

REPORT NUMBER: NCAP-MGA-25-003

**NEW CAR ASSESSMENT PROGRAM (NCAP)
Frontal Barrier Impact Test**

**TOYOTA MOTOR MANUFACTURING, KENTUCKY, INC.
2025 Toyota Camry HEV SE 4-Door Sedan
NHTSA No.: O20255100**

**MGA RESEARCH CORPORATION
5000 Warren Road
Burlington, WI 53105**



Test Date: November 8, 2024

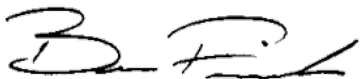
Final Report Date: January 27, 2025

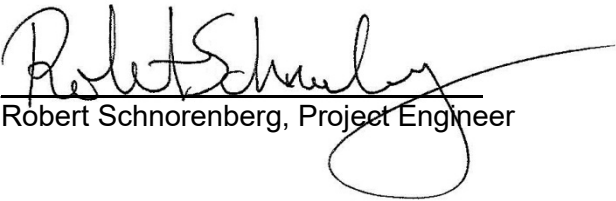
FINAL REPORT

**U.S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
Office of Crashworthiness Standards
Mail Code: NRM-110
1200 New Jersey Ave, SE
Washington, DC 20590**

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Approval Date: January 27, 2025

FINAL REPORT ACCEPTANCE BY OCWS:

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

Date: _____

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

Date: _____

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16. Abstract A 56.3 km/h NCAP Frontal Rigid Barrier Impact Test was conducted on a 2025 Toyota Camry HEV SE 4-Door Sedan in accordance with the specifications of the Office of Crashworthiness Standards Laboratory Procedure for NCAP Full Frontal Rigid Barrier Impact Testing. The test was conducted at MGA Research Corporation in Burlington, Wisconsin on November 8, 2024. The impact velocity of the vehicle was 56.15 km/h and the ambient temperature at the barrier face at the time of impact was 21.8°C. The target vehicle post-test maximum crush was 516 mm located to the right of the vehicle centerline. The test vehicle's performance was as follows: <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th rowspan="2">Measurement Description</th> <th rowspan="2">Units</th> <th colspan="2">Driver ATD</th> <th colspan="2">Passenger ATD</th> </tr> <tr> <th>Threshold</th> <th>Result</th> <th>Threshold</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC₁₅)</td> <td></td> <td>700</td> <td>182.806</td> <td>700</td> <td>268.286</td> </tr> <tr> <td>Maximum Chest Compression</td> <td>mm</td> <td>63</td> <td>28.050</td> <td>52</td> <td>12.992</td> </tr> <tr> <td>Nij</td> <td></td> <td>1</td> <td>0.290</td> <td>1</td> <td>0.243</td> </tr> <tr> <td>Neck Tension</td> <td>N</td> <td>4170</td> <td>1357.573</td> <td>2620</td> <td>538.442</td> </tr> <tr> <td>Neck Compression</td> <td>N</td> <td>4000</td> <td>194.079</td> <td>2520</td> <td>390.868</td> </tr> <tr> <td>Left Femur Force</td> <td>N</td> <td>10008</td> <td>1729.925</td> <td>6805</td> <td>1496.683</td> </tr> <tr> <td>Right Femur Force</td> <td>N</td> <td>10008</td> <td>1857.771</td> <td>6805</td> <td>1547.901</td> </tr> </tbody> </table>						Measurement Description	Units	Driver ATD		Passenger ATD		Threshold	Result	Threshold	Result	Head Injury Criteria (HIC ₁₅)		700	182.806	700	268.286	Maximum Chest Compression	mm	63	28.050	52	12.992	Nij		1	0.290	1	0.243	Neck Tension	N	4170	1357.573	2620	538.442	Neck Compression	N	4000	194.079	2520	390.868	Left Femur Force	N	10008	1729.925	6805	1496.683	Right Femur Force	N	10008	1857.771	6805	1547.901
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17. Key Words 56.3 km/h (35 mph) Full Frontal Rigid Barrier Impact Test New Car Assessment Program (NCAP)			18. Distribution Statement Copies of this report are available from: National Highway Traffic Safety Administration Technical Information Services Division 1200 New Jersey Ave, SE Washington, DC 20590																																																						
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SECTION 1 PURPOSE AND SUMMARY OF TEST

PURPOSE

This 56.3 km/h frontal barrier impact test is part of the Vehicle Barrier Impact Testing Program sponsored by the National Highway Traffic Safety Administration (NHTSA) under contract number 693JJ919D000006. The purpose of this test was to obtain vehicle crashworthiness and occupant restraint system performance data for consumer information purposes.

The 56.3 km/h frontal barrier impact was conducted in accordance with the Office of Crashworthiness Standards Laboratory Procedure for NCAP Full Frontal Rigid Barrier Impact Testing.

SUMMARY

A load cell barrier consisting of 176 load cells was impacted by a 2025 Toyota Camry HEV SE 4-Door Sedan at a velocity of 56.15 km/h. The test was performed at MGA Research Corporation on November 8, 2024. Pre-test and post-test photographs of the vehicle and dummies can be found in Appendix A.

Two (2) real-time cameras and sixteen (16) high-speed cameras were used to document the frontal barrier impact event. Camera locations and other pertinent camera information can be found in this report.

One Part 572E 50th percentile male anthropomorphic test device (ATD), was placed in the driver seating position and one Part 572O 5th percentile female test device (ATD) was placed in the right-front passenger seating position according to dummy placement instructions specified in the Laboratory Procedure for NCAP Full Frontal Rigid Barrier Impact Testing.

Both ATDs were fully instrumented with head, chest and pelvis tri-axial accelerometers, chest displacement potentiometers, upper neck transducers, right/left femur load cells, and lower leg instrumentation.

The driver (position 1) ATD (Serial No. 064) and the right-front passenger (position 2) ATD (Serial No. 142) were qualified previous to this test. Certification details, along with instrumentation calibration data, are found in Appendix C of this report.

The 278 channels of data were recorded on a data acquisition system. Appendix B contains the dummy response data traces.

There was 100 percent windshield retention and no intrusion into the protected zone of the windshield during the event. There was no Stoddard Solvent or battery electrolyte leakage and no loss of high-voltage battery isolation after the event or during any phase of the static rollover.

The maximum static crush of the vehicle was 516 mm located to the right of the vehicle centerline and both the driver and passenger side doors remained closed during the impact event and were operable after the impact.

The driver's visible contact points were as follows: The driver's head contacted the airbag. The driver's head also contacted the headrest. The driver's knees contacted the knee airbag.

The passenger's visible contact points were as follows: The passenger's head contacted the airbag. The passenger's head also contacted the headrest. The passenger's knees contacted the knee airbag.

The occupant data is summarized below:

ATD position	HIC₁₅	Nij	Neck Tension (N)	Neck Comp. (N)	3ms Chest Clip (g)	Chest Disp. (mm)	Left Femur (N)	Right Femur (N)
Driver (50 th)	182.806	0.290	1357.573	194.079	43.050	28.050	1729.925	1857.771
Passenger (5 th)	268.286	0.243	538.442	390.868	46.333	12.992	1496.683	1547.901

The test data can be found on the NHTSA website at www.nhtsa.gov

TEST NOTES

None.

MGA does not endorse or certify products. The manufacturer's name appears solely for identification purposes.

SECTION 2
OCCUPANT AND VEHICLE INFORMATION / DATA SHEETS

DATA SHEET NO. 1
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2025 Toyota Camry HEV SE 4-Door Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20255100
 Test Date: 11/8/2024

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	O20255100	Traction Control System (TCS)	Yes
Model Year	2025	Power Steering	Yes
Make	Toyota	Power Window Auto-Reverse	Yes
Model	Camry HEV SE	Driver Frontal Airbag	Yes
Body Style	4-Door Sedan	Driver Curtain Airbag	Yes
VIN	4T1DBADK7SU506283	Driver Head/Torso Airbag	No
Body Color	Ice Cap	Driver Torso Airbag	No
Odometer (km/mi)	307 km / 191 mi	Driver Torso/Pelvis Airbag	Yes
Engine Displacement (L)	2.5	Driver Pelvis Airbag	No
Type/No. Cylinders	Inline 4	Driver Knee Airbag	Yes
Engine Placement	Lateral	Front Pass. Frontal Airbag	Yes
Transmission Type	Automatic	Front Pass. Curtain Airbag	Yes
Transmission Speeds	CVT	Front Pass. Head/Torso Airbag	No
Overdrive	Yes	Front Pass. Torso Airbag	No
Final Drive	AWD	Front Pass. Torso/Pelvis Airbag	Yes
Roof Rack	No	Front Pass. Pelvis Airbag	No
Sunroof/T-Top	No	Front Pass. Knee Airbag	Yes
Running Boards	No	Driver Pretensioner	Yes
Tilt Steering Wheel	Yes	Driver Load Limiter	Yes
Power Seats	Driver Only	Front Pass. Pretensioner	Yes
Anti-Lock Brakes (ABS)	Yes	Front Pass. Load Limiter	Yes
Automatic Door Locks (ADLs)	Yes	Other	N/A

Does owner's manual provide instructions to turn off automatic door locks?	Yes
--	-----

DATA FROM CERTIFICATION LABEL

Manufactured By	TOYOTA MOTOR MANUFACTURING, KENTUCKY, INC.	GVWR (kg)	2150
Date of Manufacture	07/24	GAWR Front (kg)	1191
		GAWR Rear (kg)	1134

VEHICLE SEATING AND WEIGHT CAPACITY DATA

Measured Parameter	Front	Rear	Third	Total
Type of Seats	Bucket	Contoured		
Designated Seating Capacity (DSC)	2	3		5
Capacity Weight (VCW) (kg)				420
Cargo Weight (RCLW) (kg)				71

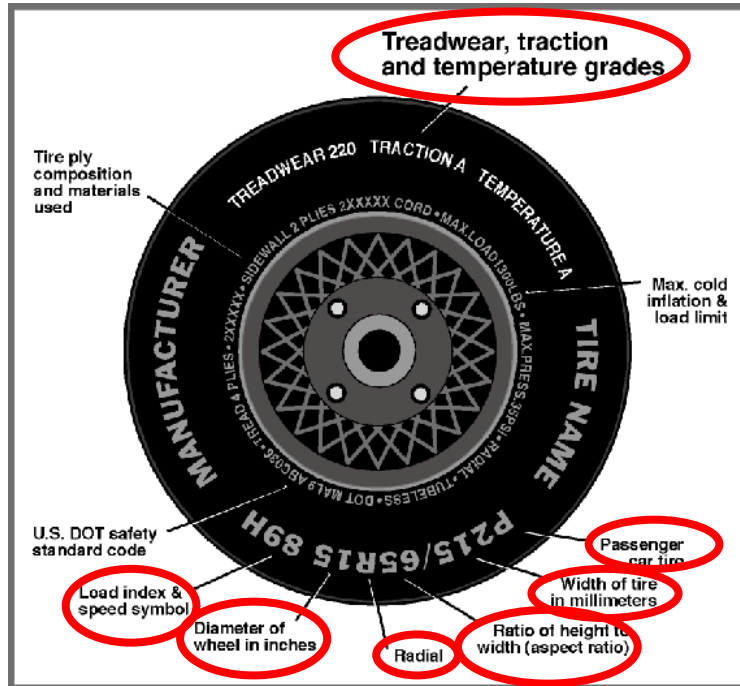
* Rated Cargo and Luggage Weight (RCLW) reduced by 9 kg to account for Load Carrying Capacity Reduction Label.

DATA SHEET NO. 1 (CONTINUED)
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2025 Toyota Camry HEV SE 4-Door Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20255100
 Test Date: 11/8/2024

VEHICLE TIRE INFORMATION



Measured Parameter	Front	Rear
Max. Tire Pressure (kPa)	350	350
Cold Pressure (kPa)	240	240
Recommended Tire Size	235/45R18	235/45R18
Tire Size on Vehicle	235/45R18	235/45R18
Tire Manufacturer	Hankook	Hankook
Tire Model	Kinergy GT	Kinergy GT
Treadwear	540	540
Traction	A	A
Temperature Grade	A	A
Tire Plies Sidewall	1 Polyester	1 Polyester
Tire Plies Body	2 Steel, 1 Polyester, 1 Nylon	2 Steel, 1 Polyester, 1 Nylon
Load Index/Speed Symbol	94V	94V
Tire Material	Rubber	Rubber
DOT Safety Code Left	OOT N92VHA 2524	OOT N92VHA 2524
DOT Safety Code Right	OOT N92VHA 2524	OOT N92VHA 2524

DATA SHEET NO. 1 (CONTINUED)
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2025 Toyota Camry HEV SE 4-Door Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20255100
 Test Date: 11/8/2024

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)		
		Front	Rear	Total	Front	Rear	Total
Left	kg	494.0	341.0		536.5	408.5	
Right	kg	445.0	384.5		461.0	464.0	
Ratio	%	56.4%	43.6%		53.3%	46.7%	
Totals	kg	939.0	725.5	1664.5	997.5	872.5	1870.0

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total Delivered Weight (UVW)	kg	1664.5
Weight of 1 P572E ATD & 1 P572O ATD	kg	141
Rated Cargo/Luggage Weight (RCLW)	kg	71
Calculated Test Vehicle Target Weight (TVTW)	kg	1876.5

TEST VEHICLE ATTITUDES AND CG

	Units	LF	RF	LR	RR	CG (aft of front axle)
As Delivered	mm	721	717	716	722	1231
As Tested	mm	703	702	693	702	1318
Post Test	mm	779	782	690	695	

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Total Vehicle Wheel Base	mm	2825
Total Vehicle Length at Left Side	mm	4769
Total Vehicle Length at Centerline	mm	4920
Total Vehicle Length at Right Side	mm	4772
Weight of Ballast in Cargo Area	kg	17
Weight of Vehicle Components Removed	kg	26
Amount of Stoddard Solvent in Fuel Tank	L	45.0

List of components removed to meet test weight: None.

List of components removed for instrumentation, data box, and equipment installation: Cargo area carpet/trim/divider, jack and tools, spare tire, underbody plastic.

DATA SHEET NO. 1 (CONTINUED)
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2025 Toyota Camry HEV SE 4-Door Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20255100
 Test Date: 11/8/2024

TARGET VEHICLE STRUCTURAL MEASUREMENT

	Elements	Pre-Test (mm)
1	Total Length	4920
2	Total Width	1797
3	Bumper Top Height	467
4	Bumper Bottom Height	383
5	Longitudinal Member Top Height	553
6	Distance between Longitudinal Members	940
7	Longitudinal Member Width	58
8	Engine Top Height	834
9	Engine Bottom Height	166
10	Engine and Gearbox Width	770
11	Front Bumper-Engine Distance	618
12	Front Shock Absorber Fixing Height	881
13	Bonnet Leading Edge Height	768
14	Front Shock Absorber Fixing Width	1199
15	Front Bumper – Front Axle Distance	857
16	Front Axle – A-Pillar Distance	539
17	A-Pillar – B-Pillar Distance	1128
18	B-Pillar – Rear Axle Distance	1159
19	B-Pillar – C-Pillar Distance	1133
20	Roof Sill Bottom Height	1249
21	Roof Sill Top Height	1302
22	Floor Sill Bottom Height	169
23	Floor Sill Top Height	325

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

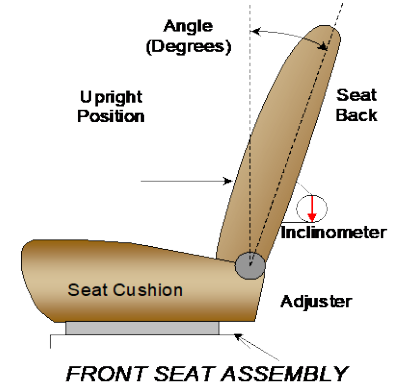
Test Vehicle: 2025 Toyota Camry HEV SE 4-Door Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20255100
 Test Date: 11/8/2024

NOMINAL DESIGN RIDING POSITION

The driver seat back is positioned as close as possible to the manufacturer's design angle. For the passenger seat back, seat back is adjusted following Appendix F, "Driver & Passenger Dummy Seating & Positioning Procedures" in the NCAP Test Procedure dated May 2018.

	Degrees
Driver Seat Back Angle	3.0° on outboard headrest post
Passenger Seat Back Angle	-3.5° on outboard headrest post



SEAT FORE/AFT POSITIONS

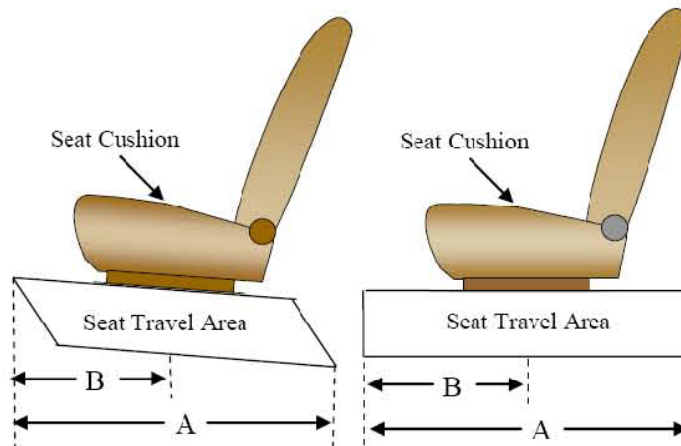
The driver and passenger seat fore/aft positions are adjusted following Appendix F, "Driver & Passenger Dummy Seating & Positioning Procedures" in the NCAP Test Procedure dated May 2018.

	Total Fore/Aft Travel	Placed in Position #
Driver Seat	313 mm	157 mm
Passenger Seat	260 mm / 27 detents (1st as 1)	0 mm / 0th detent (1st as 0)

SEAT BELT UPPER ANCHORAGES

The seat belt upper anchorages are set following the manufacturer's specified position as listed in Form 1.

	Total # of Positions	Placed in Position #
Driver Seat	4 (1st as 1)	0 (1st as 0)
Passenger Seat	4 (1st as 1)	0 (1st as 0)



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

Test Vehicle: 2025 Toyota Camry HEV SE 4-Door Sedan
 Test Program: NCAP Frontal Barrier Impact Test

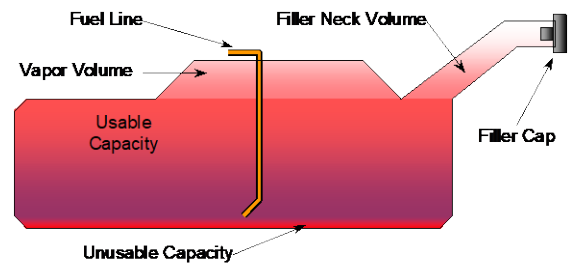
NHTSA No.: O20255100
 Test Date: 11/8/2024

FUEL TANK CAPACITY DATA

	Liters
Usable Capacity of "Standard Tank"	48.5
Usable Capacity of "Optional Tank"	
92-94% of Usable Capacity	44.6 to 45.6
Actual Amount of Solvent used	45.0
1/3 of Usable Capacity	16.2

FUEL PUMP

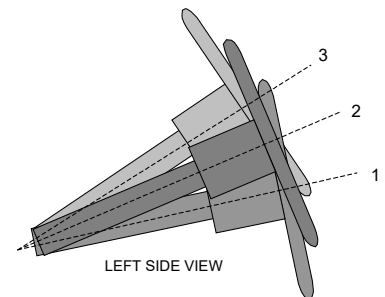
The vehicle is equipped with an electronic fuel pump. The fuel pump will run when the engine is running. The pump will also briefly run when the ignition key is turned to the "on" position. The filler neck is located on the driver's side.



VEHICLE FUEL TANK ASSEMBLY

STEERING COLUMN ADJUSTMENT

Steering wheel and column adjustments are made so that the steering wheel hub is at the geometric center of the locus it describes when moved through its full range of motion. An aluminum plate is placed across the rim of the steering wheel, an inclinometer is placed on the plate and the angle is measured.



STEERING COLUMN ASSEMBLY

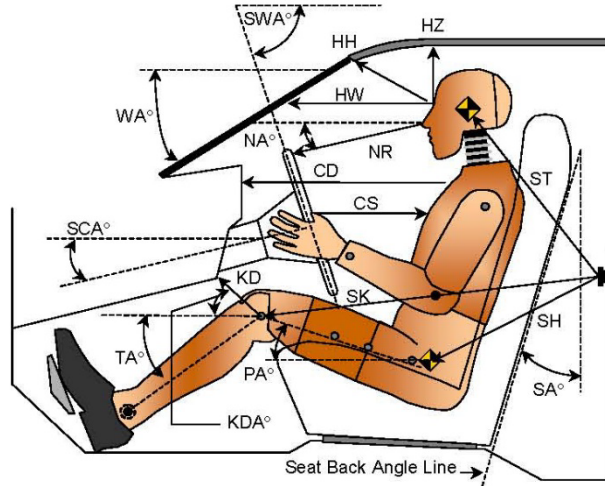
STEERING COLUMN POSITION

	Degrees	Fore/Aft Position (mm)
Lowermost Position 1	71.3	
Geometric Center Position 2	69.3	
Uppermost Position 3	67.2	
Telescoping Steering Wheel Travel		56
Test Position	69.3	28

DATA SHEET NO. 3
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2025 Toyota Camry HEV SE 4-Door Sedan
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20255100
Test Date: 11/8/2024



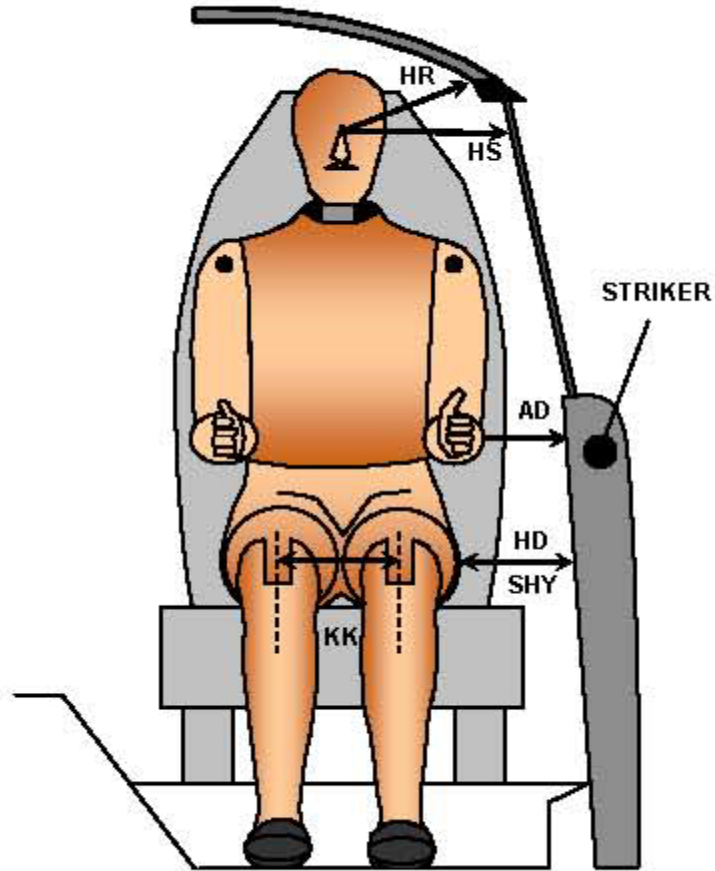
LEFT SIDE VIEW

Code	Measurement Description	Driver		Passenger	
		Length (mm)	Angle (°)	Length (mm)	Angle (°)
WA°	Windshield Angle		23.4		
SWA°	Steering Wheel Angle		69.3		
SCA°	Steering Column Angle		20.7		
SA°	Seat Back Angle		3.0		-3.5
HZ	Head to Roof (Z)	174	90	186	90
HH	Head to Header	349	23.9	283	51.0
HW	Head to Windshield	660	0	638	0
NR	Nose to Rim	403	9.3		
CD	Chest to Dash	538		345	
CS	Chest to Steering Hub	322	2.5		
RA	Rim to Abdomen	211	0		
KDL	Left Knee to Dash	157	40.4	117	48.2
KDR	Right Knee to Dash	166	26.5	114	38.4
PA°	Pelvic Angle		24.5		20.9
TA°	Tibia Angle		32.8		41.0
SK	Striker to Knee	607	99.1	709	100.5
ST	Striker to Head	424	12.8	412	35.9
SH	Striker to H-Point	339	136.2	434	120.2

DATA SHEET NO. 4
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2025 Toyota Camry HEV SE 4-Door Sedan
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20255100
Test Date: 11/8/2024



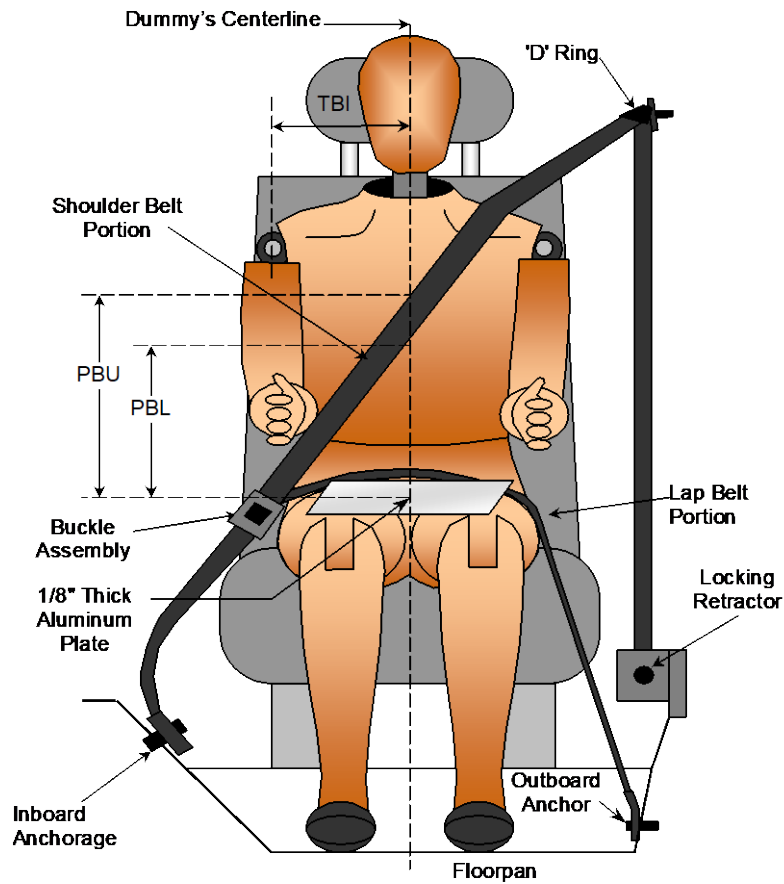
FRONT VIEW OF DUMMY

Code	Measurement Description	Units	Driver	Passenger
AD	Arm to Door	mm	136	83
HD	H-Point to Door	mm	149	182
HR	Head to Side Header	mm	211	237
HS	Head to Side Window	mm	327	342
KK	Knee to Knee	mm	342	229
SHY	Striker to H-Point (Y Direction)	mm	237	274
AA	Ankle to Ankle	mm	335	174

DATA SHEET NO. 5 SEAT BELT POSITIONING DATA

Test Vehicle: 2025 Toyota Camry HEV SE 4-Door Sedan
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20255100
Test Date: 11/8/2024



FRONT VIEW OF DUMMY

SEAT BELT POSITIONING MEASUREMENTS

Measurement Description	Units	Driver	Passenger
PBU - Top surface of reference to belt upper edge	mm	350	305
PBL - Top surface of reference to belt lower edge	mm	260	205

BELT LENGTH DATA

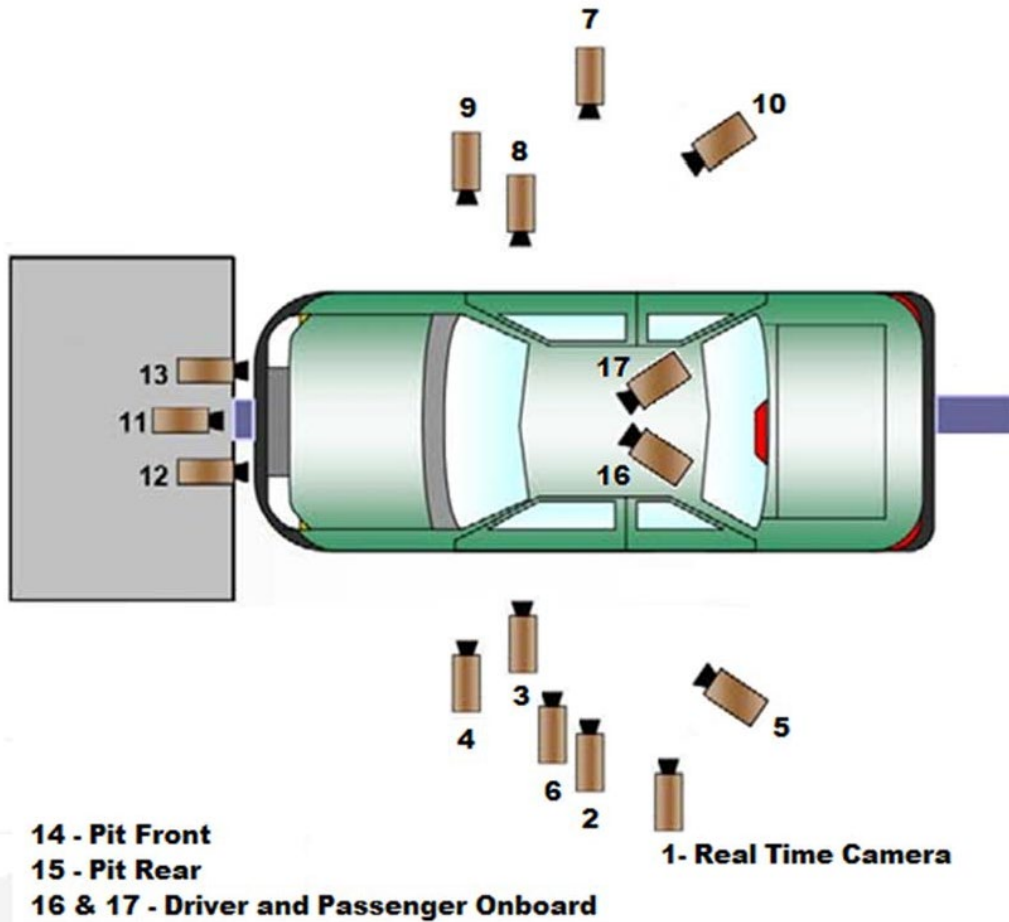
Measurement Description	Units	Driver	Passenger
Shoulder Belt Length as measured on ATD	mm	835	910
Lap Belt Length as measured on ATD	mm	720	782
Remainder of belt on reel	mm	455	318
Total Belt Length for Continuous Webbing Systems	mm	2680	2680

DATA SHEET NO. 6
HIGH-SPEED CAMERA LOCATIONS AND DATA

Test Vehicle: 2025 Toyota Camry HEV SE 4-Door Sedan
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20255100
Test Date: 11/8/2024

CAMERA POSITIONS FOR FRONTAL IMPACTS



***Camera locations are approximate and not to scale*

DATA SHEET NO. 6 (CONTINUED)
HIGH-SPEED CAMERA LOCATIONS AND DATA

Test Vehicle: 2025 Toyota Camry HEV SE 4-Door Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20255100
 Test Date: 11/8/2024

CAMERA LOCATIONS

No.	Camera View	Coordinates* (mm)			Lens (mm)	Speed (fps)
		X	Y	Z		
1	Real-Time Left Overall					30
2	Left Overall	-2400	-5590	-1380	12	1000
3	Driver Close-Up	-1800	-6970	-2210	50	1000
4	Left Front Half	-1300	-5560	-1450	24	1000
5	Left Angle	-7310	-5780	-2280	75	1000
6	Steering Column	-900	-5580	-1220	50	1000
7	Right Overall	-2170	5750	-1470	12	1000
8	Passenger Close-Up	-1610	6600	-2110	50	1000
9	Right Front Half	-1040	5600	-1490	24	1000
10	Right Angle	-7470	5500	-2280	75	1000
11	Windshield	160	0	-2310	12	1000
12	Driver Windshield	190	-370	-2230	25	1000
13	Passenger Windshield	190	370	-2230	25	1000
14	Pit Front	-740	0	3340	24	1000
15	Pit Rear	-2950	0	3340	24	1000
16	Driver Onboard				12	1000
17	Passenger Onboard				12	1000
18	Real-Time Pan View					30

*COORDINATES:

+X = forward of impact plane

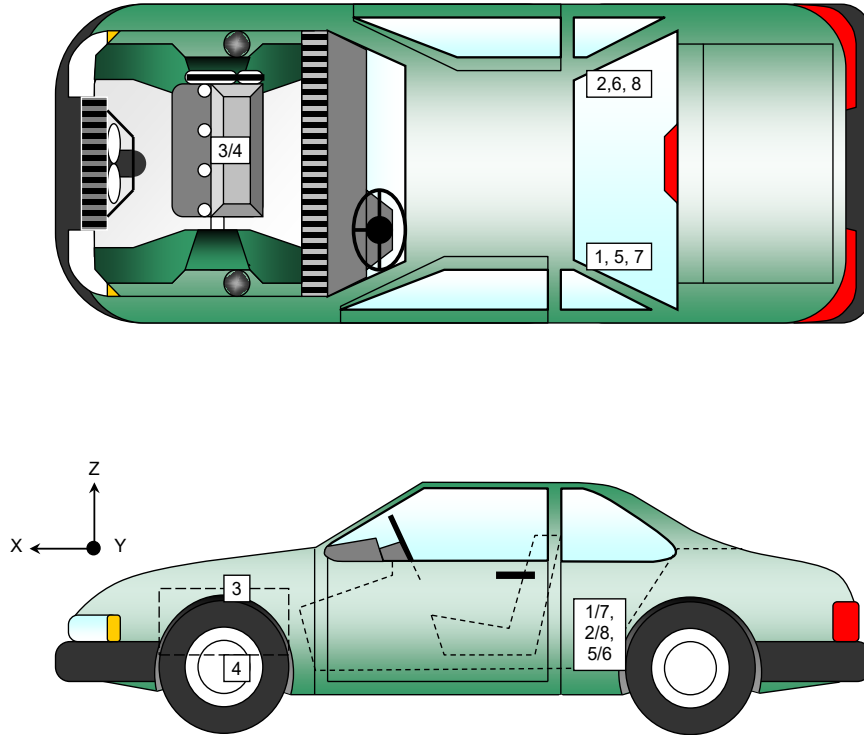
+Y = right of monorail centerline

+Z = below ground level

DATA SHEET NO. 7 **VEHICLE ACCELEROMETER LOCATIONS**

Test Vehicle: 2025 Toyota Camry HEV SE 4-Door Sedan
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20255100
Test Date: 11/8/2024



VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

No.	Accelerometer Location	Measurements (mm)		
		X	Y	Z
1	Left Rear Crossmember Accelerometer – X Direction	2023	-411	-211
2	Right Rear Crossmember Accelerometer – X Direction	2019	421	-215
3	Engine Top X	4091	-1	-830
4	Engine Bottom X	4126	169	-154
5	Left Rear Crossmember Accelerometer – Z Direction	2023	-411	-211
6	Right Rear Crossmember Accelerometer – Z Direction	2019	421	-215
7	Left Rear Crossmember Accelerometer Redundant – X Direction	2023	-411	-211
8	Right Rear Crossmember Accelerometer Redundant – X Direction	2019	421	-215

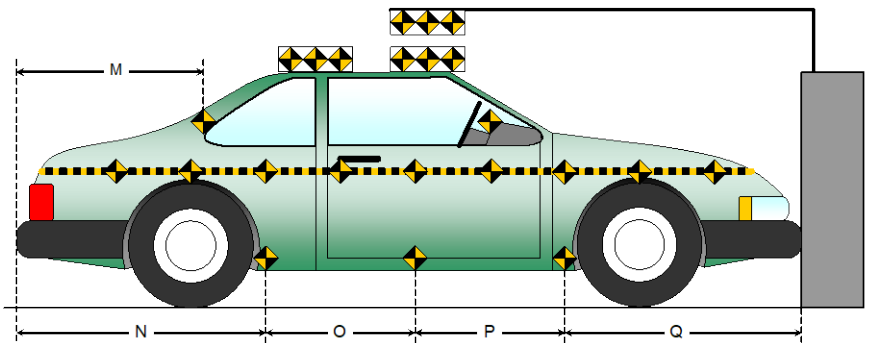
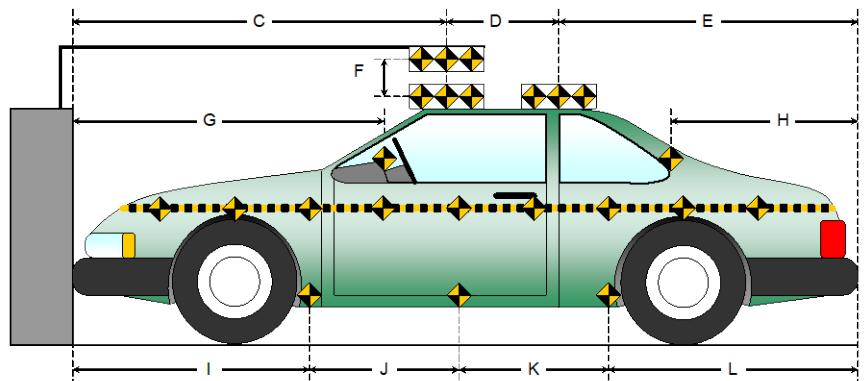
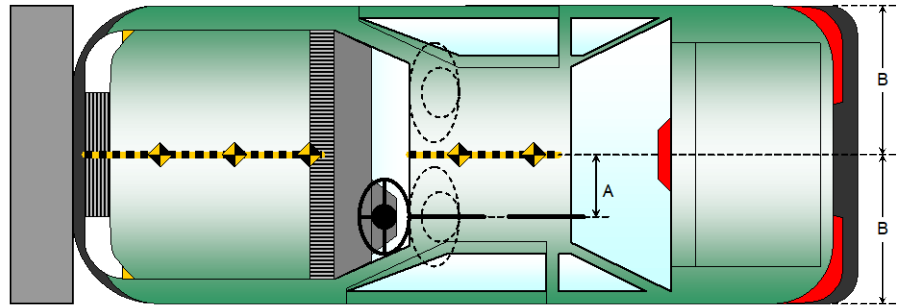
Reference Points: X - Rear Surface of Vehicle (+ forward)
Y - Vehicle Centerline (+ to right)
Z - Ground Plane (+ down)

DATA SHEET NO. 8 **PHOTOGRAPHIC REFERENCE TARGET LOCATIONS**

Test Vehicle: 2025 Toyota Camry HEV SE 4-Door Sedan
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20255100
Test Date: 11/8/2024

Item	Value (mm)
A	378
B	899
C	2488
D	608
E	1824
F	284
G	
H	1158
I	1477
J	961
K	955
L	1527
M	1158
N	1530
O	956
P	954
Q	1480



DATA SHEET NO. 9 **LOAD CELL LOCATIONS ON FIXED BARRIER**

Test Vehicle: 2025 Toyota Camry HEV SE 4-Door Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20255100
 Test Date: 11/8/2024

ADVANCED RESEARCH LOAD CELL BARRIER

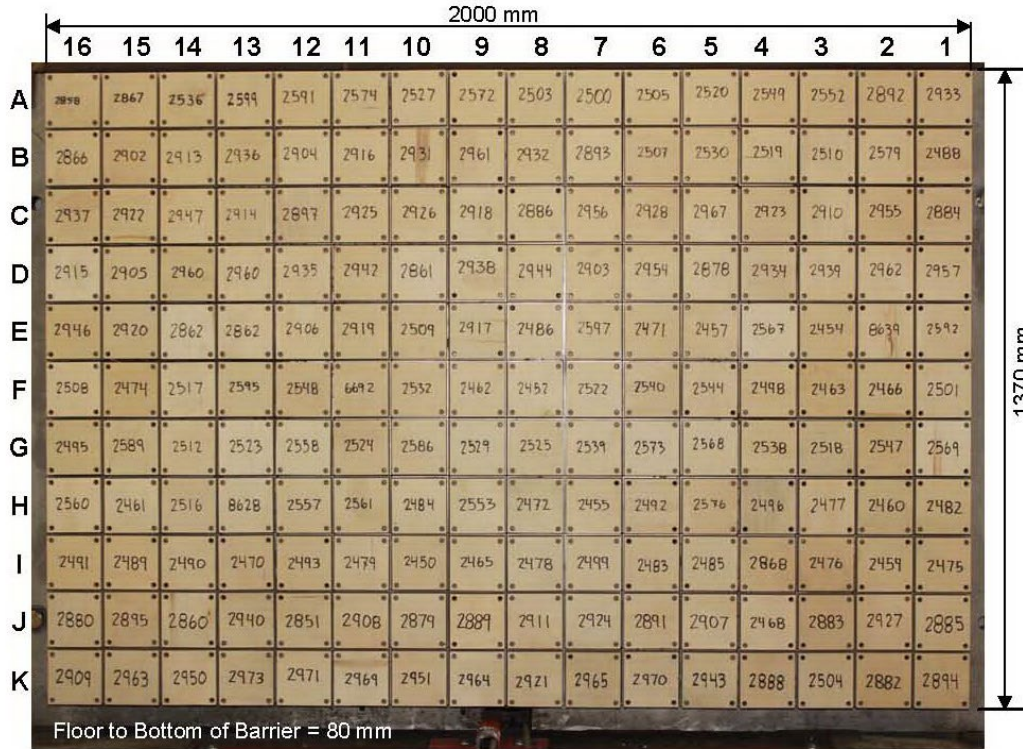


Photo for Reference Only

Centerline

A-16	A-15	A-14	A-13	A-12	A-11	A-10	A-09	A-08	A-07	A-06	A-05	A-04	A-03	A-02	A-01
B-16	B-15	B-14	B-13	B-12	B-11	B-10	B-09	B-08	B-07	B-06	B-05	B-04	B-03	B-02	B-01
C-16	C-15	C-14	C-13	C-12	C-11	C-10	C-09	C-08	C-07	C-06	C-05	C-04	C-03	C-02	C-01
D-16	D-15	D-14	D-13	D-12	D-11	D-10	D-09	D-08	D-07	D-06	D-05	D-04	D-03	D-02	D-01
E-16	E-15	E-14	E-13	E-12	E-11	E-10	E-09	E-08	E-07	E-06	E-05	E-04	E-03	E-02	E-01
F-16	F-15	F-14	F-13	F-12	F-11	F-10	F-09	F-08	F-07	F-06	F-05	F-04	F-03	F-02	F-01
G-16	G-15	G-14	G-13	G-12	G-11	G-10	G-09	G-08	G-07	G-06	G-05	G-04	G-03	G-02	G-01
H-16	H-15	H-14	H-13	H-12	H-11	H-10	H-09	H-08	H-07	H-06	H-05	H-04	H-03	H-02	H-01
I-16	I-15	I-14	I-13	I-12	I-11	I-10	I-09	I-08	I-07	I-06	I-05	I-04	I-03	I-02	I-01
J-16	J-15	J-14	J-13	J-12	J-11	J-10	J-09	J-08	J-07	J-06	J-05	J-04	J-03	J-02	J-01
K-16	K-15	K-14	K-13	K-12	K-11	K-10	K-09	K-08	K-07	K-06	K-05	K-04	K-03	K-02	K-01

Load Cells are 121 mm x 121 mm with a 7 mm gap in between each load cell.

DATA SHEET NO. 10
TEST VEHICLE SUMMARY OF RESULTS

Test Vehicle: 2025 Toyota Camry HEV SE 4-Door Sedan
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20255100
Test Date: 11/8/2024

INSTRUMENTATION

Instrumentation	Number of Channels Collected
Driver Dummy Data Channels	47
Passenger Dummy Data Channels	47
Vehicle Structure Accelerometers	8
Barrier Channels	176
Total	278

CAMERA COVERAGE

Type of Camera	Number Used in this Test
High-Speed Vehicle Onboard	2
High-Speed Offboard	14
Real-Time	2
Total	18

DATA SHEET NO. 11
POST-TEST OBSERVATIONS

Test Vehicle: 2025 Toyota Camry HEV SE 4-Door Sedan
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20255100
Test Date: 11/8/2024

TEST DUMMY INFORMATION AND CONTACT LOCATIONS

Description	Driver	Passenger
Dummy Type / Serial No.	HIII 50% / 064	HIII 5% / 142
Head Contact	Frontal Airbag, Headrest	Frontal Airbag, Headrest
Upper Torso Contact	Frontal Airbag	Frontal Airbag
Lower Torso Contact	None	None
Left Knee Contact	Knee Airbag	Knee Airbag
Right Knee Contact	Knee Airbag	Knee Airbag

DOOR OPENING, TRUNK OPENING, AND SEAT TRACK INFORMATION

Description	Driver	Passenger
Locked/Unlocked Doors	Doors were unlocked pre-test	Doors were unlocked pre-test
Front Door Opening	Remained closed and unlocked; opened without tools	Remained closed and unlocked; opened without tools
Rear Door Opening	Remained closed and unlocked; opened without tools	Remained closed and unlocked; opened without tools
Trunk/Hatch/Tailgate Opening	Remained closed; opened without tools	
Seat Track Shift (mm)	0	0
Seat Back Movement	None	None

OTHER VEHICLE POST-TEST OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Windshield Damage	Cracked by driver and passenger side hood corners
Window Damage	None
Other Notable Effects	None

VEHICLE REBOUND FROM BARRIER

Measured Parameter	Units	Value
Left Side	mm	1155
Center	mm	1160
Right Side	mm	1170
Average	mm	1162

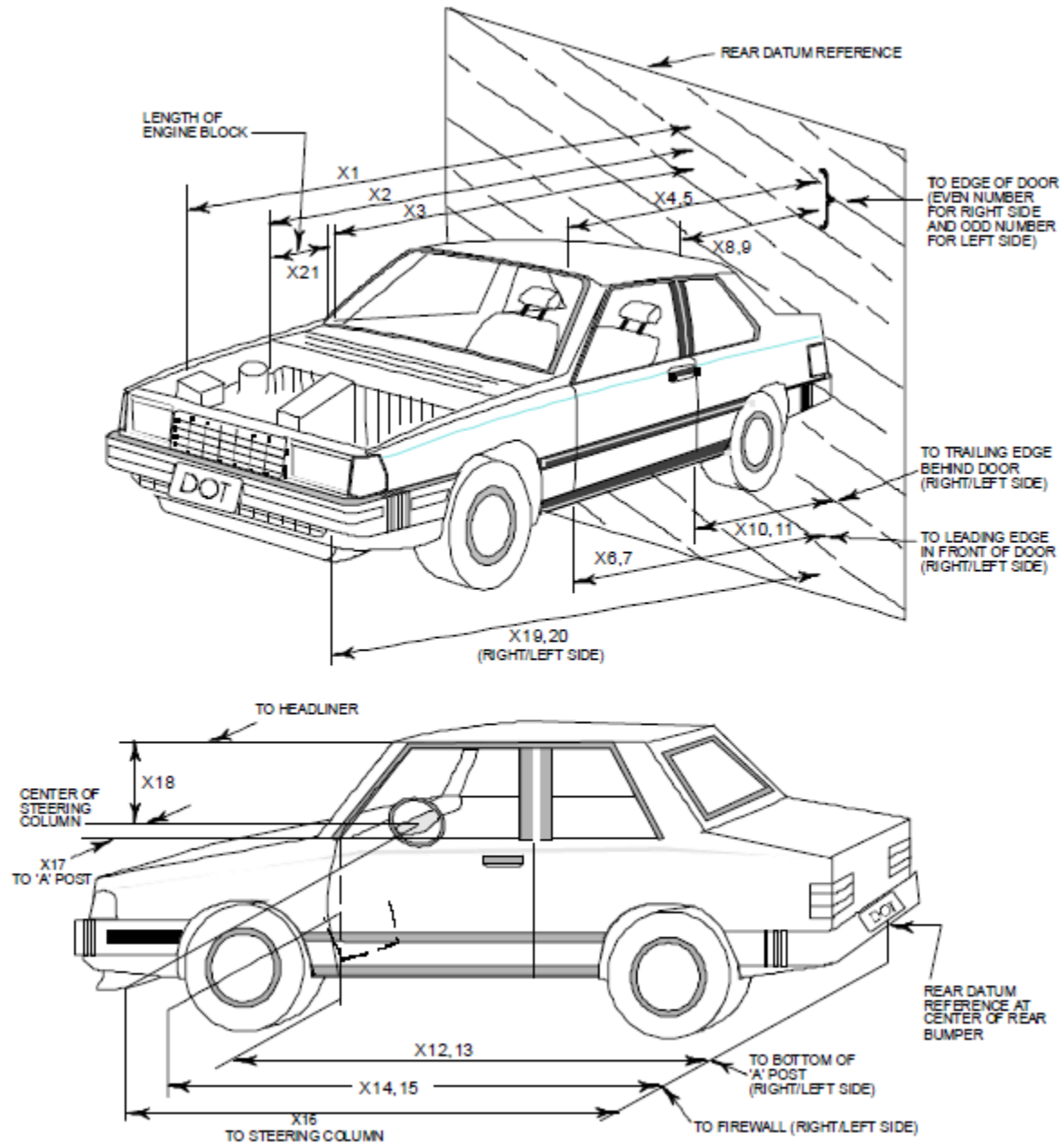
SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Driver		Passenger	
	Mounted	Deployed	Mounted	Deployed
Frontal Airbag	Yes	Yes	Yes	Yes
Curtain Side Airbag	Yes	Yes	Yes	Yes
Torso/Pelvis Side Airbag	Yes	No	Yes	No
Knee Airbag	Yes	Yes	Yes	Yes
Seat Belt Pretensioner	Yes	Yes	Yes	Yes
Seat Belt Load Limiter	Yes	Yes	Yes	Yes
Other				

DATA SHEET NO. 12
VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2025 Toyota Camry HEV SE 4-Door Sedan
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20255100
Test Date: 11/8/2024



DATA SHEET NO. 12 (CONTINUED)
VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2025 Toyota Camry HEV SE 4-Door Sedan
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20255100
Test Date: 11/8/2024

No.	Measurement Description	Pre-Test	Post-Test	Change
1	Total Length of Vehicle at Centerline	4920	4272	-648
2	RSOV to Front of Engine	4159	3887	-272
3	RSOV to Firewall	3810	3694	-116
4	RSOV to Upper Leading Edge of Right Door	3438	3432	-6
5	RSOV to Upper Leading Edge of Left Door	3438	3432	-6
6	RSOV to Lower Leading Edge of Right Door	3415	3412	-3
7	RSOV to Lower Leading Edge of Left Door	3417	3415	-2
8	RSOV to Upper Trailing Edge of Right Door	2248	2244	-4
9	RSOV to Upper Trailing Edge of Left Door	2248	2245	-3
10	RSOV to Lower Trailing Edge of Right Door	2249	2245	-4
11	RSOV to Lower Trailing Edge of Left Door	2250	2247	-3
12	RSOV to Bottom of "A" Post of Right Side	3440	3436	-4
13	RSOV to Bottom of "A" Post of Left Side	3443	3439	-4
14	RSOV to Firewall, Right Side	3695	3666	-29
15	RSOV to Firewall, Left Side	3691	3671	-20
16	RSOV to Steering Column	2865	2905	40
17	Center of Steering Column to "A" Post	267	250	-17
18	Center of Steering Column to Headliner	416	419	3
19	RSOV to Right Side of Front Bumper	4772	4322	-450
20	RSOV to Left Side of Front Bumper	4769	4309	-460
21	Length of Engine Block	163	163	0
RD	RSOV to Right Side of Dash Panel	3140	3122	-18
CD	RSOV to Center of Dash Panel	3154	3133	-21
LD	RSOV to Left Side of Dash Panel	3146	3130	-16

All dimensions in mm

DATA SHEET NO. 13
ACCIDENT INVESTIGATION DIVISION DATA

Test Vehicle: 2025 Toyota Camry HEV SE 4-Door Sedan
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20255100
Test Date: 11/8/2024

VEHICLE INFORMATION

VIN: 4T1DBADK7SU506283
Vehicle Size Category: Passenger Car

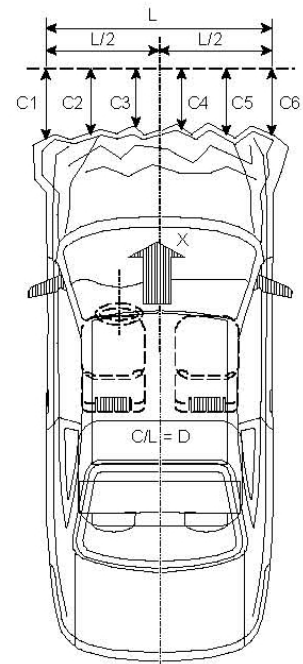
Wheelbase (mm): 2825
Test Weight (kg): 1870.0

ACCELEROMETER DATA

Accelerometer Locations: As per Data Sheet No. 7
Cal. Procedure/Interval: MGA Procedure / 6 month
Integration Algorithm: Trapezoidal
Linearity: > 99%
Impact Velocity (km/h): 56.15
Velocity Change (km/h): 66.1
Time of Separation (msec) 107

CRUSH PROFILE

Collision Deformation Classification: 12FDEW3
Midpoint of Damage: Centerline
Damage Region Length (mm): 1229
Impact Mode: Frontal



No.	Measurement Description	Units	Pre-Test	Post-Test	Exterior Crush
C1	Crush zone 1 at left side	mm	2231	2691	460
C2	Crush zone 2 at left side	mm	2139	2627	488
C3	Crush zone 3 at left side	mm	2113	2616	503
C4	Crush zone 4 at right side	mm	2113	2629	516
C5	Crush zone 5 at right side	mm	2136	2635	499
C6	Crush zone 6 at right side	mm	2228	2678	450
L	C1 TO C6	mm	1229	1249	-20

DATA SHEET NO. 14
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2025 Toyota Camry HEV SE 4-Door Sedan
Test Program: NCAP Frontal Barrier Impact Test

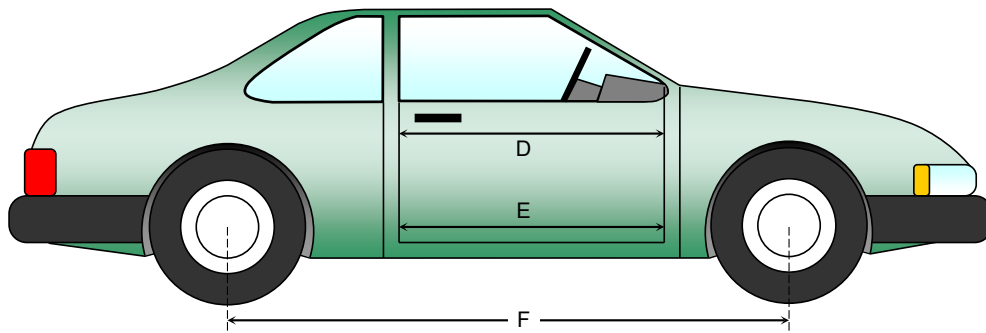
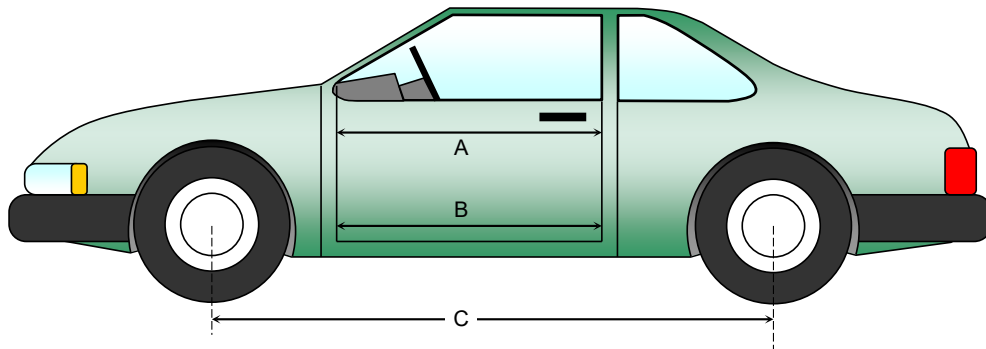
NHTSA No.: O20255100
Test Date: 11/8/2024

DOOR OPENING WIDTH

Item	Description	Units	Pre-Test	Post-Test	Change
A	Left Side Upper	mm	1095	1094	-1
B	Left Side Lower	mm	1008	1008	0
D	Right Side Upper	mm	1094	1093	-1
E	Right Side Lower	mm	1012	1011	-1

WHEELBASE MEASUREMENTS

Item	Description	Units	Pre-Test	Post-Test	Change
C	Left Side Wheelbase	mm	2825	2770	-55
F	Right Side Wheelbase	mm	2825	2756	-69



DATA SHEET NO. 14 (CONTINUED)
VEHICLE INTRUSION MEASUREMENTS

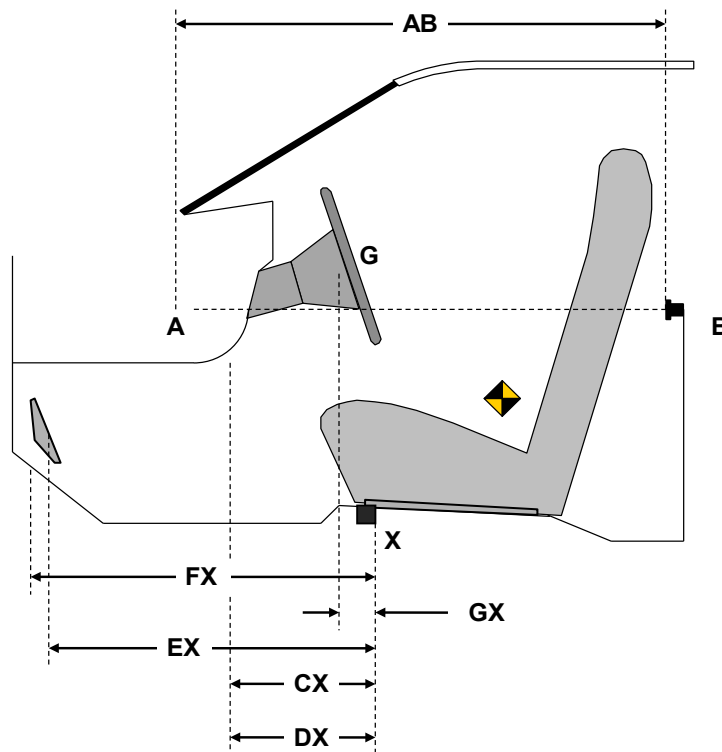
Test Vehicle: 2025 Toyota Camry HEV SE 4-Door Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20255100
 Test Date: 11/8/2024

DRIVER COMPARTMENT INTRUSION

Item	Description	Units	Pre-Test	Post-Test	Change
AB	Door Opening (Inside Window Jam)	mm	887	888	1
CX	Left Knee Bolster to X	mm	266	251	-15
DX	Right Knee Bolster to X	mm	276	268	-8
EX	Brake Pedal to X	mm	561	552	-9
FX	Foot Rest to X	mm	581	565	-16
GX	Center of Steering Column Wheel Hub to X	mm	29	72	43

X = Front of Seat Track (stationary)



DRIVER COMPARTMENT

DATA SHEET NO. 15
SUMMARY OF FMVSS 212 AND FMVSS 219 (PARTIAL) DATA

Test Vehicle: 2025 Toyota Camry HEV SE 4-Door Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20255100
 Test Date: 11/8/2024

WINDSHIELD MOUNTING DETAILS

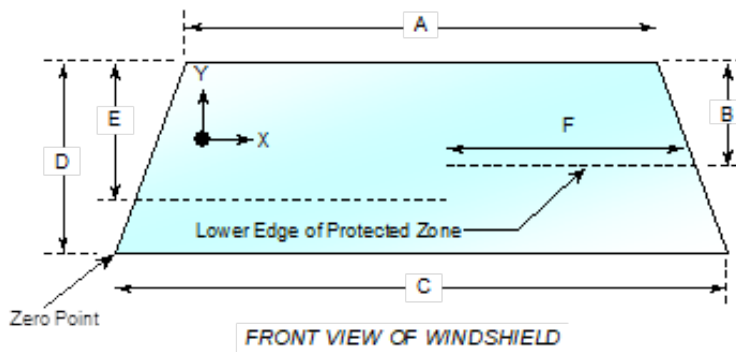
Windshield glass is secured to the vehicle frame with a rubber trim and glue.

The standard requires that the post-test retention measurement be a minimum of 75 percent of the pre-test total periphery measurement for vehicles not equipped with occupant passive restraints and 50 percent for each side of the windshield for vehicles which are equipped with occupant passive restraints.

Temperature of windshield molding during test: 21.8°C.

WINDSHIELD PERIPHERY MEASUREMENTS

Measurement	Pre-Test (mm)	Post-Test (mm)	% of Retention
Left Side	2165	2165	100
Right Side	2165	2165	100
Total	4330	4330	100



Item	Units	Value
A	mm	1104
B	mm	449
C	mm	1510
D	mm	858
E	mm	480
F	mm	517

AREA OF PROTECTED ZONE FAILURES

A. Provide coordinates of the area that the protected zone was penetrated more than 0.25 inches by a vehicle component other than one that is normally in contact with the windshield. **None**

X	Y

B. Provide coordinates of the area beneath the protected zone that the inner surface of the windshield was penetrated by a vehicle component. **None**

X	Y

DATA SHEET NO. 16
FMVSS 301 BARRIER IMPACT AND STATIC ROLLOVER

Test Vehicle: 2025 Toyota Camry HEV SE 4-Door Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20255100
 Test Date: 11/8/2024

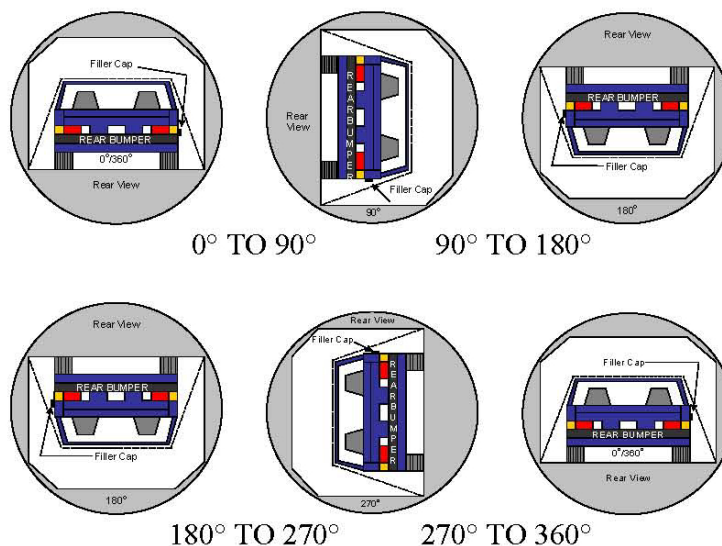
FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Temperature at Time of Impact: 21.8°C

Test Time: 12:11 p.m.

- A. From impact until vehicle motion ceases: (Maximum Allowable = 1 ounce) 0.0 oz.
 B. For the 5 minute period after motion ceases: (Maximum Allowable = 5 ounces) 0.0 oz.
 C. For the following 25 minutes: (Maximum Allowable = 1 ounce / minute) None
 D. Spillage Details: None

FMVSS 301 STATIC ROLLOVER RESULTS



1. The specified fixture rollover rate for each 90° of rotation is 60 to 180 seconds.
2. The position hold time at each position is 300 seconds (minimum).
3. Details of Stoddard Solvent spillage: **None**

SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0° to 90°	111	300	411
90° to 180°	112	300	412
180° to 270°	108	300	408
270° to 360°	111	300	411

DATA SHEET NO. 16 (CONTINUED)
FMVSS 301 BARRIER IMPACT AND STATIC ROLLOVER

Test Vehicle: 2025 Toyota Camry HEV SE 4-Door Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20255100
 Test Date: 11/8/2024

FMVSS 301 SPILLAGE TABLE (UNITS IN OUNCES)

Test Phase	First 5 Minutes	Sixth Minute	Seventh Minute	Eight Minute
0° to 90°	0	0	0	
90° to 180°	0	0	0	
180° to 270°	0	0	0	
270° to 360°	0	0	0	

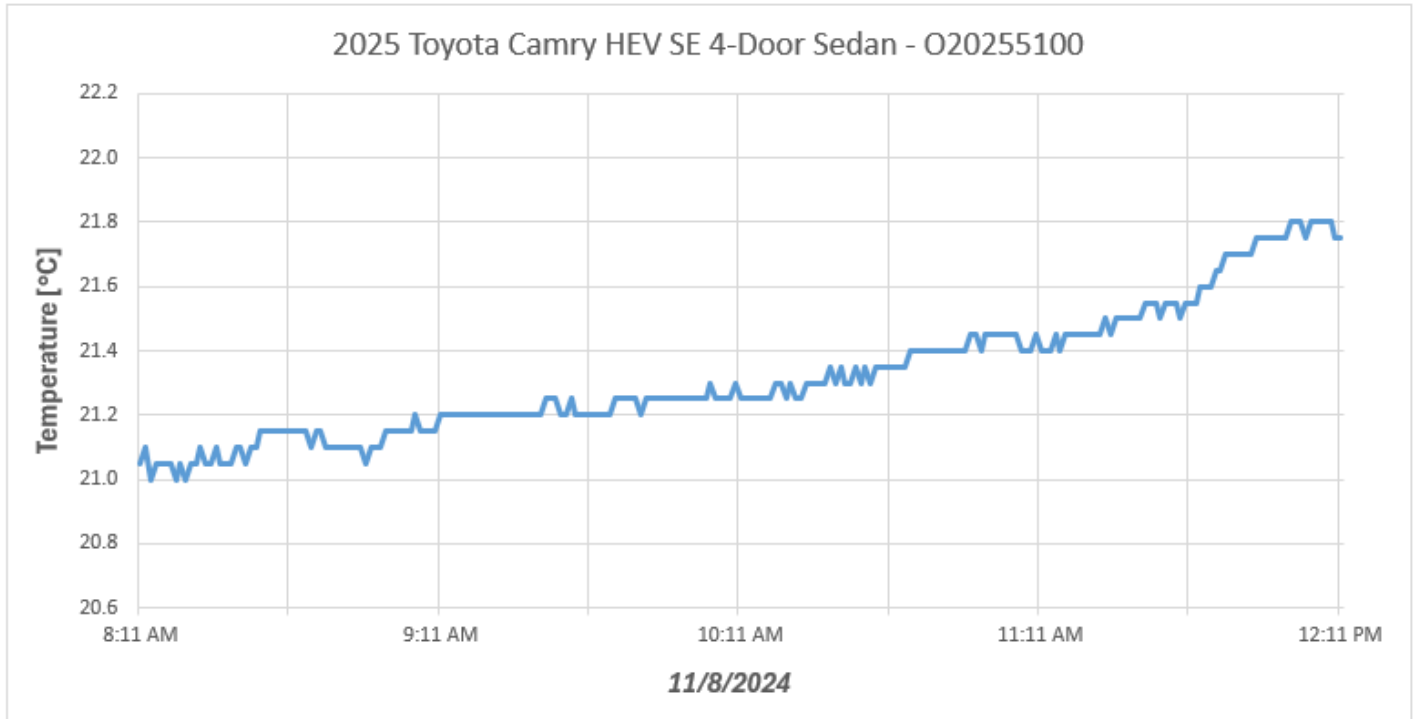
SOLVENT SPILLAGE LOCATION TABLE

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

DATA SHEET NO. 17
DUMMY/VEHICLE TEMPERATURE STABILIZATION DATA

Test Vehicle: 2025 Toyota Camry HEV SE 4-Door Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20255100
 Test Date: 11/8/2024



Serial #	Description	Maximum	Average	Minimum	Units
W1443497	VSC Start Room A - Temp (1038)	21.80	21.32	21.00	°C

DATA SHEET NO. 305-1
GENERAL TEST AND VEHICLE PARAMETER DATA
FOR INDICANT FMVSS NO. 305 TESTING

Test Vehicle: 2025 Toyota Camry HEV SE 4-Door Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20255100
 Test Date: 11/8/2024

ELECTRIC VEHICLE PROPULSION SYSTEM

	Units	Observations and Conclusions
Type of Electric Vehicle		Gas-Electric Hybrid
Propulsion Battery Type		Lithium-Ion
Nominal Voltage	V	251.6
Physical Location of Automatic Propulsion Battery Disconnect		On HV battery case below RH rear seat
Auxiliary Battery Type		LN2

PROPULSION BATTERY SYSTEM DATA

	Units	Observations and Conclusions
Electrolyte Fluid Type		Organic electrolyte mainly composed of alkyl carbonate
Electrolyte Fluid Specific Gravity	g/L	1.247
Electrolyte Fluid Kinematic Viscosity	mPa	3.9
Electrolyte Fluid Color		Clear ($\text{ALPHA} \leq 100$)
Propulsion Battery Coolant Type, Color, Specific Gravity (if applicable)		Air-Cooled
Location of Battery Modules		X Location of Battery Modules
		Outside Passenger Compartment
		The high-voltage battery is located below the 2 nd row seat cushion.

PROPULSION BATTERY STATE OF CHARGE

<i>For all battery types:</i>	
Voltage range corresponding to useable energy of the battery:	
Minimum State of Charge	
Maximum State of Charge	
95% of Maximum State of Charge	
Test Voltage - No less than 95% of maximum State of Charge	
<i>For batteries that are rechargeable ONLY by an energy source on the vehicle:</i>	
Voltage range corresponding to useable energy of the battery:	
Minimum State of Charge	
Maximum State of Charge	262.6 V
Test Voltage – Maximum practicable State of Charge within Normal Operating Range	255.9 V

**DATA SHEET NO. 305-2
PRE-IMPACT DATA
FOR INDICANT FMVSS NO. 305 TESTING**

Test Vehicle: 2025 Toyota Camry HEV SE 4-Door Sedan
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20255100
Test Date: 11/8/2024

VEHICLE CHASSIS GROUND POINT(S) LOCATION(S)

Details of Vehicle Chassis Ground Point(s) & Location(s)	Access panel near high-voltage battery pack
---	---

PROPULSION BATTERY SYSTEM

Details of Electric Energy Storage/Conversion System Test Points	Connected at + and – terminal ends of propulsion system
Additional Comments	None

DATA SHEET NO. 305-3
PRE-IMPACT ELECTRICAL ISOLATION MEASUREMENTS AND CALCULATIONS
FOR INDICANT FMVSS NO. 305 TESTING

Test Vehicle: 2025 Toyota Camry HEV SE 4-Door Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20255100
 Test Date: 11/8/2024

VOLTMETER INFORMATION

	Units	Observations and Conclusions
Make		
Model		
Serial Number		
Internal Impedance Value	MΩ	
Resolution	V	
Last Calibration Date		

PROPULSION BATTERY VOLTAGE

Measurement shall be made with Energy Storage/Conversion System connected to the vehicle propulsion system, and the vehicle in the “ready-to-drive” (propulsion system energized) position.
NOTE: If voltage measurement is not at the voltage or within the normal operating voltage range specified by the manufacturer, the battery must be charged.

Vb	V	
----	---	--

ELECTRIC ISOLATION MEASUREMENTS
PROPULSION BATTERY TO VEHICLE CHASSIS

Vehicle chassis point(s) determined and supplied to contractor by COR.
--

V1	V	
V2	V	

PROPULSION BATTERY TO VEHICLE CHASSIS ACROSS RESISTOR

The known resistance Ro (in ohms) should be approximately 500 times the normal operating voltage of the vehicle (in volts) per SAE J1766.

Ro	Ω	
----	---	--

V1' Pre-Impact	V	
V2' Pre-Impact	V	

DATA SHEET NO. 305-3 (CONTINUED)
PRE-IMPACT ELECTRICAL ISOLATION MEASUREMENTS AND CALCULATIONS
FOR INDICANT FMVSS NO. 305 TESTING

Test Vehicle: 2025 Toyota Camry HEV SE 4-Door Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20255100
 Test Date: 11/8/2024

ELECTRICAL ISOLATION CALCULATIONS

NOTE: If measured voltage is zero and results in a division by zero, record "Zero Volts".
 This "zero voltage" condition is considered as being compliant.

$R_{i1} = R_o (1 + V_2/V_1) [(V_1 - V_1')/V_1']$		
Ri1 Pre-Impact	Ω	
$R_{i2} = R_o (1 + V_1/V_2) [(V_2 - V_2')/V_2']$		
Ri2 Pre-Impact	Ω	
$R_i = \text{The lesser of } R_{i1} \text{ and } R_{i2}$		
Ri Pre-Impact	Ω	
$R_i / V_b = \text{Electrical Isolation Value} / \text{Nominal Battery Voltage}$		
Ri / Vb Pre-Impact	Ω	

NOTE: The minimum Electrical Isolation Value is 500 Ω/V .

	Yes	No (Fail)
Is the measured Electrical Isolation Value $\geq 500 \Omega/V$?		
Additional Comments	Not Applicable, vehicle was certified to FMVSS No. 305 S5.3(c).	

**DATA SHEET NO. 305-4
POST-IMPACT DATA
FOR INDICANT FMVSS NO. 305 TESTING**

Test Vehicle: 2025 Toyota Camry HEV SE 4-Door Sedan
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20255100
Test Date: 11/8/2024

VOLTMETER INFORMATION

	Units	Observations and Conclusions
Make		
Model		
Serial Number		
Internal Impedance Value	MΩ	
Resolution	V	
Last Calibration Date		

ELECTRICAL ISOLATION MEASUREMENTS

Vb Post-Impact	V	
----------------	---	--

V1 Post-Impact	V		Impact Time		Minutes		Seconds
V2 Post-Impact	V				Minutes		Seconds
V1' Post-Impact	V				Minutes		Seconds
V2' Post-Impact	V				Minutes		Seconds

Ro	Ω	
----	---	--

DATA SHEET NO. 305-4 (CONTINUED)
POST-IMPACT DATA
FOR INDICANT FMVSS NO. 305 TESTING

Test Vehicle: 2025 Toyota Camry HEV SE 4-Door Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20255100
 Test Date: 11/8/2024

ELECTRICAL ISOLATION CALCULATIONS

NOTE: If measured voltage is zero and results in a division by zero, record "Zero Volts".
 This "zero voltage" condition is considered as being compliant.

$R_{i1} = R_o (1 + V_2/V_1) [(V_1 - V_1')/V_1']$							
Ri1 Post-Impact	Ω		Impact Time		Minutes		Seconds
$R_{i2} = R_o (1 + V_1/V_2) [(V_2 - V_2')/V_2']$							
Ri2 Post-Impact	Ω		Impact Time		Minutes		Seconds
Ri = The lesser of Ri1 and Ri2							
Ri Post-Impact	Ω		Impact Time		Minutes		Seconds
$R_i / V_b = \text{Electrical Isolation Value} / \text{Nominal Battery Voltage}$							
Ri / Vb Post-Impact	Ω		Impact Time		Minutes		Seconds

NOTE: The minimum Electrical Isolation Value is 500 Ω/V.

	Yes	No (Fail)
Is the measured Electrical Isolation Value $\geq 500 \Omega/V$?		
Additional Comments	Not Applicable, vehicle was certified to FMVSS No. 305 S5.3(c).	

DATA SHEET NO. 305-4 (CONTINUED)
POST-IMPACT DATA
FOR INDICANT FMVSS NO. 305 TESTING

Test Vehicle: 2025 Toyota Camry HEV SE 4-Door Sedan
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20255100
Test Date: 11/8/2024

PROPULSION BATTERY SYSTEM COMPONENTS

Describe any Propulsion Battery Module movement within the passenger compartment [Supply photographs as appropriate]:
Not Applicable

	Yes (Fail)	No
Has the Propulsion Battery Module moved within the passenger compartment?		X

Describe intrusion of an outside Propulsion Battery Component into the passenger compartment [Supply photographs as appropriate]:
No Intrusion

	Yes (Fail)	No
Has an outside Propulsion Battery Component intruded into the passenger compartment?		X

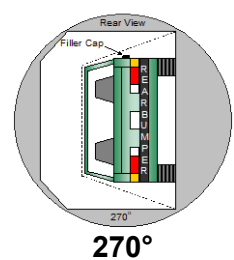
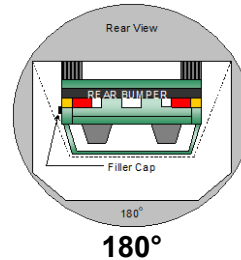
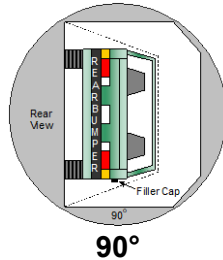
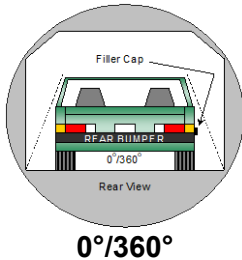
	Yes (Fail)	No
Is the Propulsion Battery Electrolyte Spillage visible in the passenger compartment?		X

DATA SHEET NO. 305-5
STATIC ROLLOVER TEST DATA
FOR INDICANT FMVSS NO. 305 TESTING

Test Vehicle: 2025 Toyota Camry HEV SE 4-Door Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20255100
 Test Date: 11/8/2024

PROPULSION BATTERY SYSTEM COMPONENTS



PROPULSION BATTERY ELECTROLYTE COLLECTION TIME PERIOD

Test Phase	Rotation Time (spec. 1-3 min)				FMVSS 301 Hold Time		Total Time				Next Whole Minute Interval	
0° - 90°	1	min	51	sec	5	min	6	min	51	sec	7	min
90° - 180°	1	min	52	sec	5	min	6	min	52	sec	7	min
180° - 270°	1	min	48	sec	5	min	6	min	48	sec	7	min
270° - 360°	1	min	51	sec	5	min	6	min	51	sec	7	min

TEST VEHICLE PROPULSION BATTERY ELECTROLYTE SPILLAGE

NOTE: The maximum allowable Propulsion Battery Electrolyte Spillage is 5.0 Liters.

Test Phase	Propulsion Battery Electrolyte Spillage (L)	Spillage Location
0° to 90°	0	Not Applicable
90° to 180°	0	Not Applicable
180° to 270°	0	Not Applicable
270° to 360°	0	Not Applicable
Total Spillage	0	

	Yes (Fail)	No
Is the total Propulsion Battery Electrolyte Spillage greater than 5.0 Liters?		X
Is the Propulsion Battery Electrolyte Spillage visible in the passenger compartment?		X

DATA SHEET NO. 305-5 (CONTINUED)
STATIC ROLLOVER TEST DATA
FOR INDICANT FMVSS NO. 305 TESTING

Test Vehicle: 2025 Toyota Camry HEV SE 4-Door Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20255100
 Test Date: 11/8/2024

VOLTMETER INFORMATION

	Units	Observations and Conclusions
Make		
Model		
Serial Number		
Internal Impedance Value	MΩ	
Resolution	V	
Last Calibration Date		

ELECTRICAL ISOLATION MEASUREMENTS

Vb Post-Impact	V	
----------------	---	--

Record V1, V2, V1', V2' voltage measurements at the start of each successive increment of 90°, 180°, 270°, and 360° of the static rollover test.

	Voltage	Units	Test Phase	Time			
V1		V	0°		min		sec
			90°				
			180°				
			270°				
			360°				
V2		V	0°		min		sec
			90°				
			180°				
			270°				
			360°				
V1'		V	0°		min		sec
			90°				
			180°				
			270°				
			360°				
V2'		V	0°		min		sec
			90°				
			180°				
			270°				
			360°				

DATA SHEET NO. 305-5 (CONTINUED)
STATIC ROLLOVER TEST DATA
FOR INDICANT FMVSS NO. 305 TESTING

Test Vehicle: 2025 Toyota Camry HEV SE 4-Door Sedan
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20255100
Test Date: 11/8/2024

ELECTRICAL ISOLATION CALCULATIONS

NOTE: If measured voltage is zero and results in a division by zero, record "Zero Volts".
This "zero voltage" condition is considered as being compliant.

	Voltage	Units	Test Phase	Time			
Ri1 = Ro (1 + V2/V1) [(V1-V1')/V1']							
Ri1		Ω	0°		min		sec
			90°				
			180°				
			270°				
			360°				
Ri2 = Ro (1 + V1/V2) [(V2-V2')/V2']							
Ri2		Ω	0°		min		sec
			90°				
			180°				
			270°				
			360°				
Ri = The lesser of Ri1 and Ri2							
Ri		Ω	0°		min		sec
			90°				
			180°				
			270°				
			360°				
Ri / Vb = Electrical Isolation Value / Nominal Battery Voltage							
Ri / Vb		Ω/V	0°		min		sec
			90°				
			180°				
			270°				
			360°				

NOTE: The minimum Electrical Isolation Value is 500 Ω/V .

	Yes	No (Fail)
Is the measured Electrical Isolation Value $\geq 500 \Omega/V$?		
Additional Comments	Not Applicable, vehicle was certified to FMVSS No. 305 S5.3(c).	

DATA SHEET NO. 305A-1
EVALUATE PROTECTION FROM DIRECT CONTACT WITH HIGH VOLTAGES SOURCES
FOR INDICANT FMVSS NO. 305 TESTING

Test Vehicle: 2025 Toyota Camry HEV SE 4-Door Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20255100
 Test Date: 11/8/2024

For each data point where the IPXXB probe is used to evaluate electrical protection from direct contact with high voltage sources, provide a thumbnail photo and be as descriptive of the locations as possible. If an apparent failure is detected, include a photograph showing the direct contact between probe and the high voltage source and/or the probe lamp being illuminated.

POST-CRASH / PRE-ROLLOVER

Description of Evaluated Location	Probe Contact with High Voltage Source		Probe Lamp Illuminated	
	Yes, Fail	No, Pass	Yes, Fail	No, Pass
High-Voltage Battery to Electrical Ground		X		X
Power Control Unit to Electrical Ground		X		X
Rear Drive Motor to Electrical Ground		X		X
High-Voltage Battery to Power Control Unit		X		X
High-Voltage Battery to Rear Drive Motor		X		X
Power Control Unit to Rear Drive Motor		X		X

STATIC ROLLOVER

Description of Evaluated Location	Probe Contact with High Voltage Source		Probe Lamp Illuminated	
	Yes, Fail	No, Pass	Yes, Fail	No, Pass
High-Voltage Battery to Electrical Ground		X		X
Power Control Unit to Electrical Ground		X		X
Rear Drive Motor to Electrical Ground		X		X
High-Voltage Battery to Power Control Unit		X		X
High-Voltage Battery to Rear Drive Motor		X		X
Power Control Unit to Rear Drive Motor		X		X

POST-ROLLOVER

Description of Evaluated Location	Probe Contact with High Voltage Source		Probe Lamp Illuminated	
	Yes, Fail	No, Pass	Yes, Fail	No, Pass
High-Voltage Battery to Electrical Ground		X		X
Power Control Unit to Electrical Ground		X		X
Rear Drive Motor to Electrical Ground		X		X
High-Voltage Battery to Power Control Unit		X		X
High-Voltage Battery to Rear Drive Motor		X		X
Power Control Unit to Rear Drive Motor		X		X

DATA SHEET NO. 305A-2
EVALUATE PROTECTION AGAINST INDIRECT CONTACT WITH HIGH VOLTAGE SOURCES
USING A RESISTANCE TESTER OR DC POWER SUPPLY, VOLTMETER AND AMMETER
FOR INDICANT FMVSS NO. 305 TESTING

Test Vehicle: 2025 Toyota Camry HEV SE 4-Door Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20255100
 Test Date: 11/8/2024

For any measuring points where protection against indirect contact with high voltage sources is evaluated, provide a thumbnail photo and be as descriptive of the locations as possible. If an apparent failure is detected, include a photograph showing the locations in question and the related measured values. If the resistance is calculated using separately measured resistances, describe each measurement and the final calculation as separate entries in the table below.

Measuring Path	Pass	Fail
BC: Between exposed conductive parts of the electrical protection barrier of the high voltage source and the electrical chassis.	< 0.1 Ω	$\geq$ 0.1 Ω
BB: Between exposed conductive parts of the electrical protection barrier of the high voltage source and any other simultaneously reachable exposed conductive parts of the electrical protection barriers within 2.5 meters.	< 0.2 Ω	$\geq$ 0.2 Ω

POST-CRASH / PRE-ROLLOVER

Description of Evaluated Location	Measuring Path	Method 2 ONLY		Methods 1 & 2	Pass or Fail
	BC or BB	Voltage (V) Volts	Current (I) Amps	Resistance (R=V/I) Ω	
High-Voltage Battery to Electrical Ground	BC			0.0000	Pass
Power Control Unit to Electrical Ground	BC			0.0014	Pass
Rear Drive Motor to Electrical Ground	BC			0.0000	Pass
High-Voltage Battery to Power Control Unit	BB			0.0000	Pass
High-Voltage Battery to Rear Drive Motor	BB			0.0000	Pass
Power Control Unit to Rear Drive Motor	BB			0.0000	Pass

STATIC ROLLOVER

Description of Evaluated Location	Measuring Path	Method 2 ONLY		Methods 1 & 2	Pass or Fail
	BC or BB	Voltage (V) Volts	Current (I) Amps	Resistance (R=V/I) Ω	
High-Voltage Battery to Electrical Ground	BC			0.0000	Pass
Power Control Unit to Electrical Ground	BC			0.0000	Pass
Rear Drive Motor to Electrical Ground	BC			0.0013	Pass
High-Voltage Battery to Power Control Unit	BB			0.0000	Pass
High-Voltage Battery to Rear Drive Motor	BB			0.0000	Pass
Power Control Unit to Rear Drive Motor	BB			0.0000	Pass

* Final resistance values reported after subtracting the resistance of the measurement device extensions.

DATA SHEET NO. 305A-2 (CONTINUED)
EVALUATE PROTECTION AGAINST INDIRECT CONTACT WITH HIGH VOLTAGE SOURCES
USING A RESISTANCE TESTER OR DC POWER SUPPLY, VOLTMETER AND AMMETER
FOR INDICANT FMVSS NO. 305 TESTING

Test Vehicle: 2025 Toyota Camry HEV SE 4-Door Sedan
 Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20255100
 Test Date: 11/8/2024

For any measuring points where protection against indirect contact with high voltage sources is evaluated, provide a thumbnail photo and be as descriptive of the locations as possible. If an apparent failure is detected, include a photograph showing the locations in question and the related measured values. If the resistance is calculated using separately measured resistances, describe each measurement and the final calculation as separate entries in the table below.

Measuring Path	Pass	Fail
BC: Between exposed conductive parts of the electrical protection barrier of the high voltage source and the electrical chassis.	< 0.1 Ω	$\geq$ 0.1 Ω
BB: Between exposed conductive parts of the electrical protection barrier of the high voltage source and any other simultaneously reachable exposed conductive parts of the electrical protection barriers within 2.5 meters.	< 0.2 Ω	$\geq$ 0.2 Ω

POST-ROLLOVER

Description of Evaluated Location	Measuring Path	Method 2 ONLY		Methods 1 & 2	Pass or Fail
	BC or BB	Voltage (V) Volts	Current (I) Amps	Resistance (R=V/I) Ω	
High-Voltage Battery to Electrical Ground	BC			0.0000	Pass
Power Control Unit to Electrical Ground	BC			0.0000	Pass
Rear Drive Motor to Electrical Ground	BC			0.0013	Pass
High-Voltage Battery to Power Control Unit	BB			0.0000	Pass
High-Voltage Battery to Rear Drive Motor	BB			0.0000	Pass
Power Control Unit to Rear Drive Motor	BB			0.0000	Pass

* Final resistance values reported after subtracting the resistance of the measurement device extensions.

DATA SHEET NO. 305A-3
DETERMINE VOLTAGE BETWEEN EXPOSED CONDUCTIVE PARTS
OF ELECTRICAL PROTECTION BARRIERS AND THE ELECTRICAL CHASSIS
AND BETWEEN EXPOSED PARTS OF ELECTRICAL PROTECTION BARRIERS

Test Vehicle: 2025 Toyota Camry HEV SE 4-Door Sedan
Test Program: NCAP Frontal Barrier Impact Test

NHTSA No.: O20255100
Test Date: 11/8/2024

For each data point where the voltage between exposed conductive parts of electrical protection barriers and the electrical chassis and between exposed conductive parts of electrical protection barriers is determined, provide a thumbnail photo and be as descriptive of the locations as possible. If an apparent failure is detected, include a photograph showing the locations in question and the related measured values.

Measuring Path	Pass	Fail
BC: Between exposed conductive parts of the electrical protection barrier of the high voltage source and the electrical chassis.	≤ 30 VAC ≤ 60 VDC	> 30 VAC > 60 VDC
BB: Between exposed conductive parts of the electrical protection barrier of the high voltage source and any other simultaneously reachable exposed conductive parts of the electrical protection barriers within 2.5 meters.	≤ 30 VAC ≤ 60 VDC	> 30 VAC > 60 VDC

POST-CRASH / PRE-ROLLOVER

Description of Evaluated Location	Measuring Path	Measured Voltage		Pass or Fail
	BC or BB	VAC (V) Volts	VDC (V) Volts	
High-Voltage Battery to Electrical Ground	BC	0.0	0.0	Pass
Power Control Unit to Electrical Ground	BC	0.0	0.0	Pass
Rear Drive Motor to Electrical Ground	BC	0.0	0.0	Pass
High-Voltage Battery to Power Control Unit	BB	0.0	0.0	Pass
High-Voltage Battery to Rear Drive Motor	BB	0.0	0.0	Pass
Power Control Unit to Rear Drive Motor	BB	0.0	0.0	Pass

STATIC ROLLOVER

Description of Evaluated Location	Measuring Path	Measured Voltage		Pass or Fail
	BC or BB	VAC (V) Volts	VDC (V) Volts	
High-Voltage Battery to Electrical Ground	BC	0.0	0.0	Pass
Power Control Unit to Electrical Ground	BC	0.0	0.0	Pass
Rear Drive Motor to Electrical Ground	BC	0.0	0.0	Pass
High-Voltage Battery to Power Control Unit	BB	0.0	0.0	Pass
High-Voltage Battery to Rear Drive Motor	BB	0.0	0.0	Pass
Power Control Unit to Rear Drive Motor	BB	0.0	0.0	Pass

POST-ROLLOVER

Description of Evaluated Location	Measuring Path	Measured Voltage		Pass or Fail
	BC or BB	VAC (V) Volts	VDC (V) Volts	
High-Voltage Battery to Electrical Ground	BC	0.0	0.0	Pass
Power Control Unit to Electrical Ground	BC	0.0	0.0	Pass
Rear Drive Motor to Electrical Ground	BC	0.0	0.0	Pass
High-Voltage Battery to Power Control Unit	BB	0.0	0.0	Pass
High-Voltage Battery to Rear Drive Motor	BB	0.0	0.0	Pass
Power Control Unit to Rear Drive Motor	BB	0.0	0.0	Pass

**APPENDIX A
PHOTOGRAPHS**

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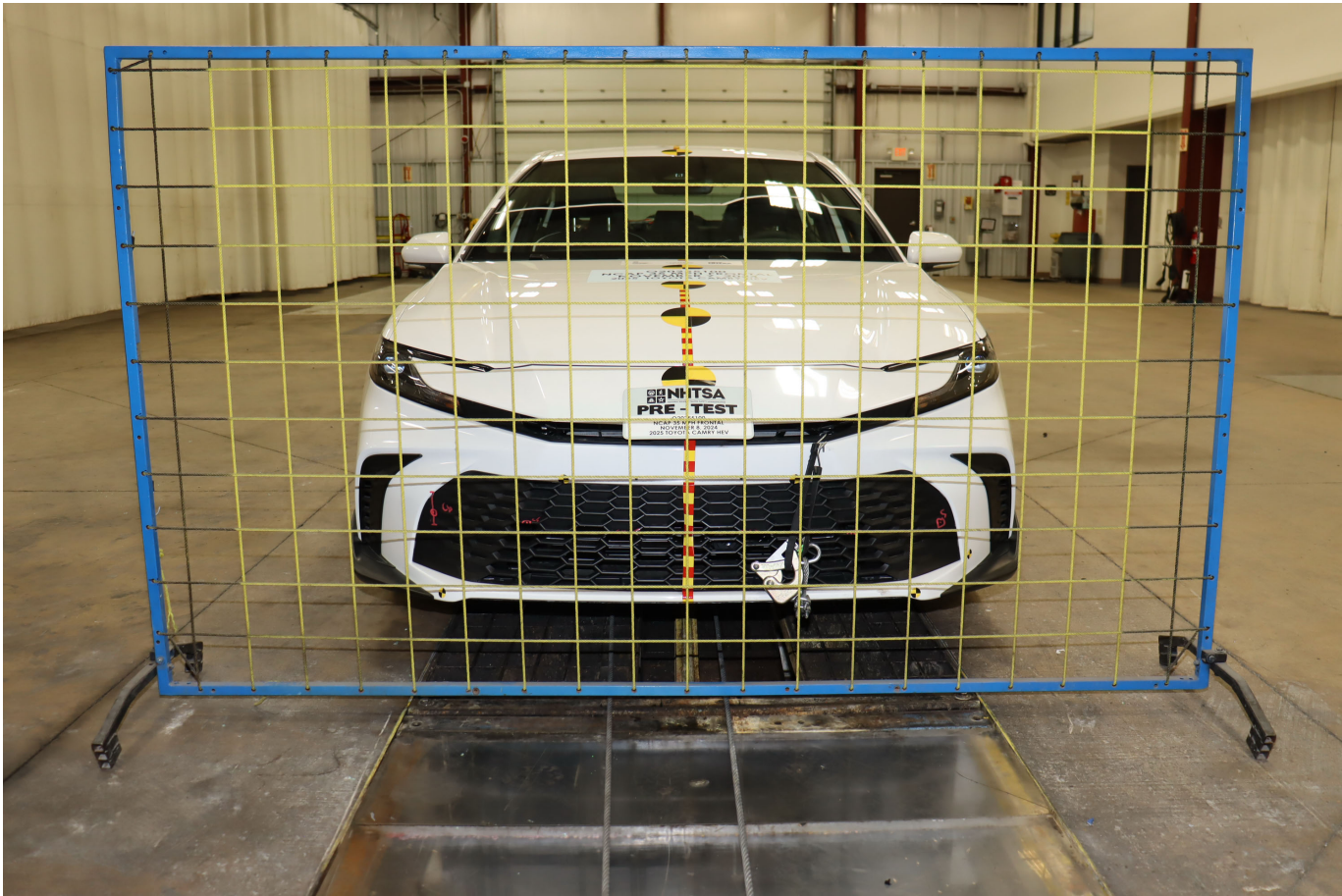


Photo No. 001 - Load Cell Location



Photo No. 002 - Pre-Test Load Cell Wall



Photo No. 003 - Post-Test Load Cell Wall



Photo No. 004 - Manufacturer's Label

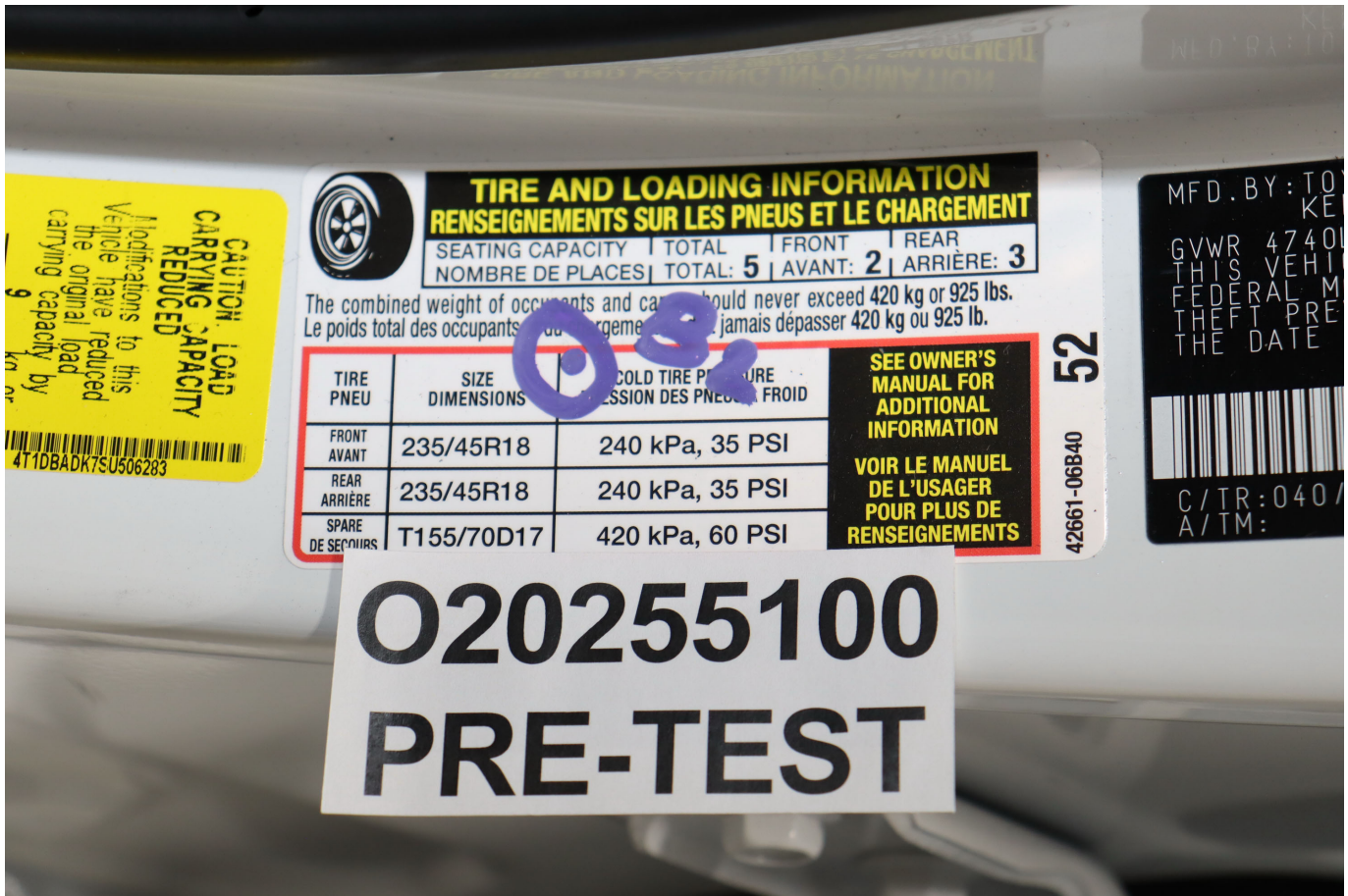


Photo No. 005 - Tire Placard



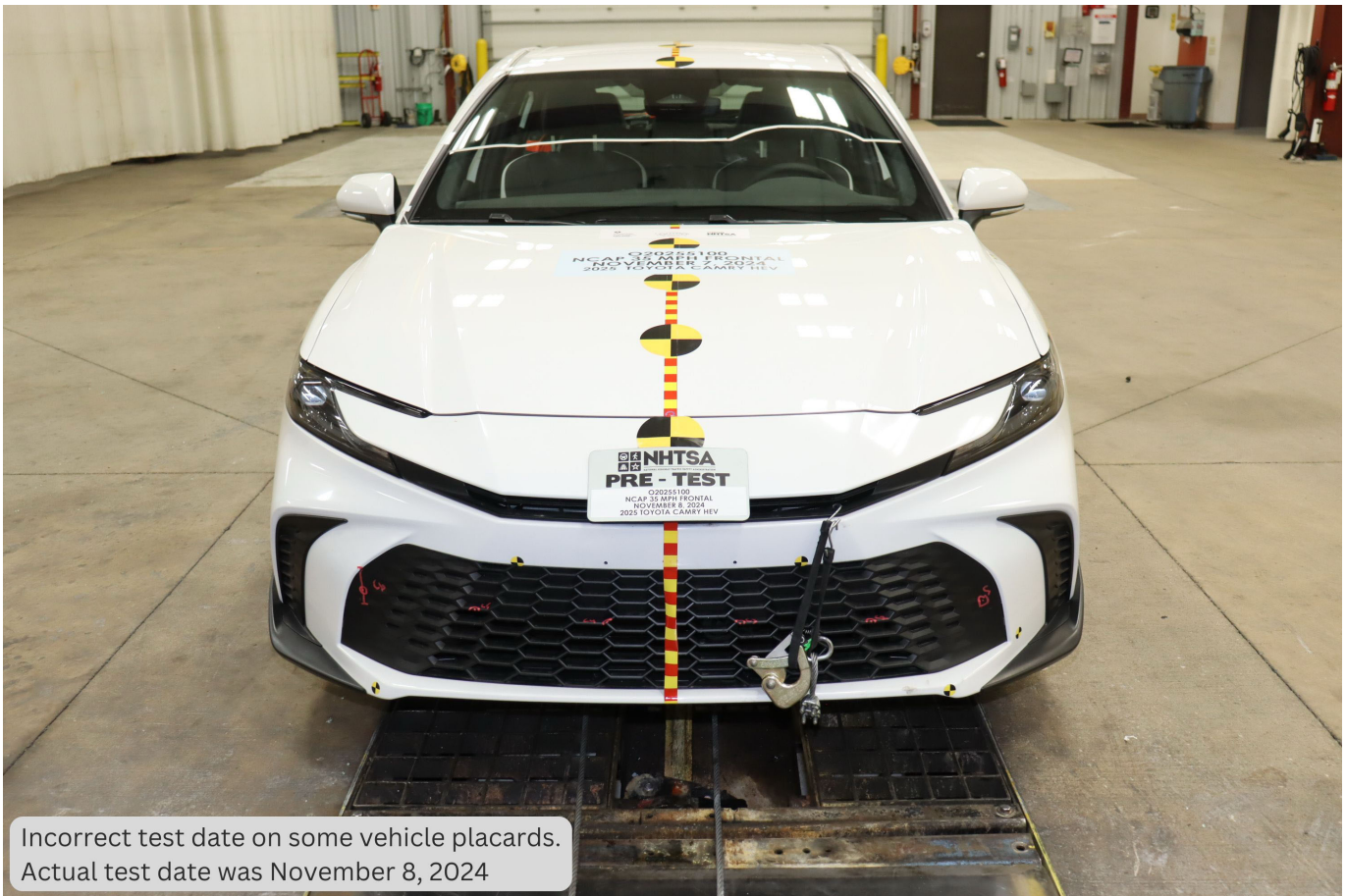
Photo No. 005a - Vehicle Load Carrying Capacity Reduction Label



Photo No. 006 - 2025 Toyota Camry HEV SE 4-Door Sedan Frontal As Delivered



Photo No. 007 - Left Rear 3-4 View, As Received



Incorrect test date on some vehicle placards.
Actual test date was November 8, 2024

Photo No. 008 - Pre-Test Front View of Test Vehicle



Photo No. 009 - Post-Test Front View of Test Vehicle



Photo No. 010 - Pre-Test Left View of Test Vehicle

PHOTOGRAPH NOT AVAILABLE

Photo No. 011 - Post-Test Left View of Test Vehicle

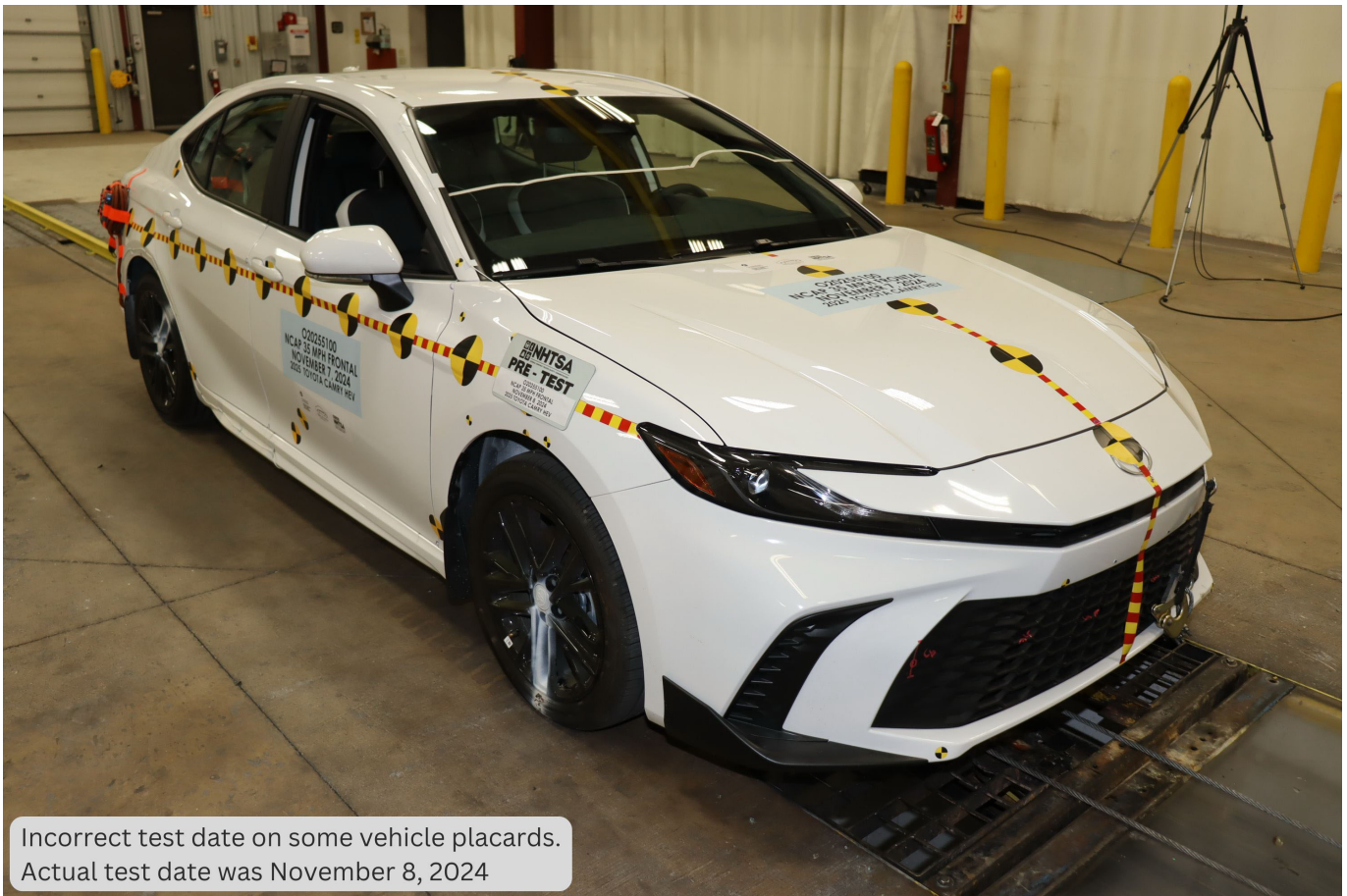


Incorrect test date on some vehicle placards.
Actual test date was November 8, 2024

Photo No. 012 - Pre-Test Right View of Test Vehicle



Photo No. 013 - Post-Test Right View of Test Vehicle



Incorrect test date on some vehicle placards.
Actual test date was November 8, 2024

Photo No. 014 - Pre-Test Right Front 3-4 View



Photo No. 015 - Post-Test Right Front 3-4 View



Photo No. 016 - Pre-Test Left Rear 3-4 View



Photo No. 017 - Post-Test Left Rear 3-4 View



Photo No. 018 - Pre-Test Windshield View



Photo No. 019 - Post-Test Windshield View

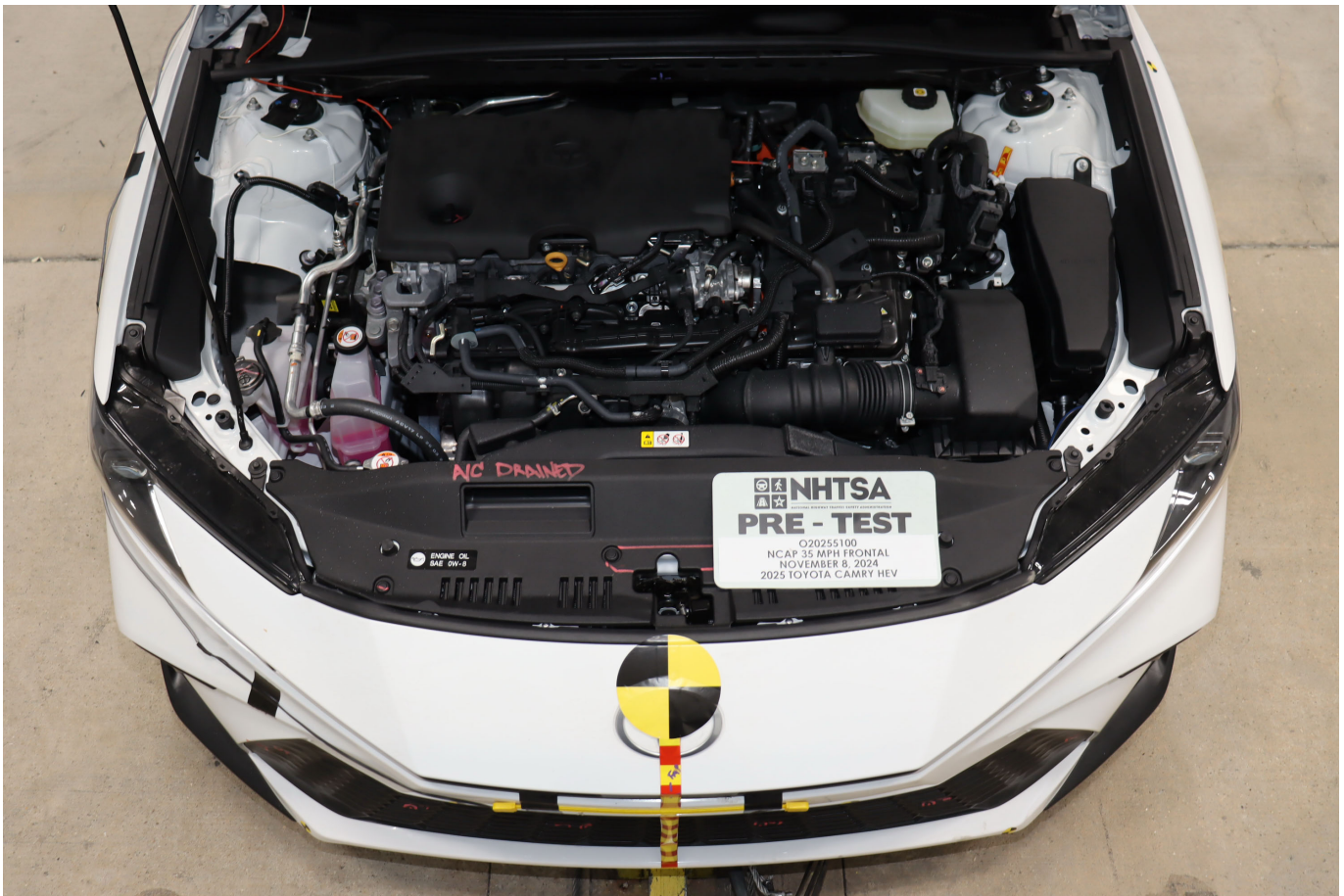


Photo No. 020 - Pre-Test Engine Compartment View

PHOTOGRAPH NOT AVAILABLE

Photo No. 021 - Post-Test Engine Compartment View



Photo No. 022 - Pre-Test Fuel Filler Cap View



Photo No. 023 - Post-Test Fuel Filler Cap View

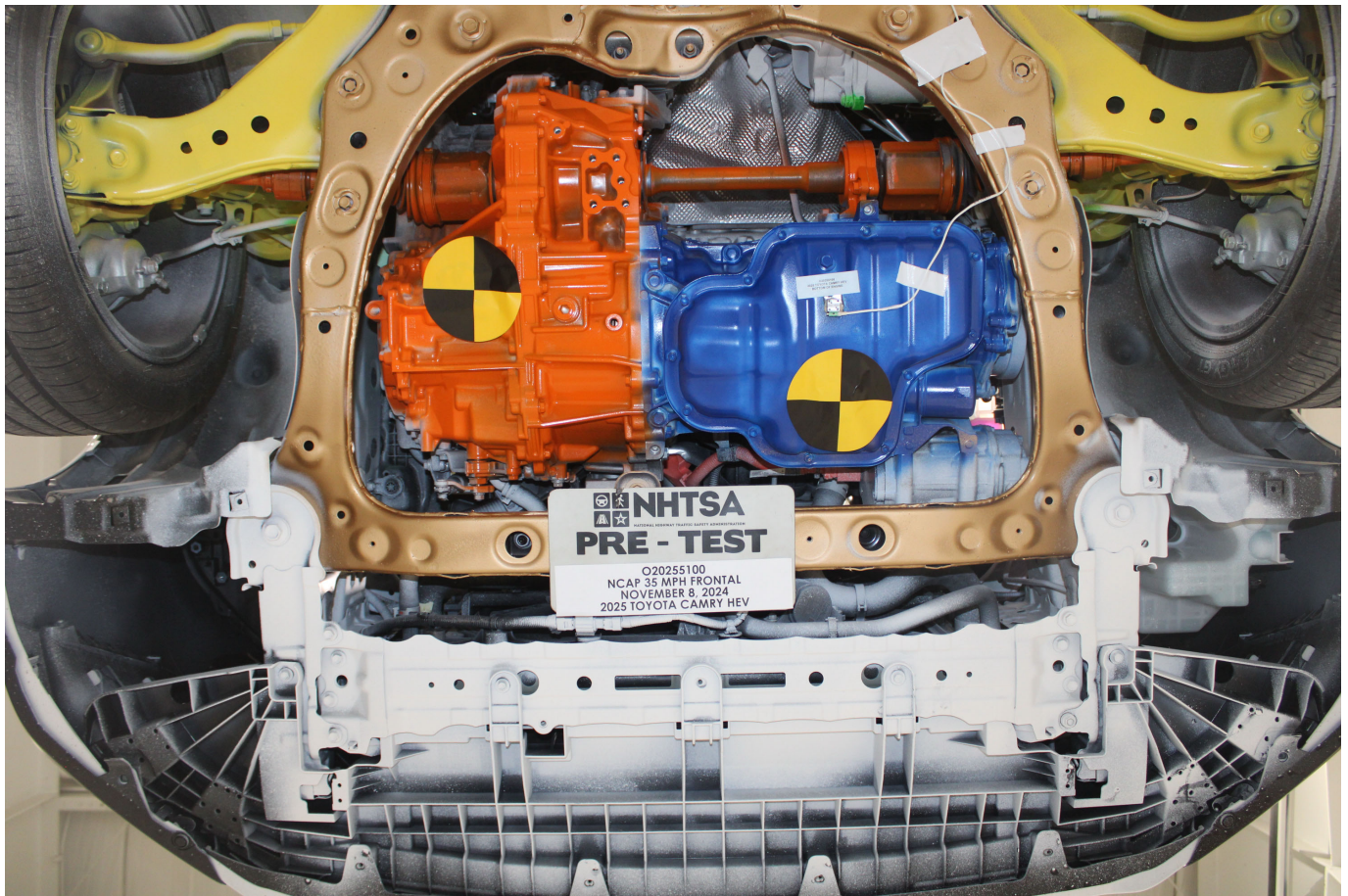


Photo No. 024 - Pre-Test Front Underbody View

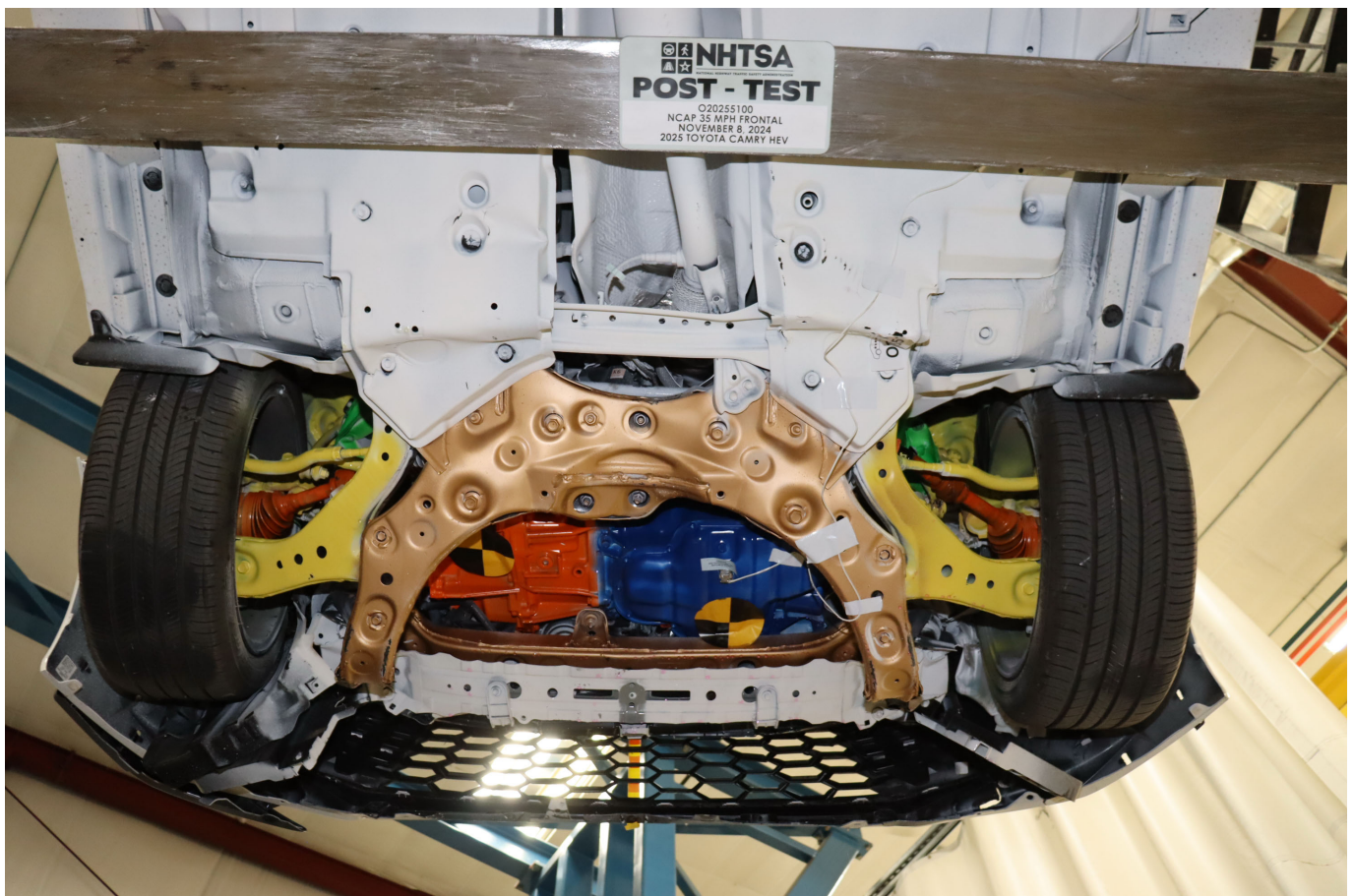


Photo No. 025 - Post-Test Front Underbody View

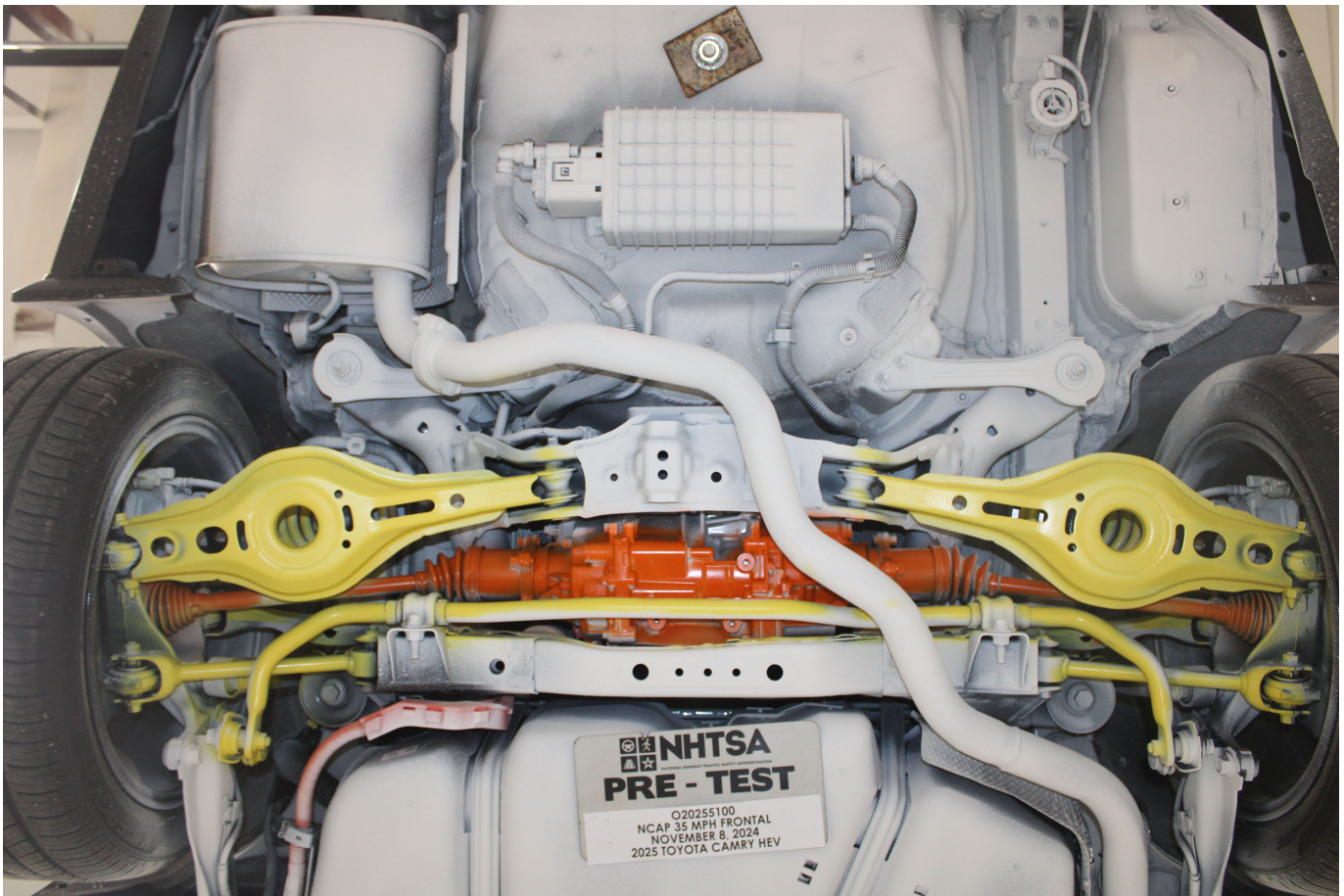


Photo No. 026 - Pre-Test Rear Underbody View

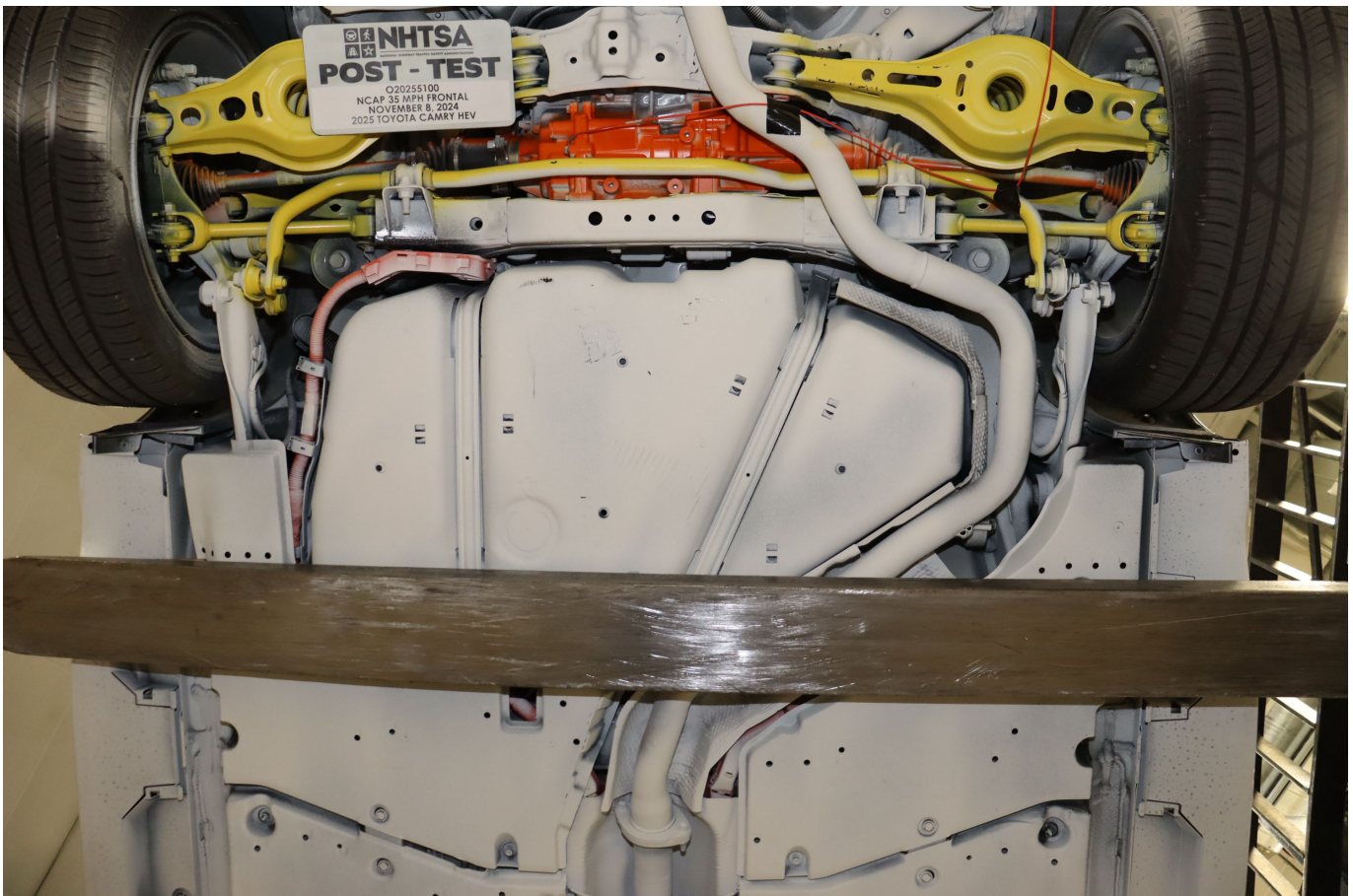


Photo No. 027 - Post-Test Rear Underbody View



Photo No. 028 - Pre-Test Dummy Cable Routing



Photo No. 029 - Post-Test Dummy Cable Routing



Photo No. 030 - Pre-Test Driver Dummy Front View



Photo No. 031 - Post-Test Driver Dummy Front View



Photo No. 032 - Pre-Test Driver Dummy Window View



Photo No. 033 - Post-Test Driver Dummy Window View



Photo No. 034 - Pre-Test Driver Dummy and Vehicle Interior View



Photo No. 035 - Post-Test Driver Dummy and Vehicle Interior View



Photo No. 036 - Pre-Test Driver's Seat Fore-Aft Markings



Photo No. 037 - Post-Test Driver's Seat Fore-Aft Markings



Photo No. 038 - Pre-Test View of Belt Anchorage for Driver Dummy



Photo No. 039 - Post-Test View of Belt Anchorage for Driver Dummy



Photo No. 040 - Pre-Test View of Belt Buckle and Latch Plate for Driver Dummy



Photo No. 041 - Post-Test View of Belt Buckle and Latch Plate for Driver Dummy



Photo No. 042 - Pre-Test Driver Dummy Feet



Photo No. 043 - Post-Test Driver Dummy Feet



Photo No. 044 - Pre-Test Driver's Side Knee Bolster



Photo No. 045 - Post-Test Driver's Side Knee Bolster



Photo No. 046 - Pre-Test Driver's Side Floorpan



Photo No. 047 - Post-Test Driver's Side Floorpan



Photo No. 048 - Post-Test Driver Dummy Face

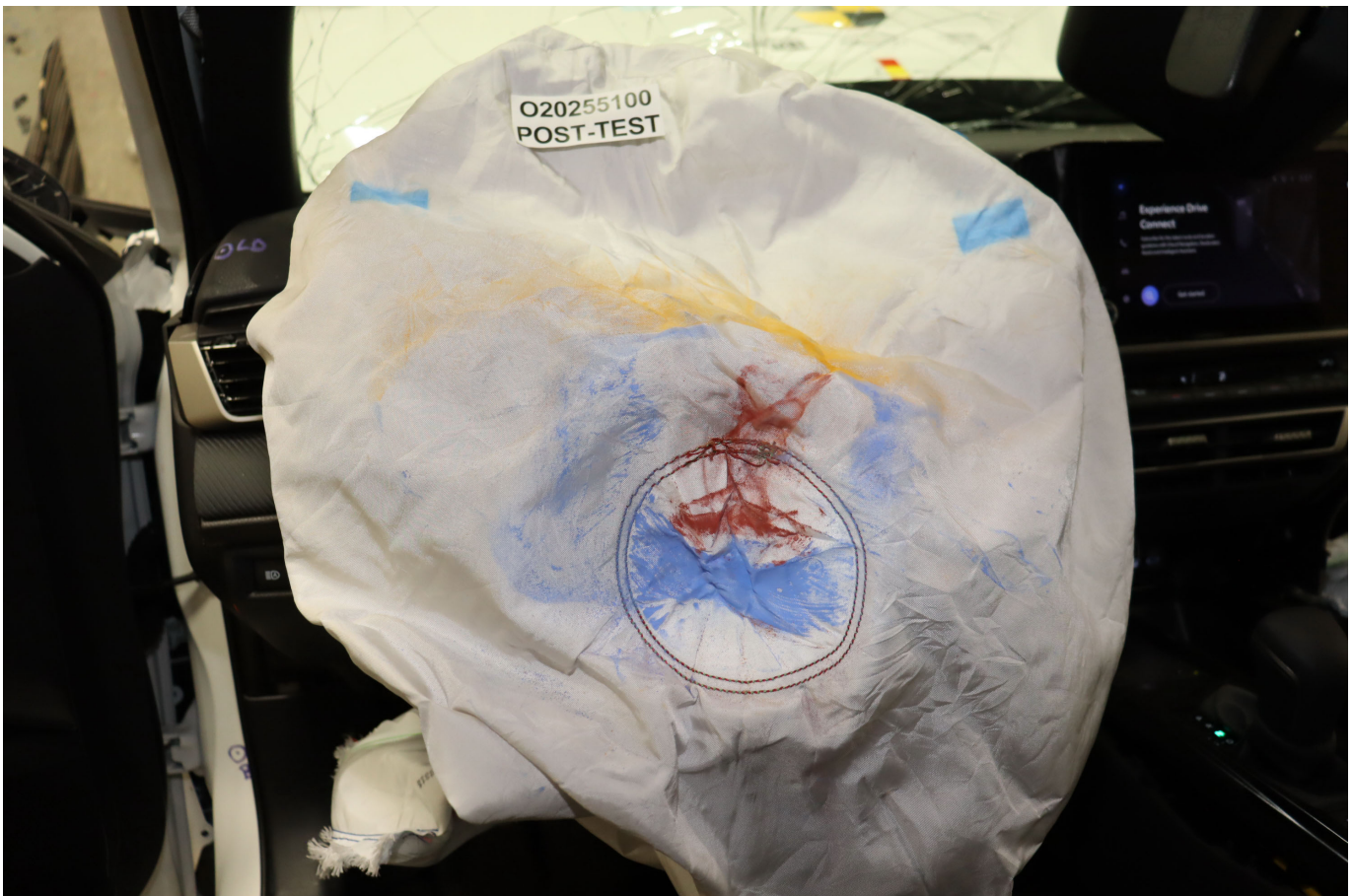


Photo No. 049 - Post-Test Driver Dummy Contact with Airbag



Photo No. 050 - Post-Test Driver Dummy Contact with Headrest



Photo No. 051 - Pre-Test View of the Steering Wheel



Photo No. 052 - Post-Test View of the Steering Wheel



Photo No. 053 - Pre-Test Passenger Dummy Front View



Photo No. 054 - Post-Test Passenger Dummy Front View



O20255100
Photo No. 055 - Pre-Test Passenger Dummy Window View



Photo No. 056 - Post-Test Passenger Dummy Window View



Photo No. 057 - Pre-Test Passenger Dummy and Vehicle Interior View



Photo No. 058 - Post-Test Passenger Dummy and Vehicle Interior View



Photo No. 059 - Pre-Test Passenger's Seat Fore-Aft Markings



Photo No. 060 - Post-Test Passenger's Seat Fore-Aft Markings



Photo No. 061 - Pre-Test View of Belt Anchorage for Passenger Dummy



Photo No. 062 - Post-Test View of Belt Anchorage for Passenger Dummy



Photo No. 063 - Pre-Test View of Belt Buckle and Latch Plate for Passenger Dummy



Photo No. 064 - Post-Test View of Belt Buckle and Latch Plate for Passenger Dummy



Photo No. 065 - Pre-Test Passenger Dummy Feet



Photo No. 066 - Post-Test Passenger Dummy Feet



Photo No. 067 - Pre-Test Passenger's Side Knee Bolster



Photo No. 068 - Post-Test Passenger's Side Knee Bolster



Photo No. 069 - Pre-Test Passenger's Side Floorpan



Photo No. 070 - Post-Test Passenger's Side Floorpan



Photo No. 071 - Post-Test Passenger Dummy Face



Photo No. 072 - Post-Test Passenger Dummy Contact with Airbag



Photo No. 073 - Post-Test Passenger Dummy Contact with Headrest

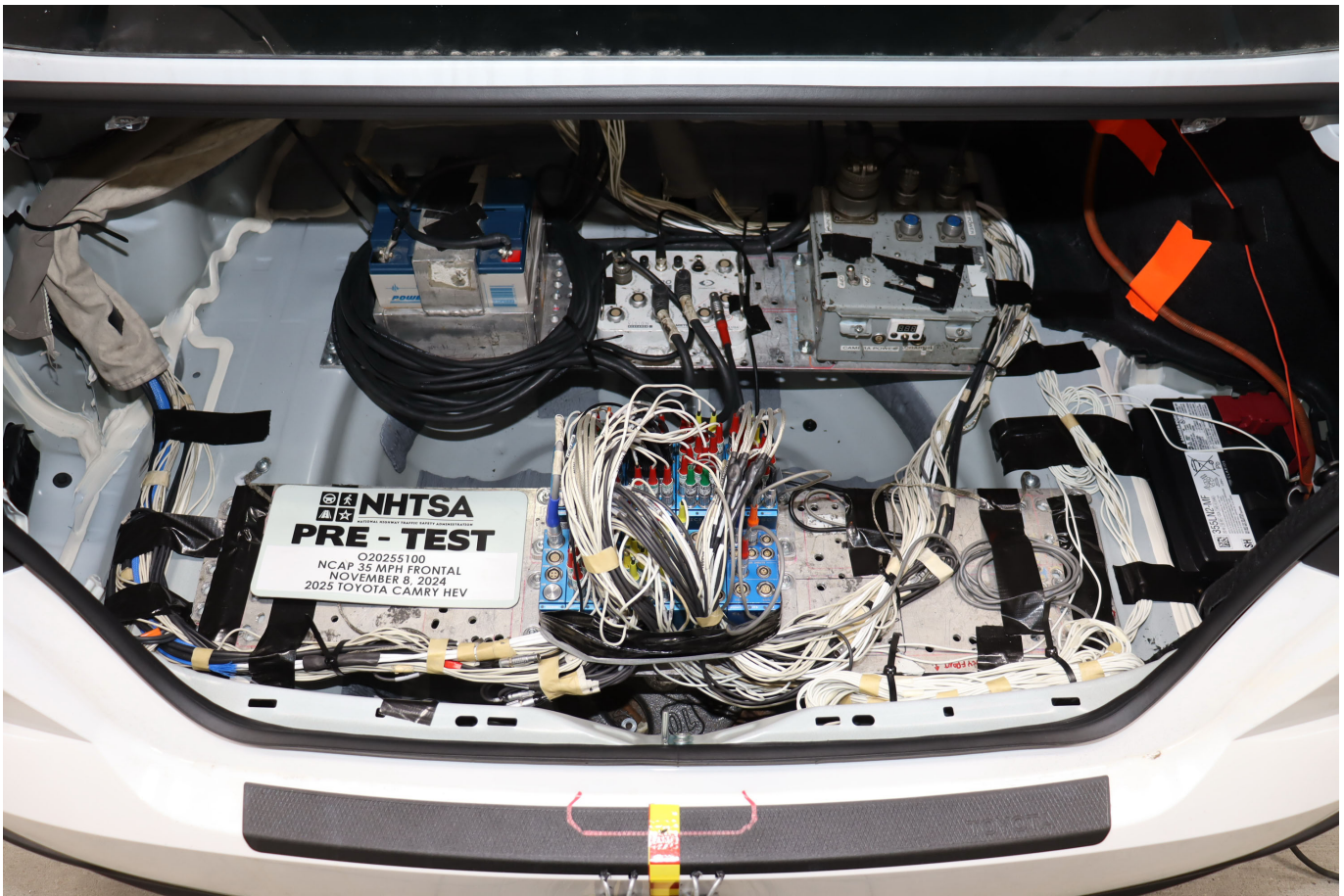


Photo No. 074 - Photograph of Ballast Installed in Vehicle

PHOTOGRAPH NOT APPLICABLE

Photo No. 075 - Post-Test Stoddard Solvent Spillage Location View



Photo No. 076 - Post-Test Speed Trap Read-Out



Photo No. 077 - Vehicle at 0 Degrees on Static Rollover Device

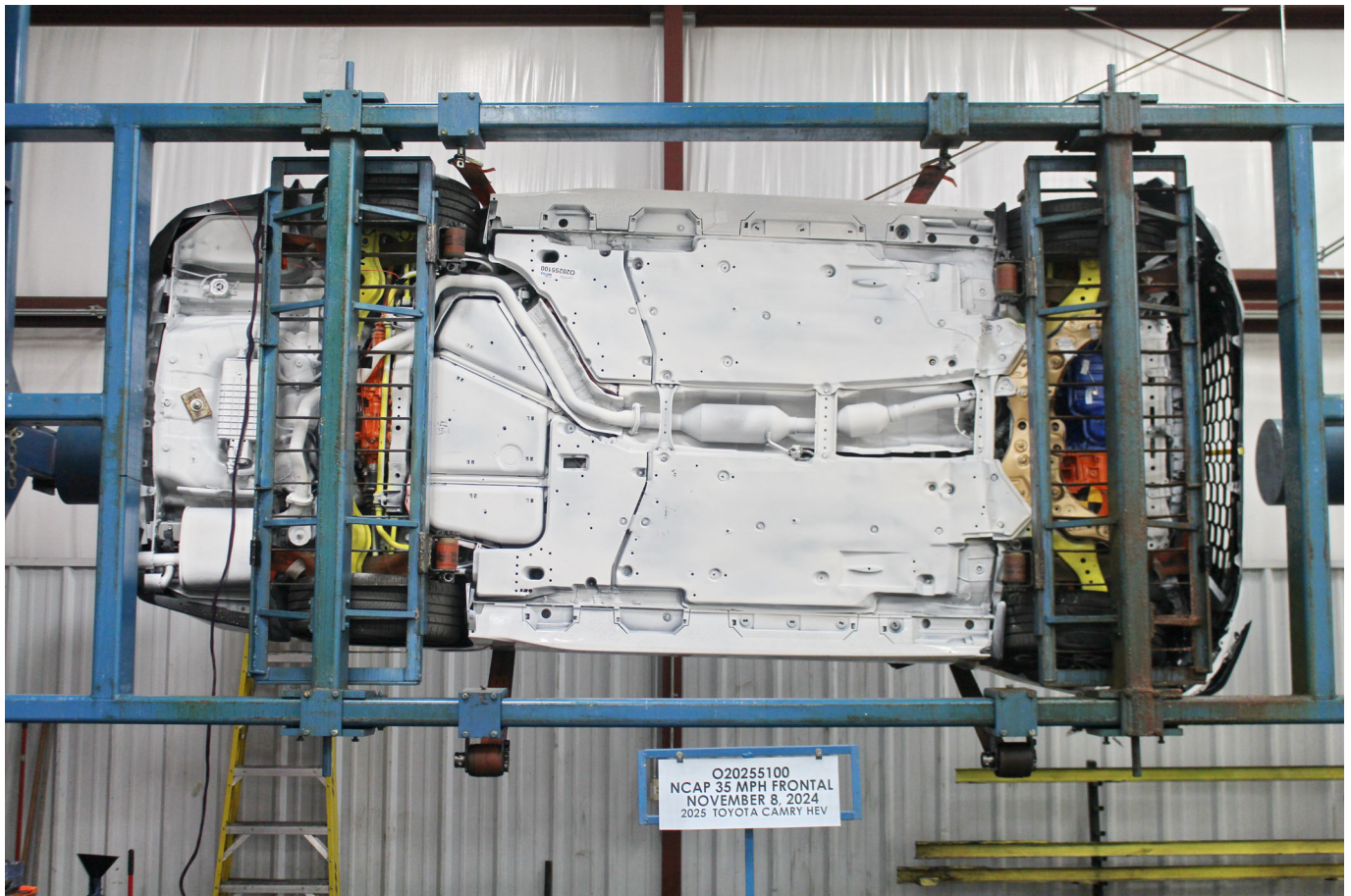


Photo No. 078 - Vehicle at 90 Degrees on Static Rollover Device



Photo No. 079 - Vehicle at 180 Degrees on Static Rollover Device



Photo No. 080 - Vehicle at 270 Degrees on Static Rollover Device



Photo No. 081 - Vehicle at 360 Degrees on Static Rollover Device



Photo No. 082 - 2025 Toyota Camry HEV SE 4-Door Sedan Frontal Impact Event

TOYOTA

DESC.: **CAMRY** SE AWD
VIN: **4T1DBADK7SU506283**
YR/MDL: 2025/2553A
CLR: ICE CAP/EA20 (0040/20)
FINAL ASSEMBLY POINT: GEORGETOWN, KENTUCKY, U.S.A.

GOVERNMENT 5-STAR SAFETY RATINGS

This vehicle has not been rated by the government for overall vehicle score, frontal crash, side crash or rollover risk.

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

STANDARD EQUIPMENT
UNLESS REPLACED BY OPTIONAL EQUIPMENT

MECHANICAL & PERFORMANCE

- 5th Generation Toyota Hybrid System
- 2.5L 4-Cylinder Engine
- 232 Combined System Net Horsepower
- Electronic Continuously Variable Transmission (ECT) w/Paddle Shifters
- Electronic On-Demand All Wheel Drive
- Sport-Tuned Suspension
- Single Exhaust w/Dual Chrome Tips

SAFETY & CONVENIENCE

- Toyota Safety Sense 3.0 w/Pre-Collision Blind Spot Monitor w/Rear-Cross Traffic Alert
- Connected Services Capable. 4G Network Dependent. See Toyota.com for details.

EXTERIOR

- 18-in. Black-Finished Alloy Wheels
- Bi-LED Combination Headlights
- Heated Side View Mirrors
- Black Sport Mesh Grille
- Front Side Canards
- Body Color Rear Spoiler
- Black Rear Camry Badge
- Black Rear Sport Diffuser

INTERIOR

- 7-in. Digital Gauge Cluster
- 8-in. Toyota Audio Multimedia w/6-Speakers, Wireless Apple CarPlay and Android Auto Compatibility
- SiriusXM w/3-Month Trial
- Aluminum Sport Pedals
- Leather-Trimmed Steering Wheel & Shifter
- Sport Fabric & Softex-Trimmed Seats
- 8-Way Power Driver Seat w/Lumbar
- Dual-Zone Auto Climate Control
- Push Button Start
- Qi Wireless Smartphone Charger
- 1 USB Media Port, 1 USB-A, & 3 USB-C
- For Full Product Details Please Visit Toyota.com/camry
- ***Full Tank of Gas***

BASE MANUFACTURER'S SUGGESTED RETAIL PRICE \$32,225.00

OPTIONAL EQUIPMENT

FE	50 State Emissions	
CP	Convenience Package: Includes Auto-Dimming Rearview Mirror w/HomeLink, and Smart Key System On Front Doors	600.00
ZT	All Weather Floor Protection:All Weather Floor Liners, All Weather Trunk Mat	309.00
WL	Wheel Locks	90.00
MF	Mudguards	150.00
EF	Rear Bumper Applique	69.00
DS	Door Edge Guard	155.00

EPA DOT Fuel Economy and Environment

Fuel Economy

46 MPG Midsize Cars range from 15 to 140 MPG. The best vehicle rates 140 MPG.

46 combined city/hwy
46 city
46 highway
2.2 gallons per 100 miles

You save \$3,750 in fuel costs over 5 years compared to the average new vehicle.

Annual fuel cost \$1,150

Fuel Economy & Greenhouse Gas Rating (tailpipe only) **Smog Rating** (tailpipe only)

1 **8** **10** **1** **6** **10**
Best Best

This vehicle emits 189 grams CO₂ per mile. The best emits 0 grams per mile (tailpipe only). Producing and distributing fuel also create emissions. Learn more at fueleconomy.gov.

Actual results will vary for many reasons, including driving conditions and how you drive and maintain your vehicle. The average new vehicle gets 28 MPG and costs \$9,500 to fuel over 5 years. Cost estimates are based on 15,000 miles per year at \$3.50 per gallon. MPG is miles per gasoline gallon equivalent. Vehicle emissions are a significant cause of climate change and smog.

fueleconomy.gov
Calculate personalized estimates and compare vehicles

Gasoline Vehicle

MANUFACTURER'S SUGGESTED RETAIL PRICE \$33,598.00

DELIVERY, PROCESSING AND HANDLING FEE 1,095.00

TOTAL SUGGESTED RETAIL PRICE \$34,693.00

Delivered by Truck to: 19076
SHEEHY TOYOTA OF LAUREL
8801 FREESTATE DRIVE
LAUREL MD 20723

TMLE1N1S0F0W0

Photo No. 083 - Monroney Label Photograph



Photo No. 305-01 - Auxiliary Power Module Warning Label



Photo No. 305-02 - Power Inverter Warning Label



Photo No. 305-03 - First Responder Warning Label



Photo No. 305-04 - First Responder Warning Location



Photo No. 305-05 - Other Vehicle Label(s) Related to Electrical Propulsion System



Photo No. 305-06 - Manual High Voltage Service Disconnect in Place



Photo No. 305-07 - Manual High Voltage Service Disconnect Removed



Photo No. 305-08 - Manual High Voltage Service Disconnect Removed



Photo No. 305-09 - Pre-Impact View of Propulsion Battery

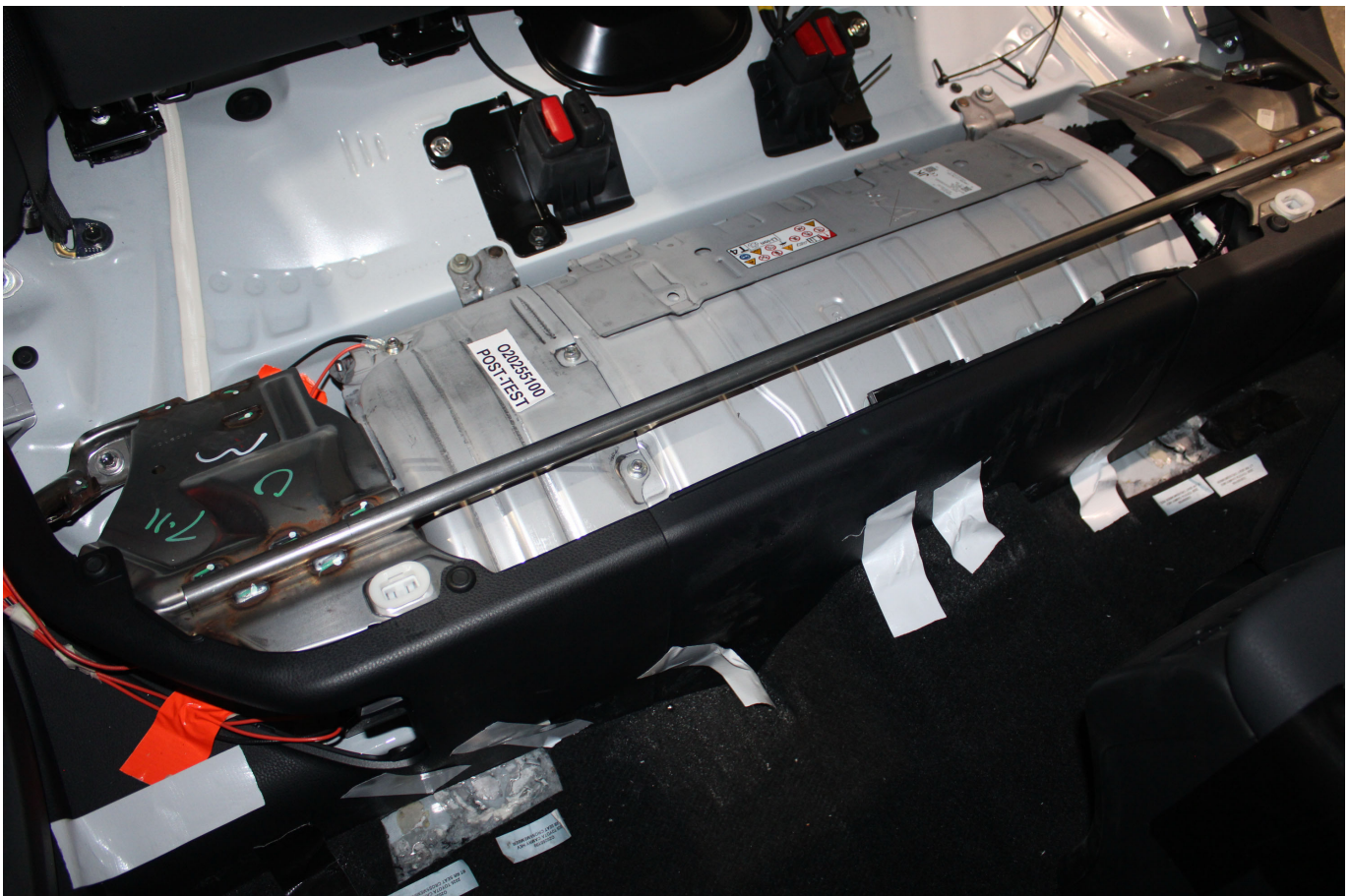


Photo No. 305-10 - Post-Impact Front View of Propulsion Battery



Photo No. 305-11 - Post-Impact Rear View of Propulsion Battery

PHOTOGRAPH NOT AVAILABLE

Photo No. 305-12 - Pre-Impact View of Battery Box(s) or Container(s) Which Holds Individual Battery Modules

PHOTOGRAPH NOT AVAILABLE

Photo No. 305-13 - Post-Impact View of Battery Box(s) or Container(s) Which Holds Individual Battery Modules

PHOTOGRAPH NOT AVAILABLE

Photo No. 305-14 - Pre-Impact View of Propulsion Battery Module(s)

PHOTOGRAPH NOT AVAILABLE

Photo No. 305-15 - Post-Impact View of Propulsion Battery Module(s)

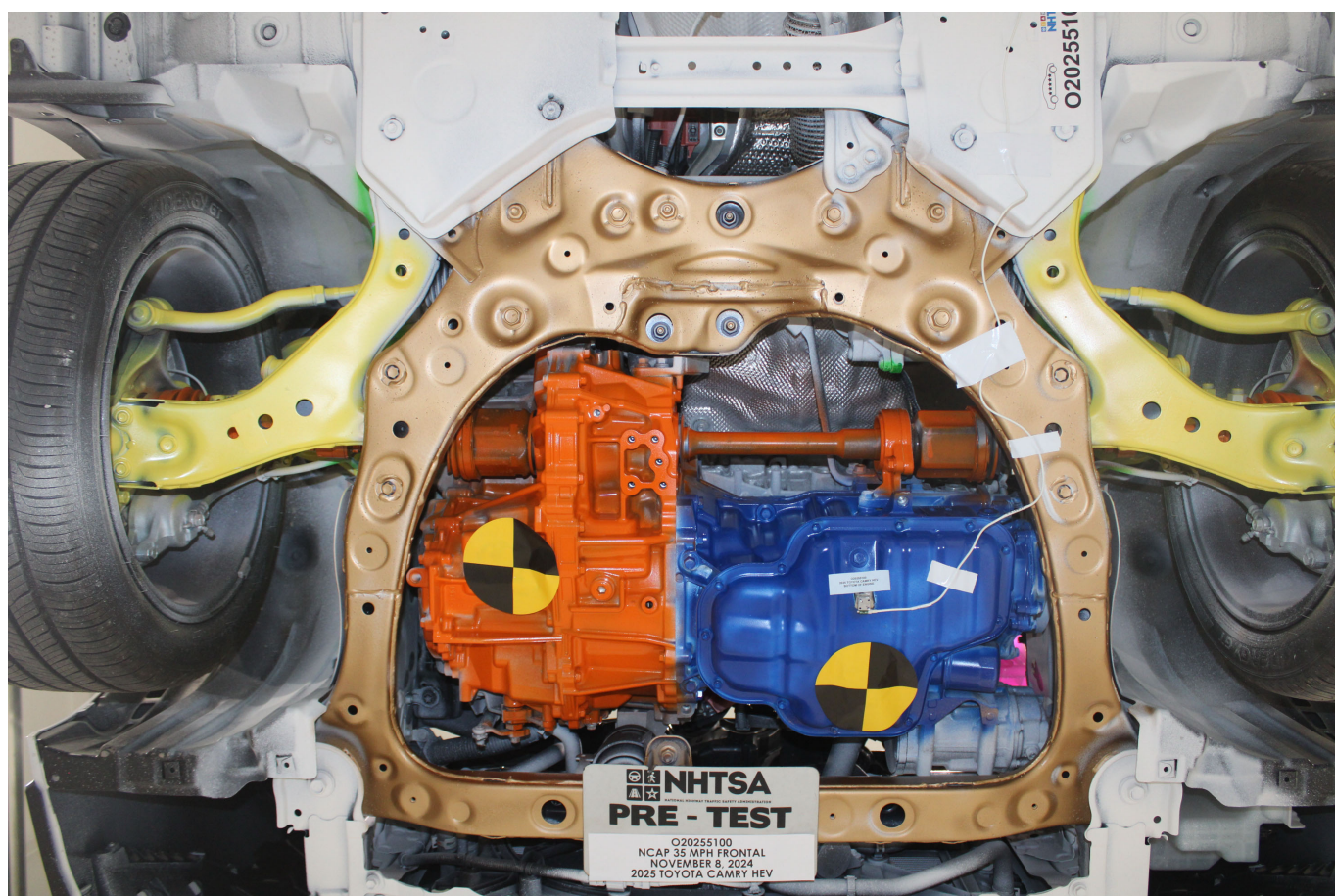


Photo No. 305-16 - Pre-Impact View of Electric Propulsion Drive

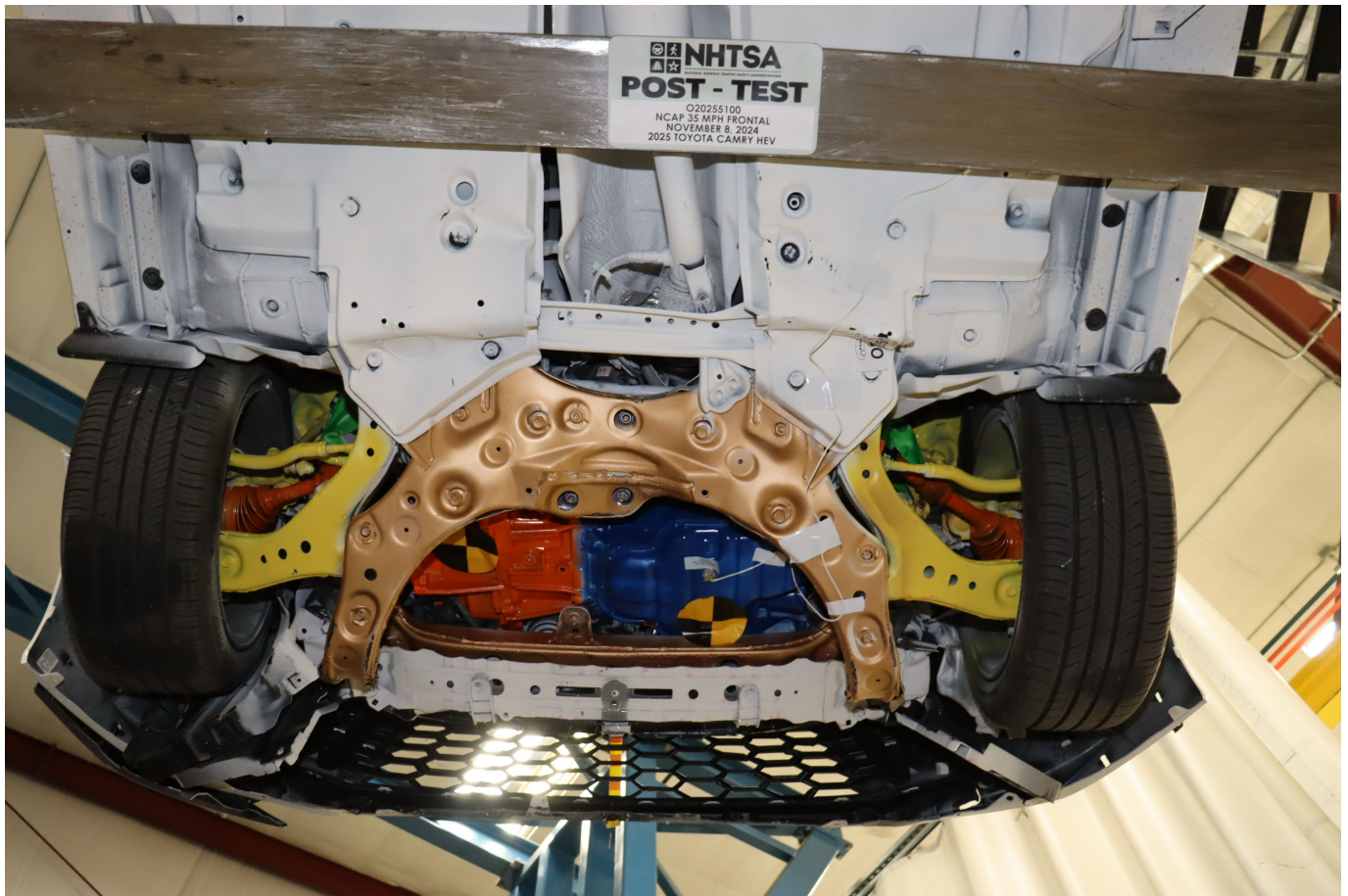


Photo No. 305-17 - Post-Impact View of Electric Propulsion Drive



Photo No. 305-18 - Pre-Impact View of High Voltage Interconnect(s)

PHOTOGRAPH NOT APPLICABLE

Photo No. 305-19 - Pre-Impact View Propulsion Battery Venting System(s)

PHOTOGRAPH NOT APPLICABLE

Photo No. 305-20 - Pre-Impact View of Other Visible Electric Propulsion Components



Photo No. 305-21 - Pre-Impact View of Ground Lead Attached



Photo No. 305-22 - Pre-Impact View of High Voltage Leads Attached



Photo No. 305-23 - Pre-Impact Close-Up View of High Voltage Leads Attached



Photo No. 305-24 - Pre-Impact View of Installed Test Interface Port



Photo No. 305-25 - Post-Impact View of Installed Test Interface Port



Photo No. 305-26 - Pre-Impact View of Other Test Devices



Photo No. 305-27 - Post-Impact View of Other Test Devices



Photo No. 305-28 - FMVSS No. 305 Static Rollover at 90 Degrees



Photo No. 305-29 - FMVSS No. 305 Static Rollover at 180 Degrees



Photo No. 305-30 - FMVSS No. 305 Static Rollover at 270 Degrees



Photo No. 305-31 - FMVSS No. 305 Static Rollover at 360 Degrees



Photo No. 305-32 - Pre-Impact View of the Vehicle Passenger Compartment Adjacent to Propulsion Battery



Photo No. 305-33 - Post-Impact View of the Vehicle Passenger Compartment Adjacent to Propulsion Battery

PHOTOGRAPH NOT APPLICABLE

Photo No. 305-34 - Post-Impact Propulsion Battery System Mounting and-or Intrusion Failure(s)

PHOTOGRAPH NOT APPLICABLE

Photo No. 305-35 - Post-Impact View of Battery Component Intrusion

PHOTOGRAPH NOT APPLICABLE

Photo No. 305-36 - Post-Impact View of Battery Module Movement or Retention Loss

PHOTOGRAPH NOT APPLICABLE

Photo No. 305-37 - Post-Impact View of Propulsion Battery Electrolyte Spillage Location

PHOTOGRAPH NOT APPLICABLE

Photo No. 305-38 - Post-Test View of Propulsion Battery Electrolyte Spillage Location

APPENDIX B
DUMMY RESPONSE DATA TRACES

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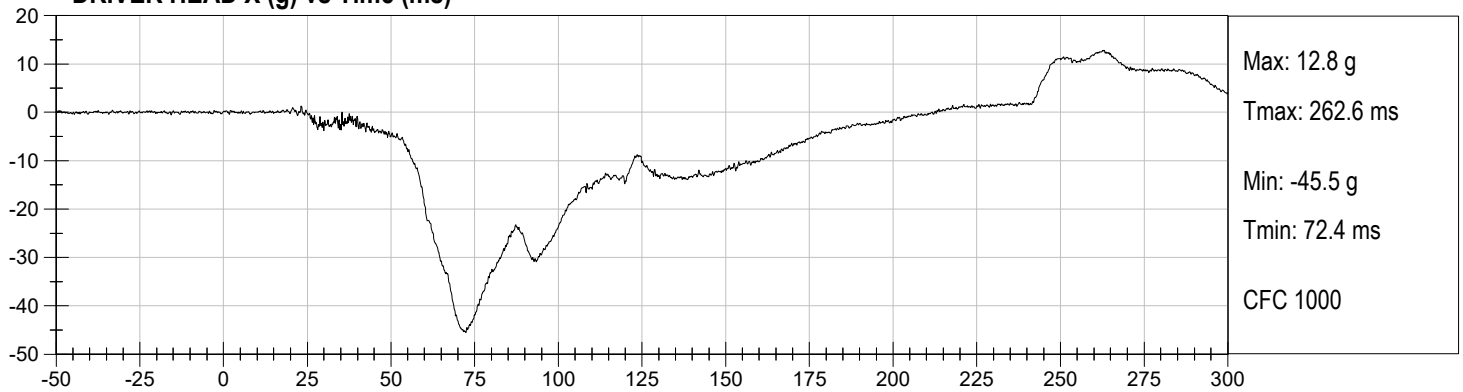
The following additional dummy and vehicle response data can be found in the R&D section of the NHTSA website at www.nhtsa.gov

Driver Head X Redundant
 Driver Head Y Redundant
 Driver Head Z Redundant
 Driver Head Angular Velocity X
 Driver Head Angular Velocity Y
 Driver Head Angular Velocity Z
 Driver Upper Neck Force Y
 Driver Upper Neck Moment X
 Driver Upper Neck Moment Z
 Driver Chest X Redundant
 Driver Chest Y Redundant
 Driver Chest Z Redundant
 Driver Pelvis X
 Driver Pelvis Y
 Driver Pelvis Z
 Driver Left Femur Redundant
 Driver Right Femur Redundant
 Driver Left Upper Tibia Moment X
 Driver Left Upper Tibia Moment Y

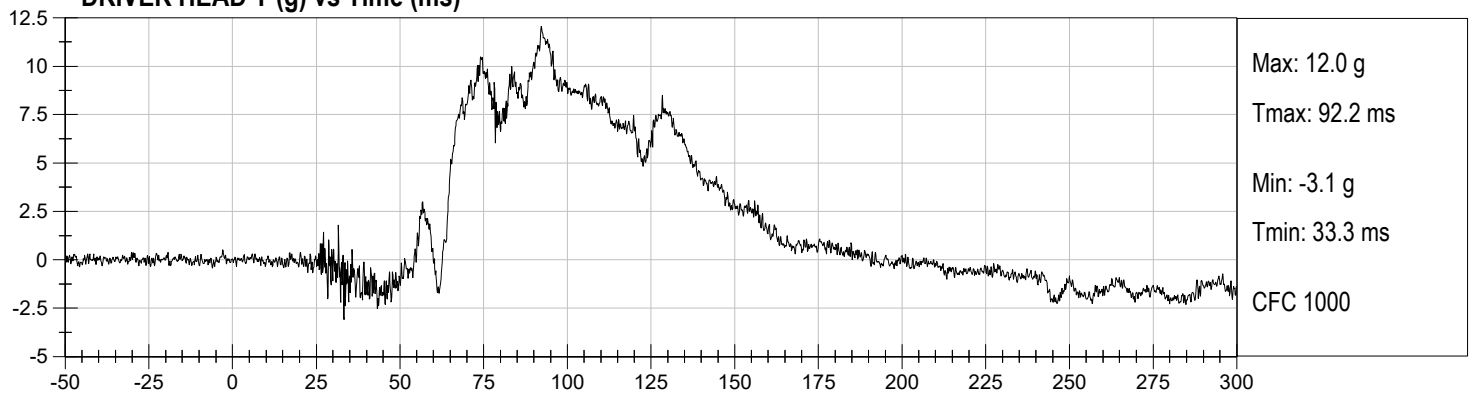
Driver Left Upper Tibia Force Z
Driver Left Lower Tibia Moment X
Driver Left Lower Tibia Moment Y
Driver Left Lower Tibia Force Z
Driver Right Upper Tibia Moment X
Driver Right Upper Tibia Moment Y
Driver Right Upper Tibia Force Z
Driver Right Lower Tibia Moment X
Driver Right Lower Tibia Moment Y
Driver Right Lower Tibia Force Z
Driver Left Foot Fore Z
Driver Left Foot Aft X
Driver Left Foot Aft Z
Driver Right Foot Fore Z
Driver Right Foot Aft X
Driver Right Foot Aft Z
Driver Lap Belt Force
Driver Shoulder Belt Force
Passenger Head X Redundant
Passenger Head Y Redundant
Passenger Head Z Redundant
Passenger Head Angular Velocity X
Passenger Head Angular Velocity Y
Passenger Head Angular Velocity Z
Passenger Upper Neck Force Y
Passenger Upper Neck Moment X
Passenger Upper Neck Moment Z
Passenger Chest X Redundant
Passenger Chest Y Redundant
Passenger Chest Z Redundant
Passenger Pelvis X
Passenger Pelvis Y

Passenger Pelvis Z
Passenger Left Femur Redundant
Passenger Right Femur Redundant
Passenger Left Upper Tibia Moment X
Passenger Left Upper Tibia Moment Y
Passenger Left Upper Tibia Force Z
Passenger Left Lower Tibia Moment X
Passenger Left Lower Tibia Moment Y
Passenger Left Lower Tibia Force Z
Passenger Right Upper Tibia Moment X
Passenger Right Upper Tibia Moment Y
Passenger Right Upper Tibia Force Z
Passenger Right Lower Tibia Moment X
Passenger Right Lower Tibia Moment Y
Passenger Right Lower Tibia Force Z
Passenger Left Foot Fore Z
Passenger Left Foot Aft X
Passenger Left Foot Aft Z
Passenger Right Foot Fore Z
Passenger Right Foot Aft X
Passenger Right Foot Aft Z
Passenger Lap Belt Force
Passenger Shoulder Belt Force
Left Rear Seat Crossmember X
Right Rear Seat Crossmember X
Vehicle Engine Top X
Vehicle Engine Bottom X
Left Rear Seat Crossmember Z
Right Rear Seat Crossmember Z
Left Rear Seat Crossmember Xr
Right Rear Seat Crossmember Xr
Advanced Research Load Cell Barrier – 528 channels

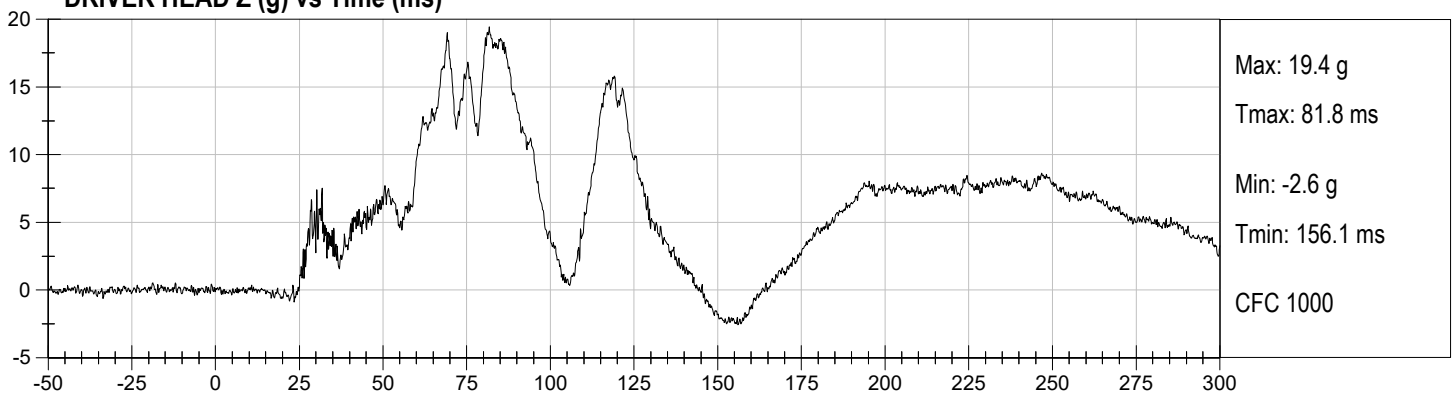
DRIVER HEAD X (g) vs Time (ms)



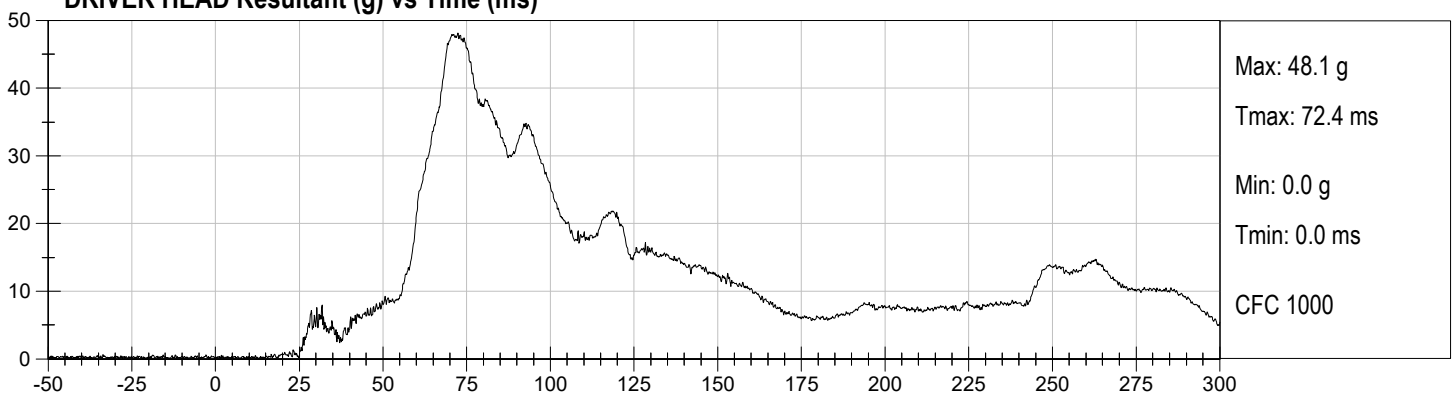
DRIVER HEAD Y (g) vs Time (ms)

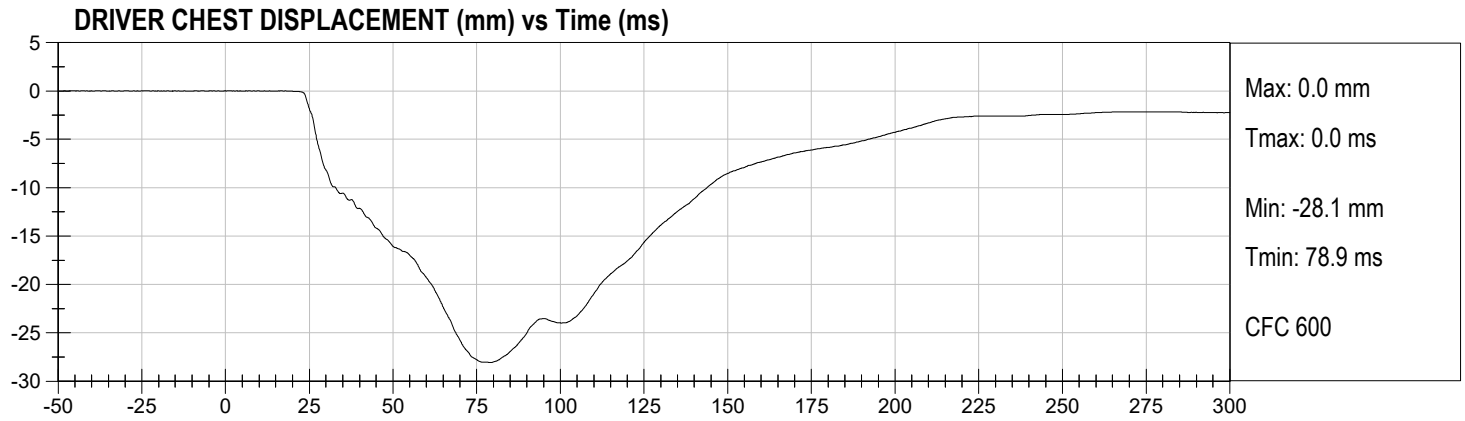


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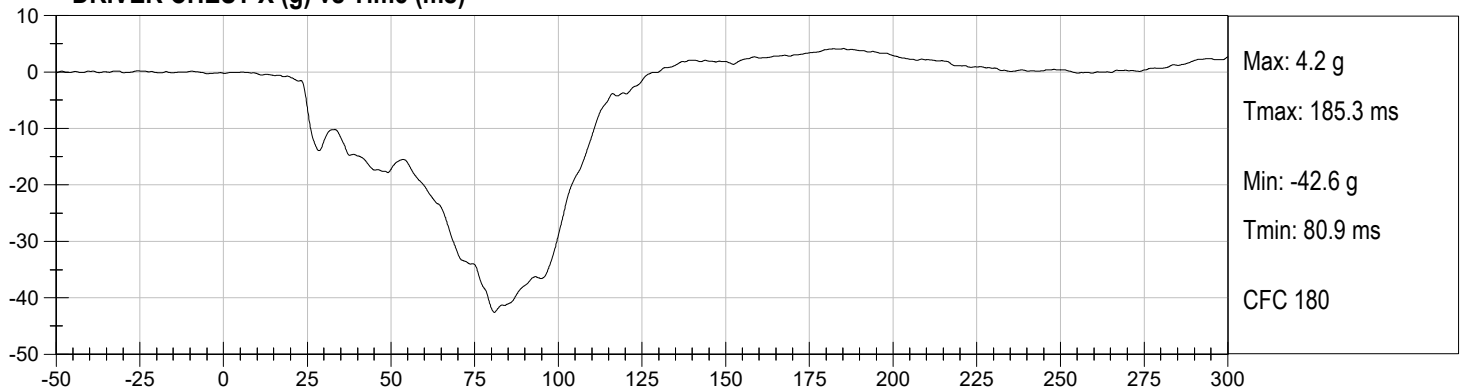


DRIVER HEAD Resultant (g) vs Time (ms)

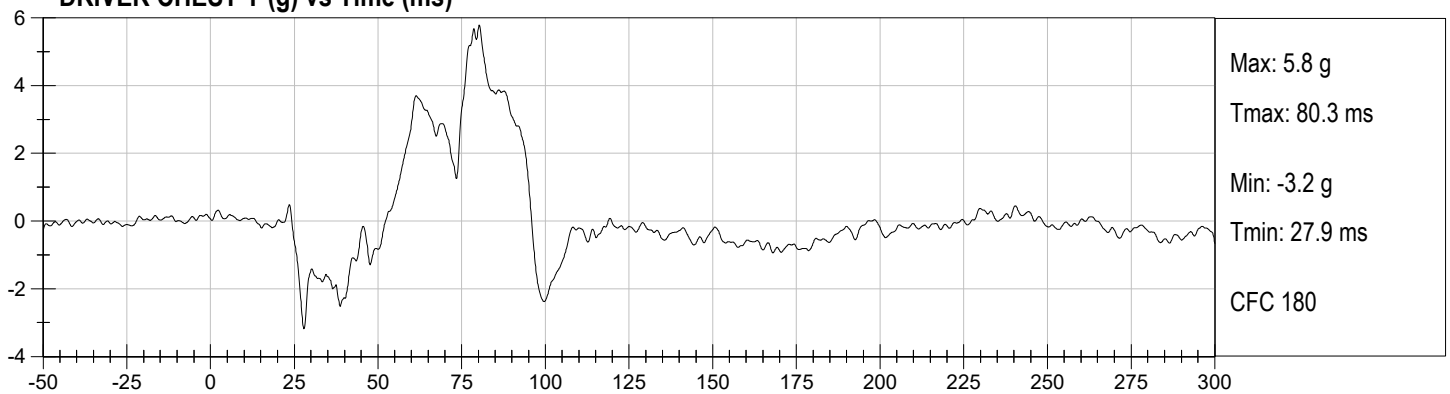




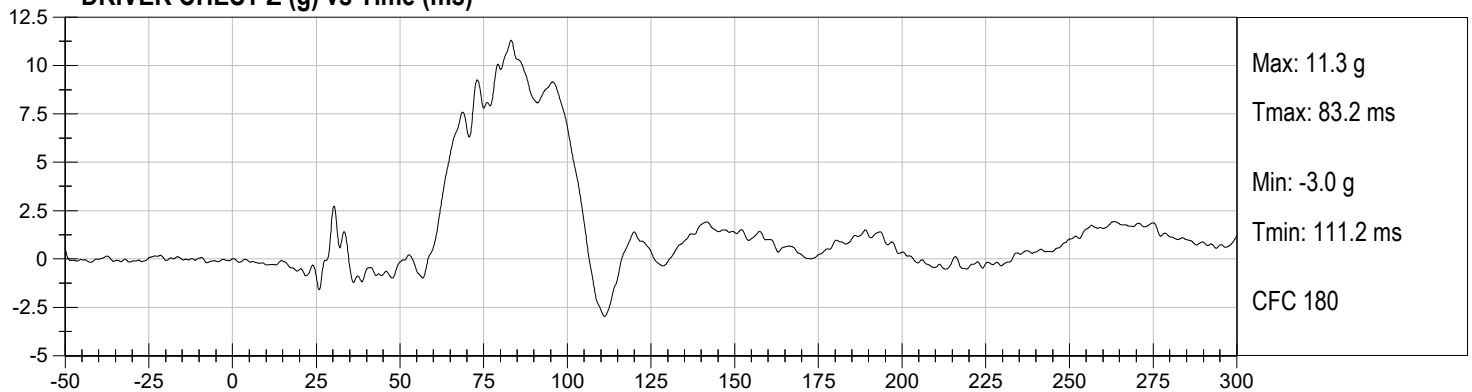
DRIVER CHEST X (g) vs Time (ms)



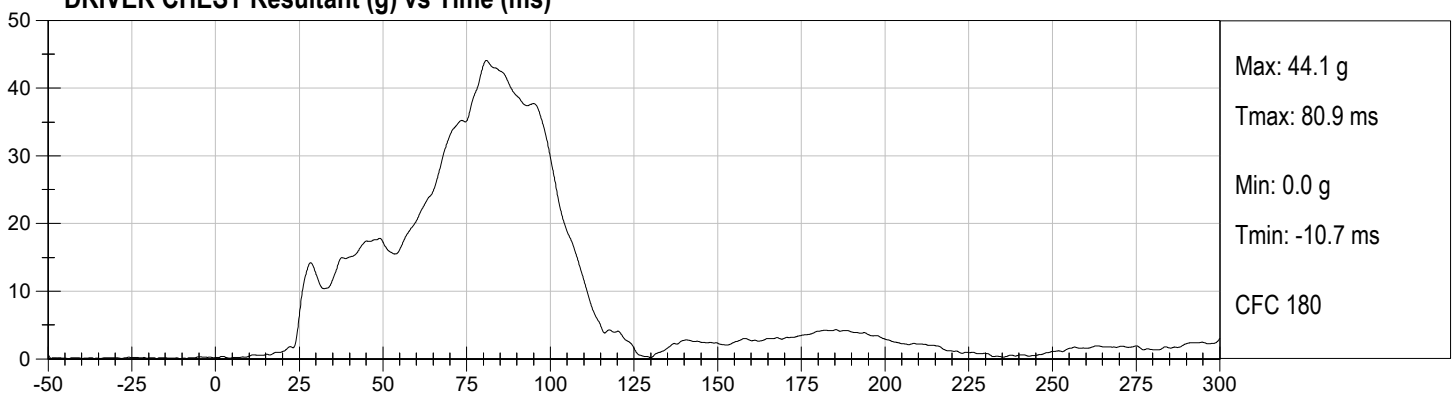
DRIVER CHEST Y (g) vs Time (ms)

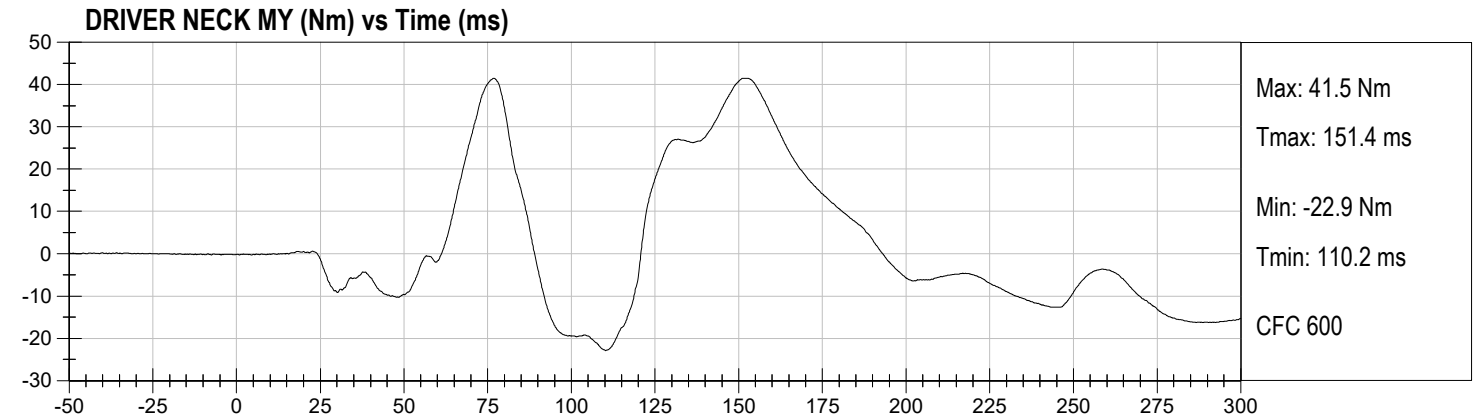
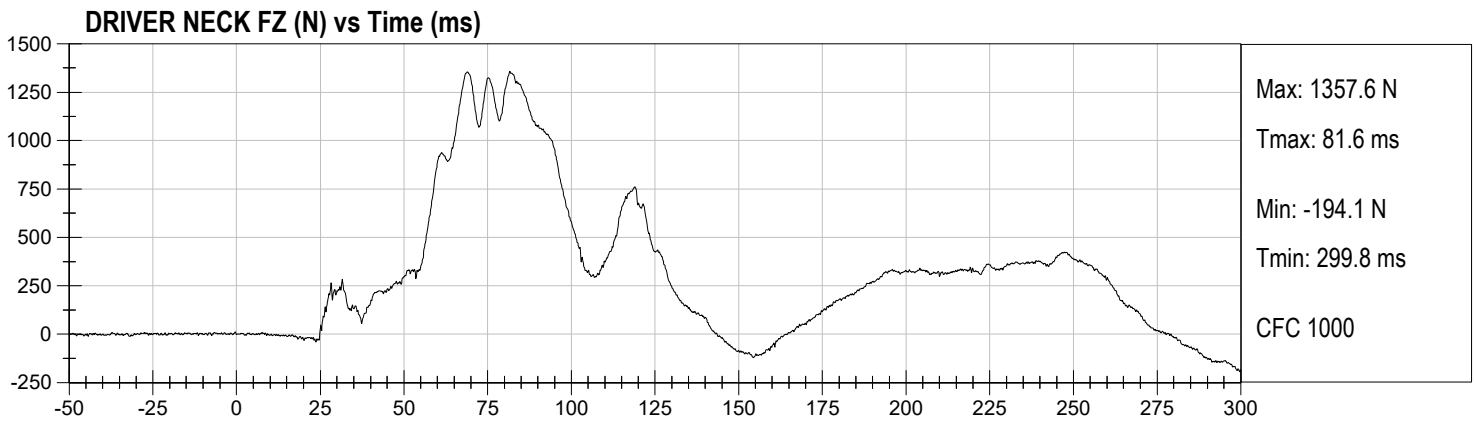
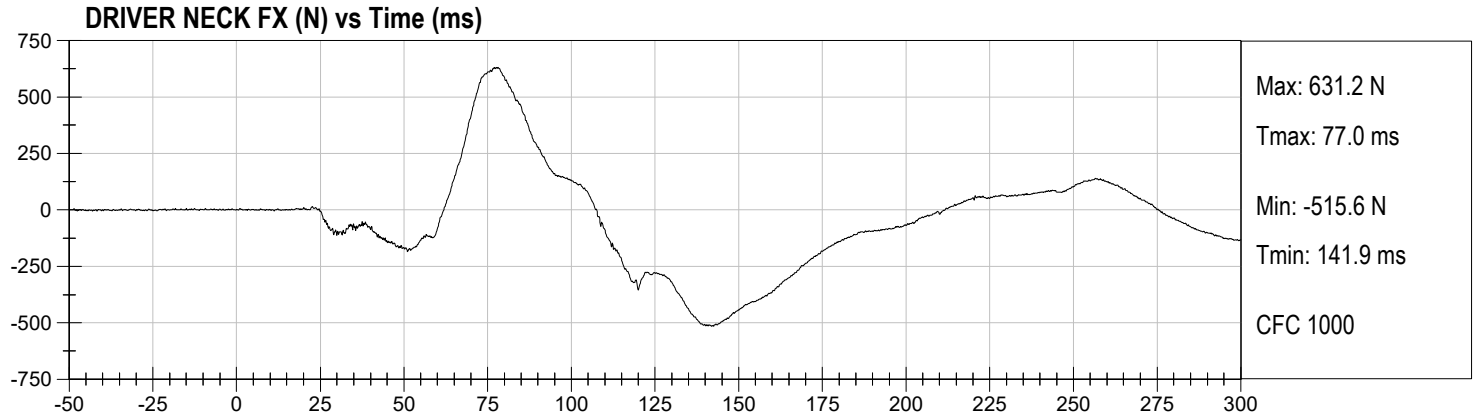


DRIVER CHEST Z (g) vs Time (ms)

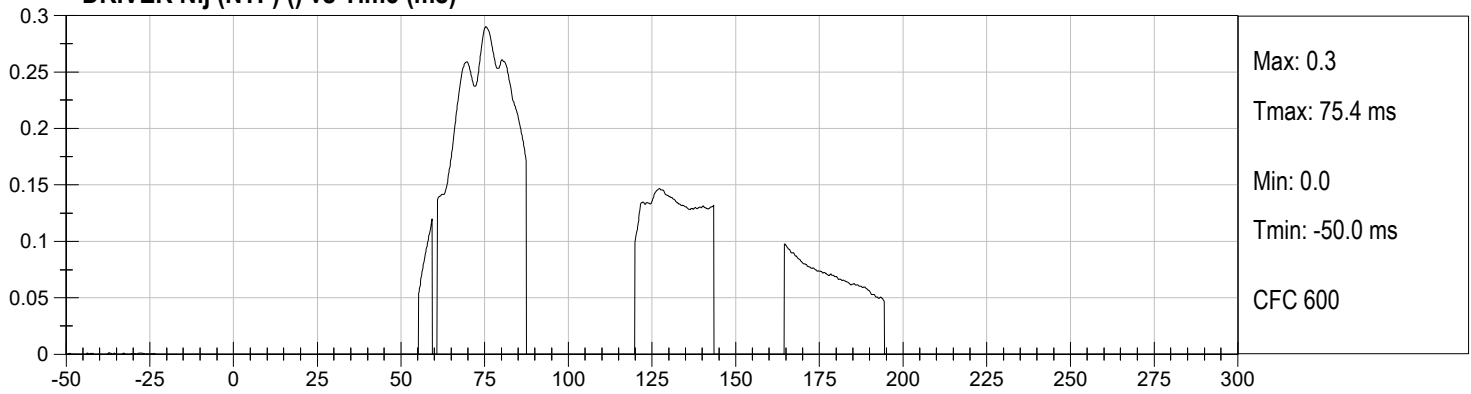


DRIVER CHEST Resultant (g) vs Time (ms)

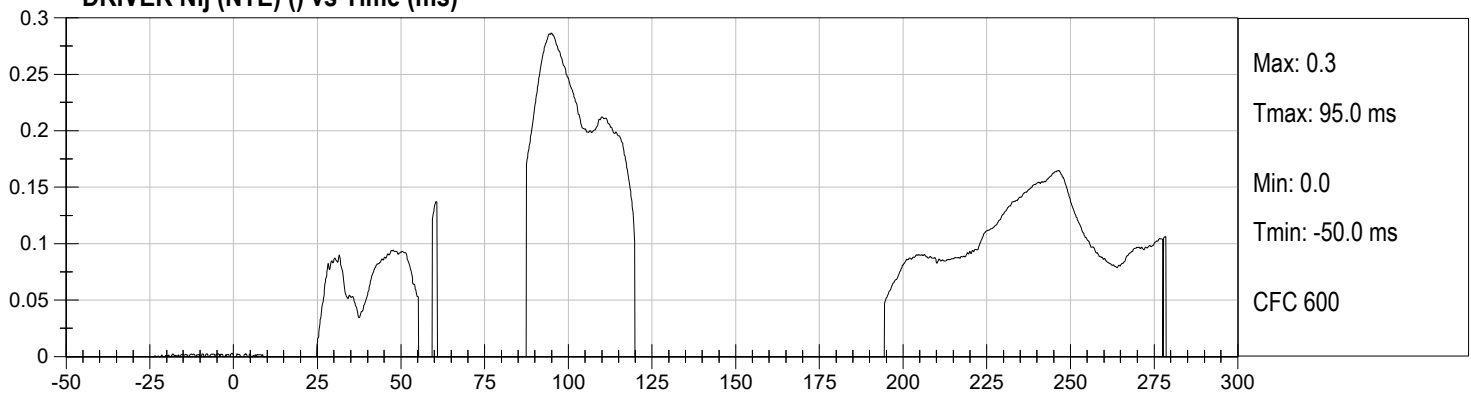




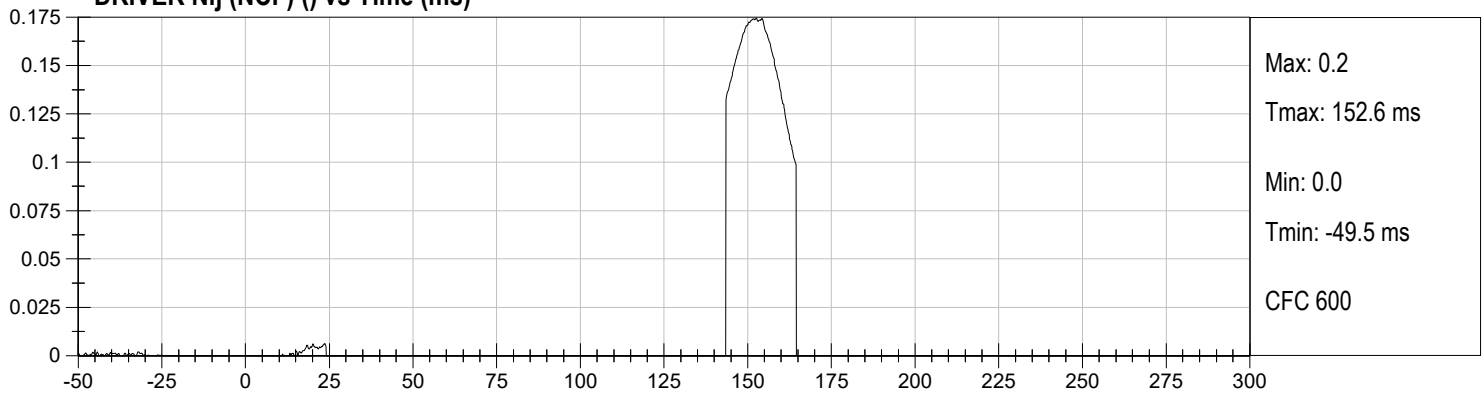
DRIVER Nij (NTF) () vs Time (ms)



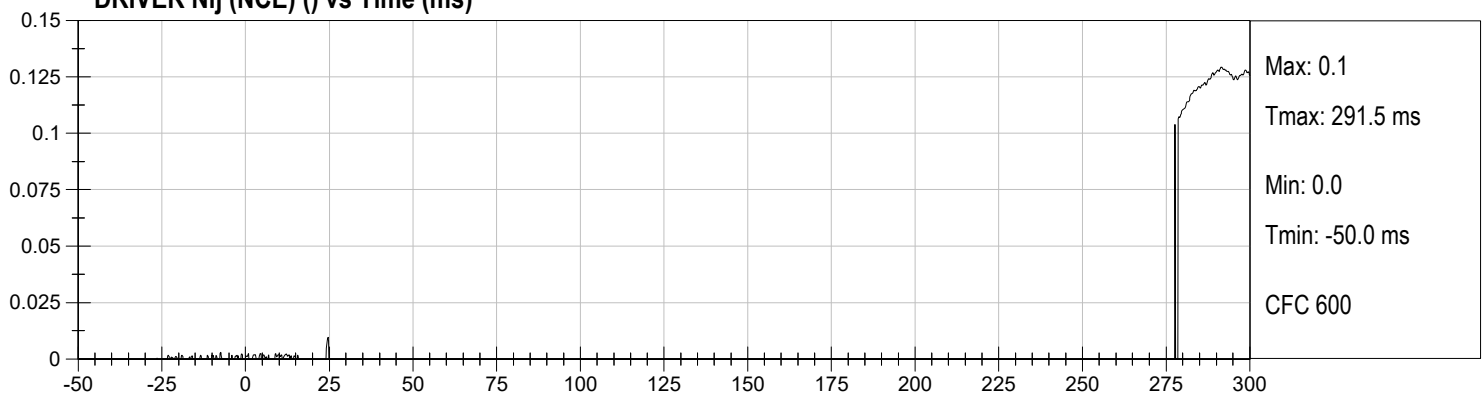
DRIVER Nij (NTE) () vs Time (ms)

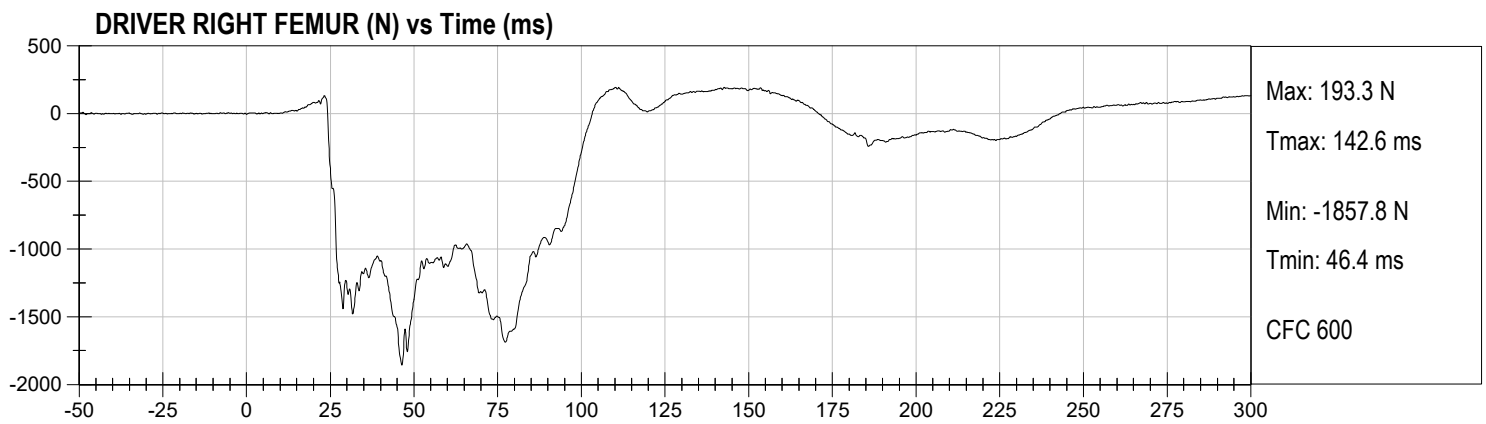


DRIVER Nij (NCF) () vs Time (ms)

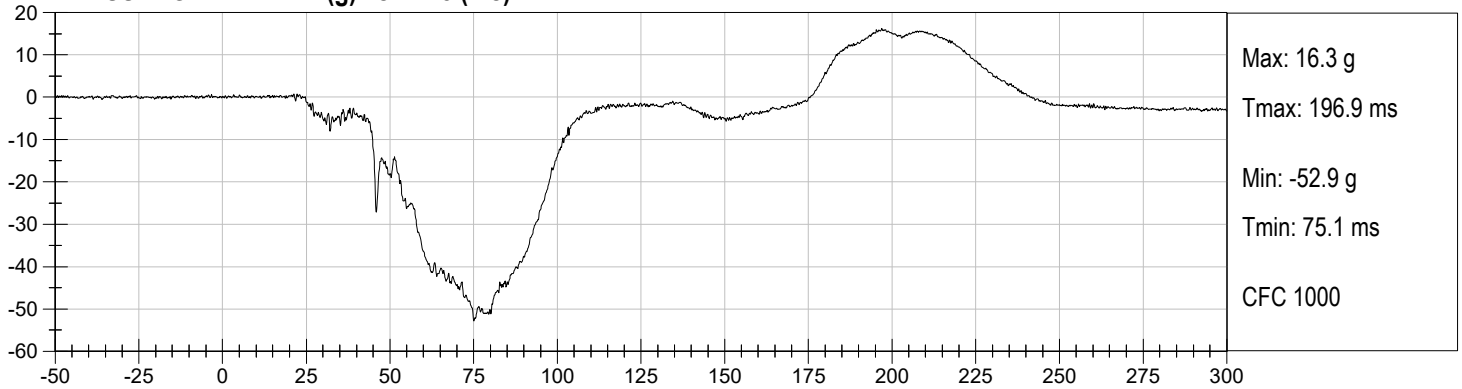


DRIVER Nij (NCE) () vs Time (ms)

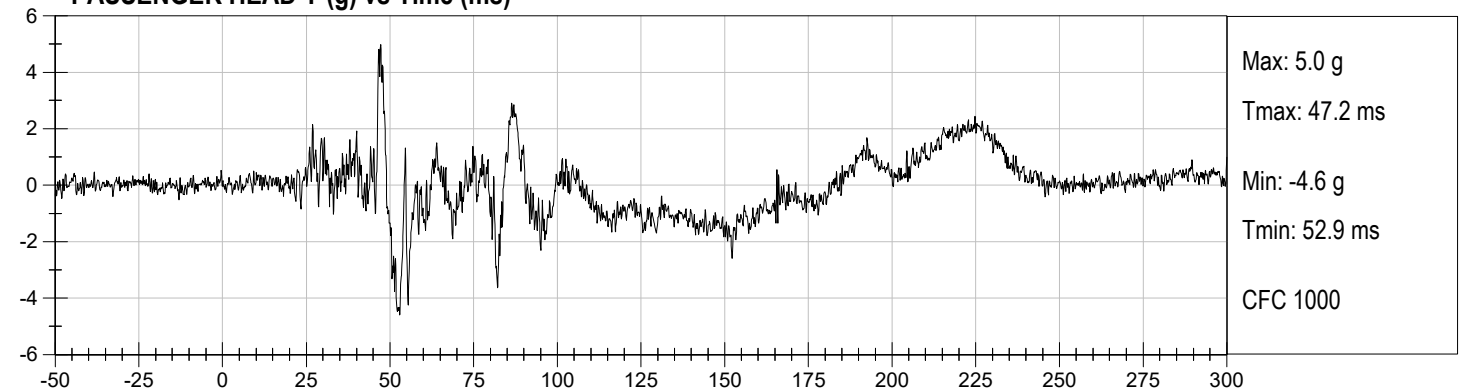




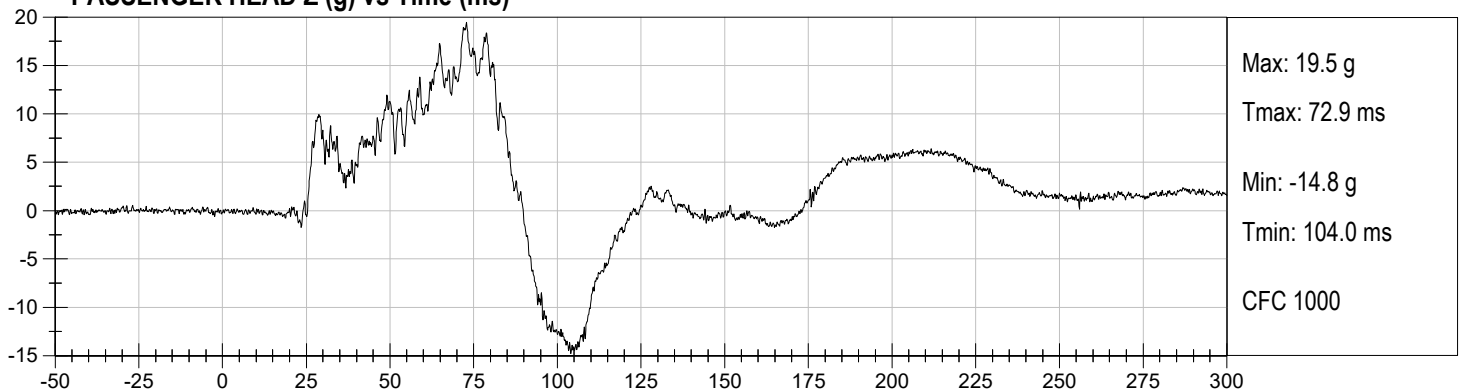
PASSENGER HEAD X (g) vs Time (ms)



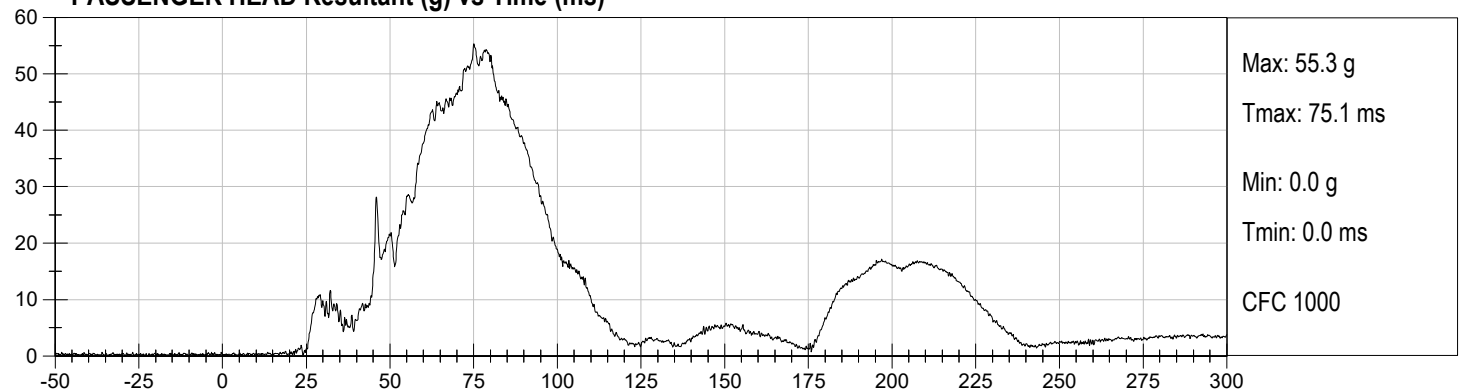
PASSENGER HEAD Y (g) vs Time (ms)

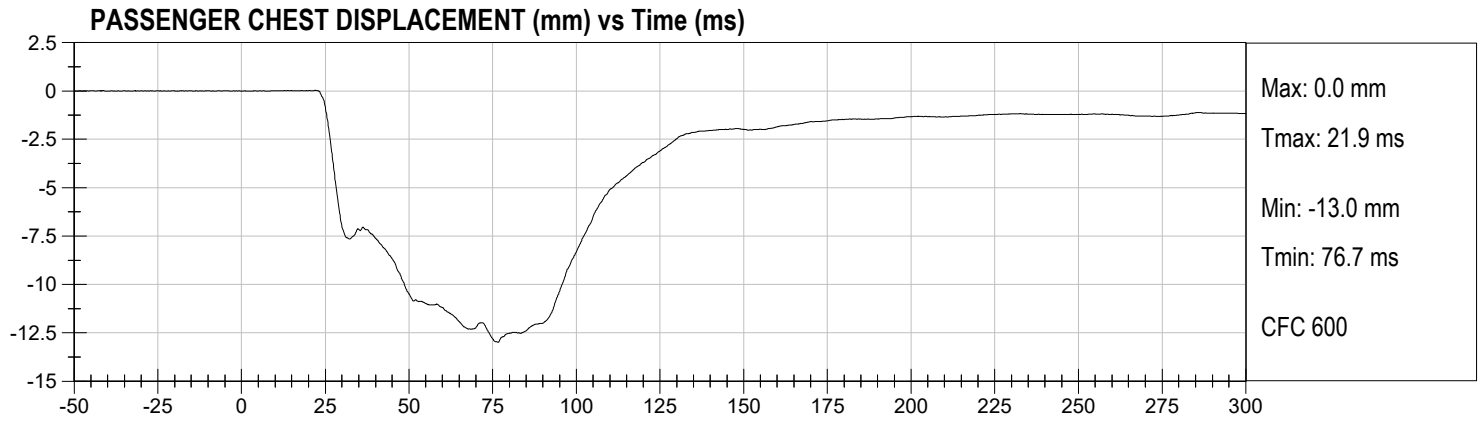


PASSENGER HEAD Z (g) vs Time (ms)

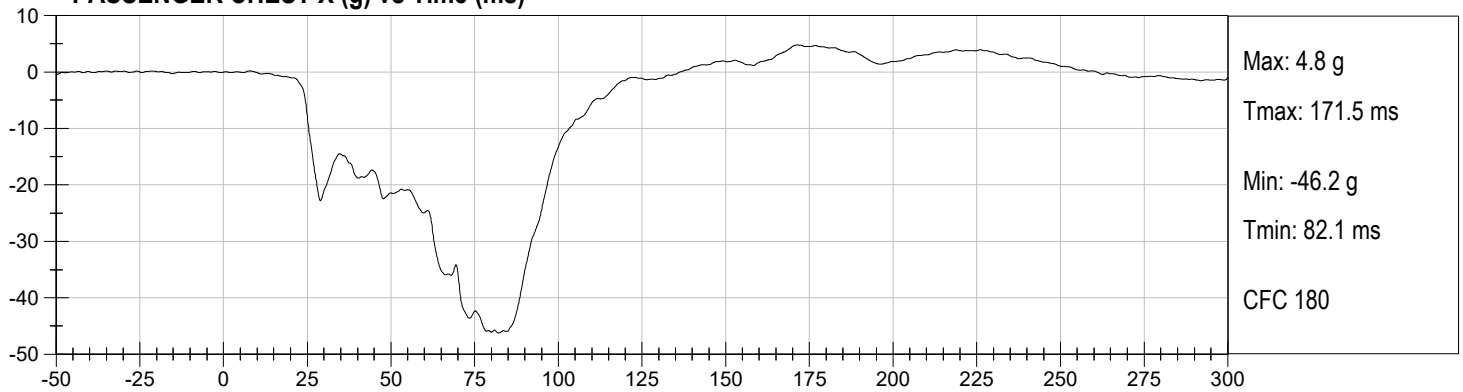


PASSENGER HEAD Resultant (g) vs Time (ms)

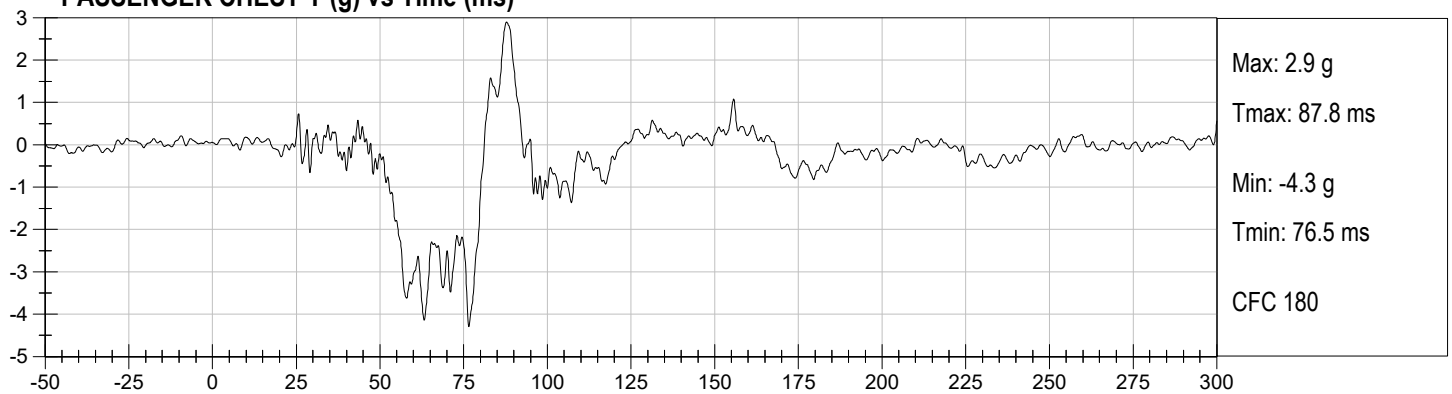




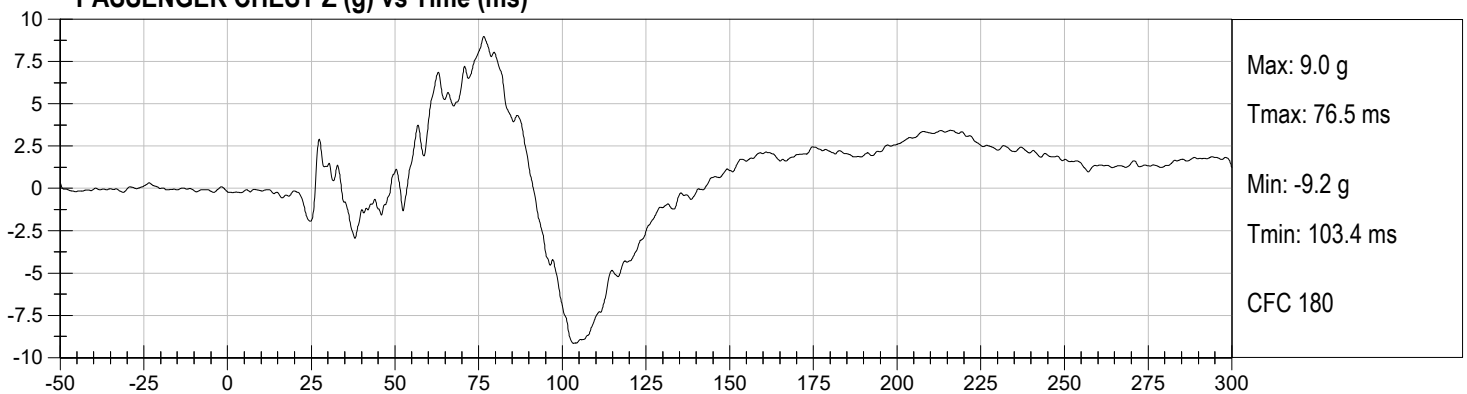
PASSENGER CHEST X (g) vs Time (ms)



PASSENGER CHEST Y (g) vs Time (ms)



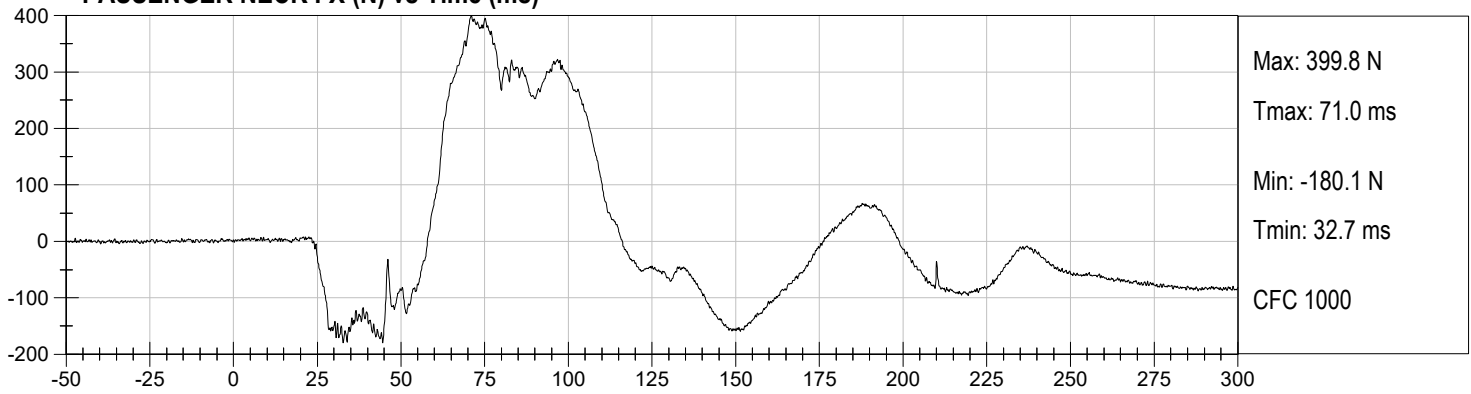
PASSENGER CHEST Z (g) vs Time (ms)



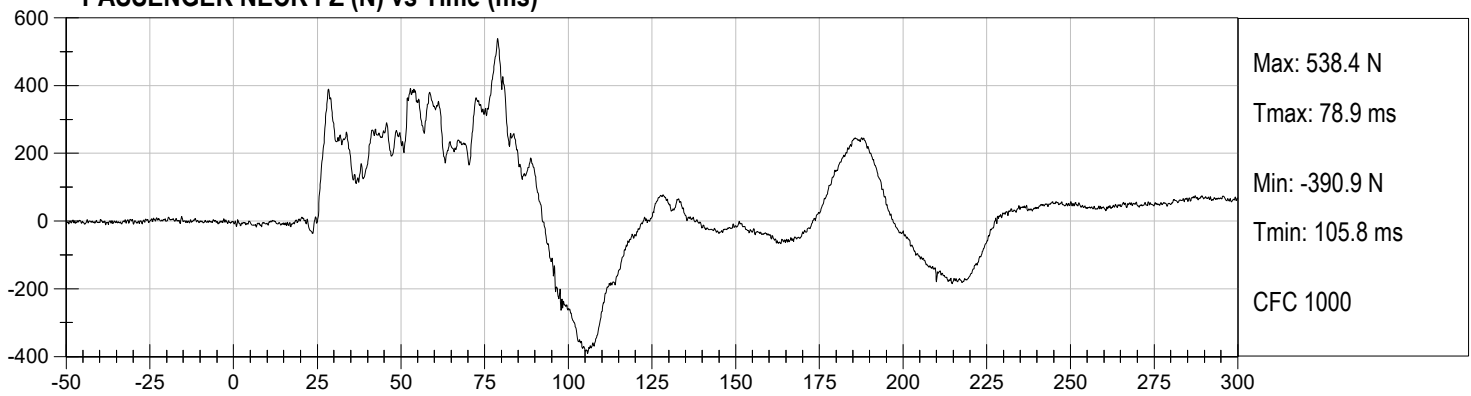
PASSENGER CHEST Resultant (g) vs Time (ms)



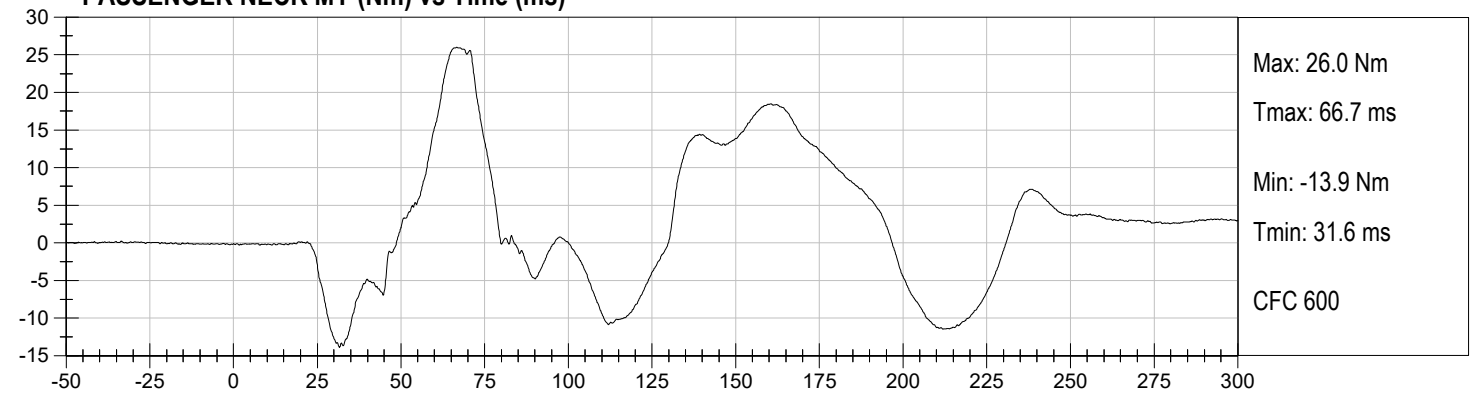
PASSENGER NECK FX (N) vs Time (ms)



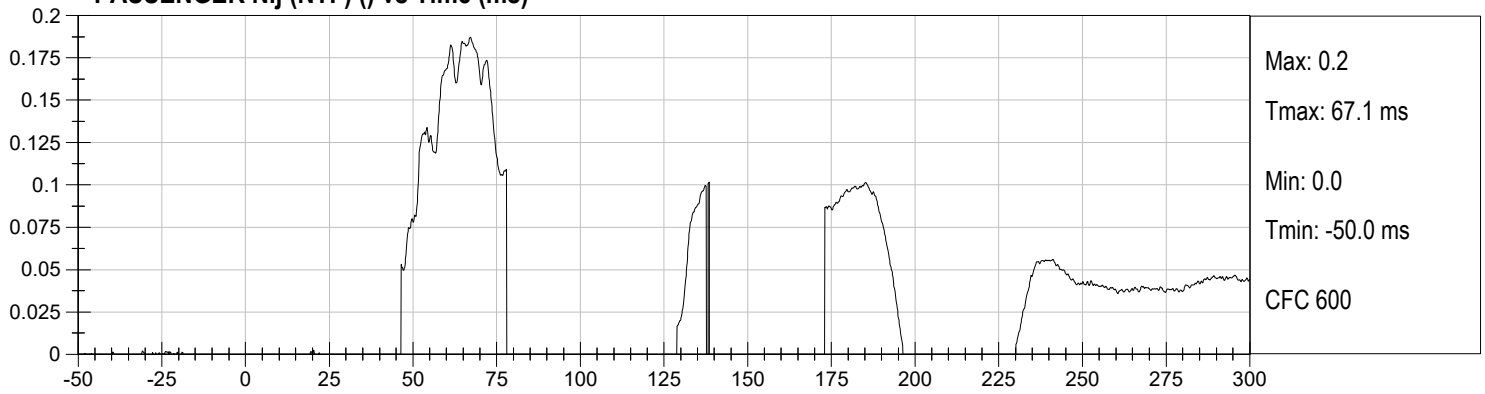
PASSENGER NECK FZ (N) vs Time (ms)



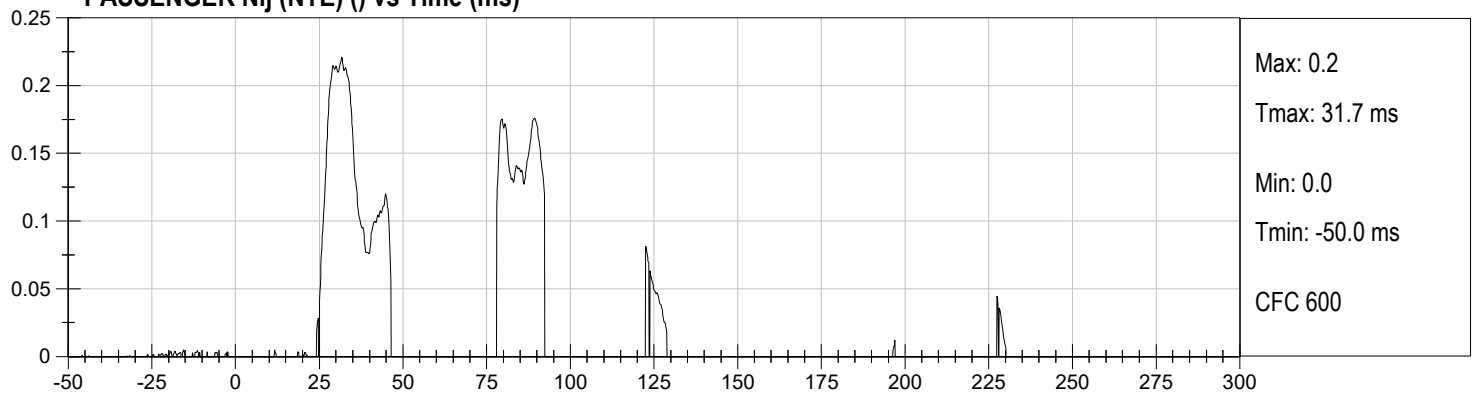
PASSENGER NECK MY (Nm) vs Time (ms)



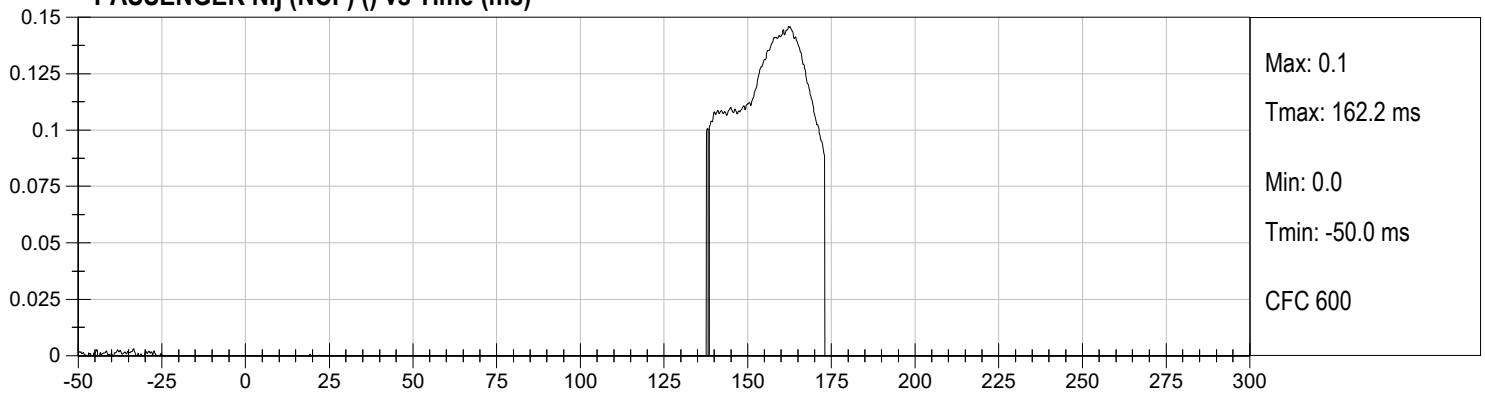
PASSENGER Nij (NTF) () vs Time (ms)



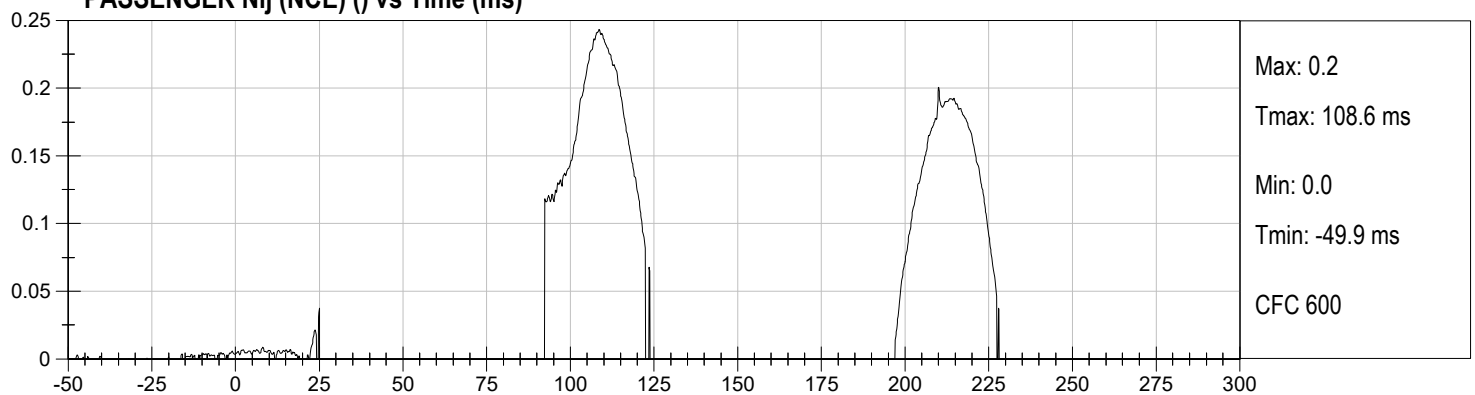
PASSENGER Nij (NTE) () vs Time (ms)



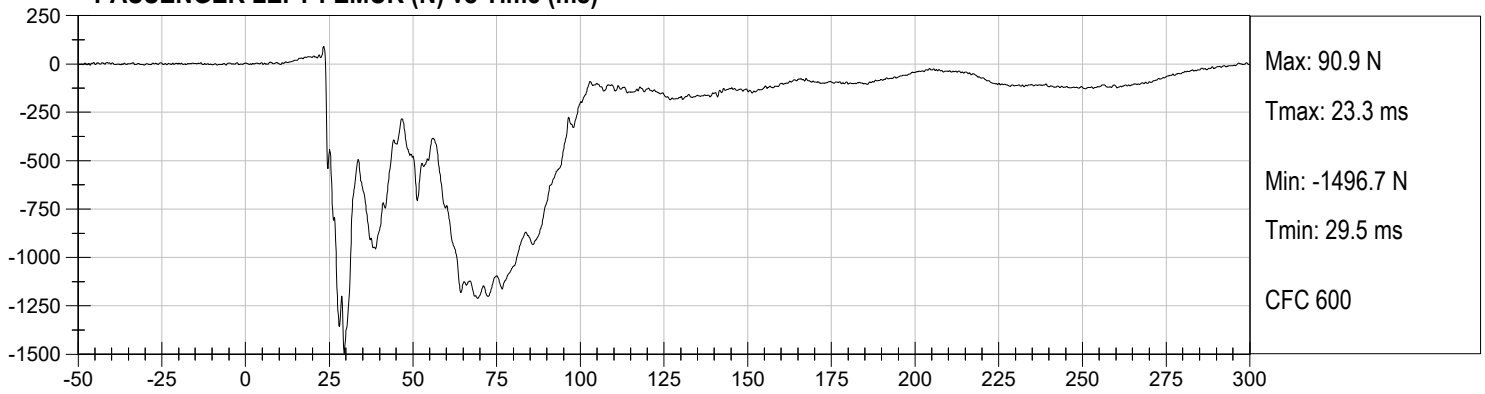
PASSENGER Nij (NCF) () vs Time (ms)



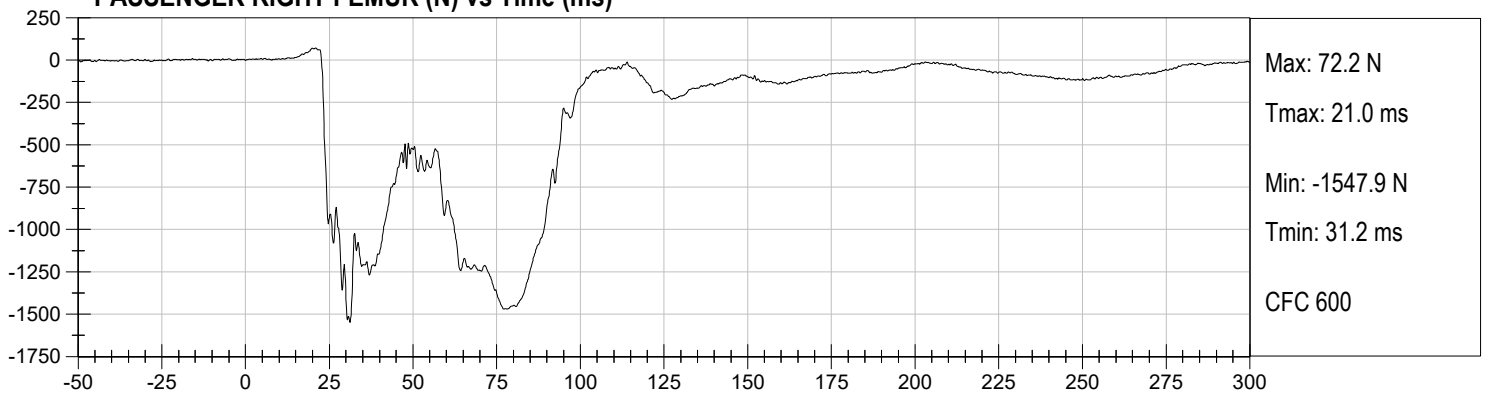
PASSENGER Nij (NCE) () vs Time (ms)



PASSENGER LEFT FEMUR (N) vs Time (ms)



PASSENGER RIGHT FEMUR (N) vs Time (ms)



APPENDIX C
DUMMY QUALIFICATION AND PERFORMANCE VERIFICATION

QUALIFICATION TEST RESULTS

PRE-TEST

HYBRID III 50TH PERCENTILE MALE - DRIVER ATD

**Hybrid III 50th, External Measurements
SN: 064**

HYBRID III, PART 572, SUBPART E EXTERNAL DIMENSIONS				
DIMENSION	DESCRIPTION	DETAILS	ASSEMBLY DIMENSION (inches)	ACTUAL MEASUREMENT
A	TOTAL SITTING HEIGHT	Seat surface to highest point on top of the head.	34.6–35.0	34.71
B	SHOULDER PIVOT HEIGHT	Centerline of shoulder pivot bolt to the seat surface.	19.9-20.5	20.31
C	H-POINT HEIGHT	Reference	3.3-3.5	3.38
D	H-POINT LOCATION FROM BACKLINE	Reference	5.3-5.5	5.40
E	SHOULDER PIVOT FROM BACKLINE	Center of the shoulder clevis to the rear vertical surface of the fixture.	3.3-3.7	3.46
F	THIGH CLEARANCE	Measured at the highest point on the upper femur segment.	5.5-6.1	6.09
G	BACK OF ELBOW TO WRIST PIVOT	back of the elbow flesh to the wrist pivot in line with the elbow and wrist pivots	11.4-12.0	11.48
H	HEAD BACK TO BACKLINE	Back of Skull cap skin to seat rear vertical surface (Reference)	1.6-1.8	1.75
I	SHOULDER TO- ELBOW LENGTH	Measure from the highest point on top of the shoulder clevis to the lowest part of the flesh on the elbow in line with the elbow pivot bolt.	13.0-13.6	13.08
J	ELBOW REST HEIGHT	Measure from the flesh below the elbow pivot bolt to the seat surface.	7.5-8.3	8.13
K	BUTTOCK TO KNEE LENGTH	The forward most part of the knee flesh to the rear vertical surface of the fixture.	22.8-23.8	23.49
L	POPLITEAL HEIGHT	Seat surface to the plane of the horizontal plane of the bottom of the feet.	16.9-17.9	17.01
M	KNEE PIVOT HEIGHT	Centerline of knee pivot bolt to the horizontal plane of the bottom of the feet.	19.1-19.7	19.22
N	BUTTOCK POPLITEAL LENGTH	The rearmost surface of the lower leg to the same point on the rear surface of the buttocks used for dim. "K".	17.8-18.8	18.20

HYBRID III, SUBPART E EXTERIOR DIMENSIONS, continued				
DIMENSION	DESCRIPTION	DETAILS		ACTUAL MEASUREMENT
O	CHEST DEPTH WITHOUT JACKET	Measured 16.9-17.1 in. above seat surface	8.4-9.0	8.43
P	FOOT LENGTH	Tip of toe to rear of heel	9.9-10.5	10.33
V	SHOULDER BREADTH	Outside edges of right and left shoulder clevises	16.3-17.2	16.65
W	FOOT BREADTH	The widest part of the foot	3.6-4.2	3.94
Y	CHEST CIRCUMFERENCE (WITH CHEST JACKET)	Measured 16.9-17.1 in. above seat surface	38.2-39.4	39.25
Z	WAIST CIRCUMFERENCE	Measured 8.9-9.1 in. above seat surface	32.9-34.1	33.89
AA	REFERENCE LOCATION FOR MEASUREMENT OF CHEST CIRCUMFERENCE	Reference	16.9-17.1	17.00
BB	REFERENCE LOCATION FOR MEASUREMENT OF WAIST CIRCUMFERENCE	Reference	8.9-9.1	9.00

NOTE: THE H-POINT IS LOCATED 1.83 INCHES FORWARD AND 2.57 INCHES DOWN FROM THE CENTER OF THE PELVIS ANGLE REFERENCE HOLE.

MGA RESEARCH CORPORATION
HEAD DROP TEST
HYBRID III 50TH PERCENTILE MALE

ATD Serial No: 064

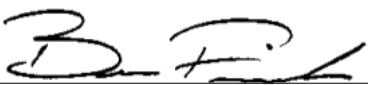
Test ID: D242391

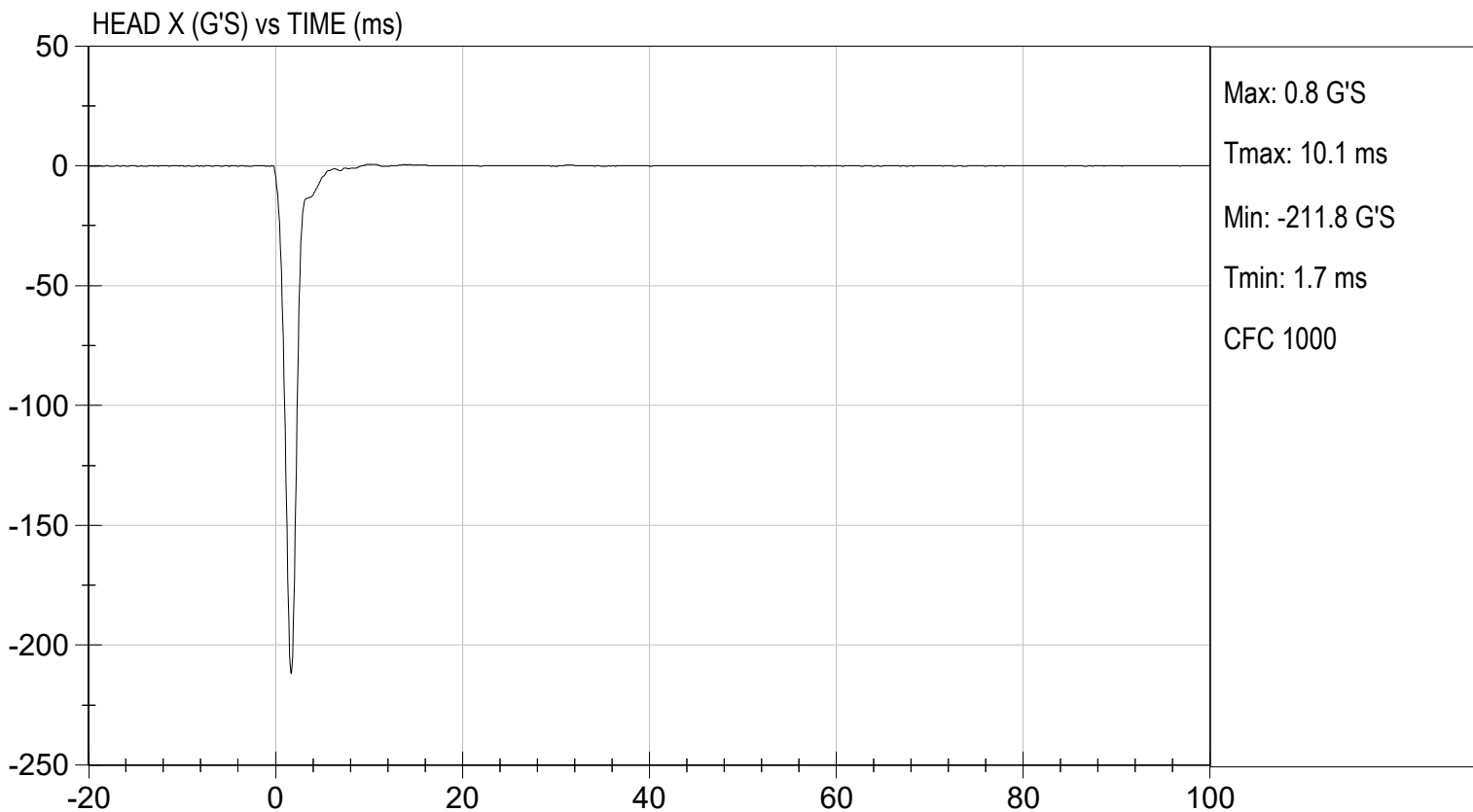
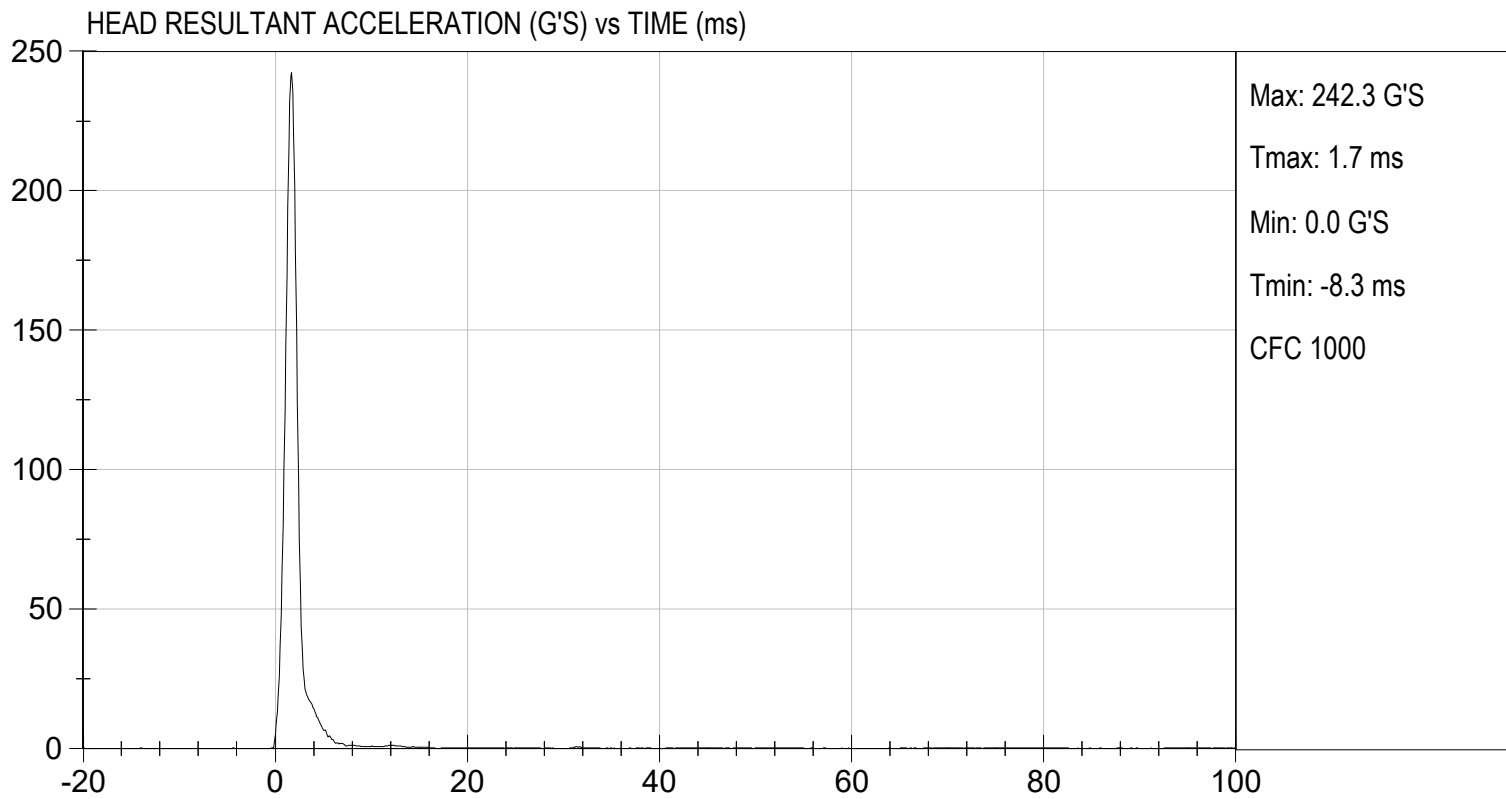
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.3	Pass
Laboratory Relative Humidity	%	10 to 70	45	Pass
Peak Resultant Acceleration	G's	225 to 275	242	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	-1.4	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 10% of peak	Yes	Pass
Overall Test Results				Pass

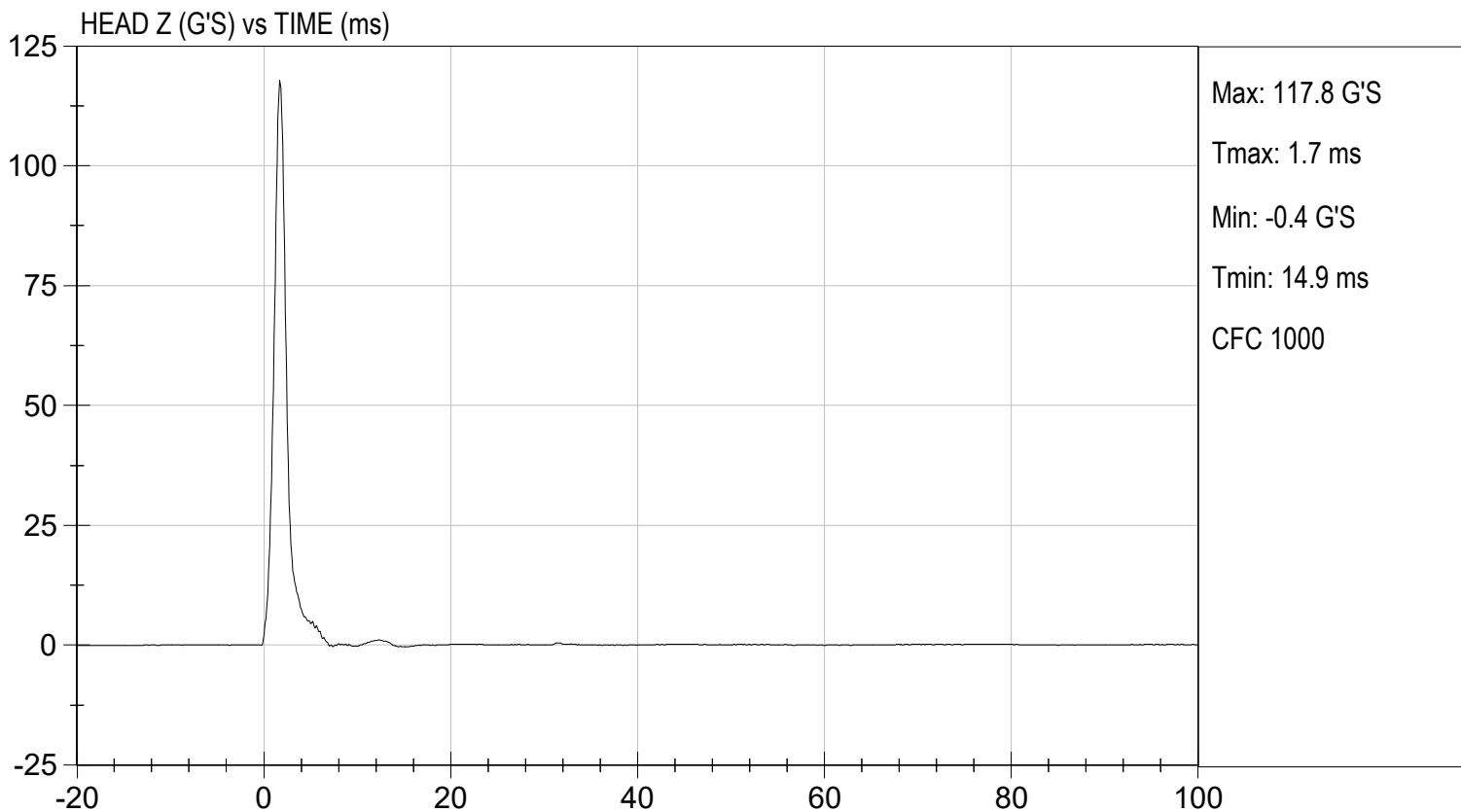
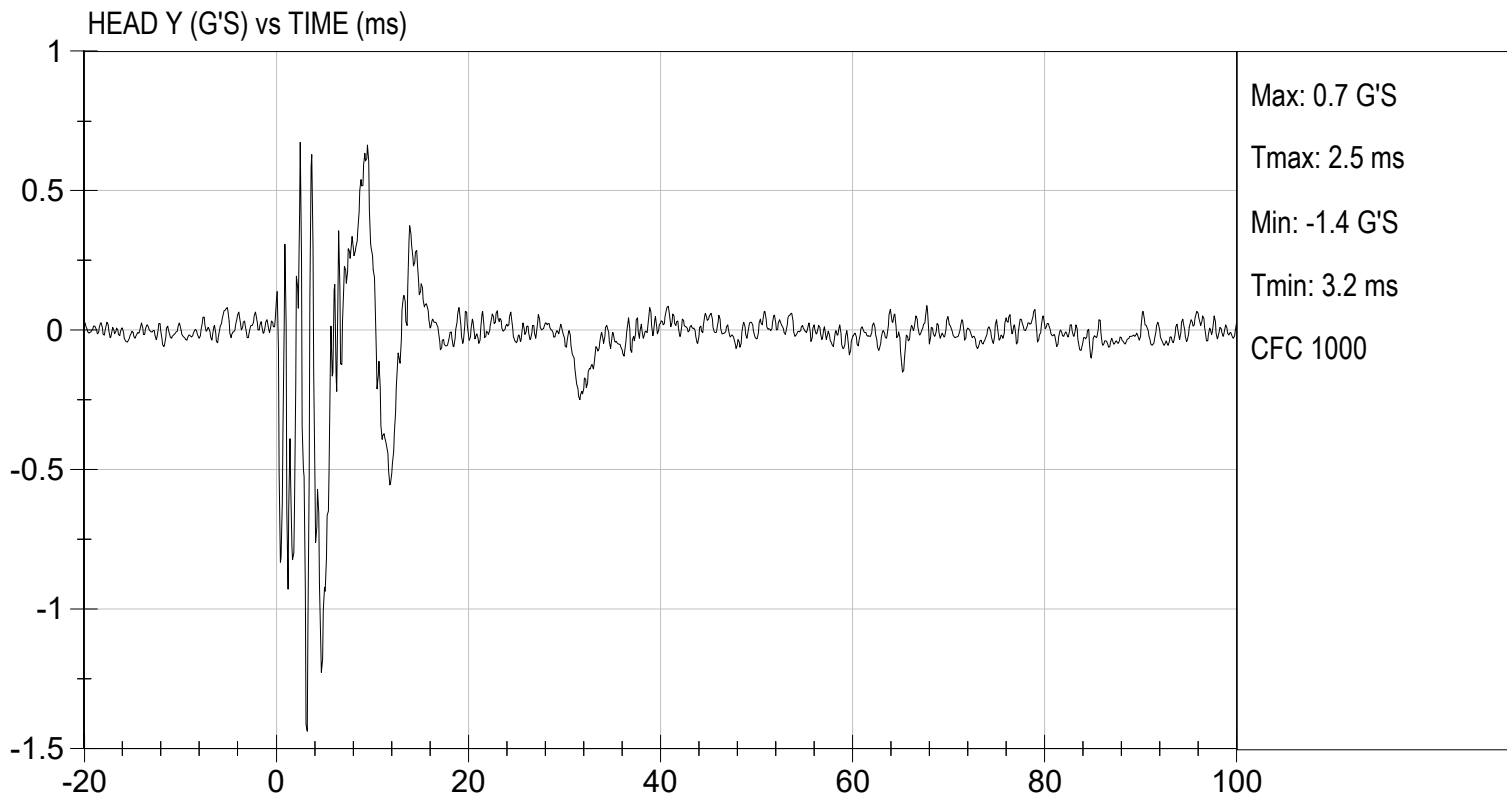

Laboratory Technician

09/19/2024

Test Date


Approved By





MGA RESEARCH CORPORATION
NECK FLEXION TEST
HYBRID III 50TH PERCENTILE MALE

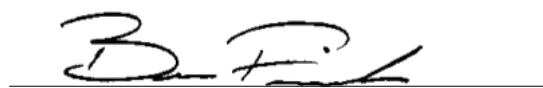
ATD Serial No: 064

Test I.D: D24CC2

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.4	Pass
Laboratory Relative Humidity		%	10 to 70	43	Pass
Pendulum Velocity		m/s	6.89 to 7.13	6.96	Pass
Pendulum Deceleration	10 ms	G's	22.50 to 27.50	24.20	Pass
	20 ms	G's	17.60 to 22.60	21.56	Pass
	30 ms	G's	12.50 to 18.50	15.33	Pass
Peak Pendulum Deceleration After 30 ms		G's	<= 29.0	15.5	Pass
Deceleration Decay Time to Cross 5 G's		ms	34.0 to 42.0	37.1	Pass
Maximum "D" Plane Rotation	Maximum	Deg	64.0 to 78.0	71.1	Pass
	Time	ms	57.0 to 64.0	58.6	Pass
"D" Plane Rotation Decay Time To Zero Crossing		ms	113.0 to 128.0	115.8	Pass
Moment About Occipital Condyle	Maximum	Nm	88.1 to 108.5	100.8	Pass
	Time	ms	47.0 to 58.0	49.7	Pass
Positive Moment Decay Time To Zero Crossing		ms	97.0 to 107.0	97.2	Pass
Overall Test Results					Pass


 Laboratory Technician

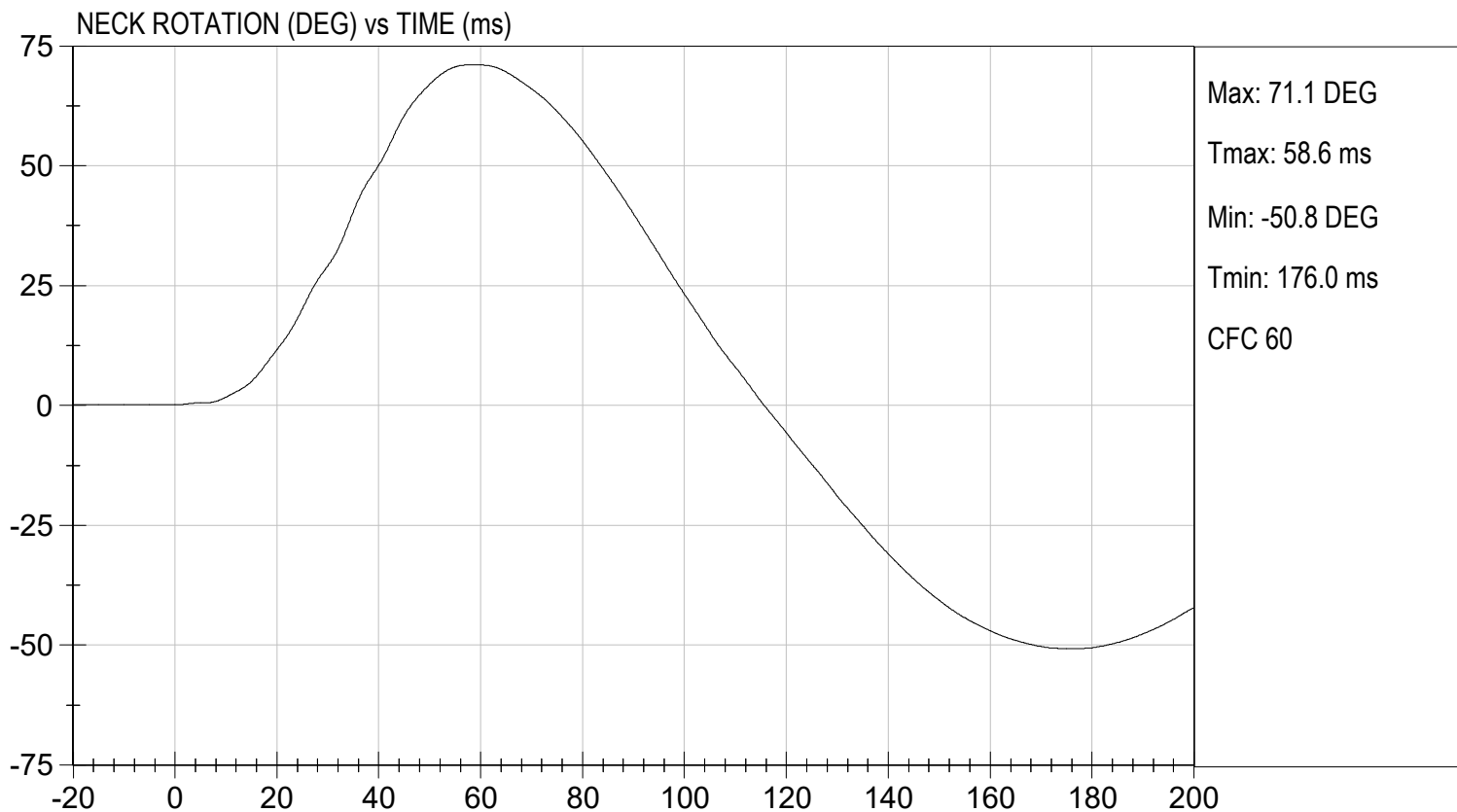
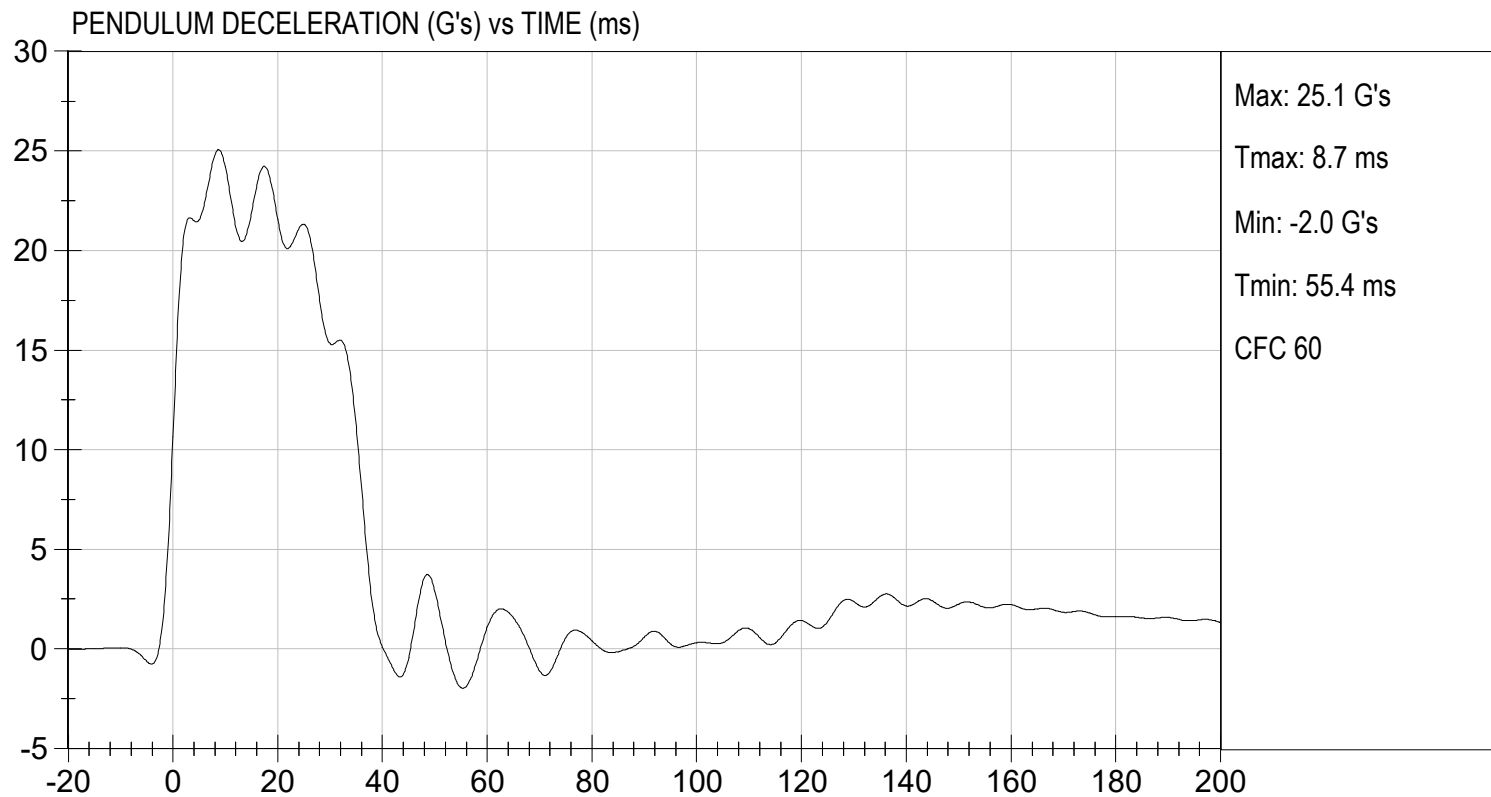
10/29/2024
 Test Date


 Approved By



TEST DESC: NECK FLEXION
VELOCITY: 22.83 ft/s, 6.96 m/s

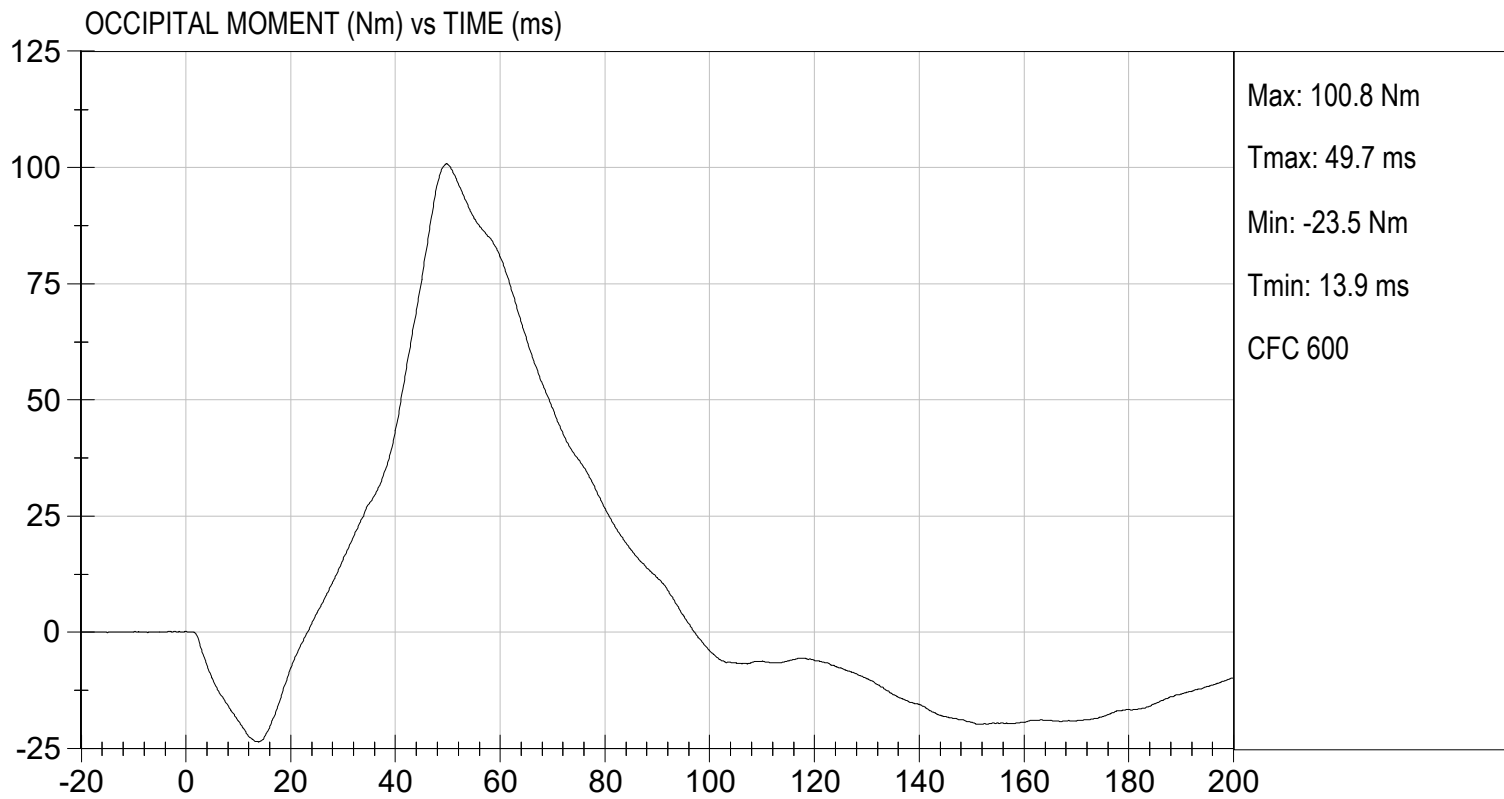
TEST DATE: 10/29/2024
TEST #: D24CC2





TEST DESC: NECK FLEXION
VELOCITY: 22.83 ft/s, 6.96 m/s

TEST DATE: 10/29/2024
TEST #: D24CC2



MGA RESEARCH CORPORATION
NECK EXTENSION TEST
HYBRID III 50TH PERCENTILE MALE

ATD Serial No: 064

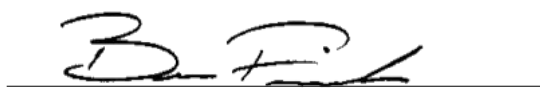
Test I.D: D24CC3

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.4	Pass
Laboratory Relative Humidity		%	10 to 70	43	Pass
Pendulum Velocity		m/s	5.95 to 6.19	5.98	Pass
Pendulum Deceleration	10 ms	G's	17.20 to 21.20	18.40	Pass
	20 ms	G's	14.00 to 19.00	16.52	Pass
	30 ms	G's	11.00 to 16.00	13.76	Pass
Peak Pendulum Deceleration After 30 ms		G's	<= 22.0	14.0	Pass
Deceleration Decay Time to Cross 5 G's		ms	38.0 to 46.0	42.0	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	97.1	Pass
	Time	ms	72.0 to 82.0	79.0	Pass
"D" Plane Rotation Decay Time To Zero Crossing		ms	147.0 to 174.0	161.0	Pass
Moment About Occipital Condyle	Maximum	Nm	-52.9 to -79.9	-55.6	Pass
	Time	ms	65.0 to 79.0	77.0	Pass
Negative Moment Decay Time To Zero Crossing		ms	120.0 to 148.0	144.2	Pass
Overall Test Results					Pass


Laboratory Technician

10/29/2024

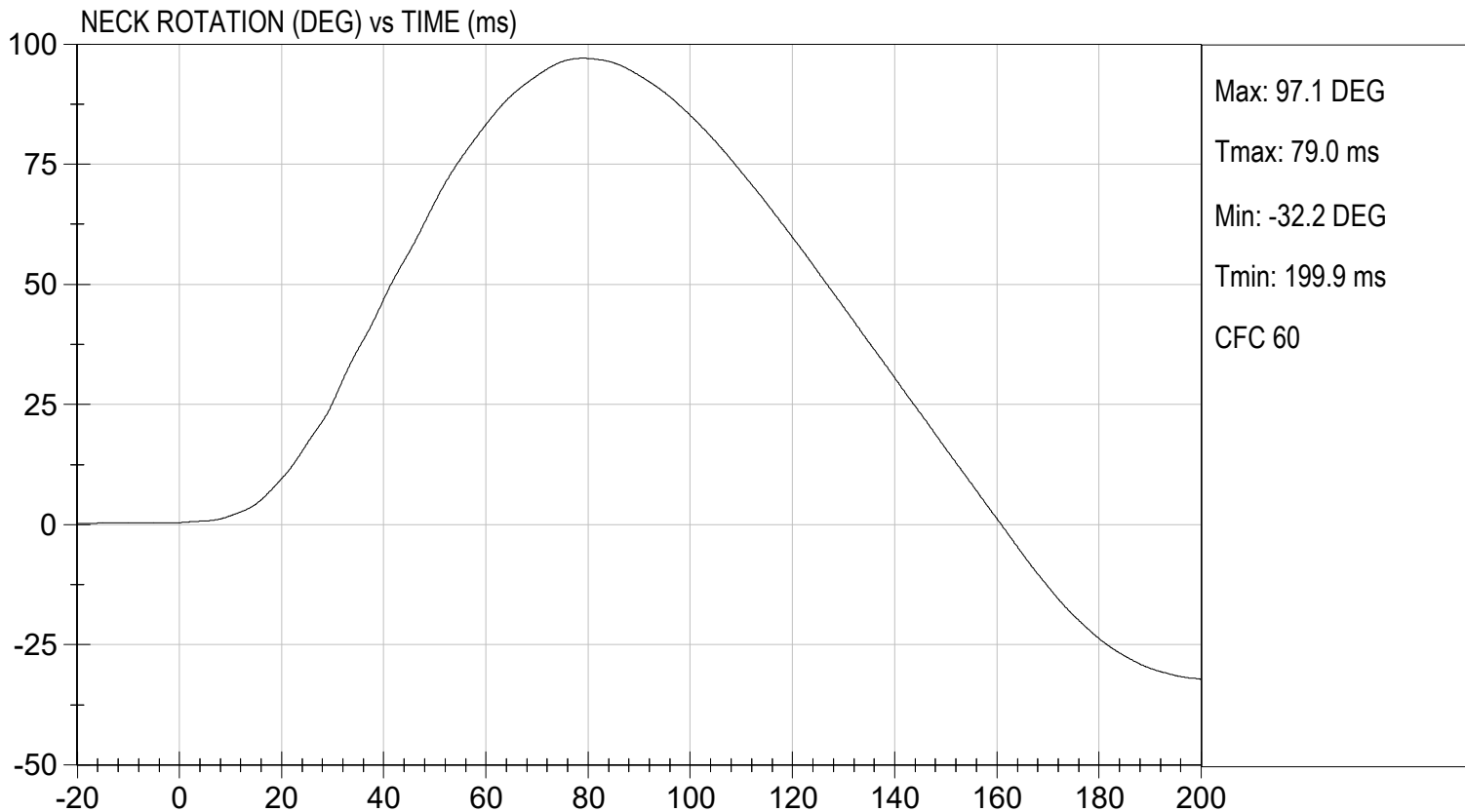
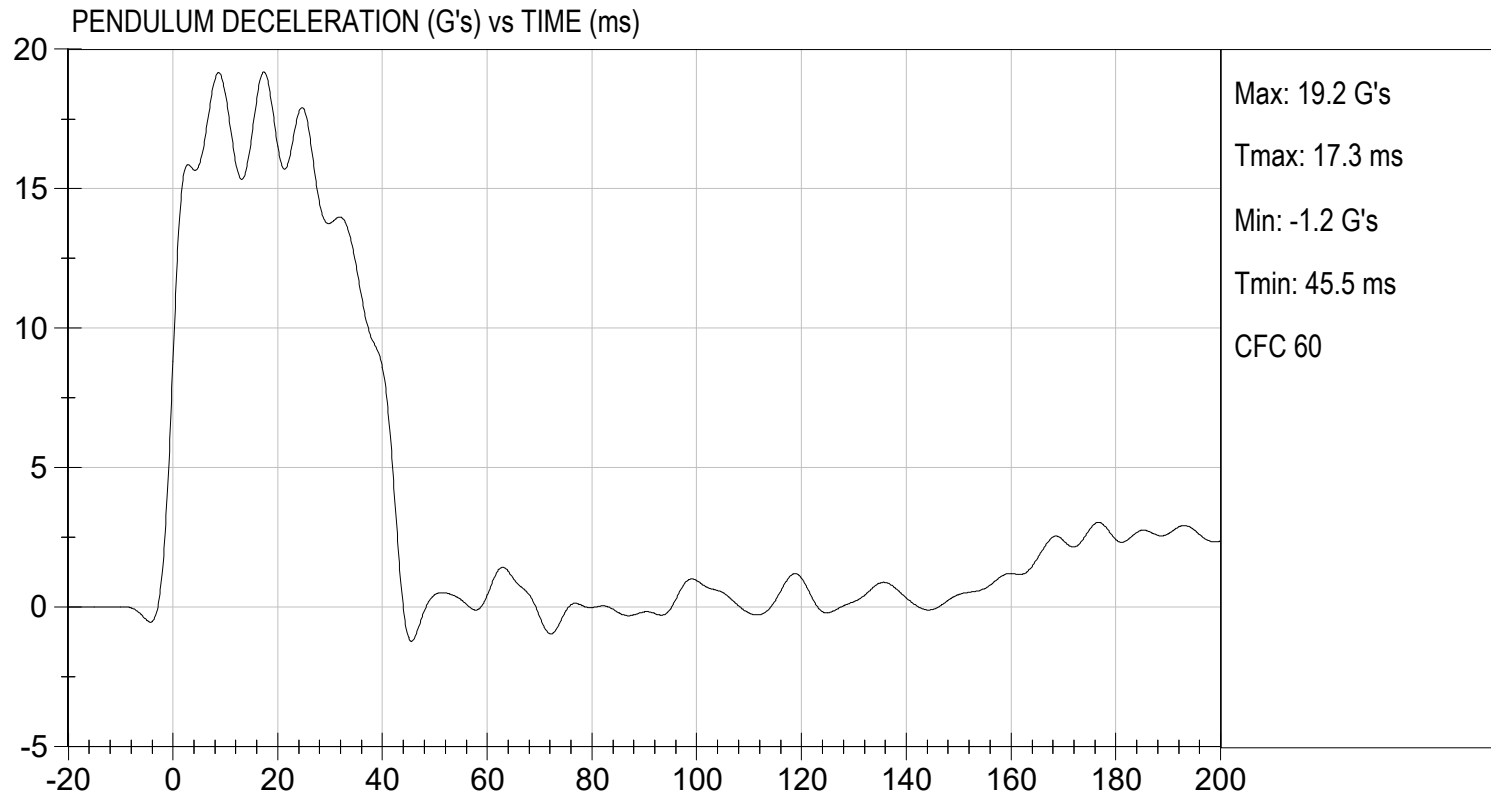
Test Date


Approved By



TEST DESC: NECK EXTENSION
VELOCITY: 19.61 ft/s, 5.98 m/s

TEST DATE: 10/29/2024
TEST #: D24CC3





TEST DESC: NECK EXTENSION
VELOCITY: 19.61 ft/s, 5.98 m/s

TEST DATE: 10/29/2024
TEST #: D24CC3



MGA RESEARCH CORPORATION
THORAX IMPACT
HYBRID III 50TH PERCENTILE MALE

ATD Serial No: 064

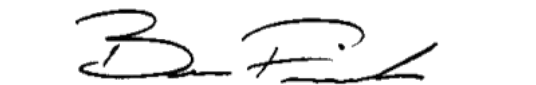
Test I.D: D242394

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.3	Pass
Laboratory Relative Humidity	%	10 to 70	46	Pass
Probe Velocity	m/s	6.58 to 6.82	6.68	Pass
Peak Probe Force	N	5159 to 5893	5,349	Pass
Peak Sternum Displacement	cm	6.35 to 7.26	7.11	Pass
Internal Hysteresis	%	69 to 85	72	Pass
			Overall Test Results	Pass


Laboratory Technician

09/19/2024

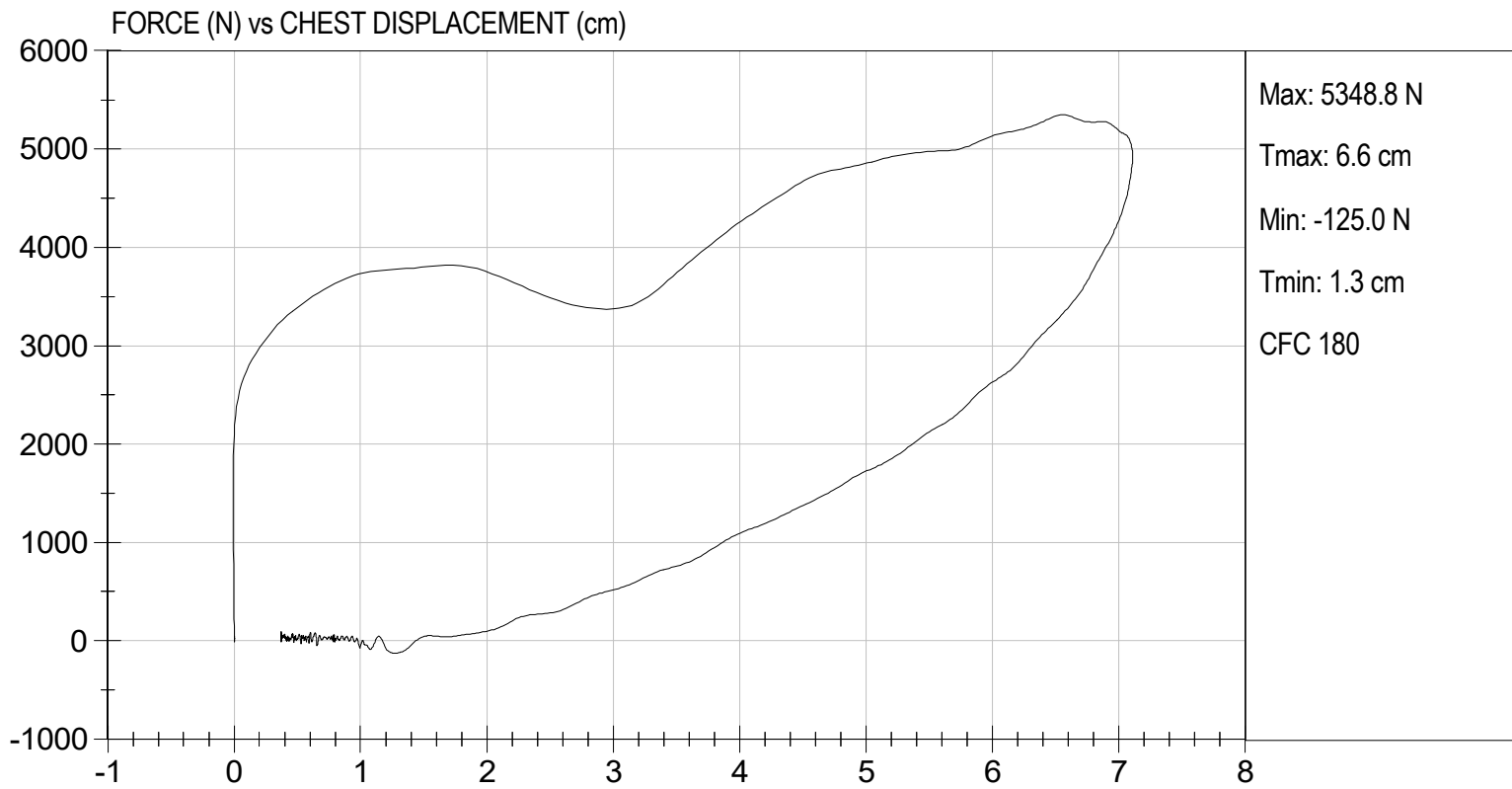
Test Date


Approved By



TEST DESC: THORAX IMPACT
VELOCITY: 21.93 ft/s, 6.68 m/s

TEST DATE: 09/19/2024
TEST #: D242394



MGA RESEARCH CORPORATION
RIGHT KNEE IMPACT TEST
HYBRID III 50TH PERCENTILE MALE

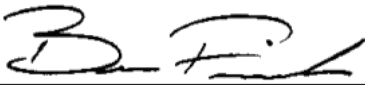
ATD Serial No: 064

Test I.D: D242395

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.3	Pass
Laboratory Relative Humidity	%	10 to 70	45	Pass
Probe Velocity	m/s	2.07 to 2.13	2.10	Pass
Peak Probe Force	N	4715 to 5782	5,152	Pass
Overall Test Results				Pass


Laboratory Technician

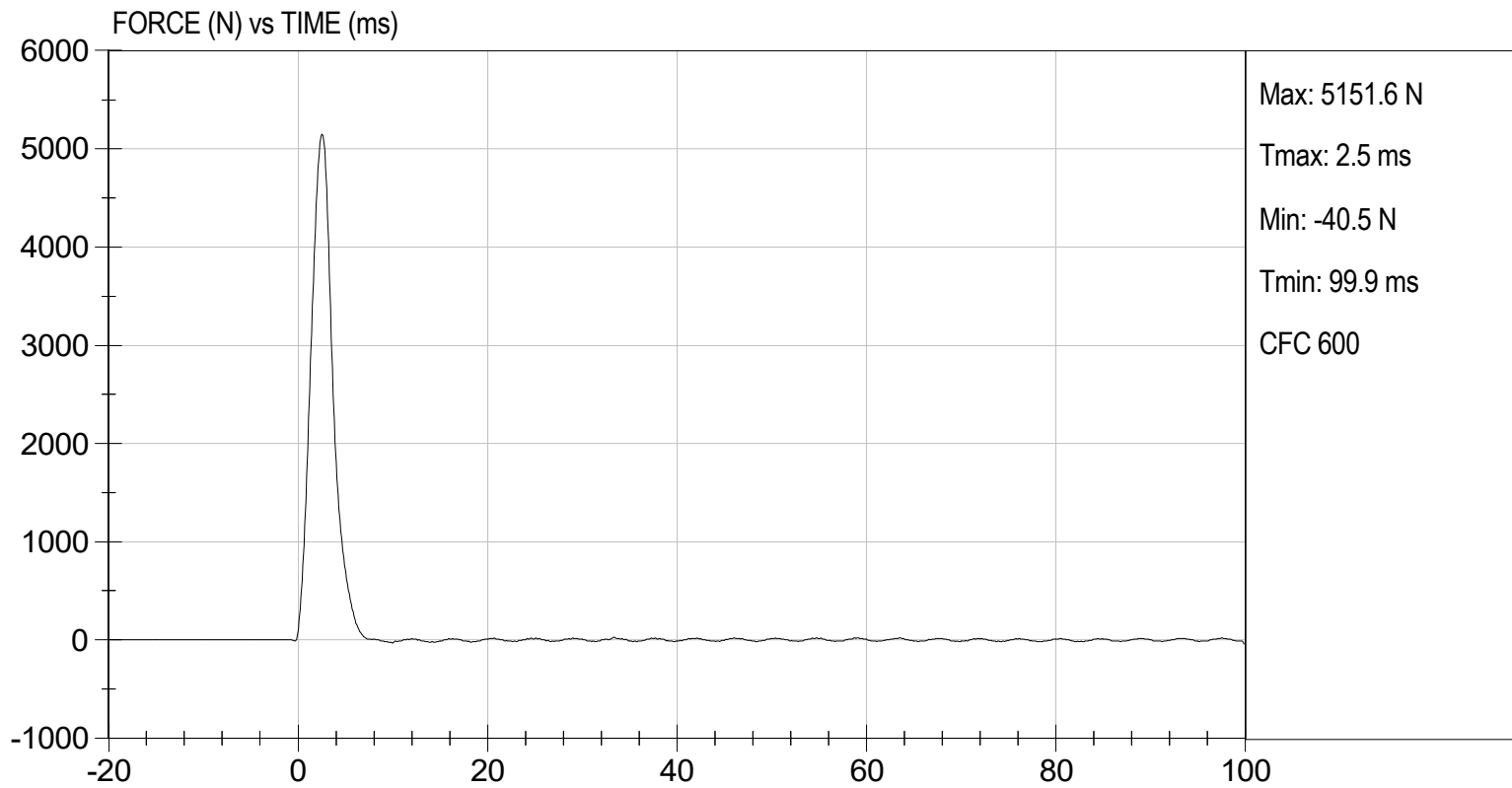
09/19/2024
Test Date


Approved By



TEST DESC: RIGHT KNEE
VELOCITY: 6.89 ft/s, 2.10 m/s

TEST DATE: 09/19/2024
TEST #: D242395



MGA RESEARCH CORPORATION
LEFT KNEE IMPACT TEST
HYBRID III 50TH PERCENTILE MALE

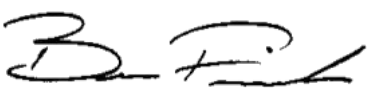
ATD Serial No: 064

Test I.D: D242396

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.3	Pass
Laboratory Relative Humidity	%	10 to 70	45	Pass
Probe Velocity	m/s	2.07 to 2.13	2.10	Pass
Peak Probe Force	N	4715 to 5782	4,803	Pass
			Overall Test Results	Pass


Laboratory Technician

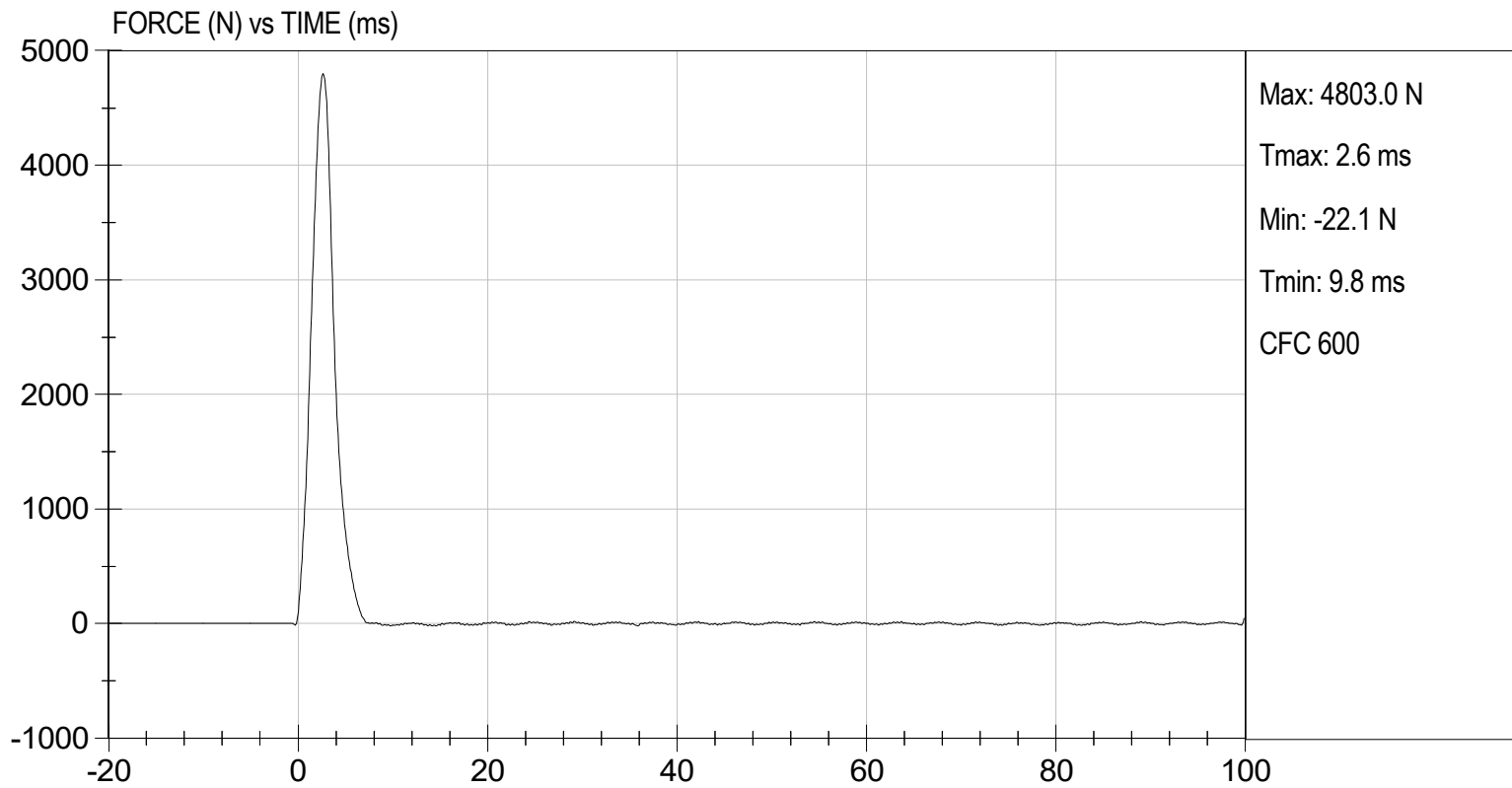
09/19/2024
Test Date


Approved By



TEST DESC: LEFT KNEE
VELOCITY: 6.89 ft/s, 2.10 m/s

TEST DATE: 09/19/2024
TEST #: D242396



MGA RESEARCH CORPORATION
HIP-FEMUR FLEXION TEST
HYBRID III 50TH PERCENTILE MALE

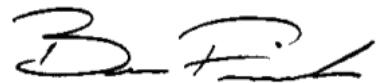
ATD Serial No: 064

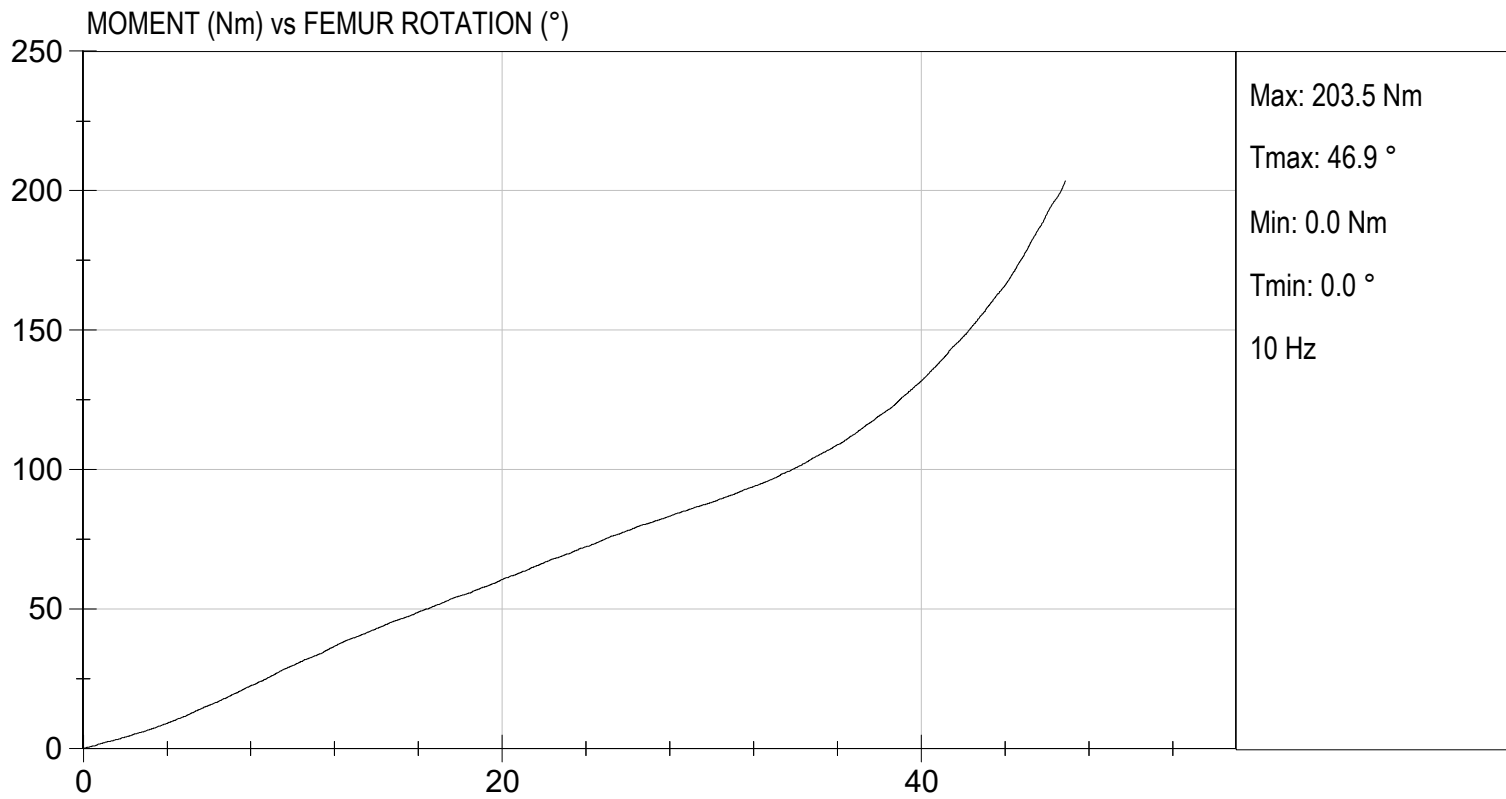
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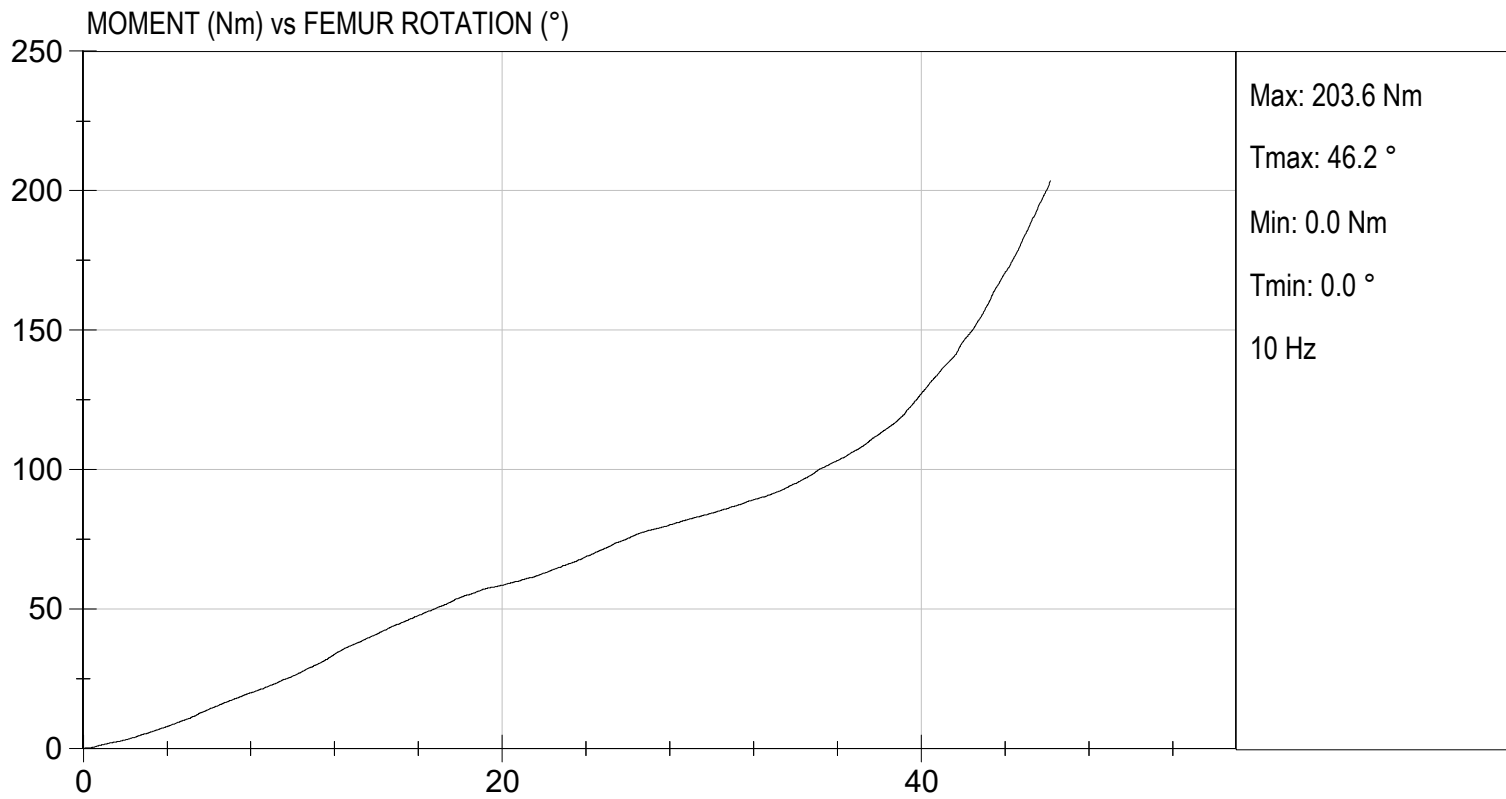
Tested Parameter	Units	Specification	Result		Pass/Fail
			Right	Left	
Laboratory Temperature	deg C	18.9 to 25.6	21.3	21.3	Pass
Laboratory Relative Humidity	%	10 to 70	43	43	Pass
Rotation Rate	deg/s	5.0 to 10.0	6.6	6.5	Pass
30 Degrees	Nm	94.9 Nm Max	88.3	84.4	Pass
150 ft-lbf / 203.4 Nm	Deg	40.0 to 50.0 Degree Max Rotation	46.9	46.2	Pass
Overall Test Results					Pass


 Laboratory Technician

09/19/2024
 Test Date


 Approved By





QUALIFICATION TEST RESULTS

POST-TEST

HYBRID III 50TH PERCENTILE MALE - DRIVER ATD

MGA RESEARCH CORPORATION
HEAD DROP TEST
HYBRID III 50TH PERCENTILE MALE

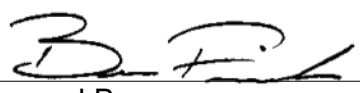
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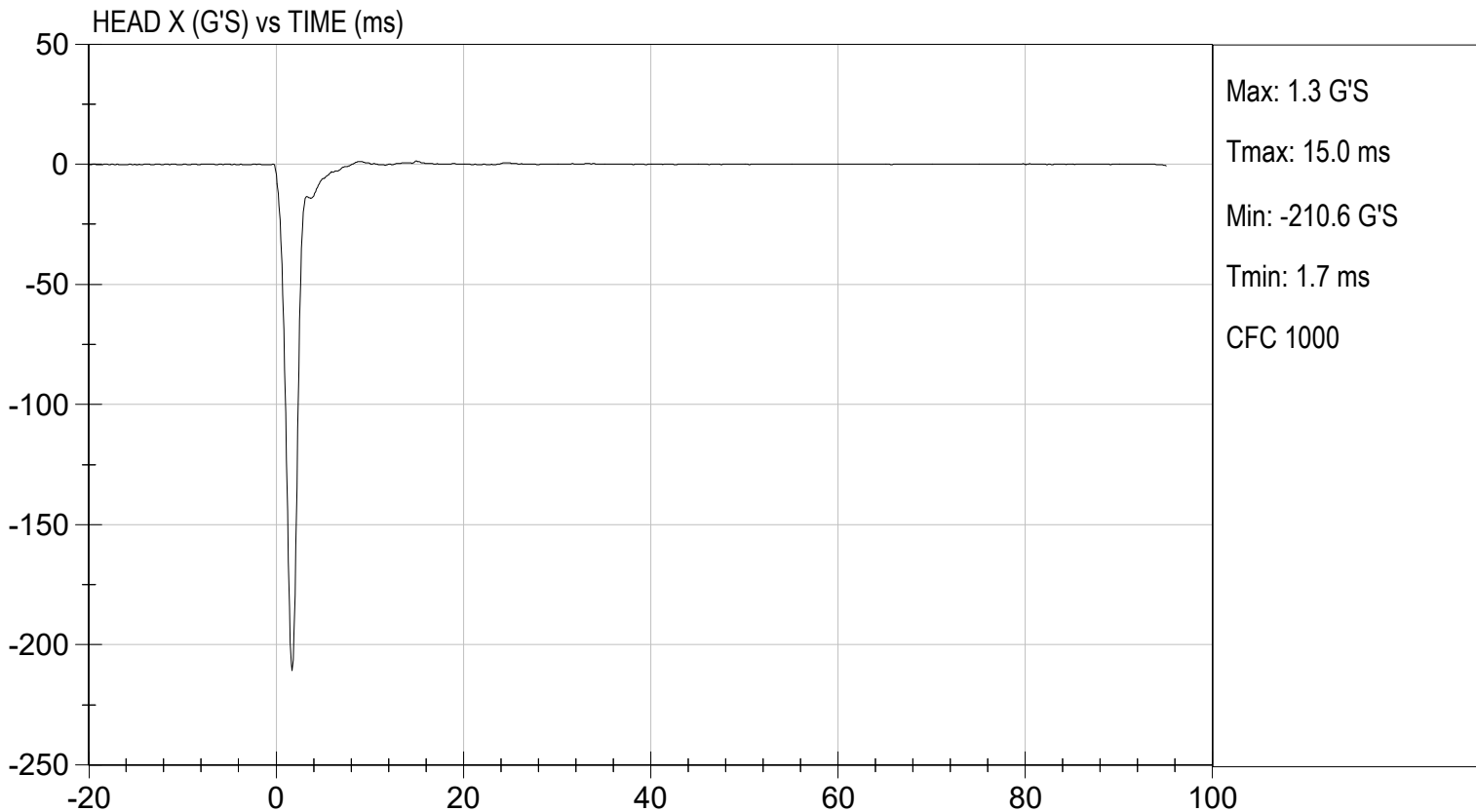
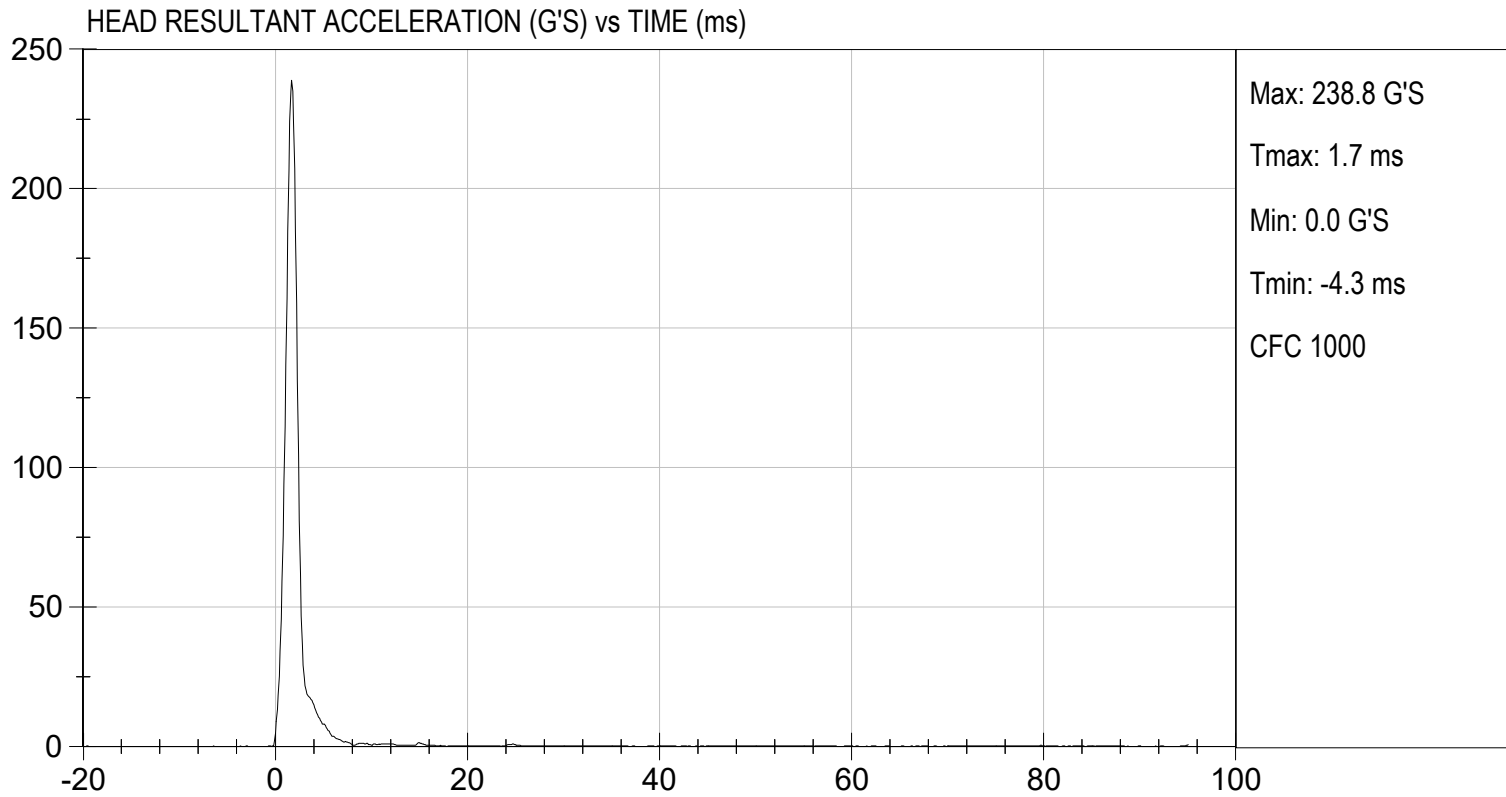
Test ID: D242941

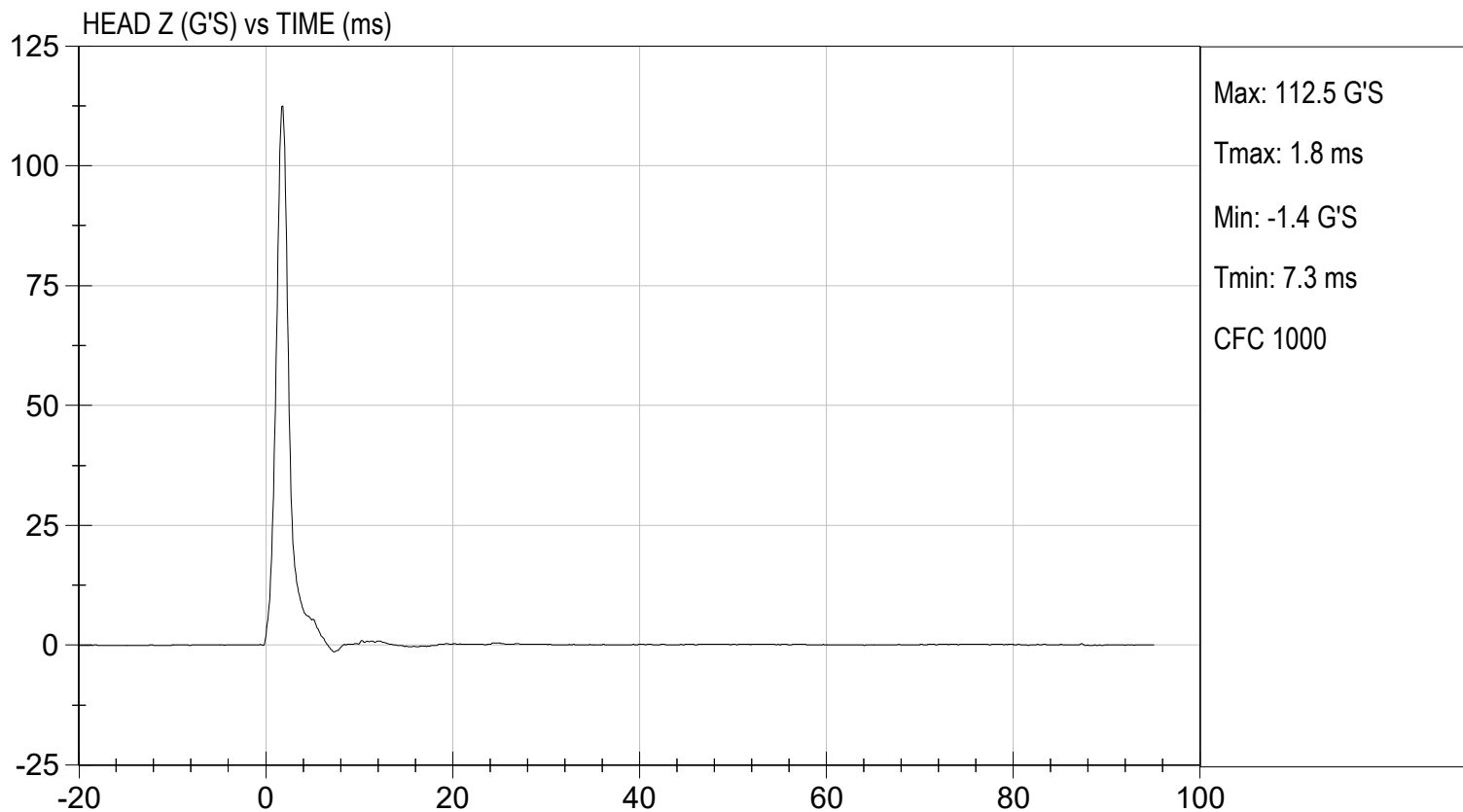
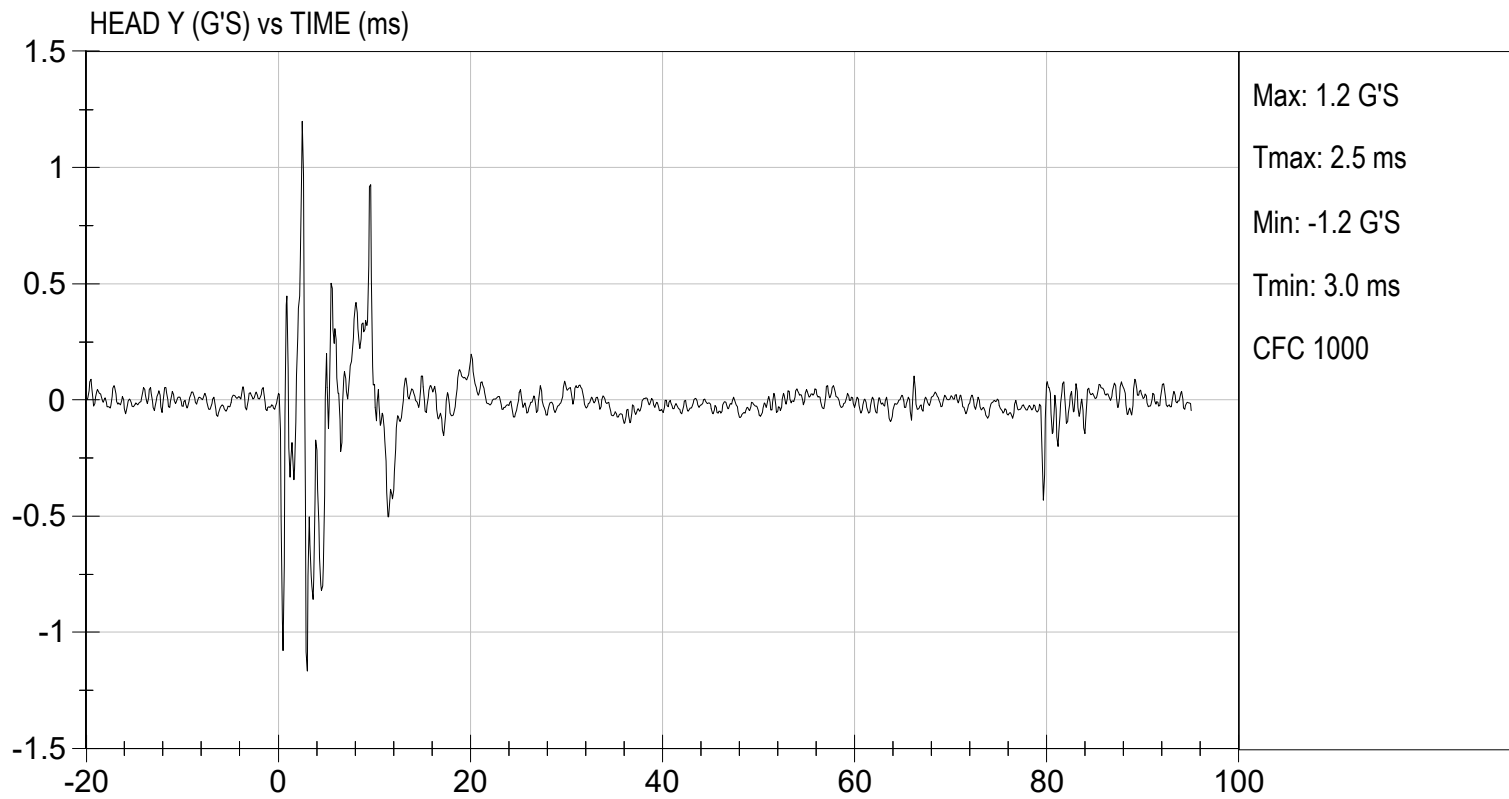
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	42	Pass
Peak Resultant Acceleration	G's	225 to 275	239	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	1.2	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 10% of peak	Yes	Pass
			Overall Test Results	Pass


Laboratory Technician

11/11/2024
Test Date


Approved By





MGA RESEARCH CORPORATION
NECK FLEXION TEST
HYBRID III 50TH PERCENTILE MALE

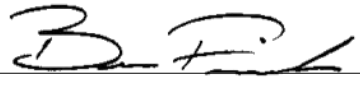
ATD Serial No: 064

Test I.D: D242942

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity		%	10 to 70	40	Pass
Pendulum Velocity		m/s	6.89 to 7.13	7.05	Pass
Pendulum Deceleration	10 ms	G's	22.50 to 27.50	23.16	Pass
	20 ms	G's	17.60 to 22.60	21.45	Pass
	30 ms	G's	12.50 to 18.50	15.04	Pass
Peak Pendulum Deceleration After 30 ms		G's	<= 29.0	15.0	Pass
Deceleration Decay Time to Cross 5 G's		ms	34.0 to 42.0	38.6	Pass
Maximum "D" Plane Rotation	Maximum	Deg	64.0 to 78.0	71.1	Pass
	Time	ms	57.0 to 64.0	59.2	Pass
"D" Plane Rotation Decay Time To Zero Crossing		ms	113.0 to 128.0	115.4	Pass
Moment About Occipital Condyle	Maximum	Nm	88.1 to 108.5	99.4	Pass
	Time	ms	47.0 to 58.0	50.8	Pass
Positive Moment Decay Time To Zero Crossing		ms	97.0 to 107.0	97.6	Pass
Overall Test Results					Pass


 Laboratory Technician

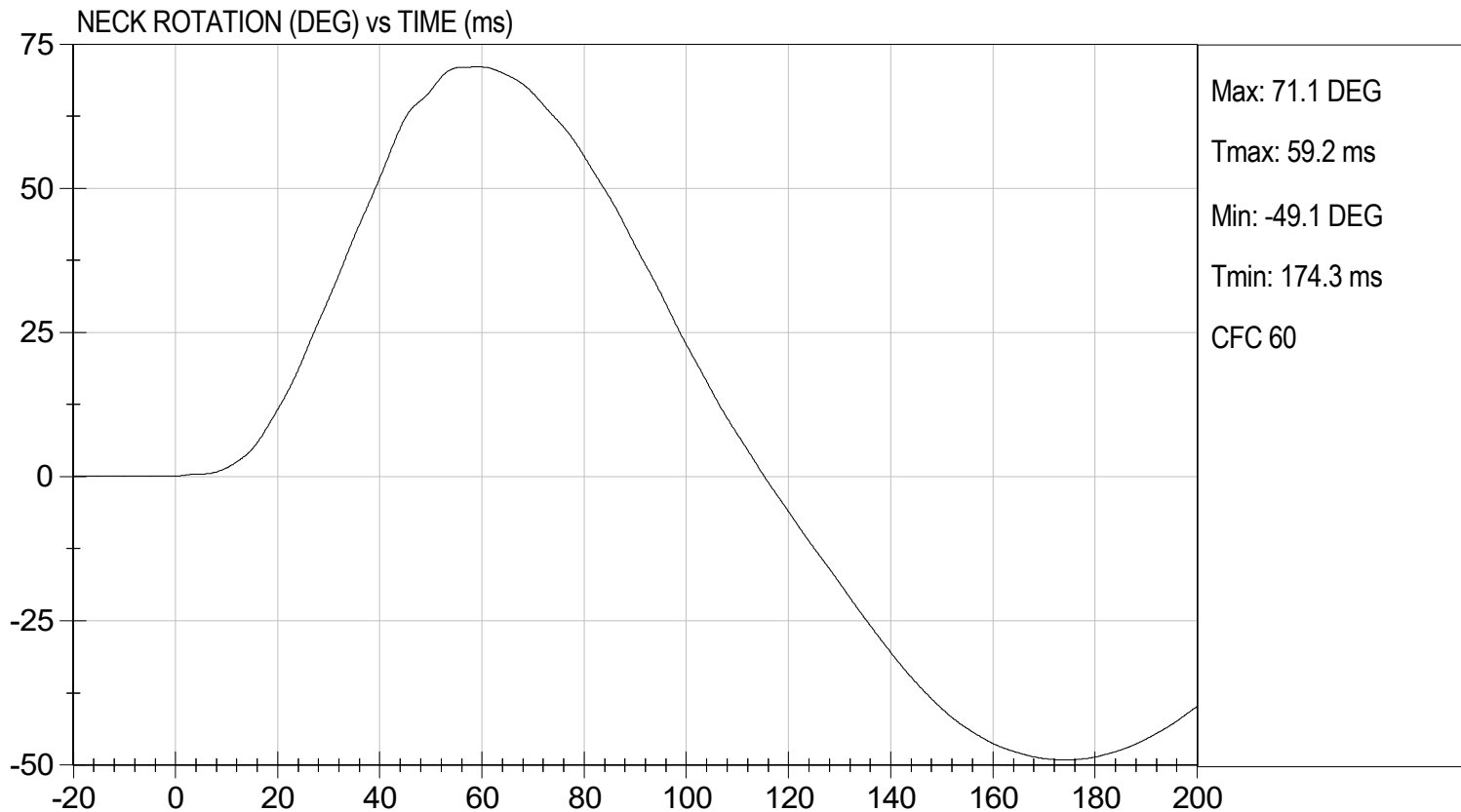
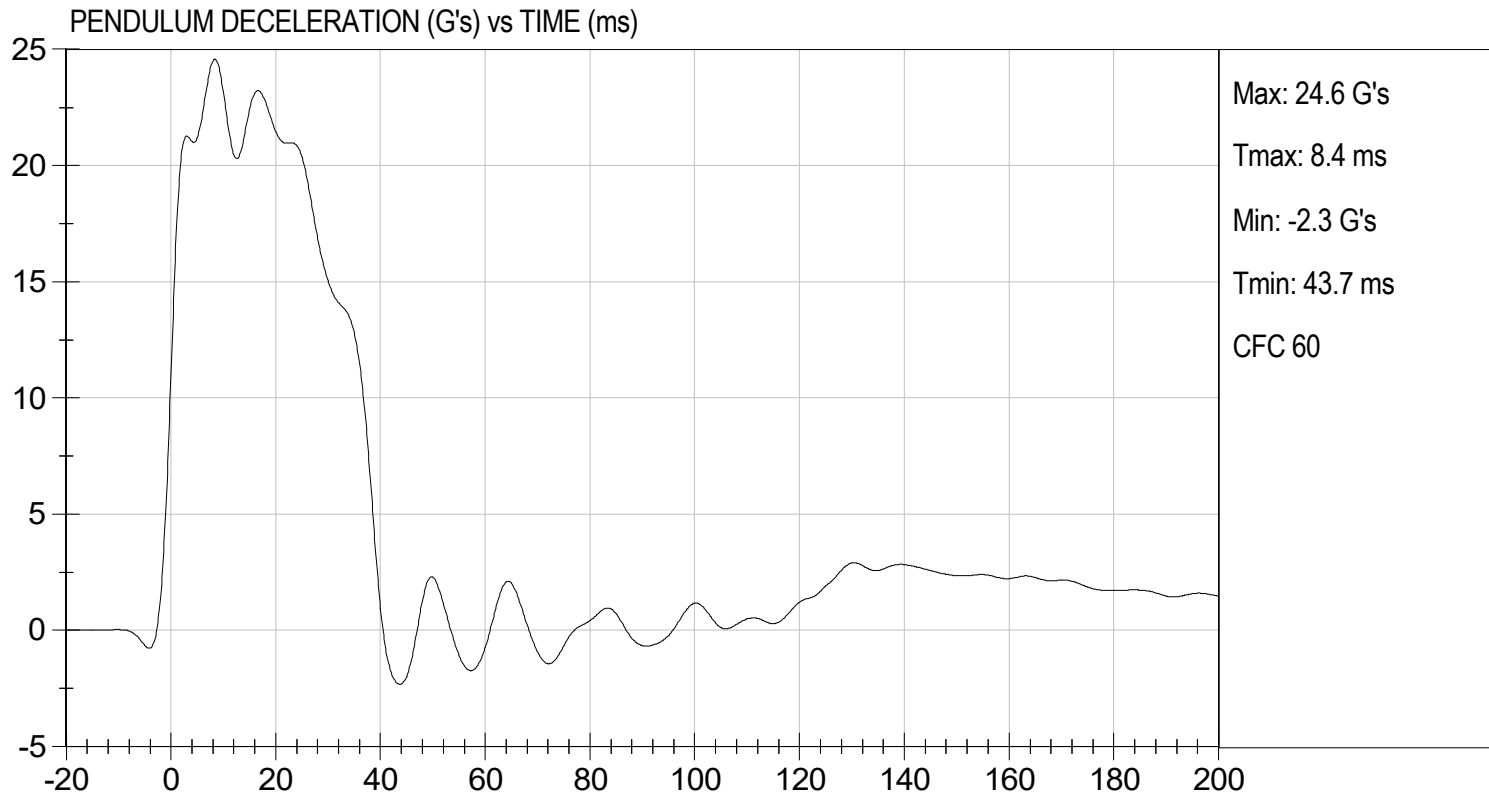
11/11/2024
 Test Date


 Approved By



TEST DESC: NECK FLEXION
VELOCITY: 23.12 ft/s, 7.05 m/s

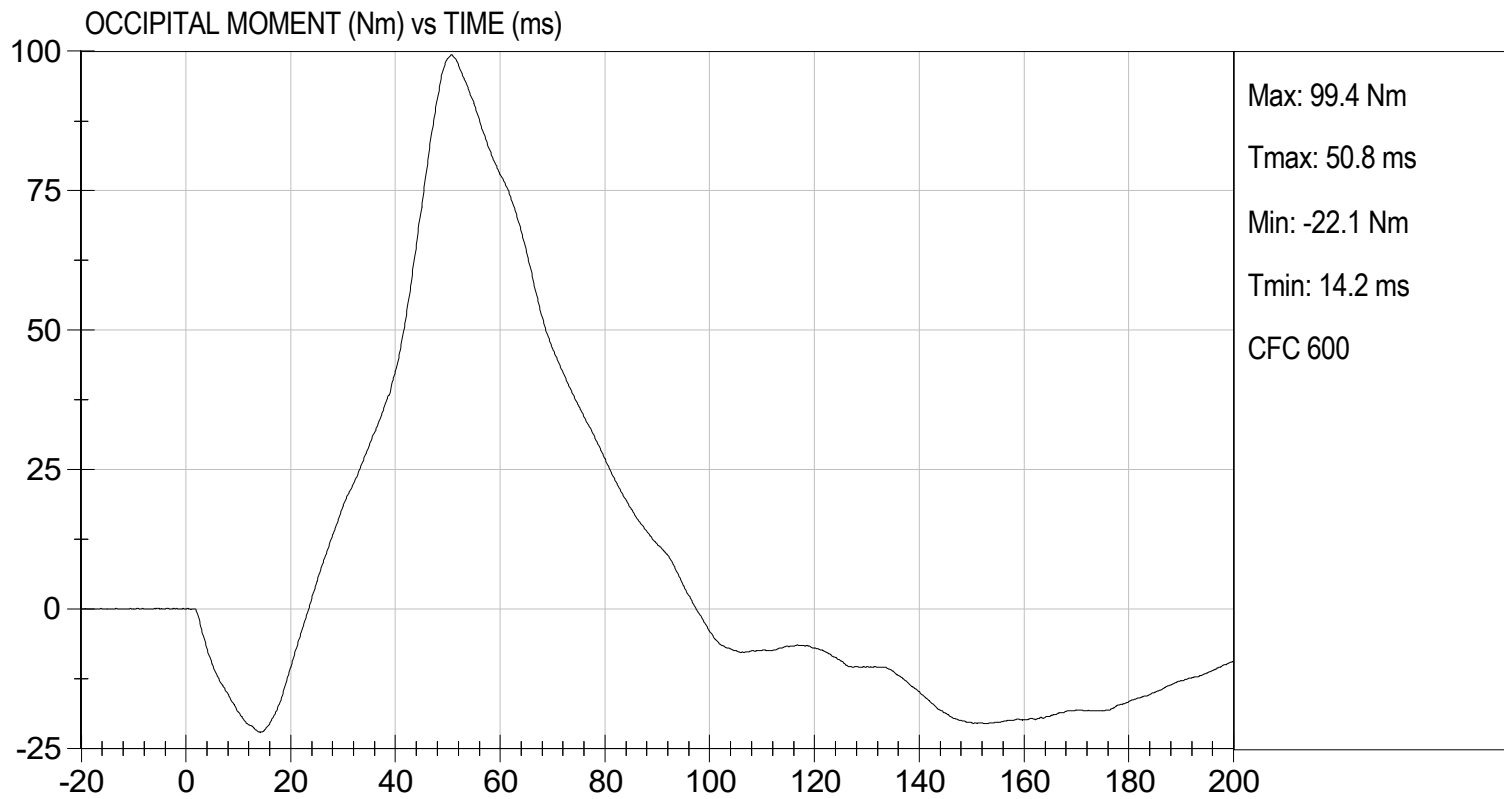
TEST DATE: 11/11/2024
TEST #: D242942





TEST DESC: NECK FLEXION
VELOCITY: 23.12 ft/s, 7.05 m/s

TEST DATE: 11/11/2024
TEST #: D242942



MGA RESEARCH CORPORATION
NECK EXTENSION TEST
HYBRID III 50TH PERCENTILE MALE

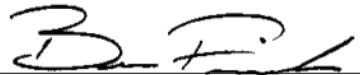
ATD Serial No: 064

Test I.D: D242943

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity		%	10 to 70	38	Pass
Pendulum Velocity		m/s	5.95 to 6.19	6.12	Pass
Pendulum Deceleration	10 ms	G's	17.20 to 21.20	17.43	Pass
	20 ms	G's	14.00 to 19.00	15.07	Pass
	30 ms	G's	11.00 to 16.00	11.89	Pass
Peak Pendulum Deceleration After 30 ms		G's	<= 22.0	12.7	Pass
Deceleration Decay Time to Cross 5 G's		ms	38.0 to 46.0	41.1	Pass
Maximum "D" Plane Rotation	Maximum	Degrees	81.0 to 106.0	95.2	Pass
	Time	ms	72.0 to 82.0	80.0	Pass
"D" Plane Rotation Decay Time To Zero Crossing		ms	147.0 to 174.0	161.9	Pass
Moment About Occipital Condyle	Maximum	Nm	-52.9 to -79.9	-53.9	Pass
	Time	ms	65.0 to 79.0	78.6	Pass
Negative Moment Decay Time To Zero Crossing		ms	120.0 to 148.0	147.5	Pass
Overall Test Results					Pass


 Laboratory Technician

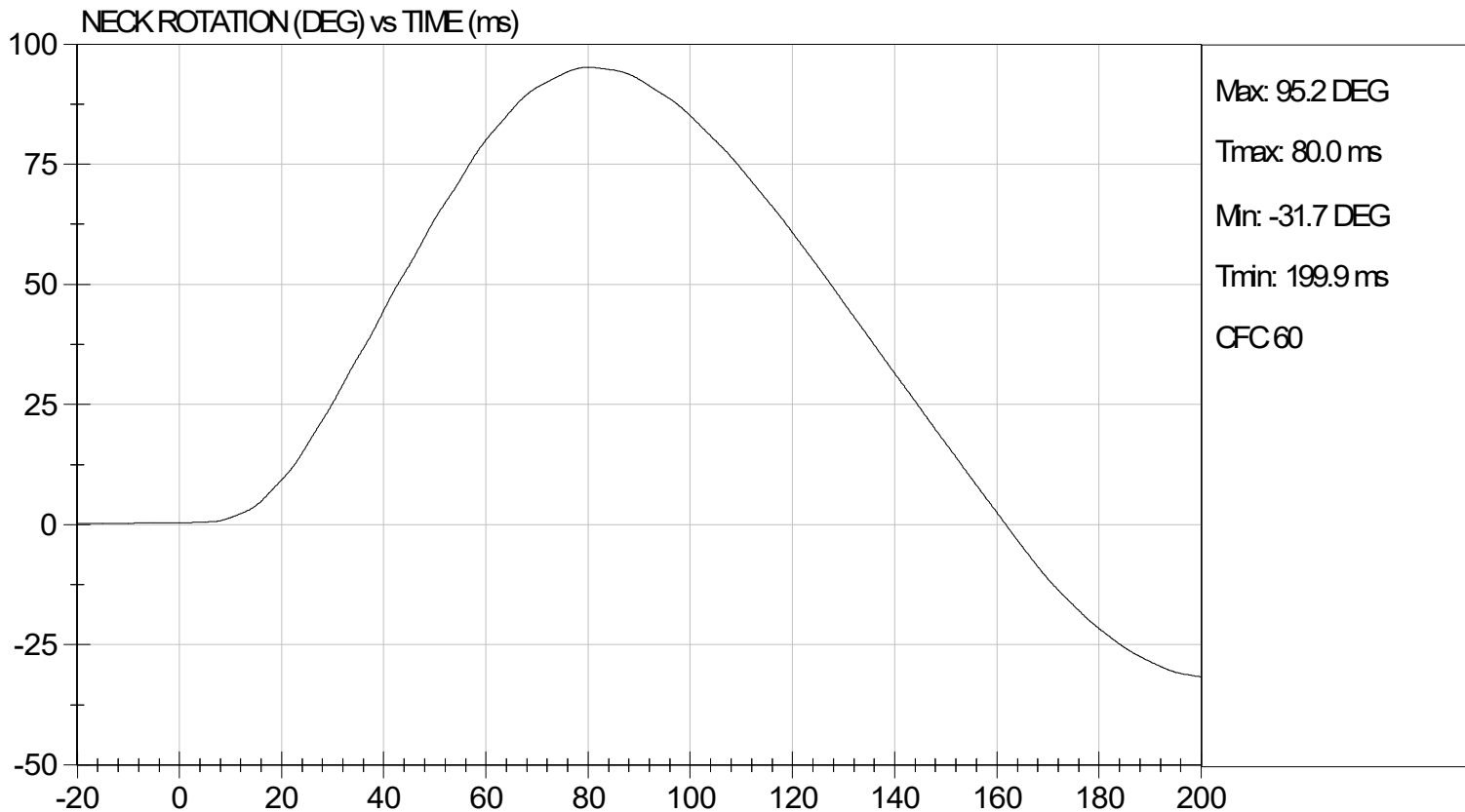
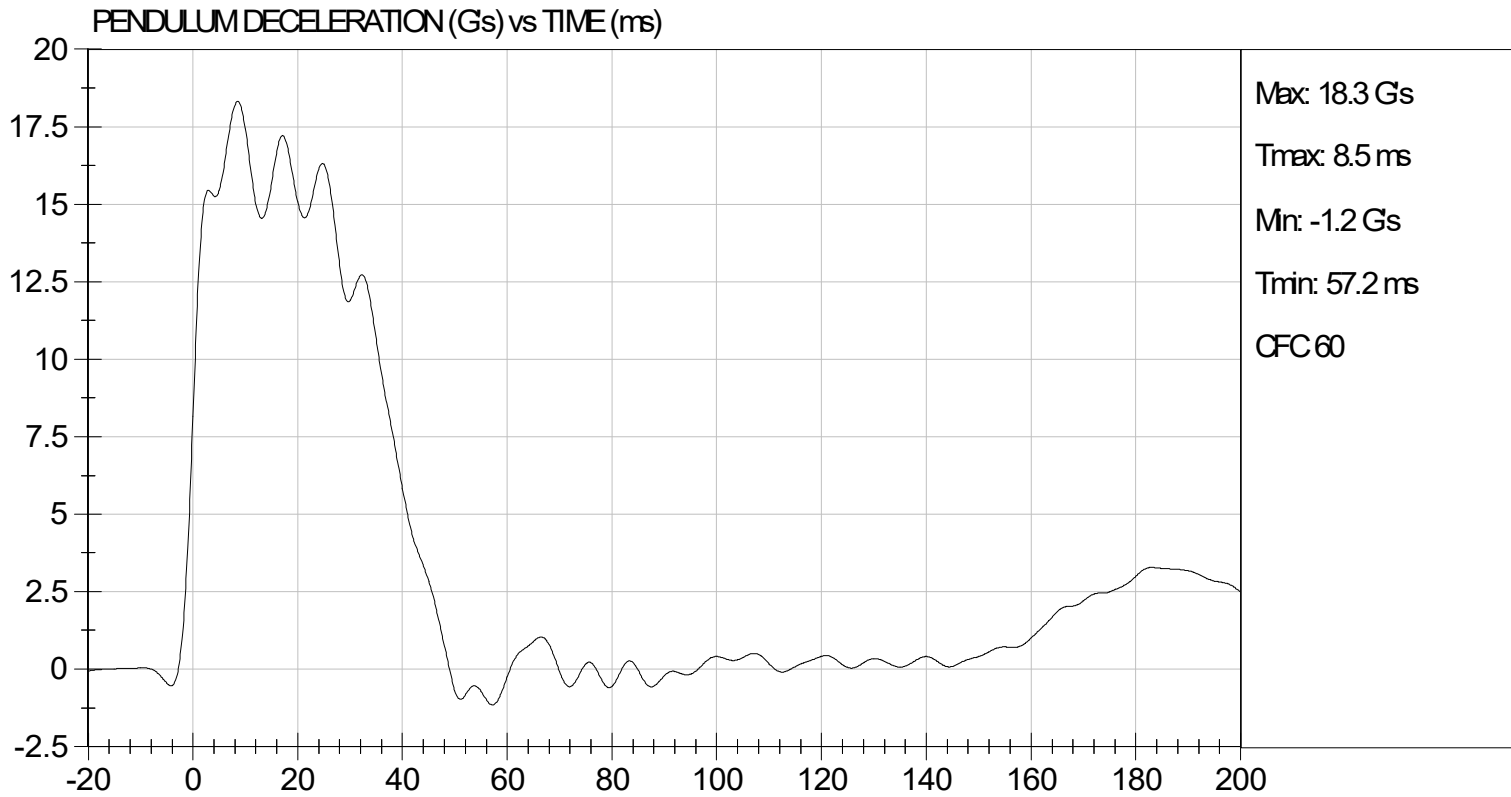
11/11/2024
 Test Date


 Approved By



TEST DESC: NECK EXTENSION
VELOCITY: 20.08 ft/s, 6.12 m/s

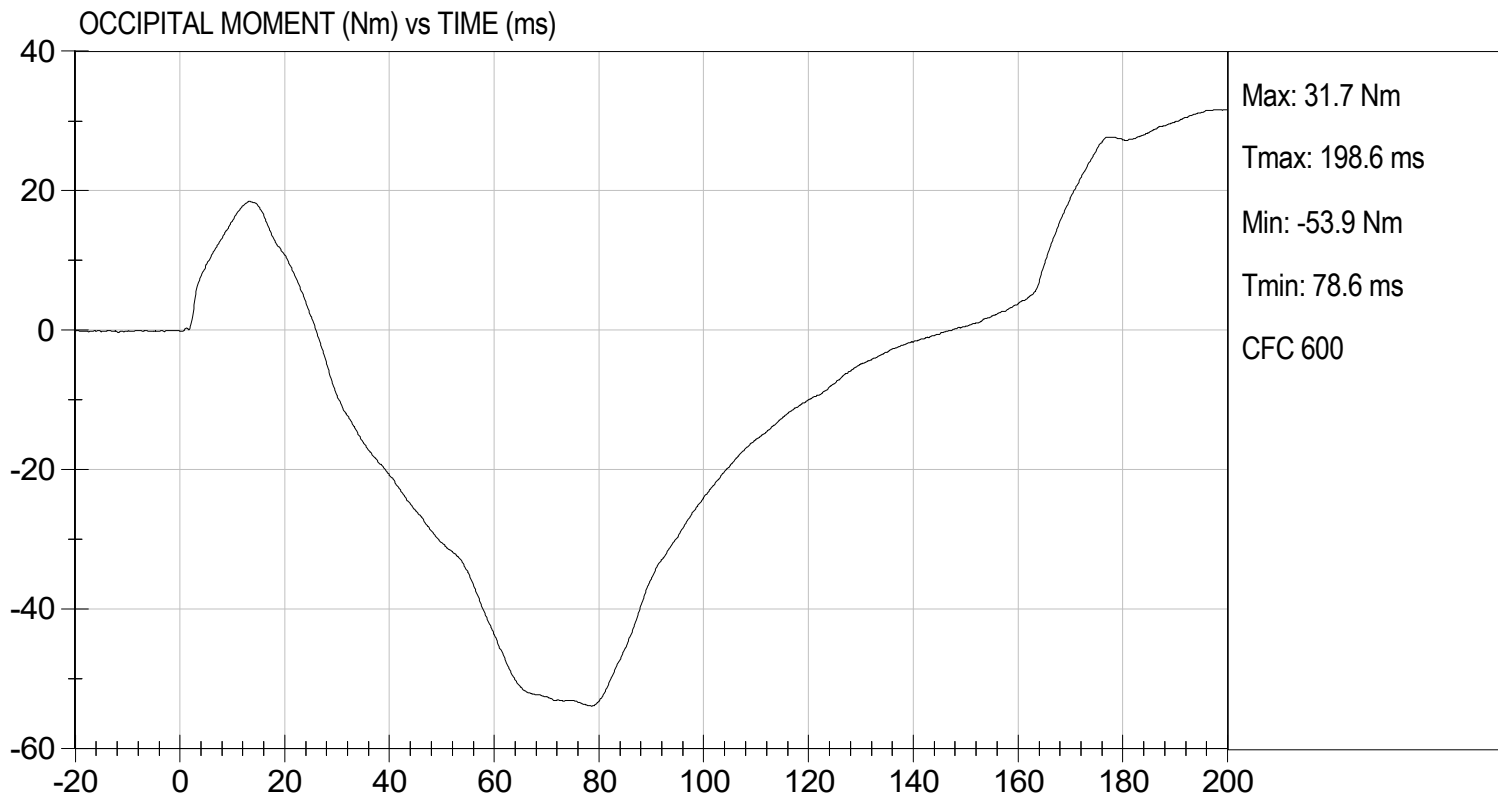
TEST DATE: 11/11/2024
TEST #: D242943





TEST DESC: NECK EXTENSION
VELOCITY: 20.08 ft/s, 6.12 m/s

TEST DATE: 11/11/2024
TEST #: D242943



MGA RESEARCH CORPORATION
THORAX IMPACT
HYBRID III 50TH PERCENTILE MALE

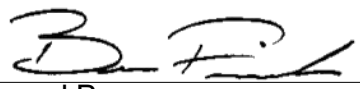
ATD Serial No: 064

Test I.D: D242944

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	20.6 to 22.2	21.2	Pass
Laboratory Relative Humidity	%	10 to 70	43	Pass
Probe Velocity	m/s	6.58 to 6.82	6.68	Pass
Peak Probe Force	N	5159 to 5893	5,325	Pass
Peak Sternum Displacement	cm	6.35 to 7.26	6.97	Pass
Internal Hysteresis	%	69 to 85	71	Pass
			Overall Test Results	Pass


Laboratory Technician

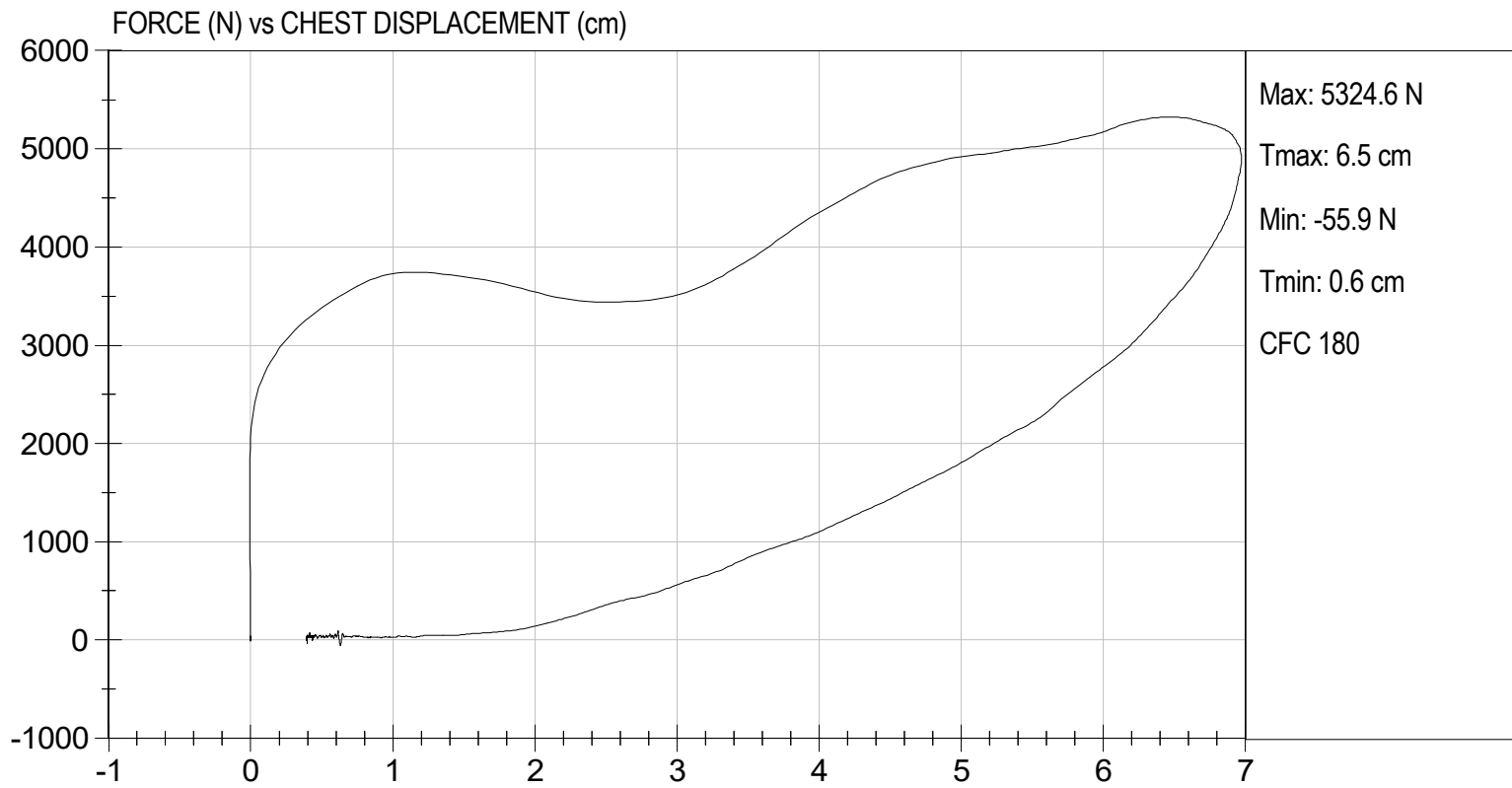
11/11/2024
Test Date


Approved By



TEST DESC: THORAX IMPACT
VELOCITY: 21.93 ft/s, 6.68 m/s

TEST DATE: 11/11/2024
TEST #: D242944



MGA RESEARCH CORPORATION
RIGHT KNEE IMPACT TEST
HYBRID III 50TH PERCENTILE MALE

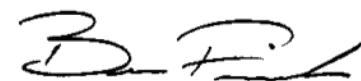
ATD Serial No: 064

Test I.D: D242945

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	43	Pass
Probe Velocity	m/s	2.07 to 2.13	2.12	Pass
Peak Probe Force	N	4715 to 5782	5,017	Pass
Overall Test Results				Pass


Laboratory Technician

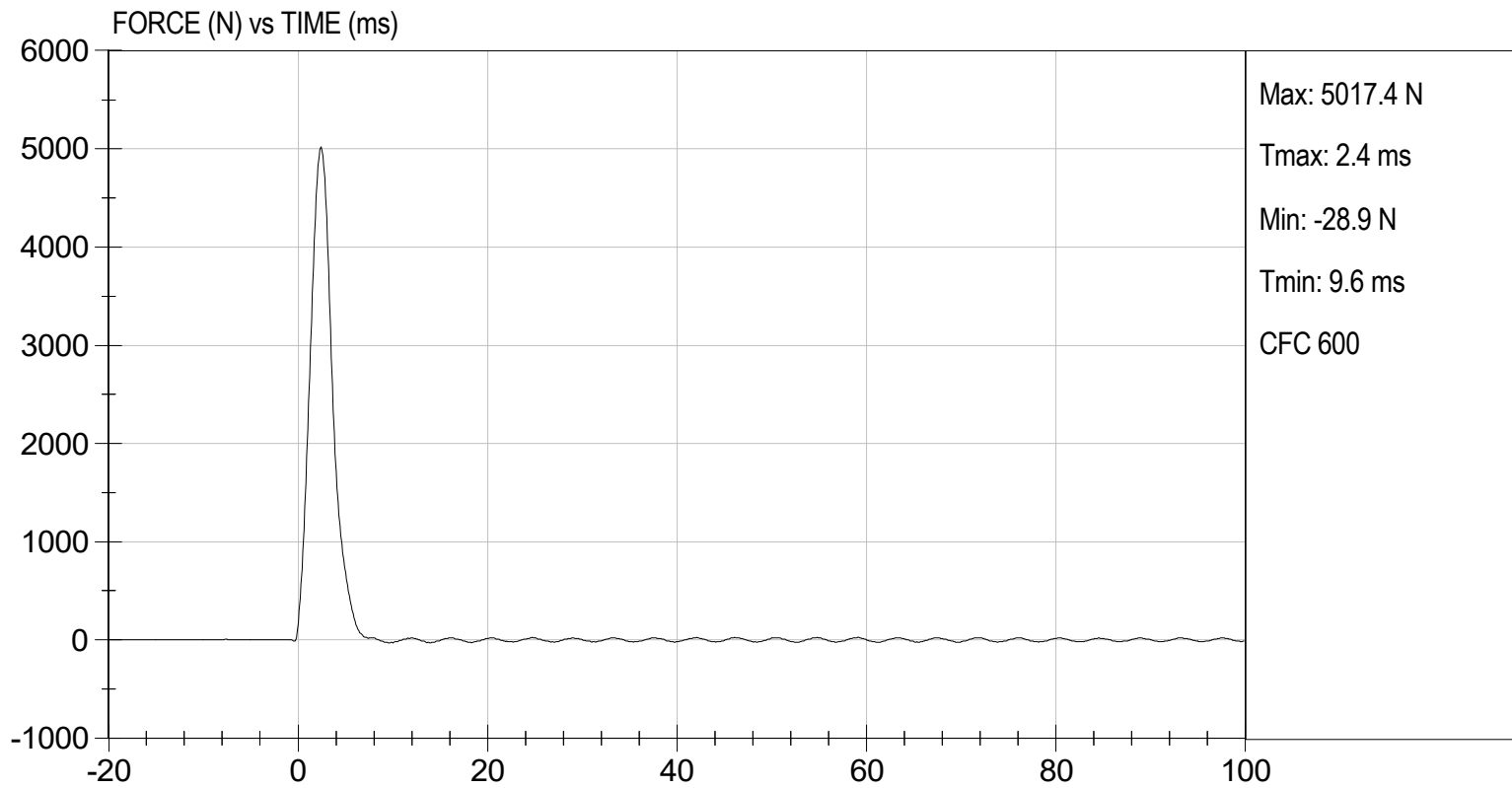
11/11/2024
Test Date


Approved By



TEST DESC: RIGHT KNEE
VELOCITY: 6.97 ft/s, 2.12 m/s

TEST DATE: 11/11/2024
TEST #: D242945



MGA RESEARCH CORPORATION
LEFT KNEE IMPACT TEST
HYBRID III 50TH PERCENTILE MALE

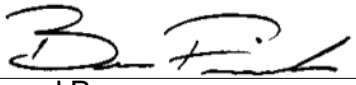
ATD Serial No: 064

Test I.D: D242946

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.1	Pass
Laboratory Relative Humidity	%	10 to 70	42	Pass
Probe Velocity	m/s	2.07 to 2.13	2.10	Pass
Peak Probe Force	N	4715 to 5782	4,819	Pass
			Overall Test Results	Pass


Laboratory Technician

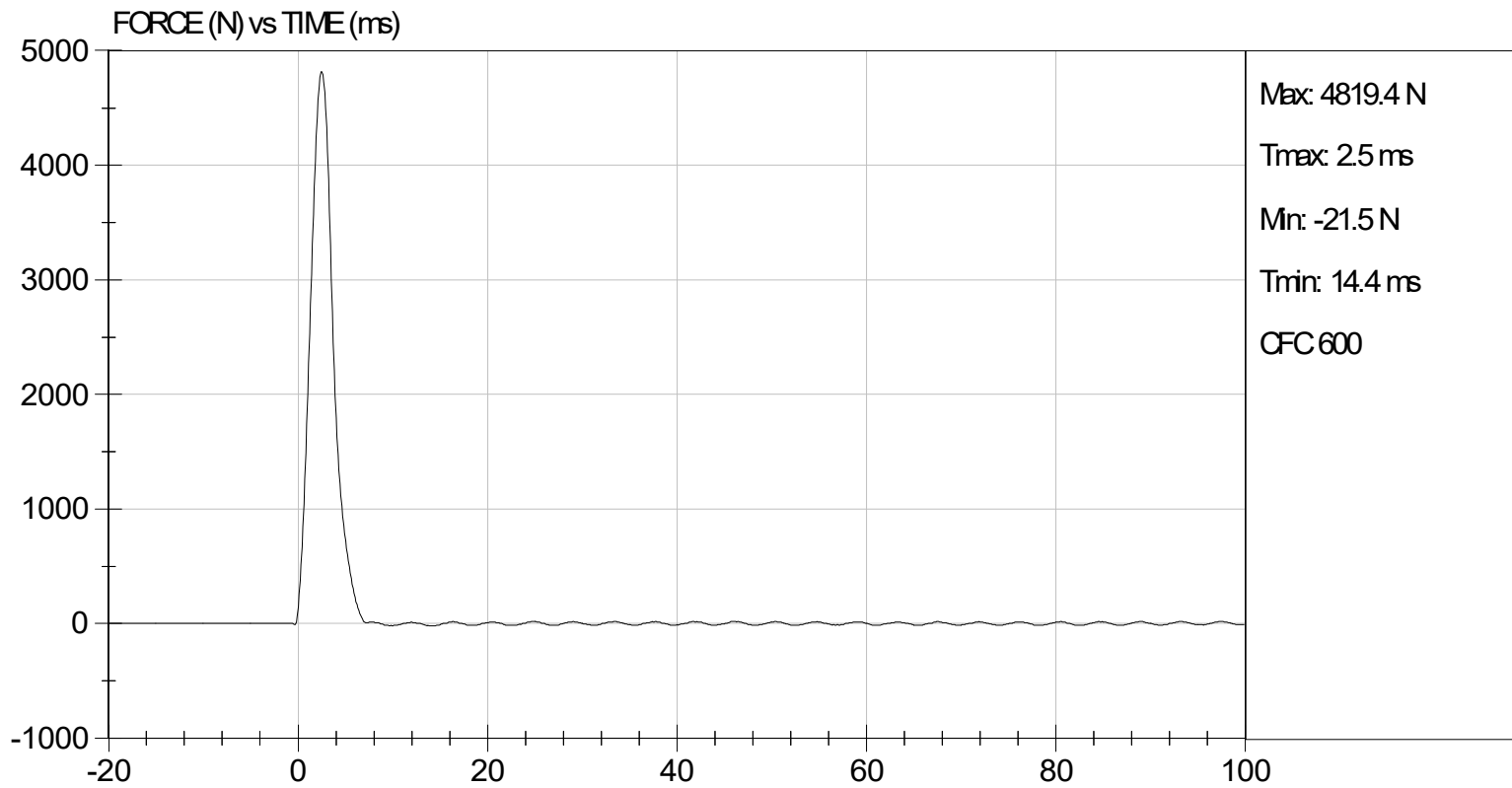
11/11/2024
Test Date


Approved By



TEST DESC: LEFT KNEE
VELOCITY: 6.89 ft/s, 2.10 m/s

TEST DATE: 11/11/2024
TEST #: D242946



MGA RESEARCH CORPORATION
HIP-FEMUR FLEXION TEST
HYBRID III 50TH PERCENTILE MALE

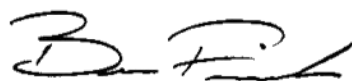
ATD Serial No: 064

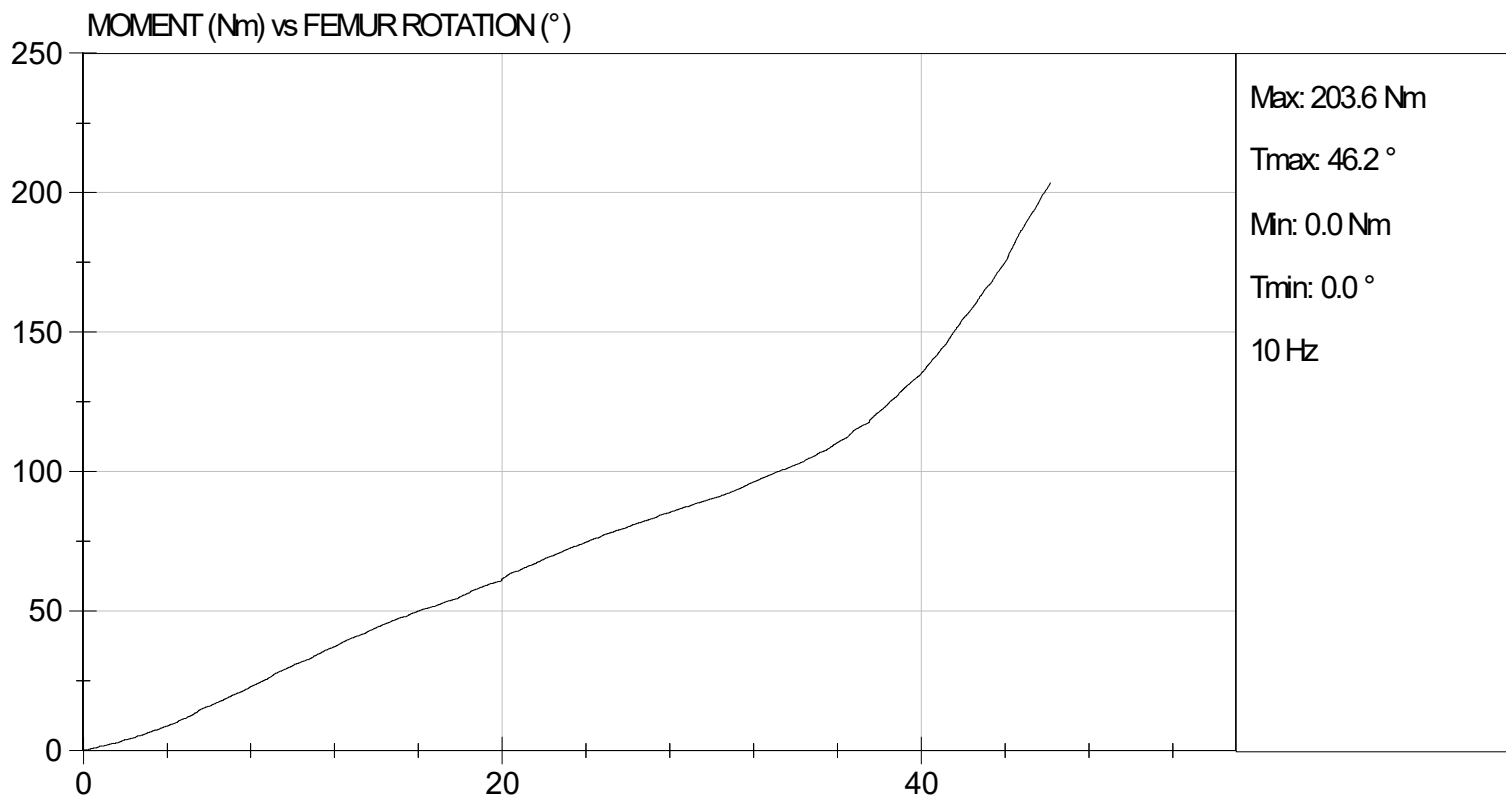
Test I.D: D242940

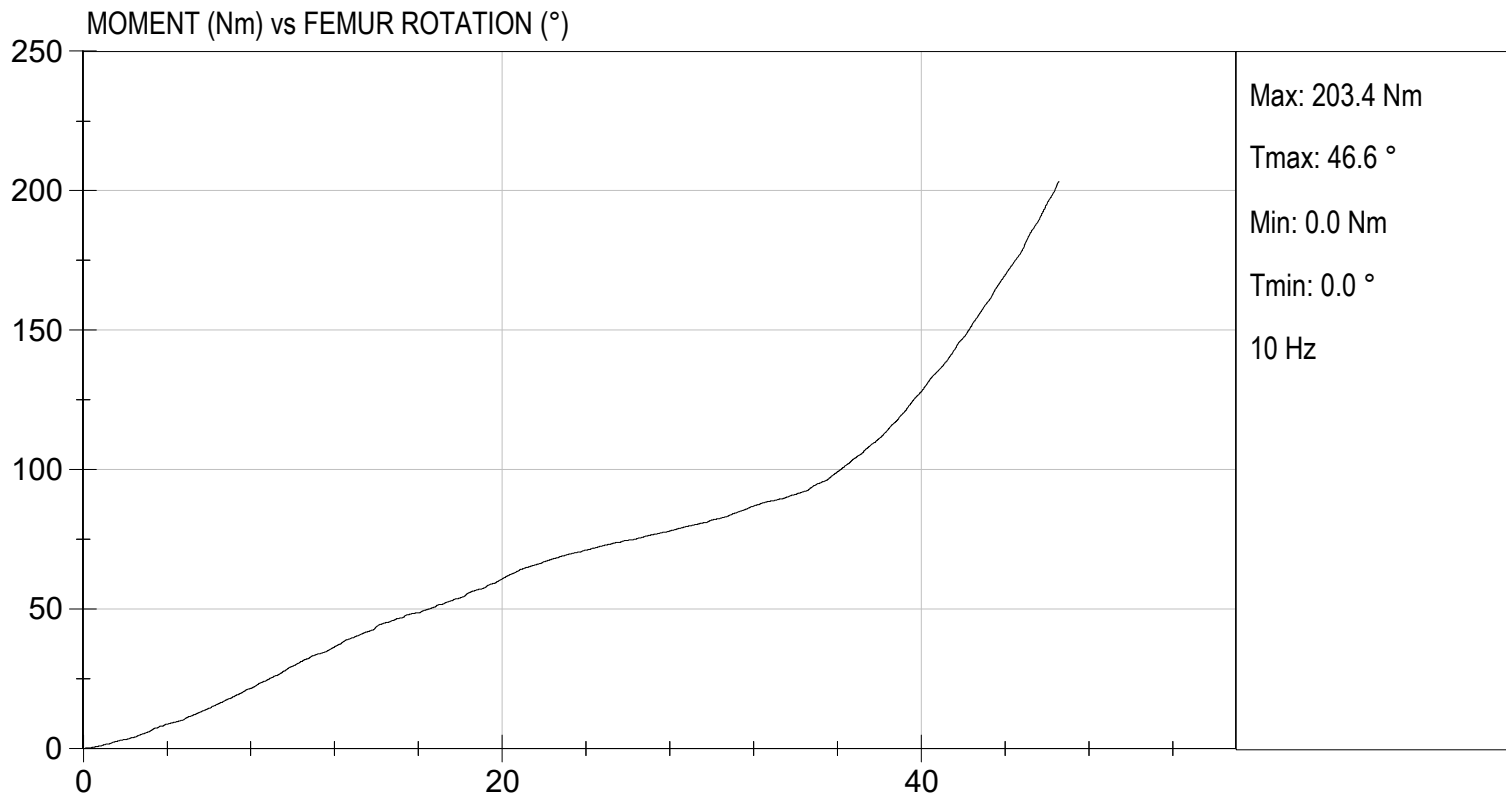
Tested Parameter	Units	Specification	Result		Pass/Fail
			Right	Left	
Laboratory Temperature	deg C	18.9 to 25.6	21.2	21.2	Pass
Laboratory Relative Humidity	%	10 to 70	43	43	Pass
Rotation Rate	deg/s	5.0 to 10.0	6.4	6.4	Pass
30 Degrees	Nm	94.9 Nm Max	90.3	81.9	Pass
150 ft-lbf / 203.4 Nm	Deg	40.0 to 50.0 Degree Max Rotation	46.2	46.6	Pass
Overall Test Results					Pass


 Laboratory Technician

11/11/2024
 Test Date


 Approved By





QUALIFICATION TEST RESULTS

PRE-TEST

HYBRID III 5TH PERCENTILE FEMALE - PASSENGER ATD

Hybrid III, 5th External Measurements
SN: 142

HYBRID III, PART 572, SUBPART O EXTERNAL DIMENSIONS				
DIMENSION	DESCRIPTION	DETAILS	ASSEMBLY DIMENSION (mm)	ACTUAL MEASUREMENT
A	TOTAL SITTING HEIGHT	Seat surface to highest point on top of the head.	774.7-800.1	775.0
B	SHOULDER PIVOT HEIGHT	Centerline of shoulder pivot bolt to the seat surface.	431.8-457.2	438.2
C	H-POINT HEIGHT	Reference	81.3-86.3	81.8
D	H-POINT LOCATION FROM BACKLINE	Reference	144.8-149.8	148.3
E	SHOULDER PIVOT FROM BACKLINE	Center of the shoulder clevis to the rear vertical surface of the fixture.	68.6-83.8	83.0
F	THIGH CLEARANCE	Measured at the highest point on the upper femur segment.	119.4-134.6	124.4
G	BACK OF ELBOW TO WRIST PIVOT	back of the elbow flesh to the wrist pivot in line with the elbow and wrist pivots	243.9-259.1	245.2
H	HEAD BACK TO BACKLINE	Back of Skull cap skin to seat rear vertical surface (Reference)	43.2-48.2	43.4
I	SHOULDER TO- ELBOW LENGTH	Measure from the highest point on top of the shoulder clevis to the lowest part of the flesh on the elbow in line with the elbow pivot bolt.	276.8-297.2	281.1
J	ELBOW REST HEIGHT	Measure from the flesh below the elbow pivot bolt to the seat surface.	182.8-203.2	197.2
K	BUTTOCK TO KNEE LENGTH	The forward most part of the knee flesh to the rear vertical surface of the fixture.	520.7-546.1	537.2
L	POPLITEAL HEIGHT	Seat surface to the plane of the horizontal plane of the bottom of the feet.	355.6-376	358.8
M	KNEE PIVOT HEIGHT	Centerline of knee pivot bolt to the horizontal plane of the bottom of the feet.	393.7-419.1	403.1
N	BUTTOCK POPLITEAL LENGTH	The rearmost surface of the lower leg to the same point on the rear surface of the buttocks used for dim. "K".	414-439.4	435.2

HYBRID III, SUBPART O EXTERNAL DIMENSIONS, continued				
DIMENSION	DESCRIPTION	DETAILS	ASSEMBLY DIMENSION (mm)	ACTUAL MEASUREMENT
O	CHEST DEPTH WITHOUT JACKET	Measured 304.8 ± 5.1 mm above seat surface	175.3-190.5	181.2
P	FOOT LENGTH	Tip of toe to rear of heel	218.5-233.7	227.3
Q	STANDING HEIGHT	(THEORETICAL)	1501.1	N/A
R	BUTTOCK TO KNEE PIVOT LENGTH	The rear surface of the buttocks to the knee pivot bolt	457.2-482.6	475.0
S	HEAD BREADTH	The widest part of the head	137.1-147.3	138.6
T	HEAD DEPTH	Back of the head to the forehead	177.8-188	181.0
U	HIP BREADTH	The widest part of the hip	299.7-314.9	308.4
V	SHOULDER BREADTH	Outside edges of right and left shoulder clevises	350.5-365.7	362.1
W	FOOT BREADTH	The widest part of the foot	78.8-94	82.8
X	HEAD CIRCUMFERENCE	Measured at the point as in dim. "T"	528.3-548.7	545.2
Y	CHEST CIRCUMFERENCE (WITH CHEST JACKET)	Measured 345.4 ± 12.7 mm above seat surface	850.9-881.3	870.7
Z	WAIST CIRCUMFERENCE	Measured 165.1 ± 5.1 mm above seat surface	759.5-789.9	779.9
AA	REFERENCE LOCATION FOR MEASUREMENT OF CHEST CIRCUMFERENCE	Reference	332.7-358.1	350.1
BB	REFERENCE LOCATION FOR MEASUREMENT OF WAIST CIRCUMFERENCE	Reference	160.1-170.2	170.0

MGA RESEARCH CORPORATION

HEAD DROP TEST

HYBRID III 5TH PERCENTILE

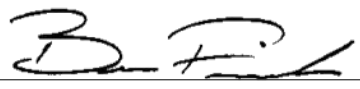
ATD Serial No: 142

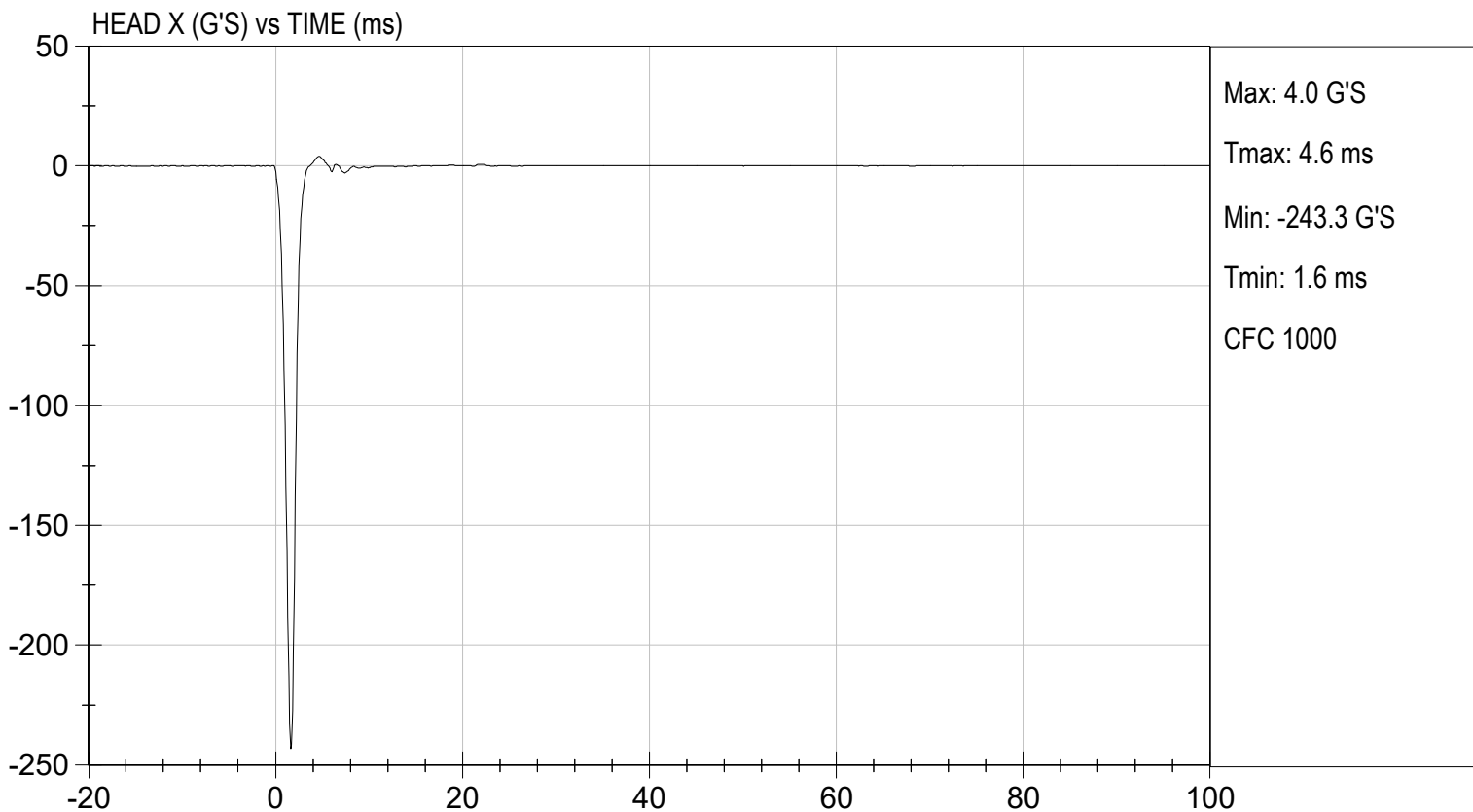
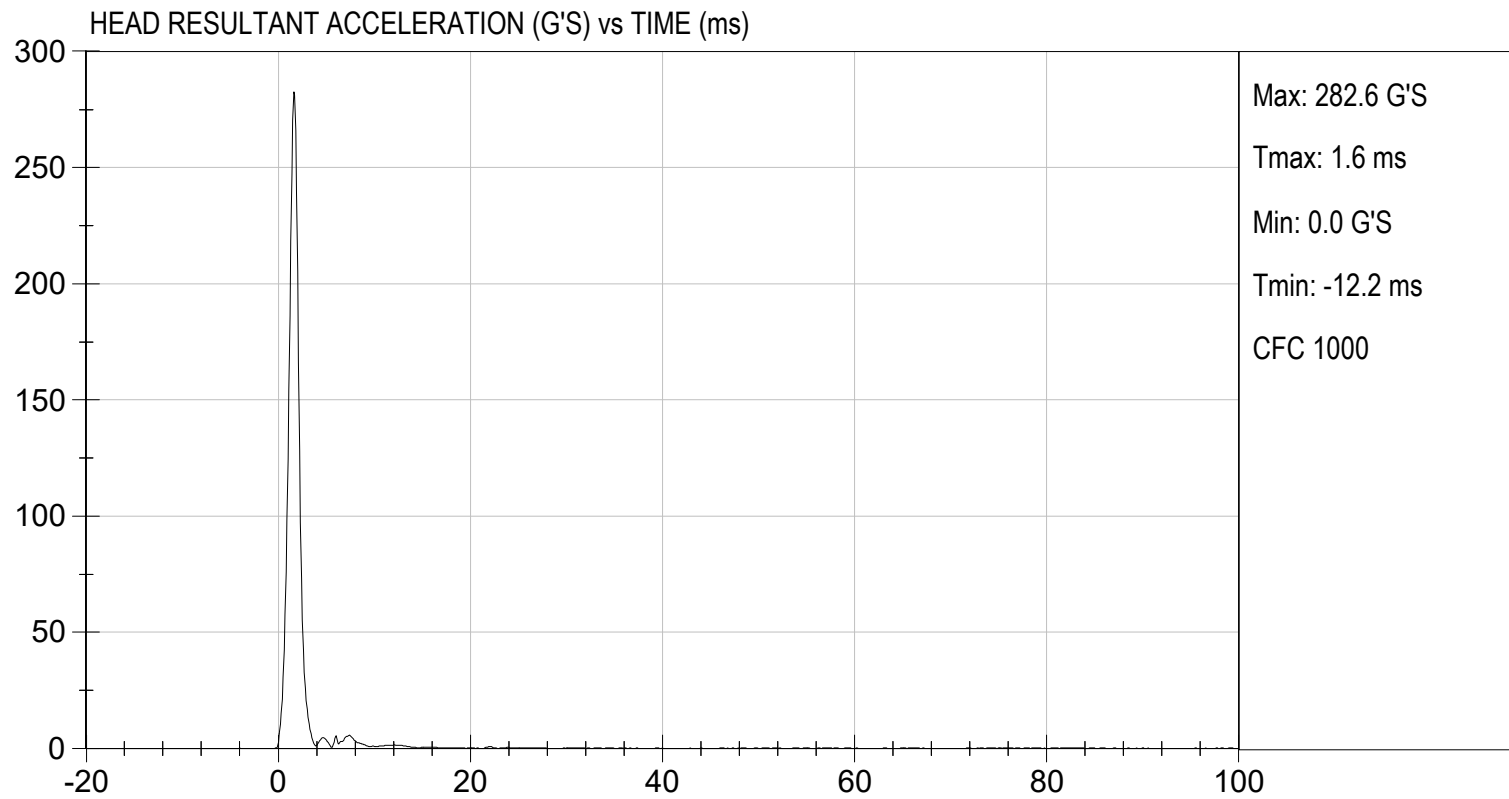
Test ID: D242381

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.3	Pass
Laboratory Relative Humidity	%	10 to 70	46	Pass
Peak Resultant Acceleration	G's	250 to 300	283	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	6.5	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 10% of peak	Yes	Pass
Overall Test Results				Pass

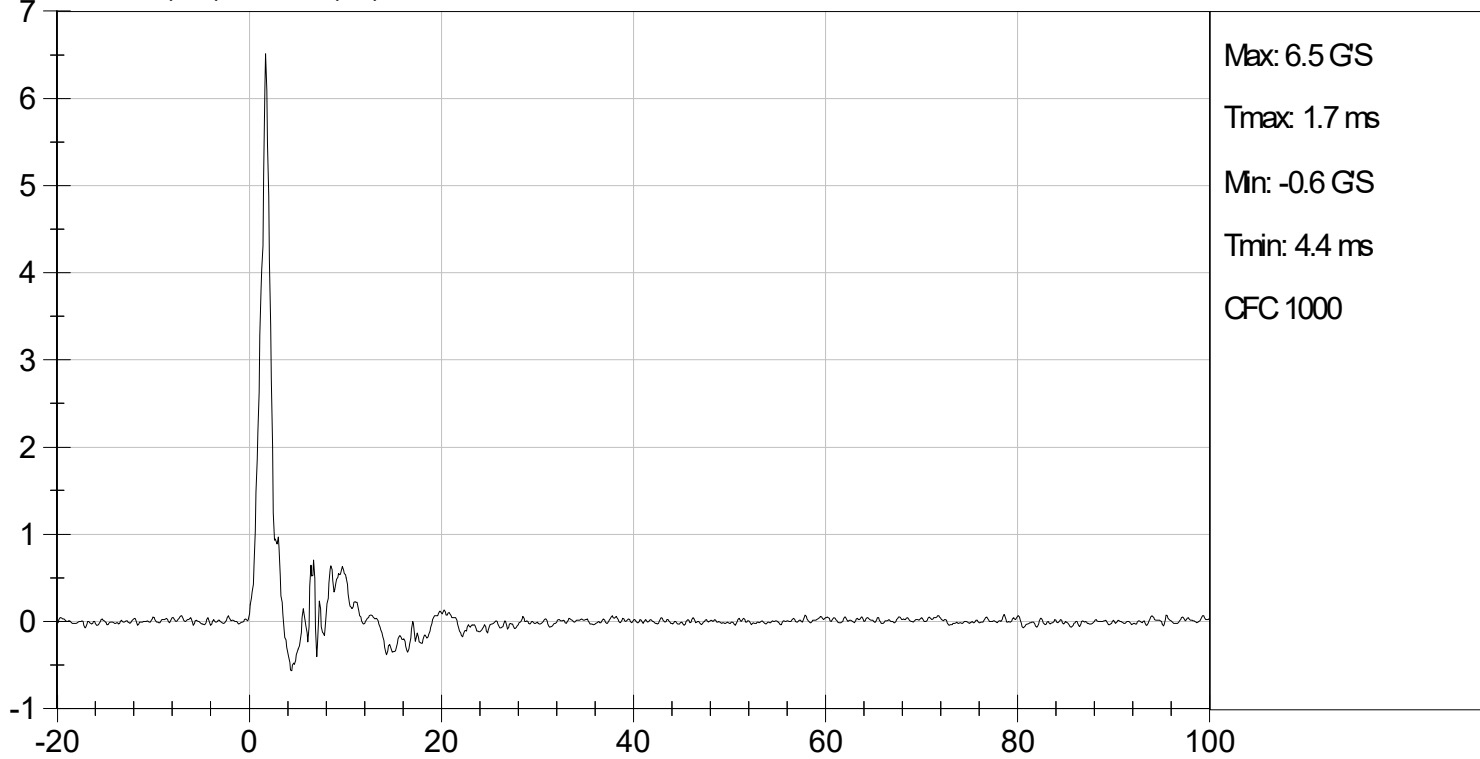

 Laboratory Technician

09/19/2024
 Test Date

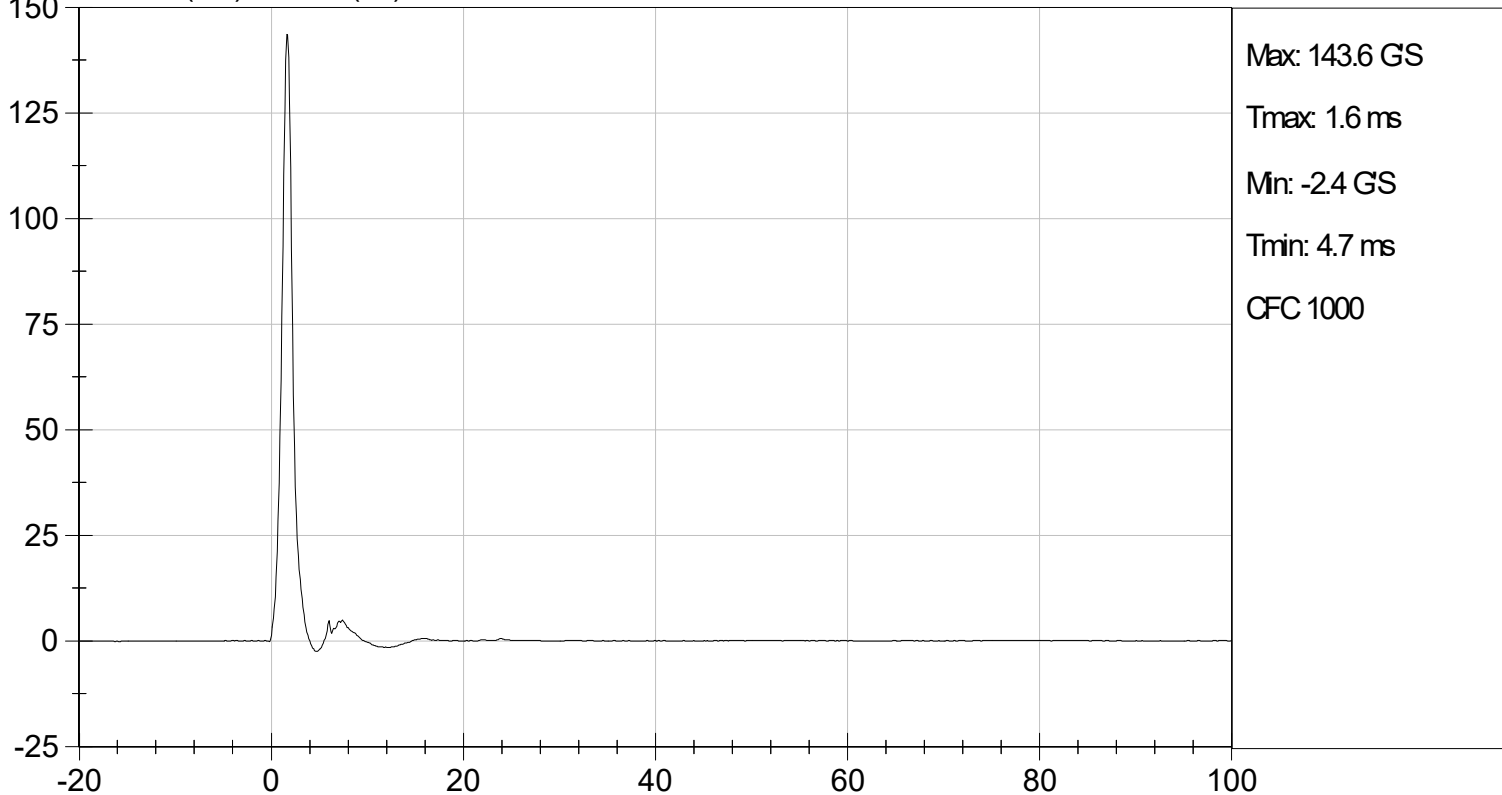

 Approved By



HEAD Y (GS) vs TIME (ms)



HEAD Z (GS) vs TIME (ms)



MGA RESEARCH CORPORATION

NECK FLEXION TEST

HYBRID III 5TH PERCENTILE

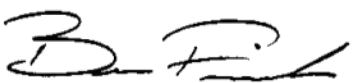
ATD Serial No: 142

Test I.D: D242382

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.4	Pass
Laboratory Relative Humidity		%	10 to 70	43	Pass
Pendulum Speed		m/s	6.89 to 7.13	7.06	Pass
Pendulum Velocity	10 ms	m/s	2.1 to 2.5	2.1	Pass
	20 ms	m/s	4.0 to 5.0	4.2	Pass
	30 ms	m/s	5.8 to 7.0	6.6	Pass
D Plane Rotation	Max	deg	77 to 91	80	Pass
Occipital Condyle Moment within Rotation Corridor		Nm	69 to 83	71	Pass
Positive Moment Time Curve Decay to 10 Nm		ms	80 to 100	88	Pass
Overall Results					Pass


Laboratory Technician

09/19/2024
Test Date

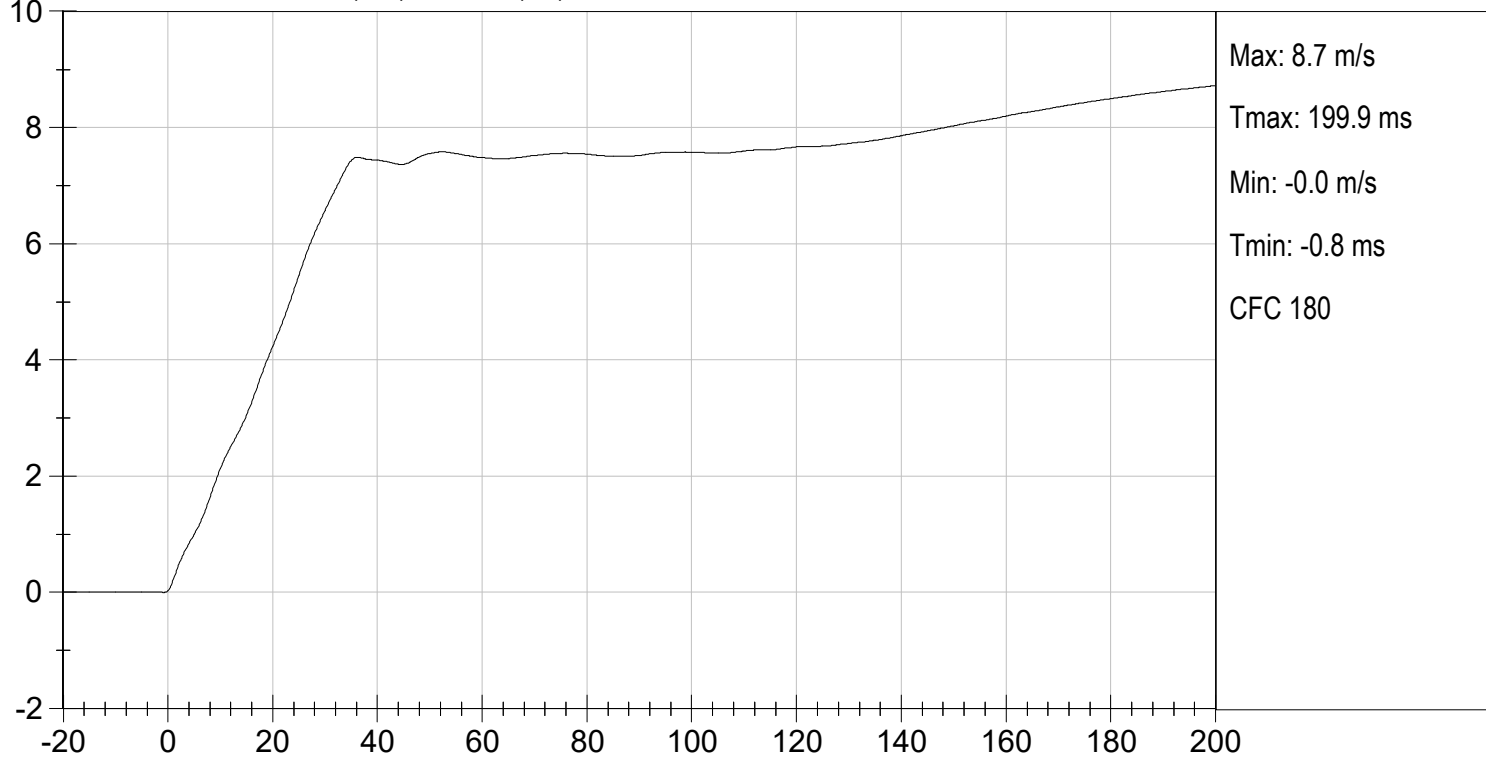

Approved By



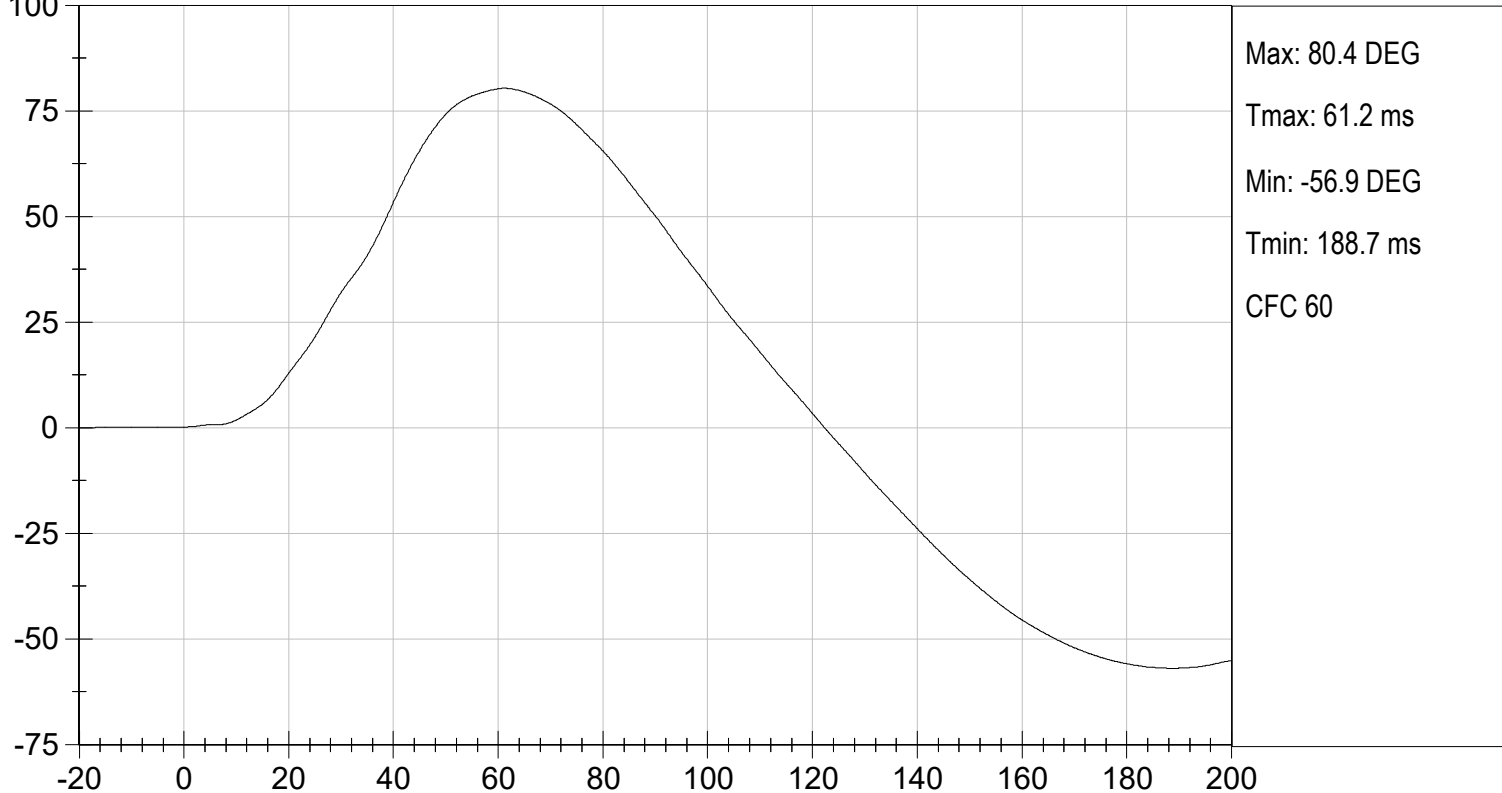
TEST DESC: NECK FLEXION
VELOCITY: 23.15 ft/s, 7.06 m/s

TEST DATE: 09/19/2024
TEST #: D242382

PENDULUM VELOCITY (m/s) vs TIME (ms)



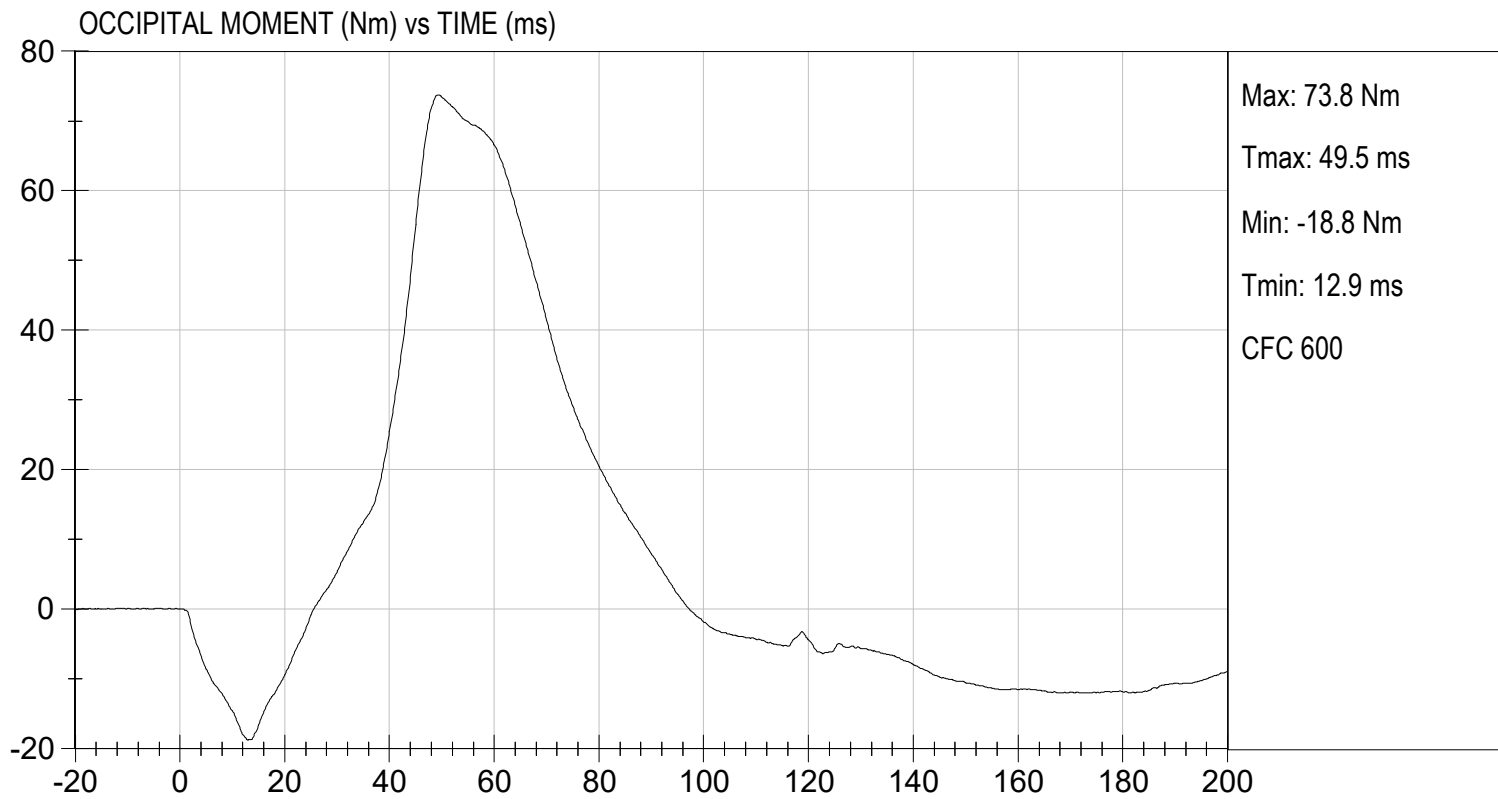
NECK ROTATION (DEG) vs TIME (ms)





TEST DESC: NECK FLEXION
VELOCITY: 23.15 ft/s, 7.06 m/s

TEST DATE: 09/19/2024
TEST #: D242382



MGA RESEARCH CORPORATION
NECK EXTENSION TEST
HYBRID III 5TH PERCENTILE

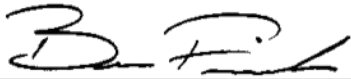
ATD Serial No: 142

Test I.D: D242383

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.4	Pass
Laboratory Relative Humidity		%	10 to 70	43	Pass
Pendulum Speed		m/s	5.95 to 6.19	6.05	Pass
Pendulum Velocity	10 ms	m/s	1.5 to 1.9	1.8	Pass
	20 ms	m/s	3.1 to 3.9	3.7	Pass
	30 ms	m/s	4.6 to 5.6	5.4	Pass
D Plane Rotation	Max	deg	99 to 114	109	Pass
Occipital Condyle Moment within Rotation Corridor		Nm	-65 to -53	-58	Pass
Negative Moment Time Curve Decay to -10 Nm		ms	94 to 114	105	Pass
Overall Results					Pass


Laboratory Technician

09/19/2024
Test Date

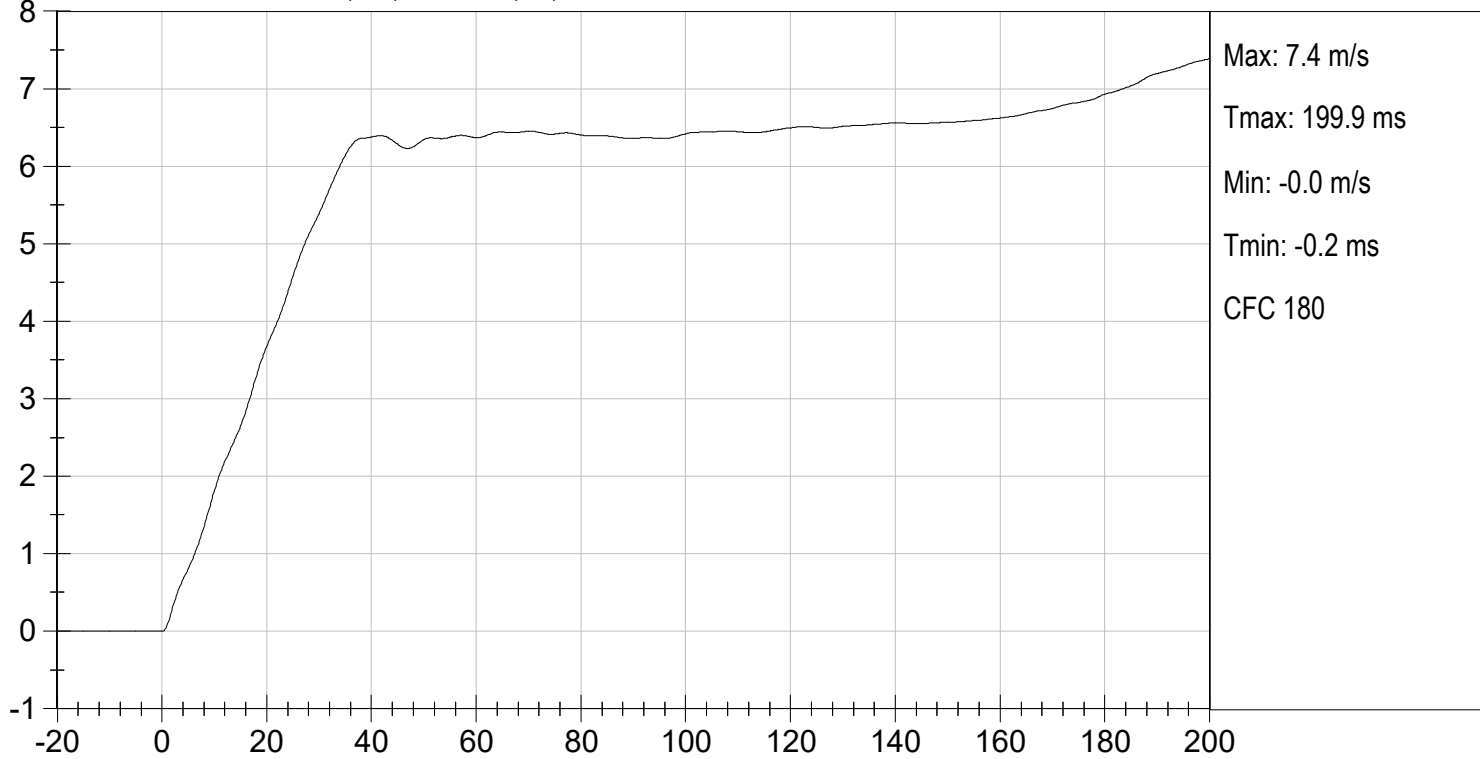

Approved By



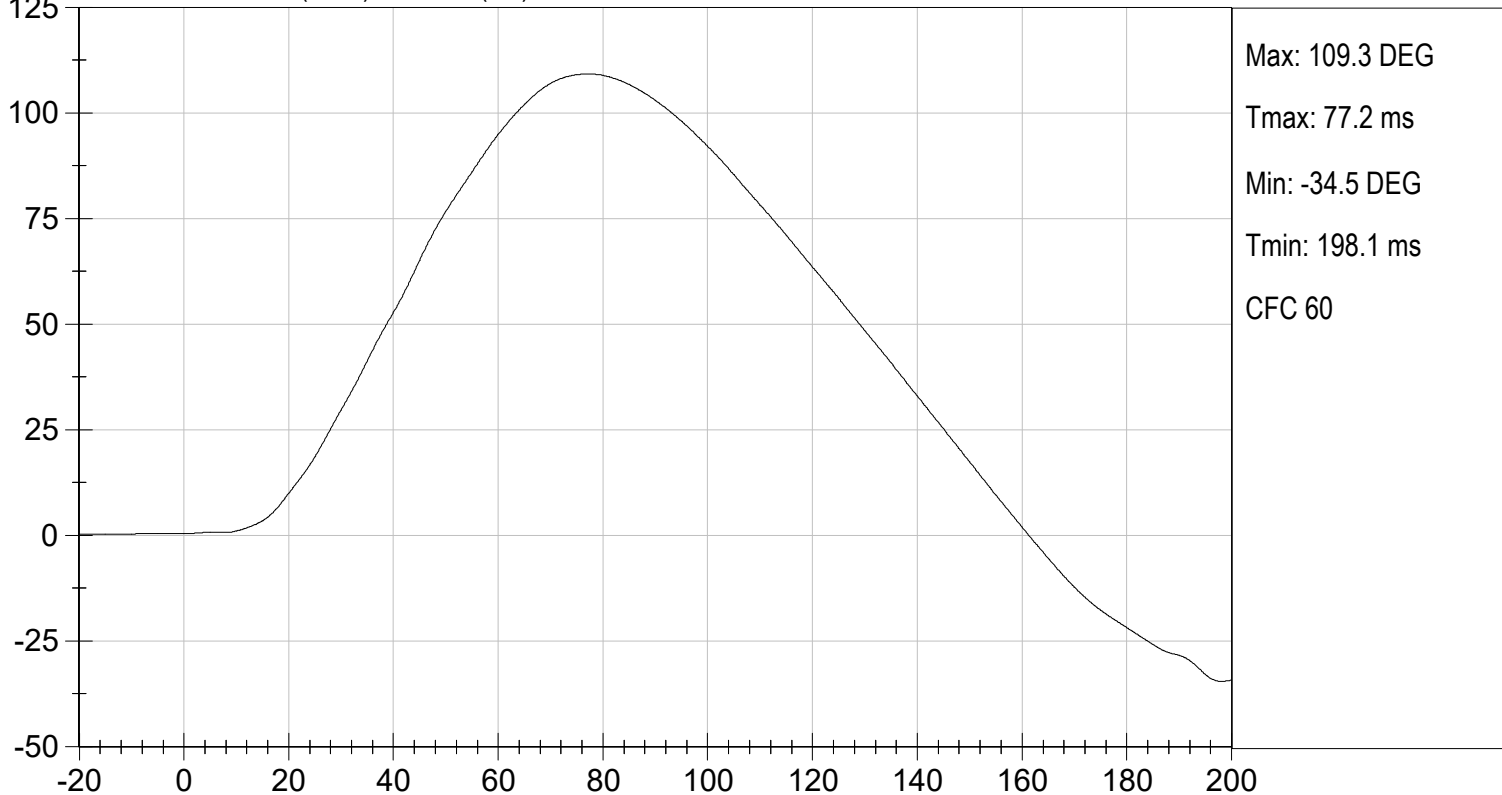
TEST DESC: NECK EXTENSION
VELOCITY: 19.84 ft/s, 6.05 m/s

TEST DATE: 09/19/2024
TEST #: D242383

PENDULUM VELOCITY (m/s) vs TIME (ms)



NECK ROTATION (DEG) vs TIME (ms)





TEST DESC: NECK EXTENSION
VELOCITY: 19.84 ft/s, 6.05 m/s

TEST DATE: 09/19/2024
TEST #: D242383



MGA RESEARCH CORPORATION

THORAX IMPACT

HYBRID III 5TH PERCENTILE

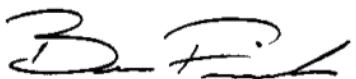
ATD Serial No: 142

Test I.D: D242384

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.2	Pass
Relative Humidity	%	10 to 70	46	Pass
Probe Speed	m/s	6.59 to 6.83	6.68	Pass
Peak Deflection	mm	50 to 58	52	Pass
Peak Resistive Force w/in Deflection Corridor	N	3900 to 4400	4252	Pass
Internal Hysteresis	%	69 to 85	75	Pass
Peak Force 18 mm - 50 mm	N	<= 4600	4287	Pass
			Overall Test Results	Pass


Laboratory Technician

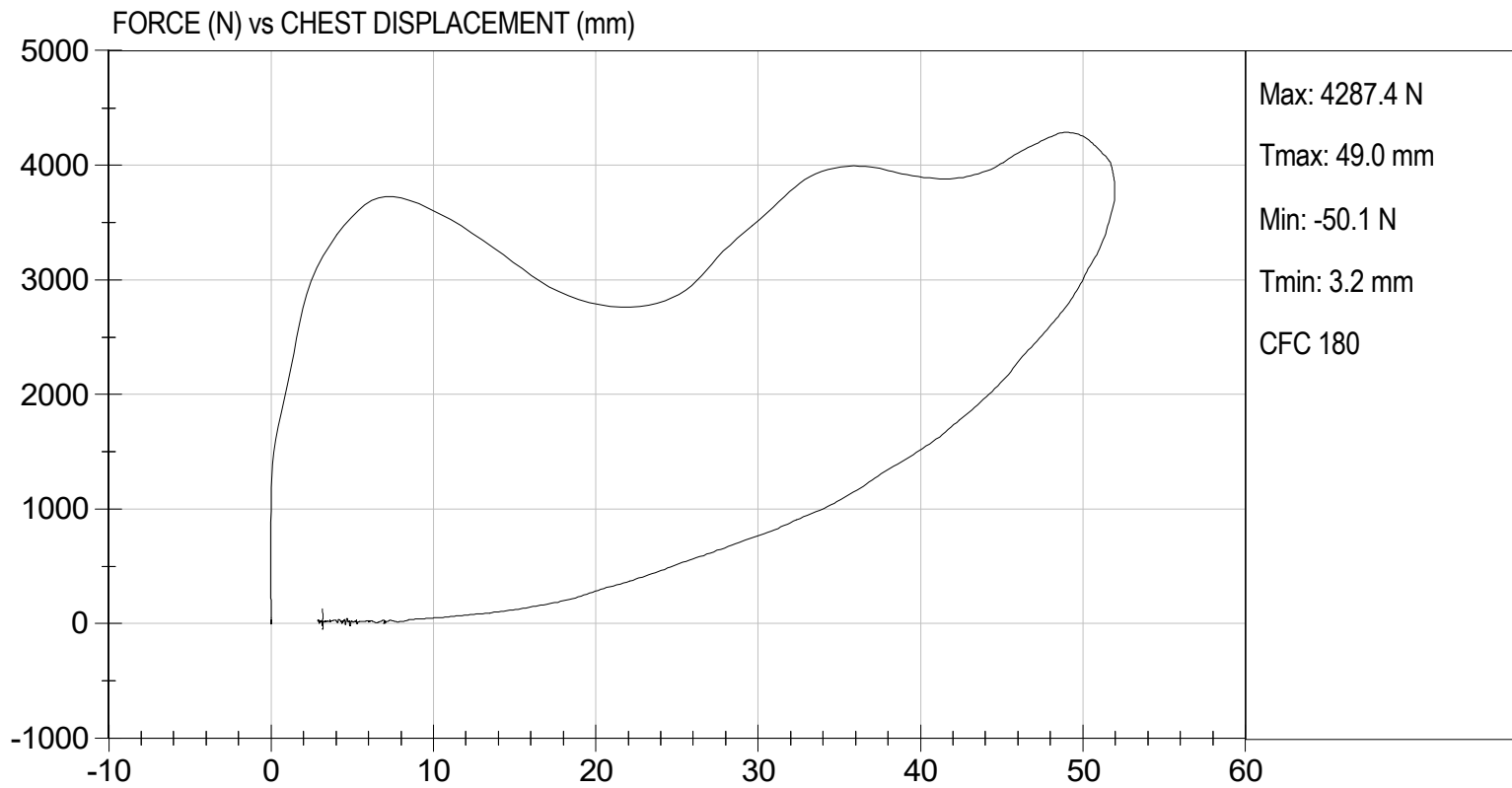
09/19/2024
Test Date


Approved By



TEST DESC: THORAX IMPACT
VELOCITY: 21.93 ft/s, 6.68 m/s

TEST DATE: 09/19/2024
TEST #: D242384



MGA RESEARCH CORPORATION

RIGHT KNEE IMPACT TEST

HYBRID III 5TH PERCENTILE

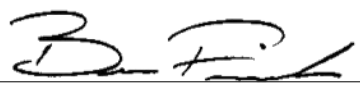
ATD Serial No: 142

Test I.D: D242385

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.3	Pass
Laboratory Relative Humidity	%	10 to 70	46	Pass
Probe Speed	m/s	2.07 to 2.13	2.10	Pass
Maximum Force	N	3450 to 4060	3802	Pass
			Overall Test Results	Pass


Laboratory Technician

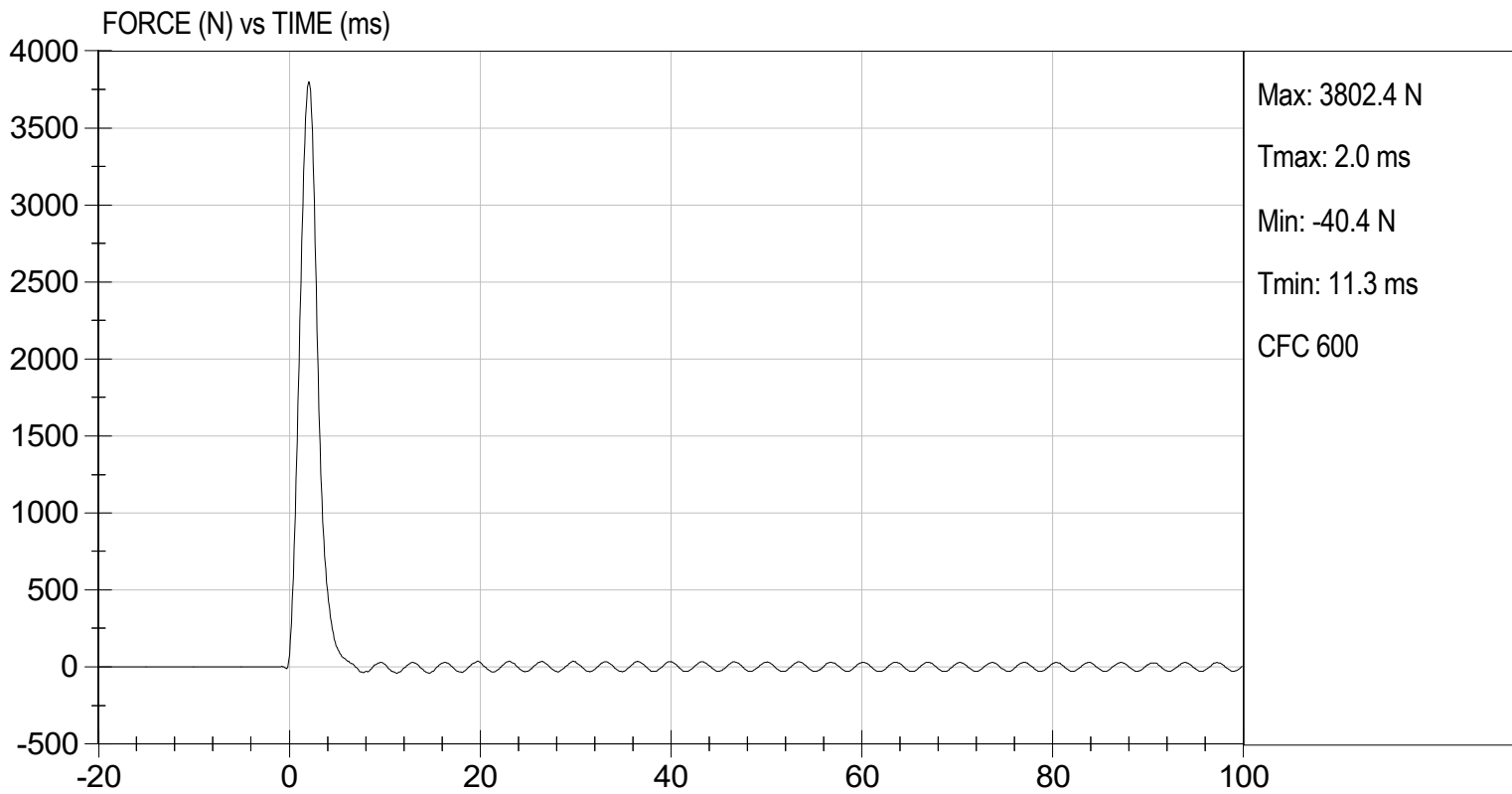
09/19/2024
Test Date


Approved By



TEST DESC: RIGHT KNEE
VELOCITY: 6.89 ft/s, 2.10 m/s

TEST DATE: 09/19/2024
TEST #: D242385



MGA RESEARCH CORPORATION

**LEFT KNEE IMPACT TEST
HYBRID III 5TH PERCENTILE**

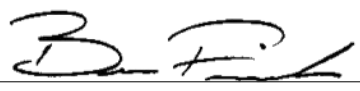
ATD Serial No: 142

Test I.D: D242386

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.3	Pass
Laboratory Relative Humidity	%	10 to 70	46	Pass
Probe Speed	m/s	2.07 to 2.13	2.10	Pass
Maximum Force	N	3450 to 4060	3935	Pass
Overall Test Results				Pass


Laboratory Technician

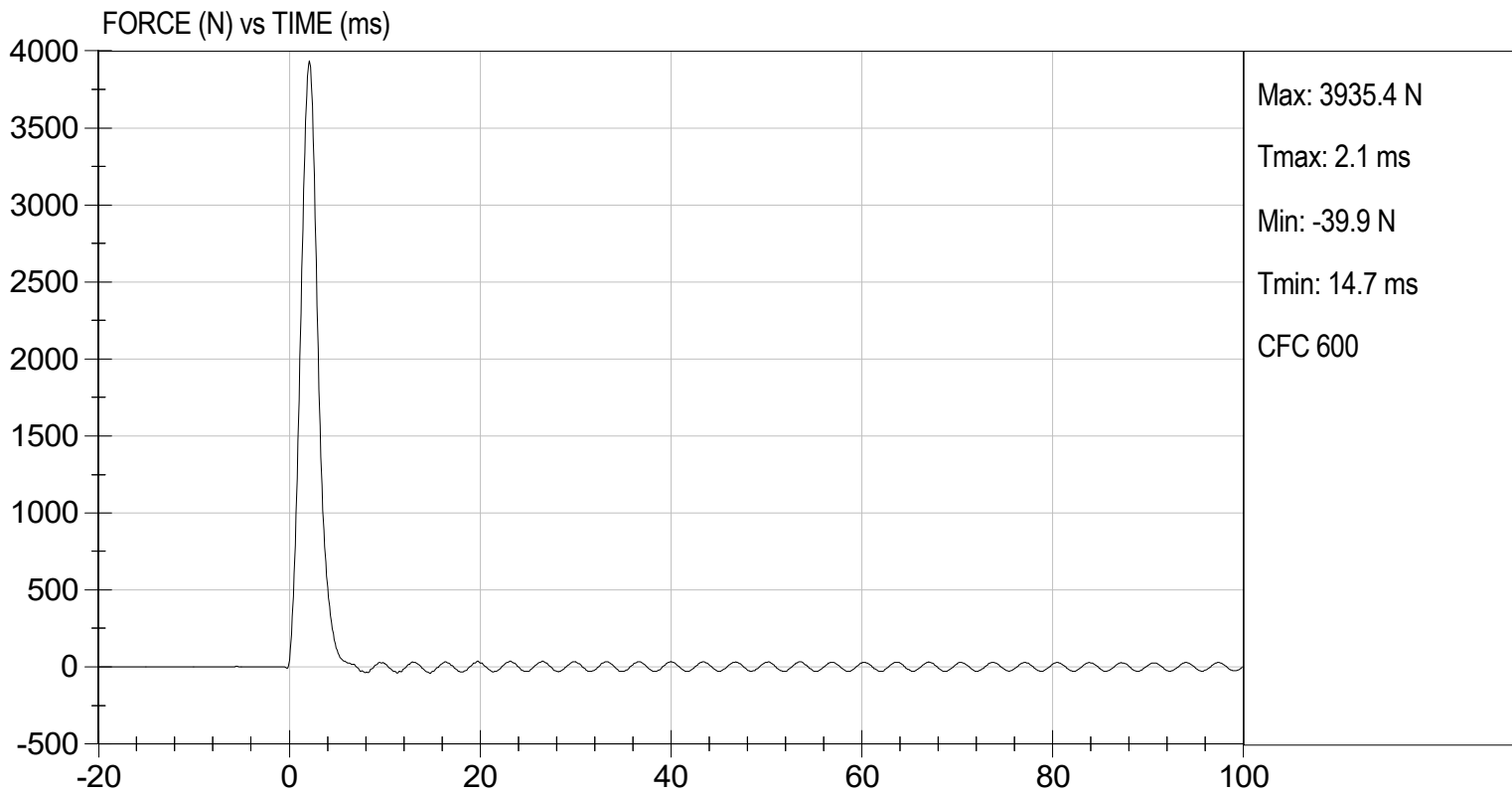
09/19/2024
Test Date


Approved By



TEST DESC: LEFT KNEE
VELOCITY: 6.89 ft/s, 2.10 m/s

TEST DATE: 09/19/2024
TEST #: D242386



MGA RESEARCH CORPORATION

TORSO FLEXION TEST

HYBRID III 5TH PERCENTILE

ATD Serial No: 142

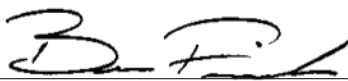
Test I.D: D242387

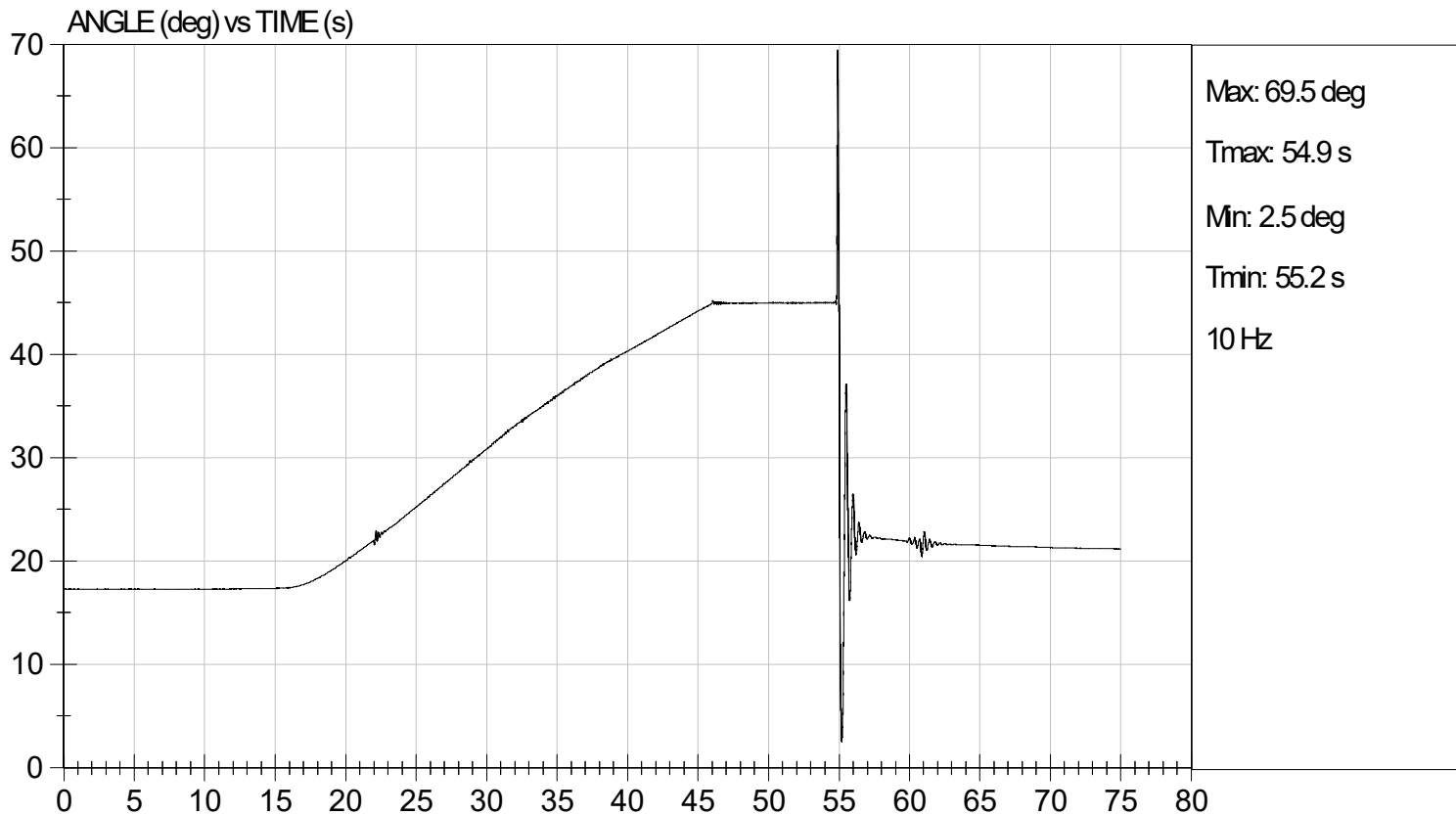
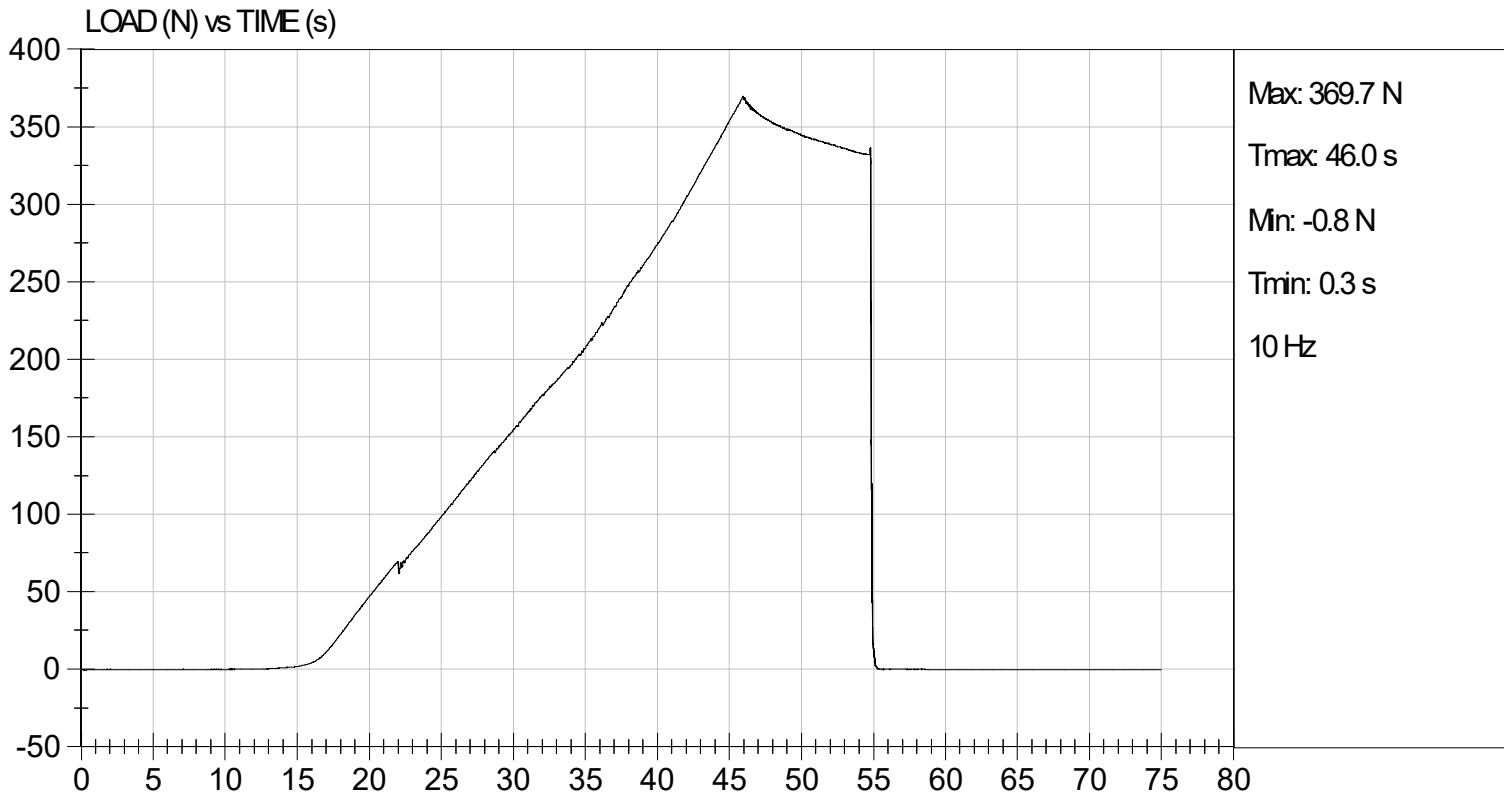
Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.3	Pass
Laboratory Relative Humidity	%	10 to 70	46	Pass
Initial Angle	deg	0 to 20	17	Pass
Return Angle	deg	+/- 8	4	Pass
Force at 45 deg	N	320 to 390	370	Pass
Upper Torso Deflection Rate	deg/s	0.5 to 1.5	1.0	Pass
Overall Result			Pass	


Laboratory Technician

09/19/2024

Test Date


Approved By



QUALIFICATION TEST RESULTS

POST-TEST

HYBRID III 5TH PERCENTILE FEMALE - PASSENGER ATD

MGA RESEARCH CORPORATION

HEAD DROP TEST

HYBRID III 5TH PERCENTILE

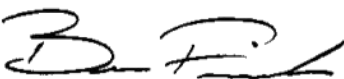
ATD Serial No: 142

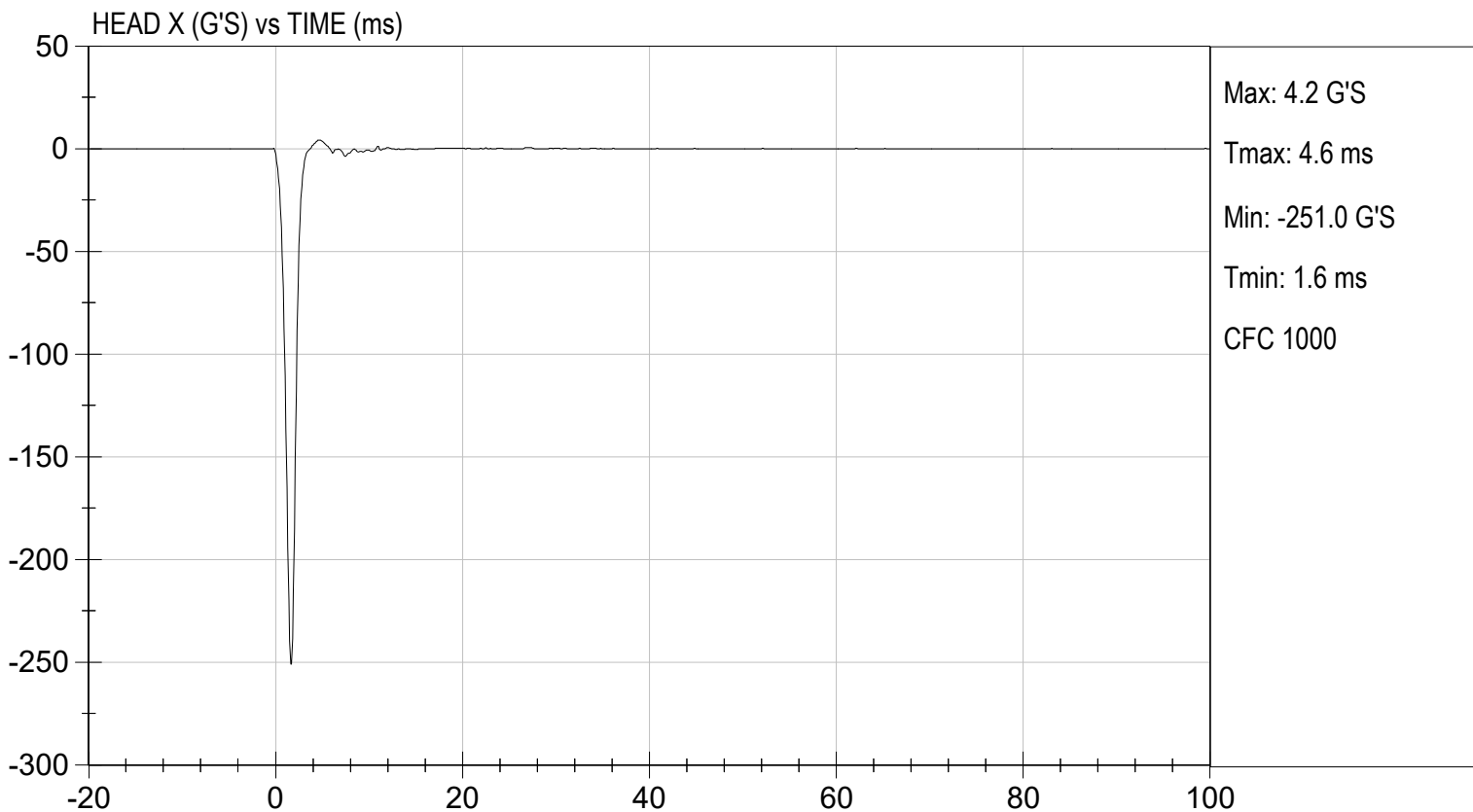
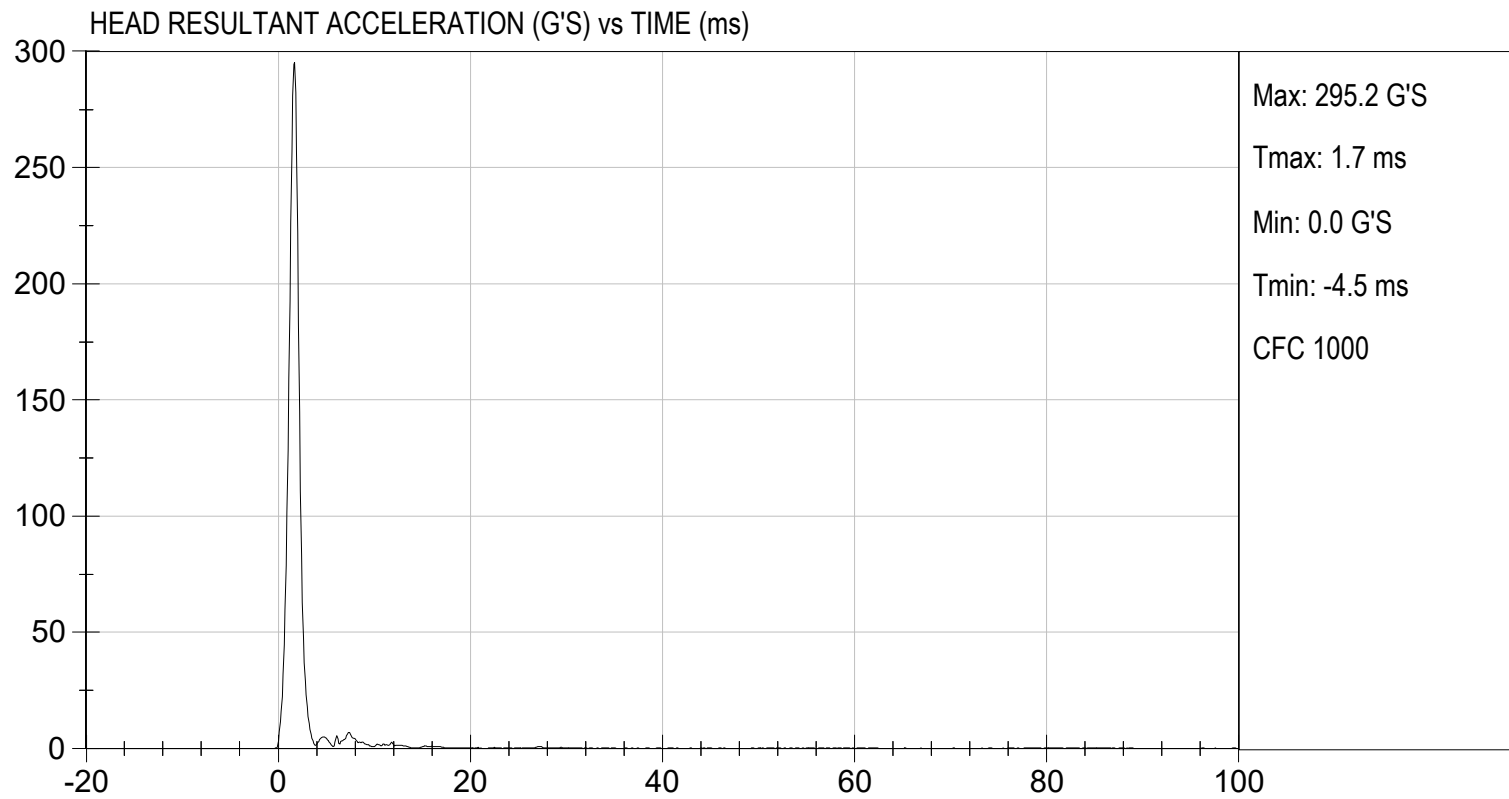
Test ID: D242931

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.3	Pass
Laboratory Relative Humidity	%	10 to 70	40	Pass
Peak Resultant Acceleration	G's	250 to 300	295	Pass
Peak Lateral Acceleration	G's	<= +/- 15.0	4.6	Pass
Unimodal	N/A	Yes	Yes	Pass
Oscillations	N/A	within 10% of peak	Yes	Pass
Overall Test Results				Pass


Laboratory Technician

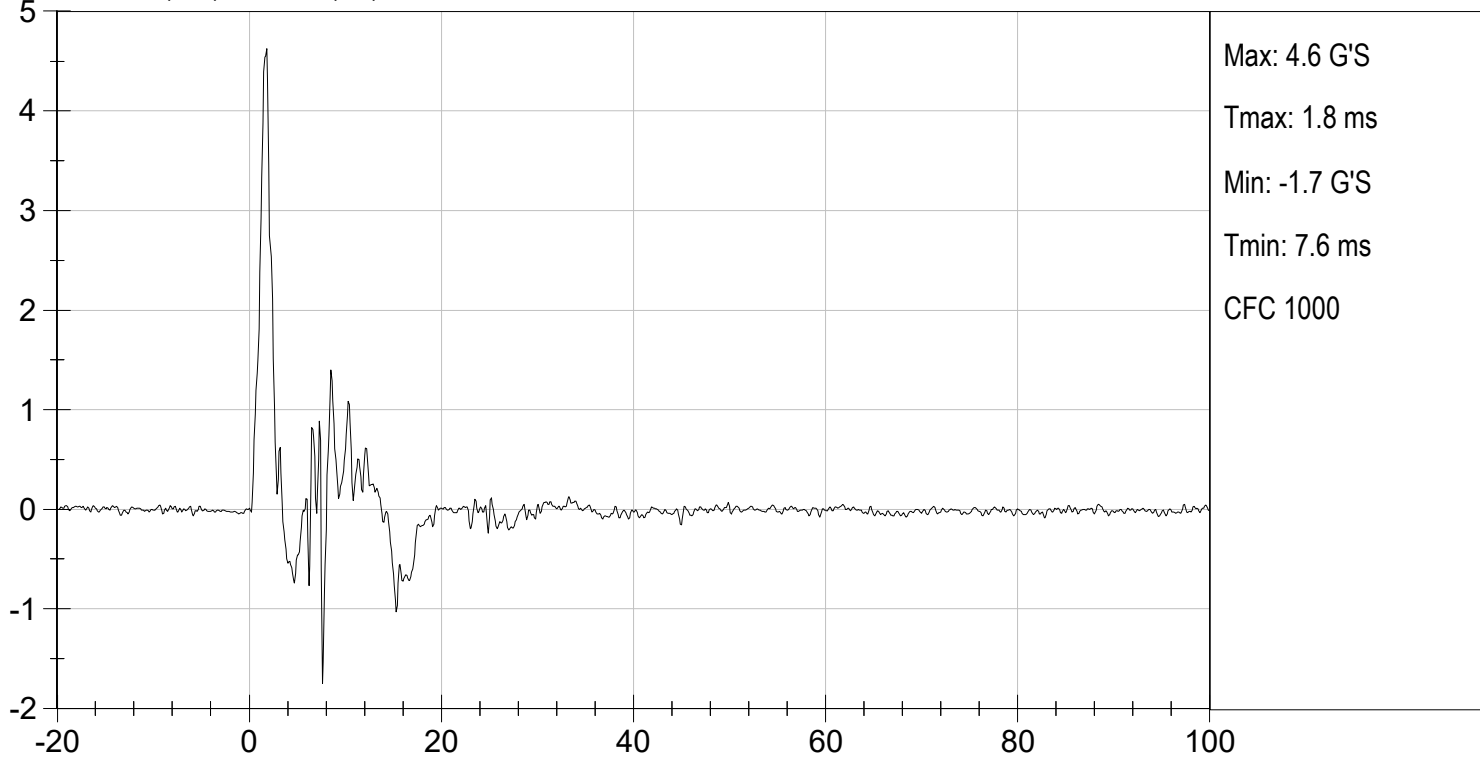
11/11/2024
Test Date


Approved By

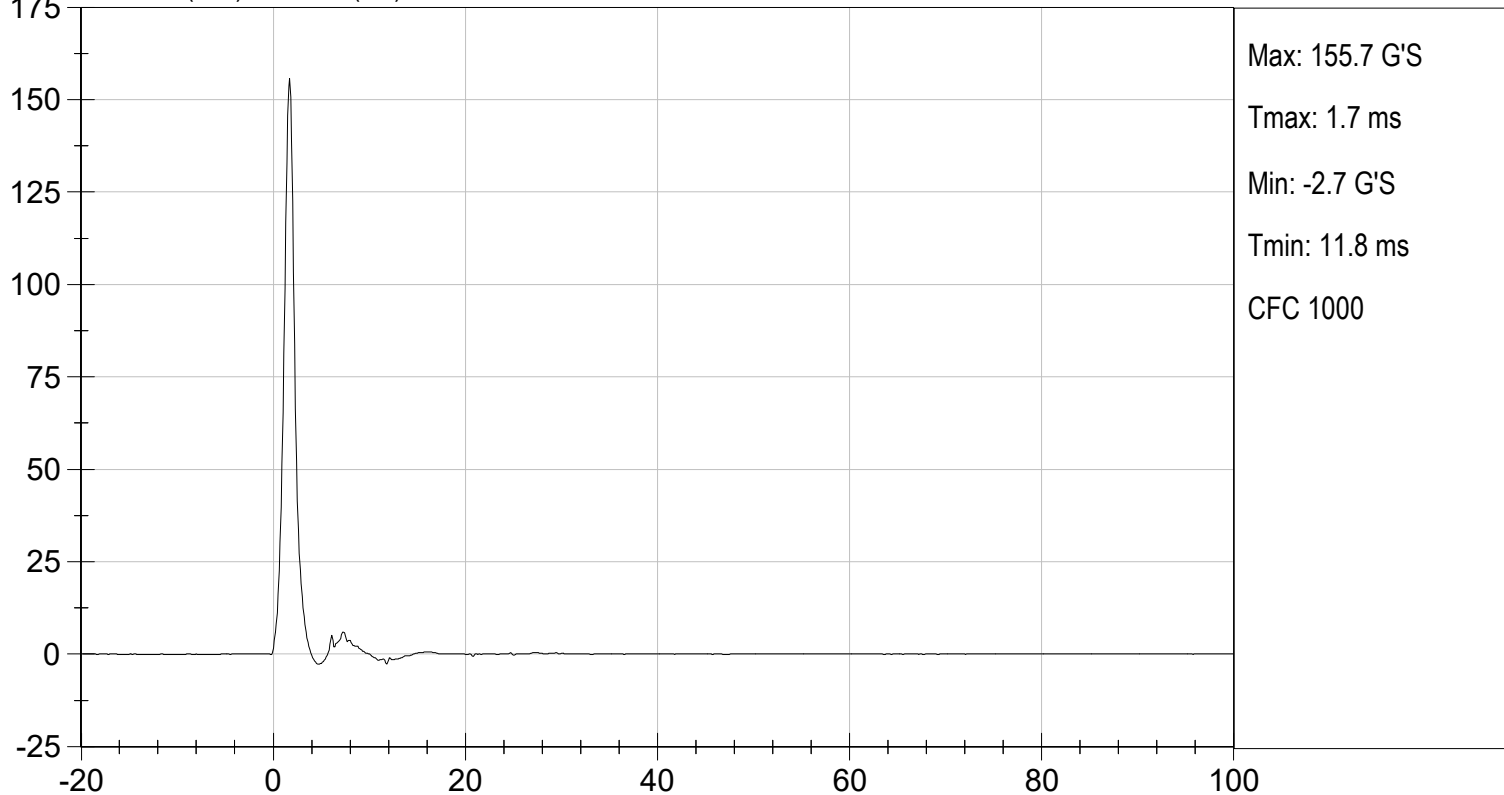




HEAD Y (G'S) vs TIME (ms)



HEAD Z (G'S) vs TIME (ms)



MGA RESEARCH CORPORATION

NECK FLEXION TEST

HYBRID III 5TH PERCENTILE

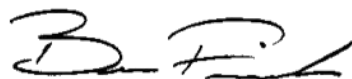
ATD Serial No: 142

Test I.D: D242932

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.3	Pass
Laboratory Relative Humidity		%	10 to 70	40	Pass
Pendulum Speed		m/s	6.89 to 7.13	7.06	Pass
Pendulum Velocity	10 ms	m/s	2.1 to 2.5	2.2	Pass
	20 ms	m/s	4.0 to 5.0	4.3	Pass
	30 ms	m/s	5.8 to 7.0	6.3	Pass
D Plane Rotation	Max	deg	77 to 91	79	Pass
Occipital Condyle Moment within Rotation Corridor		Nm	69 to 83	73	Pass
Positive Moment Time Curve Decay to 10 Nm		ms	80 to 100	88	Pass
Overall Results					Pass


Laboratory Technician

11/11/2024
Test Date

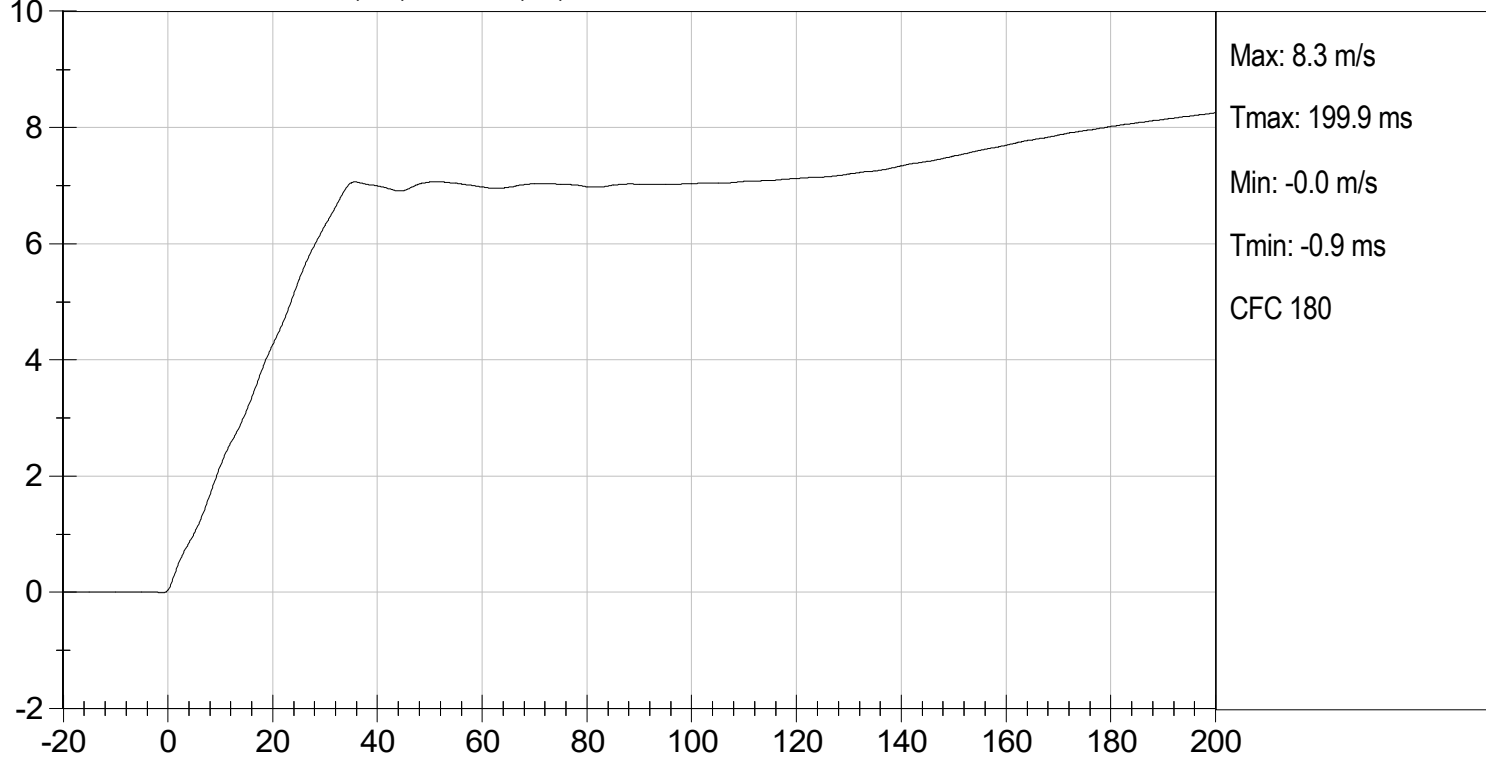

Approved By



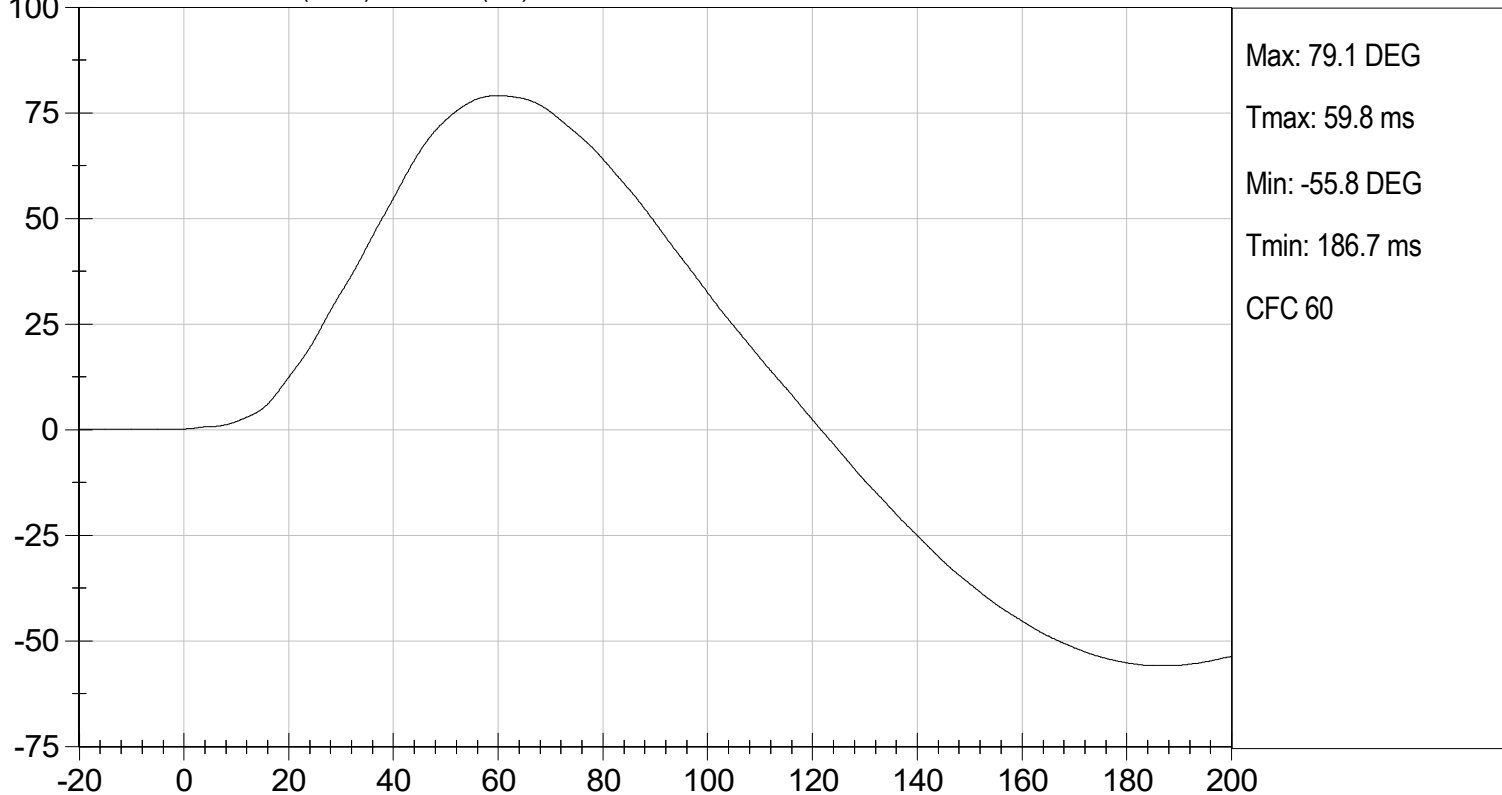
TEST DESC: NECK FLEXION
VELOCITY: 23.15 ft/s, 7.06 m/s

TEST DATE: 11/11/2024
TEST #: D242932

PENDULUM VELOCITY (m/s) vs TIME (ms)



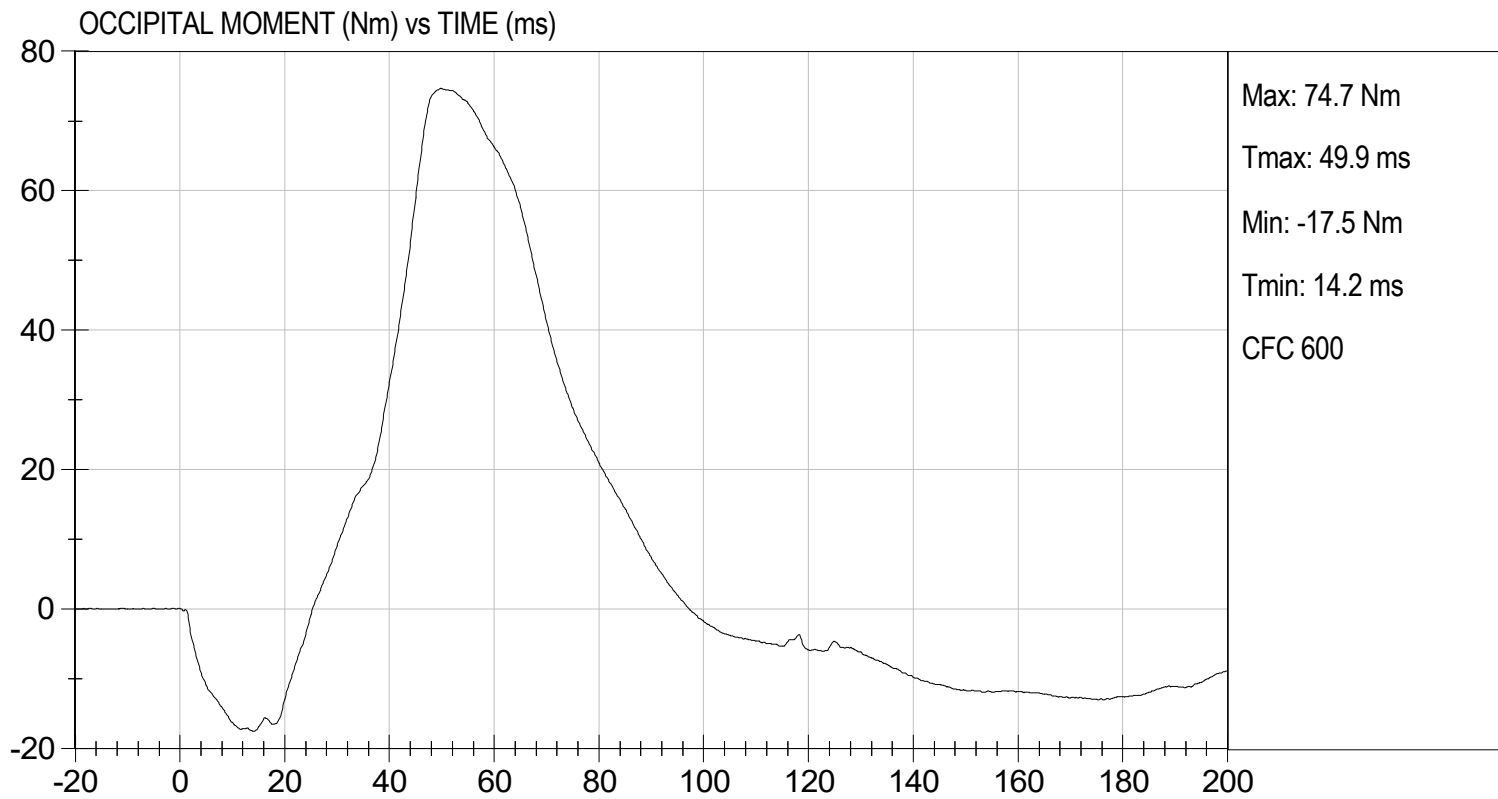
NECK ROTATION (DEG) vs TIME (ms)





TEST DESC: NECK FLEXION
VELOCITY: 23.15 ft/s, 7.06 m/s

TEST DATE: 11/11/2024
TEST #: D242932



MGA RESEARCH CORPORATION

NECK EXTENSION TEST

HYBRID III 5TH PERCENTILE

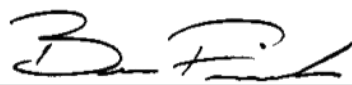
ATD Serial No: 142

Test I.D: D242933

Tested Parameter		Units	Specification	Result	Pass/Fail
Laboratory Temperature		deg C	20.6 to 22.2	21.3	Pass
Laboratory Relative Humidity		%	10 to 70	40	Pass
Pendulum Speed		m/s	5.95 to 6.19	6.14	Pass
Pendulum Velocity	10 ms	m/s	1.5 to 1.9	1.7	Pass
	20 ms	m/s	3.1 to 3.9	3.4	Pass
	30 ms	m/s	4.6 to 5.6	5	Pass
D Plane Rotation	Max	deg	99 to 114	107	Pass
Occipital Condyle Moment within Rotation Corridor		Nm	-65 to -53	-55	Pass
Negative Moment Time Curve Decay to -10 Nm		ms	94 to 114	108	Pass
Overall Results					Pass


Laboratory Technician

11/11/2024
Test Date

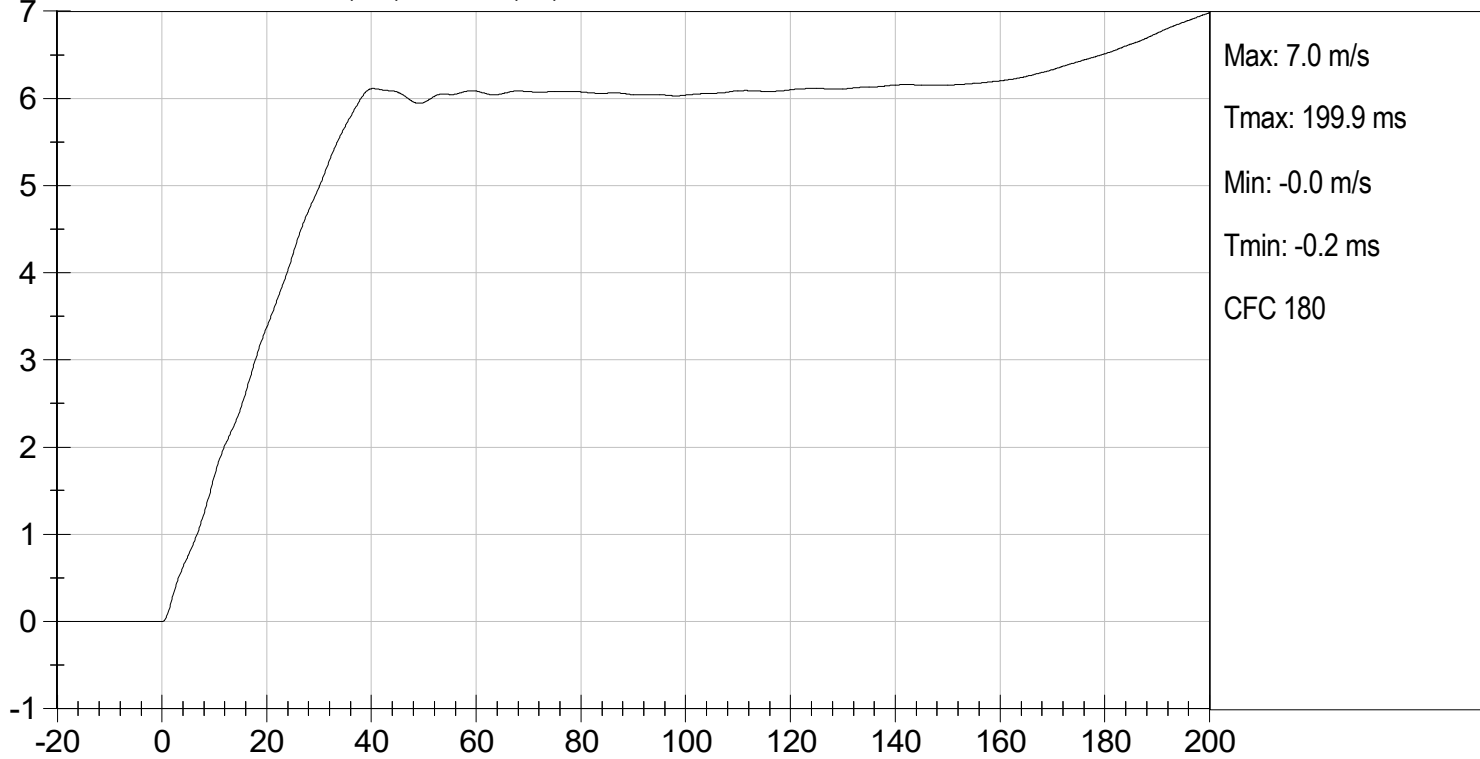

Approved By



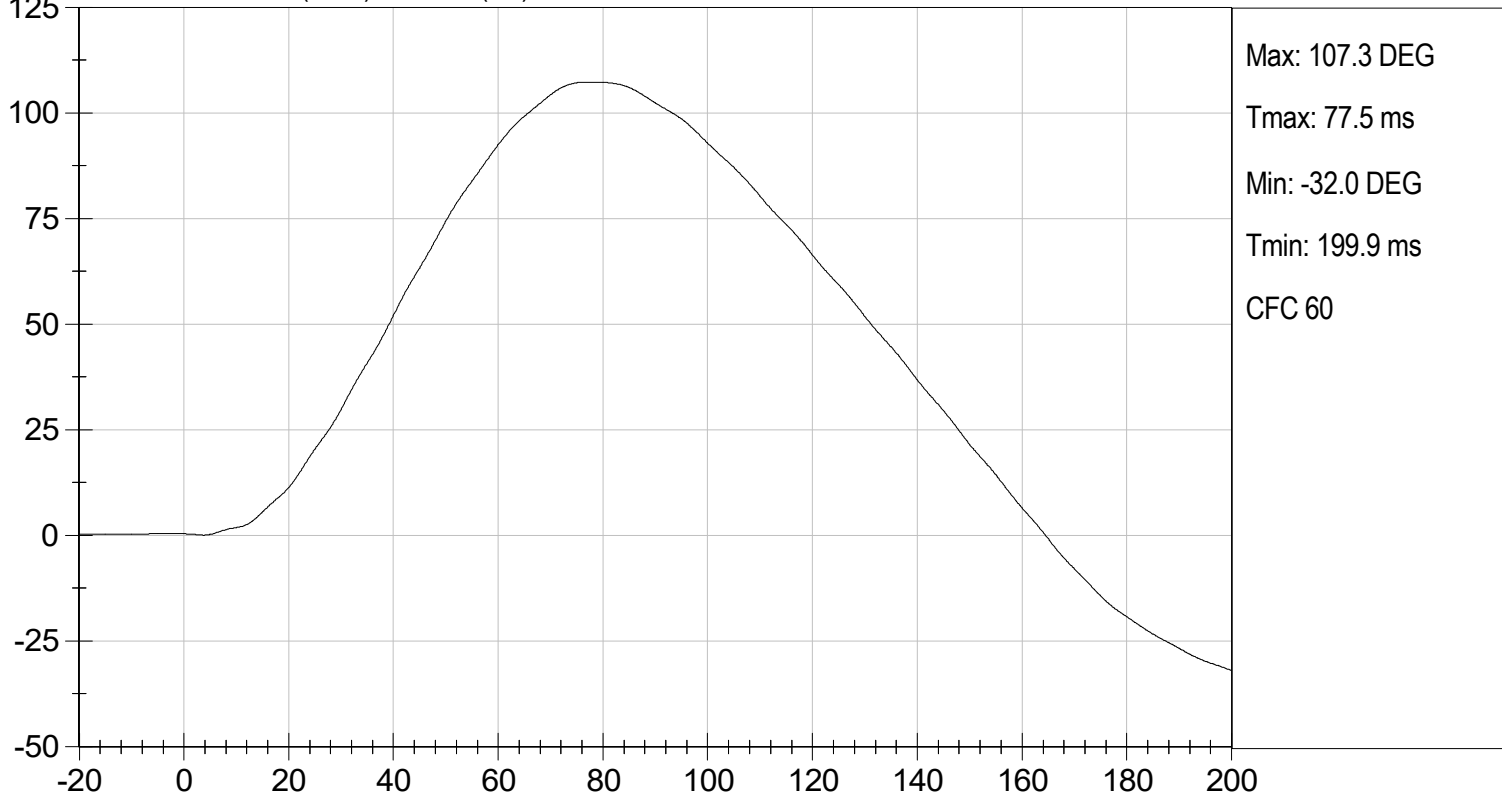
TEST DESC: NECK EXTENSION
VELOCITY: 20.15 ft/s, 6.14 m/s

TEST DATE: 11/11/2024
TEST #: D242933

PENDULUM VELOCITY (m/s) vs TIME (ms)



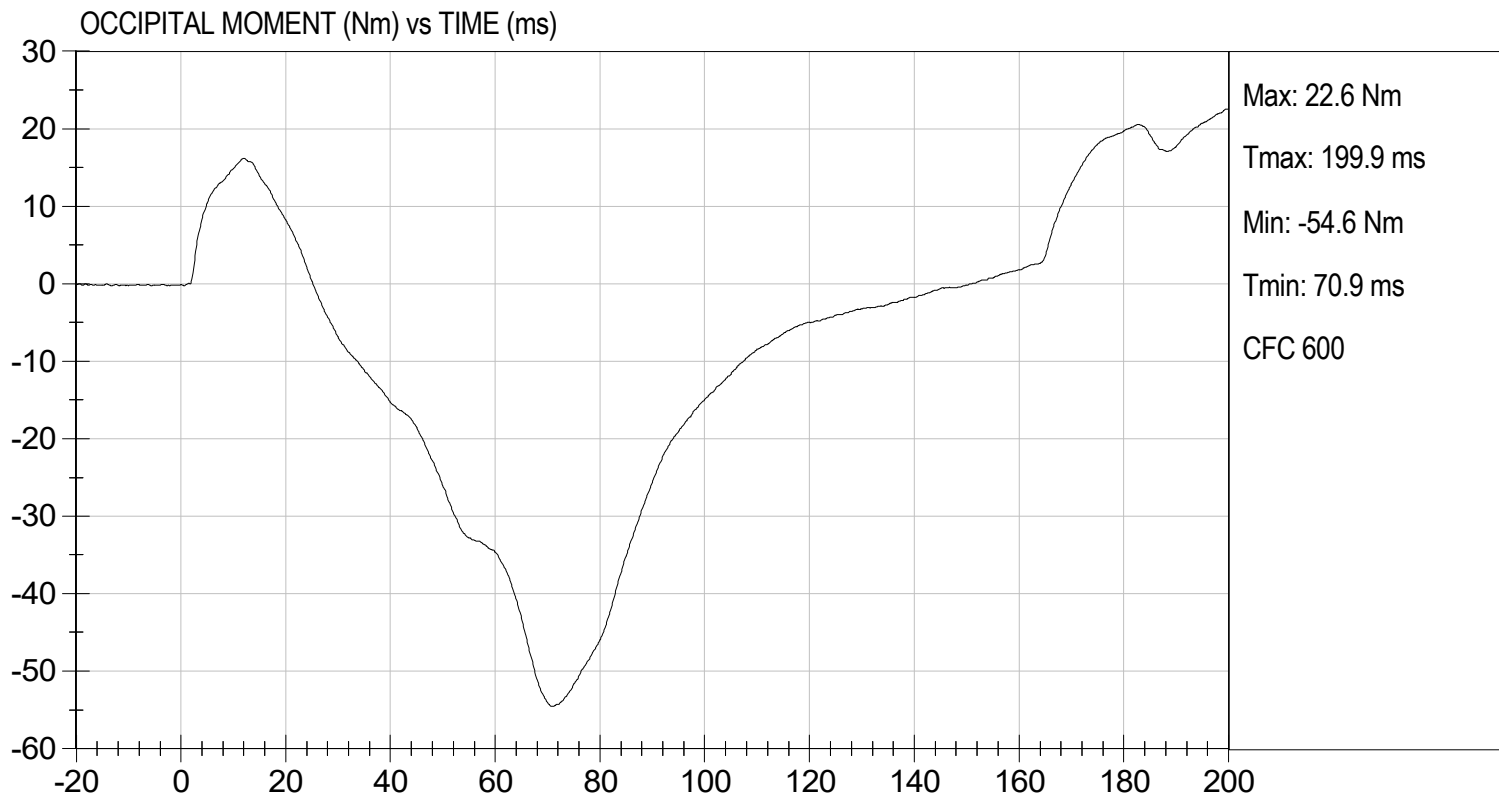
NECK ROTATION (DEG) vs TIME (ms)





TEST DESC: NECK EXTENSION
VELOCITY: 20.15 ft/s, 6.14 m/s

TEST DATE: 11/11/2024
TEST #: D242933



MGA RESEARCH CORPORATION

THORAX IMPACT

HYBRID III 5TH PERCENTILE

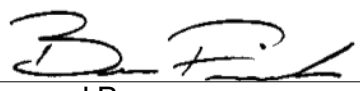
ATD Serial No: 142

Test I.D: D242934

Tested Parameter	Units	Specification	Result	Pass/Fail
Temperature	deg C	20.6 to 22.2	21.3	Pass
Relative Humidity	%	10 to 70	43	Pass
Probe Speed	m/s	6.59 to 6.83	6.68	Pass
Peak Deflection	mm	50 to 58	52	Pass
Peak Resistive Force w/in Deflection Corridor	N	3900 to 4400	4188	Pass
Internal Hysteresis	%	69 to 85	75	Pass
Peak Force 18 mm - 50 mm	N	<= 4600	4213	Pass
Overall Test Results			Pass	


Laboratory Technician

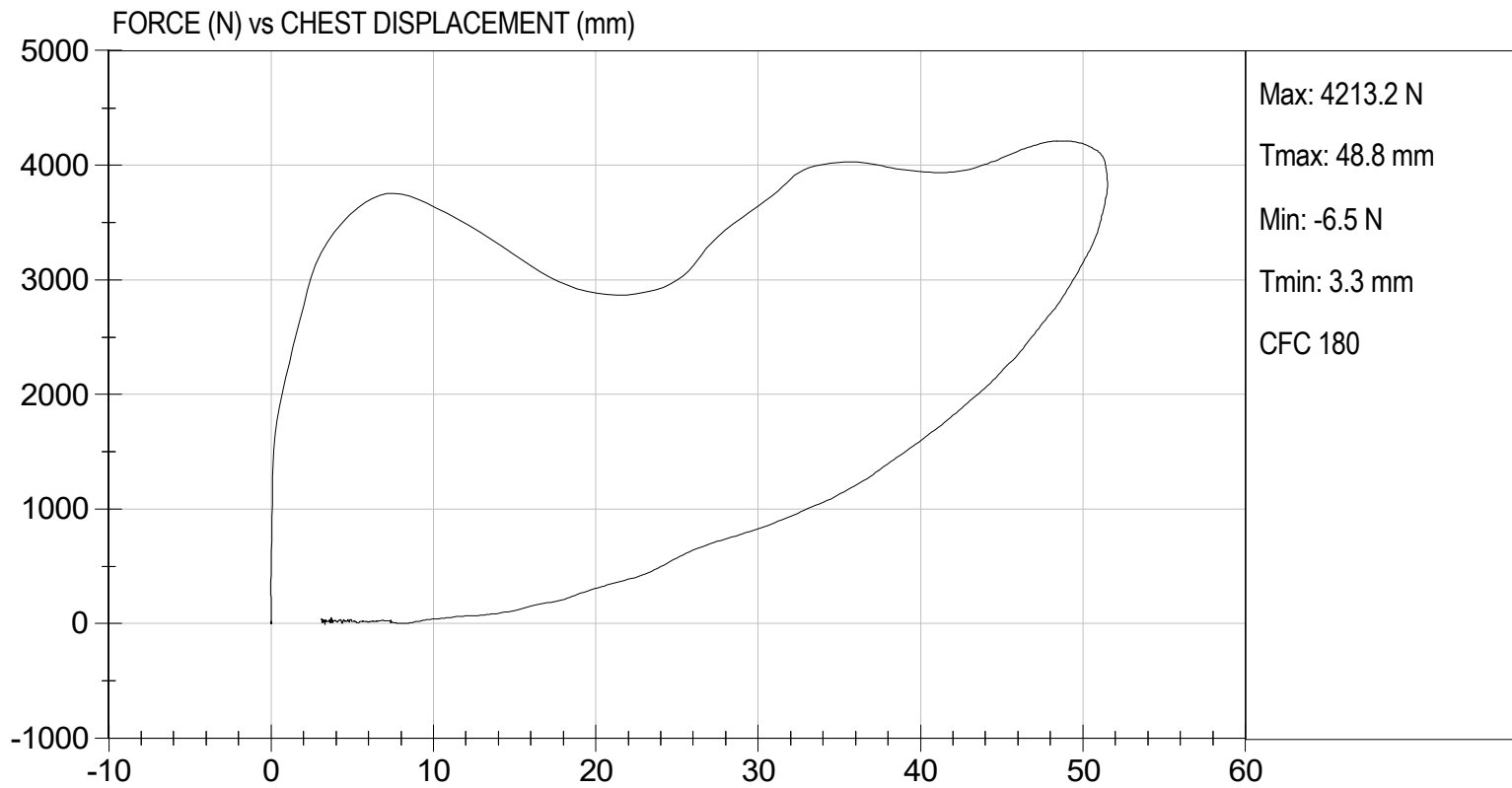
11/11/2024
Test Date


Approved By



TEST DESC: THORAX IMPACT
VELOCITY: 21.93 ft/s, 6.68 m/s

TEST DATE: 11/11/2024
TEST #: D242934



MGA RESEARCH CORPORATION

RIGHT KNEE IMPACT TEST

HYBRID III 5TH PERCENTILE

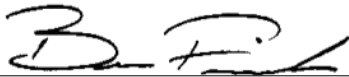
ATD Serial No: 142

Test I.D: D242935

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.3	Pass
Laboratory Relative Humidity	%	10 to 70	40	Pass
Probe Speed	m/s	2.07 to 2.13	2.10	Pass
Maximum Force	N	3450 to 4060	3500	Pass
Overall Test Results				Pass


Laboratory Technician

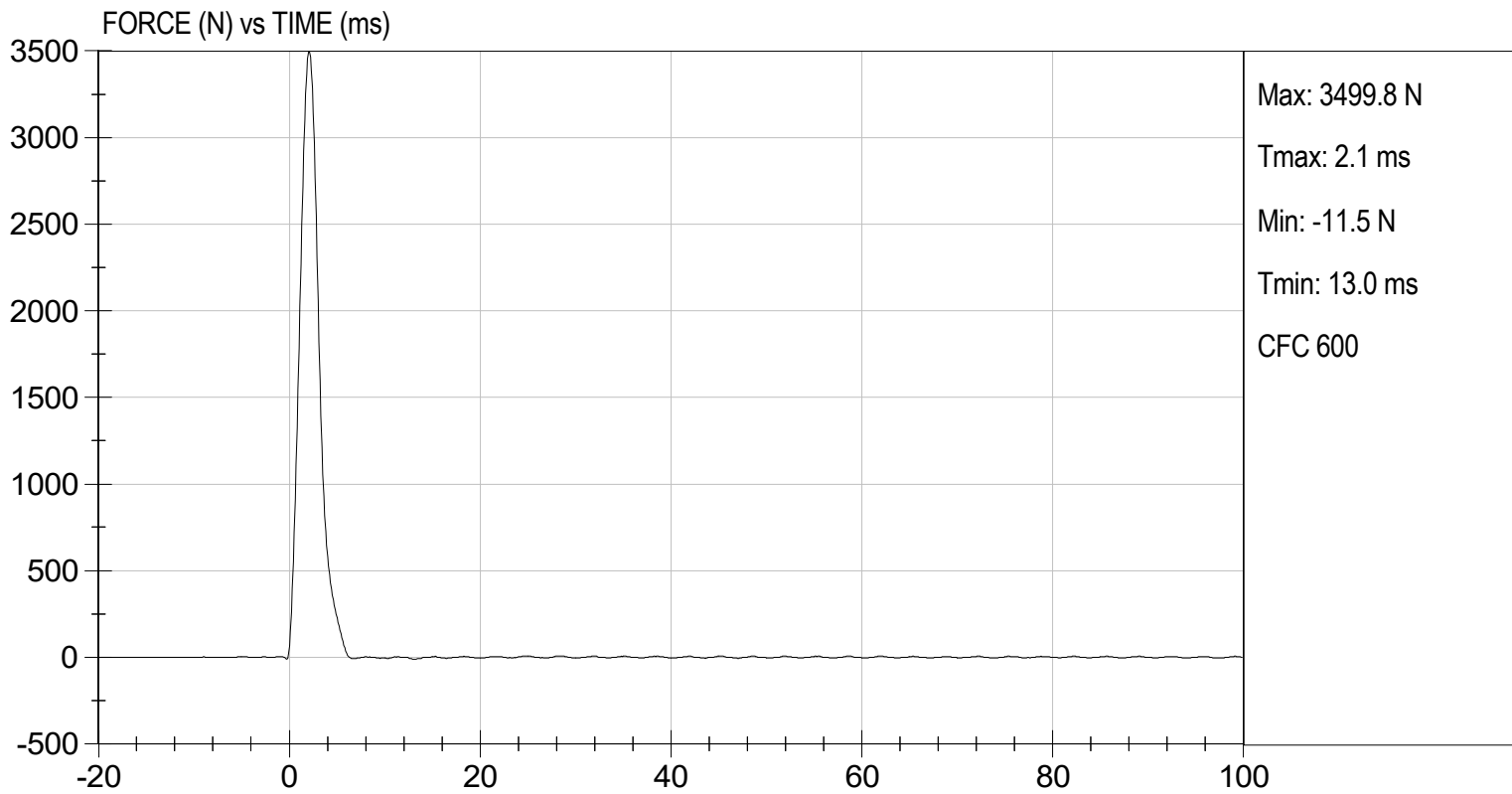
11/11/2024
Test Date


Approved By



TEST DESC: RIGHT KNEE
VELOCITY: 6.89 ft/s, 2.10 m/s

TEST DATE: 11/11/2024
TEST #: D242935



MGA RESEARCH CORPORATION

LEFT KNEE IMPACT TEST

HYBRID III 5TH PERCENTILE

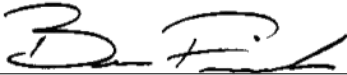
ATD Serial No: 142

Test I.D: D242936

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.3	Pass
Laboratory Relative Humidity	%	10 to 70	40	Pass
Probe Speed	m/s	2.07 to 2.13	2.10	Pass
Maximum Force	N	3450 to 4060	3604	Pass
Overall Test Results				Pass


Laboratory Technician

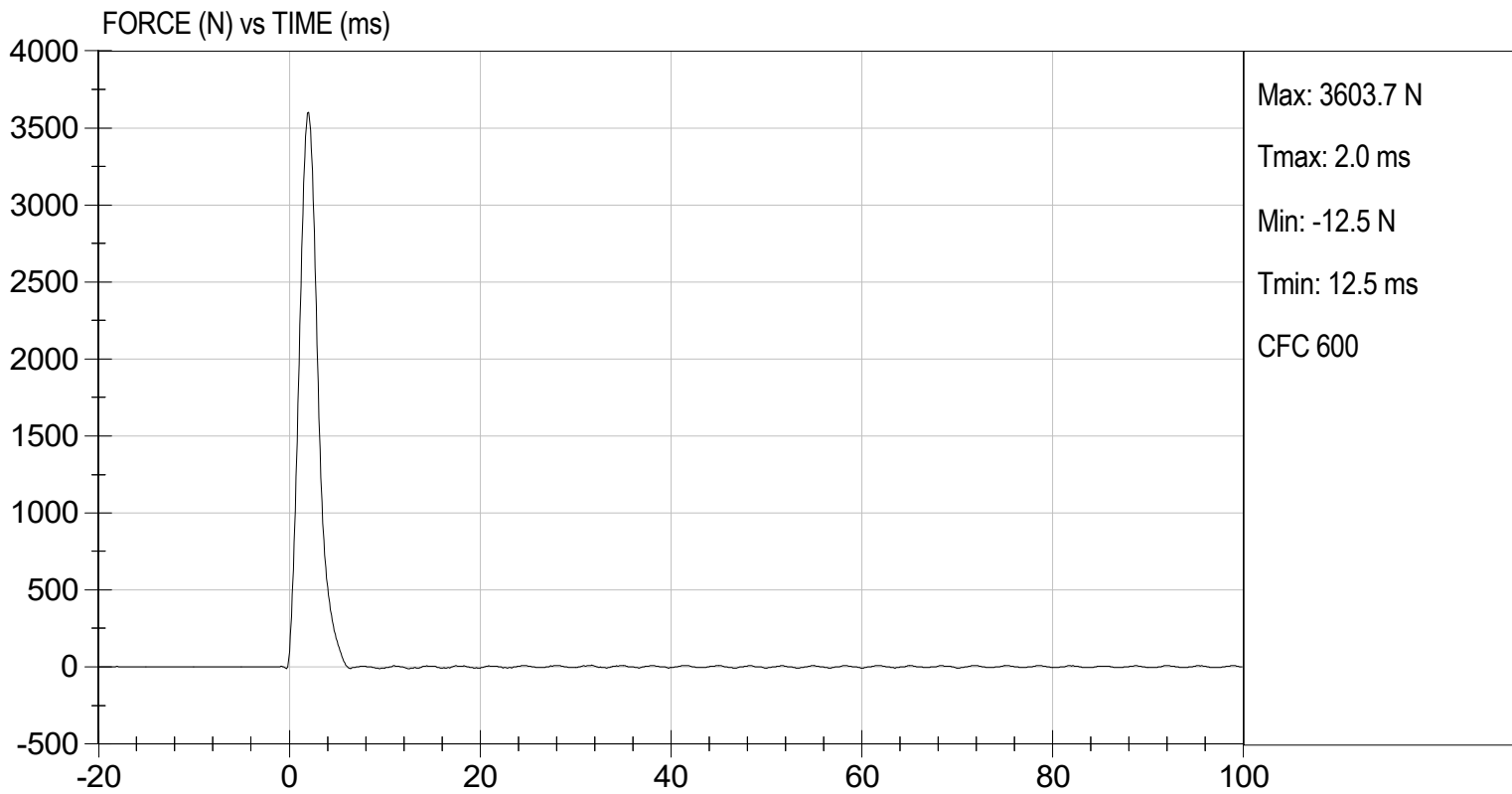
11/11/2024
Test Date


Approved By



TEST DESC: LEFT KNEE
VELOCITY: 6.89 ft/s, 2.10 m/s

TEST DATE: 11/11/2024
TEST #: D242936



MGA RESEARCH CORPORATION

TORSO FLEXION TEST

HYBRID III 5TH PERCENTILE

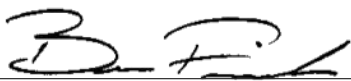
ATD Serial No: 142

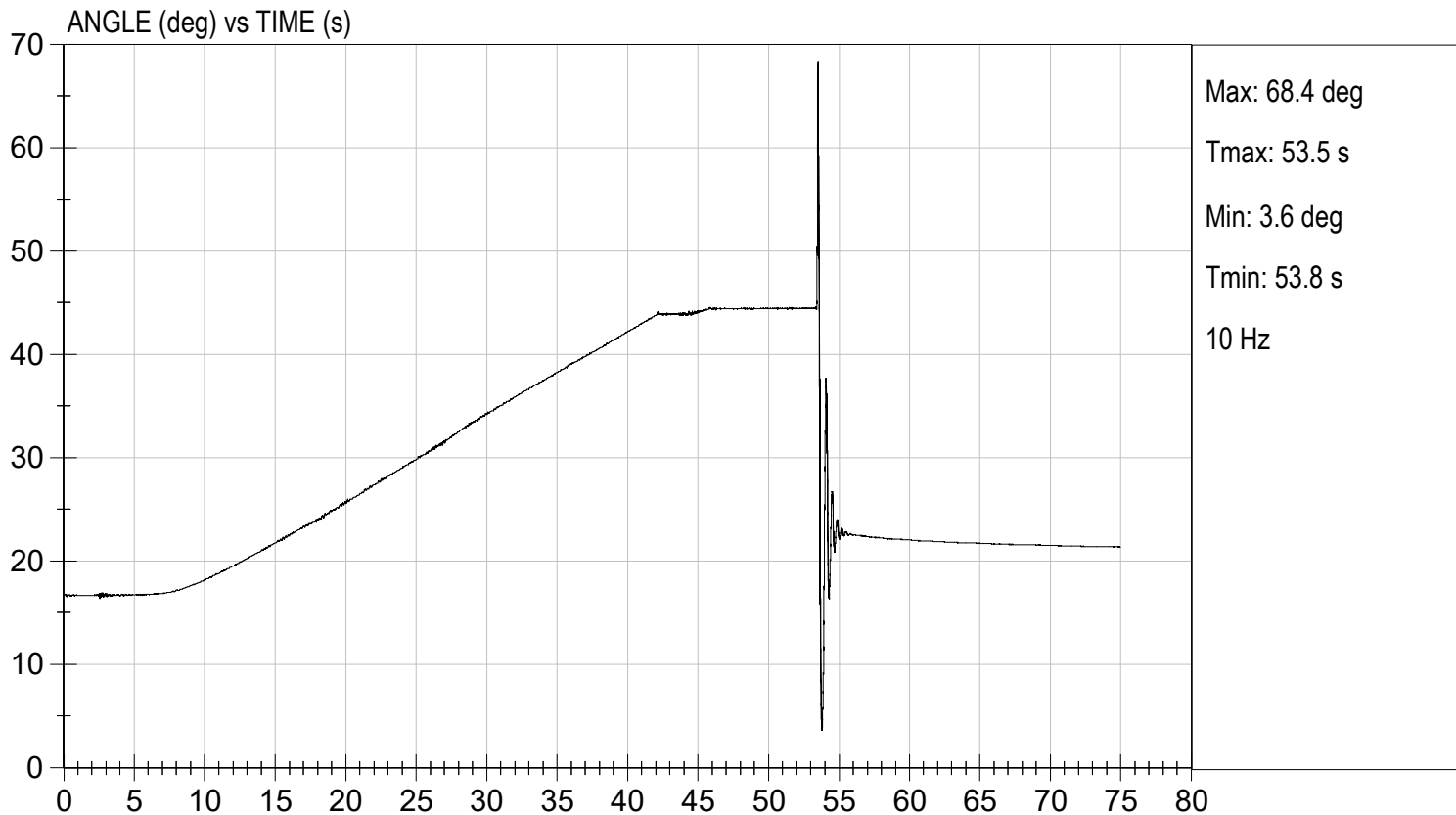
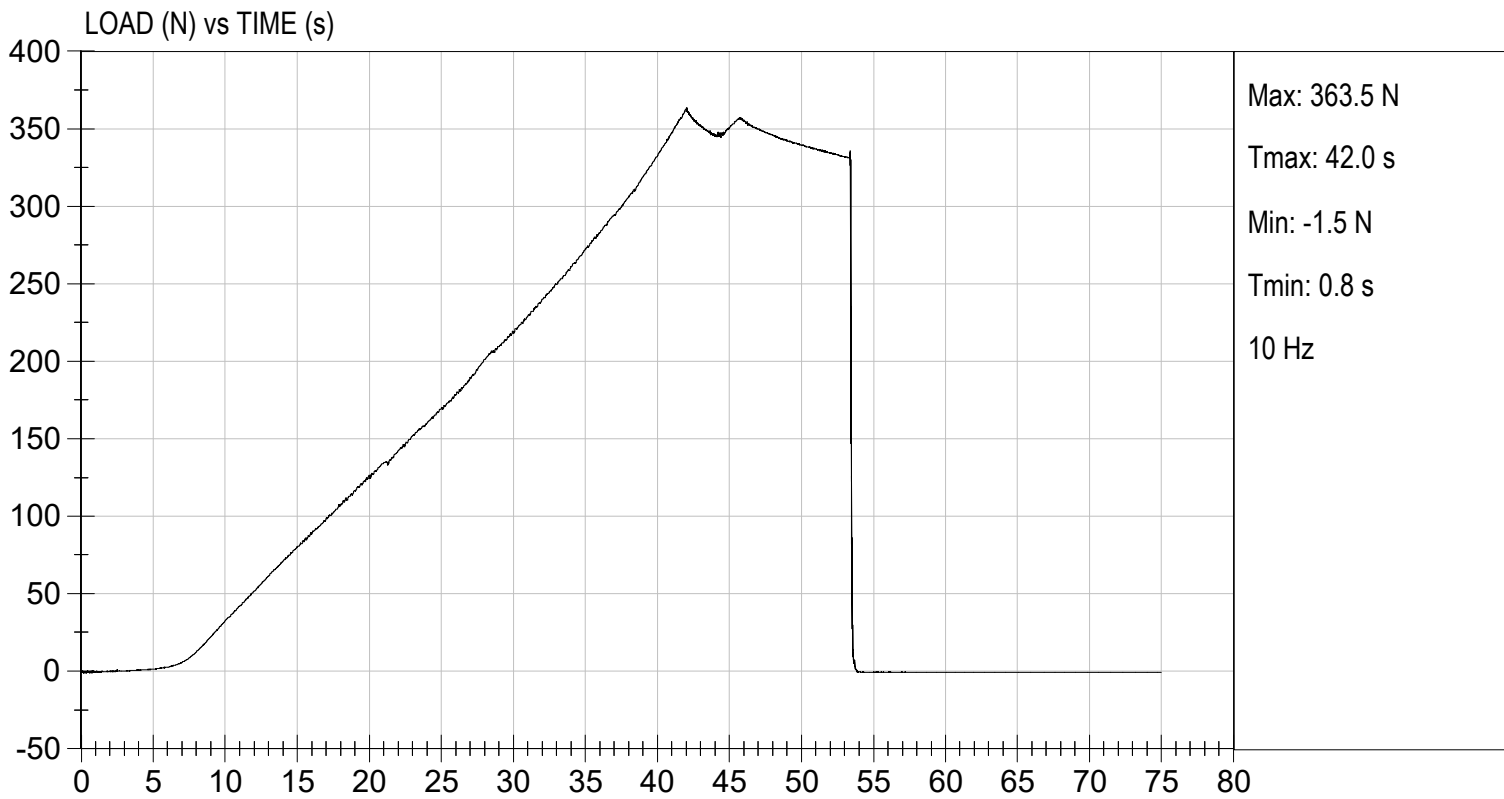
Test I.D: D242937

Tested Parameter	Units	Specification	Result	Pass/Fail
Laboratory Temperature	deg C	18.9 to 25.6	21.2	Pass
Laboratory Relative Humidity	%	10 to 70	42	Pass
Initial Angle	deg	0 to 20	17	Pass
Return Angle	deg	+/- 8	5	Pass
Force at 45 deg	N	320 to 390	357	Pass
Upper Torso Deflection Rate	deg/s	0.5 to 1.5	0.7	Pass
Overall Result			Pass	


Laboratory Technician

11/11/2024
Test Date


Approved By



APPENDIX D
TEST EQUIPMENT AND INSTRUMENTATION CALIBRATION

TABLE 1 – DRIVER DUMMY INSTRUMENTATION

Instrument Location			Axis	Hybrid III 50 th S/N 064		
				Serial Number	Manufacturer	Calibration Date
Head Accelerometers	Primary		X	T30960	Endevco	05/23/2024
			Y	P79743	Endevco	05/23/2024
			Z	P79741	Endevco	05/23/2024
	Redundant		X	P79744	Endevco	05/23/2024
			Y	P94834	Endevco	05/23/2024
			Z	P94856	Endevco	05/23/2024
Head Angular Rate Sensors			X	ARS7325	DTS	11/17/2023
			Y	ARS7340	DTS	11/17/2023
			Z	ARS7354	DTS	11/17/2023
Upper Neck Load Cell			Fx, Fy, Fz Mx, My, Mz	NG2022	Denton	05/24/2024
Chest Accelerometers	Primary		X	P86793	Endevco	05/23/2024
			Y	P88348	Endevco	05/23/2024
			Z	P86792	Endevco	05/23/2024
	Redundant		X	P88667	Endevco	05/23/2024
			Y	P94109	Endevco	05/23/2024
			Z	P88666	Endevco	05/23/2024
Chest Potentiometer			X	064	Humanetics	05/23/2024
Pelvis Accelerometers			X	P97742	Endevco	05/23/2024
			Y	P96038	Endevco	05/23/2024
			Z	P95526	Endevco	05/23/2024
Femur Load Cells	Right	Primary	Z	FG121P	Denton	05/22/2024
		Redundant	Z	FG121R	Denton	05/22/2024
	Left	Primary	Z	FG122P	Denton	05/22/2024
		Redundant	Z	FG122R	Denton	05/22/2024
Tibia Load Cells	Right	Upper	Mx, My, Fz	TG408	Denton	11/28/2023
		Lower	Mx, My, Fz	AG116	Denton	11/28/2023
	Left	Upper	Mx, My, Fz	TG480	Denton	11/28/2023
		Lower	Mx, My, Fz	AG502	Denton	11/28/2023
Foot Accelerometers	Right	Rear	X	T22486	Endevco	05/23/2024
			Z	P97382	Endevco	05/23/2024
		Front	Z	P82120	Endevco	05/23/2024
	Left	Rear	X	T16468	Endevco	05/23/2024
			Z	T32154	Endevco	05/23/2024
		Front	Z	T32190	Endevco	05/23/2024
Seat Belt Load Cells		Lap				
		Shoulder				

TABLE 2 – FRONT PASSENGER DUMMY INSTRUMENTATION

Instrument Location			Axis	Hybrid III 5 th S/N 142		
				Serial Number	Manufacturer	Calibration Date
Head Accelerometers	Primary		X	P94799	Endevco	10/29/2024
			Y	P94800	Endevco	10/29/2024
			Z	P94801	Endevco	10/29/2024
	Redundant		X	P94802	Endevco	10/29/2024
			Y	P94803	Endevco	10/29/2024
			Z	P97377	Endevco	10/29/2024
Head Angular Rate Sensors			X	ARS7413	DTS	07/31/2024
			Y	ARS7421	DTS	07/31/2024
			Z	ARS7423	DTS	07/31/2024
Upper Neck Load Cell		Fx, Fy, Fz Mx, My, Mz	NG2203	Denton	01/22/2024	
Chest Accelerometers	Primary		X	P88719	Endevco	10/29/2024
			Y	P94785	Endevco	10/29/2024
			Z	P94793	Endevco	10/29/2024
	Redundant		X	P95322	Endevco	10/29/2024
			Y	P95370	Endevco	10/29/2024
			Z	T30901	Endevco	10/29/2024
Chest Potentiometer		X	142	Humanetics	10/29/2024	
Pelvis Accelerometers			X	P94798	Endevco	10/29/2024
			Y	P82646	Endevco	10/29/2024
			Z	P97705	Endevco	10/29/2024
Femur Load Cells	Right	Primary	Z	FG126P	Denton	10/29/2024
		Redundant	Z	FG126R	Denton	10/29/2024
	Left	Primary	Z	FG127P	Denton	10/29/2024
		Redundant	Z	FG127R	Denton	10/29/2024
Tibia Load Cells	Right	Upper	Mx, My, Fz	TG467	Denton	01/22/2024
		Lower	Mx, My, Fz	AG500	Denton	01/22/2024
	Left	Upper	Mx, My, Fz	TG478	Denton	01/22/2024
		Lower	Mx, My, Fz	AG491	Denton	01/22/2024
Foot Accelerometers	Right	Rear	X	P94795	Endevco	10/29/2024
			Z	P94796	Endevco	10/29/2024
		Front	Z	P94797	Endevco	10/29/2024
	Left	Rear	X	P83167	Endevco	10/29/2024
			Z	P83168	Endevco	10/29/2024
		Front	Z	P83169	Endevco	10/29/2024
Seat Belt Load Cells		Lap				
		Shoulder				

TABLE 3 – VEHICLE INSTRUMENTATION

Instrument Location			Axis	Serial Number	Manufacturer	Calibration Date
Crossmember / Rear Seat Accelerometers	Left	Primary	X	T44153	Endevco	11/01/2024
			Z	T44156	Endevco	11/01/2024
		Redundant	X	T44168	Endevco	10/31/2024
	Right	Primary	X	T44180	Endevco	10/31/2024
			Z	T44178	Endevco	10/31/2024
		Redundant	X	T41122	Endevco	09/11/2024
Engine Accelerometers		Top	X	T44177	Endevco	10/31/2024
		Bottom	X	T44166	Endevco	10/31/2024