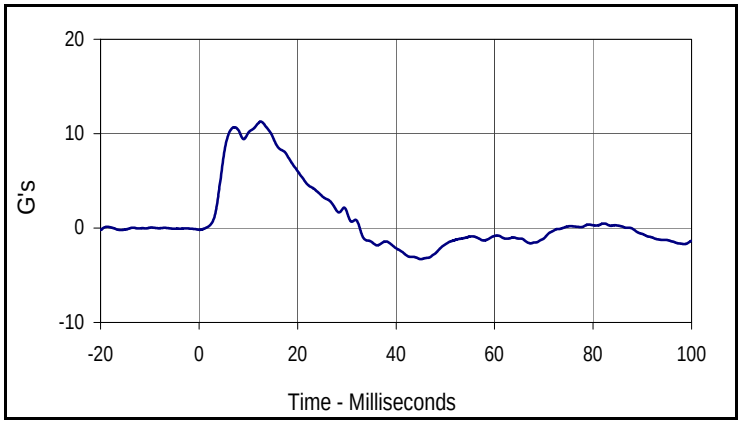
Curve Description			
Impactor Accleration			
Plot No.	Type	SAE Class	Units
006	FIL	180	G's
Max	Time	Min	Time
16.5	19.6	-0.3	65.6

Test Program:	SID IIs Abdomen Impact Test	Test Date:	8/31/12
ATD Serial No.:	299	Test I.D.:	299ABD045

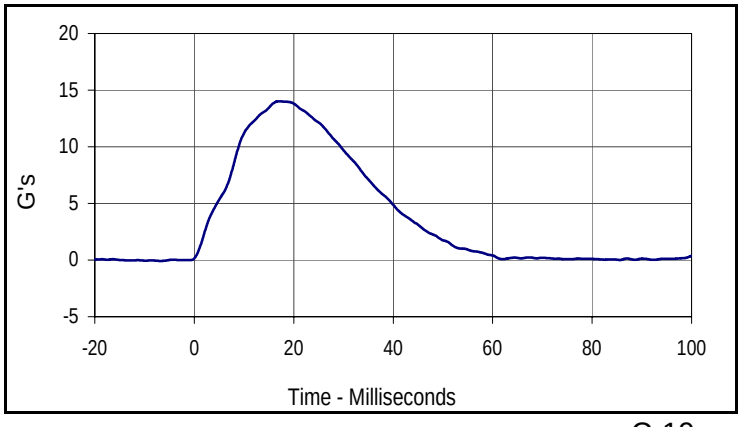
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	390	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.7	Pass
	Min	°C		20.7	Pass
Humidity During Soak	Max	%	10.0 to 70.0	30.0	Pass
	Min	%		28.0	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.2	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	29.1	Pass
Impactor Velocity		m/s	4.2 to 4.4	4.3	Pass
Peak Upper Abdominal Rib Deflection		mm	36 to 47	38.7	Pass
Peak Lower Abdominal Rib Deflection		mm	33 to 44	39.4	Pass
Peak Lower Spine Y Acceleration		G's	9 to 14	11.3	Pass
Peak Impactor Acceleration		G's	12 to 16	14.0	Pass
			Overall Test Results		Pass



Curve Description			
Upper Abdominal Rib Deflection			
Plot No.	Type	SAE Class	Units
001	FIL	600	MM
Max	Time	Min	Time
38.7	24.1	0.0	-11.2
Curve Description			
Lower Abdominal Rib Deflection			
Plot No.	Type	SAE Class	Units
002	FIL	600	MM
Max	Time	Min	Time
39.4	22.8	0.0	-10.8



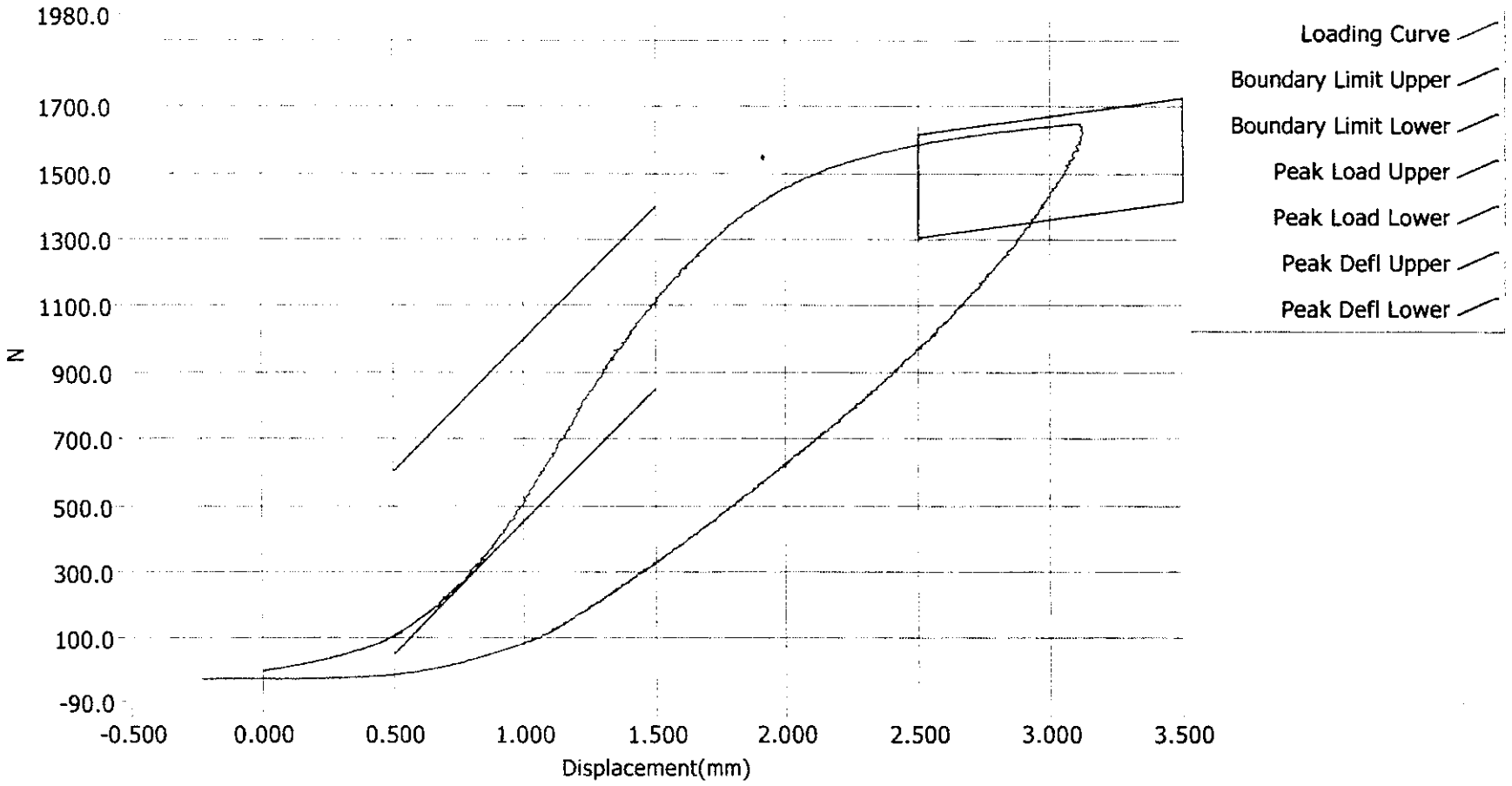
Curve Description			
Lower Spine Y Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
11.3	12.5	-3.3	45.0



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
004	FIL	180	G's
Max	Time	Min	Time
14.0	17.0	-0.1	0.0

ND5202 POST TEST

Resultant Data - SIDIIs Plug Compression



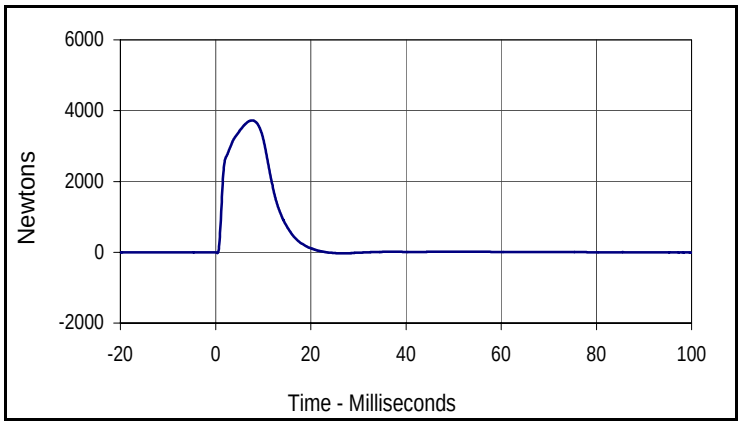
ATD Calibration Lab

Test ID	Part Serial Number	Test Date	Test Time
	49064	12/7/2011	8:35 PM
Cert ID	ATD Serial Number	ATD Type	
	N/A	SIDIIs	

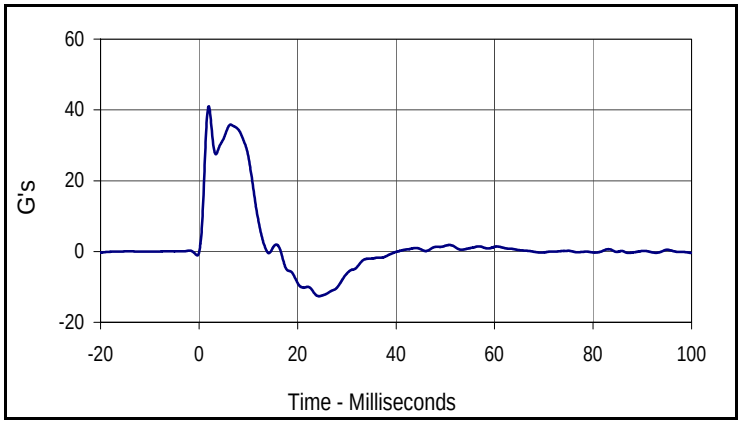
Current Date : 12/7/2011 Current Time : 20:36:04

Test Program:	SID IIs Pelvis Acetabulum Impact Test	Test Date:	8/31/12
ATD Serial No.:	299	Test I.D.:	299ACET045

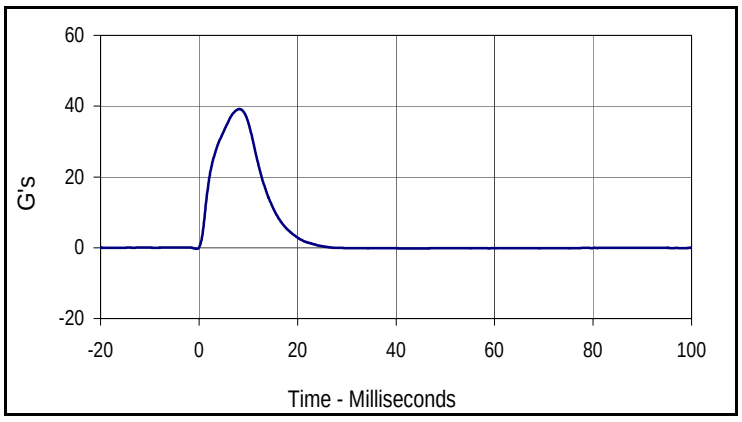
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	415	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.7	Pass
	Min	°C		20.7	Pass
Humidity During Soak	Max	%	10.0 to 70.0	30.0	Pass
	Min	%		28.0	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.3	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	29.3	Pass
Impactor Velocity		m/s	6.6 to 6.8	6.7	Pass
Peak Acetabulum Force Y		Newtons	3600 to 4300	3724.9	Pass
Peak Pelvis Y Acceleration After 6 msec.		G's	34 to 42	35.8	Pass
Peak Impactor Acceleration		G's	38 to 47	39.2	Pass
			Overall Test Results		Pass



Curve Description			
Pelvis Acetabulum Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
3724.9	7.7	-33.1	27.0



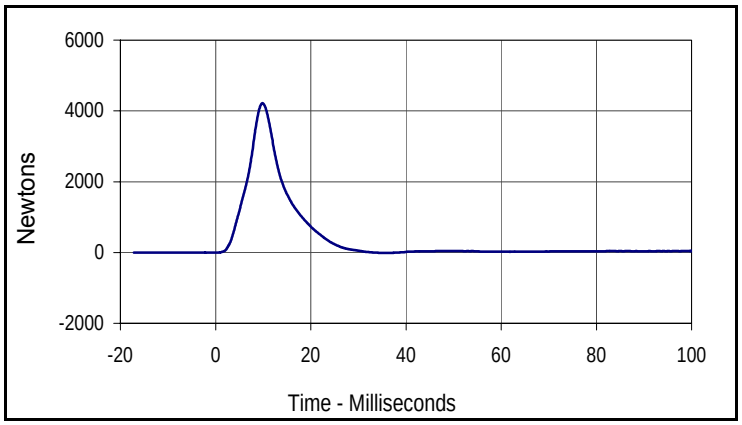
Curve Description			
Pelvis Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
41.0	2.0	-12.6	24.3



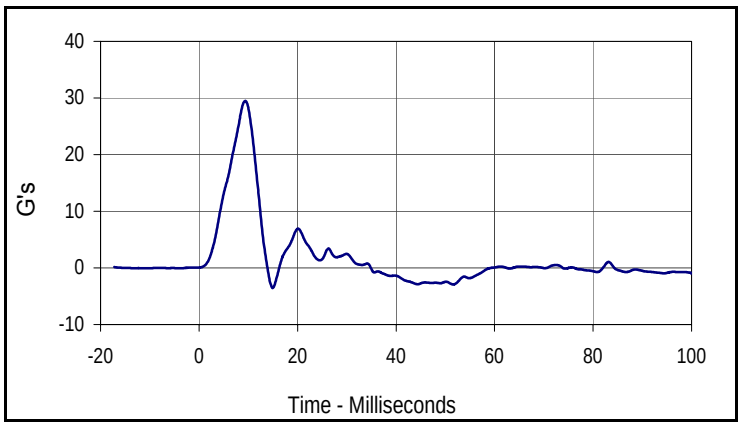
Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
39.2	8.2	-0.3	-0.5

Test Program:	SID IIs Pelvis Iliac Calibration	Test Date:	8/31/12
ATD Serial No.:	299	Test I.D.:	299PL045

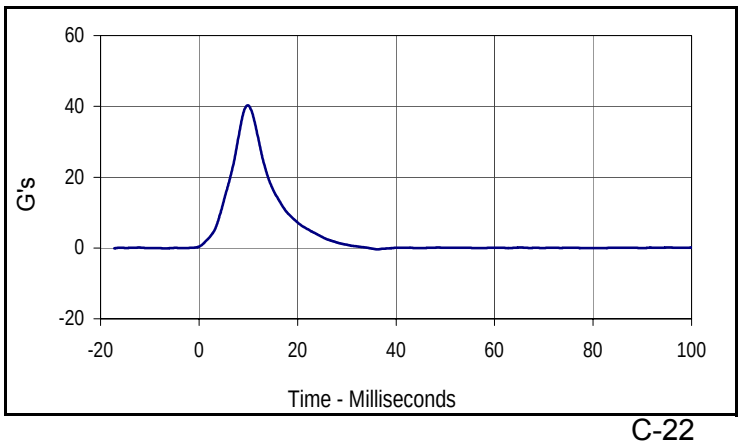
Tested Parameter		Units	Specification	Result	Pass/Fail
Dummy Soak Time		Minutes	≥180	440	Pass
Temperature During Soak	Max	°C	20.6 to 22.2	21.7	Pass
	Min	°C		20.7	Pass
Humidity During Soak	Max	%	10.0 to 70.0	30.0	Pass
	Min	%		28.0	Pass
Laboratory Temperature During Test		°C	18.9 to 25.6	21.3	Pass
Laboratory Humidity During Test		%	10.0 to 70.0	29.1	Pass
Impactor Velocity		m/s	4.2 to 4.4	4.3	Pass
Peak Illiac Force		Newtons	4100 to 5100	4217.1	Pass
Peak Pelvis Y Acceleration		G's	28 to 39	29.5	Pass
Peak Impactor Acceleration		G's	36 to 45	40.3	Pass
			Overall Test Results		Pass



Curve Description			
Pelvis Iliac Force			
Plot No.	Type	SAE Class	Units
001	FIL	600	Newtons
Max	Time	Min	Time
4217.1	9.8	-12.4	34.9



Curve Description			
Pelvis Y Acceleration			
Plot No.	Type	SAE Class	Units
002	FIL	180	G's
Max	Time	Min	Time
29.5	9.4	-3.5	14.9



Curve Description			
Impactor Acceleration			
Plot No.	Type	SAE Class	Units
003	FIL	180	G's
Max	Time	Min	Time
40.3	9.9	-0.4	36.2

APPENDIX D
TEST EQUIPMENT AND INSTRUMENTATION CALIBRATION DATA

TABLE 1 – Dummy Instrumentation (SID-IIs)

				SID-IIs S/N 299		
				Serial Number	Manufacturer	Calibration
Head Accelerometers			X	P51926	Endevco	6/25/12
			Y	P51929	Endevco	6/25/12
			Z	P51934	Endevco	6/25/12
Displacement Potentiometers	Shoulder		Y	1074	FTSS	6/26/12
	Thoracic Rib	Upper	Y	1143	FTSS	6/26/12
		Middle	Y	1160	FTSS	6/26/12
		Lower	Y	1213	FTSS	6/26/12
	Abdominal Rib	Upper	Y	1218	FTSS	6/26/12
		Lower	Y	1234	FTSS	6/26/12
Lower Spine Accelerometers (T12)			X	P63999	Endevco	6/25/12
			Y	P58872	Endevco	6/25/12
			Z	P58795	Endevco	6/25/12
Acetabulum Load Cell			Y	272	Denton	5/24/12
Iliac Wing Load Cell			Y	284	Denton	5/24/12
Pelvis Plug (Struck Side)				46075	FTSS	9/21/11
Pelvis Plug (Non-Struck Side)				46851	FTSS	10/5/11

TABLE 2 – Vehicle Instrumentation

Vehicle Instrumentation		Serial Number	Manufacturer	Calibration Date
Vehicle Center of Gravity	X	Ketx5a	Endevco	8/20/12
Vehicle Center of Gravity	Y	Ketx5b	Endevco	8/20/12
Vehicle Center of Gravity	Z	Ketx5c	Endevco	8/20/12
Left Floor Sill	Y	12903	Endevco	1/11/12
A-Pillar Sill	Y	13319	Endevco	6/18/12
A-Pillar Low	Y	12493	Endevco	3/29/12
A-Pillar Mid	Y	13327	Endevco	6/18/12
B-Pillar Sill	Y	12892	Endevco	1/11/12
B-Pillar Low	Y	12865	Endevco	1/11/12
B-Pillar Mid	Y	12911	Endevco	1/11/12
Driver Seat	Y	J24512	Endevco	6/29/12
Engine Top	X	13357	Endevco	6/18/12
Engine Top	Y	13337	Endevco	6/28/12
Firewall	Y	12418	Endevco	2/14/12
Right Roof	Y	12357	Endevco	2/14/12
Right Floor Sill	Y	13000	Endevco	12/17/11
Rear Floorpan	X	13330	Endevco	6/18/12
Rear Floorpan	Y	13320	Endevco	6/18/12

TABLE 3 – Pole Instrumentation

	Serial Number	Manufacturer	Calibration Date
Load Cell 1	131822A	Interface	8/8/11
Load Cell 2	132304A	Interface	8/8/11
Load Cell 3	19477	Interface	8/8/11
Load Cell 4	19325	Interface	8/8/11
Load Cell 5	131827A	Interface	8/8/11
Load Cell 6	132302A	Interface	8/8/11
Load Cell 7	19267	Interface	8/8/11
Load Cell 8	19321	Interface	8/8/11