

REPORT NUMBER: SINCAP-KAR-20-025

**NEW CAR ASSESSMENT PROGRAM (NCAP)
MOVING DEFORMABLE BARRIER SIDE IMPACT TEST**

**VOLKSWAGEN GROUP OF AMERICA
2020 VOLKSWAGEN ATLAS CROSS SPORT 5 DOOR MPV**

NHTSA No: M20205802

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



SEPTEMBER 15, 2020

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**

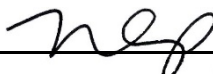
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Approval Date: September 15, 2020

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: _____

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		15. Supplementary Notes The Placards for this vehicle should be named "Atlas Cross Sport"																																																			
16. Abstract A 61.9 km/h 90° Moving Deformable Barrier NCAP Side Impact Test was conducted on the subject 2020 Volkswagen Atlas Cross Sport 5-Door MPV in accordance with the specifications of the Office of Crashworthiness Standards Test Procedure for the generation of consumer information on vehicle side crash protection. The test was conducted at the Applus IDIADA KARCO Engineering, LLC. facility in Adelanto, California on August 31, 2020. The impact velocity of the Moving Deformable Barrier was 62.38 km/h and the outside ambient temperature at the struck (driver's) side of the vehicle was 35.0°C. The target vehicle's maximum post-test static crush was 181 mm located at level 3. The test vehicle's occupant performance data is as follows: <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th rowspan="2">Measurement Description</th> <th colspan="3">Driver ATD (ES-2re)</th> </tr> <tr> <th>Units</th> <th>IARV</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC₃₆)</td> <td></td> <td>1000</td> <td>48.2</td> </tr> <tr> <td>Maximum Thoracic Rib Deflection</td> <td>mm</td> <td>44</td> <td>12</td> </tr> <tr> <td>Total Abdominal Force</td> <td>N</td> <td>2500</td> <td>283</td> </tr> <tr> <td>Pubic Symphysis Force</td> <td>N</td> <td>6000</td> <td>957</td> </tr> </tbody> </table> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th rowspan="2">Measurement Description</th> <th colspan="3">Passenger ATD (SID-IIs)</th> </tr> <tr> <th>Units</th> <th>IARV</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC₃₆)</td> <td></td> <td>1000</td> <td>207.9</td> </tr> <tr> <td>Resultant Lower Spine Acceleration</td> <td>g</td> <td>82</td> <td>35</td> </tr> <tr> <td>Total Pelvic Force (Sum of Acetubular and Iliac Forces)</td> <td>N</td> <td>5525</td> <td>2353</td> </tr> <tr> <td>Maximum Thoracic Rib Deflection</td> <td>mm</td> <td>38*</td> <td>14</td> </tr> <tr> <td>Maximum Abdominal Rib Deflection</td> <td>mm</td> <td>45*</td> <td>23</td> </tr> </tbody> </table> Both struck side doors were jammed shut and did not separate from the body at the hinges or latches. The opposite side doors did not open during the side impact event.				Measurement Description	Driver ATD (ES-2re)			Units	IARV	Result	Head Injury Criteria (HIC ₃₆)		1000	48.2	Maximum Thoracic Rib Deflection	mm	44	12	Total Abdominal Force	N	2500	283	Pubic Symphysis Force	N	6000	957	Measurement Description	Passenger ATD (SID-IIs)			Units	IARV	Result	Head Injury Criteria (HIC ₃₆)		1000	207.9	Resultant Lower Spine Acceleration	g	82	35	Total Pelvic Force (Sum of Acetubular and Iliac Forces)	N	5525	2353	Maximum Thoracic Rib Deflection	mm	38*	14	Maximum Abdominal Rib Deflection	mm	45*	23
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*Proposed IARV

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SECTION 1

TEST PURPOSE AND PROCEDURE

This moving deformable barrier side impact test is part of the MY 2020 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 2020 Volkswagen Atlas Cross Sport 5-Door MPV. The side impact test was conducted in accordance with the Office of Crashworthiness Standard's Laboratory Test Procedure dated October 2015.

SECTION 2

SUMMARY OF TEST RESULTS

A 2020 Volkswagen Atlas Cross Sport 5-Door MPV was impacted on the left (driver's) side by a Moving Deformable Barrier (MDB) which was moving forward in a 27° crabbed position to the tow road guidance system at a velocity of 62.38 km/h (38.76 mph). The target vehicle was stationary and was positioned at an angle of 63° to the line of forward motion. The side impact test was conducted by Applus IDIADA KARCO Engineering, LLC. in Adelanto, California, on August 31, 2020. Pre- and post-test photographs of the test vehicle, the MDB and the dummy (ES-2re and SID-IIs) are included in Appendix A of this report.

The dummies were placed in the driver and left rear designated seating position according to instructions specified in the OCWS Side Impact Laboratory Test Procedure, dated October 2015. The side impact event was documented by 10 cameras. Camera locations are included in Data Sheet No. 5 of this report.

The dummies were instrumented in the following manner:

DRIVER ATD (ES-2re)

Primary and redundant head CG tri-axial accelerometers

Chest upper rib, middle rib and lower rib y-axis displacement potentiometers

Abdomen forward, middle, and rear y-axis load cells

Lower spine (12) tri-axial accelerometers

Pubic symphysis y-axis load cell

PASSENGER ATD (SID-IIs)

Primary and redundant head CG tri-axial accelerometers

Chest upper rib, middle rib and lower rib y-axis displacement potentiometers

Abdomen upper rib and lower rib y-axis displacement potentiometers

Lower spine (12) tri-axial accelerometers

Acetabulum and iliac wing y-axis load cells

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 of this report contains the test equipment and instrumentation calibration data.

Dummy injury readings were recorded as follows:

Measurement Description	Units	Driver ATD (ES-2re)	
		Threshold	Result
Head Injury Criteria (HIC ₃₆)		1000	48.2
Maximum Thoracic Rib Deflection	mm	44	12
Combined Abdominal Force	N	2500	283
Pubic Symphysis Force	N	6000	957

Measurement Description	Units	Passenger ATD (SID-IIs)	
		Threshold	Result
Head Injury Criteria (HIC ₃₆)		1000	207.9
Lower Spine (T12) Resultant Acceleration	g	82	35
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	2353
Maximum Thoracic Rib Deflection	mm	38*	14
Maximum Abdominal Rib Deflection	mm	45*	23

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

GENERAL COMMENTS

The doors on the struck side of the vehicle remained closed and latched. There was no separation at the hinges or latches. The doors on the non-struck side remained closed and latched. There was no ATD value that exceeded its limit.

The following items were noted:

- Driver and Passenger Lap Belt Force, Not Installed
- PASSENGER CHEST AXR - Channel Failed at 64ms
- Load cell 103 BARRIER MZ, Channel Failed, No Data
- Load cell 803 BARRIER FX, Channel Failed, No Data
- BARRIER load cell 109 thru load cell 116, DAQ module shut down due to overheating (CURNOS 611-634)

SECTION 3

OCCUPANT AND VEHICLE INFORMATION/DATA SHEETS

Test Vehicle: 2020 Volkswagen Atlas Cross Sport 5-Door MPV NHTSA No. M20205802

Test Program: NCAP MDB Side Impact Test Test Date: 08/31/20

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: 2020 Volkswagen Atlas Cross Sport 5-Door MPV NHTSA No. M20205802
 Test Program: NCAP MDB Side Impact Test Test Date: 08/31/20

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA Number	M20205802
Model Year	2020
Make	Volkswagen
Model	Atlas Cross Sport
Body Style	5 Door MPV
VIN	1V2AC2CA3LC201131
Body Color	Tourmaline Blue
Odometer Reading (km / mi)	34 / 21
Engine Displacement (L)	2.0
Type / No. of Cylinders	Inline 4
Engine Placement	Transverse
Transmission Type	Automatic
Transmission Speeds	8
Overdrive	Yes
Final Drive	FWD
Roof Rack	Yes
Sunroof / T-Top	No
Running Boards	No
Tilt Steering Wheel	Yes
Power Seats	No
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	No
Rear Pass. Curtain Airbag	Yes
Rear Pass. Head/Torso Airbag	No
Rear Pass. Torso Airbag	No
Rear Pass. Torso/Pelvis Airbag	No
Rear Pass. Pelvis Airbag	No
Driver Seat Belt Pretensioner	Yes
Rear Pass. Seat Belt Pretensioner	No
Driver Load Limiter	Yes
Rear Pass. Load Limiter	Yes
Other Safety Restraint	Yes

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

No

DATA FROM CERTIFICATION LABEL

Manufactured By	Volkswagen Group of America
Date of Manufacture	Oct-19
Vehicle Type	MPV

GVWR (kg)	2480
GAWR Front (kg)	1270
GAWR Rear (kg)	1260

VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

Measured Parameter	Front	Rear	Third	Total	
Designated Seating Capacity	2	3		5	
Capacity Weight (VCW) (kg)				495.0	A
DSC x 68.04 (kg)				340.2	B
Cargo Weight (RCLW) (kg)				154.8	A-B*

**For trucks or MPVs, if A-B>136, RCLW=136 kg

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: 2020 Volkswagen Atlas Cross Sport 5-Door MPV NHTSA No. M20205802

Test Program: NCAP MDB Side Impact Test Test Date: 08/31/20

TIRE PRESSURES

	Units	LF	RF	LR	RR
As Delivered	kPa	250	250	250	250
Tire Placard	kPa	250	250	250	250
Owner's Manual	kPa	250	250	250	250
As Tested	kPa	250	250	250	250

MDB TIRE SPECIFICATIONS

	Units	Requirement	LF	RF	LR	RR
Tire Size		P205/60R16	P205/60R16	P205/60R16	P205/60R16	P205/60R16
Tire Pressure	kPa	230 ± 21	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	522.5	414.5		593.5	536.0		557.5	528.5	
Right	kg	568.5	369.0		565.0	433.0		585.5	464.0	
Ratio	%	58.2%	41.8%	100.0%	54.5%	45.5%	100.0%	53.5%	46.5%	100.0%
Total	kg	1091.0	783.5	1874.5	1158.5	969.0	2127.5	1143.0	992.5	2135.5

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	1874.5	A
Actual Weight of 2 P572 ATD Used	kg	125.0	B
Rated Cargo/Luggage Wt (RCLW)	kg	136.0	C
Calculated Vehicle Target Wt (TVTW)	kg	2135.5	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	Fully Loaded	As Tested	Meets Requirement***
LF	mm	835	838	Yes
RF	mm	838	842	Yes
LR	mm	866	876	Yes
RR	mm	878	888	Yes
Vehicle CG (Aft of Front Axle)	mm	1384	1356	
Vehicle CG (Left (+)/Right (-) from Longitudinal Centerline)	mm	15	53	

***The "As Tested" vehicle attitude measurements must be equal to or within ±10 mm of the "Fully Loaded" vehicle attitude measurements at each wheel well. Indicate "Yes" or "No" for "Meets Requirement"

DATA SHEET NO. 1 ... (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2020 Volkswagen Atlas Cross Sport 5-Door MPV NHTSA No. M20205802

Test Program: NCAP MDB Side Impact Test Test Date: 08/31/20

WEIGHT OF BALLAST AND VEHICLE COMPONENTS REMOVED TO MEET TVTW

Component Description	Weight (kg)
Spare Tire	18.0
Trim	3.7
Ballast / Equipment Added	31.0

Test Height Adjustable Setting (If Applicable)	N/A
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DATA SHEET NO. 2**SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT, AND FUEL SYSTEM DATA**Test Vehicle: 2020 Volkswagen Atlas Cross Sport 5-Door MPV NHTSA No. M20205802Test Program: NCAP MDB Side Impact Test Test Date: 08/31/20**SEAT POSITIONING**

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

SCRL ANGLE RANGE

Seat	SCRL (°)		
	Max	Min	Mid
Driver Seat	4.0	0.0	2.0
Front Passenger Seat	4.3	0.0	2.2
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	2.0	250	Max			
			Mid	252	250	251
			Min			
Front Passenger Seat	2.2	716	Max			
			Mid	717	716	716
			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

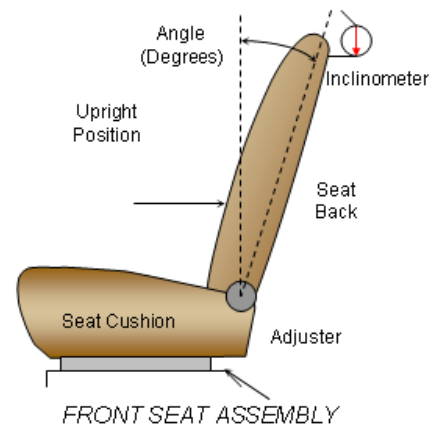
DATA SHEET NO. 2 ... (CONTINUED)**SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT, AND FUEL SYSTEM DATA**Test Vehicle: 2020 Volkswagen Atlas Cross Sport 5-Door MPV NHTSA No. M20205802Test Program: NCAP MDB Side Impact Test Test Date: 08/31/20**SEAT FORE/AFT POSITION**

Seat	Total Fore/Aft Travel		Test Position From Forwardmost Position	
	mm	Detents*	mm	Detent*
Driver Seat	256	39	128	19
Front Passenger Seat	256	39	128	19
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 to the manufacturer's designated design angle. The right front passenger's seat back is positioned in a similar manner as the driver's seat back. The struck side rear seat back is fixed. The rear center and non-struck side rear outboard seat backs are positioned in a similar manner as the struck side rear seat back. Seat back angle is measured using the outboard head restraint post.

**SEAT BACK POSITION**

Seat	Total Seat Back Angle Range		Test Position from Most Upright	
	Degrees	Detents*	Degree	Detent*
Driver Seat w/ Seated Dummy	59.7	30	13.2	6
Front Passenger Seat	58.1	34	14.0	9
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: 2020 Volkswagen Atlas Cross Sport 5-Door MPV NHTSA No. M20205802Test Program: NCAP MDB Side Impact Test Test Date: 08/31/20**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, M2, M1, L from top to bottom.

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

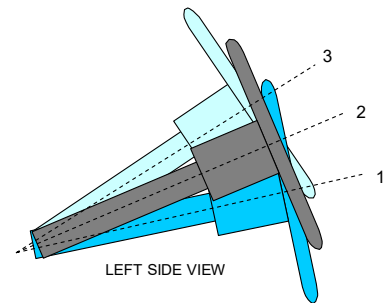
HEAD RESTRAINT ADJUSTMENT

The driver's head restraint is adjusted to the highest and most full forward in-use position. The struck-side rear passenger'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	H
Rear Seat	Fixed	Fixed

STEERING COLUMN ADJUSTMENT

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



STEERING COLUMN ASSEMBLY

	Degrees	Fore-Aft Position (mm)
Lowermost - Position 1	29.0	75
Geometric Center - Position 2	26.2	103
Uppermost - Position 3	23.4	130
Telescoping Steering Wheel Travel		55
Test Position	26.2	103

DATA SHEET NO. 2 ... (CONTINUED)

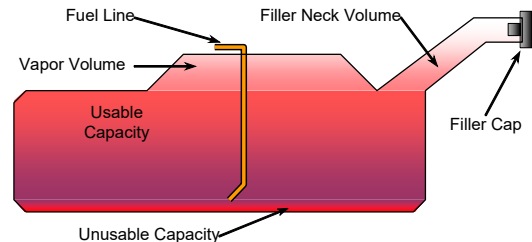
SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT, AND FUEL SYSTEM DATA

Test Vehicle: 2020 Volkswagen Atlas Cross Sport 5-Door MPV NHTSA No. M20205802

Test Program: NCAP MDB Side Impact Test Test Date: 08/31/20

FUEL PUMP

The vehicle is equipped with an electric fuel pump. The fuel pump operates for 1.0 s after the ignition is switched to the "ON" position, while the engine is running, and for 1.5 s after the engine stops.



VEHICLE FUEL TANK ASSEMBLY

FUEL TANK CAPACITY

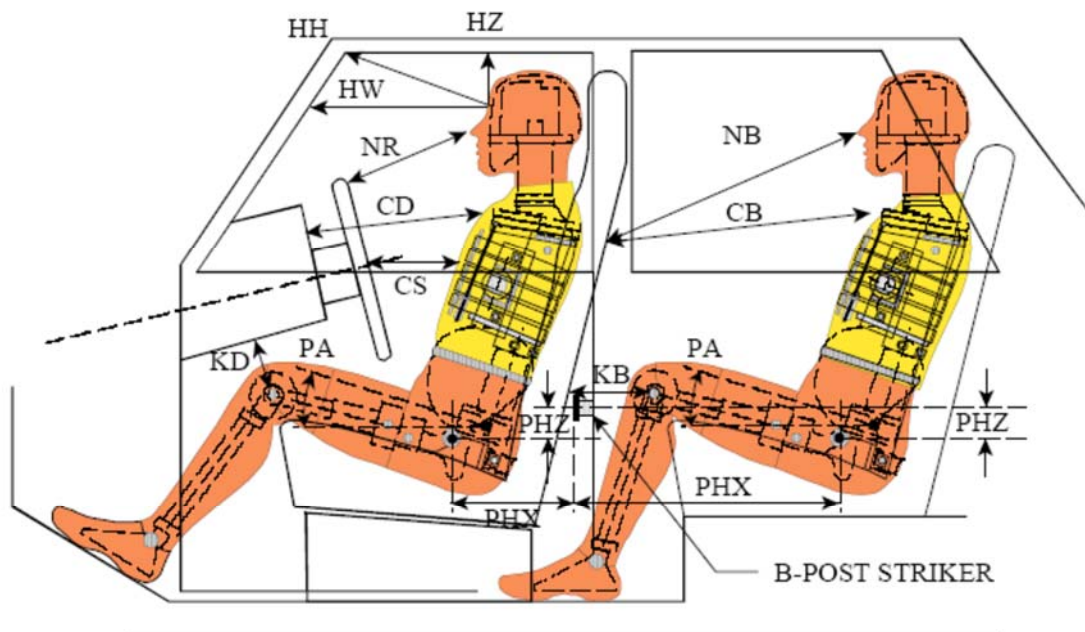
Description	Liters
Usable Capacity of "Standard Tank" (see Form No. 1)	70.41
Usable Capacity of "Optional Tank" (see Form No. 1)	
Usable Capacity of "Standard Tank" (see Owner's Manual)	70.41
Usable Capacity of "Optional Tank" (see Owner's Manual)	
93% of Usable Capacity	65.48
Actual amount of Solvent Used in Test	65.48
1/3 of Usable Capacity	23.47

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

DATA SHEET NO. 3

DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2020 Volkswagen Atlas Cross Sport 5-Door MPV NHTSA No. M20205802
 Test Program: NCAP MDB Side Impact Test Test Date: 08/31/20



LEFT SIDE VIEW

NOTE: 2-DOOR VEHICLE SHOWN.
 REAR DUMMY PHX & PHZ
 MEASUREMENTS FOR A 4-DOOR
 VEHICLE WOULD USE THE C-POST
 STRIKER AS A REFERENCE POINT

DUMMY LONGITUDINAL CLEARANCE DIMENSION INFORMATION

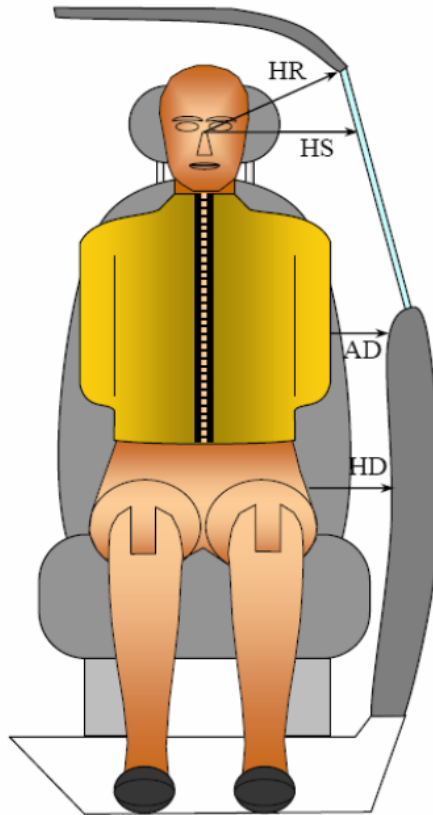
Driver Code	Pass. Code	Description	Driver		Passenger	
			Length (mm)	Angle (°)	Length (mm)	Angle (°)
HH		Head to Header	159			
HW		Head to Windshield	578			
HZ	HZ	Head to Roof	169		271	
NR	NB	Nose to Rim/Seat Back	413		688	
CD	CB	Chest to Dash/Seat Back	530		676	
CS		Chest to Steering Wheel	298			
KD(L)/KDA(L)°	KB(L)/KBA(L)°	Left Knee to Dash/Seat Back	170	39.6	387	7.2
KD(R)/KDA(R)°	KB(R)/KBA(R)°	Right Knee to Dash/Seat Back	130	26.7	382	6.1
PAX°	PAX°	Pelvic Tilt Angle X		18.2		19.5
	PAY°	Pelvic Tilt Angle Y		18.2		0.2
PHX	PHX	Hip Point to Striker (x-axis)	215		289	
PHZ	PHZ	Hip Point to Striker (z-axis)	226		187	

DATA SHEET NO. 4

DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2020 Volkswagen Atlas Cross Sport 5-Door MPV NHTSA No. M20205802

Test Program: NCAP MDB Side Impact Test Test Date: 08/31/20



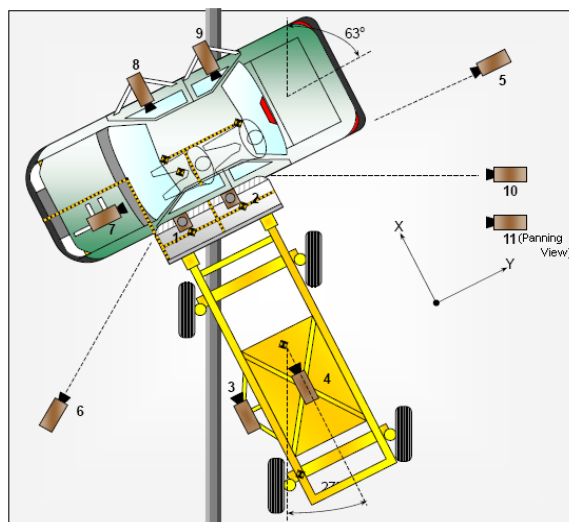
DUMMY LATERAL CLEARANCE DIMENSION INFORMATION

Code	Measurement Description	Units	Driver	Passenger
HR	Head to Side Header	mm	225	252
HS	Head to Side Window	mm	382	378
AD	Arm to Door	mm	110	168
HD	H-Point to Door	mm	163	250

DATA SHEET NO. 5

CAMERA AND INSTRUMENTATION DATA

Test Vehicle: 2020 Volkswagen Atlas Cross Sport 5-Door MPV NHTSA No. M20205802
 Test Program: NCAP MDB Side Impact Test Test Date: 08/31/20



CAMERA LOCATIONS AND DATA

No.	View	Coordinates (mm)			Lens Length (mm)	Operating Frame Rate (fps)
		X	Y	Z		
1	Overhead Overall	1220	2287	-5486	14	1000
2	Overhead Close-Up	609	2287	-5102	35	1000
3	Left Impact Point (MDB)	-2134	0	-1143	25	1000
4	Side Overall (MDB)	-3912	838	-1829	12.5	1000
5	Rear	-64	2485	-1348	85	1000
6	Left Front	-2266	-3564	-1475	24	1000
7	Driver Front (On-Board)	462	-667	-640	6	1000
8	Driver Side (On-Board)	1639	552	-356	6	1000
9	Passenger Side (On-Board)	1645	1552	-386	6	1000
10	Real Time Overall				Zoom	30
11	Real Time Inrun				Zoom	30

Reference: Impact Point Projected to Ground; +X = To Front of MDB, +Y = To Right of MDB, +Z = Down

*All measurements accurate to ± 6 mm

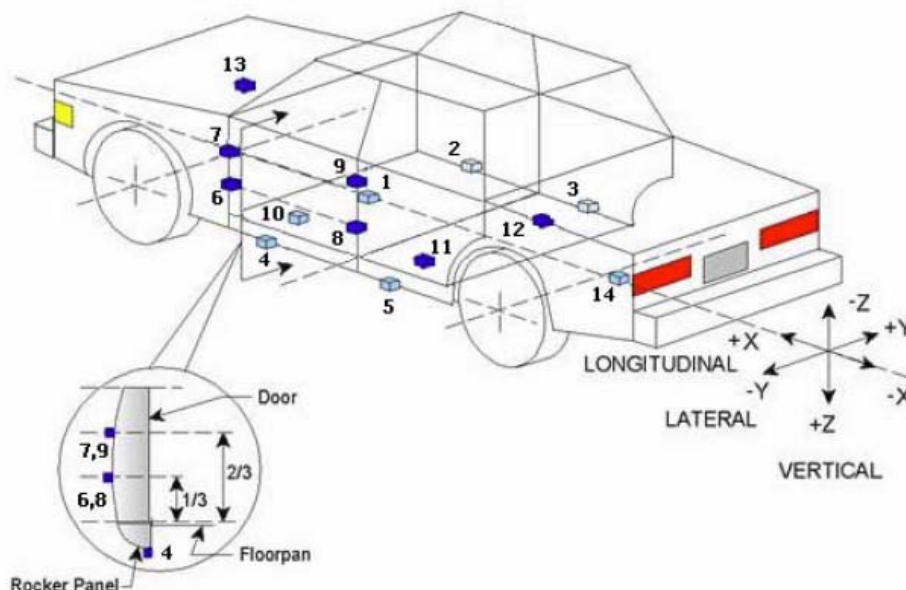
INSTRUMENTATION

Driver Dummy Channels	16
Passenger Dummy Channels	19
Vehicle Structure Accelerometers	21
MDB Channels	5
Total	61

DATA SHEET NO. 6

TEST VEHICLE ACCELEROMETER LOCATIONS

Test Vehicle: 2020 Volkswagen Atlas Cross Sport 5-Door MPV NHTSA No. M20205802
 Test Program: NCAP MDB Side Impact Test Test Date: 08/31/20



VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

Loc. No.	Sensor Description	Coordinates (mm)		
		X	Y	Z
1	Vehicle CG	2820	0	420
2	Right Sill at Front Seat	2103	945	500
3	Right Sill at Rear Seat	3001	840	520
4	Left Sill at Front Door	2105	-945	500
5	Left Sill at Rear Door	3009	-840	520
6	A-Pillar Lower	1420	770	510
7	A-Pillar Middle	1420	775	930
8	B-Pillar Lower	2510	820	915
9	B-Pillar Middle	2510	850	950
10	Front Seat Track	2200	870	420
11	Rear Seat Structure	2950	-410	470
12	Right Rear Occupant Compartment	2960	520	460
13	Engine Block	920	335	1000
14	Rear Floorpan Above Axle	3900	0	735

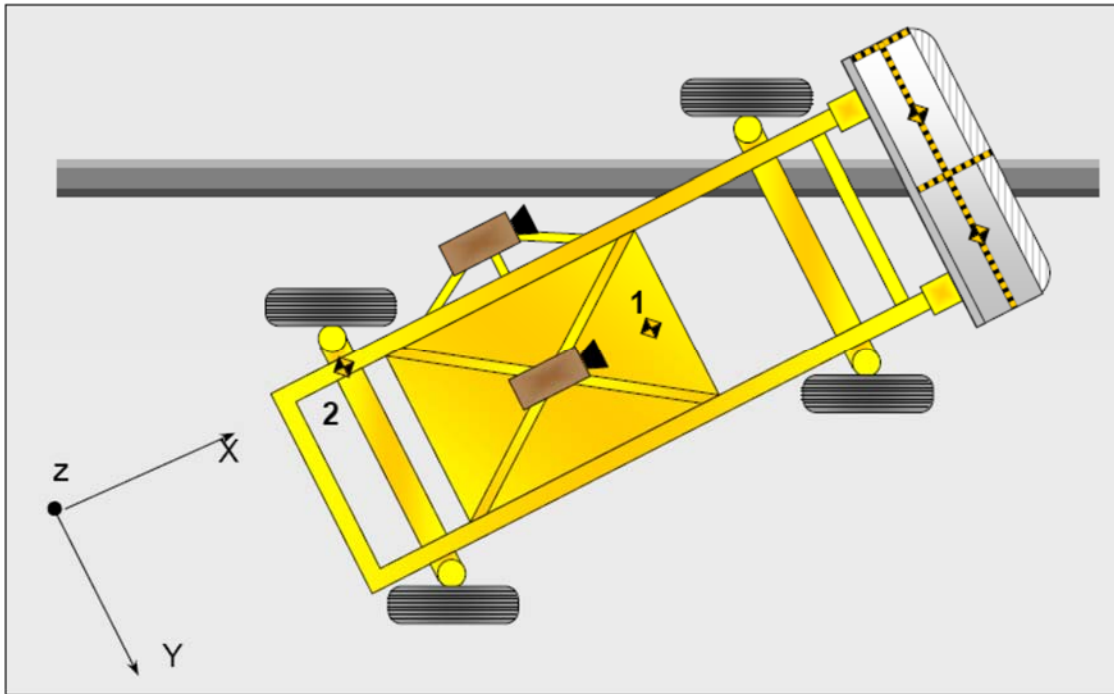
Reference: X – Rear surface of vehicle (+ forward)
 Y – Vehicle centerline (+ to right)
 Z – Ground plane (+ down)

DATA SHEET NO. 7

MDB ACCELEROMETER LOCATIONS

Test Vehicle: 2020 Volkswagen Atlas Cross Sport 5-Door MPV NHTSA No. M20205802

Test Program: NCAP MDB Side Impact Test Test Date: 08/31/20



MDB ACCELEROMETER LOCATIONS

Loc. No.	Accelerometer Location	Measurement		
		X	Y	Z
1	MDB CG	-1195	0	-430
2	MDB Rear	-2642	-593	-608

Reference: X – Face of MDB (+ forward)
Y – MDB centerline (+ to right)
Z – Ground plane (+ down)

DATA SHEET NO. 8**POST-TEST OBSERVATIONS**Test Vehicle: 2020 Volkswagen Atlas Cross Sport 5-Door MPV NHTSA No. M20205802Test Program: NCAP MDB Side Impact Test Test Date: 08/31/20**TEST DUMMY INFORMATION AND CONTACT POINTS**

Dummy Body Part	Front Seat Dummy (ES-2re)	Rear Seat Dummy (SID-IIs)
Face	Curtain Airbag	Curtain Airbag
Top of Head	Side Header	Curtain Airbag
Left Side of Head	Curtain Airbag, Side Header	Curtain Airbag
Back of Head	Headrest	Center Seatback, Center Headrest
Left Shoulder	Curtain Airbag, Door Panel	Door Panel
Upper Torso	Side Airbag	Door Panel
Lower Torso	Side Airbag	Door Panel
Left Hip	Door Panel	Door Panel
Left Knee	Door Panel	None

POST-TEST DOOR PERFORMANCE

Description	Struck Side		Non-Struck Side		Rear Hatch/Other
	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

DATA SHEET NO. 8 ... (CONTINUED)**POST-TEST OBSERVATIONS**Test Vehicle: 2020 Volkswagen Atlas Cross Sport 5-Door MPV NHTSA No. M20205802Test Program: NCAP MDB Side Impact Test Test Date: 08/31/20**POST-TEST SEAT PERFORMANCE**

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

POST-TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Pillar Performance	No separation
Sill Separation	No separation
Windshield Damage	None
Side Window Damage	Both struck side windows broken
Other Notable Effects	None

DATA SHEET NO. 8 ... (CONTINUED)**POST-TEST OBSERVATIONS**Test Vehicle: 2020 Volkswagen Atlas Cross Sport 5-Door MPV NHTSA No. M20205802Test Program: NCAP MDB Side Impact Test Test Date: 08/31/20**SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION**

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

IMPACT POINT LOCATION DATA

Measured Parameter	Units	Tolerance	Value
Vehicle Wheel Base	mm		2977
Vertical Impact Reference Line (Aft of Front Axle)(Intended Impact Point)	mm		512
Actual Impact Point (Aft of Front Axle)	mm		508
Horizontal Offset (+ forward / - rearward)	mm	± 50 of Intended Impact Point	-4
Vertical Offset (+ down / - up)	mm	± 20 of Intended Impact Point	2

DATA SHEET NO. 9**MDB SUMMARY OF RESULTS**Test Vehicle: 2020 Volkswagen Atlas Cross Sport 5-Door MPV NHTSA No. M20205802Test Program: NCAP MDB Side Impact Test Test Date: 08/31/20**MDB SPECIFICATIONS**

Measurement Description	Length (mm)
Overall Width of Framework Carriage	1251
Overall Length including Honeycomb Face	4115
Wheel Base of Framework Carriage	2595
CG location aft of Front Axle	1118

MDB WEIGHTS

	Units	Front Axle	Rear Axle	Total
Left	kg	402.0	297.5	699.5
Right	kg	377.0	290.0	667.0
Ratio	%	57.0%	43.0%	100.0%
Totals	kg	779.0	587.5	1366.5

SPEED AND IMPACT DATA

Measured Parameter	Units	Requirement	Value
Trap No. 1 Velocity (Primary)	km/h	61.1 to 62.7	62.38
Trap No. 2 Velocity (Redundant)	km/h	61.1 to 62.7	62.54
MDB CL to Target Vehicle CL	degrees	88.5 to 91.5	90.1
MDB Forward Line of Motion to Target Vehicle CL	degrees	62.5 to 63.5	62.5
MDB Crabbed Angle to MDB Forward Line of Motion	degrees	26.0 to 28.0	27.7

MAXIMUM STATIC CRUSH OF HONEYCOMB FACE

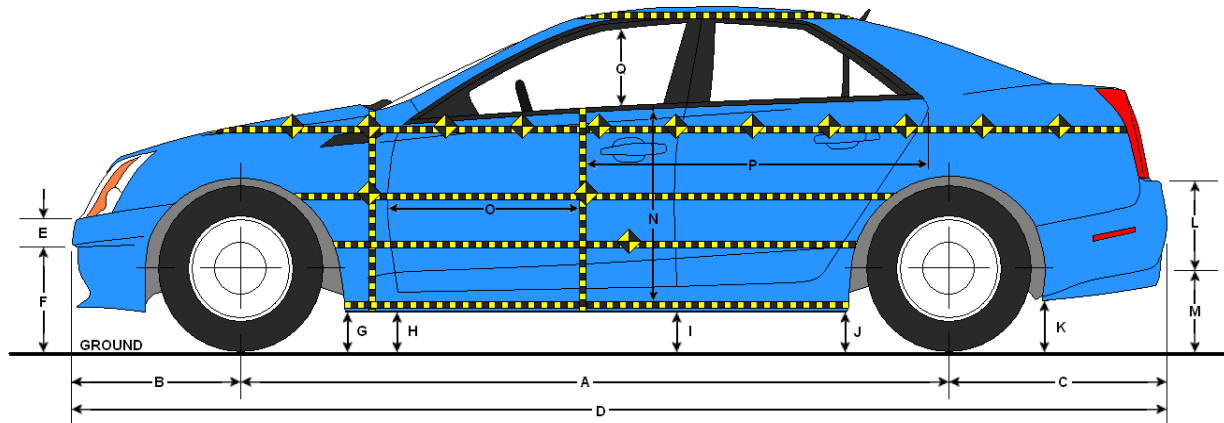
Vertical Location			From Centerline		Max. Crush (mm)
Row	Description	Height (mm)	Distance (mm)	Direction	
A	Center of Bumper	432	0	C/L	272
B	Top of Bumper	533	800	Left	196
C	Mid Level	686	800	Left	211
D	Top of Stack	813	800	Left	231

DATA SHEET NO. 10

TEST VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2020 Volkswagen Atlas Cross Sport 5-Door MPV NHTSA No. M20205802

Test Program: NCAP MDB Side Impact Test Test Date: 08/31/20



LEFT SIDE VIEW

VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

Code	Description	Pre-Test	Post-Test	Difference
A	Wheelbase	2977	2954	-23
B	Front Axle to FSOV	966	973	7
C	Rear Axle to RSOV	1027	1041	14
D	Total Length at Centerline	4970	4969	-1
E	Front Bumper Thickness	89	89	0
F	Front Bumper Bottom to Ground	600	596	-4
G	Sill Height at Front Wheel Well	345	339	-6
H	Sill Height at Front Door Leading Edge	385	412	27
I	Sill Height at B-Pillar	396	422	26
J1	Sill Height at Rear Wheel Well	305	292	-13
J2	Pinch Weld Height at Rear Wheel Well	267	256	-11
K	Sill Height Aft of Rear Wheel Well	383	370	-13
L	Rear Bumper Thickness	121	122	1
M	Rear Bumper Bottom to Ground	614	612	-2
N	Sill Height to Bottom of Front Window Sill	737	685	-52
O	Front Door Leading Edge to Impact CL	798	791	-7
P	Rear Door Trailing Edge to Impact CL	1437	1400	-37
Q	Front Window Opening	398	405	7
R	Right Side Length	3636	3636	0
S	Left Side Length	3634	3631	-3
T	Vehicle Width at B-Pillar	1976	1929	-47

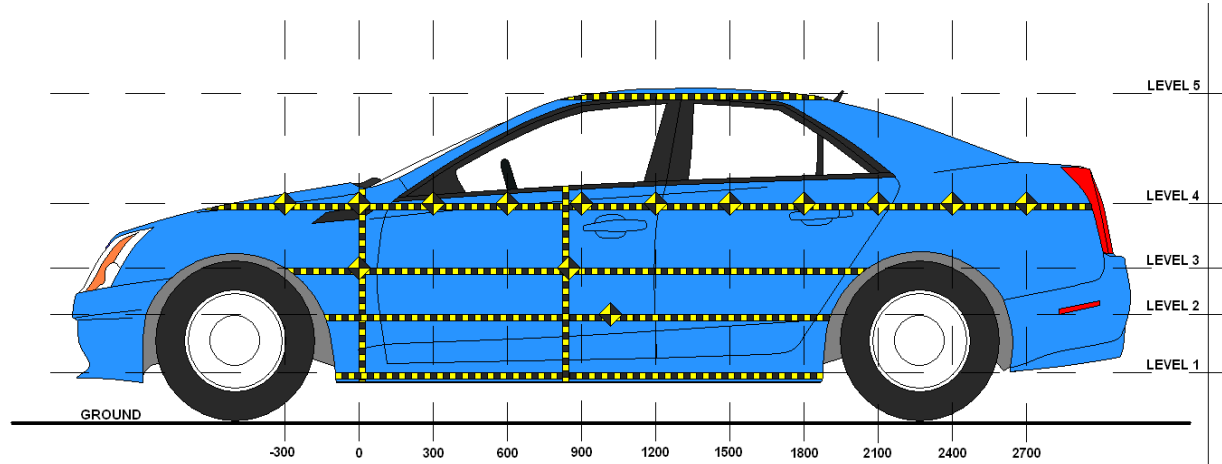
All measurements in mm with tolerance of ± 3 mm

DATA SHEET NO. 11

TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2020 Volkswagen Atlas Cross Sport 5-Door MPV NHTSA No. M20205802

Test Program: NCAP MDB Side Impact Test Test Date: 08/31/20



LEFT SIDE VIEW

Level	Description	Height Above Ground (mm)	Maximum Exterior Static Crush	Distance from Impact
1	Sill Top	421	112	1650
2	Occupant H-Point	727	178	1800
3	Mid-Door	772	181	1800
4	Window Sill	1046	71	1500
5	Window Top	1635	1	2400

DATA SHEET NO. 11 ... (CONTINUED)

TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2020 Volkswagen Atlas Cross Sport 5-Door MPV NHTSA No. M20205802

Test Program: NCAP MDB Side Impact Test Test Date: 08/31/20

EXTERIOR CRUSH MEASUREMENTS AT EACH LEVEL

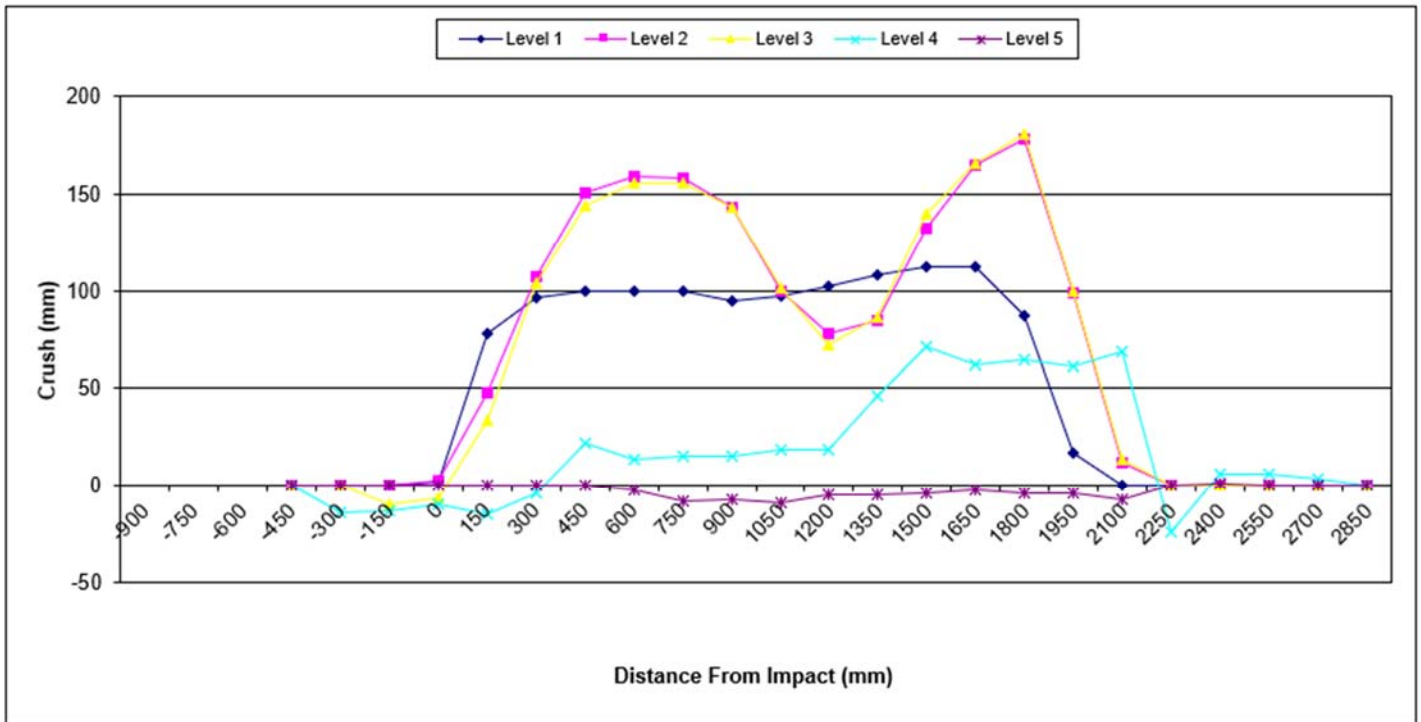
	Pre-Test (mm)					Post-Test (mm)					Difference (mm)				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-900															
-750															
-600															
-450															
-300				557					543					-14	
-150		510	512	571			510	502	558			0	-10	-13	
0	532	515	517	564		534	518	511	554		2	3	-6	-10	
150	526	522	522	560		604	570	556	545		78	48	34	-15	
300	522	519	520	554		618	626	624	550		96	107	104	-4	
450	518	518	518	550		618	669	662	572		100	151	144	22	
600	515	517	517	547	807	615	676	673	561	805	100	159	156	14	-2
750	513	517	516	545	815	613	675	672	560	807	100	158	156	15	-8
900	512	517	517	542	821	607	660	660	557	814	95	143	143	15	-7
1050	512	518	518	539	829	609	618	619	558	820	97	100	101	19	-9
1200	513	519	519	541	832	615	597	591	560	827	102	78	72	19	-5
1350	514	520	520	540	837	622	605	606	586	832	108	85	86	46	-5
1500	515	522	522	541	840	627	654	662	612	836	112	132	140	71	-4
1650	517	524	524	541	842	629	689	690	603	840	112	165	166	62	-2
1800	521	525	525	543	846	608	703	706	608	842	87	178	181	65	-4
1950	524	514	515	547	851	541	613	615	608	847	17	99	100	61	-4
2100		507	507	545	856		519	521	614	849		12	14	69	-7
2250				528	853				504	853				-24	0
2400				523	857				529	858				6	1
2550				523	861				529	861				6	0
2700				530					534					4	
2850															

DATA SHEET NO. 11 ... (CONTINUED)

TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2020 Volkswagen Atlas Cross Sport 5-Door MPV NHTSA No. M20205802

Test Program: NCAP MDB Side Impact Test Test Date: 08/31/20

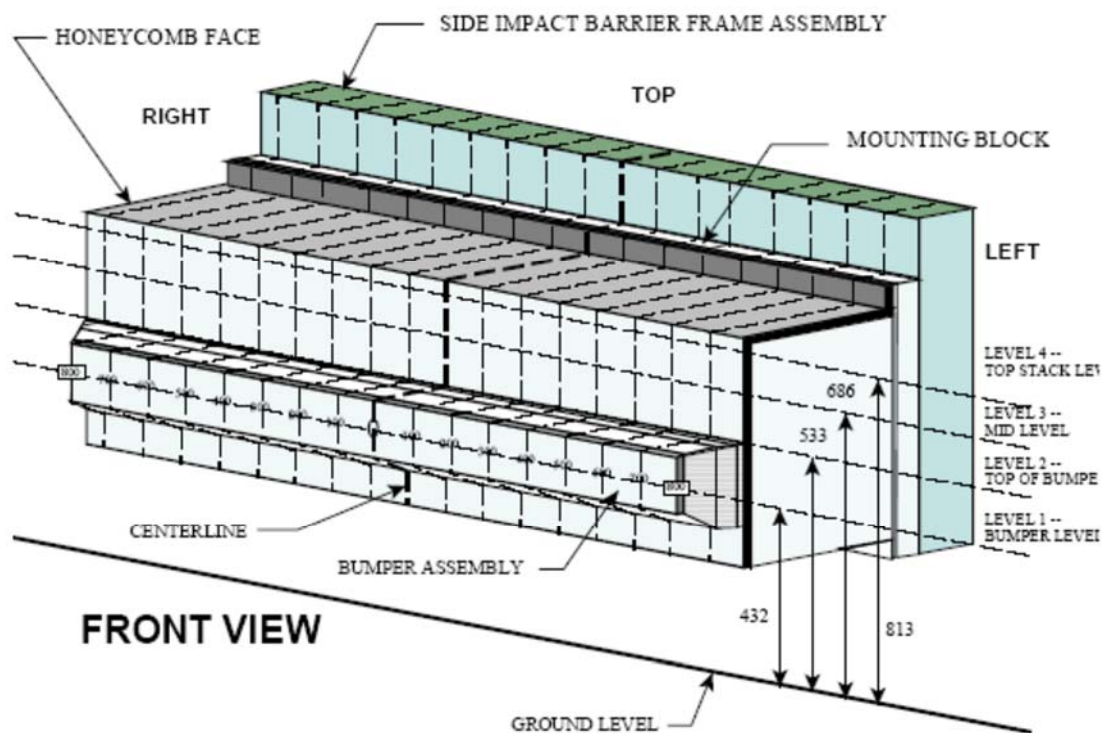


DATA SHEET NO. 12

MDB EXTERIOR STATIC CRUSH MEASUREMENTS

Test Vehicle: 2020 Volkswagen Atlas Cross Sport 5-Door MPV NHTSA No. M20205802

Test Program: NCAP MDB Side Impact Test Test Date: 08/31/20



NOTE: Dimensions are shown in millimeters, mm

DEFORMABLE BARRIER STATIC CRUSH

Stack Level	Distance Right of Center								C/L	Distance Left of Center							
	800	700	600	500	400	300	200	100		100	200	300	400	500	600	700	800
1	258	258	258	261	258	260	268	266	272	263	253	243	248	243	248	243	263
2	191	188	181	169	166	173	191	176	166	176	169	168	171	176	179	181	196
3	116	113	136	161	163	178	203	181	151	121	111	108	111	118	133	161	211
4	116	116	123	141	166	193	211	181	151	126	113	108	111	124	141	181	231

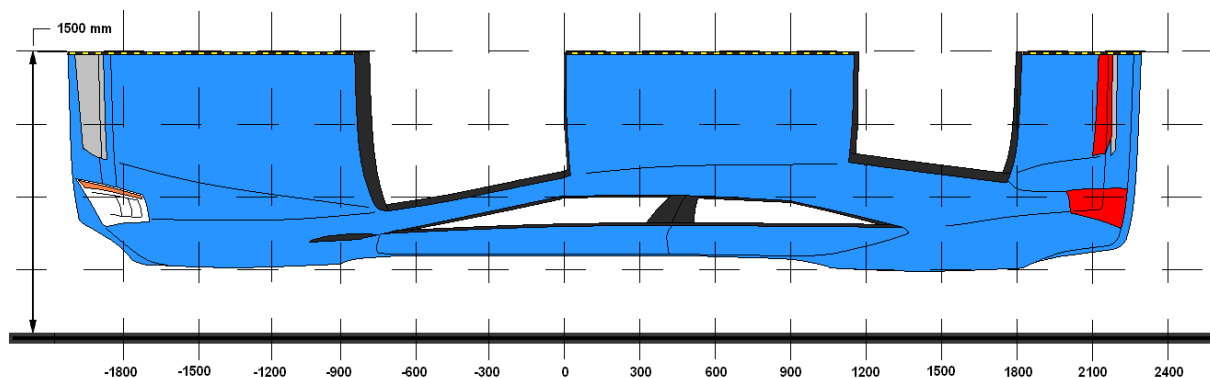
All dimensions in millimeters.

DATA SHEET NO. 13

VEHICLE AND MDB DAMAGE PROFILE DISTANCES

Test Vehicle: 2020 Volkswagen Atlas Cross Sport 5-Door MPV NHTSA No. M20205802

Test Program: NCAP MDB Side Impact Test Test Date: 08/31/20



VEHICLE DAMAGE PROFILE DISTANCES

DPD	Distance From Impact Point (mm)	Level	Pre-Test (mm)	Post-Test (mm)	Crush (mm)
1	2700	4	530	534	4
2	2100	4	545	614	69
3	1500	3	522	662	140
4	900	2	517	660	143
5	300	2	519	626	107
6	-300	4	557	543	-14

MDB DAMAGE PROFILE DISTANCES

DPD	From MDB Centerline		Level	Crush (mm)
	Distance (mm)	Direction		
1	800	Left	1	258
2	500	Left	1	261
3	200	Left	1	268
4	200	Right	1	253
5	500	Right	1	243
6	800	Right	1	263

DATA SHEET NO. 14

FMVSS NO. 301 STATIC ROLLOVER RESULTS

Test Vehicle: 2020 Volkswagen Atlas Cross Sport 5-Door MPV NHTSA No. M20205802

Test Program: NCAP MDB Side Impact Test Test Date: 08/31/20

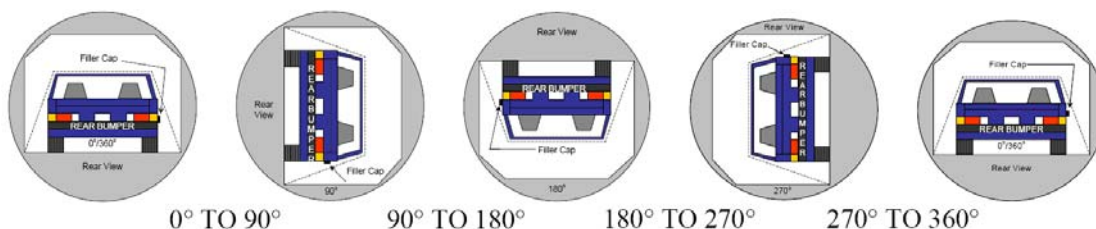
Temperature at Time of Impact: 35.0 °C Test Time: 12:57 P.M.

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°	78	300	378
90° To 180°	82	300	382
180° To 270°	80	300	380
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	0	0	
90° To 180°	0	0	0	
180° To 270°	0	0	0	
270° To 360°	0	0	0	

SOLVENT SPILLAGE LOCATION TABLE

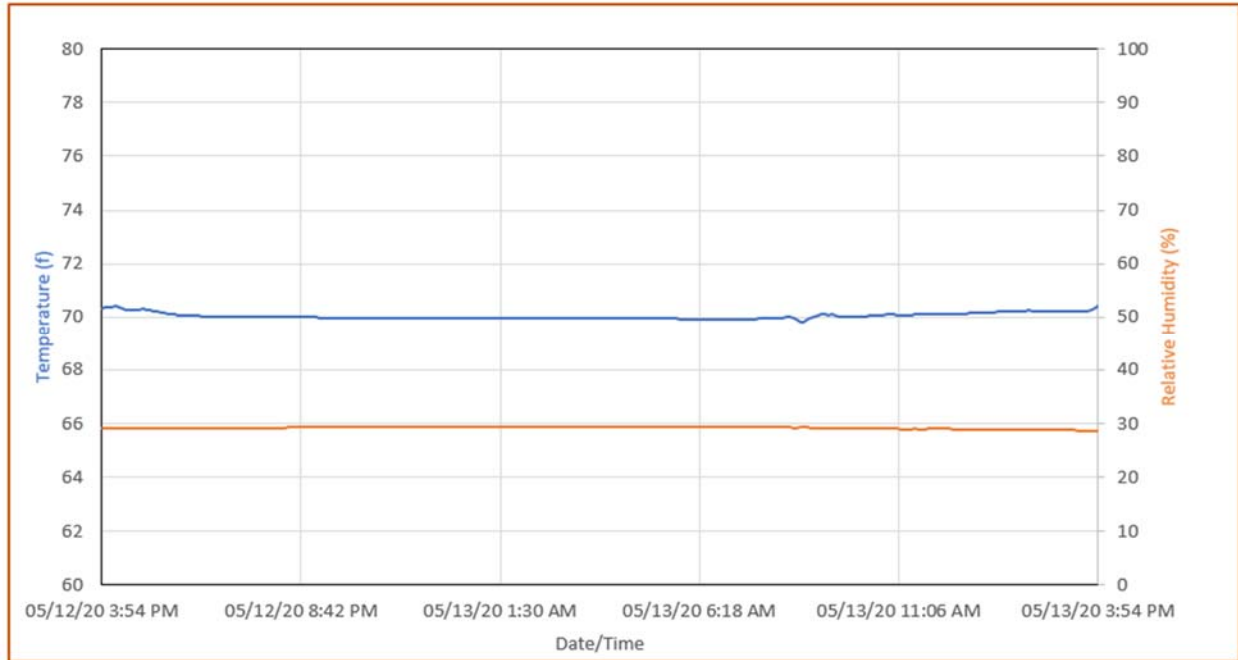
Test Phase	Spillage Location
0° To 90°	N/A
90° To 180°	N/A
180° To 270°	N/A
270° To 360°	N/A

DATA SHEET NO. 15

DUMMY/VEHICLE TEMPERATURE AND HUMIDITY STABILIZATION

Test Vehicle: 2020 Volkswagen Atlas Cross Sport 5-Door MPV NHTSA No. M20205802

Test Program: NCAP MDB Side Impact Test Test Date: 08/31/20



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

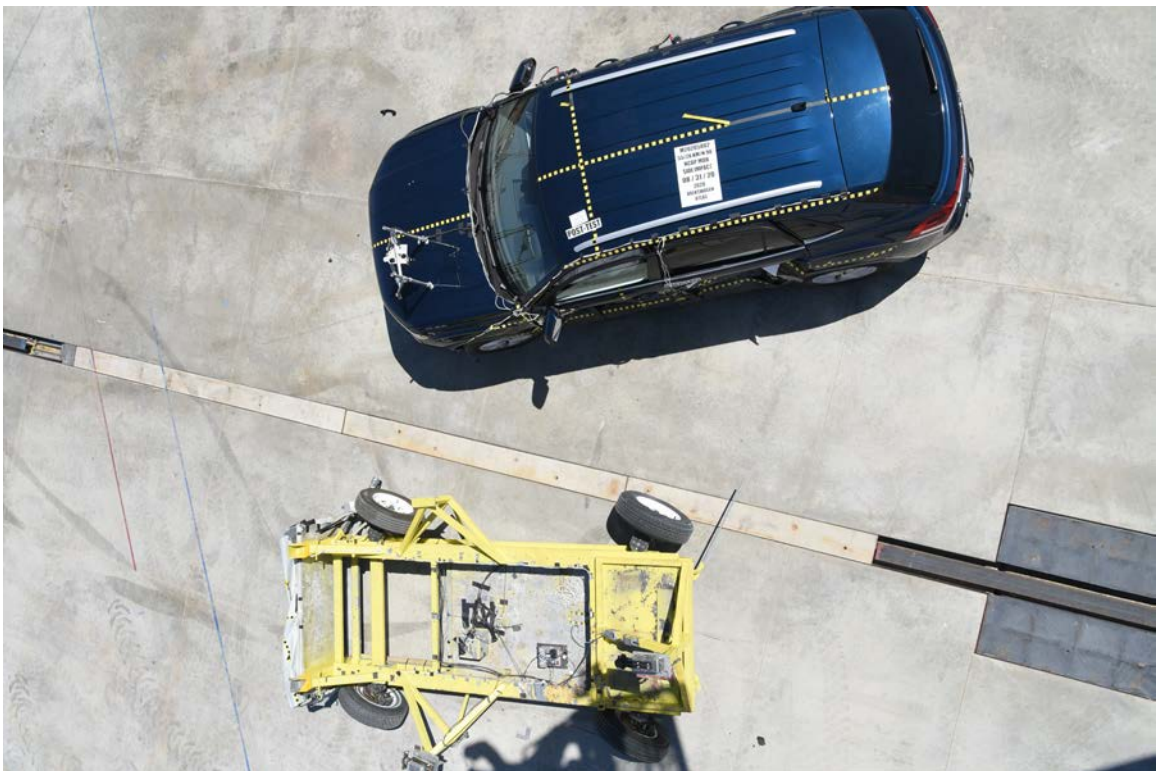


FIGURE 16. Post-Test Overhead View of Test Area



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



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



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



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



FIGURE 21. Pre-Test Left Front Door Latch Close-Up



FIGURE 22. Post-Test Left Front Door Latch Close-Up



FIGURE 23. Pre-Test Left Rear Door Latch Close-Up



FIGURE 24. Post-Test Left Rear Door Latch Close-Up



FIGURE 25. Pre-Test Front Close-Up View of Driver Dummy



FIGURE 26. Post-Test Front Close-Up View of Driver Dummy



FIGURE 27. Pre-Test Left Side View of Driver Dummy
Showing Belt and Chalking



FIGURE 28. Pre-Test Left Side View of Driver Dummy Shoulder and Door Top View



FIGURE 29. Post-Test Left Side View of Driver Dummy Shoulder and Door Top View



FIGURE 30. Pre-Test Frontal View of Driver Seat Back Prior to Dummy Positioning



FIGURE 31. Pre-Test Frontal View of Driver Dummy Head and Shoulders in Relation to Head Restraint



FIGURE 32. Pre-Test Overhead View of Driver Seat Pan Prior to Dummy Positioning



FIGURE 33. Pre-Test Overhead View of Driver Dummy Thighs on Seat Pan



FIGURE 34. Pre-Test Placement of Driver Dummy's Feet



FIGURE 35. Pre-Test View of Belt Anchorage for Driver Dummy



FIGURE 36. Pre-Test Left Side View of Steering Wheel



FIGURE 37. View of Disengaged Parking Brake



FIGURE 38. Pre-Test View of Parking Brake



FIGURE 39. Pre-Test Close-Up Left Side View of Driver Seat Track

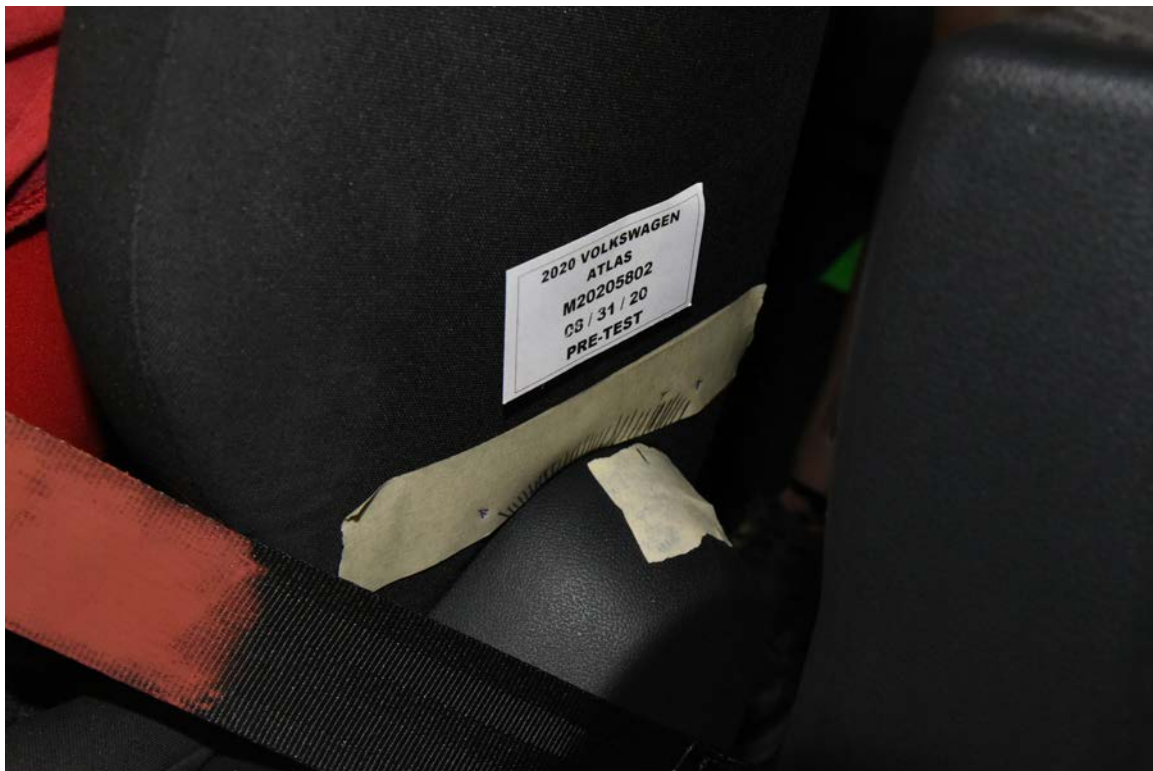


FIGURE 40. Pre-Test Close-Up Left Side View of Driver Seat Back



FIGURE 41. Pre-Test Close-Up View of Driver Seat Back or Head Restraint



FIGURE 42. Pre-Test Driver Dummy and Door Clearance View



FIGURE 43. Post-Test Driver Dummy and Door Clearance View



FIGURE 44. Pre-Test Right Side View of Driver Dummy
and Front Seat Occupant Compartment



FIGURE 45. Post-Test Right Side View of Driver Dummy and Front Seat Occupant Compartment



FIGURE 46. Pre-Test Driver Inner Door Panel View



FIGURE 47. Post-Test Driver Inner Door Panel View
Showing Driver Dummy Contact Locations



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

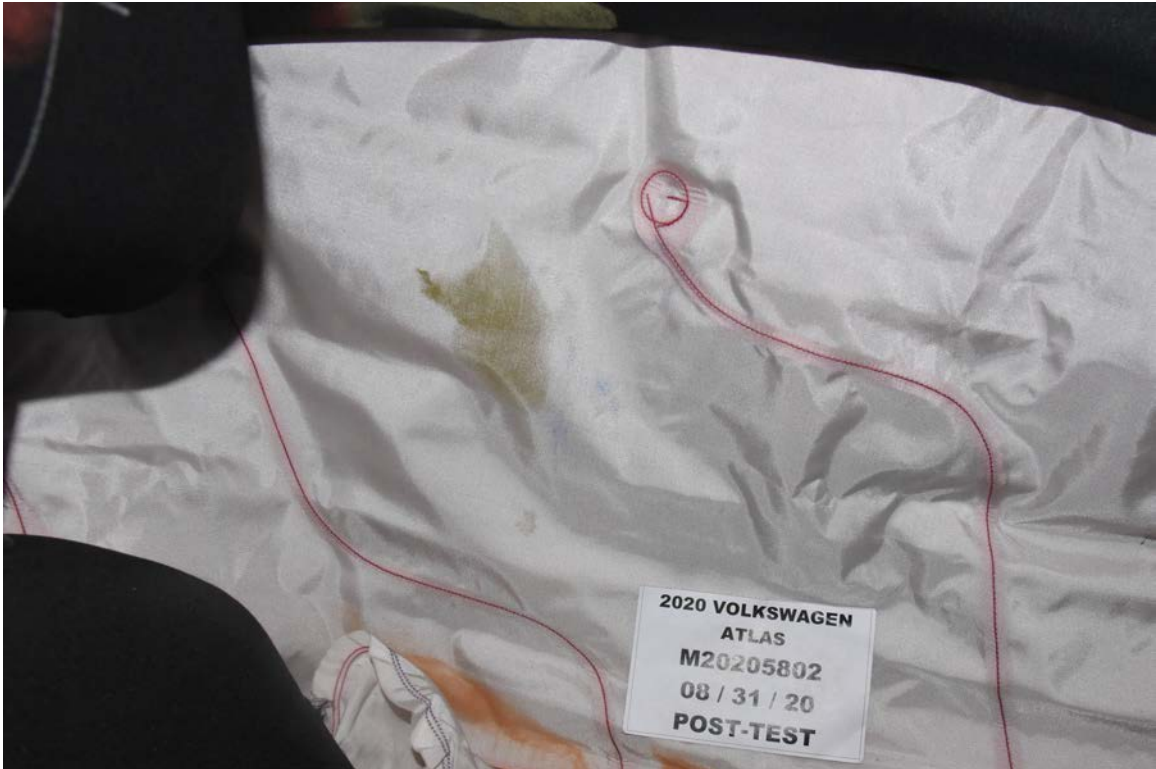


FIGURE 49. Post-Test Driver Dummy Close-Up Head Contact with Side Airbag View



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



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

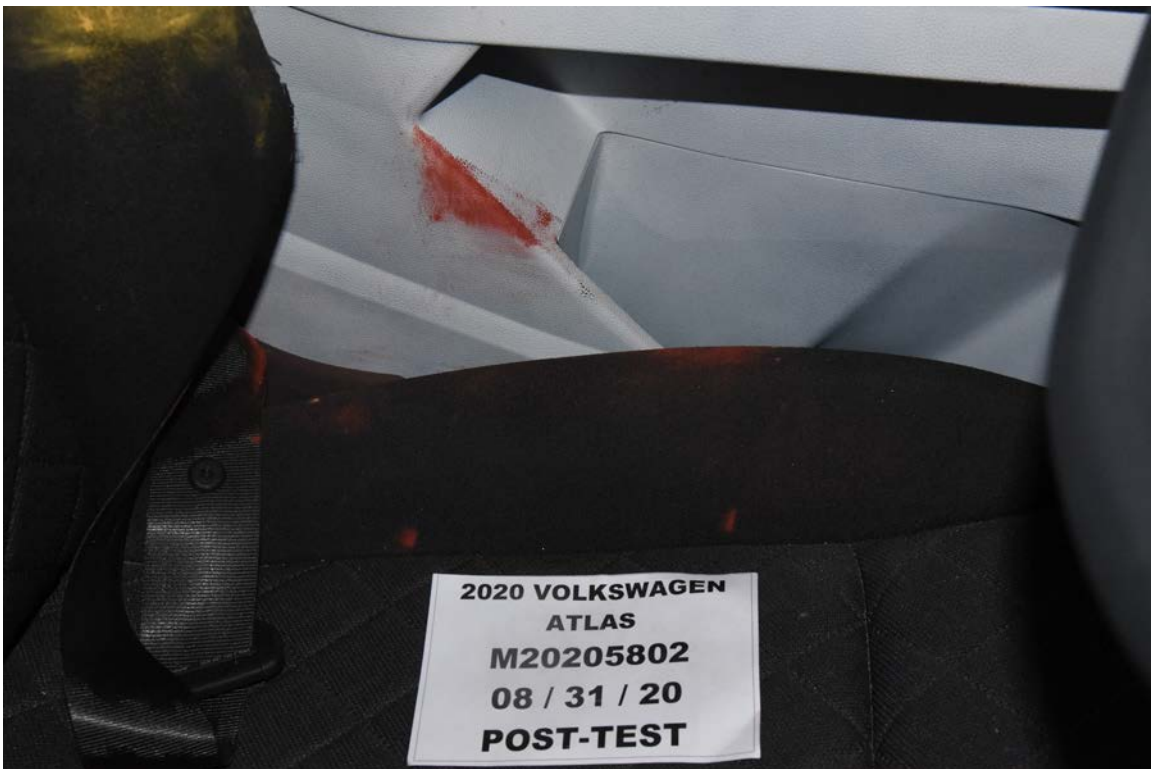


FIGURE 52. Post-Test Driver Dummy Close-Up Pelvis Contact
with Vehicle Interior View



FIGURE 53. Post-Test Driver Dummy Close-Up Pelvis Contact with Side Airbag View

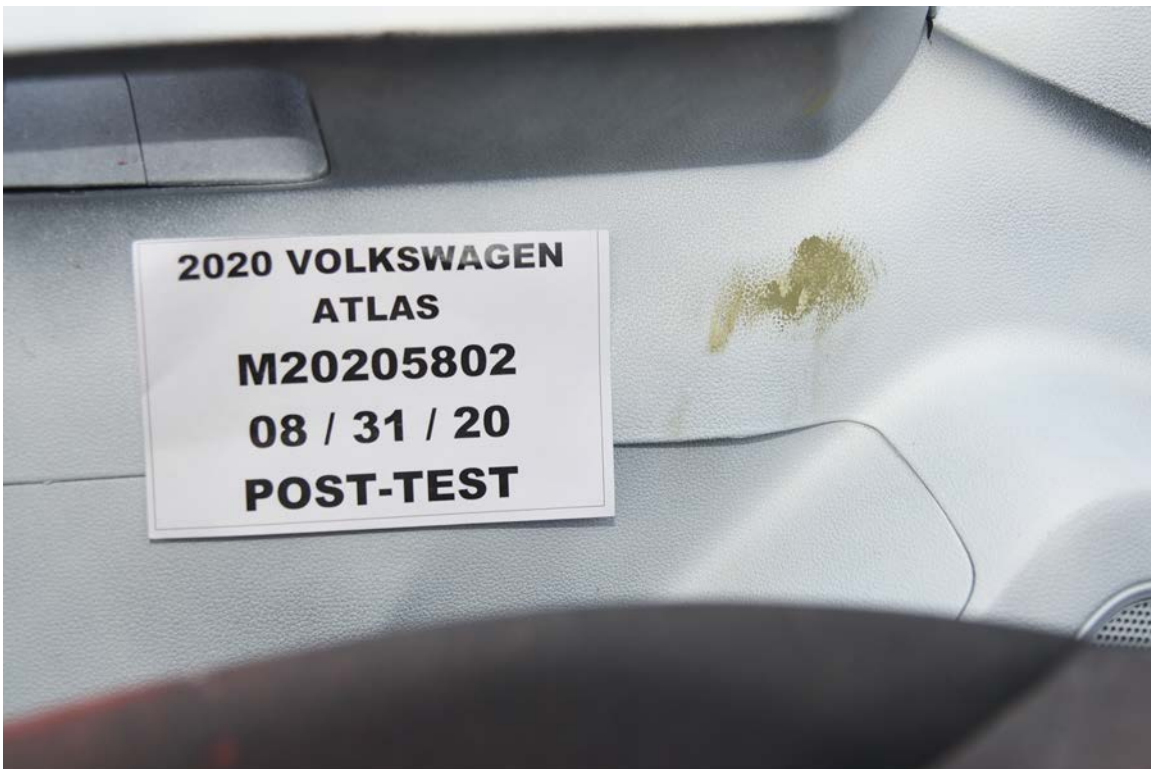


FIGURE 54. Post-Test Driver Dummy Close-Up Knee Contact View



FIGURE 55. Pre-Test Left Side View of Rear Passenger Dummy
Showing Belt and Chalking



FIGURE 56. Pre-Test Left Side View of Rear Passenger Dummy
Shoulder and Door Top View



FIGURE 57. Post-Test Left Side View of Rear Passenger Dummy
Shoulder and Door Top View



FIGURE 58. Pre-Test Frontal View of Rear Passenger Seat Back
Prior to Dummy Positioning



FIGURE 59. Pre-Test Frontal View of Rear Passenger Dummy Head and Shoulders in Relation to Head Restraint



FIGURE 60. Pre-Test Overhead View of Rear Passenger Seat Pan Prior to Dummy Positioning



FIGURE 61. Pre-Test Overhead View of Rear Passenger Dummy Thighs on Seat Pan

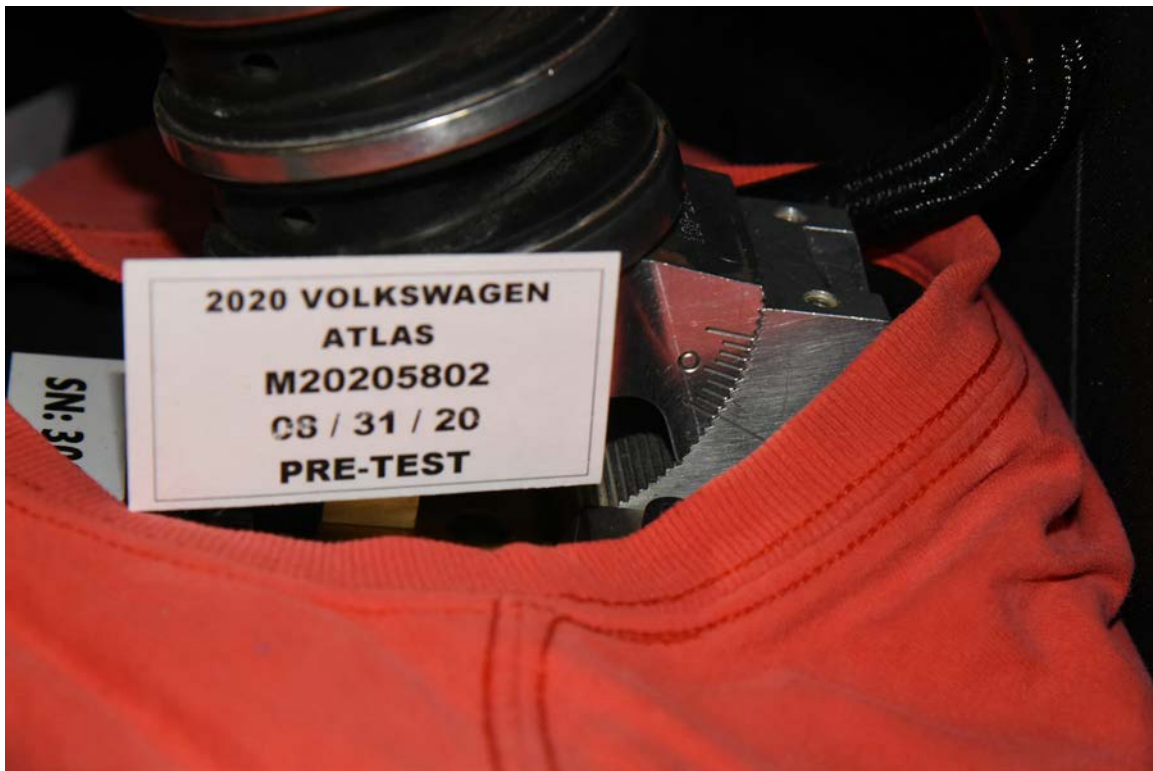


FIGURE 62. Pre-Test View of Rear Passenger Dummy's Neck
Showing Position of Adjustable Neck Bracket



FIGURE 63. Pre-Test View of Rear Passenger Dummy's Head
Showing Dummy's Head is Level



FIGURE 64. Pre-Test Placement of Rear Passenger Dummy's Feet



FIGURE 65. Pre-Test View of Belt Anchorage for Rear Passenger Dummy



FIGURE 66. Pre-Test Close-Up Left Side View of Rear Passenger Seat Track



FIGURE 67. Pre-Test Close-Up Left Side View of Rear Passenger Seat Back



FIGURE 68. Pre-Test Close-Up View of Rear Passenger Seat Back or Head Restraint



FIGURE 69. Pre-Test Rear Passenger Dummy and Door Clearance View



FIGURE 70. Post-Test Rear Passenger Dummy and Door Clearance View



FIGURE 71. Pre-Test Right Side View of Rear Passenger Dummy and Rear Seat Occupant Compartment



FIGURE 72. Post-Test Right Side View of Rear Passenger Dummy and Rear Seat Occupant Compartment



FIGURE 73. Pre-Test Rear Passenger Inner Door Panel View



FIGURE 74. Post-Test Rear Passenger Inner Door Panel View
Showing Rear Passenger Dummy Contact Locations



FIGURE 75. Post-Test Rear Passenger Dummy Close-Up
Head Contact with Vehicle Interior View



FIGURE 76. Post-Test Rear Passenger Dummy Close-Up
Head Contact with Side Airbag View



FIGURE 77. Post-Test Rear Passenger Dummy Close-Up
Torso Contact with Vehicle Interior View

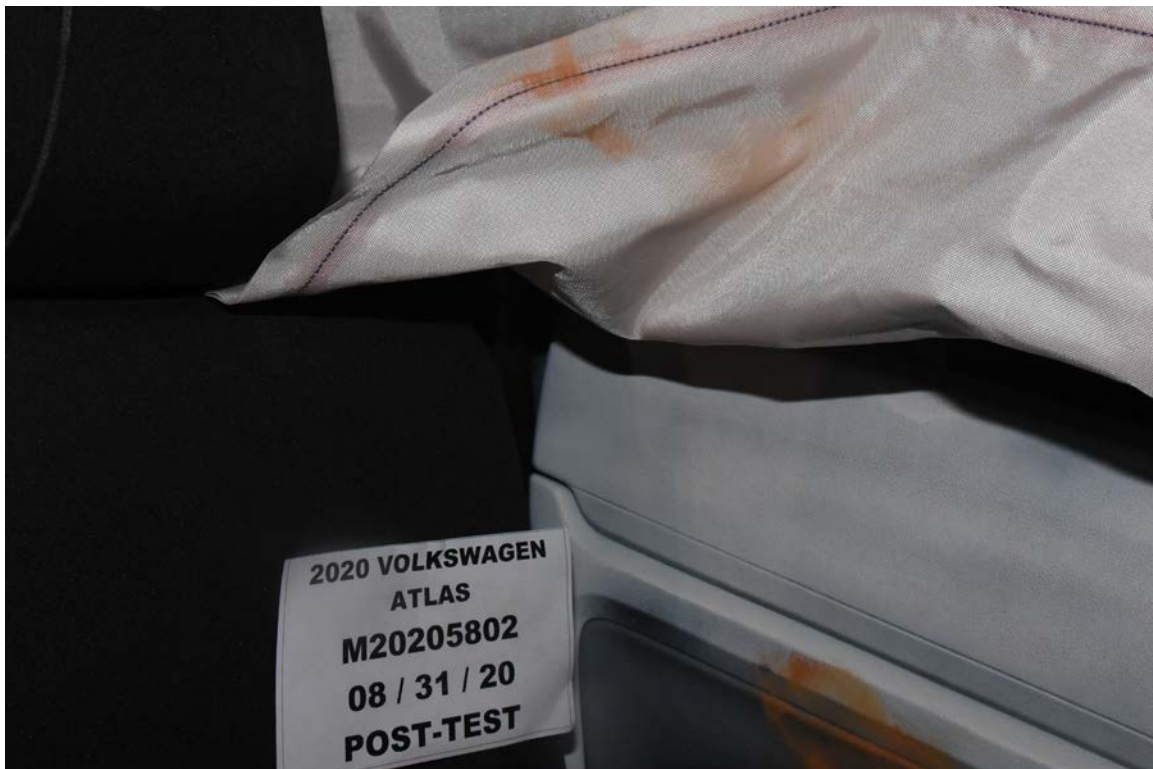


FIGURE 78. Post-Test Rear Passenger Dummy Close-Up
Torso Contact with Side Airbag View



FIGURE 79. Post-Test Rear Passenger Dummy Close-Up
Pelvis Contact with Vehicle Interior View

Photograph Not Applicable

Vehicle Not Equipped with Rear Passenger Side Airbag

FIGURE 80. Post-Test Rear Passenger Dummy Close-Up
Pelvis Contact with Side Airbag View

No Passenger Dummy Knee Contact

2020 VOLKSWAGEN
ATLAS
M700000002
CJ : 31 : 20
PRE TEST

FOR SPRAY MAY CAUSE FLAME
WARNING
TIGHTEN UNTIL ONE CLICK
OR TUNE
MAY TURN ON
SEE OWNER'S MANUAL
DO NOT TOP OFF
RESET NOZZLE PROPERLY

TR-P40110-01-NC



FIGURE 83. Post-Test View of Fuel Filler Cap or Fuel Filler Neck



FIGURE 84. Pre-Test Front View of MDB Impactor Face



FIGURE 85. Post-Test Front View of MDB Impactor Face



FIGURE 86. Pre-Test Top View of MDB Impactor Face



FIGURE 87. Post-Test Top View of MDB Impactor Face



FIGURE 88. Pre-Test Left Side View of MDB Impactor Face



FIGURE 89. Post-Test Left Side View of MDB Impactor Face



FIGURE 90. Pre-Test Right Side View of MDB Impactor Face



FIGURE 91. Post-Test Right Side View of MDB Impactor Face

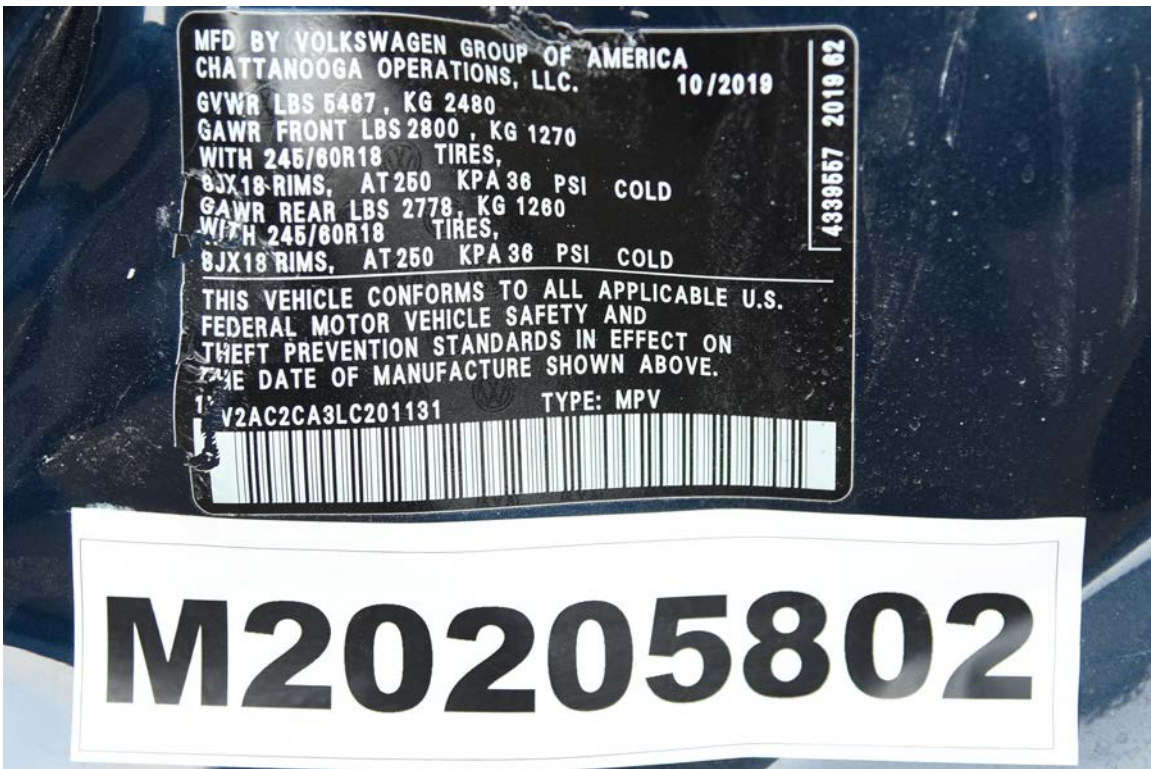


FIGURE 92. Close-Up View of Vehicle's Certification Label

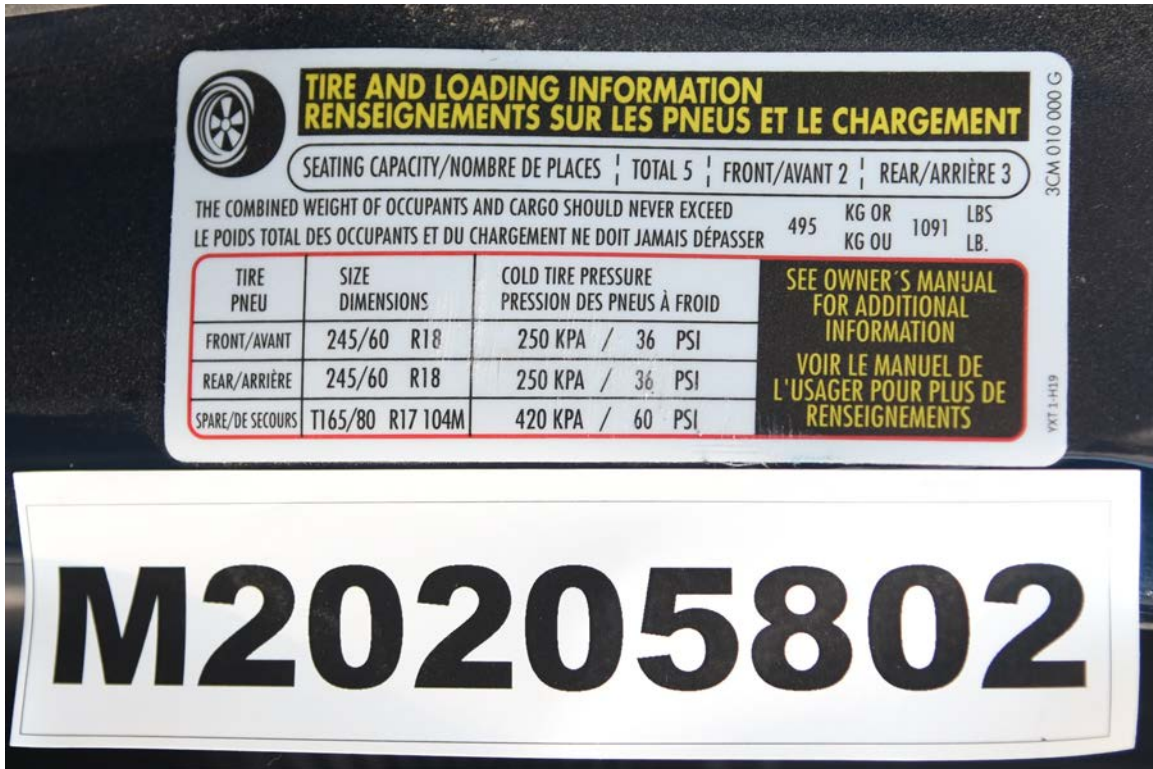


FIGURE 93. Close-Up View of Vehicle's Tire Information Placard or Label

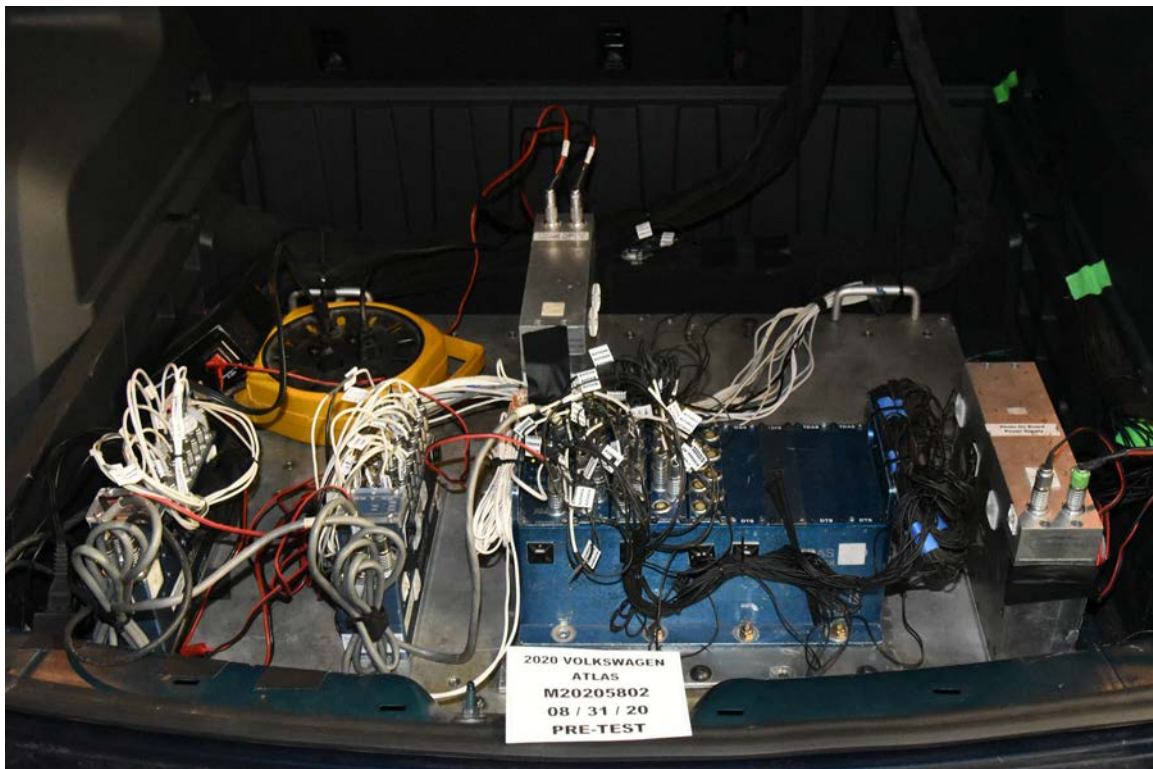


FIGURE 94. Pre-Test Ballast View



FIGURE 95. Post-Test Primary and Redundant Speed Trap Read-Out

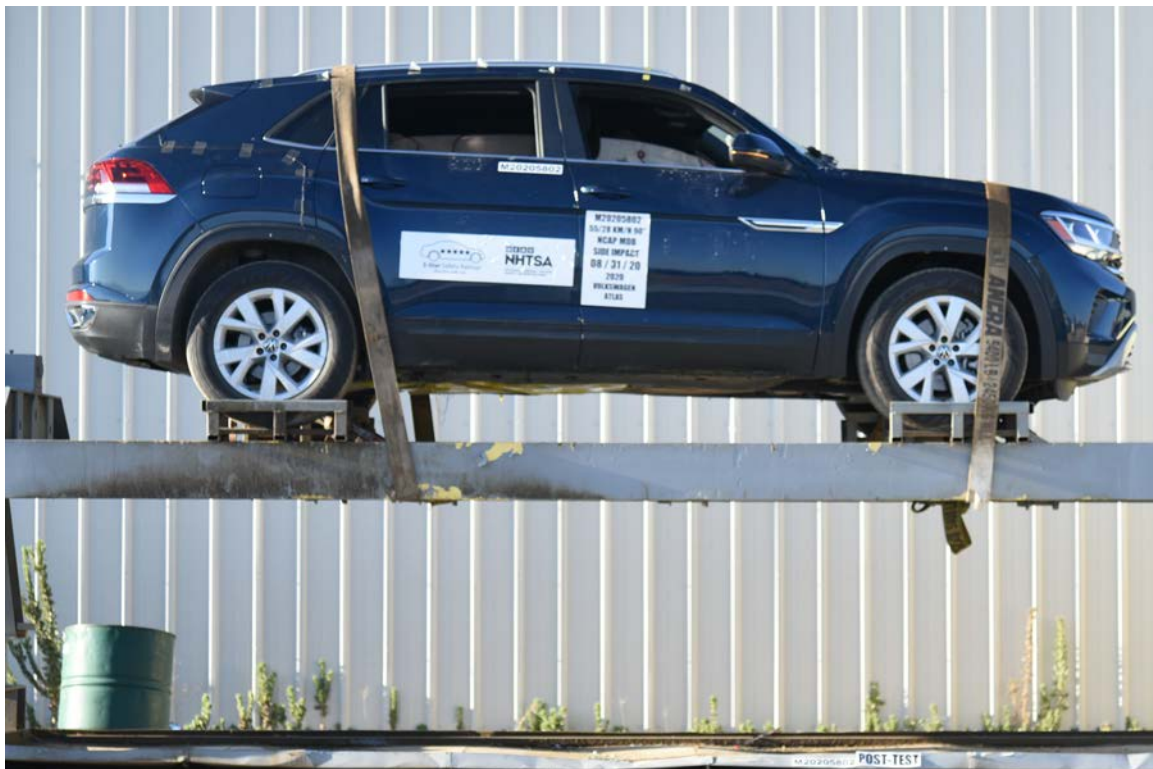


FIGURE 96. FMVSS No. 301 Static Rollover 0 Degrees



FIGURE 97. FMVSS No. 301 Static Rollover 90 Degrees

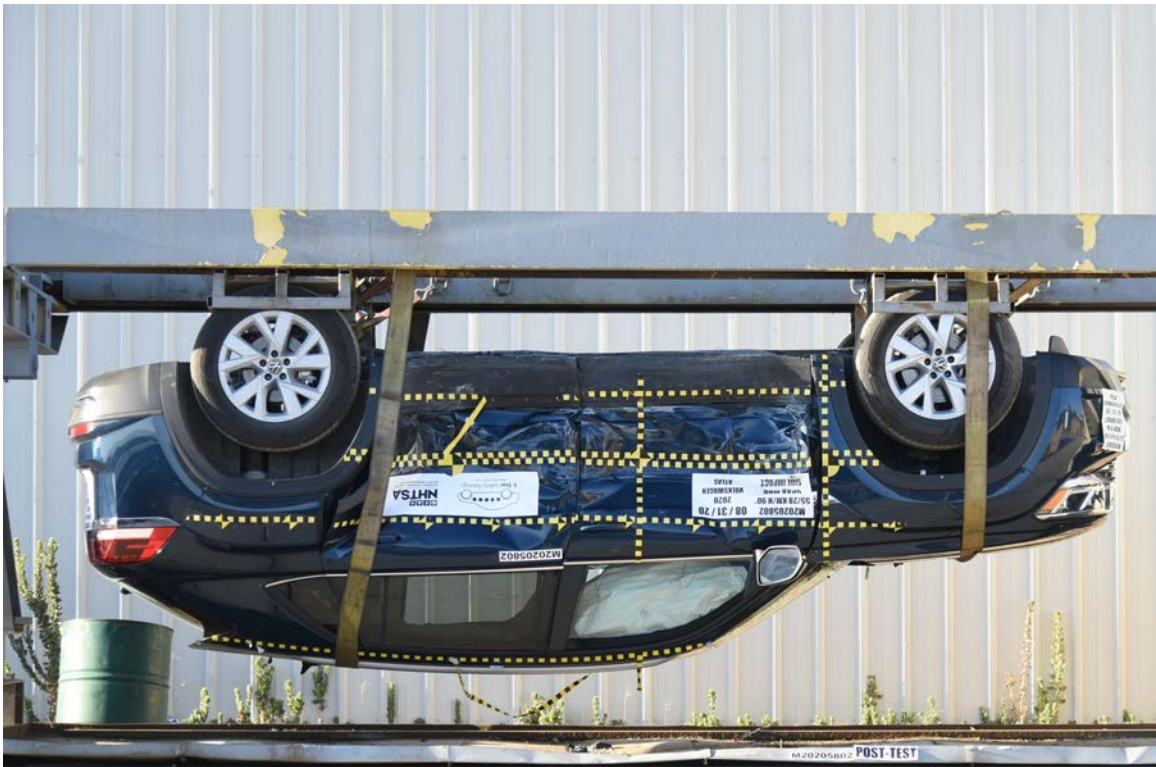


FIGURE 98. FMVSS No. 301 Static Rollover 180 Degrees



FIGURE 99. FMVSS No. 301 Static Rollover 270 Degrees



FIGURE 100. FMVSS No. 301 Static Rollover 360 Degrees



FIGURE 101. Impact Event

EPA DOT Fuel Economy and Environment

Fuel Economy

22 MPG

combined city/hwy

21 city

24 highway

4.5 gallons per 100 miles

Small SUVs range from 18 to 120 MPG. The best vehicle rates 136 MPG.

You spend \$1,750 more in fuel costs over 5 years

compared to the average new vehicle

Annual fuel cost \$1,850

Actual results will vary for many reasons, including driving conditions and how you drive and maintain your vehicle. The average new vehicle gets 27 MPG and costs \$7,500 to fuel over 5 years. Cost estimates are based on 15,000 miles per year at \$2.79 per gallon. MPGs is miles per gallon/for gallon equivalent. Vehicle emissions are a significant cause of climate change and smog.

fuel economy.gov

Calculate personalized estimates and compare vehicles

Gasoline Vehicle

2020 Atlas Cross Sport 2.0T S

Tourmaline Blue Metallic Exterior

8-Speed Automatic w/ Tiptronic® FWD

STANDARD FEATURES (unless replaced by packages or options)

PERFORMANCE

- 2.0L TSI® 16-valve DOHC turbocharged 4-cylinder engine w/ direct fuel injection
- Front-wheel drive
- Engine Start-Stop System
- Four-wheel independent suspension
- Electro-mechanical power steering w/ variable assistance

SAFETY FEATURES

- 3-point safety belts, all seating positions
- Advanced Airbag Protection System w/ 6 airbags
- Anti-lock Braking System (ABS) w/ disc brakes
- Anti-Slip Regulation (ASR), Engine Brake Assist (EBA)
- Electronic Brake-pressure Distribution (EBD), Hydraulic Brake Assist (HBA)
- Electronic Stability Control (ESC), Electronic Differential Lock (EDL)
- Intelligent Crash Response System (ICRS), Automatic Post-Collision Braking System
- Lower Anchors & Tethers for Children (LATCH)
- Rear View Camera System
- Tire Pressure Monitoring System (TPMS)

EXTERIOR

- 18" alloy wheels w/ all-season tires
- Automatic, LED headlights & LED Daytime Running Lights (DRL), LED taillights
- Integrated fog & cornering lights
- Heated, foldable, power adjustable side mirrors w/ integrated turn signals
- Rain-sensing, variable intermittent front wipers
- Rear window washer & wiper
- Silver roof rails

INTERIOR

- Manual climate control w/ 2nd-row air vents
- 3-spoke steering wheel, multi-function
- Tilting & telescoping adjustable steering column
- Driver's seat: 6-way manual, includes height adjustment
- Front pass. seat: 6-way manual, includes height adjustment
- Rear seat: 60/40 split folding, folds flat & reclines
- Cloth seating surfaces
- Center console w/ dual USB data & charging ports, cup holders, armrest & storage
- Bumstepped, carpeted cargo area w/ tie-down hooks & 12V power port
- Auto-dimming interior rearview mirror
- Reading lights, 1st & 2nd row

TECHNOLOGY & CONVENIENCE

- Forward Collision Warning & Autonomous Emergency Braking w/ Pedestrian Monitoring (Front Assist)
- Blind Spot Monitor & Rear Traffic Alert
- HiL Hold Control
- Power door locks w/ remote featuring panic button
- Composition Color 6.5" touchscreen AM/FM radio w/ USB inputs
- 6-speaker sound system
- Bluetooth® connectivity (for compatible devices)
- VW App-Connect® (Smartphone Integration & Interface)
- Cruise control
- Color multi-function display (MFD) w/ trip computer
- Electric parking brake

WARRANTY INFORMATION

- Volkswagen New Vehicle Limited Warranty:
- 4 years/50,000 miles (whichever occurs first)
- Includes coverage for powertrain components*
- Limited Warranty against Corrosion Perforation:
- 7 years/100,000 miles (whichever occurs first)
- *See owner's literature or dealer for important details and limitations.

CAREFREE SCHEDULED MAINTENANCE

- 2 years/25,000 miles (whichever occurs first)
- *See owner's literature or dealer for important details and limitations.

24-HOUR ROADSIDE ASSISTANCE

- 24-hour roadside assistance (whichever occurs first), for towing, jump starts, tire changes, out-of-fuel & lock-out.† Services provided by third party supplier.
- †See owner's literature or dealer for important details and limitations.

car-net

Equipped with Next Generation VW Car-Net®

All services require acceptance of Terms of Service

Some services require a paid subscription

See dealer or visit www.car-net.com for details.

Base Manufacturer's Suggested Retail Price: \$30,545.00

PACKAGES & OPTIONS

- Tourmaline Blue Metallic Exterior
- Tran Black Cloth Interior
- Monitor Mount (set of 2) & Heavy Duty Trunk Liner w/ VW Car-Net Blocker
- Volkswagen Prepaid Scheduled Maintenance w/ 30,000-mile warranty for 30 days
- Roadside Assistance X2
- 8-Speed Automatic w/ Tiptronic® FWD

No Charge

No Charge

\$235.00

\$195.00

\$85.00

No Charge

Destination Charge \$1,025.00

Total Manufacturer's Suggested Retail Price: \$32,080.00

Does not include: Sales taxes, title or registration fees, license, dealer fees, or any options or items not listed above.

Ready to make this your new ride?

Apply now with Volkswagen Credit!

Volkswagen Credit

GOVERNMENT 5-STAR SAFETY RATINGS

Overall Vehicle Score Not Rated

Based on the combined ratings of frontal, side and rollover. Should ONLY be compared to other vehicles of similar size and weight.

Crash	Driver	Passenger	Side	Rear Seat	Rollover
Frontal	Not Rated	Not Rated	Not Rated	Not Rated	Not Rated
Side	Not Rated	Not Rated	Not Rated	Not Rated	Not Rated
Rollover	Not Rated	Not Rated	Not Rated	Not Rated	Not Rated

Star ratings range from 1 to 5 stars (★★★★★) with 5 being the highest.

Source: National Highway Traffic Safety Administration (NHTSA).

www.safercar.gov or 1-888-327-4236

PARTS CONTENT INFORMATION

For vehicles in this carline:

U.S./CANADIAN

PARTS CONTENT: 44%

Major sources of foreign parts content:

- GERMANY 19%
- MEXICO 18%

Note: parts content does not include final assembly, distribution or other non-parts costs.

For this vehicle:

Final assembly point: CHATTANOOGA TN,U.S.A.

Country of origin: CHATTANOOGA TN,U.S.A.

ENGINE: GERMANY

TRANSMISSION: JAPAN

VIN: YV3C3CAN1391131

COMM. NUMBER: WH5067

Part of Error: CHATTANOOGA

FIGURE 102. Monroney Label

Photograph Not Available

FIGURE 103. Driver Head Restraint Use and Adjustment Information
from Vehicle Owner's Manual

Photograph Not Available

FIGURE 104. Left Rear Passenger Head Restraint Use and Adjustment Information
from Vehicle Owner's Manual

APPENDIX B
DUMMY RESPONSE DATA

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The following additional data for this test can be obtained from the Research and Development section of the NHTSA website (www.NHTSA.gov)

Additional Driver & Passenger Dummy Instrumentation Data

Driver Lower Spine T12 Acceleration (X)
Driver Lower Spine T12 Acceleration (Y)
Driver Lower Spine T12 Acceleration (Z)
Driver Head Acceleration Redundant (X)
Driver Head Acceleration Redundant (Y)
Driver Head Acceleration Redundant (Z)
Passenger Head Acceleration Redundant (X)
Passenger Head Acceleration Redundant (Y)
Passenger 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)
Right Side Sill at Front Seat Acceleration (X)
Right Side Sill at Front Seat Acceleration (Y)
Right Side Sill at Front Seat Acceleration (Z)
Right Side Sill at Rear Seat Acceleration (X)
Right Side Sill at Rear Seat Acceleration (Y)
Right Side Sill at Rear Seat Acceleration (Z)
Left Side Sill at Front Seat Acceleration (Y)
Left Side Sill at Rear Seat Acceleration (Y)
Lower A-Post Acceleration (Y)
Middle A-Post Acceleration (Y)
Lower B-Post Acceleration (Y)
Middle B-Post Acceleration (Y)
Front Seat Track Acceleration (Y)
Rear Seat Structure Acceleration (Y)
Right Rear Occupant Compartment Acceleration (Y)
Engine Block (X)
Engine Block (Y)
Rear Floorpan Above Axle Acceleration (X)
Rear Floorpan Above Axle Acceleration (Y)
Rear Floorpan Above Axle Acceleration (Z)

MDB Instrumentation Data

MDB Center of Gravity Acceleration (X)

MDB Center of Gravity Acceleration (Y)

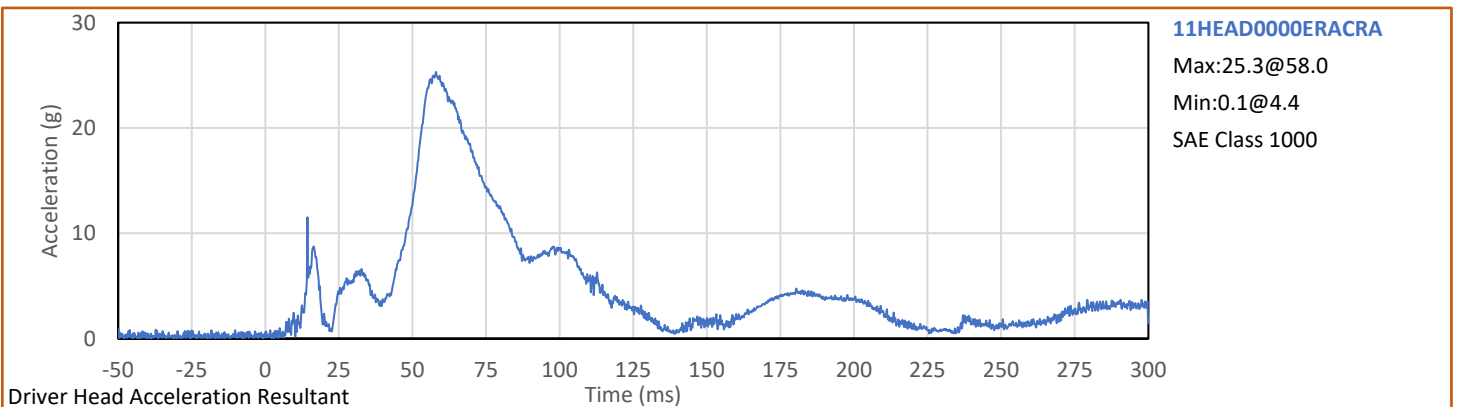
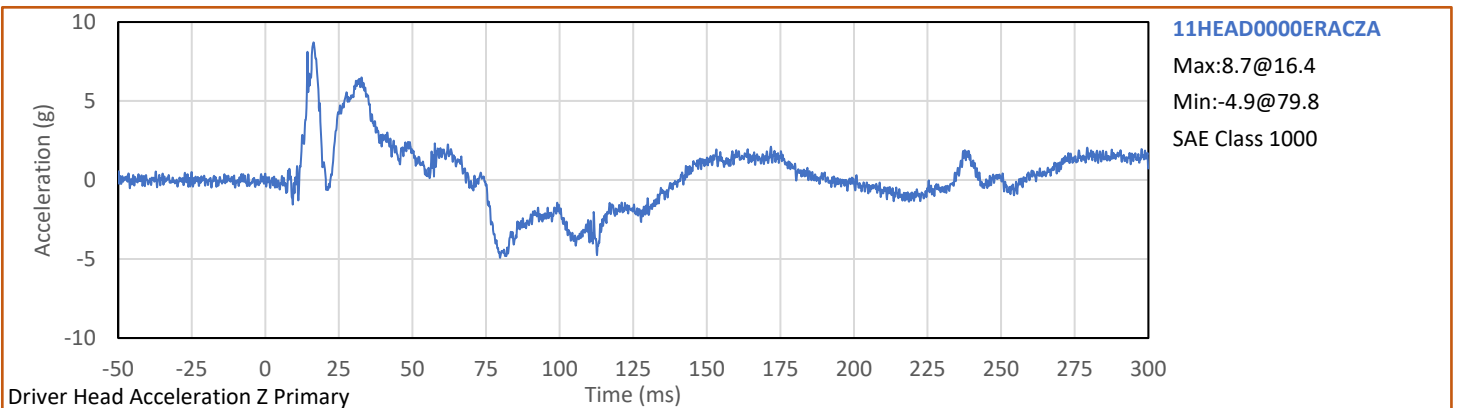
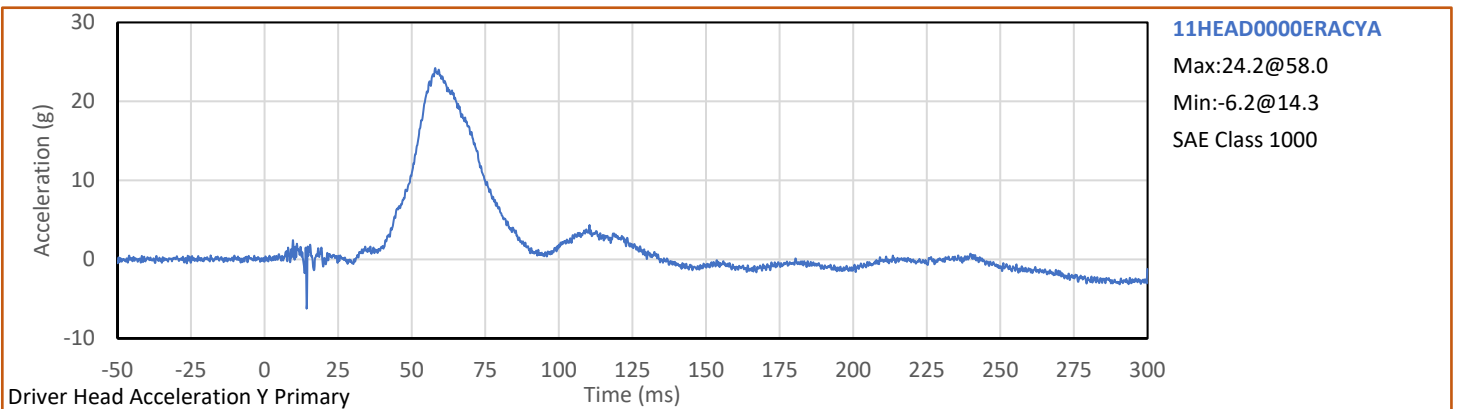
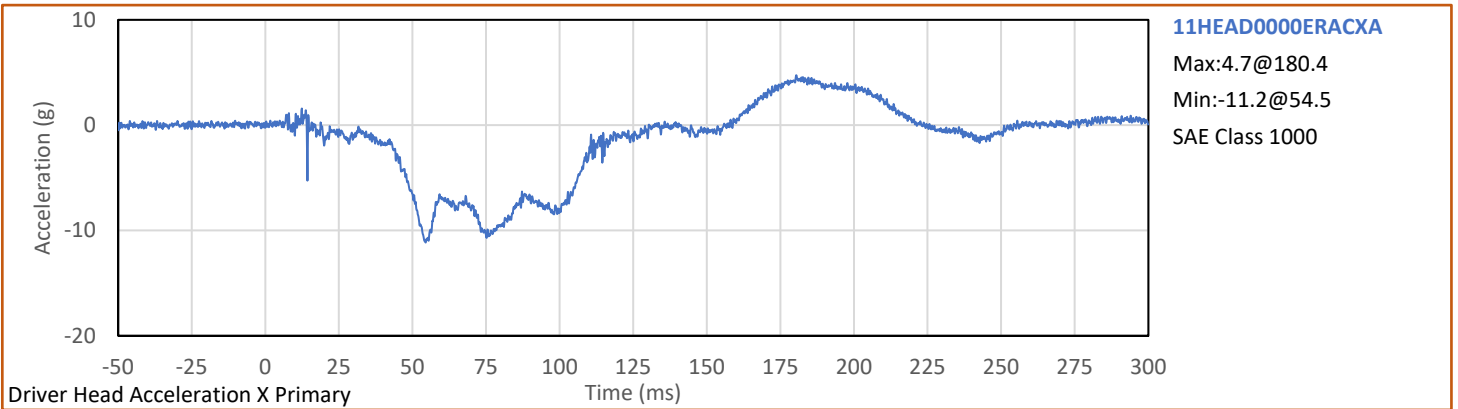
MDB Center of Gravity Acceleration (Z)

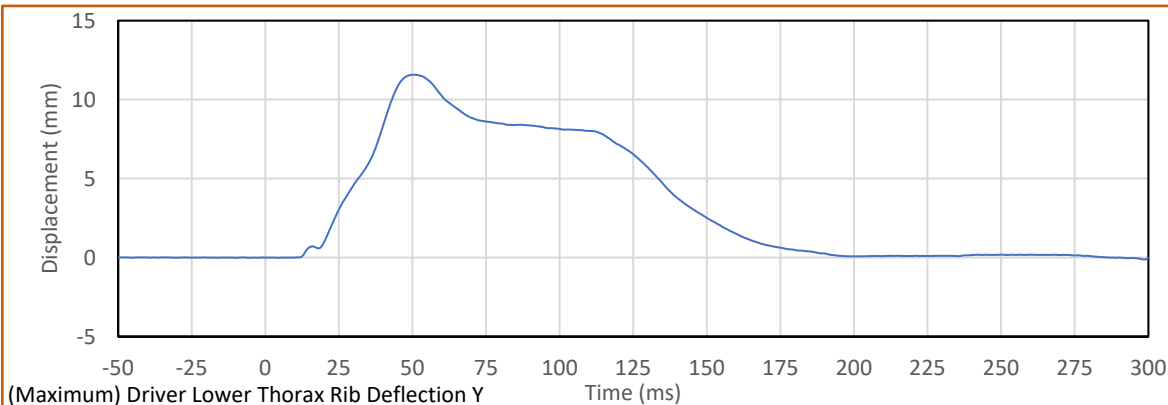
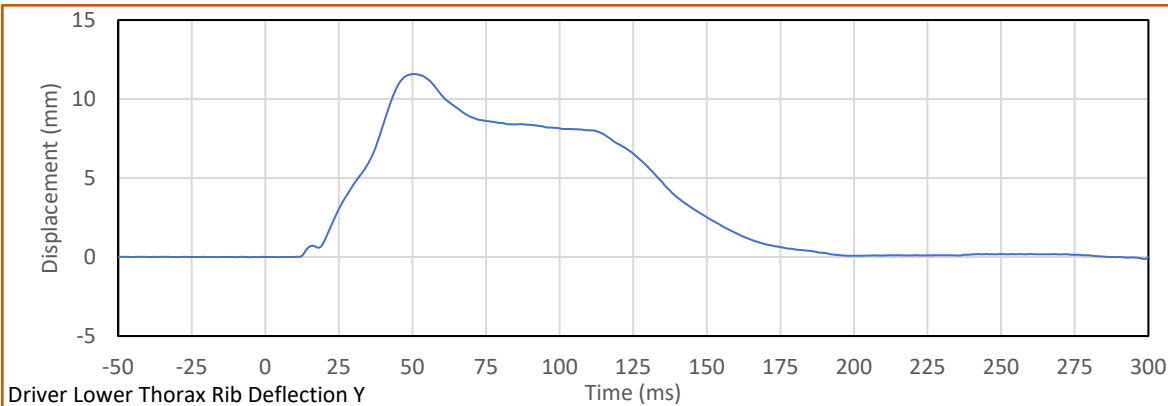
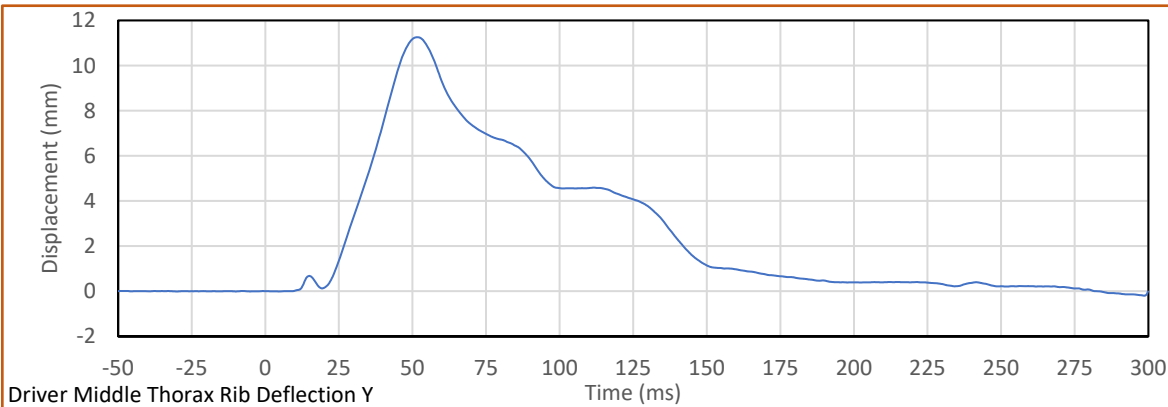
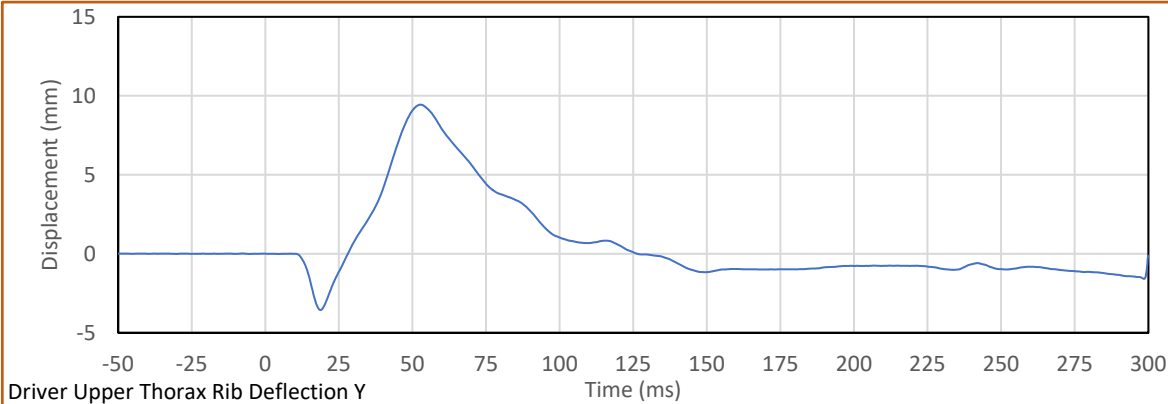
MDB Rear Acceleration (X)

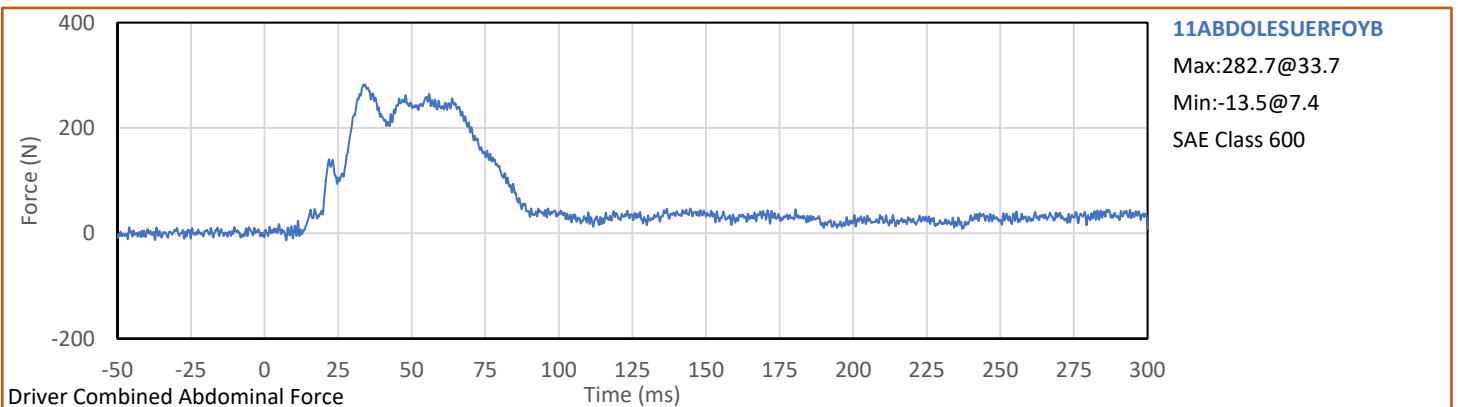
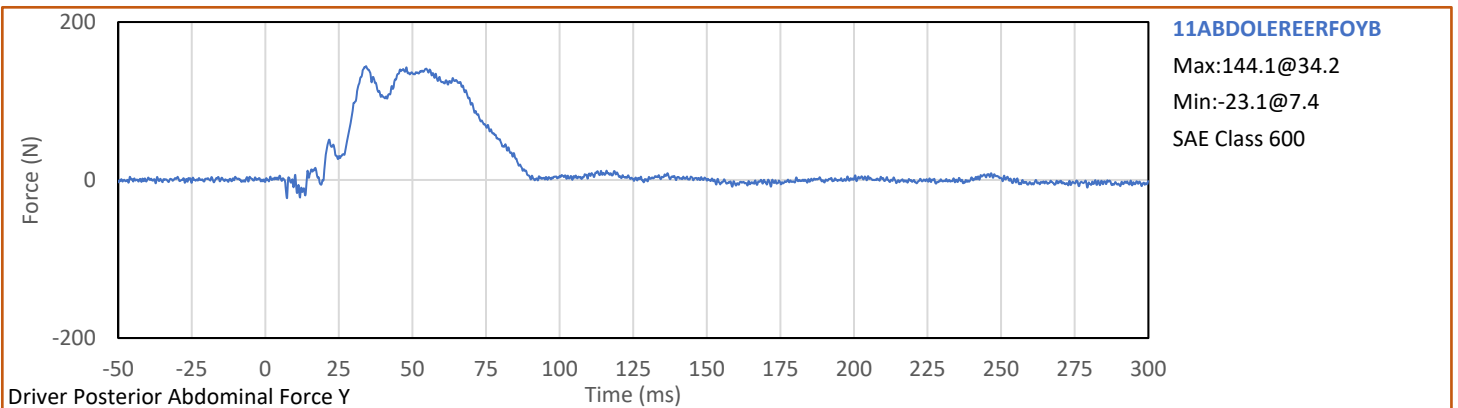
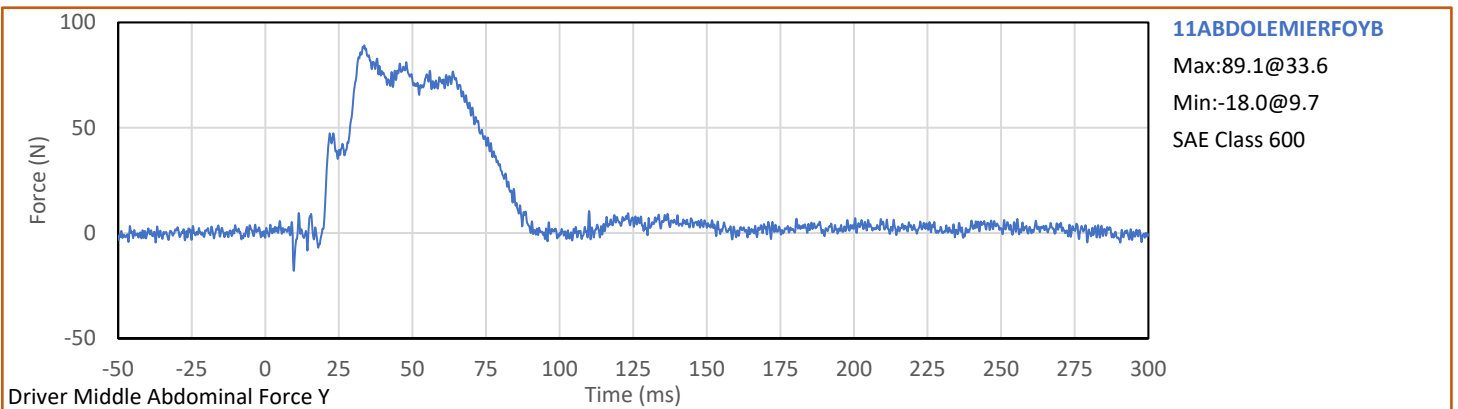
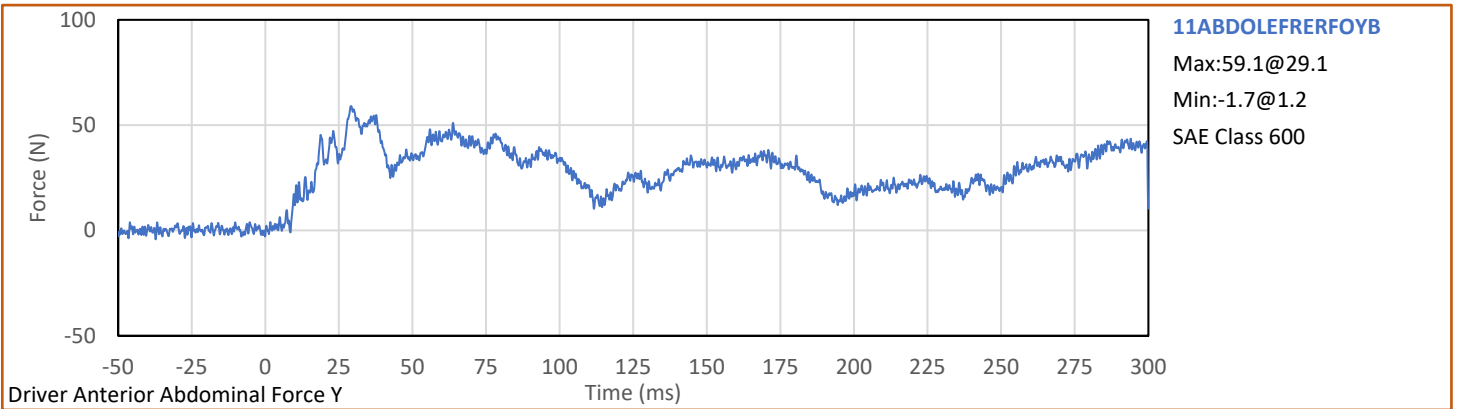
MDB Rear Acceleration (Y)

Left MDB Contact Switch

Right MDB Contact Switch

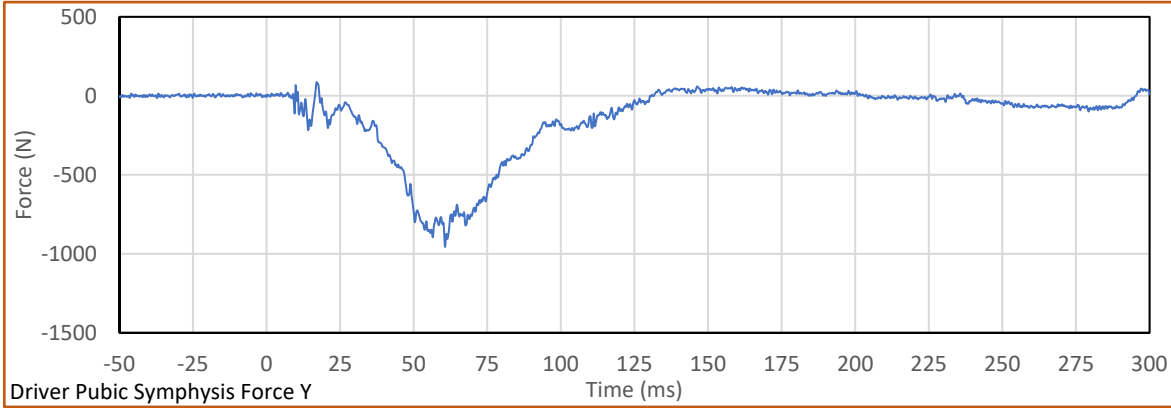






Test Vehicle: 2020 Volkswagen Atlas Cross Sport 5-Door MPV
Test Program: NCAP MDB Side Impact Test

NHTSA No.: M20205802
Test Date: 8/31/2020

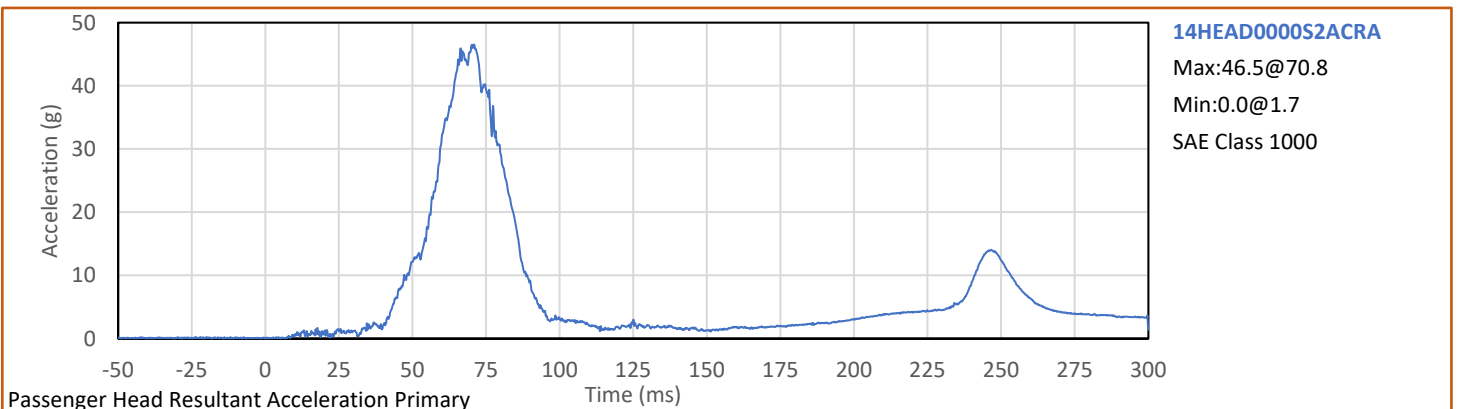
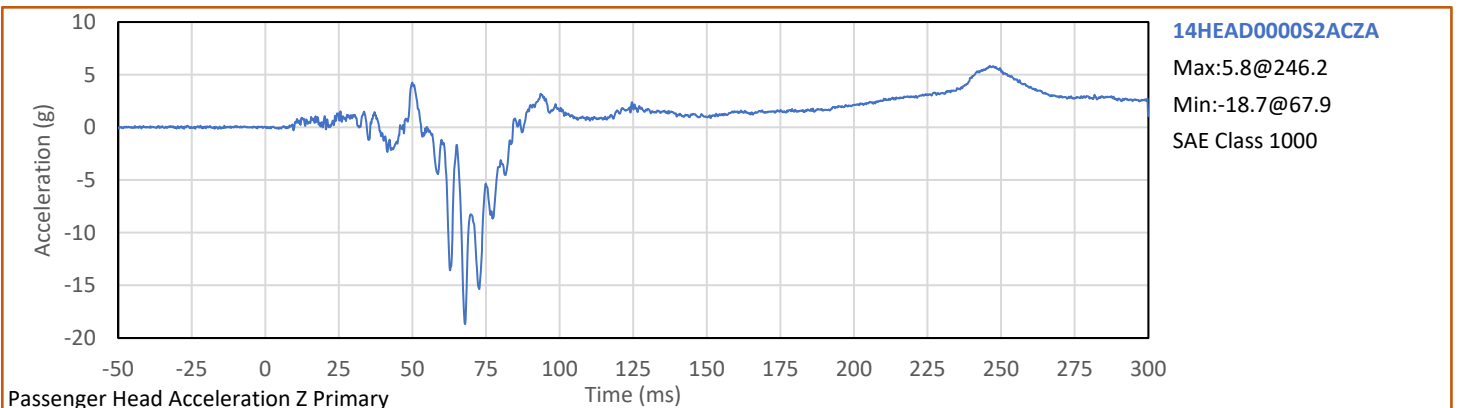
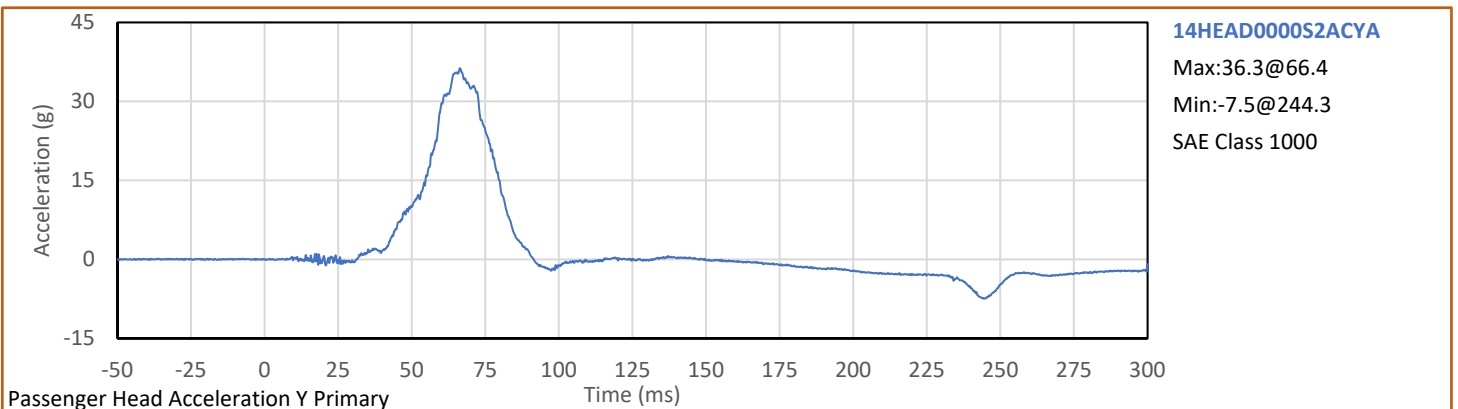
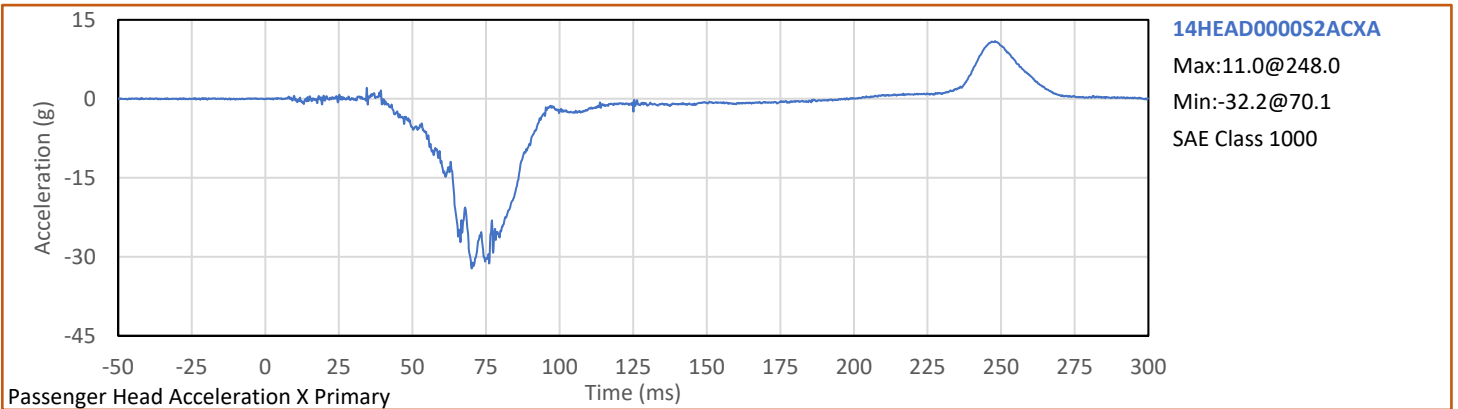


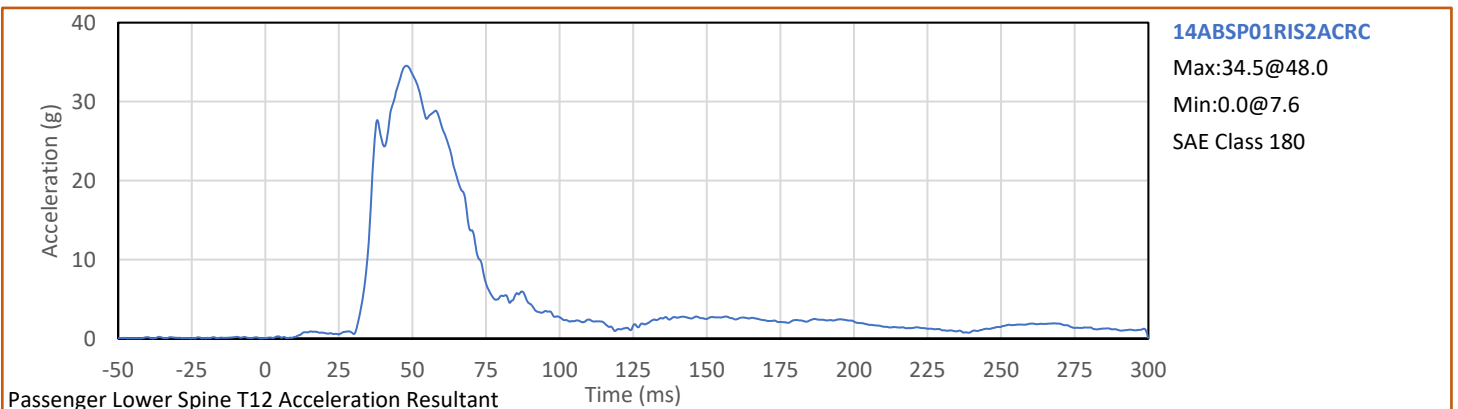
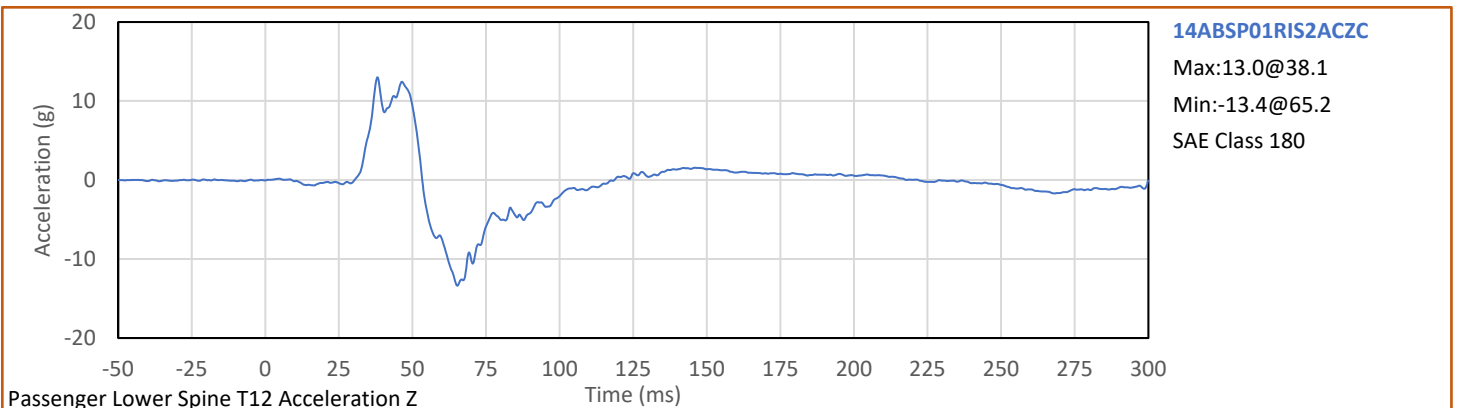
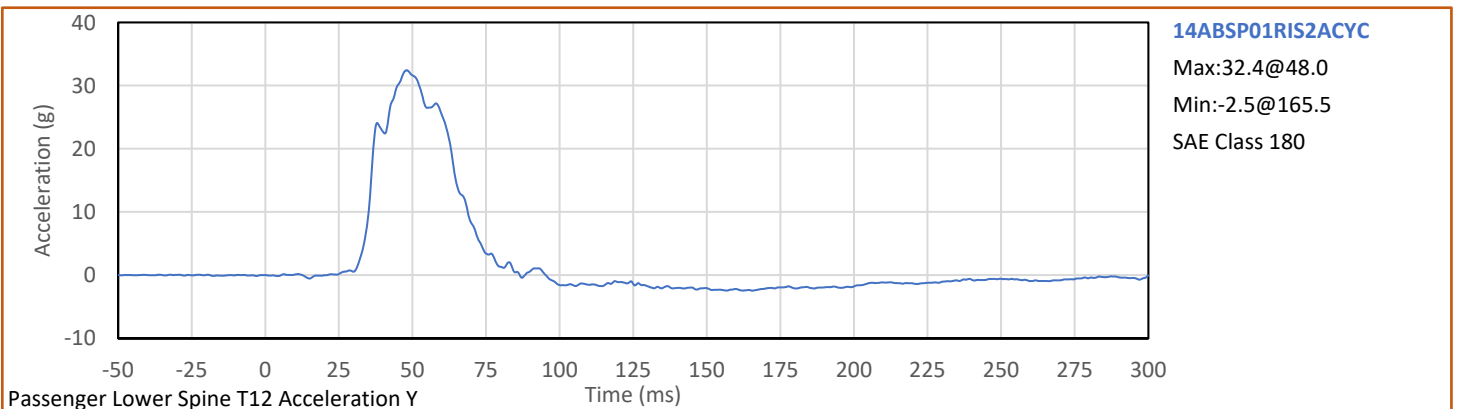
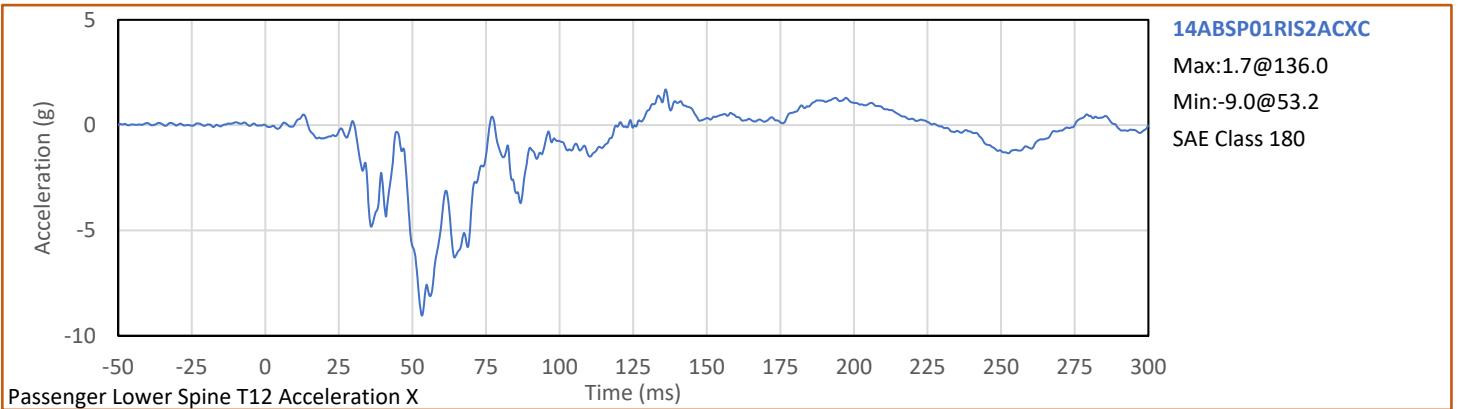
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Min:-956.7@60.7

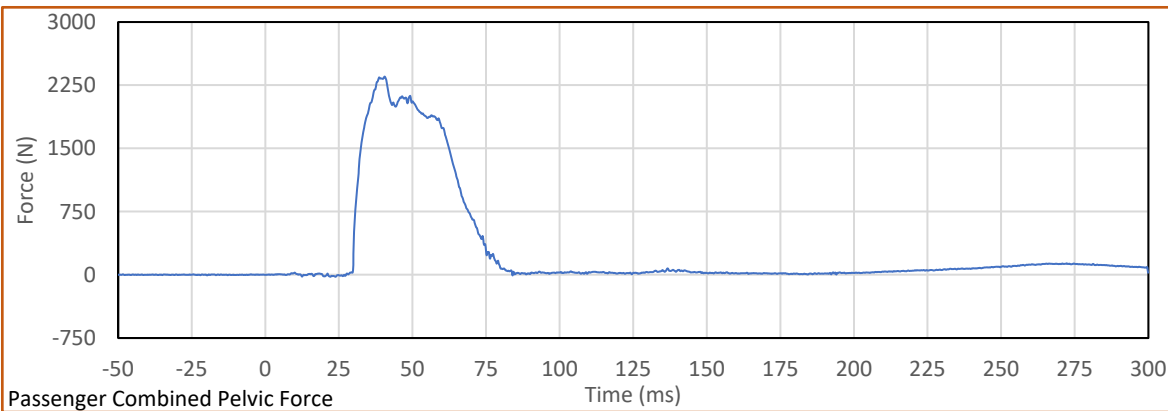
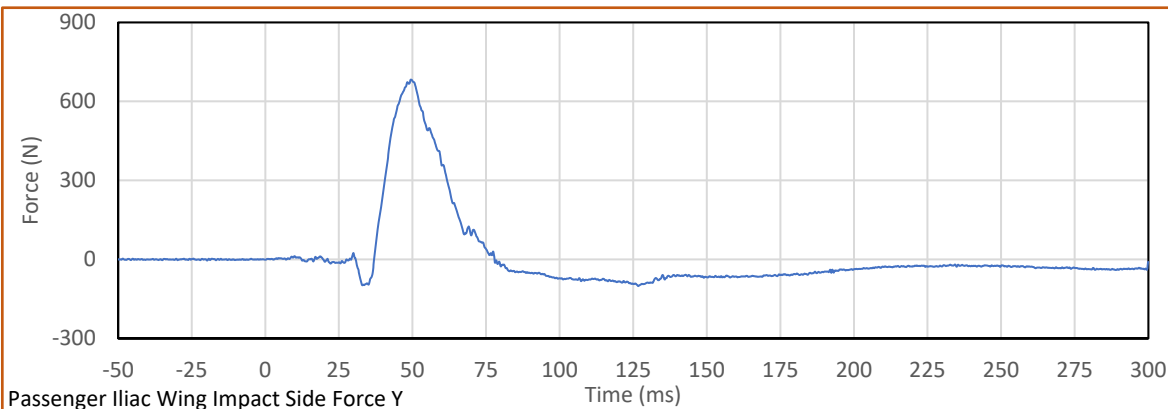
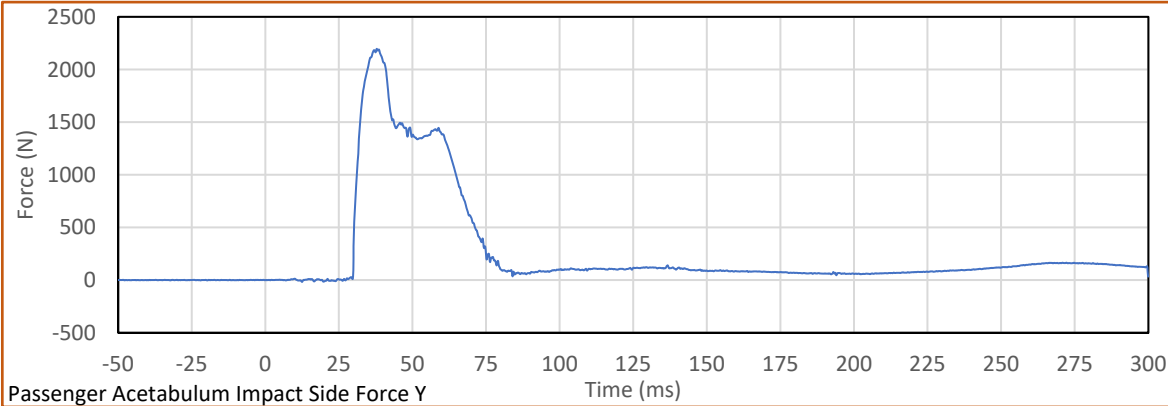
SAE Class 600

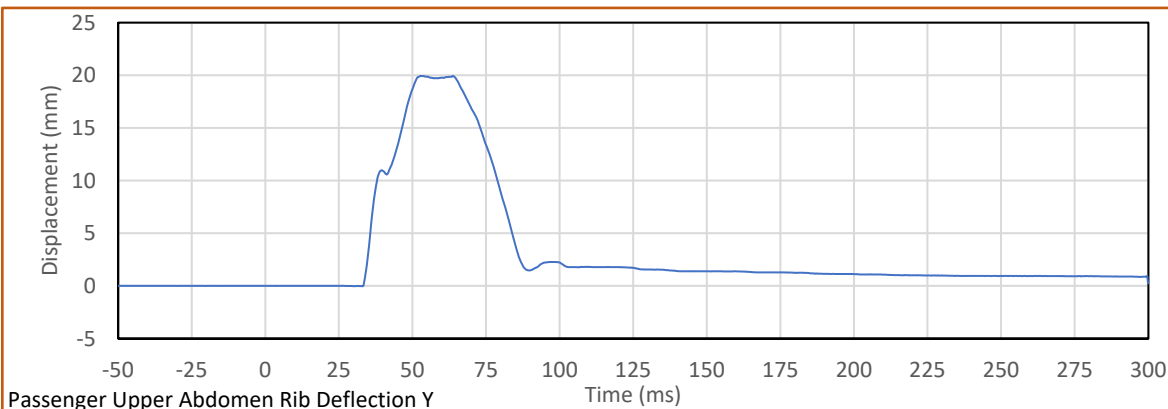
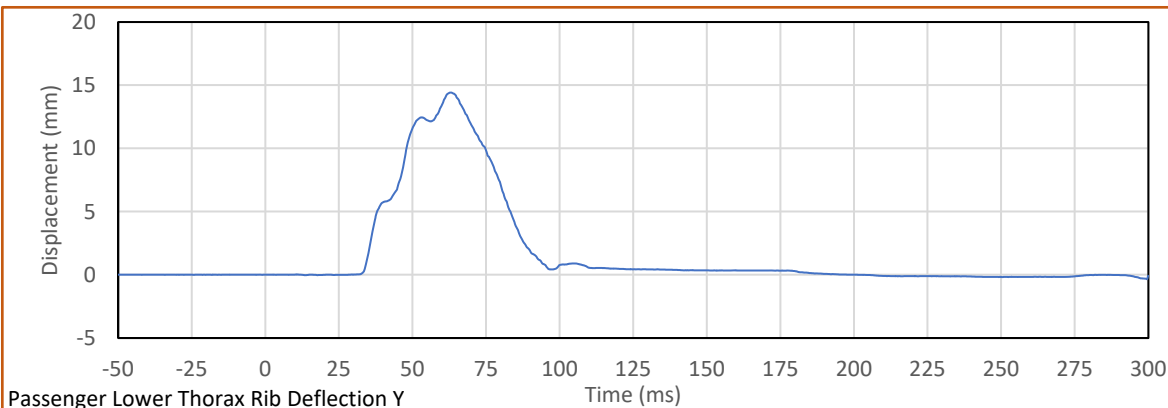
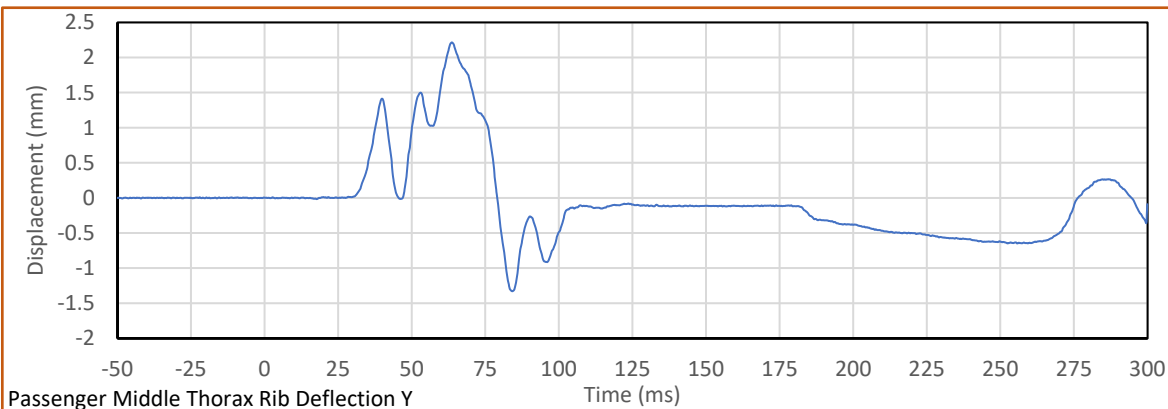
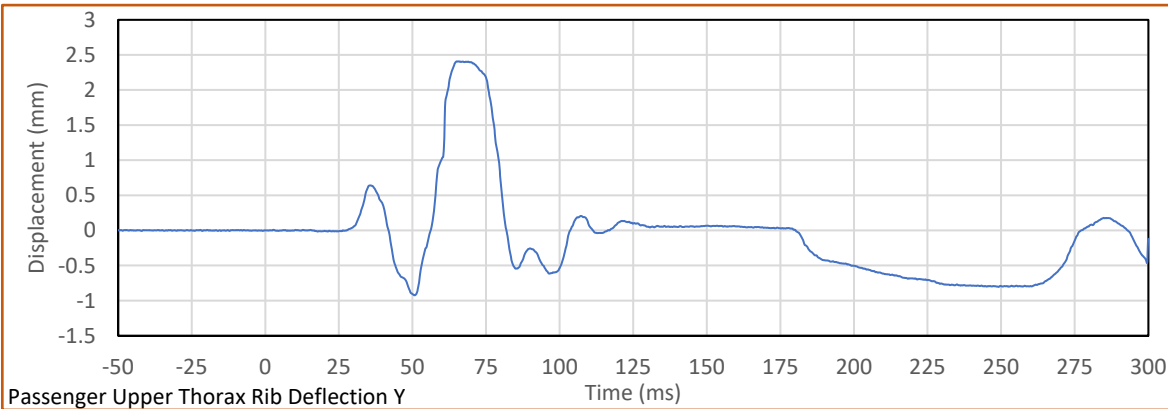




Test Vehicle: 2020 Volkswagen Atlas Cross Sport 5-Door MPV
Test Program: NCAP MDB Side Impact Test

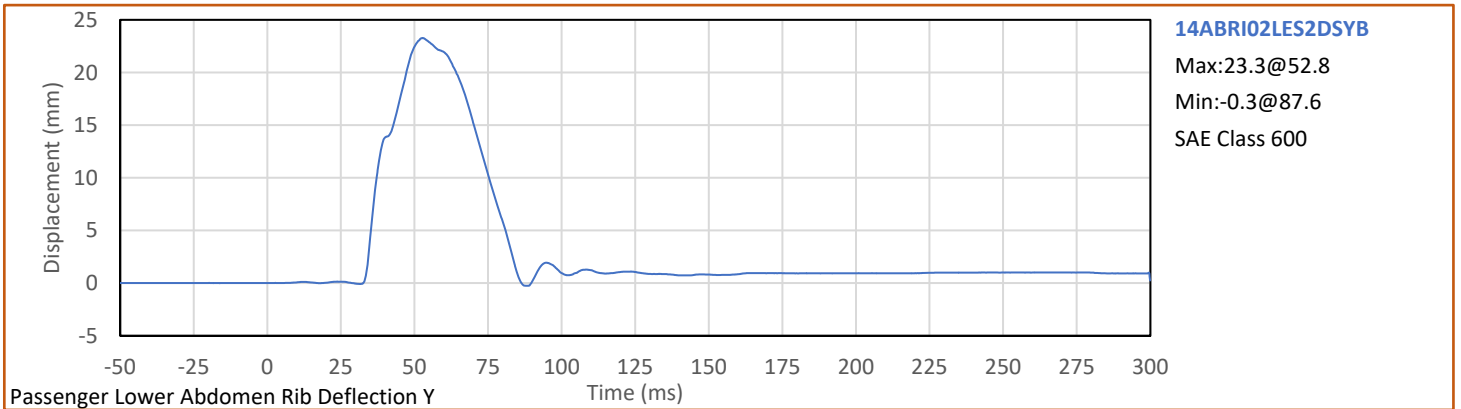
NHTSA No.: M20205802
Test Date: 8/31/2020





Test Vehicle: 2020 Volkswagen Atlas Cross Sport 5-Door MPV
Test Program: NCAP MDB Side Impact Test

NHTSA No.: M20205802
Test Date: 8/31/2020

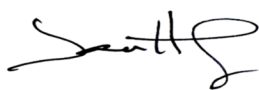


APPENDIX C
ATD CONFIGURATION AND PERFORMANCE VERIFICATION DATA

APPENDIX C
Pre-Test ATD Qualification and Performance Verification
ES-2re 50th Male Side Impact ATD, Left Side Configuration
S/N: F035

Tested Parameter	Units	Spec Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.1	Pass
Laboratory Relative Humidity	%	10	70	47	Pass
1 - Sitting Height	mm	900	918	910	Pass
2 - Seat to Shoulder Joint	mm	558	572	566	Pass
3 - Seat to Lower Face of Thoracic Spine Box	mm	346	356	352	Pass
4 - Seat to Hip Joint (bolt center)	mm	97	103	99	Pass
5 - Sole to Seat, Sitting	mm	433	451	440	Pass
6 - Head Width	mm	152	158	156	Pass
7 - Shoulder/Arm Width	mm	461	479	475	Pass
8 - Thorax Width	mm	322	332	328	Pass
9 - Abdomen Width	mm	273	287	278	Pass
10 - Pelvis Lap Width	mm	359	373	364	Pass
11 - Head Depth	mm	196	206	202	Pass
12 - Thorax Depth	mm	262	272	267	Pass
13 - Abdomen Depth	mm	194	204	199	Pass
14 - Pelvis Depth	mm	235	245	241	Pass
15 - Back of Buttocks to Hip Joint (bolt Center)	mm	150	160	159	Pass
16 - Back of Buttocks to Front Knee	mm	597	615	614	Pass
			Overall Test Results	Pass	

Technician:



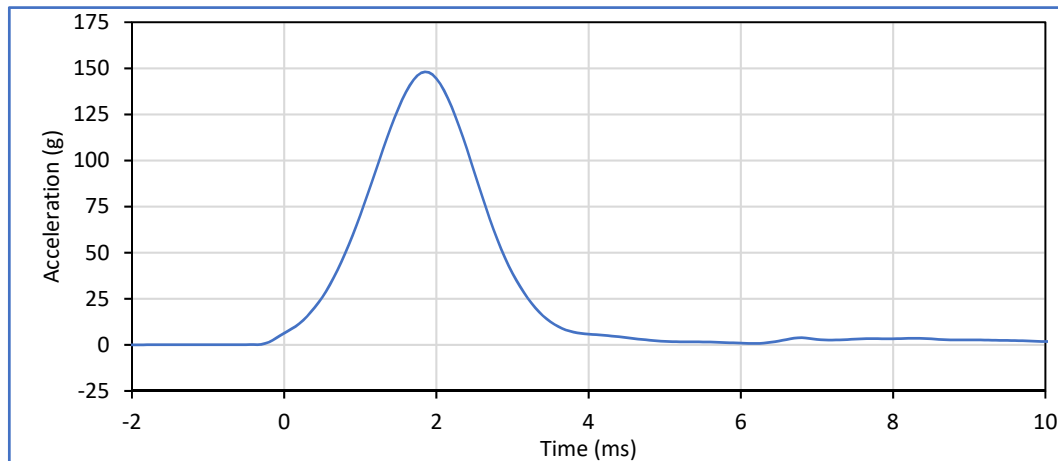
J. Hernandez

Approved By:

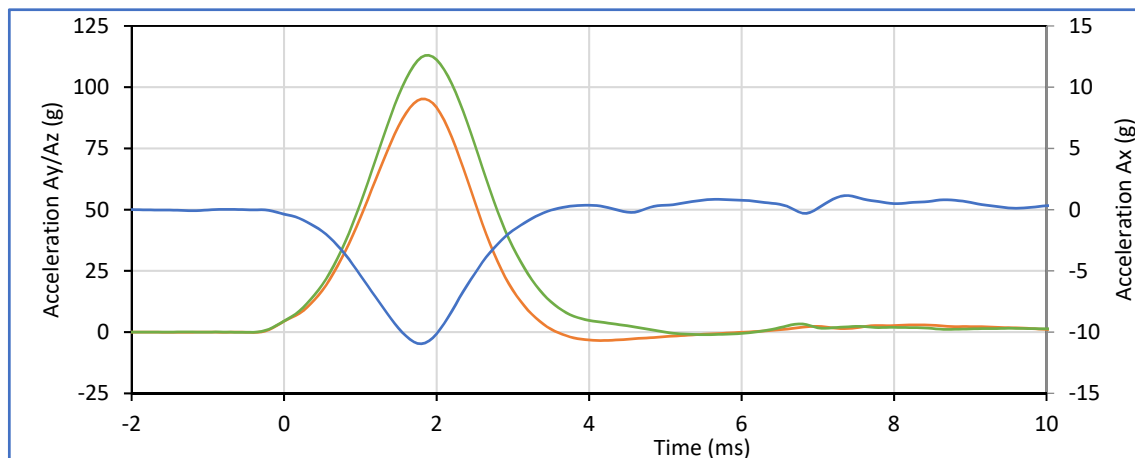


P. Puzzuto

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	18.9	25.6	21.7	Pass
Laboratory Relative Humidity	%	10	70	41	Pass
Peak Resultant Acceleration	g	125.0	155.0	148.1	Pass
Peak Head Ax	g	-15.0	15.0	1.1	Pass
Oscillations After Main Pulse	%	0.0	15.0	2.6	Pass
Is Acceleration Unimodal?	Yes/No	Yes		Yes	Pass
			Overall Test Results		Pass



Head Resultant
Max:148.1@1.9
Min:0.7@6.2
SAE Class 1000



Head Ax
Max:1.1@7.4
Min:-11.0@1.8
SAE Class 1000
Head Ay
Max:95.2@1.9
Min:-3.4@4.2
SAE Class 1000
Head Az
Max:113.0@1.9
Min:-1.0@5.5
SAE Class 1000

Technician:

J. Hernandez

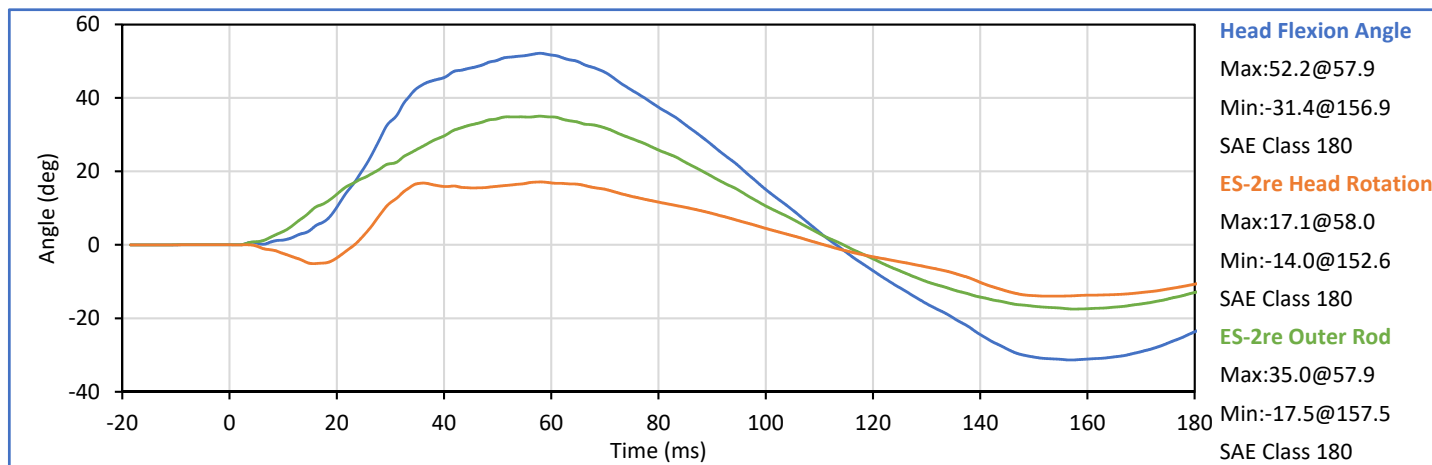
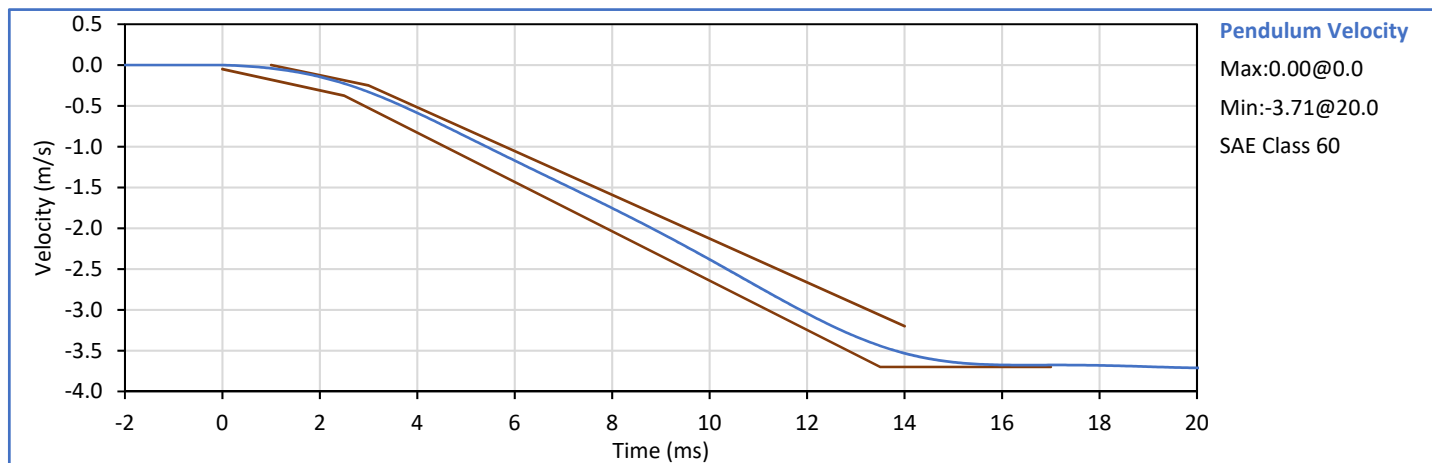
J. Hernandez

Approved By:

P. Puzzuto

P. Puzzuto

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.5	Pass
Laboratory Relative Humidity	%	10	70	41	Pass
Pendulum Velocity	m/s	3.30	3.50	3.48	Pass
Peak Headform Flexion	deg	49.0	59.0	52.2	Pass
Time of Peak Headform Flexion	ms	54.0	66.0	57.9	Pass
Flexion Decay (Peak to zero)	ms	53.0	88.0	55.3	Pass
Overall Test Results				Pass	Pass



Technician:

J. Hernandez

J. Hernandez

Approved By:

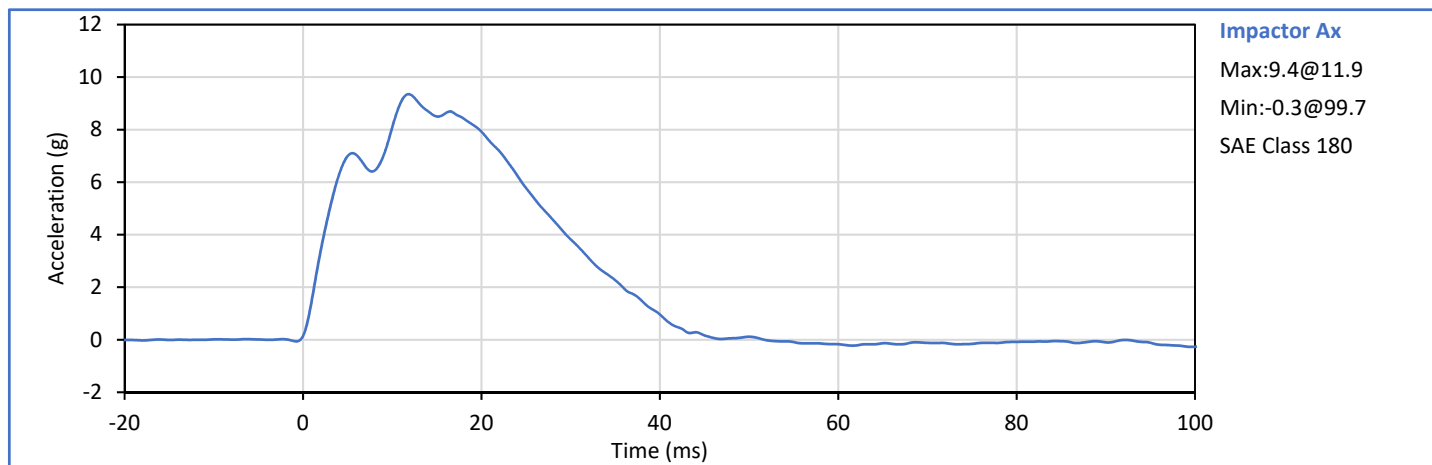
P. Puzzuto

P. Puzzuto

ATD Serial No.: F035

Test Date: 2020-08-24

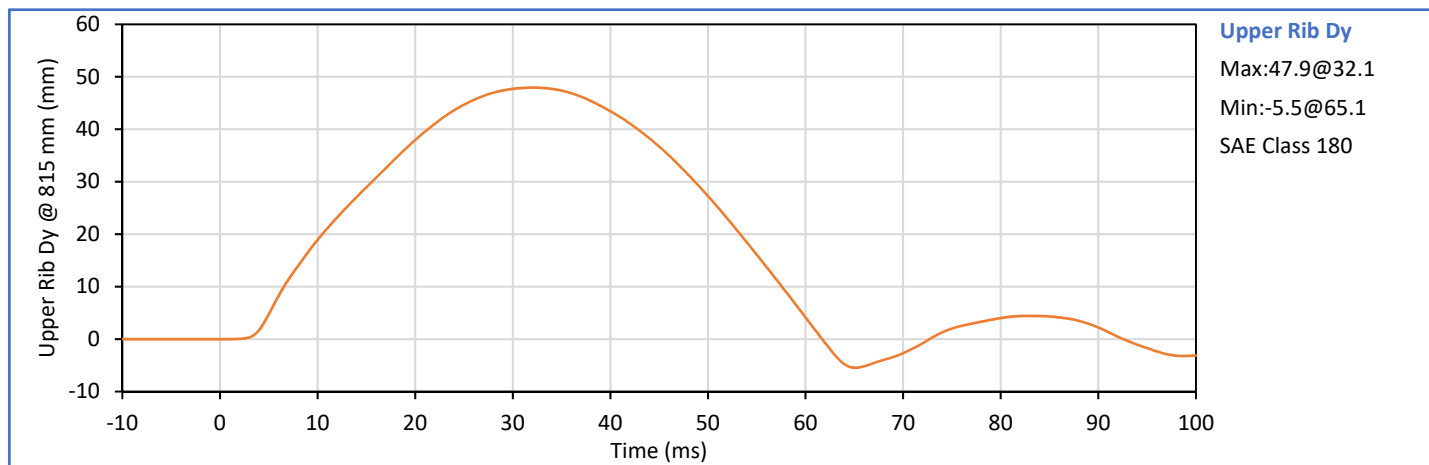
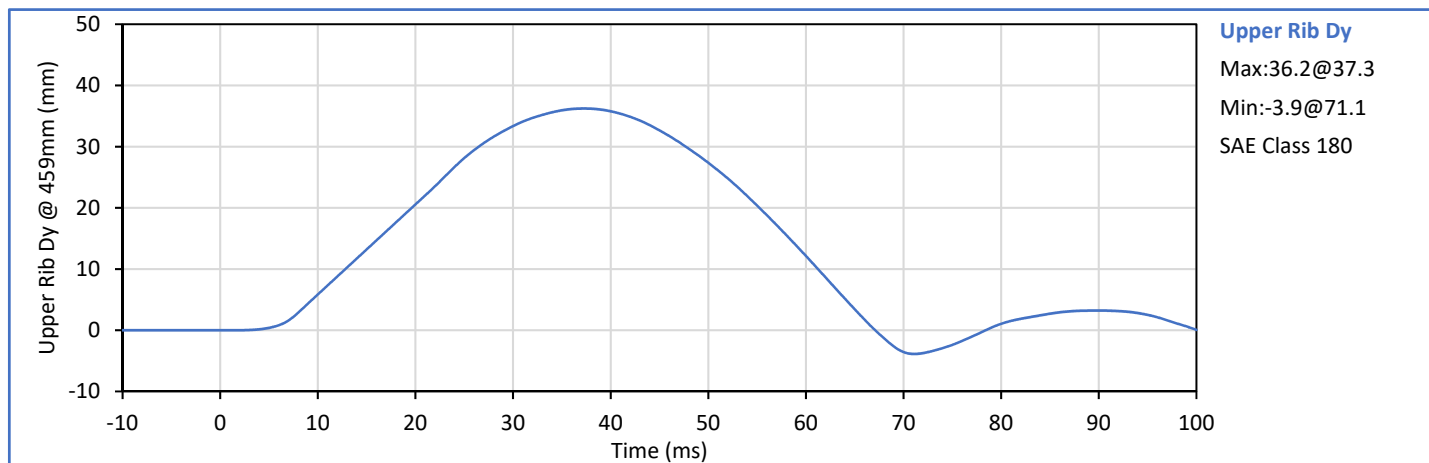
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.1	Pass
Laboratory Relative Humidity	%	10	70	47	Pass
Impactor Velocity	m/s	4.20	4.40	4.32	Pass
Peak Impactor Ax	g	7.5	10.5	9.4	Pass
Overall Test Results					Pass



Technician: J. Hernandez

Approved By: P. Puzzuto

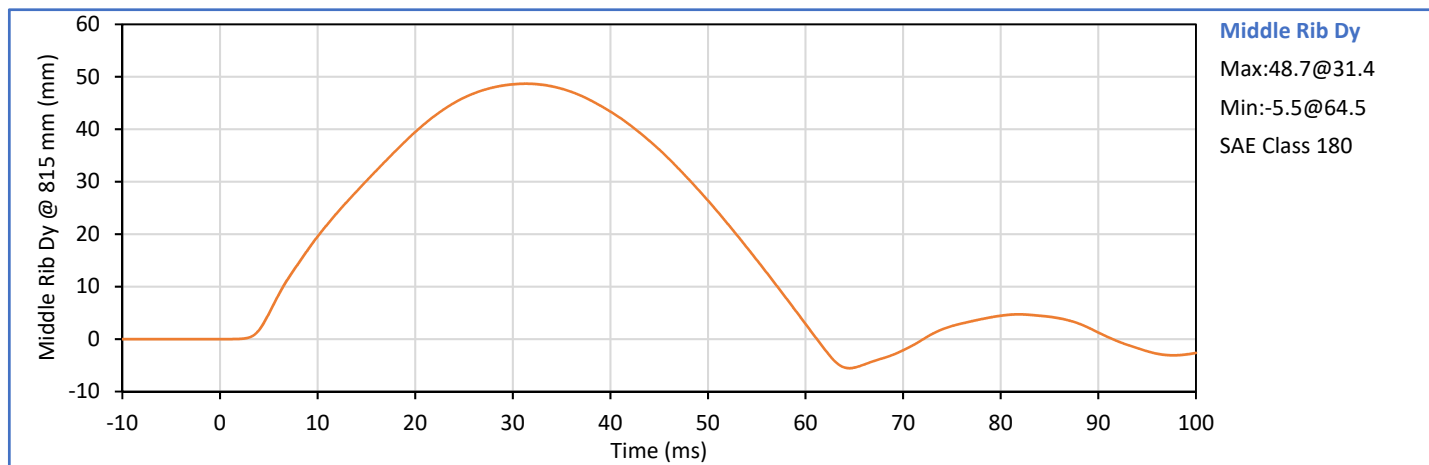
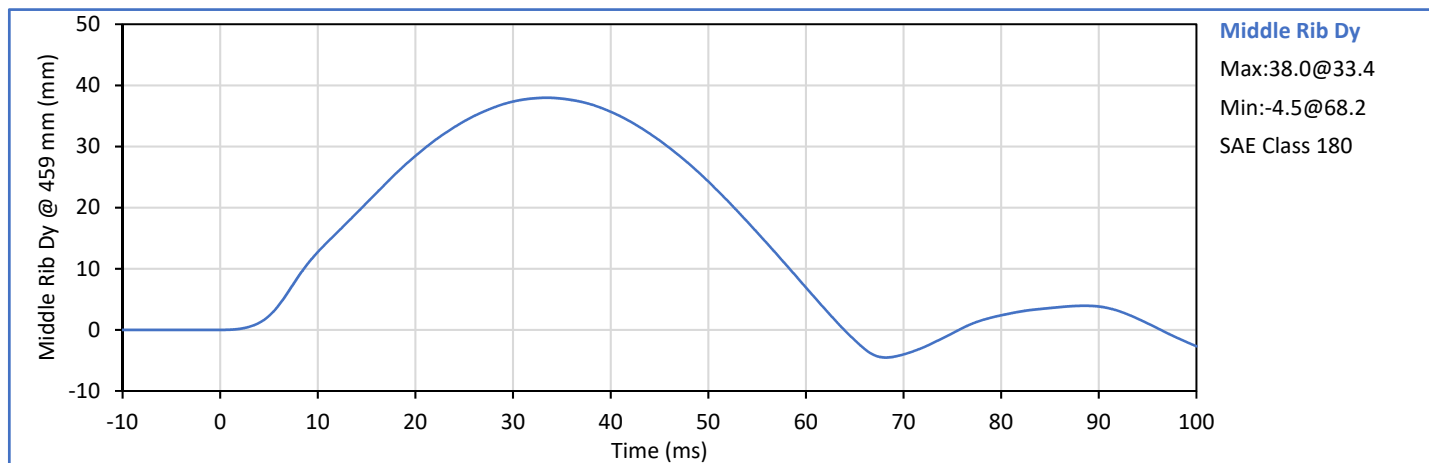
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.1	Pass
Laboratory Relative Humidity	%	10	70	41	Pass
Upper Rib Dy @ 459mm	mm	36.0	40.0	36.2	Pass
Upper Rib Dy @ 815mm	mm	46.0	51.0	47.9	Pass
Overall Test Results				Pass	Pass



Technician: J. Hernandez

Approved By: P. Puzzuto

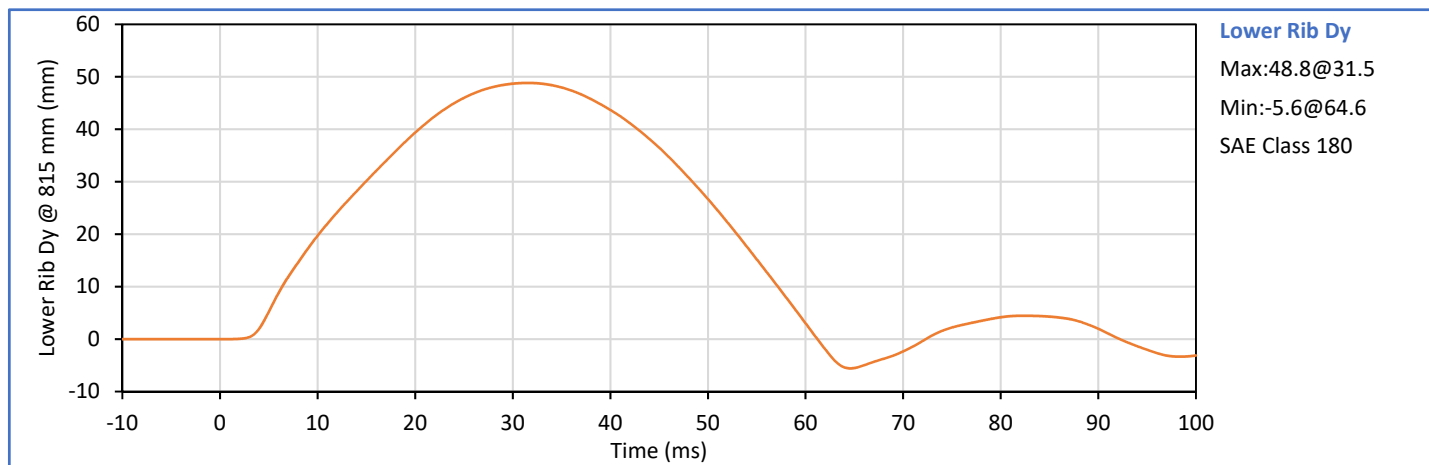
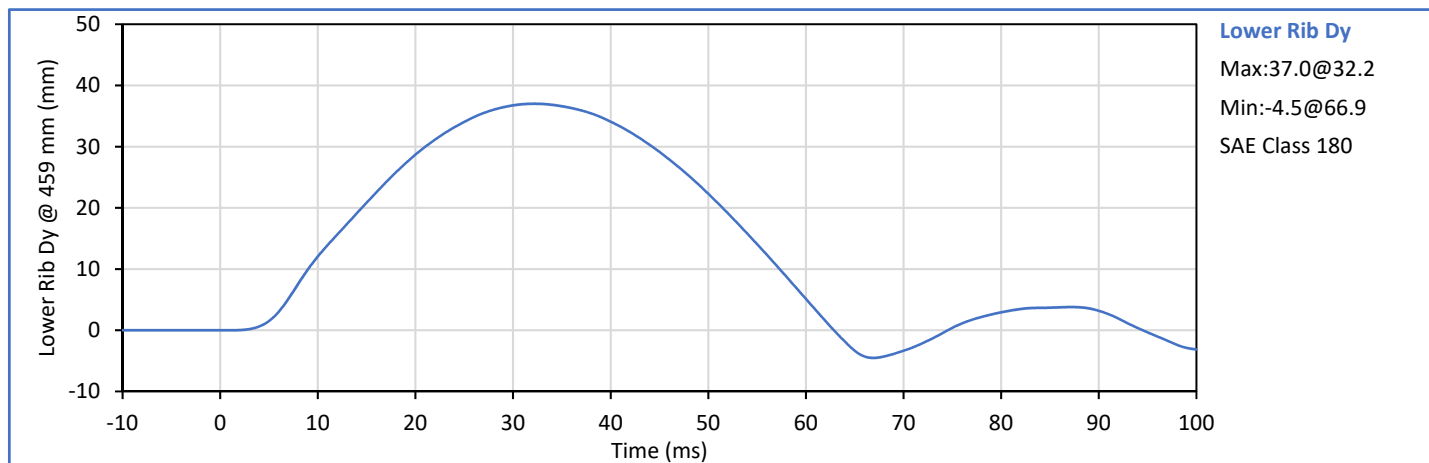
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.1	Pass
Laboratory Relative Humidity	%	10	70	41	Pass
Middle Rib Dy @ 459mm	mm	36.0	40.0	38.0	Pass
Middle Rib Dy @ 815mm	mm	46.0	51.0	48.7	Pass
Overall Test Results				Pass	Pass



Technician: J. Hernandez

Approved By: P. Puzzuto

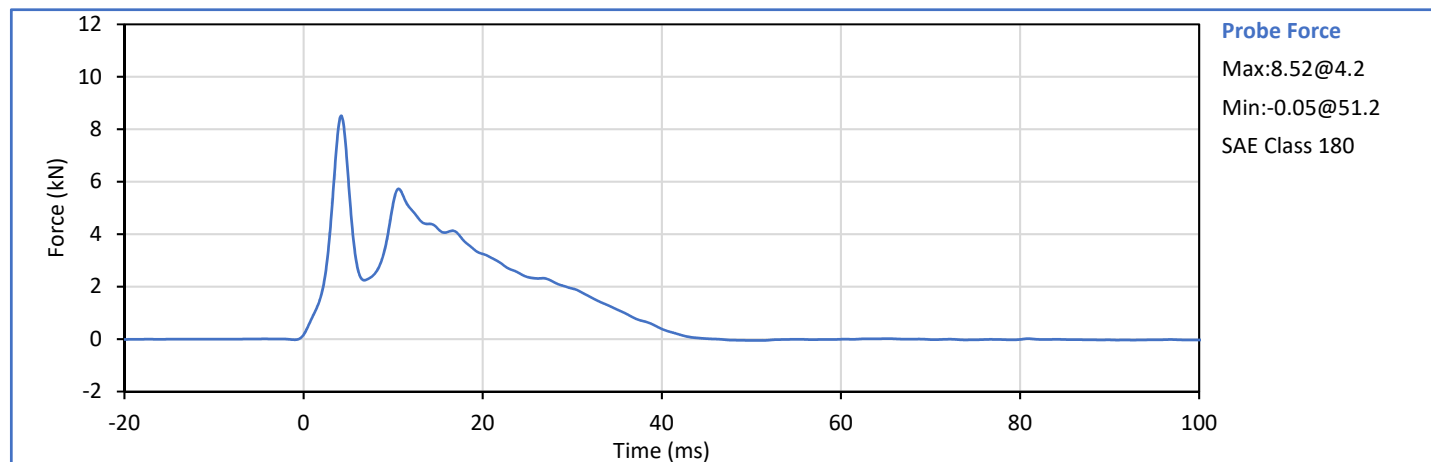
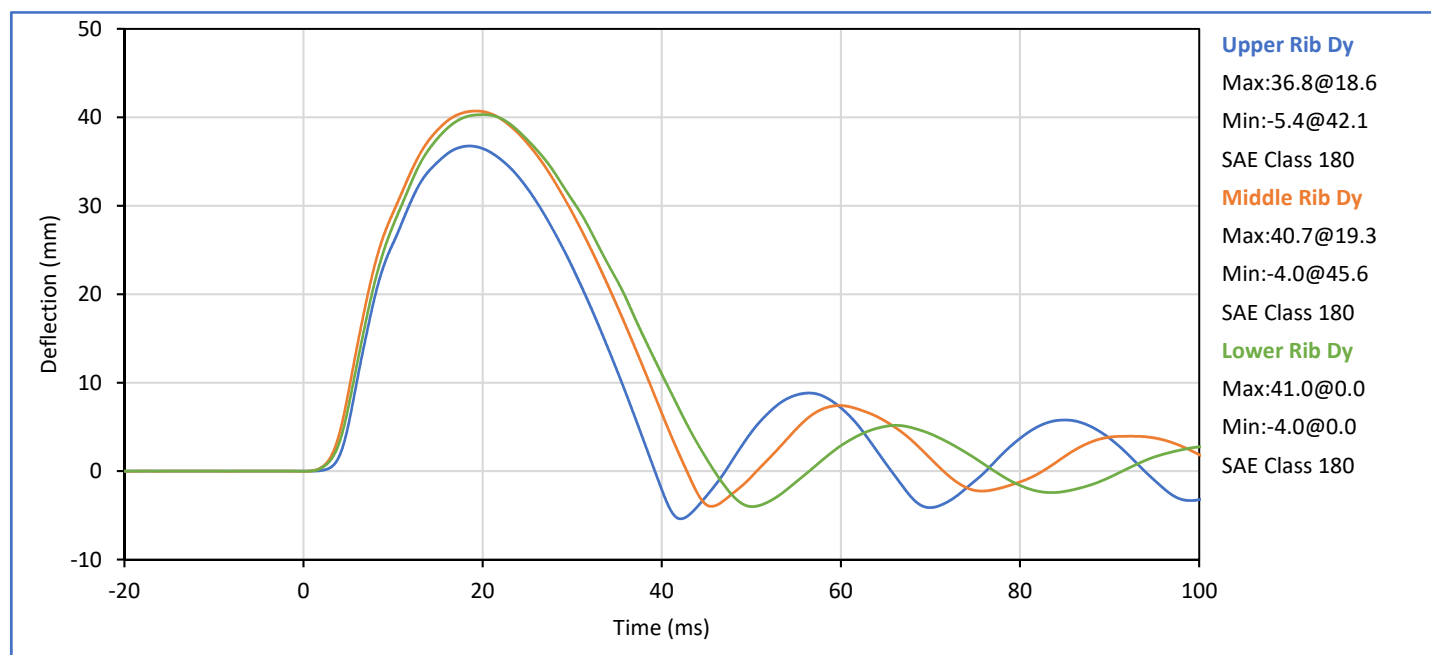
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.1	Pass
Laboratory Relative Humidity	%	10	70	41	Pass
Lower Rib Dy @ 459mm	mm	36.0	40.0	37.0	Pass
Lower Rib Dy @ 815mm	mm	46.0	51.0	48.8	Pass
Overall Test Results				Pass	Pass



Technician: J. Hernandez

Approved By: P. Puzzuto

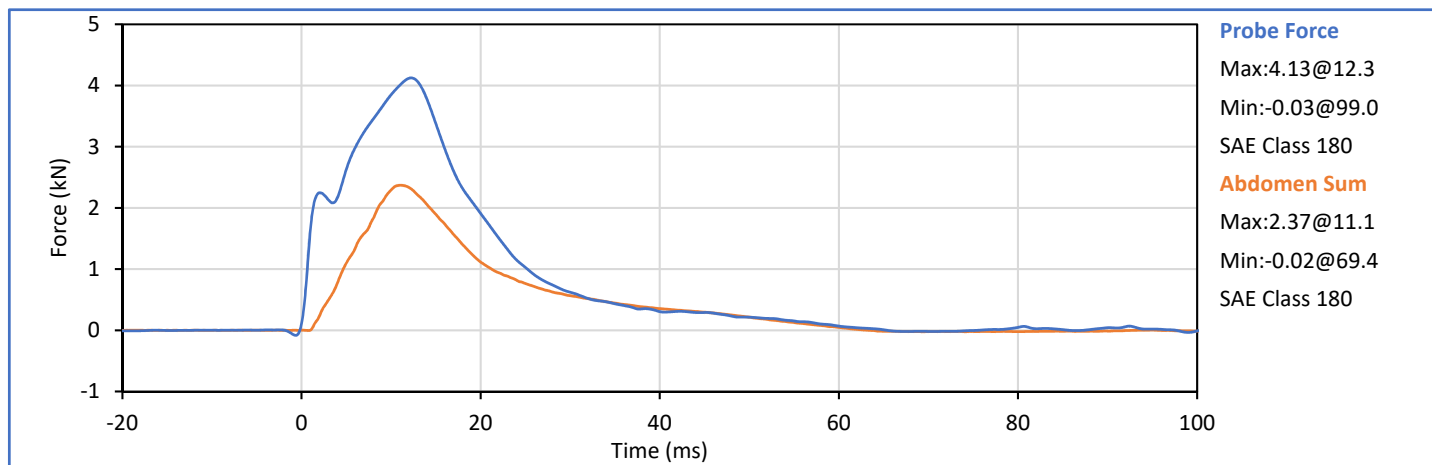
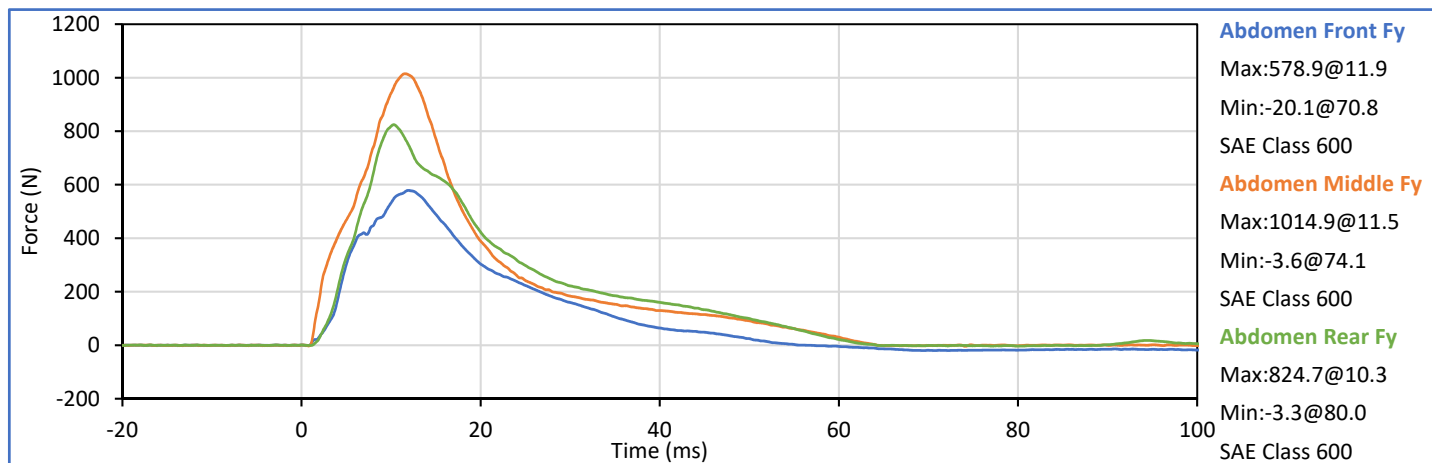
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.1	Pass
Laboratory Relative Humidity	%	10	70	47	Pass
Impactor Velocity	m/s	5.40	5.60	5.50	Pass
Peak Upper Rib Dy	mm	34.0	41.0	36.8	Pass
Peak Middle Rib Dy	mm	37.0	45.0	40.7	Pass
Peak Lower Rib Dy	mm	37.0	44.0	40.3	Pass
Peak Impactor Force After 6 ms	kN	5.10	6.20	5.73	Pass
Overall Test Results				Pass	Pass



Technician: J. Hernandez

Approved By: P. Puzzuto

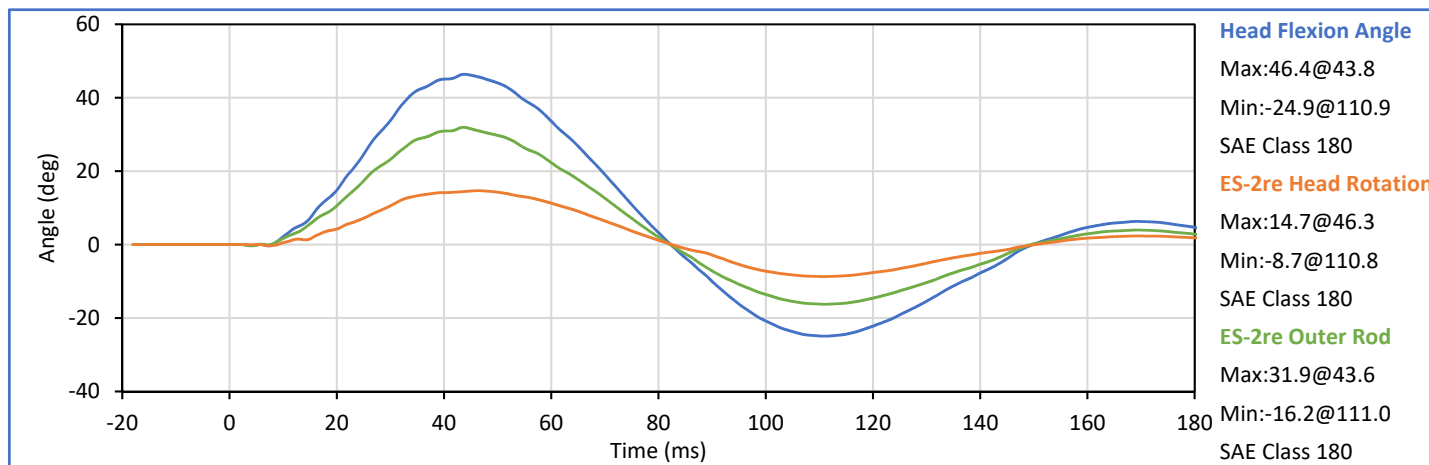
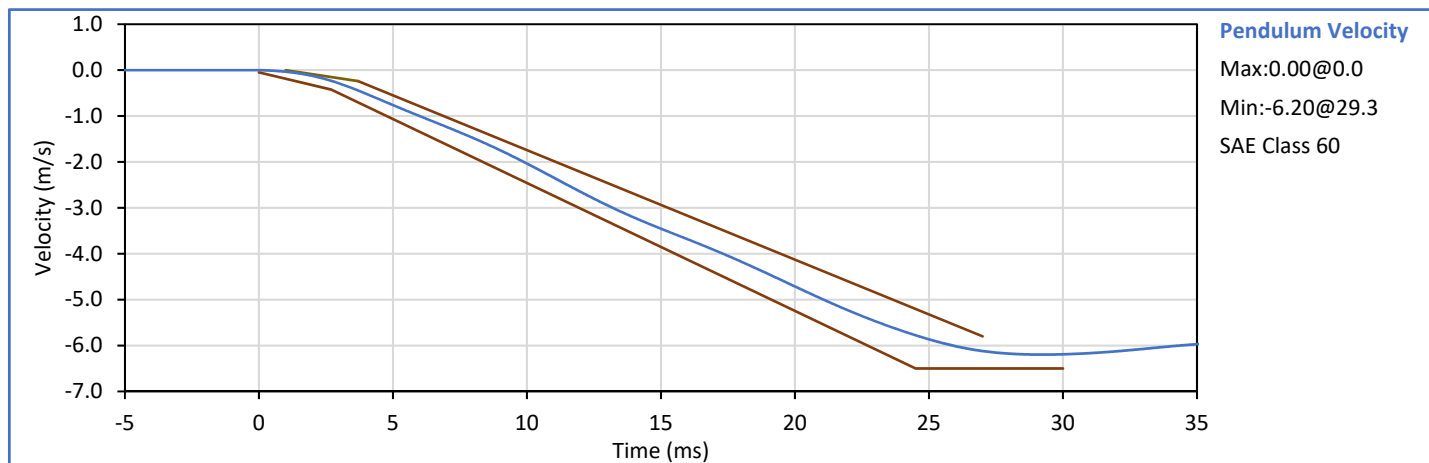
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.1	Pass
Laboratory Relative Humidity	%	10	70	47	Pass
Impactor Velocity	m/s	3.90	4.10	4.05	Pass
Peak Impactor Force	kN	4.00	4.80	4.13	Pass
Time of Peak Impactor Force	ms	10.6	13.0	12.3	Pass
Sum of Abdomen Forces	kN	2.20	2.70	2.37	Pass
Time of Peak Sum Abdomen Force	ms	10.0	12.3	11.1	Pass
Overall Test Results				Pass	Pass



Technician: J. Hernandez

Approved By: P. Puzzuto

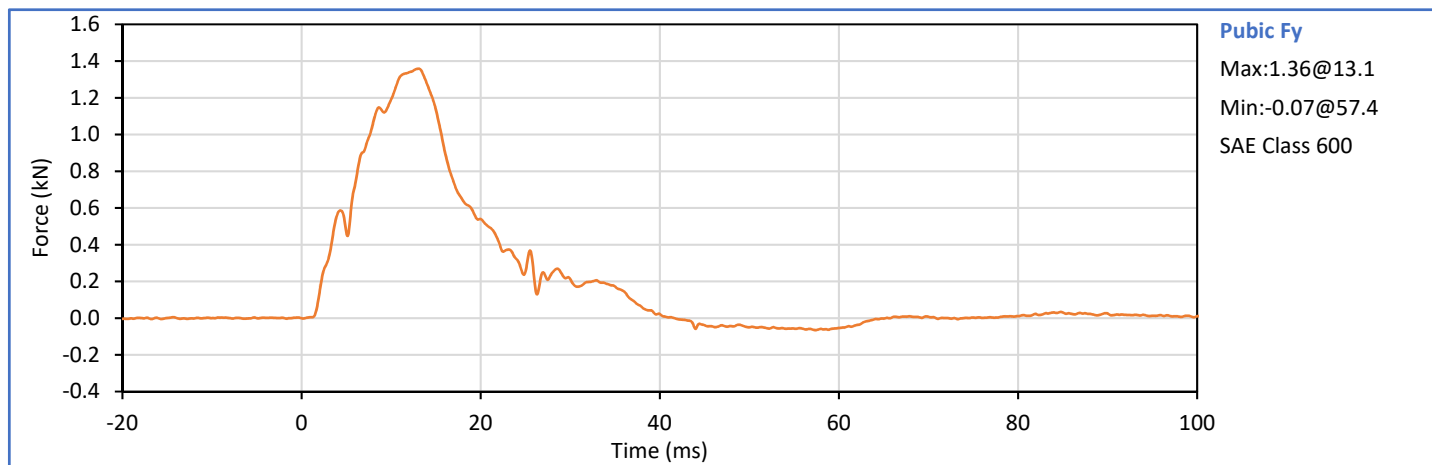
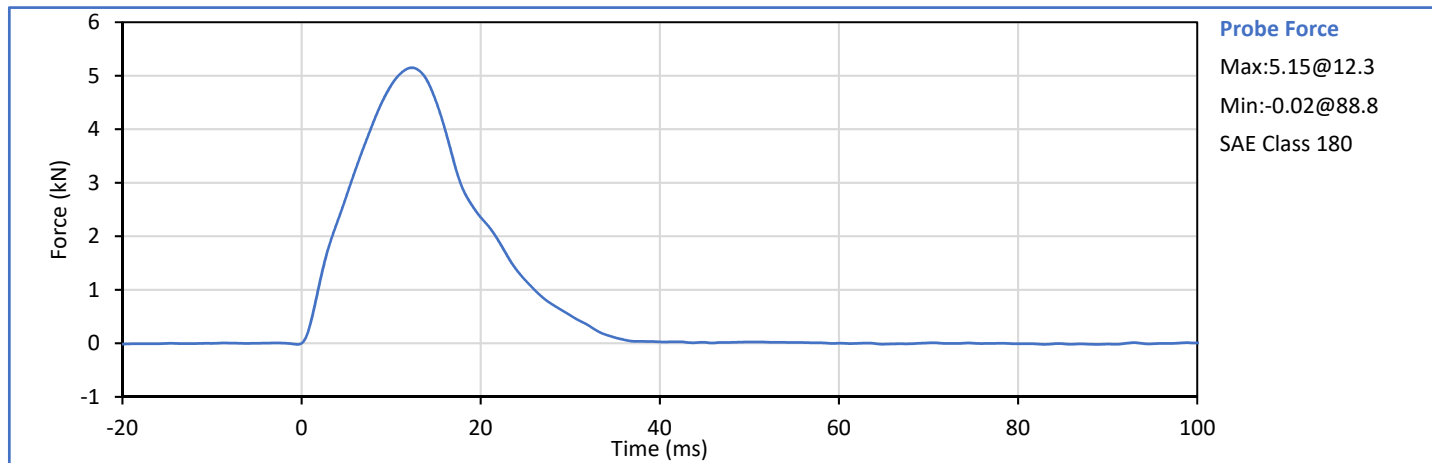
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.7	Pass
Laboratory Relative Humidity	%	10	70	44	Pass
Pendulum Velocity	m/s	5.95	6.15	6.13	Pass
Peak Headform Flexion	deg	45.0	55.0	46.4	Pass
Time of Peak Headform Flexion	ms	39.0	53.0	43.8	Pass
Flexion Decay (Peak to zero)	ms	37.0	57.0	38.6	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 Relative Humidity	%	10	70	47	Pass
Impactor Velocity	m/s	4.20	4.40	4.32	Pass
Peak Impactor Force	kN	4.70	5.40	5.15	Pass
Time of Peak Impactor Force	ms	11.8	16.1	12.3	Pass
Pubic Symphysis Fy	kN	1.23	1.59	1.36	Pass
Time of Peak Pubic Symphysis Fy	ms	12.2	17.0	13.1	Pass
Overall Test Results				Pass	Pass



Technician: J. Hernandez

Approved By: P. Puzzuto

APPENDIX C
Pre-Test ATD Qualification and Performance Verification
SID-IIs Small Side Impact ATD, Left Side Configuration
S/N: 308

ATD Serial No.: 308

Test Date: 2020-08-21

Tested Parameter	Units	Spec Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	20.8	Pass
Laboratory Relative Humidity	%	10	70	44	Pass
A - Sitting Height	mm	772	788	785	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	147	Pass
E - Shoulder Pivot From Backline	mm	97	107	102	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	183	Pass
J - Head Circumference	mm	541	551	544	Pass
K - Buttock To Knee Length	mm	514	540	521	Pass
L - Popliteal Height	mm	343	369	355	Pass
K - Knee Pivot To Floor Height	mm	392	409	404	Pass
N - Buttock Popliteal Length	mm	416	442	428	Pass
O - Chest Depth W/O Jacket	mm	195	211	202	Pass
P - Foot Length	mm	216	232	229	Pass
Q - Hip Breadth (W/Pelvic Plugs)	mm	313	323	320	Pass
R - Arm Length	mm	249	259	257	Pass
S - Knee Joint To Seatback	mm	477	493	489	Pass
V - Shoulder Width	mm	341	357	354	Pass
W - Foot Width	mm	78	94	87	Pass
Y - Chest Circumference W/Jacket	mm	851	881	874	Pass
Z - Waist Circumference	mm	761	791	767	Pass
			Overall Test Results		Pass

Technician:



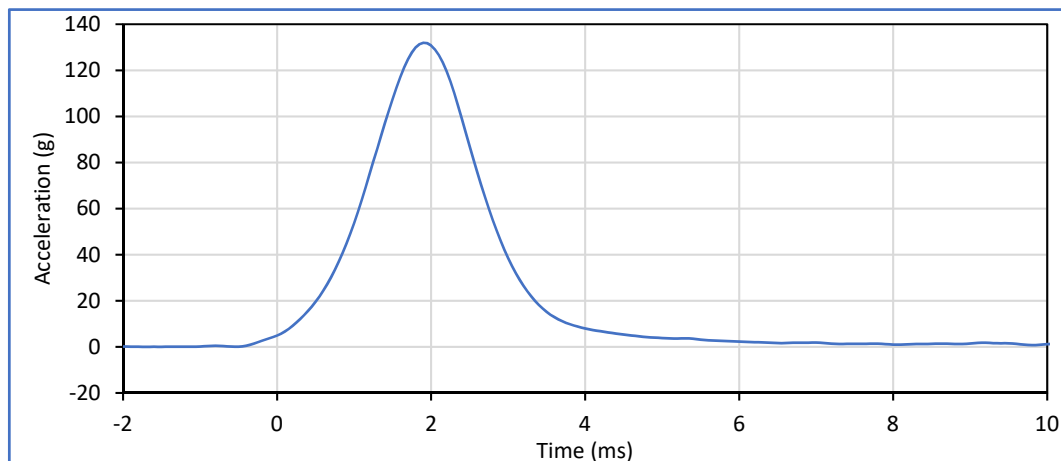
J. Hernandez

Approved By:



P. Puzzuto

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	18.9	25.6	20.9	Pass
Laboratory Humidity	%	10	70	44	Pass
Peak Resultant Acceleration	g	115.0	137.0	132.0	Pass
Peak Head Ax	g	-15.0	15.0	-2.8	Pass
Oscillations After Main Pulse	%	0.0	15.0	1.8	Pass
Is Acceleration Unimodal?	Yes/No	Yes		Yes	Pass
			Overall Test Results		Pass

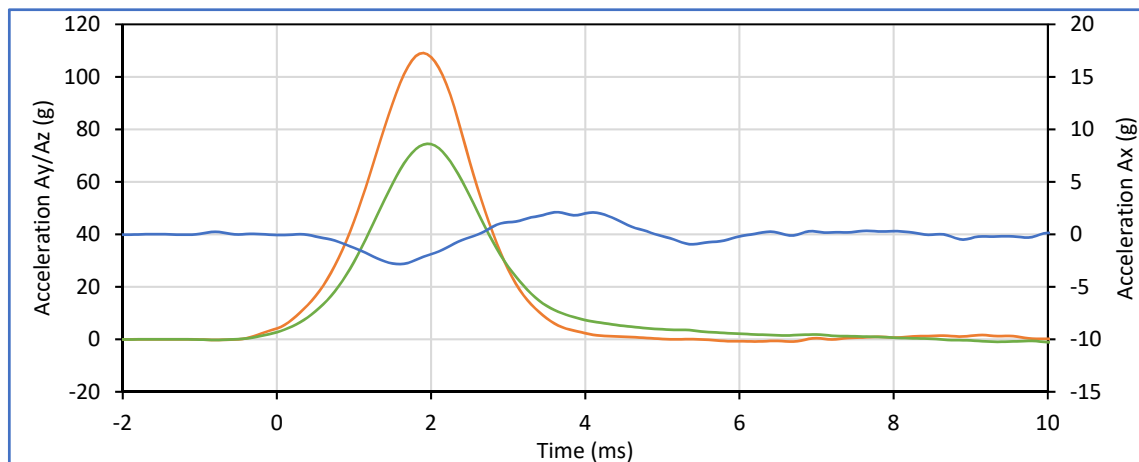


Head Resultant

Max:132.0@1.9

Min:0.7@9.8

SAE Class 1000



Head Ax

Max:2.1@3.7

Min:-2.8@1.6

SAE Class 1000

Head Ay

Max:109.1@1.9

Min:-0.8@6.7

SAE Class 1000

Head Az

Max:74.5@2.0

Min:-1.1@10.0

SAE Class 1000

Technician:

J. Hernandez

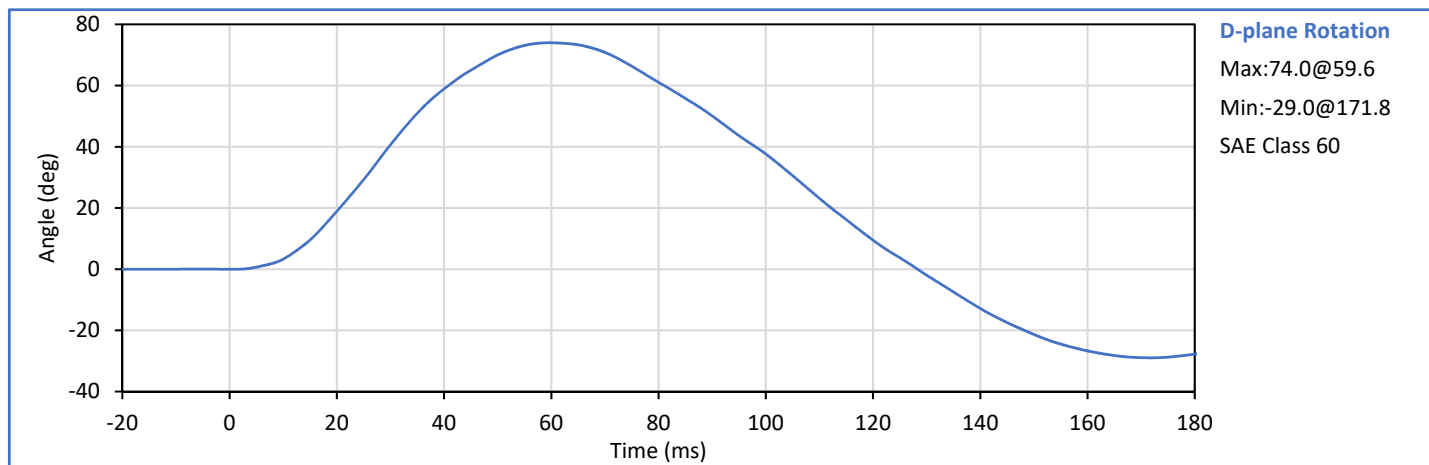
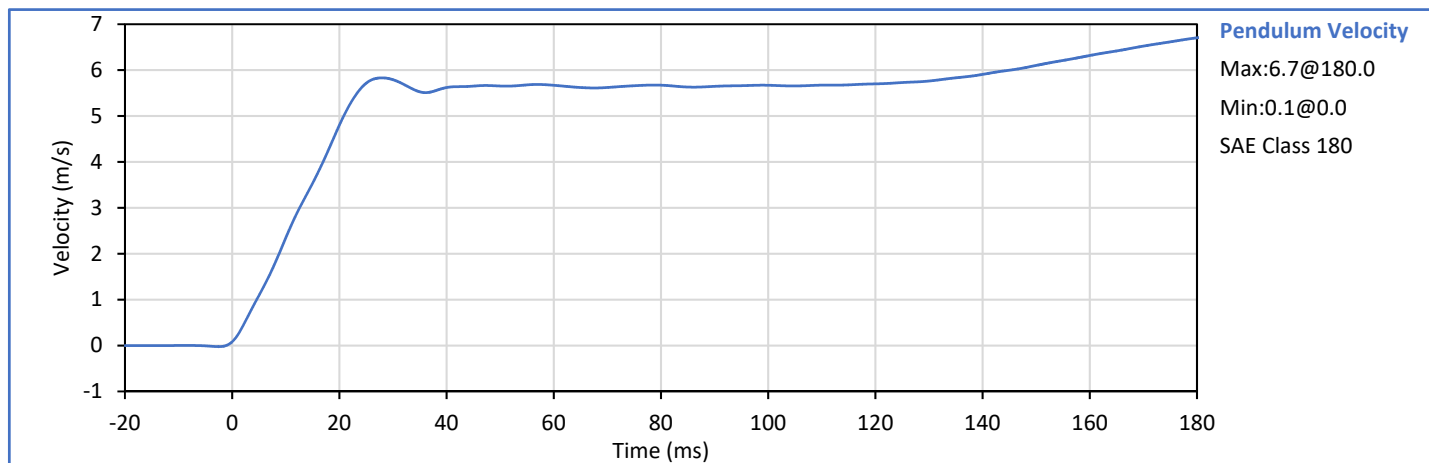
J. Hernandez

Approved By:

P. Puzzuto

P. Puzzuto

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.0	Pass
Laboratory Humidity	%	10	70	44	Pass
Pendulum Velocity	m/s	5.51	5.63	5.57	Pass
Pendulum Decel at 10 ms	m/s	2.20	2.80	2.34	Pass
Pendulum Decel at 15 ms	m/s	3.30	4.10	3.53	Pass
Pendulum Decel at 20 ms	m/s	4.40	5.40	4.80	Pass
Pendulum Decel at 25 ms	m/s	5.40	6.10	5.72	Pass
Pendulum Decel from 25-100 ms	m/s	5.50	6.20	5.83	Pass
Peak "D" Plane Rotation	deg	71.0	81.0	74.0	Pass
Time of Peak "D" Plane Rotation	ms	50.0	70.0	59.6	Pass
Peak Occ. Condyle Moment	Nm	-44.0	-36.0	-38.9	Pass
Time of Moment Decay to 0 Nm	ms	102.0	126.0	109.1	Pass
Overall Test Results				Pass	Pass



Technician:

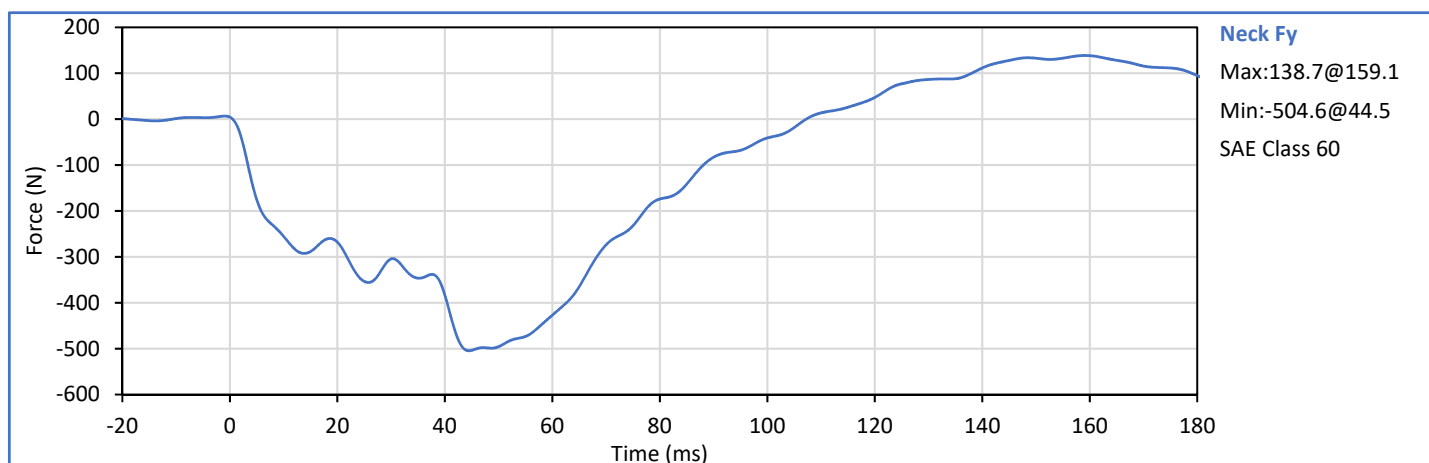
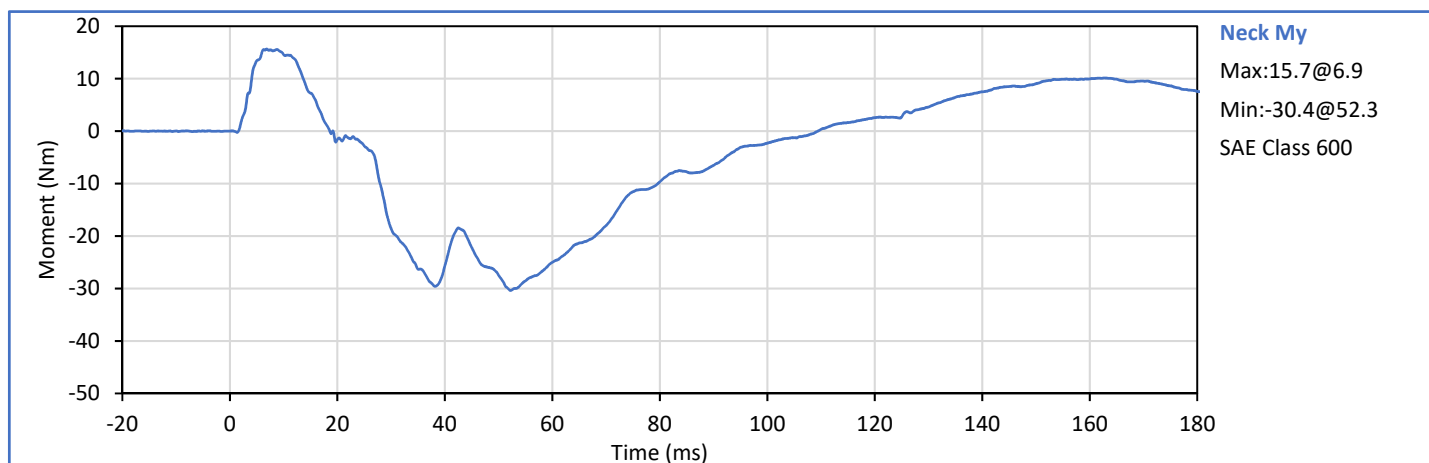
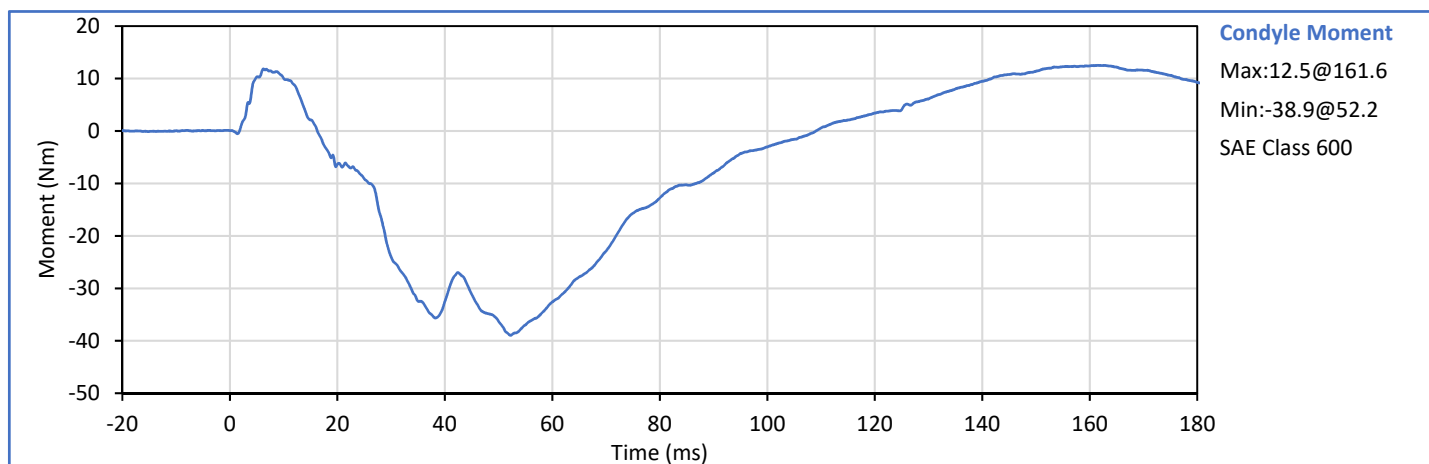
J. Hernandez

J. Hernandez

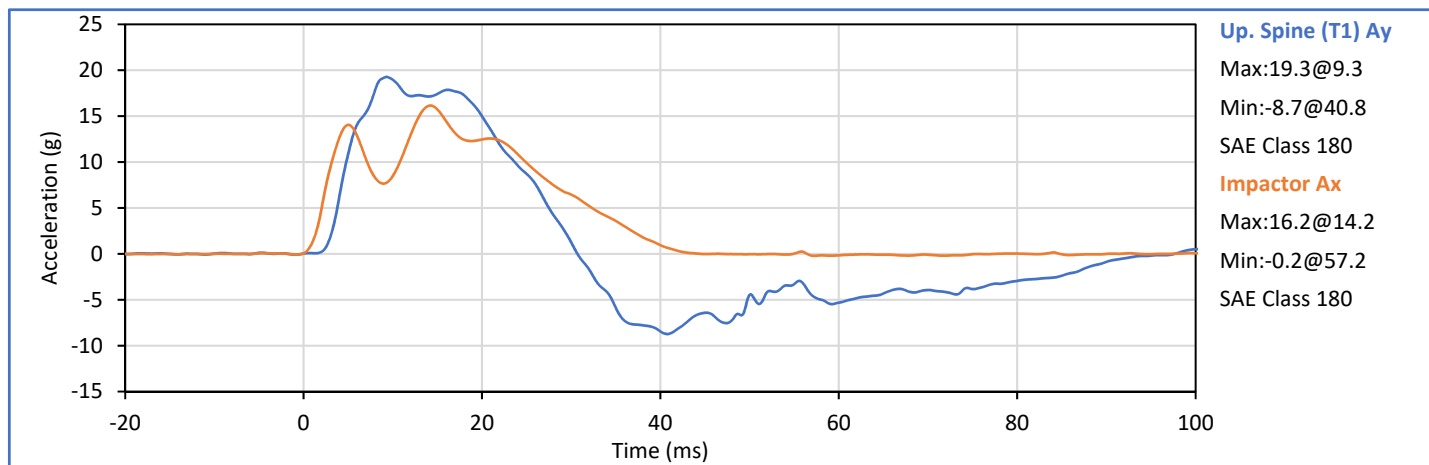
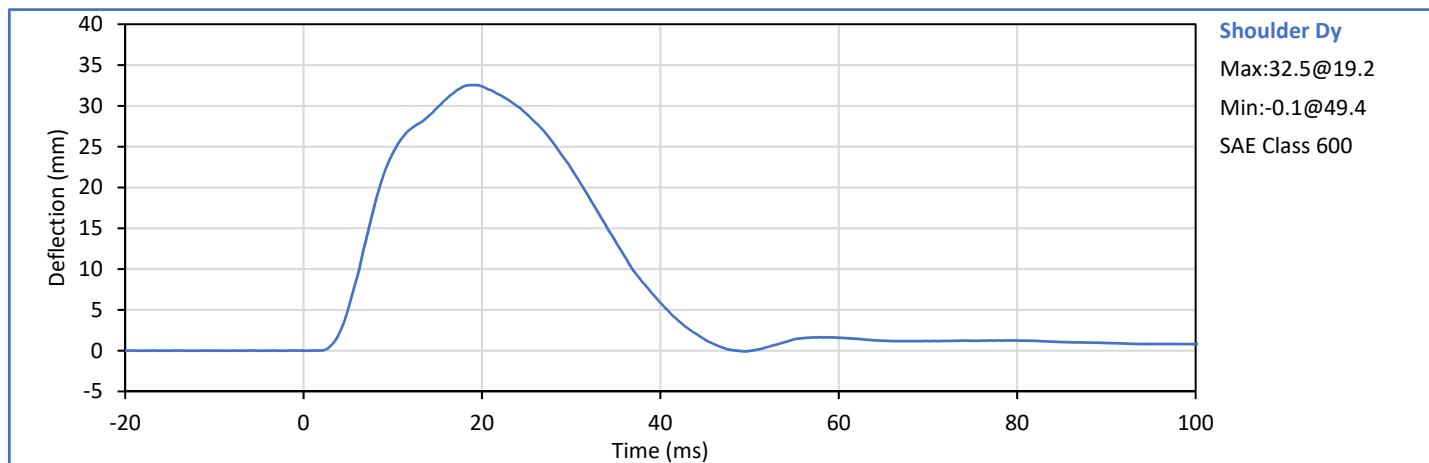
Approved By:

P. Puzzuto

P. Puzzuto



Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.7	Pass
Laboratory Humidity	%	10	70	41	Pass
Impactor Velocity	m/s	4.20	4.40	4.31	Pass
Peak Shoulder Dy	mm	28.0	37.0	32.5	Pass
Peak Upper Spine (T1) Ay	g	17.0	22.0	19.3	Pass
Peak Impactor Ax	g	13.0	18.0	16.2	Pass
Overall Test Results					Pass



Technician:

J. Hernandez

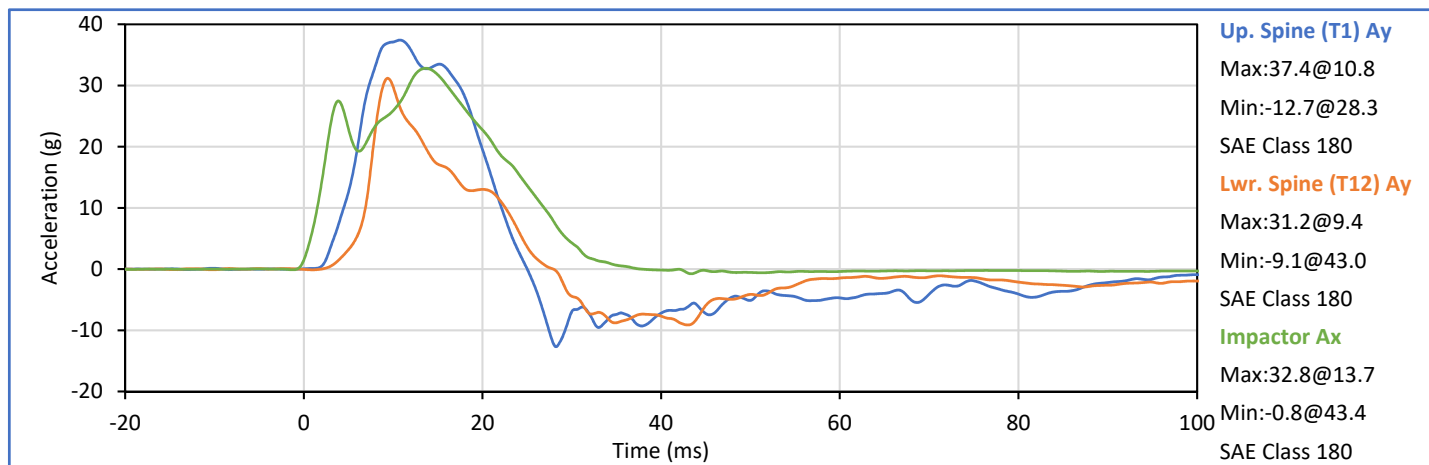
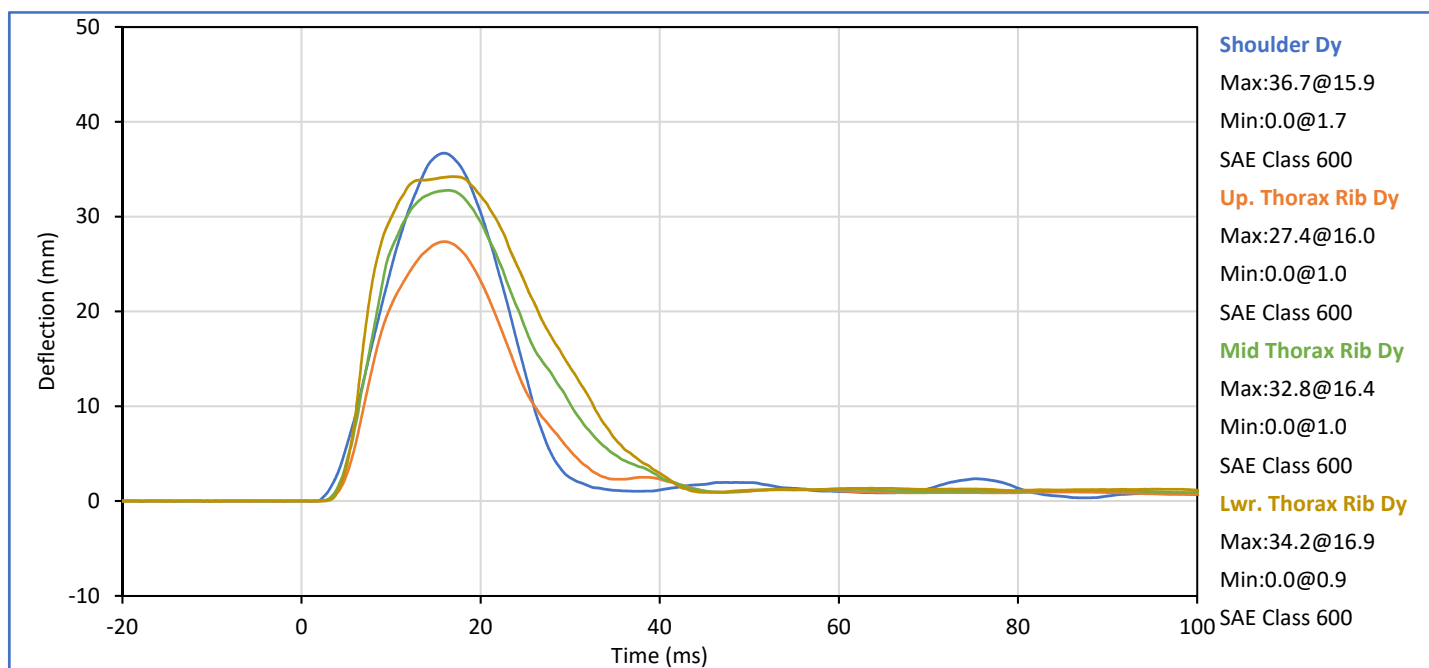
J. Hernandez

Approved By:

P. Puzzuto

P. Puzzuto

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.7	Pass
Laboratory Humidity	%	10	70	41	Pass
Impactor Velocity	m/s	6.60	6.80	6.71	Pass
Peak Shoulder Dy	mm	31.0	40.0	36.7	Pass
Peak Upper Rib Dy	mm	25.0	32.0	27.4	Pass
Peak Middle Rib Dy	mm	30.0	36.0	32.8	Pass
Peak Lower Rib Dy	mm	32.0	38.0	34.2	Pass
Peak Upper Spine (T1) Ay	g	34.0	43.0	37.4	Pass
Peak Lower Spine (T12) Ay	g	29.0	37.0	31.2	Pass
Peak Impactor Ax	g	30.0	36.0	32.8	Pass
Overall Test Results				Pass	Pass



Technician:

J. Hernandez

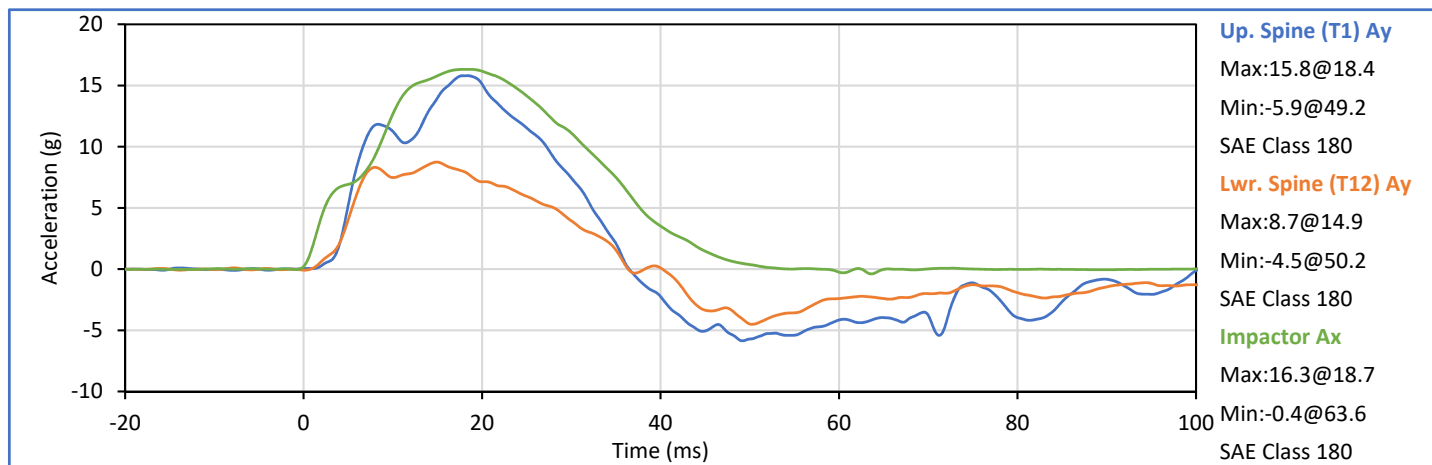
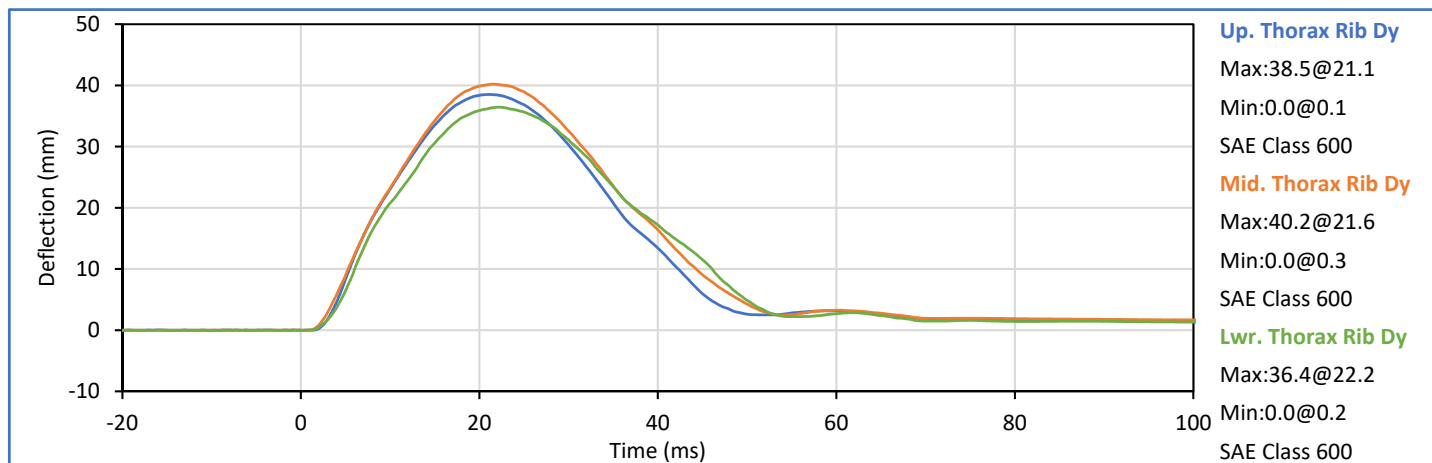
J. Hernandez

Approved By:

P. Puzzuto

P. Puzzuto

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.7	Pass
Laboratory Humidity	%	10	70	41	Pass
Impactor Velocity	m/s	4.20	4.40	4.32	Pass
Peak Upper Rib Dy	mm	32.0	40.0	38.5	Pass
Peak Middle Rib Dy	mm	39.0	45.0	40.2	Pass
Peak Lower Rib Dy	mm	35.0	43.0	36.4	Pass
Peak Upper Spine (T1) Ay	g	13.0	17.0	15.8	Pass
Peak Lower Spine (T12) Ay	g	7.0	11.0	8.7	Pass
Peak Impactor Ax	g	14.0	18.0	16.3	Pass
Overall Test Results				Pass	Pass



Technician:

J. Hernandez

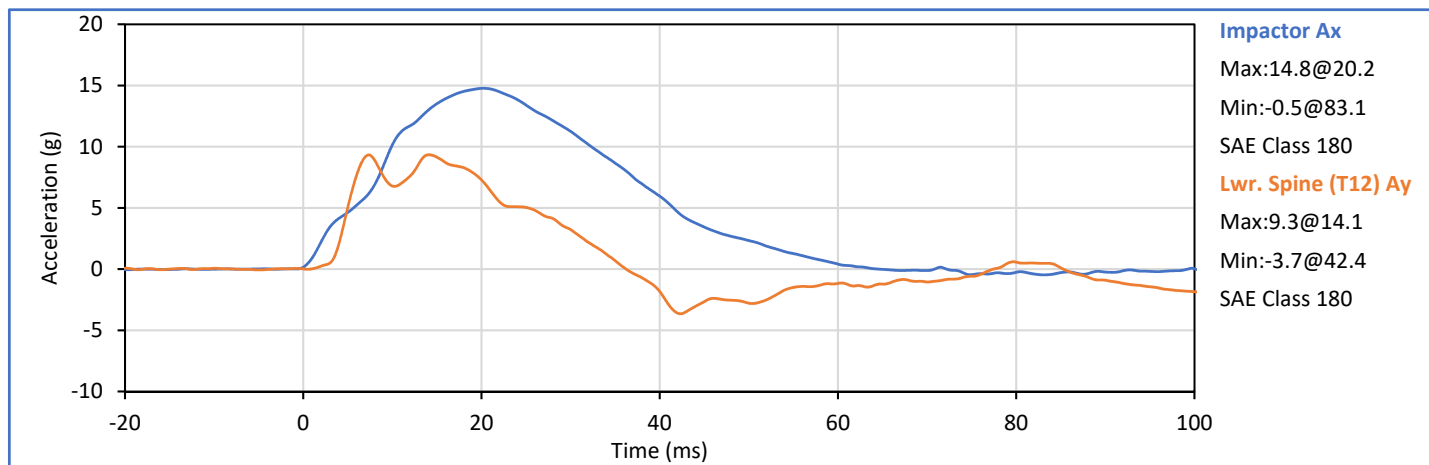
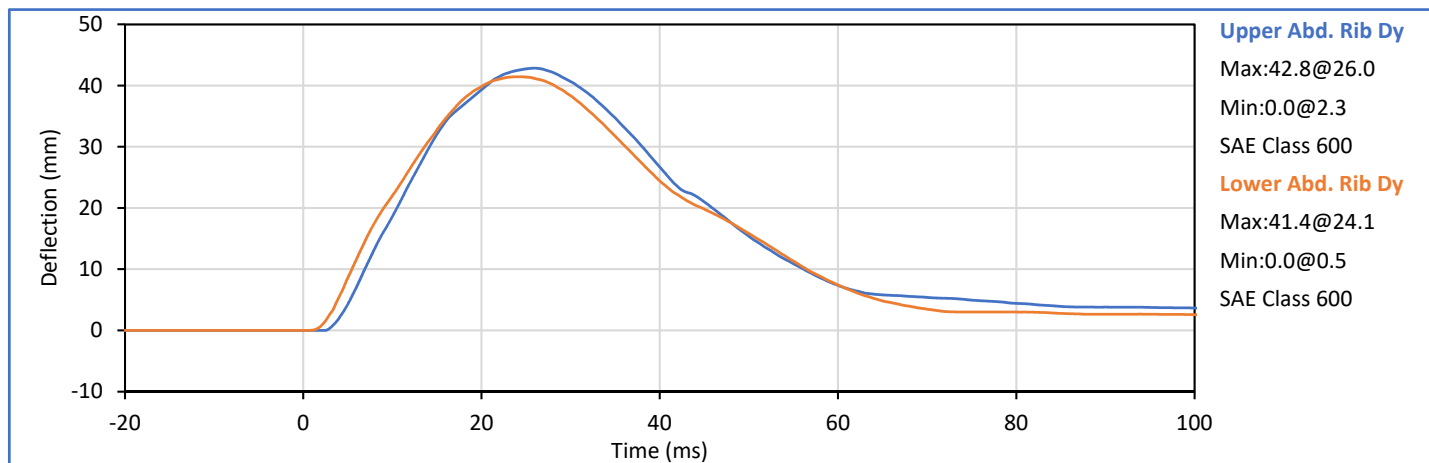
J. Hernandez

Approved By:

P. Puzzuto

P. Puzzuto

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.7	Pass
Laboratory Humidity	%	10	70	41	Pass
Impactor Velocity	m/s	4.20	4.40	4.33	Pass
Peak Upper Abdomen Rib Dy	mm	36.0	47.0	42.8	Pass
Peak Lower Abdomen Rib Dy	mm	33.0	44.0	41.4	Pass
Peak Lower Spine T12 Ay	mm	9.0	14.0	9.3	Pass
Peak Impactor Ax	g	12.0	16.0	14.8	Pass
Overall Test Results				Pass	Pass



Technician:

J. Hernandez

J. Hernandez

Approved By:

P. Puzzuto

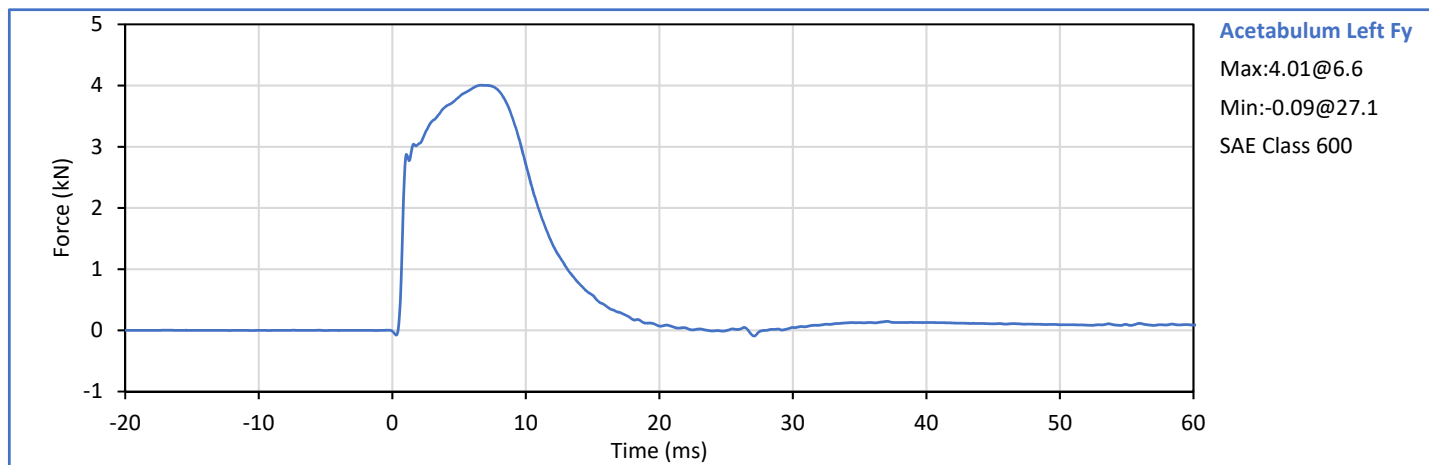
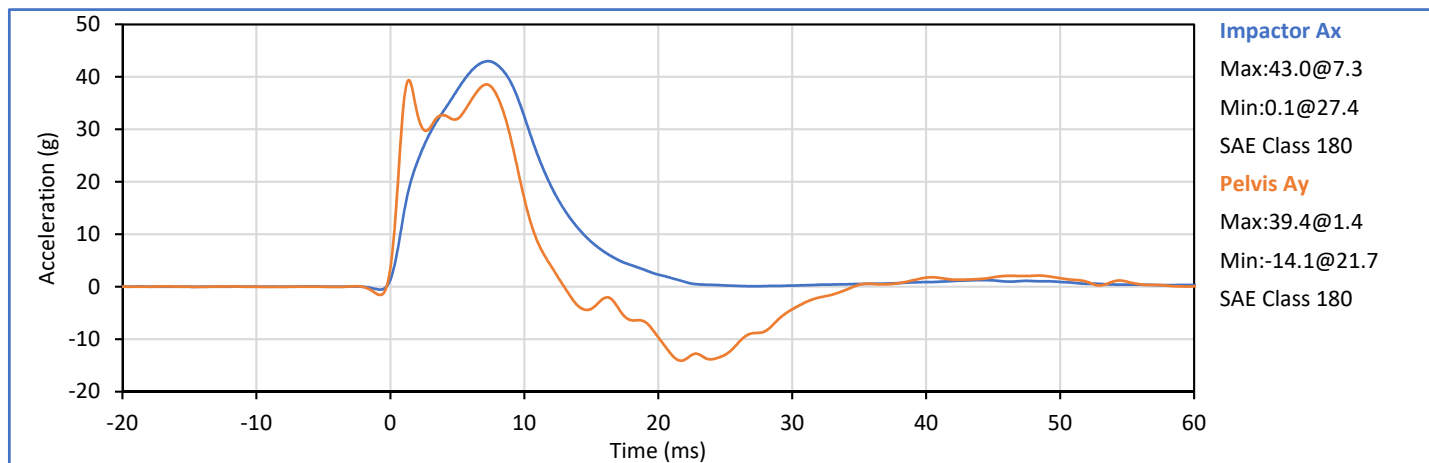
P. Puzzuto

ATD Serial No.: 308

Test Date: 2020-08-22

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.7	Pass
Laboratory Humidity	%	10	70	41	Pass
Impactor Velocity	m/s	6.60	6.80	6.71	Pass
Peak Acetabulum Fy	kN	3.60	4.30	4.01	Pass
Pelvis Ay after 6ms	g	34.0	42.0	38.6	Pass
Peak Impactor Ax	g	38.0	47.0	43.0	Pass
Overall Test Results				Pass	Pass

Pelvis Plug S/N: 13589



Technician:

J. Hernandez

J. Hernandez

Approved By:

P. Puzzuto

P. Puzzuto

ATD Serial No.: 308

SID-IIs Small Side Impact ATD
Pelvis Acetabulum Impact

Test Date: 2020-08-22

Pelvis Plug S/N: 13589



SID-IIs Pelvis Plug Certification Test

Plug S/N 13589
Test Number 11233
Report Number 11271
Test Date 9/25/2019 12:38:50 PM

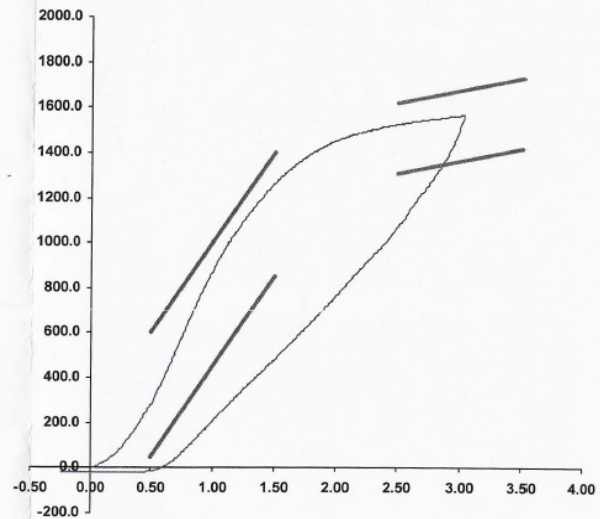
	Test Results	Spec Min	Spec Max
Force @ 0.5 mm (N)	293.69	50.00	600.00
Force @ 1.5 mm (N)	1,271.88	850.00	1,400.00
Force @ 2.5 mm (N)	1,526.63	1,306.00	1,618.00
Force @ 3.0 mm (N)	1,564.53	1,361.00	1,673.00

Testing Machine STM-20 5965542
Load Cell S/N (F1360947), 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 25-Sep-19
SACO Research

By: DC Date: 9/25/2019

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

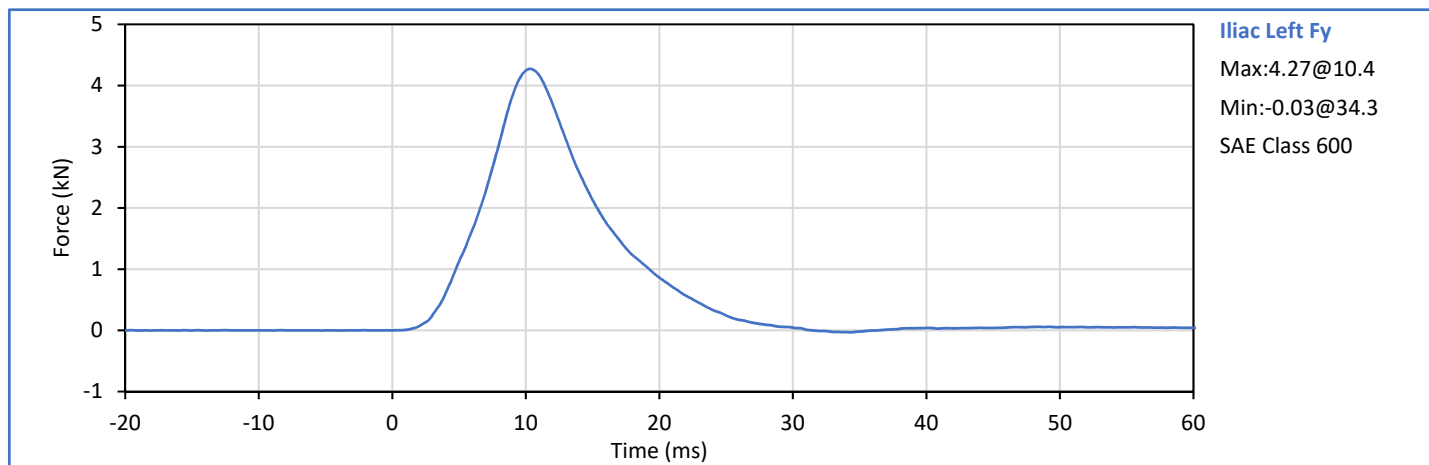
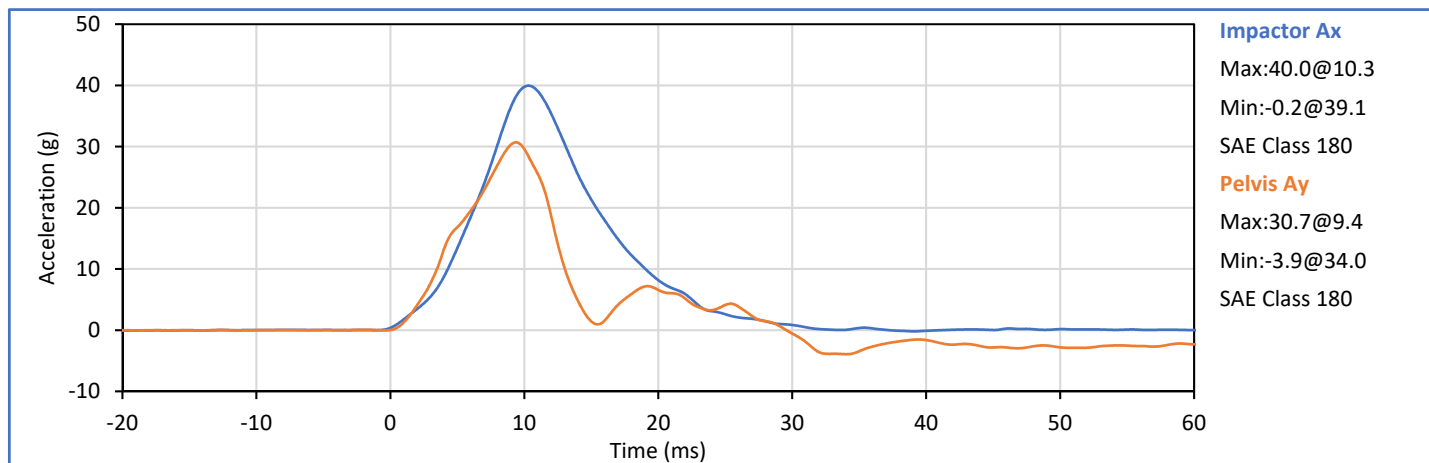
ATD Serial No.: 308

Test Date: 2020-08-24

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.7	Pass
Laboratory Humidity	%	10	70	41	Pass
Impactor Velocity	m/s	4.20	4.40	4.31	Pass
Peak Iliac Fy	kN	4.10	5.10	4.27	Pass
Pelvis Ay after 6ms	g	28.0	39.0	30.7	Pass
Peak Impactor Ax	g	36.0	45.0	40.0	Pass
Overall Test Results				Pass	Pass

Pelvis Plug S/N: 12228 *

* Plug is not impacted and remains certified



Technician:

J. Hernandez

J. Hernandez

Approved By:

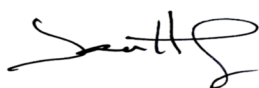
P. Puzzuto

P. Puzzuto

APPENDIX C
Post-Test ATD Qualification and Performance Verification
ES-2re 50th Male Side Impact ATD, Left Side Configuration
S/N: F035

Tested Parameter	Units	Spec Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.1	Pass
Laboratory Relative Humidity	%	10	70	32	Pass
1 - Sitting Height	mm	900	918	911	Pass
2 - Seat to Shoulder Joint	mm	558	572	563	Pass
3 - Seat to Lower Face of Thoracic Spine Box	mm	346	356	351	Pass
4 - Seat to Hip Joint (bolt center)	mm	97	103	101	Pass
5 - Sole to Seat, Sitting	mm	433	451	438	Pass
6 - Head Width	mm	152	158	154	Pass
7 - Shoulder/Arm Width	mm	461	479	471	Pass
8 - Thorax Width	mm	322	332	324	Pass
9 - Abdomen Width	mm	273	287	280	Pass
10 - Pelvis Lap Width	mm	359	373	362	Pass
11 - Head Depth	mm	196	206	201	Pass
12 - Thorax Depth	mm	262	272	264	Pass
13 - Abdomen Depth	mm	194	204	200	Pass
14 - Pelvis Depth	mm	235	245	241	Pass
15 - Back of Buttocks to Hip Joint (bolt Center)	mm	150	160	157	Pass
16 - Back of Buttocks to Front Knee	mm	597	615	613	Pass
			Overall Test Results		Pass

Technician:



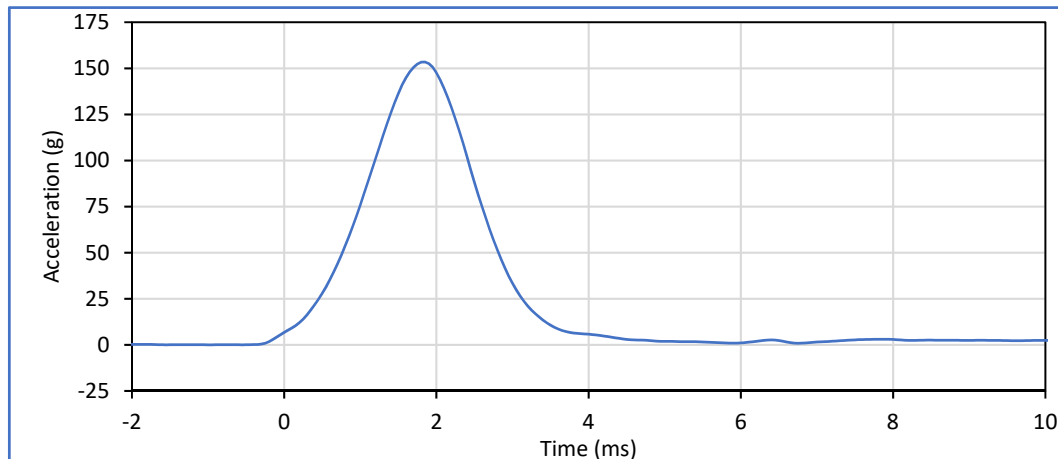
J. Hernandez

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 Relative Humidity	%	10	70	32	Pass
Peak Resultant Acceleration	g	125.0	155.0	153.4	Pass
Peak Head Ax	g	-15.0	15.0	1.2	Pass
Oscillations After Main Pulse	%	0.0	15.0	2.0	Pass
Is Acceleration Unimodal?	Yes/No	Yes		Yes	Pass
			Overall Test Results		Pass

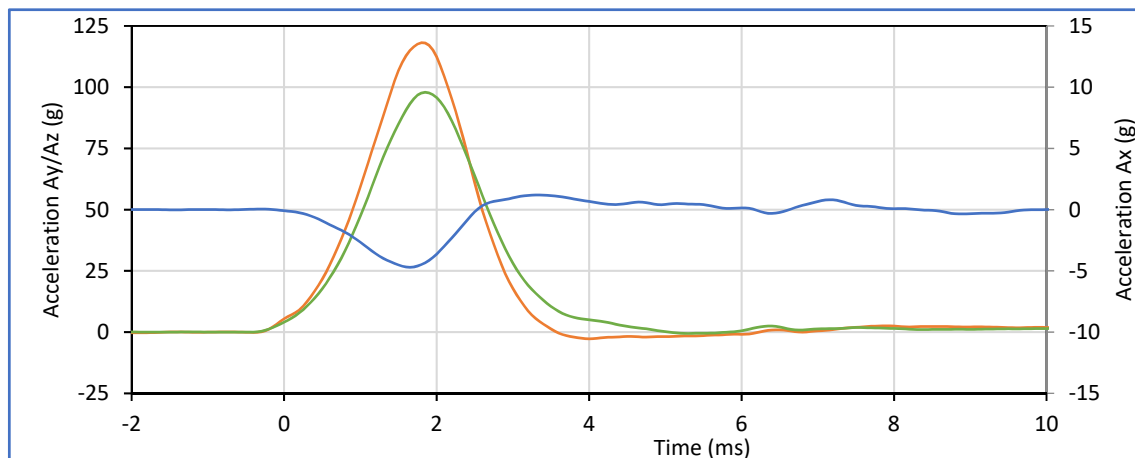


Head Resultant

Max:153.4@1.9

Min:0.9@6.8

SAE Class 1000



Head Ax

Max:1.2@3.4

Min:-4.7@1.7

SAE Class 1000

Head Ay

Max:118.1@1.8

Min:-2.7@4.0

SAE Class 1000

Head Az

Max:97.9@1.9

Min:-0.6@5.3

SAE Class 1000

Technician:

J. Hernandez

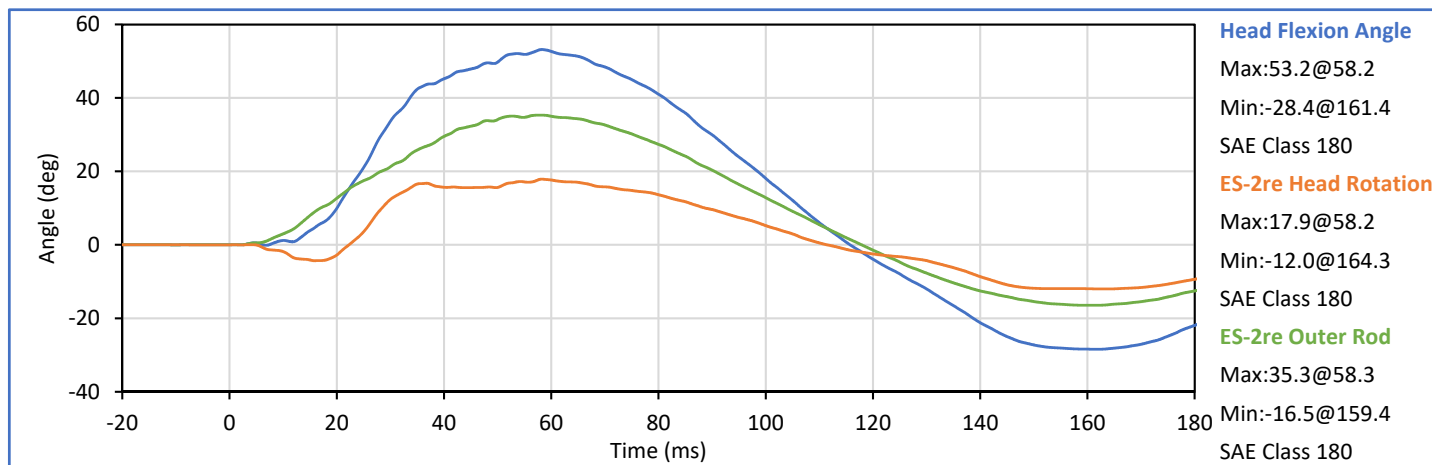
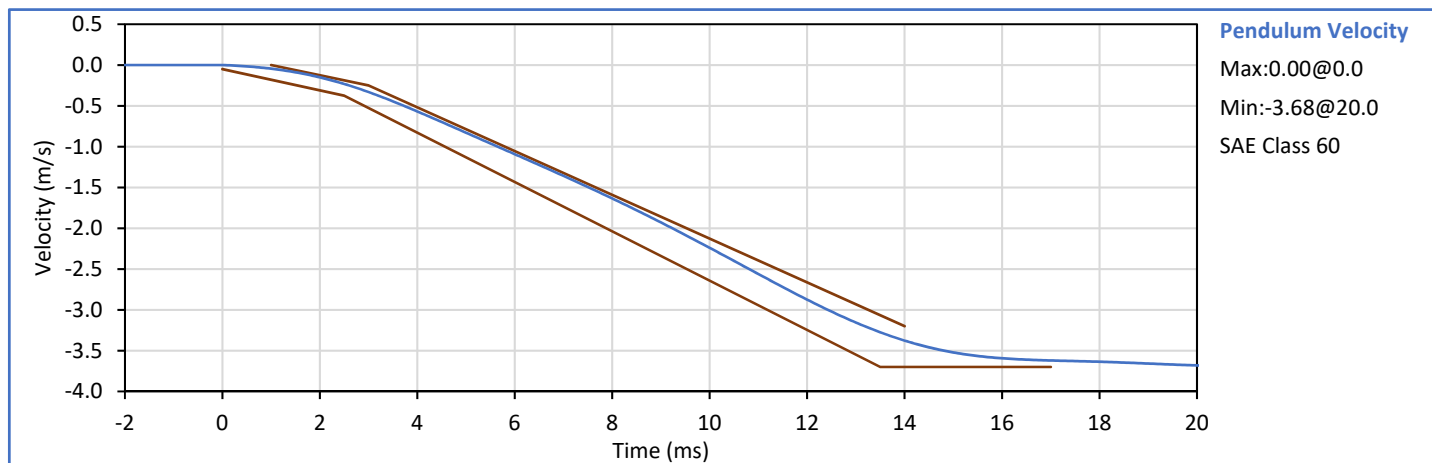
J. Hernandez

Approved By:

P. Puzzuto

P. Puzzuto

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	20.6	Pass
Laboratory Relative Humidity	%	10	70	22	Pass
Pendulum Velocity	m/s	3.30	3.50	3.45	Pass
Peak Headform Flexion	deg	49.0	59.0	53.2	Pass
Time of Peak Headform Flexion	ms	54.0	66.0	58.2	Pass
Flexion Decay (Peak to zero)	ms	53.0	88.0	57.6	Pass
Overall Test Results				Pass	Pass



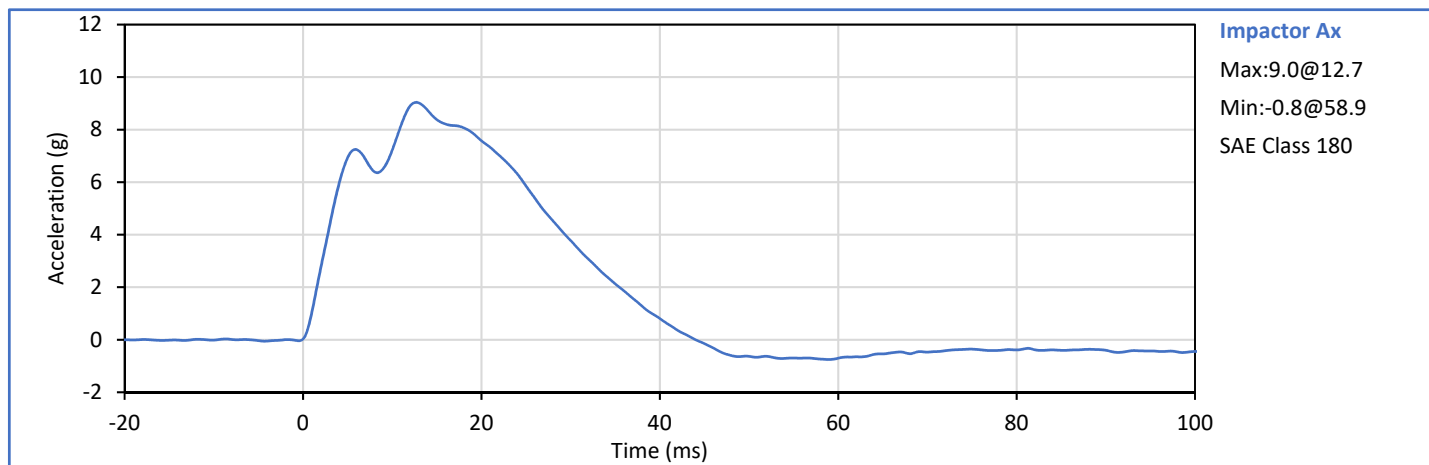
Technician: J. Hernandez

Approved By: P. Puzzuto

ATD Serial No.: F035

Test Date: 2020-09-03

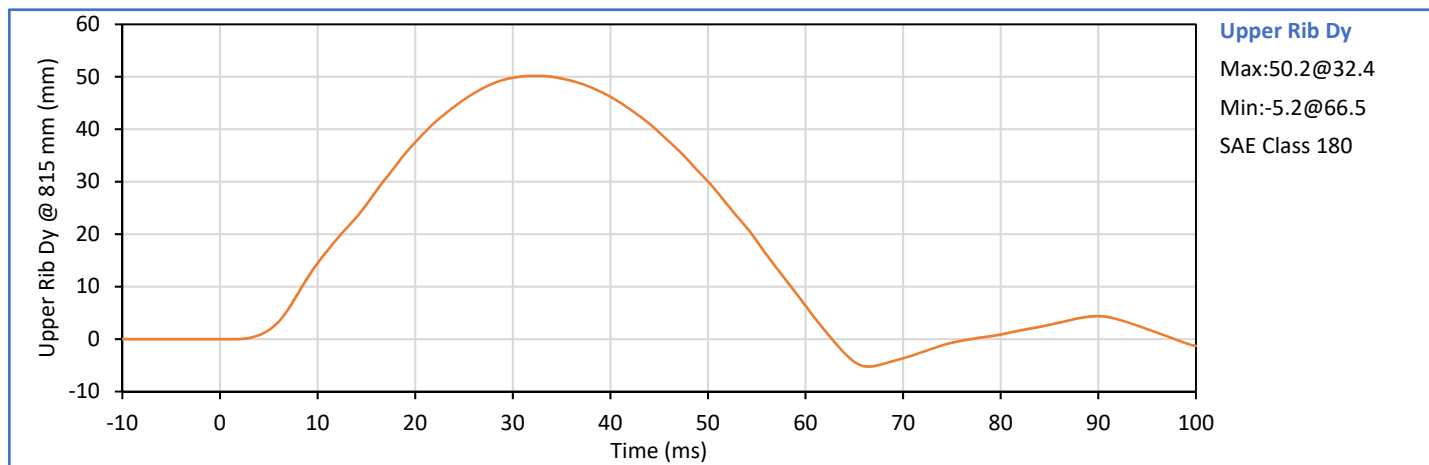
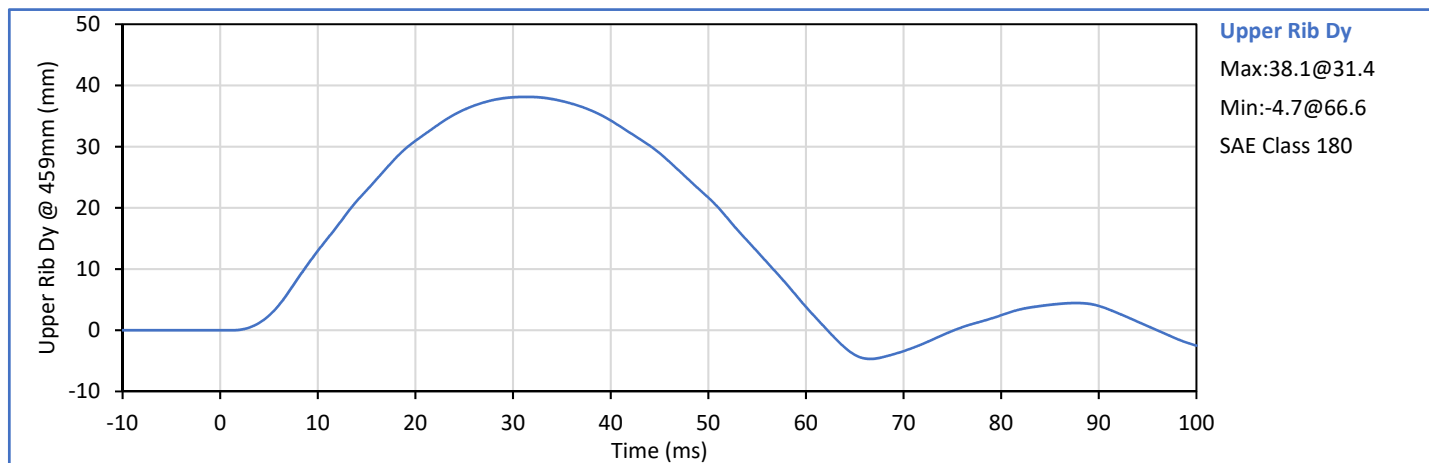
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.8	Pass
Laboratory Relative Humidity	%	10	70	33	Pass
Impactor Velocity	m/s	4.20	4.40	4.33	Pass
Peak Impactor Ax	g	7.5	10.5	9.0	Pass
Overall Test Results					Pass



Technician: J. Hernandez

Approved By: P. Puzzuto

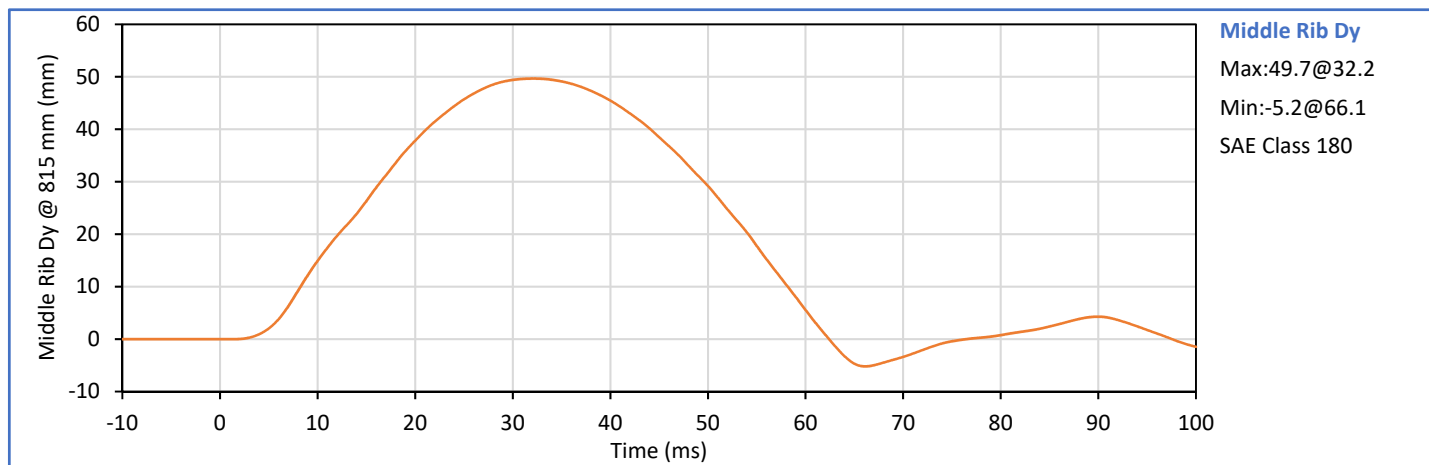
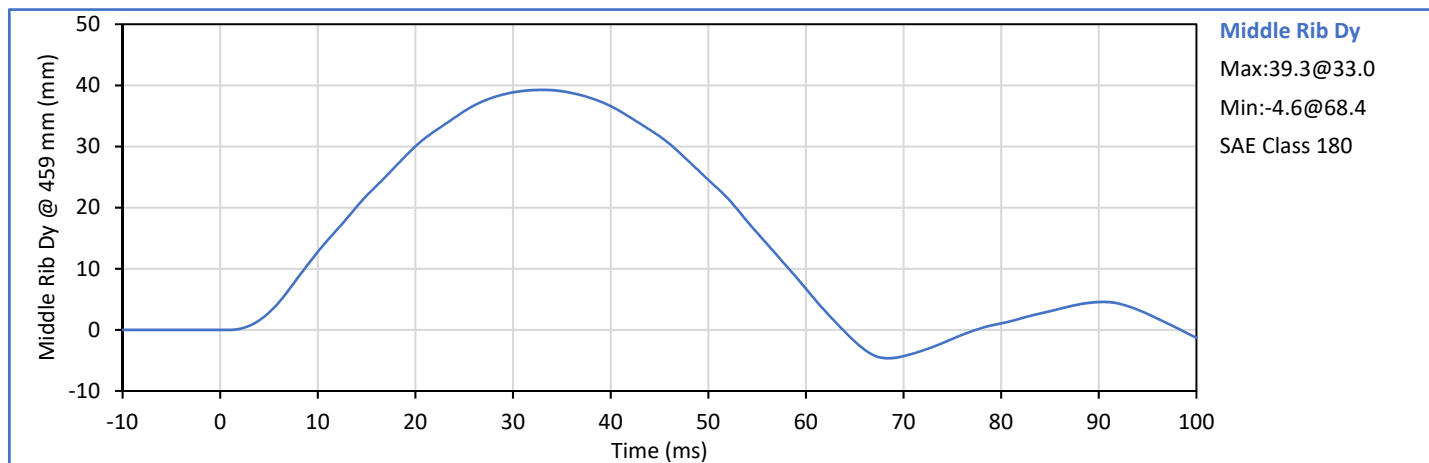
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.1	Pass
Laboratory Relative Humidity	%	10	70	33	Pass
Upper Rib Dy @ 459mm	mm	36.0	40.0	38.1	Pass
Upper Rib Dy @ 815mm	mm	46.0	51.0	50.2	Pass
Overall Test Results				Pass	Pass



Technician: J. Hernandez

Approved By: P. Puzzuto

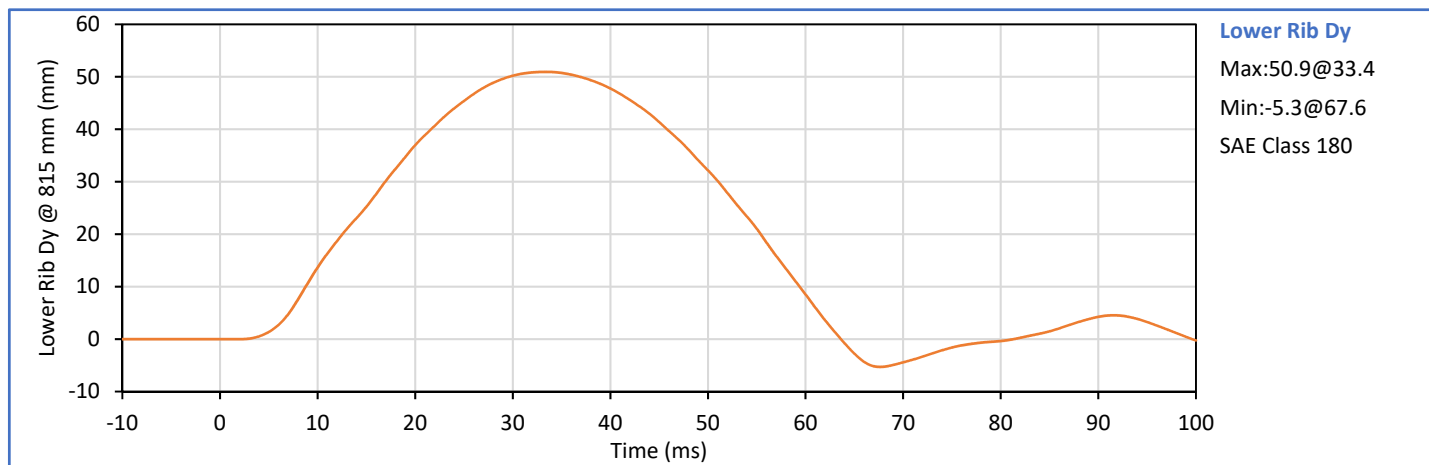
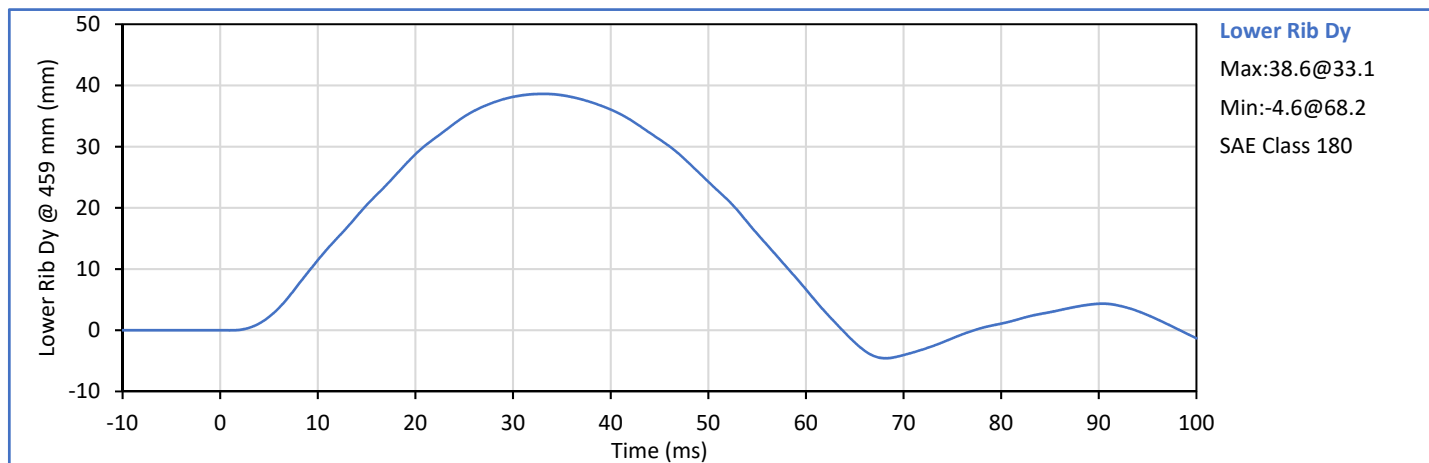
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.0	Pass
Laboratory Relative Humidity	%	10	70	22	Pass
Middle Rib Dy @ 459mm	mm	36.0	40.0	39.3	Pass
Middle Rib Dy @ 815mm	mm	46.0	51.0	49.7	Pass
Overall Test Results				Pass	Pass



Technician: J. Hernandez

Approved By: P. Puzzuto

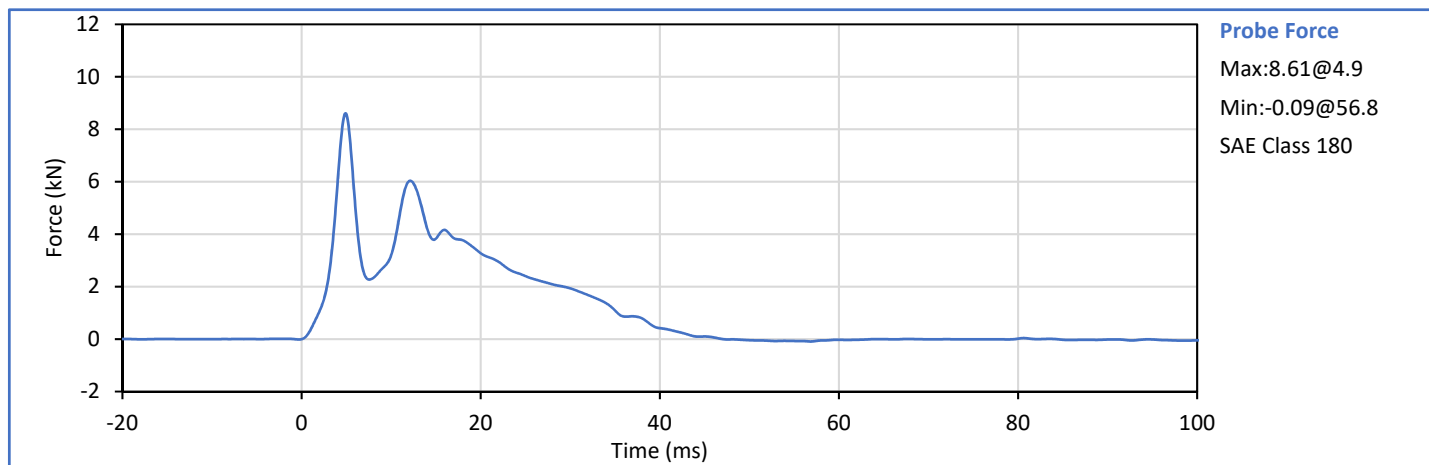
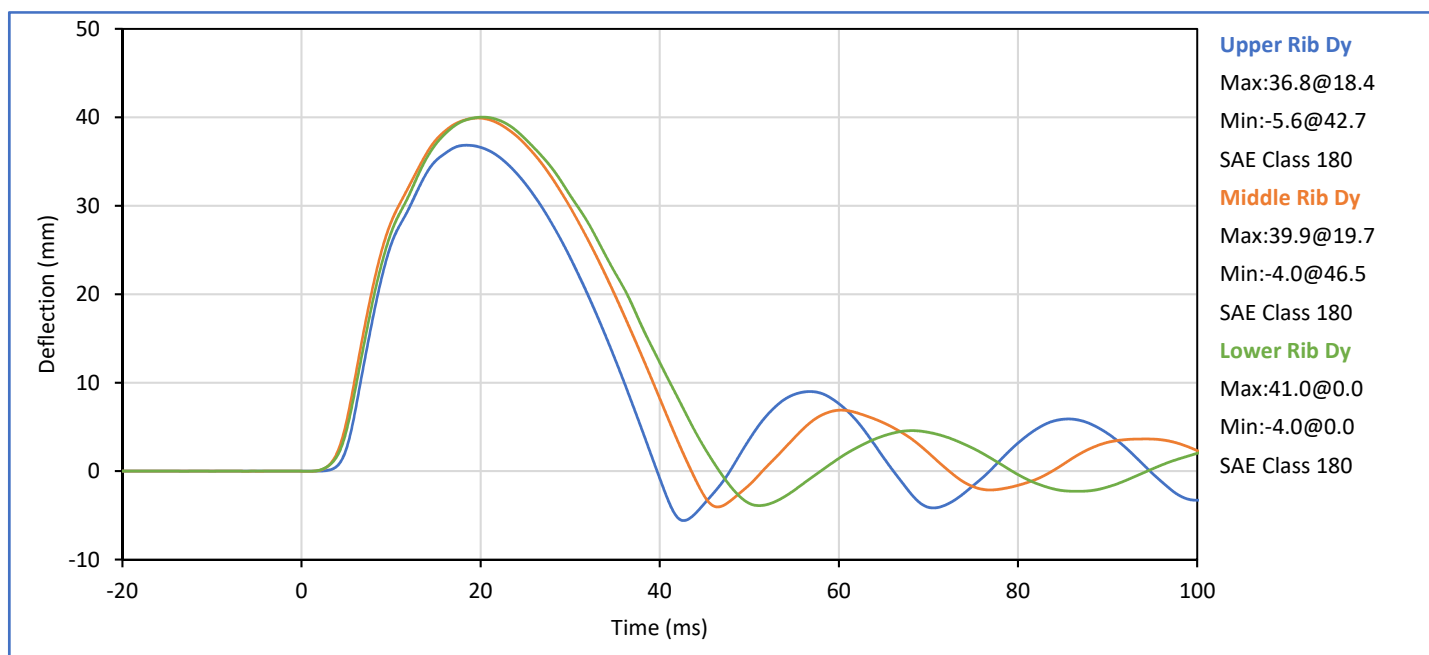
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.0	Pass
Laboratory Relative Humidity	%	10	70	22	Pass
Lower Rib Dy @ 459mm	mm	36.0	40.0	38.6	Pass
Lower Rib Dy @ 815mm	mm	46.0	51.0	50.9	Pass
Overall Test Results				Pass	Pass



Technician: J. Hernandez

Approved By: P. Puzzuto

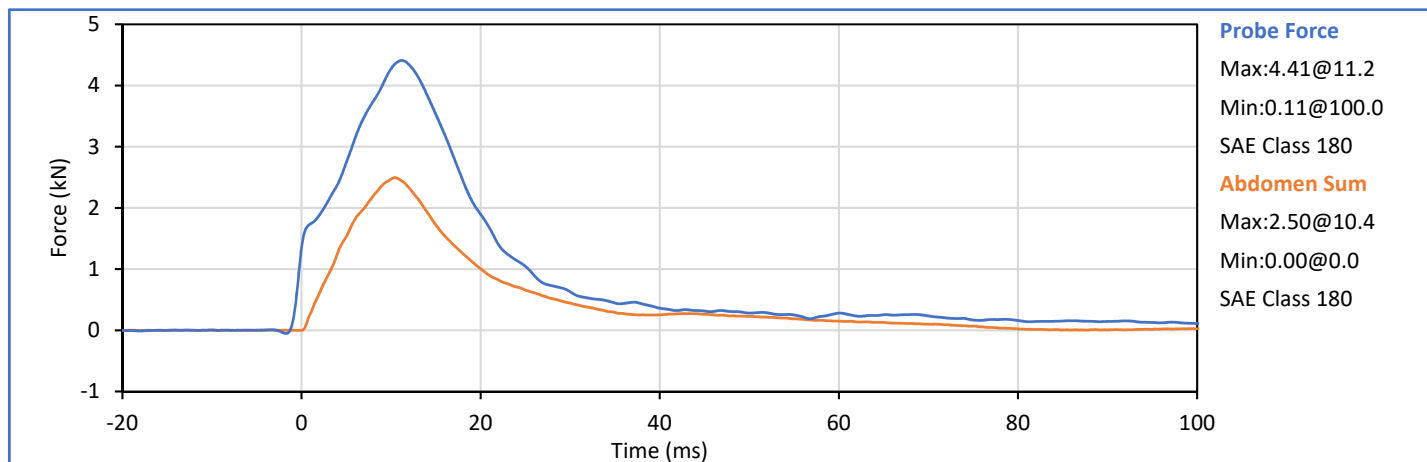
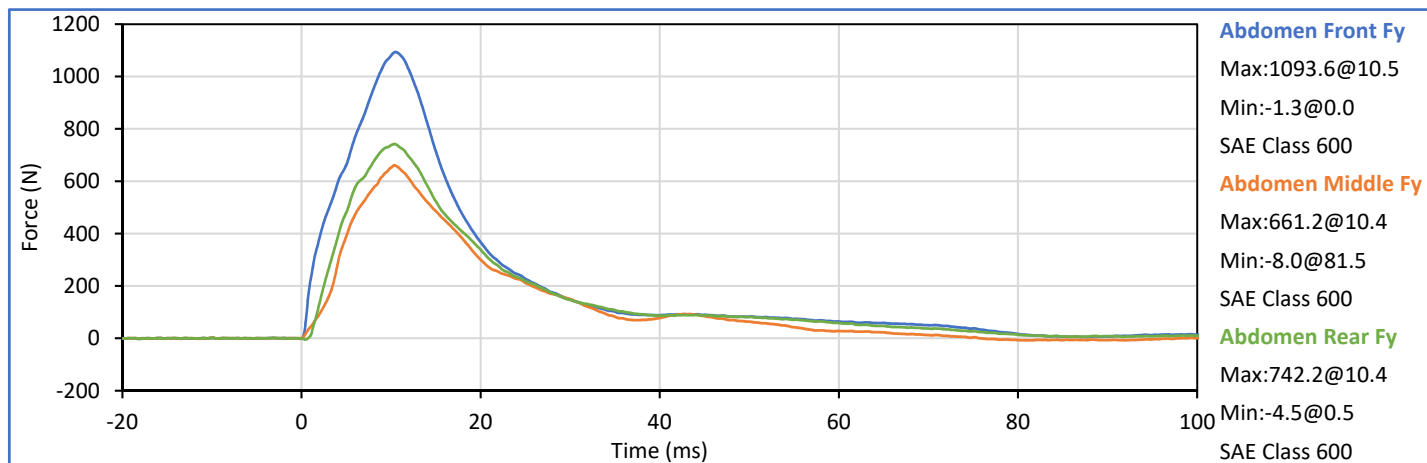
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	22.0	Pass
Laboratory Relative Humidity	%	10	70	29	Pass
Impactor Velocity	m/s	5.40	5.60	5.52	Pass
Peak Upper Rib Dy	mm	34.0	41.0	36.8	Pass
Peak Middle Rib Dy	mm	37.0	45.0	39.9	Pass
Peak Lower Rib Dy	mm	37.0	44.0	40.0	Pass
Peak Impactor Force After 6 ms	kN	5.10	6.20	6.04	Pass
Overall Test Results				Pass	Pass



Technician: J. Hernandez

Approved By: P. Puzzuto

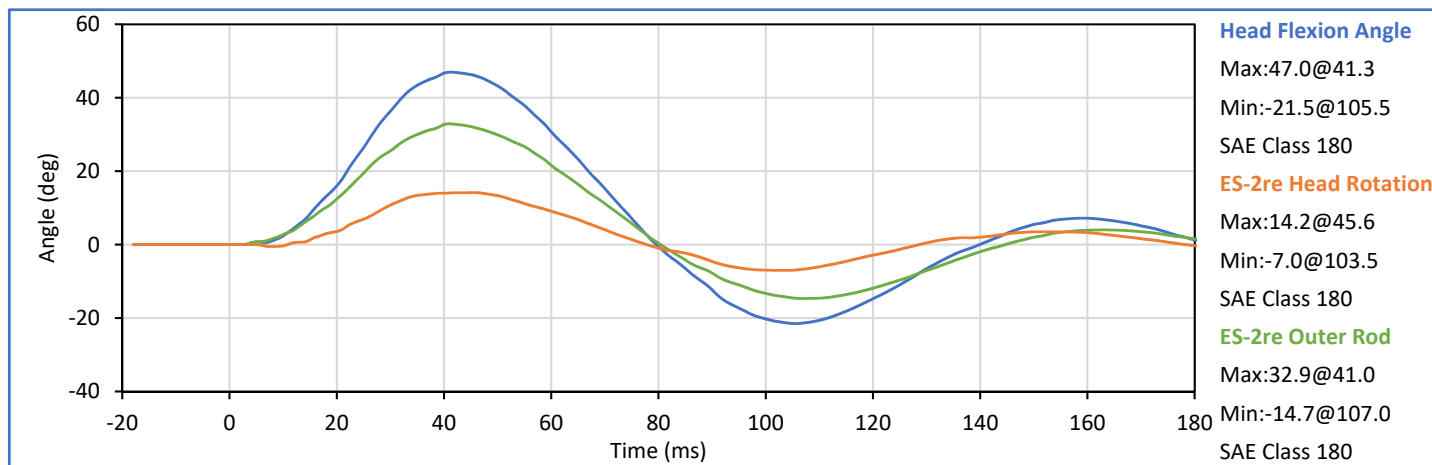
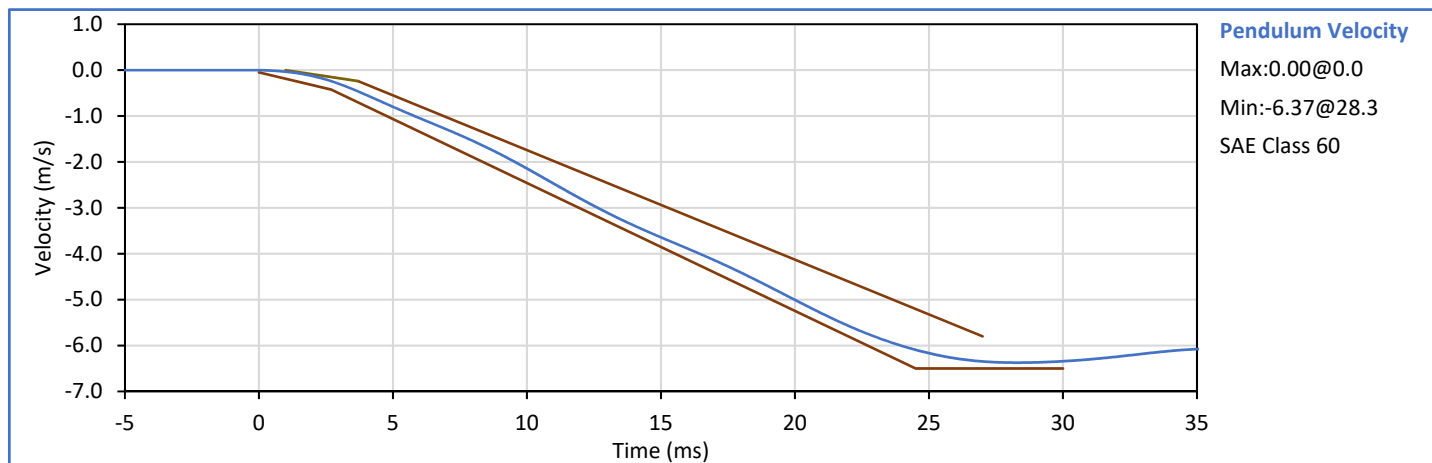
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.9	Pass
Laboratory Relative Humidity	%	10	70	30	Pass
Impactor Velocity	m/s	3.90	4.10	3.97	Pass
Peak Impactor Force	kN	4.00	4.80	4.41	Pass
Time of Peak Impactor Force	ms	10.6	13.0	11.2	Pass
Sum of Abdomen Forces	kN	2.20	2.70	2.50	Pass
Time of Peak Sum Abdomen Force	ms	10.0	12.3	10.4	Pass
Overall Test Results				Pass	Pass



Technician: J. Hernandez

Approved By: P. Puzzuto

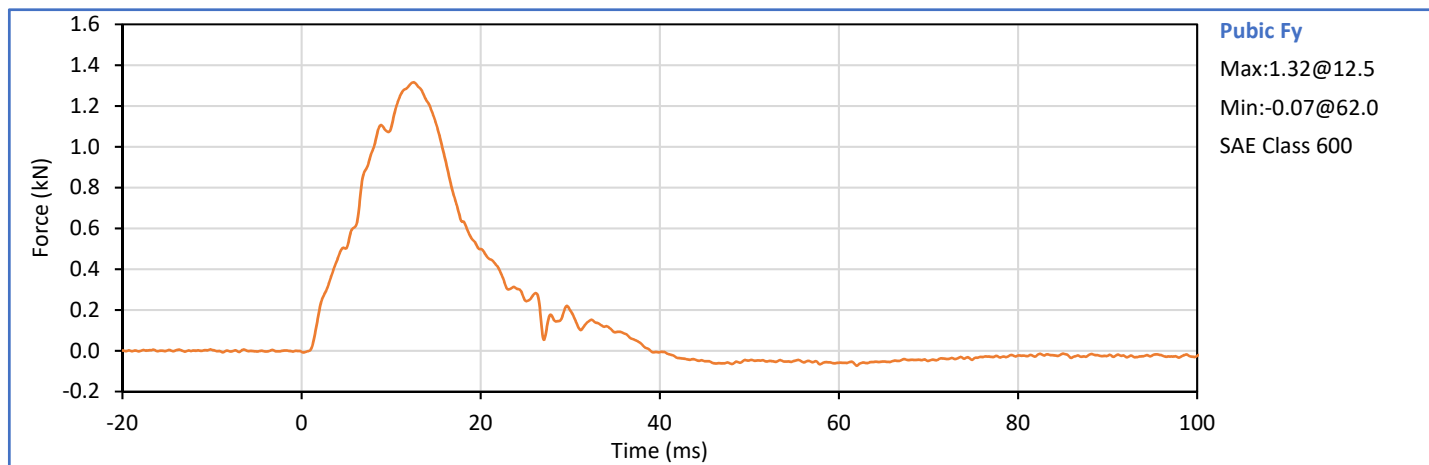
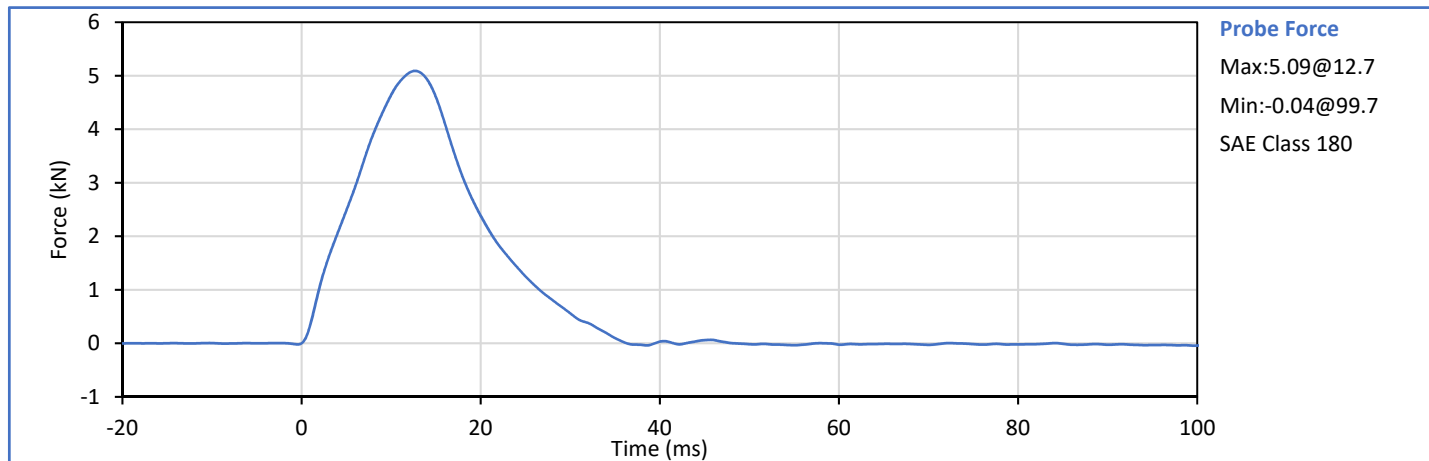
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.0	Pass
Laboratory Relative Humidity	%	10	70	22	Pass
Pendulum Velocity	m/s	5.95	6.15	6.14	Pass
Peak Headform Flexion	deg	45.0	55.0	47.0	Pass
Time of Peak Headform Flexion	ms	39.0	53.0	41.3	Pass
Flexion Decay (Peak to zero)	ms	37.0	57.0	38.3	Pass
Overall Test Results				Pass	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	21.9	Pass
Laboratory Relative Humidity	%	10	70	30	Pass
Impactor Velocity	m/s	4.20	4.40	4.33	Pass
Peak Impactor Force	kN	4.70	5.40	5.09	Pass
Time of Peak Impactor Force	ms	11.8	16.1	12.7	Pass
Pubic Symphysis Fy	kN	1.23	1.59	1.32	Pass
Time of Peak Pubic Symphysis Fy	ms	12.2	17.0	12.5	Pass
Overall Test Results				Pass	



Technician: J. Hernandez

Approved By: P. Puzzuto

APPENDIX C
Post-Test ATD Qualification and Performance Verification
SID-IIs Small Side Impact ATD, Left Side Configuration
S/N: 308

ATD Serial No.: 308

Test Date: 2020-09-02

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	783	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	147	Pass
E - Shoulder Pivot From Backline	mm	97	107	100	Pass
F - Thigh Clearance	mm	119	135	123	Pass
G - Head Breadth	mm	140	148	144	Pass
H - Head Back From Backline	mm	40	46	43	Pass
I - Head Depth	mm	178	188	186	Pass
J - Head Circumference	mm	541	551	548	Pass
K - Buttock To Knee Length	mm	514	540	528	Pass
L - Popliteal Height	mm	343	369	356	Pass
K - Knee Pivot To Floor Height	mm	392	409	399	Pass
N - Buttock Popliteal Length	mm	416	442	438	Pass
O - Chest Depth W/O Jacket	mm	195	211	202	Pass
P - Foot Length	mm	216	232	221	Pass
Q - Hip Breadth (W/Pelvic Plugs)	mm	313	323	322	Pass
R - Arm Length	mm	249	259	256	Pass
S - Knee Joint To Seatback	mm	477	493	487	Pass
V - Shoulder Width	mm	341	357	345	Pass
W - Foot Width	mm	78	94	86	Pass
Y - Chest Circumference W/Jacket	mm	851	881	857	Pass
Z - Waist Circumference	mm	761	791	778	Pass
			Overall Test Results		Pass

Technician:



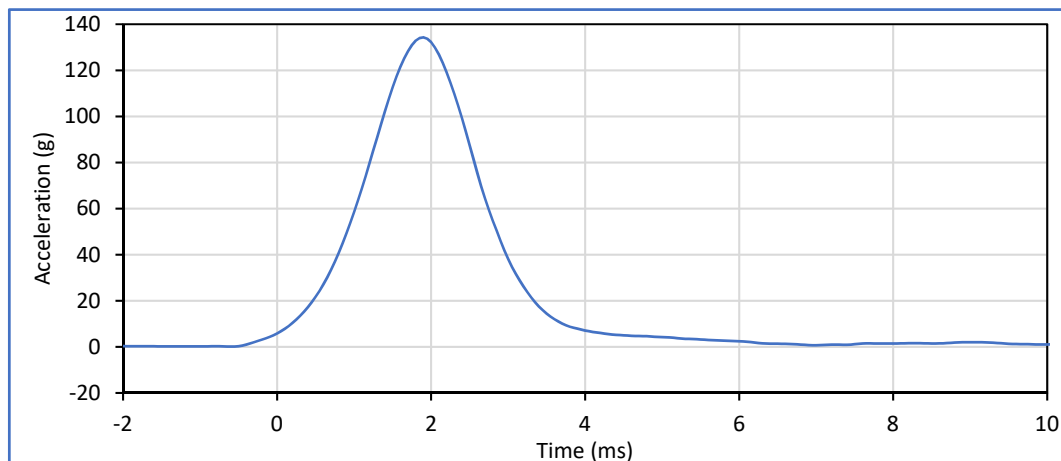
J. Hernandez

Approved By:



P. Puzzuto

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	18.9	25.6	21.8	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	-1.7	Pass
Oscillations After Main Pulse	%	0.0	15.0	1.9	Pass
Is Acceleration Unimodal?	Yes/No	Yes		Yes	Pass
			Overall Test Results		Pass

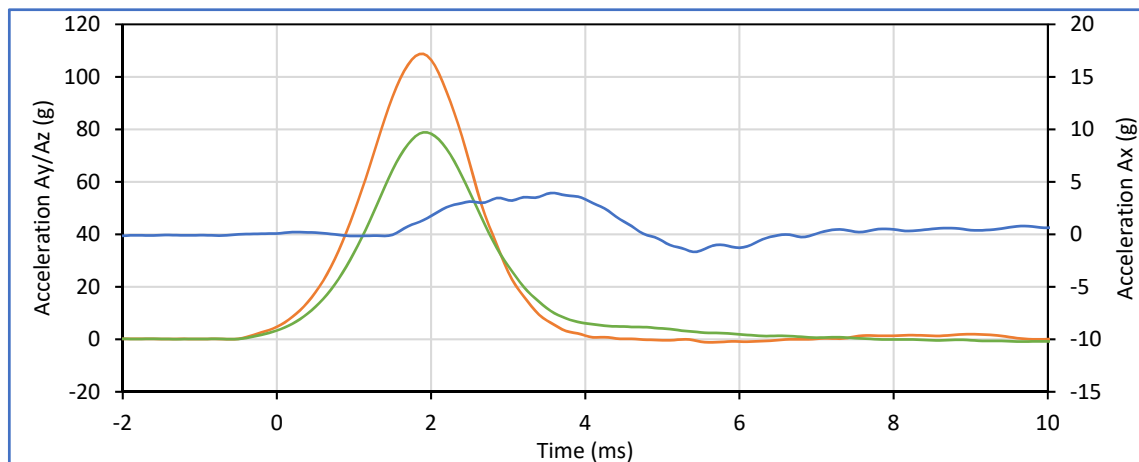


Head Resultant

Max:134.3@1.9

Min:0.6@7.0

SAE Class 1000



Head Ax

Max:3.9@3.6

Min:-1.7@5.4

SAE Class 1000

Head Ay

Max:108.7@1.9

Min:-1.1@5.6

SAE Class 1000

Head Az

Max:78.9@1.9

Min:-0.8@9.7

SAE Class 1000

Technician:

J. Hernandez

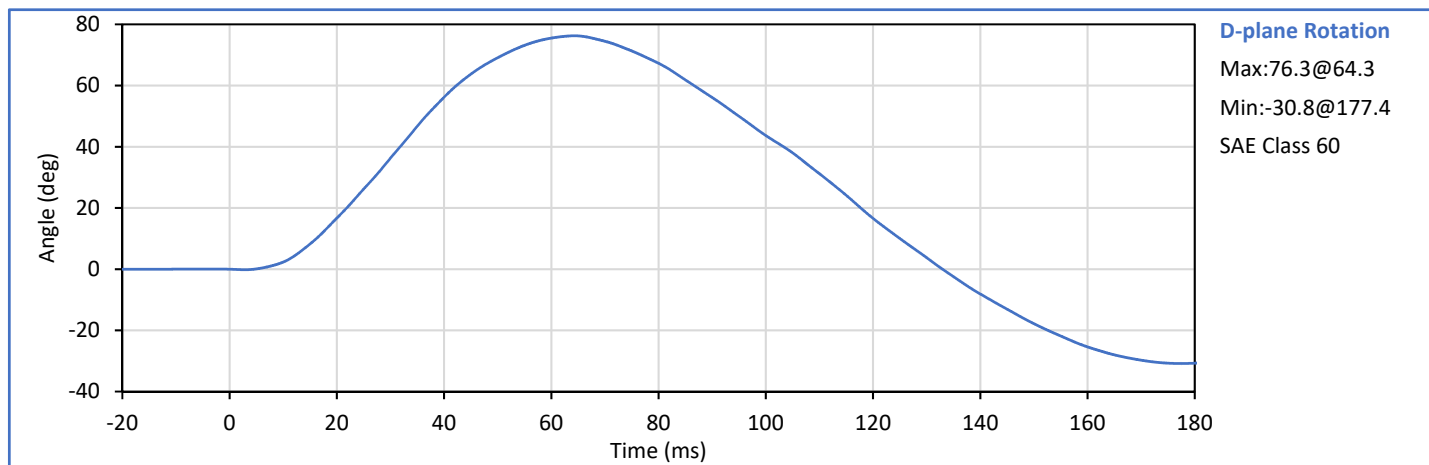
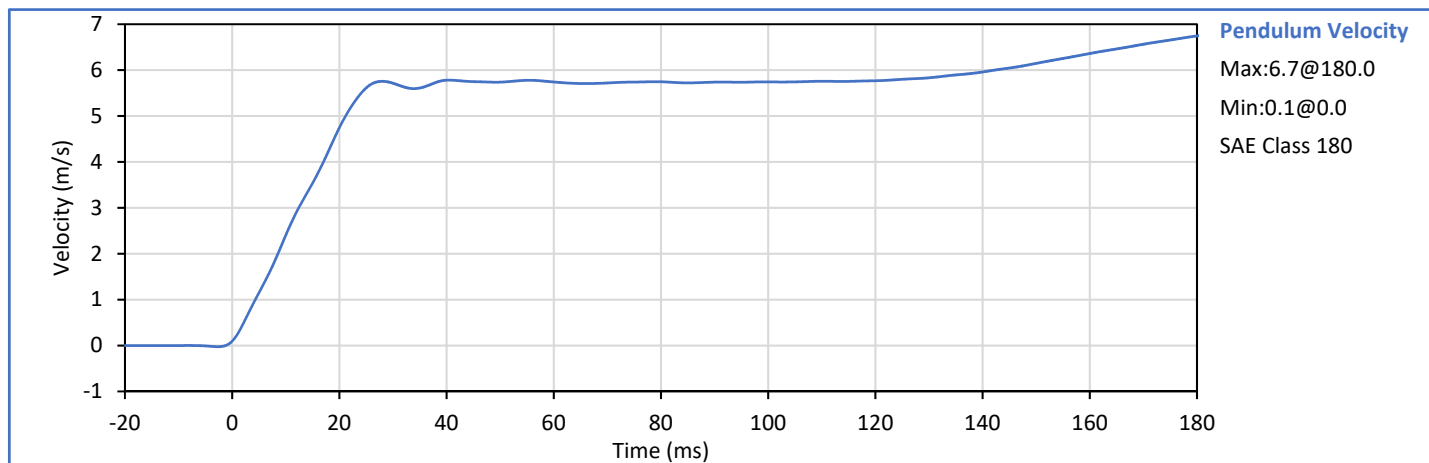
J. Hernandez

Approved By:

P. Puzzuto

P. Puzzuto

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.4	Pass
Laboratory Humidity	%	10	70	34	Pass
Pendulum Velocity	m/s	5.51	5.63	5.59	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	3.54	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	5.61	Pass
Pendulum Decel from 25-100 ms	m/s	5.50	6.20	5.78	Pass
Peak "D" Plane Rotation	deg	71.0	81.0	76.3	Pass
Time of Peak "D" Plane Rotation	ms	50.0	70.0	64.3	Pass
Peak Occ. Condyle Moment	Nm	-44.0	-36.0	-39.7	Pass
Time of Moment Decay to 0 Nm	ms	102.0	126.0	114.1	Pass
Overall Test Results				Pass	Pass



Technician:

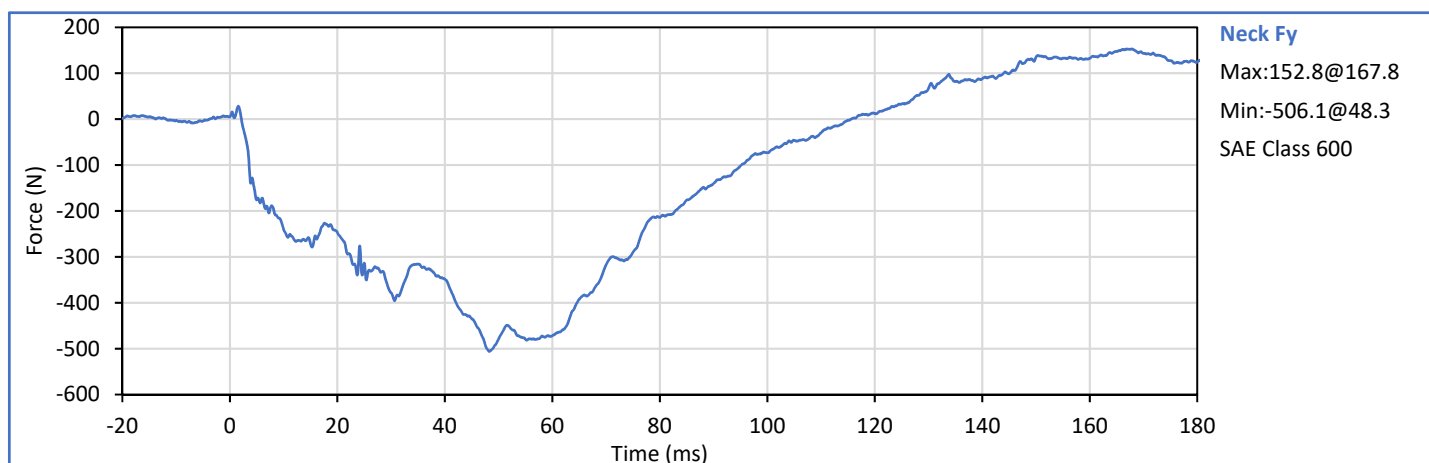
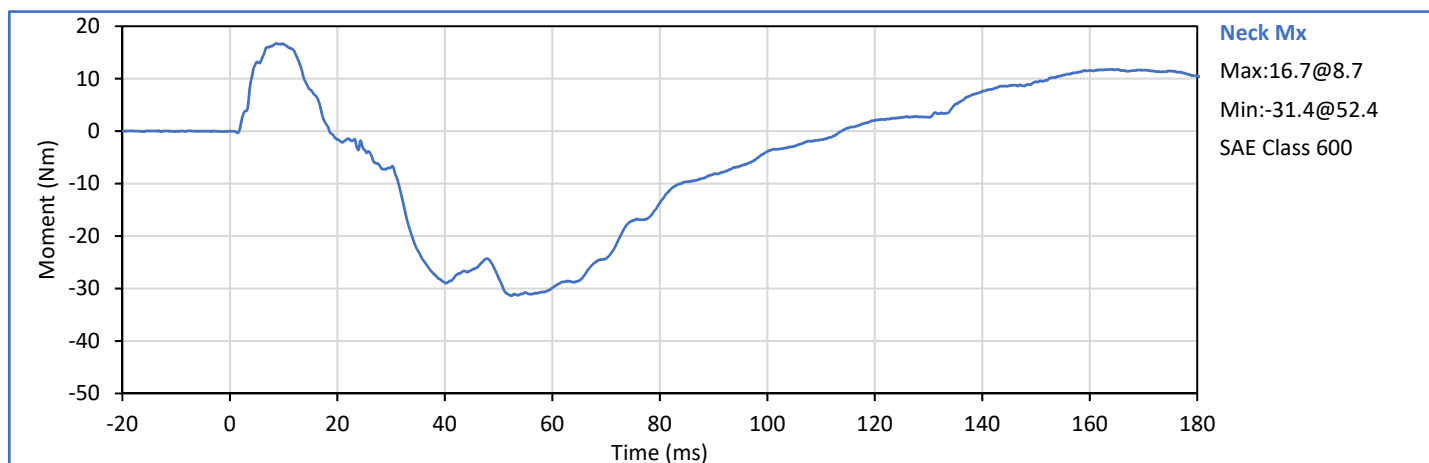
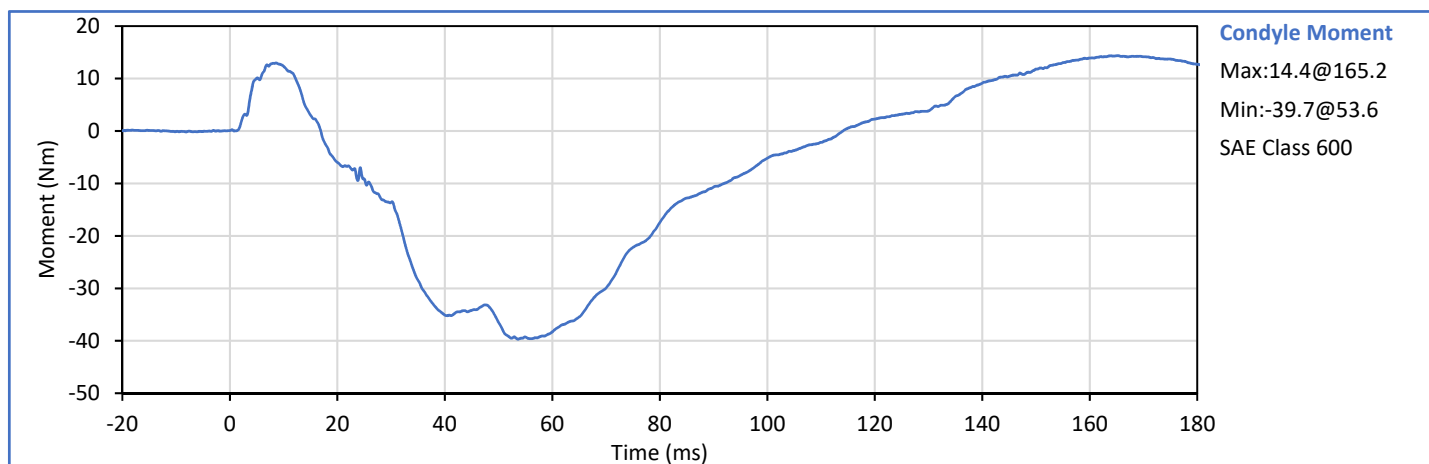
J. Hernandez

J. Hernandez

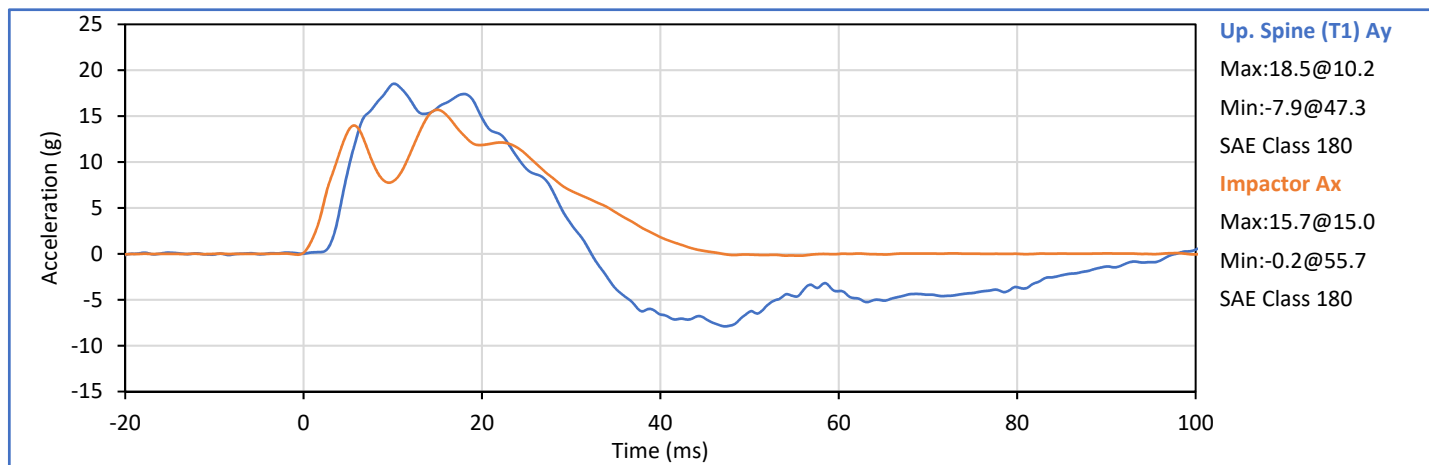
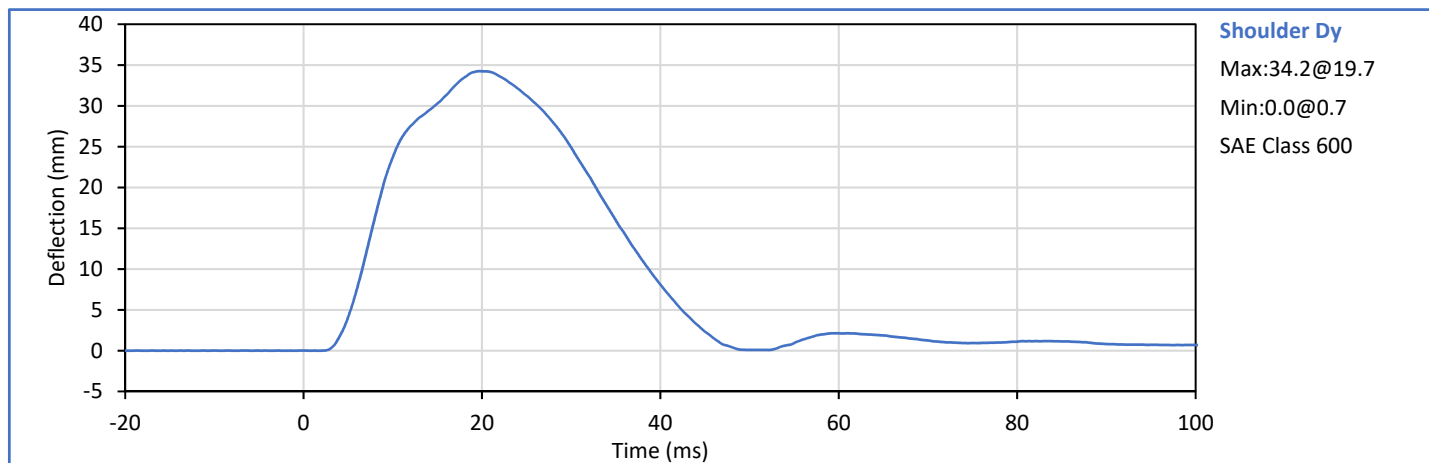
Approved By:

P. Puzzuto

P. Puzzuto



Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.8	Pass
Laboratory Humidity	%	10	70	35	Pass
Impactor Velocity	m/s	4.20	4.40	4.32	Pass
Peak Shoulder Dy	mm	28.0	37.0	34.2	Pass
Peak Upper Spine (T1) Ay	g	17.0	22.0	18.5	Pass
Peak Impactor Ax	g	13.0	18.0	15.7	Pass
Overall Test Results					Pass



Technician:

J. Hernandez

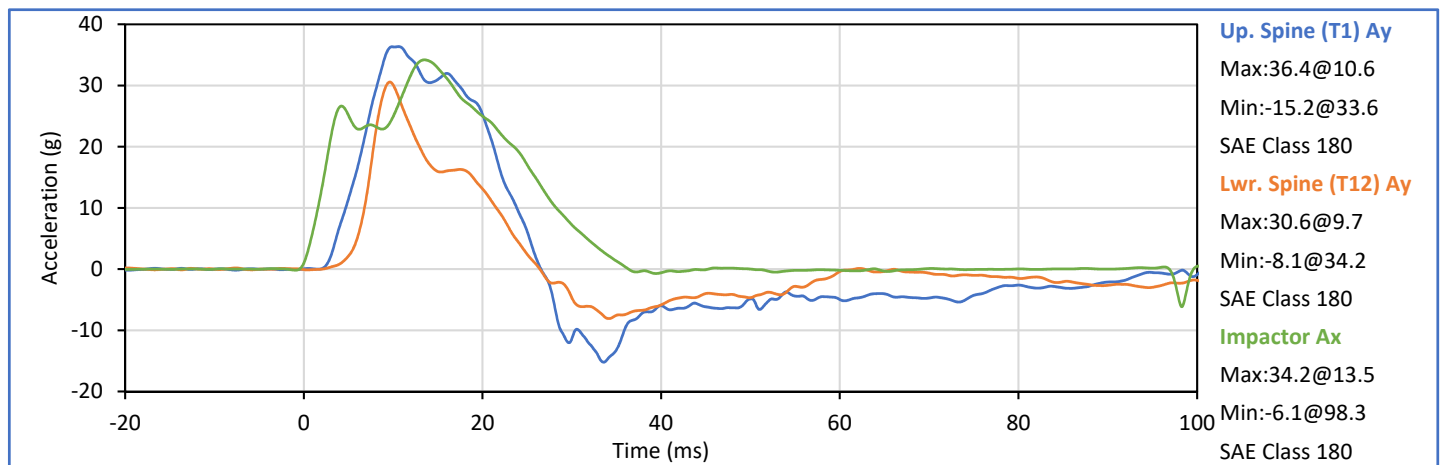
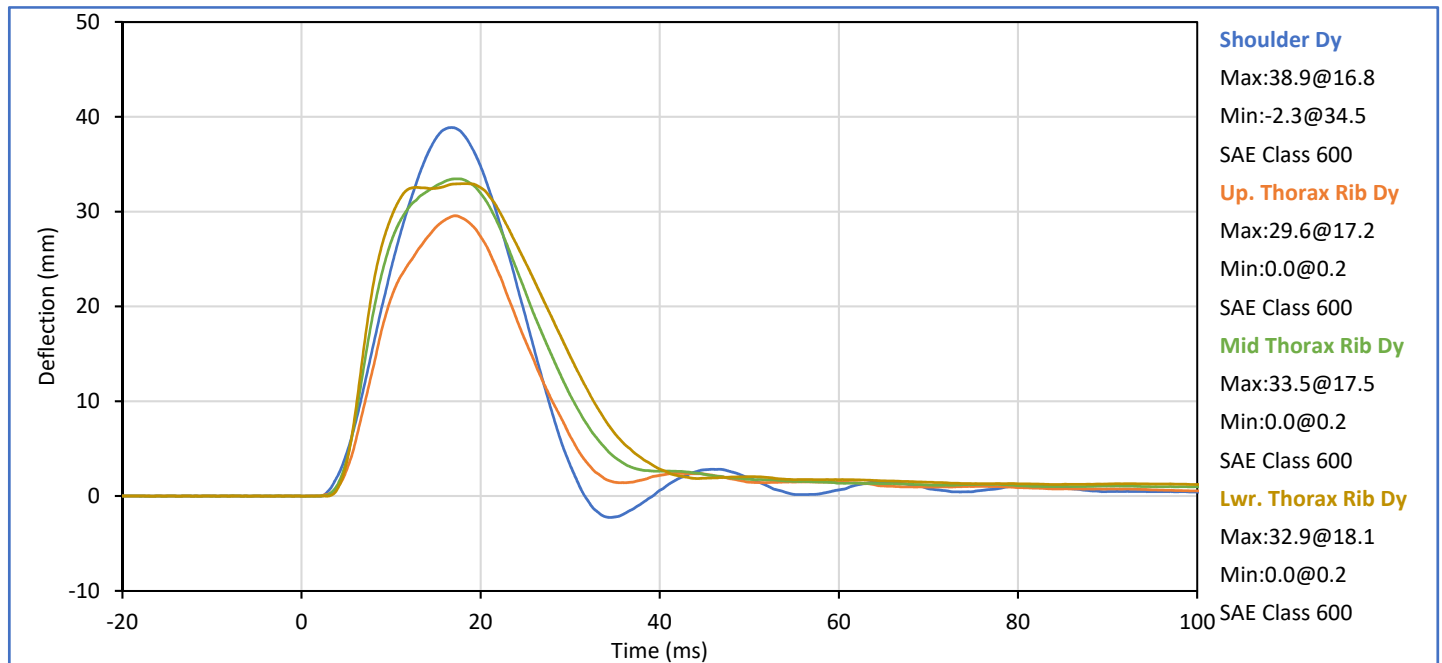
J. Hernandez

Approved By:

P. Puzzuto

P. Puzzuto

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.7	Pass
Laboratory Humidity	%	10	70	35	Pass
Impactor Velocity	m/s	6.60	6.80	6.72	Pass
Peak Shoulder Dy	mm	31.0	40.0	38.9	Pass
Peak Upper Rib Dy	mm	25.0	32.0	29.6	Pass
Peak Middle Rib Dy	mm	30.0	36.0	33.5	Pass
Peak Lower Rib Dy	mm	32.0	38.0	32.9	Pass
Peak Upper Spine (T1) Ay	g	34.0	43.0	36.4	Pass
Peak Lower Spine (T12) Ay	g	29.0	37.0	30.6	Pass
Peak Impactor Ax	g	30.0	36.0	34.2	Pass
Overall Test Results					Pass



Technician:

J. Hernandez

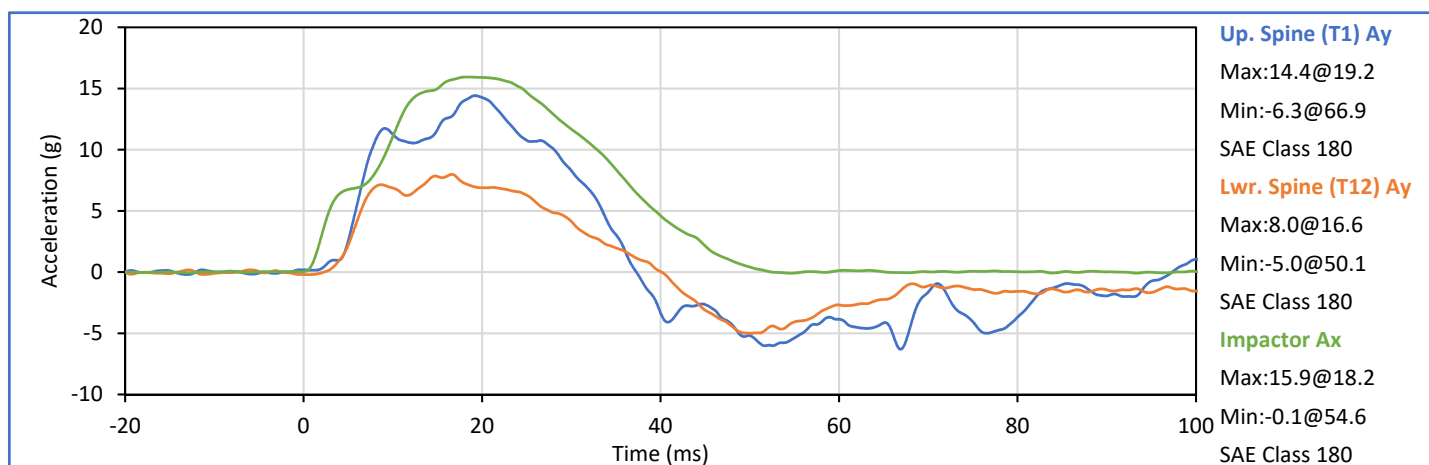
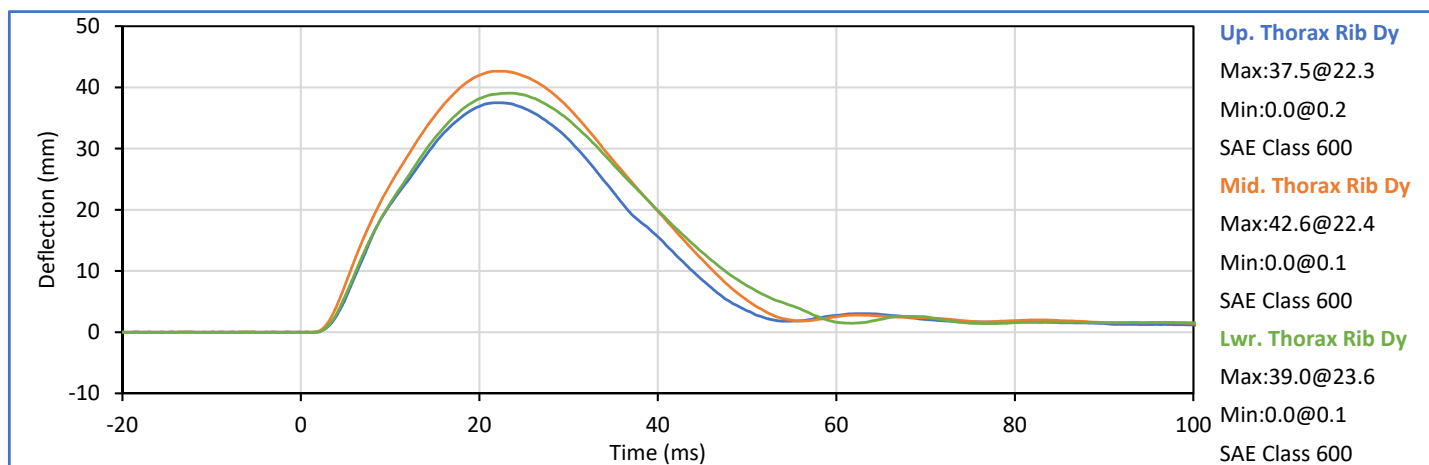
J. Hernandez

Approved By:

P. Puzzuto

P. Puzzuto

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.8	Pass
Laboratory Humidity	%	10	70	35	Pass
Impactor Velocity	m/s	4.20	4.40	4.31	Pass
Peak Upper Rib Dy	mm	32.0	40.0	37.5	Pass
Peak Middle Rib Dy	mm	39.0	45.0	42.6	Pass
Peak Lower Rib Dy	mm	35.0	43.0	39.0	Pass
Peak Upper Spine (T1) Ay	g	13.0	17.0	14.4	Pass
Peak Lower Spine (T12) Ay	g	7.0	11.0	8.0	Pass
Peak Impactor Ax	g	14.0	18.0	15.9	Pass
Overall Test Results				Pass	Pass



Technician:

J. Hernandez

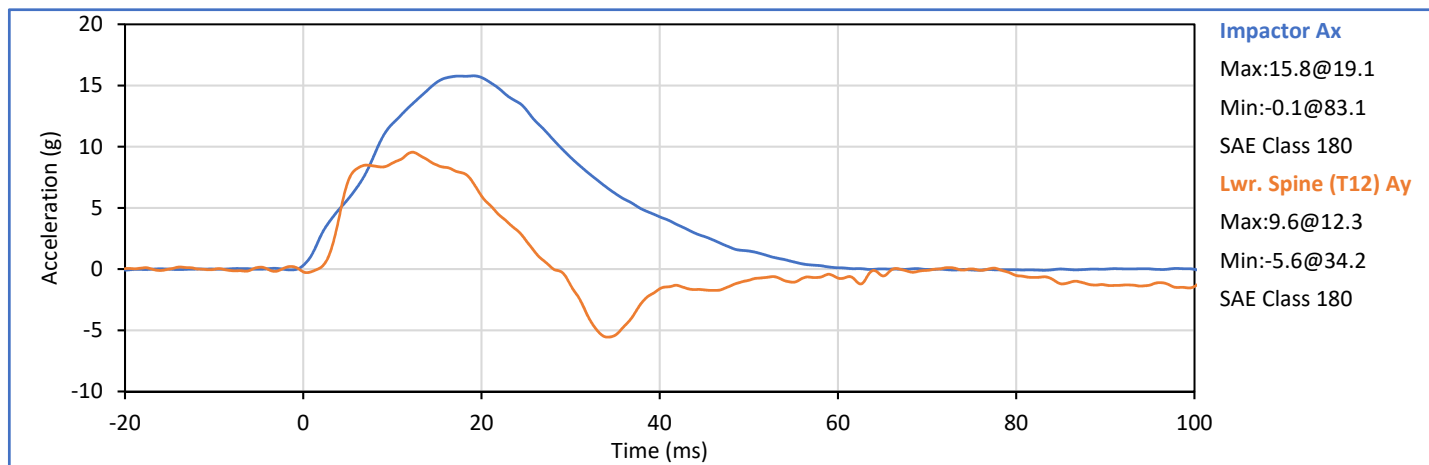
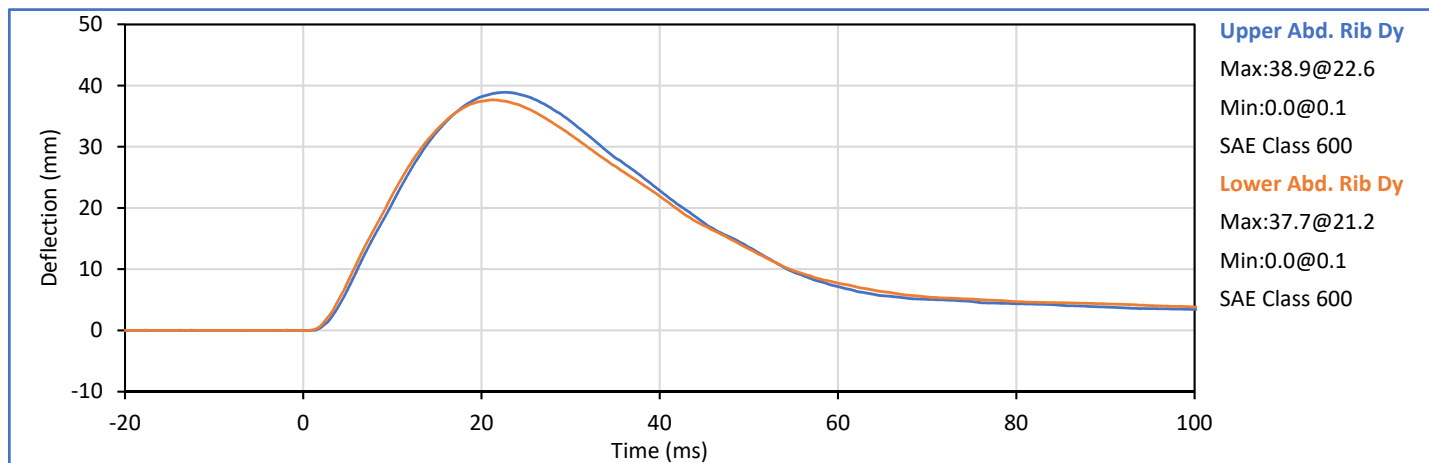
J. Hernandez

Approved By:

P. Puzzuto

P. Puzzuto

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	22.1	Pass
Laboratory Humidity	%	10	70	34	Pass
Impactor Velocity	m/s	4.20	4.40	4.32	Pass
Peak Upper Abdomen Rib Dy	mm	36.0	47.0	38.9	Pass
Peak Lower Abdomen Rib Dy	mm	33.0	44.0	37.7	Pass
Peak Lower Spine T12 Ay	mm	9.0	14.0	9.6	Pass
Peak Impactor Ax	g	12.0	16.0	15.8	Pass
Overall Test Results				Pass	Pass



Technician:

J. Hernandez

J. Hernandez

Approved By:

P. Puzzuto

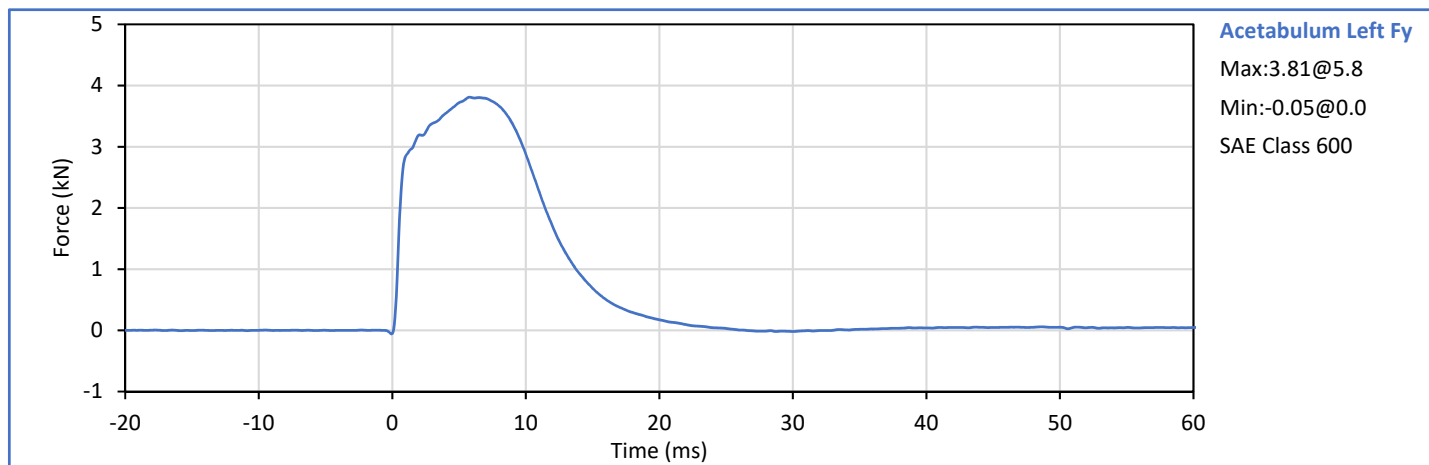
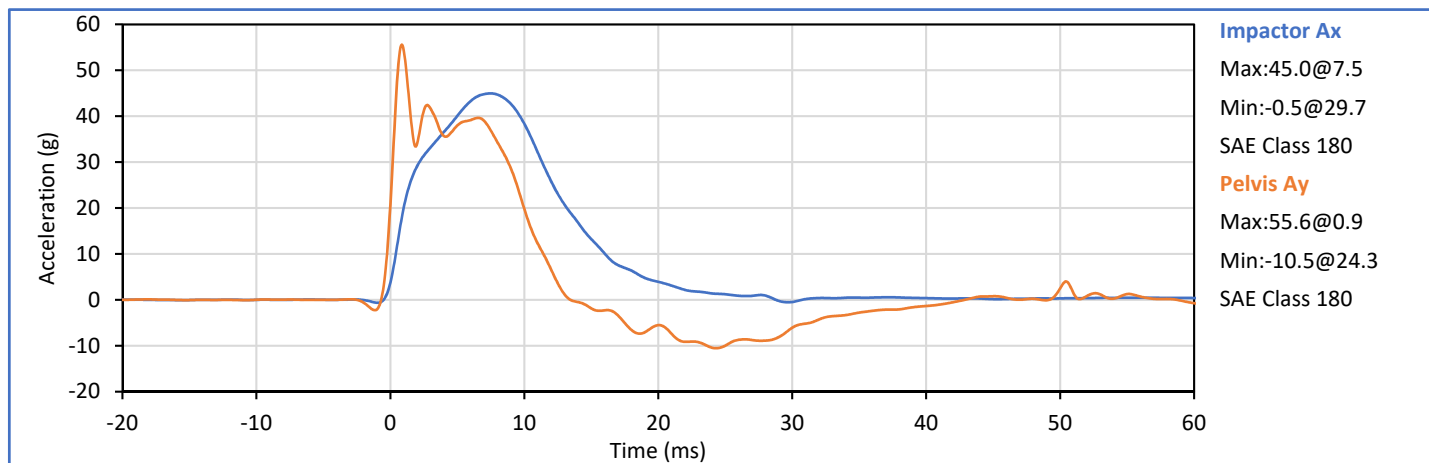
P. Puzzuto

ATD Serial No.: 308

Test Date: 2020-09-03

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.6	Pass
Laboratory Humidity	%	10	70	34	Pass
Impactor Velocity	m/s	6.60	6.80	6.71	Pass
Peak Acetabulum Fy	kN	3.60	4.30	3.81	Pass
Pelvis Ay after 6ms	g	34.0	42.0	39.6	Pass
Peak Impactor Ax	g	38.0	47.0	45.0	Pass
Overall Test Results				Pass	Pass

Pelvis Plug S/N: 13448



Technician: _____

J. Hernandez

Approved By: _____

P. Puzzuto

ATD Serial No.: 308

Test Date: 2020-09-03

Pelvis Plug S/N: 13448



SID-IIs Pelvis Plug Certification Test

Plug S/N 13448

Test Number 11091

Report Number 11129

Test Date 9/20/2019 8:49:17 AM

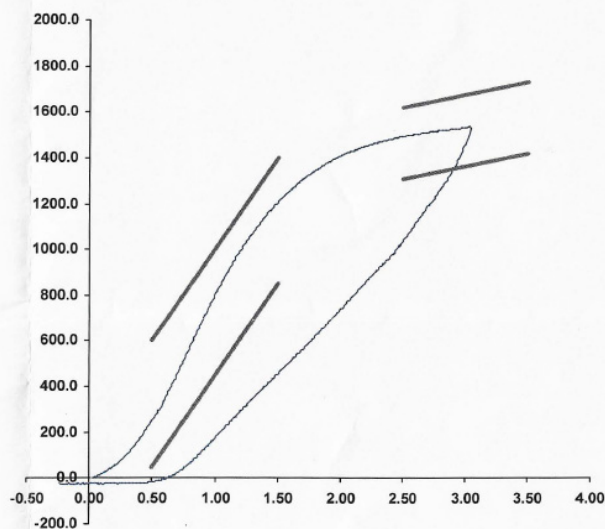
	Test Results	Spec Min	Spec Max
Force @ 0.5 mm (N)	267.76	50.00	600.00
Force @ 1.5 mm (N)	1,209.54	850.00	1,400.00
Force @ 2.5 mm (N)	1,494.03	1,306.00	1,618.00
Force @ 3.0 mm (N)	1,534.26	1,361.00	1,673.00

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 20-Sep-19
SACO Research

By: bc Date: 9/20/2019

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

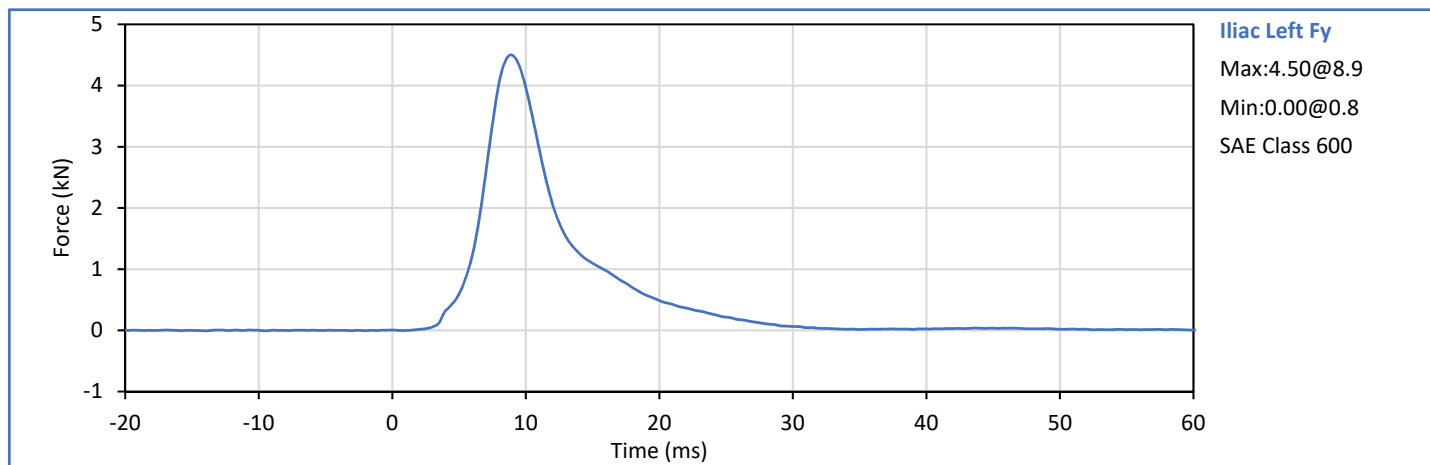
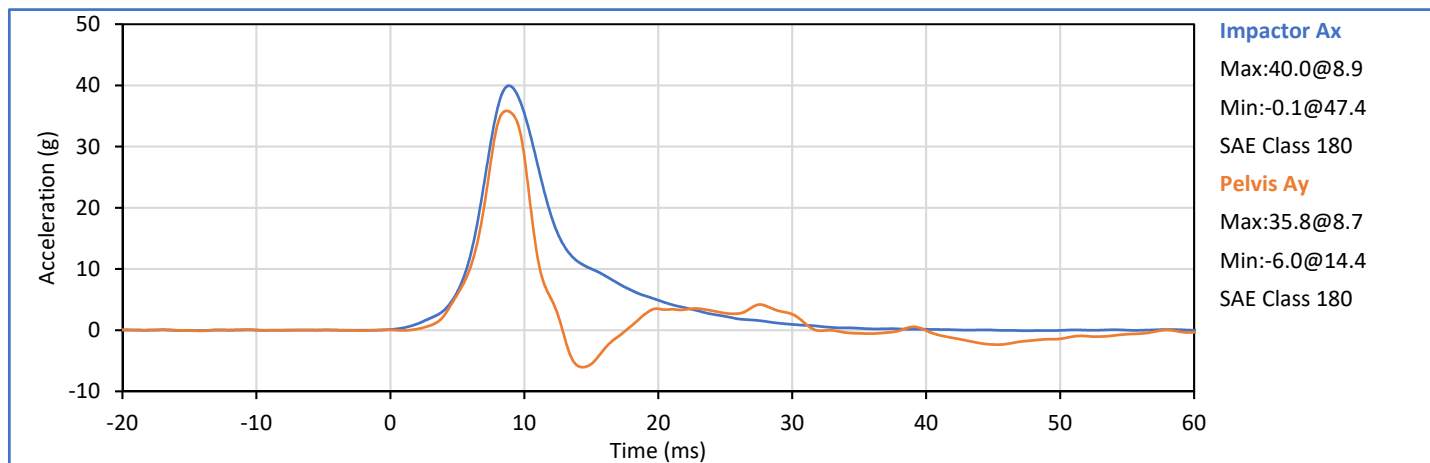
ATD Serial No.: 308

Test Date: 2020-09-03

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	4.32	Pass
Peak Iliac Fy	kN	4.10	5.10	4.50	Pass
Pelvis Ay after 6ms	g	28.0	39.0	35.8	Pass
Peak Impactor Ax	g	36.0	45.0	40.0	Pass
Overall Test Results				Pass	Pass

Pelvis Plug S/N: 12228 *

* Plug is not impacted and remains certified



Technician: J. Hernandez

Approved By: P. Puzzuto

APPENDIX D
TEST EQUIPMENT AND INSTRUMENTATION CALIBRATION DATA

Table 1 - Driver ATD Instrumentation

Sensor Location	Sensor S\N	Mfr	Model	Cal Date
Head Acceleration X Primary	P58760	Endevco	7264C-2k	2020-08-24
Head Acceleration Y Primary	P58763	Endevco	7264C-2k	2020-08-24
Head Acceleration Z Primary	P52093	Endevco	7264C-2k	2020-08-24
Head Acceleration X Redundant	P52072	Endevco	7264C-2k	2020-08-24
Head Acceleration Y Redundant	P58768	Endevco	7264C-2k	2020-08-24
Head Acceleration Z Redundant	P52074	Endevco	7264C-2k	2020-08-24
Upper Thorax Rib Deflection Y	180 (ES-2 Rib)	Honeywell	F38000203	2020-08-26
Middle Thorax Rib Deflection Y	177 (ES-2 Rib)	Honeywell	F38000203	2020-08-26
Lower Thorax Rib Deflection Y	186 (ES-2 Rib)	Honeywell	F38000203	2020-08-26
Anterior Abdominal Force Y	1514 Fy	R.A. Denton	2631J	2020-01-07
Middle Abdominal Force Y	1510 Fy	R.A. Denton	2631J	2020-01-07
Posterior Abdominal Force Y	1515 Fy	R.A. Denton	2631J	2020-01-07
Lower Spine T12 Acceleration X	P63850	Endevco	7264C-2KTZ	2020-08-24
Lower Spine T12 Acceleration Y	P51278	Endevco	7264C-2KTZ	2020-08-24
Lower Spine T12 Acceleration Z	P51696	Endevco	7264C-2KTZ	2020-08-24
Pubic Symphysis Force Y	506 Fy	R.A. Denton	3096JFL	2020-01-06

Table 2 - Left Rear Passenger ATD Instrumentation

Sensor Location	Sensor S\N	Mfr	Model	Cal Date
Head Acceleration X Primary	P63980	Endevco	7264C-2k	2020-07-23
Head Acceleration Y Primary	P58861	Endevco	7264C-2k	2020-07-23
Head Acceleration Z Primary	P51261	Endevco	7264C-2k	2020-07-23
Head Acceleration X Redundant	P58808	Endevco	7264C-2k	2020-07-23
Head Acceleration Y Redundant	P63310	Endevco	7264C-2k	2020-07-23
Head Acceleration Z Redundant	P49189	Endevco	7264C-2k	2020-07-23
Head Rotation Rate X	ARS7498	DTS	ARS PRO-8k (2000Hz)	2019-07-08
Head Rotation Rate Y	ARS7367	DTS	ARS PRO-8k (2000Hz)	2019-07-08
Head Rotation Rate Z	ARS7377	DTS	ARS PRO-8k (2000Hz)	2019-07-08
Upper Thorax Rib Deflection Y	1249	Servo	08TCI-3725	2020-08-17
Middle Thorax Rib Deflection Y	1219	Servo	08TCI-3725	2020-08-17
Lower Thorax Rib Deflection Y	1221	Servo	08TCI-3725	2020-08-17
Upper Abdomen Rib Deflection Y	1252	Servo	08TCI-3725	2020-08-17
Lower Abdomen Rib Deflection Y	1283	Servo	08TCI-3725	2020-08-17
Lower Spine T12 Acceleration X	P52108	Endevco	7264C-2k	2020-07-23
Lower Spine T12 Acceleration Y	P63970	Endevco	7264C-2k	2020-07-23
Lower Spine T12 Acceleration Z	P51712	Endevco	7264C-2k	2020-07-23
Iliac Wing Impact Side Force Y	289 Fy (Iliac)	R.A. Denton	3228J	2019-10-17
Acetabulum Impact Side Force Y	277 Fy (Acetabulum)	R.A. Denton	3249J	2019-10-07

Table 3 - Vehicle Instrumentation

Sensor Location	Sensor S\N	Mfr	Model	Cal Date
Vehicle CG Ax	A265914	MSI	52F-2k	2020-07-17
Vehicle CG Ay	A265869	MSI	52F-2k	2020-07-17
Vehicle CG Az	A265922	MSI	52F-2k	2020-07-18
Right Side Sill at Front Seat Ax	A224566	MSI	52F-2k	2020-07-18
Right Side Sill at Front Seat Ay	A265945	MSI	52F-2k	2020-07-17
Right Side Sill at Front Seat Az	A148222	MSI	52F-2k	2020-07-17
Right Side Sill at Rear Seat Ax	A254924	MSI	52F-2k	2020-07-17
Right Side Sill at Rear Seat Ay	A254926	MSI	52F-2k	2020-07-18
Right Side Sill at Rear Seat Az	A224532	MSI	52F-2k	2020-07-17
Left Side Sill at Front Seat Ay	10836	Endevco	757F-2k	2020-07-17
Left Side Sill at Rear Seat Ay	11186	Endevco	757F-2k	2020-07-17
Left Lower A-Pillar Ay	A273023	MSI	52F-2k	2020-07-18
Left Middle A-Pillar Ay	10858	Endevco	757F-2k	2020-07-17
Left Lower B-Pillar Ay	A208767	MSI	52F-2k	2020-07-18
Left Middle B-Pillar Ay	A273418	MSI	52F-2k	2020-07-17
Driver Seat Track at H-Point Ay	10895	Endevco	757F-2k	2020-07-18
Rear Seat Structure Ay	10910	Endevco	757F-2k	2020-07-17
Right Rear Occupant Comp. Ay	A217317	MSI	52F-2k	2020-07-17
Engine Block Top Ax	A265902	MSI	52F-2k	2020-07-18
Engine Block Top Ay	A185686	MSI	52F-2k	2020-07-17
Rear Floopan Above Axle Ax	A273037	MSI	52F-2k	2020-07-18
Rear Floopan Above Axle Ay	A273040	MSI	52F-2k	2020-07-17
Rear Floopan Above Axle Az	A217318	MSI	52F-2k	2020-07-17

Table 4 - Moving Deformable Barrier (MDB) Instrumentation

Sensor Location	Sensor S\N	Mfr	Model	Cal Date
MDB CG Ax	A298349	MSI	52F-2k	2020-07-24
MDB CG Ay	A298392	MSI	52F-2k	2020-07-24
MDB CG Az	A298387	MSI	52F-2k	2020-07-24
MDB Left Side at Rear Axle Ax	A298580	MSI	52F-2k	2020-07-24
MDB Left Side at Rear Axle Ay	A298575	MSI	52F-2k	2020-07-24