

REPORT NUMBER: SideNCAPMDB-KAR-24-004

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

**MAZDA MOTOR CORPORATION
2024 MAZDA CX-50 5-DOOR SUV**

NHTSA No: M20245401

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



JUNE 21, 2024

FINAL REPORT

**PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
OFFICE OF CRASHWORTHINESS STANDARDS
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Prepared By: Amjad A. Jadallah

Mr. Amjad A. Jadallah, Program Manager
Applus+ IDIADA KARCO Engineering, LLC.

Reviewed By: AB

Mr. Alex Beltran, Engineering Manager
Applus+ IDIADA KARCO Engineering, LLC.

Approved By: MLD

Mr. Michael L. Dunlap, Director of Operations
Applus+ IDIADA KARCO Engineering, LLC.

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FINAL REPORT ACCEPTANCE BY OCWS:

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

Date: _____

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16. Abstract A 61.9 km/h 90° Moving Deformable Barrier NCAP Side Impact Test was conducted on the subject 2024 Mazda CX-50 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 7, 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 34.4°C. The target vehicle's maximum post-test static crush was 209 mm located at level 3. The test vehicle's occupant performance data is as follows:																														
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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																												
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*Proposed IARV

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SECTION 1
TEST PURPOSE AND PROCEDURE

This moving deformable barrier side impact test is part of the MY 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 Mazda CX-50 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 Mazda CX-50 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 7, 2024. Pre- and post-test photographs of the test vehicle, the MDB and the dummy (ES-2re and SID-IIs) are included in Appendix A of this report.

The dummies were placed in the driver and left rear designated seating position according to instructions specified in the OCWS Side Impact Laboratory Test Procedure, dated 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

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	34.995
Maximum Thoracic Rib Deflection	mm	44	16.843
Combined Abdominal Force	N	2500	642.691
Pubic Symphysis Force	N	6000	505.885

Measurement Description	Units	Passenger ATD (SID-IIs)	
		Threshold	Result
Head Injury Criteria (HIC ₃₆)		1000	67.476
Lower Spine (T12) Resultant Acceleration	g	82	37.753
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	2219.607
Maximum Thoracic Rib Deflection	mm	38*	8.820
Maximum Abdominal Rib Deflection	mm	45*	10.036

*Proposed IARV

Supplemental restraint information is given below:

Restraint Type	Left Front (Driver) Occupant Location 1		Left Rear (Passenger) Occupant Location 4	
	Mounted	Deployed	Mounted	Deployed
Frontal Airbag	Yes	No		
Knee Airbag	Yes	No		
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:

None

SECTION 3

OCCUPANT AND VEHICLE INFORMATION/DATA SHEETS

Test Vehicle: 2024 Mazda CX-50 5-Door SUV NHTSA No. M20245401

Test Program: Side NCAP MDB Impact Test Test Date: 06/07/24

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 Mazda CX-50 5-Door SUV NHTSA No. M20245401
 Test Program: Side NCAP MDB Impact Test Test Date: 06/07/24

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA Number	M20245401
Model Year	2024
Make	Mazda
Model	CX-50
Body Style	5-Door SUV
VIN	7MMVABAM9RN211603
Body Color	Gray
Odometer Reading (km / mi)	18/11
Engine Displacement (L)	2.5
Type / No. of Cylinders	4 Cylinder
Engine Placement	Transverse
Transmission Type	Automatic
Transmission Speeds	6
Overdrive	Yes
Final Drive	AWD
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	Yes
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 134

DATA FROM CERTIFICATION LABEL

Manufactured By	Mazda Toyota Manufacturing
Date of Manufacture	24-Mar
Vehicle Type	MPV

GVWR (kg)	2199
GAWR Front (kg)	1133
GAWR Rear (kg)	1079

VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

Measured Parameter	Front	Rear	Third	Total	
Designated Seating Capacity	2	3		5	
Capacity Weight (VCW) (kg)				385.0	A
DSC x 68 (kg)				340.0	B
Cargo Weight (RCLW) (kg)				45.0	A-B*

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

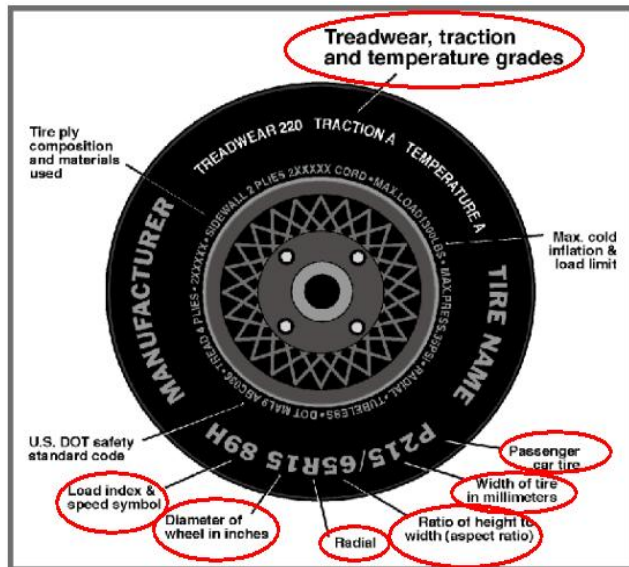
VEHICLE SEAT TYPE

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							

DATA SHEET NO. 1 ... (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2024 Mazda CX-50 5-Door SUV NHTSA No. M20245401
 Test Program: Side NCAP MDB Impact Test Test Date: 06/07/24



Measured Parameter	Front	Rear
Max. Tire Pressure (kpa)	350	350
Cold Pressure (kPa)	250	250
Recommended Tire Size	225/65 R17	225/65 R17
Tire Size on Vehicle	225/65 R17	225/65 R17
Tire Manufacturer	Goodyear	Goodyear
Tire Model	Assurance	Assurance
Treadware	540	540
Traction Grade	A	A
Temperature Grade	A	A
Tire Plies Sidewall	Polyester	Polyester
Tire Plies Body	1 Polyester, 2 Steel, 1 Polyamide	1 Polyester, 2 Steel, 1 Polyamide
Load Index/Speed Symbol	102H	102H
Tire Material	Polyester, Steel, Polyamide	Polyester, Steel, Polyamide
DOT Safety Code Left	1M62YNT1R	1M62YNT1R
DOT Safety Code Right	1M62YNT1R	1M62YNT1R

DATA SHEET NO. 1 ... (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2024 Mazda CX-50 5-Door SUV NHTSA No. M20245401
 Test Program: Side NCAP MDB Impact Test Test Date: 06/07/24

TIRE PRESSURES

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

MDB TIRE SPECIFICATIONS

	Units	Requirement	LF	RF	LR	RR
Tire Size		P205/75R15	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	483.5	355.5		526.0	432.0		470.5	411.0	
Right	kg	461.0	368.0		469.5	405.0		525.5	430.0	
Ratio	%	56.6%	43.4%		54.3%	45.7%		54.2%	45.8%	
Total	kg	944.5	723.5	1668.0	995.5	837.0	1832.5	996.0	841.0	1837.0

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	1668.0	A
Actual Weight of 2 P572 ATD Used	kg	125.0	B
Rated Cargo/Luggage Wt (RCLW)	kg	45.0	C
Calculated Vehicle Target Wt (TVTW)	kg	1838.0	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	797	799	Yes
RF	mm	797	798	Yes
LR	mm	800	800	Yes
RR	mm	805	805	Yes
Vehicle CG (Aft of Front Axle)	mm	1290	1287	
Vehicle CG (Left (+)/Right (-) from Longitudinal Centerline)	mm	-33	37	

***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 Mazda CX-50 5-Door SUV NHTSA No. M20245401
Test Program: Side NCAP MDB Impact Test Test Date: 06/07/24

Test Height Adjustable Setting (If Applicable)	
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WEIGHT OF BALLAST AND VEHICLE COMPONENTS REMOVED TO MEET TVTW

Component Description	Weight (kg)
Rear Trim Removed	2.5

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 Mazda CX-50 5-Door SUV NHTSA No. M20245401
 Test Program: Side NCAP MDB Impact Test Test Date: 06/07/24

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	4.1	0.0	2.1
Front Passenger Seat	Fixed	Fixed	Fixed
Front Center Seat			
Struck Side Rear Seat	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Fixed
Rear Center Seat	Fixed	Fixed	Fixed

SEAT HEIGHT AND ANGLE

Seat	As Tested SCRL Angle (Mid) (°)	As Tested SCRP Height (mm)	SCRP Height Position	SCRP Height (mm)		
				Rearmost	Mid Fore/Aft	Forwardmost
Driver Seat	2.1	665	Max			
			Mid	651	665	681
			Min			
Front Passenger Seat	Fixed	Fixed	Max			
			Mid	Fixed	Fixed	Fixed
			Min			
Front Center Seat			Max			
			Mid			
			Min			
Struck Side Rear Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
			Mid	Fixed	Fixed	Fixed
			Min	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
			Mid	Fixed	Fixed	Fixed
			Min	Fixed	Fixed	Fixed
Rear Center Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
			Mid	Fixed	Fixed	Fixed
			Min	Fixed	Fixed	Fixed

DATA SHEET NO. 2 ... (CONTINUED)

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

Test Vehicle: 2024 Mazda CX-50 5-Door SUV NHTSA No. M20245401
 Test Program: Side NCAP MDB Impact Test Test Date: 06/07/24

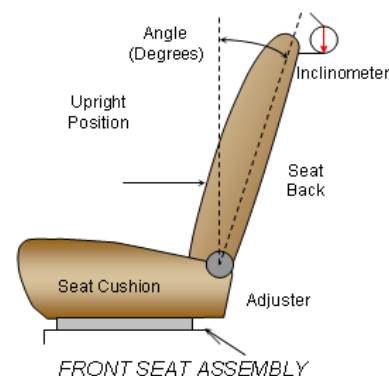
SEAT FORE/AFT POSITION

Seat	Total Fore/Aft Travel		Test Position From Forwardmost Position	
	mm	Detents*	mm	Detent*
Driver Seat	254	32	125	16
Front Passenger Seat	254	31	125	16
Front Center Seat				
Struck Side Rear Seat	Fixed	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Fixed	Fixed
Rear Center Seat	Fixed	Fixed	Fixed	Fixed

*Detent zero (0) is the forward most detent

SEAT BACK ADJUSTMENT

The driver's seat back is positioned to the manufacturer's designated design angle. The right front passenger's seat back is positioned in a similar manner as the driver's seat back. The struck side rear seat back is fixed. The rear center and non-struck side rear outboard seat backs are positioned in a similar manner as the struck side rear seat back. Seat back angle is measured 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	64.0	34	4.3	6
Front Passenger Seat	57.4	34	5.6	8
Front Center Seat				
Struck Side Rear Seat w/Seated Dummy	Fixed	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Fixed	Fixed
Rear Center Seat	Fixed	Fixed	Fixed	Fixed

*Detent zero (0) is the forward most detent

DATA SHEET NO. 2 ... (CONTINUED)

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

Test Vehicle: 2024 Mazda CX-50 5-Door SUV NHTSA No. M20245401
 Test Program: Side NCAP MDB Impact Test Test Date: 06/07/24

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	H
Rear Seat	Fixed	Fixed

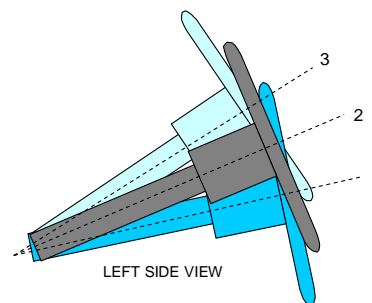
HEAD RESTRAINT ADJUSTMENT

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

	Total No. of Positions	Placed in Position
Driver Seat	3	H
Rear Seat	2	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.



LEFT SIDE VIEW
STEERING COLUMN ASSEMBLY

STEERING COLUMN POSITIONING

	Degrees	Fore-Aft Position (mm)
Lowermost Position, No. 1	21.6	150
Geometric Center Position, No. 2	23.9	117
Uppermost Position, No. 3	26.2	83
Telescoping Steering Wheel Travel		50
Test Position	23.9	117

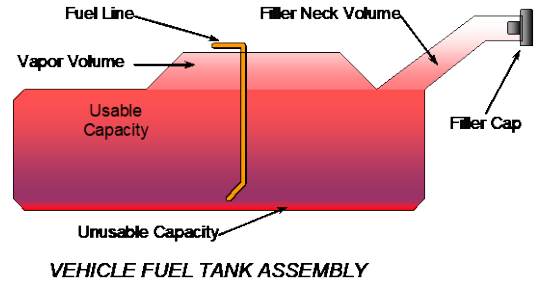
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Test Vehicle: 2024 Mazda CX-50 5-Door SUV NHTSA No. M20245401
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FUEL PUMP

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

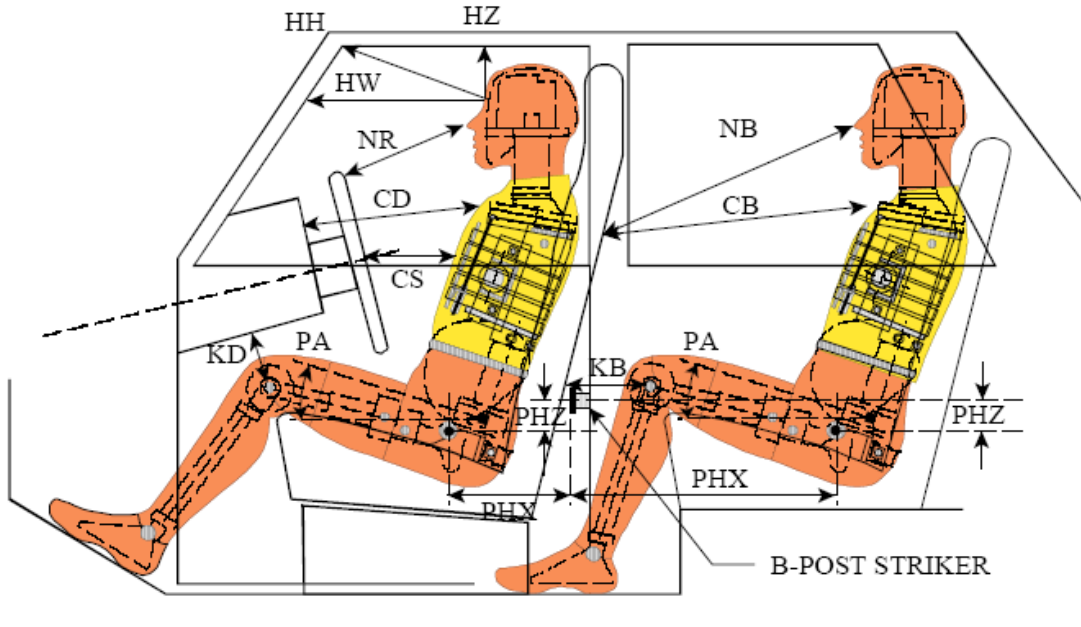
Description	Liters
Usable Capacity of "Standard Tank" (see Form No. 1)	60.19
Usable Capacity of "Optional Tank" (see Form No. 1)	
Usable Capacity of "Standard Tank" (see Owner's Manual)	60.19
Usable Capacity of "Optional Tank" (see Owner's Manual)	
93% of Usable Capacity	55.98
Actual amount of Solvent Used in Test	55.98
1/3 of Usable Capacity	20.06

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

DATA SHEET NO. 3

DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2024 Mazda CX-50 5-Door SUV NHTSA No. M20245401
 Test Program: Side NCAP MDB Impact Test Test Date: 06/07/24



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

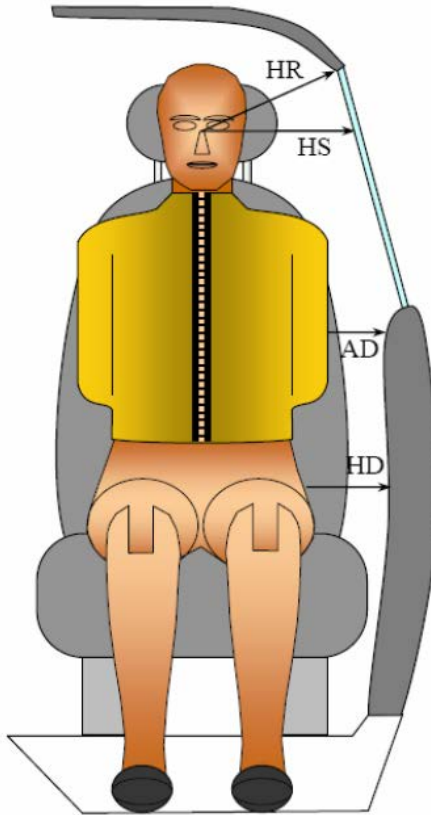
DUMMY LONGITUDINAL CLEARANCE DIMENSION INFORMATION

Driver Code	Pass. Code	Description	Driver		Passenger	
			Length (mm)	Angle (°)	Length (mm)	Angle (°)
HH		Head to Header	369			
HW		Head to Windshield	579			
HZ	HZ	Head to Roof	160		275	
NR	NB	Nose to Rim/Seat Back	460		574	
CD	CB	Chest to Dash/Seat Back	553		578	
CS		Chest to Steering Wheel	285			
KD(L)/KDA(L)°	KB(L)/KBA(L)°	Left Knee to Dash/Seat Back	190	15.4	320	13.1
KD(R)/KDA(R)°	KB(R)/KBA(R)°	Right Knee to Dash/Seat Back	182	23.6	320	13.2
PAX°	PAX°	Pelvic Tilt Angle X		17.4		20.7
	PAY°	Pelvic Tilt Angle Y		0.0		0.1
PHX	PHX	Hip Point to Striker (x-axis)	205		238	
PHZ	PHZ	Hip Point to Striker (z-axis)	172		306	

DATA SHEET NO. 4

DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2024 Mazda CX-50 5-Door SUV NHTSA No. M20245401
Test Program: Side NCAP MDB Impact Test Test Date: 06/07/24



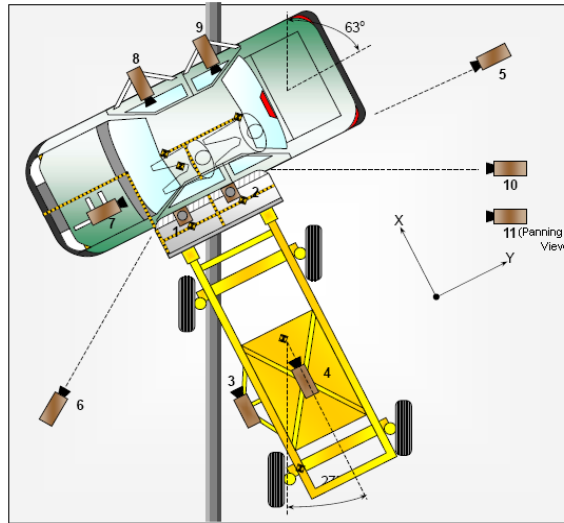
DUMMY LATERAL CLEARANCE DIMENSION INFORMATION

Code	Measurement Description	Units	Driver	Passenger
HR	Head to Side Header	mm	219	260
HS	Head to Side Window	mm	335	400
AD	Arm to Door	mm	97	165
HD	H-Point to Door	mm	167	207

DATA SHEET NO. 5

CAMERA AND INSTRUMENTATION DATA

Test Vehicle: 2024 Mazda CX-50 5-Door SUV NHTSA No. M20245401
 Test Program: Side NCAP MDB Impact Test Test Date: 06/07/24



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

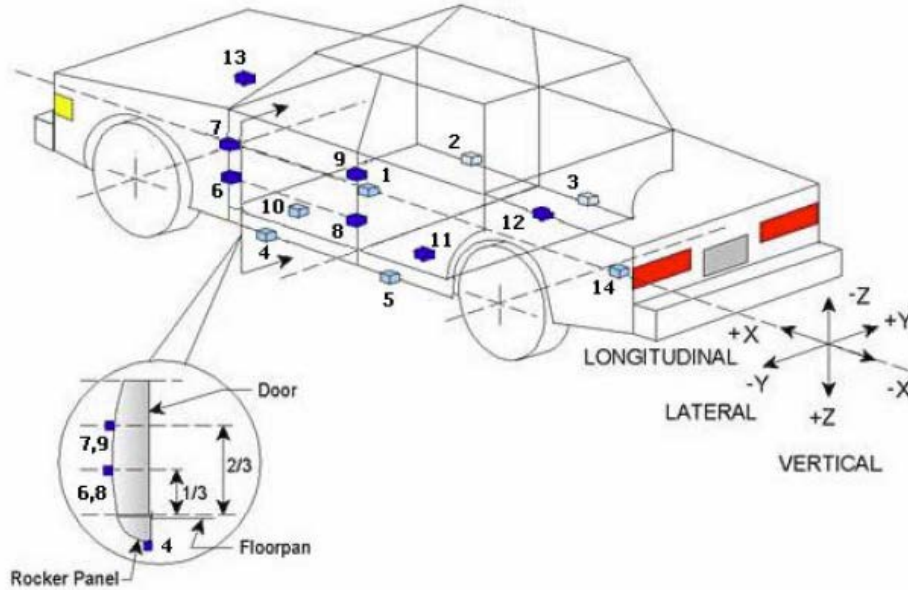
INSTRUMENTATION

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 Mazda CX-50 5-Door SUV NHTSA No. M20245401
 Test Program: Side NCAP MDB Impact Test Test Date: 06/07/24



VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

Loc. No.	Sensor Description	Coordinates (mm)		
		X	Y	Z
1	Vehicle CG	2000	0	-420
2	Right Sill at Front Seat	3000	750	-420
3	Right Sill at Rear Seat	1950	750	-420
4	Left Sill at Front Door	3000	-750	-420
5	Left Sill at Rear Door	1950	-750	-420
6	A-Pillar Lower	3200	-800	-420
7	A-Pillar Middle	3200	-800	-420
8	B-Pillar Lower	2120	-700	-420
9	B-Pillar Middle	2150	-700	-420
10	Front Seat Track	2450	-700	-420
11	Rear Seat Structure	1900	-750	-420
12	Right Rear Occupant Compartment	1950	400	-420
13	Engine Block	4000	0	-950
14	Rear Floorpan Above Axle	900	0	-450

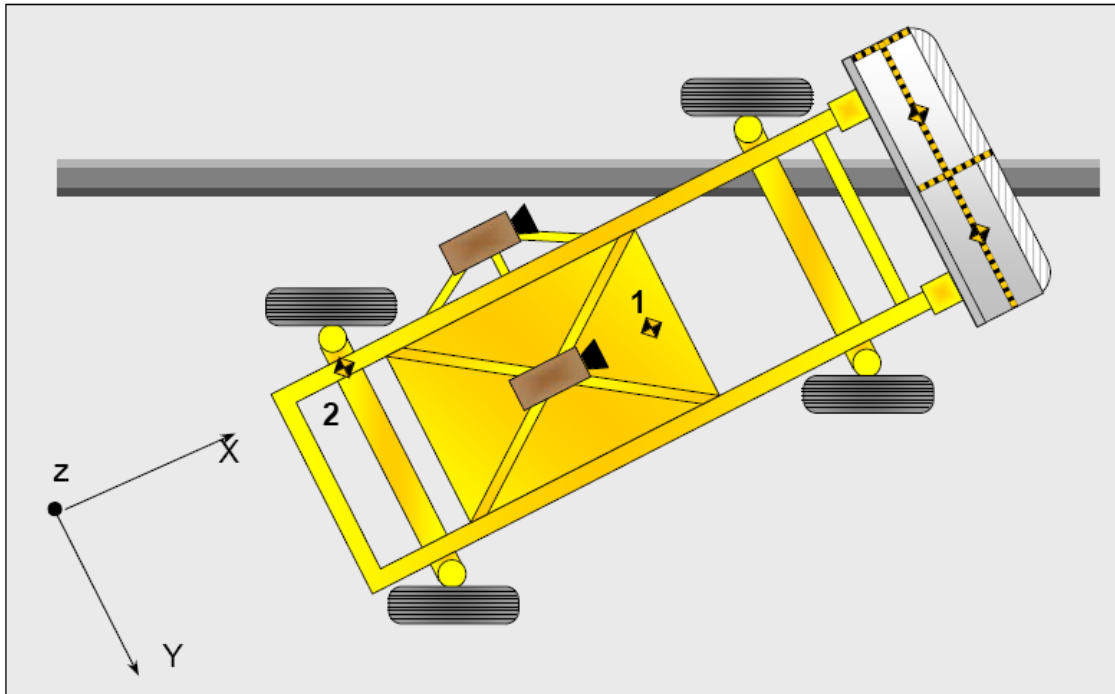
Reference: X – Rear surface of vehicle (+ forward)
 Y – Vehicle centerline (+ to right)
 Z – Ground plane (+ down)

DATA SHEET NO. 7

MDB ACCELEROMETER LOCATIONS

Test Vehicle: 2024 Mazda CX-50 5-Door SUV NHTSA No. M20245401

Test Program: Side NCAP MDB Impact Test Test Date: 06/07/24



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 Mazda CX-50 5-Door SUV NHTSA No. M20245401
 Test Program: Side NCAP MDB Impact Test Test Date: 06/07/24

TEST DUMMY INFORMATION AND CONTACT POINTS

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

POST-TEST DOOR PERFORMANCE

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

DATA SHEET NO. 8 ... (CONTINUED)

POST-TEST OBSERVATIONS

Test Vehicle: 2024 Mazda CX-50 5-Door SUV NHTSA No. M20245401
Test Program: Side NCAP MDB Impact Test Test Date: 06/07/24

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 Mazda CX-50 5-Door SUV NHTSA No. M20245401
 Test Program: Side NCAP MDB Impact Test Test Date: 06/07/24

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Struck Side		Struck Side	
	Driver		Rear Passenger	
	Mounted	Deployed	Mounted	Deployed
Frontal Airbag	Yes	No		
Knee Airbag	Yes	No		
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		2817
Vertical Impact Reference Line (Aft of Front Axle)(Intended Impact Point)	mm		472
Actual Impact Point (Aft of Front Axle)	mm		439
Horizontal Offset (+ forward / - rearward)	mm	± 50 of Intended Impact Point	33
Vertical Offset (+ down / - up)	mm	± 20 of Intended Impact Point	18

DATA SHEET NO. 9
MDB SUMMARY OF RESULTS

Test Vehicle: 2024 Mazda CX-50 5-Door SUV NHTSA No. M20245401
 Test Program: Side NCAP MDB Impact Test Test Date: 06/07/24

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	89.8
MDB Forward Line of Motion to Target Vehicle CL	degrees	62.5 to 63.5	62.6
MDB Crabbed Angle to MDB Forward Line of Motion	degrees	26.0 to 28.0	27.2

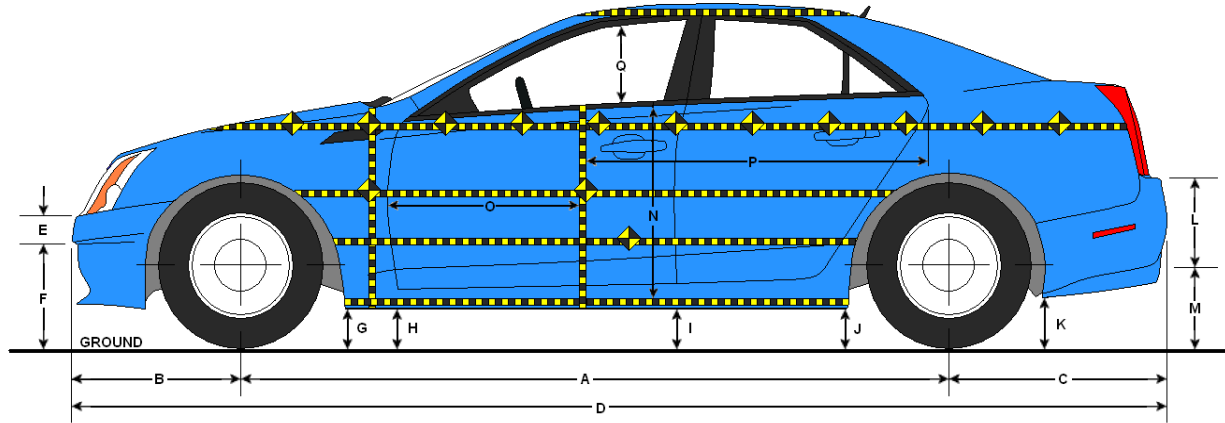
MAXIMUM STATIC CRUSH OF HONEYCOMB FACE

Vertical Location			From Centerline		Max. Crush (mm)
Row	Description	Height (mm)	Distance (mm)	Direction	
A	Center of Bumper	432	800	Right	277
B	Top of Bumper	533	800	Left	169
C	Mid Level	686	800	Left	153
D	Top of Stack	813	800	Left	183

DATA SHEET NO. 10

TEST VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2024 Mazda CX-50 5-Door SUV NHTSA No. M20245401
 Test Program: Side NCAP MDB Impact Test Test Date: 06/07/24



LEFT SIDE VIEW

VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

Code	Description	Pre-Test	Post-Test	Change
A	Wheelbase	2817	2796	-21
B	Front Axle to FSOV	950	982	32
C	Rear Axle to RSOV	943	933	-10
D	Total Length at Centerline	4712	4710	-2
E	Front Bumper Thickness	102	99	-3
F	Front Bumper Bottom to Ground	500	526	26
G	Sill Height at Front Wheel Well	321	388	67
H	Sill Height at Front Door Leading Edge	358	413	55
I	Sill Height at B-Pillar	315	370	55
J1	Sill Height at Rear Wheel Well	318	352	34
J2	Pinch Weld Height at Rear Wheel Well	267	296	29
K	Sill Height Aft of Rear Wheel Well	392	419	27
L	Rear Bumper Thickness	135	137	2
M	Rear Bumper Bottom to Ground	524	507	-17
N	Sill Height to Bottom of Front Window Sill	694	673	-21
O	Front Door Leading Edge to Impact CL	763	759	-4
P	Rear Door Trailing Edge to Impact CL	1333	1296	-37
Q	Front Window Opening	382	392	10
R	Right Side Length	3586	3588	2
S	Left Side Length	3583	3579	-4
T	Vehicle Width at B-Pillar	1842	1720	-122

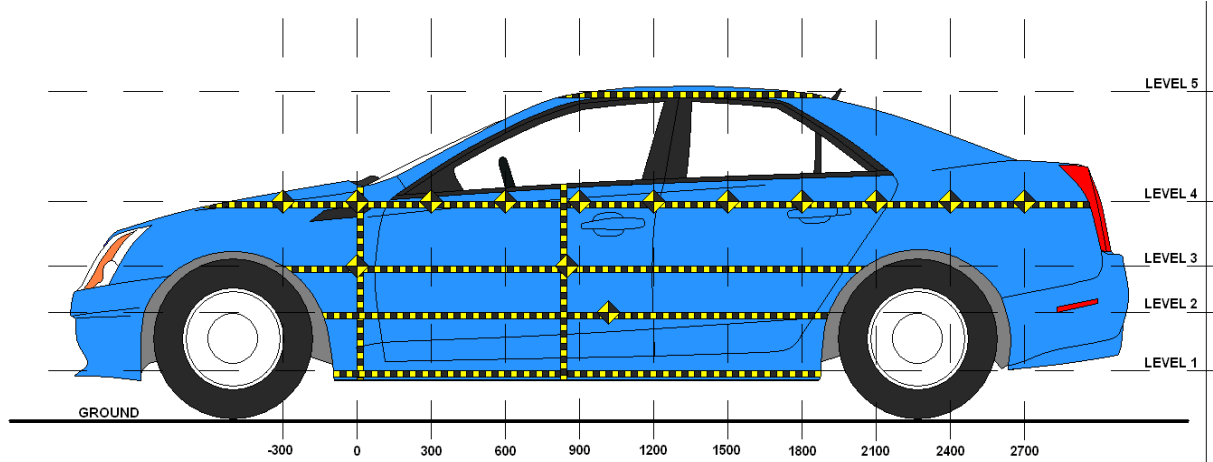
All measurements in mm with tolerance of ± 3mm

DATA SHEET NO. 11

TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2024 Mazda CX-50 5-Door SUV NHTSA No. M20245401

Test Program: Side NCAP MDB Impact Test Test Date: 06/07/24



LEFT SIDE VIEW

Level	Description	Height Above Ground (mm)	Maximum Exterior Static Crush	Distance from Impact
1	Sill Top	389	110	1200
2	Occupant H-Point	657	201	1350
3	Mid-Door	740	209	900
4	Window Sill	1072	156	1650
5	Window Top	1565	98	2400

DATA SHEET NO. 11 ... (CONTINUED)

TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2024 Mazda CX-50 5-Door SUV NHTSA No. M20245401
 Test Program: Side NCAP MDB Impact Test Test Date: 06/07/24

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			546	719				563	740				17	21	
0	575	565	572	701		585	594	602	727		10	29	30	26	
150	590	601	605	689		652	700	719	694		62	99	114	5	
300	606	615	617	683		673	764	758	704		67	149	141	21	
450	610	618	619	676		683	771	761	706		73	153	142	30	
600	609	616	618	670		690	762	792	709		81	146	174	39	
750	608	614	615	665		699	780	814	723	937	91	166	199	58	
900	607	612	614	662	880	706	803	823	722	945	99	191	209	60	65
1050	607	611	612	658	890	713	781	809	719	960	106	170	197	61	70
1200	606	611	612	656	895	716	783	814	743	970	110	172	202	87	75
1350	606	612	613	654	899	711	813	816	767	979	105	201	203	113	80
1500	604	613	614	654	901	701	812	809	797	983	97	199	195	143	82
1650	591	605	606	651	905	679	785	805	807	989	88	180	199	156	84
1800	582	580	582	640	906	642	770	789	774	994	60	190	207	134	88
1950		552	554	619	908		610	681	713	998		58	127	94	90
2100				602	909				671	1001				69	92
2250				592	910				680	1006				88	96
2400				590	914				677	1012				87	98
2550				598					683					85	
2700				618					704					86	
2850				657					745					88	

DATA SHEET NO. 11 ... (CONTINUED)

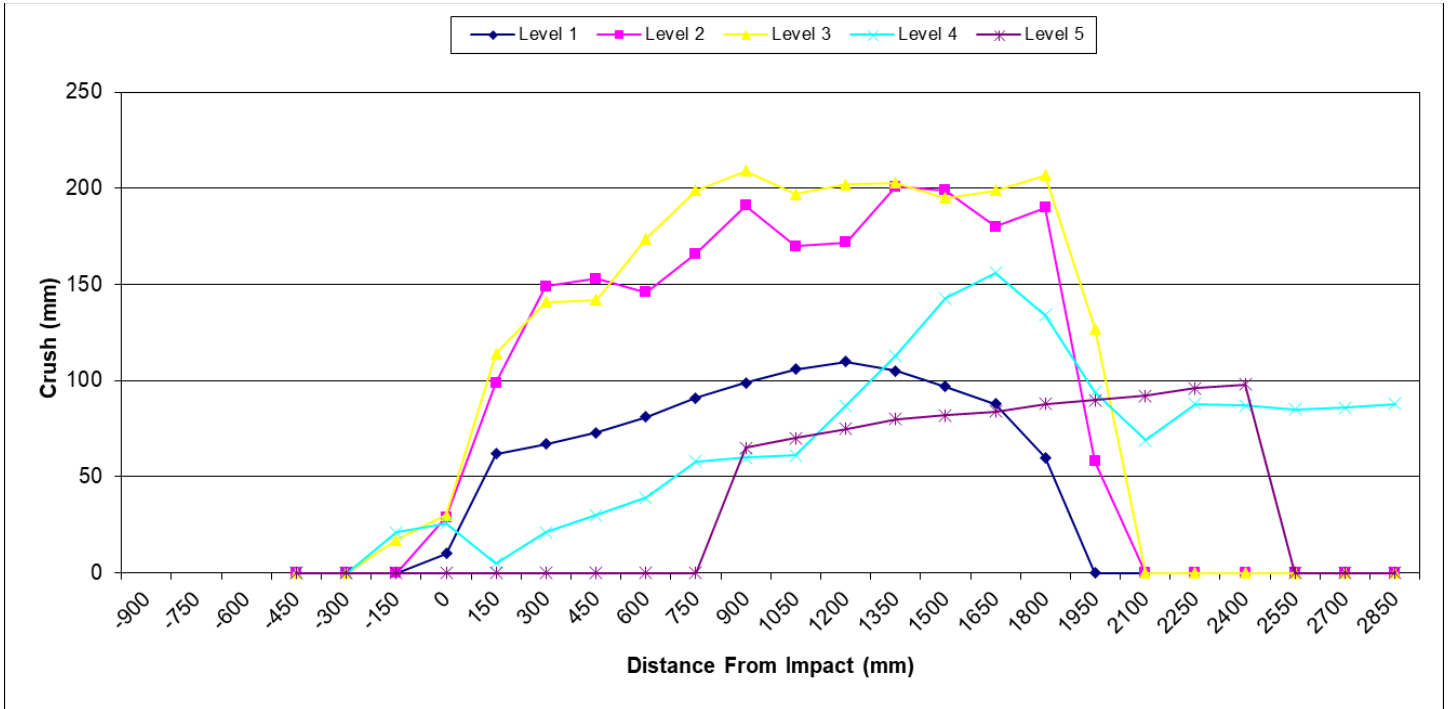
TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2024 Mazda CX-50 5-Door SUV

NHTSA No. M20245401

Test Program: Side NCAP MDB Impact Test

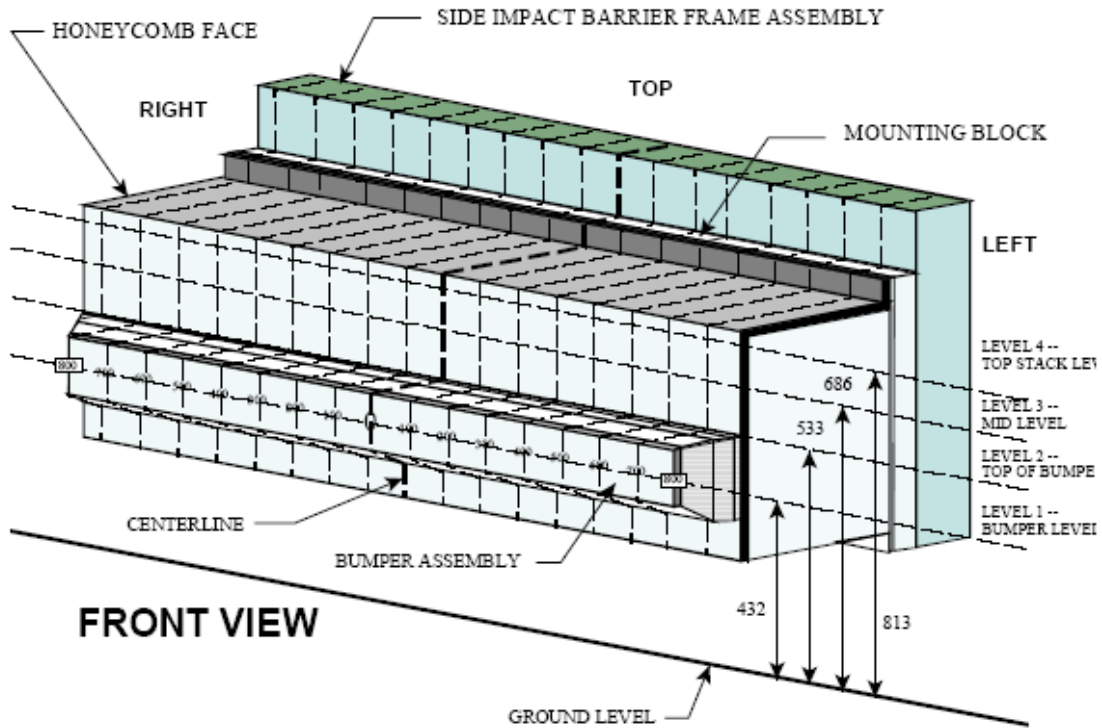
Test Date: 06/07/24



DATA SHEET NO. 12

MDB EXTERIOR STATIC CRUSH MEASUREMENTS

Test Vehicle: 2024 Mazda CX-50 5-Door SUV NHTSA No. M20245401
 Test Program: Side NCAP MDB Impact Test Test Date: 06/07/24



NOTE: Dimensions are shown in millimeters, mm

DEFORMABLE BARRIER STATIC CRUSH

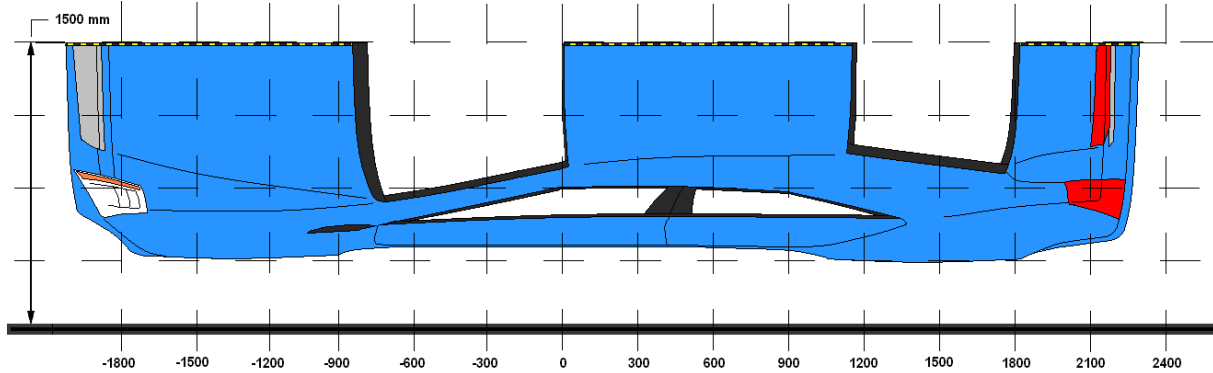
Stack Level	Distance Right of Center								C/L	Distance Left of Center							
	800	700	600	500	400	300	200	100		0	100	200	300	400	500	600	700
1	277	227	228	229	232	229	237	238	237	238	243	242	244	241	244	242	259
2	140	138	139	141	143	132	126	134	139	145	148	148	151	152	154	156	169
3	114	99	85	60	56	69	104	87	68	59	60	68	73	78	89	107	153
4	110	69	51	47	49	68	93	106	70	58	61	69	82	97	117	143	183

All dimensions in millimeters.

DATA SHEET NO. 13

VEHICLE AND MDB DAMAGE PROFILE DISTANCES

Test Vehicle: 2024 Mazda CX-50 5-Door SUV NHTSA No. M20245401
 Test Program: Side NCAP MDB Impact Test Test Date: 06/07/24



VEHICLE DAMAGE PROFILE DISTANCES

DPD	Distance From Impact Point (mm)	Level	Pre-Test (mm)	Post-Test (mm)	Crush (mm)
1	2850	4	657	745	88
2	2400	5	914	1012	98
3	1650	4	651	807	156
4	1050	3	612	809	197
5	300	2	615	764	149
6	-150	4	719	740	21

MDB DAMAGE PROFILE DISTANCES

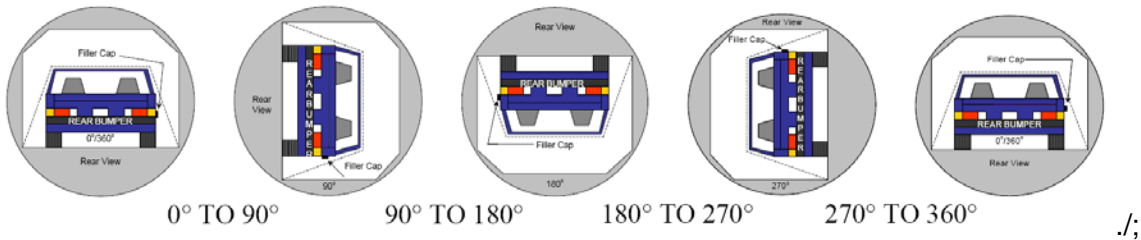
DPD	From MDB Centerline		Level	Crush (mm)
	Distance (mm)	Direction		
1	800	Left	1	259
2	500	Left	1	241
3	200	Left	1	243
4	200	Right	1	237
5	500	Right	1	229
6	800	Right	1	277

DATA SHEET NO. 14

FMVSS NO. 301 STATIC ROLLOVER RESULTS

Test Vehicle: 2024 Mazda CX-50 5-Door SUV NHTSA No. M20245401
 Test Program: Side NCAP MDB Impact Test Test Date: 06/07/24
 Temperature at Time of Impact: 34.4°C Test Time: 4:48 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°	82	300	382
90° To 180°	83	300	383
180° To 270°	80	300	380
270° To 360°	82	300	382

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

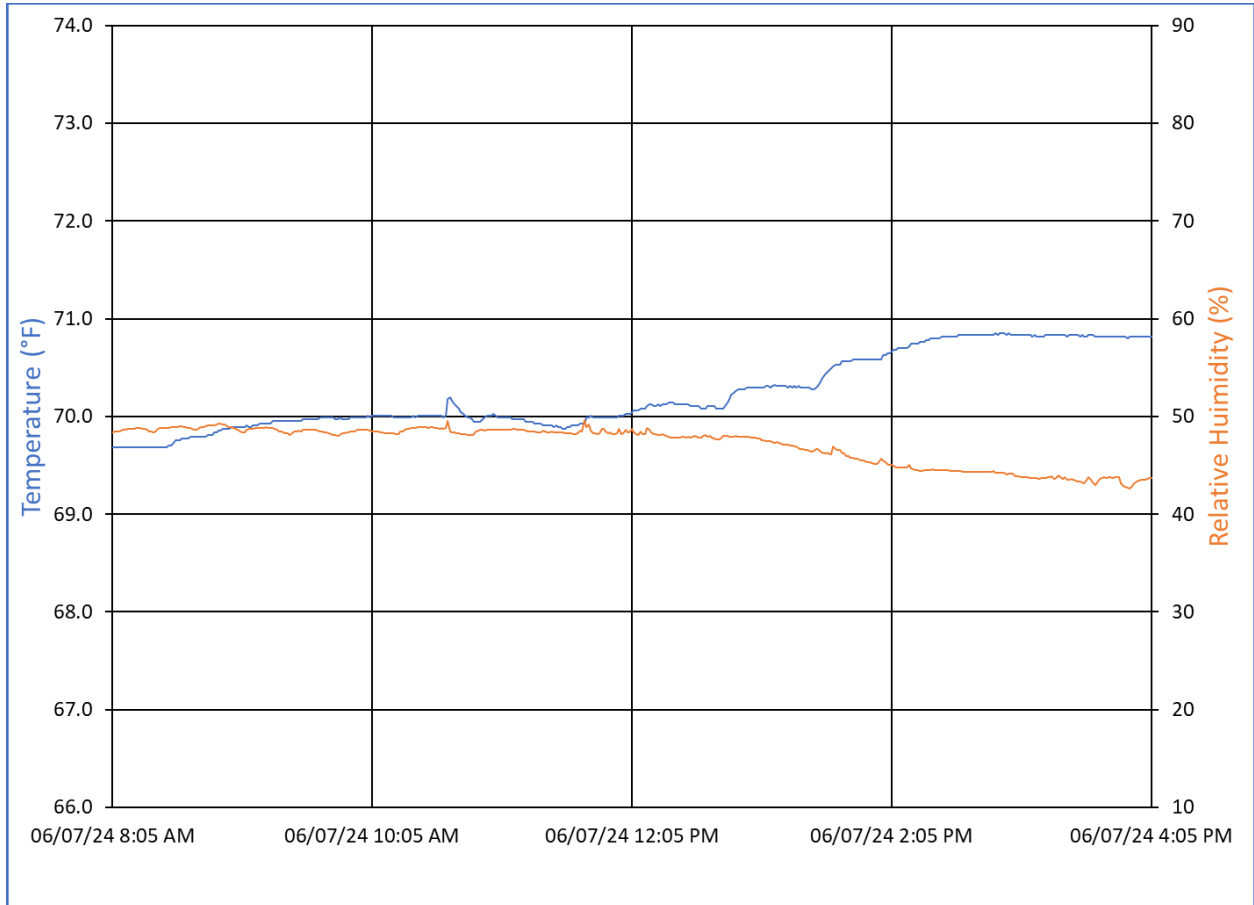
Test Phase	Spillage Location
0° To 90°	
90° To 180°	
180° To 270°	
270° To 360°	

DATA SHEET NO. 15

DUMMY/VEHICLE TEMPERATURE AND HUMIDITY STABILIZATION

Test Vehicle: 2024 Mazda CX-50 5-Door SUV NHTSA No. M20245401

Test Program: Side NCAP MDB Impact Test Test Date: 06/07/24



**APPENDIX A
PHOTOGRAPHS**

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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

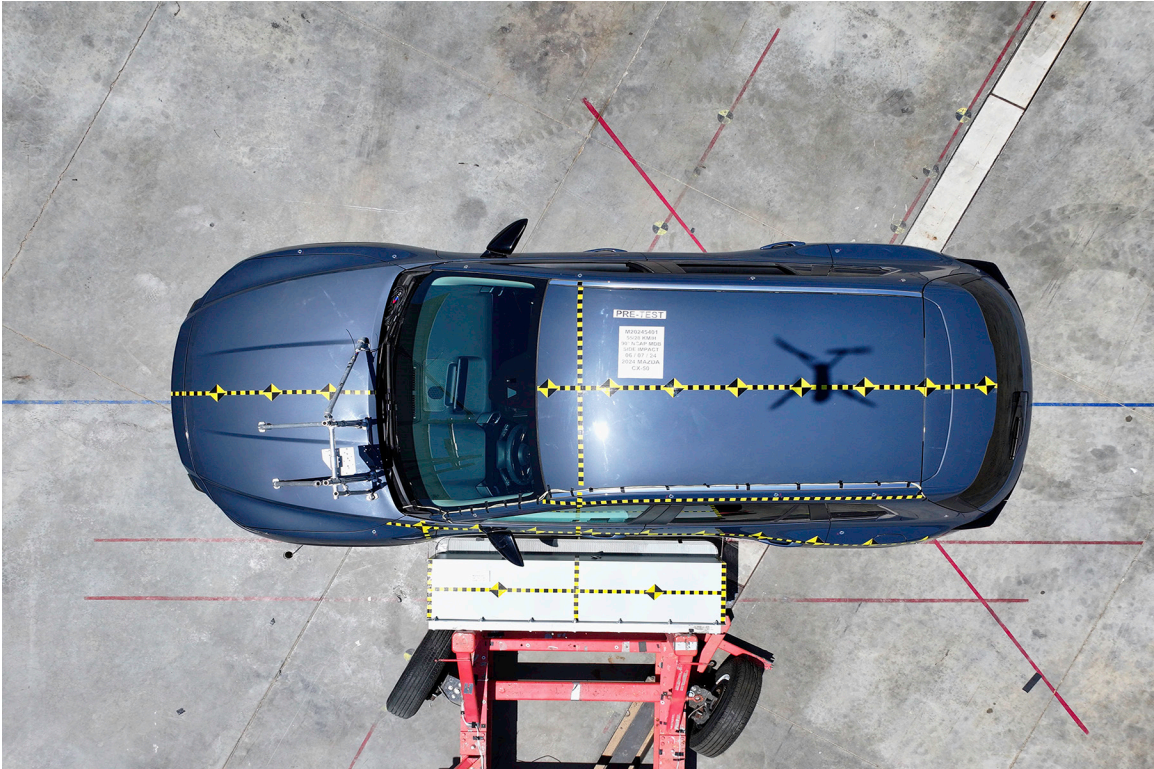


FIGURE 15. Pre-Test Overhead View of Test Area



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

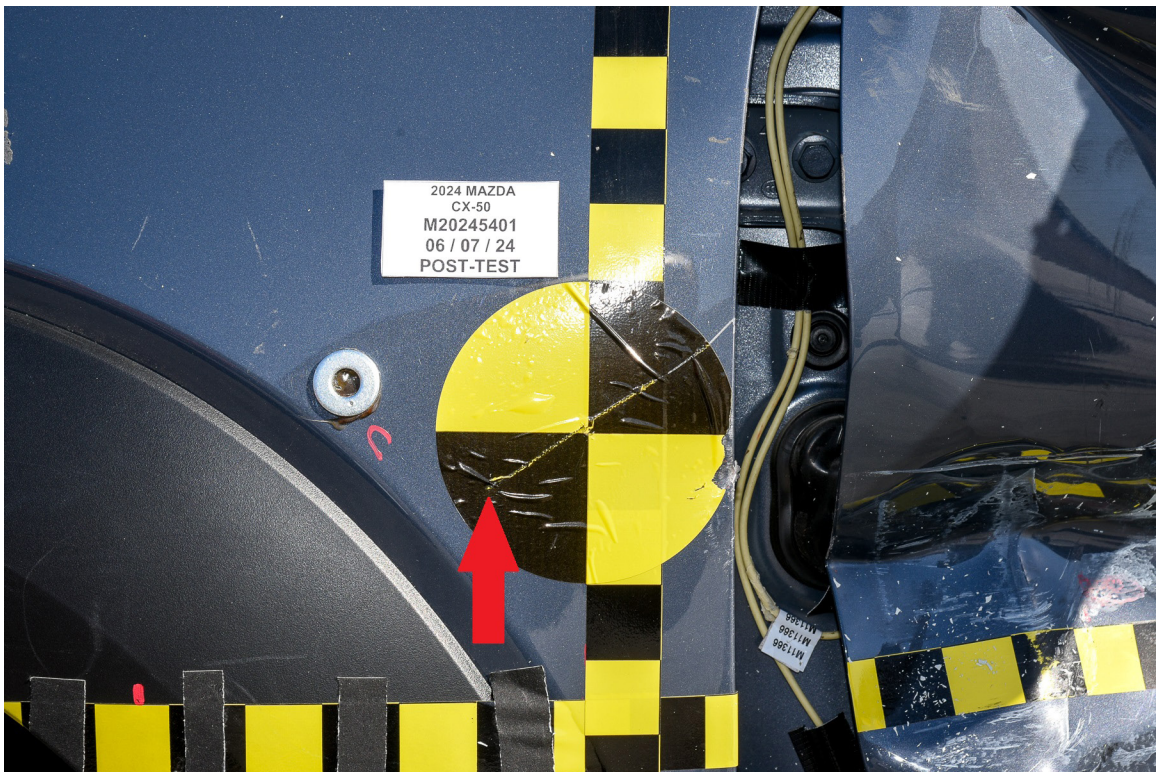


FIGURE 20. Post-Test Close-Up View of Impact Point Target



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

Photograph Not Available

No Overhead View of Driver Seat Pan

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 Showing Driver Dummy Contact Locations



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



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



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 Driver 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

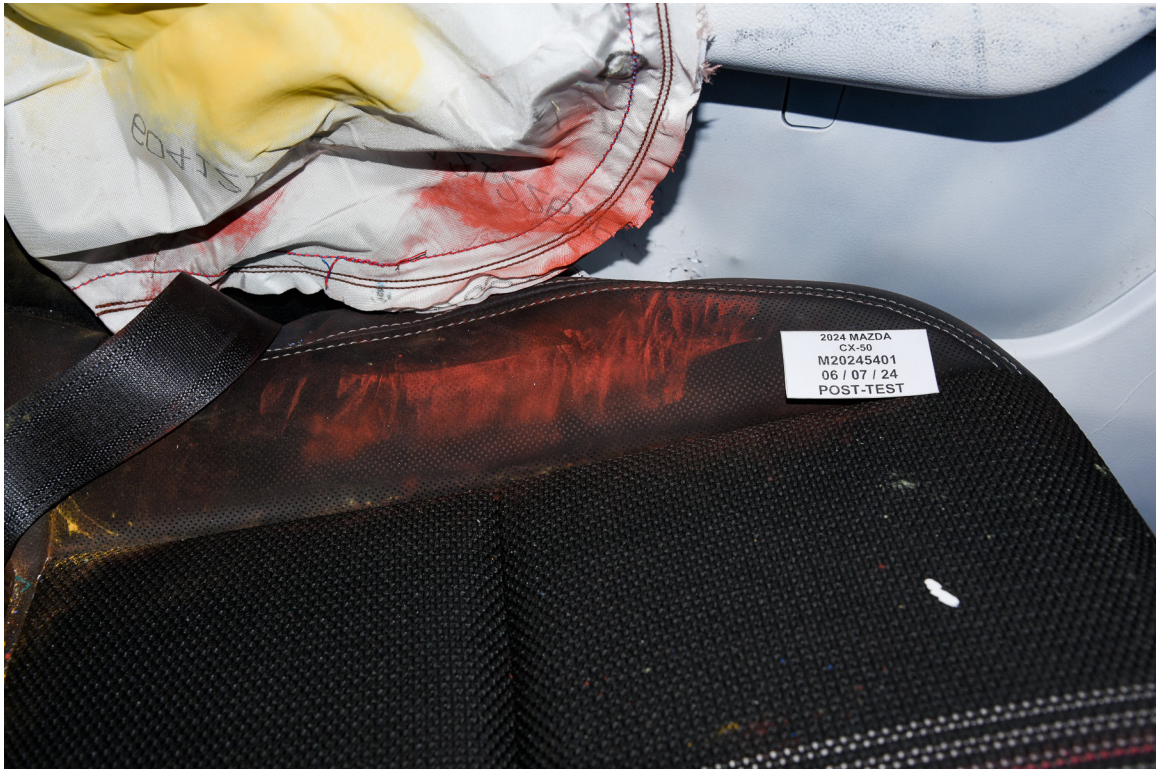


FIGURE 79. Post-Test Rear Passenger Dummy Close-Up Pelvis Contact with Vehicle Interior View



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

Photograph Not Applicable

No Passenger Dummy Close-Up Knee Contact

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

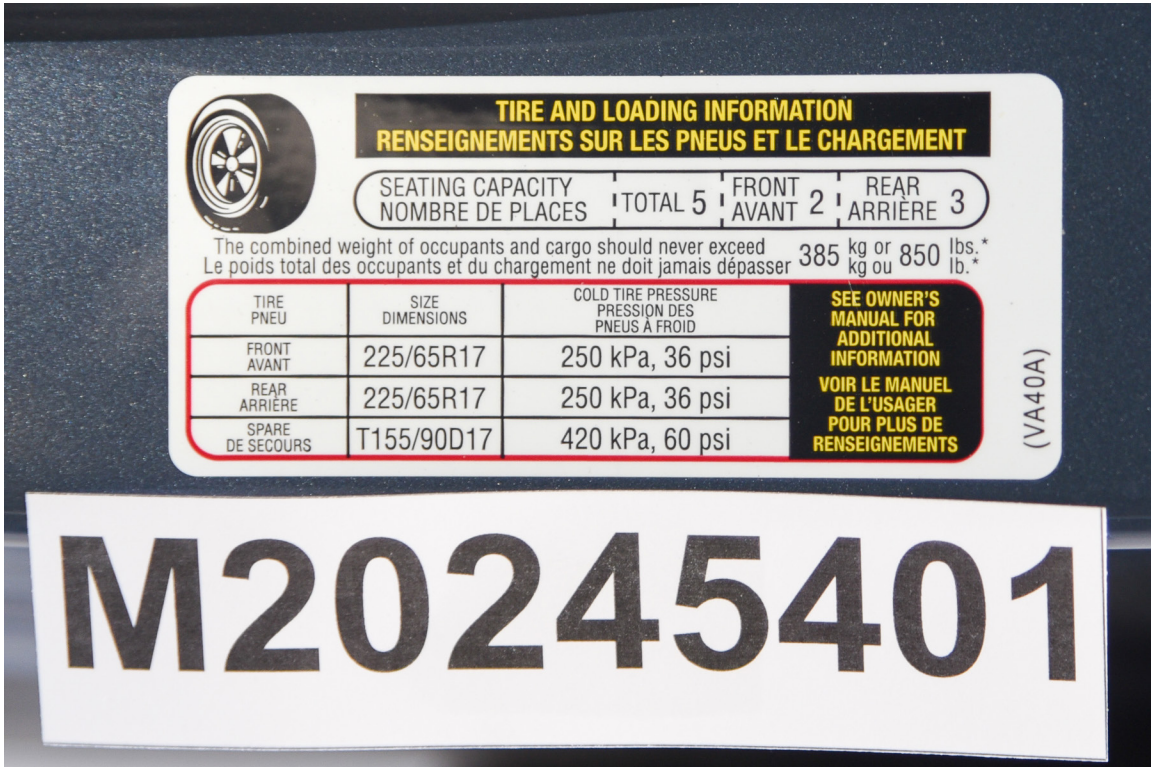


FIGURE 93. Close-Up View of Vehicle's Tire Information Placard or Label



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

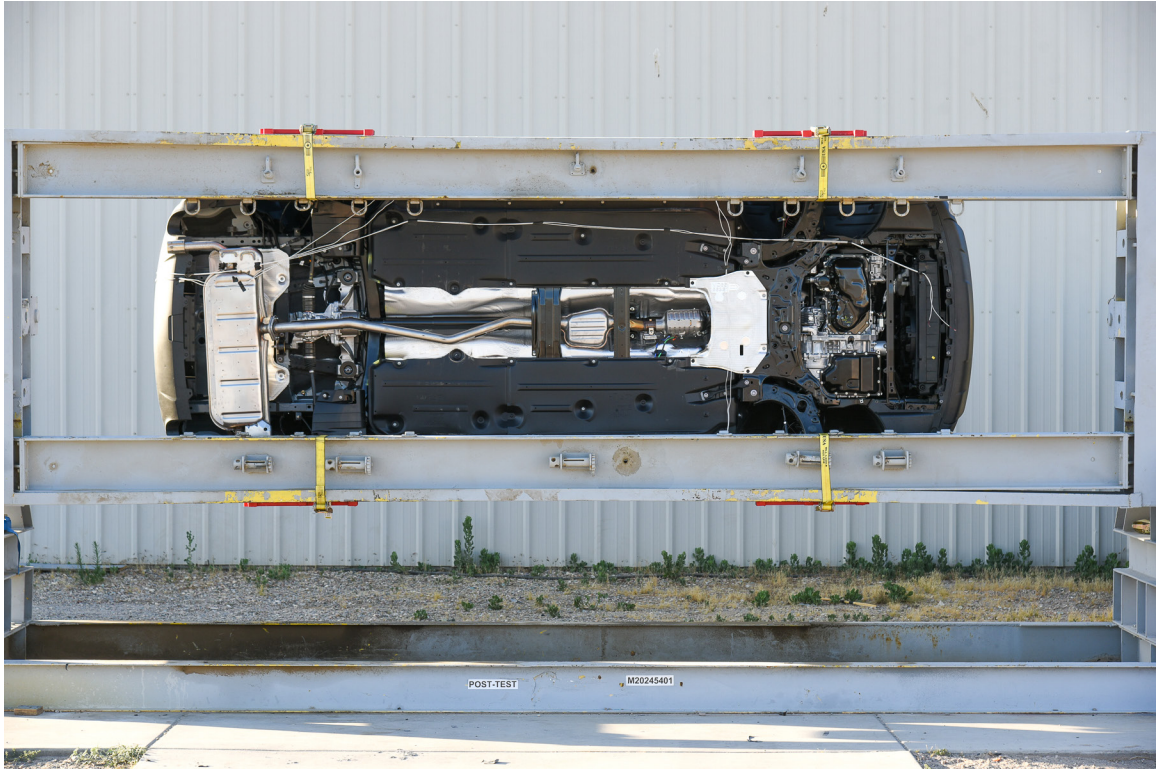


FIGURE 97. FMVSS No. 301 Static Rollover 90 Degrees

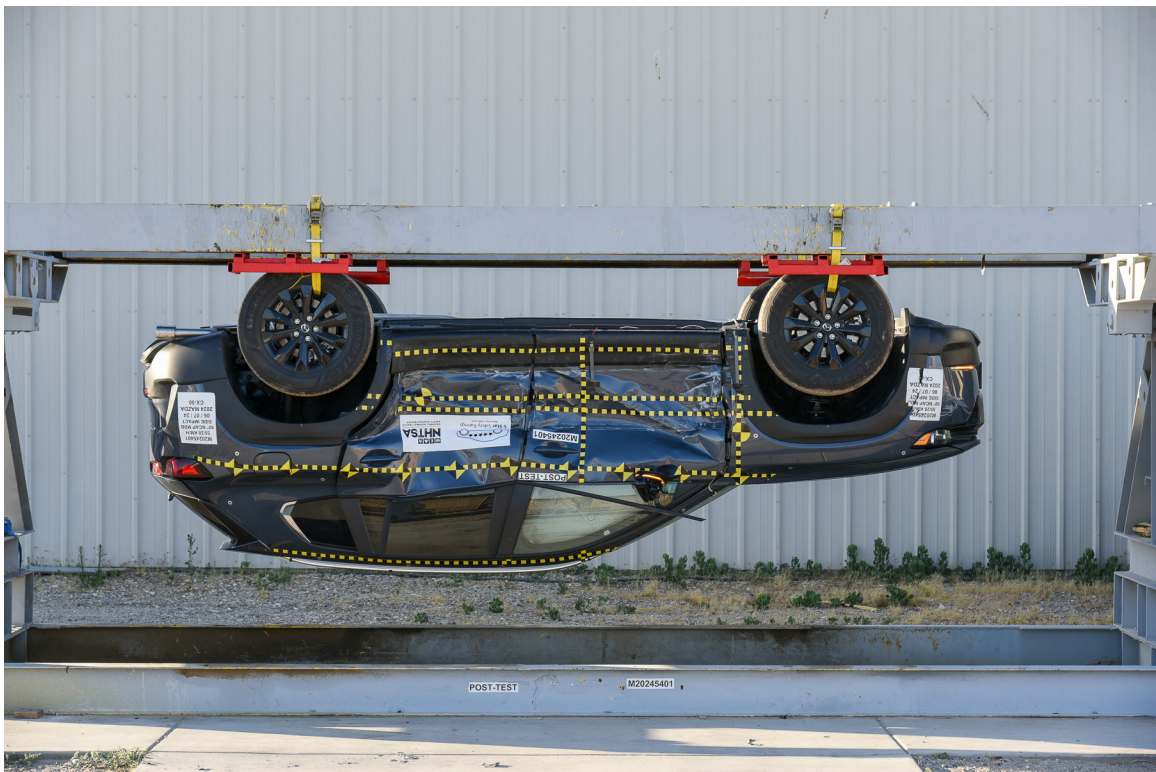


FIGURE 98. FMVSS No. 301 Static Rollover 180 Degrees




FIGURE 99. FMVSS No. 301 Static Rollover 270 Degrees



FIGURE 100. FMVSS No. 301 Static Rollover 360 Degrees



FIGURE 101. Impact Event



EPA DOT Fuel Economy and Environment Gasoline Vehicle

Fuel Economy
27 MPG combined city/hwy
 24 city
 30 highway
 3.7 gallons per 100 miles

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 (EPA only) Smog Rating (EPA only)

1 5 10 Best
 1 7 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 20 MPG and costs \$9,700 to fuel over 5 years. Cost estimates are based on 15,000 miles per year at \$3.00 per gallon. MPG is for city per gasoline gallon equivalent. Vehicle emissions are a significant cause of climate change and smog.

fuel economy.gov
Calculate personalized estimates and compare vehicles

2024 Mazda CX-50

Model: 2024 CX-50 2.5 S SELECT
 Exterior Color: POLYMETAL GRAY METALLIC
 Interior Color: BLACK W/ GRAY

PARTS CONTENT INFORMATION:

FOR VEHICLES IN THIS CARLINE: U.S./CANADIAN PARTS CONTENT: 50%
 MAJOR SOURCES OF FOREIGN PARTS CONTENT: MEXICO 30%, JAPAN 15%

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

FOR THIS VEHICLE: FINAL ASSEMBLY POINT: MADISON, AL, U.S.
 COUNTRY OF ORIGIN: ENGINE: MEXICO
 TRANSMISSION: JAPAN

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

STANDARD EQUIPMENT

ENGINE/MECHANICAL FEATURES

- SKYACTIV-G 2.5L ENGINE W/ CYLINDER DEACTIVATION
- 187 HORSEPOWER, 195 LB-FT TORQUE
- SKYACTIV-DRIVE ESPD AT HILL LAUNCH ASSIST

EXTERIOR FEATURES

- 17-INCH ALLOY WHEELS
- 122268R11 ALL-SEASON TIRES
- RAIN-SENSING WINDSHIELD WIPERS
- REAR ROOF SPOILER
- ROOF RAILS

INTERIOR FEATURES

- 5-PASSENGER SEATING
- 8-WAY MANUAL DRIVER'S SEAT
- POWER WINDOWS & POWER DOOR LOCKS
- ELECTRIC PARKING BRAKE
- PUSH BUTTON ENGINE START
- REARVIEW CAMERA
- MAZDA CONNECTED SERVICES

SAFETY AND SECURITY FEATURES

- 200 HORSEPOWER MI POWERTRAIN & 360/360 MI NEW VEHICLE LIMITED WARRANTY
- 24-HOUR ROADSIDE ASSISTANCE
- 5-PASSENGER 3-POINT SAFETY BELTS
- LATCH CHILD SAFETY SEAT ANCHORS
- ANTI-THIEF ENGINE IMMOBILIZER
- TIRE PRESSURE MONITORING SYSTEM
- LANE DEPARTURE WARNING SYSTEM
- LANE KEEP ASSIST
- BLIND SPOT MONITORING
- REAR CROSS TRAFFIC ALERT

ACTIV ALL-WHEEL DRIVE DEACTIVATION

- G-VECTORING CONTROL PLUS
- 4 WHEEL DISC BRAKES
- M-DRIVE SPORT/OFF-ROAD MODES
- 2000 LB TOWING CAPACITY
- LED HEADLIGHTS W/ AUTO ON/OFF
- DAYTIME RUNNING LIGHTS
- HIGH BEAM CONTROL
- POWER SIDE MIRRORS W/ TURN LAMPS
- DUAL EXHAUST OUTLETS
- MULTI-FUNCTION COMMANDER CONTROL
- AMPM 8-SPEAKER AUDIO
- BLUETOOTH'S HANDS-FREE PHONE/AUDIO
- FRONT 2 USB INPUTS
- FRONT CENTER ARMREST WITH STORAGE
- WIRELESS ANDROID AUTO™
- WIRELESS APPLE CARPLAY™
- ABS WITH EBD AND BRAKE-ASSIST
- DYNAMIC STABILITY CONTROL
- TRACTION CONTROL SYSTEM
- ADVANCED DUAL FRONT AIRBAGS
- FRONT SIDE-IMPACT AIR BAGS
- FRONT & REAR SIDE AIR CURTAINS
- FRONT KNEE AIR BAGS
- REAR BRAKE SUPPORT
- DRIVER ATTENTION ALERT
- MAZDA ROAD CRUISE CONTROL WITH STOP & GO

MSRP \$30,300

OPTIONAL EQUIPMENT

CGM	CARGO MAT	\$100
JCM	POLYMETAL GRAY METALLIC PAINT CHARGE	\$400
1CG	CARGO PACKAGE	\$110
	CARGO BLOCKS	
1CP	CONVENIENCE PACKAGE	\$700
	FRAMELESS AUTO-DIMMING REARVIEW MIRROR WITH HOVELINKING	
1SE	SELECT PACKAGE	NO CHARGE
	HALF LEATHERETTE-TRIMMED SEATS	
	40/60 SPLIT FOLD-DOWN REAR SEAT	
	LEATHER-WRAPPED STEERING WHEEL	
	LEATHER-WRAPPED SHIFT KNOB	
	MAZDA ADVANCED KEYLESS ENTRY	
	SUNVISORS W/ COVERED ILLUMINATED VANITY MIRRORS AND EXTENSIONS	
	10.25" COLOR CENTER DISPLAY	
	DUAL-ZONE AUTO CLIMATE CONTROL	
	REAR AIR CONDITIONING VENTS	
	REAR USB OUTLETS (2)	
	OVERHEAD CONSOLE WITH SUNGLASS HOLDER & LED ROOM LAMP	

Total Vehicle and Options \$31,660
 Delivery, Processing and Handling Fee \$1,375
Total MSRP \$33,035

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

Driver Passenger ★★★★★

Side Crash Front seat Not Rated
 Rear seat 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

This vehicle is equipped with bumpers that can withstand an impact of 2.5 miles per hour with no damage to the vehicle's body and safety systems, although the bumper and related components may sustain damage. The bumper system on this vehicle conforms to the current federal bumper standard of 2.5 miles per hour.

SOLD TO: 42158
 MATTA MAZDA
 2410 AUBURN BLVD
 SACRAMENTO, CA 95821

SHIP TO: 42158
 MATTA MAZDA
 2410 AUBURN BLVD
 SACRAMENTO, CA 95821

7MMVABAM9RN211603

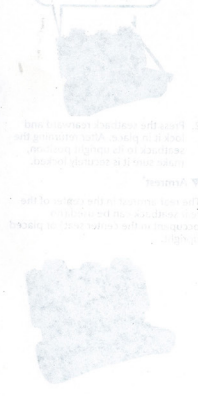
 C06-08-A2-V460944-01-0000027

MazdaUSA.com

FIGURE 102. Monroney Label

WARNING

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



Head Restraints

▼ **Head Restraints**

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

WARNING

Always drive with the head restraints installed when seats are being used and make sure they are properly adjusted.

Driving with the head restraints adjusted too low or removed is dangerous. With no support behind your head, your neck could be seriously injured in a collision.

▼ **Height Adjustment**

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



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

WARNING

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

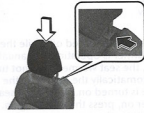
After installing a head restraint, try lifting it to make sure that it does not pull out:
Driving with an unsecured head restraint is dangerous as the effectiveness of the head restraint will be compromised which could cause it to unexpectedly detach from the seat.

CAUTION

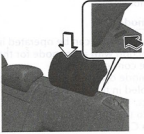
When installing a head restraint, make sure that it is installed correctly with the front of the head restraint facing forward. If the head restraint is installed incorrectly, it could detach from the seat during a collision and result in injury.

The head restraints on each of the front and rear seats are specialized to each seat. Do not switch around the head restraint positions. If a head restraint is not installed to its correct seat position, the effectiveness of the head restraint during a collision will be compromised which could cause injury.

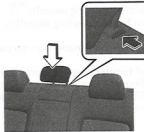
Front seats



Rear outboard seats



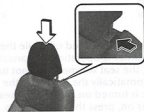
Rear center seat



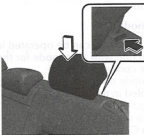
▼ **Removal/Installation**

To remove the head restraint, pull it up while pressing the stop-catch.
To install the head restraint, insert the legs into the holes while pressing the stop-catch.

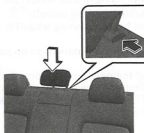
Front seats



Rear outboard seats



Rear center seat



▼ **Removal/Installation**

To remove the head restraint, pull it up while pressing the stop-catch.
To install the head restraint, insert the legs into the holes while pressing the stop-catch.

WARNING

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

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

CAUTION

When installing a head restraint, make sure that it is installed correctly with the front of the head restraint facing forward. If the head restraint is installed incorrectly, it could detach from the seat during a collision and result in injury.

The head restraints on each of the front and rear seats are specialized to each seat. Do not switch around the head restraint positions. If a head restraint is not installed to its correct seat position, the effectiveness of the head restraint during a collision will be compromised which could cause injury.

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

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

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1	Driver Head Acceleration (X) Primary vs. Time	B-1
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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)

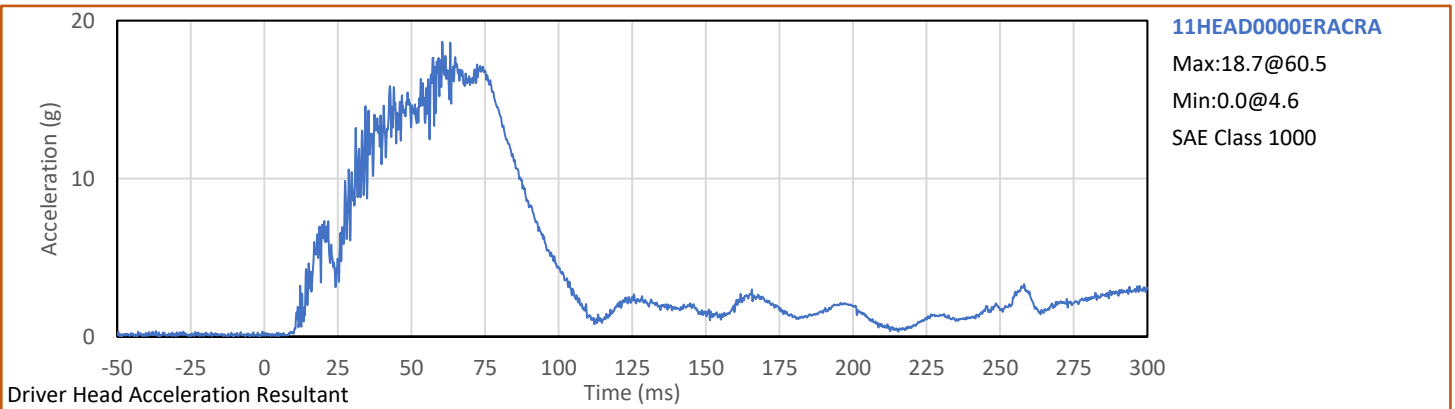
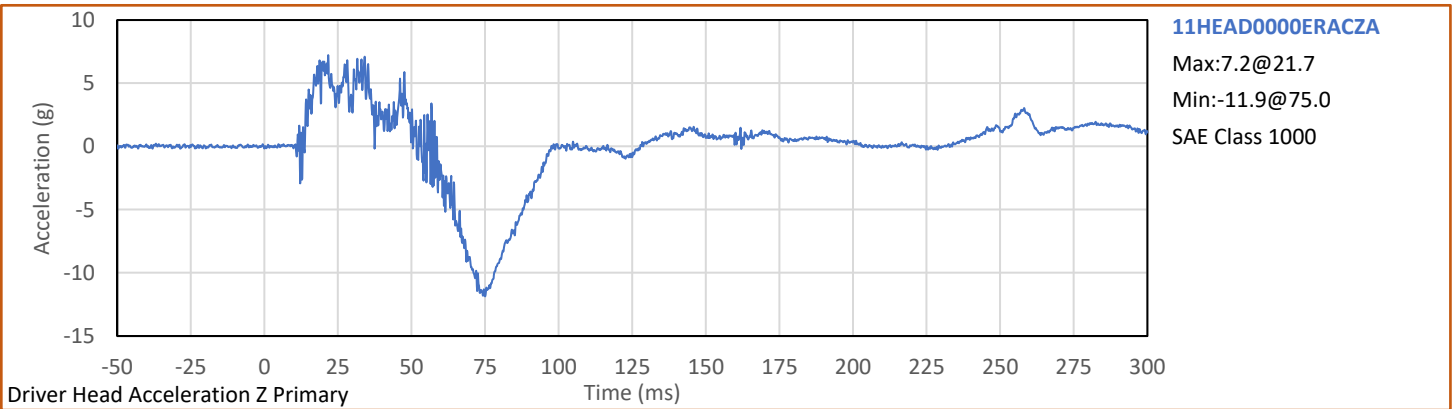
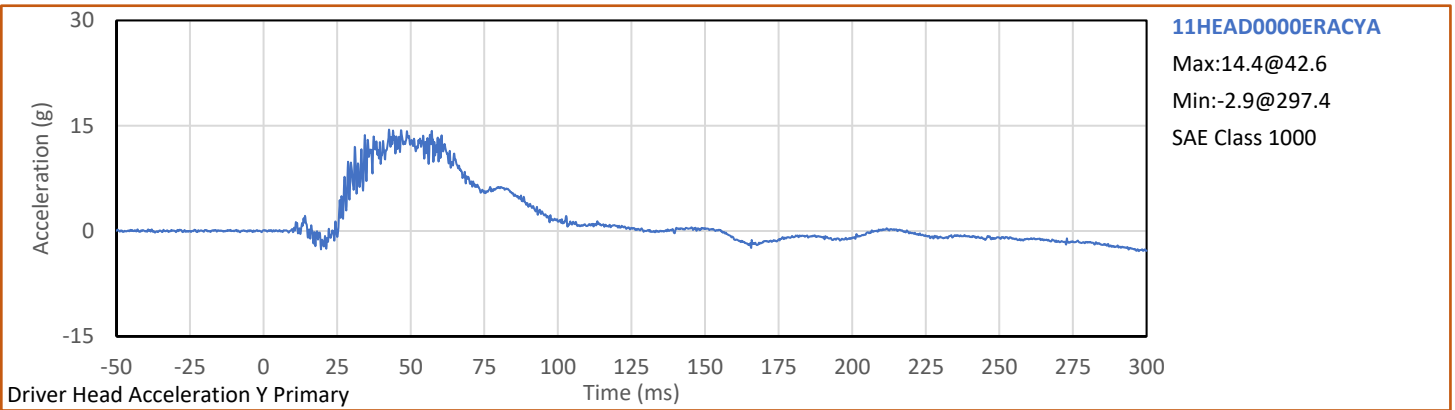
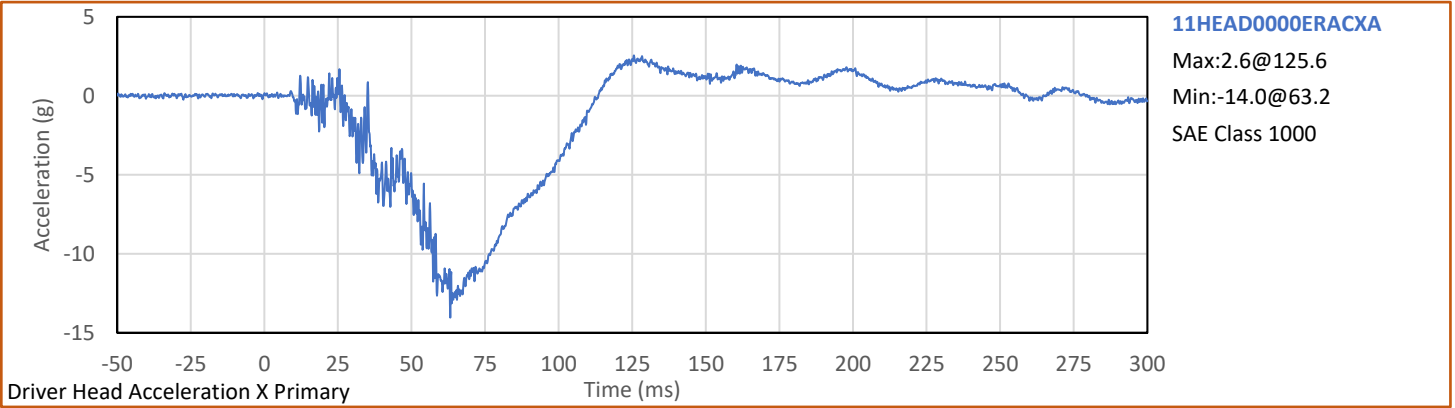
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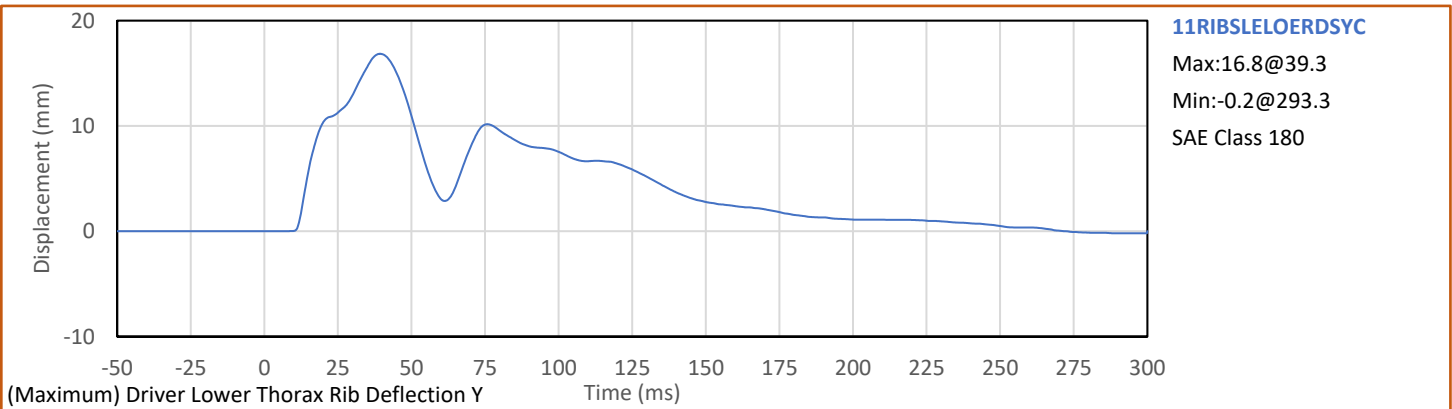
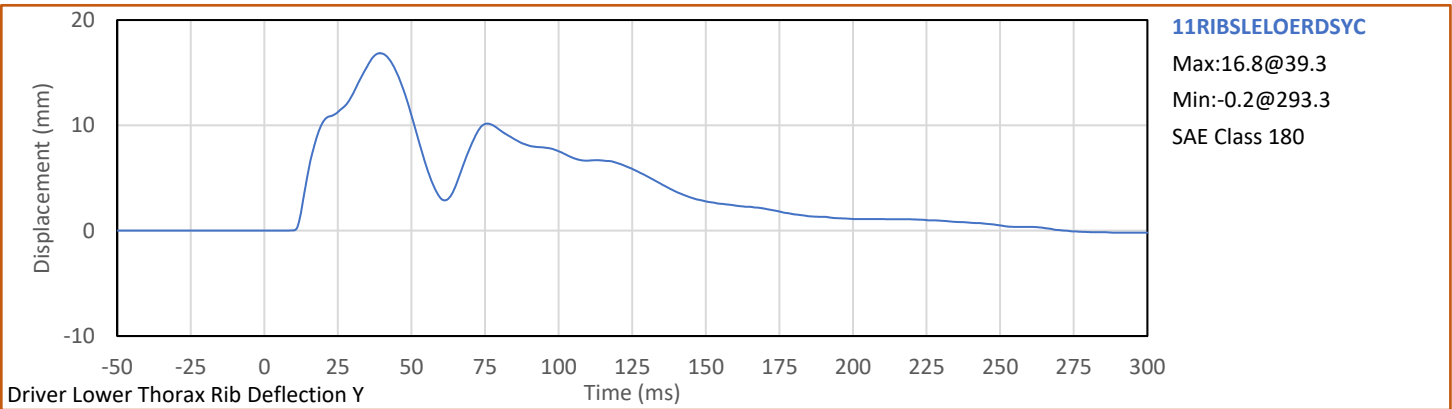
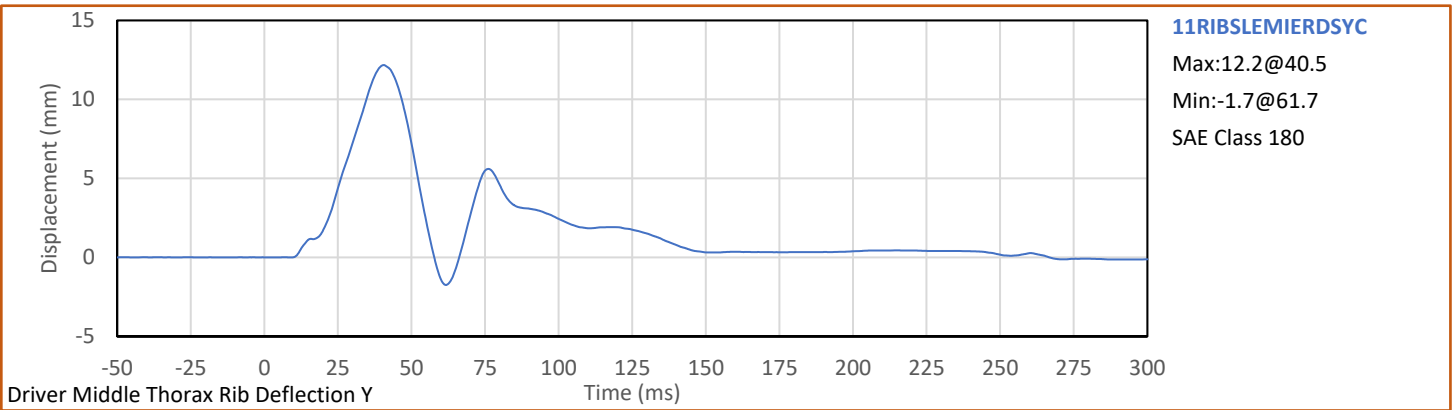
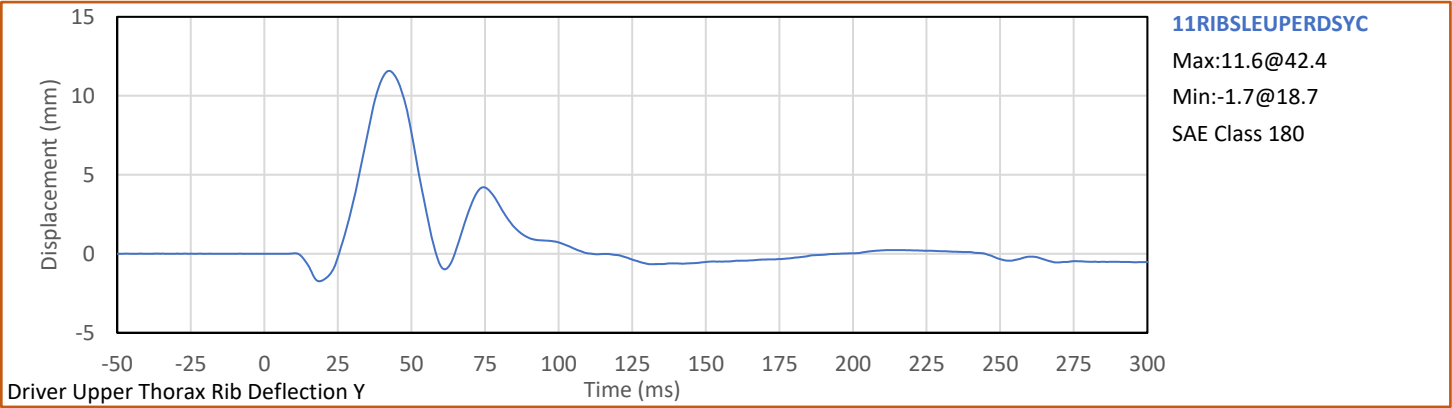
MDB Rear Acceleration (X)

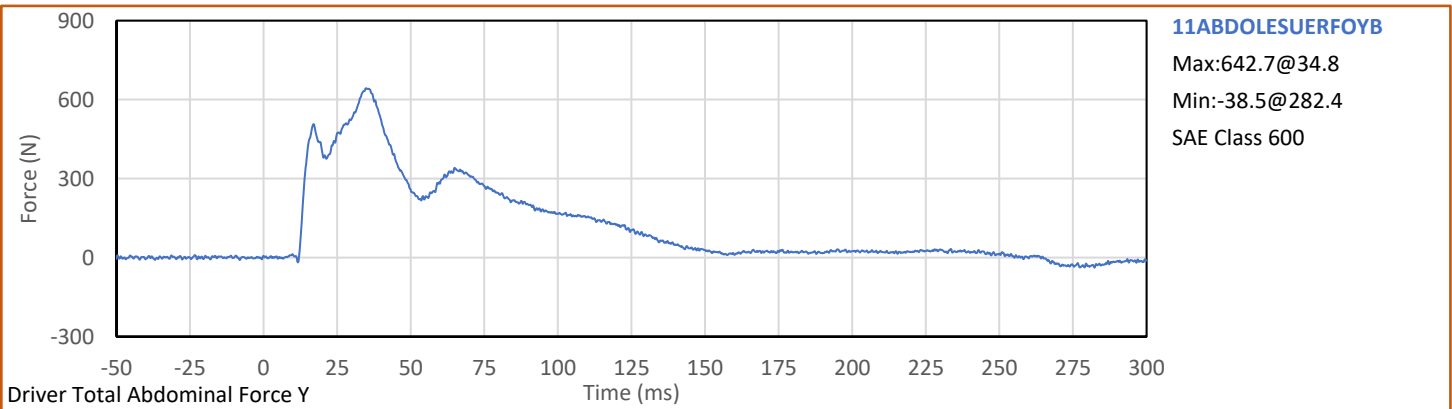
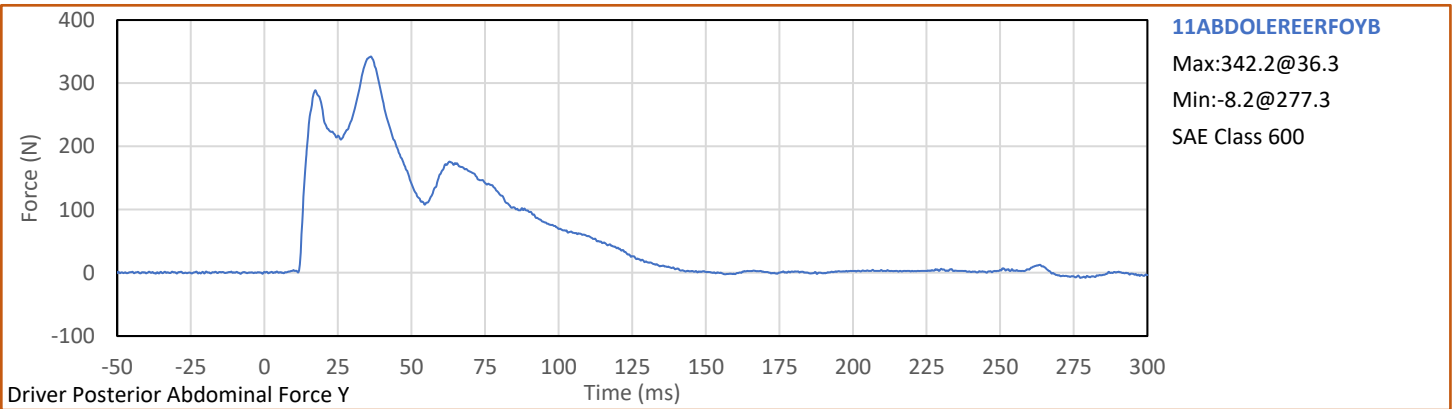
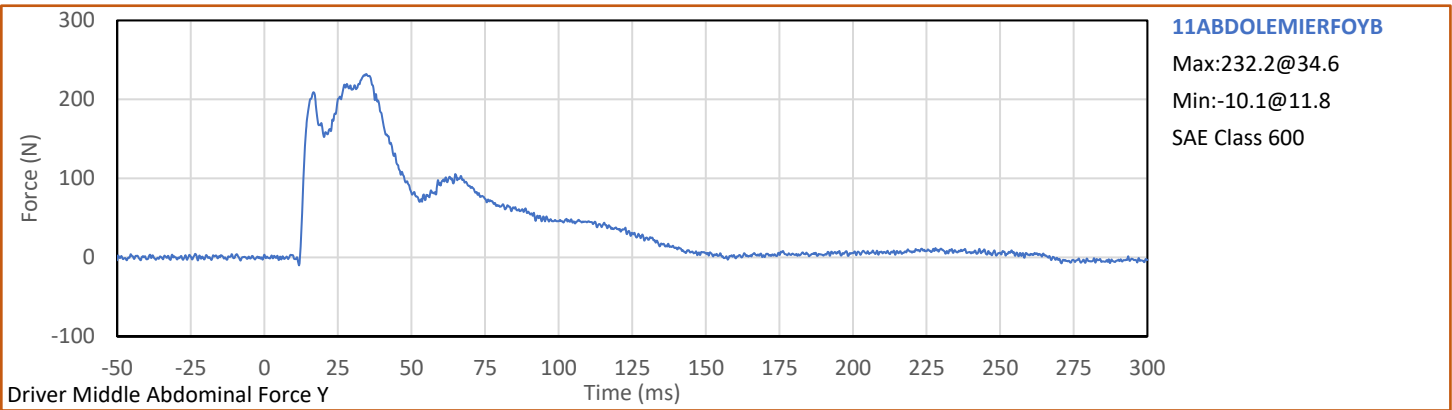
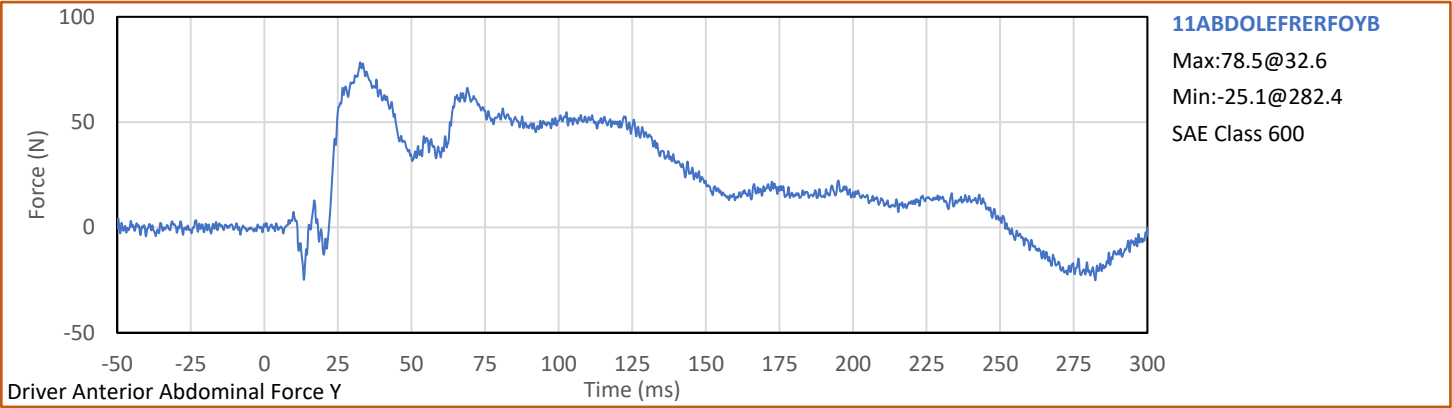
MDB Rear Acceleration (Y)

Left MDB Contact Switch

Right MDB Contact Switch

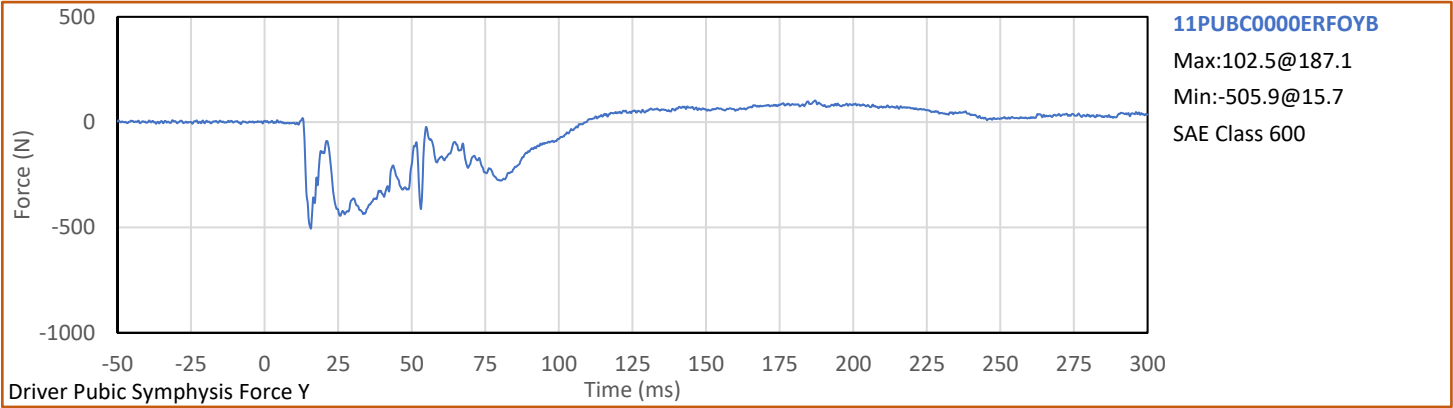


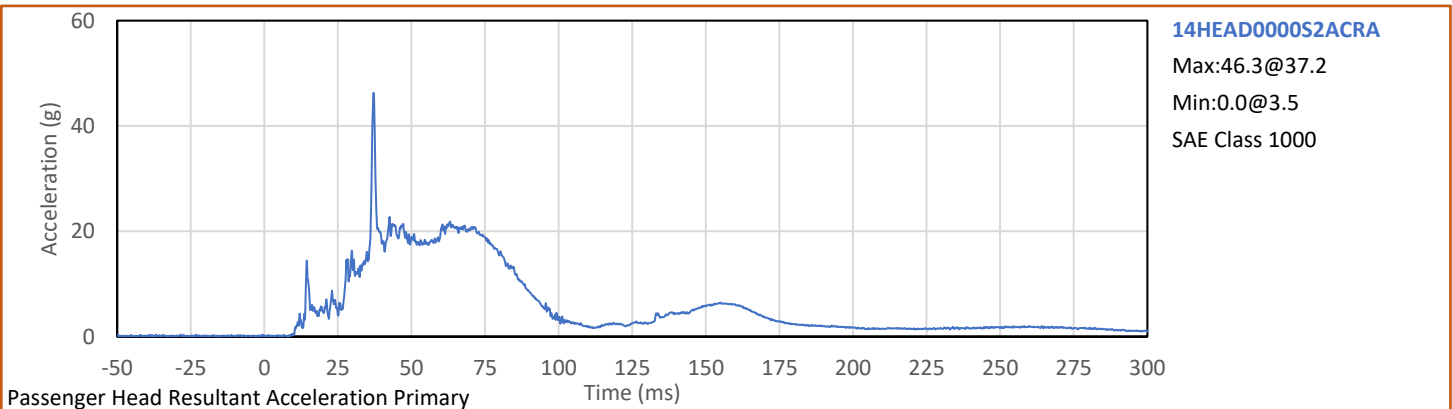
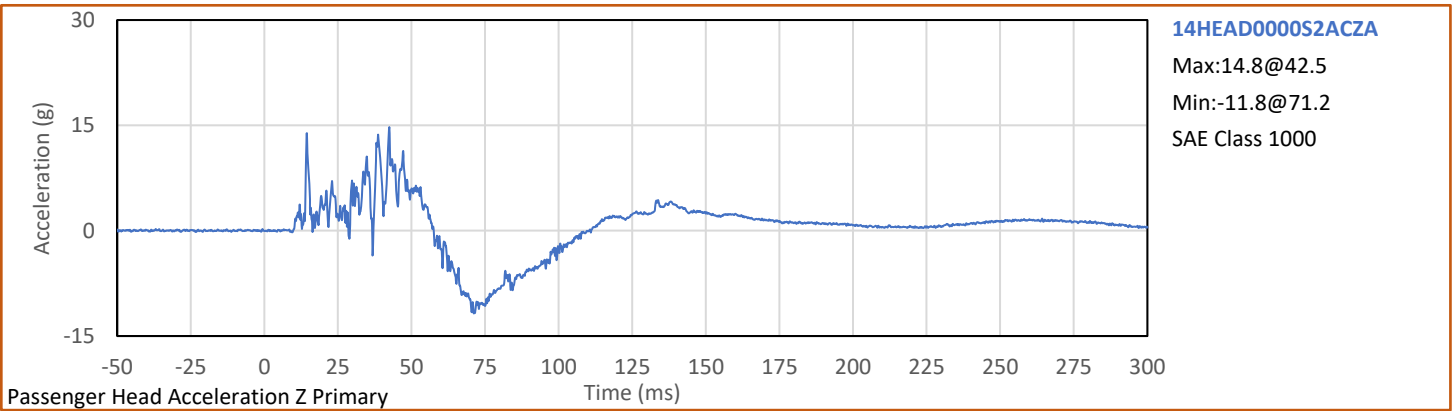
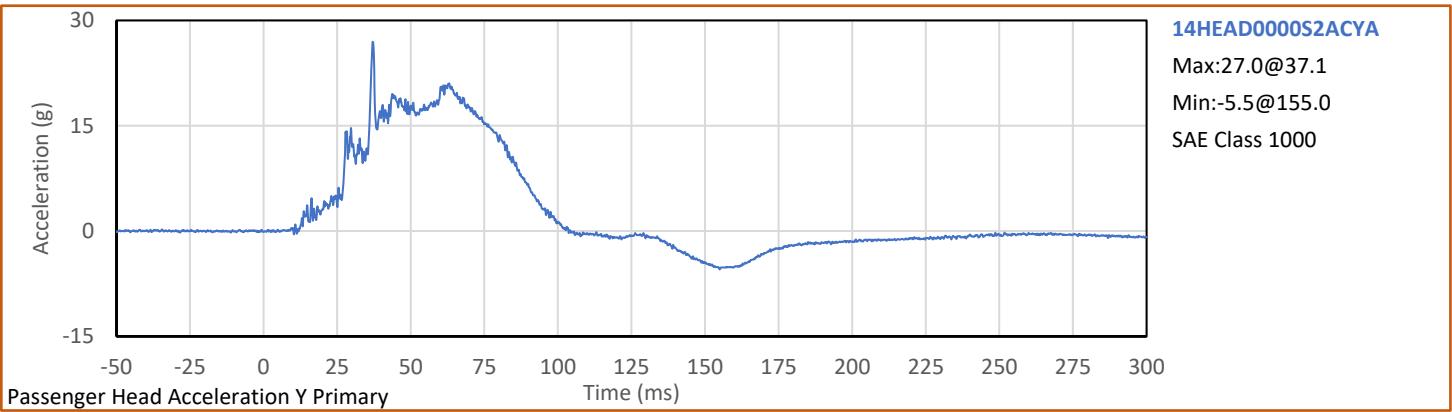
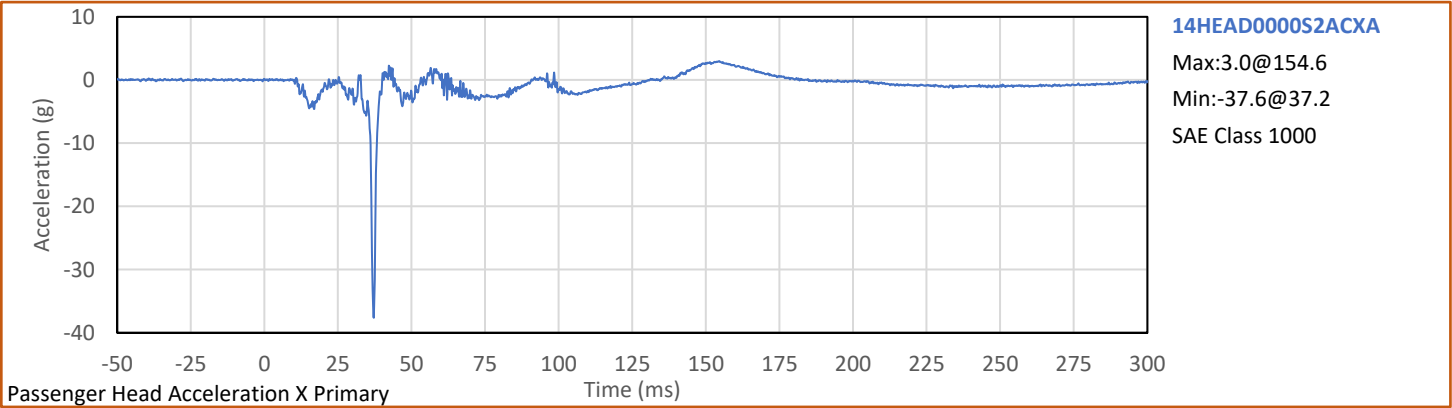


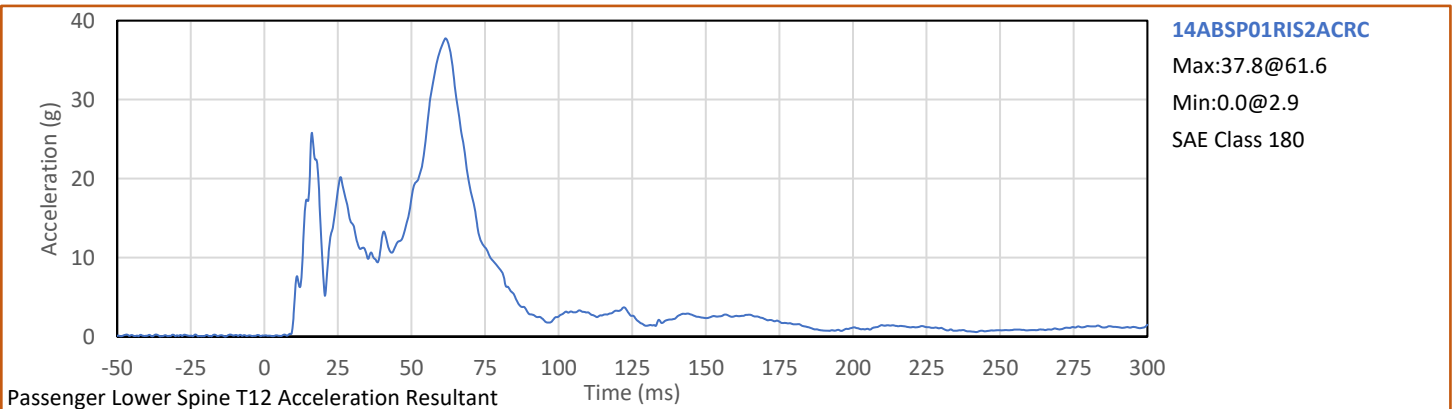
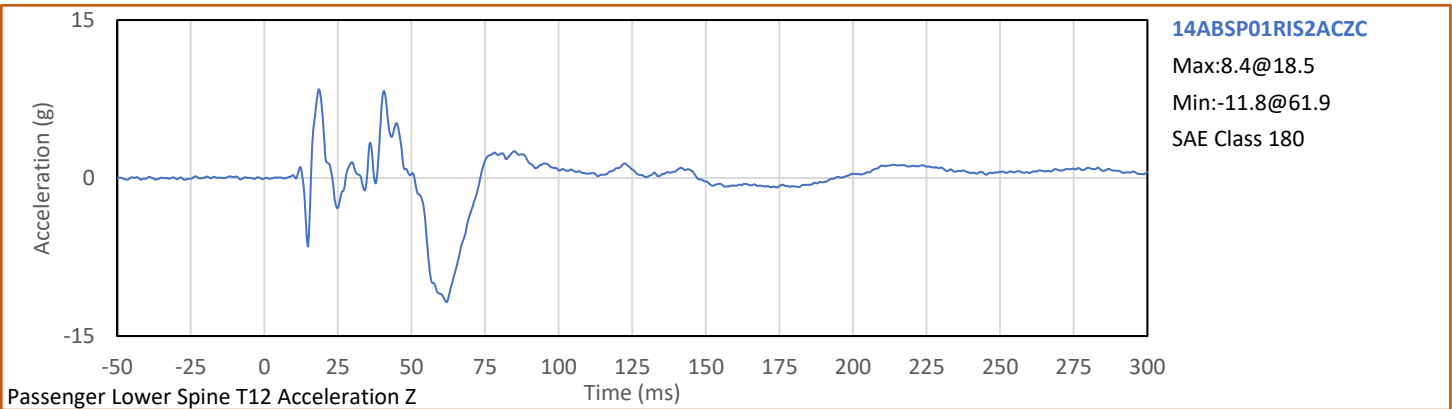
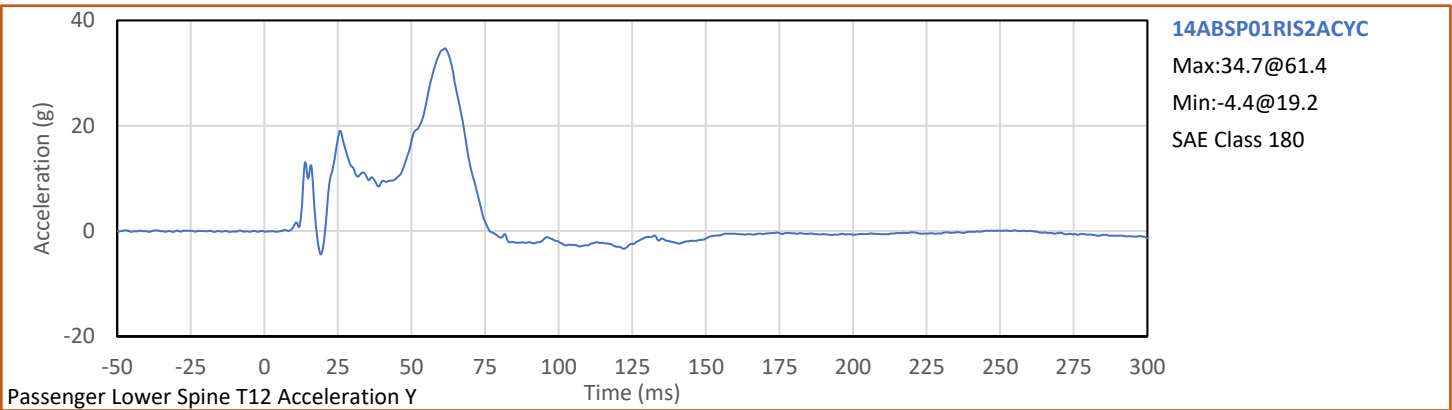
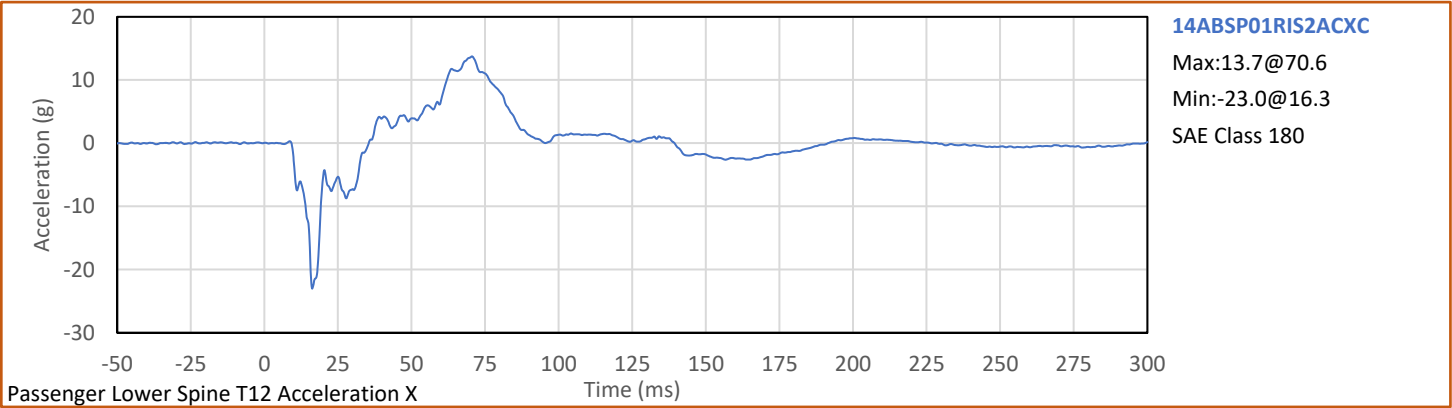


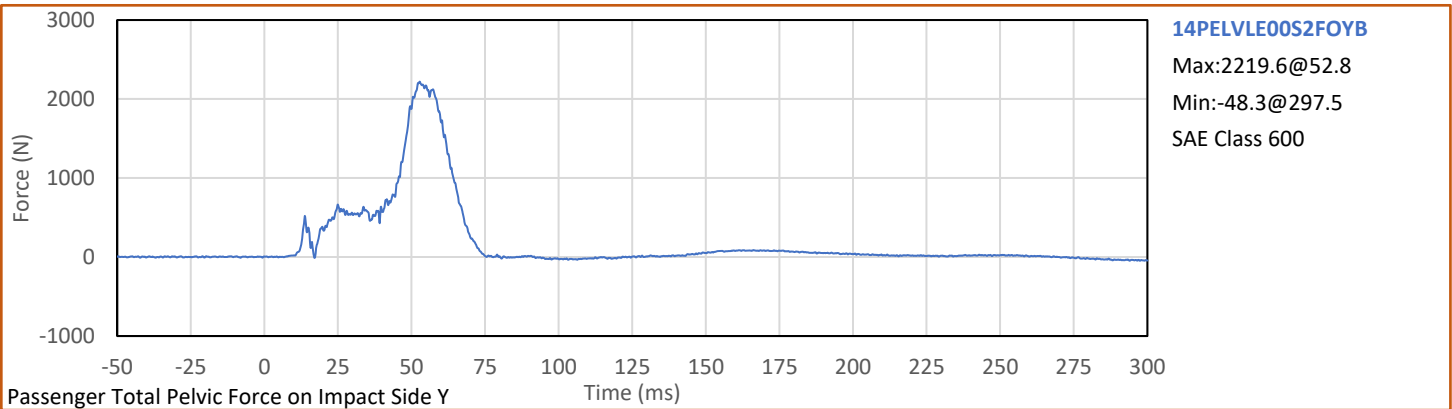
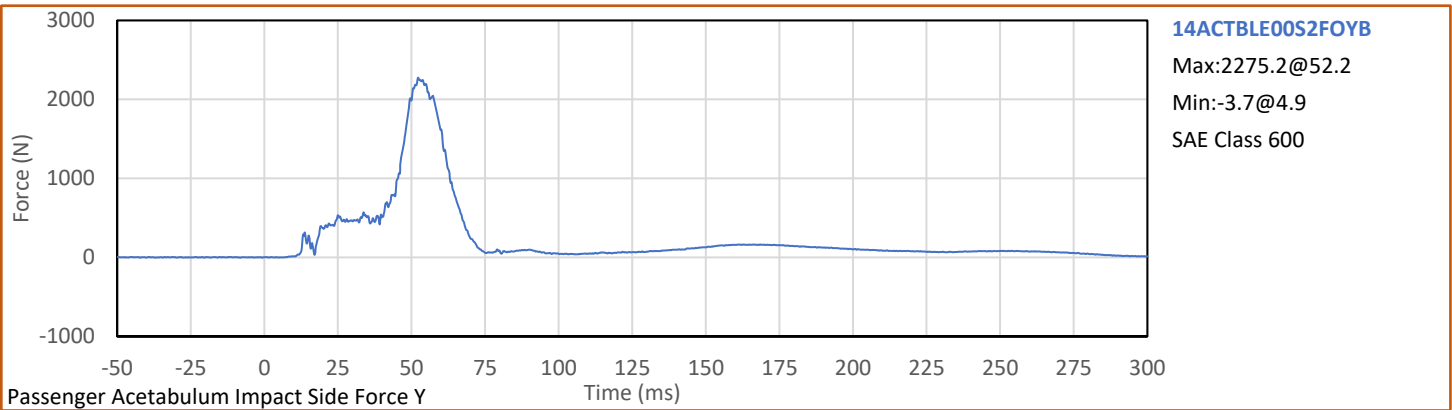
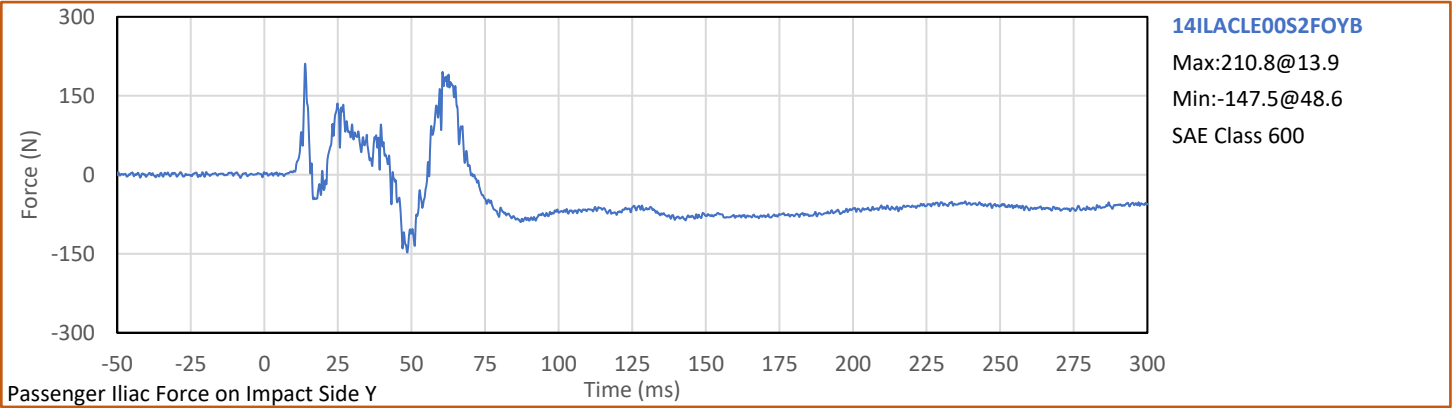
Test Vehicle: 2024 Mazda CX-50 5-Door SUV
Test Program: NCAP MDB Side Impact Test

NHTSA No.: M20245401
Test Date: 6/7/2024









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

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	40	Pass
1 - Sitting Height	mm	900	918	915	Pass
2 - Seat to Shoulder Joint	mm	558	572	565	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	441	Pass
6 - Head Width	mm	152	158	157	Pass
7 - Shoulder/Arm Width	mm	461	479	468	Pass
8 - Thorax Width	mm	322	332	324	Pass
9 - Abdomen Width	mm	273	287	281	Pass
10 - Pelvis Lap Width	mm	359	373	366	Pass
11 - Head Depth	mm	196	206	202	Pass
12 - Thorax Depth	mm	262	272	269	Pass
13 - Abdomen Depth	mm	194	204	201	Pass
14 - Pelvis Depth	mm	235	245	239	Pass
15 - Back of Buttocks to Hip Joint (bolt Center)	mm	150	160	158	Pass
16 - Back of Buttocks to Front Knee	mm	597	615	612	Pass
Overall Test Results					Pass

Technician: _____



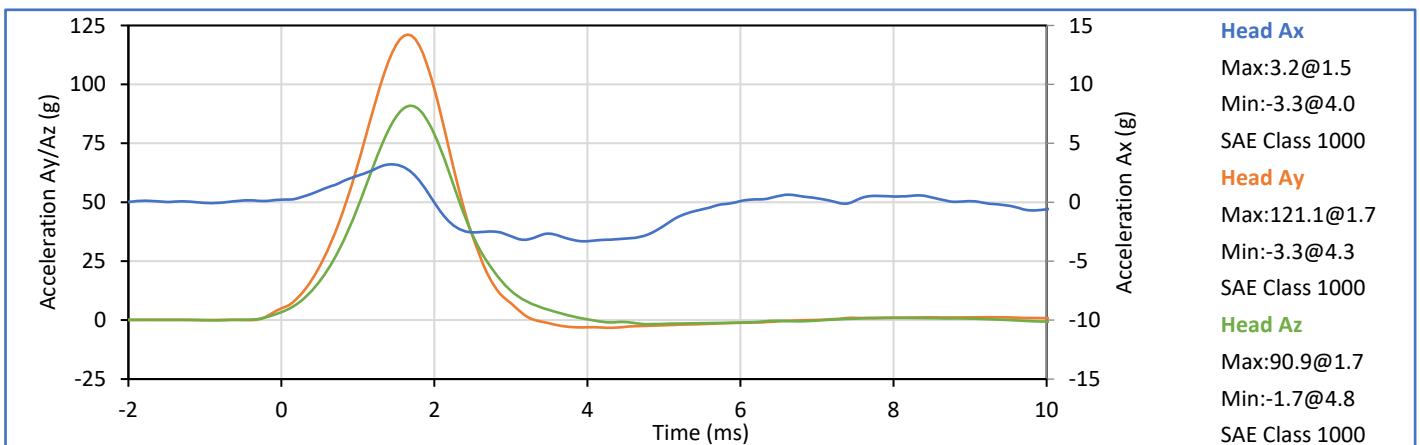
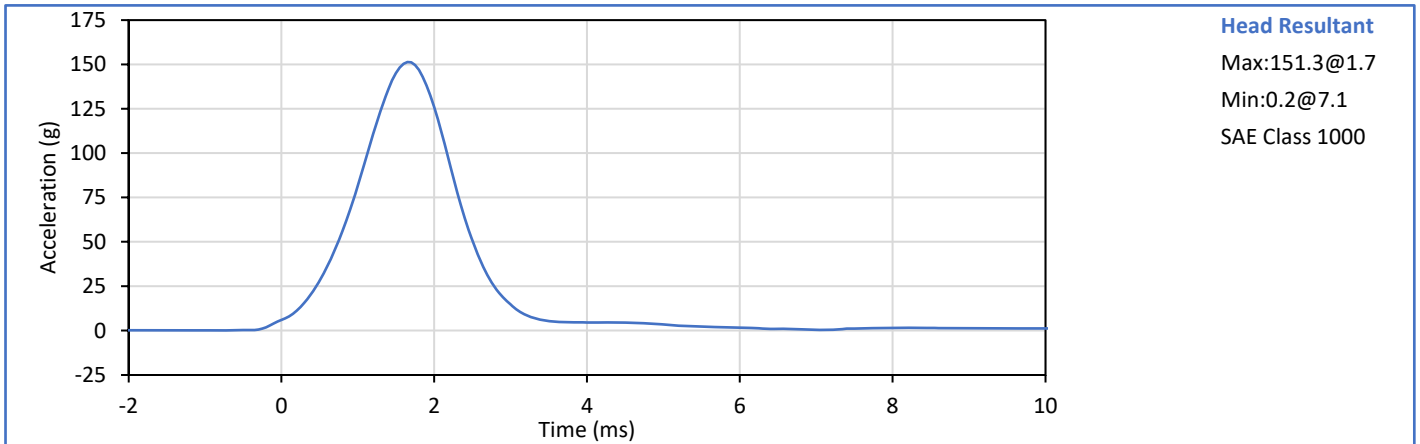
G. Fuentes

Approved By: _____



J. Hernandez

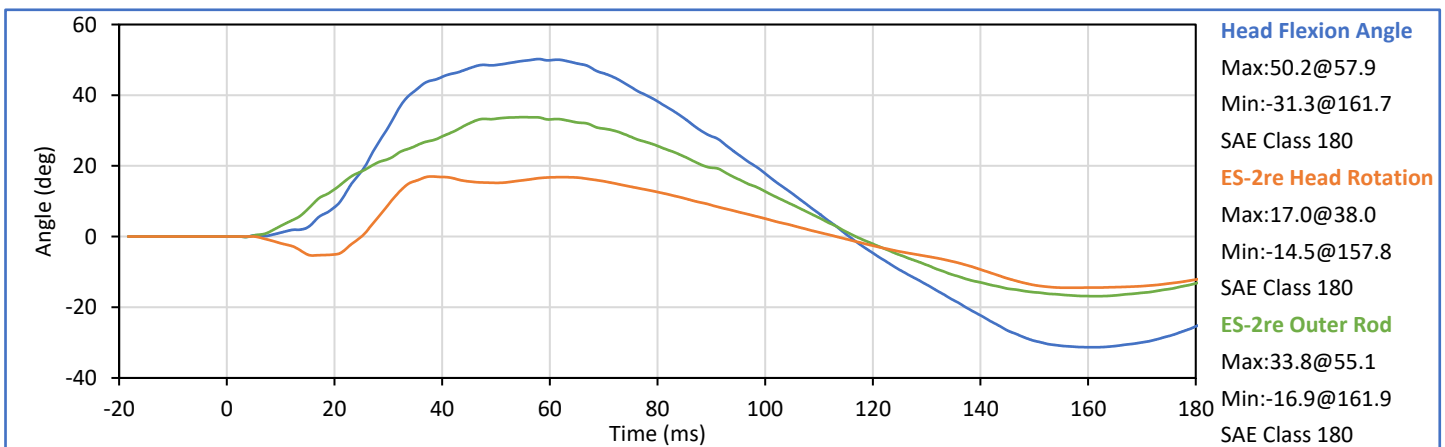
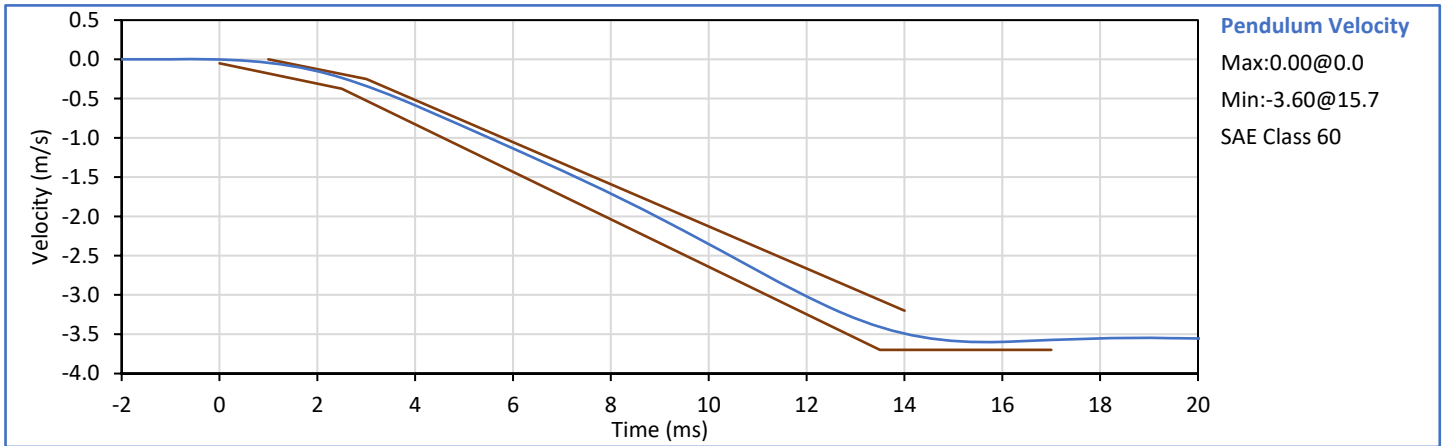
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	18.9	25.6	21.3	Pass
Laboratory Relative Humidity	%	10	70	40	Pass
Peak Resultant Acceleration	g	125.0	155.0	151.3	Pass
Peak Head Ax	g	-15.0	15.0	3.2	Pass
Oscillations After Main Pulse	%	0.0	15.0	1.3	Pass
Is Acceleration Unimodal?	Yes/No	Yes		Yes	Pass
Overall Test Results					Pass



Technician: *Mill LGS III*
G. Fuentes

Approved By: *Smith*
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	40	Pass
Pendulum Velocity	m/s	3.30	3.50	3.40	Pass
Peak Headform Flexion	deg	49.0	59.0	50.2	Pass
Time of Peak Headform Flexion	ms	54.0	66.0	57.9	Pass
Flexion Decay (Peak to zero)	ms	53.0	88.0	57.7	Pass
Overall Test Results					Pass



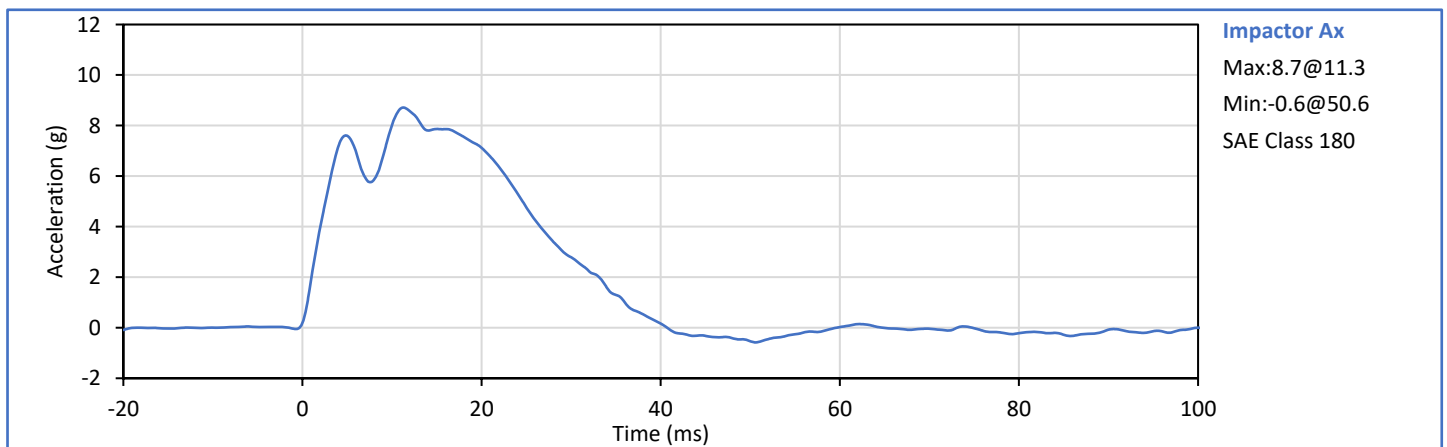
Technician: *Mill LGS III*
G. Fuentes

Approved By: *J. Hernandez*
J. Hernandez

ATD Serial No.: F037

Test Date: 2024-06-05

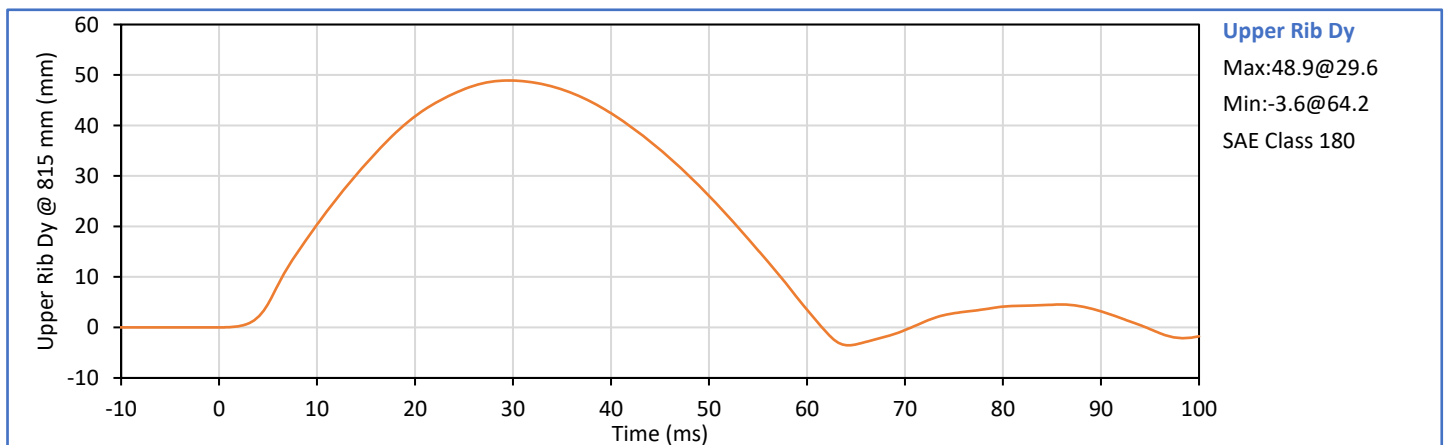
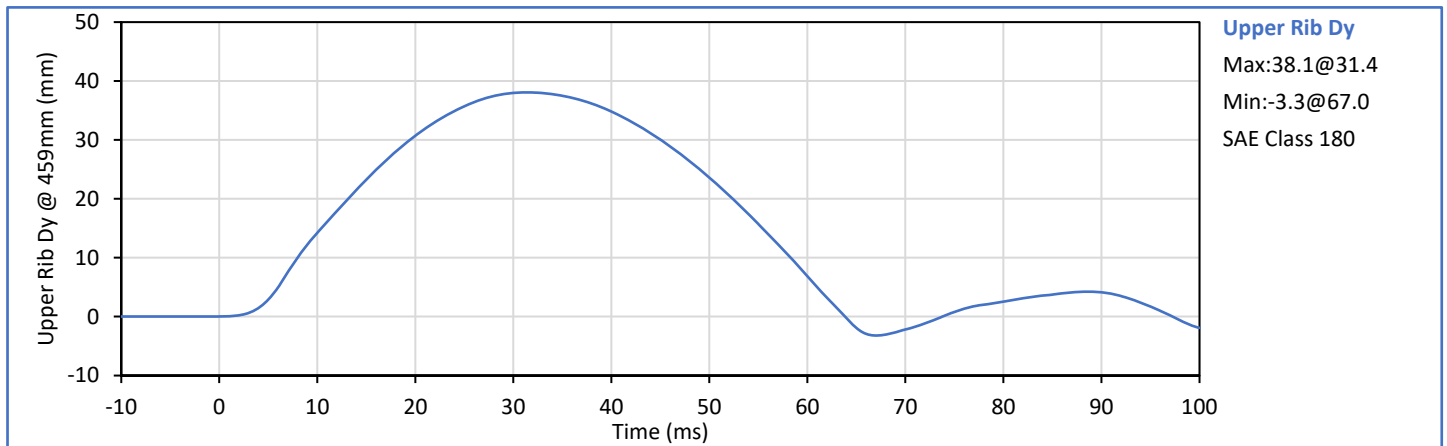
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.4	Pass
Laboratory Relative Humidity	%	10	70	40	Pass
Impactor Velocity	m/s	4.20	4.40	4.31	Pass
Peak Impactor Ax	g	7.5	10.5	8.7	Pass
Overall Test Results					Pass



Technician: *Mill JG III*
G. Fuentes

Approved By: *Seath*
J. Hernandez

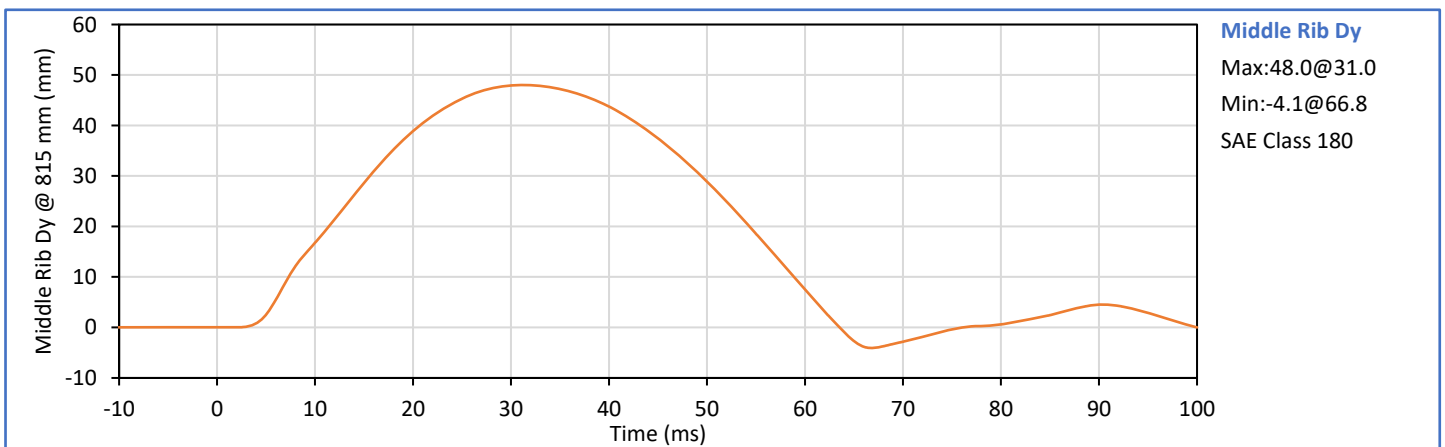
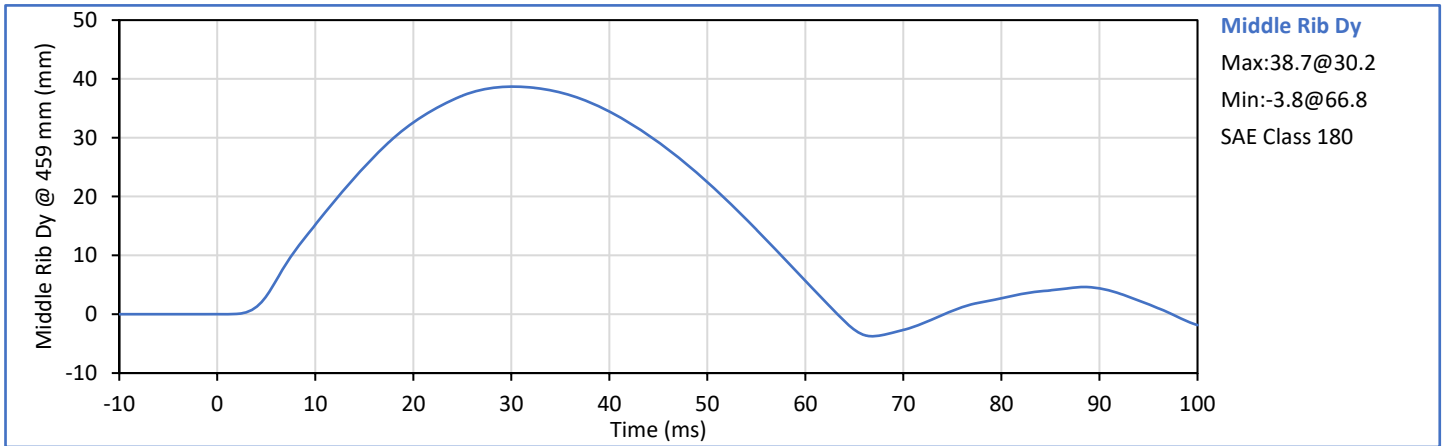
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.3	Pass
Laboratory Relative Humidity	%	10	70	40	Pass
Upper Rib Dy @ 459mm	mm	36.0	40.0	38.1	Pass
Upper Rib Dy @ 815mm	mm	46.0	51.0	48.9	Pass
Overall Test Results					Pass



Technician: *Mill LGS III*
G. Fuentes

Approved By: *Seath*
J. Hernandez

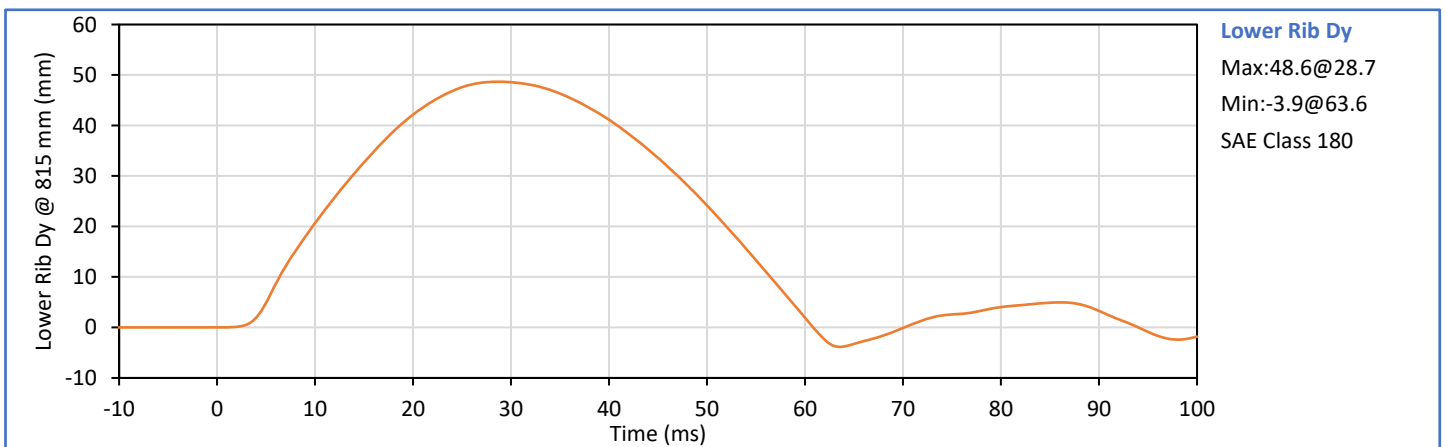
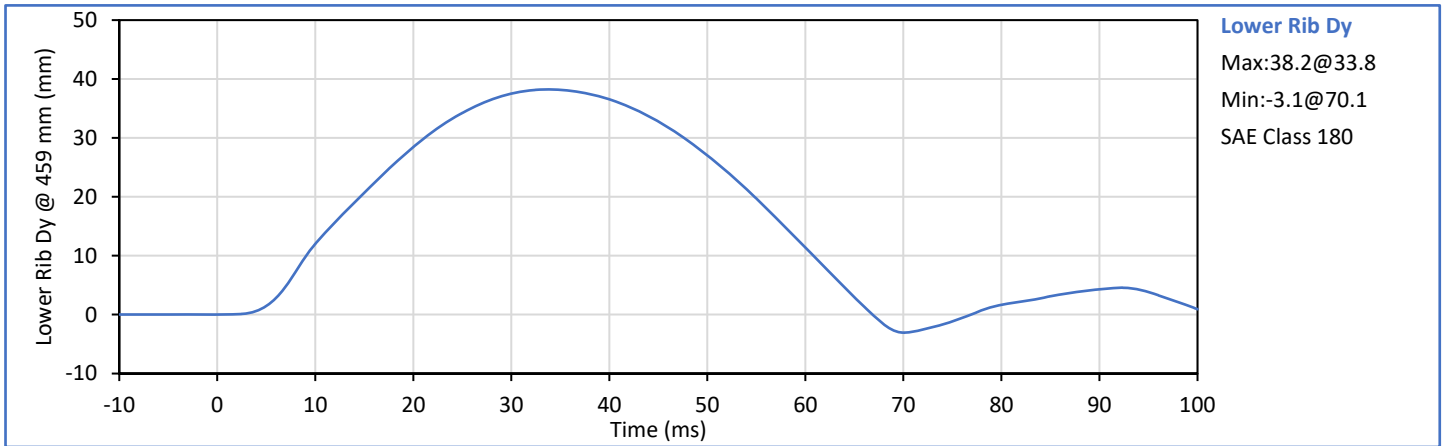
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.3	Pass
Laboratory Relative Humidity	%	10	70	40	Pass
Middle Rib Dy @ 459mm	mm	36.0	40.0	38.7	Pass
Middle Rib Dy @ 815mm	mm	46.0	51.0	48.0	Pass
Overall Test Results					Pass



Technician: *Mill LGS III*
G. Fuentes

Approved By: *Seath*
J. Hernandez

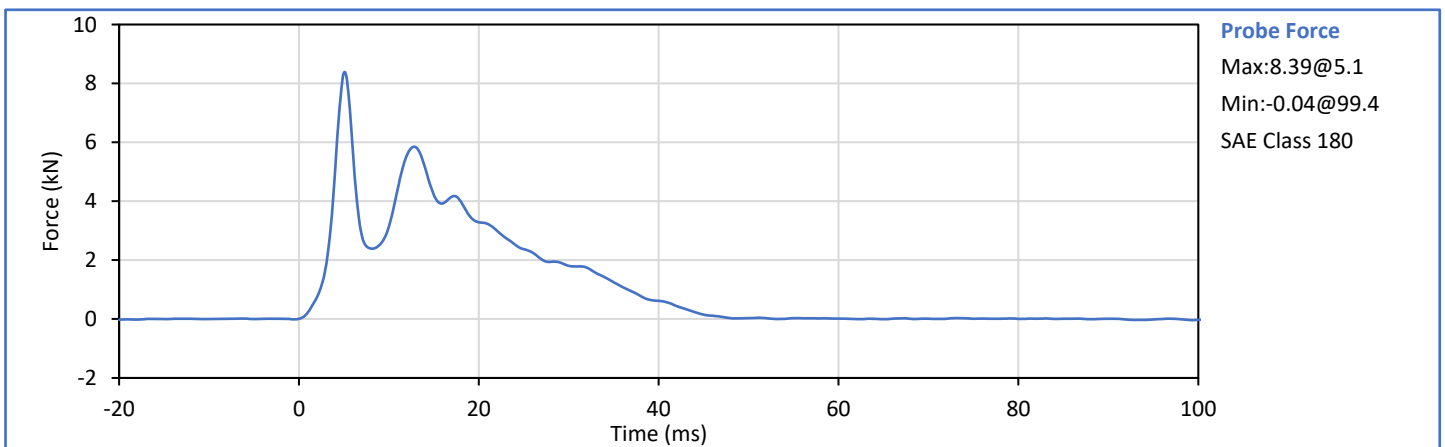
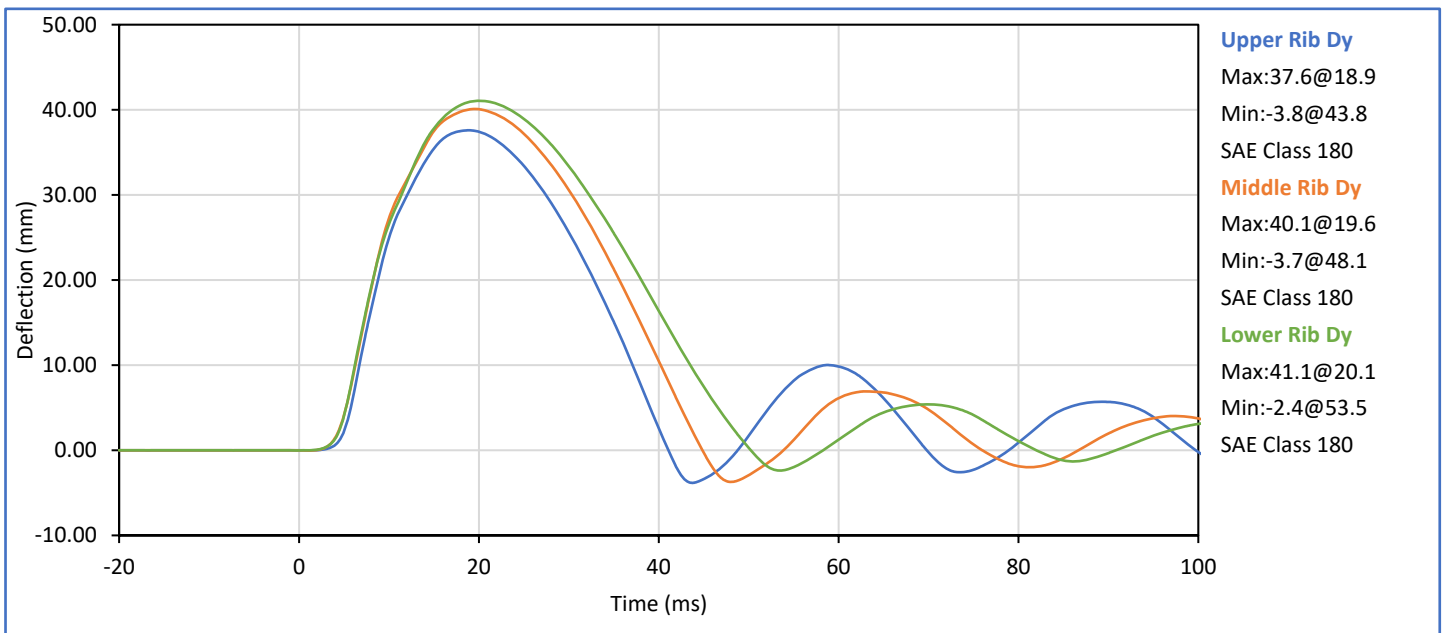
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.3	Pass
Laboratory Relative Humidity	%	10	70	40	Pass
Lower Rib Dy @ 459mm	mm	36.0	40.0	38.2	Pass
Lower Rib Dy @ 815mm	mm	46.0	51.0	48.6	Pass
Overall Test Results					Pass



Technician: *Mill LGS III*
G. Fuentes

Approved By: *Seath*
J. Hernandez

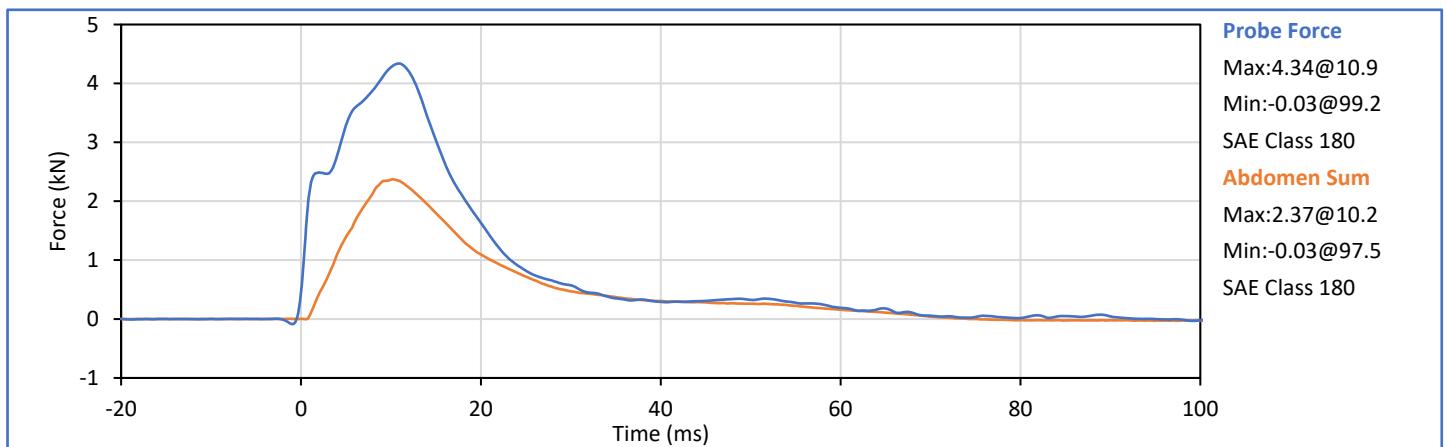
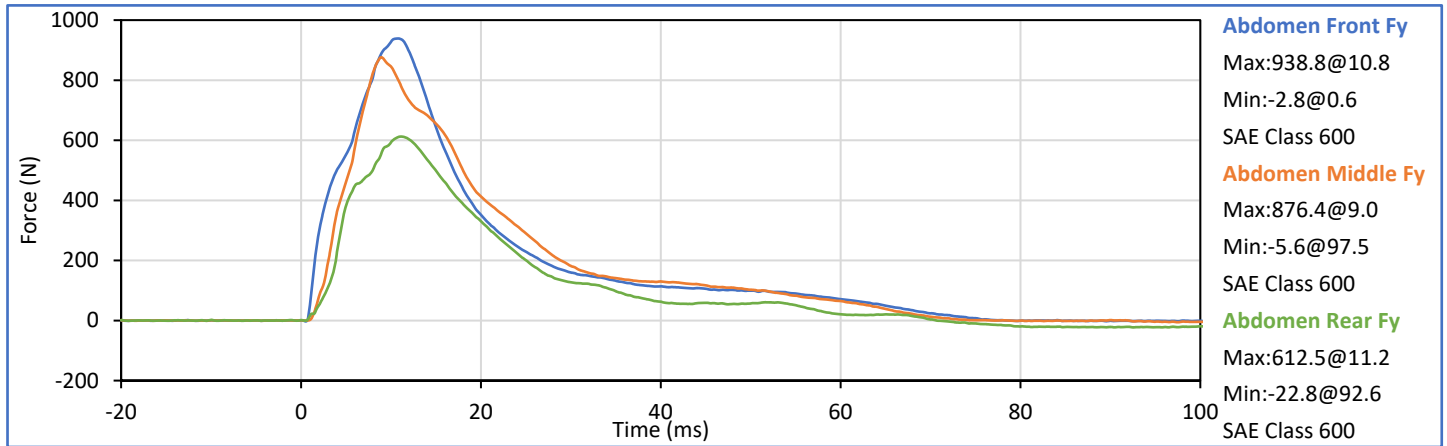
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.6	Pass
Laboratory Relative Humidity	%	10	70	41	Pass
Impactor Velocity	m/s	5.40	5.60	5.52	Pass
Peak Upper Rib Dy	mm	34.0	41.0	37.6	Pass
Peak Middle Rib Dy	mm	37.0	45.0	40.1	Pass
Peak Lower Rib Dy	mm	37.0	44.0	41.1	Pass
Peak Impactor Force After 6 ms	kN	5.10	6.20	5.85	Pass
Overall Test Results					Pass



Technician: *Mill JG III*
G. Fuentes

Approved By: *Smith*
J. Hernandez

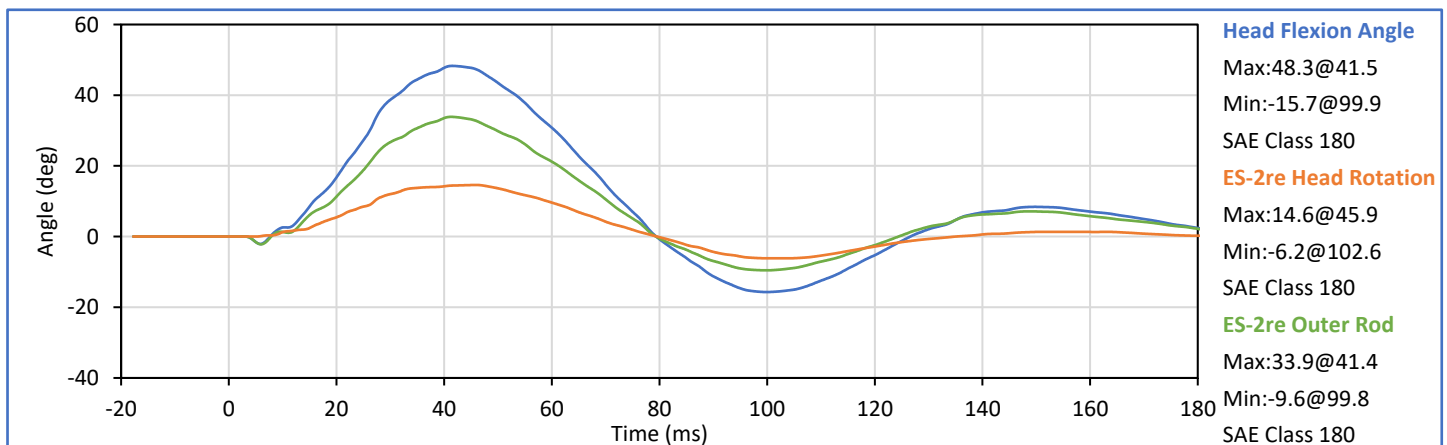
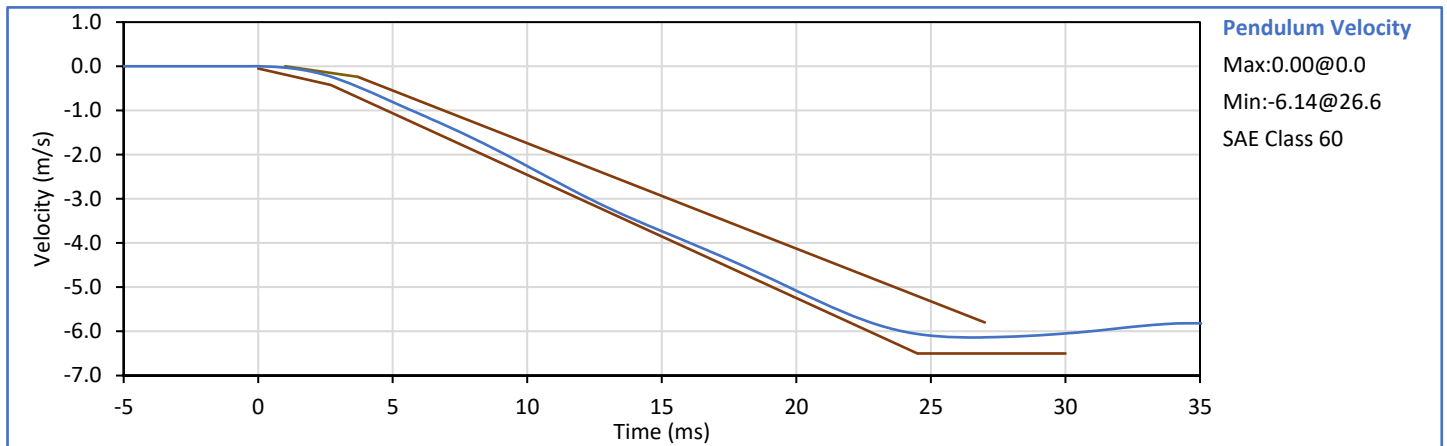
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.3	Pass
Laboratory Relative Humidity	%	10	70	40	Pass
Impactor Velocity	m/s	3.90	4.10	4.04	Pass
Peak Impactor Force	kN	4.00	4.80	4.34	Pass
Time of Peak Impactor Force	ms	10.6	13.0	10.9	Pass
Sum of Abdomen Forces	kN	2.20	2.70	2.37	Pass
Time of Peak Sum Abdomen Force	ms	10.0	12.3	10.2	Pass
Overall Test Results					Pass



Technician: *Milli JG III*
G. Fuentes

Approved By: *Santhi*
J. Hernandez

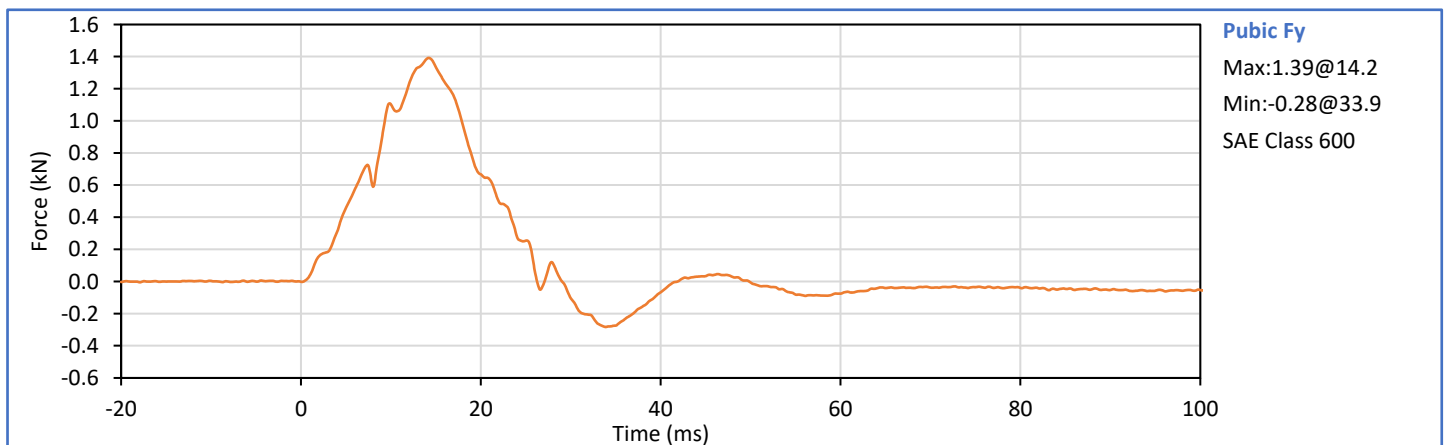
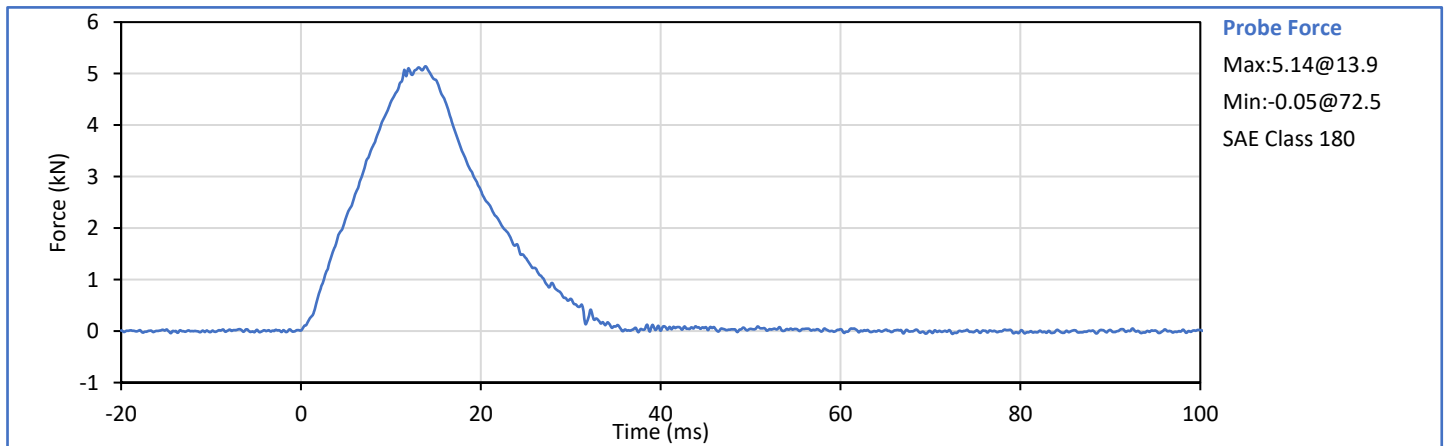
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.3	Pass
Laboratory Relative Humidity	%	10	70	40	Pass
Pendulum Velocity	m/s	5.95	6.15	6.08	Pass
Peak Headform Flexion	deg	45.0	55.0	48.3	Pass
Time of Peak Headform Flexion	ms	39.0	53.0	41.5	Pass
Flexion Decay (Peak to zero)	ms	37.0	57.0	37.9	Pass
Overall Test Results					Pass



Technician: *Mill LGS 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	21.3	Pass
Laboratory Relative Humidity	%	10	70	40	Pass
Impactor Velocity	m/s	4.20	4.40	4.32	Pass
Peak Impactor Force	kN	4.70	5.40	5.14	Pass
Time of Peak Impactor Force	ms	11.8	16.1	13.9	Pass
Pubic Symphysis Fy	kN	1.23	1.59	1.39	Pass
Time of Peak Pubic Symphysis Fy	ms	12.2	17.0	14.2	Pass
Overall Test Results					Pass



Technician: *Mill LGS III*
G. Fuentes

Approved By: *Seath*
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: 2024-06-04

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	45	Pass
A - Sitting Height	mm	772	788	778	Pass
B - Shoulder Pivot Height	mm	437	453	450	Pass
C - Hpoint Height	mm	79	89	84	Pass
D - H Point From Seatback	mm	141	151	146	Pass
E - Shoulder Pivot From Backline	mm	97	107	100	Pass
F - Thigh Clearance	mm	119	135	129	Pass
G - Head Breadth	mm	140	148	148	Pass
H - Head Back From Backline	mm	40	46	43	Pass
I - Head Depth	mm	178	188	180	Pass
J - Head Circumference	mm	541	551	549	Pass
K - Buttock To Knee Length	mm	514	540	533	Pass
L - Popliteal Height	mm	343	369	354	Pass
K - Knee Pivot To Floor Height	mm	392	409	399	Pass
N - Buttock Popliteal Length	mm	416	442	433	Pass
O - Chest Depth W/O Jacket	mm	195	211	204	Pass
P - Foot Length	mm	216	232	228	Pass
Q - Hip Breadth (W/Pelvic Plugs)	mm	313	323	318	Pass
R - Arm Length	mm	249	259	254	Pass
S - Knee Joint To Seatback	mm	477	493	490	Pass
V - Shoulder Width	mm	341	357	354	Pass
W - Foot Width	mm	78	94	85	Pass
Y - Chest Circumference W/Jacket	mm	851	881	868	Pass
Z - Waist Circumference	mm	761	791	770	Pass
				Overall Test Results	Pass

Technician:



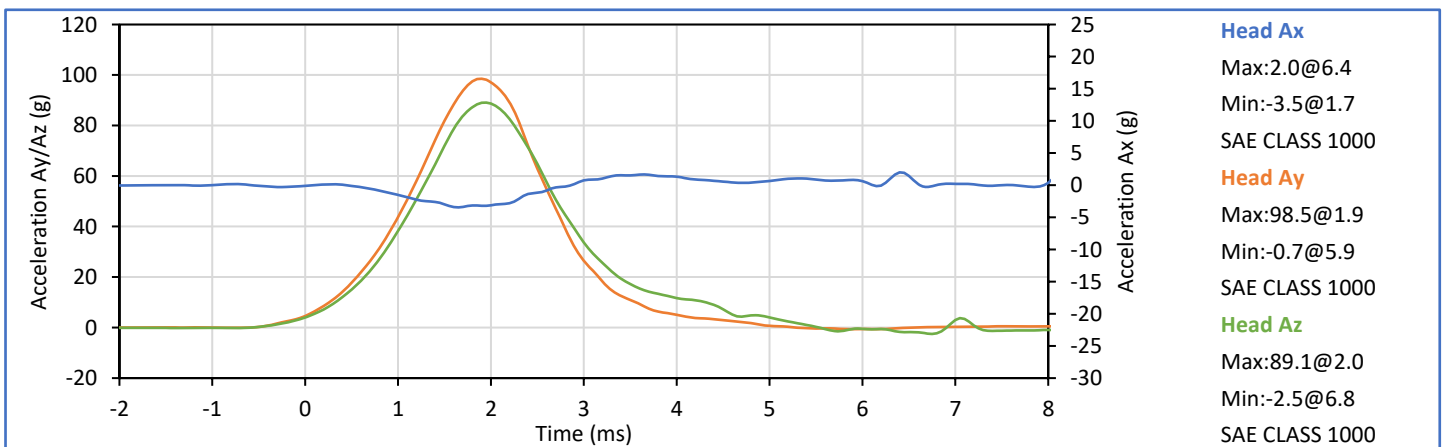
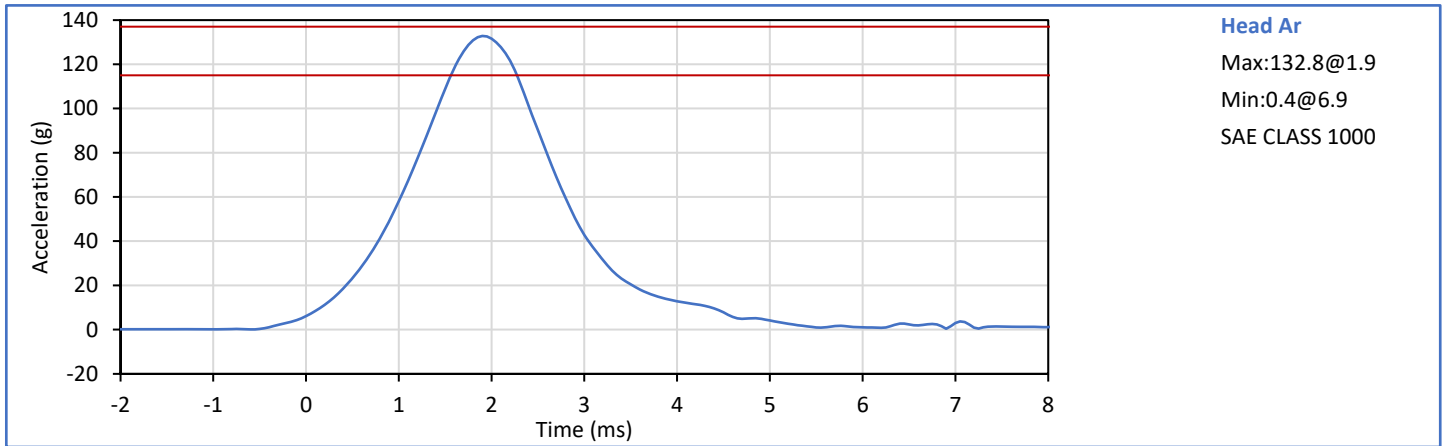
G. Fuentes

Approved By:



J. Hernandez

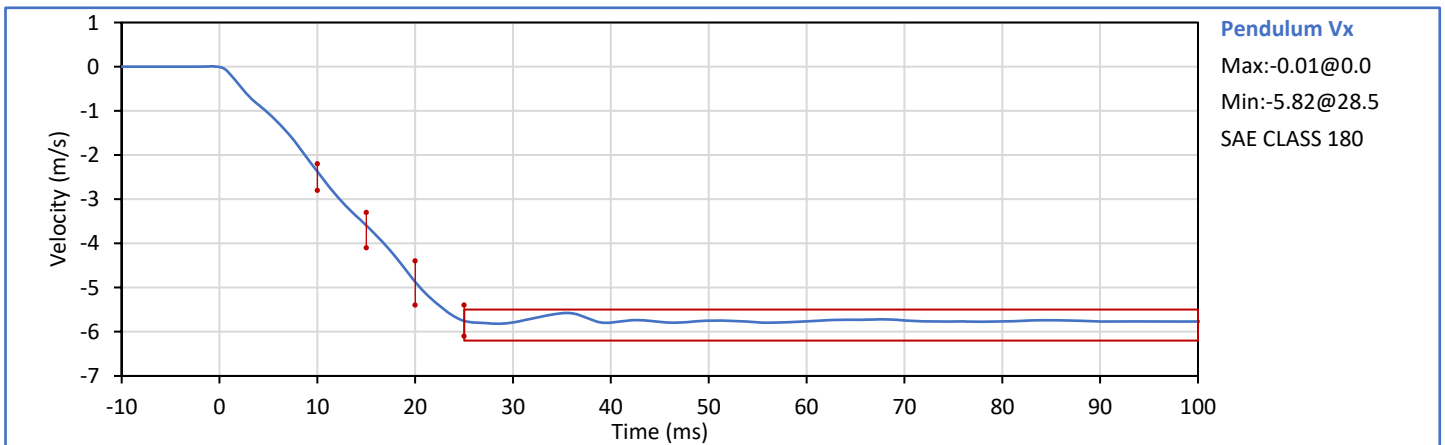
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	18.9	25.6	21.4	Pass
Laboratory Relative Humidity	%	10	70	45	Pass
Peak Resultant Acceleration	g	115.0	137.0	132.8	Pass
Peak Head Ax	g	-15.0	15.0	-3.5	Pass
Oscillations After Main Pulse	%	0.0	15.0	2.8	Pass
Is Acceleration Unimodal?	Yes/No	Yes		Yes	Pass
Overall Test Results					Pass



Technician: *Mill LGS III*
G. Fuentes

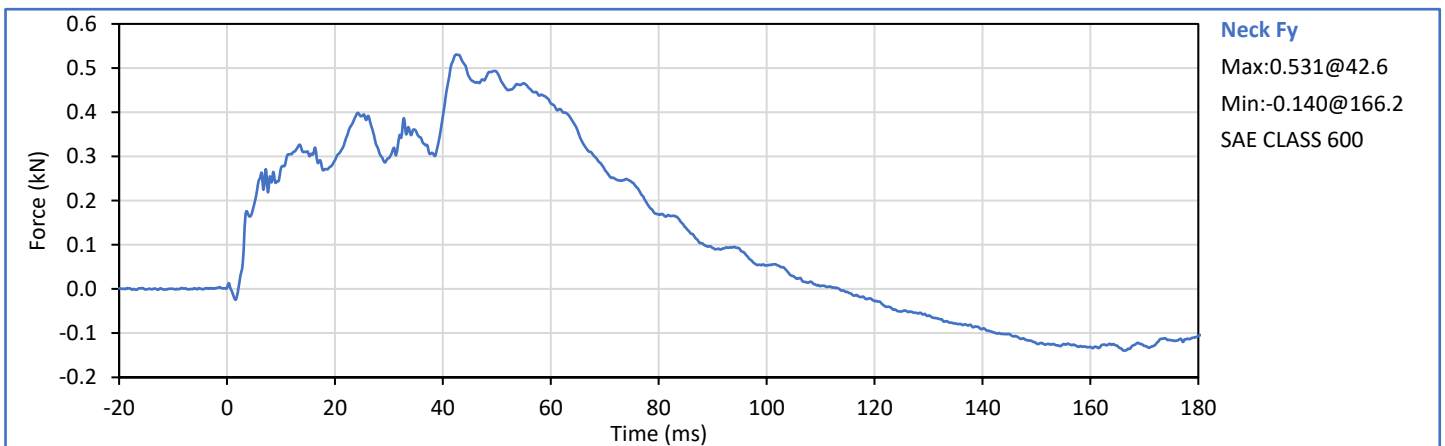
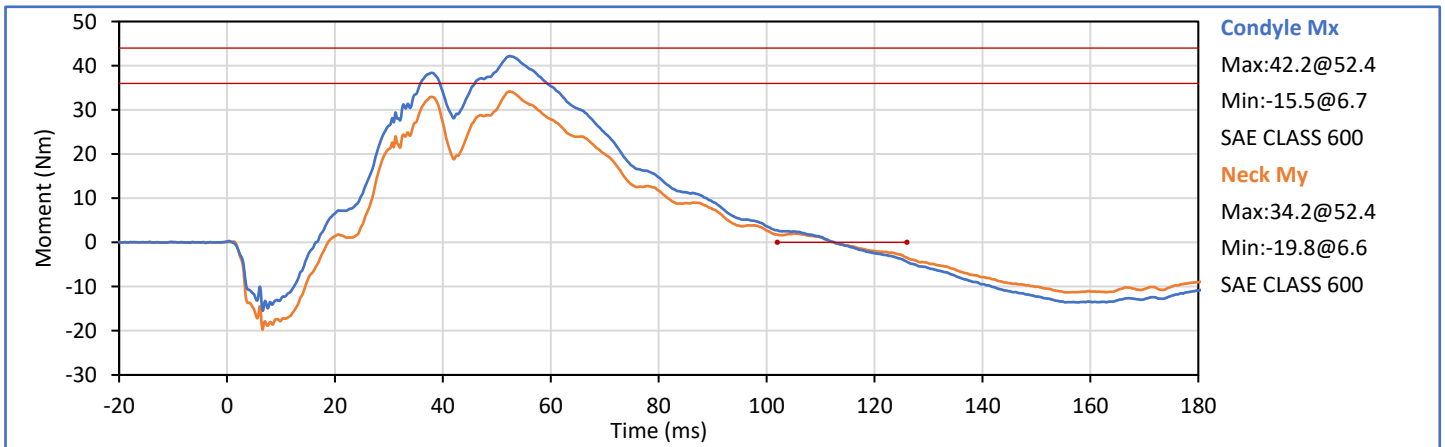
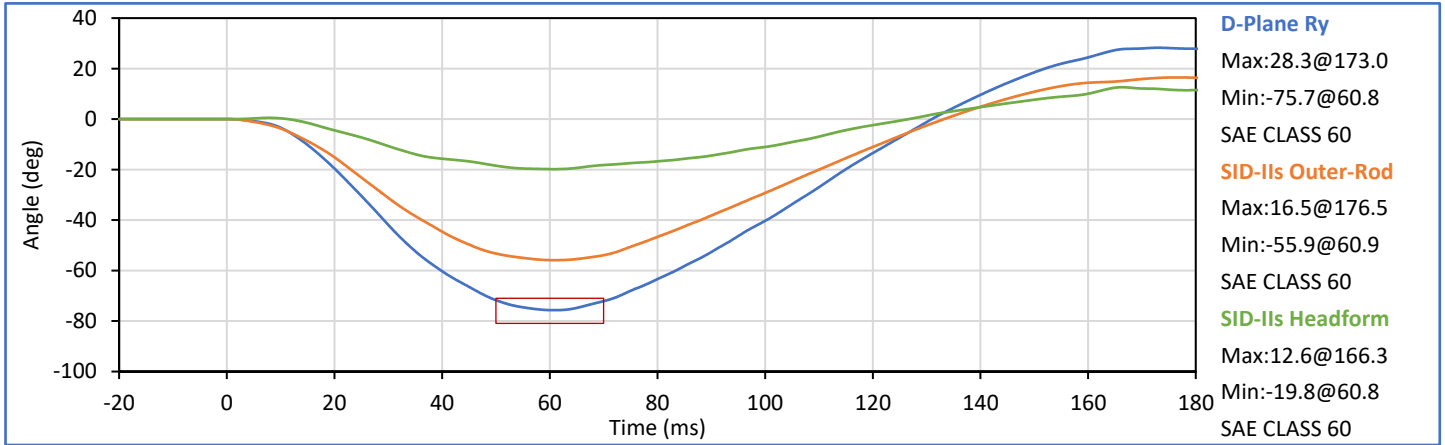
Approved By: *J. Hernandez*
J. Hernandez

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
Pendulum Velocity	m/s	5.51	5.63	5.55	Pass
Pendulum Decel at 10 ms	m/s	-2.80	-2.20	-2.38	Pass
Pendulum Decel at 15 ms	m/s	-4.10	-3.30	-3.60	Pass
Pendulum Decel at 20 ms	m/s	-5.40	-4.40	-4.87	Pass
Pendulum Decel at 25 ms	m/s	-6.10	-5.40	-5.76	Pass
Pendulum Decel from 25-100 ms	m/s	-6.20	-5.50	-5.82/-5.58	Pass
Peak "D" Plane Rotation	deg	-81.0	-71.0	-75.7	Pass
Time of Peak "D" Plane Rotation	ms	50.0	70.0	60.8	Pass
Peak Occ. Condyle Moment	Nm	36.0	44.0	42.2	Pass
Time of Moment Decay to 0 Nm	ms	102.0	126.0	112.6	Pass
Overall Test Results					Pass

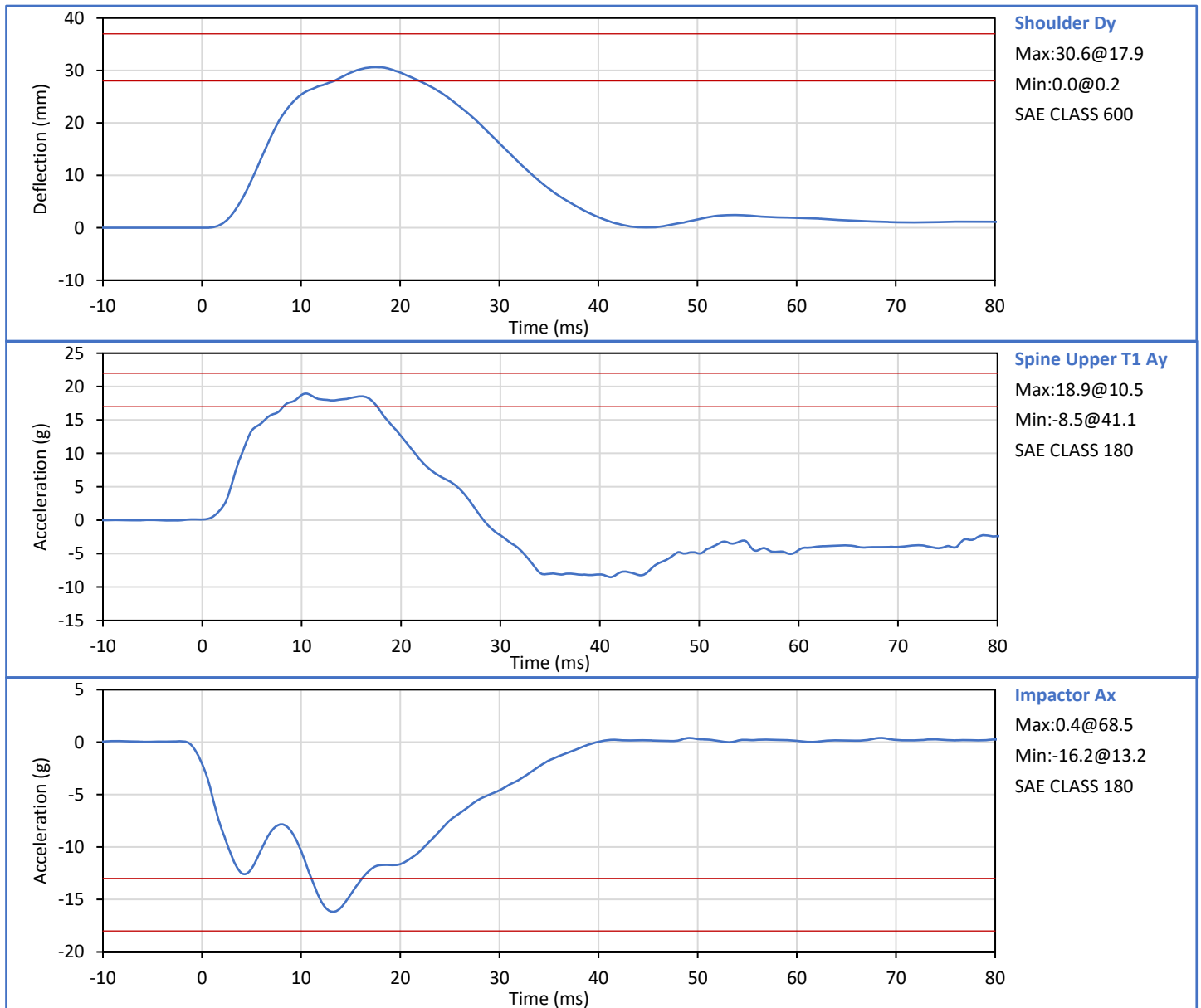


Technician: *Mill LGS III*
G. Fuentes

Approved By: *Smith*
J. Hernandez



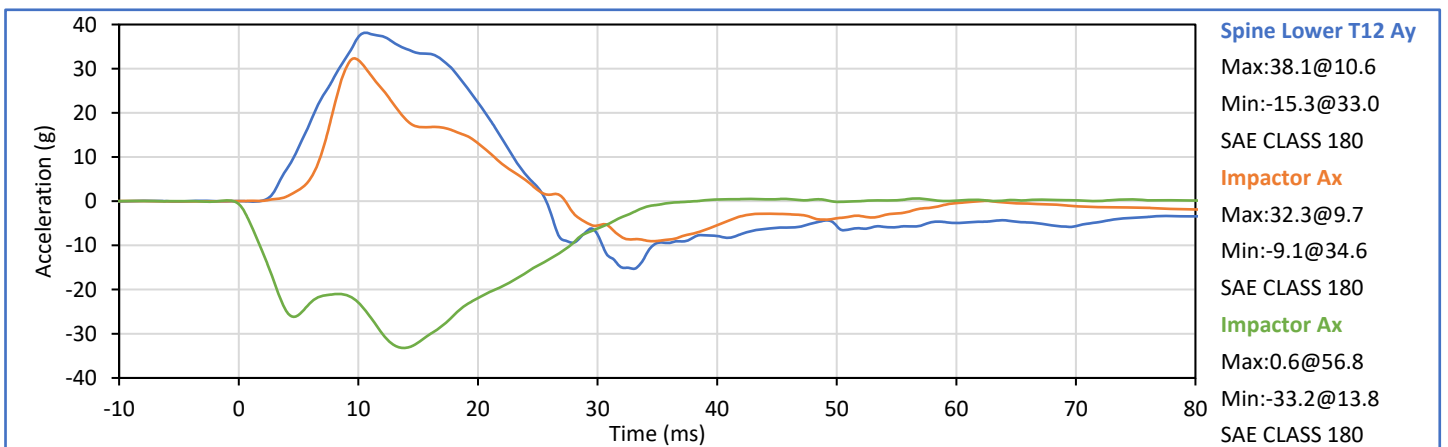
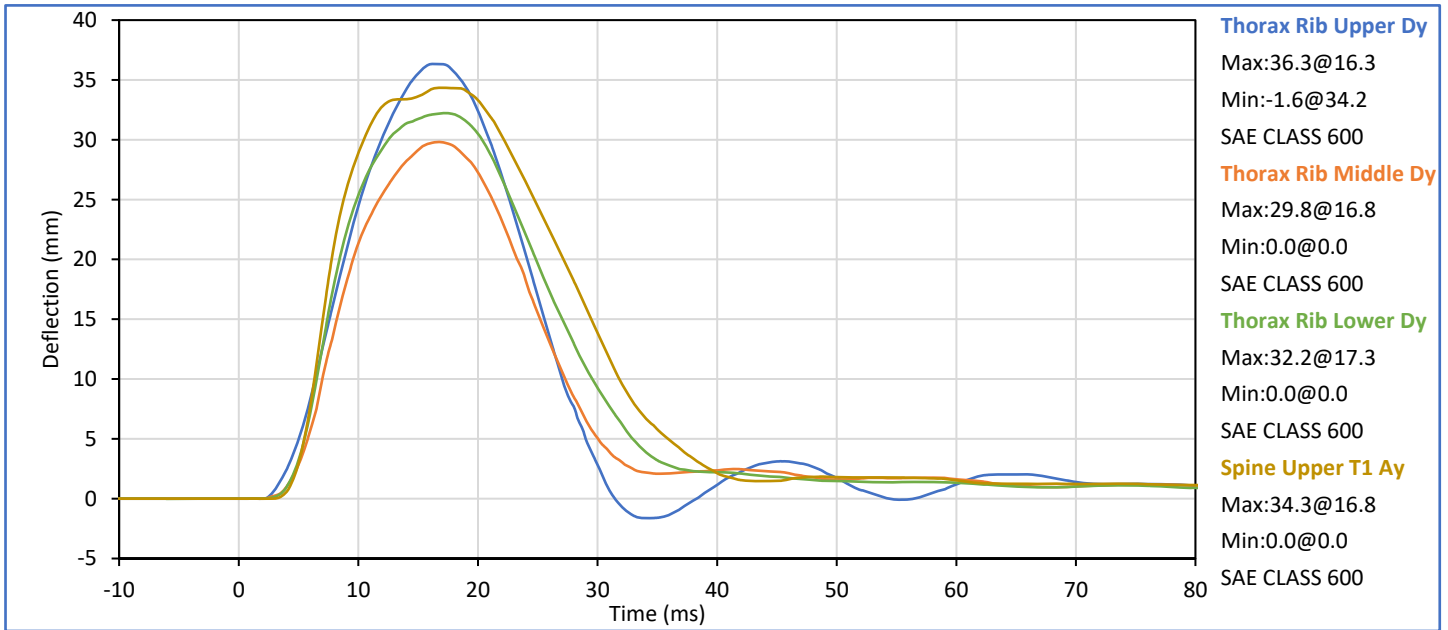
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.2	Pass
Laboratory Relative Humidity	%	10	70	42	Pass
Impactor Velocity	m/s	4.20	4.40	4.32	Pass
Peak Shoulder Dy	mm	28.0	37.0	30.6	Pass
Peak Upper Spine (T1) Ay	g	17.0	22.0	18.9	Pass
Peak Impactor Ax	g	-18.0	-13.0	-16.2	Pass
Overall Test Results					Pass



Technician: *Mill LGS III*
G. Fuentes

Approved By: *Smith*
J. Hernandez

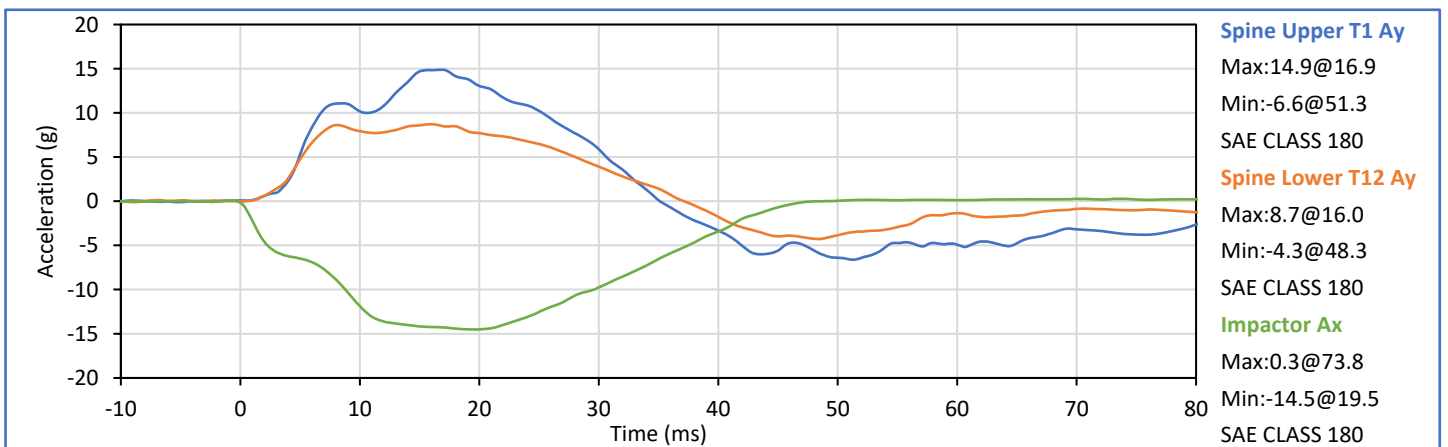
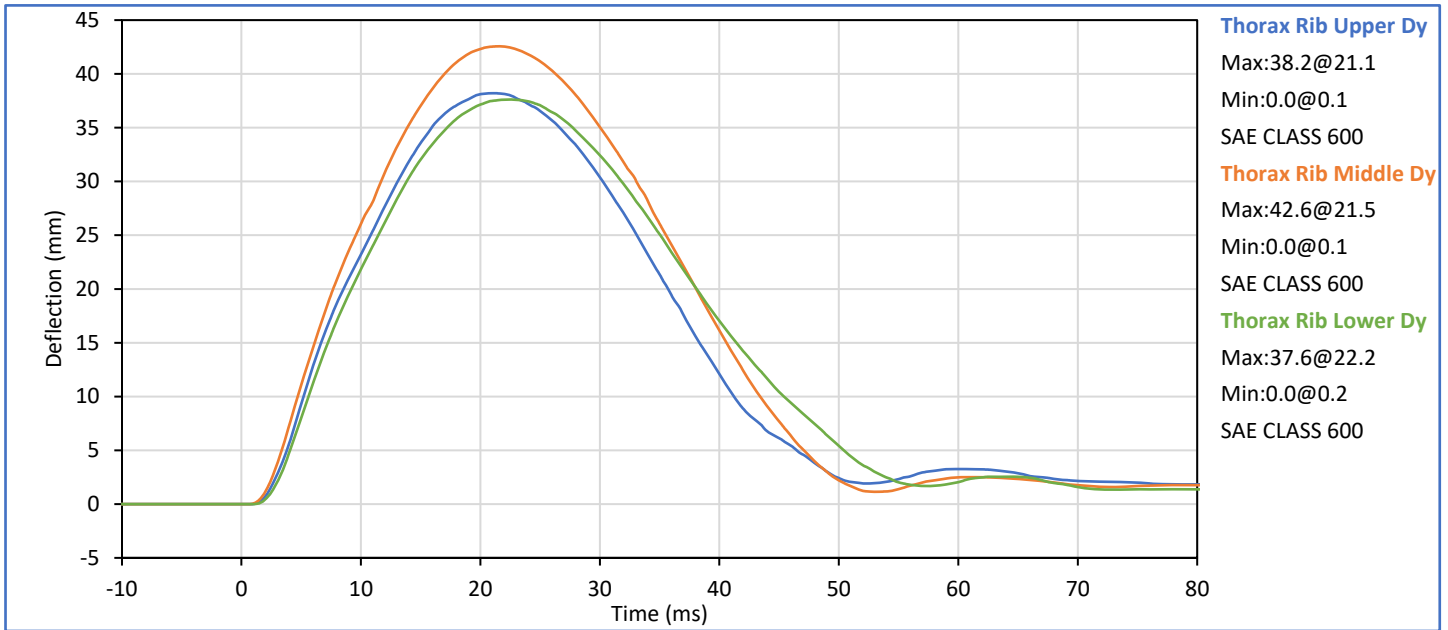
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.2	Pass
Laboratory Relative Humidity	%	10	70	45	Pass
Impactor Velocity	m/s	6.60	6.80	6.71	Pass
Peak Shoulder Dy	mm	31.0	40.0	36.3	Pass
Peak Upper Rib Dy	mm	25.0	32.0	29.8	Pass
Peak Middle Rib Dy	mm	30.0	36.0	32.2	Pass
Peak Lower Rib Dy	mm	32.0	38.0	34.3	Pass
Peak Upper Spine (T1) Ay	g	34.0	43.0	38.1	Pass
Peak Lower Spine (T12) Ay	g	29.0	37.0	32.3	Pass
Peak Impactor Ax	g	-36.0	-30.0	-33.2	Pass
Overall Test Results					Pass



Technician: Mill LGS III
G. Fuentes

Approved By: J. Hernandez
J. Hernandez

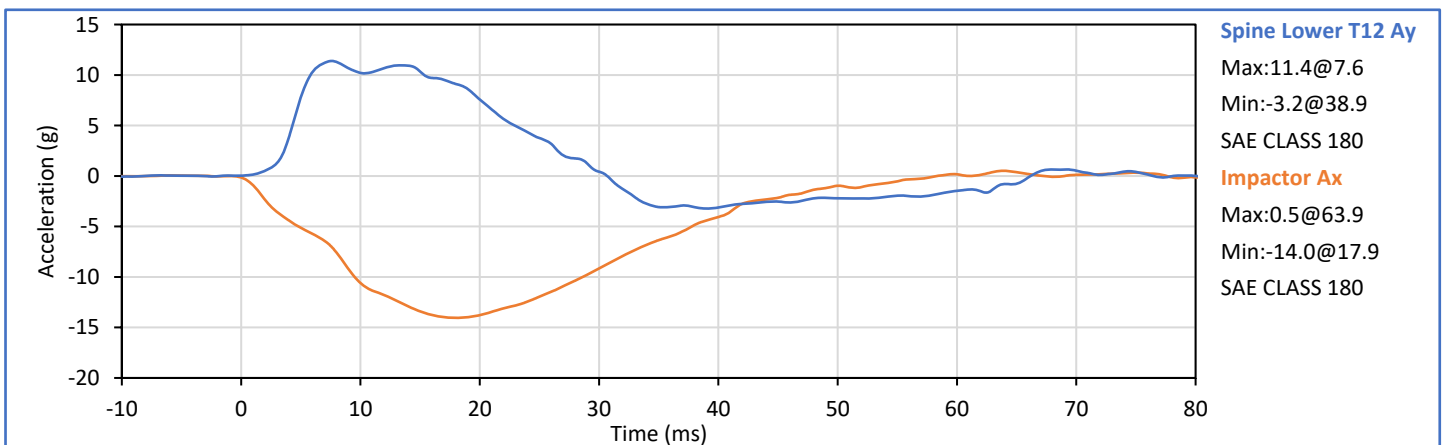
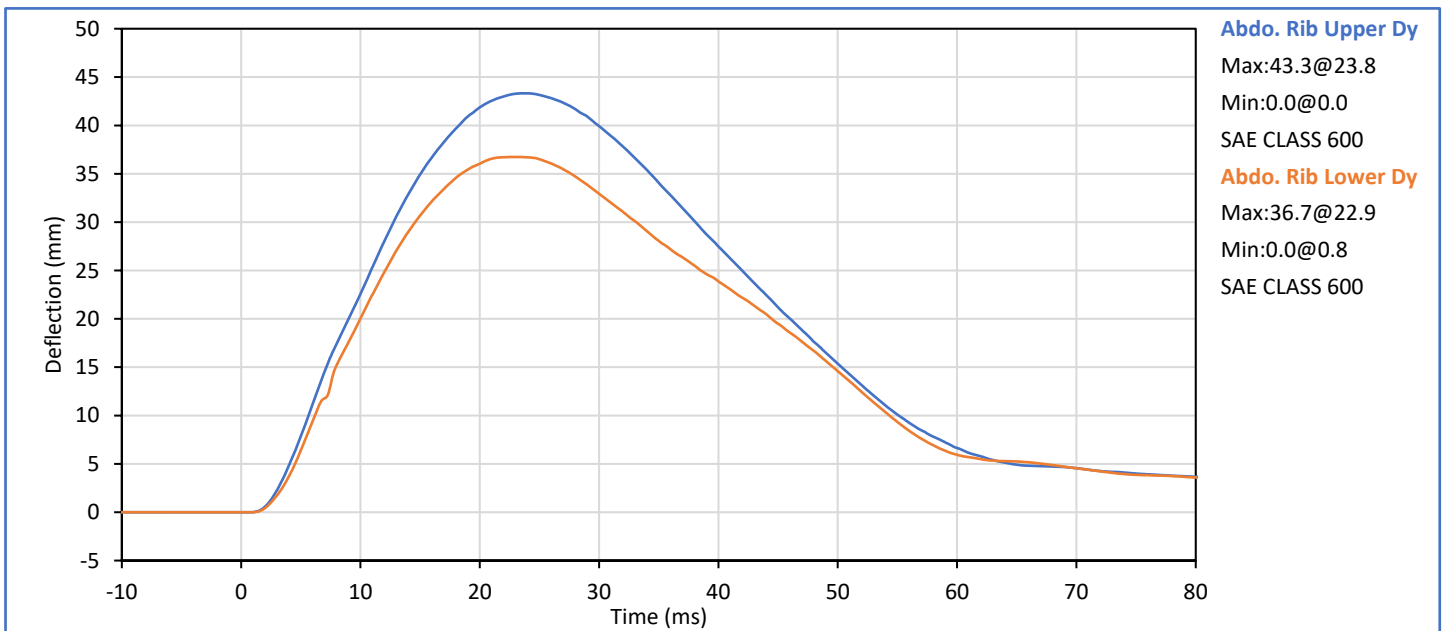
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.2	Pass
Laboratory Relative Humidity	%	10	70	42	Pass
Impactor Velocity	m/s	4.20	4.40	4.32	Pass
Peak Thorax Rib Upper Dy	mm	32.0	40.0	38.2	Pass
Peak Thorax Rib Middle Dy	mm	39.0	45.0	42.6	Pass
Peak Thorax Rib Lower Dy	mm	35.0	43.0	37.6	Pass
Peak Spine Upper T1 Ay	g	13.0	17.0	14.9	Pass
Peak Spine Lower T12 Ay	g	7.0	11.0	8.7	Pass
Peak Impactor Ax	g	-18.0	-14.0	-14.5	Pass
Overall Test Results					Pass



Technician: *Mill JG III*
G. Fuentes

Approved By: *Smith*
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	4.31	Pass
Peak Upper Abdomen Rib Dy	mm	36.0	47.0	43.3	Pass
Peak Lower Abdomen Rib Dy	mm	33.0	44.0	36.7	Pass
Peak Lower Spine T12 Ay	mm	9.0	14.0	11.4	Pass
Peak Impactor Ax	g	-16.0	-12.0	-14.0	Pass
Overall Test Results					Pass

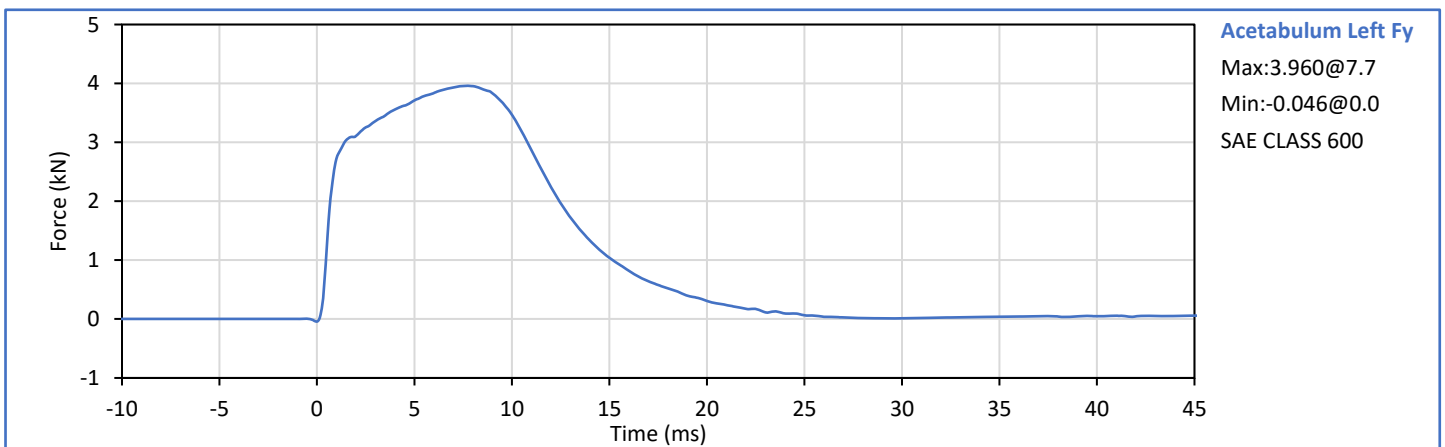
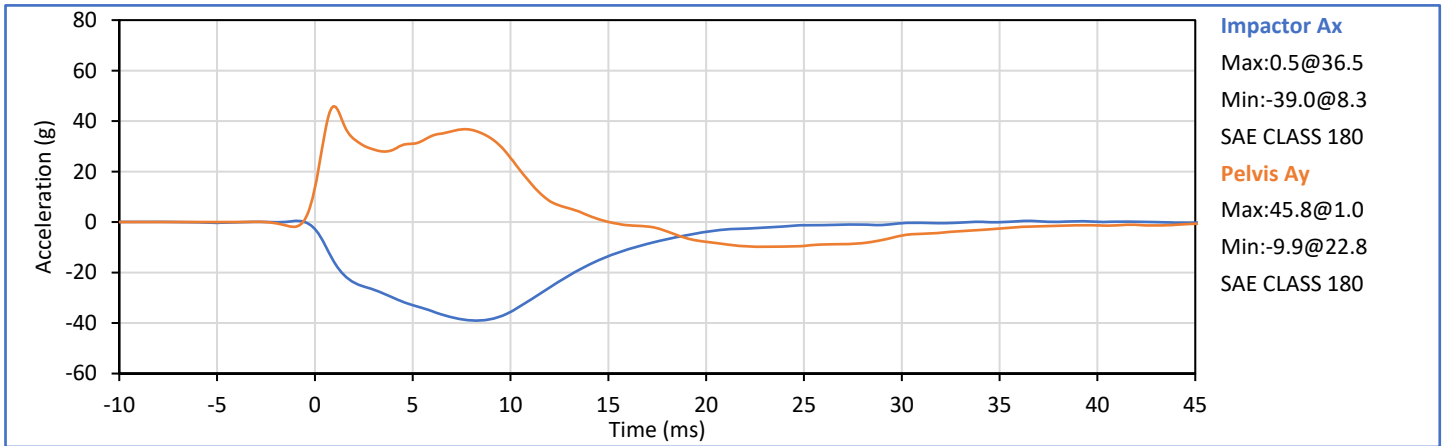


Technician: *Mill LGS III*
G. Fuentes

Approved By: *Seath*
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	41	Pass
Impactor Velocity	m/s	6.60	6.80	6.72	Pass
Peak Acetabulum Fy	kN	3.60	4.30	3.96	Pass
Pelvis Ay after 6ms	g	34.0	42.0	36.8	Pass
Peak Impactor Ax	g	-47.0	-38.0	-39.0	Pass
Overall Test Results					Pass

Pelvis Plug S/N: 14798



Technician: *Mill LGS III*
G. Fuentes

Approved By: *Smith*
J. Hernandez

ATD Serial No.: 299

Test Date: 2024-06-06

Pelvis Plug S/N: 14798

SID-IIs Small Side Impact ATD
Pelvis Acetabulum Impact



SID-IIs Pelvis Plug Certification Test

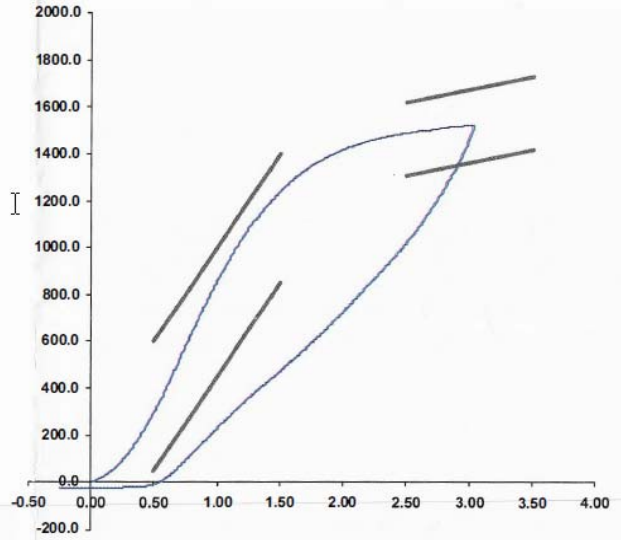
Plug S/N 14798
Test Number 16771
Report Number 16817
Test Date 12/29/2020 11:57:41 AM

	Test Results	Spec. Min	Spec. Max
Force @ 0.5 mm (N)	301.07	50.00	600.00
Force @ 1.5 mm (N)	1,236.55	850.00	1,400.00
Force @ 2.5 mm (N)	1,487.30	1,306.00	1,618.00
Force @ 3.0 mm (N)	1,520.37	1,361.00	1,673.00

Testing Machine STM-20 5965542
Load Cell S/N (F1360947), 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

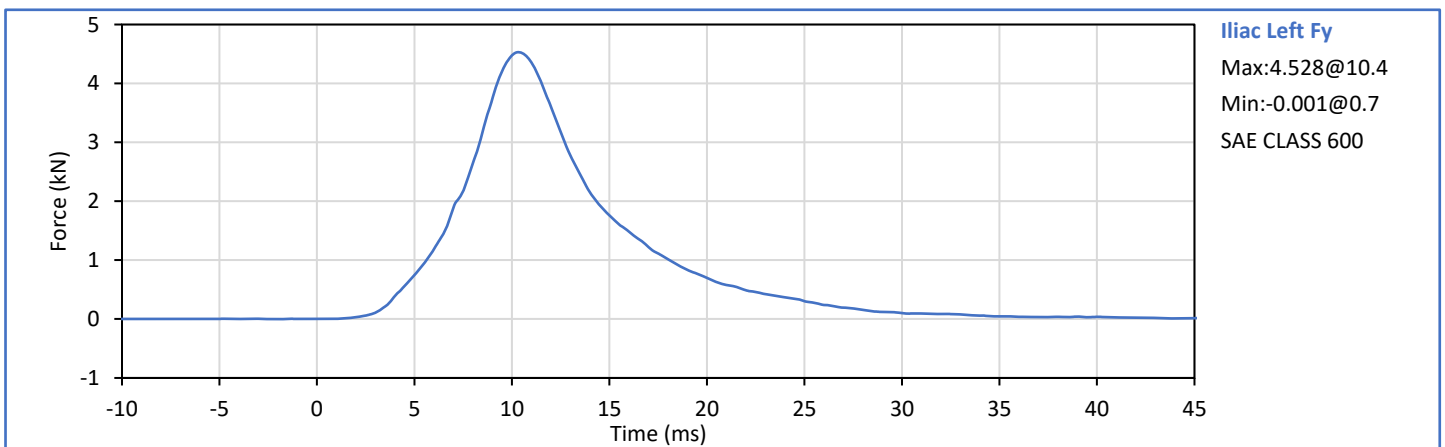
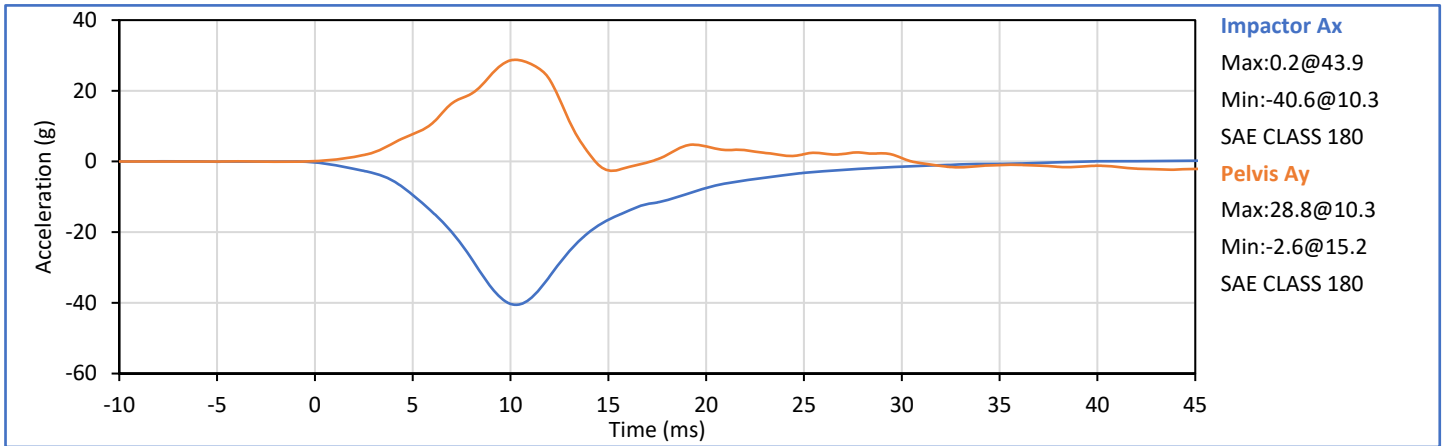
Template No 107 29-Dec-20
SACO Research

By: DC Date: 12/29/20

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	29	Pass
Impactor Velocity	m/s	4.20	4.40	4.32	Pass
Peak Iliac Fy	kN	4.10	5.10	4.53	Pass
Peak Pelvis Ay	g	28.0	39.0	34.7	Pass
Peak Impactor Ax	g	-45.0	-36.0	-40.6	Pass
Overall Test Results					Pass

Pelvis Plug S/N: 14821 *

* Plug is not impacted and remains certified



Technician: *Mill LGS III*
G. Fuentes

Approved By: *Seath*
J. Hernandez

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

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:



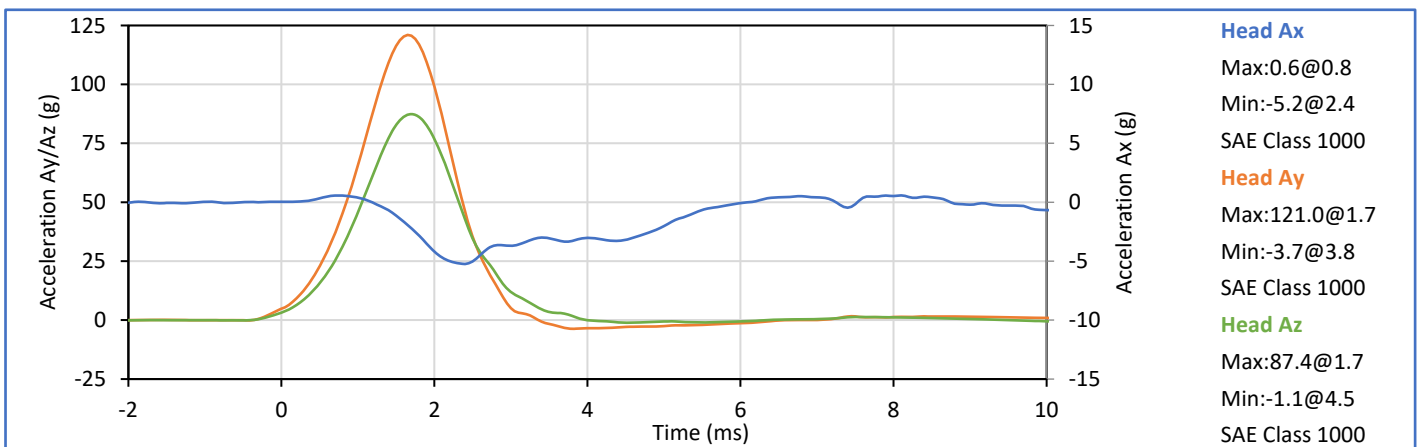
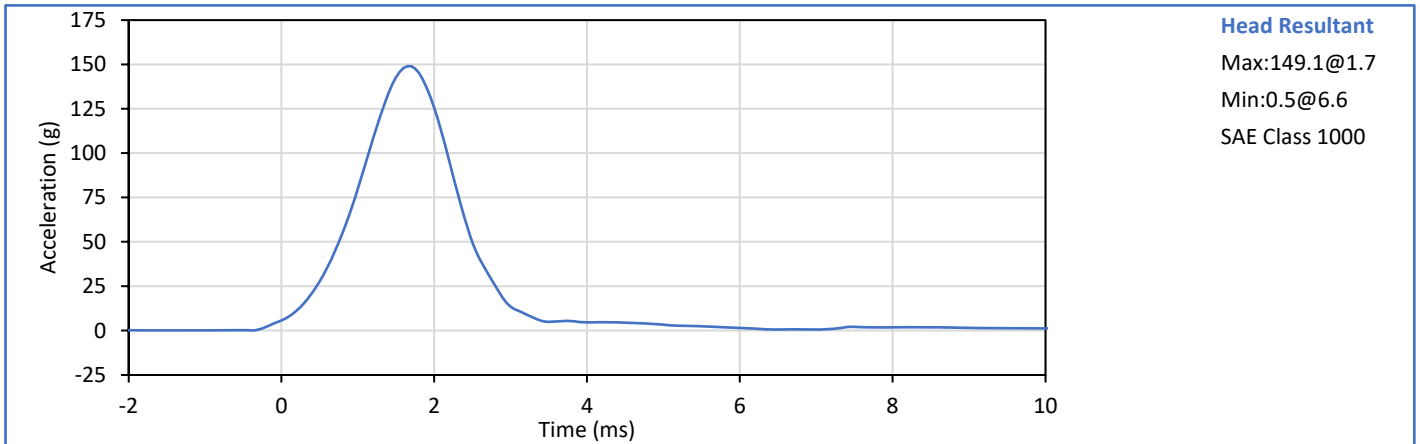
G. Fuentes

Approved By:



J. Hernandez

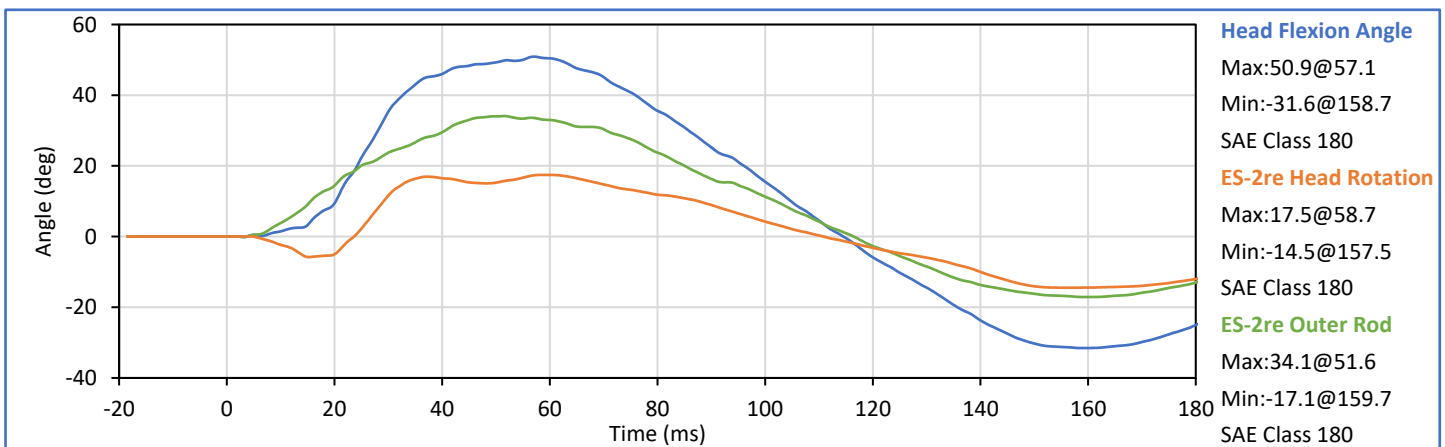
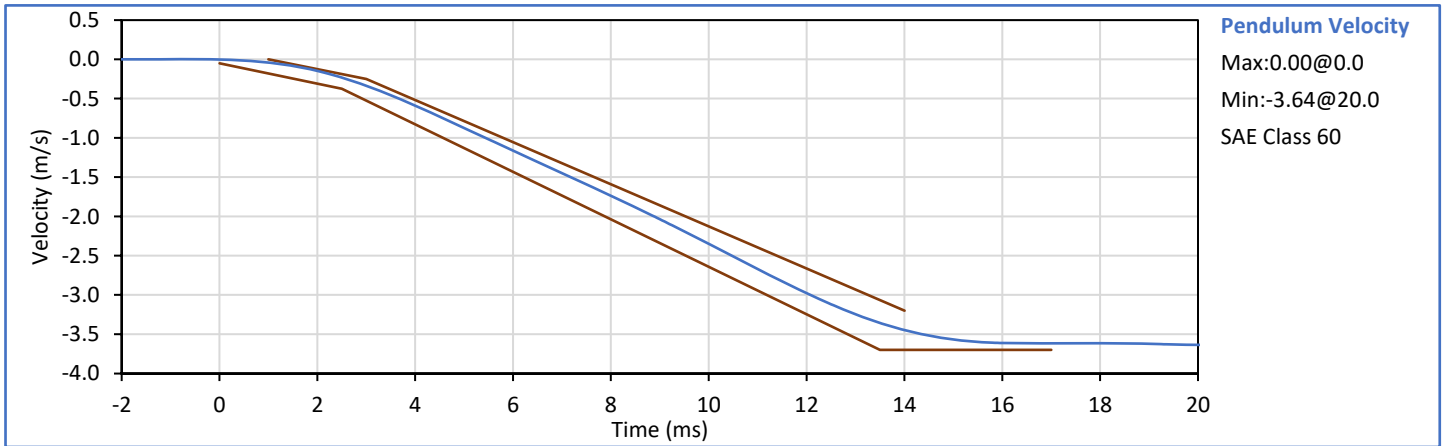
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	18.9	25.6	21.4	Pass
Laboratory Relative Humidity	%	10	70	40	Pass
Peak Resultant Acceleration	g	125.0	155.0	149.1	Pass
Peak Head Ax	g	-15.0	15.0	0.6	Pass
Oscillations After Main Pulse	%	0.0	15.0	1.4	Pass
Is Acceleration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



Technician: *Mill LGS III*
G. Fuentes

Approved By: *Smith*
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



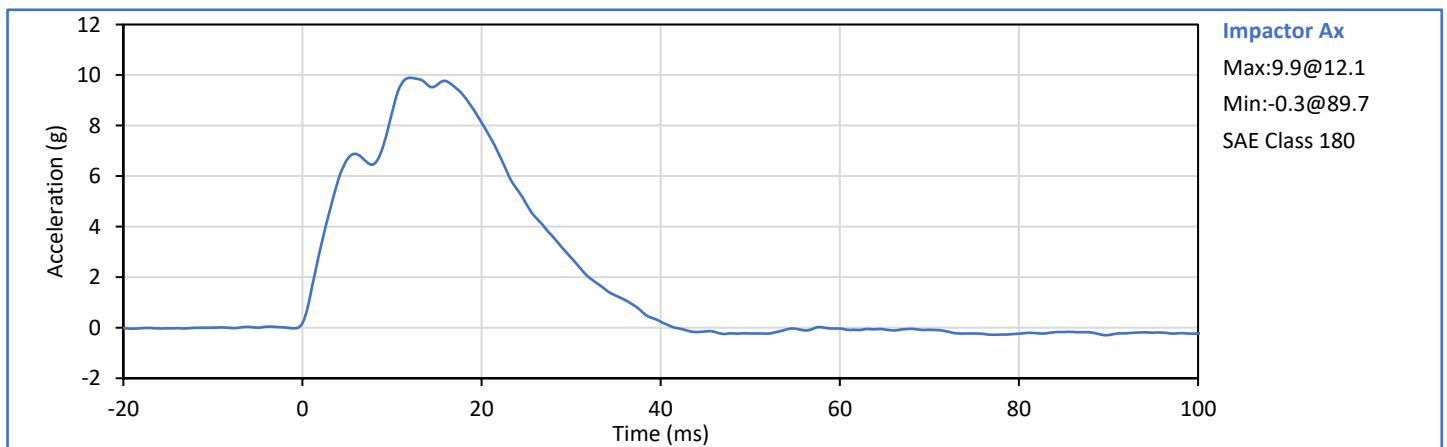
Technician: *Mill LGS III*
G. Fuentes

Approved By: *J. Hernandez*
J. Hernandez

ATD Serial No.: F037

Test Date: 2024-06-14

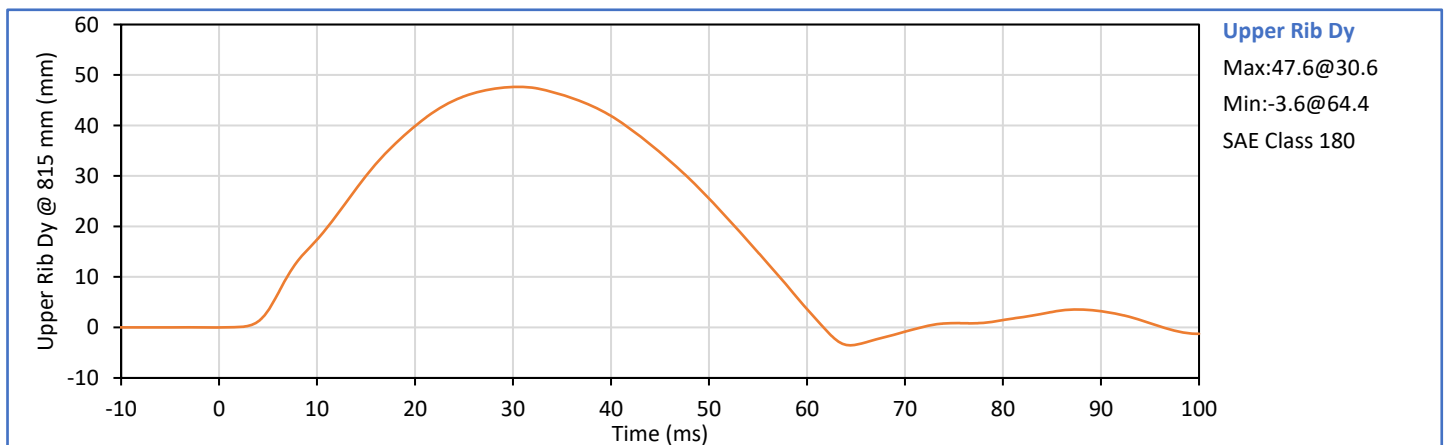
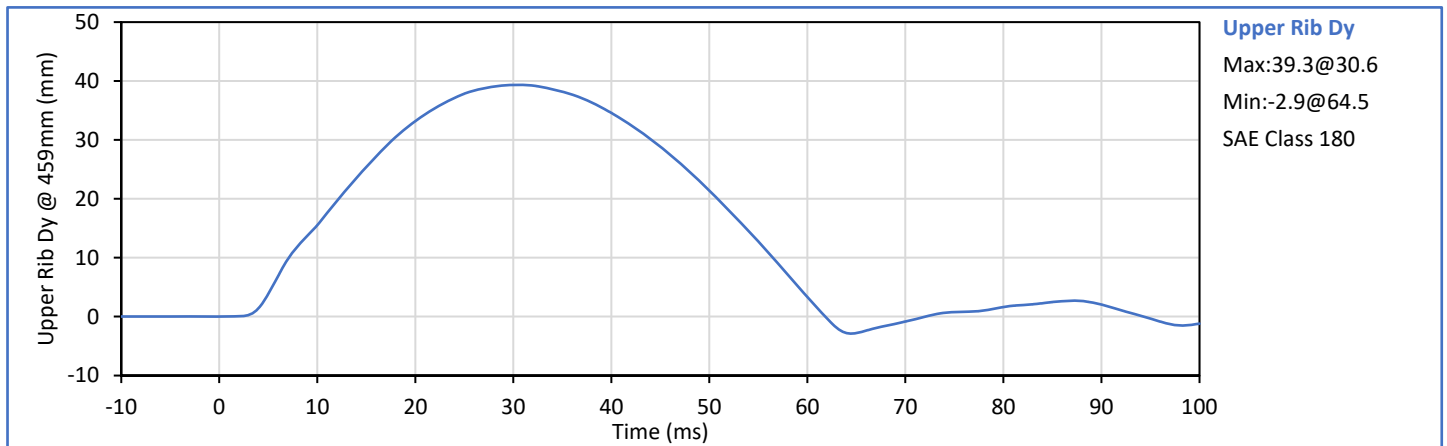
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.2	Pass
Laboratory Relative Humidity	%	10	70	46	Pass
Impactor Velocity	m/s	4.20	4.40	4.31	Pass
Peak Impactor Ax	g	7.5	10.5	9.9	Pass
Overall Test Results					Pass



Technician: *Mill JG III*
G. Fuentes

Approved By: *Seath*
J. Hernandez

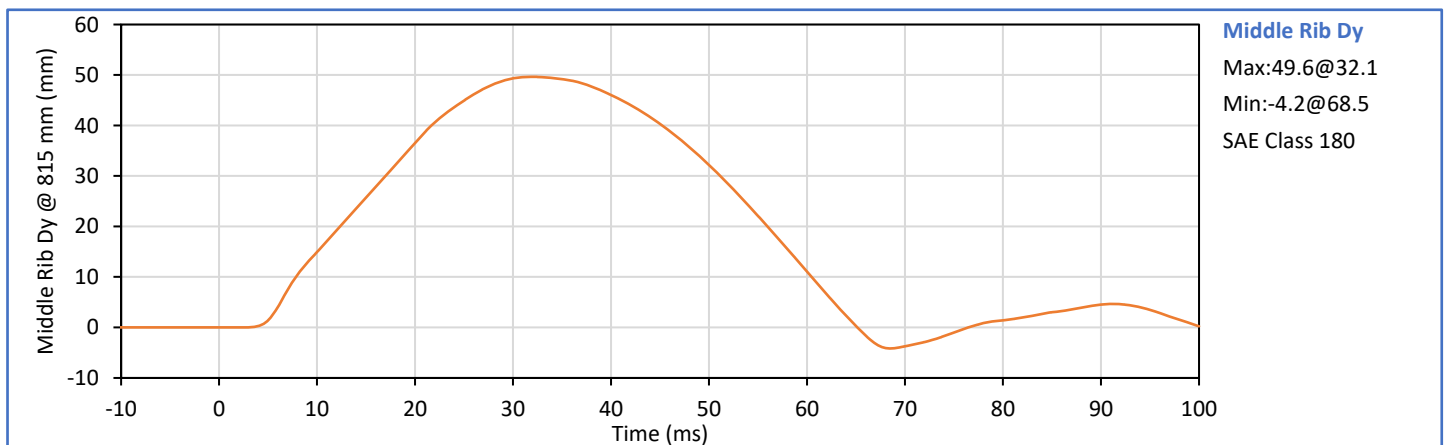
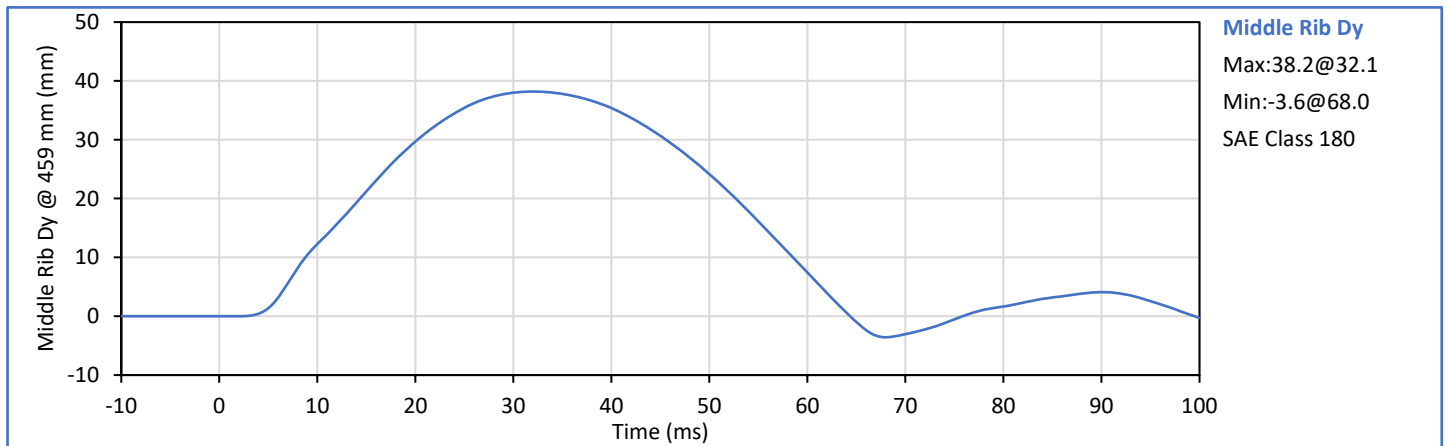
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.3	Pass
Laboratory Relative Humidity	%	10	70	41	Pass
Upper Rib Dy @ 459mm	mm	36.0	40.0	39.3	Pass
Upper Rib Dy @ 815mm	mm	46.0	51.0	47.6	Pass
Overall Test Results					Pass



Technician: *Mill LGS III*
G. Fuentes

Approved By: *Seath*
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



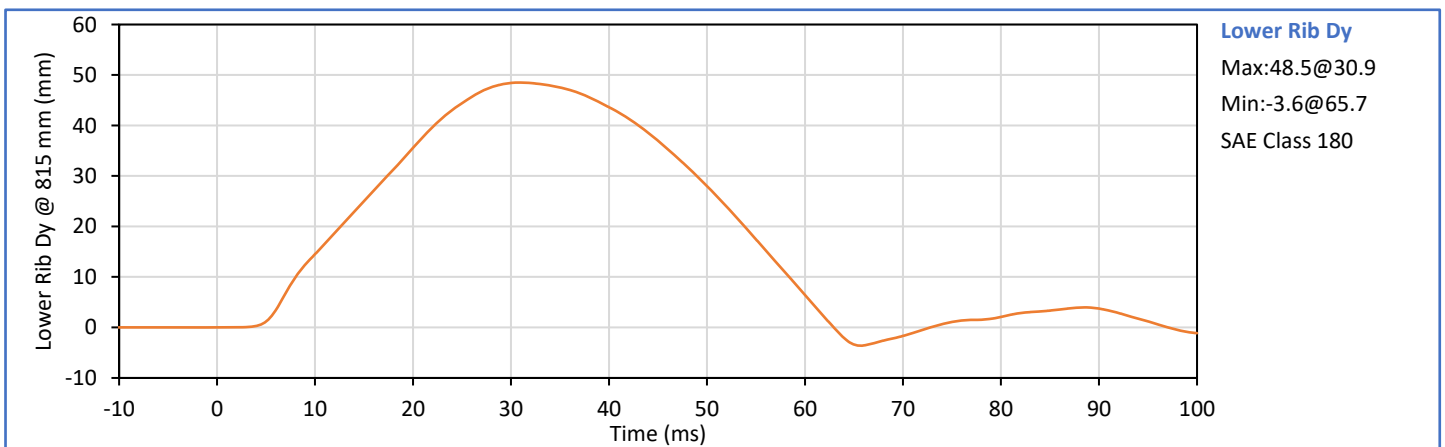
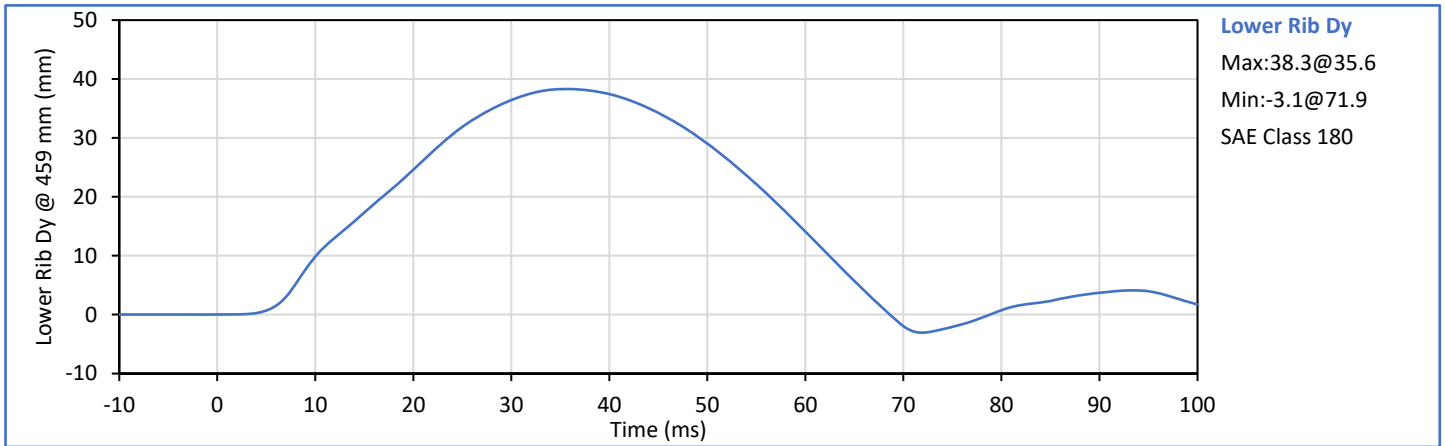
Technician: *Mill LGS III*
G. Fuentes

Approved By: *Seath*
J. Hernandez

ATD Serial No.: F037

Test Date: 2024-06-17

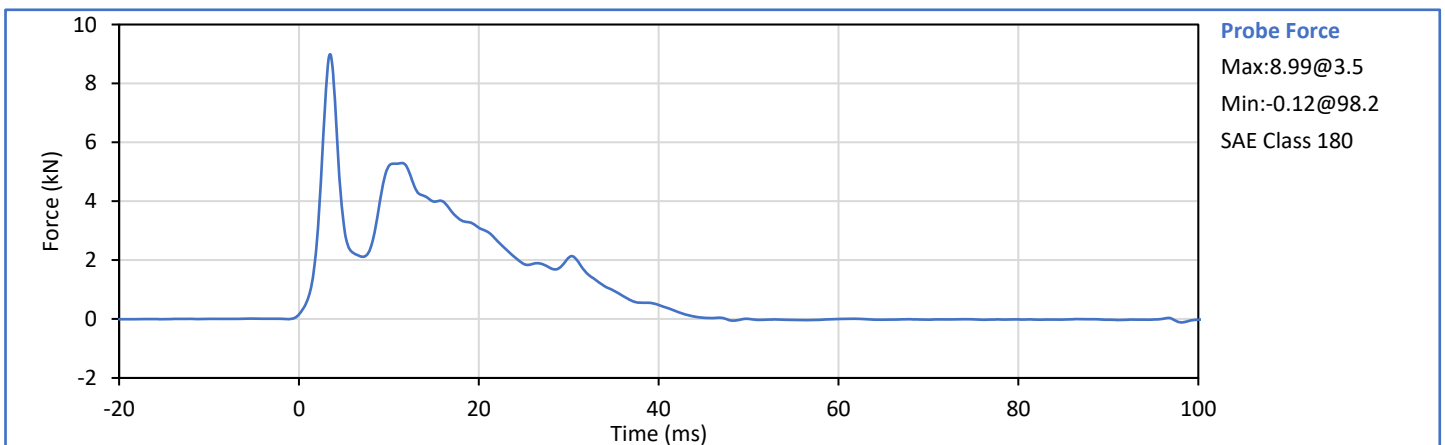
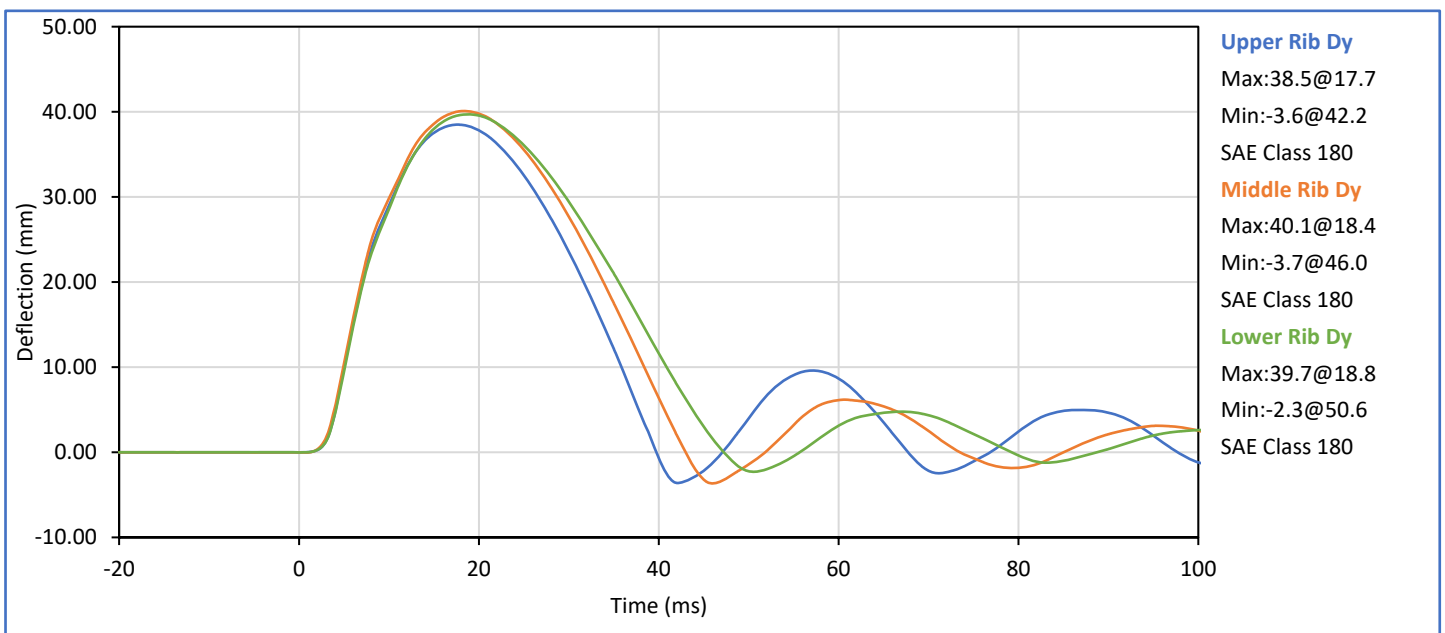
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.6	Pass
Laboratory Relative Humidity	%	10	70	41	Pass
Lower Rib Dy @ 459mm	mm	36.0	40.0	38.3	Pass
Lower Rib Dy @ 815mm	mm	46.0	51.0	48.5	Pass
Overall Test Results					Pass



Technician: *Mill LGS III*
G. Fuentes

Approved By: *Seuth*
J. Hernandez

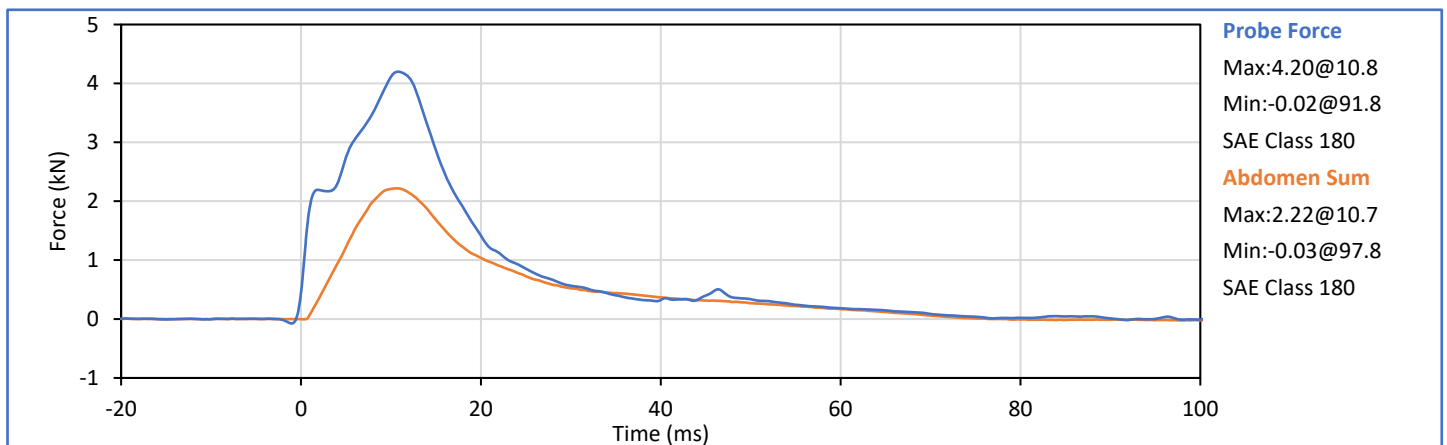
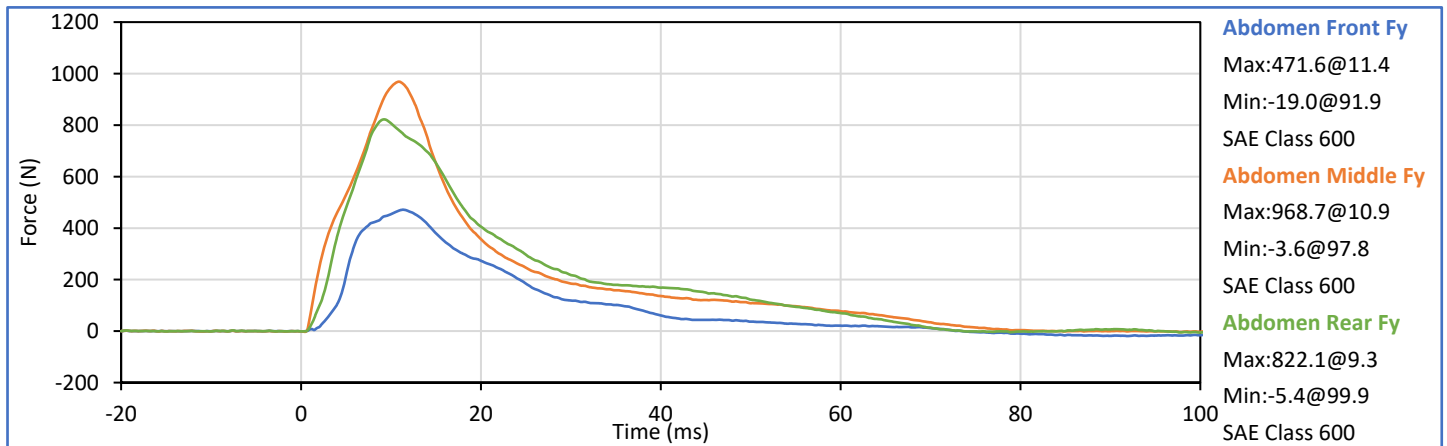
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.6	Pass
Laboratory Relative Humidity	%	10	70	41	Pass
Impactor Velocity	m/s	5.40	5.60	5.50	Pass
Peak Upper Rib Dy	mm	34.0	41.0	38.5	Pass
Peak Middle Rib Dy	mm	37.0	45.0	40.1	Pass
Peak Lower Rib Dy	mm	37.0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



Technician: *Milli JG III*
G. Fuentes

Approved By: *Seath*
J. Hernandez

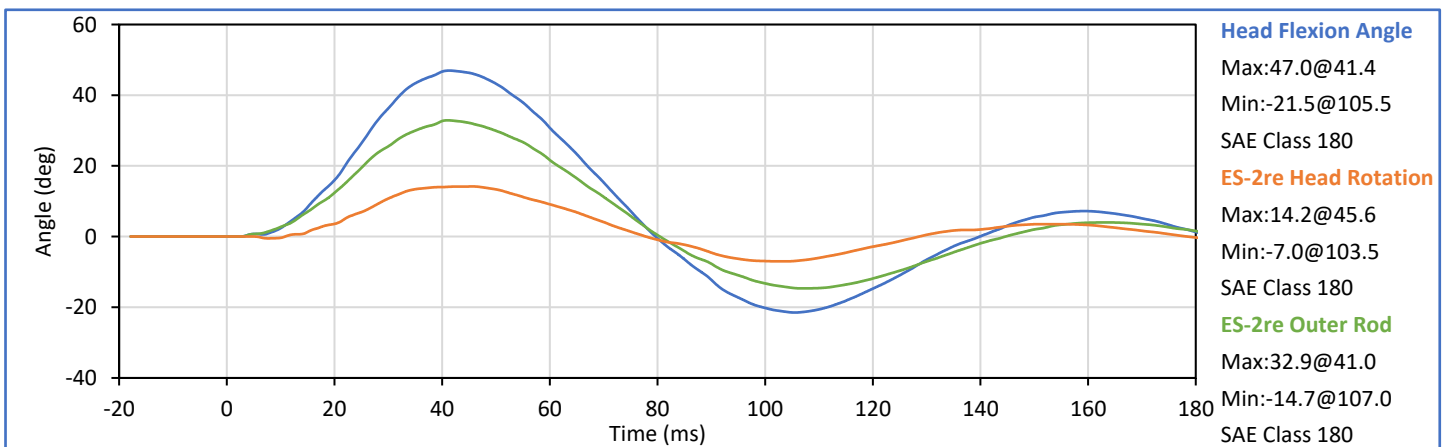
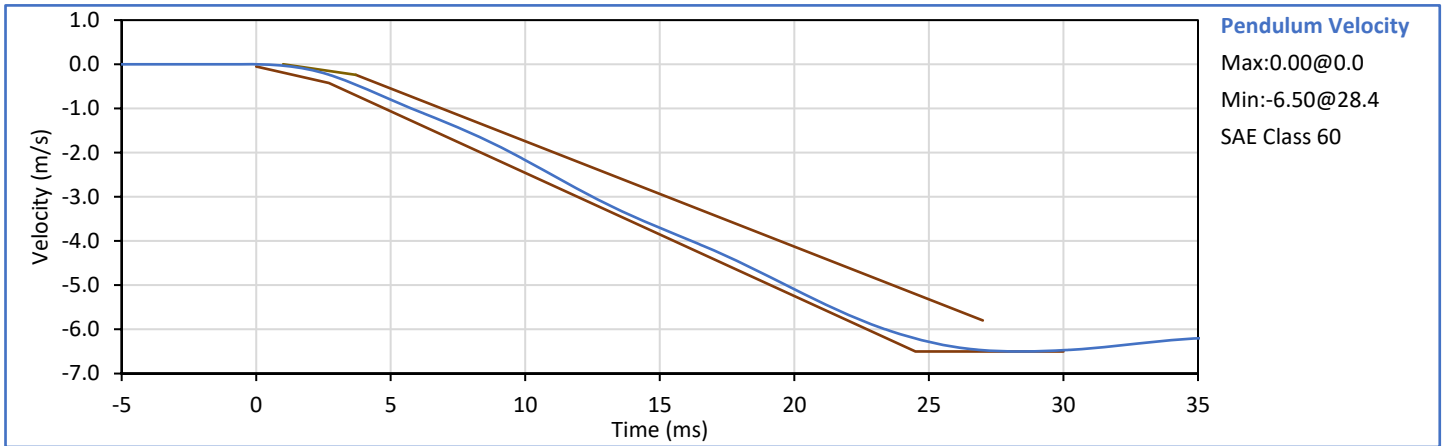
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.1	Pass
Laboratory Relative Humidity	%	10	70	45	Pass
Impactor Velocity	m/s	3.90	4.10	3.96	Pass
Peak Impactor Force	kN	4.00	4.80	4.20	Pass
Time of Peak Impactor Force	ms	10.6	13.0	10.8	Pass
Sum of Abdomen 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: *Mill JG III*
G. Fuentes

Approved By: *Smith*
J. Hernandez

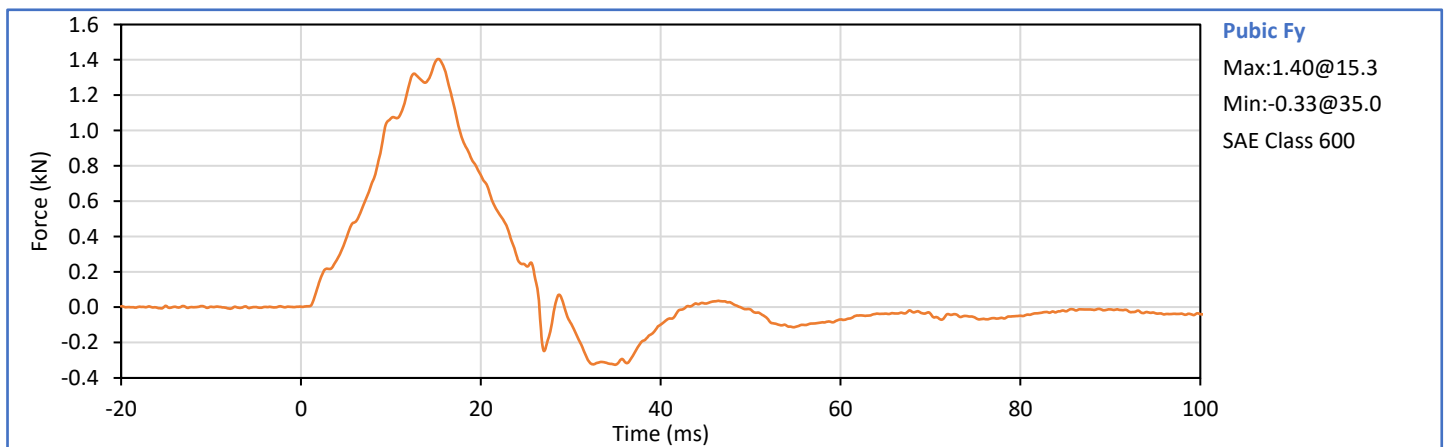
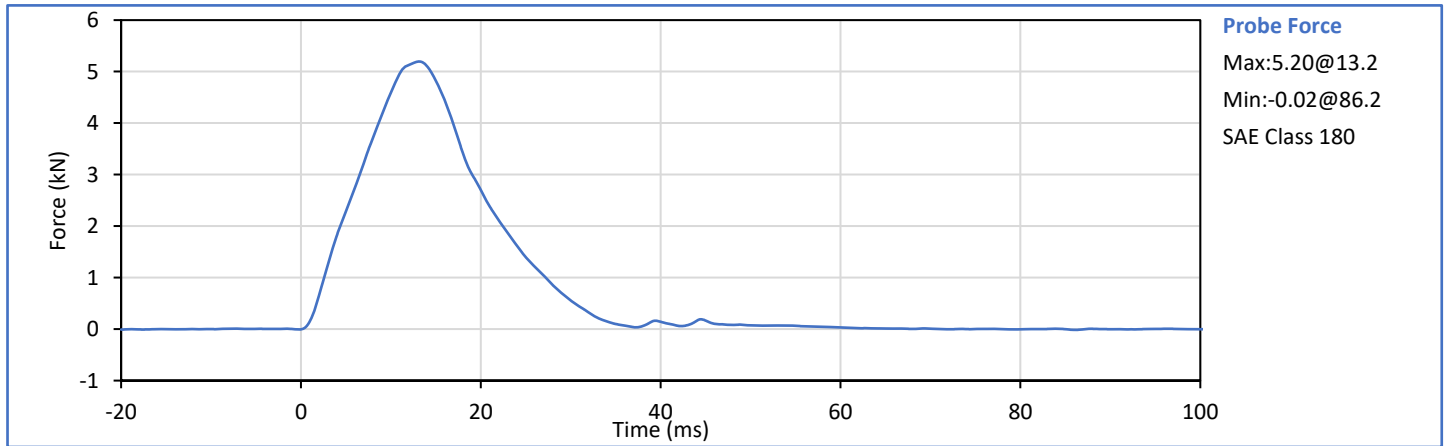
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.1	Pass
Laboratory Relative Humidity	%	10	70	40	Pass
Pendulum Velocity	m/s	5.95	6.15	6.11	Pass
Peak Headform Flexion	deg	45.0	55.0	47.0	Pass
Time of Peak Headform Flexion	ms	39.0	53.0	41.4	Pass
Flexion Decay (Peak to zero)	ms	37.0	57.0	38.3	Pass
Overall Test Results					Pass



Technician: *Mill LGS III*
G. Fuentes

Approved By: *Smith*
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 LGS III*
G. Fuentes

Approved By: *Seath*
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: 2024-06-12

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:



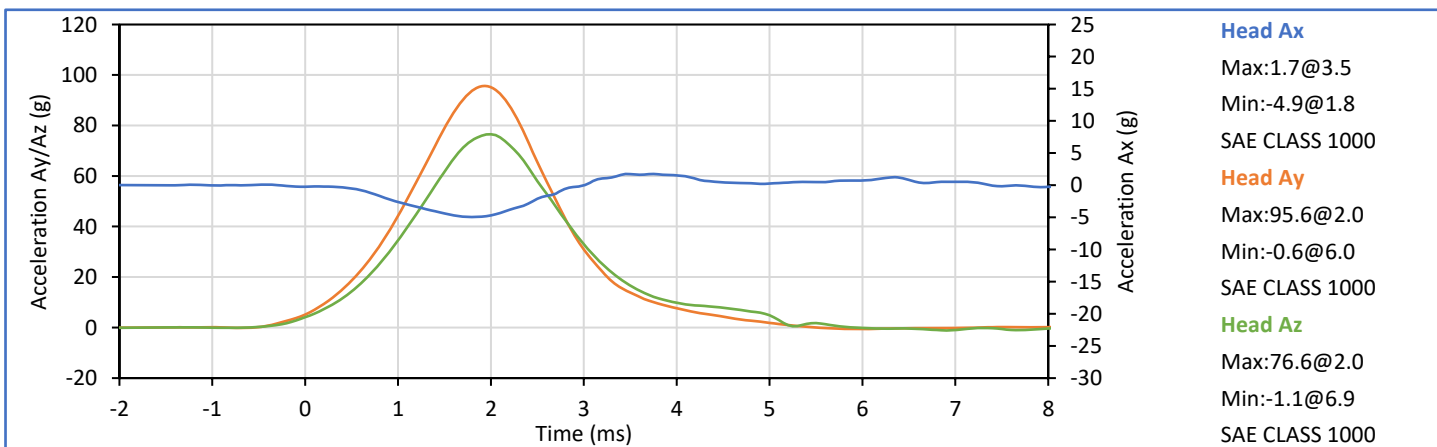
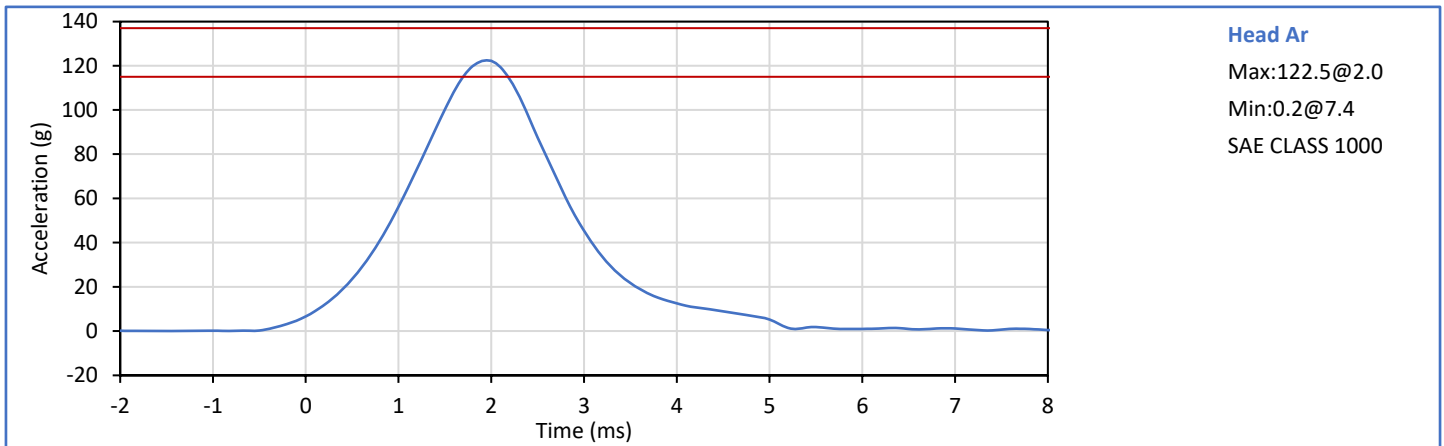
G. Fuentes

Approved By:



J. Hernandez

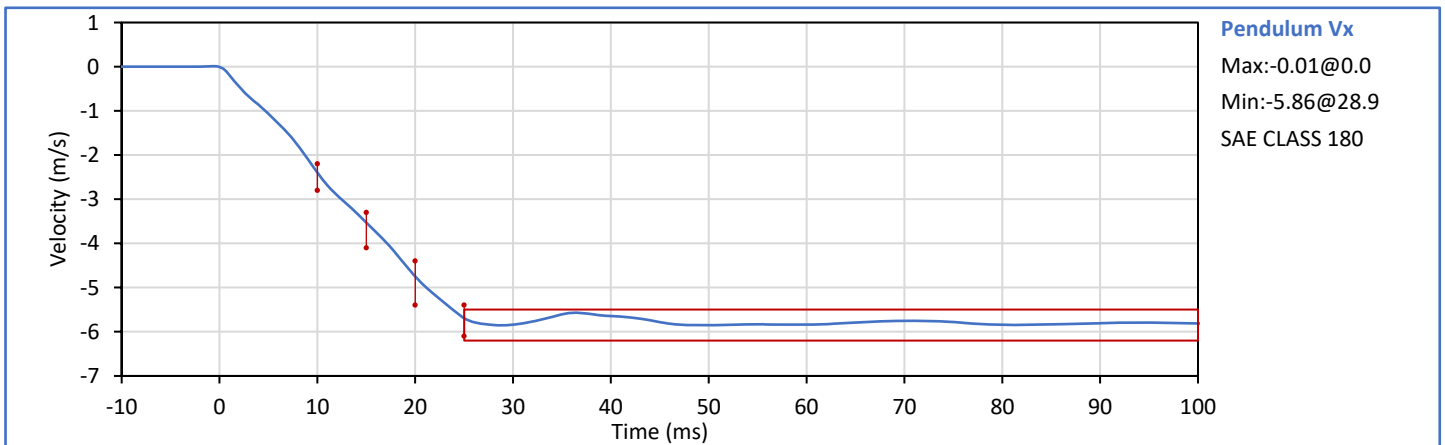
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	18.9	25.6	21.4	Pass
Laboratory Relative Humidity	%	10	70	36	Pass
Peak Resultant Acceleration	g	115.0	137.0	122.5	Pass
Peak Head Ax	g	-15.0	15.0	-4.9	Pass
Oscillations After Main Pulse	%	0.0	15.0	1.1	Pass
Is Acceleration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



Technician: *Mill LGS III*
G. Fuentes

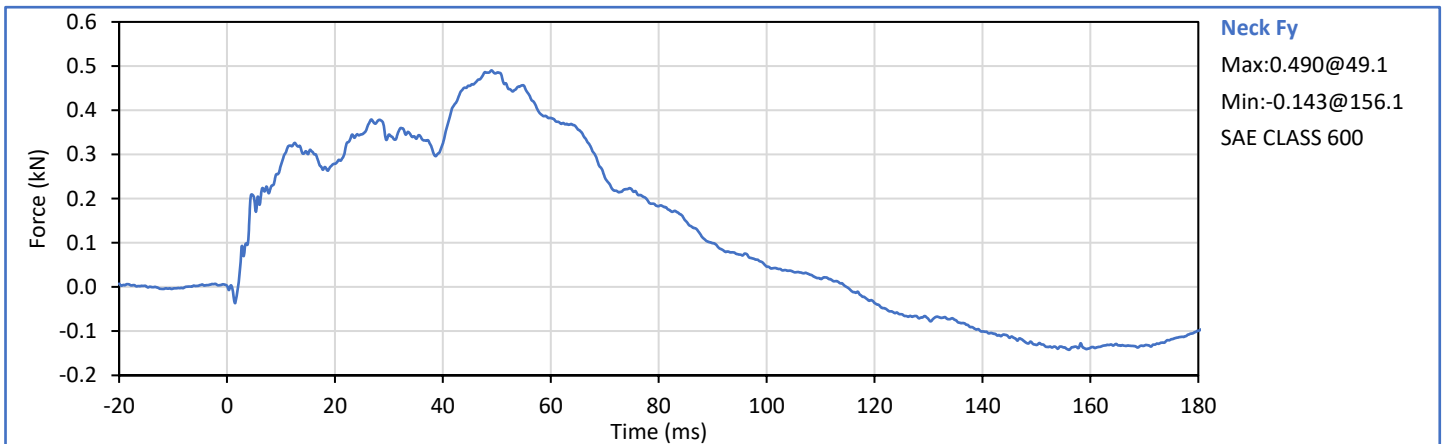
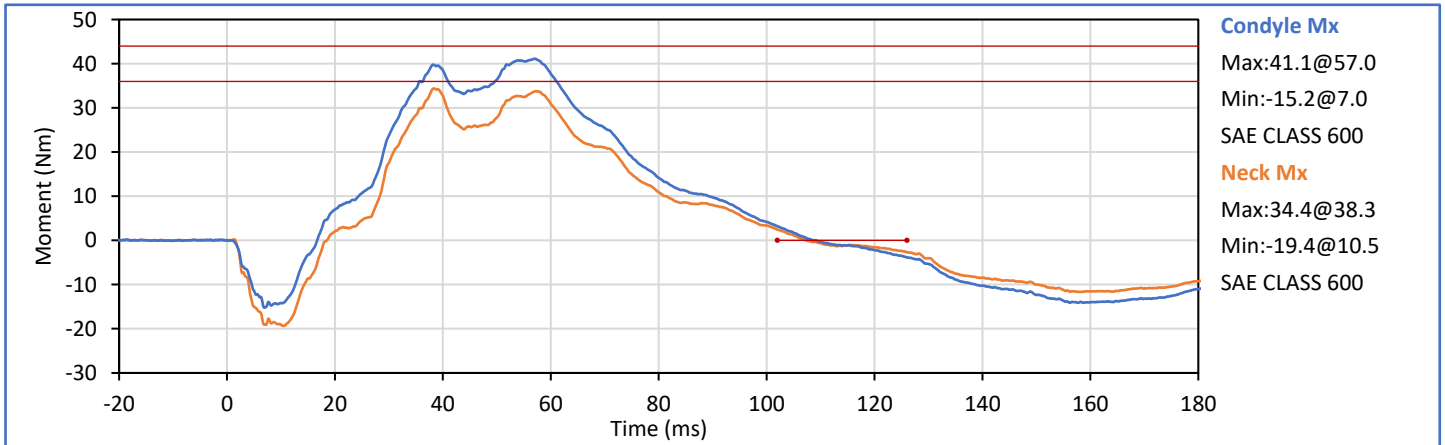
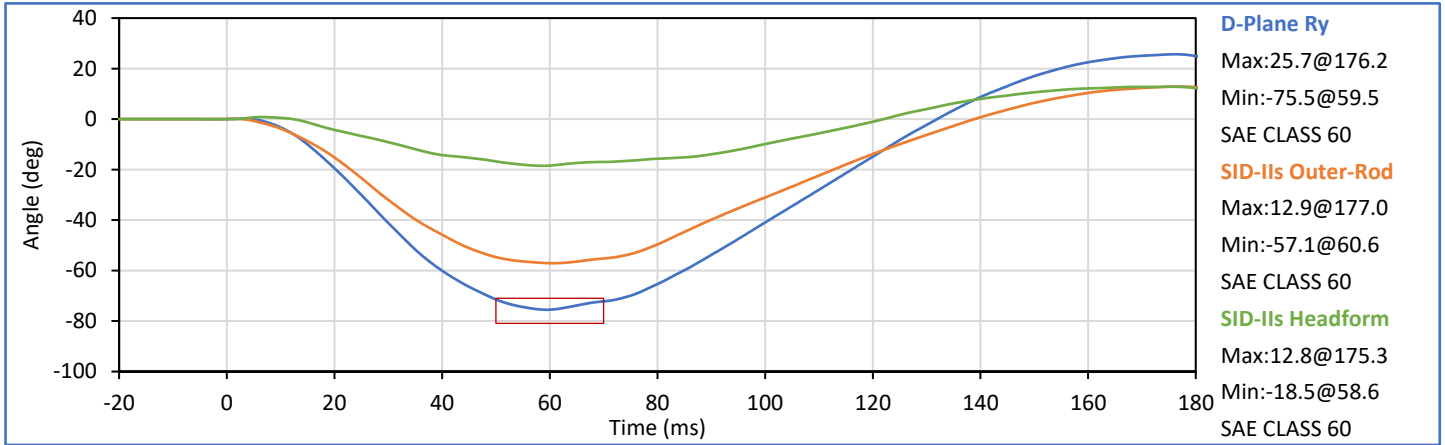
Approved By: *Smith*
J. Hernandez

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

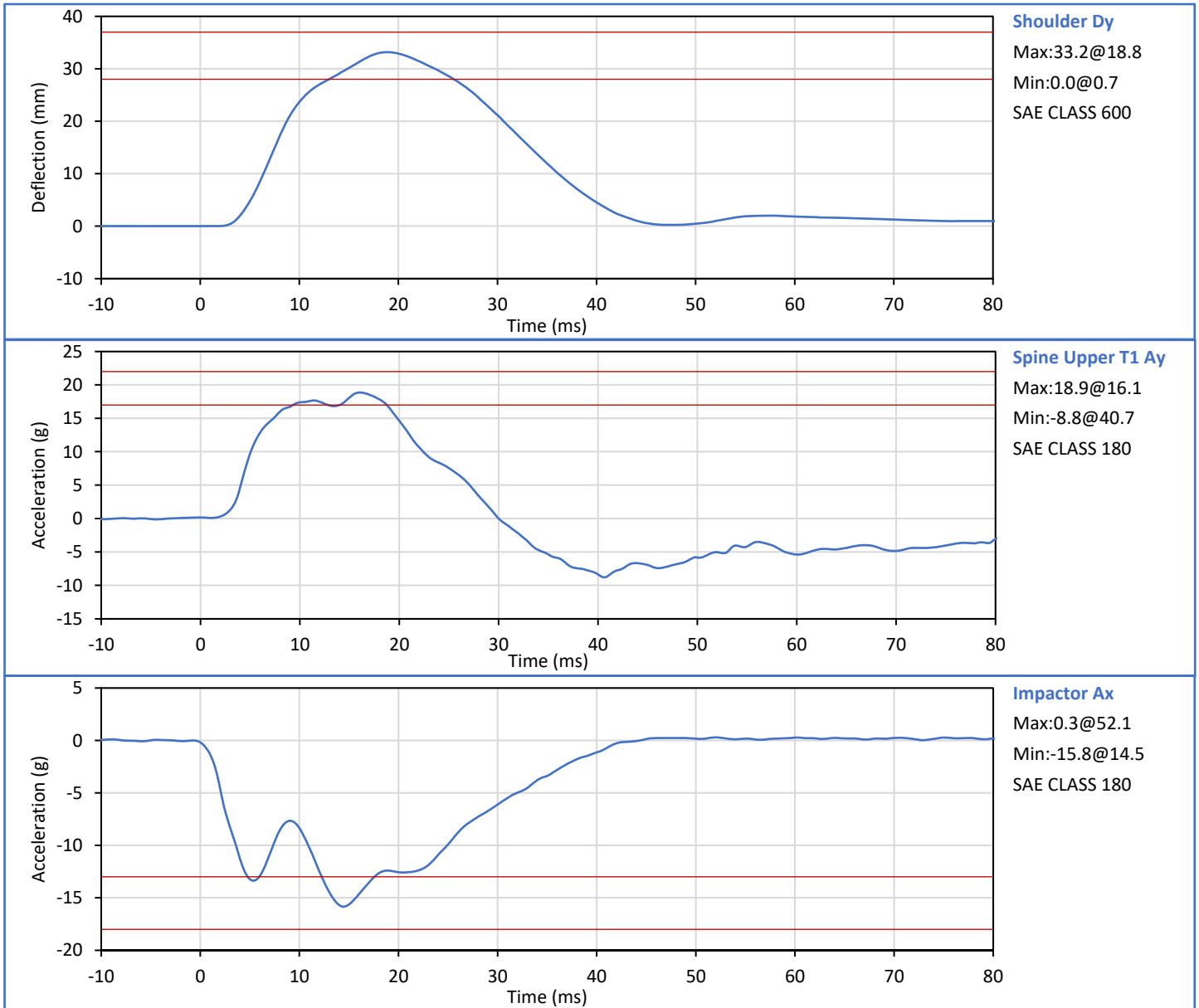


Technician: *Mill LGS III*
G. Fuentes

Approved By: *Santh*
J. Hernandez



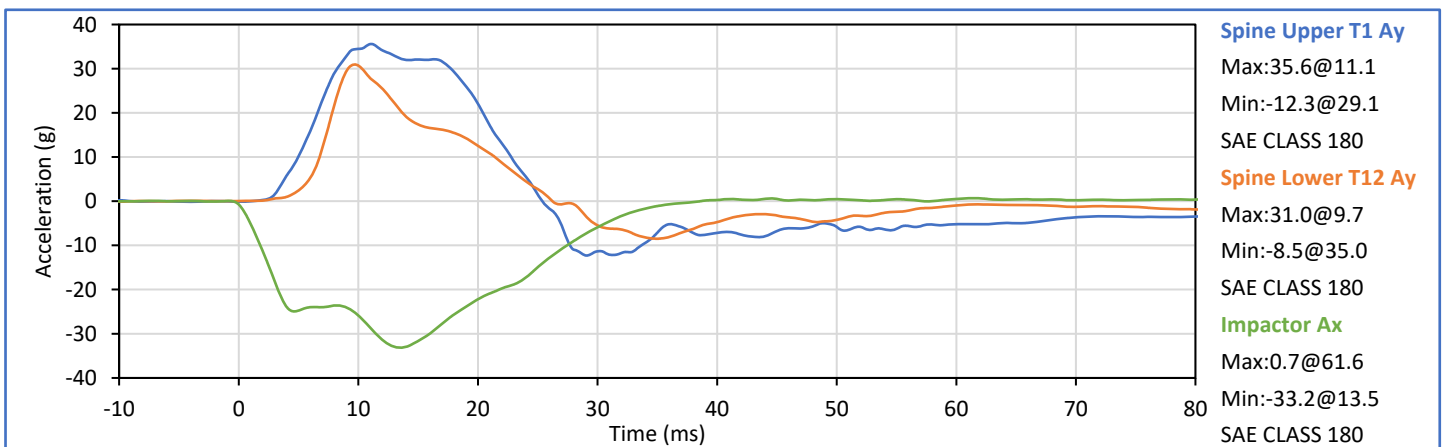
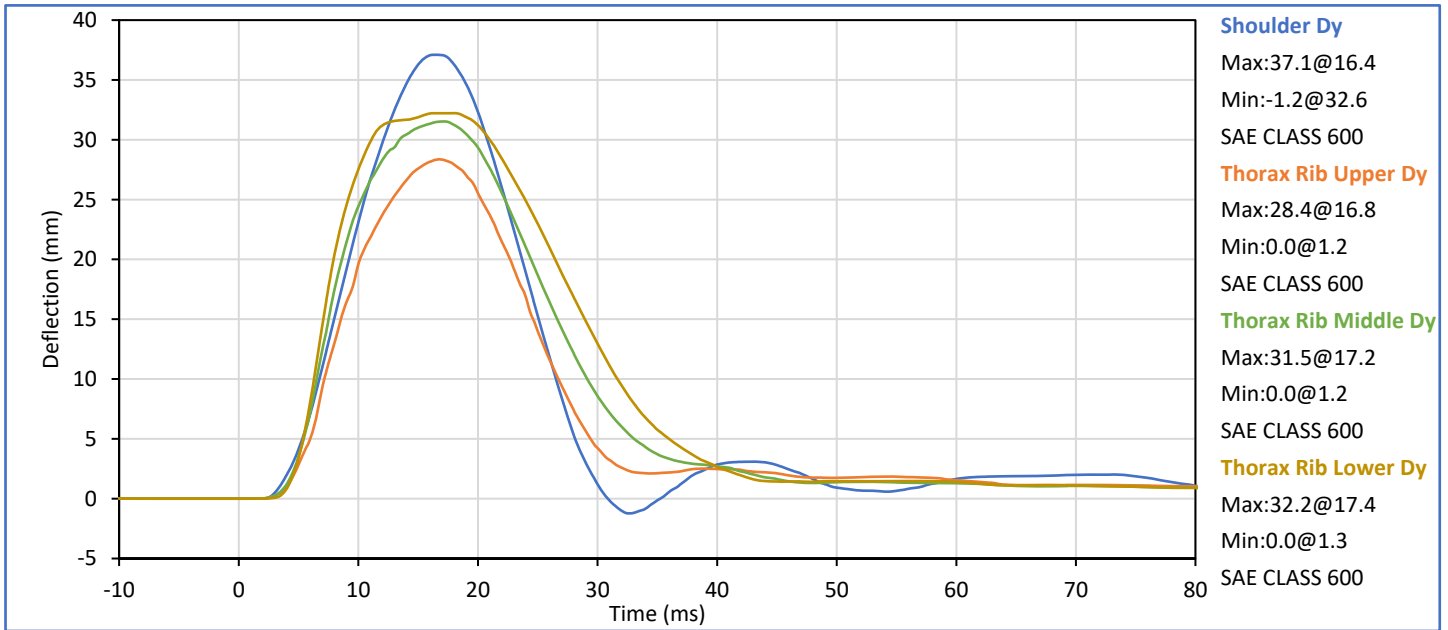
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.6	Pass
Laboratory Relative Humidity	%	10	70	35	Pass
Impactor Velocity	m/s	4.20	4.40	4.30	Pass
Peak Shoulder Dy	mm	28.0	37.0	33.2	Pass
Peak Upper Spine (T1) Ay	g	17.0	22.0	18.9	Pass
Peak Impactor Ax	g	-18.0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



Technician: *Mill LGS III*
G. Fuentes

Approved By: *Smith*
J. Hernandez

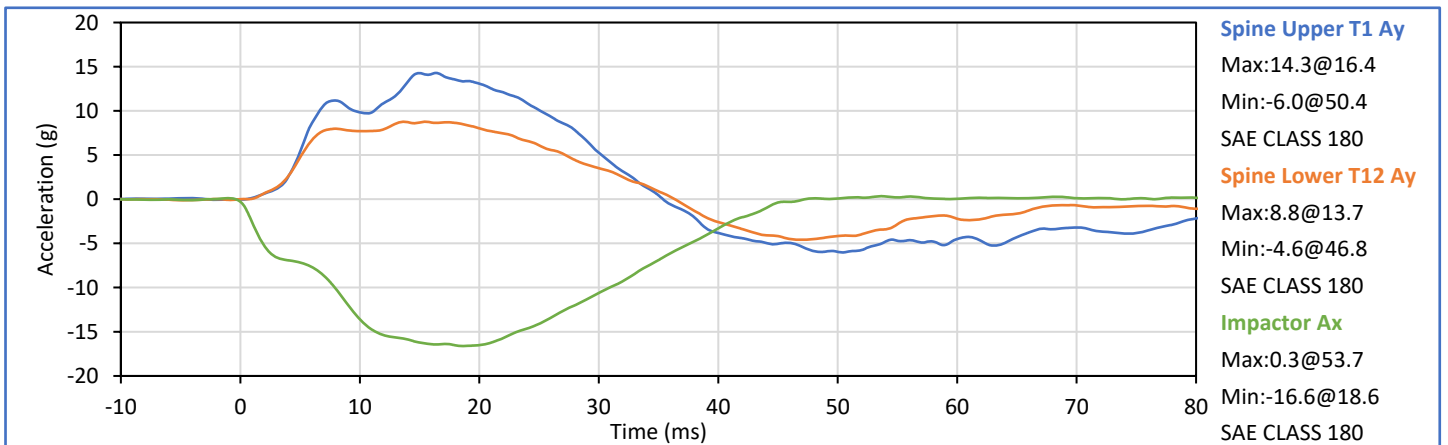
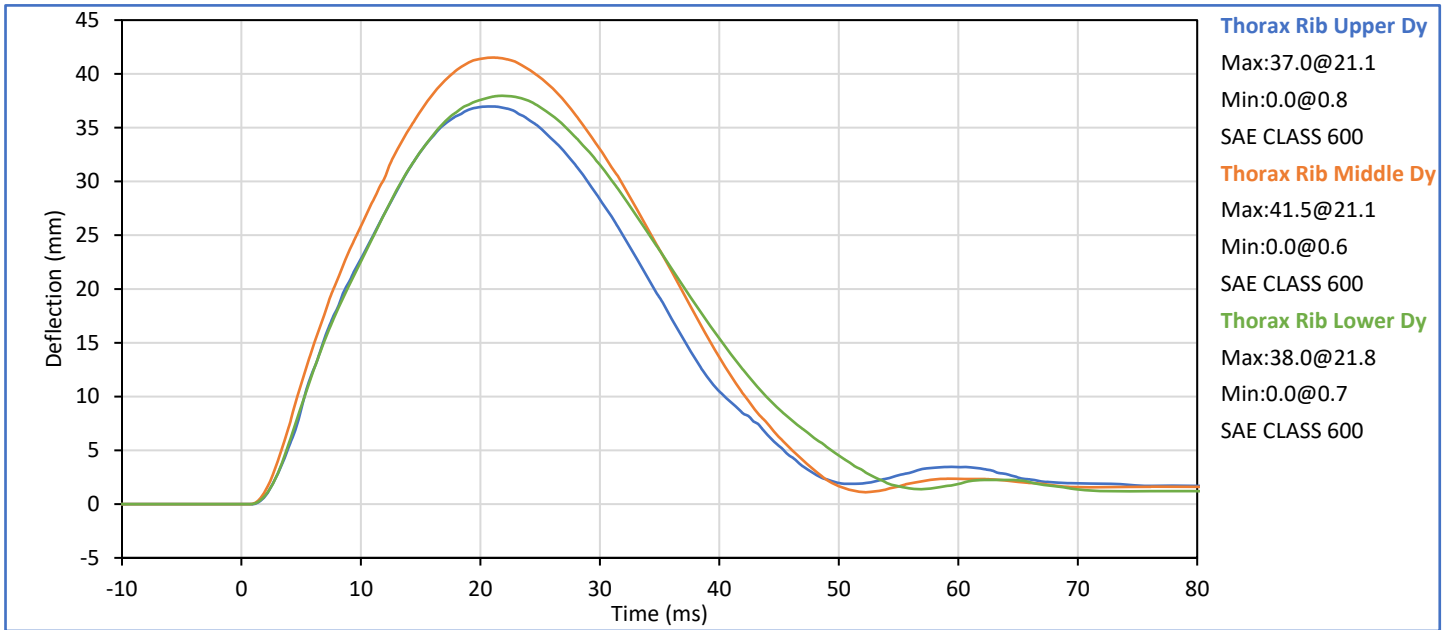
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.1	Pass
Laboratory Relative Humidity	%	10	70	34	Pass
Impactor Velocity	m/s	6.60	6.80	6.66	Pass
Peak Shoulder Dy	mm	31.0	40.0	37.1	Pass
Peak Upper Rib Dy	mm	25.0	32.0	28.4	Pass
Peak Middle Rib Dy	mm	30.0	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



Technician: Mill LGS III
G. Fuentes

Approved By: J. Hernandez
J. Hernandez

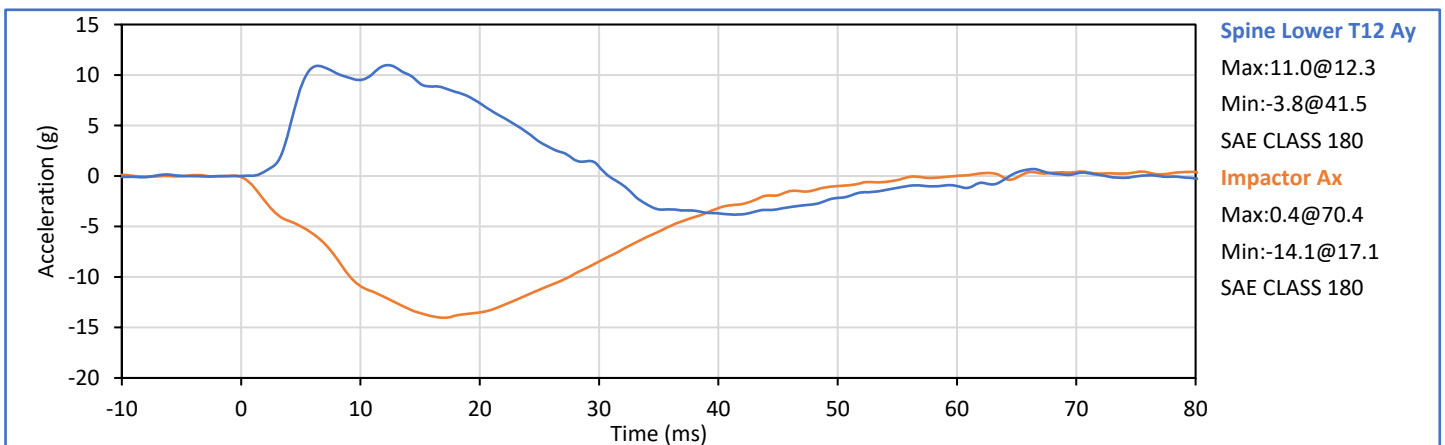
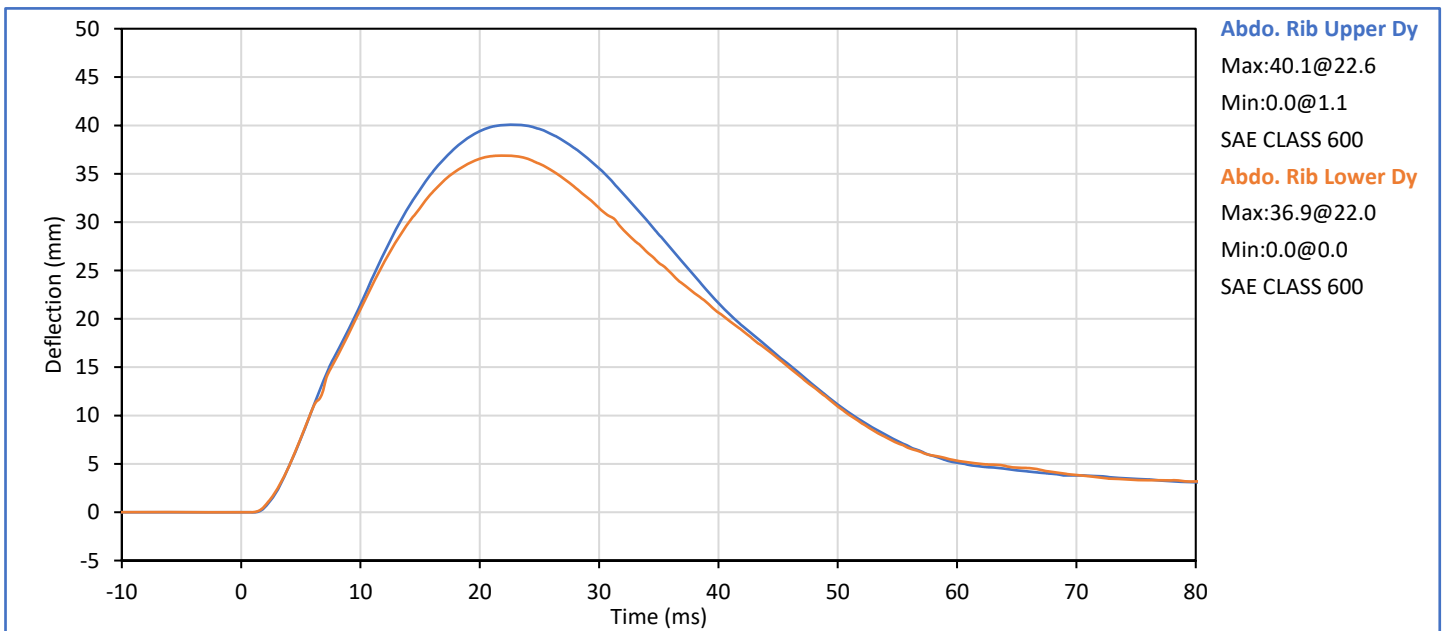
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.1	Pass
Laboratory Relative Humidity	%	10	70	35	Pass
Impactor Velocity	m/s	4.20	4.40	4.32	Pass
Peak Thorax Rib Upper Dy	mm	32.0	40.0	37.0	Pass
Peak Thorax Rib Middle Dy	mm	39.0	45.0	41.5	Pass
Peak Thorax 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: *Milli JG III*
G. Fuentes

Approved By: *Smith*
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

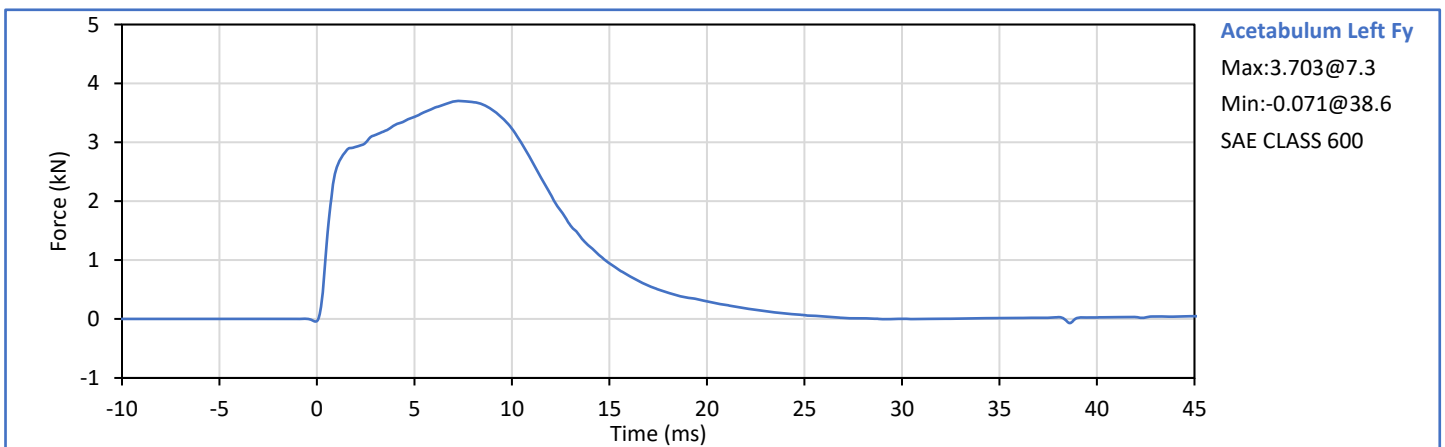
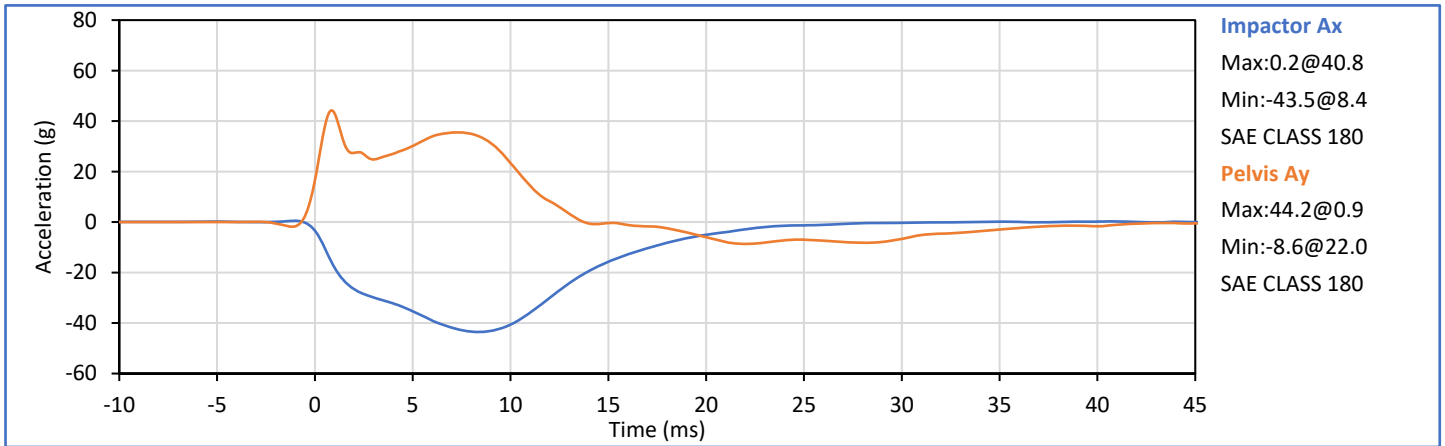


Technician: *Mill LGS III*
G. Fuentes

Approved By: *Seath*
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	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: *Milli JG III*
G. Fuentes

Approved By: *Smith*
J. Hernandez

ATD Serial No.: 299

Test Date: 2024-06-14

Pelvis Plug S/N: 14762



SID-IIs Pelvis Plug Certification Test

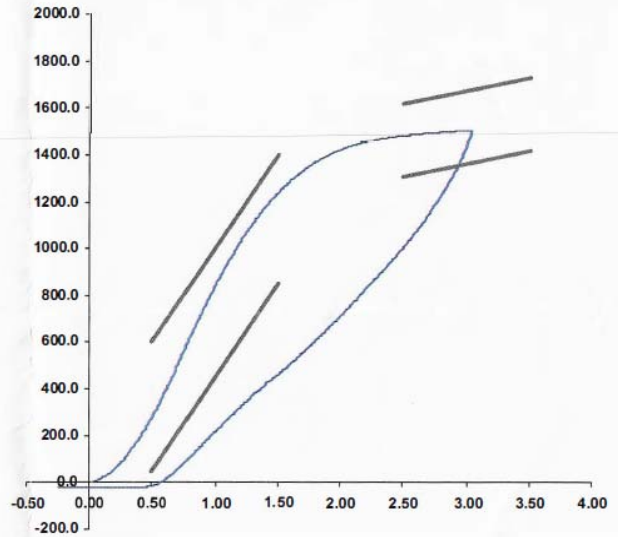
Plug S/N 14762
Test Number 16734
Report Number 16780
Test Date 12/28/2020 10:55:20 AM

	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

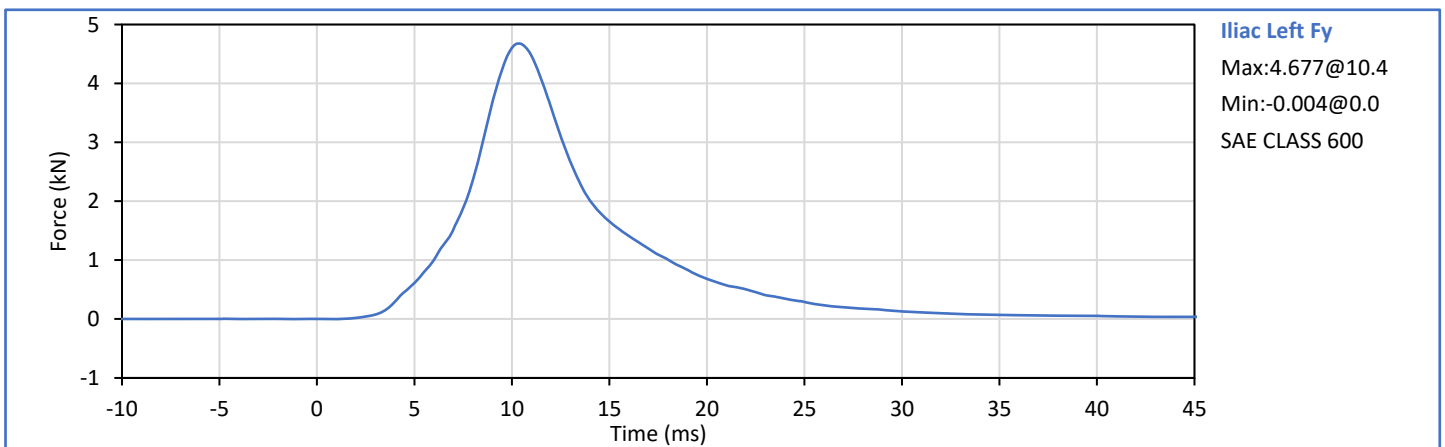
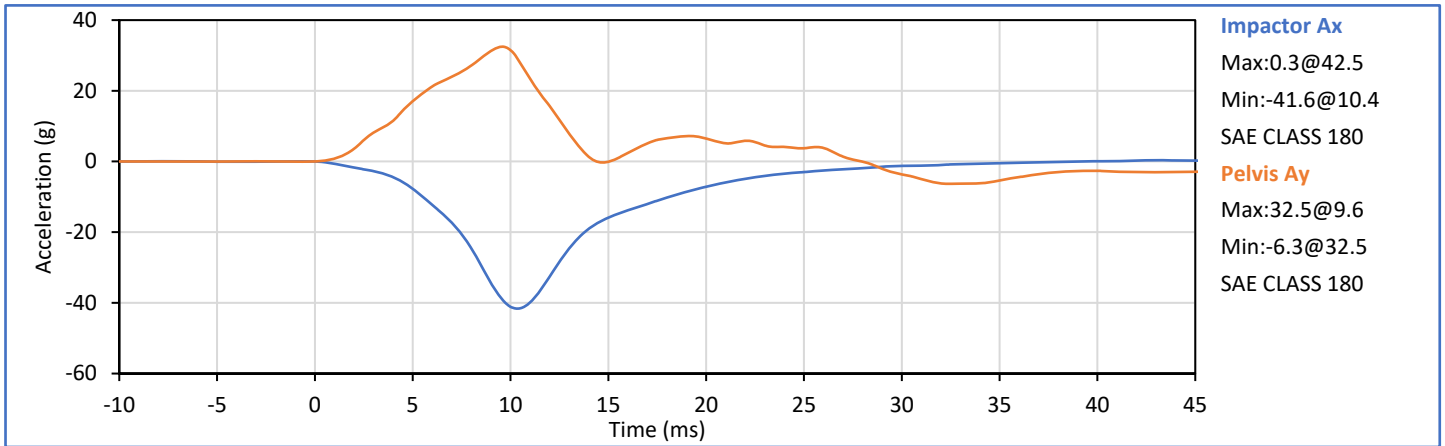
Template No 107 28-Dec-20
SACO Research

By: DC Date: 12/28/20

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: *Mill LGS III*
G. Fuentes

Approved By: *Seath*
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	M12311	Endevco	758H-2k	2024-01-08
Vehicle CG Ay	M11104	Endevco	758H-2k	2024-03-08
Vehicle CG Az	M12857	Endevco	758H-2k	2024-01-08
Right Side Sill at Front Seat Ax	M12321	Endevco	758H-2k	2024-01-09
Right Side Sill at Front Seat Ay	M12844	Endevco	758H-2k	2024-01-08
Right Side Sill at Front Seat Az	M11239	Endevco	758H-2k	2024-02-05
Right Side Sill at Rear Seat Ax	M12883	Endevco	758H-2k	2024-01-08
Right Side Sill at Rear Seat Ay	M13674	Endevco	758H-2k	2024-01-08
Right Side Sill at Rear Seat Az	M13689	Endevco	758H-2k	2024-01-09
Left Side Sill at Front Seat Ay	M11172	Endevco	758H-2k	2024-03-22
Left Side Sill at Rear Seat Ay	M11100	Endevco	758H-2k	2024-03-08
Left Lower A-Pillar Ay	M12804	Endevco	758H-2k	2024-01-08
Left Middle A-Pillar Ay	M11366	Endevco	758H-2k	2024-01-08
Left Lower B-Pillar Ay	M11171	Endevco	758H-2k	2024-02-08
Left Middle B-Pillar Ay	M11285	Endevco	758H-2k	2024-03-14
Driver Seat Track at H-Point Ay	M11048	Endevco	758H-2k	2024-02-05
Rear Seat Structure Ay	M11144	Endevco	758H-2k	2024-02-01
Right Rear Occupant Comp. Ay	M13677	Endevco	758H-2k	2024-01-08
Engine Block Top Ax	M11250	Endevco	758H-2k	2024-02-05
Engine Block Top Ay	M11082	Endevco	758H-2k	2024-02-01
Rear Floopan Above Axle Ax	M12862	Endevco	758H-2k	2024-01-08
Rear Floopan Above Axle Ay	M12884	Endevco	758H-2k	2024-01-08
Rear Floopan Above Axle Az	M13705	Endevco	758H-2k	2024-02-09

Table 4 - Moving Deformable Barrier (MDB) Instrumentation

Sensor Location	Sensor S\N	Mfr	Model	Cal Date
MDB CG Ax	M12872	Endevco	758H-2k	2024-01-08
MDB CG Ay	M12805	Endevco	758H-2k	2024-01-08
MDB CG Az	M12807	Endevco	758H-2k	2024-01-08
MDB Left Side at Rear Axle Ax	M11368	Endevco	758H-2k	2024-01-08
MDB Left Side at Rear Axle Ay	M11278	Endevco	758H-2k	2024-02-09