

**REPORT NUMBER: SPNCAP-KAR-20-011
NEW CAR ASSESSMENT PROGRAM (NCAP)
SIDE IMPACT POLE TEST**

**MAZDA MOTOR MANUFACTURING DE MEXICO S.A. DE C.V.
2020 MAZDA3 4-DOOR SEDAN**

NHTSA No: M20205404

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



JANUARY 24, 2020

FINAL REPORT

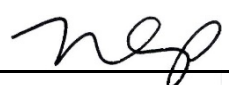
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NHTSA, Office of Crashworthiness Standards

Date: _____

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

Date: _____

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		15. Supplementary Notes																												
16. Abstract A 32.20 km/h 75° rigid pole side NCAP impact test was conducted on the subject 2020 MAZDA3 4-door sedan in accordance with the specifications of the Office of Crashworthiness Standards Side NCAP Pole Laboratory Test Procedure for the generation of consumer information on vehicle side pole crash protection. The test was conducted at the Applus IDIADA KARCO Engineering, LLC. facility in Adelanto, California on January 10, 2020. The impact velocity was 32.05 km/h and the outside ambient temperature at the struck (driver's) side of the vehicle was 15.0°C. The target vehicle's maximum post-test static crush was 264 mm located at level 2. The test vehicle's occupant performance data is as follows: <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th rowspan="2" style="text-align: left;">Measurement Description</th> <th colspan="3" style="text-align: center;">Driver ATD (SID-IIs)</th> </tr> <tr> <th style="text-align: center;">Units</th> <th style="text-align: center;">Threshold</th> <th style="text-align: center;">Result</th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC₃₆)</td> <td style="text-align: center;">g</td> <td style="text-align: center;">1000</td> <td style="text-align: center;">198.7</td> </tr> <tr> <td>Resultant Lower Spine Acceleration</td> <td style="text-align: center;">g</td> <td style="text-align: center;">82</td> <td style="text-align: center;">30</td> </tr> <tr> <td>Total Pelvic Force (Sum of Acetabular and Iliac Forces)</td> <td style="text-align: center;">N</td> <td style="text-align: center;">5525</td> <td style="text-align: center;">2343</td> </tr> <tr> <td>Maximum Thoracic Rib Deflection</td> <td style="text-align: center;">mm</td> <td style="text-align: center;">38</td> <td style="text-align: center;">26</td> </tr> <tr> <td>Maximum Abdominal Rib Deflection</td> <td style="text-align: center;">mm</td> <td style="text-align: center;">45</td> <td style="text-align: center;">20</td> </tr> </tbody> </table> The struck side doors of the vehicle were jammed shut and did not separate from the body at the hinges or latches. The remaining doors did not open during the side impact event.				Measurement Description	Driver ATD (SID-IIs)			Units	Threshold	Result	Head Injury Criteria (HIC ₃₆)	g	1000	198.7	Resultant Lower Spine Acceleration	g	82	30	Total Pelvic Force (Sum of Acetabular and Iliac Forces)	N	5525	2343	Maximum Thoracic Rib Deflection	mm	38	26	Maximum Abdominal Rib Deflection	mm	45	20
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17. Key Words New Car Assessment Program (NCAP) Side Impact Pole Part 572V SID-IIs		18. Distribution Statement Copies of this report are available from: National Highway Traffic Safety Admin. Technical Information Services Division 1200 New Jersey Ave., SE Washington, DC 20590																												
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SECTION 1

TEST PURPOSE AND PROCEDURE

This side impact test is part of the MY 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 MAZDA3 4-door sedan. The side impact test was conducted in accordance with the Office of Crashworthiness Standard's Laboratory Test Procedure date October 2015.

SECTION 2

SUMMARY OF TEST RESULTS

A rigid pole side impact test was conducted on a 2020 MAZDA3 4-door sedan. The subject vehicle was towed into the rigid pole at an angle of 75.5° and a velocity of 32.05 km/h. The test was conducted by Applus IDIADA KARCO Engineering, LLC. in Adelanto, California on January 10, 2020. Pre- and post-test photographs of the test vehicle and side impact dummy (SID-IIs) are included in Appendix A of this report.

One Part 572V (SID-IIs) dummy was placed in the driver designated seating position according to instructions specified in the OCWS Side NCAP Pole Laboratory Test Procedure, dated October 2015. Camera locations and other pertinent camera information are included in this report.

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

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

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

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

Measurement Description	Units	Driver ATD (SID-IIs)	
		IARV	Result
Head Injury Criteria (HIC ₃₆)		1000	198.7
Lower Spine (T12) Resultant Acceleration	g	82	30
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	2343
Maximum Thoracic Rib Deflection	mm	38*	26
Maximum Abdominal Rib Deflection	mm	45*	20

*Proposed IARV

Supplemental restraint information is given below:

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

GENERAL COMMENTS

The struck side doors of the vehicle were jammed shut. There was no separation at the hinges or latches. The remaining doors remained closed and latched. There were no ATD values that exceeded limits. The Left A-Post at Sill Acceleration Y channel failed at 17.0 milliseconds, the Left Lower A-Post Acceleration Y channel failed at 30.0 milliseconds, and the Left B-Post at Sill Acceleration Y channel failed at 50.0 milliseconds. The Vehicle CG Accelerometers and Left Mid A-Post Acceleration Y channels failed and no data was collected.

SECTION 3

OCCUPANT AND VEHICLE INFORMATION/DATA SHEETS

Test Vehicle: 2020 MAZDA3 4-Door Sedan NHTSA No. M20205404
Test Program: NCAP Side Pole Impact Test Test Date: 01/10/20

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 MAZDA3 4-Door Sedan NHTSA No. M20205404
 Test Program: NCAP Side Pole Impact Test Test Date: 01/10/20

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA Number	M20205404
Model Year	2020
Make	Mazda
Model	MAZDA3
Body Style	4-Door Sedan
VIN	3MZBPACL8LM115962
Body Color	Sonic Silver Metallic
Odometer Reading (km / mi)	6 / 4
Engine Displacement (L)	2.5
Type / No. of Cylinders	Inline 4
Engine Placement	Transverse
Transmission Type	Automatic
Transmission Speeds	6
Overdrive	Yes
Final Drive	FWD
Roof Rack	No
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	Yes
Rear Pass. Curtain Airbag	Yes
Rear Pass. Head/Torso Airbag	No
Rear Pass. Torso Airbag	No
Rear Pass. Torso/Pelvis Airbag	No
Rear Pass. Pelvis Airbag	No
Driver Seat Belt Pretensioner	Yes
Rear Pass. Seat Belt Pretensioner	No
Driver Load Limiter	Yes
Rear Pass. Load Limiter	No
Other Safety Restraint	No

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

Yes

DATA FROM CERTIFICATION LABEL

Manufactured By	Mazda Motor Manufacturing De Mexico S.A. De C.V.
Date of Manufacture	Jul-19
Vehicle Type	Passenger Car

GVWR (kg)	1850
GAWR Front (kg)	1016
GAWR Rear (kg)	839

VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

Measured Parameter	Front	Rear	Third	Total	
Designated Seating Capacity	2	3		5	
Capacity Weight (VCW) (kg)				385.0	A
DSC x 68.04 (kg)				340.2	B
Cargo Weight (RCLW) (kg)				44.8	A-B

VEHICLE SEAT TYPE

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

DATA SHEET NO. 1 ... (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2020 MAZDA3 4-Door Sedan NHTSA No. M20205404
 Test Program: NCAP Side Pole Impact Test Test Date: 01/10/20

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

TEST VEHICLE AXLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)			Fully Loaded		
		Front	Rear	Total	Front	Rear	Total	Front	Rear	Total
Left	kg	436.5	266.5		449.0	321.0		447.5	312.0	
Right	kg	419.0	264.5		413.0	290.5		423.5	300.0	
Ratio	%	61.7%	38.3%	100.0%	58.5%	41.5%	100.0%	58.7%	41.3%	100.0%
Total	kg	855.5	531.0	1386.5	862.0	611.5	1473.5	871.0	612.0	1483.0

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	1386.5	A
Actual Weight of 1 P572V ATD Used	kg	49.0	B
Rated Cargo/Luggage Wt (RCLW)	kg	44.8	C
Calculated Vehicle Target Wt (TVTW)	kg	1480.3	A+B+C

Does the measured As Tested Vehicle Weight lie within the required weight range (i.e.

Calculated Test Vehicle Target Weight -4.5 kg to -9.0 kg)? ☒ Yes ☐ No

TEST VEHICLE ATTITUDE AND CG

Measurement Description	Units	As Delivered	As Tested	Fully Loaded	Meets Requirement***
Driver Door Sill Angle (front-to-rear)*	°	-0.5	-0.3	-0.3	Yes
Front Passenger Sill Angle (front-to-rear)*	°	-0.9	-0.8	-0.8	Yes
Front Bumper-Line Angle (left-to-right)**	°	-0.6	-0.6	-0.6	Yes
Rear Bumper-Line Angle (left-to-right)**	°	0.3	0.3	0.3	Yes
Vehicle CG (Aft of Front Axle)	mm	1042	1129	1122	
Vehicle CG (Left (+)/Right (-) from Longitudinal Centerline)	mm	11	35	19	

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

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

DATA SHEET NO. 1 ... (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2020 MAZDA3 4-Door Sedan NHTSA No. M20205404
Test Program: NCAP Side Pole Impact Test Test Date: 01/10/20

WEIGHT OF BALLAST AND VEHICLE COMPONENTS REMOVED TO MEET TVTW

Component Description	Weight (kg)
Spare Tire and Tools	18.0
Trim	2.0
Ballast / Equipment Added	58.0

Test Height Adjustable Setting (If Applicable)	
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DATA SHEET NO. 2**SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT, AND FUEL SYSTEM DATA**

Test Vehicle: 2020 MAZDA3 4-Door Sedan NHTSA No. M20205404
 Test Program: NCAP Side Pole Impact Test Test Date: 01/10/20

SEAT POSITIONING

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

SCRL ANGLE RANGE

Seat	SCRL (°)		
	Max	Min	Mid
Driver Seat	7.5	0.0	3.8
Front Passenger Seat	Fixed	Fixed	Fixed
Front Center Seat			
Struck Side Rear Seat	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Fixed
Rear Center Seat	Fixed	Fixed	Fixed

SEAT HEIGHT AND ANGLE

Seat	As Tested SCRL Angle (Mid) (°)	As Tested SCRP Height (mm)	SCRP Height Position	SCRP Height (mm)		
				Rearmost	Mid Fore/Aft	Forwardmost
Driver Seat	3.8	257	Max	256	271	281
			Mid	231	246	257
			Min	206	220	232
Front Passenger Seat	Fixed	235	Max			
			Mid	206	220	235
			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 MAZDA3 4-Door Sedan NHTSA No. M20205404
 Test Program: NCAP Side Pole Impact Test Test Date: 01/10/20

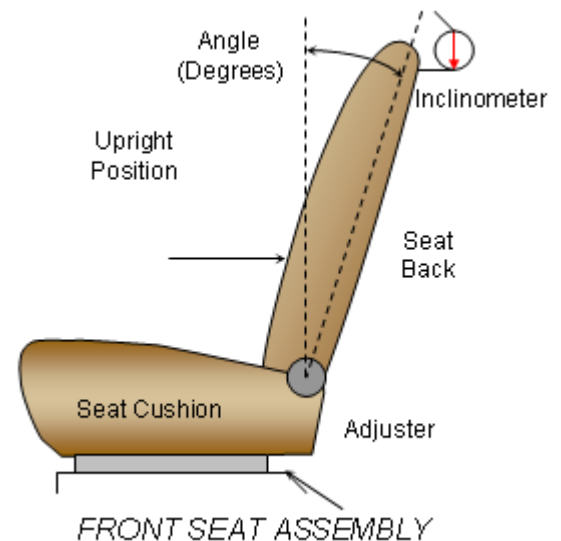
SEAT FORE/AFT POSITION

Seat	Total Fore/Aft Travel		Test Position From Forwardmost Position	
	mm	Detents*	mm	Detent*
Driver Seat	260	32	0	0
Front Passenger Seat	260	32	0	0
Front Center Seat				
Struck Side Rear Seat	Fixed	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Fixed	Fixed
Rear Center Seat	Fixed	Fixed	Fixed	Fixed

*Detent zero (0) is the forward most detent

SEAT BACK ADJUSTMENT

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



Seat	Total Seat Back Angle Range		Test Position from Most Upright	
	Degrees	Detents*	Degree	Detent*
Driver Seat w/Seated Dummy	61.4	34	4.3	0
Front Passenger Seat	60.0	34	4.3	0
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 MAZDA3 4-Door Sedan NHTSA No. M20205404Test Program: NCAP Side Pole Impact Test Test Date: 01/10/20**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

HEAD RESTRAINT ADJUSTMENT

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

	Total No. of Positions	Placed in Position
Driver Seat	3	L

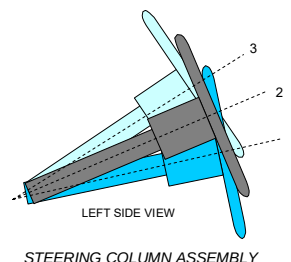
DATA SHEET NO. 2 ... (CONTINUED)**SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT, AND FUEL SYSTEM DATA**

Test Vehicle: 2020 MAZDA3 4-Door Sedan NHTSA No. M20205404
Test Program: NCAP Side Pole Impact Test Test Date: 01/10/20

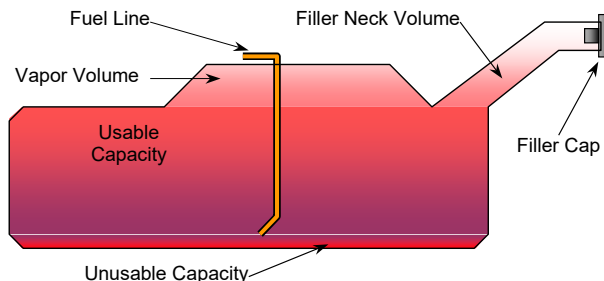
STEERING COLUMN ADJUSTMENT

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

	Degrees	Fore-Aft Position (mm)
Lowermost - Position 1	18.2	90
Geometric Center - Position 2	20.5	123
Uppermost - Position 3	22.8	155
Telescoping Steering Wheel Travel		65
Test Position	20.5	123

**FUEL PUMP**

The vehicle is equipped with an electronic fuel pump. The pump operates a few seconds after the ignition switch is turned ON. After that the pump operates only while the engine is running.

**FUEL TANK CAPACITY**

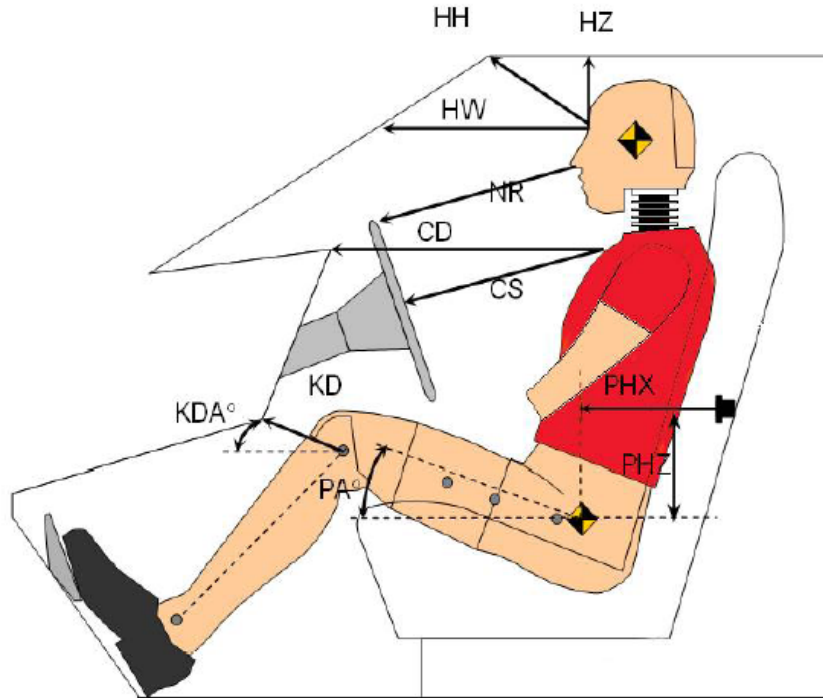
Description	Liters
Usable Capacity of "Standard Tank" (see Form No. 1)	48.07
Usable Capacity of "Optional Tank" (see Form No. 1)	
Usable Capacity of "Standard Tank" (see Owner's Manual)	48.07
Usable Capacity of "Optional Tank" (see Owner's Manual)	
93% of Usable Capacity	44.71
Actual amount of Solvent Used in Test	44.70
1/3 of Usable Capacity	16.02

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 MAZDA3 4-Door Sedan NHTSA No. M20205404
 Test Program: NCAP Side Pole Impact Test Test Date: 01/10/20



Driver Code	Description	Driver	
		Length (mm)	Angle (°)
HH	Head to Header	215	
HW	Head to Windshield	600	
HZ	Head to Roof	198	
NR	Nose to Rim	192	
CD	Chest to Dash	390	
CS	Chest to Steering Wheel	138	
KD(L)/KDA(L)°	Left Knee to Dash	116	35.6
KD(R)/KDA(R)°	Right Knee to Dash	110	31.2
PAX°	Pelvic Tilt Angle (x-axis)		20.1
PAY°	Pelvic Tilt Angle (y-axis)		0.2
PHX	Hip Point to Striker (x-axis)	331	
PHZ	Hip Point to Striker (z-axis)	165	

DATA SHEET NO. 4

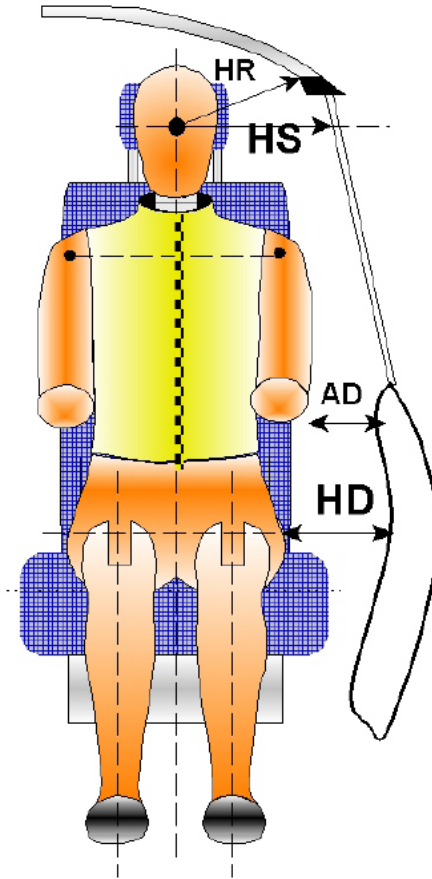
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2020 MAZDA3 4-Door Sedan

NHTSA No. M20205404

Test Program: NCAP Side Pole Impact Test

Test Date: 01/10/20

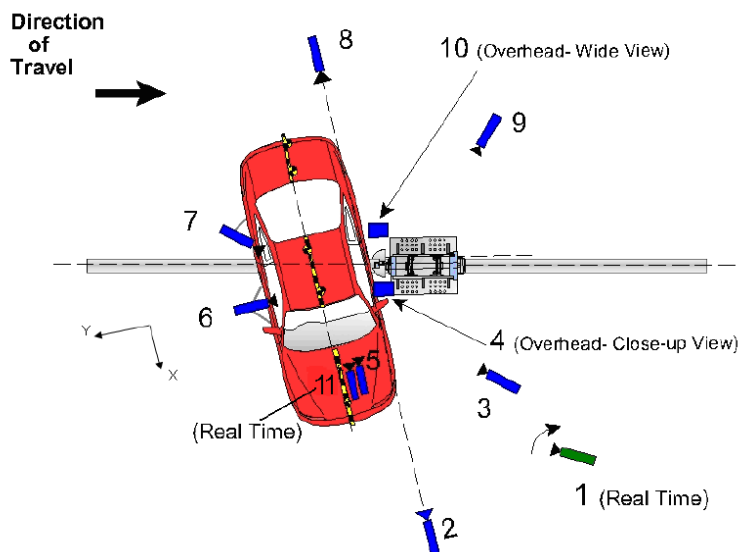


Code	Measurement Description	Units	Driver
HR	Head to Side Header	mm	238
HS	Head to Side Window	mm	365
AD	Arm to Door	mm	125
HD	Hip Point to Door	mm	163

DATA SHEET NO. 5

CAMERA AND INSTRUMENTATION DATA

Test Vehicle: 2020 MAZDA3 4-Door Sedan NHTSA No. M20205404
 Test Program: NCAP Side Pole Impact Test Test Date: 01/10/20



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

Camera No.	View	Coordinates (m)			Lens (mm)	Film Speed (fps)
		X*	Y*	Z*		
1	Real Time Pan View of Impact	8.89	46.57	-3.04		30
2	Front Ground Level - Impact View	8.34	-0.05	-0.93	24	1000
3	Impact Side 45° - Forward Pole View	4.10	-2.15	-1.15	8.5	1000
4	Overhead Close-Up View of Impact	0.00	0.00	-5.79	12.5	1000
5	On-Board - Dummy Front View	1.25	0.51	-1.43	8.5	1000
6	On-Board - Dummy Side View	0.07	1.66	-1.14	8.5	1000
7	On-Board - Dummy Rear Oblique View	-1.00	1.65	-1.16	8.5	1000
8	Rear Ground Level - Impact View	-6.12	-6.23	-0.96	24	1000
9	Impact Side 45° - Rearward Pole View	-8.02	0.04	-1.01	35	1000
10	Overhead Wide View of Impact	-0.06	0.22	-5.79	14	1000
11	Real Time Dummy Front View	1.24	0.58	-1.42		30

*All measurements accurate to ± 6 mm

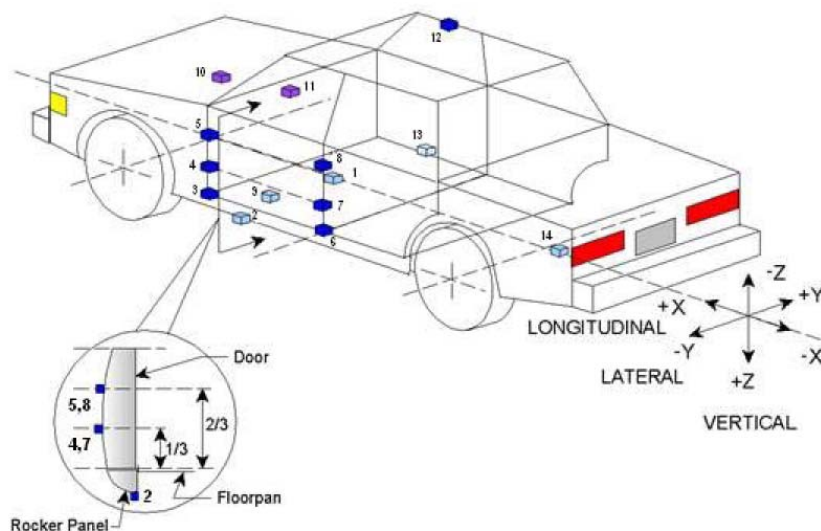
INSTRUMENTATION

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

DATA SHEET NO. 6

TEST VEHICLE ACCELEROMETER LOCATIONS

Test Vehicle: 2020 MAZDA3 4-Door Sedan NHTSA No. M20205404
 Test Program: NCAP Side Pole Impact Test Test Date: 01/10/20

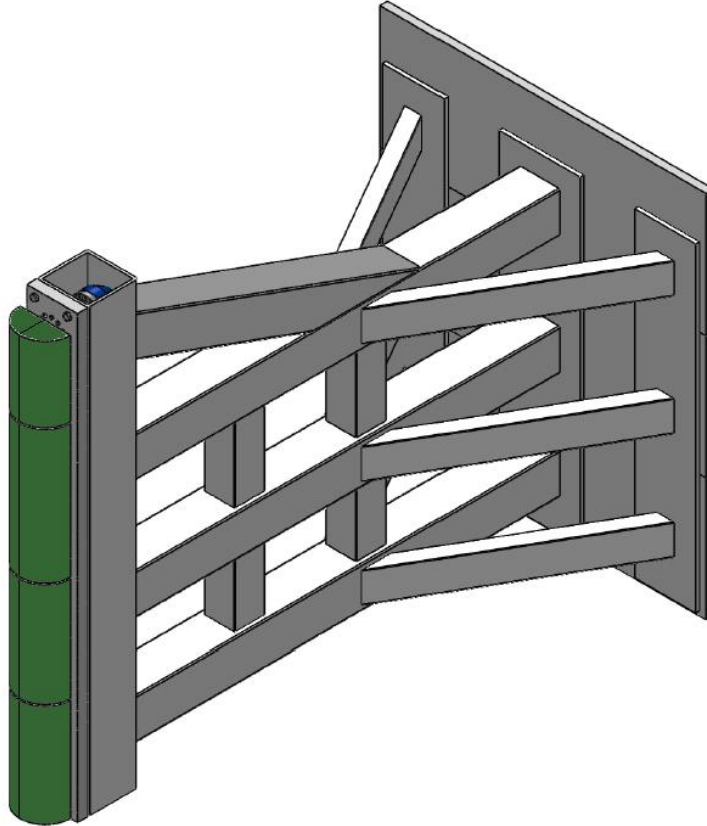


Loc. No.	Sensor Description	Coordinates (mm)		
		X	Y	Z
1	Vehicle CG	1903	100	-500
2	Left Floor Sill	2420	-760	-160
3	A-Pillar Sill	2950	-825	-320
4	A-Pillar Low	2350	-800	-410
5	A-Pillar Mid	2380	-810	-745
6	B-Pillar Sill	2020	-720	-412
7	B-Pillar Low	1890	-745	-620
8	B-Pillar Mid	1920	-755	-940
9	Driver Seat Track	2180	-555	-280
10	Engine Top	3850	365	-730
11	Firewall	3300	625	-690
12	Right Roof	2110	550	-1400
13	Right Floor Sill	2350	715	-380
14	Rear Floorpan	1020	150	-680

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

DATA SHEET NO. 7
RIGID POLE LOAD CELL DATA

Test Vehicle: 2020 MAZDA3 4-Door Sedan NHTSA No. M20205404
Test Program: NCAP Side Pole Impact Test Test Date: 01/10/20



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

DATA SHEET NO. 8**POST-TEST OBSERVATIONS**

Test Vehicle: 2020 MAZDA3 4-Door Sedan NHTSA No. M20205404
 Test Program: NCAP Side Pole Impact Test Test Date: 01/10/20

TEST DUMMY INFORMATION AND CONTACT POINTS

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

POST-TEST DOOR PERFORMANCE

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

POST-TEST SEAT PERFORMANCE

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

DATA SHEET NO. 8 ... (CONTINUED)**POST-TEST OBSERVATIONS**

Test Vehicle: 2020 MAZDA3 4-Door Sedan NHTSA No. M20205404
 Test Program: NCAP Side Pole Impact Test Test Date: 01/10/20

POST-TEST STRUCTURAL OBSERVATIONS

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

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

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

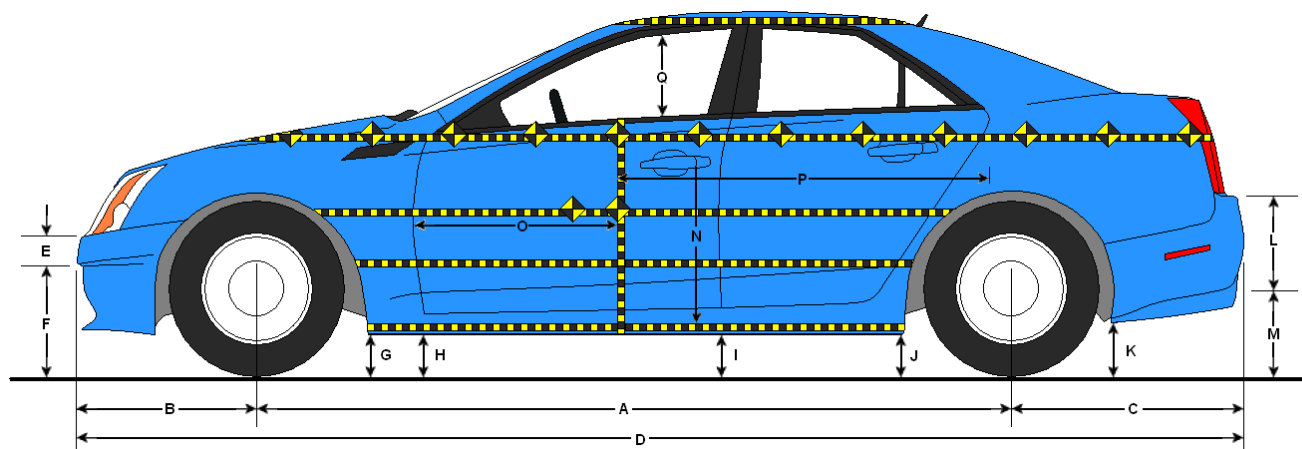
IMPACT POINT LOCATION DATA

Measured Parameter	Units	Tolerance	Value
Vertical Impact Reference Line (Aft of Front Axle)(Intended Impact Point)	mm		1142
Actual Impact Point (Aft of Front Axle)	mm		1155
Horizontal Offset (+ forward / - rearward)	mm	± 38 of Intended Impact Point	-13
Angle Between Vehicle's Longitudinal Centerline and Line of Forward Motion	°	75 ± 3	75.5
Trap No. 1 Velocity (Primary)	km/h	31.4 to 33.0	32.05
Trap No. 2 Velocity (Redundant)	km/h	31.4 to 33.0	32.12

DATA SHEET NO. 9

TEST VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2020 MAZDA3 4-Door Sedan NHTSA No. M20205404
 Test Program: NCAP Side Pole Impact Test Test Date: 01/10/20



LEFT SIDE VIEW

All measurements in mm with tolerance of ± 3 mm

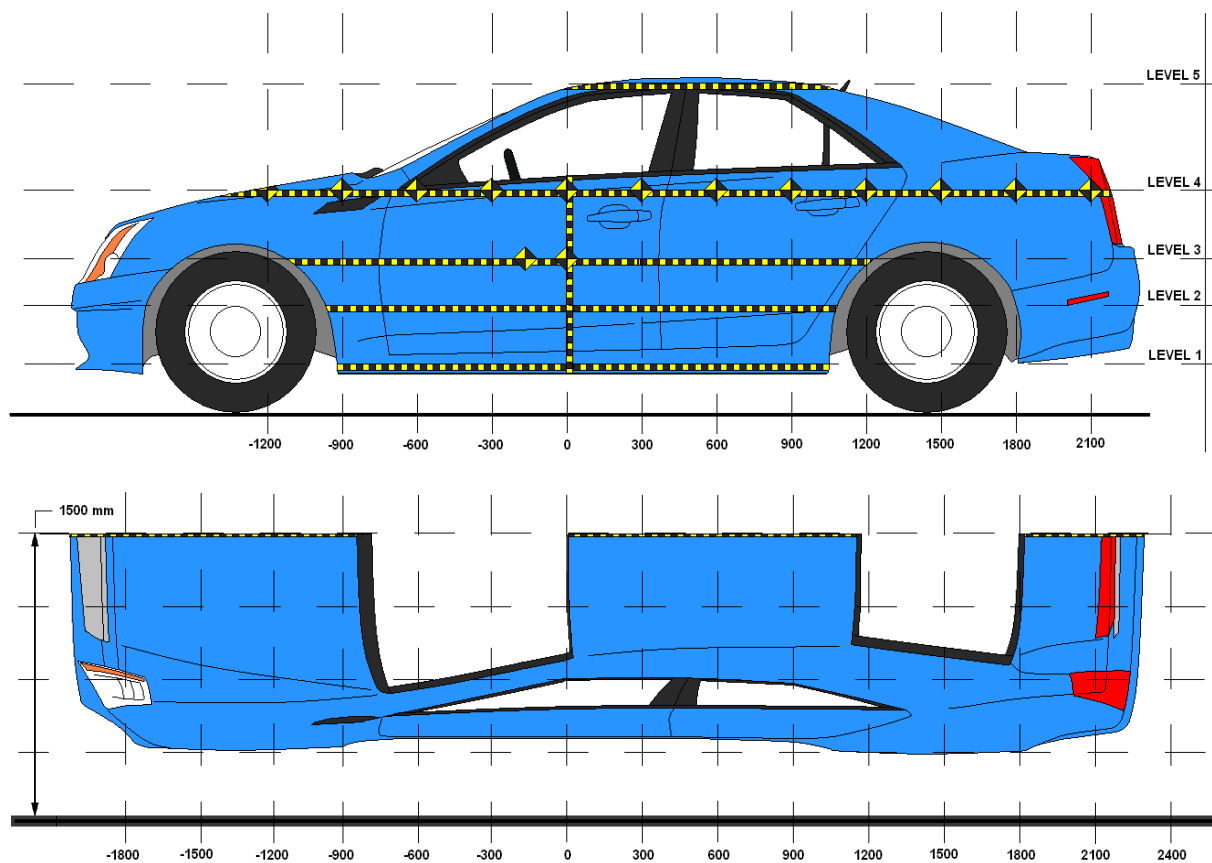
VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

Code	Description	Pre-Test	Post-Test	Difference
A	Wheelbase	2720	2698	-22
B	Front Axle to FSOV	891	910	19
C	Rear Axle to RSOV	1026	1017	-9
D	Total Length at Centerline	4616	4625	9
E	Front Bumper Thickness	256	259	3
F	Front Bumper Bottom to Ground	486	470	-16
G	Sill Height at Front Wheel Well	398	396	-2
H	Sill Height at Front Door Leading Edge	399	385	-14
I	Sill Height at B-Pillar	395	402	7
J1	Sill Height at Rear Wheel Well	347	361	14
J2	Pinch Weld Height at Rear Wheel Well	309	298	-11
K	Sill Height Aft of Rear Wheel Well	376	376	0
L	Rear Bumper Thickness	267	268	1
M	Rear Bumper Bottom to Ground	515	522	7
N	Sill Height to Bottom of Front Window Sill	679	696	17
O	Front Door Leading Edge to Impact CL	599	543	-56
P	Rear Door Trailing Edge to Impact CL	1530	1484	-46
Q	Front Window Opening	370	375	5
R	Right Side Length	3273	3282	9
S	Left Side Length	3276	3225	-51
T	Vehicle Width at B-Pillar	1800	1719	-81

DATA SHEET NO. 10

TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2020 MAZDA3 4-Door Sedan NHTSA No. M20205404
 Test Program: NCAP Side Pole Impact Test Test Date: 01/10/20



NOTE: All measurements in mm with tolerance of $\pm 3\text{mm}$

MAXIMUM EXTERIOR CRUSH MEASUREMENTS

Level	Description	Height Above Ground (mm)	Maximum Exterior Static Crush	Distance from Impact
1	Sill Top	408	256	0
2	Occupant H-Point	667	264	0
3	Mid-Door	783	261	0
4	Window Sill	1015	256	0
5	Window Top	1507	58	150

DATA SHEET NO. 10 ... (CONTINUED)

TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2020 MAZDA3 4-Door Sedan NHTSA No. M20205404
 Test Program: NCAP Side Pole Impact Test Test Date: 01/10/20

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				649					617					-32	
-750	639	604	607	639		631	582	584	614		-8	-22	-23	-25	
-600	640	614	615	635		646	596	604	610		6	-18	-11	-25	
-450	640	620	620	631		687	660	642	667		47	40	22	36	
-300	638	623	623	628		741	729	723	724		103	106	100	96	
-150	638	625	624	627		817	807	807	801		179	182	183	174	
0	637	624	625	627		893	888	886	883		256	264	261	256	
150	637	623	624	628	891	826	837	840	847	949	189	214	216	219	58
300	636	622	624	630	890	748	740	745	760	921	112	118	121	130	31
450	637	621	624	633	892	700	689	682	691	908	63	68	58	58	16
600	637	620	623	637	895	670	670	669	680	901	33	50	46	43	6
750	636	618	622	643	901	644	652	655	671	899	8	34	33	28	-2
900	634	615	619	648	907	621	631	639	662	898	-13	16	20	14	-9
1050	631	610	615	653	911	593	606	618	653	899	-38	-4	3	0	-12
1200	626	602	607	655	921	566	583	594	643	907	-60	-19	-13	-12	-14
1350			601	655	936			592	631	925			-9	-24	-11
1500				654					646					-8	
1650				657					651					-6	
1800				668					660					-8	
1950															
2100															
2250															
2400															
2550															
2700															
2850															

DATA SHEET NO. 10 ... (CONTINUED)

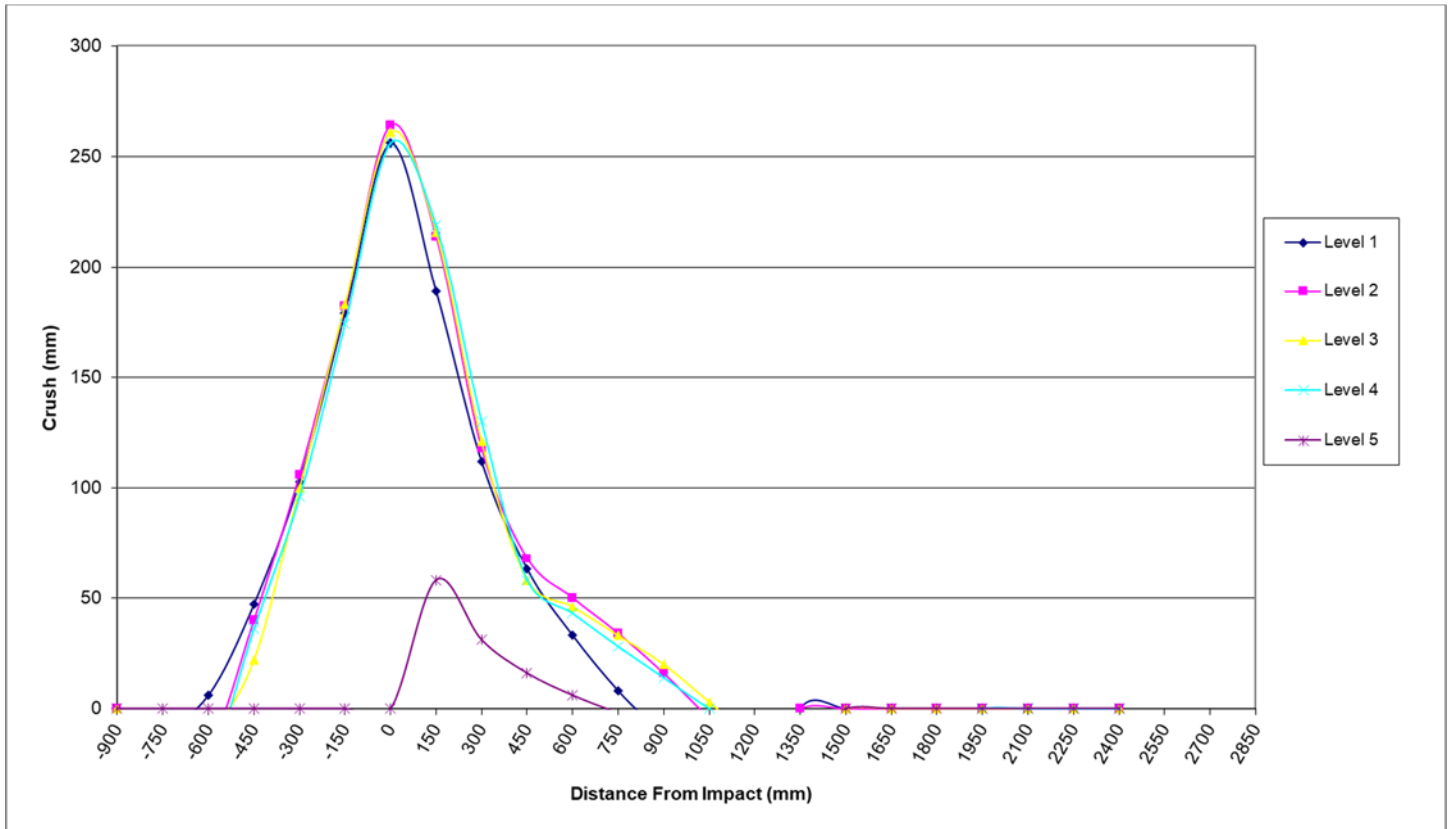
TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2020 MAZDA3 4-Door Sedan

NHTSA No. M20205404

Test Program: NCAP Side Pole Impact Test

Test Date: 01/10/20

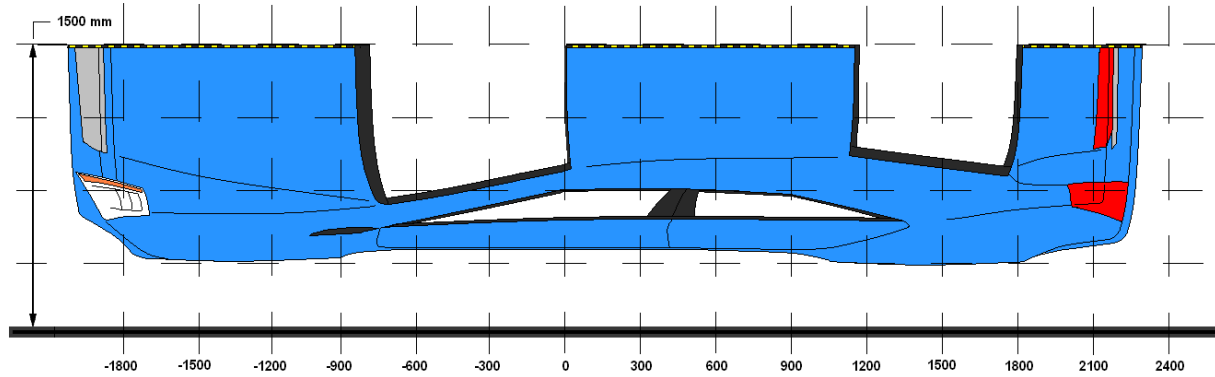


DATA SHEET NO. 11

VEHICLE DAMAGE PROFILE DISTANCES

Test Vehicle: 2020 MAZDA3 4-Door Sedan NHTSA No. M20205404

Test Program: NCAP Side Pole Impact Test Test Date: 01/10/20



DPD	Distance From Impact Point (mm)	Level	Pre-Test (mm)	Post-Test (mm)	Crush (mm)
1	1800	4	668	660	-8
2	1350	3	601	592	-9
3	750	2	618	652	34
4	150	4	628	847	219
5	-450	1	640	687	47
6	-900	4	649	617	-32

DATA SHEET NO. 12

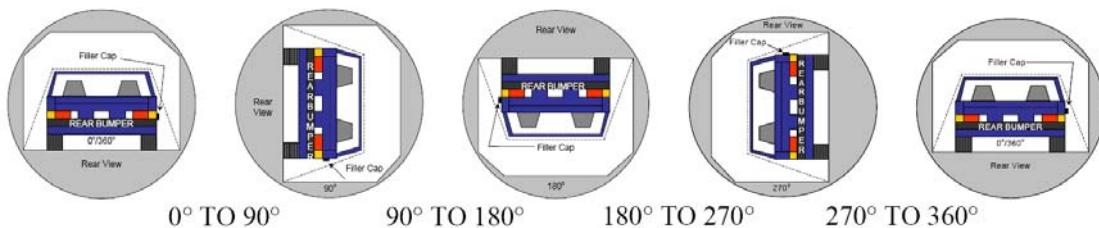
FMVSS NO. 301 STATIC ROLLOVER RESULTS

Test Vehicle: 2020 MAZDA3 4-Door Sedan NHTSA No. M20205404

Test Program: NCAP Side Pole Impact Test Test Date: 01/10/20

Temperature at Time of Impact: 15.0° C Test Time: 11:45 AM

- 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°	88	300	388
90° To 180°	78	300	378
180° To 270°	81	300	381
270° To 360°	80	300	380

FMVSS 301 SPILLAGE TABLE

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

SOLVENT SPILLAGE LOCATION TABLE

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

DATA SHEET NO. 13

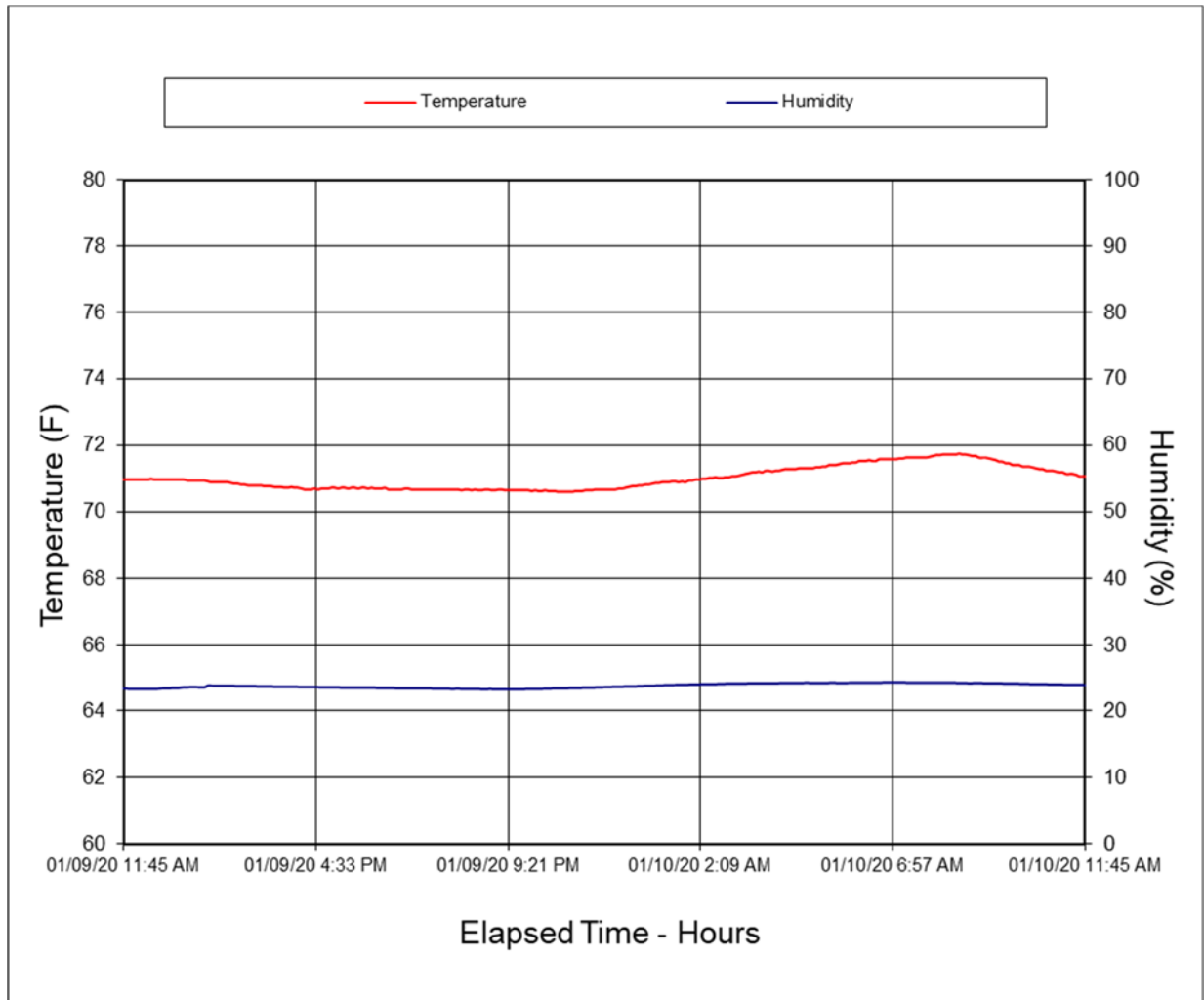
DUMMY/VEHICLE TEMPERATURE AND HUMIDITY STABILIZATION

Test Vehicle: 2020 MAZDA3 4-Door Sedan

NHTSA No. M20205404

Test Program: NCAP Side Pole Impact Test

Test Date: 01/10/20



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

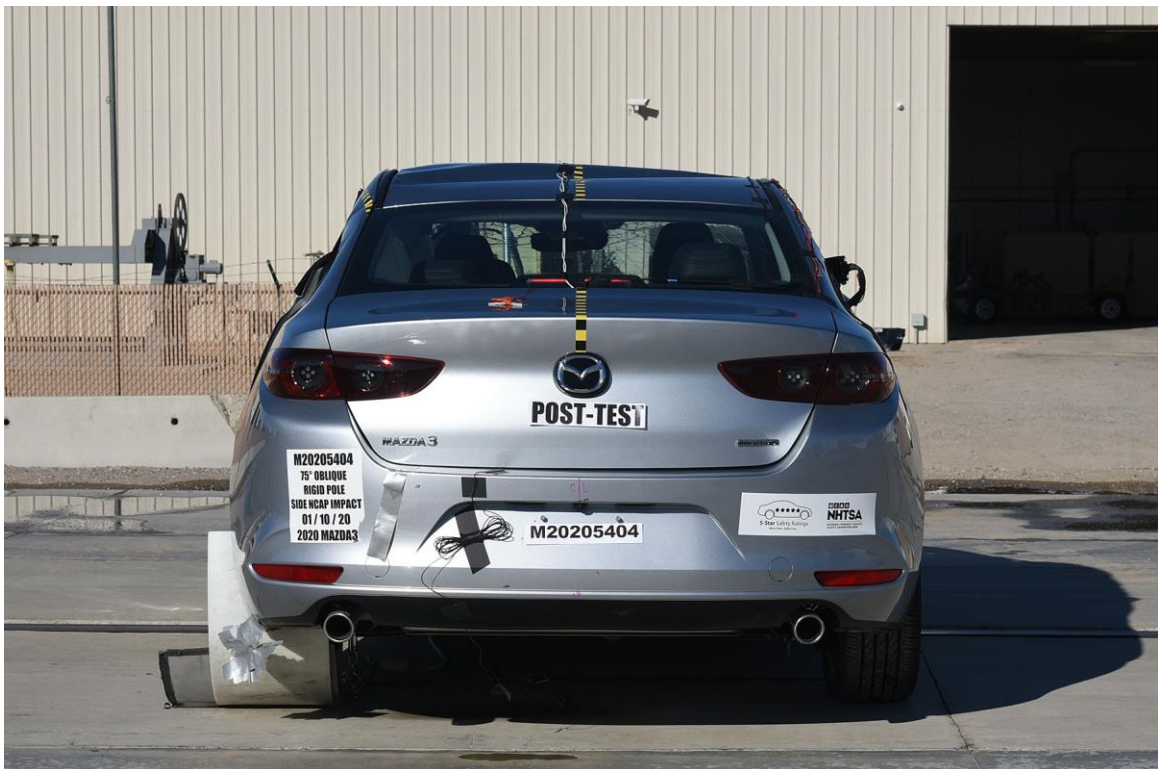


FIGURE 12. Post-Test Rear View of Test Vehicle



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



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

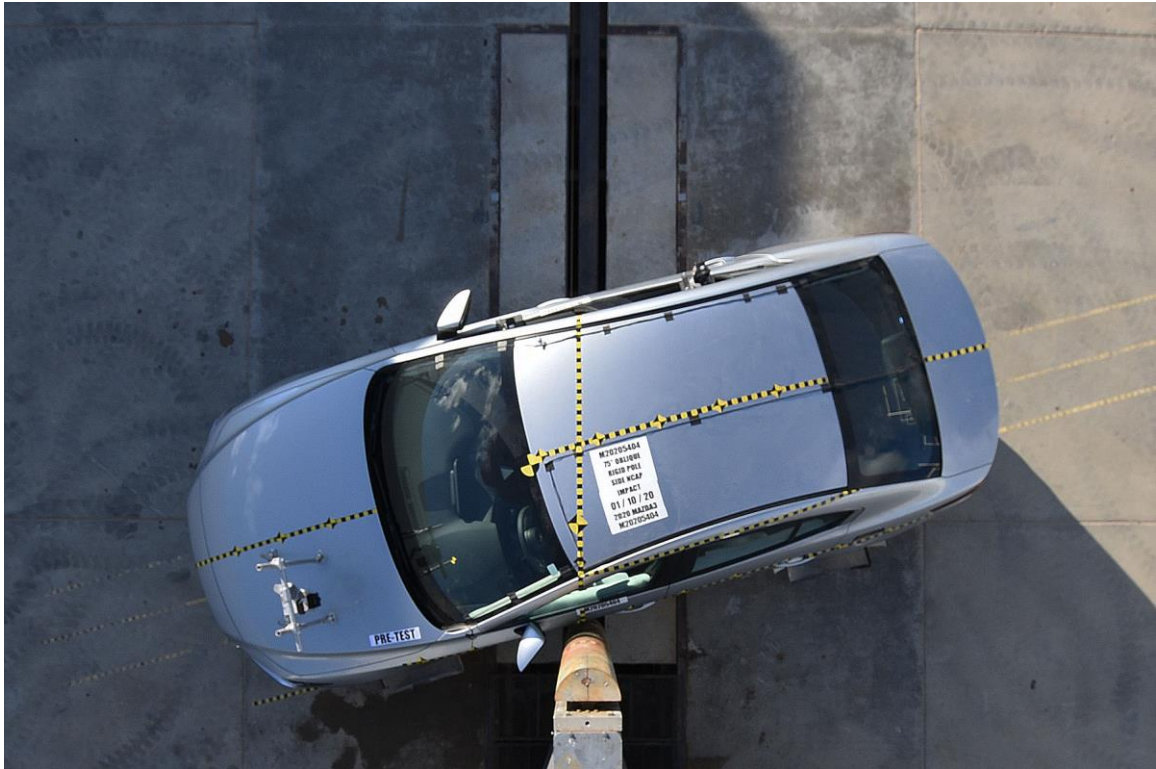


FIGURE 15. Pre-Test Overhead View of Test Area

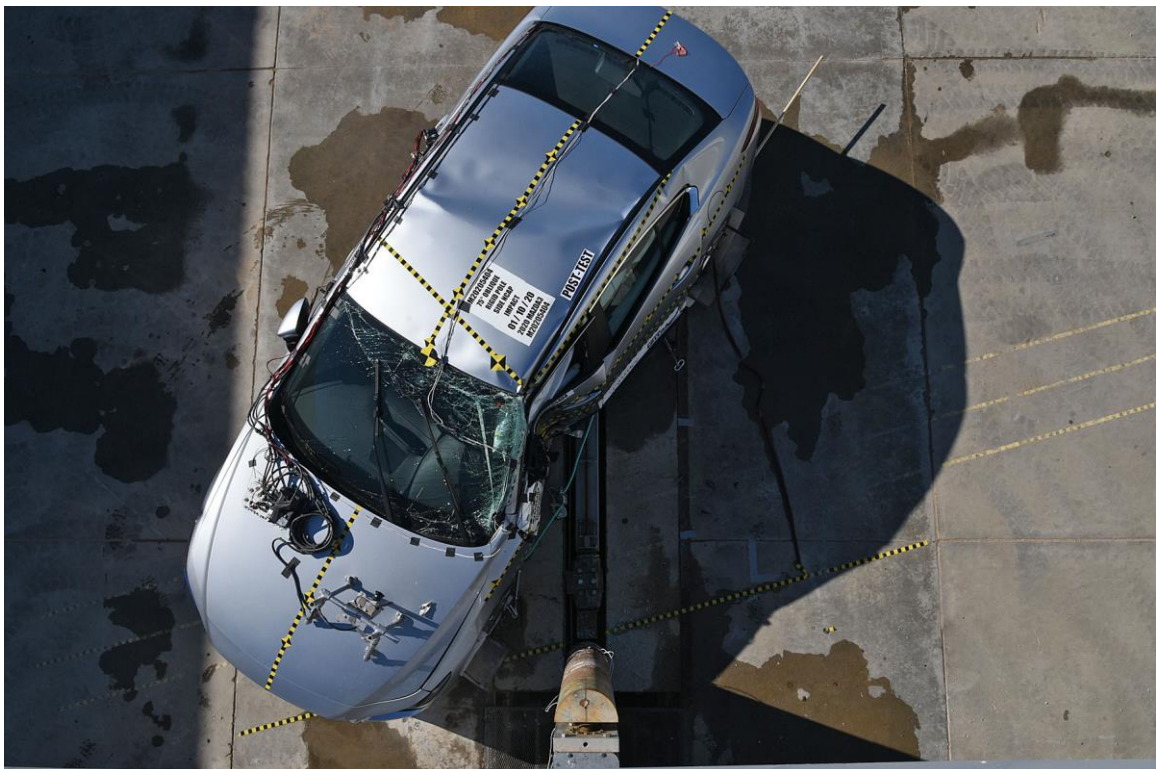


FIGURE 16. Post-Test Overhead View of Test Area



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



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



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



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



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



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



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



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



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

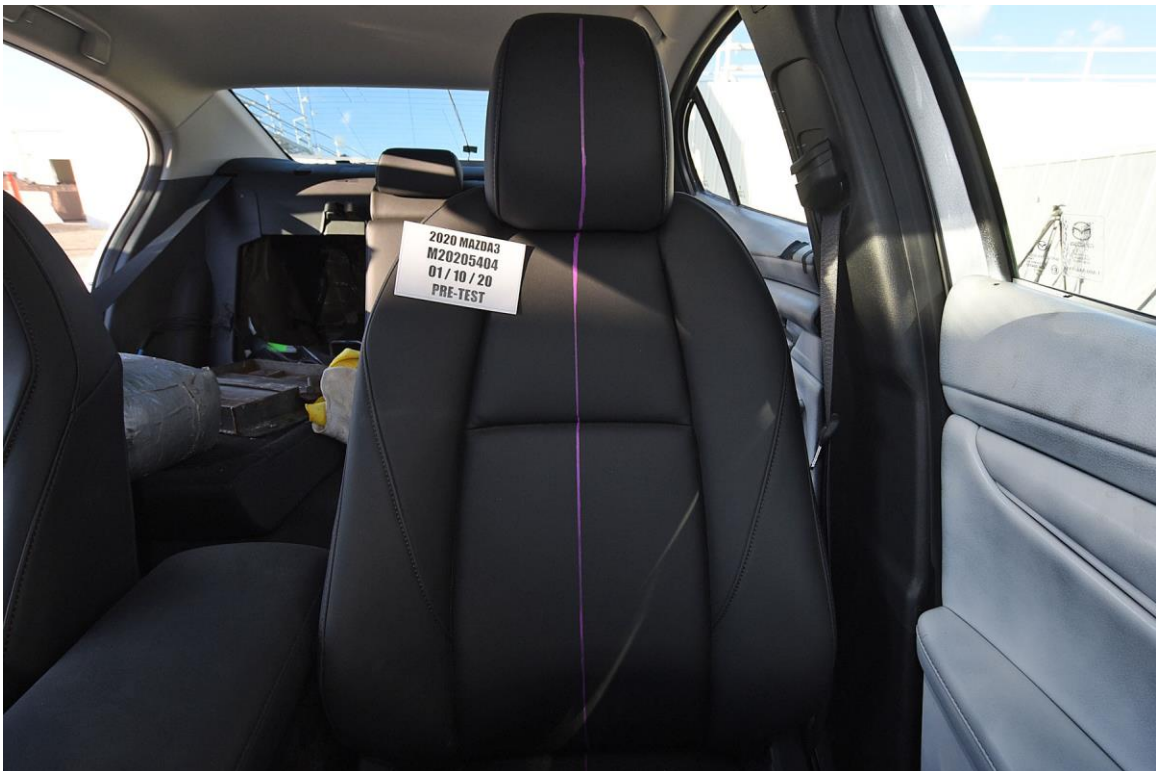


FIGURE 26. Pre-Test Frontal View of Seat Back Prior to Dummy Positioning



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



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



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



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



FIGURE 31. Pre-Test Left Side View of Dummy's Head
Showing Dummy's Head is Level



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



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



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



FIGURE 35. View of Disengaged Parking Brake



FIGURE 36. Pre-Test View of Parking Brake



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



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



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



FIGURE 40. Pre-Test Dummy and Door Clearance View



FIGURE 41. Post-Test Dummy and Door Clearance View



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



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



FIGURE 44. Pre-Test Inner Door Panel View



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



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



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



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



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



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



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



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



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



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

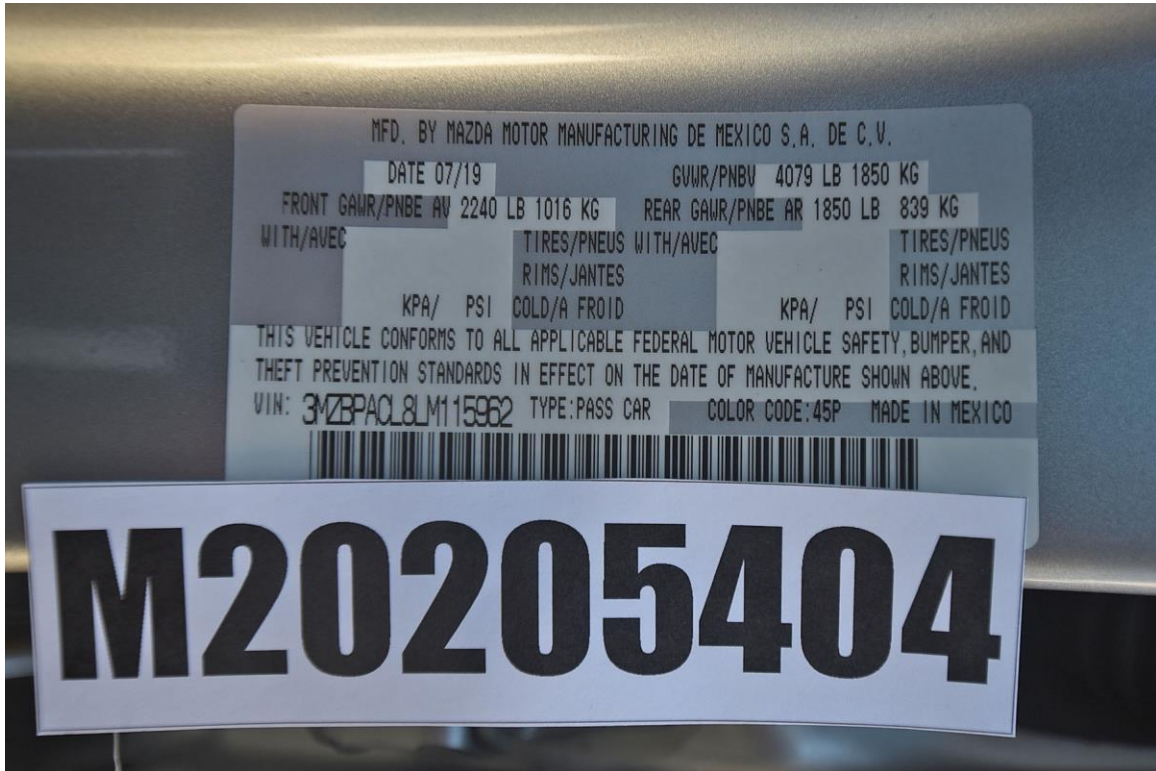


FIGURE 55. Close-Up View of Vehicle's Certification Label

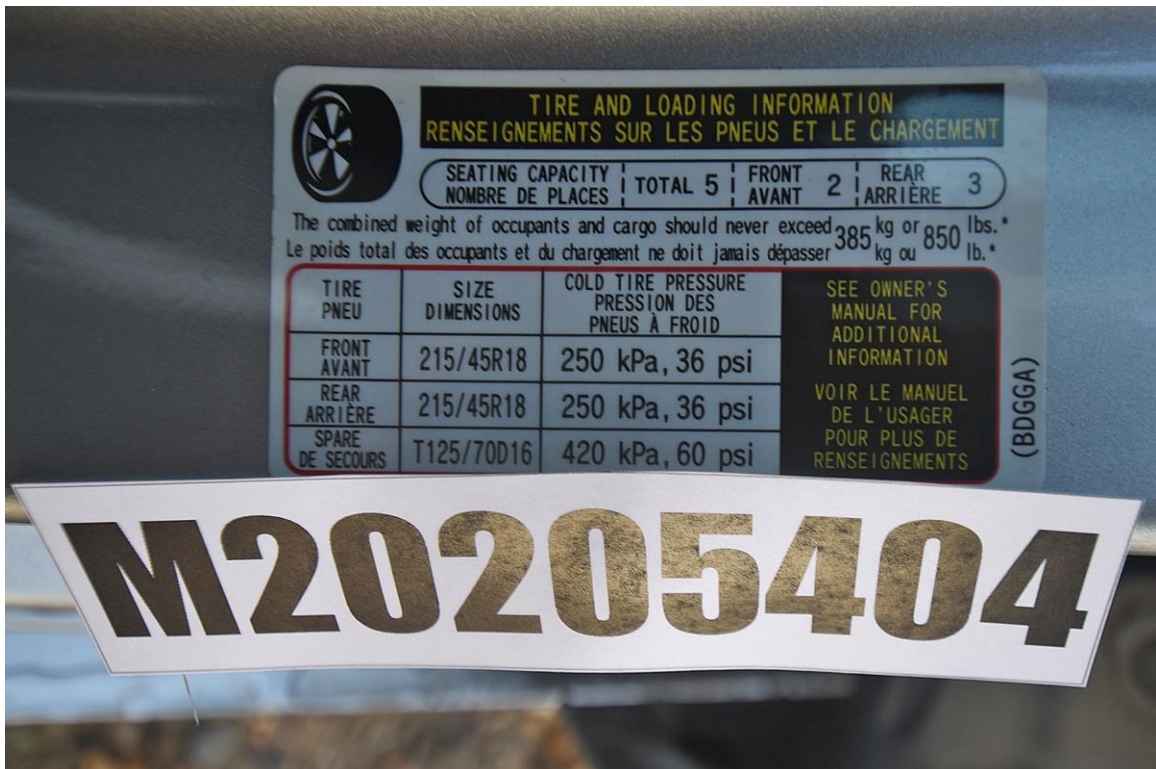


FIGURE 56. Close-Up View of Vehicle's Tire Information Placard or Label



FIGURE 57. Pre-Test Pole Barrier Front View



FIGURE 58. Post-Test Pole Barrier Front View



FIGURE 59. Pre-Test Pole Barrier Side View



FIGURE 60. Post-Test Pole Barrier Side View

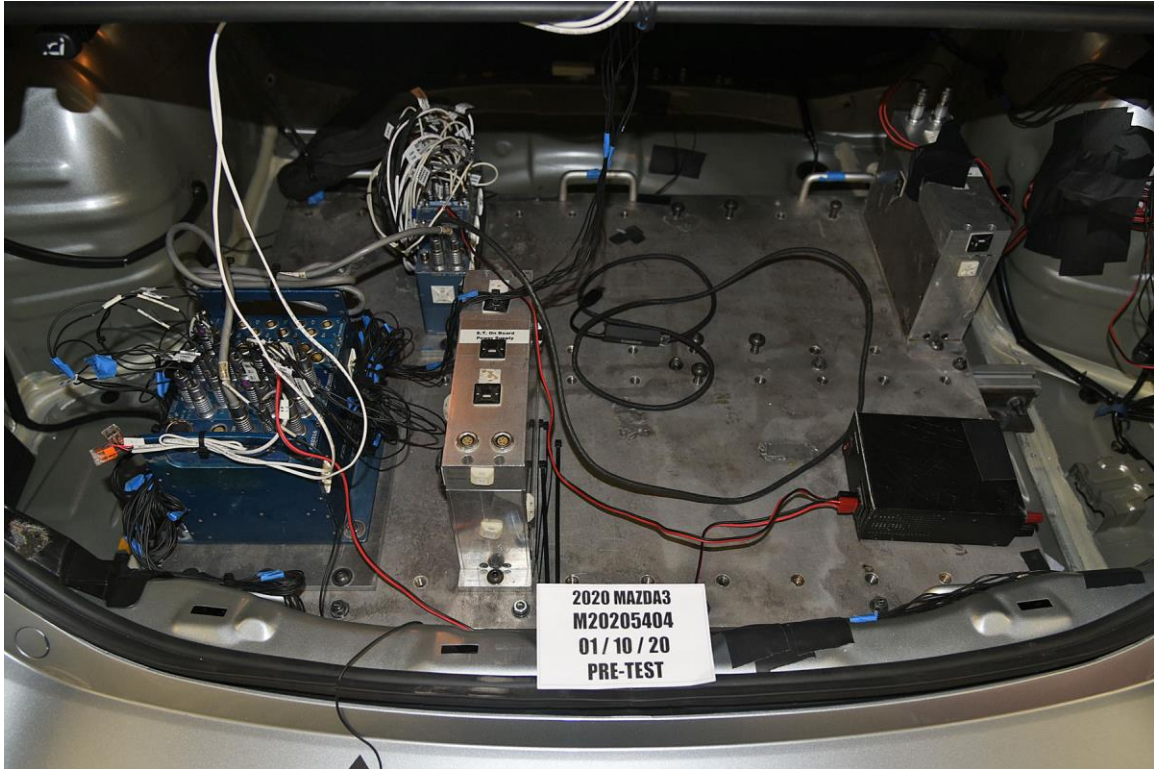


FIGURE 61. Pre-Test Ballast View



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



FIGURE 63. FMVSS No. 301 Static Rollover 0 Degrees

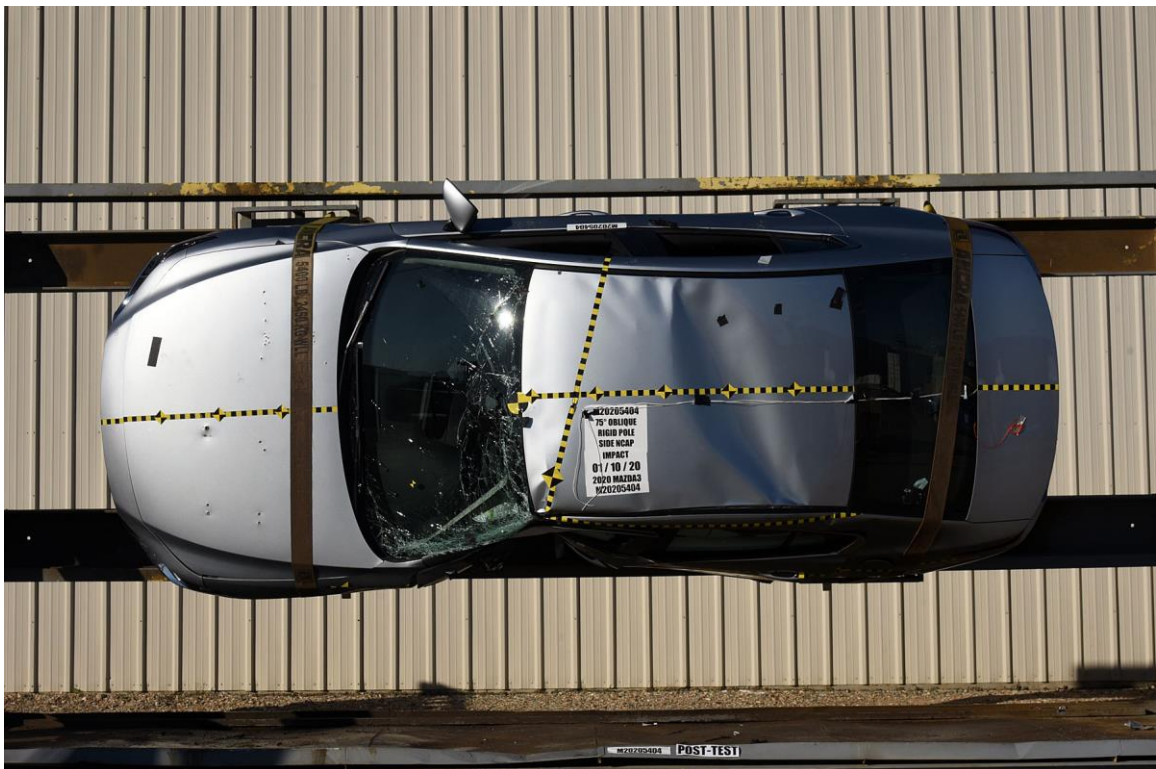


FIGURE 64. FMVSS No. 301 Static Rollover 90 Degrees



FIGURE 67. FMVSS No. 301 Static Rollover 360 Degrees



FIGURE 68. Impact Event

Scan for vehicle info and offers

2020 Mazda3

Model: 2020 MAZDA3 SEDAN WITH SELECT PACKAGE
Exterior Color: SONIC SILVER METALLIC
Interior Color: BLACK

Fuel Economy and Environment

Fuel Economy
30 MPG
Compact Cars range from 14 to 112 MPG.
The best vehicle rates 136 MPG.

You Save \$750
in fuel costs over 5 years compared to the average new vehicle.

Annual fuel cost \$1,350

Fuel Economy & Greenhouse Gas Rating
This vehicle emits 289 grams CO₂ per mile. The best emits 6 grams per mile (large car). Producing and distributing fuel also create emissions. Learn more at fuelconomy.gov

Smog Rating
Best

fuelconomy.gov
Calculate personalized estimates and compare vehicles

PARTS CONTENT INFORMATION:

FOR VEHICLES IN THIS CARLINE:
U.S. CANADIAN PARTS CONTENT: 5%
MAJOR SOURCES OF FOREIGN PARTS CONTENT: MEXICO 70%, JAPAN 25%

NOTE: PARTS CONTENT DOES NOT INCLUDE FINAL ASSEMBLY, DISTRIBUTION, OR OTHER NON-PARTS COSTS.

FOR THIS VEHICLE:
FINAL ASSEMBLY POINT: SALAMANCA, MEXICO
COUNTRY OF ORIGIN: ENGINE: MEXICO
TRANSMISSION: THAILAND

This label is affixed pursuant to the Federal Automobile Disclosure Act. Gasoline, License and Title fees, State and Local taxes, and Dealer installed options are not included.

STANDARD EQUIPMENT

ENGINE/MECHANICAL FEATURES

- SKYACTIV G 2.5L DOHC 4-CYL. ENGINE
- 186 HORSEPOWER
- 186 LB FT TORQUE
- 4-WHEEL DISC BRAKES

EXTERIOR FEATURES

- LED DAYTIME RUNNING LIGHTS
- LED HEADLIGHTS
- LED TAILLIGHTS

INTERIOR FEATURES

- AIR CONDITIONING
- POWER WINDOWS/DOOR LOCKS
- REMOTE KEYLESS ENTRY
- 60/40 SPLIT FOLD-DOWN REAR SEAT
- PUSH BUTTON START
- RE-ARVIEW CAMERA

SAFETY AND SECURITY FEATURES

- 6-STAR RATED POWER TRAIN & 5-STAR 35K MI BLAMPER-TO-SUMPER WARRANTY
- 5-STAR ROADSIDE ASSIST STANCE
- ANTI-THEFT ENGINE IMMOBILIZER
- FRONT & REAR SIDE AIR CURTAINS
- TIRE PRESSURE MONITORING SYSTEM
- LANE DEPARTURE WARNING SYSTEM
- LANE KEEP ASSIST
- MAZDA RADAR CRUISE CONTROL WITH STOP & GO

OPTIONAL EQUIPMENT

- SKYACTIV DRIVE ESPD SPORT MODE AT
- G-VECTORING CONTROL PLUS
- ELECTRIC POWER ASSISTED STEERING
- AUTO ENVOY HEADLIGHTS
- RAIN-SENSING WINDSHIELD WIPERS
- DUAL POWER SIDE MIRRORS
- 8-SPEAKER PREMIUM AUDIO
- BLUETOOTH HANDS-FREE PHONE/AUDIO
- HD RADIO/8.2 USB INPUTS
- ELECTRONIC PARKING BRAKE
- CARPETED FLOOR MATS
- DYNAMIC STABILITY CONTROL
- TRACTION CONTROL SYSTEM
- ADVANCED DUAL FRONT AIR BAGS
- FRONT SIDE-IMPACT AIR BAGS
- KNEE AIR BAGS
- ABS WITH BRAKE ASSIST
- SMART BRAKE SUPPORT
- DRIVER ATTENTION ALERT
- HIGH BEAM CONTROL

MSRP \$22,700

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.

Frontal Crash Driver Passenger Not Rated
Based on the risk of injury in a frontal impact.

Side Crash Front seat Not Rated
Based on the risk of injury in a side impact.

Rollover Not Rated
Based on the risk of rollover in a single vehicle crash.

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

SOLD TO: 23688
MAZDA CITY OF ORANGE PARK
6916 BLANDING BLVD.
JACKSONVILLE, FL 32244

SHIP TO: 23688
MAZDA CITY OF ORANGE PARK
6916 BLANDING BLVD.
JACKSONVILLE, FL 32244

3MZBPAC18LM115962
N35-SE-2A-01VGMAR-J6--20191000

MazdaUSA.com

FIGURE 69. Monroney Label

Essential Safety Equipment Seats

▼ Airrest*
The rear airrest in the center of the rear seatback can be used (no occupant in the center seat) or placed upright.

WARNING
Never put your hands and fingers around the moving parts of the seat and airrest. Putting your hands and fingers around the moving parts of the seat and airrest is dangerous as they could get injured.

Head Restraints
▼ Head Restraints
Your vehicle is equipped with head restraints on all outboard seats and the rear center seat. The head restraints are intended to help protect you and the passengers from neck injury.

WARNING
Always drive with the head restraints installed when seats are being used and make sure they are properly adjusted. Driving with the head restraints adjusted too low or removed is dangerous. With no support behind your head, your neck could be seriously injured in a collision.

Height Adjustment
Adjust the head restraint so that the center is even with the top of the passenger's ears.

To raise a head restraint, pull it up to the desired position.
To lower the head restraint, press the stop-catch release, then push the head restraint down.

*Some models.

Essential Safety Equipment Seats

Front seats

Rear outboard seats

Rear center seat

▼ Removal/Installation
To remove the head restraint, pull it up while pressing the stop-catch.
To install the head restraint, insert the leg into the holes while pressing the stop-catch.

WARNING
Always drive with the head restraints installed when seats are being used and make sure they are properly installed. Driving with the head restraints not installed is dangerous. With no support behind your head, your neck could be seriously injured in a collision.

After installing a head restraint, try tilting it to make sure that it does not pull out.
Driving with an unsecured head restraint is dangerous as the effectiveness of the head restraint will be compromised which could cause it to unexpectedly detach from the seat.

Essential Safety Equipment Seats

CAUTION
When installing a head restraint, make sure that it is installed correctly with the front of the head restraint facing forward. If the head restraint is installed incorrectly, it could detach from the seat during a collision and result in injury.
The head restraints on each of the front and rear seats are specialized to each seat. Do not switch around the head restraint positions. If a head restraint is not installed in its correct seat position, the effectiveness of the head restraint during a collision will be compromised which could cause injury.

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

Photograph Not Applicable

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

APPENDIX B
DUMMY RESPONSE DATA

TABLE OF DATA PLOTS

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

The following additional data for this test can be obtained from the Research and Development section of the NHTSA website. The website can be found at

www.NHTSA.gov

Additional Driver Dummy Instrumentation Data

Driver Head Acceleration Redundant (X)

Driver Head Acceleration Redundant (Y)

Driver Head Acceleration Redundant (Z)

Vehicle Instrumentation Data

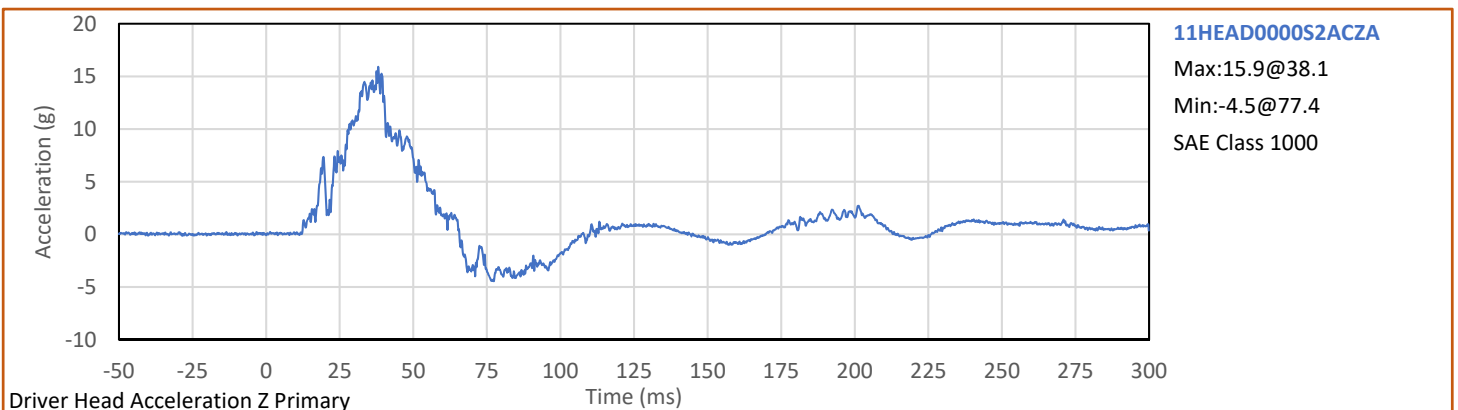
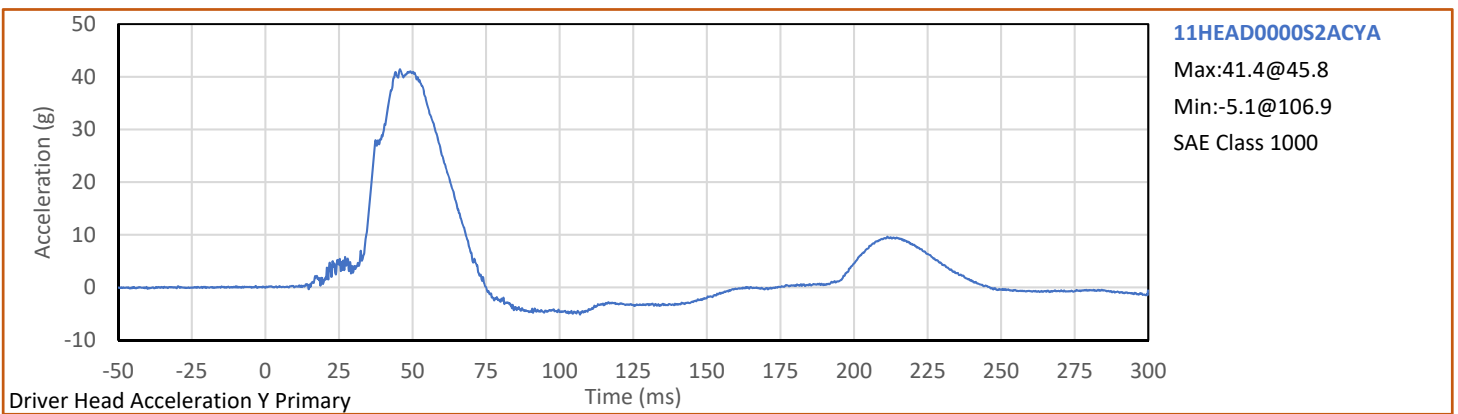
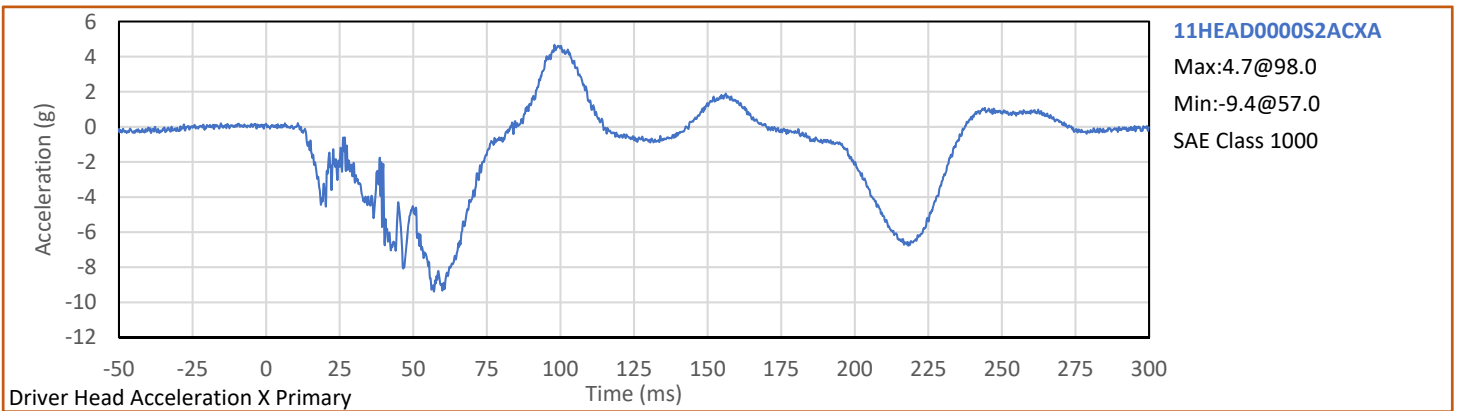
Vehicle Center of Gravity Acceleration (X)
Vehicle Center of Gravity Acceleration (Y)
Vehicle Center of Gravity Acceleration (Z)
Left Floor Sill Acceleration (Y)
Left A-Pillar Sill Acceleration (Y)
Left Lower A-Pillar Acceleration (Y)
Left Mid A-Pillar Acceleration (Y)
Left B-Pillar Sill Acceleration
Left Lower B-Pillar Acceleration (Y)
Left Mid B-Pillar Acceleration (Y)
Driver Seat Track at Dummy Hip Point Acceleration (Y)
Engine Top Acceleration (X)
Engine Top Acceleration (Y)
Firewall Center Acceleration (Y)
Right Roof at Vertical Impact Reference Line Acceleration (Y)
Right Sill at Vertical Impact Reference Line Acceleration (Y)
Rear Floorpan Behind Rear Axle at Centerline Acceleration (X)
Rear Floorpan Behind Rear Axle at Centerline Acceleration (Y)

Pole Instrumentation Data

Load Cell Pole Barrier #1 Force (Y)
Load Cell Pole Barrier #2 Force (Y)
Load Cell Pole Barrier #3 Force (Y)
Load Cell Pole Barrier #4 Force (Y)
Load Cell Pole Barrier #5 Force (Y)
Load Cell Pole Barrier #6 Force (Y)
Load Cell Pole Barrier #7 Force (Y)
Load Cell Pole Barrier #8 Force (Y)

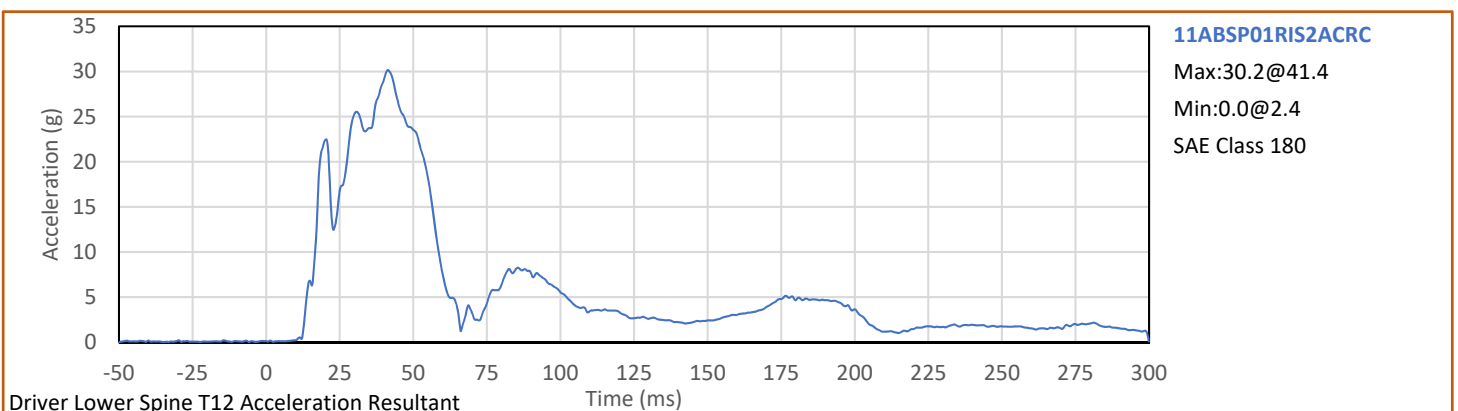
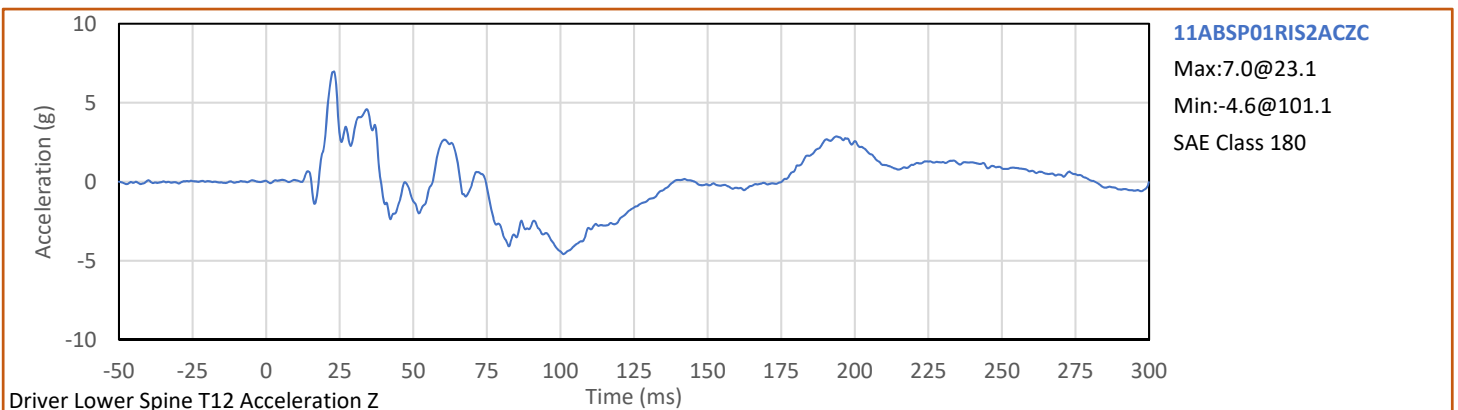
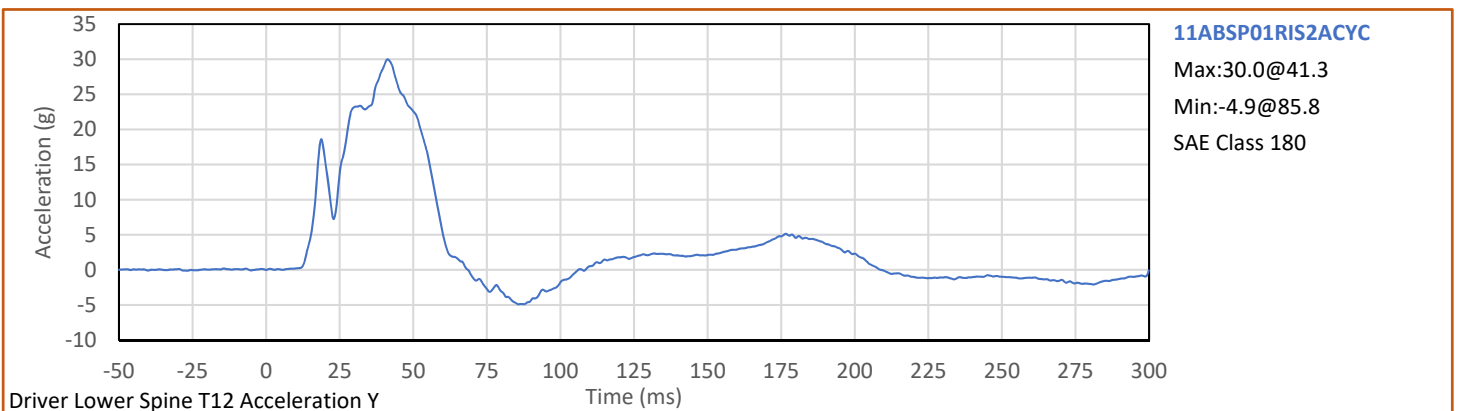
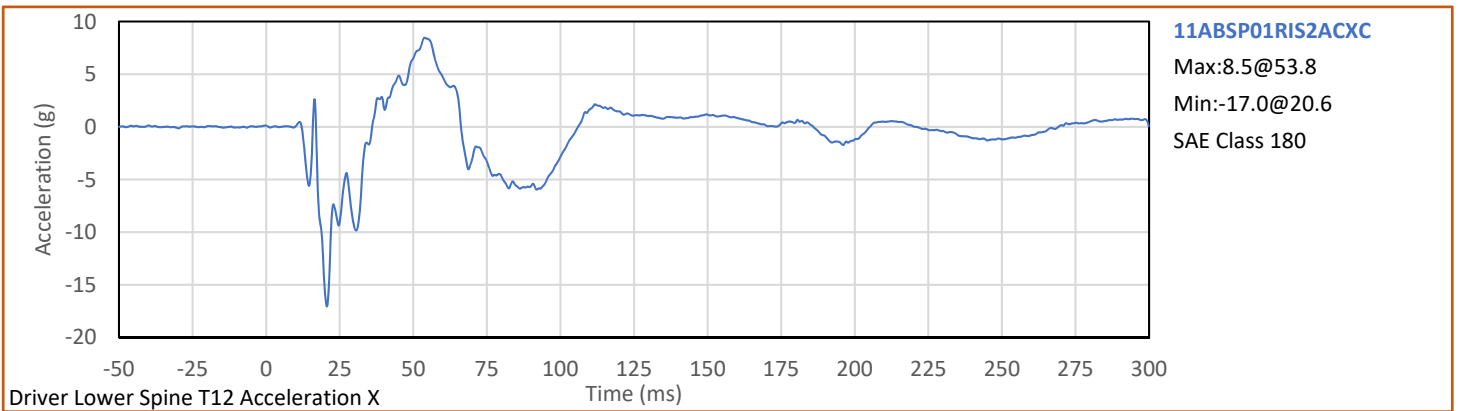
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Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20205404
Test Date: 1/10/2020



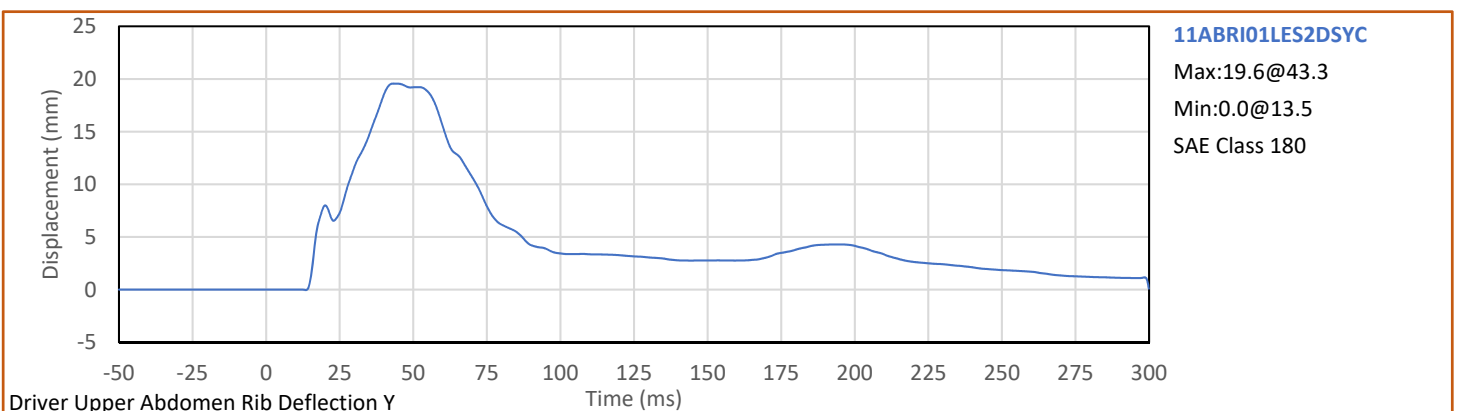
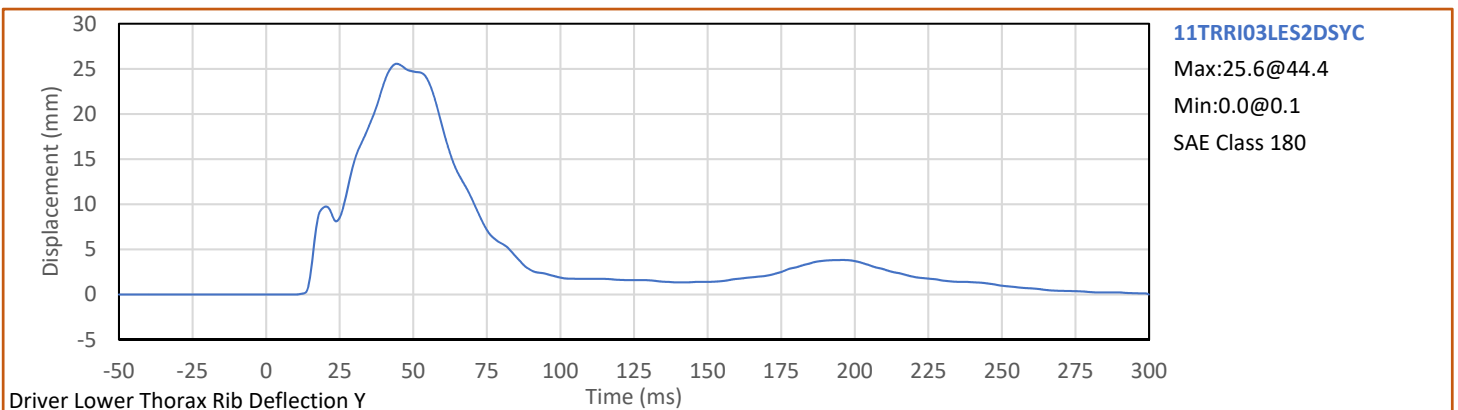
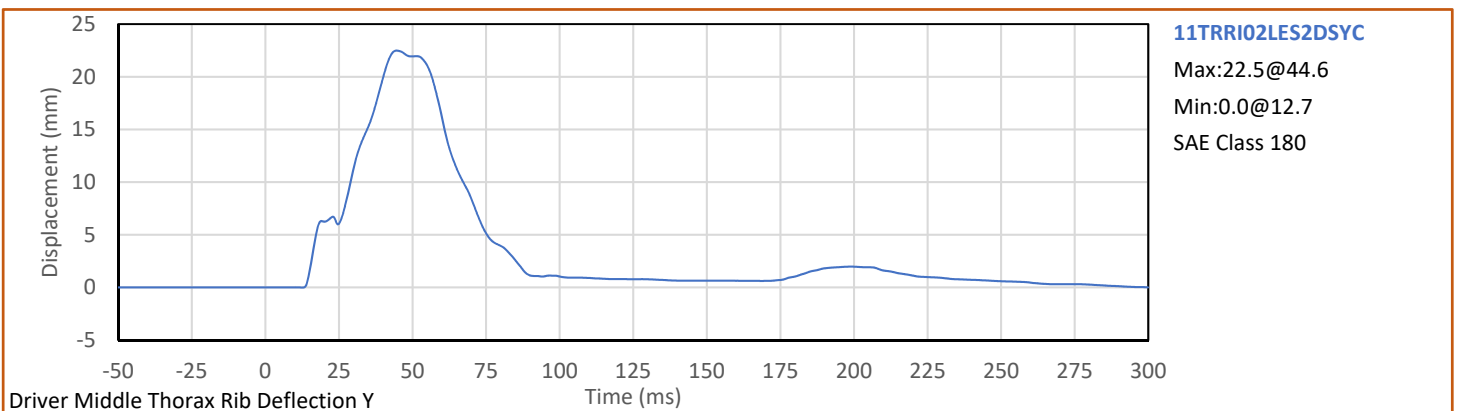
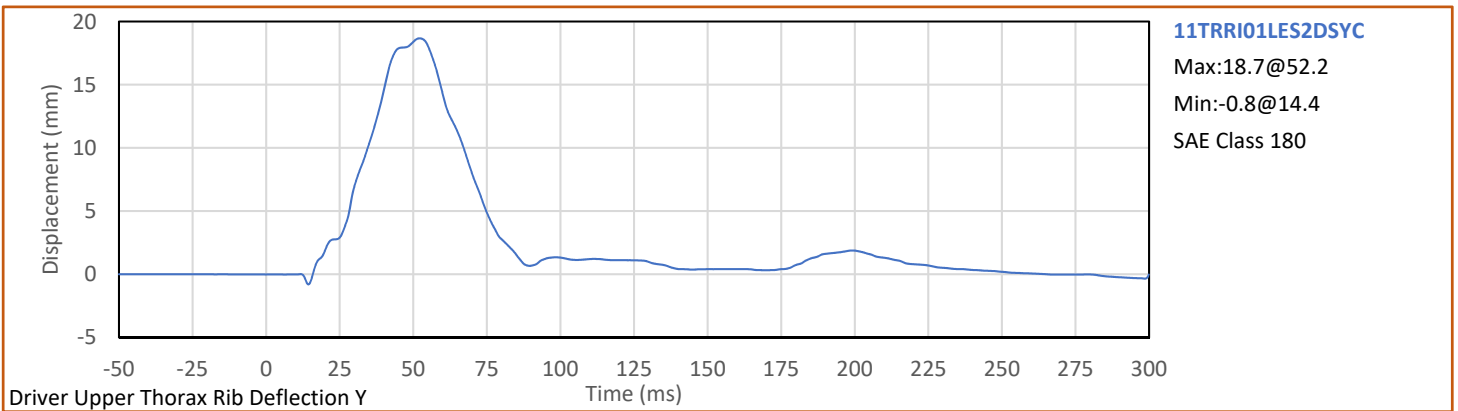
Test Vehicle: 2020 MAZDA3 4-Door Sedan
Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20205404
Test Date: 1/10/2020



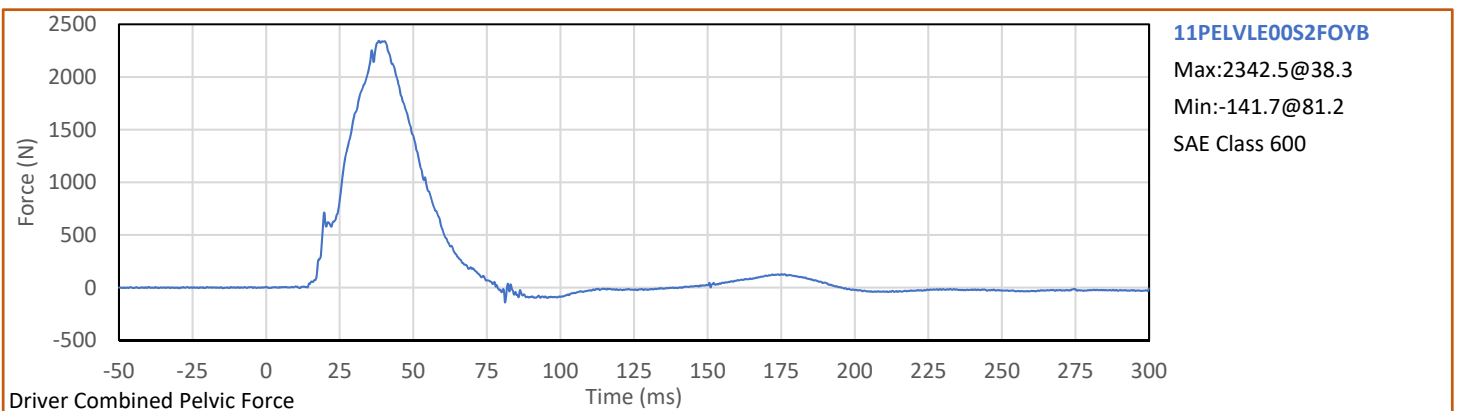
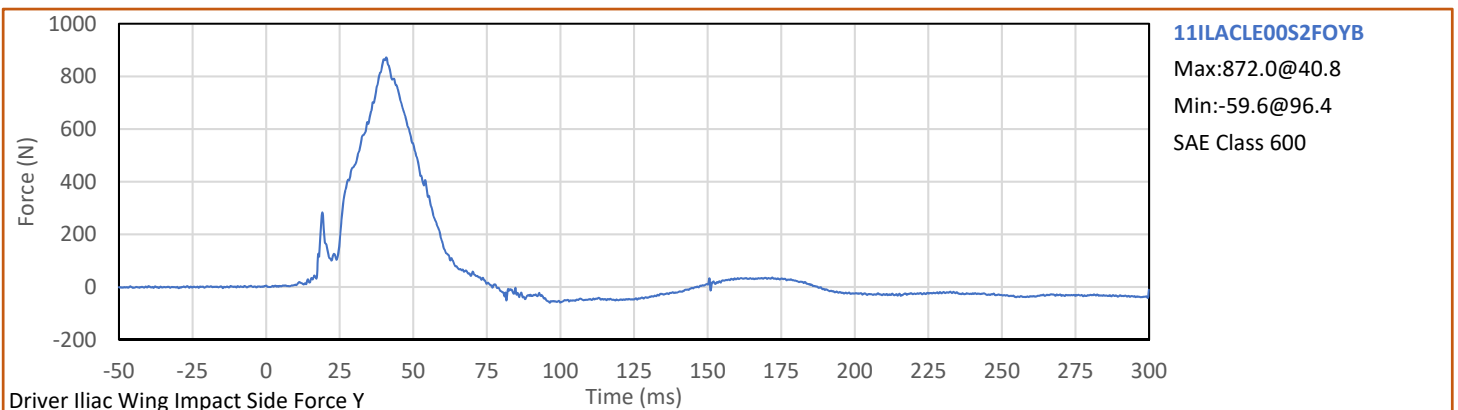
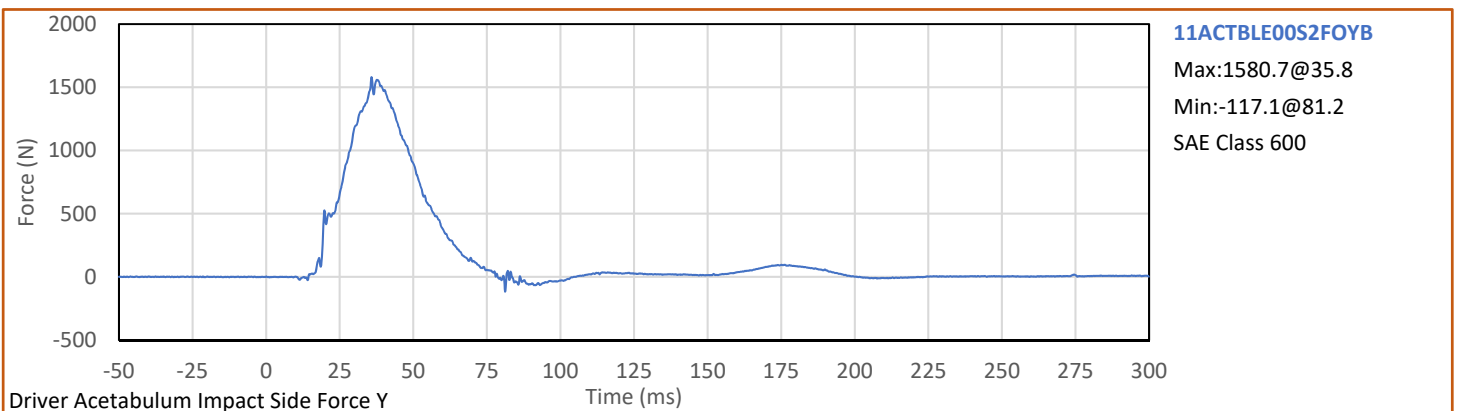
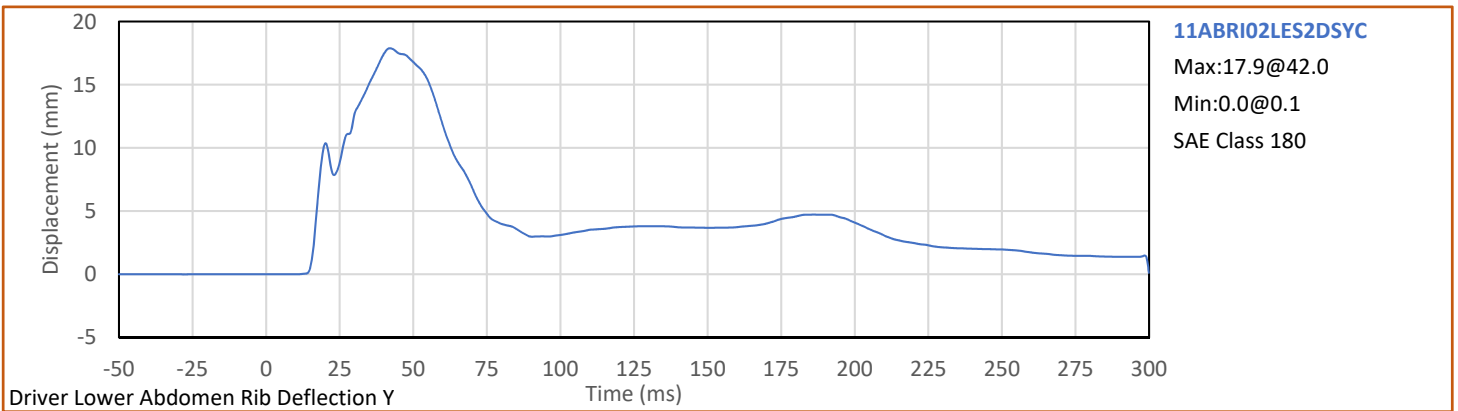
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Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20205404
Test Date: 1/10/2020



Test Vehicle: 2020 MAZDA3 4-Door Sedan
Test Program: NCAP Side Pole Impact Test

NHTSA No.: M20205404
Test Date: 1/10/2020



APPENDIX C
ATD CONFIGURATION AND PERFORMANCE VERIFICATION DATA

APPENDIX C
Pre-Test ATD Qualification and Performance Verification
SID-IIs Small Side Impact ATD
S/N: 299

ATD Serial No.: 299

Test Date: 2020-01-08

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

Technician:



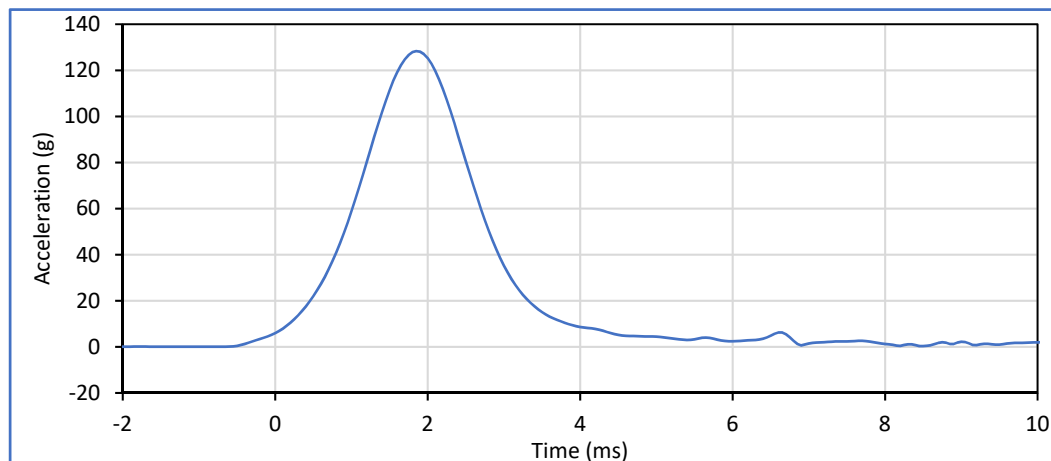
J. Hernandez

Approved By:



P. Puzzuto

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	18.9	25.6	20.6	Pass
Laboratory Humidity	%	10	70	25	Pass
Peak Resultant Acceleration	g	115.0	137.0	128.4	Pass
Peak Head Ax	g	-15.0	15.0	-7.0	Pass
Oscillations After Main Pulse	%	0.0	15.0	4.9	Pass
Is Acceleration Unimodal?	Yes/No	Yes		Yes	Pass
			Overall Test Results		Pass

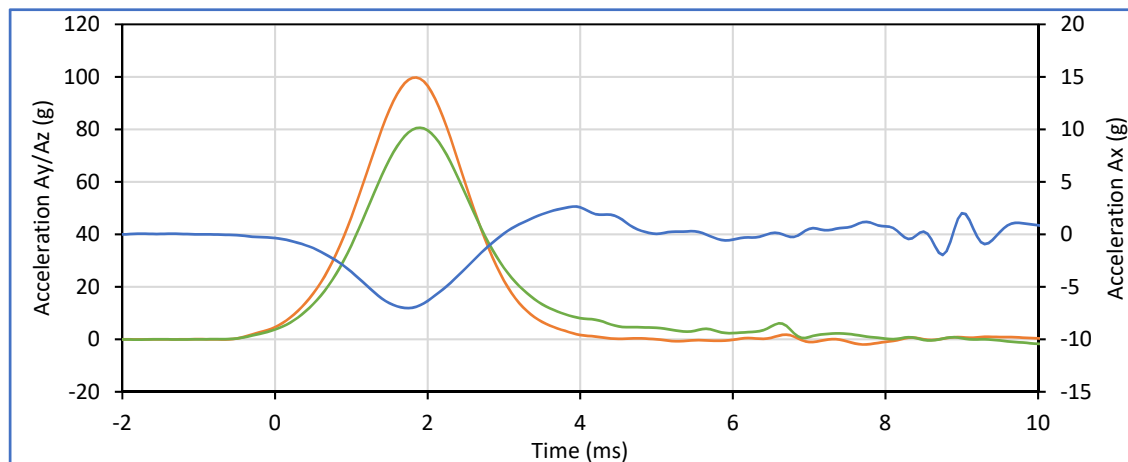


Head Resultant

Max:128.4@1.9

Min:0.3@8.5

SAE Class 1000



Head Ax

Max:2.6@3.9

Min:-7.0@1.8

SAE Class 1000

Head Ay

Max:99.8@1.9

Min:-2.0@7.7

SAE Class 1000

Head Az

Max:80.6@1.9

Min:-1.7@10.0

SAE Class 1000

Technician:

J. Hernandez

J. Hernandez

Approved By:

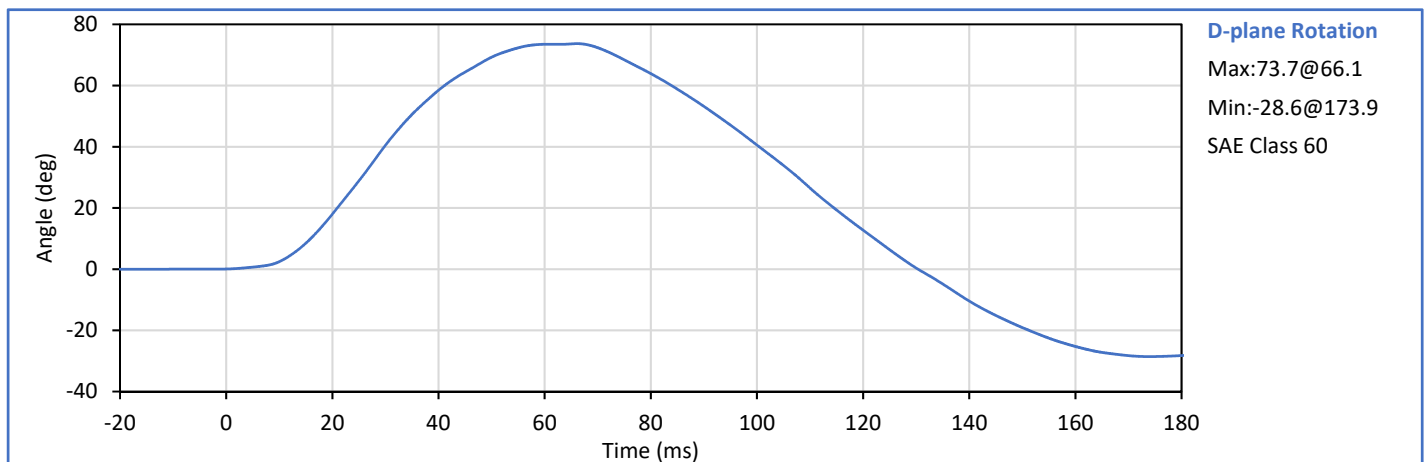
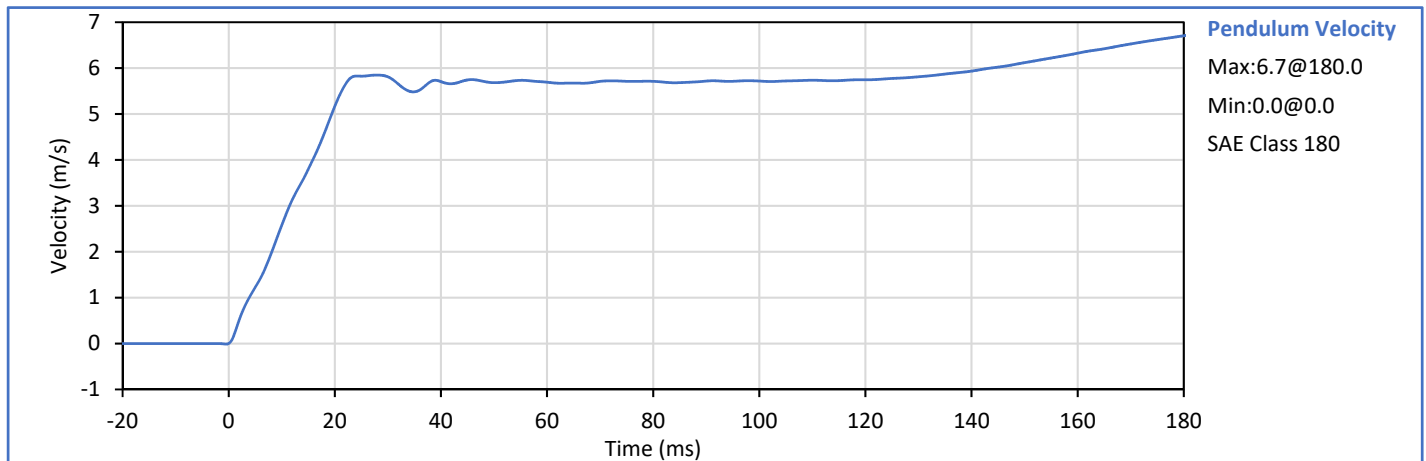
P. Puzzuto

P. Puzzuto

ATD Serial No.: 299

Test Date: 2019-12-11

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	5.60	Pass
Pendulum Decel at 10 ms	m/s	2.20	2.80	2.58	Pass
Pendulum Decel at 15 ms	m/s	3.30	4.10	3.80	Pass
Pendulum Decel at 20 ms	m/s	4.40	5.40	5.17	Pass
Pendulum Decel at 25 ms	m/s	5.40	6.10	5.83	Pass
Pendulum Decel from 25-100 ms	m/s	5.50	6.20	5.85	Pass
Peak "D" Plane Rotation	deg	71.0	81.0	73.7	Pass
Time of Peak "D" Plane Rotation	ms	50.0	70.0	66.1	Pass
Peak Occ. Condyle Moment	Nm	-44.0	-36.0	-40.9	Pass
Time of Moment Decay to 0 Nm	ms	102.0	126.0	111.3	Pass
Overall Test Results				Pass	



Technician:

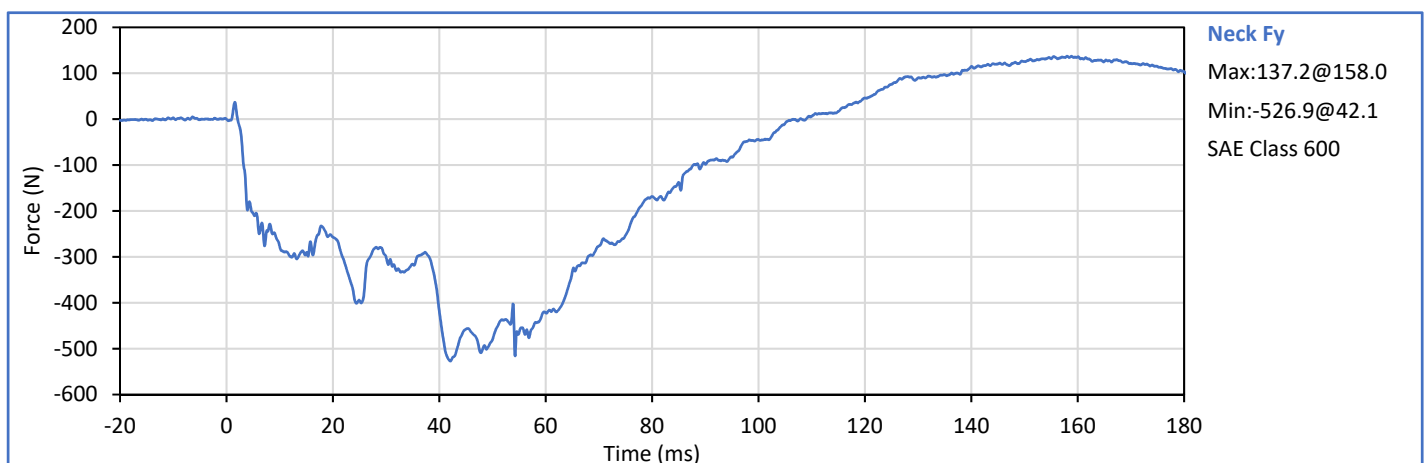
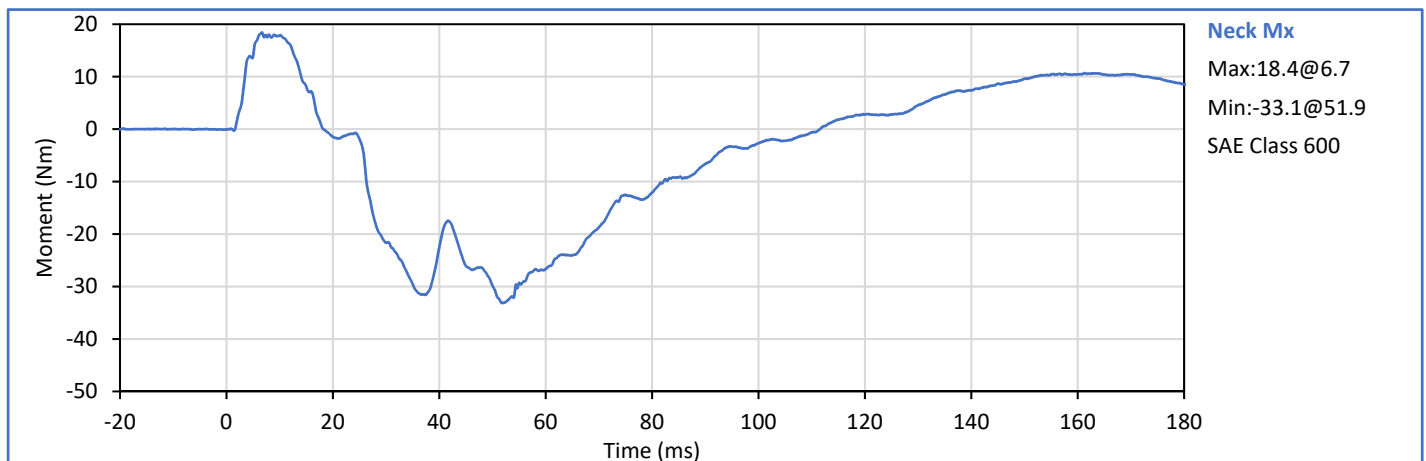
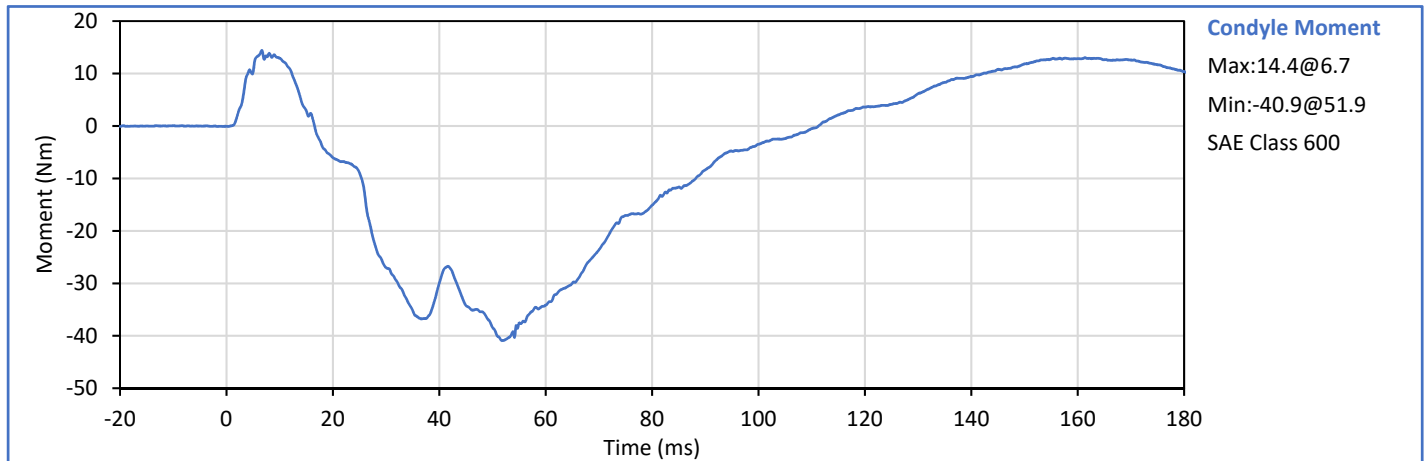
J. Hernandez

J. Hernandez

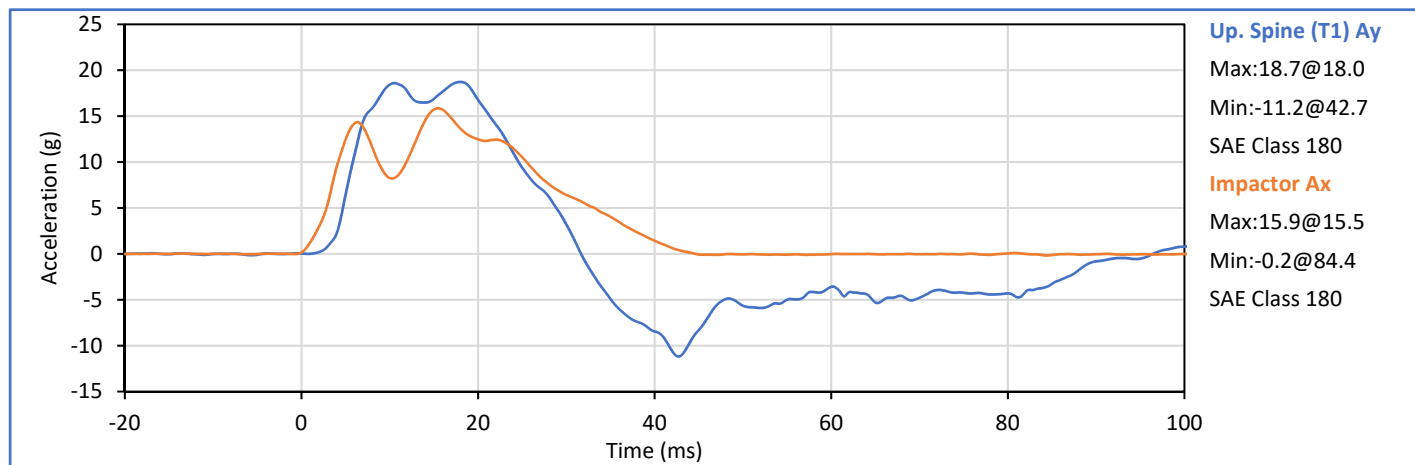
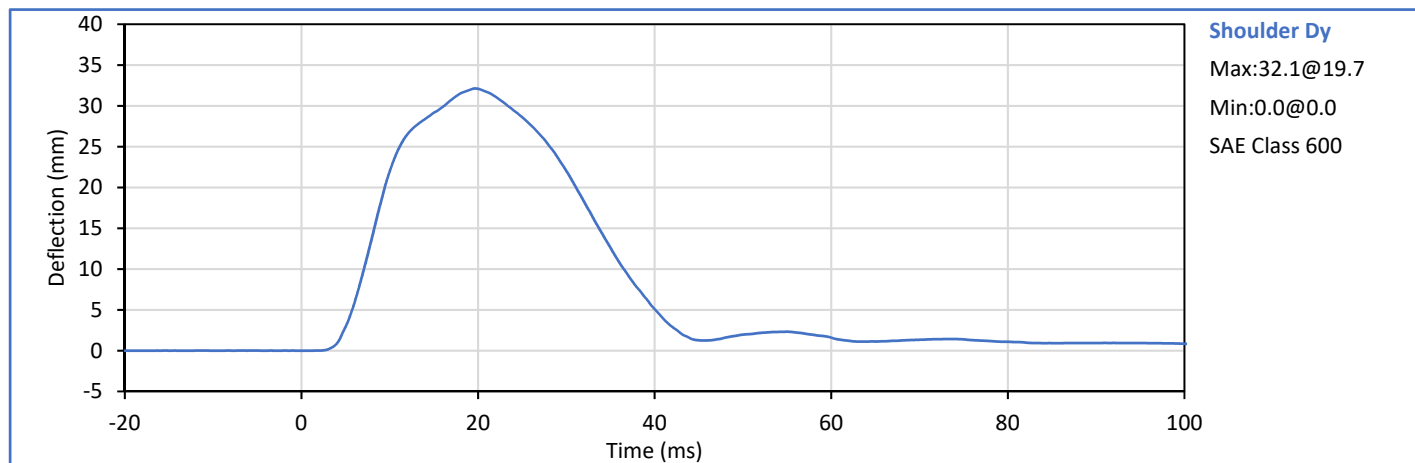
Approved By:

P. Puzzuto

P. Puzzuto



Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.1	Pass
Laboratory Humidity	%	10	70	25	Pass
Impactor Velocity	m/s	4.20	4.40	4.31	Pass
Peak Shoulder Dy	mm	28.0	37.0	32.1	Pass
Peak Upper Spine (T1) Ay	g	17.0	22.0	18.7	Pass
Peak Impactor Ax	g	13.0	18.0	15.9	Pass
Overall Test Results					Pass



Technician:

J. Hernandez

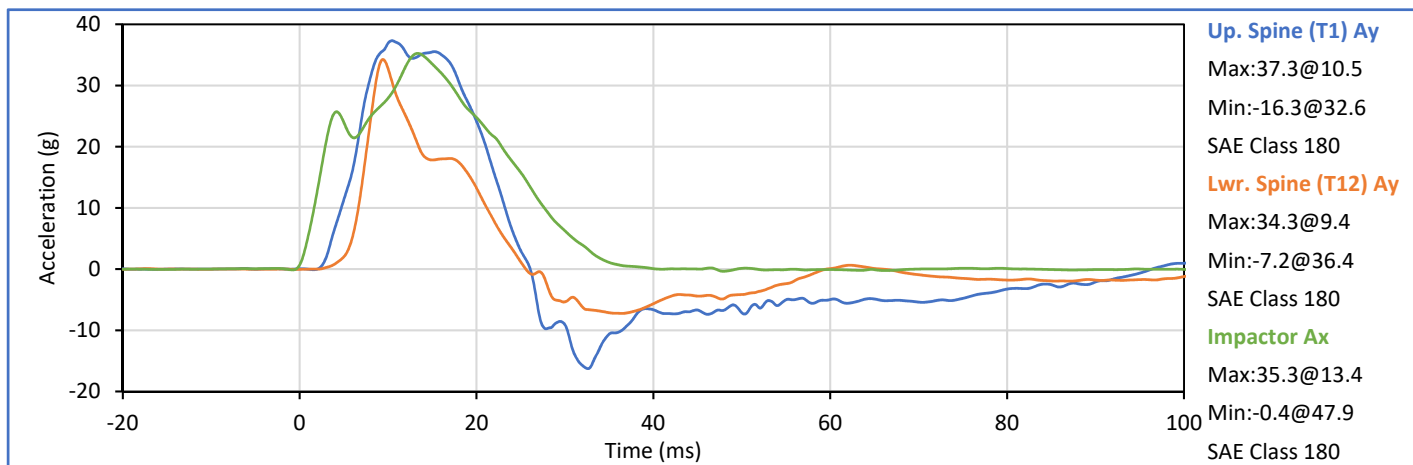
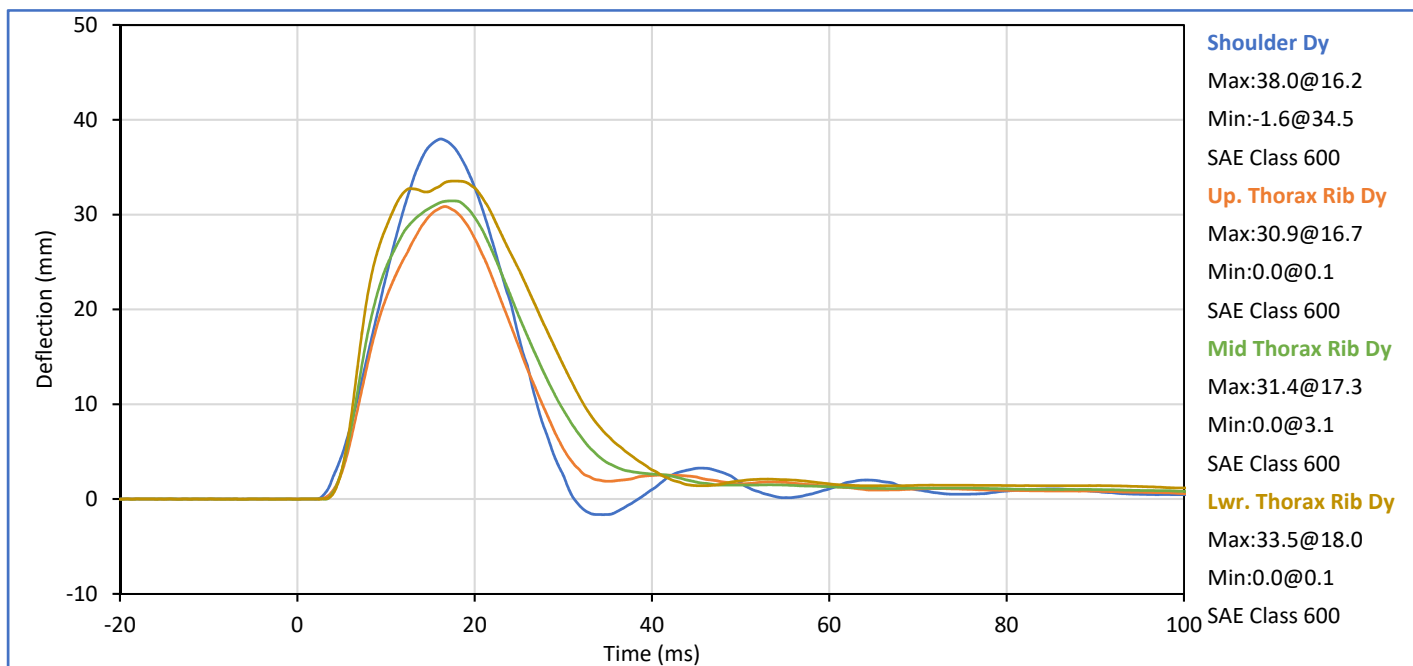
J. Hernandez

Approved By:

P. Puzzuto

P. Puzzuto

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.1	Pass
Laboratory Humidity	%	10	70	40	Pass
Impactor Velocity	m/s	6.60	6.80	6.67	Pass
Peak Shoulder Dy	mm	31.0	40.0	38.0	Pass
Peak Upper Rib Dy	mm	25.0	32.0	30.9	Pass
Peak Middle Rib Dy	mm	30.0	36.0	31.4	Pass
Peak Lower Rib Dy	mm	32.0	38.0	33.5	Pass
Peak Upper Spine (T1) Ay	g	34.0	43.0	37.3	Pass
Peak Lower Spine (T12) Ay	g	29.0	37.0	34.3	Pass
Peak Impactor Ax	g	30.0	36.0	35.3	Pass
Overall Test Results				Pass	



Technician:

J. Hernandez

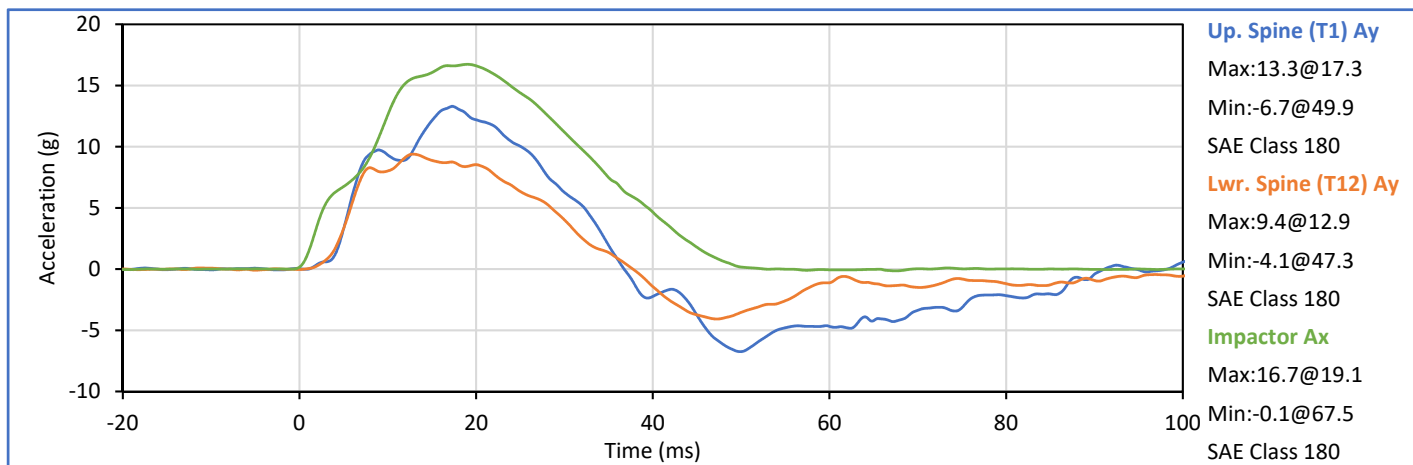
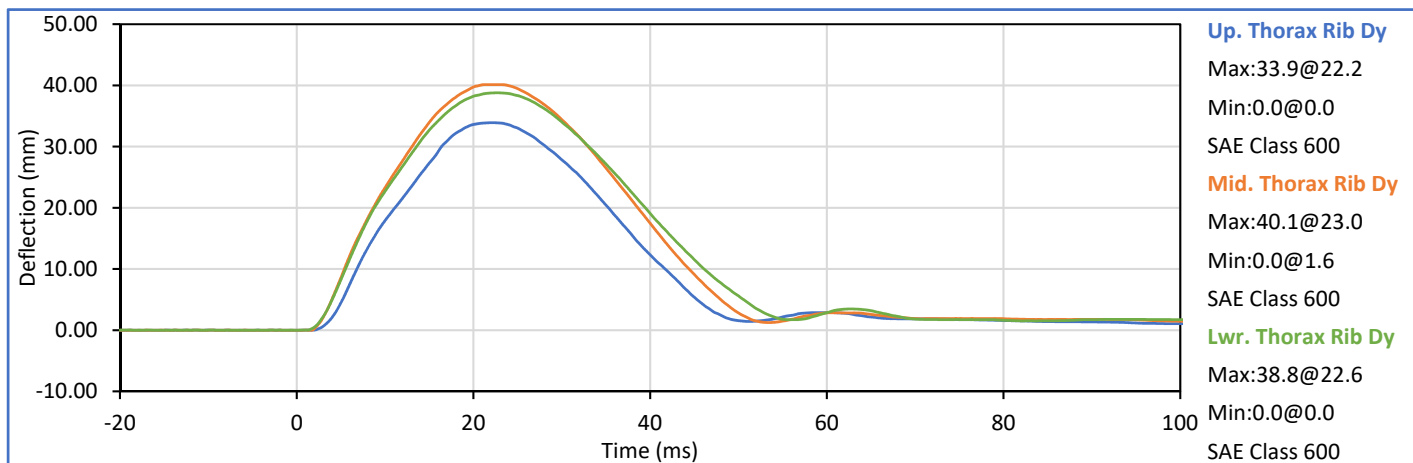
J. Hernandez

Approved By:

P. Puzzuto

P. Puzzuto

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.1	Pass
Laboratory Humidity	%	10	70	24	Pass
Impactor Velocity	m/s	4.20	4.40	4.34	Pass
Peak Upper Rib Dy	mm	32.0	40.0	33.9	Pass
Peak Middle Rib Dy	mm	39.0	45.0	40.1	Pass
Peak Lower Rib Dy	mm	35.0	43.0	38.8	Pass
Peak Upper Spine (T1) Ay	g	13.0	17.0	13.3	Pass
Peak Lower Spine (T12) Ay	g	7.0	11.0	9.4	Pass
Peak Impactor Ax	g	14.0	18.0	16.7	Pass
Overall Test Results				Pass	Pass



Technician:

J. Hernandez

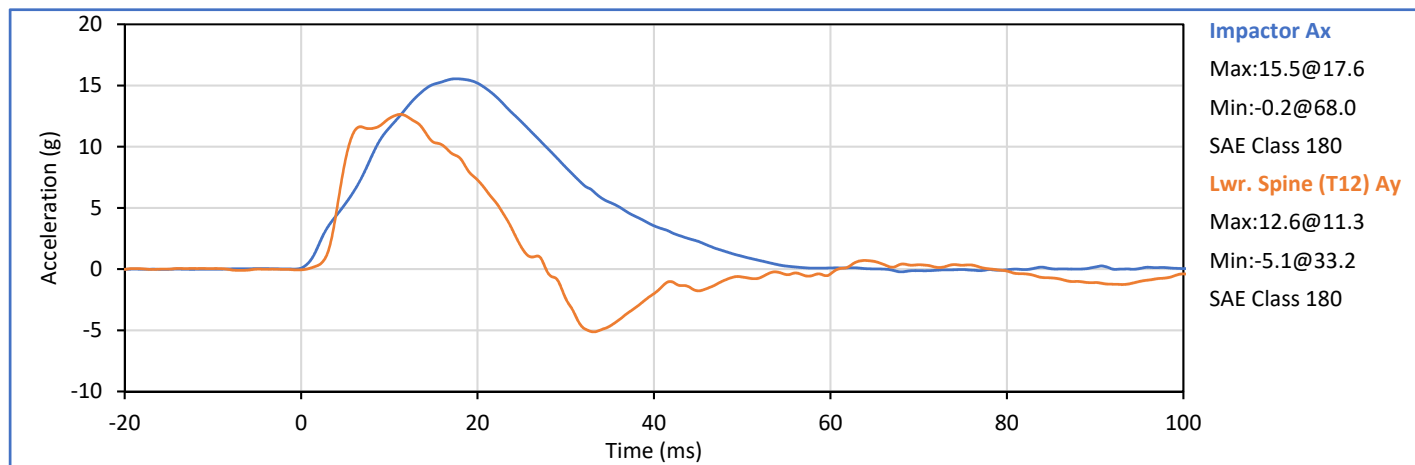
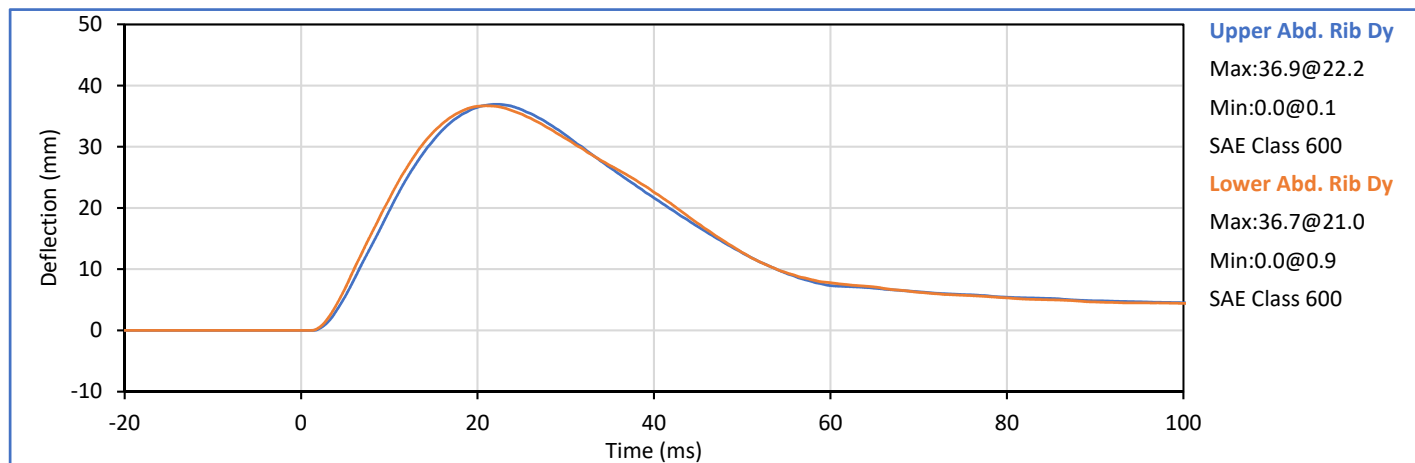
J. Hernandez

Approved By:

P. Puzzuto

P. Puzzuto

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.1	Pass
Laboratory Humidity	%	10	70	24	Pass
Impactor Velocity	m/s	4.20	4.40	4.33	Pass
Peak Upper Abdomen Rib Dy	mm	36.0	47.0	36.9	Pass
Peak Lower Abdomen Rib Dy	mm	33.0	44.0	36.7	Pass
Peak Lower Spine T12 Ay	mm	9.0	14.0	12.6	Pass
Peak Impactor Ax	g	12.0	16.0	15.5	Pass
Overall Test Results				Pass	Pass



Technician:

J. Hernandez

J. Hernandez

Approved By:

P. Puzzuto

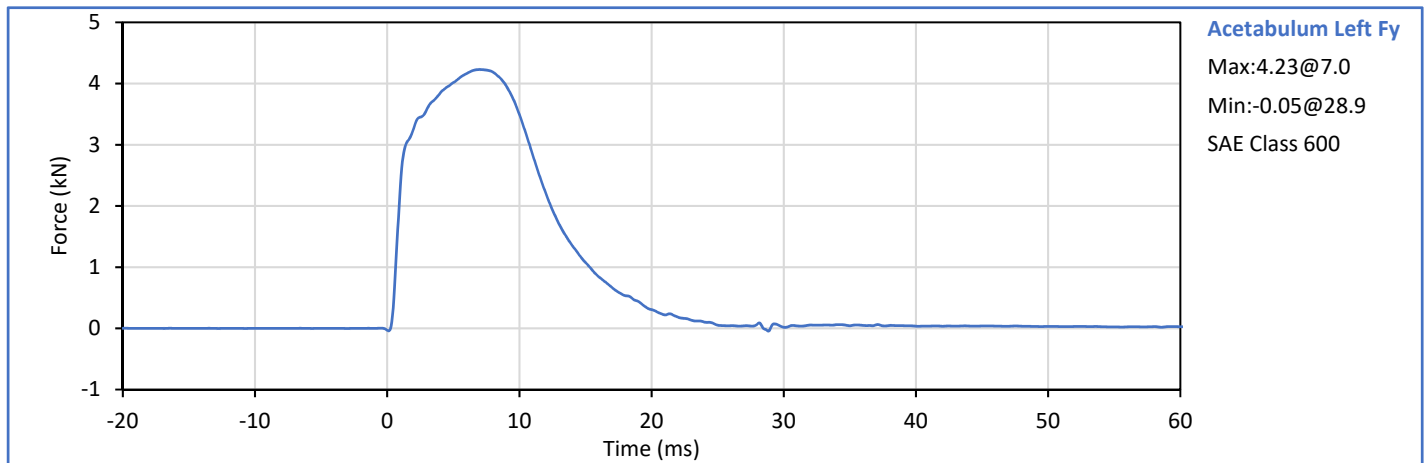
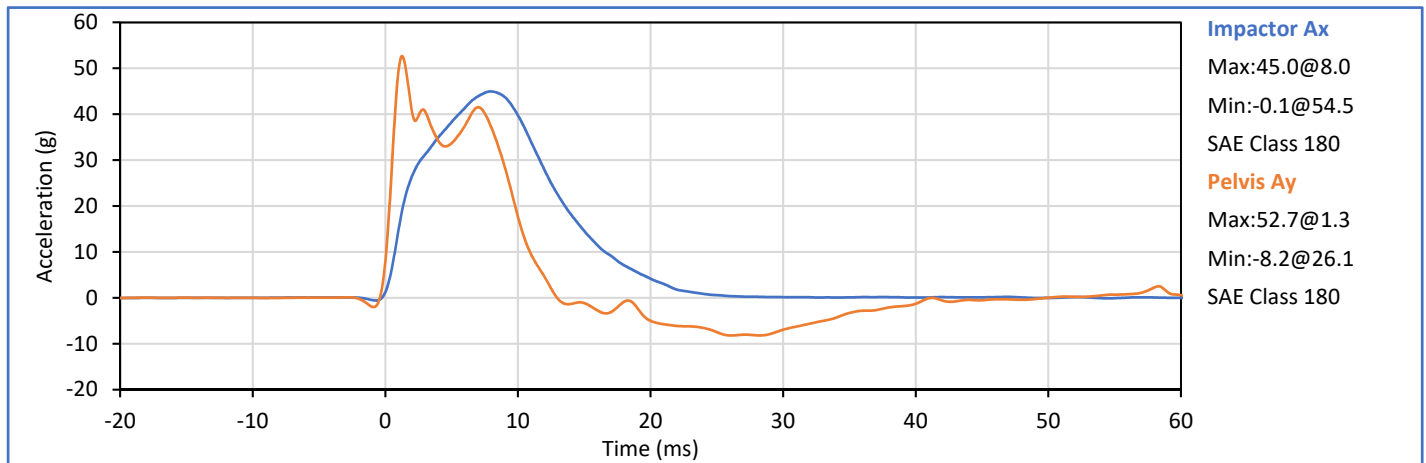
P. Puzzuto

ATD Serial No.: 299

Test Date: 2020-01-09

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.2	Pass
Laboratory Humidity	%	10	70	42	Pass
Impactor Velocity	m/s	6.60	6.80	6.71	Pass
Peak Acetabulum Fy	kN	3.60	4.30	4.23	Pass
Pelvis Ay after 6ms	g	34.0	42.0	41.5	Pass
Peak Impactor Ax	g	38.0	47.0	45.0	Pass
Overall Test Results				Pass	Pass

Pelvis Plug S/N: 12496 (SACO)



Technician:

J. Hernandez

J. Hernandez

Approved By:

P. Puzzuto

P. Puzzuto

ATD Serial No.: 299

Test Date: 2020-01-09

Pelvis Plug S/N: 12496 (SACO)



SID-IIs Pelvis Plug Certification Test

Plug S/N 12496

Test Number 7423

Report Number 7437

Test Date 10/2/2018 7:59:58 AM

	Test Results	Spec Min	Spec Max
Force @ 0.5 mm (N)	319.68	50.00	600.00
Force @ 1.5 mm (N)	1,160.17	850.00	1,400.00
Force @ 2.5 mm (N)	1,424.33	1,306.00	1,618.00
Force @ 3.0 mm (N)	1,474.14	1,361.00	1,673.00

Testing Machine STM-20 5965542

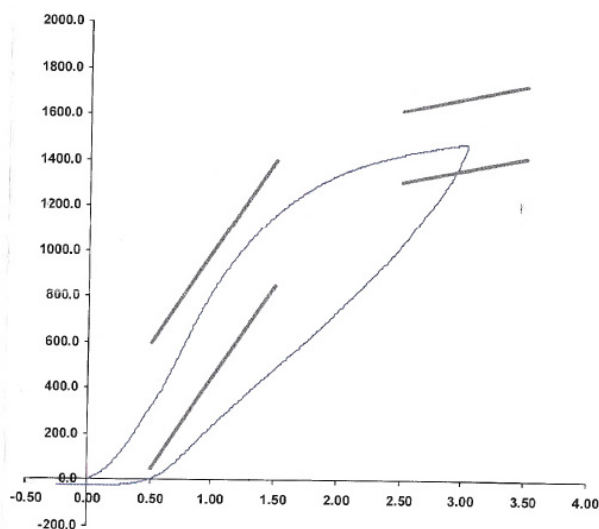
Load Cell S/N (F1360947), Units (LBS) 1000

Crosshead Speed (mm / min) or Rate 12.7

Extension or Position Measured by XHD_100 (XHD100)

Notes:

Force (-N) vs Extension (-mm)



Operator DC

Part Number 160-4450

Template No 107 02-Oct-18

SACO Research

By: DC

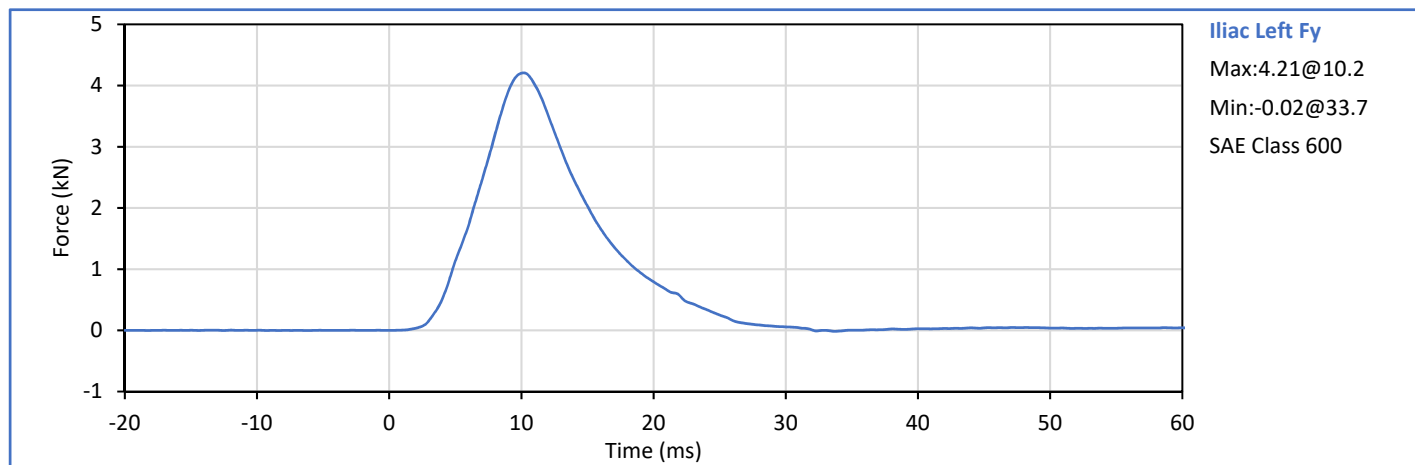
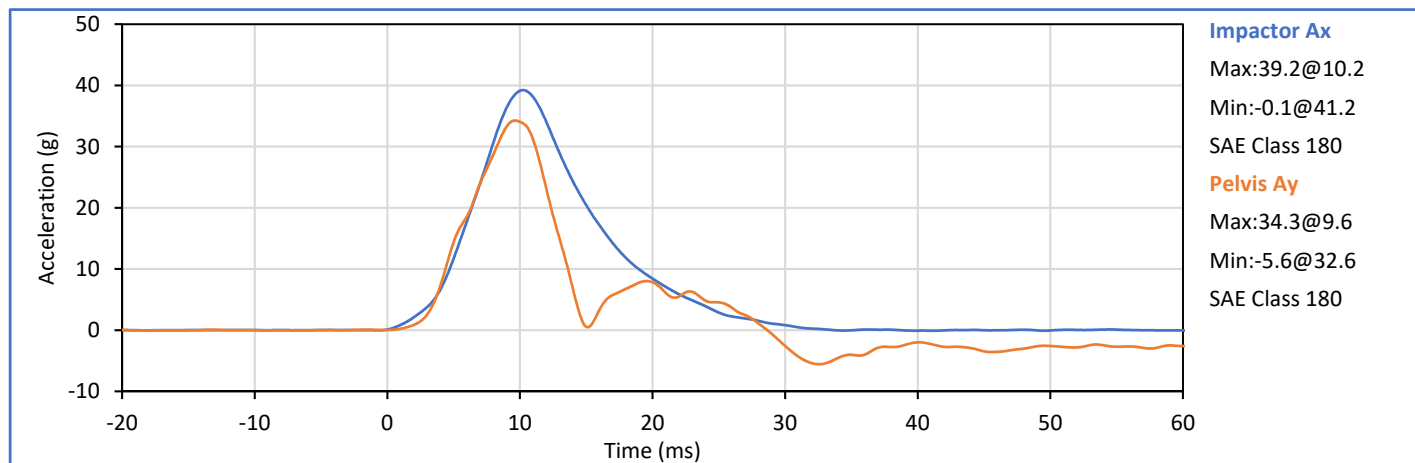
Date: 10/2/18

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

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.1	Pass
Laboratory Humidity	%	10	70	25	Pass
Impactor Velocity	m/s	4.20	4.40	4.31	Pass
Peak Iliac Fy	kN	4.10	5.10	4.21	Pass
Pelvis Ay after 6ms	g	28.0	39.0	34.3	Pass
Peak Impactor Ax	g	36.0	45.0	39.2	Pass
Overall Test Results				Pass	

Pelvis Plug S/N: 12228 (SACO) *

* 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
SID-IIs Small Side Impact ATD
S/N: 299

ATD Serial No.: 299

Test Date: 2020-01-14

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	26	Pass
A - Sitting Height	mm	772	788	778	Pass
B - Shoulder Pivot Height	mm	437	453	450	Pass
C - Hpoint Height	mm	79	89	86	Pass
D - H Point From Seatback	mm	141	151	149	Pass
E - Shoulder Pivot From Backline	mm	97	107	102	Pass
F - Thigh Clearance	mm	119	135	124	Pass
G - Head Breadth	mm	140	148	145	Pass
H - Head Back From Backline	mm	40	46	43	Pass
I - Head Depth	mm	178	188	185	Pass
J - Head Circumference	mm	541	551	544	Pass
K - Buttock To Knee Length	mm	514	540	525	Pass
L - Popliteal Height	mm	343	369	350	Pass
K - Knee Pivot To Floor Height	mm	392	409	398	Pass
N - Buttock Popliteal Length	mm	416	442	427	Pass
O - Chest Depth W/O Jacket	mm	195	211	202	Pass
P - Foot Length	mm	216	232	224	Pass
Q - Hip Breadth (W/Pelvic Plugs)	mm	313	323	319	Pass
R - Arm Length	mm	249	259	254	Pass
S - Knee Joint To Seatback	mm	477	493	487	Pass
V - Shoulder Width	mm	341	357	351	Pass
W - Foot Width	mm	78	94	86	Pass
Y - Chest Circumference W/Jacket	mm	851	881	862	Pass
Z - Waist Circumference	mm	761	791	780	Pass
			Overall Test Results		Pass

Technician:



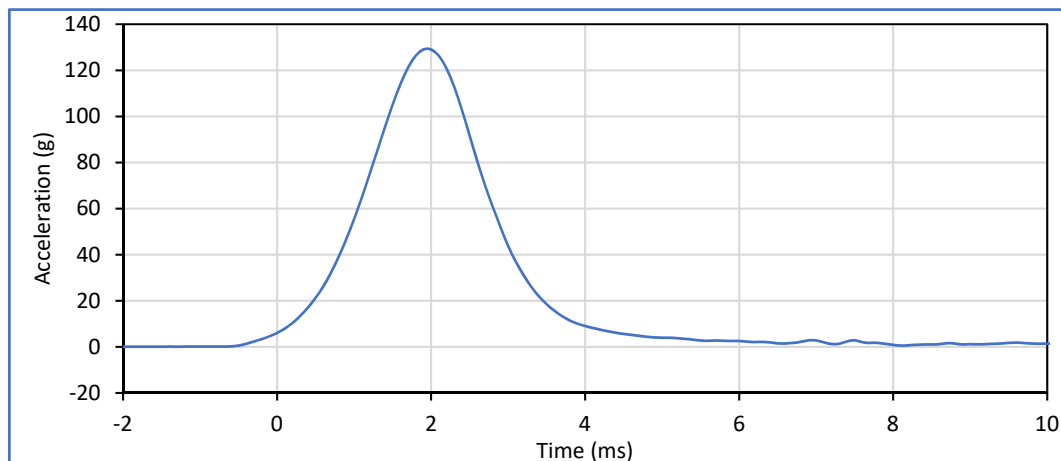
J. Hernandez

Approved By:



P. Puzzuto

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	18.9	25.6	21.1	Pass
Laboratory Humidity	%	10	70	26	Pass
Peak Resultant Acceleration	g	115.0	137.0	129.4	Pass
Peak Head Ax	g	-15.0	15.0	-0.9	Pass
Oscillations After Main Pulse	%	0.0	15.0	2.3	Pass
Is Acceleration Unimodal?	Yes/No	Yes		Yes	Pass
			Overall Test Results		Pass

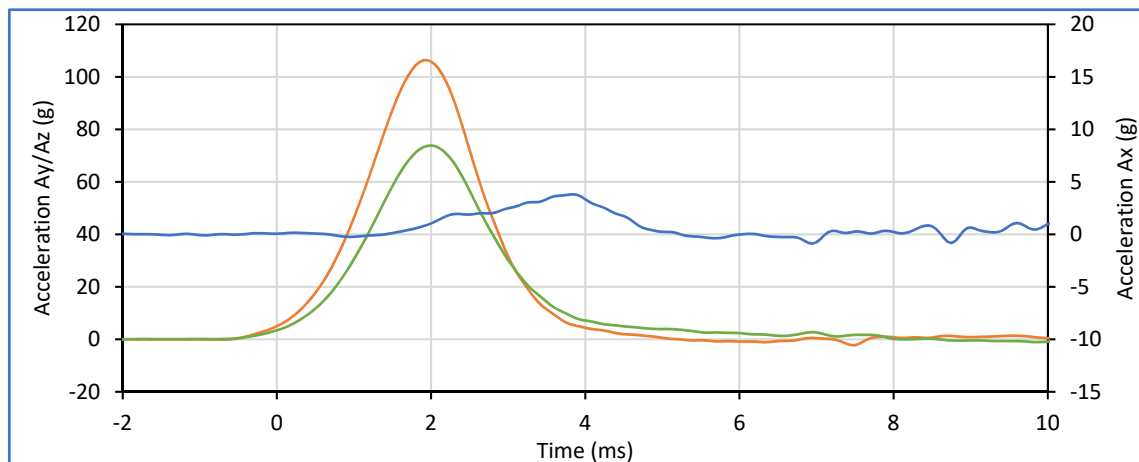


Head Resultant

Max:129.4@2.0

Min:0.5@8.1

SAE Class 1000



Head Ax

Max:3.8@3.9

Min:-0.9@7.0

SAE Class 1000

Head Ay

Max:106.4@2.0

Min:-2.2@7.5

SAE Class 1000

Head Az

Max:73.9@2.0

Min:-1.1@9.9

SAE Class 1000

Technician:

J. Hernandez

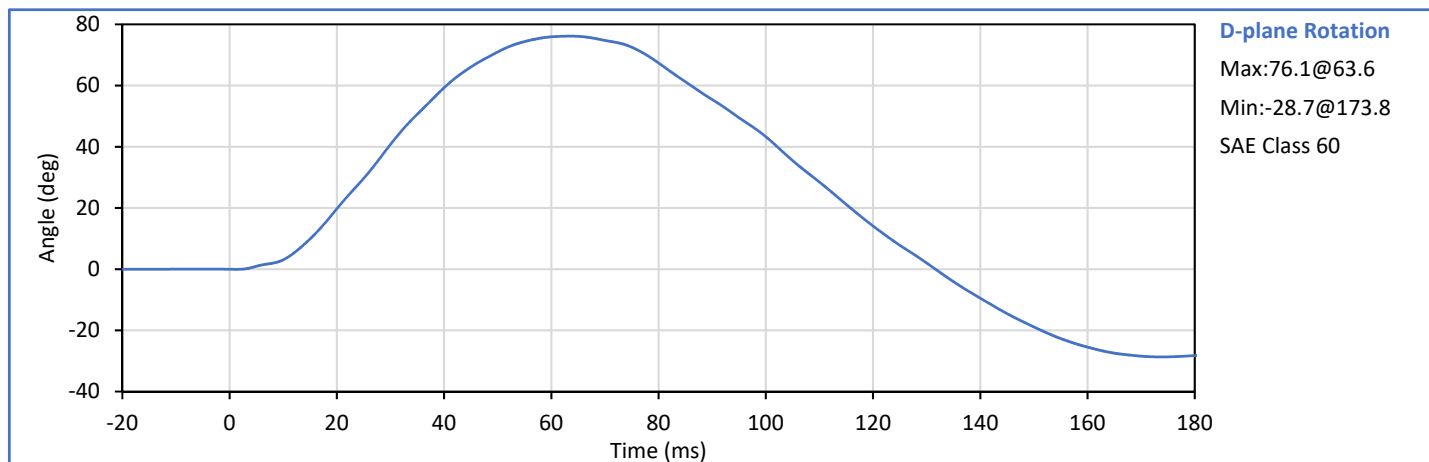
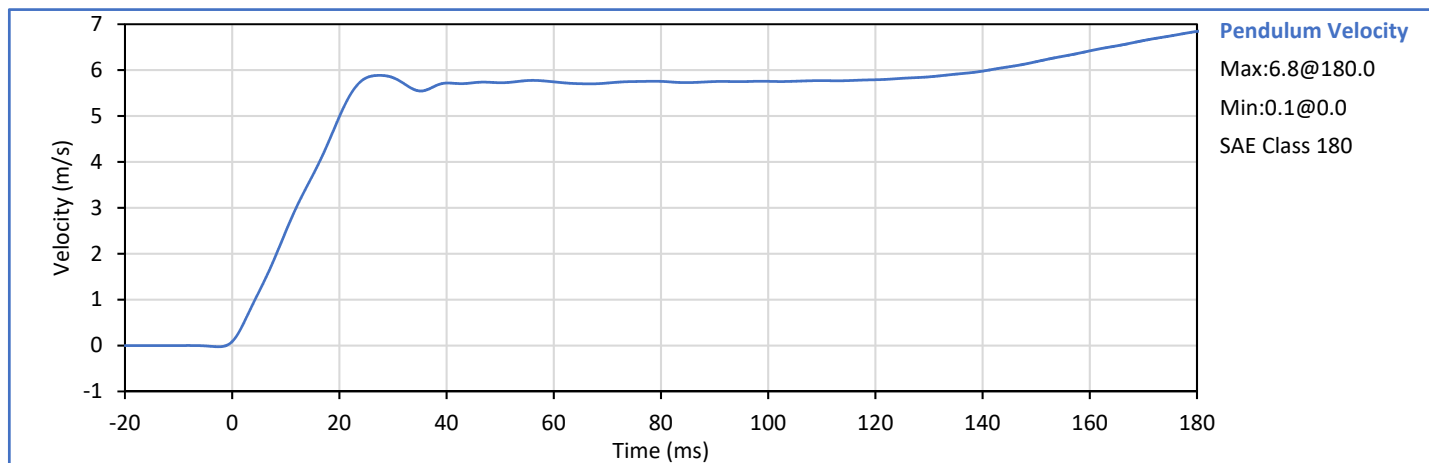
J. Hernandez

Approved By:

P. Puzzuto

P. Puzzuto

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.1	Pass
Laboratory Humidity	%	10	70	27	Pass
Pendulum Velocity	m/s	5.51	5.63	5.62	Pass
Pendulum Decel at 10 ms	m/s	2.20	2.80	2.48	Pass
Pendulum Decel at 15 ms	m/s	3.30	4.10	3.70	Pass
Pendulum Decel at 20 ms	m/s	4.40	5.40	4.98	Pass
Pendulum Decel at 25 ms	m/s	5.40	6.10	5.83	Pass
Pendulum Decel from 25-100 ms	m/s	5.50	6.20	5.89	Pass
Peak "D" Plane Rotation	deg	71.0	81.0	76.1	Pass
Time of Peak "D" Plane Rotation	ms	50.0	70.0	63.6	Pass
Peak Occ. Condyle Moment	Nm	-44.0	-36.0	-42.5	Pass
Time of Moment Decay to 0 Nm	ms	102.0	126.0	109.8	Pass
Overall Test Results				Pass	Pass



Technician:

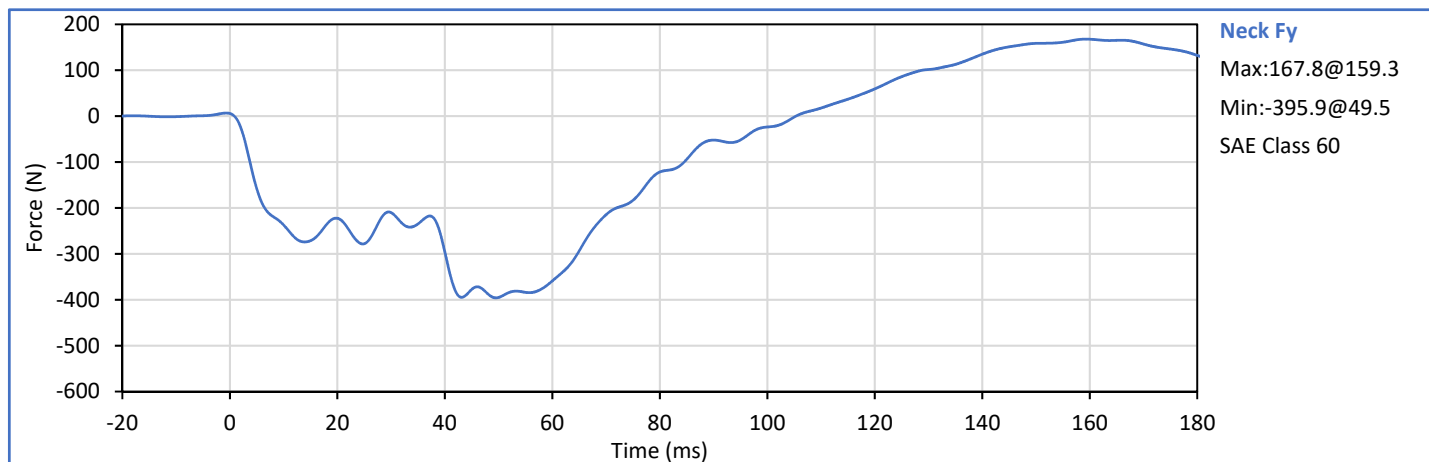
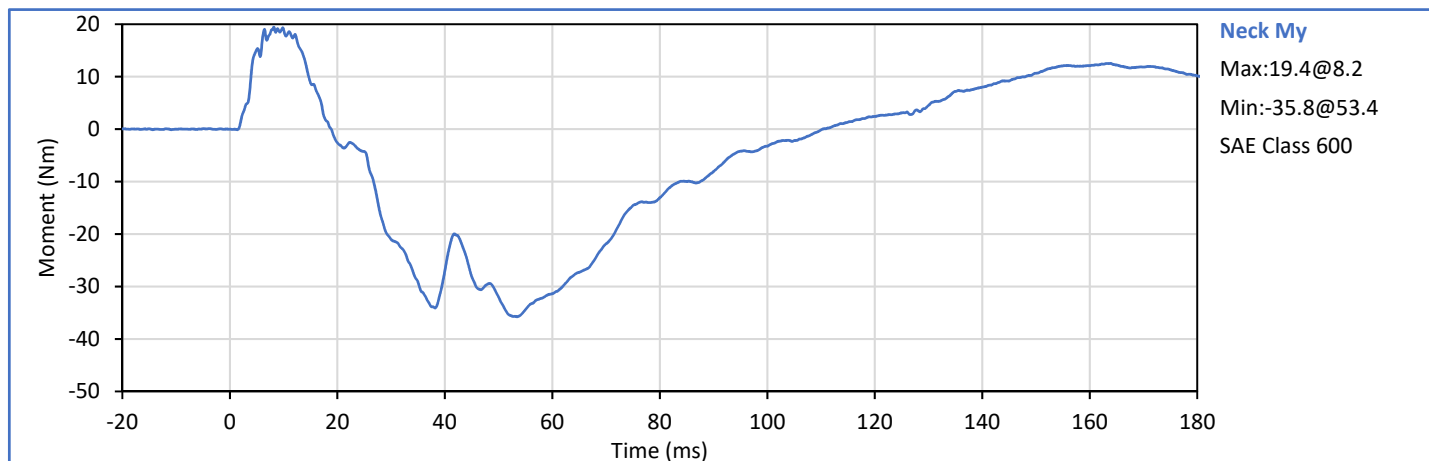
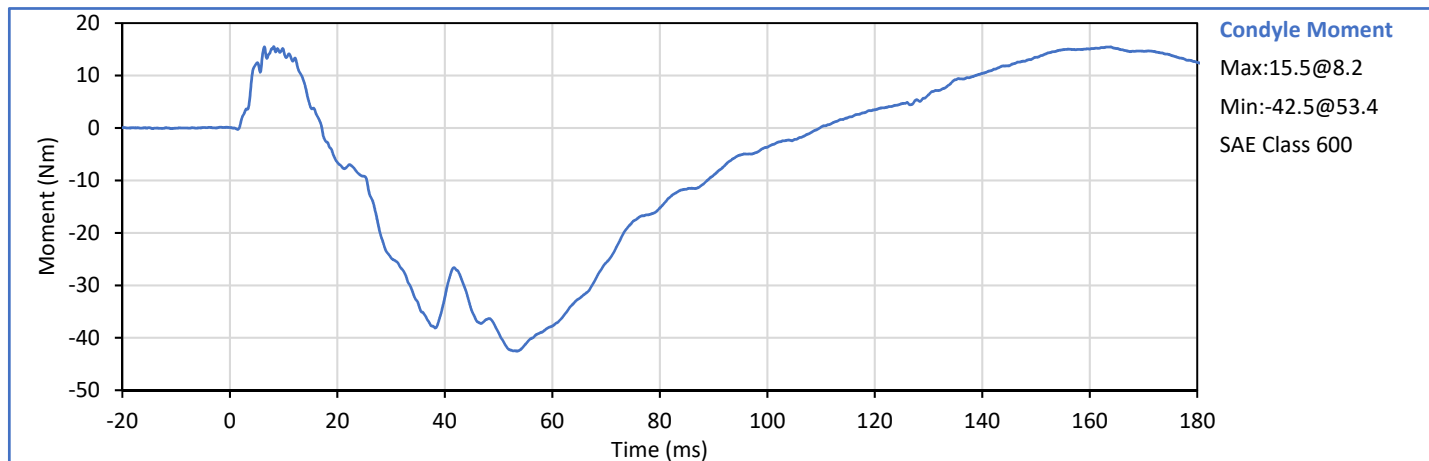
J. Hernandez

J. Hernandez

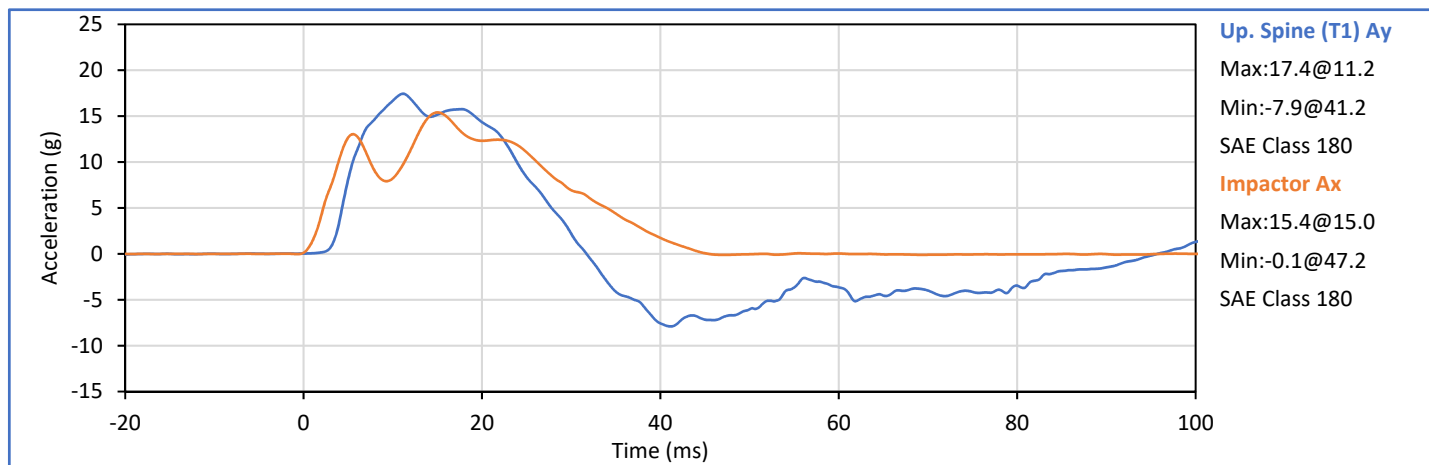
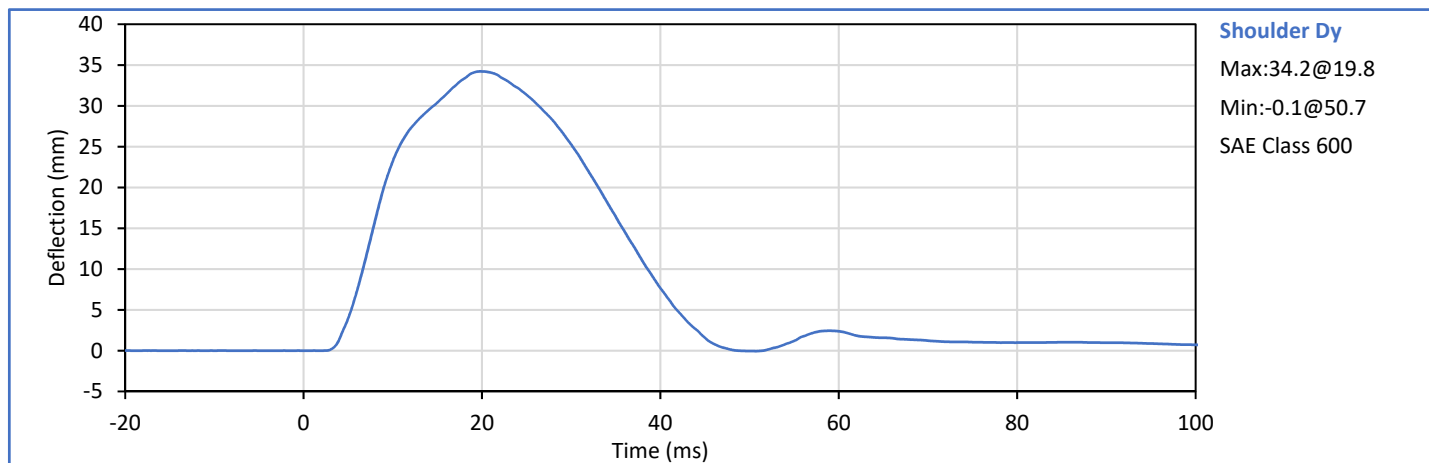
Approved By:

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	26	Pass
Impactor Velocity	m/s	4.20	4.40	4.31	Pass
Peak Shoulder Dy	mm	28.0	37.0	34.2	Pass
Peak Upper Spine (T1) Ay	g	17.0	22.0	17.4	Pass
Peak Impactor Ax	g	13.0	18.0	15.4	Pass
Overall Test Results					Pass



Technician:

J. Hernandez

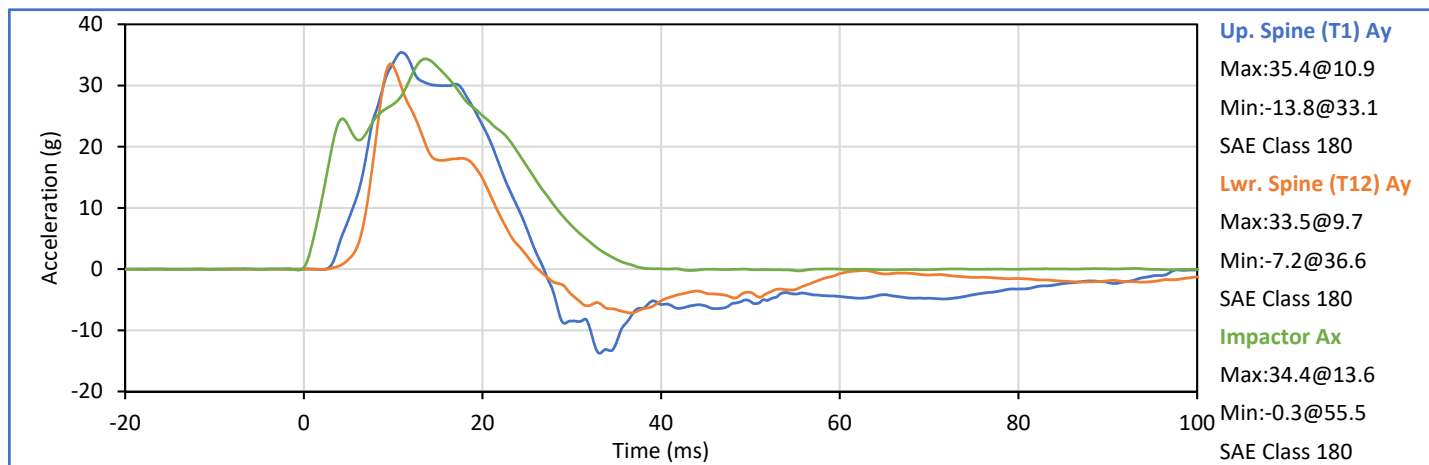
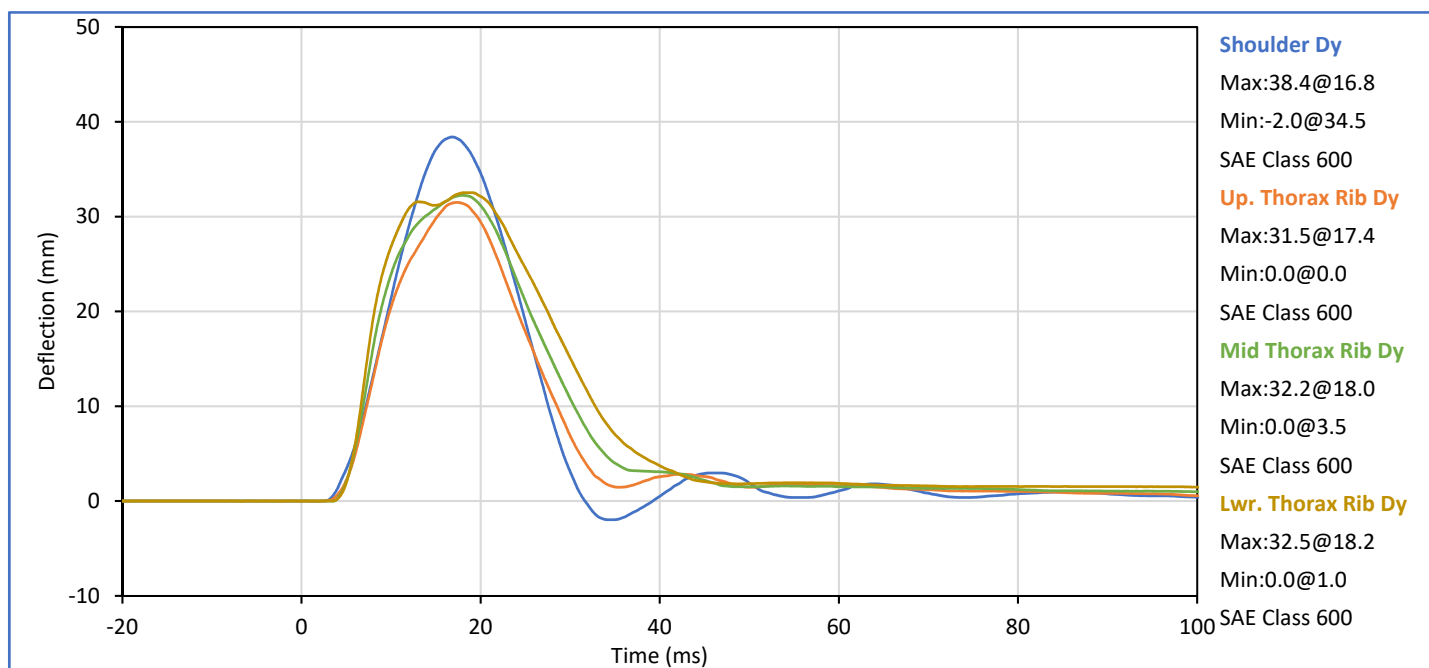
J. Hernandez

Approved By:

P. Puzzuto

P. Puzzuto

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.1	Pass
Laboratory Humidity	%	10	70	26	Pass
Impactor Velocity	m/s	6.60	6.80	6.66	Pass
Peak Shoulder Dy	mm	31.0	40.0	38.4	Pass
Peak Upper Rib Dy	mm	25.0	32.0	31.5	Pass
Peak Middle Rib Dy	mm	30.0	36.0	32.2	Pass
Peak Lower Rib Dy	mm	32.0	38.0	32.5	Pass
Peak Upper Spine (T1) Ay	g	34.0	43.0	35.4	Pass
Peak Lower Spine (T12) Ay	g	29.0	37.0	33.5	Pass
Peak Impactor Ax	g	30.0	36.0	34.4	Pass
Overall Test Results					Pass



Technician:

J. Hernandez

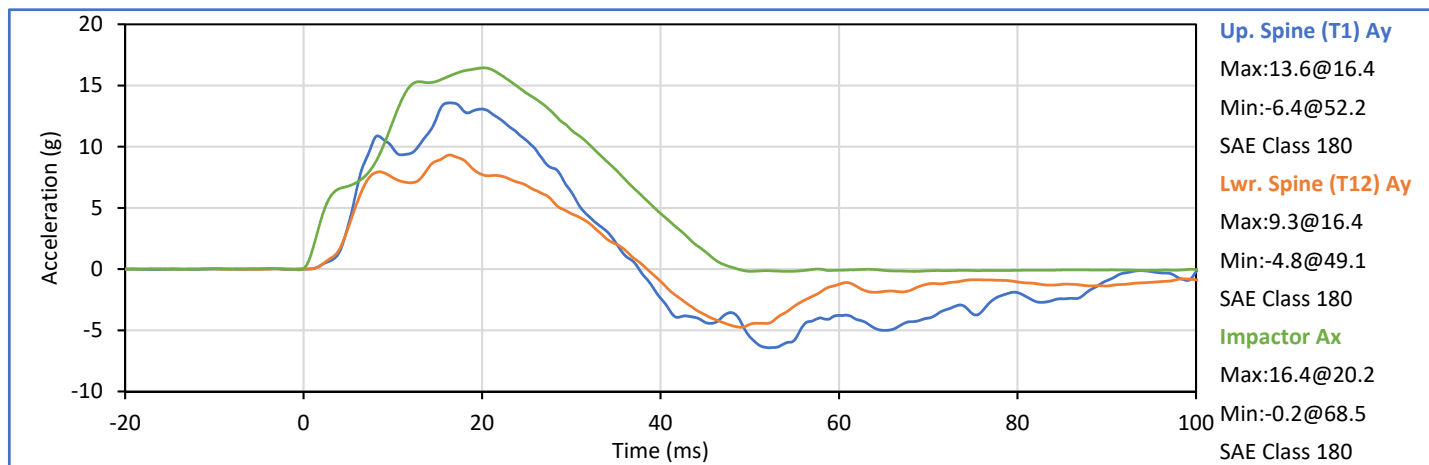
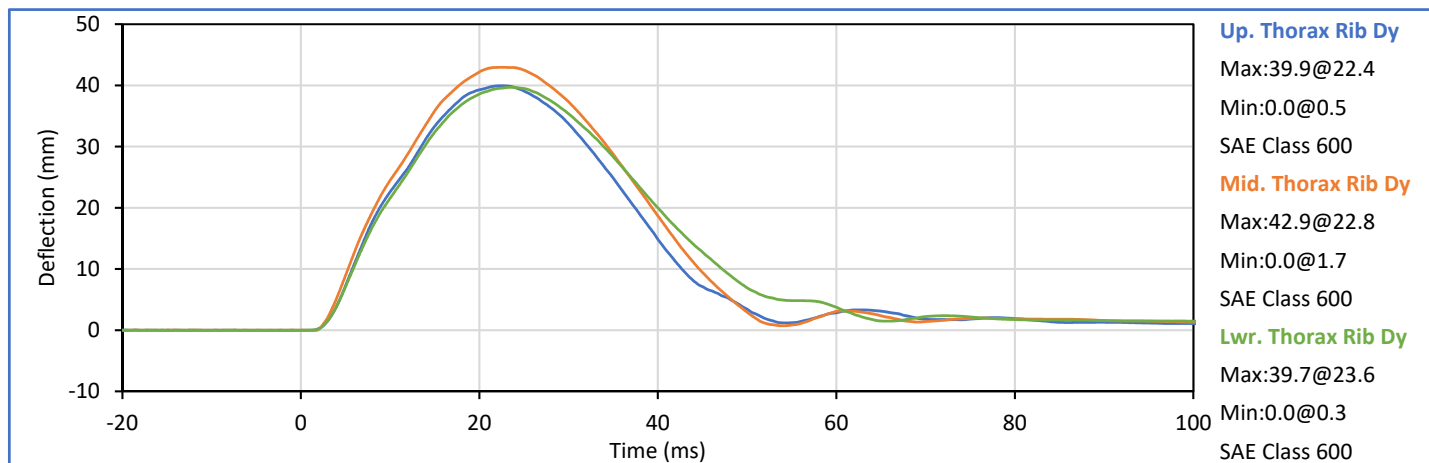
J. Hernandez

Approved By:

P. Puzzuto

P. Puzzuto

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.1	Pass
Laboratory Humidity	%	10	70	26	Pass
Impactor Velocity	m/s	4.20	4.40	4.31	Pass
Peak Upper Rib Dy	mm	32.0	40.0	39.9	Pass
Peak Middle Rib Dy	mm	39.0	45.0	42.9	Pass
Peak Lower Rib Dy	mm	35.0	43.0	39.7	Pass
Peak Upper Spine (T1) Ay	g	13.0	17.0	13.6	Pass
Peak Lower Spine (T12) Ay	g	7.0	11.0	9.3	Pass
Peak Impactor Ax	g	14.0	18.0	16.4	Pass
Overall Test Results				Pass	Pass



Technician:

J. Hernandez

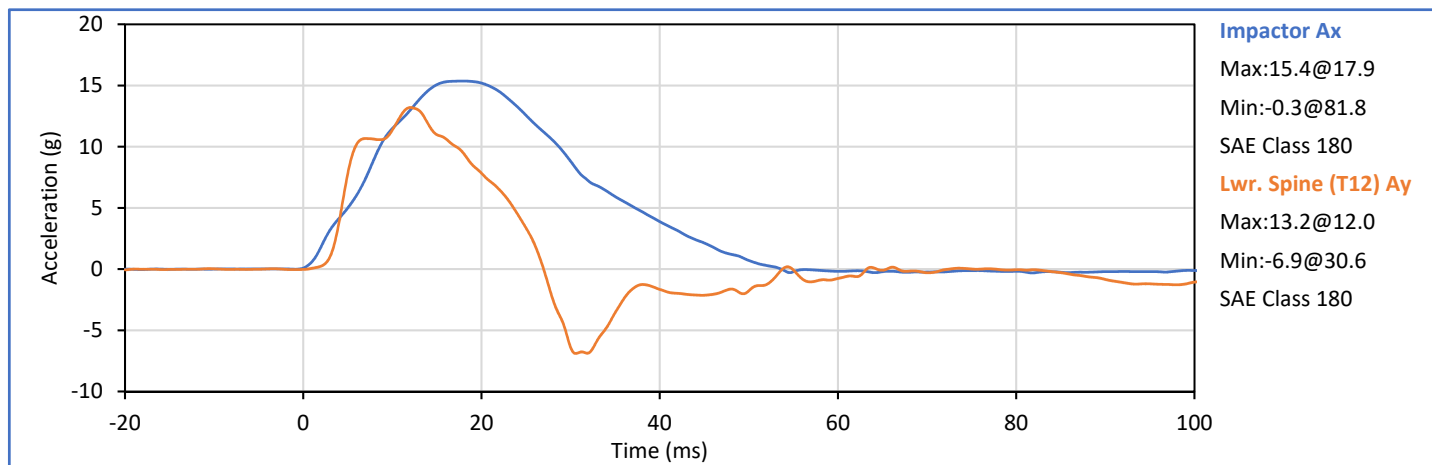
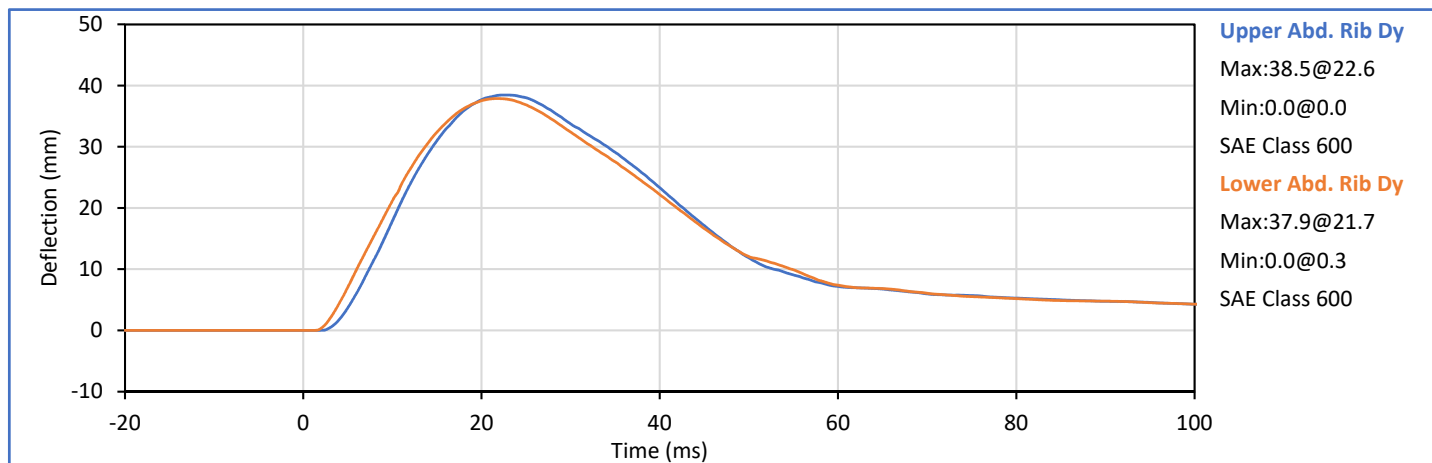
J. Hernandez

Approved By:

P. Puzzuto

P. Puzzuto

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.1	Pass
Laboratory Humidity	%	10	70	26	Pass
Impactor Velocity	m/s	4.20	4.40	4.36	Pass
Peak Upper Abdomen Rib Dy	mm	36.0	47.0	38.5	Pass
Peak Lower Abdomen Rib Dy	mm	33.0	44.0	37.9	Pass
Peak Lower Spine T12 Ay	mm	9.0	14.0	13.2	Pass
Peak Impactor Ax	g	12.0	16.0	15.4	Pass
Overall Test Results				Pass	Pass



Technician:

J. Hernandez

J. Hernandez

Approved By:

P. Puzzuto

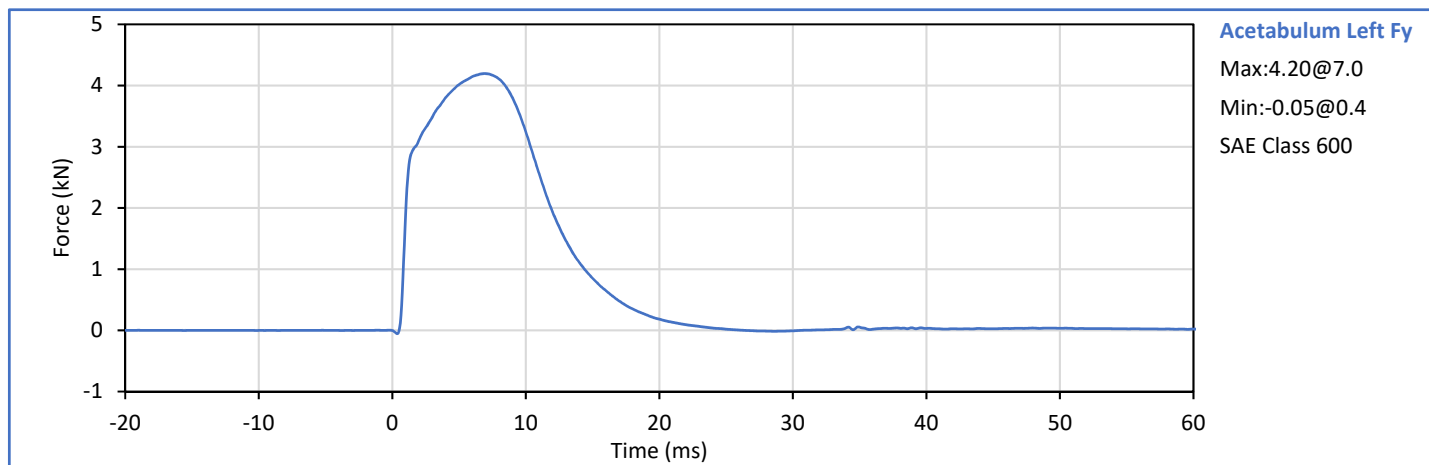
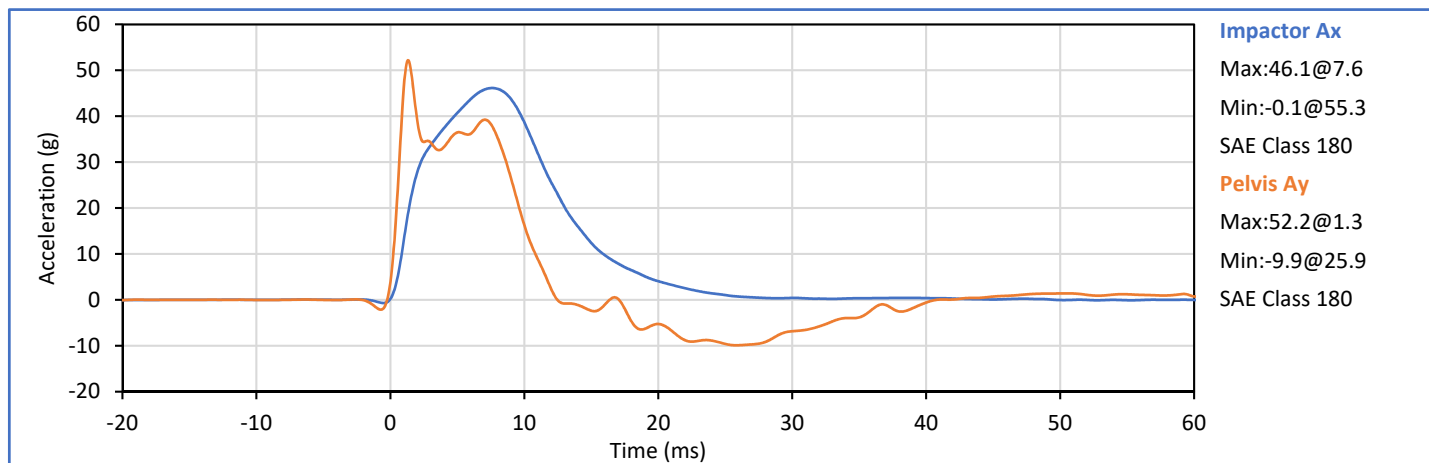
P. Puzzuto

ATD Serial No.: 299

Test Date: 2020-01-16

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.1	Pass
Laboratory Humidity	%	10	70	26	Pass
Impactor Velocity	m/s	6.60	6.80	6.71	Pass
Peak Acetabulum Fy	kN	3.60	4.30	4.20	Pass
Pelvis Ay after 6ms	g	34.0	42.0	39.2	Pass
Peak Impactor Ax	g	38.0	47.0	46.1	Pass
Overall Test Results				Pass	Pass

Pelvis Plug S/N: 12314 (SACO)



Technician:

J. Hernandez

J. Hernandez

Approved By:

P. Puzzuto

P. Puzzuto

ATD Serial No.: 299

Test Date: 2020-01-16

Pelvis Plug S/N: 12314 (SACO)



SID-IIs Pelvis Plug Certification Test

Plug S/N 12314

Test Number 6699

Report Number 6714

Test Date 3/21/2018 12:20:17 PM

	Test Results	Spec Min	Spec Max
Force @ 0.5 mm (N)	353.84	50.00	600.00
Force @ 1.5 mm (N)	1,174.64	850.00	1,400.00
Force @ 2.5 mm (N)	1,409.36	1,306.00	1,618.00
Force @ 3.0 mm (N)	1,449.45	1,361.00	1,673.00

Testing Machine STM-20 5965542

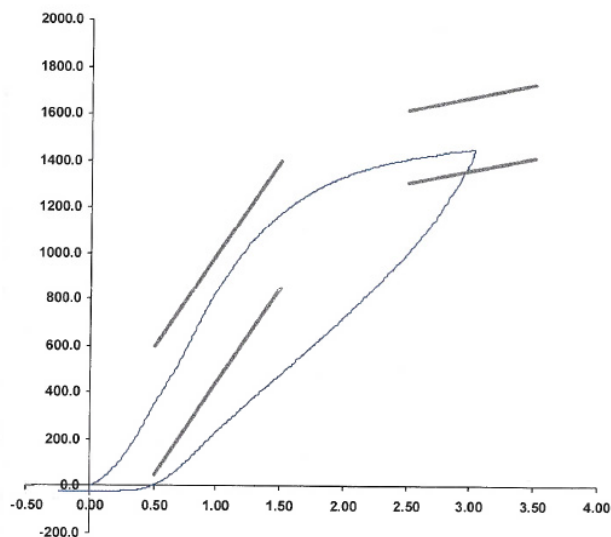
Load Cell S/N (F1360947), Units (LBS) 1000

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 22-Mar-18

SACO Research

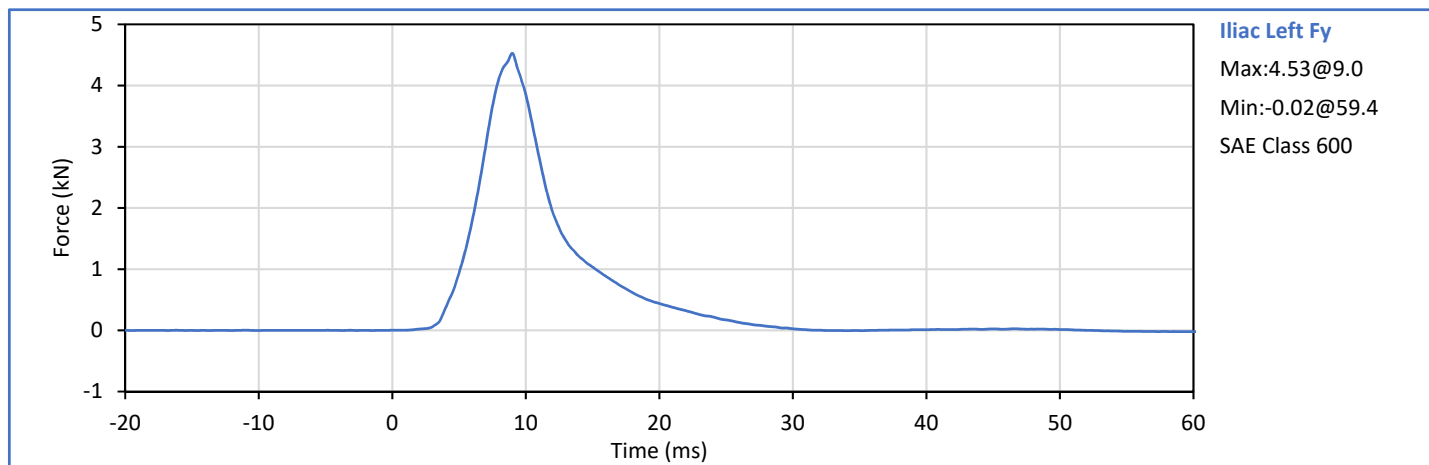
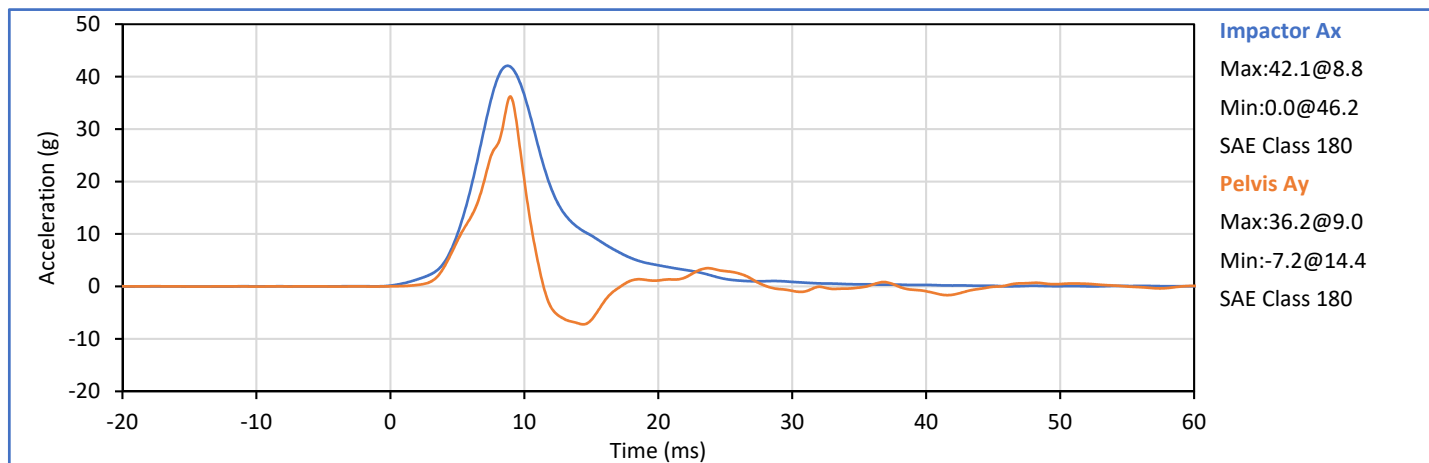
By: DC Date: 3/21/18

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

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.1	Pass
Laboratory Humidity	%	10	70	25	Pass
Impactor Velocity	m/s	4.20	4.40	4.31	Pass
Peak Iliac Fy	kN	4.10	5.10	4.53	Pass
Pelvis Ay after 6ms	g	28.0	39.0	36.2	Pass
Peak Impactor Ax	g	36.0	45.0	42.1	Pass
Overall Test Results				Pass	Pass

Pelvis Plug S/N: 12228 (SACO) *

* Plug is not impacted and remains certified



Technician:

J. Hernandez

J. Hernandez

Approved By:

P. Puzzuto

P. Puzzuto

APPENDIX D
TEST EQUIPMENT AND INSTRUMENTATION CALIBRATION DATA

Table 1 - Driver ATD Instrumentation

Sensor Location	ISO Code	Sensor S\N	Mfr	Model	Cal Date
Head Acceleration X Primary	11HEAD0000S2ACXP	P51929	Endevco	7264C-2k	2019-12-30
Head Acceleration Y Primary	11HEAD0000S2ACYP	P50086	Endevco	7264C-2k	2019-12-30
Head Acceleration Z Primary	11HEAD0000S2ACZP	P51931	Endevco	7264C-2k	2019-12-30
Head Acceleration X Redundant	11HEAD0000S2ACXP	P68604	Endevco	7264C-2k	2019-12-30
Head Acceleration Y Redundant	11HEAD0000S2ACYP	P51934	Endevco	7264C-2k	2019-12-30
Head Acceleration Z Redundant	11HEAD0000S2ACZP	P58736	Endevco	7264C-2k	2019-12-30
Head Rotation Rate X	11HEAD0000S2ARXP	ARS7571	DTS	ARS PRO-8k (2000Hz)	2019-07-08
Head Rotation Rate Y	11HEAD0000S2ARYP	ARS7316	DTS	ARS PRO-8k (2000Hz)	2019-07-08
Head Rotation Rate Z	11HEAD0000S2ARZP	ARS7330	DTS	ARS PRO-8k (2000Hz)	2019-07-08
Upper Thorax Rib Deflection Y	11TRRI01LES2DSYP	1143	Servo	08TCI-3725	2019-12-30
Middle Thorax Rib Deflection Y	11TRRI02LES2DSYP	1075	Servo	08TCI-3725	2019-12-30
Lower Thorax Rib Deflection Y	11TRRI03LES2DSYP	1213	Servo	08TCI-3725	2019-12-30
Upper Abdomen Rib Deflection Y	11ABRI01LES2DSYP	1218	Servo	08TCI-3725	2019-12-30
Lower Abdomen Rib Deflection Y	11ABRI02LES2DSYP	1177	Servo	08TCI-3725	2019-12-31
Lower Spine T12 Acceleration X	11ABSP01RIS2ACXP	P58761	Endevco	7264C-2k	2019-12-30
Lower Spine T12 Acceleration Y	11ABSP01RIS2ACYP	P50077	Endevco	7264C-2k	2019-12-30
Lower Spine T12 Acceleration Z	11ABSP01RIS2ACZP	P58795	Endevco	7264C-2k	2019-12-30
Iliac Wing Impact Side Force Y	11ILACLE00S2FOYP	278 Fy (Iliac)	R.A. Denton	3228J	2019-04-11
Acetabulum Impact Side Force Y	11ACTBLE00S2FOYP	260 Fy (Acetabulum)	R.A. Denton	3249J	2019-04-11

Table 2 - Vehicle Instrumentation

Sensor Location	ISO Code	Sensor S\N	Mfr	Model	Cal Date
Vehicle CG Ax	15VEHCCG0000ACXP	Accels\10904	Endevco	757F-2k	2019-11-11
Vehicle CG Ay	15VEHCCG0000ACYP	Accels\10901	Endevco	757F-2k	2019-11-11
Vehicle CG Az	15VEHCCG0000ACZP	Accels\10861	Endevco	757F-2k	2019-12-17
Left Floor Sill Ay	14SILBFR0000ACYP	Accels\A247326	MSI	52F-2000	2019-12-16
A-Pillar Sill Ay	11APILLO0030ACYP	Accels\11180	Endevco	757F-2k	2019-12-17
A-Pillar Low Ay	11APILLO0040ACYP	Accels\11177	Endevco	757F-2k	2019-12-17
A-Pillar Mid Ay	11APILMI0000ACYP	Accels\10897	Endevco	757F-2k	2019-12-17
B-Pillar Sill Ay	14BPILLO0033ACXP	Accels\10409	Endevco	757F-2k	2019-12-09
B-Pillar Low Ay	14BPILLO0040ACYP	Accels\A265917	MSI	52F-2000	2019-12-16
B-Pillar Mid Ay	14BPILMI0000ACYP	Accels\A273425	MSI	52F-2000	2019-12-13
Driver Seat Track at H-Point Ay	11SETR000000ACYP	Accels\A273431	MSI	52F-2000	2019-11-25
Engine Top Ax	10ENGNMIMITPACXP	Accels\A254886	MSI	52F-2000	2019-12-09
Engine Top Ay	10ENGNMIMITPACYP	Accels\A254841	MSI	52F-2000	2019-12-09
Firewall Ay	12VEHCFRMI00ACYP	Accels\11162	Endevco	757F-2k	2019-12-17
Right Roof Ay	16ROFRFRIN00ACYP	Accels\10867	Endevco	757F-2k	2019-12-17
Right Floor Sill Ay	16SILBRE0000ACYP	Accels\10849	Endevco	757F-2k	2019-12-17
Rear Floorpan Ax	18FORAMI0020ACXP	Accels\11186	Endevco	757F-2k	2019-12-17
Rear Floorpan Ay	18FORAMI0020ACYP	Accels\10869	Endevco	757F-2k	2019-12-17

Table 3 - Barrier Pole Instrumentation

Sensor Location	ISO Code	Sensor S\N	Mfr	Model	Cal Date
Barrier Pole 01 Fx	K0FBAR010000FOXA	19461A	Interface	1220FS-50k	2019-03-20
Barrier Pole 02 Fx	K0FBAR020000FOXA	131822A	Interface	1220-FS	2019-05-07
Barrier Pole 03 Fx	K0FBAR030000FOXA	131816A	Interface	1220AF-50k	2019-03-20
Barrier Pole 04 Fx	K0FBAR040000FOXA	19325	Interface	1220-FS	2019-05-07
Barrier Pole 05 Fx	K0FBAR050000FOXA	131827A	Interface	1220-FS	2019-05-07
Barrier Pole 06 Fx	K0FBAR060000FOXA	19340	Interface	1220FS-50k	2019-03-20
Barrier Pole 07 Fx	K0FBAR070000FOXA	19267	Interface	1220-FS	2019-05-07
Barrier Pole 08 Fx	K0FBAR080000FOXA	19466A	Interface	1220FS-50k	2019-03-20