

REPORT NUMBER: SideNCAPMDB-KAR-24-005

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

**MITSUBISHI MOTORS
2024 MITSUBISHI OUTLANDER 5-DOOR SUV**

NHTSA No: M20245601

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



JULY 09, 2024

FINAL REPORT

**PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
OFFICE OF CRASHWORTHINESS STANDARDS
MAIL CODE: NRM-100
1200 NEW JERSEY AVE, SE
WASHINGTON, D.C. 20590**

TECHNICAL REPORT DOCUMENTATION PAGE

1. Report No. SideNCAPMDB-KAR-24-005	2. Government Accession No.	3. Recipient's Catalog No.																																																			
4. Title and Subtitle Final Report of New Car Assessment Program Side Impact MDB Testing of a 2024 Mitsubishi Outlander 5-Door SUV NHTSA No. M20245601		5. Report Date July 9, 2024																																																			
		6. Performing Organization Code KAR																																																			
7. Authors Mr. Rushlan Amin, Project Engineer, Applus+ IDIADA KARCO Engineering, LLC Mr. Alex Beltran, Engineering Manager, Applus+ IDIADA KARCO Engineering, LLC		8. Performing Organization Report No. TR-P44200-01-NC																																																			
9. Performing Organization Name and Address Applus+ IDIADA KARCO Engineering, LLC. 9270 Holly Rd. Adelanto, CA 92301		10. Work Unit No.																																																			
		11. Contract or Grant No. 693JJ920D000015																																																			
12. Sponsoring Agency Name and Address U. S. Department of Transportation National Highway Traffic Safety Administration Office of Crashworthiness Standards (NRM-100) 1200 New Jersey Ave., SE Washington, D.C. 20590		13. Type of Report and Period Covered Final Test Report, June 25 - July 9, 2024																																																			
		14. Sponsoring Agency Code NRM-100																																																			
15. Supplementary Notes																																																					
16. Abstract A 61.9 km/h 90° Moving Deformable Barrier NCAP Side Impact Test was conducted on the subject 2024 Mitsubishi Outlander 5-Door SUV 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 June 25, 2024. The impact velocity of the Moving Deformable Barrier was 61.79 km/h and the outside ambient temperature at the struck (driver's) side of the vehicle was 36.2°C. The target vehicle's maximum post-test static crush was 195 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>105.625</td> </tr> <tr> <td>Maximum Thoracic Rib Deflection</td> <td>mm</td> <td>44</td> <td>14.489</td> </tr> <tr> <td>Total Abdominal Force</td> <td>N</td> <td>2500</td> <td>503.176</td> </tr> <tr> <td>Pubic Symphysis Force</td> <td>N</td> <td>6000</td> <td>1232.538</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>123.580</td> </tr> <tr> <td>Resultant Lower Spine Acceleration</td> <td>g</td> <td>82</td> <td>21.085</td> </tr> <tr> <td>Total Pelvic Force (Sum of Acetubular and Iliac Forces)</td> <td>N</td> <td>5525</td> <td>1227.970</td> </tr> <tr> <td>Maximum Thoracic Rib Deflection</td> <td>mm</td> <td>38*</td> <td>14.080</td> </tr> <tr> <td>Maximum Abdominal Rib Deflection</td> <td>mm</td> <td>45*</td> <td>14.192</td> </tr> </tbody> </table>				Measurement Description	Driver ATD (ES-2re)			Units	IARV	Result	Head Injury Criteria (HIC ₃₆)		1000	105.625	Maximum Thoracic Rib Deflection	mm	44	14.489	Total Abdominal Force	N	2500	503.176	Pubic Symphysis Force	N	6000	1232.538	Measurement Description	Passenger ATD (SID-IIs)			Units	IARV	Result	Head Injury Criteria (HIC ₃₆)		1000	123.580	Resultant Lower Spine Acceleration	g	82	21.085	Total Pelvic Force (Sum of Acetubular and Iliac Forces)	N	5525	1227.970	Maximum Thoracic Rib Deflection	mm	38*	14.080	Maximum Abdominal Rib Deflection	mm	45*	14.192
Measurement Description	Driver ATD (ES-2re)																																																				
	Units	IARV	Result																																																		
Head Injury Criteria (HIC ₃₆)		1000	105.625																																																		
Maximum Thoracic Rib Deflection	mm	44	14.489																																																		
Total Abdominal Force	N	2500	503.176																																																		
Pubic Symphysis Force	N	6000	1232.538																																																		
Measurement Description	Passenger ATD (SID-IIs)																																																				
	Units	IARV	Result																																																		
Head Injury Criteria (HIC ₃₆)		1000	123.580																																																		
Resultant Lower Spine Acceleration	g	82	21.085																																																		
Total Pelvic Force (Sum of Acetubular and Iliac Forces)	N	5525	1227.970																																																		
Maximum Thoracic Rib Deflection	mm	38*	14.080																																																		
Maximum Abdominal Rib Deflection	mm	45*	14.192																																																		
17. Key Words New Car Assessment Program (NCAP) Side Impact Moving Deformable Barrier (MDB) ES-2re SID-IIs		18. Distribution Statement Copies of this report are available from: National Highway Traffic Safety Admin. Technical Reference Division 1200 New Jersey Ave., SE Washington, DC 20590																																																			
19. Security Classification of this report UNCLASSIFIED	20. Security Classification of this page UNCLASSIFIED	21. No. of Pages 152	22. Price																																																		

*Proposed IARV

TABLE OF CONTENTS

<u>Section</u>		<u>Page</u>
1	Test Purpose and Procedure	1
2	Summary of Test Results	2
3	Occupant and Vehicle Information/Data Sheets	4
<u>Data Sheet</u>		<u>Page</u>
1	General Test and Vehicle Parameter Data	5
2	Seat, Seat Belt, Steering Wheel Adjustment, and Fuel System Data	9
3	Dummy Longitudinal Clearance Dimensions	13
4	Dummy Lateral Clearance Dimensions	14
5	Camera and Instrumentation Data	15
6	Test Vehicle Accelerometer Locations	16
7	MDB Accelerometer Locations	17
8	Post-Test Observations	18
9	MDB Summary of Results	21
10	Test Vehicle Profile Measurements	22
11	Test Vehicle Exterior Crush Measurements	23
12	MDB Exterior Static Crush Measurements	26
13	Vehicle and MDB Damage Profile Distances	27
14	FMVSS No. 301 Static Rollover Results	28
15	Dummy/Vehicle Temperature and Humidity Stabilization	29
<u>Appendix</u>		<u>Page</u>
A	Photographs	A
B	Vehicle and Dummy Response Data Plots	B
C	ATD Configuration and Performance Verification Data	C
D	Test Equipment and Instrumentation Calibration Data	D

SECTION 1

TEST PURPOSE AND PROCEDURE

This moving deformable barrier side impact test is part of the MY 2024 New Car Assessment Program Side Impact Test Program, sponsored by the National Highway Traffic Safety Administration (NHTSA), under contract number 693JJ920D000015. The purpose of this test is to generate comparative side impact performance in a 2024 Mitsubishi Outlander 5-Door SUV. The side impact test was conducted in accordance with the Office of Crashworthiness Standard's Laboratory Test Procedure dated March 2020.

SECTION 2

SUMMARY OF TEST RESULTS

A 2024 Mitsubishi Outlander 5-Door SUV 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 61.79 km/h (38.39 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 June 25, 2024. Pre- and post-test photographs of the test vehicle, the MDB and the dummies (ES-2re and SID-IIs) are included in Appendix A of this report.

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 March 2020. The side impact event was documented by 11 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

Head Triaxial Angular Rate Sensors

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	105.625
Maximum Thoracic Rib Deflection	mm	44	14.849
Combined Abdominal Force	N	2500	503.176
Pubic Symphysis Force	N	6000	1232.538
Lower Spine (T12) Resultant Acceleration	G	82*	17.473

**Proposed IARV*

Measurement Description	Units	Passenger ATD (SID-IIs)	
		Threshold	Result
Head Injury Criteria (HIC ₃₆)		1000	123.580
Lower Spine (T12) Resultant Acceleration	g	82	21.085
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	1227.970
Maximum Thoracic Rib Deflection	mm	38*	14.080
Maximum Abdominal Rib Deflection	mm	45*	14.192

**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	Yes		
Knee Airbag	Yes	Yes		
Side Airbag 1 (Curtain)	Yes	Yes	Yes	Yes
Side Airbag 2 (Torso/Pelvis)	Yes	Yes	Yes	Yes
Seat Belt Pretensioner	Yes	Yes	Yes	Yes
Seat Belt Load Limiter	Yes	Yes	Yes	Yes

GENERAL COMMENTS:

Driver center airbag deployed.

SECTION 3

OCCUPANT AND VEHICLE INFORMATION/DATA SHEETS

Test Vehicle: 2024 Mitsubishi Outlander 5-Door SUV NHTSA No. M20245601
Test Program: NCAP MDB Side Impact Test Test Date: 6/25/24

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: 2024 Mitsubishi Outlander 5-Door SUV NHTSA No. M20245601
 Test Program: NCAP MDB Side Impact Test Test Date: 6/25/24

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA Number	M20245601
Model Year	2024
Make	Mitsubishi
Model	Outlander
Body Style	5-Door SUV
VIN	JA4J3UA87RZ043681
Body Color	White Diamond
Odometer Reading (km / mi)	31/19
Engine Displacement (L)	2.5
Type / No. of Cylinders	4 Cylinder
Engine Placement	Transverse
Transmission Type	Automatic
Transmission Speeds	8
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	Yes
Rear Pass. Pelvis Airbag	No
Driver Seat Belt Pretensioner	Yes
Rear Pass. Seat Belt Pretensioner	Yes
Driver Load Limiter	Yes
Rear Pass. Load Limiter	Yes
Other Safety Restraint	Yes

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

Yes; Page 3-7

DATA FROM CERTIFICATION LABEL

Manufactured By	Mitsubishi Motors
Date of Manufacture	24-Jan
Vehicle Type	MPV

GVWR (kg)	2355
GAWR Front (kg)	1210
GAWR Rear (kg)	1365

VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

Measured Parameter	Front	Rear	Third	Total	
Designated Seating Capacity	2	3	2	7	
Capacity Weight (VCW) (kg)				525.0	A
DSC x 68 (kg)				476.0	B
Cargo Weight (RCLW) (kg)				49.0	A-B*

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

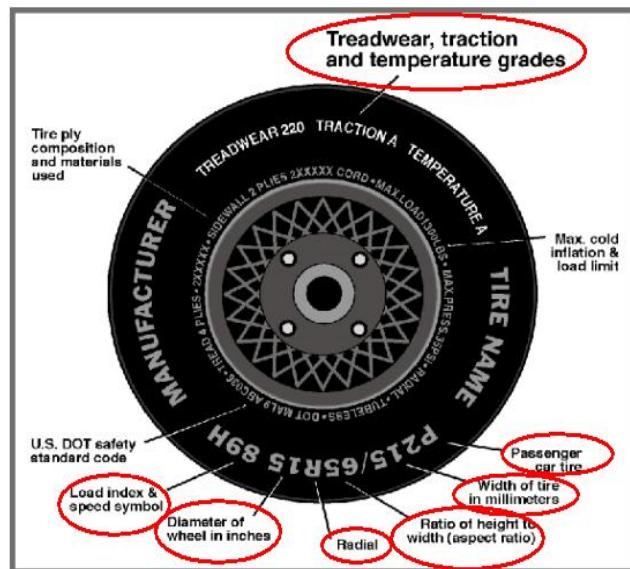
VEHICLE SEAT TYPE

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		Yes			Yes		

DATA SHEET NO. 1 ... (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2024 Mitsubishi Outlander 5-Door SUV NHTSA No. M20245601
 Test Program: NCAP MDB Side Impact Test Test Date: 6/25/24



Measured Parameter	Front	Rear
Max. Tire Pressure (kpa)	350	350
Cold Pressure (kPa)	240	240
Recommended Tire Size	240	240
Tire Size on Vehicle	P235/60 R18	P235/60 R18
Tire Manufacturer	Falken	Falken
Tire Model	Ziex ZE001 A/S	Ziex ZE001 A/S
Treadware	360	360
Traction Grade	A	A
Temperature Grade	A	A
Tire Plies Sidewall	2 Polyester	2 Polyester
Tire Plies Body	2 Polyester, 2 Steel, 1 Polyamide	2 Polyester, 2 Steel, 1 Polyamide
Load Index/Speed Symbol	102H	102H
Tire Material	Polyester, Steel, Polyamide	Polyester, Steel, Polyamide
DOT Safety Code Left	1V4DC 3M2R 5223	1V4DC 3M2R 5223
DOT Safety Code Right	1V4DC 3M2R 5223	1V4DC 3M2R 5223

DATA SHEET NO. 1 ... (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2024 Mitsubishi Outlander 5-Door SUV NHTSA No. M20245601
 Test Program: NCAP MDB Side Impact Test Test Date: 6/25/24

TIRE PRESSURES

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

MDB TIRE SPECIFICATIONS

	Units	Requirement	LF	RF	LR	RR
Tire Size		P205/75R15	P205/75R15	P205/75R15	P205/75R15	P205/75R15
Tire Pressure	kPa	200 ± 21	220	220	220	220

TEST VEHICLE AXLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)			Fully Loaded		
		Front	Rear	Total	Front	Rear	Total	Front	Rear	Total
Left	kg	472.5	332.0		493.0	387.0		518.0	418.5	
Right	kg	475.0	339.0		500.0	406.0		473.0	382.0	
Ratio	%	58.5%	41.5%		55.6%	44.4%		55.3%	44.7%	
Total	kg	947.5	671.0	1618.5	993.0	793.0	1786.0	991.0	800.5	1791.5

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	1618.5	A
Sum of Actual Weight of 2 P572 ATD Used	kg	125.0	B
Rated Cargo/Luggage Weight (RCLW)	kg	49.0	C
Calculated Target Vehicle Test Weight (TVTW)	kg	1792.5	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	803	800	Yes
RF	mm	804	801	Yes
LR	mm	789	799	Yes
RR	mm	795	800	Yes
Vehicle CG (Aft of Front Axle)	mm	1207	1199	
Vehicle CG (Left (+)/Right (-) from Longitudinal Centerline)	mm	36	-11	

***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: 2024 Mitsubishi Outlander 5-Door SUV NHTSA No. M20245601
Test Program: NCAP MDB Side Impact Test Test Date: 6/25/24

Test Height Adjustable Setting (If Applicable)	
--	--

WEIGHT OF BALLAST AND VEHICLE COMPONENTS REMOVED TO MEET TVTW

Component Description	Weight (kg)
Third Row Seat	27.0
Foam	3.0
Headrest	1.5
Trunk Lid Cover	2.5
Rear Trim	1.5

TEST SURFACE MARKINGS

	Distance from 63° Impact Angle Line (mm)
Fore 25 mm target	0
Aft 25 mm target	0
Pre-Impact Angle Line	63°

Parallel Track Target	X Location (mm)	Y Location (mm)
A	0	0
B	1355	689
C	1355	3756
D	0	3059

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

Test Vehicle: 2024 Mitsubishi Outlander 5-Door SUV NHTSA No. M20245601
 Test Program: NCAP MDB Side Impact Test Test Date: 6/25/24

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	4.7	0.0	2.4
Front Passenger Seat	4.2	0.0	2.1
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	2.4	633	Max			
			Mid	620	633	646
			Min			
Front Passenger Seat	2.1	620	Max			
			Mid	610	620	630
			Min			
Front Center Seat			Max			
			Mid			
			Min			
Struck Side Rear Seat	11.3	762	Max			
			Mid	762	762	755
			Min			
Non-Struck Side Rear Seat	10.3	756	Max			
			Mid	756	756	752
			Min			
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: 2024 Mitsubishi Outlander 5-Door SUV NHTSA No. M20245601
 Test Program: NCAP MDB Side Impact Test Test Date: 6/25/24

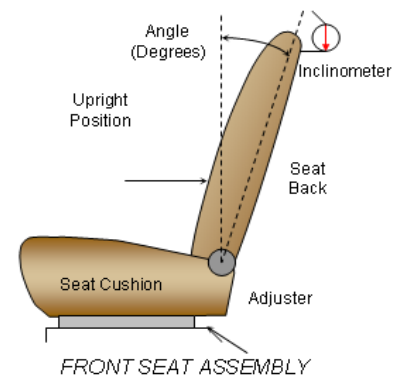
SEAT FORE/AFT POSITION

Seat	Total Fore/Aft Travel		Test Position From Forwardmost Position	
	mm	Detents*	mm	Detent*
Driver Seat	260	26	130	
Front Passenger Seat	260	26	130	
Front Center Seat				
Struck Side Rear Seat	239	22	11	
Non-Struck Side Rear Seat	239	22	11	
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 adjustable. 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 at the head rest post.



SEAT BACK POSITION

Seat	Total Seat Back Angle Range		Test Position from Most Upright	
	Degrees	Detents*	Degree	Detent*
Driver Seat w/ Seated Dummy	64.3	40	9.3	
Front Passenger Seat	61.0	40	11.0	
Front Center Seat				
Struck Side Rear Seat w/Seated Dummy	28.3	11	17.0	
Non-Struck Side Rear Seat	27.5	11	17.0	
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: 2024 Mitsubishi Outlander 5-Door SUV NHTSA No. M20245601
Test Program: NCAP MDB Side Impact Test Test Date: 6/25/24

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	M2
Rear Seat	Fixed	Fixed

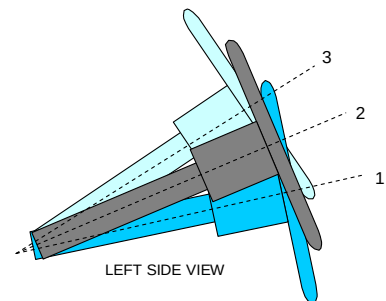
HEAD RESTRAINT ADJUSTMENT

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	4	H
Rear Seat	3	L

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

STEERING COLUMN POSITIONING

	Degrees	Fore-Aft Position (mm)
Lowermost Position, No. 1	57.7	80
Geometric Center Position, No. 2	60.3	110
Uppermost Position, No. 3	62.9	140
Telescoping Steering Wheel Travel		60
Test Position	60.3	110

DATA SHEET NO. 2 ... (CONTINUED)

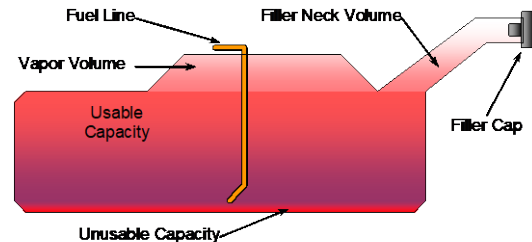
SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT, AND FUEL SYSTEM DATA

Test Vehicle: 2024 Mitsubishi Outlander 5-Door SUV NHTSA No. M20245601

Test Program: NCAP MDB Side Impact Test Test Date: 6/25/24

FUEL PUMP

The vehicle is equipped with an electric fuel pump. The pump will work at "ignition on" until pressure in the system has reached working pressure in the system; then it will stop pumping fuel until the engine has been started.



FUEL TANK CAPACITY

VEHICLE FUEL TANK ASSEMBLY

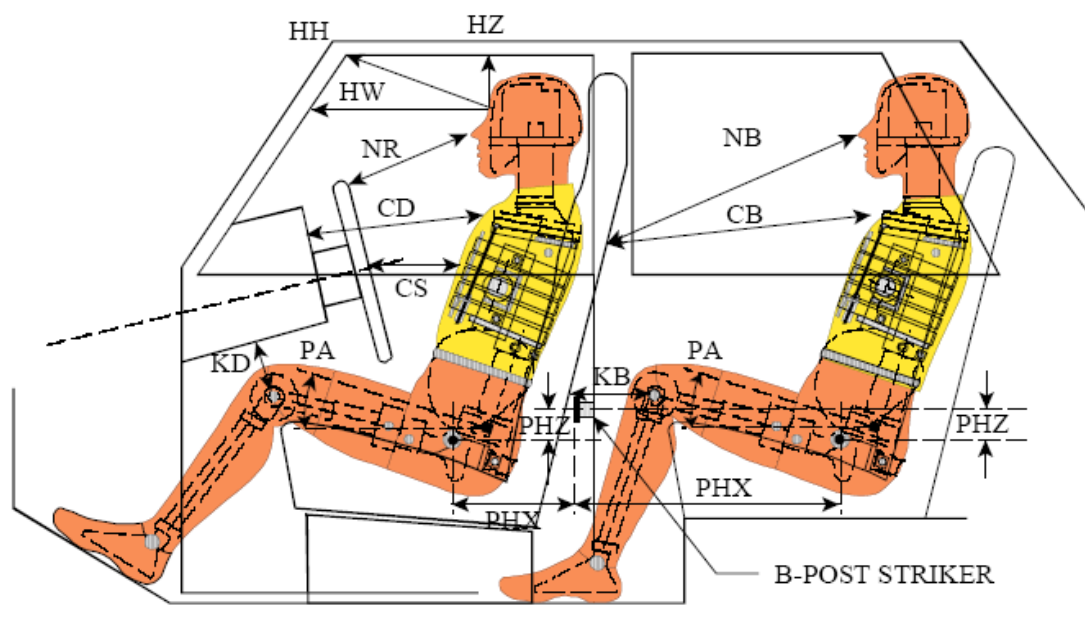
Description	Liters
Usable Capacity of "Standard Tank" (see Form No. 1)	55.00
Usable Capacity of "Optional Tank" (see Form No. 1)	
Usable Capacity of "Standard Tank" (see Owner's Manual)	55.00
Usable Capacity of "Optional Tank" (see Owner's Manual)	
93% of Usable Capacity	51.15
Actual amount of Solvent Used in Test	51.15
1/3 of Usable Capacity	18.33

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: 2024 Mitsubishi Outlander 5-Door SUV NHTSA No. M20245601
 Test Program: NCAP MDB Side Impact Test Test Date: 6/25/24



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

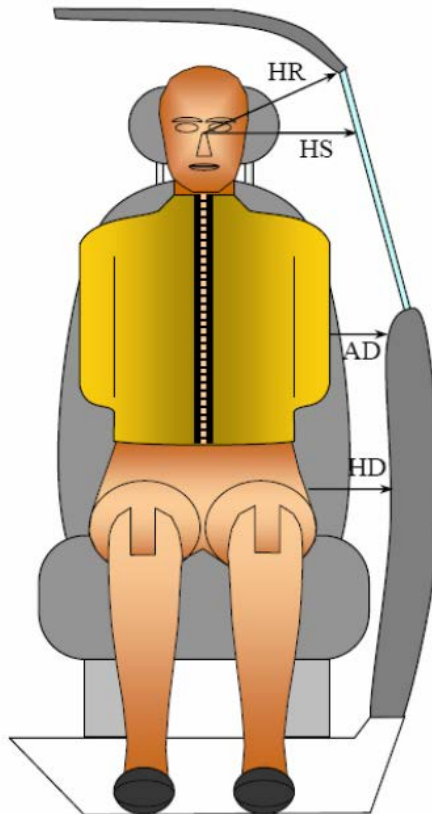
DUMMY LONGITUDINAL CLEARANCE DIMENSION INFORMATION

Driver Code	Pass. Code	Description	Driver		Passenger	
			Length (mm)	Angle (°)	Length (mm)	Angle (°)
HH		Head to Header	460			
HW		Head to Windshield	636			
HZ	HZ	Head to Roof	193		293	
NR	NB	Nose to Rim/Seat Back	467		550	
CD	CB	Chest to Dash/Seat Back	598		551	
CS		Chest to Steering Wheel	321			
KD(L)/KDA(L)°	KB(L)/KBA(L)°	Left Knee to Dash/Seat Back	176	22.8	343	18.5
KD(R)/KDA(R)°	KB(R)/KBA(R)°	Right Knee to Dash/Seat Back	125	30.4	320	15.8
PAX°	PAX°	Pelvic Tilt Angle X		15.5		18.3
	PAY°	Pelvic Tilt Angle Y		0.0		0.0
PHX	PHX	Hip Point to Striker (x-axis)	255		257	
PHZ	PHZ	Hip Point to Striker (z-axis)	233		256	

DATA SHEET NO. 4

DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2024 Mitsubishi Outlander 5-Door SUV NHTSA No. M20245601
Test Program: NCAP MDB Side Impact Test Test Date: 6/25/24



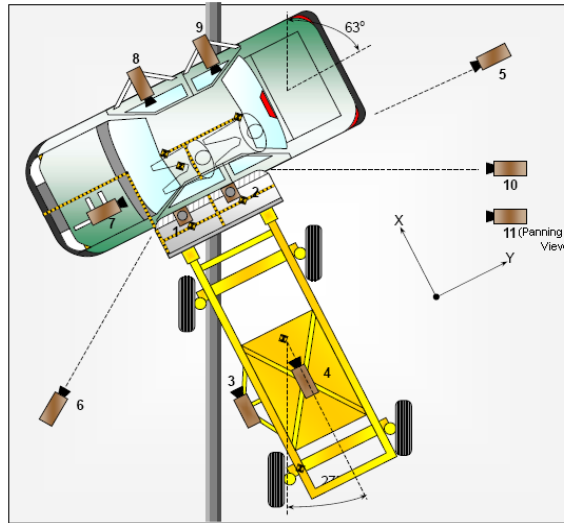
DUMMY LATERAL CLEARANCE DIMENSION INFORMATION

Code	Measurement Description	Units	Driver	Passenger
HR	Head to Side Header	mm	214	255
HS	Head to Side Window	mm	350	375
AD	Arm to Door	mm	100	165
HD	H-Point to Door	mm	139	168

DATA SHEET NO. 5

CAMERA AND INSTRUMENTATION DATA

Test Vehicle: 2024 Mitsubishi Outlander 5-Door SUV NHTSA No. M20245601
 Test Program: NCAP MDB Side Impact Test Test Date: 6/25/24



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)	316	-1424	608	8.5	1000
8	Driver Side (On-Board)	435	-1451	576	8	1000
9	Passenger Side (On-Board)	342	-1418	650	8	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

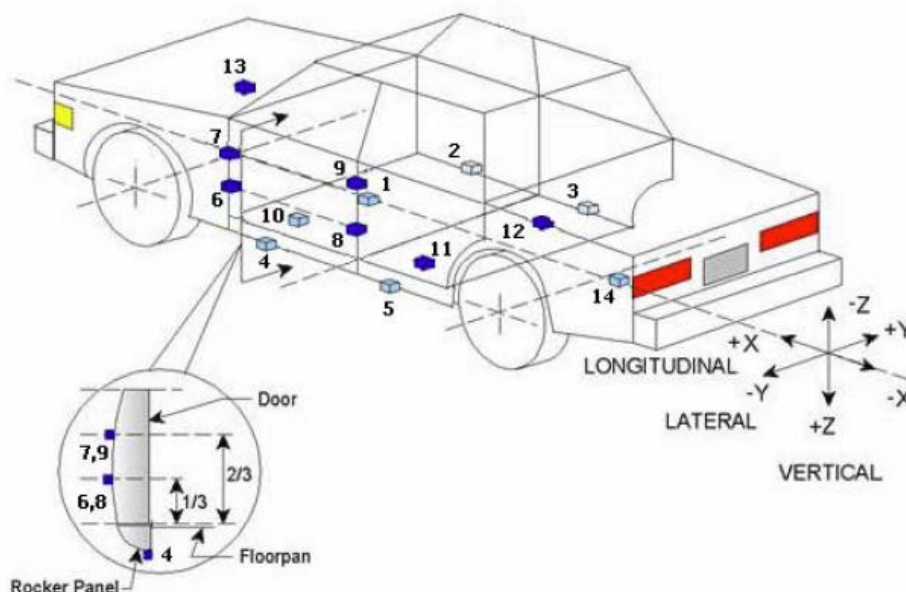
INSTRUMENTATION

Driver Dummy Channels	16
Passenger Dummy Channels	19
Vehicle Structure Accelerometers	23
MDB Channels	5
Total	63

DATA SHEET NO. 6

TEST VEHICLE ACCELEROMETER LOCATIONS

Test Vehicle: 2024 Mitsubishi Outlander 5-Door SUV NHTSA No. M20245601
 Test Program: NCAP MDB Side Impact Test Test Date: 6/25/24



VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

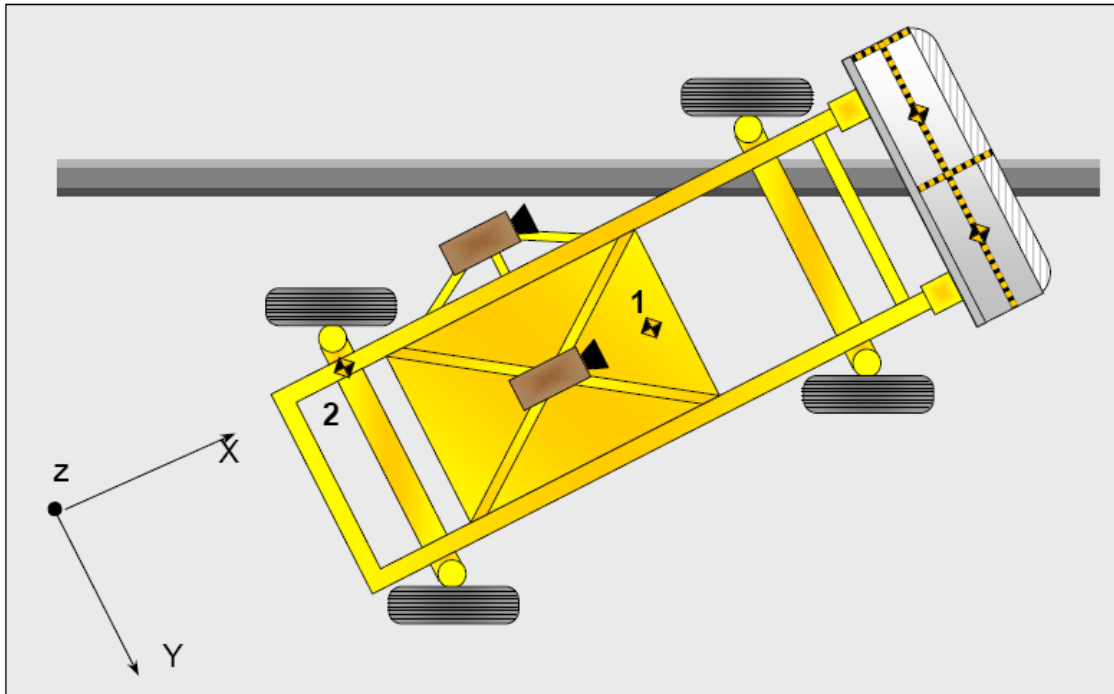
Loc. No.	Sensor Description	Coordinates (mm)		
		X	Y	Z
1	Vehicle CG	2110	0	-475
2	Right Sill at Front Seat	2870	675	-435
3	Right Sill at Rear Seat	2010	735	-190
4	Left Sill at Front Door	2870	-675	-435
5	Left Sill at Rear Door	2010	-735	-190
6	A-Pillar Lower	3180	-810	-360
7	A-Pillar Middle	3180	-810	-600
8	B-Pillar Lower	2010	-735	-350
9	B-Pillar Middle	2010	-735	-600
10	Front Seat Track	2510	-580	-150
11	Rear Seat Structure	1803	-330	-595
12	Right Rear Occupant Compartment	2100	405	-475
13	Engine Block	3880	100	-620
14	Rear Floorpan Above Axle	780	0	-475

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: 2024 Mitsubishi Outlander 5-Door SUV NHTSA No. M20245601
Test Program: NCAP MDB Side Impact Test Test Date: 6/25/24



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: 2024 Mitsubishi Outlander 5-Door SUV NHTSA No. M20245601
 Test Program: NCAP MDB Side Impact Test Test Date: 6/25/24

TEST DUMMY INFORMATION AND CONTACT POINTS

Dummy Body Part	Front Seat Dummy (ES-2re)	Rear Seat Dummy (SID-IIs)
Face	Curtain Air Bag, Center Air Bag, Frontal Air Bag	Curtain Air Bag
Top of Head	Curtain Air Bag, Center Air Bag, Headliner	Curtain Air Bag
Left Side of Head	Curtain Air Bag	Curtain Air Bag
Back of Head	Headrest, Headliner, Curtain Air Bag	Headrest
Left Shoulder	Curtain Air Bag	Curtain Air Bag, Seat Bolster, Door Panel
Upper Torso	Pelvis/Torso Air Bag, Seat Bolster	Pelvis/Torso Air Bag, Seat Bolster
Lower Torso	Pelvis/Torso Air Bag, Seat Bolster	Pelvis/Torso Air Bag, Seat Bolster
Left Hip	Side Air Bag	Pelvis/Torso Air Bag, Door Panel
Left Knee	None	Door Panel

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: 2024 Mitsubishi Outlander 5-Door SUV NHTSA No. M20245601
Test Program: NCAP MDB Side Impact Test Test Date: 6/25/24

POST-TEST SEAT PERFORMANCE

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

POST-TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Pillar Performance	Good
Sill Separation	None
Windshield Damage	None
Side Window Damage	None
Other Notable Effects	None

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

Test Vehicle: 2024 Mitsubishi Outlander 5-Door SUV NHTSA No. M20245601
Test Program: NCAP MDB Side Impact Test Test Date: 6/25/24

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Struck Side		Struck Side	
	Driver		Rear Passenger	
	Mounted	Deployed	Mounted	Deployed
Frontal Airbag	Yes	Yes		
Knee Airbag	Yes	Yes		
Side Airbag 1 (Curtain)	Yes	Yes	Yes	Yes
Side Airbag 2 (Torso/Pelvis)	Yes	Yes	Yes	Yes
Seat Belt Pretensioner	Yes	Yes	Yes	Yes
Seat Belt Load Limiter	Yes	Yes	Yes	Yes

IMPACT POINT LOCATION DATA

Measured Parameter	Units	Tolerance	Value
Vehicle Wheelbase	mm		2701
Vertical Impact Reference Line (Aft of Front Axle)(Intended Impact Point)	mm		418
Actual Impact Point (Aft of Front Axle)	mm		443
Horizontal Offset (+ forward / - rearward)	mm	± 50 of Intended Impact Point	-25
Vertical Offset (+ down / - up)	mm	± 20 of Intended Impact Point	10

DATA SHEET NO. 9**MDB SUMMARY OF RESULTS**

Test Vehicle: 2024 Mitsubishi Outlander 5-Door SUV NHTSA No. M20245601
 Test Program: NCAP MDB Side Impact Test Test Date: 6/25/24

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	61.79
Trap No. 2 Velocity (Redundant)	km/h	61.1 to 62.7	
MDB CL to Target Vehicle CL	degrees	88.5 to 91.5	88.5
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	26.0

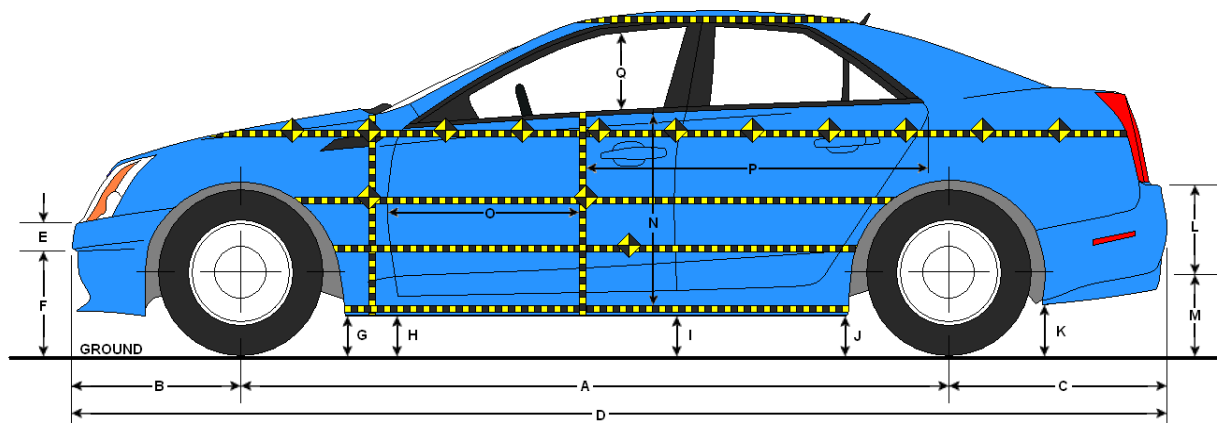
MAXIMUM STATIC CRUSH OF HONEYCOMB FACE

Vertical Location			From Centerline		Max. Crush (mm)
Row	Description	Height (mm)	Distance (mm)	Direction	
A	Center of Bumper	432	0	Center	244
B	Top of Bumper	533	800	Left	155
C	Mid Level	686	800	Left	141
D	Top of Stack	813	800	Left	173

DATA SHEET NO. 10

TEST VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2024 Mitsubishi Outlander 5-Door SUV NHTSA No. M20245601
 Test Program: NCAP MDB Side Impact Test Test Date: 6/25/24



LEFT SIDE VIEW

VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

Code	Description	Pre-Test	Post-Test	Change
A	Wheelbase	2701	2672	-29
B	Front Axle to FSOV	965	990	25
C	Rear Axle to RSOV	1035	1042	7
D	Total Length at Centerline	4701	4703	2
E	Front Bumper Thickness	79	80	1
F	Front Bumper Bottom to Ground	403	408	5
G	Sill Height at Front Wheel Well	646	639	-7
H	Sill Height at Front Door Leading Edge	656	650	-6
I	Sill Height at B-Pillar	654	638	-16
J1	Sill Height at Rear Wheel Well	675	657	-18
J2	Pinch Weld Height at Rear Wheel Well	675	672	-3
K	Sill Height Aft of Rear Wheel Well	611	718	107
L	Rear Bumper Thickness	190	189	-1
M	Rear Bumper Bottom to Ground	451	457	6
N	Sill Height to Bottom of Front Window Sill	729	723	-6
O	Front Door Leading Edge to Impact CL	799	793	-6
P	Rear Door Trailing Edge to Impact CL	1372	1358	-14
Q	Front Window Opening	422	433	11
R	Right Side Length	3255	3259	4
S	Left Side Length	3256	3251	-5
T	Vehicle Width at B-Pillar	1842	1799	-43

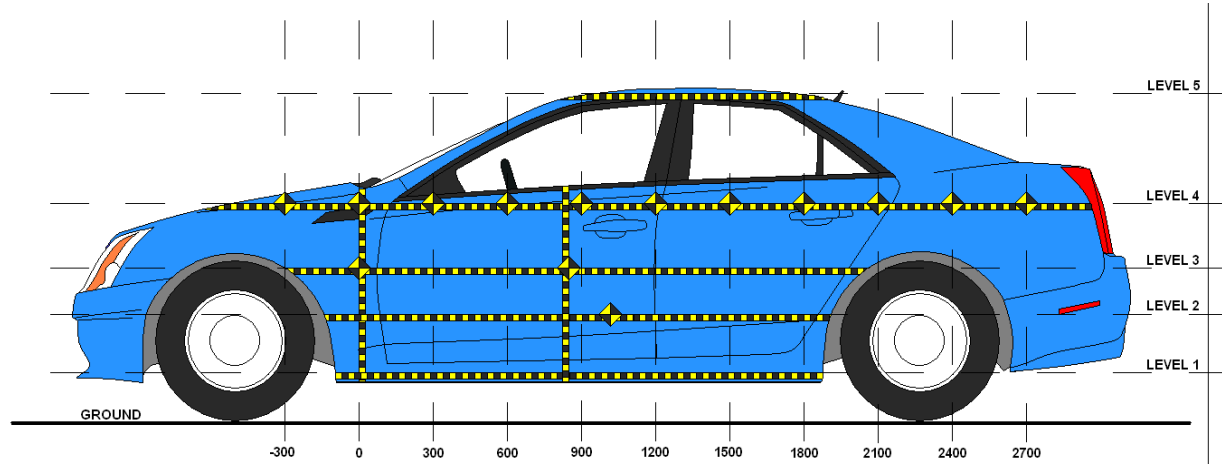
All measurements in mm with tolerance of ± 3 mm

DATA SHEET NO. 11

TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2024 Mitsubishi Outlander 5-Door SUV NHTSA No. M20245601

Test Program: NCAP MDB Side Impact Test Test Date: 6/25/24



LEFT SIDE VIEW

Level	Description	Height Above Ground (mm)	Maximum Exterior Static Crush	Distance from Impact
1	Sill Top	175	109	1200
2	Occupant H-Point	494	169	1650
3	Mid-Door	579	195	1650
4	Window Sill	875	55	1950
5	Window Top	1372	3	1500

DATA SHEET NO. 11 ... (CONTINUED)

TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2024 Mitsubishi Outlander 5-Door SUV NHTSA No. M20245601
 Test Program: NCAP MDB Side Impact Test Test Date: 6/25/24

EXTERIOR CRUSH MEASUREMENTS AT EACH LEVEL

	Pre-Test (mm)					Post-Test (mm)					Crush (mm)				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-900															
-750															
-600															
-450															
-300															
-150				667					666					-1	
0	579	562	561	659		578	565	562	661		-1	3	1	2	
150	583	565	563	648		658	682	662	627		75	117	99	-21	
300	585	572	567	640		681	692	708	626		96	120	141	-14	
450	583	577	569	627		681	707	726	619		98	130	157	-8	
600	581	579	570	619		685	731	737	618		104	152	167	-1	
750	580	580	570	612	869	685	741	746	621	870	105	161	176	9	1
900	580	580	571	606	864	682	738	745	625	864	102	158	174	19	0
1050	580	581	571	617	862	683	721	726	640	863	103	140	155	23	1
1200	582	582	571	598	859	691	693	697	632	862	109	111	126	34	3
1350	584	582	572	595	860	685	724	731	641	862	101	142	159	46	2
1500	585	579	571	598	861	685	744	753	639	864	100	165	182	41	3
1650	585	573	566	601	863	684	742	761	639	865	99	169	195	38	2
1800	582	563	559	604	866	663	732	743	657	868	81	169	184	53	2
1950			557	606	869			638	661	871			81	55	2
2100				608	875				625	875				17	0
2250				607	878				618	880				11	2
2400				609	885				615	886				6	1
2550				616	893				618	894				2	1
2700				624					624					0	
2850				634					639					5	

DATA SHEET NO. 11 ... (CONTINUED)

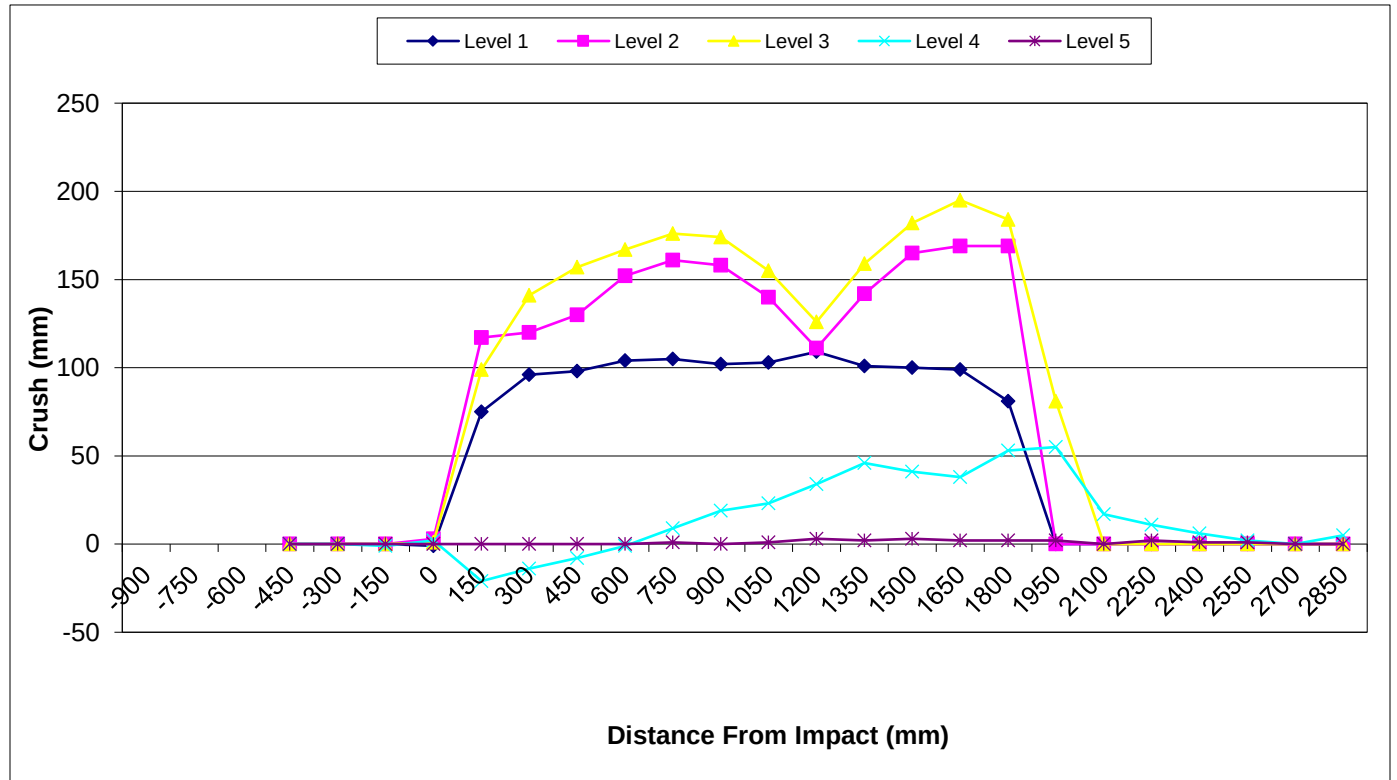
TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2024 Mitsubishi Outlander 5-Door SUV

NHTSA No. M20245601

Test Program: NCAP MDB Side Impact Test

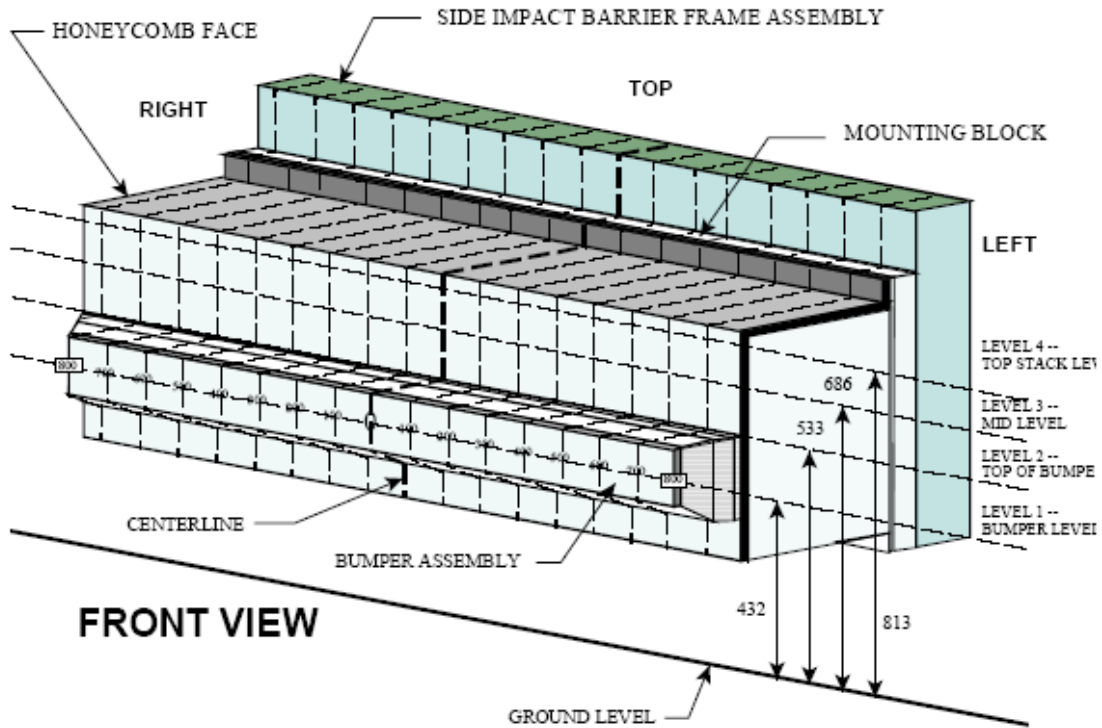
Test Date: 6/25/24



DATA SHEET NO. 12

MDB EXTERIOR STATIC CRUSH MEASUREMENTS

Test Vehicle: 2024 Mitsubishi Outlander 5-Door SUV NHTSA No. M20245601
 Test Program: NCAP MDB Side Impact Test Test Date: 6/25/24



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	238	232	232	233	232	234	234	233	244	231	224	231	230	231	231	233	241
2	150	150	149	148	146	144	153	129	147	142	144	143	143	145	145	145	155
3	84	67	62	66	69	101	113	111	18	71	68	67	72	-16	102	111	141
4	76	61	60	67	86	111	133	117	93	72	66	72	-17	31	120	138	173

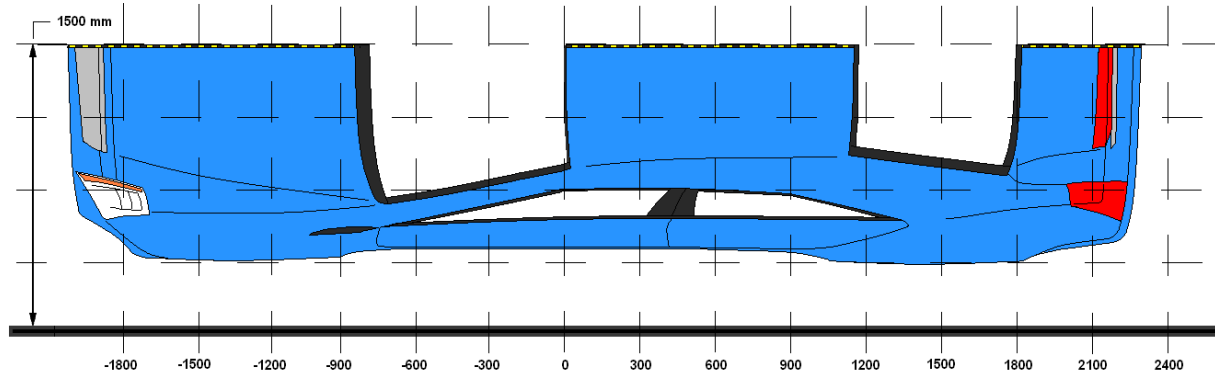
All dimensions in millimeters.

DATA SHEET NO. 13

VEHICLE AND MDB DAMAGE PROFILE DISTANCES

Test Vehicle: 2024 Mitsubishi Outlander 5-Door SUV NHTSA No. M20245601

Test Program: NCAP MDB Side Impact Test Test Date: 6/25/24



VEHICLE DAMAGE PROFILE DISTANCES

DPD	Distance From Impact Point (mm)	Level	Pre-Test (mm)	Post-Test (mm)	Crush (mm)
1	2850	4	634	639	5
2	2400	3	609	615	6
3	1650	3	566	761	195
4	1050	3	571	726	155
5	300	3	567	708	141
6	-150	4	667	666	-1

MDB DAMAGE PROFILE DISTANCES

DPD	From MDB Centerline		Level	Crush (mm)
	Distance (mm)	Direction		
1	800	Left	1	241
2	500	Left	1	231
3	200	Left	1	224
4	200	Right	1	234
5	500	Right	1	233
6	800	Right	1	238

DATA SHEET NO. 14

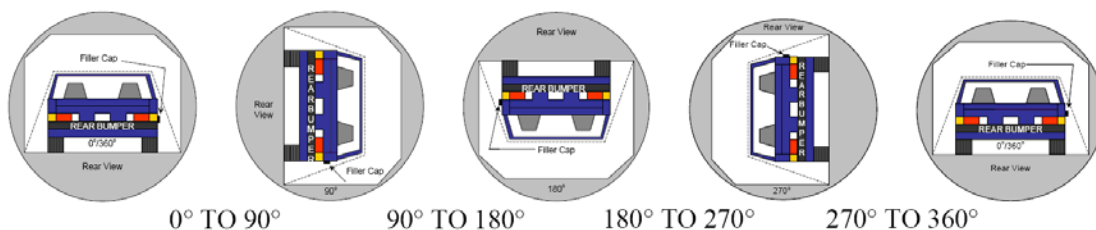
FMVSS NO. 301 STATIC ROLLOVER RESULTS

Test Vehicle: 2024 Mitsubishi Outlander 5-Door SUV NHTSA No. M20245601

Test Program: NCAP MDB Side Impact Test Test Date: 6/25/24

Temperature at Time of Impact: 36.2°C Test Time: 4:04 P.M.

- A. From impact until vehicle motion ceases: N/A oz.
(Maximum allowable = 1 oz.)
- B. For the 5 minute period after motion ceases: N/A oz.
(Maximum allowable = 5 oz.)
- C. For the following 25 minutes: N/A oz.
(Maximum allowable = 1 oz./minute)
- D. Spillage Details: _____



SOLVENT COLLECTION TIME TABLE IN SECONDS

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

FMVSS 301 SPILLAGE TABLE

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

SOLVENT SPILLAGE LOCATION TABLE

Test Phase	Spillage Location
0° To 90°	
90° To 180°	
180° To 270°	
270° To 360°	

DATA SHEET NO. 15

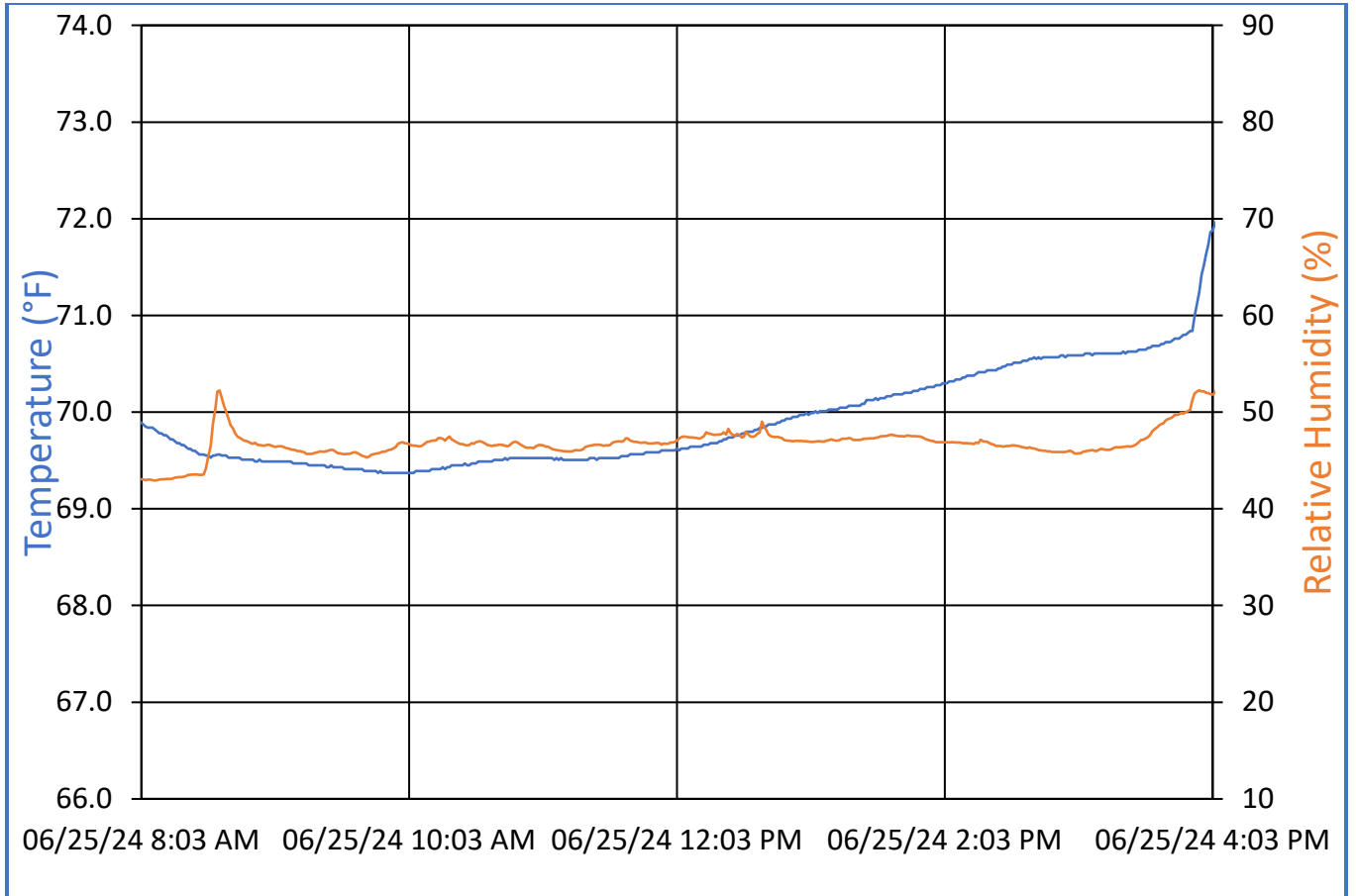
DUMMY/VEHICLE TEMPERATURE AND HUMIDITY STABILIZATION

Test Vehicle: 2024 Mitsubishi Outlander 5-Door SUV

NHTSA No. M20245601

Test Program: NCAP MDB Side Impact Test

Test Date: 6/25/24



APPENDIX A
PHOTOGRAPHS

TABLE OF PHOTOGRAPHS

Figure		Page
1	As-Delivered Right Front $\frac{3}{4}$ View of Test Vehicle	A-1
2	As-Delivered Left Rear $\frac{3}{4}$ View of Test Vehicle	A-1
3	Pre-Test Frontal View of Test Vehicle	A-2
4	Post-Test Frontal View of Test Vehicle	A-2
5	Pre-Test Left Front $\frac{3}{4}$ View of Test Vehicle	A-3
6	Post-Test Left Front $\frac{3}{4}$ View of Test Vehicle	A-3
7	Pre-Test Left Side View of Test Vehicle	A-4
8	Post-Test Left Side View of Test Vehicle	A-4
9	Pre-Test Left Rear $\frac{3}{4}$ View of Test Vehicle	A-5
10	Post-Test Left Rear $\frac{3}{4}$ View of Test Vehicle	A-5
11	Pre-Test Rear View of Test Vehicle	A-6
12	Post-Test Rear View of Test Vehicle	A-6
13	Pre-Test Right Side View of Test Vehicle	A-7
14	Post-Test Right Side View of Test Vehicle	A-7
15	Pre-Test Overhead View of Test Area	A-8
16	Post-Test Overhead View of Test Area	A-8
17	Pre-Test Left Side View of MDB Positioned Against Side of Test Vehicle	A-9
18	Pre-Test Right Side View of MDB Positioned Against Side of Test Vehicle	A-9
19	Pre-Test Close-Up View of Impact Point Target	A-10
20	Post-Test Close-Up View of Impact Point Target	A-10
21	Pre-Test Left Front Door Latch Close-Up	A-11
22	Post-Test Left Front Door Latch Close-Up	A-11
23	Pre-Test Left Rear Door Latch Close-Up	A-12
24	Post-Test Left Rear Door Latch Close-Up	A-12
25	Pre-Test Front Close-Up View of Driver Dummy	A-13
26	Post-Test Front Close-Up View of Driver Dummy	A-13
27	Pre-Test Left Side View of Driver Dummy Showing Belt and Chalking	A-14
28	Pre-Test Left Side View of Driver Dummy Shoulder and Door Top View	A-14
29	Post-Test Left Side View of Driver Dummy Shoulder and Door Top View	A-15
30	Pre-Test Frontal View of Driver Seat Back Prior to Dummy Positioning	A-15
31	Pre-Test Frontal View of Driver Dummy Head and Shoulders in Relation to Head Restraint	A-16
32	Pre-Test Overhead View of Driver Seat Pan Prior to Dummy Positioning	A-16
33	Pre-Test Overhead View of Driver Dummy Thighs on Seat Pan	A-17
34	Pre-Test Placement of Driver Dummy's Feet	A-17
35	Pre-Test View of Belt Anchorage for Driver Dummy	A-18

TABLE OF PHOTOGRAPHS ... (CONTINUED)

Figure		Page
36	Pre-Test Left Side View of Steering Wheel	A-18
37	View of Disengaged Parking Brake	A-19
38	Pre-Test View of Parking Brake	A-19
39	Pre-Test Close-Up Left Side View of Driver Seat Track	A-20
40	Pre-Test Close-Up Left Side View of Driver Seat Back	A-20
41	Pre-Test Close-Up View of Driver Seat Back or Head Restraint	A-21
42	Pre-Test Driver Dummy and Door Clearance View	A-21
43	Post-Test Driver Dummy and Door Clearance View	A-22
44	Pre-Test Right Side View of Driver Dummy and Front Seat Occupant Compartment	A-22
45	Post-Test Right Side View of Driver Dummy and Front Seat Occupant Compartment	A-23
46	Pre-Test Driver Inner Door Panel View	A-23
47	Post-Test Driver Inner Door Panel View Showing Driver Dummy Contact Locations	A-24
48	Post-Test Driver Dummy Close-Up Head Contact with Vehicle Interior View	A-24
49	Post-Test Driver Dummy Close-Up Head Contact with Side Air Bag View	A-25
50	Post-Test Driver Dummy Close-Up Torso Contact with Vehicle Interior View	A-25
51	Post-Test Driver Dummy Close-Up Torso Contact with Side Airbag View	A-26
52	Post-Test Driver Dummy Close-Up Pelvis Contact with Vehicle Interior View	A-26
53	Post-Test Driver Dummy Close-Up Pelvis Contact with Side Airbag View	A-27
54	Post-Test Driver Dummy Close-Up Knee Contact View	A-27
55	Pre-Test Left Side View of Rear Passenger Dummy Showing Belt and Chalking	A-28
56	Pre-Test Left Side View of Rear Passenger Dummy Shoulder and Door Top View	A-28
57	Post-Test Left Side View of Rear Passenger Dummy Shoulder and Door Top View	A-29
58	Pre-Test Frontal View of Rear Passenger Seat Back Prior to Dummy Positioning	A-29
59	Pre-Test Frontal View of Rear Passenger Dummy Head and Shoulders in Relation to Head Restraint	A-30
60	Pre-Test Overhead View of Rear Passenger Seat Pan Prior to Dummy Positioning	A-30
61	Pre-Test Overhead View of Rear Passenger Dummy Thighs on Seat Pan	A-31
62	Pre-Test View of Rear Passenger Dummy's Neck Showing Position of Adjustable Neck Bracket	A-31
63	Pre-Test View of Rear Passenger Dummy's Head Showing Dummy's Head is Level	A-32
64	Pre-Test Placement of Rear Passenger Dummy's Feet	A-32
65	Pre-Test View of Belt Anchorage for Rear Passenger Dummy	A-33
66	Pre-Test Close-Up Left Side View of Rear Passenger Seat Track	A-33
67	Pre-Test Close-Up Left Side View of Rear Passenger Seat Back	A-34
68	Pre-Test Close-Up View of Rear Passenger Seat Back or Head Restraint	A-34
69	Pre-Test Rear Passenger Dummy and Door Clearance View	A-35

TABLE OF PHOTOGRAPHS ... (CONTINUED)

Figure		Page
70	Post-Test Rear Passenger Dummy and Door Clearance View	A-35
71	Pre-Test Right Side View of Rear Passenger Dummy and Rear Seat Occupant Compartment	A-36
72	Post-Test Right Side View of Rear Passenger Dummy and Rear Seat Occupant Compartment	A-36
73	Pre-Test Rear Passenger Inner Door Panel View	A-37
74	Post-Test Rear Passenger Inner Door Panel View Showing Rear Passenger Dummy Contact Locations	A-37
75	Post-Test Rear Passenger Dummy Close-Up Head Contact with Vehicle Interior View	A-38
76	Post-Test Rear Passenger Dummy Close-Up Head Contact with Side Airbag View	A-38
77	Post-Test Rear Passenger Dummy Close-Up Torso Contact with Vehicle Interior View	A-39
78	Post-Test Rear Passenger Dummy Close-Up Torso Contact with Side Airbag View	A-39
79	Post-Test Rear Passenger Dummy Close-Up Pelvis Contact with Vehicle Interior View	A-40
80	Post-Test Rear Passenger Dummy Close-Up Pelvis Contact with Side Airbag View	A-40
81	Post-Test Rear Passenger Dummy Close-Up Knee Contact View	A-41
82	Pre-Test View of Fuel Filler Cap or Fuel Filler Neck	A-41
83	Post-Test View of Fuel Filler Cap or Fuel Filler Neck	A-42
84	Pre-Test Front View of MDB Impactor Face	A-42
85	Post-Test Front View of MDB Impactor Face	A-43
86	Pre-Test Top View of MDB Impactor Face	A-43
87	Post-Test Top View of MDB Impactor Face	A-44
88	Pre-Test Left Side View of MDB Impactor Face	A-44
89	Post-Test Left Side View of MDB Impactor Face	A-45
90	Pre-Test Right Side View of MDB Impactor Face	A-45
91	Post-Test Right Side View of MDB Impactor Face	A-46
92	Close-Up View of Vehicle's Certification Label	A-46
93	Close-Up View of Vehicle's Tire Information Placard or Label	A-47
94	Pre-Test Ballast View	A-47
95	Post-Test Primary and Redundant Speed Trap Read-Out	A-48
96	FMVSS No. 301 Static Rollover 0 Degrees	A-48
97	FMVSS No. 301 Static Rollover 90 Degrees	A-49
98	FMVSS No. 301 Static Rollover 180 Degrees	A-49
99	FMVSS No. 301 Static Rollover 270 Degrees	A-50
100	FMVSS No. 301 Static Rollover 360 Degrees	A-50
101	Impact Event	A-51
102	Monroney Label	A-51
103	Driver Head Restraint Use and Adjustment Information from Vehicle Owner's Manual	A-52
104	Left Rear Passenger Head Restraint Use and Adjustment Information from Vehicle Owner's Manual	A-52



FIGURE 1. As-Delivered Right Front 3/4 View of Test Vehicle



FIGURE 2. As-Delivered Left Rear 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 3/4 View of Test Vehicle



FIGURE 6. Post-Test Left Front 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 3/4 View of Test Vehicle



FIGURE 10. Post-Test Left Rear 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

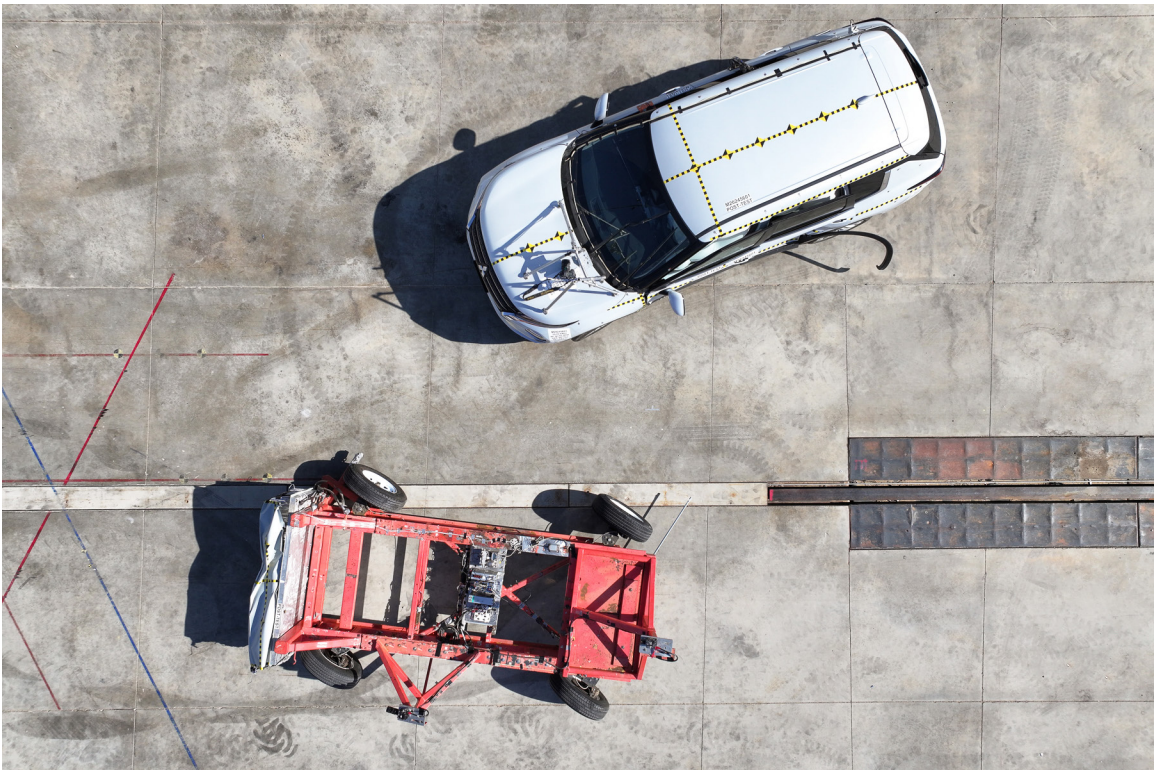


FIGURE 16. Post-Test Overhead View of Test Area



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 of Occupant Compartment



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



FIGURE 46. Pre-Test Driver Inner Door Panel View



FIGURE 47. Post-Test Driver Inner Door Panel View



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

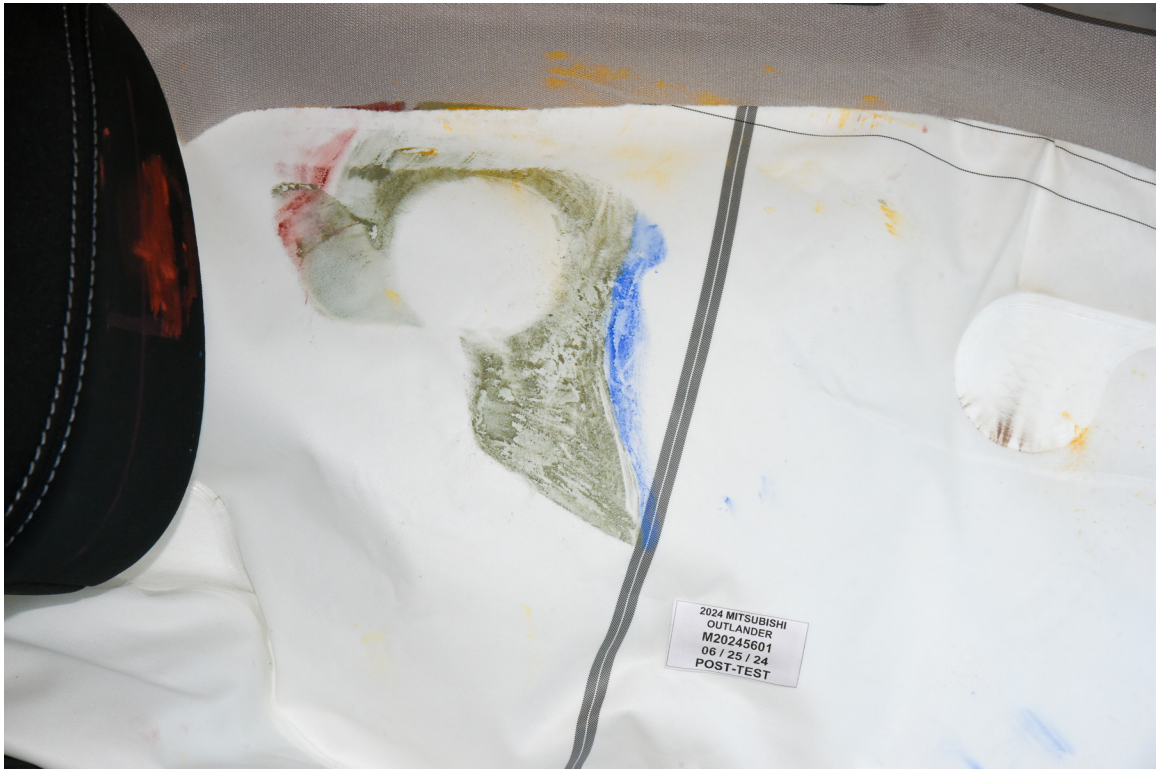


FIGURE 49. Post-Test Driver Dummy Close-Up Head Contact with Side Air Bag View



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

Photograph Not Applicable
No Pelvis Contact With Vehicle Interior

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

Photograph Not Applicable
No Dummy Close-Up Knee Contact

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



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

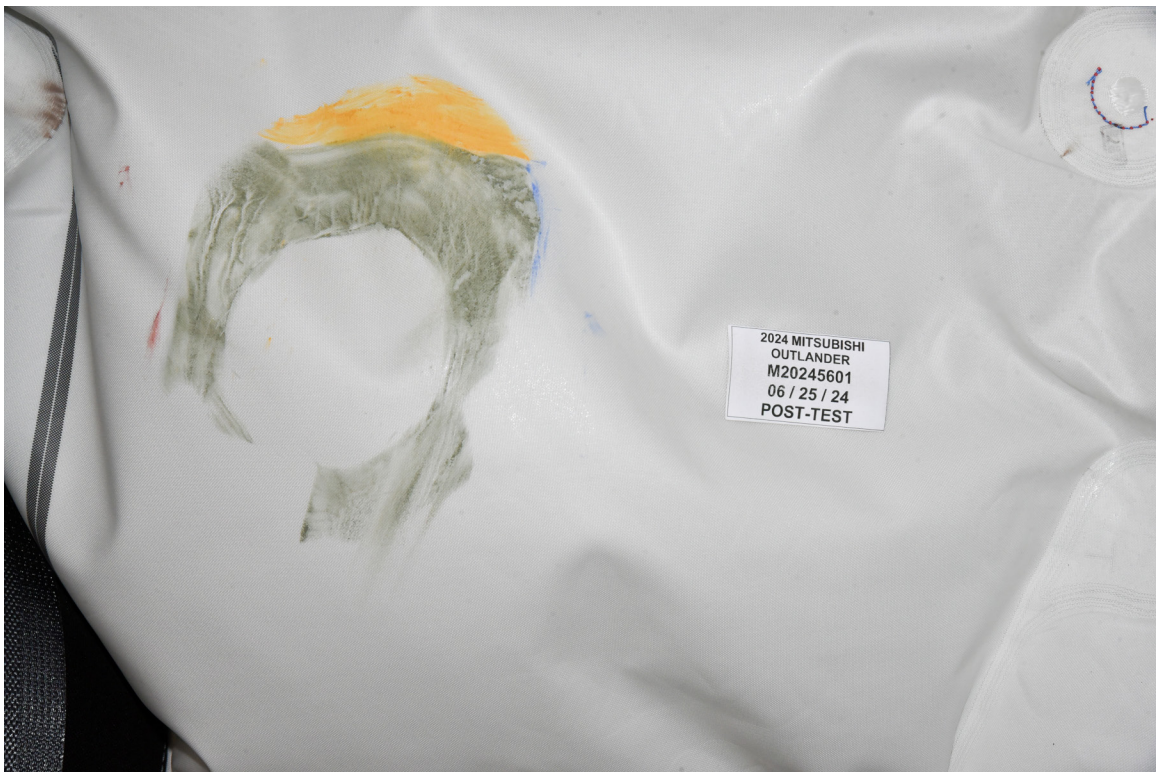


FIGURE 76. Post-Test Rear Passenger Dummy Close-Up Head Contact with Side Airbag View



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 Vehicle Side Airbag View

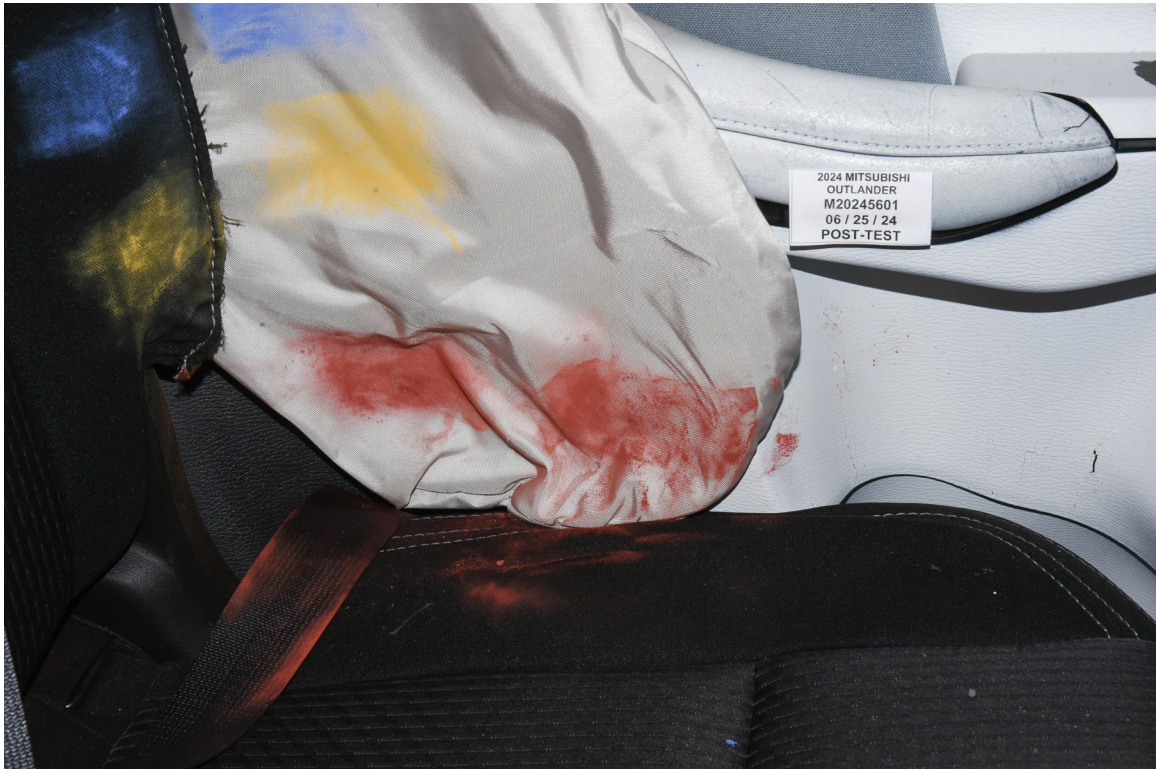


FIGURE 79. Post-Test Rear Passenger Dummy Close-Up Pelvis Contact with Vehicle Interior View



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



FIGURE 81. Post-Test Rear Passenger Dummy Close-Up Knee Contact View



FIGURE 82. Pre-Test View of Fuel Filler Cap or Fuel Filler Neck



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 View of MDB Impactor Face



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



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



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



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

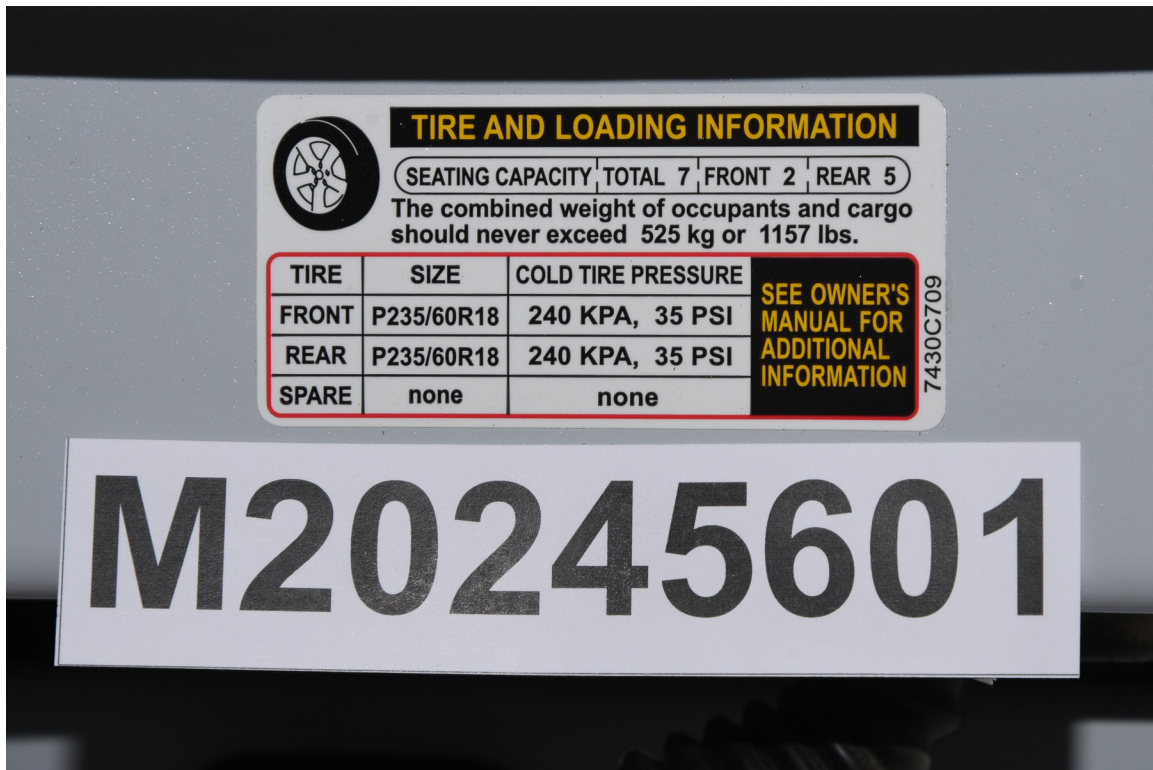


FIGURE 93. Close-Up View of Vehicle's Tire Information Placard or Label



FIGURE 94. Pre-Test Ballast View

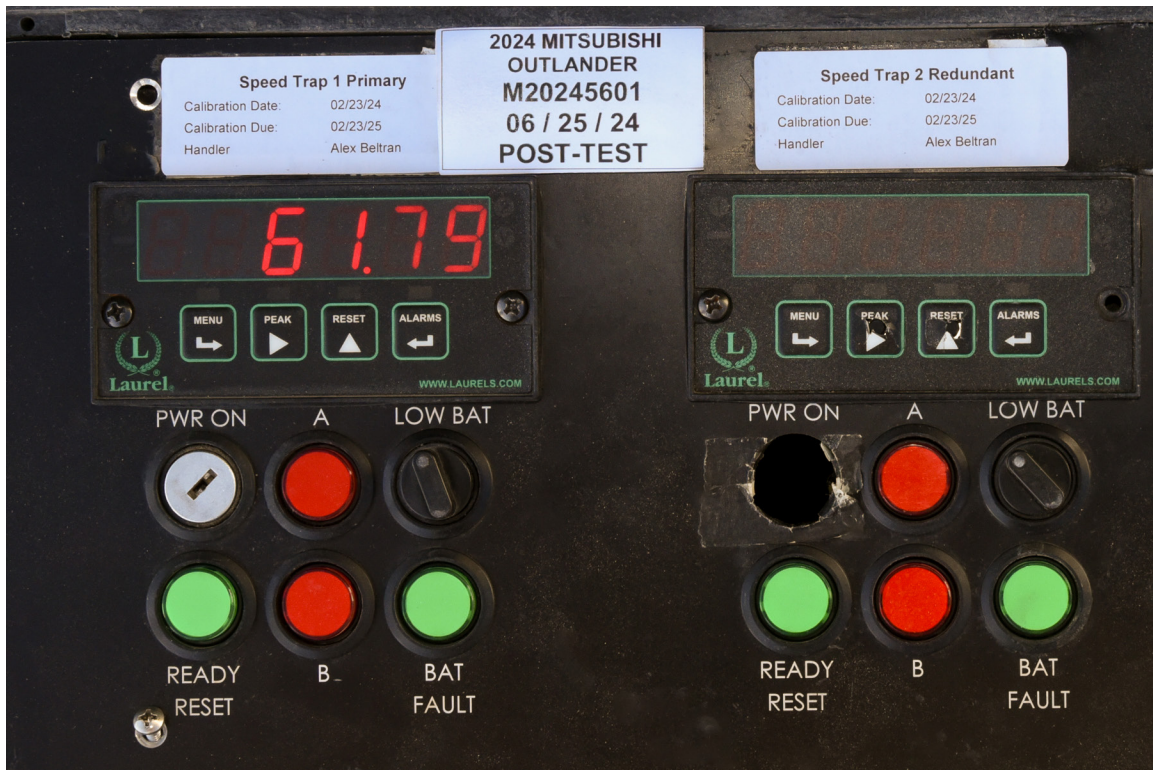


FIGURE 95. Post-Test Primary and Redundant Speed Trap Read-Out

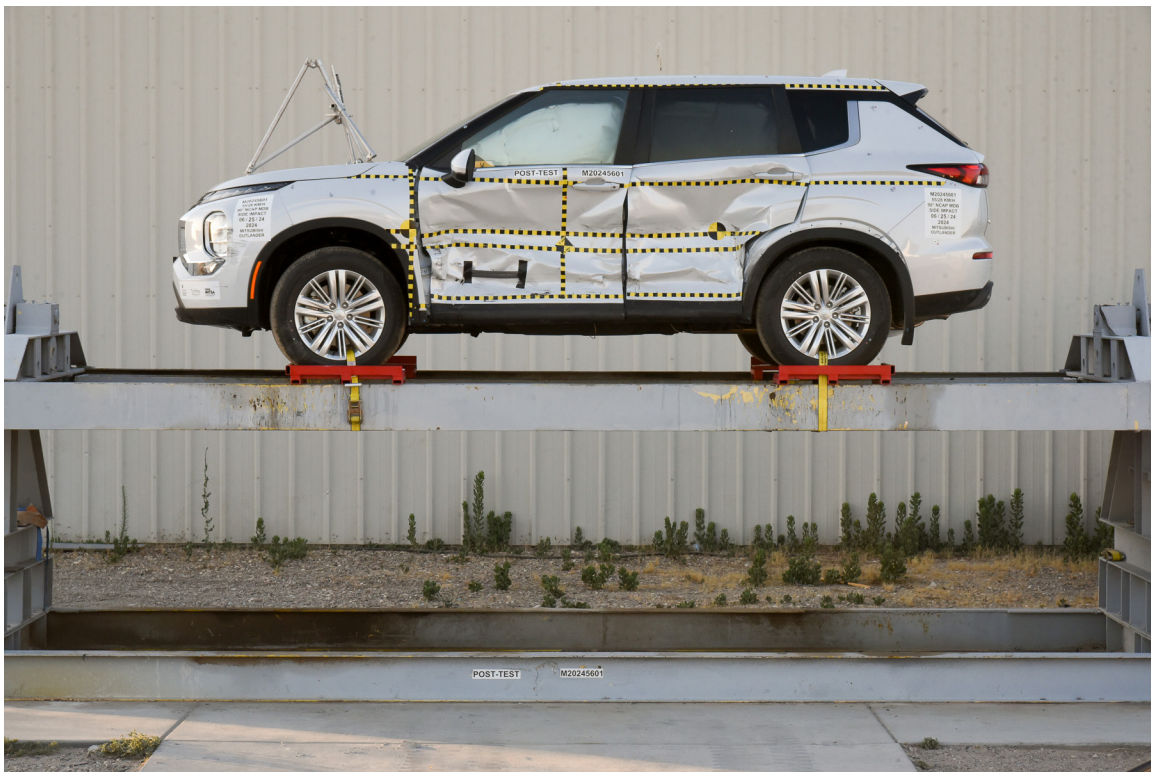


FIGURE 96. FMVSS No. 301 Static Rollover 0 Degrees

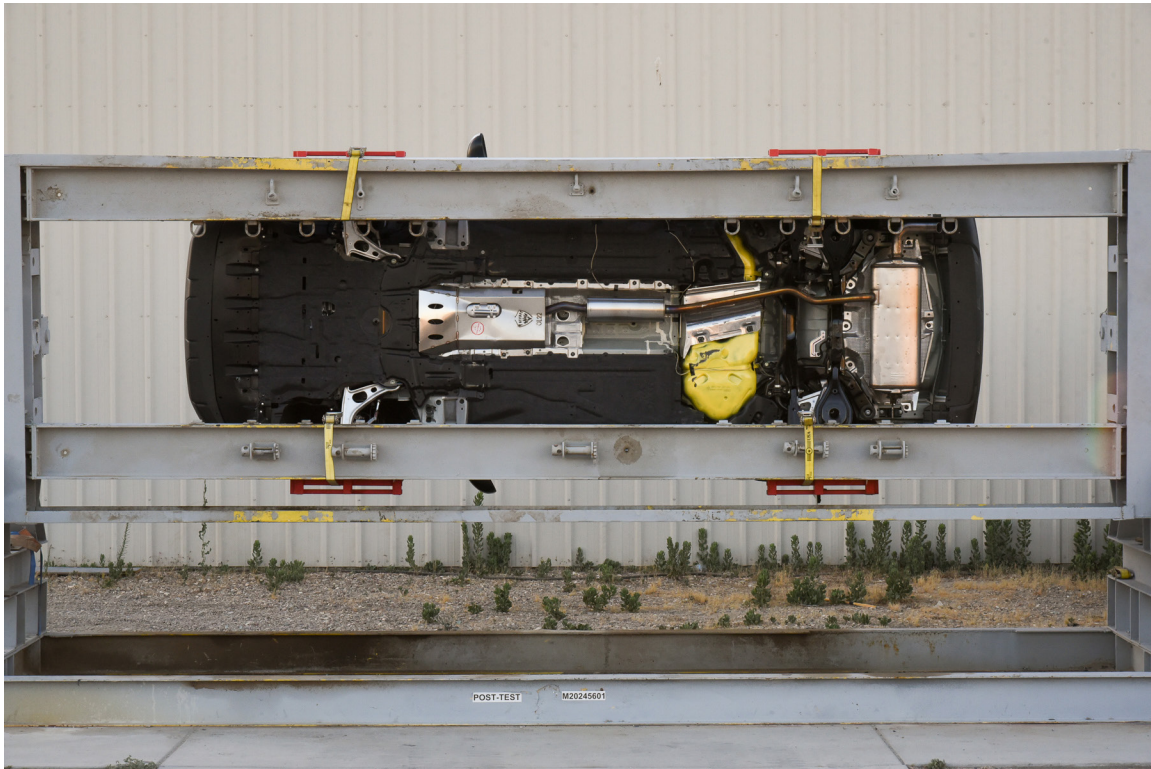


FIGURE 97. FMVSS No. 301 Static Rollover 90 Degrees

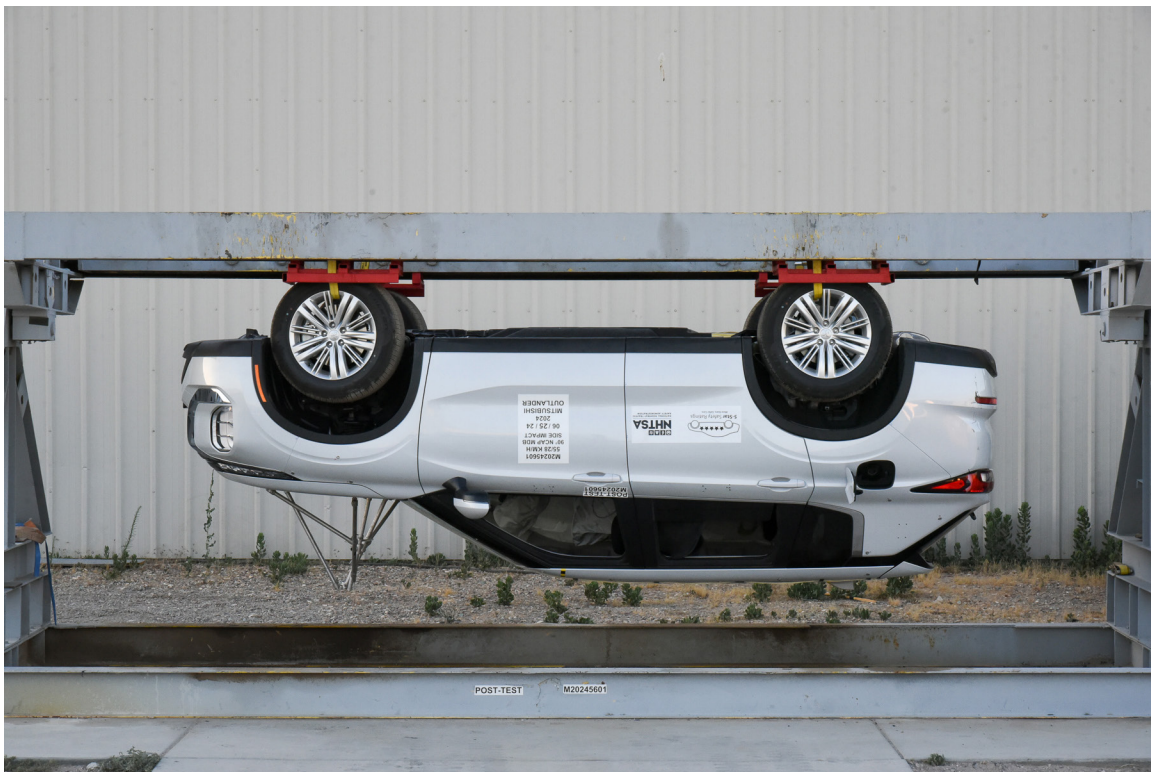


FIGURE 98. FMVSS No. 301 Static Rollover 180 Degrees



FIGURE 99. FMVSS No. 301 Static Rollover 270 Degrees

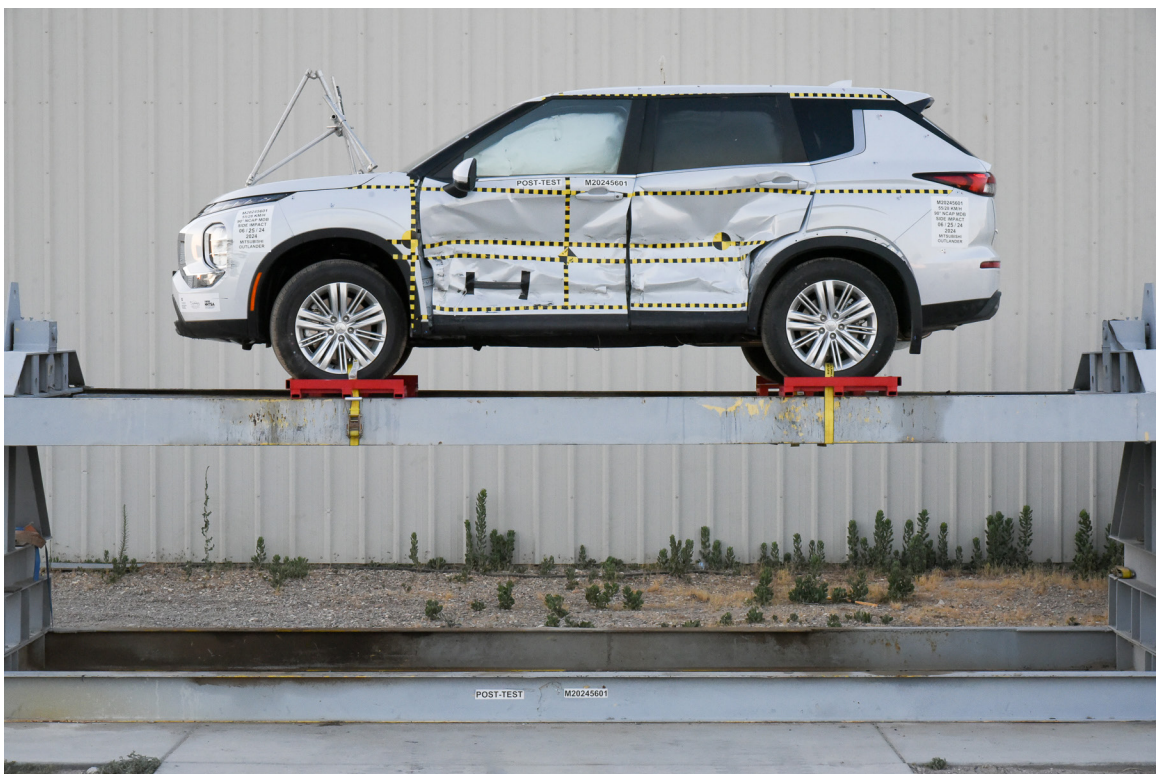


FIGURE 100. FMVSS No. 301 Static Rollover 360 Degrees



FIGURE 101. Impact Event

2024 OUTLANDER ES 2.5 2WD
4-DOOR SUV
WHITE DIAMOND / BLACK

2.5L DOHC 4-CYLINDER DIRECT-INJECTION
 CONTINUOUSLY VARIABLE TRANSMISSION
 50-STATE EMISSIONS STANDARD

Mechanical Features

- 2.5L DOHC 4-cylinder Direct-Injection
- 8-Speed Continuously Variable Transmission (CVT)
- Shift by wire
- Paddle shifters
- LED low and high beam headlights
- LED daytime running lights
- Automatic headlights
- Body-colored side mirrors w/ LED turn indicators
- Rear window defroster with timer
- Capless fuel filler
- 18-inch alloy wheels
- P235/50 R18 all-season tires
- Tire repair kit

Interior Features

- Fabric seating surfaces
- 40/20/40 split 2nd row seat with folding function
- 7 Passenger seating

Convenience Features

- 8.0" Smartphone-link Display Audio (SDA)
- Apple CarPlay®
- Google Android Auto®
- SXM audio with 90-day SXM All Access subscription
- 7.0" Multi-information display
- 6 speakers
- Bluetooth® wireless technology
- Steering wheel audio and phone controls
- Steering wheel voice recognition control
- Front 1x USB-C and 1x USB-A
- Drive mode selector (Tarmac, Gravel, Snow, Normal, Eco)
- Dual-zone automatic climate control
- Remote keyless entry
- Push button start

Safety & Security

- Anti-lock Braking System (ABS) with Electronic Brakeforce Distribution (EBD) and brake assist
- Electronic parking brake with auto hold
- Active Stability Control (ASC)
- Hill Start Assist (HSA)
- Traffic Jam Assist (TJA)
- Tire Pressure Monitoring System (TPMS) with tire fill notification
- Automatic High Beam (AHB)
- Forward Collision Mitigation (FCM) with pedestrian detection
- Driver Attention Alert (DAA)
- Blind Spot Warning (BSW) w/ Lane Change Assist (LCA)
- Rear Cross Traffic Alert (RCTA)
- Rear Automatic Emergency Braking (Rear AEB)
- Rear parking sensors
- Cruise control
- Advanced dual-stage front airbags
- Driver and passenger SRS knee airbags

Additional Equipment

Full Tank of Gas INCLUDED

Mitsubishi Connect Subscriptions INCLUDED

- 24-month trial from the date of vehicle delivery (enrollment required)
- Safeguard Services
- Remote Services

Mitsubishi Motors Confidence INCLUDED

- 10-Year/100,000-Mile Limited Powertrain Warranty
- 5-Year/Unlimited-Mile Roadside Assistance
- 2-Year/50,000-Mile Limited Maintenance (3 Oil Changes, 3 Tire Rotations and 1 Cabin Filter)
- See Participating Retailer for Details

White Diamond Paint \$595.00

Welcome Package \$175.00

- Touch Up Paint Pen (Body Color)
- Console Tray Mat
- Floor Mats, Carpet
- Vehicle Manuals Binder

MSRP: \$28,395.00

Total Additional Equipment: \$770.00

Subtotal: \$29,165.00

Destination/Handling: \$1,445.00

Total MSRP: \$30,610.00

MSRP (excludes taxes, license, title, dealer fees)

Fuel Economy and Environment

Fuel Economy

27 MPG combined city/hwy

24 MPG city

31 MPG highway

3.7 gallons per 100 miles

Small SUVs range from 14 to 123 MPG. The best vehicle rates 140 MPG.

You spend \$250 more in fuel costs over 5 years compared to the average new vehicle.

Annual fuel Cost \$2,000

Fuel Economy & Greenhouse Gas Rating (tailpipe only)

5 (Best)

This vehicle emits 327 grams CO₂ per mile. The best emits 0 grams per mile (tailpipe only). Producing and distributing fuel also create emissions; learn more at fuelconomy.gov.

Smog Rating (tailpipe only)

10 (Best)

Actual results will vary for many reasons, including driving conditions and how you drive and maintain your vehicle. The average new vehicle gets 28 MPG and costs \$3750 to fuel over 5 years. Cost estimates are based on 15000 miles per year at \$3.00 per gallon. MPGe is miles per gasoline gallon equivalent. Vehicle emissions are a significant cause of climate change and smog.

fuelconomy.gov

Calculate personalized estimates and compare vehicles

10-year 100,000-mile LIMITED POWERTRAIN WARRANTY

10"/100,000" POWERTRAIN

7"/100,000" WITH CORROSION PROTECTION

5"/60,000" NEW VEHICLE LIMITED WARRANTY

5"/UNLIMITED" ROADSIDE ASSISTANCE

*See participating retailer for limited warranty and roadside assistance terms and conditions.

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 ★★★★★

Based on the risk of injury in a frontal impact. Should ONLY be compared to other vehicles of similar size and weight.

Side Crash Front seat Rear seat Not Rated Not Rated

Based on the risk of injury in a side impact.

Rollover ★★★★★

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

Parts Content Information

For vehicles in this carline:

U.S./Canadian Major Sources of Foreign Parts Content: 5% JAPAN 82%

For this vehicle:

Final Assembly: OKAZAKI, JAPAN

Country of Origin: JAPAN

Engine: JAPAN

Transmission: JAPAN

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

Ship To: (DBA) VICTORVILLE MITSUBISHI 1529 RAMONA AVE. VICTORVILLE, CA 92392

Sold To: (Same unless indicated)

Method of Transport: TRUCK

Plan/Port of Entry: HUENEME, CA

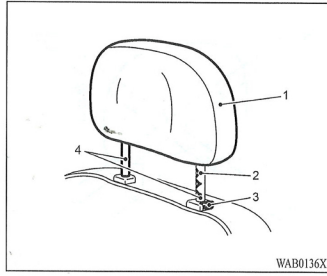
Route Code: TMP

Cumulative Accessory Weight is 70 lbs

Gasoline, license and title fees, applicable federal, state and local taxes and dealer and distributor installed options and accessories are not included in the manufacturer's suggested retail price. This label has been applied to this vehicle pursuant to federal law and cannot be moved or altered prior to delivery to the ultimate purchaser.

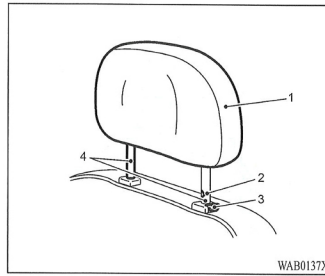
Visit us at www.mitsubishicars.com

FIGURE 102. Monroney Label



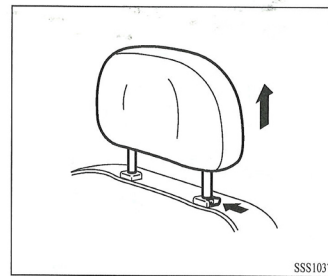
ADJUSTABLE HEAD RESTRAINT COMPONENTS

1. Removable head restraint
2. Multiple notches
3. Lock knob
4. Stalks



NON-ADJUSTABLE HEAD RESTRAINT COMPONENTS

1. Removable head restraint
2. Single notch
3. Lock knob
4. Stalks



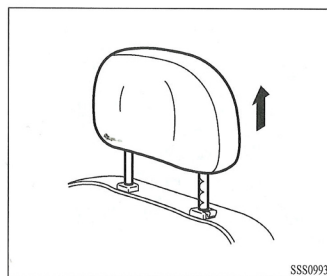
REMOVE

Use the following procedure to remove the head restraint.

1. Pull the head restraint up to the highest position.
2. Push and hold the lock knob.
3. Remove the head restraint from the seat.
4. Store the head restraint properly in a secure place so it is not loose in the vehicle.
5. Reinstall and properly adjust the head restraint before an occupant uses the seating position.

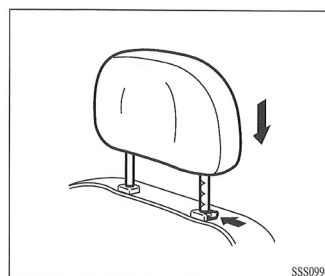
Safety — Seats, seat belts and supplemental restraint system 1-13

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



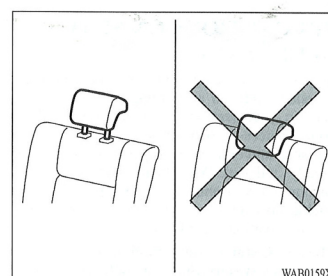
Raise

To raise the head restraint, pull it up. Make sure the head restraint is positioned so the lock knob is engaged in the notch before riding in that designated seating position.



Lower

To lower, push and hold the lock knob and push the head restraint down. Make sure the head restraint is positioned so the lock knob is engaged in the notch before riding in that designated seating position.



WARNING

When a person sits in the second center seating position, pull up the head restraint to a height at which it locks in position. Be sure to make this adjustment before starting to drive. Serious injuries could otherwise be suffered in the result of an impact.

Safety — Seats, seat belts and supplemental restraint system 1-15

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

APPENDIX B
VEHICLE AND DUMMY RESPONSE DATA PLOTS

TABLE OF DATA PLOTS

Plot		Page
1	Driver Head Acceleration (X) Primary vs. Time	B-1
2	Driver Head Acceleration (Y) Primary vs. Time	B-1
3	Driver Head Acceleration (Z) Primary vs. Time	B-1
4	Driver Head Resultant Acceleration Primary vs. Time	B-1
5	Driver Upper Thorax Rib Deflection (Y) vs. Time	B-2
6	Driver Middle Thorax Rib Deflection (Y) vs. Time	B-2
7	Driver Lower Thorax Rib Deflection (Y) vs. Time	B-2
8	Driver Thorax Rib Deflection Maximum vs. Time	B-2
9	Driver Anterior Abdominal Force (Y) vs. Time	B-3
10	Driver Middle Abdominal Force (Y) vs. Time	B-3
11	Driver Posterior Abdominal Force (Y) vs. Time	B-3
12	Driver Total Abdominal Force (Y) vs. Time	B-3
13	Driver Pubic Symphysis Force (Y) vs. Time	B-4
14	Passenger Head Acceleration (X) vs. Time Primary	B-5
15	Passenger Head Acceleration (Y) vs. Time Primary	B-5
16	Passenger Head Acceleration (Z) vs. Time Primary	B-5
17	Passenger Head Resultant Acceleration Primary vs. Time	B-5
18	Passenger Lower Spine T12 Acceleration (X) vs. Time	B-6
19	Passenger Lower Spine T12 Acceleration (Y) vs. Time	B-6
20	Passenger Lower Spine T12 Acceleration (Z) vs. Time	B-6
21	Passenger Lower Spine T12 Resultant Acceleration vs. Time	B-6
22	Passenger Acetabulum Force on Impact Side (Y) vs. Time	B-7
23	Passenger Iliac Force on Impact Side (Y) vs. Time	B-7
24	Passenger Total Pelvic Force on Impact Side (Y) vs. Time	B-7

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)

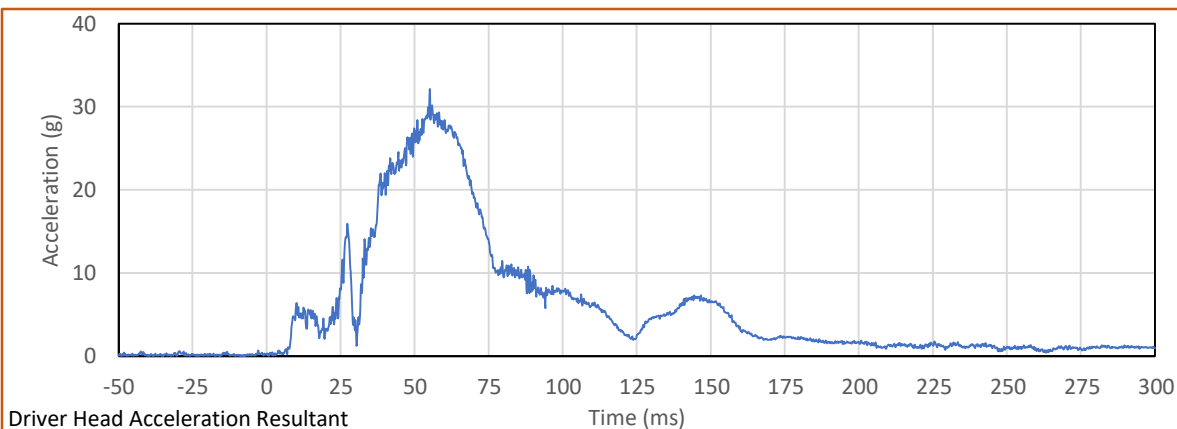
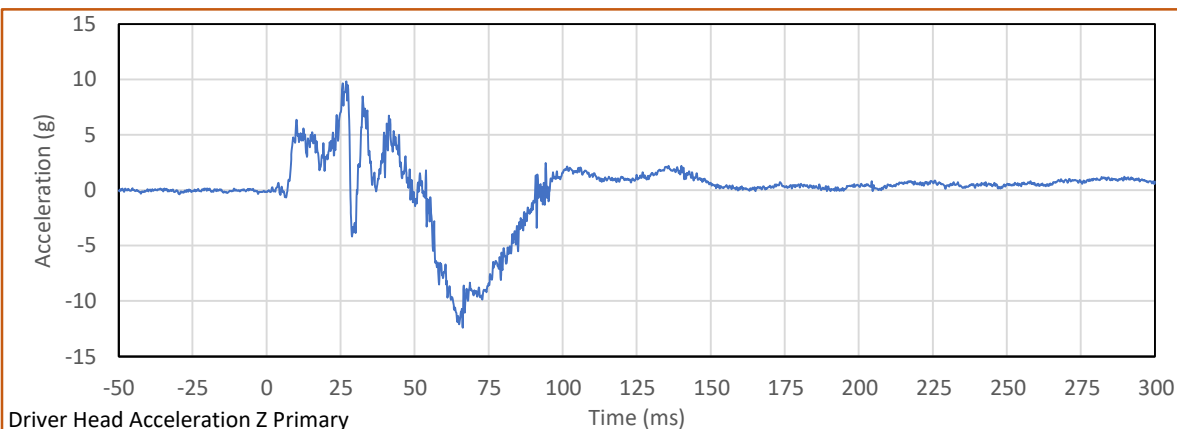
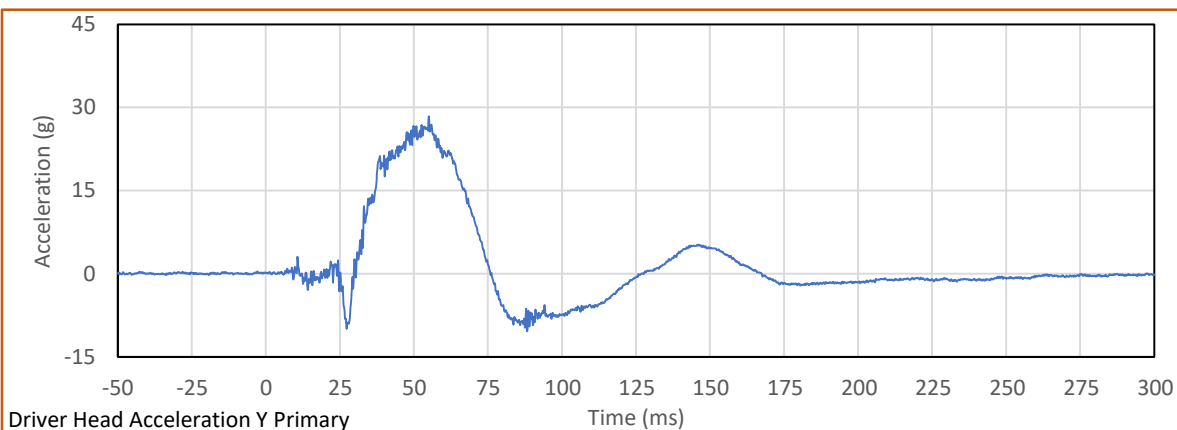
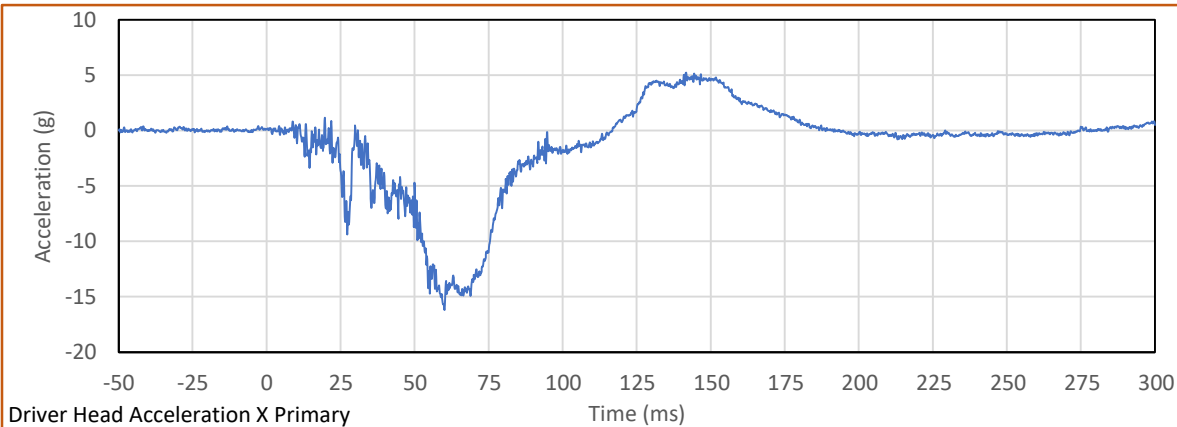
MDB Center of Gravity Acceleration (Z)

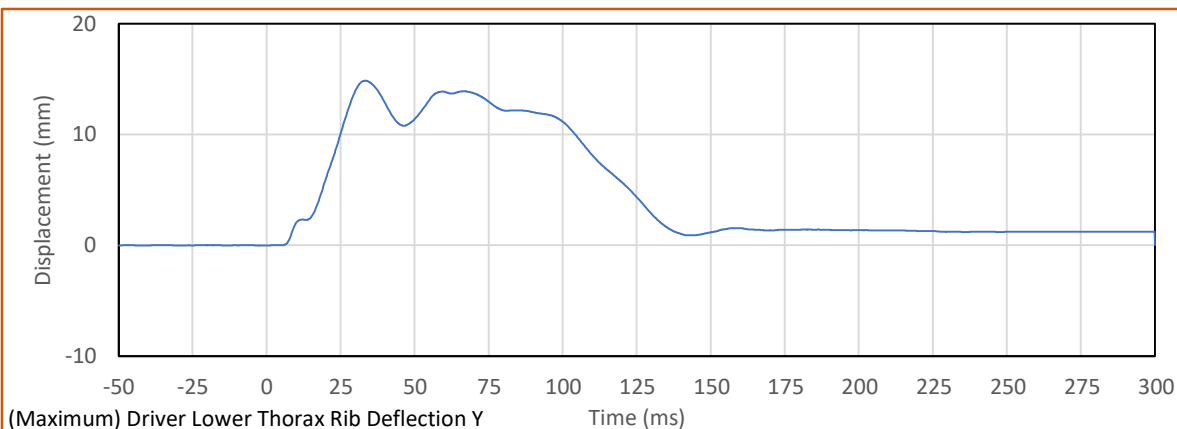
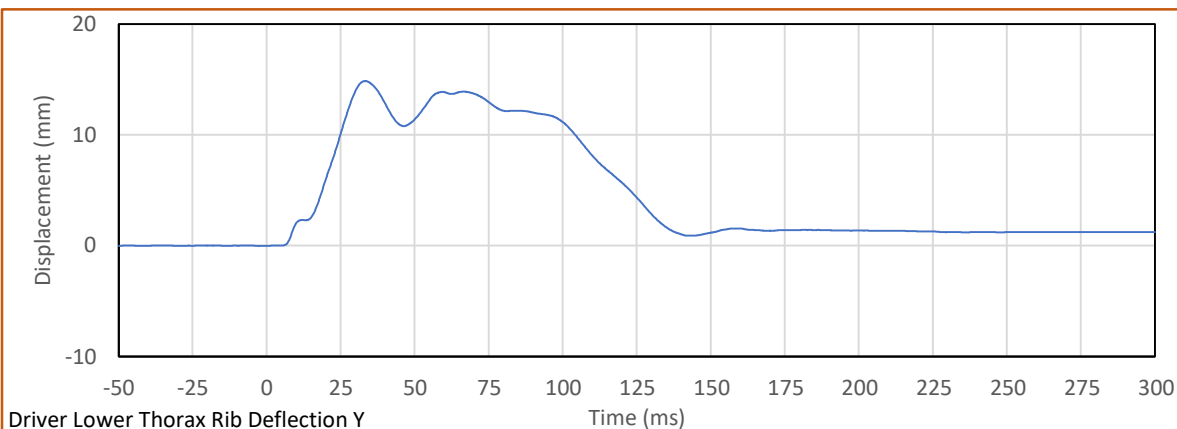
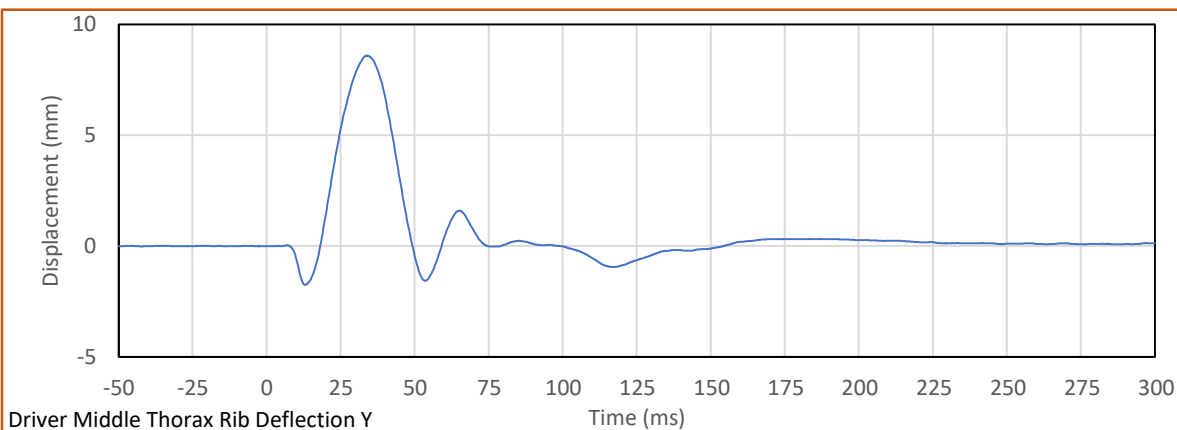
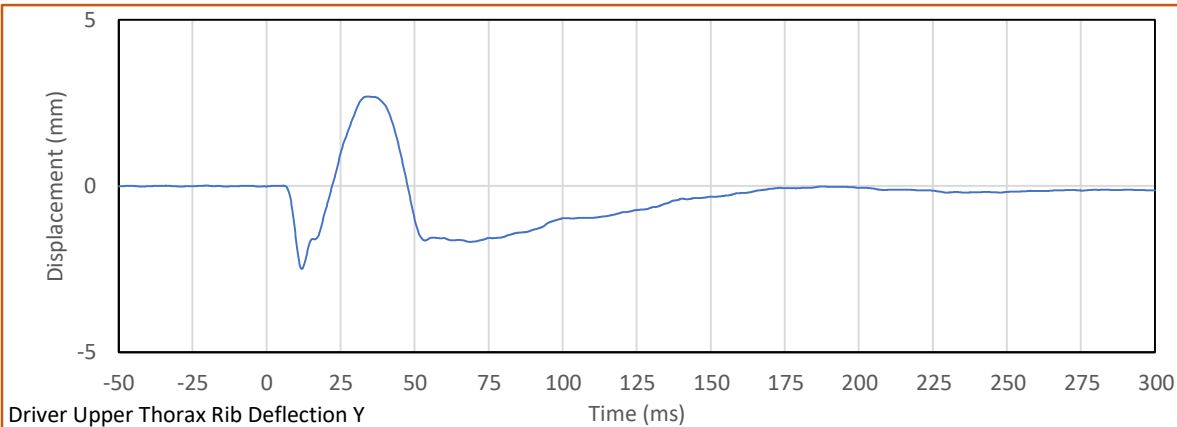
MDB Rear Acceleration (X)

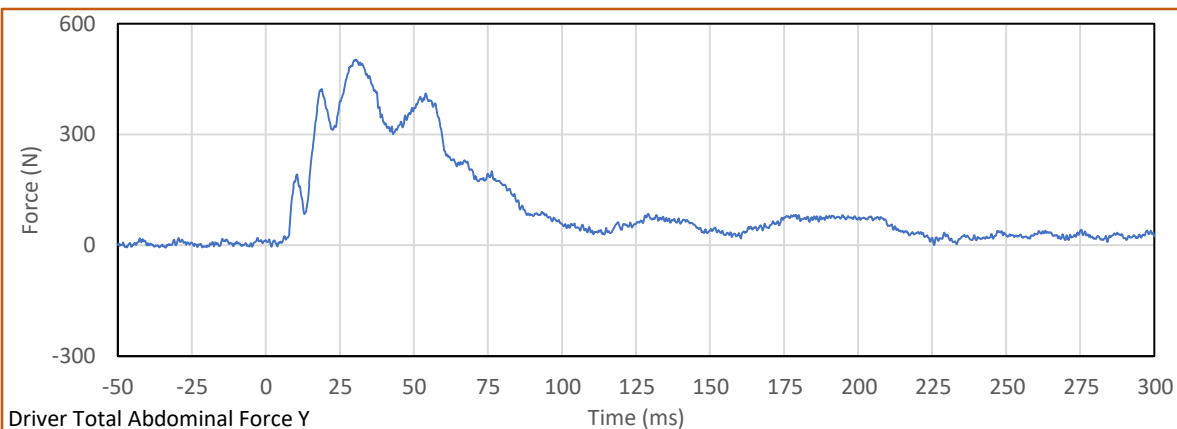
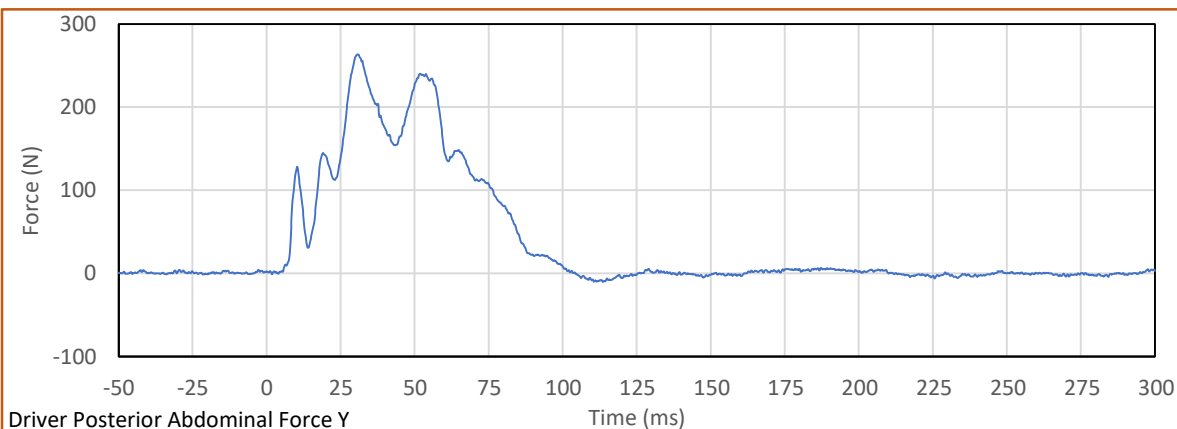
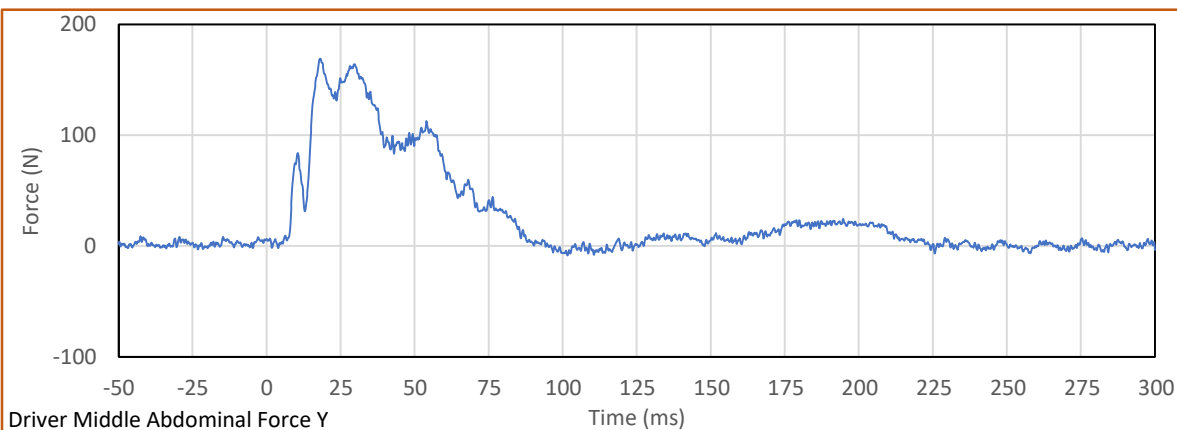
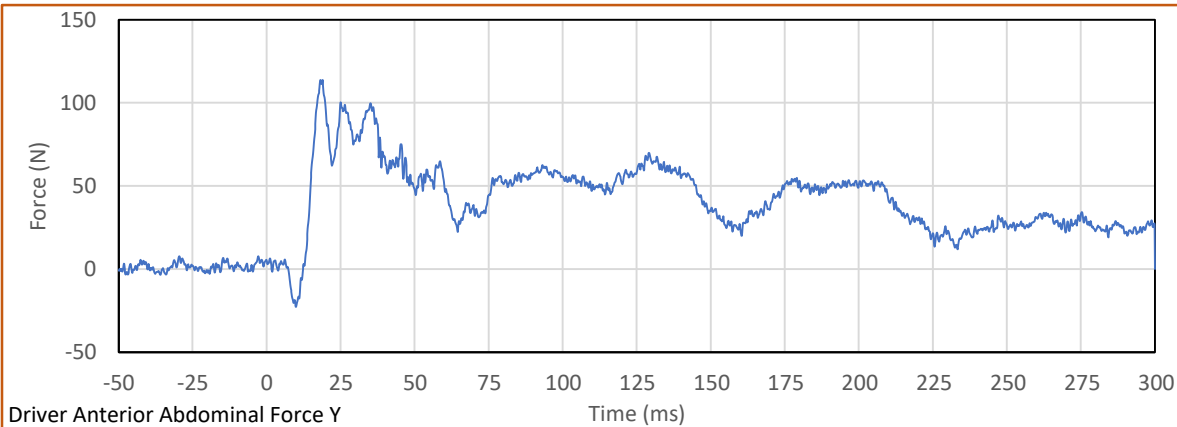
MDB Rear Acceleration (Y)

Left MDB Contact Switch

Right MDB Contact Switch

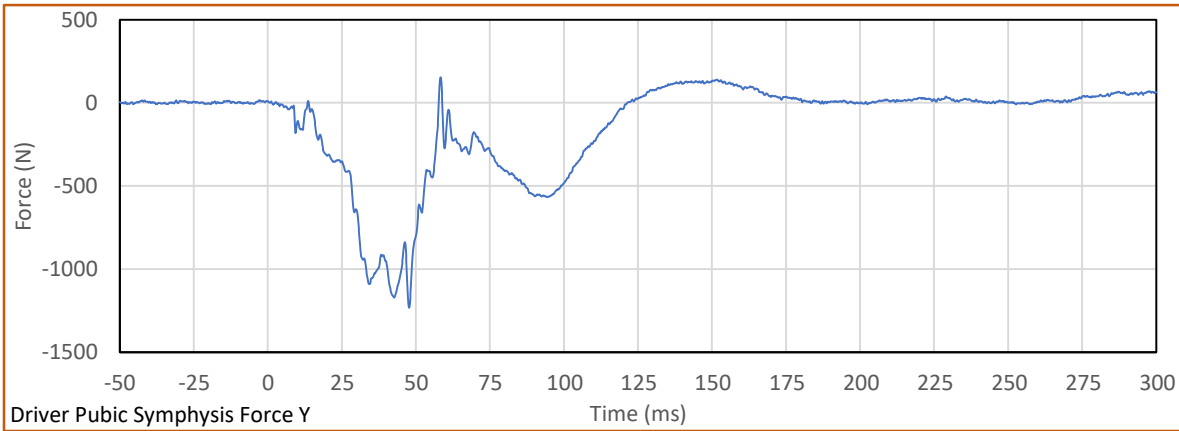






Test Vehicle: 2024 Mitsubishi Outlander 5-Door SUV
Test Program: NCAP MDB Side Impact Test

NHTSA No.: M20245601
Test Date: 6/25/2024

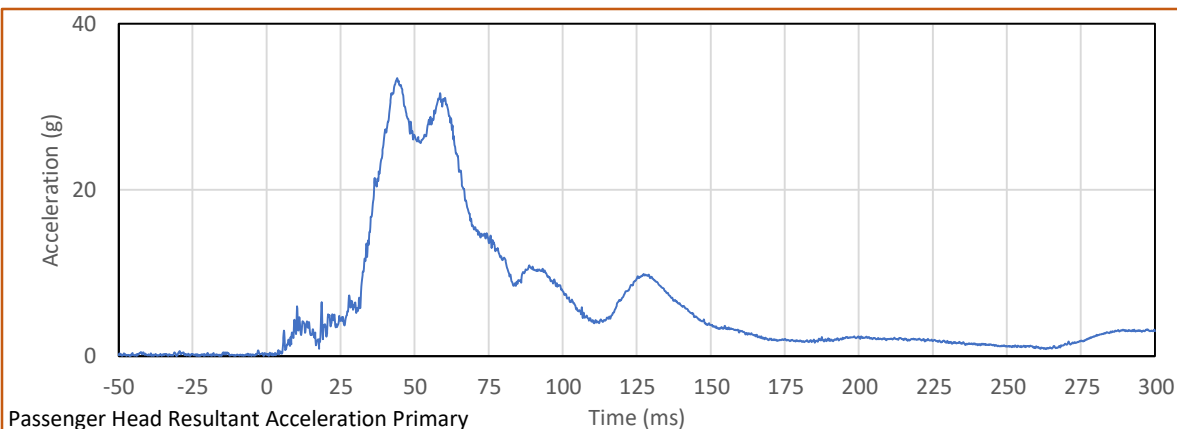
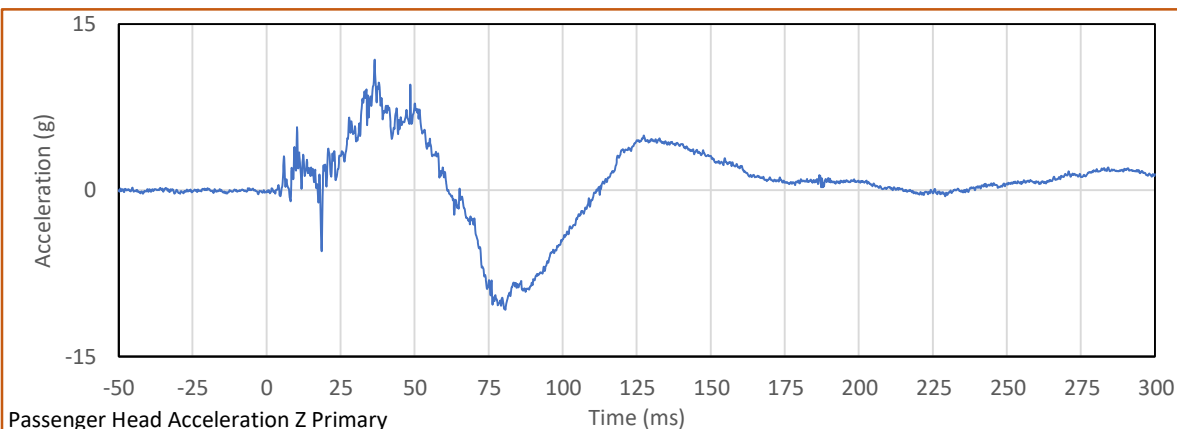
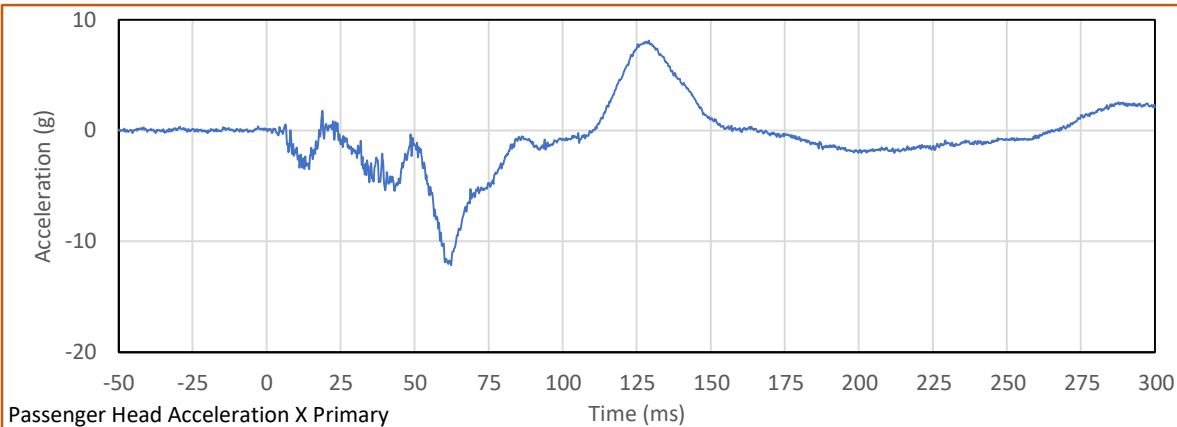


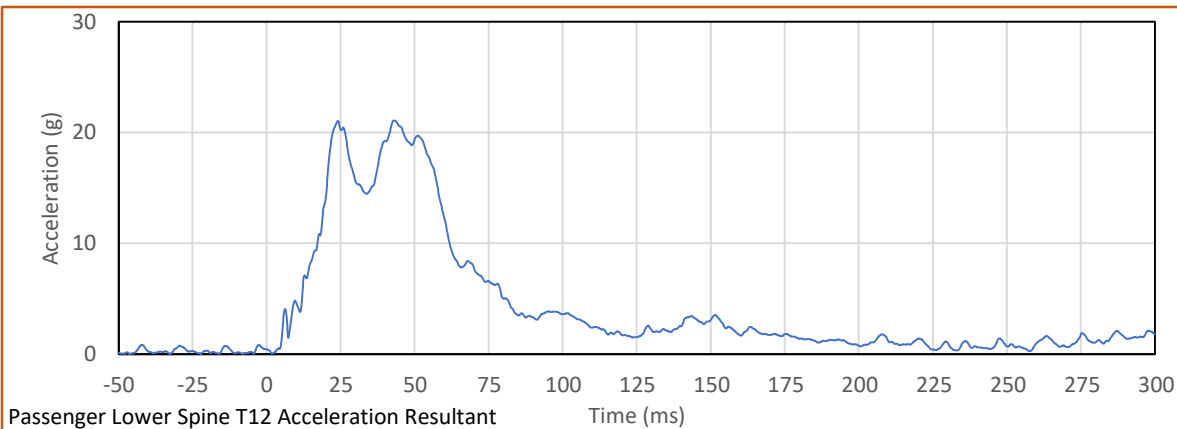
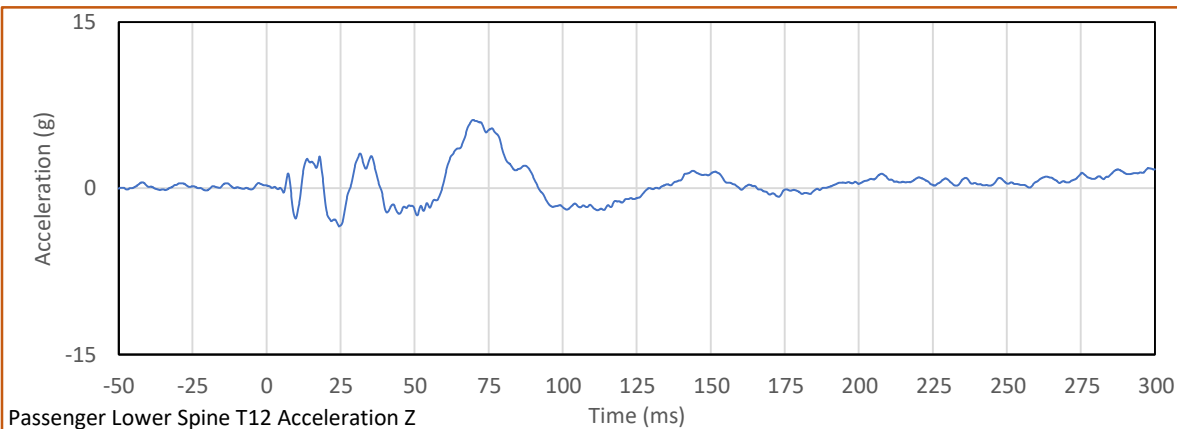
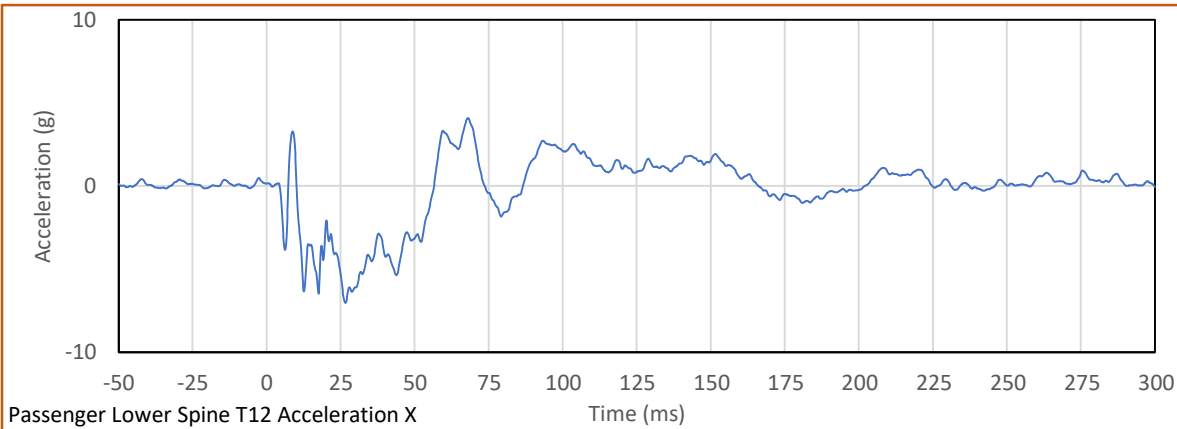
11PUBC0000ERFOYB

Max:154.3@58.3

Min:-1232.5@47.7

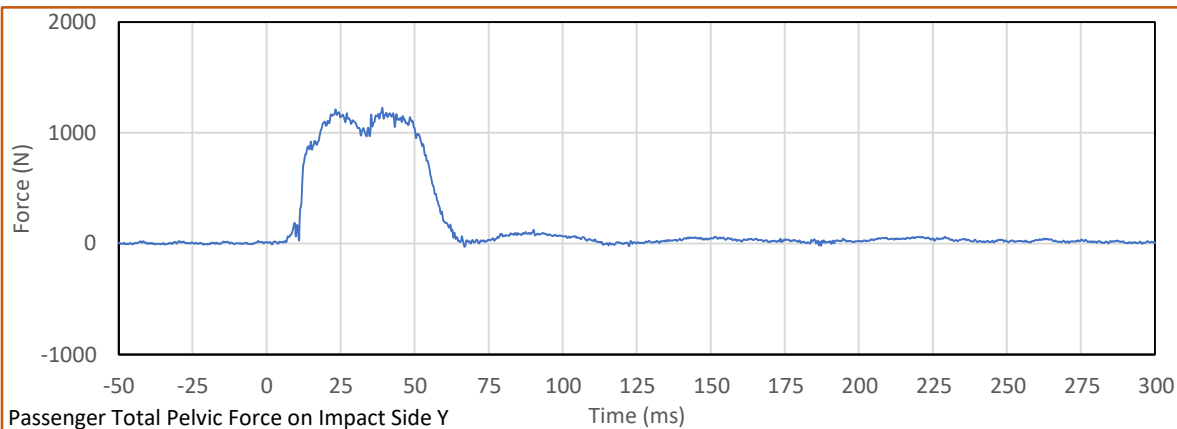
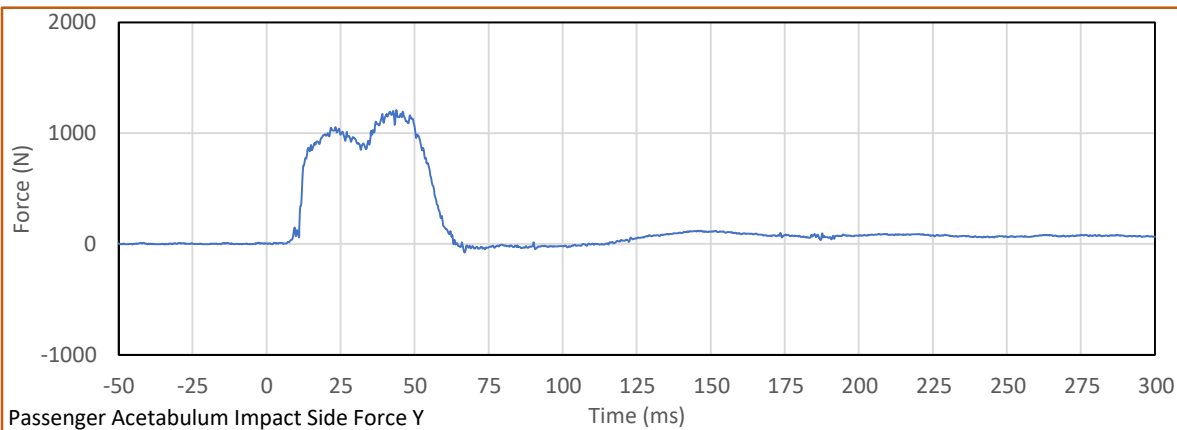
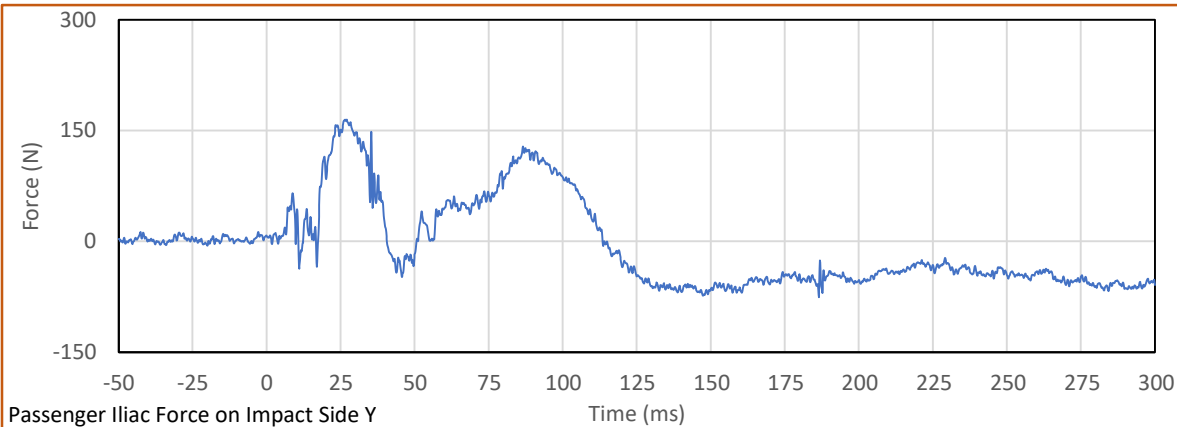
SAE Class 600





Test Vehicle: 2024 Mitsubishi Outlander 5-Door SUV
Test Program: NCAP MDB Side Impact Test

NHTSA No.: M20245601
Test Date: 6/25/2024



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: F037**

ATD Serial No.: F037

Test Date: 2024-06-12

Tested Parameter	Units	Spec Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.6	Pass
Laboratory Relative Humidity	%	10	70	42	Pass
1 - Sitting Height	mm	900	918	913	Pass
2 - Seat to Shoulder Joint	mm	558	572	569	Pass
3 - Seat to Lower Face of Thoracic Spine Box	mm	346	356	353	Pass
4 - Seat to Hip Joint (bolt center)	mm	97	103	99	Pass
5 - Sole to Seat, Sitting	mm	433	451	437	Pass
6 - Head Width	mm	152	158	156	Pass
7 - Shoulder/Arm Width	mm	461	479	470	Pass
8 - Thorax Width	mm	322	332	328	Pass
9 - Abdomen Width	mm	273	287	285	Pass
10 - Pelvis Lap Width	mm	359	373	365	Pass
11 - Head Depth	mm	196	206	198	Pass
12 - Thorax Depth	mm	262	272	265	Pass
13 - Abdomen Depth	mm	194	204	202	Pass
14 - Pelvis Depth	mm	235	245	241	Pass
15 - Back of Buttocks to Hip Joint (bolt Center)	mm	150	160	153	Pass
16 - Back of Buttocks to Front Knee	mm	597	615	604	Pass
				Overall Test Results	Pass

Technician:



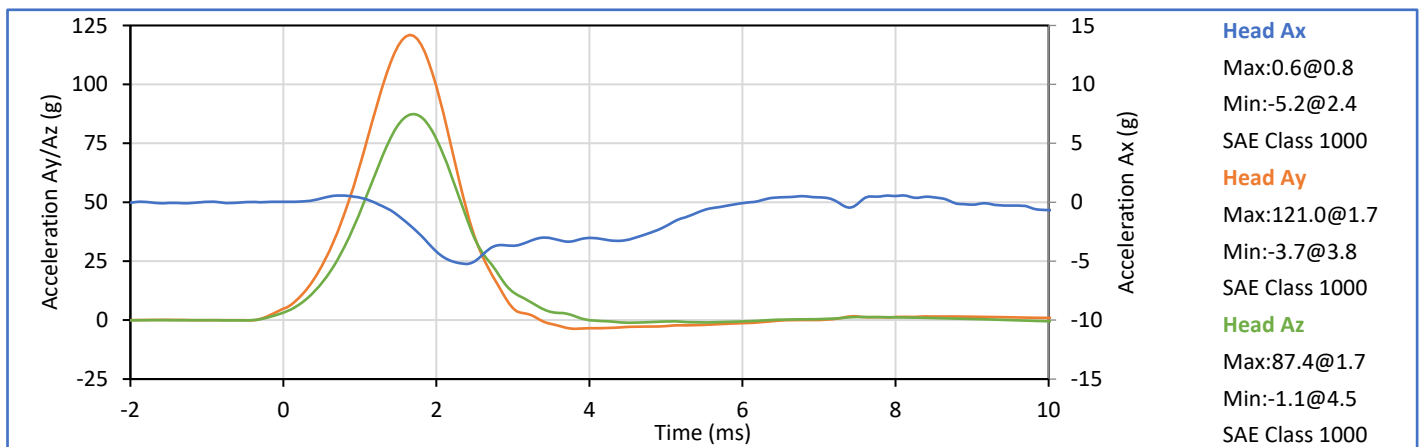
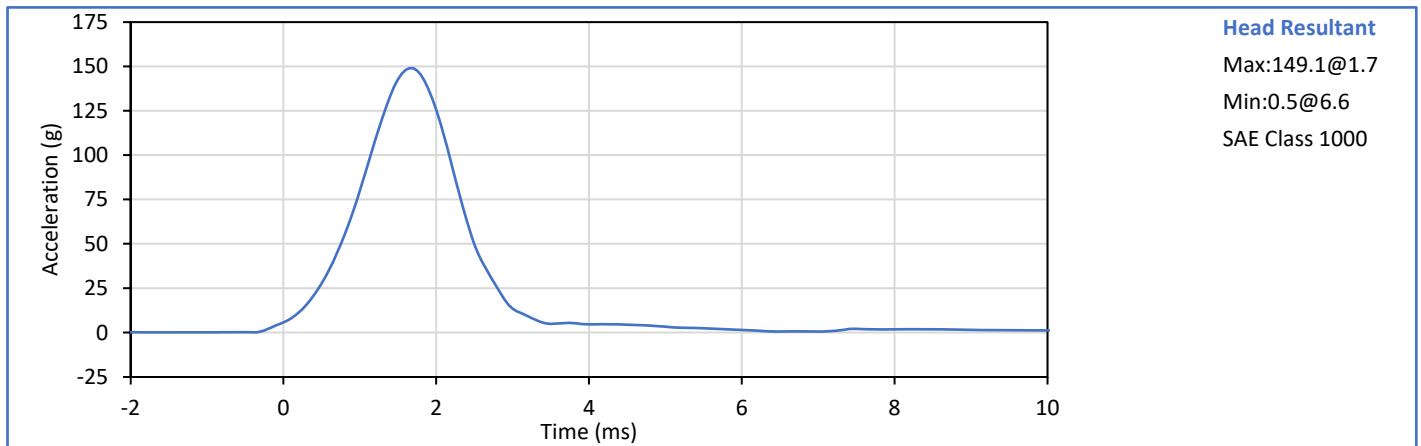
G. Fuentes

Approved By:



J. Hernandez

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	18.9	25.6	21.4	Pass
Laboratory Relative Humidity	%	10	70	40	Pass
Peak Resultant Acceleration	g	125.0	155.0	149.1	Pass
Peak Head Ax	g	-15.0	15.0	0.6	Pass
Oscillations After Main Pulse	%	0.0	15.0	1.4	Pass
Is Acceleration Unimodal?	Yes/No	Yes		Yes	Pass
			Overall Test Results		Pass



Technician:

G. Fuentes

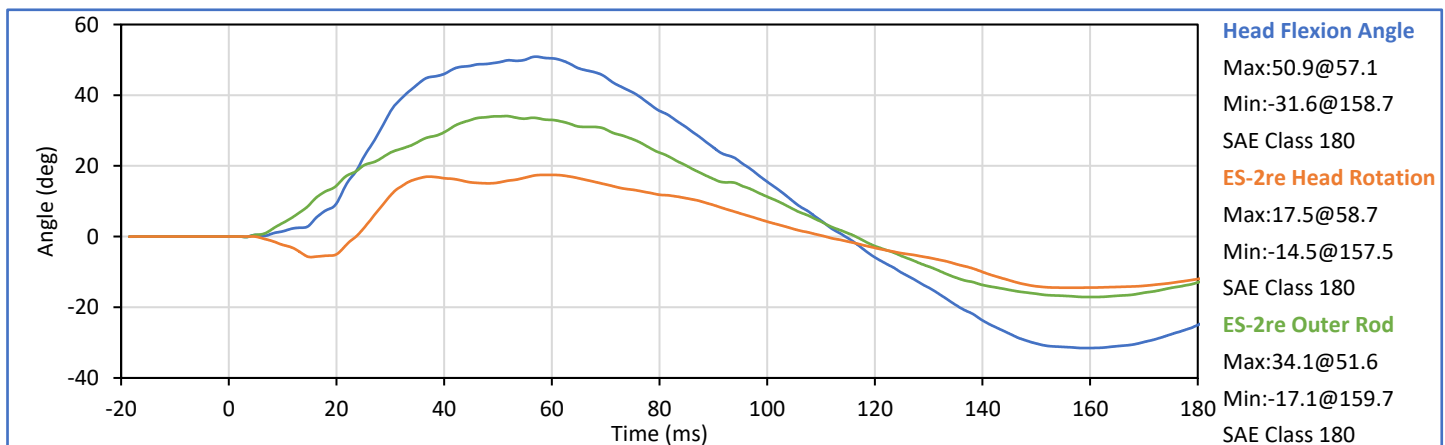
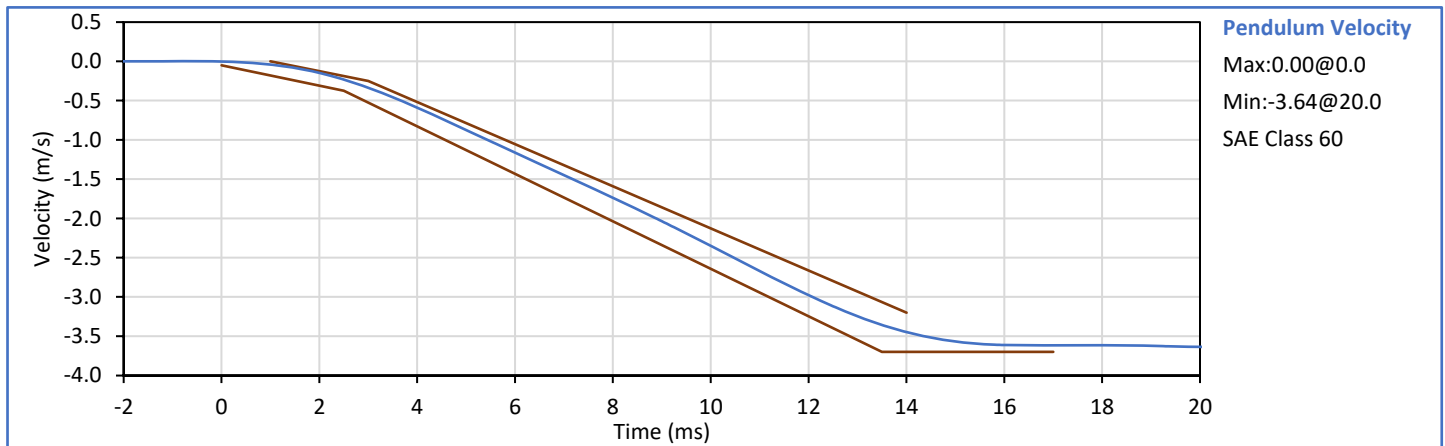
G. Fuentes

Approved By:

J. Hernandez

J. Hernandez

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.6	Pass
Laboratory Relative Humidity	%	10	70	41	Pass
Pendulum Velocity	m/s	3.30	3.50	3.41	Pass
Peak Headform Flexion	deg	49.0	59.0	50.9	Pass
Time of Peak Headform Flexion	ms	54.0	66.0	57.1	Pass
Flexion Decay (Peak to zero)	ms	53.0	88.0	57.5	Pass
Overall Test Results					Pass



Technician:

G. Fuentes

G. Fuentes

Approved By:

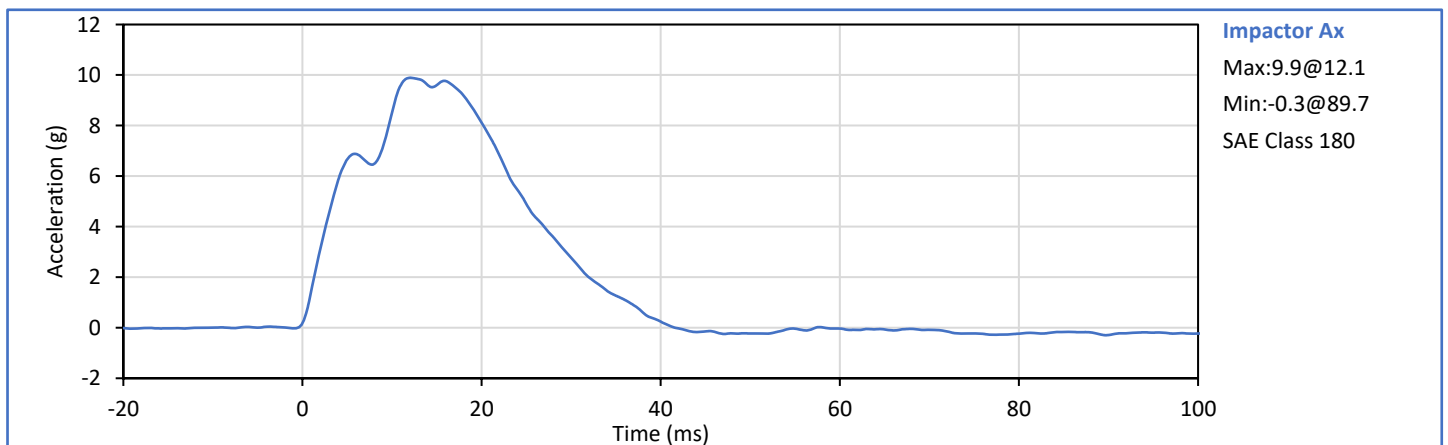
J. Hernandez

J. Hernandez

ATD Serial No.: F037

Test Date: 2024-06-14

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	46	Pass
Impactor Velocity	m/s	4.20	4.40	4.31	Pass
Peak Impactor Ax	g	7.5	10.5	9.9	Pass
Overall Test Results					Pass



Technician:

G. Fuentes

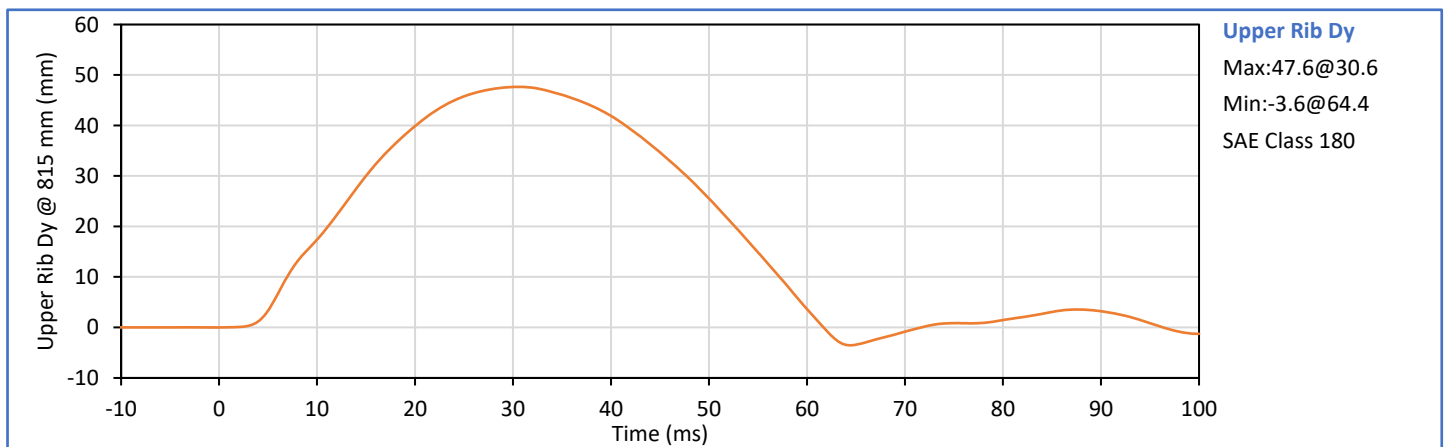
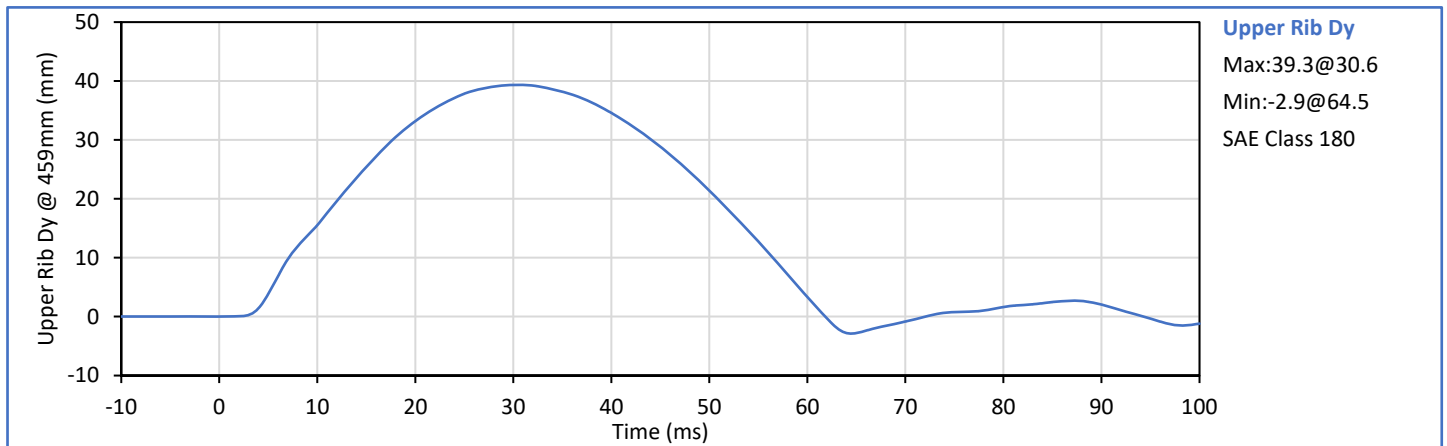
G. Fuentes

Approved By:

J. Hernandez

J. Hernandez

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.3	Pass
Laboratory Relative Humidity	%	10	70	41	Pass
Upper Rib Dy @ 459mm	mm	36.0	40.0	39.3	Pass
Upper Rib Dy @ 815mm	mm	46.0	51.0	47.6	Pass
Overall Test Results				Pass	Pass



Technician:

G. Fuentes

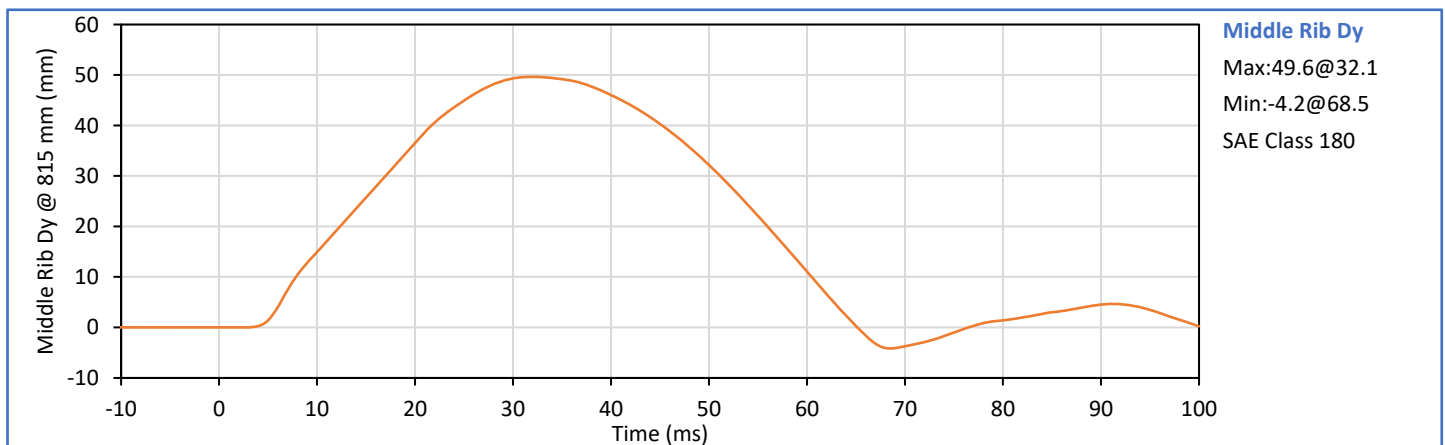
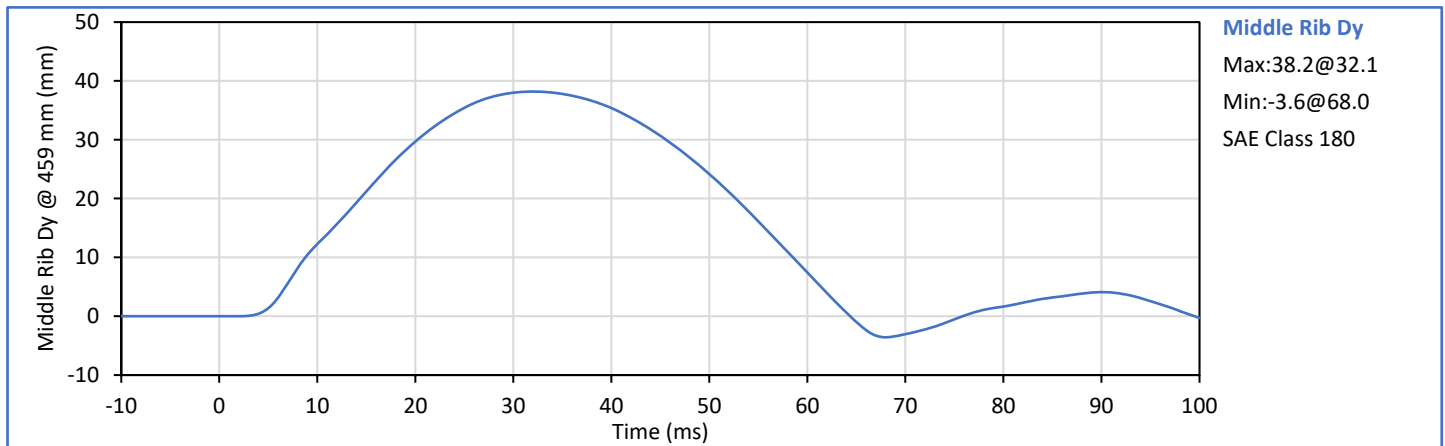
G. Fuentes

Approved By:

J. Hernandez

J. Hernandez

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.6	Pass
Laboratory Relative Humidity	%	10	70	41	Pass
Middle Rib Dy @ 459mm	mm	36.0	40.0	38.2	Pass
Middle Rib Dy @ 815mm	mm	46.0	51.0	49.6	Pass
Overall Test Results				Pass	Pass



Technician:

G. Fuentes

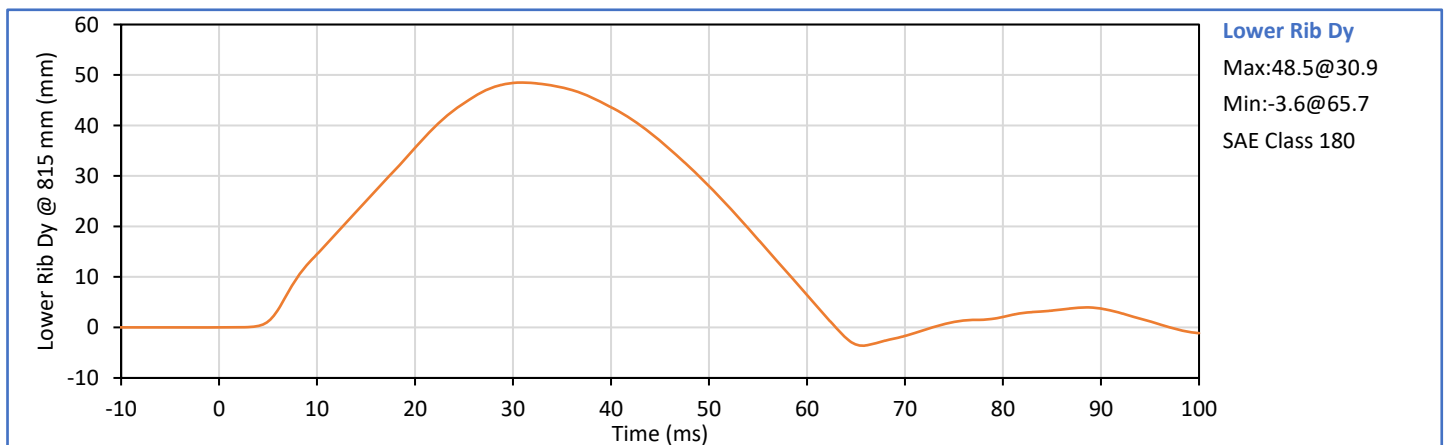
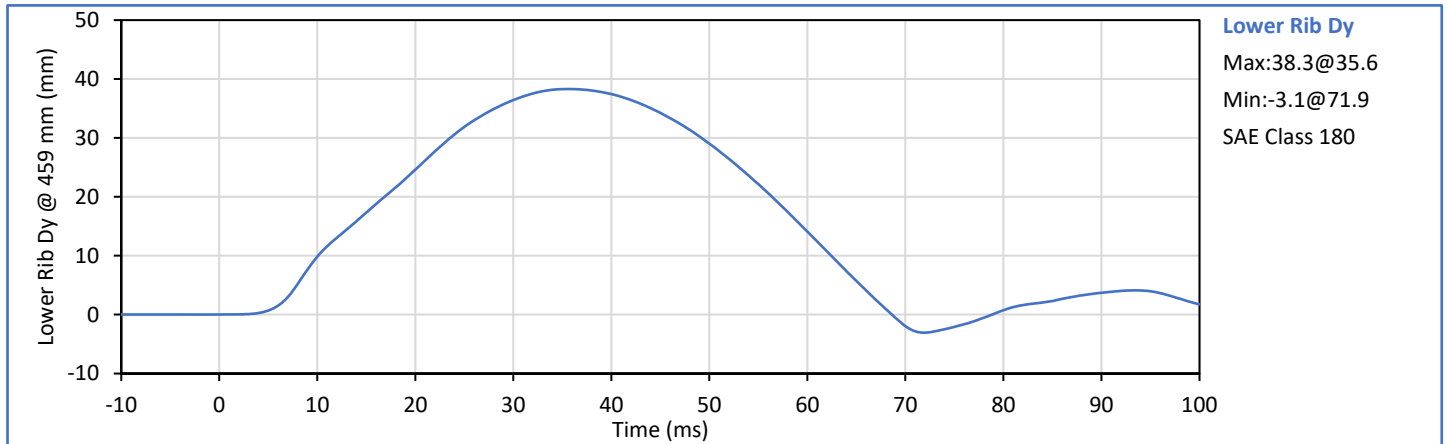
G. Fuentes

Approved By:

J. Hernandez

J. Hernandez

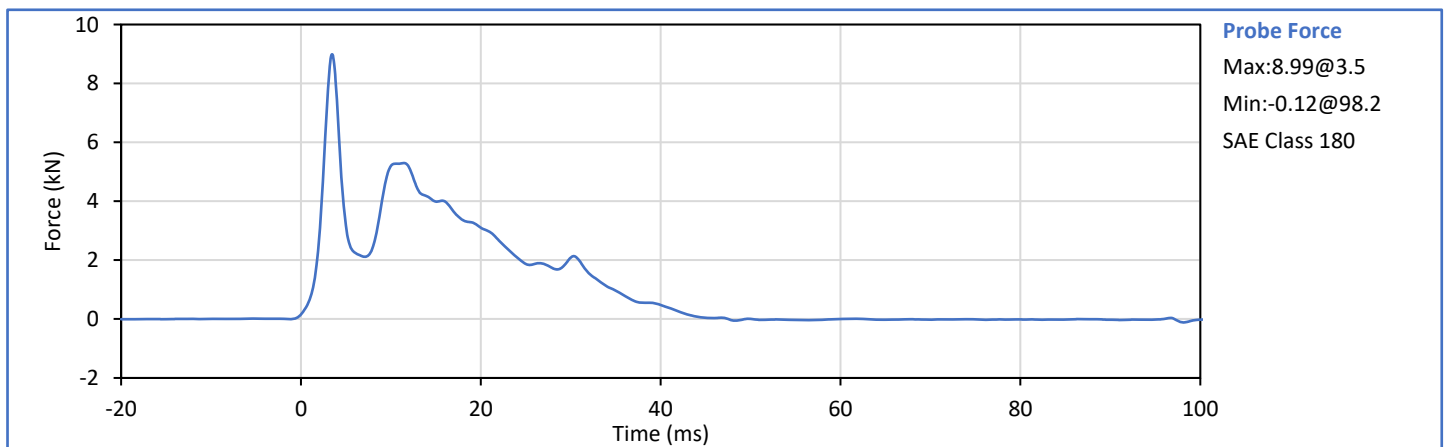
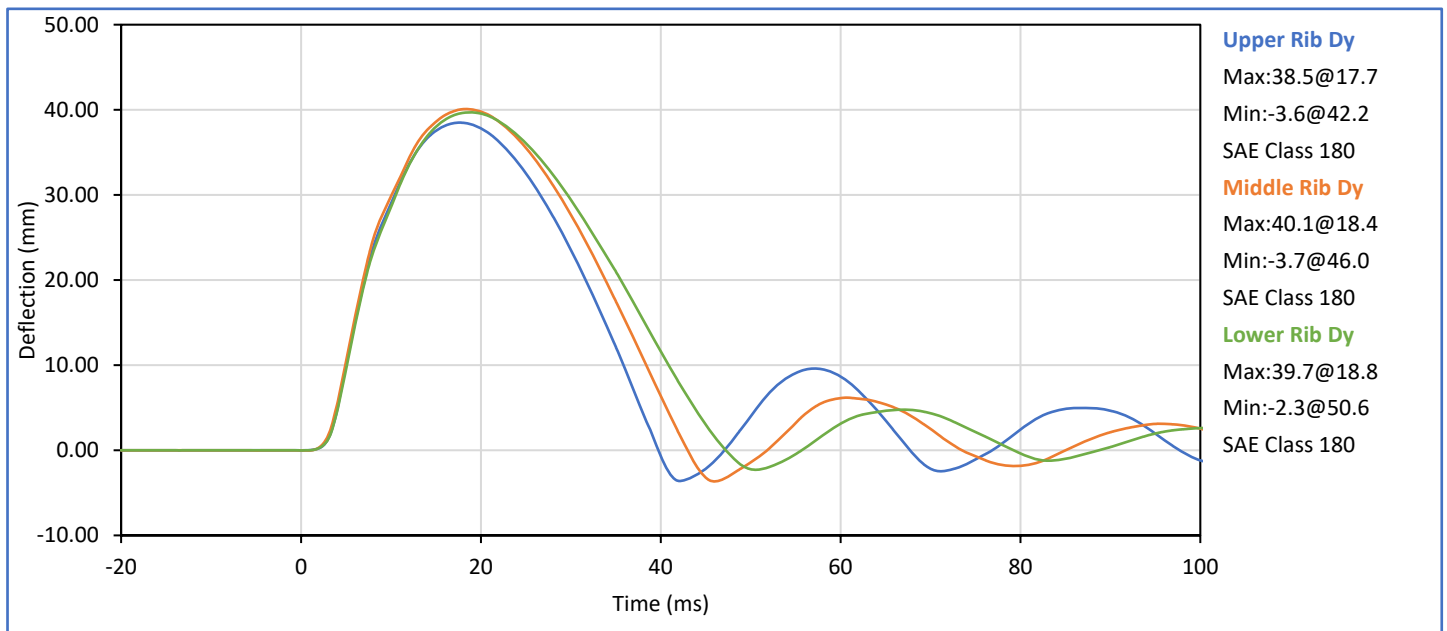
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.6	Pass
Laboratory Relative Humidity	%	10	70	41	Pass
Lower Rib Dy @ 459mm	mm	36.0	40.0	38.3	Pass
Lower Rib Dy @ 815mm	mm	46.0	51.0	48.5	Pass
Overall Test Results				Pass	Pass



Technician: Mill LLS III
G. Fuentes

Approved By: Santh
J. Hernandez

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.6	Pass
Laboratory Relative Humidity	%	10	70	41	Pass
Impactor Velocity	m/s	5.40	5.60	5.50	Pass
Peak Upper Rib Dy	mm	34.0	41.0	38.5	Pass
Peak Middle Rib Dy	mm	37.0	45.0	40.1	Pass
Peak Lower Rib Dy	mm	37.0	44.0	39.7	Pass
Peak Impactor Force After 6 ms	kN	5.10	6.20	5.29	Pass
Overall Test Results					Pass



Technician:

G. Fuentes

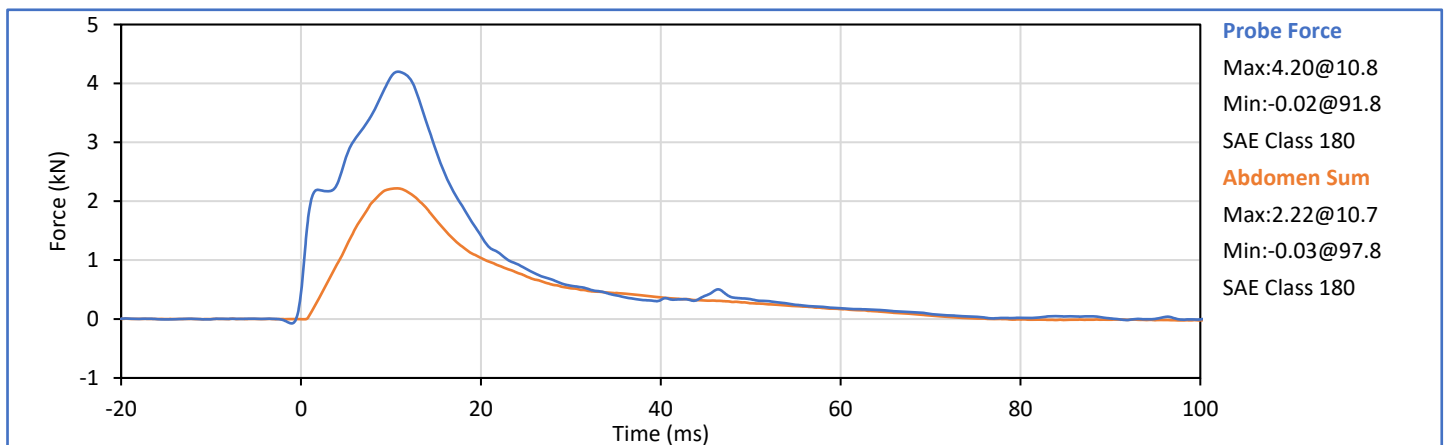
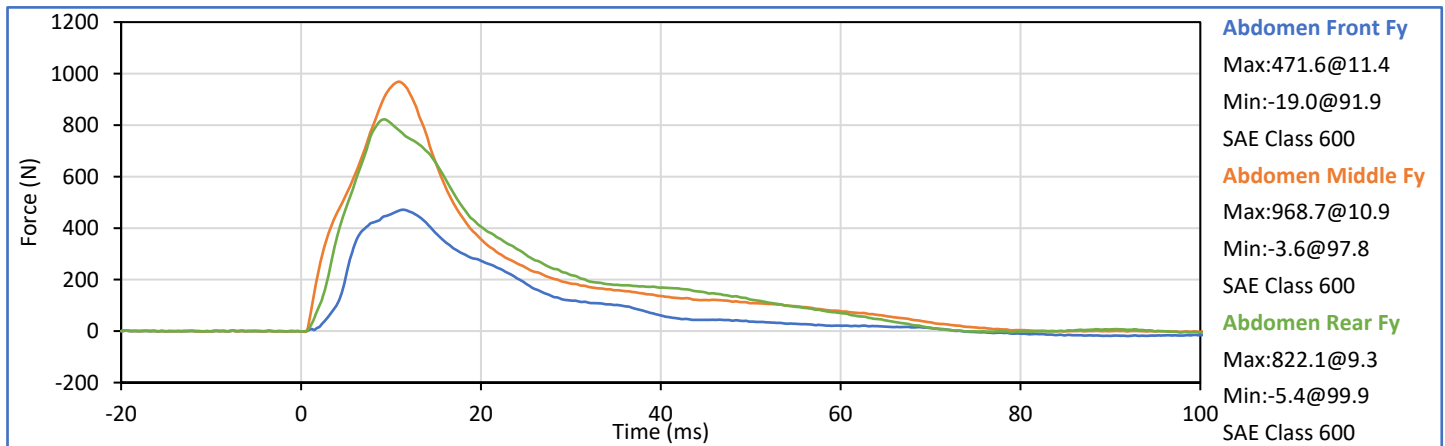
G. Fuentes

Approved By:

J. Hernandez

J. Hernandez

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	45	Pass
Impactor Velocity	m/s	3.90	4.10	3.96	Pass
Peak Impactor Force	kN	4.00	4.80	4.20	Pass
Time of Peak Impactor Force	ms	10.6	13.0	10.8	Pass
Sum of Abdomen Forces	kN	2.20	2.70	2.22	Pass
Time of Peak Sum Abdomen Force	ms	10.0	12.3	10.7	Pass
Overall Test Results					Pass



Technician:

G. Fuentes

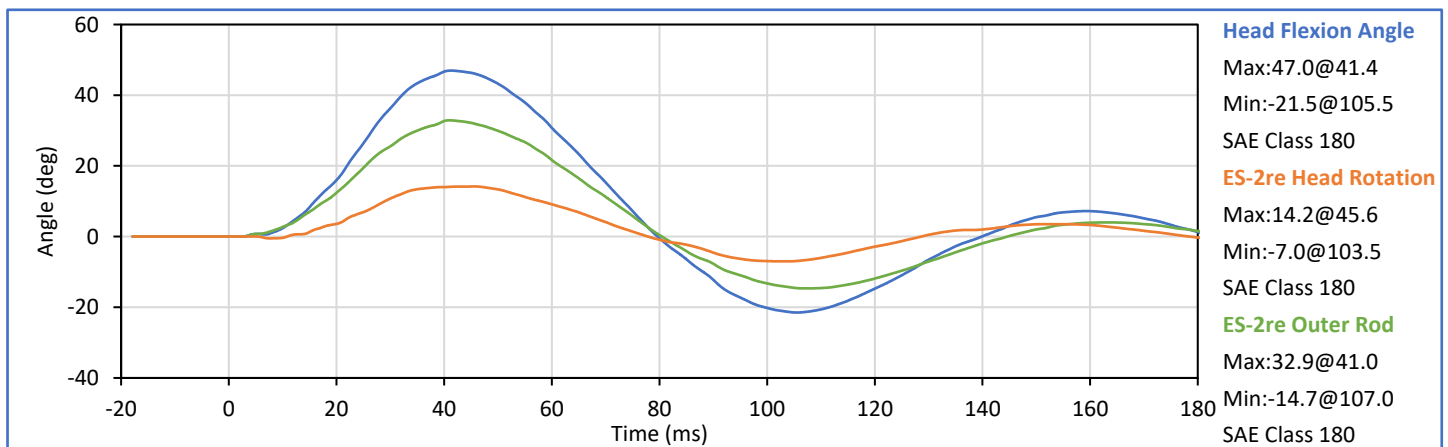
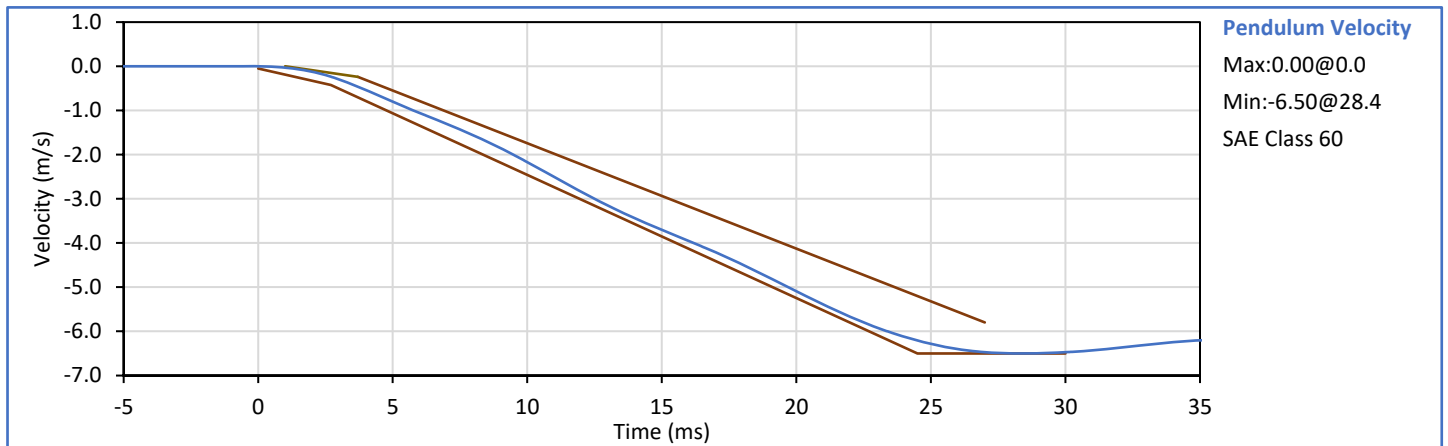
G. Fuentes

Approved By:

J. Hernandez

J. Hernandez

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
Pendulum Velocity	m/s	5.95	6.15	6.11	Pass
Peak Headform Flexion	deg	45.0	55.0	47.0	Pass
Time of Peak Headform Flexion	ms	39.0	53.0	41.4	Pass
Flexion Decay (Peak to zero)	ms	37.0	57.0	38.3	Pass
Overall Test Results					Pass



Technician:

G. Fuentes

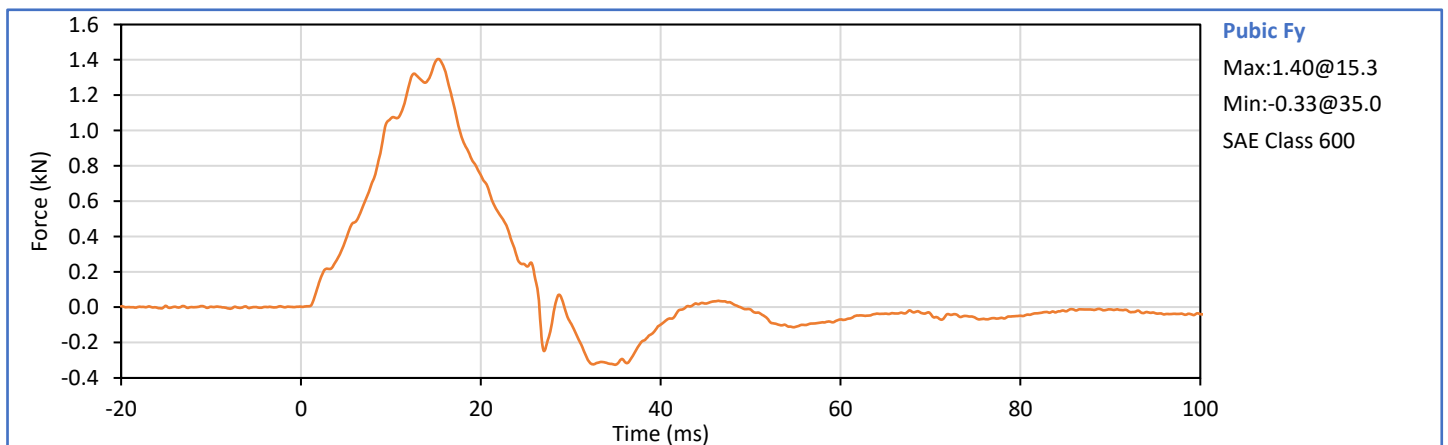
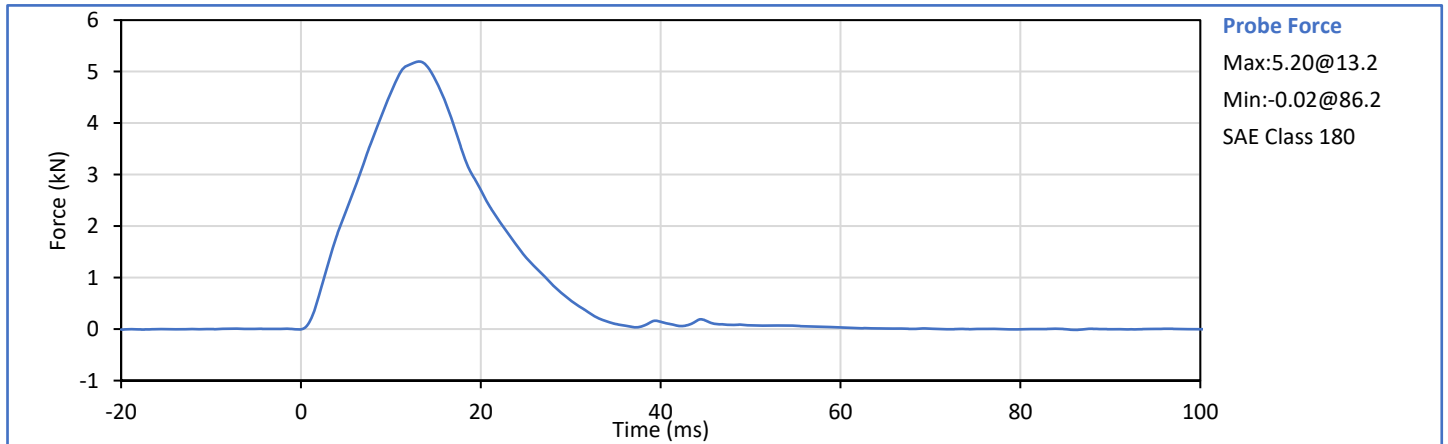
G. Fuentes

Approved By:

J. Hernandez

J. Hernandez

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.3	Pass
Laboratory Relative Humidity	%	10	70	41	Pass
Impactor Velocity	m/s	4.20	4.40	4.32	Pass
Peak Impactor Force	kN	4.70	5.40	5.20	Pass
Time of Peak Impactor Force	ms	11.8	16.1	13.2	Pass
Pubic Symphysis Fy	kN	1.23	1.59	1.40	Pass
Time of Peak Pubic Symphysis Fy	ms	12.2	17.0	15.3	Pass
Overall Test Results					Pass



Technician: Mill LLS III
G. Fuentes

Approved By: Santh
J. Hernandez

APPENDIX C

Pre-Test ATD Qualification and Performance Verification

SID-IIs Small Side Impact ATD, Left Side Configuration

S/N: 299

ATD Serial No.: 299

Test Date: 2024-06-12

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	34	Pass
A - Sitting Height	mm	772	788	778	Pass
B - Shoulder Pivot Height	mm	437	453	450	Pass
C - Hpoint Height	mm	79	89	81	Pass
D - H Point From Seatback	mm	141	151	148	Pass
E - Shoulder Pivot From Backline	mm	97	107	104	Pass
F - Thigh Clearance	mm	119	135	125	Pass
G - Head Breadth	mm	140	148	147	Pass
H - Head Back From Backline	mm	40	46	43	Pass
I - Head Depth	mm	178	188	181	Pass
J - Head Circumference	mm	541	551	544	Pass
K - Buttock To Knee Length	mm	514	540	533	Pass
L - Popliteal Height	mm	343	369	360	Pass
K - Knee Pivot To Floor Height	mm	392	409	404	Pass
N - Buttock Popliteal Length	mm	416	442	427	Pass
O - Chest Depth W/O Jacket	mm	195	211	209	Pass
P - Foot Length	mm	216	232	221	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	488	Pass
V - Shoulder Width	mm	341	357	351	Pass
W - Foot Width	mm	78	94	84	Pass
Y - Chest Circumference W/Jacket	mm	851	881	863	Pass
Z - Waist Circumference	mm	761	791	771	Pass
				Overall Test Results	Pass

Technician:



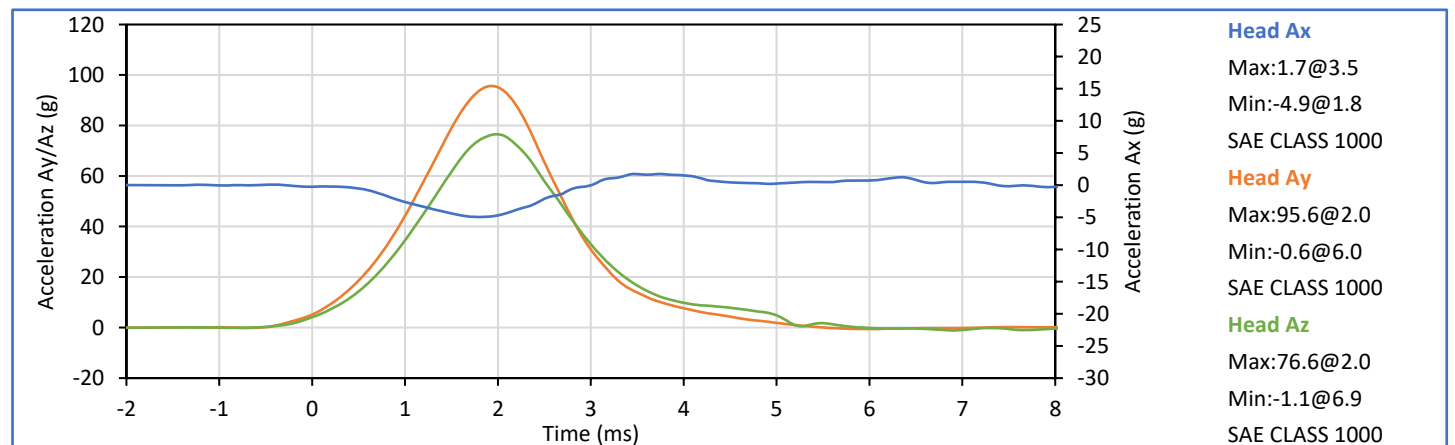
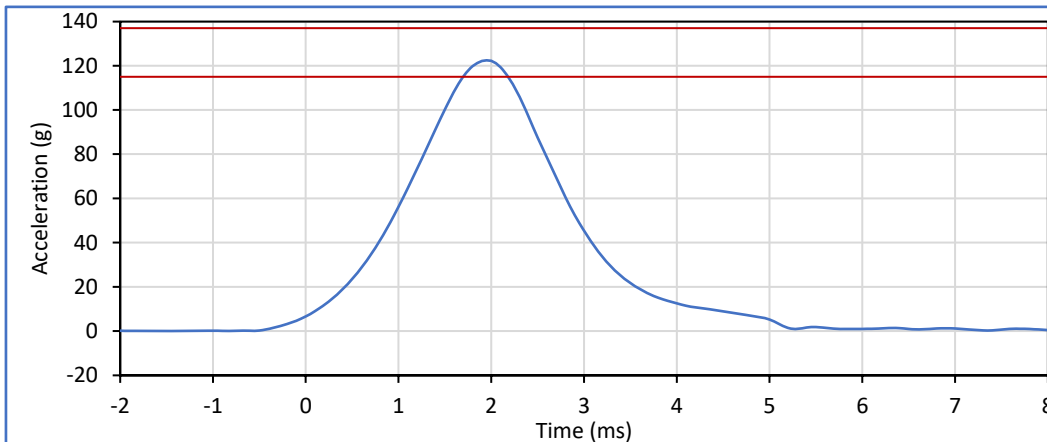
G. Fuentes

Approved By:



J. Hernandez

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	18.9	25.6	21.4	Pass
Laboratory Relative Humidity	%	10	70	36	Pass
Peak Resultant Acceleration	g	115.0	137.0	122.5	Pass
Peak Head Ax	g	-15.0	15.0	-4.9	Pass
Oscillations After Main Pulse	%	0.0	15.0	1.1	Pass
Is Acceleration Unimodal?	Yes/No	Yes		Yes	Pass
			Overall Test Results	Pass	



Technician:

G. Fuentes

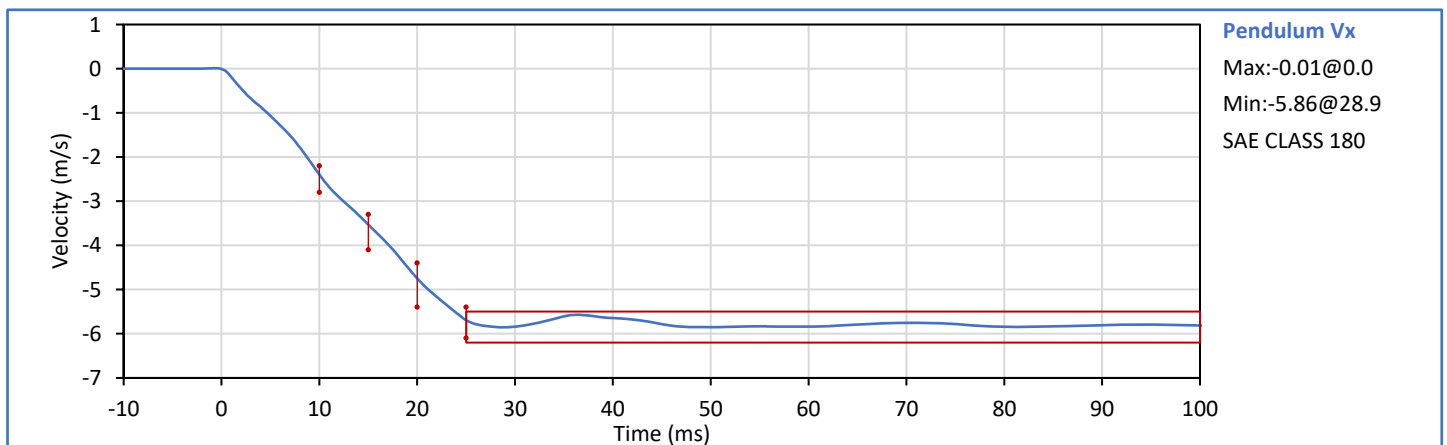
G. Fuentes

Approved By:

J. Hernandez

J. Hernandez

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.4	Pass
Laboratory Relative Humidity	%	10	70	36	Pass
Pendulum Velocity	m/s	5.51	5.63	5.55	Pass
Pendulum Decel at 10 ms	m/s	-2.80	-2.20	-2.40	Pass
Pendulum Decel at 15 ms	m/s	-4.10	-3.30	-3.53	Pass
Pendulum Decel at 20 ms	m/s	-5.40	-4.40	-4.75	Pass
Pendulum Decel at 25 ms	m/s	-6.10	-5.40	-5.69	Pass
Pendulum Decel from 25-100 ms	m/s	-6.20	-5.50	-5.86/-5.57	Pass
Peak "D" Plane Rotation	deg	-81.0	-71.0	-75.5	Pass
Time of Peak "D" Plane Rotation	ms	50.0	70.0	59.5	Pass
Peak Occ. Condyle Moment	Nm	36.0	44.0	41.1	Pass
Time of Moment Decay to 0 Nm	ms	102.0	126.0	108.8	Pass
				Overall Test Results	Pass



Technician:

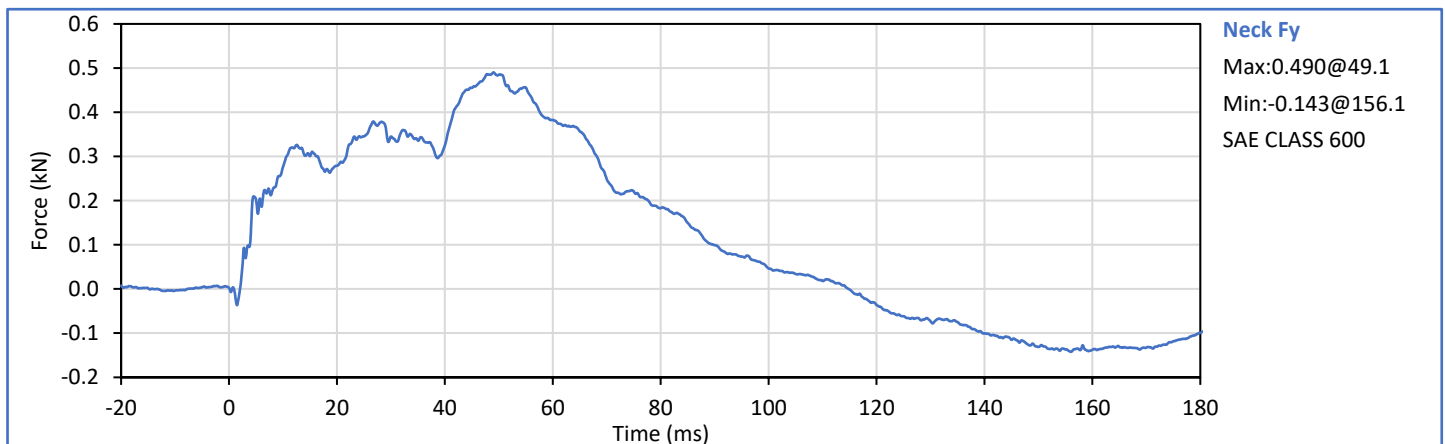
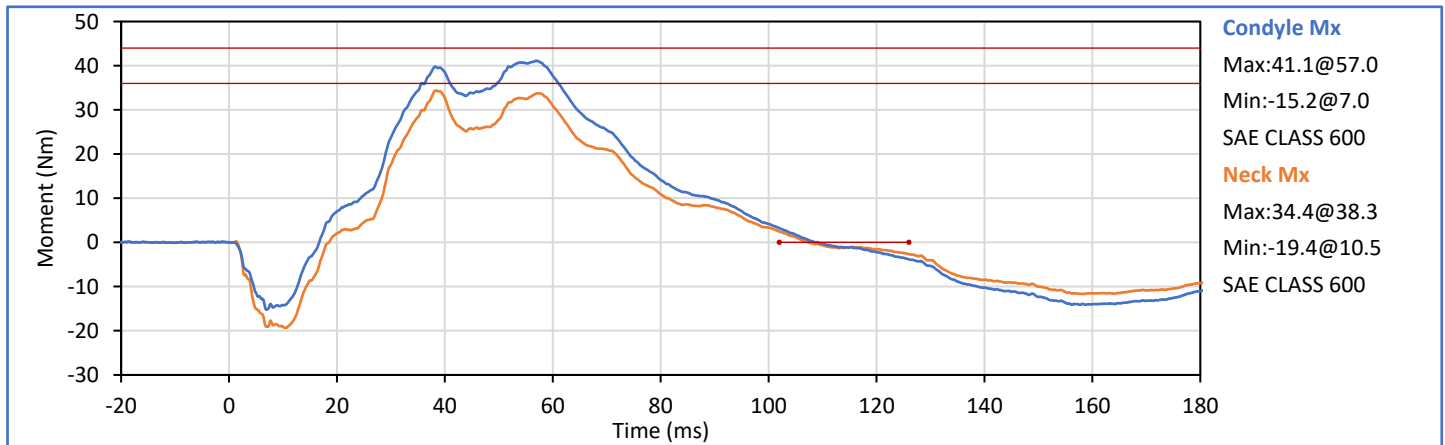
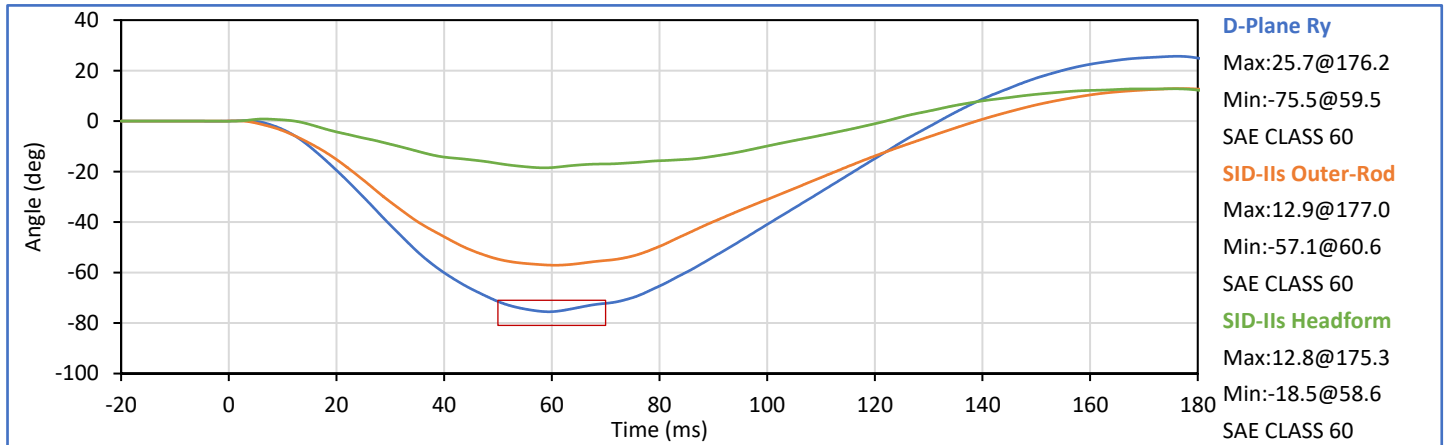
G. Fuentes

G. Fuentes

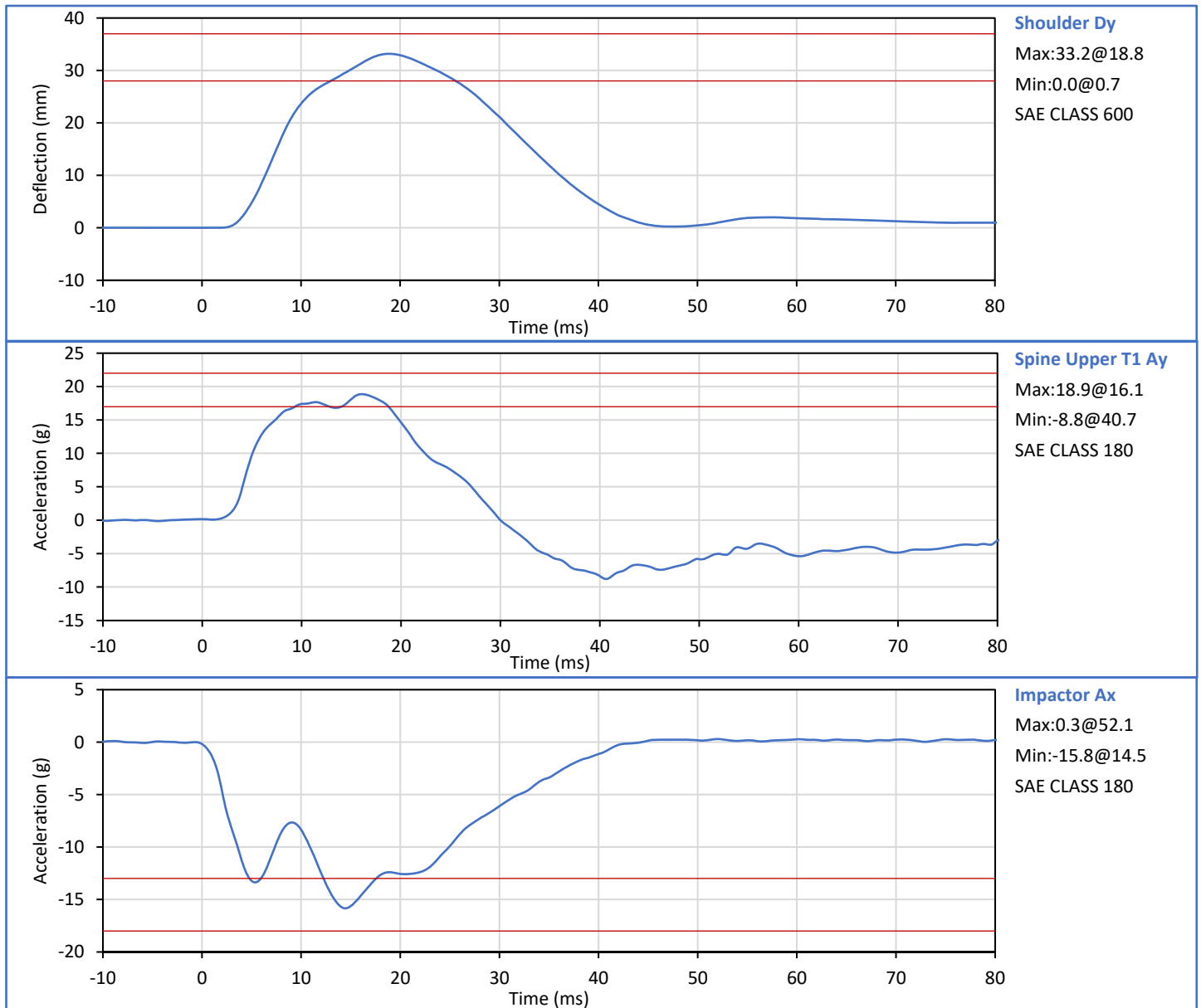
Approved By:

J. Hernandez

J. Hernandez



Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.6	Pass
Laboratory Relative Humidity	%	10	70	35	Pass
Impactor Velocity	m/s	4.20	4.40	4.30	Pass
Peak Shoulder Dy	mm	28.0	37.0	33.2	Pass
Peak Upper Spine (T1) Ay	g	17.0	22.0	18.9	Pass
Peak Impactor Ax	g	-18.0	-13.0	-15.8	Pass
Overall Test Results					Pass



Technician:

G. Fuentes

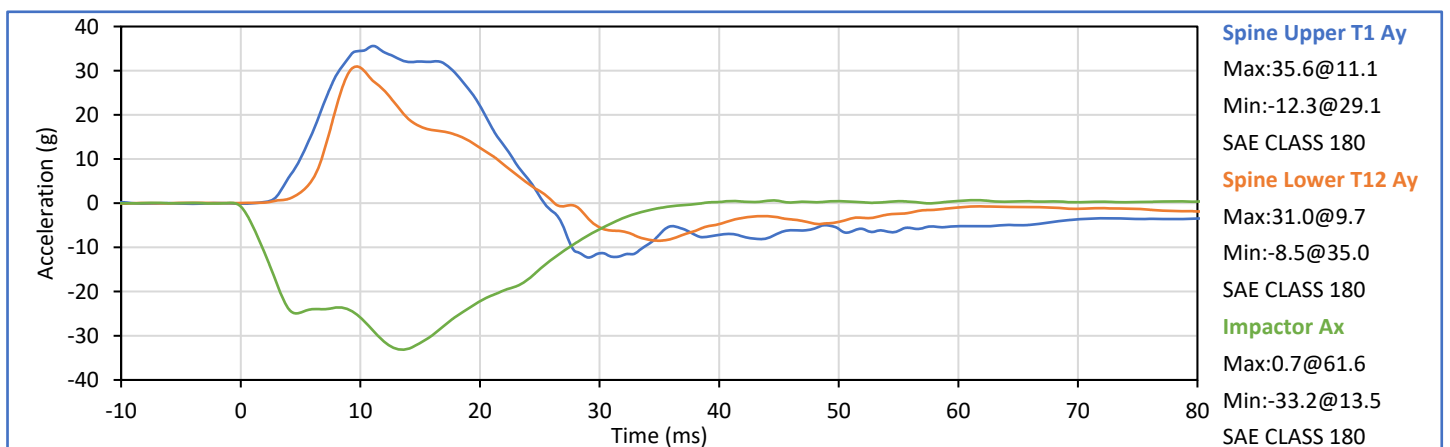
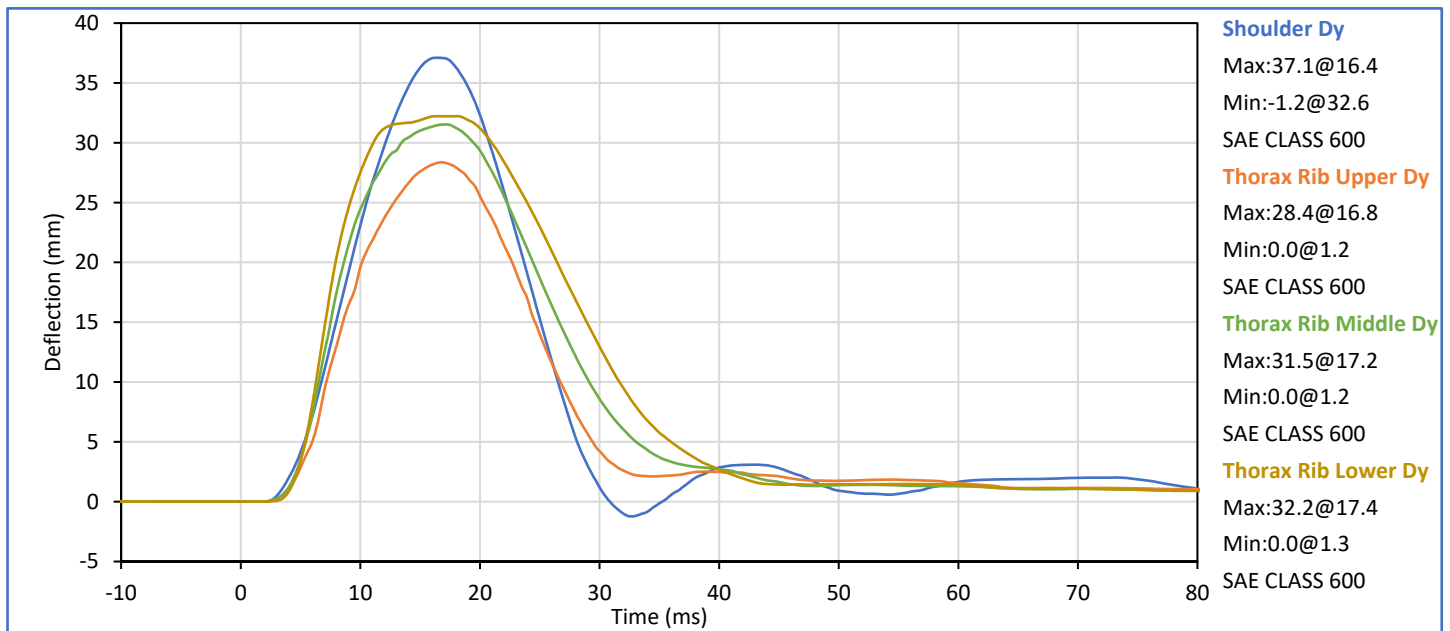
G. Fuentes

Approved By:

J. Hernandez

J. Hernandez

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	34	Pass
Impactor Velocity	m/s	6.60	6.80	6.66	Pass
Peak Shoulder Dy	mm	31.0	40.0	37.1	Pass
Peak Upper Rib Dy	mm	25.0	32.0	28.4	Pass
Peak Middle Rib Dy	mm	30.0	36.0	31.5	Pass
Peak Lower Rib Dy	mm	32.0	38.0	32.2	Pass
Peak Upper Spine (T1) Ay	g	34.0	43.0	35.6	Pass
Peak Lower Spine (T12) Ay	g	29.0	37.0	31.0	Pass
Peak Impactor Ax	g	-36.0	-30.0	-33.2	Pass
Overall Test Results				Pass	Pass



Technician:

G. Fuentes

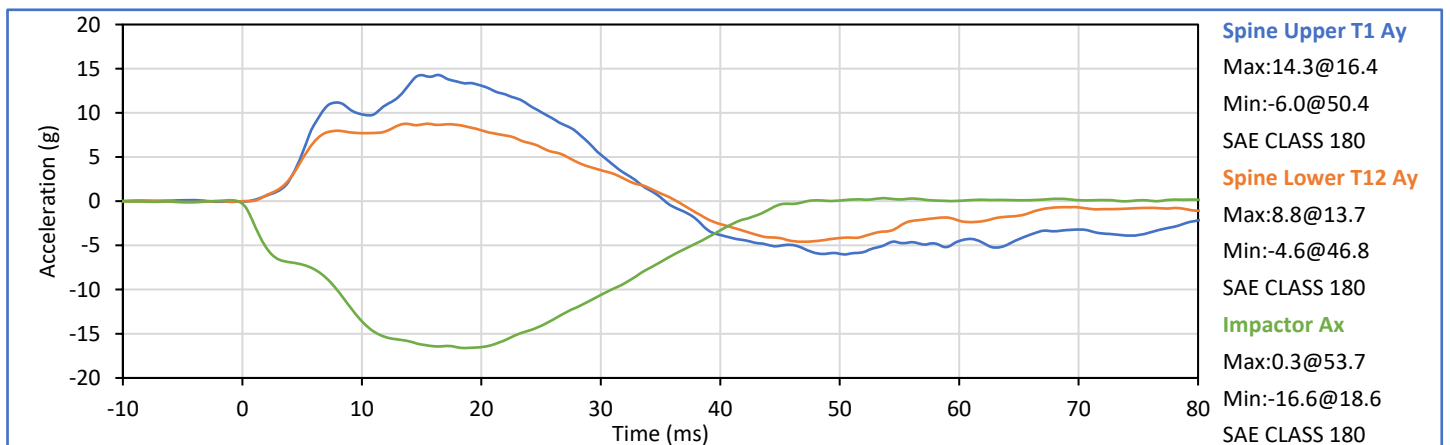
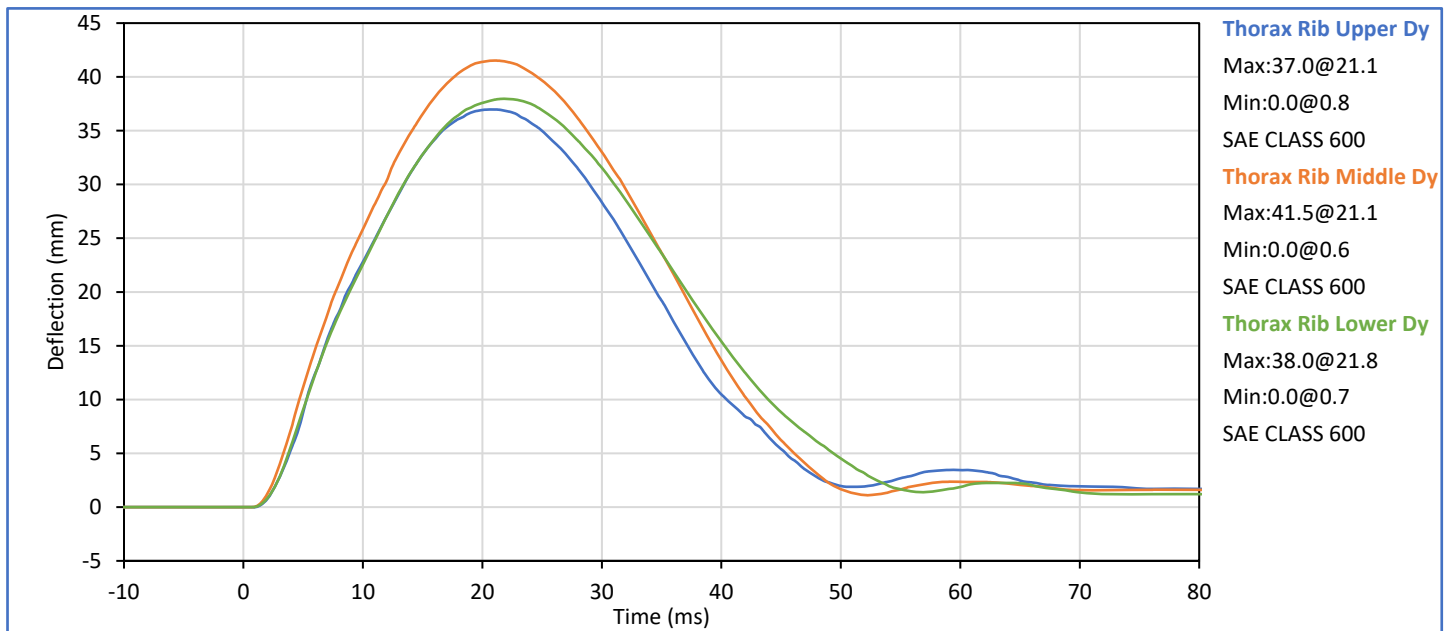
G. Fuentes

Approved By:

J. Hernandez

J. Hernandez

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	35	Pass
Impactor Velocity	m/s	4.20	4.40	4.32	Pass
Peak Thorax Rib Upper Dy	mm	32.0	40.0	37.0	Pass
Peak Thorax Rib Middle Dy	mm	39.0	45.0	41.5	Pass
Peak Thorax Rib Lower Dy	mm	35.0	43.0	38.0	Pass
Peak Spine Upper T1 Ay	g	13.0	17.0	14.3	Pass
Peak Spine Lower T12 Ay	g	7.0	11.0	8.8	Pass
Peak Impactor Ax	g	-18.0	-14.0	-16.6	Pass
Overall Test Results					Pass



Technician:

G. Fuentes

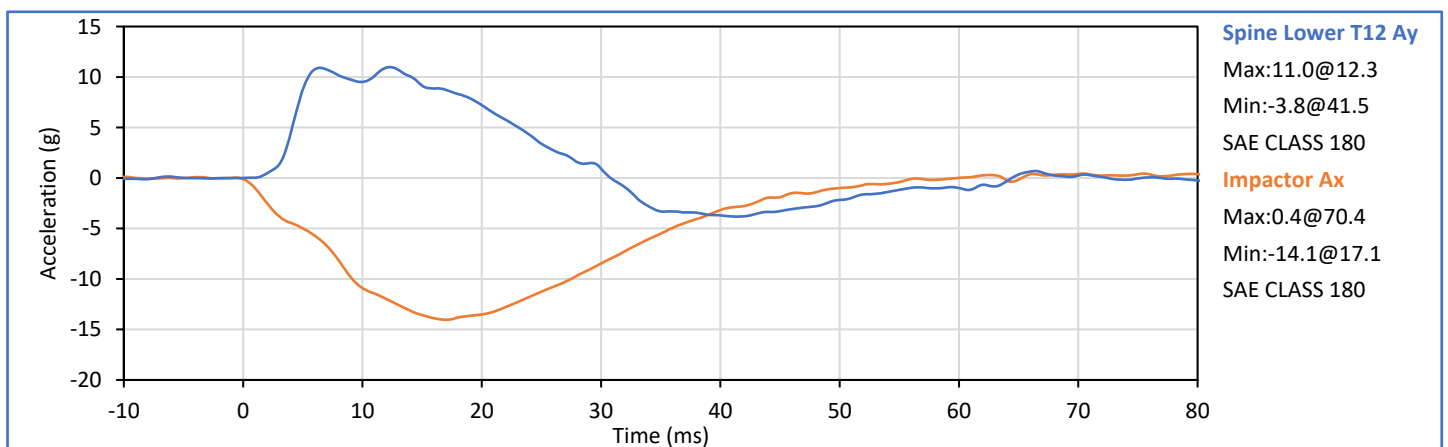
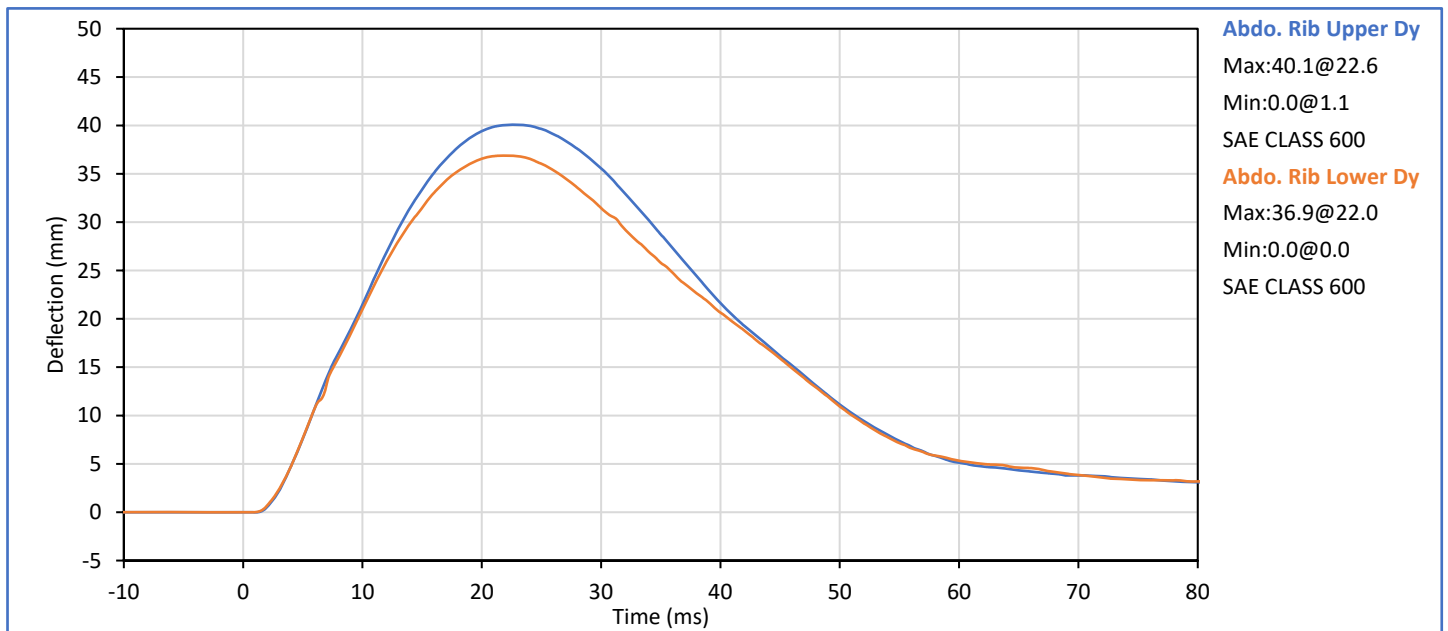
G. Fuentes

Approved By:

J. Hernandez

J. Hernandez

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	35	Pass
Impactor Velocity	m/s	4.20	4.40	4.29	Pass
Peak Upper Abdomen Rib Dy	mm	36.0	47.0	40.1	Pass
Peak Lower Abdomen Rib Dy	mm	33.0	44.0	36.9	Pass
Peak Lower Spine T12 Ay	mm	9.0	14.0	11.0	Pass
Peak Impactor Ax	g	-16.0	-12.0	-14.1	Pass
Overall Test Results					Pass



Technician:

G. Fuentes

G. Fuentes

Approved By:

J. Hernandez

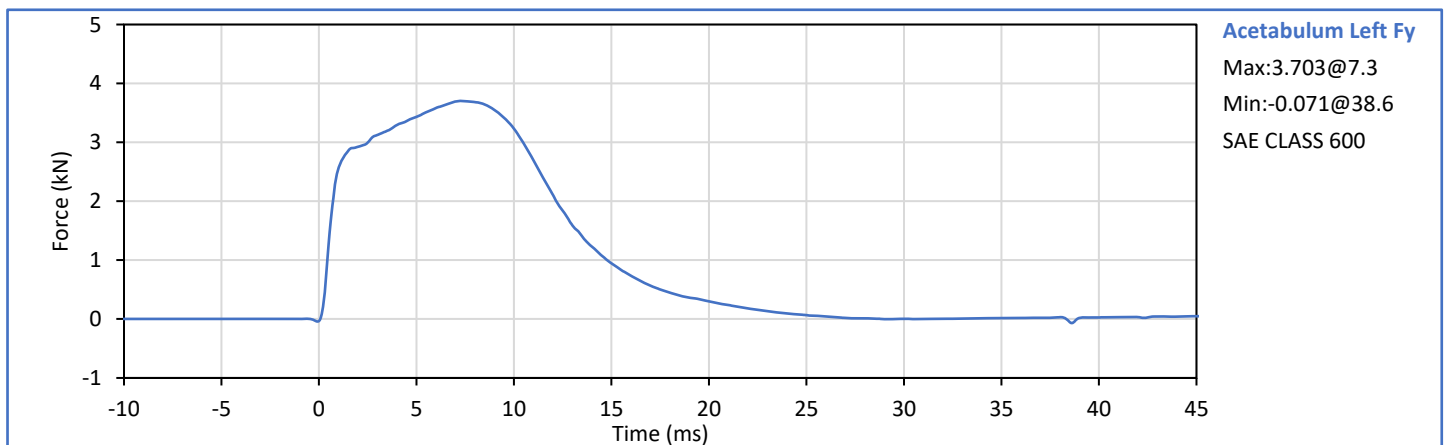
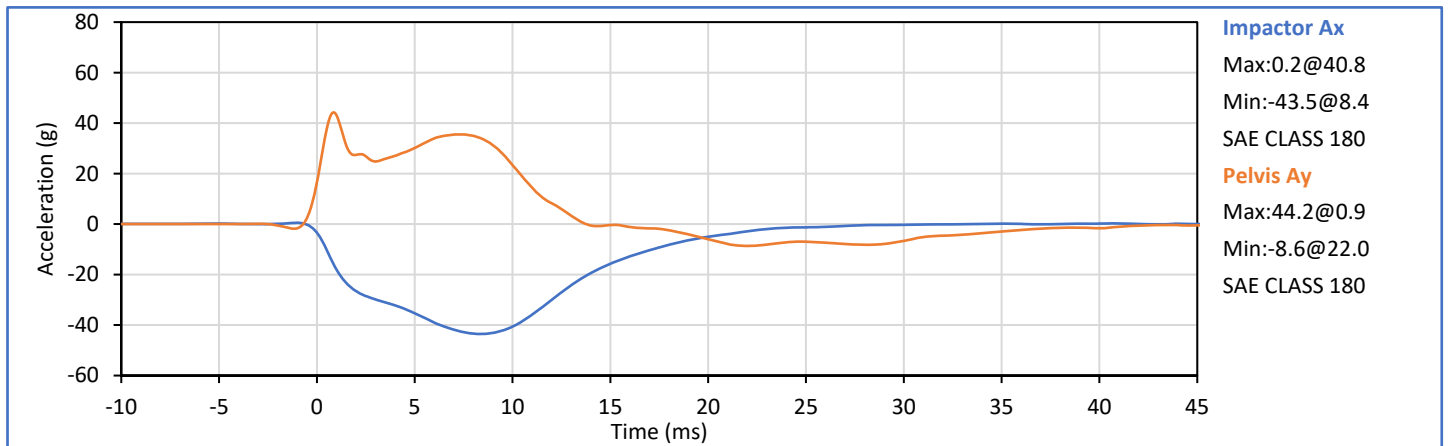
J. Hernandez

ATD Serial No.: 299

Test Date: 2024-06-14

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	35	Pass
Impactor Velocity	m/s	6.60	6.80	6.69	Pass
Peak Acetabulum Fy	kN	3.60	4.30	3.70	Pass
Pelvis Ay after 6ms	g	34.0	42.0	35.6	Pass
Peak Impactor Ax	g	-47.0	-38.0	-43.5	Pass
Overall Test Results					Pass

Pelvis Plug S/N: 14762



Technician:

G. Fuentes

G. Fuentes

Approved By:

J. Hernandez

J. Hernandez



SID-IIs Pelvis Plug Certification Test

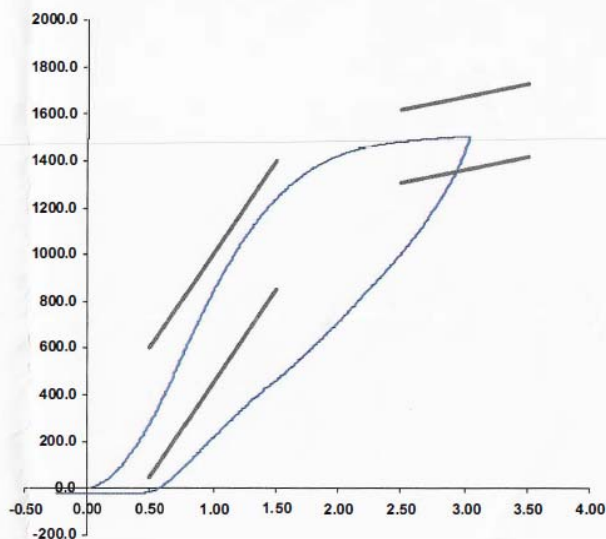
Plug S/N 14762
Test Number 16734
Report Number 16780
Test Date 12/28/2020 10:55:20 AM

	Test Results	Spec Min	Spec Max
Force @ 0.5 mm (N)	282.88	50.00	600.00
Force @ 1.5 mm (N)	1,243.39	850.00	1,400.00
Force @ 2.5 mm (N)	1,481.55	1,306.00	1,618.00
Force @ 3.0 mm (N)	1,504.17	1,361.00	1,673.00

Testing Machine STM-20 5965542
Load Cell S/N (FI360947), Units (LBS) 1000
Preload Value (-N) 22.24
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 28-Dec-20
SACO Research

By: DC Date: 12/28/20

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

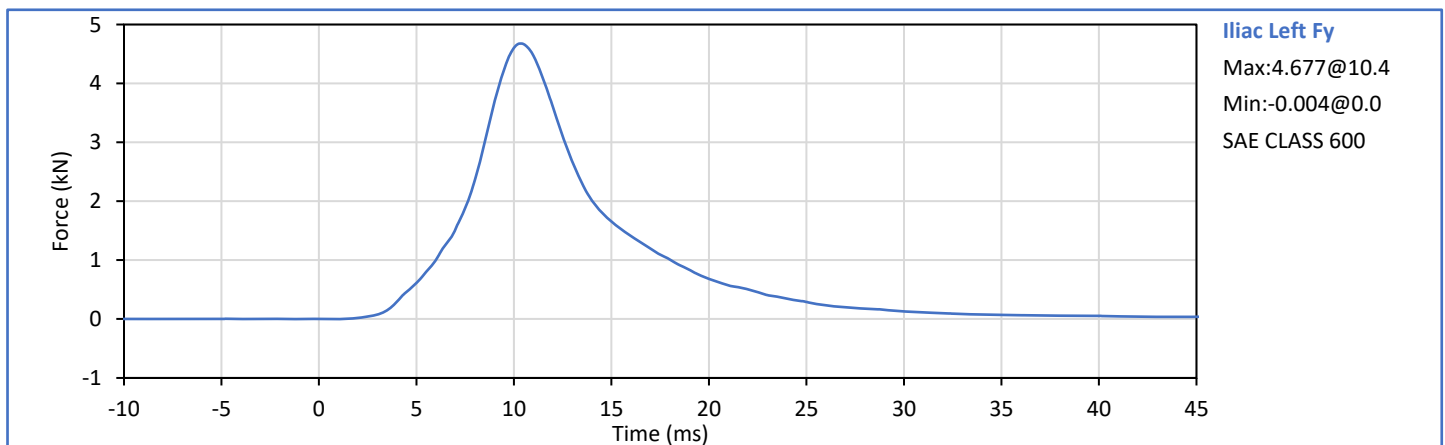
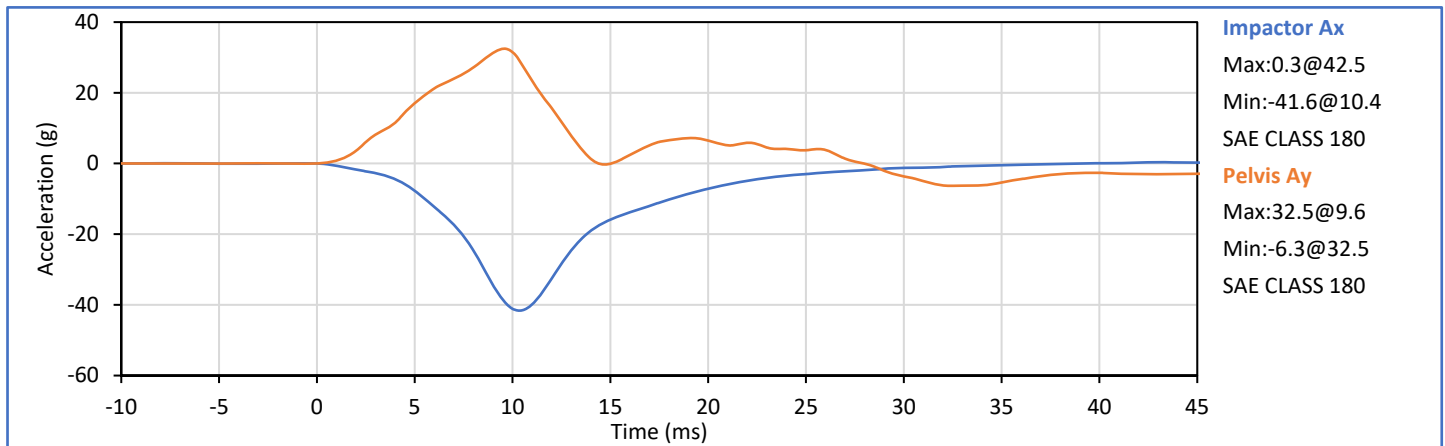
ATD Serial No.: 299

Test Date: 2024-06-14

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.3	Pass
Laboratory Relative Humidity	%	10	70	36	Pass
Impactor Velocity	m/s	4.20	4.40	4.32	Pass
Peak Iliac Fy	kN	4.10	5.10	4.68	Pass
Peak Pelvis Ay	g	28.0	39.0	34.7	Pass
Peak Impactor Ax	g	-45.0	-36.0	-41.6	Pass
Overall Test Results					Pass

Pelvis Plug S/N: 14821 *

* Plug is not impacted and remains certified



Technician:

G. Fuentes

G. Fuentes

Approved By:

J. Hernandez

J. Hernandez

APPENDIX C

**Post-Test ATD Qualification and Performance Verification
ES-2re 50th Male Side Impact ATD, Left Side Configuration
S/N: F037**

ATD Serial No.: F037

Test Date: 2024-06-27

Tested Parameter	Units	Spec Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.6	Pass
Laboratory Relative Humidity	%	10	70	42	Pass
1 - Sitting Height	mm	900	918	912	Pass
2 - Seat to Shoulder Joint	mm	558	572	569	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	102	Pass
5 - Sole to Seat, Sitting	mm	433	451	438	Pass
6 - Head Width	mm	152	158	158	Pass
7 - Shoulder/Arm Width	mm	461	479	472	Pass
8 - Thorax Width	mm	322	332	327	Pass
9 - Abdomen Width	mm	273	287	283	Pass
10 - Pelvis Lap Width	mm	359	373	364	Pass
11 - Head Depth	mm	196	206	200	Pass
12 - Thorax Depth	mm	262	272	268	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	152	Pass
16 - Back of Buttocks to Front Knee	mm	597	615	604	Pass
				Overall Test Results	Pass

Technician:



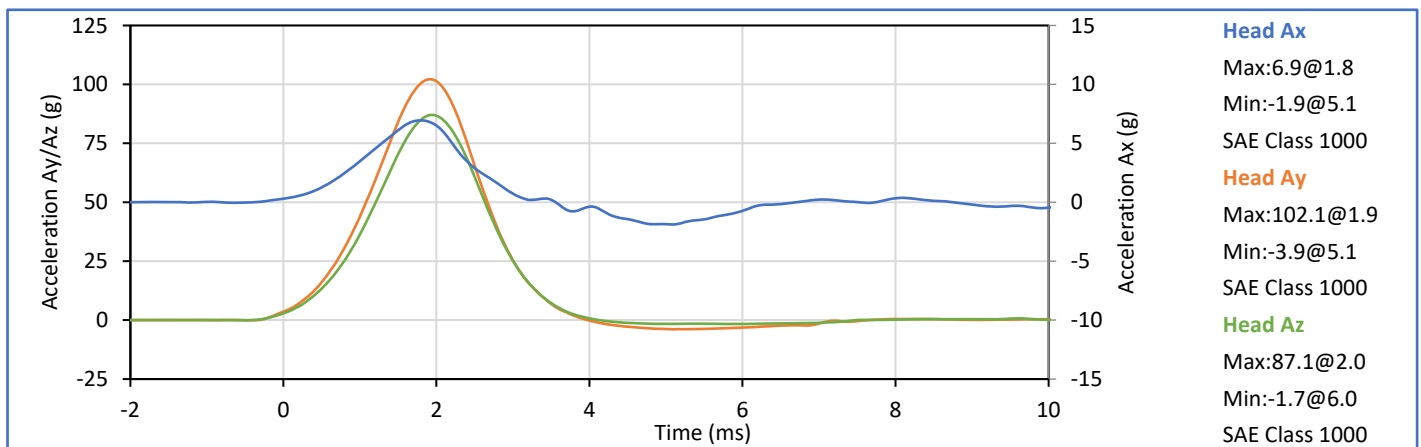
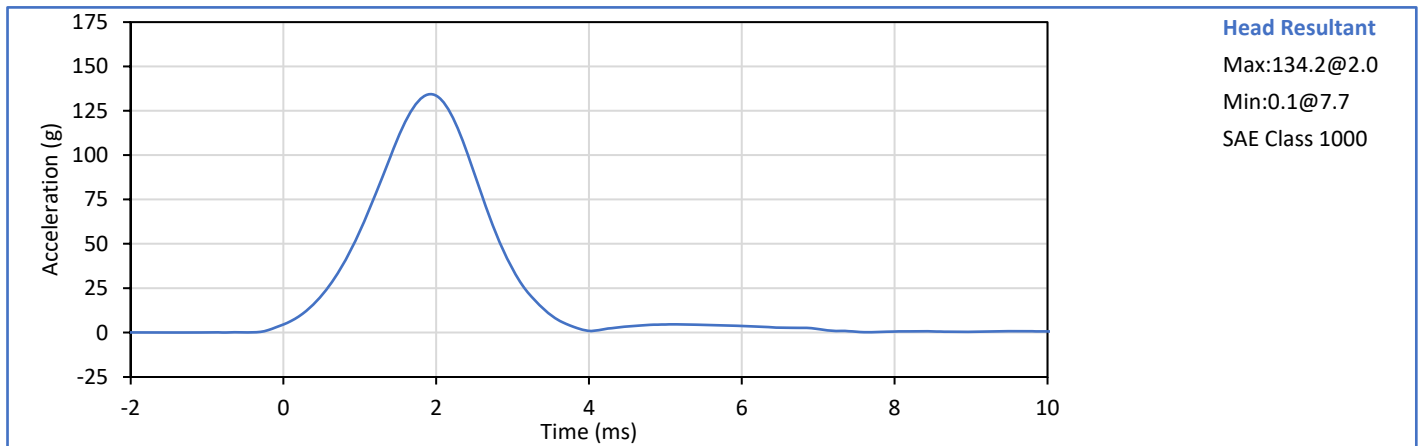
G. Fuentes

Approved By:



J. Hernandez

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	18.9	25.6	21.4	Pass
Laboratory Relative Humidity	%	10	70	40	Pass
Peak Resultant Acceleration	g	125.0	155.0	134.2	Pass
Peak Head Ax	g	-15.0	15.0	6.9	Pass
Oscillations After Main Pulse	%	0.0	15.0	2.8	Pass
Is Acceleration Unimodal?	Yes/No	Yes		Yes	Pass
			Overall Test Results	Pass	



Technician:

G. Fuentes

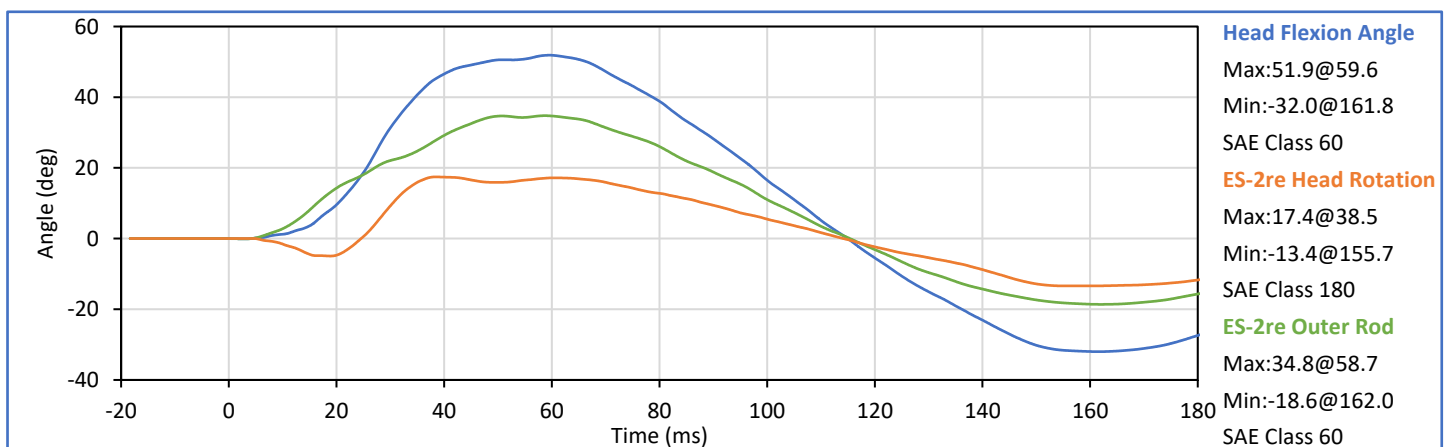
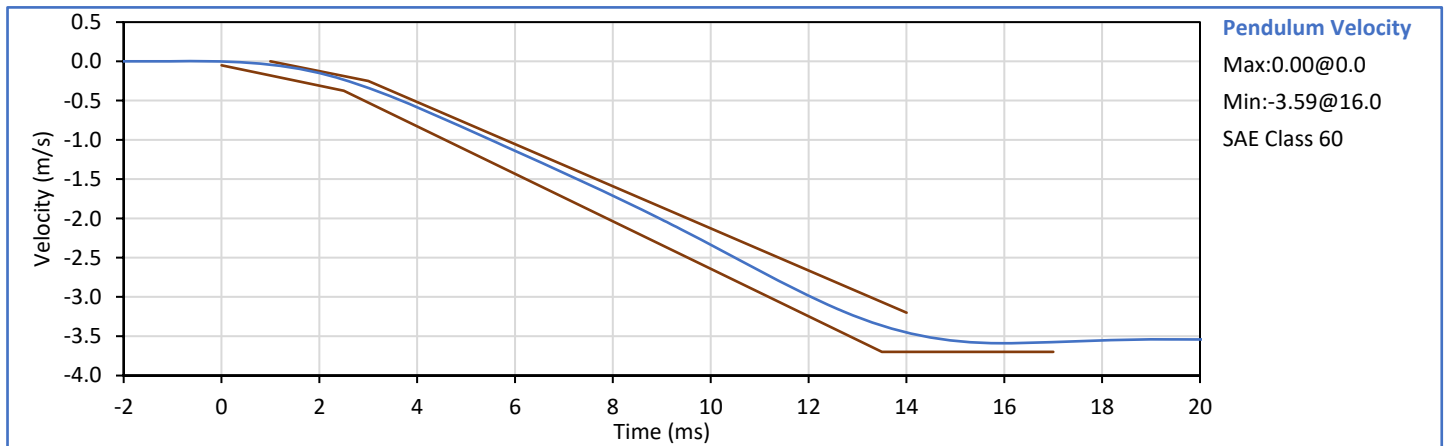
G. Fuentes

Approved By:

J. Hernandez

J. Hernandez

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.6	Pass
Laboratory Relative Humidity	%	10	70	41	Pass
Pendulum Velocity	m/s	3.30	3.50	3.43	Pass
Peak Headform Flexion	deg	49.0	59.0	51.9	Pass
Time of Peak Headform Flexion	ms	54.0	66.0	59.6	Pass
Flexion Decay (Peak to zero)	ms	53.0	88.0	55.4	Pass
Overall Test Results					Pass



Technician:

G. Fuentes

G. Fuentes

Approved By:

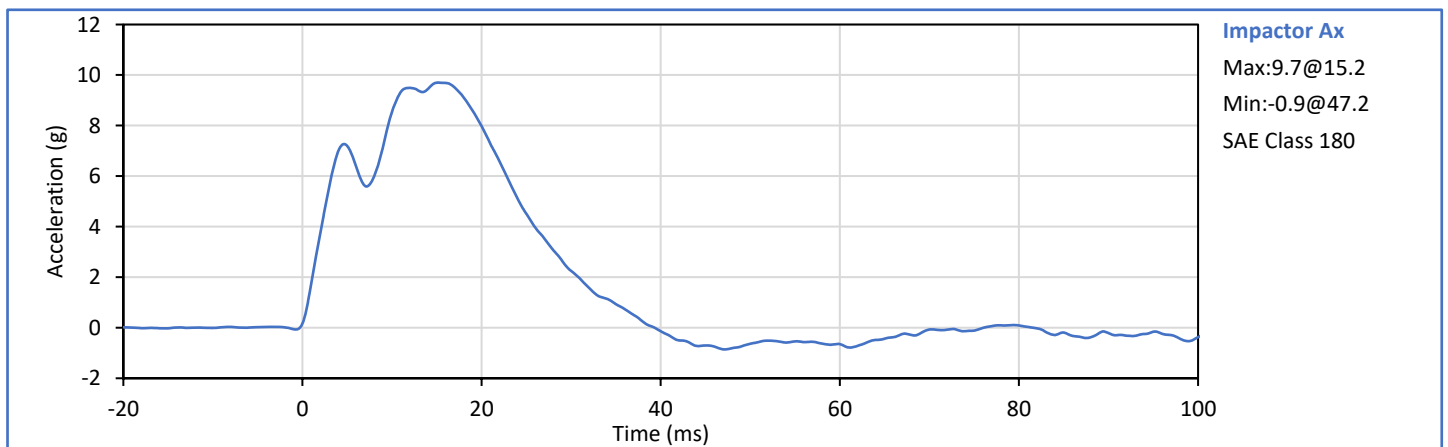
J. Hernandez

J. Hernandez

ATD Serial No.: F037

Test Date: 2024-06-27

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	46	Pass
Impactor Velocity	m/s	4.20	4.40	4.31	Pass
Peak Impactor Ax	g	7.5	10.5	9.7	Pass
Overall Test Results					Pass



Technician:

G. Fuentes

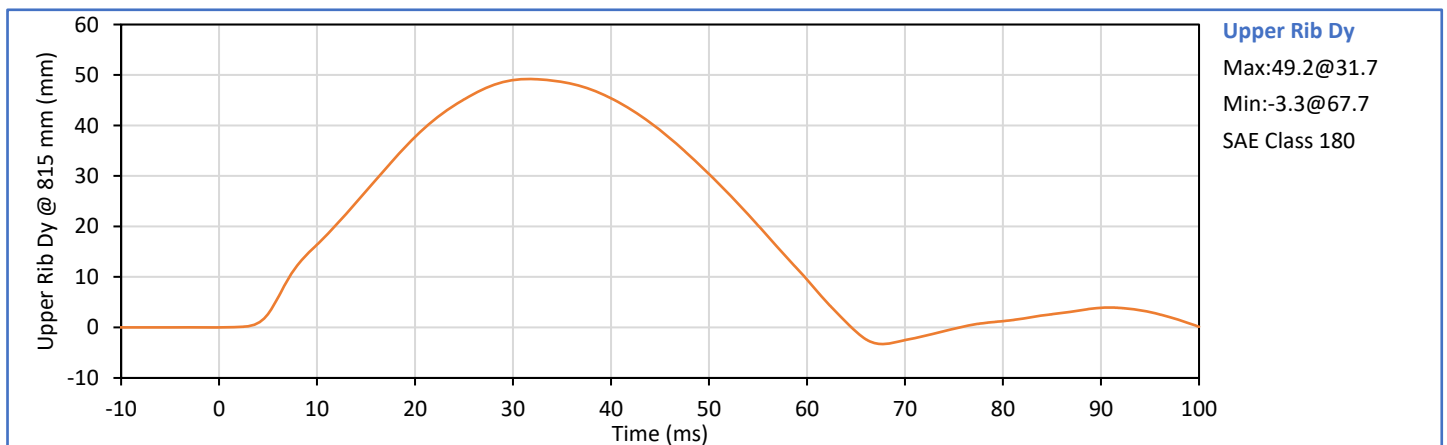
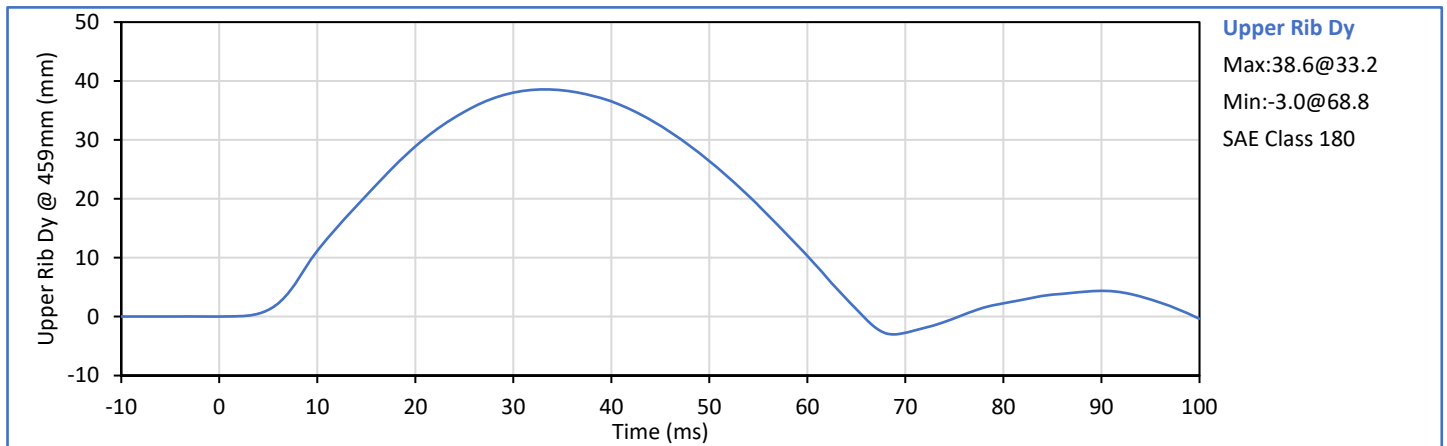
G. Fuentes

Approved By:

J. Hernandez

J. Hernandez

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.3	Pass
Laboratory Relative Humidity	%	10	70	41	Pass
Upper Rib Dy @ 459mm	mm	36.0	40.0	38.6	Pass
Upper Rib Dy @ 815mm	mm	46.0	51.0	49.2	Pass
Overall Test Results					Pass



Technician:

G. Fuentes

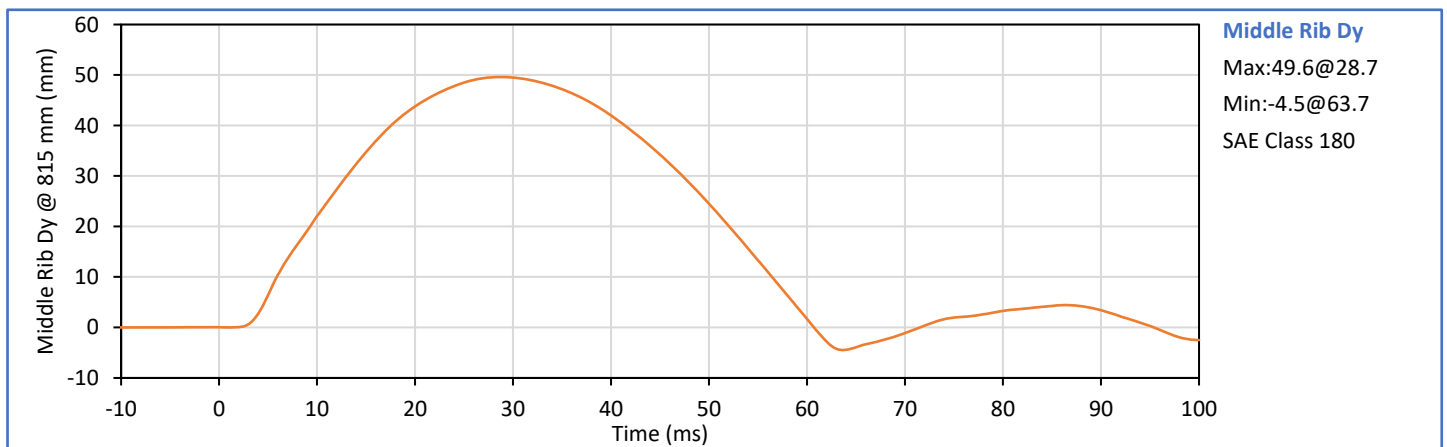
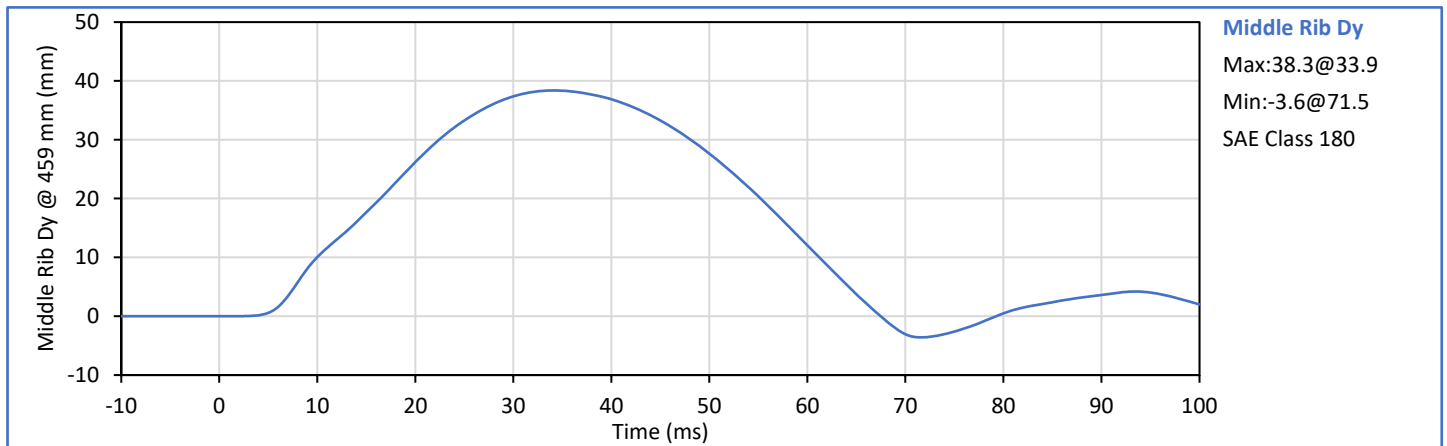
G. Fuentes

Approved By:

J. Hernandez

J. Hernandez

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.6	Pass
Laboratory Relative Humidity	%	10	70	41	Pass
Middle Rib Dy @ 459mm	mm	36.0	40.0	38.3	Pass
Middle Rib Dy @ 815mm	mm	46.0	51.0	49.6	Pass
Overall Test Results				Pass	Pass



Technician:

G. Fuentes

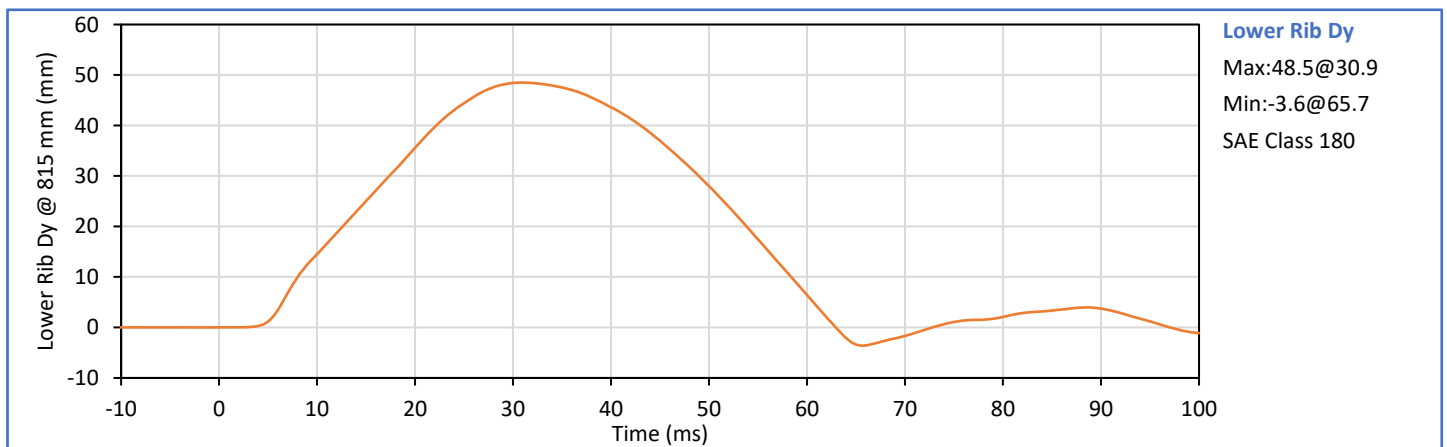
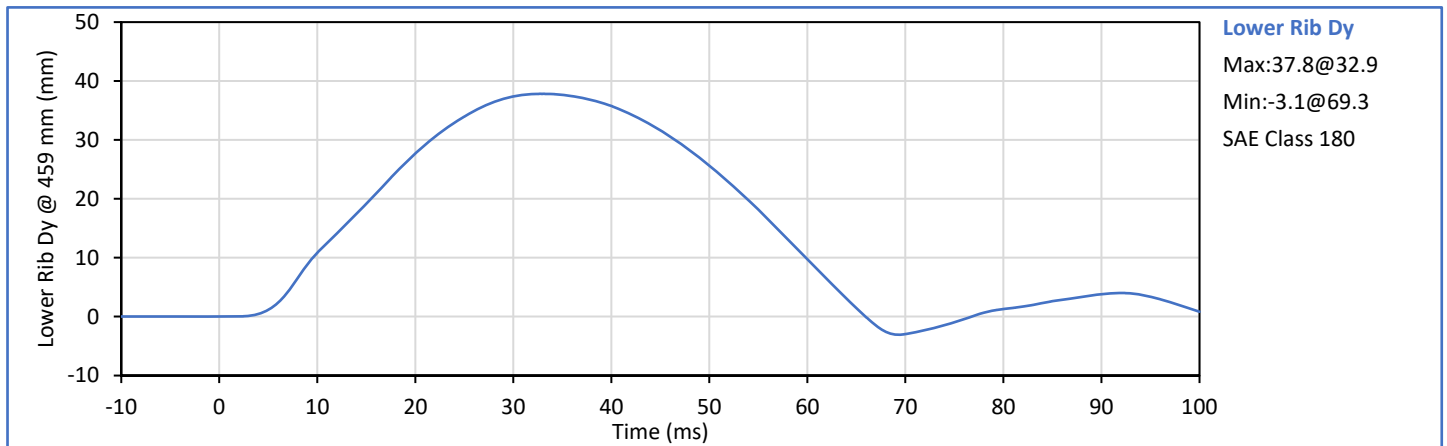
G. Fuentes

Approved By:

J. Hernandez

J. Hernandez

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.6	Pass
Laboratory Relative Humidity	%	10	70	41	Pass
Lower Rib Dy @ 459mm	mm	36.0	40.0	37.8	Pass
Lower Rib Dy @ 815mm	mm	46.0	51.0	48.5	Pass
Overall Test Results				Pass	Pass



Technician:

G. Fuentes

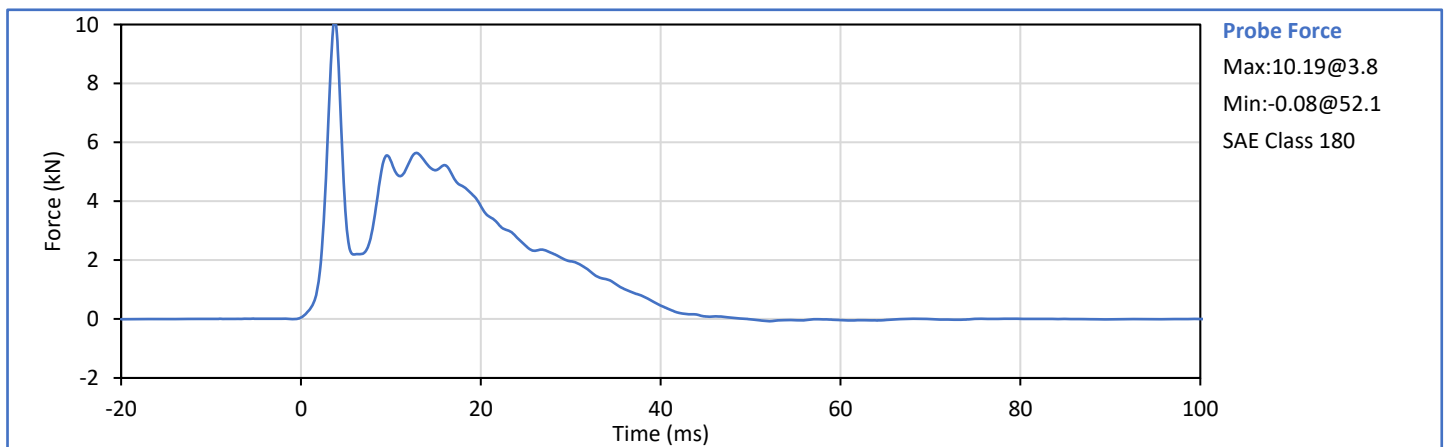
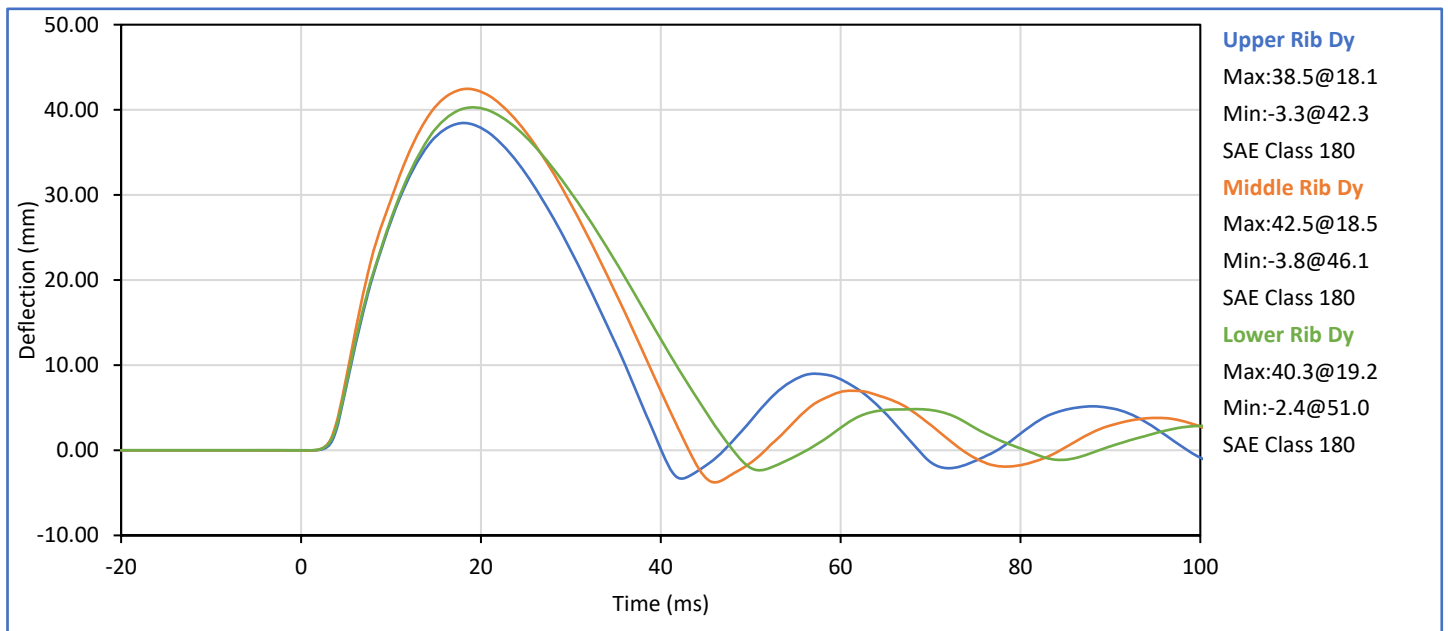
G. Fuentes

Approved By:

J. Hernandez

J. Hernandez

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.3	Pass
Laboratory Relative Humidity	%	10	70	48	Pass
Impactor Velocity	m/s	5.40	5.60	5.51	Pass
Peak Upper Rib Dy	mm	34.0	41.0	38.5	Pass
Peak Middle Rib Dy	mm	37.0	45.0	42.5	Pass
Peak Lower Rib Dy	mm	37.0	44.0	40.3	Pass
Peak Impactor Force After 6 ms	kN	5.10	6.20	5.64	Pass
Overall Test Results					Pass



Technician:

G. Fuentes

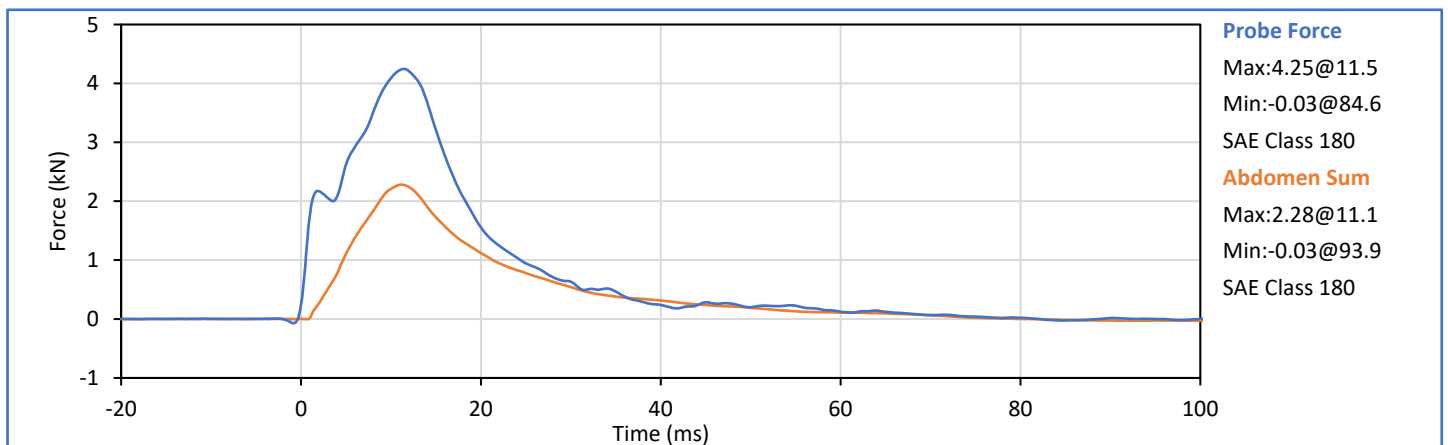
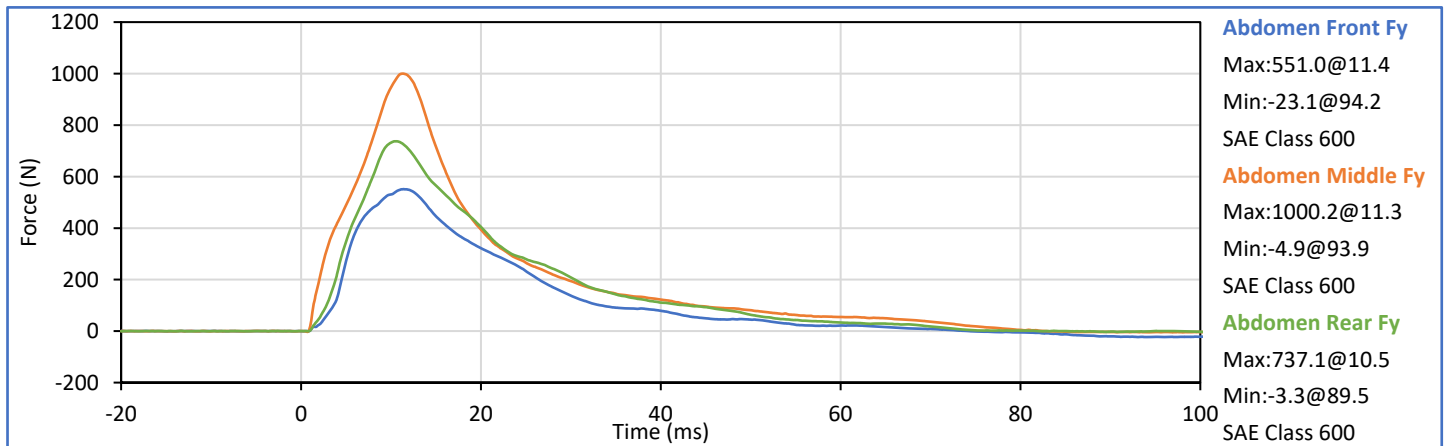
G. Fuentes

Approved By:

J. Hernandez

J. Hernandez

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	45	Pass
Impactor Velocity	m/s	3.90	4.10	3.96	Pass
Peak Impactor Force	kN	4.00	4.80	4.25	Pass
Time of Peak Impactor Force	ms	10.6	13.0	11.5	Pass
Sum of Abdomen Forces	kN	2.20	2.70	2.28	Pass
Time of Peak Sum Abdomen Force	ms	10.0	12.3	11.1	Pass
Overall Test Results					Pass



Technician:

G. Fuentes

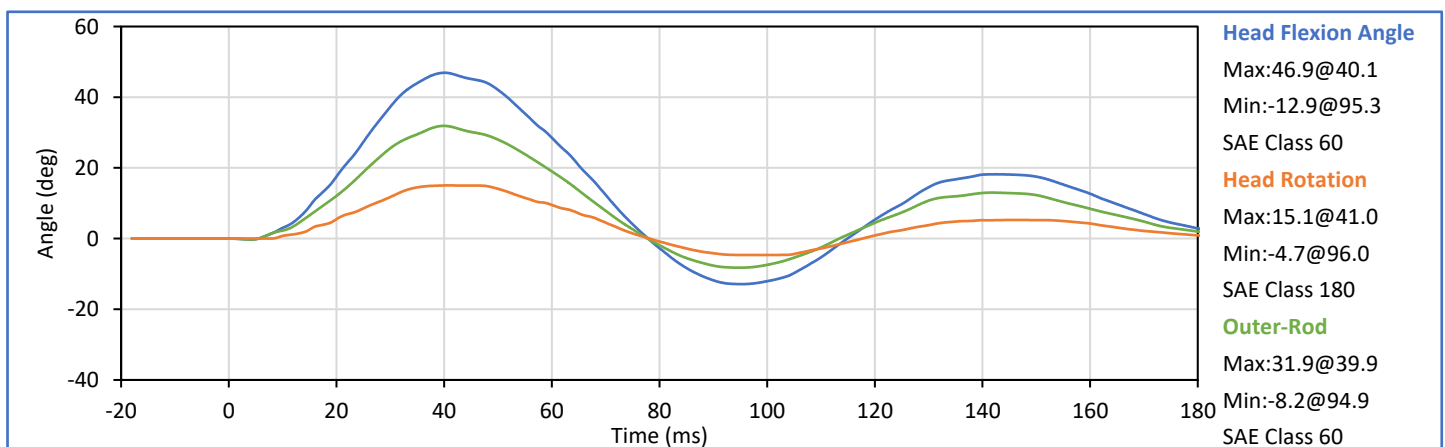
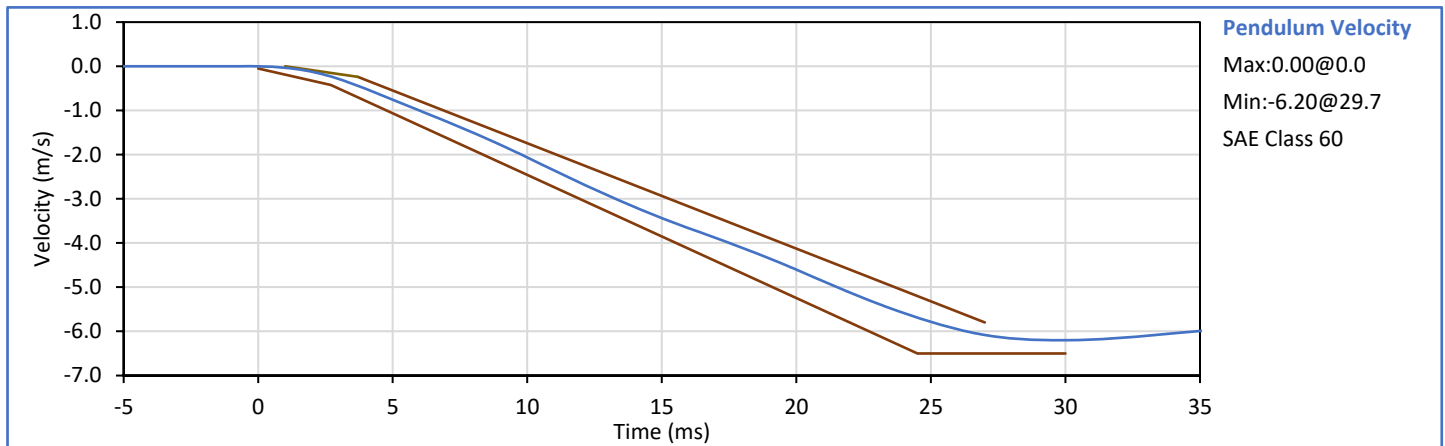
G. Fuentes

Approved By:

J. Hernandez

J. Hernandez

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	42	Pass
Pendulum Velocity	m/s	5.95	6.15	6.03	Pass
Peak Headform Flexion	deg	45.0	55.0	46.9	Pass
Time of Peak Headform Flexion	ms	39.0	53.0	40.1	Pass
Flexion Decay (Peak to zero)	ms	37.0	57.0	37.8	Pass
Overall Test Results					Pass



Technician:

G. Fuentes

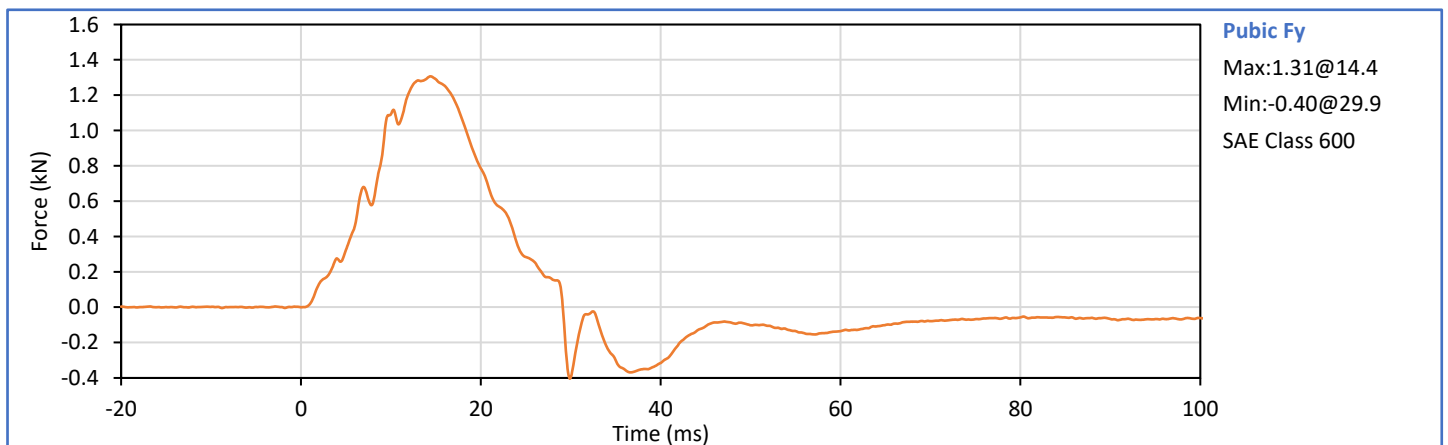
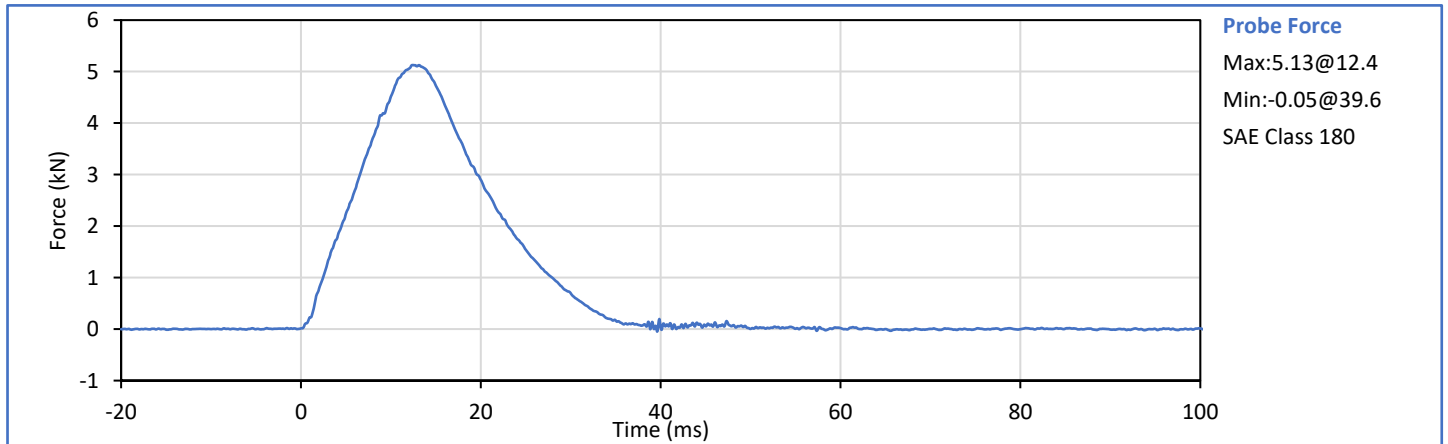
G. Fuentes

Approved By:

J. Hernandez

J. Hernandez

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.3	Pass
Laboratory Relative Humidity	%	10	70	41	Pass
Impactor Velocity	m/s	4.20	4.40	4.32	Pass
Peak Impactor Force	kN	4.70	5.40	5.13	Pass
Time of Peak Impactor Force	ms	11.8	16.1	12.4	Pass
Pubic Symphysis Fy	kN	1.23	1.59	1.31	Pass
Time of Peak Pubic Symphysis Fy	ms	12.2	17.0	14.4	Pass
Overall Test Results					Pass



Technician:

G. Fuentes

G. Fuentes

Approved By:

J. Hernandez

J. Hernandez

APPENDIX C
Post-Test ATD Qualification and Performance Verification
SID-IIs Small Side Impact ATD, Left Side Configuration
S/N: 299

ATD Serial No.: 299

Test Date: 2024-06-26

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	50	Pass
A - Sitting Height	mm	772	788	778	Pass
B - Shoulder Pivot Height	mm	437	453	450	Pass
C - Hpoint Height	mm	79	89	85	Pass
D - H Point From Seatback	mm	141	151	144	Pass
E - Shoulder Pivot From Backline	mm	97	107	106	Pass
F - Thigh Clearance	mm	119	135	130	Pass
G - Head Breadth	mm	140	148	146	Pass
H - Head Back From Backline	mm	40	46	44	Pass
I - Head Depth	mm	178	188	182	Pass
J - Head Circumference	mm	541	551	550	Pass
K - Buttock To Knee Length	mm	514	540	523	Pass
L - Popliteal Height	mm	343	369	356	Pass
K - Knee Pivot To Floor Height	mm	392	409	403	Pass
N - Buttock Popliteal Length	mm	416	442	429	Pass
O - Chest Depth W/O Jacket	mm	195	211	203	Pass
P - Foot Length	mm	216	232	220	Pass
Q - Hip Breadth (W/Pelvic Plugs)	mm	313	323	321	Pass
R - Arm Length	mm	249	259	254	Pass
S - Knee Joint To Seatback	mm	477	493	489	Pass
V - Shoulder Width	mm	341	357	348	Pass
W - Foot Width	mm	78	94	88	Pass
Y - Chest Circumference W/Jacket	mm	851	881	859	Pass
Z - Waist Circumference	mm	761	791	771	Pass
				Overall Test Results	Pass

Technician:



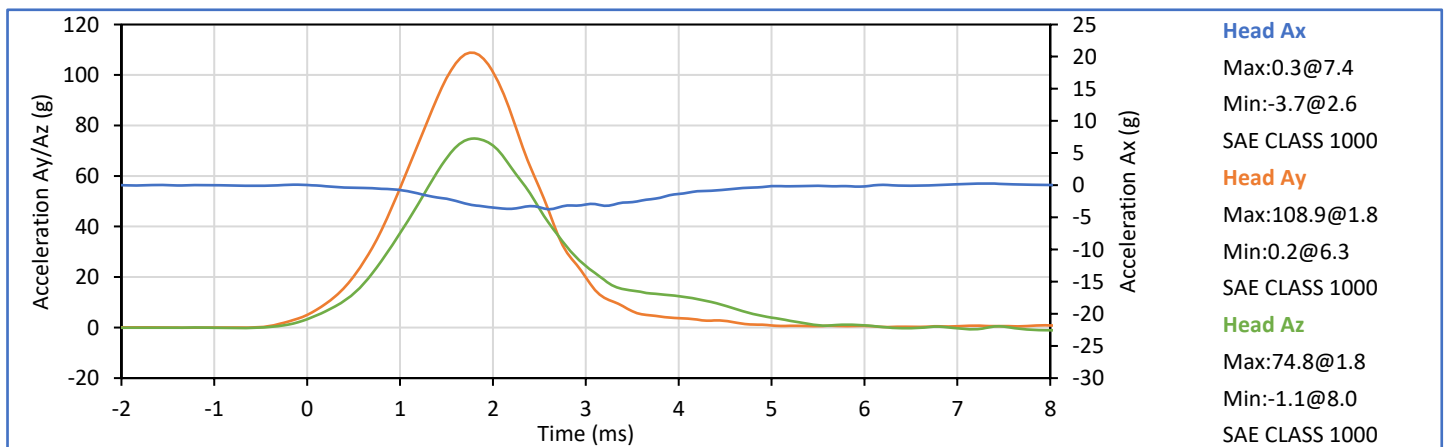
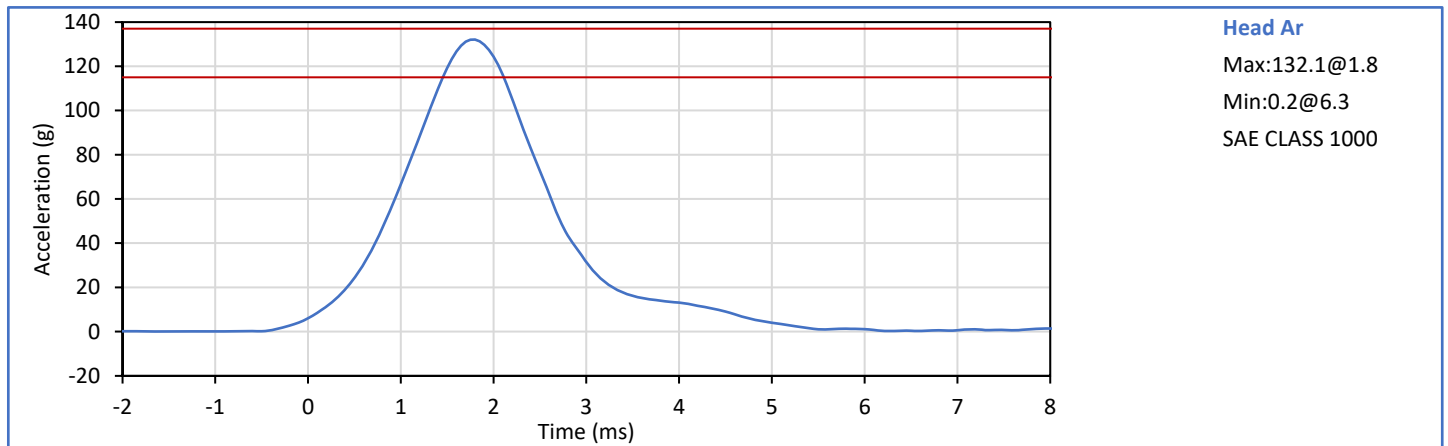
G. Fuentes

Approved By:



J. Hernandez

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	18.9	25.6	20.6	Pass
Laboratory Relative Humidity	%	10	70	44	Pass
Peak Resultant Acceleration	g	115.0	137.0	132.1	Pass
Peak Head Ax	g	-15.0	15.0	-3.7	Pass
Oscillations After Main Pulse	%	0.0	15.0	1.1	Pass
Is Acceleration Unimodal?	Yes/No	Yes		Yes	Pass
			Overall Test Results	Pass	



Technician:

G. Fuentes

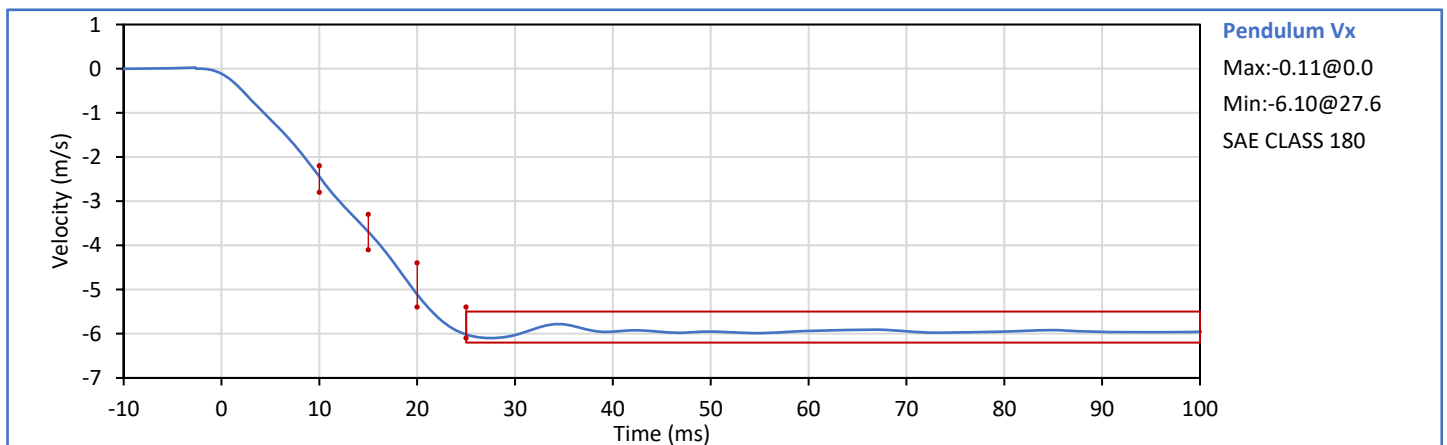
G. Fuentes

Approved By:

J. Hernandez

J. Hernandez

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	41	Pass
Pendulum Velocity	m/s	5.51	5.63	5.58	Pass
Pendulum Decel at 10 ms	m/s	-2.80	-2.20	-2.44	Pass
Pendulum Decel at 15 ms	m/s	-4.10	-3.30	-3.69	Pass
Pendulum Decel at 20 ms	m/s	-5.40	-4.40	-5.11	Pass
Pendulum Decel at 25 ms	m/s	-6.10	-5.40	-6.02	Pass
Pendulum Decel from 25-100 ms	m/s	-6.20	-5.50	-6.1/-5.78	Pass
Peak "D" Plane Rotation	deg	-81.0	-71.0	-74.5	Pass
Time of Peak "D" Plane Rotation	ms	50.0	70.0	59.5	Pass
Peak Occ. Condyle Moment	Nm	36.0	44.0	41.5	Pass
Time of Moment Decay to 0 Nm	ms	102.0	126.0	115.6	Pass
				Overall Test Results	Pass



Technician:

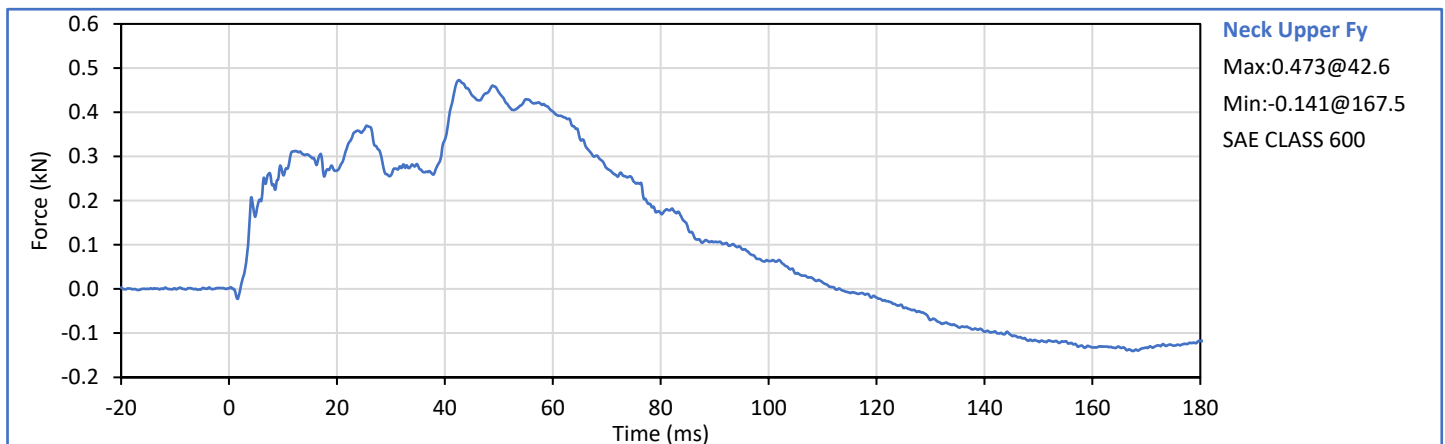
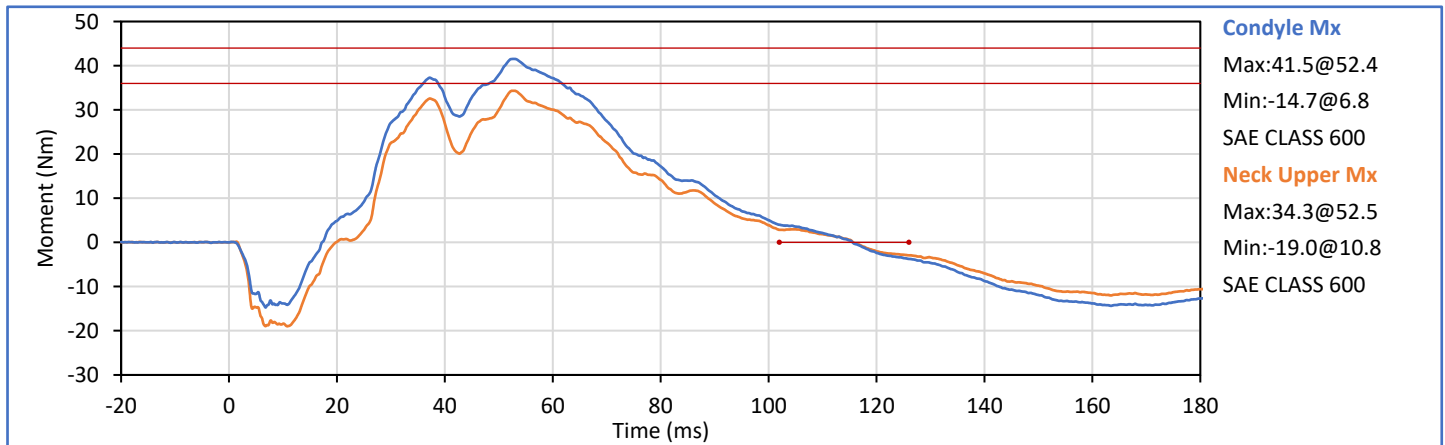
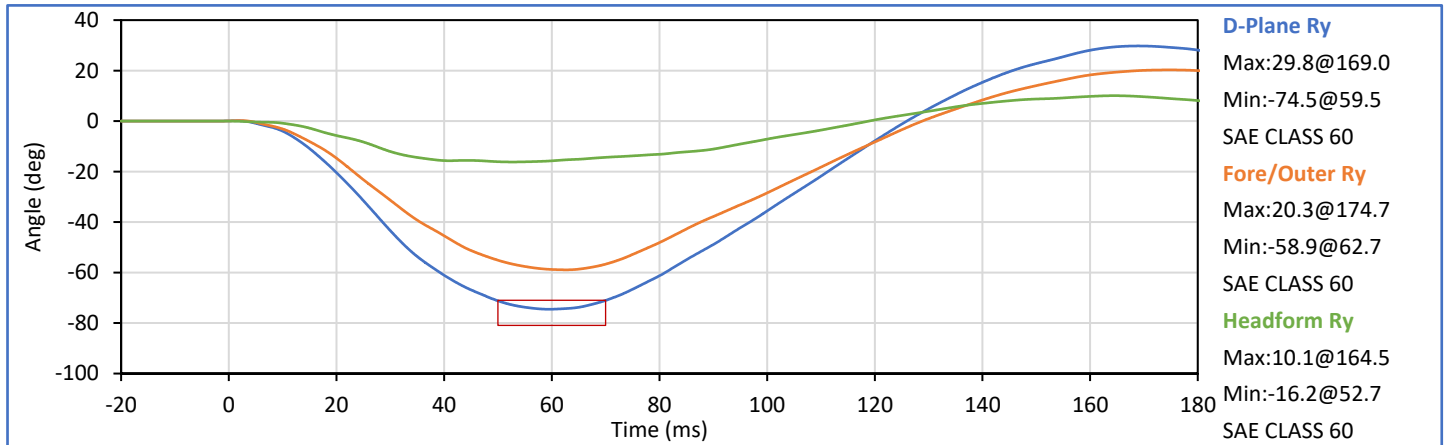
G. Fuentes

G. Fuentes

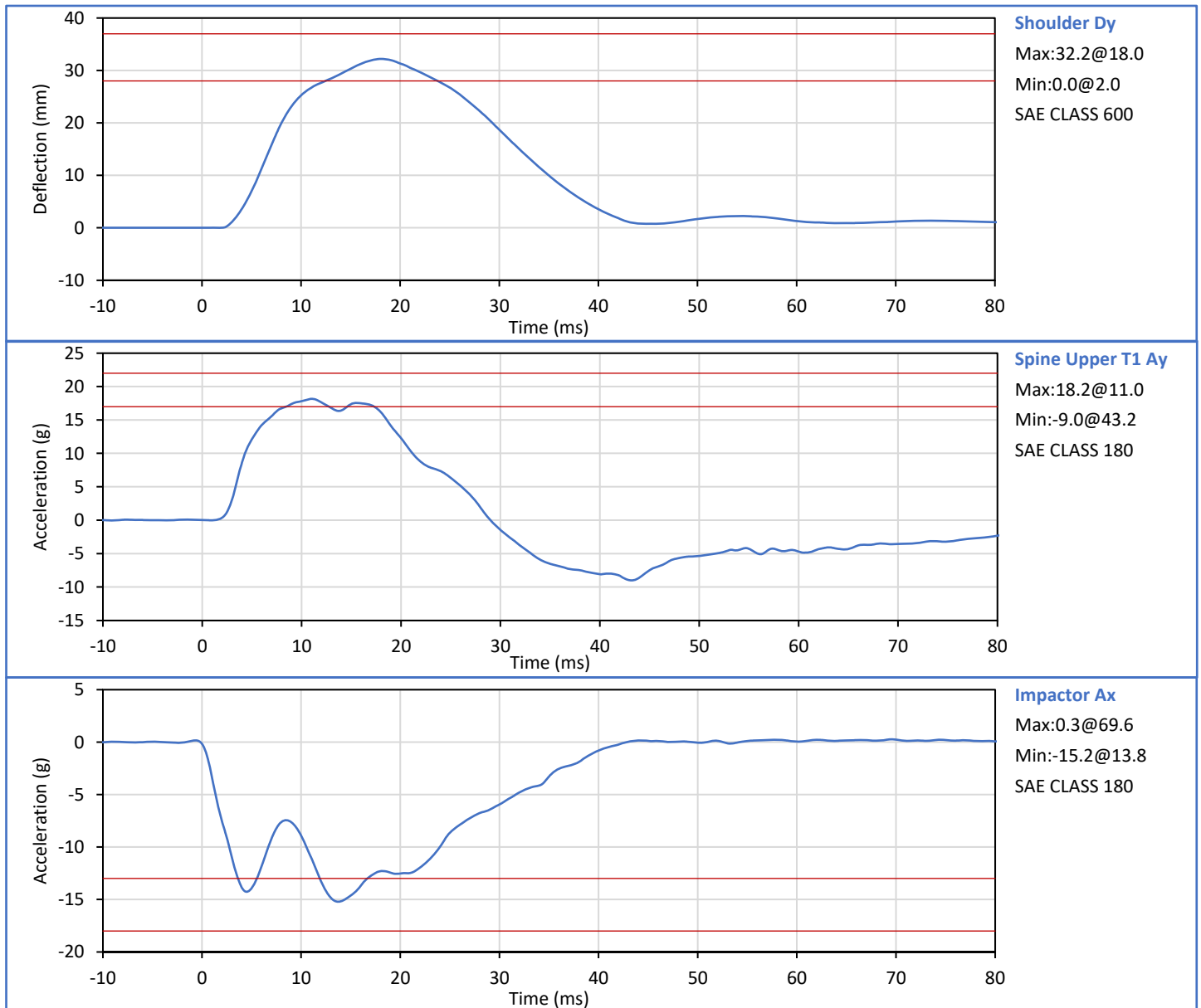
Approved By:

J. Hernandez

J. Hernandez



Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.4	Pass
Laboratory Relative Humidity	%	10	70	42	Pass
Impactor Velocity	m/s	4.20	4.40	4.32	Pass
Peak Shoulder Dy	mm	28.0	37.0	32.2	Pass
Peak Upper Spine (T1) Ay	g	17.0	22.0	18.2	Pass
Peak Impactor Ax	g	-18.0	-13.0	-15.2	Pass
Overall Test Results					Pass



Technician:

G. Fuentes

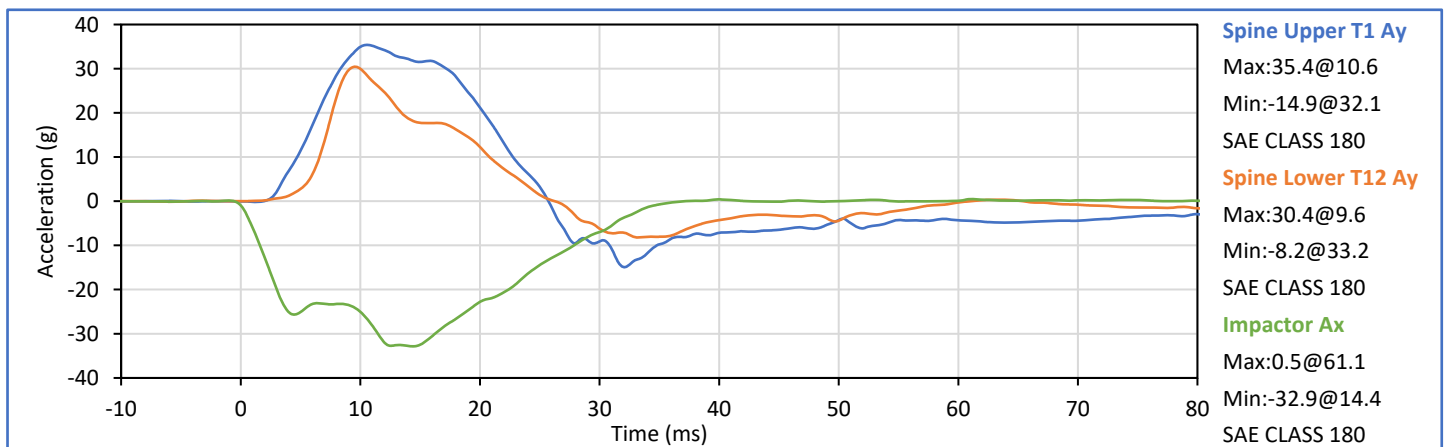
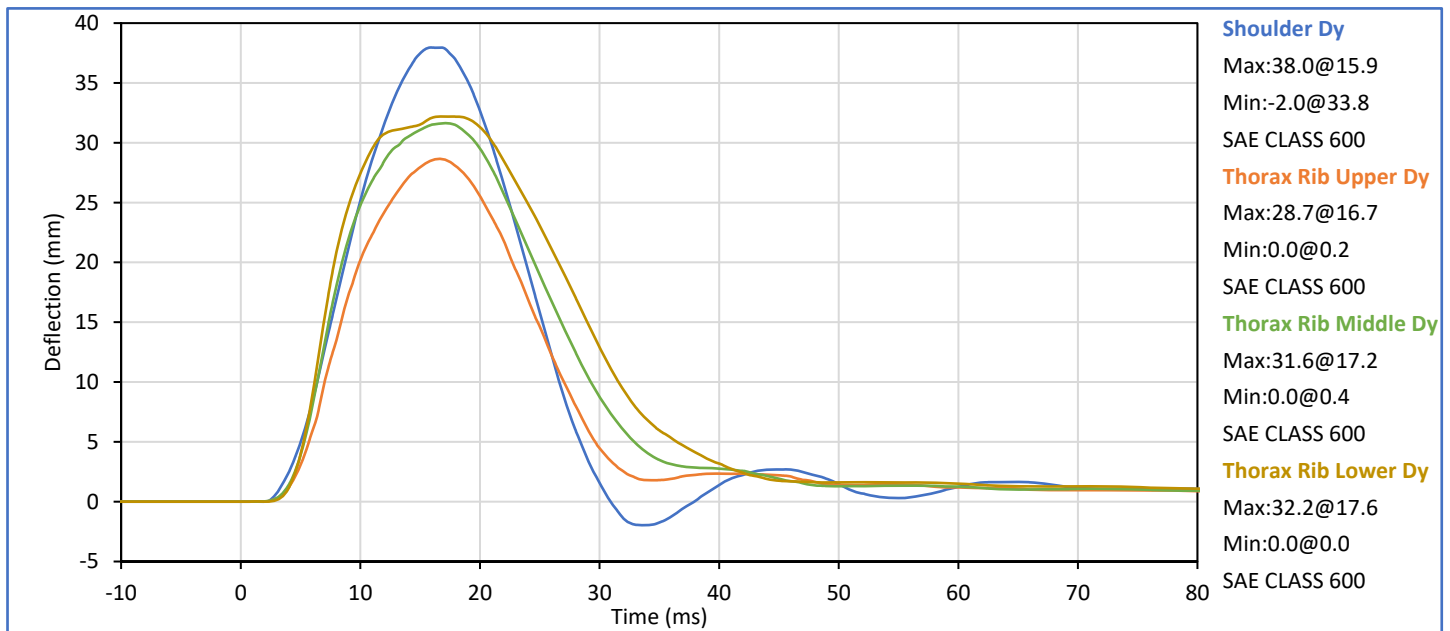
G. Fuentes

Approved By:

J. Hernandez

J. Hernandez

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	20.9	Pass
Laboratory Relative Humidity	%	10	70	44	Pass
Impactor Velocity	m/s	6.60	6.80	6.65	Pass
Peak Shoulder Dy	mm	31.0	40.0	38.0	Pass
Peak Upper Rib Dy	mm	25.0	32.0	28.7	Pass
Peak Middle Rib Dy	mm	30.0	36.0	31.6	Pass
Peak Lower Rib Dy	mm	32.0	38.0	32.2	Pass
Peak Upper Spine (T1) Ay	g	34.0	43.0	35.4	Pass
Peak Lower Spine (T12) Ay	g	29.0	37.0	30.4	Pass
Peak Impactor Ax	g	-36.0	-30.0	-32.9	Pass
Overall Test Results				Pass	



Technician:

G. Fuentes

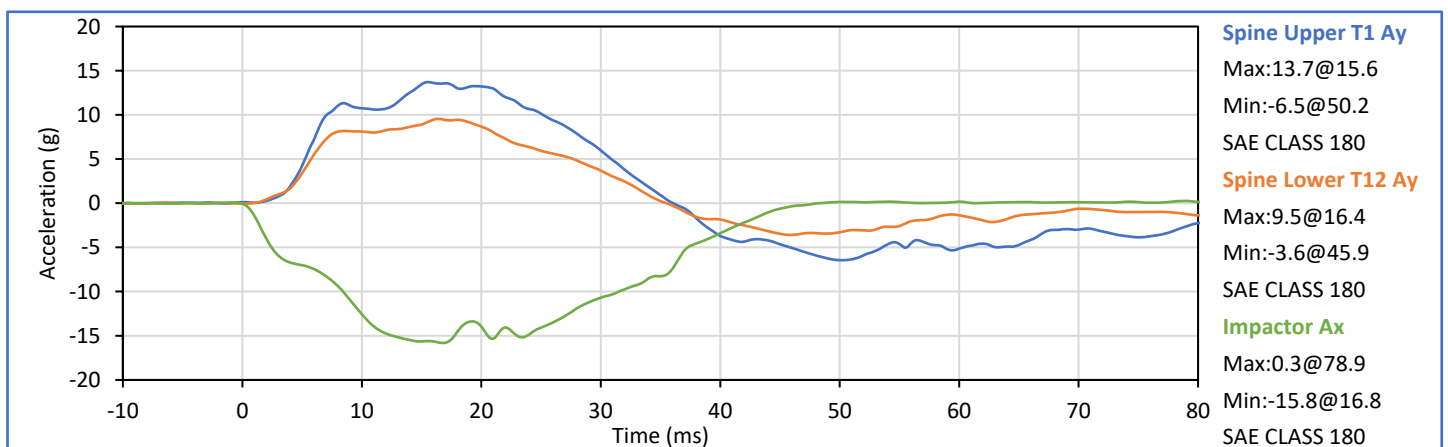
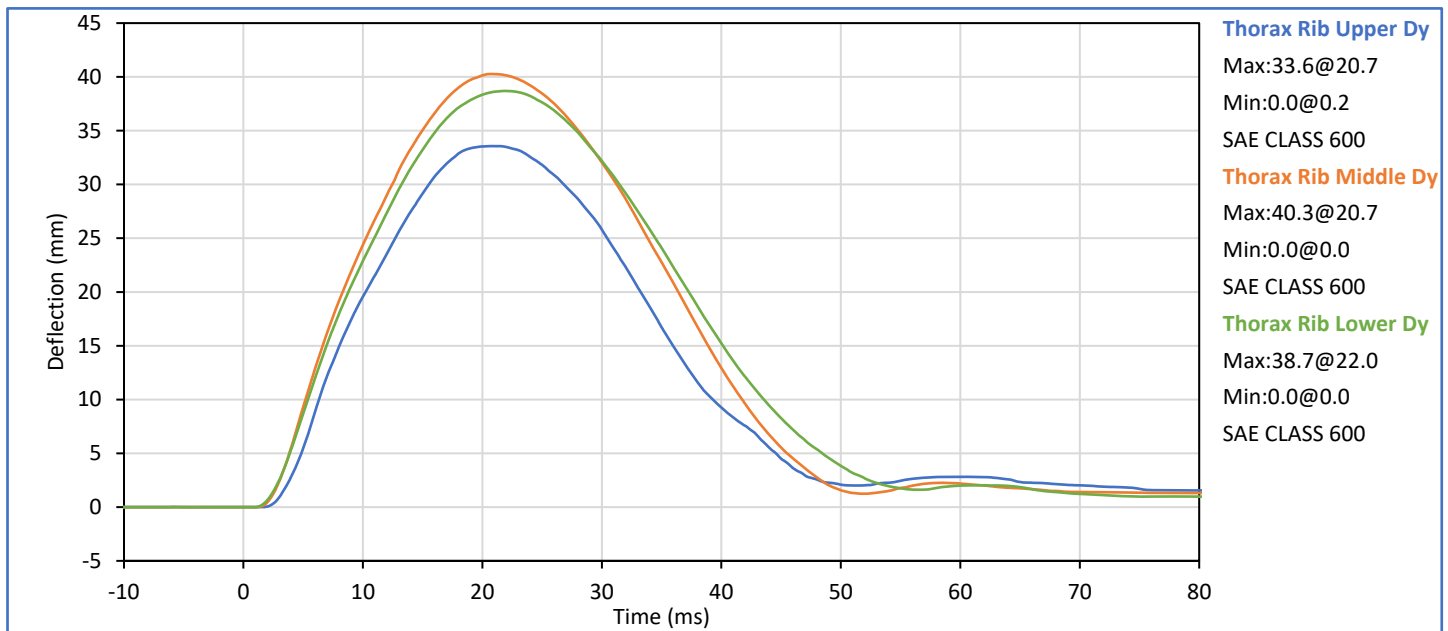
G. Fuentes

Approved By:

J. Hernandez

J. Hernandez

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.3	Pass
Laboratory Relative Humidity	%	10	70	50	Pass
Impactor Velocity	m/s	4.20	4.40	4.30	Pass
Peak Thorax Rib Upper Dy	mm	32.0	40.0	33.6	Pass
Peak Thorax Rib Middle Dy	mm	39.0	45.0	40.3	Pass
Peak Thorax Rib Lower Dy	mm	35.0	43.0	38.7	Pass
Peak Spine Upper T1 Ay	g	13.0	17.0	13.7	Pass
Peak Spine Lower T12 Ay	g	7.0	11.0	9.5	Pass
Peak Impactor Ax	g	-18.0	-14.0	-15.8	Pass
Overall Test Results					Pass



Technician:

G. Fuentes

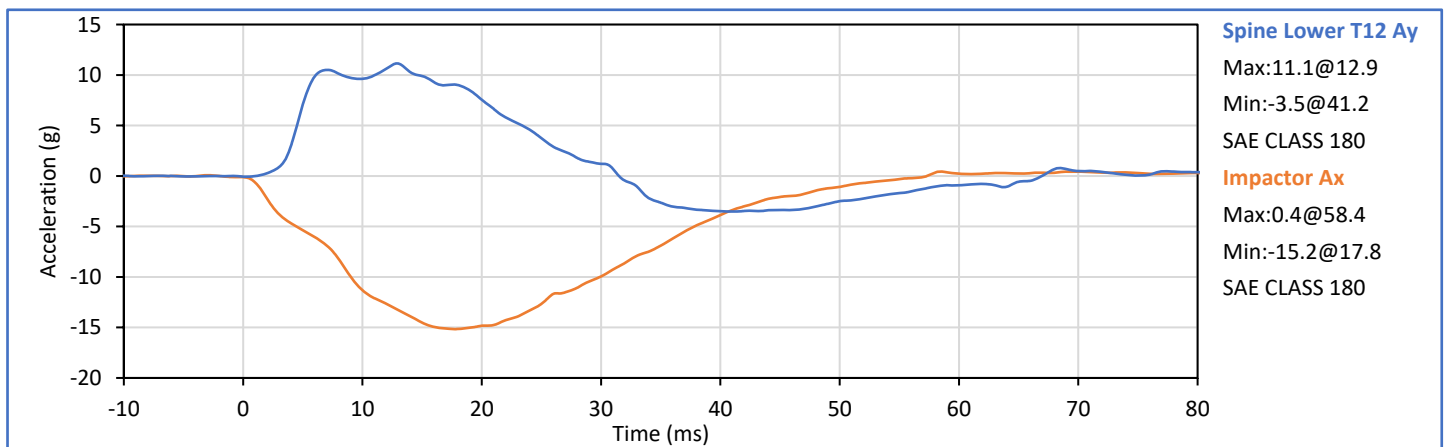
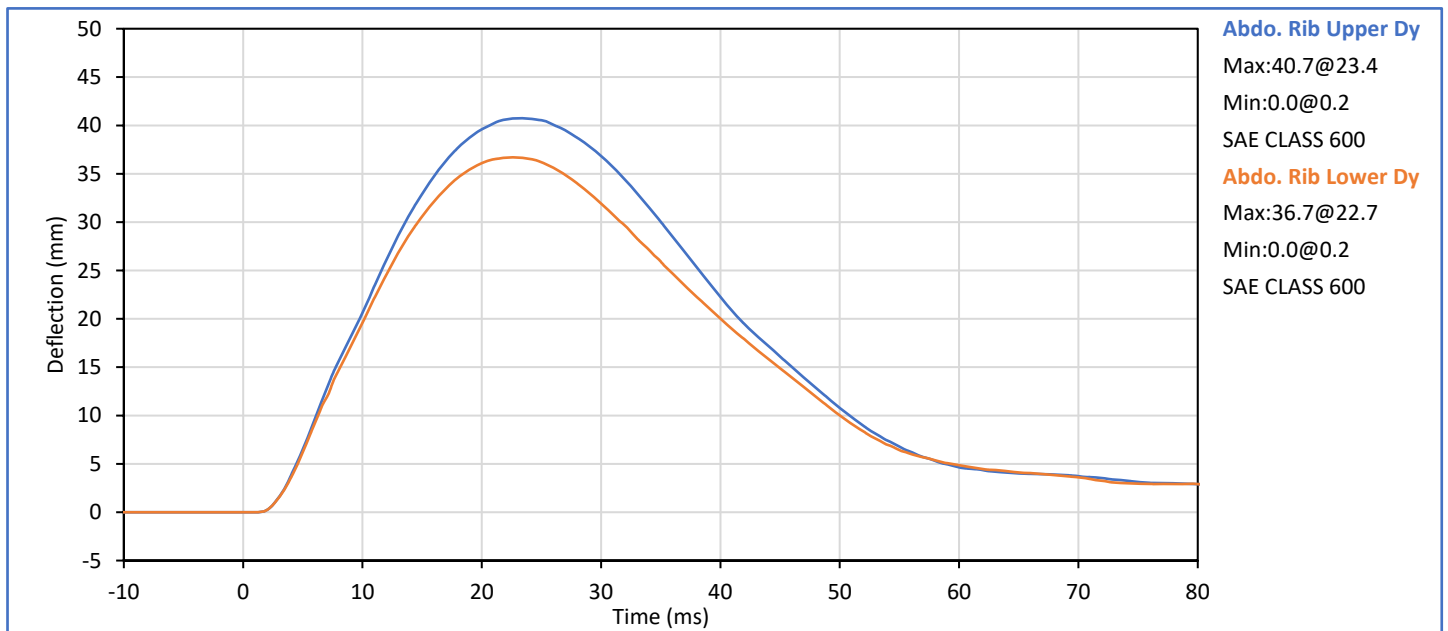
G. Fuentes

Approved By:

J. Hernandez

J. Hernandez

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.6	Pass
Laboratory Relative Humidity	%	10	70	50	Pass
Impactor Velocity	m/s	4.20	4.40	4.31	Pass
Peak Upper Abdomen Rib Dy	mm	36.0	47.0	40.7	Pass
Peak Lower Abdomen Rib Dy	mm	33.0	44.0	36.7	Pass
Peak Lower Spine T12 Ay	mm	9.0	14.0	11.1	Pass
Peak Impactor Ax	g	-16.0	-12.0	-15.2	Pass
Overall Test Results					Pass



Technician:

G. Fuentes

G. Fuentes

Approved By:

J. Hernandez

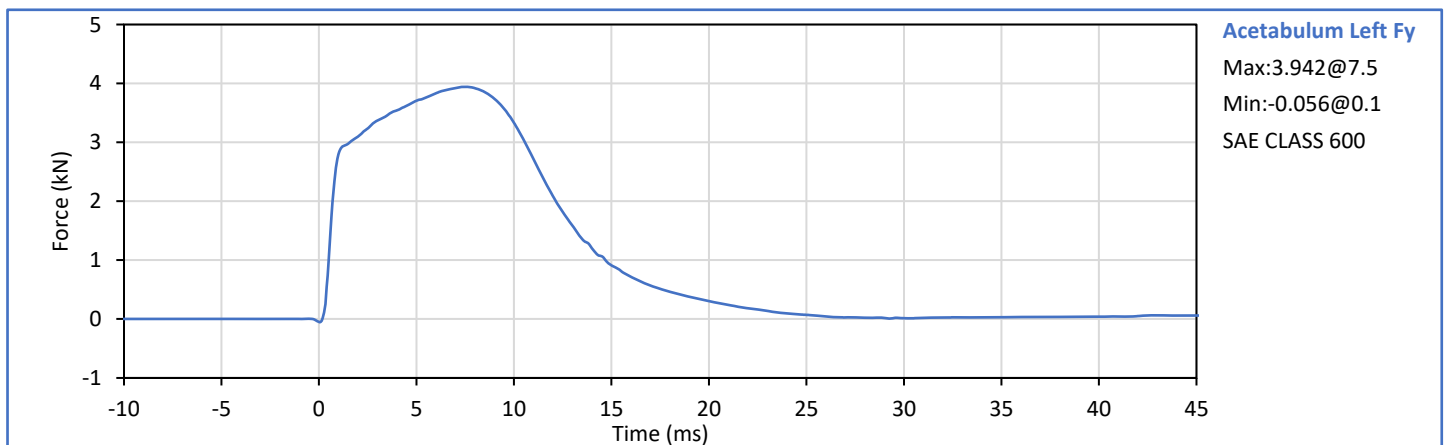
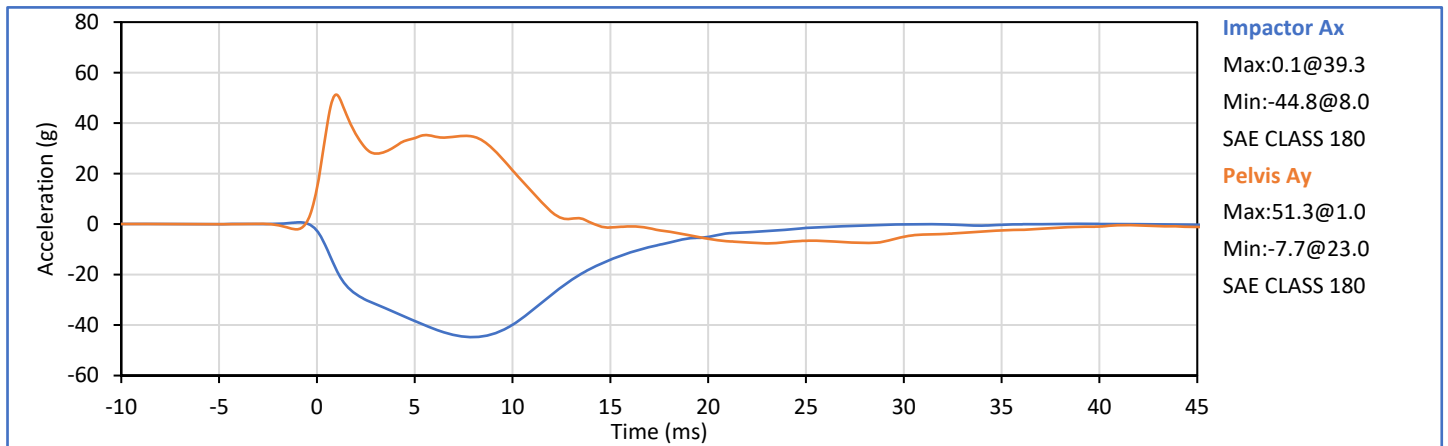
J. Hernandez

ATD Serial No.: 299

Test Date: 2024-06-26

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	50	Pass
Impactor Velocity	m/s	6.60	6.80	6.69	Pass
Peak Acetabulum Fy	kN	3.60	4.30	3.94	Pass
Pelvis Ay after 6ms	g	34.0	42.0	35.0	Pass
Peak Impactor Ax	g	-47.0	-38.0	-44.8	Pass
Overall Test Results					Pass

Pelvis Plug S/N: 16756



Technician:

G. Fuentes

G. Fuentes

Approved By:

J. Hernandez

J. Hernandez

ATD Serial No.: 299

SID-IIs Small Side Impact ATD
Pelvis Acetabulum Impact

Test Date: 2024-06-26

Pelvis Plug S/N: 16756



SID-IIs Pelvis Plug Certification Test

Plug S/N 16756

Test Number 23559

Report Number 23616

Test Date 7/22/2022 1:46:52 PM

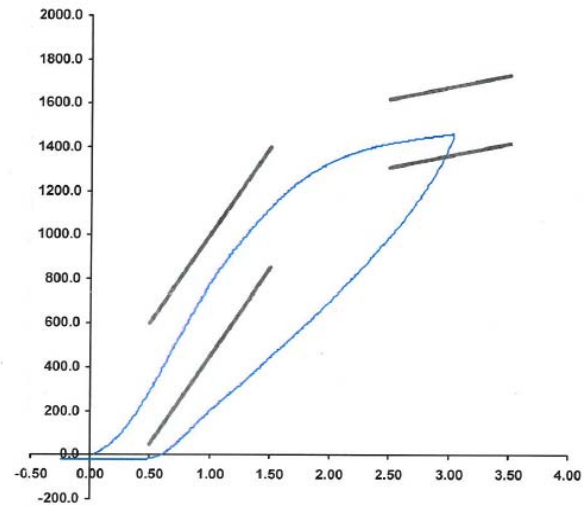
	Test Results	Spec Min	Spec Max
Force @ 0.5 mm (N)	293	50	600
Force @ 1.5 mm (N)	1,123	850	1,400
Force @ 2.5 mm (N)	1,417	1,306	1,618
Force @ 3.0 mm (N)	1,459	1,361	1,673

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-Jul-22

SACO Research

By: *De*

Date: *7/22/22*

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

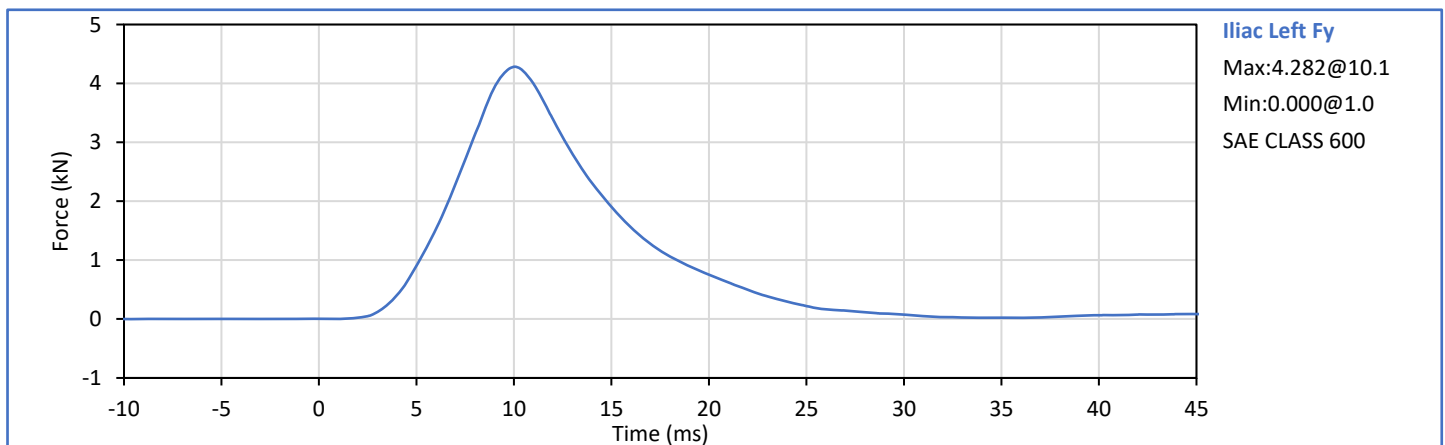
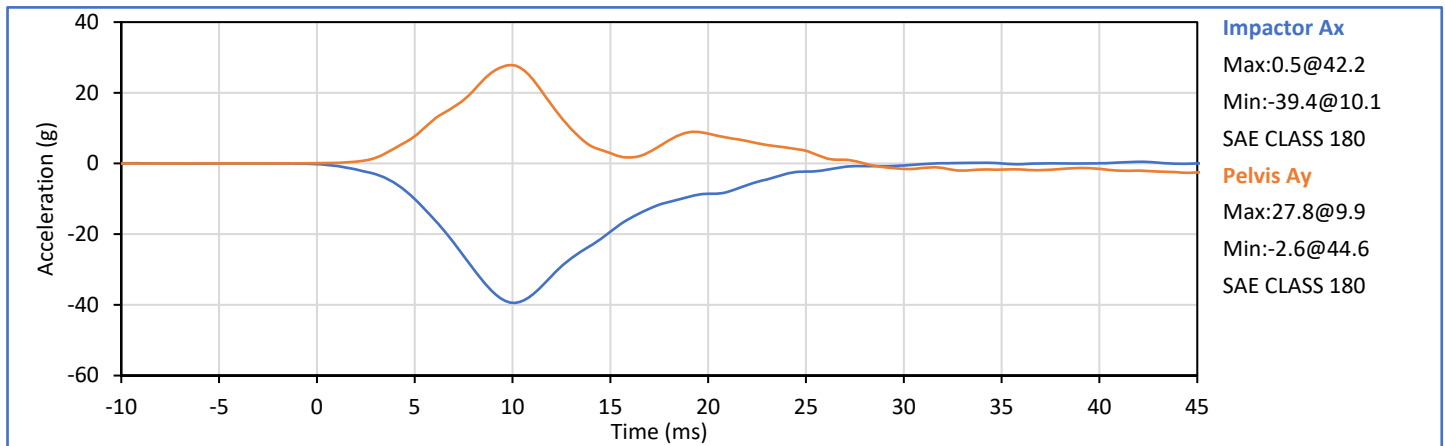
ATD Serial No.: 299

Test Date: 2024-07-01

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.4	Pass
Laboratory Relative Humidity	%	10	70	43	Pass
Impactor Velocity	m/s	4.20	4.40	4.36	Pass
Peak Iliac Fy	kN	4.10	5.10	4.28	Pass
Peak Pelvis Ay	g	28.0	39.0	34.7	Pass
Peak Impactor Ax	g	-45.0	-36.0	-39.4	Pass
Overall Test Results					Pass

Pelvis Plug S/N: 12228 *

* Plug is not impacted and remains certified



Technician:

G. Fuentes

G. Fuentes

Approved By:

J. Hernandez

J. Hernandez

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	P58858	Endevco	7264C-2k	2024-06-04
Head Acceleration Y Primary	P58865	Endevco	7264C-2k	2024-06-04
Head Acceleration Z Primary	P58867	Endevco	7264C-2k	2024-06-04
Head Acceleration X Redundant	P58859	Endevco	7264C-2k	2024-06-04
Head Acceleration Y Redundant	P58866	Endevco	7264C-2k	2024-06-04
Head Acceleration Z Redundant	P58873	Endevco	7264C-2k	2024-06-04
Upper Thorax Rib Deflection Y	209 (ES-2 Rib)	Honeywell	F38000203	2024-02-15
Middle Thorax Rib Deflection Y	210 (ES-2 Rib)	Honeywell	F38000203	2024-02-15
Lower Thorax Rib Deflection Y	207 (ES-2 Rib)	Honeywell	F38000203	2024-02-15
Anterior Abdominal Force Y	1504 Fy	R.A. Denton	2631J	2024-05-28
Middle Abdominal Force Y	1505 Fy	R.A. Denton	2631J	2024-05-28
Posterior Abdominal Force Y	1506 Fy	R.A. Denton	2631J	2024-05-28
Lower Spine T12 Acceleration X	P63856	Endevco	7264C-2k	2024-06-04
Lower Spine T12 Acceleration Y	P50063	Endevco	7264C-2k	2024-06-04
Lower Spine T12 Acceleration Z	P51880	Endevco	7264C-2k	2024-06-04
Pubic Symphysis Force Y	DG6834 Fy	FTSS	IF-556	2024-05-24

Table 2 - Left Rear Passenger ATD Instrumentation

Sensor Location	Sensor S\N	Mfr	Model	Cal Date
Head Acceleration X Primary	P51929	Endevco	7264C-2k	2024-06-05
Head Acceleration Y Primary	P50086	Endevco	7264C-2k	2024-06-05
Head Acceleration Z Primary	P51931	Endevco	7264C-2k	2024-06-05
Head Acceleration X Redundant	P68604	Endevco	7264C-2k	2024-06-05
Head Acceleration Y Redundant	P51934	Endevco	7264C-2k	2024-06-05
Head Acceleration Z Redundant	P58736	Endevco	7264C-2k	2024-06-05
Head Rotation Rate X	ARS11283	DTS	ARS PRO-18k (2kHz)	2023-11-15
Head Rotation Rate Y	ARS14935	DTS	ARS PRO-18k (2kHz)	2023-11-15
Head Rotation Rate Z	ARS4062	DTS	ARS PRO-18k (2kHz)	2023-11-15
Upper Thorax Rib Deflection Y	1143	Servo	08TCI-3725	2024-06-05
Middle Thorax Rib Deflection Y	1075	Servo	08TCI-3725	2024-06-05
Lower Thorax Rib Deflection Y	1213	Servo	08TCI-3725	2024-06-05
Upper Abdomen Rib Deflection Y	1218	Servo	08TCI-3725	2024-06-05
Lower Abdomen Rib Deflection Y	1177	Servo	08TCI-3725	2024-06-05
Lower Spine T12 Acceleration X	P58761	Endevco	7264C-2k	2024-06-06
Lower Spine T12 Acceleration Y	P50077	Endevco	7264C-2k	2024-06-06
Lower Spine T12 Acceleration Z	P58795	Endevco	7264C-2k	2024-06-06
Iliac Wing Impact Side Force Y	278 (Iliac)	R.A. Denton	3228J	2024-05-10
Acetabulum Impact Side Force Y	260 (Acetabulum)	R.A. Denton	3249J	2024-05-10

Table 3 - Vehicle Instrumentation

Sensor Location	Sensor S\N	Mfr	Model	Cal Date
Vehicle CG Ax	M12878	Endevco	758H-2k	2024-01-08
Vehicle CG Ay	M13683	Endevco	758H-2k	2024-01-08
Vehicle CG Az	M12871	Endevco	758H-2k	2024-01-08
Right Side Sill at Front Seat Ax	M13677	Endevco	758H-2k	2024-01-08
Right Side Sill at Front Seat Ay	M12811	Endevco	758H-2k	2024-01-08
Right Side Sill at Front Seat Az	M12829	Endevco	758H-2k	2024-01-08
Right Side Sill at Rear Seat Ax	M12805	Endevco	758H-2k	2024-01-08
Right Side Sill at Rear Seat Ay	M13672	Endevco	758H-2k	2024-01-08
Right Side Sill at Rear Seat Az	M12311	Endevco	758H-2k	2024-01-08
Left Side Sill at Front Seat Ay	M11256	Endevco	758H-2k	2024-01-25
Left Side Sill at Rear Seat Ay	M12859	Endevco	758H-2k	2024-01-08
Left Lower A-Pillar Ay	M13691	Endevco	758H-2k	2024-01-08
Left Middle A-Pillar Ay	M13678	Endevco	758H-2k	2024-01-08
Left Lower B-Pillar Ay	M13687	Endevco	758H-2k	2024-01-09
Left Middle B-Pillar Ay	M13675	Endevco	758H-2k	2024-01-08
Driver Seat Track at H-Point Ay	M12858	Endevco	758H-2k	2024-01-08
Rear Seat Structure Ay	M13689	Endevco	758H-2k	2024-01-09
Right Rear Occupant Comp. Ay	M12320	Endevco	758H-2k	2024-01-08
Engine Block Top Ax	M13682	Endevco	758H-2k	2024-01-08
Engine Block Top Ay	M13684	Endevco	758H-2k	2024-01-08
Rear Floopan Above Axle Ax	M12882	Endevco	758H-2k	2024-01-08
Rear Floopan Above Axle Ay	M13692	Endevco	758H-2k	2024-01-08
Rear Floopan Above Axle Az	M11344	Endevco	758H-2k	2024-01-09

Table 4 - Moving Deformable Barrier (MDB) Instrumentation

Sensor Location	Sensor S\N	Mfr	Model	Cal Date
MDB CG Ax	M12880	Endevco	758H-2k	2024-01-08
MDB CG Ay	M12875	Endevco	758H-2k	2024-01-08
MDB CG Az	M12876	Endevco	758H-2k	2024-01-08
MDB Left Side at Rear Axle Ax	M12842	Endevco	758H-2k	2024-01-08
MDB Left Side at Rear Axle Ay	M11059	Endevco	758H-2k	2024-02-01