

**REPORT NUMBER: SPNCAP-KAR-19-031
NEW CAR ASSESSMENT PROGRAM (NCAP)
SIDE IMPACT POLE TEST**

**FCA US LLC
2019 JEEP GRAND CHEROKEE LAREDO 5-DOOR MPV**

NHTSA No: M20190319

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



JUNE 27, 2019

FINAL REPORT

**PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
OFFICE OF CRASHWORTHINESS STANDARDS
MAIL CODE: NRM-110
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Approval Date: June 27, 2019

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

Date: _____

COTR, New Car Assessment Program
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Date: _____

TECHNICAL REPORT DOCUMENTATION PAGE

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15. Supplementary Notes																														
16. Abstract A 32.20 km/h 75° rigid pole side NCAP impact test was conducted on the subject 2019 Jeep Grand Cherokee Laredo 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 June 13, 2019. The impact velocity was 32.45 km/h and the outside ambient temperature at the struck (driver's) side of the vehicle was 33.3°C. The target vehicle's maximum post-test static crush was 335 mm located at level 2. The test vehicle's occupant performance data is as follows: <table border="1" style="width: 100%; border-collapse: collapse; margin: 10px 0;"> <thead> <tr> <th rowspan="2" style="width: 35%;">Measurement Description</th> <th colspan="3" style="text-align: center;">Driver ATD (SID-IIs)</th> </tr> <tr> <th style="width: 15%;">Units</th> <th style="width: 15%;">Threshold</th> <th style="width: 35%;">Result</th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC₃₆)</td> <td></td> <td style="text-align: center;">1000</td> <td style="text-align: center;">162.8</td> </tr> <tr> <td>Resultant Lower Spine Acceleration</td> <td style="text-align: center;">g</td> <td style="text-align: center;">82</td> <td style="text-align: center;">37</td> </tr> <tr> <td>Total Pelvic Force (Sum of Acetabular and Iliac Forces)</td> <td style="text-align: center;">N</td> <td style="text-align: center;">5525</td> <td style="text-align: center;">2900</td> </tr> <tr> <td>Maximum Thoracic Rib Deflection</td> <td style="text-align: center;">mm</td> <td style="text-align: center;">38</td> <td style="text-align: center;">17</td> </tr> <tr> <td>Maximum Abdominal Rib Deflection</td> <td style="text-align: center;">mm</td> <td style="text-align: center;">45</td> <td style="text-align: center;">18</td> </tr> </tbody> </table> <p>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.</p>				Measurement Description	Driver ATD (SID-IIs)			Units	Threshold	Result	Head Injury Criteria (HIC ₃₆)		1000	162.8	Resultant Lower Spine Acceleration	g	82	37	Total Pelvic Force (Sum of Acetabular and Iliac Forces)	N	5525	2900	Maximum Thoracic Rib Deflection	mm	38	17	Maximum Abdominal Rib Deflection	mm	45	18
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17. Key Words New Car Assessment Program (NCAP) Side Impact Pole Part 572V SID-IIs		18. Distribution Statement 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																												
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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 Jeep Grand Cherokee Laredo 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 Jeep Grand Cherokee Laredo 5-door MPV. The subject vehicle was towed into the rigid pole at an angle of 77.0° and a velocity of 32.45 km/h. The test was conducted by Applus IDIADA KARCO Engineering, LLC. in Adelanto, California on June 13, 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	162.8
Lower Spine (T12) Resultant Acceleration	g	82	37
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	2900
Maximum Thoracic Rib Deflection	mm	38*	17
Maximum Abdominal Rib Deflection	mm	45*	18

*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	No	
Seat Belt Load Limiter	Yes	Yes	No	

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.

SECTION 3

OCCUPANT AND VEHICLE INFORMATION/DATA SHEETS

Test Vehicle: 2019 Jeep Grand Cherokee Laredo 5-Door MPV NHTSA No. M20190319

Test Program: NCAP Side Pole Impact Test Test Date: 06/13/19

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	°F	°C	$=(T_f - 32)/1.8$
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 Jeep Grand Cherokee Laredo 5-Door MPV NHTSA No. M20190319
 Test Program: NCAP Side Pole Impact Test Test Date: 06/13/19

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA Number	M20190319
Model Year	2019
Make	Jeep
Model	Grand Cherokee Laredo
Body Style	5-Door MPV
VIN	1C4RJEAG9KC704969
Body Color	Granite
Odometer Reading (km / mi)	82 / 132
Engine Displacement (L)	3.6
Type / No. of Cylinders	V6
Engine Placement	Longitudinal
Transmission Type	Automatic
Transmission Speeds	8 Speed
Overdrive	Yes
Final Drive	RWD
Roof Rack	Yes
Sunroof / T-Top	No
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	No
Driver Load Limiter	Yes
Rear Pass. Load Limiter	No
Other Safety Restraint	N/A

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

DATA FROM CERTIFICATION LABEL

Manufactured By	FCA US LLC
Date of Manufacture	Feb-19
Vehicle Type	MPV

GVWR (kg)	2949
GAWR Front (kg)	1452
GAWR Rear (kg)	1679

VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

Measured Parameter	Front	Rear	Third	Total	
Designated Seating Capacity	2	3		5	
Capacity Weight (VCW) (kg)				476.0	A
DSC x 68.04 (kg)				340.2	B
Cargo Weight (RCLW) (kg)				135.8	A-B

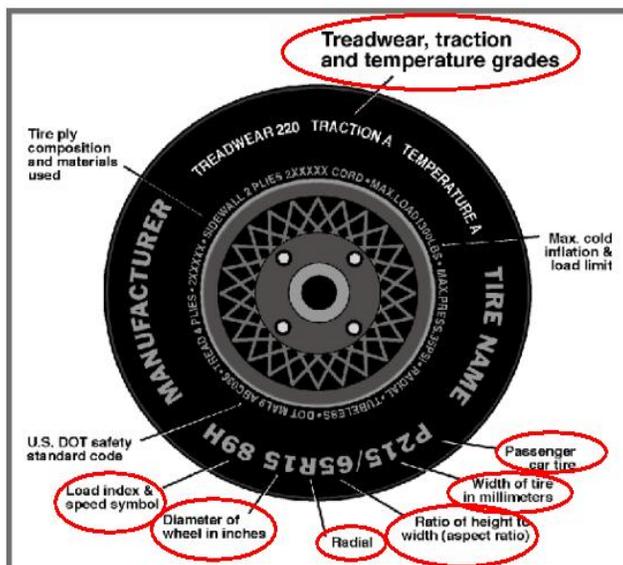
VEHICLE SEAT TYPE

Seating Location	Type of Seat Pan				Type of Seat Back		
	Bucket	Bench	Split Bench	Contoured	Fixed	Adjustable	
						w/ Lever	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 Jeep Grand Cherokee Laredo 5-Door MPV NHTSA No. M20190319
 Test Program: NCAP Side Pole Impact Test Test Date: 06/13/19



Measured Parameter	Front	Rear
Max. Tire Pressure (kPa)	350	350
Cold Pressure (kPa)	230	230
Recommended Tire Size	245/70R17	245/70R17
Tire Size on Vehicle	245/70R17	245/70R17
Tire Manufacturer	Goodyear	Goodyear
Tire Model	Fortera	Fortera
Treadware	540	540
Traction Grade	A	A
Temperature Grade	B	B
Tire Plies Sidewall	2 Polyester	2 Polyester
Tire Plies Body	2 Polyester, 2 Steel	2 Polyester, 2 Steel
Load Index/Speed Symbol	108T	108T
Tire Material	Polyester, Steel	Polyester, Steel
DOT Safety Code Left	4B83 JD1R 0419	4B83 JD1R 0419
DOT Safety Code Right	4B83 JD1R 0419	4B83 JD1R 0419

DATA SHEET NO. 1 ... (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2019 Jeep Grand Cherokee Laredo 5-Door MPV NHTSA No. M20190319
 Test Program: NCAP Side Pole Impact Test Test Date: 06/13/19

TIRE PRESSURES

	Units	LF	RF	LR	RR
As Delivered	kPa	230	230	230	230
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

	Units	As Delivered (UVW)			As Tested (ATW)			Fully Loaded		
		Front	Rear	Total	Front	Rear	Total	Front	Rear	Total
Left	kg	524.5	494.0		527.0	530.0		529.0	515.5	
Right	kg	529.0	500.0		578.0	588.5		596.0	593.5	
Ratio	%	51.5%	48.5%	100.0%	49.7%	50.3%	100.0%	50.4%	49.6%	100.0%
Total	kg	1053.5	994.0	2047.5	1105.0	1118.5	2223.5	1125.0	1109.0	2234.0

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	2047.5	A
Actual Weight of 1 P572V ATD Used	kg	49.0	B
Rated Cargo/Luggage Wt (RCLW)	kg	135.8	C
Calculated Vehicle Target Wt (TVTW)	kg	2232.3	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

TEST VEHICLE ATTITUDE AND CG

Measurement Description	Units	As Delivered	As Tested	Fully Loaded	Meets Requirement***
Driver Door Sill Angle (front-to-rear)*	°	-0.5	-0.6	-0.8	Yes
Front Passenger Sill Angle (front-to-rear)*	°	-0.2	-0.3	-0.3	Yes
Front Bumper-Line Angle (left-to-right)**	°	0.7	-0.7	0.6	Yes
Rear Bumper-Line Angle (left-to-right)**	°	0.2	0.2	0.3	Yes
Vehicle CG (Aft of Front Axle)	mm	1418	1532	1555	
Vehicle CG (Left (+)/Right (-) from Longitudinal Centerline)	mm	-4	-5	6	

*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 Jeep Grand Cherokee Laredo 5-Door MPV NHTSA No. M20190319

Test Program: NCAP Side Pole Impact Test Test Date: 06/13/19

WEIGHT OF BALLAST AND VEHICLE COMPONENTS REMOVED TO MEET TVTW

Component Description	Weight (kg)
Trunk Trim and Spare Tire	15.0
Rear Non Struck Door Panel	6.5
Ballast / Equipment Added	139.0

Test Height Adjustable Setting (If Applicable)	
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DATA SHEET NO. 2

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

Test Vehicle: 2019 Jeep Grand Cherokee Laredo 5-Door MPV NHTSA No. M20190319

Test Program: NCAP Side Pole Impact Test Test Date: 06/13/19

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	7.7	0.0	3.9
Front Passenger Seat	Fixed	Fixed	Fixed
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	3.9	342	Max	340	356	373
			Mid	309	326	342
			Min	277	295	310
Front Passenger Seat	Fixed	276	Max			
			Mid	239	262	276
			Min			
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 Jeep Grand Cherokee Laredo 5-Door MPV NHTSA No. M20190319
 Test Program: NCAP Side Pole Impact Test Test Date: 06/13/19

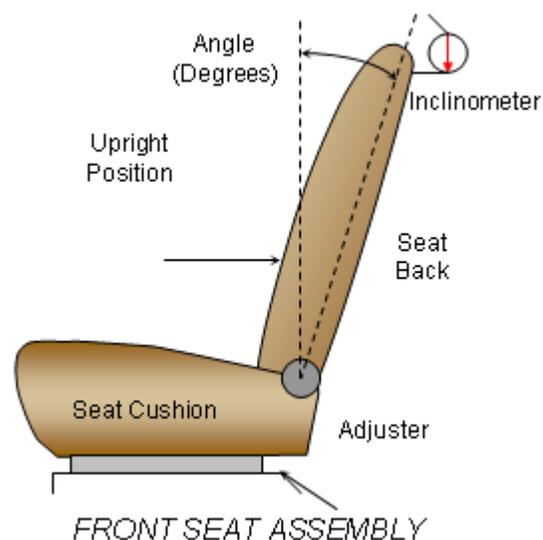
SEAT FORE/AFT POSITION

Seat	Total Fore/Aft Travel		Test Position From Forwardmost Position	
	mm	Detents*	mm	Detent*
Driver Seat	280		0	
Front Passenger Seat	240		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 from the headrest post.



Seat	Total Seat Back Angle Range		Test Position from Most Upright	
	Degrees	Detents*	Degree	Detent*
Driver Seat w/Seated Dummy	59.0		1.4	
Front Passenger Seat	62.7		1.4	
Front Center Seat				
Struck Side Rear Seat w/Seated Dummy	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

DATA SHEET NO. 2 ... (CONTINUED)

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

Test Vehicle: 2019 Jeep Grand Cherokee Laredo 5-Door MPV NHTSA No. M20190319

Test Program: NCAP Side Pole Impact Test Test Date: 06/13/19

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	5	H

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	L

DATA SHEET NO. 2 ... (CONTINUED)

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

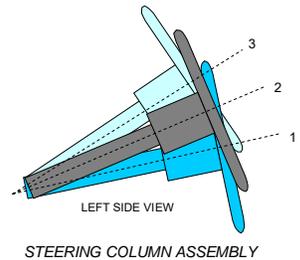
Test Vehicle: 2019 Jeep Grand Cherokee Laredo 5-Door MPV NHTSA No. M20190319

Test Program: NCAP Side Pole Impact Test Test Date: 06/13/19

STEERING COLUMN ADJUSTMENT

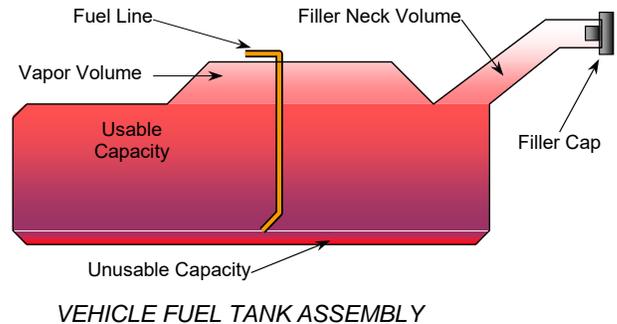
Steering wheel and column adjustments are made so that the steering wheel hub is at the center of the geometric locus it describes when it moves through its full range of motion.

	Degrees	Fore-Aft Position (mm)
Lowermost - Position 1	18.7	95
Geometric Center - Position 2	21.2	123
Uppermost - Position 3	23.7	150
Telescoping Steering Wheel Travel		55
Test Position	21.2	123



FUEL PUMP

The fuel pump starts pumping fuel when the key is in the "ON" position.



FUEL TANK CAPACITY

Description	Liters
Usable Capacity of "Standard Tank" (see Form No. 1)	93.50
Usable Capacity of "Optional Tank" (see Form No. 1)	
Usable Capacity of "Standard Tank" (see Owner's Manual)	93.50
Usable Capacity of "Optional Tank" (see Owner's Manual)	
93% of Usable Capacity	86.96
Actual amount of Solvent Used in Test	86.96
1/3 of Usable Capacity	31.17

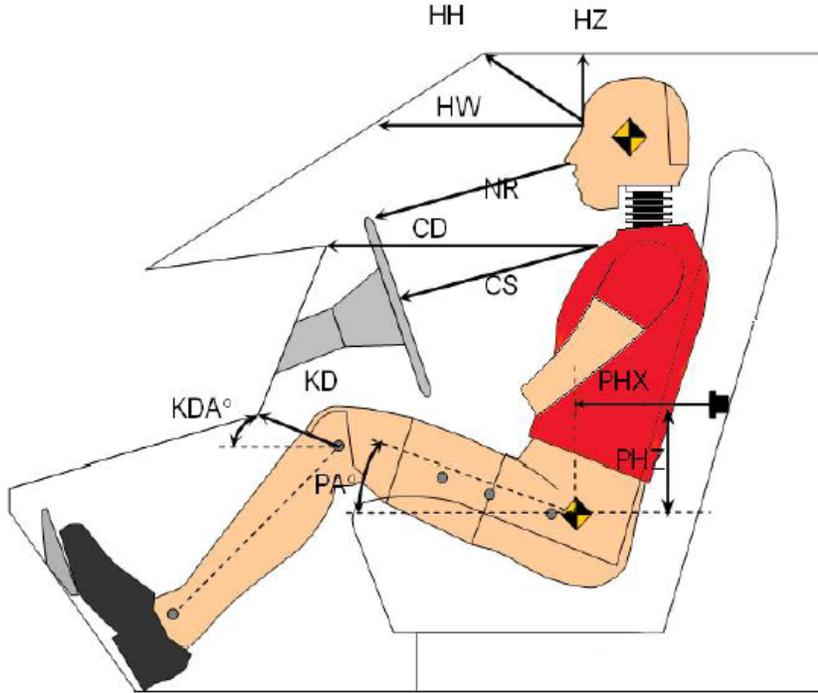
Is the Actual Amount of Solvent Used in the test equal to 93% ± 1% of the Usable Capacity stated in the Form No. 1? Yes No

DATA SHEET NO. 3

DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2019 Jeep Grand Cherokee Laredo 5-Door MPV NHTSA No. M20190319

Test Program: NCAP Side Pole Impact Test Test Date: 06/13/19



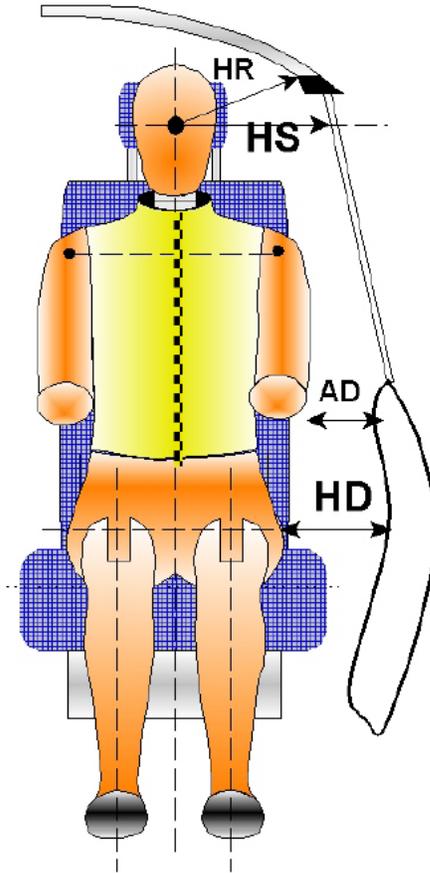
Driver Code	Description	Driver	
		Length (mm)	Angle (°)
HH	Head to Header	254	
HW	Head to Windshield	544	
HZ	Head to Roof	180	
NR	Nose to Rim	176	
CD	Chest to Dash	380	
CS	Chest to Steering Wheel	128	
KD(L)/KDA(L)°	Left Knee to Dash	92	28.2
KD(R)/KDA(R)°	Right Knee to Dash	65	30.2
PAX°	Pelvic Tilt Angle (x-axis)		19.6
PAY°	Pelvic Tilt Angle (y-axis)		0.0
PHX	Hip Point to Striker (x-axis)	368	
PHZ	Hip Point to Striker (z-axis)	52	

DATA SHEET NO. 4

DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2019 Jeep Grand Cherokee Laredo 5-Door MPV NHTSA No. M20190319

Test Program: NCAP Side Pole Impact Test Test Date: 06/13/19



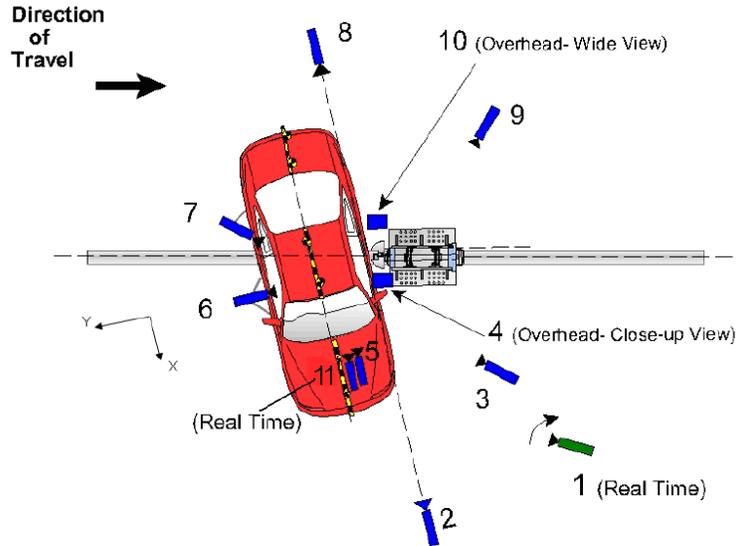
Code	Measurement Description	Units	Driver
HR	Head to Side Header	mm	264
HS	Head to Side Window	mm	415
AD	Arm to Door	mm	161
HD	Hip Point to Door	mm	179

DATA SHEET NO. 5

CAMERA AND INSTRUMENTATION DATA

Test Vehicle: 2019 Jeep Grand Cherokee Laredo 5-Door MPV NHTSA No. M20190319

Test Program: NCAP Side Pole Impact Test Test Date: 06/13/19



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	1.28	0.58	-1.56	8.5	1000
6	On-Board - Dummy Side View	1.25	0.57	-1.54	8.5	1000
7	On-Board - Dummy Rear Oblique View	-0.12	1.89	-1.40	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	-1.26	1.81	-1.45		30

*All measurements accurate to ±6 mm

INSTRUMENTATION

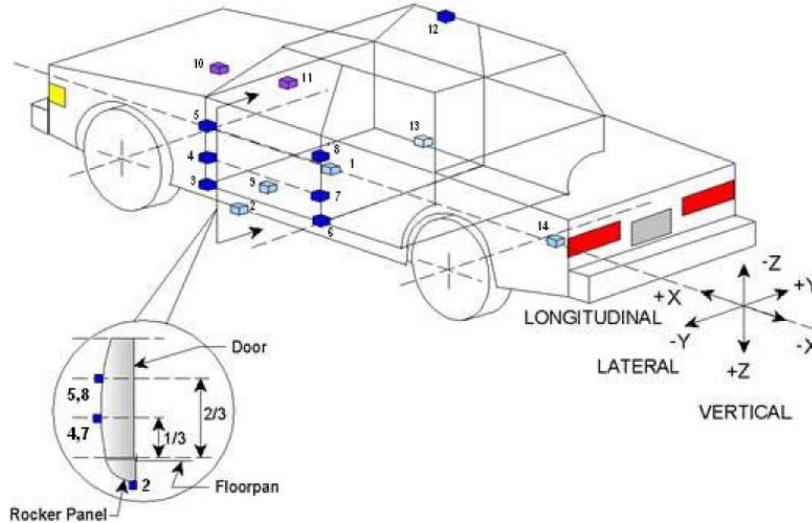
Driver Dummy Channels	19
Vehicle Structure Accelerometers	18
Pole Load Cells	8
Total	45

DATA SHEET NO. 6

TEST VEHICLE ACCELEROMETER LOCATIONS

Test Vehicle: 2019 Jeep Grand Cherokee Laredo 5-Door MPV NHTSA No. M20190319

Test Program: NCAP Side Pole Impact Test Test Date: 06/13/19



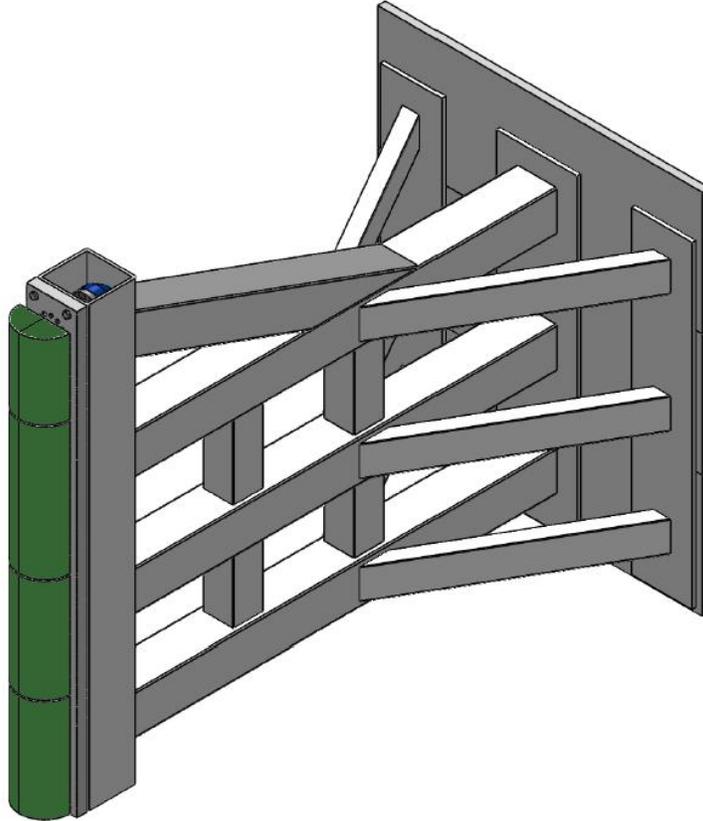
Loc. No.	Sensor Description	Coordinates (mm)		
		X	Y	Z
1	Vehicle CG	2200	0	-550
2	Left Floor Sill	3210	-780	-300
3	A-Pillar Sill	3180	-725	-490
4	A-Pillar Low	3175	-840	-575
5	A-Pillar Mid	3160	-840	-1070
6	B-Pillar Sill	2240	-745	-530
7	B-Pillar Low	2130	-730	-780
8	B-Pillar Mid	2121	-730	-1110
9	Driver Seat Track	2450	-600	-580
10	Engine Top	3700	0	-1065
11	Firewall	3410	570	-980
12	Right Roof	2345	510	-1750
13	Right Floor Sill	2870	730	-520
14	Rear Floorpan	1210	0	-780

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 Jeep Grand Cherokee Laredo 5-Door MPV NHTSA No. M20190319

Test Program: NCAP Side Pole Impact Test Test Date: 06/13/19



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 Jeep Grand Cherokee Laredo 5-Door MPV NHTSA No. M20190319

Test Program: NCAP Side Pole Impact Test Test Date: 06/13/19

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, Seatback
Upper Torso	Side Airbag, Seatback
Lower Torso	Side Airbag, Seatback
Left Hip	Side Airbag, Door Panel
Left Knee	Door Panel, Knee Bolster

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 Jeep Grand Cherokee Laredo 5-Door MPV NHTSA No. M20190319
 Test Program: NCAP Side Pole Impact Test Test Date: 06/13/19

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	No	
Seat Belt Load Limiter	Yes	Yes	No	

IMPACT POINT LOCATION DATA

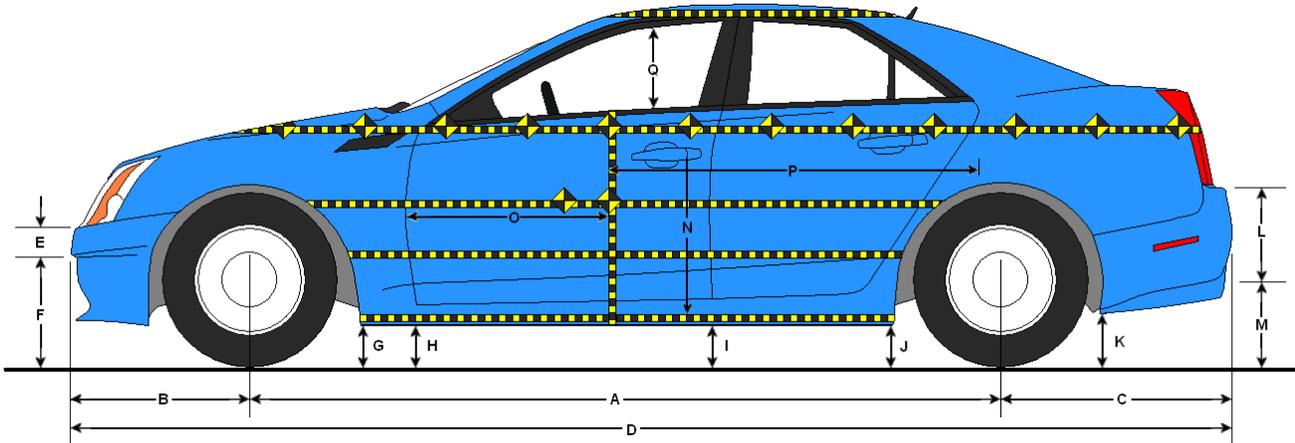
Measured Parameter	Units	Tolerance	Value
Vertical Impact Reference Line (Aft of Front Axle)(Intended Impact Point)	mm		1202
Actual Impact Point (Aft of Front Axle)	mm		1219
Horizontal Offset (+ forward / - rearward)	mm	± 38 of Intended Impact Point	-17
Angle Between Vehicle's Longitudinal Centerline and Line of Forward Motion	°	75 ± 3	77.0
Trap No. 1 Velocity (Primary)	km/h	31.4 to 33.0	32.45
Trap No. 2 Velocity (Redundant)	km/h	31.4 to 33.0	32.47

DATA SHEET NO. 9

TEST VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2019 Jeep Grand Cherokee Laredo 5-Door MPV NHTSA No. M20190319

Test Program: NCAP Side Pole Impact Test Test Date: 06/13/19



LEFT SIDE VIEW

All measurements in mm with tolerance of ± 3 mm

VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

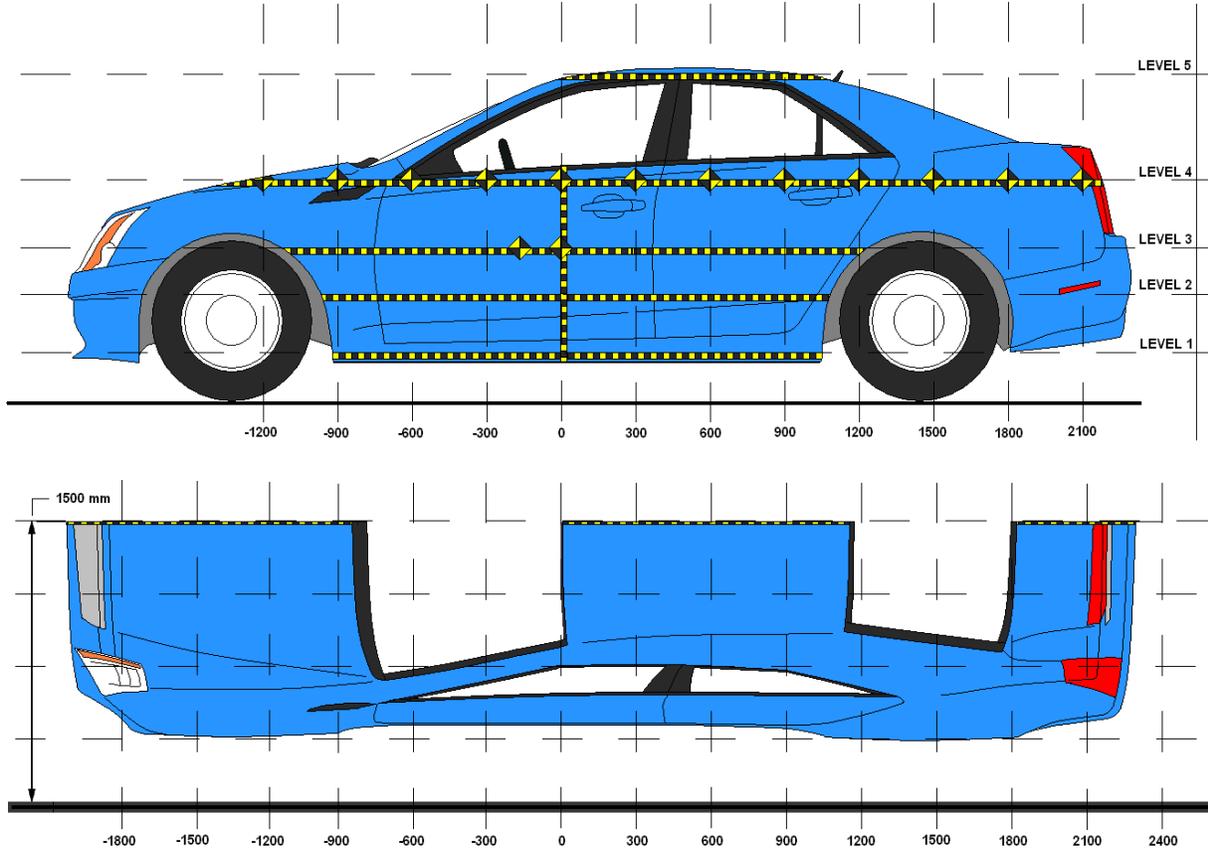
Code	Description	Pre-Test	Post-Test	Difference
A	Wheelbase	2921	2755	-166
B	Front Axle to FSOV	907	1047	140
C	Rear Axle to RSOV	1017	1002	-15
D	Total Length at Centerline	4830	4804	-26
E	Front Bumper Thickness	156	155	-1
F	Front Bumper Bottom to Ground	560	511	-49
G	Sill Height at Front Wheel Well	387	335	-52
H	Sill Height at Front Door Leading Edge	399	344	-55
I	Sill Height at B-Pillar	422	399	-23
J1	Sill Height at Rear Wheel Well	454	460	6
J2	Pinch Weld Height at Rear Wheel Well	331	322	-9
K	Sill Height Aft of Rear Wheel Well	561	561	0
L	Rear Bumper Thickness	97	99	2
M	Rear Bumper Bottom to Ground	668	675	7
N	Sill Height to Bottom of Front Window Sill	746	736	-10
O	Front Door Leading Edge to Impact CL	591	455	-136
P	Rear Door Trailing Edge to Impact CL	1475	1360	-115
Q	Front Window Opening	453	470	17
R	Right Side Length	3517	3528	11
S	Left Side Length	3518	3382	-136
T	Vehicle Width at B-Pillar	1919	1835	-84

DATA SHEET NO. 10

TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2019 Jeep Grand Cherokee Laredo 5-Door MPV NHTSA No. M20190319

Test Program: NCAP Side Pole Impact Test Test Date: 06/13/19



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

MAXIMUM EXTERIOR CRUSH MEASUREMENTS

Level	Description	Height Above Ground (mm)	Maximum Exterior Static Crush	Distance from Impact
1	Sill Top	441	285	0
2	Occupant H-Point	871	335	0
3	Mid-Door	844	334	0
4	Window Sill	1178	292	150
5	Window Top	1711	106	150

DATA SHEET NO. 10 ... (CONTINUED)

TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2019 Jeep Grand Cherokee Laredo 5-Door MPV NHTSA No. M20190319

Test Program: NCAP Side Pole Impact Test Test Date: 06/13/19

EXTERIOR CRUSH MEASUREMENTS AT EACH LEVEL

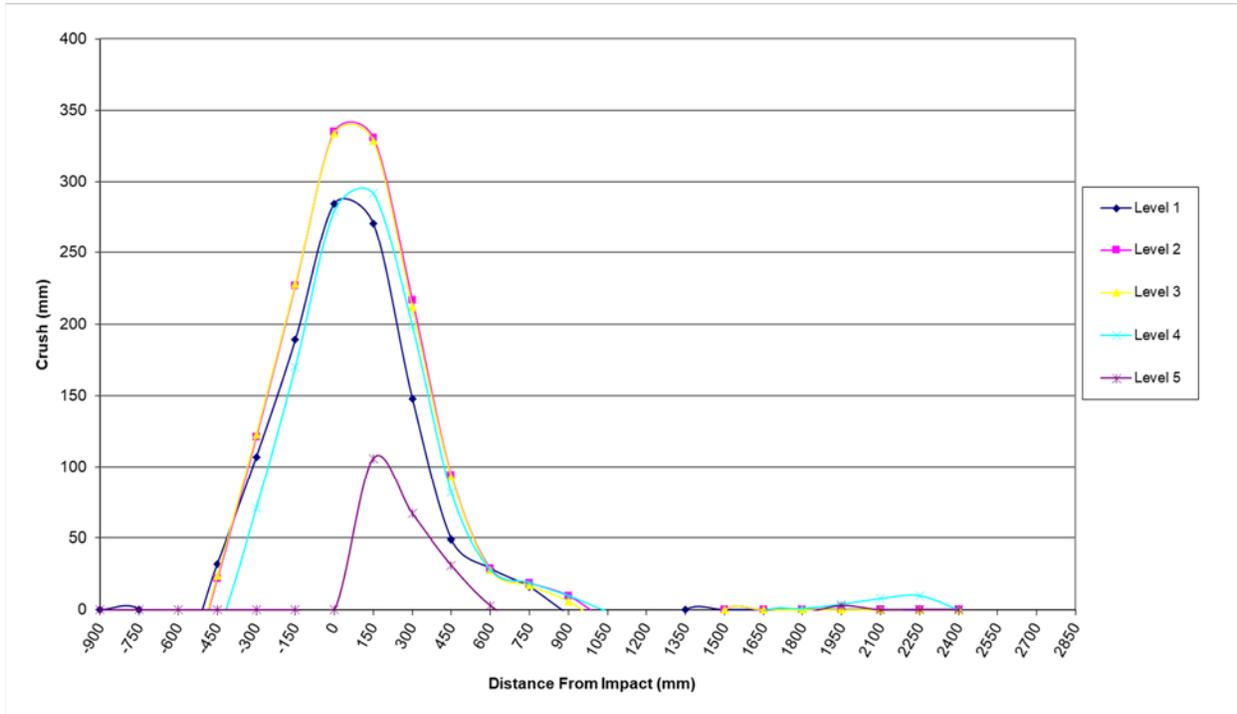
	Pre-Test (mm)					Post-Test (mm)					Difference (mm)				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-900		544	533	688			450	440	561			-94	-93	-127	
-750		552	550	662			473	472	555			-79	-78	-107	
-600	598	569	568	643		560	502	502	571		-38	-67	-66	-72	
-450	616	569	571	631		648	591	595	614		32	22	24	-17	
-300	612	566	568	618		719	687	691	689		107	121	123	71	
-150	609	563	565	610		798	790	793	780		189	227	228	170	
0	609	562	564	604		894	897	898	884		285	335	334	280	
150	608	562	564	599	844	879	893	893	891	950	271	331	329	292	106
300	610	562	565	594	847	758	779	777	793	914	148	217	212	199	67
450	609	564	566	592	847	658	658	659	674	878	49	94	93	82	31
600	612	568	571	592	847	641	597	599	620	850	29	29	28	28	3
750	612	572	576	592	848	628	591	593	611	836	16	19	17	19	-12
900	616	578	582	592	846	613	588	588	602	836	-3	10	6	10	-10
1050	615	580	581	594	848	599	572	569	593	834	-16	-8	-12	-1	-14
1200	591	557	554	579	849	561	533	527	570	836	-30	-24	-27	-9	-13
1350		538	539	566	848		501	503	544	837		-37	-36	-22	-11
1500				595	851				568	844				-27	-7
1650				599	850				598	849				-1	-1
1800				604	857				605	855				1	-2
1950				610	868				614	871				4	3
2100				621					629					8	
2250				640					650					10	
2400															
2550															
2700															
2850															

DATA SHEET NO. 10 ... (CONTINUED)

TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2019 Jeep Grand Cherokee Laredo 5-Door MPV NHTSA No. M20190319

Test Program: NCAP Side Pole Impact Test Test Date: 06/13/19

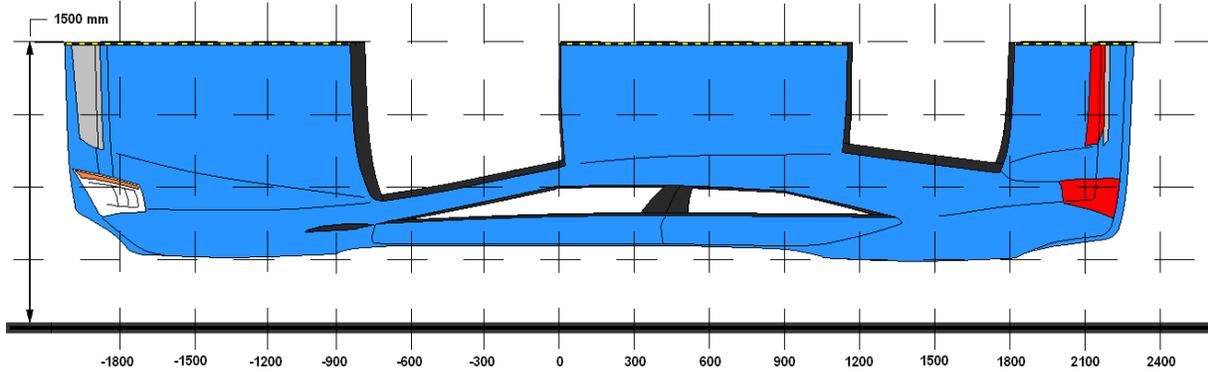


DATA SHEET NO. 11

VEHICLE DAMAGE PROFILE DISTANCES

Test Vehicle: 2019 Jeep Grand Cherokee Laredo 5-Door MPV NHTSA No. M20190319

Test Program: NCAP Side Pole Impact Test Test Date: 06/13/19



DPD	Distance From Impact Point (mm)	Level	Pre-Test (mm)	Post-Test (mm)	Crush (mm)
1	2250	3	640	650	10
2	1650	3	599	598	-1
3	1050	2	594	593	-1
4	300	4	562	779	217
5	-300	4	568	691	123
6	-900	4	533	440	-93

DATA SHEET NO. 12

FMVSS NO. 301 STATIC ROLLOVER RESULTS

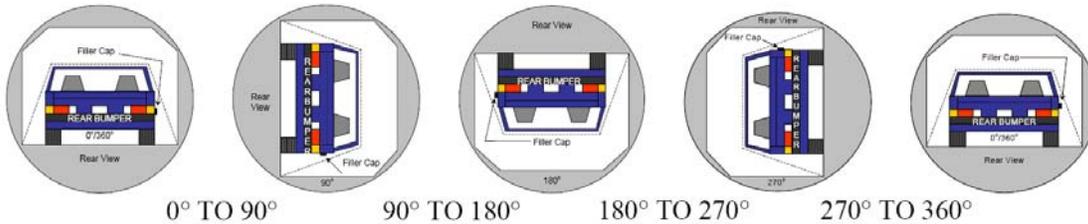
Test Vehicle: 2019 Jeep Grand Cherokee Laredo 5-Door MPV NHTSA No. M20190319

Test Program: NCAP Side Pole Impact Test Test Date: 06/13/19

Temperature at Time of Impact: 21.2° C

Test Time: 12:03 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: There was no Stoddard solvent spillage.



SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0° To 90°	79	300	379
90° To 180°	79	300	379
180° To 270°	78	300	378
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

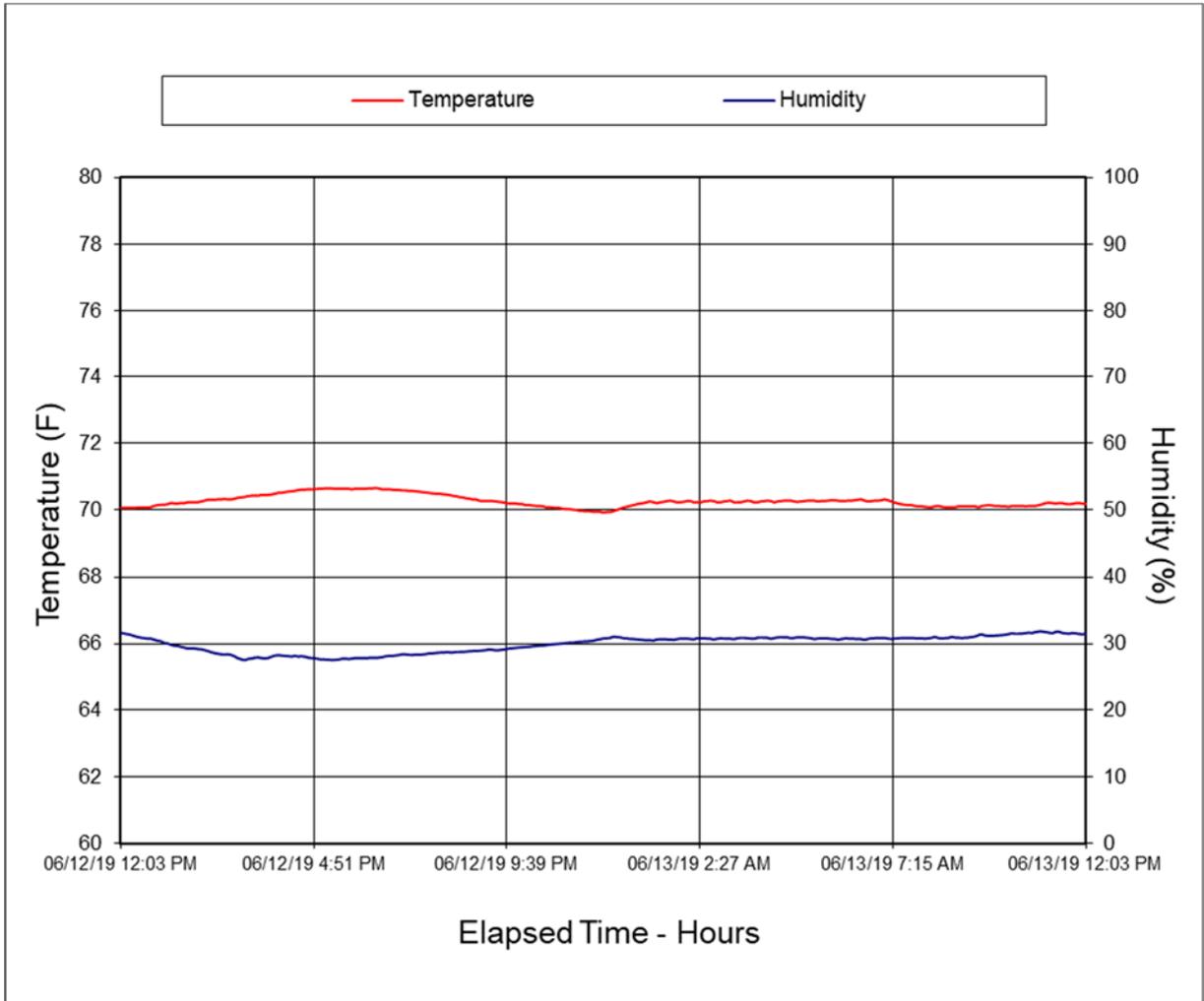
Test Phase	Spillage Location
0° To 90°	No Spillage Occurred
90° To 180°	No Spillage Occurred
180° To 270°	No Spillage Occurred
270° To 360°	No Spillage Occurred

DATA SHEET NO. 13

DUMMY/VEHICLE TEMPERATURE AND HUMIDITY STABILIZATION

Test Vehicle: 2019 Jeep Grand Cherokee Laredo 5-Door MPV NHTSA No. M20190319

Test Program: NCAP Side Pole Impact Test Test Date: 06/13/19



**APPENDIX A
PHOTOGRAPHS**

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FIGURE 1. As-Delivered Right Front $\frac{3}{4}$ View of Test Vehicle



FIGURE 2. As-Delivered Left Rear $\frac{3}{4}$ 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 $\frac{3}{4}$ View of Test Vehicle



FIGURE 6. Post-Test Left Front $\frac{3}{4}$ 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 $\frac{3}{4}$ View of Test Vehicle



FIGURE 10. Post-Test Left Rear $\frac{3}{4}$ 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

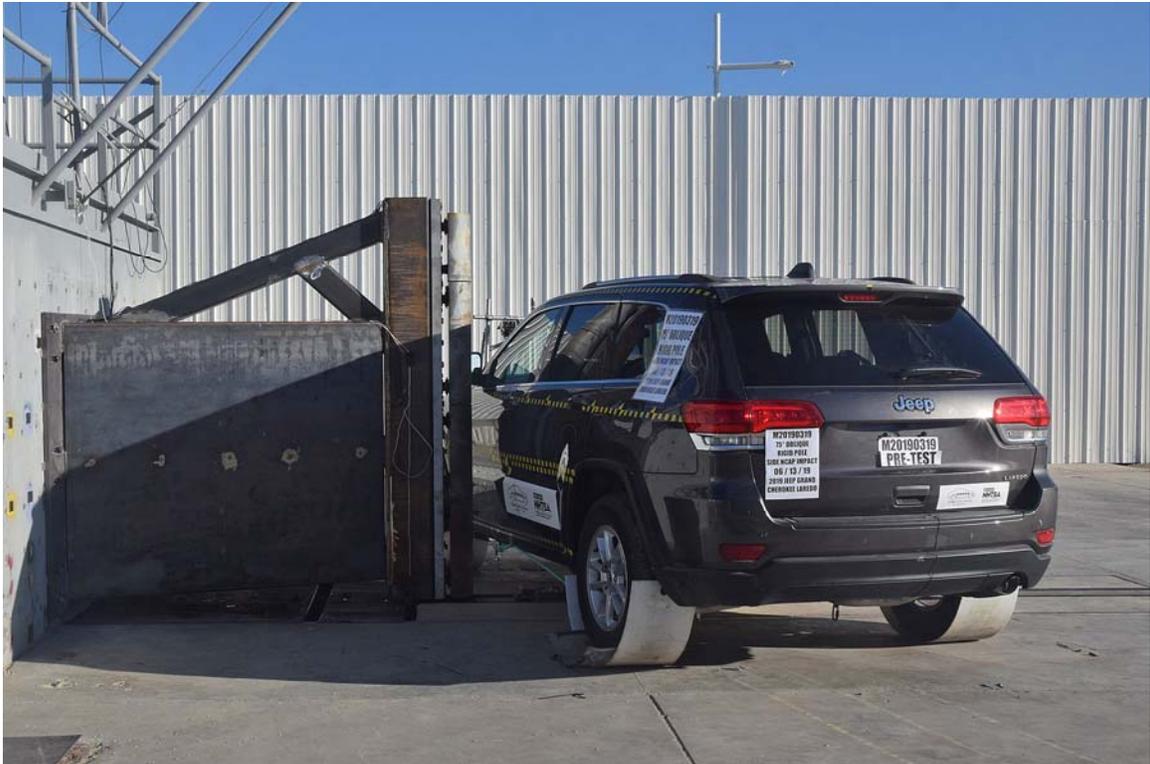


FIGURE 18. Pre-Test Right Side View of Pole Positioned Against Side of Vehicle



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 Dummy Head and Shoulders in Relation to Head Restraint



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

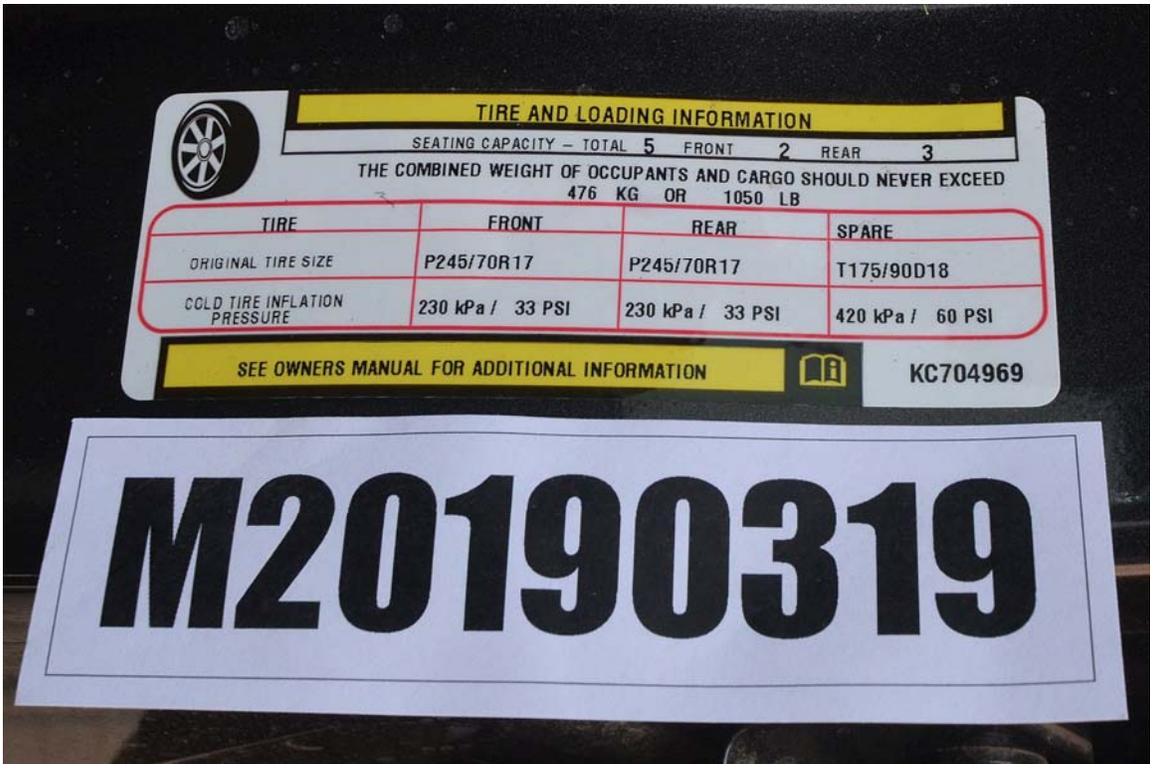


FIGURE 56. Close-Up View of Vehicle's Tire Information Placard or Label



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

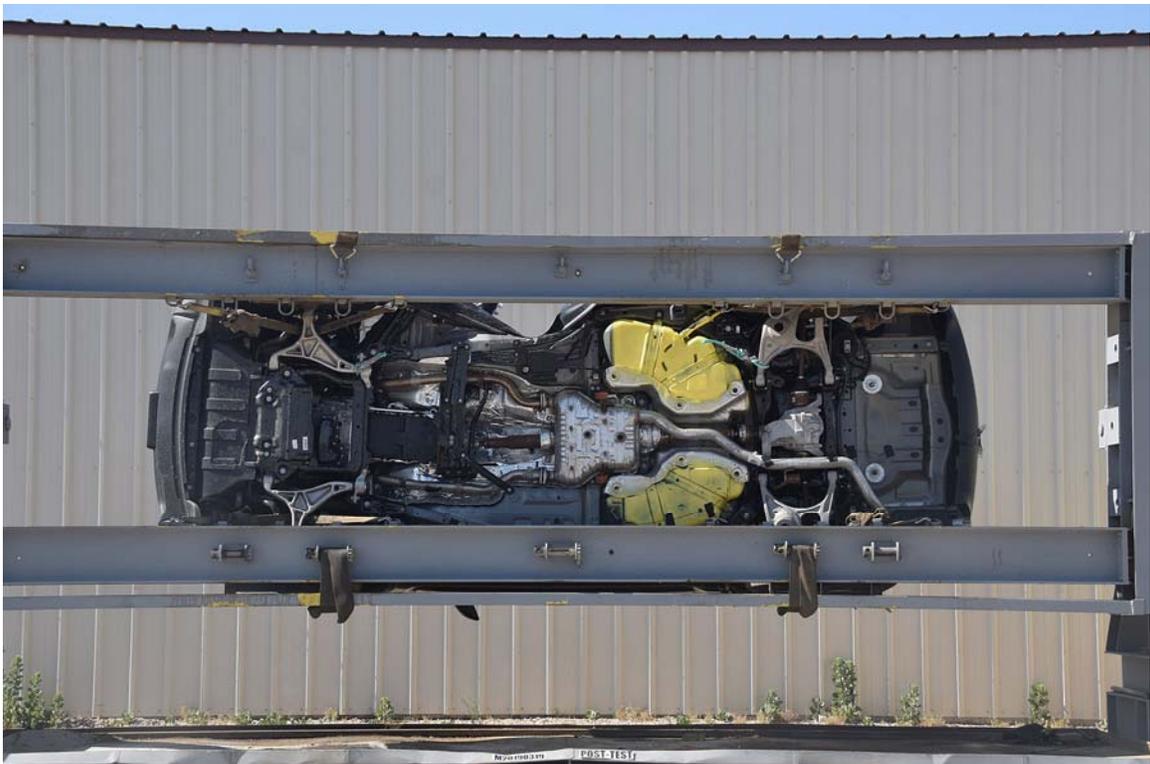


FIGURE 66. FMVSS No. 301 Static Rollover 270 Degrees



FIGURE 67. FMVSS No. 301 Static Rollover 360 Degrees



FIGURE 68. Impact Event

Photograph Not Available

FIGURE 69. Monroney Label

SETTING TO KNOW YOUR VEHICLE

WARNING!

- Persons who are unable to feel pain to the skin because of advanced age, chronic illness, diabetes, spinal cord injury, medication, alcohol use, exhaustion or other physical condition must exercise care when using the seat heater. It may cause burns even at low temperatures, especially if used for long periods of time.
- Do not place anything on the seat or seat-back that insulates against heat, such as a blanket or cushion. This may cause the seat heater to overheat. Sitting in a seat that has been overheated could cause serious burns due to the increased surface temperature of the seat.

Front Ventilated Seats

If your vehicle is equipped with ventilated seats, the seat cushion and seat back will have fans that draw the air from the passenger compartment and move air through fine perforations in the seat cover to help keep the driver and front passenger cooler in higher ambient temperatures. The fans operate at two speeds, HI and LO.

HEAD RESTRAINTS

Head restraints are designed to reduce the risk of injury by restricting head movement in the event of a rear-impact. Head restraints should be adjusted so that the top of the head restraint is located above the top of your ear.

WARNING!

- All occupants, including the driver, should not operate a vehicle or sit in a vehicle's seat until the head restraints are placed in their proper positions in the event of a crash.
- Head restraints should never be adjusted while the vehicle is in motion. Driving a vehicle with the head restraints improperly adjusted or removed could cause serious injury or death in the event of a collision.

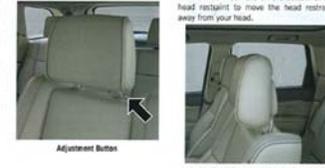
Supplemental Active Head Restraints – Front Seats

Active Head Restraints are passive, deployable components, and vehicles with this equipment cannot be readily identified by any markings, only through visual inspection of the head restraint. The Active Head Restraints (AHR) will be split in two halves, with the front half being soft foam and the back half being decorative plastic.

When AHRs deploy during a rear impact, the front half of the head restraint extends forward to reduce the gap between the back of the occupant's head and the AHR. This system is designed to reduce the risk of injury to the driver or front passenger in certain types of rear impacts. Refer to "Occupant Restraints" in "Safety" for further information.

To raise the head restraint, pull upward on the head restraint. To lower the head restraint, push the adjustment button, located at the base of the head restraint, and push downward on the head restraint.

For comfort, the Active Head Restraints can be tilted forward and upward. To tilt the head restraint closer to the back of your head, pull forward on the bottom of the head restraint. Push forward on the bottom of the head restraint to move the head restraint away from your head.



Adjustment Button

Active Head Restraint (Normal Position)

Active Head Restraint (Tilted)

NOTE:

- The head restraints should only be removed by qualified technicians, for service purposes only. If either of the head restraints require removal, see your authorized dealer.

WARNING!

- ALL the head restraints MUST be reinstalled in the vehicle to properly protect the occupants.
- All occupants, including the driver, should not operate a vehicle or sit in a vehicle's seat until the head restraints are placed in their proper positions in order to minimize the risk of neck injury in the event of a collision.

WARNING!

- Do not place items over the top of the Active Head Restraint, such as coats, seat covers or portable DVD players. These items may interfere with the operation of the Active Head Restraint in the event of a collision and could result in serious injury or death.
- Active Head Restraints may be deployed if they are struck by an object such as a hand, foot or loose cargo. To avoid accidental deployment of the Active Head Restraint, ensure that all cargo is secured, as loose cargo could contact the Active Head Restraint during sudden stops. Failure to follow this warning could cause personal injury if the Active Head Restraint is deployed.

Adjustment – Rear Seats

The head restraints on the outboard seats are not adjustable. They automatically fold forward when the rear seat is folded to a load floor position, but do not return to their normal position when the rear seat is raised. After returning either seat to its upright position, raise the head restraint until it locks in place. The outboard head restraints are not removable.

The center head restraint has limited adjustment. Lift upward on the head restraint to raise it, or push downward on the head restraint to lower it.

Head Restraint Removal – Rear Seats

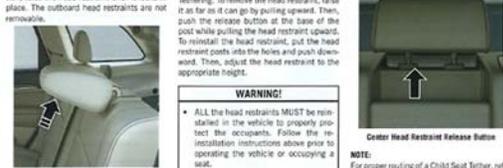
The center head restraint can be adjusted when occupied, or removed for Child Seat Tethering. To remove the head restraint, raise it as far as it can go by pulling upward. Then, push the release button at the base of the post while pulling the head restraint upward. To reinstall the head restraint, pull the head restraint posts into the holes and push downward. Then, adjust the head restraint to the appropriate height.

WARNING!

- ALL the head restraints MUST be reinstalled in the vehicle to properly protect the occupants. Follow the reinstallation instructions above prior to operating the vehicle or occupying a seat.
- Sitting in a seat with the head restraint in its lowered position could result in serious injury or death in a collision. Always make sure the outboard head restraints are in their upright positions when the seat is to be occupied.

NOTE:

- For proper routing of a Child Seat Tether, refer to "Occupant Restraints" in "Safety" for further information.



Folded Rear Head Restraint

Center Head Restraint Release Button

FIGURE 70. Head Restraint Use and Adjustment



FIGURE 71. Post-Test View of Shattered Vehicle Inner Door Pane

APPENDIX B
DUMMY RESPONSE DATA

TABLE OF DATA PLOTS

Plot		Page
1	Driver Head Acceleration (X) Primary	B-1
2	Driver Head Acceleration (Y) Primary	B-1
3	Driver Head Acceleration (Z) Primary	B-1
4	Driver Head Acceleration Primary Resultant	B-1
5	Driver Lower Spine T12 Acceleration (X)	B-2
6	Driver Lower Spine T12 Acceleration (Y)	B-2
7	Driver Lower Spine T12 Acceleration (Z)	B-2
8	Driver Lower Spine T12 Acceleration Resultant	B-2
9	Driver Upper Thorax Rib Deflection (Y)	B-3
10	Driver Middle Thorax Rib Deflection (Y)	B-3
11	Driver Lower Thorax Rib Deflection (Y)	B-3
12	Driver Upper Abdomen Rib Deflection (Y)	B-3
13	Driver Lower Abdomen Rib Deflection (Y)	B-4
14	Driver Acetabulum Force on Impact Side (Y)	B-4
15	Driver Iliac Wing Force on Impact Side (Y)	B-4
16	Driver Total Pelvis Force on Impact Side (Y)	B-4

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)

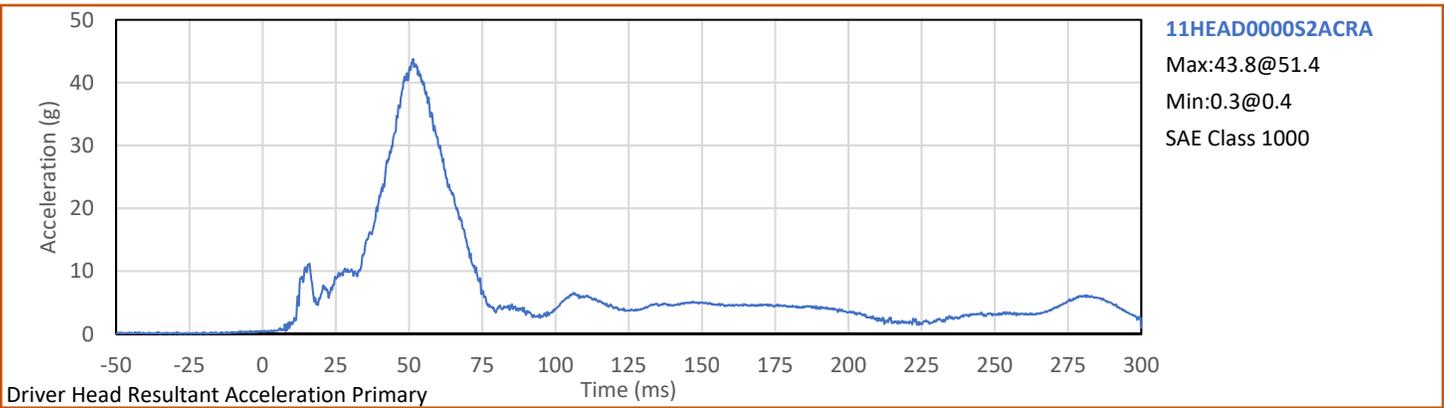
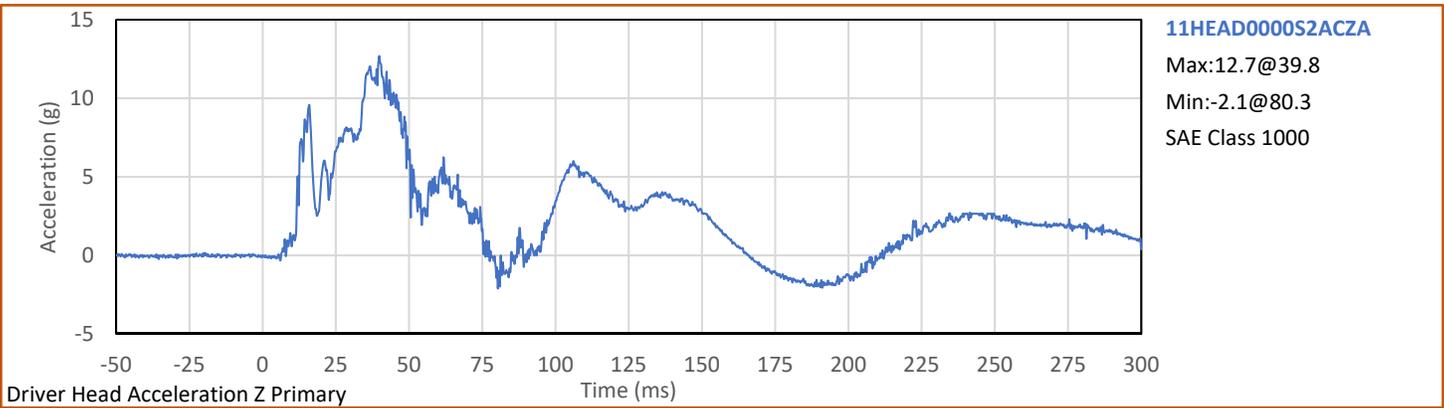
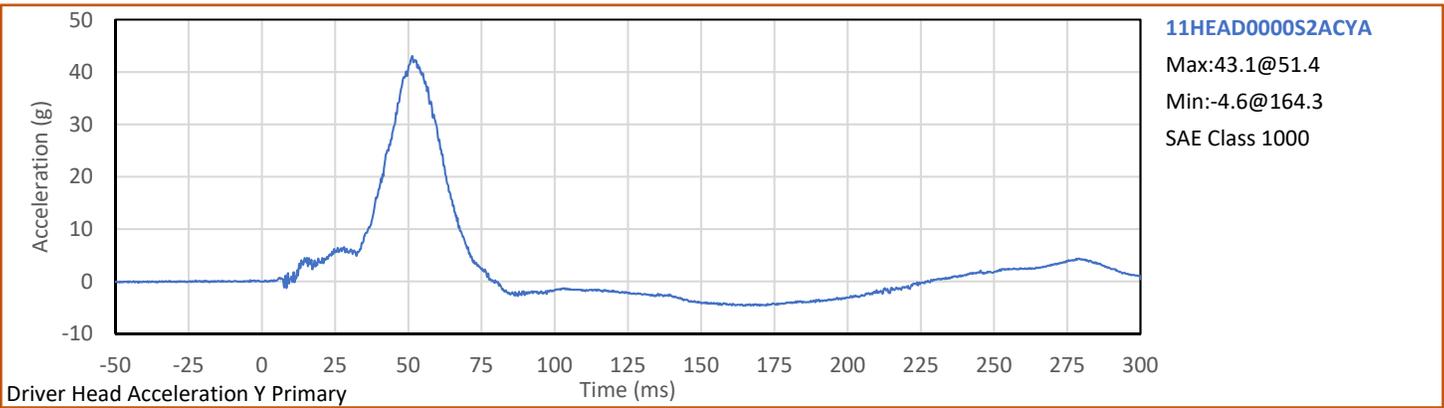
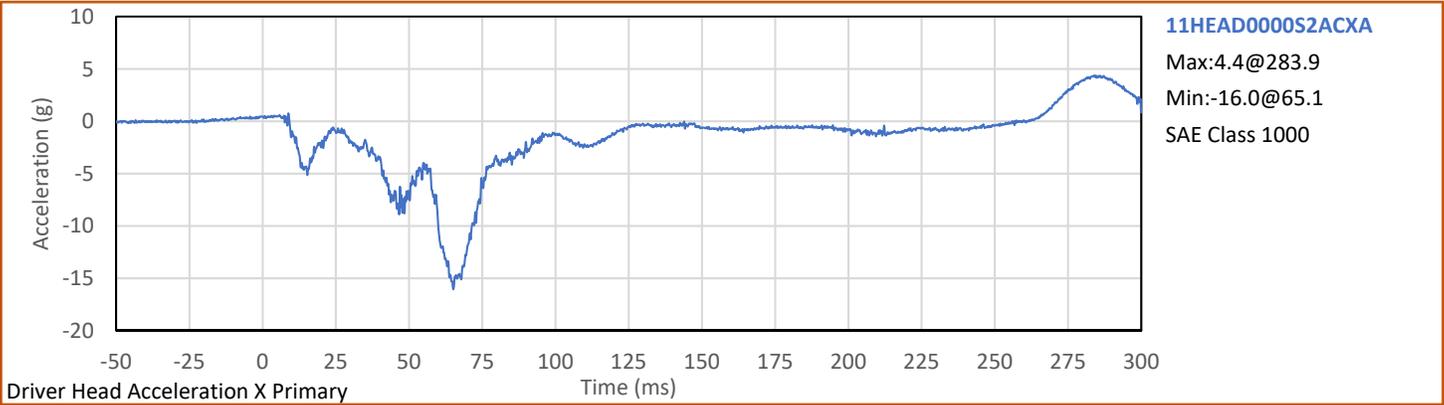
Driver Head Acceleration Redundant (Z)

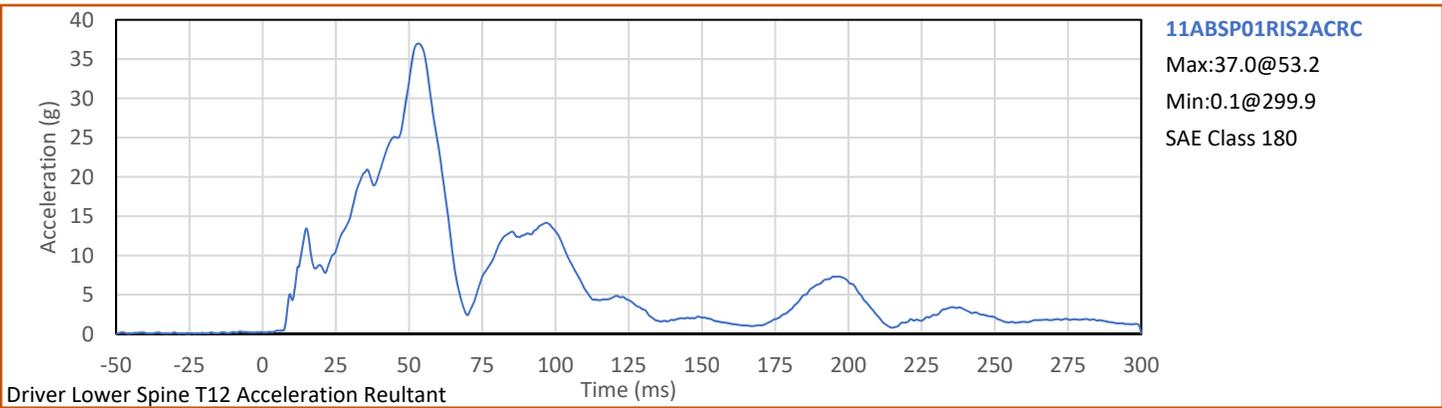
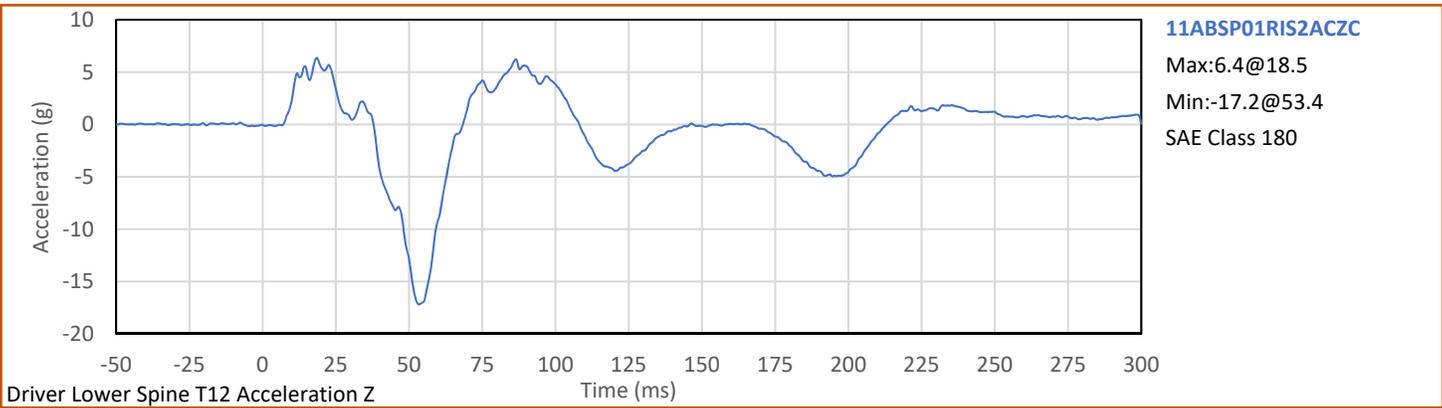
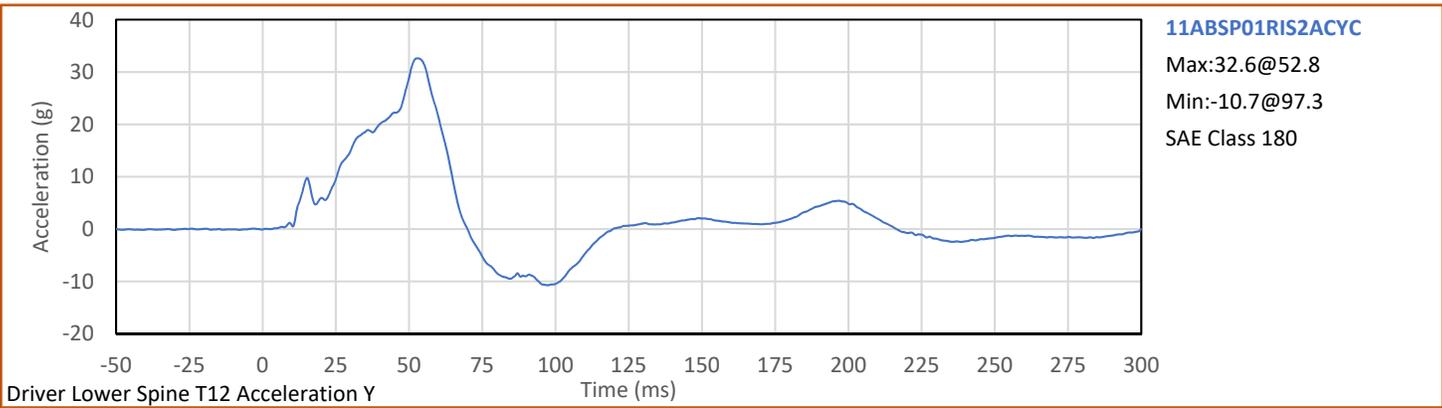
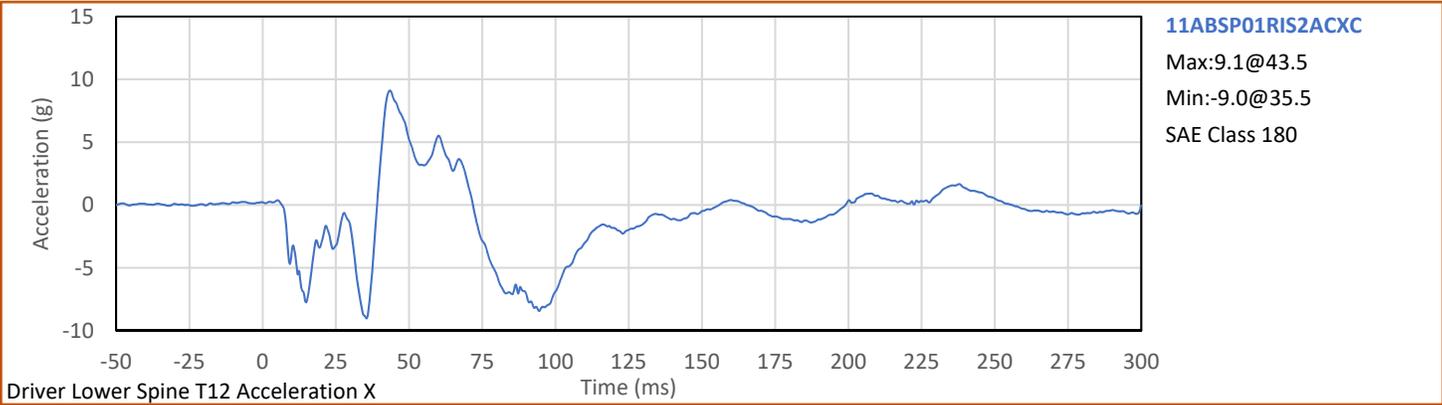
Vehicle Instrumentation Data

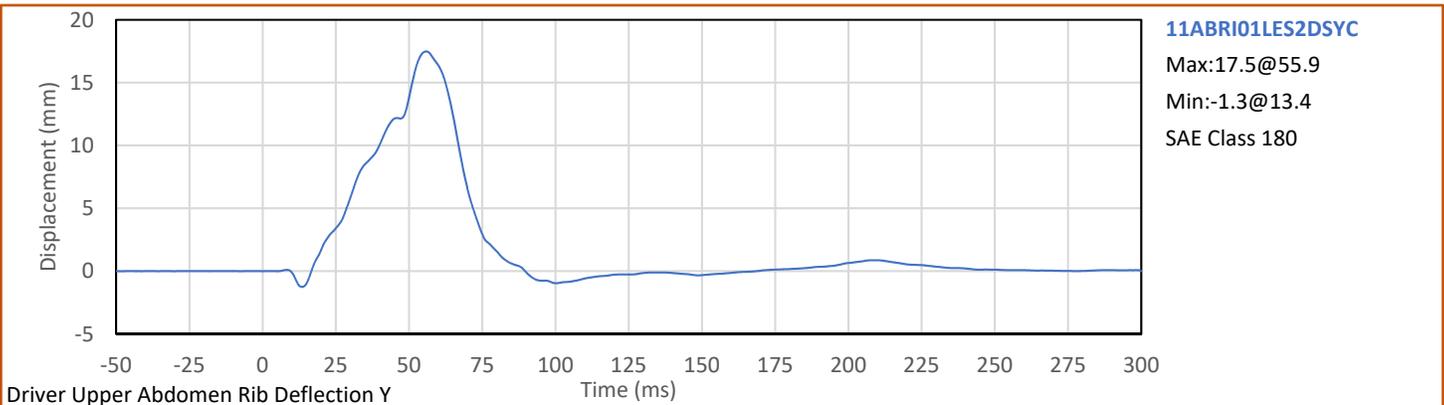
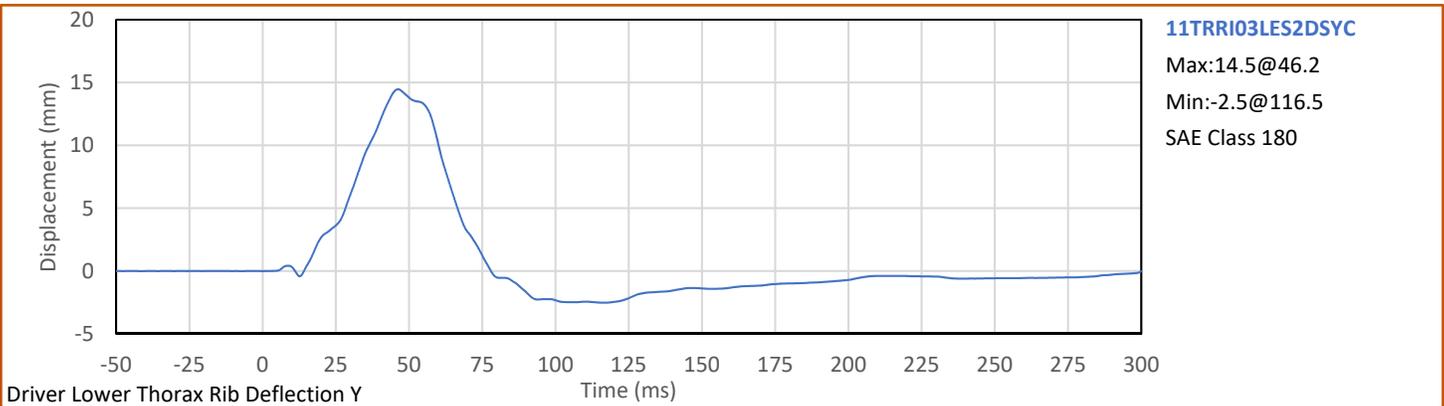
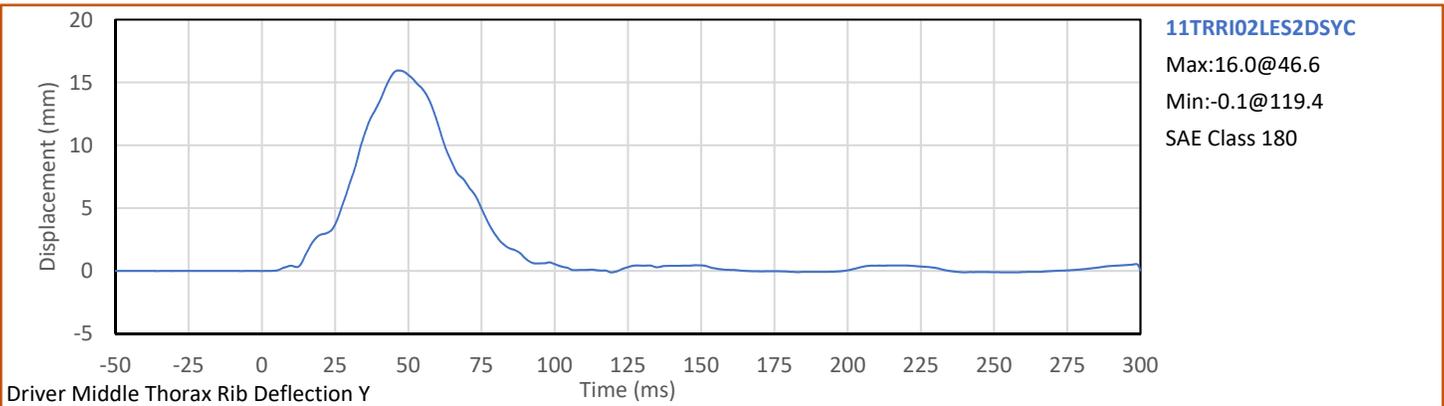
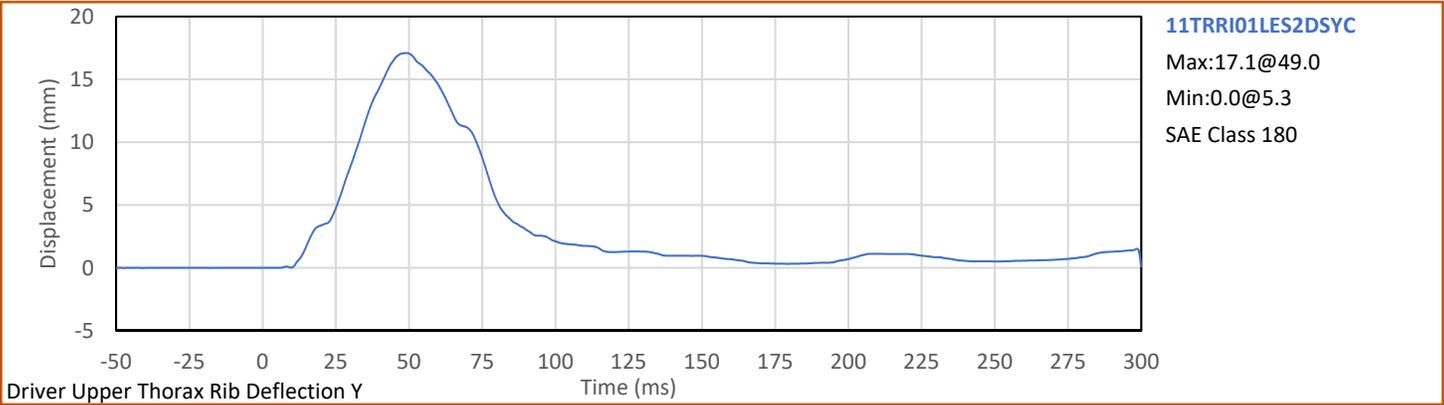
Vehicle Center of Gravity Acceleration (X)
Vehicle Center of Gravity Acceleration (Y)
Vehicle Center of Gravity Acceleration (Z)
Left Floor Sill Acceleration (Y)
Left A-Pillar Sill Acceleration (Y)
Left Lower A-Pillar Acceleration (Y)
Left Mid A-Pillar Acceleration (Y)
Left B-Pillar Sill Acceleration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

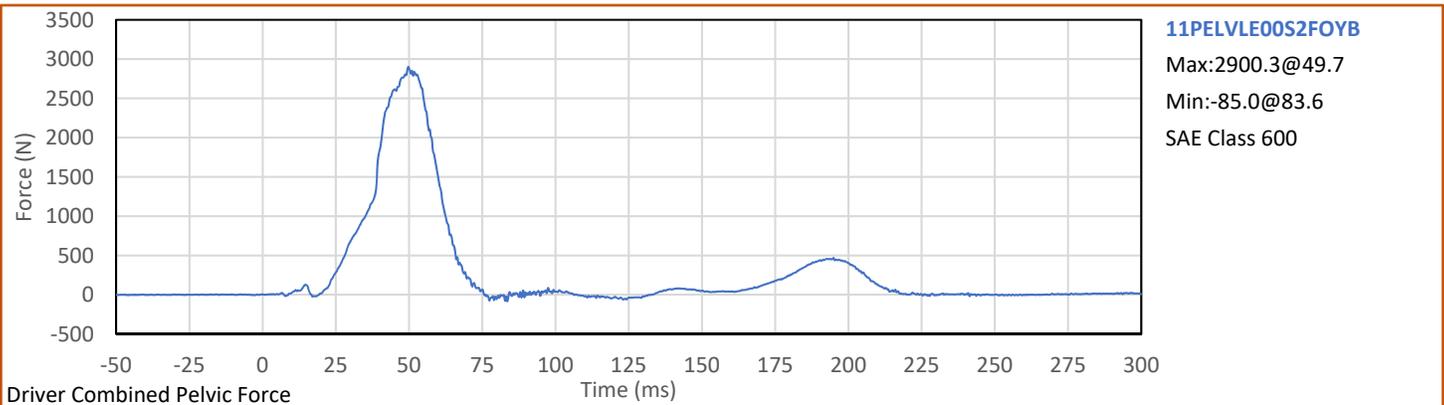
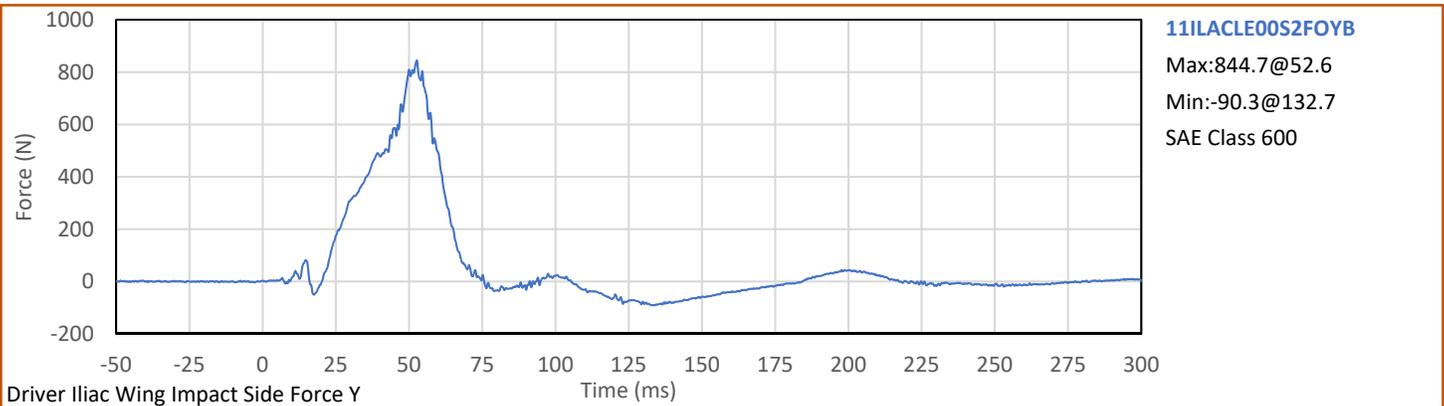
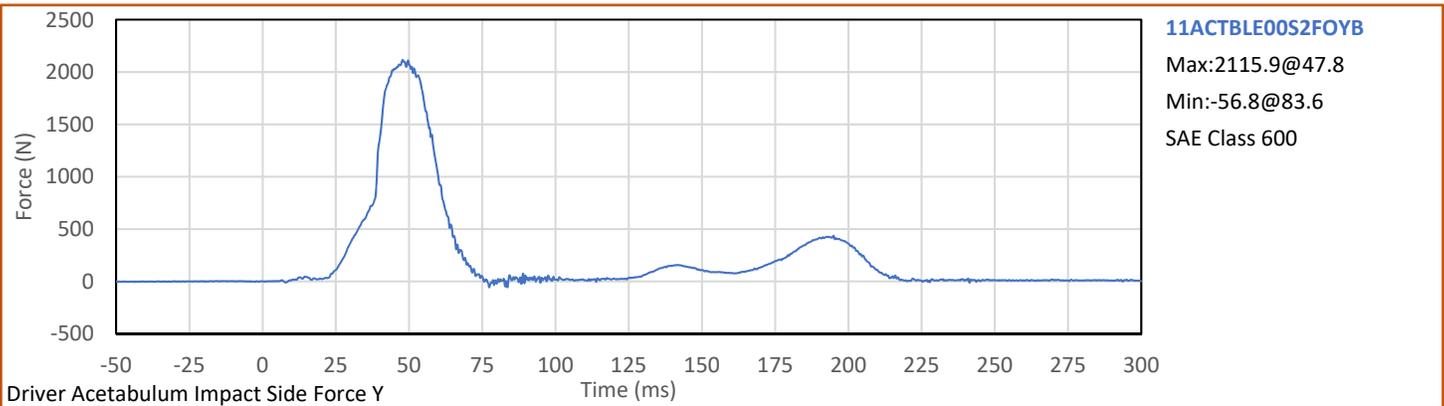
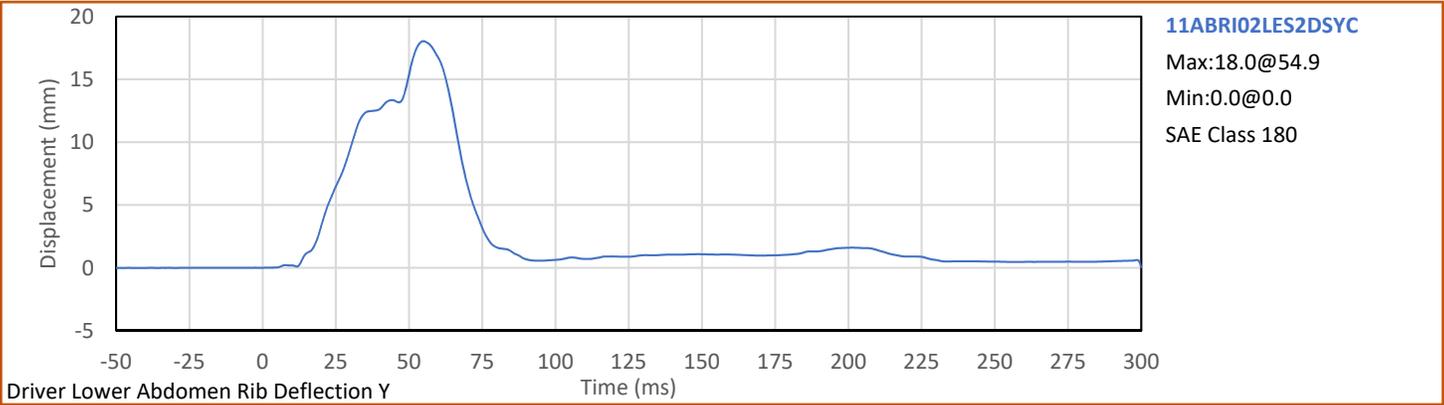
Pole Instrumentation Data

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)









APPENDIX C
ATD CONFIGURATION AND PERFORMANCE VERIFICATION DATA

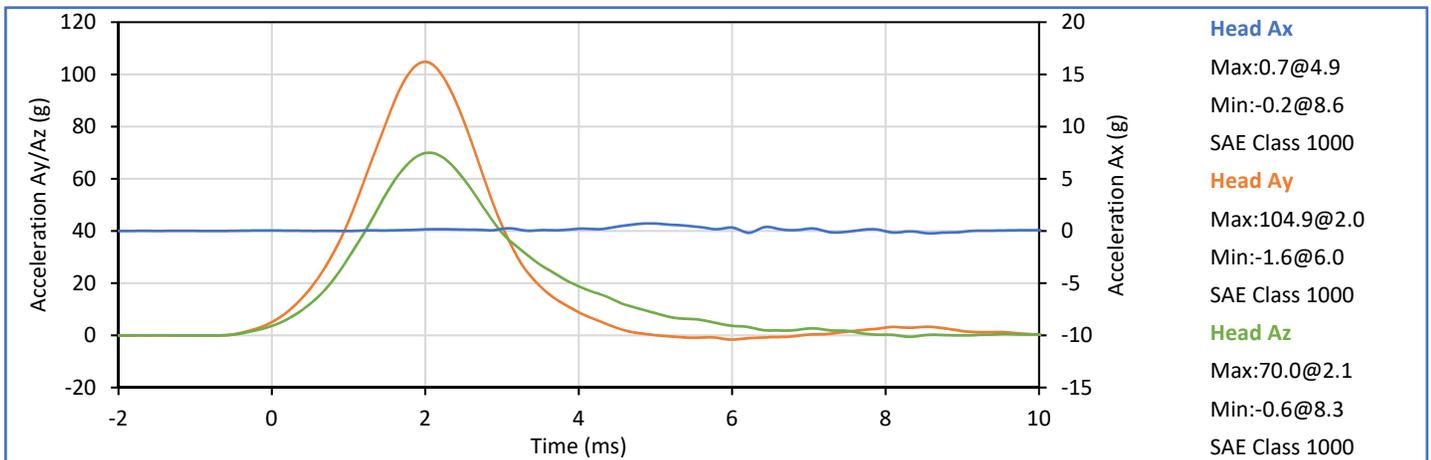
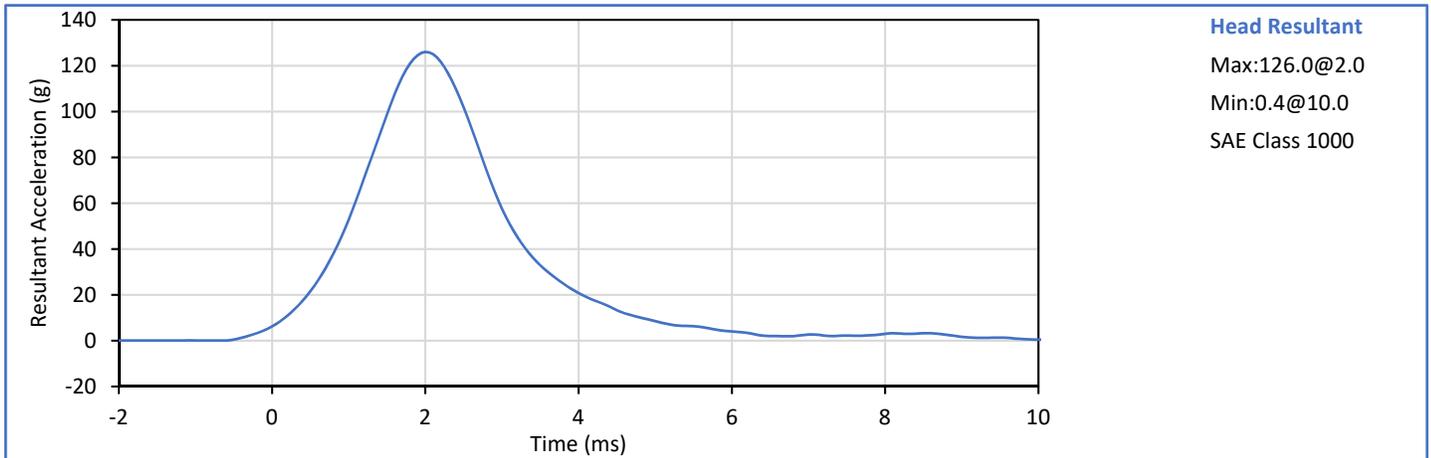
APPENDIX C
Pre-Test ATD Configuration And Performance Verification Data
SID-IIs Small Side Impact ATD
S/N: 299

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	785	Pass
B - Shoulder Pivot Height	mm	437	453	450	Pass
C - Hpoint Height	mm	79	89	81	Pass
D - H Point From Seatback	mm	141	151	147	Pass
E - Shoulder Pivot From Backline	mm	97	107	102	Pass
F - Thigh Clearance	mm	119	135	129	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	184	Pass
J - Head Circumference	mm	541	551	548	Pass
K - Buttock To Knee Length	mm	514	540	527	Pass
L - Popliteal Height	mm	343	369	355	Pass
K - Knee Pivot To Floor Height	mm	392	409	400	Pass
N - Buttock Popliteal Length	mm	416	442	434	Pass
O - Chest Depth W/O Jacket	mm	195	211	204	Pass
P - Foot Length	mm	216	232	226	Pass
Q - Hip Breadth (W/Pelvic Plugs)	mm	313	323	319	Pass
R - Arm Length	mm	249	259	258	Pass
S - Knee Joint To Seatback	mm	477	493	486	Pass
V - Shoulder Width	mm	341	357	347	Pass
W - Foot Width	mm	78	94	87	Pass
Y - Chest Circumference W/Jacket	mm	851	881	860	Pass
Z - Waist Circumference	mm	761	791	779	Pass
Overall Test Results					Pass

Technician: 
J. Hernandez

Approved By: 
P. Puzzuto

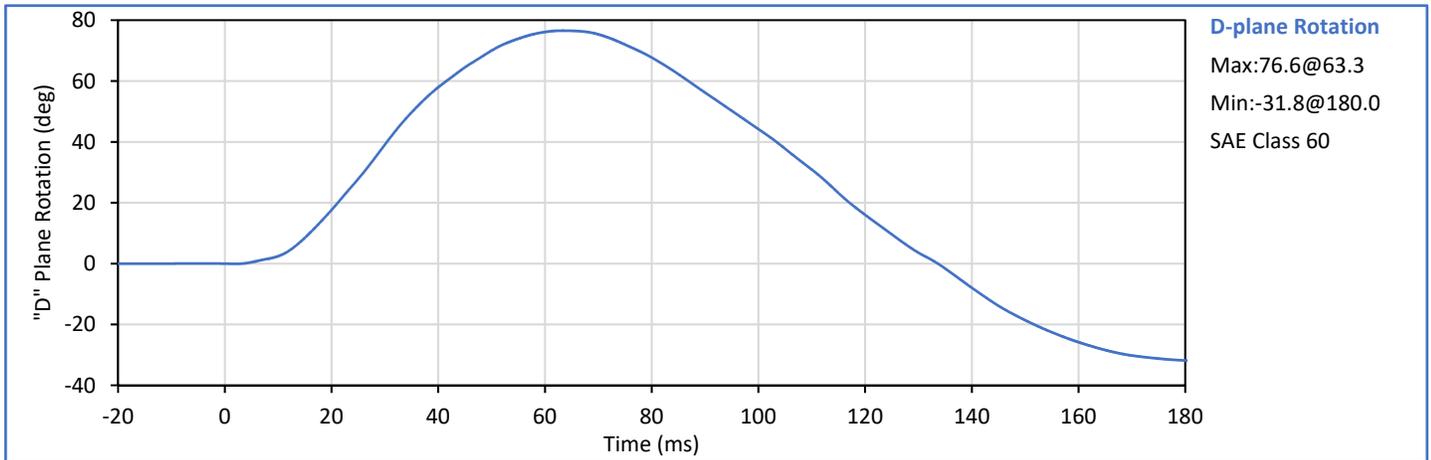
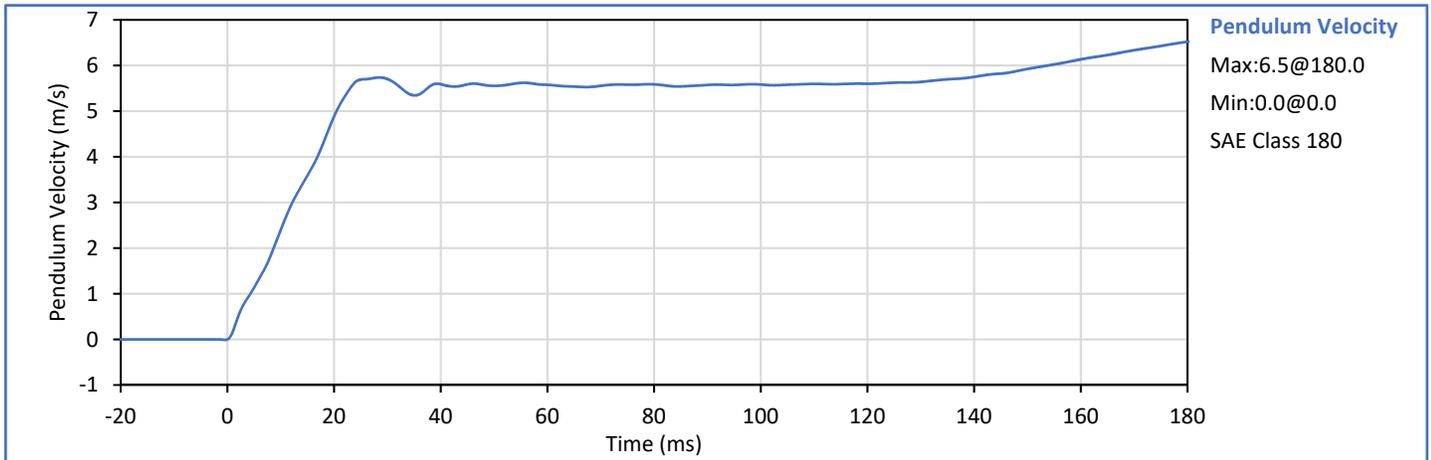
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	18.9	25.6	21.7	Pass
Laboratory Humidity	%	10	70	28	Pass
Peak Resultant Acceleration	g	115.0	137.0	126.0	Pass
Peak Head Ax	g	-15.0	15.0	-0.2	Pass
Oscillations After Main Pulse	%	0.0	15.0	3.2	Pass
Is Acceleration Unimodal?	Yes/No	Yes		Yes	Pass
Overall Test Results					Pass



Technician: 
J. Hernandez

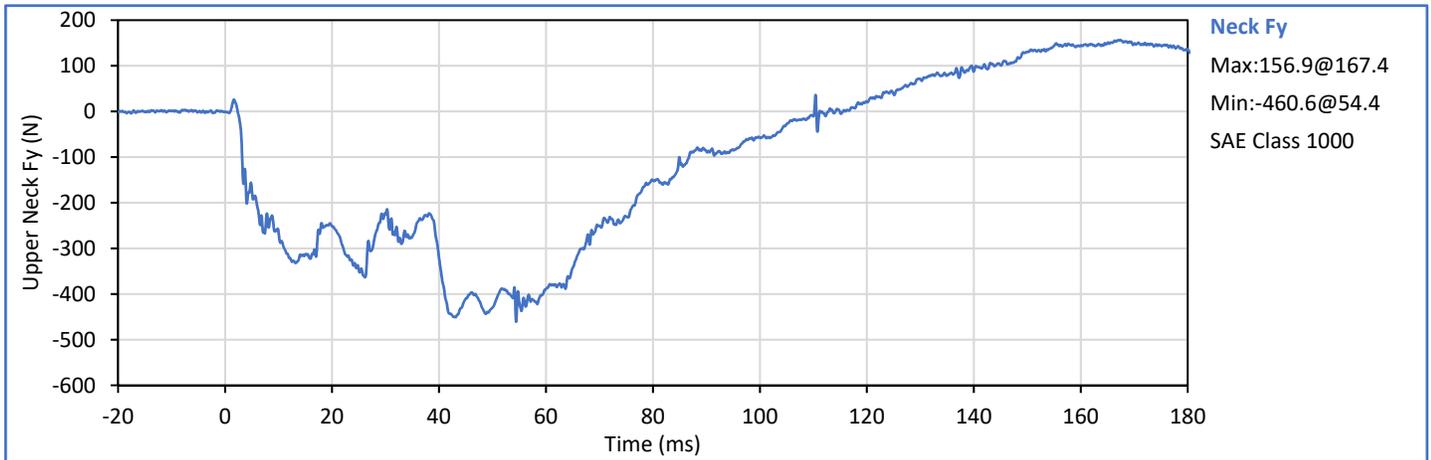
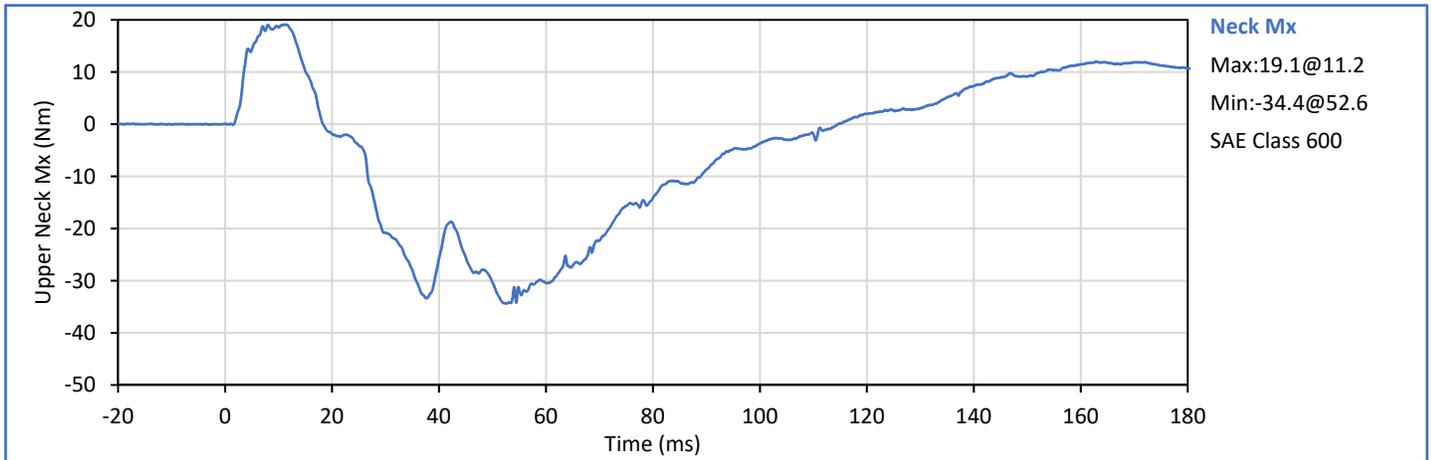
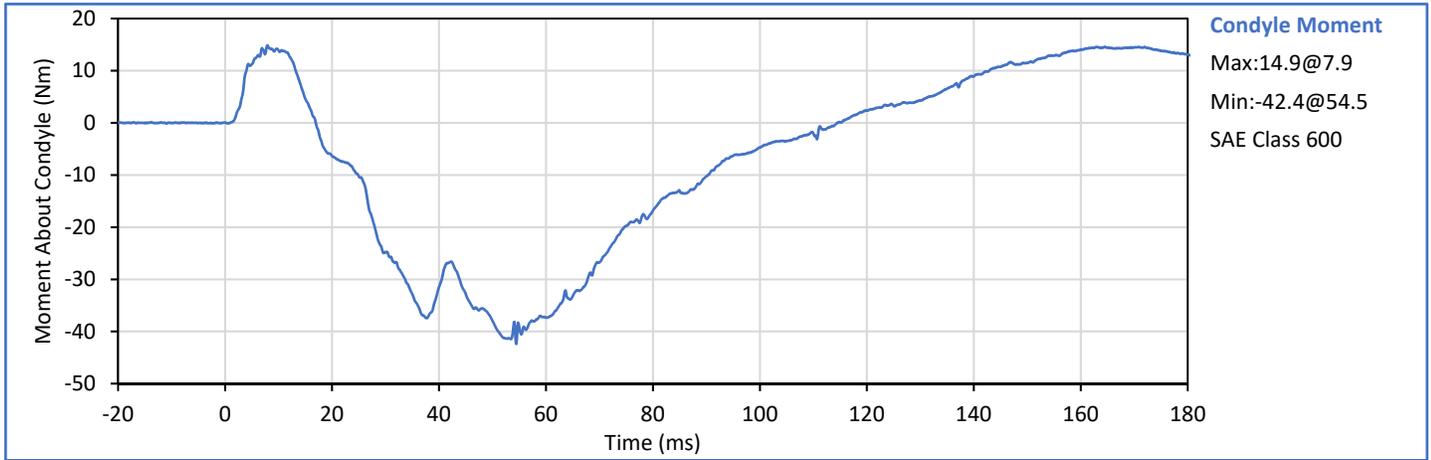
Approved By: 
P. Puzzuto

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.7	Pass
Laboratory Humidity	%	10	70	24	Pass
Pendulum Velocity	m/s	5.51	5.63	5.54	Pass
Pendulum Decel at 10 ms	m/s	2.20	2.80	2.39	Pass
Pendulum Decel at 15 ms	m/s	3.30	4.10	3.59	Pass
Pendulum Decel at 20 ms	m/s	4.40	5.40	4.88	Pass
Pendulum Decel at 25 ms	m/s	5.40	6.10	5.69	Pass
Pendulum Decel from 25-100 ms	m/s	5.50	6.20	5.74	Pass
Peak "D" Plane Rotation	deg	71.0	81.0	76.6	Pass
Time of Peak "D" Plane Rotation	ms	50.0	70.0	63.3	Pass
Peak Occ. Condyle Moment	Nm	-44.0	-36.0	-42.4	Pass
Time of Moment Decay to 0 Nm	ms	102.0	126.0	114.5	Pass
Overall Test Results					Pass

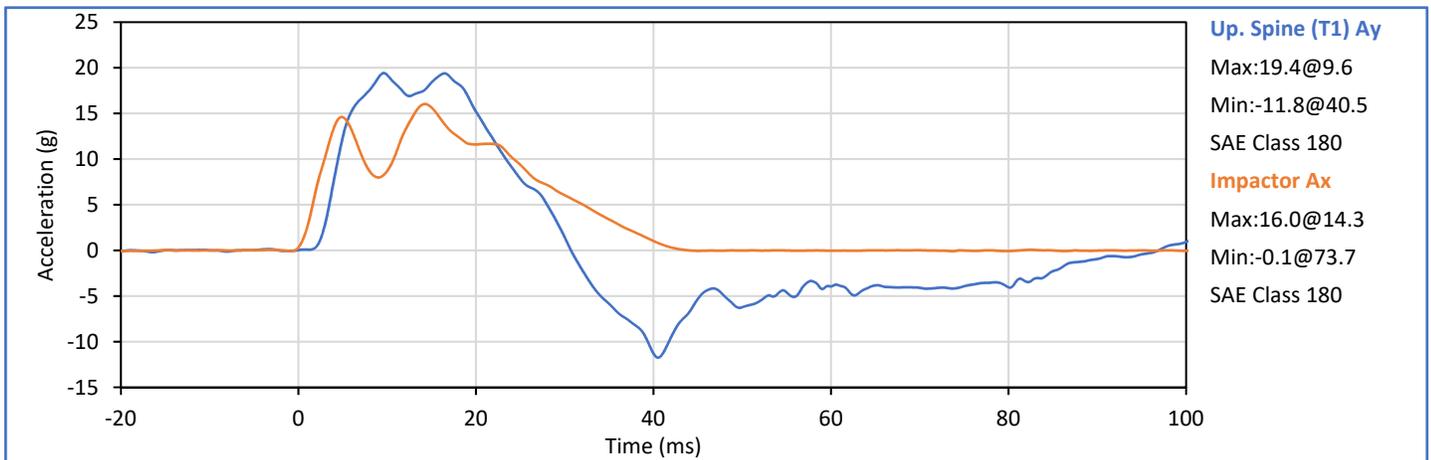
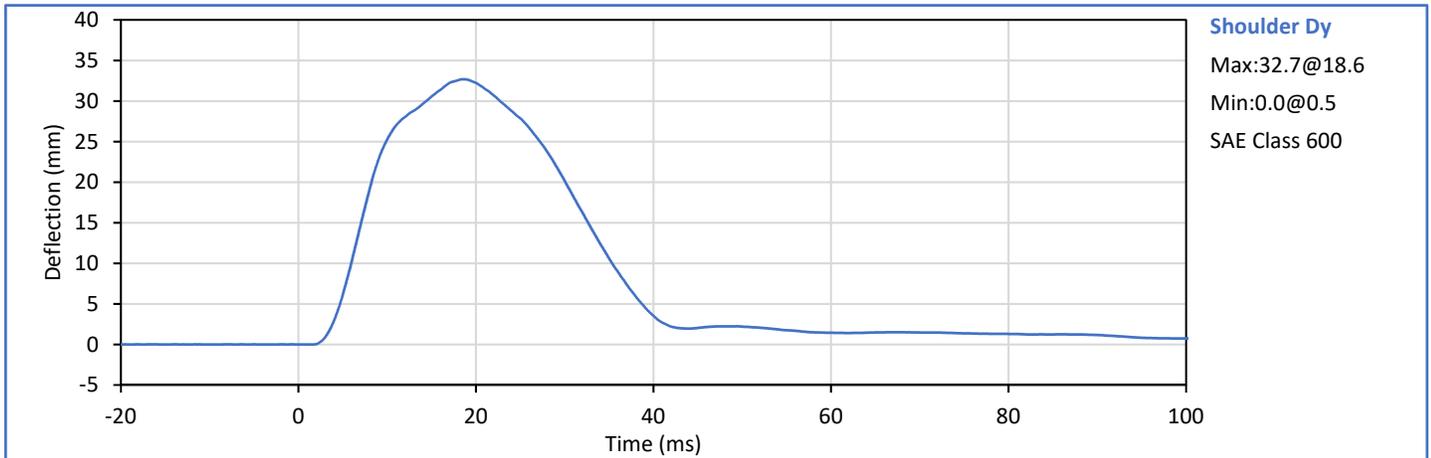


Technician: 
J. Hernandez

Approved By: 
P. Puzzuto



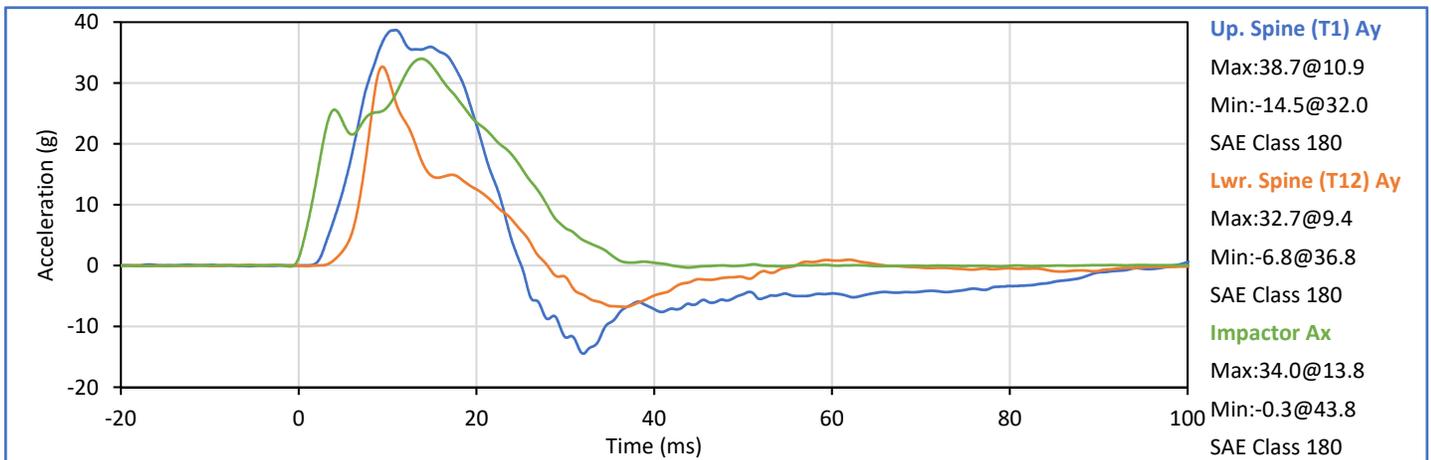
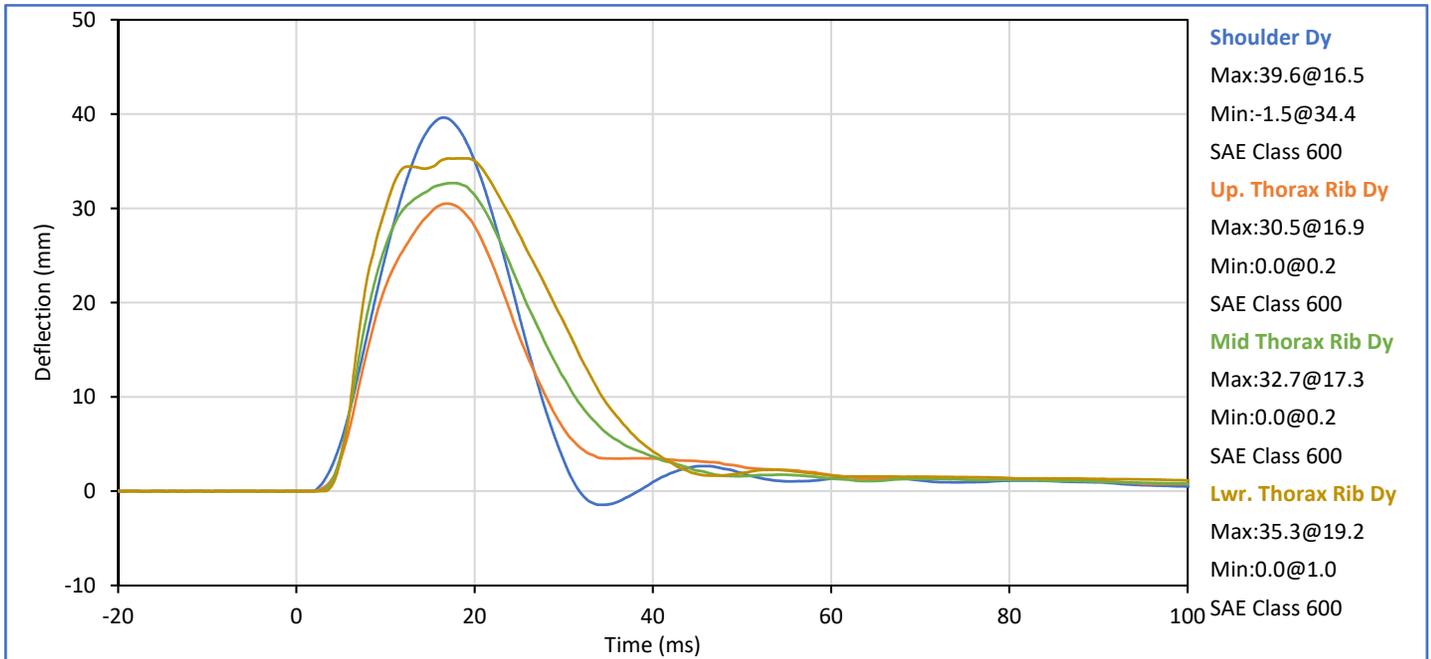
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.1	Pass
Laboratory Humidity	%	10	70	39	Pass
Impactor Velocity	m/s	4.20	4.40	4.28	Pass
Peak Shoulder Dy	mm	28.0	37.0	32.7	Pass
Peak Upper Spine (T1) Ay	g	17.0	22.0	19.4	Pass
Peak Impactor Ax	g	13.0	18.0	16.0	Pass
Overall Test Results					Pass



Technician: 
J. Hernandez

Approved By: 
P. Puzzuto

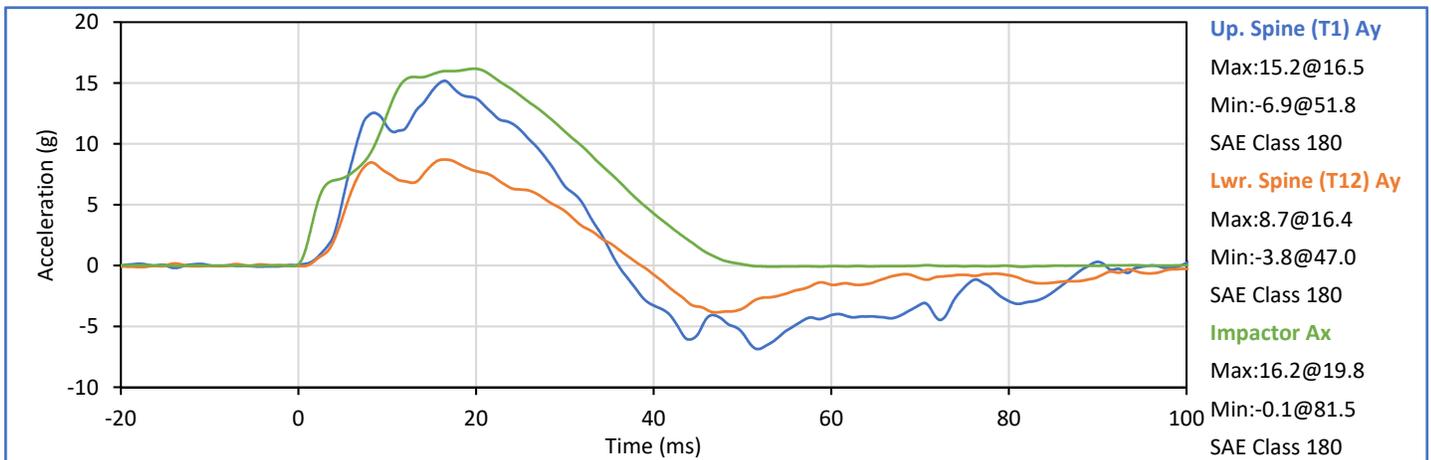
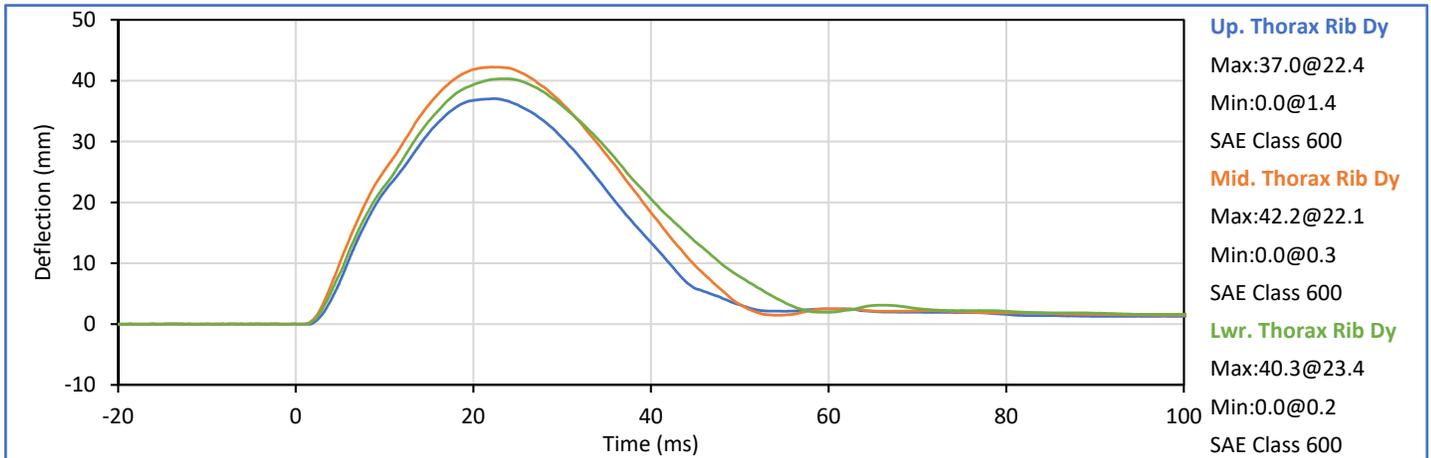
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.7	Pass
Laboratory Humidity	%	10	70	31	Pass
Impactor Velocity	m/s	6.60	6.80	6.67	Pass
Peak Shoulder Dy	mm	31.0	40.0	39.6	Pass
Peak Upper Rib Dy	mm	25.0	32.0	30.5	Pass
Peak Middle Rib Dy	mm	30.0	36.0	32.7	Pass
Peak Lower Rib Dy	mm	32.0	38.0	35.3	Pass
Peak Upper Spine (T1) Ay	g	34.0	43.0	38.7	Pass
Peak Lower Spine (T12) Ay	g	29.0	37.0	32.7	Pass
Peak Impactor Ax	g	30.0	36.0	34.0	Pass
Overall Test Results					Pass



Technician: 
J. Hernandez

Approved By: 
P. Puzzuto

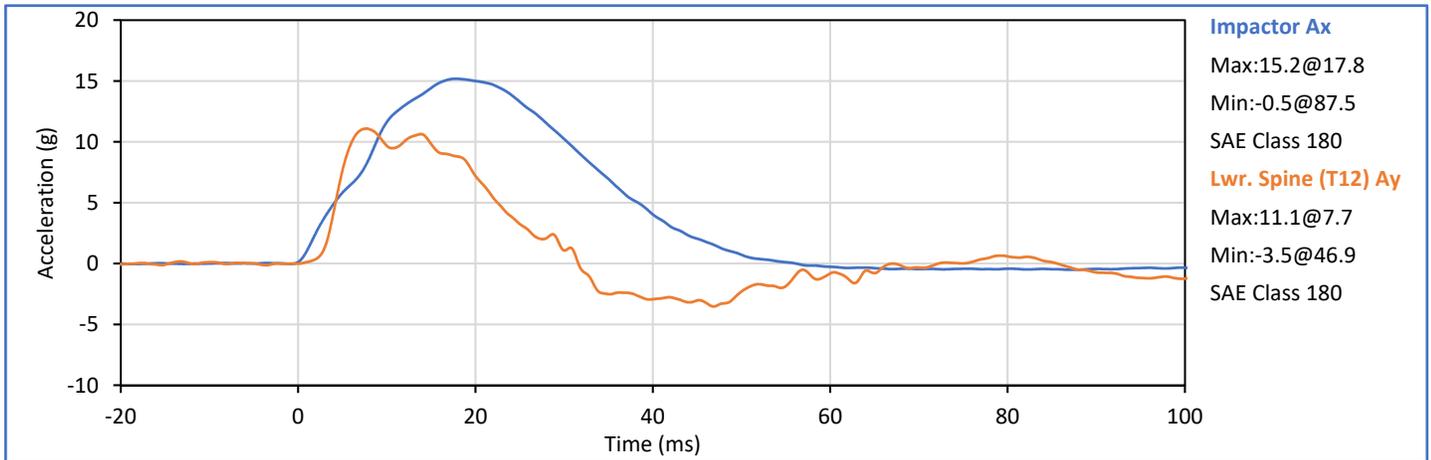
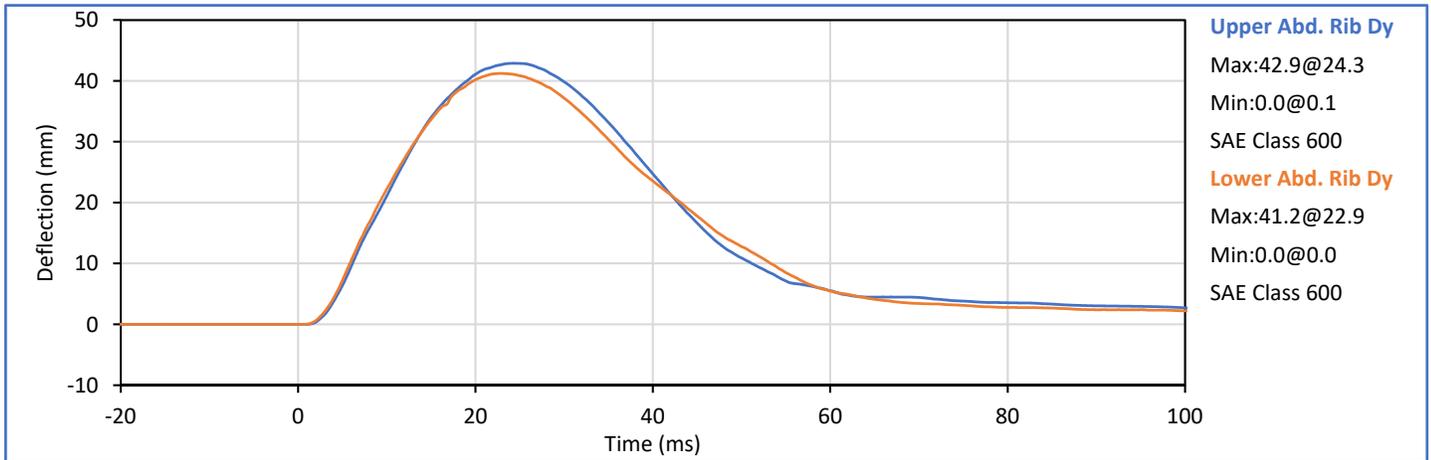
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.7	Pass
Laboratory Humidity	%	10	70	31	Pass
Impactor Velocity	m/s	4.20	4.40	4.32	Pass
Peak Upper Rib Dy	mm	32.0	40.0	37.0	Pass
Peak Middle Rib Dy	mm	39.0	45.0	42.2	Pass
Peak Lower Rib Dy	mm	35.0	43.0	40.3	Pass
Peak Upper Spine (T1) Ay	g	13.0	17.0	15.2	Pass
Peak Lower Spine (T12) Ay	g	7.0	11.0	8.7	Pass
Peak Impactor Ax	g	14.0	18.0	16.2	Pass
Overall Test Results					Pass



Technician: 
J. Hernandez

Approved By: 
P. Puzzuto

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.7	Pass
Laboratory Humidity	%	10	70	31	Pass
Impactor Velocity	m/s	4.20	4.40	4.35	Pass
Peak Upper Abdomen Rib Dy	mm	36.0	47.0	42.9	Pass
Peak Lower Abdomen Rib Dy	mm	33.0	44.0	41.2	Pass
Peak Lower Spine T12 Ay	mm	9.0	14.0	11.1	Pass
Peak Impactor Ax	g	12.0	16.0	15.2	Pass
Overall Test Results					Pass

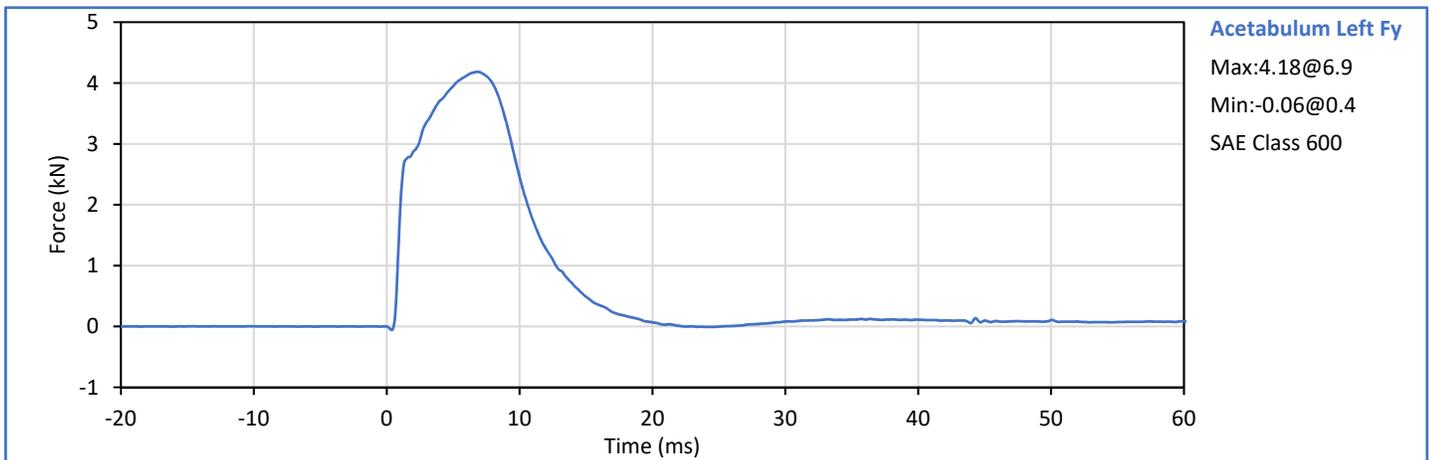
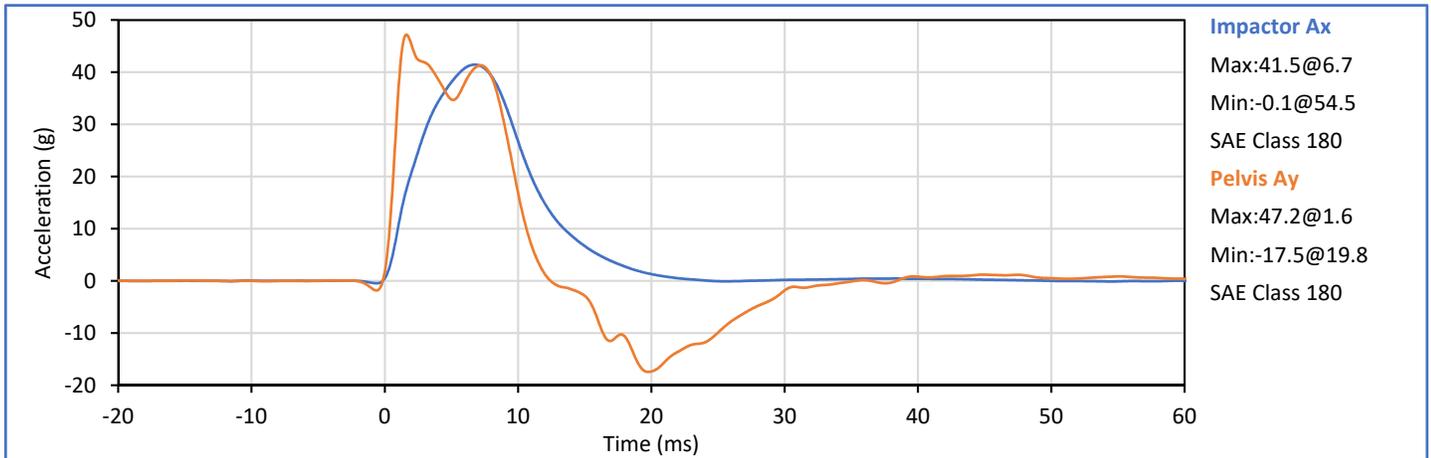


Technician: 
J. Hernandez

Approved By: 
P. Puzzuto

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.7	Pass
Laboratory Humidity	%	10	70	30	Pass
Impactor Velocity	m/s	6.60	6.80	6.72	Pass
Peak Acetabulum Fy	kN	3.60	4.30	4.18	Pass
Pelvis Ay after 6ms	g	34.0	42.0	41.3	Pass
Peak Impactor Ax	g	38.0	47.0	41.5	Pass
Overall Test Results					Pass

Pelvis Plug S/N: 12295 (SACO)



Technician: 
J. Hernandez

Approved By: 
P. Puzzuto



SID-IIs Pelvis Plug Certification Test

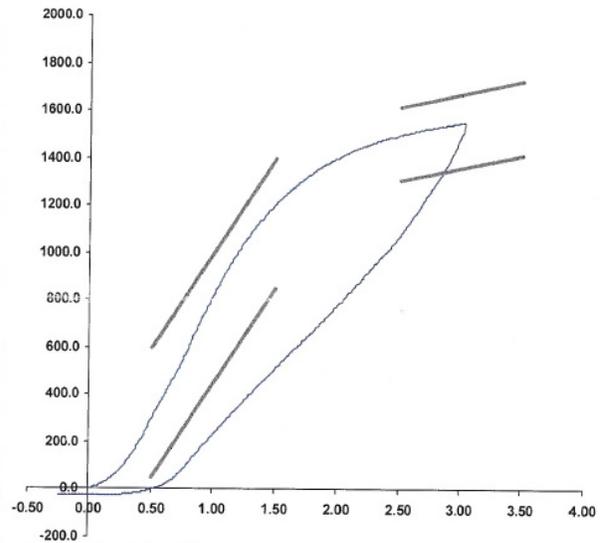
Plug S/N 12295
Test Number 6679
Report Number 6694
Test Date 3/15/2018 11:56:40 AM

	Test Results	Spec Min	Spec Max
Force @ 0.5 mm (N)	301.05	50.00	600.00
Force @ 1.5 mm (N)	1,208.86	850.00	1,400.00
Force @ 2.5 mm (N)	1,499.81	1,306.00	1,618.00
Force @ 3.0 mm (N)	1,551.31	1,361.00	1,673.00

Testing Machine STM-20 5965542
Load Cell S/N (FI360947), 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 _____
Part Number 180-4450

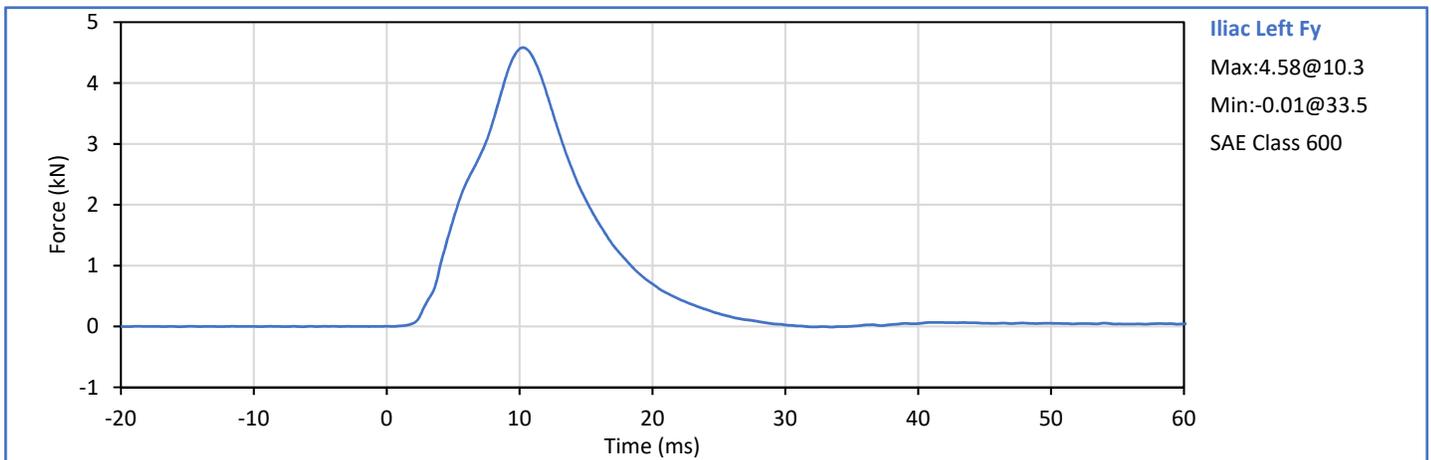
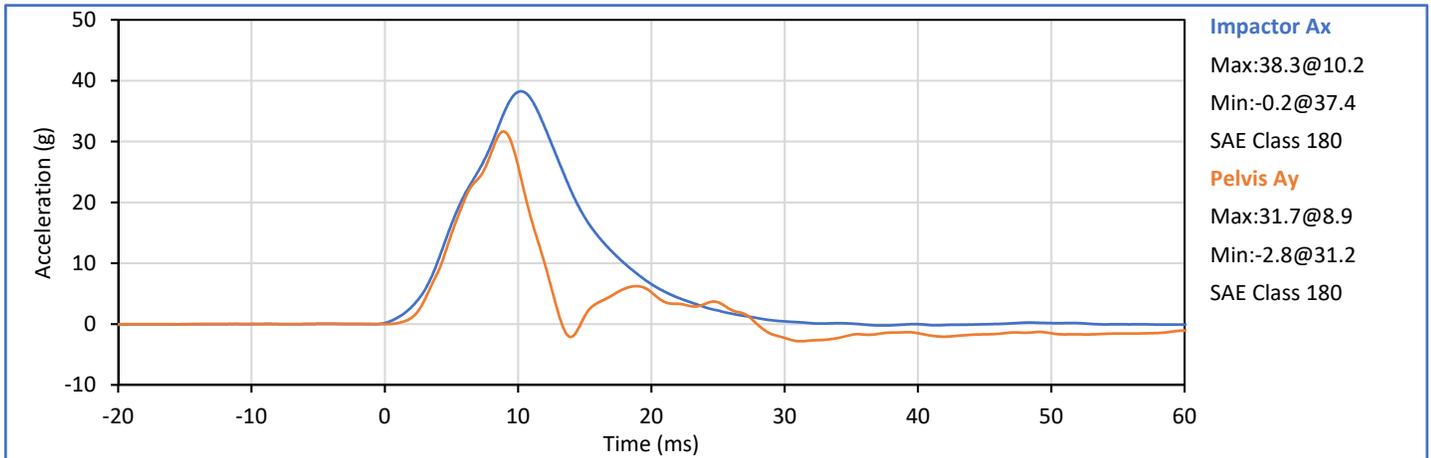
Template No 107 15-Mar-18
SACO Research

By: DC Date: 3/15/18

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Laboratory Temperature	°C	20.6	22.2	21.1	Pass
Laboratory Humidity	%	10	70	33	Pass
Impactor Velocity	m/s	4.20	4.40	4.27	Pass
Peak Iliac Fy	kN	4.10	5.10	4.58	Pass
Pelvis Ay after 6ms	g	28.0	39.0	31.7	Pass
Peak Impactor Ax	g	36.0	45.0	38.3	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

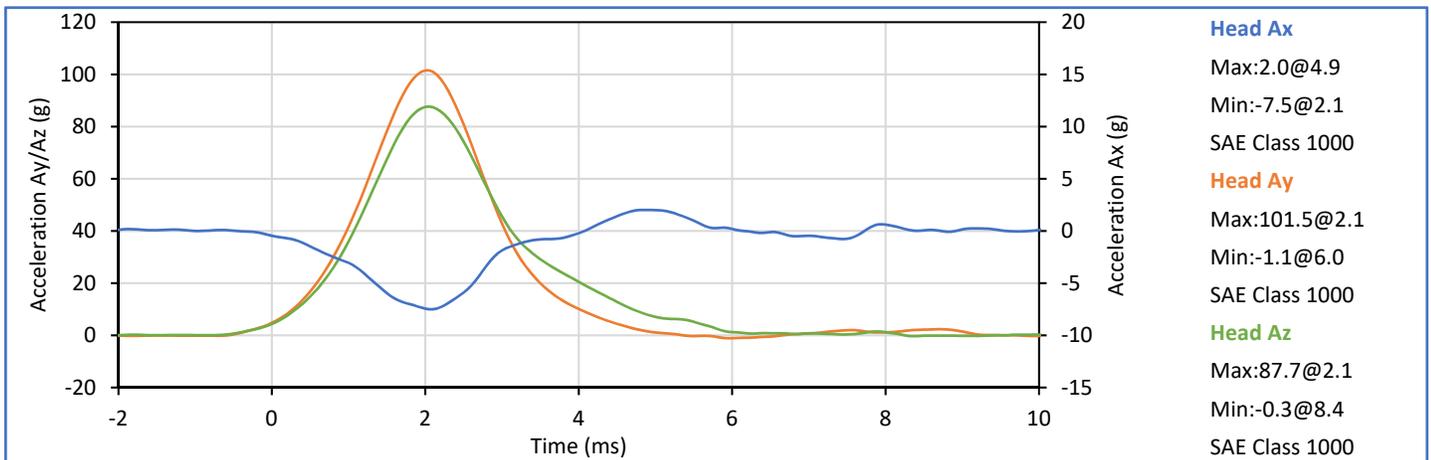
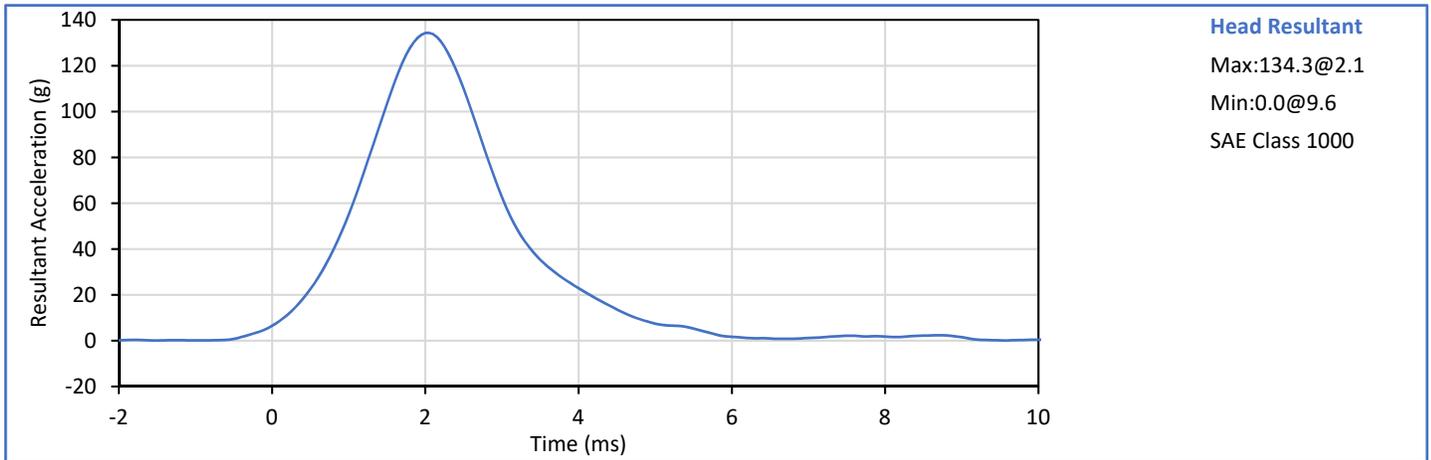
APPENDIX C
Post-Test ATD Configuration And Performance Verification Data
SID-IIs Small Side Impact ATD
S/N: 299

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	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	85	Pass
D - H Point From Seatback	mm	141	151	150	Pass
E - Shoulder Pivot From Backline	mm	97	107	106	Pass
F - Thigh Clearance	mm	119	135	128	Pass
G - Head Breadth	mm	140	148	144	Pass
H - Head Back From Backline	mm	40	46	44	Pass
I - Head Depth	mm	178	188	184	Pass
J - Head Circumference	mm	541	551	546	Pass
K - Buttock To Knee Length	mm	514	540	523	Pass
L - Popliteal Height	mm	343	369	354	Pass
K - Knee Pivot To Floor Height	mm	392	409	403	Pass
N - Buttock Popliteal Length	mm	416	442	429	Pass
O - Chest Depth W/O Jacket	mm	195	211	203	Pass
P - Foot Length	mm	216	232	224	Pass
Q - Hip Breadth (W/Pelvic Plugs)	mm	313	323	317	Pass
R - Arm Length	mm	249	259	253	Pass
S - Knee Joint To Seatback	mm	477	493	488	Pass
V - Shoulder Width	mm	341	357	348	Pass
W - Foot Width	mm	78	94	88	Pass
Y - Chest Circumference W/Jacket	mm	851	881	865	Pass
Z - Waist Circumference	mm	761	791	779	Pass
Overall Test Results					Pass

Technician: 
J. Hernandez

Approved By: 
P. Puzzuto

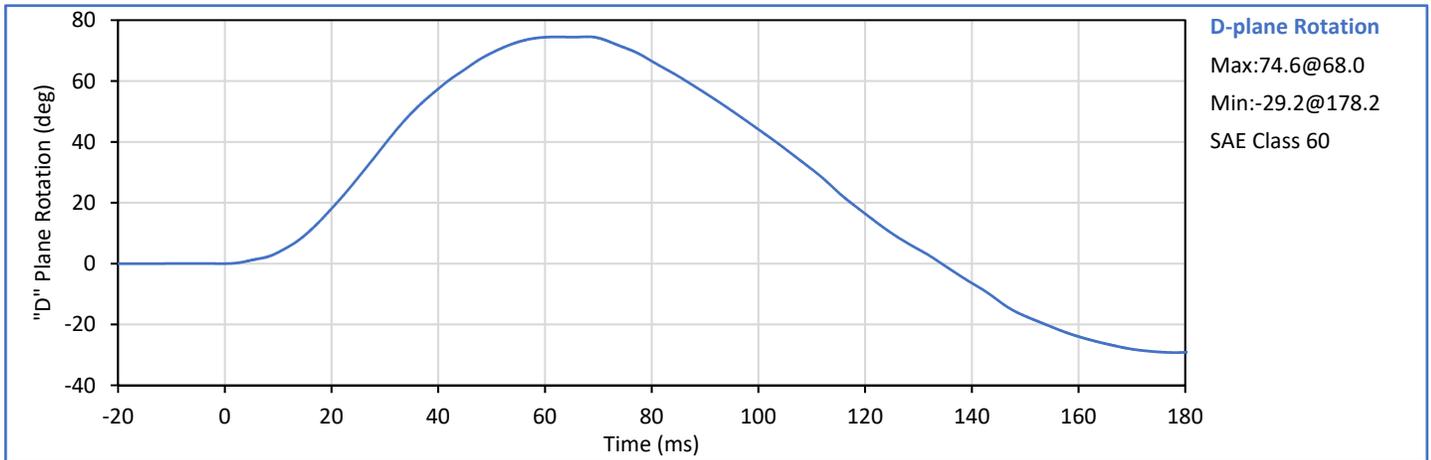
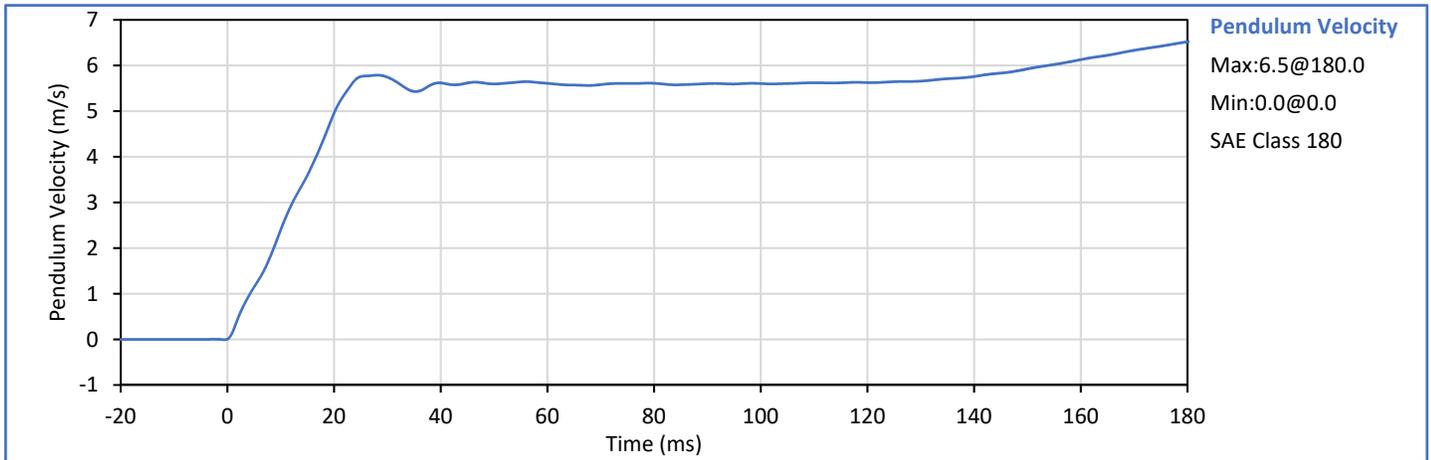
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	18.9	25.6	21.1	Pass
Laboratory Humidity	%	10	70	30	Pass
Peak Resultant Acceleration	g	115.0	137.0	134.3	Pass
Peak Head Ax	g	-15.0	15.0	-7.5	Pass
Oscillations After Main Pulse	%	0.0	15.0	1.8	Pass
Is Acceleration Unimodal?	Yes/No	Yes		Yes	Pass
Overall Test Results					Pass



Technician: 
J. Hernandez

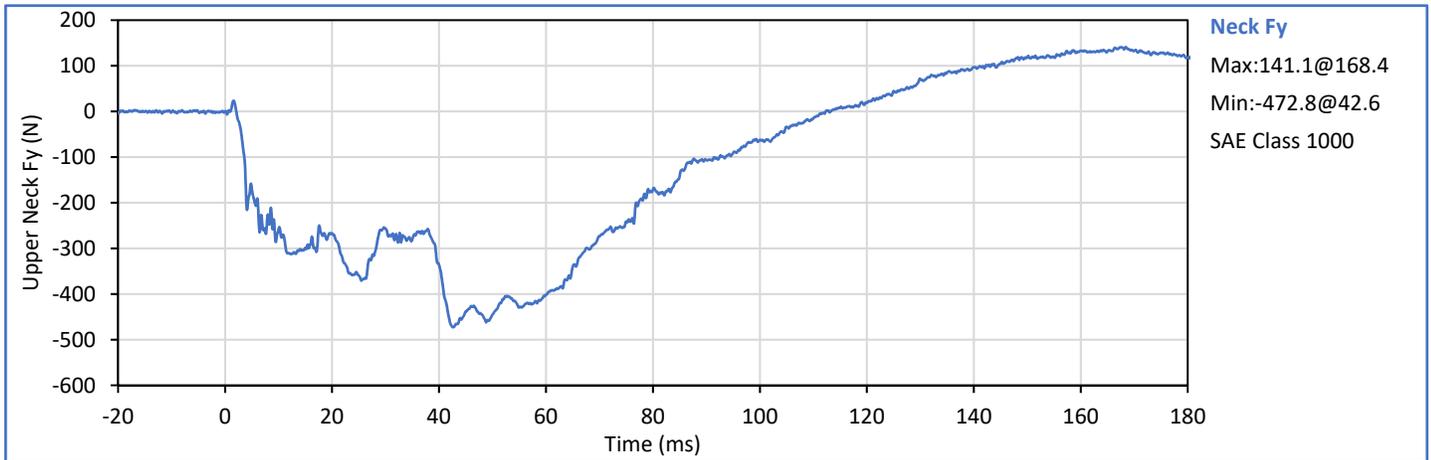
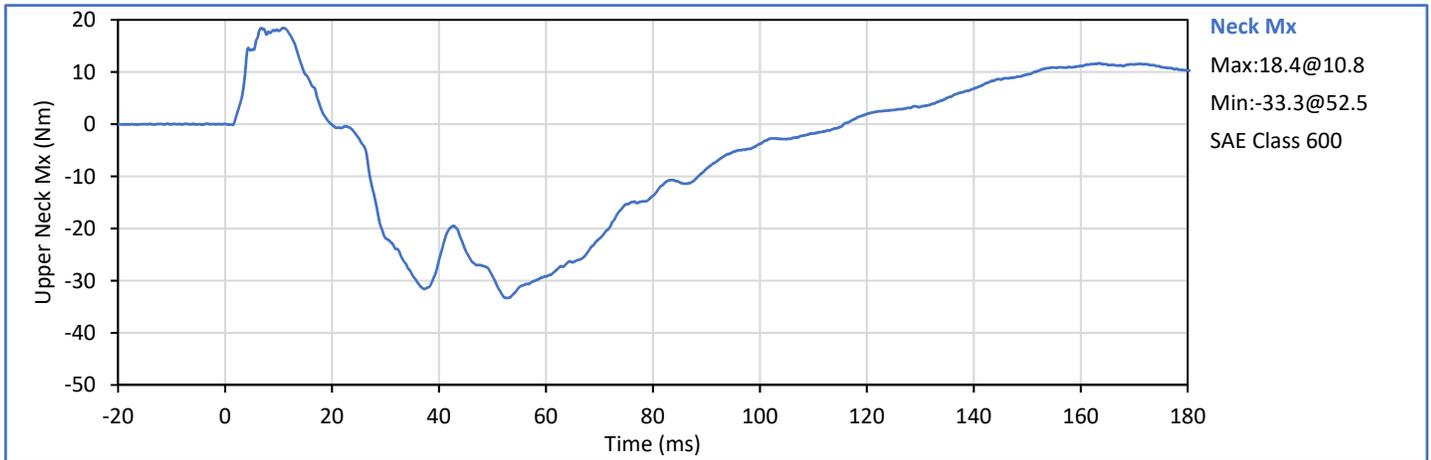
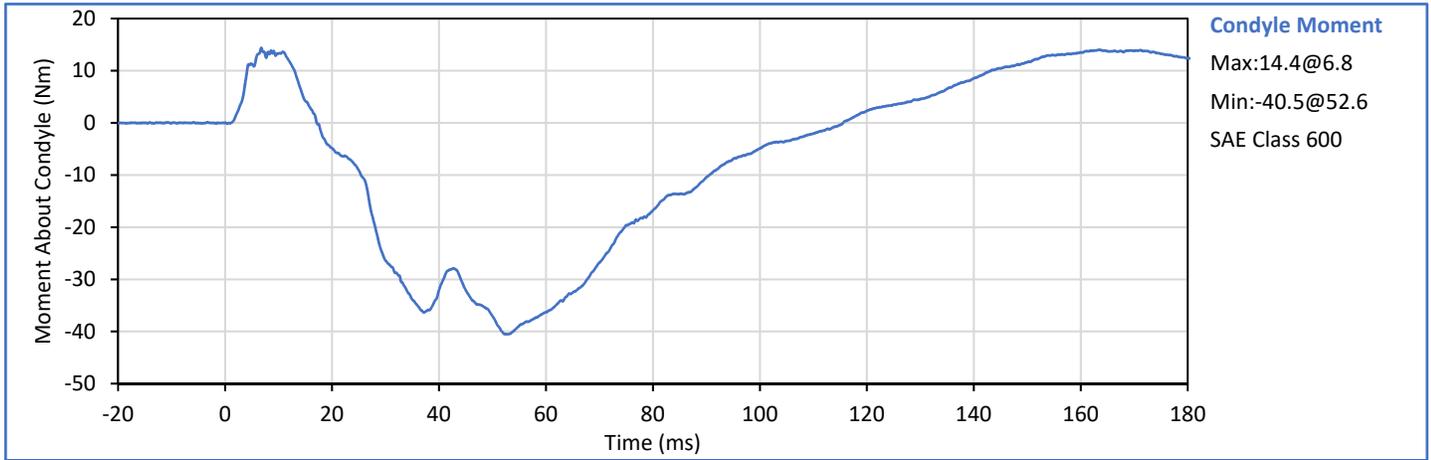
Approved By: 
P. Puzzuto

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	5.53	Pass
Pendulum Decel at 10 ms	m/s	2.20	2.80	2.40	Pass
Pendulum Decel at 15 ms	m/s	3.30	4.10	3.59	Pass
Pendulum Decel at 20 ms	m/s	4.40	5.40	4.95	Pass
Pendulum Decel at 25 ms	m/s	5.40	6.10	5.76	Pass
Pendulum Decel from 25-100 ms	m/s	5.50	6.20	5.79	Pass
Peak "D" Plane Rotation	deg	71.0	81.0	74.6	Pass
Time of Peak "D" Plane Rotation	ms	50.0	70.0	68.0	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	115.6	Pass
Overall Test Results					Pass

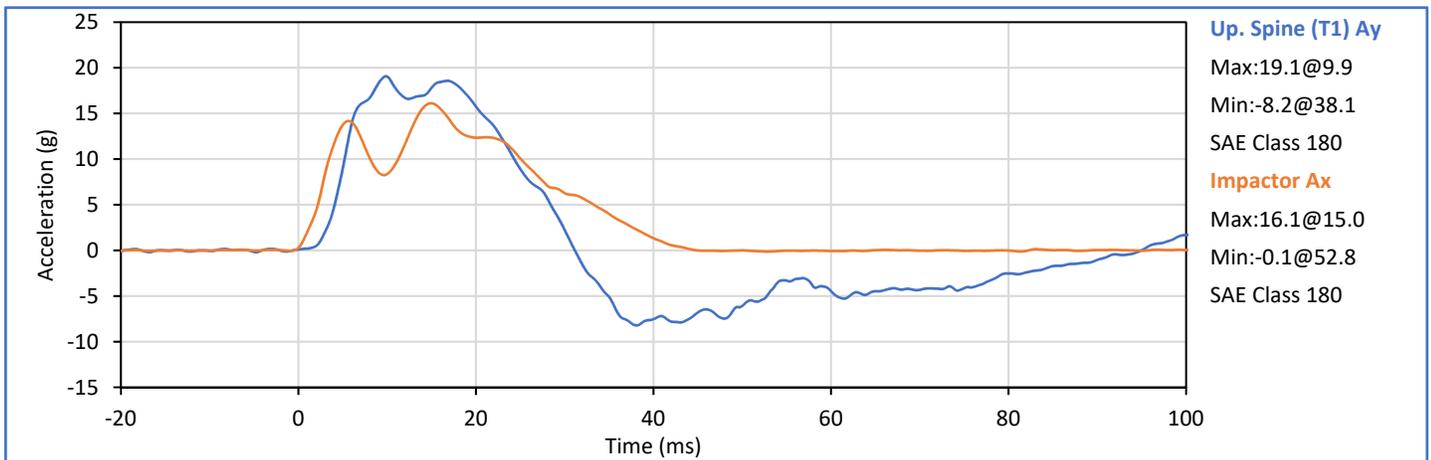
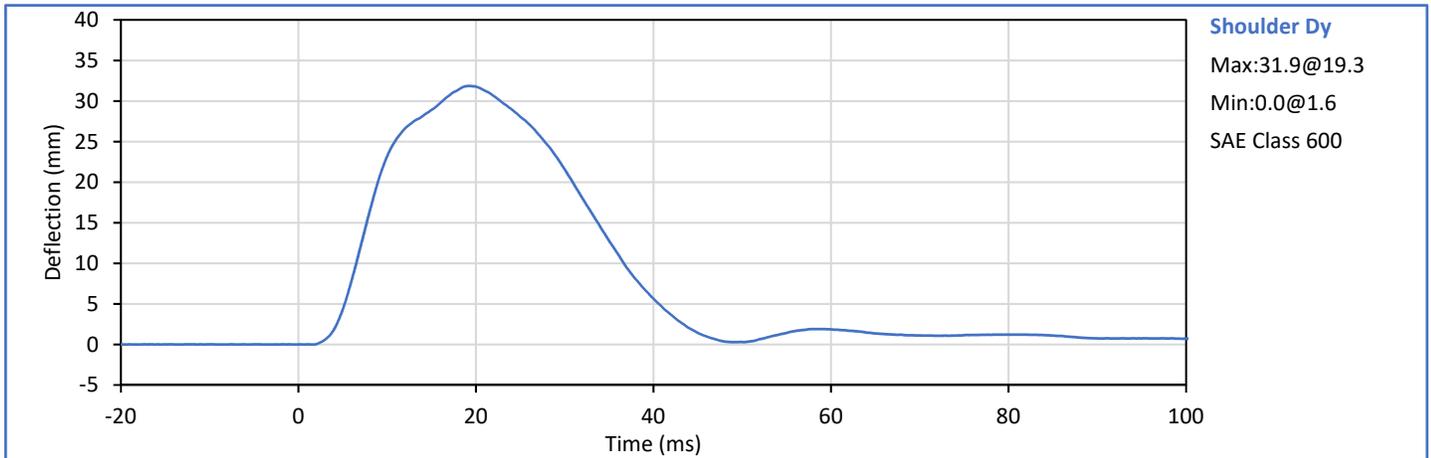


Technician: *J. Hernandez*
J. Hernandez

Approved By: *P. Puzzuto*
P. Puzzuto



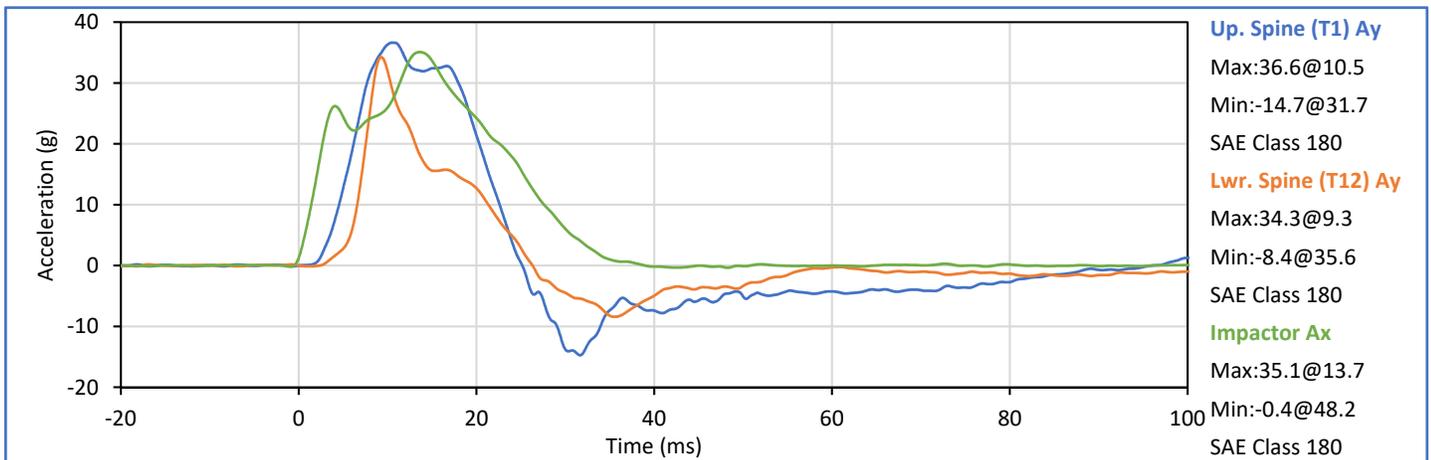
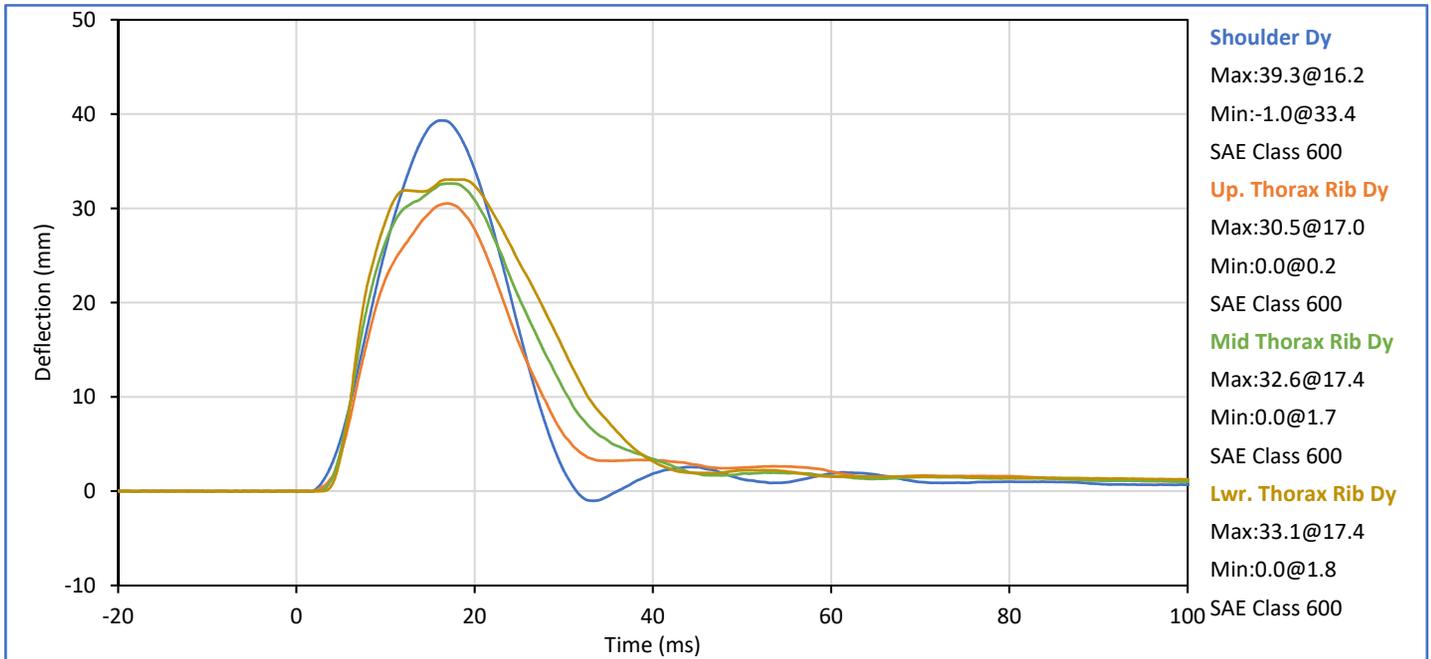
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.1	Pass
Laboratory Humidity	%	10	70	31	Pass
Impactor Velocity	m/s	4.20	4.40	4.30	Pass
Peak Shoulder Dy	mm	28.0	37.0	31.9	Pass
Peak Upper Spine (T1) Ay	g	17.0	22.0	19.1	Pass
Peak Impactor Ax	g	13.0	18.0	16.1	Pass
Overall Test Results					Pass



Technician: 
J. Hernandez

Approved By: 
P. Puzzuto

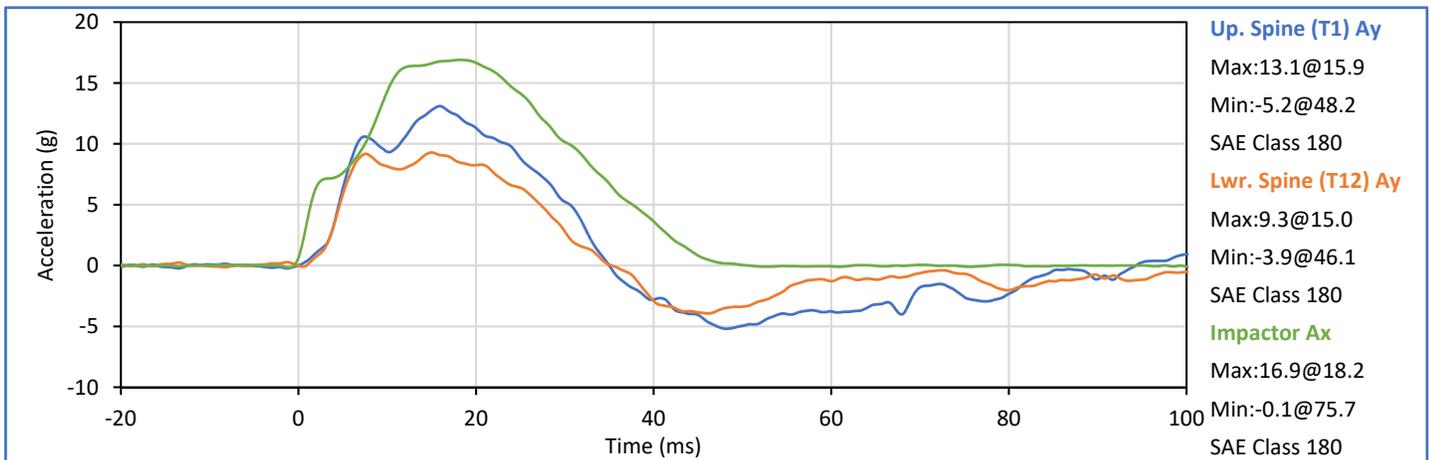
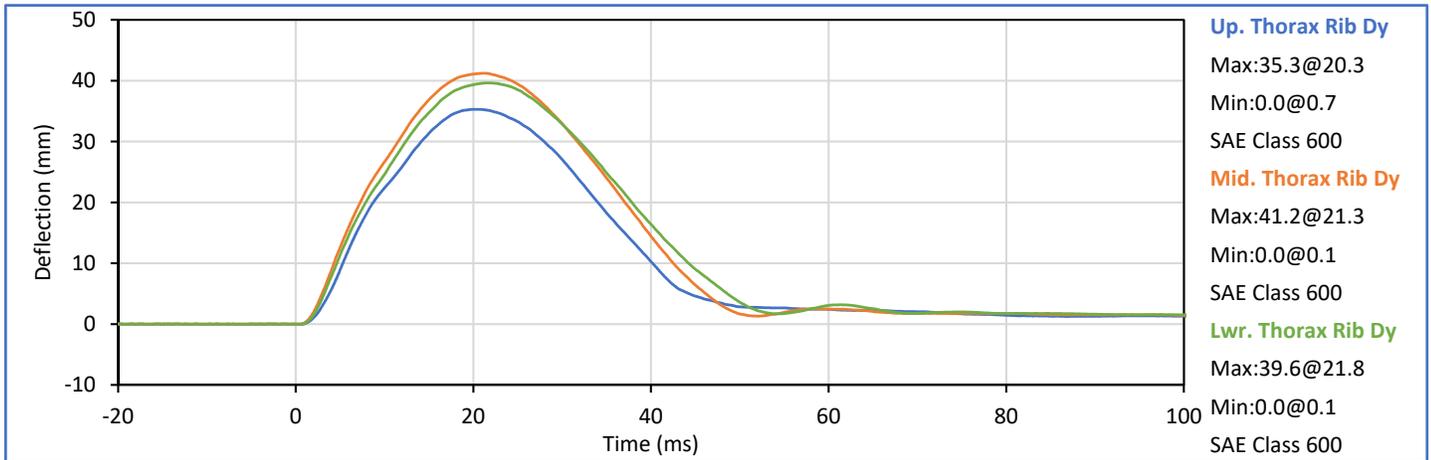
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.1	Pass
Laboratory Humidity	%	10	70	30	Pass
Impactor Velocity	m/s	6.60	6.80	6.65	Pass
Peak Shoulder Dy	mm	31.0	40.0	39.3	Pass
Peak Upper Rib Dy	mm	25.0	32.0	30.5	Pass
Peak Middle Rib Dy	mm	30.0	36.0	32.6	Pass
Peak Lower Rib Dy	mm	32.0	38.0	33.1	Pass
Peak Upper Spine (T1) Ay	g	34.0	43.0	36.6	Pass
Peak Lower Spine (T12) Ay	g	29.0	37.0	34.3	Pass
Peak Impactor Ax	g	30.0	36.0	35.1	Pass
Overall Test Results					Pass



Technician: 
J. Hernandez

Approved By: 
P. Puzzuto

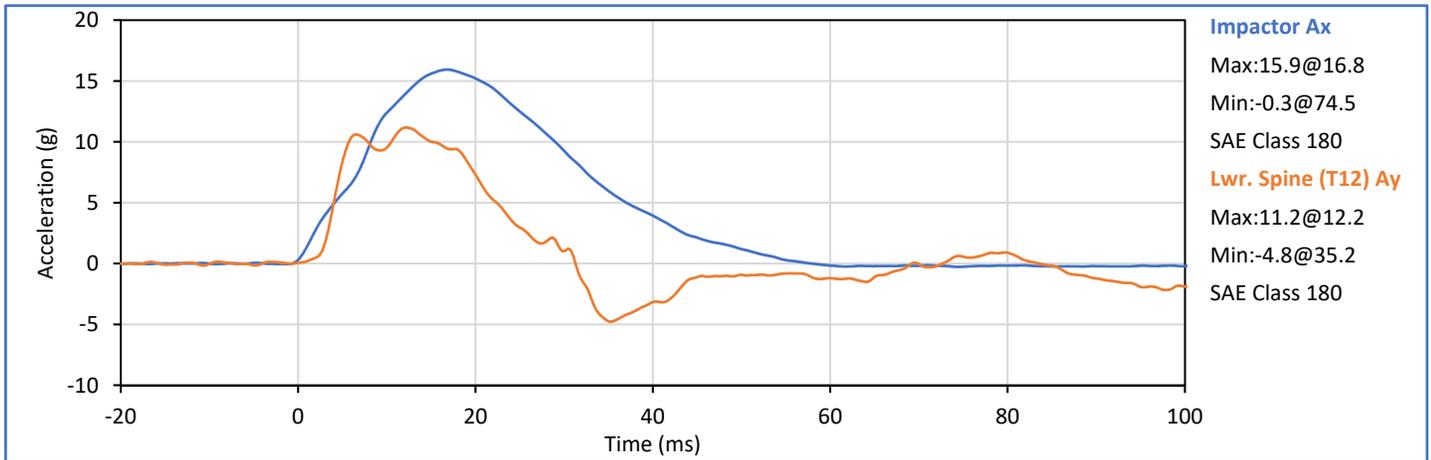
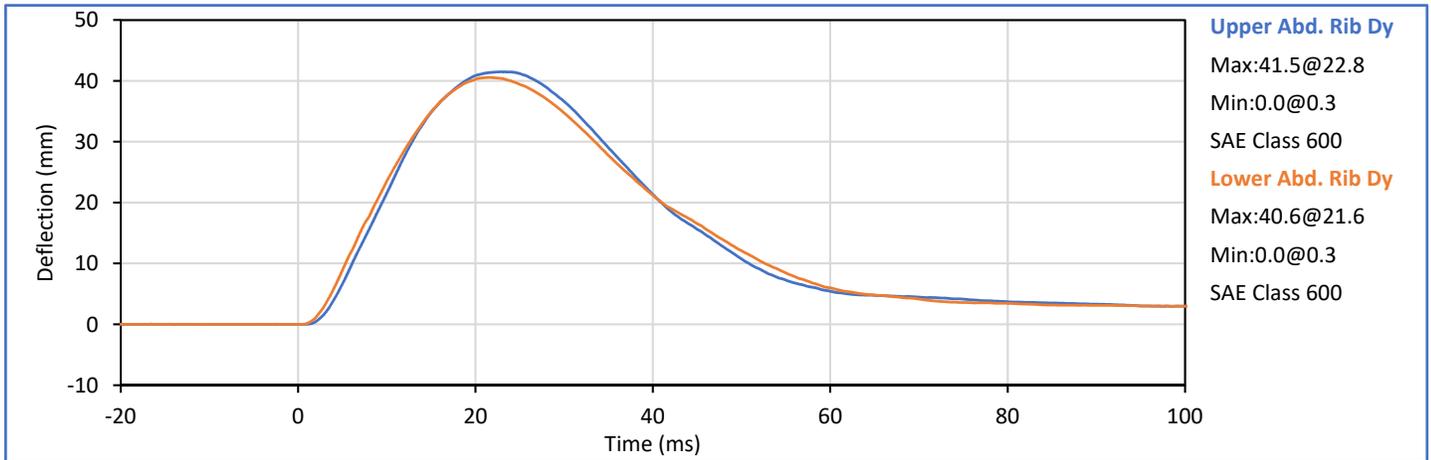
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.1	Pass
Laboratory Humidity	%	10	70	30	Pass
Impactor Velocity	m/s	4.20	4.40	4.33	Pass
Peak Upper Rib Dy	mm	32.0	40.0	35.3	Pass
Peak Middle Rib Dy	mm	39.0	45.0	41.2	Pass
Peak Lower Rib Dy	mm	35.0	43.0	39.6	Pass
Peak Upper Spine (T1) Ay	g	13.0	17.0	13.1	Pass
Peak Lower Spine (T12) Ay	g	7.0	11.0	9.3	Pass
Peak Impactor Ax	g	14.0	18.0	16.9	Pass
Overall Test Results					Pass



Technician: 
J. Hernandez

Approved By: 
P. Puzzuto

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.1	Pass
Laboratory Humidity	%	10	70	30	Pass
Impactor Velocity	m/s	4.20	4.40	4.34	Pass
Peak Upper Abdomen Rib Dy	mm	36.0	47.0	41.5	Pass
Peak Lower Abdomen Rib Dy	mm	33.0	44.0	40.6	Pass
Peak Lower Spine T12 Ay	mm	9.0	14.0	11.2	Pass
Peak Impactor Ax	g	12.0	16.0	15.9	Pass
Overall Test Results					Pass

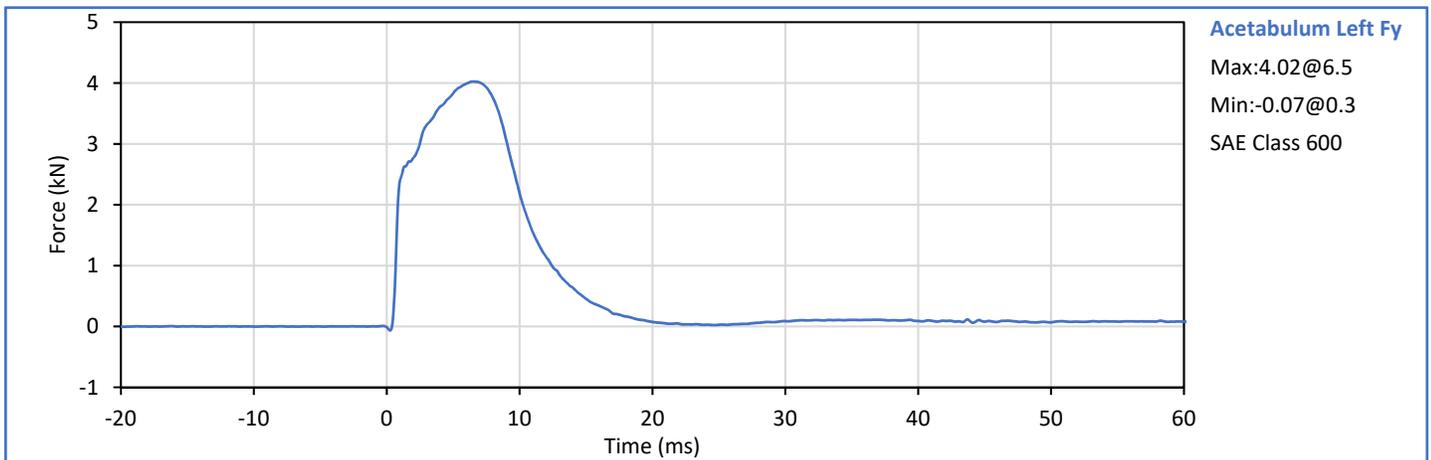
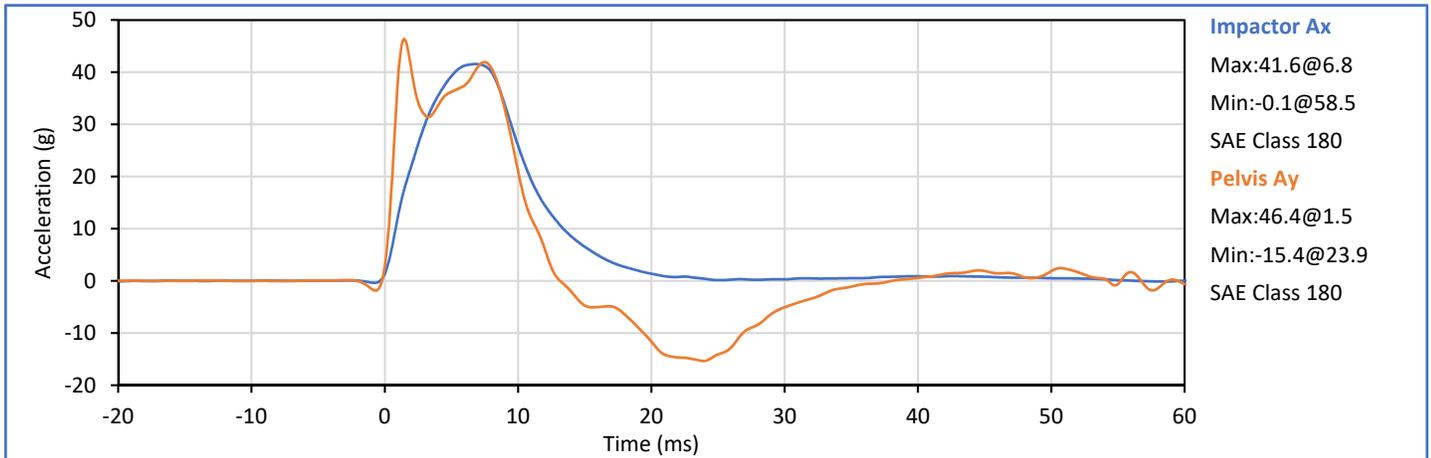


Technician: 
J. Hernandez

Approved By: 
P. Puzzuto

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.1	Pass
Laboratory Humidity	%	10	70	30	Pass
Impactor Velocity	m/s	6.60	6.80	6.71	Pass
Peak Acetabulum Fy	kN	3.60	4.30	4.02	Pass
Pelvis Ay after 6ms	g	34.0	42.0	41.9	Pass
Peak Impactor Ax	g	38.0	47.0	41.6	Pass
Overall Test Results					Pass

Pelvis Plug S/N: 11643 (SACO)



Technician: 
J. Hernandez

Approved By: 
P. Puzzuto



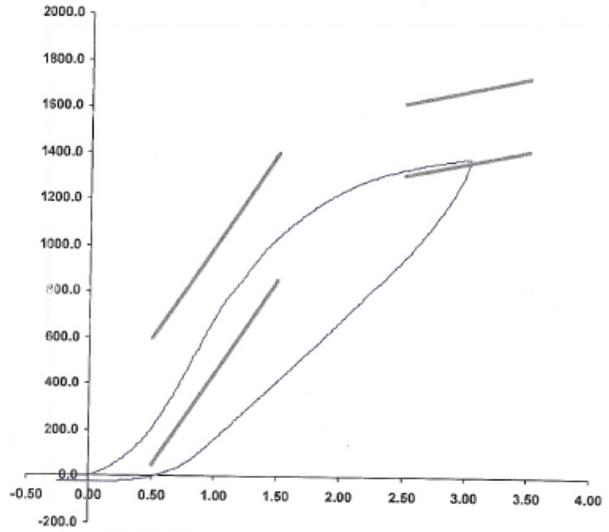
SID-IIs Pelvis Plug Certification Test

Plug S/N 11643
Test Number 3468
Report Number 3461
Test Date 3/27/2017 2:21:32 PM

	Test Results	Spec Min	Spec Max
Force @ 0.5 mm (N)	201.03	50.00	600.00
Force @ 1.5 mm (N)	1,031.85	850.00	1,400.00
Force @ 2.5 mm (N)	1,328.78	1,306.00	1,618.00
Force @ 3.0 mm (N)	1,377.41	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

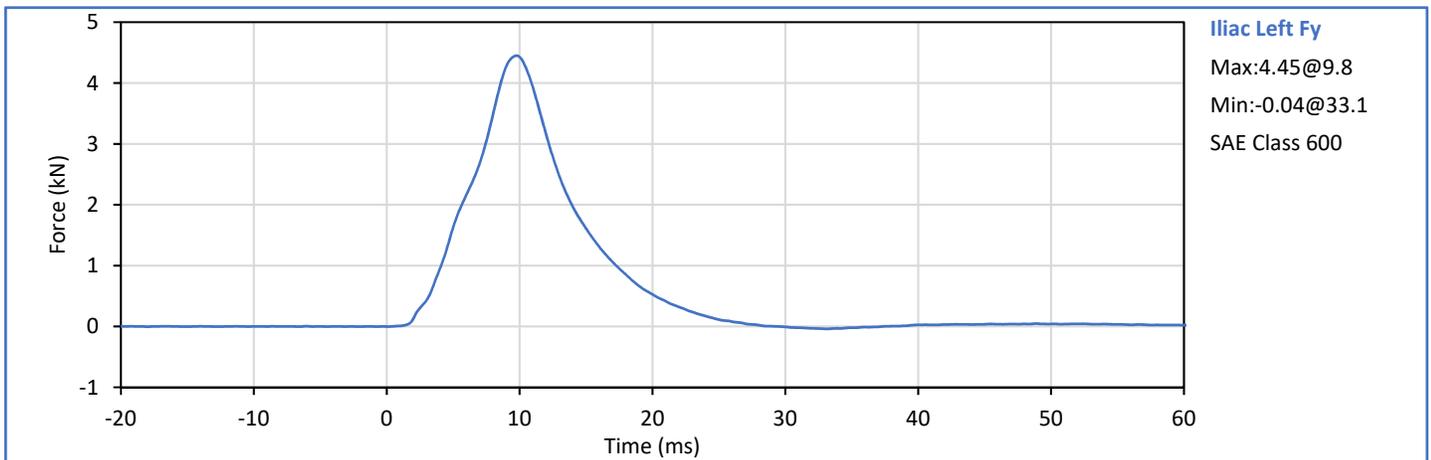
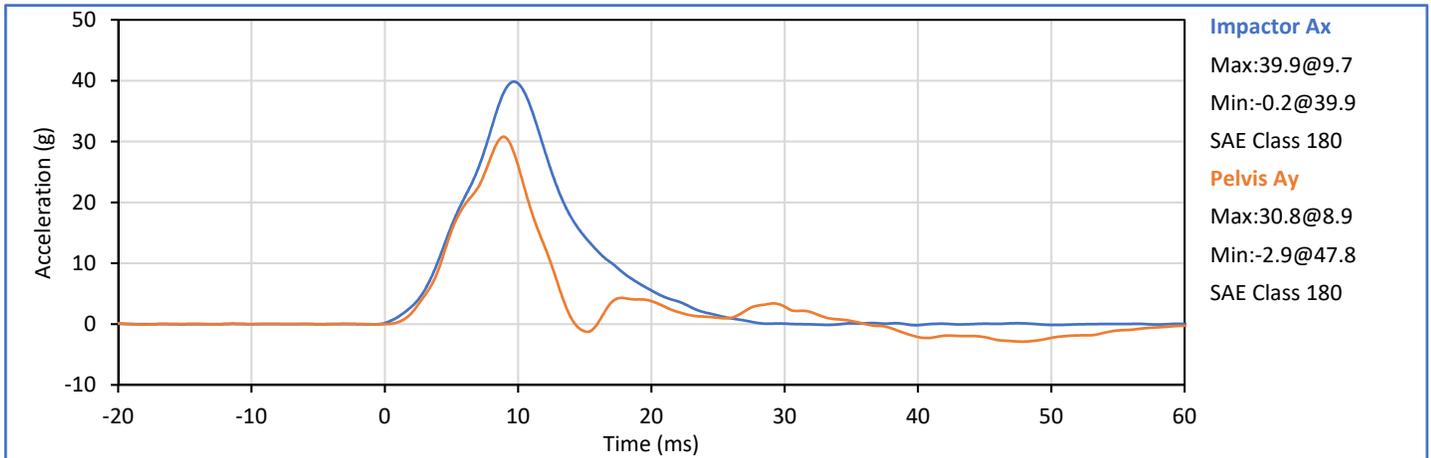
Template No 107 27-Mar-17
SACO Research

By: DC Date: 3/27/17
SACO Research 41735 Elm St, #401 Murrieta, CA 92562 Tel 310-694-2082 FAX

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.1	Pass
Laboratory Humidity	%	10	70	30	Pass
Impactor Velocity	m/s	4.20	4.40	4.26	Pass
Peak Iliac Fy	kN	4.10	5.10	4.45	Pass
Pelvis Ay after 6ms	g	28.0	39.0	30.8	Pass
Peak Impactor Ax	g	36.0	45.0	39.9	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	ARS15063	DTS	ARS PRO-8k (2000Hz)	2019-09-06
Head Rotation Rate Y	ARS15064	DTS	ARS PRO-8k (2000Hz)	2019-09-06
Head Rotation Rate Z	ARS15065	DTS	ARS PRO-8k (2000Hz)	2019-09-06

Table 2 - Vehicle Instrumentation

Sensor Location	Sensor S\N	Mfr	Model	Cal Due
Vehicle CG Ax	10432	Endevco	757F-2k	2019-09-04
Vehicle CG Ay	10396	Endevco	757F-2k	2019-09-04
Vehicle CG Az	10438	Endevco	757F-2k	2019-09-04
Left Floor Sill Ay	A266305	MSI	52F-2000	2019-07-05
A-Pillar Sill Ay	A265914	MSI	52F-2000	2019-07-05
A-Pillar Low Ay	A265952	MSI	52F-2000	2019-07-05
A-Pillar Mid Ay	A265883	MSI	52F-2000	2019-07-05
B-Pillar Sill Ay	A265944	MSI	52F-2000	2019-07-05
B-Pillar Low Ay	A266319	MSI	52F-2000	2019-07-05
B-Pillar Mid Ay	A273032	MSI	52F-2000	2019-09-12
Driver Seat Track at H-Point Ay	A266318	MSI	52F-2000	2019-07-05
Engine Top Ax	A265898	MSI	52F-2000	2019-07-05
Engine Top Ay	A266307	MSI	52F-2000	2019-07-05
Firewall Ay	A265850	MSI	52F-2000	2019-07-05
Right Roof Ay	A266327	MSI	52F-2000	2019-07-05
Right Floor Sill Ay	A265872	MSI	52F-2000	2019-07-05
Rear Floorpan Ax	A273022	MSI	52F-2000	2019-09-12
Rear Floorpan Ay	A273384	MSI	52F-2000	2019-09-17

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	2020-05-06
Load Cell Pole Barrier #2 Force Y	132304A	Interface	1220-FS	2020-05-06
Load Cell Pole Barrier #3 Force Y	19477	Interface	1220-FS	2020-05-06
Load Cell Pole Barrier #4 Force Y	19325	Interface	1220-FS	2020-05-06
Load Cell Pole Barrier #5 Force Y	131827A	Interface	1220-FS	2020-05-06
Load Cell Pole Barrier #6 Force Y	132302A	Interface	1220-FS	2020-05-06
Load Cell Pole Barrier #7 Force Y	19267	Interface	1220-FS	2020-05-06
Load Cell Pole Barrier #8 Force Y	19321	Interface	1220-FS	2020-05-06