REPORT NUMBER: R&D-KAR-20-002

VEHICLE TO RIGID BARRIER CRASH TEST IN SUPPORT OF NHTSA'S FRONTAL RESEARCH CRASH TEST PROGRAM RIGHT SIDE 30° FRONTAL RIGID BARRIER IMPACT

HONDA OF AMERICA MFG., INC.
2020 HONDA ACCORD 4-DOOR SEDAN

NHTSA No: R20205379

PREPARED BY:
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ADELANTO, CA 92301

NOVEMBER 24, 2020

FINAL REPORT

PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
VEHICLE SAFETY RESEARCH
1200 NEW JERSEY AVE, SE, ROOM W46-446
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Approval Date: November 24, 2020

FINAL REPORT ACCEPTANCE BY VEHICLE SAFETY RESEARCH,
OFFICE OF STRUCTURAL AND RESTRAINTS RESEARCH DIVISION:

_____

TOM, Vehicle Crash Testing
NHTSA, Office of Structures and Restraints Research

Date: _____

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Final Report of Frontal Research Crash Testing of a 2020 Honda Accord 4-Door Sedan NHTSA No. R20205379	November 24, 2020
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9. Performing Organization Name and Address Applus IDIADA KARCO Engineering, LLC. 9270 Holly Rd. Adelanto, CA 92301	**10. Work Unit No.**
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15. Supplementary Notes

16. Abstract

A 48.0 km/h Right Side 30° Frontal Rigid Barrier Impact Test was conducted on a 2020 Honda Accord 4-door sedan in accordance with Contract DTNH22-14-D-00360L, Task Order #693JJ918F000199. The test was conducted to obtain data indicant of FMVSS 208, 212, 219 (partial), 301, and foot well intrusion performance. The test was conducted at the Applus IDIADA KARCO Engineering, LLC. facility in Adelanto, California on September 25, 2020.

The impact velocity of the vehicle was 48.17 km/h and the ambient temperature at the barrier face at the time of impact was 28.3°C. The vehicle's post-test maximum crush was 444.1 mm measured to left of the vehicle's centerline. The test vehicle's performance was as follows:

Measurement Description	Units	Driver THOR	Passenger Hybrid III
		Result	Result
Head Injury Criteria (HIC_{15})		70.60	495.51
Brain Injury Criteria (BrIC)		0.99	
Nij			0.69
Peak Neck Tension	N	1216.40	451.52
Peak Neck Compression	N	-1546.00	-3023.93
Peak Chest Deflection	mm	40.50	-12.45
Peak Abdomen Deflection	mm	-39.50	
Peak Resultant Acetabulum Force	N	3252.70	
Peak Femur Force	N	-6025.60	-5117.46
Peak Tibia Index		0.68	

17. Key Words	18. Distribution Statement
30° Frontal Rigid Barrier Impact Frontal Research Crash Test THOR Hybrid III	Copies of this report are available from: National Highway Traffic Safety Administration Technical Reference Division 1200 New Jersey Ave., SE Washington, D.C. 20590

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SECTION 1

TEST PURPOSE AND PROCEDURE

Test Vehicle: 2020 Honda Accord 4-Door Sedan NHTSA No. R20205379

Test Program: R&D Right Side 30° Frontal Rigid Barrier Impact Test Date: 09/25/20

This 48.0 km/h (29.8 mph) Right Side 30° Frontal Rigid Barrier Impact Test is part of the Frontal Research Crash Test Program outlined in Contract No. DTNH22-14-D-00360L, Task Order #693JJ918F000199. The purpose of this test is to obtain vehicle crashworthiness and occupant restraint system performance data for research purposes.

This test was conducted in accordance with the instructions set forth for a 48.0 km/h Right Side 30° Frontal Rigid Barrier Impact, outlined in Contract No. DTNH22-14-D-00360L, Task Order #693JJ918F000199. Data indicant of Federal Motor Vehicle Safety Standard FMVSS 208 - Occupant Crash Protection, FMVSS 212 – Windshield Mounting, FMVSS 219 (partial) – Windshield Zone Intrusion, and FMVSS 301 – Fuel System Integrity was obtained, in addition to the data required by Contract No. DTNH22-14-D-00360L, Task Order #693JJ918F000199.

SECTION 2
SUMMARY OF TEST RESULTS

Test Vehicle: 2020 Honda Accord 4-Door Sedan NHTSA No. R20205379

Test Program: R&D Right Side 30° Frontal Rigid Barrier Impact Test Date: 09/25/20

A 48.0 km/h Right Side 30° Frontal Rigid Barrier Impact Test was conducted on a 2020 Honda Accord 4-door sedan. The test was performed at Applus IDIADA KARCO Engineering, LLC. on September 25, 2020.

The test was documented by one (1) real-time and eighteen (18) high-speed video cameras. Pre- and post-test photographs of the test vehicle and test setup were taken using a digital still camera. Photographic documentation of the test is presented in Appendix A of this report.

One (1) 50th percentile adult male THOR anthropomorphic test device (ATD) (Serial No. EG2595) was seated in the left front seating position (P1 – Driver) and one (1) 50th percentile adult male Hybrid III ATD (Serial No. 168) was seated in the right front passenger seating position (P2). The driver was positioned according to instructions specified in the THOR 50th Percentile Male Dummy Seating & Positioning Procedures: Driver Position. The passenger was positioned according to instructions specified in FMVSS 208 Appendix F, Dummy Positioning Procedures for Driver and Passenger Test Dummy Conforming to Subpart E of Part 572.

The driver was restrained with frontal and knee airbags. The passenger was restrained with frontal, knee, curtain, and torso/pelvis airbags. Both ATDs were unbelted for this test.

Test Vehicle: 2020 Honda Accord 4-Door Sedan NHTSA No. R20205379
Test Program: R&D Right Side 30° Frontal Rigid Barrier Impact Test Date: 09/25/20

One hundred seventy-two (172) channels of data from the two (2) ATD's and the test vehicle were collected using Diversified Technical Systems, Inc. data acquisition systems. Appendix B contains dummy data plots, as well as vehicle response data plots.

There was 100% total windshield retention. There was no intrusion into the protected zone of the windshield during any portion of the impact event. The maximum static crush of the vehicle was 444.1 mm measured on the right of the vehicle's centerline.

All four vehicle doors remained closed and latched during the test. All doors remained operational after the impact event.

Structural observations include the following:

- The front end including the bumper, grille, and hood were crushed, with the damage concentrated on the right side
- The windshield was broken due to the impact with the driver and passenger ATD's head

The driver ATD's visible contact points were:

- Head contacted the front airbag, headliner, sun visor, and windshield
- Upper torso contacted the front airbag
- Lower torso contacted the front airbag
- Left leg contacted the knee airbag and steering column
- Right leg contacted the knee airbag and knee bolster

The right front passenger ATD's visible contact points were:

- Head contacted the front airbag, windshield, A-pillar, and headliner
- Upper torso contacted the front airbag
- Lower torso contacted the front airbag and door panel
- Left leg contacted the knee airbag, knee bolster, and door panel
- Right leg contacted the knee airbag and knee bolster

SECTION 2 … (CONTINUED)

SUMMARY OF TEST RESULTS

Test Vehicle: 2020 Honda Accord 4-Door Sedan NHTSA No. R20205379

Test Program: R&D Right Side 30° Frontal Rigid Barrier Impact Test Date: 09/25/20

PRIMARY IMPACT DATA

Measured Parameter	Units	Value
Impact Velocity	km/h	48.17
Test Vehicle Weight	kg	1623.5
Maximum Static Crush	mm	444.1
Number of Data Channels		172
Number of Real-Time Cameras		1
Number of High-Speed Cameras		18

DUMMY CONTACTS

Description	Driver	Picture Ref.	Passenger	Picture Ref.
Dummy Type	THOR, S/N: EG2595		Hybrid III, S/N: 168	
Head Contact	Front Airbag, Headliner, Sun Visor, Windshield	A-45, A-47	Front Airbag, Windshield, A-Pillar, Headliner	A-67, A-69
Upper Torso Contact	Front Airbag	N/A	Front Airbag	N/A
Lower Torso Contact	Front Airbag	N/A	Front Airbag, Door Panel	A-61
Left Leg Contact	Knee Airbag, Steering Column	A-39, A-40, A-46	Knee Airbag, Knee Bolster, Door Panel	A-61, A-63, A-68
Right Leg Contact	Knee Airbag, Knee Bolster	A-46	Knee Airbag, Knee Bolster	A-63, A-68

SECTION 2 … (CONTINUED)

SUMMARY OF TEST RESULTS

Test Vehicle: 2020 Honda Accord 4-Door Sedan NHTSA No. R20205379

Test Program: R&D Right Side 30° Frontal Rigid Barrier Impact Test Date: 09/25/20

DATA ANOMALIES

Channel Description	Explanation
P1TH Acetabulum Right X Force	THOR S/N: EG2595 was received with a bad Right Acetabulum Force X channel. After investigation of the bad channel it was determined that the channel was not fixable without replacing the load cell. NHTSA approved running the test without recording this channel.

SECTION 2 … (CONTINUED)

SUMMARY OF TEST RESULTS

Test Vehicle: 2020 Honda Accord 4-Door Sedan NHTSA No. R20205379

Test Program: R&D Right Side 30° Frontal Rigid Barrier Impact Test Date: 09/25/20

Driver, THOR S/N EG2595						
LOCATION	**DESCRIPTION**	**UNIT**	**SOURCE**	**MAX**	**MIN**	
Head	HIC 15ms		Compute	70.6		
	Brain Injury Criteria (BrIC)		Compute	0.986		
	Head Rotational Velocity X	Deg/s	60	1488.6	-312.8	
	Head Rotational Velocity Y	Deg/s	60	349.9	-1734.5	
	Head Rotational Velocity Z	Deg/s	60	1204.1	-1789.0	
Neck	Upper Neck Z-axis Force	N	1000	1216.4	-1546.0	
	Upper Neck Y-axis Moment	Nm	600	19.7	-11.1	
Chest	Upper Left Resultant Chest Deflection	mm	Compute	40.5		
	Upper Right Resultant Chest Deflection	mm	Compute	29.7		
	Lower Left Resultant Chest Deflection	mm	Compute	19.7		
	Lower Right Resultant Chest Deflection	mm	Compute	33.0		
Abdomen	Lower Left X-axis Deflection	mm	Compute	4.4	-9.2	
	Lower Right X-axis Deflection	mm	Compute	3.8	-39.5	
Acetabulum	Left Acetabulum Resultant Force	N	Compute	3252.7		
	Right Acetabulum Resultant Force	N	Compute	2960.0		*
Femur	Left Femur Force, FZ	N	600	352.3	-4371.6	
	Right Femur Force, FZ	N	600	656.3	-6025.6	
Tibia	Left Upper Tibia, FZ	N	600	175.3	-2323.0	
	Left Upper Tibia Index		Compute	0.296		
	Right Upper Tibia, FZ	N	600	650.6	-2424.4	
	Right Upper Tibia Index		Compute	0.679		
	Left Lower Tibia, FZ	N	600	150.3	-2790.5	
	Left Lower Tibia Index		Compute	0.511		
	Right Lower Tibia, FZ	N	600	607.4	-3031.1	
	Right Lower Tibia Index		Compute	0.368		
Ankle	Left Ankle Rotation, RX	Deg	180	41.3	-16.4	
	Left Ankle Rotation, RY	Deg	180	18.4	-1.5	
	Left Ankle Dorsiflexion Moment, MY	Nm	Compute	44.5	-48.2	
	Left Ankle In/Eversion Moment, MX	Nm	Compute	172.3	-7.5	
	Right Ankle Rotation, RX	Deg	180	3.6	-26.9	
	Right Ankle Rotation, RY	Deg	180	9.7	-34.9	
	Right Ankle Dorsiflexion Moment, MY	Nm	Compute	52.7	-65.8	
	Right Ankle In/Eversion Moment, MX	Nm	Compute	11.8	-60.3	

Anomalies:

Right Acetabulum Fx is not functioning

SECTION 2 … (CONTINUED)

SUMMARY OF TEST RESULTS

Test Vehicle: 2020 Honda Accord 4-Door Sedan NHTSA No. R20205379

Test Program: R&D Right Side 30° Frontal Rigid Barrier Impact Test Date: 09/25/20

	Passenger, Hybrid III 50th Percentile Male S/N 168				
Injury Reading	**Units**	**Limit**	**Value**	**t¹**	**t²**
HIC 15		700	495.507	90.4	101.2
Nij		1	0.692	83.6	***NCF***
Upper Neck Force Z (Tension)	N	4170	451.516	78.6	
Upper Neck Force Z (Compression)	N	4000	-3023.933	83.7	
Upper Neck Moment Y (Flexion)	Nm	310	100.339	85.0	
Upper Neck Moment Y (Extension)	Nm	135	-22.857	136.0	
Chest Deflection	mm	63	-12.449	88.1	
3 ms Chest Clip	g	60	34.687	95.3	98.3
Femur Force, Left	N	10000	-5117.464	73.6	
Femur Force, Right	N	10000	-4907.880	75.3	

SECTION 3

OCCUPANT AND VEHICLE INFORMATION / DATA SHEETS

Test Vehicle: 2020 Honda Accord 4-Door Sedan NHTSA No. R20205379

Test Program: R&D Right Side 30° Frontal Rigid Barrier Impact Test Date: 09/25/20

CONVERSION FACTORS

Quantity	Typical Application	Std Units	Metric Unit	Multiply By
Mass	Vehicle Weight	lb	kg	0.4536
Linear Velocity	Impact Velocity	miles/hr	km/hr	1.609344
Length or Distance	Measurements	in	mm	25.4
Volume	Fuel Systems	gal	liter	3.785
Volume	Small Fluids	oz	mL	29.574
Pressure	Tire Pressures	lbf/in^2	kPa	6.895
Temperature	General Use	^oF	^oC	=(Tf -32)/1.8
Force	Dynamic Forces	lbf	N	4.448
Moment	Torque	lbf-ft	N•m	1.355

DATA SHEET NO. 1

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2020 Honda Accord 4-Door Sedan NHTSA No. R20205379

Test Program: R&D Right Side 30° Frontal Rigid Barrier Impact Test Date: 09/25/20

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA Number	R20205379
Model Year	2020
Make	Honda
Model	Accord
Body Style	4-Door Sedan
VIN	1HGCV1F18LA082743
Body Color	Modern Steel M.
Odometer Reading (km / mi)	23 / 14
Engine Displacement (L)	1.5
Type / No. of Cylinders	Inline 4
Engine Placement	Transverse
Transmission Type	Automatic
Transmission Speeds	CVT
Overdrive	Yes
Final Drive	FWD
Roof Rack	No
Sunroof / T-Top	No
Running Boards	No
Tilt Steering Wheel	Yes
Power Seats	No
Anti-Lock Brakes (ABS)	Yes
Automatic Door Locks (ADLs)	Yes

Traction Control System	Yes
Power Steering	Yes
Power Window Auto-Reverse	Yes
Driver Frontal Airbag	Yes
Driver Curtain Airbag	Yes
Driver Head/Torso Airbag	No
Driver Torso Airbag	No
Driver Torso/Pelvis Airbag	Yes
Driver Pelvis Airbag	No
Driver Knee Airbag	Yes
Front Pass. Frontal Airbag	Yes
Front Pass. Curtain Airbag	Yes
Front Pass. Head/Torso Airbag	No
Front Pass. Torso Airbag	No
Front Pass. Torso/Pelvis Airbag	Yes
Front Pass. Pelvis Airbag	No
Front Pass. Knee Airbag	Yes
Driver Seat Belt Pretensioner	Yes
Driver Load Limiter	Yes
Front Pass. Seat Belt Pretensioner	Yes
Front Pass. Load Limiter	Yes
Other Safety Restraint	No

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

DATA FROM CERTIFICATION LABEL

Manufactured By	Honda of America Mfg., Inc.
Date of Manufacture	Mar-20

GVWR (kg)	1950
GAWR Front (kg)	1070
GAWR Rear (kg)	960

VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

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

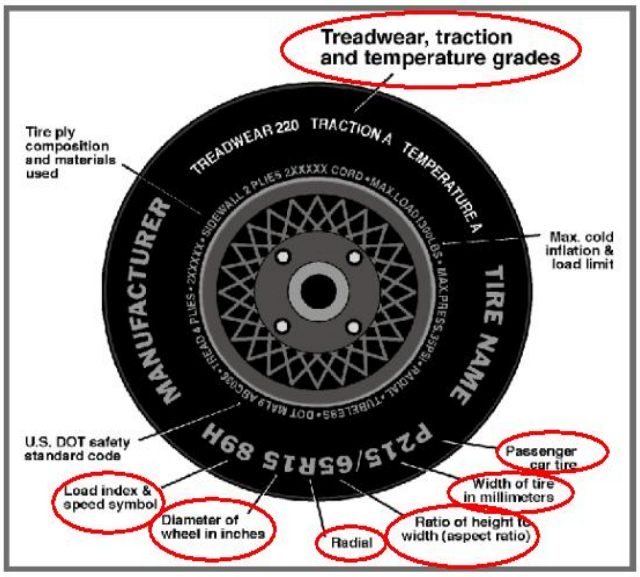
*A maximum RCLW of 136.0 kg is used for a truck, MPV, or bus

DATA SHEET NO. 1 … (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2020 Honda Accord 4-Door Sedan NHTSA No. R20205379

Test Program: R&D Right Side 30° Frontal Rigid Barrier Impact Test Date: 09/25/20



Measured Parameter	Front	Rear
Max. Tire Pressure (kpa)	350	350
Cold Pressure (kPa)	220	220
Recommended Tire Size	225/50R17	225/50R17
Tire Size on Vehicle	225/50R17	225/50R17
Tire Manufacturer	Hankook	Hankook
Tire Model	Kinergy GT	Kinergy GT
Treadware	500	500
Traction Grade	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	Polyester, Nylon, Steel	Polyester, Nylon, Steel
DOT Safety Code Left	1T7AB 1BH0 3719	1T7AB 1BH0 3719
DOT Safety Code Right	1T7AB 1BH0 3719	1T7AB 1BH0 3719

DATA SHEET NO. 1 … (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2020 Honda Accord 4-Door Sedan NHTSA No. R20205379

Test Program: R&D Right Side 30° Frontal Rigid Barrier Impact Test Date: 09/25/20

TEST VEHICLE WEIGHTS

	Units	As Delivered Weights (UVW)			As Tested Weights (ATW)		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	429.0	281.5		471.0	340.5	
Right	kg	427.0	282.5		452.5	359.5	
Ratio	%	60.3%	39.7%	100.0%	56.9%	43.1%	100.0%
Total	kg	856.0	564.0	1420.0	923.5	700.0	1623.5

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	1420.0	A
Weight of THOR-50M and AM50	kg	164.0	B
Rated Cargo/Luggage Weight (RCLW)	kg	44.8	C
Calculated Vehicle Target Weight (TVTW)	kg	1628.8	A+B+C

TEST VEHICLE ATTITUDES

Condition	Units	LF	RF	LR	RR	CG Aft of Front Axle
As Delivered	mm	700	702	722	721	1118
As Tested	mm	690	697	693	699	1214
Post-Test	mm	690	765	688	709	

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Total Vehicle Wheel Base	mm	2829
Total Vehicle Length at Left Side	mm	4721
Total Vehicle Length at Centerline	mm	4882
Total Vehicle Length at Right Side	mm	4714
Weight of Ballast/Equipment in Cargo Area	kg	84.5
Weight of Vehicle Components Removed	kg	58.5
Amount of Stoddard Solvent in Fuel Tank	L	52.10

VEHICLE COMPONENTS REMOVED TO MEET TEST WEIGHT:

Rear bumper fascia, spare tire and tools, rear trim, tail lights, trunk lid, rear seat assembly

DATA SHEET NO. 1 … (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2020 Honda Accord 4-Door Sedan NHTSA No. R20205379

Test Program: R&D Right Side 30° Frontal Rigid Barrier Impact Test Date: 09/25/20

TARGET VEHICLE STRUCTURAL MEASUREMENTS

No.	Description	Units	Pre-Test
1	Total Length	mm	4882
2	Total Width	mm	1863
3*	Bumper Top Height	mm	567
4*	Bumper Bottom Height	mm	232
5*	Longitudinal Member Top Height	mm	510
6	Distance Between Longitudinal Members	mm	940
7	Longitudinal Member Width	mm	49
8*	Engine Top Height	mm	815
9*	Engine Bottom Height	mm	192
10	Engine and Gearbox Width	mm	522
11	Front Bumper to Engine Distance	mm	430
12*	Front Shock Absorber Fixing Height	mm	880
13*	Bonnet Leading Edge Height	mm	800
14	Front Shock Absorber Fixing Width	mm	1179
15	Front Bumper to Front Axle Distance	mm	936
16	Front Axle to A-Pillar Distance	mm	553
17	A-Pillar to B-Pillar Distance	mm	1060
18	B-Pillar to Rear Axle Distance	mm	1203
19	B-Pillar to C-Pillar Distance	mm	957
20*	Roof Sill Bottom Height	mm	1315
21*	Roof Sill Top Height	mm	1430
22*	Floor Sill Bottom Height	mm	251
23*	Floor Sill Top Height	mm	331

*Note: Height measurements are in reference to the ground.

DATA SHEET NO. 2

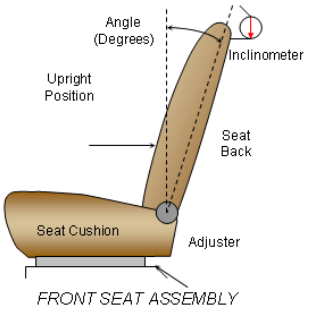
SEAT ADJUSTMENT, FUEL SYSTEM, AND STEERING WHEEL

Test Vehicle: 2020 Honda Accord 4-Door Sedan NHTSA No. R20205379

Test Program: R&D Right Side 30° Frontal Rigid Barrier Impact Test Date: 09/25/20

NOMINAL DESIGN RIDING POSITION

The driver seat back was initially set to the manufacturer's designated angle listed in FORM 208 but was moved rearward per THOR seating procedure to level the head. The passenger seat back was set to the manufacturer's designated angle listed in FORM 208.

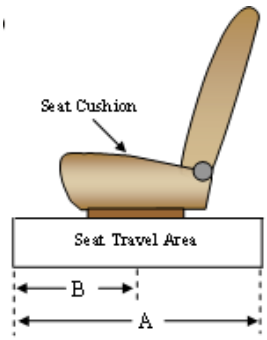


SEAT BACK ANGLE

Seating Position	Unit	FORM 208 Position	After ATD Positioning
Driver Seat Back Angle	Degrees	2.7	3.7
Passenger Seat Back Angle	Degrees	2.7	2.8

SEAT FORE / AFT POSITIONING

The driver seat travel is measured from the forward most position to the rear most position with the seat cushion set at mid angle. The driver seat was initially positioned 25 mm rearward of mid-track before being moved as far forward as possible where the ATD did not contact any interior panels, up to mid-track. The passenger seat travel is measured from the forward most possible position to the rear most possible position. The passenger seat is set to the middle of the fore-aft travel.



SEAT FORE/AFT POSITIONS

Seating Position	Total Fore/Aft Travel (mm)	Placed in Position (mm)
Driver Seat	240	130
Passenger Seat	240	120

SEAT BELT UPPER ANCHORAGE

The seat belt upper anchorage is positioned to the manufacturer's design position for a 50th percentile adult male ATD for the driver and passenger. Position "H" is the uppermost position, followed by position "M1" and "M2." Position "L" is the lowermost position.

SEAT BELT UPPER ANCHORAGES

Seating Position	Total No. of Positions	Placed in Position
Driver Seat	4	H
Passenger Seat	4	H

SEAT ADJUSTMENT, FUEL SYSTEM, AND STEERING WHEEL

Test Vehicle: 2020 Honda Accord 4-Door Sedan NHTSA No. R20205379

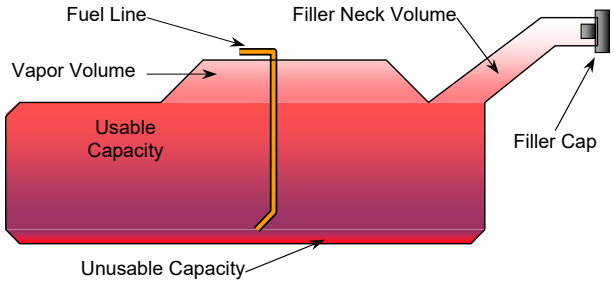
Test Program: R&D Right Side 30° Frontal Rigid Barrier Impact Test Date: 09/25/20

FUEL TANK CAPACITY

Description	Liters
Usable Capacity of "Standard Tank"	56.02
Usable Capacity of "Optional Tank"	
93% of Usable Capacity	52.10
Actual Amount of Stoddard Solvent Used	52.10
1/3 of Usable Capacity	18.67

FUEL PUMP

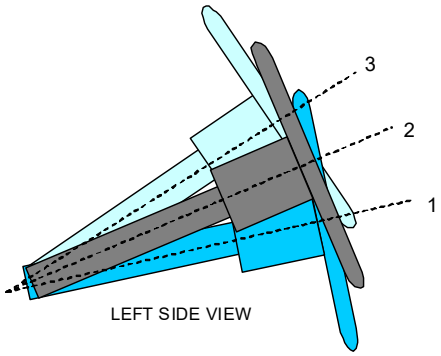
Fuel was evacuated according to the specifications provided by the manufacturer in Form 208. The electric fuel pump operates when the electrical system is activated.



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. A digital inclinometer is used to measure a plate which is placed across the rim of the steering wheel for angular measurements. A tape measure is used to measure telescoping steering wheel travel.



STEERING COLUMN ASSEMBLY

STEERING COLUMN POSITIONING

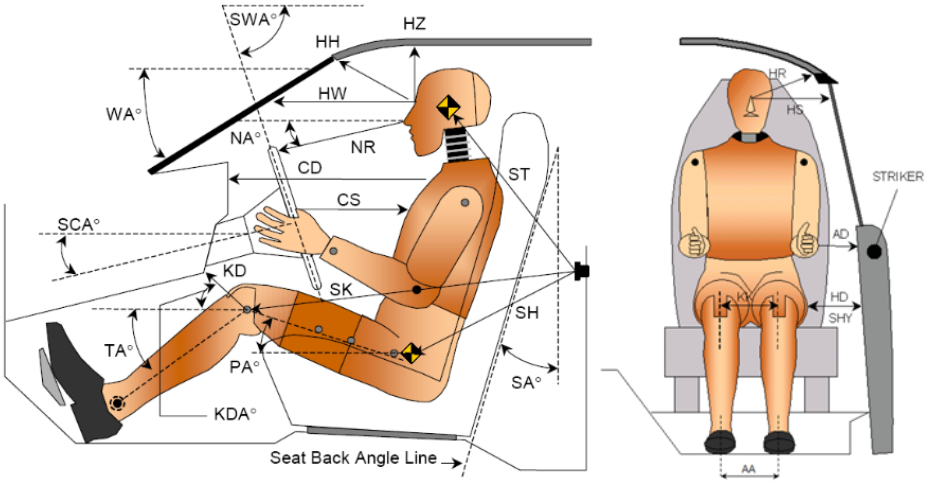
	Degrees	Fore-Aft Position (mm)
Lowermost Position, No. 1	17.9	88
Geometric Center Position, No. 2	20.5	108
Uppermost Position, No. 3	23.1	128
Telescoping Steering Wheel Travel		40
Test Position	20.5	108

DATA SHEET NO. 3

DUMMY CLEARANCE DIMENSIONS

Test Vehicle: 2020 Honda Accord 4-Door Sedan NHTSA No. R20205379

Test Program: R&D Right Side 30° Frontal Rigid Barrier Impact Test Date: 09/25/20



LEFT SIDE VIEW

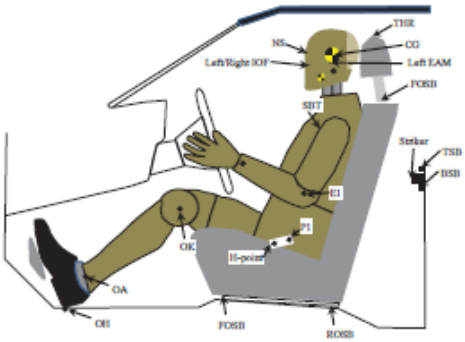
Code	Measurement Description	Driver S/N# EG2595		Passenger S/N# 168	
		Length (mm)	Angle (°)	Length (mm)	Angle (°)
HZ	Nasion to Roof (Z Distance)	190		183	
HH	Nasion to Header (3D Distance)	388		331	
HW	Nasion to Windshield Point 1 Inside (X Distance)	663		619	
NR	Tip of Nose to Top of Steering Wheel (3D Distance)	502			
CD	Chest Point 1 to Dash Point 1 (3D Distance)	568		481	
CS	Chest Point 2 to Center of Steering Wheel (X Distance)	361			
CBS	Chest Point 3 to Bottom of Steering Wheel (X Distance)	238			
IKD	Inboard Knee to Dash Point 3 (3D Distance)			134	
OKD	Outboard Knee to Dash Point 2 (3D Distance)	141		166	
HR	Nasion to Side Header (3D Distance)	217		216	
HS	Nasion to Side Window Distance (Y Distance)	367		363	
AD	Elbow to Door (Y Distance)	195		65	
HD	H-Point to Door (Y Distance)	160			
HLHL	Inboard Heel to Outboard Heel (Y Distance)	346		162	
KK	Inboard Knee to Outboard Knee (Y Distance)			288	
SH	Striker to H-Point (3D Distance)	432		408	
HRA	Head Restraint Post Angle	2.7		2.8	
	H-Point Tool Angle		20.1		20.7
	Torso Angle		18.0		11.2
	Windshield Angle		60.3		60.2
	Head Angle (X)		0.9		0.3
	Head Angle (Y)		-0.6		0.0
	T1 Angle (X)				
	T1 Angle (Y)				
	T6 Angle (X)		-0.6		
	T6 Angle (Y)		20.7		
	T12 Angle (X)				
	T12 Angle (Y)				
	Pelvis Angle (X)		-0.7		
	Pelvis Angle (Y)		31.1		

DATA SHEET NO. 4

DUMMY CMM MEASUREMENTS RELATIVE TO VCS

Test Vehicle: 2020 Honda Accord 4-Door Sedan NHTSA No. R20205379

Test Program: R&D Right Side 30° Frontal Rigid Barrier Impact Test Date: 09/25/20



Description	Units	Driver S/N# EG2595			Passenger S/N# 168		
		X	Y	Z	X	Y	Z
Center of Upper Striker Bolt	mm	2313	-805	-194	2314	807	-194
Center of Lower Striker Bolt	mm	2318	-806	-159	2318	808	-158
Center of Striker Bar	mm	2348	-808	-181	2349	809	-180
Front Outboard Seat Bolt	mm	2853	-645	306	2850	603	303
Rear Outboard Seat Bolt	mm	2449	-605	328	2450	604	321
Center of Steering Wheel Hub	mm	3102	-474	-214			
Outer Head Restraint Post	mm	2207	-446	-455	2228	456	-460
Right Head CG	mm	2412	-286	-578	2481	453	-570
Left Head CG	mm	2411	-444	-579	2479	300	-571
Right EAM	mm						
Left EAM	mm	2418	-441	-552			
Nasion	mm	2499	-362	-589	2569	376	-574
Right IOF	mm	2495	-328	-551	2559	404	-563
Left IOF	mm	2494	-392	-553	2560	347	-561
Tip of Nose	mm	2497	-361	-551	2590	377	-530
Tip of Chin	mm	2497	-362	-453	2564	371	-454
Chest Point 1	mm	2549	-365	-333	2593	373	-331
Chest Point 2	mm	2551	-374	-288	2454	564	-312
Chest Point 3	mm	2621	-361	-141			
Shoulder Point 1	mm	2408	-560	-353	2583	639	-89
Shoulder Point 2	mm	2459	-542	-330			
Elbow	mm	2635	-575	-109	2559	641	-68
Center of H-Point Tool	mm	2548	-635	53			
H-Point on H-Point Tool	mm	2625	-603	81	2610	653	91
H-Point on ATD Skin	mm	2625	-557	81	2610	545	91
Outboard Knee	mm	3009	-553	-70	3011	515	-6
Inboard Knee	mm				3022	228	-17
Outboard Ankle	mm	3327	-566	203	3295	509	199
Inboard Ankle	mm						
Outboard Heel	mm	3348	-544	338	3342	470	338
Inboard Heel	mm	3376	-200	336	3325	308	336

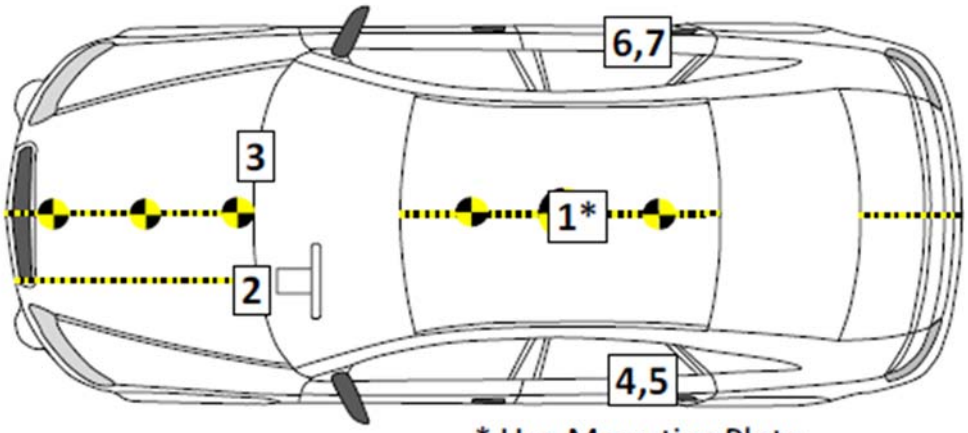
Reference Point:
+X – From the rear of the vehicle to the front of the vehicle
+Y – From the left side of the vehicle to the right side of the vehicle
+Z – From the top of the vehicle to the bottom of the vehicle

DATA SHEET NO. 5

VEHICLE INSTRUMENTATION DATA

Test Vehicle: 2020 Honda Accord 4-Door Sedan NHTSA No. R20205379

Test Program: R&D Right Side 30° Frontal Rigid Barrier Impact Test Date: 09/25/20



VEHICLE ACCELEROMETER PRE-TEST LOCATIONS RELATIVE TO VCS

No.	Instrumentation Location	Axes	Units	Coordinates (mm)		
				X	Y	Z
1	Vehicle CG (Acceleration and Angular Rate)	x, y, z	g, °/s	2189	-1	242
2	Driver Floor Pan	x, y, z	°/s	3672	-340	135
3	Passenger Floor Pan	x, y, z	g	3672	324	149
4	Door Sill LR	x, y	g	1916	-745	258
5	Door Sill LR Redundant	x, y	g	1848	-745	259
6	Door Sill RR	x, y	g	1921	742	259
7	Door Sill RR Redundant	x, y	g	1893	746	260

Reference Point:

+X – From the rear of the vehicle to the front of the vehicle

+Y – From the left side of the vehicle to the right side of the vehicle

+Z – From the top of the vehicle to the bottom of the vehicle

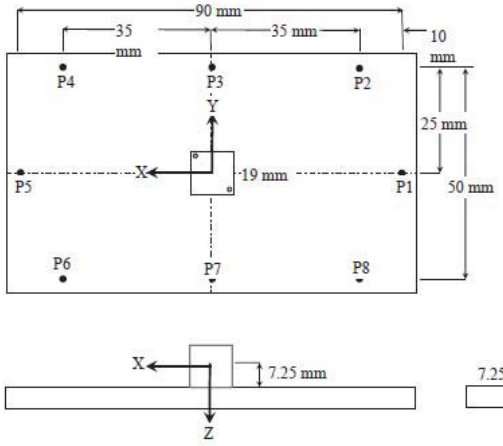
DATA SHEET NO. 5 … (CONTINUED)

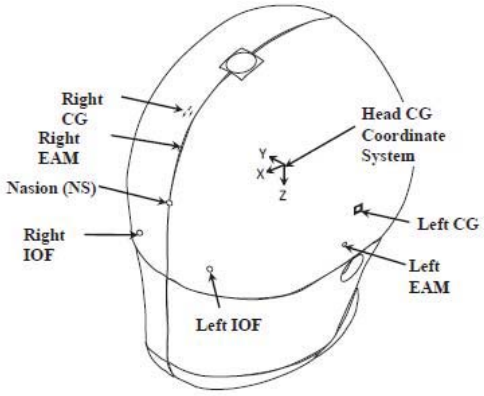
VEHICLE INSTRUMENTATION DATA

Test Vehicle: 2020 Honda Accord 4-Door Sedan NHTSA No. R20205379

Test Program: R&D Right Side 30° Frontal Rigid Barrier Impact Test Date: 09/25/20

ANGULAR RATE SENSOR MOUNTING PLATE & THOR HEAD POINT DEFINITIONS





CG ARS MOUNTING PLATE - VEHICLE COORDINATE SYSTEM

No.	Description	Units	X	Y	Z
P1	Plate Point 1	mm	2129	4	231
P2	Plate Point 2	mm	2139	30	231
P3	Plate Point 3	mm	2174	30	231
P4	Plate Point 4	mm	2208	31	231
P5	Plate Point 5	mm	2219	6	231
P6	Plate Point 6	mm	2209	-19	230
P7	Plate Point 7	mm	2174	-20	230
P8	Plate Point 8	mm	2139	-20	231

DRIVER HEAD POINTS IN RELATION TO HEAD CG COORDINATE SYSTEM

Description	Units	x	y	z
Left CG	mm	64	-42	44
Left EAM	mm	71	-36	72
Left IOF	mm	153	2	71
Right IOF	mm	154	68	72
Nasion	mm	158	34	36
Right EAM	mm	71	108	73
Right CG	mm	63	111	44

DATA SHEET NO. 5 … (CONTINUED)

VEHICLE INSTRUMENTATION DATA

Test Vehicle: 2020 Honda Accord 4-Door Sedan NHTSA No. R20205379

Test Program: R&D Right Side 30° Frontal Rigid Barrier Impact Test Date: 09/25/20

Location No.	Description	Axes	Units	Positive Direction		Negative Direction	
				Max	Time (ms)	Min	Time (ms)
1	Vehicle CG	x	g	2.2	104.1	-44.0	49.5
		y	g	4.9	9.5	-16.2	44.4
		z	g	13.8	21.1	-16.9	70.5
	Vehicle CG Rotation	x	°/s	28.7	286.5	-69.3	99.4
		y	°/s	67.8	31.3	-69.4	75.3
		z	°/s	47.8	299.8	-33.4	55.9
2	Driver Floor Pan	x	g	2.0	103.8	-45.4	50.3
		y	g	9.7	24.8	-25.0	32.1
		z	g	16.8	51.7	23.0	12.0
3	Passenger Floor Pan	x	g	23.0	12.0	-46.4	50.2
		y	g	29.2	50.1	-32.9	58.4
		z	g	11.4	13.1	-50.3	50.3
4	Door Sill LR	x	g	1.3	159.7	-40.9	50.3
		y	g	4.1	9.4	-13.4	44.6
5	Door Sill LR Redundant	x	g	1.3	149.9	-40.2	50.4
		y	g	2.8	9.7	-12.8	44.7
6	Door Sill RR	x	g	1.5	145.9	-40.8	54.3
		y	g	4.7	19.5	-16.5	33.3
7	Door Sill RR Redundant	x	g	1.9	146.0	-40.7	54.3
		y	g	8.3	19.5	-30.0	33.2

Note: See Appendix B for all vehicle data plots

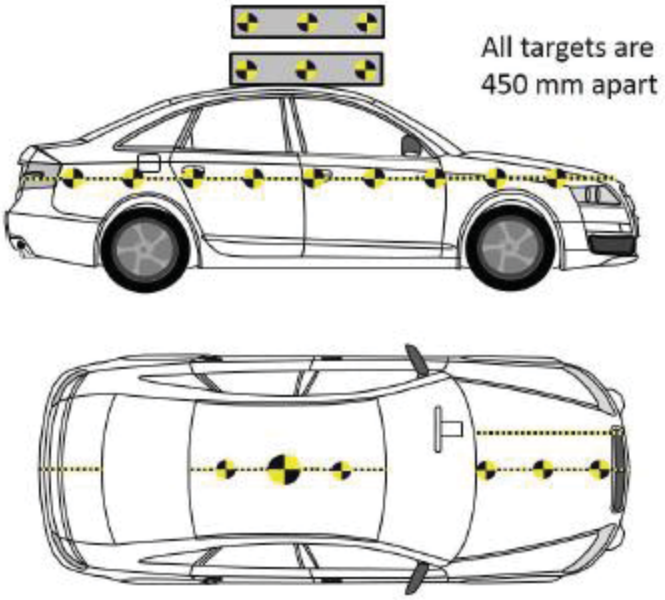
DATA SHEET NO. 6

PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

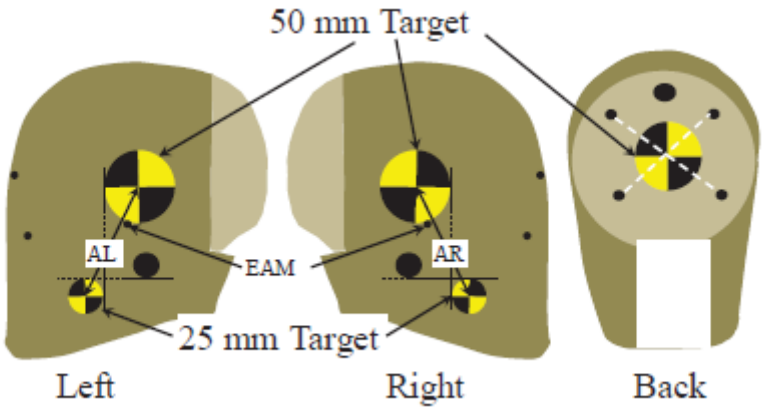
Test Vehicle: 2020 Honda Accord 4-Door Sedan NHTSA No. R20205379

Test Program: R&D Right Side 30° Frontal Rigid Barrier Impact Test Date: 09/25/20

VEHICLE TARGETS



ATD HEAD TARGETS



Driver

Target	Units	Measurement
AL	mm	97
AR	mm	98

DATA SHEET NO. 7

TEST VEHICLE SUMMARY OF RESULTS

Test Vehicle: 2020 Honda Accord 4-Door Sedan NHTSA No. R20205379

Test Program: R&D Right Side 30° Frontal Rigid Barrier Impact Test Date: 09/25/20

INSTRUMENTATION

Instrumentation	Number of Channels Collected
Driver Dummy Sensors	43
Passenger Dummy Sensors	99
Vehicle Structure Sensors	20
Airbag Timing Sensors	10
Total	172

CAMERA COVERAGE

Type of Camera	Number of Cameras Collected
High-Speed Vehicle Onboard	4
High-Speed Off-Board	14
Real-Time Panning	1
Total	19

DATA SHEET NO. 8

POST TEST OBSERVATIONS

Test Vehicle: 2020 Honda Accord 4-Door Sedan NHTSA No. R20205379

Test Program: R&D Right Side 30° Frontal Rigid Barrier Impact Test Date: 09/25/20

TEST DUMMY INFORMATION AND CONTACT

Description	Driver	Passenger
Dummy Type/Serial No.	THOR-50M / EG2595	AM50 / 168
Lower Leg Type	LX	
Lower Leg Serial No.		
Head Contact	Front Airbag, Headliner, Sun Visor, Windshield	Front Airbag, Windshield, A-Pillar, Headliner
Upper Torso Contact	Front Airbag	Front Airbag
Lower Torso Contact	Front Airbag	Front Airbag, Door Panel
Left Knee Contact	Knee Airbag, Steering Column	Knee Airbag, Knee Bolster, Door Panel
Right Knee Contact	Knee Airbag, Knee Bolster	Knee Airbag, Knee Bolster

DOOR OPENING AND SEAT TRACK INFORMATION

Description	Driver	Passenger
Locked / Unlocked Doors	Unlocked	Unlocked
Front Door Opening	Remained closed and latched, operational	Remained closed and latched, operational
Rear Door Opening	Remained closed and latched, operational	Remained closed and latched, operational
Seat Track Shift (mm)	2	2
Seat Back Failure	None	None
Glazing Damage	None	

POST TEST STRUCTURAL OBSERVATIONS

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

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Driver		Passenger	
	Installed	Operated	Installed	Operated
Front Airbag	Yes	Yes	Yes	Yes
Side Airbag 1 (Curtain)	Yes	No	Yes	Yes
Side Airbag 2 (Torso/Pelvis)	Yes	No	Yes	Yes
Knee Airbag	Yes	Yes	Yes	Yes
Seat Belt Pretensioner	Yes	N/A*	Yes	N/A*
Seat Belt Load Limiter	Yes	N/A*	Yes	N/A*

*Dummies were unbelted

DATA SHEET NO. 9

VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2020 Honda Accord 4-Door Sedan NHTSA No. R20205379

Test Program: R&D Right Side 30° Frontal Rigid Barrier Impact Test Date: 09/25/20

No.	Description	Pre-Test	Post-Test	Difference
1	Total Length of Vehicle at Centerline	4882	4558	-325
2	Rear Surface of Vehicle to Front of Engine	4452	4300	-152
3	RSOV to Firewall	3846	3852	6
4	RSOV to Upper Leading Edge of Right Door	3480	3475	-4
5	RSOV to Upper Leading Edge of Left Door	3478	3474	-4
6	RSOV to Lower Leading Edge of Right Door	3457	3452	-5
7	RSOV to Lower Leading Edge of Left Door	3464	3462	-2
8	RSOV to Upper Trailing Edge of Right Door	2278	2274	-4
9	RSOV to Upper Trailing Edge of Left Door	2277	2273	-3
10	RSOV to Lower Trailing Edge of Right Door	2293	2287	-6
11	RSOV to Lower Trailing Edge of Left Door	2291	2288	-3
12	RSOV to Bottom of A-Pillar, Right Side	3398	3394	-3
13	RSOV to Bottom of A-Pillar, Left Side	3394	3391	-3
14	RSOV to Firewall, Right Side	4010	3969	-40
15	RSOV to Firewall, Left Side	4016	4017	1
16	RSOV to Steering Column	2938	2990	52
17	Center of Steering Column to A-Pillar	456	402	-55
18	Center of Steering Column to Headliner	453	418	-35
19	RSOV to Right Side of Front Bumper	4714	4279	-435
20	RSOV to Left Side of Front Bumper	4721	4790	69
21	Length of Engine Block	573	504	-68
RD	RSOV to Right Side of Dash Panel	3160	3164	4
CD	RSOV to Center of Dash Panel	3071	3081	10
LD	RSOV to Left Side of Dash Panel	3157	3159	2

All measurements in millimeters

DATA SHEET NO. 10

ACCIDENT INVESTIGATION DIVISION DATA

Test Vehicle: 2020 Honda Accord 4-Door Sedan NHTSA No. R20205379

Test Program: R&D Right Side 30° Frontal Rigid Barrier Impact Test Date: 09/25/20

VEHICLE INFORMATION

VIN: 1HGCV1F18LA082743 Wheelbase (mm): 2829

Vehicle Size Category: Passenger Car Test Weight (kg): 1623.5

ACCELEROMETER DATA

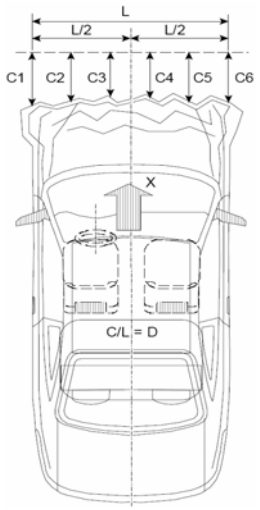
Accelerometer Locations: Vehicle CG_x

Cal. Procedure/Interval: Vibration Test / 6 months

Integration Algorithm: NHTSA Standard

Linearity: Good

Impact Velocity (km/h): 48.17



CRUSH PROFILE

Collision Deformation Classification: 12FREW2

Midpoint of Damage: Vehcle Centerline

Damage Region Length (mm): 1298

Impact Mode: Right Side 30° Frontal

Crush Measurements

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush Zone 1 at Left Side	mm	4695	4767	72
C2	Crush Zone 2 at Left Side	mm	4830	4777	-54
C3	Crush Zone 3 at Left Side	mm	4825	4664	-161
C4	Crush Zone 4 at Right Side	mm	4822	4551	-271
C5	Crush Zone 5 at Right Side	mm	4826	4382	-444
C6	Crush Zone 6 at Right Side	mm	4688	4256	-432
L	C1 to C6	mm	1287		

DATA SHEET NO. 11

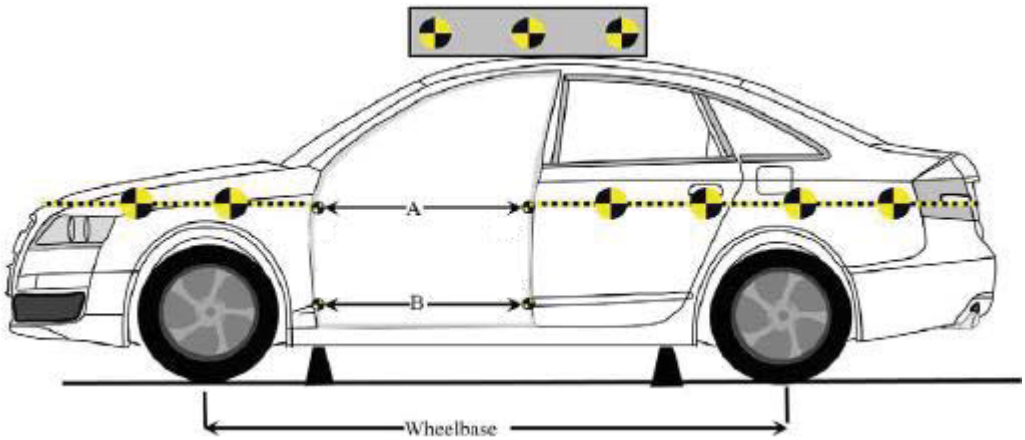
VEHICLE INTRUSION MEASUREMENTS RELATIVE TO VCS

Test Vehicle: 2020 Honda Accord 4-Door Sedan NHTSA No. R20205379

Test Program: R&D Right Side 30° Frontal Rigid Barrier Impact Test Date: 09/25/20

DOOR OPENING WIDTH

Item	Description	Units	Pre-Test	Post-Test	Difference
A	Driver Side Upper	mm	915	917	-1
B	Driver Side Lower	mm	798	797	1
D	Passenger Side Upper	mm	915	915	0
E	Passenger Side Lower	mm	797	798	-1



DATA SHEET NO. 11 … (CONTINUED)

VEHICLE INTRUSION MEASUREMENTS RELATIVE TO VCS

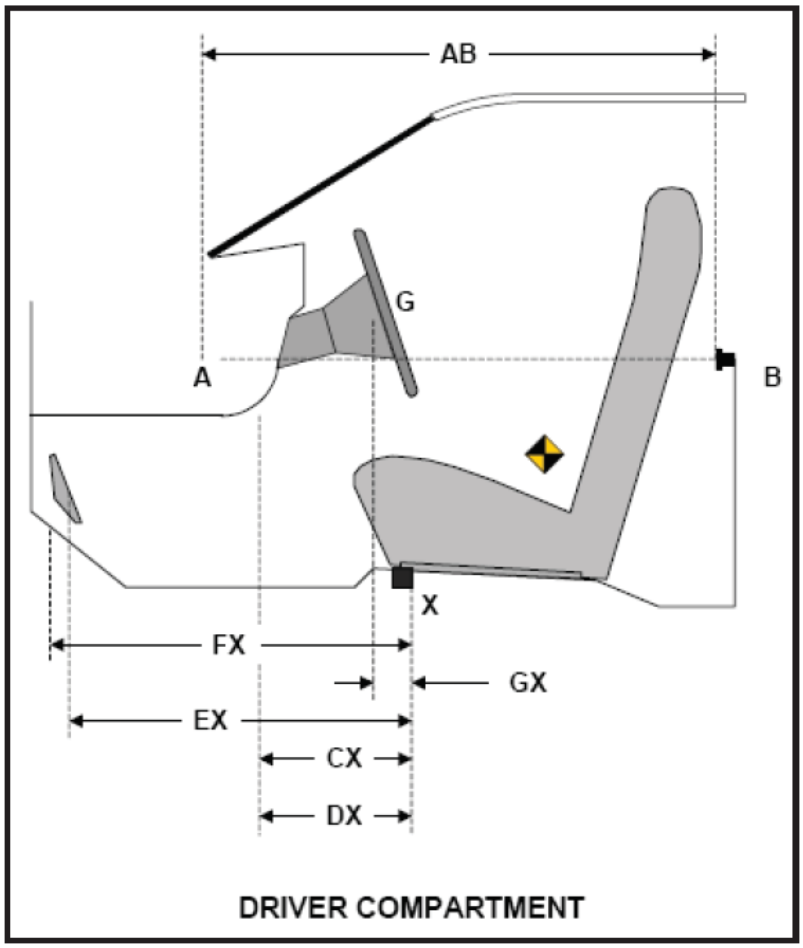
Test Vehicle: 2020 Honda Accord 4-Door Sedan NHTSA No. R20205379

Test Program: R&D Right Side 30° Frontal Rigid Barrier Impact Test Date: 09/25/20

DRIVER COMPARTMENT INTRUSION

Item	Description	Units	Pre-Test	Post-Test	Difference
AB	Door Opening (Inside Window Jam)	mm	879	882	-4
CX	Left Knee Bolster to X	mm	263	268	1
DX	Right Knee Bolster to X	mm	250	271	-10
EX	Brake Pedal to X	mm	585	578	25
FX	Footrest to X	mm	676	690	6
GX	Center of Steering Column Wheel Hub to X	mm	61	116	-37

X = Front of Seat Bolt



DRIVER COMPARTMENT

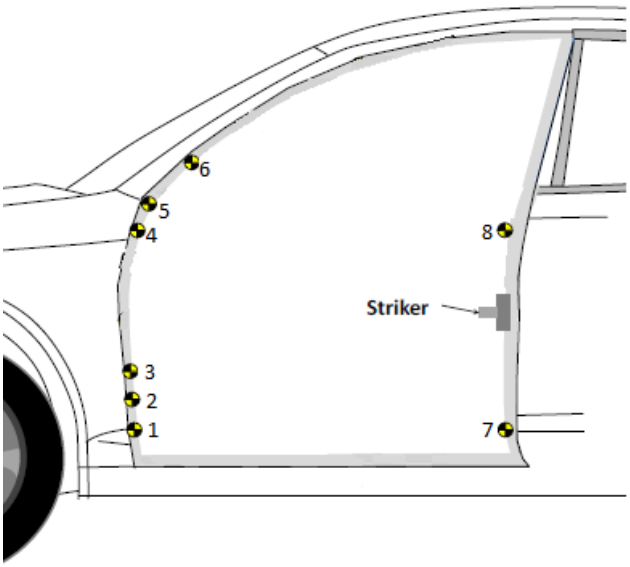
DATA SHEET NO. 11 … (CONTINUED)

VEHICLE INTRUSION MEASUREMENTS RELATIVE TO VCS

Test Vehicle: 2020 Honda Accord 4-Door Sedan NHTSA No. R20205379

Test Program: R&D Right Side 30° Frontal Rigid Barrier Impact Test Date: 09/25/20

DRIVER SIDE DOOR SILL INTRUSIONS



+X – From the rear of the vehicle to the front of the vehicle
+Y – From the left side of the vehicle to the right side of the vehicle
+Z – From the top of the vehicle to the bottom of the vehicle

Point	Pre-Test			Post-Test			Difference		
	x	y	z	x	y	z	x	y	z
1	3314	-770	161	3313	-772	159	-1	-1	-2
2	3337	-768	87	3339	-769	86	2	-1	-1
3	3330	-766	11	3330	-767	10	0	-1	-1
4	3263	-758	-288	3263	-758	-289	1	0	-1
5	3233	-744	-363	3233	-744	-364	0	0	-1
6	3150	-725	-436	3151	-724	-438	1	0	-2
7	2517	-772	160	2516	-774	162	0	-2	1
8	2347	-757	-289	2347	-758	-290	-1	-1	-1

All measurements in millimeters.

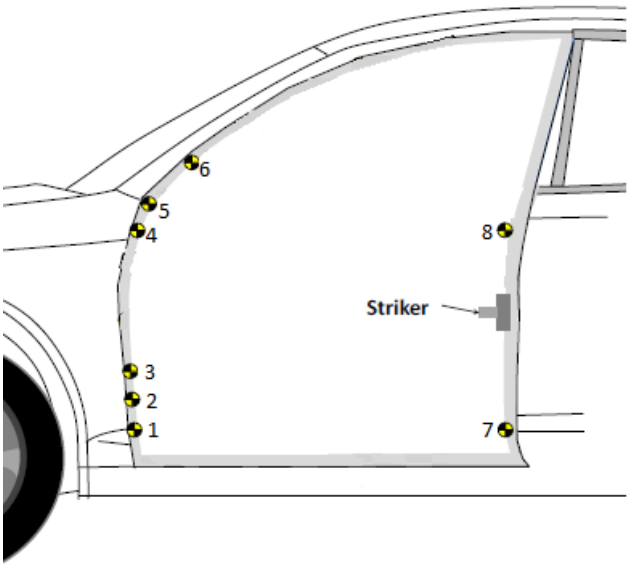
DATA SHEET NO. 11 … (CONTINUED)

VEHICLE INTRUSION MEASUREMENTS RELATIVE TO VCS

Test Vehicle: 2020 Honda Accord 4-Door Sedan NHTSA No. R20205379

Test Program: R&D Right Side 30° Frontal Rigid Barrier Impact Test Date: 09/25/20

PASSENGER SIDE DOOR SILL INTRUSIONS



+X – From the rear of the vehicle to the front of the vehicle
+Y – From the left side of the vehicle to the right side of the vehicle
+Z – From the top of the vehicle to the bottom of the vehicle

Point	Pre-Test			Post-Test			Difference		
	x	y	z	x	y	z	x	y	z
1	3314	769	161	3314	769	162	0	0	1
2	3341	766	87	3339	767	85	-2	1	-2
3	3329	765	12	3328	765	9	-2	1	-3
4	3264	756	-288	3265	758	-287	1	1	0
5	3236	741	-363	3236	743	-362	1	2	1
6	3149	722	-440	3148	723	-438	-1	1	2
7	2517	770	164	2516	770	165	-1	0	1
8	2349	757	-288	2350	757	-287	1	0	1

All measurements in millimeters.

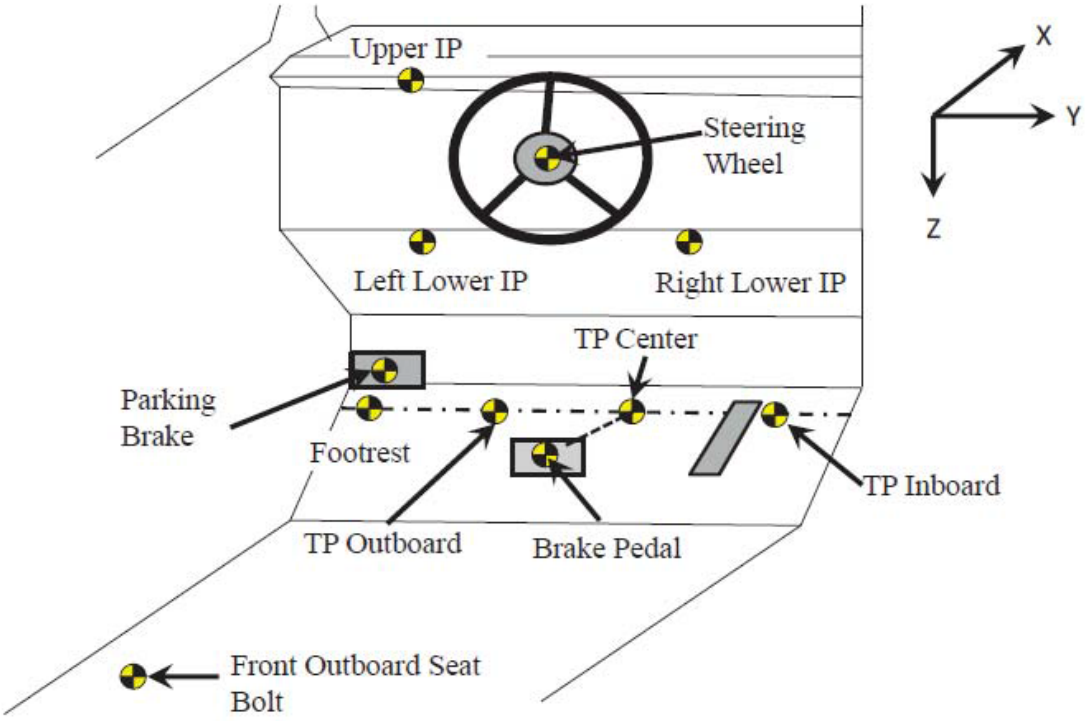
DATA SHEET NO. 11 … (CONTINUED)

VEHICLE INTRUSION MEASUREMENTS RELATIVE TO VCS

Test Vehicle: 2020 Honda Accord 4-Door Sedan NHTSA No. R20205379

Test Program: R&D Right Side 30° Frontal Rigid Barrier Impact Test Date: 09/25/20

DRIVER FLOOR PAN MEASUREMENTS



Intrusion Location	Pre-Test (mm)			Post-Test (mm)			Difference (mm)		
	x	y	z	x	y	z	x	y	z
TP Inboard	3651	-198	160	3649	-199	162	-2	0	2
TP Center	3673	-342	163	3671	-343	160	-2	-1	-4
TP Outboard	3620	-492	161	3616	-496	158	-4	-3	-3
TP Footrest	3542	-591	162	3540	-593	161	-1	-2	-1
Brake Pedal	3436	-342	163	3431	-341	160	-6	1	-3
Left Lower IP	3115	-526	-142	3119	-517	-151	4	9	-10
Right Lower IP	3102	-224	-141	3122	-224	-151	20	1	-10
Upper IP	3077	-525	-189	3085	-517	-200	8	8	-11
Steering Wheel	2912	-373	-288	2967	-358	-322	55	15	-34
Front Outboard Bolt	2853	-645	246	2851	-606	308	-2	39	61
Emergency Brake									

Reference point:
+X – From the rear of the vehicle to the front of the vehicle
+Y – From the left side of the vehicle to the right side of the vehicle
+Z – From the top of the vehicle to the bottom of the vehicle

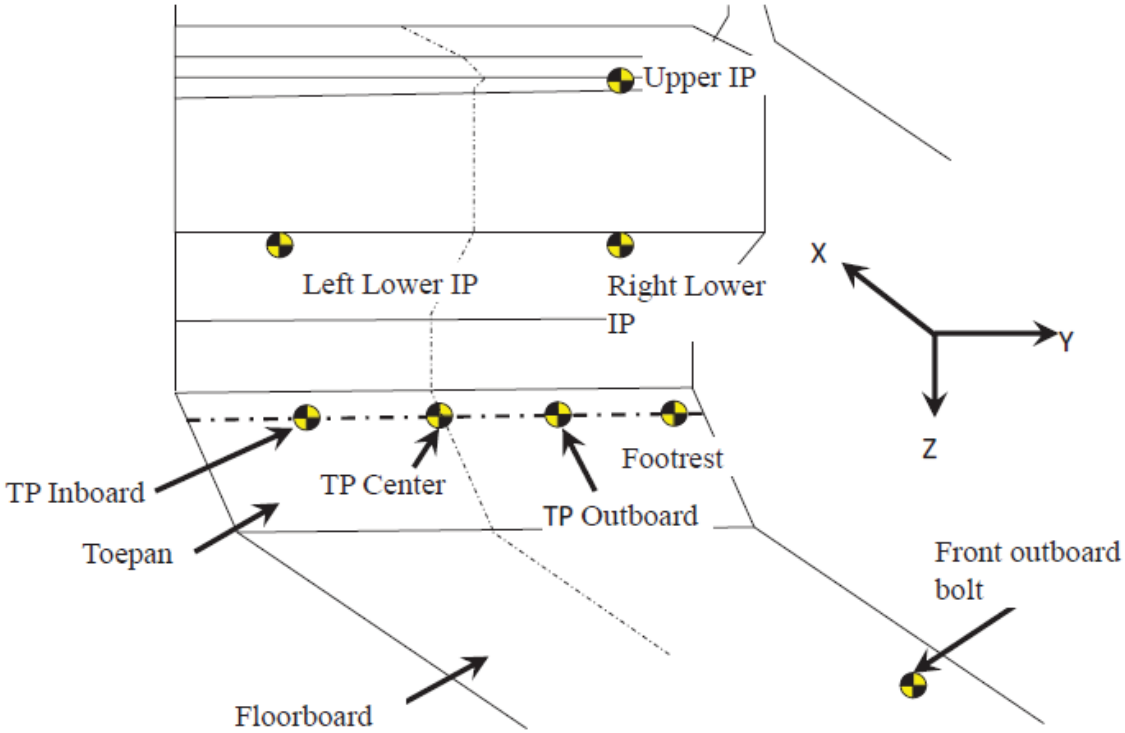
DATA SHEET NO. 11 … (CONTINUED)

VEHICLE INTRUSION MEASUREMENTS RELATIVE TO VCS

Test Vehicle: 2020 Honda Accord 4-Door Sedan NHTSA No. R20205379

Test Program: R&D Right Side 30° Frontal Rigid Barrier Impact Test Date: 09/25/20

PASSENGER FLOOR PAN MEASUREMENTS



Intrusion Location	Pre-Test (mm)			Post-Test (mm)			Difference (mm)		
	x	y	z	x	y	z	x	y	z
TP Inboard	3642	221	165	3619	220	159	-23	-1	-6
TP Center	3661	374	162	3635	371	152	-26	-3	-10
TP Outboard	3588	520	163	3564	521	147	-24	1	-16
TP Footrest	3528	621	161	3513	622	155	-15	1	-5
Left Lower IP	3074	220	-142	3081	222	-148	7	2	-6
Right Lower IP	3114	522	-142	3115	521	-133	1	-1	8
Upper IP	3077	525	-189	3074	525	-213	-3	-1	-24
Front Outboard Seat Bolt	2855	653	247	2852	625	303	-3	-28	56

Reference point:
+X – From the rear of the vehicle to the front of the vehicle
+Y – From the left side of the vehicle to the right side of the vehicle
+Z – From the top of the vehicle to the bottom of the vehicle

DATA SHEET NO. 12

SUMMARY OF FMVSS 212, 219 (PARTIAL), AND 301 DATA

Test Vehicle: 2020 Honda Accord 4-Door Sedan NHTSA No. R20205379

Test Program: R&D Right Side 30° Frontal Rigid Barrier Impact Test Date: 09/25/20

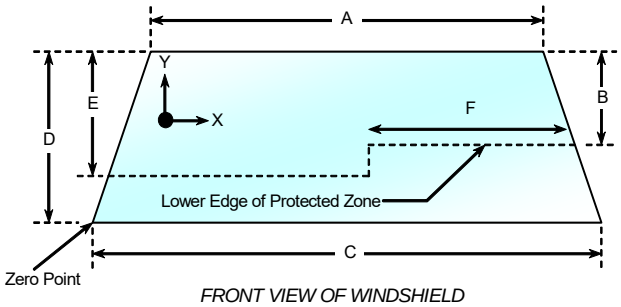
Windshield Mounting Details: Windshield glass is secured to the vehicle frame with plastic molding and rubber cement.

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

Temperature of windshield molding during test: 21.1° C

WINDSHIELD PERIPHERY MEASUREMENTS

Measurement	Pre-Test (mm)	Post-Test (mm)	% Retention
Left Side	2065	2065	100.0%
Right Side	2065	2065	100.0%
Total	4130	4130	100.0%



FRONT VIEW OF WINDSHIELD

Item	Units	Value
A	mm	1270
B	mm	340
C	mm	1500
D	mm	835
E	mm	490
F	mm	555

AREAS 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.

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.

X	Y

DATA SHEET NO. 12 … (CONTINUED)

SUMMARY OF FMVSS 212, 219 (PARTIAL), AND 301 DATA

Test Vehicle: 2020 Honda Accord 4-Door Sedan NHTSA No. R20205379

Test Program: R&D Right Side 30° Frontal Rigid Barrier Impact Test Date: 09/25/20

FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Temperature at Time of Impact: 29.4° C Test Time: 6:00 PM

Stoddard Solvent Spillage Measurements

A. From impact until vehicle motion ceases: 0 oz.
(Maximum allowable = 1 oz.)

B. For the 5 minute period after motion ceases: 0 oz.
(Maximum allowable = 5 oz.)

C. For the following 25 minutes: 0 oz.
(Maximum allowable = 1 oz./minute)

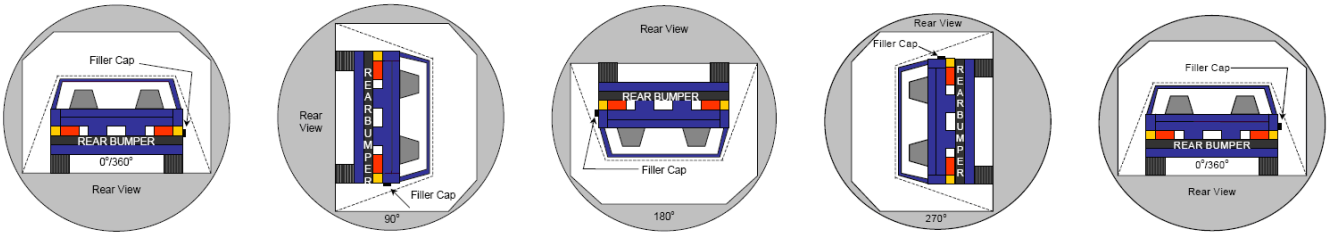
D. Spillage: There was no Stoddard solvent spillage.

DATA SHEET NO. 13

FMVSS 301 STATIC ROLLOVER RESULTS

Test Vehicle: 2020 Honda Accord 4-Door Sedan NHTSA No. R20205379

Test Program: R&D Right Side 30° Frontal Rigid Barrier Impact Test Date: 09/25/20



0° TO 90° 90° TO 180° 180° TO 270° 270° TO 360°

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: There was no Stoddard solvent spillage.

SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0° To 90°	83	300	383
90° To 180°	82	300	382
180° To 270°	77	300	377
270° To 360°	77	300	377

FMVSS 301 SPILLAGE TABLE

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

SOLVENT SPILLAGE LOCATION TABLE

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

APPENDIX A

PHOTOGRAPHS

TABLE OF PHOTOGRAPHS

TABLE OF PHOTOGRAPHS … (CONTINUED)

TABLE OF PHOTOGRAPHS … (CONTINUED)

TABLE OF PHOTOGRAPHS … (CONTINUED)

TABLE OF PHOTOGRAPHS … (CONTINUED)

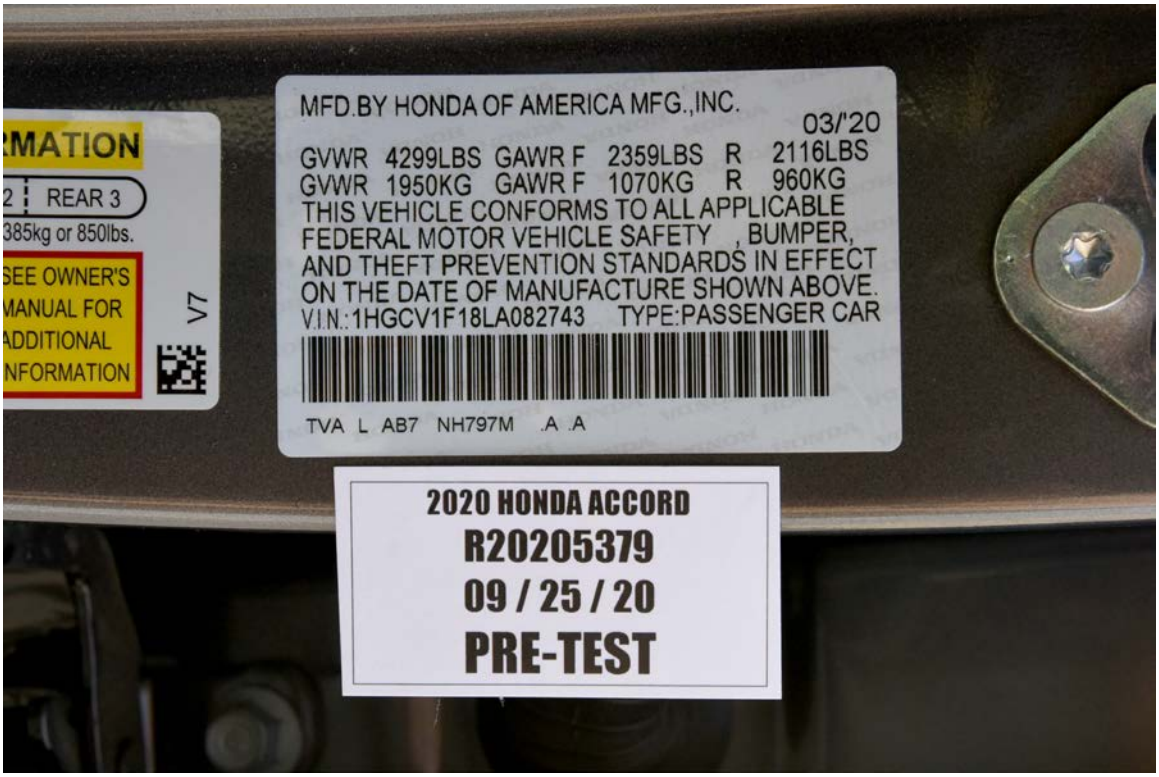


FIGURE 1. Test Vehicle Certification Label

FIGURE 2. Test Vehicle Tire Placard

FIGURE 3. Right Front ¾ View, As Received

FIGURE 4. Left Rear ¾ View, As Received

FIGURE 5. Pre-Test Front View of Test Vehicle

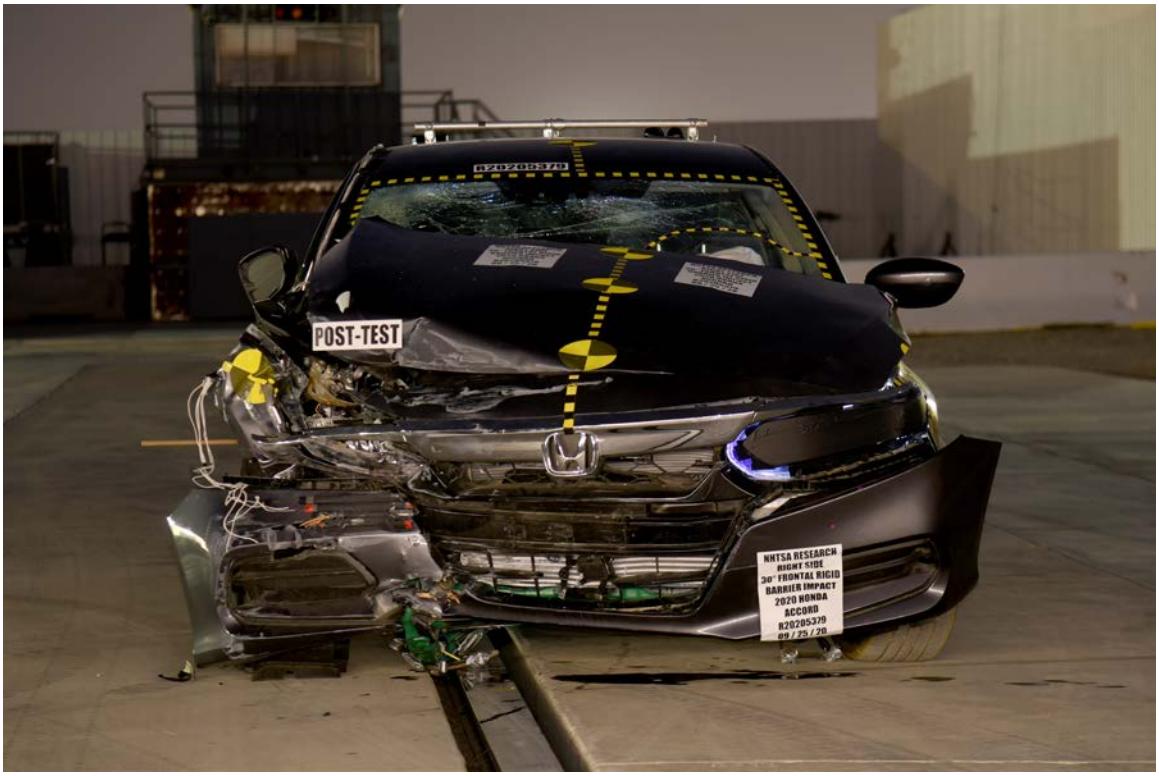


FIGURE 6. Post-Test Front View of Test Vehicle

FIGURE 7. Pre-Test Left View of Test Vehicle

FIGURE 8. Post-Test Left View of Test Vehicle

FIGURE 9. Pre-Test Right View of Test Vehicle

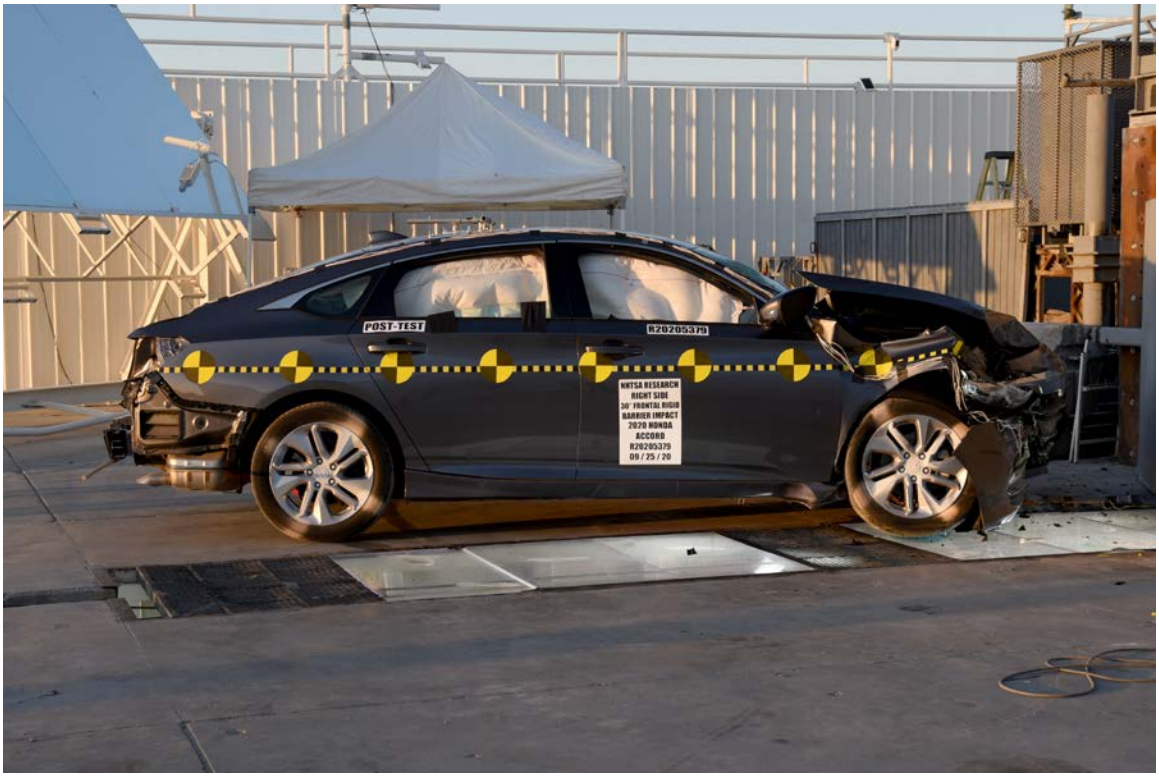


FIGURE 10. Post-Test Right View of Test Vehicle

FIGURE 11. Pre-Test Left Front ¾ View of Test Vehicle

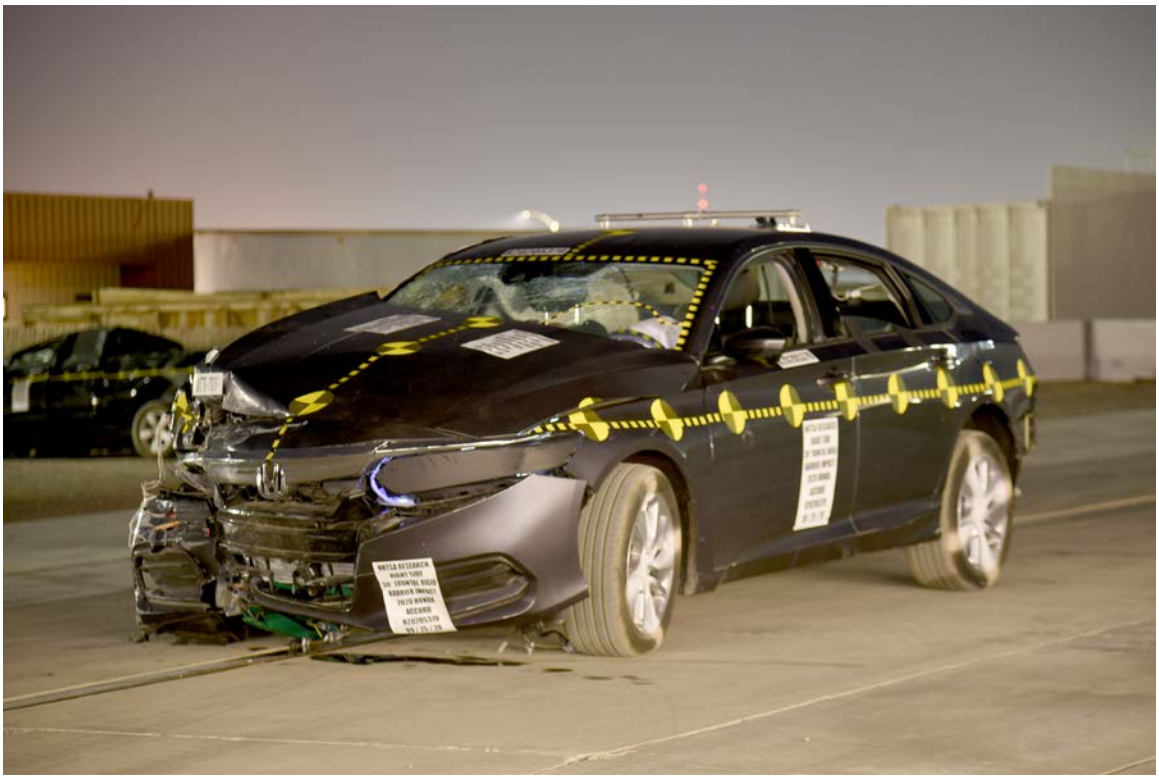


FIGURE 12. Post-Test Left Front ¾ View of Test Vehicle

FIGURE 13. Pre-Test Right Front ¾ View of Test Vehicle

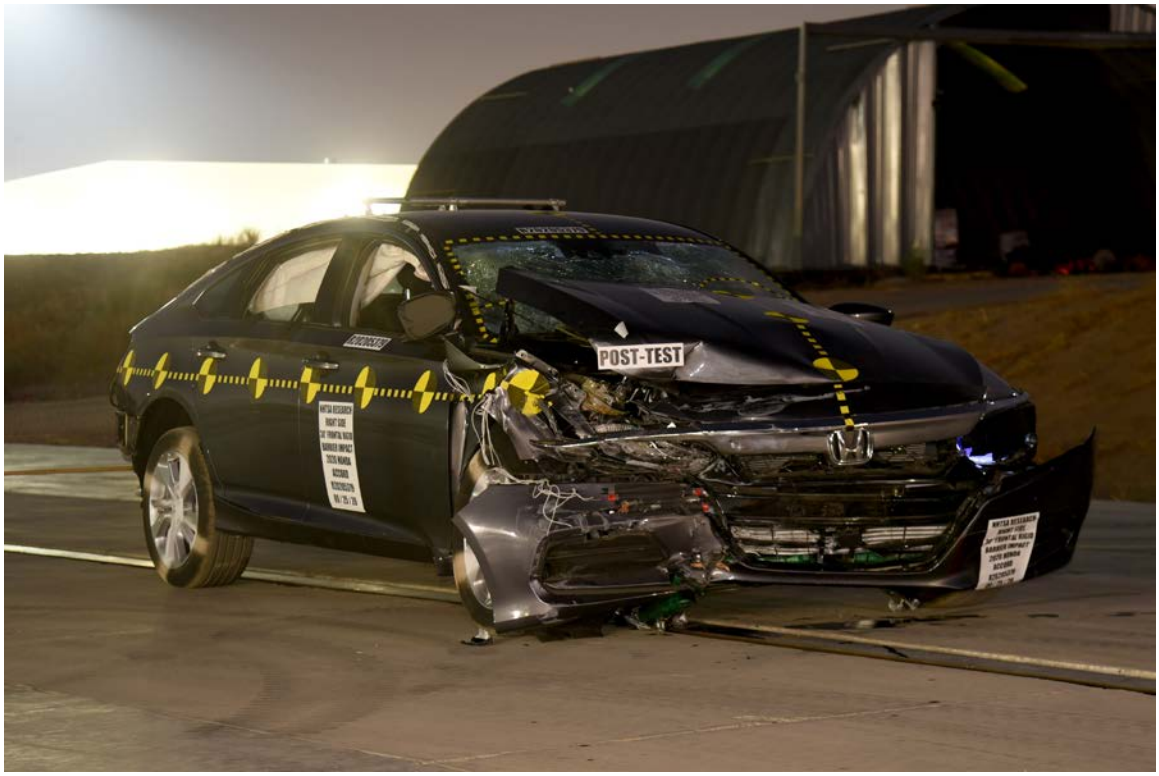


FIGURE 14. Post-Test Right Front ¾ View of Test Vehicle

FIGURE 15. Pre-Test Right Rear ¾ View of Test Vehicle

FIGURE 16. Post-Test Right Rear ¾ View of Test Vehicle

FIGURE 17. Pre-Test Rear View of Test Vehicle

FIGURE 18. Post-Test Rear View of Test Vehicle

FIGURE 19. Pre-Test Left Rear ¾ View of Test Vehicle

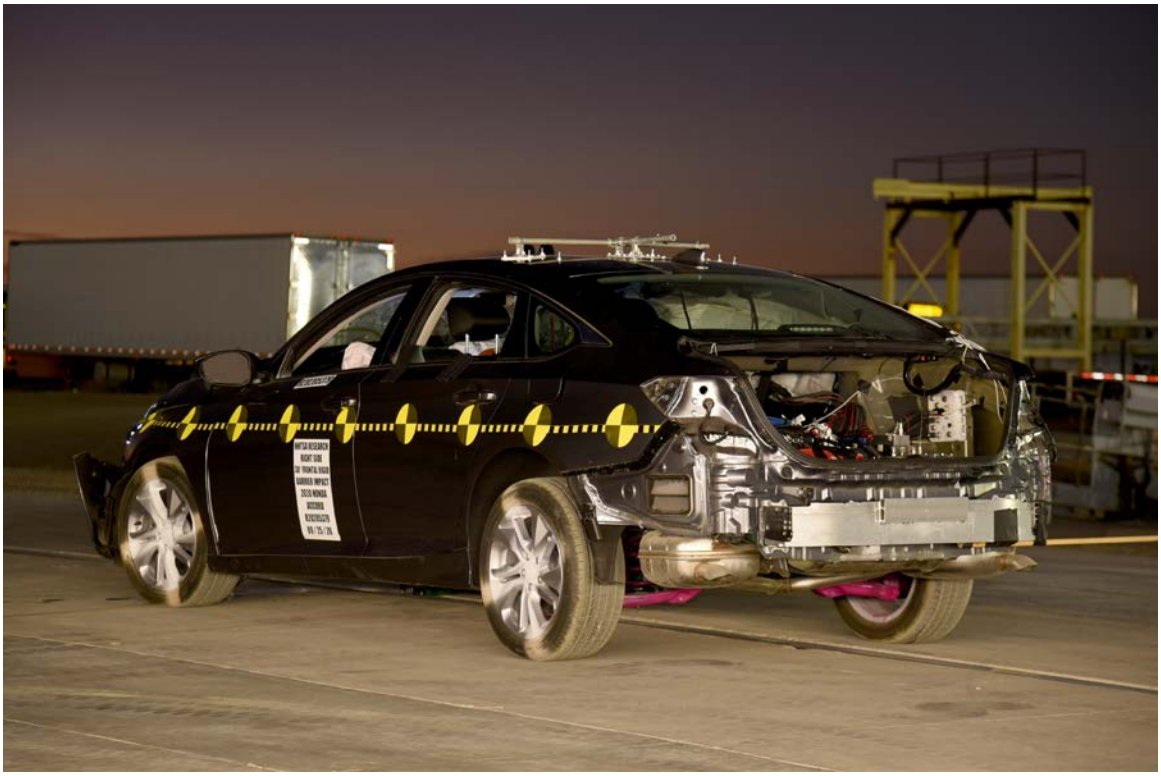


FIGURE 20. Post-Test Left Rear ¾ View of Test Vehicle

FIGURE 21. Pre-Test Windshield View

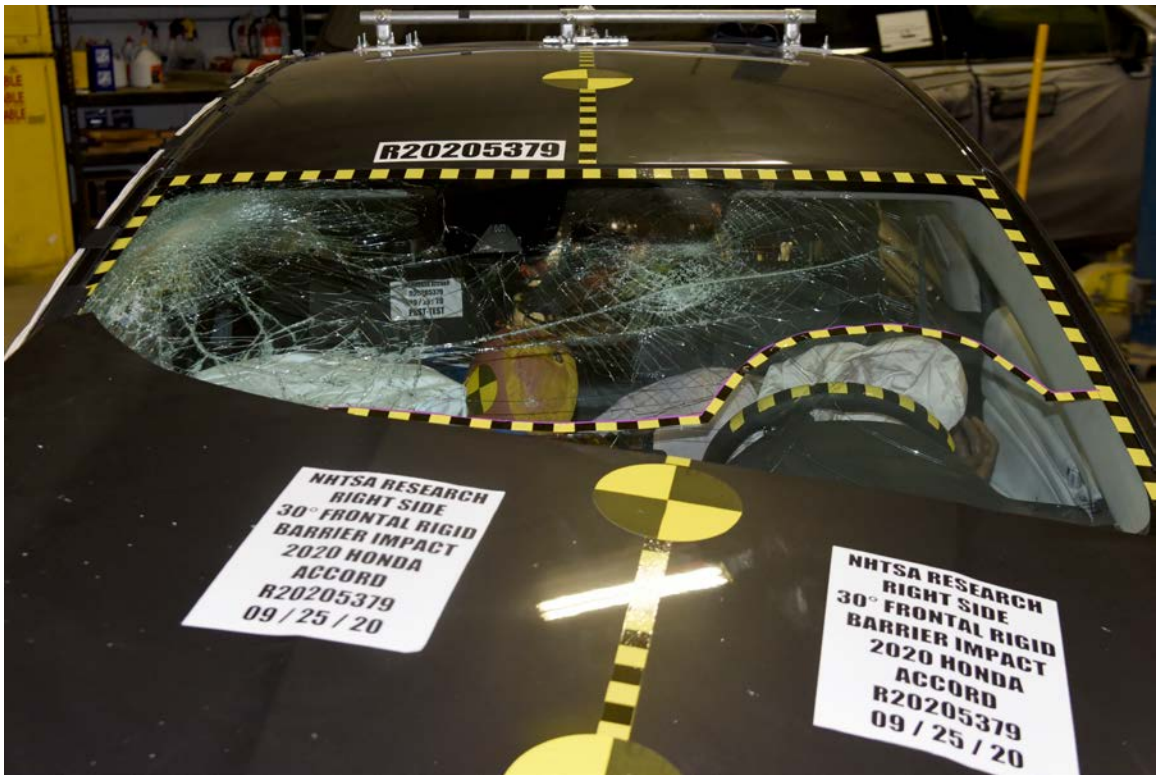


FIGURE 22. Post-Test Windshield View

FIGURE 23. Pre-Test Engine Compartment View

FIGURE 24. Post-Test Engine Compartment View

FIGURE 25. Pre-Test Fuel Filler Cap View

FIGURE 26. Post-Test Fuel Filler Cap View

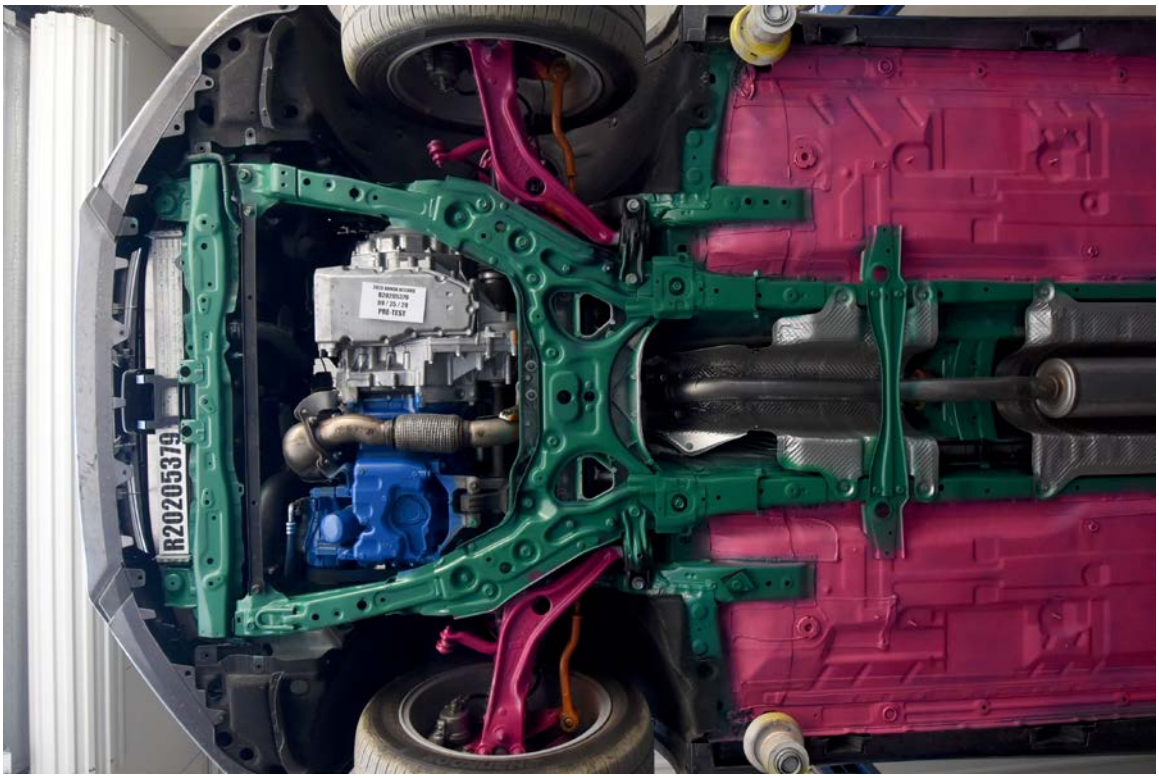


FIGURE 27. Pre-Test Front Underbody View

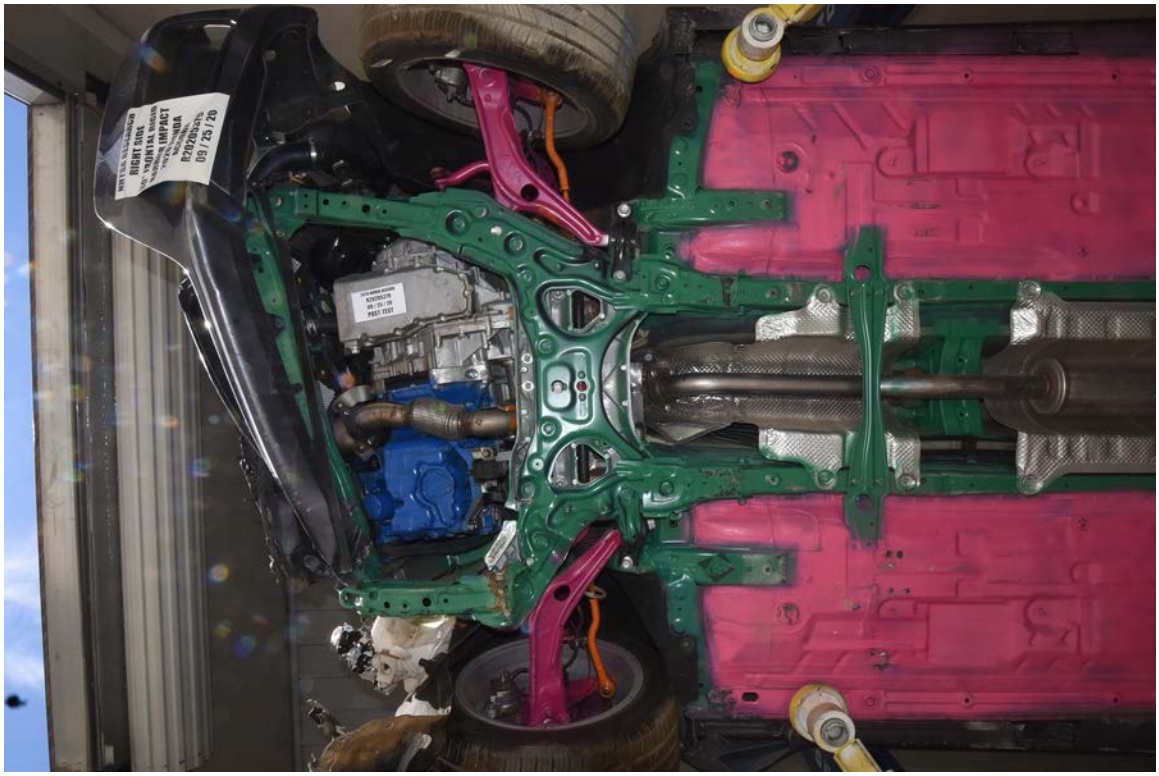


FIGURE 28. Post-Test Front Underbody View

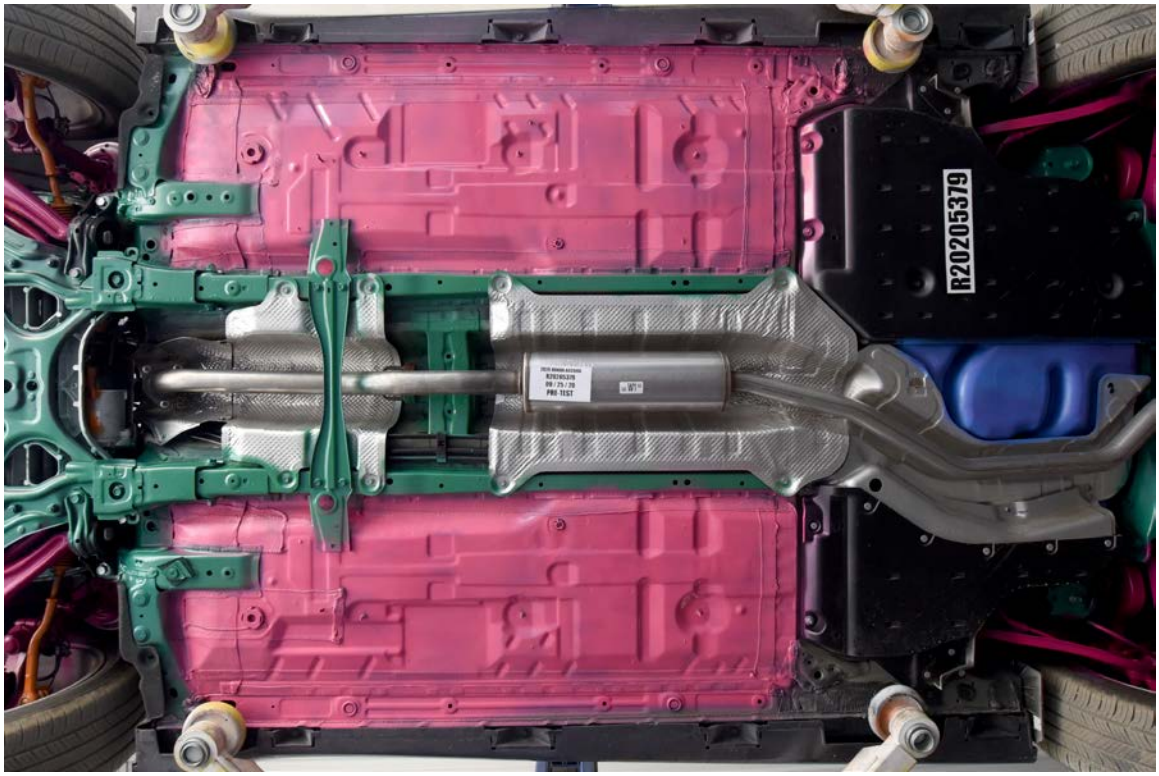


FIGURE 29. Pre-Test Mid Underbody View

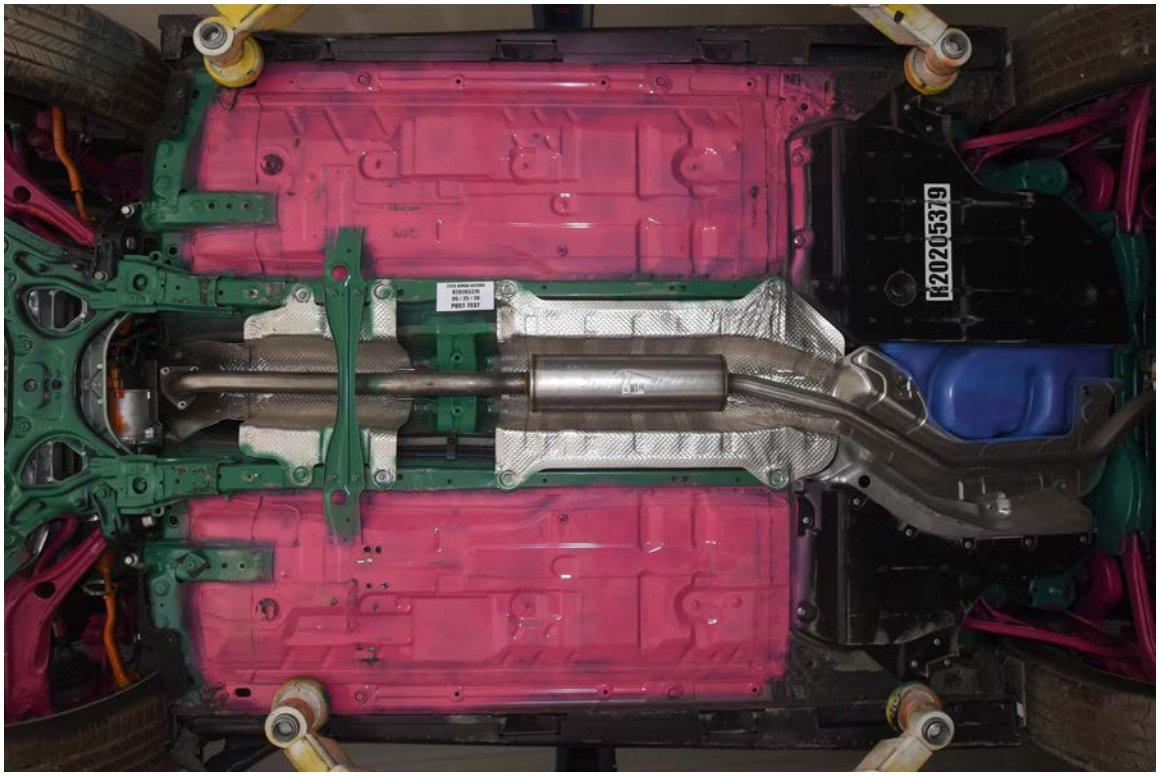


FIGURE 30. Post-Test Mid Underbody View

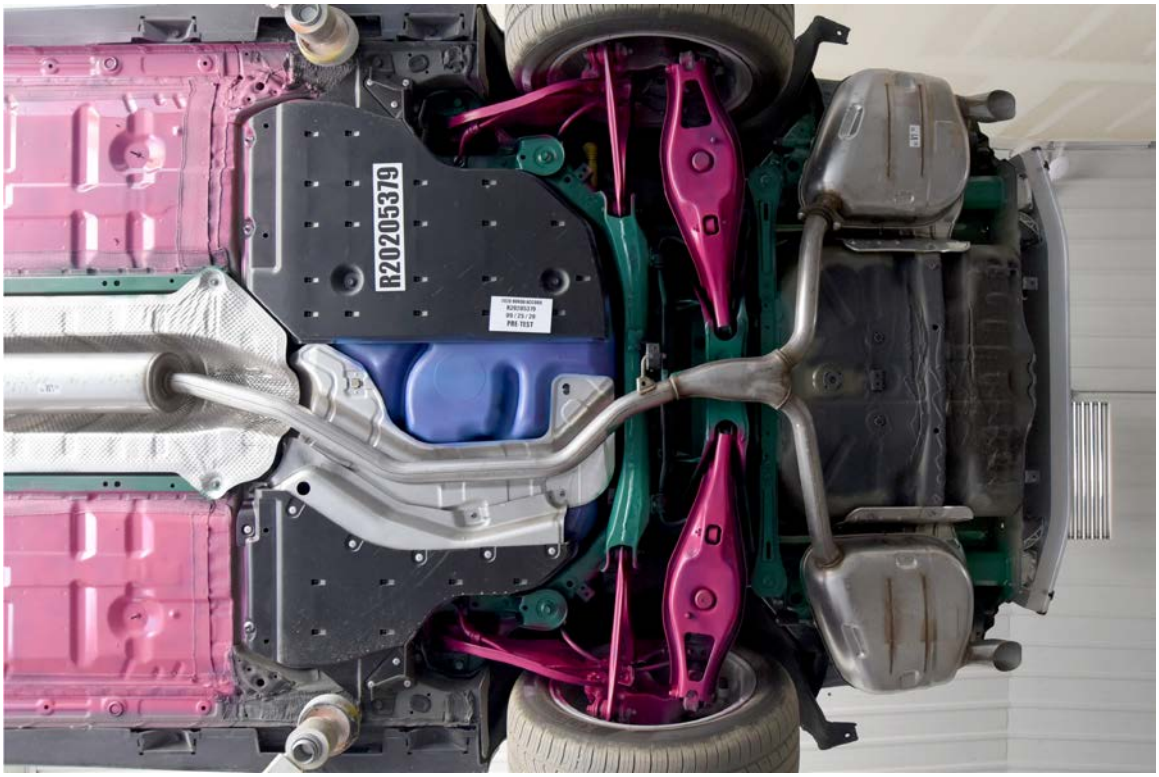


FIGURE 31. Pre-Test Rear Underbody View

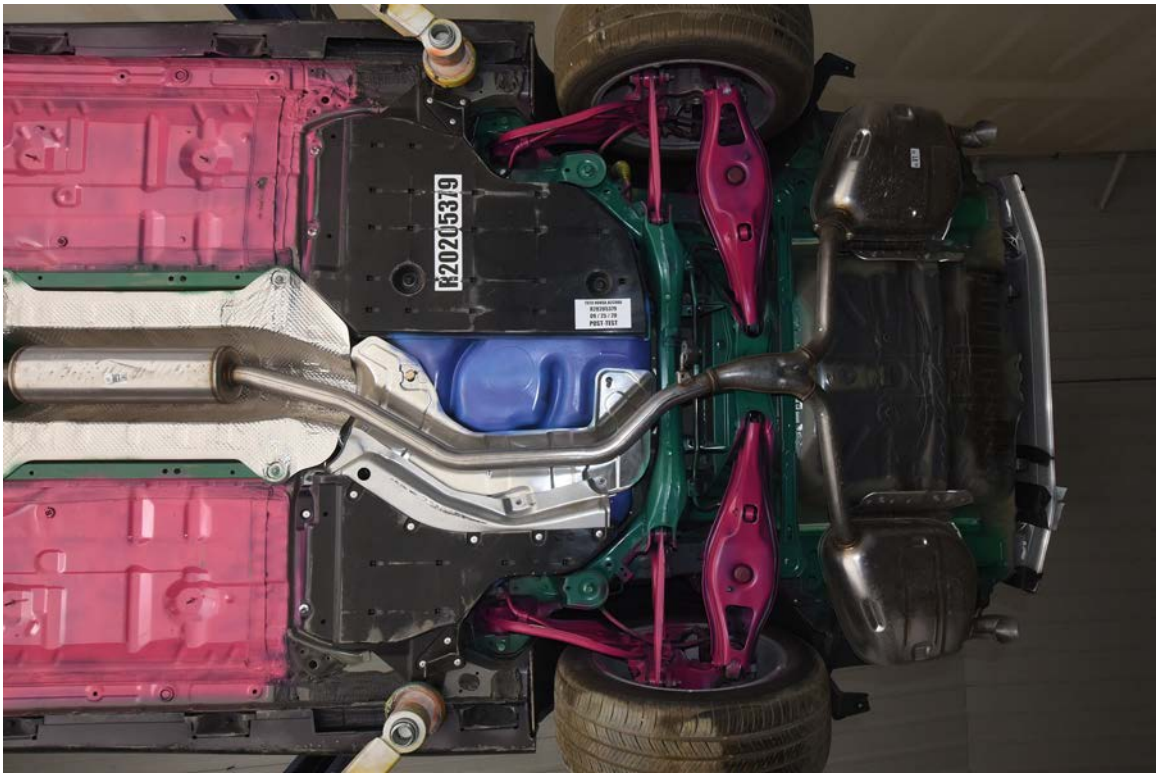


FIGURE 32. Post-Test Rear Underbody View

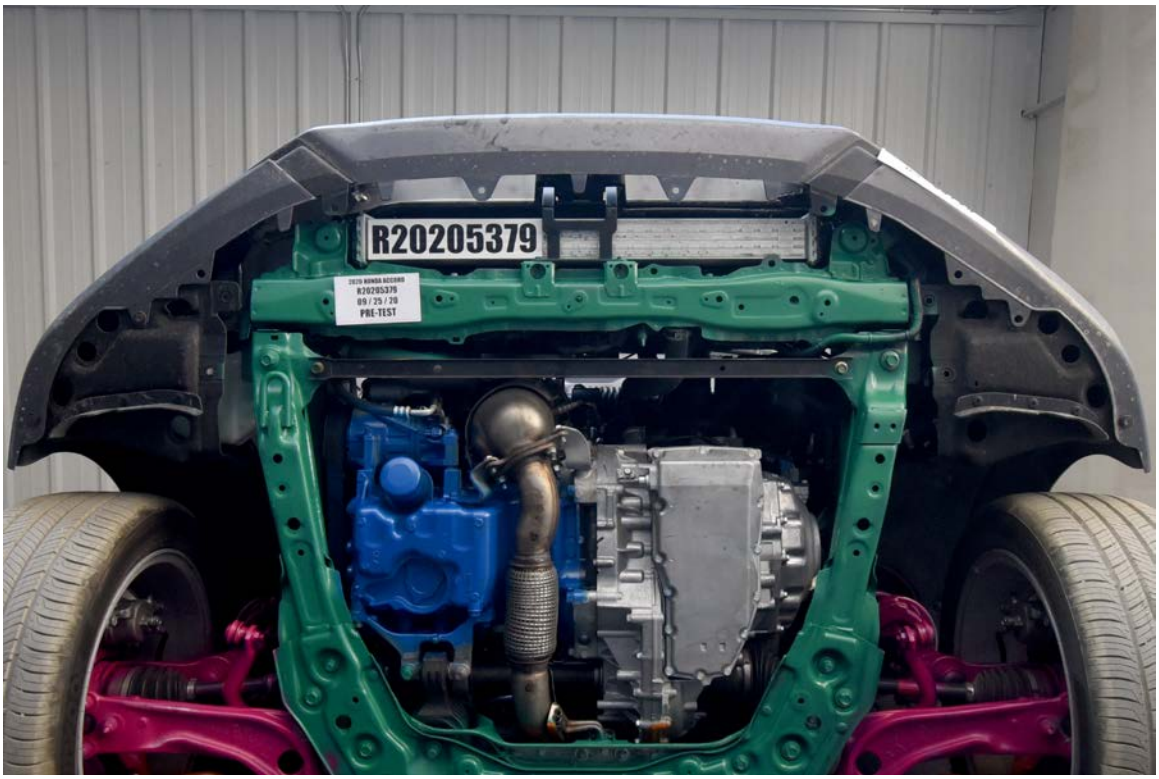


FIGURE 33. Pre-Test Bumper to Rail Attachments and Crush Initiators

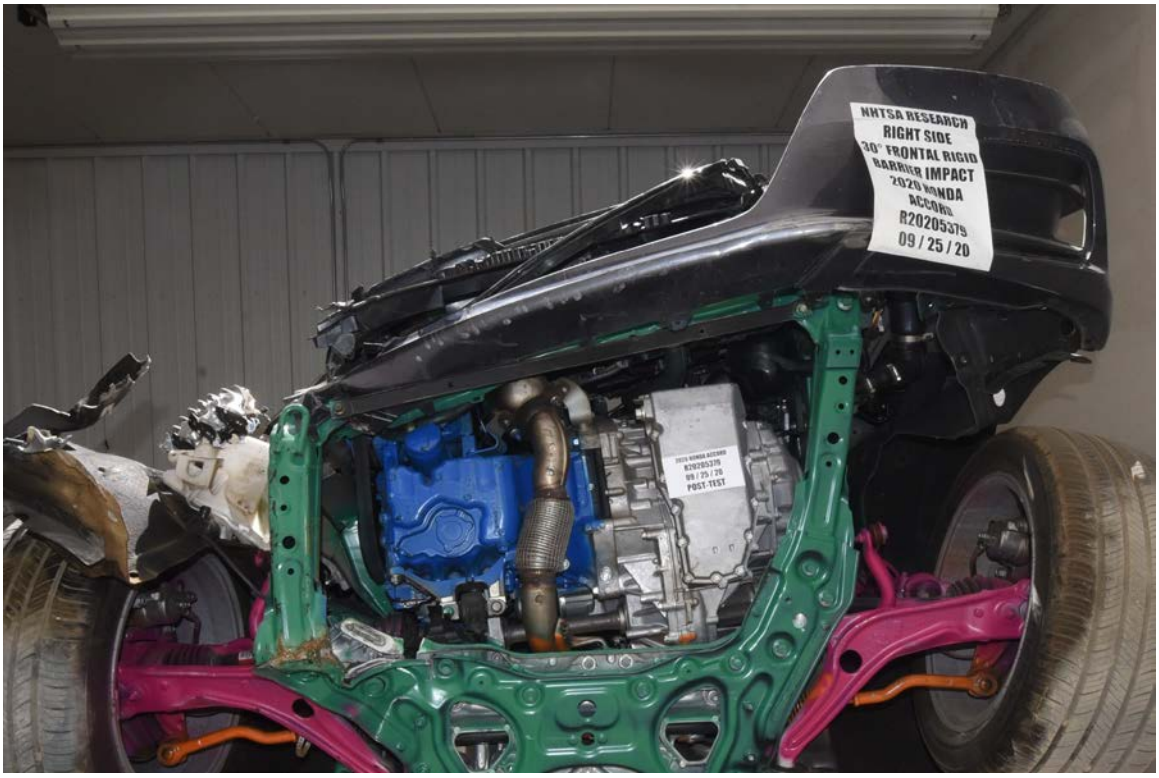


FIGURE 34. Post-Test Bumper to Rail Attachments and Crush Initiators

FIGURE 35. Pre-Test Driver Side Bumper to Rail Attachments and Crush Initiators

FIGURE 36. Post-Test Driver Side Bumper to Rail Attachments and Crush Initiators

FIGURE 37. Pre-Test Passenger Side Bumper to Rail Attachments and Crush Initiators

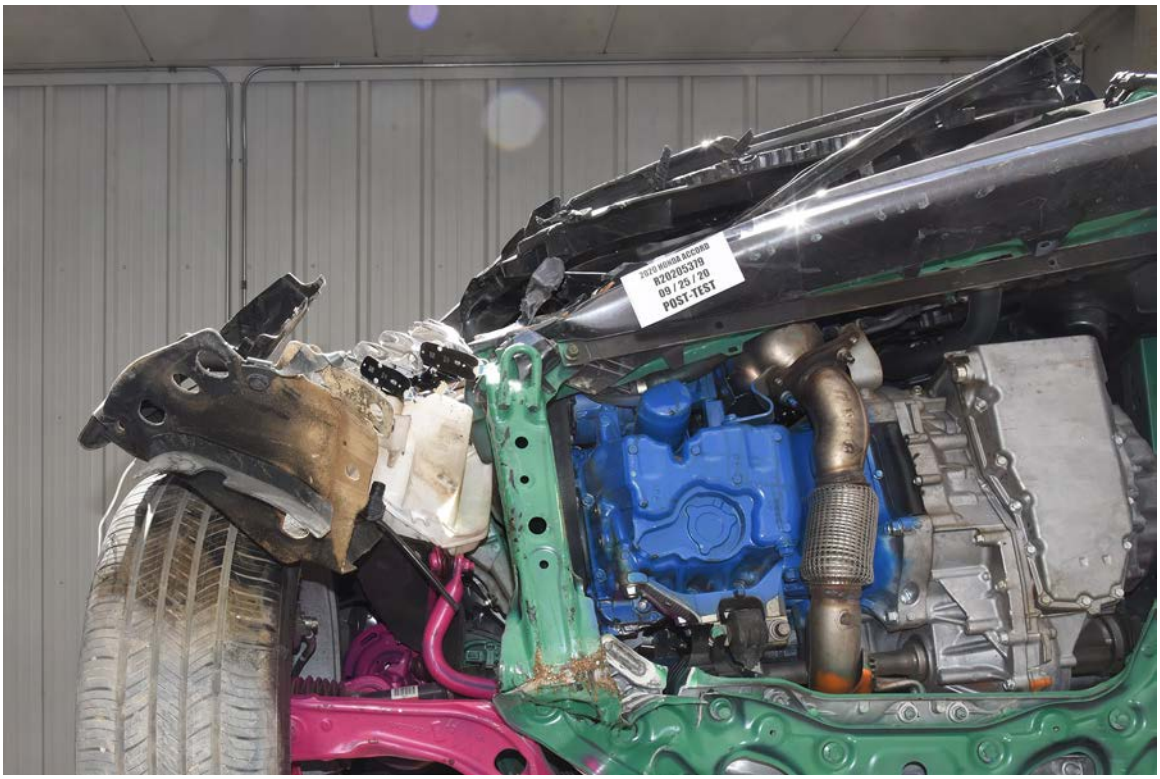


FIGURE 38. Post-Test Passenger Side Bumper to Rail Attachments and Crush Initiators

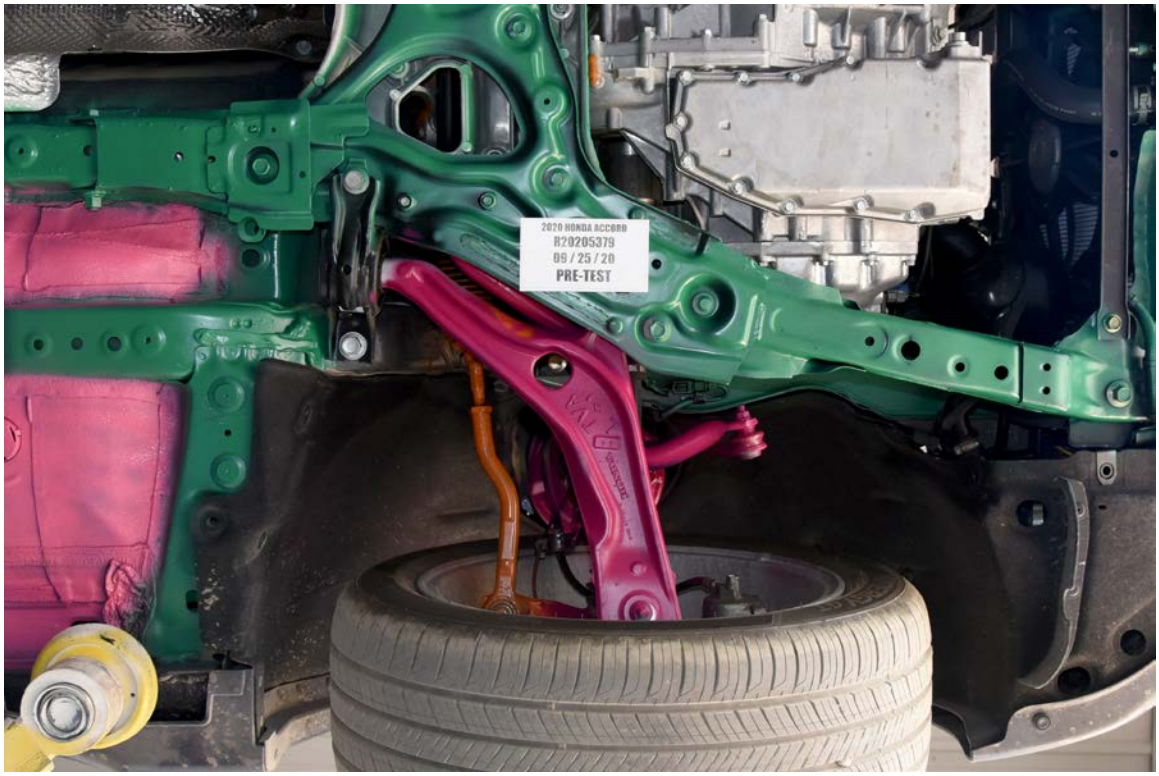


FIGURE 39. Pre-Test Driver Side Rocker

FIGURE 40. Post-Test Driver Side Rocker

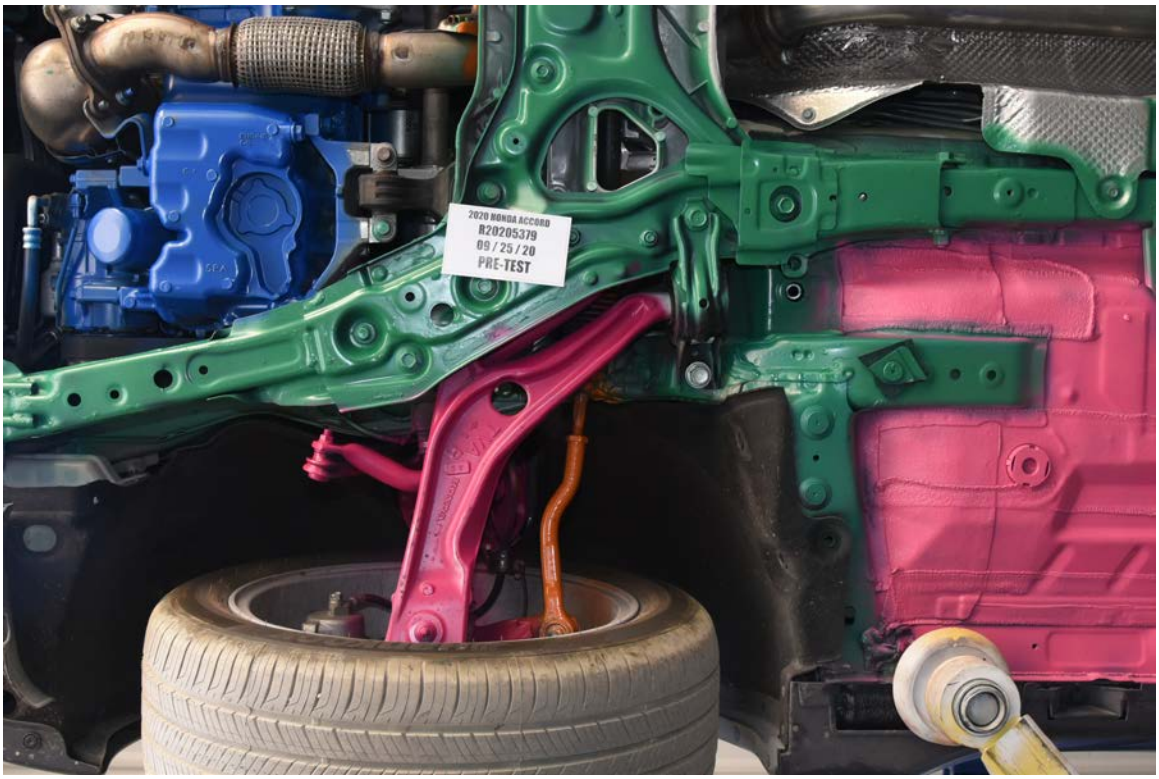


FIGURE 41. Pre-Test Passenger Side Rocker

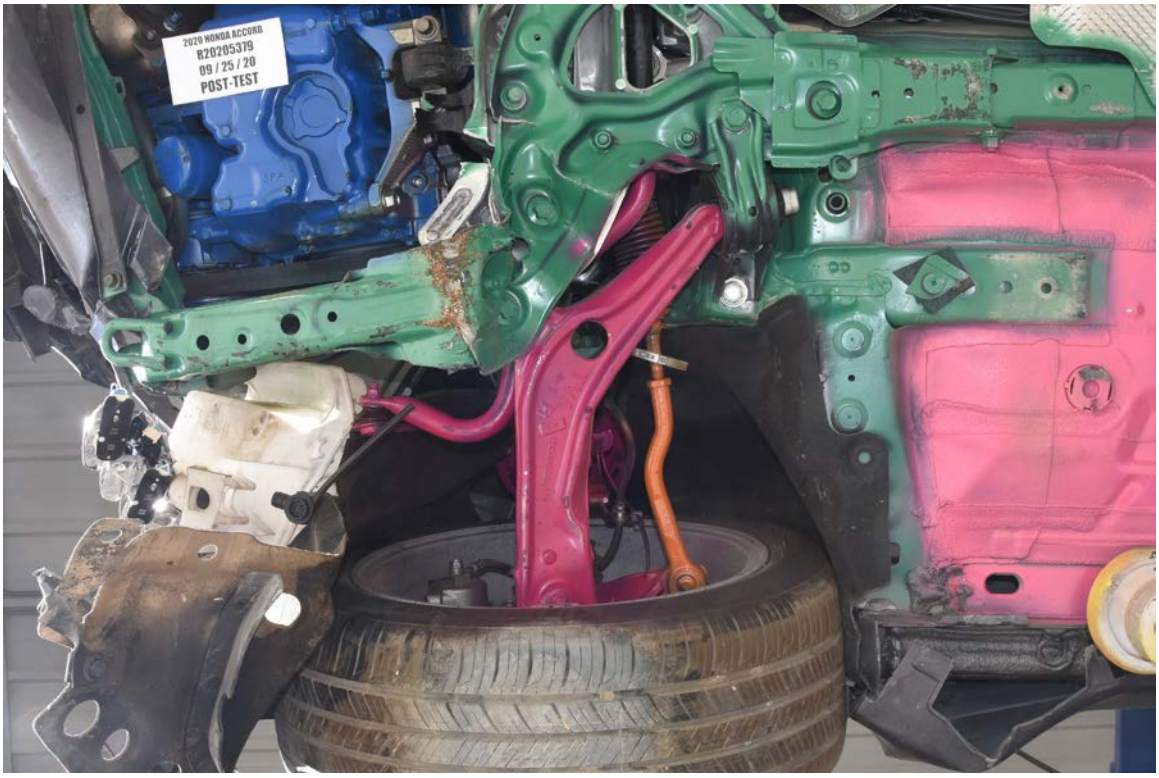


FIGURE 42. Post-Test Passenger Side Rocker

FIGURE 43. Pre-Test Driver Front Windshield View

FIGURE 44. Post-Test Driver Front Windshield View

FIGURE 45. Pre-Test Driver Side Front Window View

FIGURE 46. Post-Test Driver Side Front Window View

FIGURE 47. Pre-Test View of Driver Door Clearance

FIGURE 48. Post-Test View of Driver Door Clearance

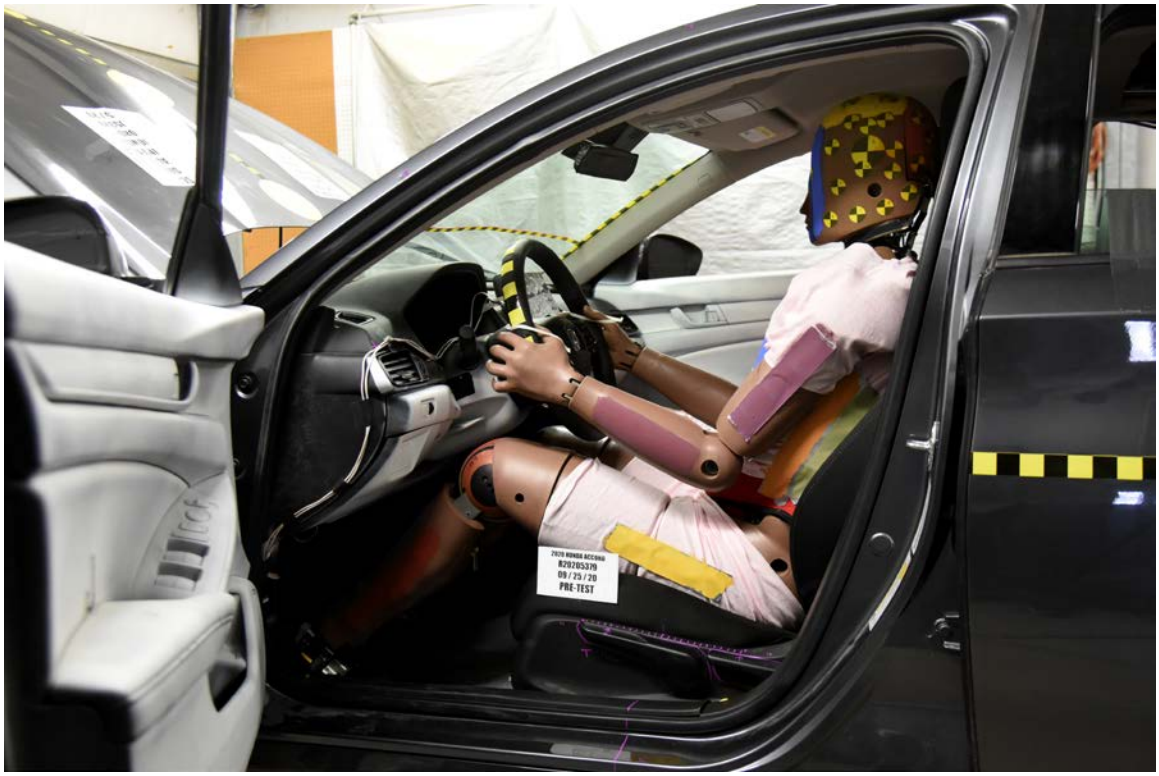


FIGURE 49. Pre-Test Left Side View of Driver and Interior

FIGURE 50. Post-Test Left Side View of Driver and Interior

FIGURE 51. Pre-Test Left Side View of Steering Wheel Position

FIGURE 52. Post-Test Left Side View of Steering Wheel Position

FIGURE 53. Pre-Test Overhead View of Driver Thighs on Seat

FIGURE 54. Post-Test Overhead View of Driver Thighs on Seat

FIGURE 55. Pre-Test View of Driver Abdomen

FIGURE 56. Post-Test View of Driver Abdomen

FIGURE 57. Pre-Test Right Side View of Driver and Interior

FIGURE 58. Post-Test Right Side View of Driver and Interior

FIGURE 59. Pre-Test View of Driver Left Knee and Bolster

FIGURE 60. Post-Test View of Driver Left Knee and Bolster

FIGURE 61. Pre-Test View of Driver Right Knee and Bolster

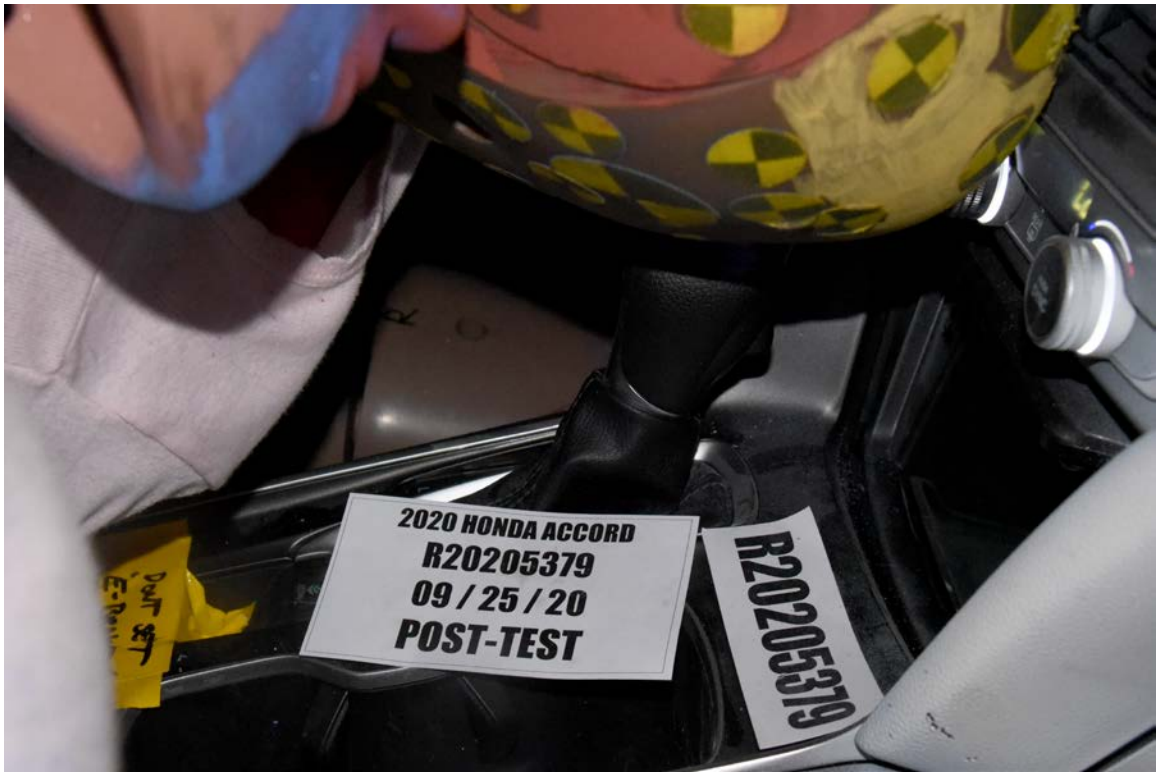


FIGURE 62. Post-Test View of Driver Right Knee and Bolster

FIGURE 63. Pre-Test View of the Driver Left Leg

FIGURE 64. Post-Test View of the Driver Left Leg

FIGURE 65. Pre-Test View of the Driver Feet

FIGURE 66. Post-Test View of the Driver Feet

Photograph Not Available

FIGURE 67. Pre-Test Driver Adjustable D-Ring

FIGURE 68. Post-Test Driver Adjustable D-Ring

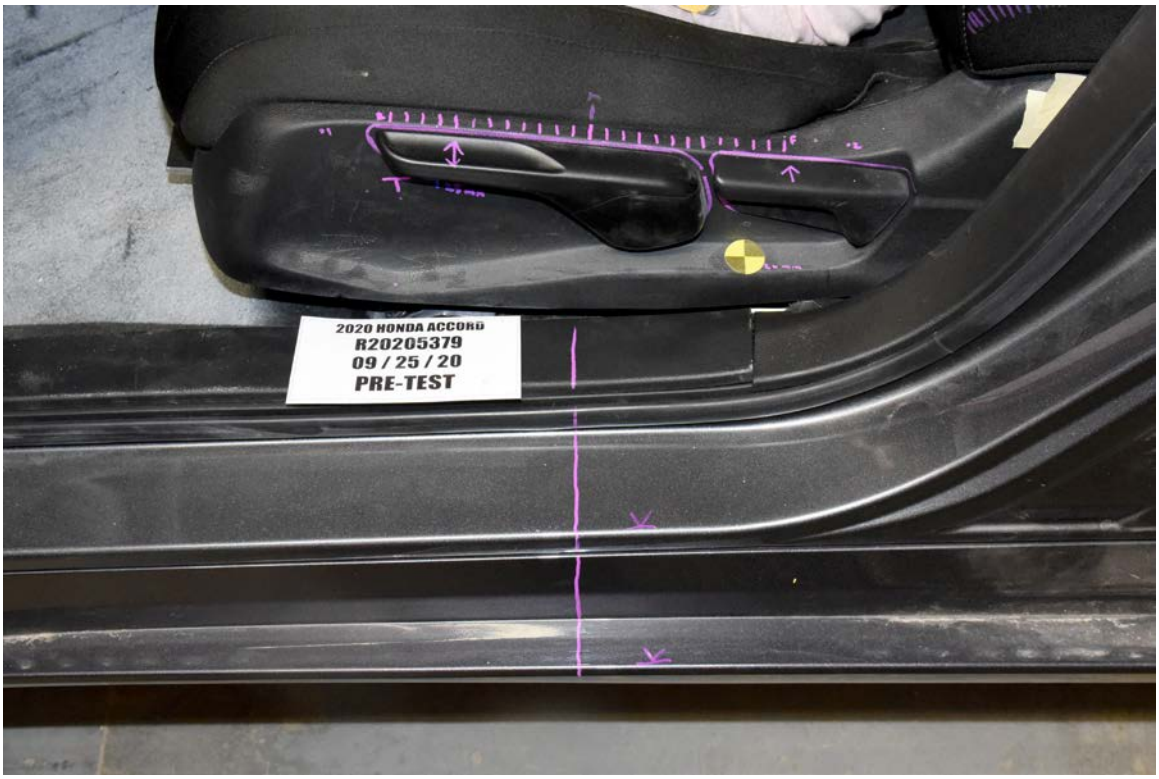


FIGURE 69. Pre-Test Driver Seat Fore-Aft Markings

FIGURE 70. Post-Test Driver Seat Fore-Aft Markings

FIGURE 71. Pre-Test Driver Seat Back Markings

FIGURE 72. Post-Test Driver Seat Back Markings

FIGURE 73. Pre-Test Close-Up View of Driver Door Latch

FIGURE 74. Post-Test Close-Up View of Driver Door Latch

Photograph Not Available

FIGURE 75. Pre-Test Driver Inner Door Panel

FIGURE 76. Post-Test Driver Inner Door Panel

Photograph Not Available

FIGURE 77. Pre-Test Left Side View of Driver Knee Bolster

FIGURE 78. Post-Test Left Side View of Driver Knee Bolster

Photograph Not Available

FIGURE 79. Pre-Test Overall View of Driver Knee Bolster

FIGURE 80. Post-Test Overall View of Driver Knee Bolster

Photograph Not Available

FIGURE 81. Pre-Test Right Side View of Driver Knee Bolster

FIGURE 82. Post-Test Right Side View of Driver Knee Bolster

Photograph Not Available

FIGURE 83. Pre-Test View of Driver Floor Pan from Outside of Vehicle

FIGURE 84. Post-Test View of Driver Floor Pan from Outside of Vehicle

Photograph Not Available

FIGURE 85. Pre-Test View of Driver Floor Pan from Top of Seat

FIGURE 86. Post-Test View of Driver Floor Pan from Top of Seat

Photograph Not Available

FIGURE 87. Pre-Test View of Driver Floor Pan from Center of Vehicle

FIGURE 88. Post-Test View of Driver Floor Pan from Center of Vehicle

FIGURE 89. Post-Test Driver Dummy Contact with Front Airbag

Photograph Not Applicable

FIGURE 90. Post-Test Driver Dummy Contact with Side Airbag

FIGURE 91. Post-Test Driver Dummy Contact with Knee Airbag

FIGURE 92. Pre-Test Passenger Front Windshield View

FIGURE 93. Post-Test Passenger Front Windshield View

FIGURE 94. Pre-Test Passenger Side Front Window View

FIGURE 95. Post-Test Passenger Side Front Window View

FIGURE 96. Pre-Test View of Passenger Door Clearance

FIGURE 97. Post-Test View of Passenger Door Clearance

FIGURE 98. Pre-Test Right Side View of Passenger and Interior

FIGURE 99. Post-Test Right Side View of Passenger and Interior

FIGURE 100. Pre-Test Overhead View of Passenger Thighs on Seat

FIGURE 101. Post-Test Overhead View of Passenger Thighs on Seat

FIGURE 102. Pre-Test View of Passenger Abdomen

FIGURE 103. Post-Test View of Passenger Abdomen

FIGURE 104. Pre-Test Left Side Passenger and Interior View

FIGURE 105. Post-Test Left Side Passenger and Interior View

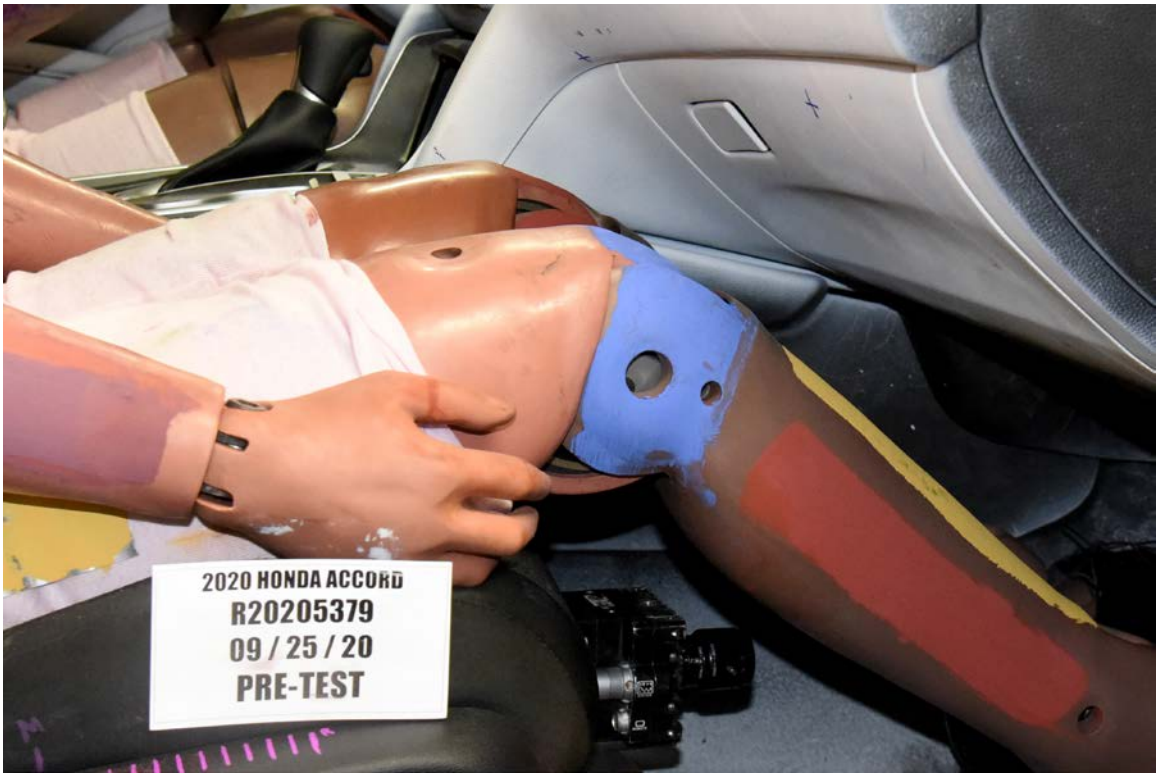


FIGURE 106. Pre-Test View of Passenger Right Knee and Bolster

FIGURE 107. Post-Test View of Passenger Right Knee and Bolster

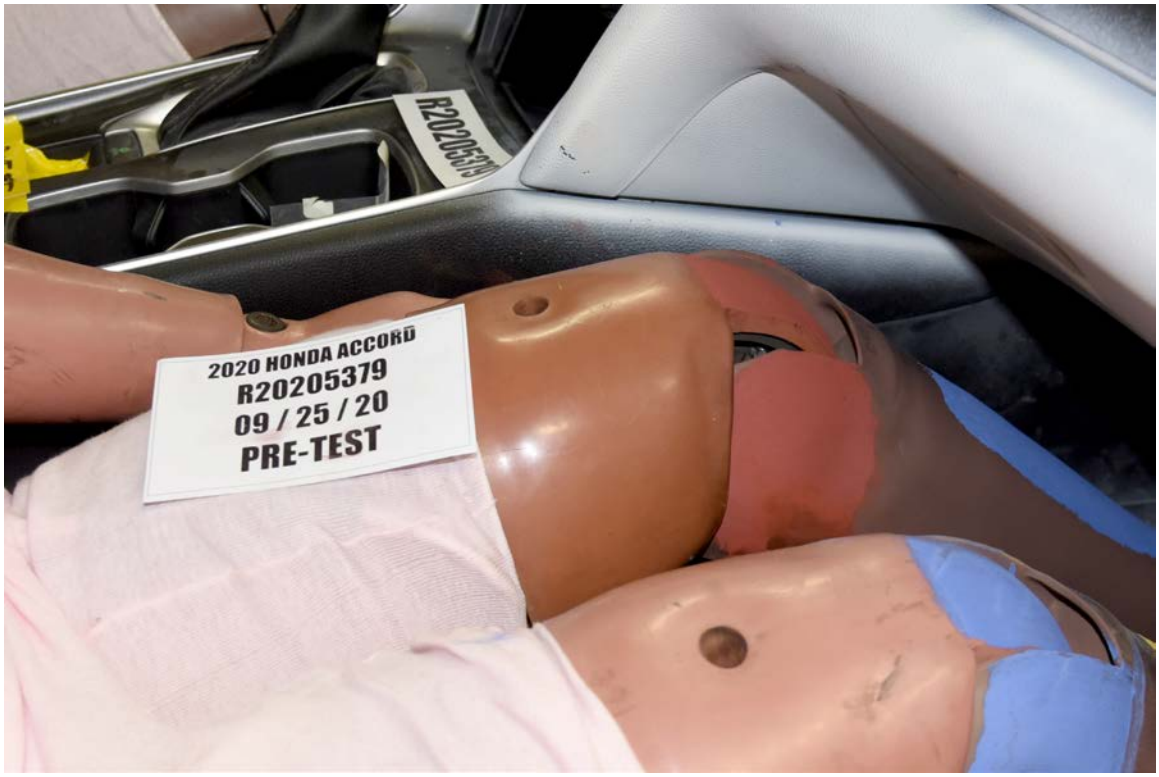


FIGURE 108. Pre-Test View of Passenger Left Knee and Bolster

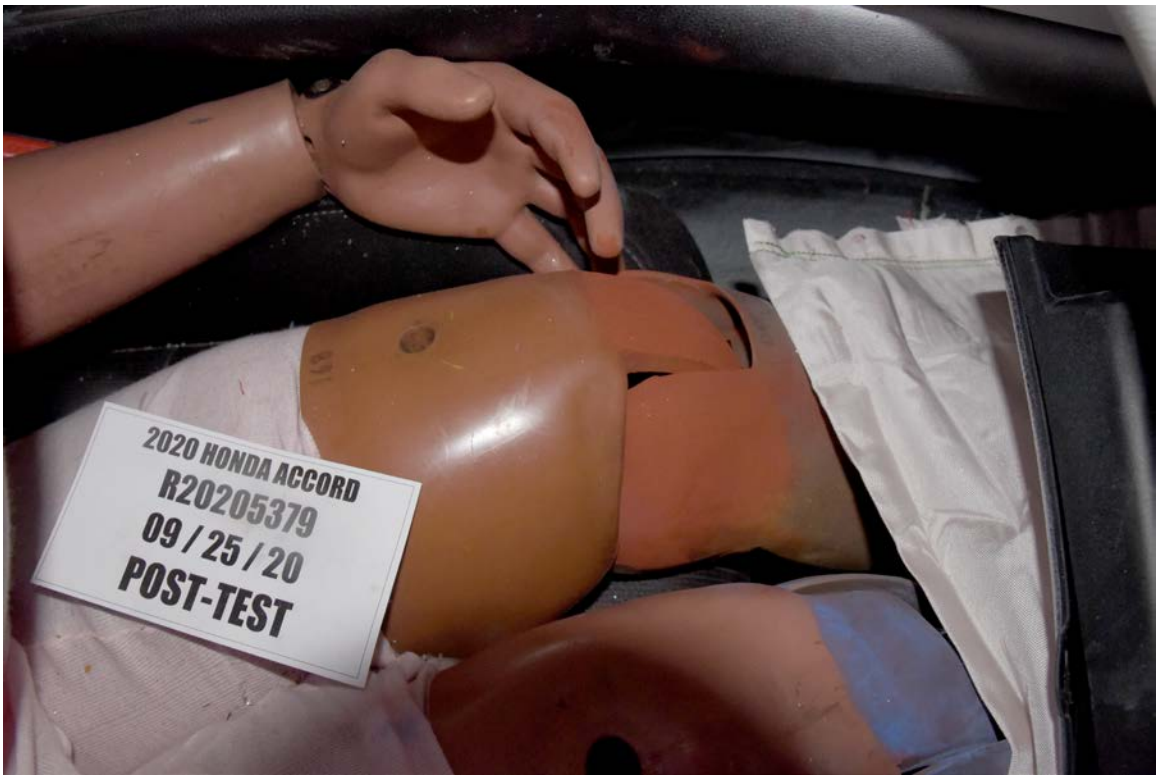


FIGURE 109. Post-Test View of Passenger Left Knee and Bolster

FIGURE 110. Pre-Test View of the Passenger Feet

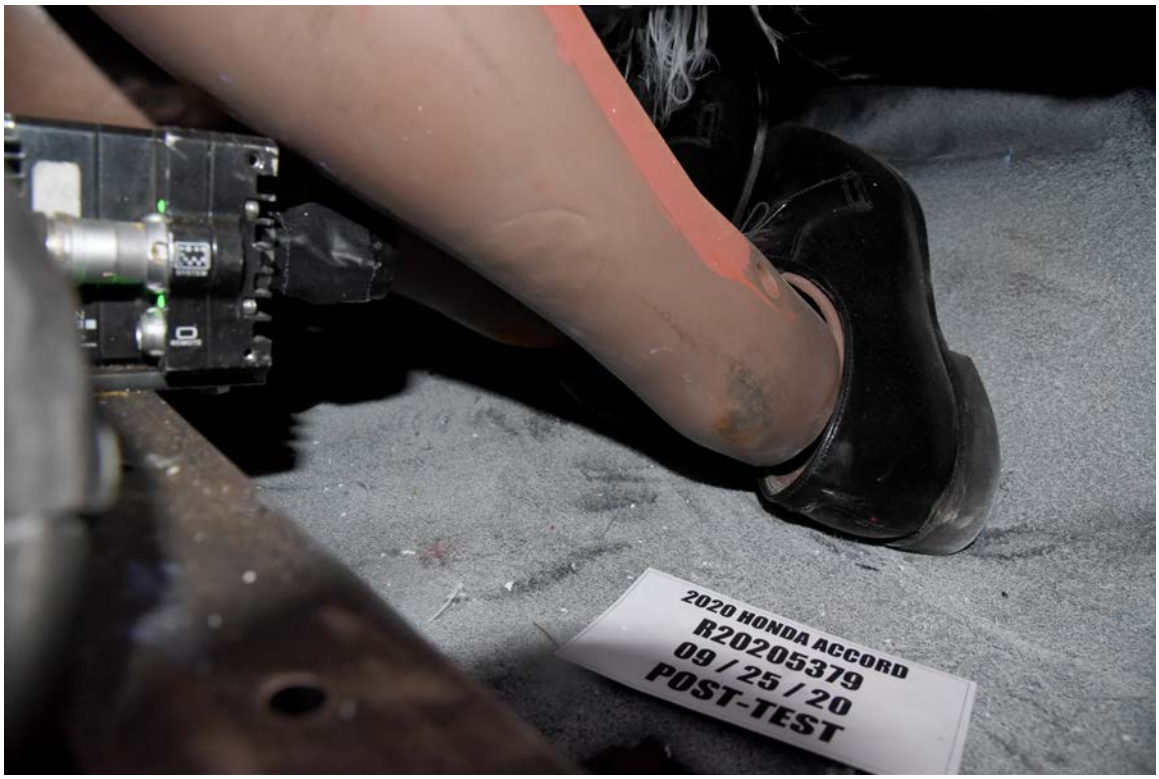


FIGURE 111. Post-Test View of the Passenger Feet

FIGURE 112. Pre-Test Passenger Adjustable D-Ring

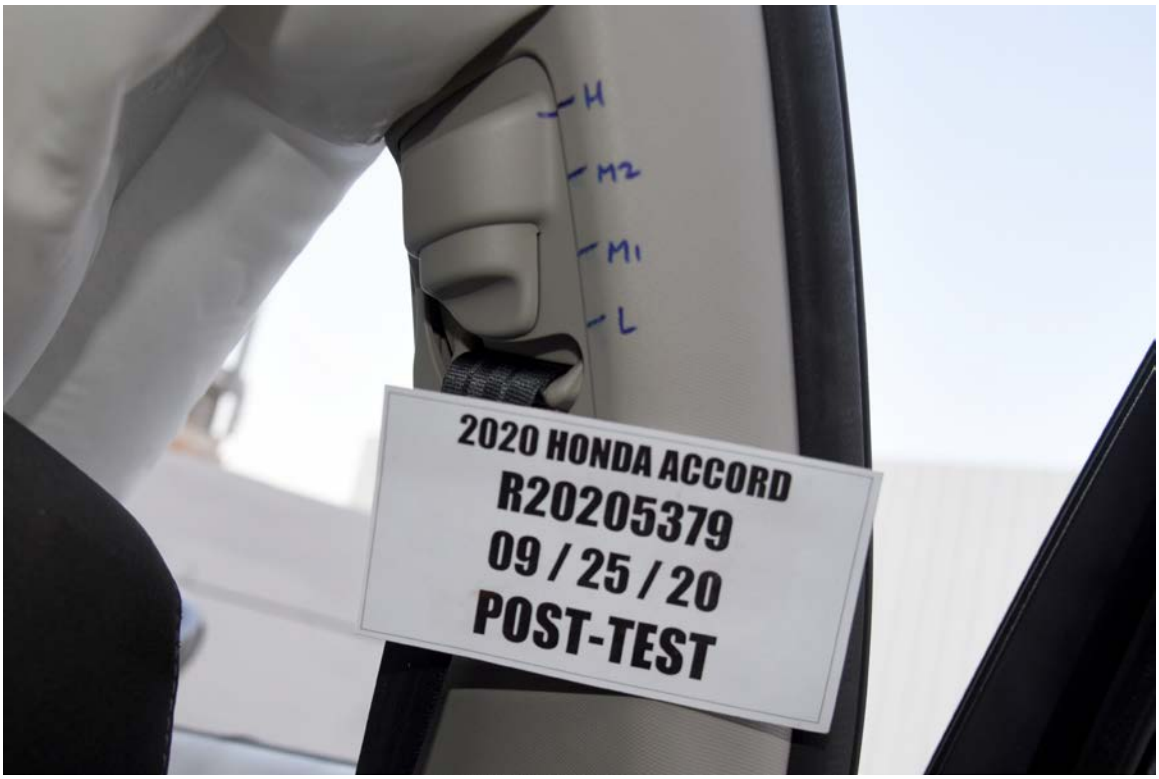


FIGURE 113. Post-Test Passenger Adjustable D-Ring

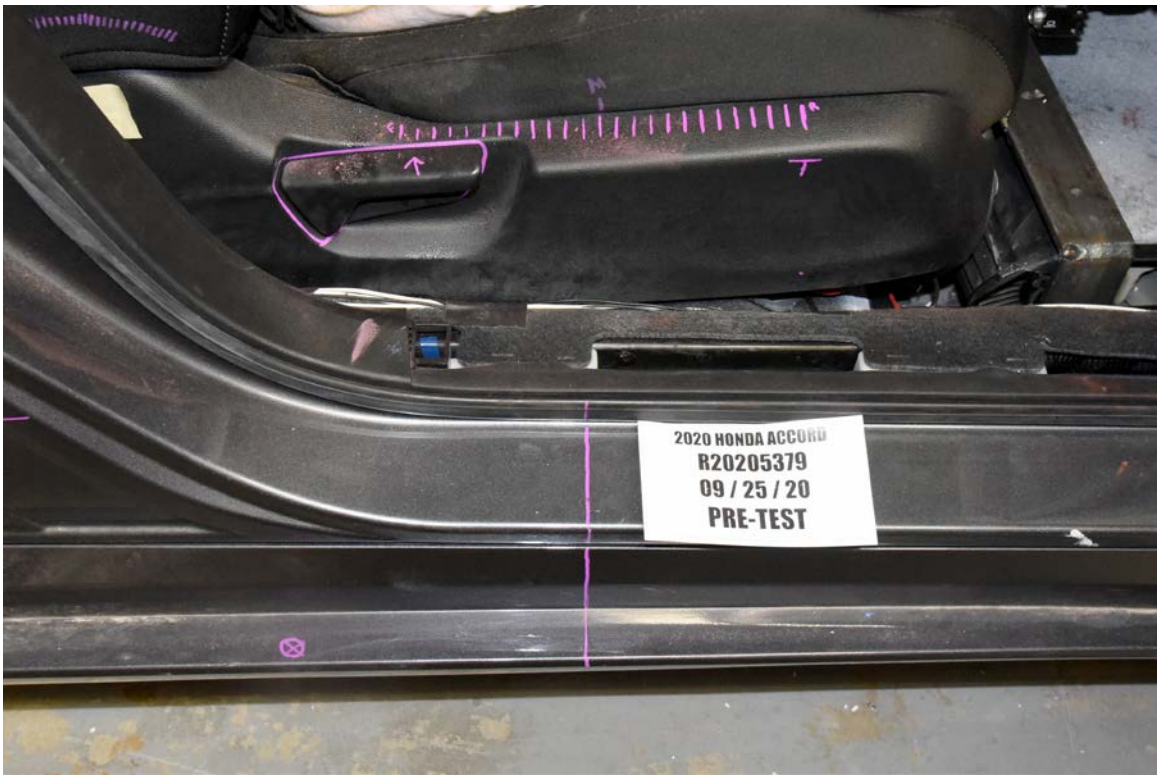


FIGURE 114. Pre-Test Right Front Passenger Seat Fore-Aft Markings

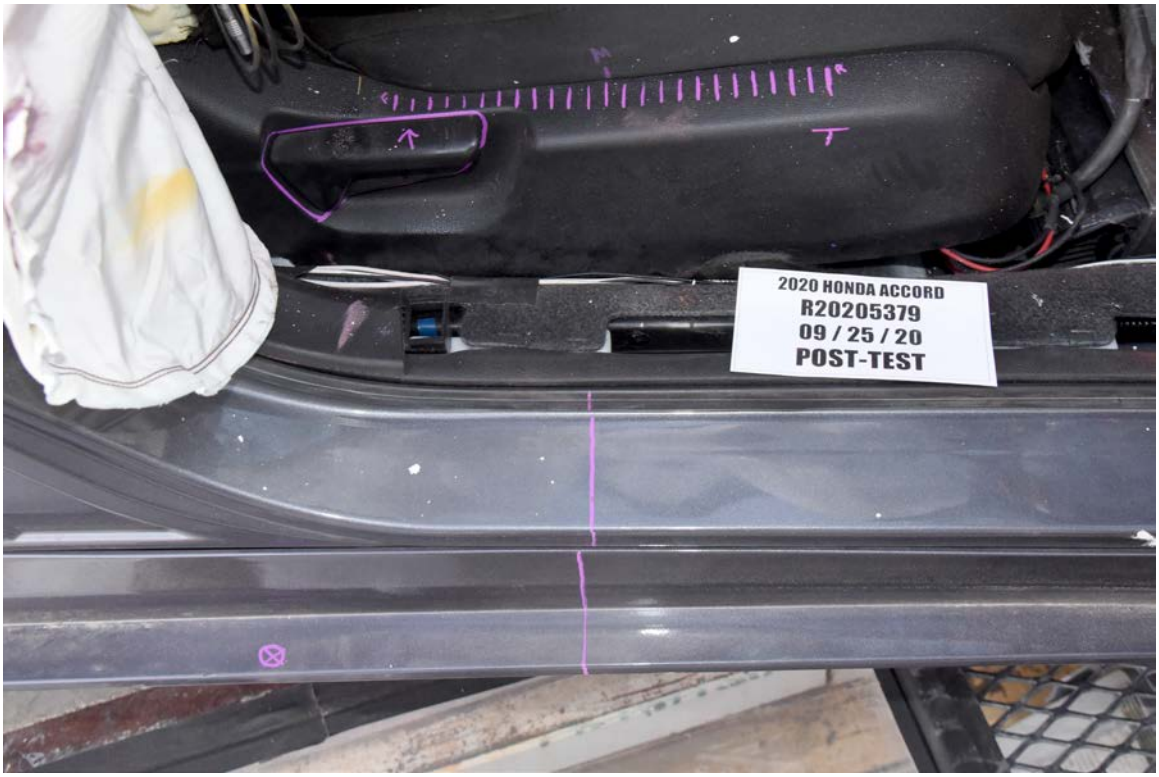


FIGURE 115. Post-Test Right Front Passenger Seat Fore-Aft Markings

FIGURE 116. Pre-Test Passenger Seat Back Markings

FIGURE 117. Post-Test Passenger Seat Back Markings

FIGURE 118. Pre-Test Close-up View of Passenger Door Latch

FIGURE 119. Post-Test Close-up View of Passenger Door Latch

Photograph Not Available

FIGURE 120. Pre-Test Passenger Inner Door Panel

FIGURE 121. Post-Test Passenger Inner Door Panel

Photograph Not Available

FIGURE 122. Pre-Test Right Side View of Passenger Knee Bolster

FIGURE 123. Post-Test Right Side View of Passenger Knee Bolster

Photograph Not Available

FIGURE 124. Pre-Test Center View of Passenger Knee Bolster

FIGURE 125. Post-Test Center View of Passenger Knee Bolster

Photograph Not Available

FIGURE 126. Pre-Test Left Side View of Passenger Knee Bolster

FIGURE 127. Post-Test Left Side View of Passenger Knee Bolster

Photograph Not Available

FIGURE 128. Pre-Test View of Passenger Floor Pan from Outside of Vehicle

FIGURE 129. Post-Test View of Passenger Floor Pan from Outside of Vehicle

Photograph Not Available

FIGURE 130. Pre-Test View of Passenger Floor Pan from Top of Front Seat

FIGURE 131. Post-Test View of Passenger Floor Pan from Top of Front Seat

Photograph Not Available

FIGURE 132. Pre-Test View of Passenger Floor Pan from Center of Vehicle

FIGURE 133. Post-Test View of Passenger Floor Pan from Center of Vehicle

FIGURE 134. Post-Test Passenger Dummy Contact with Front Airbag

Photograph Not Applicable
No Contact with Side Airbag

FIGURE 135. Post-Test Passenger Dummy Contact with Side Airbag

FIGURE 136. Post-Test Passenger Dummy Contact with Knee Airbag

FIGURE 136a. Post-Test Passenger Dummy Contact with Headliner

FIGURE 136b. Post-Test Passenger Dummy Contact with Windshield

Photograph Not Available

FIGURE 137. Photograph of Ballast Installed in Vehicle

Photograph Not Applicable

No Stoddard
Solvent Spillage

FIGURE 138. Post-Test Stoddard Solvent Spillage Location View

FIGURE 139. Post-Test Speed Trap Read-Out

FIGURE 140. Vehicle at 0° on Static Rollover Device

FIGURE 141. Vehicle at 90° on Static Rollover Device

FIGURE 142. Vehicle at 180° on Static Rollover Device

FIGURE 143. Vehicle at 270° on Static Rollover Device

FIGURE 144. Vehicle at 360° on Static Rollover Device

FIGURE 145. Frontal Impact Event

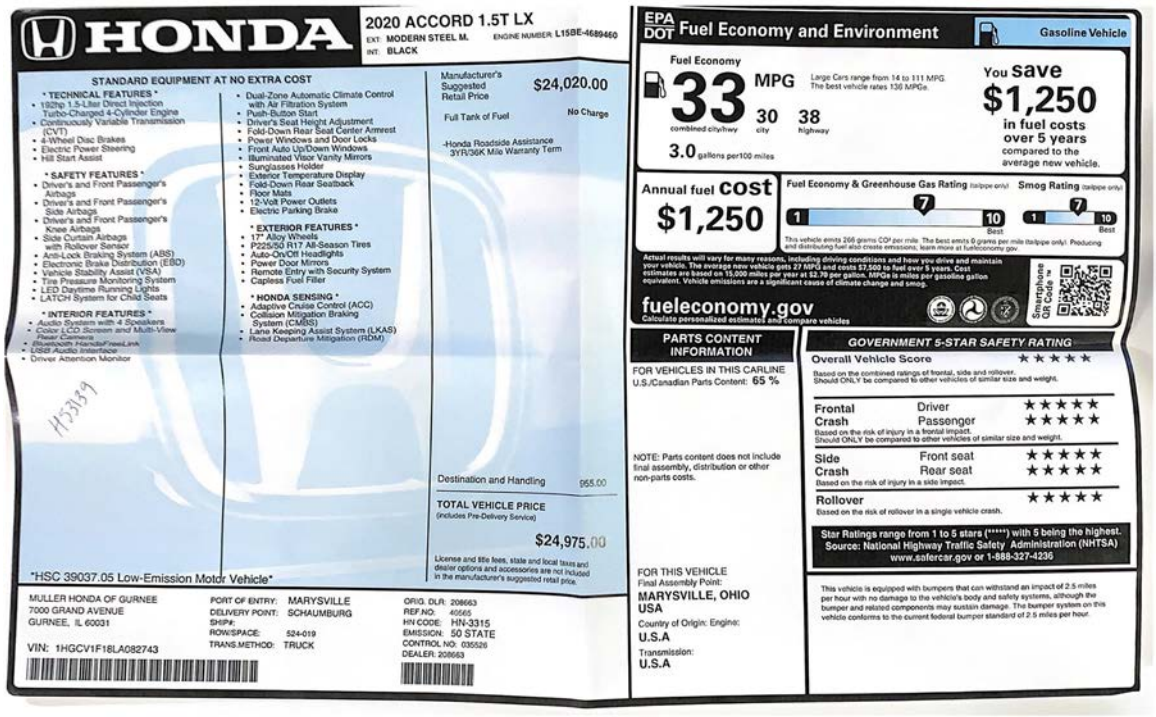


FIGURE 146. Monroney Label Photograph

APPENDIX B
VEHICLE AND DUMMY RESPONSE DATA TRACES

TABLE OF DATA PLOTS

TABLE OF DATA PLOTS … (CONTINUED)

TABLE OF DATA PLOTS … (CONTINUED)

TABLE OF DATA PLOTS … (CONTINUED)

TABLE OF DATA PLOTS … (CONTINUED)

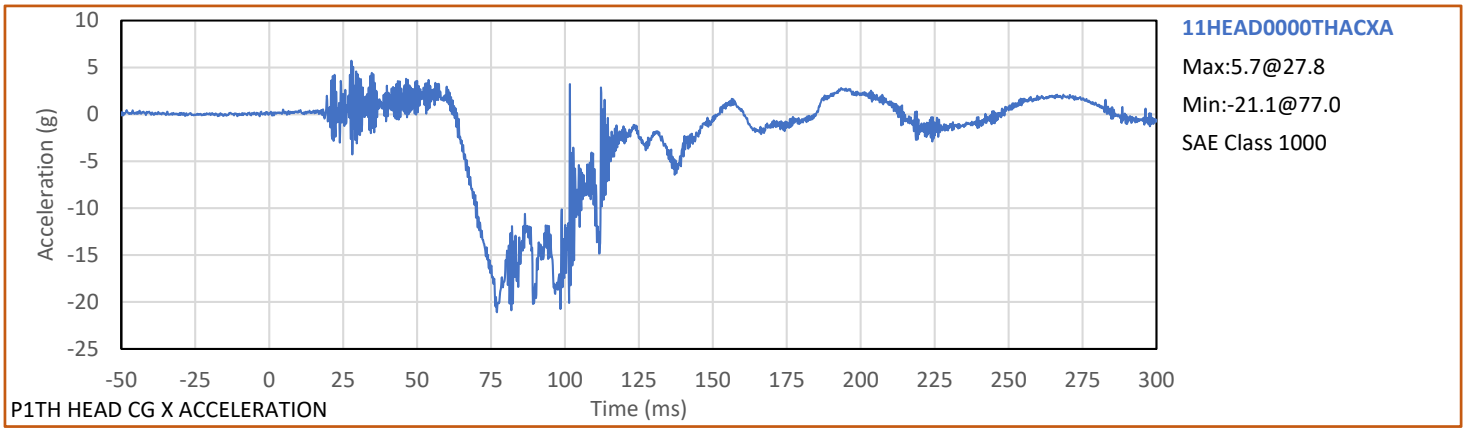
TABLE OF DATA PLOTS … (CONTINUED)

Test Vehicle: 2020 Honda Accord 4-Door Sedan

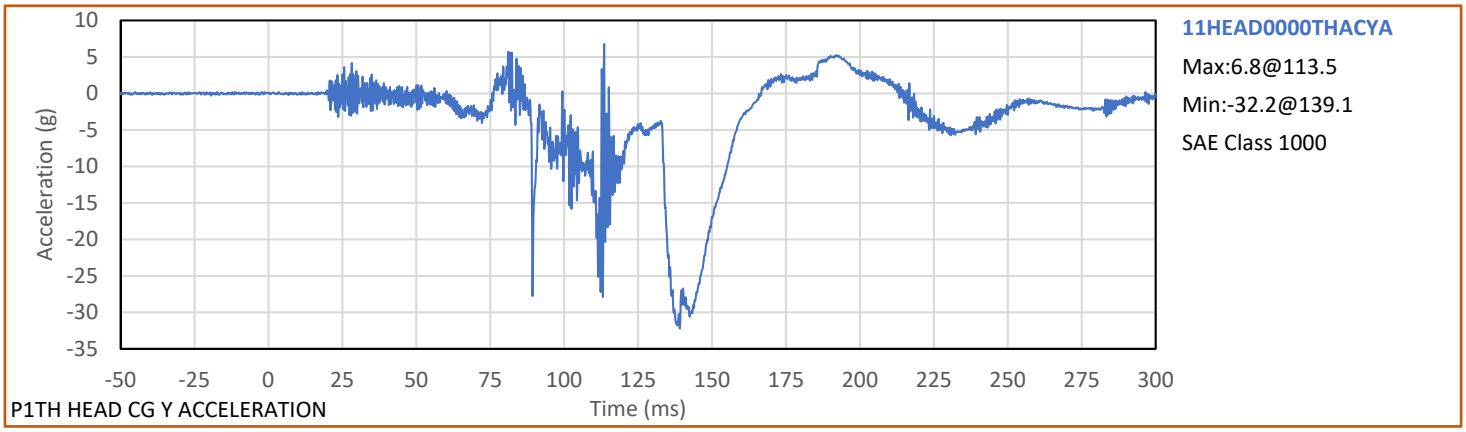
Test Program: Right Side 30° Frontal Rigid Barrier Impact

NHTSA No.: R20205379

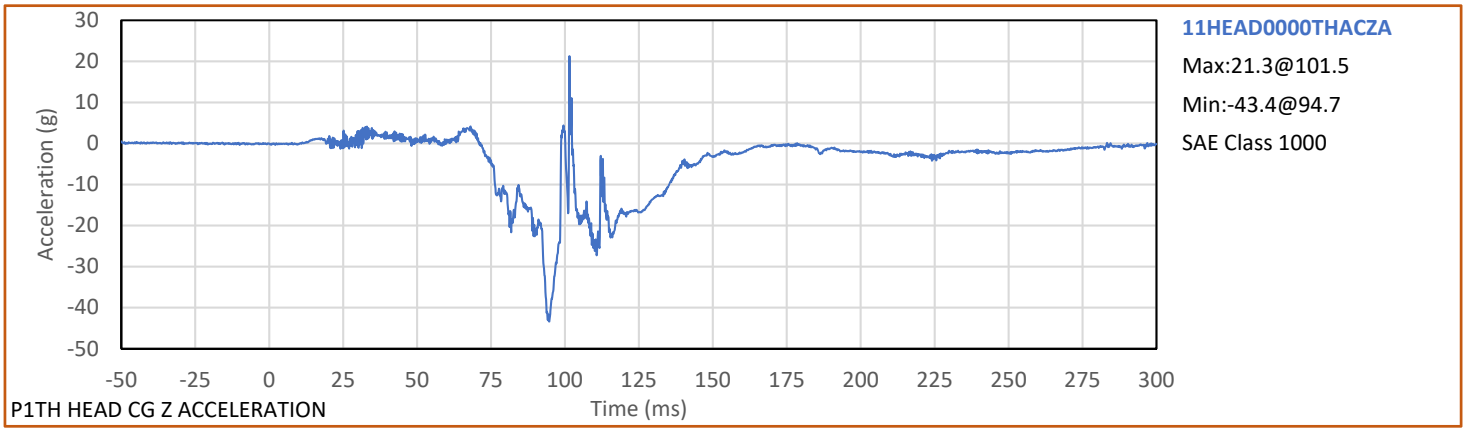
Test Date: 9/25/2020



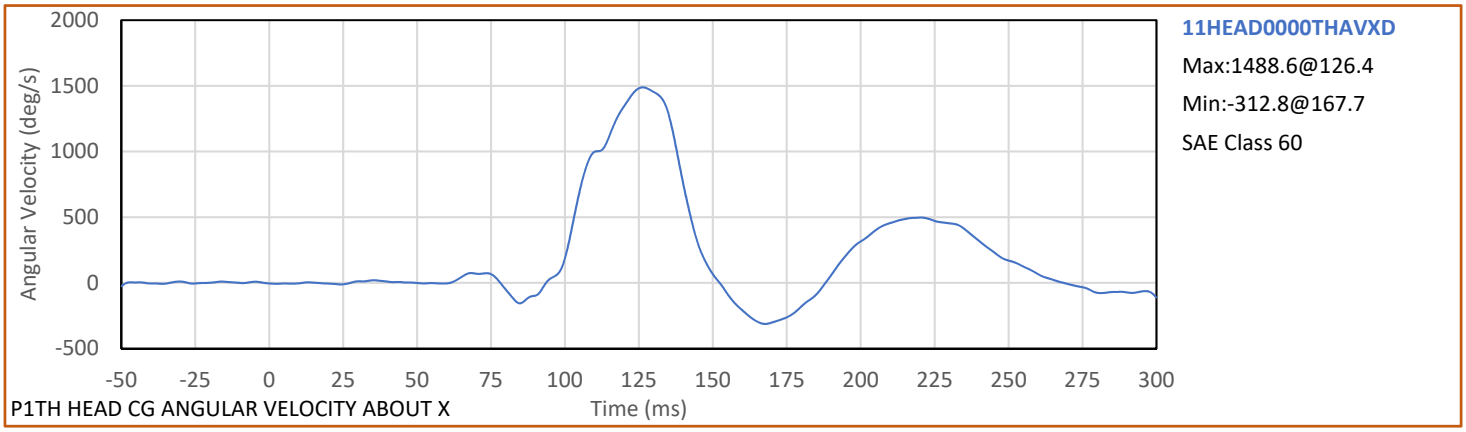
P1TH HEAD CG X ACCELERATION



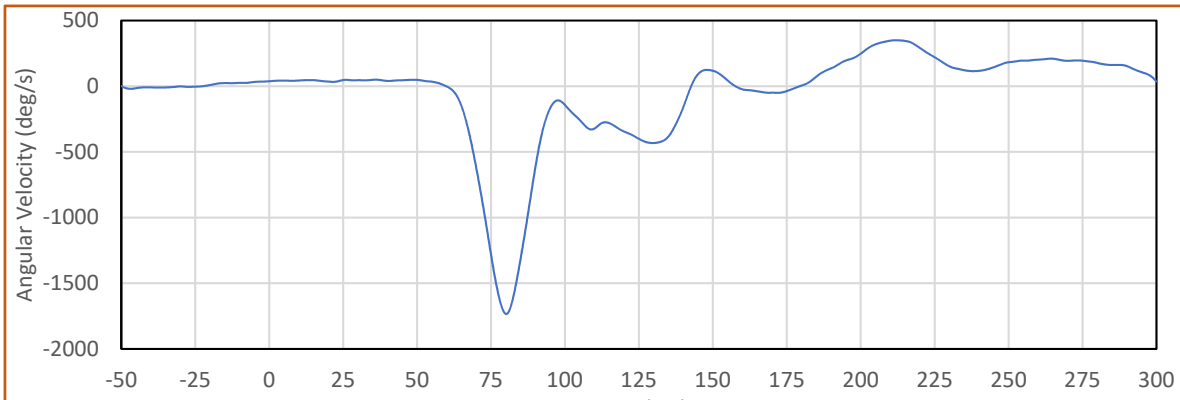
P1TH HEAD CG Y ACCELERATION



P1TH HEAD CG Z ACCELERATION

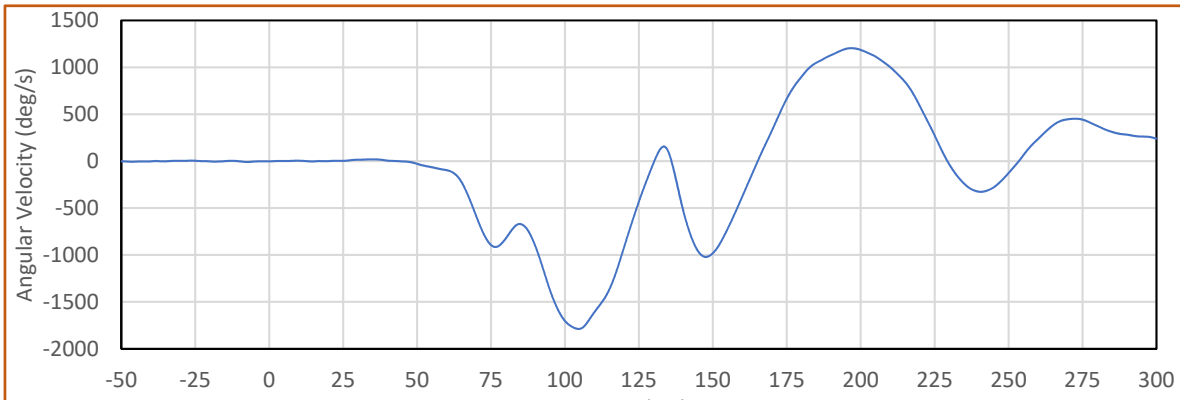


P1TH HEAD CG ANGULAR VELOCITY ABOUT X



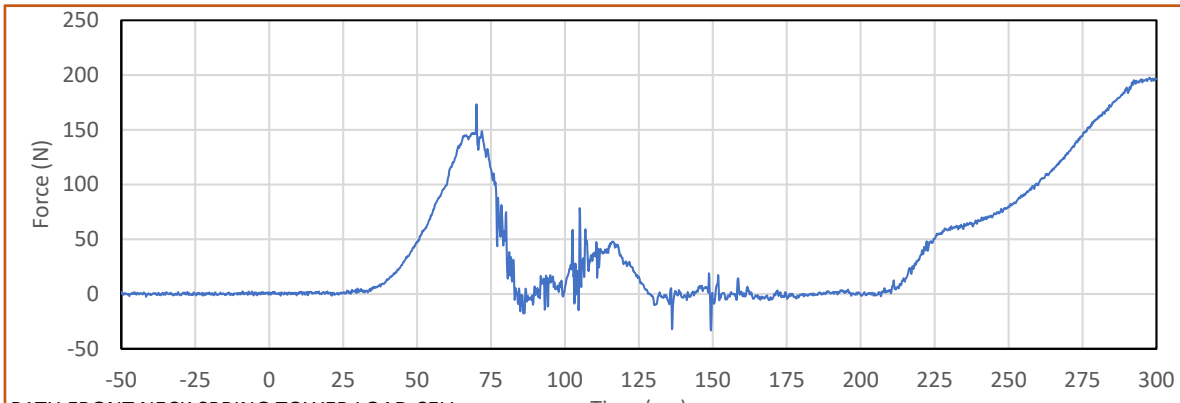
P1TH HEAD CG ANGULAR VELOCITY ABOUT Y

11HEAD0000THAVYD
Max:349.9@211.9
Min:-1734.5@80.2
SAE Class 60



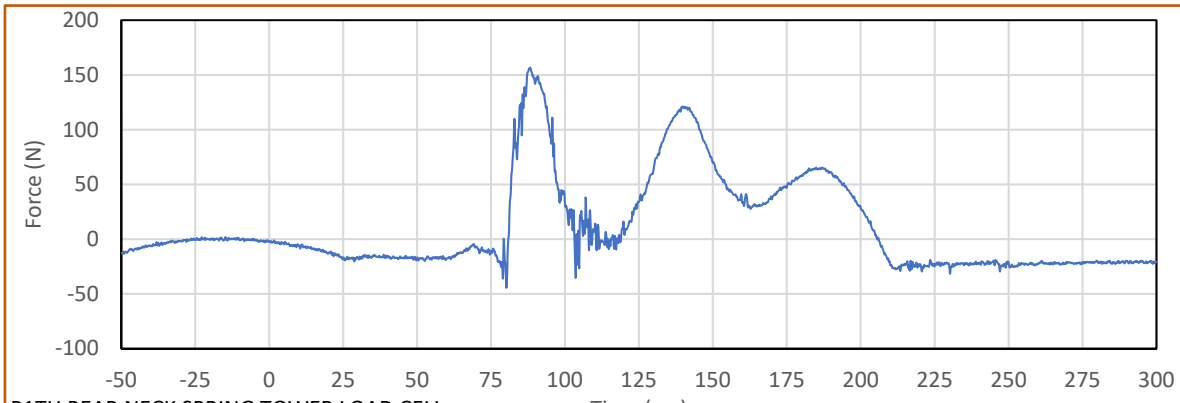
P1TH HEAD CG ANGULAR VELOCITY ABOUT Z

11HEAD0000THAVZD
Max:1204.1@196.8
Min:-1789.0@104.6
SAE Class 60



P1TH FRONT NECK SPRING TOWER LOAD CELL

11NECKFR00THFOZA
Max:197.6@297.7
Min:-33.3@149.4
SAE Class 1000

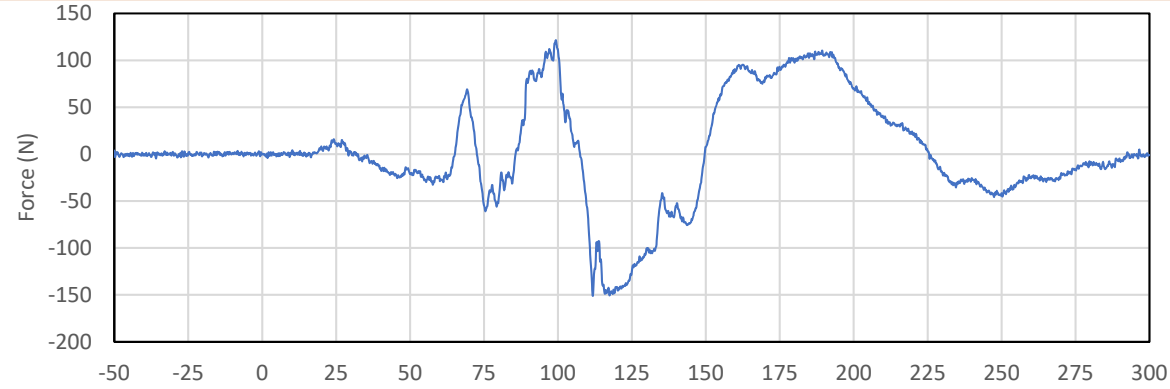


P1TH REAR NECK SPRING TOWER LOAD CELL

11NECKRE00THFOZA
Max:156.6@88.2
Min:-44.5@80.2
SAE Class 1000

P1TH UPPER NECK X FORCE

11NECKUP00THFOXA
Max:592.7@80.1
Min:-152.2@141.5
SAE Class 1000



P1TH UPPER NECK Y FORCE

11NECKUP00THFOYA
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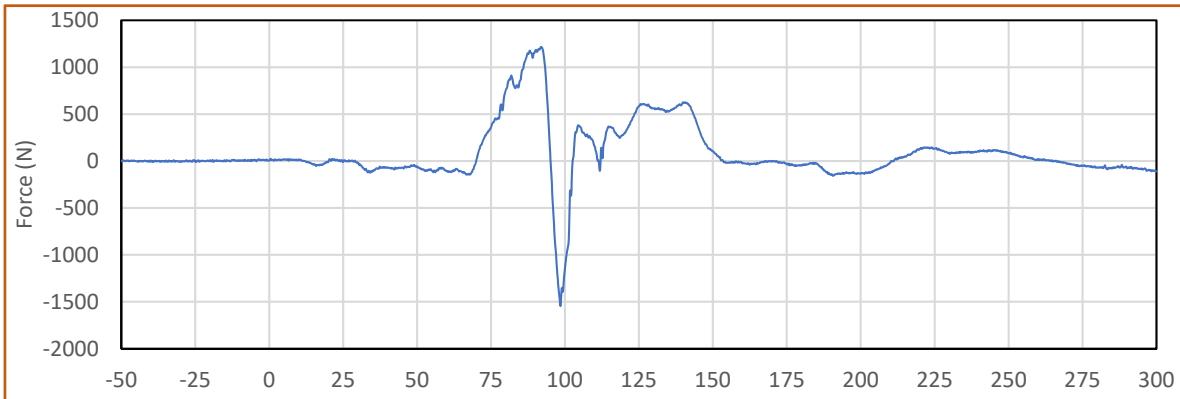
Min:-151.1@111.8
SAE Class 1000



P1TH UPPER NECK Z FORCE

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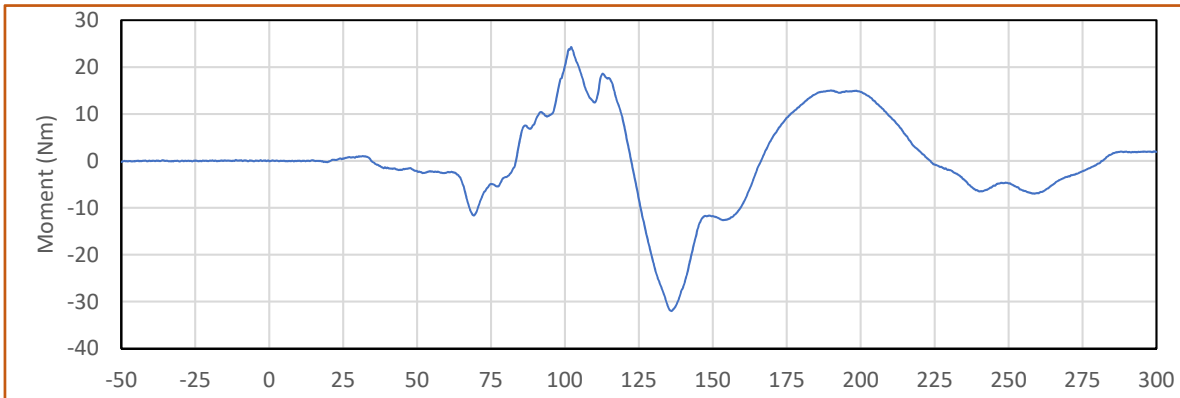
Min:-1546.0@98.5
SAE Class 1000

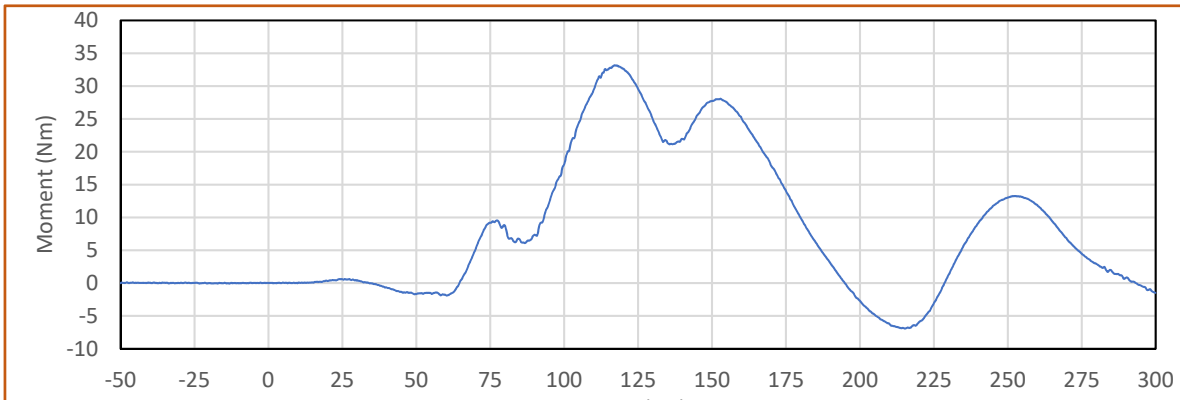


P1TH UPPER NECK X MOMENT

11NECKUP00THMOXB
Max:24.3@102.1
Min:-32.0@136.0
SAE Class 600

P1TH UPPER NECK Y MOMENT

11NECKUP00THMOYB
Max:19.7@88.0
Min:-11.1@75.8
SAE Class 600



P1TH UPPER NECK Z MOMENT

11NECKUP00THMOZB
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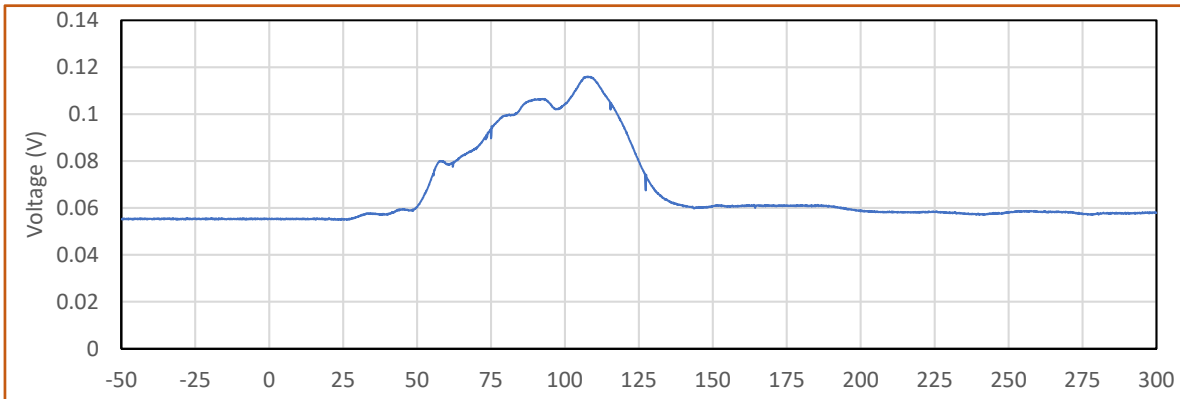
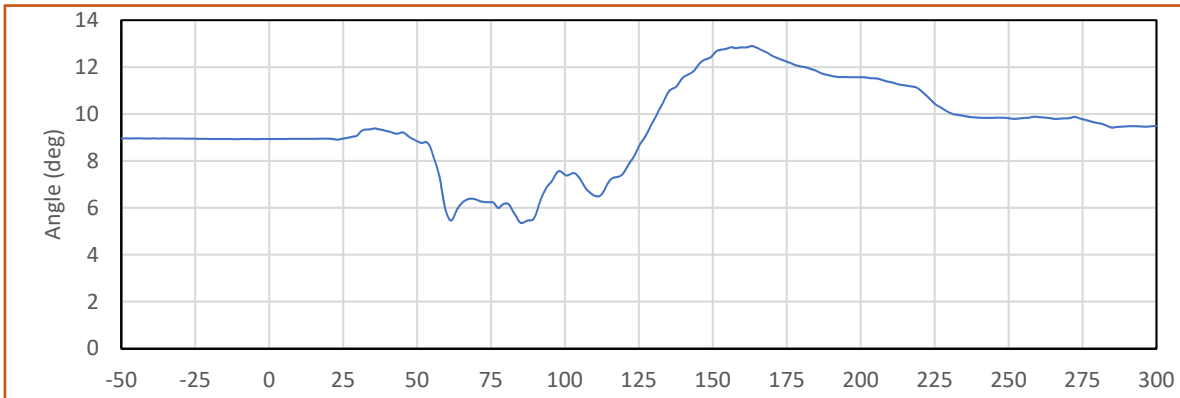
Min:-6.9@215.3
SAE Class 600



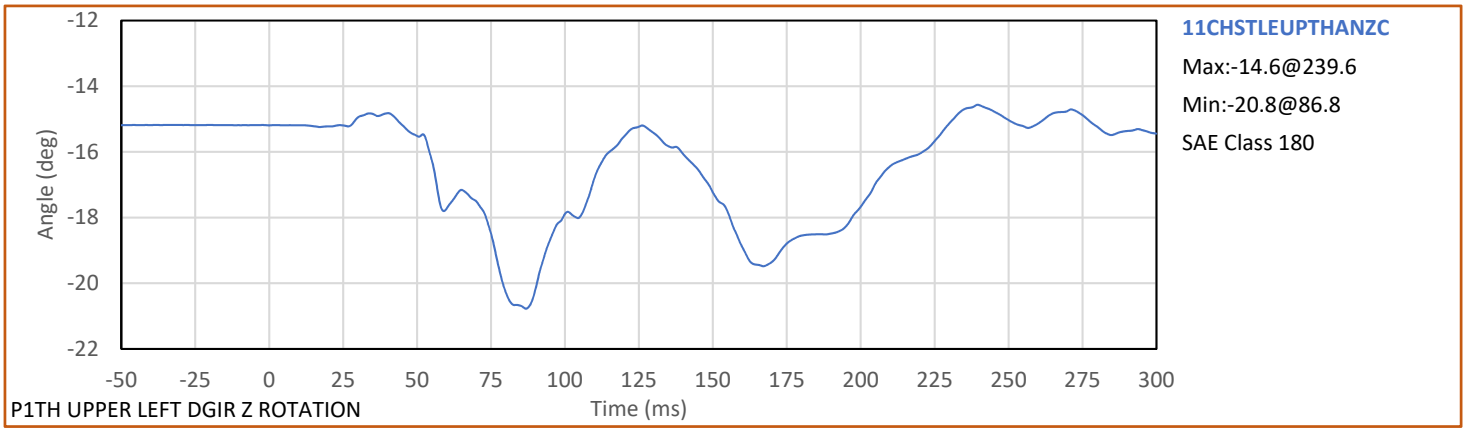
P1TH UPPER LEFT DGIR X DISPLACEMENT

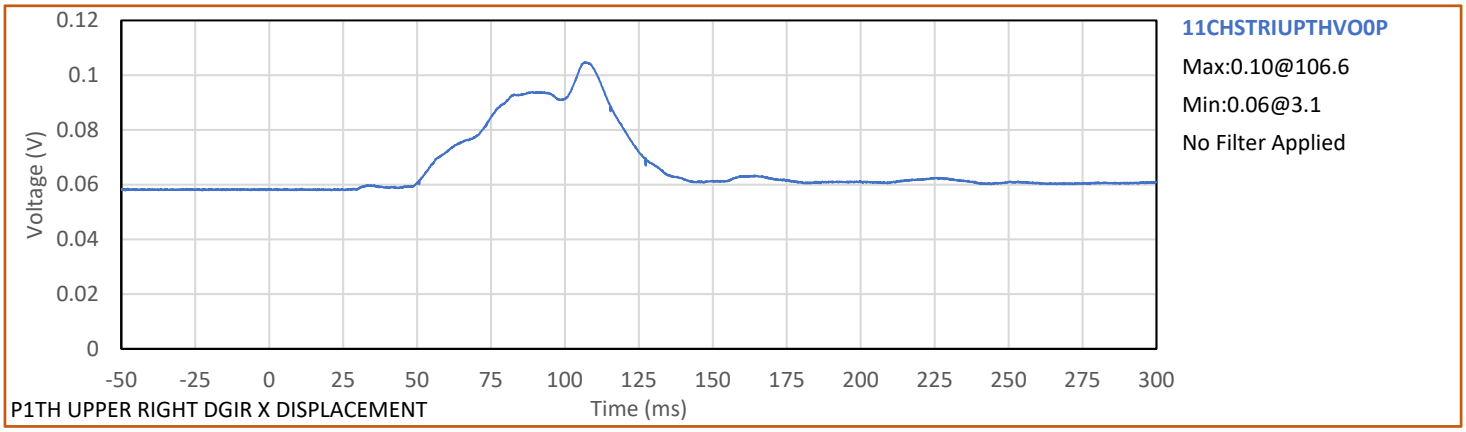
11CHSTLEUPTHVO0P
Max:0.12@107.5
Min:0.05@22.4
No Filter Applied



P1TH UPPER LEFT DGIR Y ROTATION

11CHSTLEUPTHANYC
Max:12.9@163.1
Min:5.3@85.4
SAE Class 180


Angle (deg)
Time (ms)
P1TH UPPER LEFT DGIR Z ROTATION
11CHSTLEUPTHANZC
Max:-14.6@239.6
Min:-20.8@86.8
SAE Class 180


Voltage (V)
Time (ms)
P1TH UPPER RIGHT DGIR X DISPLACEMENT
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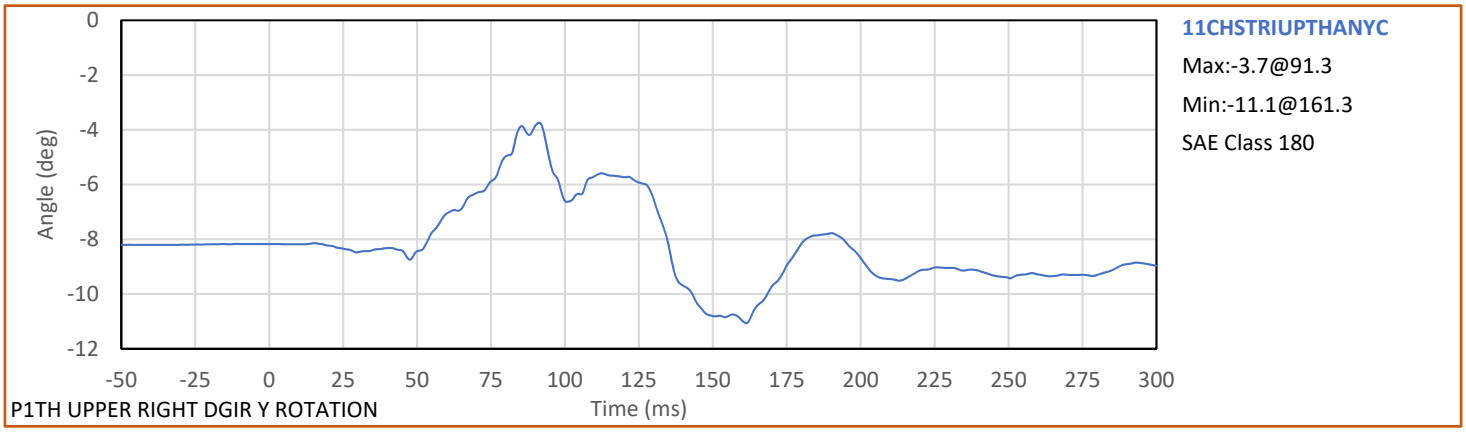
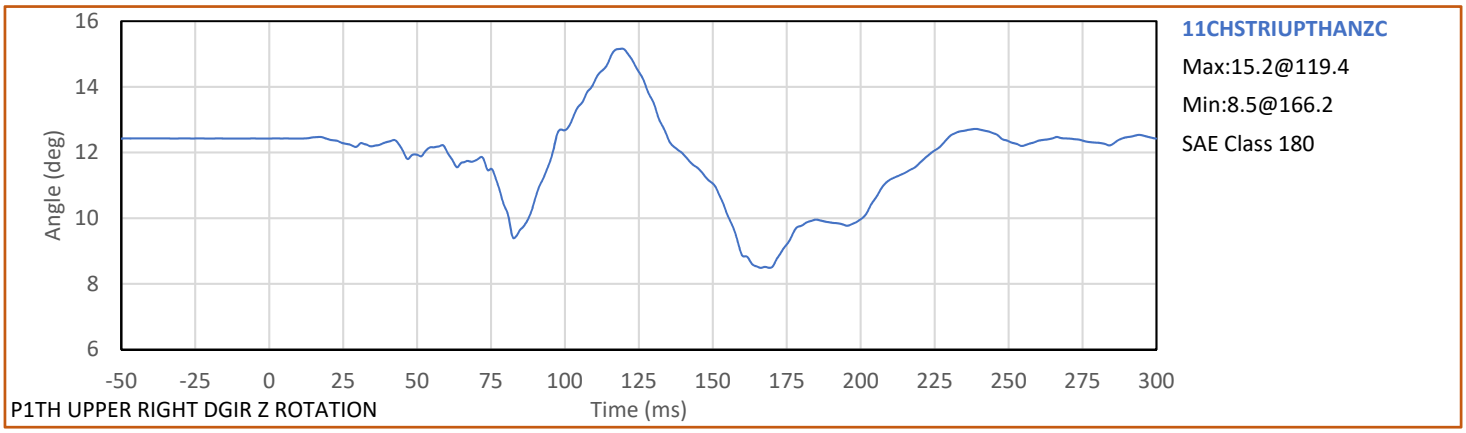
Max:0.10@106.6
Min:0.06@3.1
No Filter Applied


Angle (deg)
Time (ms)
P1TH UPPER RIGHT DGIR Y ROTATION
11CHSTRIUPTHANYC
Max:-3.7@91.3
Min:-11.1@161.3
SAE Class 180


Angle (deg)
Time (ms)
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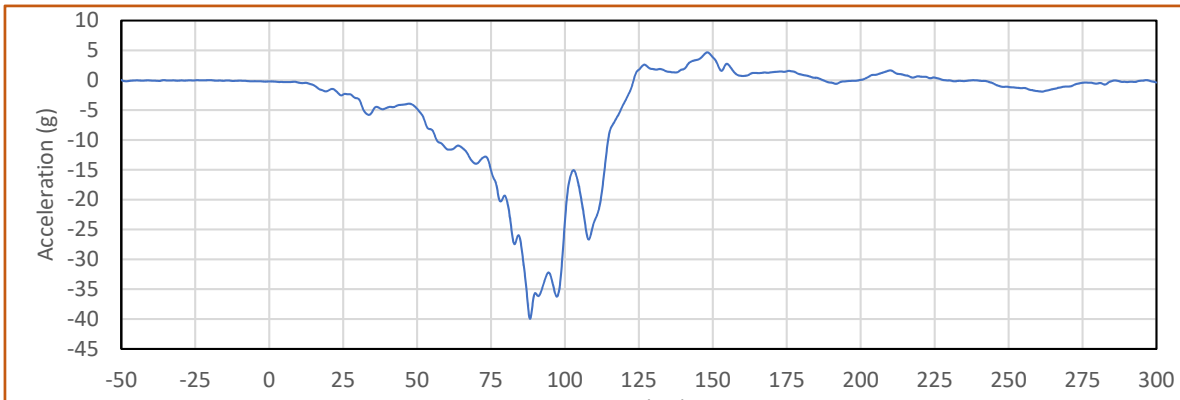
Max:15.2@119.4
Min:8.5@166.2
SAE Class 180



P1TH T6 X ACCELERATION

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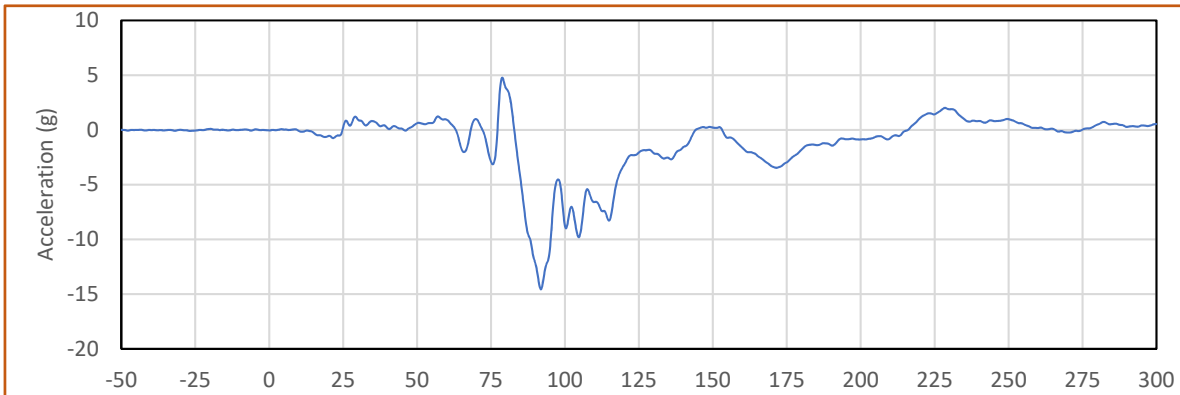
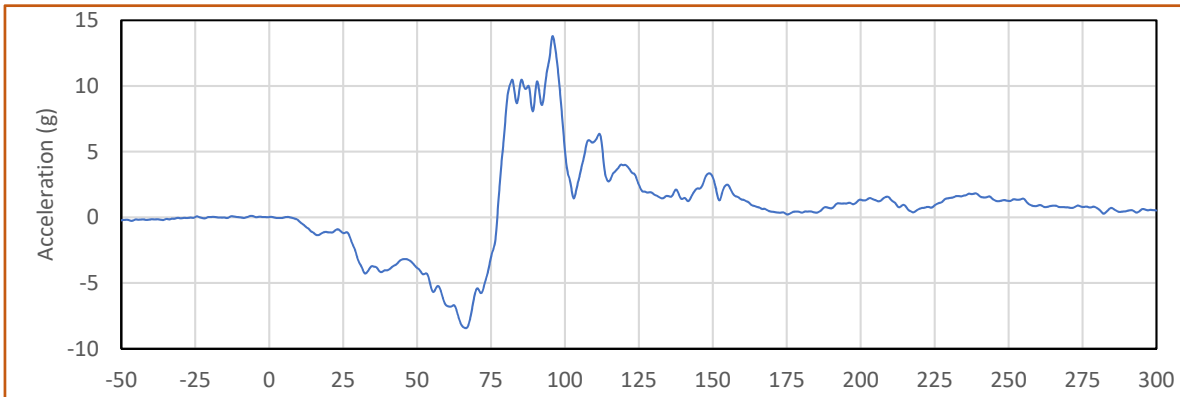
Max:4.7@148.2
Min:-40.0@88.2
SAE Class 180



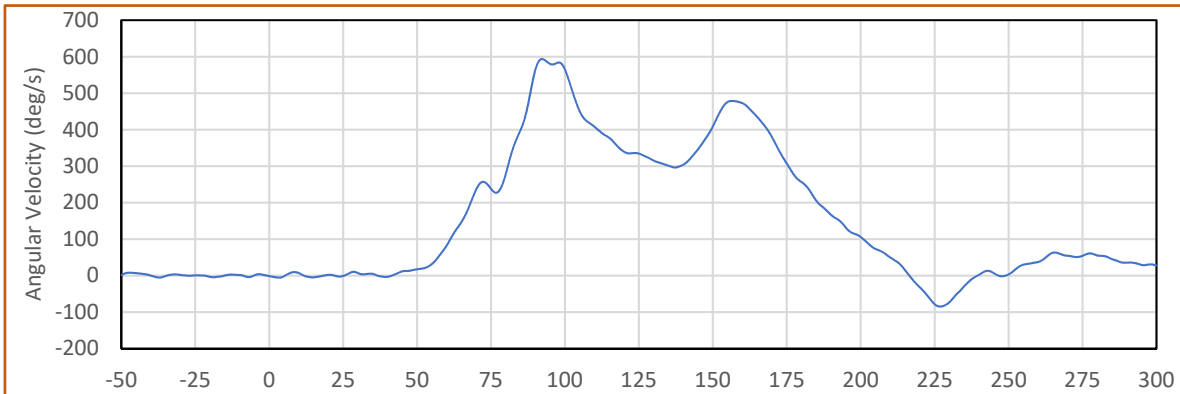
P1TH T6 Y ACCELERATION

11THSP0600THACYC
Max:4.8@78.8
Min:-14.6@91.9
SAE Class 180



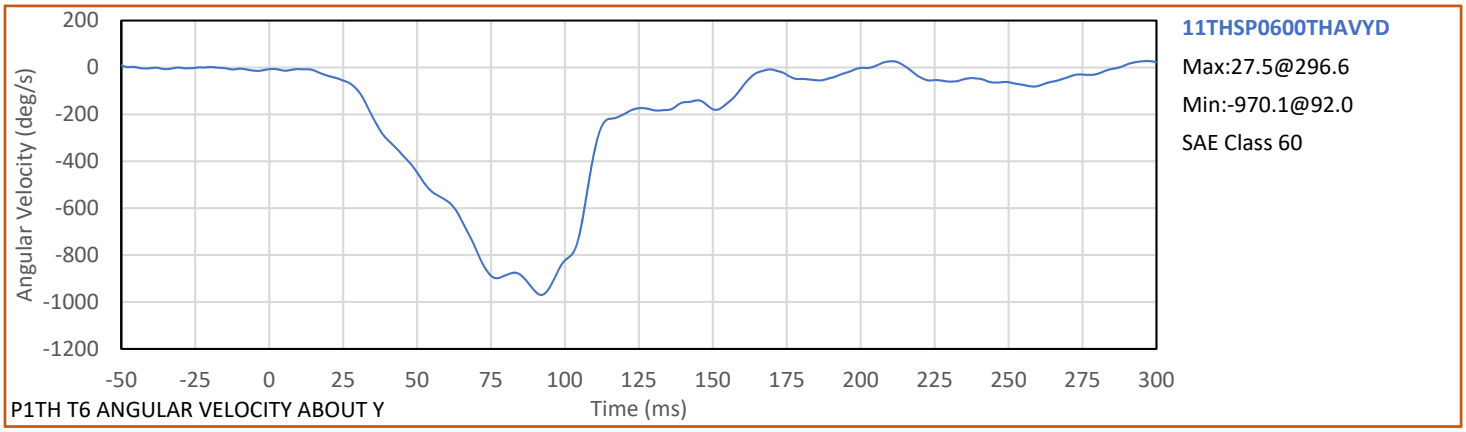
P1TH T6 Z ACCELERATION

11THSP0600THACZC
Max:13.8@95.8
Min:-8.4@66.5
SAE Class 180

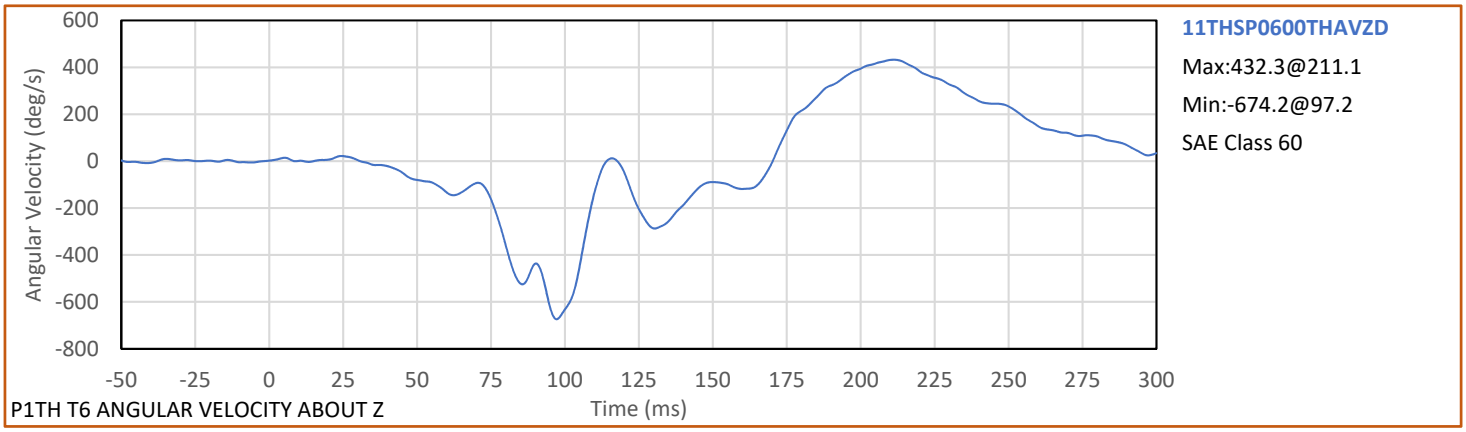


P1TH T6 ANGULAR VELOCITY ABOUT X

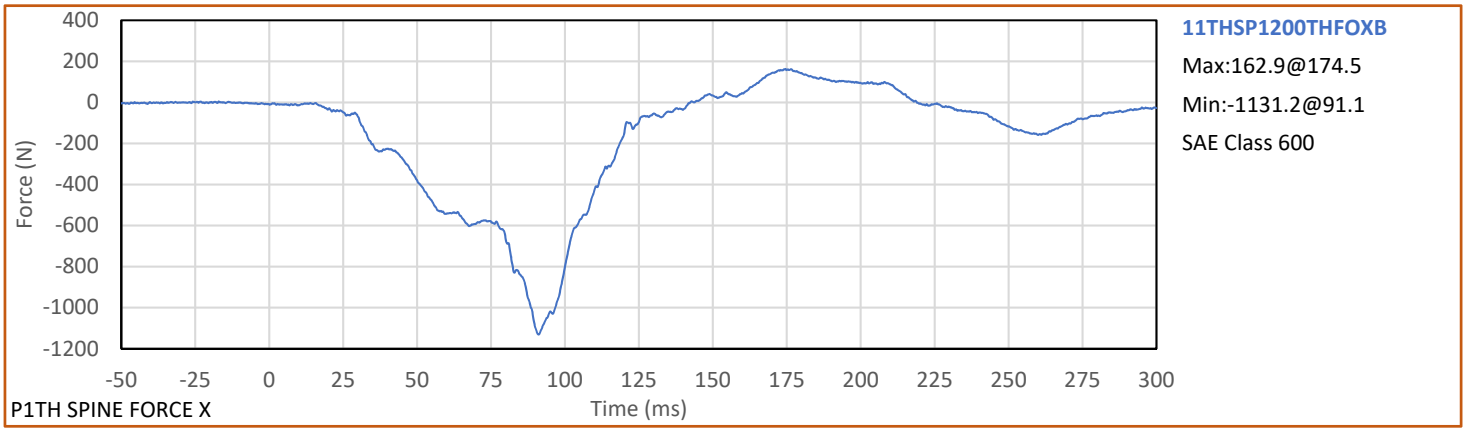
11THSP0600THAVXD
Max:593.5@92.2
Min:-85.0@226.9
SAE Class 60



11THSP0600THAVYD
Max:27.5@296.6
Min:-970.1@92.0
SAE Class 60



11THSP0600THAVZD
Max:432.3@211.1
Min:-674.2@97.2
SAE Class 60



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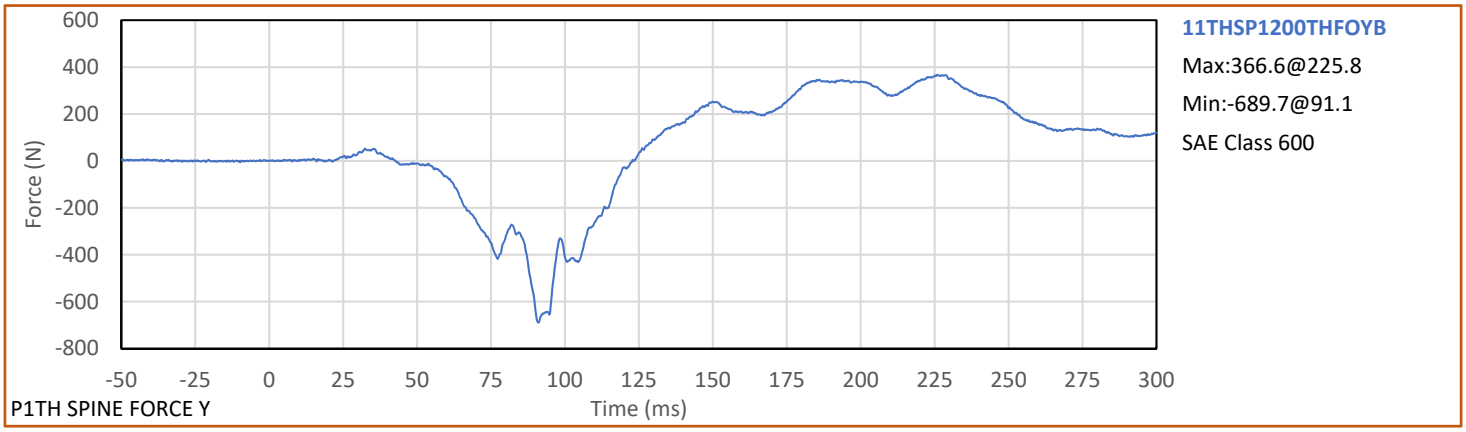
Min:-1131.2@91.1
SAE Class 600



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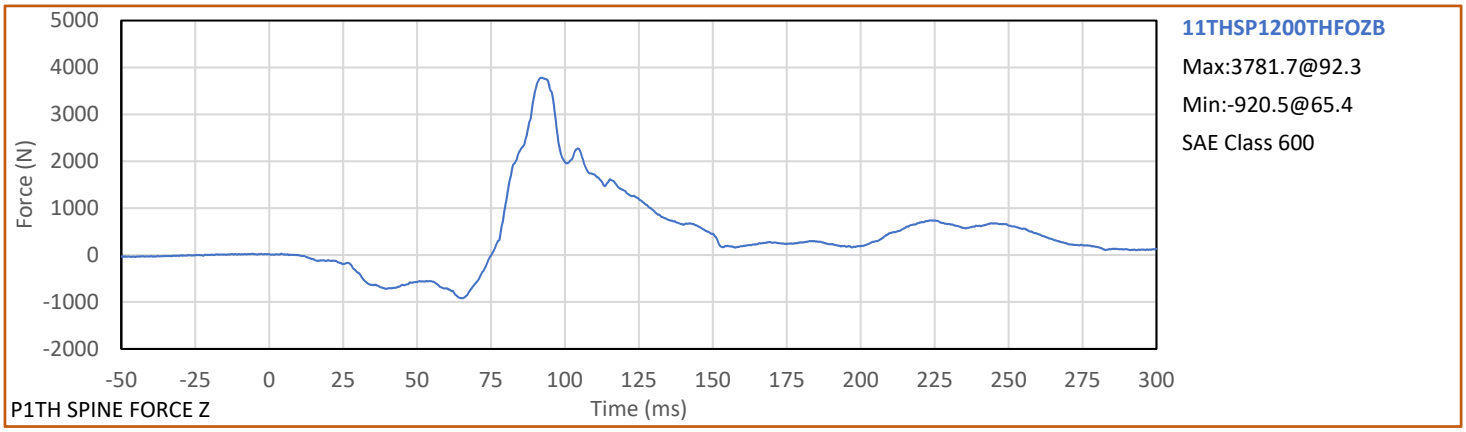
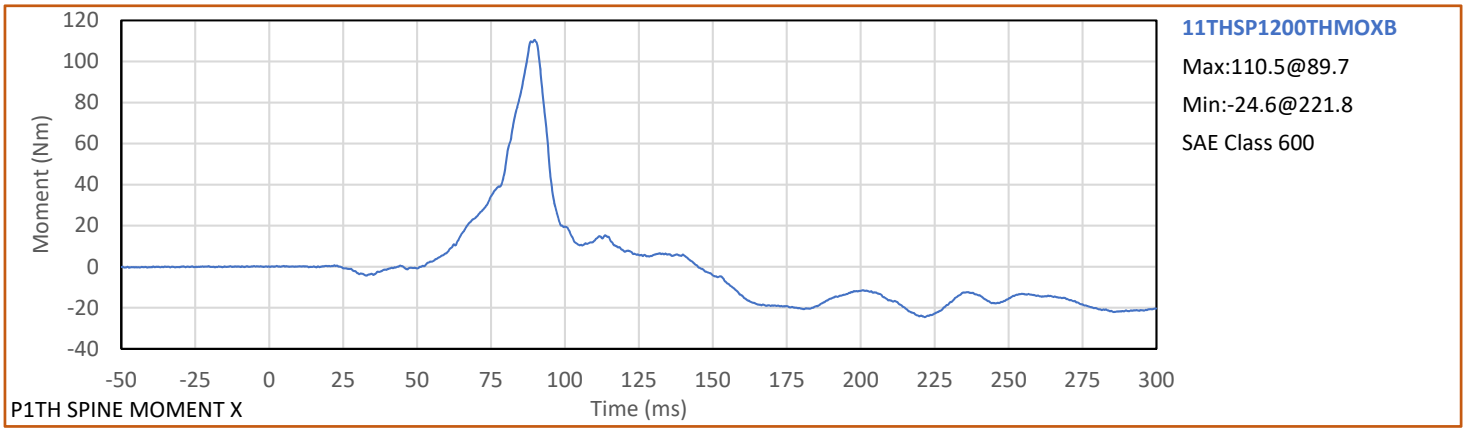
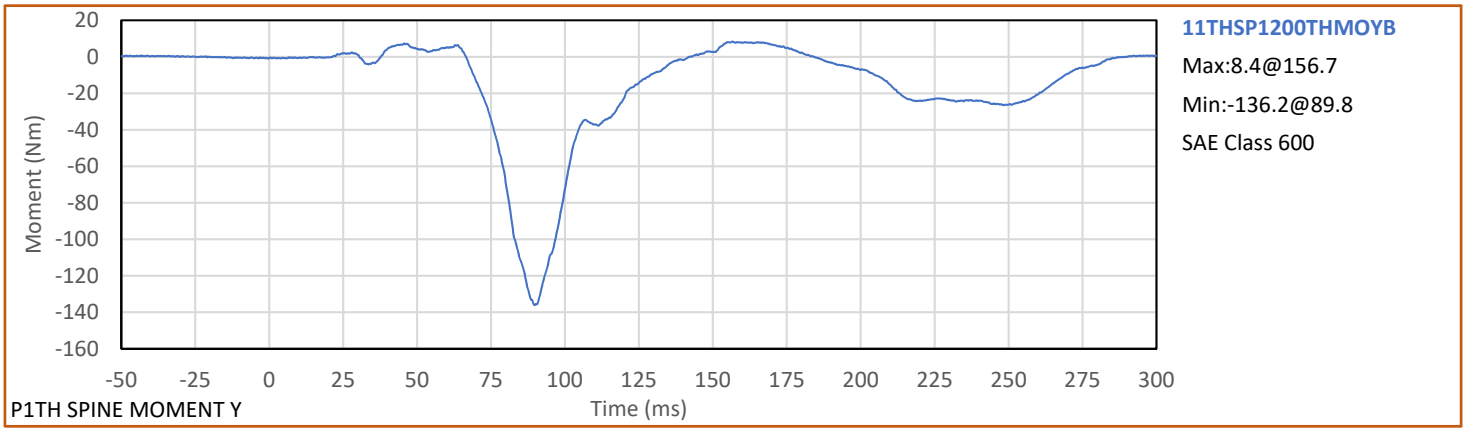
Max:366.6@225.8
Min:-689.7@91.1
SAE Class 600


11THSP1200THFOZB
Max:3781.7@92.3
Min:-920.5@65.4
SAE Class 600
Force (N)
Time (ms)
P1TH SPINE FORCE Z


11THSP1200THMOXB
Max:110.5@89.7
Min:-24.6@221.8
SAE Class 600
Moment (Nm)
Time (ms)
P1TH SPINE MOMENT X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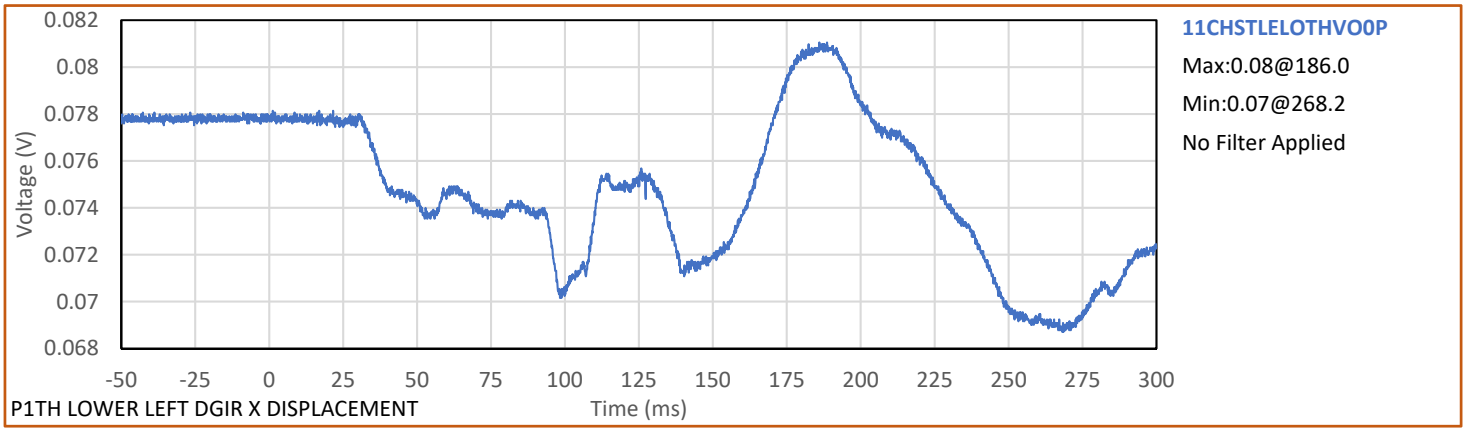
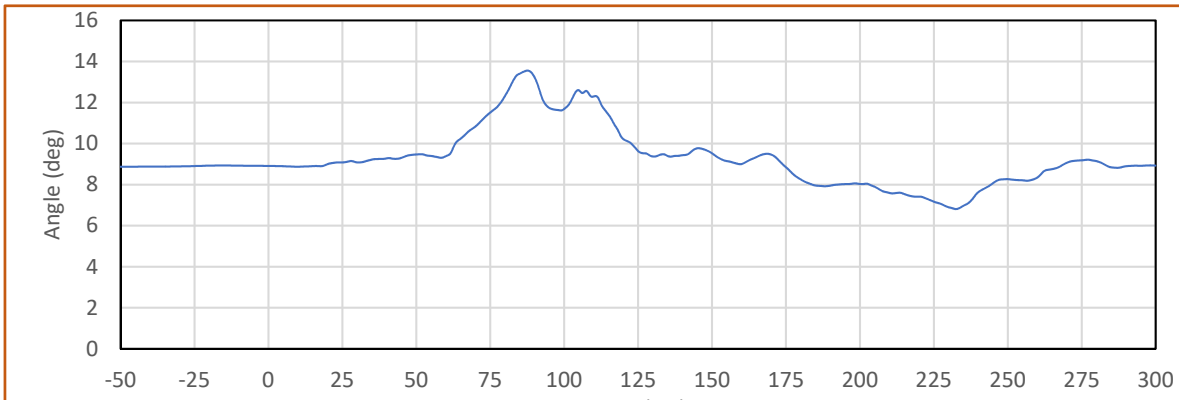
Max:8.4@156.7
Min:-136.2@89.8
SAE Class 600
Moment (Nm)
Time (ms)
P1TH SPINE MOMENT Y


11CHSTLELOTHVO0P
Max:0.08@186.0
Min:0.07@268.2
No Filter Applied
Voltage (V)
Time (ms)
P1TH LOWER LEFT DGIR X DISPLACEMENT

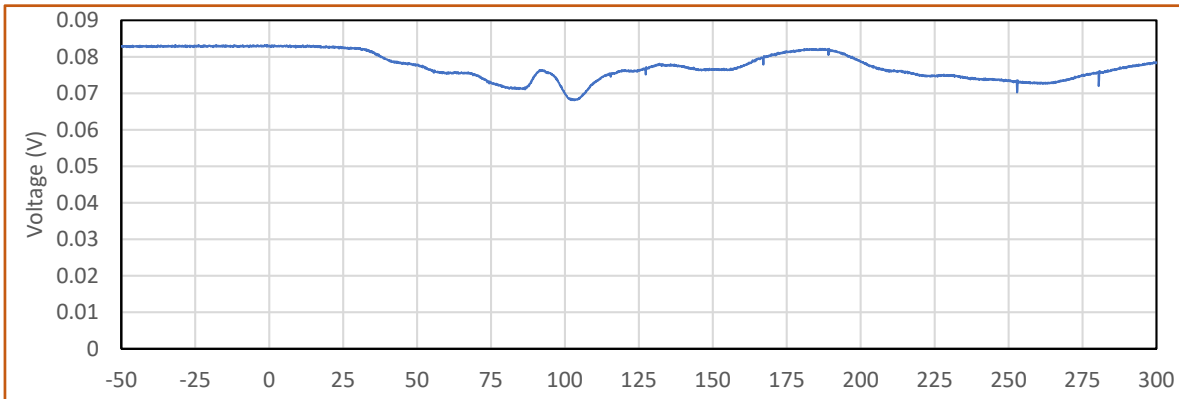
P1TH LOWER LEFT DGIR Y ROTATION

11CHSTLELOTHANYC
Max:1.6@107.6
Min:-5.4@32.9
SAE Class 180



P1TH LOWER LEFT DGIR Z ROTATION

11CHSTLELOTHANZC
Max:13.6@87.6
Min:6.8@232.5
SAE Class 180



P1TH LOWER RIGHT DGIR X DISPLACEMENT

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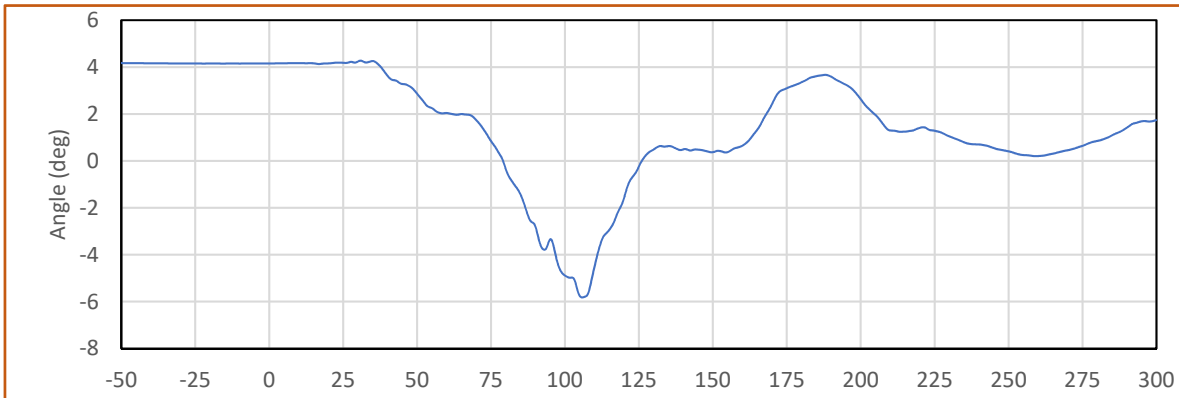
Max:0.08@1.0
Min:0.07@103.2
No Filter Applied



P1TH LOWER RIGHT DGIR Y ROTATION

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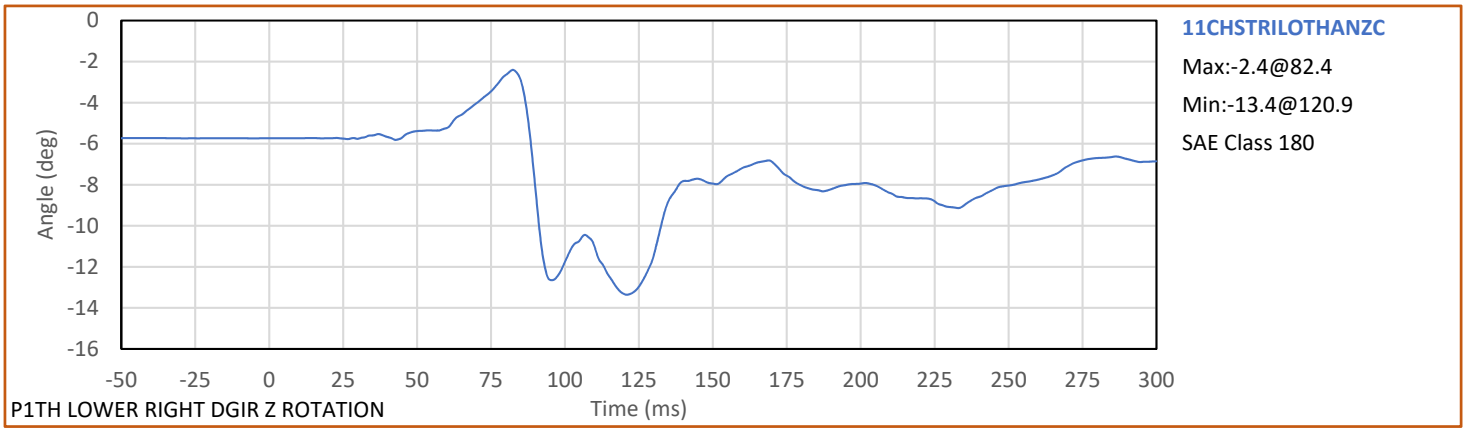
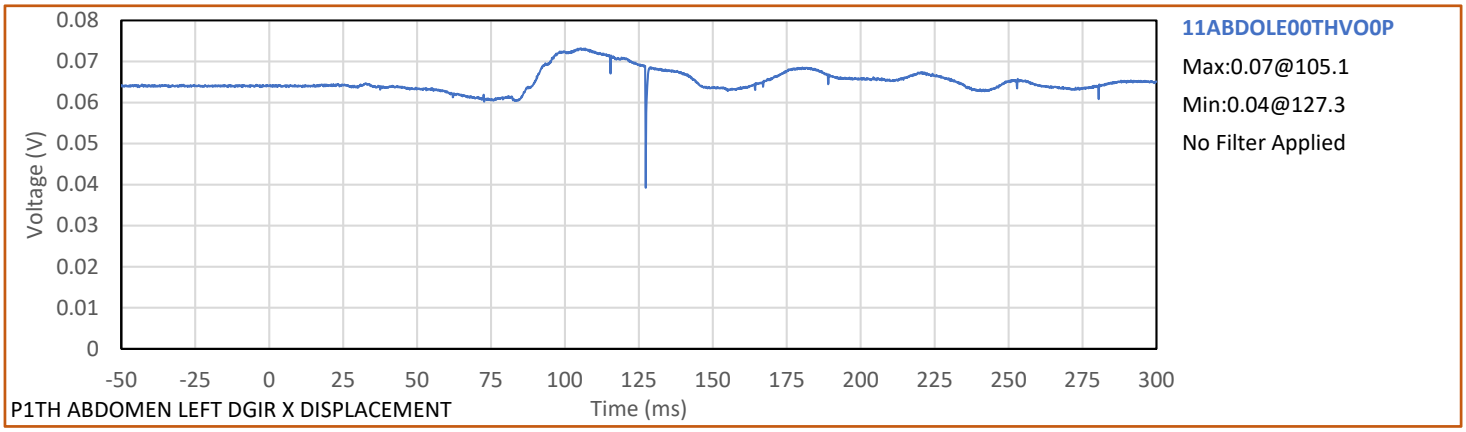
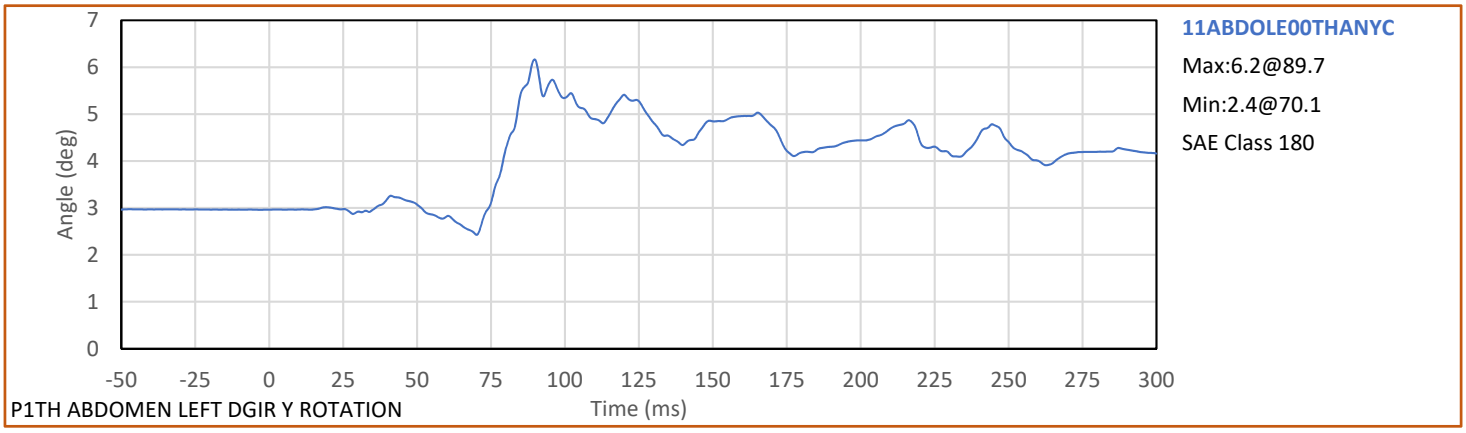
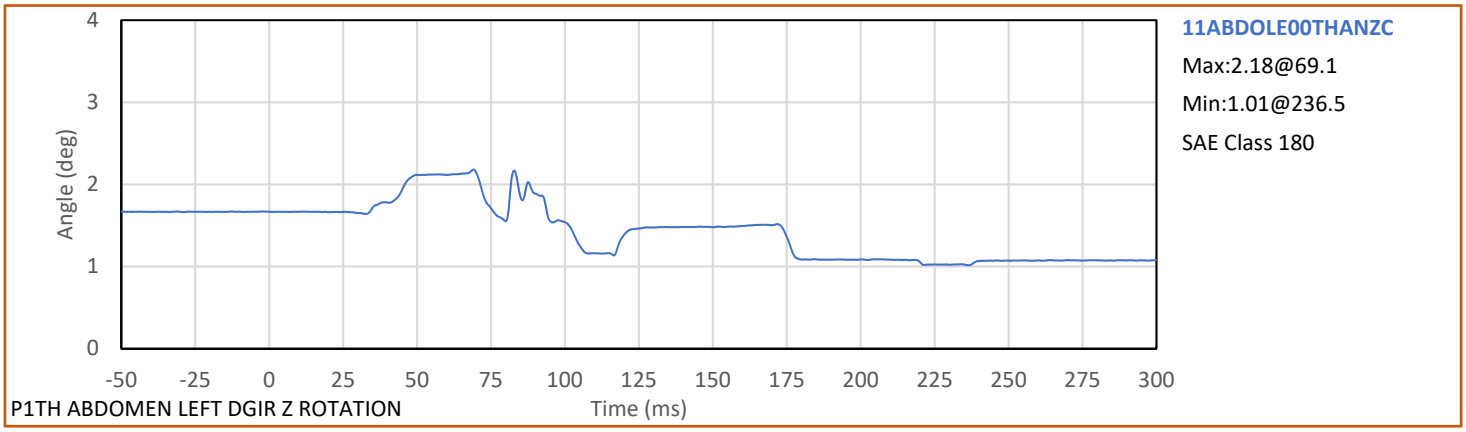
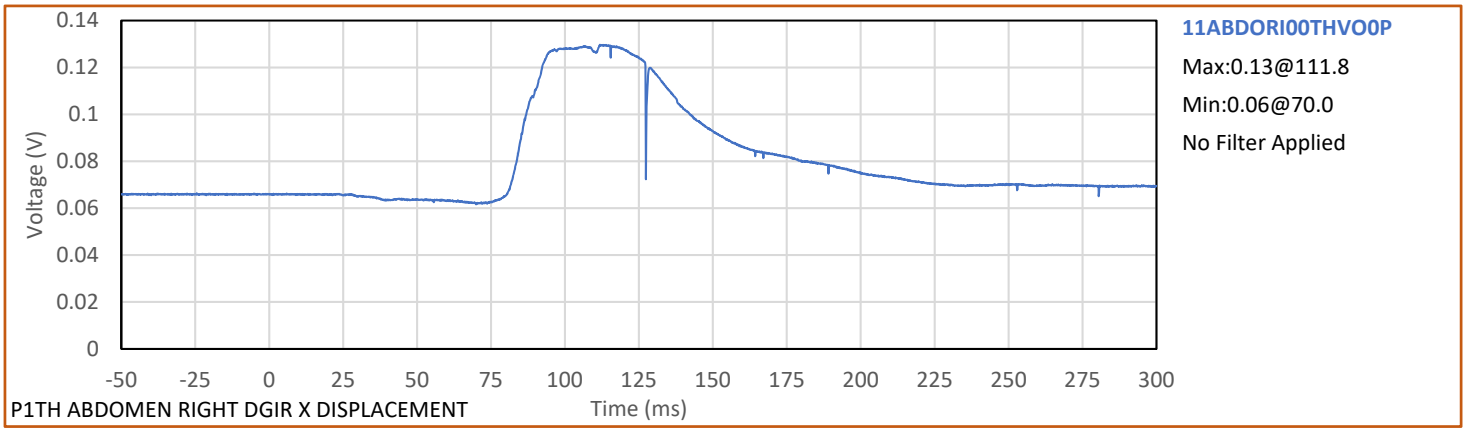
Max:4.3@30.9
Min:-5.8@105.8
SAE Class 180

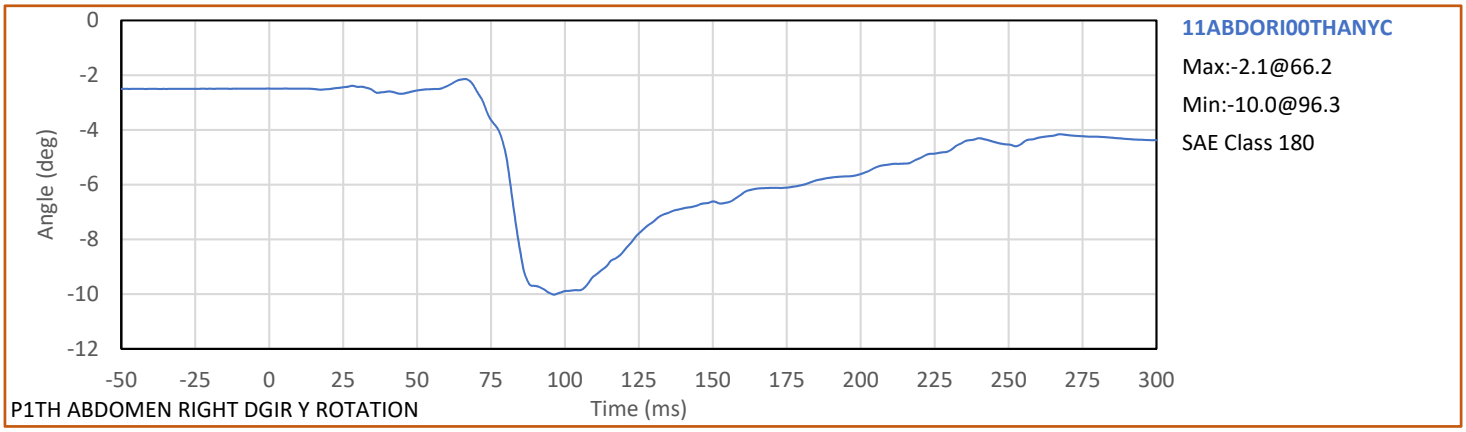

Angle (deg)
Time (ms)
11CHSTRILOTHANZC
Max:-2.4@82.4
Min:-13.4@120.9
SAE Class 180
P1TH LOWER RIGHT DGIR Z ROTATION

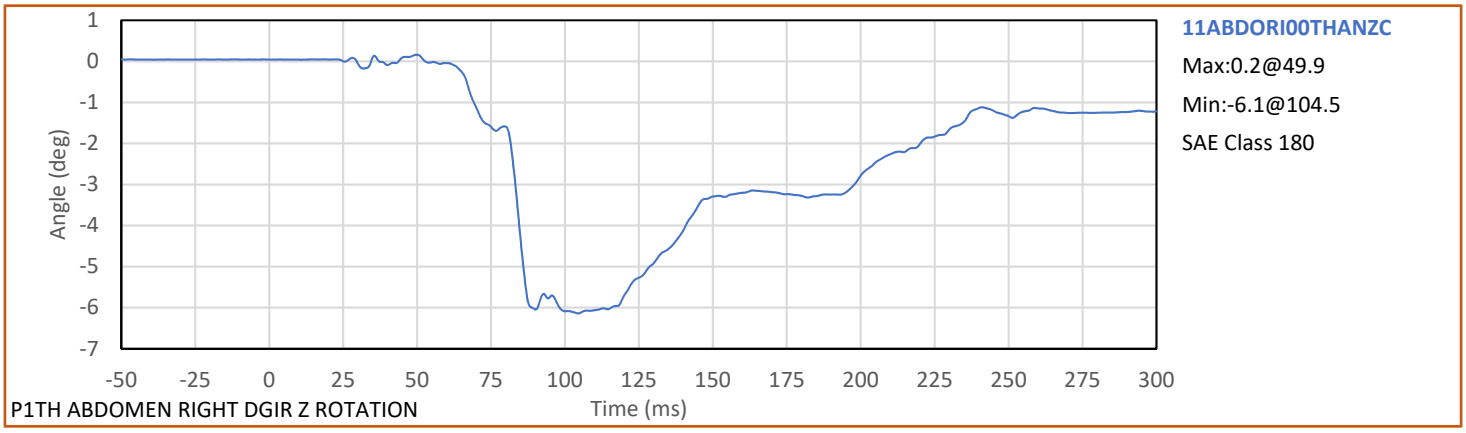

Voltage (V)
Time (ms)
11ABDOLE00THVO0P
Max:0.07@105.1
Min:0.04@127.3
No Filter Applied
P1TH ABDOMEN LEFT DGIR X DISPLACEMENT

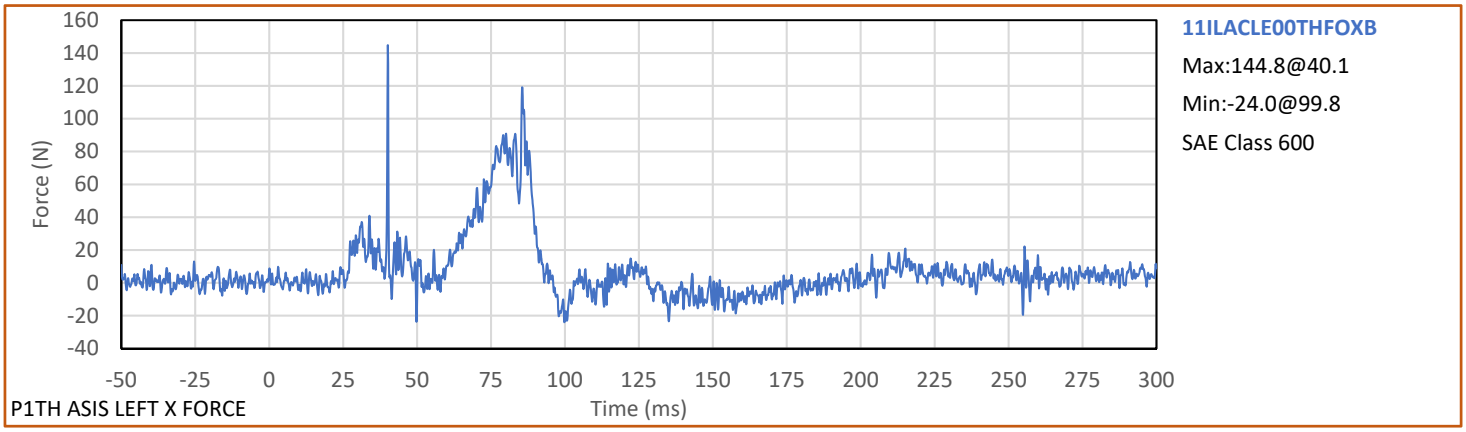

Angle (deg)
Time (ms)
11ABDOLE00THANYC
Max:6.2@89.7
Min:2.4@70.1
SAE Class 180
P1TH ABDOMEN LEFT DGIR Y ROTATION

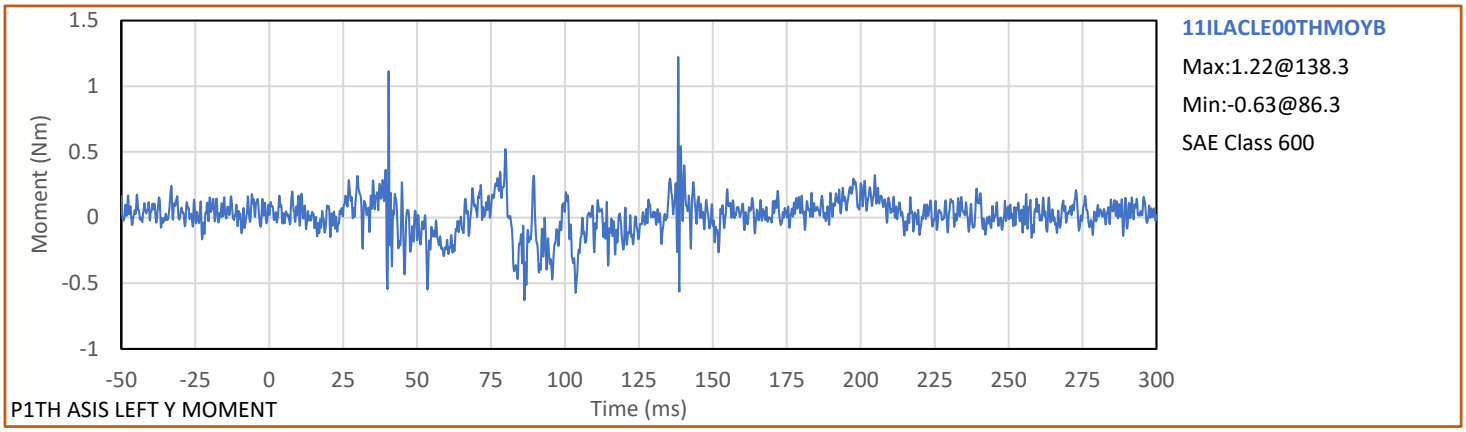

Angle (deg)
Time (ms)
11ABDOLE00THANZC
Max:2.18@69.1
Min:1.01@236.5
SAE Class 180
P1TH ABDOMEN LEFT DGIR Z ROTATION

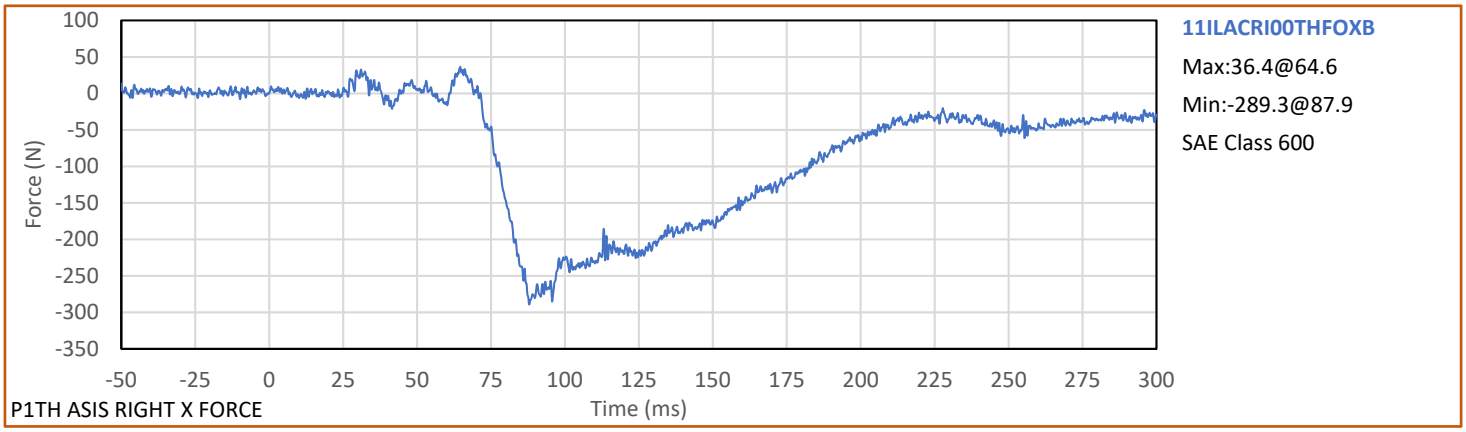

Voltage (V)
Time (ms)
P1TH ABDOMEN RIGHT DGIR X DISPLACEMENT
11ABDORI00THVO0P
Max:0.13@111.8
Min:0.06@70.0
No Filter Applied

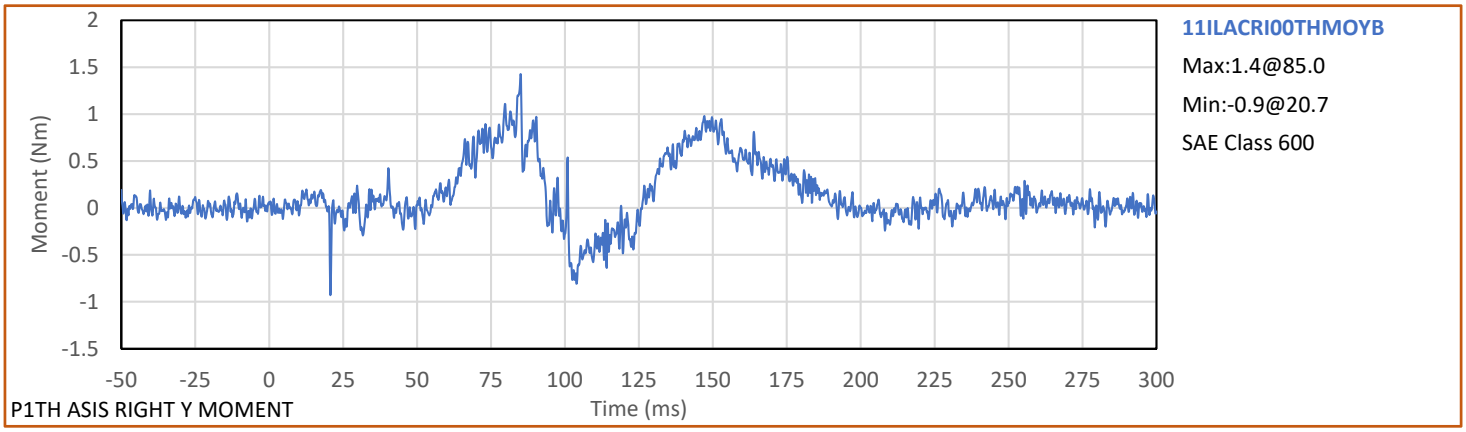

Angle (deg)
Time (ms)
P1TH ABDOMEN RIGHT DGIR Y ROTATION
11ABDORI00THANYC
Max:-2.1@66.2
Min:-10.0@96.3
SAE Class 180

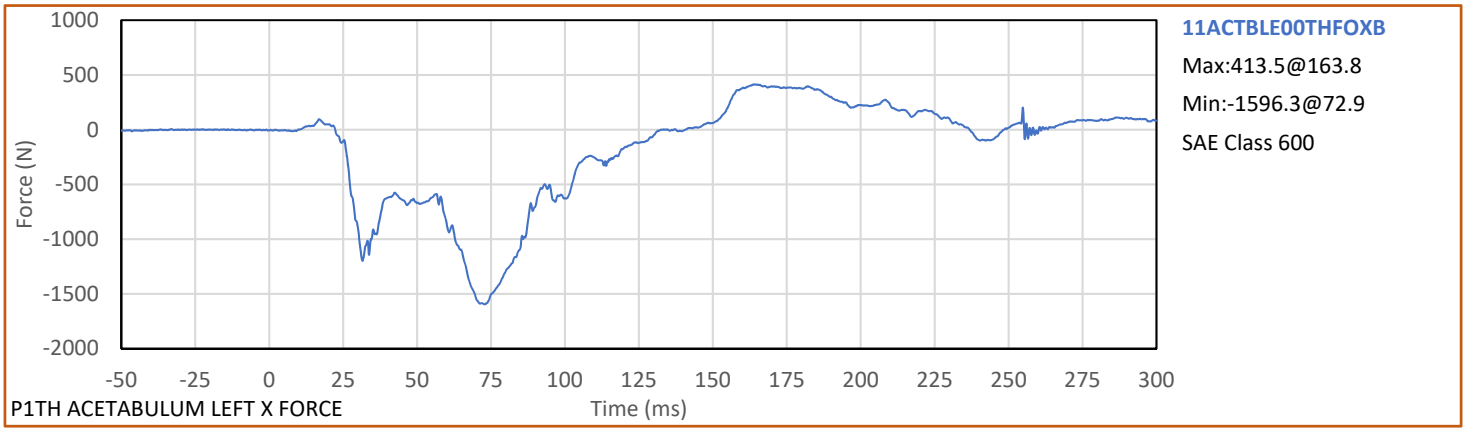

Angle (deg)
Time (ms)
P1TH ABDOMEN RIGHT DGIR Z ROTATION
11ABDORI00THANZC
Max:0.2@49.9
Min:-6.1@104.5
SAE Class 180

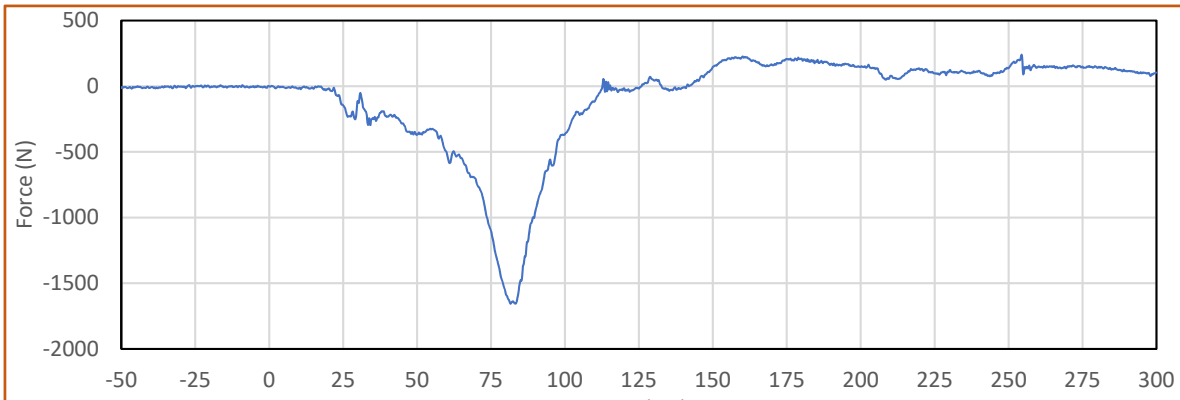

Force (N)
Time (ms)
P1TH ASIS LEFT X FORCE
11ILACLE00THFOXB
Max:144.8@40.1
Min:-24.0@99.8
SAE Class 600


Moment (Nm)
Time (ms)
11ILACLE00THMOYB
Max:1.22@138.3
Min:-0.63@86.3
SAE Class 600
P1TH ASIS LEFT Y MOMENT

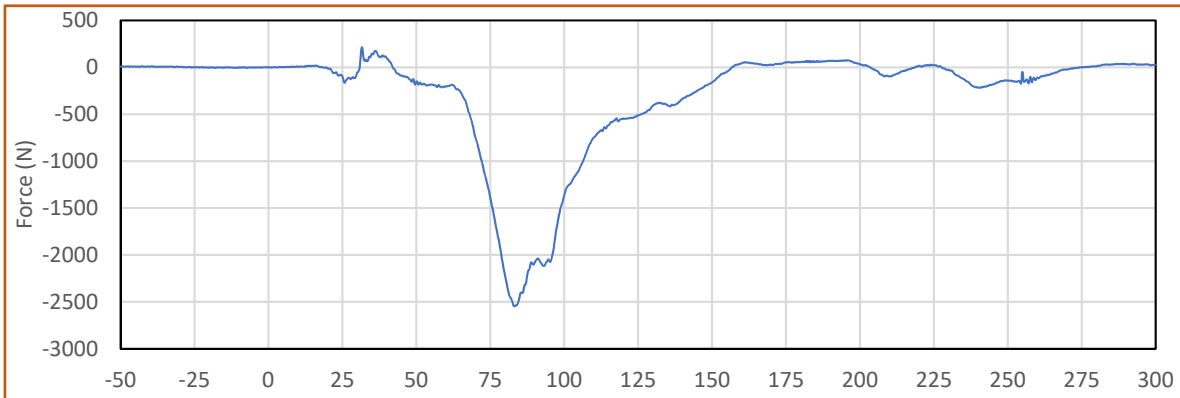

Force (N)
Time (ms)
11ILACRI00THFOXB
Max:36.4@64.6
Min:-289.3@87.9
SAE Class 600
P1TH ASIS RIGHT X FORCE


Moment (Nm)
Time (ms)
11ILACRI00THMOYB
Max:1.4@85.0
Min:-0.9@20.7
SAE Class 600
P1TH ASIS RIGHT Y MOMENT

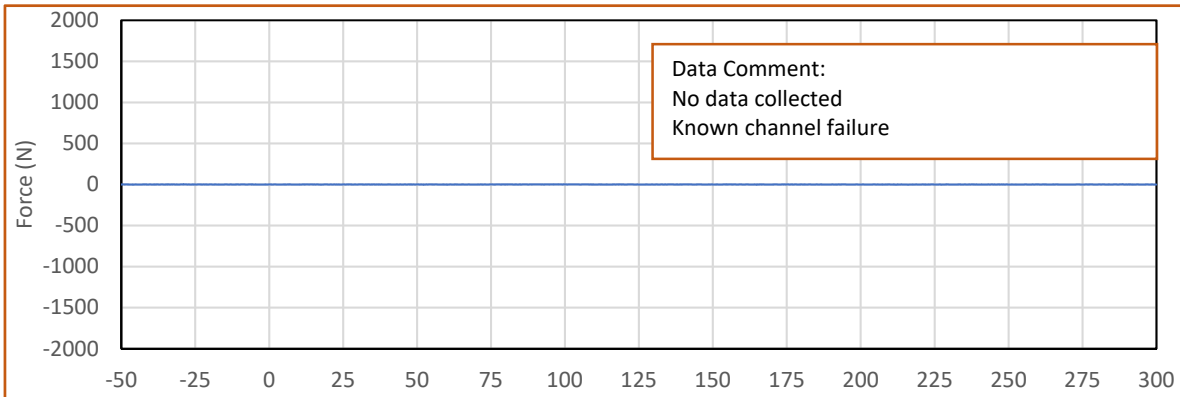

Force (N)
Time (ms)
11ACTBLE00THFOXB
Max:413.5@163.8
Min:-1596.3@72.9
SAE Class 600
P1TH ACETABULUM LEFT X FORCE



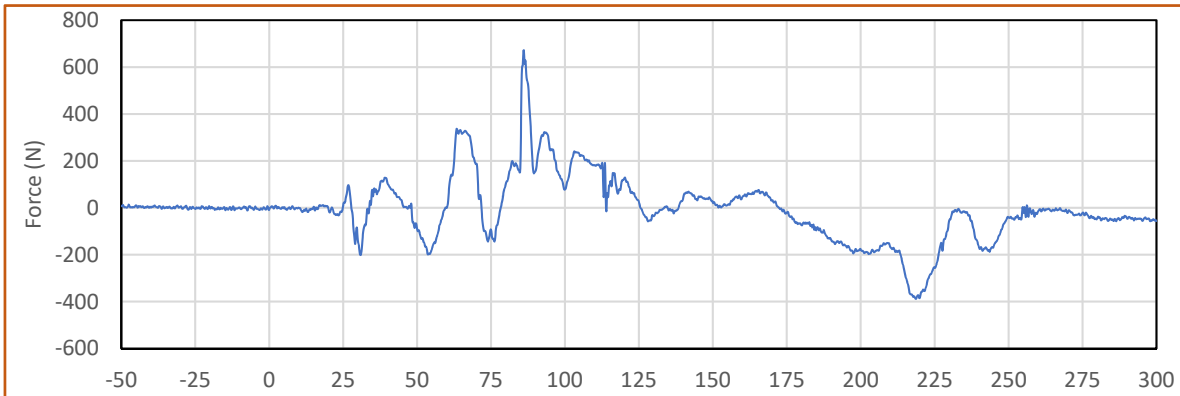
11ACTBLE00THFOYB
Max:240.6@254.4
Min:-1656.5@81.6
SAE Class 600



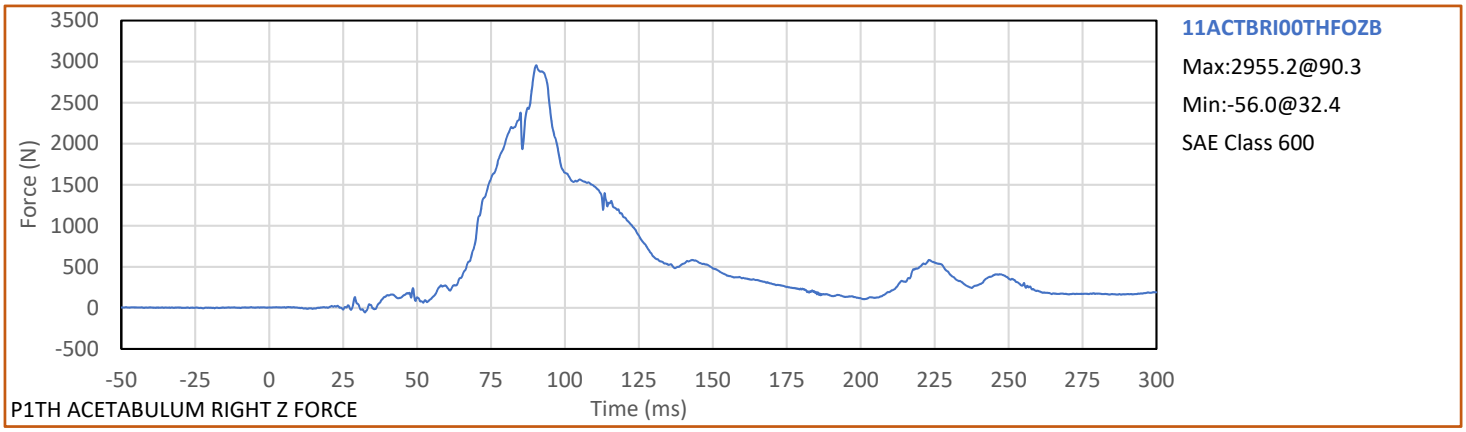
11ACTBLE00THFOZB
Max:214.3@31.6
Min:-2547.2@83.1
SAE Class 600

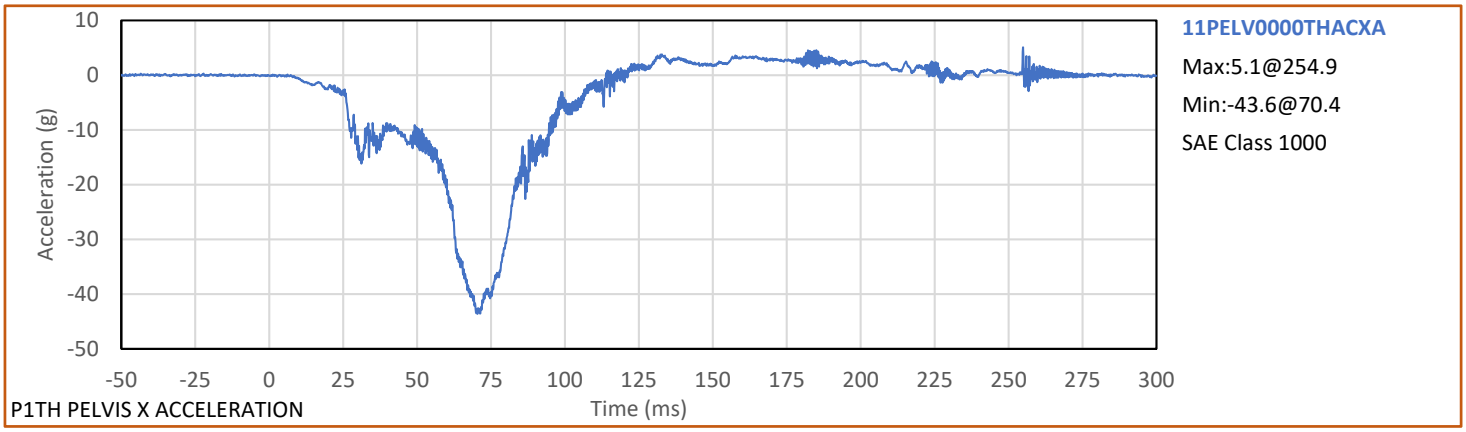


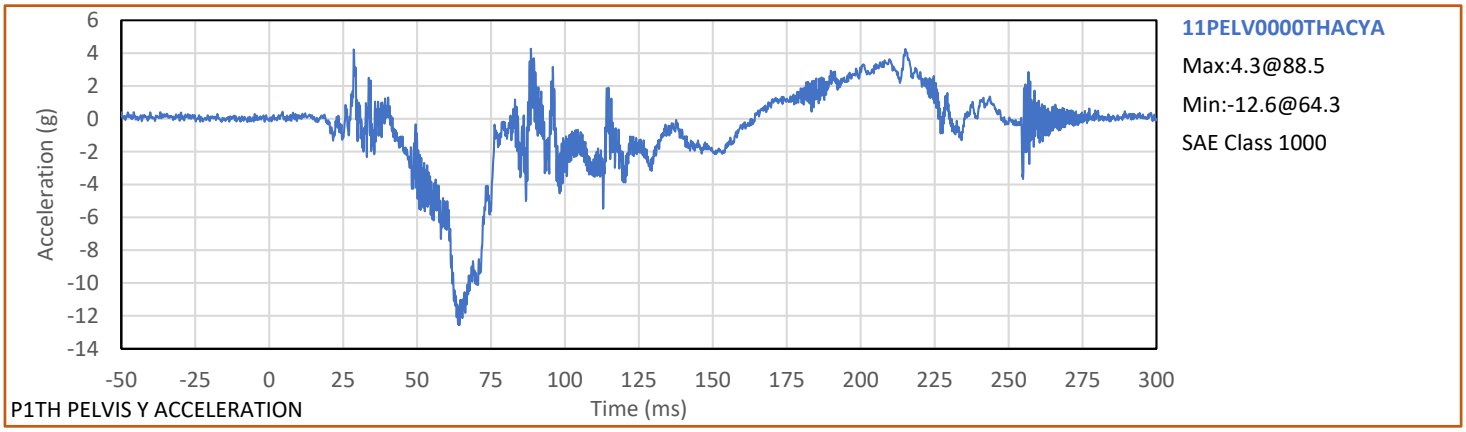
11ACTBRI00THFOXB
Max:2.3@99.7
Min:-2.4@212.0
SAE Class 600

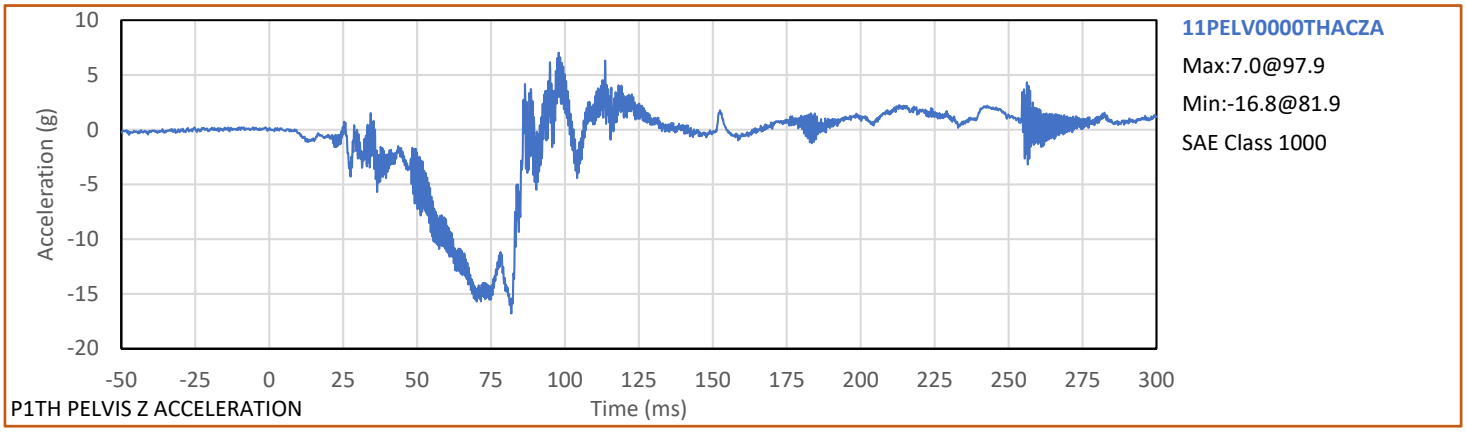


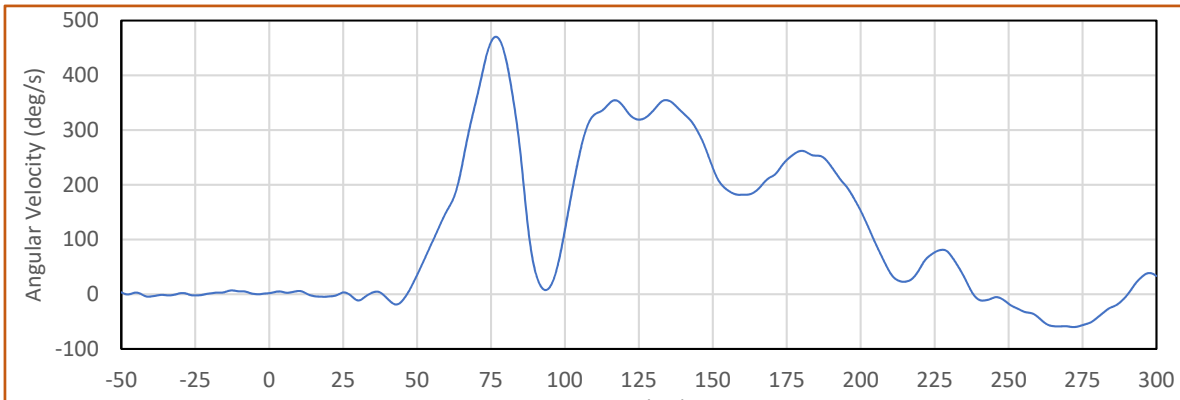
11ACTBRI00THFOYB
Max:671.9@86.1
Min:-388.5@218.7
SAE Class 600


Force (N)
Time (ms)
11ACTBRI00THFOZB
Max:2955.2@90.3
Min:-56.0@32.4
SAE Class 600
P1TH ACETABULUM RIGHT Z FORCE


Acceleration (g)
Time (ms)
11PELV0000THACXA
Max:5.1@254.9
Min:-43.6@70.4
SAE Class 1000
P1TH PELVIS X ACCELERATION

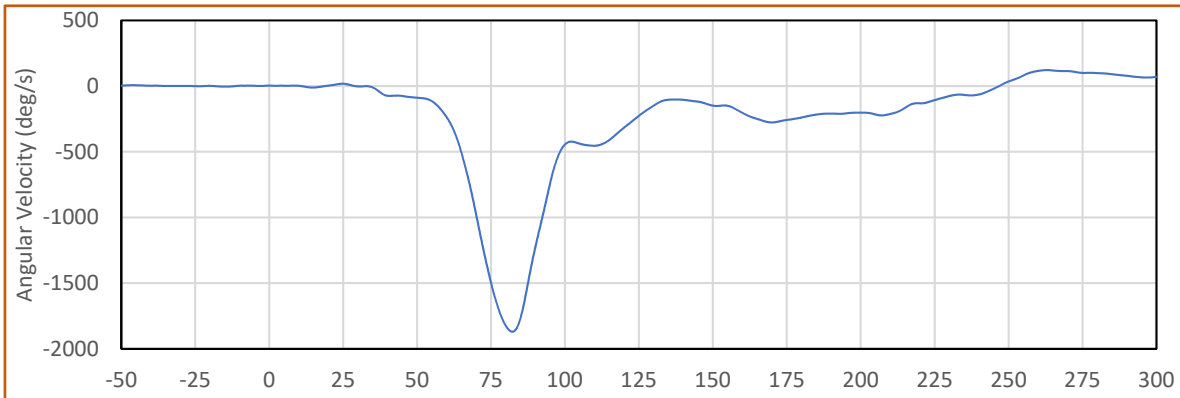

Acceleration (g)
Time (ms)
11PELV0000THACYA
Max:4.3@88.5
Min:-12.6@64.3
SAE Class 1000
P1TH PELVIS Y ACCELERATION


Acceleration (g)
Time (ms)
11PELV0000THACZA
Max:7.0@97.9
Min:-16.8@81.9
SAE Class 1000
P1TH PELVIS Z ACCELERATION



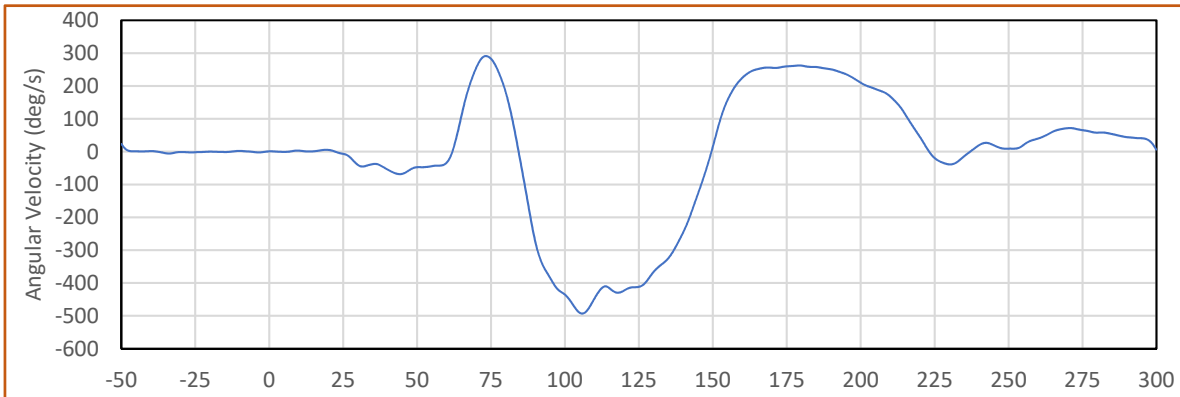
P1TH PELVIS ANGULAR VELOCITY ABOUT X

11PELV0000THAVXD
Max:470.4@76.6
Min:-60.1@271.9
SAE Class 60



P1TH PELVIS ANGULAR VELOCITY ABOUT Y

11PELV0000THAVYD
Max:121.7@263.0
Min:-1870.3@82.2
SAE Class 60

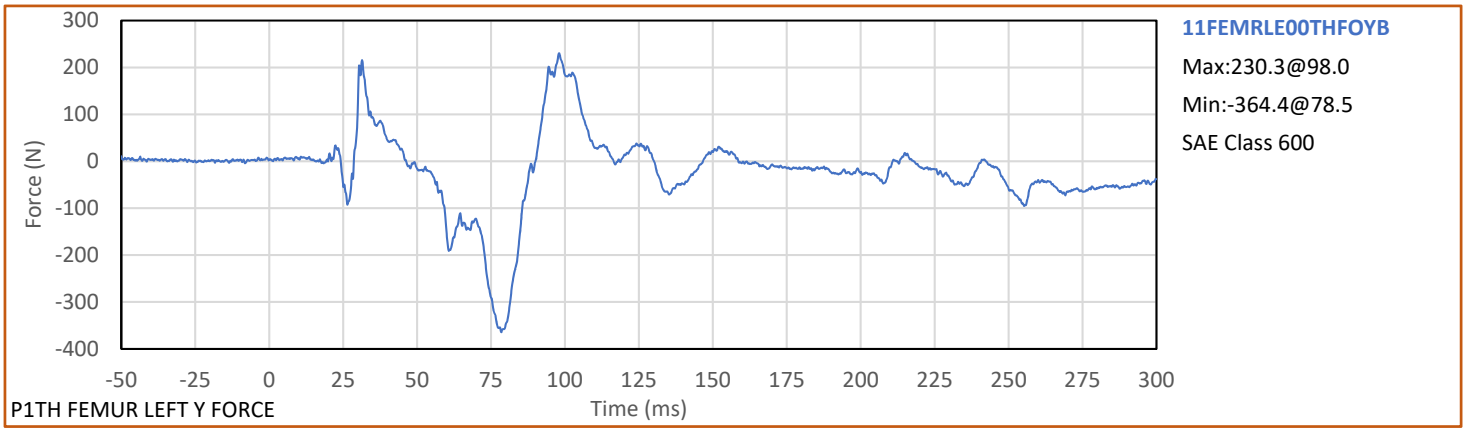


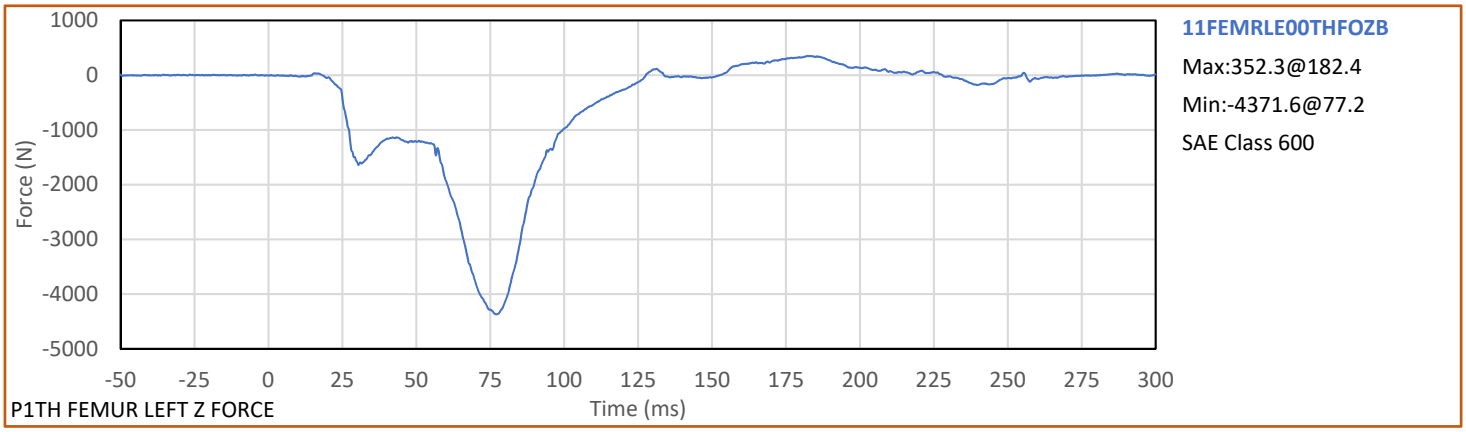
P1TH PELVIS ANGULAR VELOCITY ABOUT Z

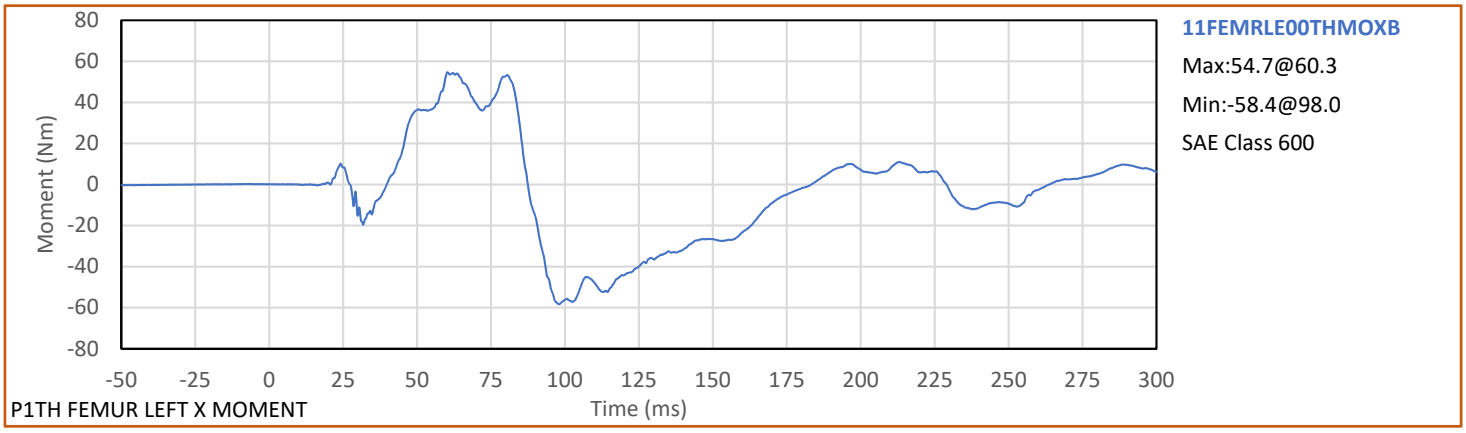
11PELV0000THAVZD
Max:291.1@73.3
Min:-493.2@105.8
SAE Class 60

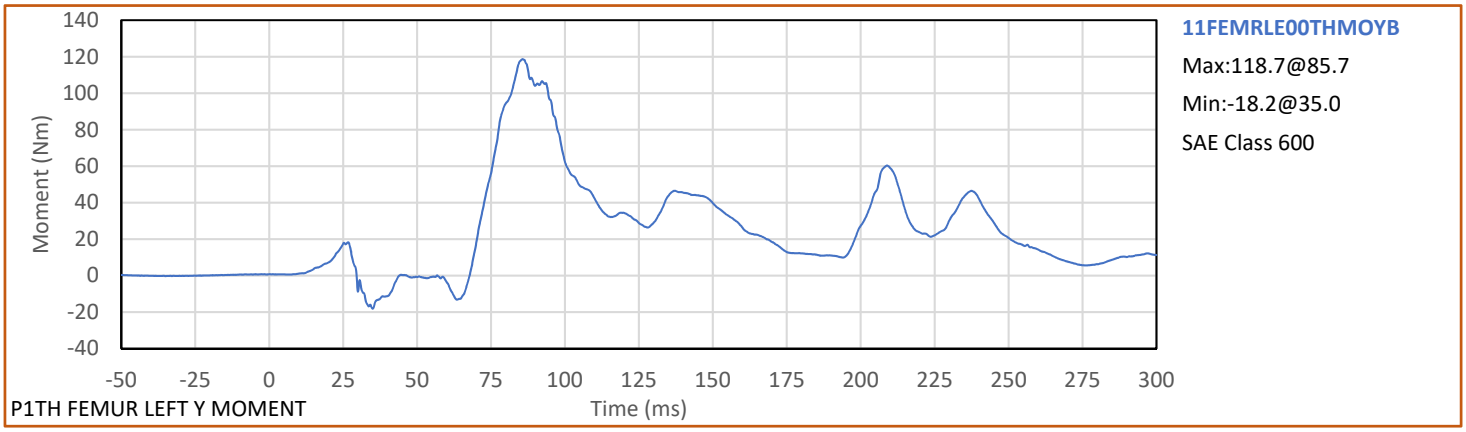
P1TH FEMUR LEFT X FORCE

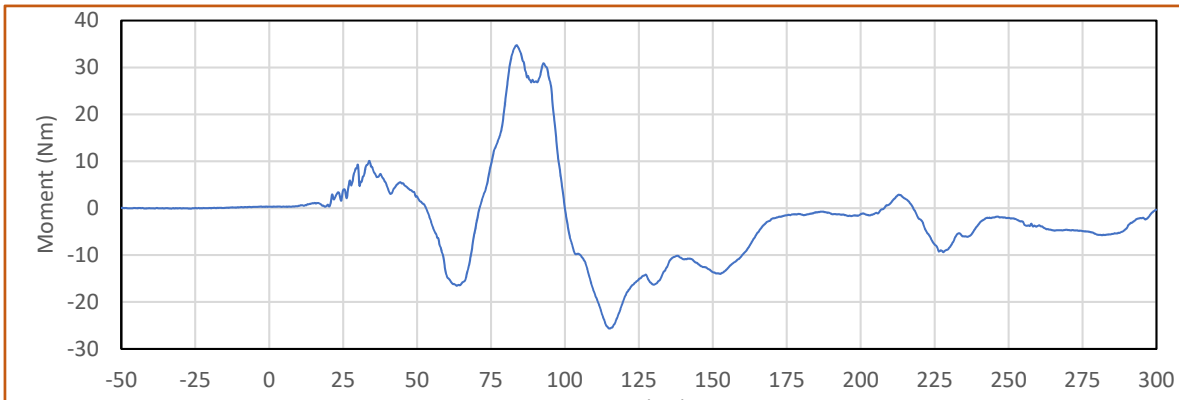
11FEMRLE00THFOXB
Max:1155.9@82.1
Min:-225.5@203.7
SAE Class 600


Force (N)
Time (ms)
P1TH FEMUR LEFT Y FORCE
11FEMRLE00THFOYB
Max:230.3@98.0
Min:-364.4@78.5
SAE Class 600


Force (N)
Time (ms)
P1TH FEMUR LEFT Z FORCE
11FEMRLE00THFOZB
Max:352.3@182.4
Min:-4371.6@77.2
SAE Class 600


Moment (Nm)
Time (ms)
P1TH FEMUR LEFT X MOMENT
11FEMRLE00THMOXB
Max:54.7@60.3
Min:-58.4@98.0
SAE Class 600


Moment (Nm)
Time (ms)
P1TH FEMUR LEFT Y MOMENT
11FEMRLE00THMOYB
Max:118.7@85.7
Min:-18.2@35.0
SAE Class 600

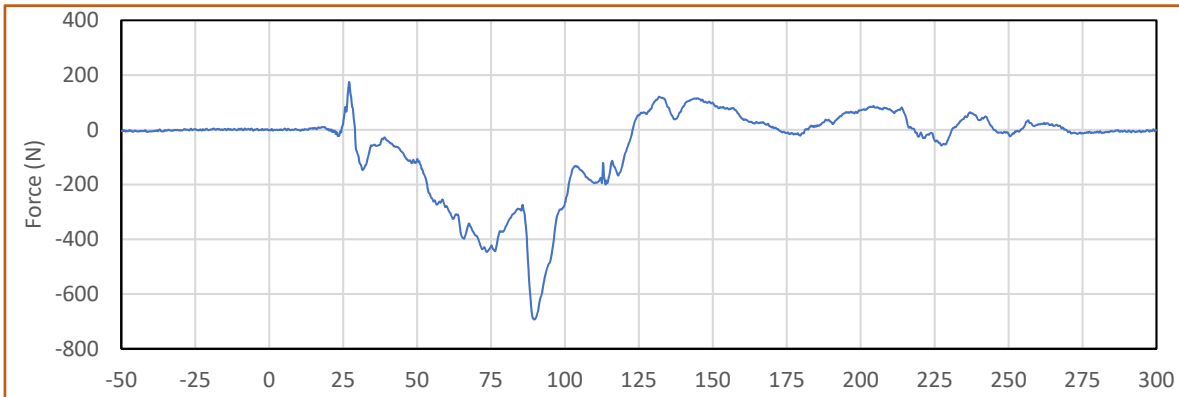


P1TH FEMUR LEFT Z MOMENT

11FEMRLE00THMOZB
Max:34.7@83.7
Min:-25.7@115.0
SAE Class 600

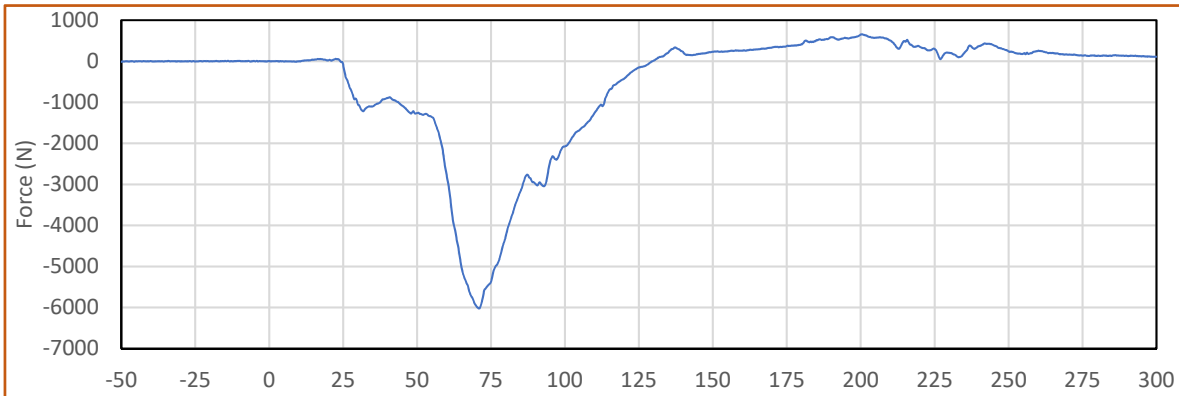
P1TH FEMUR RIGHT X FORCE

11FEMRRI00THFOXB
Max:1329.8@90.6
Min:-142.0@222.8
SAE Class 600



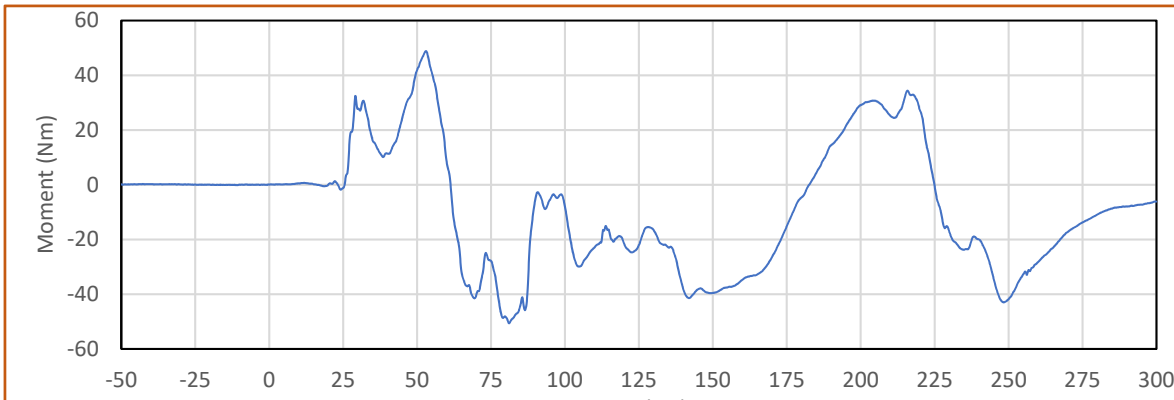
P1TH FEMUR RIGHT Y FORCE

11FEMRRI00THFOYB
Max:174.6@27.0
Min:-693.4@89.6
SAE Class 600



P1TH FEMUR RIGHT Z FORCE

11FEMRRI00THFOZB
Max:656.3@200.5
Min:-6025.6@71.0
SAE Class 600

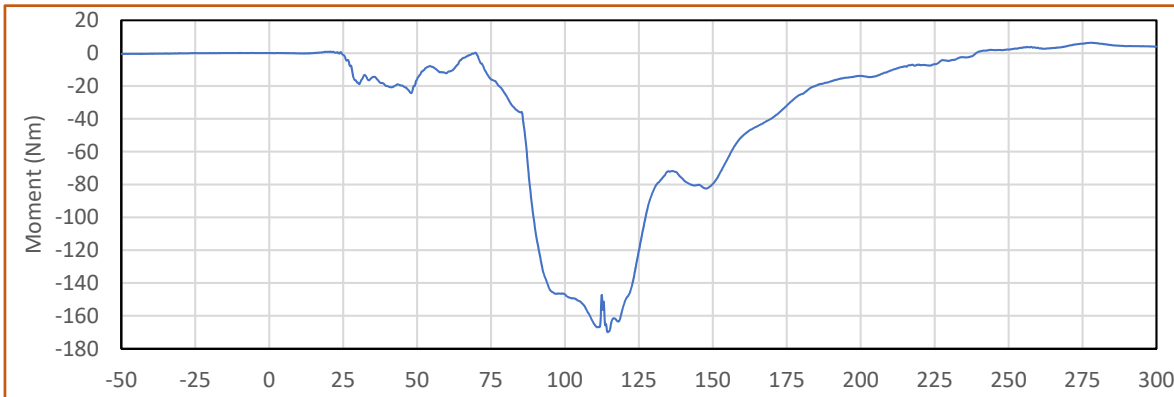


P1TH FEMUR RIGHT X MOMENT

11FEMRRI00THMOXB
Max:48.8@53.0
Min:-50.7@81.1
SAE Class 600

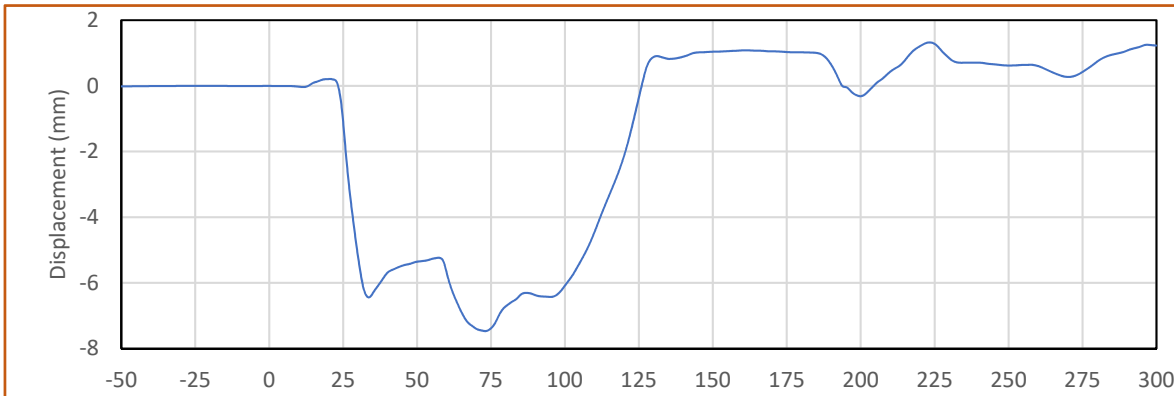
P1TH FEMUR RIGHT Y MOMENT

11FEMRRI00THMOYB
Max:122.9@102.4
Min:-29.0@64.8
SAE Class 600



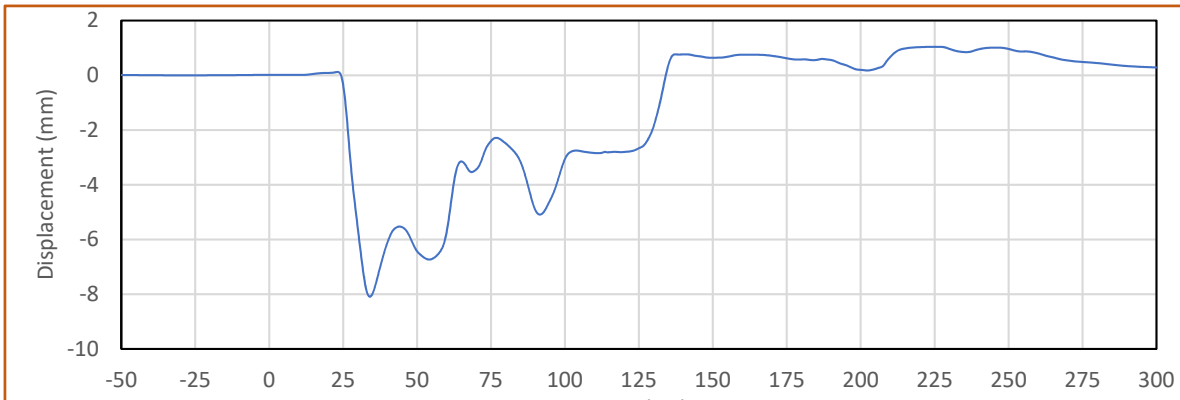
P1TH FEMUR RIGHT Z MOMENT

11FEMRRI00THMOZB
Max:6.3@278.2
Min:-170.0@114.4
SAE Class 600



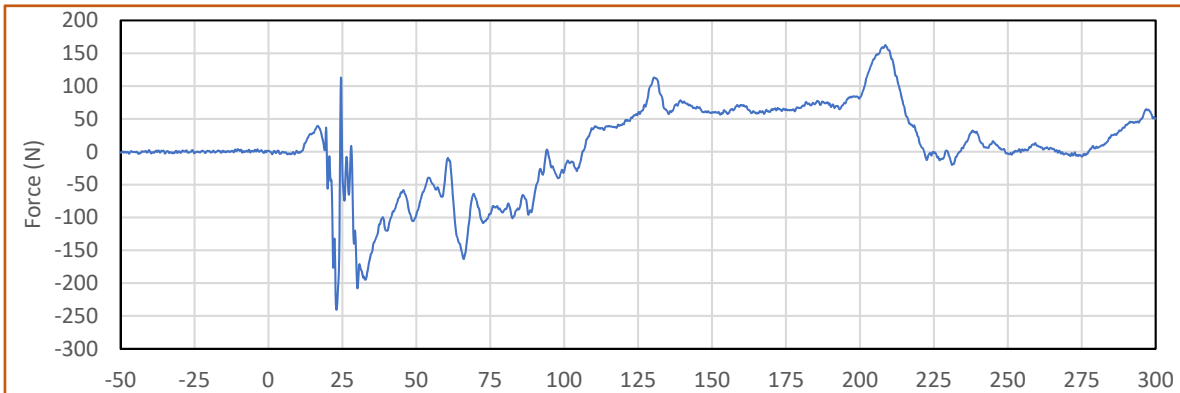
P1TH KNEE LEFT X DISPLACEMENT

11KNSLLE00THDSXC
Max:1.3@223.3
Min:-7.5@73.1
SAE Class 180



P1TH KNEE RIGHT X DISPLACEMENT

11KNSLRI00THDSXC
Max:1.0@225.2
Min:-8.1@34.0
SAE Class 180



P1TH UPPER TIBIA LEFT X FORCE

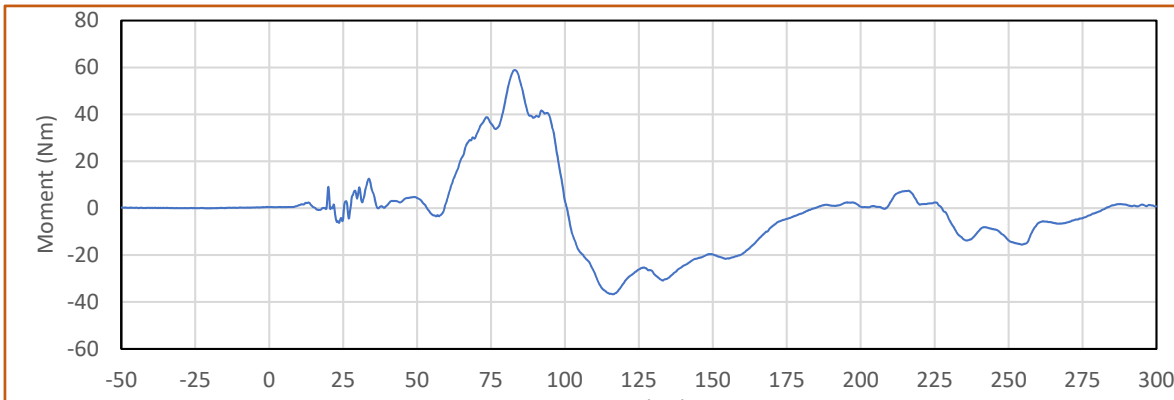
11TIBILEUPTHFOXB
Max:162.6@208.6
Min:-240.8@23.0
SAE Class 600

P1TH UPPER TIBIA LEFT Y FORCE

11TIBILEUPTHFOYB
Max:372.2@84.4
Min:-100.6@22.6
SAE Class 600

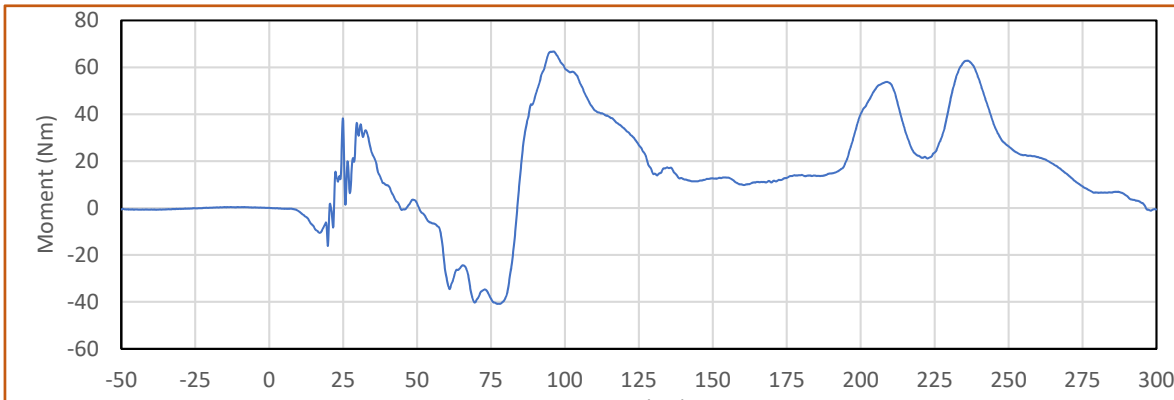
P1TH UPPER TIBIA LEFT Z FORCE

11TIBILEUPTHFOZB
Max:175.3@185.8
Min:-2323.0@82.3
SAE Class 600



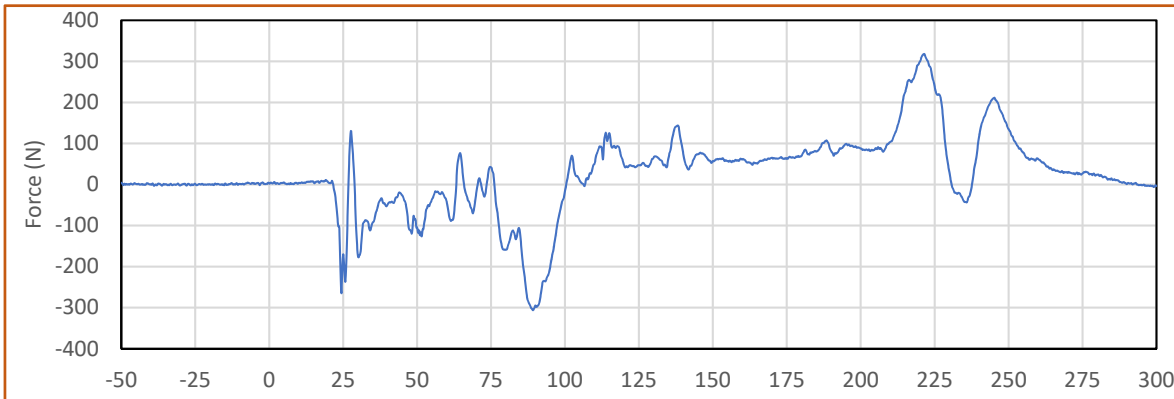
P1TH UPPER TIBIA LEFT X MOMENT

11TIBILEUPTHMOXB
Max:58.9@83.0
Min:-36.7@116.3
SAE Class 600



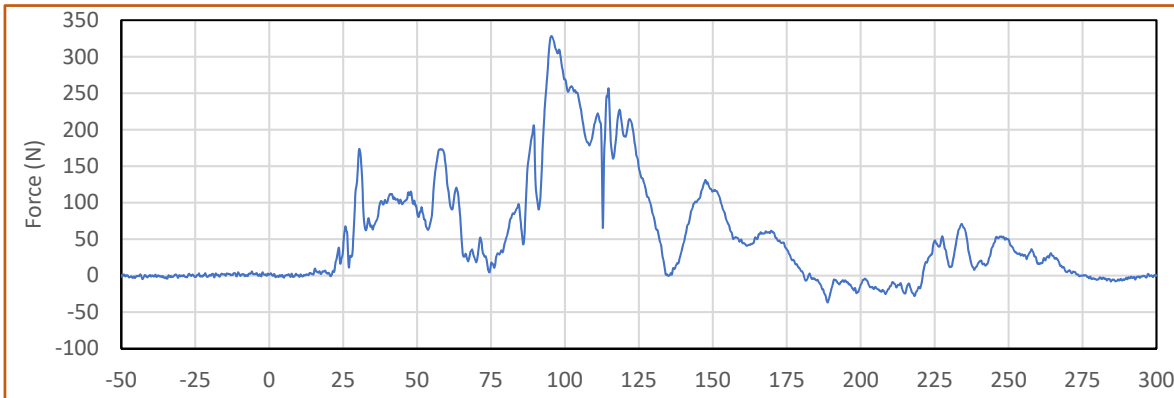
P1TH UPPER TIBIA LEFT Y MOMENT

11TIBILEUPTHMOYB
Max:66.7@96.2
Min:-40.8@78.0
SAE Class 600



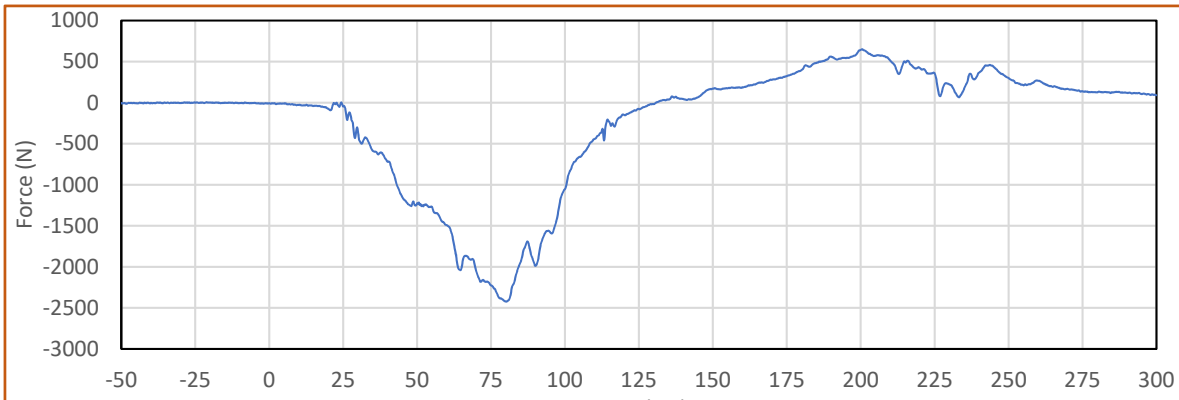
P1TH UPPER TIBIA RIGHT X FORCE

11TIBIRIUPTHFOXB
Max:318.1@221.4
Min:-306.5@89.2
SAE Class 600



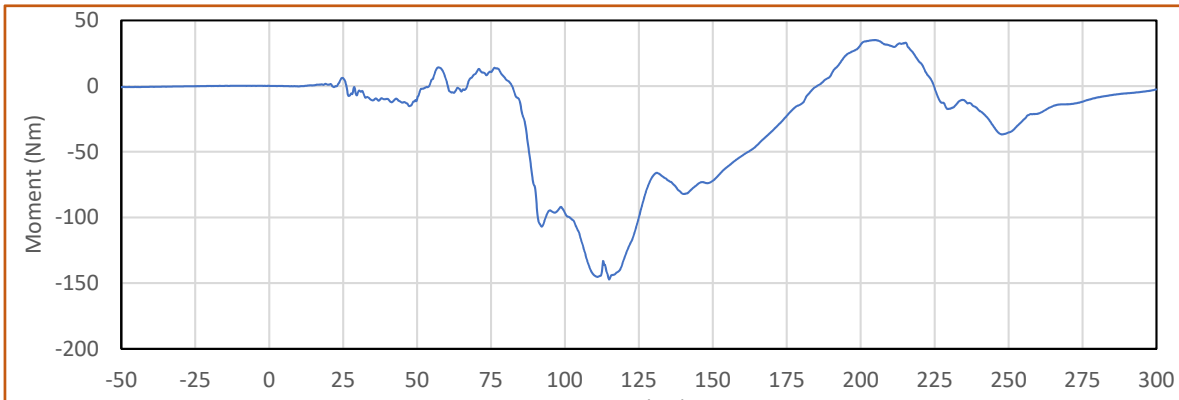
P1TH UPPER TIBIA RIGHT Y FORCE

11TIBIRIUPTHFOYB
Max:328.2@95.5
Min:-36.9@188.8
SAE Class 600



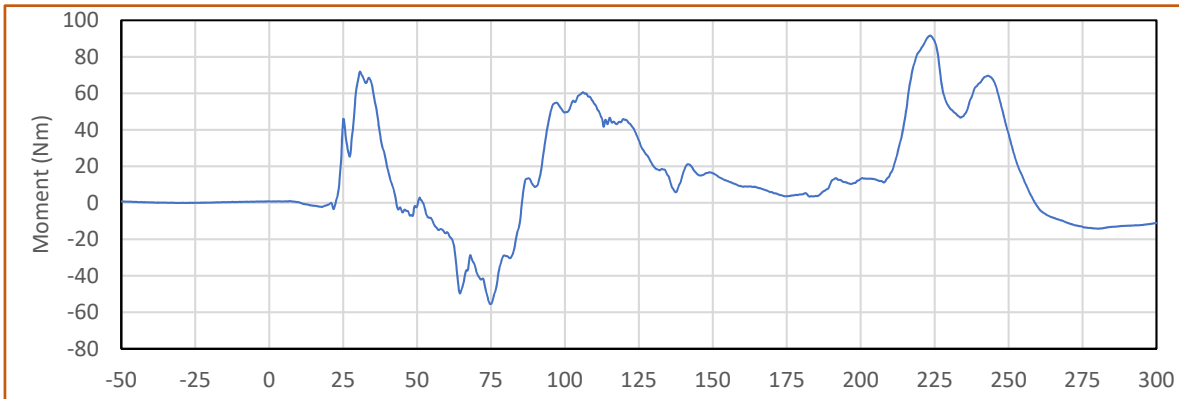
P1TH UPPER TIBIA RIGHT Z FORCE

11TIBIRIUPTHFOZB
Max:650.6@200.5
Min:-2424.4@80.1
SAE Class 600



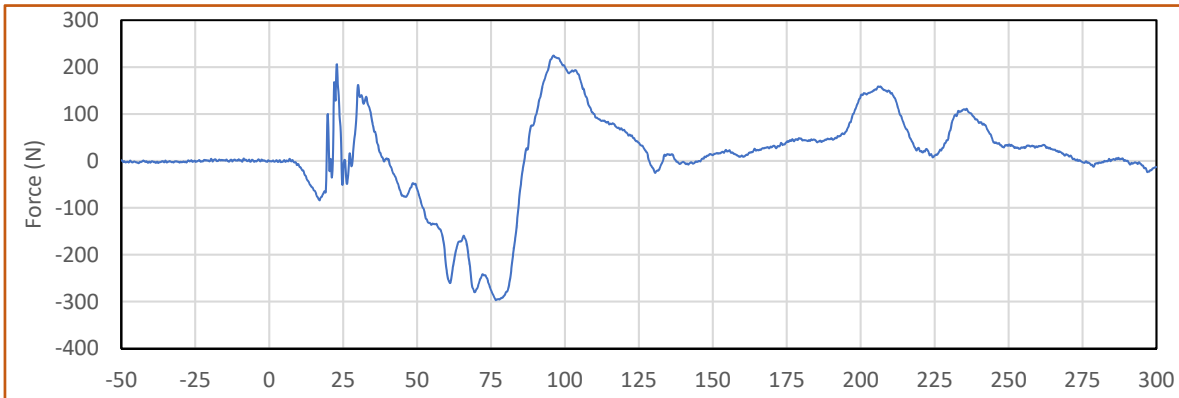
P1TH UPPER TIBIA RIGHT X MOMENT

11TIBIRIUPTHMOXB
Max:35.0@204.8
Min:-147.2@114.9
SAE Class 600



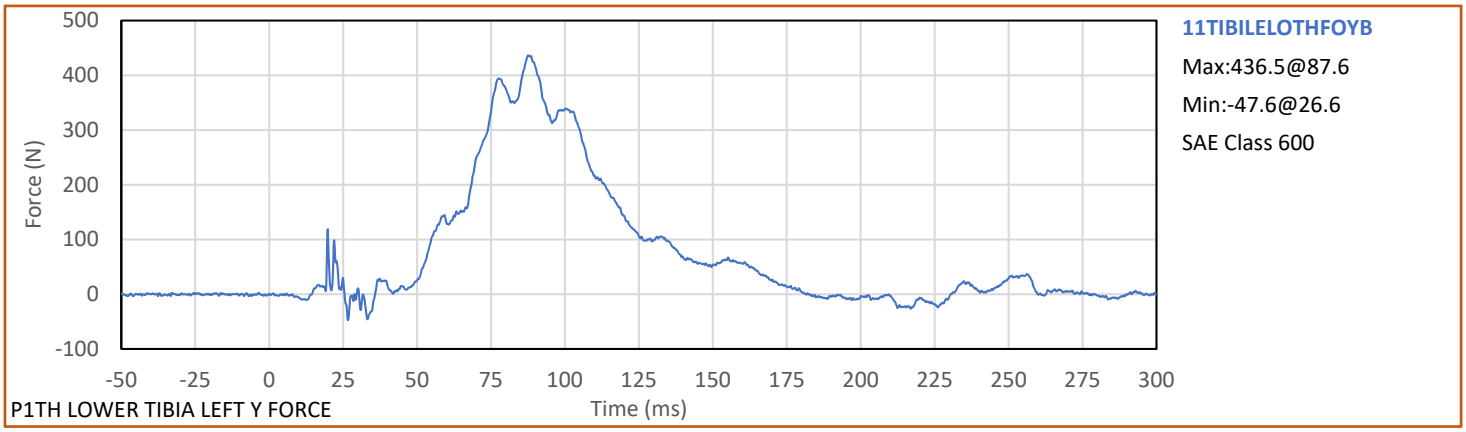
P1TH UPPER TIBIA RIGHT Y MOMENT

11TIBIRIUPTHMOYB
Max:91.6@223.5
Min:-55.6@74.8
SAE Class 600

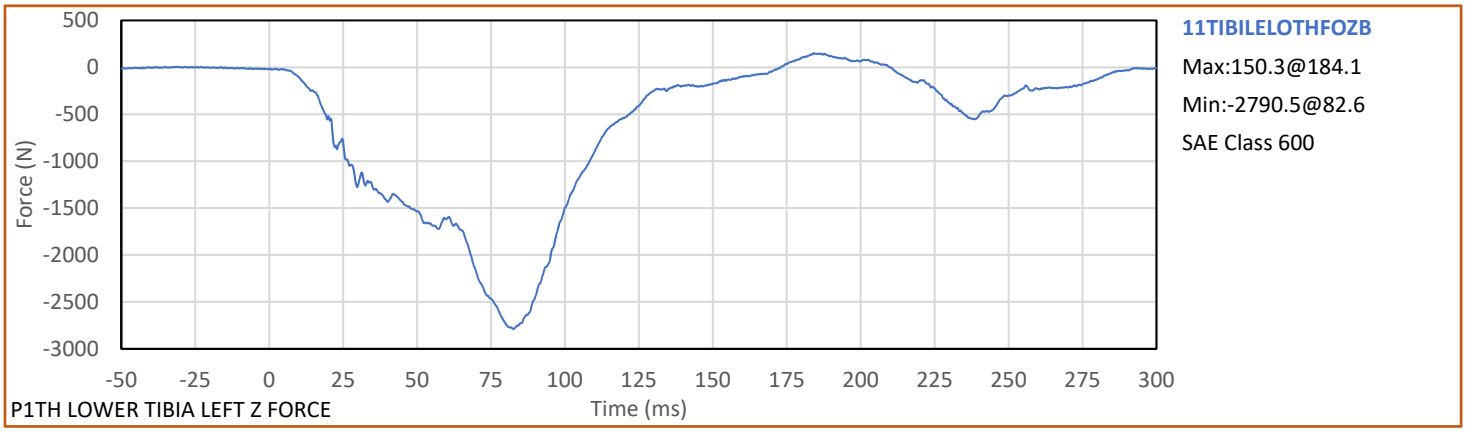


P1TH LOWER TIBIA LEFT X FORCE

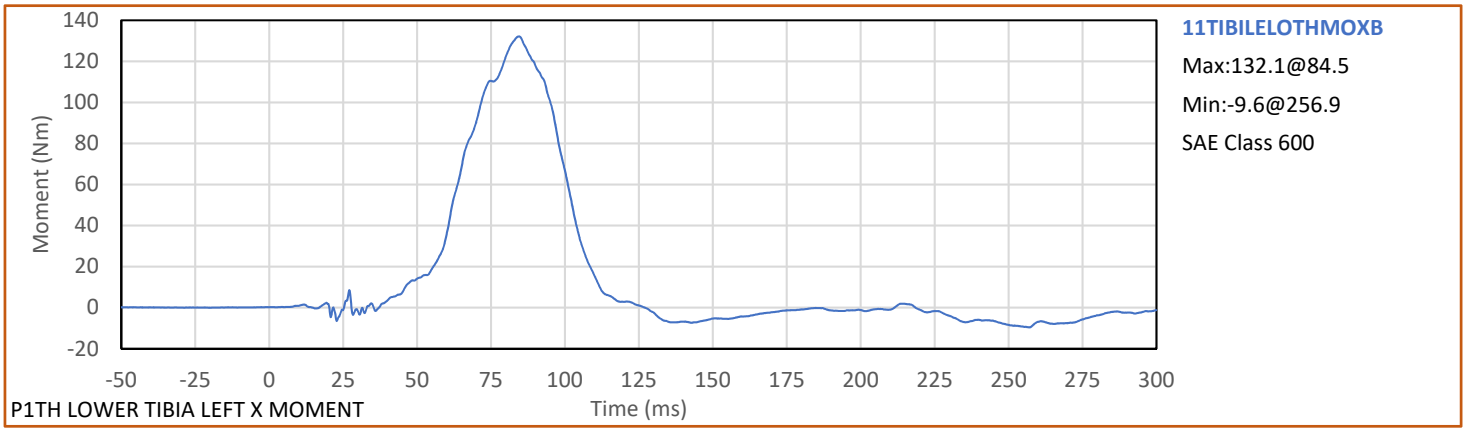
11TIBILELOTHFOXB
Max:224.6@96.1
Min:-296.8@76.6
SAE Class 600



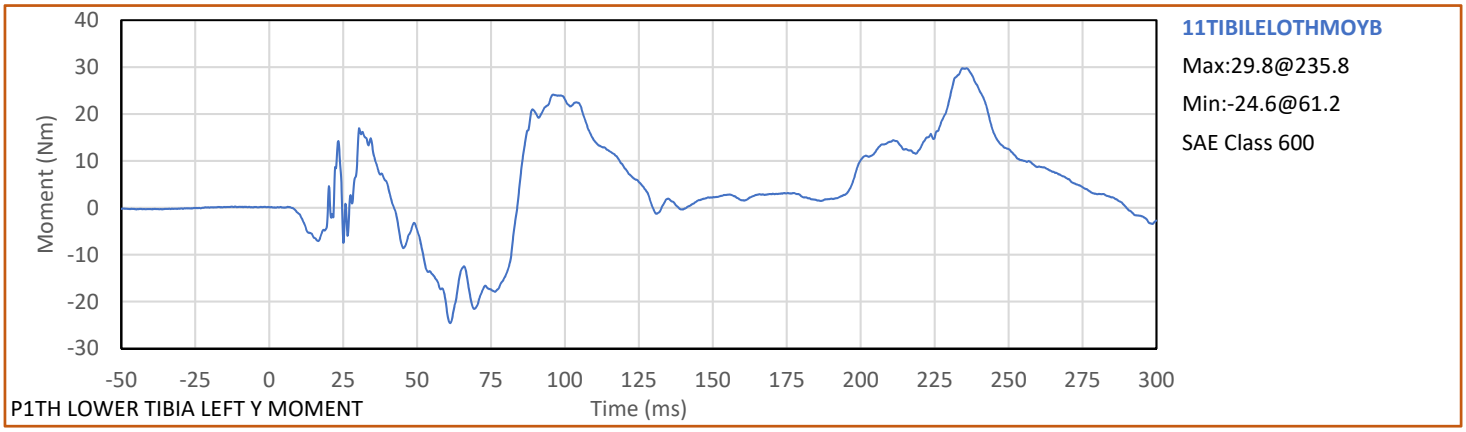
11TIBILELOTHFOYB
Max:436.5@87.6
Min:-47.6@26.6
SAE Class 600



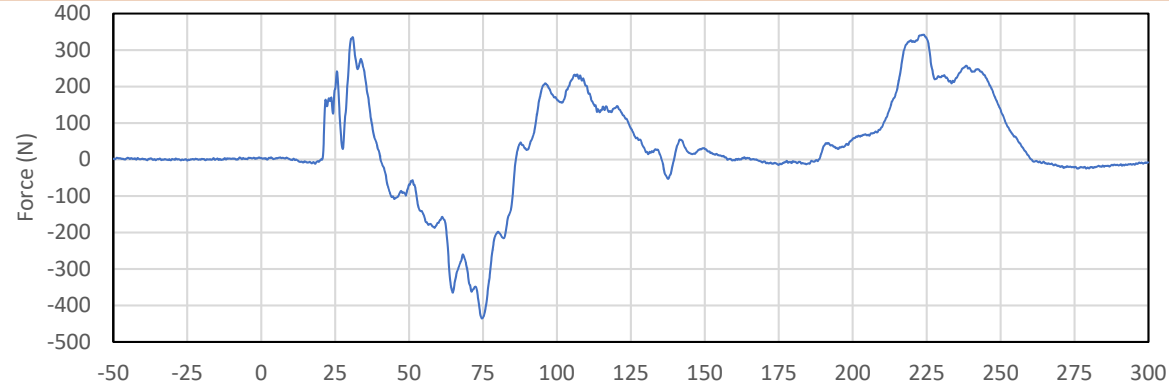
11TIBILELOTHFOZB
Max:150.3@184.1
Min:-2790.5@82.6
SAE Class 600



11TIBILELOTHMOXB
Max:132.1@84.5
Min:-9.6@256.9
SAE Class 600

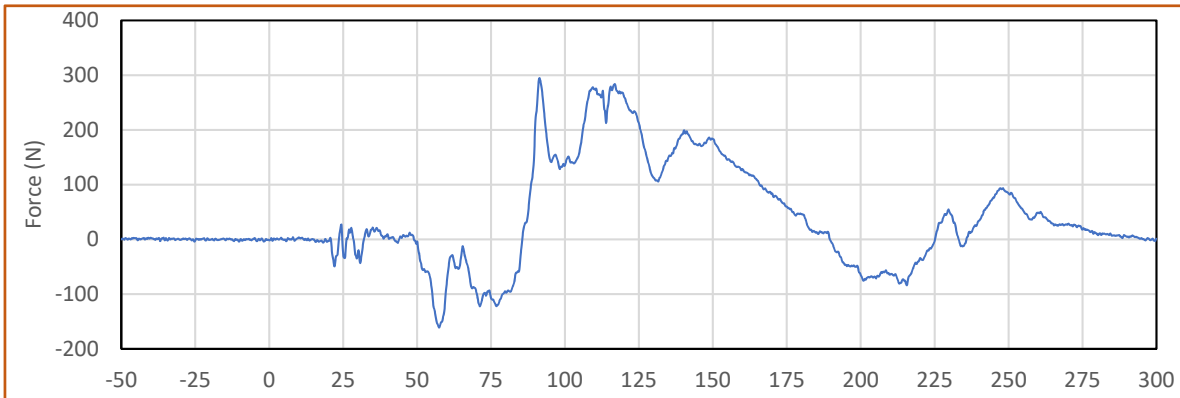


11TIBILELOTHMOYB
Max:29.8@235.8
Min:-24.6@61.2
SAE Class 600



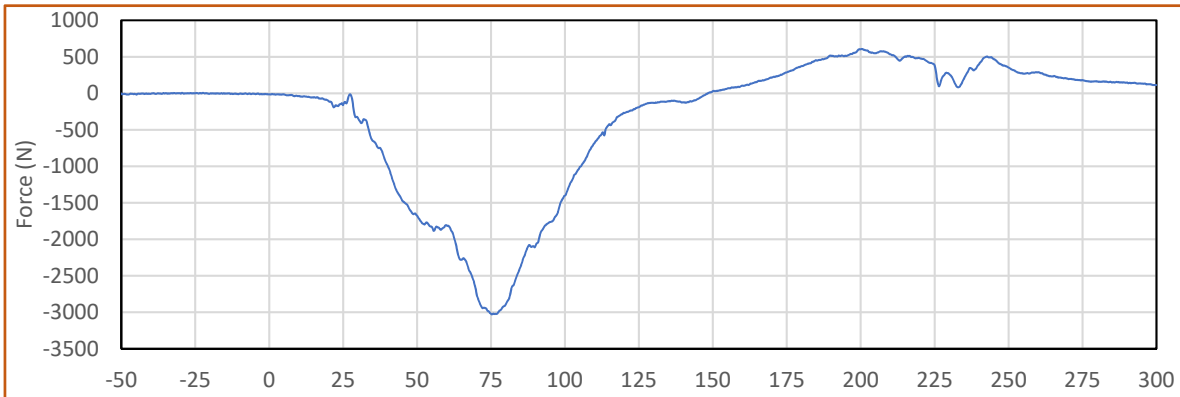
P1TH LOWER TIBIA RIGHT X FORCE

11TIBIRILOTHFOXB
Max:342.2@224.0
Min:-435.8@74.7
SAE Class 600



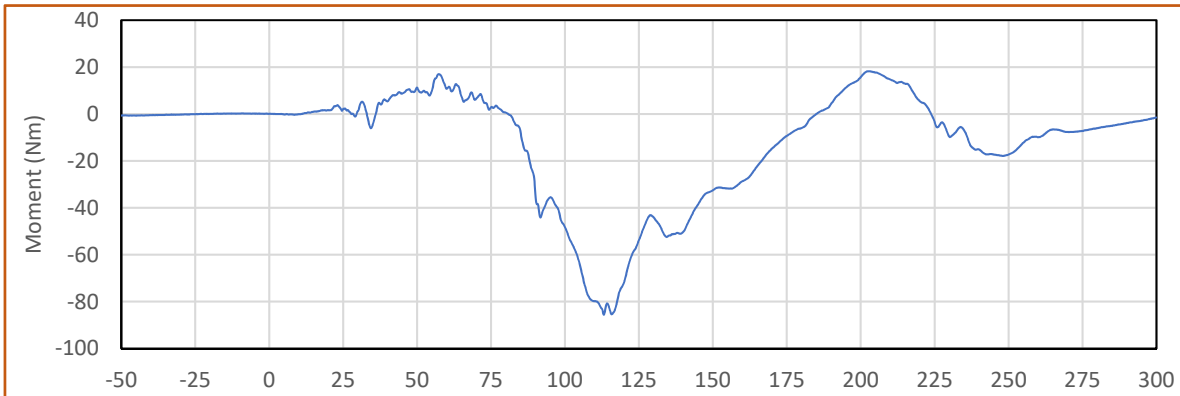
P1TH LOWER TIBIA RIGHT Y FORCE

11TIBIRILOTHFOYB
Max:294.6@91.4
Min:-161.2@57.5
SAE Class 600



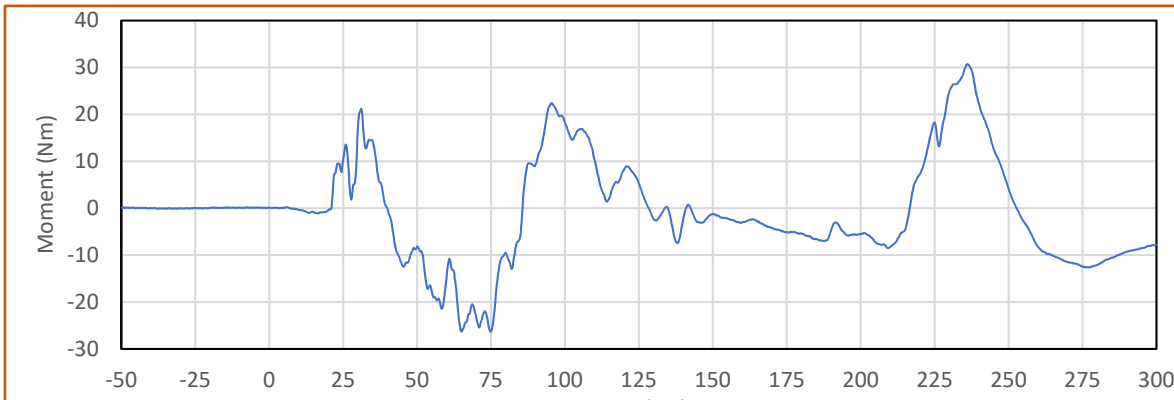
P1TH LOWER TIBIA RIGHT Z FORCE

11TIBIRILOTHFOZB
Max:607.4@200.5
Min:-3031.1@75.3
SAE Class 600



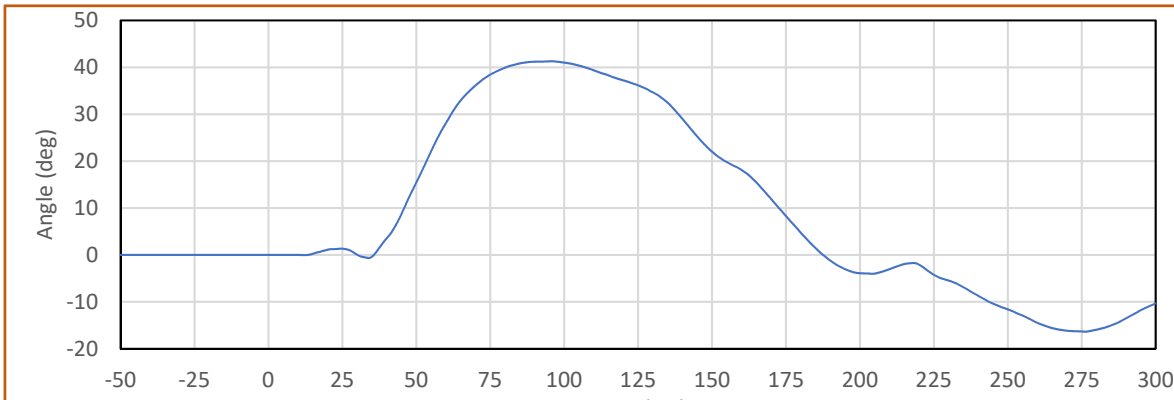
P1TH LOWER TIBIA RIGHT X MOMENT

11TIBIRILOTHMOXB
Max:18.2@203.1
Min:-85.6@113.1
SAE Class 600



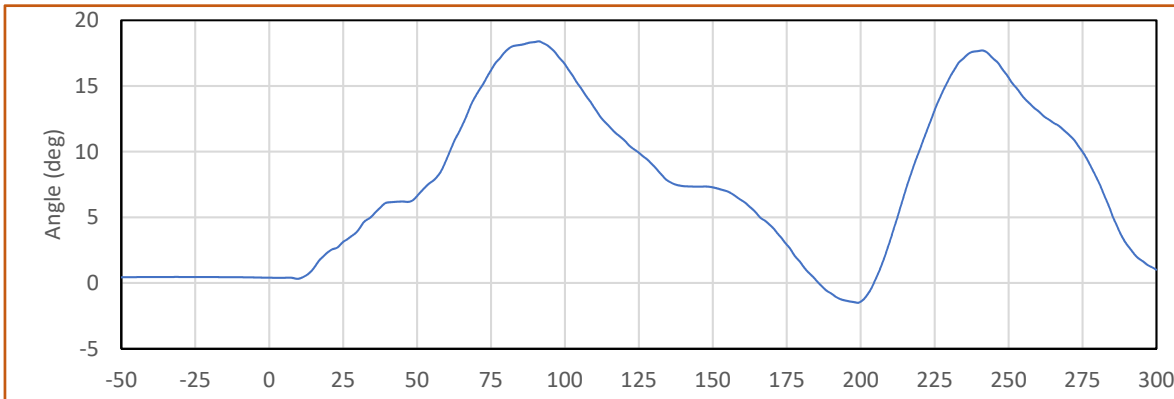
P1TH LOWER TIBIA RIGHT Y MOMENT

11TIBIRILOTHMOYB
Max:30.7@236.0
Min:-26.3@74.9
SAE Class 600



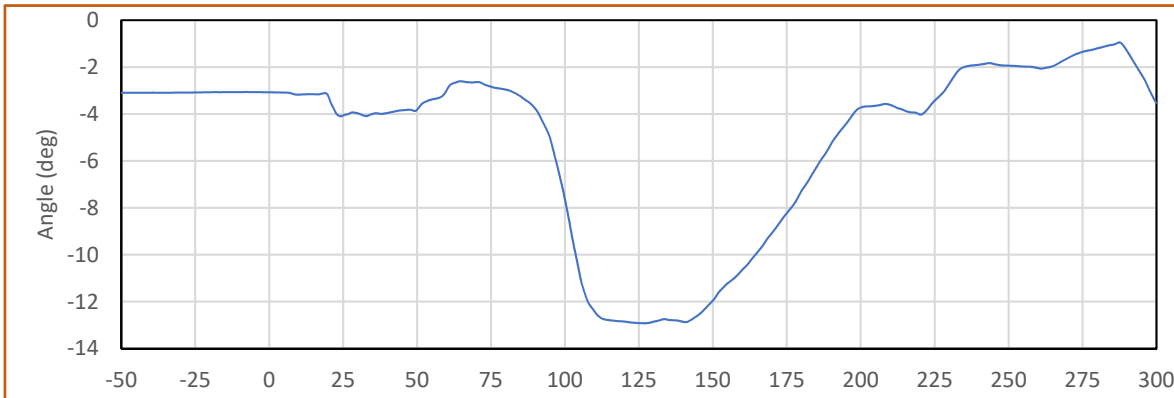
P1TH ANKLE LEFT X ROTATION

11ANKLLE00THANXC
Max:41.3@95.9
Min:-16.4@276.3
SAE Class 180



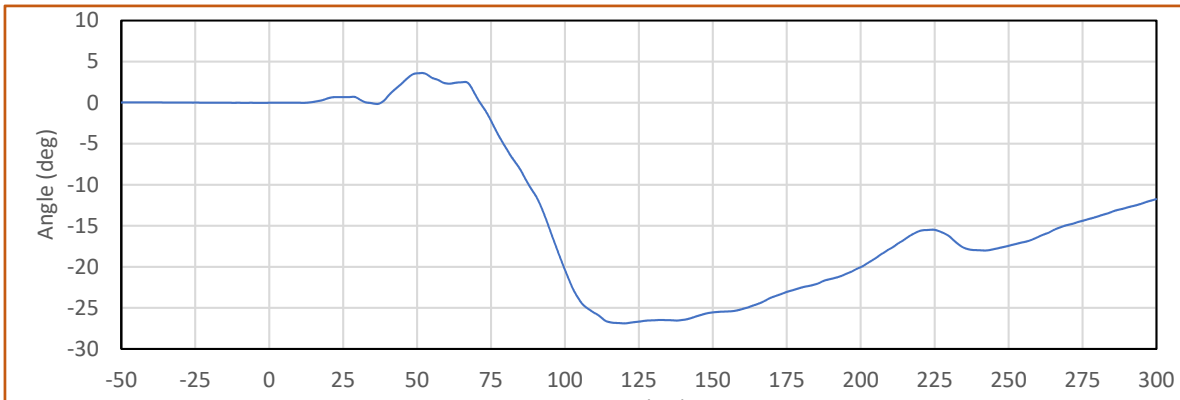
P1TH ANKLE LEFT Y ROTATION

11ANKLLE00THANYC
Max:18.4@91.2
Min:-1.5@199.0
SAE Class 180



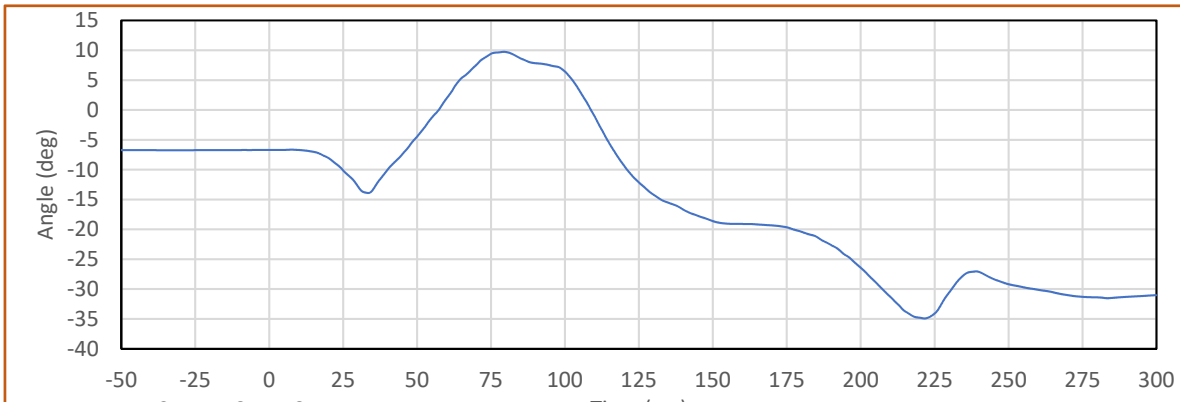
P1TH ANKLE LEFT Z ROTATION

11ANKLLE00THANZC
Max:-0.9@287.5
Min:-12.9@127.0
SAE Class 180



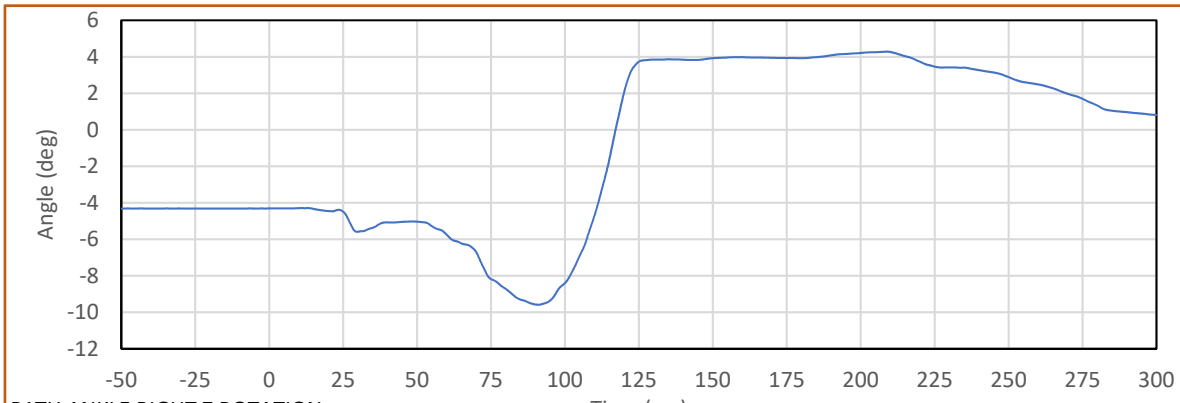
P1TH ANKLE RIGHT X ROTATION

11ANKLRI00THANXC
Max:3.6@51.7
Min:-26.9@120.1
SAE Class 180



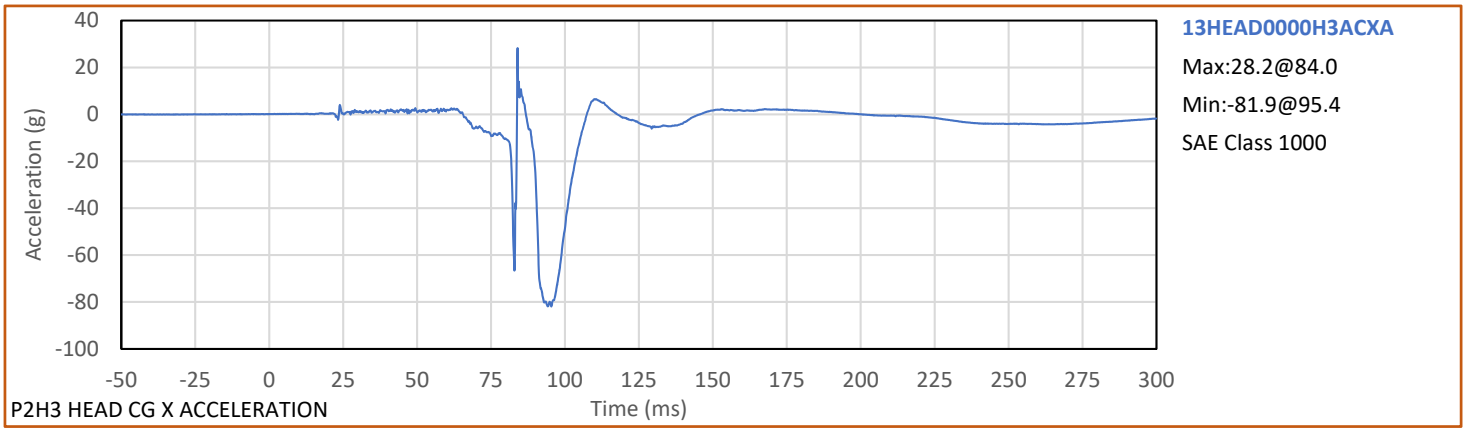
P1TH ANKLE RIGHT Y ROTATION

11ANKLRI00THANYC
Max:9.7@79.3
Min:-34.9@221.6
SAE Class 180

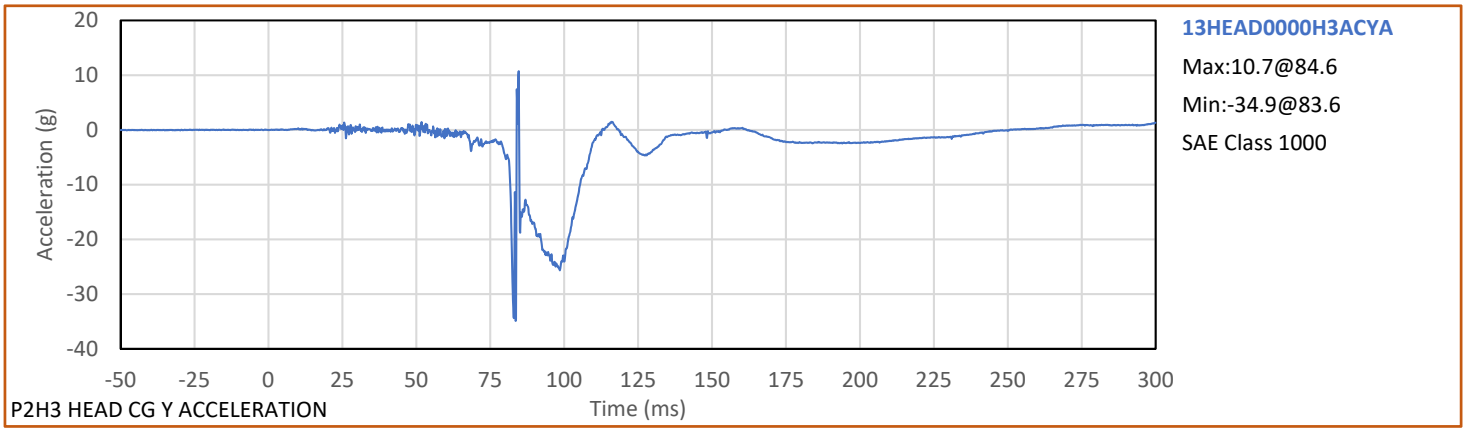


P1TH ANKLE RIGHT Z ROTATION

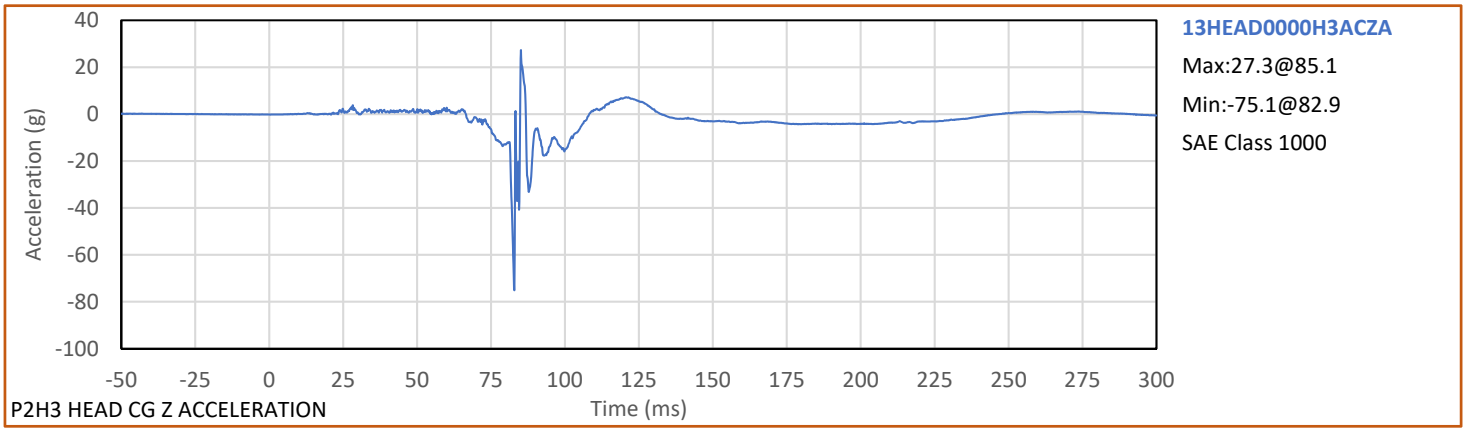
11ANKLRI00THANZC
Max:4.3@208.9
Min:-9.6@91.1
SAE Class 180



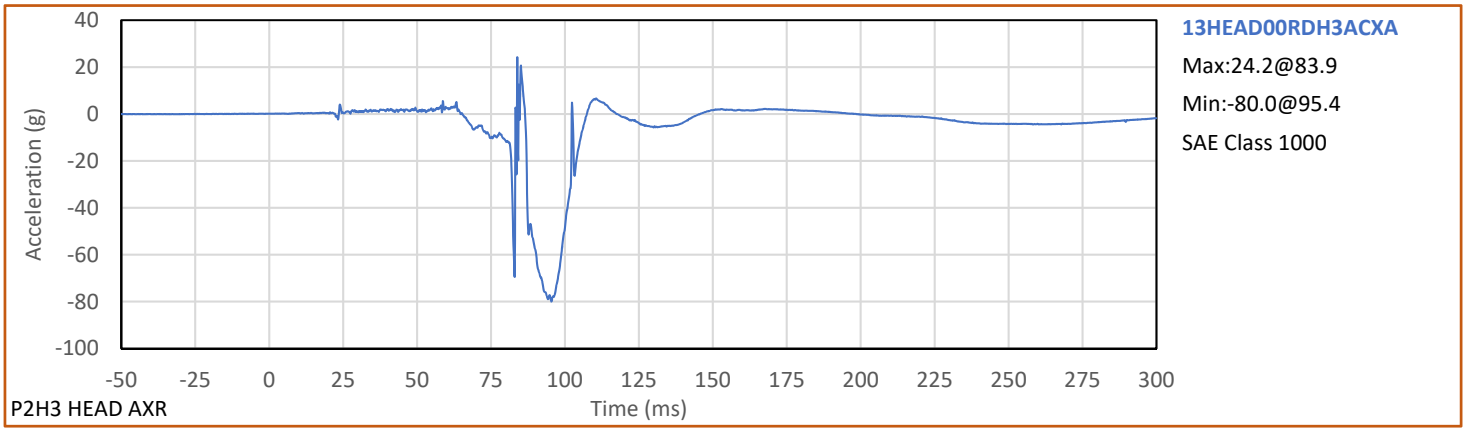
13HEAD0000H3ACXA
Max:28.2@84.0
Min:-81.9@95.4
SAE Class 1000



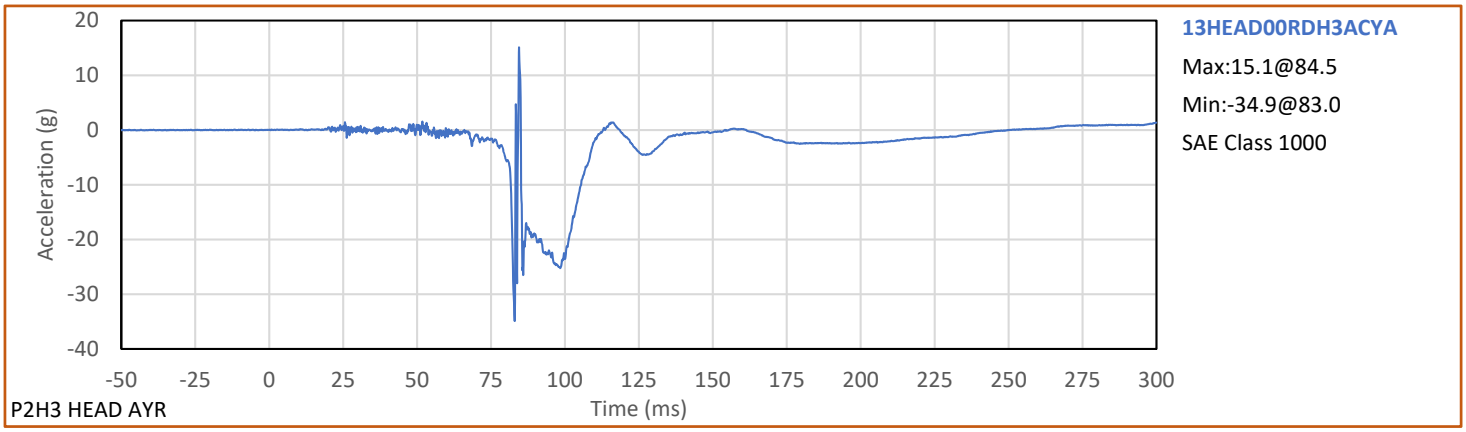
13HEAD0000H3ACYA
Max:10.7@84.6
Min:-34.9@83.6
SAE Class 1000

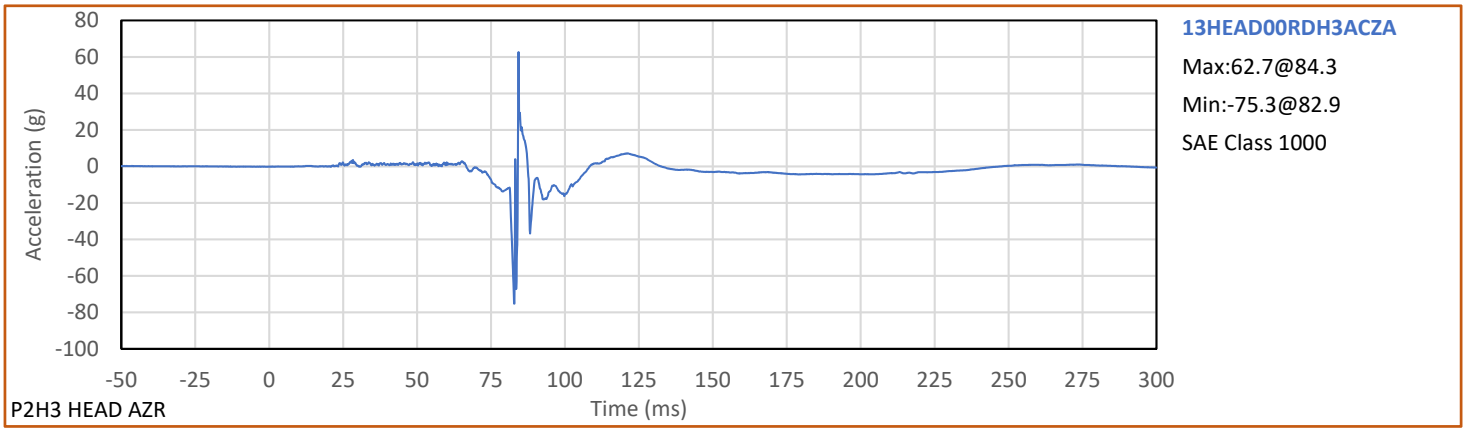


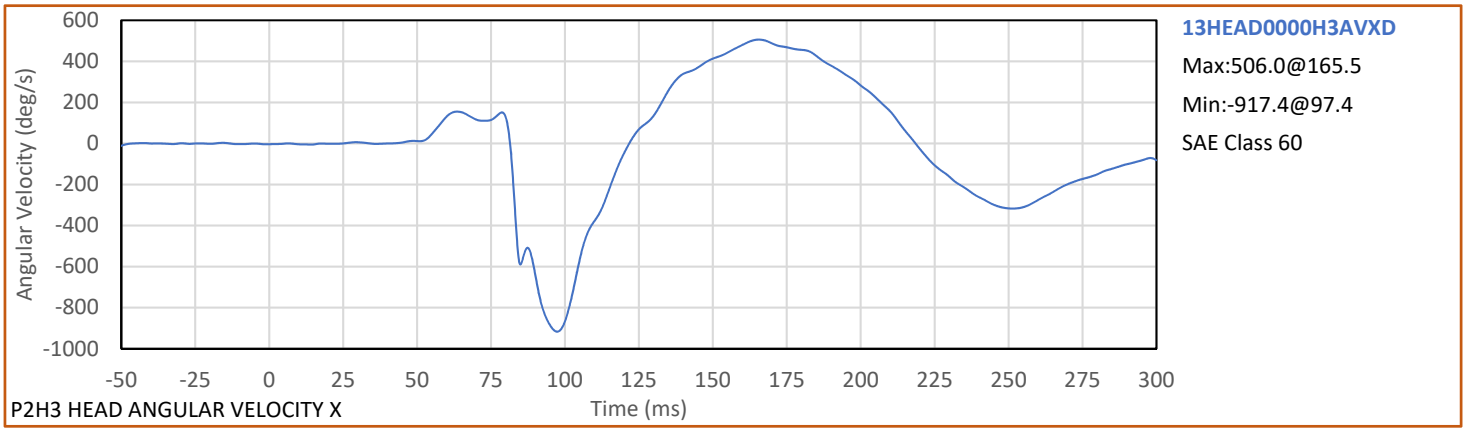
13HEAD0000H3ACZA
Max:27.3@85.1
Min:-75.1@82.9
SAE Class 1000

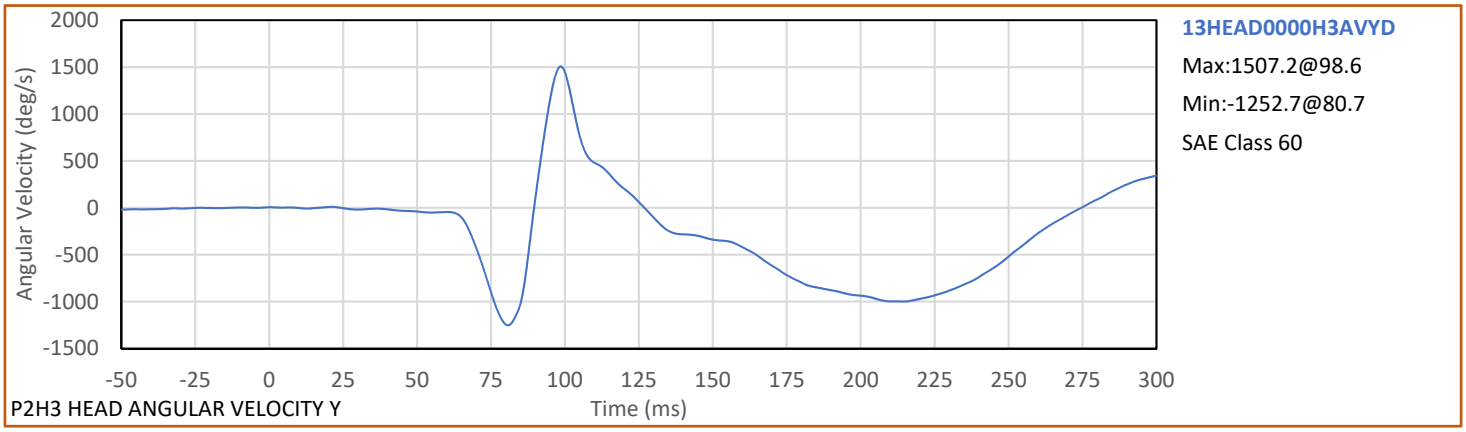


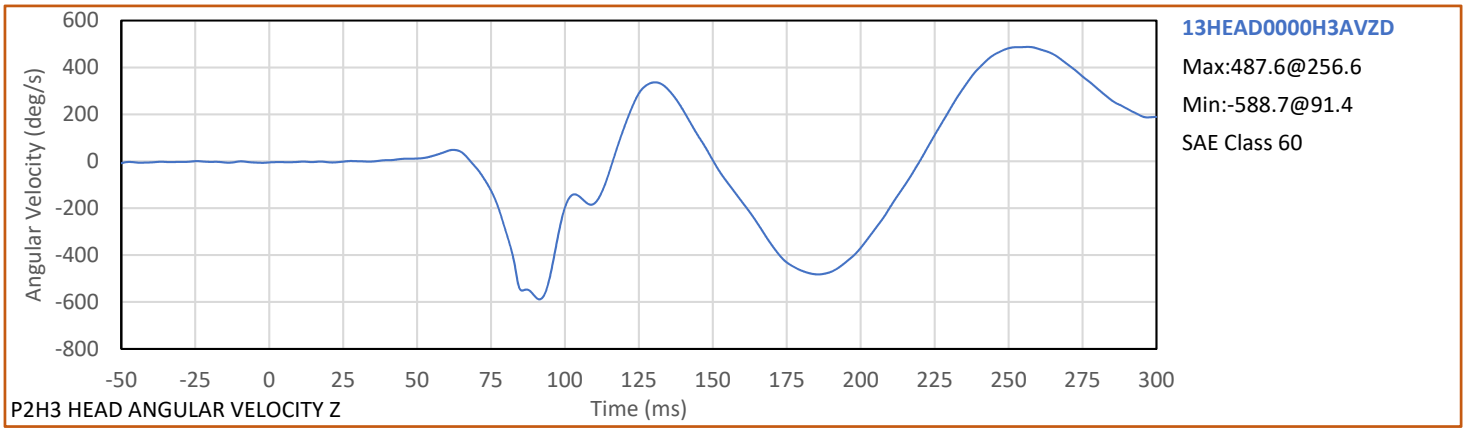
13HEAD00RDH3ACXA
Max:24.2@83.9
Min:-80.0@95.4
SAE Class 1000

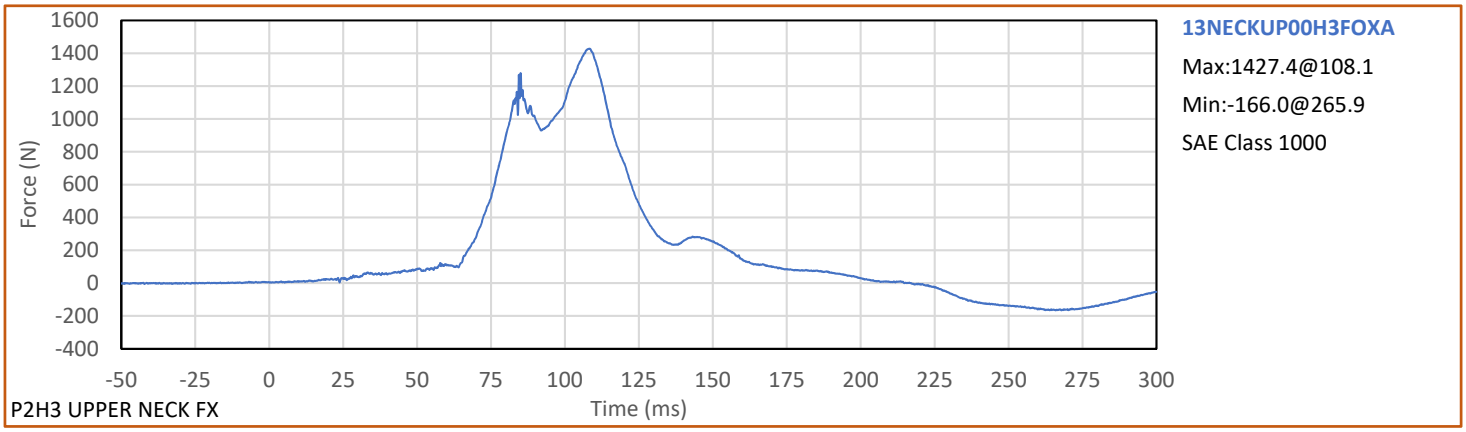

Acceleration (g)
Time (ms)
13HEAD00RDH3ACYA
Max:15.1@84.5
Min:-34.9@83.0
SAE Class 1000
P2H3 HEAD AYR

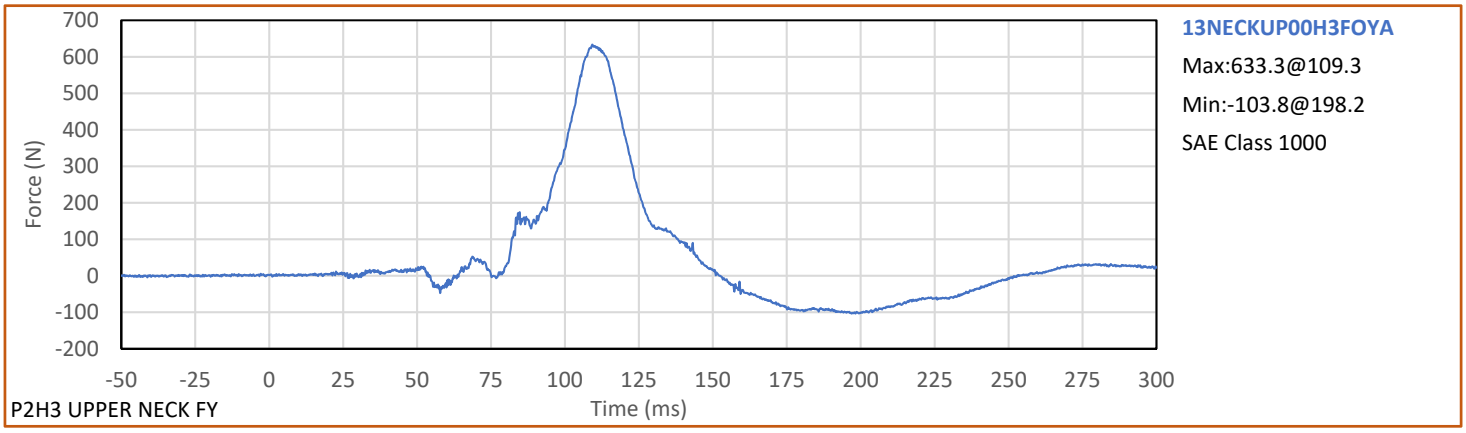

Acceleration (g)
Time (ms)
13HEAD00RDH3ACZA
Max:62.7@84.3
Min:-75.3@82.9
SAE Class 1000
P2H3 HEAD AZR

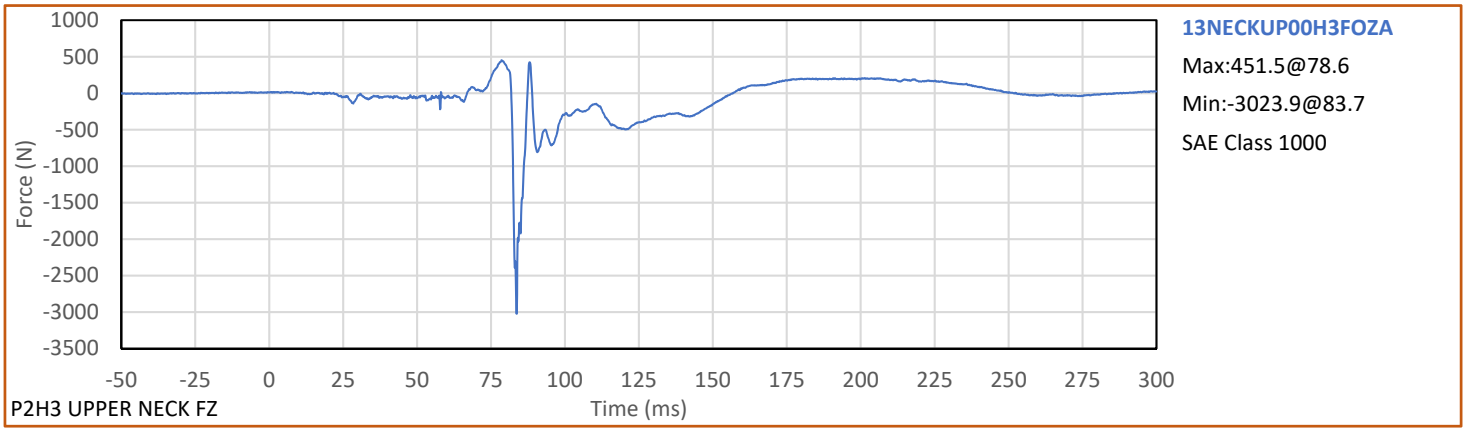

Angular Velocity (deg/s)
Time (ms)
13HEAD0000H3AVXD
Max:506.0@165.5
Min:-917.4@97.4
SAE Class 60
P2H3 HEAD ANGULAR VELOCITY X

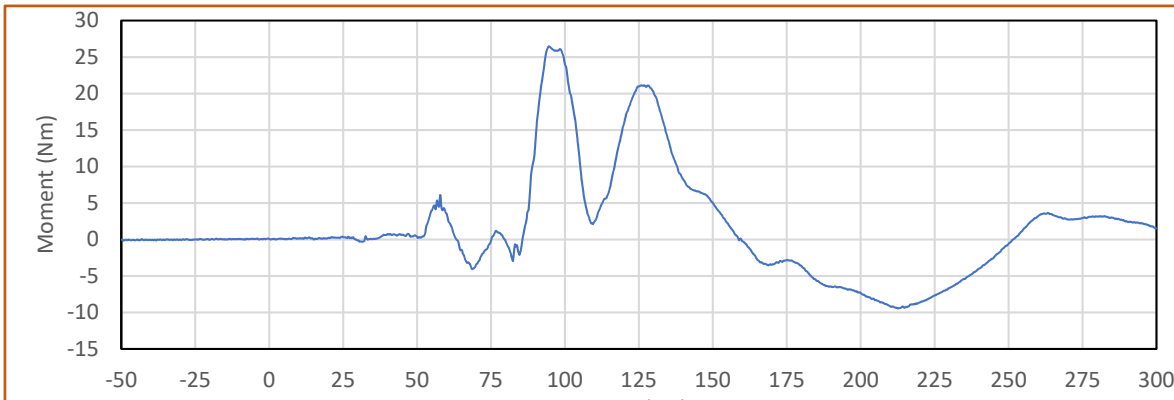

Angular Velocity (deg/s)
Time (ms)
13HEAD0000H3AVYD
Max:1507.2@98.6
Min:-1252.7@80.7
SAE Class 60
P2H3 HEAD ANGULAR VELOCITY Y


Angular Velocity (deg/s)
Time (ms)
P2H3 HEAD ANGULAR VELOCITY Z
13HEAD0000H3AVZD
Max:487.6@256.6
Min:-588.7@91.4
SAE Class 60


Force (N)
Time (ms)
P2H3 UPPER NECK FX
13NECKUP00H3FOXA
Max:1427.4@108.1
Min:-166.0@265.9
SAE Class 1000

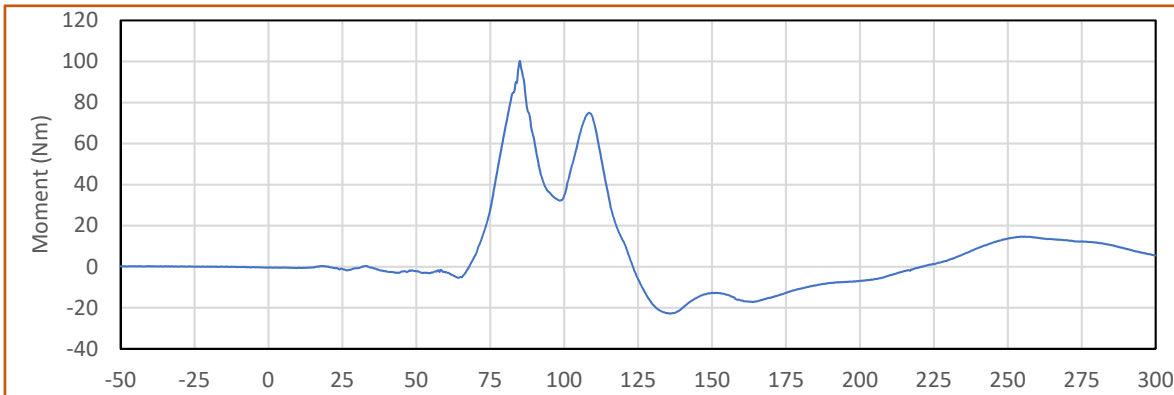

Force (N)
Time (ms)
P2H3 UPPER NECK FY
13NECKUP00H3FOYA
Max:633.3@109.3
Min:-103.8@198.2
SAE Class 1000


Force (N)
Time (ms)
P2H3 UPPER NECK FZ
13NECKUP00H3FOZA
Max:451.5@78.6
Min:-3023.9@83.7
SAE Class 1000



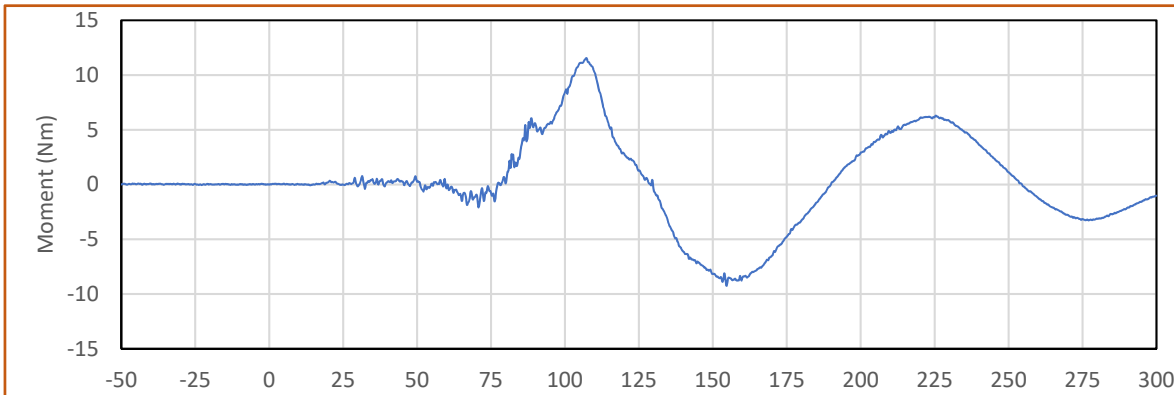
P2H3 UPPER NECK MX

13NECKUP00H3MOXB
Max:26.5@94.6
Min:-9.4@212.6
SAE Class 600



P2H3 UPPER NECK MY

13NECKUP00H3MOYB
Max:100.3@85.0
Min:-22.9@136.0
SAE Class 600

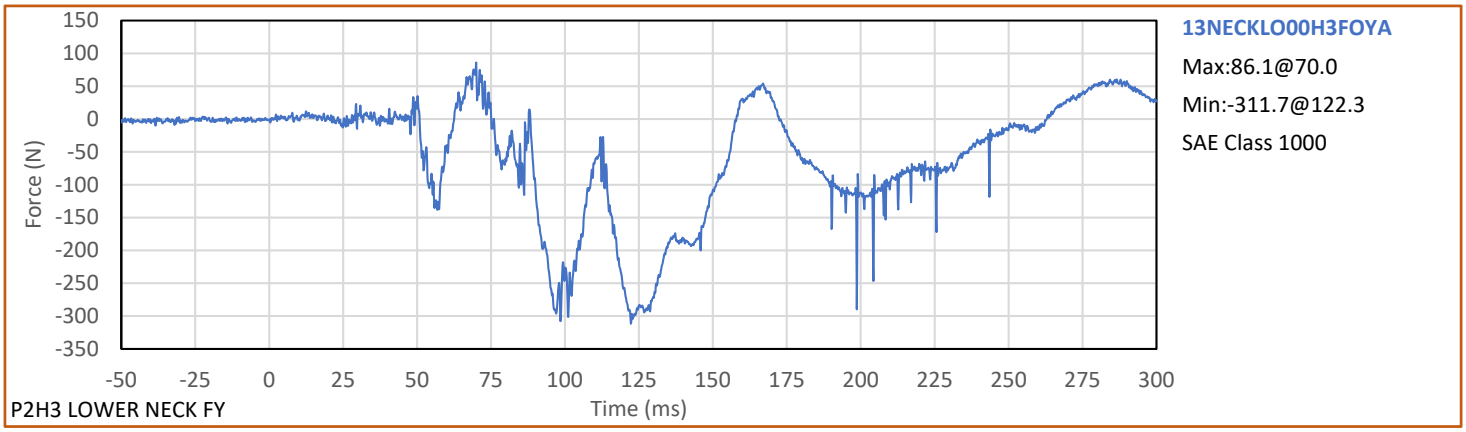


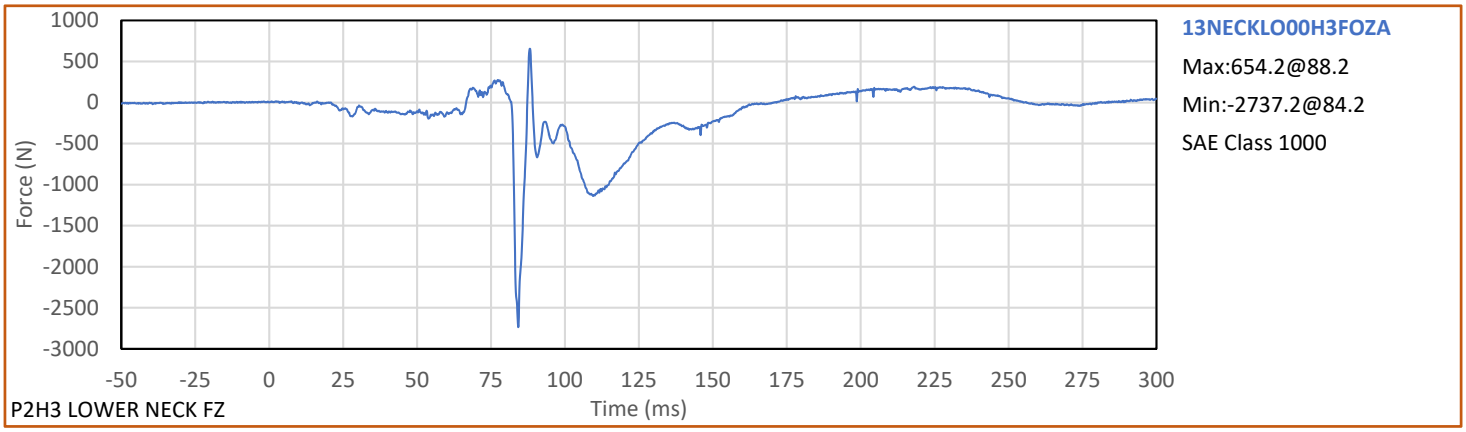
P2H3 UPPER NECK MZ

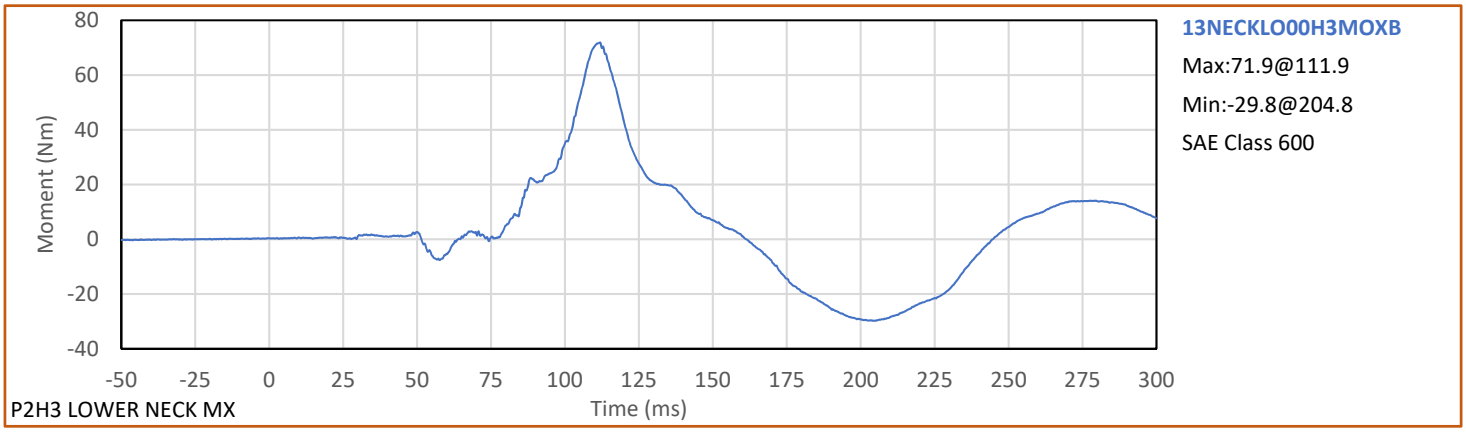
13NECKUP00H3MOZB
Max:11.6@107.2
Min:-9.3@154.7
SAE Class 600

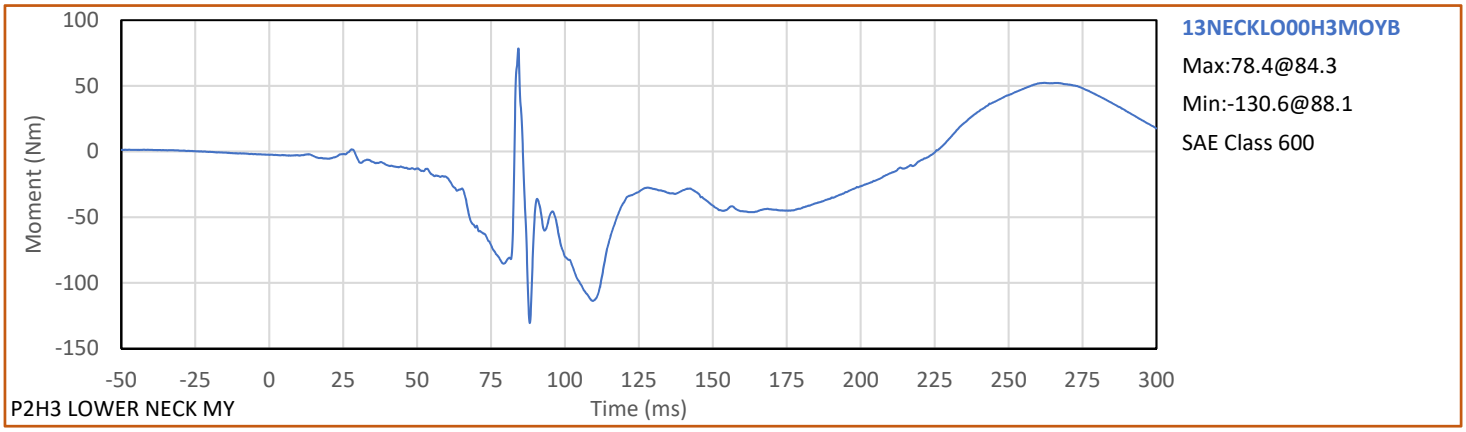
P2H3 LOWER NECK FX

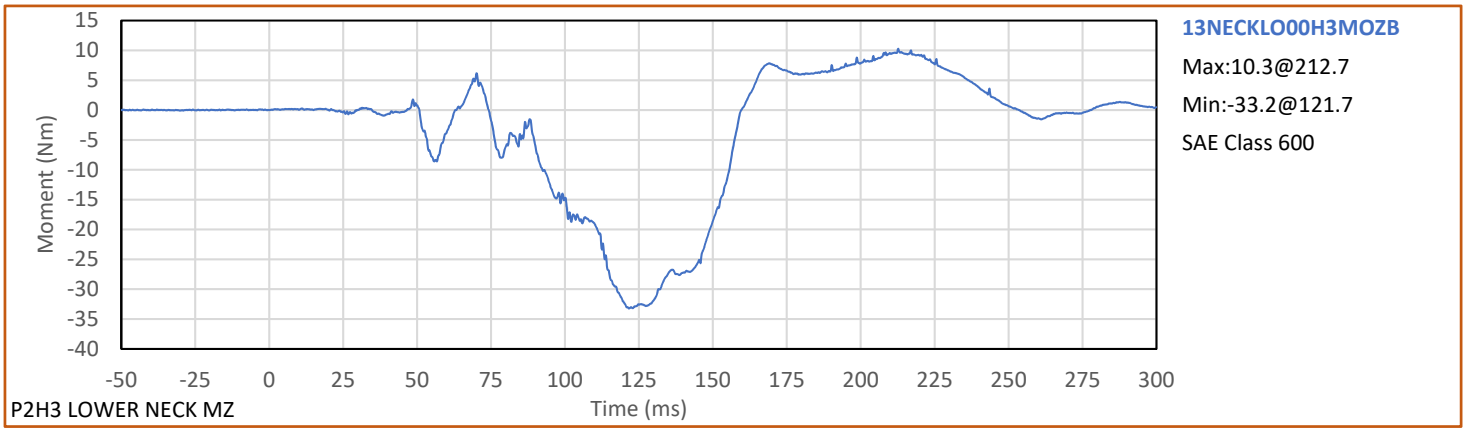
13NECKLO00H3FOXA
Max:1143.8@88.0
Min:-165.1@265.5
SAE Class 1000


Force (N)
Time (ms)
P2H3 LOWER NECK FY
13NECKLO00H3FOYA
Max:86.1@70.0
Min:-311.7@122.3
SAE Class 1000

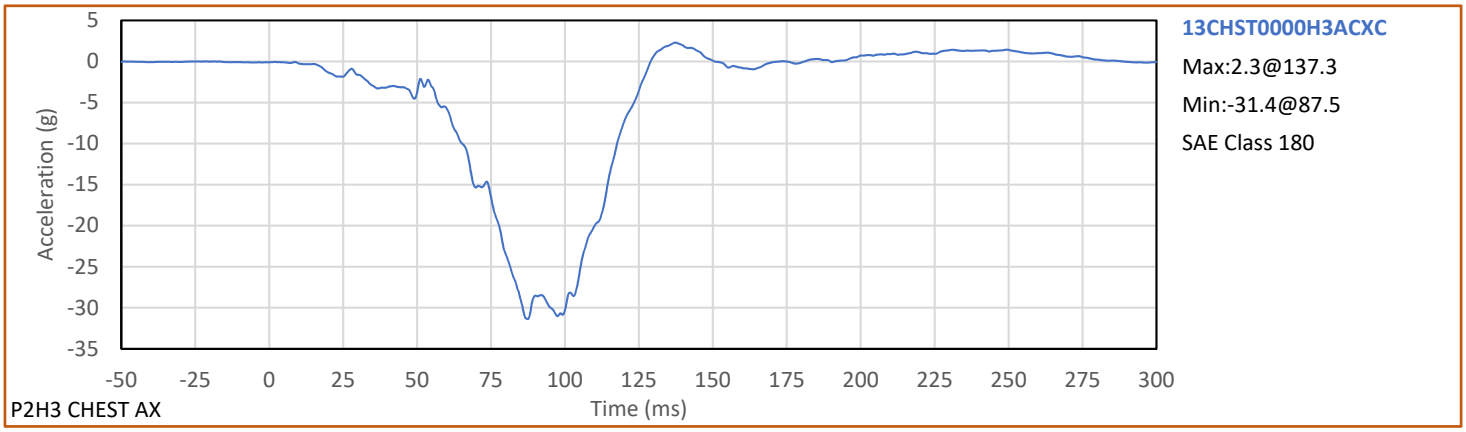

Force (N)
Time (ms)
P2H3 LOWER NECK FZ
13NECKLO00H3FOZA
Max:654.2@88.2
Min:-2737.2@84.2
SAE Class 1000


Moment (Nm)
Time (ms)
P2H3 LOWER NECK MX
13NECKLO00H3MOXB
Max:71.9@111.9
Min:-29.8@204.8
SAE Class 600

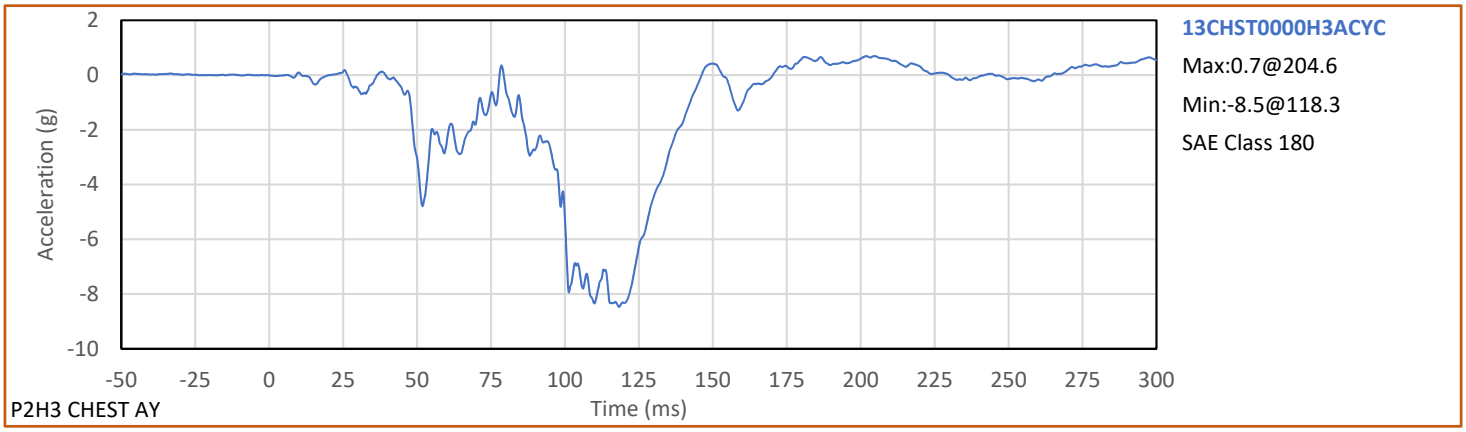

Moment (Nm)
Time (ms)
P2H3 LOWER NECK MY
13NECKLO00H3MOYB
Max:78.4@84.3
Min:-130.6@88.1
SAE Class 600



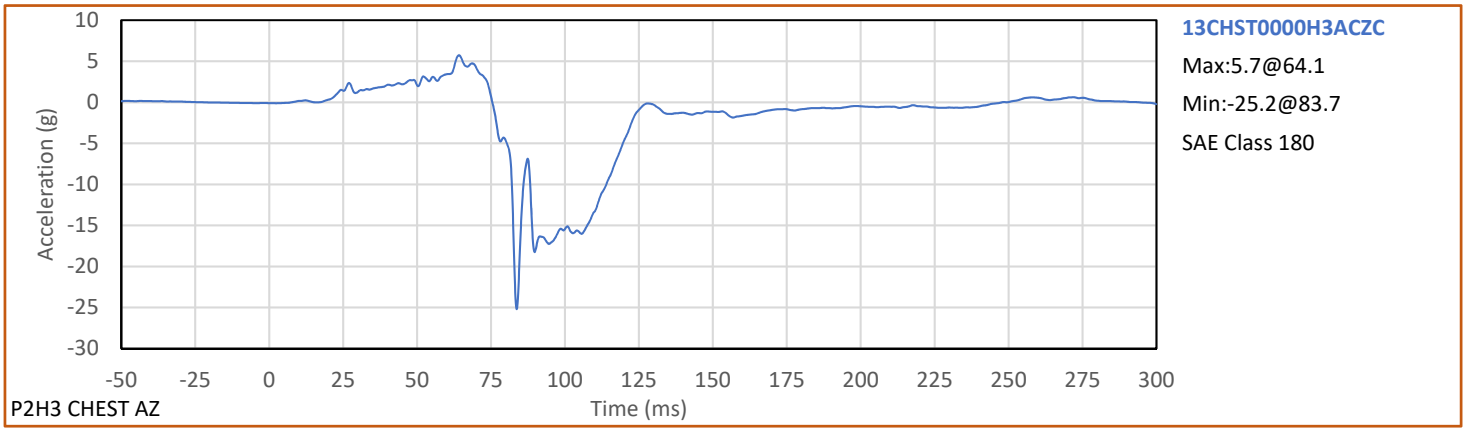
13NECKLO00H3MOZB
Max:10.3@212.7
Min:-33.2@121.7
SAE Class 600



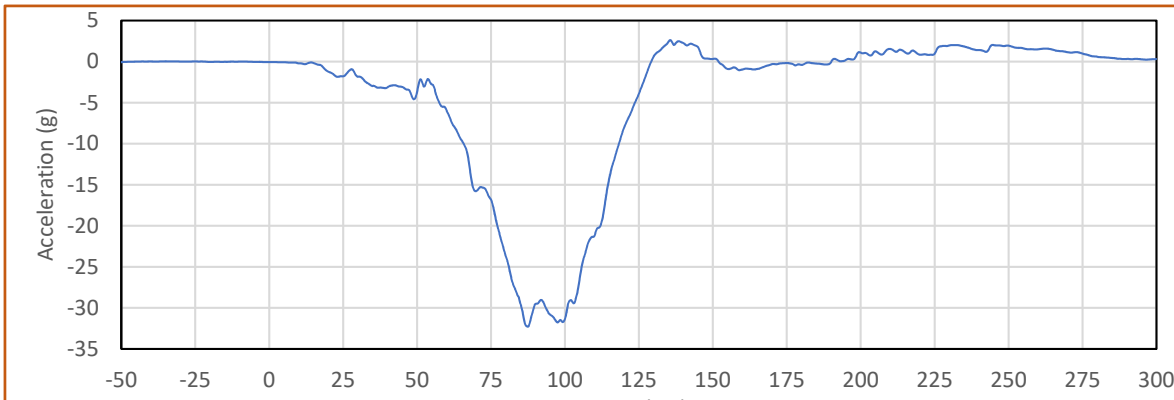
13CHST0000H3ACXC
Max:2.3@137.3
Min:-31.4@87.5
SAE Class 180



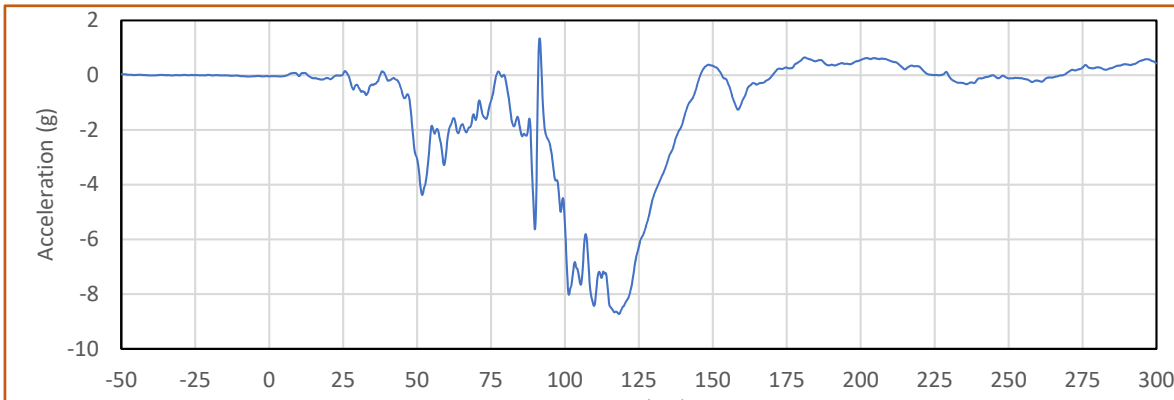
13CHST0000H3ACYC
Max:0.7@204.6
Min:-8.5@118.3
SAE Class 180



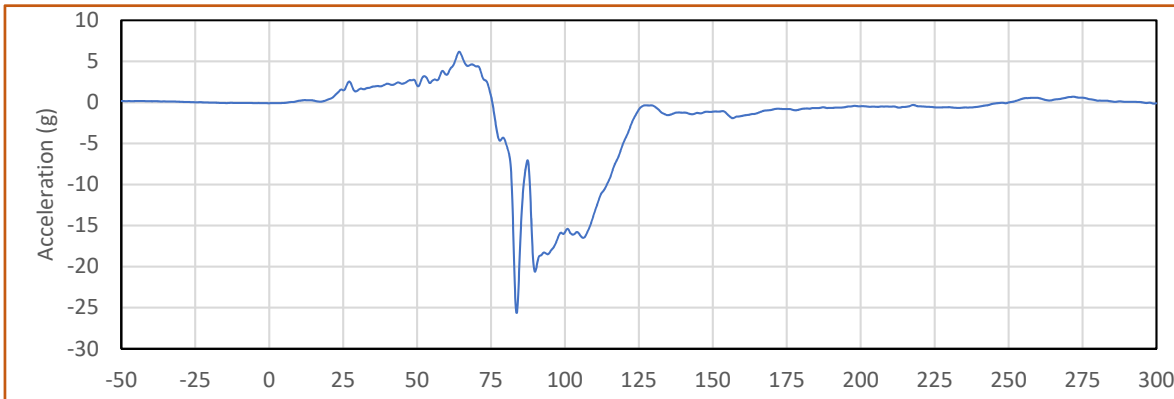
13CHST0000H3ACZC
Max:5.7@64.1
Min:-25.2@83.7
SAE Class 180



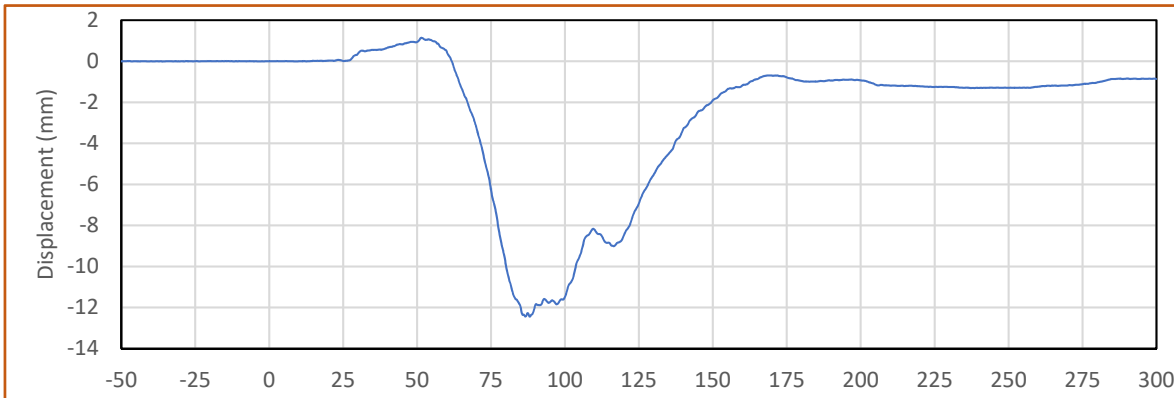
13CHST00RDH3ACXC
Max:2.6@135.6
Min:-32.3@87.5
SAE Class 180



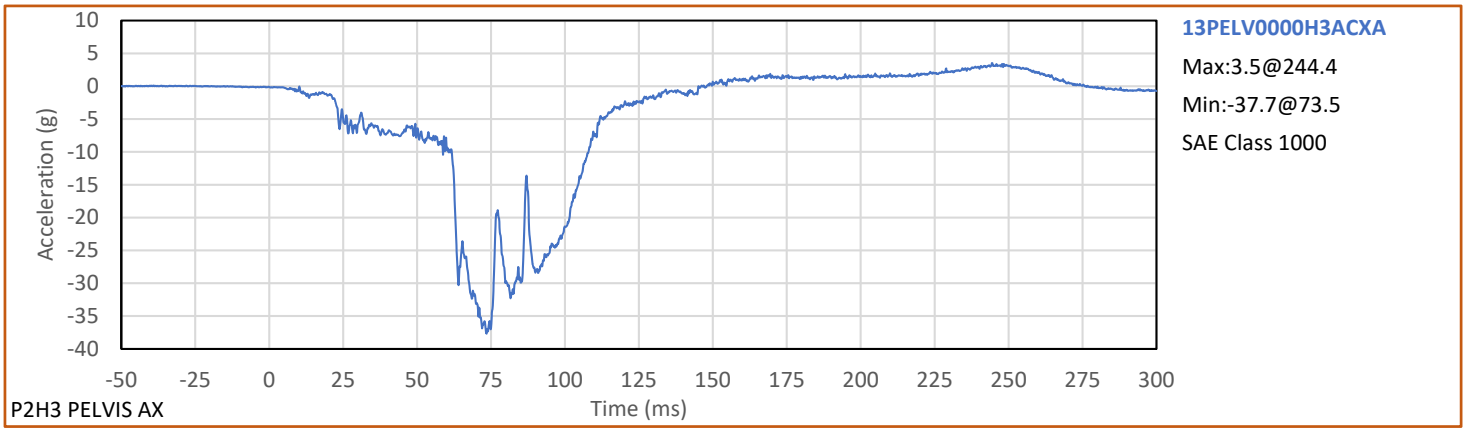
13CHST00RDH3ACYC
Max:1.3@91.4
Min:-8.7@118.3
SAE Class 180

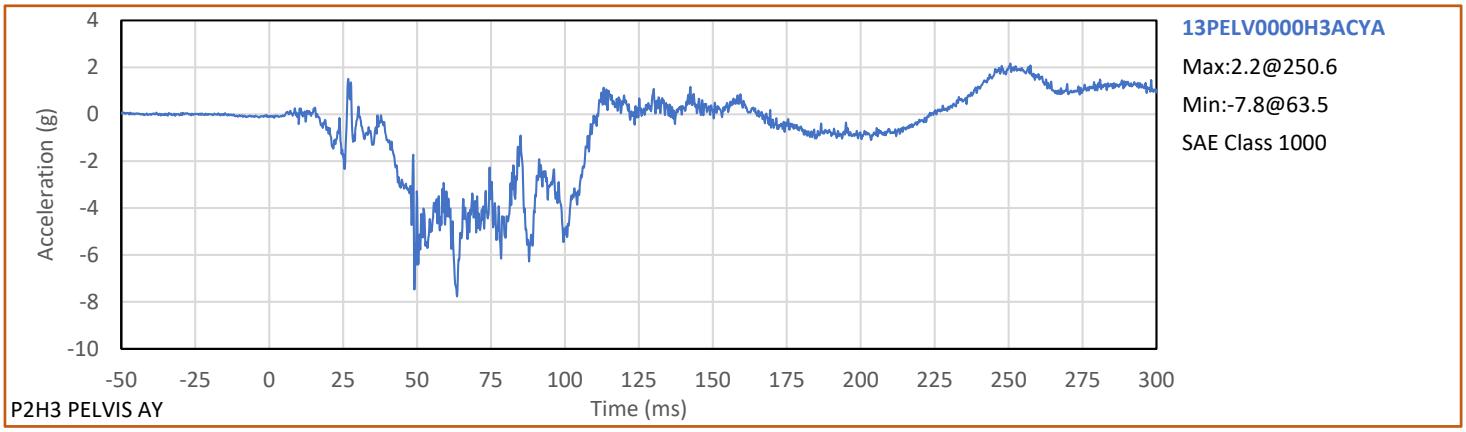


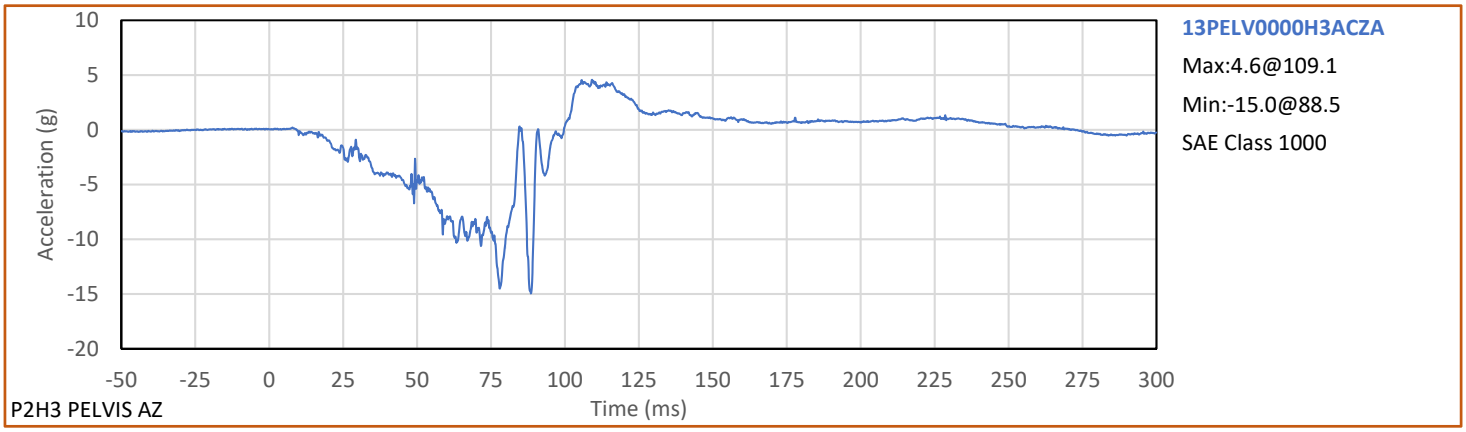
13CHST00RDH3ACZC
Max:6.2@64.2
Min:-25.7@83.7
SAE Class 180

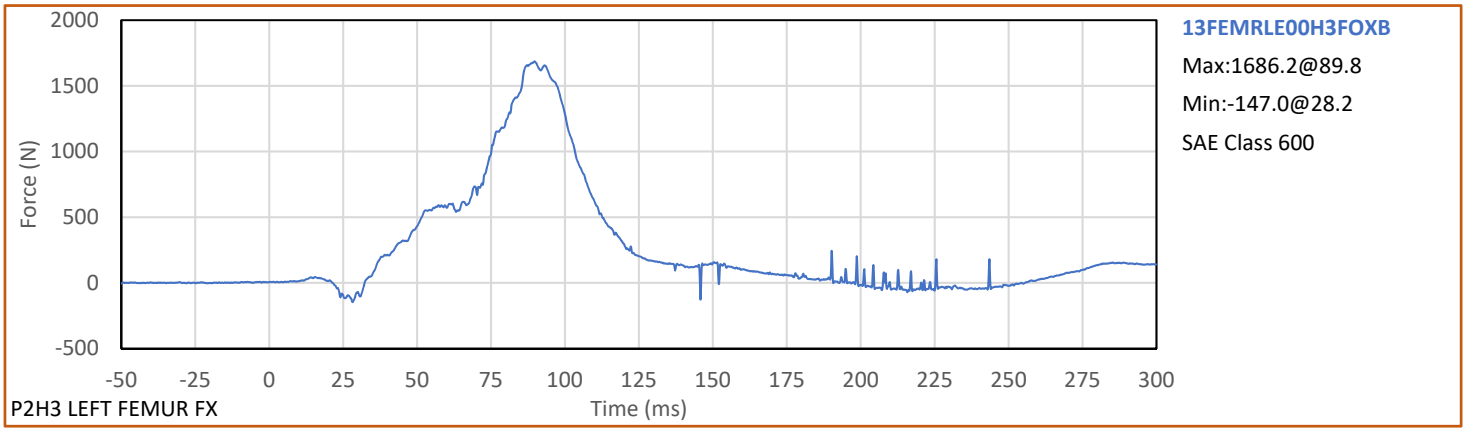


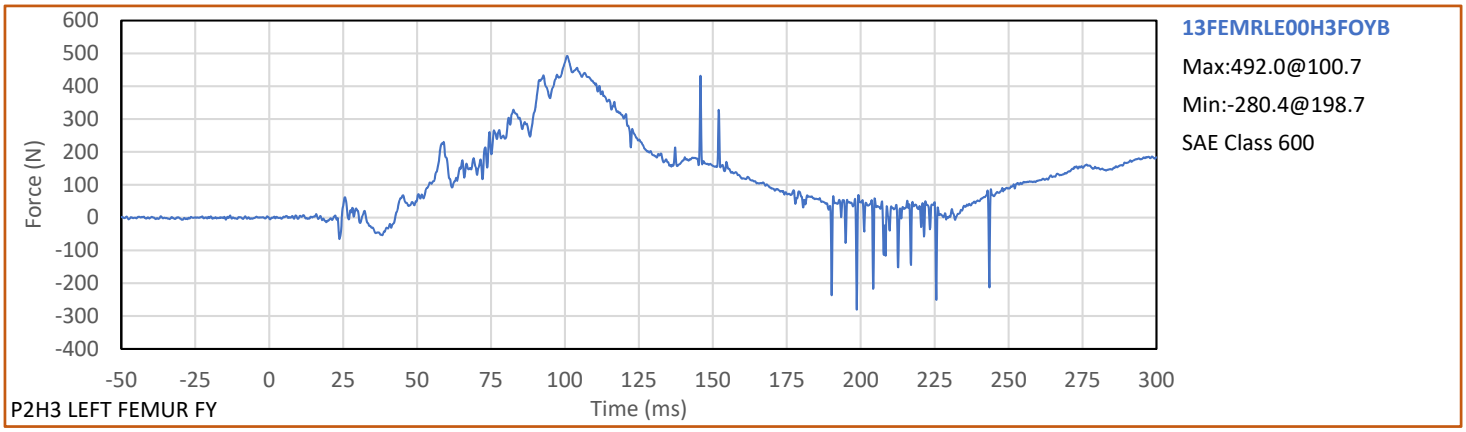
13CHST0000H3DSXB
Max:1.1@51.4
Min:-12.4@88.1
SAE Class 600

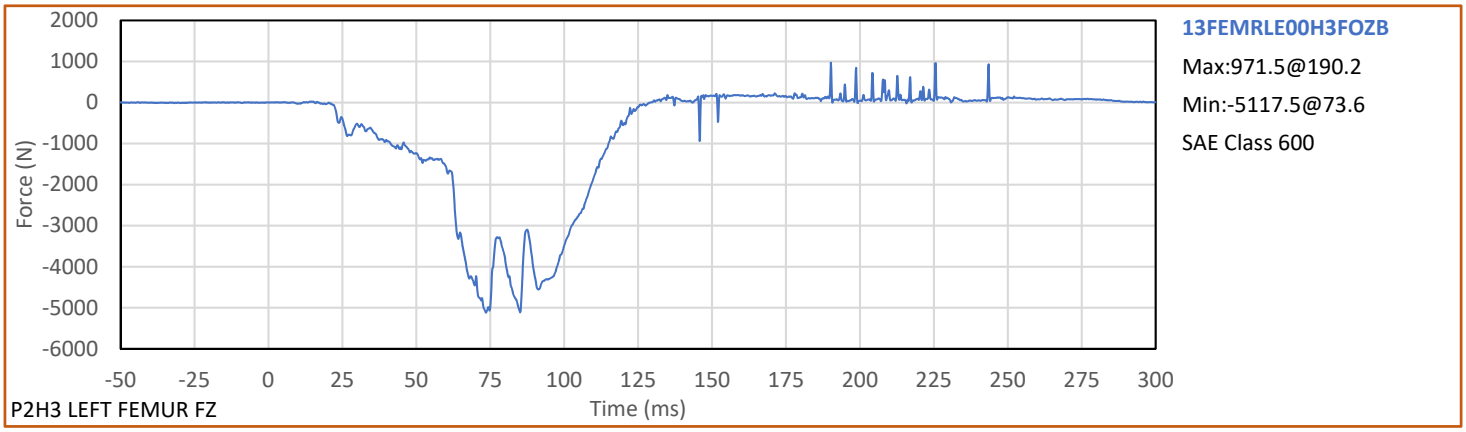

13PELV0000H3ACXA
Max:3.5@244.4
Min:-37.7@73.5
SAE Class 1000
Acceleration (g)
Time (ms)
P2H3 PELVIS AX

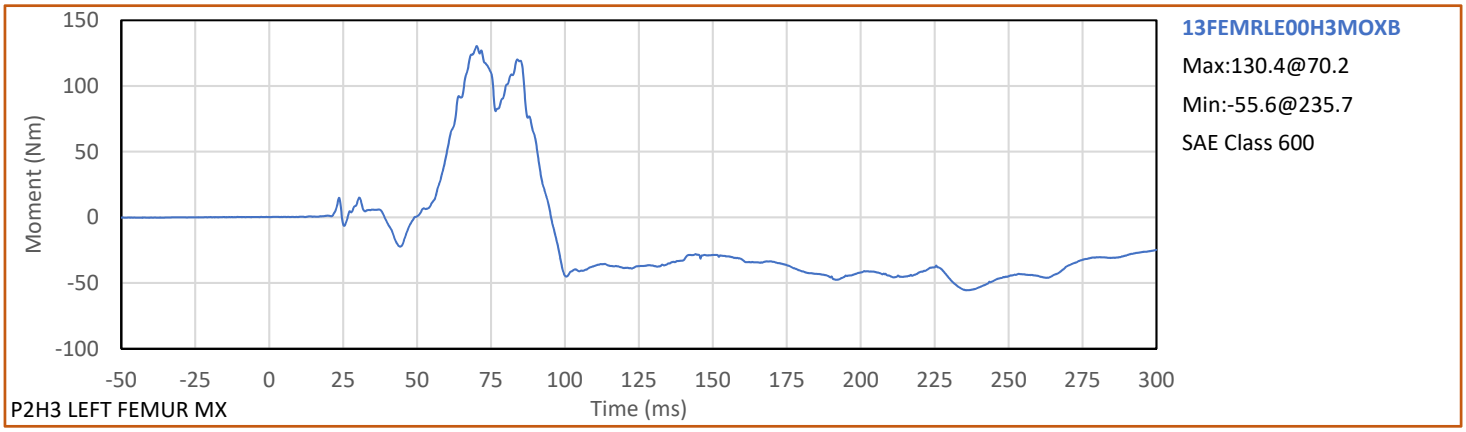

13PELV0000H3ACYA
Max:2.2@250.6
Min:-7.8@63.5
SAE Class 1000
Acceleration (g)
Time (ms)
P2H3 PELVIS AY

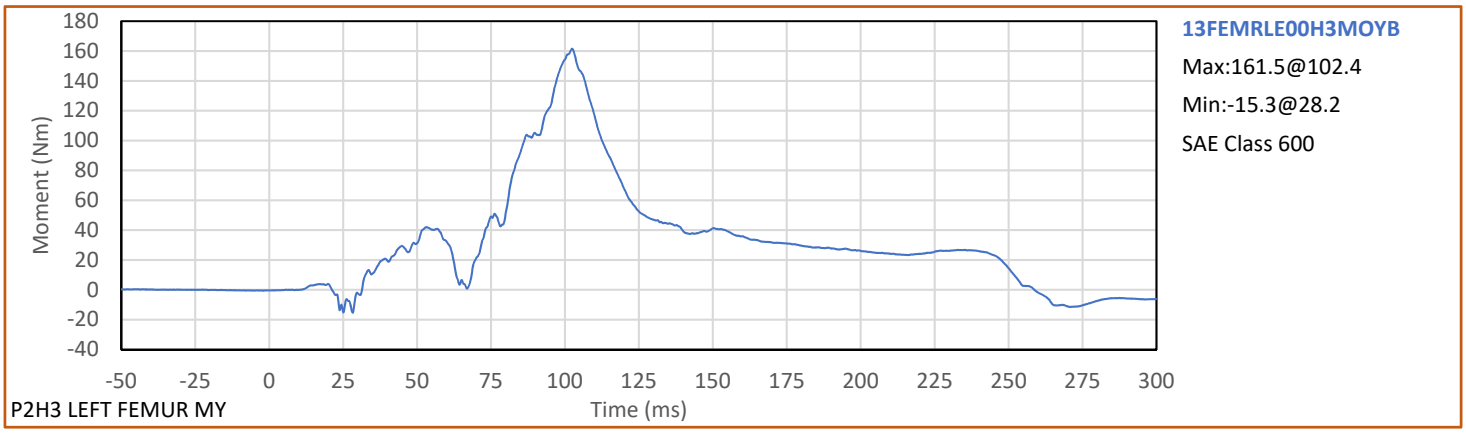

13PELV0000H3ACZA
Max:4.6@109.1
Min:-15.0@88.5
SAE Class 1000
Acceleration (g)
Time (ms)
P2H3 PELVIS AZ

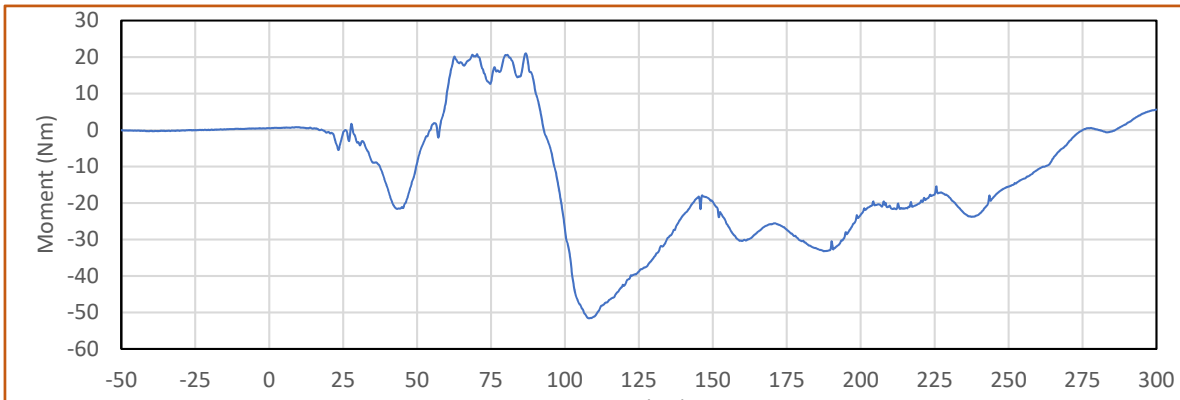

13FEMRLE00H3FOXB
Max:1686.2@89.8
Min:-147.0@28.2
SAE Class 600
Force (N)
Time (ms)
P2H3 LEFT FEMUR FX


Force (N)
Time (ms)
P2H3 LEFT FEMUR FY
13FEMRLE00H3FOYB
Max:492.0@100.7
Min:-280.4@198.7
SAE Class 600

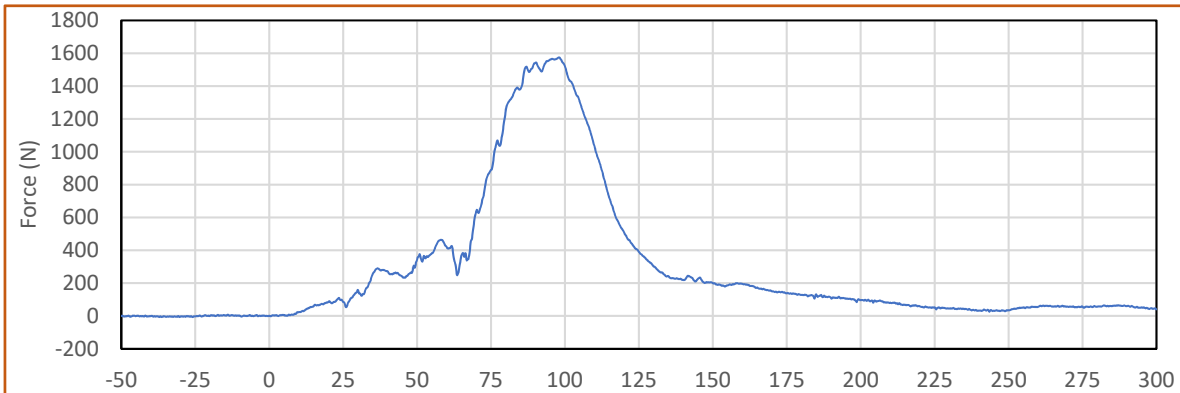

Force (N)
Time (ms)
P2H3 LEFT FEMUR FZ
13FEMRLE00H3FOZB
Max:971.5@190.2
Min:-5117.5@73.6
SAE Class 600


Moment (Nm)
Time (ms)
P2H3 LEFT FEMUR MX
13FEMRLE00H3MOXB
Max:130.4@70.2
Min:-55.6@235.7
SAE Class 600

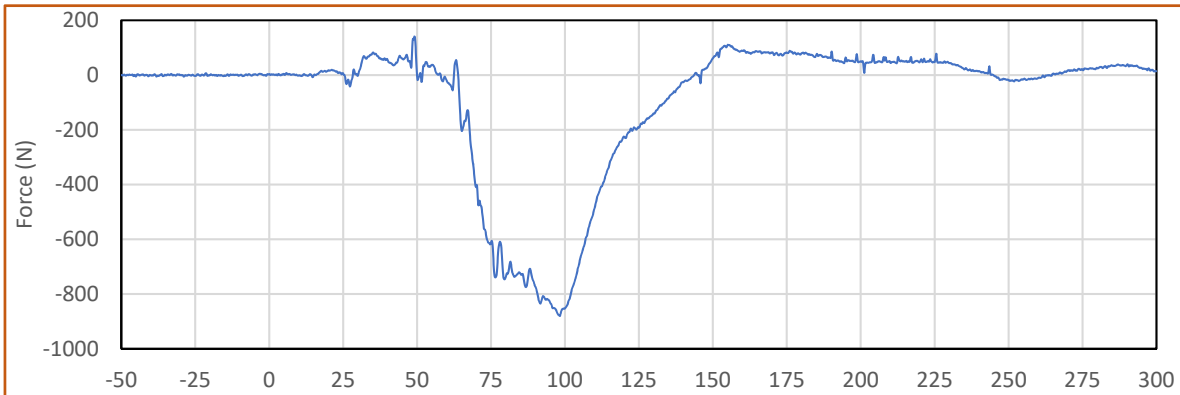

Moment (Nm)
Time (ms)
P2H3 LEFT FEMUR MY
13FEMRLE00H3MOYB
Max:161.5@102.4
Min:-15.3@28.2
SAE Class 600



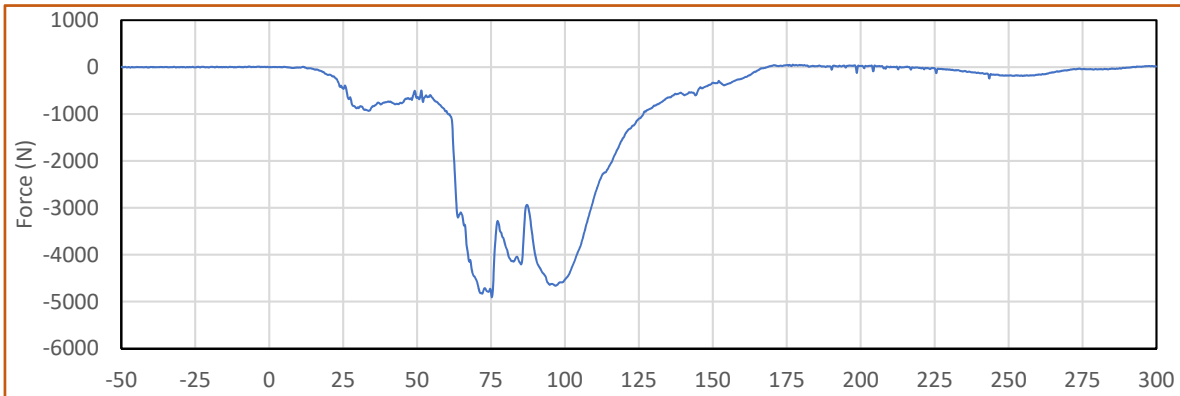
13FEMRLE00H3MOZB
Max:21.0@86.7
Min:-51.6@108.3
SAE Class 600
P2H3 LEFT FEMUR MZ



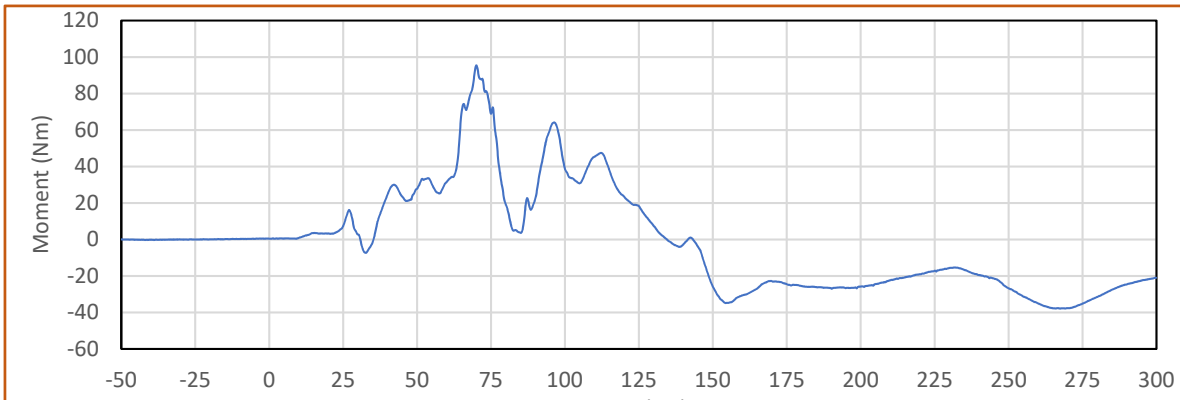
13FEMRRI00H3FOXB
Max:1574.9@98.0
Min:-1.8@0.5
SAE Class 600
P2H3 RIGHT FEMUR FX



13FEMRRI00H3FOYB
Max:140.8@49.1
Min:-880.4@98.2
SAE Class 600
P2H3 RIGHT FEMUR FY

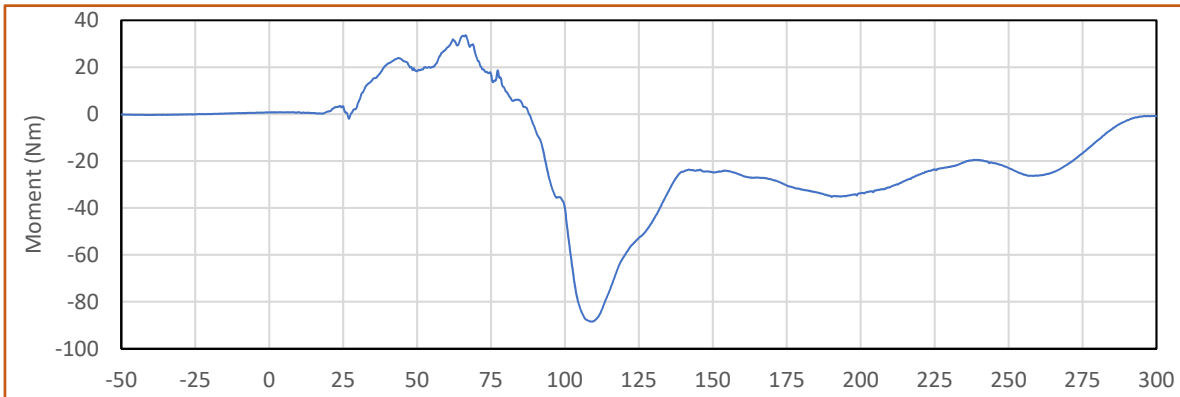


13FEMRRI00H3FOZB
Max:52.4@177.1
Min:-4907.9@75.3
SAE Class 600
P2H3 RIGHT FEMUR FZ

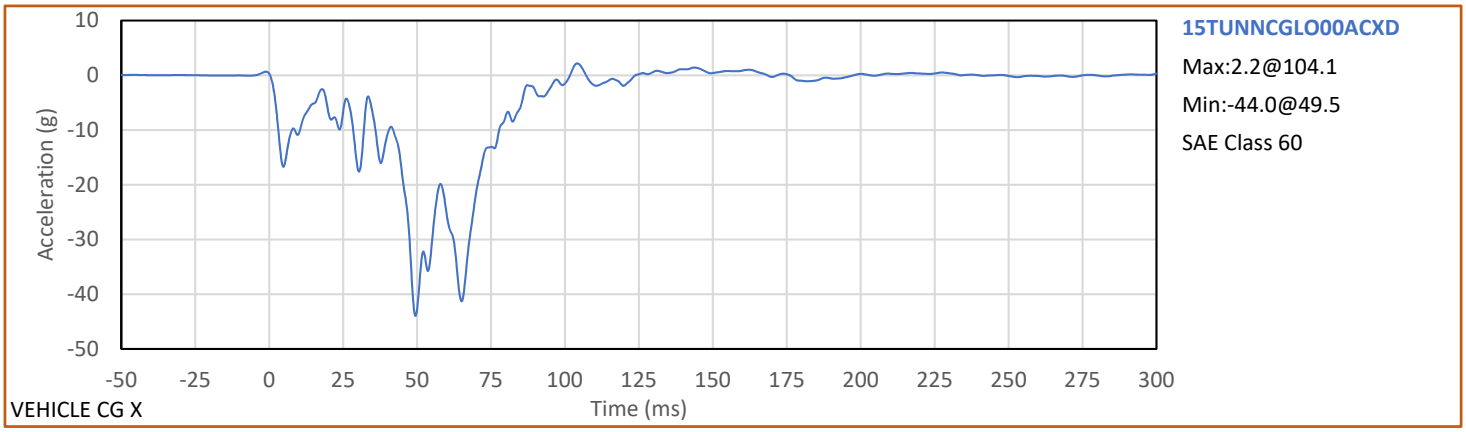


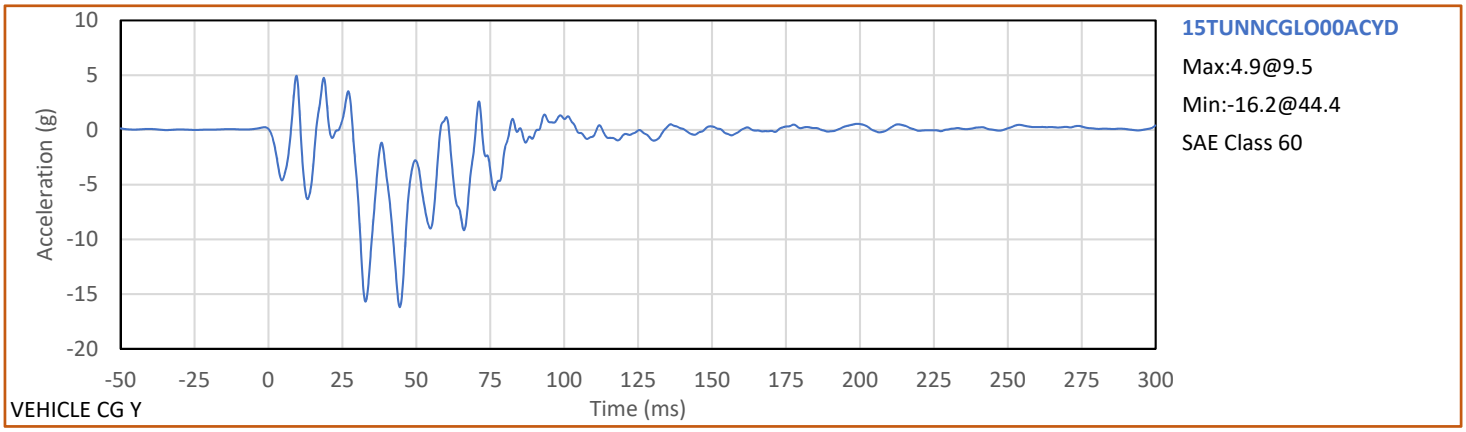
13FEMRRI00H3MOXB
Max:95.4@70.0
Min:-37.9@267.4
SAE Class 600

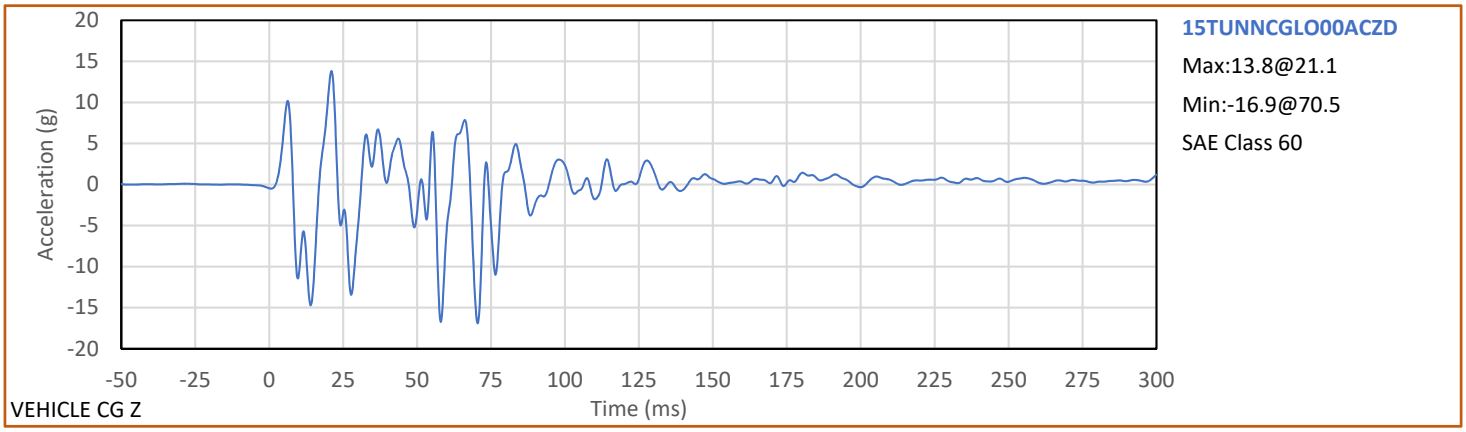
13FEMRRI00H3MOYB
Max:167.6@104.3
Min:-35.2@63.6
SAE Class 600

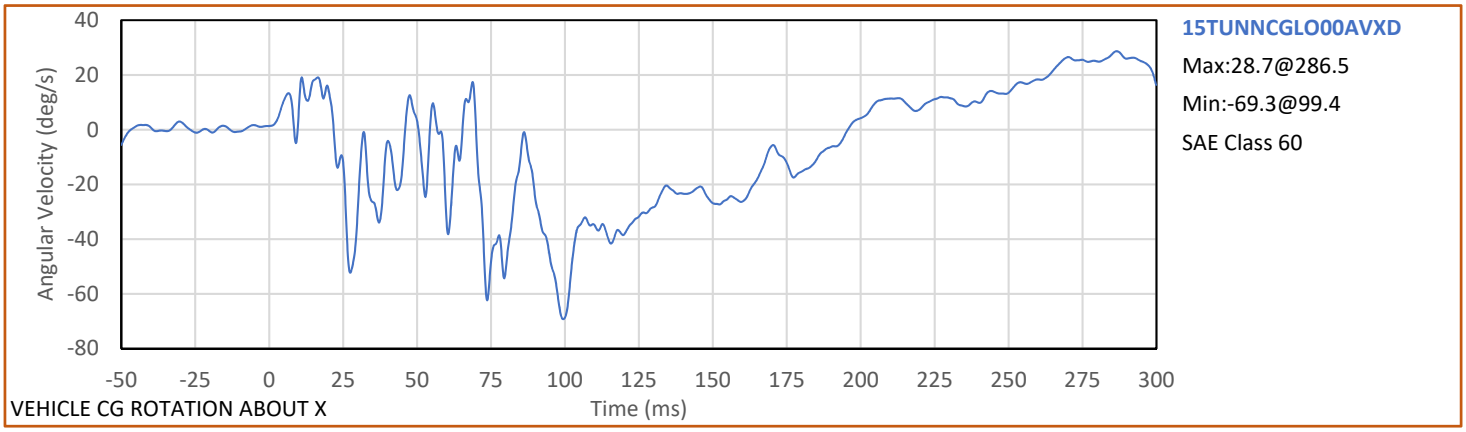


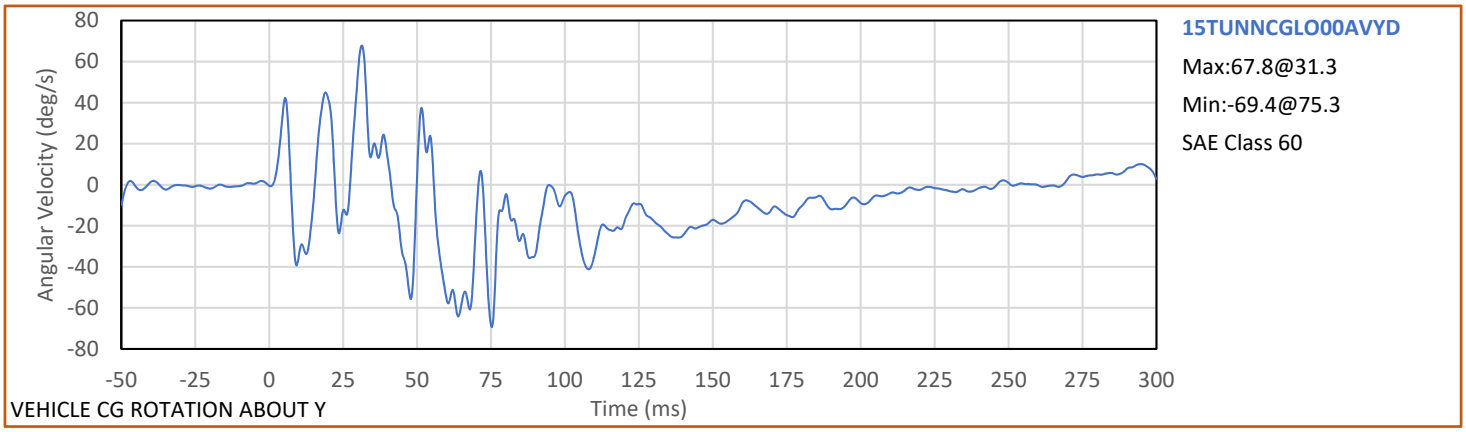
13FEMRRI00H3MOZB
Max:33.6@66.4
Min:-88.5@109.2
SAE Class 600

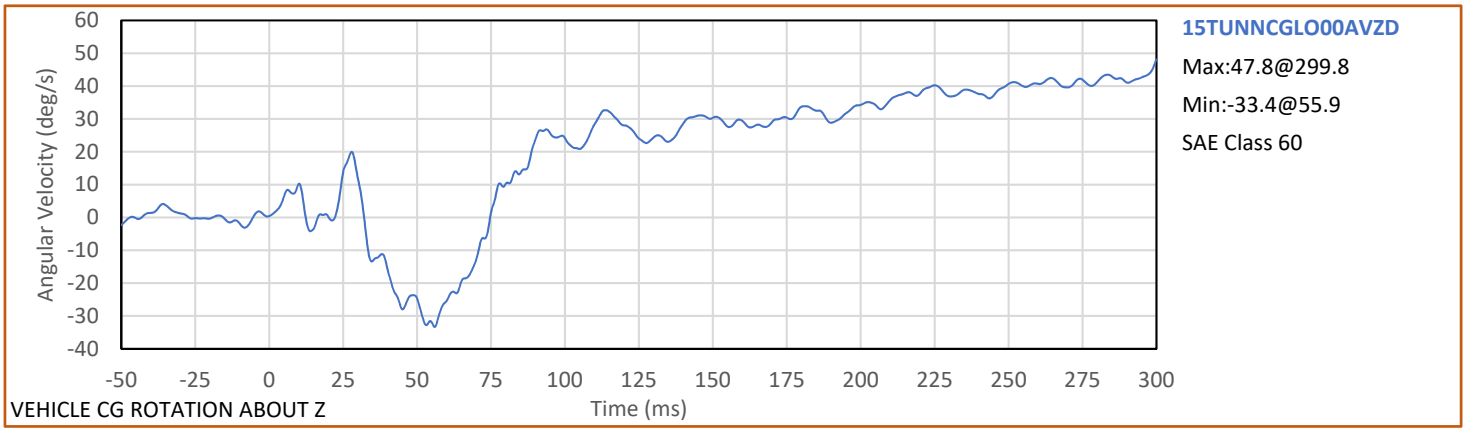

Acceleration (g)
Time (ms)
VEHICLE CG X
15TUNNCGLO00ACXD
Max:2.2@104.1
Min:-44.0@49.5
SAE Class 60

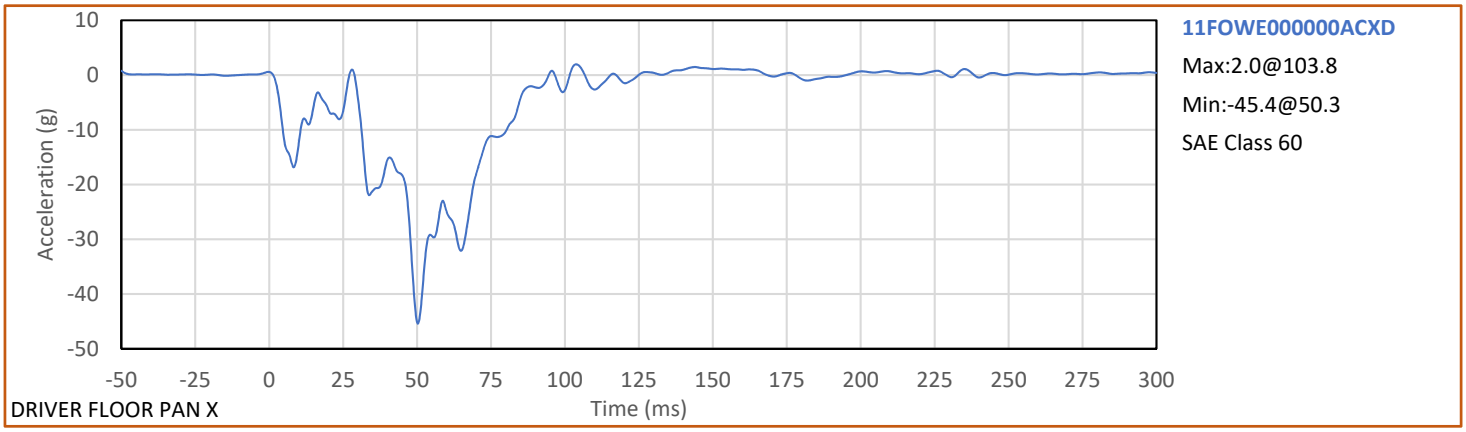

Acceleration (g)
Time (ms)
VEHICLE CG Y
15TUNNCGLO00ACYD
Max:4.9@9.5
Min:-16.2@44.4
SAE Class 60

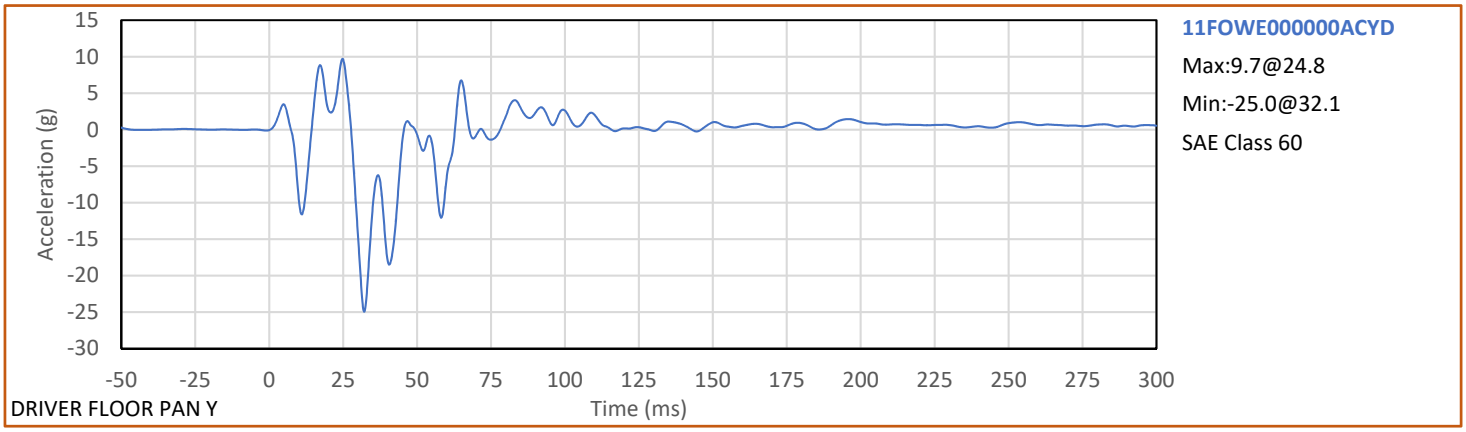

Acceleration (g)
Time (ms)
VEHICLE CG Z
15TUNNCGLO00ACZD
Max:13.8@21.1
Min:-16.9@70.5
SAE Class 60

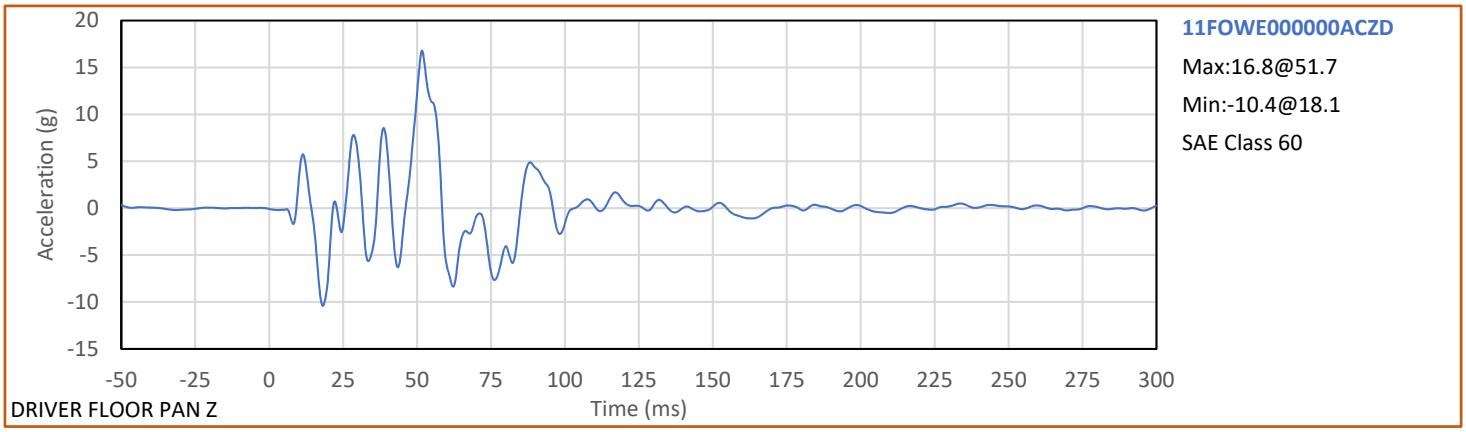

Angular Velocity (deg/s)
Time (ms)
VEHICLE CG ROTATION ABOUT X
15TUNNCGLO00AVXD
Max:28.7@286.5
Min:-69.3@99.4
SAE Class 60

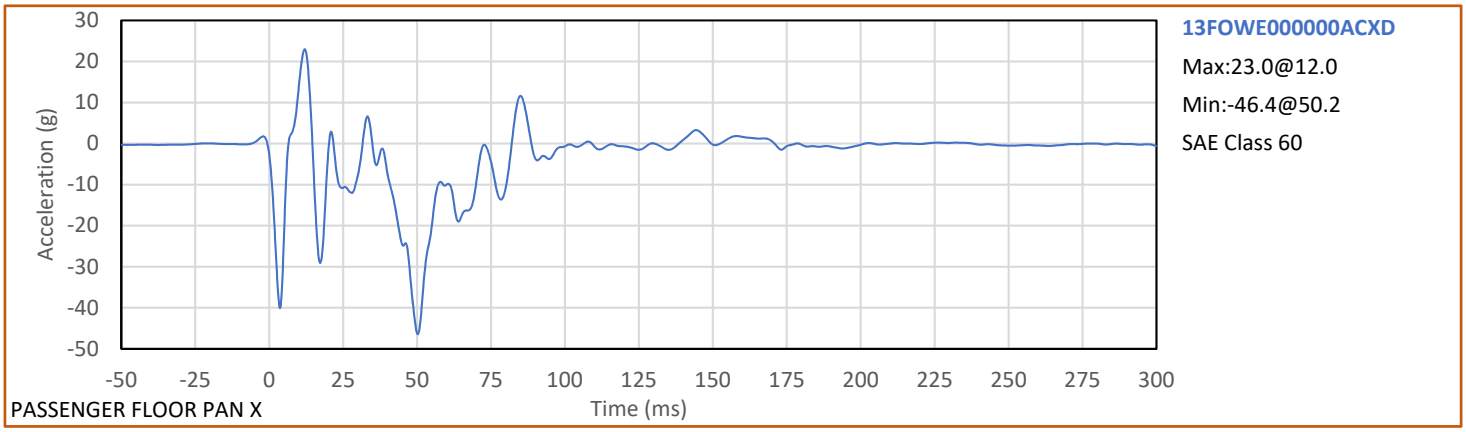

Angular Velocity (deg/s)
Time (ms)
VEHICLE CG ROTATION ABOUT Y
15TUNNCGLO00AVYD
Max:67.8@31.3
Min:-69.4@75.3
SAE Class 60

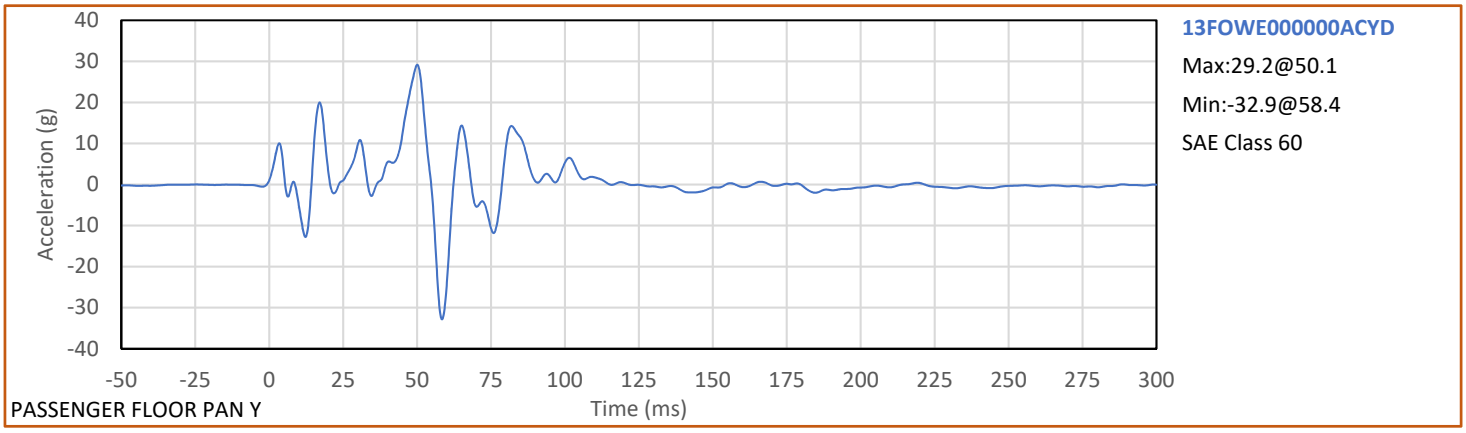

Angular Velocity (deg/s)
Time (ms)
VEHICLE CG ROTATION ABOUT Z
15TUNNCGLO00AVZD
Max:47.8@299.8
Min:-33.4@55.9
SAE Class 60

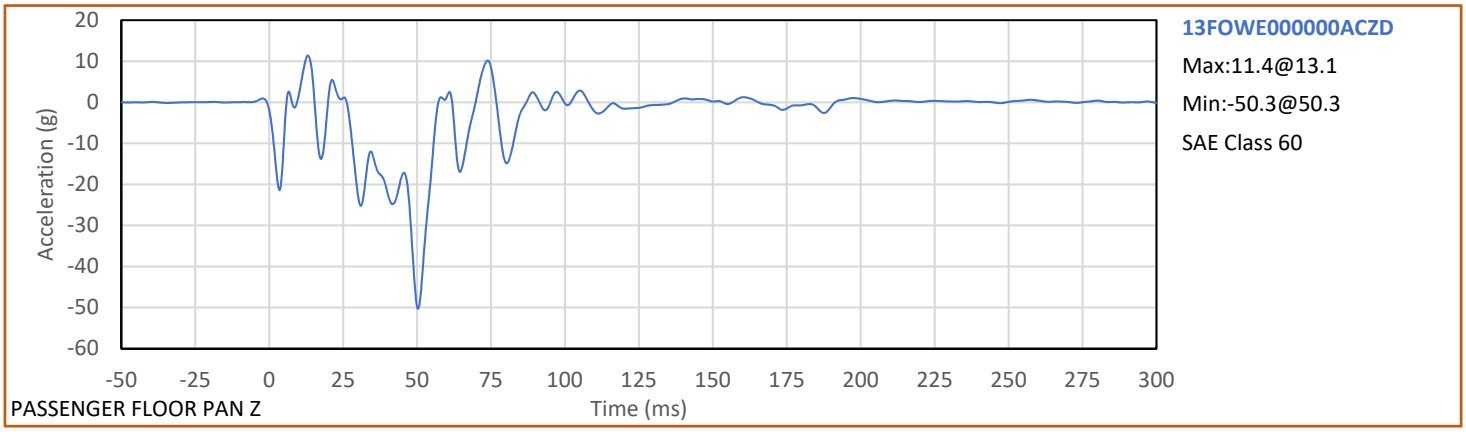

Acceleration (g)
Time (ms)
DRIVER FLOOR PAN X
11FOWE000000ACXD
Max:2.0@103.8
Min:-45.4@50.3
SAE Class 60

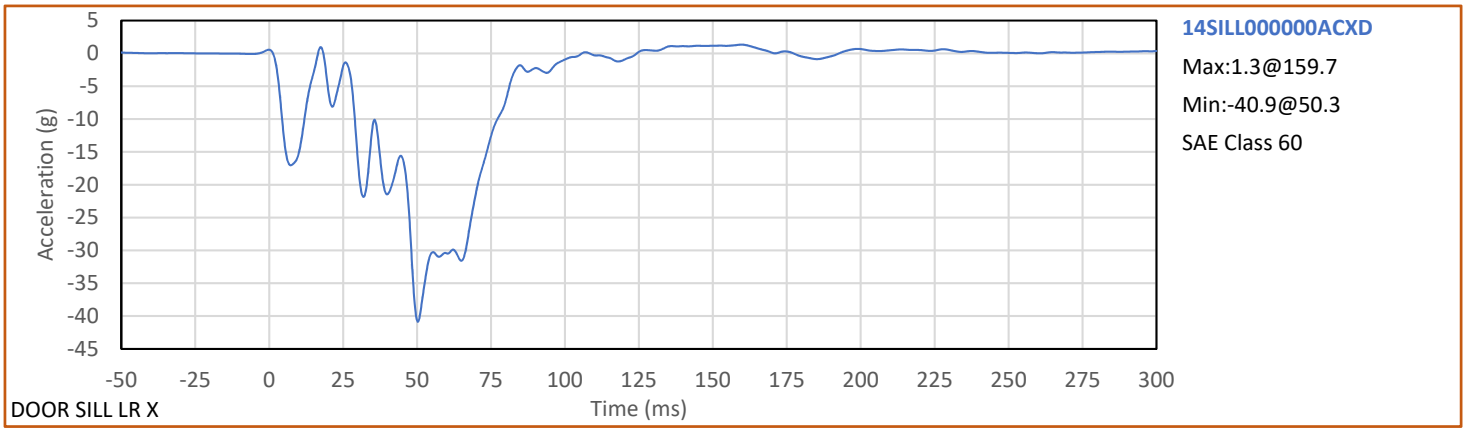

Acceleration (g)
Time (ms)
DRIVER FLOOR PAN Y
11FOWE000000ACYD
Max:9.7@24.8
Min:-25.0@32.1
SAE Class 60

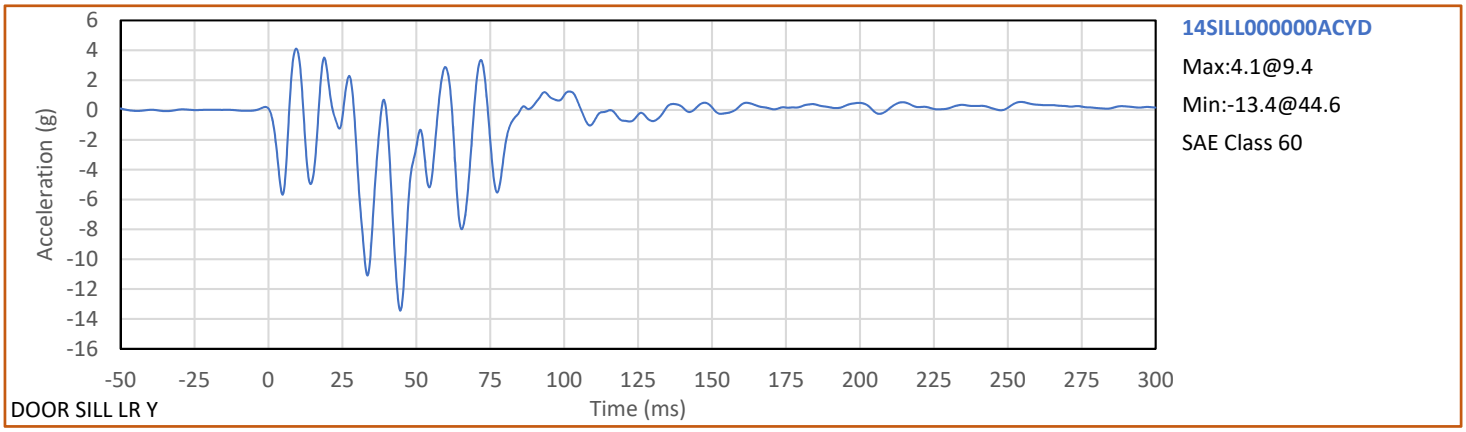

11FOWE000000ACZD
Max:16.8@51.7
Min:-10.4@18.1
SAE Class 60
Acceleration (g)
Time (ms)
DRIVER FLOOR PAN Z

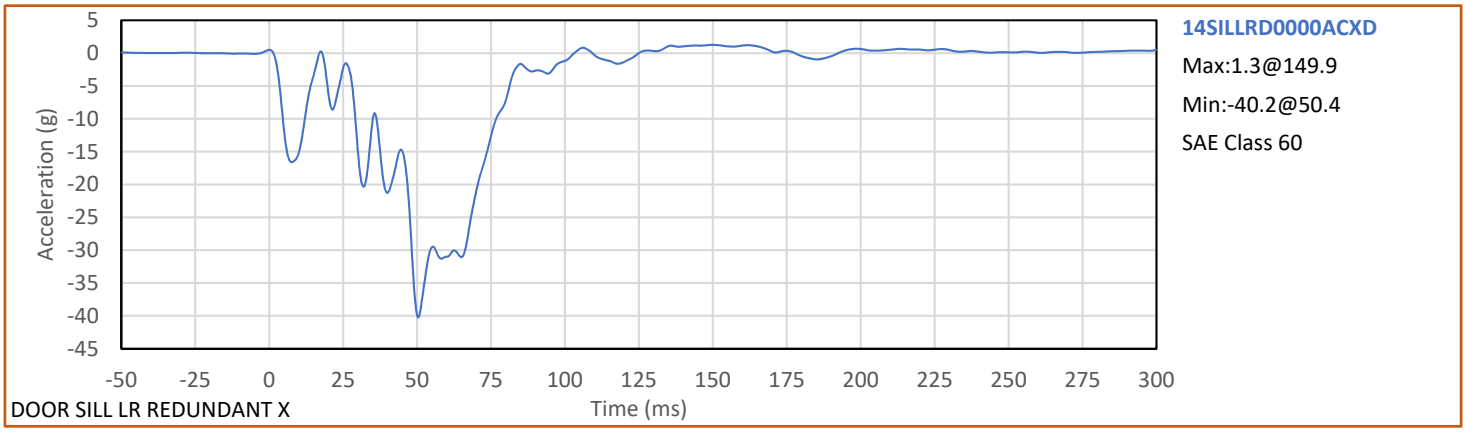

13FOWE000000ACXD
Max:23.0@12.0
Min:-46.4@50.2
SAE Class 60
Acceleration (g)
Time (ms)
PASSENGER FLOOR PAN X

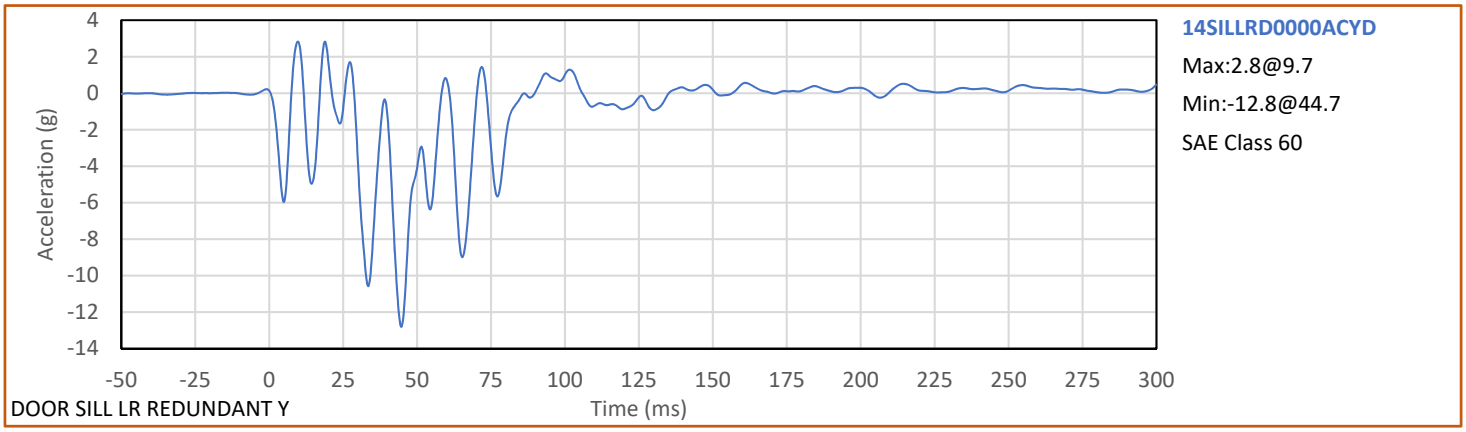

13FOWE000000ACYD
Max:29.2@50.1
Min:-32.9@58.4
SAE Class 60
Acceleration (g)
Time (ms)
PASSENGER FLOOR PAN Y


13FOWE000000ACZD
Max:11.4@13.1
Min:-50.3@50.3
SAE Class 60
Acceleration (g)
Time (ms)
PASSENGER FLOOR PAN Z


Acceleration (g)
Time (ms)
DOOR SILL LR X
14SILL000000ACXD
Max:1.3@159.7
Min:-40.9@50.3
SAE Class 60


Acceleration (g)
Time (ms)
DOOR SILL LR Y
14SILL000000ACYD
Max:4.1@9.4
Min:-13.4@44.6
SAE Class 60


Acceleration (g)
Time (ms)
DOOR SILL LR REDUNDANT X
14SILLRD0000ACXD
Max:1.3@149.9
Min:-40.2@50.4
SAE Class 60

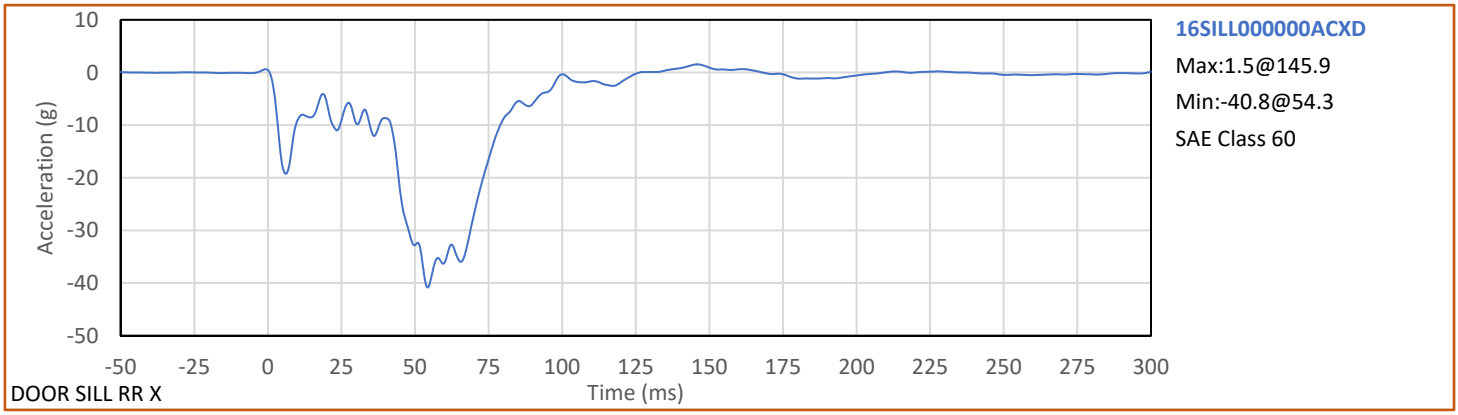

Acceleration (g)
Time (ms)
DOOR SILL LR REDUNDANT Y
14SILLRD0000ACYD
Max:2.8@9.7
Min:-12.8@44.7
SAE Class 60

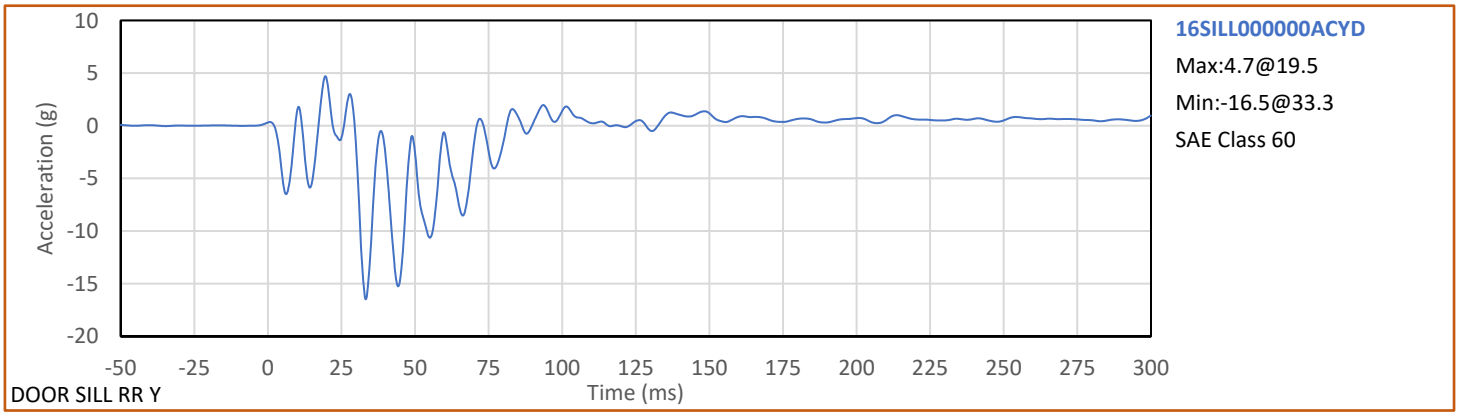
Test Vehicle: 2020 Honda Accord 4-Door Sedan

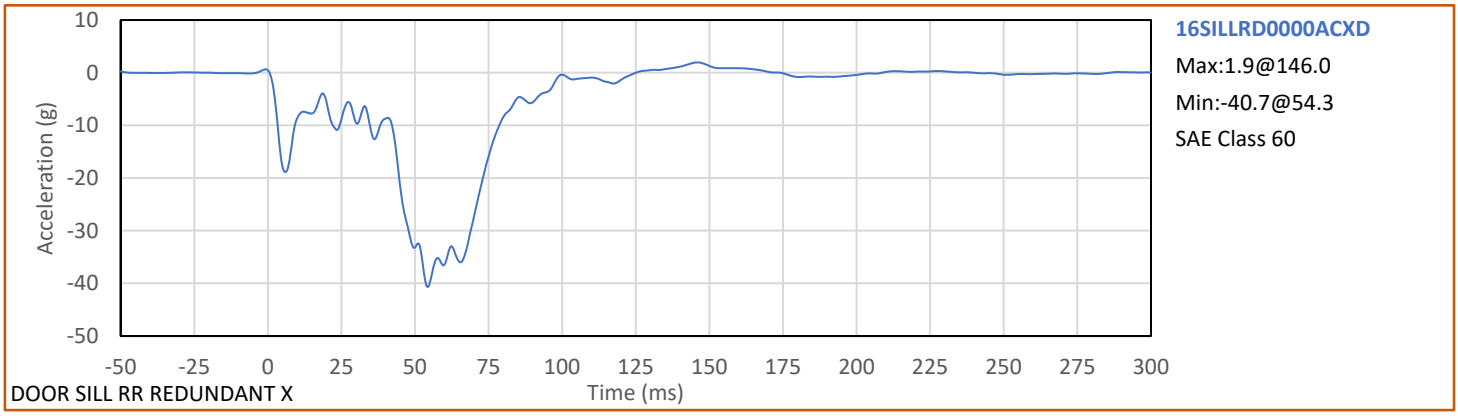
Test Program: Right Side 30° Frontal Rigid Barrier Impact

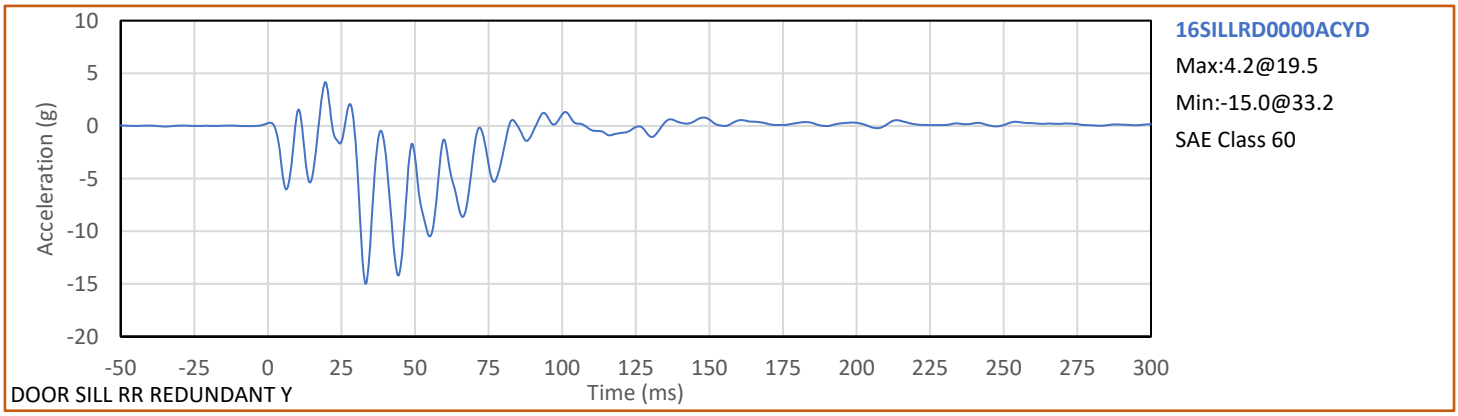
NHTSA No.: R20205379

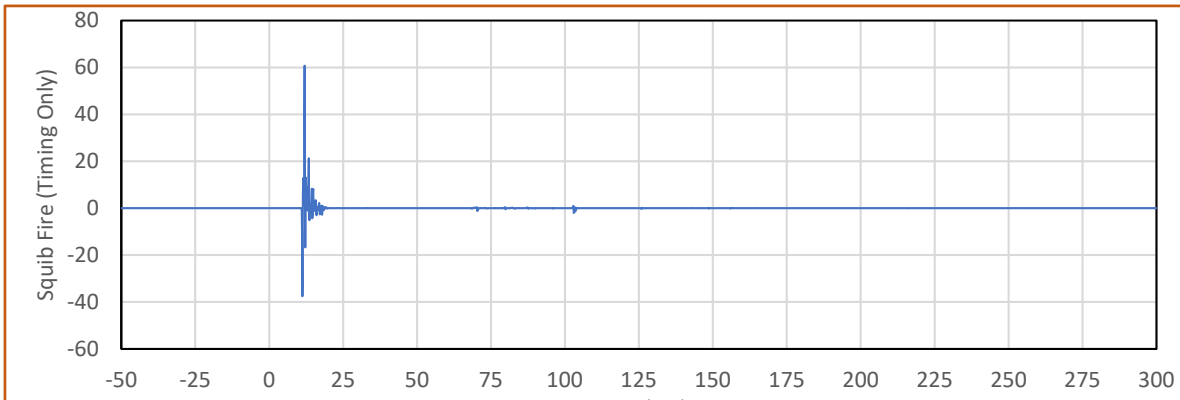
Test Date: 9/25/2020





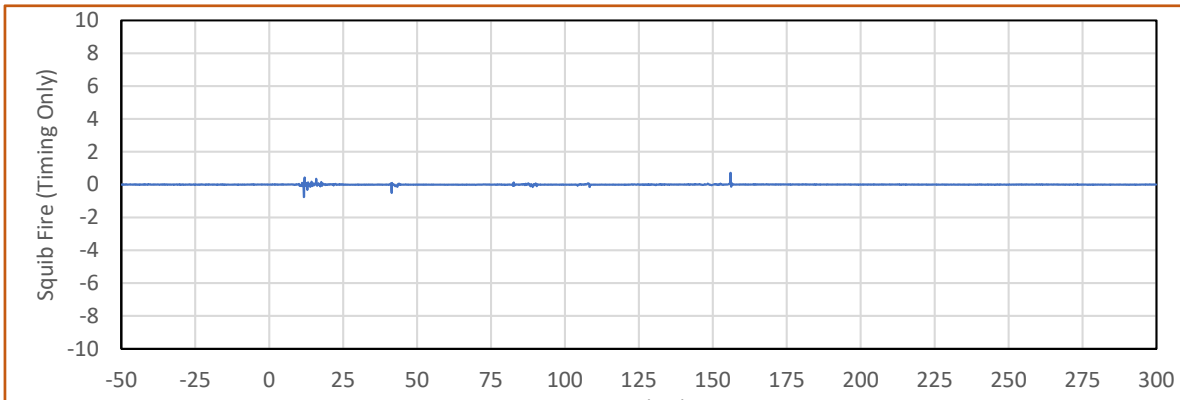






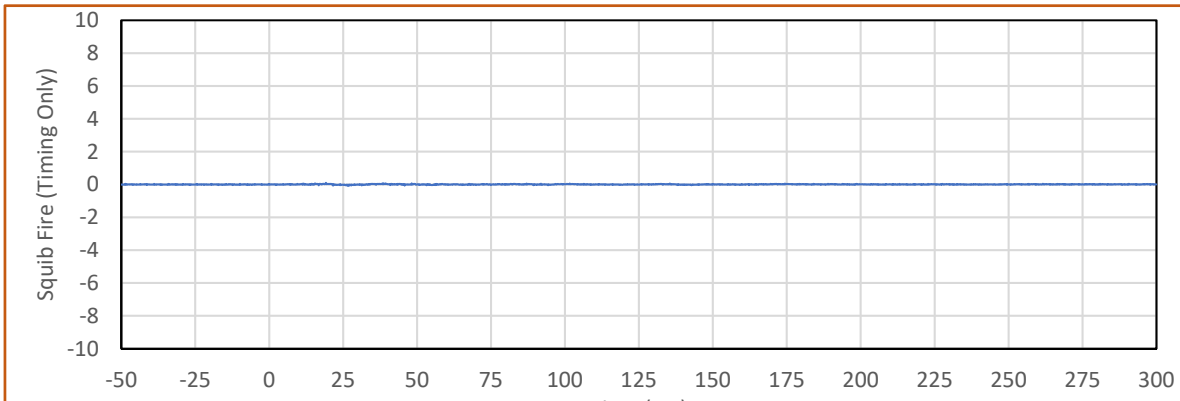
11STWL0100AFCU0P
Max:60.8@12.0
Min:-37.5@11.2
No Filter Applied

DRIVER SW AIRBAG STAGE 1 - TIME TO FIRE - 11.1 MS.



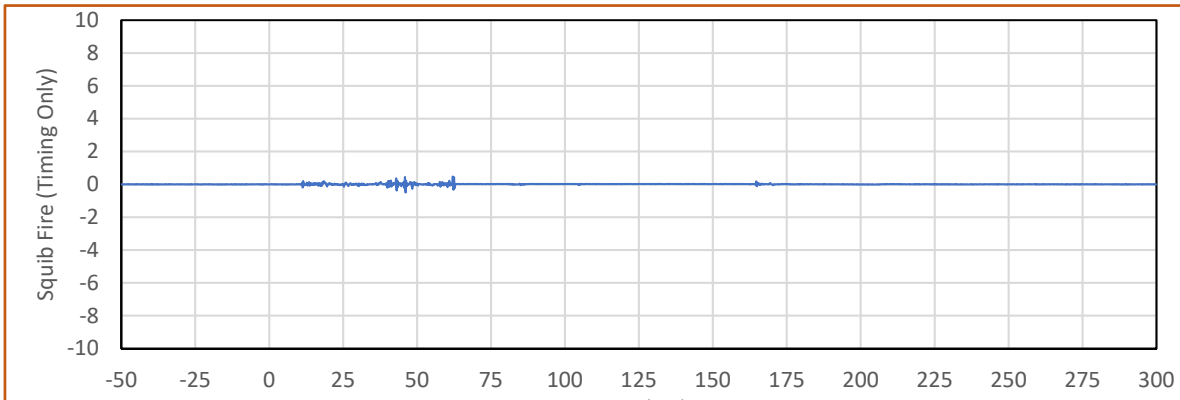
11STWL0200AFCU0P
Max:0.72@156.0
Min:-0.76@11.7
No Filter Applied

DRIVER SW AIRBAG STAGE 2 - TIME TO FIRE - UNKNOWN



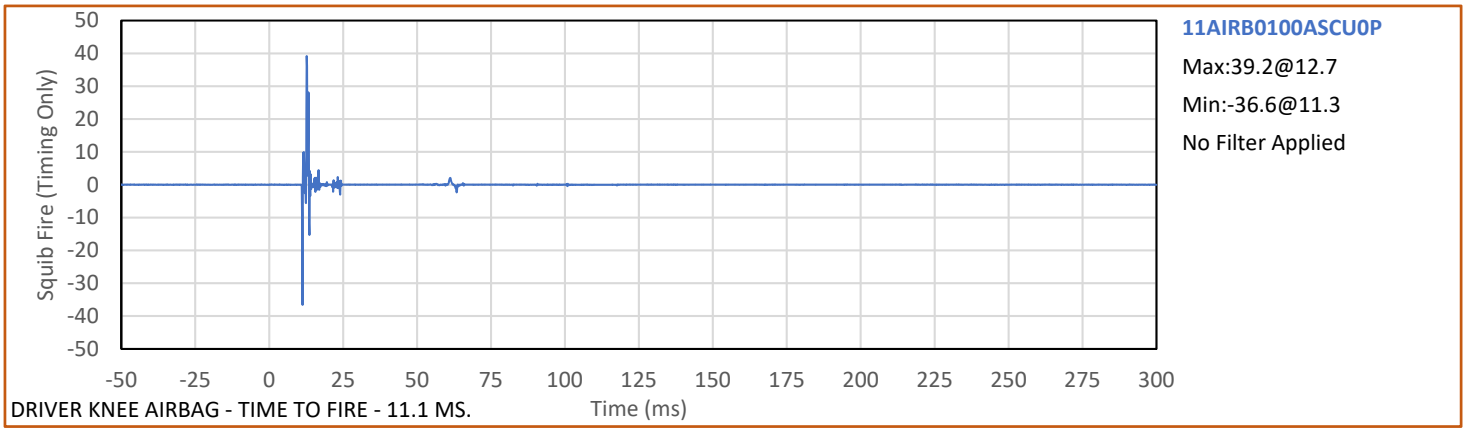
11ROFR0000AHCU0P
Max:0.10@19.2
Min:-0.08@26.9
No Filter Applied

DRIVER CURTAIN AIRBAG - TIME TO FIRE - NO FIRE

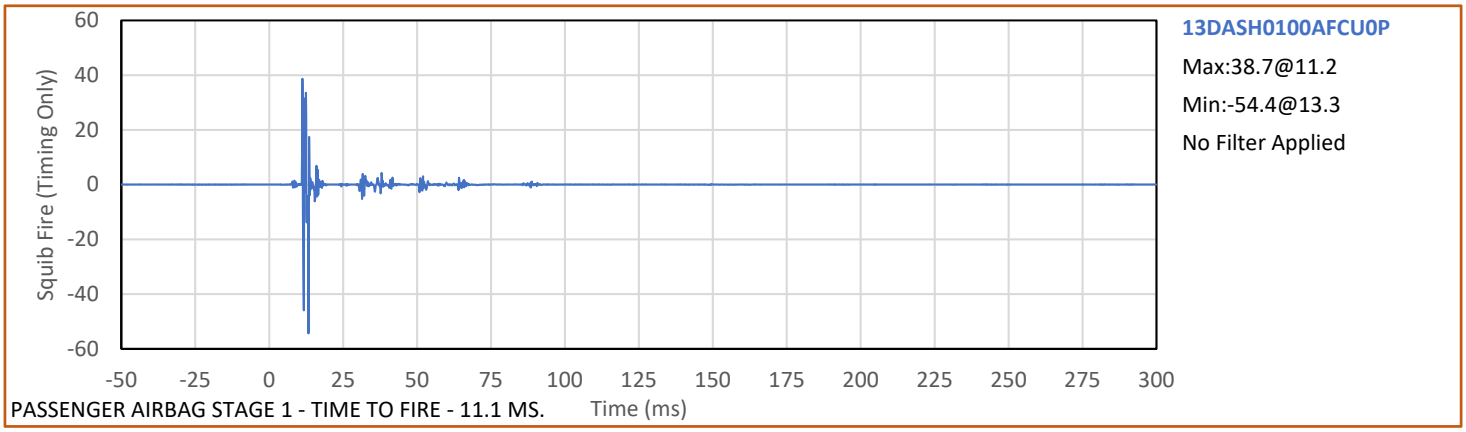


11SEBA0000ASCU0P
Max:0.48@62.1
Min:-0.50@46.1
No Filter Applied

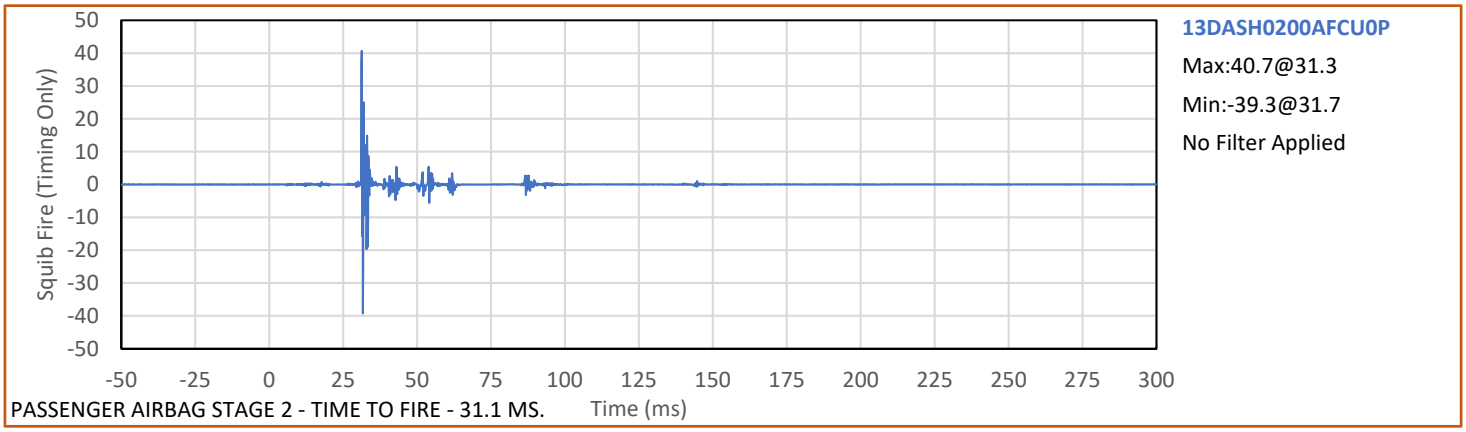
DRIVER SEAT AIRBAG - TIME TO FIRE - NO FIRE



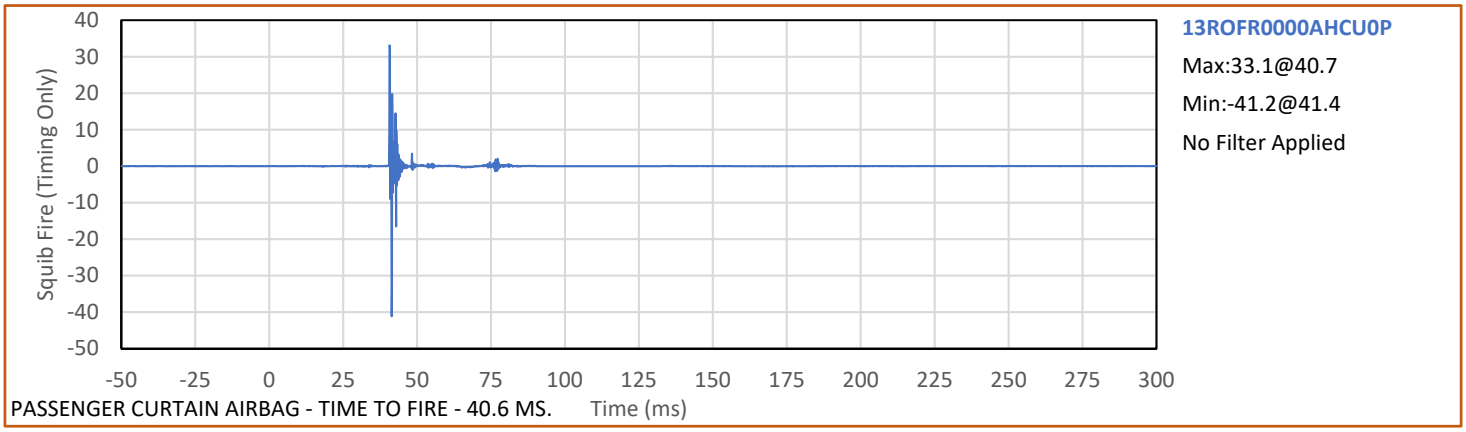
DRIVER KNEE AIRBAG - TIME TO FIRE - 11.1 MS.



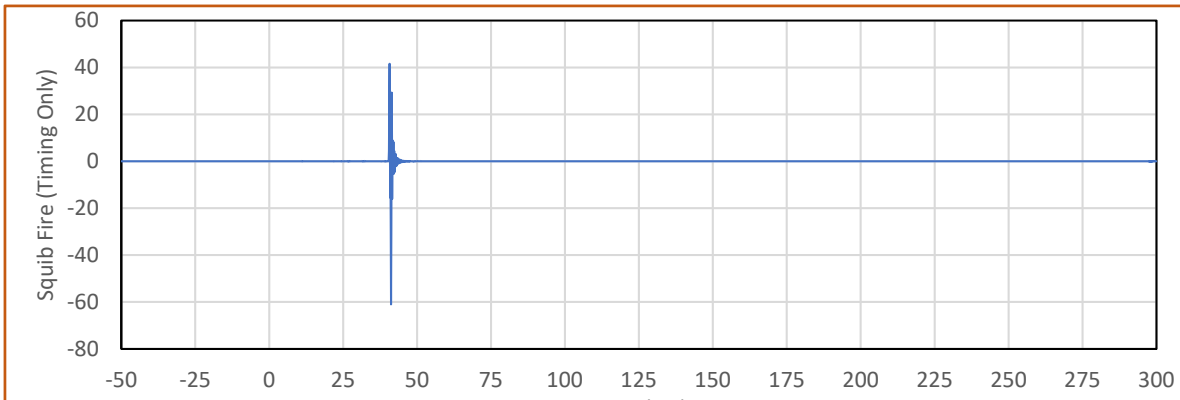
PASSENGER AIRBAG STAGE 1 - TIME TO FIRE - 11.1 MS.



PASSENGER AIRBAG STAGE 2 - TIME TO FIRE - 31.1 MS.

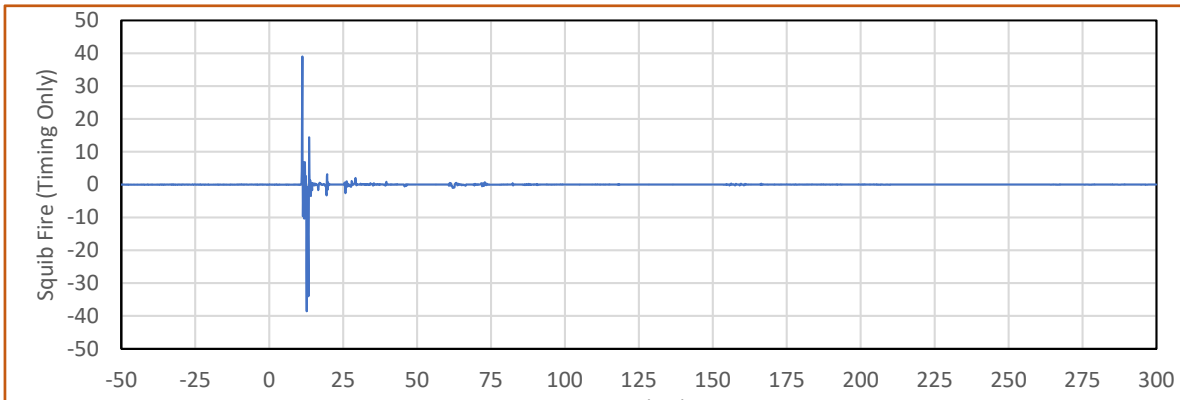


PASSENGER CURTAIN AIRBAG - TIME TO FIRE - 40.6 MS.



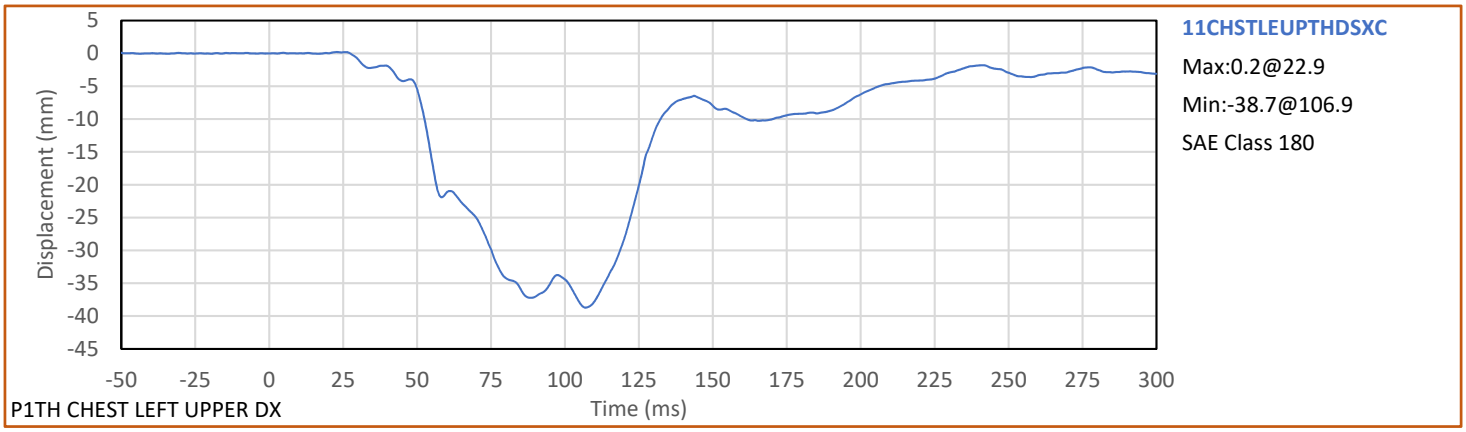
13SEBA0000ASCU0P
Max:41.6@40.7
Min:-61.0@41.2
No Filter Applied

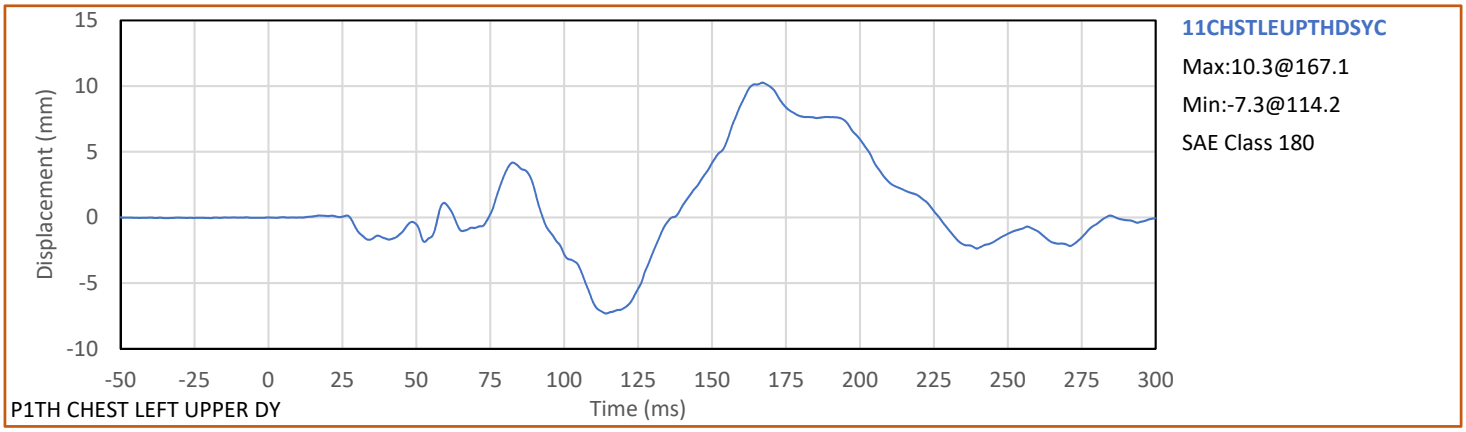
PASSENGER SEAT AIRBAG - TIME TO FIRE - 40.6 MS.

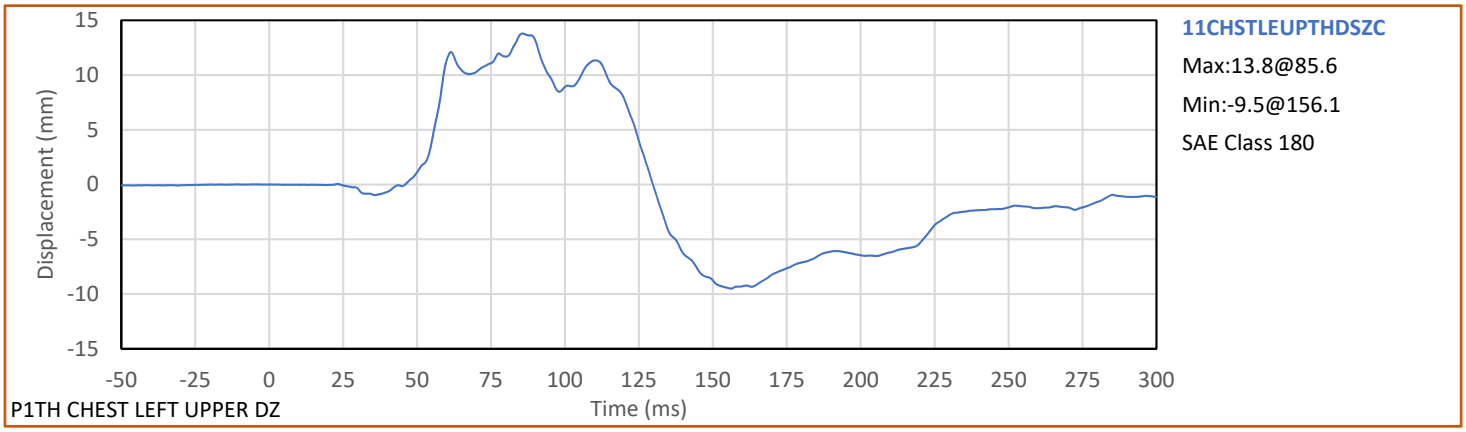


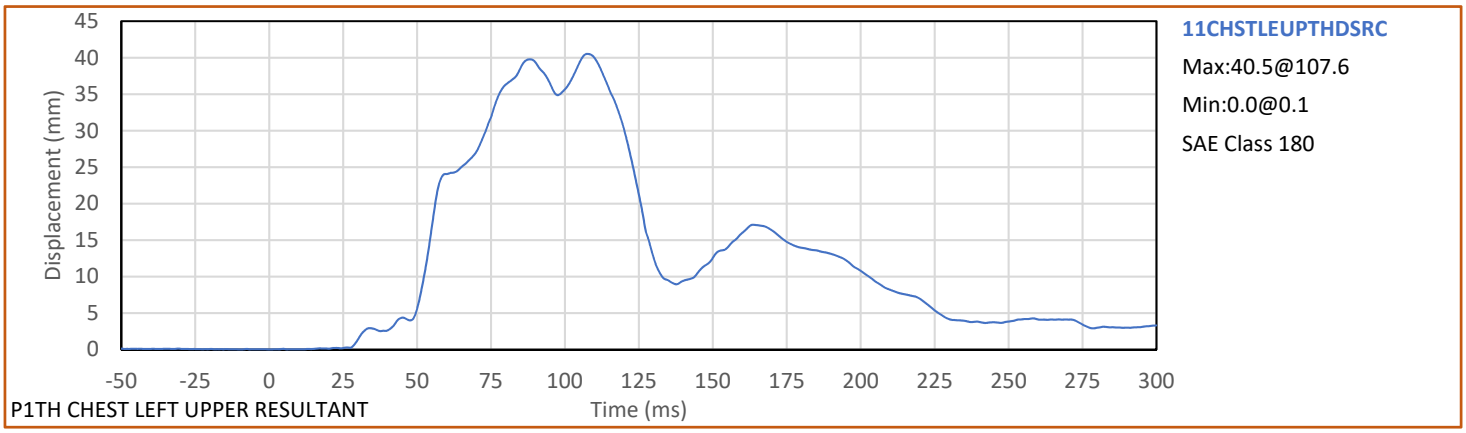
13AIRB0100ASCU0P
Max:39.0@11.2
Min:-38.6@12.7
No Filter Applied

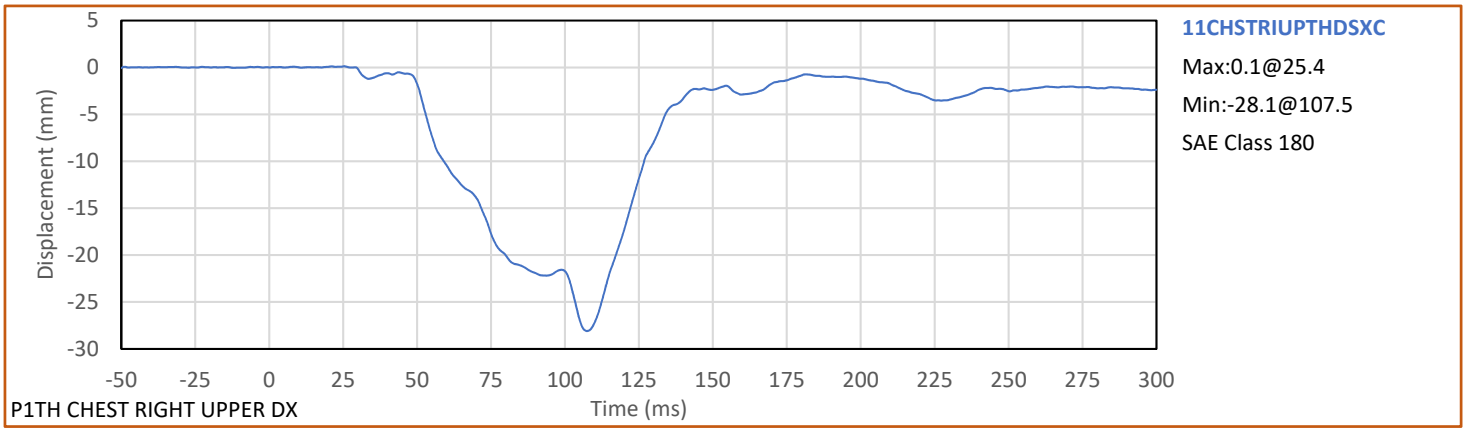
PASSENGER KNEE AIRBAG - TIME TO FIRE - 11.1 MS.

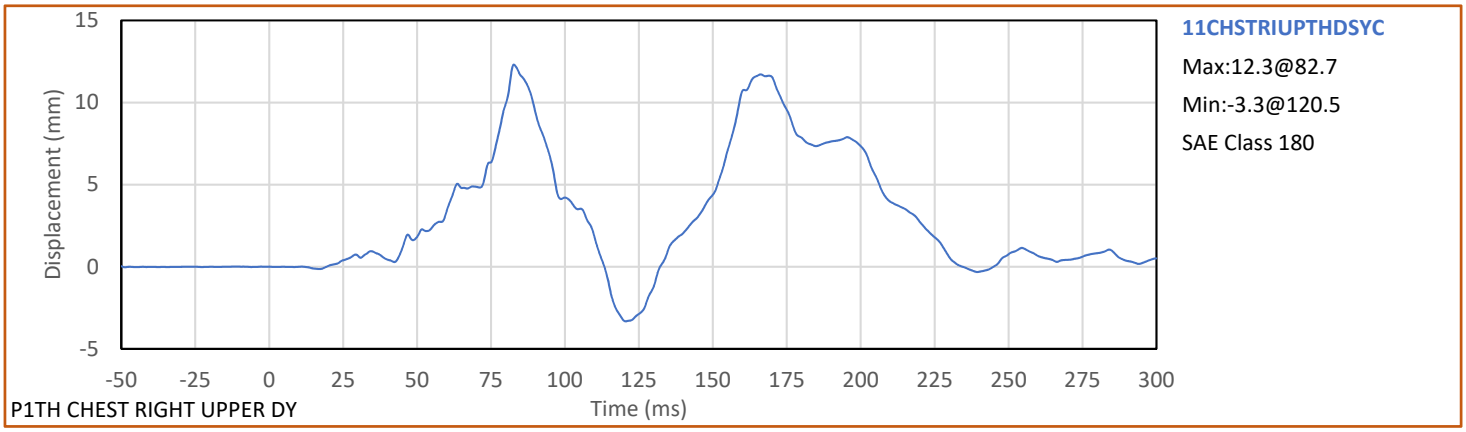

Displacement (mm)
Time (ms)
P1TH CHEST LEFT UPPER DX
11CHSTLEUPTHDSXC
Max:0.2@22.9
Min:-38.7@106.9
SAE Class 180

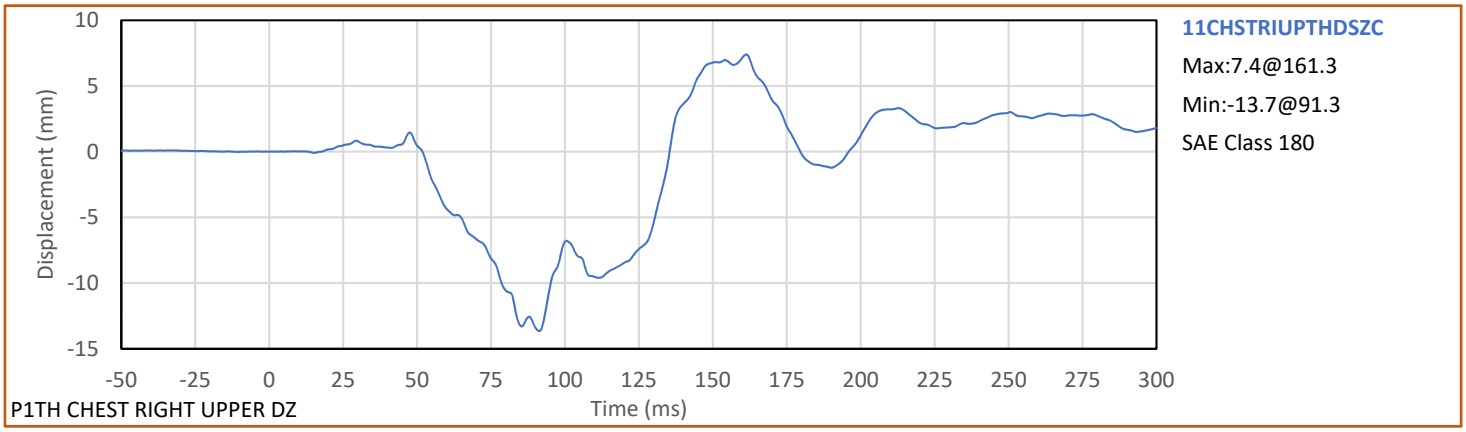

Displacement (mm)
Time (ms)
P1TH CHEST LEFT UPPER DY
11CHSTLEUPTHDSYC
Max:10.3@167.1
Min:-7.3@114.2
SAE Class 180

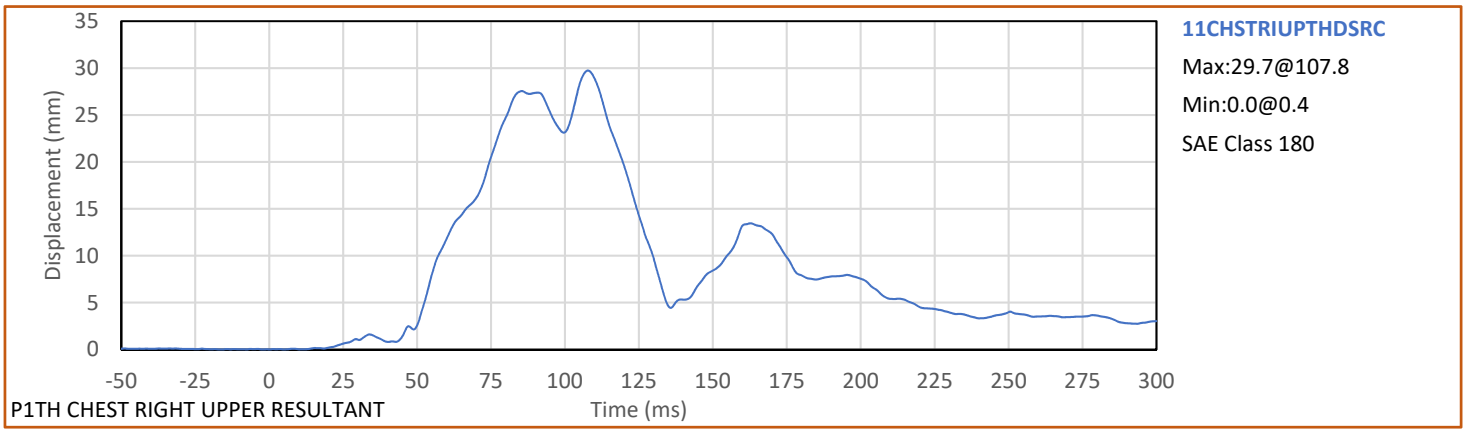

Displacement (mm)
Time (ms)
P1TH CHEST LEFT UPPER DZ
11CHSTLEUPTHDSZC
Max:13.8@85.6
Min:-9.5@156.1
SAE Class 180

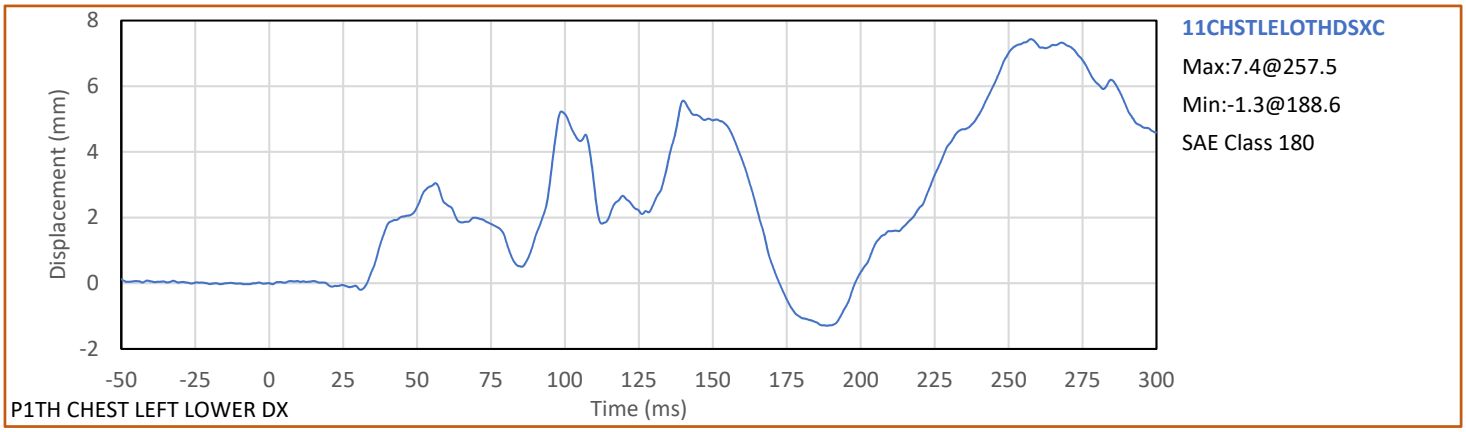

Displacement (mm)
Time (ms)
P1TH CHEST LEFT UPPER RESULTANT
11CHSTLEUPTHDSRC
Max:40.5@107.6
Min:0.0@0.1
SAE Class 180

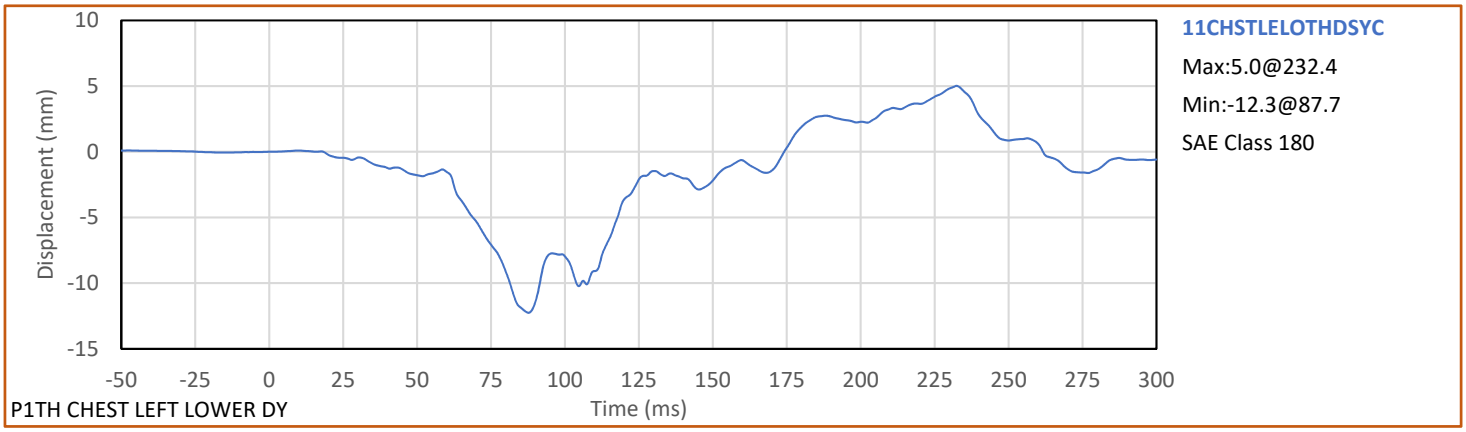

Displacement (mm)
Time (ms)
P1TH CHEST RIGHT UPPER DX
11CHSTRIUPTHDSXC
Max:0.1@25.4
Min:-28.1@107.5
SAE Class 180

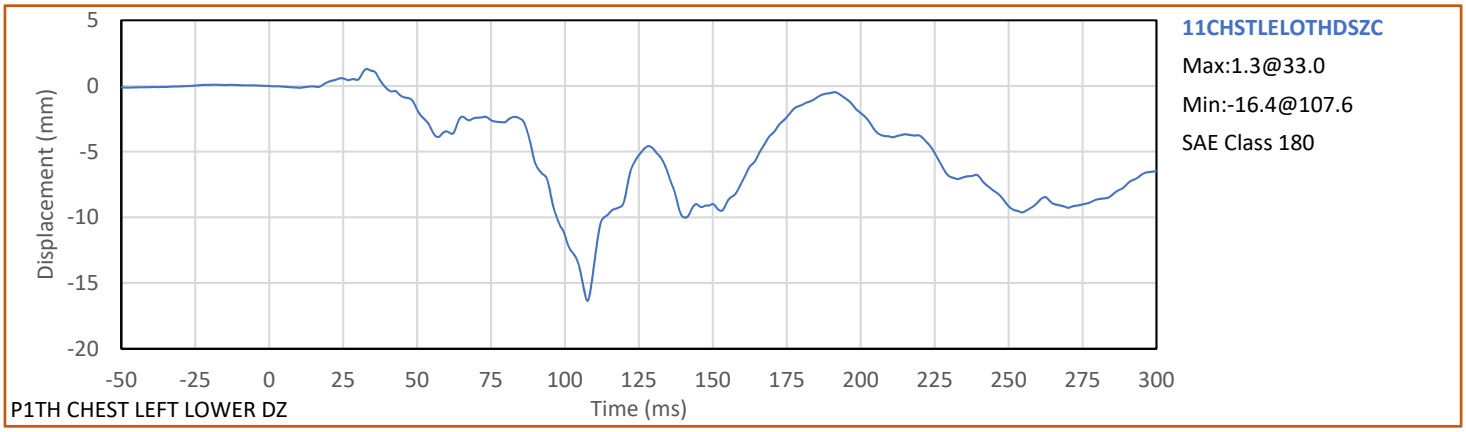

Displacement (mm)
Time (ms)
P1TH CHEST RIGHT UPPER DY
11CHSTRIUPTHDSYC
Max:12.3@82.7
Min:-3.3@120.5
SAE Class 180

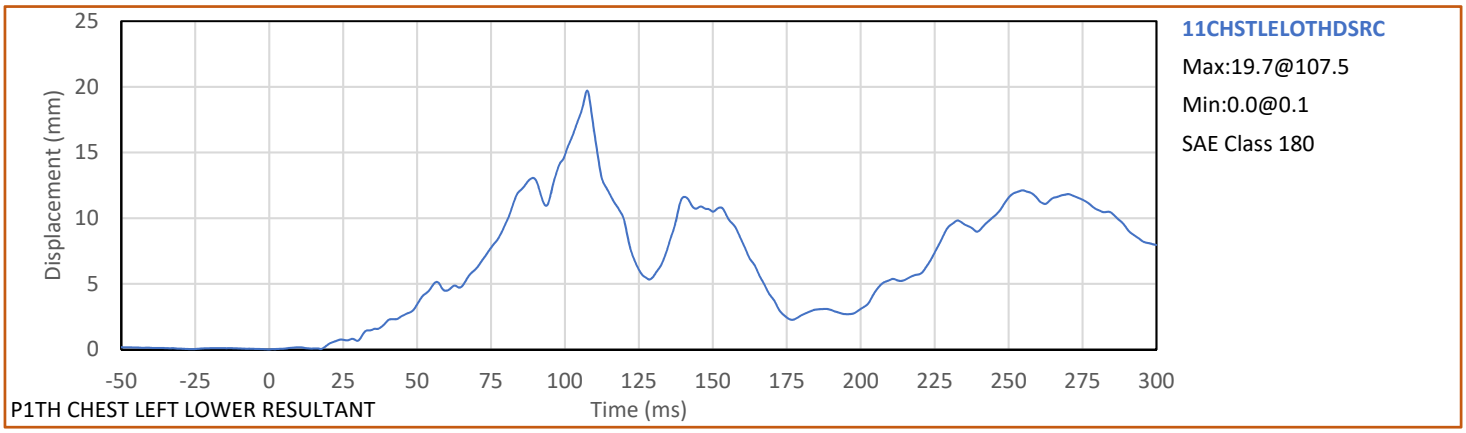

Displacement (mm)
Time (ms)
P1TH CHEST RIGHT UPPER DZ
11CHSTRIUPTHDSZC
Max:7.4@161.3
Min:-13.7@91.3
SAE Class 180

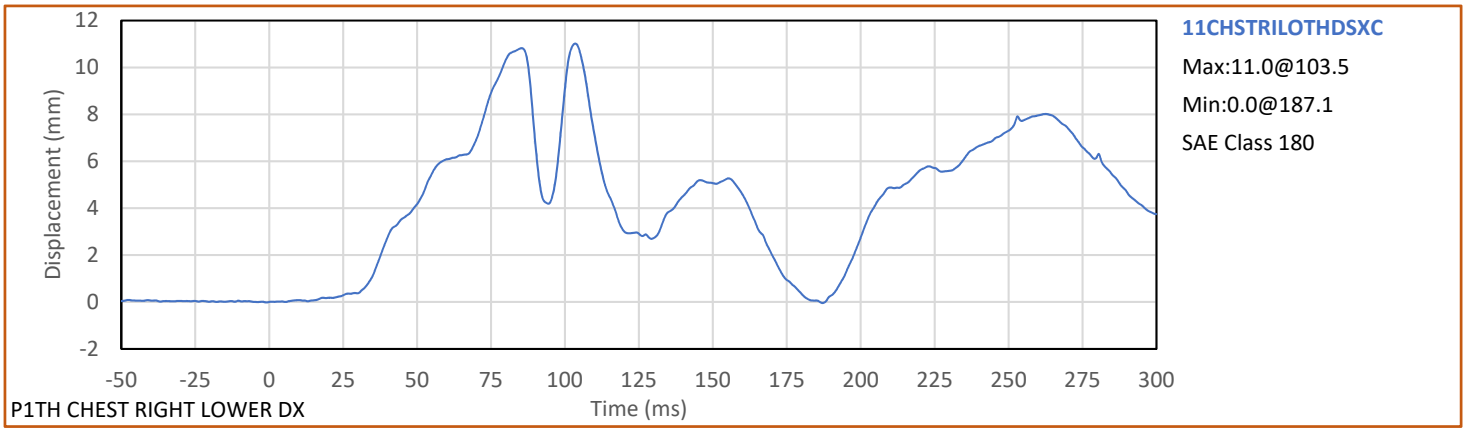

Displacement (mm)
Time (ms)
P1TH CHEST RIGHT UPPER RESULTANT
11CHSTRIUPTHDSRC
Max:29.7@107.8
Min:0.0@0.4
SAE Class 180

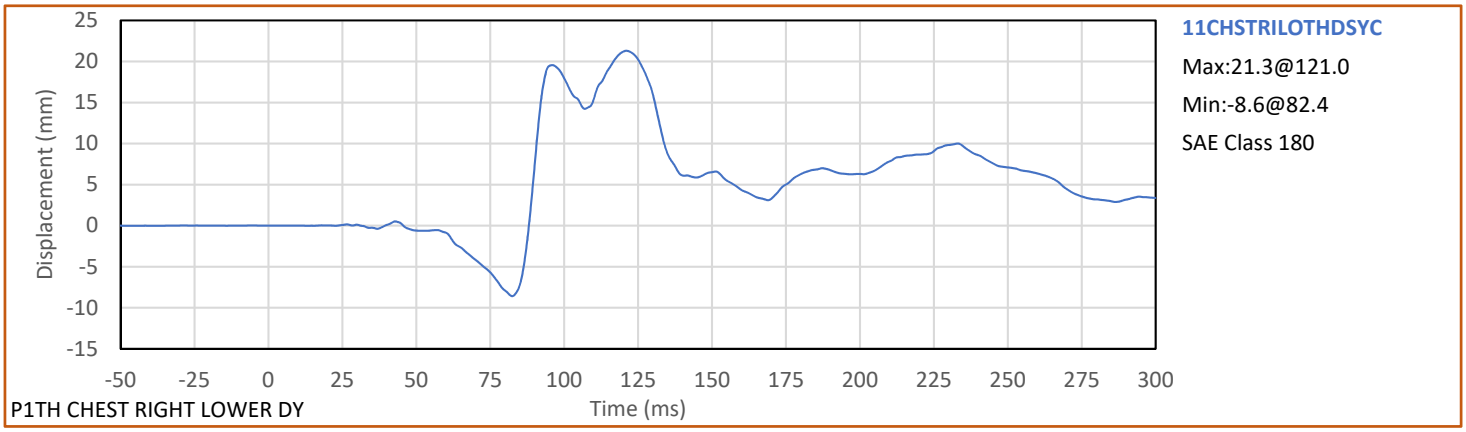

Displacement (mm)
Time (ms)
P1TH CHEST LEFT LOWER DX
11CHSTLELOTHDSXC
Max:7.4@257.5
Min:-1.3@188.6
SAE Class 180

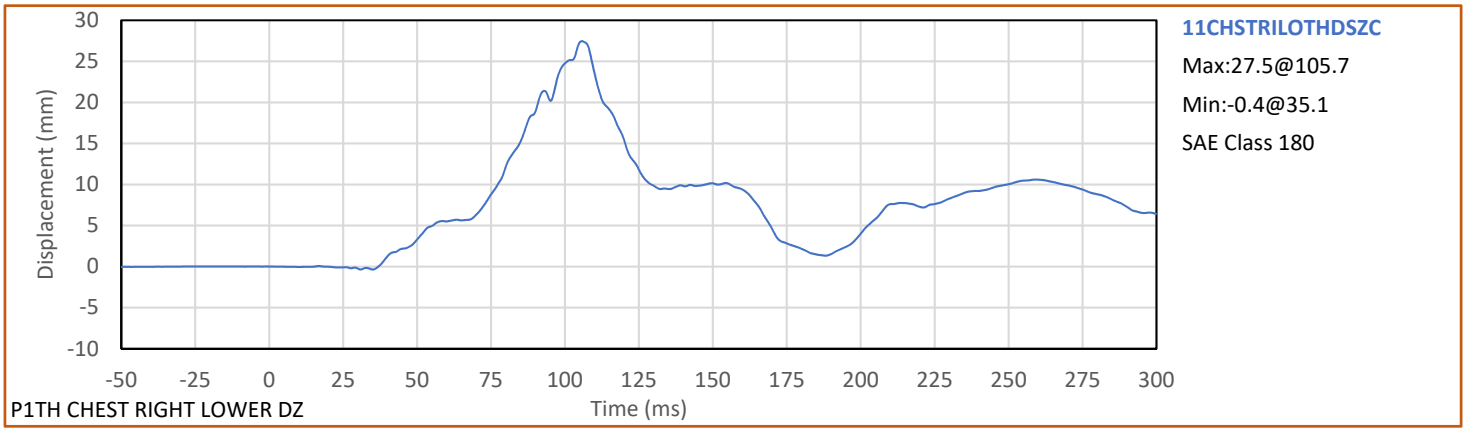

Displacement (mm)
Time (ms)
P1TH CHEST LEFT LOWER DY
11CHSTLELOTHDSYC
Max:5.0@232.4
Min:-12.3@87.7
SAE Class 180

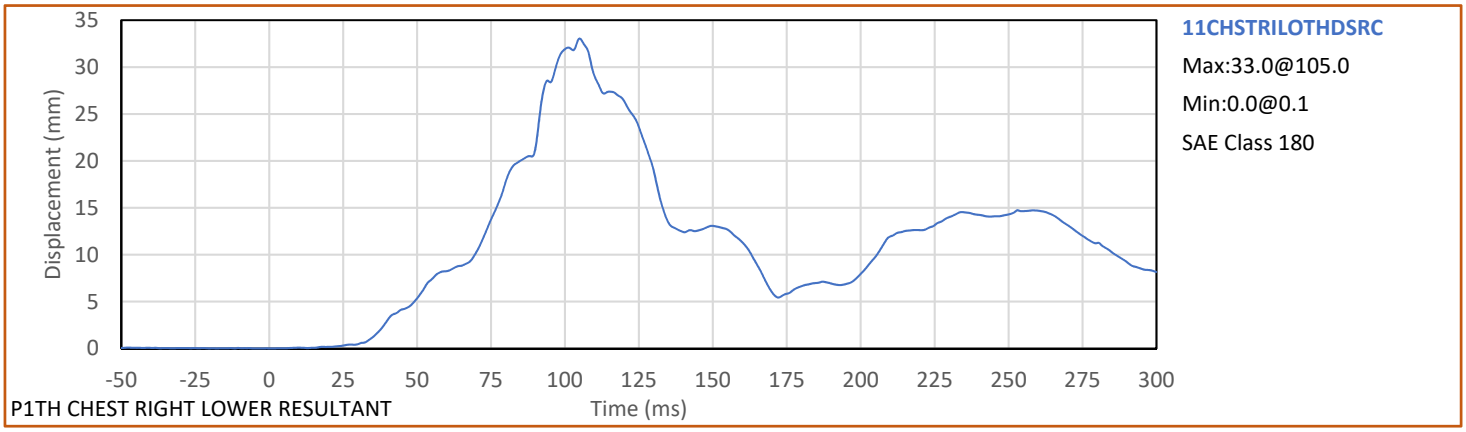

Displacement (mm)
Time (ms)
P1TH CHEST LEFT LOWER DZ
11CHSTLELOTHDSZC
Max:1.3@33.0
Min:-16.4@107.6
SAE Class 180

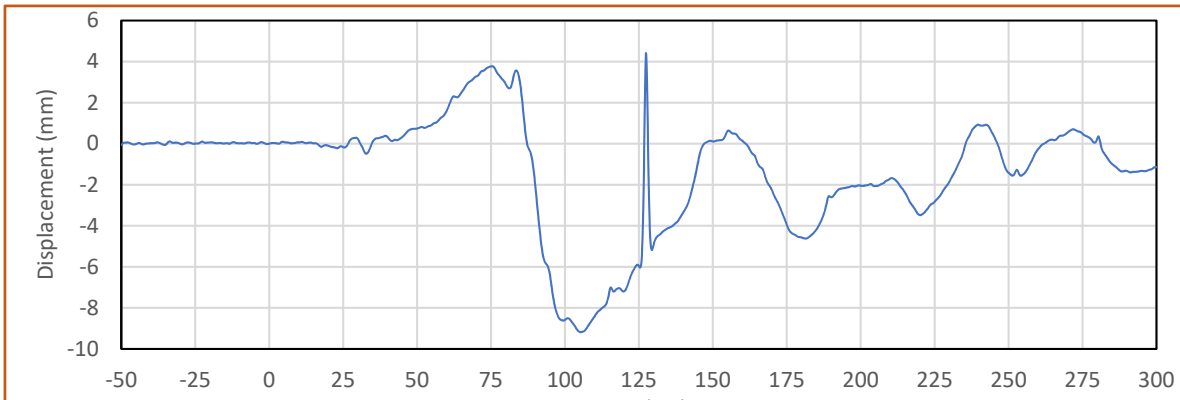

Displacement (mm)
Time (ms)
P1TH CHEST LEFT LOWER RESULTANT
11CHSTLELOTHDSRC
Max:19.7@107.5
Min:0.0@0.1
SAE Class 180


Displacement (mm)
Time (ms)
11CHSTRILOTHDSXC
Max:11.0@103.5
Min:0.0@187.1
SAE Class 180
P1TH CHEST RIGHT LOWER DX


Displacement (mm)
Time (ms)
11CHSTRILOTHDSYC
Max:21.3@121.0
Min:-8.6@82.4
SAE Class 180
P1TH CHEST RIGHT LOWER DY

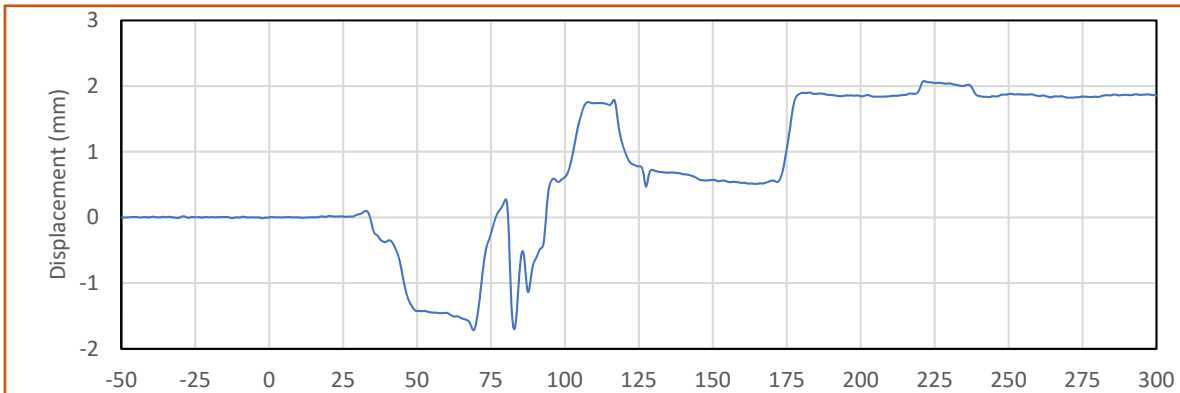

Displacement (mm)
Time (ms)
11CHSTRILOTHDSZC
Max:27.5@105.7
Min:-0.4@35.1
SAE Class 180
P1TH CHEST RIGHT LOWER DZ


Displacement (mm)
Time (ms)
11CHSTRILOTHDSRC
Max:33.0@105.0
Min:0.0@0.1
SAE Class 180
P1TH CHEST RIGHT LOWER RESULTANT



P1TH ABDOMEN LEFT LOWER DX

11ABDOLE00THDSXC
Max:4.4@127.4
Min:-9.2@105.3
SAE Class 180

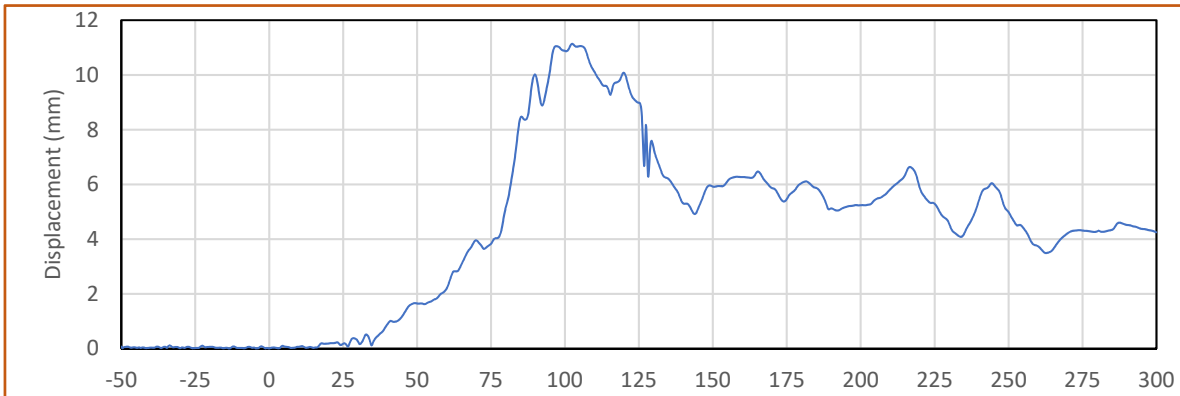


P1TH ABDOMEN LEFT LOWER DY

11ABDOLE00THDSYC
Max:2.1@221.4
Min:-1.7@69.1
SAE Class 180

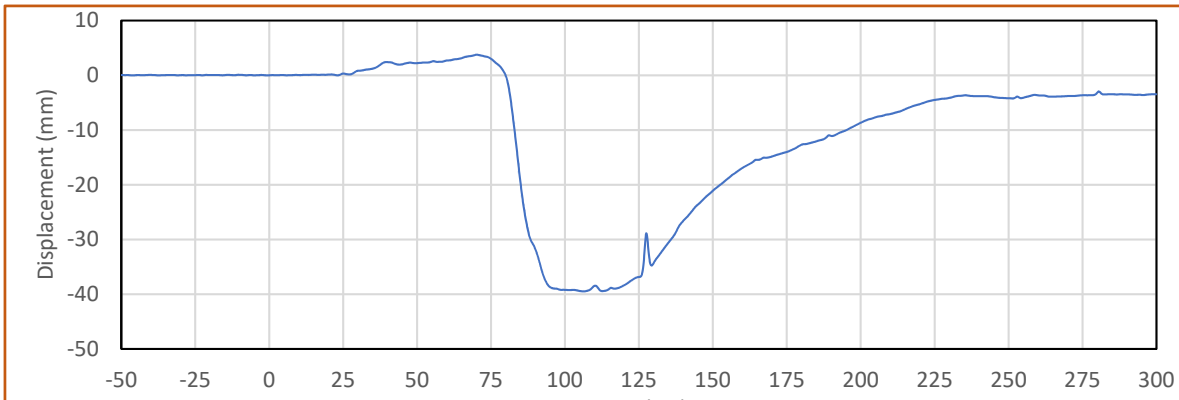
P1TH ABDOMEN LEFT LOWER DZ

11ABDOLE00THDSZC
Max:1.5@70.1
Min:-9.8@89.6
SAE Class 180



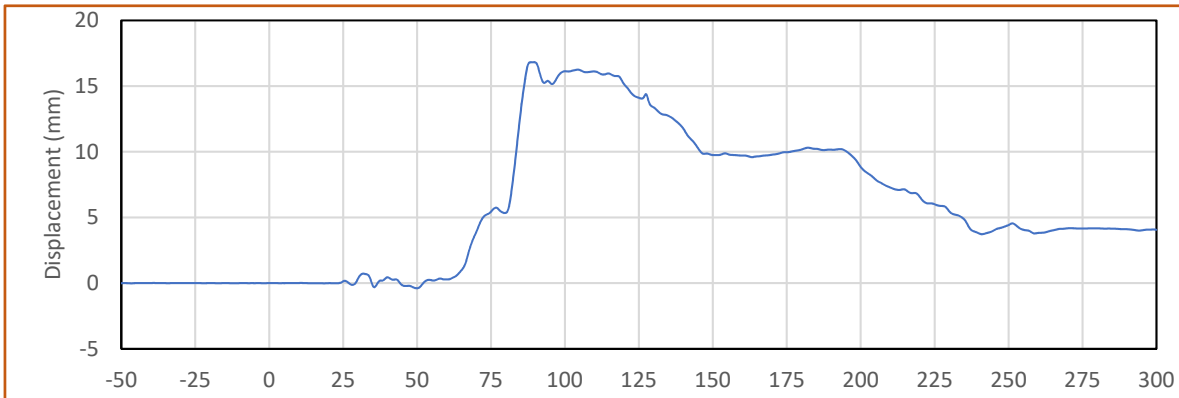
P1TH ABDOMEN LEFT LOWER RESULTANT

11ABDOLE00THDSRC
Max:11.1@102.4
Min:0.0@0.1
SAE Class 180



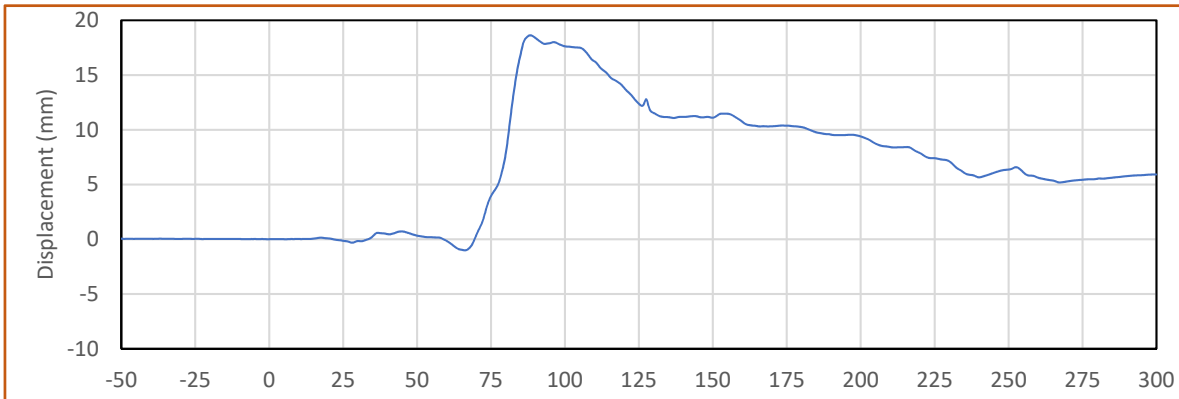
P1TH ABDOMEN RIGHT LOWER DX

11ABDORI00THDSXC
Max:3.8@70.2
Min:-39.5@106.3
SAE Class 180



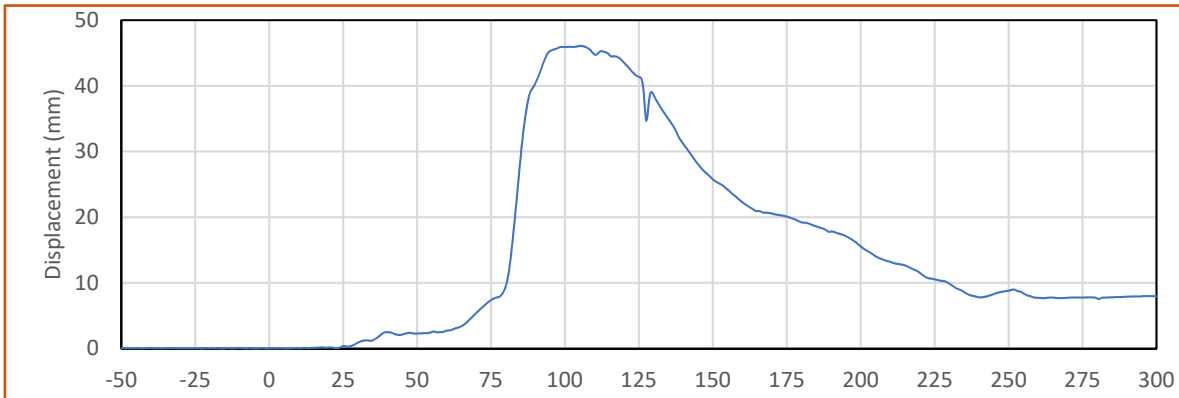
P1TH ABDOMEN RIGHT LOWER DY

11ABDORI00THDSYC
Max:16.8@89.6
Min:-0.4@49.9
SAE Class 180



P1TH ABDOMEN RIGHT LOWER DZ

11ABDORI00THDSZC
Max:18.6@88.3
Min:-1.0@66.2
SAE Class 180



P1TH ABDOMEN RIGHT LOWER RESULTANT

11ABDORI00THDSRC
Max:46.1@105.3
Min:0.0@6.2
SAE Class 180

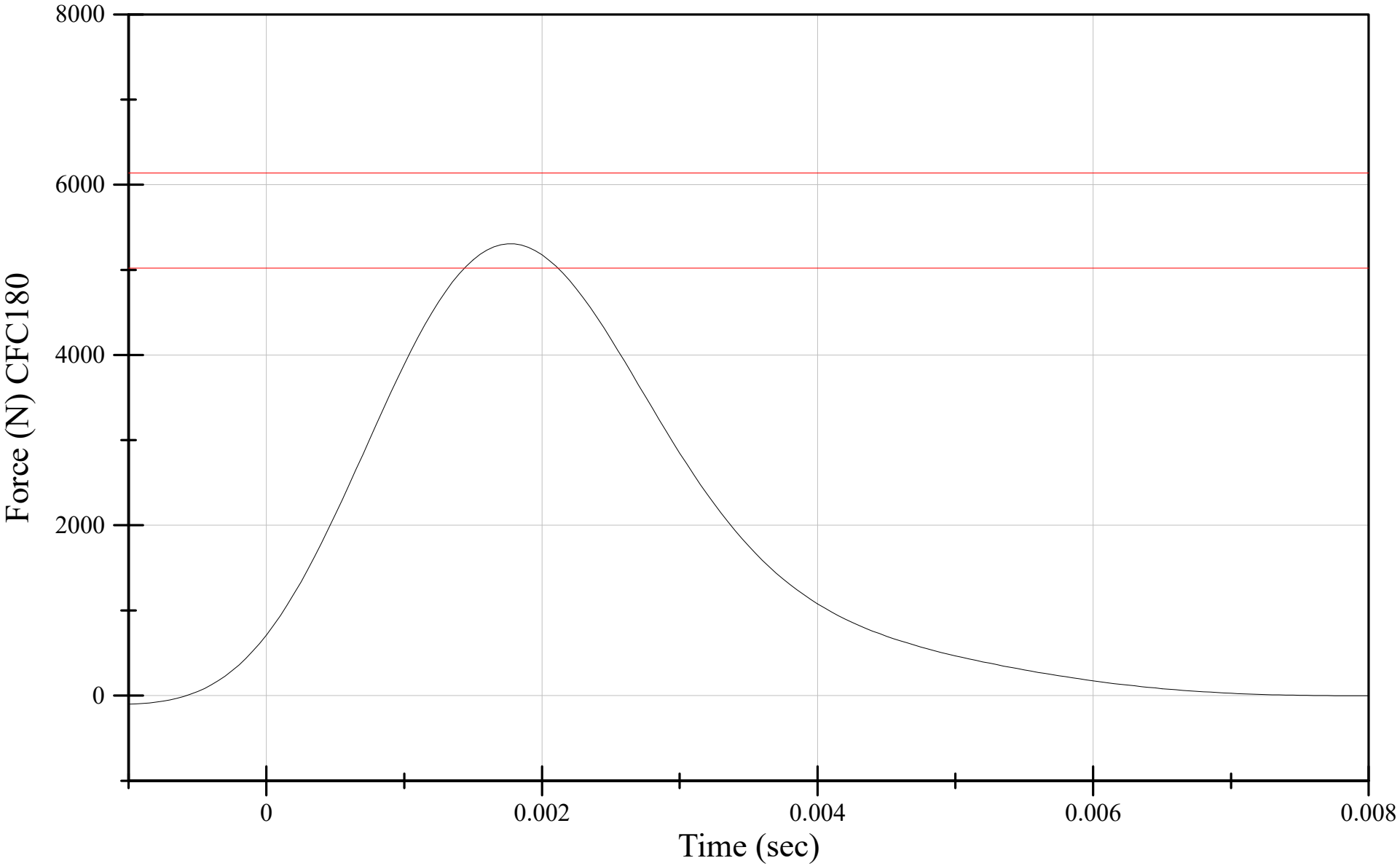
APPENDIX C
DUMMY CALIBRATION AND PERFORMANCE VERIFICATION DATA SHEETS

APPENDIX C
Pre-Test ATD Qualification and Performance Verification
THOR-50M 50th Percentile Male ATD, (Reduced Certification)
S/N: EG2595

Test Temperature: 21.0° C
Relative Humidity: 49%
Test Velocity: 1.97 m/s

THOR Head Impact Qualification
Probe Force
Serial Number: EG2595

Head skin:

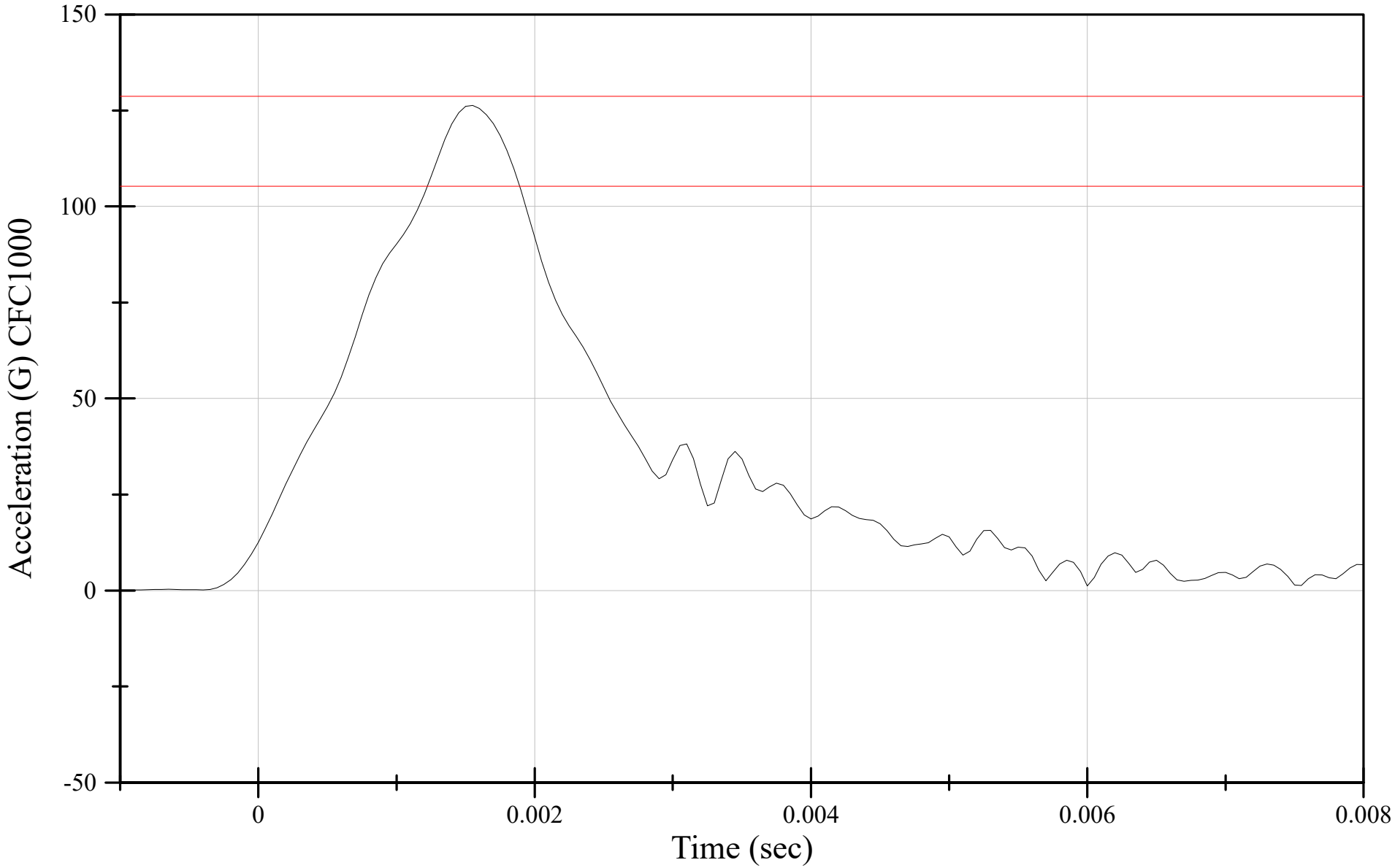


File Name: 200714-5 processed
07/14/2020 12:55:21.0000

Software Version: 2.7.1

Test Temperature: 21.0° C
Relative Humidity: 49%
Test Velocity: 1.97 m/s

THOR Head Impact Qualification
Head CG Resultant Acceleration
Serial Number: EG2595



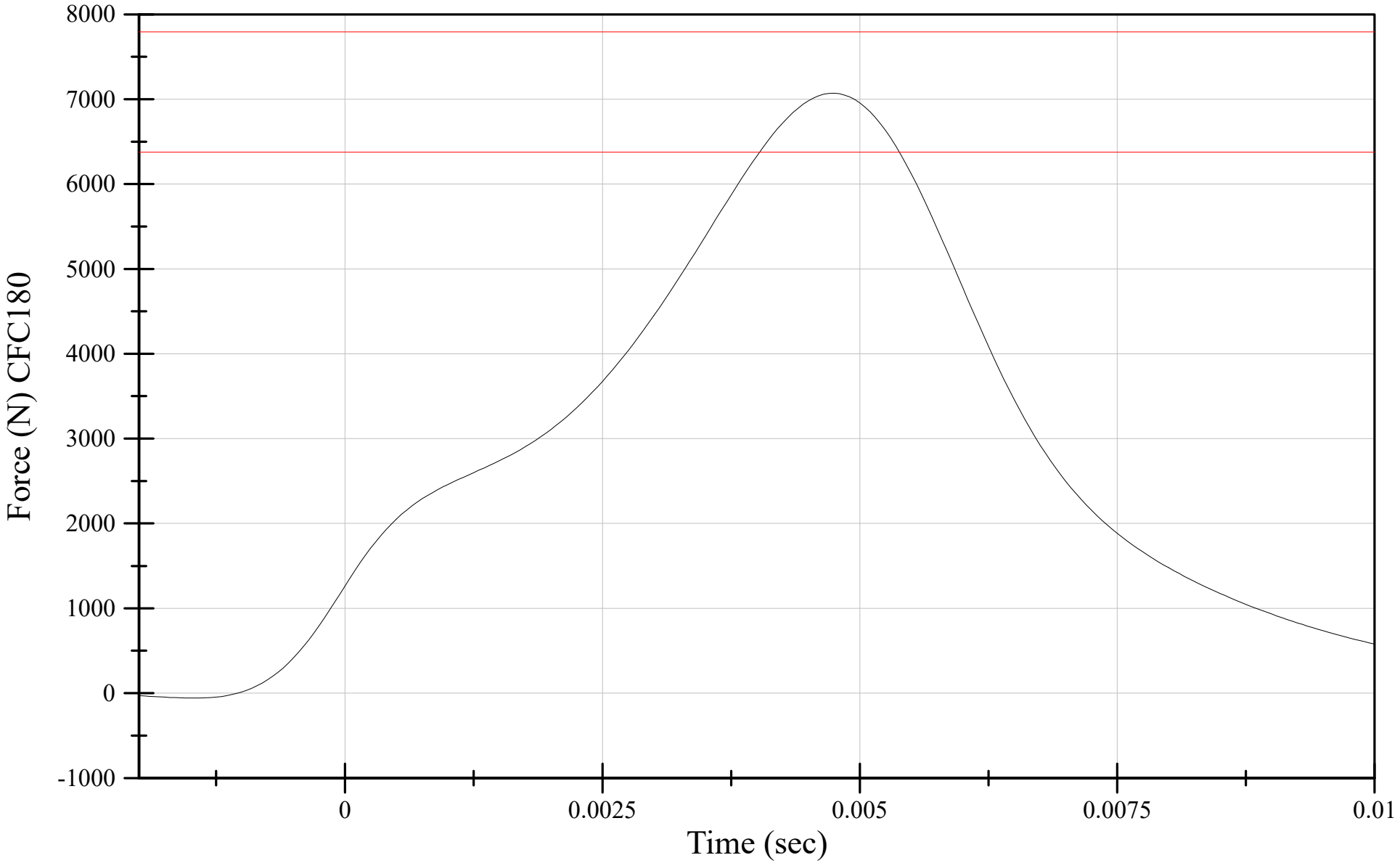
File Name: 200714-5 processed
07/14/2020 12:55:21.0000

Software Version: 2.7.1

Test Temperature: 20.7° C
Relative Humidity: 57.6%
Test Velocity: 6.77 m/s

THOR Face-Disk Qualification
Probe Force
Serial Number: EG2595

Head skin:
Face foam:

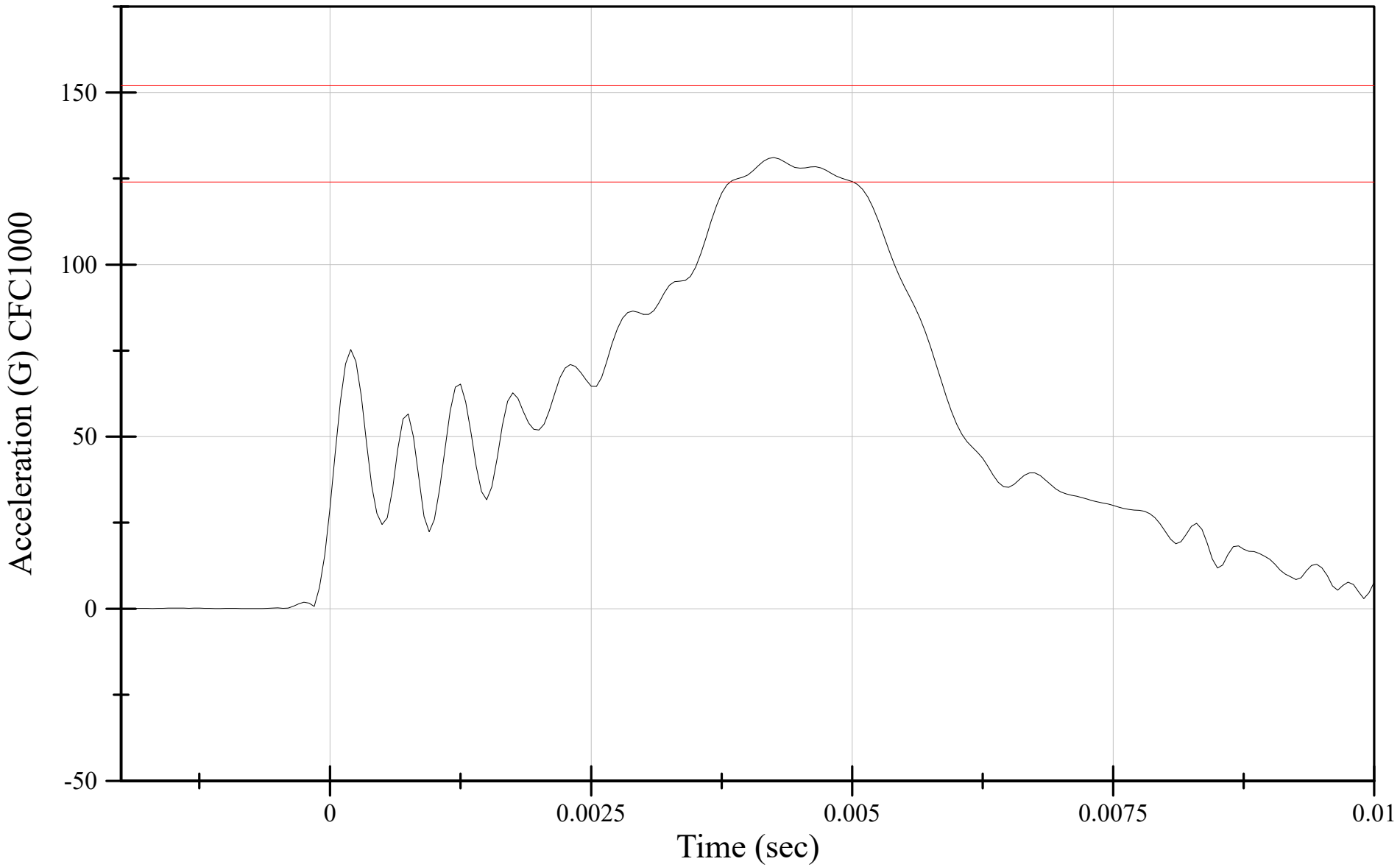


File Name: 200714-6 processed
07/14/2020 14:24:11.0000

Software Version: 2.7.1

Test Temperature: 20.7° C
Relative Humidity: 57.6%
Test Velocity: 6.77 m/s

THOR Face-Disk Qualification
Head CG Resultant Acceleration
Serial Number: EG2595

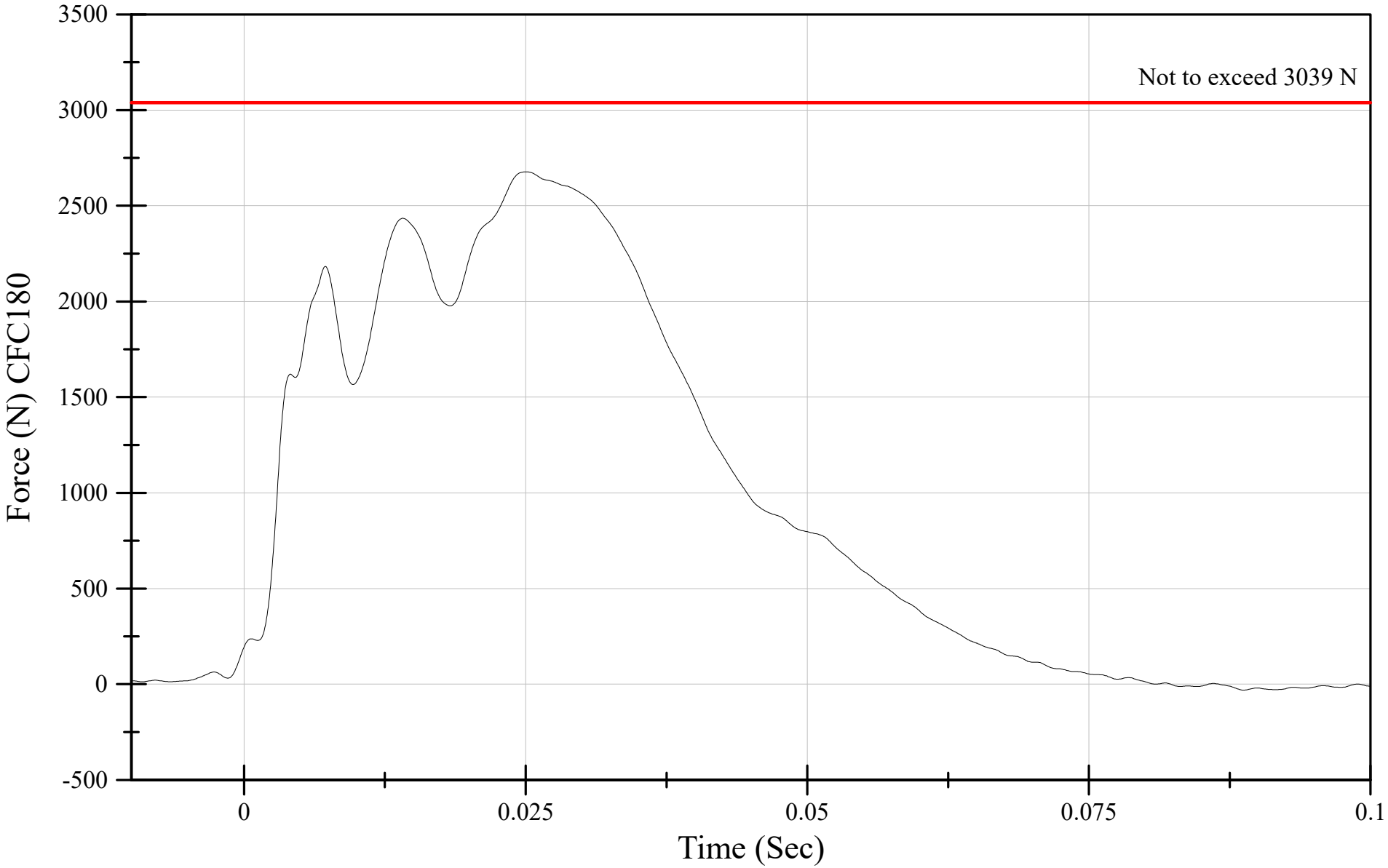


File Name: 200714-6 processed
07/14/2020 14:24:11.0000

Software Version: 2.7.1

Test Temperature: 21.5° C
Relative Humidity: 62.8%
Test Velocity: 4.31 m/s

THOR Upper Thorax Qualification
Probe Force
Serial Number: EG2595

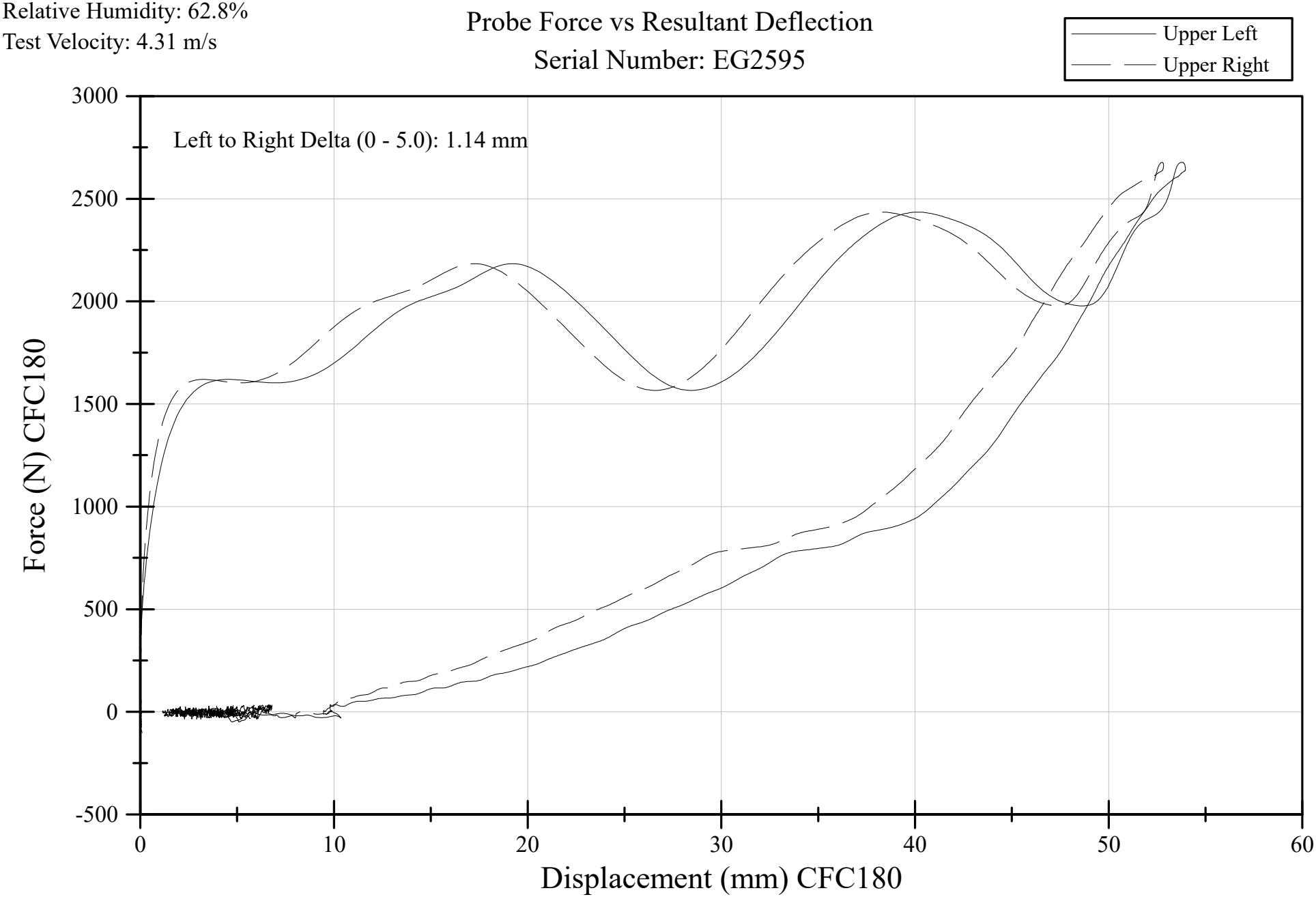


File Name: 200730-4 processed
07/30/2020 14:18:16.0000

Software Version: 2.7.1

Test Temperature: 21.5° C
Relative Humidity: 62.8%
Test Velocity: 4.31 m/s

THOR Upper Thorax Qualification
Probe Force vs Resultant Deflection
Serial Number: EG2595

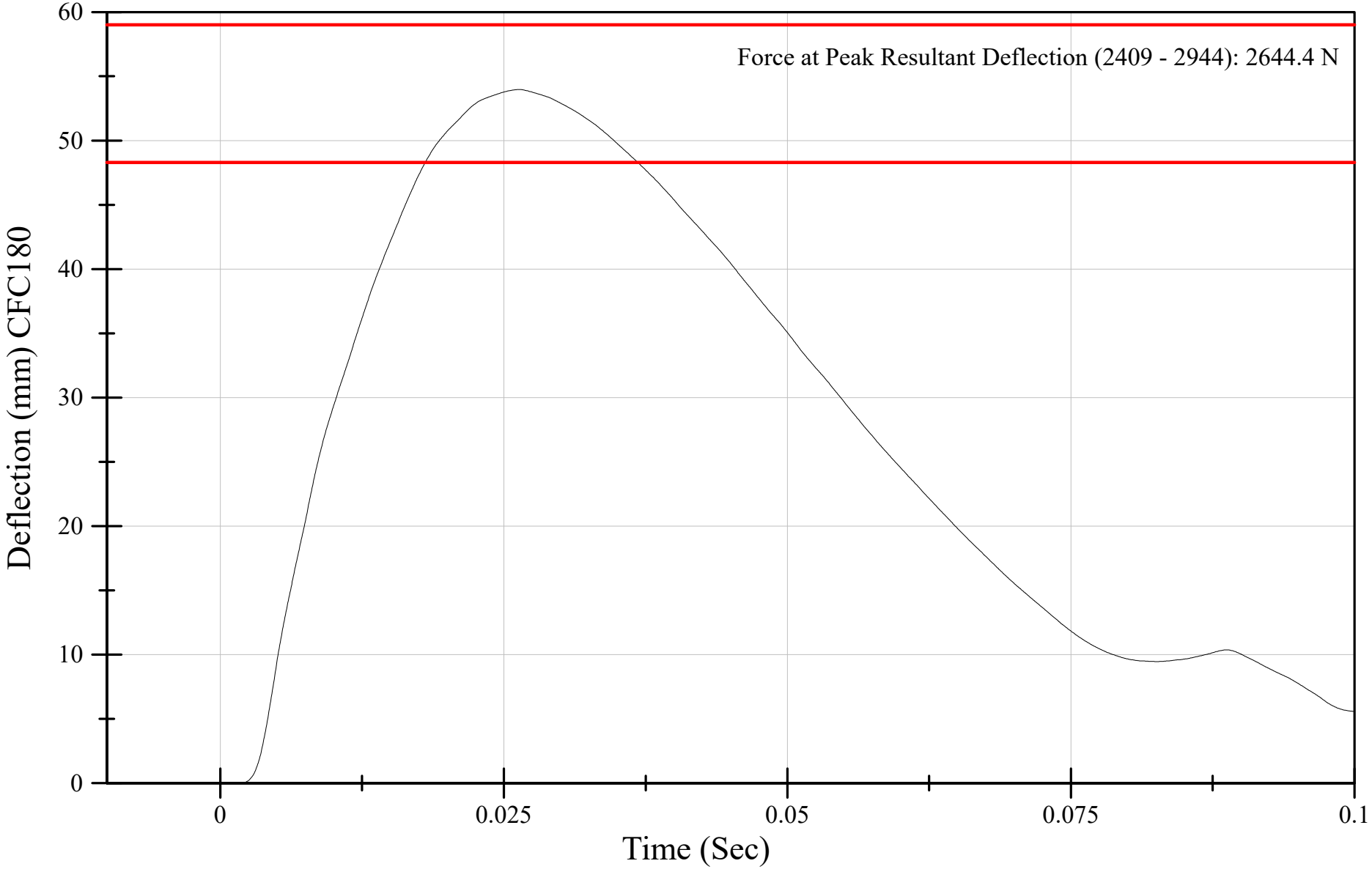


File Name: 200730-4 processed
07/30/2020 14:18:16.0000

Software Version: 2.7.1

Test Temperature: 21.5° C
Relative Humidity: 62.8%
Test Velocity: 4.31 m/s

THOR Upper Thorax Qualification
Left Resultant Deflection
Serial Number: EG2595

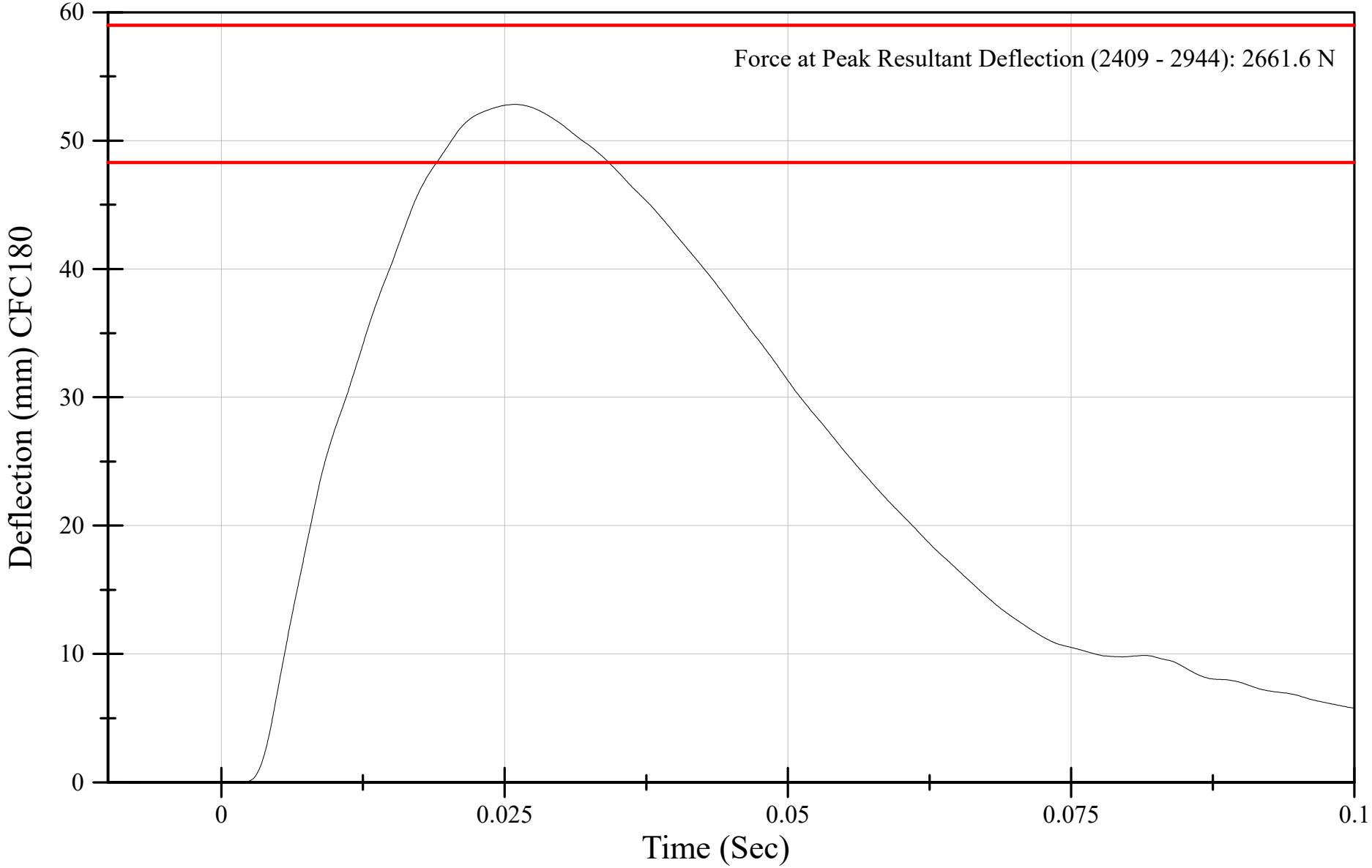


File Name: 200730-4 processed
07/30/2020 14:18:16.0000

Software Version: 2.7.1

Test Temperature: 21.5° C
Relative Humidity: 62.8%
Test Velocity: 4.31 m/s

THOR Upper Thorax Qualification
Right Resultant Deflection
Serial Number: EG2595

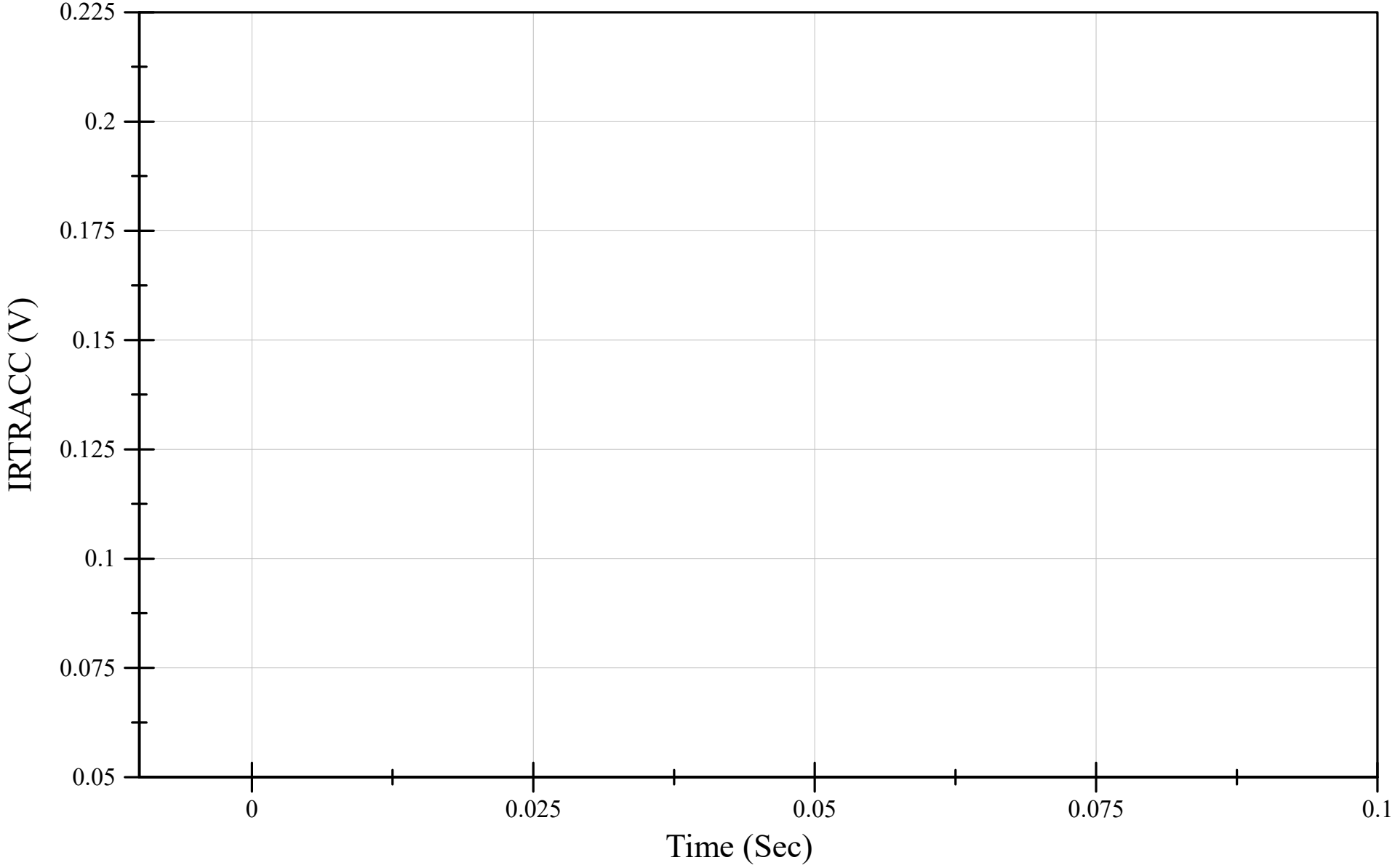


File Name: 200730-4 processed
07/30/2020 14:18:16.0000

Software Version: 2.7.1

Test Temperature: 21.5° C
Relative Humidity: 62.8%
Test Velocity: 4.31 m/s

THOR Upper Thorax Qualification
IRTRACC Voltage
Serial Number: EG2595

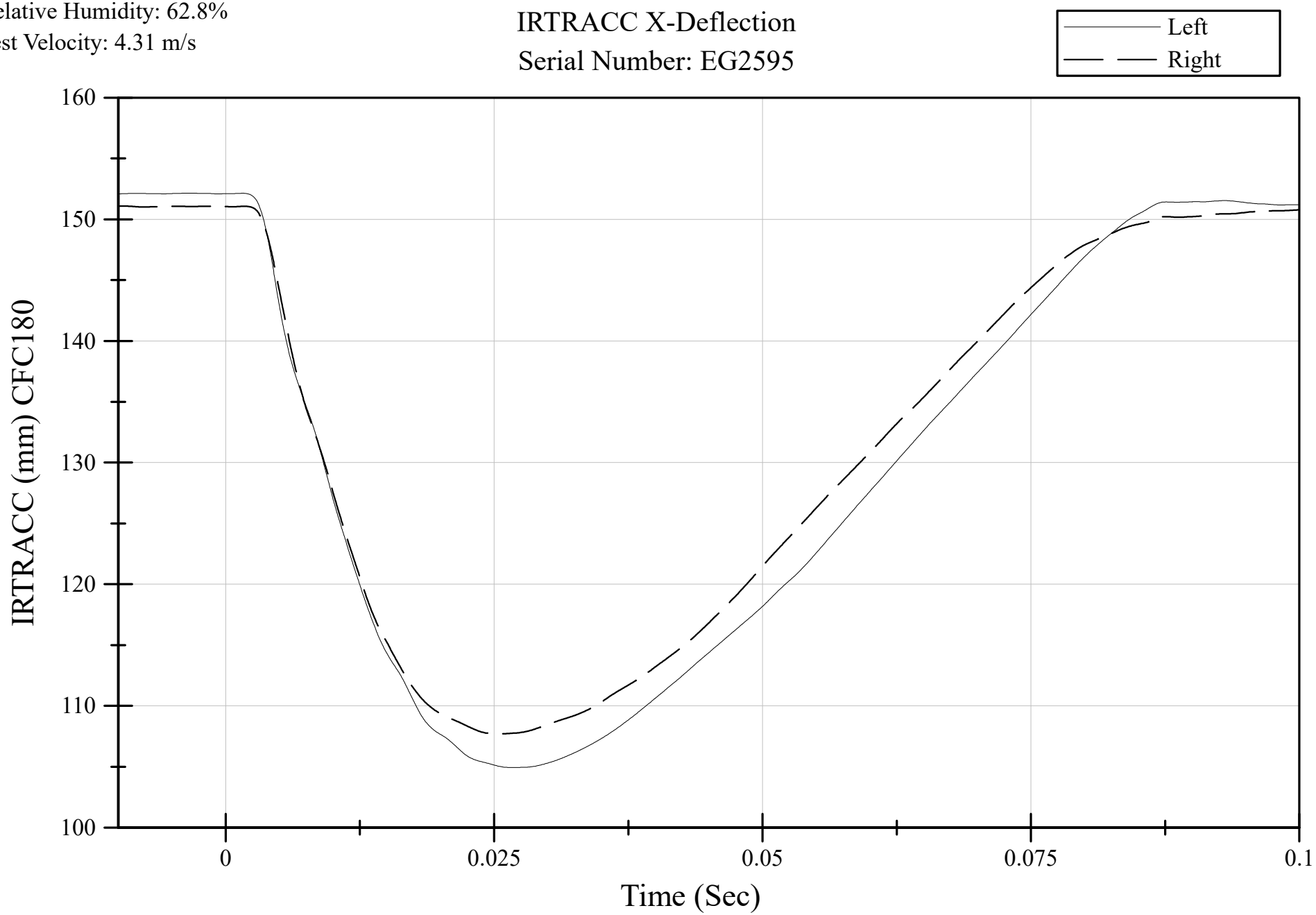


File Name: 200730-4 processed
07/30/2020 14:18:16.0000

Software Version: 2.7.1

Test Temperature: 21.5° C
Relative Humidity: 62.8%
Test Velocity: 4.31 m/s

THOR Upper Thorax Qualification
IRTRACC X-Deflection
Serial Number: EG2595

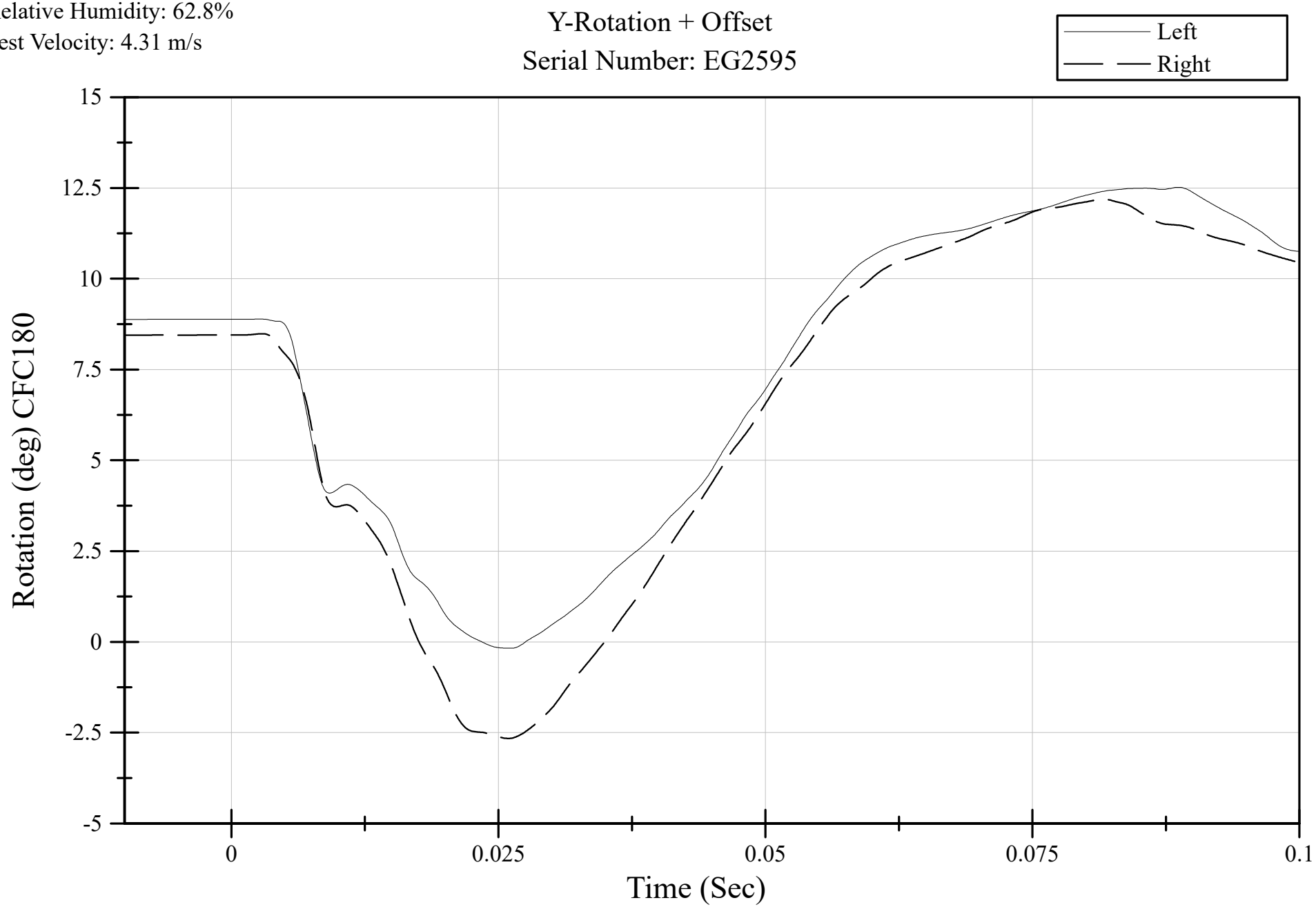


File Name: 200730-4 processed
07/30/2020 14:18:16.0000

Software Version: 2.7.1

Test Temperature: 21.5° C
Relative Humidity: 62.8%
Test Velocity: 4.31 m/s

THOR Upper Thorax Qualification
Y-Rotation + Offset
Serial Number: EG2595

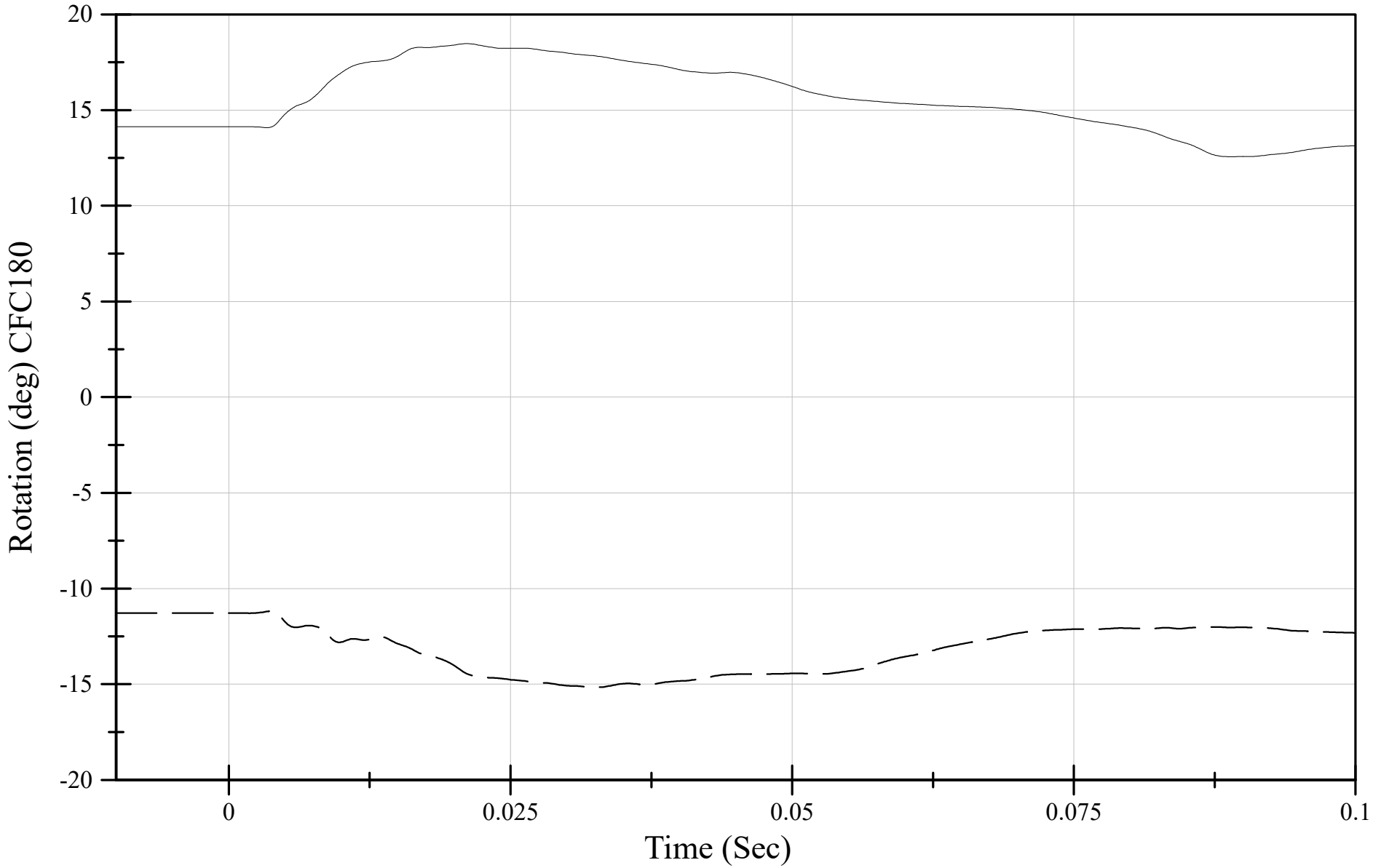


File Name: 200730-4 processed
07/30/2020 14:18:16.0000

Software Version: 2.7.1

Test Temperature: 21.5° C
Relative Humidity: 62.8%
Test Velocity: 4.31 m/s

THOR Upper Thorax Qualification
Z-Rotation + Offset
Serial Number: EG2595



File Name: 200730-4 processed
07/30/2020 14:18:16.0000

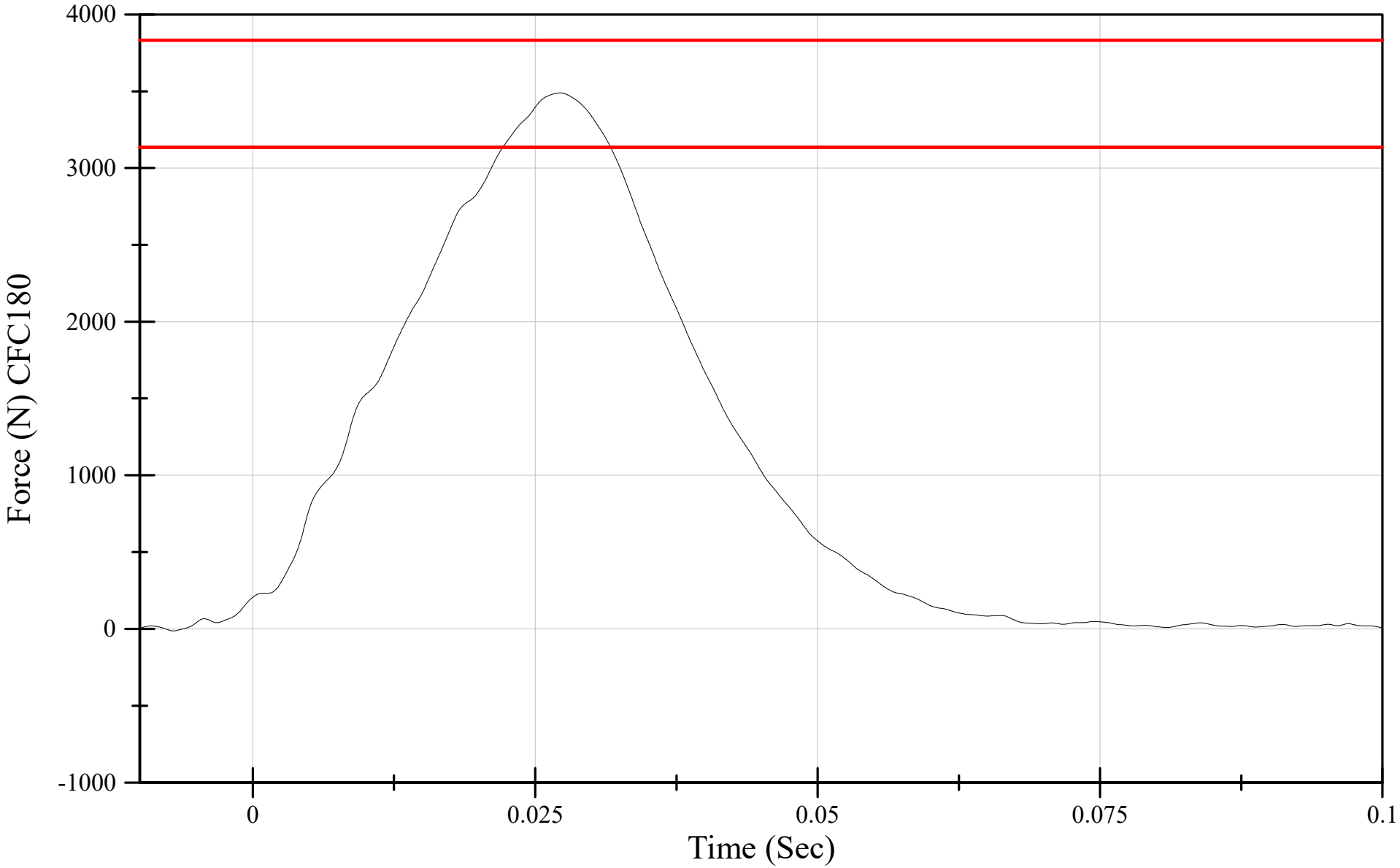
Software Version: 2.7.1

Test Temperature: 20.8° C
Relative Humidity: 51%
Test Velocity: 4.32 m/s

THOR Lower Left Thorax Qualification

Probe Force

Serial Number: EG2595

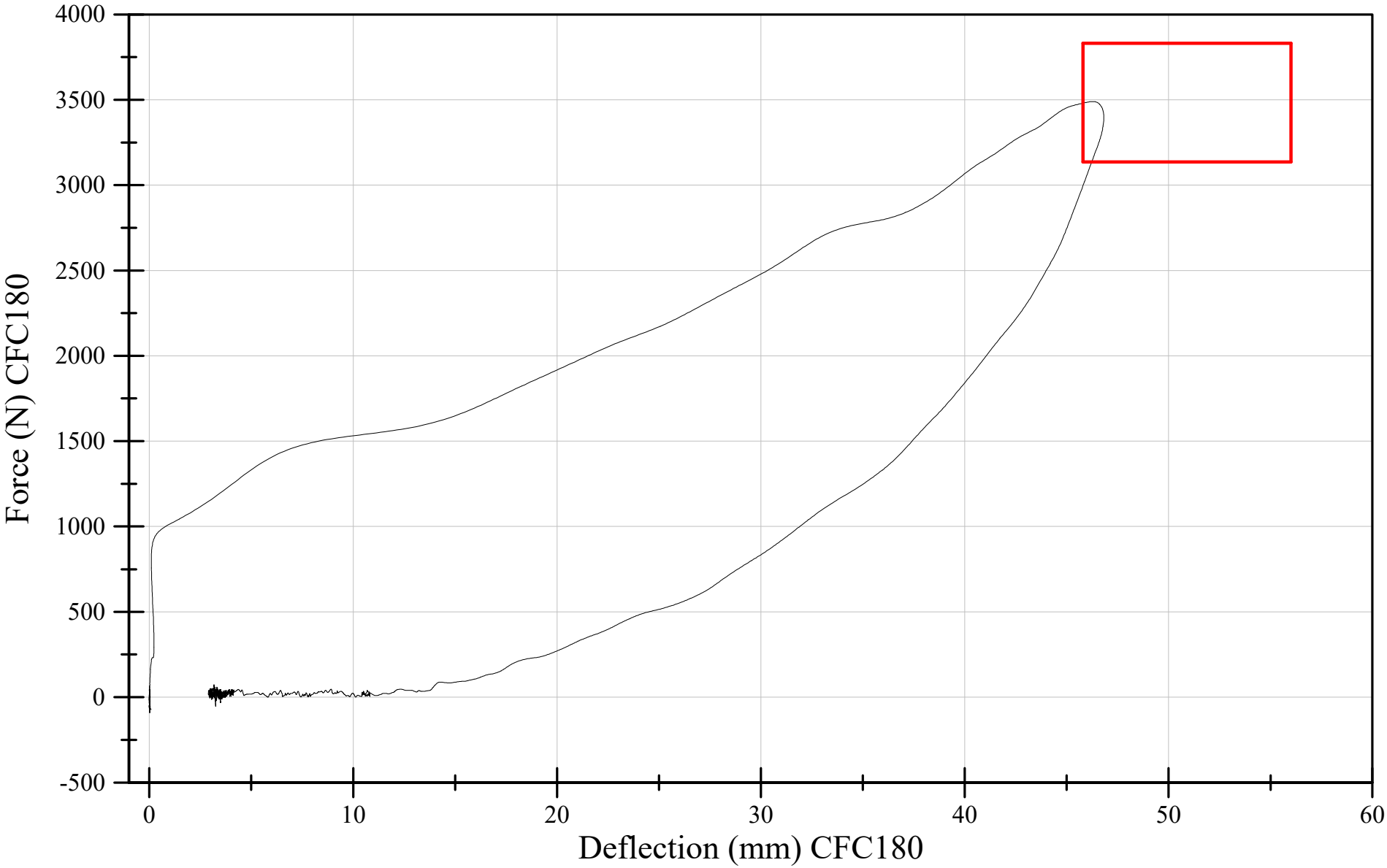


File Name: 200714-9 processed
07/14/2020 16:20:31.0000

Software Version: 2.7.1

Test Temperature: 20.8° C
Relative Humidity: 51%
Test Velocity: 4.32 m/s

THOR Lower Left Thorax Qualification
Probe Force vs Left Resultant Deflection
Serial Number: EG2595

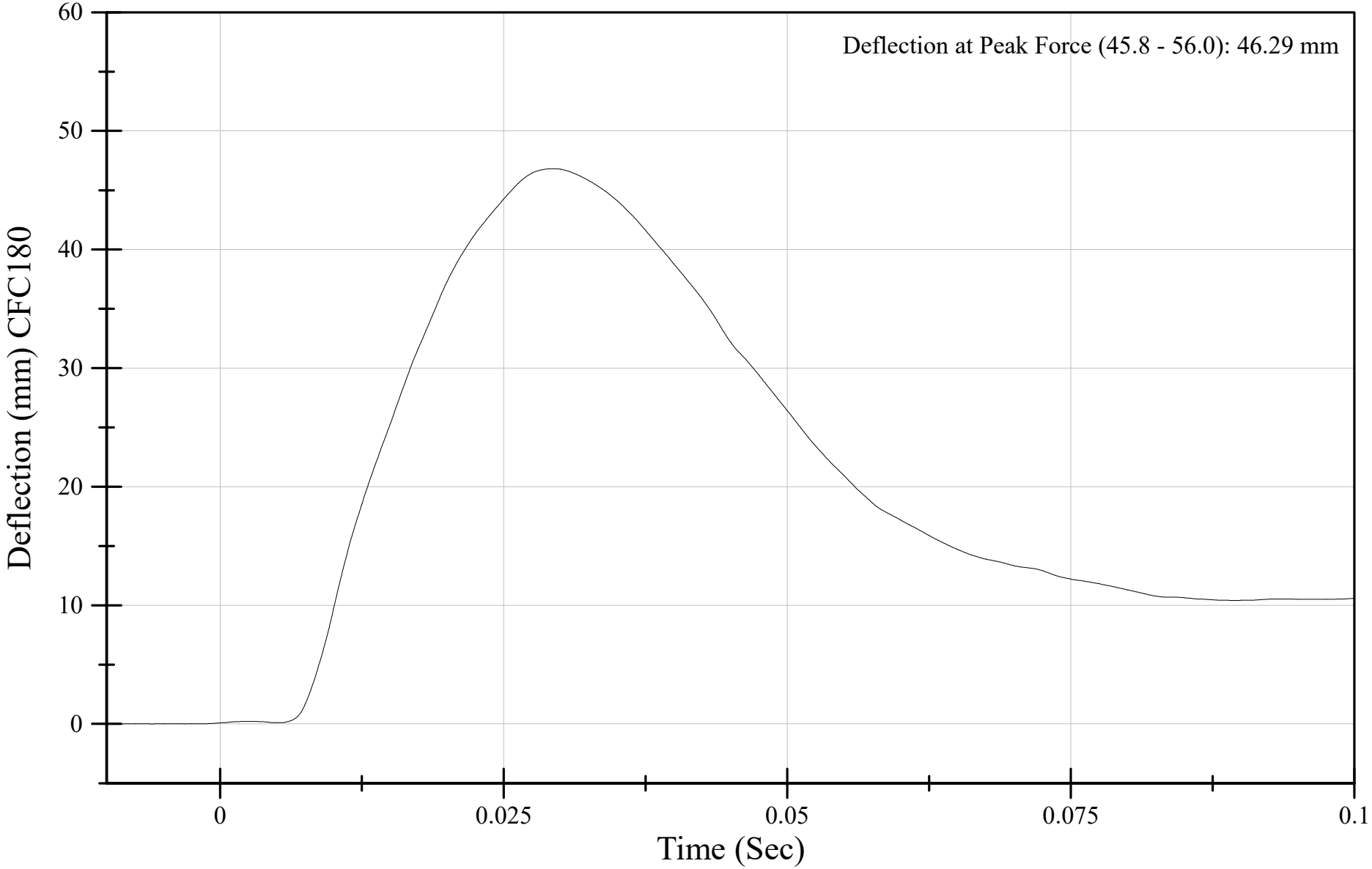


File Name: 200714-9 processed
07/14/2020 16:20:31.0000

Software Version: 2.7.1

Test Temperature: 20.8° C
Relative Humidity: 51%
Test Velocity: 4.32 m/s

THOR Lower Left Thorax Qualification
Left Resultant Deflection
Serial Number: EG2595



File Name: 200714-9 processed
07/14/2020 16:20:31.0000

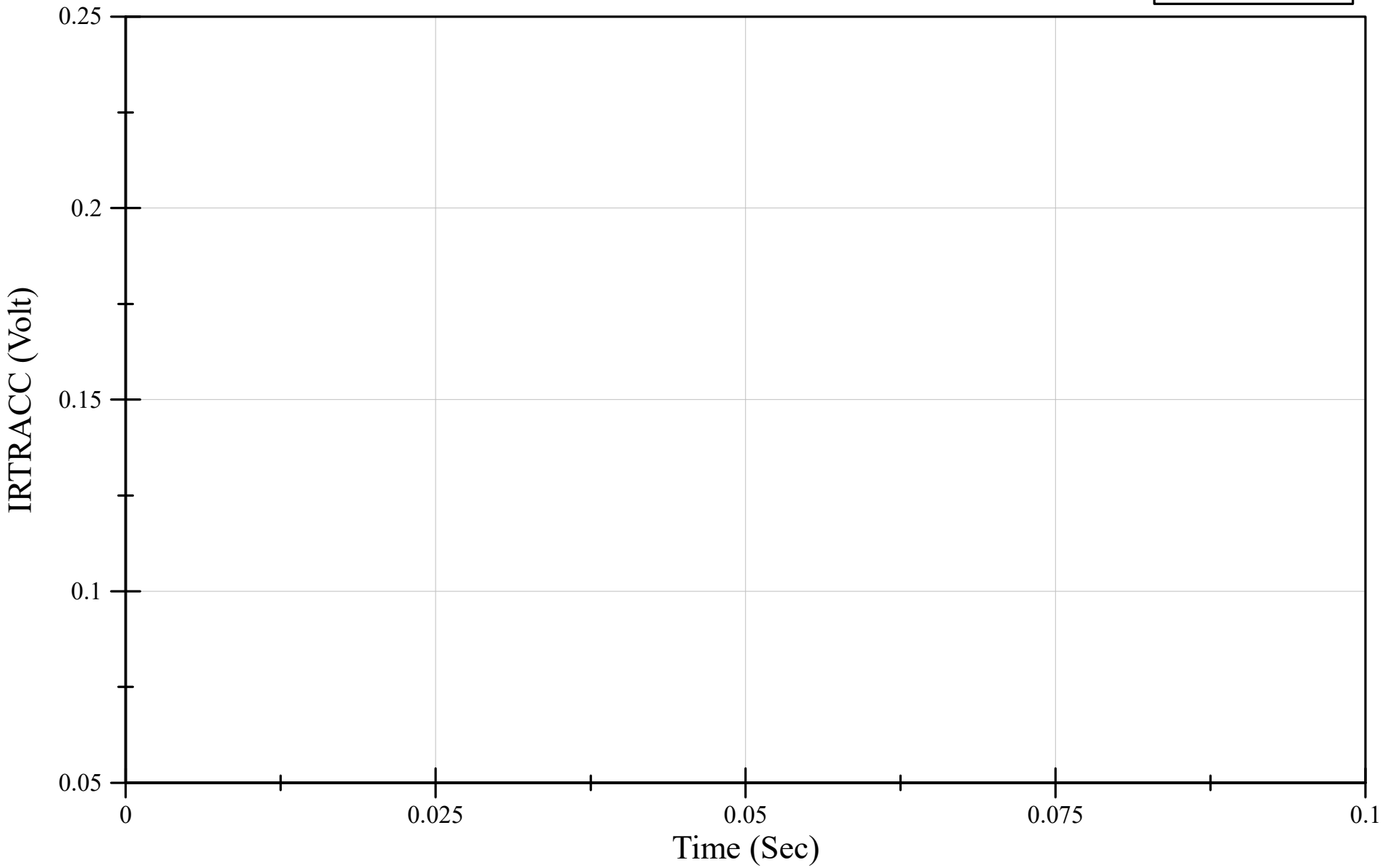
Software Version: 2.7.1

Test Temperature: 20.8° C
Relative Humidity: 51%
Test Velocity: 4.32 m/s

THOR Lower Left Thorax Qualification

IRTRACC Voltage

Serial Number: EG2595

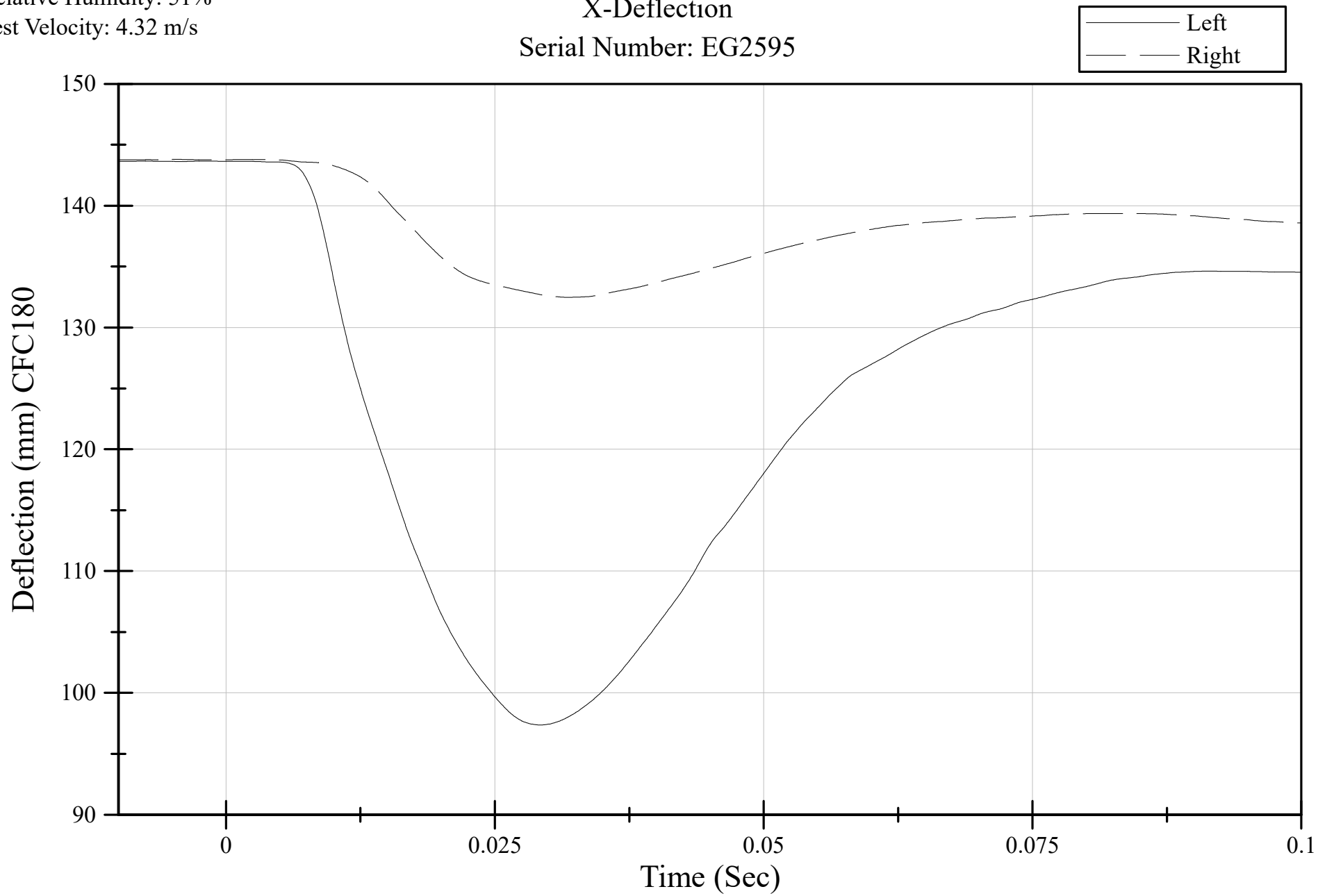


File Name: 200714-9 processed
07/14/2020 16:20:31.0000

Software Version: 2.7.1

Test Temperature: 20.8° C
Relative Humidity: 51%
Test Velocity: 4.32 m/s

THOR Lower Left Thorax Qualification
X-Deflection
Serial Number: EG2595



File Name: 200714-9 processed
07/14/2020 16:20:31.0000

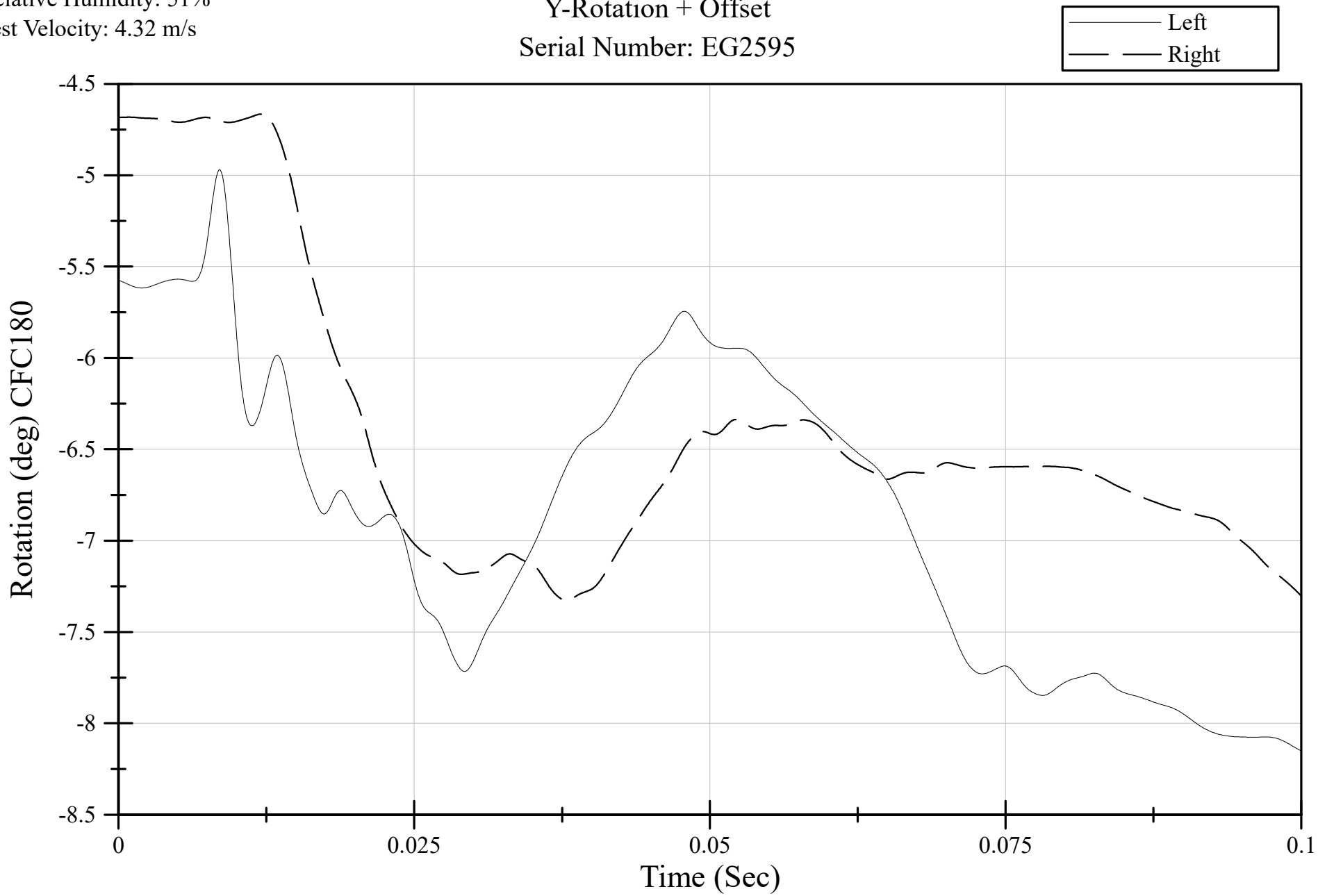
Software Version: 2.7.1

Test Temperature: 20.8° C
Relative Humidity: 51%
Test Velocity: 4.32 m/s

THOR Lower Left Thorax Qualification

Y-Rotation + Offset

Serial Number: EG2595

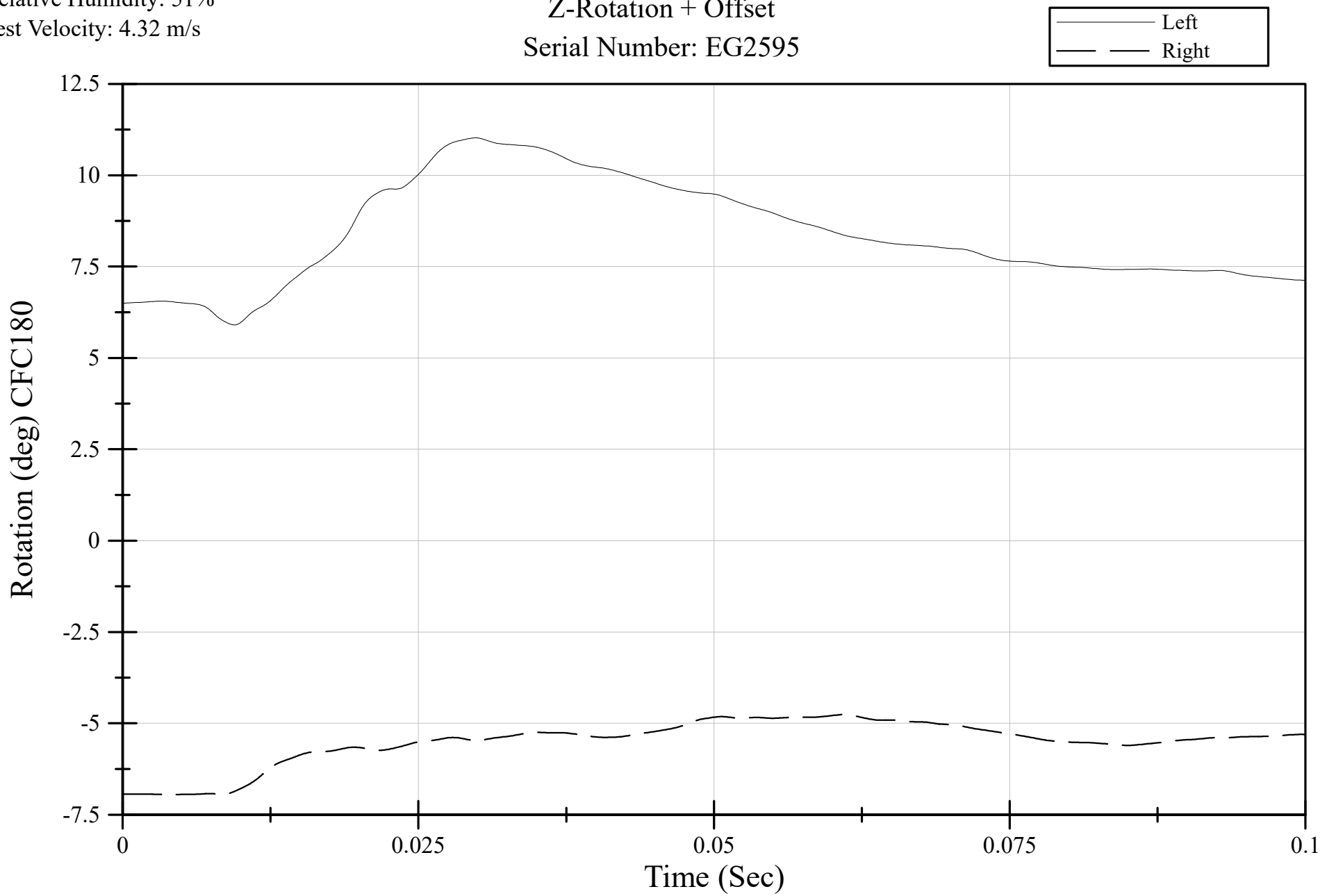


File Name: 200714-9 processed
07/14/2020 16:20:31.0000

Software Version: 2.7.1

Test Temperature: 20.8° C
Relative Humidity: 51%
Test Velocity: 4.32 m/s

THOR Lower Left Thorax Qualification
Z-Rotation + Offset
Serial Number: EG2595

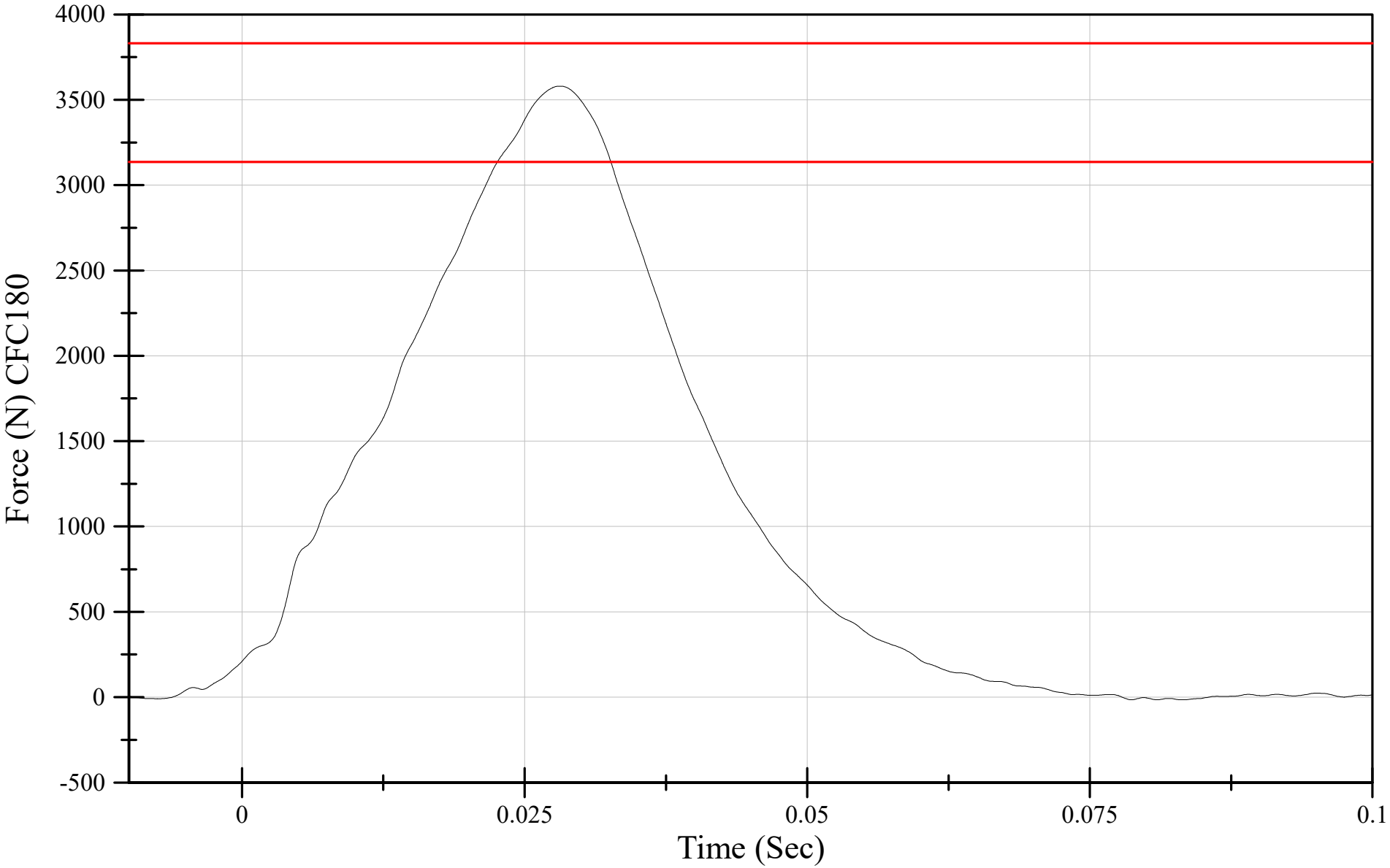


File Name: 200714-9 processed
07/14/2020 16:20:31.0000

Software Version: 2.7.1

Test Temperature: 21.6° C
Relative Humidity: 60.1%
Test Velocity: 4.31 m/s

THOR Lower Right Thorax Qualification
Probe Force
Serial Number: EG2595

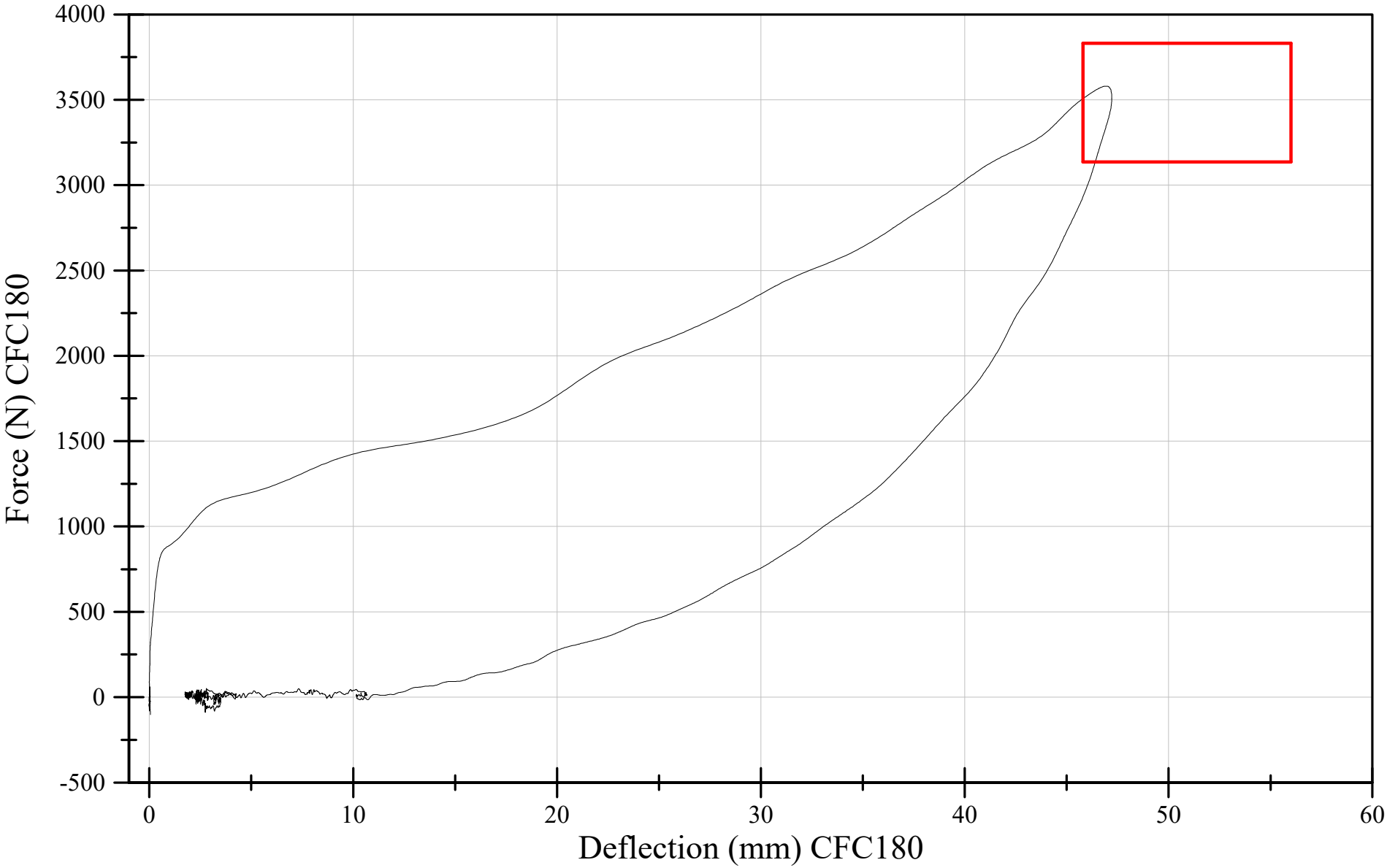


File Name: 200715-2 processed
07/15/2020 08:20:24.0000

Software Version: 2.7.1

Test Temperature: 21.6 degrees
Relative Humidity: 60.1%
Test Velocity: 4.31 m/s

THOR Lower Right Thorax Qualification
Probe Force vs Right Resultant Deflection
Serial Number: EG2595

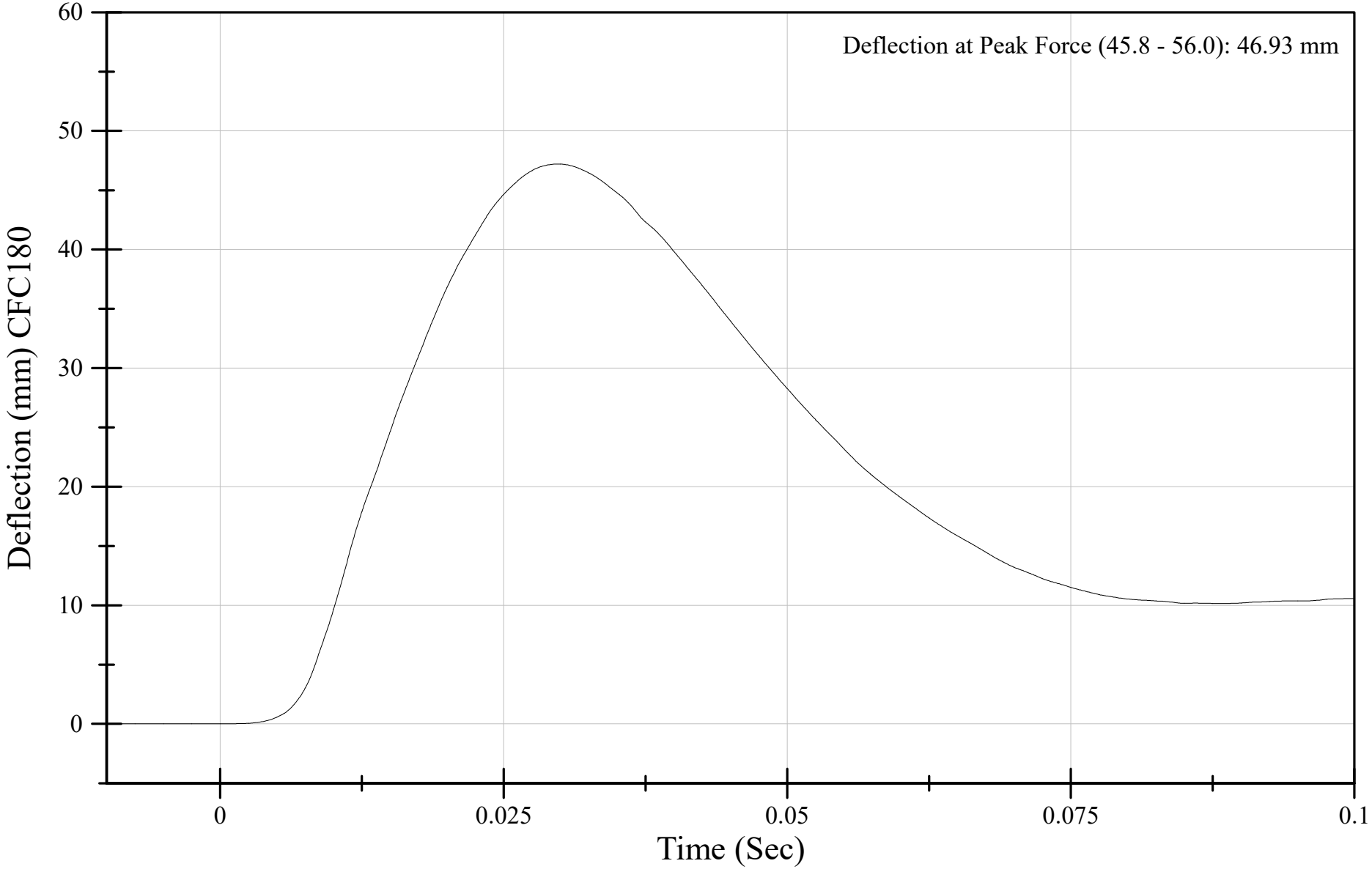


File Name: 200715-2 processed
07/15/2020 08:20:24.0000

Software Version: 2.7.1

Test Temperature: 21.6° C
Relative Humidity: 60.1%
Test Velocity: 4.31 m/s

THOR Lower Right Thorax Qualification
Right Resultant Deflection
Serial Number: EG2595



File Name: 200715-2 processed
07/15/2020 08:20:24.0000

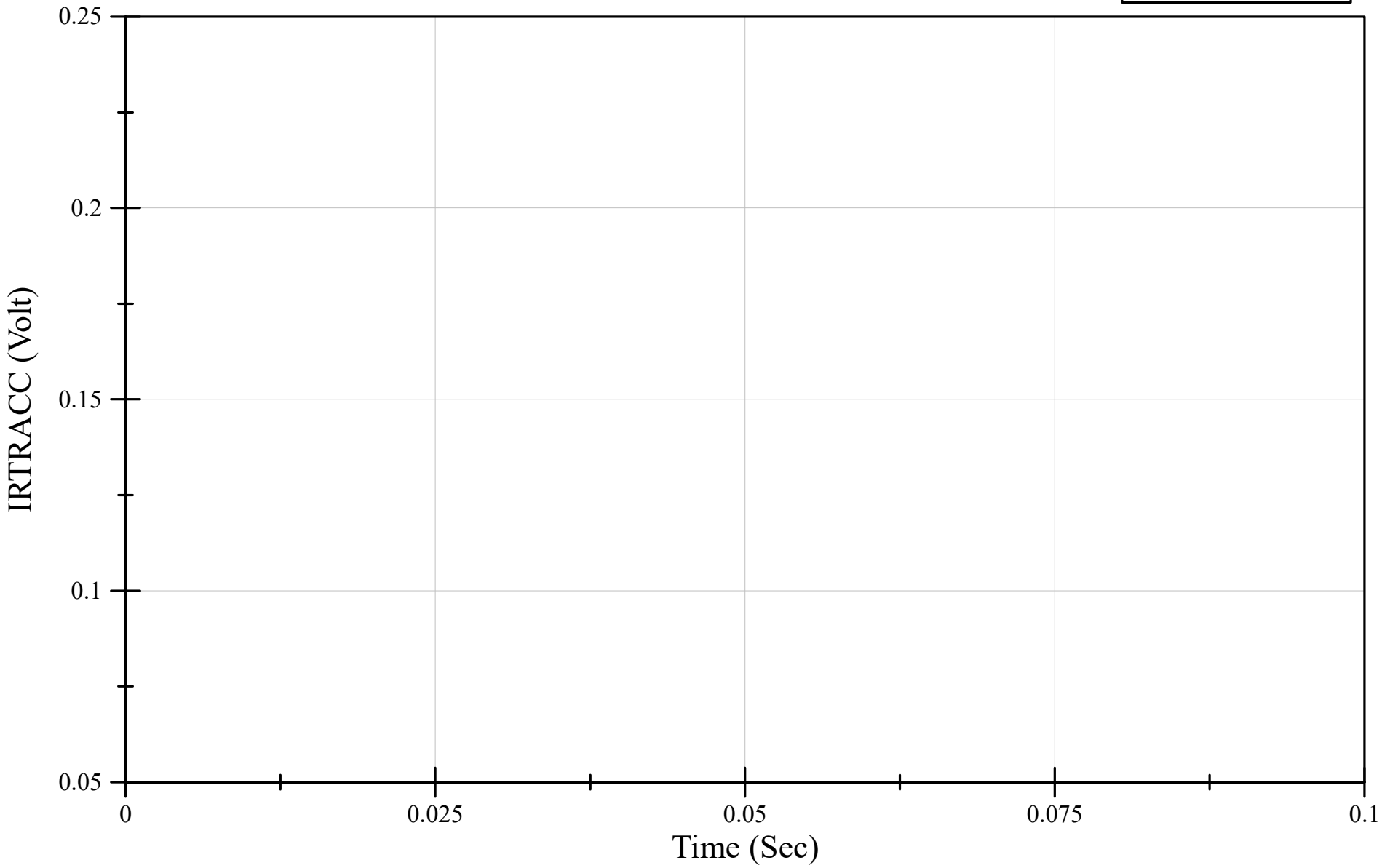
Software Version: 2.7.1

Test Temperature: 21.6° C
Relative Humidity: 60.1%
Test Velocity: 4.31 m/s

THOR Lower Right Thorax Qualification

IRTRACC Voltage

Serial Number: EG2595

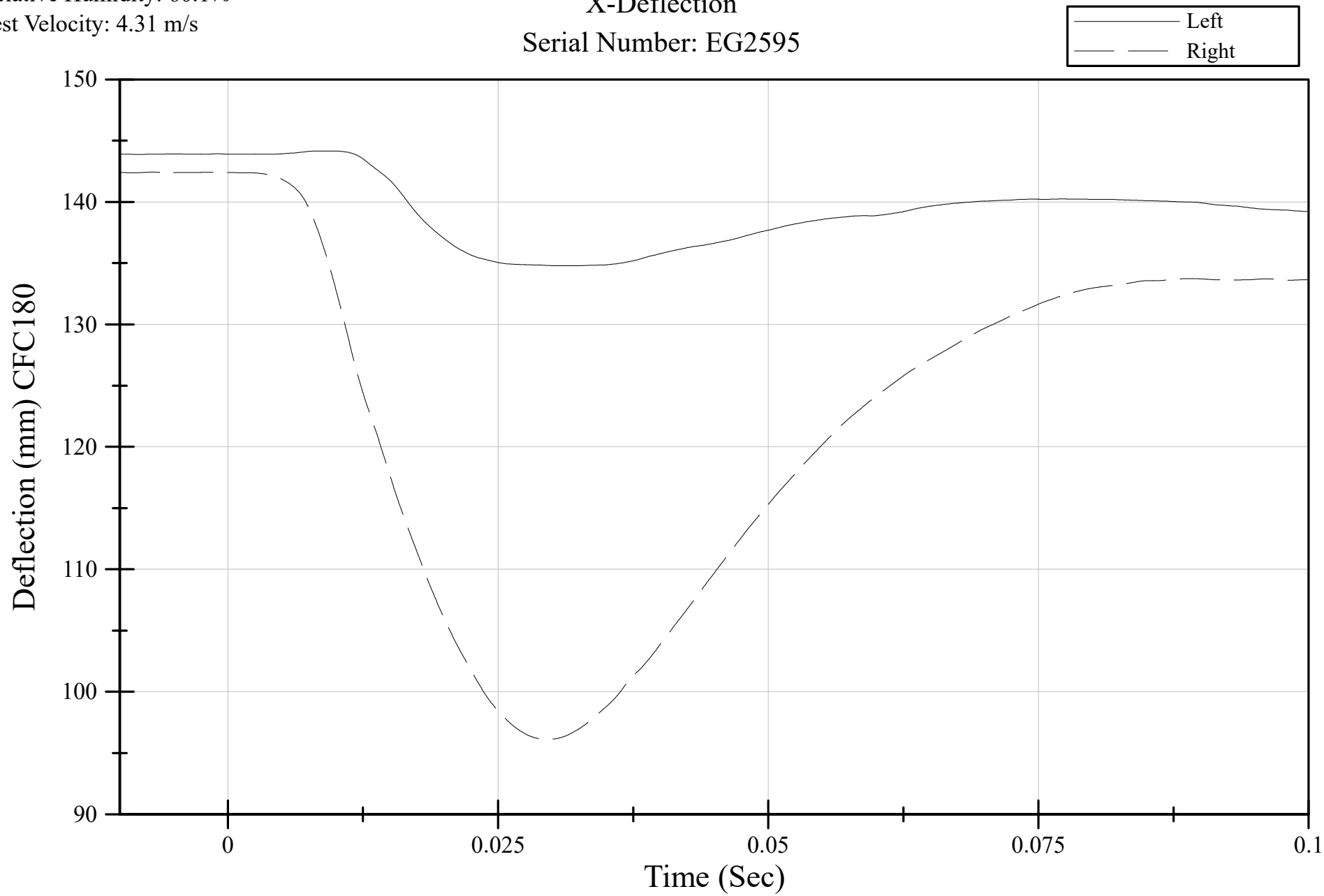


File Name: 200715-2 processed
07/15/2020 08:20:24.0000

Software Version: 2.7.1

Test Temperature: 21.6° C
Relative Humidity: 60.1%
Test Velocity: 4.31 m/s

THOR Lower Right Thorax Qualification
X-Deflection
Serial Number: EG2595

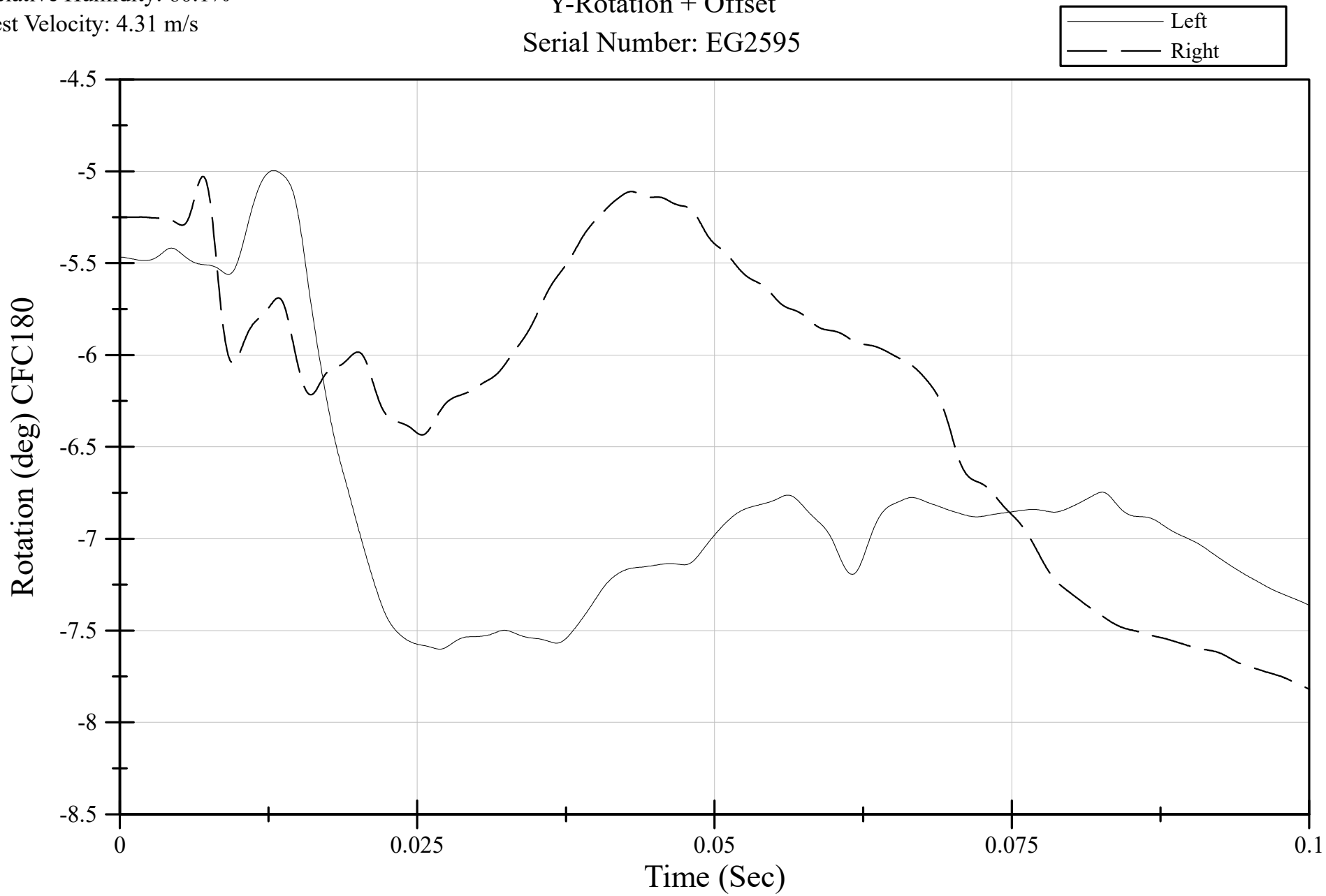


File Name: 200715-2 processed
07/15/2020 08:20:24.0000

Software Version: 2.7.1

Test Temperature: 21.6° C
Relative Humidity: 60.1%
Test Velocity: 4.31 m/s

THOR Lower Right Thorax Qualification
Y-Rotation + Offset
Serial Number: EG2595

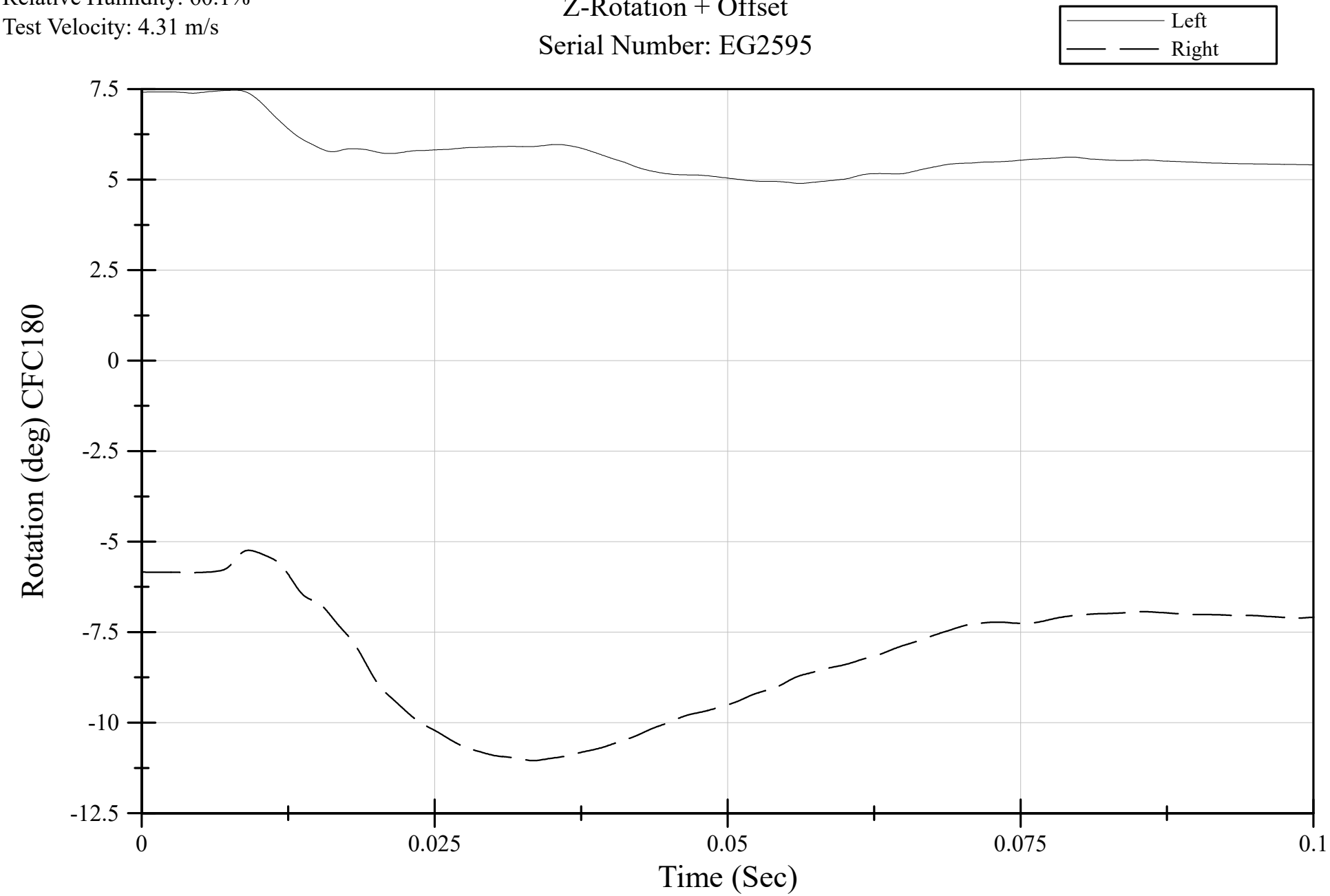


File Name: 200715-2 processed
07/15/2020 08:20:24.0000

Software Version: 2.7.1

Test Temperature: 21.6° C
Relative Humidity: 60.1%
Test Velocity: 4.31 m/s

THOR Lower Right Thorax Qualification
Z-Rotation + Offset
Serial Number: EG2595

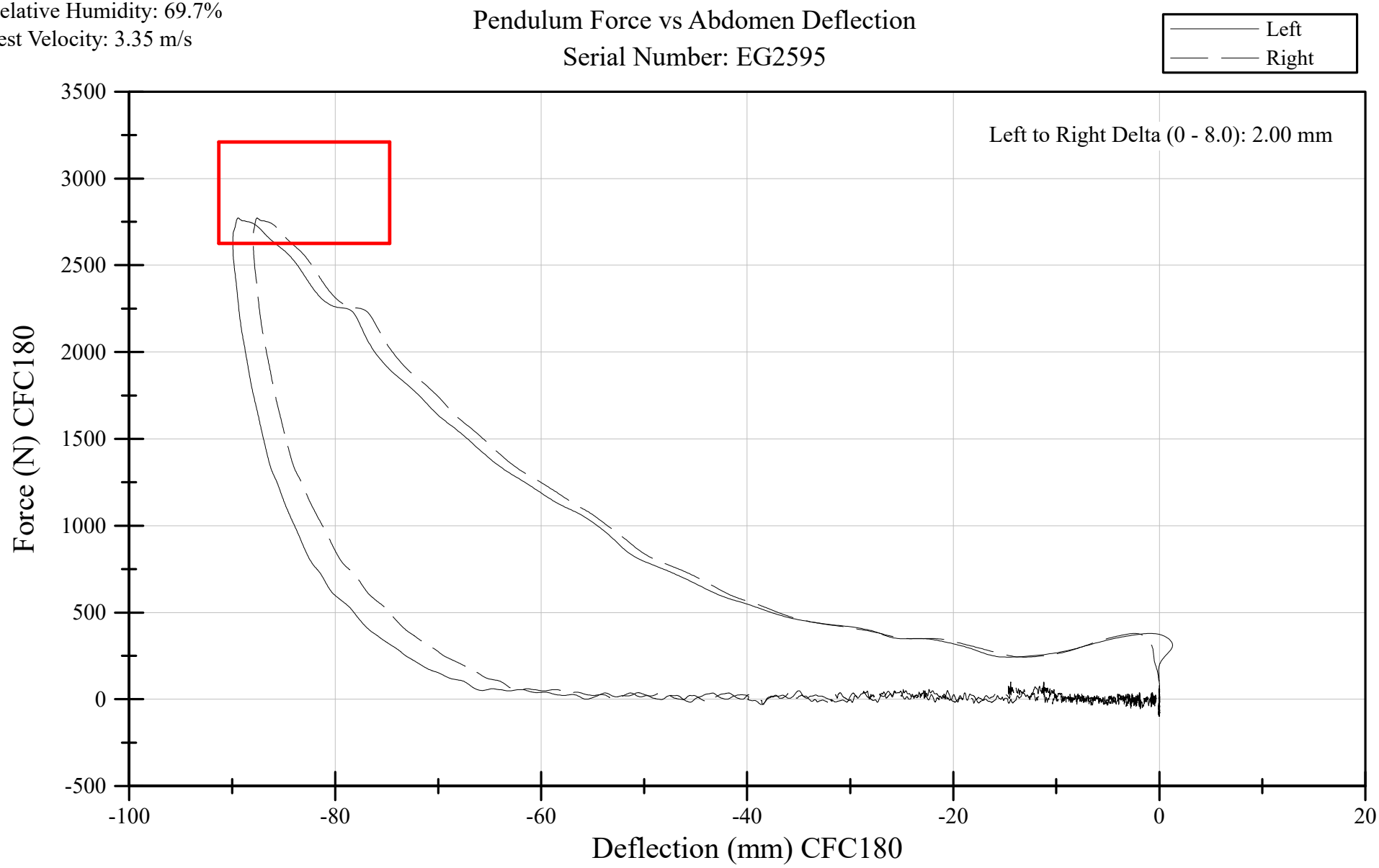


File Name: 200715-2 processed
07/15/2020 08:20:24.0000

Software Version: 2.7.1

Test Temperature: 21.9° C
Relative Humidity: 69.7%
Test Velocity: 3.35 m/s

THOR Lower Abdomen Qualification
Pendulum Force vs Abdomen Deflection
Serial Number: EG2595

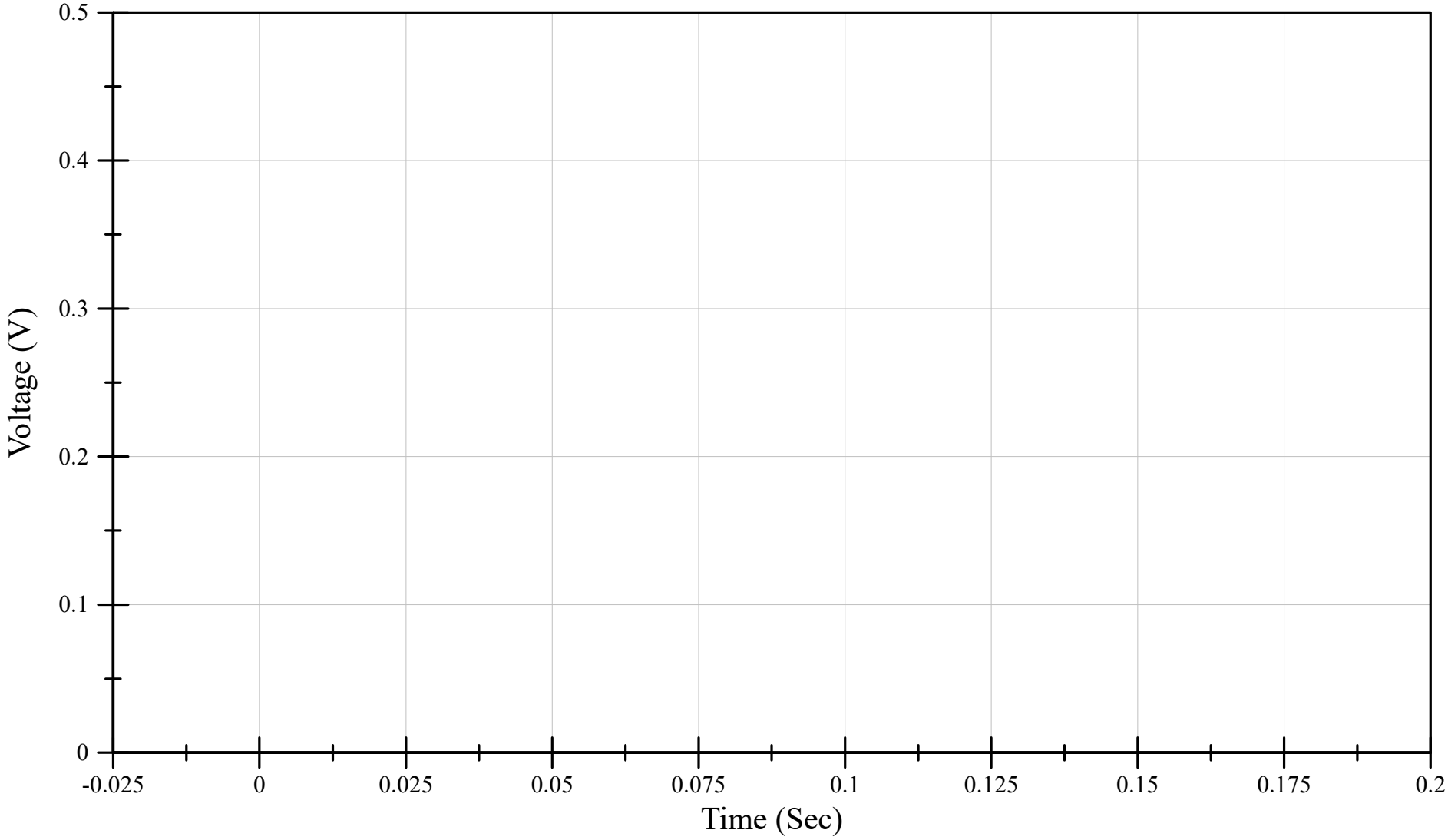


File Name: 200730-3 processed
07/30/2020 13:39:10.0000

Software Version: 2.7.1

Test Temperature: 21.9° C
Relative Humidity: 69.7%
Test Velocity: 3.35 m/s

THOR Lower Abdomen Certification
X-IRTRACC Voltage
Serial Number: EG2595

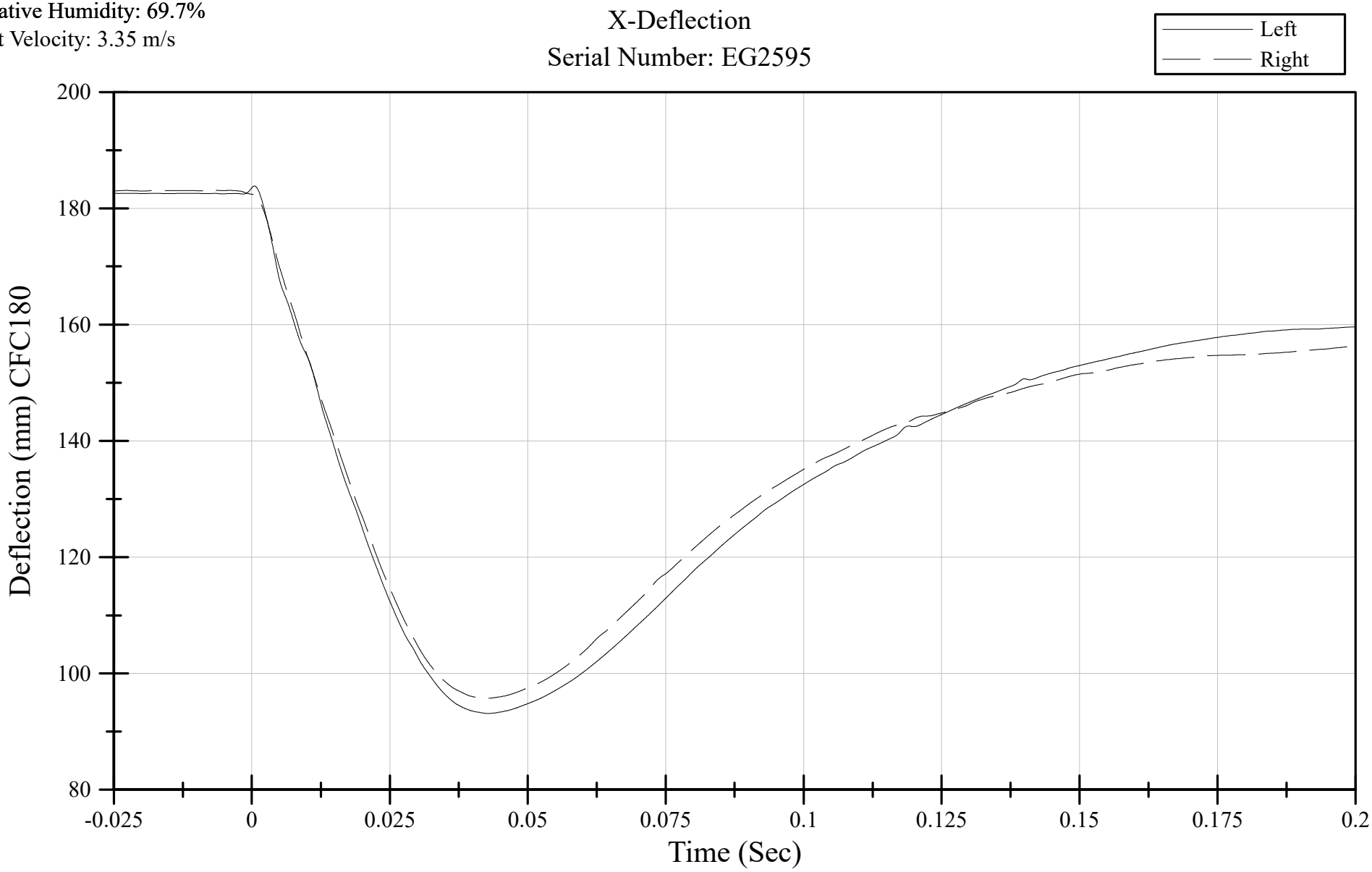


File Name: 200730-3 processed
07/30/2020 13:39:10.0000

Software Version: 2.7.1

Test Temperature: 21.9° C
Relative Humidity: 69.7%
Test Velocity: 3.35 m/s

THOR Lower Abdomen Certification
X-Deflection
Serial Number: EG2595

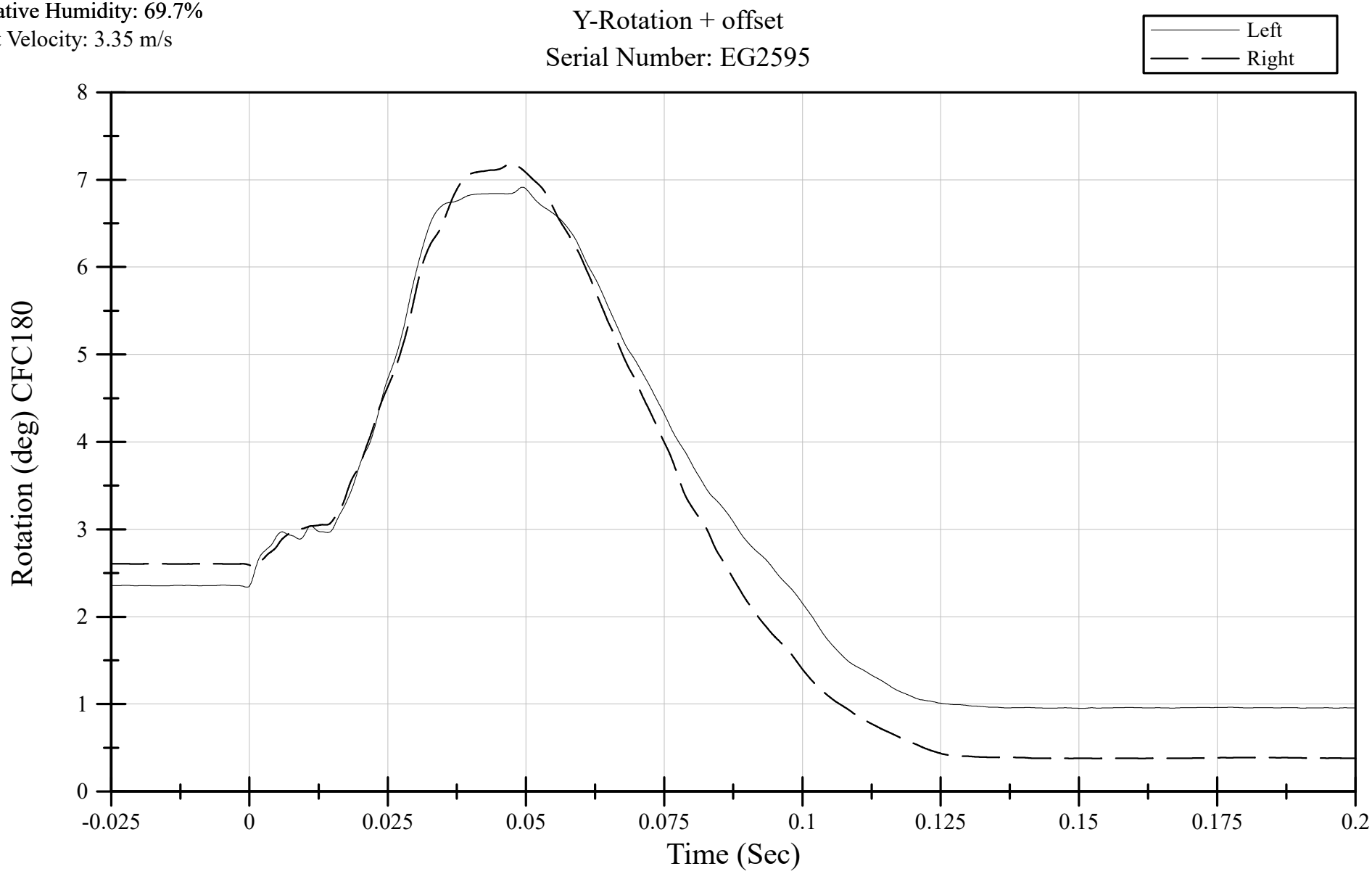


File Name: 200730-3 processed
07/30/2020 13:39:10.0000

Software Version: 2.7.1

Test Temperature: 21.9° C
Relative Humidity: 69.7%
Test Velocity: 3.35 m/s

THOR Lower Abdomen Certification
Y-Rotation + offset
Serial Number: EG2595



File Name: 200730-3 processed
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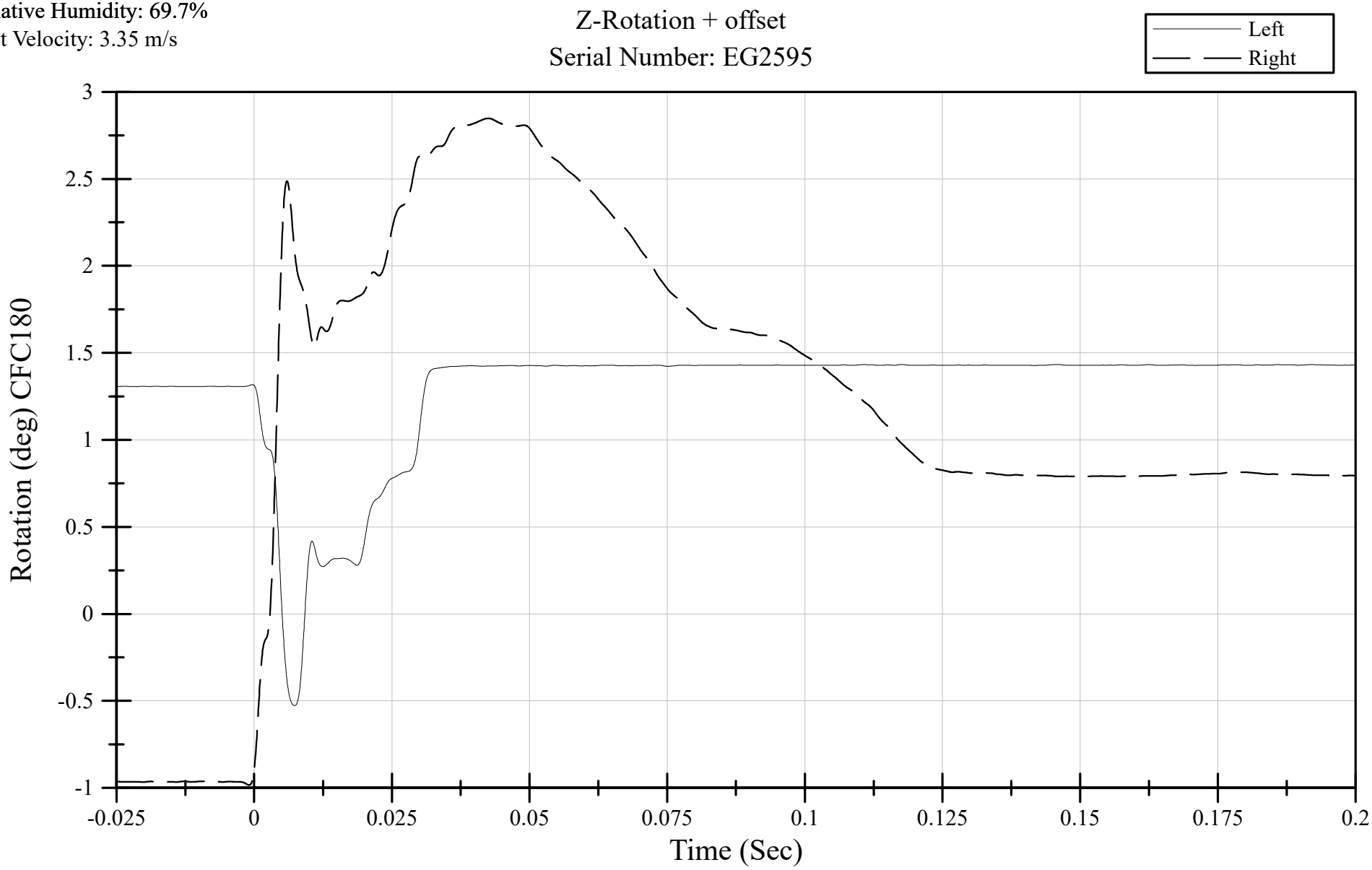
Software Version: 2.7.1

Test Temperature: 21.9° C
Relative Humidity: 69.7%
Test Velocity: 3.35 m/s

THOR Lower Abdomen Certification
Z-Rotation + offset
Serial Number: EG2595

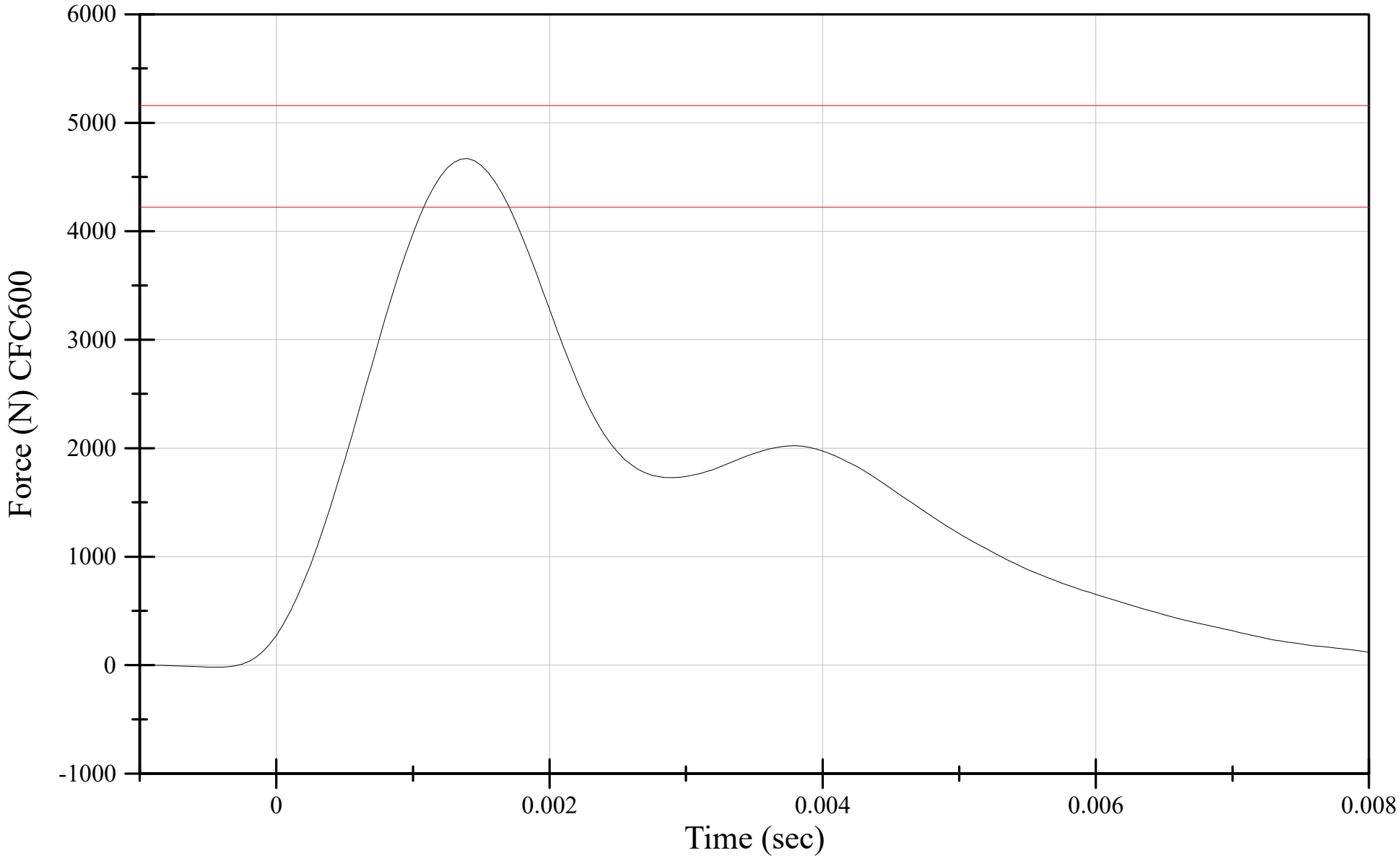


File Name: 200730-3 processed
07/30/2020 13:39:10.0000

Software Version: 2.7.1

Test Temperature: 20.7° C
Relative Humidity: 61.8%
Test Velocity: 2.62 m/s

THOR Left Upper Leg Qualification
Probe Force
Serial Number: EG2595

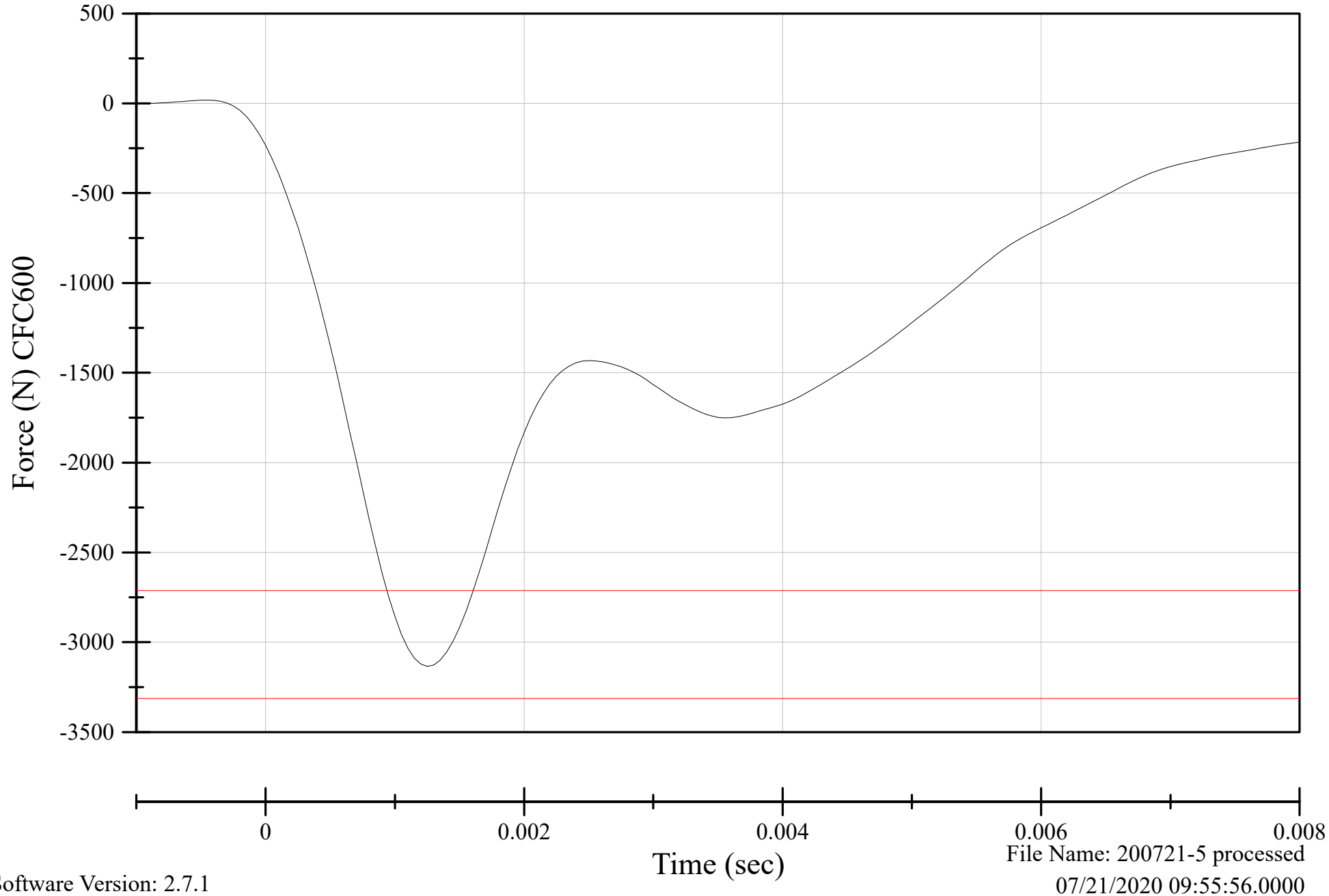


File Name: 200721-5 processed
07/21/2020 09:55:56.0000

Software Version: 2.7.1

Test Temperature: 20.7° C
Relative Humidity: 61.8%
Test Velocity: 2.62 m/s

THOR Left Upper Leg Qualification
Femur Z-Force
Serial Number: EG2595

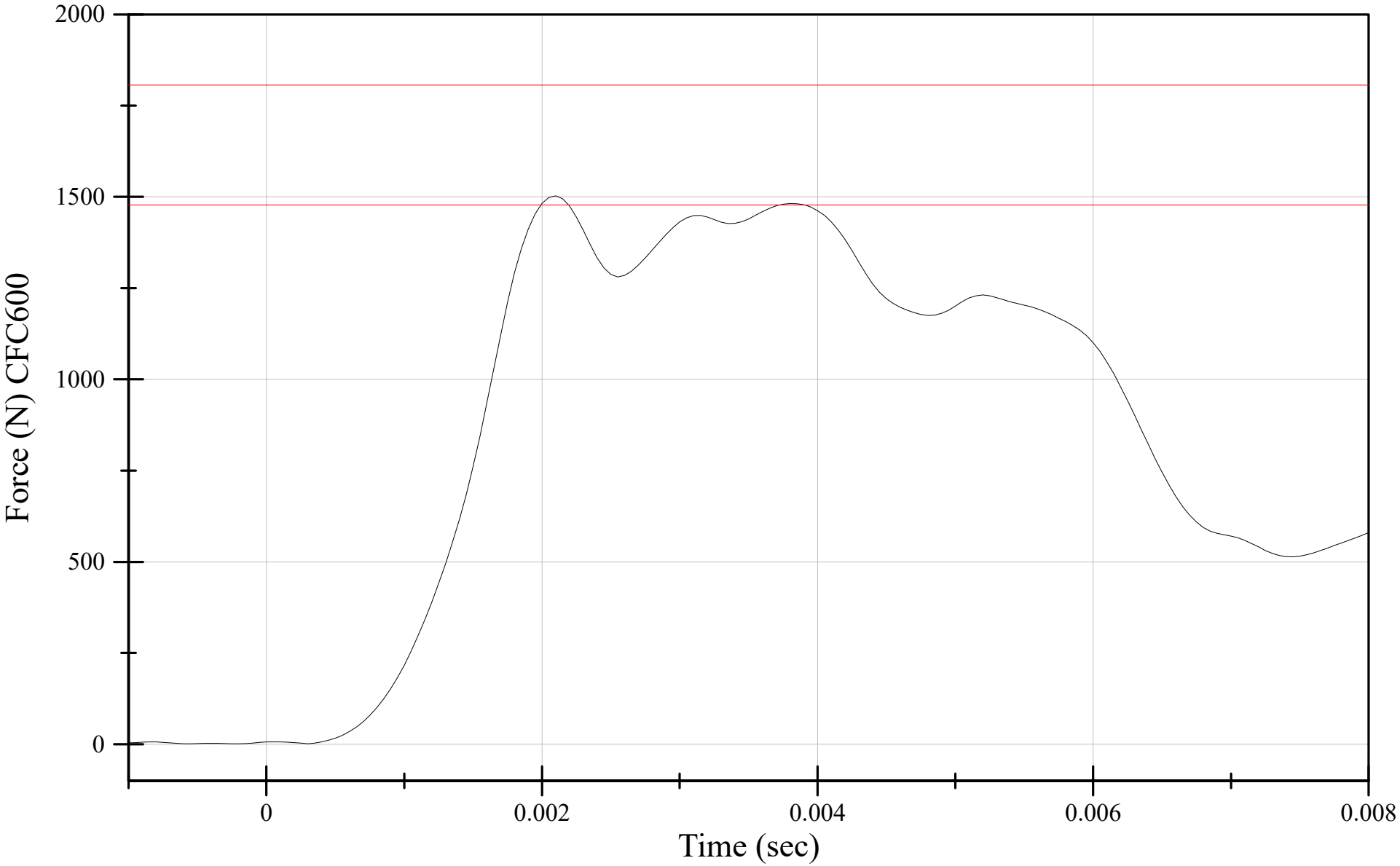


File Name: 200721-5 processed
07/21/2020 09:55:56.0000

Software Version: 2.7.1

Test Temperature: 20.7° C
Relative Humidity: 61.8%
Test Velocity: 2.62 m/s

THOR Left Upper Leg Qualification
Peak Acetabulum Resultant Force
Serial Number: EG2595

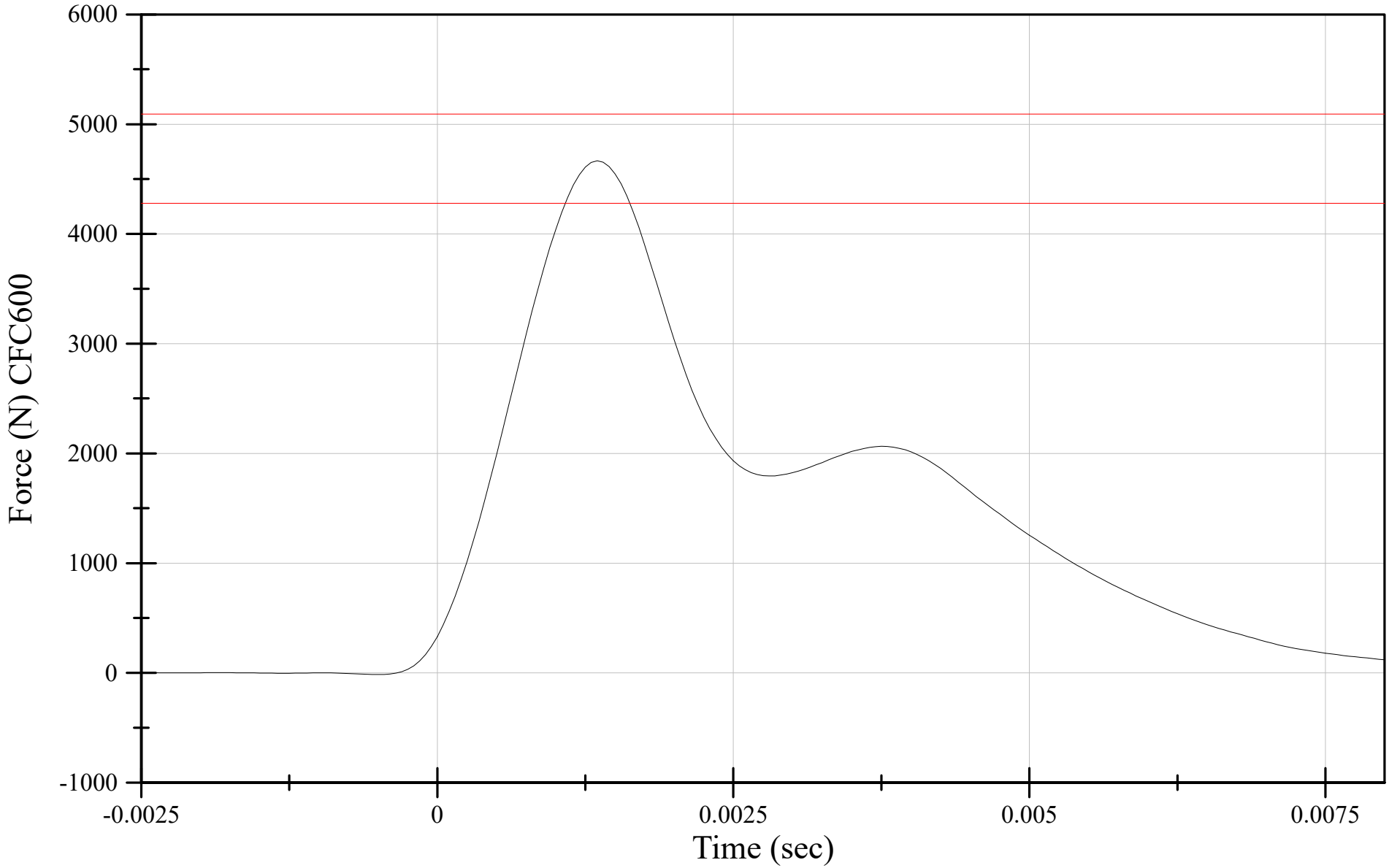


File Name: 200721-5 processed
07/21/2020 09:55:56.0000

Software Version: 2.7.1

Test Temperature: 20.8° C
Relative Humidity: 67%
Test Velocity: 2.61 m/s

THOR Right Upper Leg Qualification
Probe Force
Serial Number: EG2595

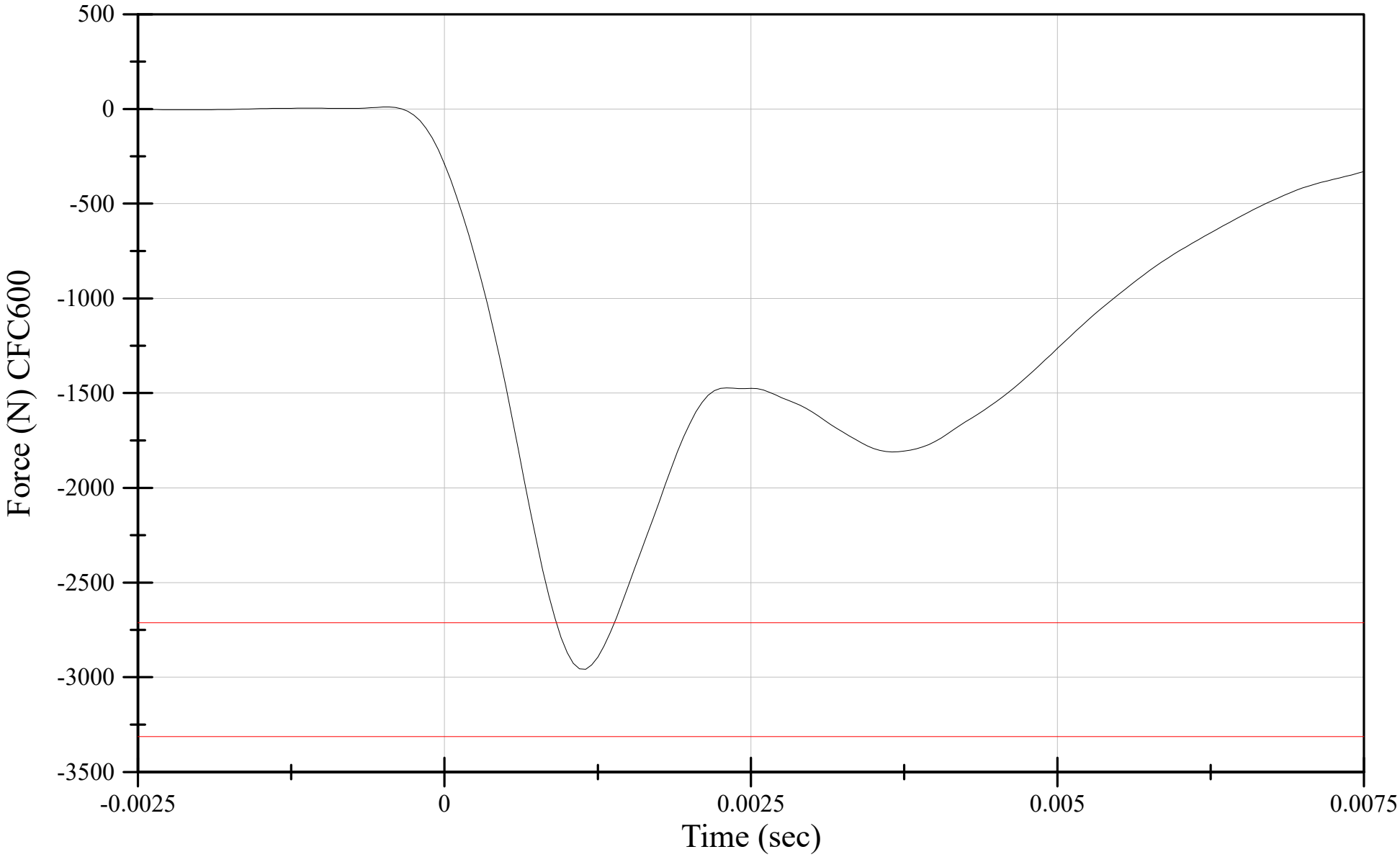


File Name: 200721-9 processed
07/21/2020 11:30:31.0000

Software Version: 2.7.1

Test Temperature: 20.8° C
Relative Humidity: 67%
Test Velocity: 2.61 m/s

THOR Right Upper Leg Qualification
Femur Z-Force
Serial Number: EG2595

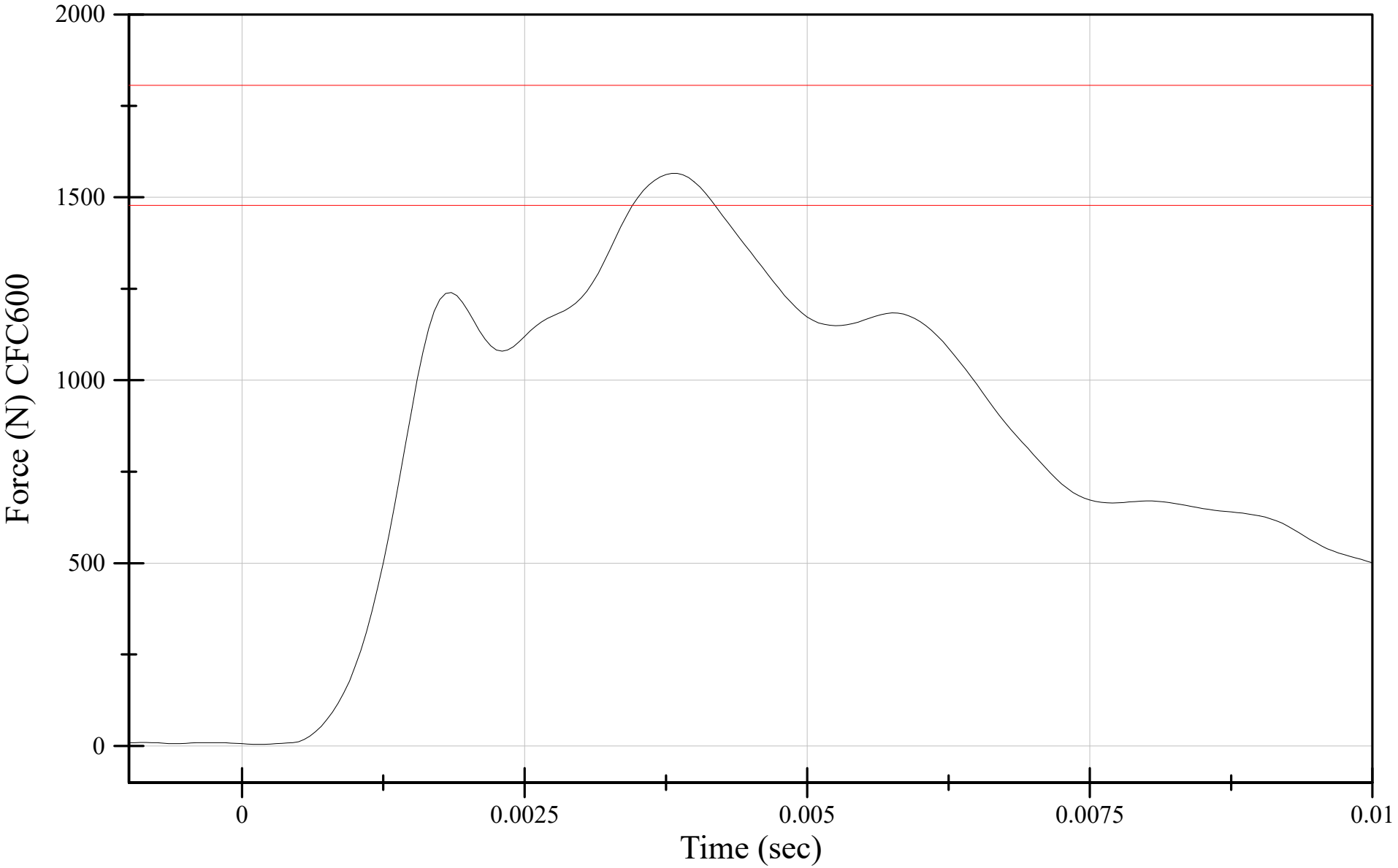


File Name: 200721-9 processed
07/21/2020 11:30:31.0000

Software Version: 2.7.1

Test Temperature: 20.8° C
Relative Humidity: 67%
Test Velocity: 2.61 m/s

THOR Right Upper Leg Qualification
Peak Acetabulum Resultant Force
Serial Number: EG2595

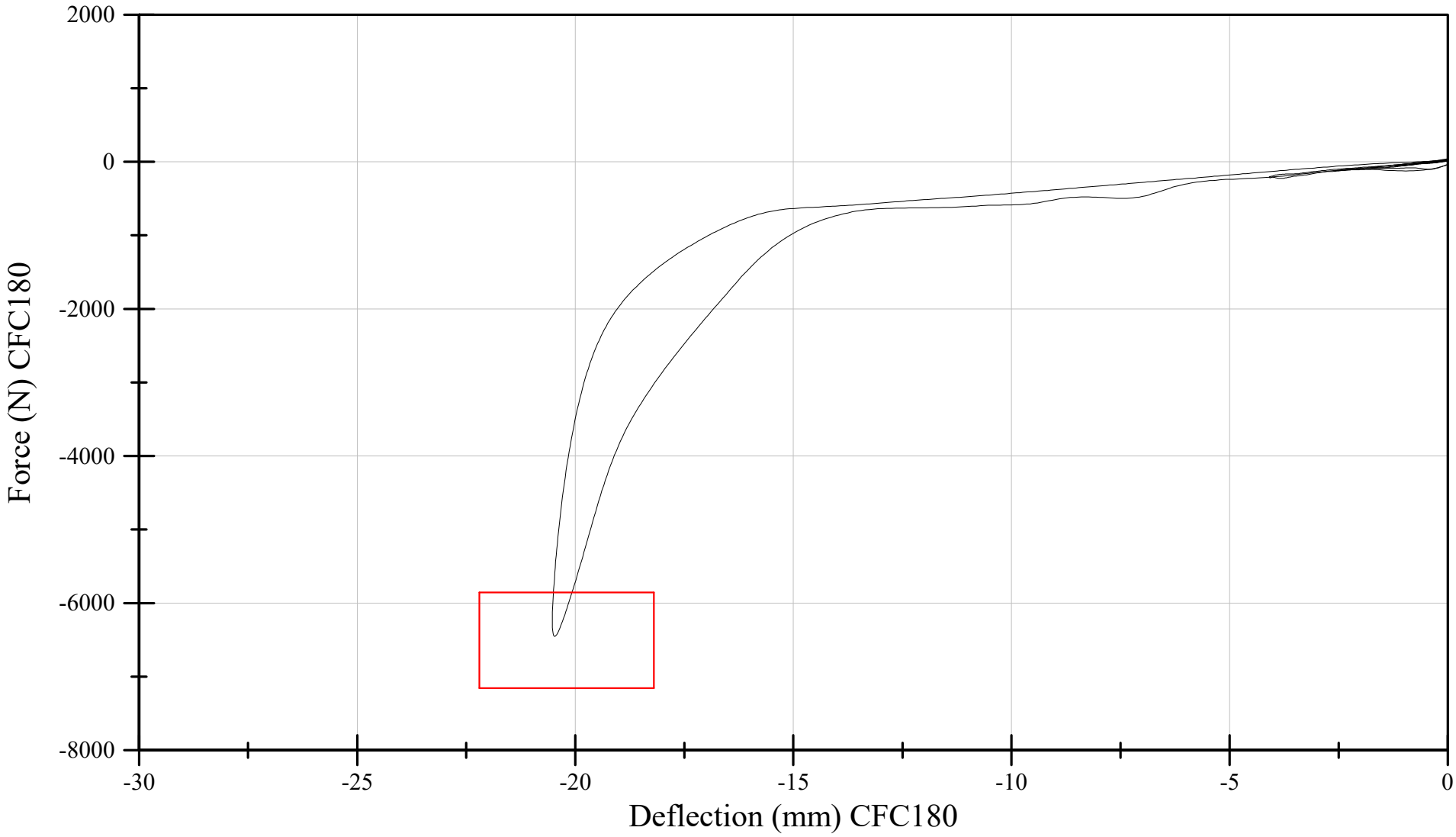


File Name: 200721-9 processed
07/21/2020 11:30:31.0000

Software Version: 2.7.1

Test Temperature: 21.1° C
Relative Humidity: 69.8%
Test Velocity: 2.22 m/s

THOR Left Knee Qualification
Peak Deflection at Peak Force
Serial Number: EG2595

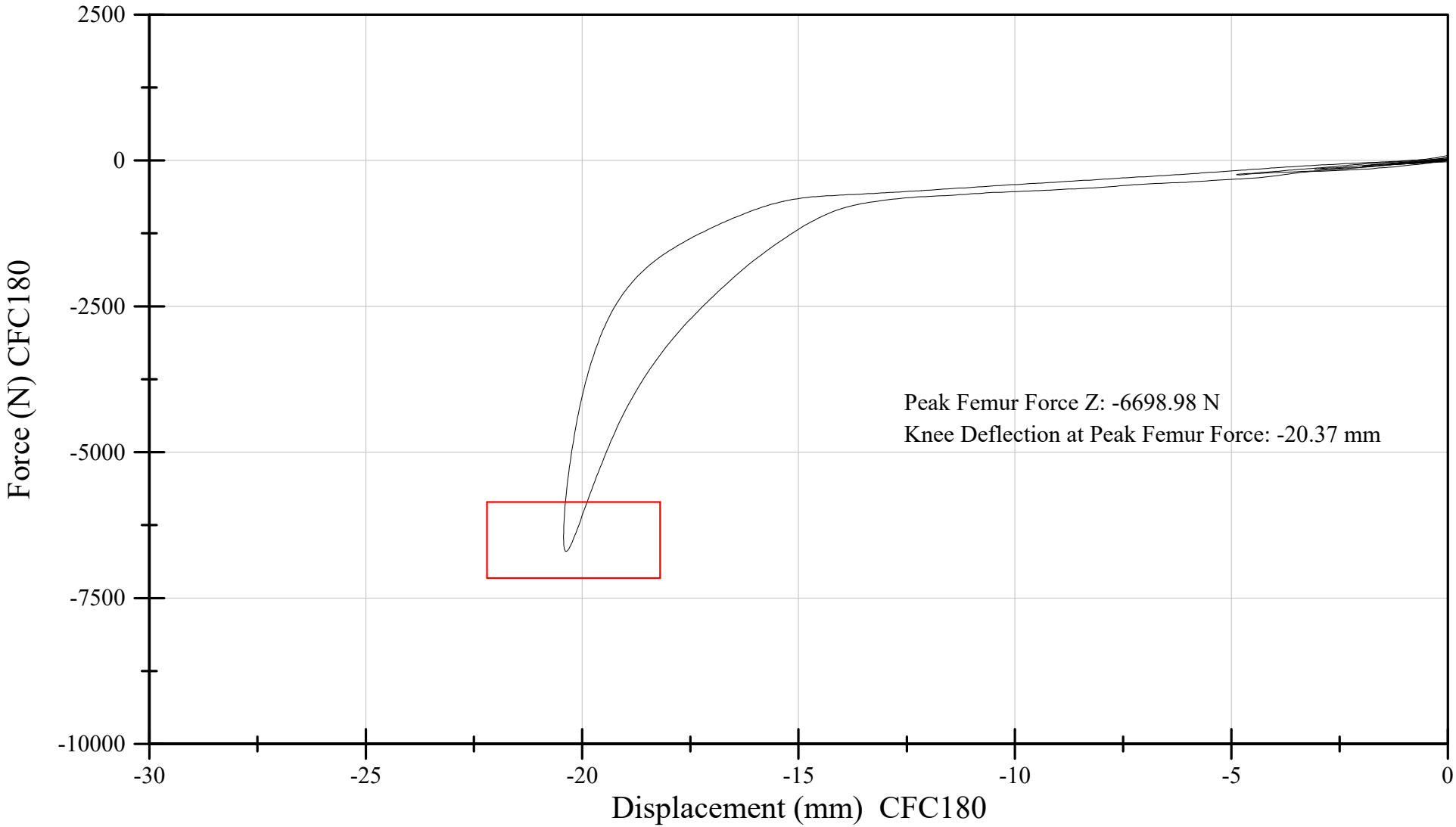


File Name: 200728-1 processed
07/28/2020 06:52:55.0000

Software Version: 2.7.1

Test Temperature: 20.6° C
Relative Humidity: 61.8%
Test Velocity: 2.20 m/s

THOR Right Knee Qualification
Femur Force vs. Knee Displacement
Serial Number: EG2595



Software Version: 2.7.1

File Name: 200722-6 processed
07/22/2020 12:44:27.0000

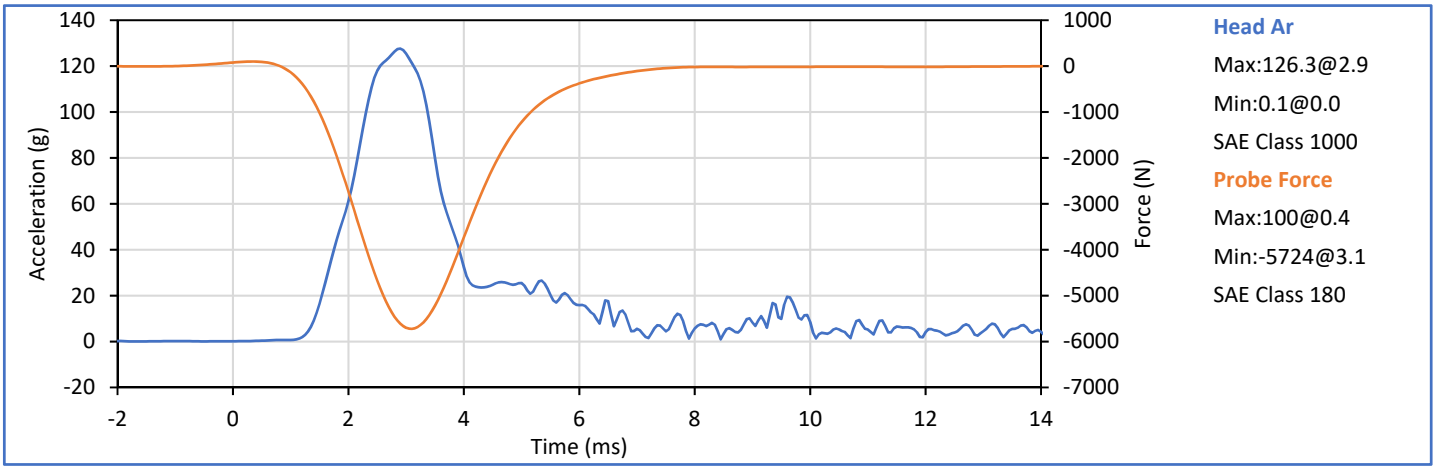
APPENDIX C
Post-Test ATD Qualification and Performance Verification
THOR-50M 50th Percentile Male ATD, (Reduced Certification)
S/N: EG2595

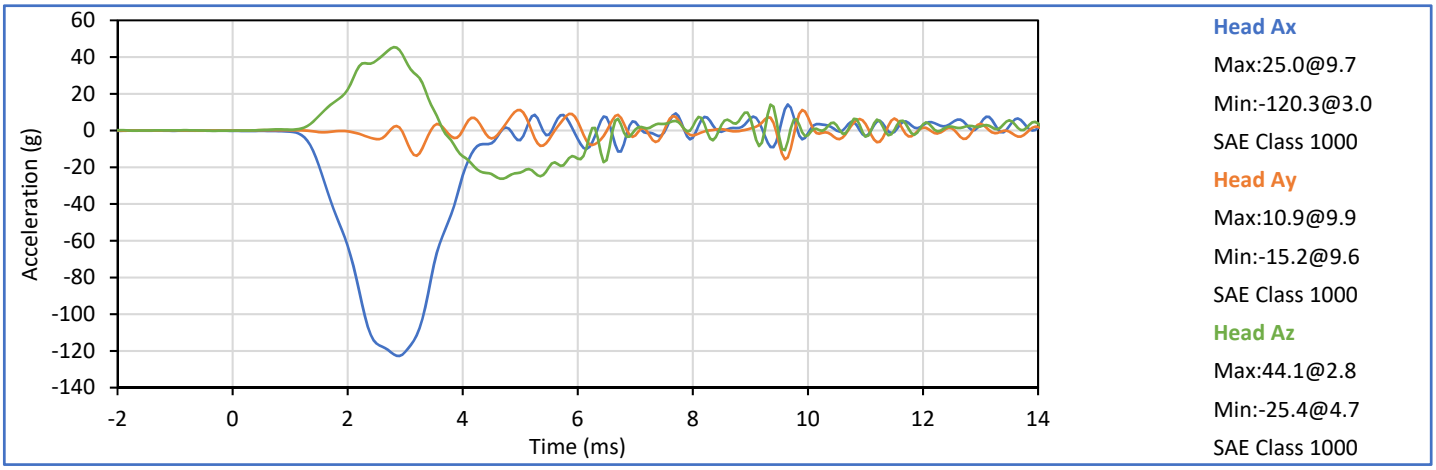
Applus IDIADA KARCO

THOR-50M 50th Percentile Male ATD
Head Qualification

ATD Serial No.: EG2595 Test Date: 2020-10-06

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	22.1	Pass
Laboratory Relative Humidity	%	10	70	23	Pass
Probe Velocity	m/s	1.95	2.05	2.01	Pass
Peak Probe Force	kN	-6138	-5022	-5724	Pass
Peak Head Resultant Acceleration	g	105.3	128.7	126.3	Pass
NHTSA Corridor 2019-05			Overall Test Results		Pass





Technician: J. Hernandez

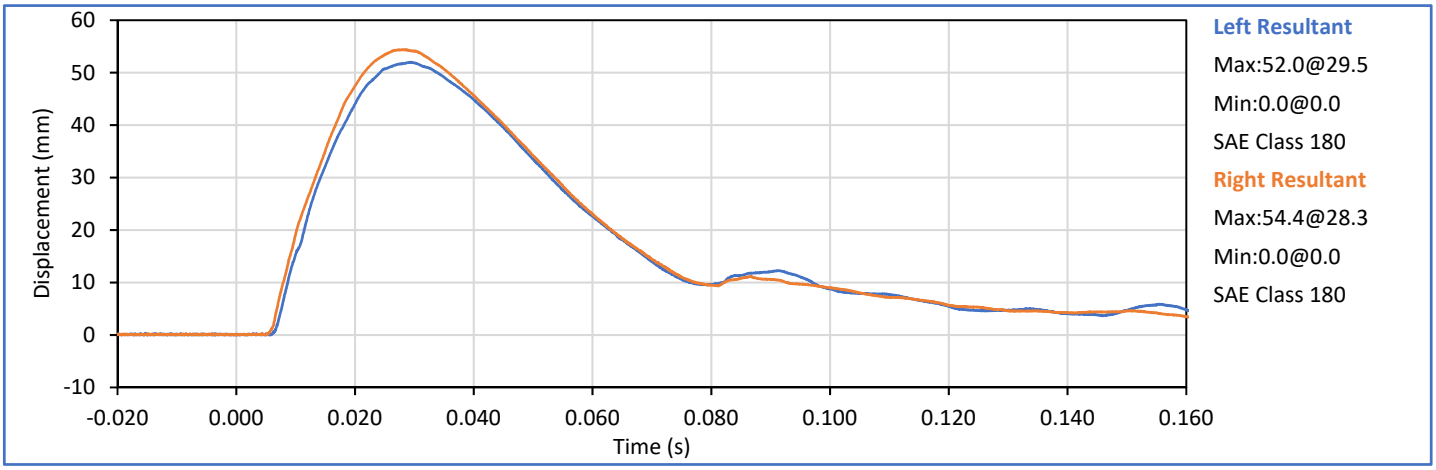
Approved By: P. Puzzuto

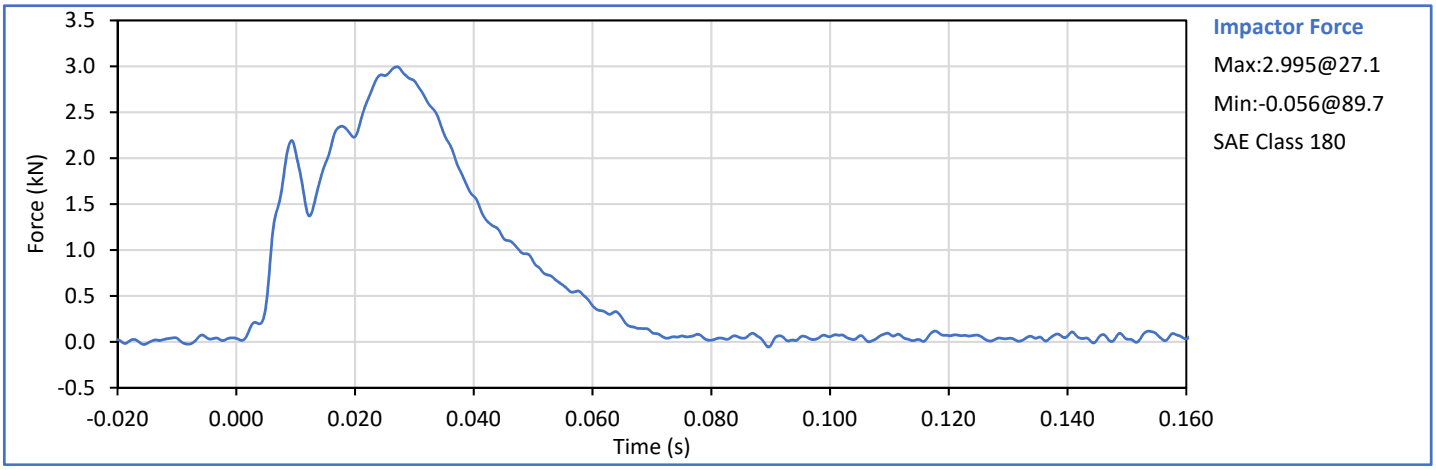
Applus IDIADA KARCO

THOR-50M 50th Percentile Male ATD
Thorax Impact (Upper)

ATD Serial No.: EG2595 Test Date: 2020-10-07

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.8	Pass
Laboratory Relative Humidity	%	10	70	26	Pass
Probe Velocity	m/sec	4.25	4.35	4.32	Pass
Peak Probe Force	kN		3.039	2.995	Pass
Peak Upper Left Deflection Resultant	mm	48.3	59.0	52.0	Pass
Peak Upper Right Deflection Resultar	mm			54.4	Pass
Absolute Difference L/R Dx Resultant	mm	0.0	5.0	2.4	Pass
Force at Peak Upper Left Resultant	mm	2.409	2.944	2.859	Pass
Force at Peak Upper Right Resultant	mm			2.913	Pass
NHTSA Corridor 2019-05			Overall Test Results		Pass





Technician: J. Hernandez

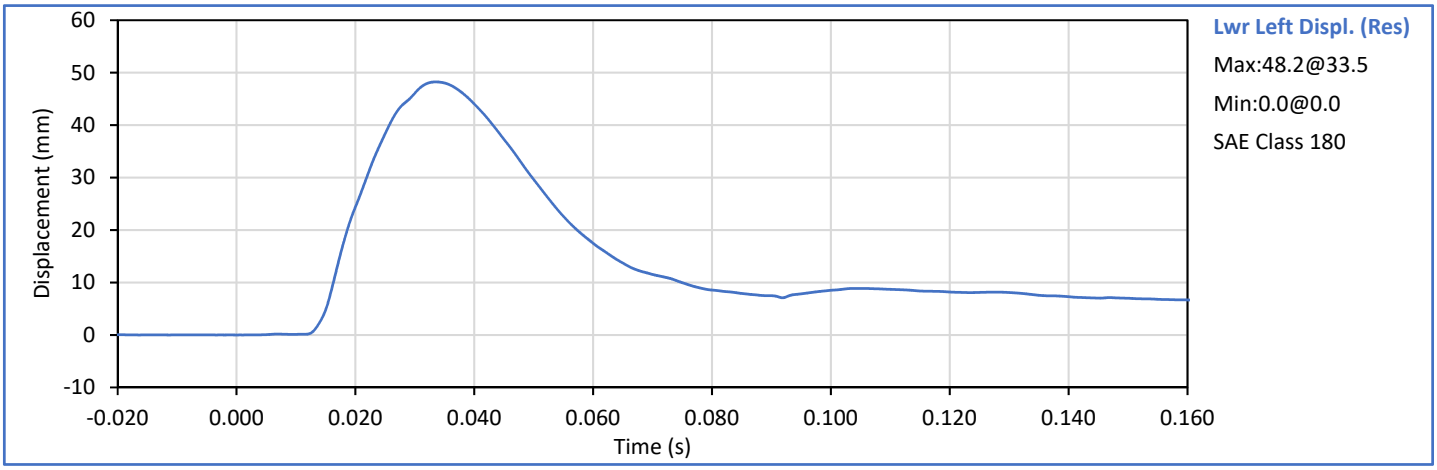
Approved By: P. Puzzuto

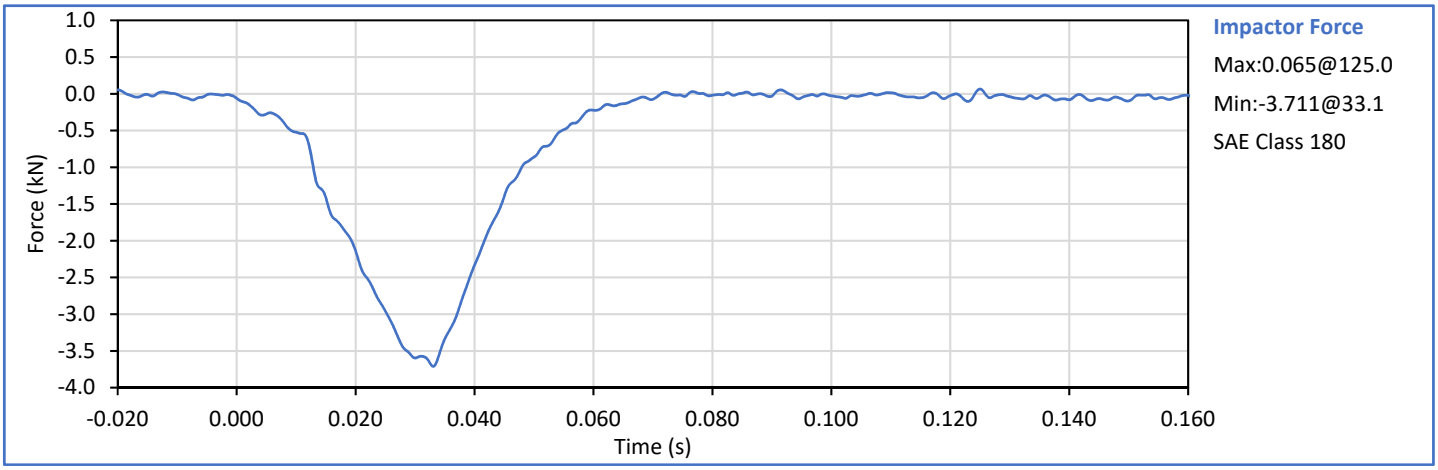
Applus IDIADA KARCO

THOR-50M 50th Percentile Male ATD
Thorax Impact (Lower Left)

ATD Serial No.: EG2595 Test Date: 2020-10-07

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.8	Pass
Laboratory Relative Humidity	%	10	70	25	Pass
Probe Velocity	m/sec	4.25	4.35	4.34	Pass
Peak Probe Force	kN	-3.832	-3.136	-3.711	Pass
Lower Left Resultant Dx at Peak Fx	mm	45.8	56.0	48.2	Pass
NHTSA Corridor 2019-05			Overall Test Results		Pass





Technician: J. Hernandez

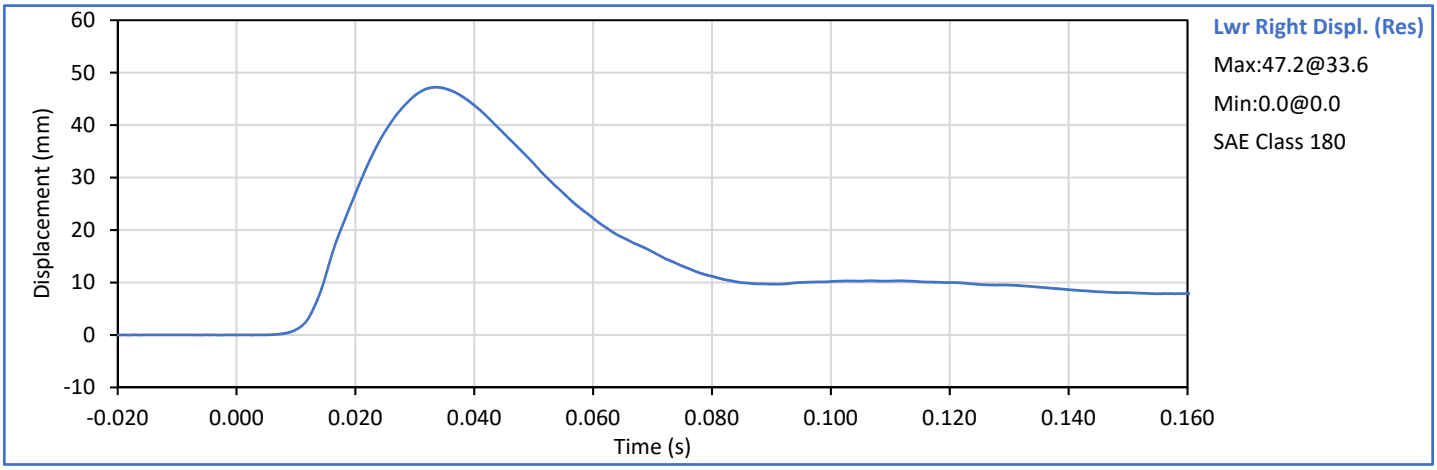
Approved By: P. Puzzuto

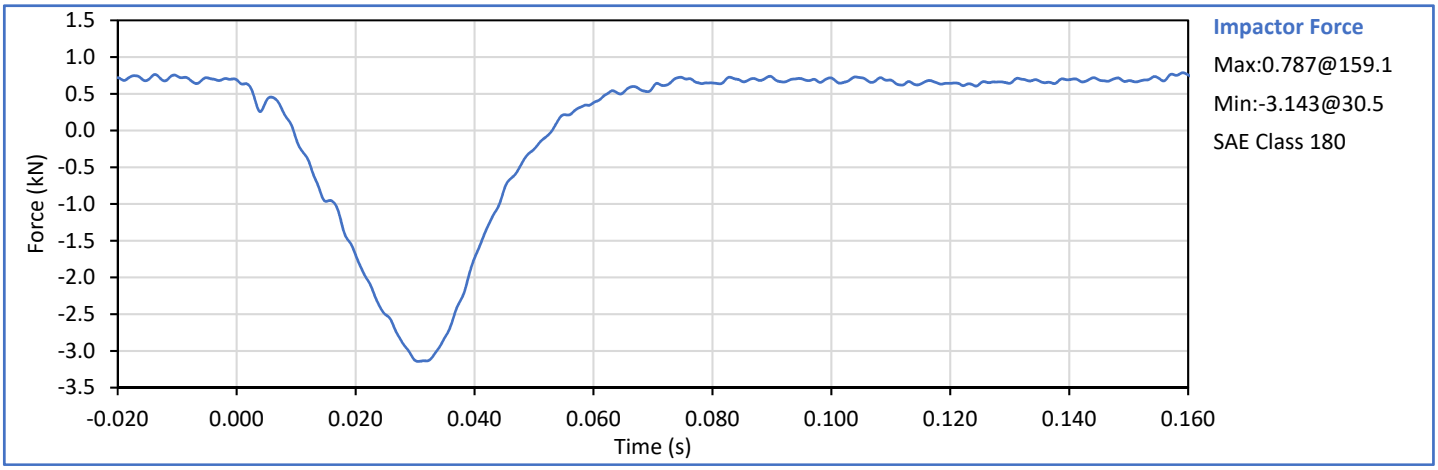
Applus IDIADA KARCO

THOR-50M 50th Percentile Male ATD
Thorax Impact (Lower Right)

ATD Serial No.: EG2595 Test Date: 2020-10-07

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.6	Pass
Laboratory Relative Humidity	%	10	70	26	Pass
Probe Velocity	m/sec	4.25	4.35	4.33	Pass
Peak Probe Force	kN	-3.832	-3.136	-3.143	Pass
Lower Right Resultant Dx at Peak Fx	mm	45.8	56.0	46.1	Pass
NHTSA Corridor 2019-05			Overall Test Results		Pass





Technician: J. Hernandez

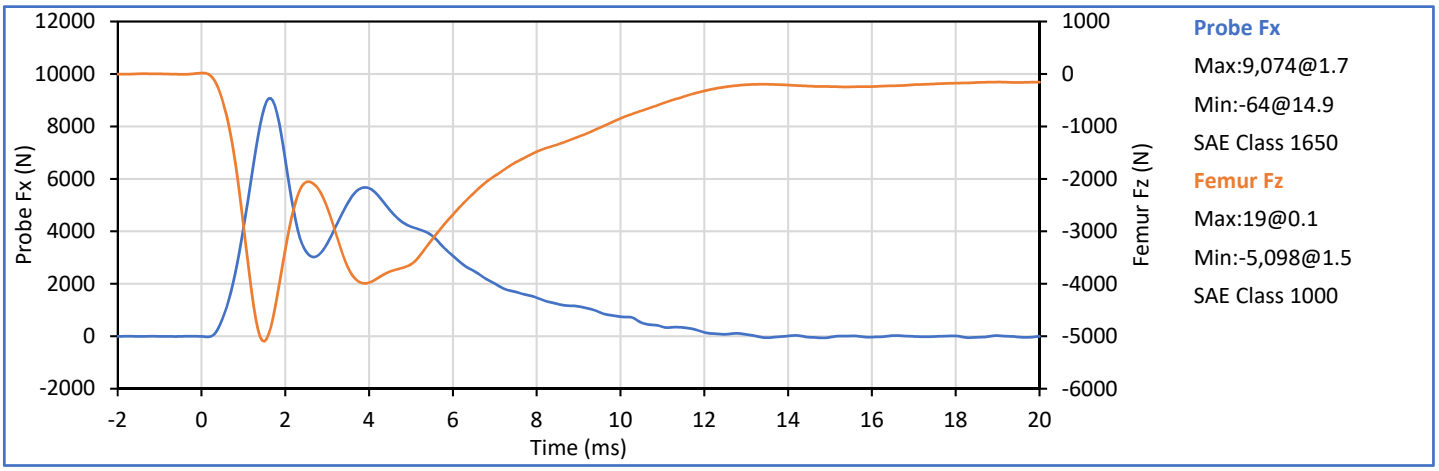
Approved By: P. Puzzuto

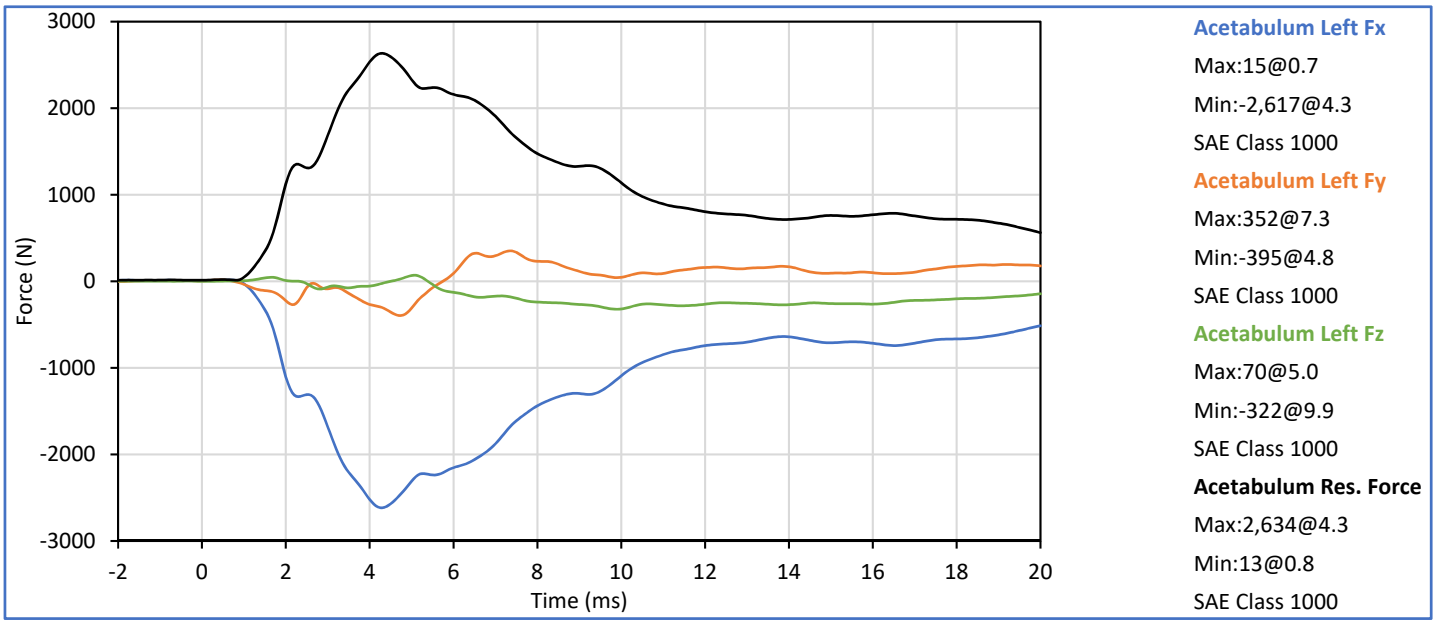
Applus IDIADA KARCO

THOR-50M 50th Percentile Male ATD
Upper Leg (Left) Qualification

ATD Serial No.: EG2595 Test Date: 2020-10-08

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.7	Pass
Laboratory Relative Humidity	%	10	70	28	Pass
Pendulum Velocity	m/s	3.25	3.35	3.33	Pass
Peak Probe Force	N	*	*	9074	*
Peak Femur Fz	N	*	*	-5098	*
Acetabulum Force Resultant	N	*	*	2634	*
* Research data. No defined P/F corridor			Overall Test Results		Pass





Technician: J. Hernandez

Approved By: P. Puzzuto

Applus IDIADA KARCO

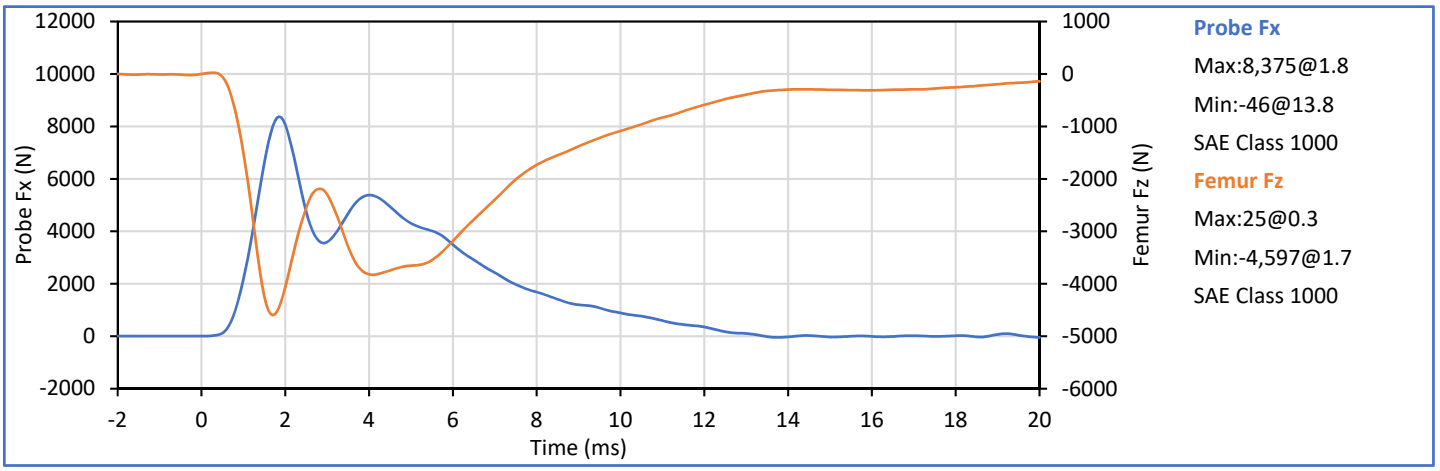
THOR-50M 50th Percentile Male ATD
Upper Leg (Right) Qualification

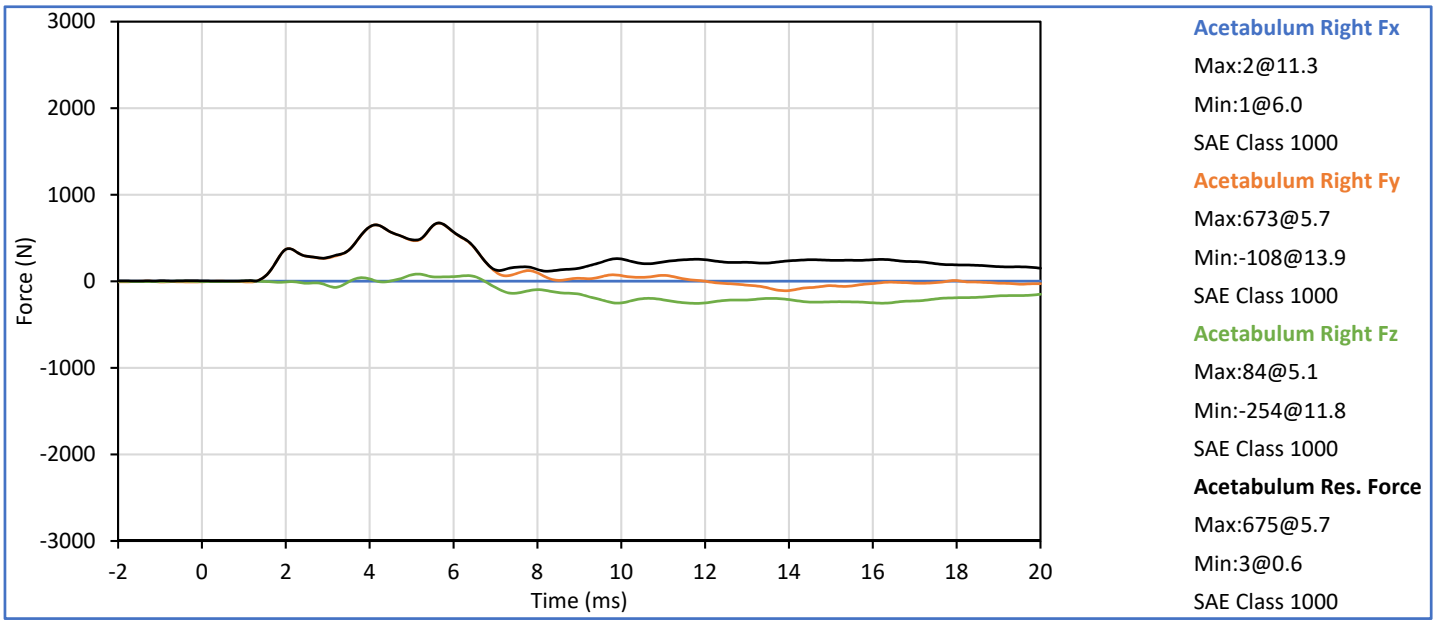
ATD Serial No.: EG2595 Test Date: 2020-10-08

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail	
Laboratory Temperature	°C	20.6	22.2	21.7	Pass	
Laboratory Relative Humidity	%	10	70	29	Pass	
Pendulum Velocity	m/s	3.25	3.35	3.32	Pass	
Peak Probe Force	N	*	*	8375	*	
Peak Femur Fz	N	*	*	-4597	*	
Acetabulum Force Resultant	N	*	*	675	*	**
			Overall Test Results		Pass	

* Research data. No defined P/F corridor

** Acetabulum Fx is not functioning





Technician: J. Hernandez

Approved By: P. Puzzuto

APPENDIX C
Post-Test ATD Qualification and Performance Verification
Hybrid III 50th Percentile Male ATD, (Compressed Certification)
S/N: 168

Applus IDIADA KARCO

Hybrid III 50th Percentile Male ATD
ATD Damage Checklist

ATD Serial No.: 168 Test Date: 2020-09-29

Dummy Item	Inspect for	Comments	Damage	OK
Entire ATD	Perform general cleaning			✓
Outer Skin	Gashes, rips, cracks			✓
Head	Ballast secure			✓
	General appearance			✓
Neck bracket	Upper neck firmly attached to lower bracket			✓
Neck	Broken or cracked rubber			✓
	Looseness at the condyle joint			✓
Nodding block	Cracked or out of position			✓
Lumbar Spine	Broken or cracked rubber			✓
Ribs	Broken or bent ribs			✓
	Broken or bent rib supports			✓
	Damping material separated or cracked			✓
	Rubber bumpers in place			✓
Chest Displ.	Bent shaft			✓
Assembly	Slider arm riding in track			✓
Sensors	Check cables for cuts, tears			✓
	Check for damaged insulation			✓
Accelerometer	Head mounting secure			✓
Mounting	Chest mounting secure			✓
Knees	Skin condition			✓
	Insert (do not remove)			✓
	Casting			✓
Limbs	Normal movement and adjustment			✓
Knee Sliders	Wires intact			✓
	Rubber returned to "resting" position			✓
Pelvis	Broken			✓
Other	Describe below as needed			✓

Describe any repairs or replacement of parts or other findings:

No Problems Found

Technician: J. Hernandez

Approved By: P. Puzzuto

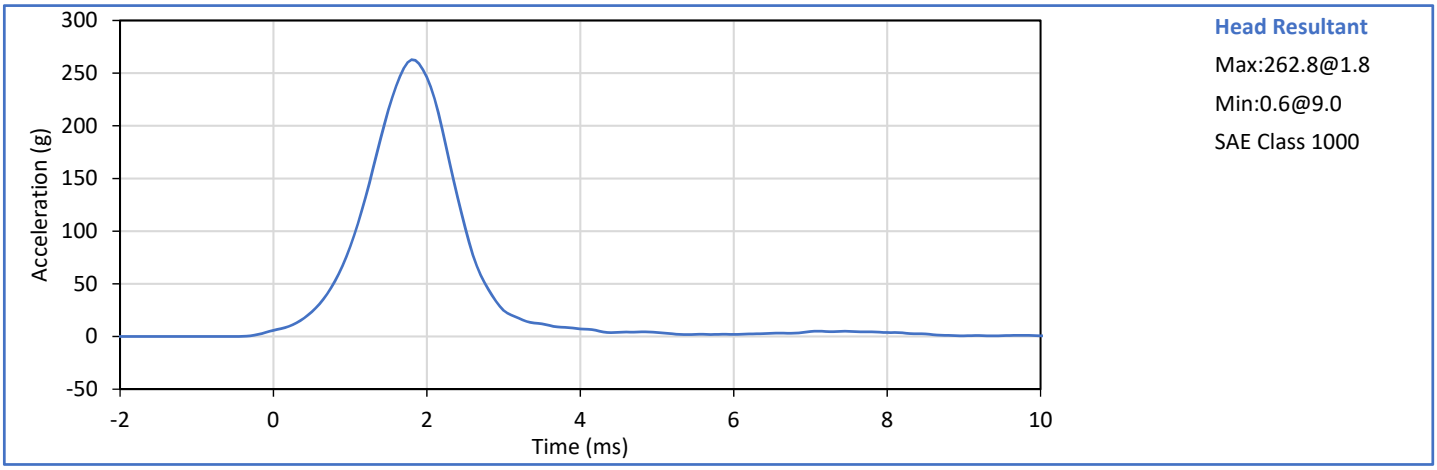
Applus IDIADA KARCO

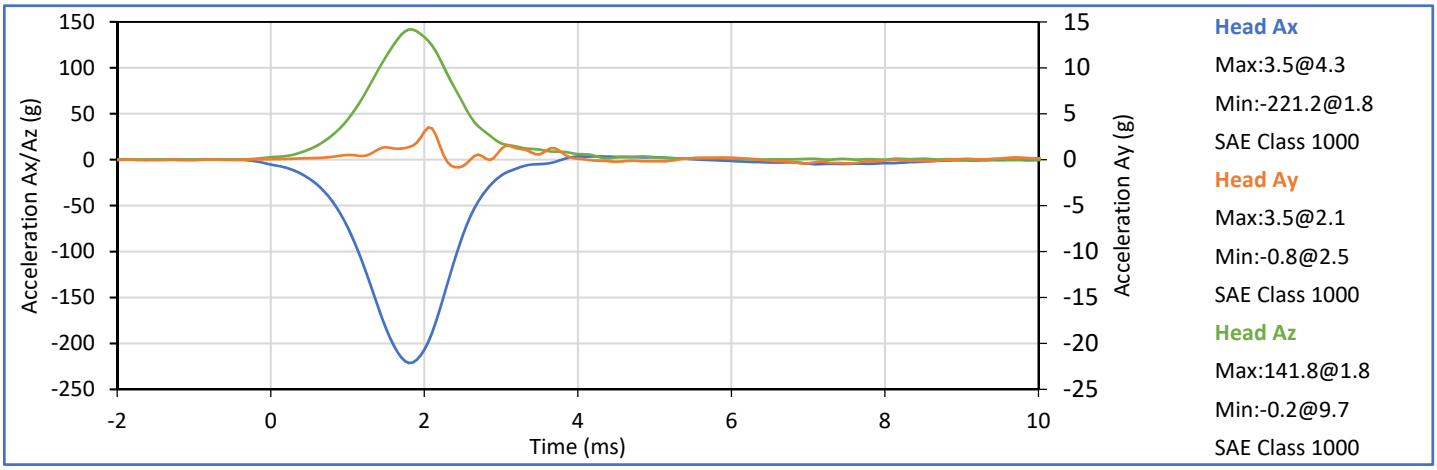
Hybrid III 50th Percentile Male ATD
Head Drop

ATD Serial No.: 168

Test Date: 2020-09-29

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	18.9	25.6	21.9	Pass
Laboratory Relative Humidity	%	10	70	21	Pass
Peak Resultant Acceleration	g	225.0	275.0	262.8	Pass
Peak Lateral Acceleration	g	-15.0	15.0	3.5	Pass
Oscillations After Main Pulse	%	0.0	10.0	1.9	Pass
Is Acceleration Unimodal?	Yes/No	Yes		Yes	Pass
			Overall Test Results		Pass





Technician: J. Hernandez

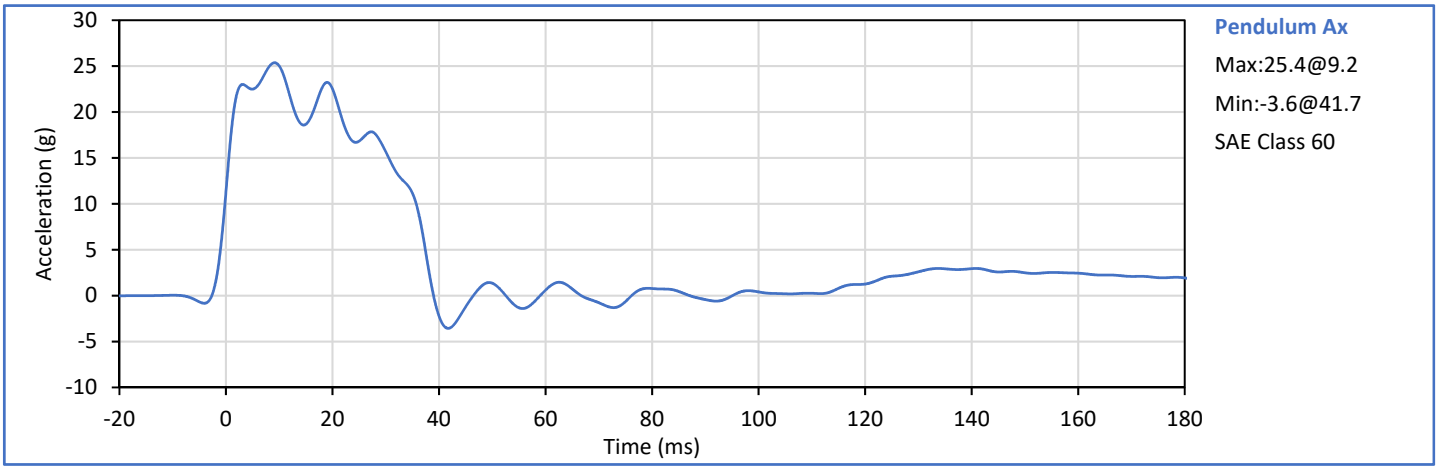
Approved By: P. Puzzuto

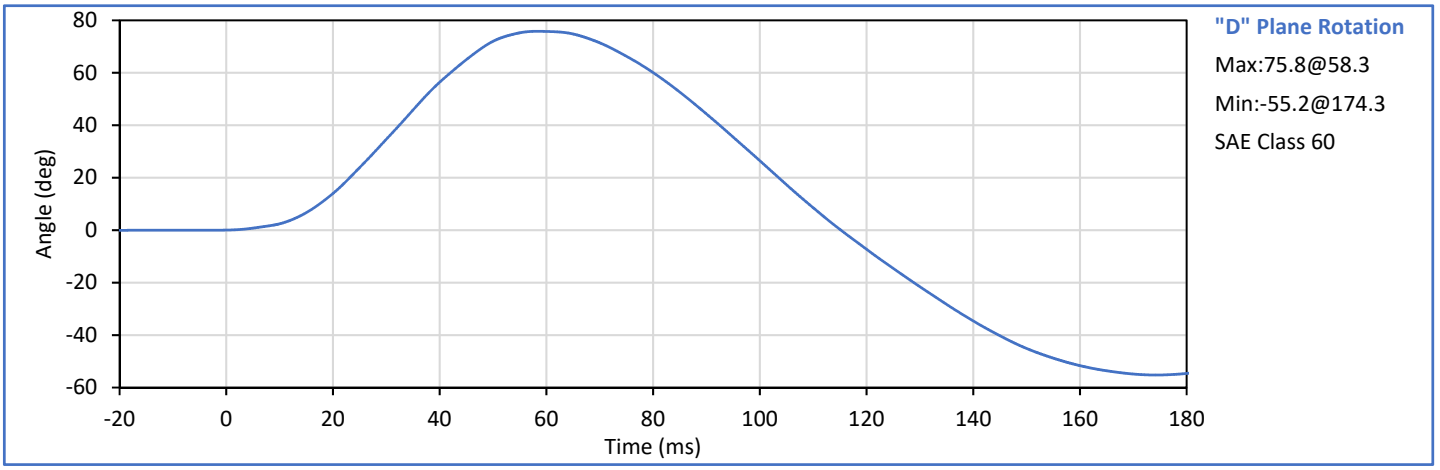
Applus IDIADA KARCO

Hybrid III 50th Percentile Male ATD
Neck Flexion Test

ATD Serial No.: 168 Test Date: 2020-09-29

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.9	Pass
Laboratory Relative Humidity	%	10	70	21	Pass
Pendulum Velocity	m/s	6.89	7.13	6.90	Pass
Pendulum Deceleration at 10 ms	g	22.5	27.5	25.0	Pass
Pendulum Deceleration at 20 ms	g	17.6	22.6	22.5	Pass
Pendulum Deceleration at 30 ms	g	12.5	18.5	15.7	Pass
Peak Pendulum Decel. after 30 ms	g	0.0	29.0	15.7	Pass
Deceleration Decay to Cross 5 g	ms	34.0	42.0	37.4	Pass
"D" Plane Rotation peak	deg	64.0	78.0	75.8	Pass
	ms	57.0	64.0	58.3	Pass
"D" Plane Rotation Decay To Zero	ms	113.0	128.0	115.3	Pass
Moment About Occipital Condyle	Nm	88.1	108.5	100.7	Pass
	ms	47.0	58.0	50.6	Pass
Moment Decay, Peak to Zero	ms	97.0	107.0	102.2	Pass
			Overall Test Results		Pass





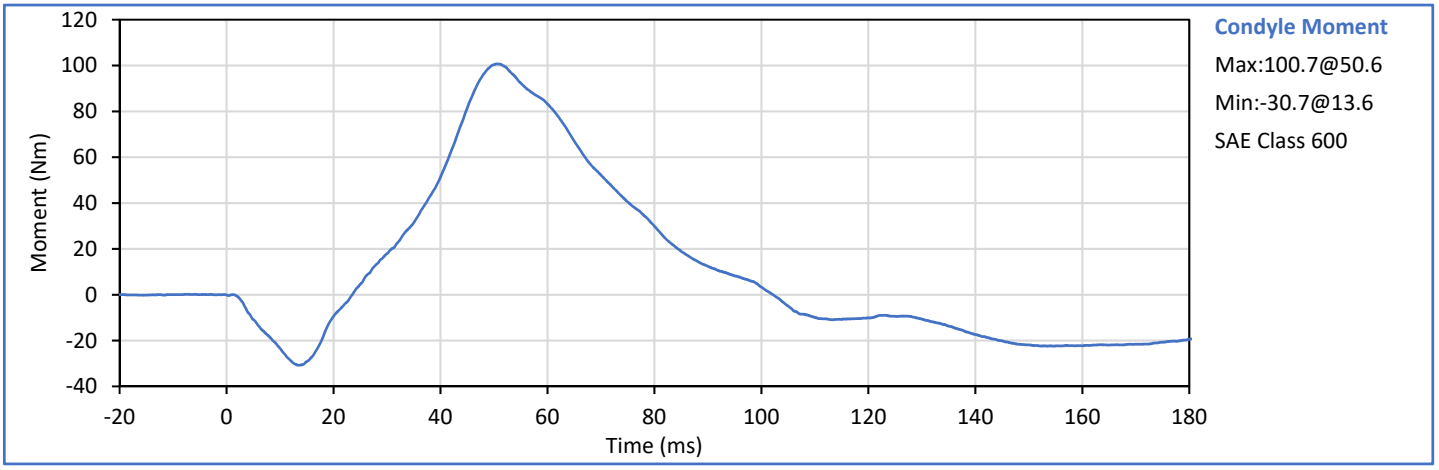
Technician: J. Hernandez

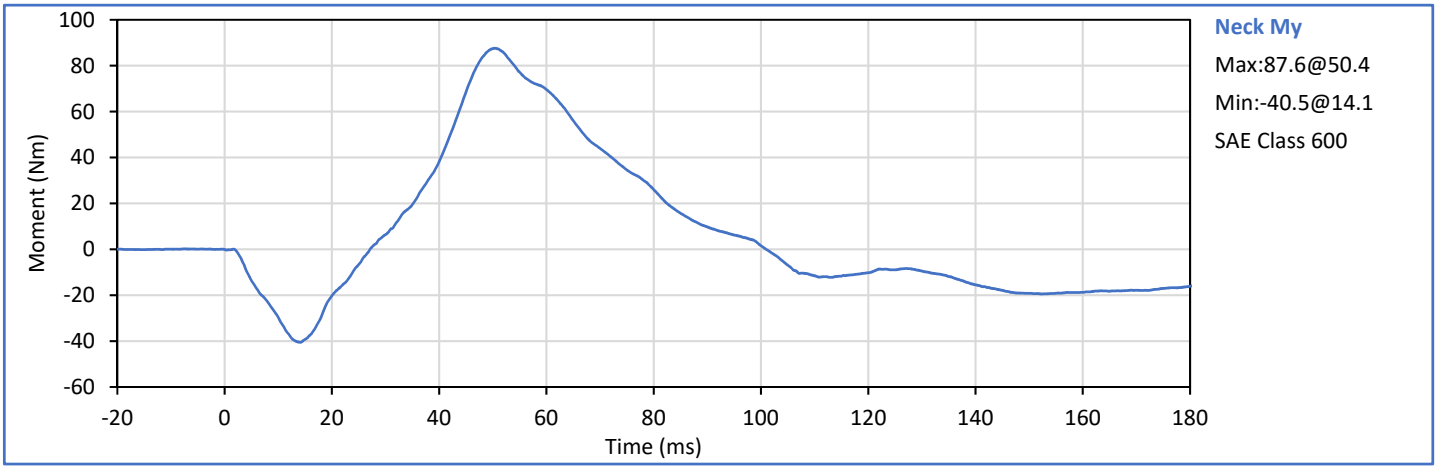
Approved By: P. Puzzuto

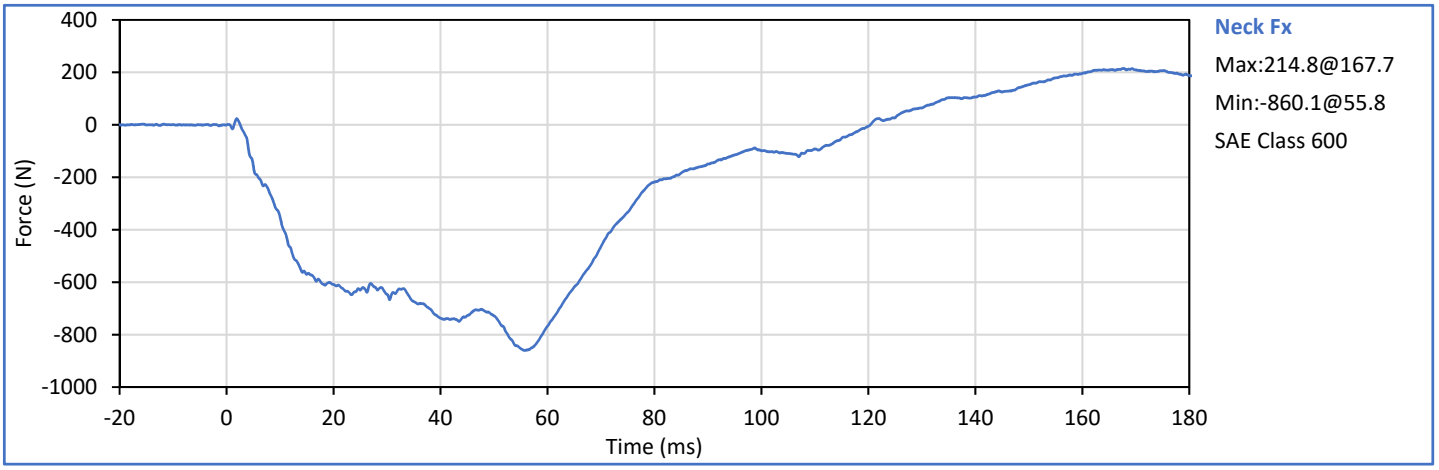
Applus IDIADA
KARCO

Hybrid III 50th Percentile Male ATD
Neck Flexion Test

ATD Serial No.: 168 Test Date: 2020-09-29





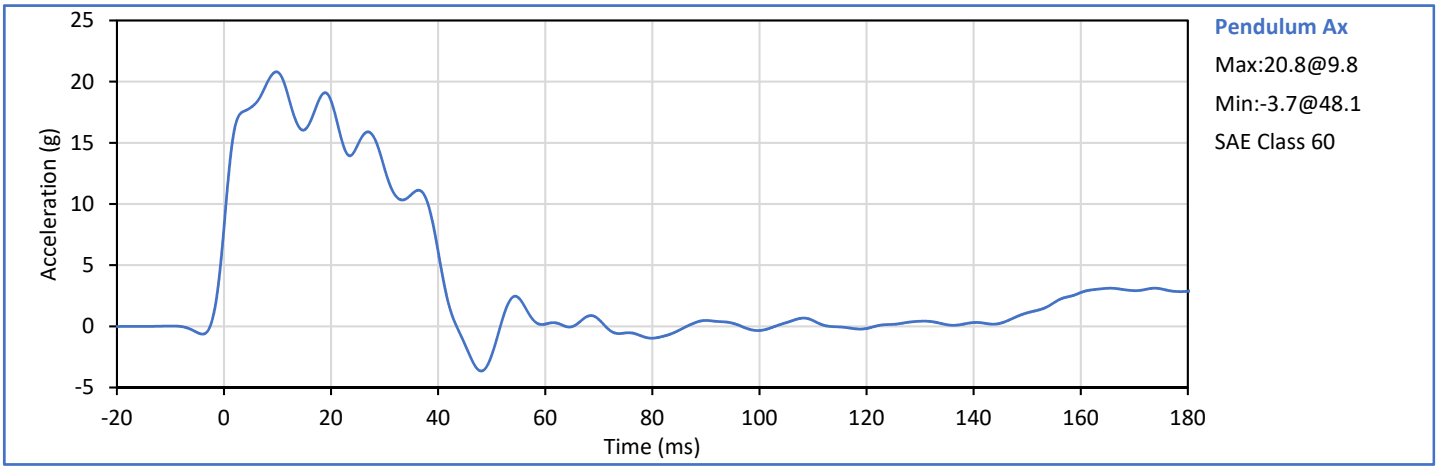


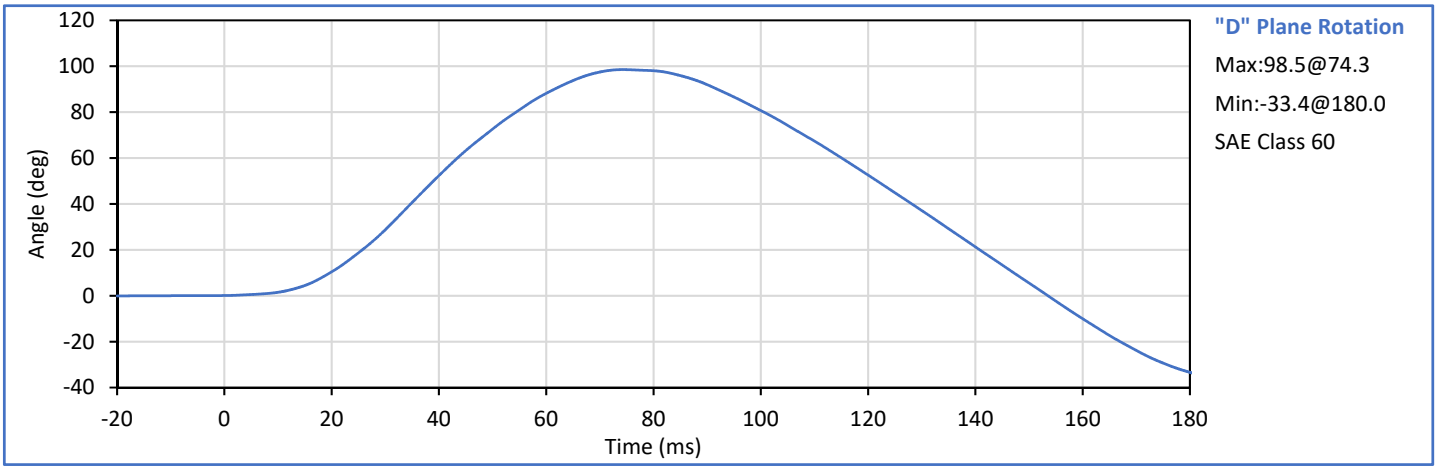
Applus IDIADA KARCO

Hybrid III 50th Percentile Male ATD
Neck Extension Test

ATD Serial No.: 168 Test Date: 2020-09-29

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.8	Pass
Laboratory Relative Humidity	%	10	70	32	Pass
Pendulum Velocity	m/s	5.94	6.19	6.09	Pass
Pendulum Deceleration at 10 ms	g	17.2	21.2	20.8	Pass
Pendulum Deceleration at 20 ms	g	14.0	19.0	18.4	Pass
Pendulum Deceleration at 30 ms	g	11.0	16.0	12.9	Pass
Peak Pendulum Decel. after 30 ms	g	0.0	22.0	12.9	Pass
Deceleration Decay to Cross 5 g	ms	38.0	46.0	40.5	Pass
"D" Plane Rotation peak	deg	81.0	106.0	98.5	Pass
	ms	72.0	82.0	74.3	Pass
"D" Plane Rotation Decay To Zero	ms	147.0	174.0	153.6	Pass
Moment About Occipital Condyle	Nm	-79.9	-52.9	-77.5	Pass
	ms	65.0	79.0	70.7	Pass
Moment Decay, Peak to Zero	ms	120.0	148.0	140.6	Pass
			Overall Test Results		Pass





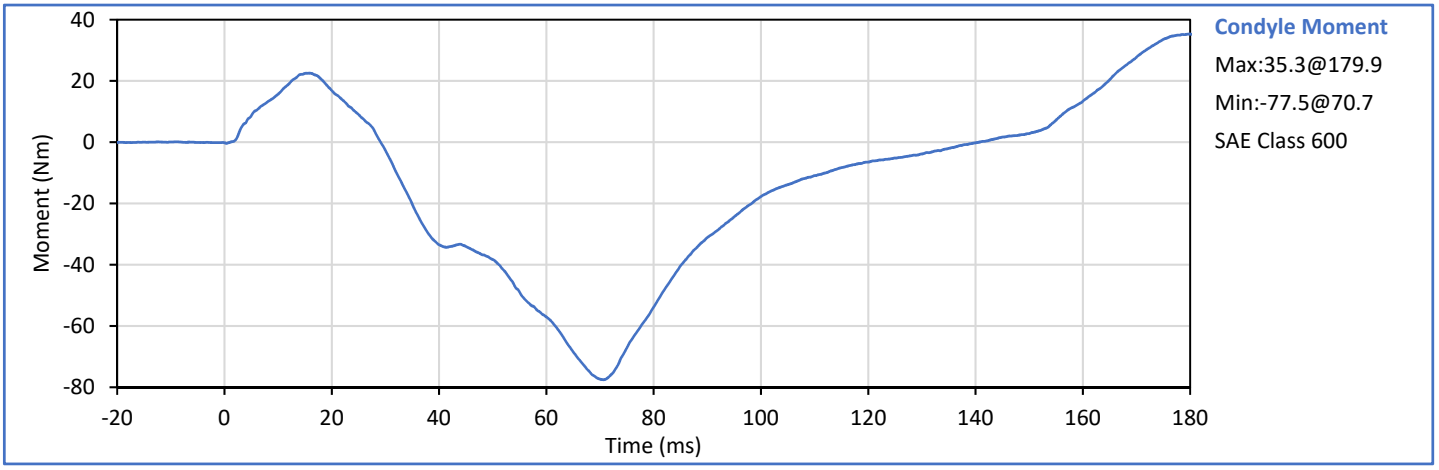
Technician: J. Hernandez

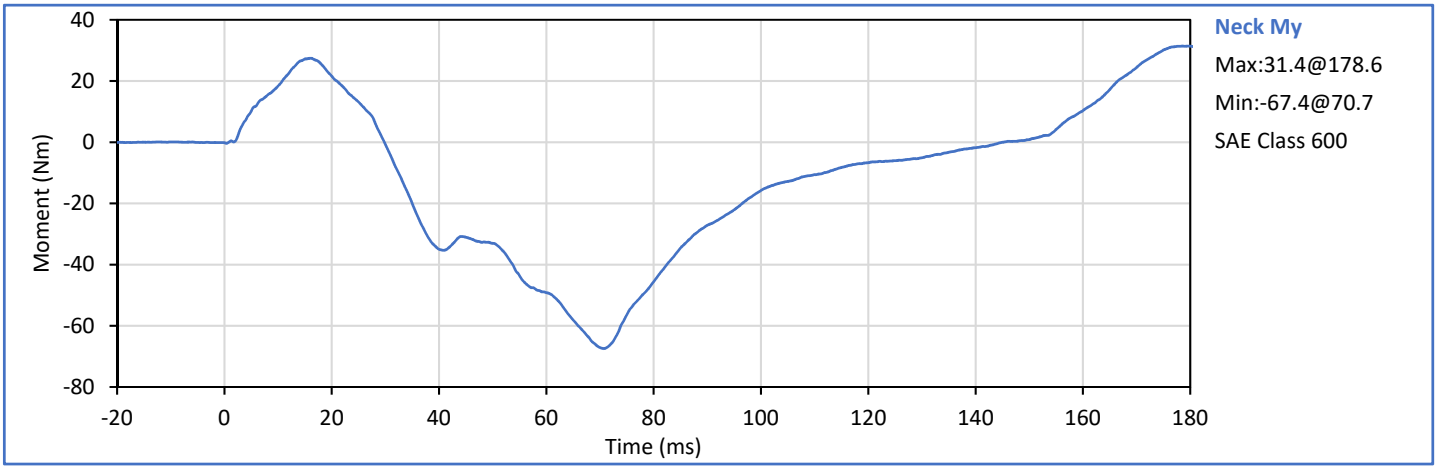
Approved By: P. Puzzuto

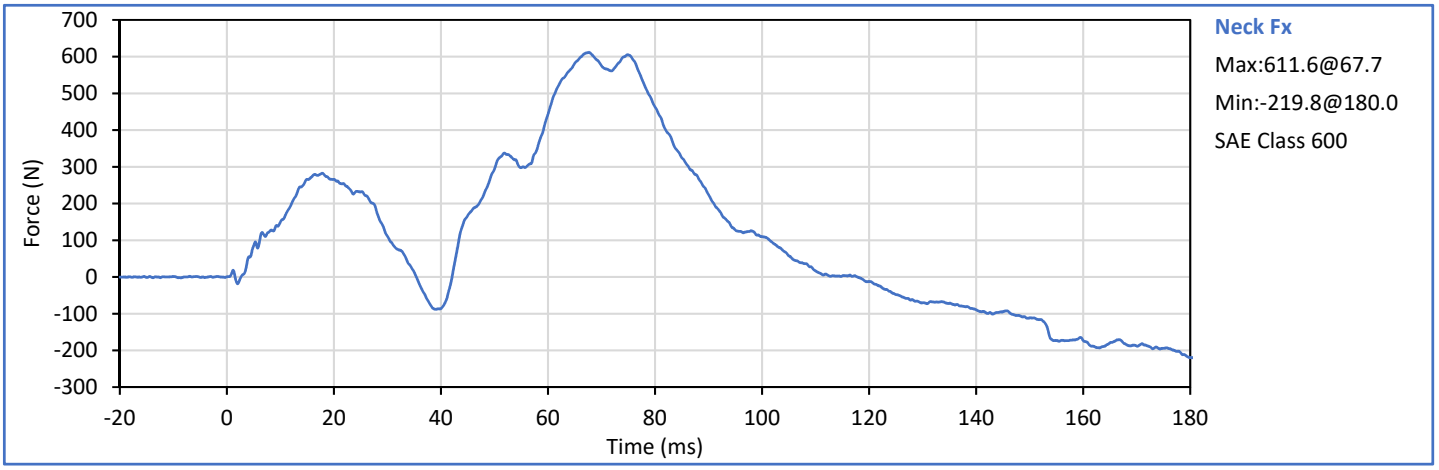
Applus IDIADA KARCO

Hybrid III 50th Percentile Male ATD
Neck Extension Test

ATD Serial No.: 168 Test Date: 2020-09-29





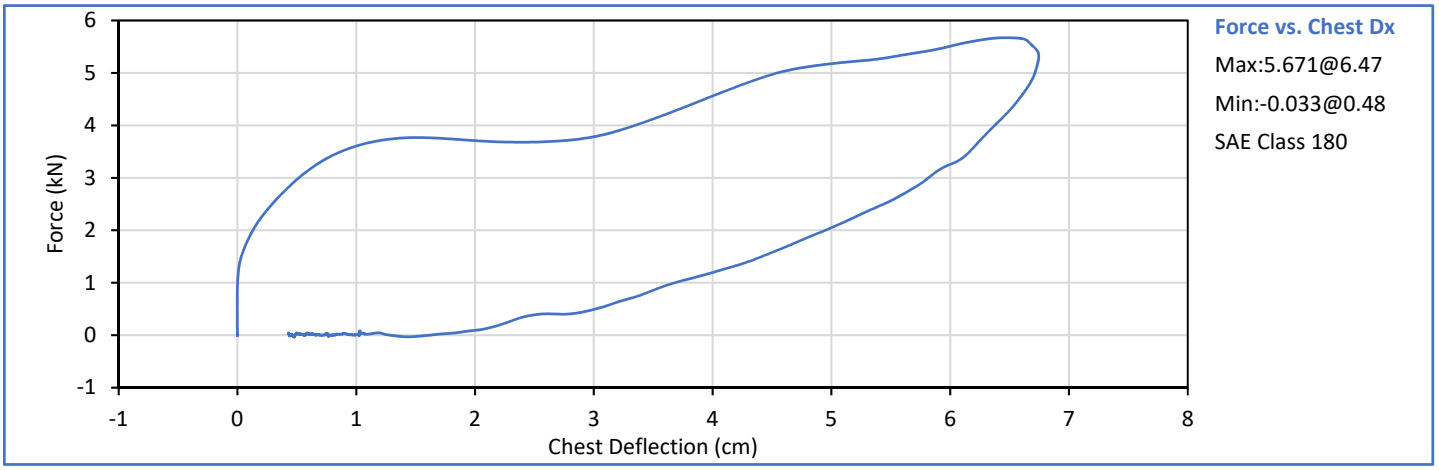


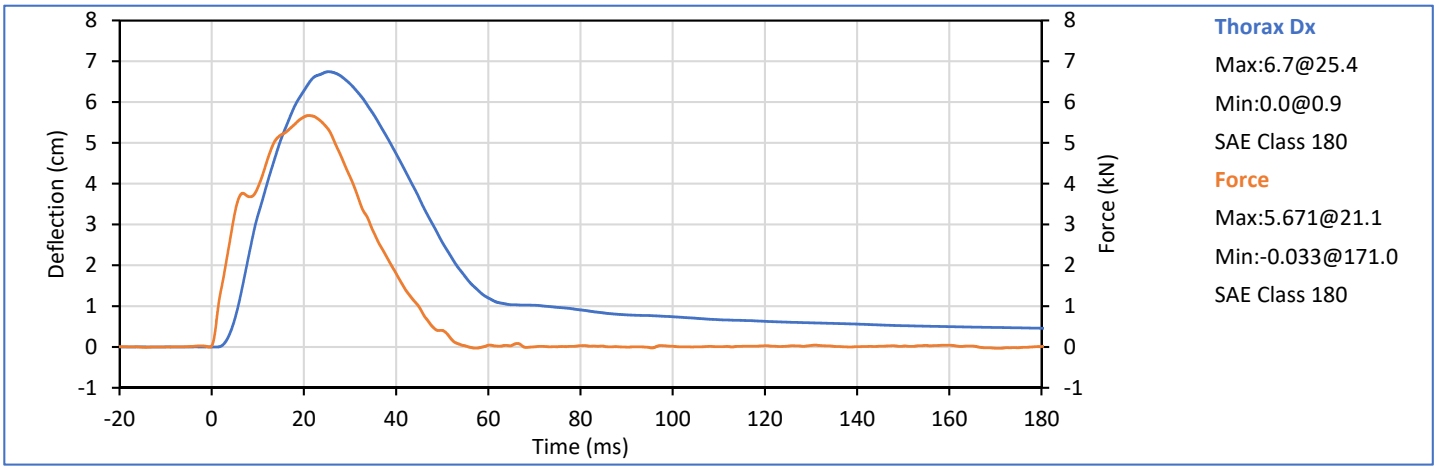
Applus IDIADA KARCO

Hybrid III 50th Percentile Male ATD
Thorax Impact

ATD Serial No.: 168 Test Date: 2020-09-30

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.9	Pass
Laboratory Relative Humidity	%	10	70	21	Pass
Probe Velocity	m/s	6.58	6.82	6.72	Pass
Peak Chest Deflection	cm	6.35	7.26	6.75	Pass
Peak Probe Force	kN	5.159	5.893	5.671	Pass
Internal Hysterisis	%	69.0	85.0	70.8	Pass
			Overall Test Results		Pass





Technician: J. Hernandez

Approved By: P. Puzzuto