REPORT NUMBER: SPNCAP-KAR-19-018

NEW CAR ASSESSMENT PROGRAM (NCAP)

SIDE IMPACT POLE TEST

BAYERISCHE MOTOREN WERKE AG

2019 BMW X3 SDRIVE30I 5-DOOR MPV

NHTSA No: M20194101

PREPARED BY:

APPLUS IDIADA KARCO ENGINEERING, LLC.

9270 HOLLY ROAD

ADELANTO, CA 92301

FEBRUARY 28, 2019

FINAL REPORT

PREPARED FOR:

U.S. DEPARTMENT OF TRANSPORTATION

NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

OFFICE OF CRASHWORTHINESS STANDARDS

MAIL CODE: NRM-110

1200 NEW JERSEY AVE, SE, ROOM W43-410

WASHINGTON, D.C. 20590

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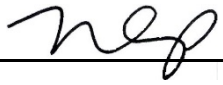
Reviewed By: 

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Approval Date: February 28, 2019

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 DOCUMENTATION PAGE

1. Report No.	2. Government Accession No.	3. Recipient's Catalog No.
SPNCAP-KAR-19-018		

4. Title and Subtitle	5. Report Date
Final Report of New Car Assessment Program Side Impact Pole Testing of a 2019 BMW X3 sDrive30i 5-Door MPV NHTSA No. M20194101	February 28, 2019
	6. Performing Organization Code KAR
7. Authors Mr. Malo L. Taua'ese, Engineering Technician, Applus IDIADA KARCO Mr. Steven D. Matsusaka, Engineering Manager, Applus IDIADA KARCO	**8. Performing Organization Report No.** TR-P39004-01-NC
9. Performing Organization Name and Address Applus IDIADA KARCO Engineering, LLC. 9270 Holly Rd. Adelanto, CA 92301	**10. Work Unit No.**
	11. Contract or Grant No. DTNH22-14-D-00355L
12. Sponsoring Agency Name and Address U. S. Department of Transportation National Highway Traffic Safety Administration Office of Crashworthiness Standards (NRM-110) 1200 New Jersey Ave., SE, Room W43-410 Washington, D.C. 20590	**13. Type of Report and Period Covered** Final Test Report, February 14, 2019 - February 28, 2019
	14. Sponsoring Agency Code NRM-110

15. Supplementary Notes

16. Abstract

A 32.20 km/h 75° rigid pole side NCAP impact test was conducted on the subject 2019 BMW X3 sDrive30i 5-door MPV in accordance with the specifications of the Office of Crashworthiness 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 Applus IDIADA KARCO Engineering, LLC. facility in Adelanto, California on February 14, 2019.

The impact velocity was 31.42 km/h and the outside ambient temperature at the struck (driver's) side of the vehicle was 15.0°C. The target vehicle's maximum post-test static crush was 324 mm located at level 3. The test vehicle's occupant performance data is as follows:

Measurement Description	Driver ATD (SID-IIs)		
	Units	Threshold	Result
Head Injury Criteria (HIC_{36})		1000	281.4
Resultant Lower Spine Acceleration	g	82	43
Total Pelvic Force (Sum of Acetabular and Iliac Forces)	N	5525	2776
Maximum Thoracic Rib Deflection	mm	38	25
Maximum Abdominal Rib Deflection	mm	45	31

The struck side doors of the vehicle were jammed shut and did not separate from the body at the hinges or latches. The remaining 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 Information Services Division, NPO-411 1200 New Jersey Ave., SE Washington, DC 20590 e-mail: 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	104	

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SECTION 1
TEST PURPOSE AND PROCEDURE

This side impact test is part of the MY 2019 New Car Assessment Program Side Impact Test Program, sponsored by the National Highway Traffic Safety Administration (NHTSA), under contract number DTNH22-14-D-00355L. The purpose of this test is to generate comparative side impact performance in a 2019 BMW X3 sDrive30i 5-door MPV. The side impact test was conducted in accordance with the Office of Crashworthiness Standard's Laboratory Test Procedure date October 2015.

SECTION 2
SUMMARY OF TEST RESULTS

A rigid pole side impact test was conducted on a 2019 BMW X3 sDrive30i 5-door MPV. The subject vehicle was towed into the rigid pole at an angle of 75.8° and a velocity of 31.42 km/h. The test was conducted by Applus IDIADA KARCO Engineering, LLC. in Adelanto, California on February 14, 2019. 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 October 2015. Camera locations and other pertinent camera information are included in this report.

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

Primary and Redundant 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. Appendix D contains the test equipment and instrumentation calibration data.

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

Measurement Description	Units	Driver ATD (SID-IIs)	
		IARV	Result
Head Injury Criteria (HIC_{36})		1000	281.4
Lower Spine (T12) Resultant Acceleration	g	82	43
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	2776
Maximum Thoracic Rib Deflection	mm	38*	25
Maximum Abdominal Rib Deflection	mm	45*	31

**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	Yes	No	No	
Side Airbag 1 (Curtain)	Yes	Yes	Yes	Yes
Side Airbag 2 (Torso/Pelvis)	Yes	Yes	No	
Seat Belt Pretensioner	Yes	Yes	Yes	N/A
Seat Belt Load Limiter	Yes	Yes	Yes	N/A

GENERAL COMMENTS

The struck side doors of the vehicle were jammed shut. There was no separation at the hinges or latches. The remaining doors remained closed and latched. There were no ATD values that exceeded limits. The Driver Lower Thorax Rib Y channel failed at 77.3 ms to 145.6 ms and after 211.0 ms. The Left Floor Sill Y had questionable data from 30.0 ms to 35.0 ms. Left Lower A-Post Y channel failed at 49.1 ms, Left Mid A-Post Y channel failed at 120.2 ms, Left B-Post at Sill Y channel failed at 70.0 ms, and the Left Mid B-Post Y channel failed at 55.0 ms.

SECTION 3

OCCUPANT AND VEHICLE INFORMATION/DATA SHEETS

Test Vehicle: 2019 BMW X3 sDrive30i 5-Door MPV NHTSA No. M20194101

Test Program: NCAP Side Pole Impact Test Test Date: 02/14/19

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: 2019 BMW X3 sDrive30i 5-Door MPV NHTSA No. M20194101

Test Program: NCAP Side Pole Impact Test Test Date: 02/14/19

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA Number	M20194101
Model Year	2019
Make	BMW
Model	X3 sDrive30i
Body Style	5-Door MPV
VIN	5UXTR7C57KLF34067
Body Color	Dark Graphite Metallic
Odometer Reading (km / mi)	31 / 19
Engine Displacement (L)	2.0
Type / No. of Cylinders	Inline 4
Engine Placement	Longitudinal
Transmission Type	Automatic
Transmission Speeds	8 Speed
Overdrive	Yes
Final Drive	RWD
Roof Rack	Yes
Sunroof / T-Top	Yes
Running Boards	No
Tilt Steering Wheel	Yes
Power Seats	Yes
Anti-Lock Brakes (ABS)	Yes

Traction Control System (TCS)	Yes
Auto-Leveling System	No
Automatic Door Locks	Yes
Power Window Auto-Reverse	Yes
Other Optional Feature	No
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	Yes
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 Pretensioner	Yes
Driver Load Limiter	Yes
Rear Pass. Load Limiter	Yes
Other Safety Restraint	N/A

Does Owner's Manual provide instructions to turn off automatic door locks?	Yes

DATA FROM CERTIFICATION LABEL

Manufactured By	Bayerische Motoren Werke AG
Date of Manufacture	Nov-18
Vehicle Type	MPV

GVWR (kg)	2330
GAWR Front (kg)	1090
GAWR Rear (kg)	1365

VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

Measured Parameter	Front	Rear	Third	Total	
Designated Seating Capacity	2	3		5	
Capacity Weight (VCW) (kg)				425.0	*A*
DSC x 68.04 (kg)				340.2	*B*
Cargo Weight (RCLW) (kg)				84.8	*A-B*

VEHICLE SEAT TYPE

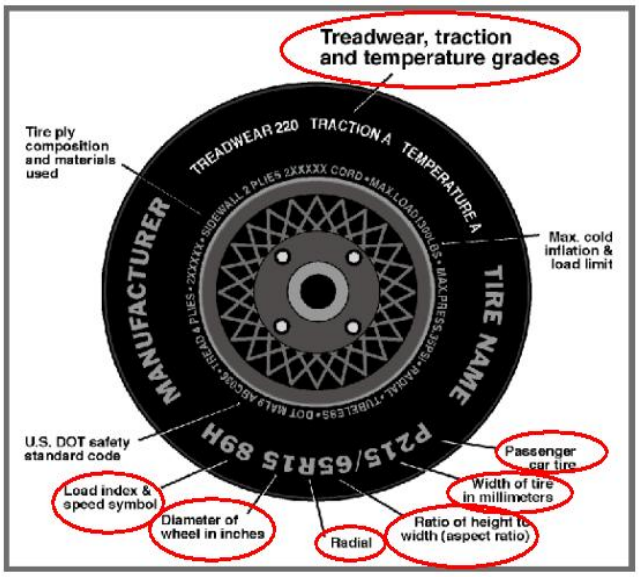
Seating Location	Type of Seat Pan				Type of Seat Back		
	Bucket	Bench	Split Bench	Contoured	Fixed	Adjustable w/ Lever	Adjustable w/ Knob
Front Seat	Yes						Yes
Rear or Second Row Seat			Yes			Yes	
Third Row Seat							

DATA SHEET NO. 1 … (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2019 BMW X3 sDrive30i 5-Door MPV NHTSA No. M20194101

Test Program: NCAP Side Pole Impact Test Test Date: 02/14/19



Measured Parameter	Front	Rear
Max. Tire Pressure (kPa)	340	340
Cold Pressure (kPa)	220	240
Recommended Tire Size	P245/50R19	P245/50R19
Tire Size on Vehicle	P245/50R19	P245/50R19
Tire Manufacturer	Pirelli	Pirelli
Tire Model	Cintirato P7	Cintirato P7
Treadware	500	500
Traction Grade	A	A
Temperature Grade	A	A
Tire Plies Sidewall	1 Rayon	1 Rayon
Tire Plies Body	1 Rayon, 2 Steel, 1 Polyamide	1 Rayon, 2 Steel, 1 Polyamide
Load Index/Speed Symbol	105H	105H
Tire Material	Rayon, Steel, Polyamide	Rayon, Steel, Polyamide
DOT Safety Code Left	UN0P VA77 3718	UN0P VA77 3718
DOT Safety Code Right	UN0P VA77 3718	UN0P VA77 3718

DATA SHEET NO. 1 … (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2019 BMW X3 sDrive30i 5-Door MPV NHTSA No. M20194101

Test Program: NCAP Side Pole Impact Test Test Date: 02/14/19

TIRE PRESSURES

	Units	LF	RF	LR	RR
As Delivered	kPa	220	220	240	240
Tire Placard	kPa	220	220	240	240
Owner's Manual	kPa	220	220	240	240
As Tested	kPa	220	220	240	240

TEST VEHICLE AXLE WEIGHTS

		As Delivered (UVW)			As Tested (ATW)			Fully Loaded		
	Units	Front	Rear	Total	Front	Rear	Total	Front	Rear	Total
Left	kg	424.0	487.0		438.0	536.5		432.0	558.5	
Right	kg	448.5	460.5		454.0	518.0		448.0	518.5	
Ratio	%	47.9%	52.1%	100.0%	45.8%	54.2%	100.0%	45.0%	55.0%	100.0%
Total	kg	872.5	947.5	1820.0	892.0	1054.5	1946.5	880.0	1077.0	1957.0

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	1820.0	A
Actual Weight of 1 P572V ATD Used	kg	49.0	B
Rated Cargo/Luggage Wt (RCLW)	kg	84.8	C
Calculated Vehicle Target Wt (TVTW)	kg	1953.8	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**

TEST VEHICLE ATTITUDE AND CG

Measurement Description	Units	As Delivered	As Tested	Fully Loaded	Meets Requirement***
Driver Door Sill Angle (front-to-rear)*	°	-0.8	-0.6	-0.5	Yes
Front Passenger Sill Angle (front-to-rear)*	°	-0.4	-0.3	-0.3	Yes
Front Bumper-Line Angle (left-to-right)**	°	0.0	-0.1	-0.1	Yes
Rear Bumper-Line Angle (left-to-right)**	°	0.0	0.0	0.0	Yes
Vehicle CG (Aft of Front Axle)	mm	1490	1550	1575	
Vehicle CG (Left (+)/Right (-) from Longitudinal Centerline)	mm	1	1	10	

*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. 1 … (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2019 BMW X3 sDrive30i 5-Door MPV NHTSA No. M20194101

Test Program: NCAP Side Pole Impact Test Test Date: 02/14/19

WEIGHT OF BALLAST AND VEHICLE COMPONENTS REMOVED TO MEET TVTW

Component Description	Weight (kg)
Trunk Trim	8.0
Ballast / Equipment Added	85.5

Test Height Adjustable Setting (If Applicable)	

DATA SHEET NO. 2

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

Test Vehicle: 2019 BMW X3 sDrive30i 5-Door MPV NHTSA No. M20194101

Test Program: NCAP Side Pole Impact Test Test Date: 02/14/19

SEAT POSITIONING

The driver's seat, front center seat (if applicable), and front passenger's seat should be set to the forward most, mid-height, mid-angle position. The struck side rear passenger's seat, rear center seat, and non-struck side rear passenger's seat should be set to the rear most, lowest, mid-angle position.

SCRL ANGLE RANGE

Seat	SCRL (°)		
	Max	Min	Mid
Driver Seat	9.4	0.0	4.7
Front Passenger Seat	9.5	0.0	4.8
Front Center Seat			
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 (Mid) (°)	As Tested SCRP Height (mm)	SCRP Height Position	SCRP Height (mm)		
				Rearmost	Mid Fore/Aft	Forwardmost
Driver Seat	4.7	408	Max	401	415	428
			Mid	382	395	408
			Min	363	375	387
Front Passenger Seat	4.8	420	Max	420	431	444
			Mid	396	408	420
			Min	372	385	395
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: 2019 BMW X3 sDrive30i 5-Door MPV NHTSA No. M20194101

Test Program: NCAP Side Pole Impact Test Test Date: 02/14/19

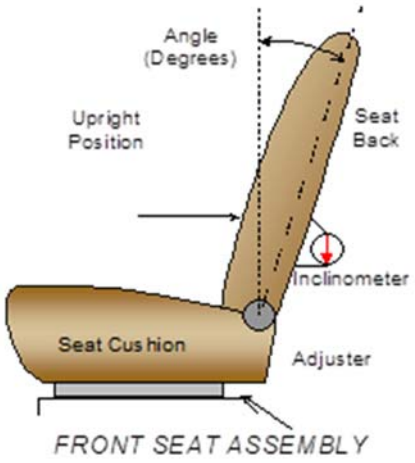
SEAT FORE/AFT POSITION

Seat	Total Fore/Aft Travel		Test Position From Forwardmost Position	
	mm	Detents*	mm	Detent*
Driver Seat	246		0	
Front Passenger Seat	231		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

*Detent zero (0) is the forward most detent

SEAT BACK ADJUSTMENT

The driver's seat back is positioned such that the dummy's head is level. The front passenger's seat back is positioned in a similar manner to the driver's seat. The struck side rear passenger seat back is positioned in accordance with the information provided by the manufacturer in Form 1 for the 5th percentile female dummy in a Side NCAP MDB Test. The rear center and non-struck side rear passenger's seat back is set to match the struck side rear seat back. Seat back angle is measured using a straight-edge across the seat back.



Seat	Total Seat Back Angle Range		Test Position from Most Upright	
	Degrees	Detents*	Degree	Detent*
Driver Seat w/Seated Dummy	64.3		13.7	
Front Passenger Seat	66.1		13.7	
Front Center Seat				
Struck Side Rear Seat w/Seated Dummy	9.9	8	21.1	0
Non-Struck Side Rear Seat	10.4	8	19.2	0
Rear Center Seat	9.9	8	21.1	0

*Detent zero (0) is the forward most detent

DATA SHEET NO. 2 … (CONTINUED)

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

Test Vehicle: 2019 BMW X3 sDrive30i 5-Door MPV NHTSA No. M20194101

Test Program: NCAP Side Pole Impact Test Test Date: 02/14/19

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, M3, M2, …, L from top to bottom.

	Total No. of Positions	Placed in Position
Driver Seat	Fixed	Fixed

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	3	Lowest

DATA SHEET NO. 2 … (CONTINUED)

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

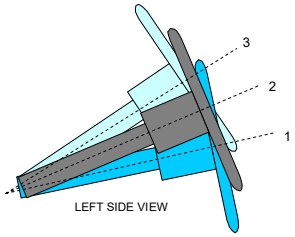
Test Vehicle: 2019 BMW X3 sDrive30i 5-Door MPV NHTSA No. M20194101

Test Program: NCAP Side Pole Impact Test Test Date: 02/14/19

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.

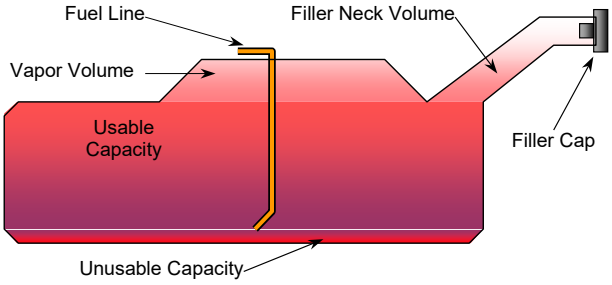
	Degrees	Fore-Aft Position (mm)
Lowermost - Position 1	23.2	128
Geometric Center - Position 2	24.8	159
Uppermost - Position 3	26.4	190
Telescoping Steering Wheel Travel		62
Test Position	24.8	159



STEERING COLUMN ASSEMBLY

FUEL PUMP

The vehicle is equipped with an electronic fuel pump. The fuel pump starts when the ignition is on and will operate for 5 seconds. After pressure has been built up, the fuel pump switches to sleep mode until the engine is started or pressure decreases.



VEHICLE FUEL TANK ASSEMBLY

FUEL TANK CAPACITY

Description	Liters
Usable Capacity of "Standard Tank" (see Form No. 1)	67.98
Usable Capacity of "Optional Tank" (see Form No. 1)	
Usable Capacity of "Standard Tank" (see Owner's Manual)	67.98
Usable Capacity of "Optional Tank" (see Owner's Manual)	
93% of Usable Capacity	63.22
Actual amount of Solvent Used in Test	63.22
1/3 of Usable Capacity	22.66

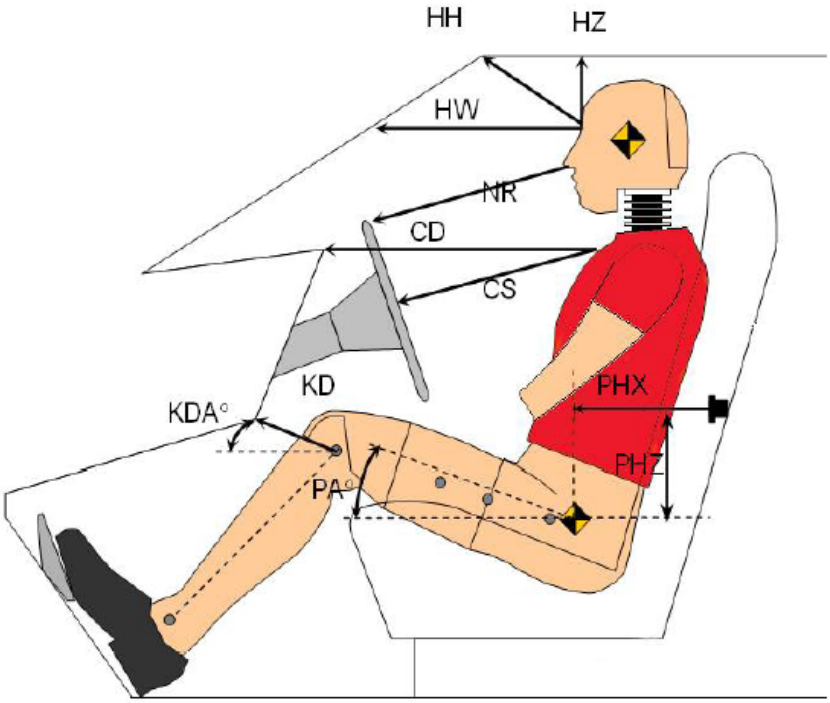
Is the Actual Amount of Solvent Used in the test equal to 93% ± 1% of the Usable Capacity stated in the Form No. 1? ☒ **Yes** ☐ **No**

DATA SHEET NO. 3

DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2019 BMW X3 sDrive30i 5-Door MPV NHTSA No. M20194101

Test Program: NCAP Side Pole Impact Test Test Date: 02/14/19



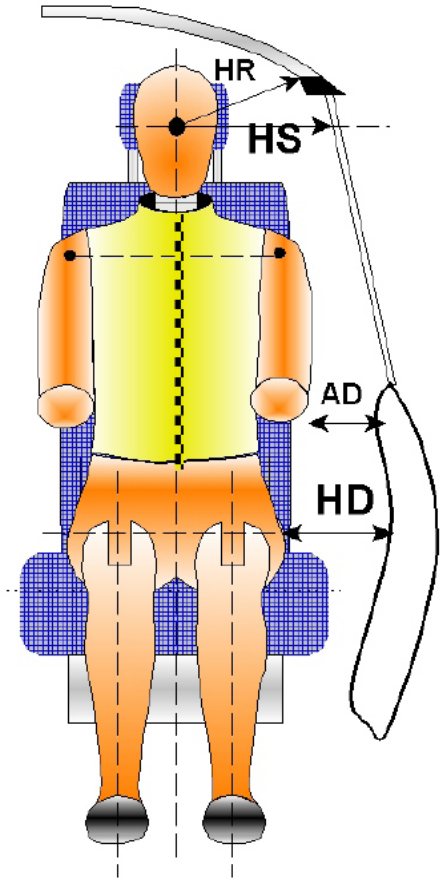
Driver Code	Description	Driver	
		Length (mm)	Angle (°)
HH	Head to Header	344	
HW	Head to Windshield	642	
HZ	Head to Roof	227	
NR	Nose to Rim	233	
CD	Chest to Dash	393	
CS	Chest to Steering Wheel	180	
KD(L)/KDA(L)°	Left Knee to Dash	142	32.3
KD(R)/KDA(R)°	Right Knee to Dash	129	18.7
PAX°	Pelvic Tilt Angle (x-axis)		21.4
PAY°	Pelvic Tilt Angle (y-axis)		0.3
PHX	Hip Point to Striker (x-axis)	299	
PHZ	Hip Point to Striker (z-axis)	176	

DATA SHEET NO. 4

DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2019 BMW X3 sDrive30i 5-Door MPV NHTSA No. M20194101

Test Program: NCAP Side Pole Impact Test Test Date: 02/14/19



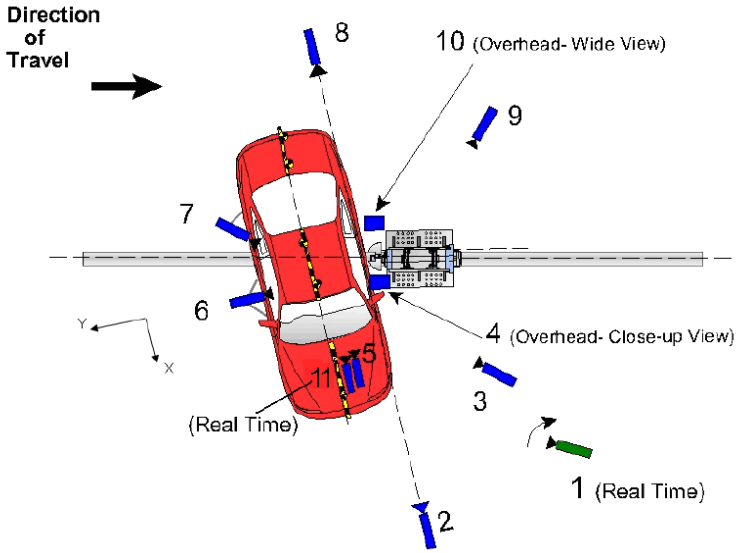
Code	Measurement Description	Units	Driver
HR	Head to Side Header	mm	276
HS	Head to Side Window	mm	385
AD	Arm to Door	mm	172
HD	Hip Point to Door	mm	178

DATA SHEET NO. 5

CAMERA AND INSTRUMENTATION DATA

Test Vehicle: 2019 BMW X3 sDrive30i 5-Door MPV NHTSA No. M20194101

Test Program: NCAP Side Pole Impact Test Test Date: 02/14/19



Reference from Point of Impact for X and Y; from Ground for Z):
+X = Forward of Vehicle, +Y = Right of Vehicle, +Z = Down

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	1.16	0.55	-1.45	8.5	1000
6	On-Board - Dummy Side View	-0.01	1.72	-1.13	8.5	1000
7	On-Board - Dummy Rear Oblique View	-0.91	1.74	-1.16	8.5	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	1.16	0.48	-1.44		30

*All measurements accurate to ±6 mm

INSTRUMENTATION

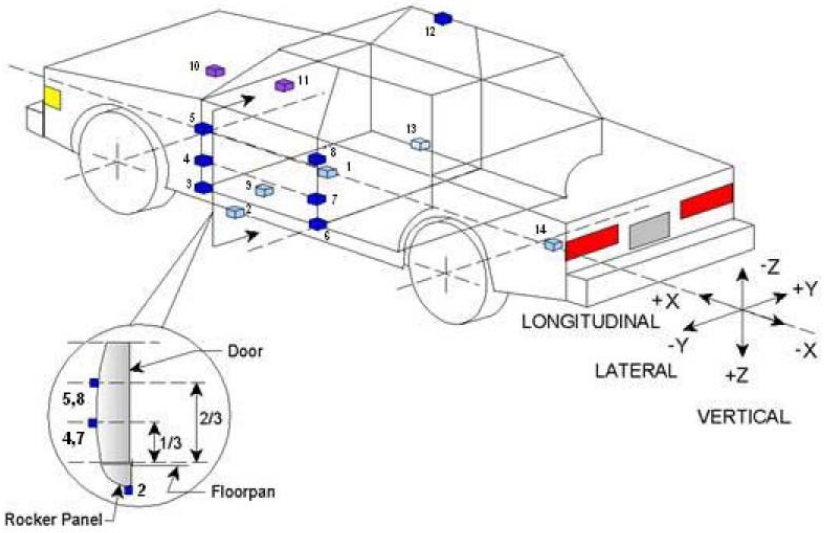
Driver Dummy Channels	19
Vehicle Structure Accelerometers	18
Pole Load Cells	8
Total	45

DATA SHEET NO. 6

TEST VEHICLE ACCELEROMETER LOCATIONS

Test Vehicle: 2019 BMW X3 sDrive30i 5-Door MPV NHTSA No. M20194101

Test Program: NCAP Side Pole Impact Test Test Date: 02/14/19



Loc. No.	Sensor Description	Coordinates (mm)		
		X	Y	Z
1	Vehicle CG	2100	0	-605
2	Left Floor Sill	2450	-740	-565
3	A-Pillar Sill	3175	-725	-465
4	A-Pillar Low	3185	-810	-540
5	A-Pillar Mid	3170	-810	-840
6	B-Pillar Sill	2010	-750	-540
7	B-Pillar Low	2030	-740	-810
8	B-Pillar Mid	2030	-740	-1050
9	Driver Seat Track	2250	-610	-510
10	Engine Top	3840	0	-1070
11	Firewall	3300	410	-1020
12	Right Roof	2120	545	-1660
13	Right Floor Sill	2450	740	-470
14	Rear Floorpan	1110	0	-820

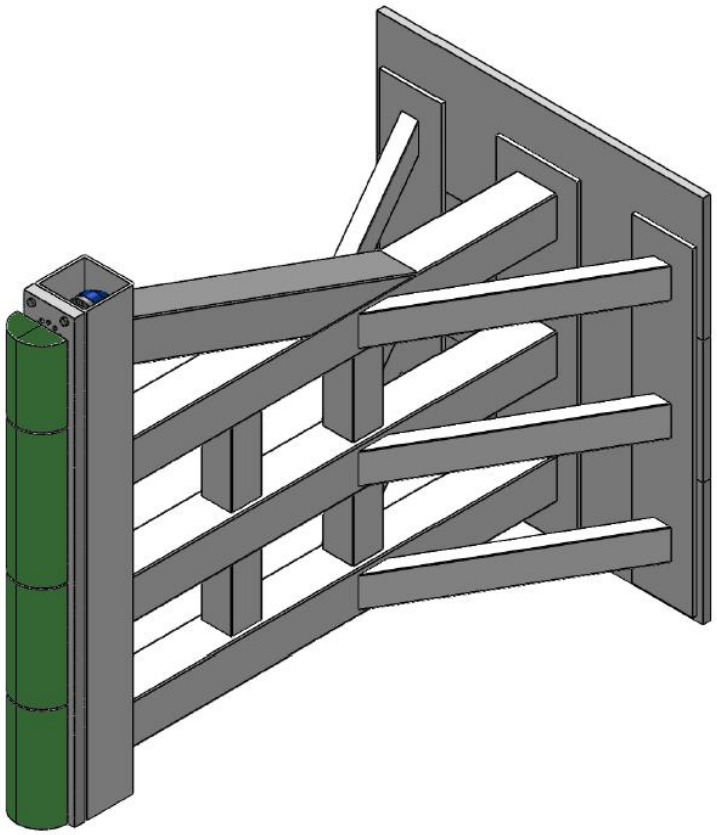
Reference: X – Rear surface of vehicle (+ forward)
Y – Vehicle centerline (+ to right)
Z – Ground plane (+ down)

DATA SHEET NO. 7

RIGID POLE LOAD CELL DATA

Test Vehicle: 2019 BMW X3 sDrive30i 5-Door MPV NHTSA No. M20194101

Test Program: NCAP Side Pole Impact Test Test Date: 02/14/19



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: 2019 BMW X3 sDrive30i 5-Door MPV NHTSA No. M20194101

Test Program: NCAP Side Pole Impact Test Test Date: 02/14/19

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
Back of Head	Curtain Airbag, Headrest
Left Shoulder	Side Airbag, Door Panel
Upper Torso	Side Airbag, Seatback
Lower Torso	Side Airbag, Seatback
Left Hip	Side Airbag, Seatback
Left Knee	Door Panel

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	
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

DATA SHEET NO. 8 … (CONTINUED)

POST-TEST OBSERVATIONS

Test Vehicle: 2019 BMW X3 sDrive30i 5-Door MPV NHTSA No. M20194101

Test Program: NCAP Side Pole Impact Test Test Date: 02/14/19

POST-TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Pillar Performance	No separation occurred
Sill Separation	No separation occurred
Windshield Damage	Broken
Side Window Damage	Left front window broken
Other Notable Effects	None

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

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

IMPACT POINT LOCATION DATA

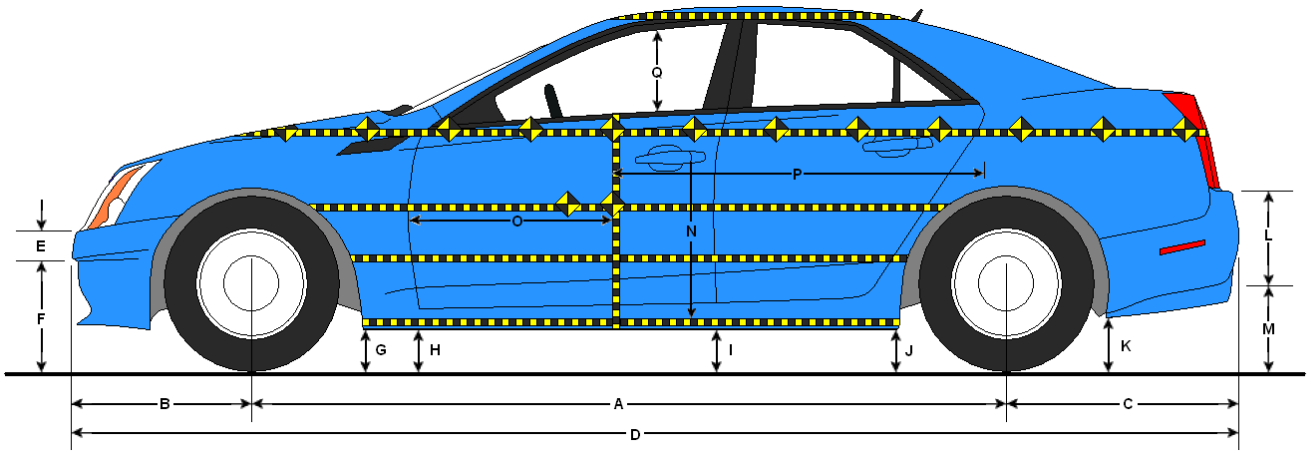
Measured Parameter	Units	Tolerance	Value
Vertical Impact Reference Line (Aft of Front Axle)(Intended Impact Point)	mm		1327
Actual Impact Point (Aft of Front Axle)	mm		1329
Horizontal Offset (+ forward / - rearward)	mm	± 38 of Intended Impact Point	-2
Angle Between Vehicle's Longitudinal Centerline and Line of Forward Motion	°	75 ± 3	75.8
Trap No. 1 Velocity (Primary)	km/h	31.4 to 33.0	31.42
Trap No. 2 Velocity (Redundant)	km/h	31.4 to 33.0	31.41

DATA SHEET NO. 9

TEST VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2019 BMW X3 sDrive30i 5-Door MPV NHTSA No. M20194101

Test Program: NCAP Side Pole Impact Test Test Date: 02/14/19



LEFT SIDE VIEW

All measurements in mm with tolerance of ± 3mm

VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

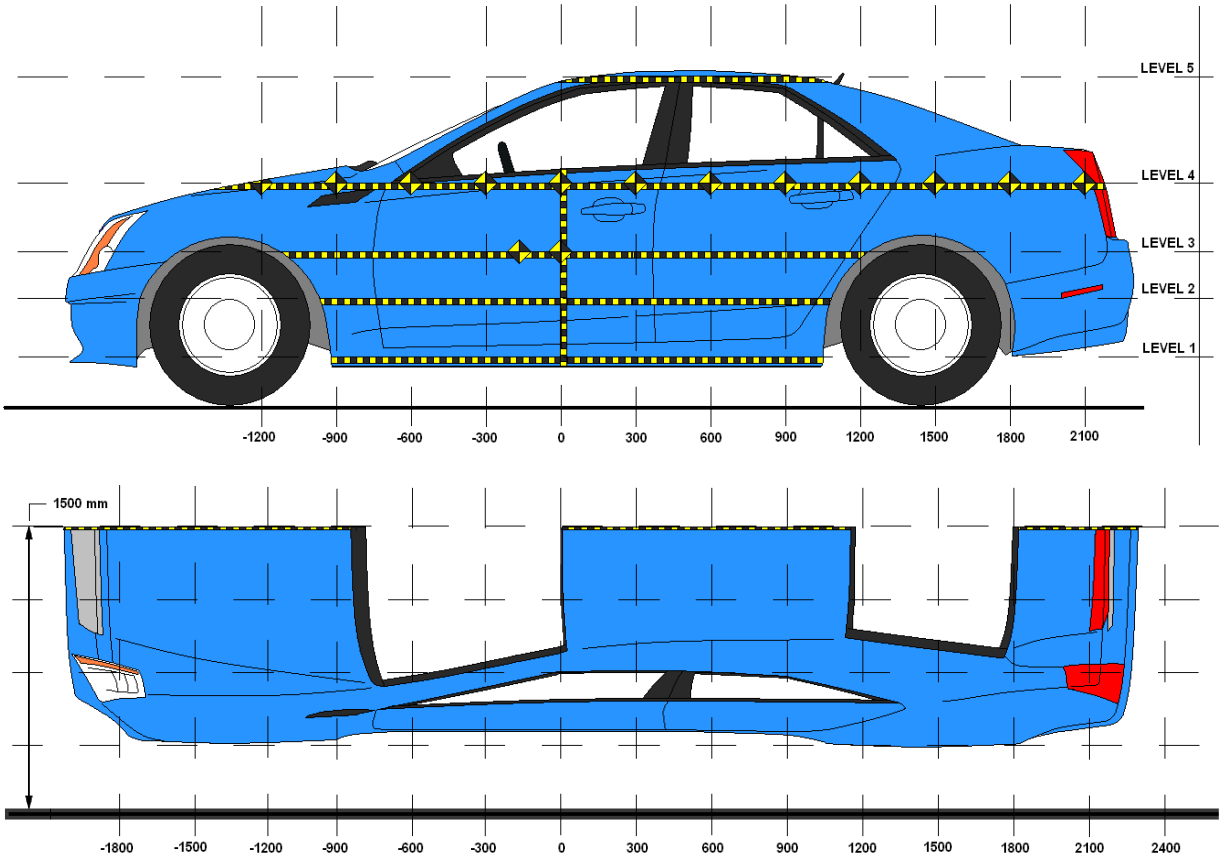
Code	Description	Pre-Test	Post-Test	Difference
A	Wheelbase	2862	2815	-47
B	Front Axle to FSOV	852	882	30
C	Rear Axle to RSOV	986	983	-3
D	Total Length at Centerline	4699	4681	-18
E	Front Bumper Thickness	158	157	-1
F	Fromt Bumper Bottom to Ground	478	498	20
G	Sill Height at Front Wheel Well	284	279	-5
H	Sill Height at Front Door Leading Edge	247	244	-3
I	Sill Height at B-Pillar	256	260	4
J1	Sill Height at Rear Wheel Well	238	247	9
J2	Pinch Weld Height at Rear Wheel Well	213	219	6
K	Sill Height Aft of Rear Wheel Well	289	290	1
L	Rear Bumper Thickness	151	152	1
M	Rear Bumper Bottom to Ground	470	469	-1
N	Sill Height to Bottom of Front Window Sill	783	797	14
O	Front Door Leading Edge to Impact CL	681	599	-82
P	Rear Door Trailing Edge to Impact CL	1448	1392	-56
Q	Front Window Opening	481	485	4
R	Right Side Length	3377	3377	0
S	Left Side Length	3378	3320	-58
T	Vehicle Width at B-Pillar	1878	1794	-84

DATA SHEET NO. 10

TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2019 BMW X3 sDrive30i 5-Door MPV NHTSA No. M20194101

Test Program: NCAP Side Pole Impact Test Test Date: 02/14/19



NOTE: All measurements in mm with tolerance of ± 3mm

MAXIMUM EXTERIOR CRUSH MEASUREMENTS

Level	Description	Height Above Ground (mm)	Maximum Exterior Static Crush	Distance from Impact
1	Sill Top	265	210	150
2	Occupant H-Point	698	320	0
3	Mid-Door	742	324	0
4	Window Sill	1044	266	0
5	Window Top	1602	75	150

DATA SHEET NO. 10 … (CONTINUED)

TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2019 BMW X3 sDrive30i 5-Door MPV NHTSA No. M20194101

Test Program: NCAP Side Pole Impact Test Test Date: 02/14/19

EXTERIOR CRUSH MEASUREMENTS AT EACH LEVEL

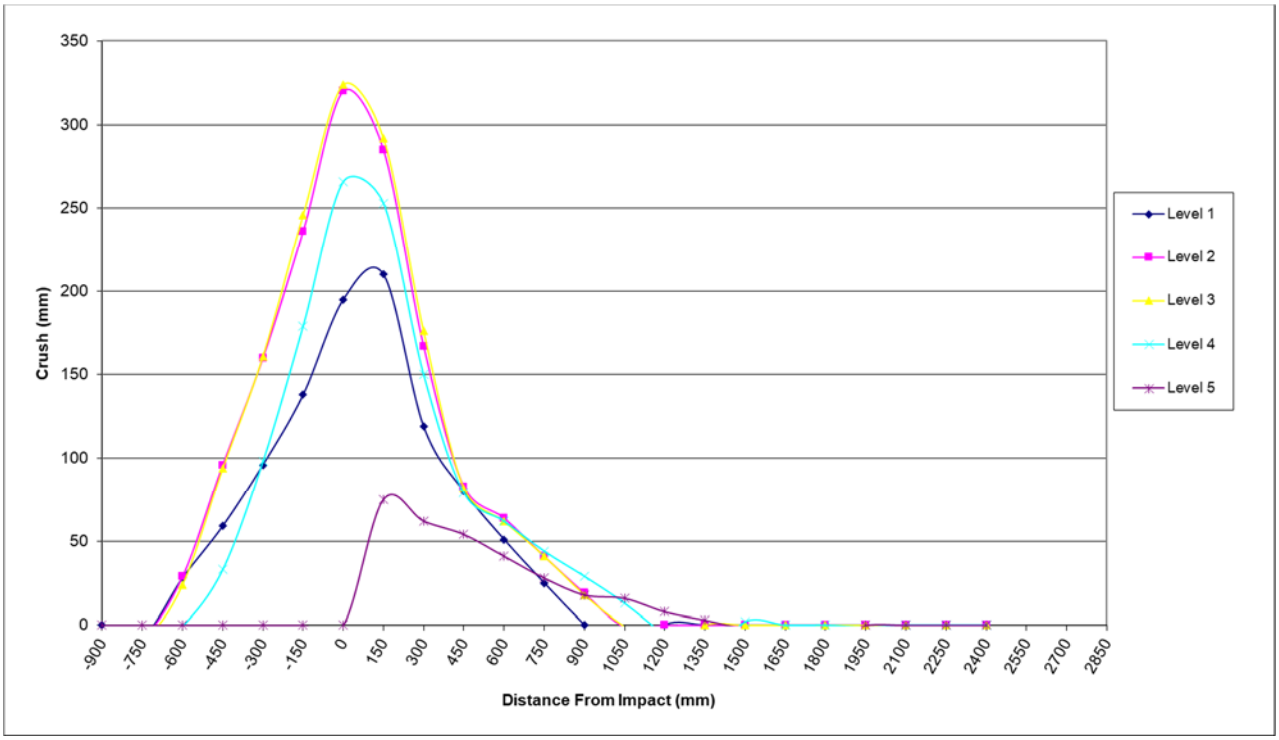
	Pre-Test (mm)					Post-Test (mm)					Difference (mm)				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-900		564	564	663			552	550	635			-12	-14	-28	
-750	632	570	569	655		625	562	559	634		-7	-8	-10	-21	
-600	645	568	567	648		673	597	591	647		28	29	24	-1	
-450	647	565	563	643		706	661	657	676		59	96	94	33	
-300	648	563	561	638		744	723	722	736		96	160	161	98	
-150	648	562	560	631		786	798	806	810		138	236	246	179	
0	648	562	560	627		843	882	884	893		195	320	324	266	
150	647	563	561	621	893	857	848	853	874	968	210	285	292	253	75
300	647	565	561	615	889	766	732	737	765	951	119	167	176	150	62
450	647	568	564	613	888	727	651	646	692	942	80	83	82	79	54
600	647	570	567	609	893	698	634	629	671	934	51	64	62	62	41
750	648	572	569	608	895	673	613	610	652	923	25	41	41	44	28
900	641	571	569	604	897	641	590	587	633	915	0	19	18	29	18
1050	620	564	563	603	895	597	563	562	616	911	-23	-1	-1	13	16
1200		561	558	583	898		561	544	577	906		0	-14	-6	8
1350				607	903				585	906				-22	3
1500				611	907				613	905				2	-2
1650				620	914				620	909				0	-5
1800				633	925				633	918				0	-7
1950				650					649					-1	
2100															
2250															
2400															
2550															
2700															
2850															

DATA SHEET NO. 10 … (CONTINUED)

TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2019 BMW X3 sDrive30i 5-Door MPV NHTSA No. M20194101

Test Program: NCAP Side Pole Impact Test Test Date: 02/14/19

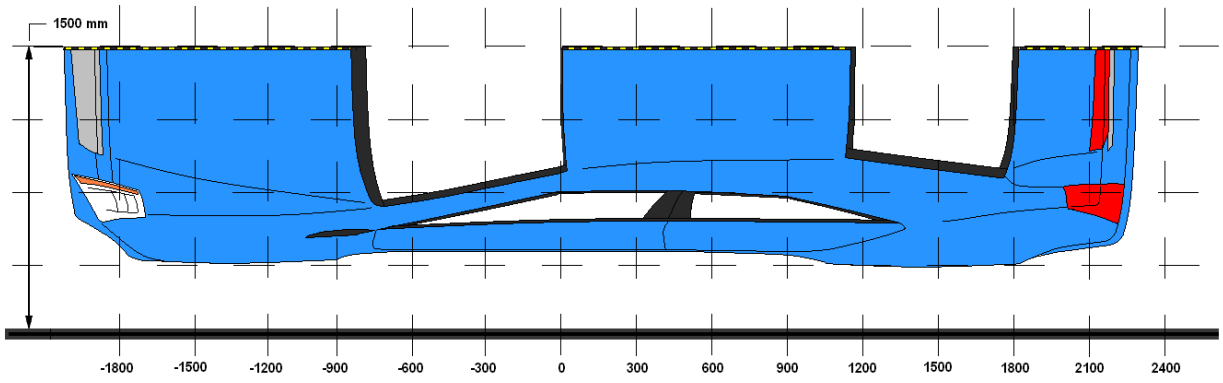


DATA SHEET NO. 11

VEHICLE DAMAGE PROFILE DISTANCES

Test Vehicle: 2019 BMW X3 sDrive30i 5-Door MPV NHTSA No. M20194101

Test Program: NCAP Side Pole Impact Test Test Date: 02/14/19



DPD	Distance From Impact Point (mm)	Level	Pre-Test (mm)	Post-Test (mm)	Crush (mm)
1	1950	4	650	649	-1
2	1350	5	903	906	3
3	750	4	608	652	44
4	300	3	561	737	176
5	-300	3	561	722	161
6	-900	2	564	552	-12

DATA SHEET NO. 12

FMVSS NO. 301 STATIC ROLLOVER RESULTS

Test Vehicle: 2019 BMW X3 sDrive30i 5-Door MPV NHTSA No. M20194101

Test Program: NCAP Side Pole Impact Test Test Date: 02/14/19

Time of Impact: 15.0° C Test Time: 2:13 PM

From impact until vehicle motion ceases: 0 oz.

(Maximum allowable = 1 oz.)

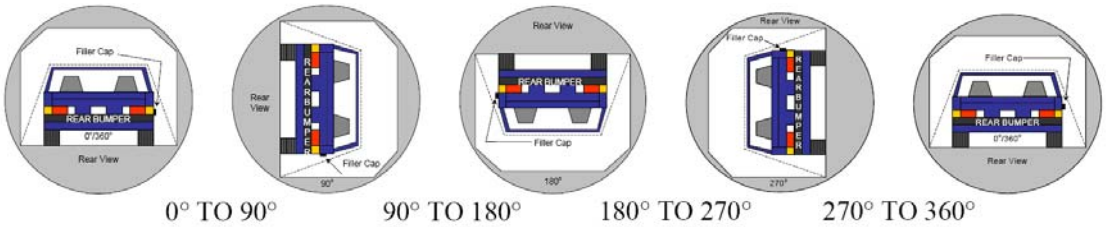
For the 5 minute period after motion ceases: 0 oz.

(Maximum allowable = 5 oz.)

For the following 25 minutes: 0 oz.

(Maximum allowable = 1 oz./minute)

Spillage Details: There was no Stoddard solvent spillage.



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°	79	300	379
90° To 180°	80	300	380
180° To 270°	81	300	381
270° To 360°	79	300	379

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

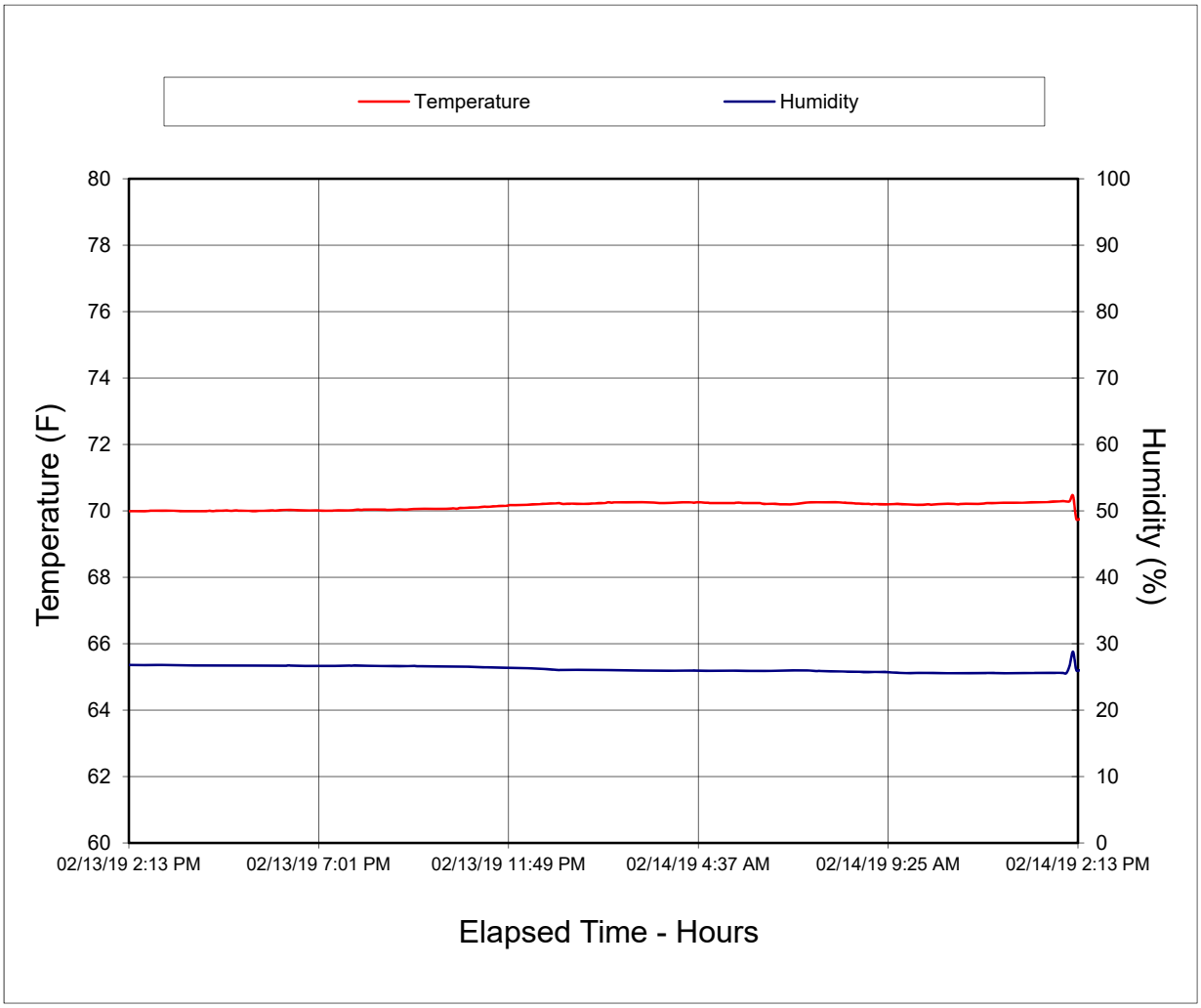
Test Phase	Spillage Location
0° To 90°	No Spillage Occurred
90° To 180°	No Spillage Occurred
180° To 270°	No Spillage Occurred
270° To 360°	No Spillage Occurred

DATA SHEET NO. 13

DUMMY/VEHICLE TEMPERATURE AND HUMIDITY STABILIZATION

Test Vehicle: 2019 BMW X3 sDrive30i 5-Door MPV NHTSA No. M20194101

Test Program: NCAP Side Pole Impact Test Test Date: 02/14/19



APPENDIX A
PHOTOGRAPHS

TABLE OF PHOTOGRAPHS

TABLE OF PHOTOGRAPHS … (CONTINUED)

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

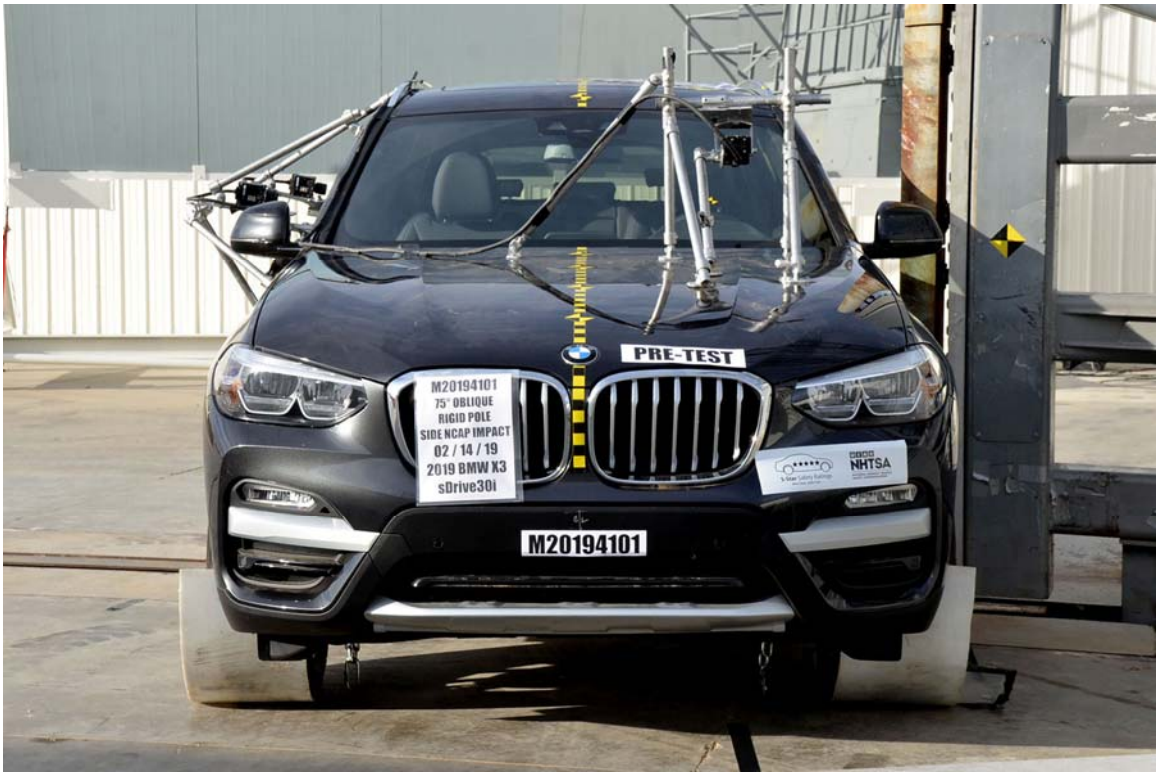


FIGURE 3. Pre-Test Frontal View of Test Vehicle

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

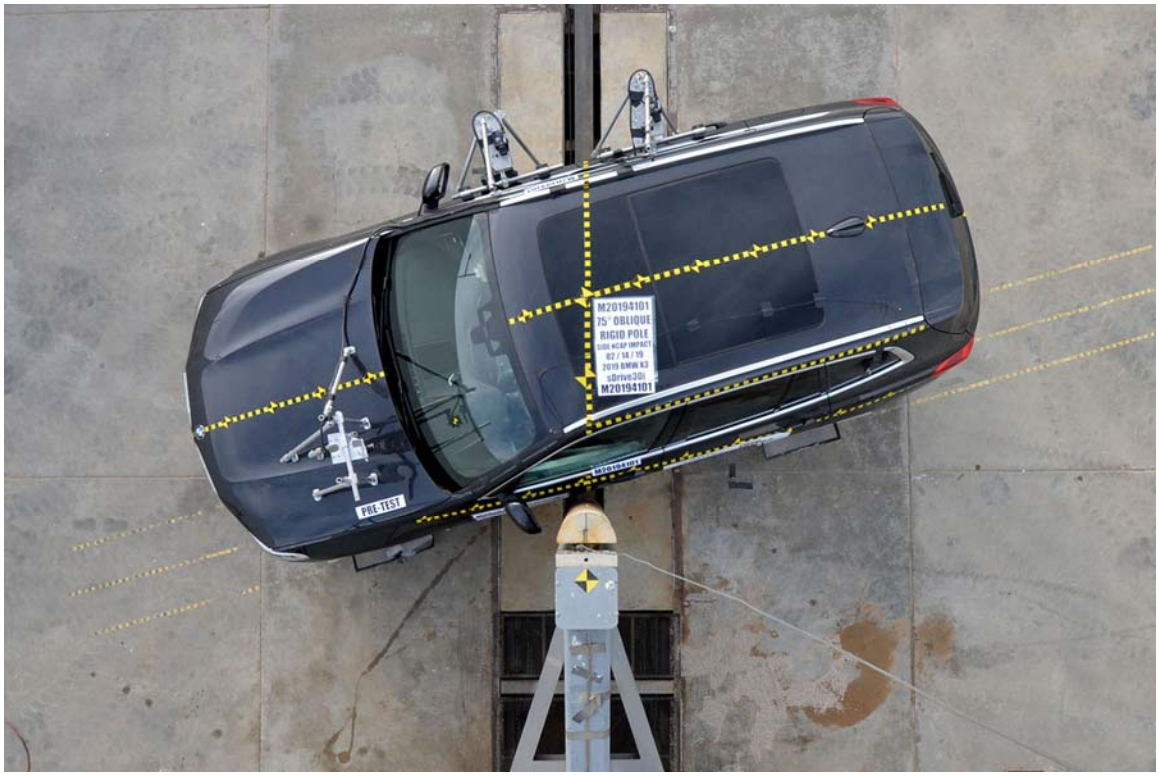


FIGURE 15. Pre-Test Overhead View of Test Area

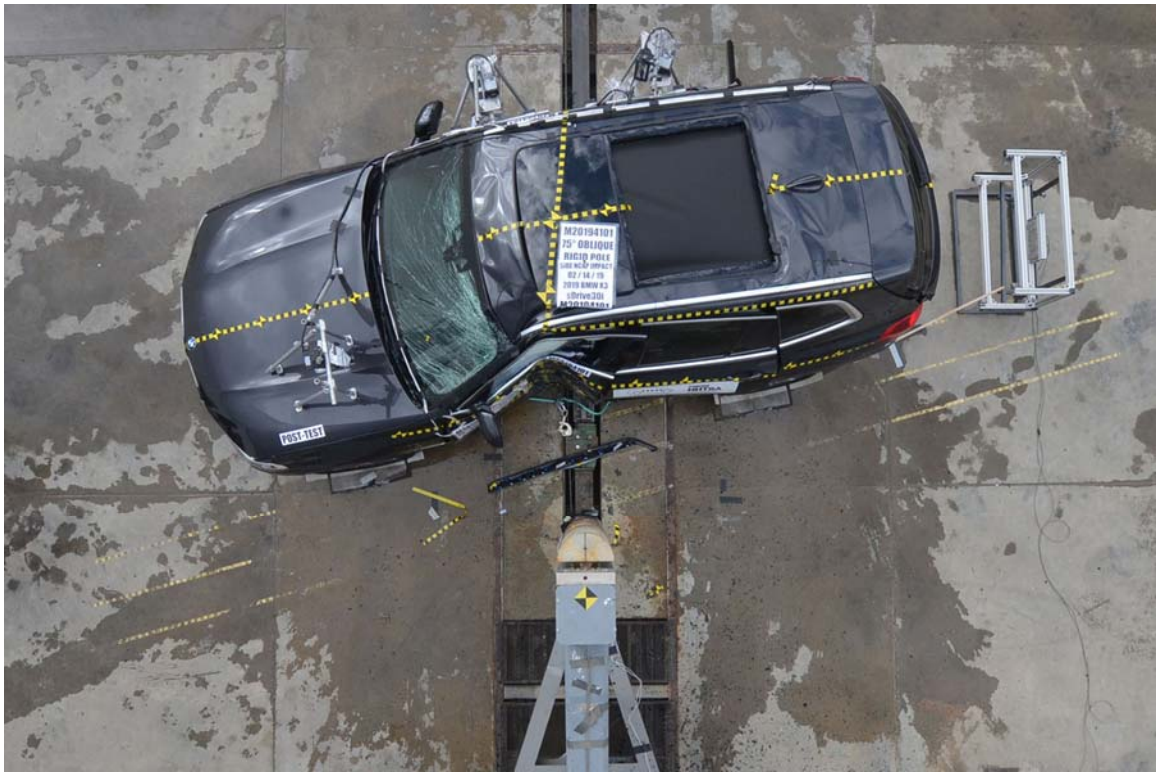


FIGURE 16. Post-Test Overhead View of Test Area

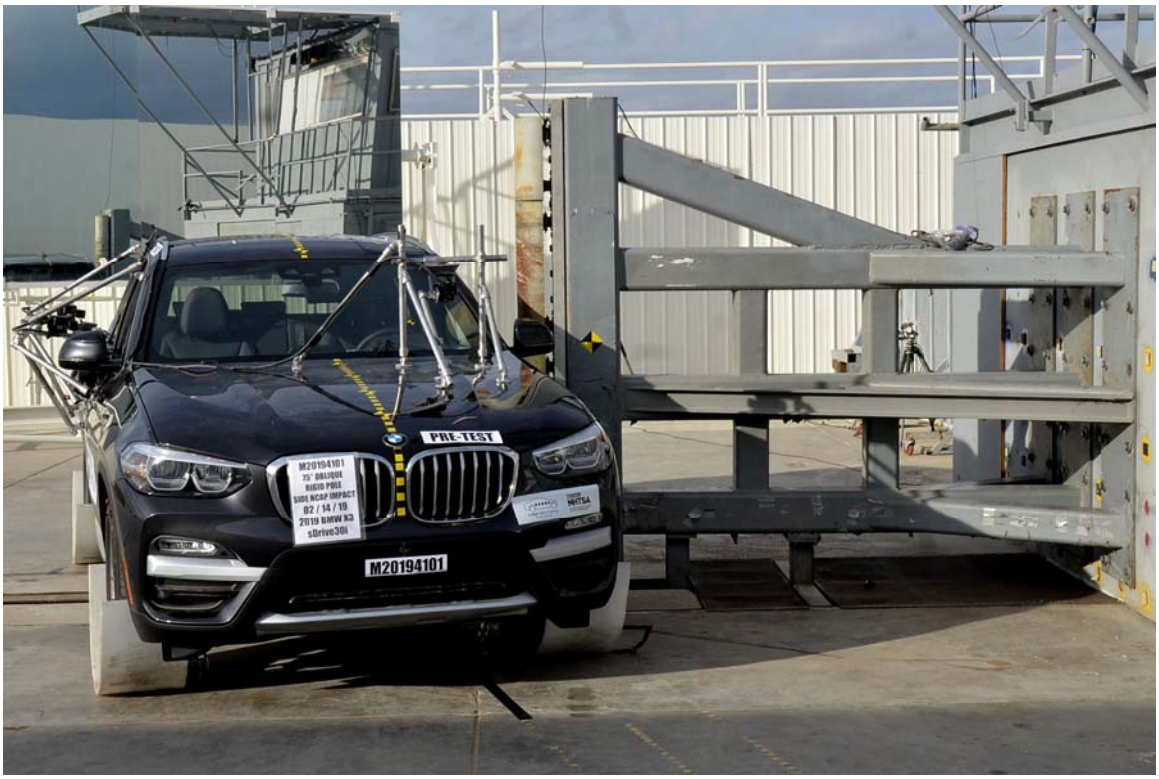


FIGURE 17. Pre-Test Left Side View of Pole Positioned Against Side of Vehicle

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

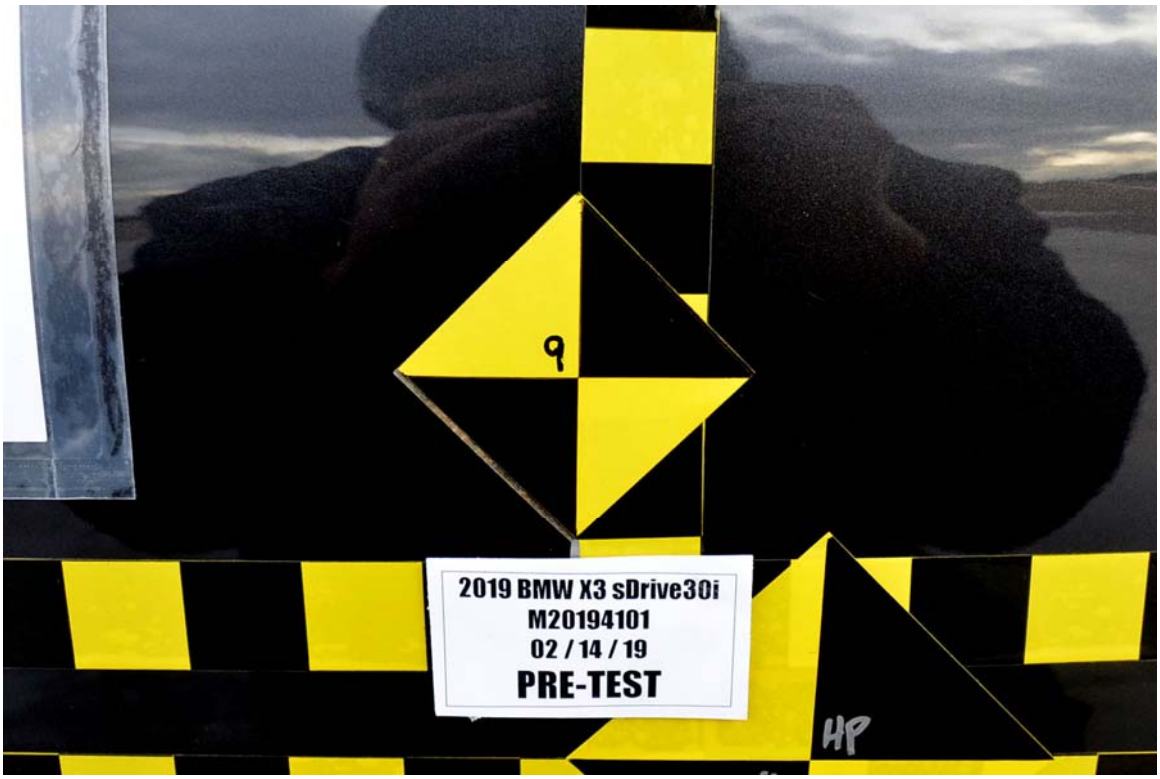


FIGURE 19. Pre-Test Close-Up View of Impact Point Target

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

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

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

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

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 Close-Up View of

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

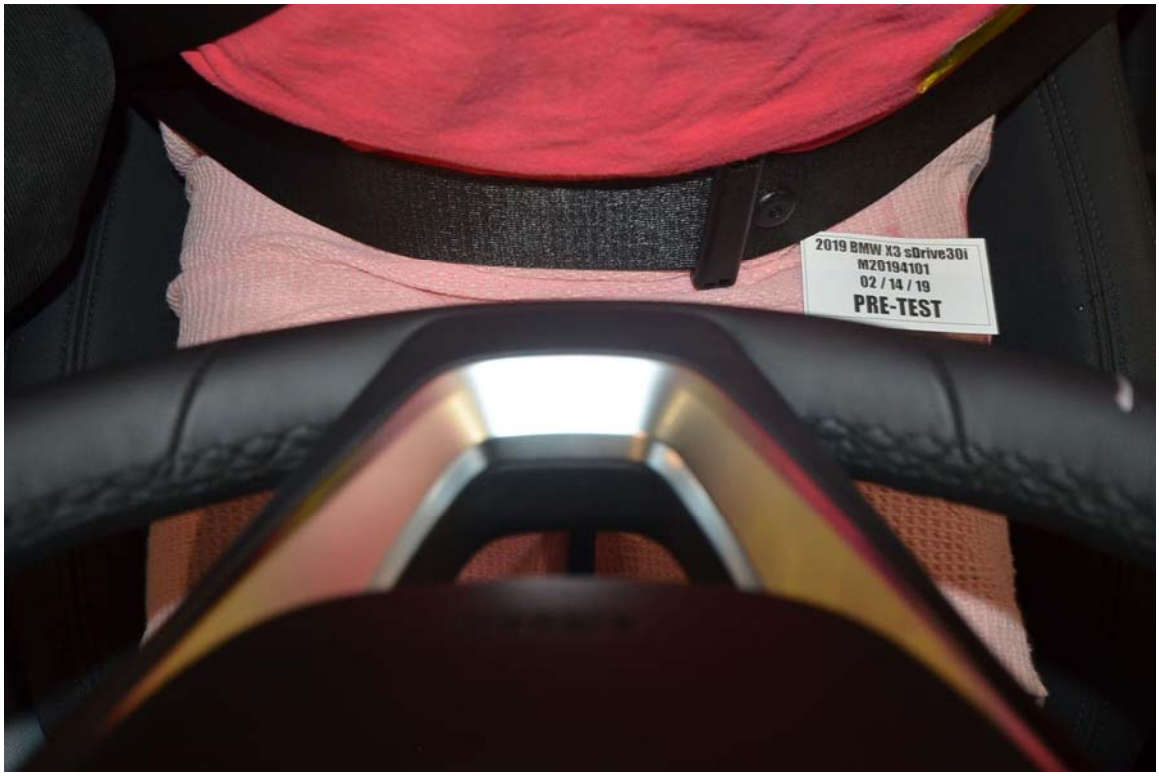


FIGURE 29. Pre-Test Overhead View of Dummy Thighs on Seat Pan

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

FIGURE 31. Pre-Test Left Side 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 Dummy and Door Clearance View

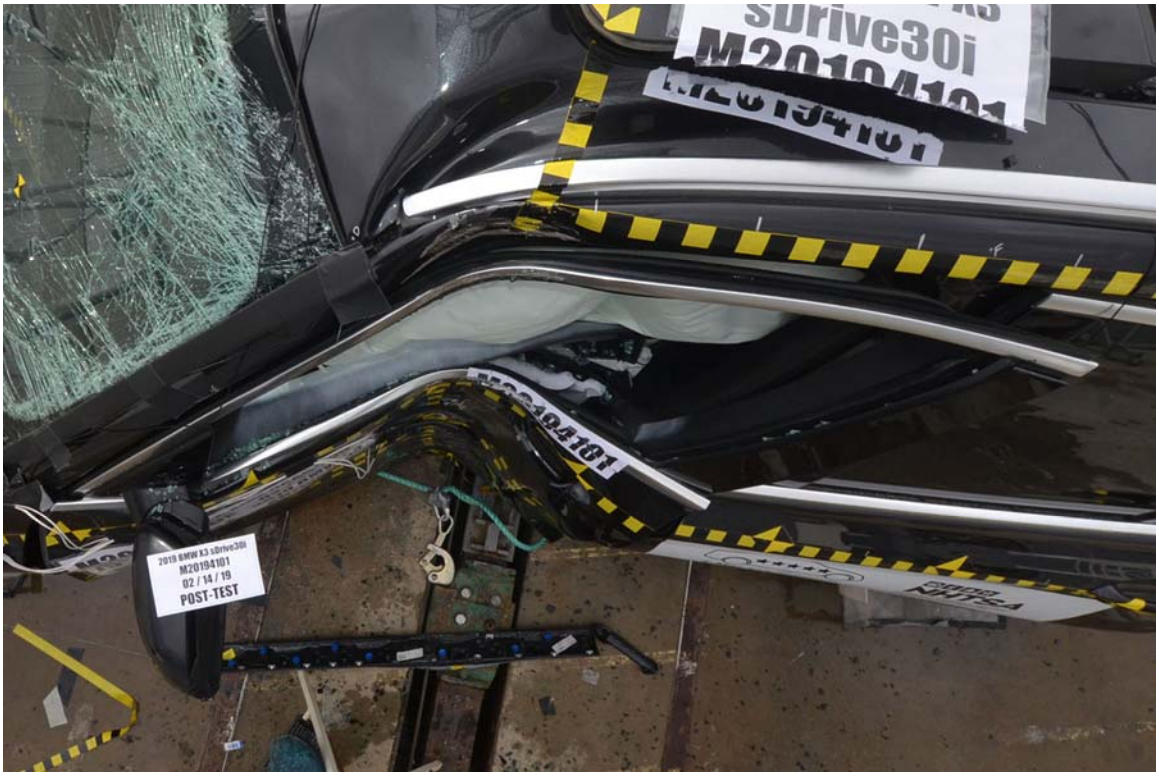


FIGURE 41. Post-Test Dummy and Door Clearance View

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

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

FIGURE 44. Pre-Test Inner Door Panel View

FIGURE 45. Post-Test Inner 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

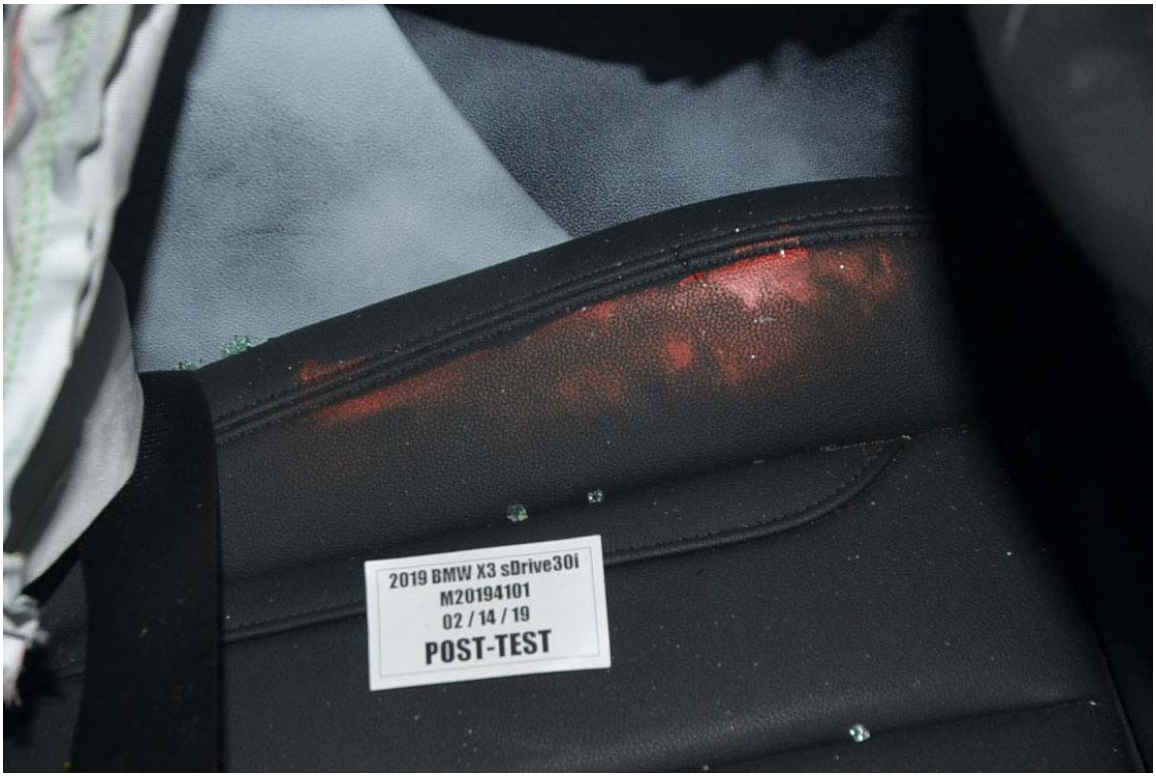


FIGURE 50. Post-Test Dummy Close-Up Pelvis Contact With Vehicle Interior View

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 or Label

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

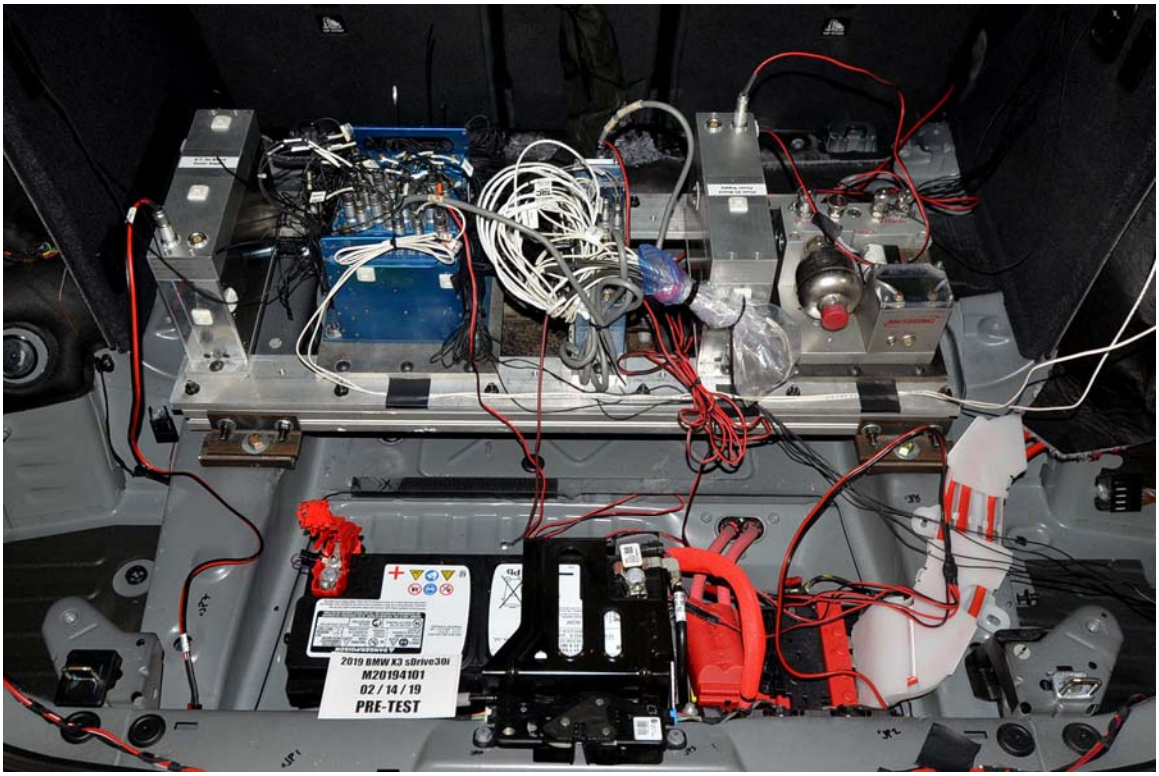


FIGURE 61. Pre-Test Ballast View

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

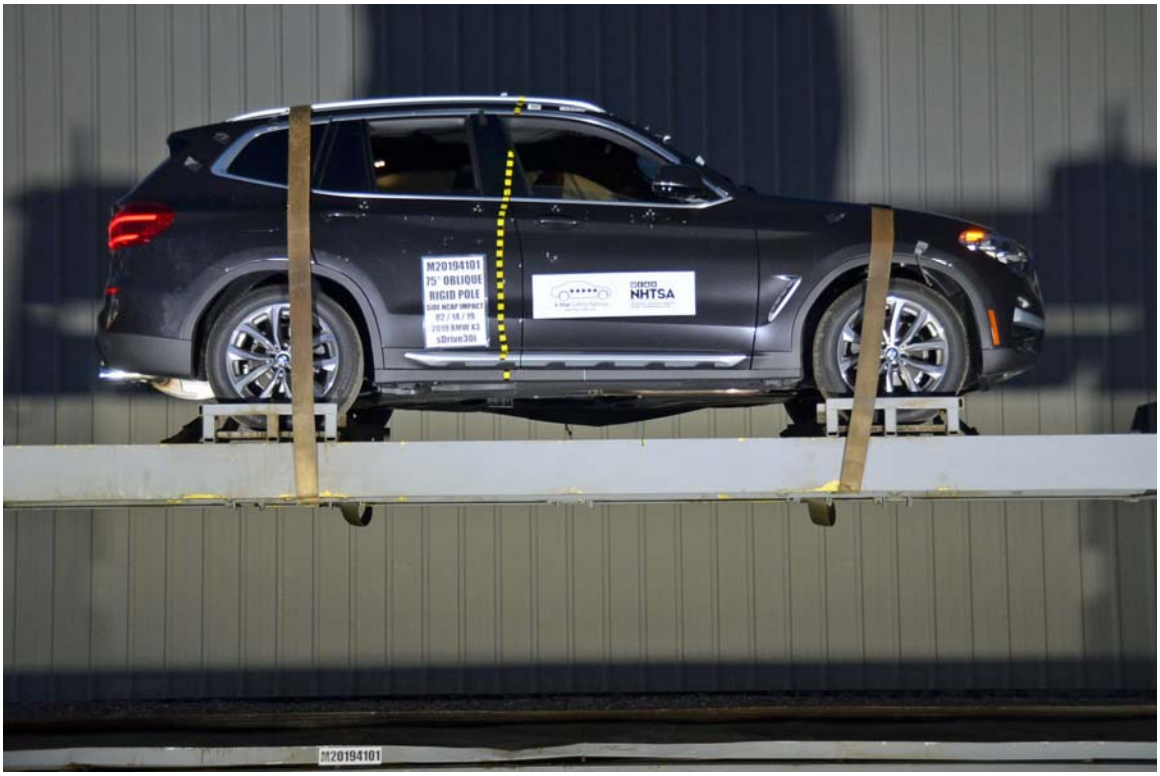


FIGURE 63. FMVSS No. 301 Static Rollover 0 Degrees

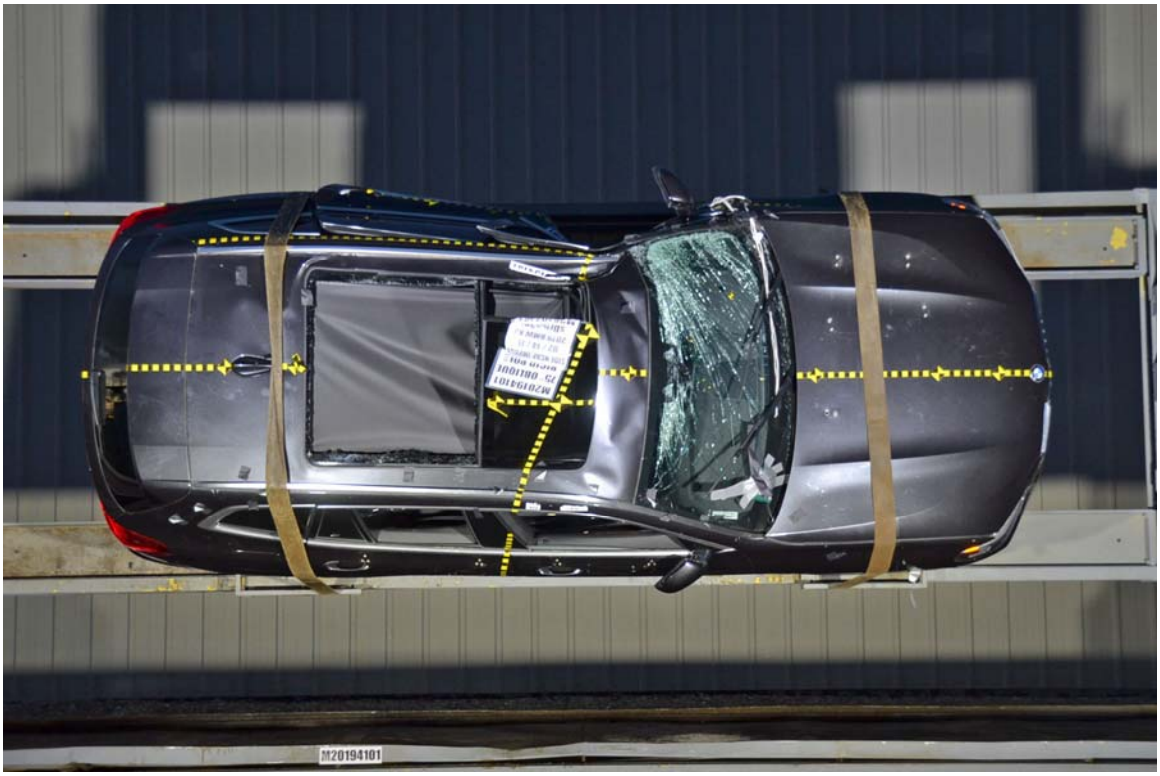


FIGURE 64. FMVSS No. 301 Static Rollover 90 Degrees

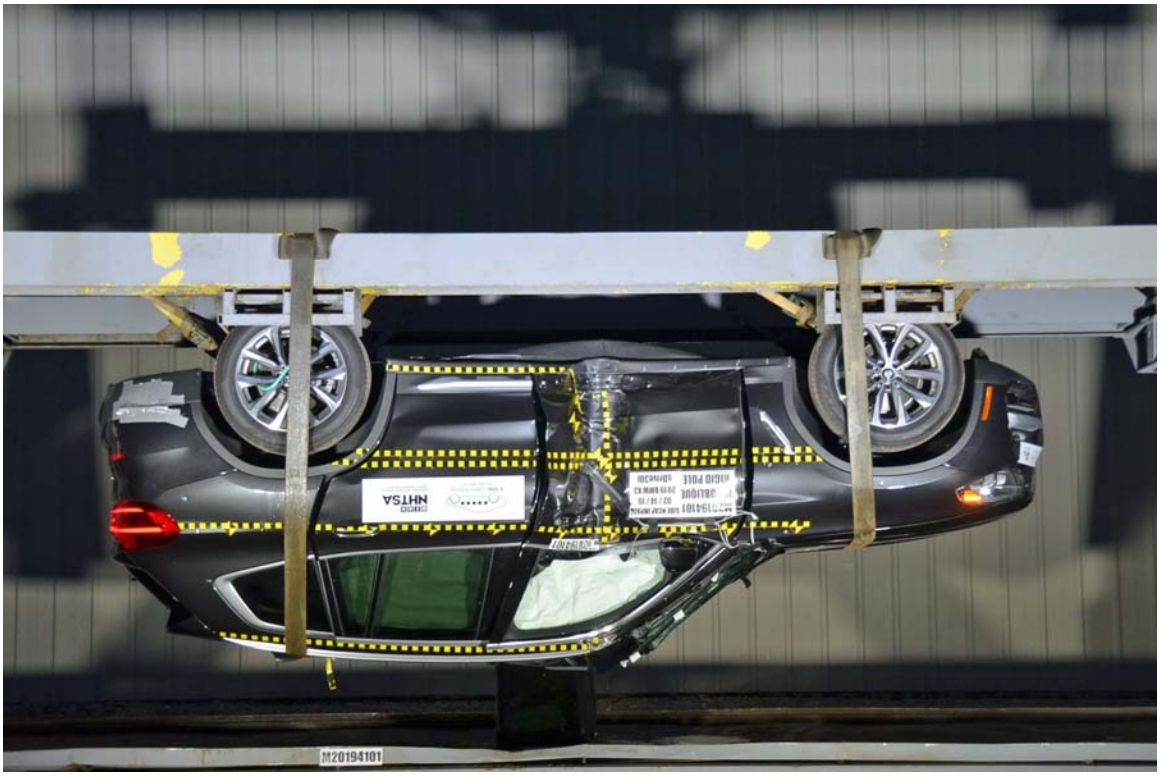


FIGURE 65. FMVSS No. 301 Static Rollover 180 Degrees

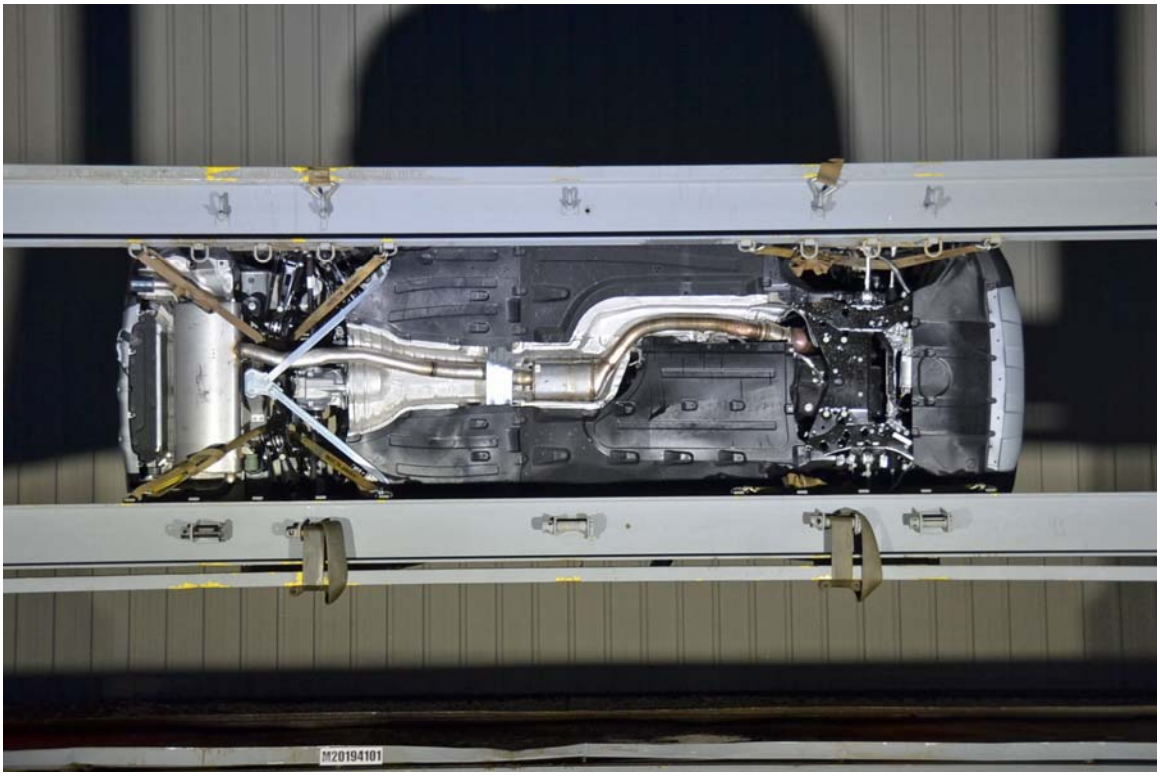


FIGURE 66. FMVSS No. 301 Static Rollover 270 Degrees

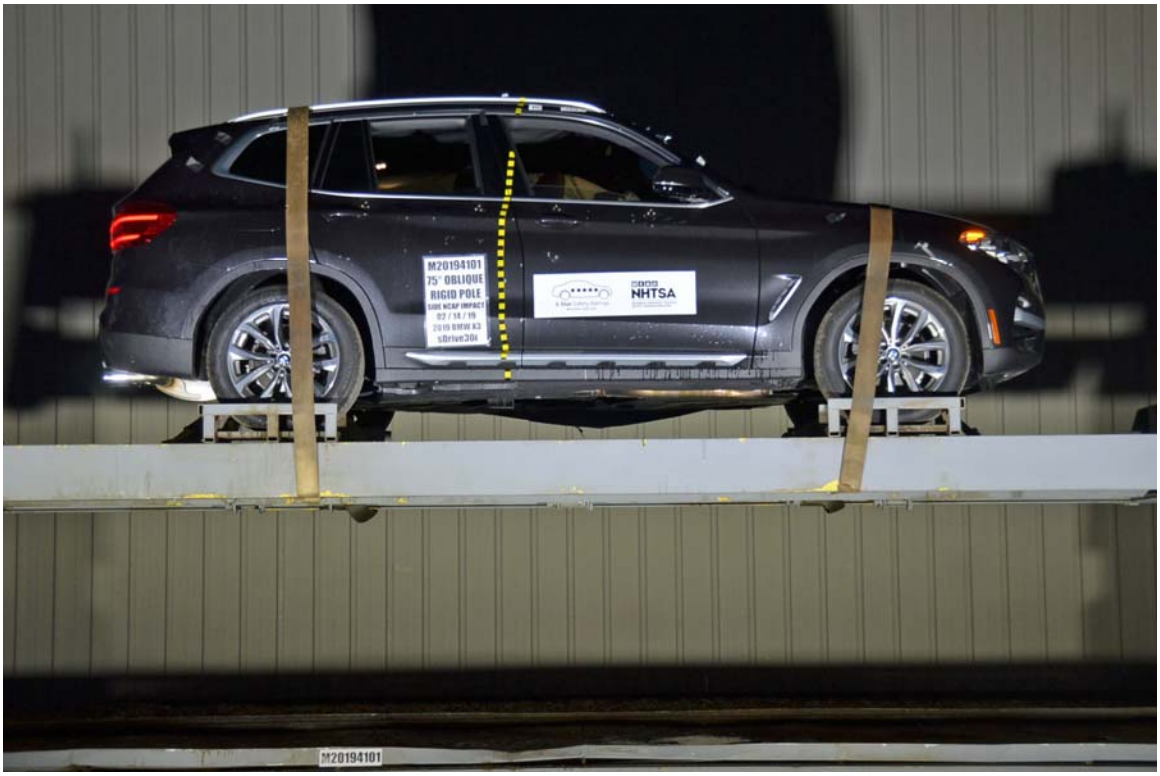


FIGURE 67. FMVSS No. 301 Static Rollover 360 Degrees

FIGURE 68. Impact Event

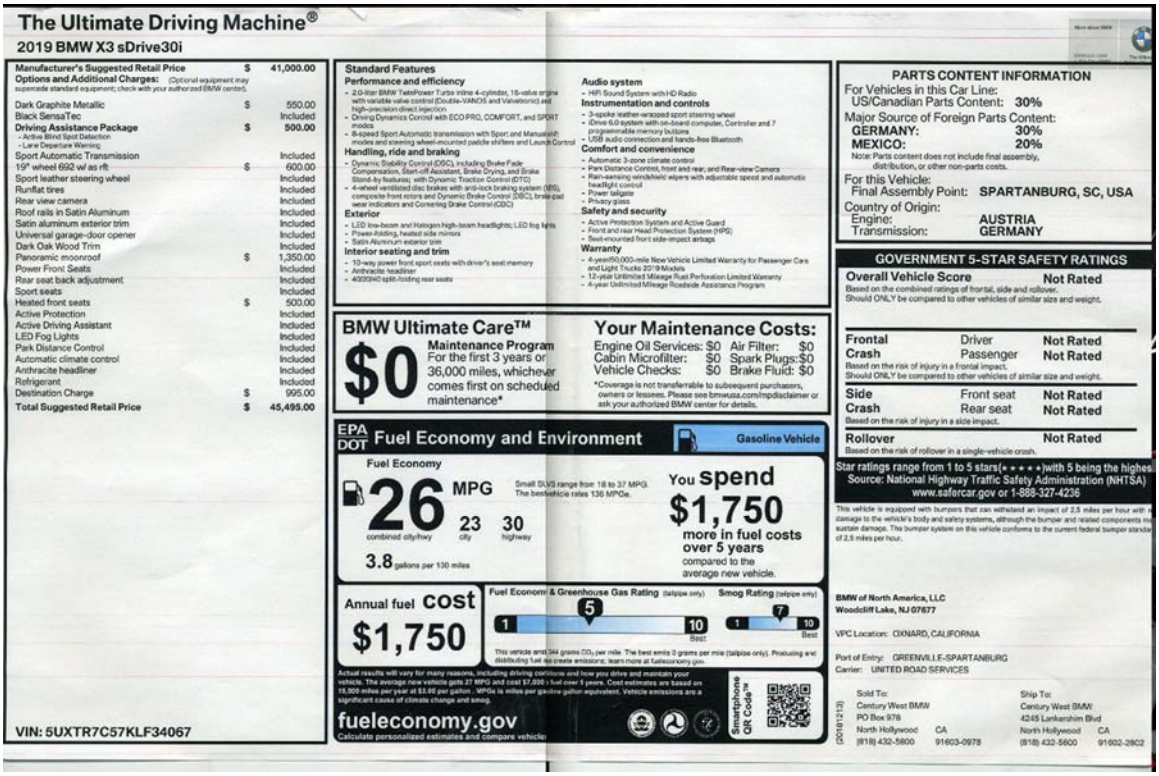


FIGURE 69. Monroney Label

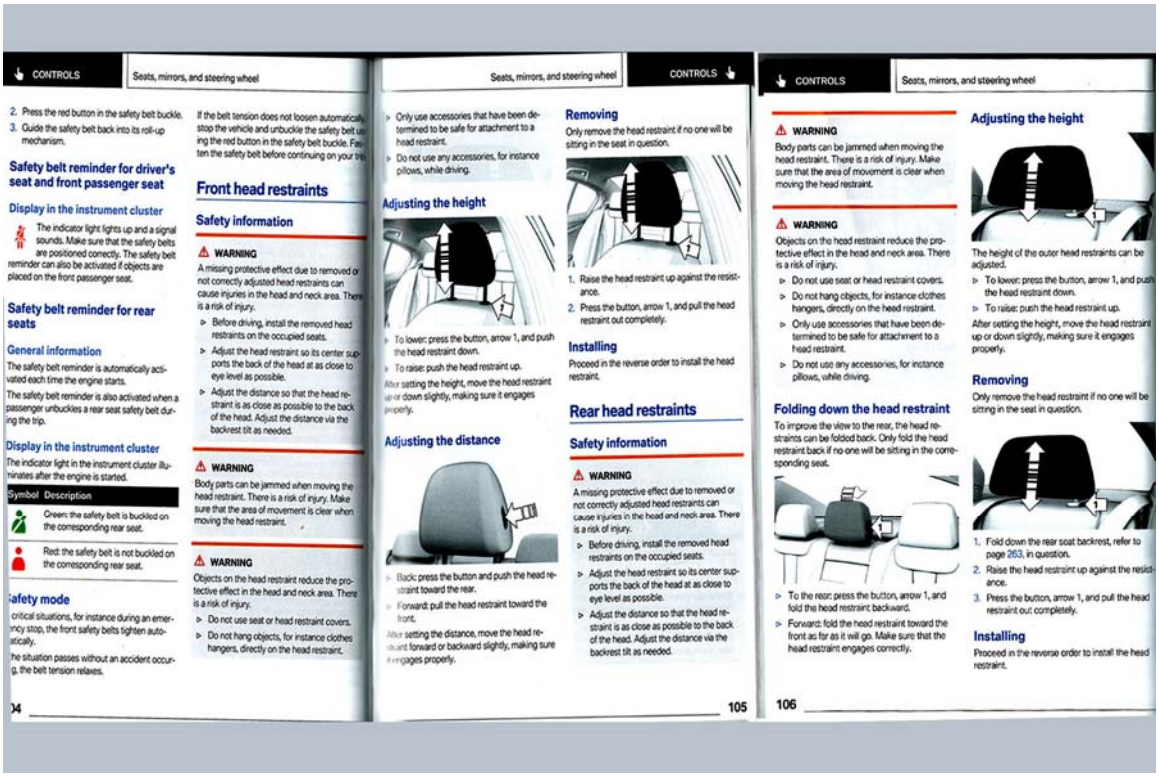


FIGURE 70. Head Restraint Use and Adjustment

Photograph Not Applicable

FIGURE 71. Information from Vehicle Owner's 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.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)

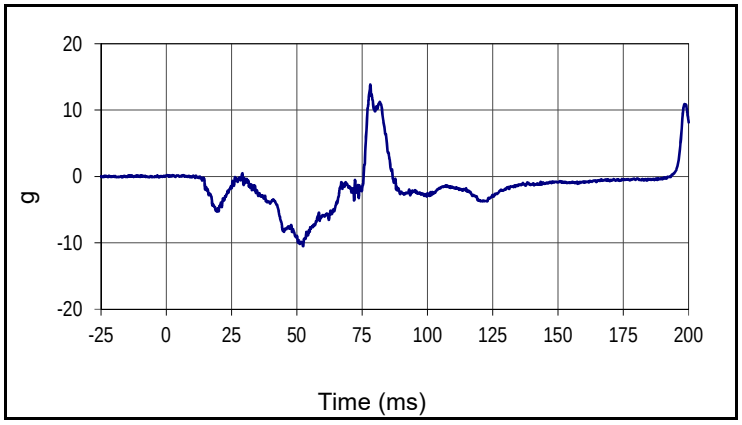
Load Cell Pole Barrier #5 Force (Y)

Load Cell Pole Barrier #6 Force (Y)

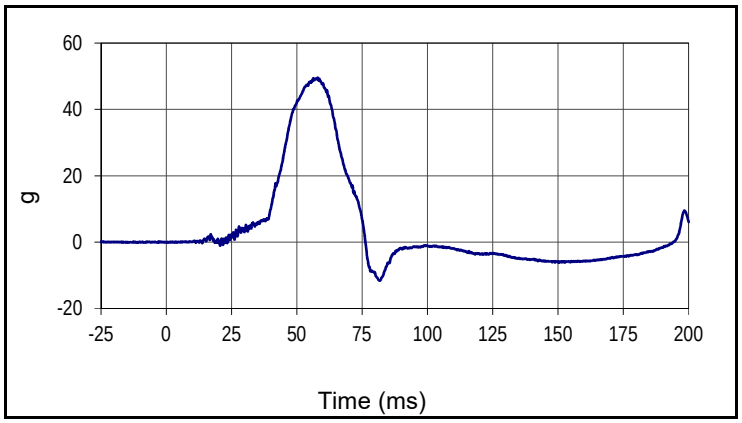
Load Cell Pole Barrier #7 Force (Y)

Load Cell Pole Barrier #8 Force (Y)

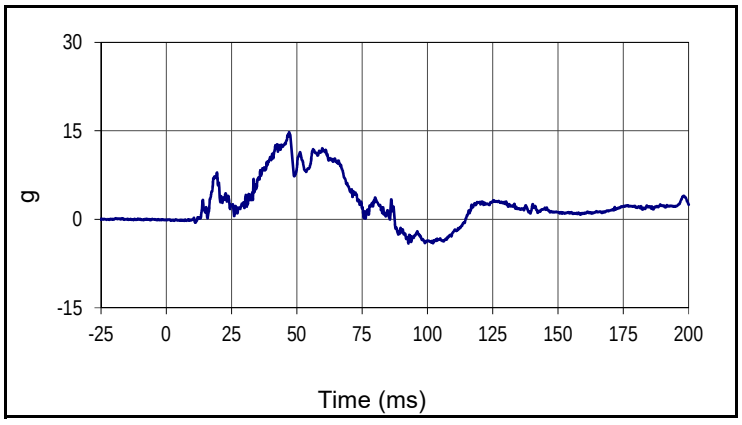
Test Vehicle:	2019 BMW X3 sDrive30i 5-Door MPV	NHTSA No.:	M20194101
Test Program:	NCAP Side Pole Impact Test	Test Date:	02/14/19



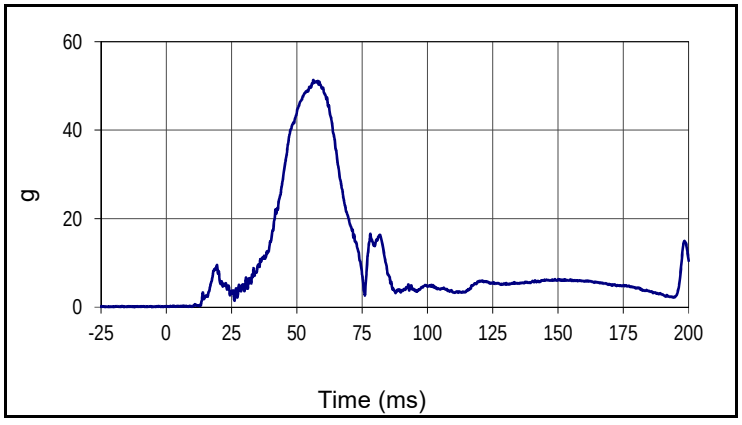
Curve Description			
Driver Head Acceleration X Primary			
Plot No.		SAE Class	Units
001		1000	g
Max	Time	Min	Time
13.9	78.1	-10.5	52.4



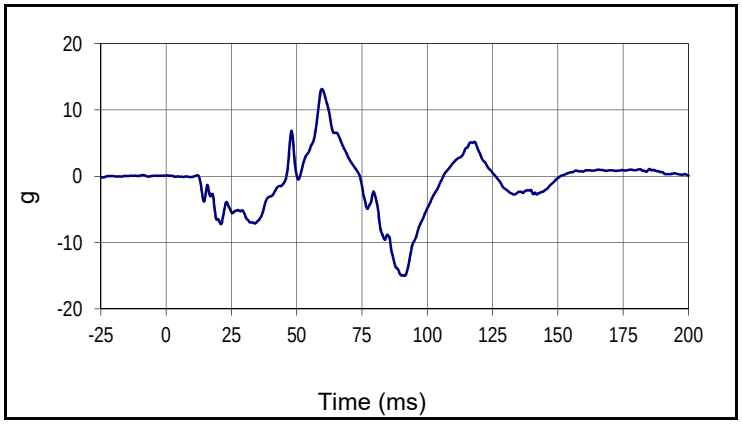
Curve Description			
Driver Head Acceleration Y Primary			
Plot No.		SAE Class	Units
002		1000	g
Max	Time	Min	Time
49.6	58.0	-11.6	81.8



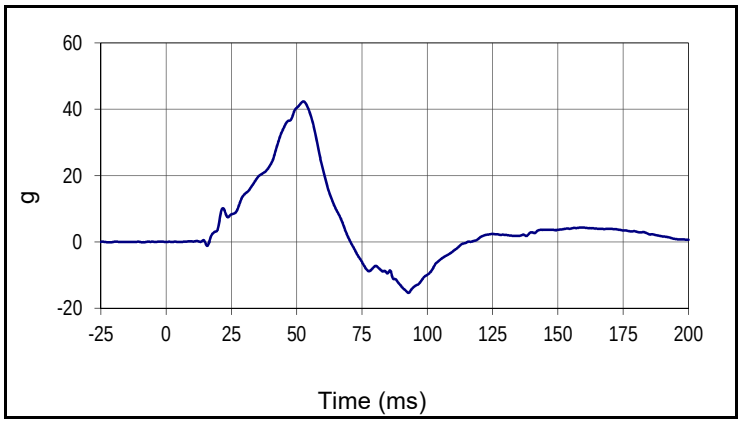
Curve Description			
Driver Head Acceleration Z Primary			
Plot No.		SAE Class	Units
003		1000	g
Max	Time	Min	Time
14.8	47.0	-4.1	92.7



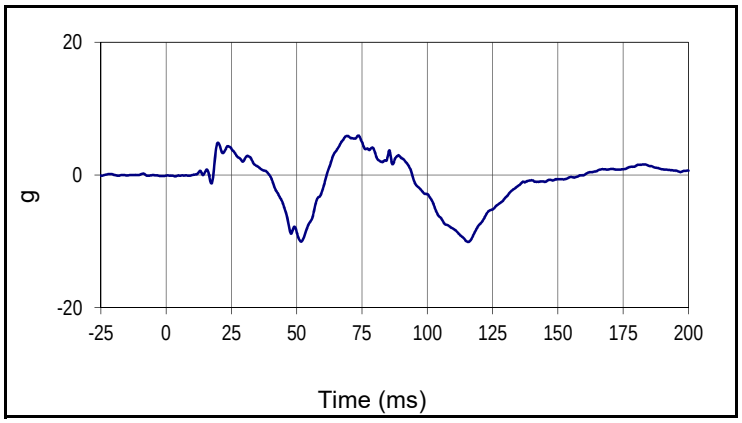
Curve Description			
Driver Head Acceleration Primary Resultant			
Plot No.		SAE Class	Units
004		1000	g
Max	Time	Min	Time
51.4	56.3	0.1	1.0



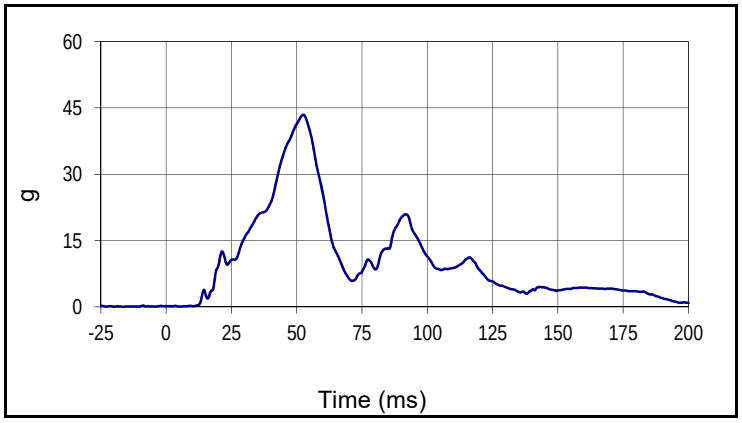
Curve Description			
Driver Lower Spine T12 Acceleration X			
Plot No.		SAE Class	Units
005		180	g
Max	Time	Min	Time
13.1	59.6	-15.0	91.3



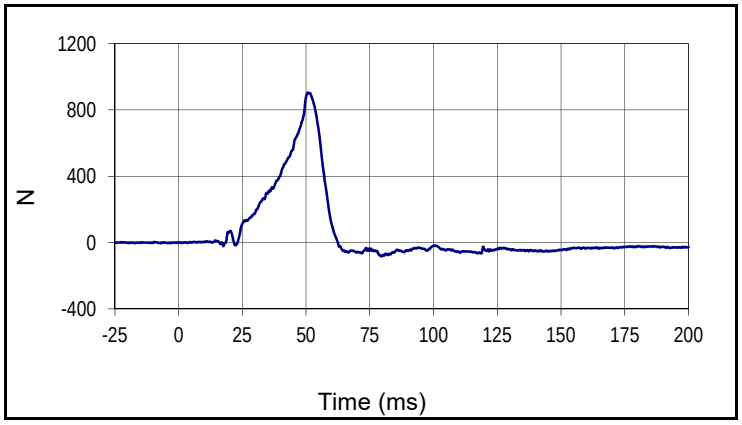
Curve Description			
Driver Lower Spine T12 Acceleration Y			
Plot No.		SAE Class	Units
006		180	g
Max	Time	Min	Time
42.3	52.6	-15.4	92.8



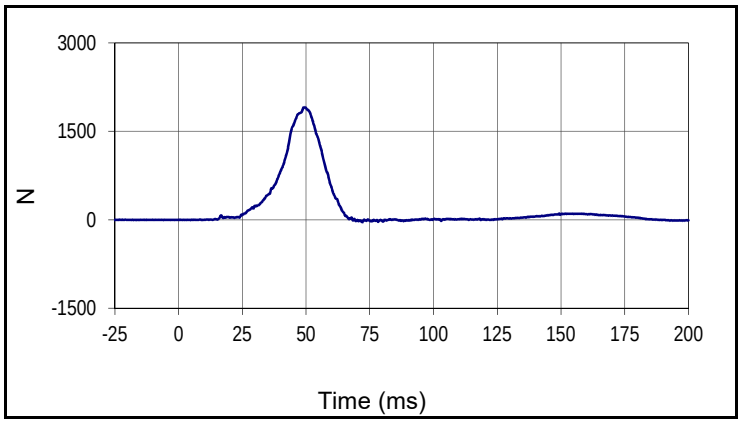
Curve Description			
Driver Lower Spine T12 Acceleration Z			
Plot No.		SAE Class	Units
007		180	g
Max	Time	Min	Time
5.9	73.6	-10.1	115.7



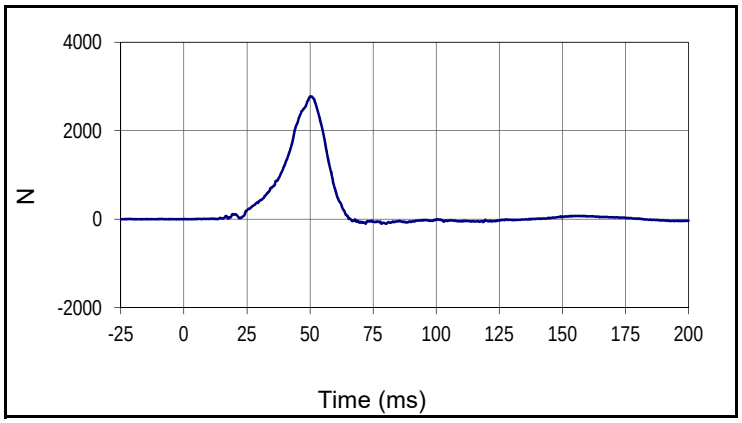
Curve Description			
Driver Lower Spine T12 Acceleration Resultant			
Plot No.		SAE Class	Units
008		180	g
Max	Time	Min	Time
43.5	52.5	0.1	4.6



Curve Description			
Driver Iliac Wing Force on Impact Side Y			
Plot No.		SAE Class	Units
009		600	N
Max	Time	Min	Time
905.2	50.7	-82.7	79.5



Curve Description			
Driver Acetabulum Force on Impact Side Y			
Plot No.		SAE Class	Units
010		600	N
Max	Time	Min	Time
1905.5	49.1	-40.3	72.1



Curve Description			
Driver Total Pelvic Force on Impact Side Y			
Plot No.		SAE Class	Units
011		600	N
Max	Time	Min	Time
2775.7	50.1	-104.1	72.0

APPENDIX C
ATD CONFIGURATION AND PERFORMANCE VERIFICATION DATA

APPENDIX C
PRE-TEST ATD CONFIGURATION AND PERFORMANCE VERIFICATION DATA
LEFT SIDE CONFIGURATION

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SID-IIs Small Side Impact ATD
External Measurements

ATD Serial No.: 299 Test Date: 2019-02-01

Tested Parameter	Units	Spec Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.7	Pass
Laboratory Relative Humidity	%	10	70	32	Pass
A - Sitting Height	mm	772	788	781	Pass
B - Shoulder Pivot Height	mm	437	453	450	Pass
C - Hpoint Height	mm	79	89	86	Pass
D - H Point From Seatback	mm	141	151	147	Pass
E - Shoulder Pivot From Backline	mm	97	107	103	Pass
F - Thigh Clearance	mm	119	135	124	Pass
G - Head Breadth	mm	140	148	145	Pass
H - Head Back From Backline	mm	40	46	42	Pass
I - Head Depth	mm	178	188	184	Pass
J - Head Circumference	mm	541	551	548	Pass
K - Buttock To Knee Length	mm	514	540	525	Pass
L - Popliteal Height	mm	343	369	362	Pass
K - Knee Pivot To Floor Height	mm	392	409	400	Pass
N - Buttock Popliteal Length	mm	416	442	439	Pass
O - Chest Depth W/O Jacket	mm	195	211	201	Pass
P - Foot Length	mm	216	232	223	Pass
Q - Hip Breadth (W/Pelvic Plugs)	mm	313	323	318	Pass
R - Arm Length	mm	249	259	258	Pass
S - Knee Joint To Seatback	mm	477	493	488	Pass
V - Shoulder Width	mm	341	357	352	Pass
W - Foot Width	mm	78	94	88	Pass
Y - Chest Circumference W/Jacket	mm	851	881	869	Pass
Z - Waist Circumference	mm	761	791	772	Pass
			Overall Test Results		Pass

Technician: J. Hernandez

Approved By: P. Puzzuto

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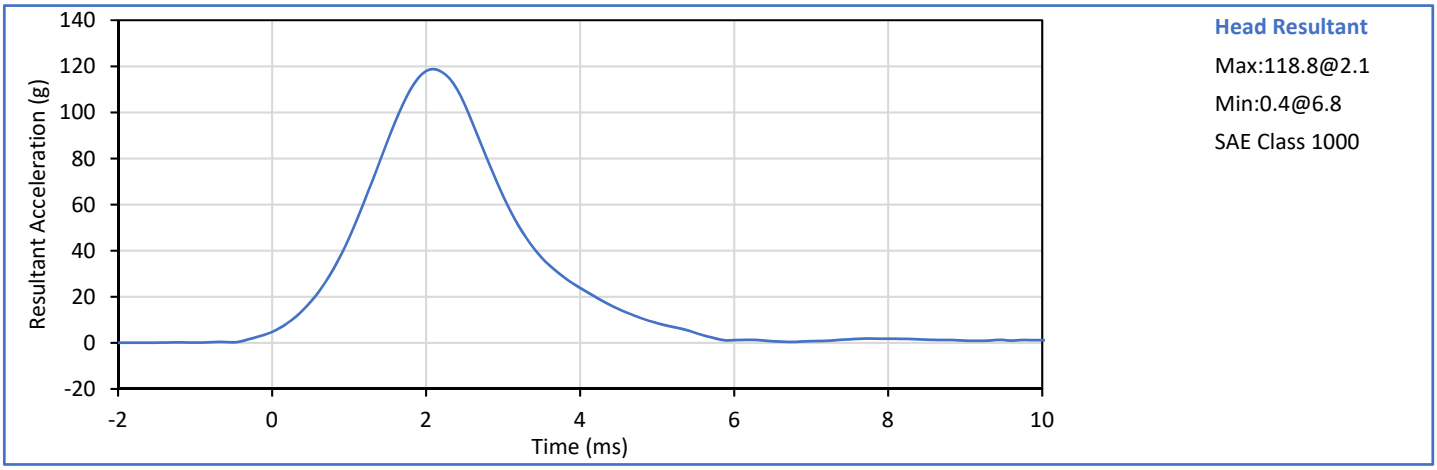
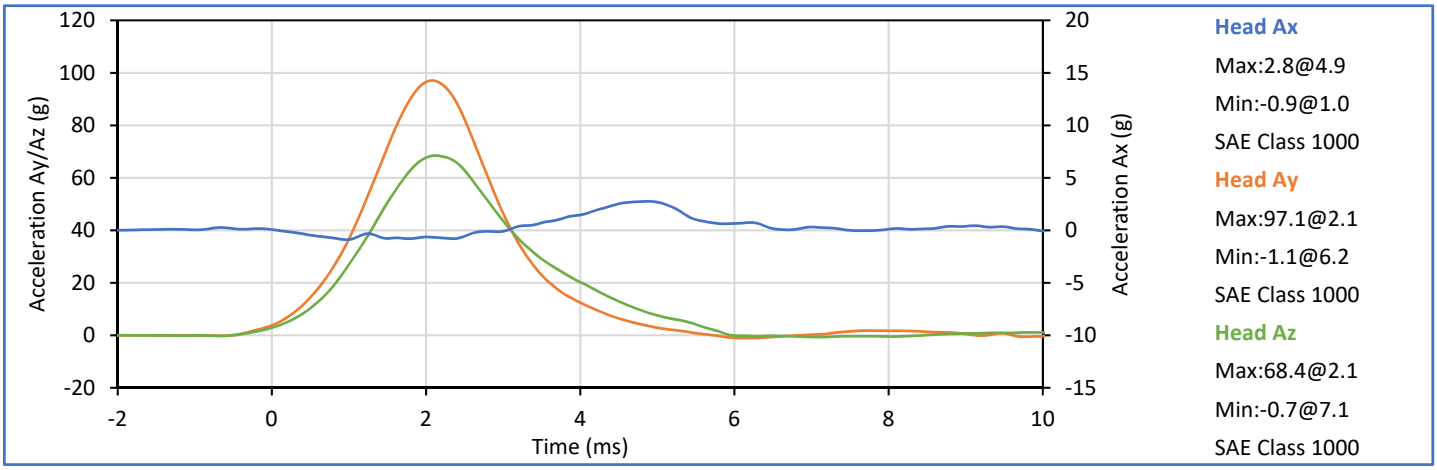
SID-IIs Small Side Impact ATD
Head Drop

ATD Serial No.: 299 Test Date: 2019-02-04

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	18.9	25.6	21.9	Pass
Laboratory Humidity	%	10	70	33	Pass
Peak Resultant Acceleration	g	115.0	137.0	118.8	Pass
Peak Head Ax	g	-15.0	15.0	-0.9	Pass
Oscillations After Main Pulse	%	0.0	15.0	1.6	Pass
Is Acceleration Unimodal?	Yes/No	Yes		Yes	Pass
			Overall Test Results		Pass





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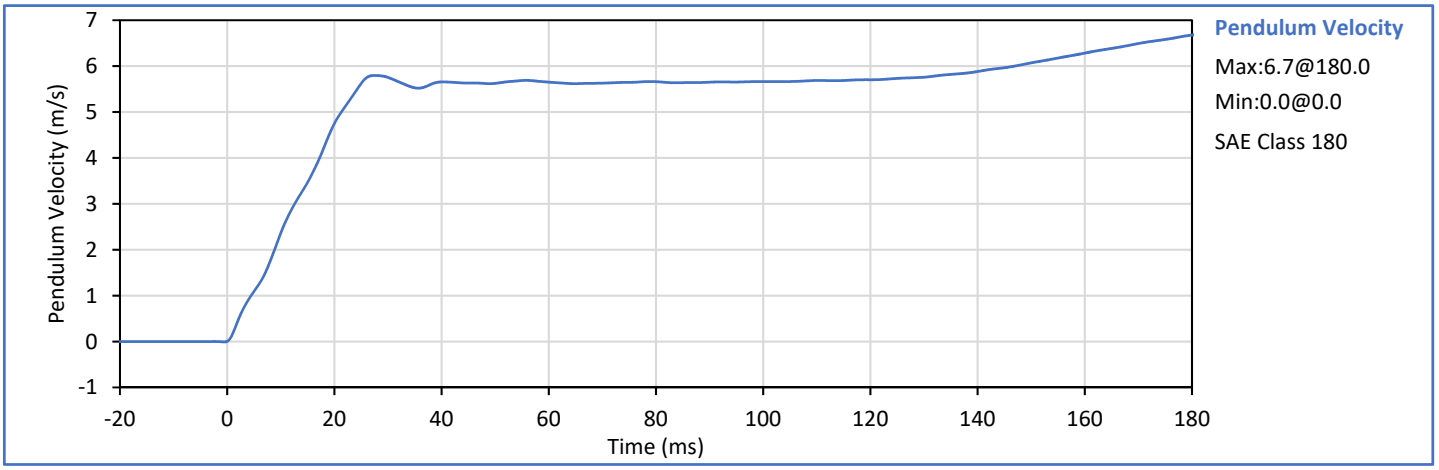
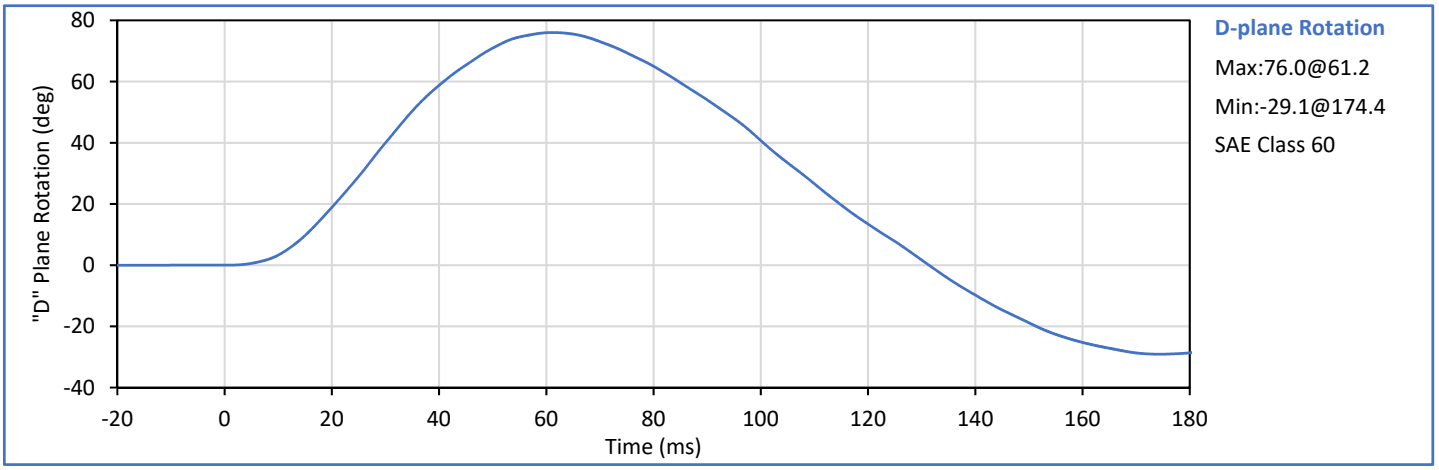
SID-IIs Small Side Impact ATD
Neck Flexion

ATD Serial No.: 299 Test Date: 2019-02-05

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.7	Pass
Laboratory Humidity	%	10	70	29	Pass
Pendulum Velocity	m/s	5.51	5.63	5.52	Pass
Pendulum Decel at 10 ms	m/s	2.20	2.80	2.36	Pass
Pendulum Decel at 15 ms	m/s	3.30	4.10	3.47	Pass
Pendulum Decel at 20 ms	m/s	4.40	5.40	4.75	Pass
Pendulum Decel at 25 ms	m/s	5.40	6.10	5.62	Pass
Pendulum Decel from 25-100 ms	m/s	5.50	6.20	5.80	Pass
Peak "D" Plane Rotation	deg	71.0	81.0	76.0	Pass
Time of Peak "D" Plane Rotation	ms	50.0	70.0	61.2	Pass
Peak Occ. Condyle Moment	Nm	-44.0	-36.0	-42.5	Pass
Time of Moment Decay to 0 Nm	ms	102.0	126.0	111.7	Pass
			Overall Test Results		Pass





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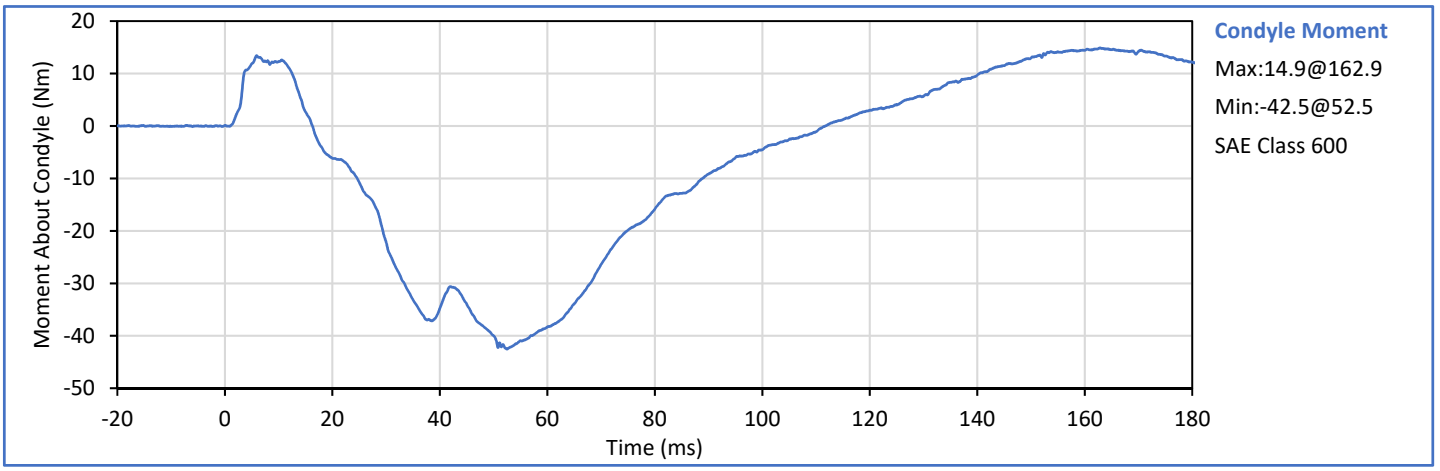
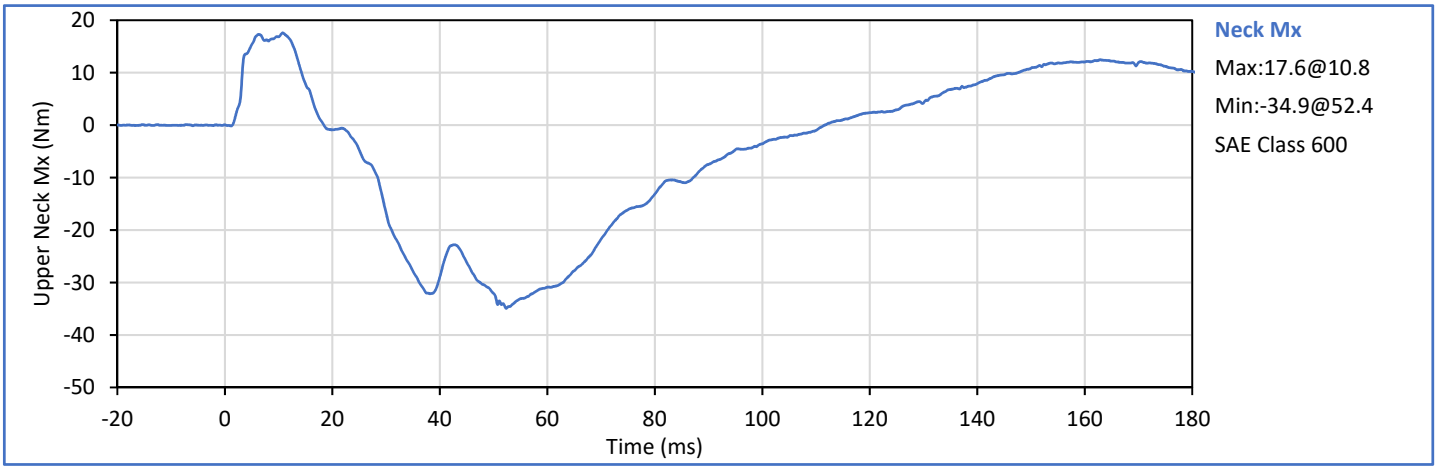
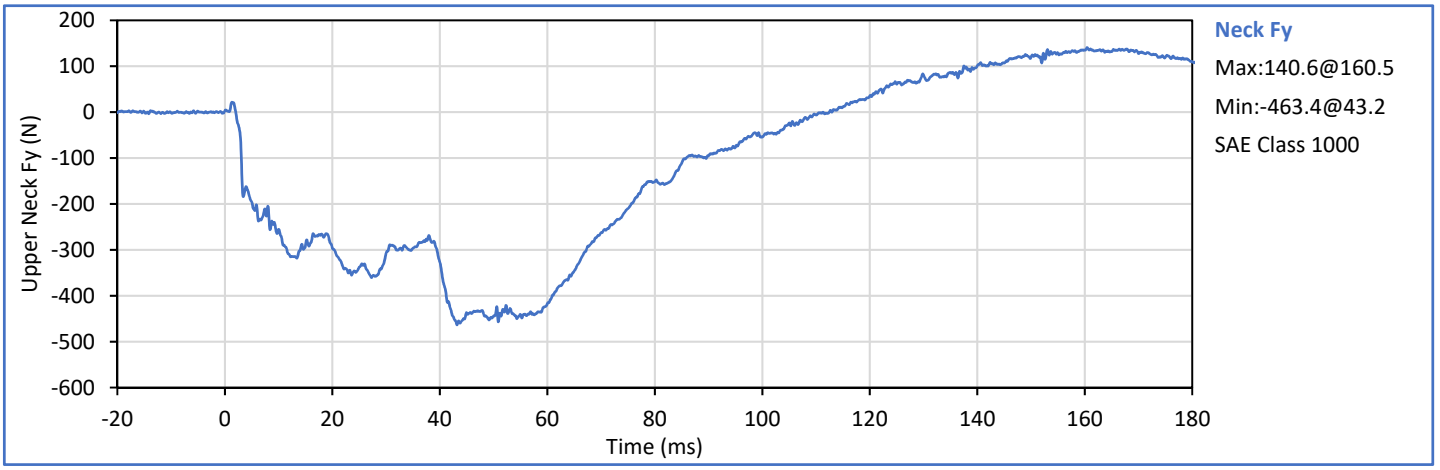
SID-IIs Small Side Impact ATD
Neck Flexion

ATD Serial No.: 299 Test Date: 2019-02-05







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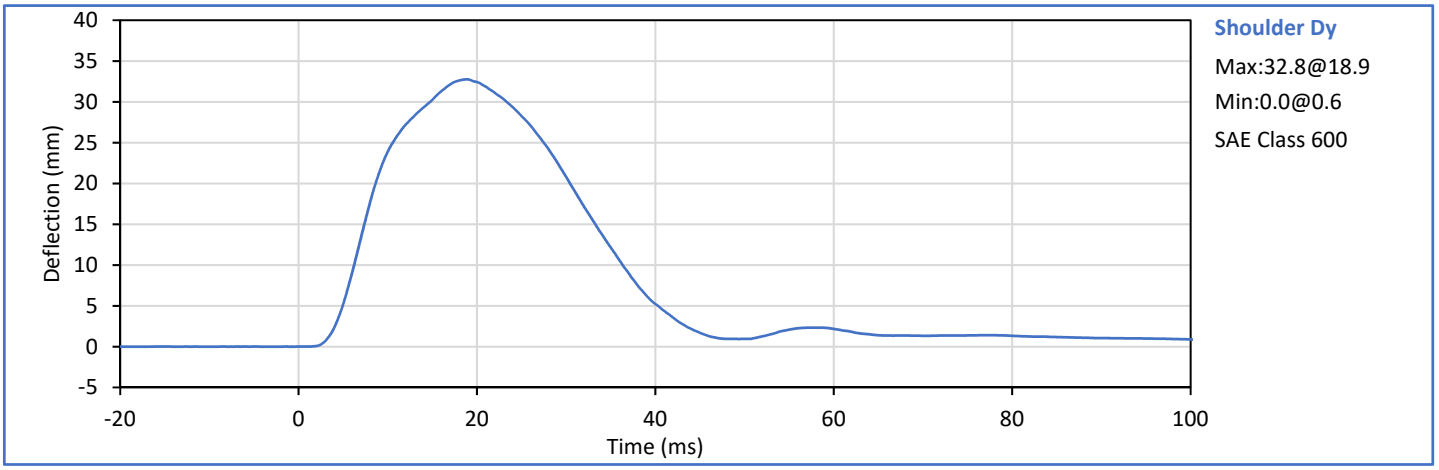
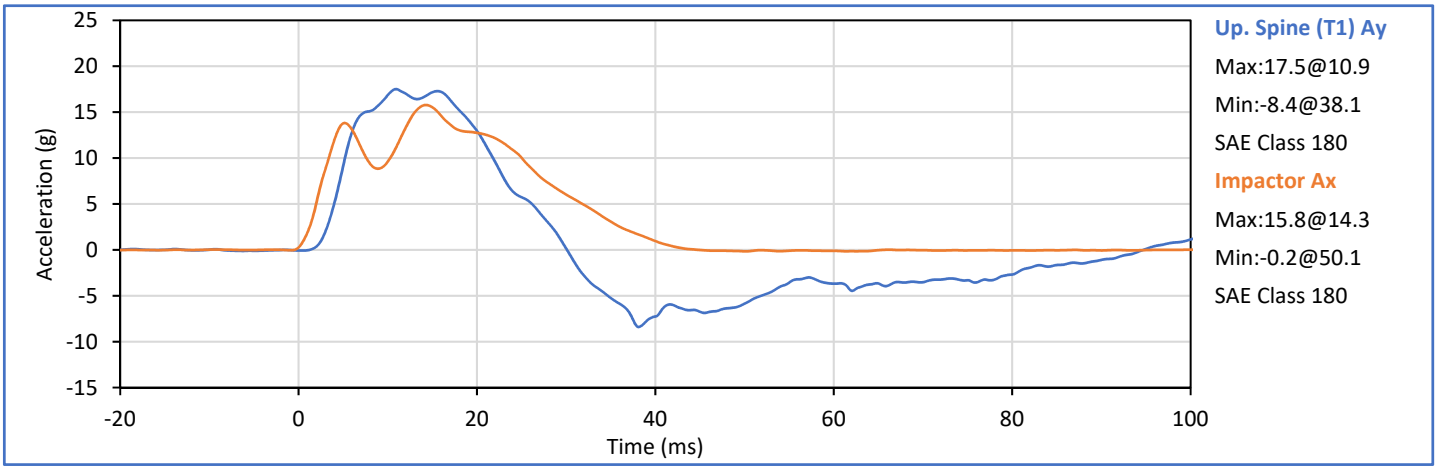
SID-IIs Small Side Impact ATD
Shoulder Impact Test

ATD Serial No.: 299 Test Date: 2019-02-01

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.1	Pass
Laboratory Humidity	%	10	70	39	Pass
Impactor Velocity	m/s	4.20	4.40	4.29	Pass
Peak Shoulder Dy	mm	28.0	37.0	32.8	Pass
Peak Upper Spine (T1) Ay	g	17.0	22.0	17.5	Pass
Peak Impactor Ax	g	13.0	18.0	15.8	Pass
			Overall Test Results		Pass





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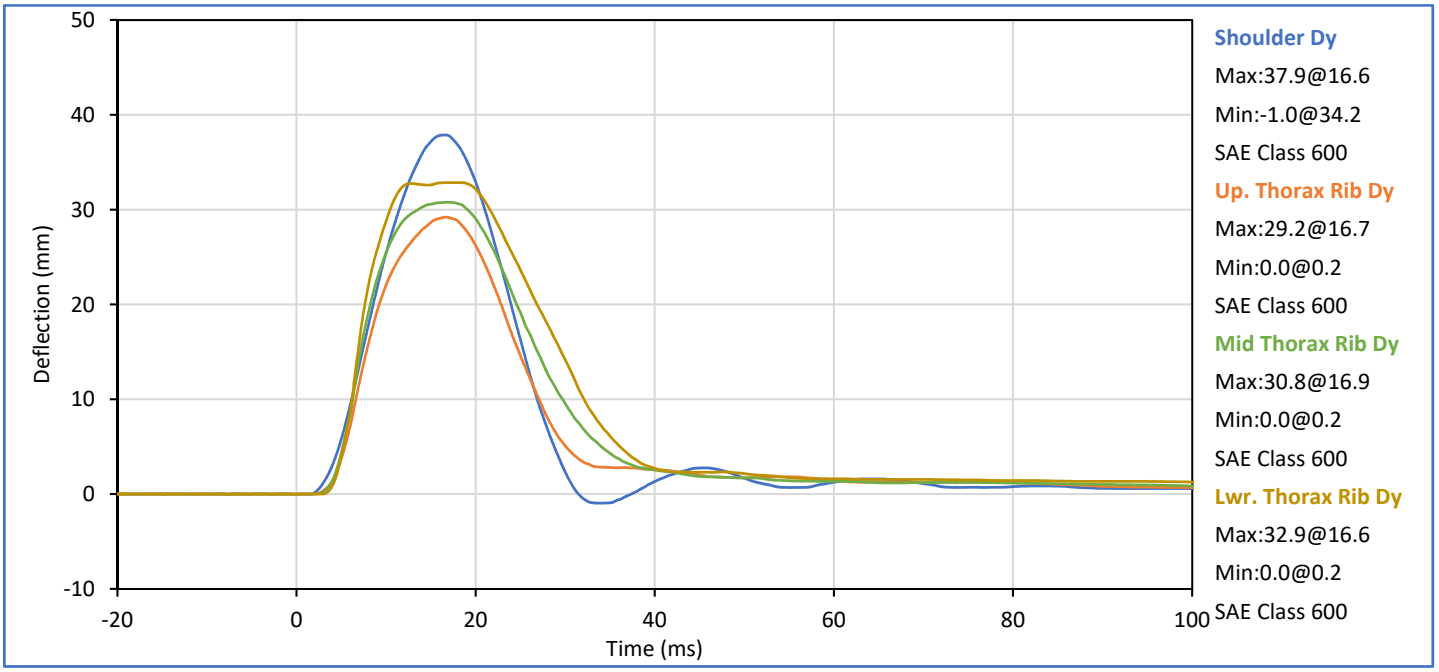
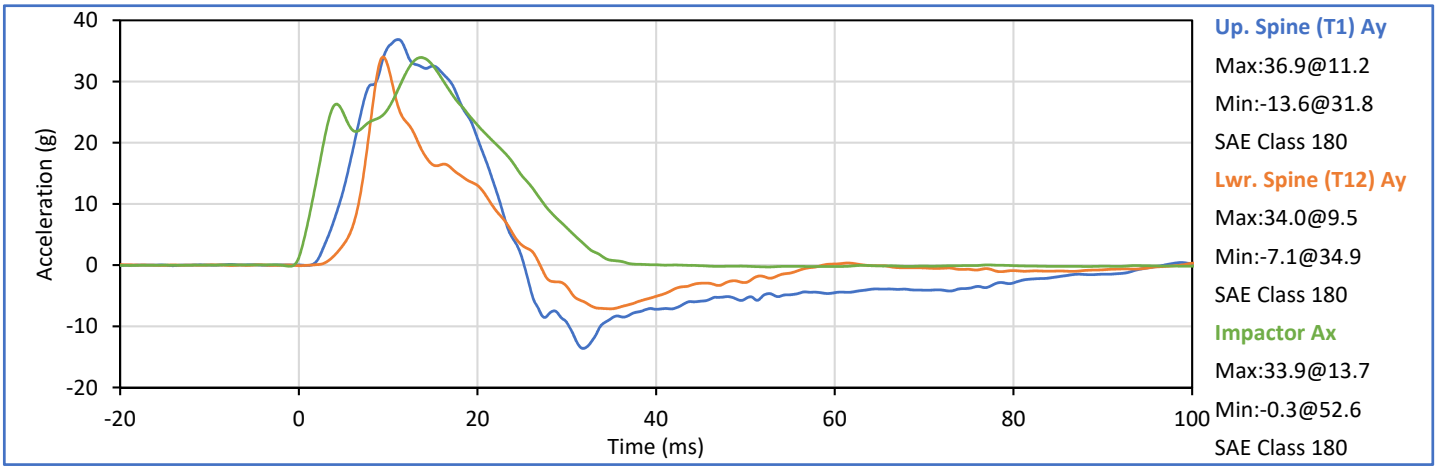
SID-IIs Small Side Impact ATD
Thorax (With Arm)

ATD Serial No.: 299 Test Date: 2019-02-02

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.1	Pass
Laboratory Humidity	%	10	70	35	Pass
Impactor Velocity	m/s	6.60	6.80	6.62	Pass
Peak Shoulder Dy	mm	31.0	40.0	37.9	Pass
Peak Upper Rib Dy	mm	25.0	32.0	29.2	Pass
Peak Middle Rib Dy	mm	30.0	36.0	30.8	Pass
Peak Lower Rib Dy	mm	32.0	38.0	32.9	Pass
Peak Upper Spine (T1) Ay	g	34.0	43.0	36.9	Pass
Peak Lower Spine (T12) Ay	g	29.0	37.0	34.0	Pass
Peak Impactor Ax	g	30.0	36.0	33.9	Pass
			Overall Test Results		Pass





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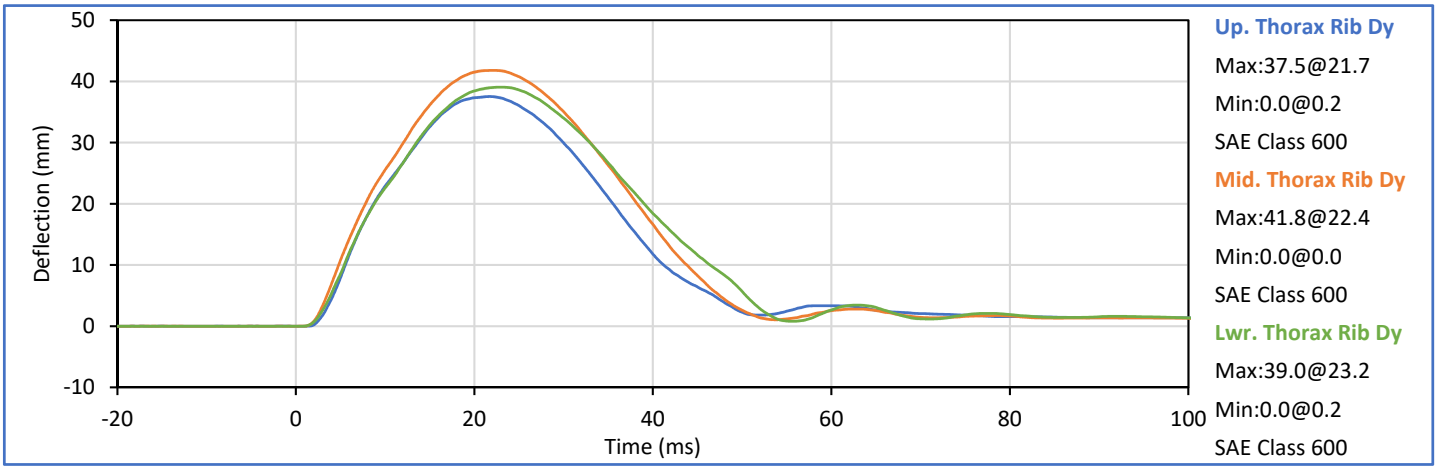
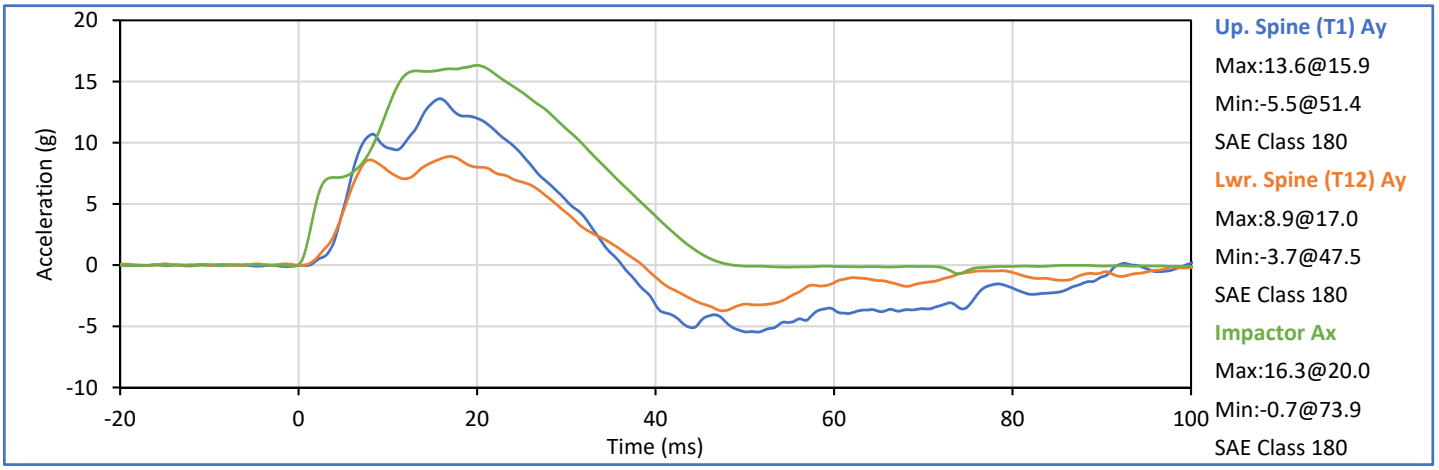
SID-IIs Small Side Impact ATD
Thorax (No Arm)

ATD Serial No.: 299 Test Date: 2019-02-01

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.1	Pass
Laboratory Humidity	%	10	70	35	Pass
Impactor Velocity	m/s	4.20	4.40	4.27	Pass
Peak Upper Rib Dy	mm	32.0	40.0	37.5	Pass
Peak Middle Rib Dy	mm	39.0	45.0	41.8	Pass
Peak Lower Rib Dy	mm	35.0	43.0	39.0	Pass
Peak Upper Spine (T1) Ay	g	13.0	17.0	13.6	Pass
Peak Lower Spine (T12) Ay	g	7.0	11.0	8.9	Pass
Peak Impactor Ax	g	14.0	18.0	16.3	Pass
			Overall Test Results		Pass





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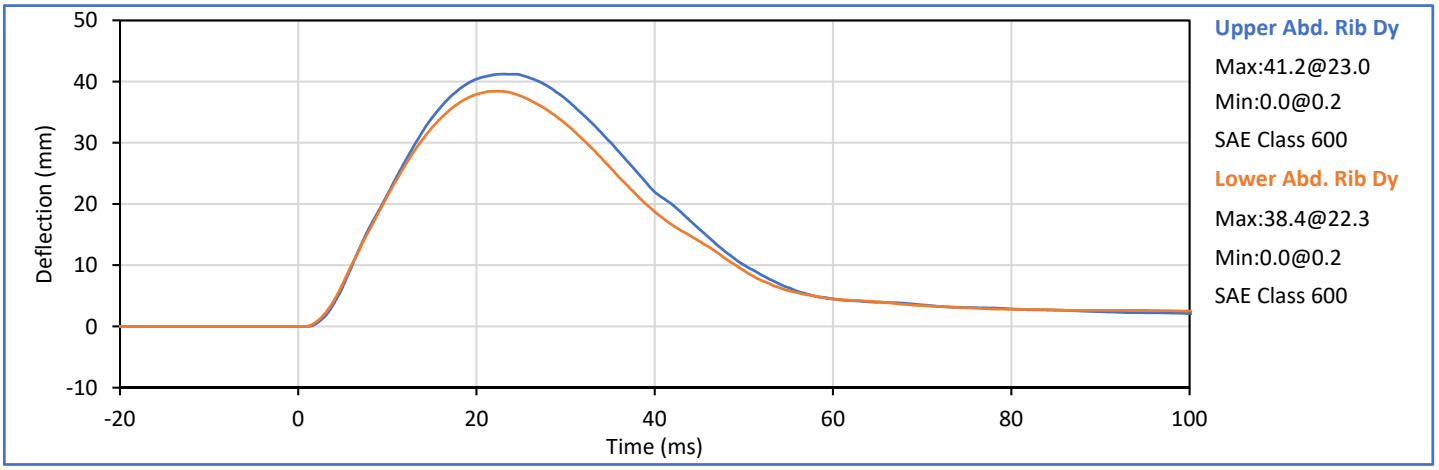
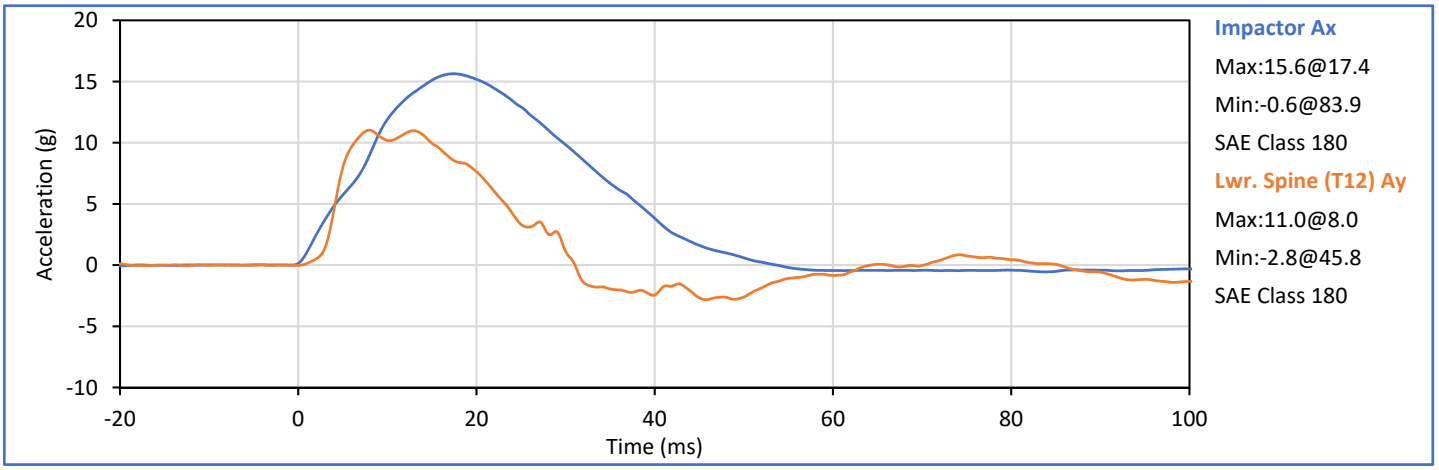
SID-IIs Small Side Impact ATD
Abdomen Impact

ATD Serial No.: 299 Test Date: 2019-02-02

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.1	Pass
Laboratory Humidity	%	10	70	40	Pass
Impactor Velocity	m/s	4.20	4.40	4.32	Pass
Peak Upper Abdomen Rib Dy	mm	36.0	47.0	41.2	Pass
Peak Lower Abdomen Rib Dy	mm	33.0	44.0	38.4	Pass
Peak Lower Spine T12 Ay	mm	9.0	14.0	11.0	Pass
Peak Impactor Ax	g	12.0	16.0	15.6	Pass
			Overall Test Results		Pass





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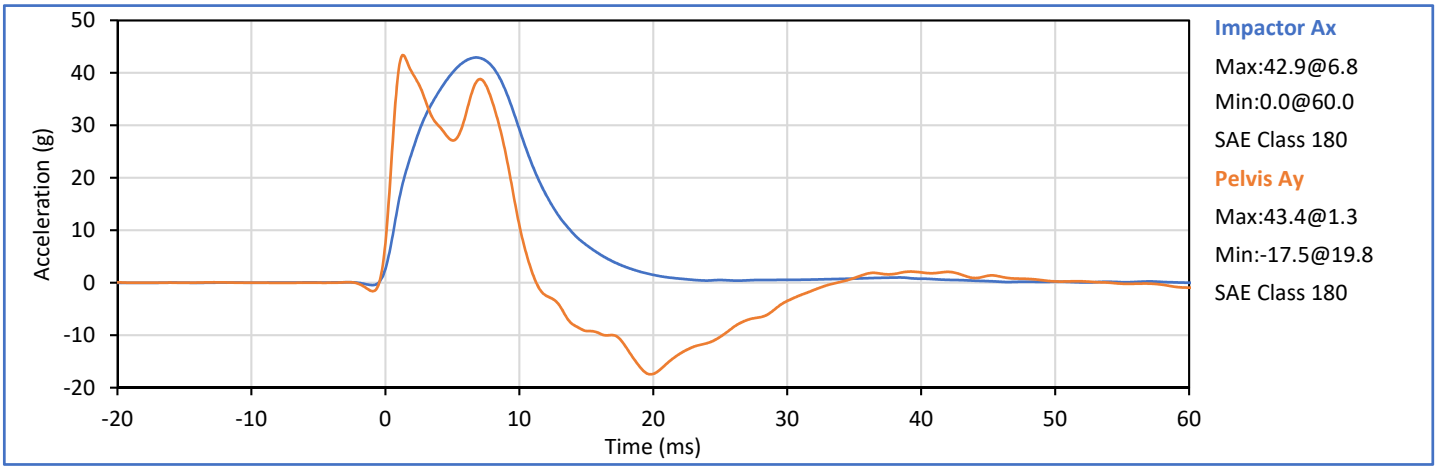
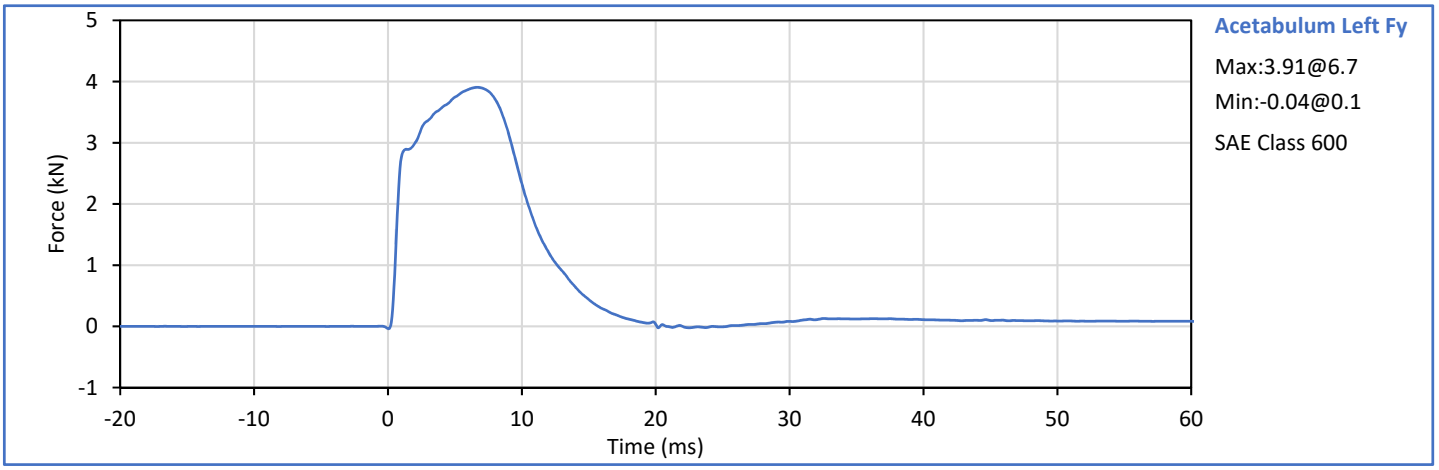
SID-IIs Small Side Impact ATD
Pelvis Acetabulum Impact

ATD Serial No.: 299 Test Date: 2019-02-01

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.3	Pass
Laboratory Humidity	%	10	70	35	Pass
Impactor Velocity	m/s	6.60	6.80	6.65	Pass
Peak Acetabulum Fy	kN	3.60	4.30	3.91	Pass
Pelvis Ay after 6ms	g	34.0	42.0	38.8	Pass
Peak Impactor Ax	g	38.0	47.0	42.9	Pass
			Overall Test Results		Pass

Pelvis Plug S/N: 11501 (SACO)





Technician: J. Hernandez

Approved By: P. Puzzuto

KARCO Engineering
9270 Holly Road, Adelanto, CA 92301
Tel: +1 760 246 1672 Fax: +1 760 246 8112
Info@karco.com www.karco.com

ATD Serial No.: 299 Test Date: 2019-02-01

Pelvis Plug S/N: 11501 (SACO)

SACO RESEARCH

SID-IIs Pelvis Plug Certification Test

Plug S/N 11501
Test Number 3005
Report Number 3002
Test Date 8/31/2016 10:43:13 AM

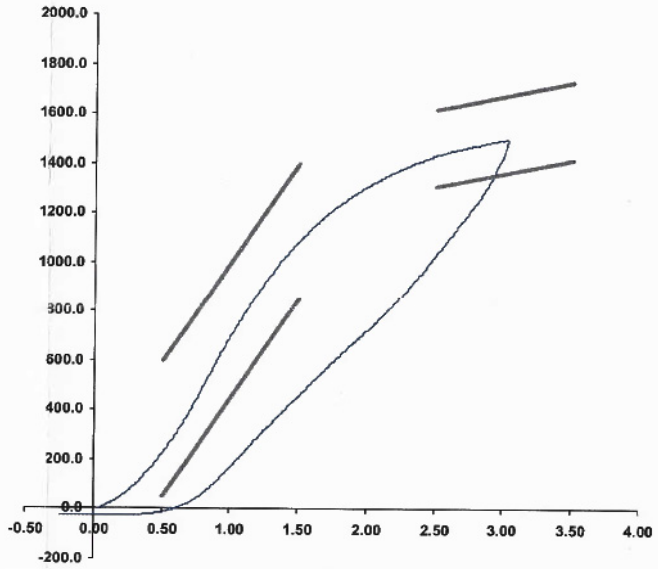
	Test Results	Spec Min	Spec Max
Force @ 0.5 mm (N)	224.41	50.00	600.00
Force @ 1.5 mm (N)	1,085.97	850.00	1,400.00
Force @ 2.5 mm (N)	1,433.61	1,306.00	1,618.00
Force @ 3.0 mm (N)	1,496.07	1,361.00	1,673.00

Testing Machine STM-20 5965542
Load Cell S/N (TI240813), Units (LBS) 1000

Crosshead Speed (mm / min) or Rate 12.7
Extension or Position Measured by XHD_100 (XHD100)

Notes:

Force (-N) vs Extension (-mm)



Operator DC

Part Number 180-4450

Template No 107 31-Aug-16
SACO Research

By : DC Date : 8/31/16

SACO Research 41735 Elm St, #401 Murrieta, CA 92562 Tel 310-694-2082 FAX

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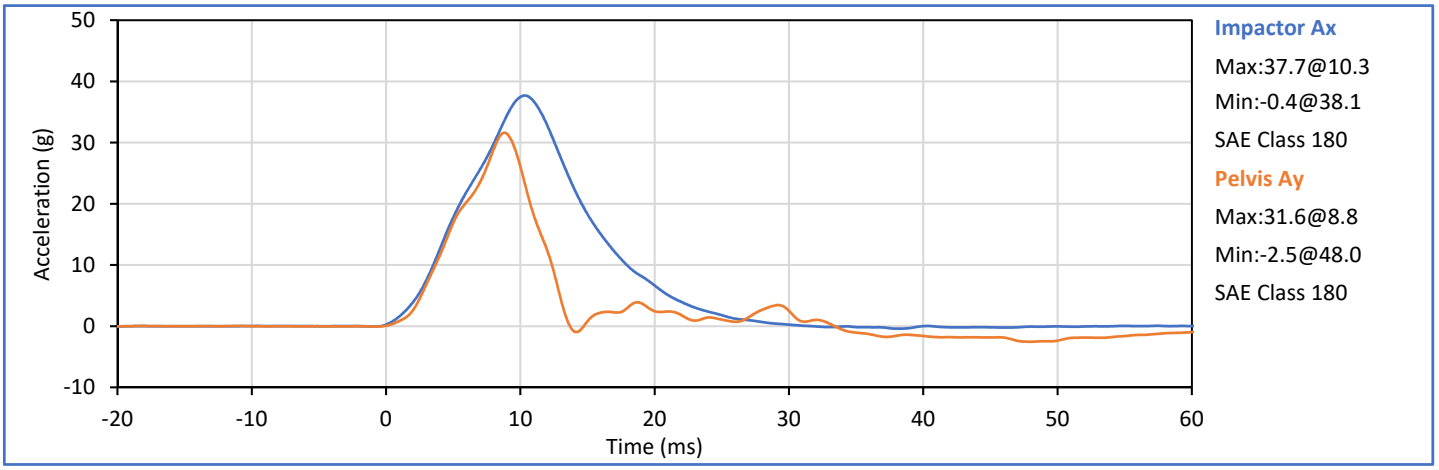
SID-IIs Small Side Impact ATD
Pelvis Iliac Impact

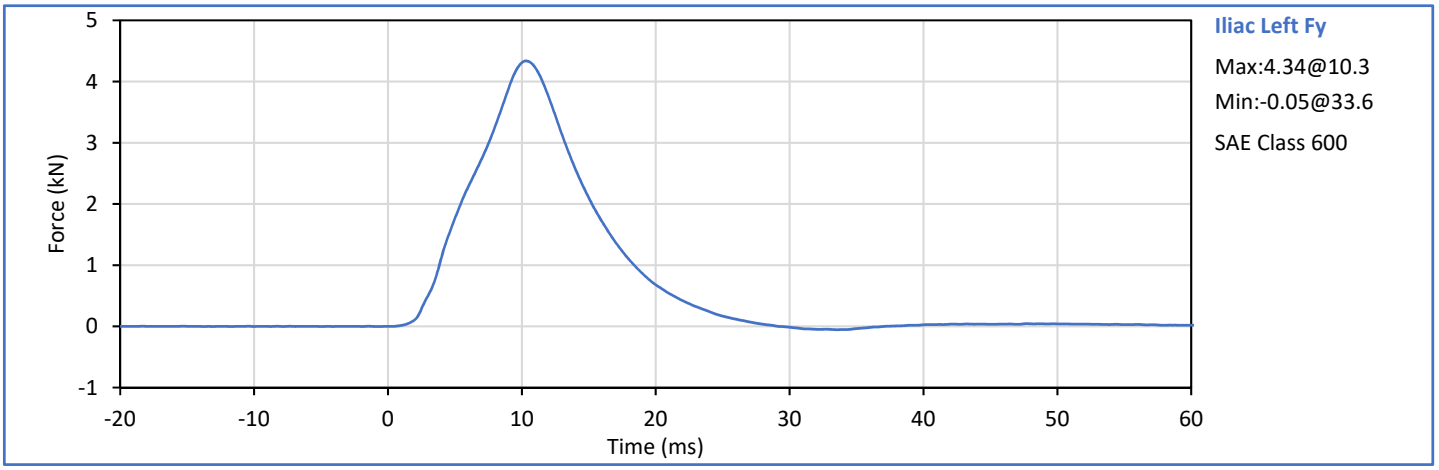
ATD Serial No.: 299 Test Date: 2019-02-02

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.8	Pass
Laboratory Humidity	%	10	70	35	Pass
Impactor Velocity	m/s	4.20	4.40	4.34	Pass
Peak Iliac Fy	kN	4.10	5.10	4.34	Pass
Pelvis Ay after 6ms	g	28.0	39.0	31.6	Pass
Peak Impactor Ax	g	36.0	45.0	37.7	Pass
			Overall Test Results		Pass

Pelvis Plug S/N: 12228 (SACO) *

* Plug is not impacted and remains certified





Technician: J. Hernandez

Approved By: P. Puzzuto

APPENDIX C
POST-TEST ATD CONFIGURATION AND PERFORMANCE VERIFICATION DATA
LEFT SIDE CONFIGURATION

Applus IDIADA
KARCO

SID-IIs Small Side Impact ATD
External Measurements

ATD Serial No.: 299 Test Date: 2019-02-22

Tested Parameter	Units	Spec Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.2	Pass
Laboratory Relative Humidity	%	10	70	44	Pass
A - Sitting Height	mm	772	788	782	Pass
B - Shoulder Pivot Height	mm	437	453	450	Pass
C - Hpoint Height	mm	79	89	83	Pass
D - H Point From Seatback	mm	141	151	149	Pass
E - Shoulder Pivot From Backline	mm	97	107	105	Pass
F - Thigh Clearance	mm	119	135	126	Pass
G - Head Breadth	mm	140	148	143	Pass
H - Head Back From Backline	mm	40	46	42	Pass
I - Head Depth	mm	178	188	186	Pass
J - Head Circumference	mm	541	551	547	Pass
K - Buttock To Knee Length	mm	514	540	524	Pass
L - Popliteal Height	mm	343	369	350	Pass
K - Knee Pivot To Floor Height	mm	392	409	398	Pass
N - Buttock Popliteal Length	mm	416	442	437	Pass
O - Chest Depth W/O Jacket	mm	195	211	207	Pass
P - Foot Length	mm	216	232	221	Pass
Q - Hip Breadth (W/Pelvic Plugs)	mm	313	323	318	Pass
R - Arm Length	mm	249	259	256	Pass
S - Knee Joint To Seatback	mm	477	493	486	Pass
V - Shoulder Width	mm	341	357	345	Pass
W - Foot Width	mm	78	94	84	Pass
Y - Chest Circumference W/Jacket	mm	851	881	862	Pass
Z - Waist Circumference	mm	761	791	779	Pass
			Overall Test Results		Pass

Technician: J. Hernandez

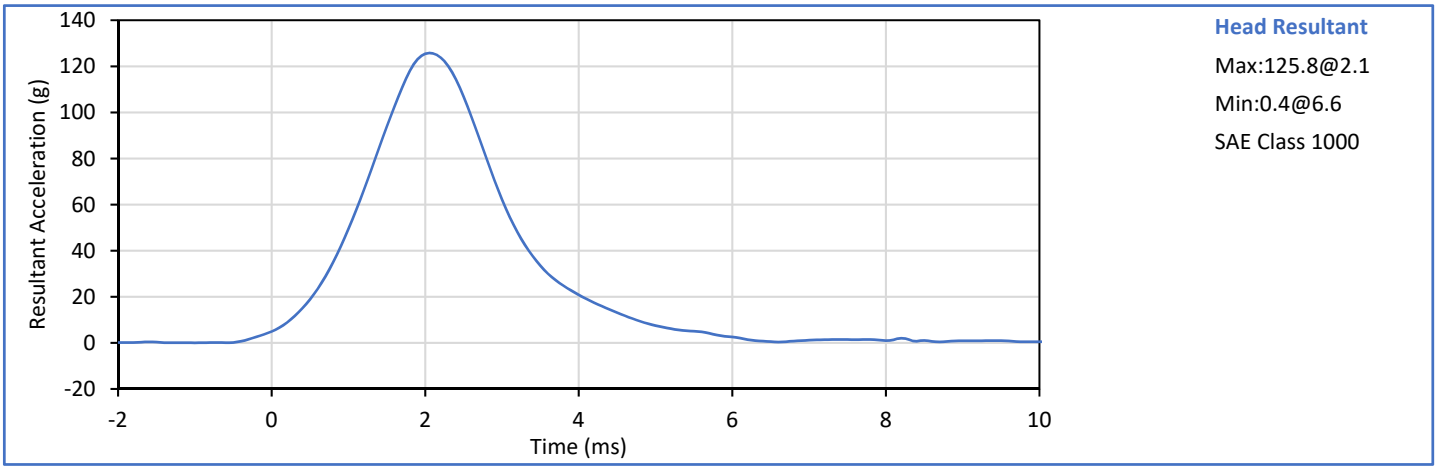
Approved By: P. Puzzuto

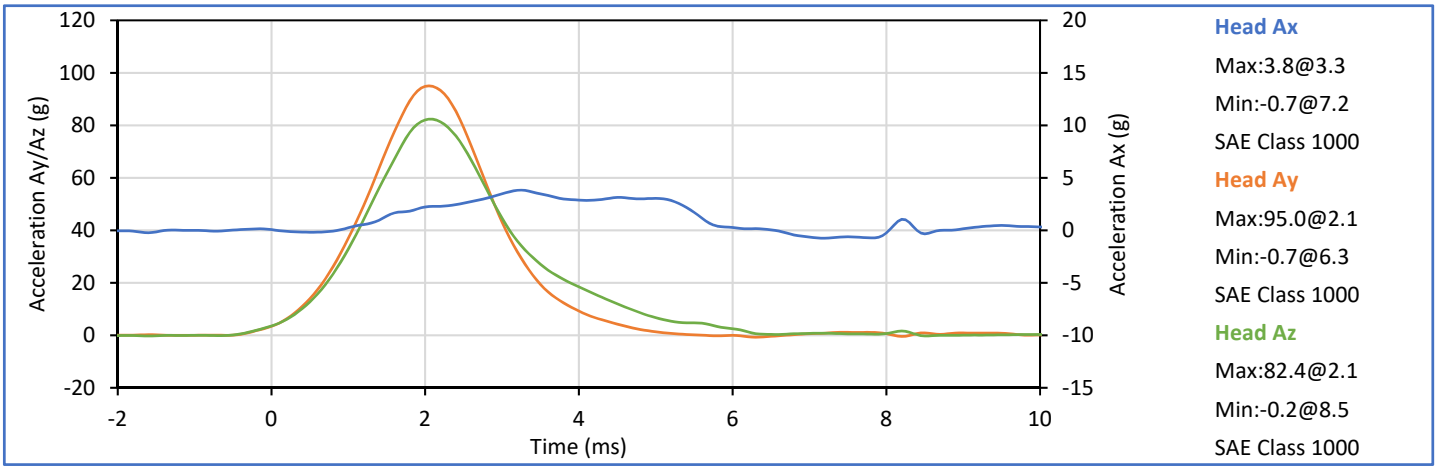
Applus IDIADA
KARCO

SID-IIs Small Side Impact ATD
Head Drop

ATD Serial No.: 299 Test Date: 2019-02-25

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	18.9	25.6	21.2	Pass
Laboratory Humidity	%	10	70	40	Pass
Peak Resultant Acceleration	g	115.0	137.0	125.8	Pass
Peak Head Ax	g	-15.0	15.0	-0.7	Pass
Oscillations After Main Pulse	%	0.0	15.0	1.9	Pass
Is Acceleration Unimodal?	Yes/No	Yes		Yes	Pass
			Overall Test Results		Pass





Technician: J. Hernandez

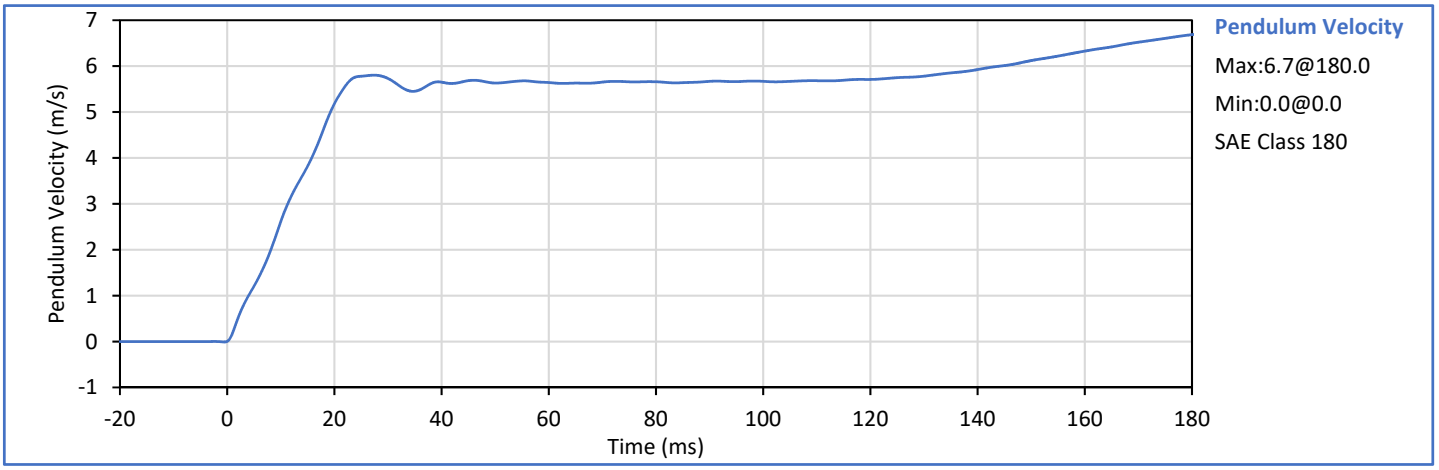
Approved By: P. Puzzuto

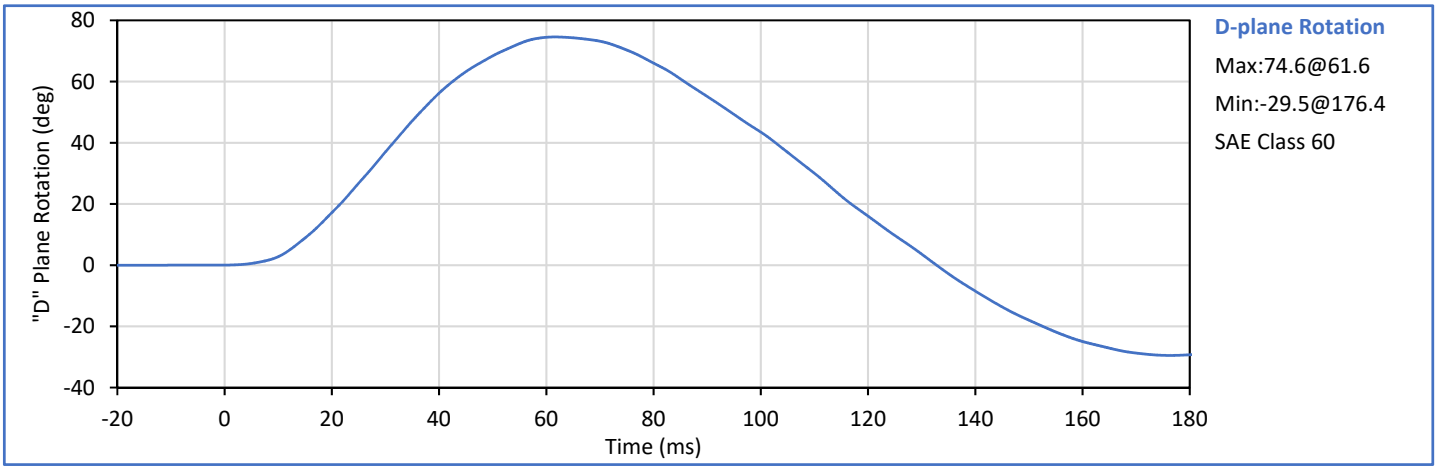
Applus IDIADA
KARCO

SID-IIs Small Side Impact ATD
Neck Flexion

ATD Serial No.: 299 Test Date: 2019-02-25

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.4	Pass
Laboratory Humidity	%	10	70	34	Pass
Pendulum Velocity	m/s	5.51	5.63	5.52	Pass
Pendulum Decel at 10 ms	m/s	2.20	2.80	2.61	Pass
Pendulum Decel at 15 ms	m/s	3.30	4.10	3.82	Pass
Pendulum Decel at 20 ms	m/s	4.40	5.40	5.18	Pass
Pendulum Decel at 25 ms	m/s	5.40	6.10	5.78	Pass
Pendulum Decel from 25-100 ms	m/s	5.50	6.20	5.80	Pass
Peak "D" Plane Rotation	deg	71.0	81.0	74.6	Pass
Time of Peak "D" Plane Rotation	ms	50.0	70.0	61.6	Pass
Peak Occ. Condyle Moment	Nm	-44.0	-36.0	-40.5	Pass
Time of Moment Decay to 0 Nm	ms	102.0	126.0	113.7	Pass
			Overall Test Results		Pass





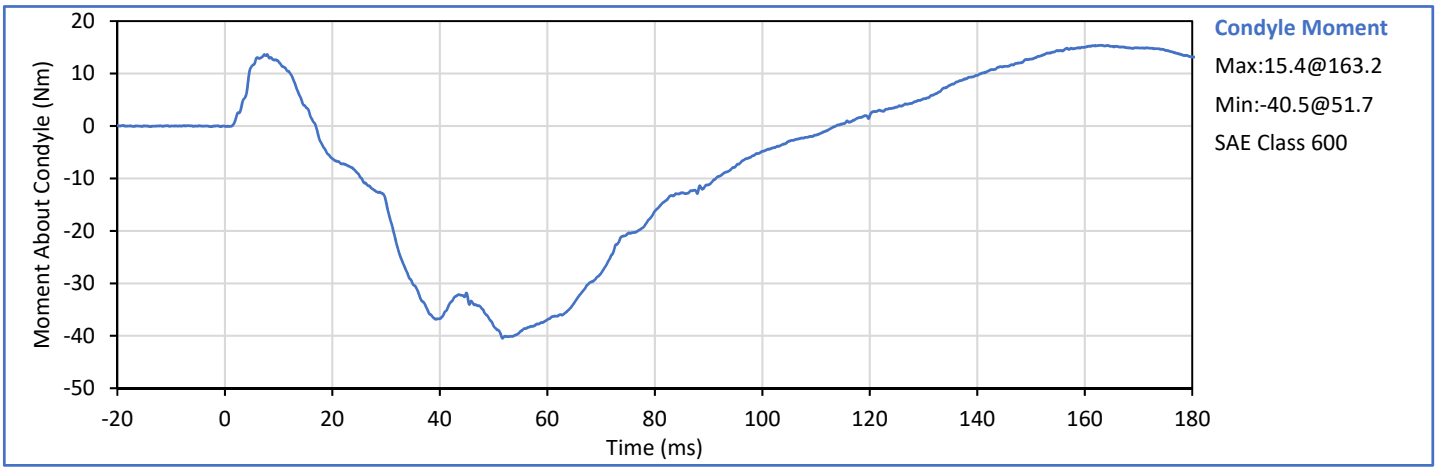
Technician: J. Hernandez

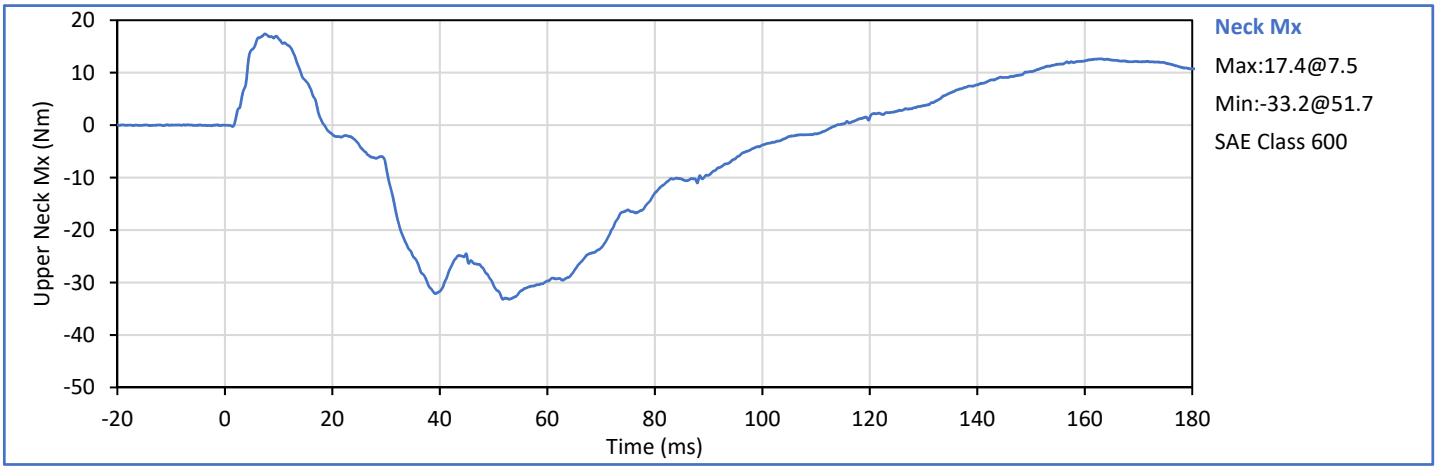
Approved By: P. Puzzuto

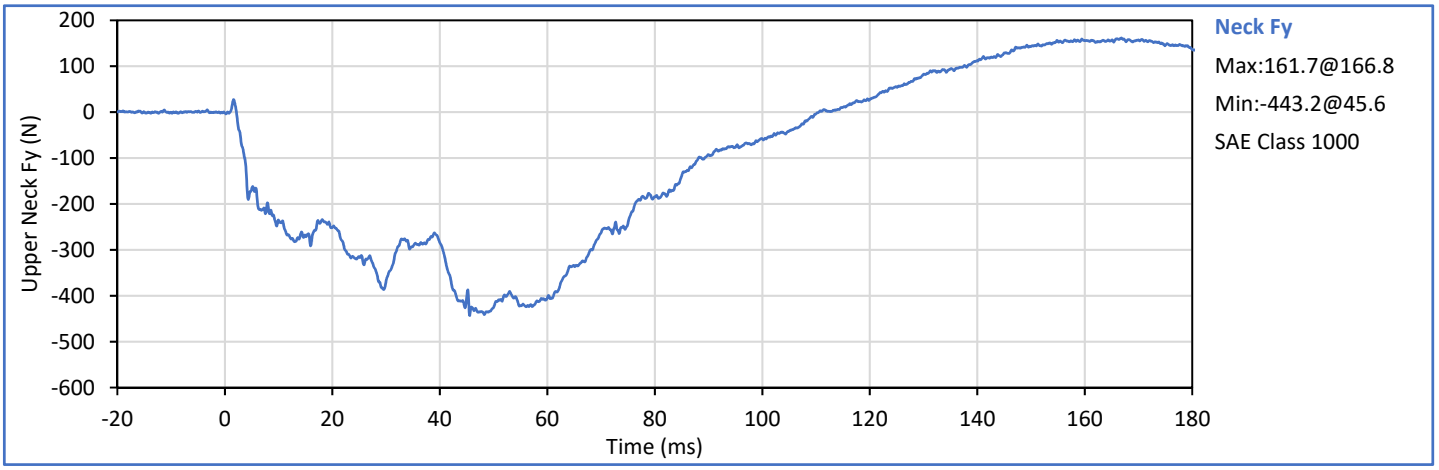
Applus IDIADA
KARCO

SID-IIs Small Side Impact ATD
Neck Flexion

ATD Serial No.: 299 Test Date: 2019-02-25





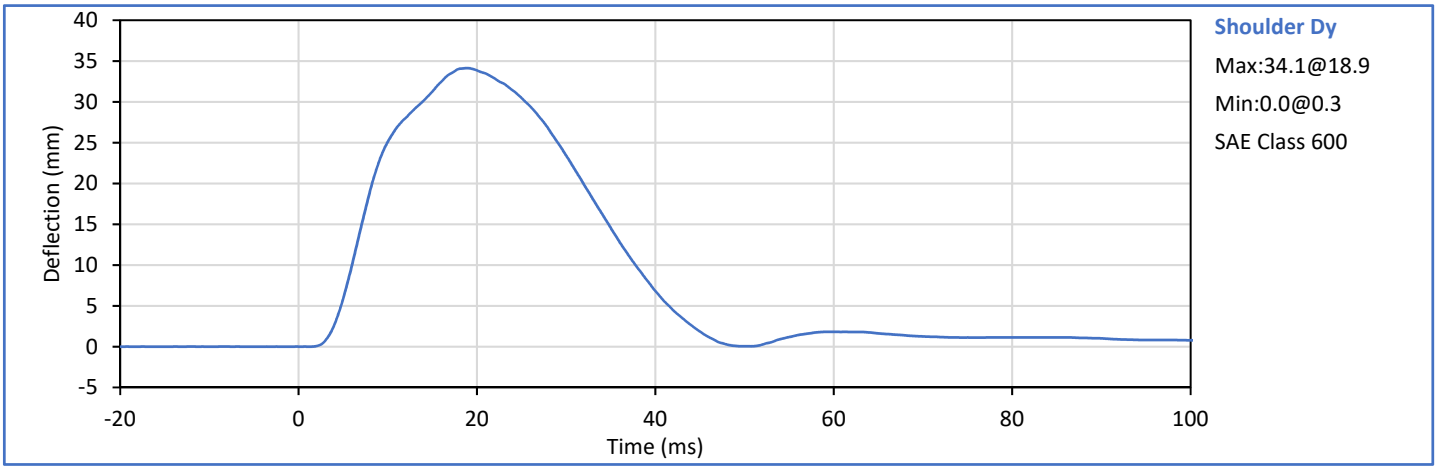


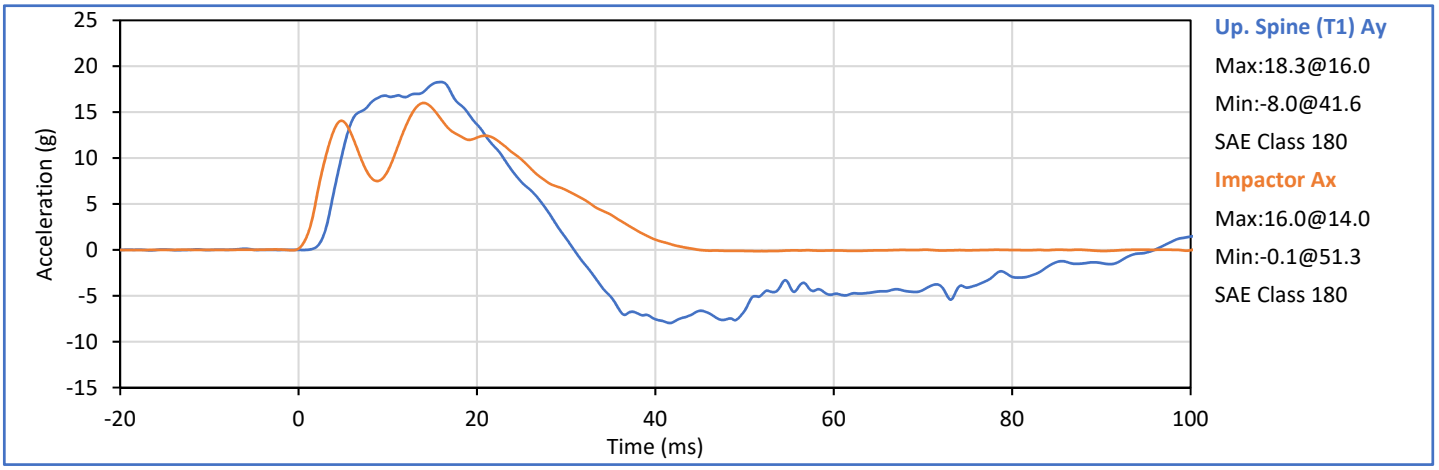
Applus IDIADA
KARCO

SID-IIs Small Side Impact ATD
Shoulder Impact Test

ATD Serial No.: 299 Test Date: 2019-02-25

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.7	Pass
Laboratory Humidity	%	10	70	20	Pass
Impactor Velocity	m/s	4.20	4.40	4.28	Pass
Peak Shoulder Dy	mm	28.0	37.0	34.1	Pass
Peak Upper Spine (T1) Ay	g	17.0	22.0	18.3	Pass
Peak Impactor Ax	g	13.0	18.0	16.0	Pass
			Overall Test Results		Pass





Technician: J. Hernandez

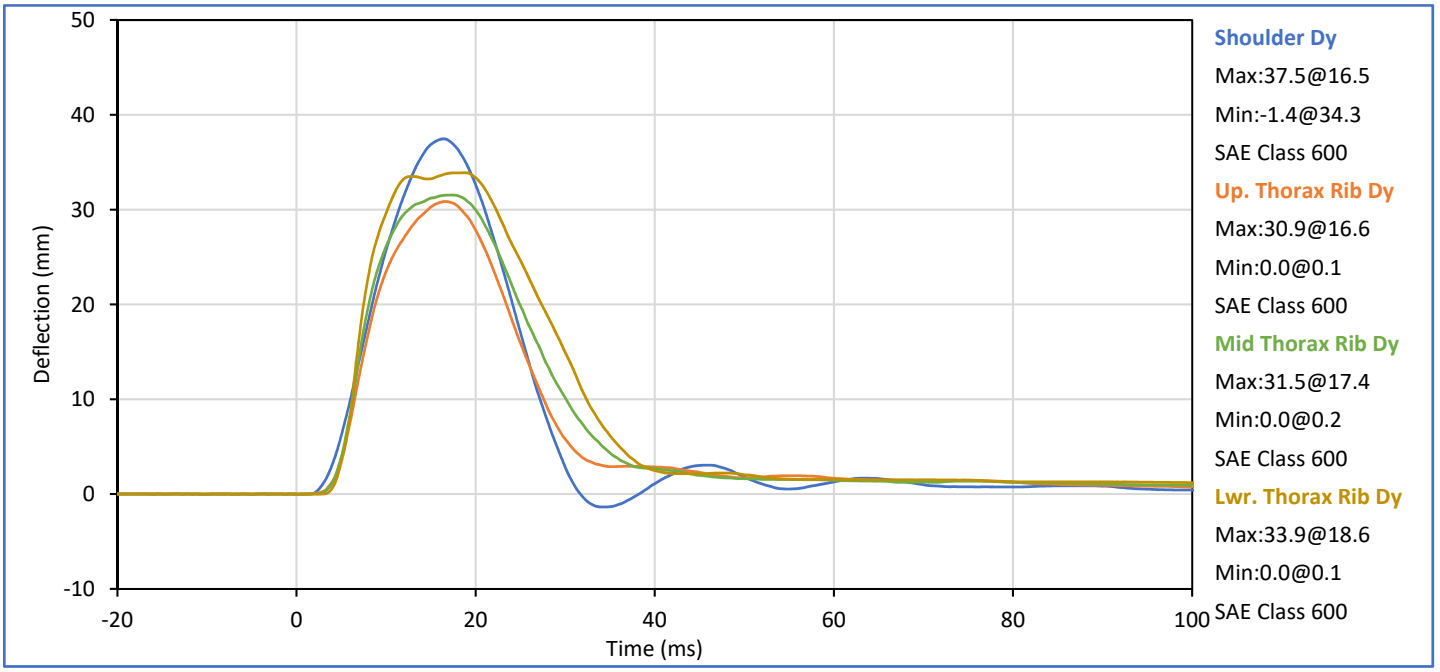
Approved By: P. Puzzuto

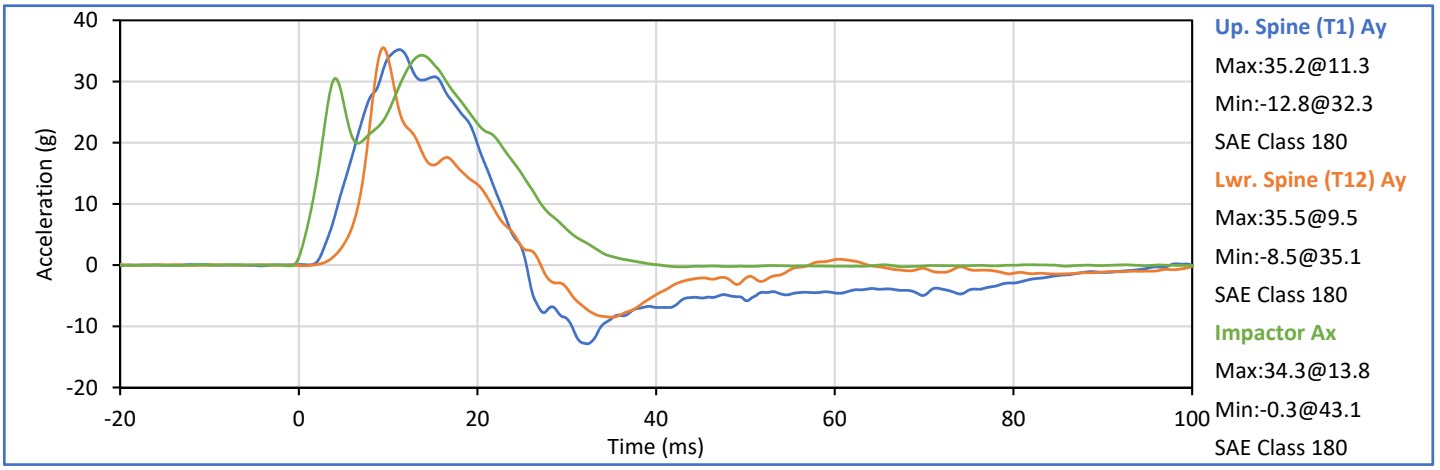
Applus IDIADA
KARCO

SID-IIs Small Side Impact ATD
Thorax (With Arm)

ATD Serial No.: 299 Test Date: 2019-02-22

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.1	Pass
Laboratory Humidity	%	10	70	42	Pass
Impactor Velocity	m/s	6.60	6.80	6.64	Pass
Peak Shoulder Dy	mm	31.0	40.0	37.5	Pass
Peak Upper Rib Dy	mm	25.0	32.0	30.9	Pass
Peak Middle Rib Dy	mm	30.0	36.0	31.5	Pass
Peak Lower Rib Dy	mm	32.0	38.0	33.9	Pass
Peak Upper Spine (T1) Ay	g	34.0	43.0	35.2	Pass
Peak Lower Spine (T12) Ay	g	29.0	37.0	35.5	Pass
Peak Impactor Ax	g	30.0	36.0	34.3	Pass
			Overall Test Results		Pass





Technician: J. Hernandez

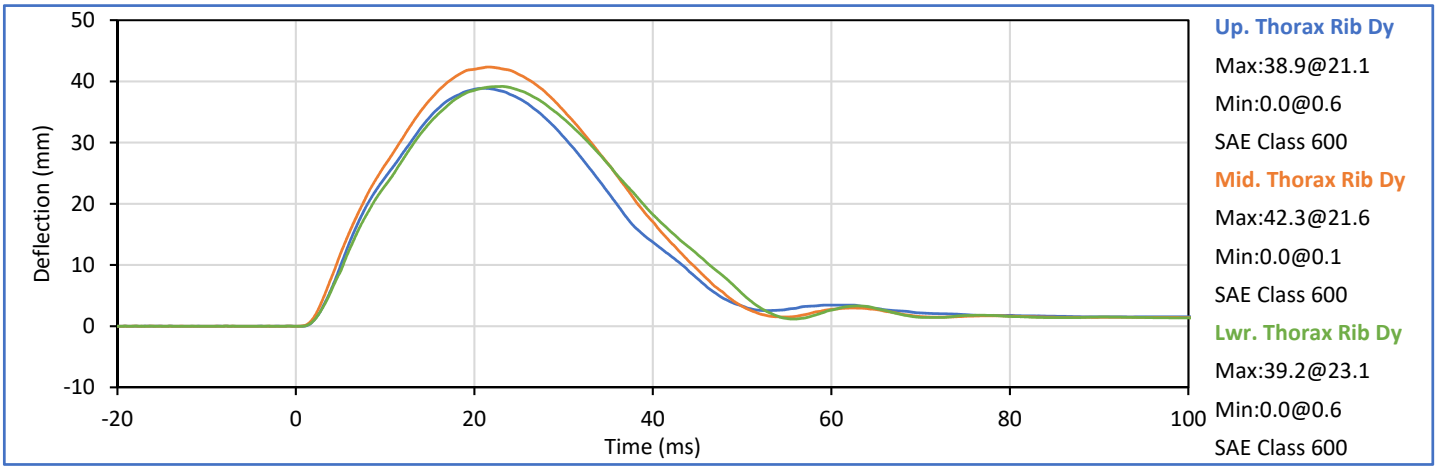
Approved By: P. Puzzuto

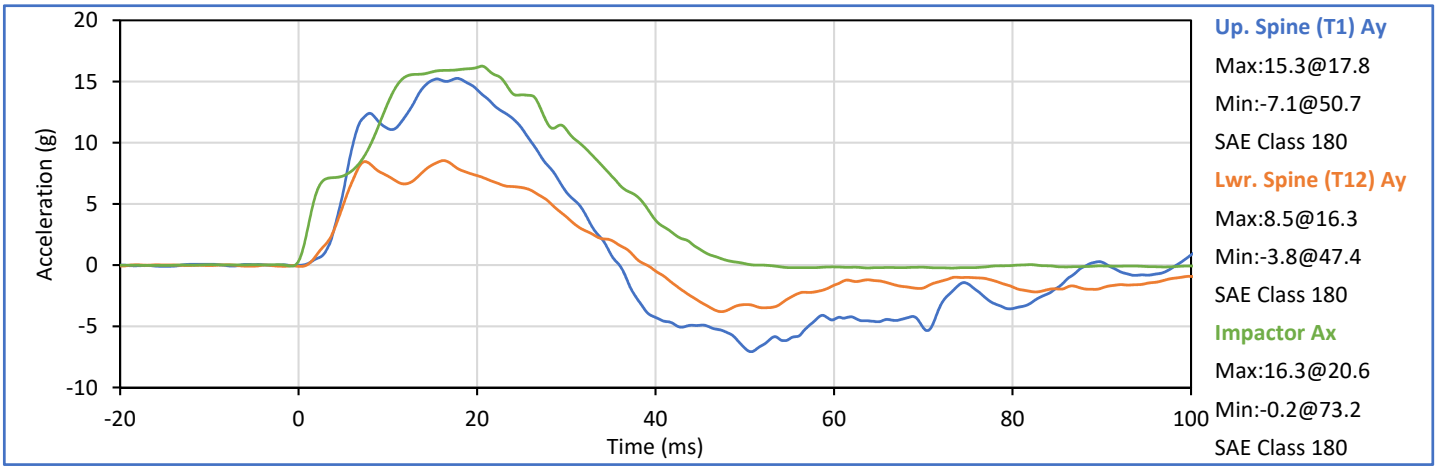
Applus IDIADA
KARCO

SID-IIs Small Side Impact ATD
Thorax (No Arm)

ATD Serial No.: 299 Test Date: 2019-02-25

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.7	Pass
Laboratory Humidity	%	10	70	20	Pass
Impactor Velocity	m/s	4.20	4.40	4.27	Pass
Peak Upper Rib Dy	mm	32.0	40.0	38.9	Pass
Peak Middle Rib Dy	mm	39.0	45.0	42.3	Pass
Peak Lower Rib Dy	mm	35.0	43.0	39.2	Pass
Peak Upper Spine (T1) Ay	g	13.0	17.0	15.3	Pass
Peak Lower Spine (T12) Ay	g	7.0	11.0	8.5	Pass
Peak Impactor Ax	g	14.0	18.0	16.3	Pass
			Overall Test Results		Pass





Technician: J. Hernandez

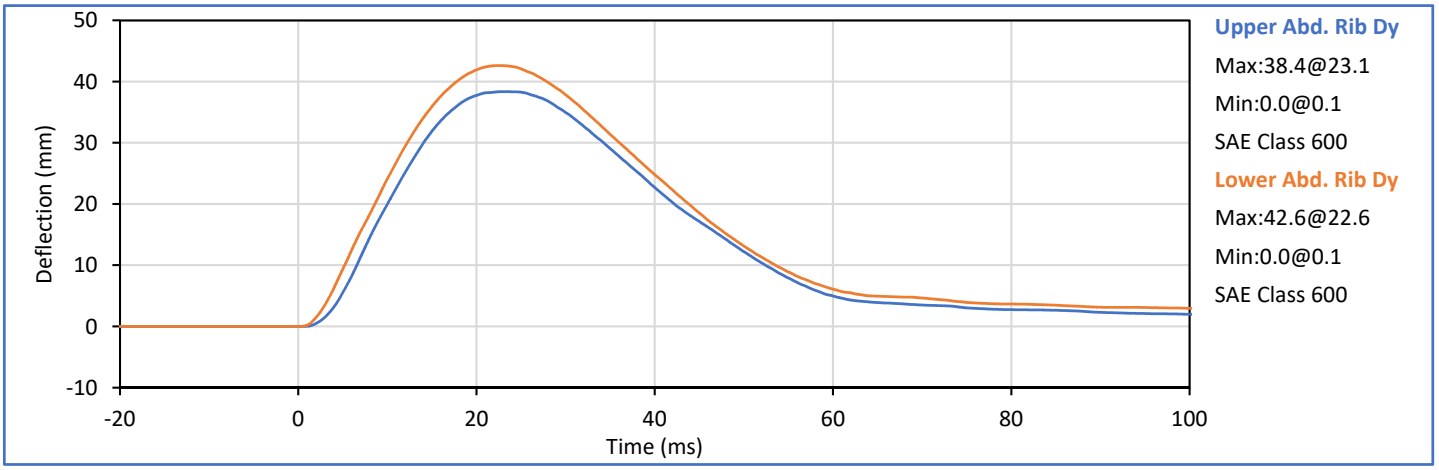
Approved By: P. Puzzuto

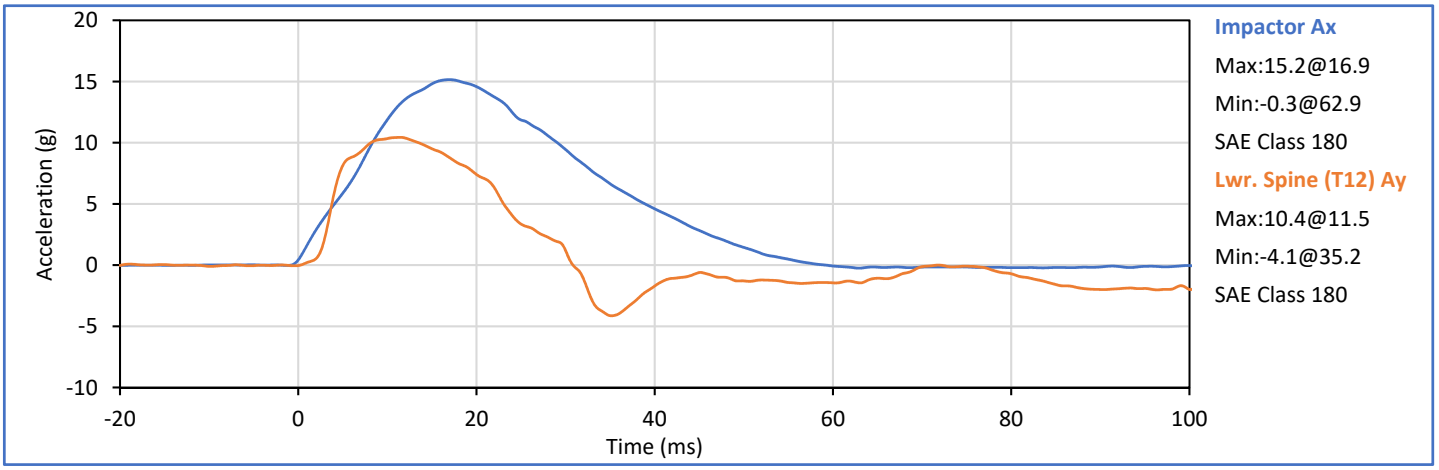
Applus IDIADA
KARCO

SID-IIs Small Side Impact ATD
Abdomen Impact

ATD Serial No.: 299 Test Date: 2019-02-25

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.7	Pass
Laboratory Humidity	%	10	70	20	Pass
Impactor Velocity	m/s	4.20	4.40	4.30	Pass
Peak Upper Abdomen Rib Dy	mm	36.0	47.0	38.4	Pass
Peak Lower Abdomen Rib Dy	mm	33.0	44.0	42.6	Pass
Peak Lower Spine T12 Ay	mm	9.0	14.0	10.4	Pass
Peak Impactor Ax	g	12.0	16.0	15.2	Pass
			Overall Test Results		Pass





Technician: J. Hernandez

Approved By: P. Puzzuto

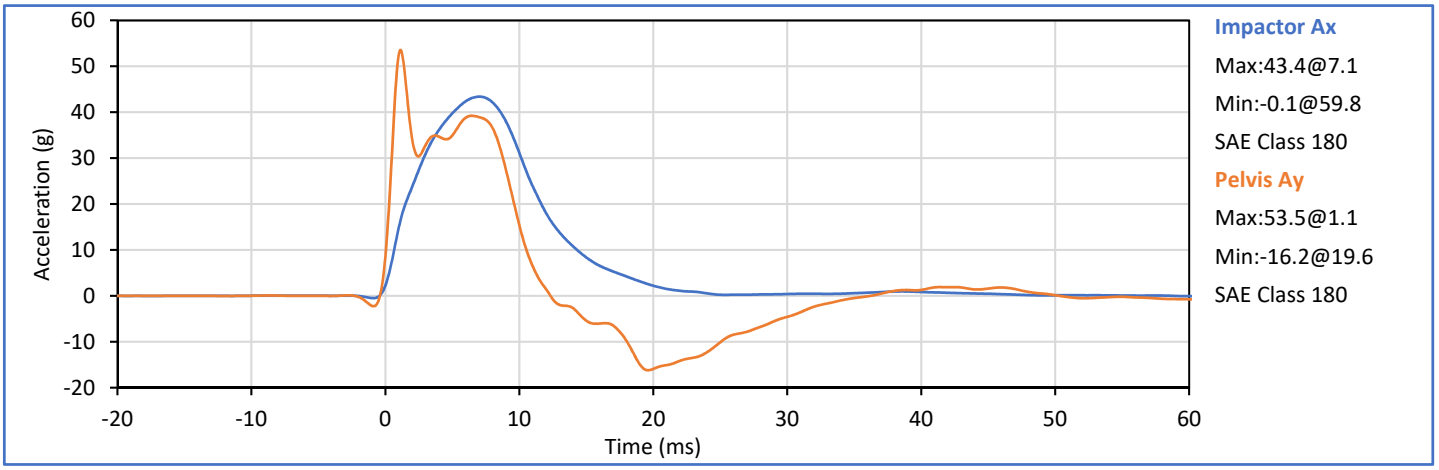
Applus IDIADA
KARCO

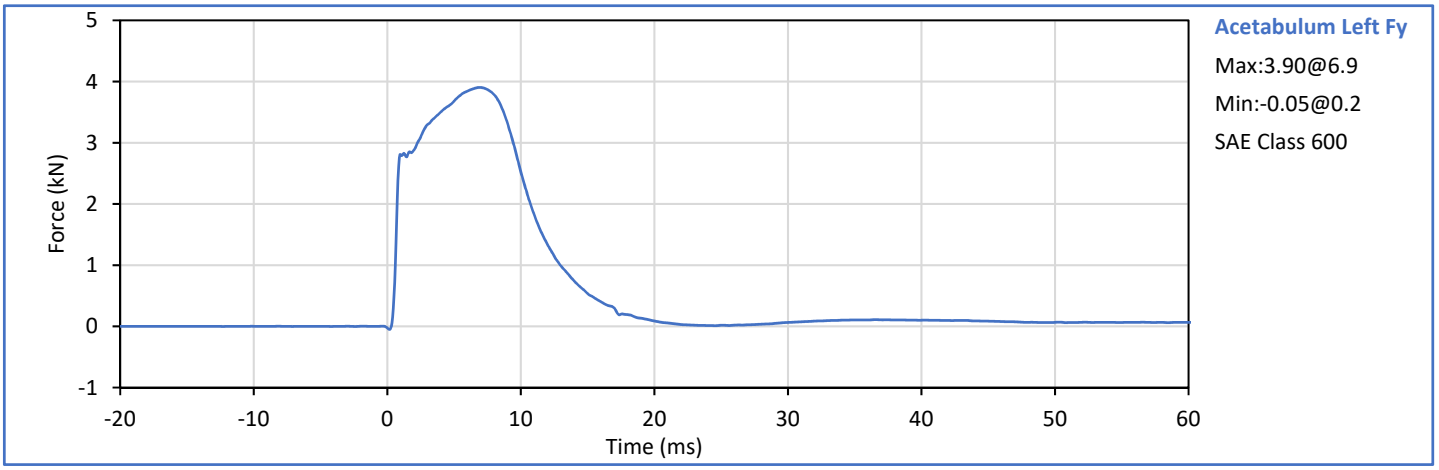
SID-IIs Small Side Impact ATD
Pelvis Acetabulum Impact

ATD Serial No.: 299 Test Date: 2019-02-22

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.2	Pass
Laboratory Humidity	%	10	70	23	Pass
Impactor Velocity	m/s	6.60	6.80	6.77	Pass
Peak Acetabulum Fy	kN	3.60	4.30	3.90	Pass
Pelvis Ay after 6ms	g	34.0	42.0	39.2	Pass
Peak Impactor Ax	g	38.0	47.0	43.4	Pass
			Overall Test Results		Pass

Pelvis Plug S/N: 11464 (SACO)





Technician: J. Hernandez

Approved By: P. Puzzuto

ATD Serial No.: 299 Test Date: 2019-02-22

Pelvis Plug S/N: 11464 (SACO)

SACO RESEARCH

SID-IIs Pelvis Plug Certification Test

Plug S/N 11464
Test Number 2953
Report Number 2950
Test Date 8/30/2016 11:24:57 AM

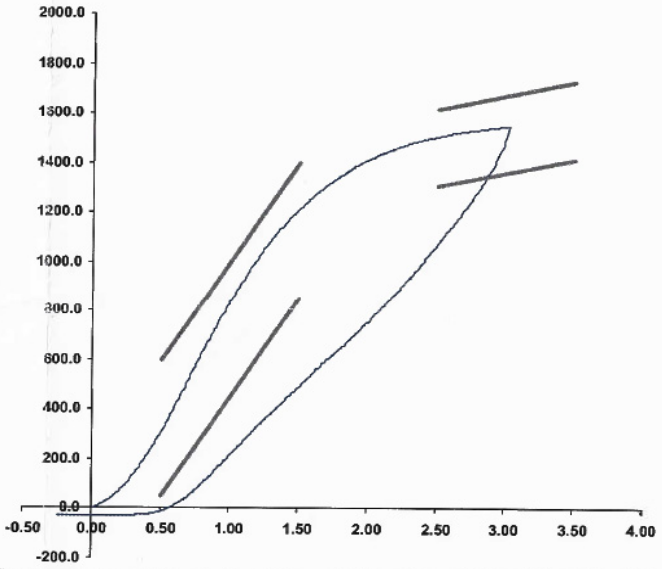
	Test Results	Spec Min	Spec Max
Force @ 0.5 mm (N)	318.37	50.00	600.00
Force @ 1.5 mm (N)	1,213.78	850.00	1,400.00
Force @ 2.5 mm (N)	1,506.12	1,306.00	1,618.00
Force @ 3.0 mm (N)	1,546.72	1,361.00	1,673.00

Testing Machine STM-20 5965542
Load Cell S/N (TI240813), Units (LBS) 1000

Crosshead Speed (mm / min) or Rate 12.7
Extension or Position Measured by XHD_100 (XHD100)

Notes:

Force (-N) vs Extension (-mm)



Operator DC

Part Number 180-4450

Template No 107 30-Aug-16
SACO Research

By : DC Date : 8/30/16

SACO Research 41735 Elm St, #401 Murrieta, CA 92562 Tel 310-694-2082 FAX

Applus IDIADA
KARCO

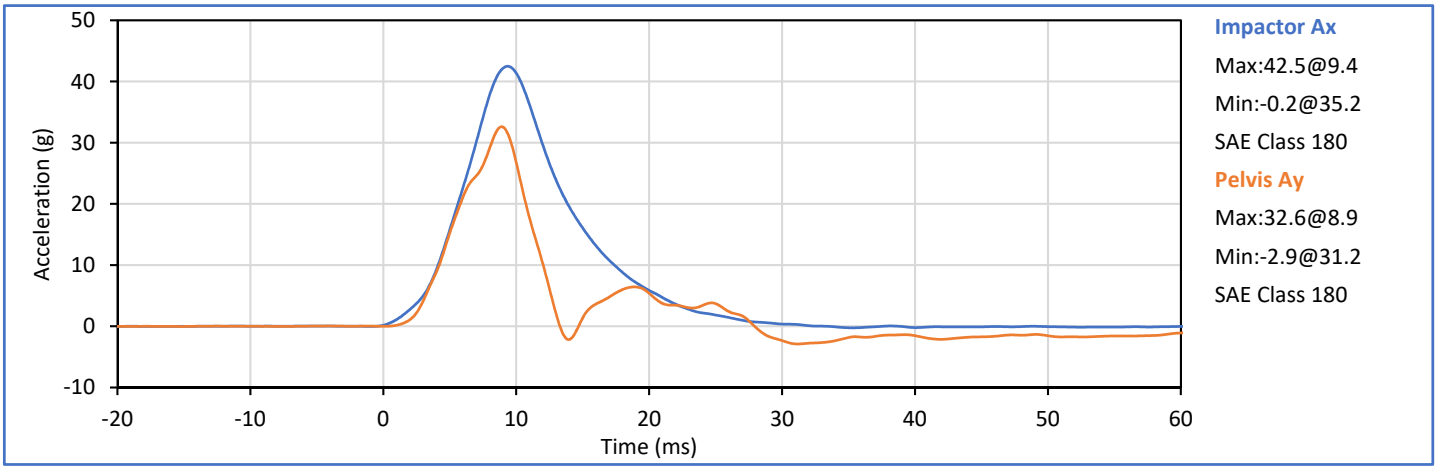
SID-IIs Small Side Impact ATD
Pelvis Iliac Impact

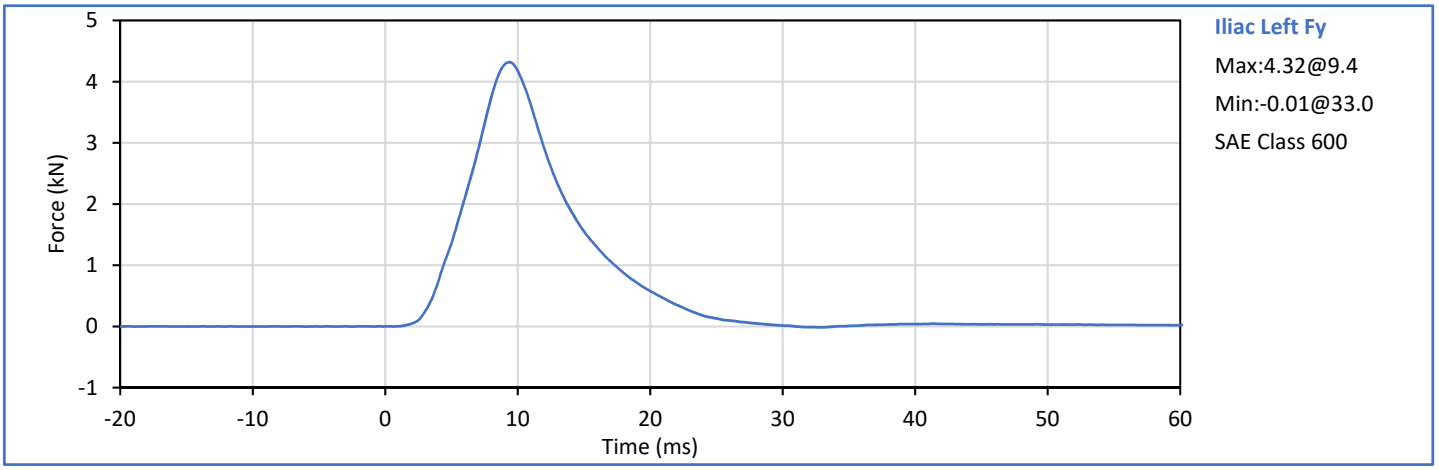
ATD Serial No.: 299 Test Date: 2019-02-25

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.7	Pass
Laboratory Humidity	%	10	70	20	Pass
Impactor Velocity	m/s	4.20	4.40	4.31	Pass
Peak Iliac Fy	kN	4.10	5.10	4.32	Pass
Pelvis Ay after 6ms	g	28.0	39.0	32.6	Pass
Peak Impactor Ax	g	36.0	45.0	42.5	Pass
			Overall Test Results		Pass

Pelvis Plug S/N: 12228 (SACO) *

* Plug is not impacted and remains certified





Technician: J. Hernandez

Approved By: P. Puzzuto

APPENDIX D
TEST EQUIPMENT AND INSTRUMENTATION CALIBRATION DATA

Position:	Driver
ATD Type:	SID-IIs
ATD S/N:	299

Table 1a - Driver ATD Instrumentation

Sensor Location	Sensor S\N	Mfr	Model	Cal Due
Head Acceleration X Primary	P51929	Endevco	7264C-2k	2019-08-08
Head Acceleration Y Primary	P50086	Endevco	7264C-2k	2019-08-08
Head Acceleration Z Primary	P51931	Endevco	7264C-2k	2019-08-08
Head Acceleration X Redundant	P68604	Endevco	7264C-2k	2019-08-08
Head Acceleration Y Redundant	P51934	Endevco	7264C-2k	2019-08-08
Head Acceleration Z Redundant	P58736	Endevco	7264C-2k	2019-08-08
Upper Thorax Rib Deflection Y	1143	Servo	08TCI-3725	2019-08-15
Middle Thorax Rib Deflection Y	1160	Servo	08TCI-3725	2019-08-15
Lower Thorax Rib Deflection Y	1213	Servo	08TCI-3725	2019-08-15
Upper Abdomen Rib Deflection Y	1218	Servo	08TCI-3725	2019-08-15
Lower Abdomen Rib Deflection Y	1177	Servo	08TCI-3725	2019-08-15
Lower Spine T12 Acceleration X	04I20-Z04	Entran	EGEB6Q-2k	2019-08-16
Lower Spine T12 Acceleration Y	06A07-R08	Entran	EGEB6Q-2k	2019-08-16
Lower Spine T12 Acceleration Z	P58795	Endevco	7264C-2k	2019-08-16
Iliac Wing Impact Side Force Y	289 Fy (Iliac)	R.A. Denton	3228J	2019-10-11
Acetabulum Impact Side Force Y	277 Fy (Acetabulum)	R.A. Denton	3249J	2019-10-11

Table 1b - Driver ATD Optional Instrumentation (Research Data Only)

Sensor Location	Sensor S\N	Mfr	Model	Cal Due
Head Rotation Rate X	ARS7571	DTS	ARS PRO-8k (2000Hz)	2018-06-09
Head Rotation Rate Y	ARS7316	DTS	ARS PRO-8k (2000Hz)	2018-06-09
Head Rotation Rate Z	ARS7330	DTS	ARS PRO-8k (2000Hz)	2018-06-09

Table 2 - Vehicle Instrumentation

Sensor Location	Sensor S\N	Mfr	Model	Cal Due
Vehicle CG Ax	A264073	MSI	52F-2000	2019-07-11
Vehicle CG Ay	A265905	MSI	52F-2000	2019-07-06
Vehicle CG Az	A264816	MSI	52F-2000	2019-07-11
Left Floor Sill Ay	A254858	MSI	52F-2000	2019-06-18
A-Pillar Sill Ay	10380	Endevco	757F-2k	2019-09-04
A-Pillar Low Ay	10371	Endevco	757F-2k	2019-09-05
A-Pillar Mid Ay	10370	Endevco	757F-2k	2019-09-05
B-Pillar Sill Ay	10418	Endevco	757F-2k	2019-09-04
B-Pillar Low Ay	10437	Endevco	757F-2k	2019-09-04
B-Pillar Mid Ay	10427	Endevco	757F-2k	2019-09-05
Driver Seat Track at H-Point Ay	10117	Endevco	757F-2k	2020-01-29
Engine Top Ax	10100	Endevco	757F-2k	2020-01-28
Engine Top Ay	10113	Endevco	757F-2k	2020-01-29
Firewall Ay	10252	Endevco	757F-2k	2020-01-29
Right Roof Ay	10425	Endevco	757F-2k	2019-09-05
Right Floor Sill Ay	A248840	MSI	52F-2000	2019-09-15
Rear Floorpan Ax	A248845	MSI	52F-2000	2019-10-01
Rear Floorpan Ay	A248860	MSI	52F-2000	2019-09-15

Table 3 - Rigid Pole Instrumentation

Sensor Location	Sensor S\N	Mfr	Model	Cal Due
Load Cell Pole Barrier #1 Force Y	131822A	Interface	1220-FS	2019-05-02
Load Cell Pole Barrier #2 Force Y	132304A	Interface	1220-FS	2019-05-02
Load Cell Pole Barrier #3 Force Y	19477	Interface	1220-FS	2019-05-02
Load Cell Pole Barrier #4 Force Y	19325	Interface	1220-FS	2019-05-02
Load Cell Pole Barrier #5 Force Y	131827A	Interface	1220-FS	2019-05-02
Load Cell Pole Barrier #6 Force Y	132302A	Interface	1220-FS	2019-05-02
Load Cell Pole Barrier #7 Force Y	19267	Interface	1220-FS	2019-05-02
Load Cell Pole Barrier #8 Force Y	19321	Interface	1220-FS	2019-05-02