REPORT NUMBER: R&D-KAR-20-001

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

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

NHTSA No: R20205378

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

NOVEMBER 6, 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
WASHINGTON, D.C. 20590

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Prepared By: _____

Mr. Amjad A. Jadallah, Project Engineer
Applus IDIADA KARCO Engineering, LLC.

Reviewed By: _____

Mr. Steven D. Matsusaka, Engineering Manager
Applus IDIADA KARCO Engineering, LLC.

Approved By: _____

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

Approval Date: November 6, 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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15. Supplementary Notes

16. Abstract

A 48.0 km/h Left 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 9, 2020.

The impact velocity of the vehicle was 48.08 km/h and the ambient temperature at the barrier face at the time of impact was 27.2°C. The vehicle's post-test maximum crush was 516.4 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})		247.80	152.51
Brain Injury Criteria (BrIC)		0.60	
Nij			0.37
Peak Neck Tension	N	743.70	988.23
Peak Neck Compression	N	-1931.40	-453.65
Peak Chest Deflection	mm	-39.90	-9.34
Peak Abdomen Deflection	mm	-15.30	
Peak Resultant Acetabulum Force	N	3561.10	
Peak Femur Force	N	-5969.80	-6163.33
Peak Tibia Index		0.66	

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. R20205378

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

This 48.0 km/h (29.8 mph) Left 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 Left 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. R20205378

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

A 48.0 km/h Left 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 9, 2020.

The test was documented by one (1) real-time and seventeen (17) 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. DO9799) was seated in the left front seating position (P1 – Driver) and one 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, knee, curtain, and torso/pelvis airbags. The passenger was restrained with frontal and knee airbags. Both ATDs were unbelted for this test.

Test Vehicle: 2020 Honda Accord 4-Door Sedan NHTSA No. R20205378
Test Program: R&D Left Side 30° Frontal Rigid Barrier Impact Test Date: 09/09/20

One hundred and ninety-one (191) 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 516.4 mm measured on the left 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 left side
- The windshield was broken at the top left corner due to an impact with the driver ATD's head

The driver ATD's visible contact points were:

- Head contacted the front airbag, curtain airbag, headliner, sun visor, A-pillar, and windshield
- Torso contacted the front airbag, curtain airbag, torso/pelvis airbag, and door panel
- Left leg contacted the knee airbag, knee bolster, and door panel
- Right leg contacted the knee airbag and knee bolster

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

- Head contacted the front airbag and sun visor
- Torso contacted the front airbag
- Left leg contacted the knee airbag
- Right leg contacted the knee airbag

SECTION 2 … (CONTINUED)

SUMMARY OF TEST RESULTS

Test Vehicle: 2020 Honda Accord 4-Door Sedan NHTSA No. R20205378

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

PRIMARY IMPACT DATA

Measured Parameter	Units	Value
Velocity at Impact	km/h	48.08
Vehicle Test Weight	kg	1645.5
Vehicle Maximum Static Crush	mm	516.4
Number of Data Channels		191
Number of Real-Time Cameras		1
Number of High-Speed Cameras		17

DUMMY CONTACTS

Description	Driver	Picture Ref.	Passenger	Picture Ref.
Dummy Type	THOR, S/N: DO9799		Hybrid III, S/N: 168	
Head Contact	Front Airbag, Curtain Airbag, Headliner, Sun Visor, A-Pillar, Windshield	A-45, A-47, A-48	Front Airbag, Sun Visor	A-70, A-72
Upper Torso Contact	Front Airbag, Curtain Airbag, Door Panel	A-45, A-46, A-49	Front Airbag	N/A
Lower Torso Contact	Front Airbag, Torso/Pelvis Airbag	A-46, A-49	Front Airbag	N/A
Left Leg Contact	Knee Airbag, Knee Bolster, Door Panel	A-41, A-46, A-49	Knee Airbag	A-71
Right Leg Contact	Knee Airbag, Knee Bolster	A-41, A-46, A-49	Knee Airbag	A-71

SECTION 2 … (CONTINUED)

SUMMARY OF TEST RESULTS

Test Vehicle: 2020 Honda Accord 4-Door Sedan NHTSA No. R20205378

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

DATA ANOMALIES

Channel Description	Explanation
P1TH UPPER LEFT DGIR Z ROTATION	No data collected. Zeroed at a nominal -13°. The upper left DGIR Z Rotation cable was found to be damaged, the cable was repaired post-test.
P1TH ABDOMEN RIGHT DGIR X DISPLACEMENT	Questionable data.
P1TH MID TIBIA LEFT X ACCELERATION	No data collected. The Left Tibia Ax cable was found damaged upon receipt of the ATD and the damage was deemed too close to the accelerometer head to repair. NHTSA approved running the test without recording this channel.
P1TH ABDOMEN RIGHT LOWER DX	Questionable Data. Calculated result from questionable IRTRACC
DOOR SILL LR REDUNDANT X	No data collected. Accelerometer cable damaged Pre-Test

SECTION 2 … (CONTINUED)

SUMMARY OF TEST RESULTS

Test Vehicle: 2020 Honda Accord 4-Door Sedan NHTSA No. R20205378

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

Driver, THOR S/N DO9799					
LOCATION	**DESCRIPTION**	**UNIT**	**SOURCE**	**MAX**	**MIN**
Head	HIC 15ms		Compute	247.8	
	Brain Injury Criteria (BrIC)		Compute	0.597	
	Head Rotational Velocity X	Deg/s	60	628.9	-390.4
	Head Rotational Velocity Y	Deg/s	60	1011.0	-1462.5
	Head Rotational Velocity Z	Deg/s	60	867.6	-368.5
Neck	Upper Neck Z-axis Force	N	1000	734.7	-1931.4
	Upper Neck Y-axis Moment	Nm	600	14.1	-17.4
Chest	Upper Left Resultant Chest Deflection	mm	Compute	17.8	
	Upper Right Resultant Chest Deflection	mm	Compute	39.9	
	Lower Left Resultant Chest Deflection	mm	Compute	19.0	
	Lower Right Resultant Chest Deflection	mm	Compute	11.4	
Abdomen	Lower Left X-axis Deflection	mm	Compute	9.7	-15.3
	Lower Right X-axis Deflection	mm	Compute	10.6	-8.8
Acetabulum	Left Acetabulum Resultant Force	N	Compute	2116.2	
	Right Acetabulum Resultant Force	N	Compute	3561.1	
Femur	Left Femur Force, FZ	N	600	344.1	-2515.4
	Right Femur Force, FZ	N	600	102.0	-5969.8
Tibia	Left Upper Tibia, FZ	N	600	-4.9	-1896.6
	Left Upper Tibia Index		Compute	0.660	
	Right Upper Tibia, FZ	N	600	216.0	-2565.2
	Right Upper Tibia Index		Compute	0.267	
	Left Lower Tibia, FZ	N	600	-3.5	-2991.2
	Left Lower Tibia Index		Compute	0.224	
	Right Lower Tibia, FZ	N	600	68.9	-3480.0
	Right Lower Tibia Index		Compute	0.222	
Ankle	Left Ankle Rotation, RX	Deg	180	31.0	-1.2
	Left Ankle Rotation, RY	Deg	180	19.4	-12.2
	Left Ankle Dorsiflexion Moment, MY	Nm	Compute	62.6	-79.9
	Left Ankle In/Eversion Moment, MX	Nm	Compute	69.3	-10.0
	Right Ankle Rotation, RX	Deg	180	17.3	-0.4
	Right Ankle Rotation, RY	Deg	180	8.3	-9.6
	Right Ankle Dorsiflexion Moment, MY	Nm	Compute	11.8	-21.8
	Right Ankle In/Eversion Moment, MX	Nm	Compute	13.7	-12.9

Anomalies:

Lower right IRTRACC did not collect accurate raw voltage

SECTION 2 … (CONTINUED)

SUMMARY OF TEST RESULTS

Test Vehicle: 2020 Honda Accord 4-Door Sedan NHTSA No. R20205378

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

	Passenger, Hybrid III 50th Percentile Male S/N 168				
Injury Reading	**Units**	**Limit**	**Value**	**t¹**	**t²**
HIC 15		700	152.513	88.4	103.4
Nij		1	0.371	90.2	***NTF***
Upper Neck Force Z (Tension)	N	4170	988.228	127.0	
Upper Neck Force Z (Compression)	N	4000	-453.648	99.9	
Upper Neck Moment Y (Flexion)	Nm	310	122.593	86.8	
Upper Neck Moment Y (Extension)	Nm	135	-8.896	63.3	
Chest Deflection	mm	63	-9.339	106.1	
3 ms Chest Clip	g	60	41.140	89.6	92.6
Femur Force, Left	N	10000	-6163.325	90.6	
Femur Force, Right	N	10000	-4114.365	74.2	

SECTION 3

OCCUPANT AND VEHICLE INFORMATION / DATA SHEETS

Test Vehicle: 2020 Honda Accord 4-Door Sedan NHTSA No. R20205378

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

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. R20205378

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

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA Number	R20205378
Model Year	2020
Make	Honda
Model	Accord
Body Style	4-Door Sedan
VIN	1HGCV1F14LA082836
Body Color	Modern Steel M.
Odometer Reading (km / mi)	31 / 19
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**

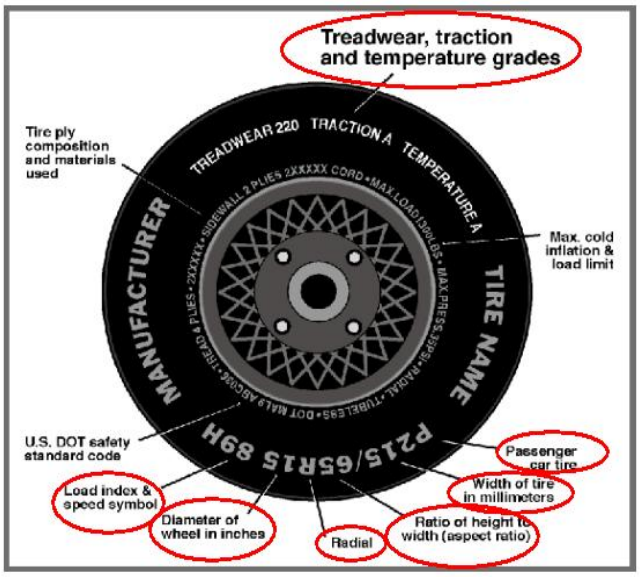
*A maximum RCLW of 136.0 kg is used for a truck, MPV, or bus

DATA SHEET NO. 1 … (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2020 Honda Accord 4-Door Sedan NHTSA No. R20205378

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



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	Steel, Polyester, Nylon	Steel, Polyester, Nylon
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. R20205378

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

TEST VEHICLE WEIGHTS

	Units	As Delivered Weights (UVW)			As Tested Weights (ATW)		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	433.5	281.0		479.0	358.0	
Right	kg	423.5	277.5		461.0	347.5	
Ratio	%	60.5%	39.5%	100.0%	57.1%	42.9%	100.0%
Total	kg	857.0	558.5	1415.5	940.0	705.5	1645.5

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	1415.5	A
Weight of THOR-50M and AM50	kg	192.5	B
Rated Cargo/Luggage Weight (RCLW)	kg	44.8	C
Calculated Vehicle Target Weight (TVTW)	kg	1652.8	A+B+C

TEST VEHICLE ATTITUDES

Condition	Units	LF	RF	LR	RR	CG Aft of Front Axle
As Delivered	mm	705	710	735	742	1116
As Tested	mm	692	698	695	697	1213
Post-Test	mm	740	731	691	702	

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Total Vehicle Wheel Base	mm	2828
Total Vehicle Length at Left Side	mm	4733
Total Vehicle Length at Centerline	mm	4881
Total Vehicle Length at Right Side	mm	4723
Weight of Ballast/Equipment in Cargo Area	kg	76.0
Weight of Vehicle Components Removed	kg	57.0
Amount of Stoddard Solvent in Fuel Tank	L	52.10

VEHICLE COMPONENTS REMOVED TO MEET TEST WEIGHT:

Rear seats, deck lid, rear bumper, and lights

DATA SHEET NO. 1 … (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2020 Honda Accord 4-Door Sedan NHTSA No. R20205378

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

TARGET VEHICLE STRUCTURAL MEASUREMENTS

No.	Description	Units	Pre-Test
1	Total Length	mm	4881
2	Total Width	mm	1863
3*	Bumper Top Height	mm	269
4*	Bumper Bottom Height	mm	235
5*	Longitudinal Member Top Height	mm	511
6	Distance Between Longitudinal Members	mm	1023
7	Longitudinal Member Width	mm	86
8*	Engine Top Height	mm	815
9*	Engine Bottom Height	mm	197
10	Engine and Gearbox Width	mm	518
11	Front Bumper to Engine Distance	mm	423
12*	Front Shock Absorber Fixing Height	mm	885
13*	Bonnet Leading Edge Height	mm	804
14	Front Shock Absorber Fixing Width	mm	1180
15	Front Bumper to Front Axle Distance	mm	930
16	Front Axle to A-Pillar Distance	mm	559
17	A-Pillar to B-Pillar Distance	mm	1062
18	B-Pillar to Rear Axle Distance	mm	1206
19	B-Pillar to C-Pillar Distance	mm	959
20*	Roof Sill Bottom Height	mm	1316
21*	Roof Sill Top Height	mm	1432
22*	Floor Sill Bottom Height	mm	188
23*	Floor Sill Top Height	mm	343

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

DATA SHEET NO. 2

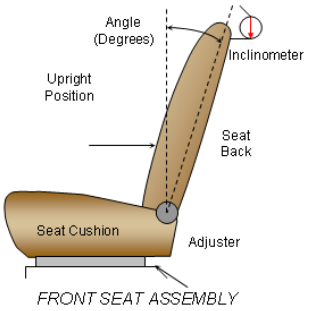
SEAT ADJUSTMENT, FUEL SYSTEM, AND STEERING WHEEL

Test Vehicle: 2020 Honda Accord 4-Door Sedan NHTSA No. R20205378

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

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.

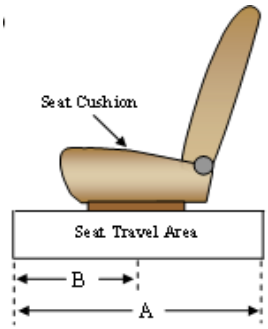


SEAT BACK ANGLE

Seating Position	Unit	FORM 208 Position	After ATD Positioning
Driver Seat Back Angle	Degrees	2.7	4.2
Passenger Seat Back Angle	Degrees	2.7	2.2

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

DATA SHEET NO. 2 … (CONTINUED)

SEAT ADJUSTMENT, FUEL SYSTEM, AND STEERING WHEEL

Test Vehicle: 2020 Honda Accord 4-Door Sedan NHTSA No. R20205378

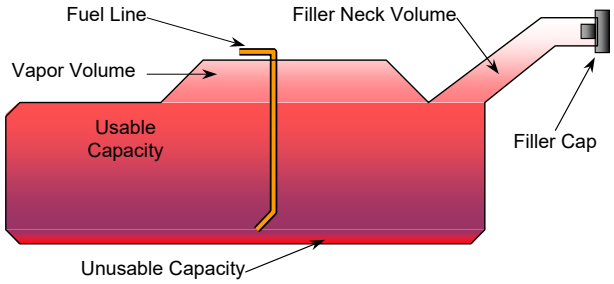
Test Program: R&D Left Side 30° Frontal Rigid Barrier Impact Test Date: 09/09/20

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

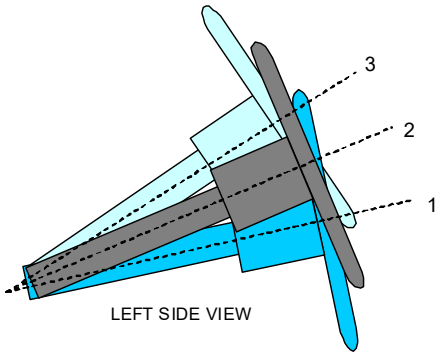
Fuel was evacuated according to the specifications provided by the manufacturer in Form 208. The electric fuel pump operates when the electrical system is activated.



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

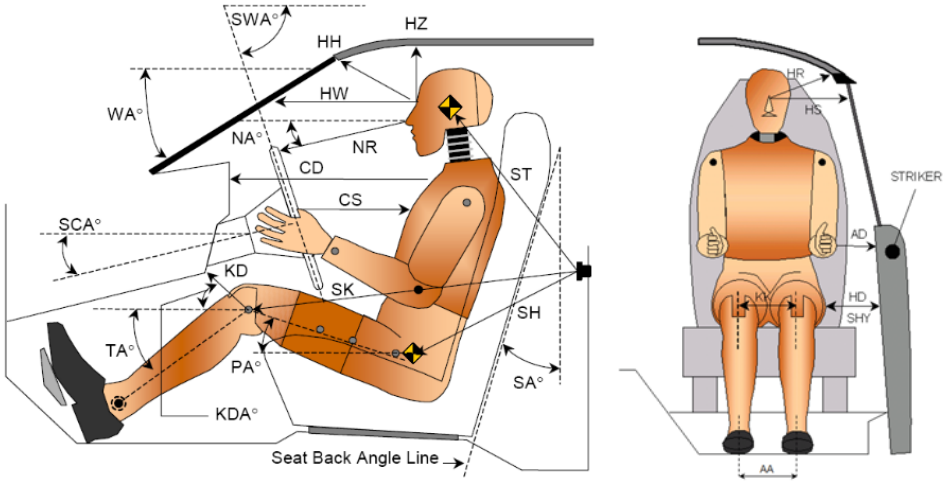
	Degrees	Fore-Aft Position (mm)
Lowermost Position, No. 1	18.0	95
Geometric Center Position, No. 2	20.7	115
Uppermost Position, No. 3	23.4	135
Telescoping Steering Wheel Travel		40
Test Position	20.7	115

DATA SHEET NO. 3

DUMMY CLEARANCE DIMENSIONS

Test Vehicle: 2020 Honda Accord 4-Door Sedan NHTSA No. R20205378

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



LEFT SIDE VIEW

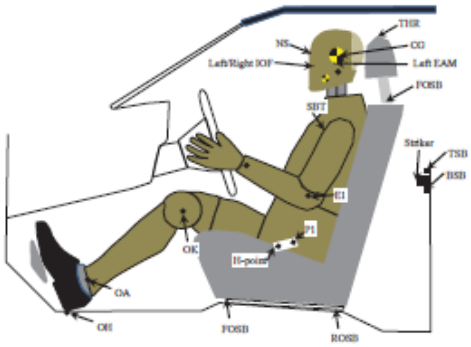
Code	Measurement Description	Driver S/N# DO9799		Passenger S/N# 168	
		Length (mm)	Angle (°)	Length (mm)	Angle (°)
HZ	Nasion to Roof (Z Distance)	186		182	
HH	Nasion to Header (3D Distance)	396		316	
HW	Nasion to Windshield Point 1 Inside (X Distance)	658		594	
NR	Tip of Nose to Top of Steering Wheel (3D Distance)	487			
CD	Chest Point 1 to Dash Point 1 (3D Distance)	578		498	
CS	Chest Point 2 to Center of Steering Wheel (X Distance)	334			
CBS	Chest Point 3 to Bottom of Steering Wheel (X Distance)	191			
IKD	Inboard Knee to Dash Point 3 (3D Distance)			146	
OKD	Outboard Knee to Dash Point 2 (3D Distance)	123		214	
HR	Nasion to Side Header (3D Distance)	216		214	
HS	Nasion to Side Window Distance (Y Distance)	366		363	
AD	Elbow to Door (Y Distance)	144		51	
HD	H-Point to Door (Y Distance)	136		155	
HLHL	Inboard Heel to Outboard Heel (Y Distance)	360		231	
KK	Inboard Knee to Outboard Knee (Y Distance)			321	
SH	Striker to H-Point (3D Distance)	428		410	
HRA	Head Restraint Post Angle	4.2		2.2	
	H-Point Tool Angle		20.0		22.1
	Torso Angle		18.8		9.7
	Windshield Angle		60.4		60.1
	Head Angle (X)		-0.3		0.2
	Head Angle (Y)		0.7		0.3
	T1 Angle (X)		-1.0		
	T1 Angle (Y)		2.5		
	T6 Angle (X)		-0.9		
	T6 Angle (Y)		22.7		
	T12 Angle (X)		-0.6		
	T12 Angle (Y)		31.2		
	Pelvis Angle (X)		-0.9		
	Pelvis Angle (Y)		32.1		

DATA SHEET NO. 4

DUMMY CMM MEASUREMENTS RELATIVE TO VCS

Test Vehicle: 2020 Honda Accord 4-Door Sedan NHTSA No. R20205378

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



Description	Units	Driver S/N# DO9799			Passenger S/N# 168		
		X	Y	Z	X	Y	Z
Center of Upper Striker Bolt	mm	2315	-810	-148	2313	807	-193
Center of Lower Striker Bolt	mm	2318	-811	-112	2318	809	-157
Center of Striker Bar	mm	2349	-812	-133	2348	810	-180
Front Outboard Seat Bolt	mm	2842	-607	366	2851	603	302
Rear Outboard Seat Bolt	mm	2440	-607	378	2446	604	321
Center of Steering Wheel Hub	mm	2913	-376	-237	2230	453	-460
Outer Head Restraint Post	mm	2215	-450	-411	2993	375	-870
Right Head CG	mm	2417	-286	-529	2497	453	-575
Left Head CG	mm	2411	-440	-531	2501	298	-573
Right EAM	mm	2424	-290	-502			
Left EAM	mm	2418	-436	-504			
Nasion	mm	2508	-367	-543	2590	377	-567
Right IOF	mm	2508	-335	-504			
Left IOF	mm	2504	-400	-505			
Tip of Nose	mm	2508	-369	-504	2607	380	-532
Tip of Chin	mm	2506	-367	-405	2576	376	-452
Chest Point 1	mm	2546	-368	-274	2603	376	-328
Chest Point 2	mm	2573	-377	-222	2471	560	-307
Chest Point 3	mm	2661	-375	-58			
Shoulder Point 1	mm	2402	-579	-298	2471	560	-307
Shoulder Point 2	mm	2483	-560	-296			
Elbow	mm	2654	-635	-85	2559	641	-68
Center of H-Point Tool	mm	2548	-621	103			
H-Point on H-Point Tool	mm	2622	-617	132	2615	661	94
H-Point on ATD Skin	mm	2622	-571	130	2615	553	94
Outboard Knee	mm	3002	-605	-20	3006	534	-37
Inboard Knee	mm				3014	214	-26
Outboard Ankle	mm	3300	-585	275	3327	494	165
Inboard Ankle	mm	3331	-230	275	3342	256	137
Outboard Heel	mm	3329	-556	402	3332	518	343
Inboard Heel	mm	3328	-196	401	3349	288	339

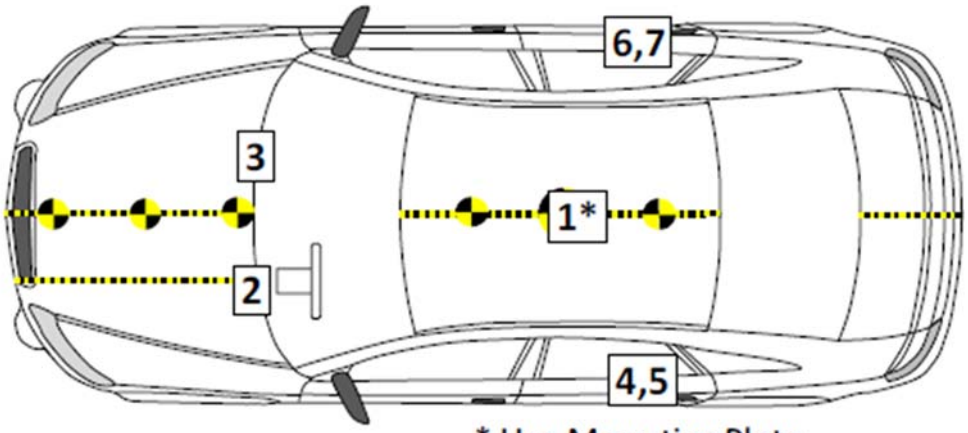
Reference Point:
+X – From the rear of the vehicle to the front of the vehicle
+Y – From the left side of the vehicle to the right side of the vehicle
+Z – From the top of the vehicle to the bottom of the vehicle

DATA SHEET NO. 5

VEHICLE INSTRUMENTATION DATA

Test Vehicle: 2020 Honda Accord 4-Door Sedan NHTSA No. R20205378

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



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	2107	-2	221
2	Driver Floor Pan	x, y, z	°/s	3671	-345	141
3	Passenger Floor Pan	x, y, z	g	3669	347	152
4	Door Sill LR	x, y	g	1934	-745	247
5	Door Sill LR Redundant	x, y	g	1894	-745	248
6	Door Sill RR	x, y	g	1941	740	247
7	Door Sill RR Redundant	x, y	g	1912	743	247

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

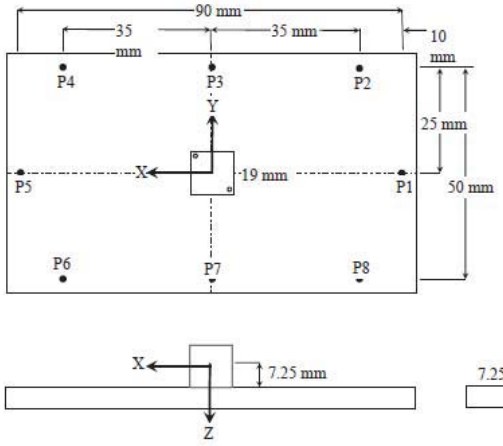
DATA SHEET NO. 5 … (CONTINUED)

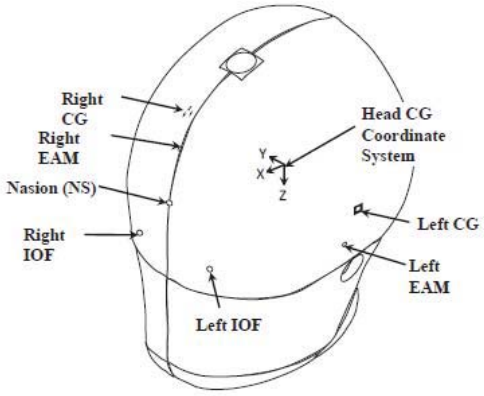
VEHICLE INSTRUMENTATION DATA

Test Vehicle: 2020 Honda Accord 4-Door Sedan NHTSA No. R20205378

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

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	2087	28	238
P2	Plate Point 2	mm	2112	38	237
P3	Plate Point 3	mm	2137	28	235
P4	Plate Point 4	mm	2137	-7	235
P5	Plate Point 5	mm	2137	-42	235
P6	Plate Point 6	mm	2112	-52	237
P7	Plate Point 7	mm	2087	-42	238
P8	Plate Point 8	mm	2087	-7	238

DRIVER HEAD POINTS IN RELATION TO HEAD CG COORDINATE SYSTEM

Description	Units	x	y	z
Left CG	mm	67	-41	43
Left EAM	mm	74	-39	72
Left IOF	mm	155	4	74
Right IOF	mm	155	67	74
Nasion	mm	157	34	34
Right EAM	mm	74	109	73
Right CG	mm	66	113	44

DATA SHEET NO. 5 … (CONTINUED)

VEHICLE INSTRUMENTATION DATA

Test Vehicle: 2020 Honda Accord 4-Door Sedan NHTSA No. R20205378

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

Location No.	Description	Axes	Units	Positive Direction		Negative Direction	
				Max	Time (ms)	Min	Time (ms)
1	Vehicle CG	x	g	1.4	155.0	-32.5	69.4
		y	g	15.5	35.9	-0.9	204.4
		z	g	11.4	33.7	-19.8	27.9
	Vehicle CG Rotation	x	°/s	59.2	77.1	-12.7	22.7
		y	°/s	57.0	31.5	-91.2	73.2
		z	°/s	49.2	51.6	-54.6	294.9
2	Driver Floor Pan	x	g	20.7	11.9	-50.8	65.5
		y	g	25.4	34.1	-13.2	27.7
		z	g	10.2	12.0	-14.6	17.8
3	Passenger Floor Pan	x	g	1.1	27.3	-29.7	68.5
		y	g	24.3	34.6	-8.1	24.9
		z	g	11.4	45.9	-12.6	23.8
4	Door Sill LR	x	g	1.0	158.6	-35.2	70.3
		y	g	14.7	64.4	-2.5	21.2
5	Door Sill LR Redundant	x	g				
		y	g	13.6	64.6	-2.4	21.3
6	Door Sill RR	x	g	1.5	140.3	-34.3	63.8
		y	g	11.4	36.2	-2.3	9.8
7	Door Sill RR Redundant	x	g	2.5	140.1	-54.9	69.3
		y	g	25.9	64.5	-3.0	28.2

Note: See Appendix B for all vehicle data plots

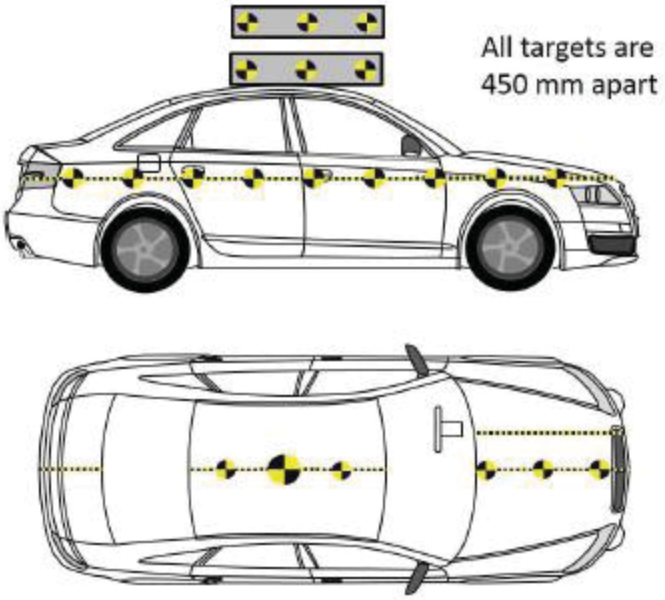
DATA SHEET NO. 6

PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

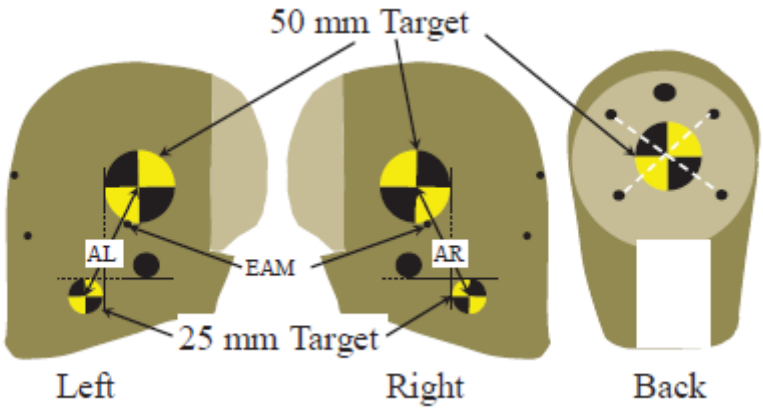
Test Vehicle: 2020 Honda Accord 4-Door Sedan NHTSA No. R20205378

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

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. R20205378

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

INSTRUMENTATION

Instrumentation	Number of Channels Collected
Driver Dummy Sensors	118
Passenger Dummy Sensors	43
Vehicle Structure Sensors	20
Airbag Timing Sensor	10
Total	191

CAMERA COVERAGE

Type of Camera	Number of Cameras Collected
High-Speed Vehicle Onboard	3
High-Speed Off-Board	14
Real-Time Panning	1
Total	18

DATA SHEET NO. 8

POST TEST OBSERVATIONS

Test Vehicle: 2020 Honda Accord 4-Door Sedan NHTSA No. R20205378

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

TEST DUMMY INFORMATION AND CONTACT

Description	Driver	Passenger
Dummy Type/Serial No.	THOR-50M / DO9799	AM50 / 168
Lower Leg Type	LX	
Head Contact	Front Airbag, Curtain Airbag, Headliner, Sun Visor, A-Pillar	Front Airbag, Sun Visor
Upper Torso Contact	Front Airbag, Curtain Airbag, Door Panel	Front Airbag
Lower Torso Contact	Front Airbag, Torso/Pelvis Airbag	Front Airbag
Left Knee Contact	Knee Airbag, Knee Bolster, Door Panel	Knee Airbag
Right Knee Contact	Knee Airbag, Knee Bolster	Knee Airbag

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	1
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	Yes	Yes	No
Side Airbag 2 (Torso/Pelvis)	Yes	Yes	Yes	No
Knee Airbag	Yes	Yes	Yes	Yes
Seat Belt Pretensioner	Yes	Yes	Yes	Yes
Seat Belt Load Limiter	Yes	Yes	Yes	Yes

DATA SHEET NO. 9

VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2020 Honda Accord 4-Door Sedan NHTSA No. R20205378

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

No.	Description	Pre-Test	Post-Test	Difference
1	Total Length of Vehicle at Centerline	4881	4687	-194
2	Rear Surface of Vehicle to Front of Engine	4457	4362	-95
3	RSOV to Firewall	3853	3846	-6
4	RSOV to Upper Leading Edge of Right Door	3478	3476	-2
5	RSOV to Upper Leading Edge of Left Door	3474	3472	-2
6	RSOV to Lower Leading Edge of Right Door	3464	3461	-3
7	RSOV to Lower Leading Edge of Left Door	3460	3459	-1
8	RSOV to Upper Trailing Edge of Right Door	2277	2276	-1
9	RSOV to Upper Trailing Edge of Left Door	2275	2274	-1
10	RSOV to Lower Trailing Edge of Right Door	2290	2287	-3
11	RSOV to Lower Trailing Edge of Left Door	2287	2287	-1
12	RSOV to Bottom of A-Pillar, Right Side	3393	3392	-1
13	RSOV to Bottom of A-Pillar, Left Side	3391	3388	-3
14	RSOV to Firewall, Right Side	4020	4018	-1
15	RSOV to Firewall, Left Side	4019	3989	-31
16	RSOV to Steering Column	2935	2955	20
17	Center of Steering Column to A-Pillar	455	432	-23
18	Center of Steering Column to Headliner	463	442	-21
19	RSOV to Right Side of Front Bumper	4723	4755	32
20	RSOV to Left Side of Front Bumper	4733	4217	-516
21	Length of Engine Block	566	519	-47
RD	RSOV to Right Side of Dash Panel	3158	3163	5
CD	RSOV to Center of Dash Panel	3071	3081	9
LD	RSOV to Left Side of Dash Panel	3154	3158	4

All measurements in millimeters.

DATA SHEET NO. 10

ACCIDENT INVESTIGATION DIVISION DATA

Test Vehicle: 2020 Honda Accord 4-Door Sedan NHTSA No. R20205378

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

VEHICLE INFORMATION

VIN: 1HGCV1F14LA082836 Wheelbase (mm): 2828

Vehicle Size Category: Passenger Car Test Weight (kg): 1645.5

ACCELEROMETER DATA

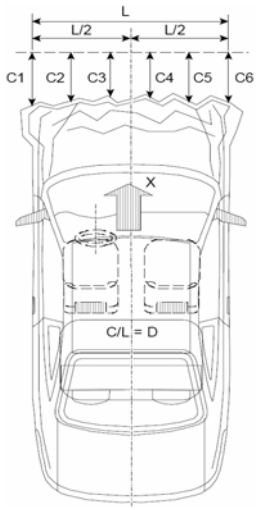
Accelerometer Locations: Vehicle CG_x

Cal. Procedure/Interval: Vibration Test / 6 months

Integration Algorithm: NHTSA Standard

Linearity: Good

Impact Velocity (km/h): 48.08



CRUSH PROFILE

Collision Deformation Classification: 12FLEW3

Midpoint of Damage: Vehcle Centerline

Damage Region Length (mm): 1298

Impact Mode: Left Side 30° Frontal

Crush Measurements

No.	Measurement Description	Units	Pre-Test	Post-Test	Difference
C1	Crush Zone 1 at Left Side	mm	4705	4192	-513
C2	Crush Zone 2 at Left Side	mm	4835	4458	-377
C3	Crush Zone 3 at Left Side	mm	4828	4568	-260
C4	Crush Zone 4 at Right Side	mm	4828	4674	-154
C5	Crush Zone 5 at Right Side	mm	4834	4756	-79
C6	Crush Zone 6 at Right Side	mm	4695	4730	35
L	C1 to C6	mm	1298		

DATA SHEET NO. 11

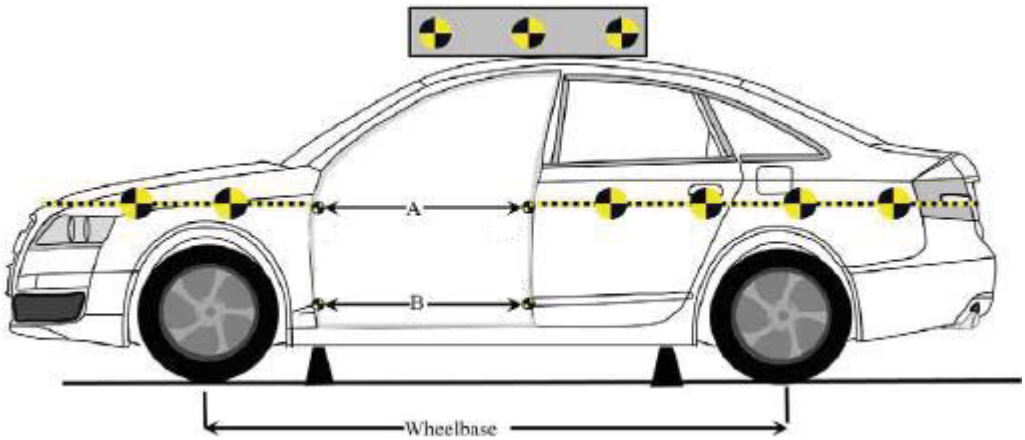
VEHICLE INTRUSION MEASUREMENTS RELATIVE TO VCS

Test Vehicle: 2020 Honda Accord 4-Door Sedan NHTSA No. R20205378

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

DOOR OPENING WIDTH

Item	Description	Units	Pre-Test	Post-Test	Difference
A	Driver Side Upper	mm	901	901	0
B	Driver Side Lower	mm	723	723	0
D	Passenger Side Upper	mm	904	902	2
E	Passenger Side Lower	mm	731	730	0



DATA SHEET NO. 11 … (CONTINUED)

VEHICLE INTRUSION MEASUREMENTS RELATIVE TO VCS

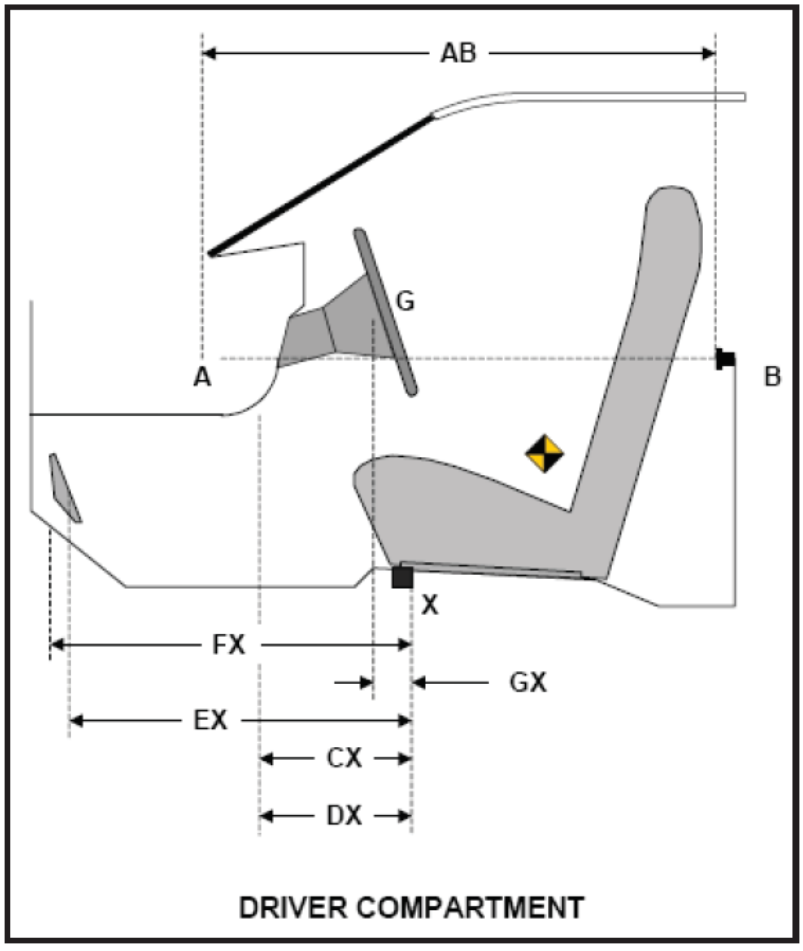
Test Vehicle: 2020 Honda Accord 4-Door Sedan NHTSA No. R20205378

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

DRIVER COMPARTMENT INTRUSION

Item	Description	Units	Pre-Test	Post-Test	Difference
AB	Door Opening (Inside Window Jam)	mm	874	872	2
CX	Left Knee Bolster to X	mm	273	281	-8
DX	Right Knee Bolster to X	mm	263	282	-19
EX	Brake Pedal to X	mm	582	567	15
FX	Footrest to X	mm	689	685	4
GX	Center of Steering Column Wheel Hub to X	mm	58	81	-23

X = Front of Seat Track (Stationary)



DRIVER COMPARTMENT

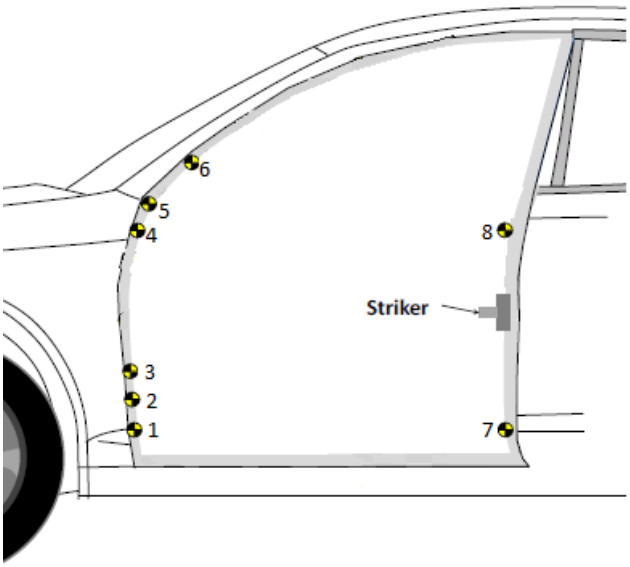
DATA SHEET NO. 11 … (CONTINUED)

VEHICLE INTRUSION MEASUREMENTS RELATIVE TO VCS

Test Vehicle: 2020 Honda Accord 4-Door Sedan NHTSA No. R20205378

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

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	3311	-776	166	3310	-772	167	0	3	0
2	3338	-773	92	3337	-770	92	-1	3	0
3	3328	-772	17	3329	-769	17	1	2	-1
4	3261	-764	-280	3261	-763	-279	0	0	1
5	3241	-751	-353	3240	-751	-352	-1	0	1
6	3171	-732	-424	3168	-732	-425	-3	0	-2
7	2588	-778	215	2587	-775	217	-1	3	2
8	2360	-761	-222	2361	-759	-222	0	2	0

All measurements in millimeters.

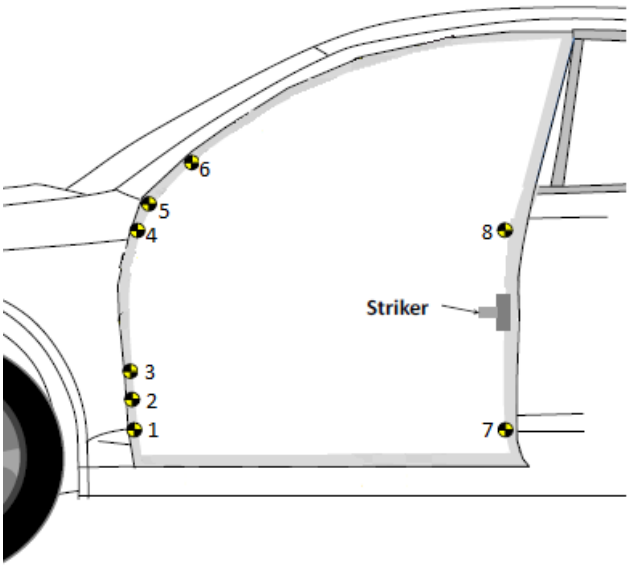
DATA SHEET NO. 11 … (CONTINUED)

VEHICLE INTRUSION MEASUREMENTS RELATIVE TO VCS

Test Vehicle: 2020 Honda Accord 4-Door Sedan NHTSA No. R20205378

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

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	3315	770	164	3316	770	164	1	0	0
2	3336	768	90	3338	768	88	2	0	-3
3	3328	766	19	3330	766	19	1	0	0
4	3265	757	-281	3266	758	-281	1	0	0
5	3236	745	-353	3237	744	-354	1	0	-1
6	3165	726	-424	3165	726	-423	1	0	1
7	2584	772	214	2585	772	215	1	0	0
8	2361	759	-223	2364	759	-223	3	0	-1

All measurements in millimeters.

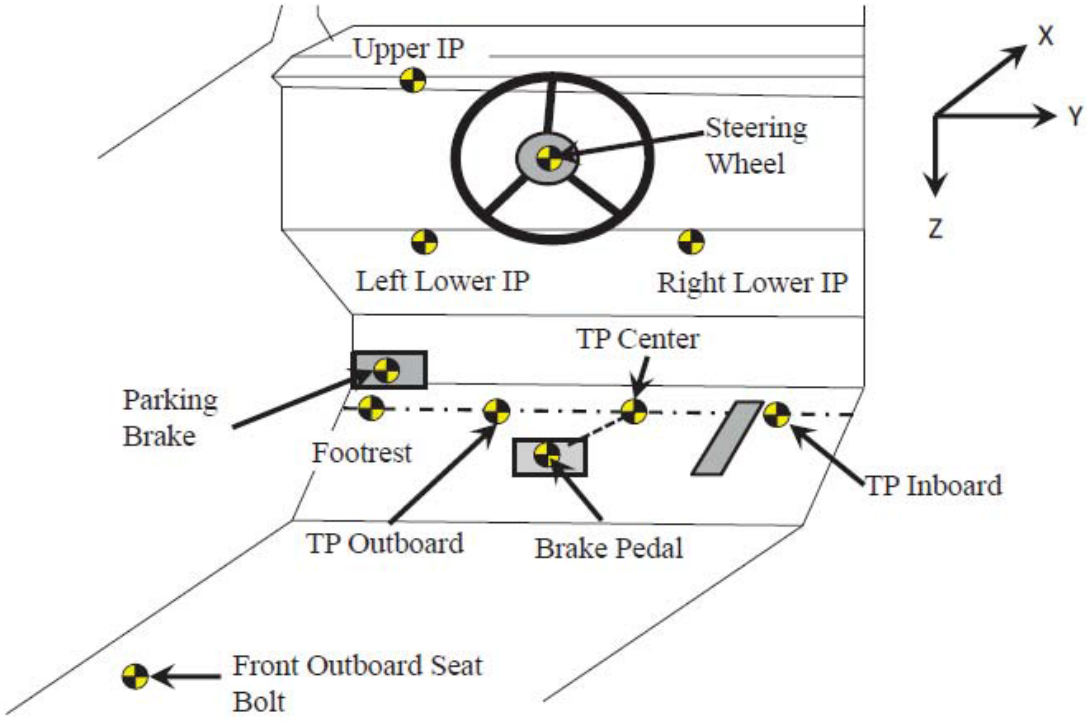
DATA SHEET NO. 11 … (CONTINUED)

VEHICLE INTRUSION MEASUREMENTS RELATIVE TO VCS

Test Vehicle: 2020 Honda Accord 4-Door Sedan NHTSA No. R20205378

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

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	3650	-198	151	3644	-197	151	-5	1	0
TP Center	3671	-347	146	3658	-331	117	-13	16	-29
TP Outboard	3621	-497	149	3614	-492	144	-7	5	-4
TP Footrest	3541	-597	154	3534	-597	153	-6	0	-1
Brake Pedal	3434	-347	161	3416	-361	165	-17	-15	4
Left Lower IP	3125	-529	-128	3130	-526	-132	5	3	-5
Right Lower IP	3114	-227	-127	3131	-229	-136	16	-2	-10
Upper IP	3074	-529	-188	3080	-527	-196	6	2	-9
Steering Wheel	2910	-378	-294	2930	-384	-313	21	-6	-19
Front Outboard Bolt	2851	-606	313	2849	-605	311	-2	1	-2
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

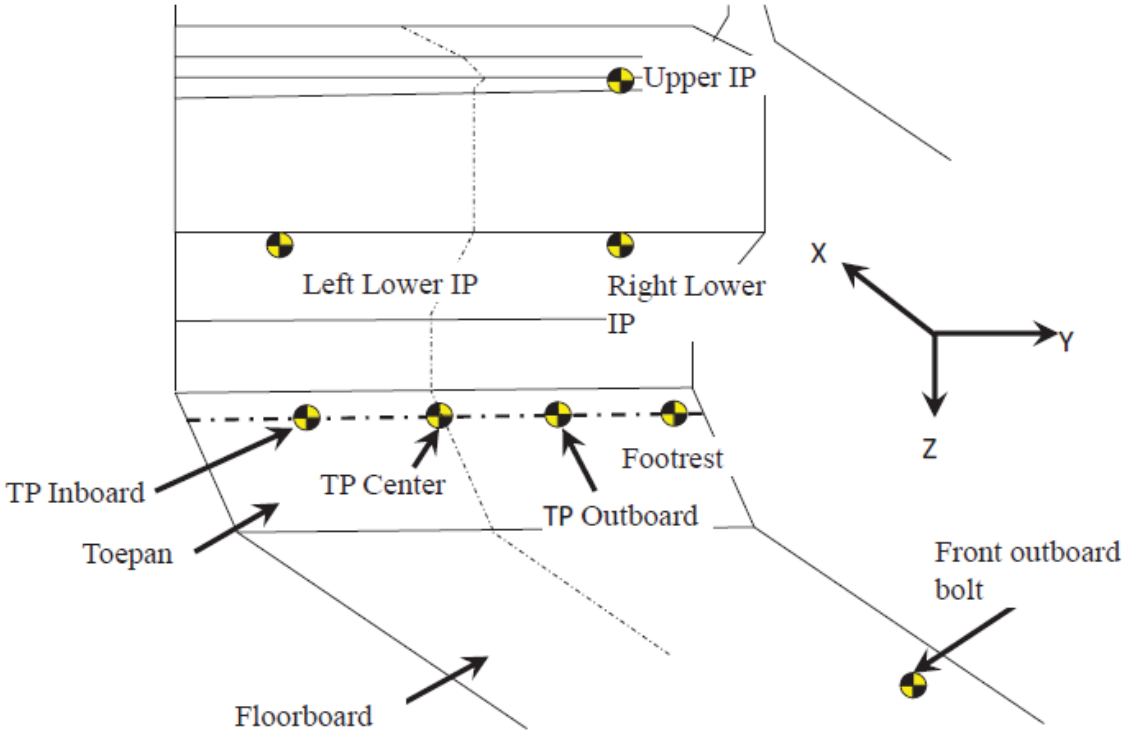
DATA SHEET NO. 11 … (CONTINUED)

VEHICLE INTRUSION MEASUREMENTS RELATIVE TO VCS

Test Vehicle: 2020 Honda Accord 4-Door Sedan NHTSA No. R20205378

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

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	3645	221	146	3644	226	149	-1	5	3
TP Center	3659	373	147	3661	372	144	2	-1	-3
TP Outboard	3587	522	153	3588	523	157	2	0	4
TP Footrest	3527	622	154	3525	628	156	-2	6	3
Left Lower IP	3097	225	-126	3106	218	-110	9	-7	16
Right Lower IP	3121	522	-128	3113	518	-97	-9	-4	31
Upper IP	3064	526	-211	3088	530	-212	24	4	-1
Front Outboard Seat Bolt	2852	604	302	2851	605	306	-1	1	4

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. R20205378

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

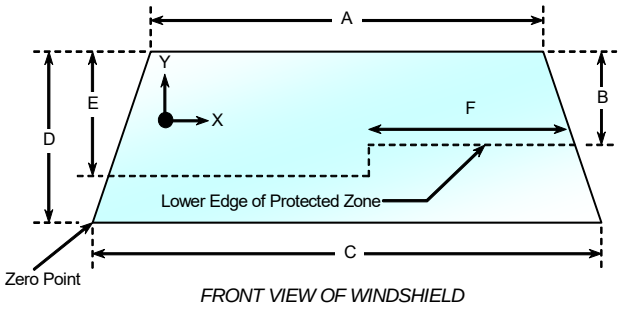
Windshield Mounting Details: Windshield glass is secured to the vehicle frame with plastic molding and rubber cement.

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: 21.2° C

WINDSHIELD PERIPHERY MEASUREMENTS

Measurement	Pre-Test (mm)	Post-Test (mm)	% Retention
Left Side	2050	2050	100.0%
Right Side	2050	2050	100.0%
Total	4100	4100	100.0%



FRONT VIEW OF WINDSHIELD

Item	Units	Value
A	mm	1240
B	mm	342
C	mm	1500
D	mm	838
E	mm	490
F	mm	560

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. R20205378

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

FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA

Temperature at Time of Impact: 27.2° C Test Time: 6:28 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)

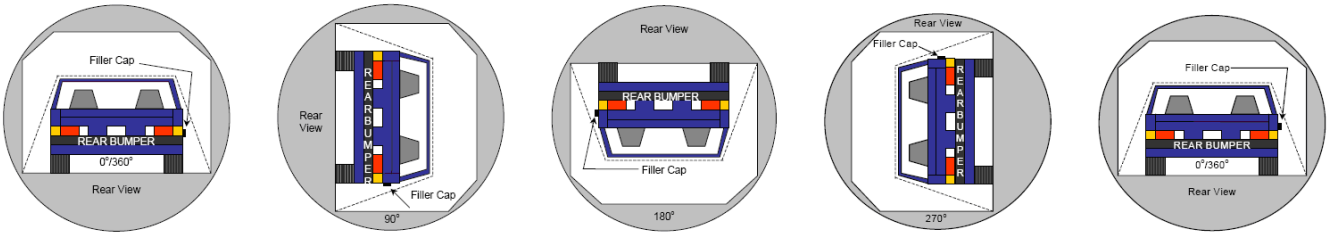
D. Spillage: There was no Stoddard solvent spillage.

DATA SHEET NO. 13

FMVSS 301 STATIC ROLLOVER RESULTS

Test Vehicle: 2020 Honda Accord 4-Door Sedan NHTSA No. R20205378

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



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°	80	300	380
180° To 270°	77	300	377
270° To 360°	82	300	382

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. Pre-Test-Front Left Side Oblique View of Test Vehicle

FIGURE 4. Post-Test-Front Left Side Oblique View of Test Vehicle

FIGURE 5. Pre-Test Front View of Test Vehicle

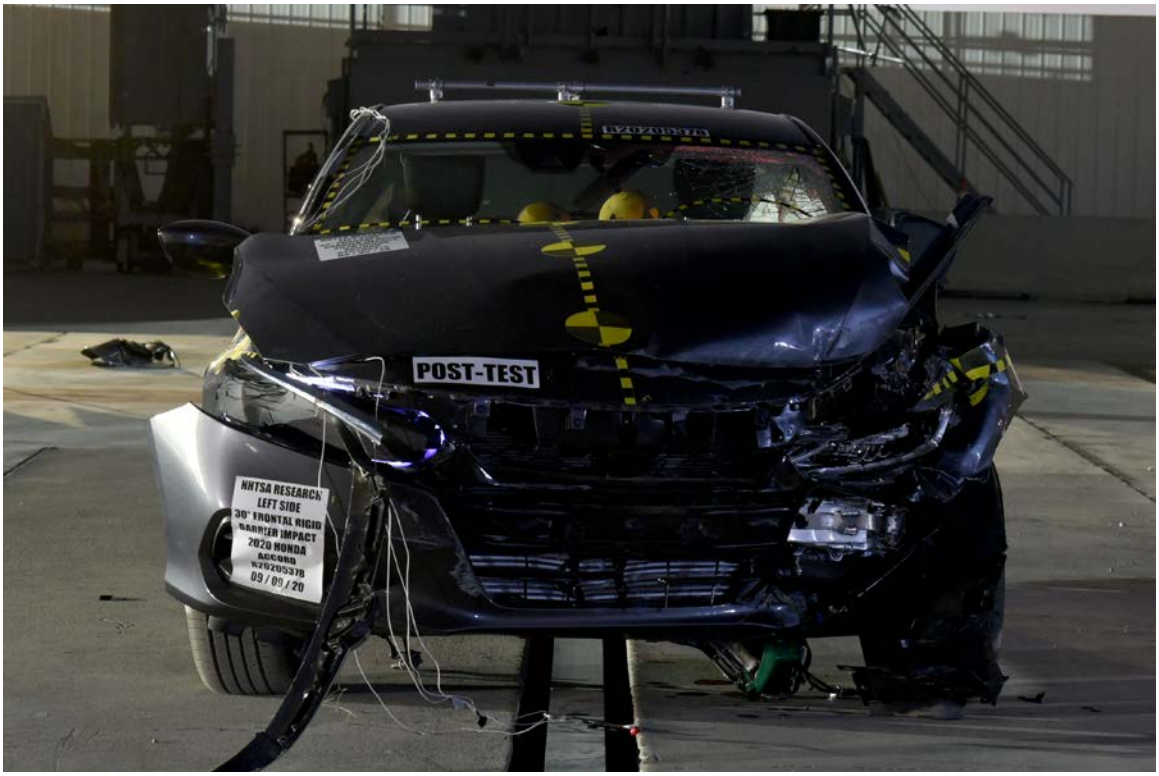


FIGURE 6. Post-Test Front View of Test Vehicle

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

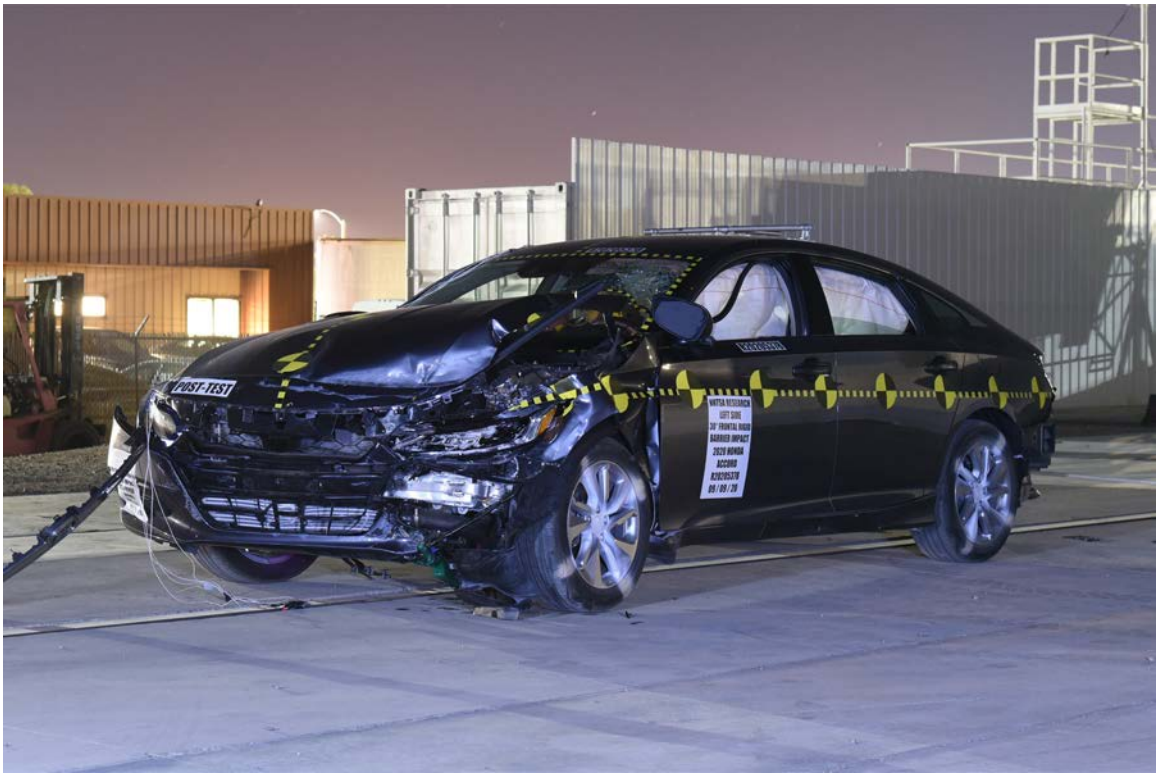


FIGURE 12. Post-Test Left Front ¾ View of Test Vehicle

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

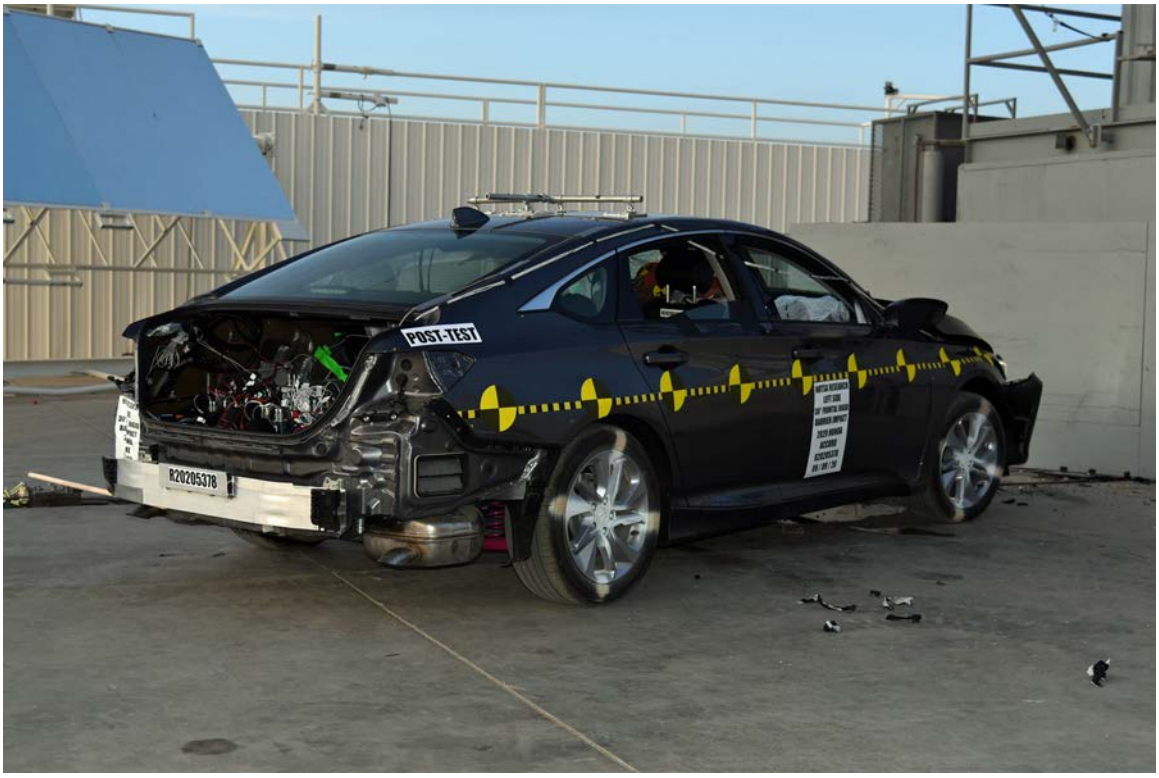


FIGURE 16. Post-Test Right Rear ¾ View of Test Vehicle

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

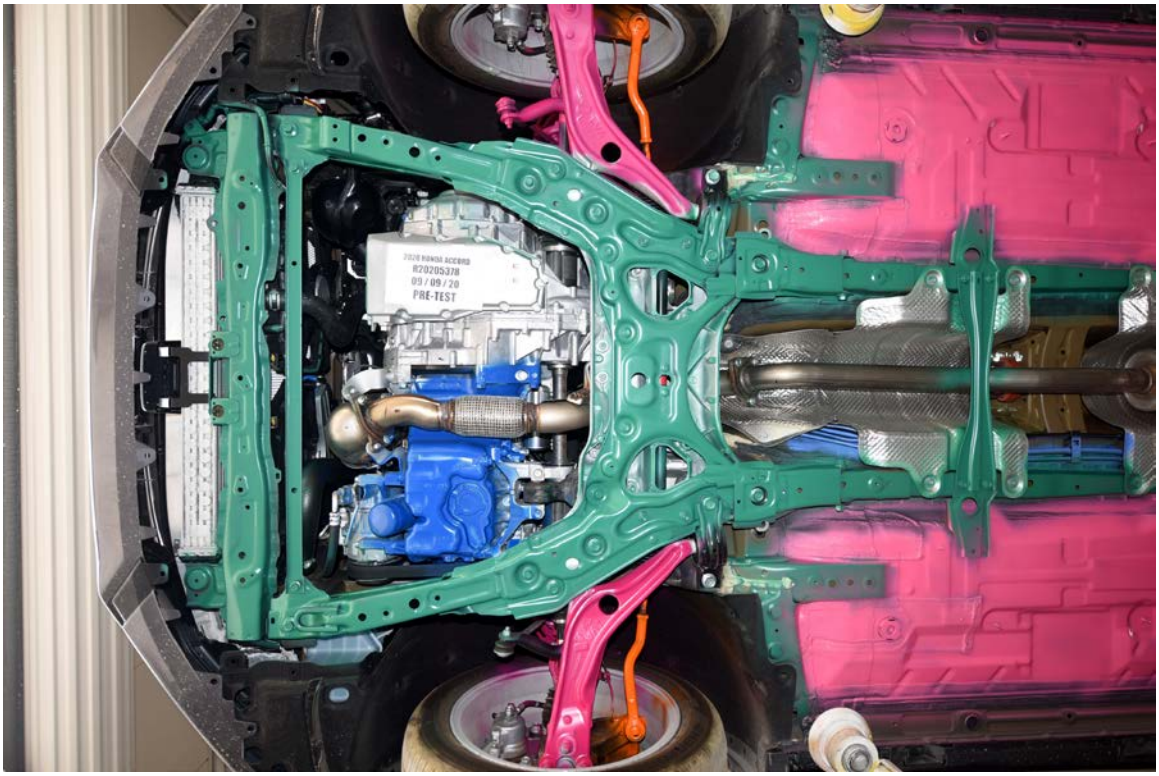


FIGURE 27. Pre-Test Front Underbody View

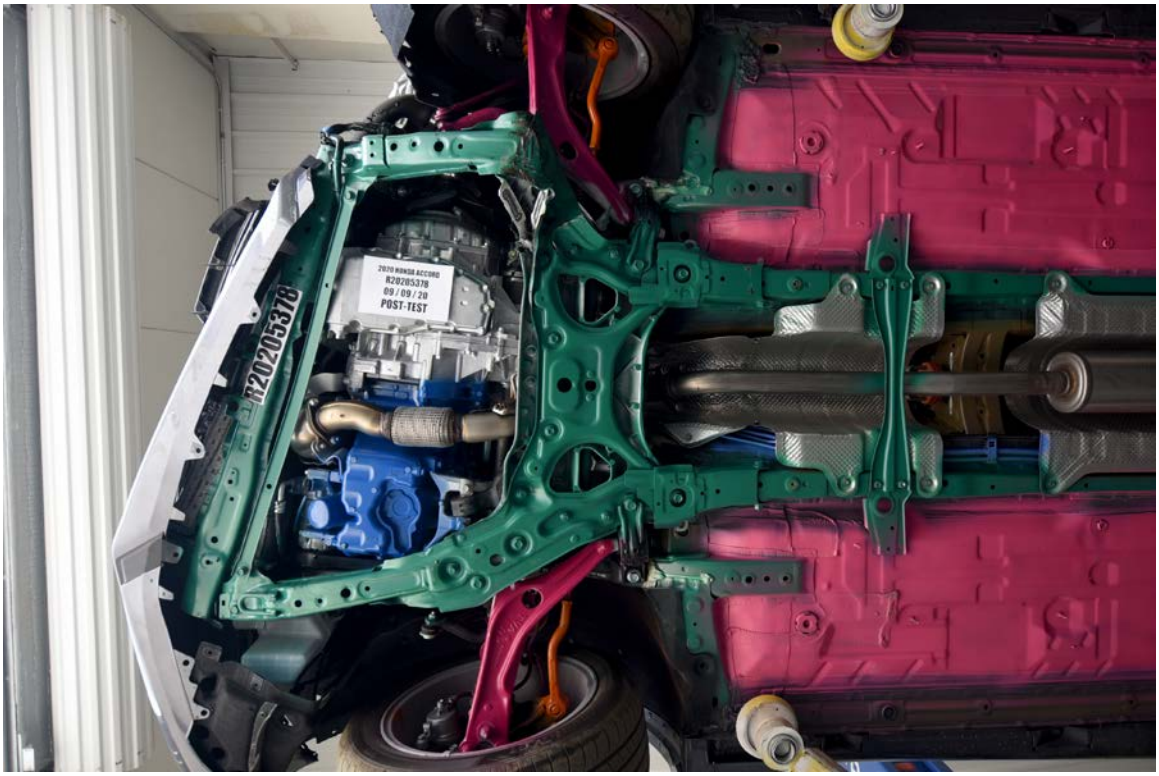


FIGURE 28. Post-Test Front Underbody View

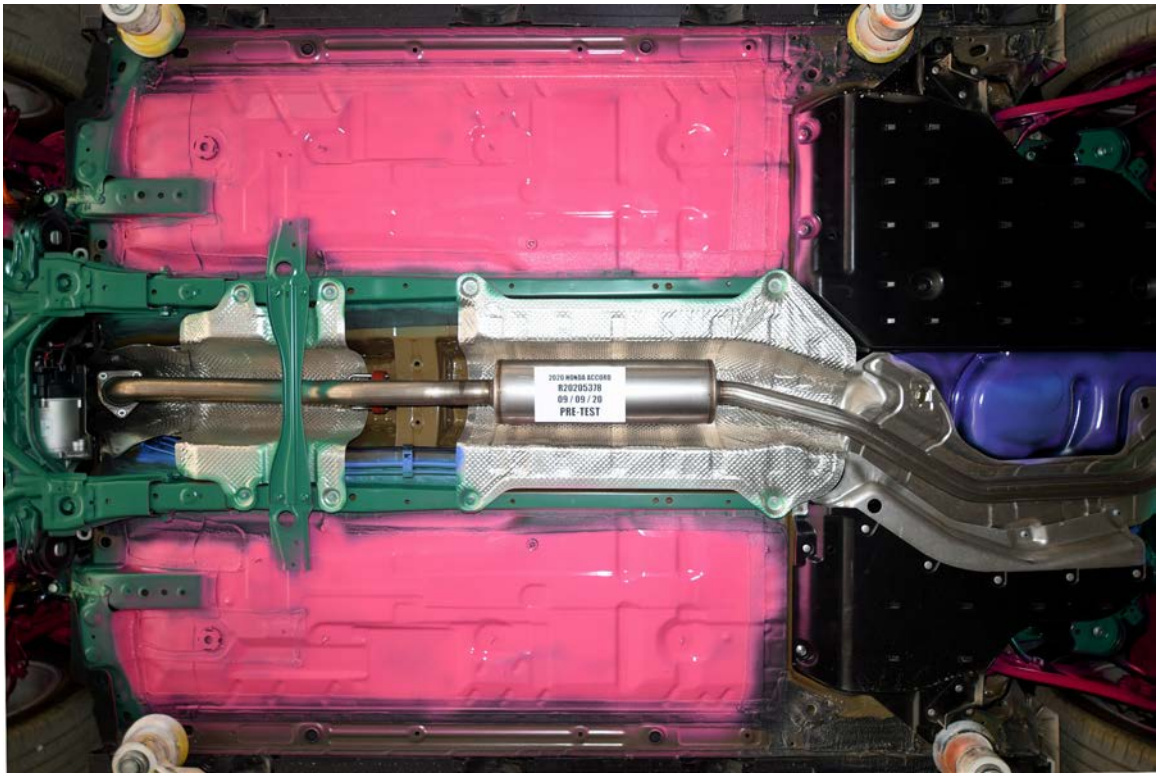


FIGURE 29. Pre-Test Mid Underbody View

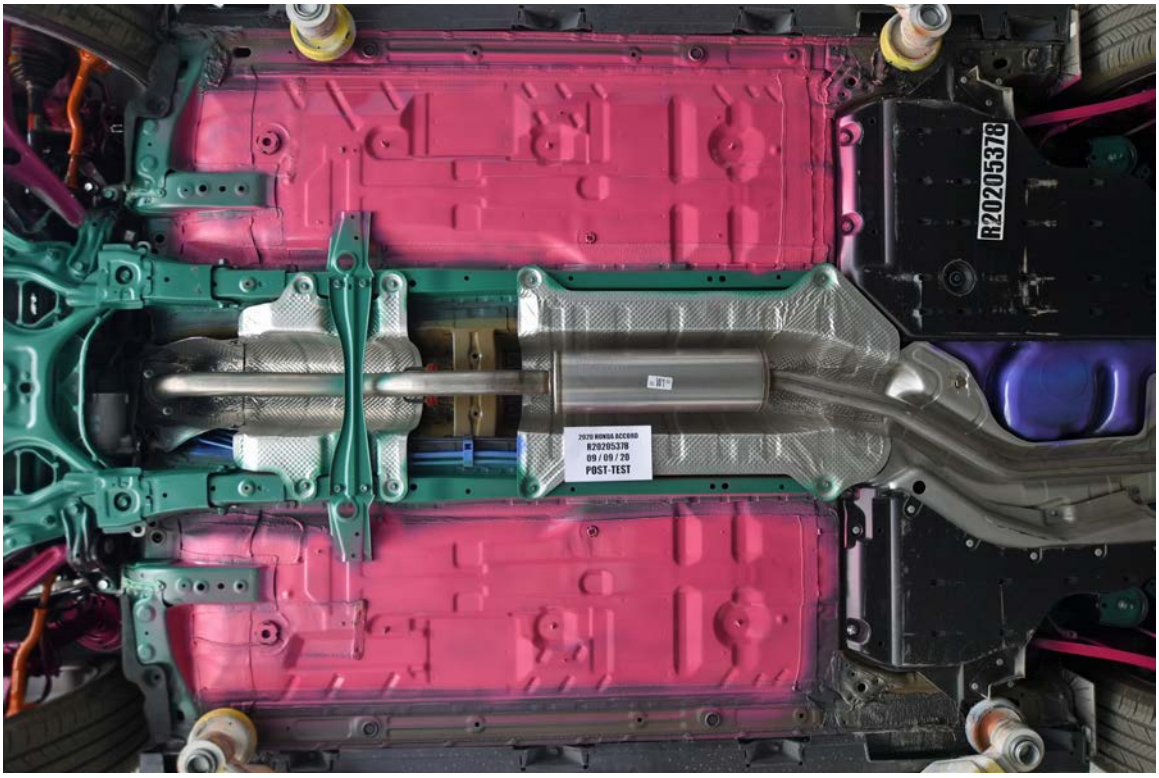


FIGURE 30. Post-Test Mid Underbody View

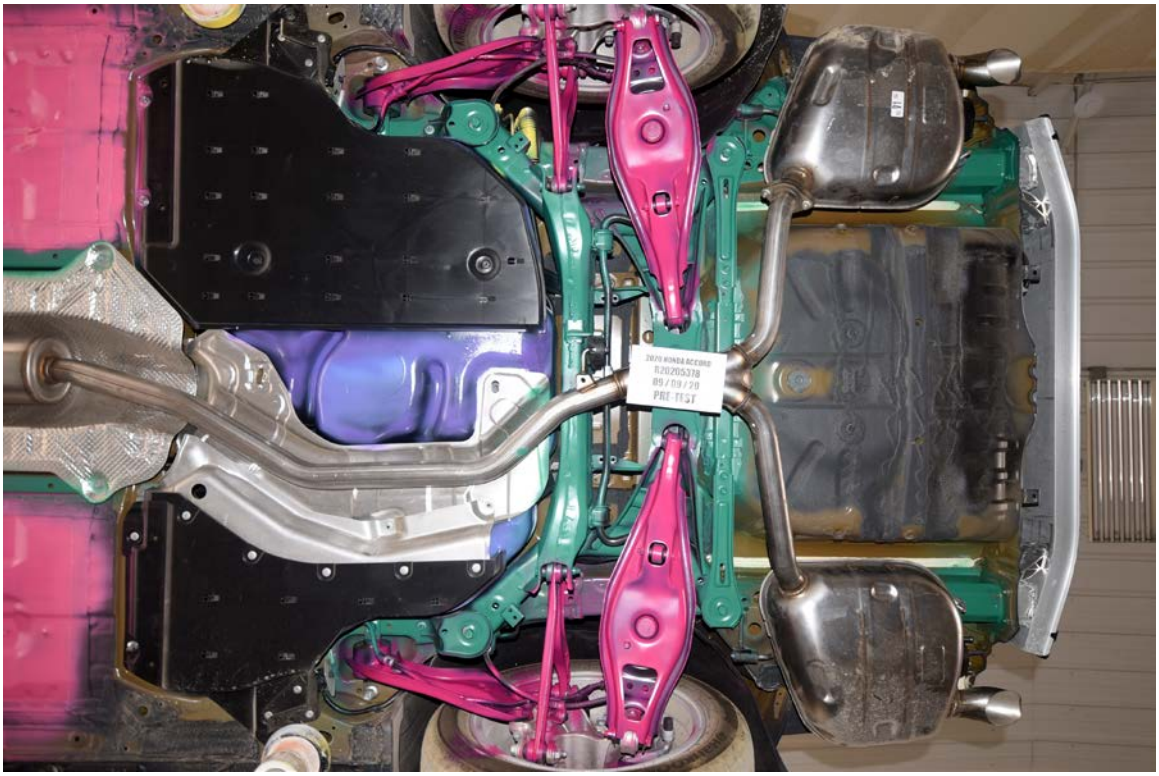


FIGURE 31. Pre-Test Rear Underbody View

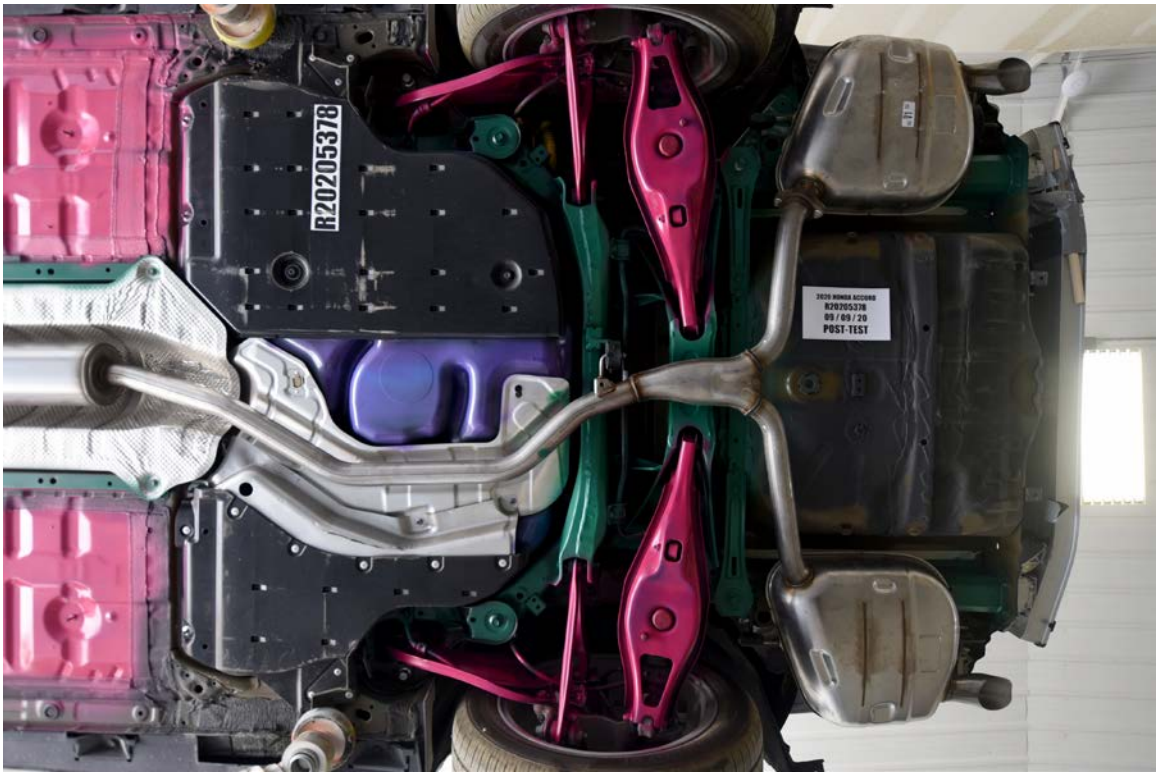


FIGURE 32. Post-Test Rear Underbody View

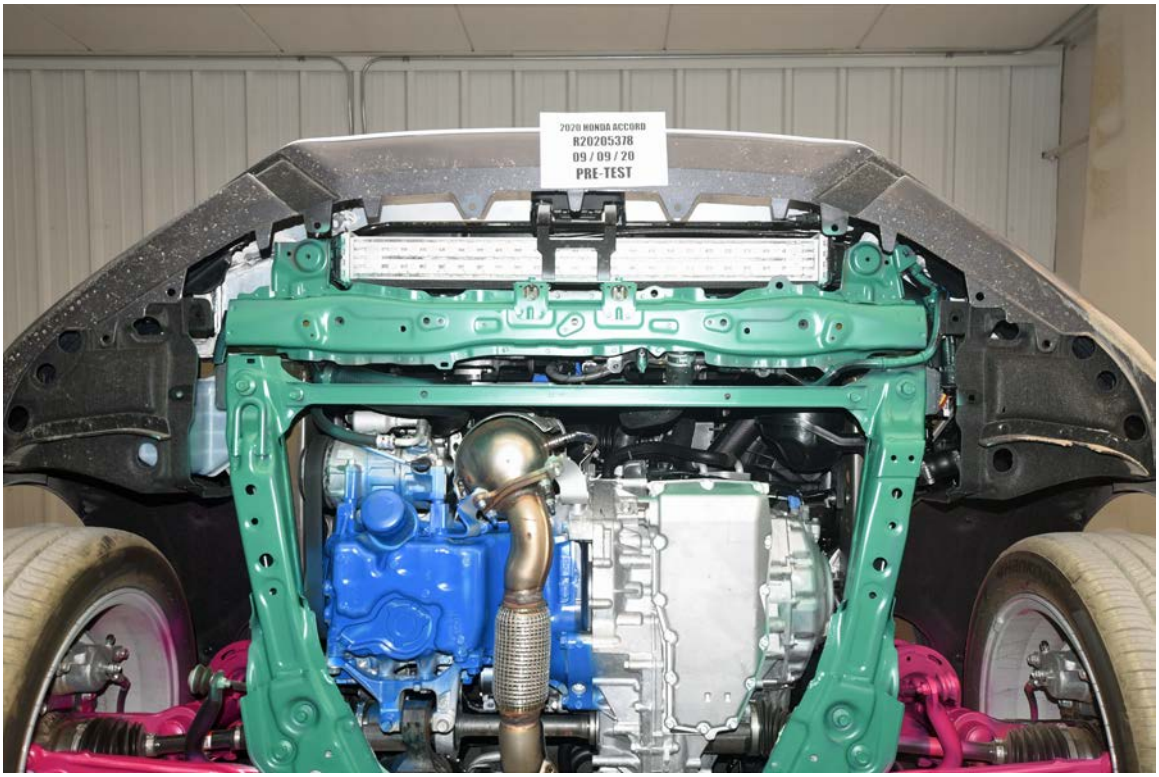


FIGURE 33. Pre-Test Bumper to Rail Attachments and Crush Initiators

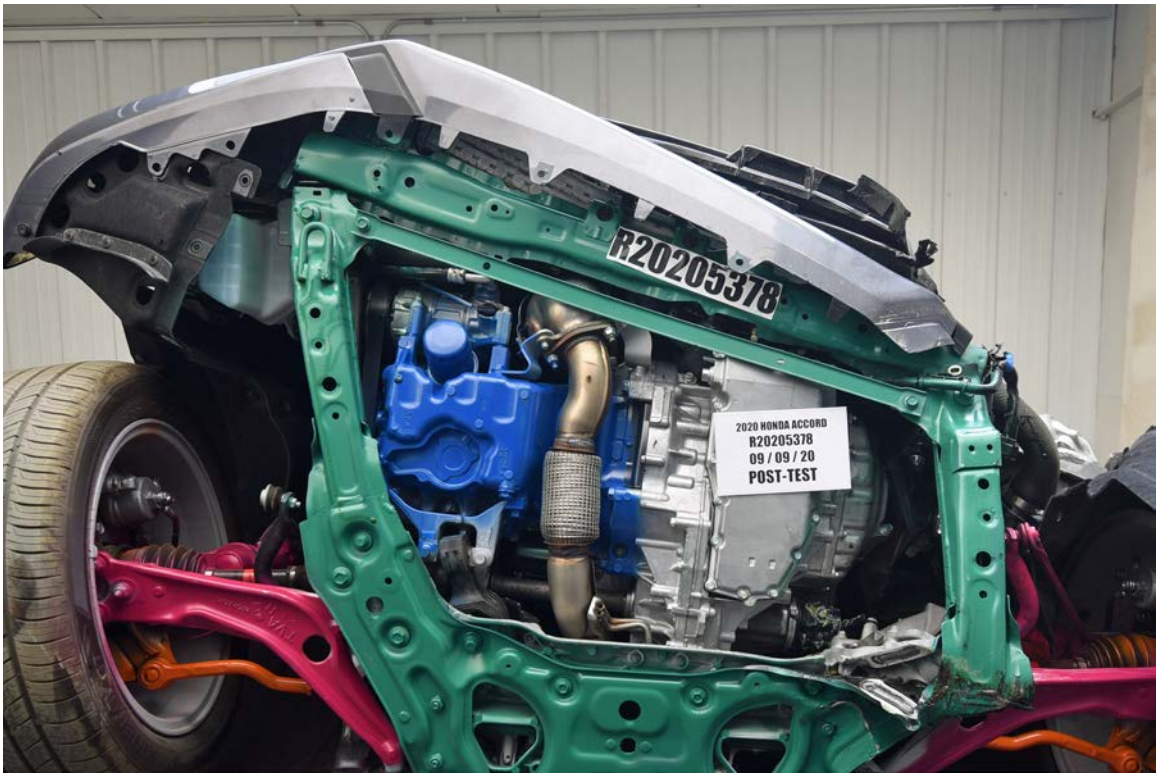


FIGURE 34. Post-Test Bumper to Rail Attachments and Crush Initiators

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

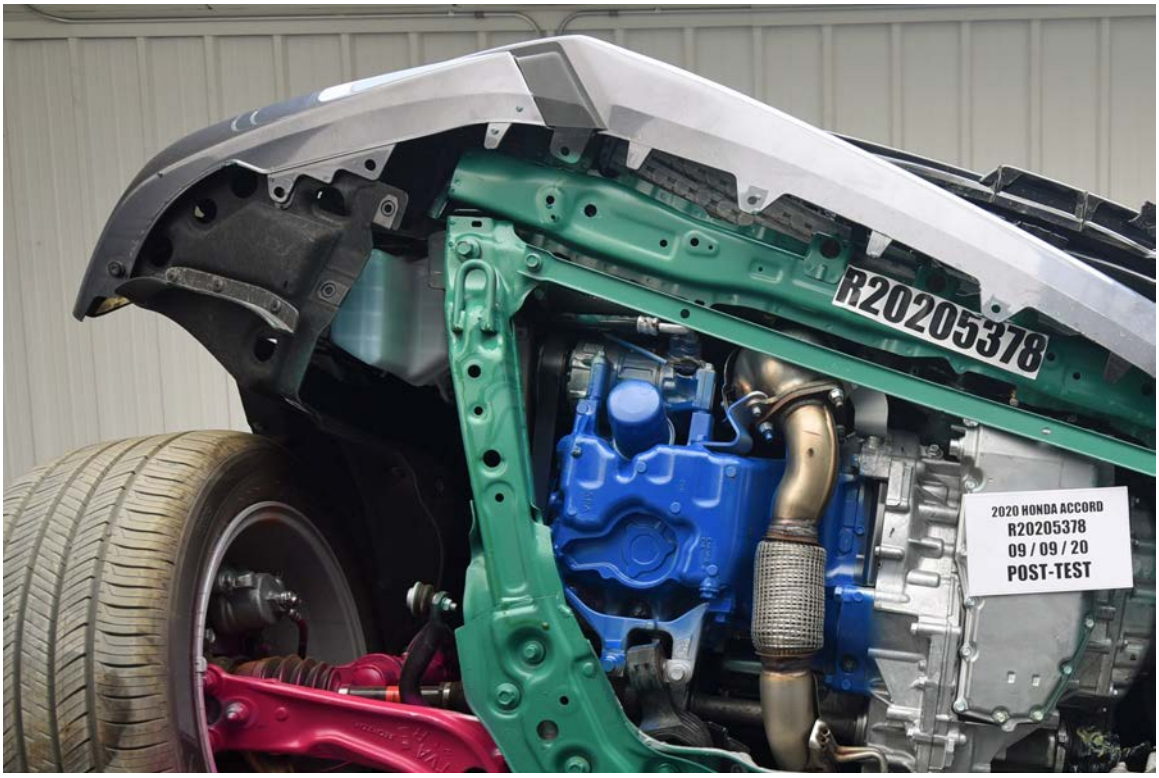


FIGURE 38. Post-Test Passenger Side Bumper to Rail Attachments and Crush Initiators

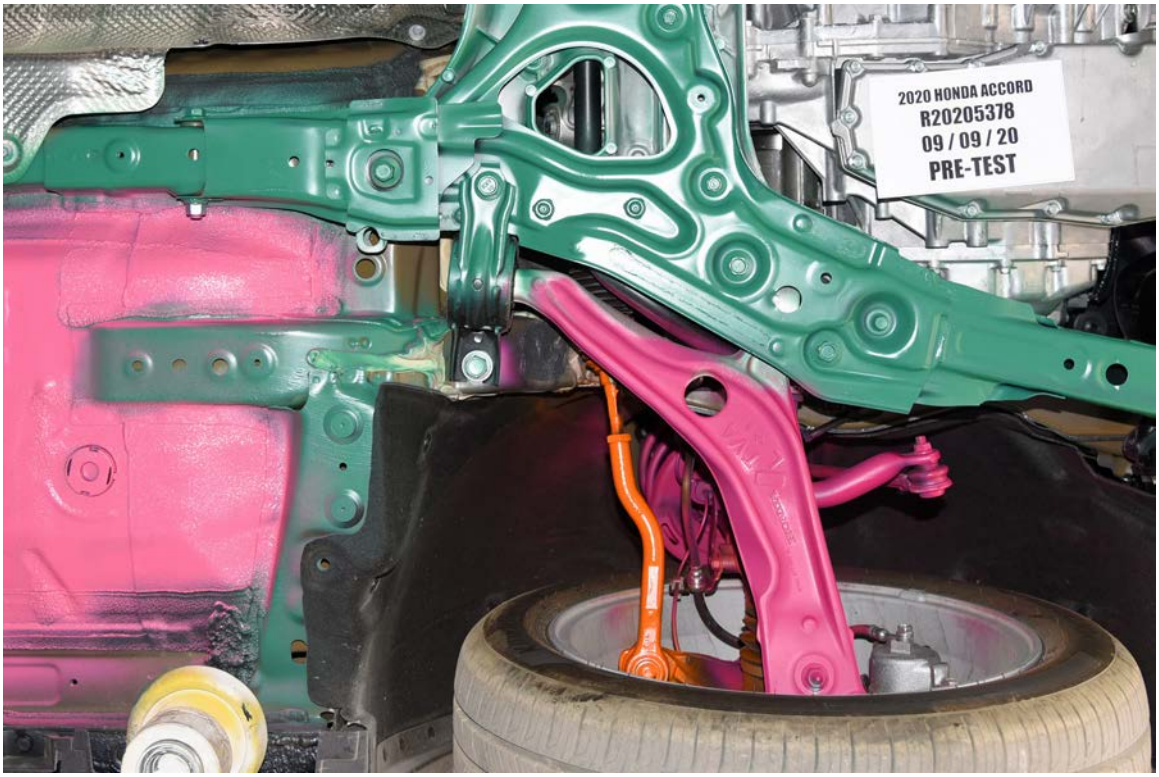


FIGURE 39. Pre-Test Driver Side Rocker

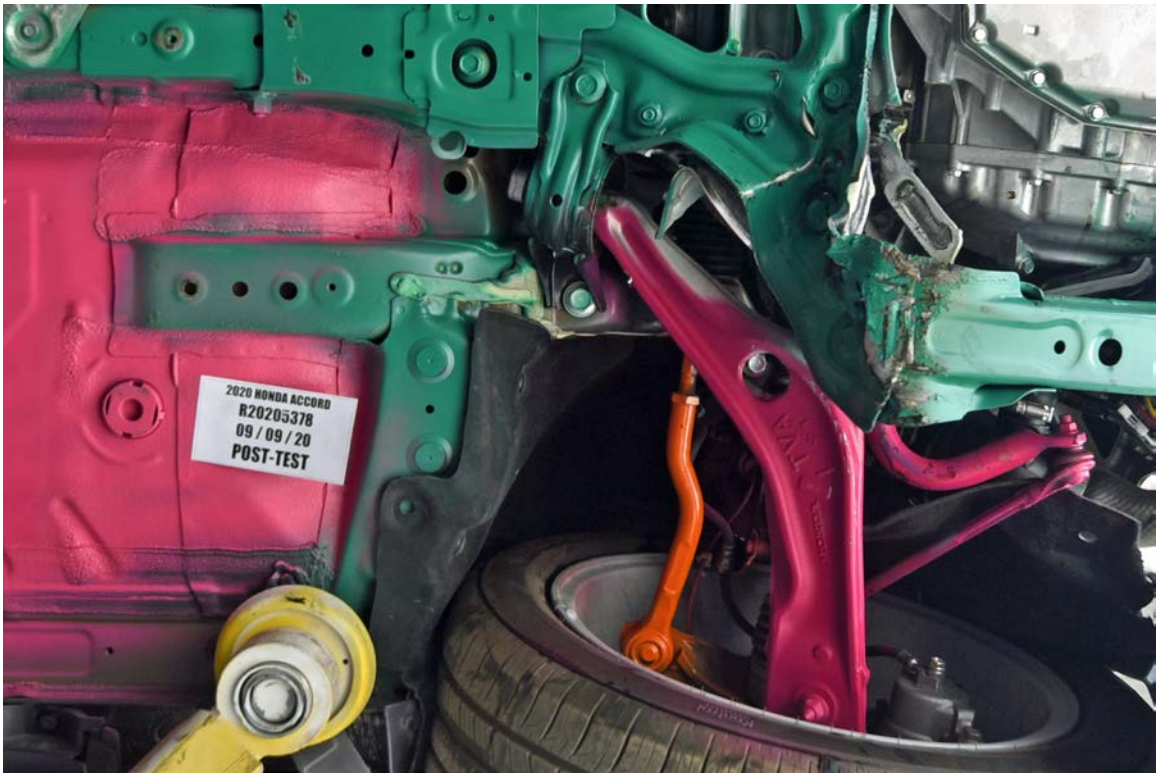


FIGURE 40. Post-Test Driver Side Rocker

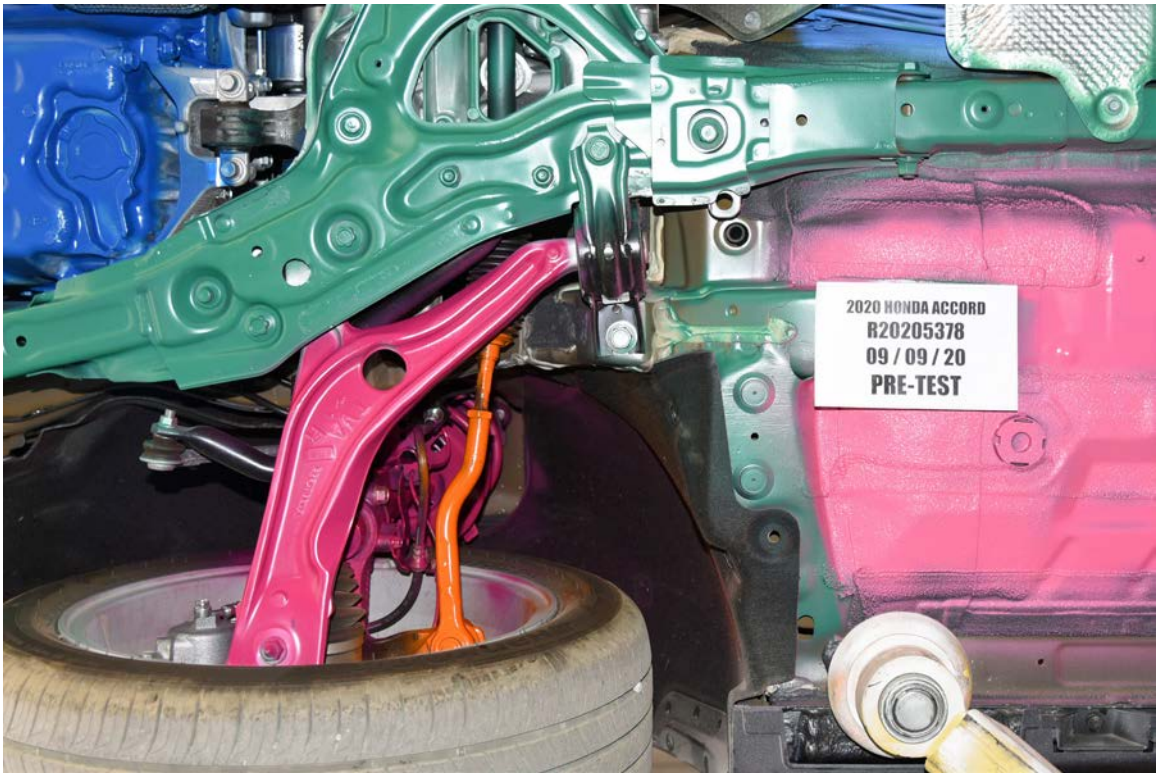


FIGURE 41. Pre-Test Passenger Side Rocker

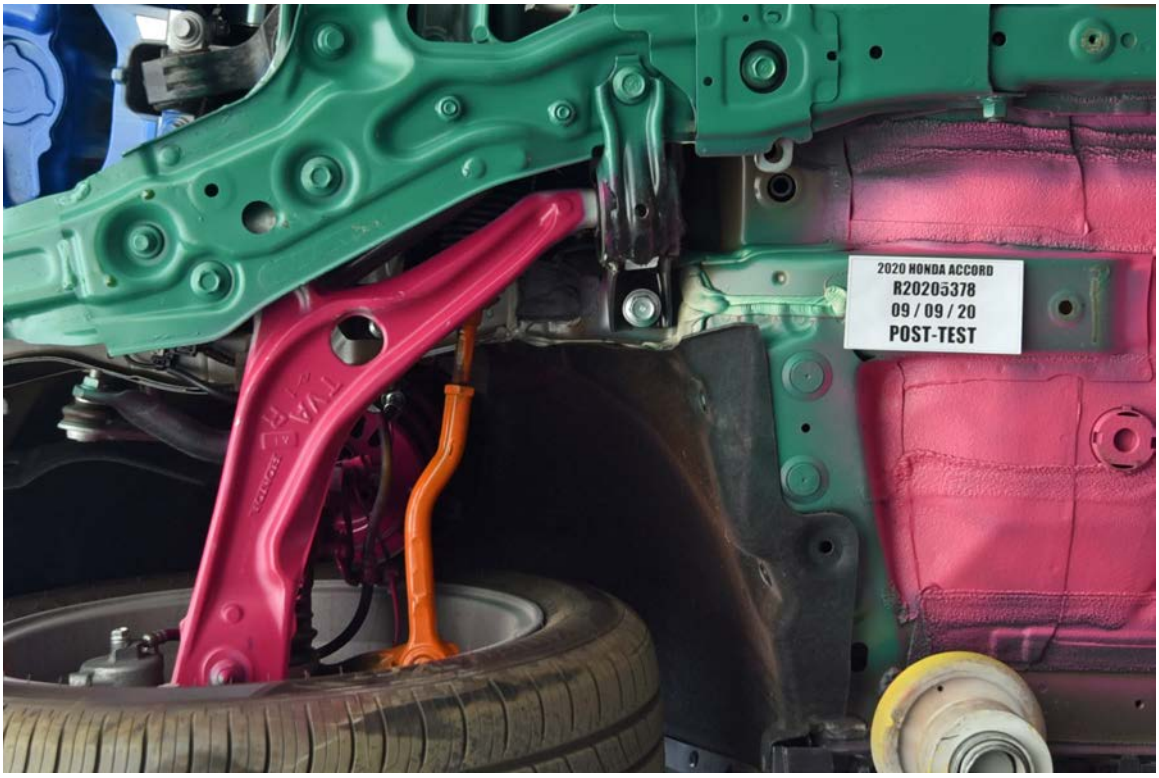


FIGURE 42. Post-Test Passenger Side Rocker

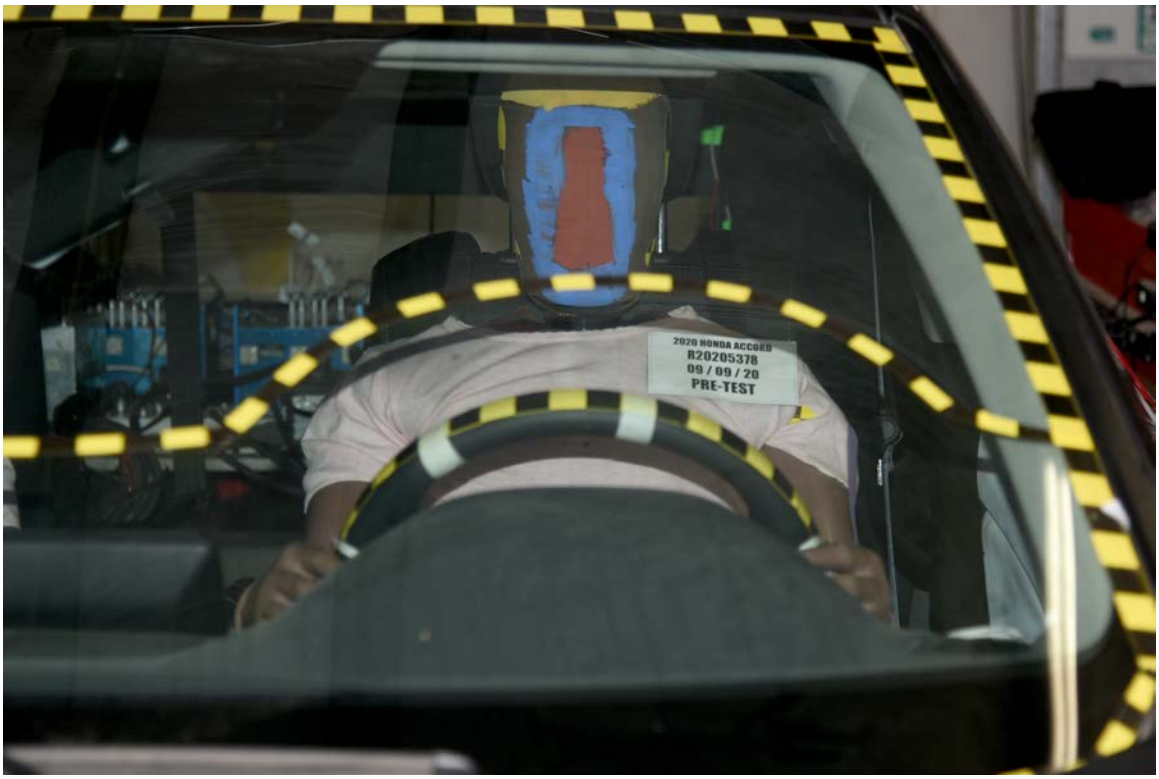


FIGURE 43. Pre-Test Driver Front Windshield View

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

Photograph Not Available

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

FIGURE 67. Pre-Test Driver Adjustable D-Ring

FIGURE 68. Post-Test Driver Adjustable D-Ring

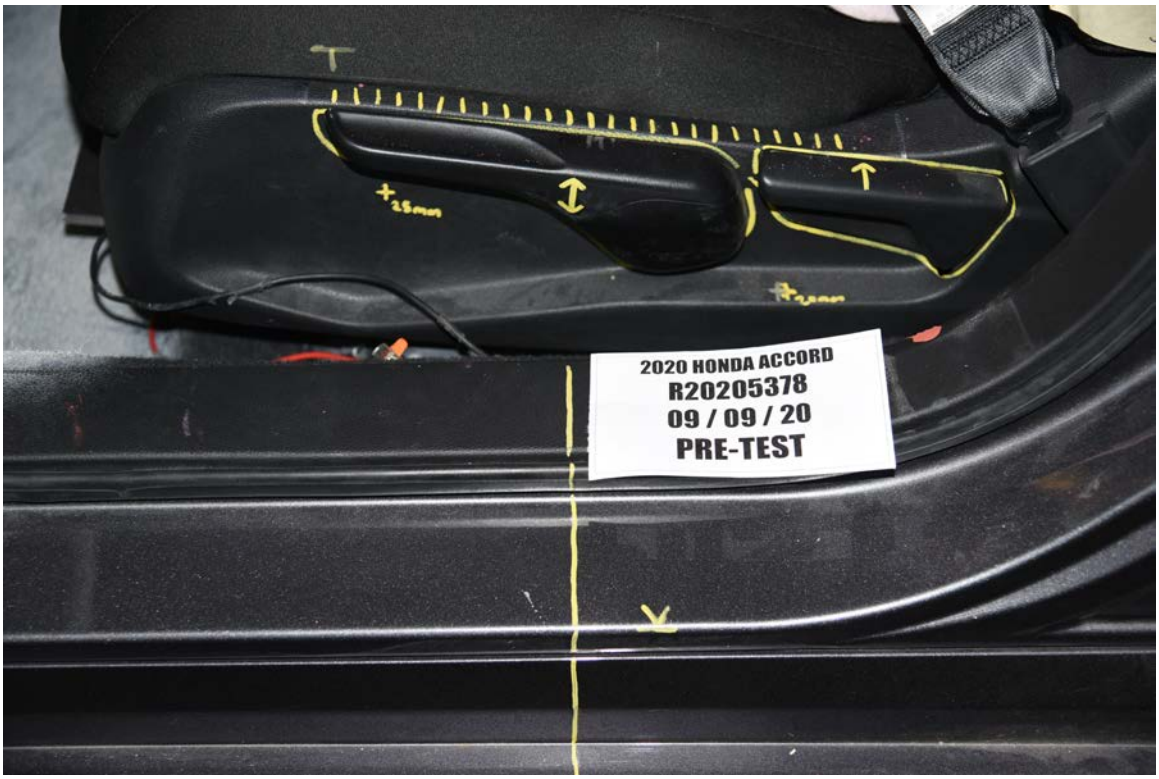


FIGURE 69. Pre-Test Driver Seat Fore-Aft Markings

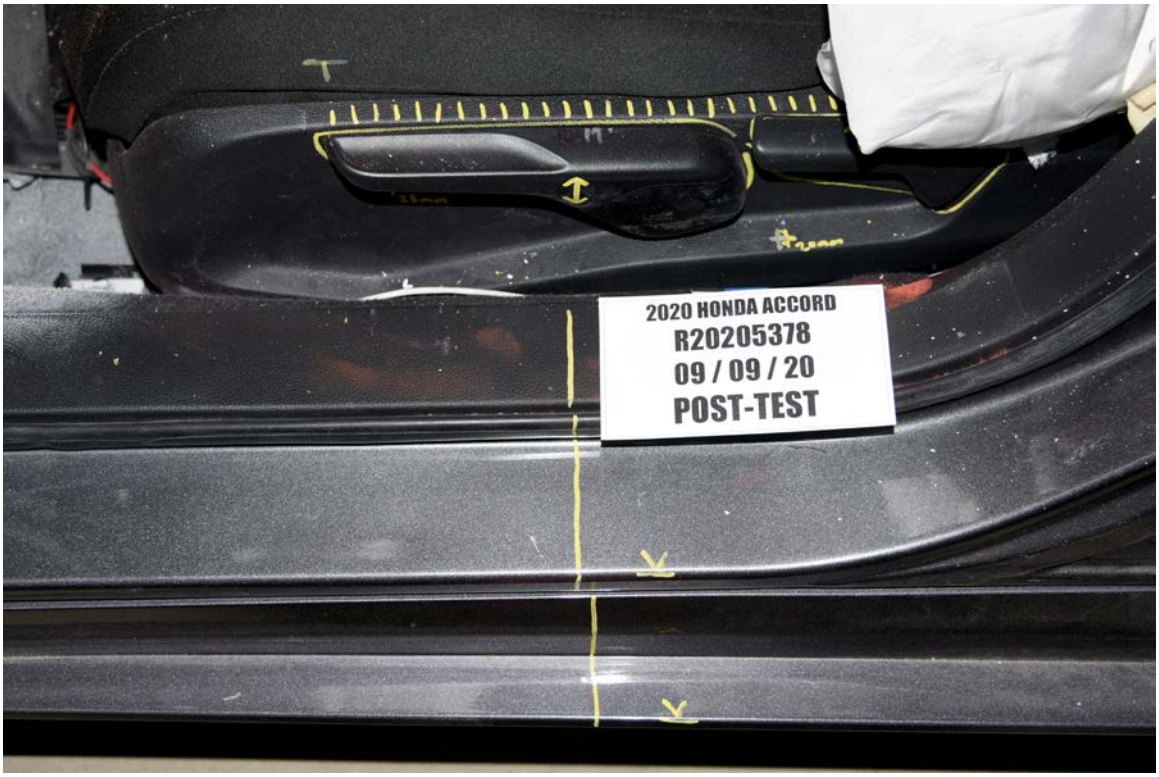


FIGURE 70. Post-Test Driver Seat Fore-Aft Markings

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

FIGURE 75. Pre-Test Driver Inner Door Panel

FIGURE 76. Post-Test Driver Inner Door Panel

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

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

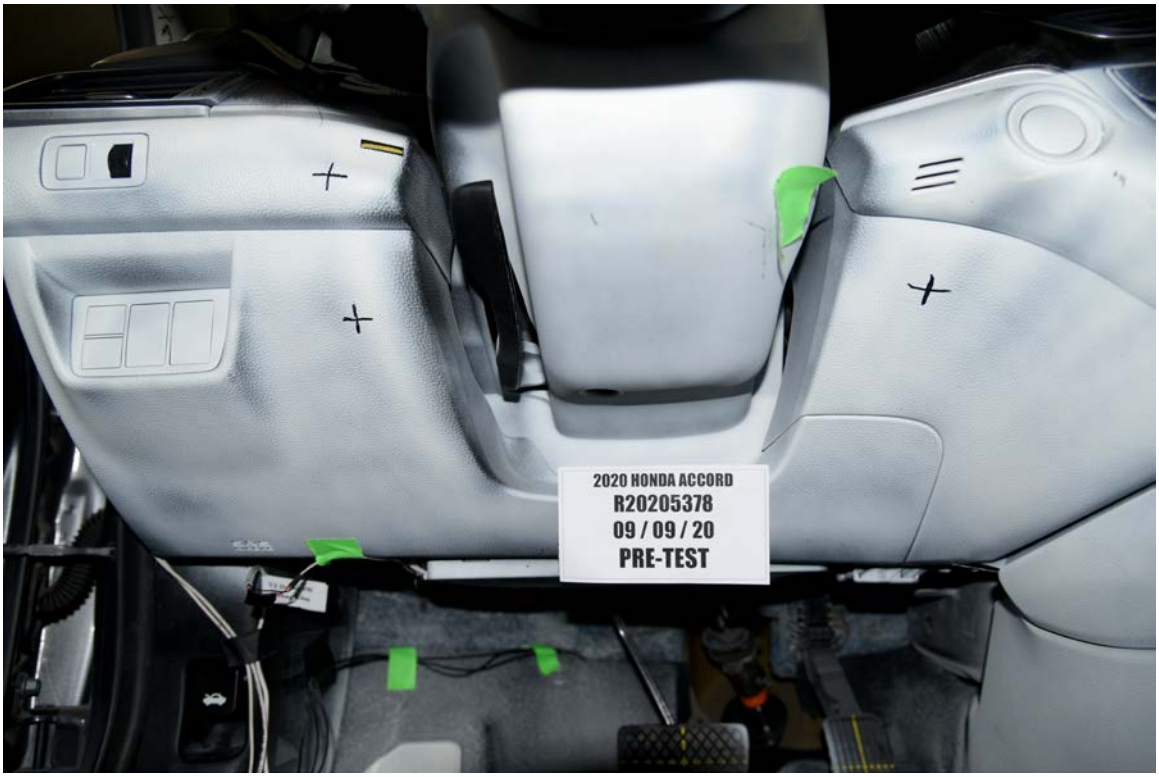


FIGURE 79. Pre-Test Overall View of Driver Knee Bolster

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

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

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

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

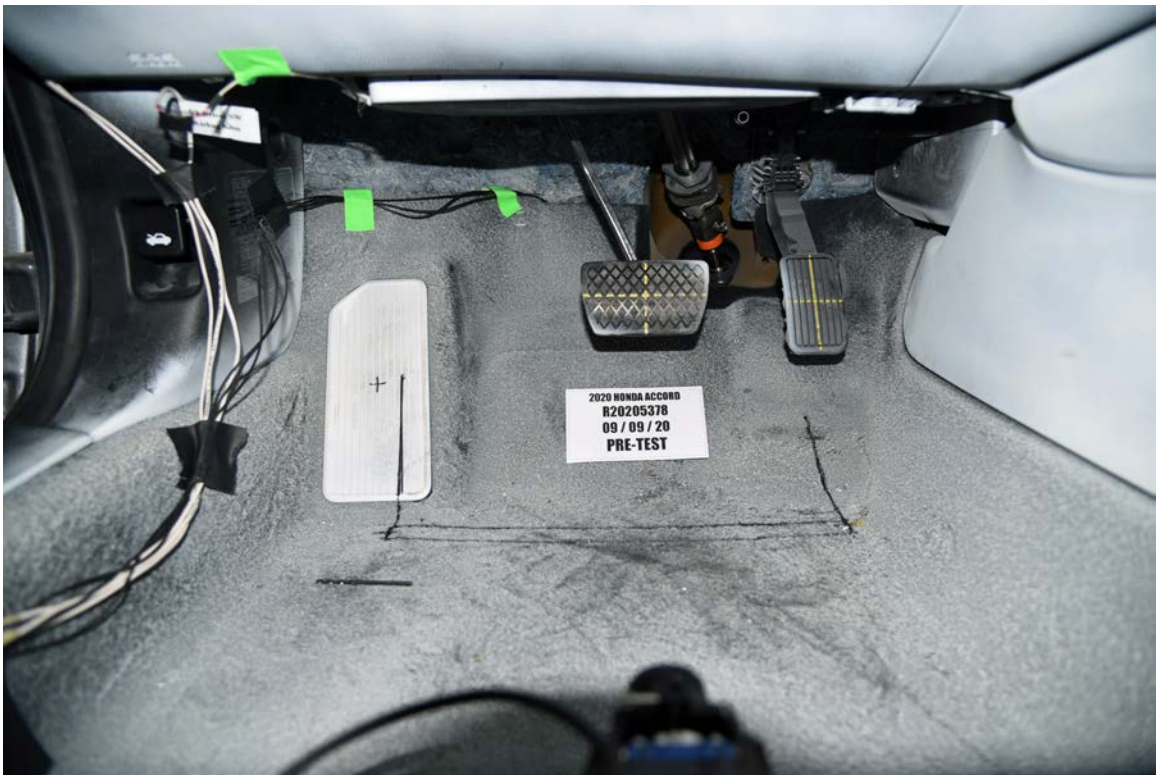


FIGURE 85. Pre-Test View of Driver Floor Pan from Top of Seat

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

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

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

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

FIGURE 91a. Post-Test Driver Dummy Contact with Pelvis Airbag

FIGURE 91b. Post-Test Driver Dummy Contact with A-Pillar

FIGURE 91c. Post-Test Driver Dummy Contact with Windshield

FIGURE 91d. Post-Test Driver Dummy Contact with Headliner

FIGURE 91e. Post-Test Driver Dummy Contact with Door Panel

FIGURE 91f. Post-Test Driver Dummy Contact with Door Panel

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

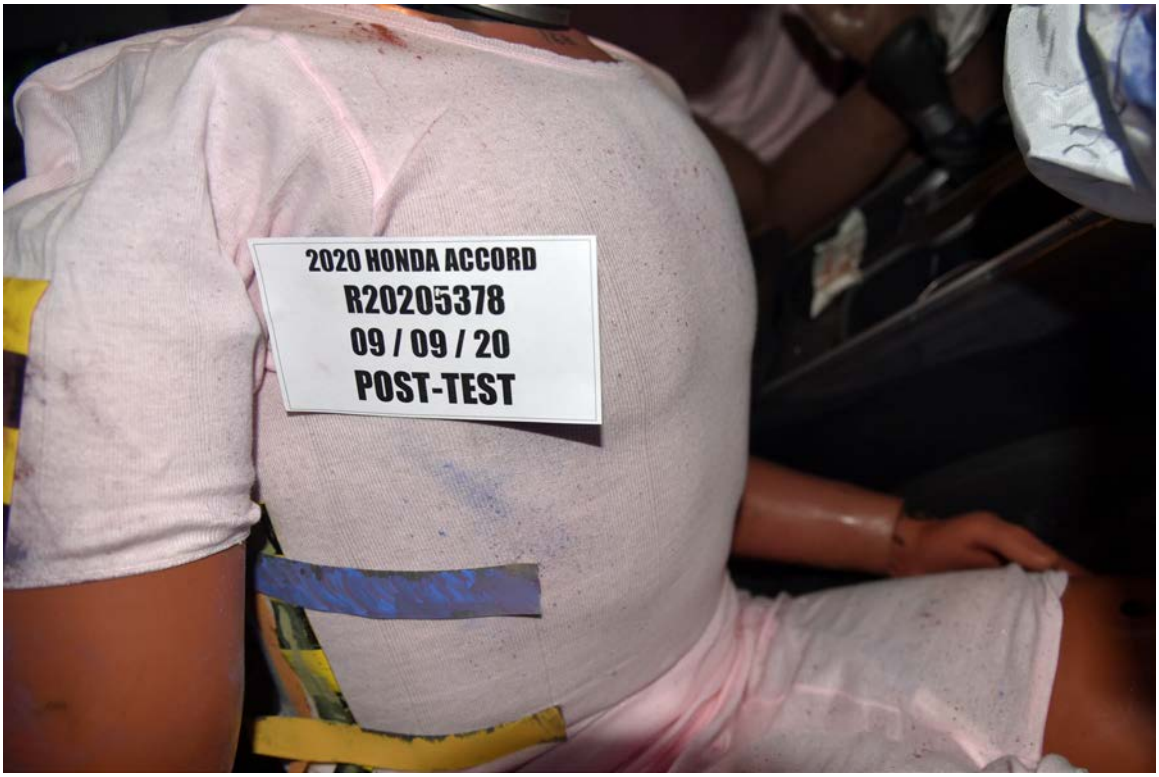


FIGURE 103. Post-Test View of Passenger Abdomen

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

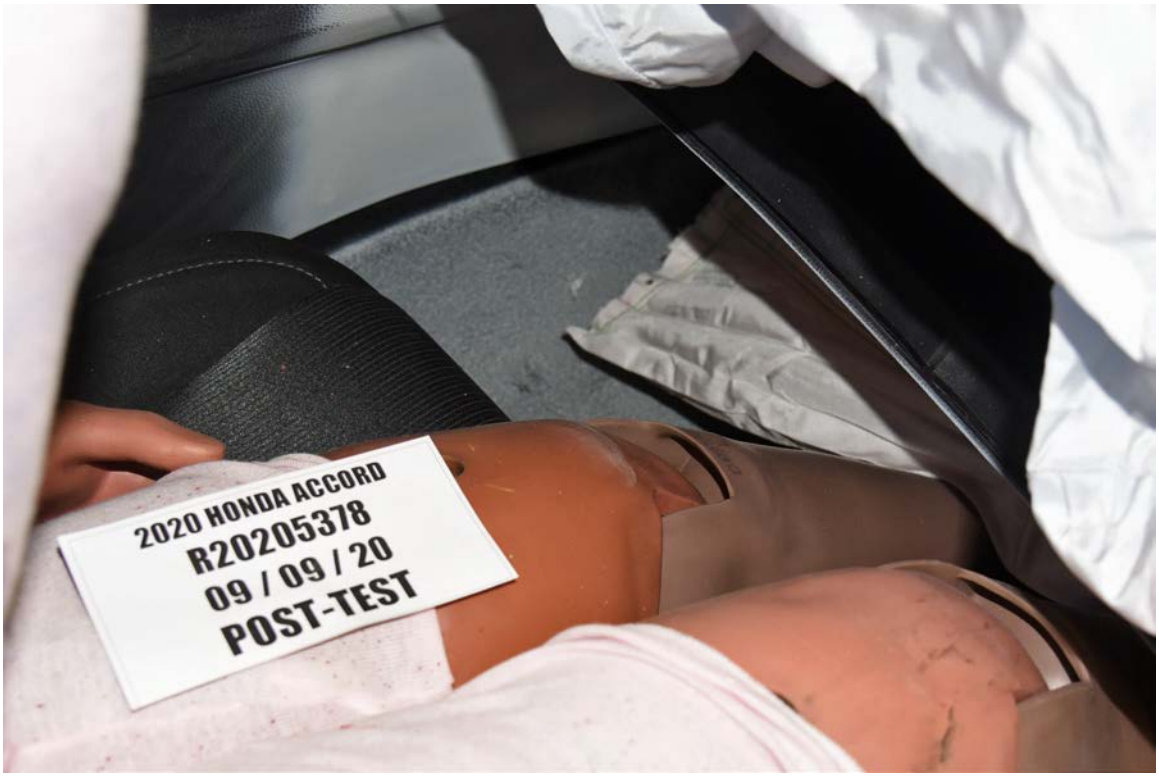


FIGURE 109. Post-Test View of Passenger Left Knee and Bolster

FIGURE 110. Pre-Test View of the Passenger Feet

FIGURE 111. Post-Test View of the Passenger Feet

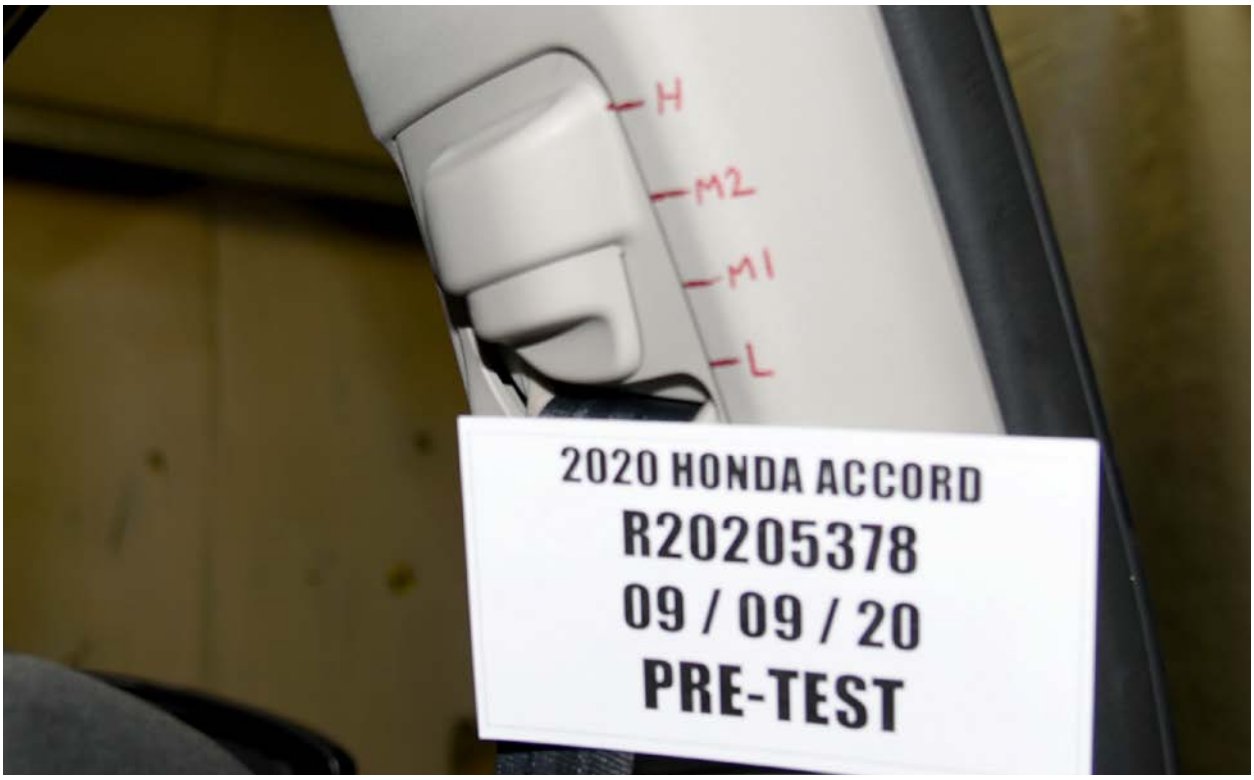


FIGURE 112. Pre-Test Passenger Adjustable D-Ring

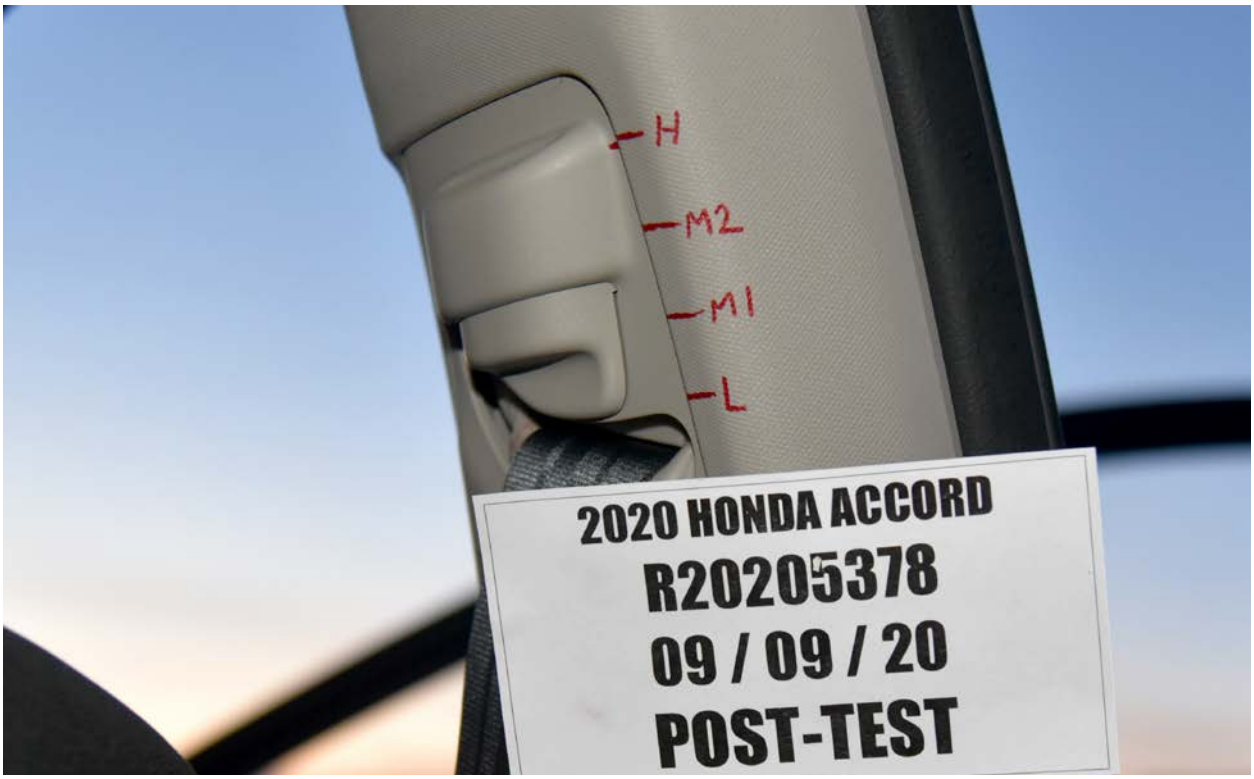


FIGURE 113. Post-Test Passenger Adjustable D-Ring

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

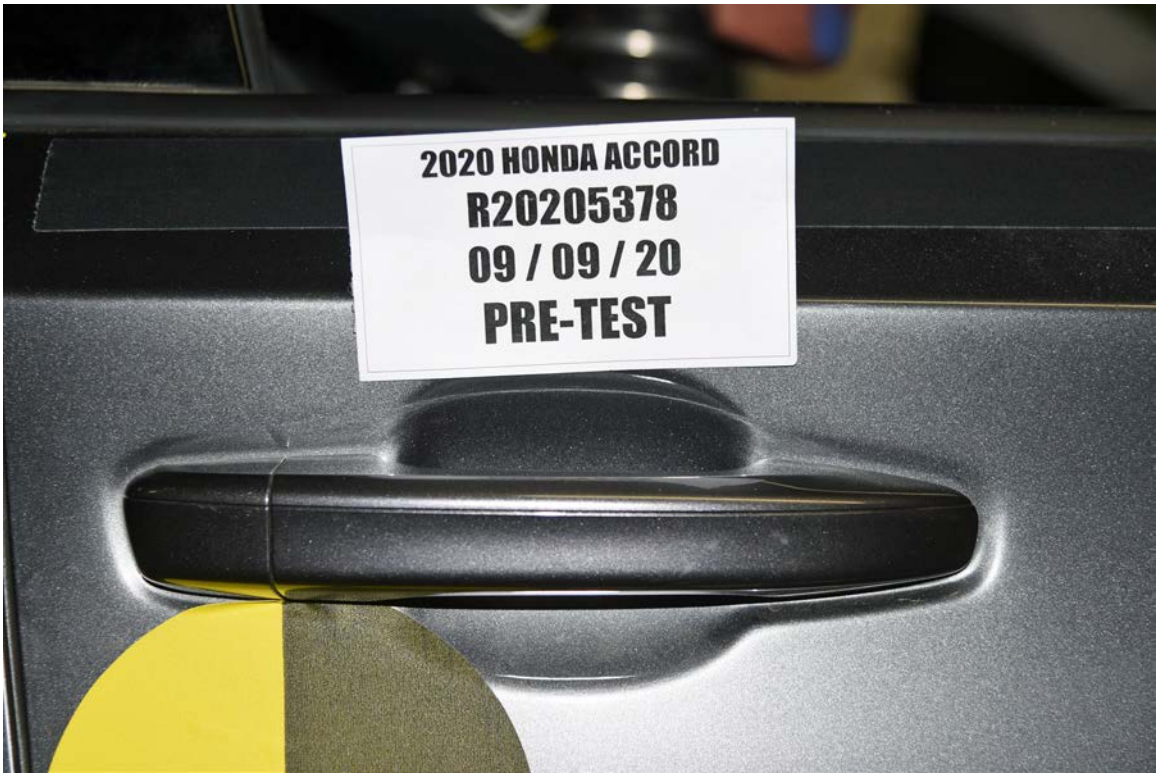


FIGURE 118. Pre-Test Close-up View of Passenger Door Latch

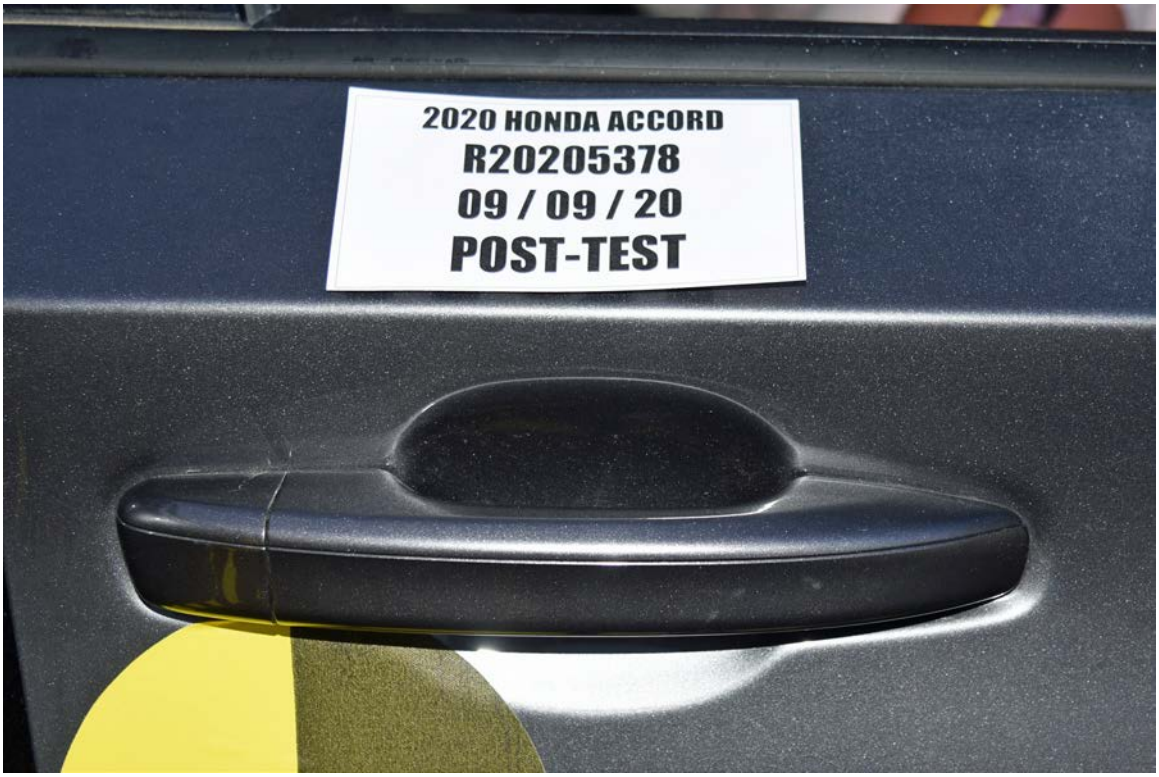


FIGURE 119. Post-Test Close-up View of Passenger Door Latch

FIGURE 120. Pre-Test Passenger Inner Door Panel

FIGURE 121. Post-Test Passenger Inner Door Panel

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

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

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

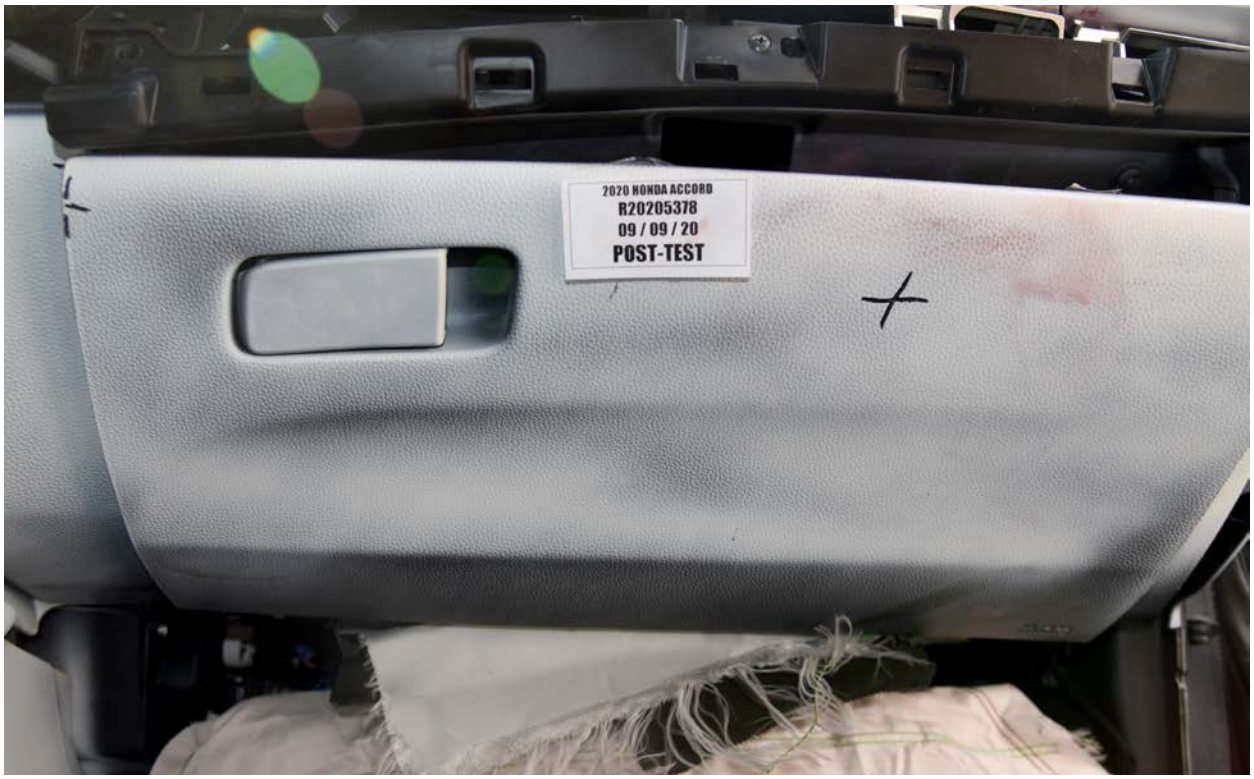


FIGURE 125. Post-Test Center View of Passenger Knee Bolster

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

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

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

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

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 Driver Dummy Contact with Front Airbag

Photograph Not Applicable
No Contact with Side Airbag

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

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

FIGURE 136a. Post-Test Driver Dummy Contact with Vehicle Interior

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

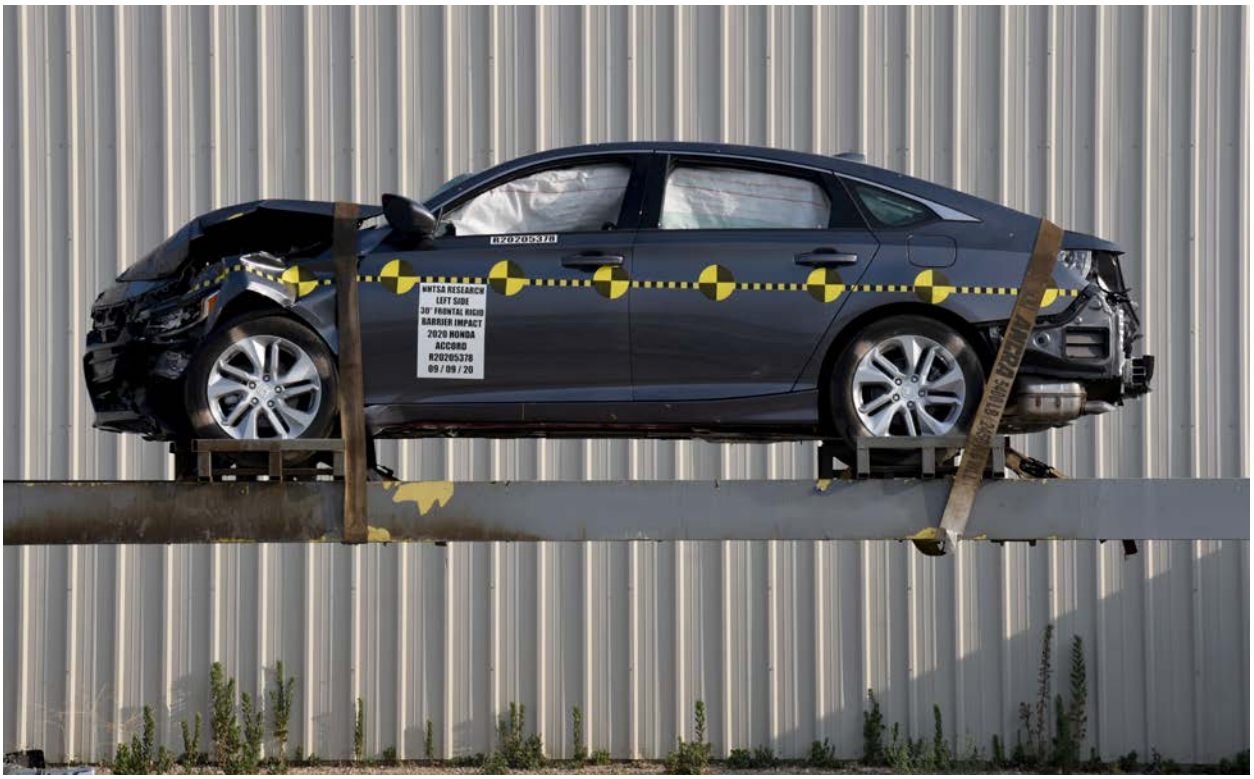


FIGURE 140. Vehicle at 0° on Static Rollover Device

FIGURE 141. Vehicle at 90° on Static Rollover Device

FIGURE 142. Vehicle at 180° on Static Rollover Device

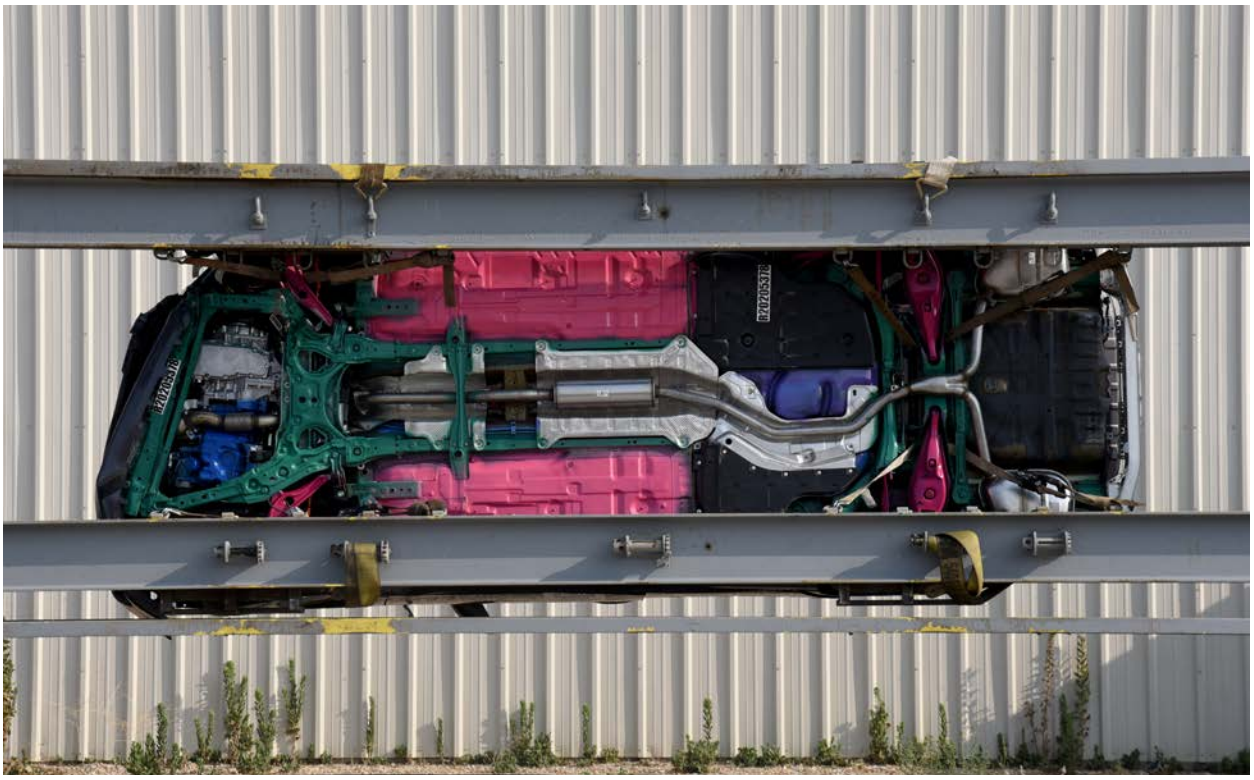


FIGURE 143. Vehicle at 270° on Static Rollover Device

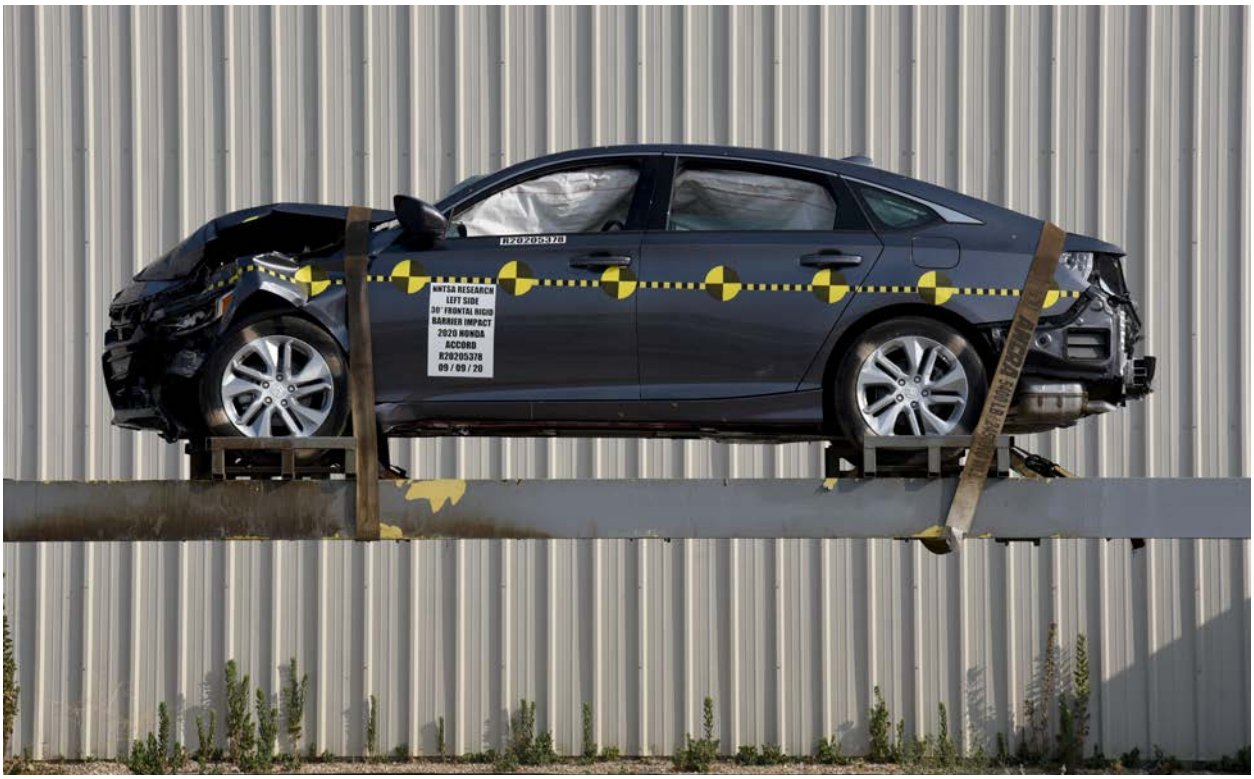


FIGURE 144. Vehicle at 360° on Static Rollover Device

FIGURE 145. Frontal Impact Event

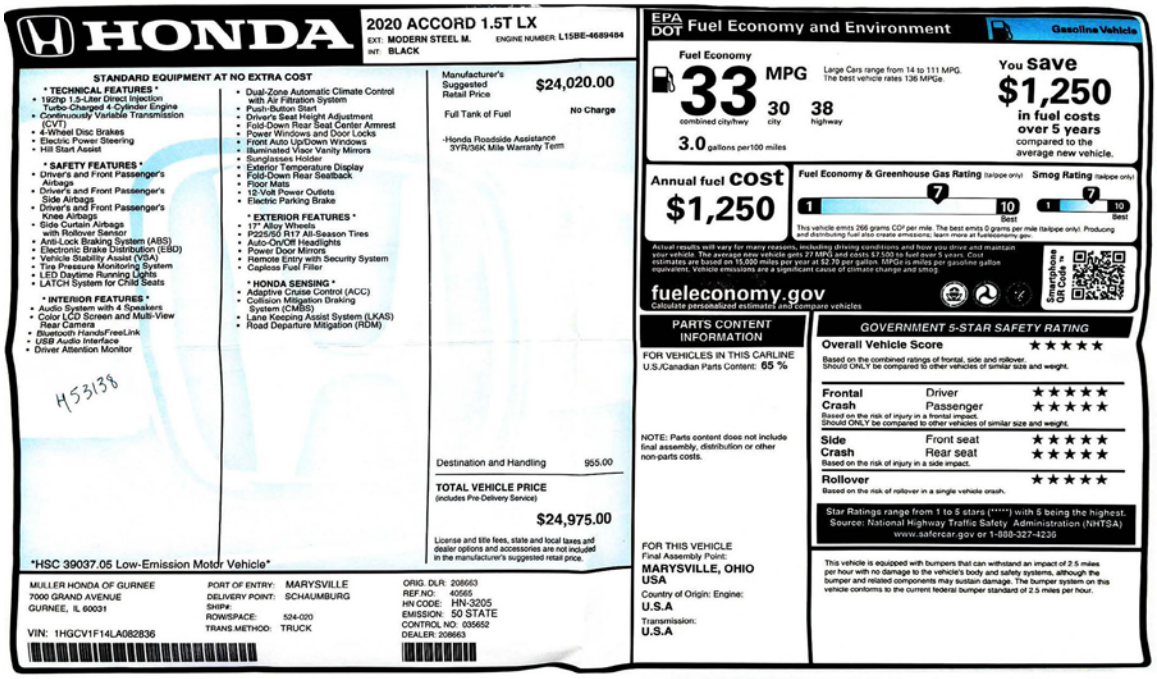


FIGURE 146. Monroney Label Photograph

APPENDIX B
VEHICLE AND DUMMY RESPONSE DATA TRACES

TABLE OF DATA PLOTS

TABLE OF DATA PLOTS … (CONTINUED)

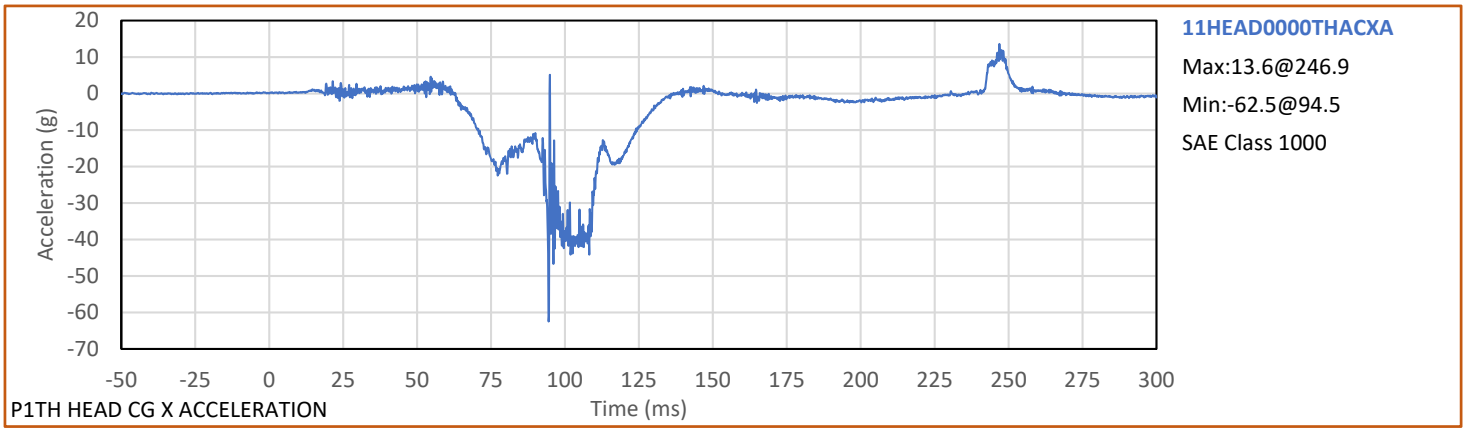
TABLE OF DATA PLOTS … (CONTINUED)

TABLE OF DATA PLOTS … (CONTINUED)

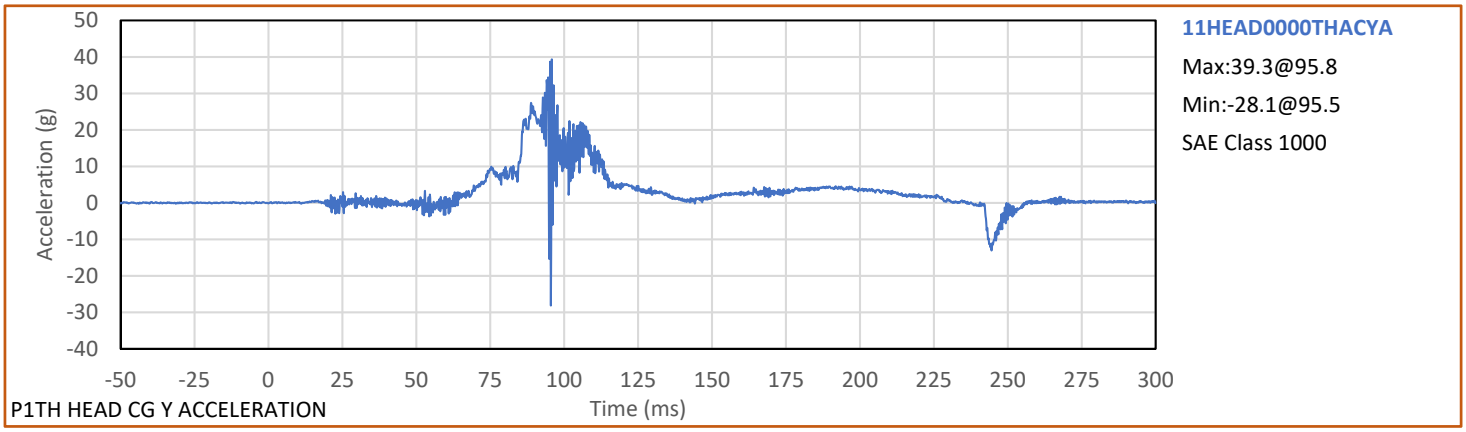
TABLE OF DATA PLOTS … (CONTINUED)

TABLE OF DATA PLOTS … (CONTINUED)

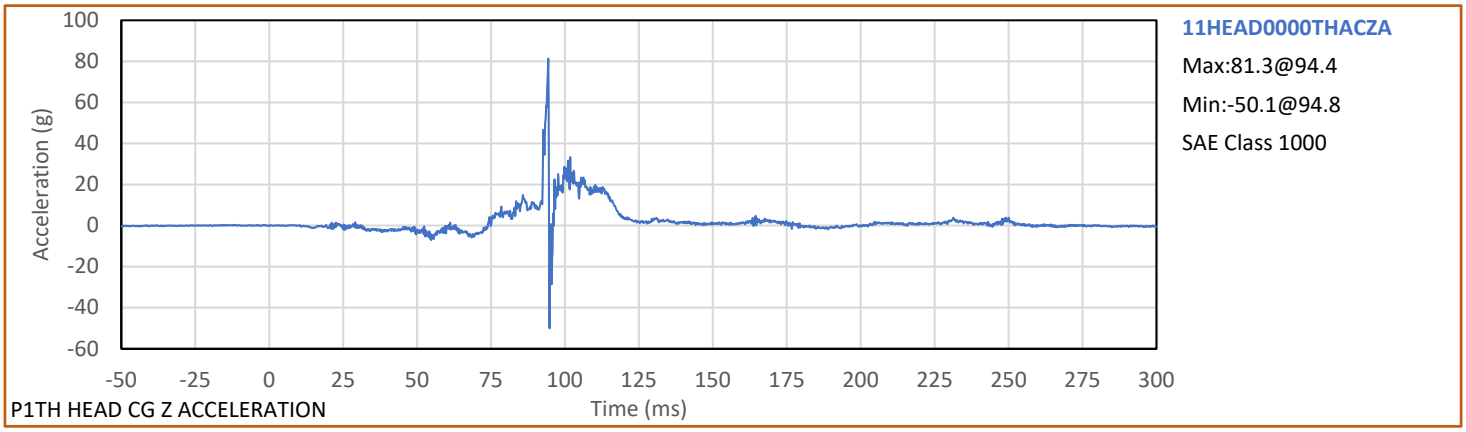
Test Vehicle:	2020 Honda Accord 4-Door Sedan	NHTSA No.:	R20205378
Test Program:	Left Side 30° Frontal Rigid Barrier Impact	Test Date:	9/9/2020



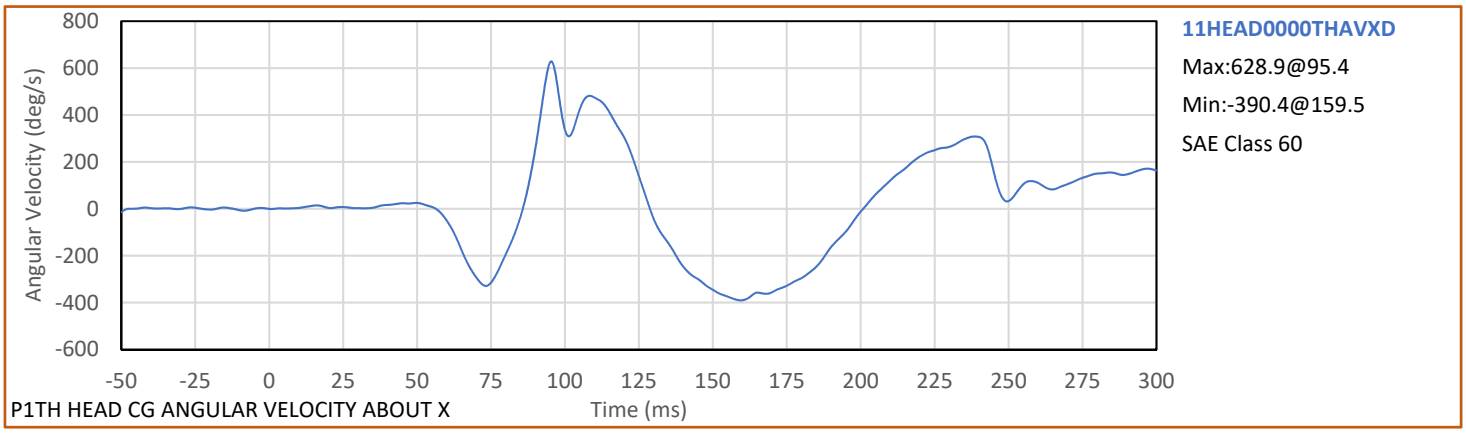
P1TH HEAD CG X ACCELERATION



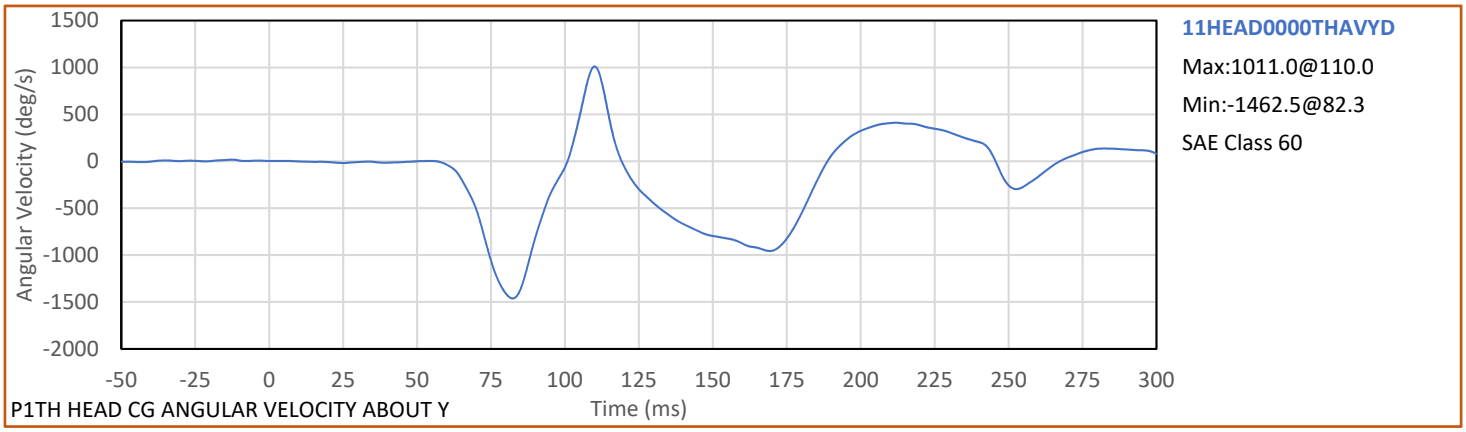
P1TH HEAD CG Y ACCELERATION



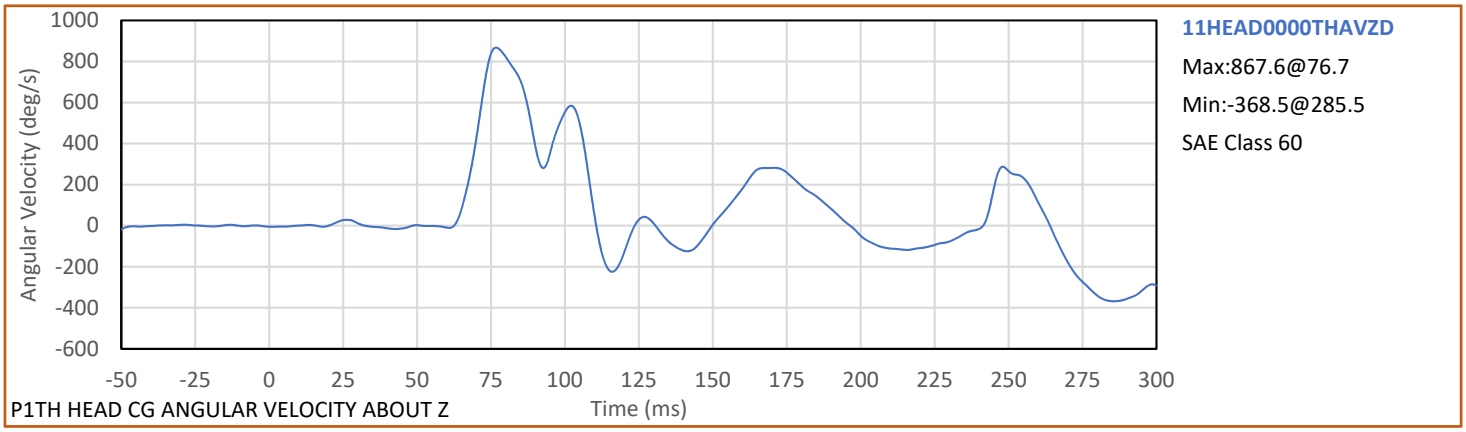
P1TH HEAD CG Z ACCELERATION



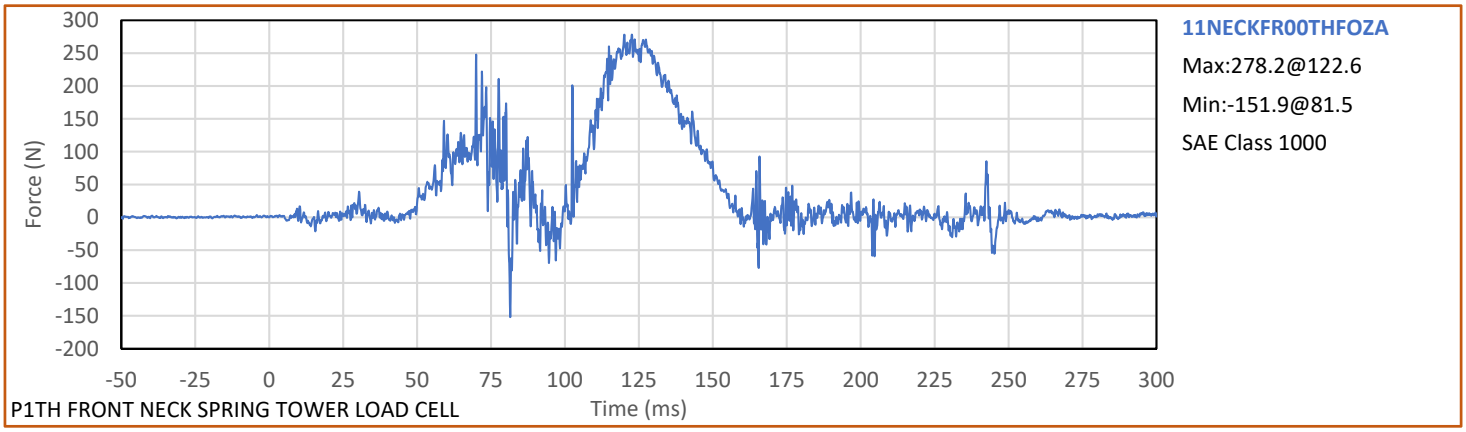
P1TH HEAD CG ANGULAR VELOCITY ABOUT X



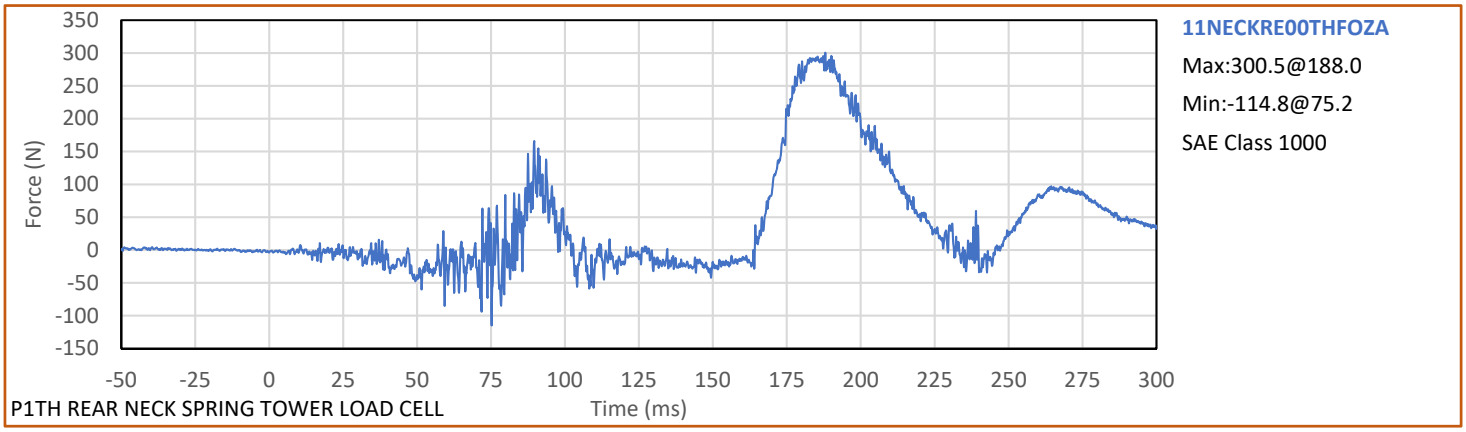
P1TH HEAD CG ANGULAR VELOCITY ABOUT Y



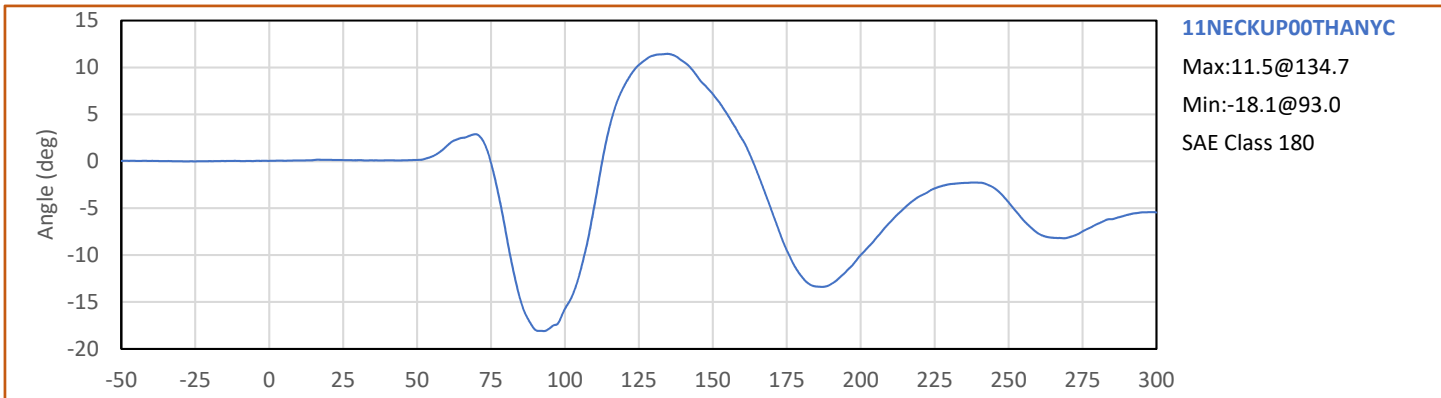
P1TH HEAD CG ANGULAR VELOCITY ABOUT Z

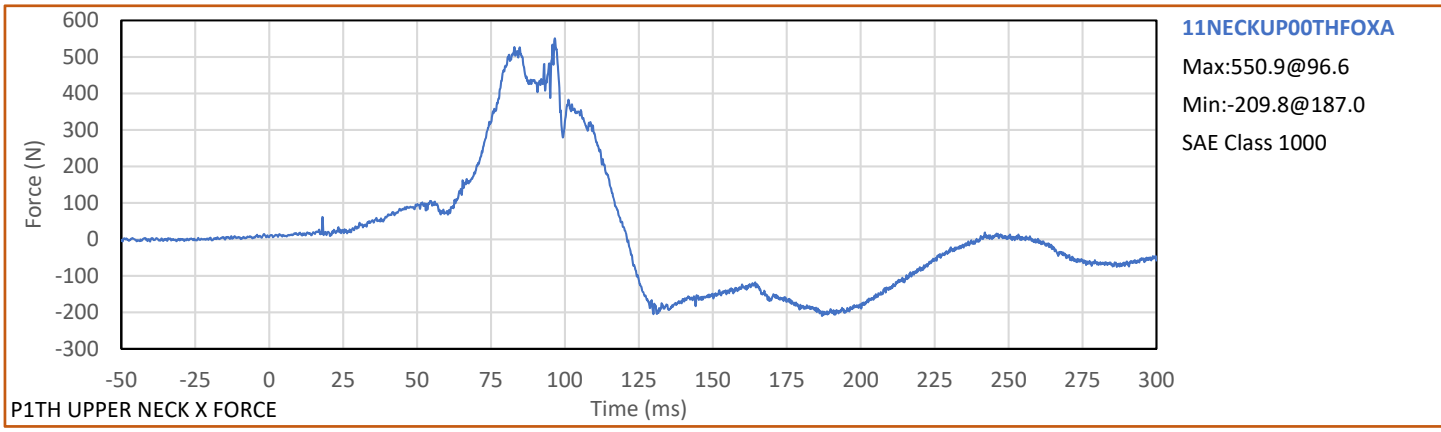


P1TH FRONT NECK SPRING TOWER LOAD CELL



P1TH REAR NECK SPRING TOWER LOAD CELL


Angle (deg)
Time (ms)
11NECKUP00THANYC
Max:11.5@134.7
Min:-18.1@93.0
SAE Class 180
P1TH OCCIPITAL CONDYLE ROTATION POTENTIOMETER


Force (N)
Time (ms)
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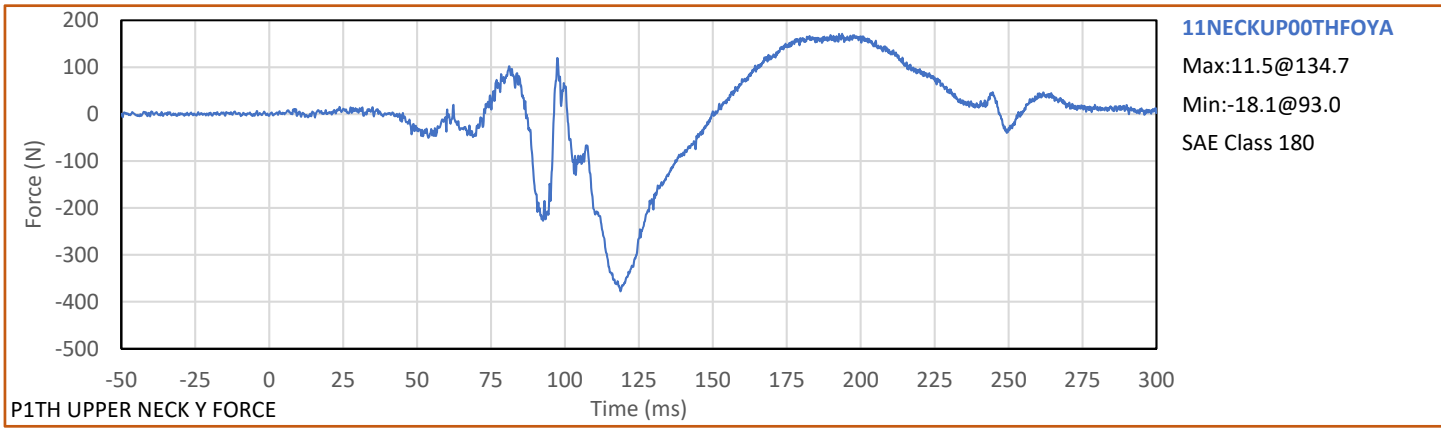
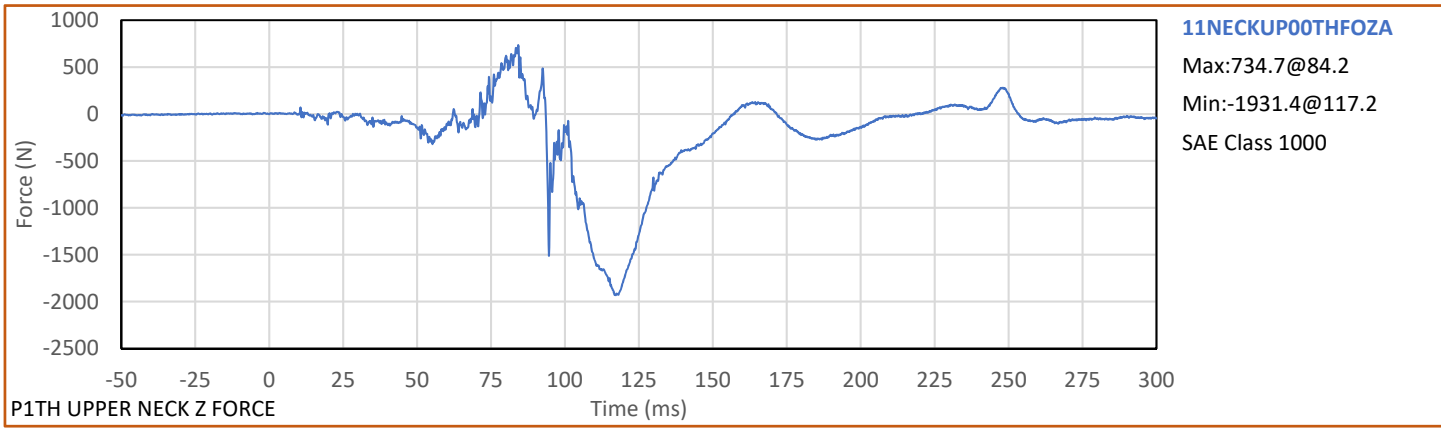
Max:550.9@96.6
Min:-209.8@187.0
SAE Class 1000
P1TH UPPER NECK X FORCE


Force (N)
Time (ms)
11NECKUP00THFOYA
Max:11.5@134.7
Min:-18.1@93.0
SAE Class 180
P1TH UPPER NECK Y FORCE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Time (ms)
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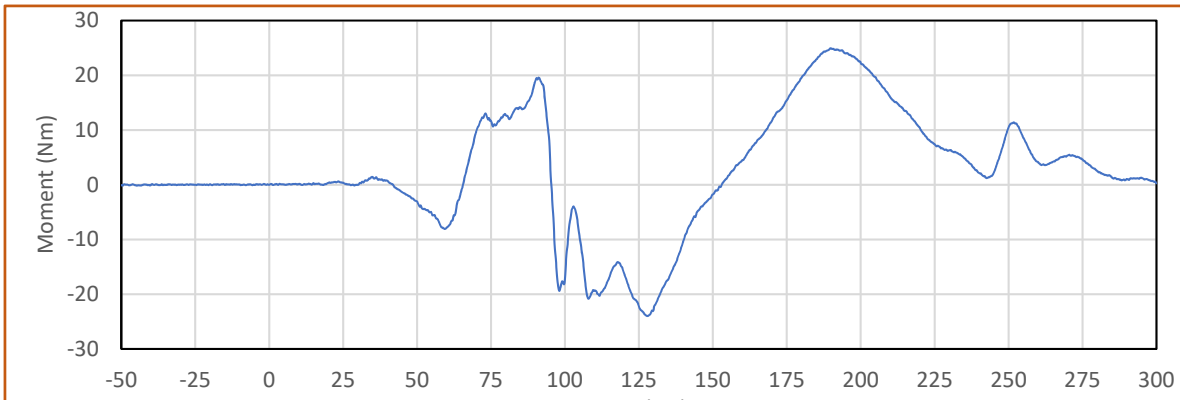
Min:-1931.4@117.2
SAE Class 1000
P1TH UPPER NECK Z FORCE



P1TH UPPER NECK X MOMENT

11NECKUP00THMOXB
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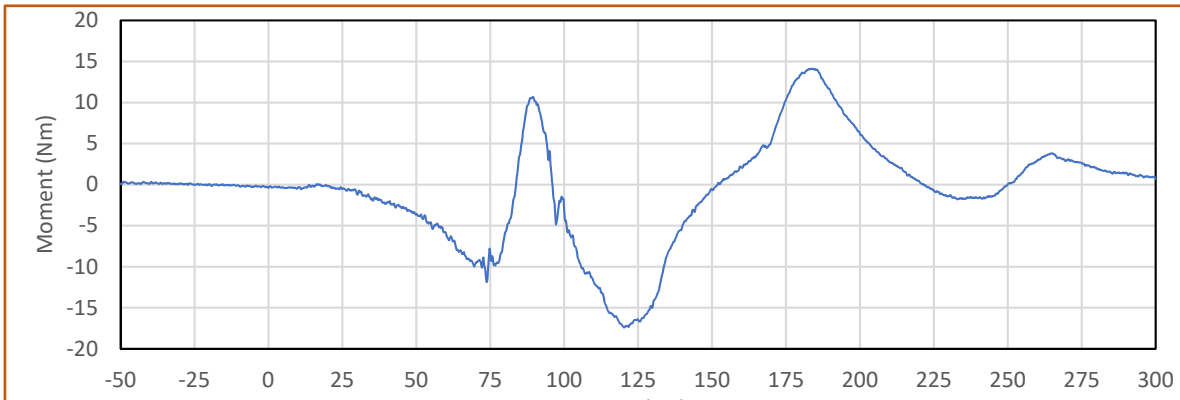
Min:-24.0@128.0
SAE Class 600



P1TH UPPER NECK Y MOMENT

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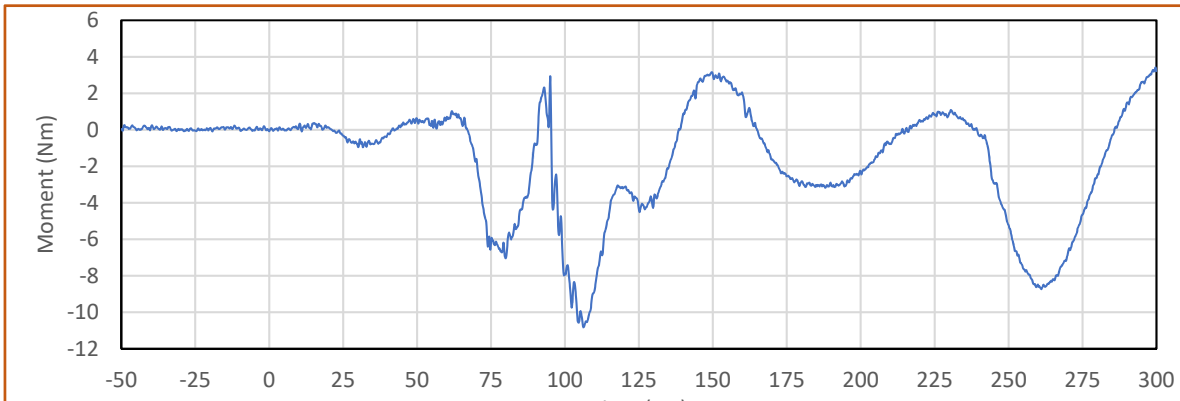
Min:-17.4@120.3
SAE Class 600



P1TH UPPER NECK Z MOMENT

11NECKUP00THMOZB
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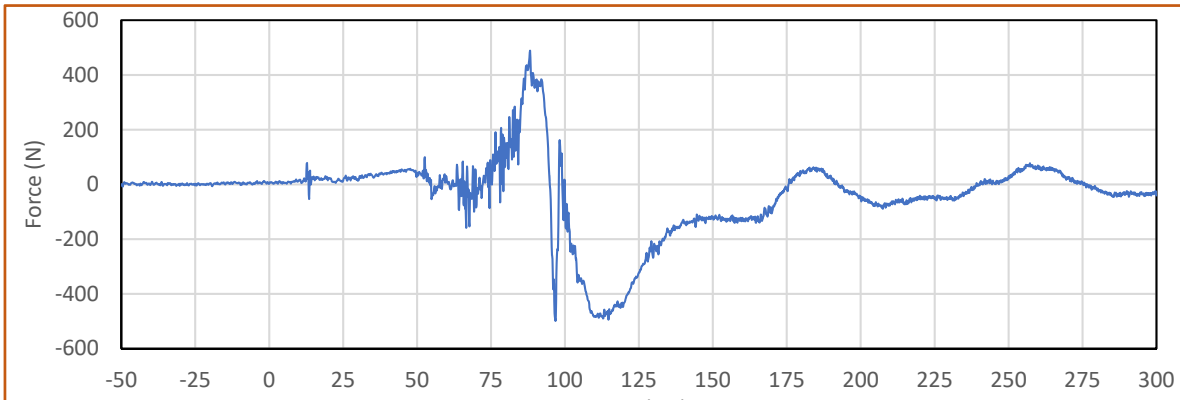
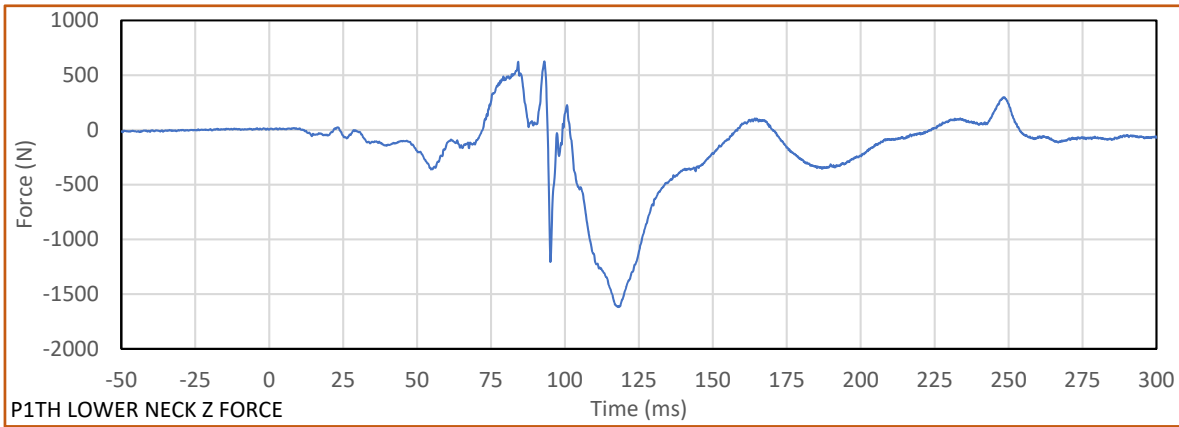
Min:-10.8@106.2
SAE Class 600



P1TH LOWER NECK X FORCE

11NECKLO00THFOXA
Max:488.5@88.2
Min:-499.3@96.8
SAE Class 1000

11NECKLO00THFOYA
Max:429.6@98.5
Min:-76.6@252.1
SAE Class 1000



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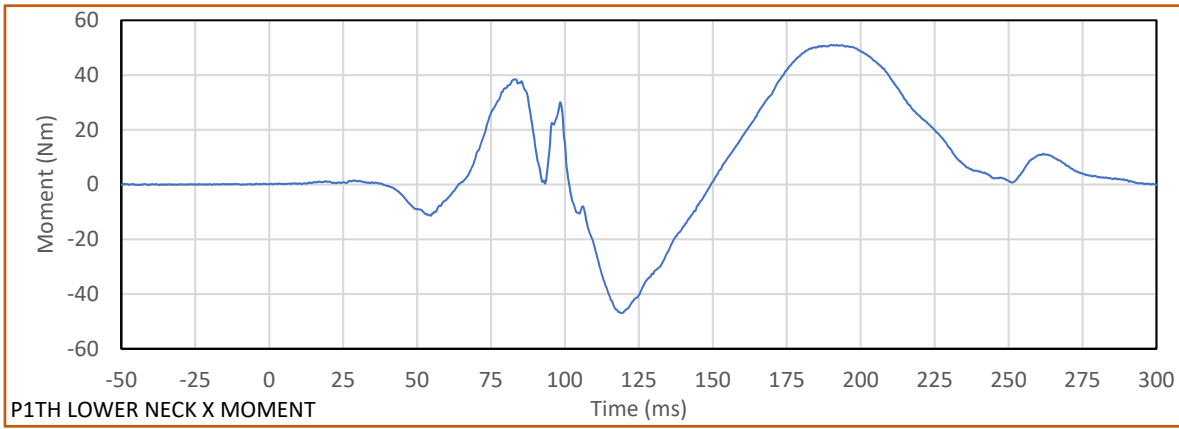
Min:-1619.3@118.1
SAE Class 1000



11NECKLO00THMOXB
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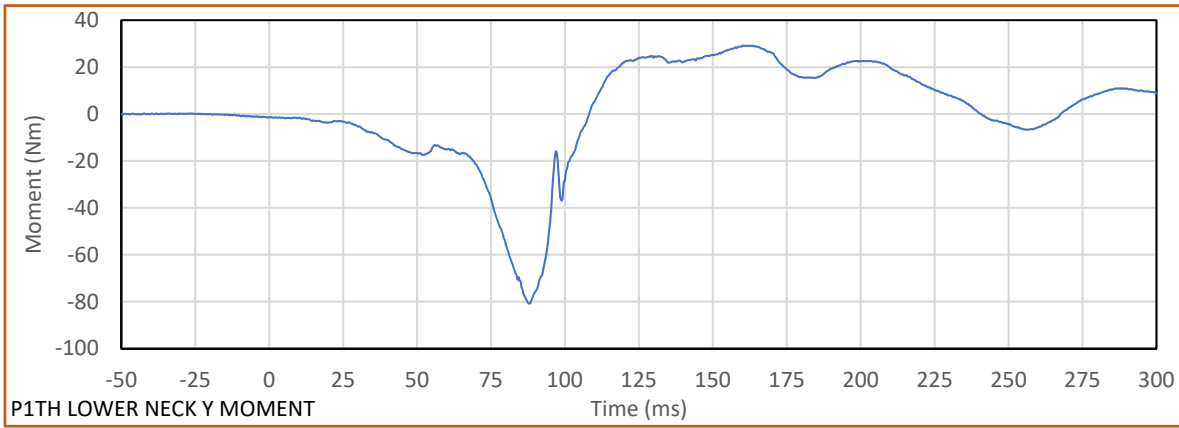
Min:-47.0@119.1
SAE Class 600



11NECKLO00THMOYB
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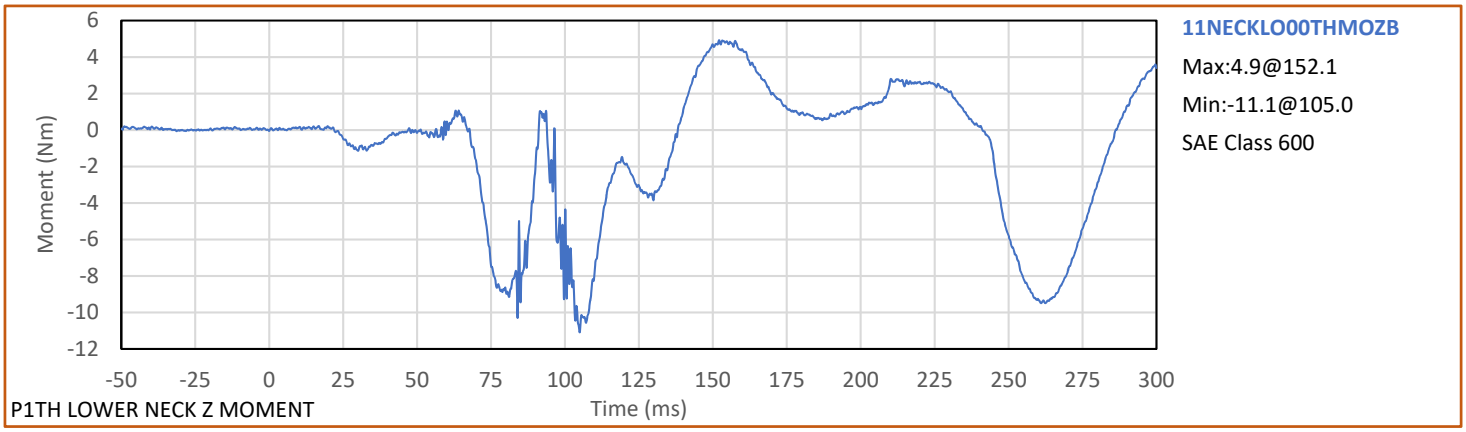
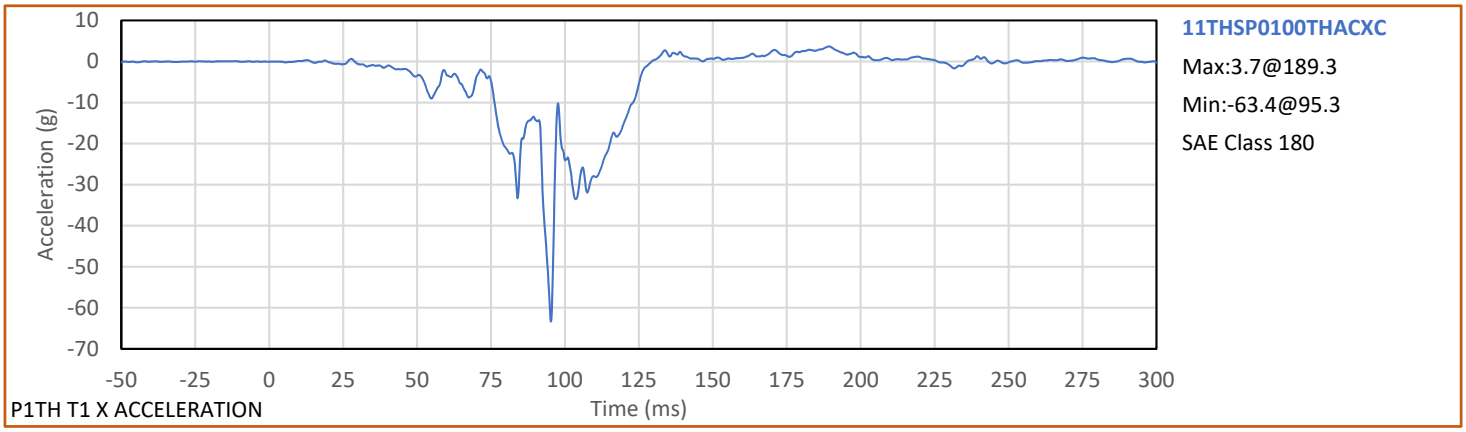
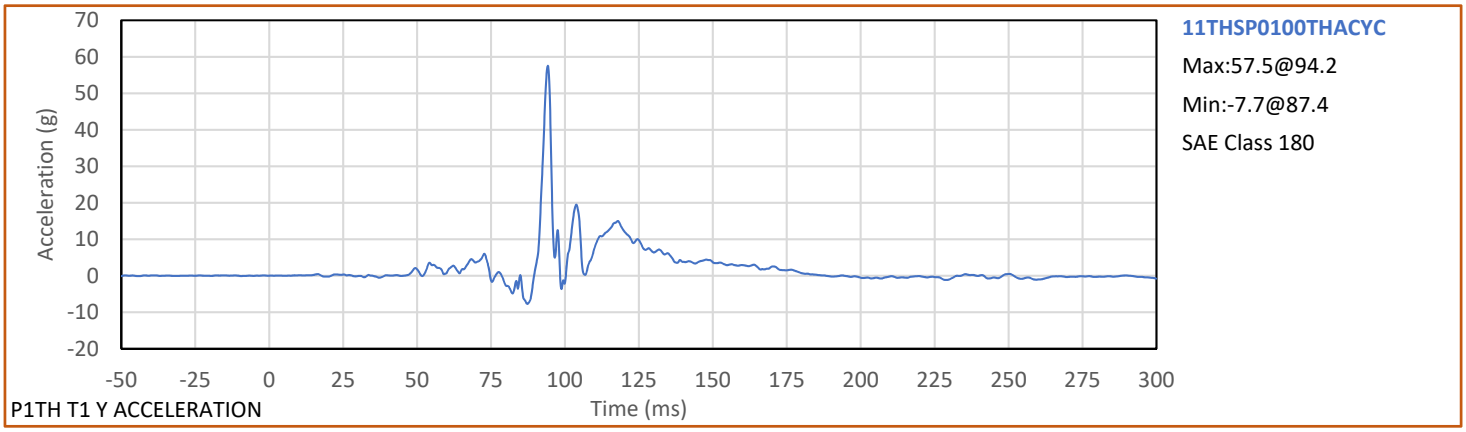
Min:-80.8@88.1
SAE Class 600


Moment (Nm)
Time (ms)
P1TH LOWER NECK Z MOMENT
11NECKLO00THMOZB
Max:4.9@152.1
Min:-11.1@105.0
SAE Class 600


Acceleration (g)
Time (ms)
P1TH T1 X ACCELERATION
11THSP0100THACXC
Max:3.7@189.3
Min:-63.4@95.3
SAE Class 180


Acceleration (g)
Time (ms)
P1TH T1 Y ACCELERATION
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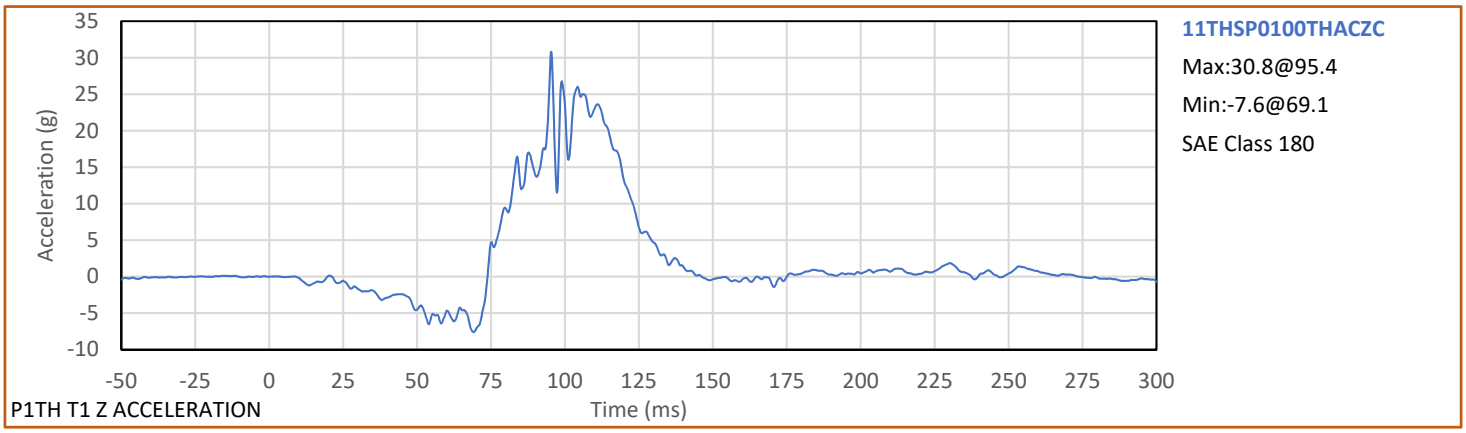
Max:57.5@94.2
Min:-7.7@87.4
SAE Class 180


Acceleration (g)
Time (ms)
P1TH T1 Z ACCELERATION
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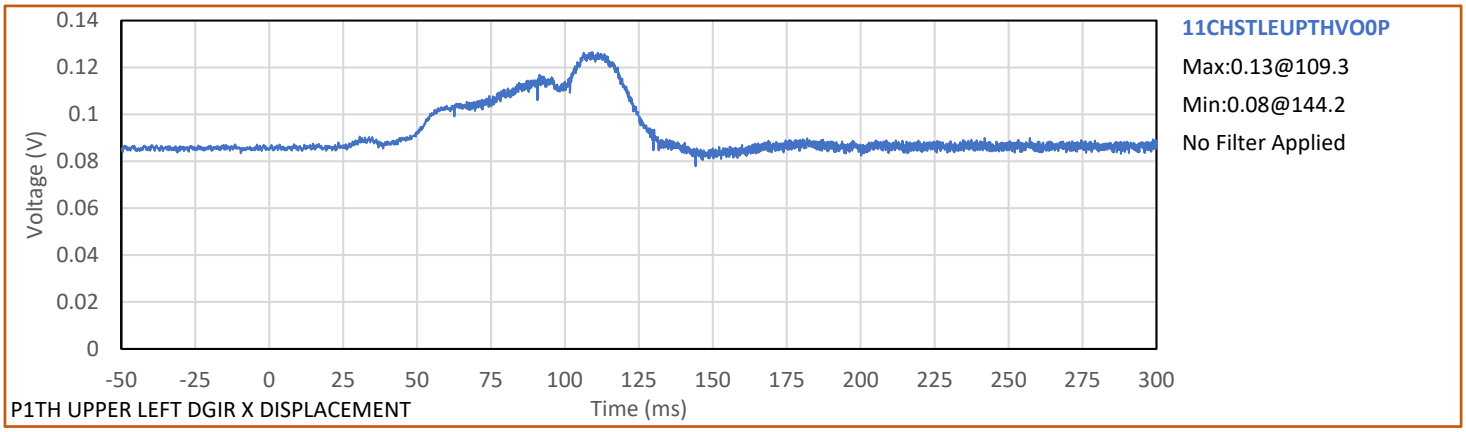
Max:30.8@95.4
Min:-7.6@69.1
SAE Class 180


Voltage (V)
Time (ms)
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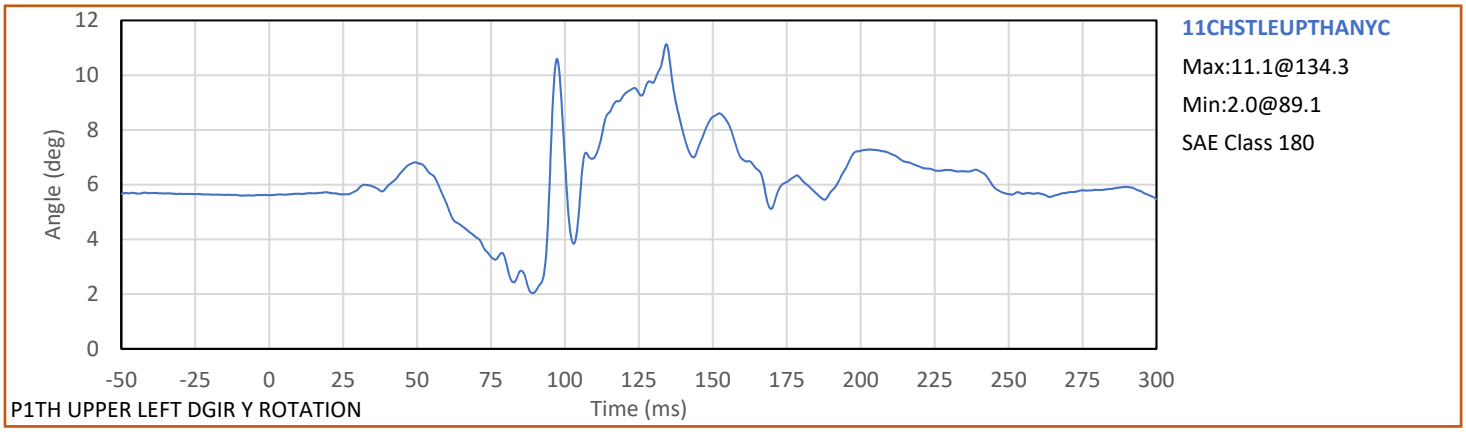
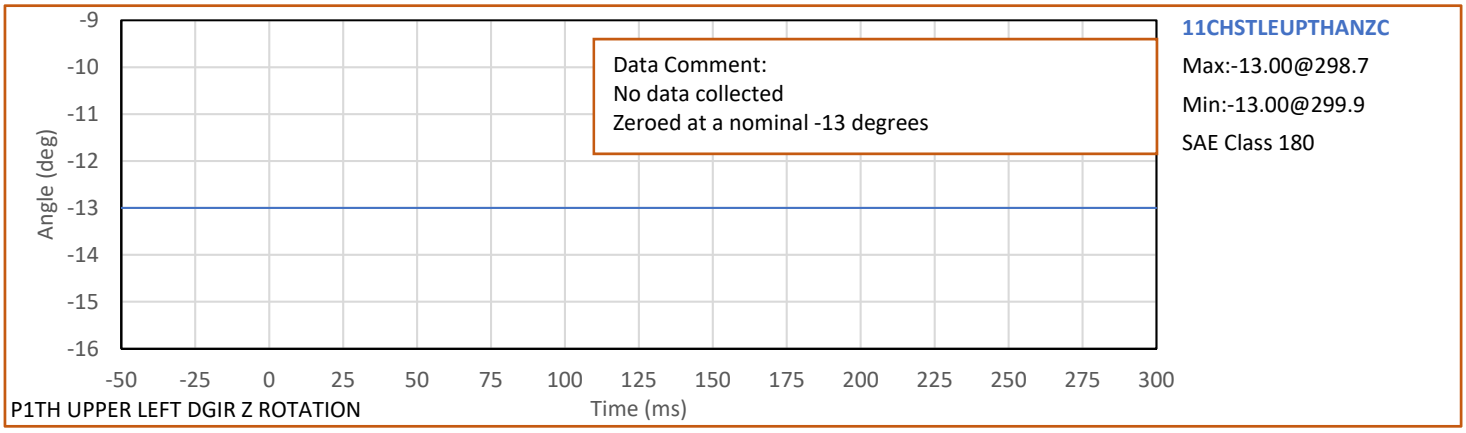
Max:0.13@109.3
Min:0.08@144.2
No Filter Applied
P1TH UPPER LEFT DGIR X DISPLACEMENT


Angle (deg)
Time (ms)
11CHSTLEUPTHANYC
Max:11.1@134.3
Min:2.0@89.1
SAE Class 180
P1TH UPPER LEFT DGIR Y ROTATION


Angle (deg)
Time (ms)
Data Comment:
No data collected
Zeroed at a nominal -13 degrees
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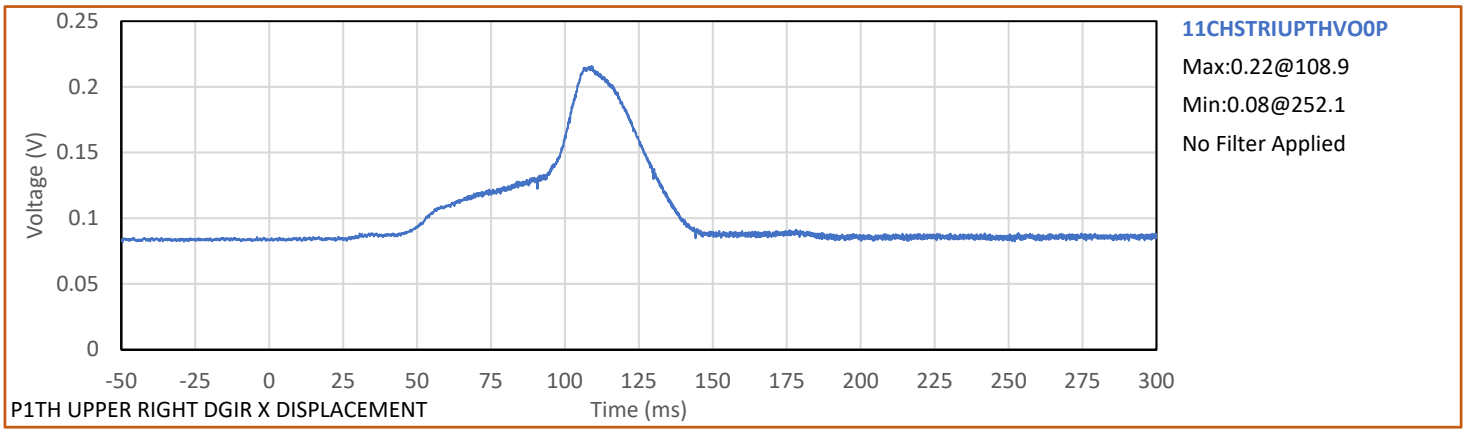
Max:-13.00@298.7
Min:-13.00@299.9
SAE Class 180
P1TH UPPER LEFT DGIR Z ROTATION


Voltage (V)
Time (ms)
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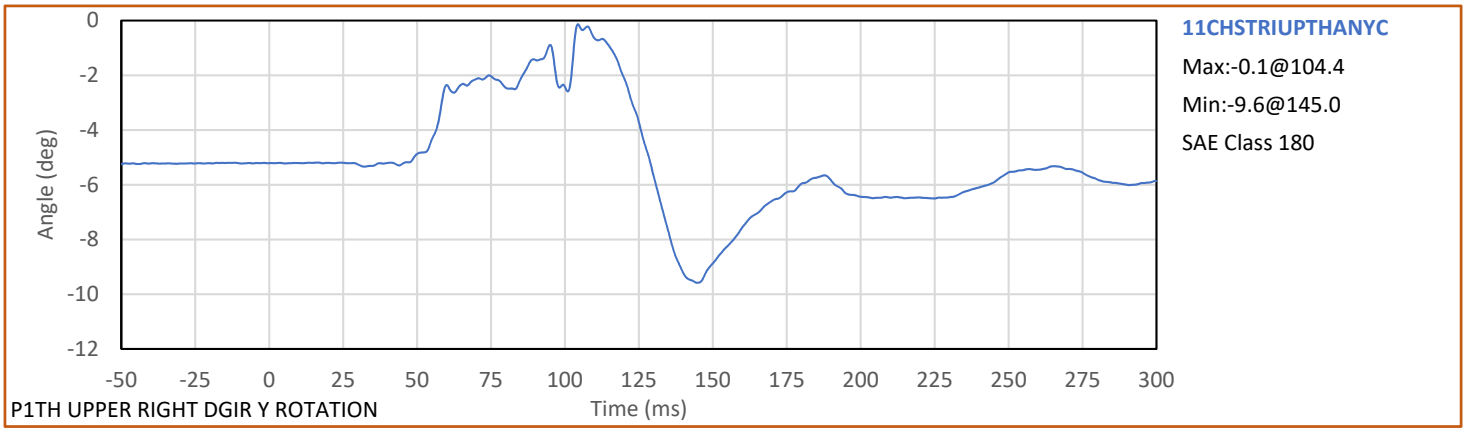
Max:0.22@108.9
Min:0.08@252.1
No Filter Applied
P1TH UPPER RIGHT DGIR X DISPLACEMENT


Angle (deg)
Time (ms)
P1TH UPPER RIGHT DGIR Y ROTATION
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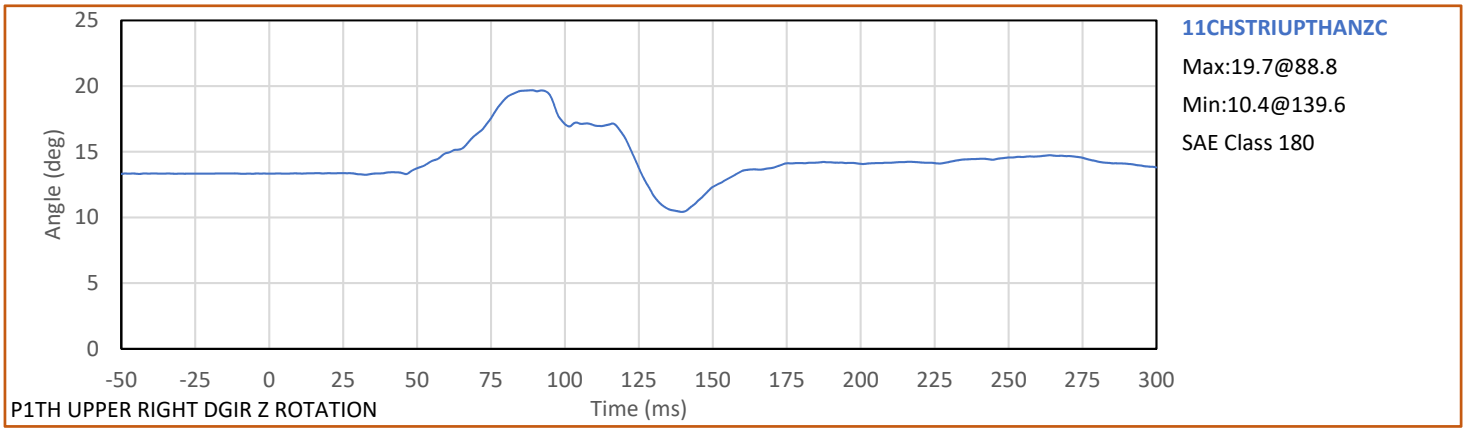
Max:-0.1@104.4
Min:-9.6@145.0
SAE Class 180


Angle (deg)
Time (ms)
P1TH UPPER RIGHT DGIR Z ROTATION
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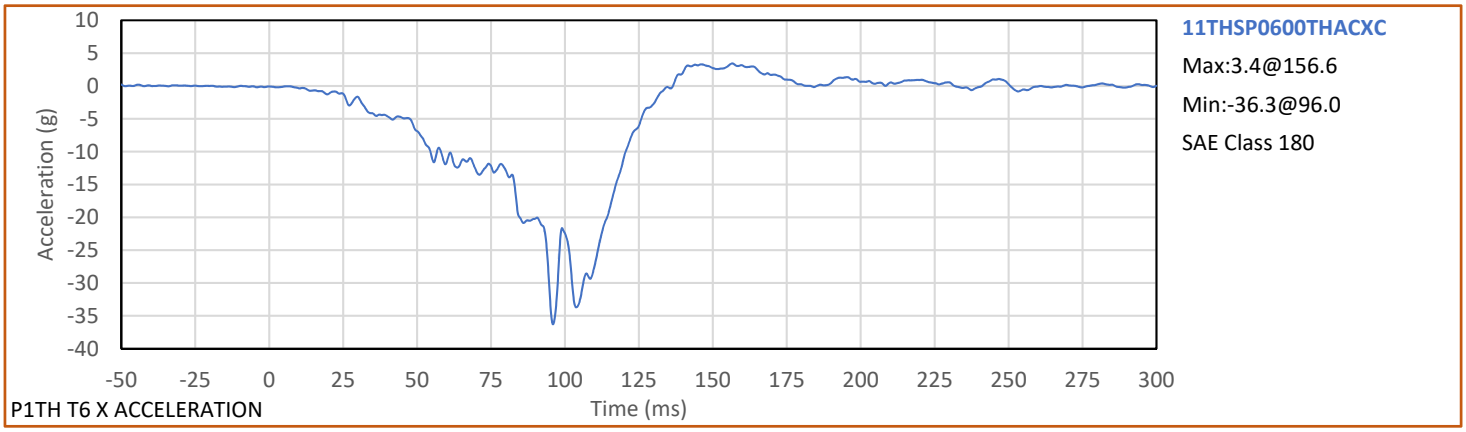
Max:19.7@88.8
Min:10.4@139.6
SAE Class 180


Acceleration (g)
Time (ms)
P1TH T6 X ACCELERATION
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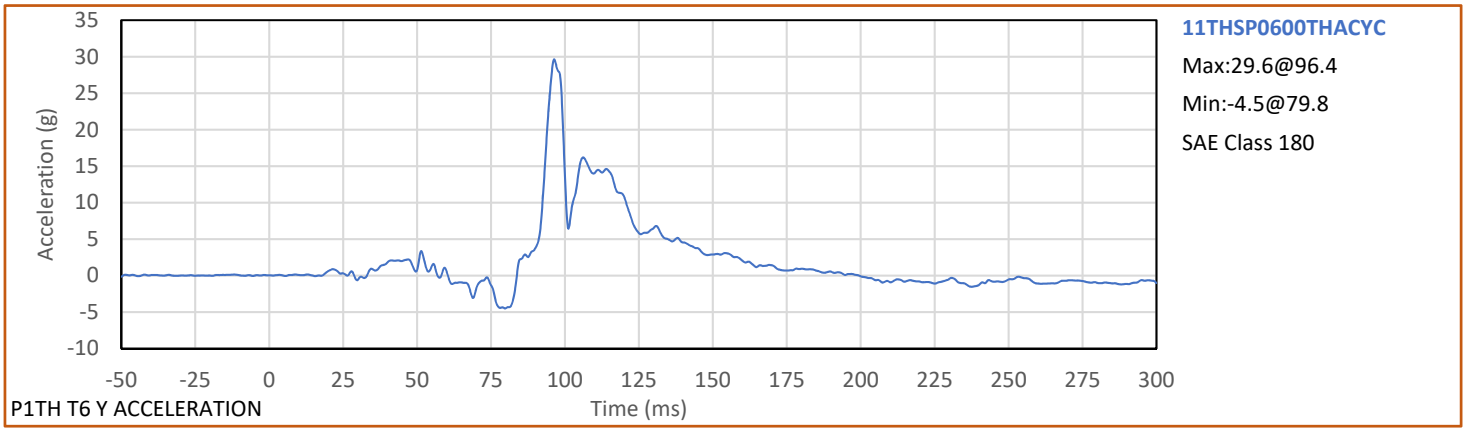
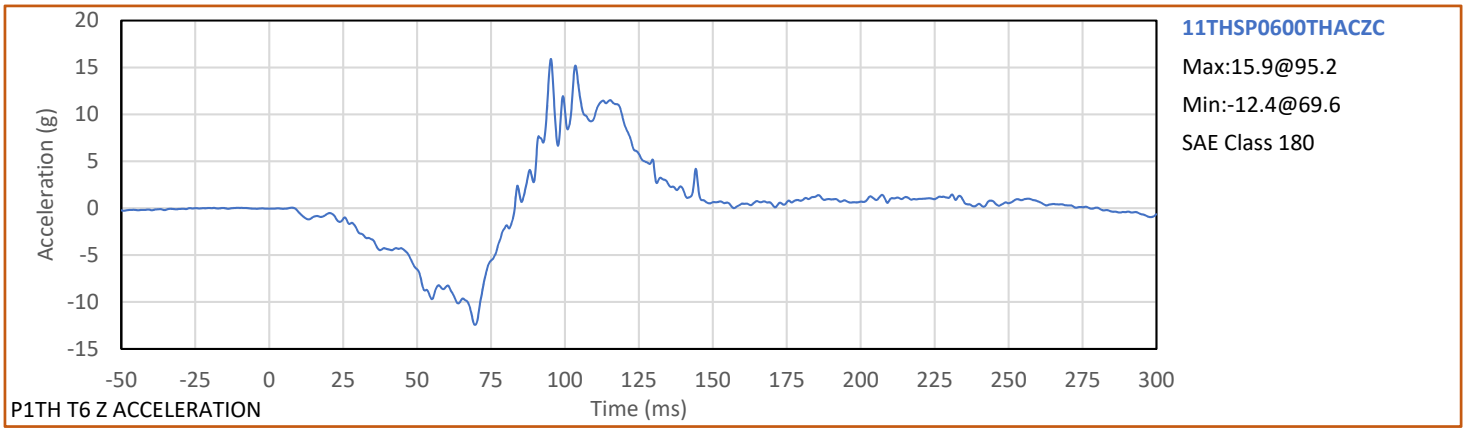
Max:3.4@156.6
Min:-36.3@96.0
SAE Class 180


Acceleration (g)
Time (ms)
P1TH T6 Y ACCELERATION
11THSP0600THACYC
Max:29.6@96.4
Min:-4.5@79.8
SAE Class 180


Acceleration (g)
Time (ms)
P1TH T6 Z ACCELERATION
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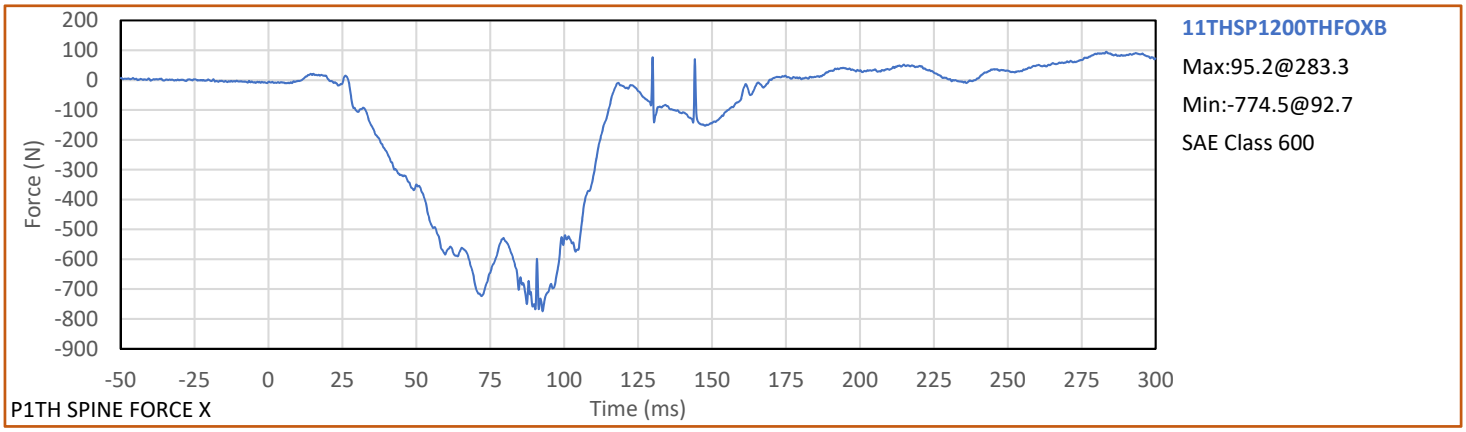
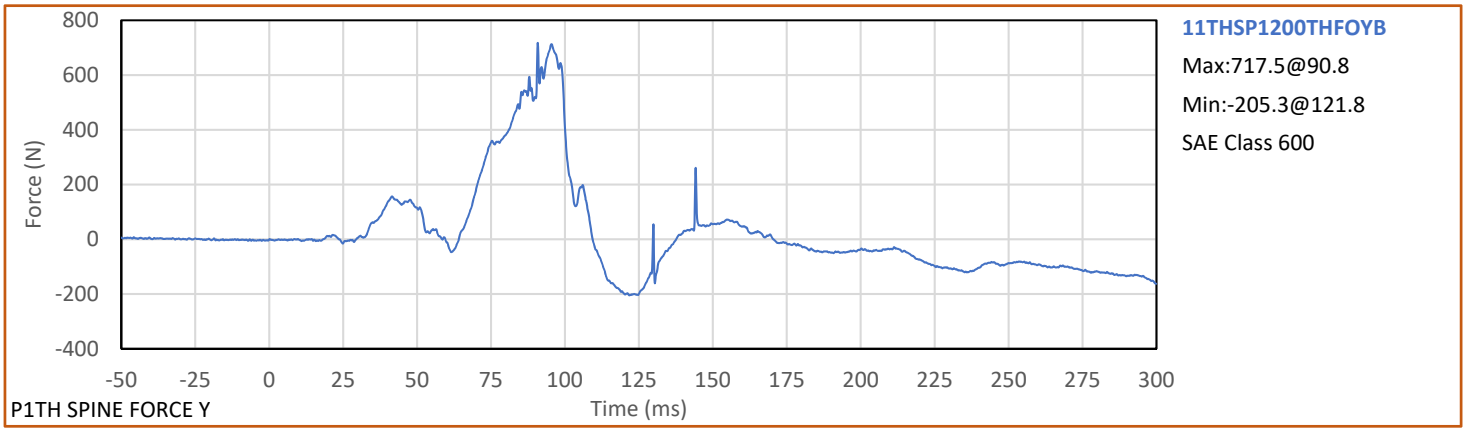
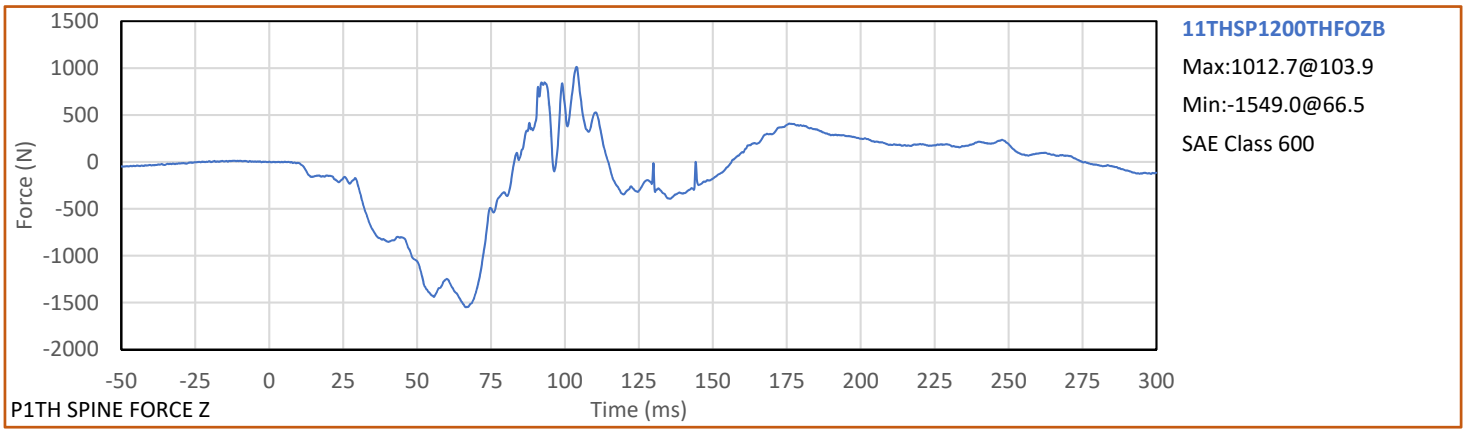
Max:15.9@95.2
Min:-12.4@69.6
SAE Class 180

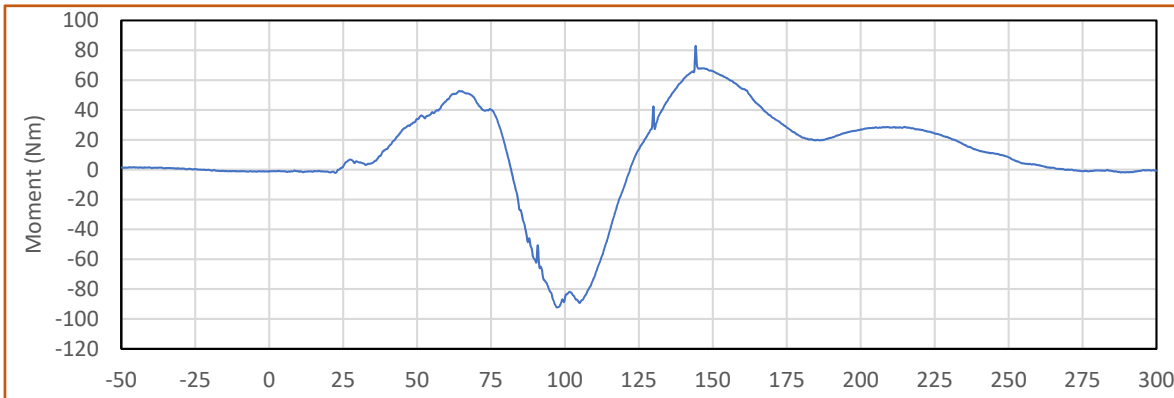

Force (N)
Time (ms)
P1TH SPINE FORCE X
11THSP1200THFOXB
Max:95.2@283.3
Min:-774.5@92.7
SAE Class 600


Force (N)
Time (ms)
P1TH SPINE FORCE Y
11THSP1200THFOYB
Max:717.5@90.8
Min:-205.3@121.8
SAE Class 600


Force (N)
Time (ms)
P1TH SPINE FORCE Z
11THSP1200THFOZB
Max:1012.7@103.9
Min:-1549.0@66.5
SAE Class 600

P1TH SPINE MOMENT X

11THSP1200THMOXB
Max:25.8@77.7
Min:-70.2@110.0
SAE Class 600



P1TH SPINE MOMENT Y

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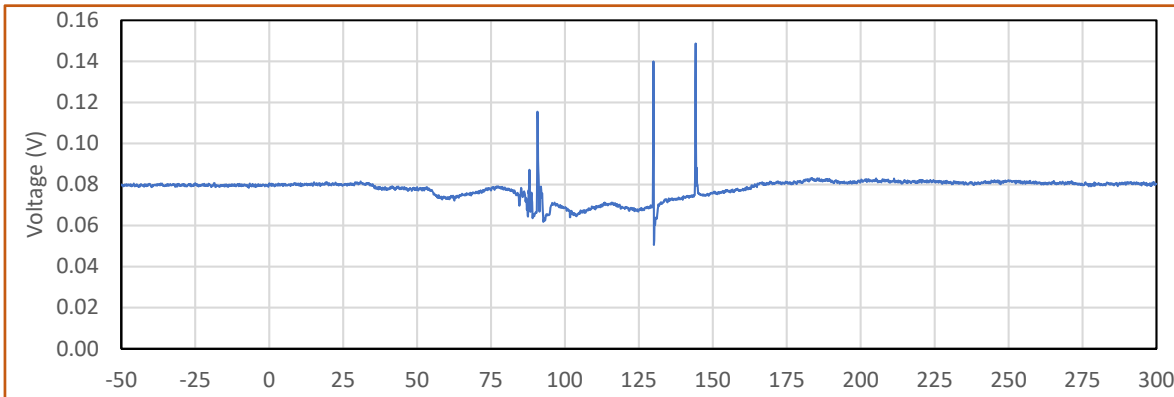
Min:-92.3@97.3
SAE Class 600



P1TH LOWER LEFT DGIR X DISPLACEMENT

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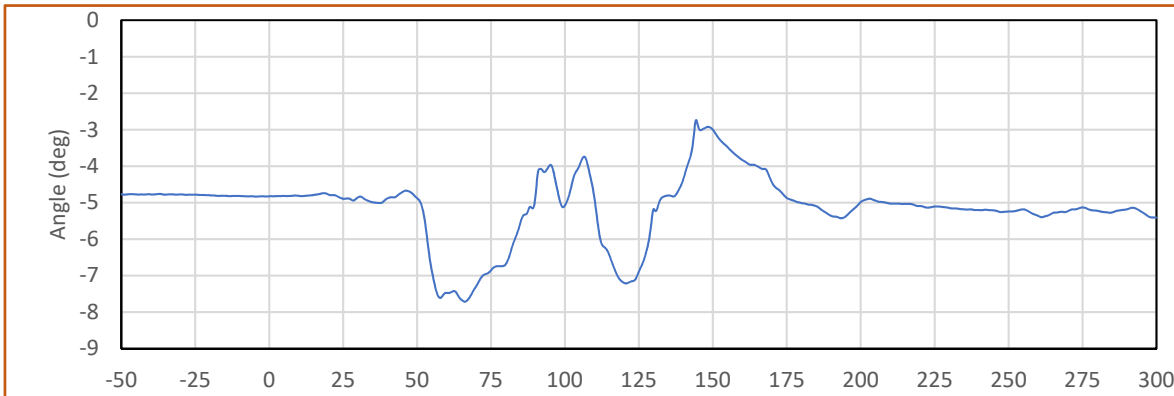
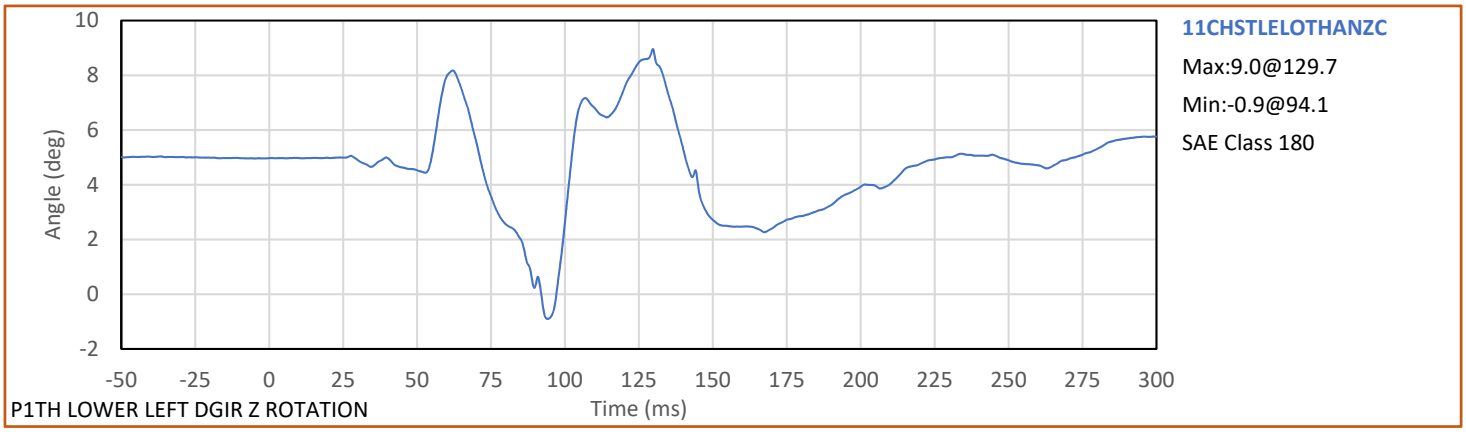
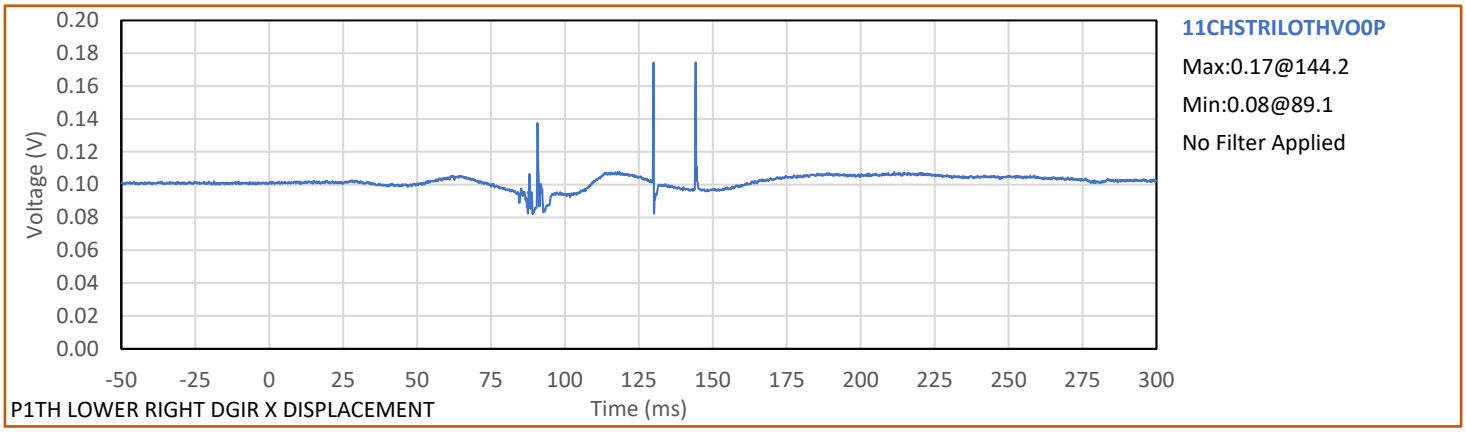
Max:0.15@144.2
Min:0.05@130.1
No Filter Applied

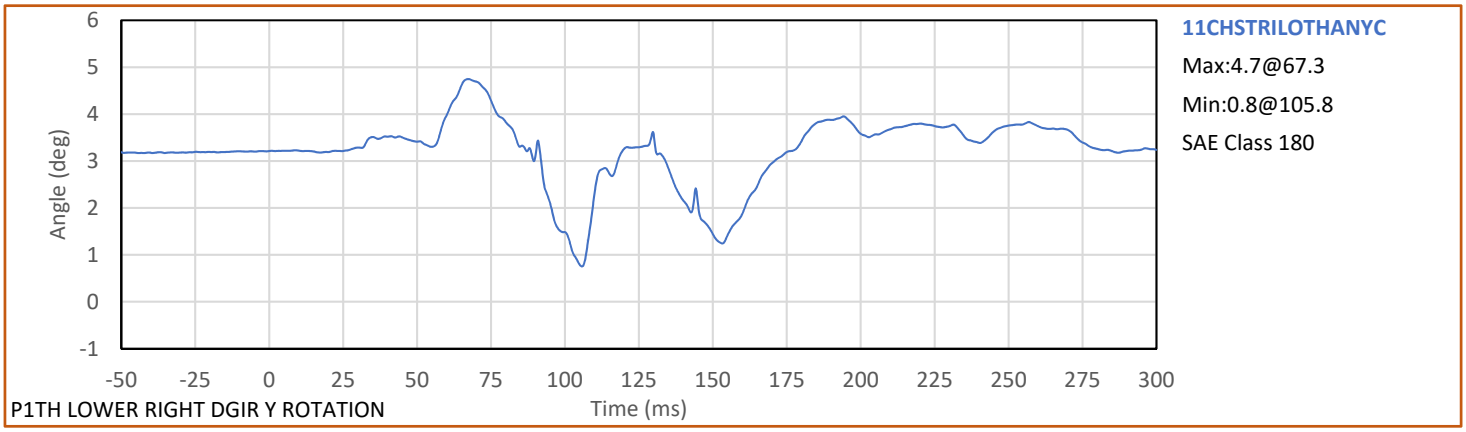


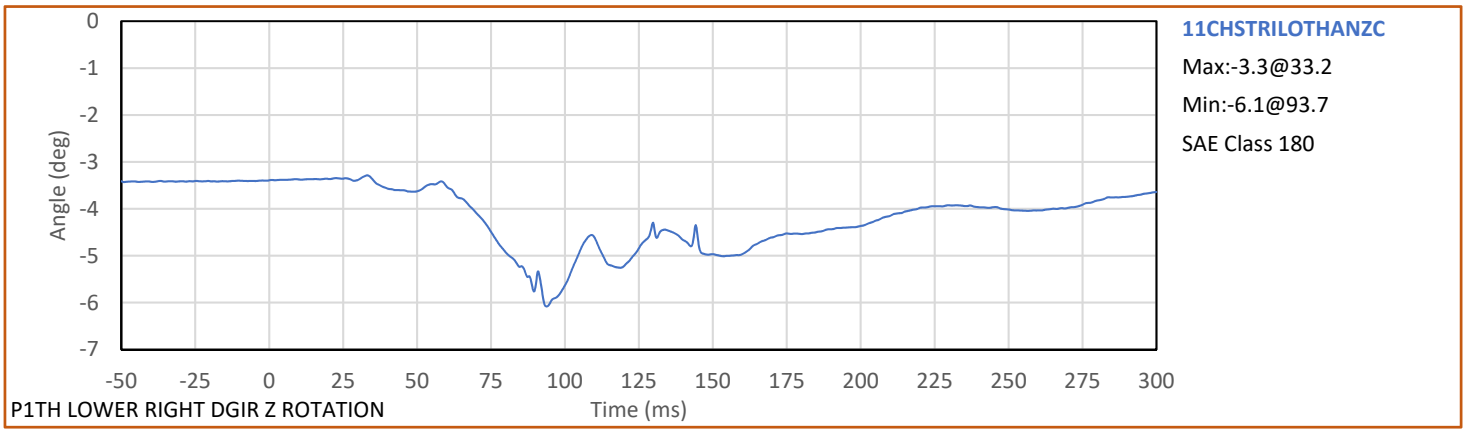
P1TH LOWER LEFT DGIR Y ROTATION

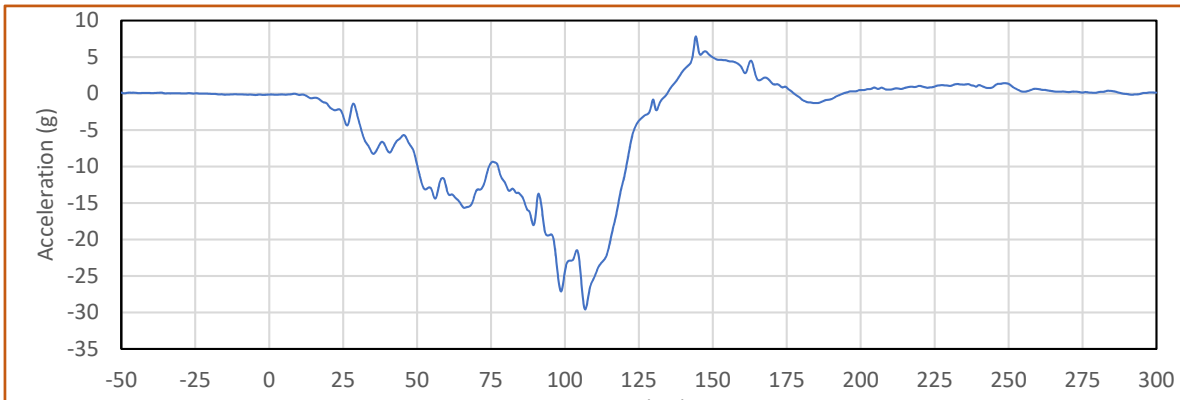
11CHSTLELOTHANYC
Max:-2.7@144.4
Min:-7.7@66.1
SAE Class 180


Angle (deg)
Time (ms)
P1TH LOWER LEFT DGIR Z ROTATION
11CHSTLELOTHANZC
Max:9.0@129.7
Min:-0.9@94.1
SAE Class 180


Voltage (V)
Time (ms)
P1TH LOWER RIGHT DGIR X DISPLACEMENT
11CHSTRILOTHVO0P
Max:0.17@144.2
Min:0.08@89.1
No Filter Applied


Angle (deg)
Time (ms)
P1TH LOWER RIGHT DGIR Y ROTATION
11CHSTRILOTHANYC
Max:4.7@67.3
Min:0.8@105.8
SAE Class 180


Angle (deg)
Time (ms)
P1TH LOWER RIGHT DGIR Z ROTATION
11CHSTRILOTHANZC
Max:-3.3@33.2
Min:-6.1@93.7
SAE Class 180



P1TH T12 X ACCELERATION

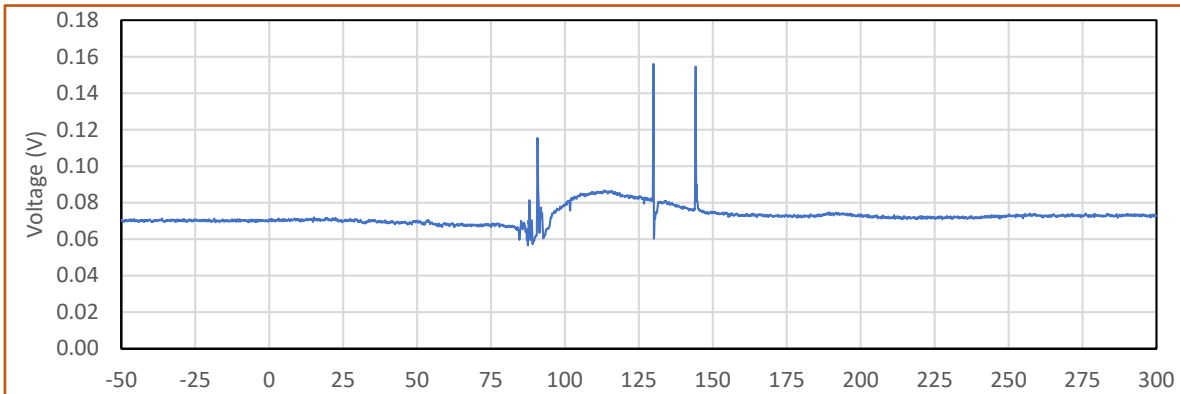
11THSP1200THACXC
Max:7.8@144.3
Min:-29.6@106.9
SAE Class 180

P1TH T12 Y ACCELERATION

11THSP1200THACYC
Max:27.8@100.1
Min:-8.5@73.0
SAE Class 180

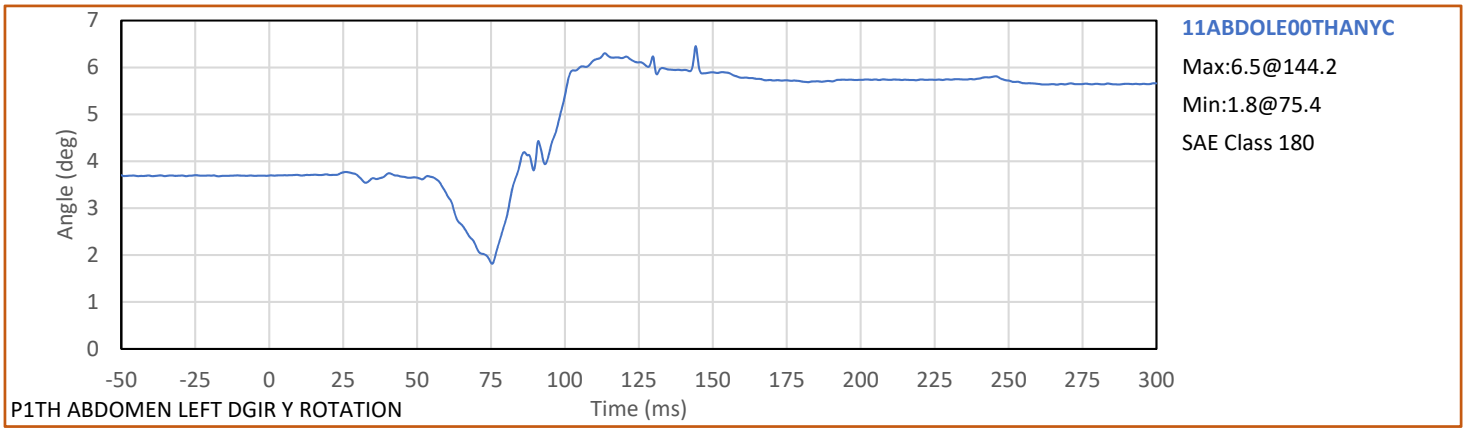
P1TH T12 Z ACCELERATION

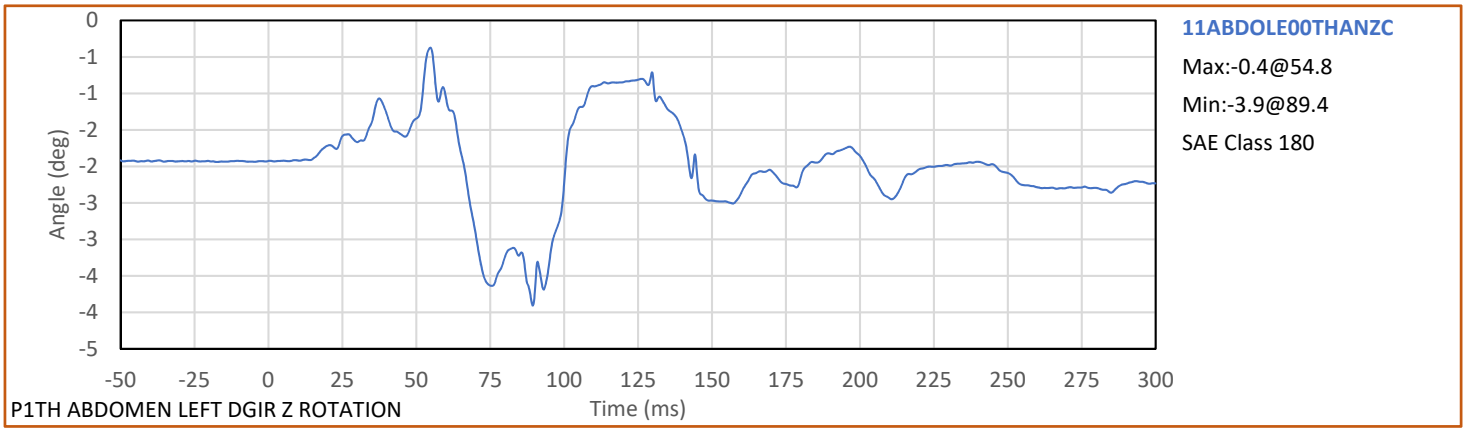
11THSP1200THACZC
Max:16.1@95.7
Min:-19.6@68.5
SAE Class 180

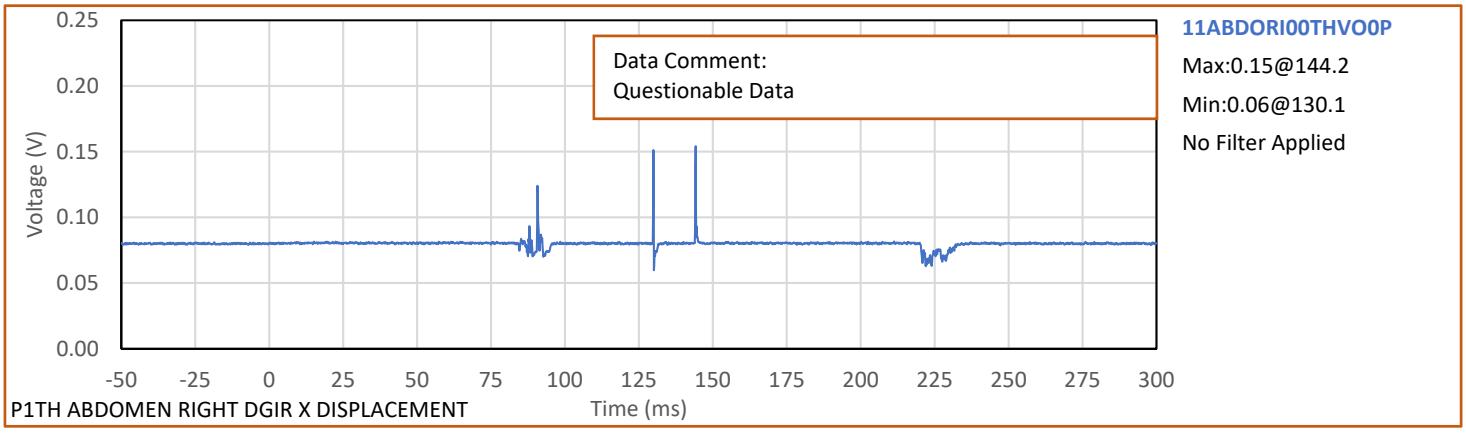


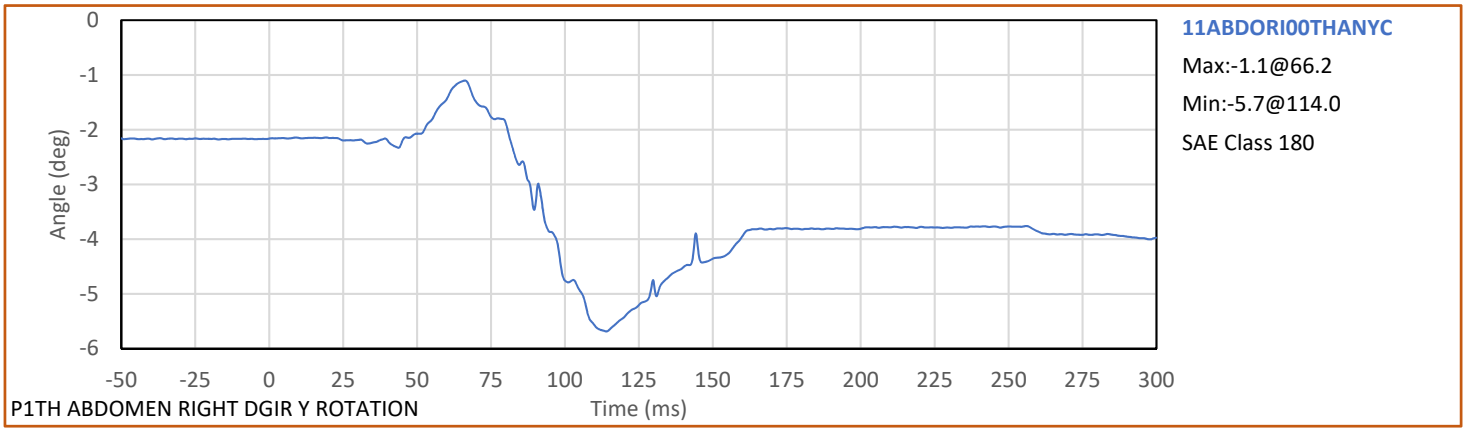
P1TH ABDOMEN LEFT DGIR X DISPLACEMENT

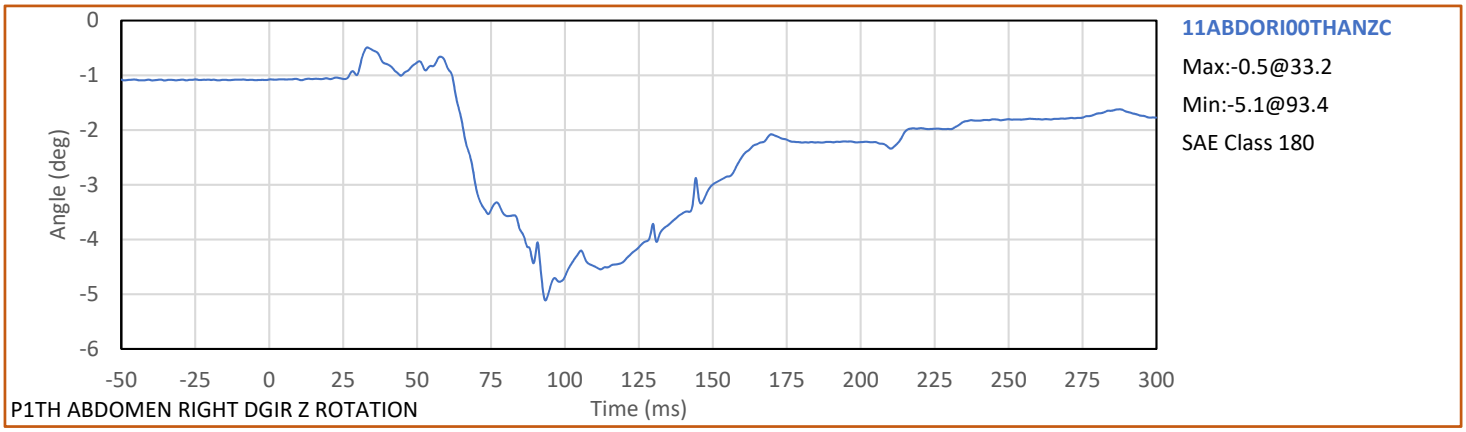
11ABDOLE00THVO0P
Max:0.16@129.9
Min:0.06@87.5
No Filter Applied

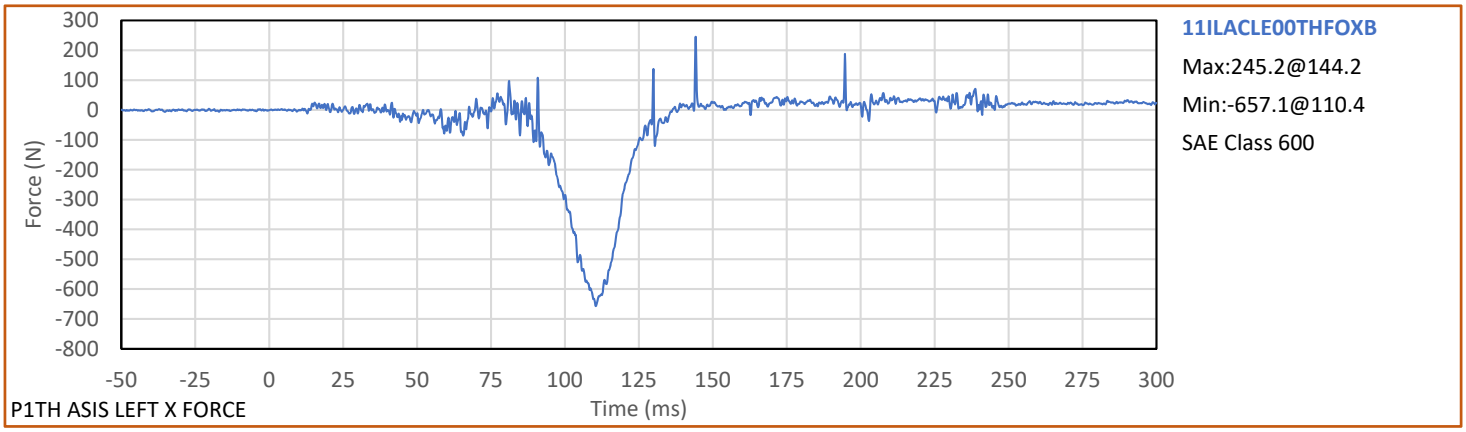

Angle (deg)
Time (ms)
11ABDOLE00THANYC
Max:6.5@144.2
Min:1.8@75.4
SAE Class 180
P1TH ABDOMEN LEFT DGIR Y ROTATION

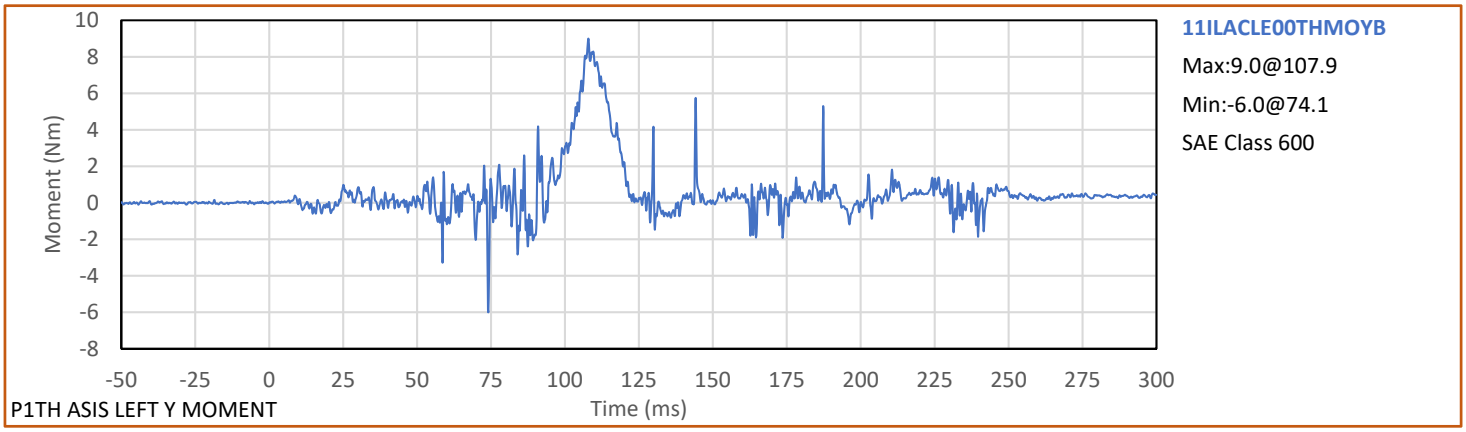

Angle (deg)
Time (ms)
11ABDOLE00THANZC
Max:-0.4@54.8
Min:-3.9@89.4
SAE Class 180
P1TH ABDOMEN LEFT DGIR Z ROTATION

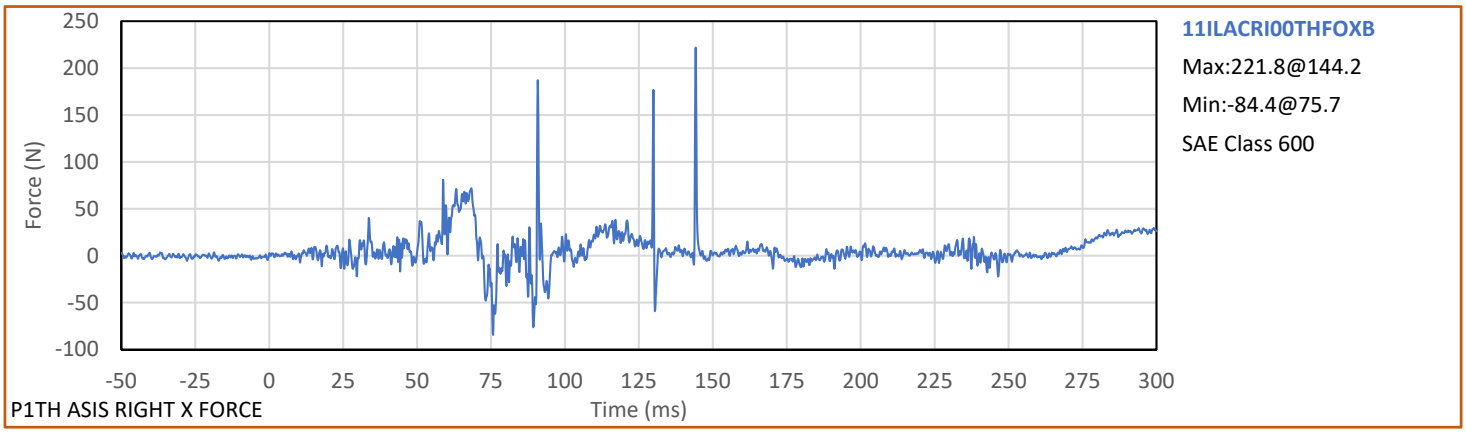

Voltage (V)
Time (ms)
Data Comment:
Questionable Data
11ABDORI00THVO0P
Max:0.15@144.2
Min:0.06@130.1
No Filter Applied
P1TH ABDOMEN RIGHT DGIR X DISPLACEMENT

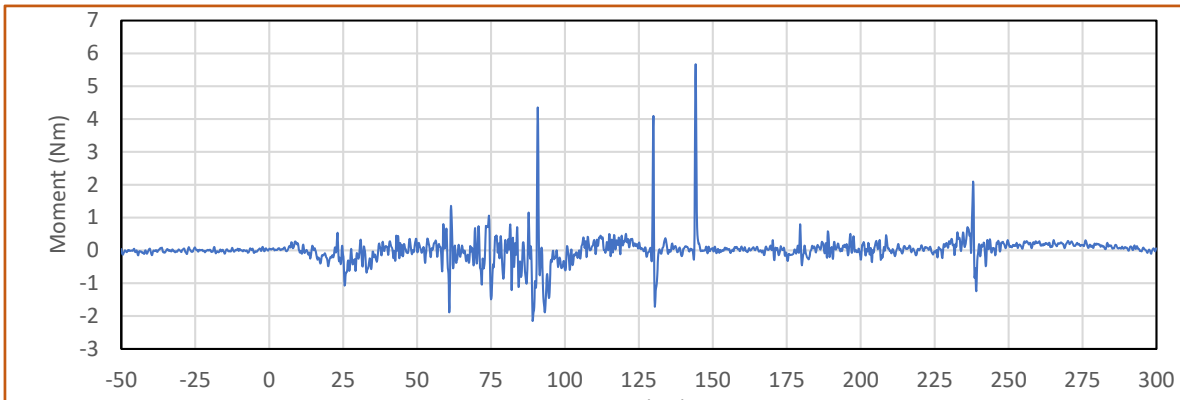

Angle (deg)
Time (ms)
11ABDORI00THANYC
Max:-1.1@66.2
Min:-5.7@114.0
SAE Class 180
P1TH ABDOMEN RIGHT DGIR Y ROTATION


Angle (deg)
Time (ms)
11ABDORI00THANZC
Max:-0.5@33.2
Min:-5.1@93.4
SAE Class 180
P1TH ABDOMEN RIGHT DGIR Z ROTATION


Force (N)
Time (ms)
11ILACLE00THFOXB
Max:245.2@144.2
Min:-657.1@110.4
SAE Class 600
P1TH ASIS LEFT X FORCE

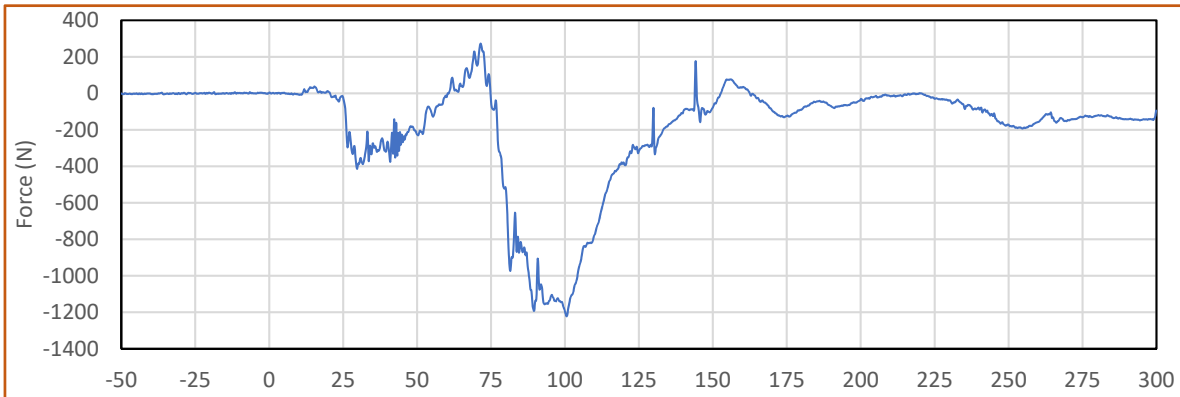

Moment (Nm)
Time (ms)
11ILACLE00THMOYB
Max:9.0@107.9
Min:-6.0@74.1
SAE Class 600
P1TH ASIS LEFT Y MOMENT


Force (N)
Time (ms)
11ILACRI00THFOXB
Max:221.8@144.2
Min:-84.4@75.7
SAE Class 600
P1TH ASIS RIGHT X FORCE



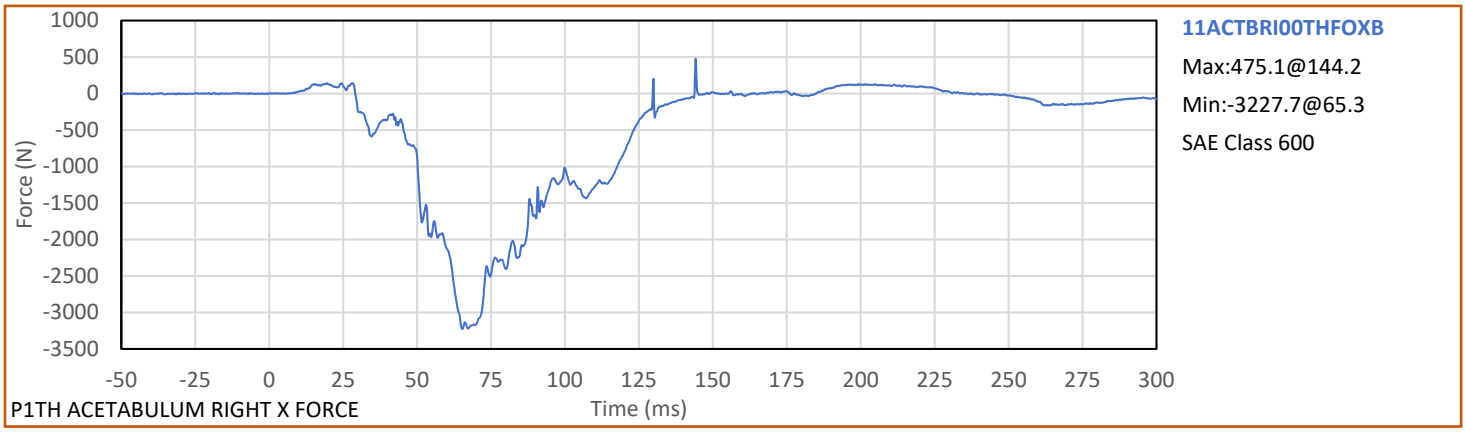
11ILACRI00THMOYB
Max:5.7@144.2
Min:-2.2@89.1
SAE Class 600

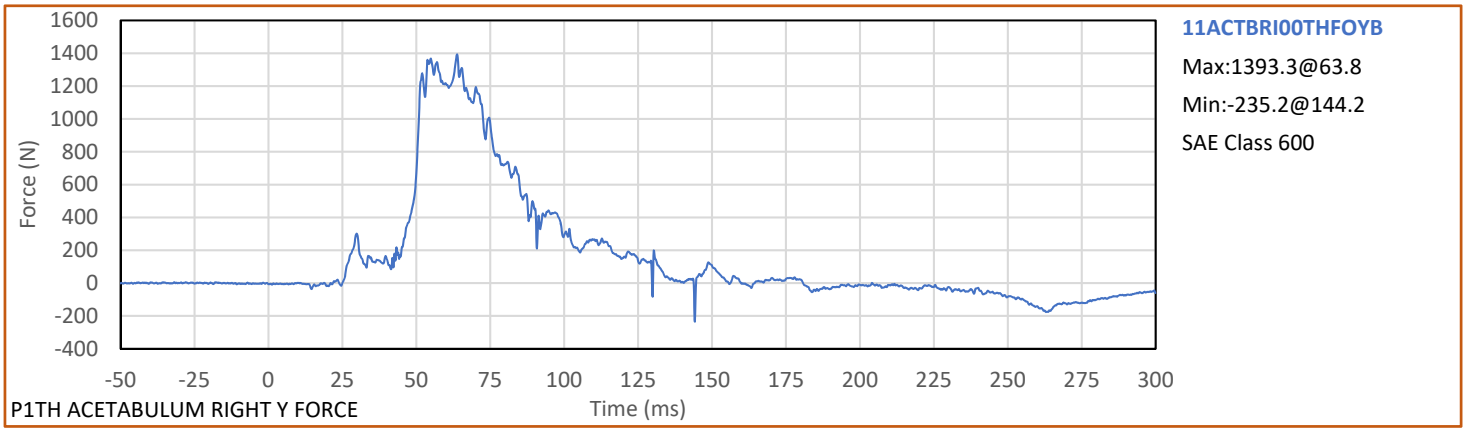
11ACTBLE00THFOXB
Max:882.8@121.9
Min:-741.2@51.4
SAE Class 600

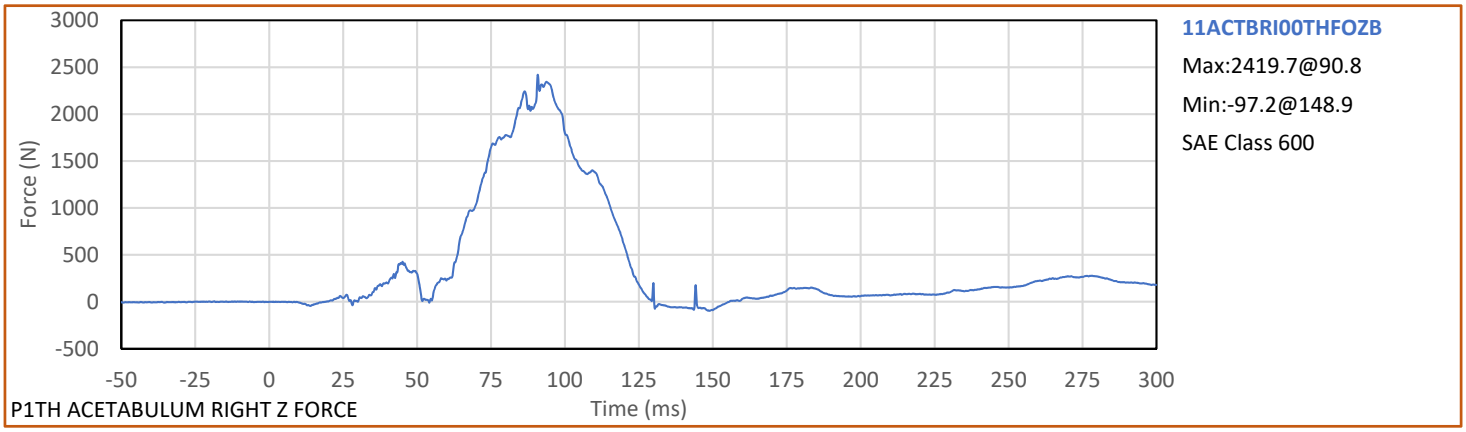


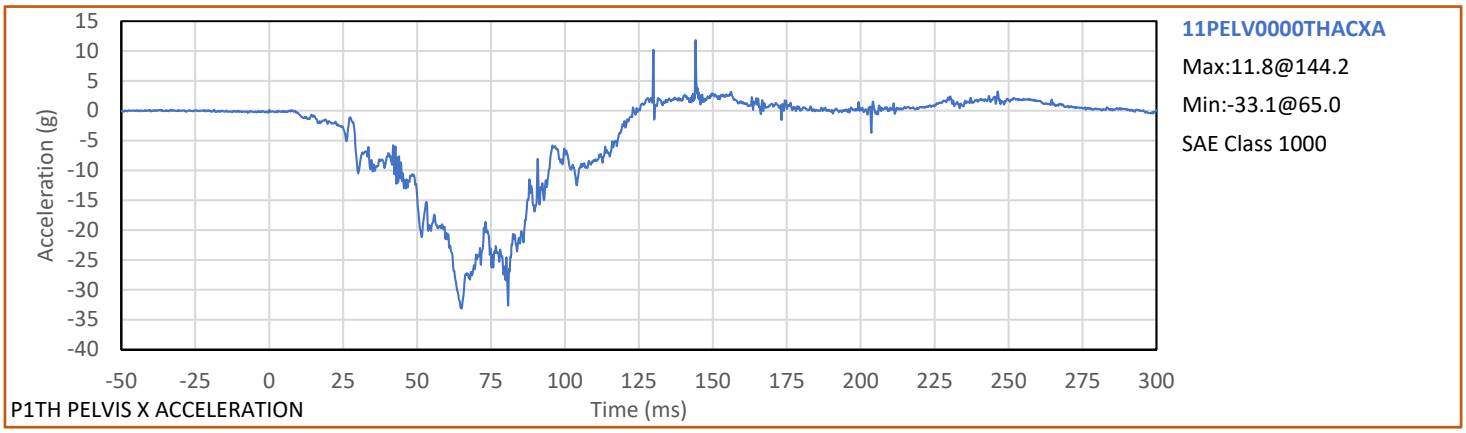
11ACTBLE00THFOYB
Max:272.5@71.5
Min:-1223.1@100.6
SAE Class 600

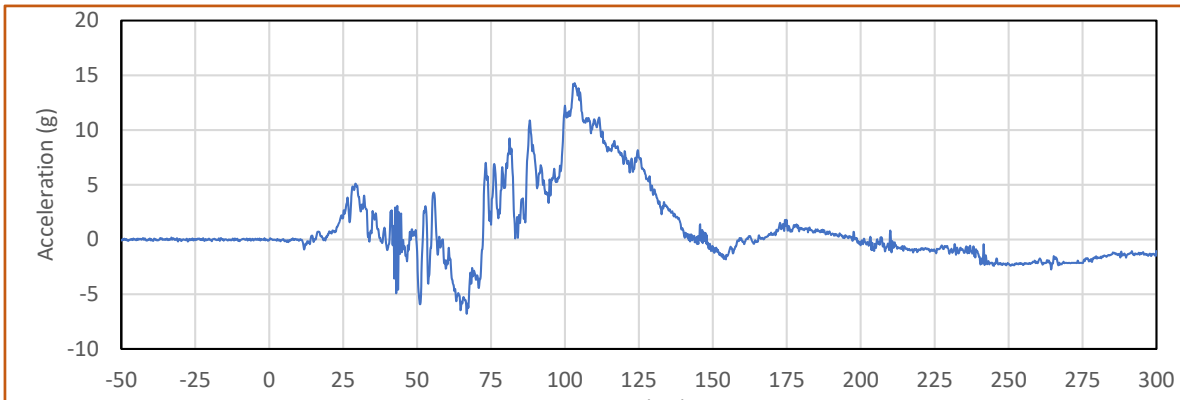
11ACTBLE00THFOZB
Max:459.3@67.9
Min:-1827.9@104.0
SAE Class 600


Force (N)
Time (ms)
P1TH ACETABULUM RIGHT X FORCE
11ACTBRI00THFOXB
Max:475.1@144.2
Min:-3227.7@65.3
SAE Class 600


Force (N)
Time (ms)
P1TH ACETABULUM RIGHT Y FORCE
11ACTBRI00THFOYB
Max:1393.3@63.8
Min:-235.2@144.2
SAE Class 600

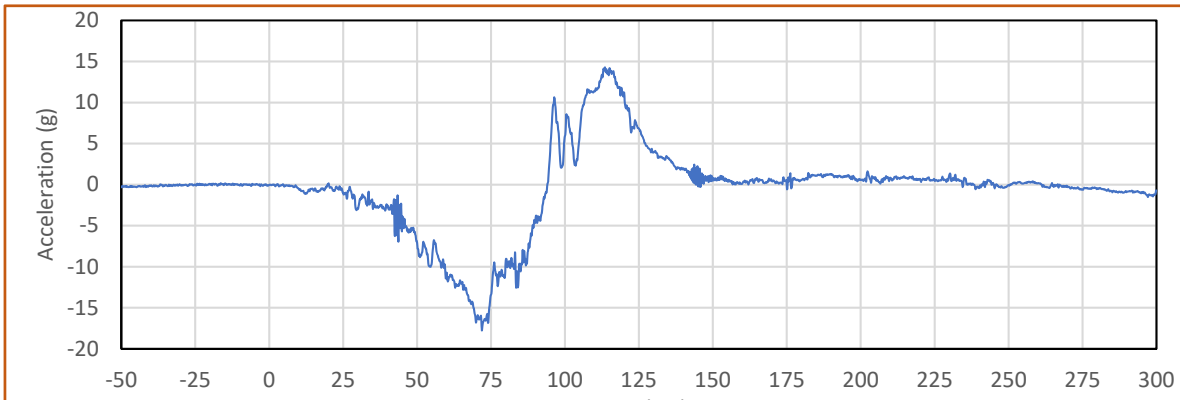

Force (N)
Time (ms)
P1TH ACETABULUM RIGHT Z FORCE
11ACTBRI00THFOZB
Max:2419.7@90.8
Min:-97.2@148.9
SAE Class 600


Acceleration (g)
Time (ms)
P1TH PELVIS X ACCELERATION
11PELV0000THACXA
Max:11.8@144.2
Min:-33.1@65.0
SAE Class 1000



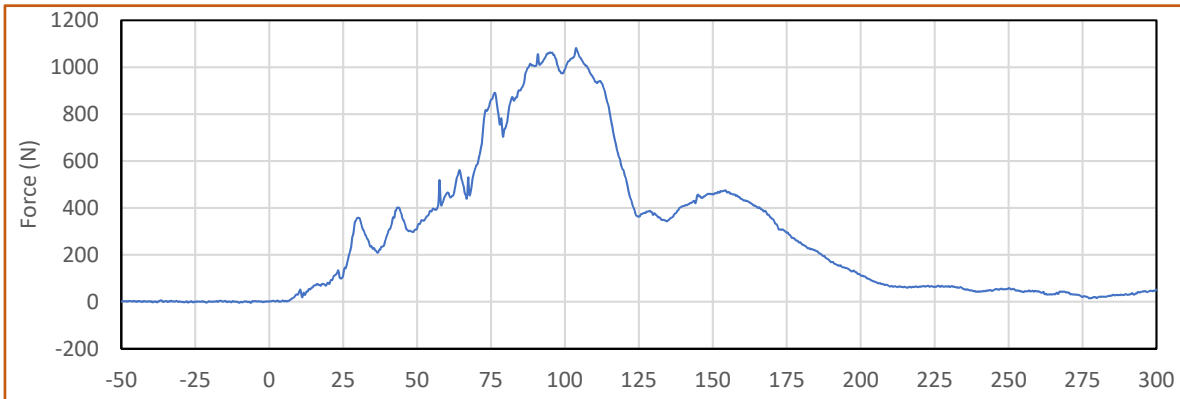
P1TH PELVIS Y ACCELERATION

11PELV0000THACYA
Max:14.3@103.3
Min:-6.8@66.8
SAE Class 1000



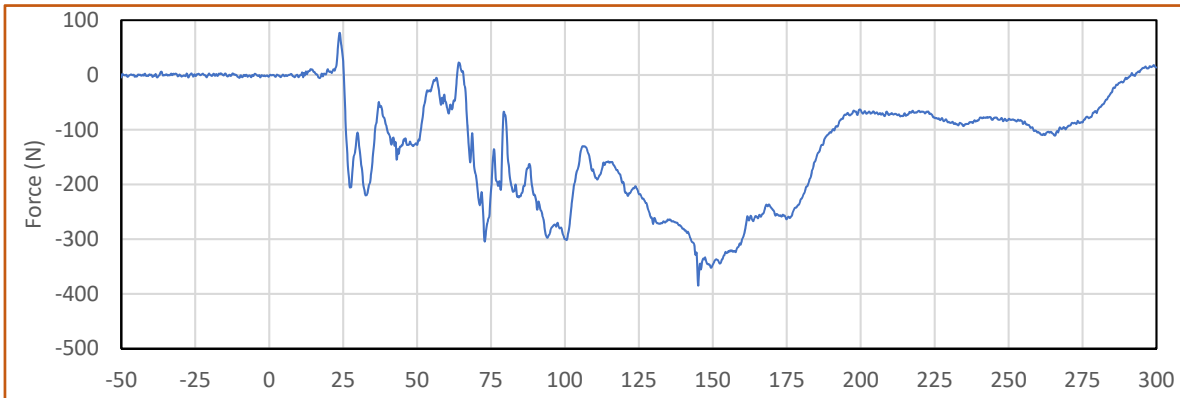
P1TH PELVIS Z ACCELERATION

11PELV0000THACZA
Max:14.3@113.5
Min:-17.8@71.9
SAE Class 1000



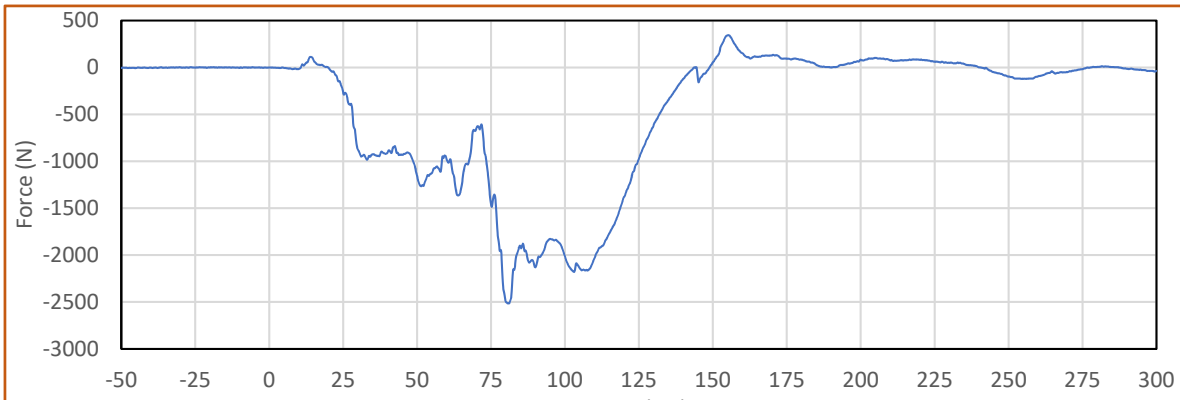
P1TH FEMUR LEFT X FORCE

11FEMRLE00THFOXB
Max:1081.7@103.8
Min:-0.3@3.8
SAE Class 600



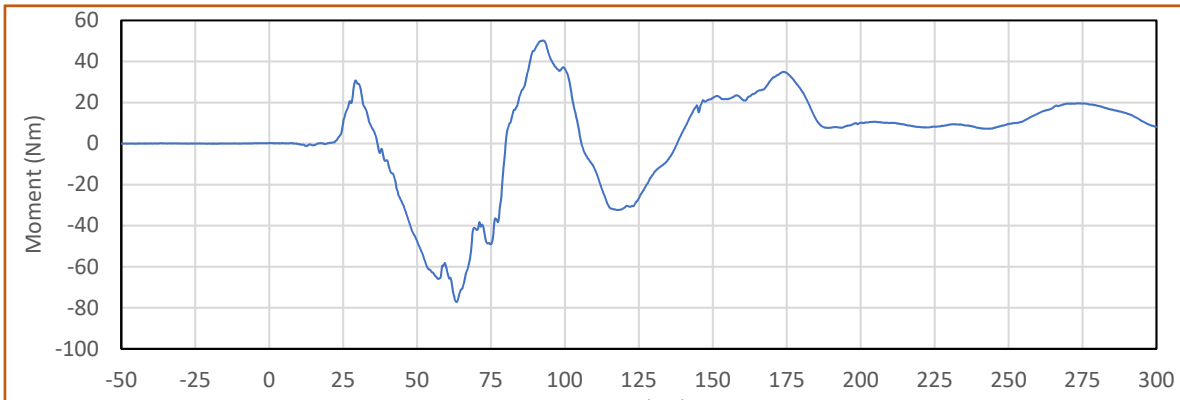
P1TH FEMUR LEFT Y FORCE

11FEMRLE00THFOYB
Max:76.8@23.8
Min:-384.8@145.0
SAE Class 600



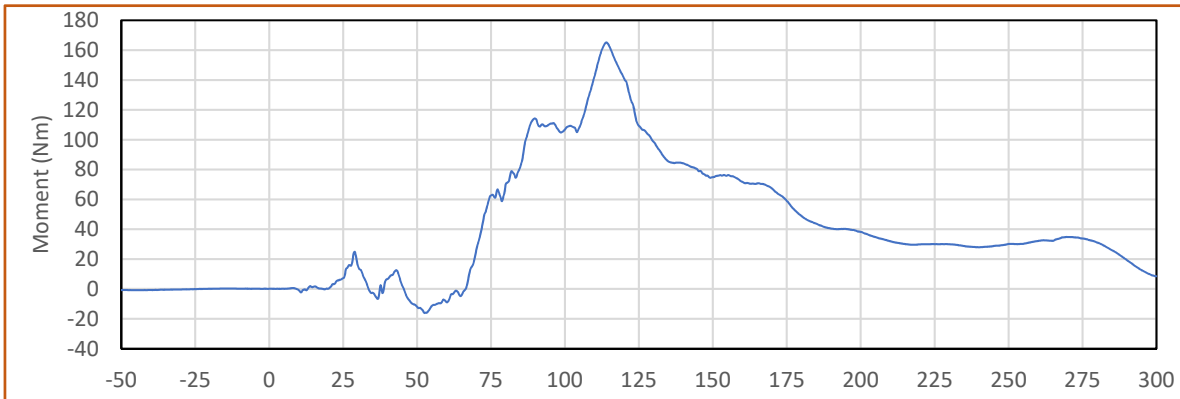
P1TH FEMUR LEFT Z FORCE

11FEMRLE00THFOZB
Max:344.1@155.3
Min:-2515.4@81.1
SAE Class 600



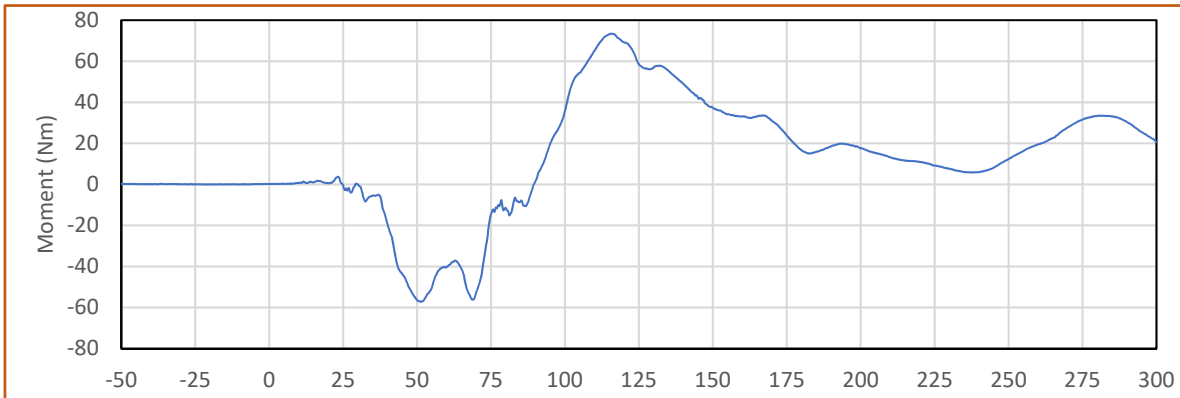
P1TH FEMUR LEFT X MOMENT

11FEMRLE00THMOXB
Max:50.2@92.7
Min:-77.2@63.4
SAE Class 600



P1TH FEMUR LEFT Y MOMENT

11FEMRLE00THMOYB
Max:165.1@114.0
Min:-16.1@52.6
SAE Class 600



P1TH FEMUR LEFT Z MOMENT

11FEMRLE00THMOZB
Max:73.4@115.8
Min:-57.2@51.3
SAE Class 600

Test Vehicle: 2020 Honda Accord 4-Door Sedan

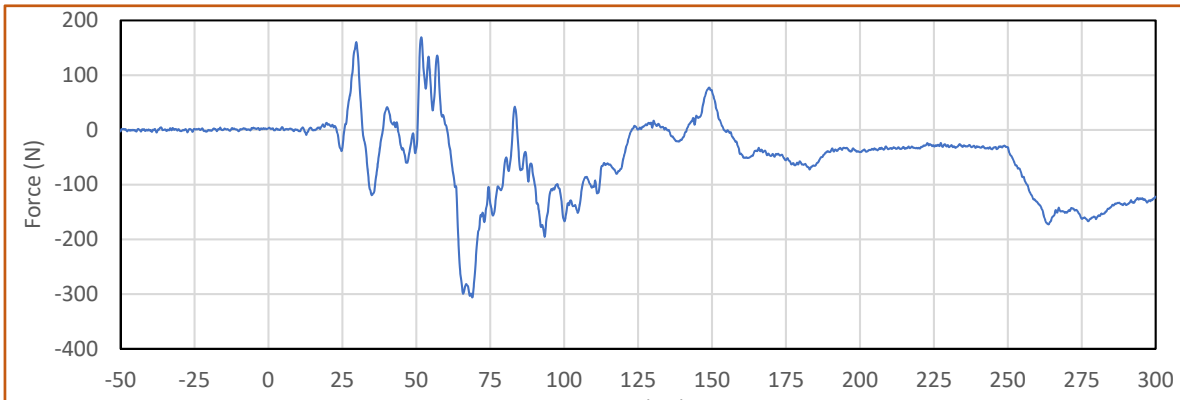
Test Program: Left Side 30° Frontal Rigid Barrier Impact

NHTSA No.: R20205378

Test Date: 9/9/2020

P1TH FEMUR RIGHT X FORCE

11FEMRRI00THFOXB
Max:868.4@87.3
Min:-125.9@115.5
SAE Class 600

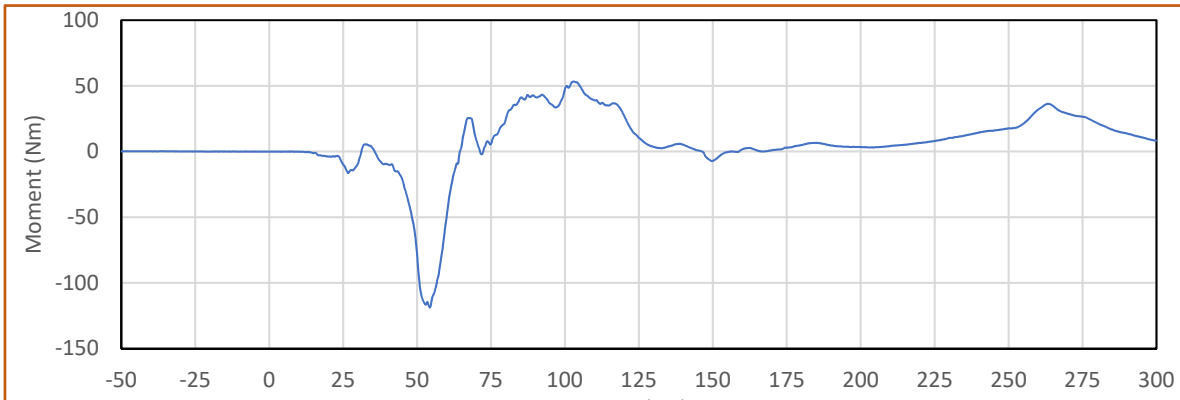


P1TH FEMUR RIGHT Y FORCE

11FEMRRI00THFOYB
Max:169.2@51.7
Min:-306.3@68.9
SAE Class 600

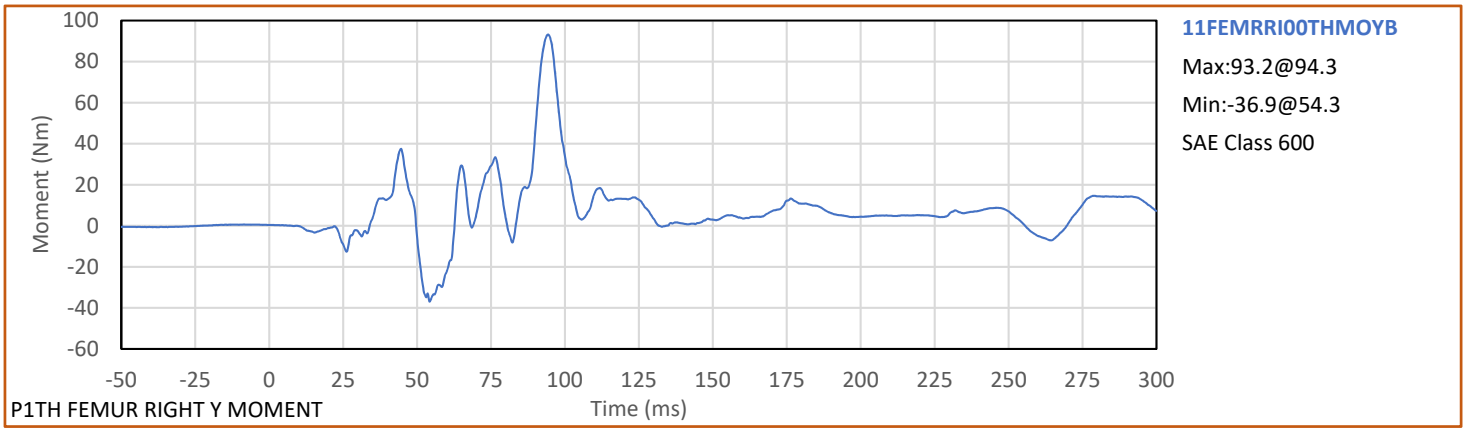
P1TH FEMUR RIGHT Z FORCE

11FEMRRI00THFOZB
Max:102.0@155.7
Min:-5969.8@66.2
SAE Class 600

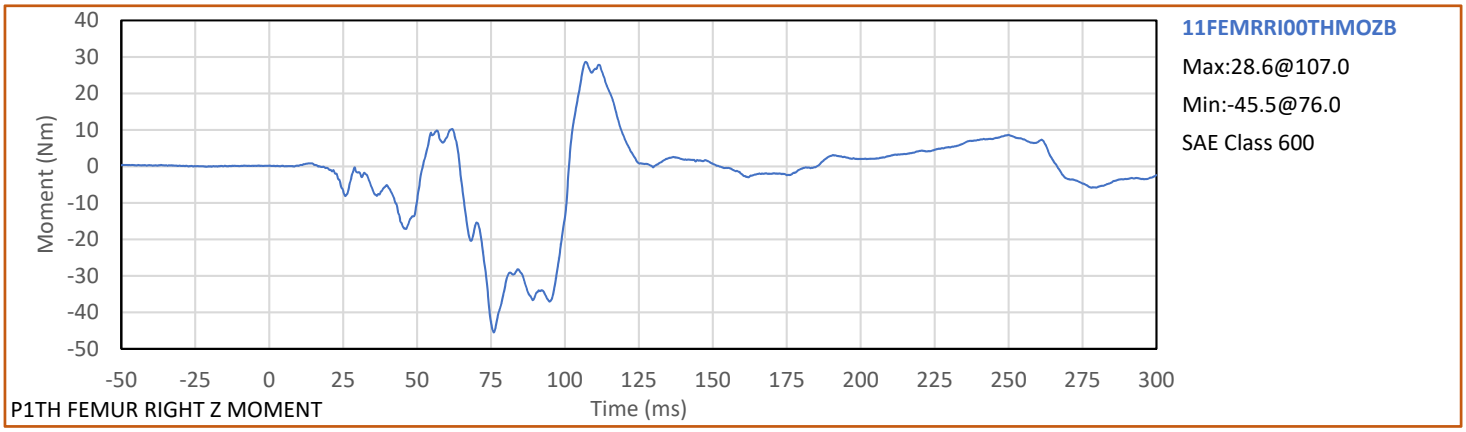


P1TH FEMUR RIGHT X MOMENT

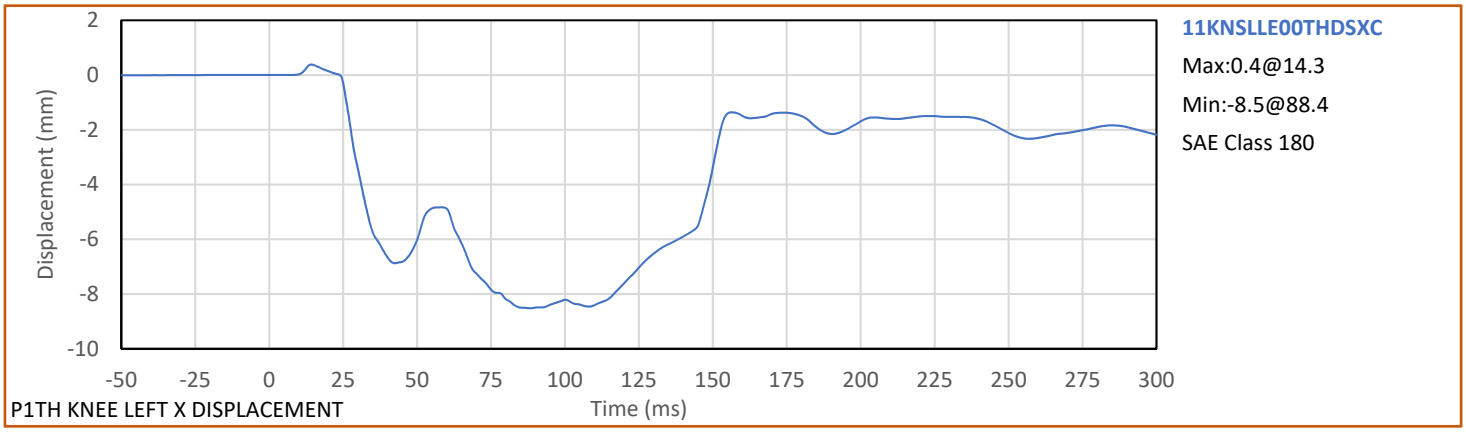
11FEMRRI00THMOXB
Max:53.4@103.0
Min:-118.8@54.3
SAE Class 600



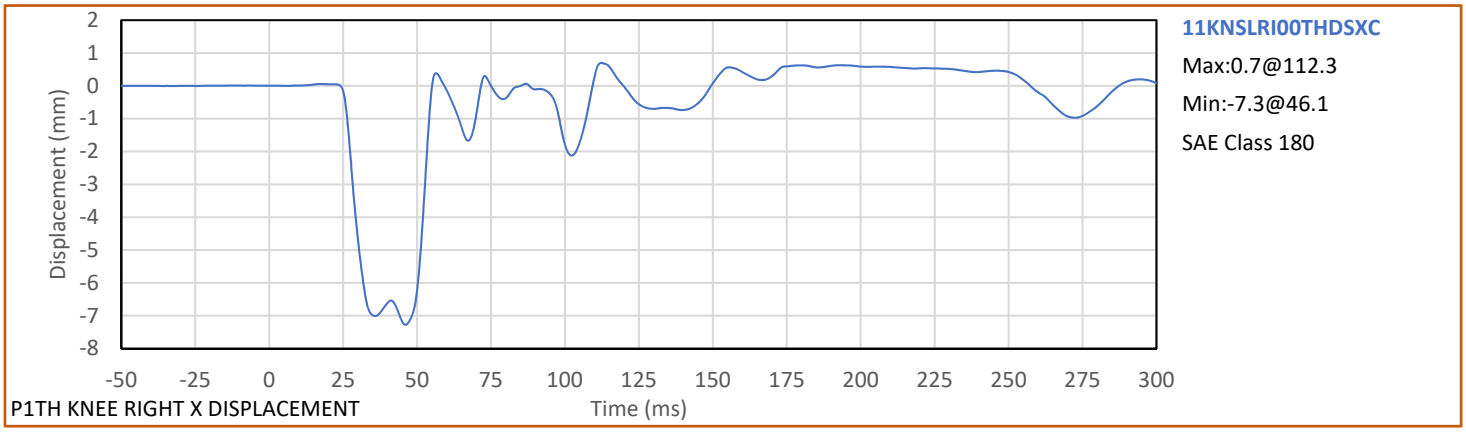
11FEMRRI00THMOYB
Max:93.2@94.3
Min:-36.9@54.3
SAE Class 600



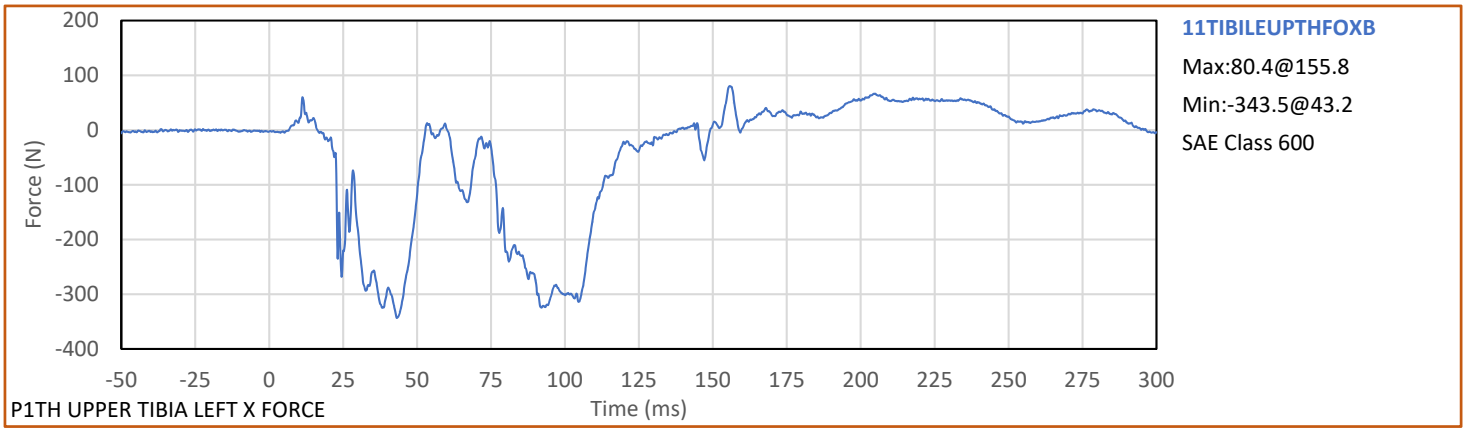
11FEMRRI00THMOZB
Max:28.6@107.0
Min:-45.5@76.0
SAE Class 600

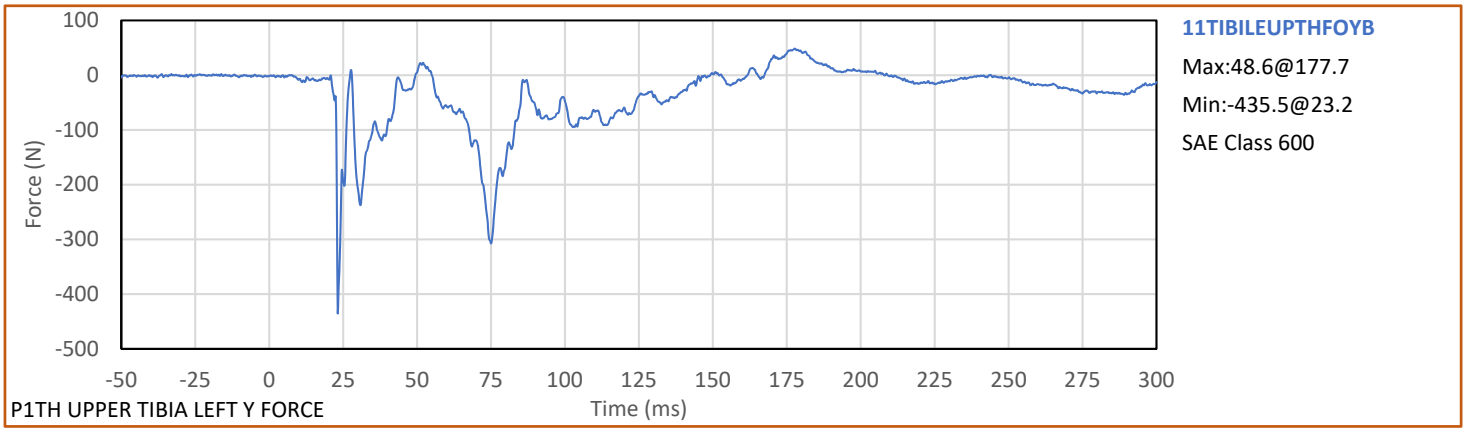


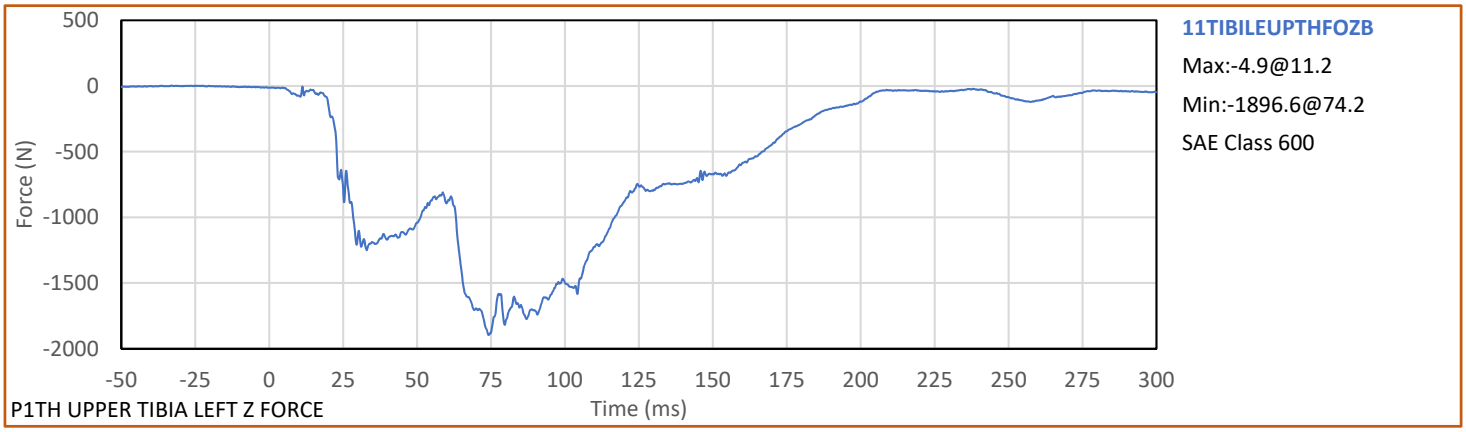
11KNSLLE00THDSXC
Max:0.4@14.3
Min:-8.5@88.4
SAE Class 180

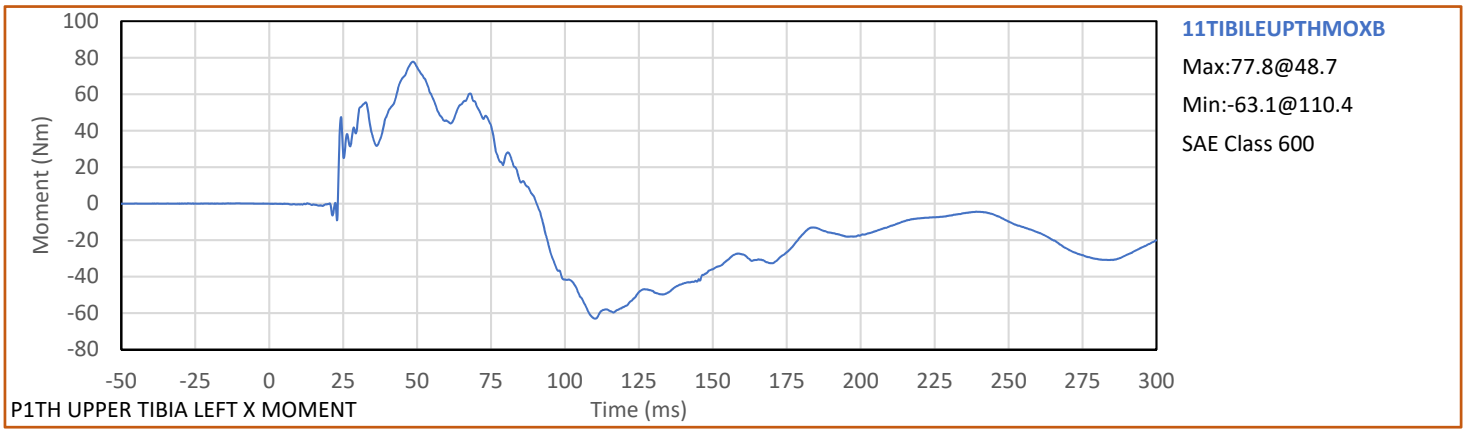


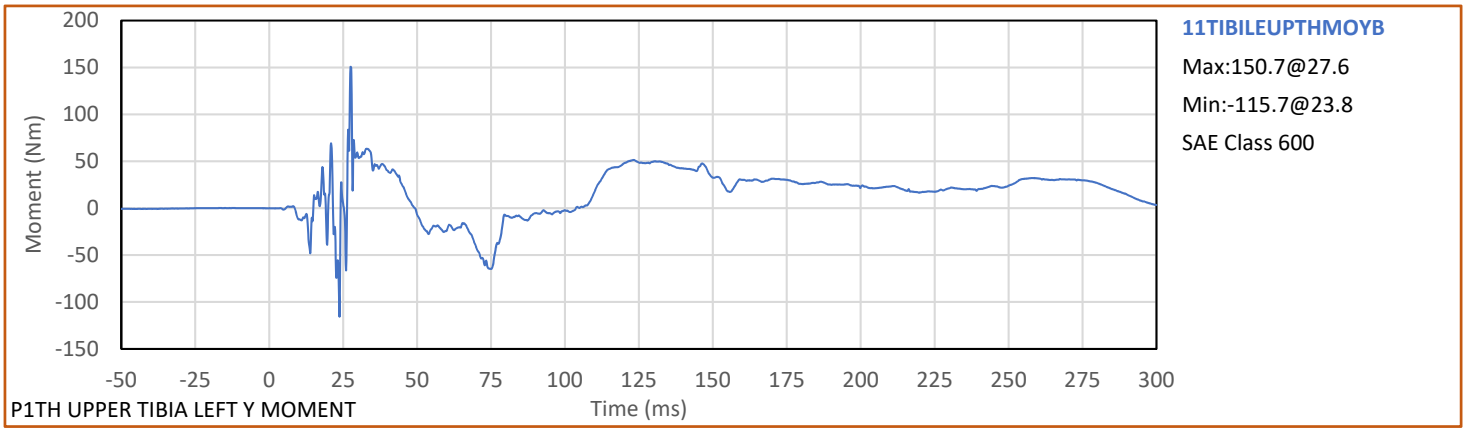
11KNSLRI00THDSXC
Max:0.7@112.3
Min:-7.3@46.1
SAE Class 180

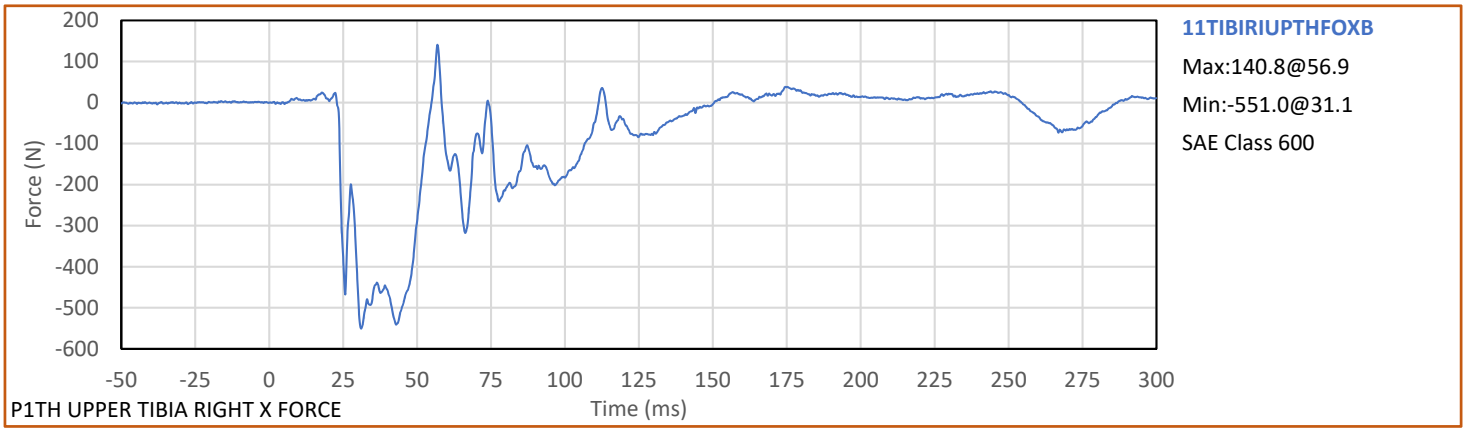

Force (N)
Time (ms)
P1TH UPPER TIBIA LEFT X FORCE
11TIBILEUPTHFOXB
Max:80.4@155.8
Min:-343.5@43.2
SAE Class 600

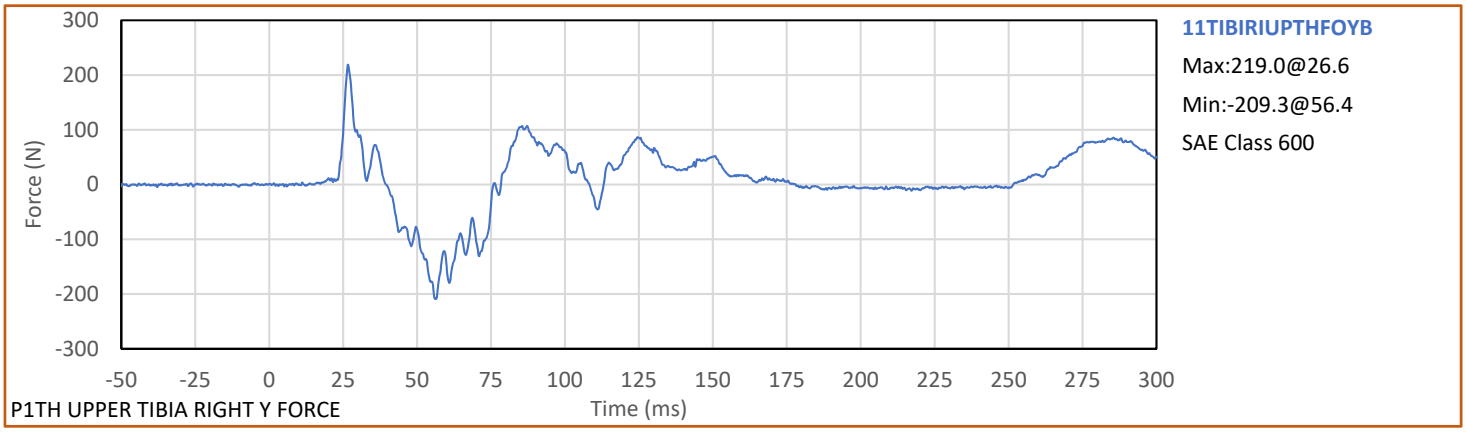

Force (N)
Time (ms)
P1TH UPPER TIBIA LEFT Y FORCE
11TIBILEUPTHFOYB
Max:48.6@177.7
Min:-435.5@23.2
SAE Class 600

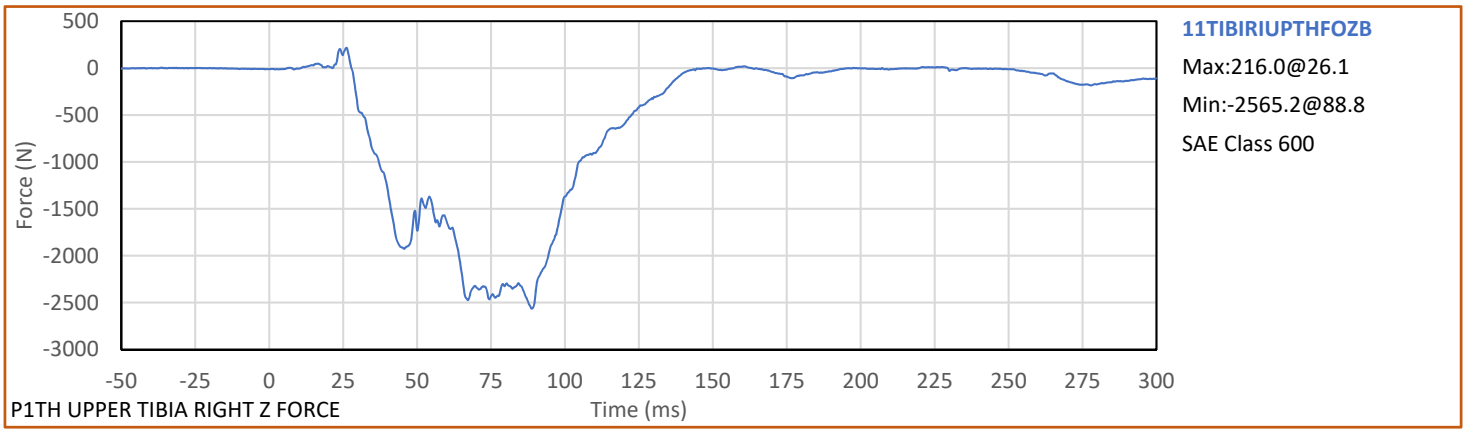

Force (N)
Time (ms)
P1TH UPPER TIBIA LEFT Z FORCE
11TIBILEUPTHFOZB
Max:-4.9@11.2
Min:-1896.6@74.2
SAE Class 600

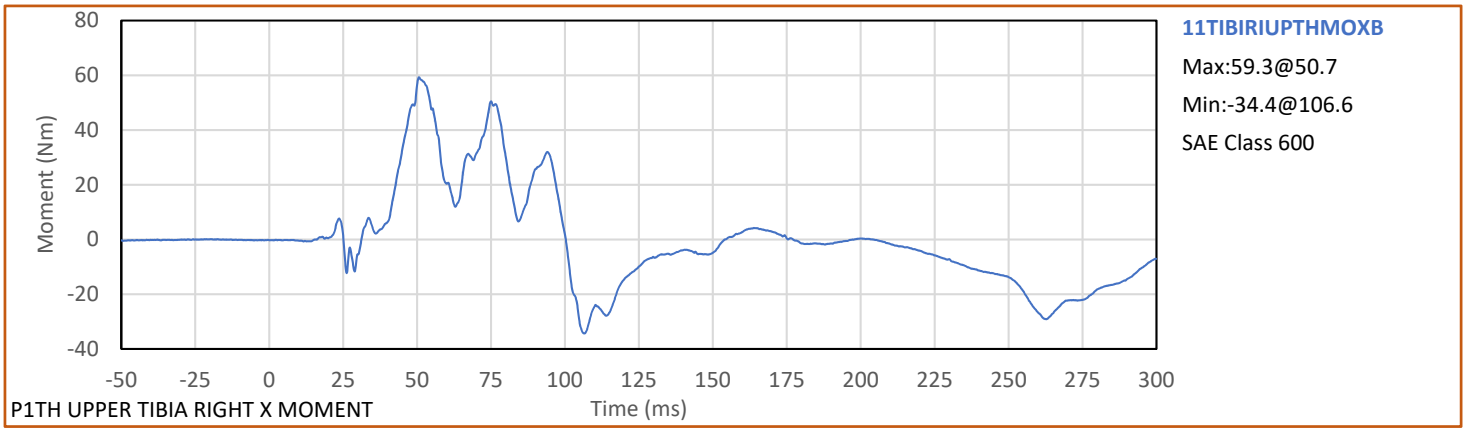

Moment (Nm)
Time (ms)
P1TH UPPER TIBIA LEFT X MOMENT
11TIBILEUPTHMOXB
Max:77.8@48.7
Min:-63.1@110.4
SAE Class 600

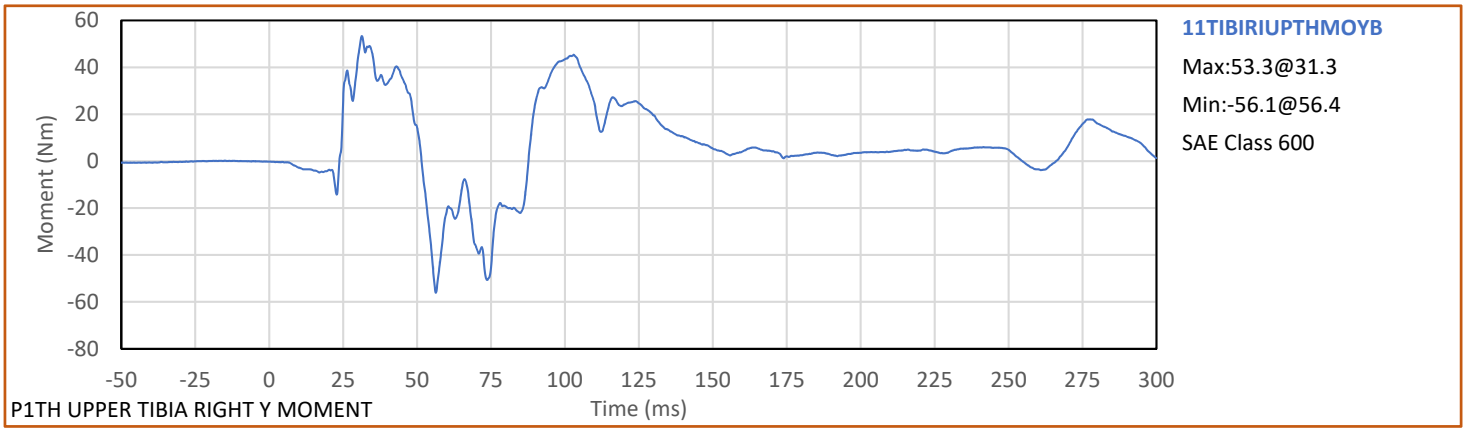

Moment (Nm)
Time (ms)
P1TH UPPER TIBIA LEFT Y MOMENT
11TIBILEUPTHMOYB
Max:150.7@27.6
Min:-115.7@23.8
SAE Class 600

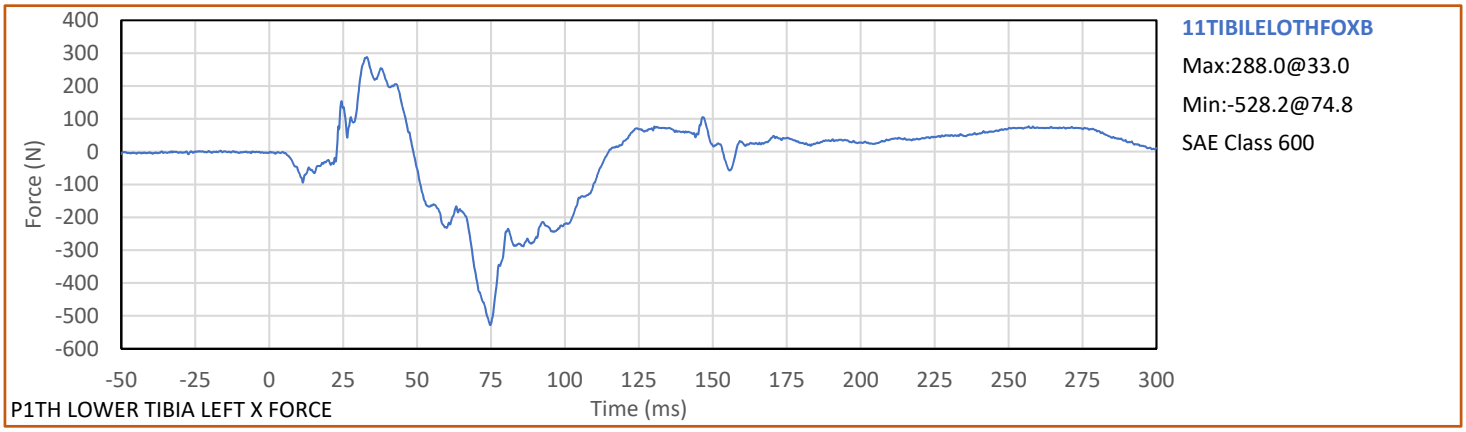

Force (N)
Time (ms)
P1TH UPPER TIBIA RIGHT X FORCE
11TIBIRIUPTHFOXB
Max:140.8@56.9
Min:-551.0@31.1
SAE Class 600

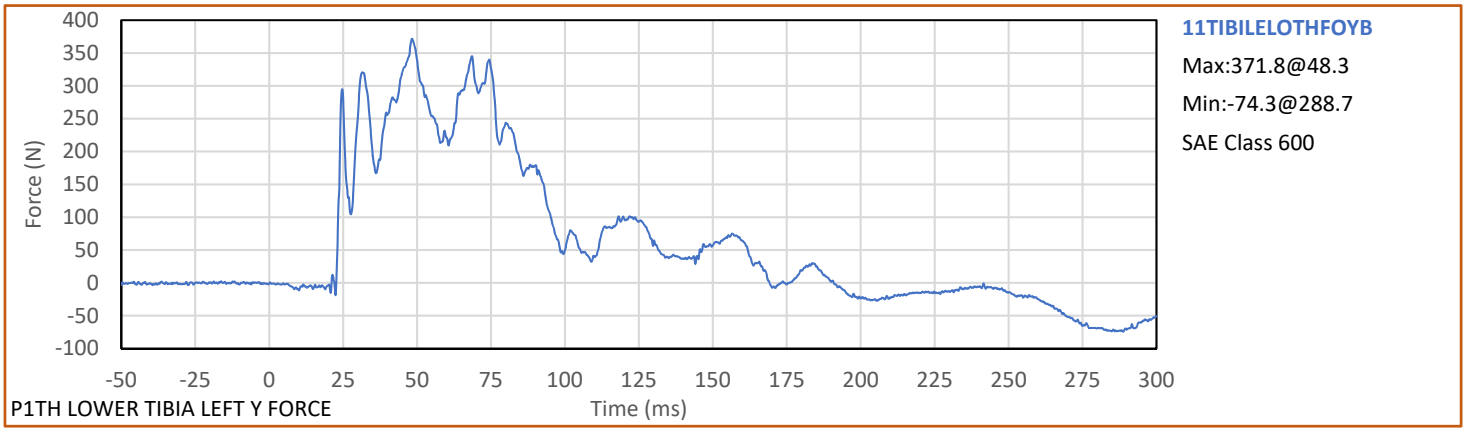

Force (N)
Time (ms)
P1TH UPPER TIBIA RIGHT Y FORCE
11TIBIRIUPTHFOYB
Max:219.0@26.6
Min:-209.3@56.4
SAE Class 600

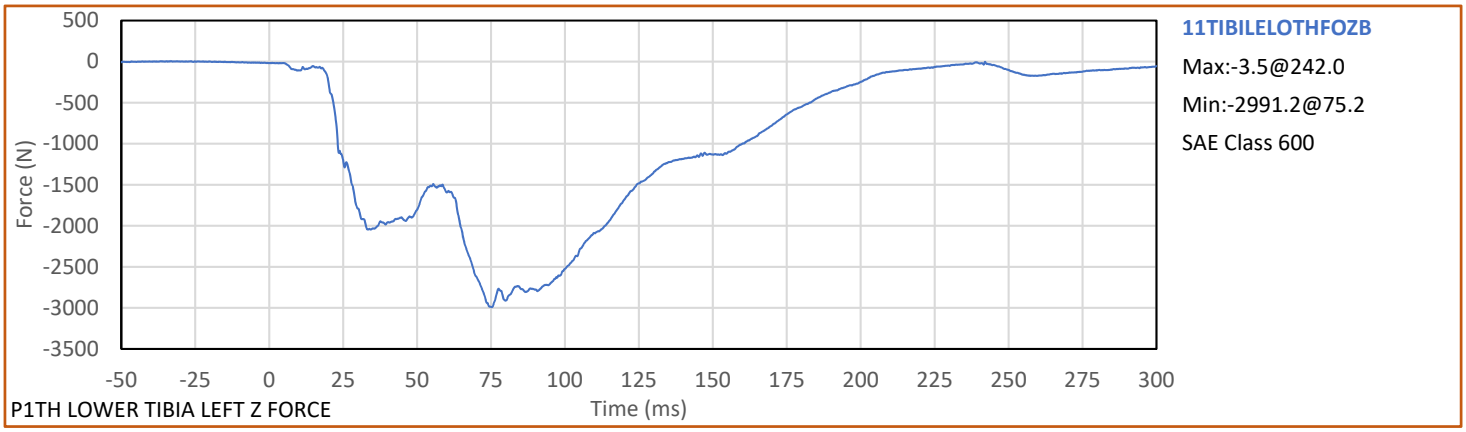

Force (N)
Time (ms)
P1TH UPPER TIBIA RIGHT Z FORCE
11TIBIRIUPTHFOZB
Max:216.0@26.1
Min:-2565.2@88.8
SAE Class 600

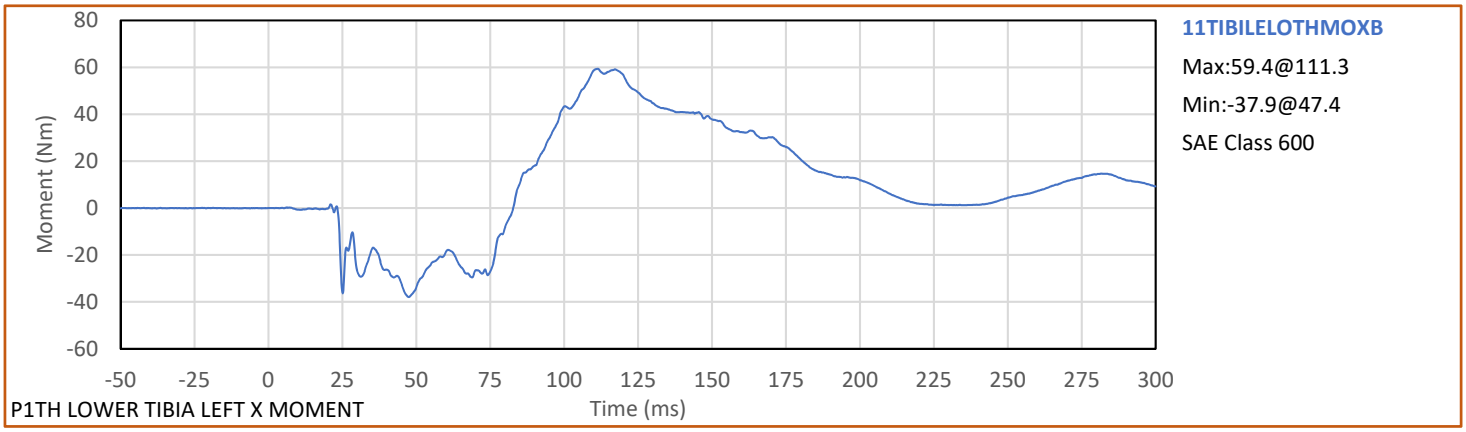

Moment (Nm)
Time (ms)
P1TH UPPER TIBIA RIGHT X MOMENT
11TIBIRIUPTHMOXB
Max:59.3@50.7
Min:-34.4@106.6
SAE Class 600

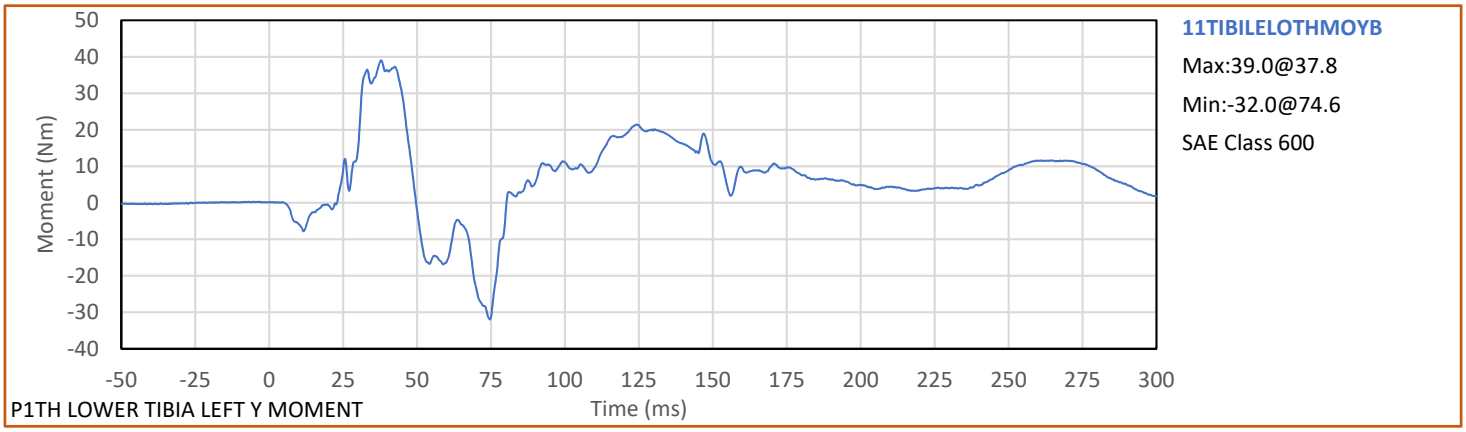

Moment (Nm)
Time (ms)
P1TH UPPER TIBIA RIGHT Y MOMENT
11TIBIRIUPTHMOYB
Max:53.3@31.3
Min:-56.1@56.4
SAE Class 600

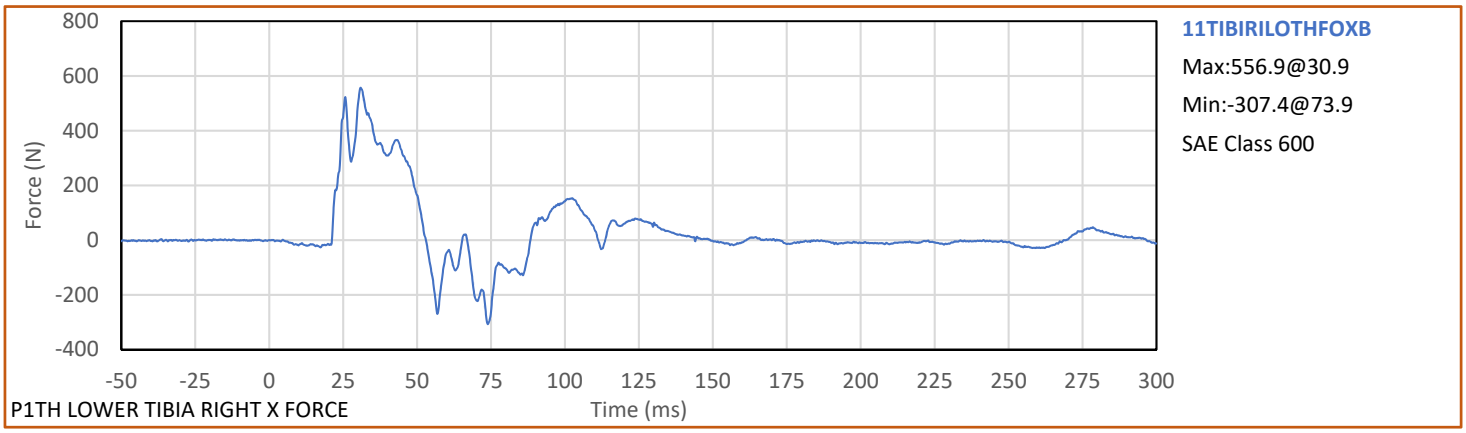

Force (N)
Time (ms)
P1TH LOWER TIBIA LEFT X FORCE
11TIBILELOTHFOXB
Max:288.0@33.0
Min:-528.2@74.8
SAE Class 600

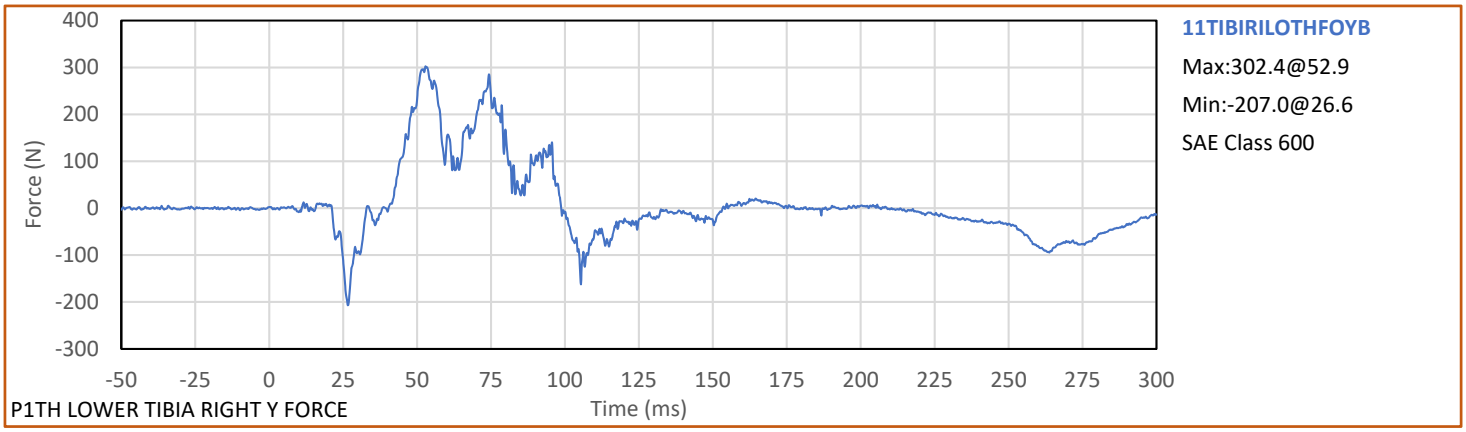

Force (N)
Time (ms)
P1TH LOWER TIBIA LEFT Y FORCE
11TIBILELOTHFOYB
Max:371.8@48.3
Min:-74.3@288.7
SAE Class 600

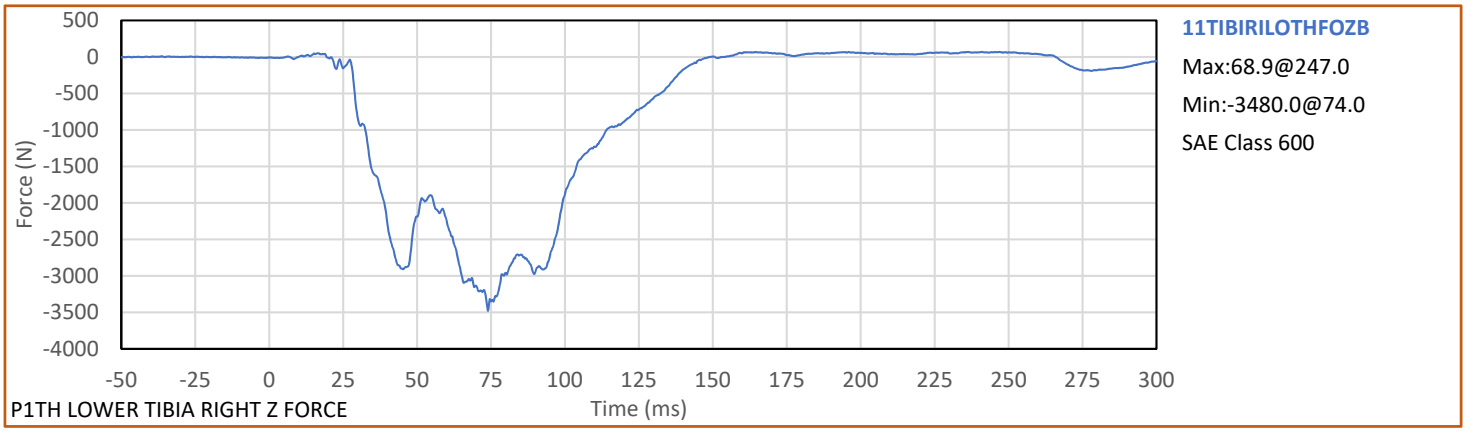

Force (N)
Time (ms)
P1TH LOWER TIBIA LEFT Z FORCE
11TIBILELOTHFOZB
Max:-3.5@242.0
Min:-2991.2@75.2
SAE Class 600

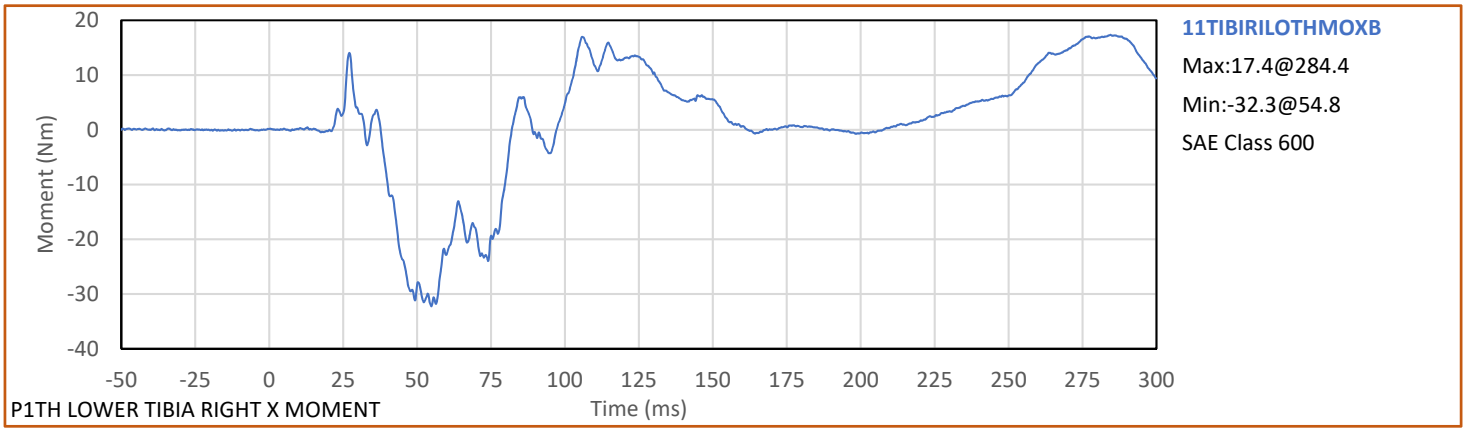

Moment (Nm)
Time (ms)
P1TH LOWER TIBIA LEFT X MOMENT
11TIBILELOTHMOXB
Max:59.4@111.3
Min:-37.9@47.4
SAE Class 600

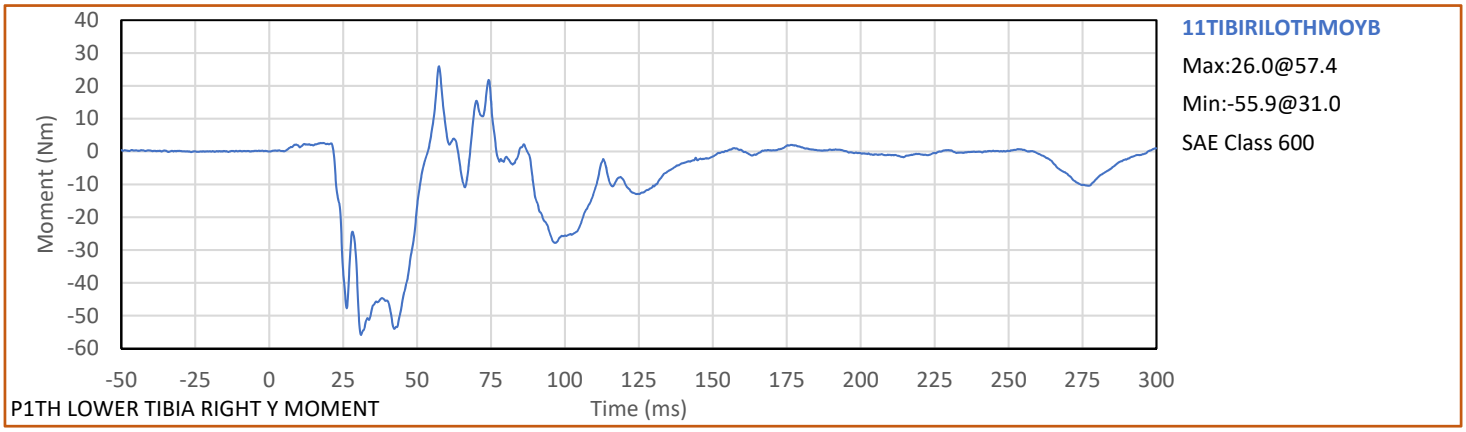

Moment (Nm)
Time (ms)
P1TH LOWER TIBIA LEFT Y MOMENT
11TIBILELOTHMOYB
Max:39.0@37.8
Min:-32.0@74.6
SAE Class 600

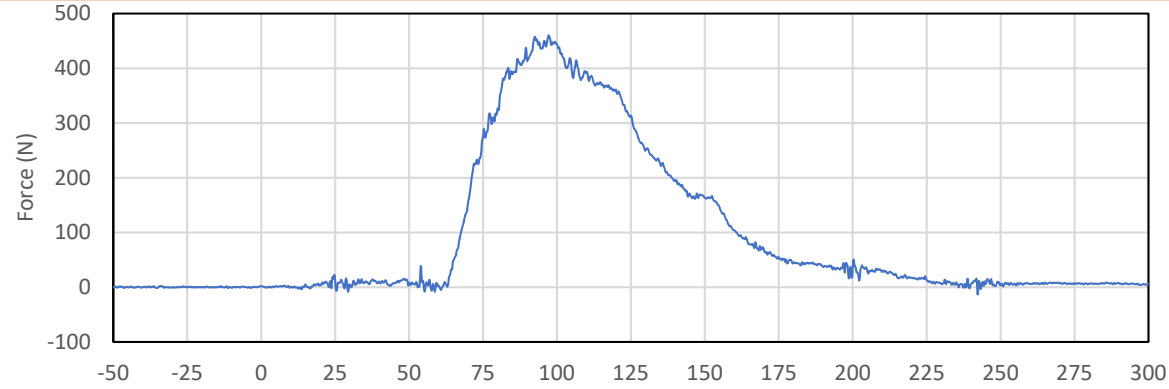

Force (N)
Time (ms)
P1TH LOWER TIBIA RIGHT X FORCE
11TIBIRILOTHFOXB
Max:556.9@30.9
Min:-307.4@73.9
SAE Class 600


Force (N)
Time (ms)
P1TH LOWER TIBIA RIGHT Y FORCE
11TIBIRILOTHFOYB
Max:302.4@52.9
Min:-207.0@26.6
SAE Class 600


Force (N)
Time (ms)
P1TH LOWER TIBIA RIGHT Z FORCE
11TIBIRILOTHFOZB
Max:68.9@247.0
Min:-3480.0@74.0
SAE Class 600


Moment (Nm)
Time (ms)
P1TH LOWER TIBIA RIGHT X MOMENT
11TIBIRILOTHMOXB
Max:17.4@284.4
Min:-32.3@54.8
SAE Class 600


Moment (Nm)
Time (ms)
P1TH LOWER TIBIA RIGHT Y MOMENT
11TIBIRILOTHMOYB
Max:26.0@57.4
Min:-55.9@31.0
SAE Class 600

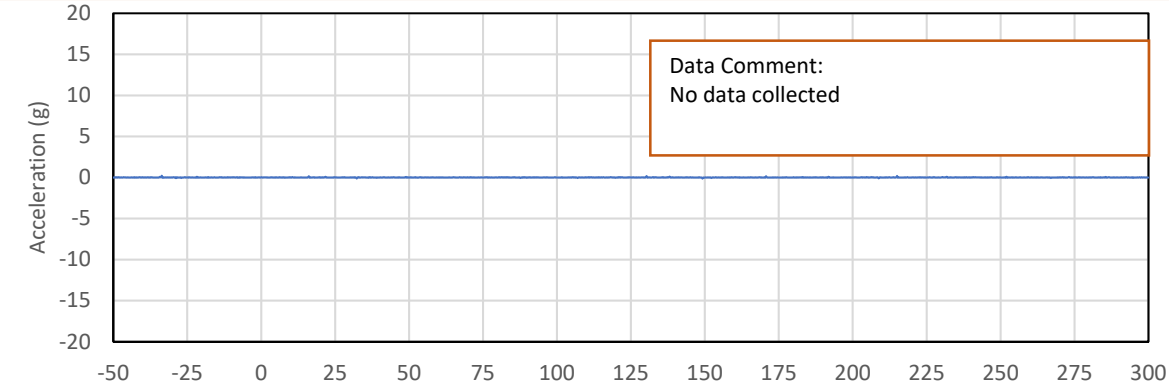


P1TH ACHILLES LEFT Z FORCE

11ANKLLE00THFOZB
Max:460.1@97.2
Min:-13.3@242.3
SAE Class 600

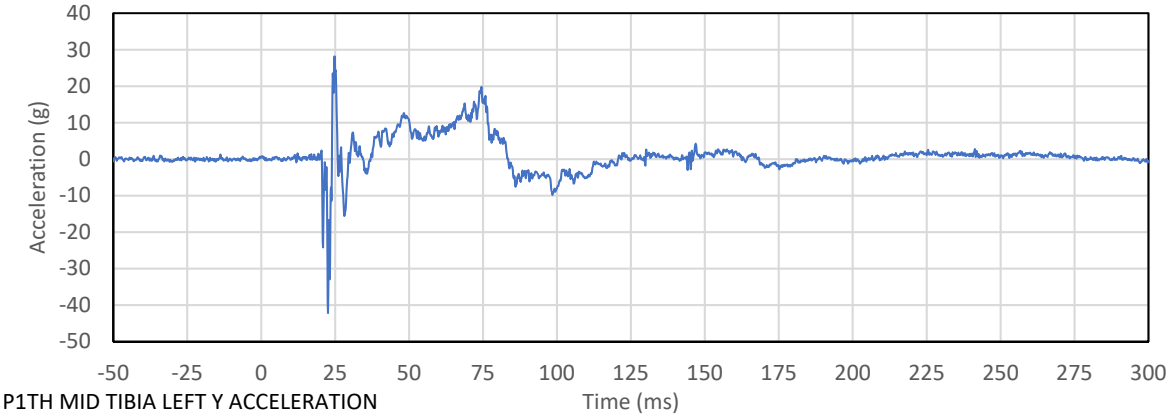
P1TH ACHILLES RIGHT Z FORCE

11ANKLRI00THFOZB
Max:401.8@82.0
Min:-4.3@25.5
SAE Class 600



P1TH MID TIBIA LEFT X ACCELERATION

11TIBILE00THACXA
Max:0.19@215.0
Min:-0.14@149.2
SAE Class 1000



P1TH MID TIBIA LEFT Y ACCELERATION

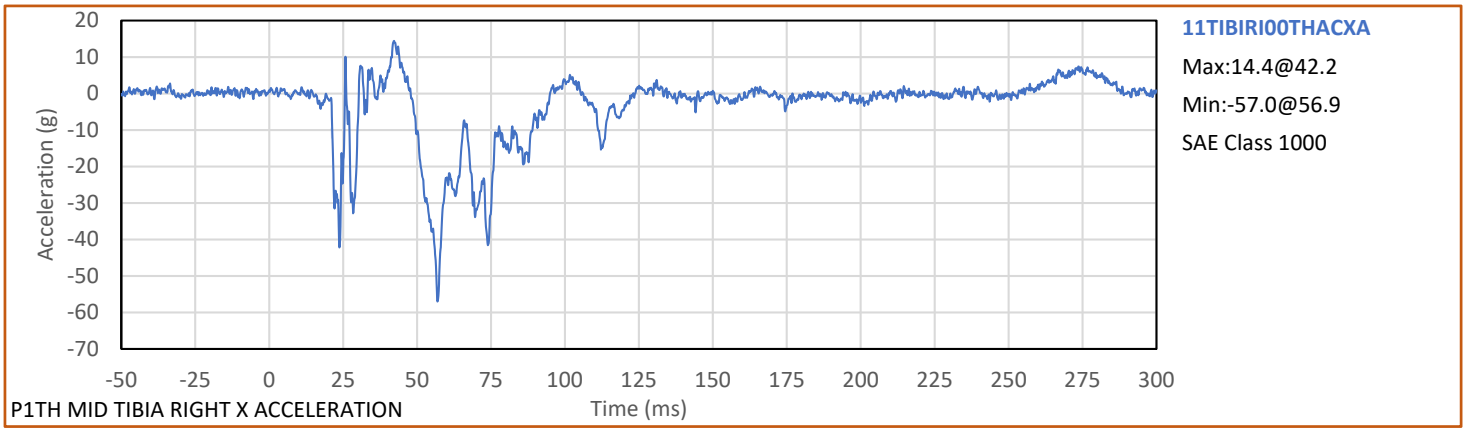
11TIBILE00THACYA
Max:28.2@24.8
Min:-42.2@22.6
SAE Class 1000

Test Vehicle: 2020 Honda Accord 4-Door Sedan

Test Program: Left Side 30° Frontal Rigid Barrier Impact

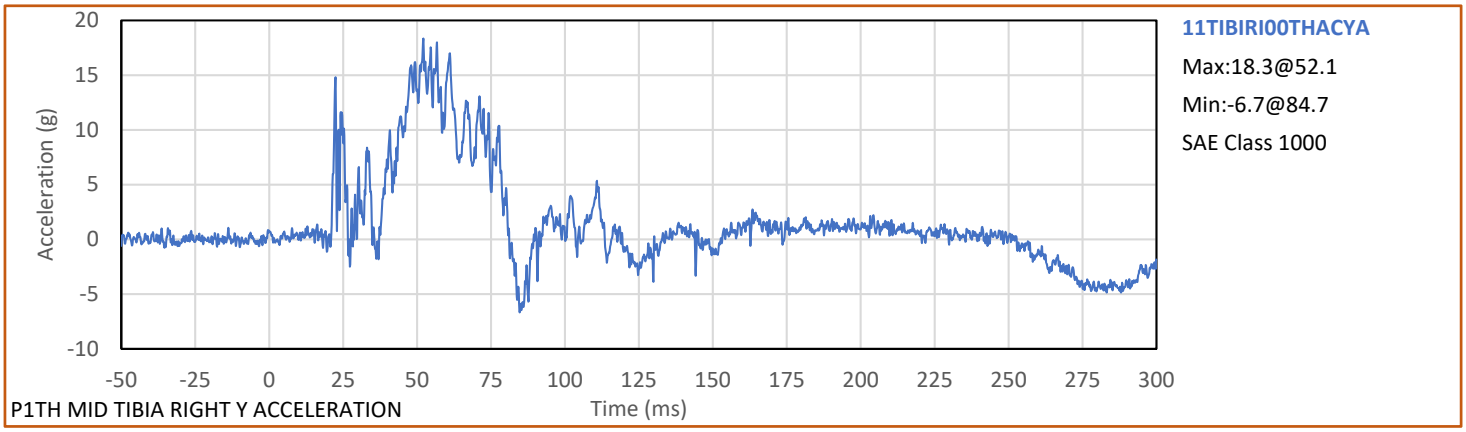
NHTSA No.: R20205378

Test Date: 9/9/2020



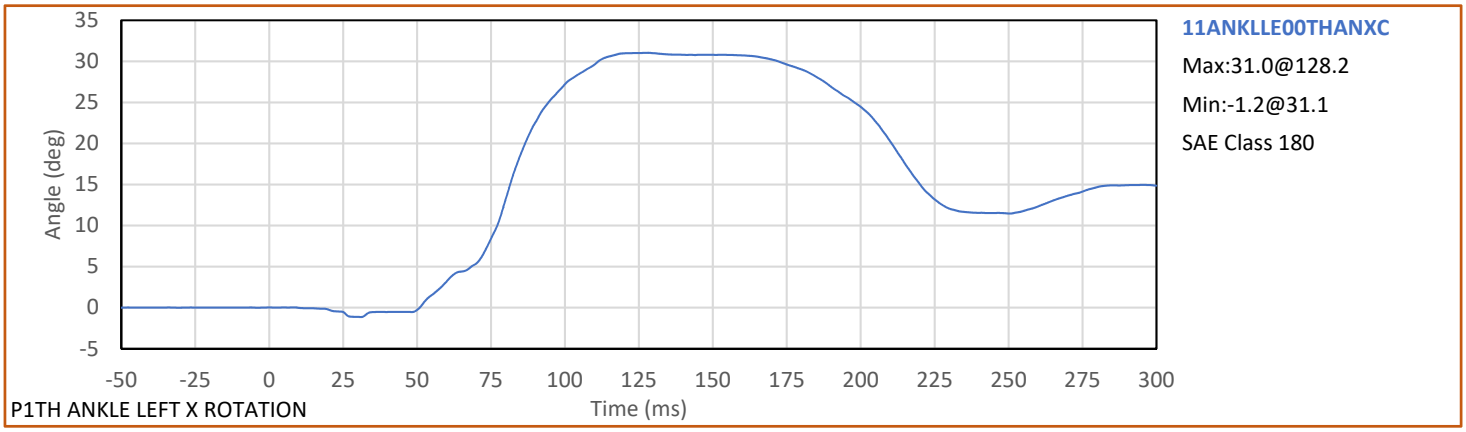
P1TH MID TIBIA RIGHT X ACCELERATION

11TIBIRI00THACXA
Max:14.4@42.2
Min:-57.0@56.9
SAE Class 1000



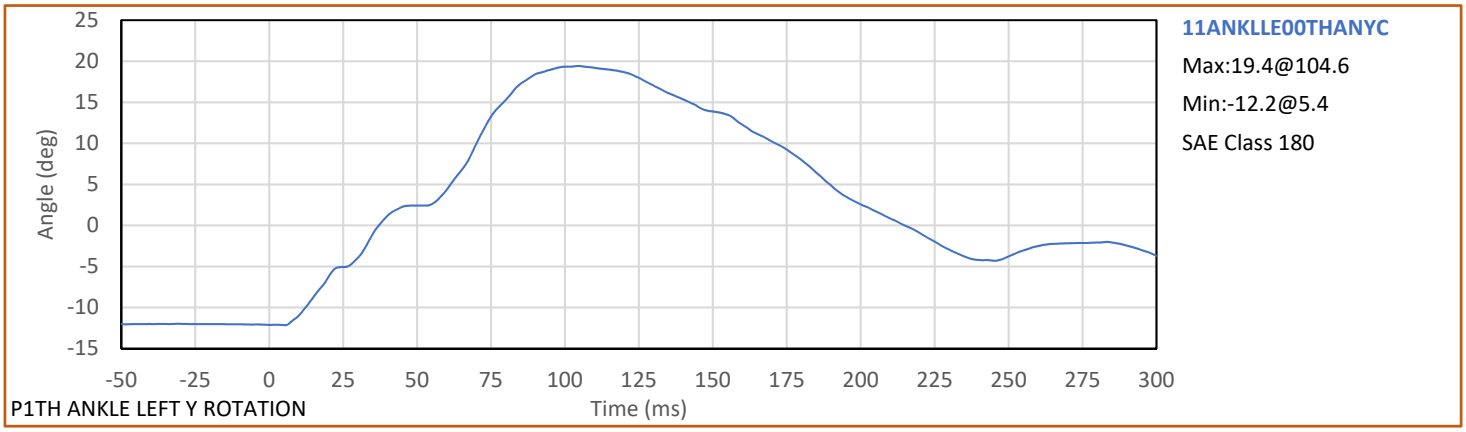
P1TH MID TIBIA RIGHT Y ACCELERATION

11TIBIRI00THACYA
Max:18.3@52.1
Min:-6.7@84.7
SAE Class 1000



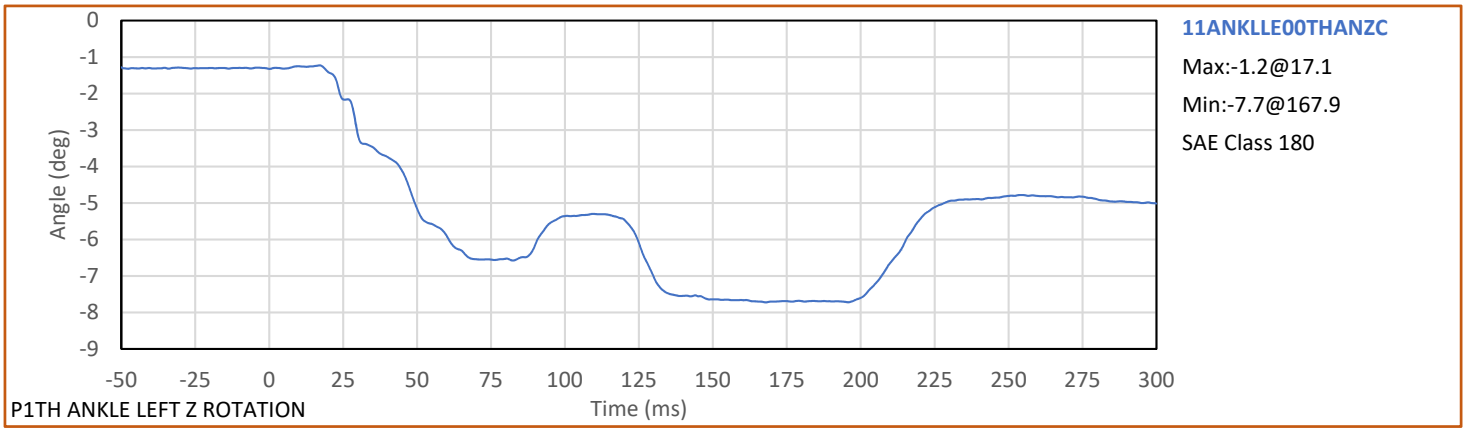
P1TH ANKLE LEFT X ROTATION

11ANKLLE00THANXC
Max:31.0@128.2
Min:-1.2@31.1
SAE Class 180

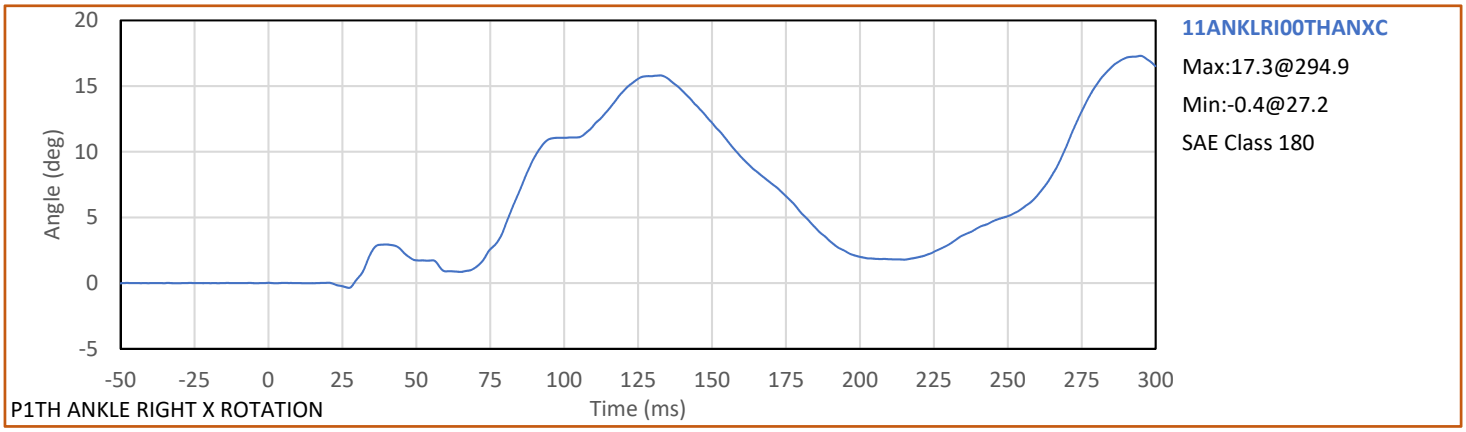


P1TH ANKLE LEFT Y ROTATION

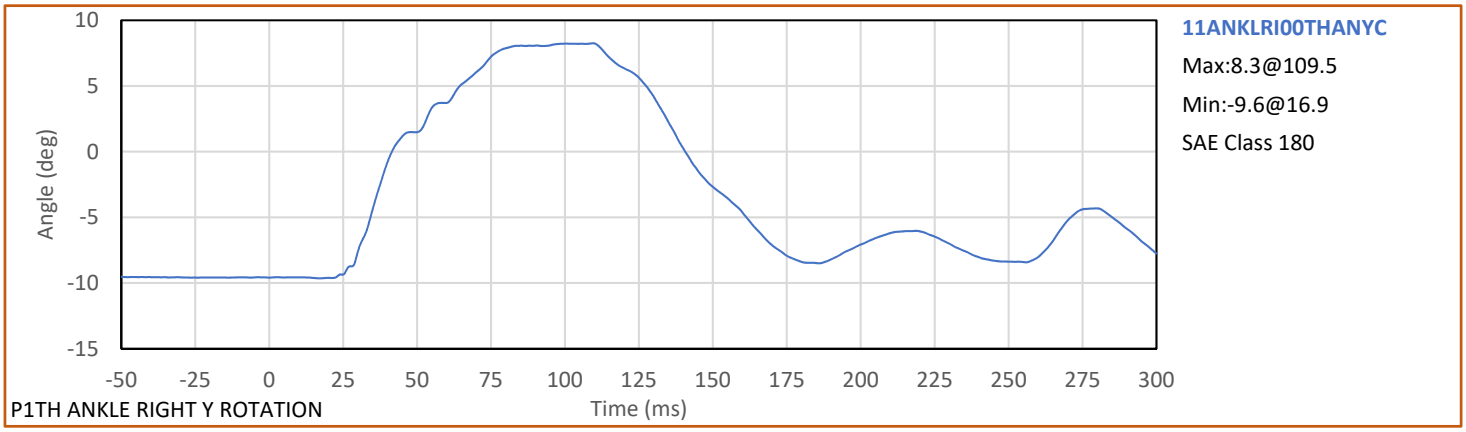
11ANKLLE00THANYC
Max:19.4@104.6
Min:-12.2@5.4
SAE Class 180



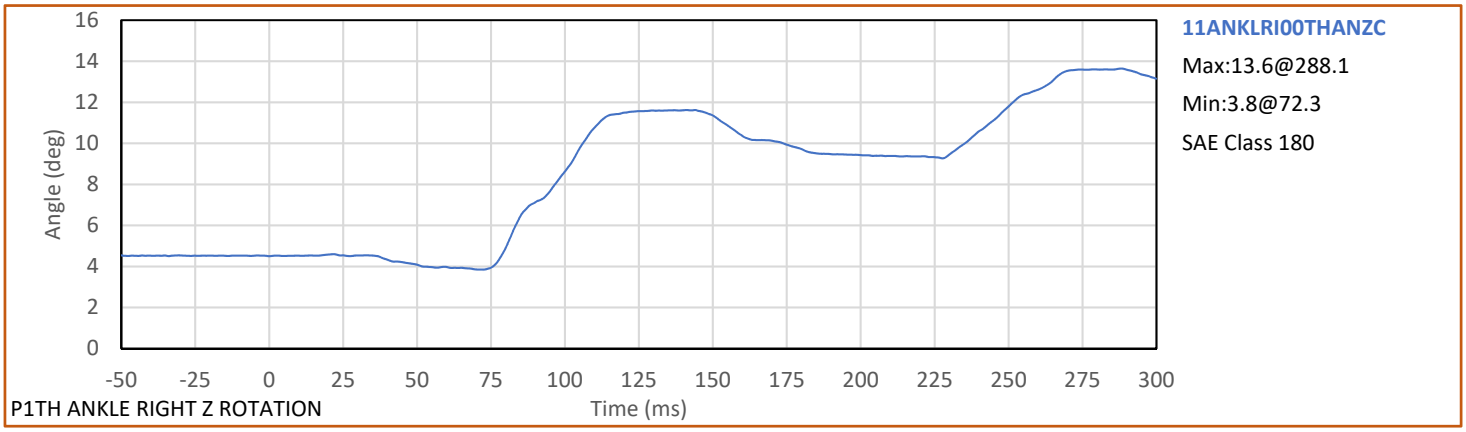
11ANKLLE00THANZC
Max:-1.2@17.1
Min:-7.7@167.9
SAE Class 180



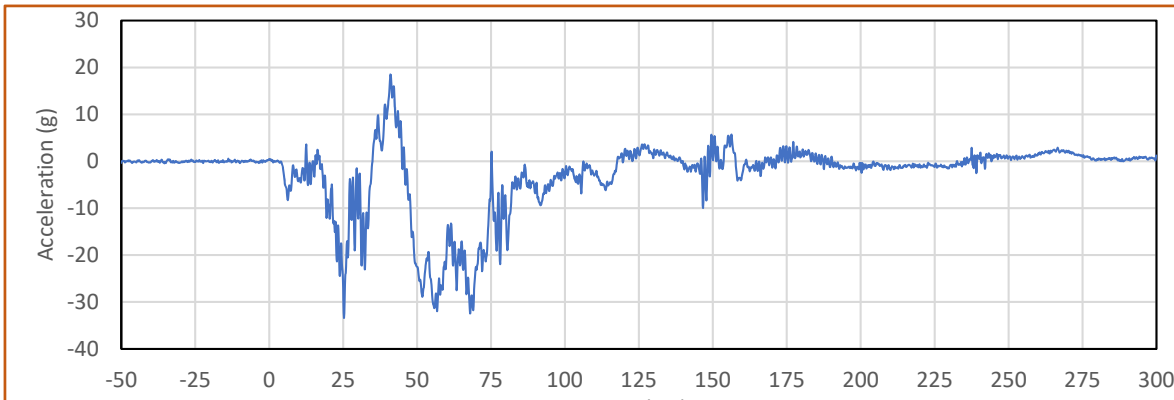
11ANKLRI00THANXC
Max:17.3@294.9
Min:-0.4@27.2
SAE Class 180



11ANKLRI00THANYC
Max:8.3@109.5
Min:-9.6@16.9
SAE Class 180

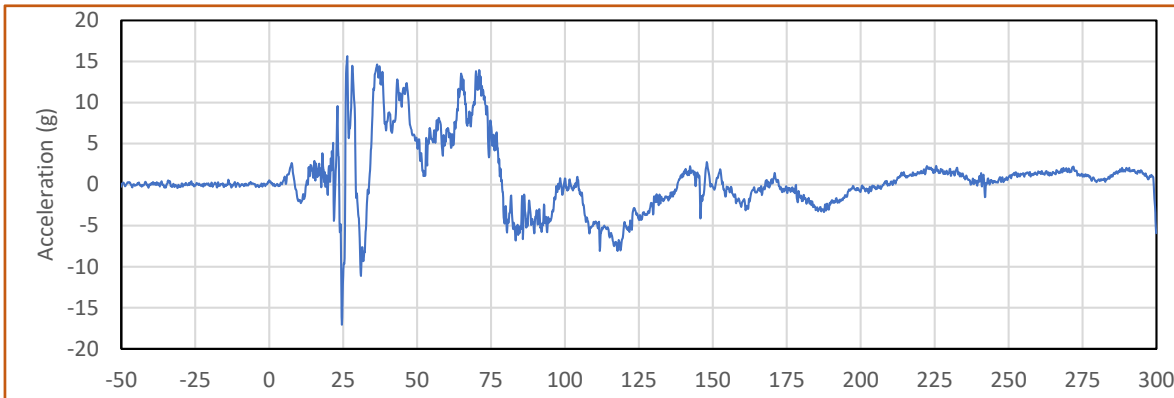


11ANKLRI00THANZC
Max:13.6@288.1
Min:3.8@72.3
SAE Class 180



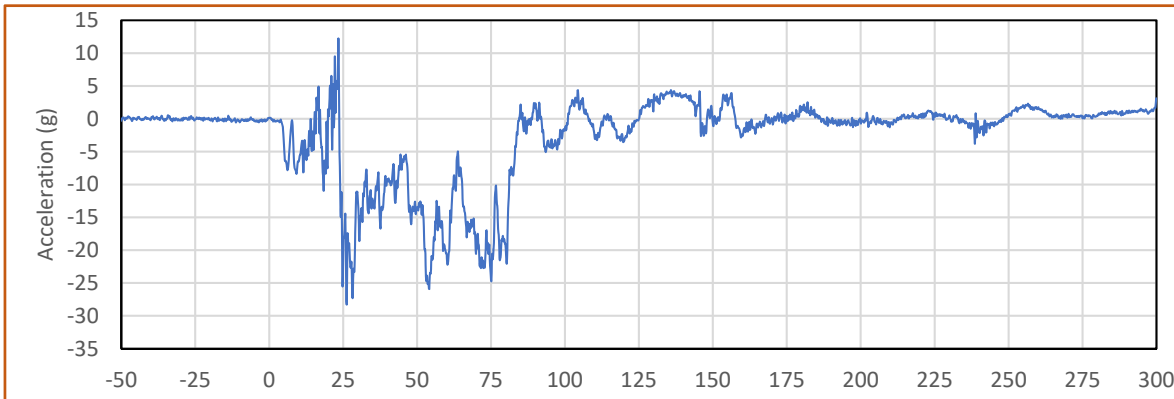
P1TH FOOT LEFT X ACCELERATION

11FOOTLE00THACXA
Max:18.5@41.0
Min:-33.4@25.3
SAE Class 1000



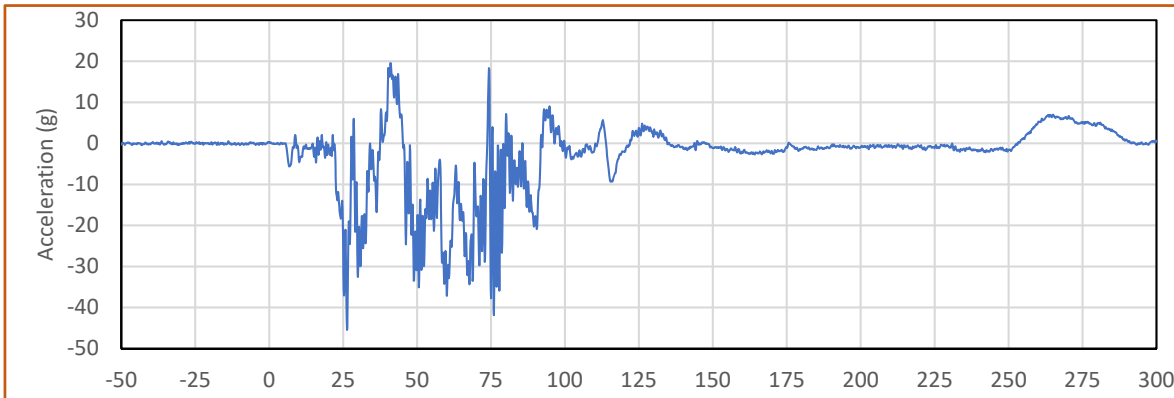
P1TH FOOT LEFT Y ACCELERATION

11FOOTLE00THACYA
Max:15.6@26.4
Min:-17.1@24.6
SAE Class 1000



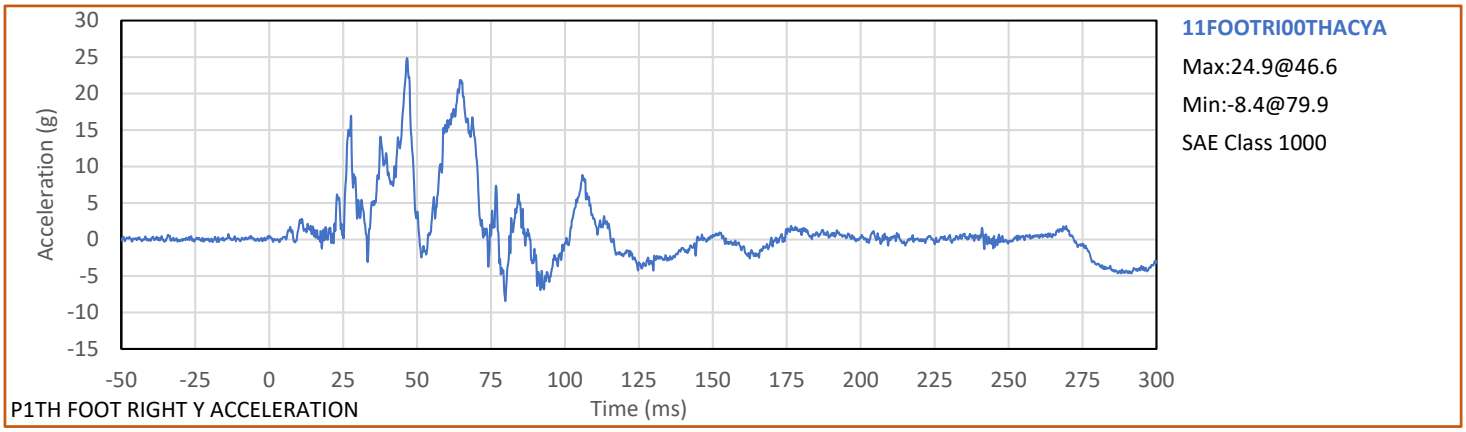
P1TH FOOT LEFT Z ACCELERATION

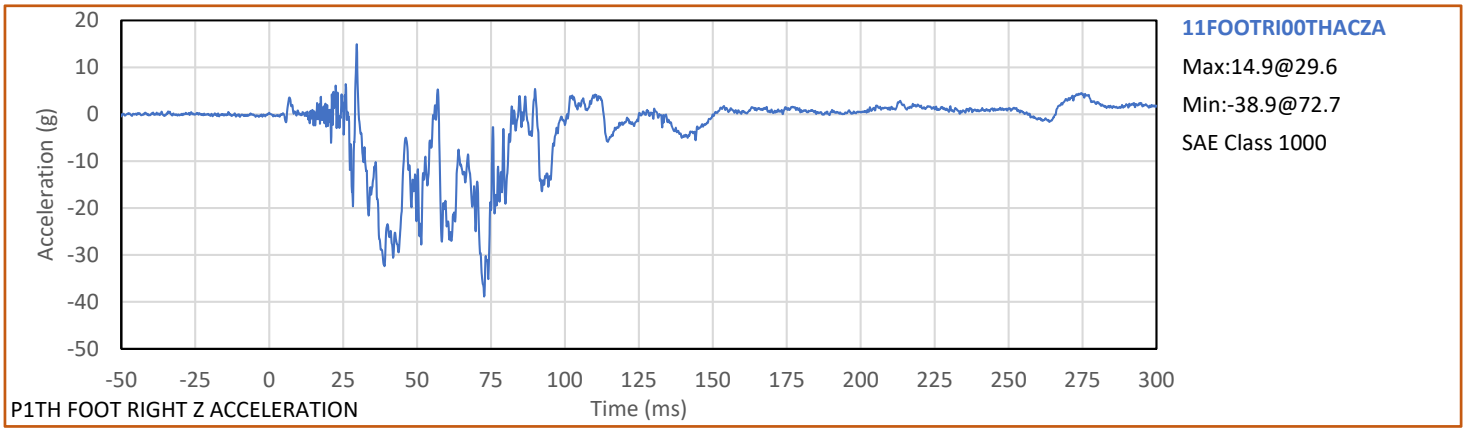
11FOOTLE00THACZA
Max:12.2@23.4
Min:-28.3@26.2
SAE Class 1000



P1TH FOOT RIGHT X ACCELERATION

11FOOTRI00THACXA
Max:19.5@41.1
Min:-45.5@26.3
SAE Class 1000


11FOOTRI00THACYA
Max:24.9@46.6
Min:-8.4@79.9
SAE Class 1000
Acceleration (g)
Time (ms)
P1TH FOOT RIGHT Y ACCELERATION

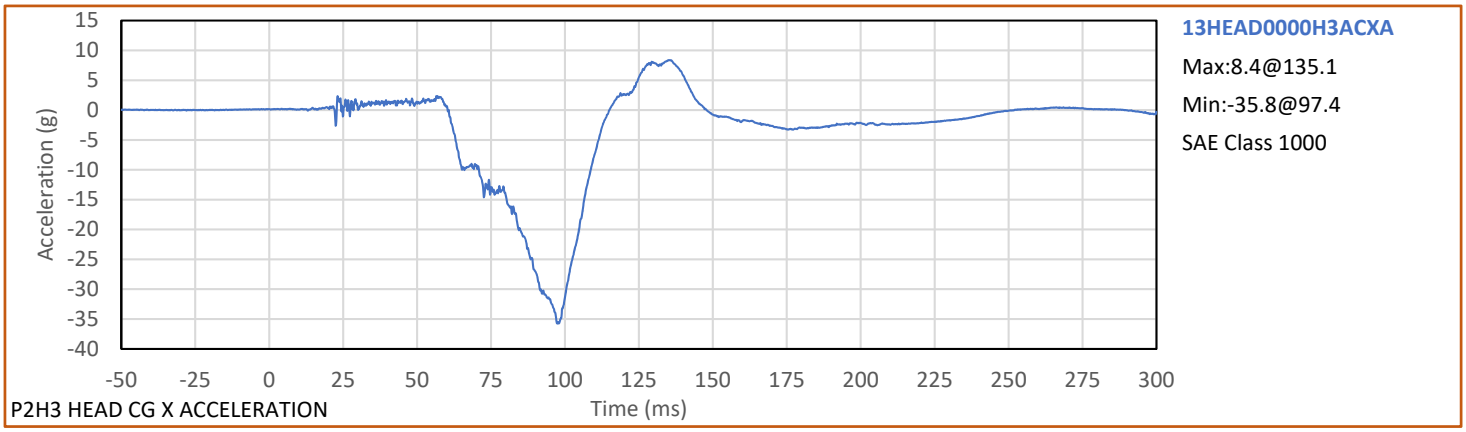

11FOOTRI00THACZA
Max:14.9@29.6
Min:-38.9@72.7
SAE Class 1000
Acceleration (g)
Time (ms)
P1TH FOOT RIGHT Z ACCELERATION

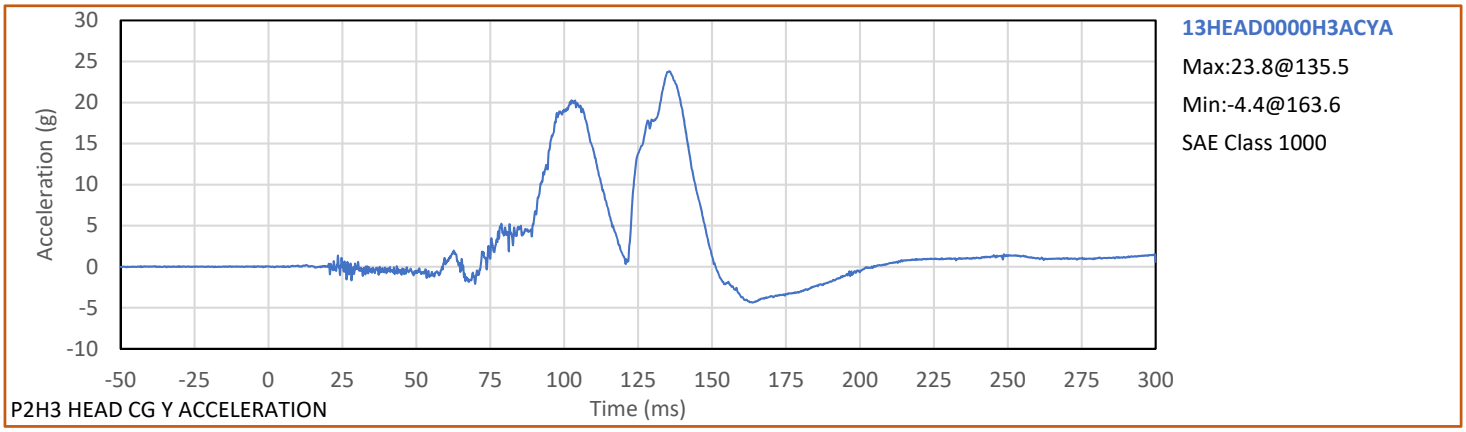
Test Vehicle: 2020 Honda Accord 4-Door Sedan

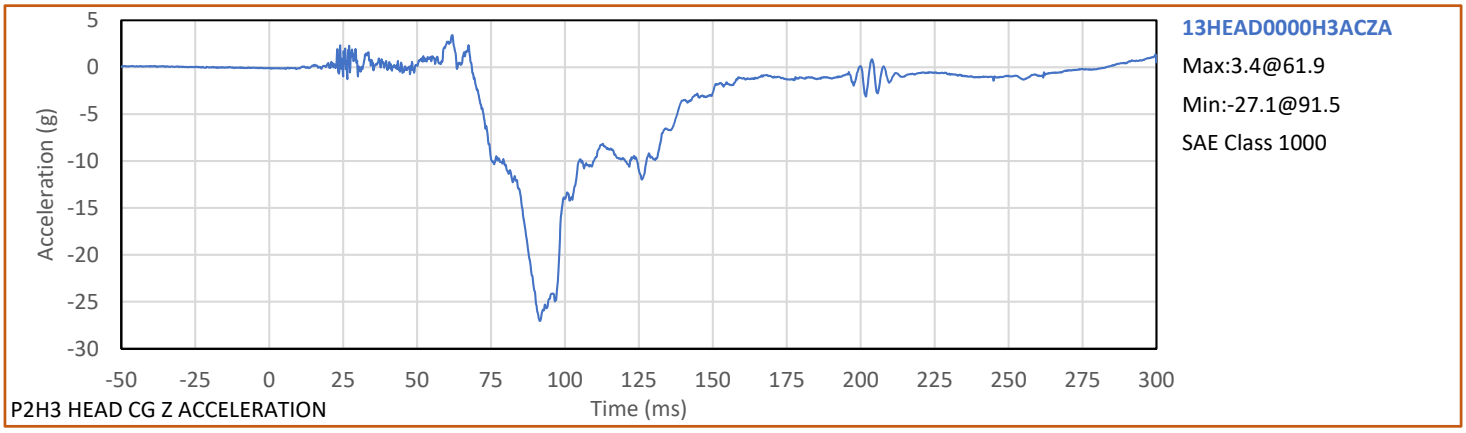
Test Program: Left Side 30° Frontal Rigid Barrier Impact

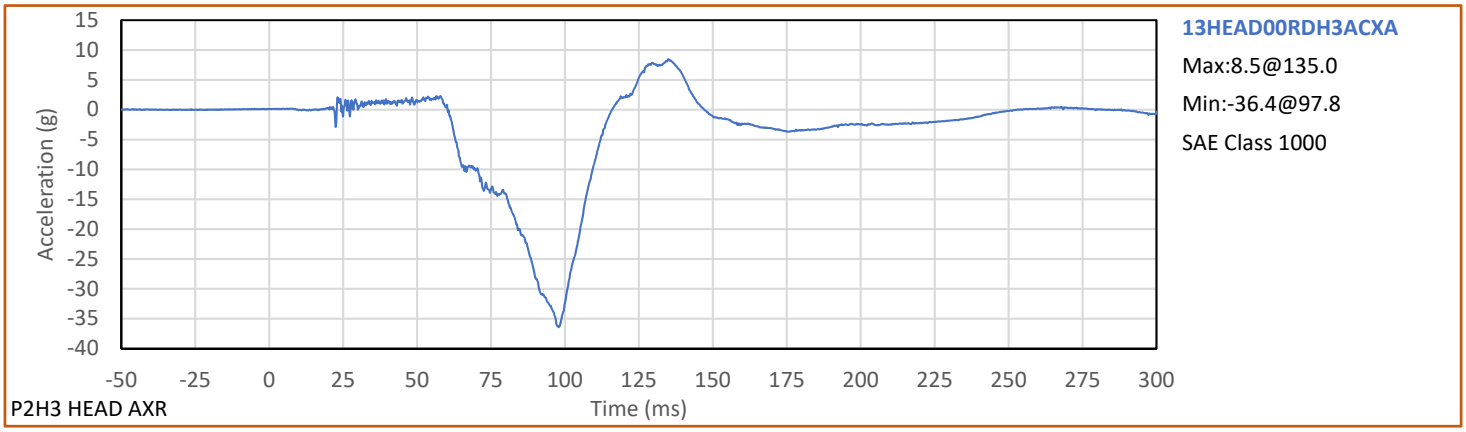
NHTSA No.: R20200378

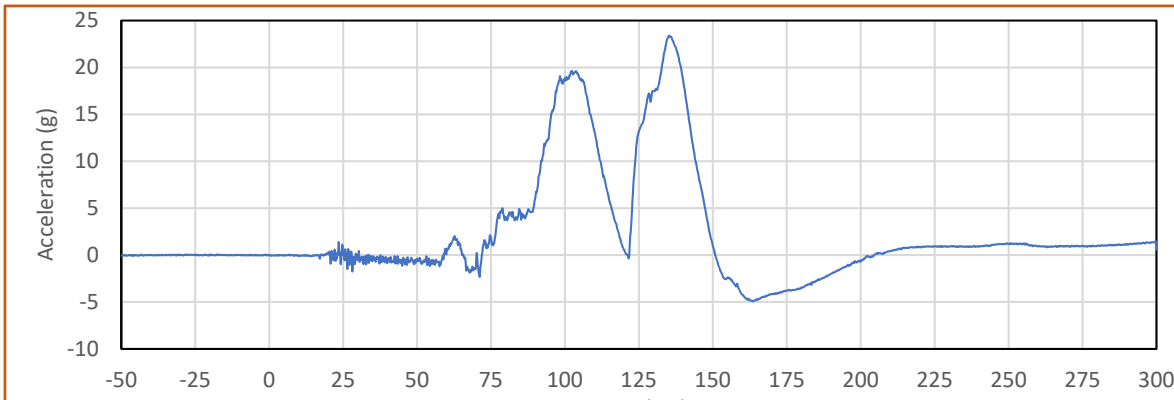
Test Date: 9/9/2020





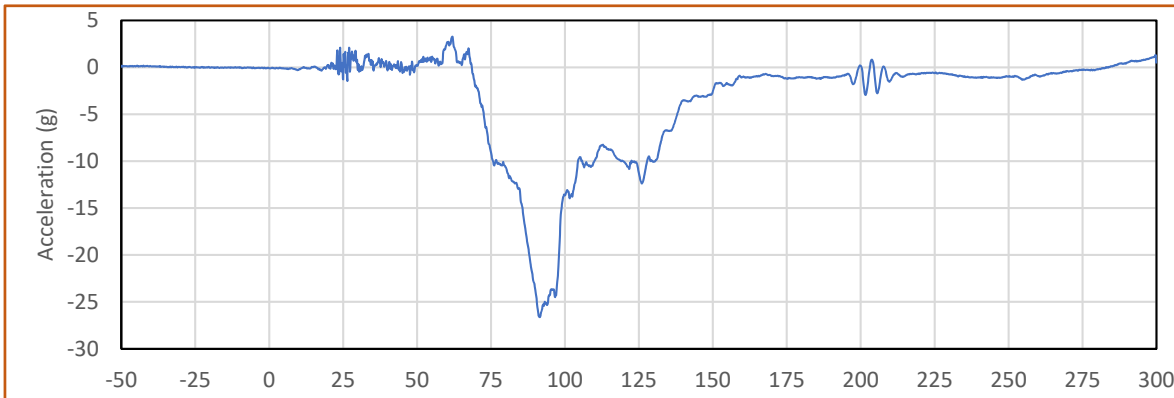






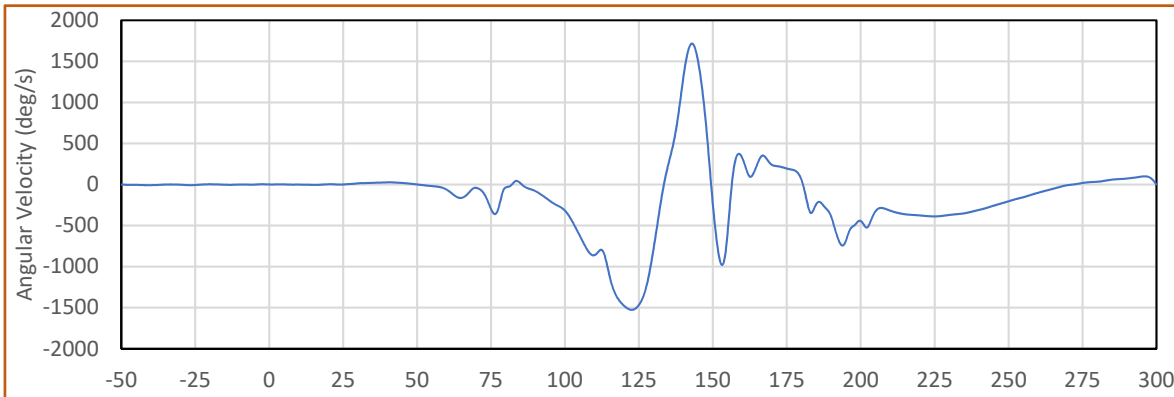
P2H3 HEAD AYR

13HEAD00RDH3ACYA
Max:23.4@135.2
Min:-4.9@163.7
SAE Class 1000



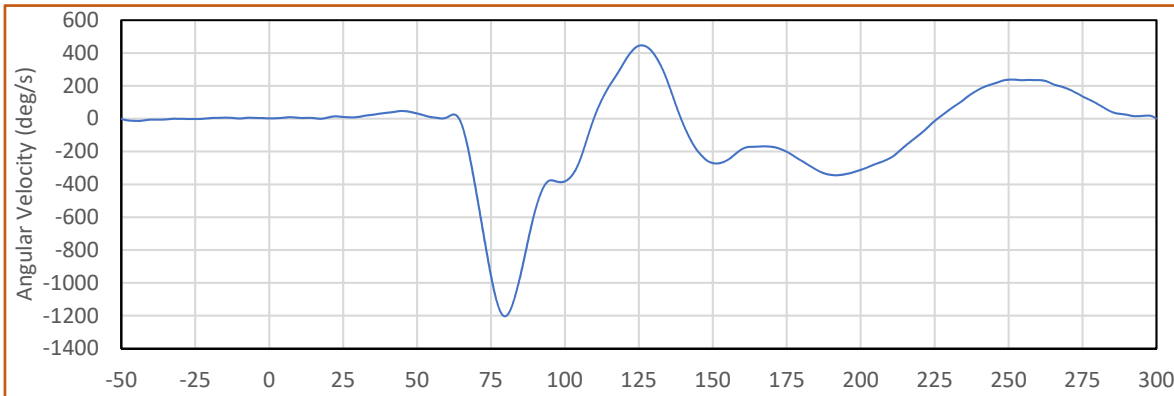
P2H3 HEAD AZR

13HEAD00RDH3ACZA
Max:3.3@61.9
Min:-26.6@91.5
SAE Class 1000



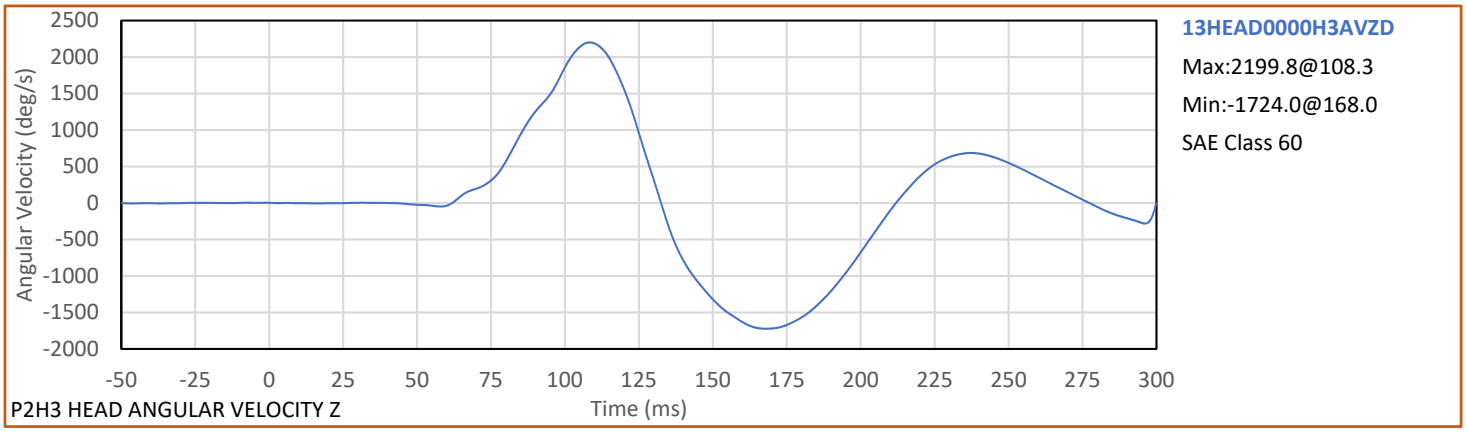
P2H3 HEAD ANGULAR VELOCITY X

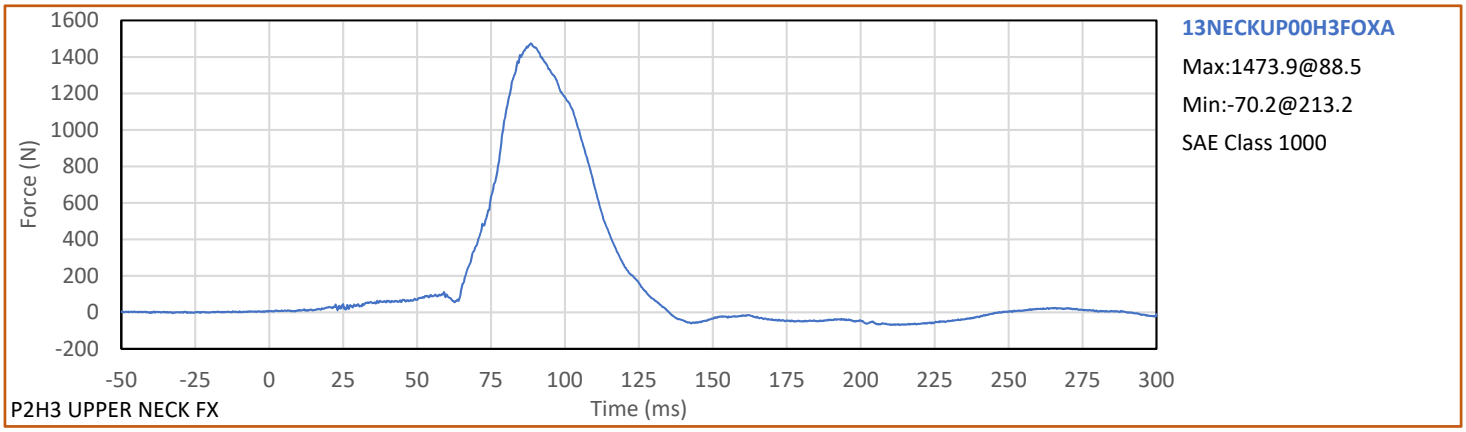
13HEAD0000H3AVXD
Max:1716.9@143.0
Min:-1527.7@122.6
SAE Class 60

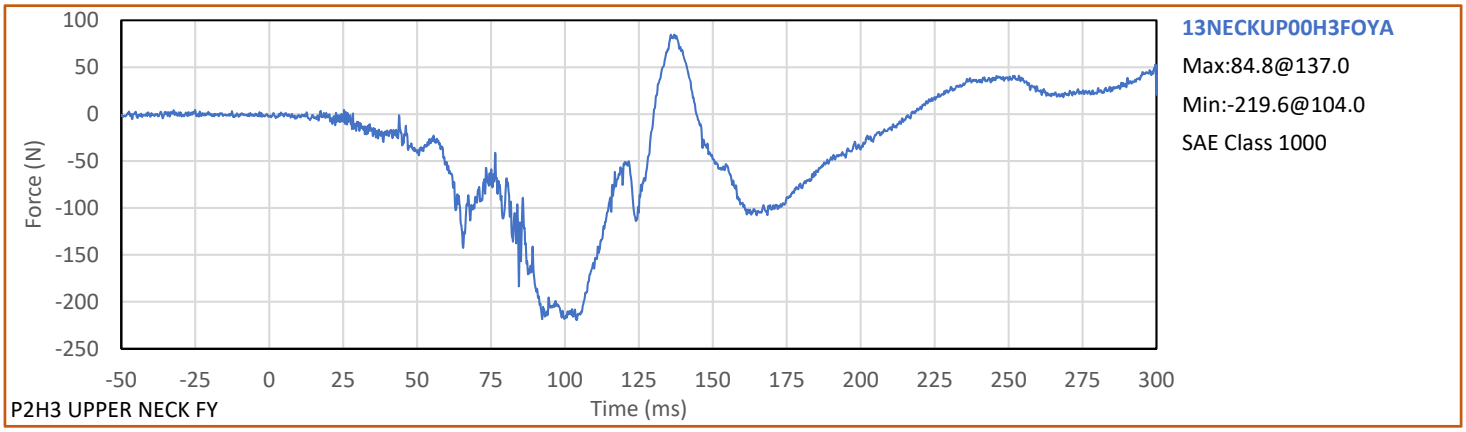


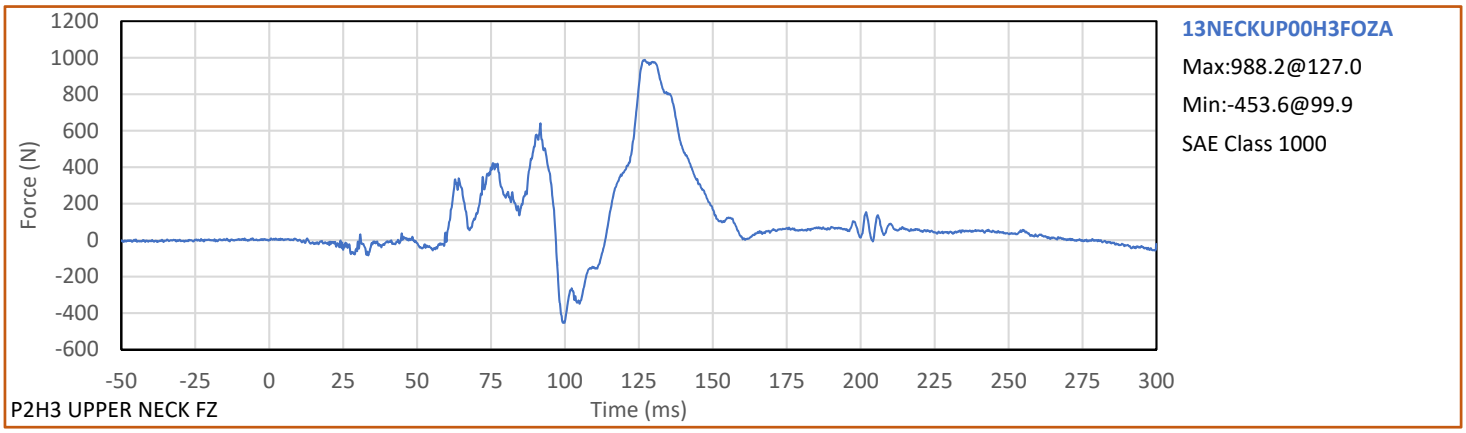
P2H3 HEAD ANGULAR VELOCITY Y

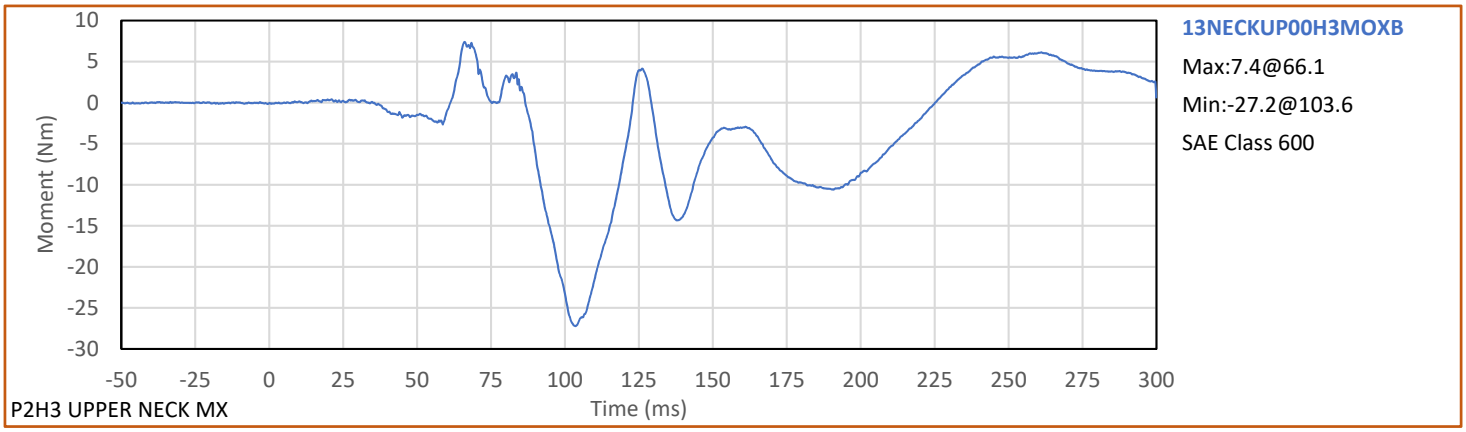
13HEAD0000H3AVYD
Max:446.9@125.9
Min:-1203.7@79.7
SAE Class 60


Angular Velocity (deg/s)
Time (ms)
P2H3 HEAD ANGULAR VELOCITY Z
13HEAD0000H3AVZD
Max:2199.8@108.3
Min:-1724.0@168.0
SAE Class 60

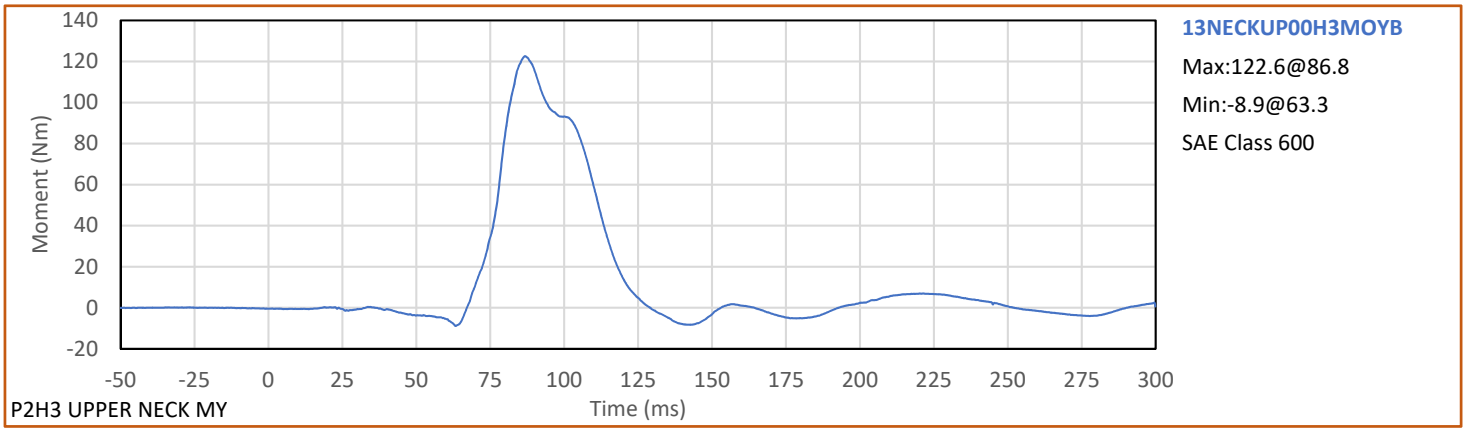

Force (N)
Time (ms)
P2H3 UPPER NECK FX
13NECKUP00H3FOXA
Max:1473.9@88.5
Min:-70.2@213.2
SAE Class 1000


Force (N)
Time (ms)
P2H3 UPPER NECK FY
13NECKUP00H3FOYA
Max:84.8@137.0
Min:-219.6@104.0
SAE Class 1000

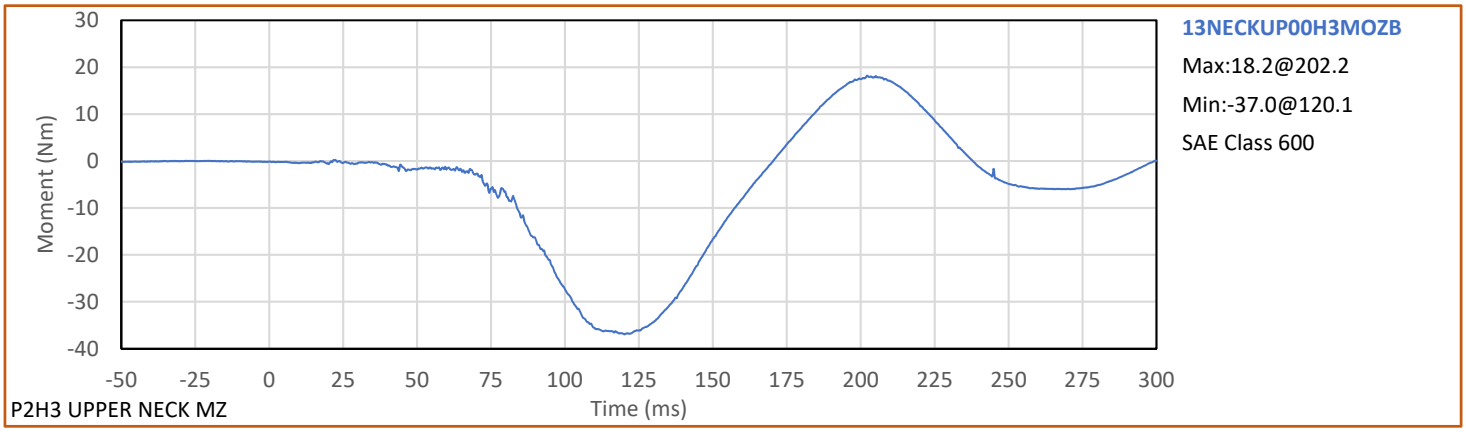

Force (N)
Time (ms)
P2H3 UPPER NECK FZ
13NECKUP00H3FOZA
Max:988.2@127.0
Min:-453.6@99.9
SAE Class 1000



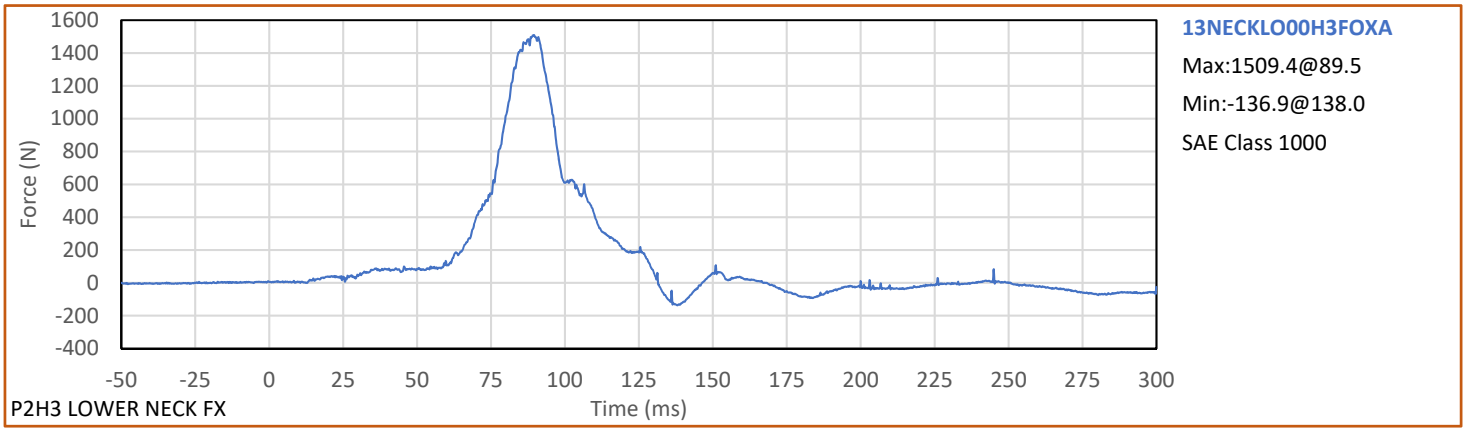
13NECKUP00H3MOXB
Max:7.4@66.1
Min:-27.2@103.6
SAE Class 600



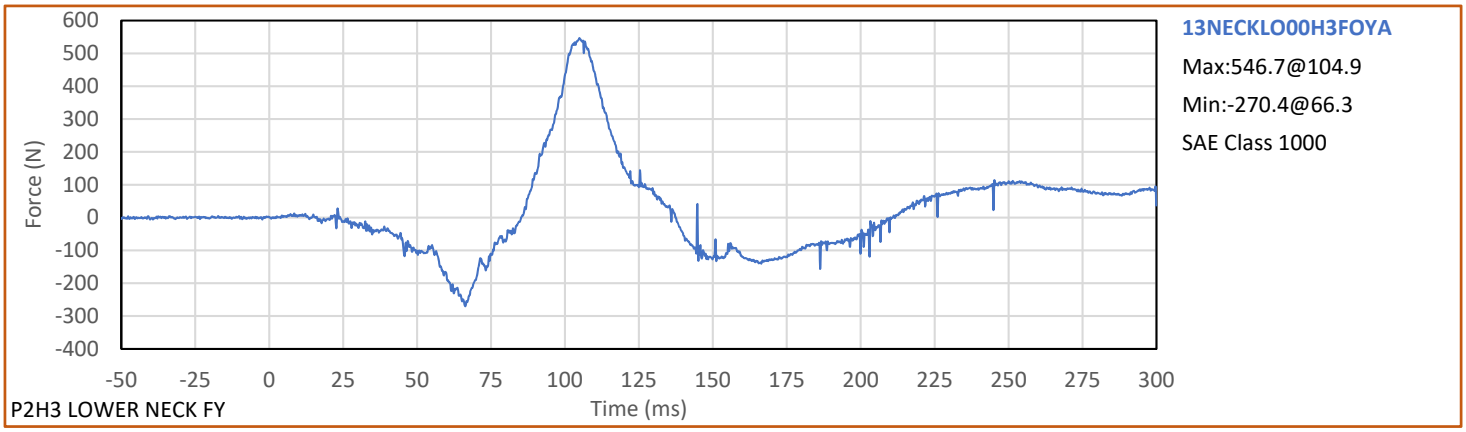
13NECKUP00H3MOYB
Max:122.6@86.8
Min:-8.9@63.3
SAE Class 600



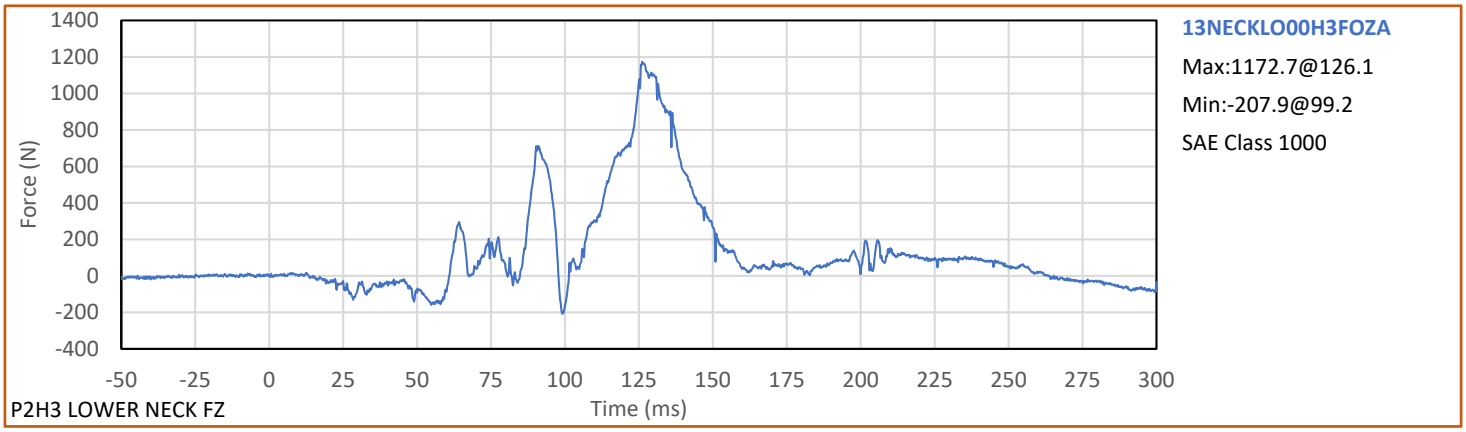
13NECKUP00H3MOZB
Max:18.2@202.2
Min:-37.0@120.1
SAE Class 600



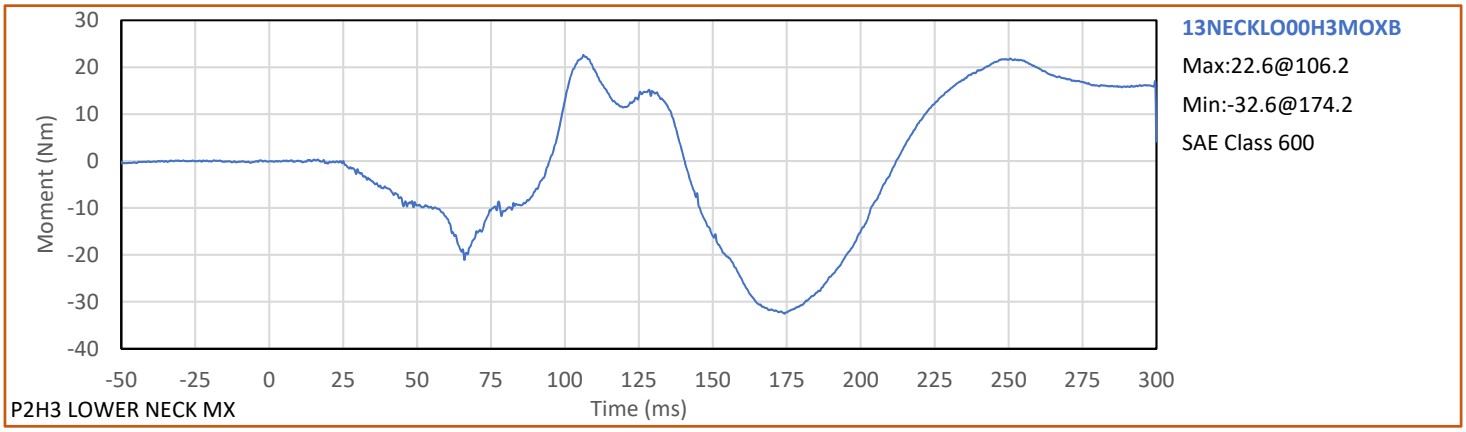
13NECKLO00H3FOXA
Max:1509.4@89.5
Min:-136.9@138.0
SAE Class 1000



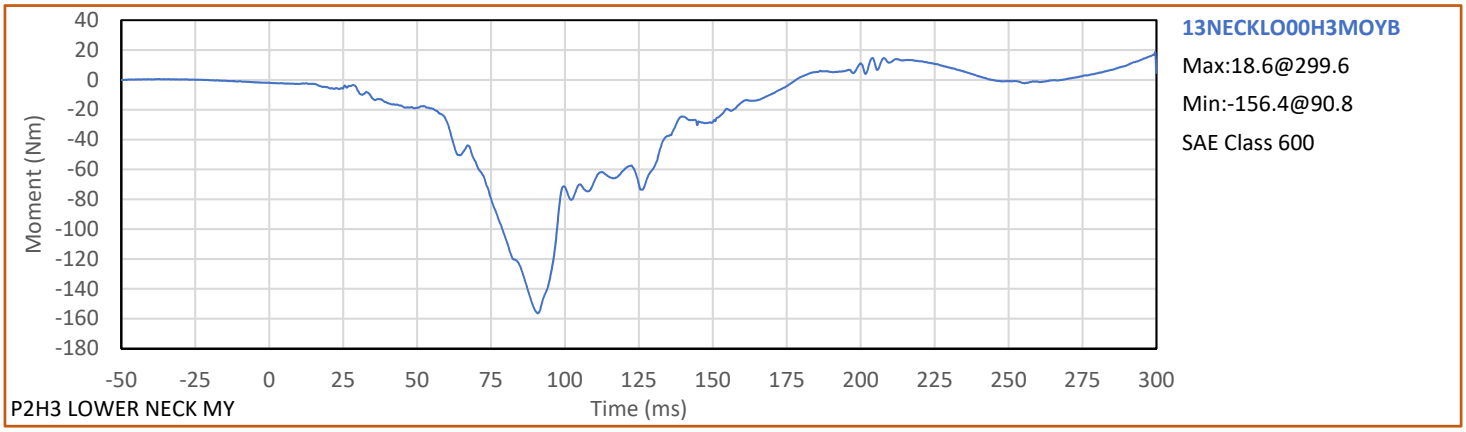
13NECKLO00H3FOYA
Max:546.7@104.9
Min:-270.4@66.3
SAE Class 1000



13NECKLO00H3FOZA
Max:1172.7@126.1
Min:-207.9@99.2
SAE Class 1000



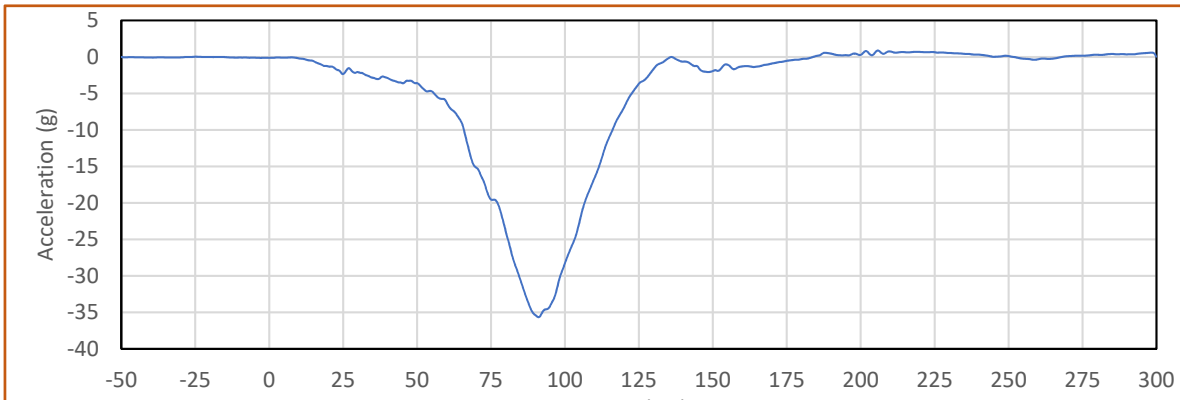
13NECKLO00H3MOXB
Max:22.6@106.2
Min:-32.6@174.2
SAE Class 600



13NECKLO00H3MOYB
Max:18.6@299.6
Min:-156.4@90.8
SAE Class 600

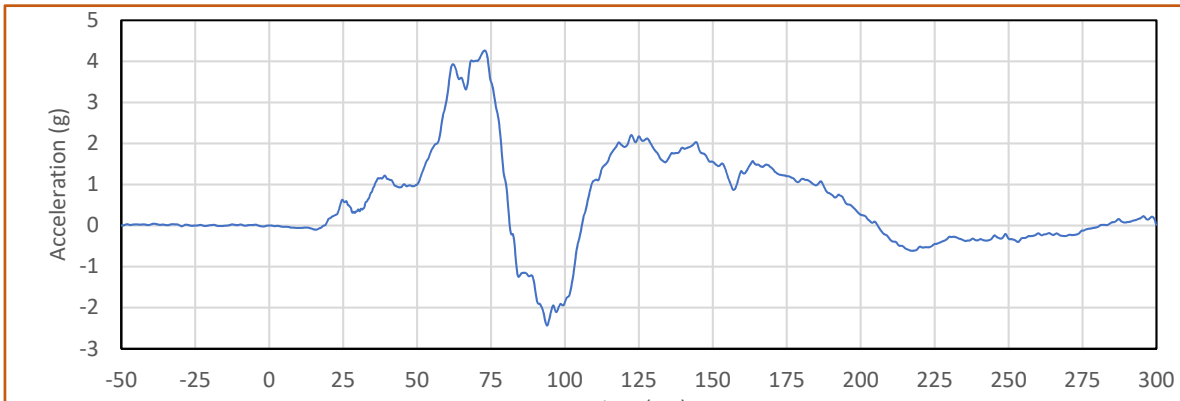
P2H3 LOWER NECK MZ

13NECKLO00H3MOZB
Max:18.4@209.7
Min:-40.3@125.4
SAE Class 600



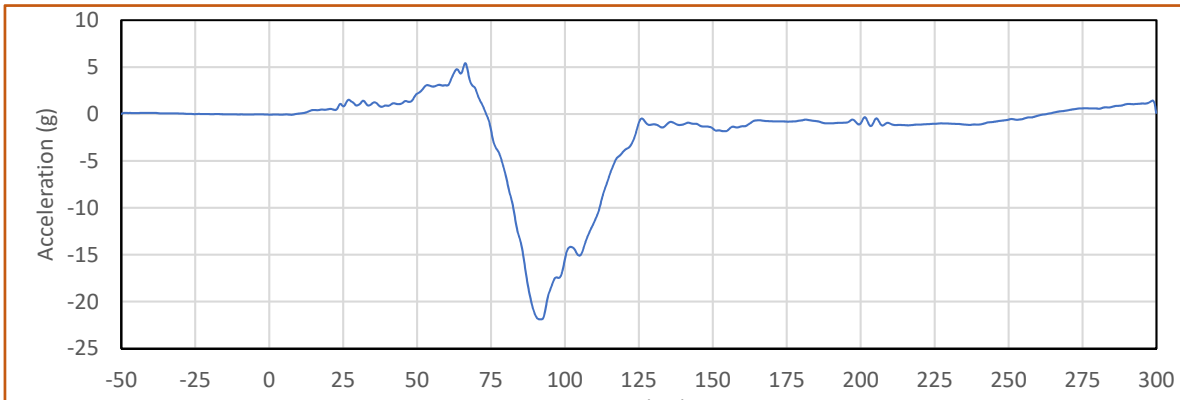
P2H3 CHEST AX

13CHST0000H3ACXC
Max:0.9@205.8
Min:-35.7@91.1
SAE Class 180



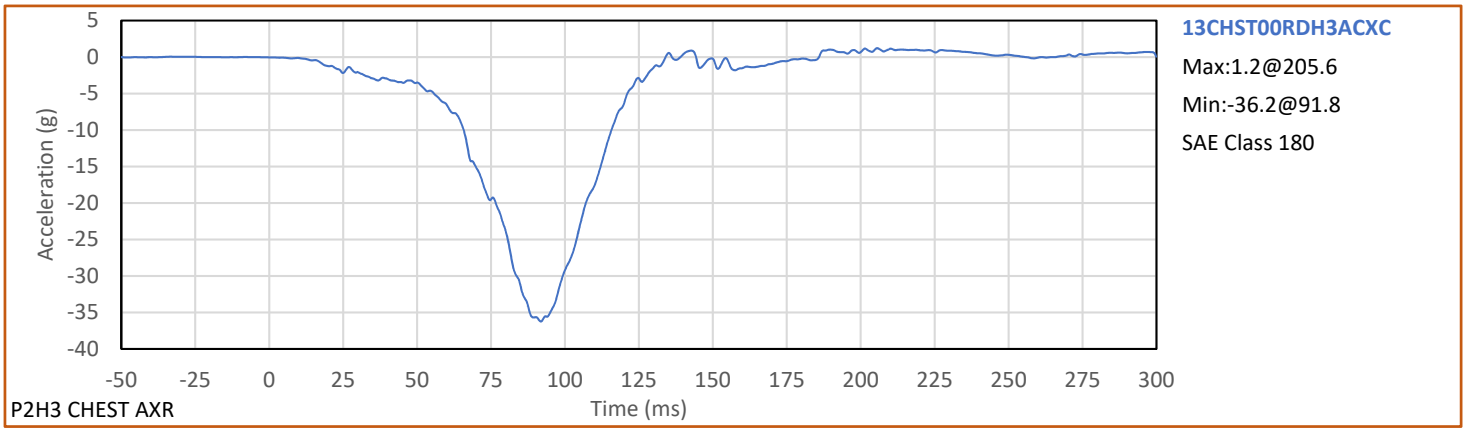
P2H3 CHEST AY

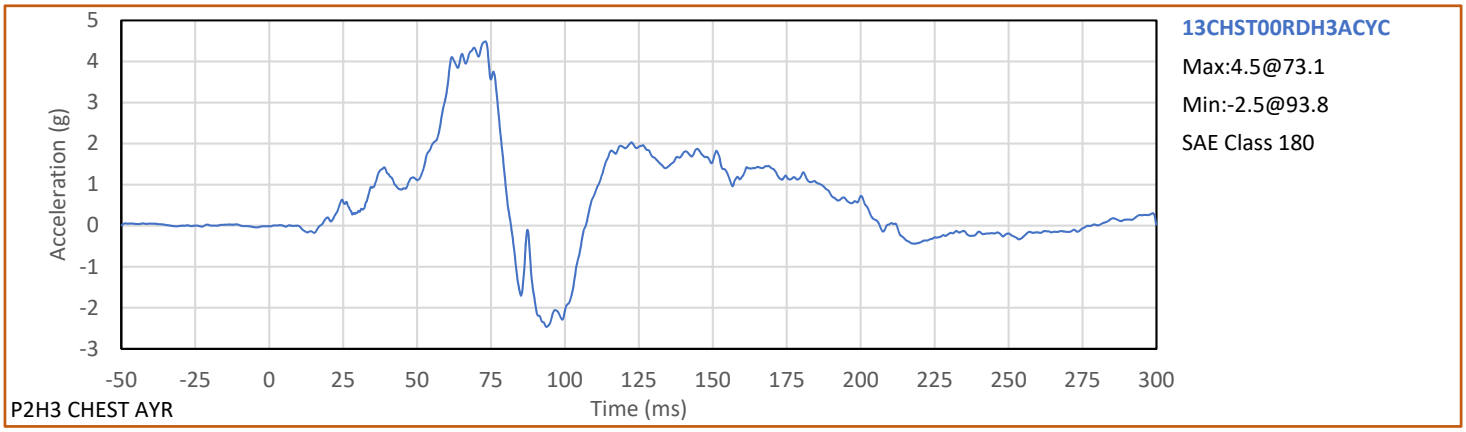
13CHST0000H3ACYC
Max:4.3@72.8
Min:-2.4@94.0
SAE Class 180

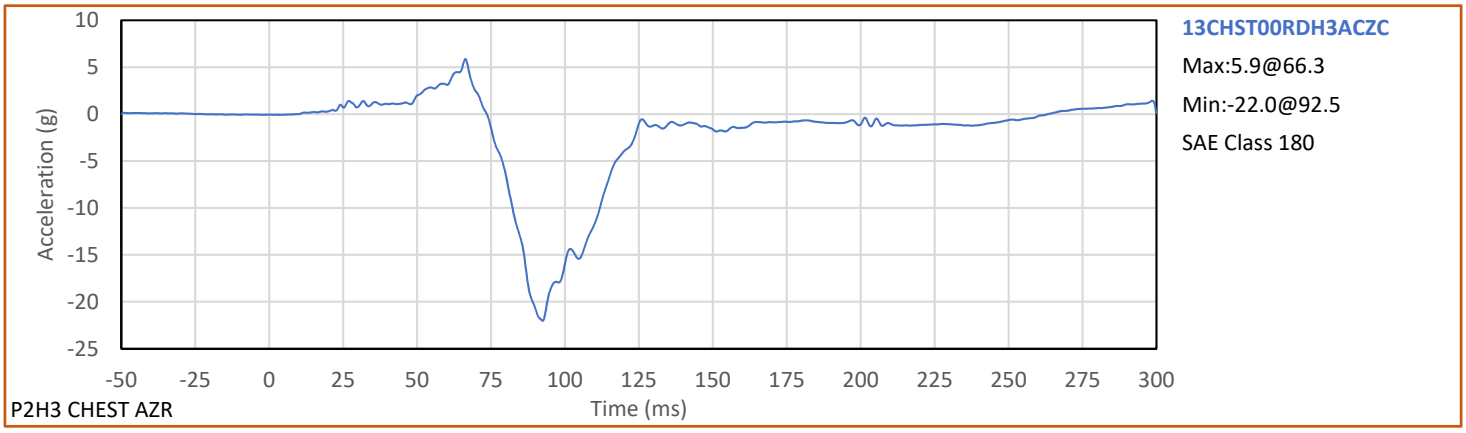


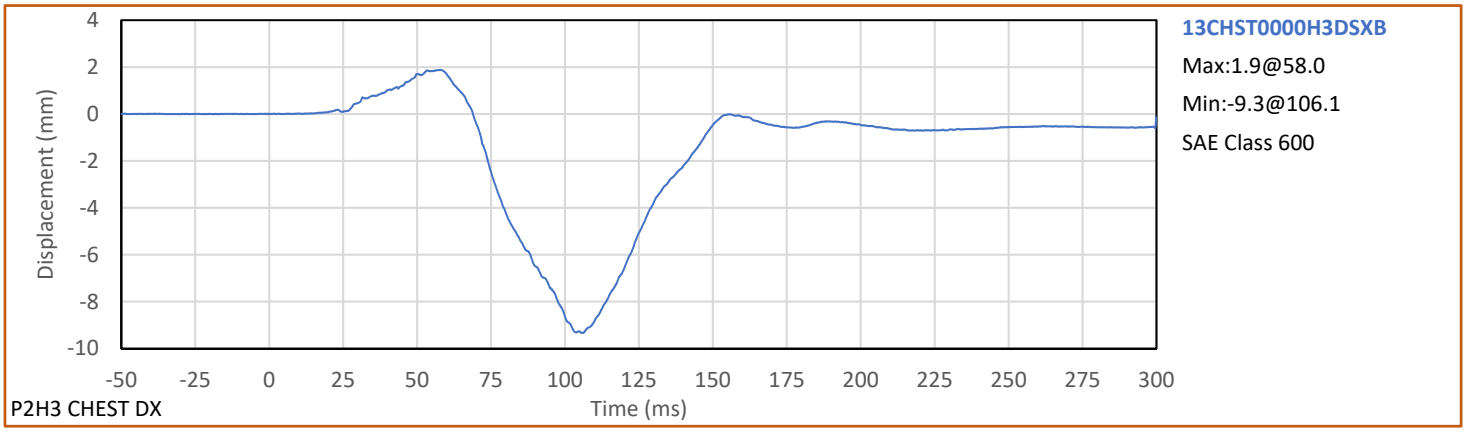
P2H3 CHEST AZ

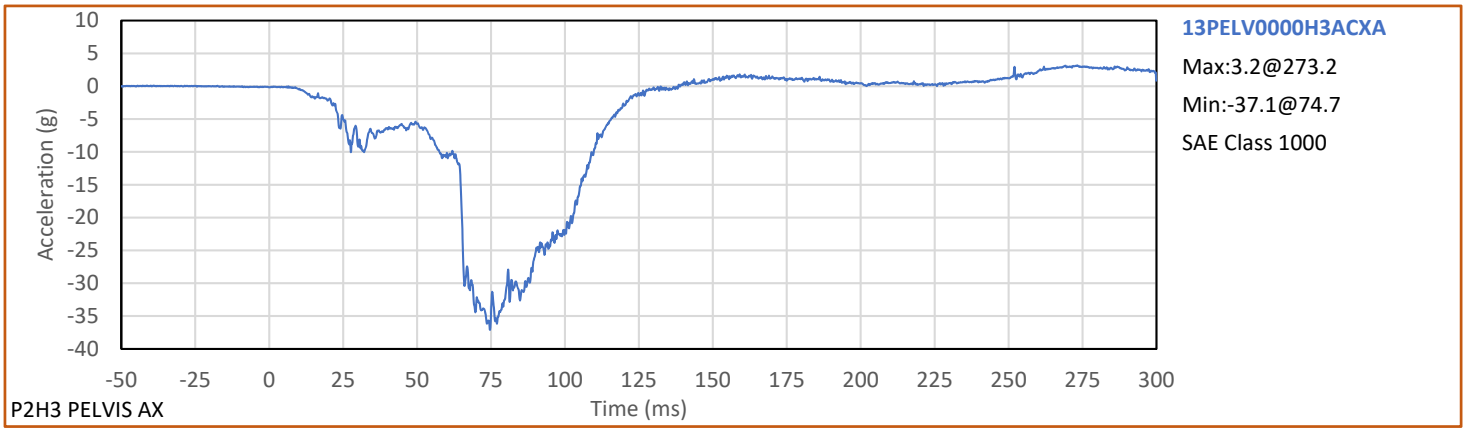
13CHST0000H3ACZC
Max:5.4@66.3
Min:-21.9@91.5
SAE Class 180

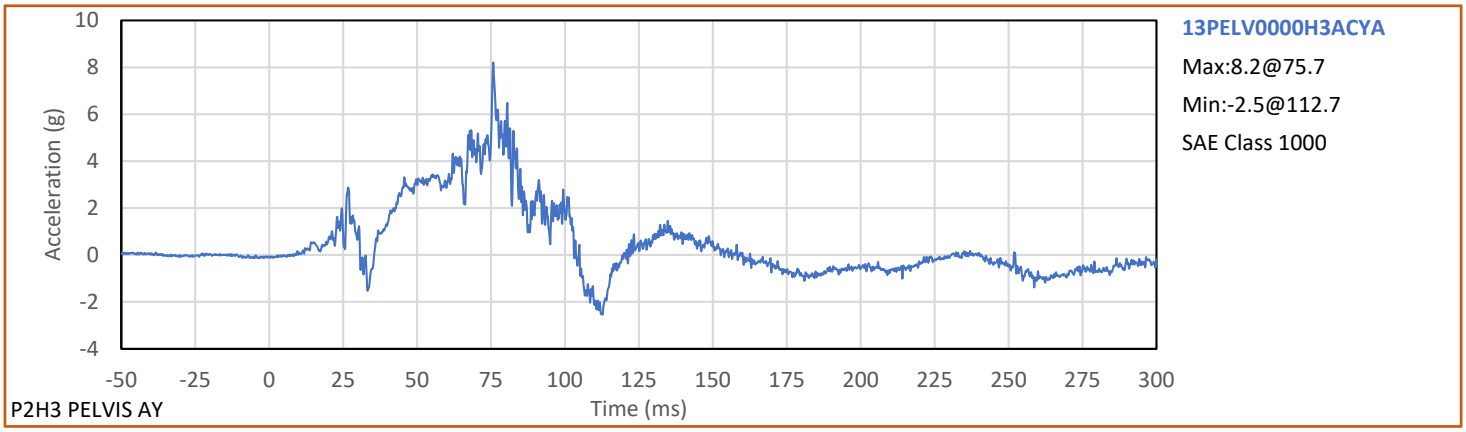

Acceleration (g)
Time (ms)
P2H3 CHEST AXR
13CHST00RDH3ACXC
Max:1.2@205.6
Min:-36.2@91.8
SAE Class 180

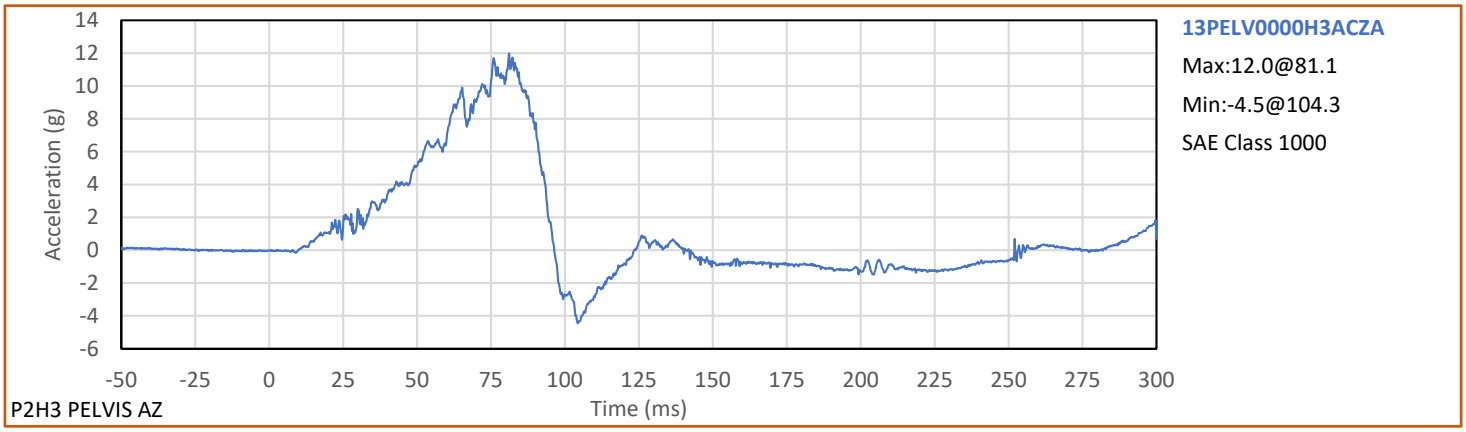

Acceleration (g)
Time (ms)
P2H3 CHEST AYR
13CHST00RDH3ACYC
Max:4.5@73.1
Min:-2.5@93.8
SAE Class 180

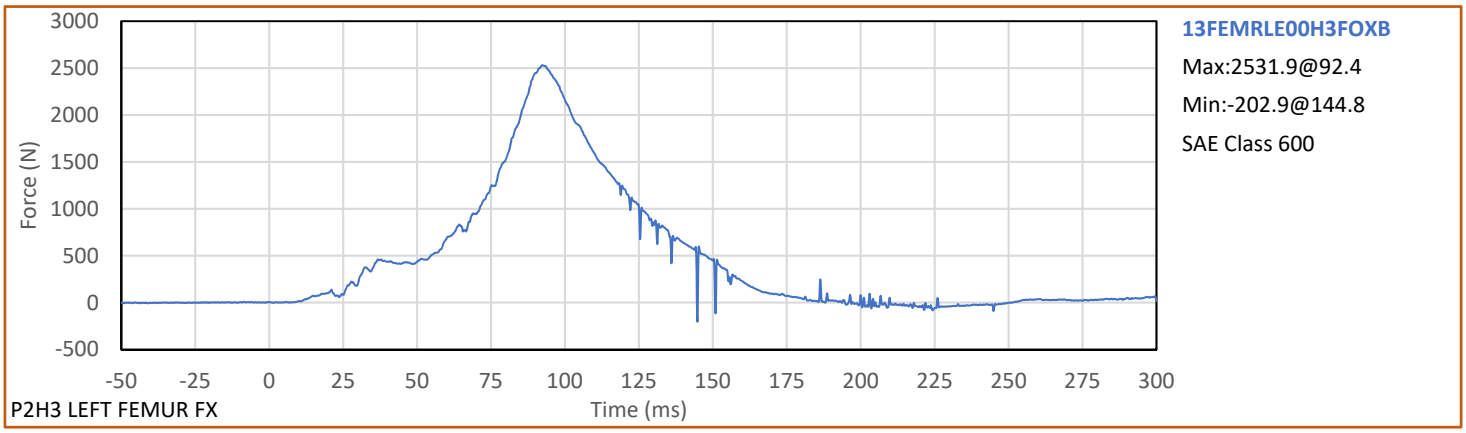

Acceleration (g)
Time (ms)
P2H3 CHEST AZR
13CHST00RDH3ACZC
Max:5.9@66.3
Min:-22.0@92.5
SAE Class 180

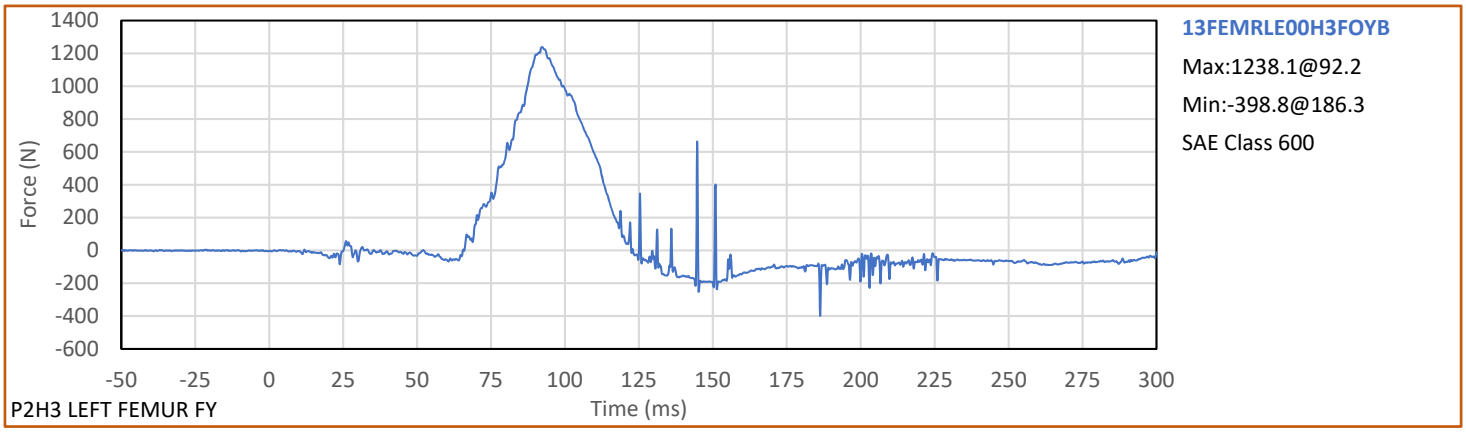

Displacement (mm)
Time (ms)
P2H3 CHEST DX
13CHST0000H3DSXB
Max:1.9@58.0
Min:-9.3@106.1
SAE Class 600

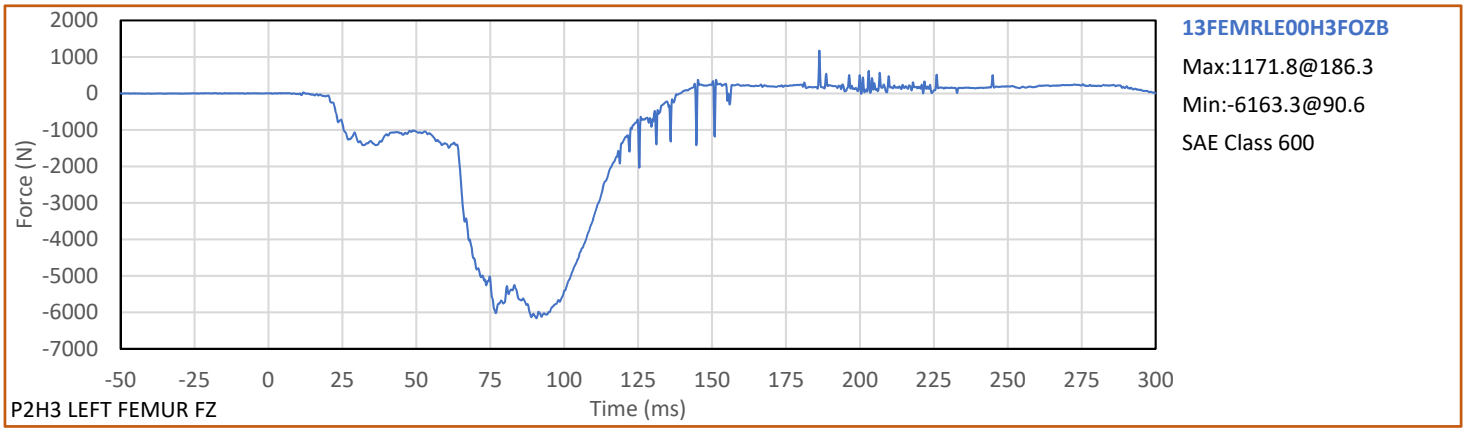

Acceleration (g)
Time (ms)
P2H3 PELVIS AX
13PELV0000H3ACXA
Max:3.2@273.2
Min:-37.1@74.7
SAE Class 1000

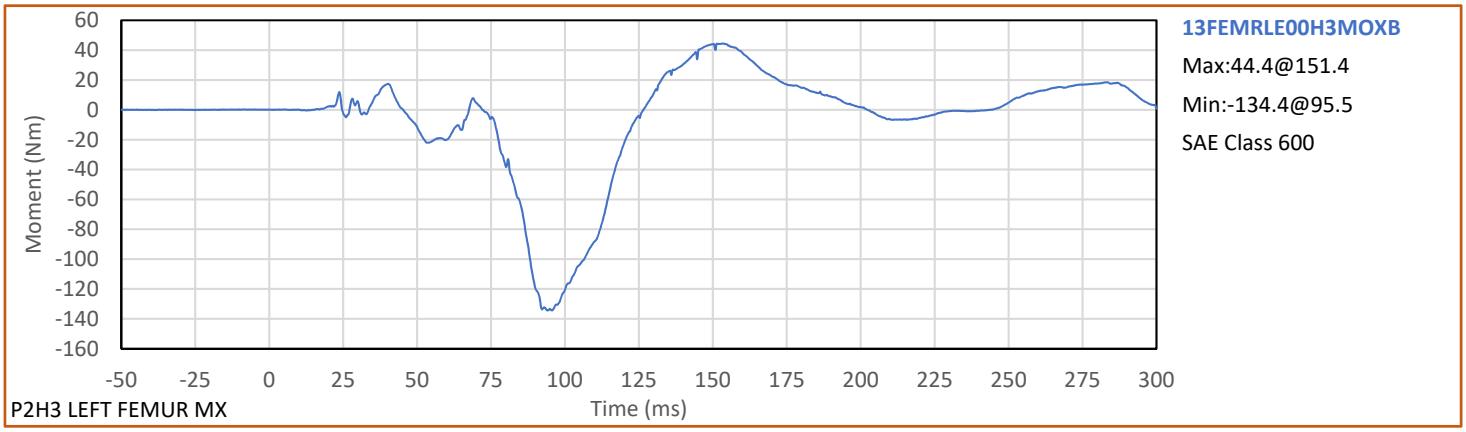

Acceleration (g)
Time (ms)
P2H3 PELVIS AY
13PELV0000H3ACYA
Max:8.2@75.7
Min:-2.5@112.7
SAE Class 1000

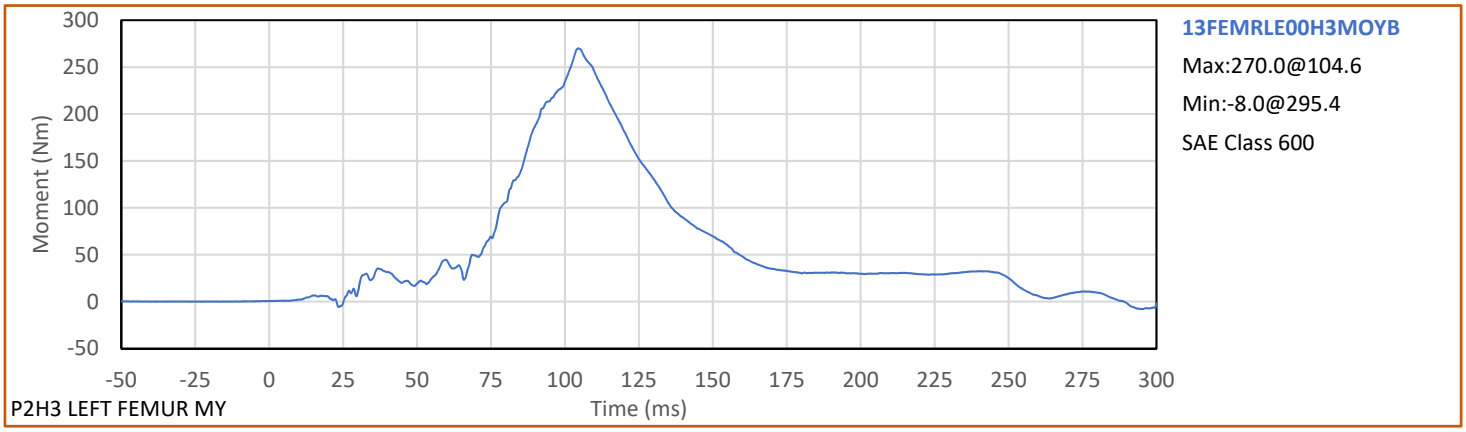

Acceleration (g)
Time (ms)
P2H3 PELVIS AZ
13PELV0000H3ACZA
Max:12.0@81.1
Min:-4.5@104.3
SAE Class 1000

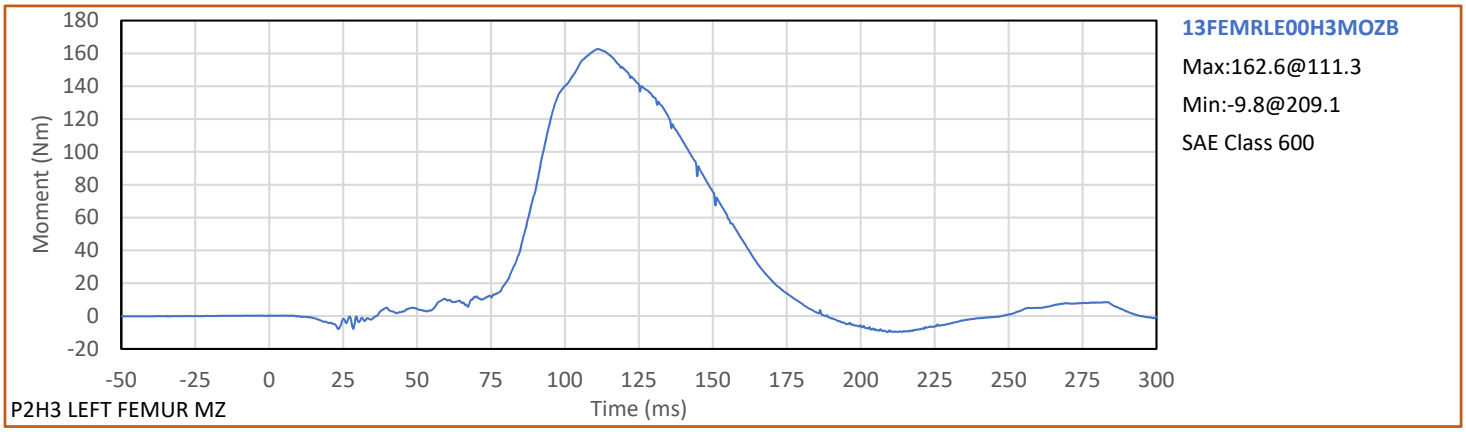

Force (N)
Time (ms)
P2H3 LEFT FEMUR FX
13FEMRLE00H3FOXB
Max:2531.9@92.4
Min:-202.9@144.8
SAE Class 600

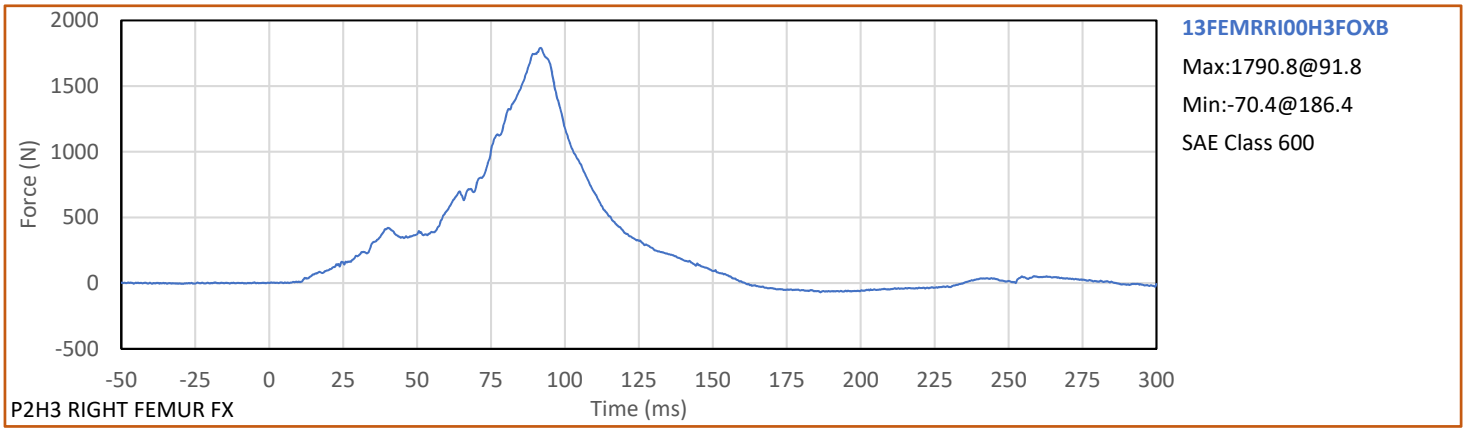

Force (N)
Time (ms)
P2H3 LEFT FEMUR FY
13FEMRLE00H3FOYB
Max:1238.1@92.2
Min:-398.8@186.3
SAE Class 600

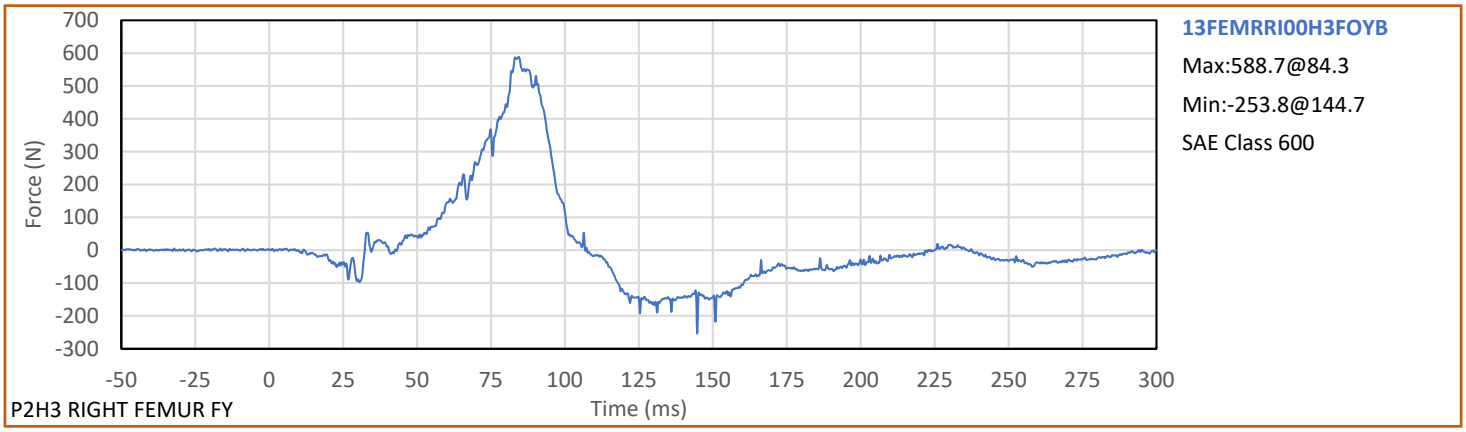

Force (N)
Time (ms)
P2H3 LEFT FEMUR FZ
13FEMRLE00H3FOZB
Max:1171.8@186.3
Min:-6163.3@90.6
SAE Class 600

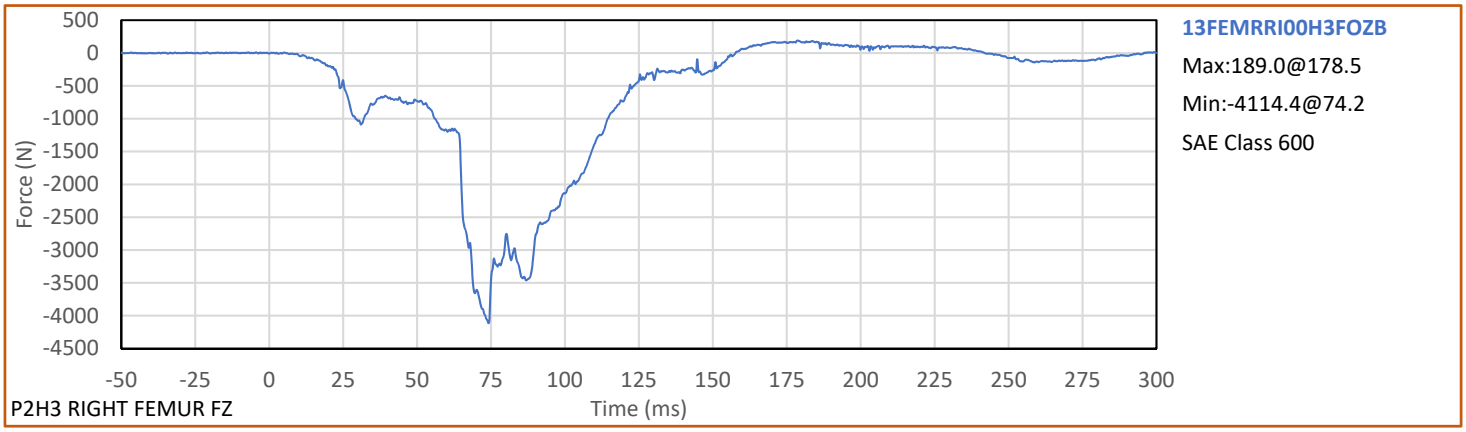

Moment (Nm)
Time (ms)
P2H3 LEFT FEMUR MX
13FEMRLE00H3MOXB
Max:44.4@151.4
Min:-134.4@95.5
SAE Class 600

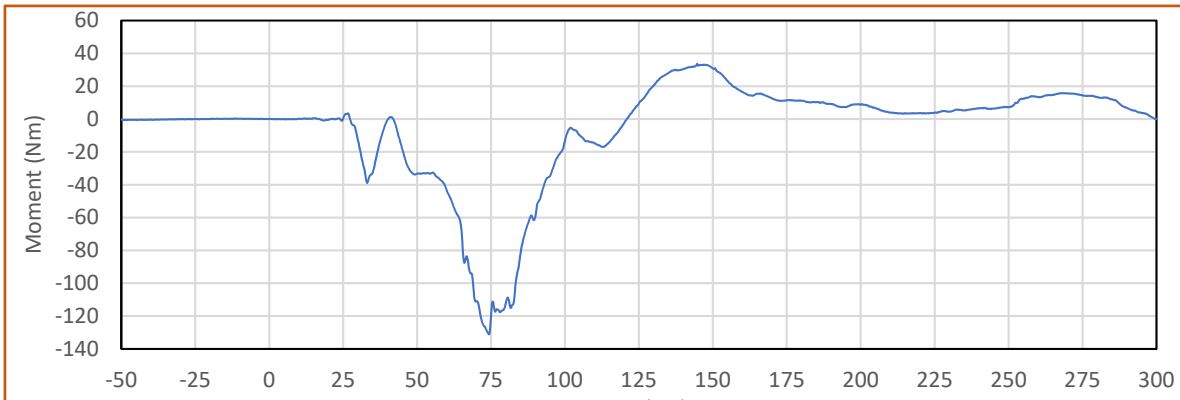

Moment (Nm)
Time (ms)
P2H3 LEFT FEMUR MY
13FEMRLE00H3MOYB
Max:270.0@104.6
Min:-8.0@295.4
SAE Class 600


Moment (Nm)
Time (ms)
P2H3 LEFT FEMUR MZ
13FEMRLE00H3MOZB
Max:162.6@111.3
Min:-9.8@209.1
SAE Class 600

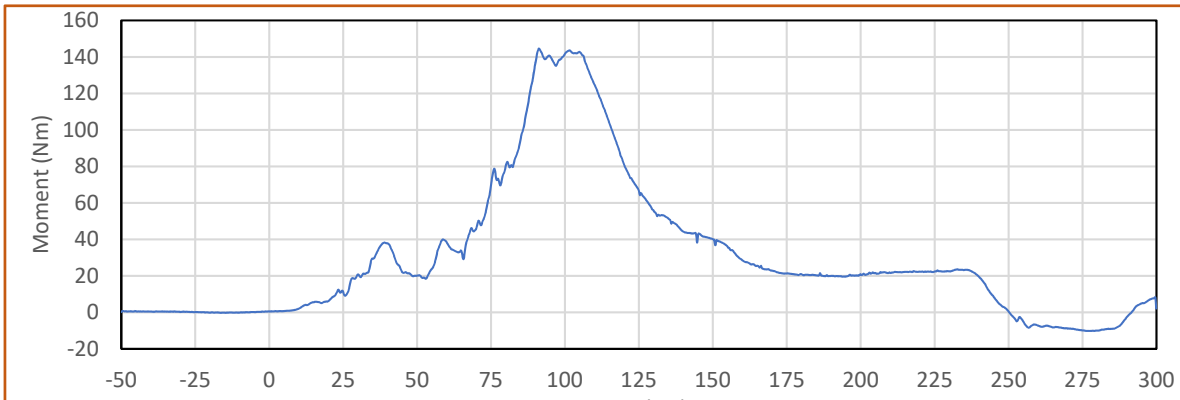

Force (N)
Time (ms)
P2H3 RIGHT FEMUR FX
13FEMRRI00H3FOXB
Max:1790.8@91.8
Min:-70.4@186.4
SAE Class 600


Force (N)
Time (ms)
P2H3 RIGHT FEMUR FY
13FEMRRI00H3FOYB
Max:588.7@84.3
Min:-253.8@144.7
SAE Class 600

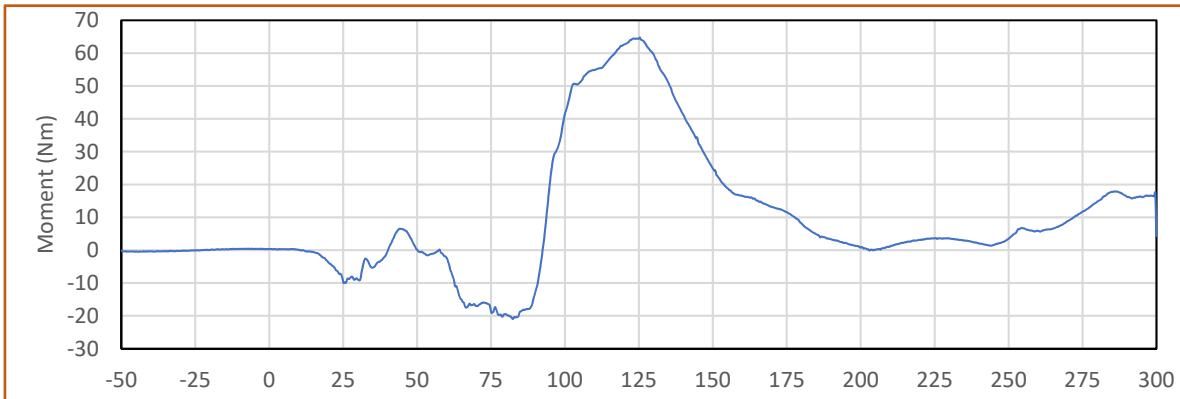

Force (N)
Time (ms)
P2H3 RIGHT FEMUR FZ
13FEMRRI00H3FOZB
Max:189.0@178.5
Min:-4114.4@74.2
SAE Class 600



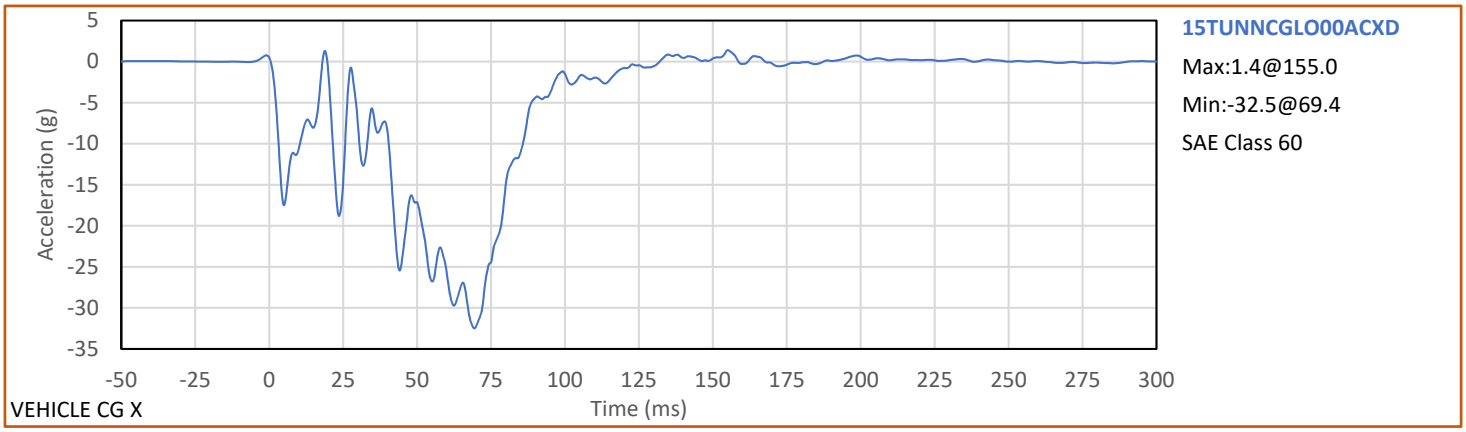
13FEMRRI00H3MOXB
Max:33.6@144.7
Min:-131.2@74.3
SAE Class 600

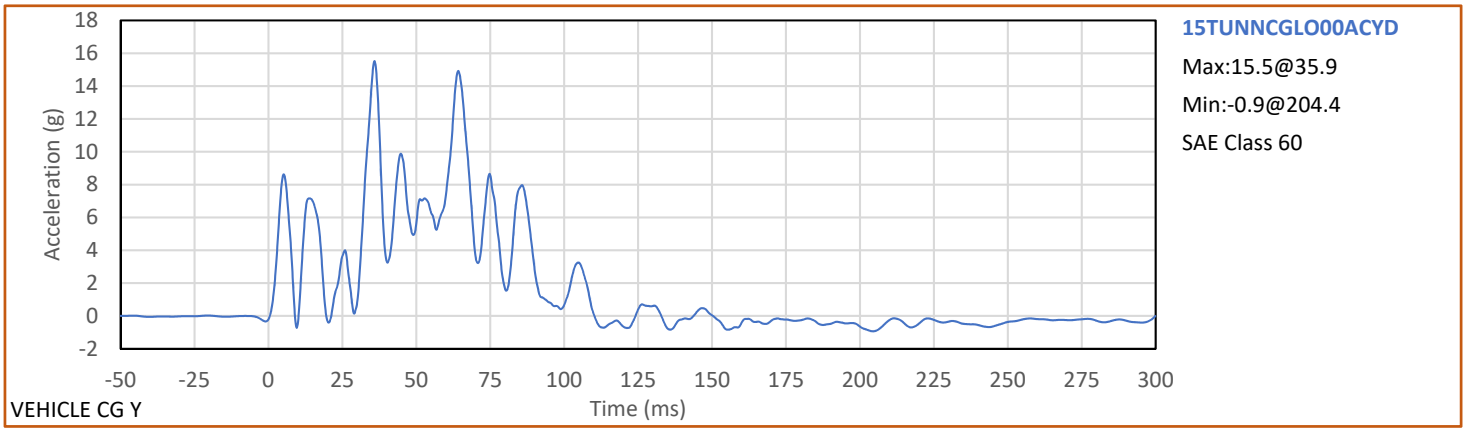


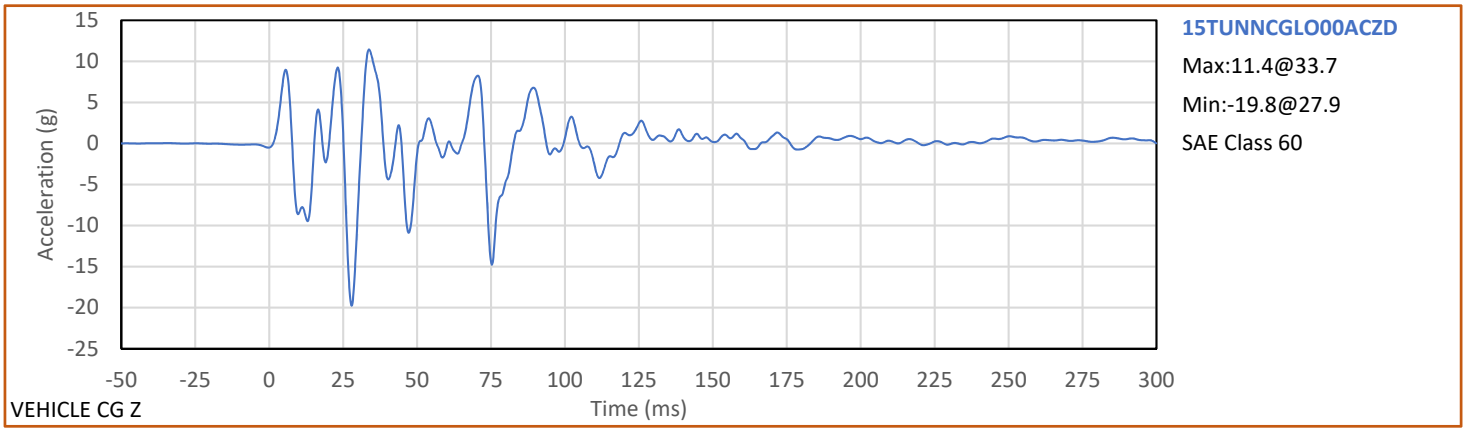
13FEMRRI00H3MOYB
Max:144.6@91.2
Min:-10.2@277.3
SAE Class 600

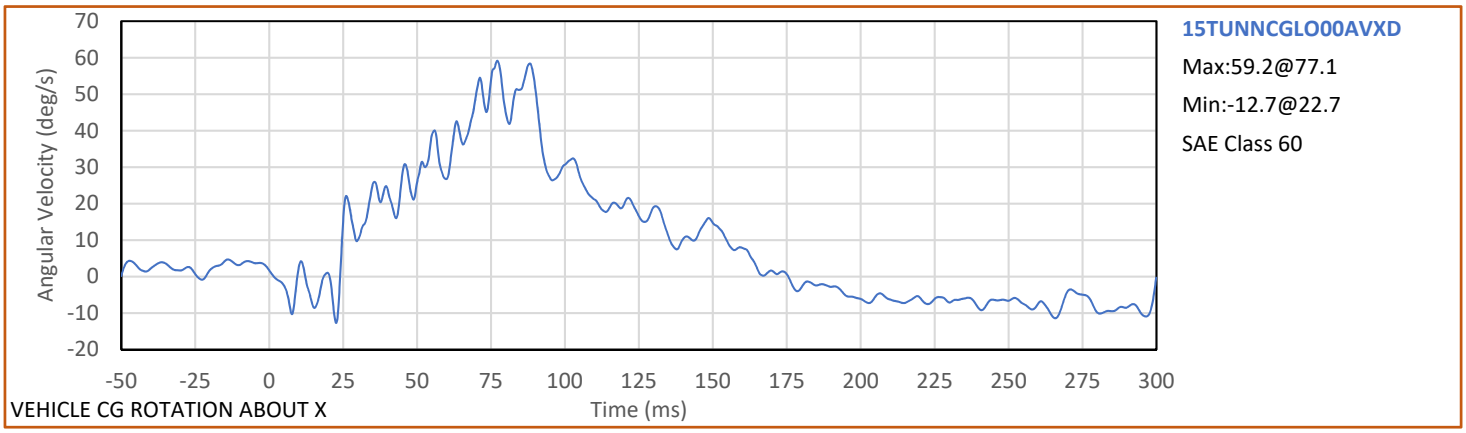


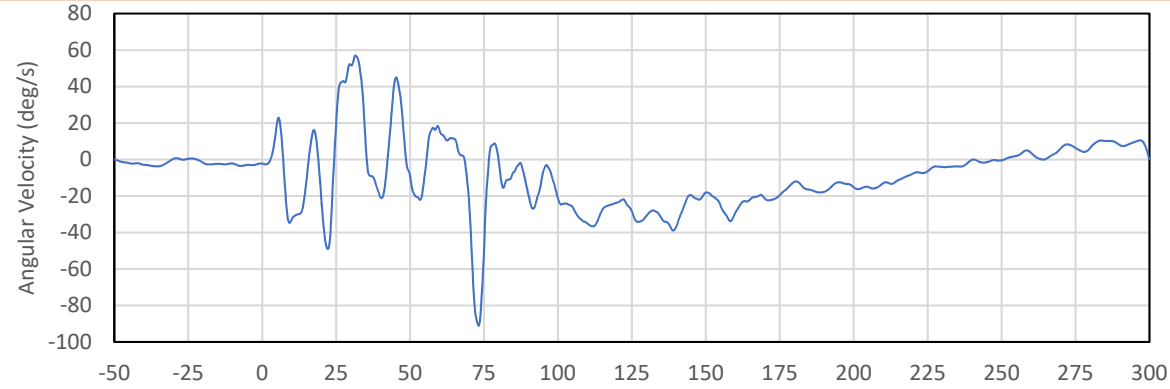
13FEMRRI00H3MOZB
Max:64.8@125.3
Min:-21.0@82.3
SAE Class 600


Acceleration (g)
Time (ms)
VEHICLE CG X
15TUNNCGLO00ACXD
Max:1.4@155.0
Min:-32.5@69.4
SAE Class 60

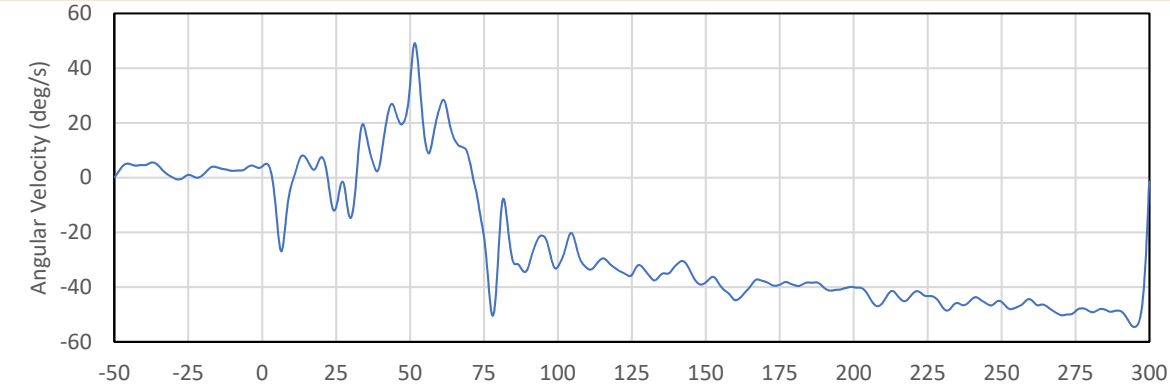

Acceleration (g)
Time (ms)
VEHICLE CG Y
15TUNNCGLO00ACYD
Max:15.5@35.9
Min:-0.9@204.4
SAE Class 60


Acceleration (g)
Time (ms)
VEHICLE CG Z
15TUNNCGLO00ACZD
Max:11.4@33.7
Min:-19.8@27.9
SAE Class 60

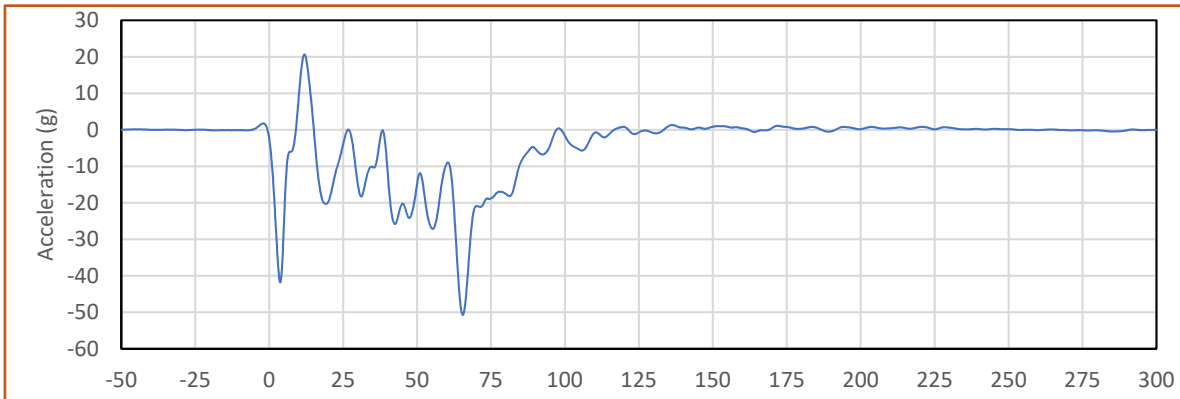

Angular Velocity (deg/s)
Time (ms)
VEHICLE CG ROTATION ABOUT X
15TUNNCGLO00AVXD
Max:59.2@77.1
Min:-12.7@22.7
SAE Class 60



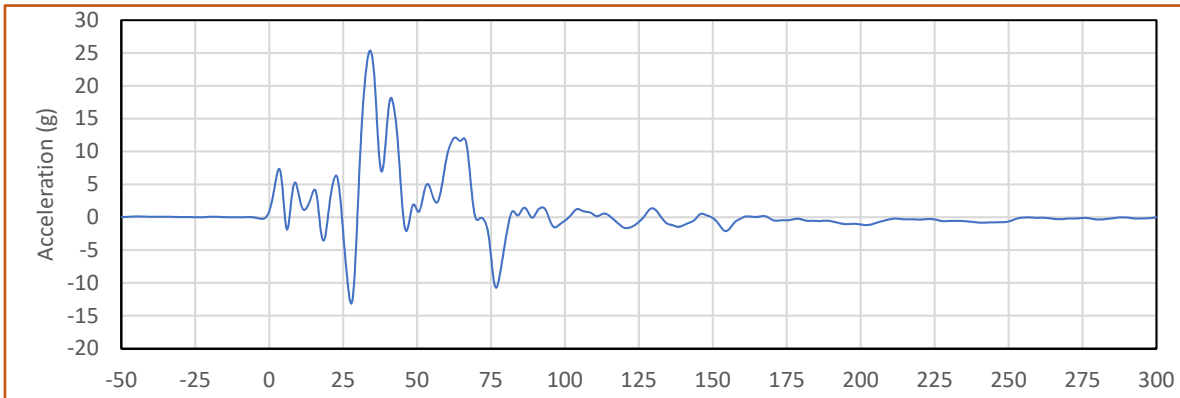
15TUNNCGLO00AVYD
Max:57.0@31.5
Min:-91.2@73.2
SAE Class 60
VEHICLE CG ROTATION ABOUT Y



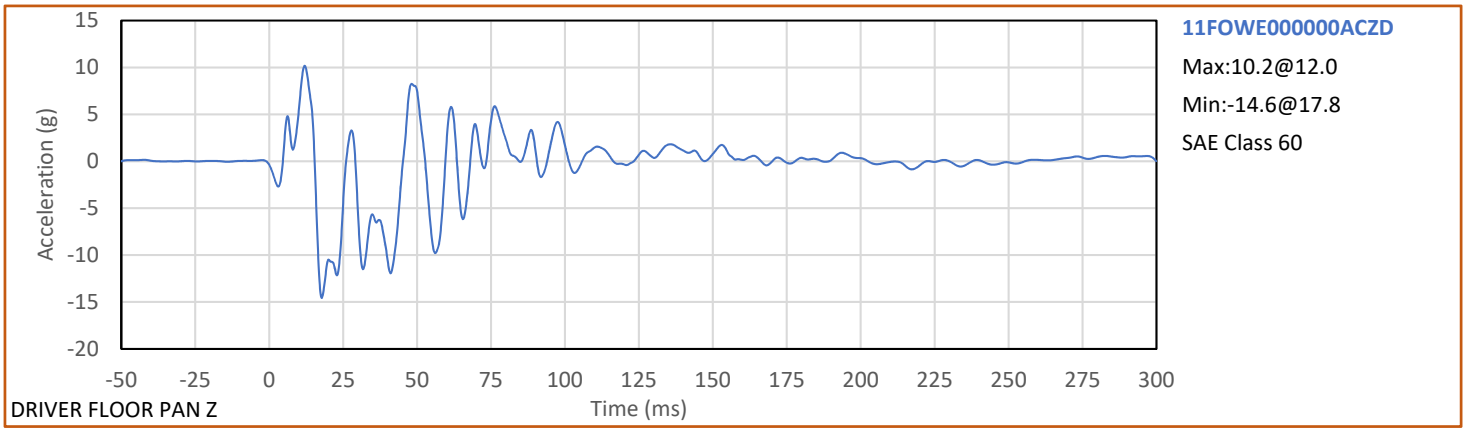
15TUNNCGLO00AVZD
Max:49.2@51.6
Min:-54.6@294.9
SAE Class 60
VEHICLE CG ROTATION ABOUT Z

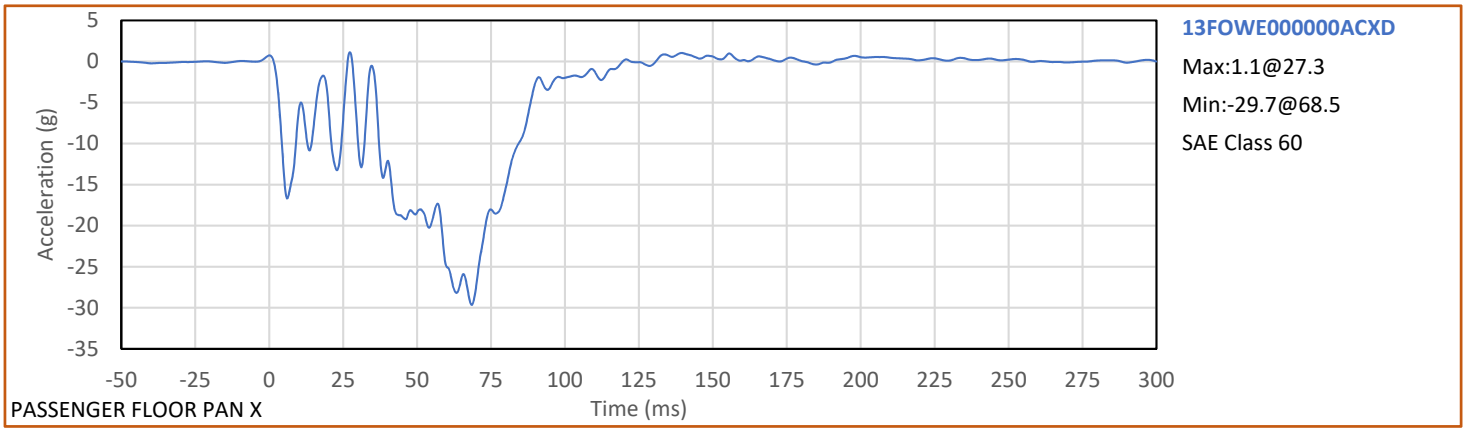


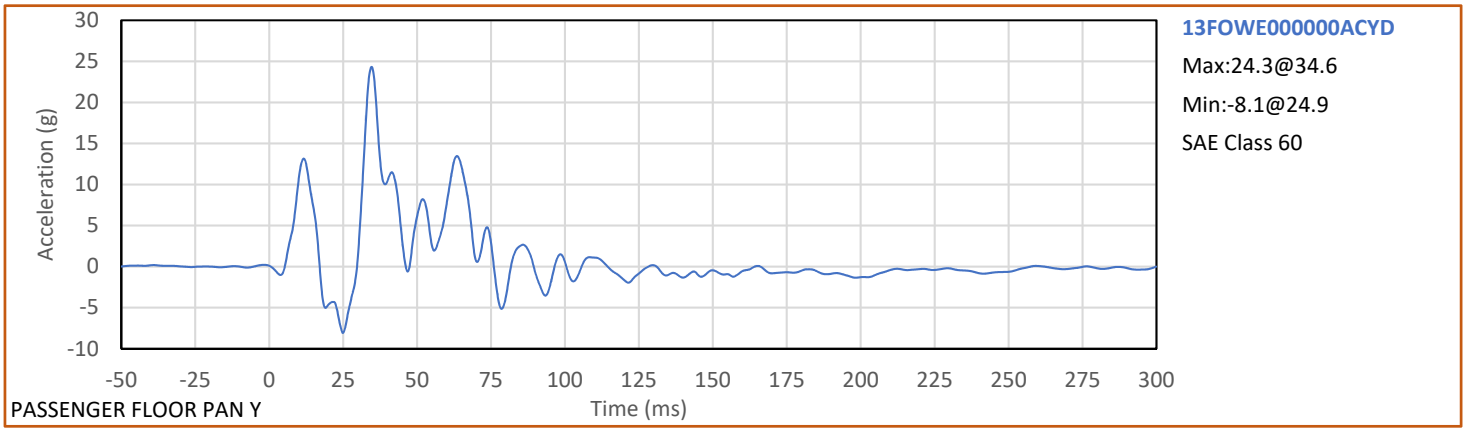
11FOWE000000ACXD
Max:20.7@11.9
Min:-50.8@65.5
SAE Class 60
DRIVER FLOOR PAN X

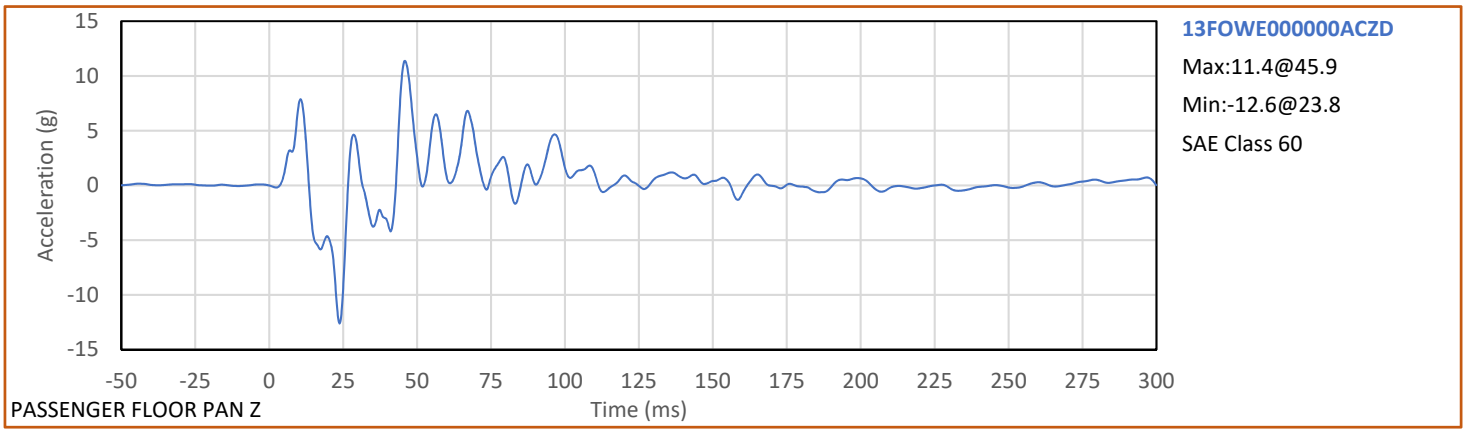


11FOWE000000ACYD
Max:25.4@34.1
Min:-13.2@27.7
SAE Class 60
DRIVER FLOOR PAN Y


11FOWE000000ACZD
Max:10.2@12.0
Min:-14.6@17.8
SAE Class 60
Acceleration (g)
Time (ms)
DRIVER FLOOR PAN Z


13FOWE000000ACXD
Max:1.1@27.3
Min:-29.7@68.5
SAE Class 60
Acceleration (g)
Time (ms)
PASSENGER FLOOR PAN X


13FOWE000000ACYD
Max:24.3@34.6
Min:-8.1@24.9
SAE Class 60
Acceleration (g)
Time (ms)
PASSENGER FLOOR PAN Y

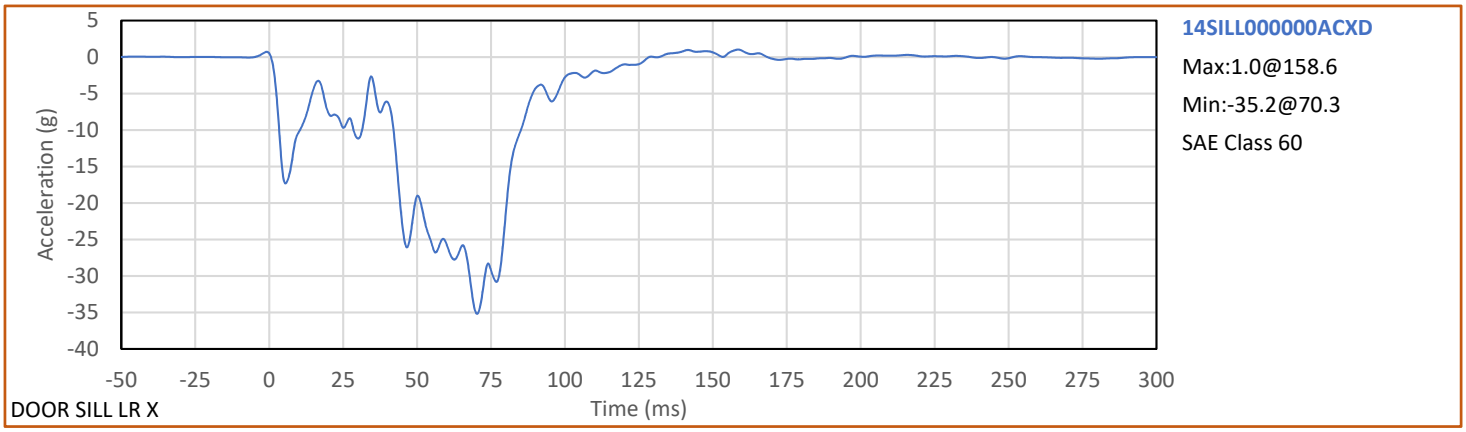

13FOWE000000ACZD
Max:11.4@45.9
Min:-12.6@23.8
SAE Class 60
Acceleration (g)
Time (ms)
PASSENGER FLOOR PAN Z

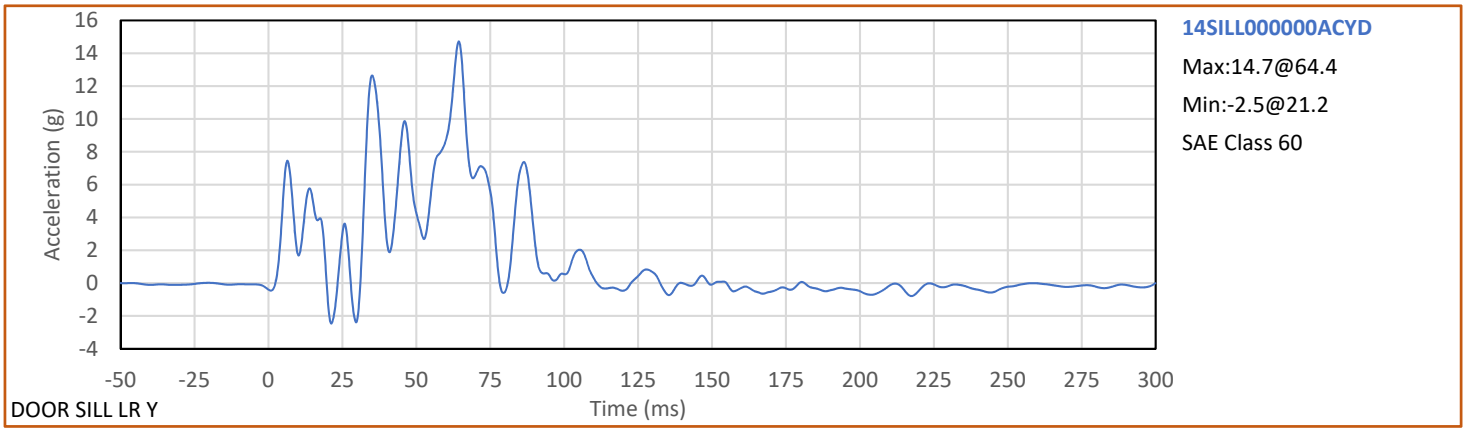
Test Vehicle: 2020 Honda Accord 4-Door Sedan

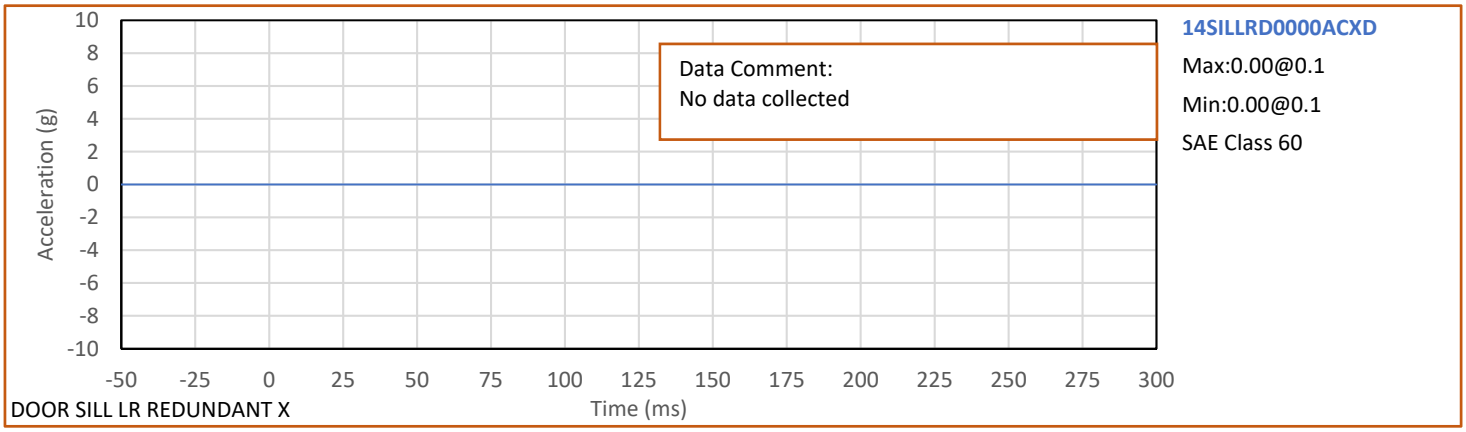
Test Program: Left Side 30° Frontal Rigid Barrier Impact

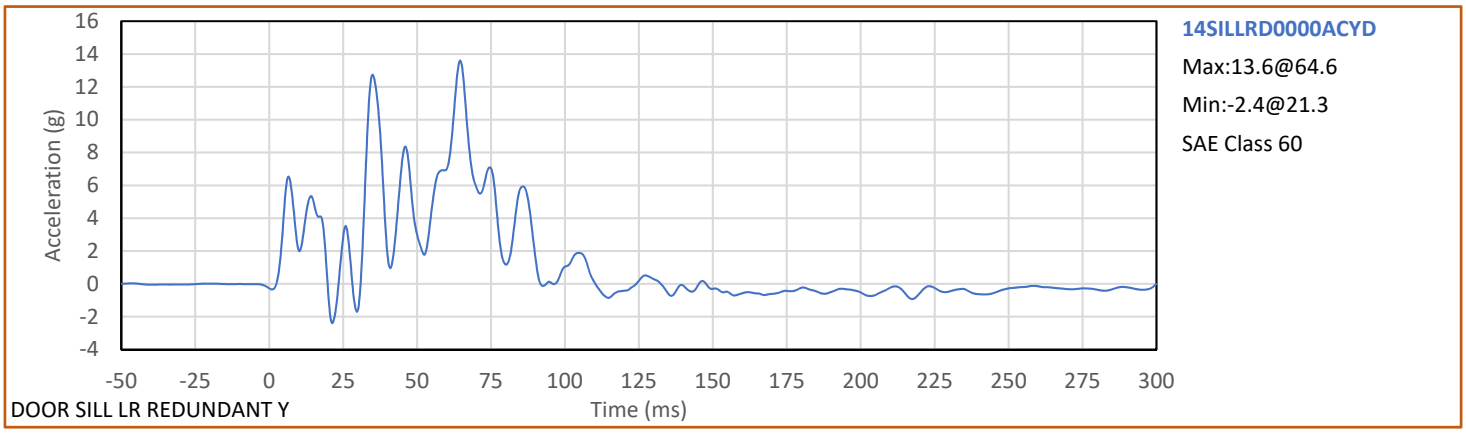
NHTSA No.: R20205378

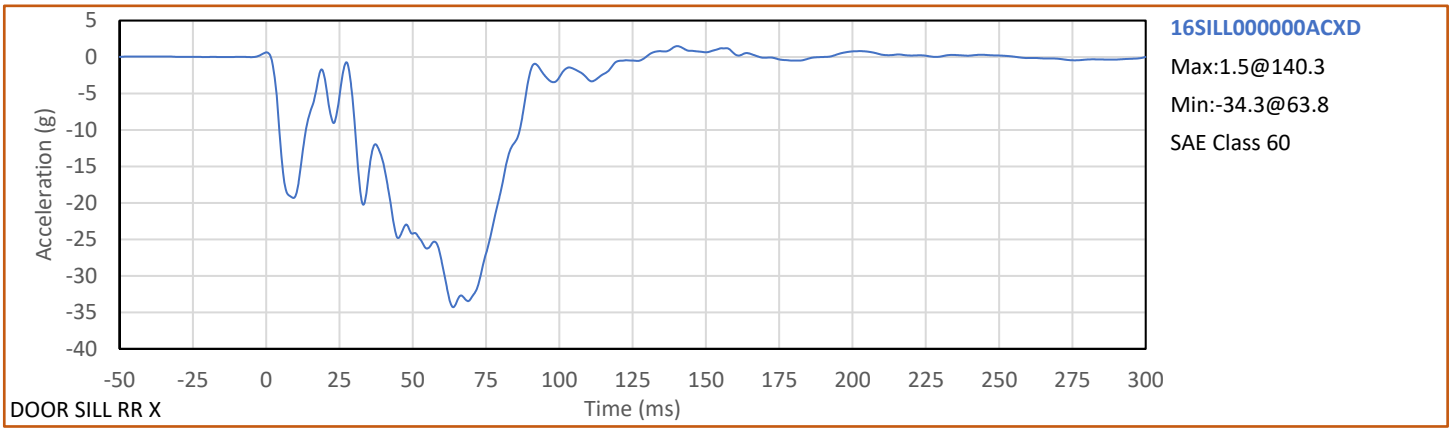
Test Date: 9/9/2020

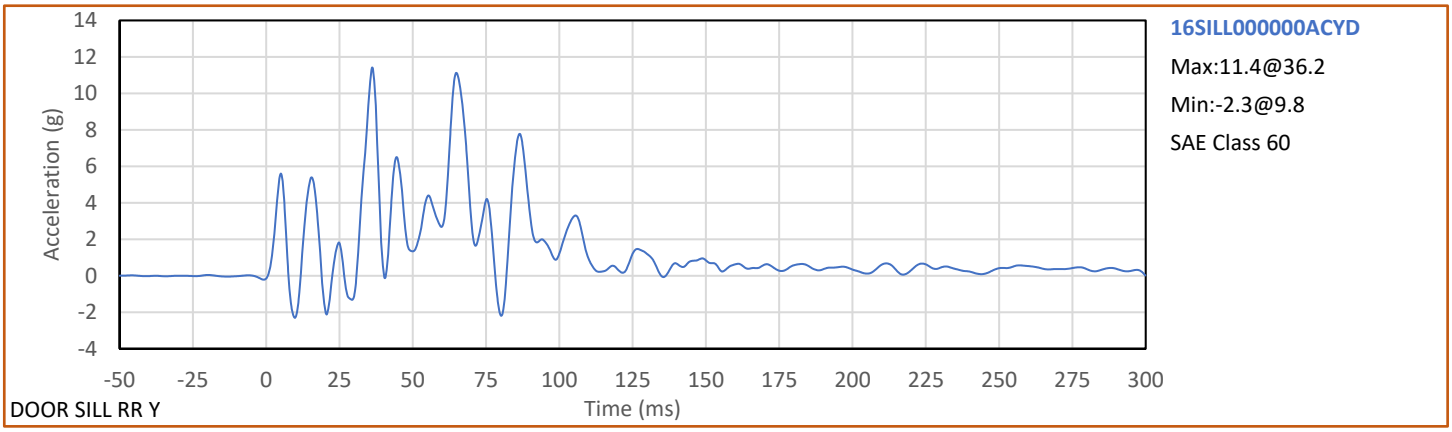


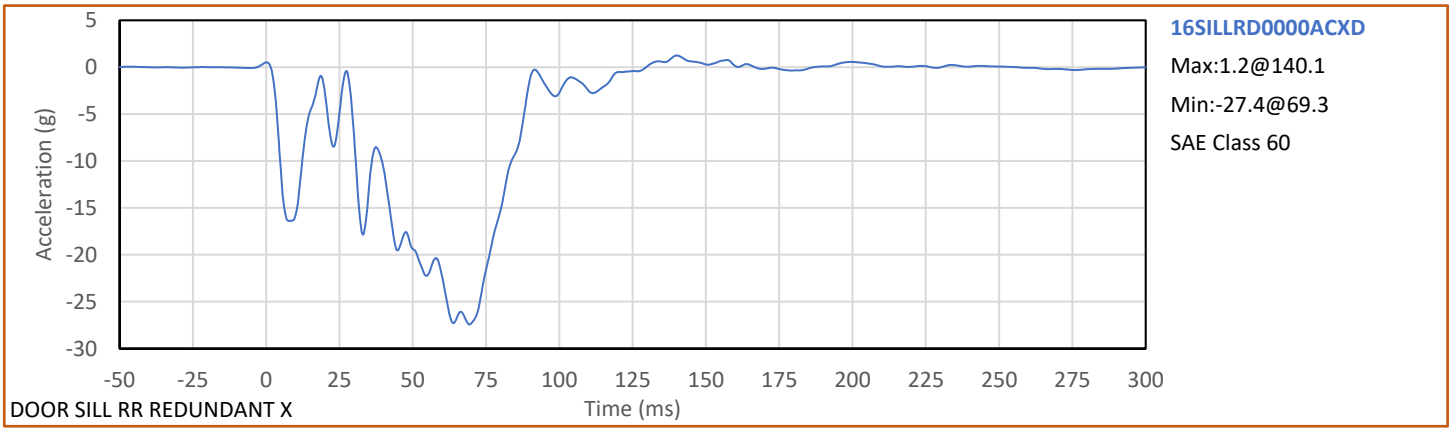


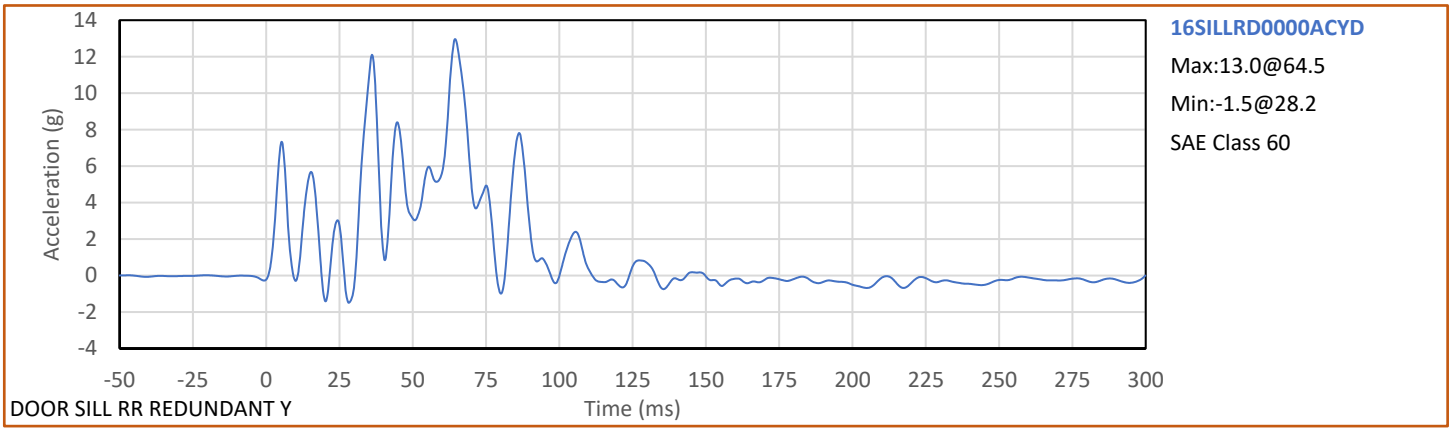


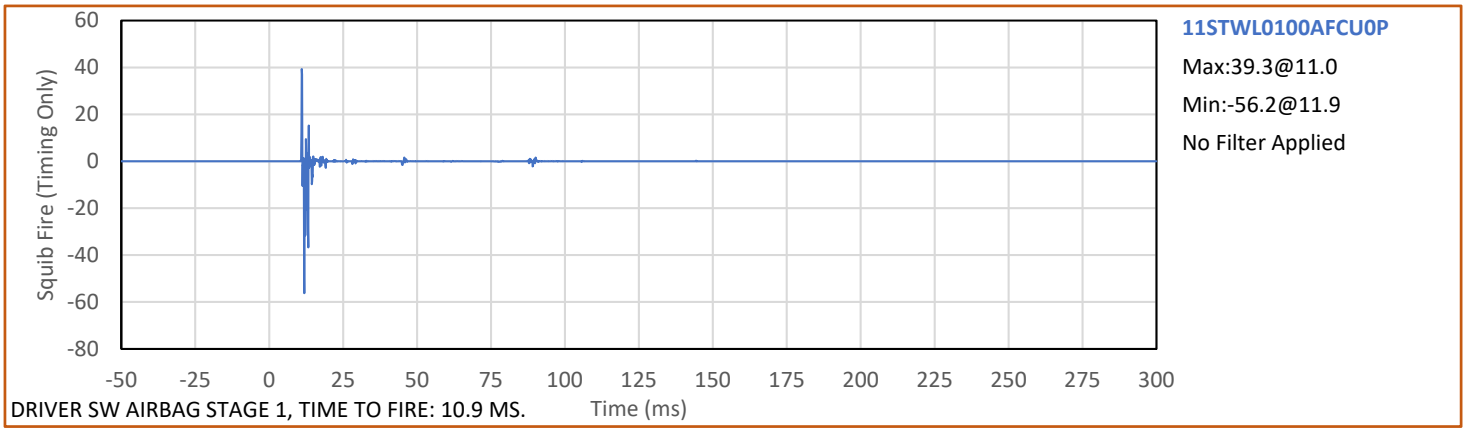



Acceleration (g)
Time (ms)
16SILL000000ACXD
Max:1.5@140.3
Min:-34.3@63.8
SAE Class 60
DOOR SILL RR X

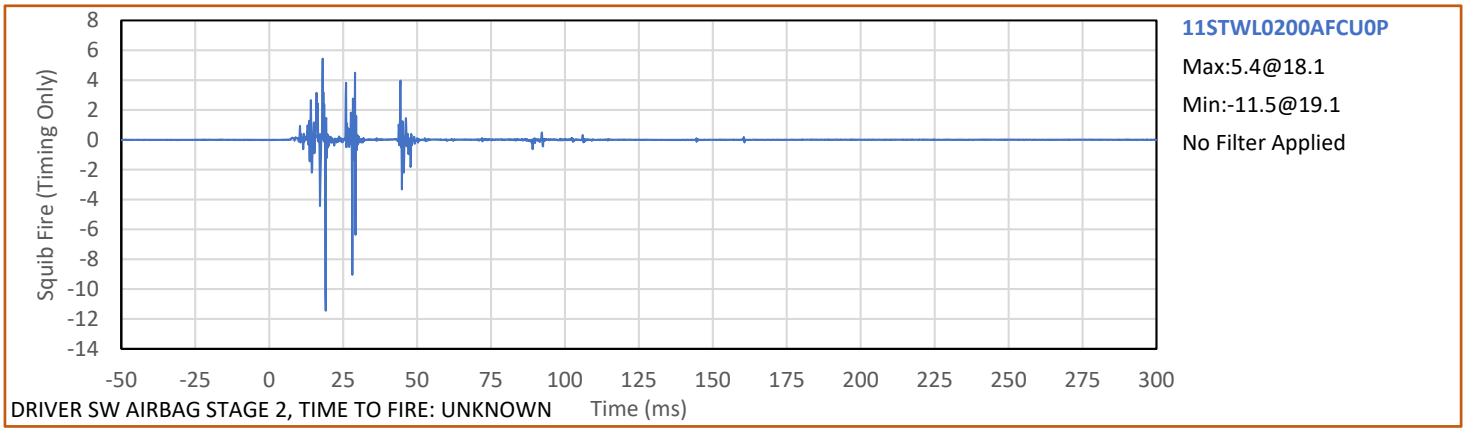

Acceleration (g)
Time (ms)
16SILL000000ACYD
Max:11.4@36.2
Min:-2.3@9.8
SAE Class 60
DOOR SILL RR Y


Acceleration (g)
Time (ms)
16SILLRD0000ACXD
Max:1.2@140.1
Min:-27.4@69.3
SAE Class 60
DOOR SILL RR REDUNDANT X

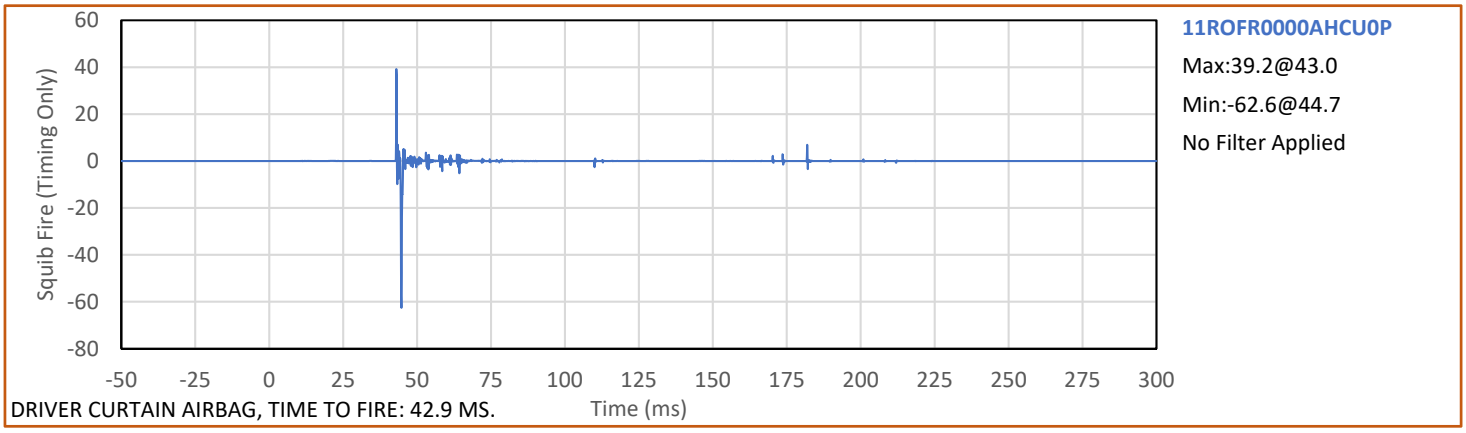

Acceleration (g)
Time (ms)
16SILLRD0000ACYD
Max:13.0@64.5
Min:-1.5@28.2
SAE Class 60
DOOR SILL RR REDUNDANT Y



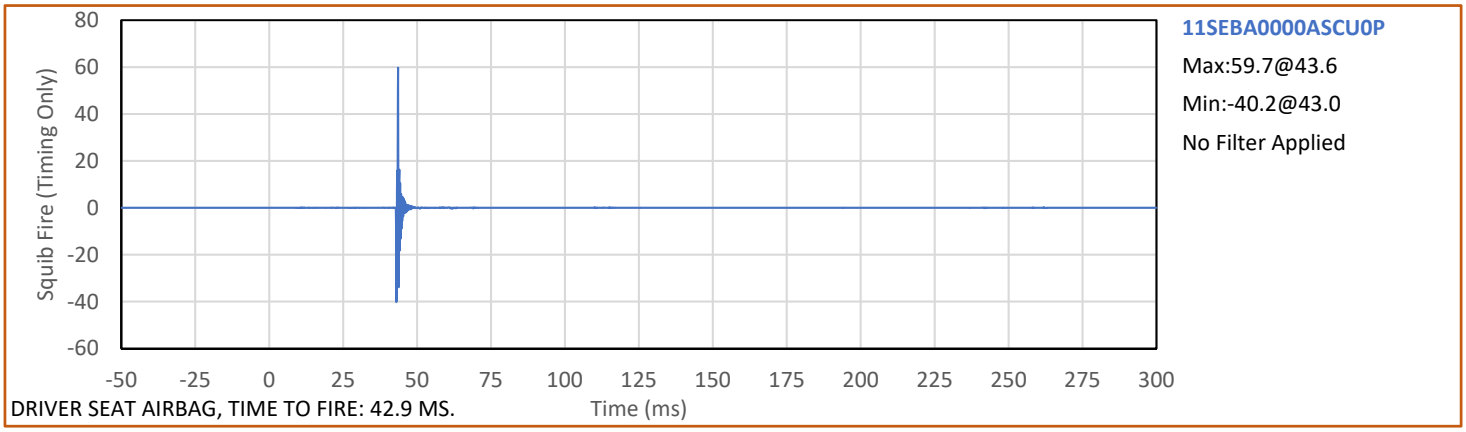
DRIVER SW AIRBAG STAGE 1, TIME TO FIRE: 10.9 MS.



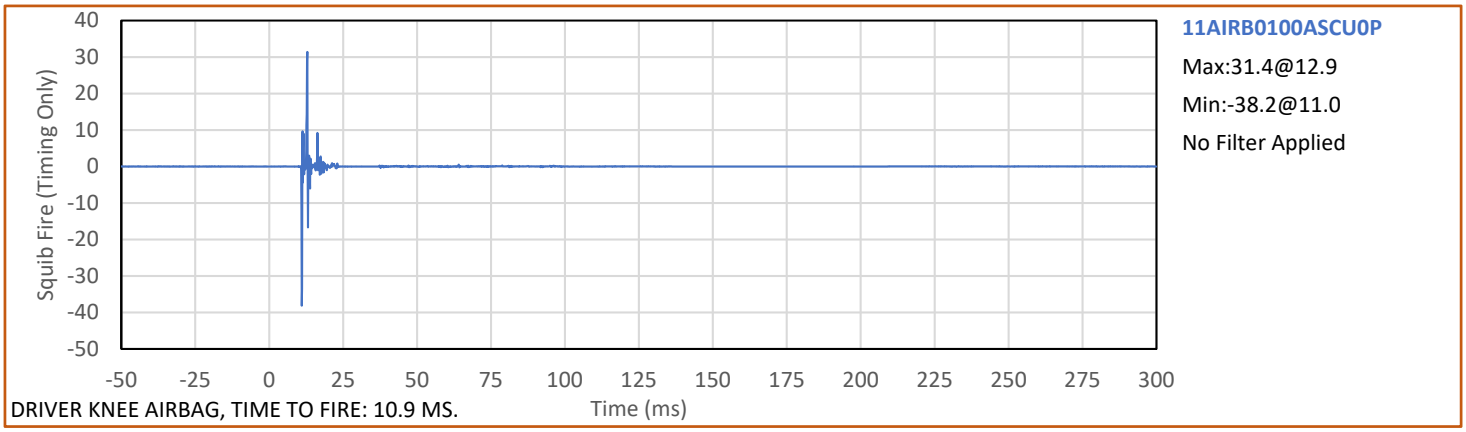
DRIVER SW AIRBAG STAGE 2, TIME TO FIRE: UNKNOWN



DRIVER CURTAIN AIRBAG, TIME TO FIRE: 42.9 MS.

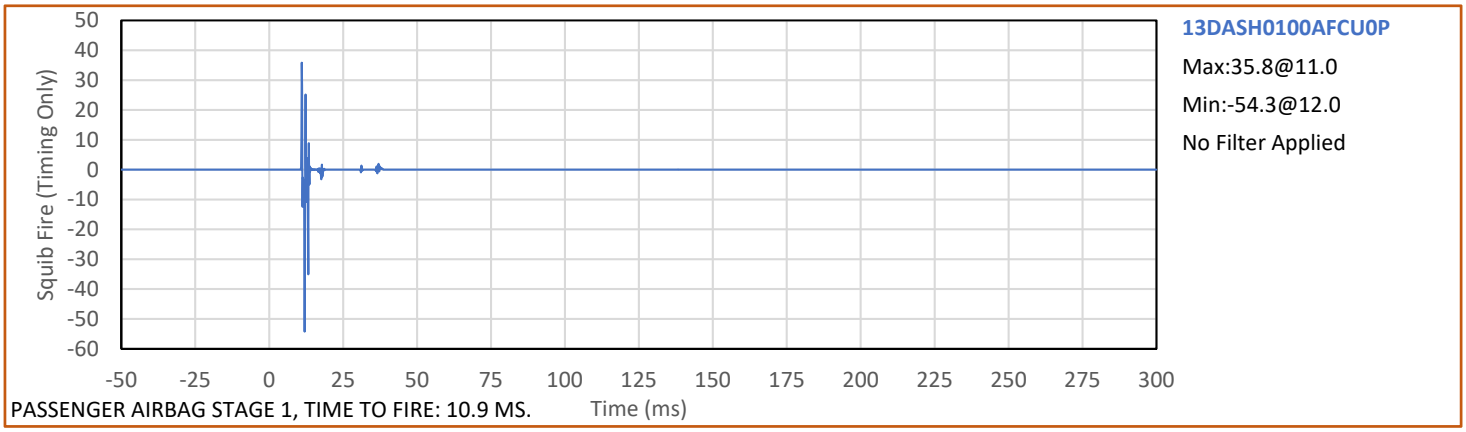


DRIVER SEAT AIRBAG, TIME TO FIRE: 42.9 MS.



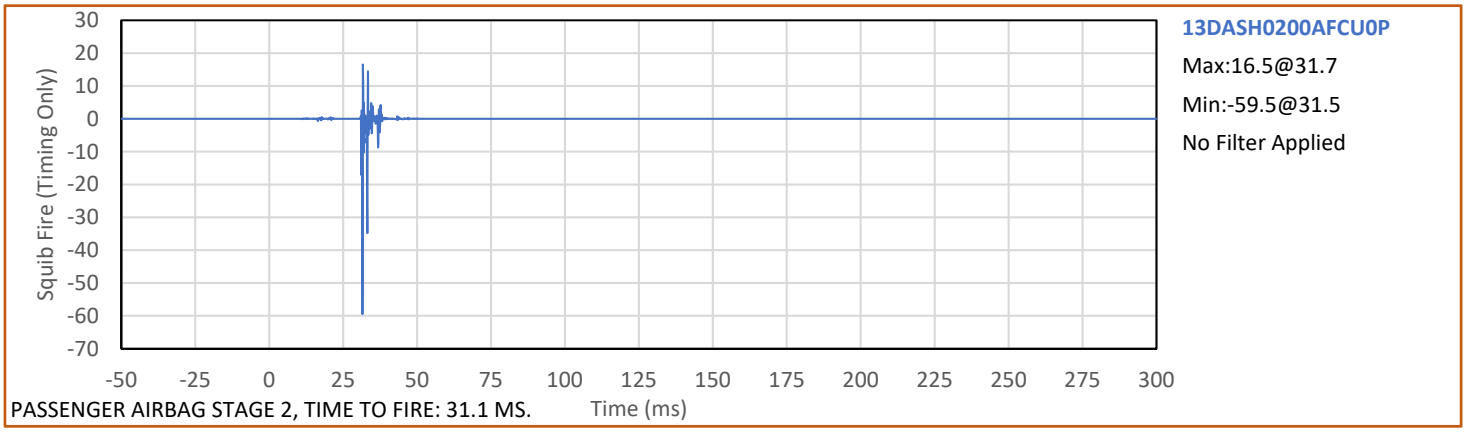
11AIRB0100ASCU0P
Max:31.4@12.9
Min:-38.2@11.0
No Filter Applied

DRIVER KNEE AIRBAG, TIME TO FIRE: 10.9 MS.



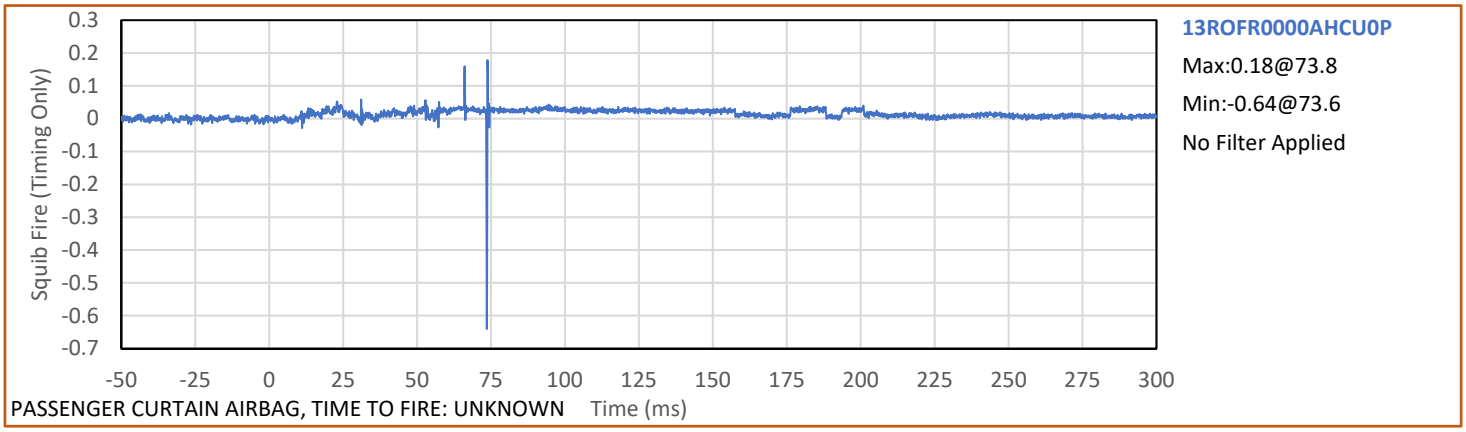
13DASH0100AFCU0P
Max:35.8@11.0
Min:-54.3@12.0
No Filter Applied

PASSENGER AIRBAG STAGE 1, TIME TO FIRE: 10.9 MS.



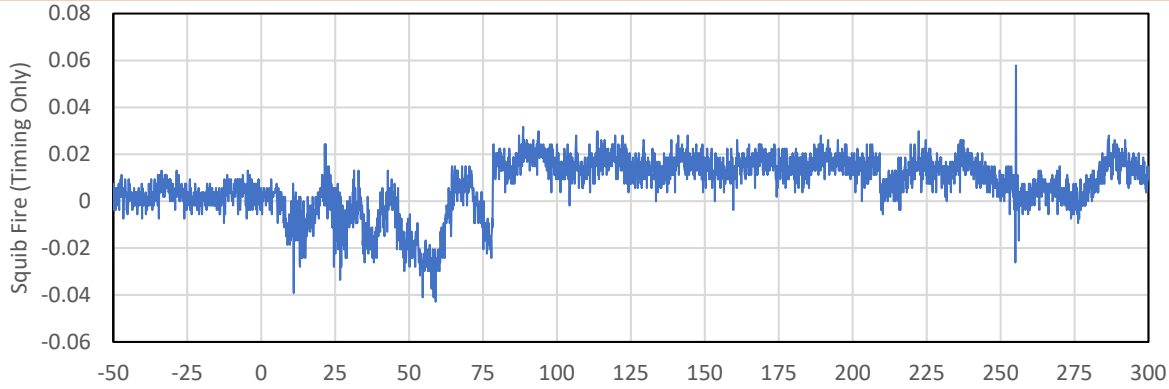
13DASH0200AFCU0P
Max:16.5@31.7
Min:-59.5@31.5
No Filter Applied

PASSENGER AIRBAG STAGE 2, TIME TO FIRE: 31.1 MS.



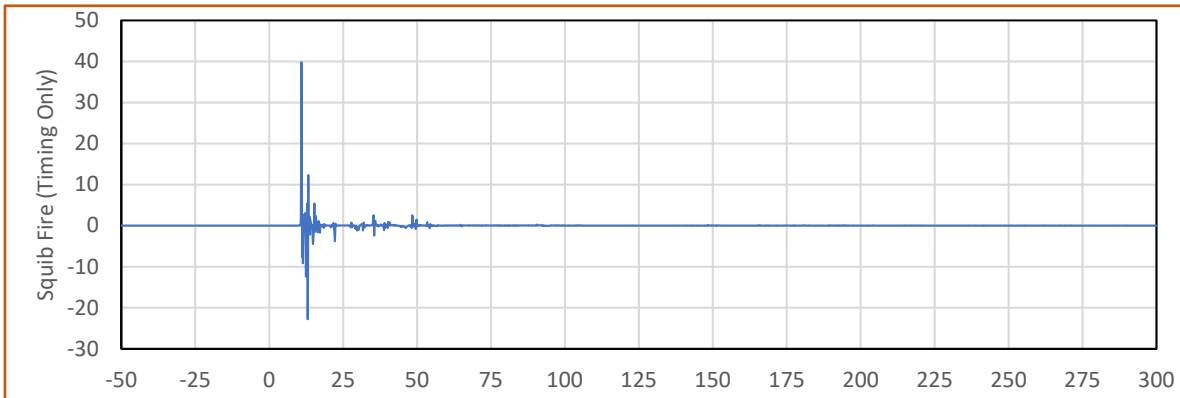
13ROFR0000AHCU0P
Max:0.18@73.8
Min:-0.64@73.6
No Filter Applied

PASSENGER CURTAIN AIRBAG, TIME TO FIRE: UNKNOWN



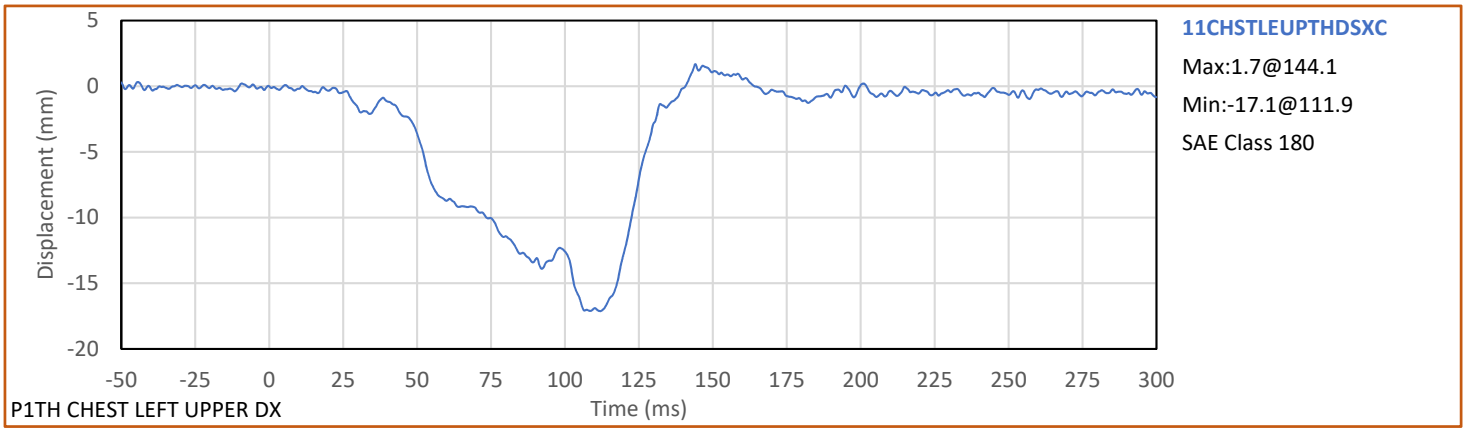
13SEBA0000ASCU0P
Max:0.06@255.2
Min:-0.04@59.0
No Filter Applied

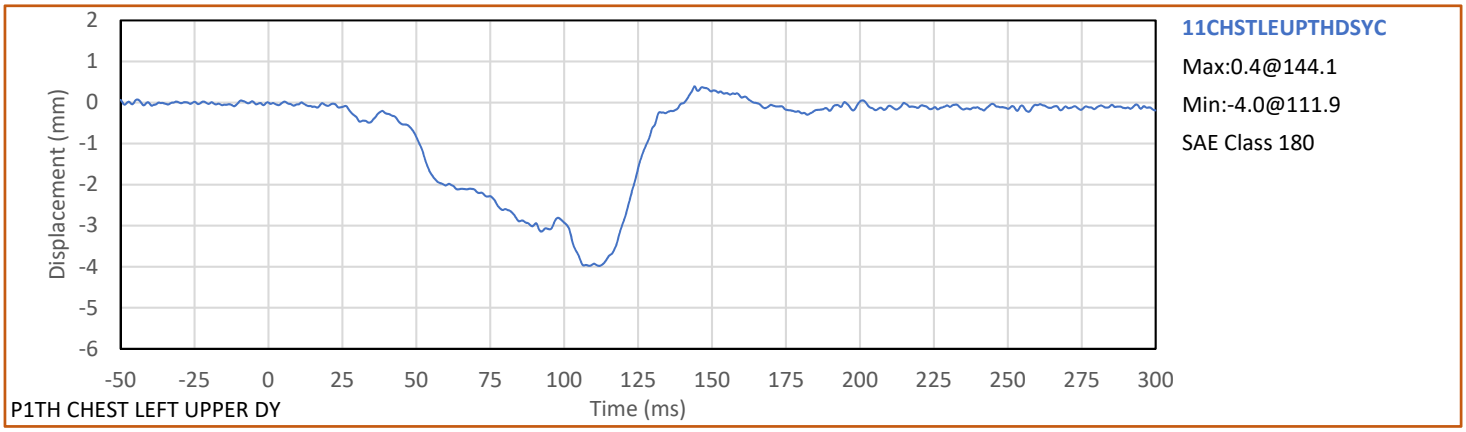
PASSENGER SEAT AIRBAG, TIME TO FIRE: UNKNOWN

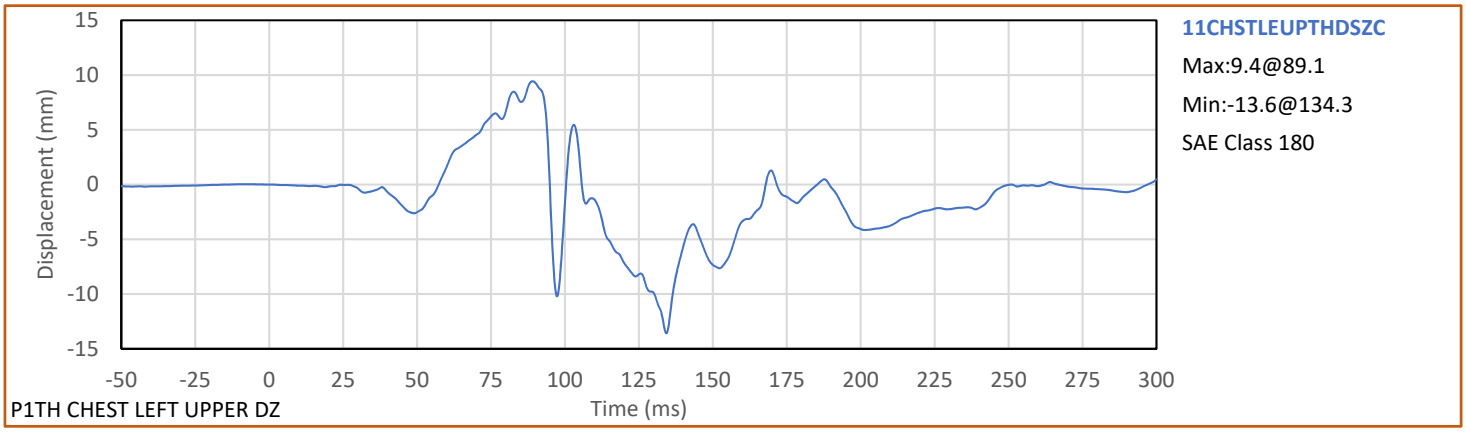


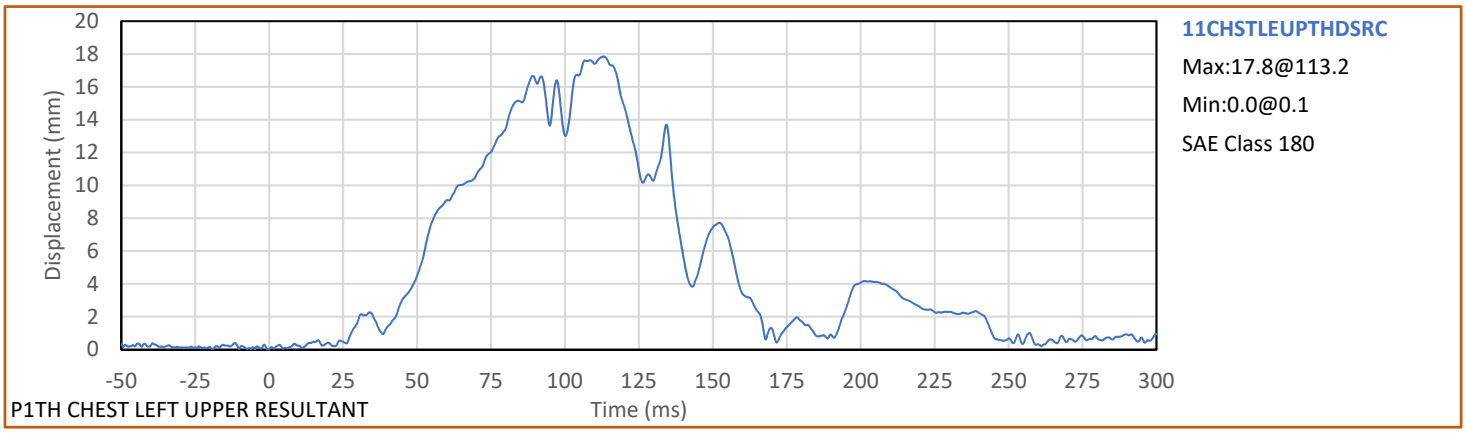
13AIRB0100ASCU0P
Max:39.8@10.9
Min:-22.8@13.0
No Filter Applied

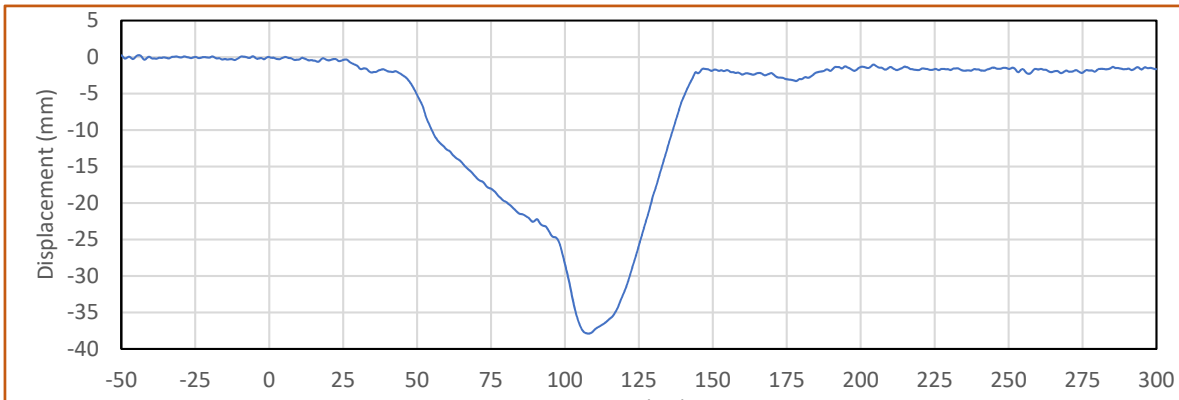
PASSENGER KNEE AIRBAG, TIME TO FIRE: 10.9 MS.


Displacement (mm)
Time (ms)
P1TH CHEST LEFT UPPER DX
11CHSTLEUPTHDSXC
Max:1.7@144.1
Min:-17.1@111.9
SAE Class 180


Displacement (mm)
Time (ms)
P1TH CHEST LEFT UPPER DY
11CHSTLEUPTHDSYC
Max:0.4@144.1
Min:-4.0@111.9
SAE Class 180

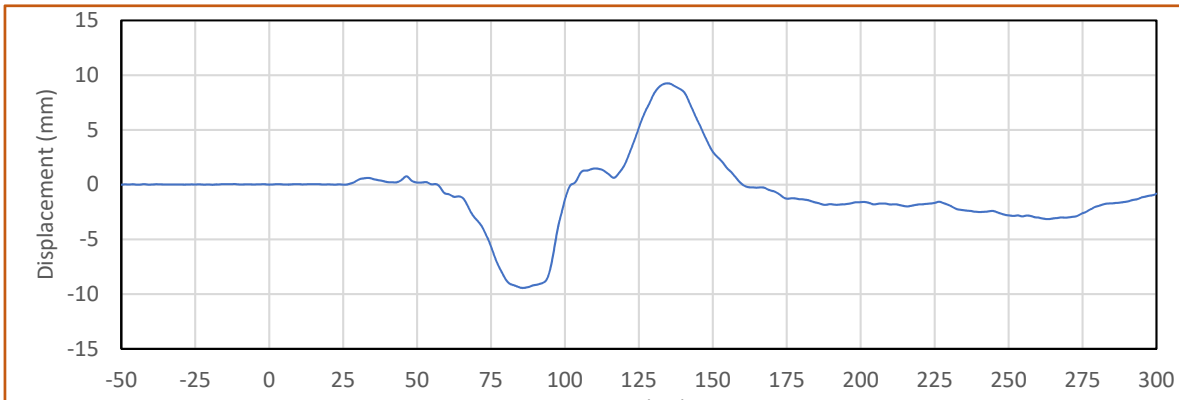

Displacement (mm)
Time (ms)
P1TH CHEST LEFT UPPER DZ
11CHSTLEUPTHDSZC
Max:9.4@89.1
Min:-13.6@134.3
SAE Class 180


Displacement (mm)
Time (ms)
P1TH CHEST LEFT UPPER RESULTANT
11CHSTLEUPTHDSRC
Max:17.8@113.2
Min:0.0@0.1
SAE Class 180



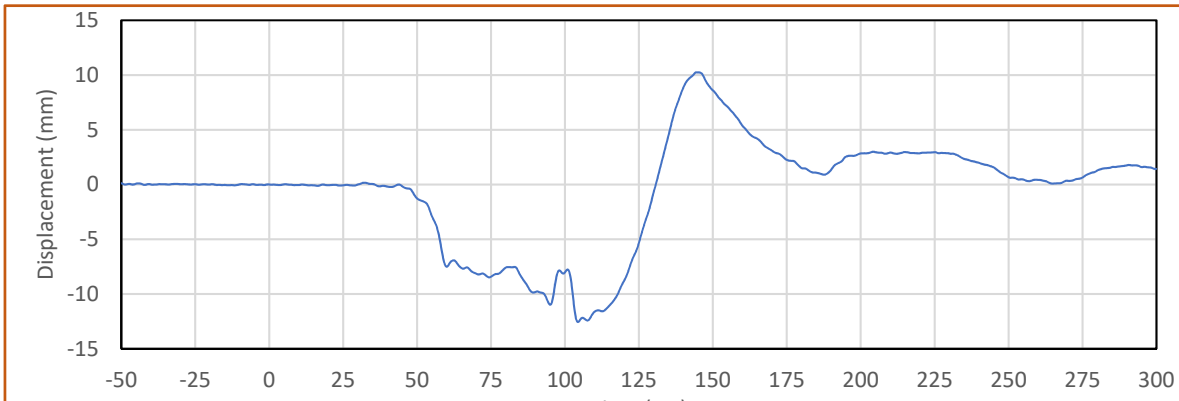
P1TH CHEST RIGHT UPPER DX

11CHSTRIUPTHDSXC
Max:0.0@5.5
Min:-37.9@108.0
SAE Class 180



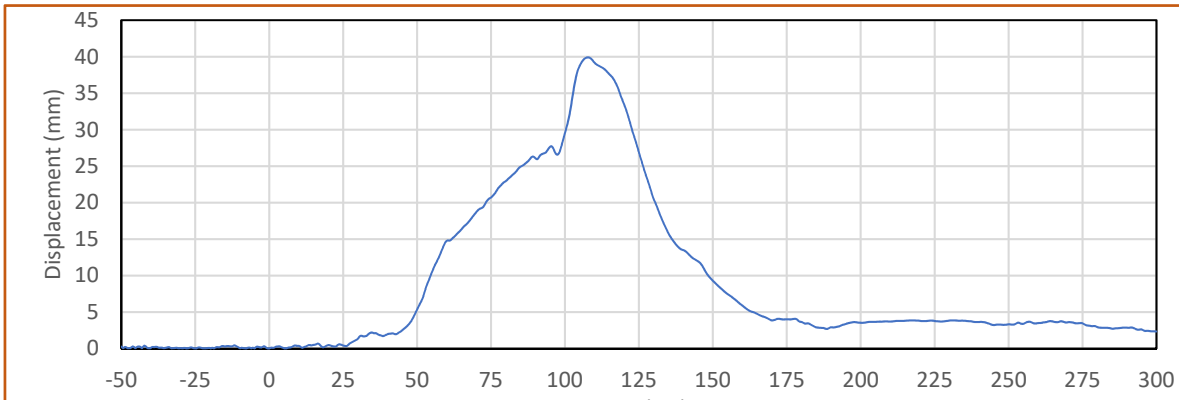
P1TH CHEST RIGHT UPPER DY

11CHSTRIUPTHDSYC
Max:9.3@134.7
Min:-9.4@85.7
SAE Class 180



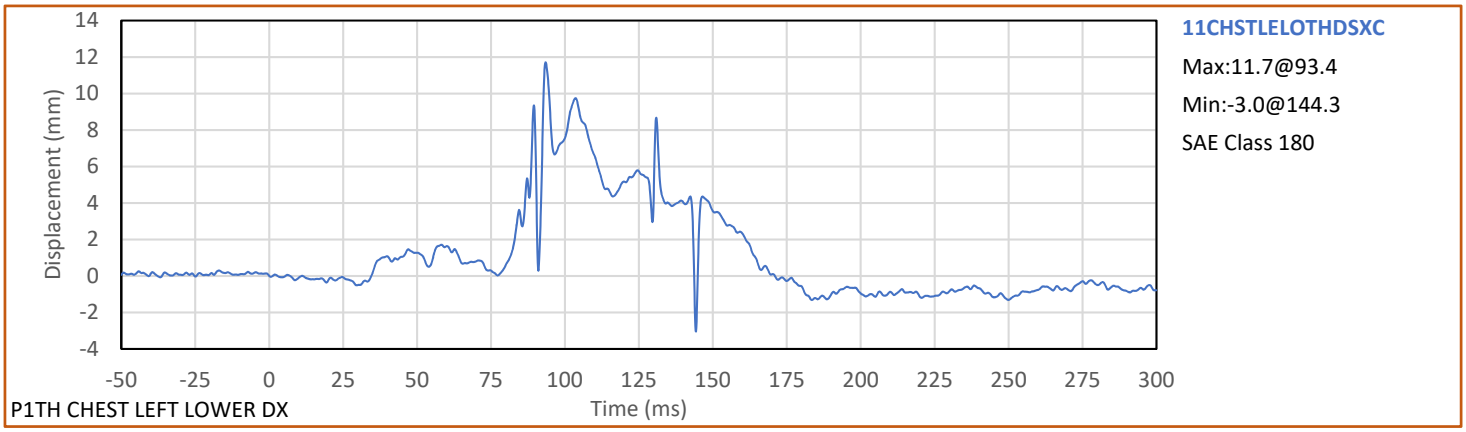
P1TH CHEST RIGHT UPPER DZ

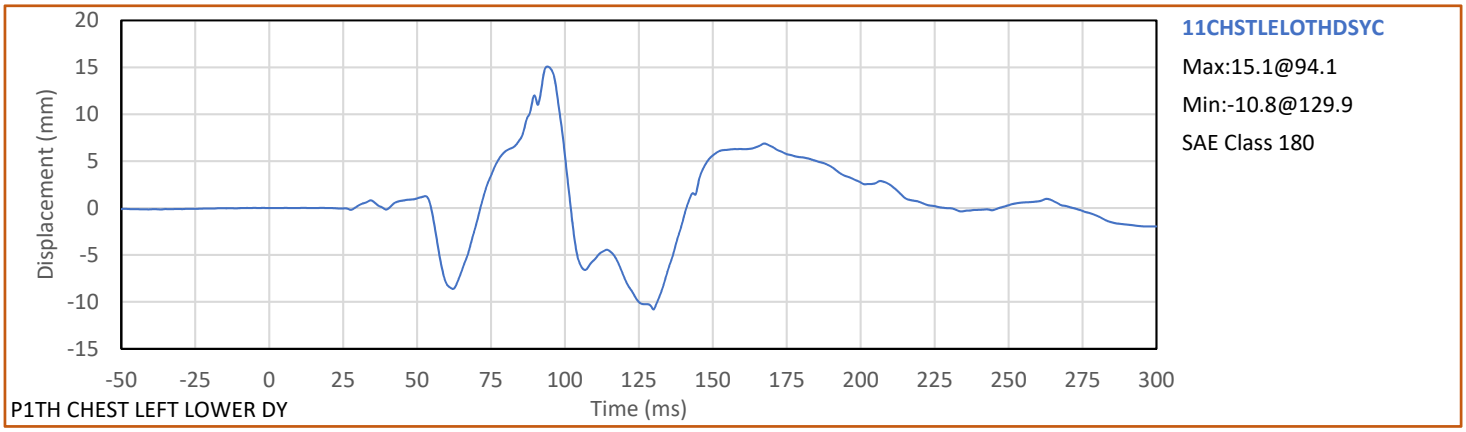
11CHSTRIUPTHDSZC
Max:10.2@144.4
Min:-12.6@104.4
SAE Class 180

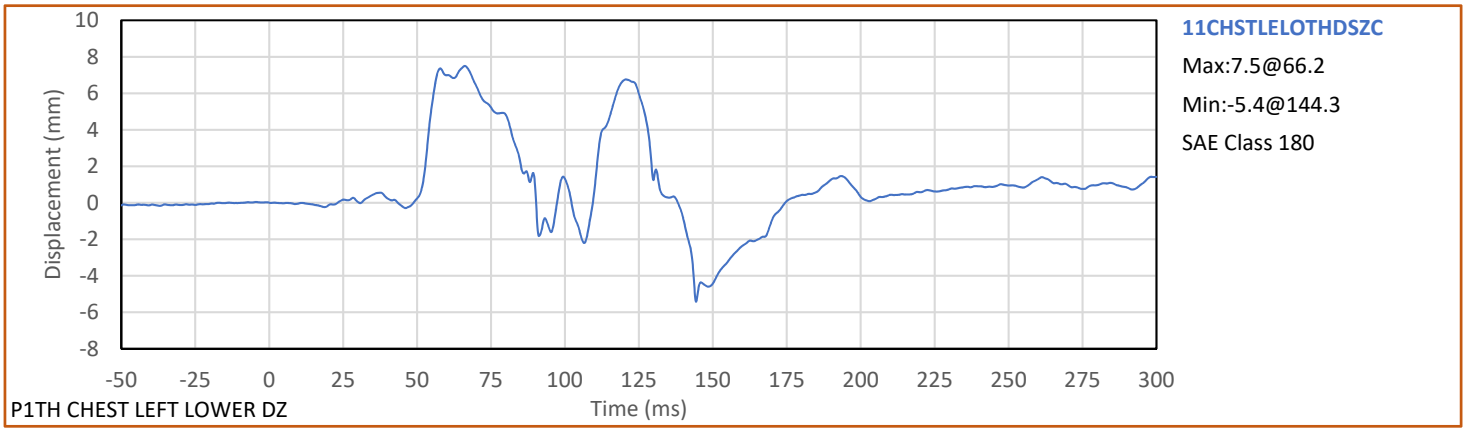


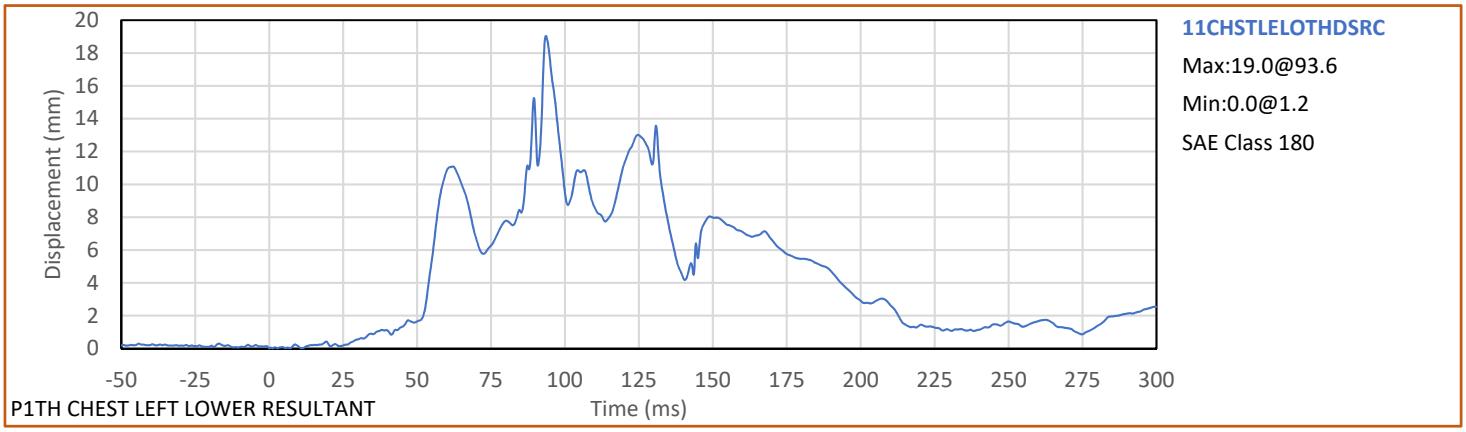
P1TH CHEST RIGHT UPPER RESULTANT

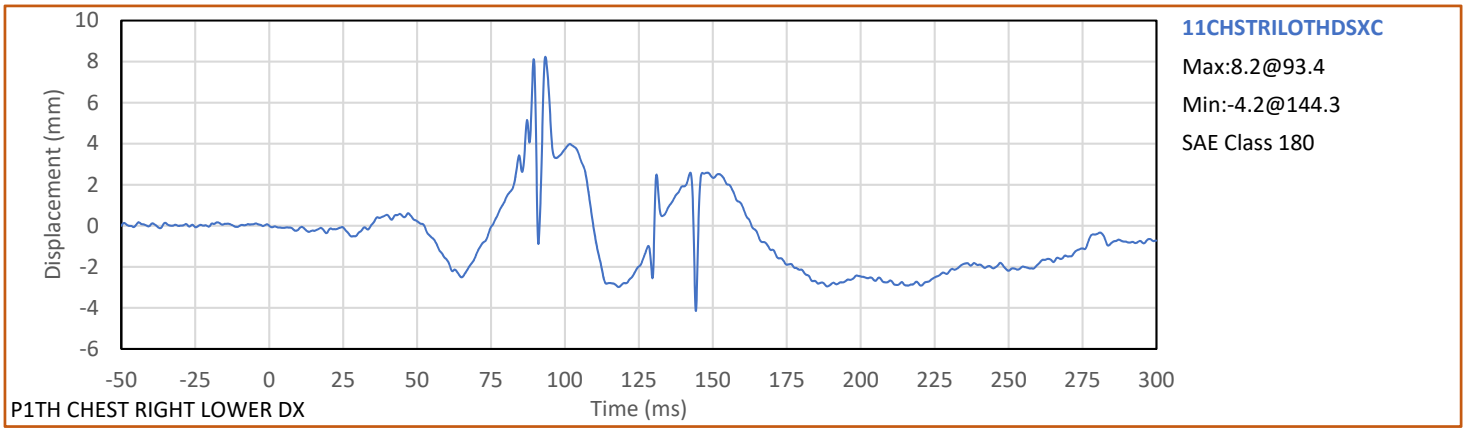
11CHSTRIUPTHDSRC
Max:39.9@107.8
Min:0.0@0.1
SAE Class 180

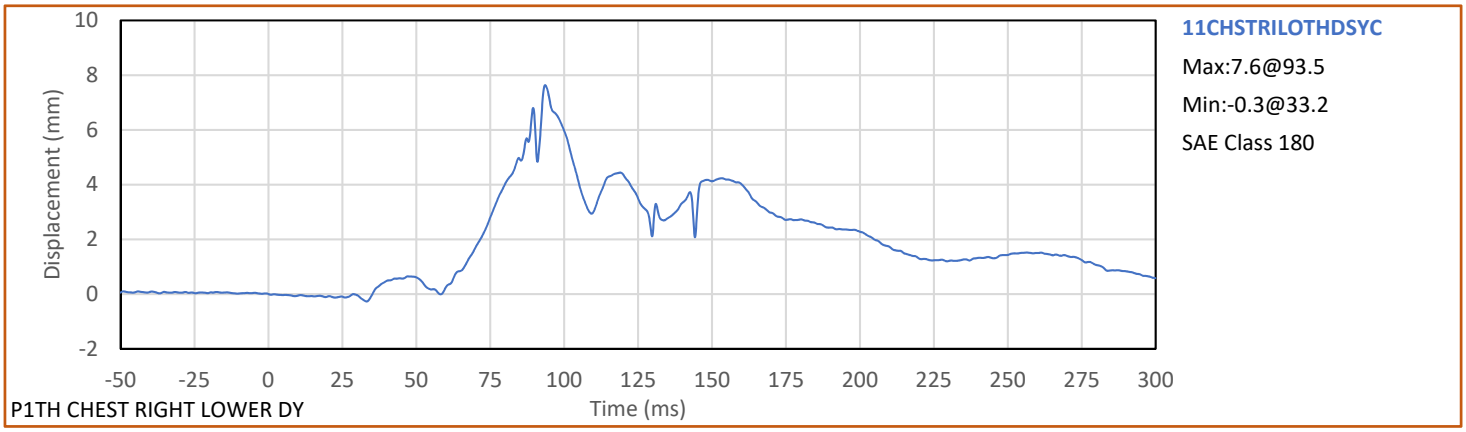

Displacement (mm)
Time (ms)
P1TH CHEST LEFT LOWER DX
11CHSTLELOTHDSXC
Max:11.7@93.4
Min:-3.0@144.3
SAE Class 180

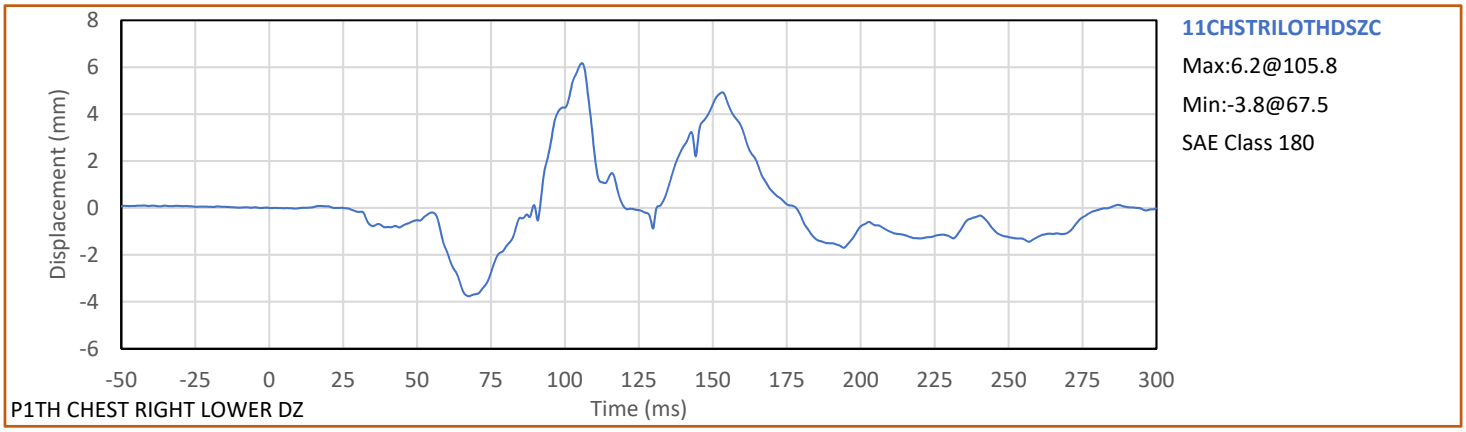

Displacement (mm)
Time (ms)
P1TH CHEST LEFT LOWER DY
11CHSTLELOTHDSYC
Max:15.1@94.1
Min:-10.8@129.9
SAE Class 180

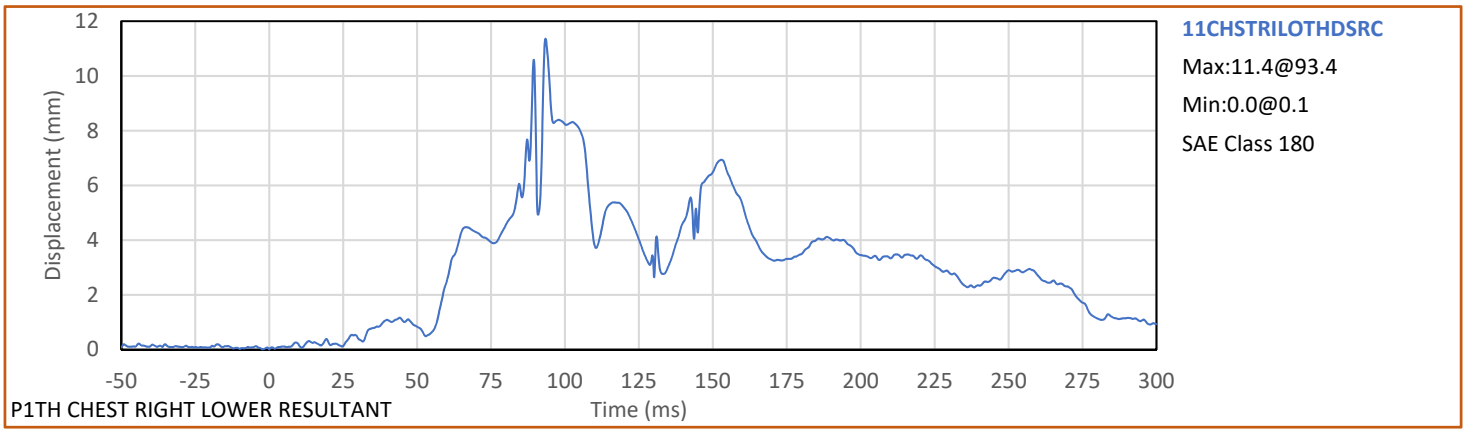

Displacement (mm)
Time (ms)
P1TH CHEST LEFT LOWER DZ
11CHSTLELOTHDSZC
Max:7.5@66.2
Min:-5.4@144.3
SAE Class 180

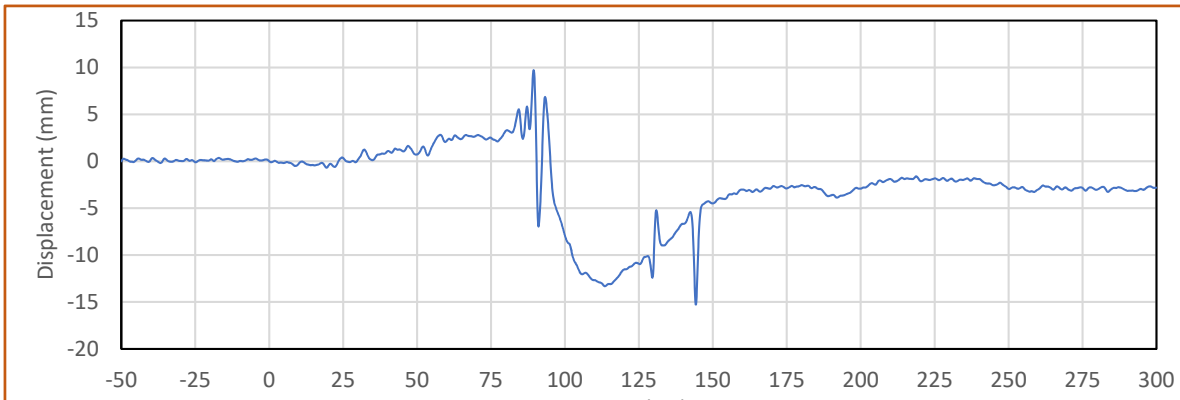

Displacement (mm)
Time (ms)
P1TH CHEST LEFT LOWER RESULTANT
11CHSTLELOTHDSRC
Max:19.0@93.6
Min:0.0@1.2
SAE Class 180


Displacement (mm)
Time (ms)
P1TH CHEST RIGHT LOWER DX
11CHSTRILOTHDSXC
Max:8.2@93.4
Min:-4.2@144.3
SAE Class 180


Displacement (mm)
Time (ms)
P1TH CHEST RIGHT LOWER DY
11CHSTRILOTHDSYC
Max:7.6@93.5
Min:-0.3@33.2
SAE Class 180

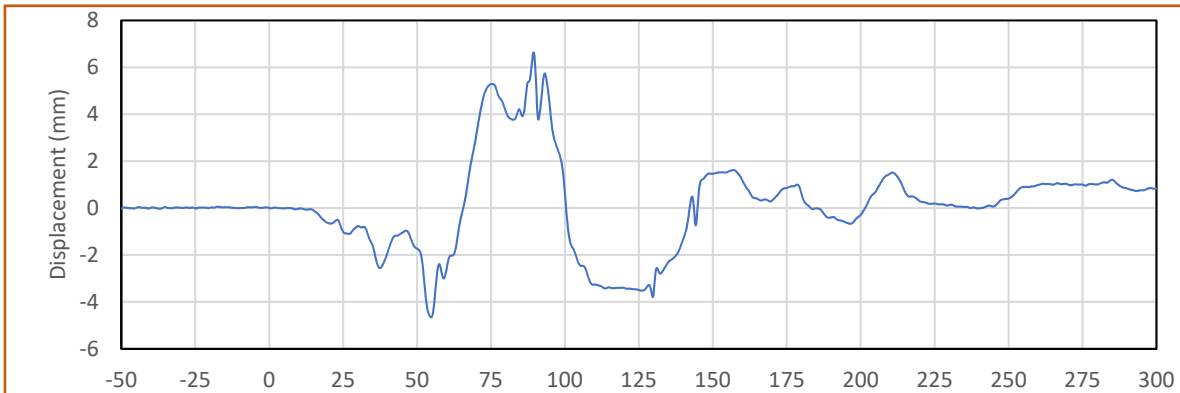

Displacement (mm)
Time (ms)
P1TH CHEST RIGHT LOWER DZ
11CHSTRILOTHDSZC
Max:6.2@105.8
Min:-3.8@67.5
SAE Class 180


Displacement (mm)
Time (ms)
P1TH CHEST RIGHT LOWER RESULTANT
11CHSTRILOTHDSRC
Max:11.4@93.4
Min:0.0@0.1
SAE Class 180



P1TH ABDOMEN LEFT LOWER DX

11ABDOLE00THDSXC
Max:9.7@89.4
Min:-15.3@144.4
SAE Class 180

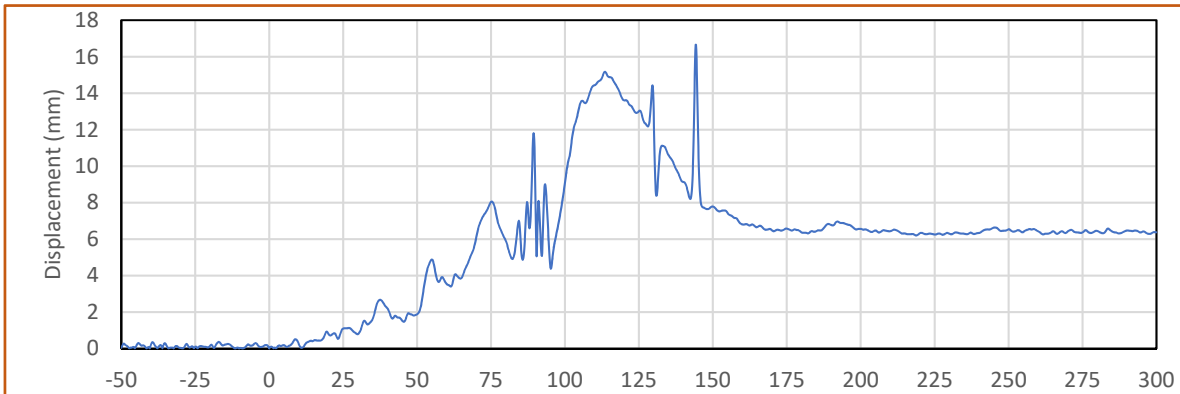


P1TH ABDOMEN LEFT LOWER DY

11ABDOLE00THDSYC
Max:6.6@89.4
Min:-4.7@54.8
SAE Class 180

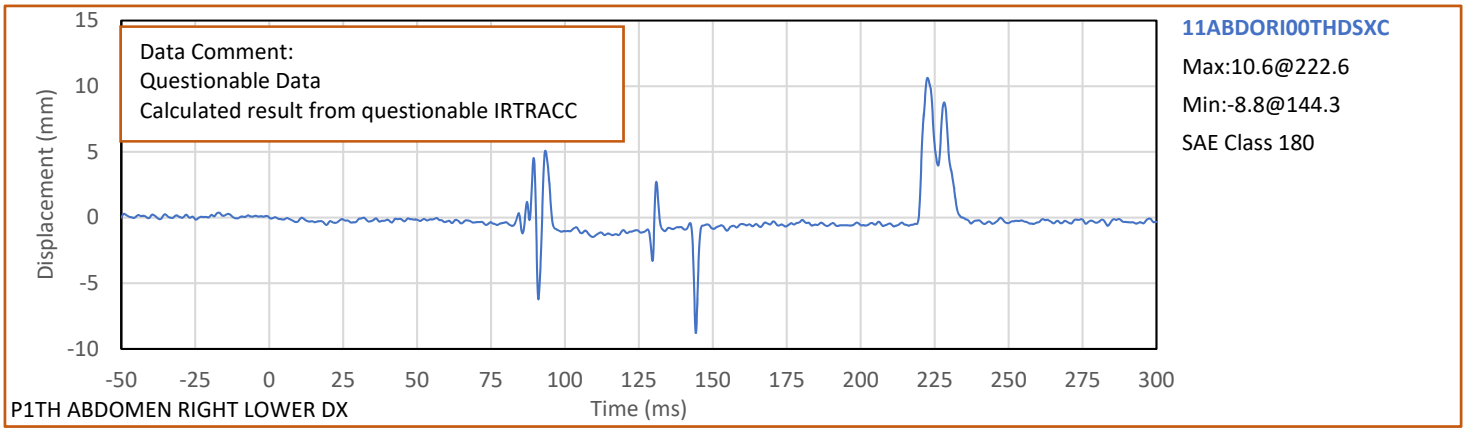
P1TH ABDOMEN LEFT LOWER DZ

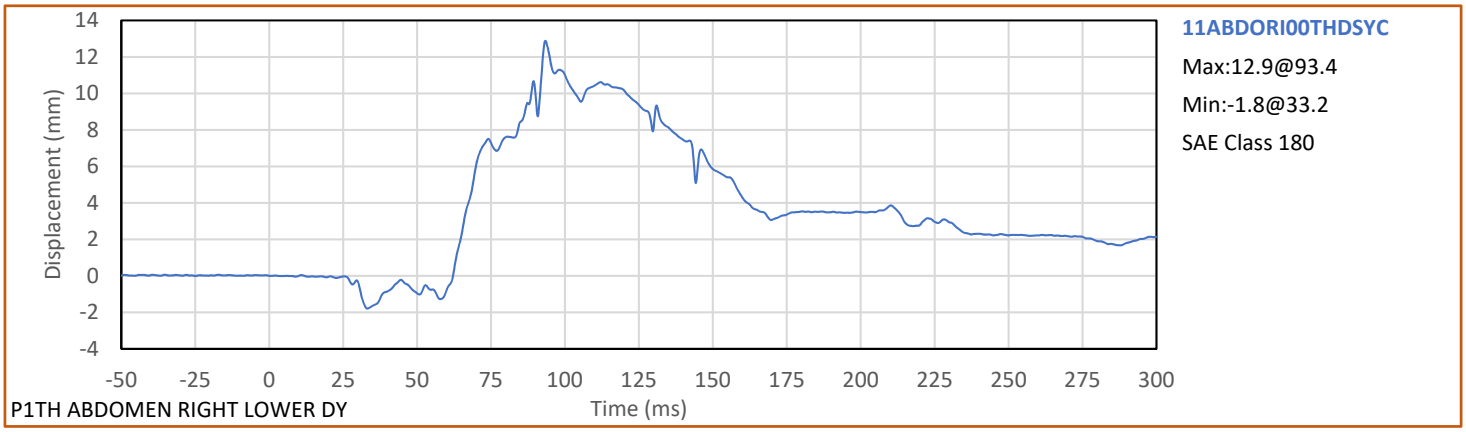
11ABDOLE00THDSZC
Max:5.6@75.4
Min:-6.6@144.1
SAE Class 180

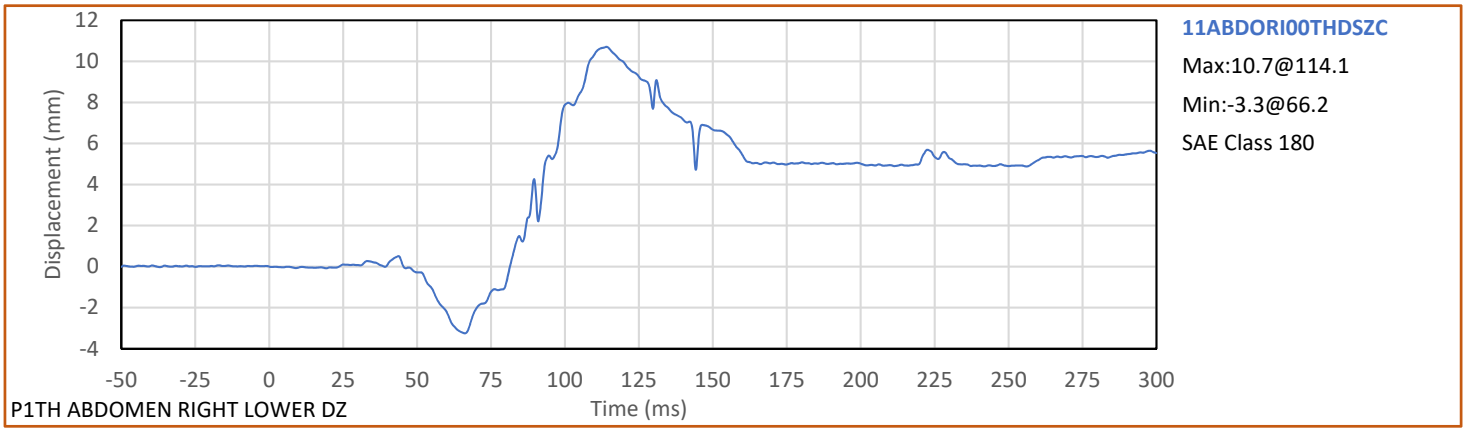


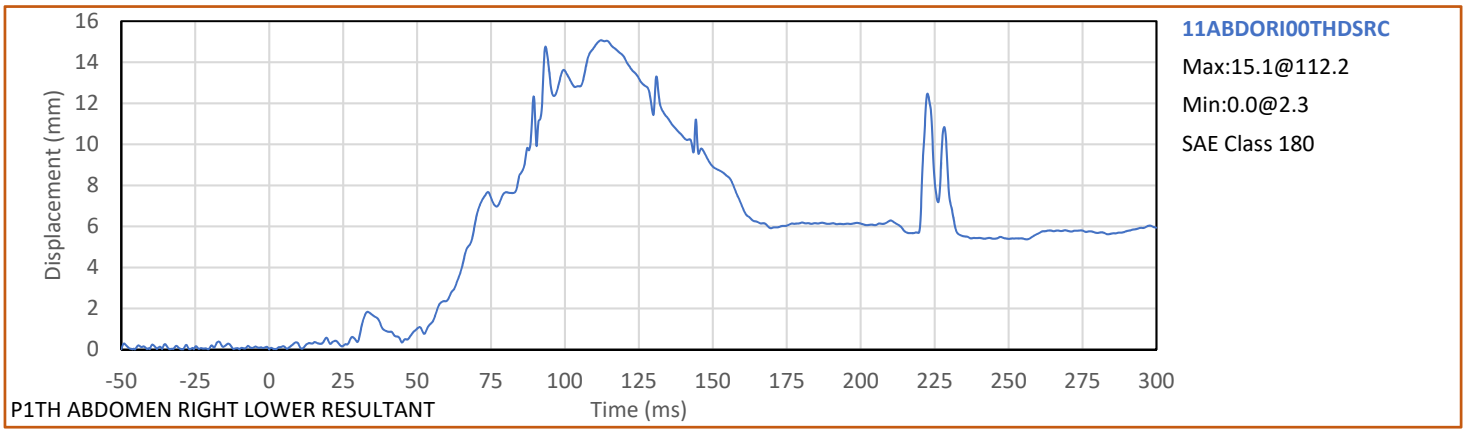
P1TH ABDOMEN LEFT LOWER RESULTANT

11ABDOLE00THDSRC
Max:16.7@144.3
Min:0.0@1.5
SAE Class 180


Data Comment:
Questionable Data
Calculated result from questionable IRTRACC
Displacement (mm)
Time (ms)
P1TH ABDOMEN RIGHT LOWER DX
11ABDORI00THDSXC
Max:10.6@222.6
Min:-8.8@144.3
SAE Class 180


Displacement (mm)
Time (ms)
P1TH ABDOMEN RIGHT LOWER DY
11ABDORI00THDSYC
Max:12.9@93.4
Min:-1.8@33.2
SAE Class 180


Displacement (mm)
Time (ms)
P1TH ABDOMEN RIGHT LOWER DZ
11ABDORI00THDSZC
Max:10.7@114.1
Min:-3.3@66.2
SAE Class 180


Displacement (mm)
Time (ms)
P1TH ABDOMEN RIGHT LOWER RESULTANT
11ABDORI00THDSRC
Max:15.1@112.2
Min:0.0@2.3
SAE Class 180

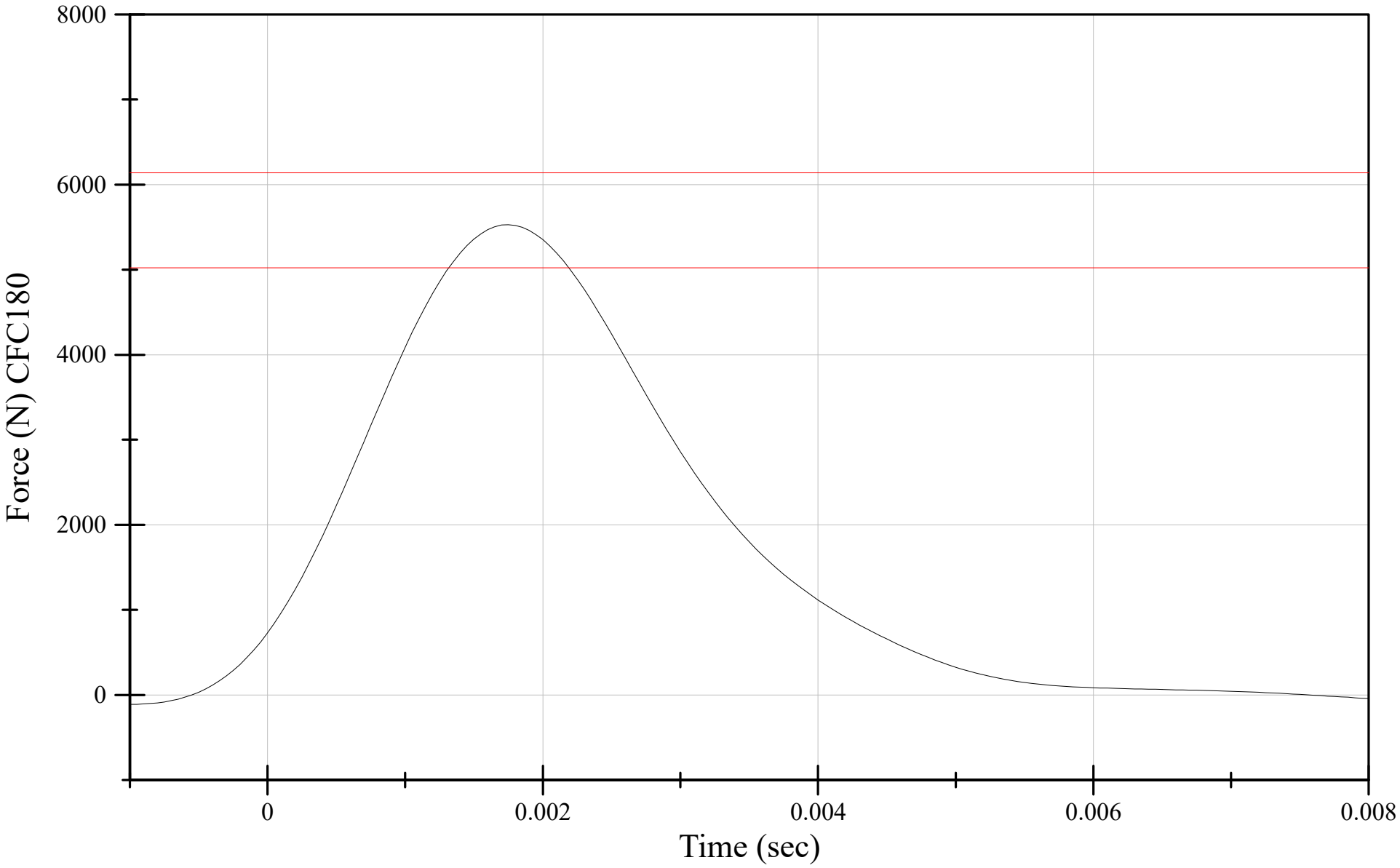
APPENDIX C
DUMMY CALIBRATION AND PERFORMANCE VERIFICATION DATA SHEETS

APPENDIX C
Pre-Test ATD Qualification and Performance Verification
THOR-50M 50th Percentile Male ATD, (Reduced Certification)
S/N: D09799

Test Temperature: 20.8° C
Relative Humidity: 59%
Test Velocity: 2.01 m/s

THOR Head Impact Qualification
Probe Force
Serial Number: DO9799

Head skin: EE7428

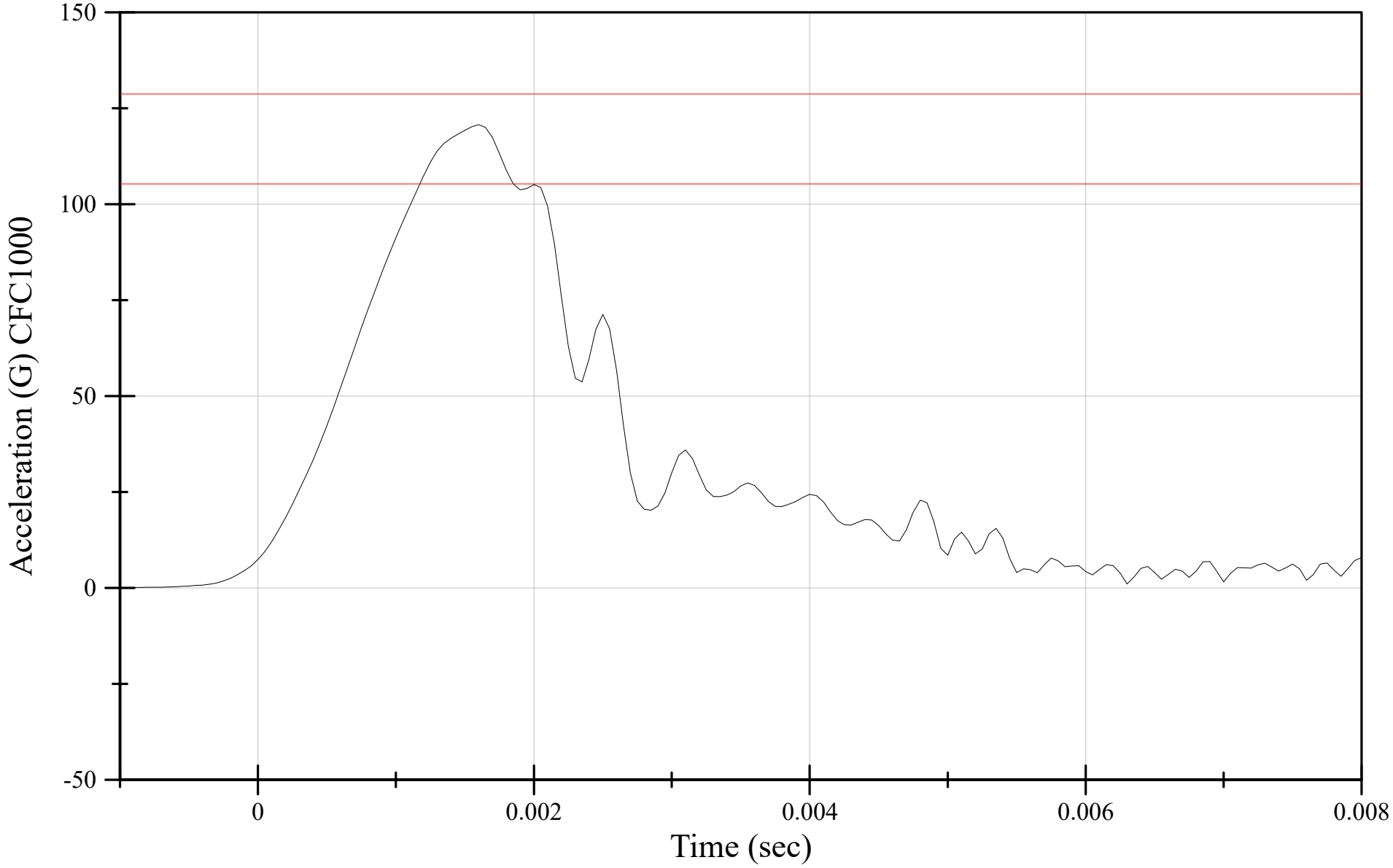


File Name: DO9799 Head200724-02_Processed
07/24/2020 10:25:35.0000

Software Version: 2.7.1

Test Temperature: 20.8° C
Relative Humidity: 59%
Test Velocity: 2.01 m/s

THOR Head Impact Qualification
Head CG Resultant Acceleration
Serial Number: DO9799



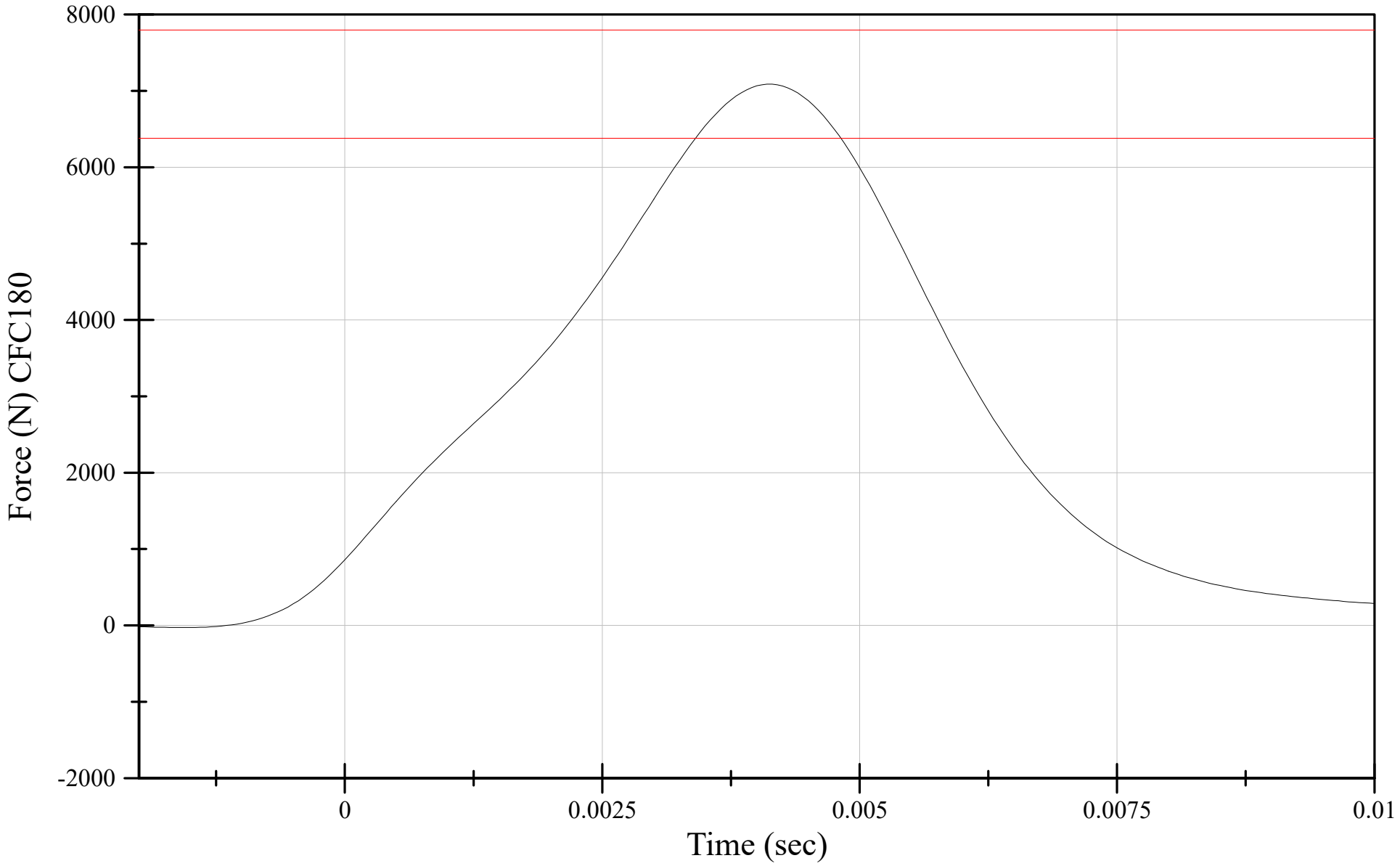
File Name: DO9799 Head200724-02_Processed
07/24/2020 10:25:35.0000

Software Version: 2.7.1

Test Temperature: 21.0° C
Relative Humidity: 60%
Test Velocity: 6.70 m/s

THOR Face-Disk Qualification
Probe Force
Serial Number: DO9799

Head skin: EE7428
Face foam: 008

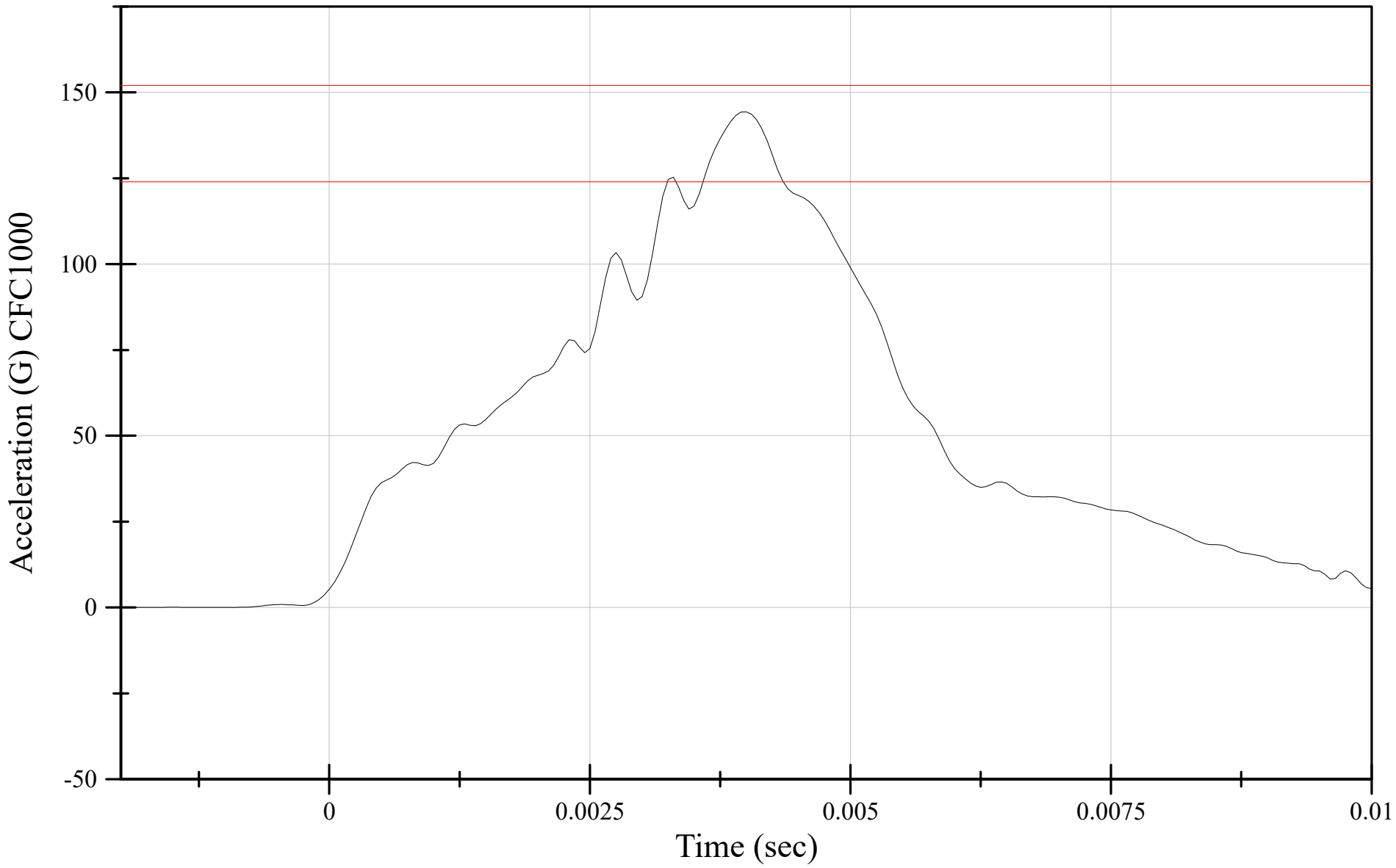


File Name: DO9799 Face200724-01_Processed
07/24/2020 11:46:12.0000

Software Version: 2.7.1

Test Temperature: 21.0° C
Relative Humidity: 60%
Test Velocity: 6.70 m/s

THOR Face-Disk Qualification
Head CG Resultant Acceleration
Serial Number: DO9799

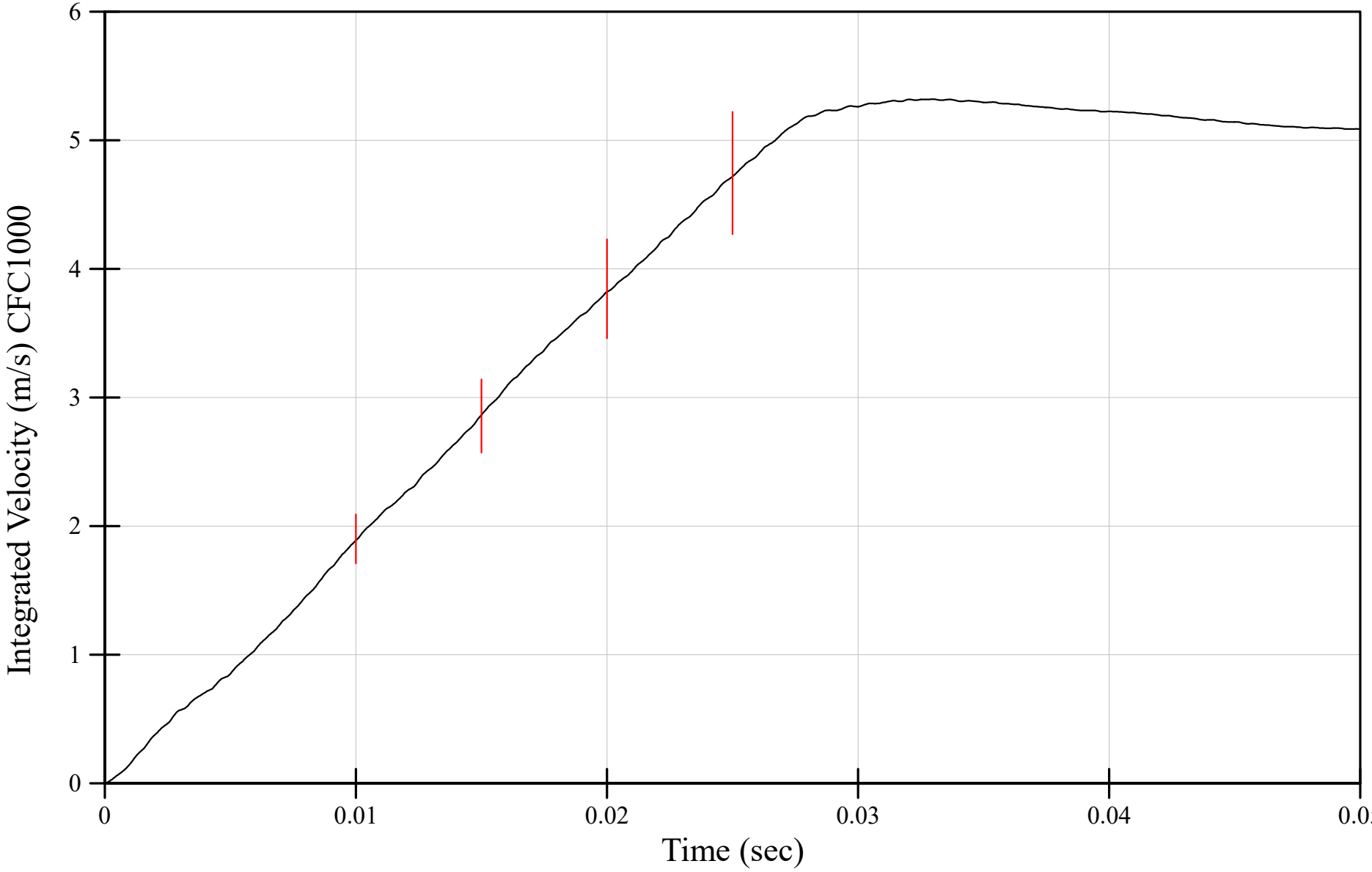


File Name: DO9799 Face200724-01_Processed
07/24/2020 11:46:12.0000

Software Version: 2.7.1

Test Temperature: 20.8° C
Relative Humidity: 60%
Test Velocity: 5.00 m/s

THOR Neck Left Torsion Qualification
Pendulum Velocity
Serial Number: DO9799



File Name: DO9799 NeckTorsionLeft200723-09_Processed
07/23/2020 08:30:21.0000

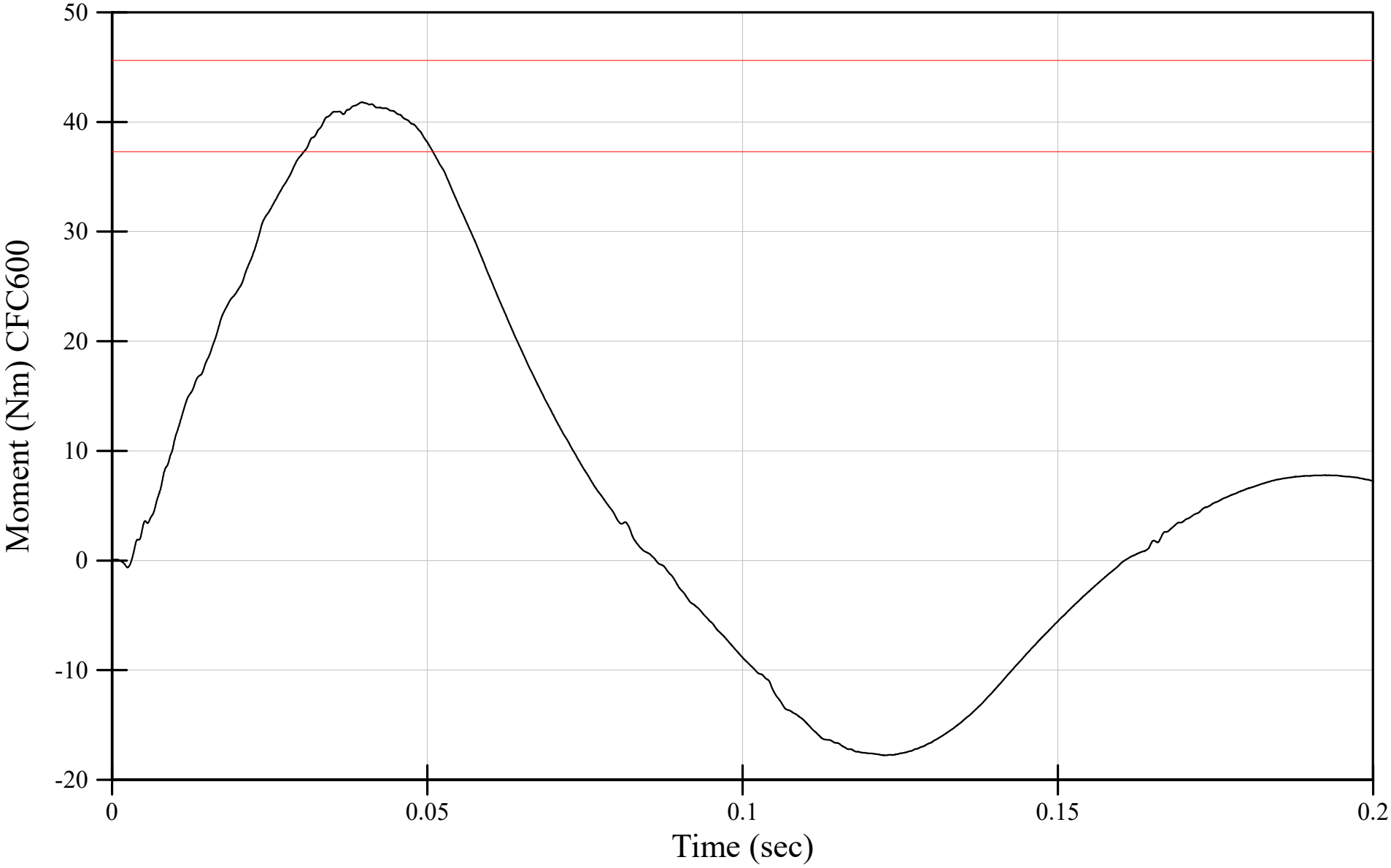
Software Version: 2.7.1

Test Temperature: 20.8° C
Relative Humidity: 60%
Test Velocity: 5.00 m/s

THOR Neck Left Torsion Qualification

Z-Moment as Measured

Serial Number: DO9799



File Name: DO9799 NeckTorsionLeft200723-09_Processed
07/23/2020 08:30:21.0000

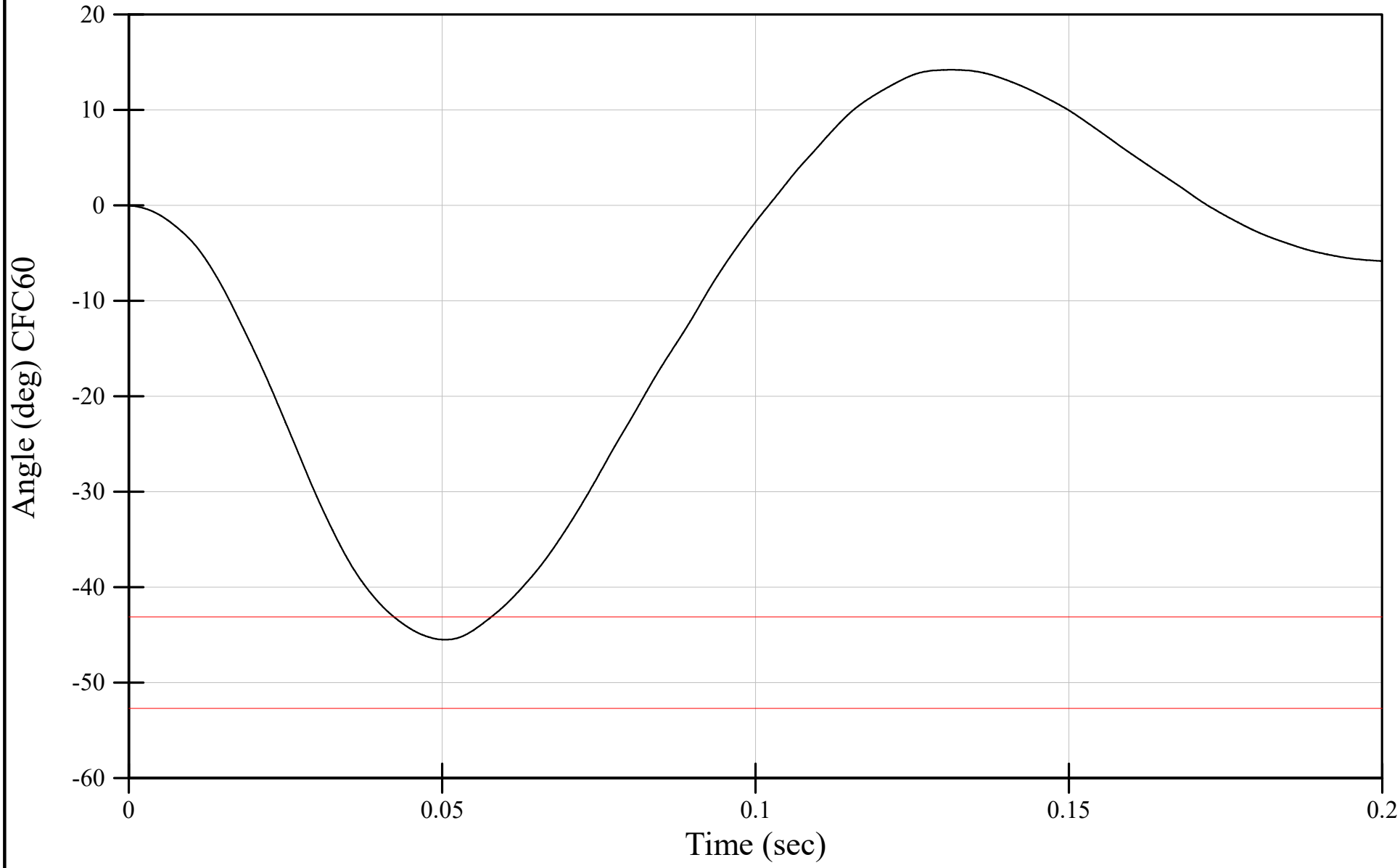
Software Version: 2.7.1

Test Temperature: 20.8° C
Relative Humidity: 60%
Test Velocity: 5.00 m/s

THOR Neck Left Torsion Qualification

Neck Fixture Rotation

Serial Number: DO9799

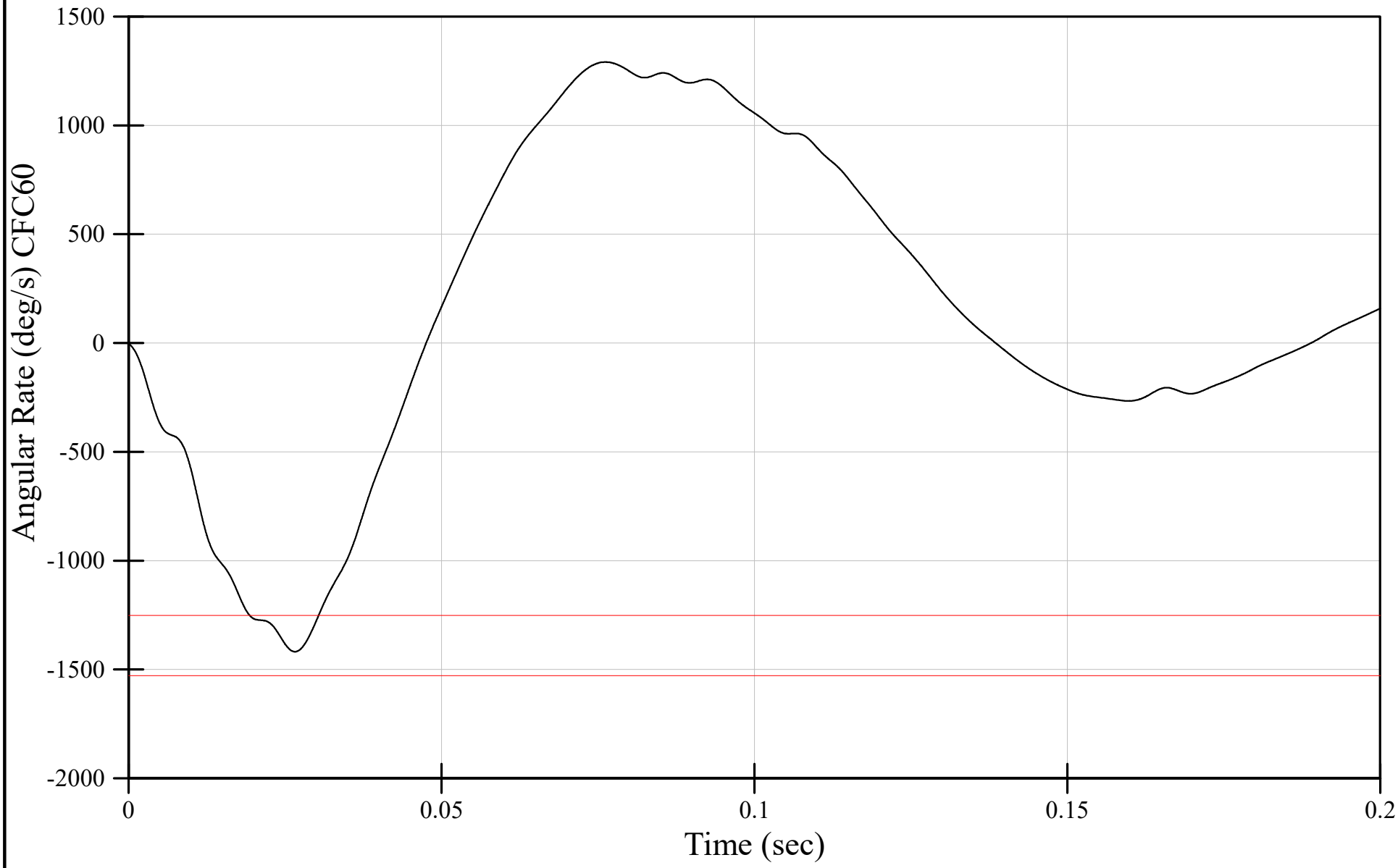


File Name: DO9799 NeckTorsionLeft200723-09_Processed
07/23/2020 08:30:21.0000

Software Version: 2.7.1

Test Temperature: 20.8° C
Relative Humidity: 60%
Test Velocity: 5.00 m/s

THOR Neck Left Torsion Qualification
Peak Angular Rate
Serial Number: DO9799

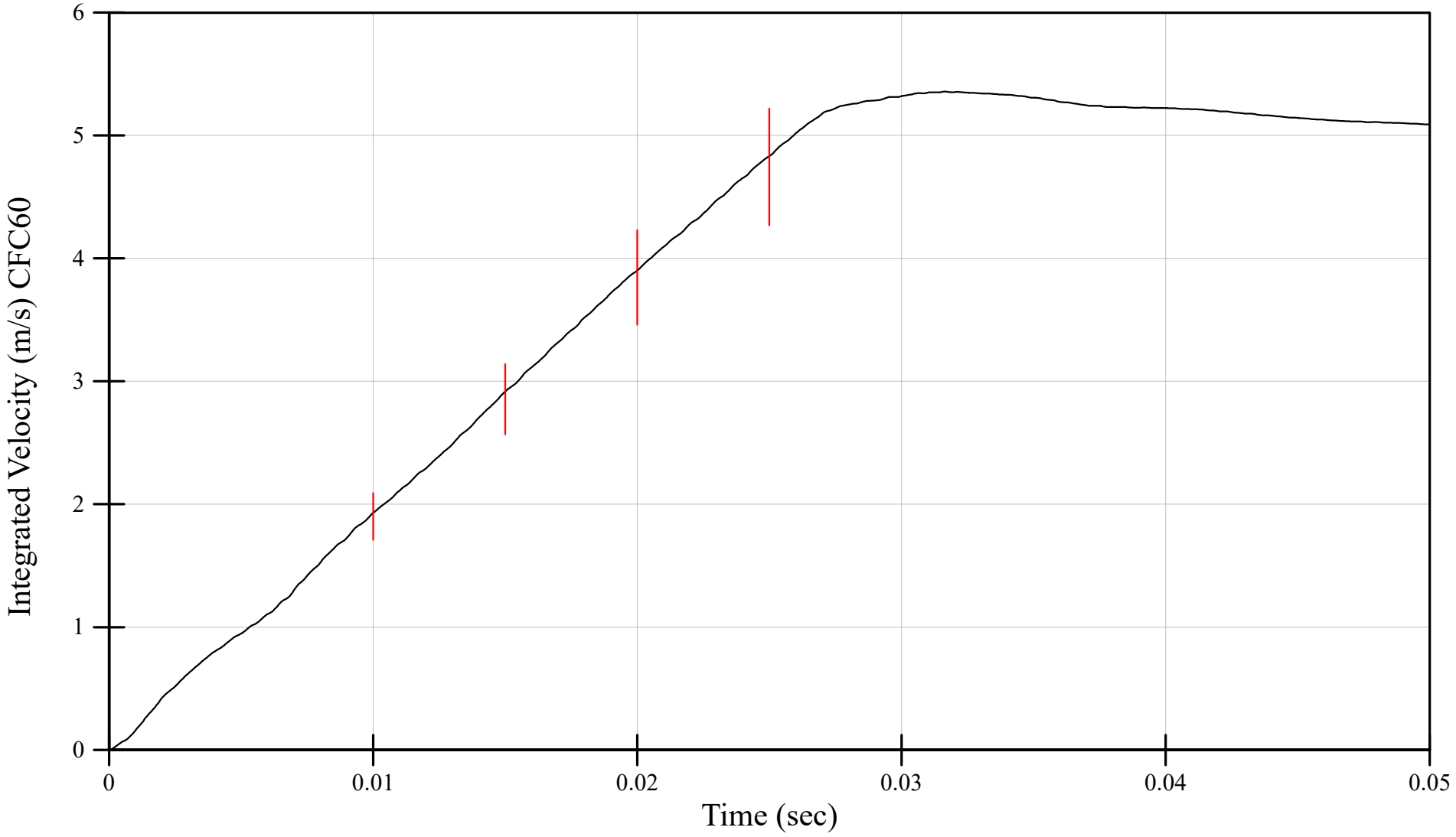


File Name: DO9799 NeckTorsionLeft200723-09_Processed
07/23/2020 08:30:21.0000

Software Version: 2.7.1

Test Temperature: 20.9° C
Relative Humidity: 59%
Test Velocity: 5.00 m/s

THOR Neck Right Torsion
Qualification Probe Acceleration
Serial Number: DO9799



File Name: DO9799 NeckTorsionRight200723-01_Processed
07/23/2020 09:02:40.0000

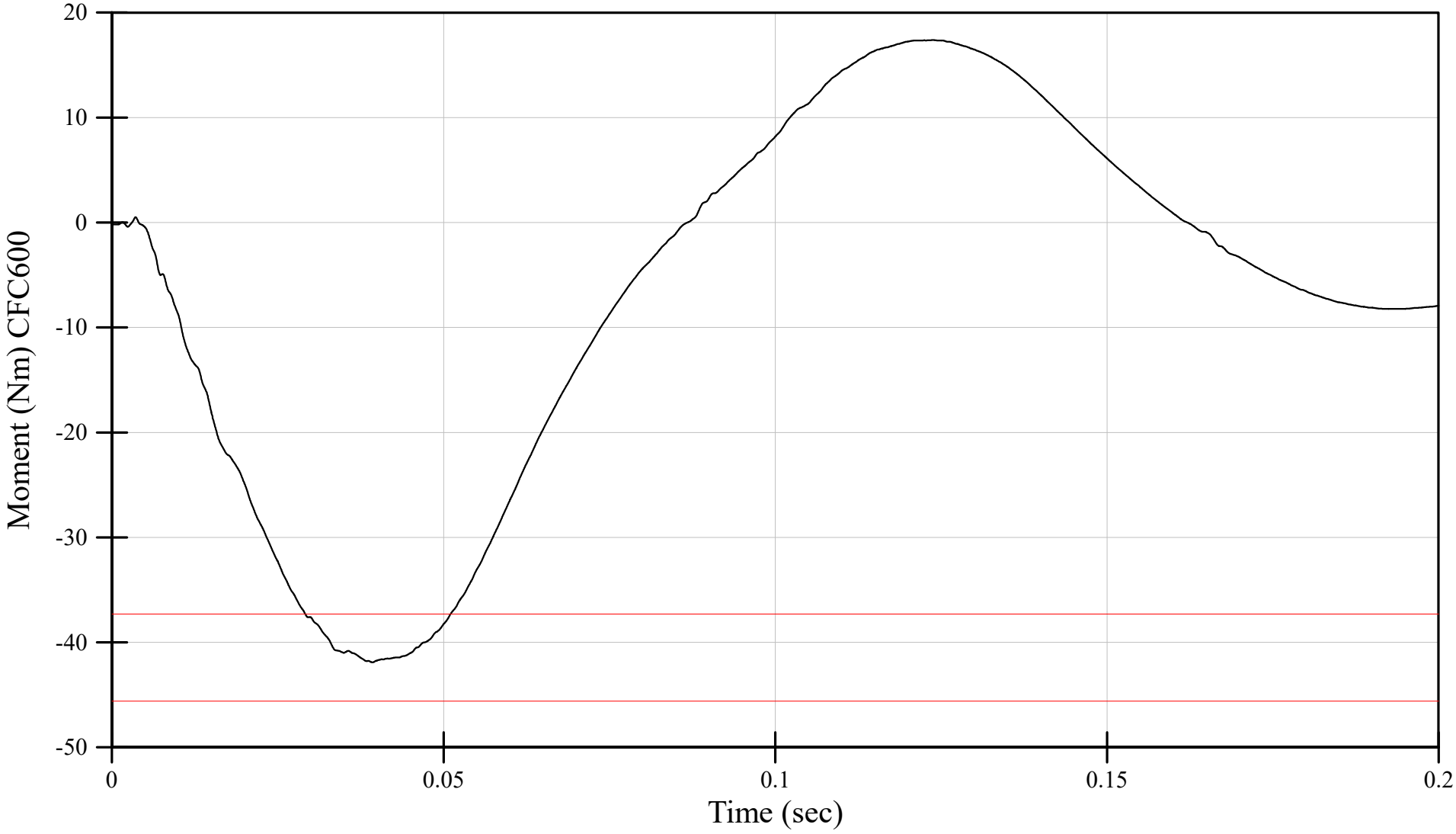
Software Version: 2.7.1

Test Temperature: 20.9° C
Relative Humidity: 59%
Test Velocity: 5.00 m/s

THOR Neck Right Torsion Qualification

Z-Moment as Measured

Serial Number: DO9799

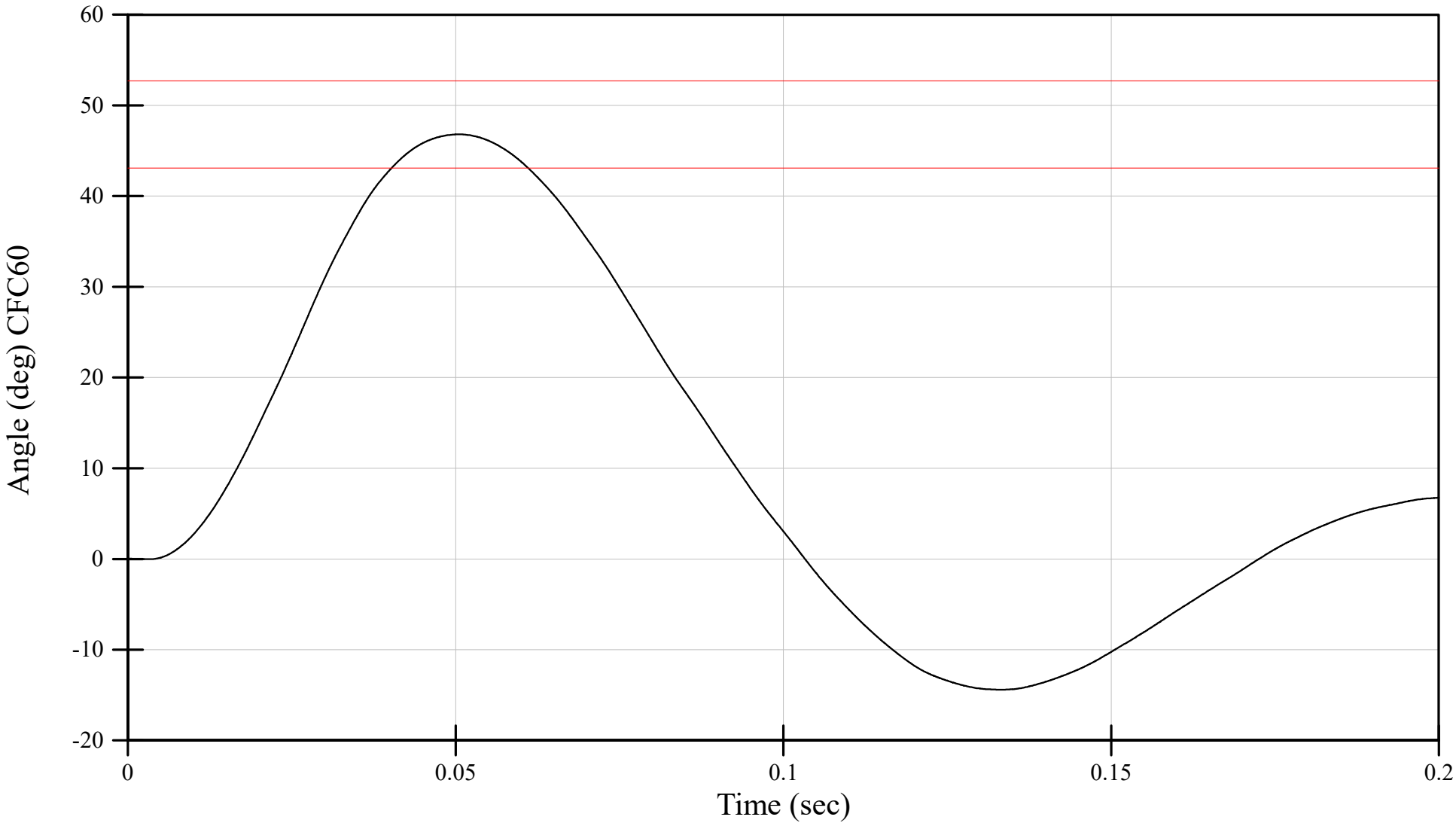


File Name: DO9799 NeckTorsionRight200723-01_Processed
07/23/2020 09:02:40.0000

Software Version: 2.7.1

Test Temperature: 20.9° C
Relative Humidity: 59%
Test Velocity: 5.00 m/s

THOR Neck Right Torsion
Qualification Neck Fixture Rotation
Serial Number: DO9799

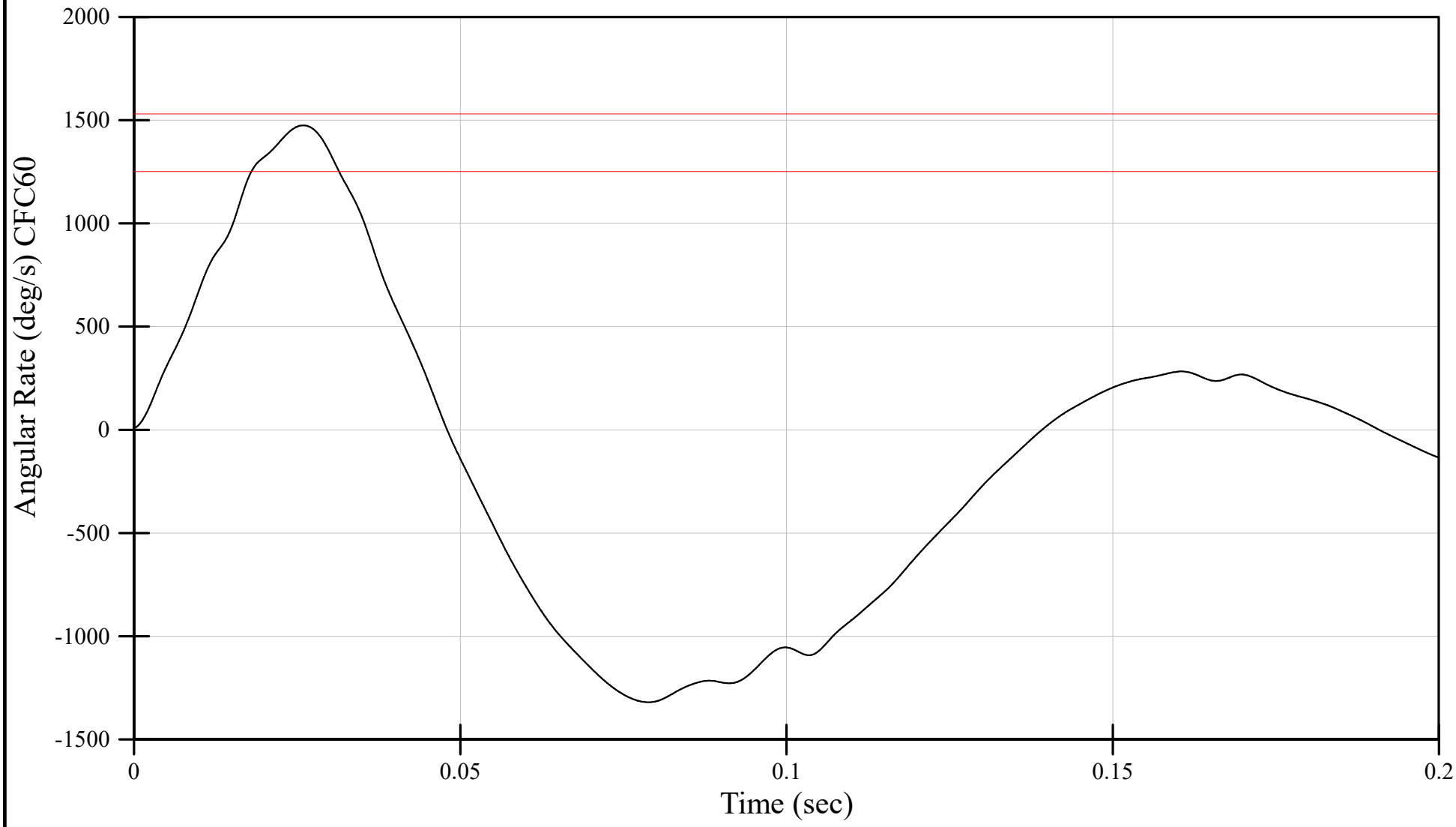


File Name: DO9799 NeckTorsionRight200723-01_Processed
07/23/2020 09:02:40.0000

Software Version: 2.7.1

Test Temperature: 20.9° C
Relative Humidity: 59%
Test Velocity: 5.00 m/s

THOR Neck Right Torsion
Qualification Peak Angular Rate
Serial Number: DO9799

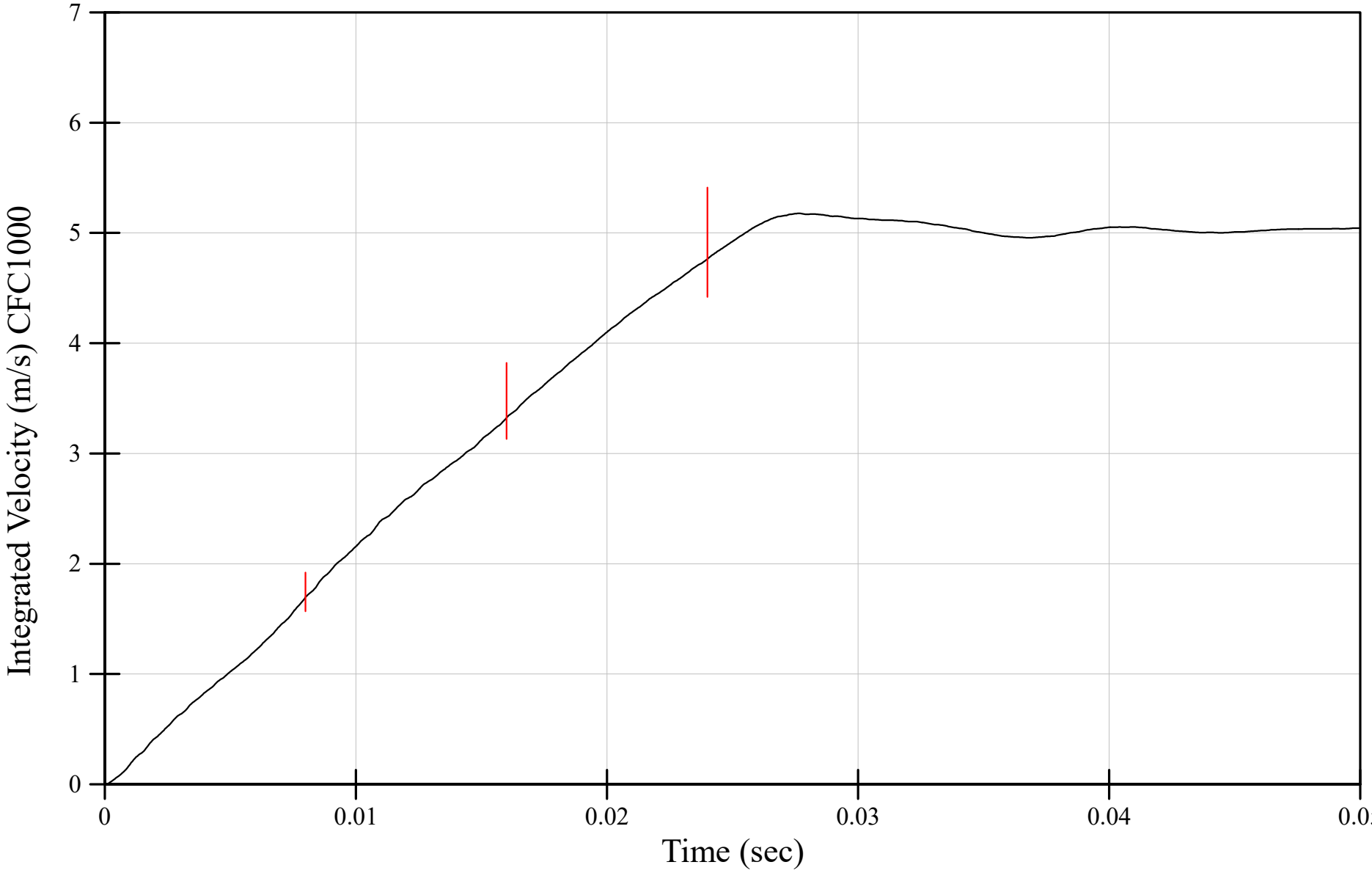


File Name: DO9799 NeckTorsionRight200723-01_Processed
07/23/2020 09:02:40.0000

Software Version: 2.7.1

Test Temperature: 20.9° C
Relative Humidity: 58%
Test Velocity: 4.96 m/s

THOR Neck Flexion Qualification
Pendulum Velocity
Serial Number: DO9799

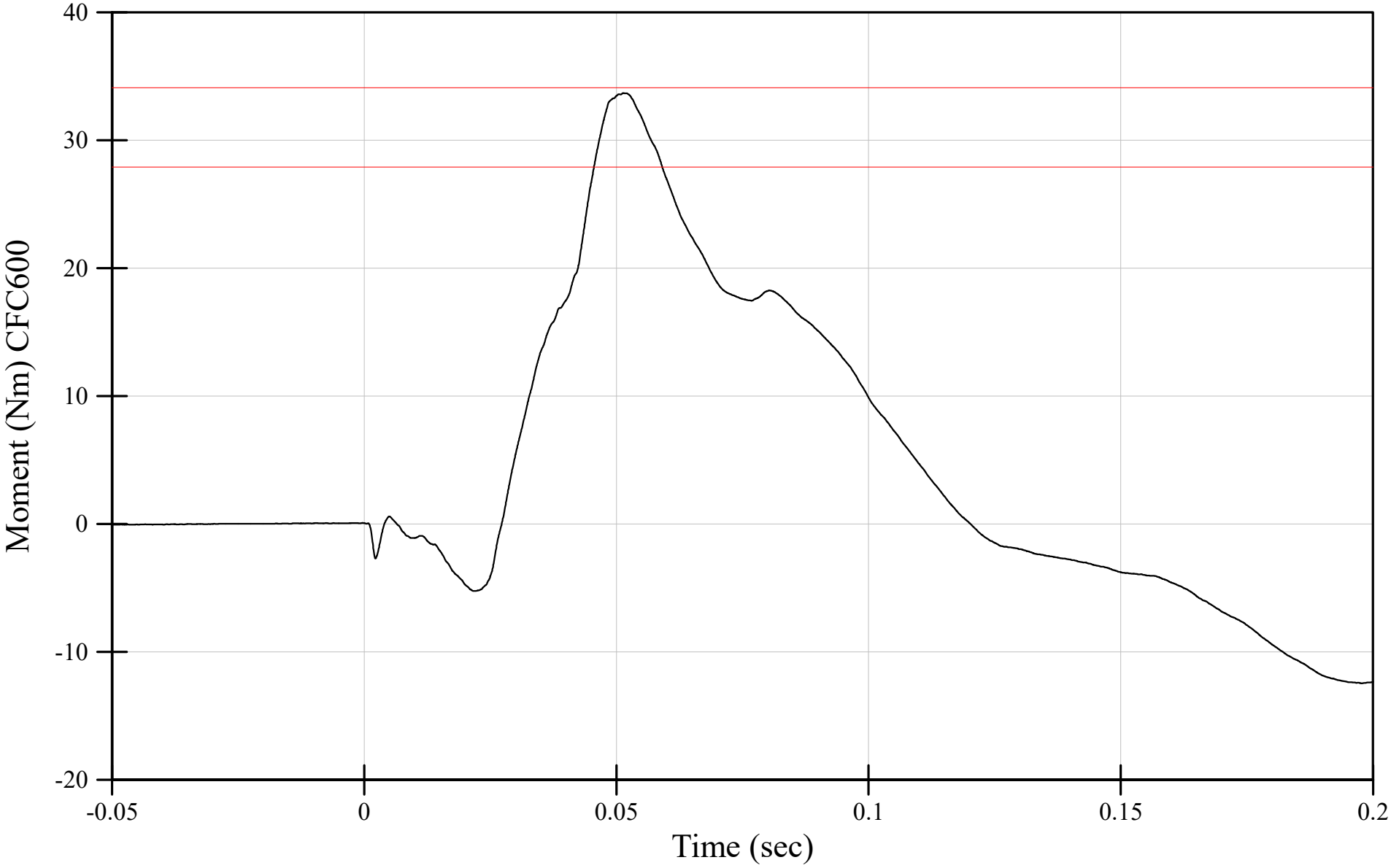


File Name: DO9799 NeckFlexion200723-02_Processed
07/23/2020 11:49:09.0000

Software Version: 2.7.1

Test Temperature: 20.9° C
Relative Humidity: 58%
Test Velocity: 4.96 m/s

THOR Neck Flexion Qualification
Y-Moment as Measured
Serial Number: DO9799

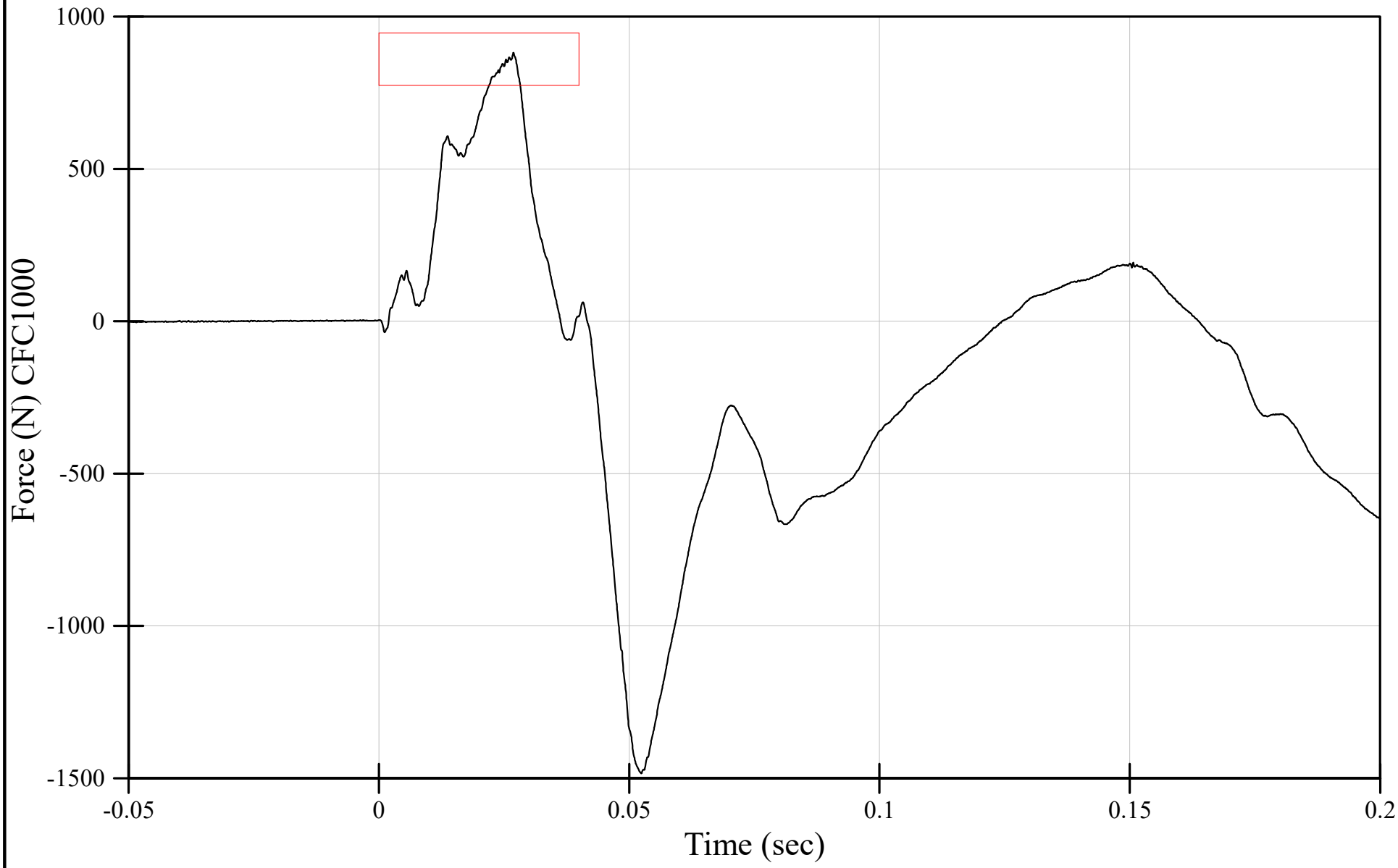


File Name: DO9799 NeckFlexion200723-02_Processed
07/23/2020 11:49:09.0000

Software Version: 2.7.1

Test Temperature: 20.9° C
Relative Humidity: 58%
Test Velocity: 4.96 m/s

THOR Neck Flexion Qualification
Z-Force as Measured
Serial Number: DO9799

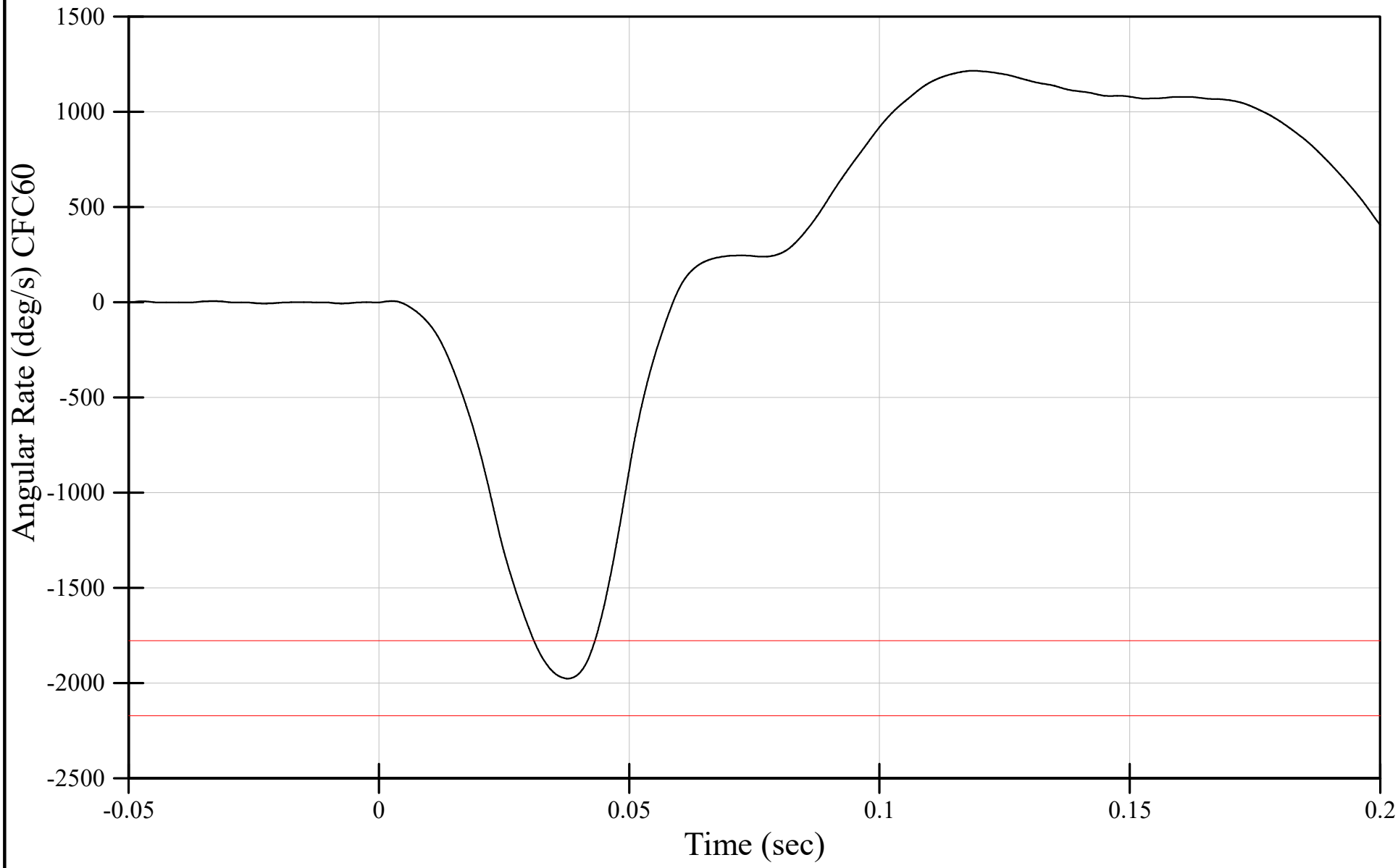


File Name: DO9799 NeckFlexion200723-02_Processed
07/23/2020 11:49:09.0000

Software Version: 2.7.1

Test Temperature: 20.9° C
Relative Humidity: 58%
Test Velocity: 4.96 m/s

THOR Neck Flexion Qualification
Peak Angular Rate
Serial Number: DO9799

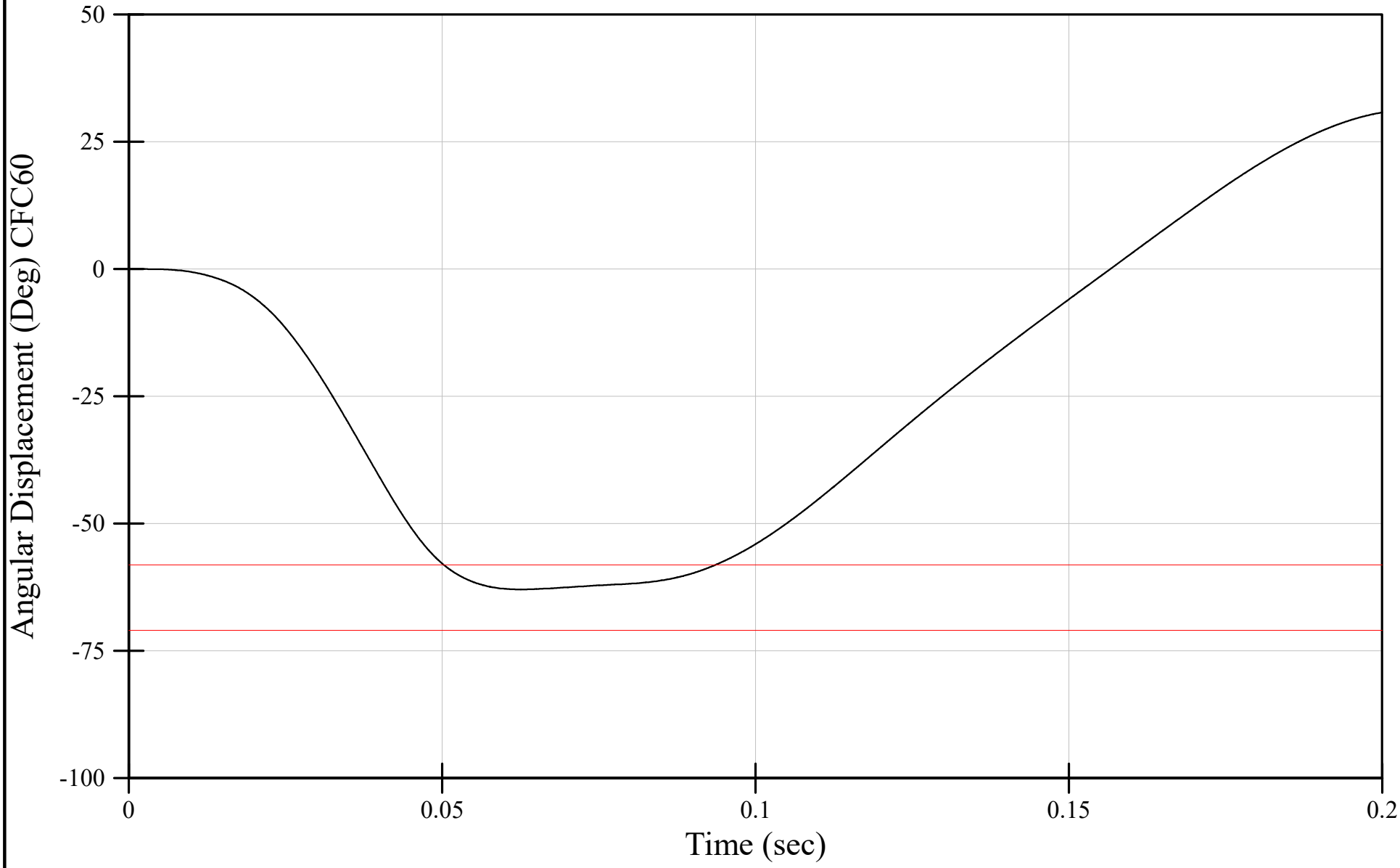


File Name: DO9799 NeckFlexion200723-02_Processed
07/23/2020 11:49:09.0000

Software Version: 2.7.1

Test Temperature: 20.9° C
Relative Humidity: 58%
Test Velocity: 4.96 m/s

THOR Neck Flexion Qualification
Neck Rotation
Serial Number: DO9799

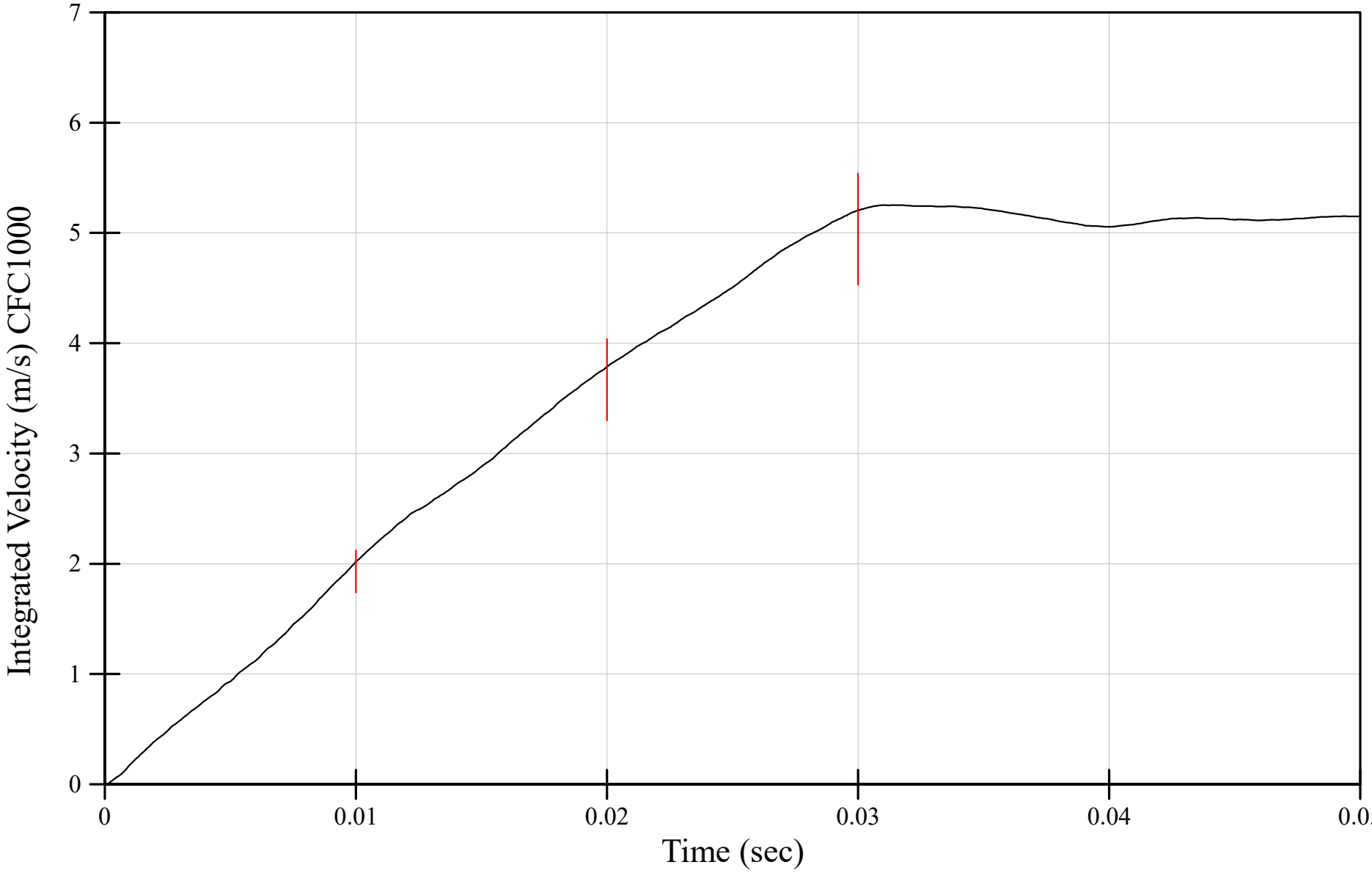


File Name: DO9799 NeckFlexion200723-02_Processed
07/23/2020 11:49:09.0000

Software Version: 2.7.1

Test Temperature: 20.9° C
Relative Humidity: 60%
Test Velocity: 5.05 m/s

THOR Neck Extension Qualification
Pendulum Velocity
Serial Number: DO9799

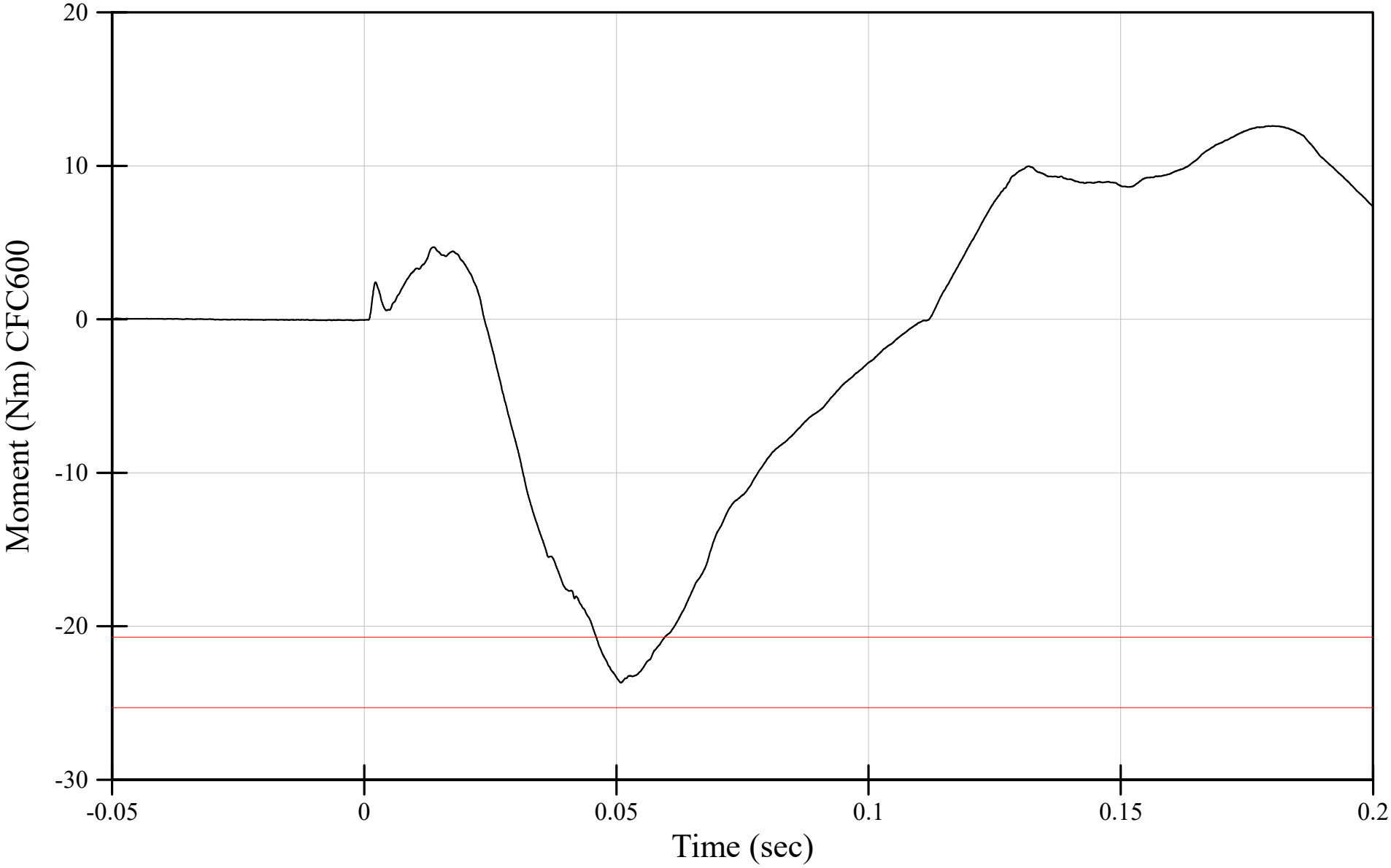


File Name: DO9799 NeckExtension200723-37_Processed
07/23/2020 10:27:13.0000

Software Version: 2.7.1

Test Temperature: 20.9° C
Relative Humidity: 60%
Test Velocity: 5.05 m/s

THOR Neck Extension Qualification
Y-Moment as Measured
Serial Number: DO9799

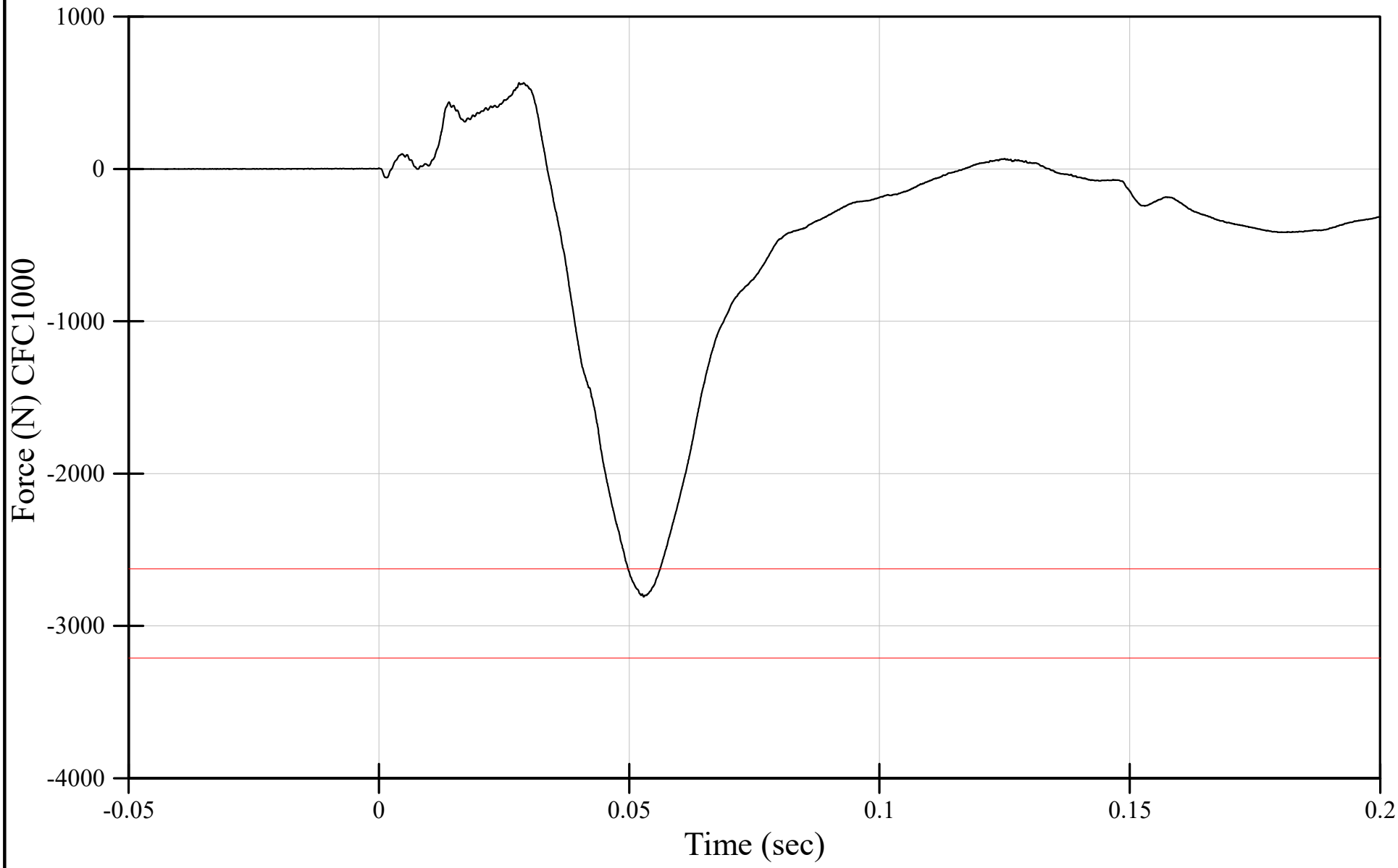


File Name: DO9799 NeckExtension200723-37_Processed
07/23/2020 10:27:13.0000

Software Version: 2.7.1

Test Temperature: 20.9° C
Relative Humidity: 60%
Test Velocity: 5.05 m/s

THOR Neck Extension Qualification
Z-Force as Measured
Serial Number: DO9799

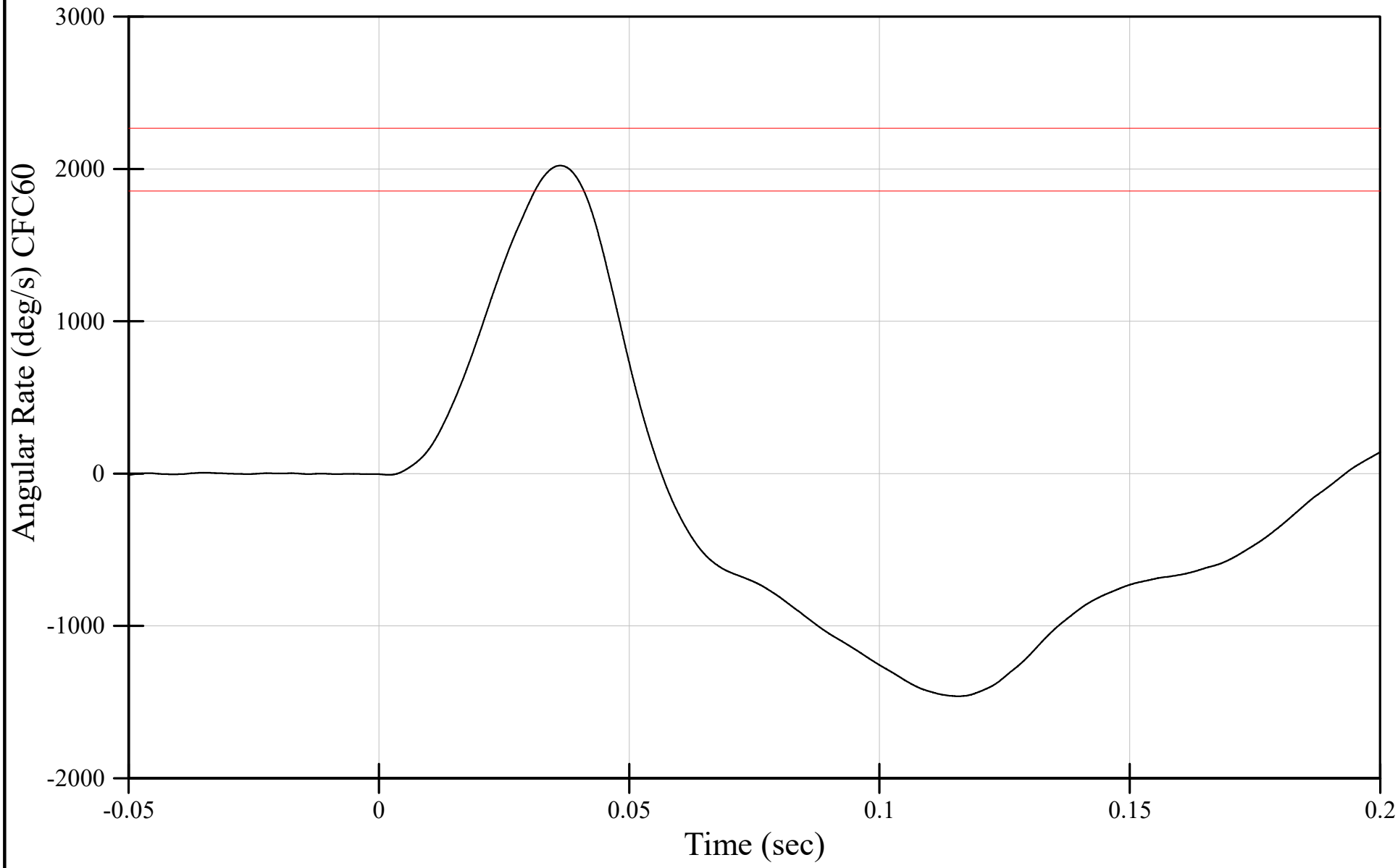


File Name: DO9799 NeckExtension200723-37_Processed
07/23/2020 10:27:13.0000

Software Version: 2.7.1

Test Temperature: 20.9° C
Relative Humidity: 60%
Test Velocity: 5.05 m/s

THOR Neck Extension Qualification
Peak Head Angular Rate
Serial Number: DO9799

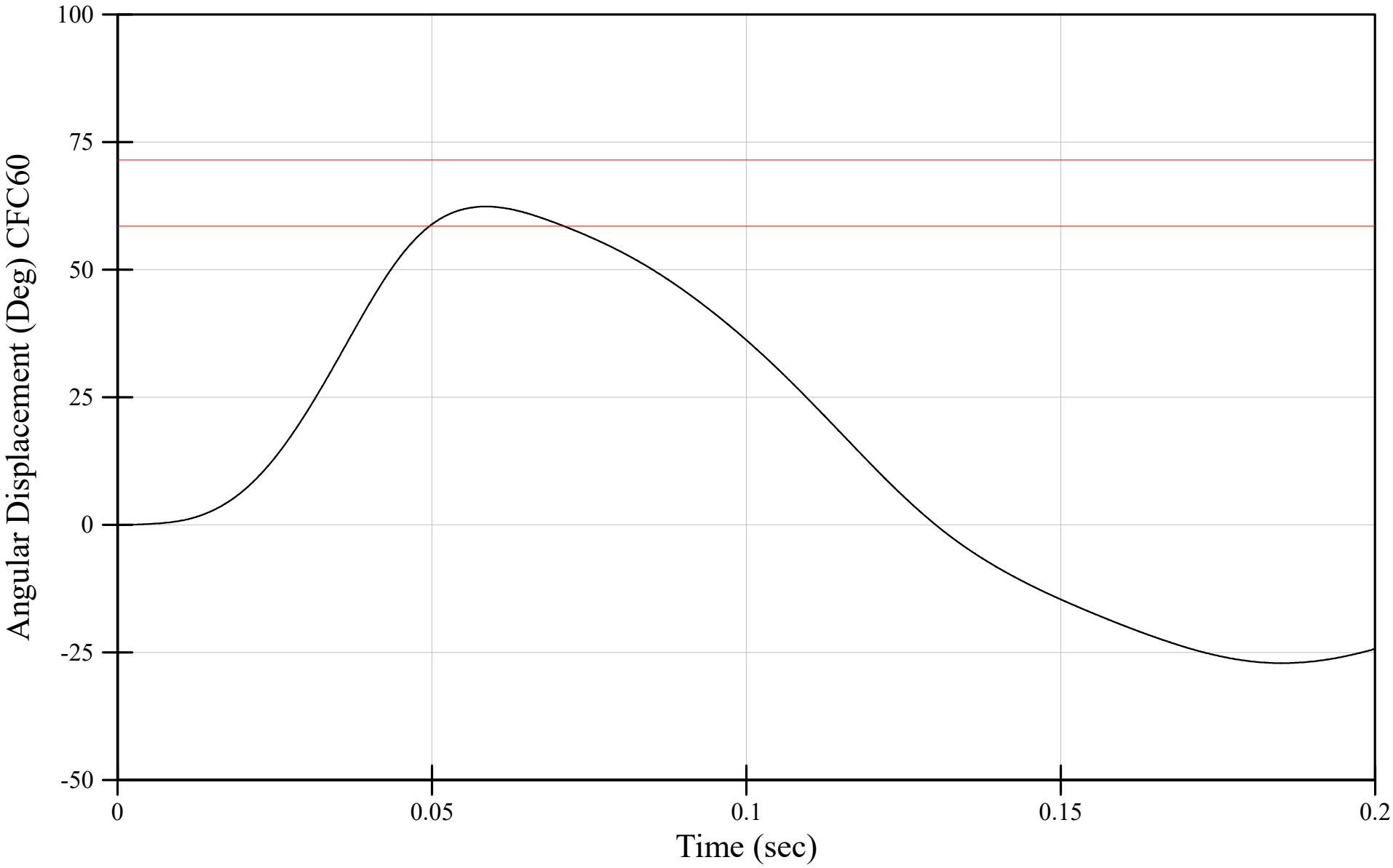


File Name: DO9799 NeckExtension200723-37_Processed
07/23/2020 10:27:13.0000

Software Version: 2.7.1

Test Temperature: 20.9° C
Relative Humidity: 60%
Test Velocity: 5.05 m/s

THOR Neck Extension Qualification
Neck Rotation
Serial Number: DO9799

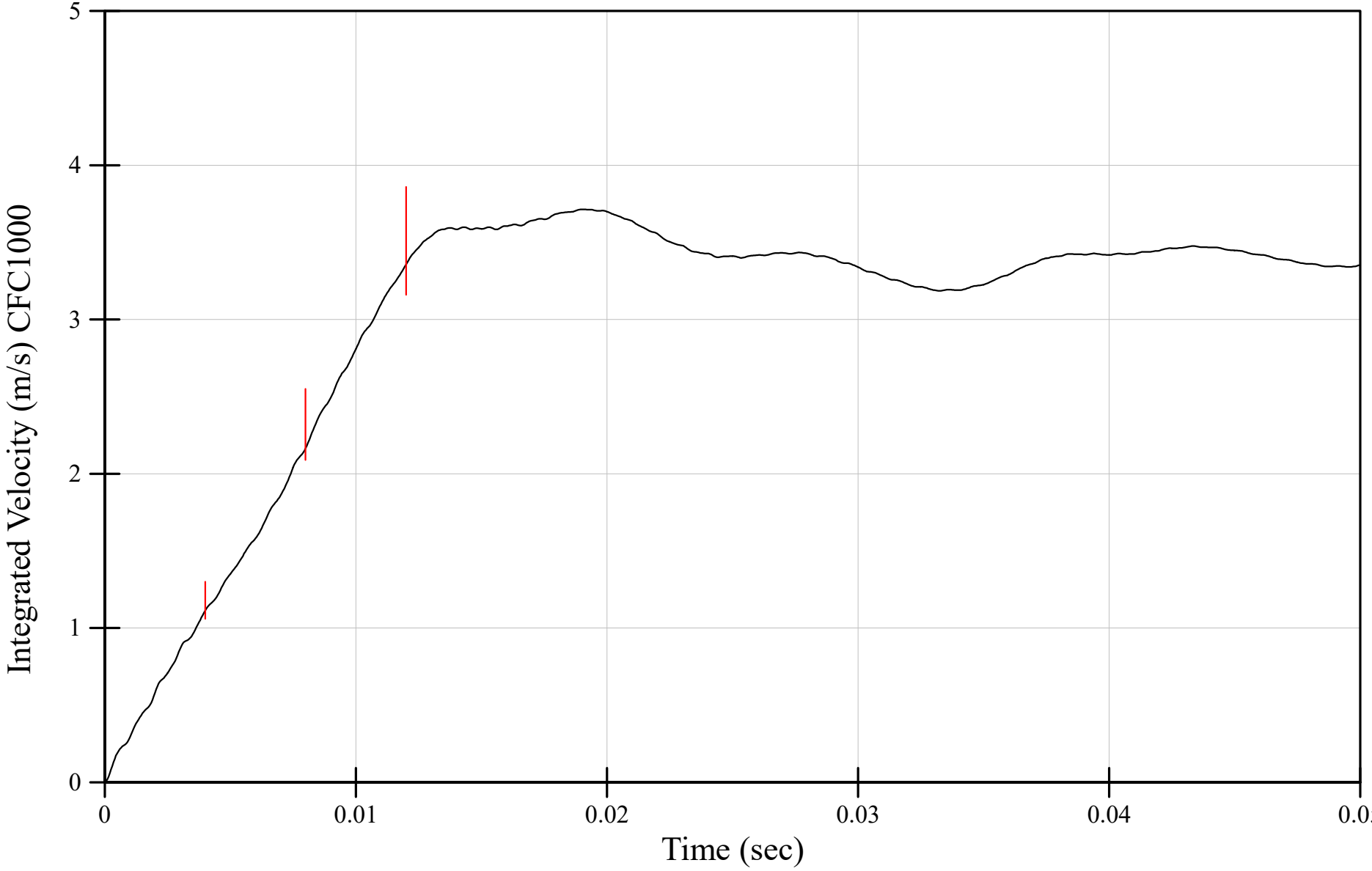


File Name: DO9799 NeckExtension200723-37_Processed
07/23/2020 10:27:13.0000

Software Version: 2.7.1

Test Temperature: 21.0° C
Relative Humidity: 59%
Test Velocity: 3.37 m/s

THOR Neck Left Lateral Qualification
Pendulum Velocity
Serial Number: DO9799

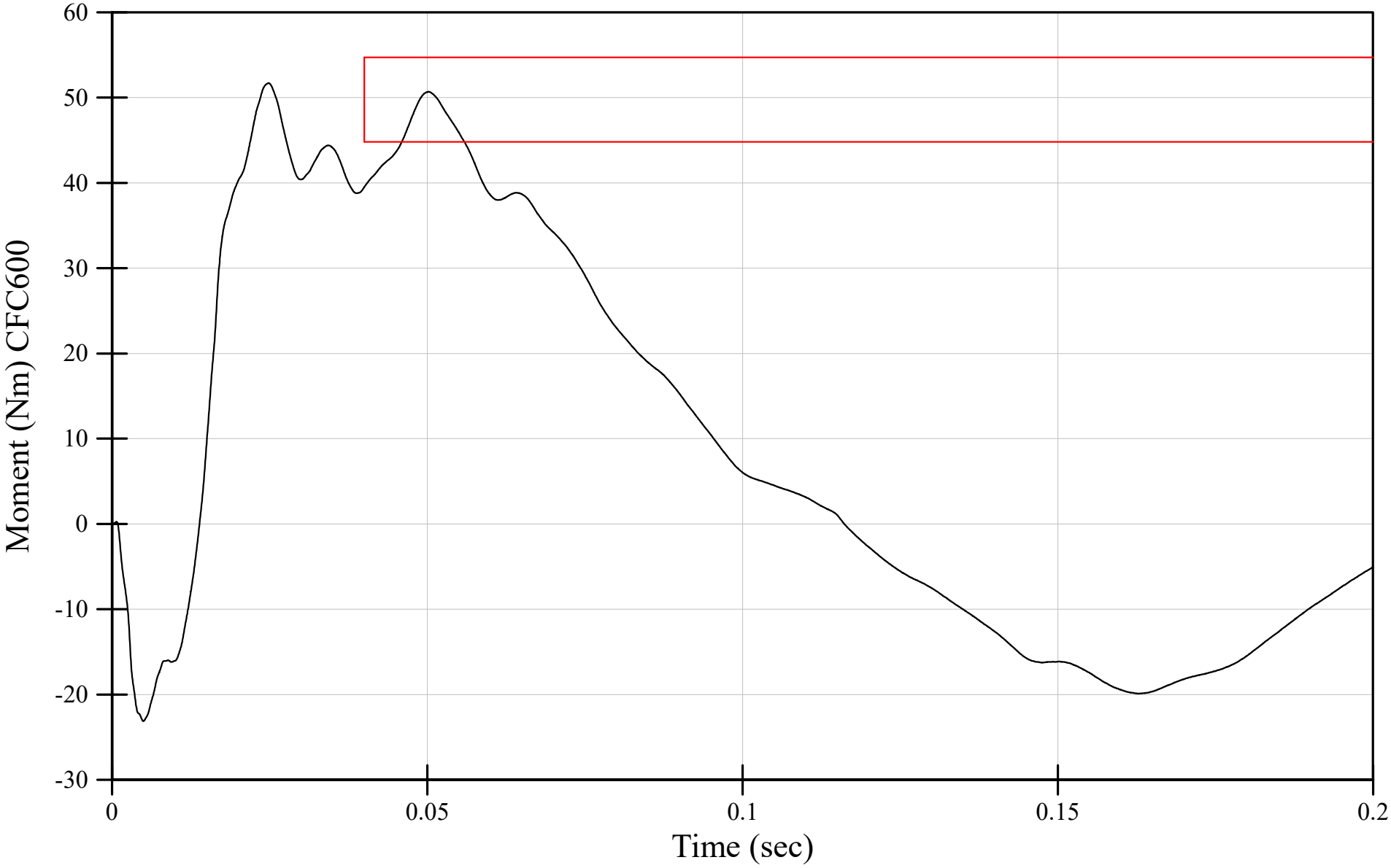


File Name: DO9799 NeckLateralLeft200723-02_Processed
07/23/2020 13:45:29.0000

Software Version: 2.7.1

Test Temperature: 21.0° C
Relative Humidity: 59%
Test Velocity: 3.37 m/s

THOR Neck Left Lateral Qualification
X-Moment as Measured
Serial Number: DO9799

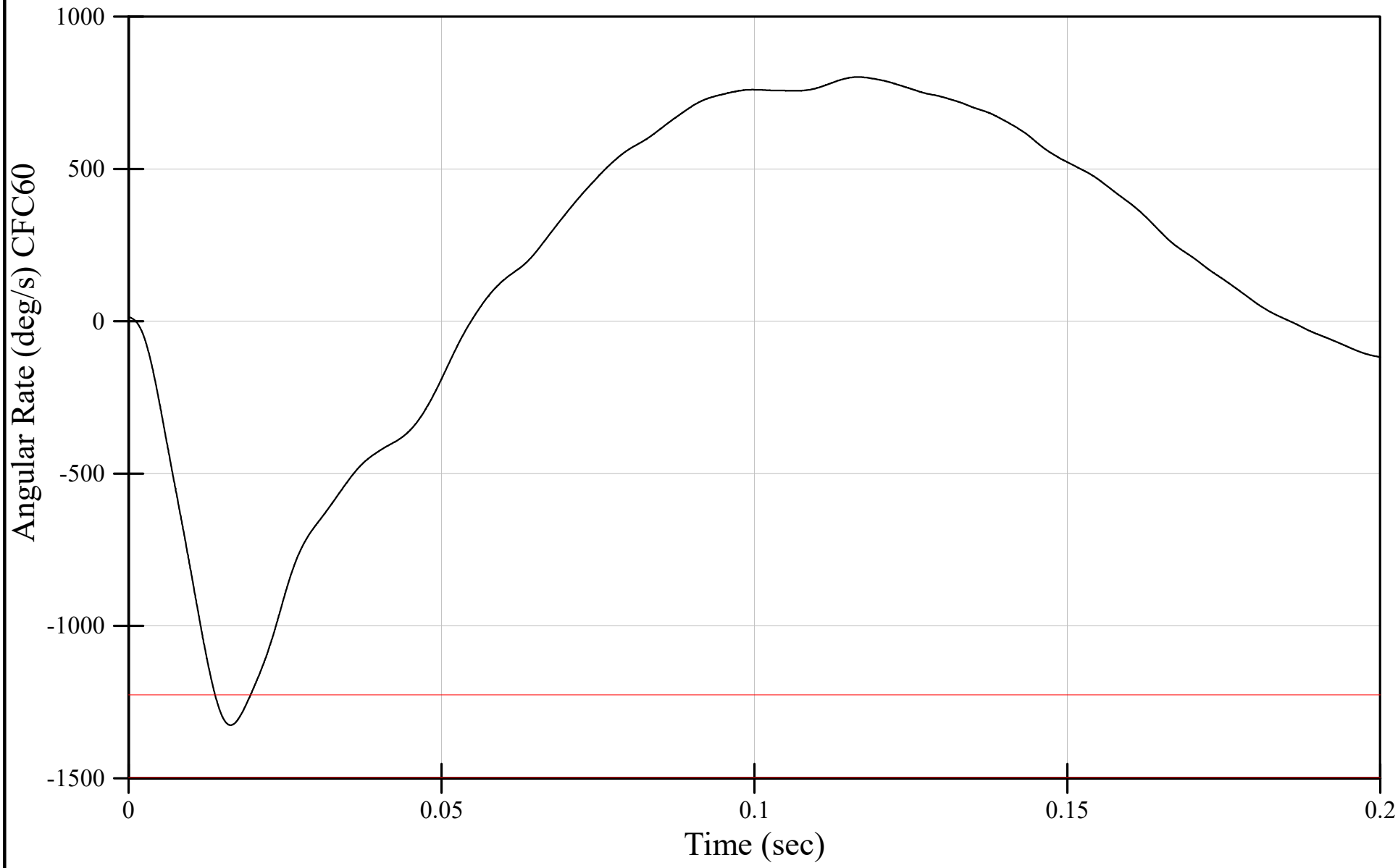


File Name: DO9799 NeckLateralLeft200723-02_Processed
07/23/2020 13:45:29.0000

Software Version: 2.7.1

Test Temperature: 21.0° C
Relative Humidity: 59%
Test Velocity: 3.37 m/s

THOR Neck Left Lateral Qualification
Peak Angular Rate
Serial Number: DO9799

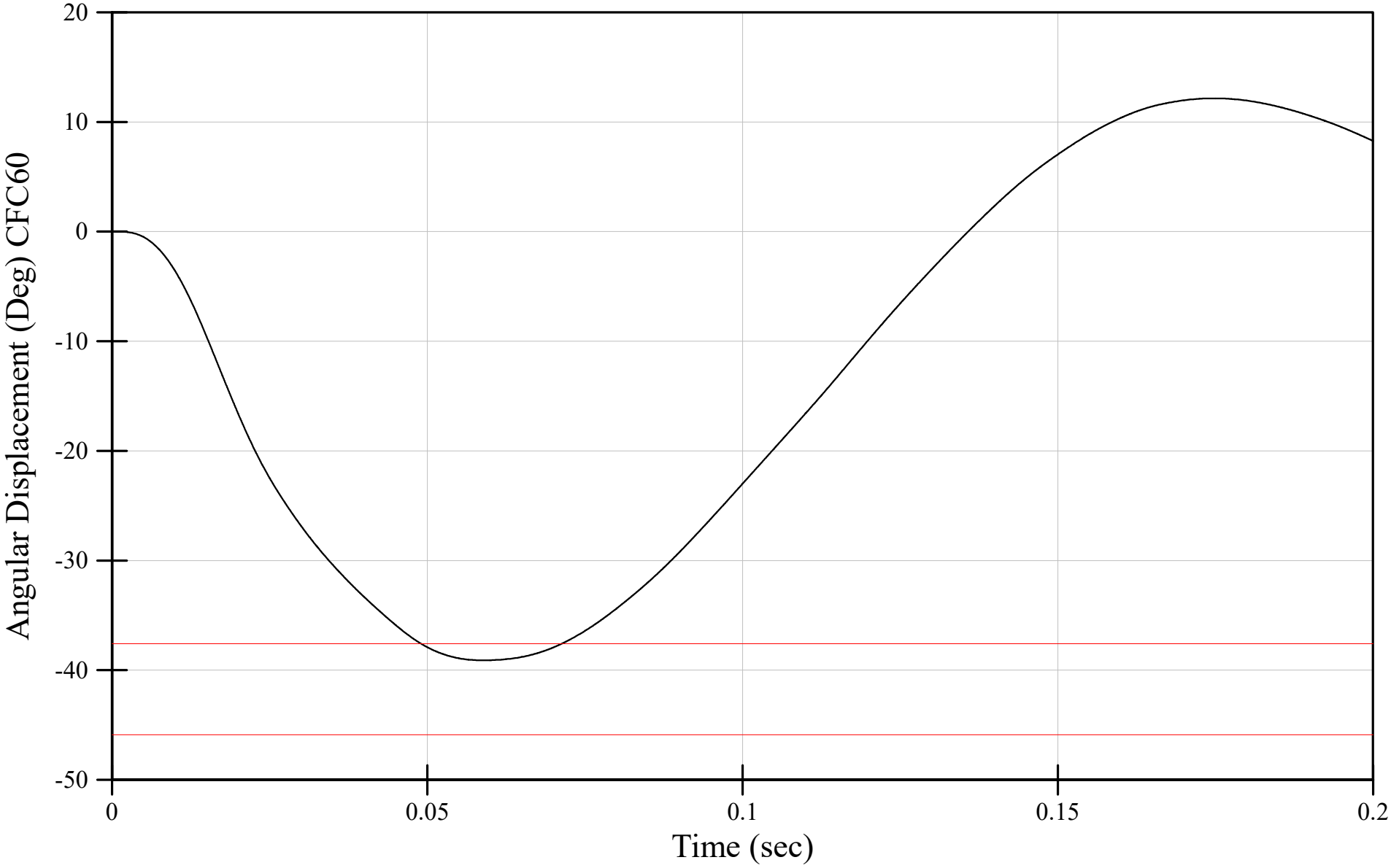


File Name: DO9799 NeckLateralLeft200723-02_Processed
07/23/2020 13:45:29.0000

Software Version: 2.7.1

Test Temperature: 21.0° C
Relative Humidity: 59%
Test Velocity: 3.37 m/s

THOR Neck Left Lateral Qualification
Neck Rotation
Serial Number: DO9799

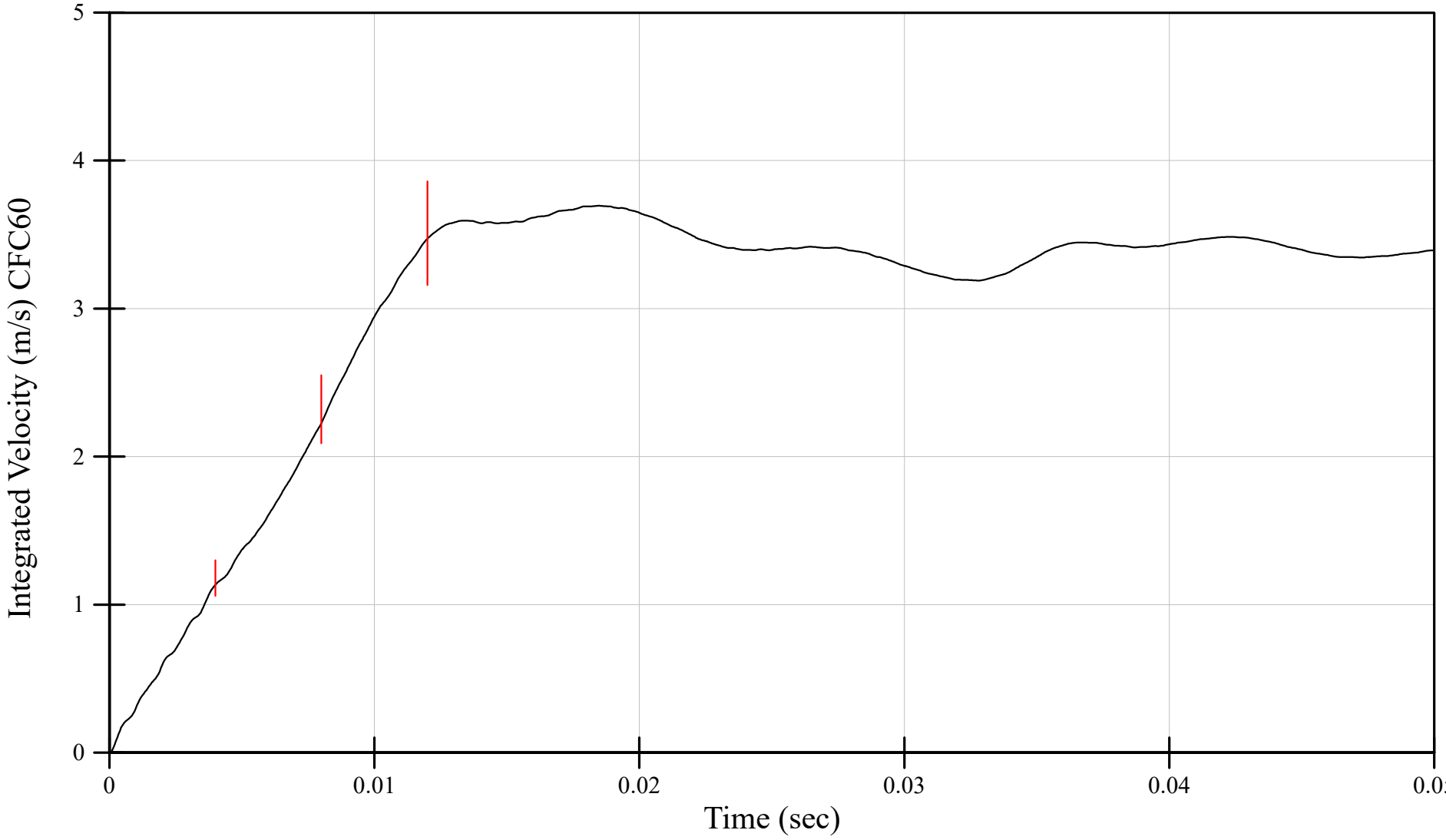


File Name: DO9799 NeckLateralLeft200723-02_Processed
07/23/2020 13:45:29.0000

Software Version: 2.7.1

Test Temperature: 21.0° C
Relative Humidity: 59%
Test Velocity: 3.37 m/s

THOR Neck Right Lateral Qualification
Probe Acceleration
Serial Number: DO9799

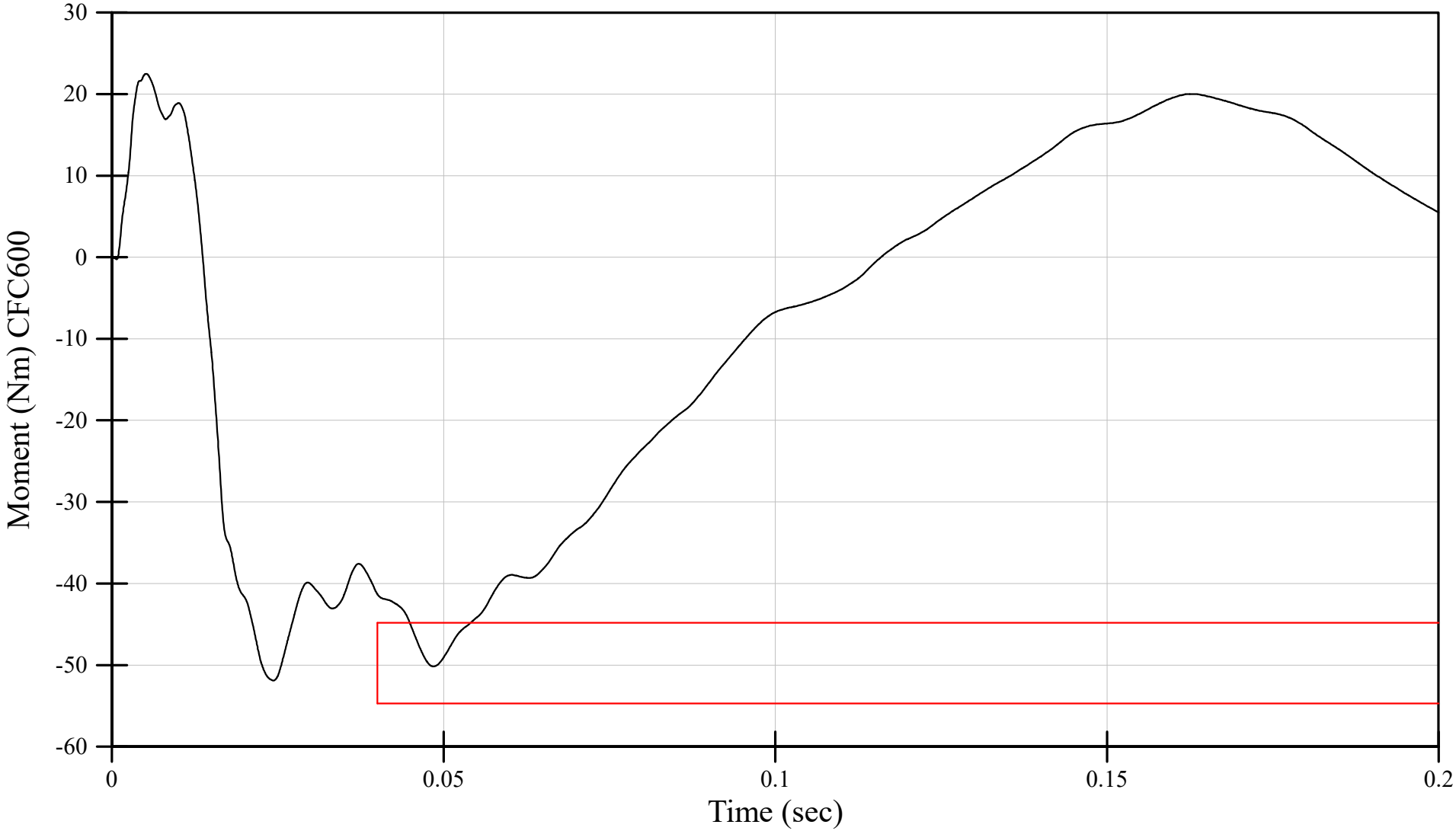


File Name: DO9799 NeckLateralRight200723-01_Processed
07/23/2020 14:27:56.0000

Software Version: 2.7.1

Test Temperature: 21.0° C
Relative Humidity: 59%
Test Velocity: 3.37 m/s

THOR Neck Right Lateral Qualification
X-Moment as Measured
Serial Number: DO9799

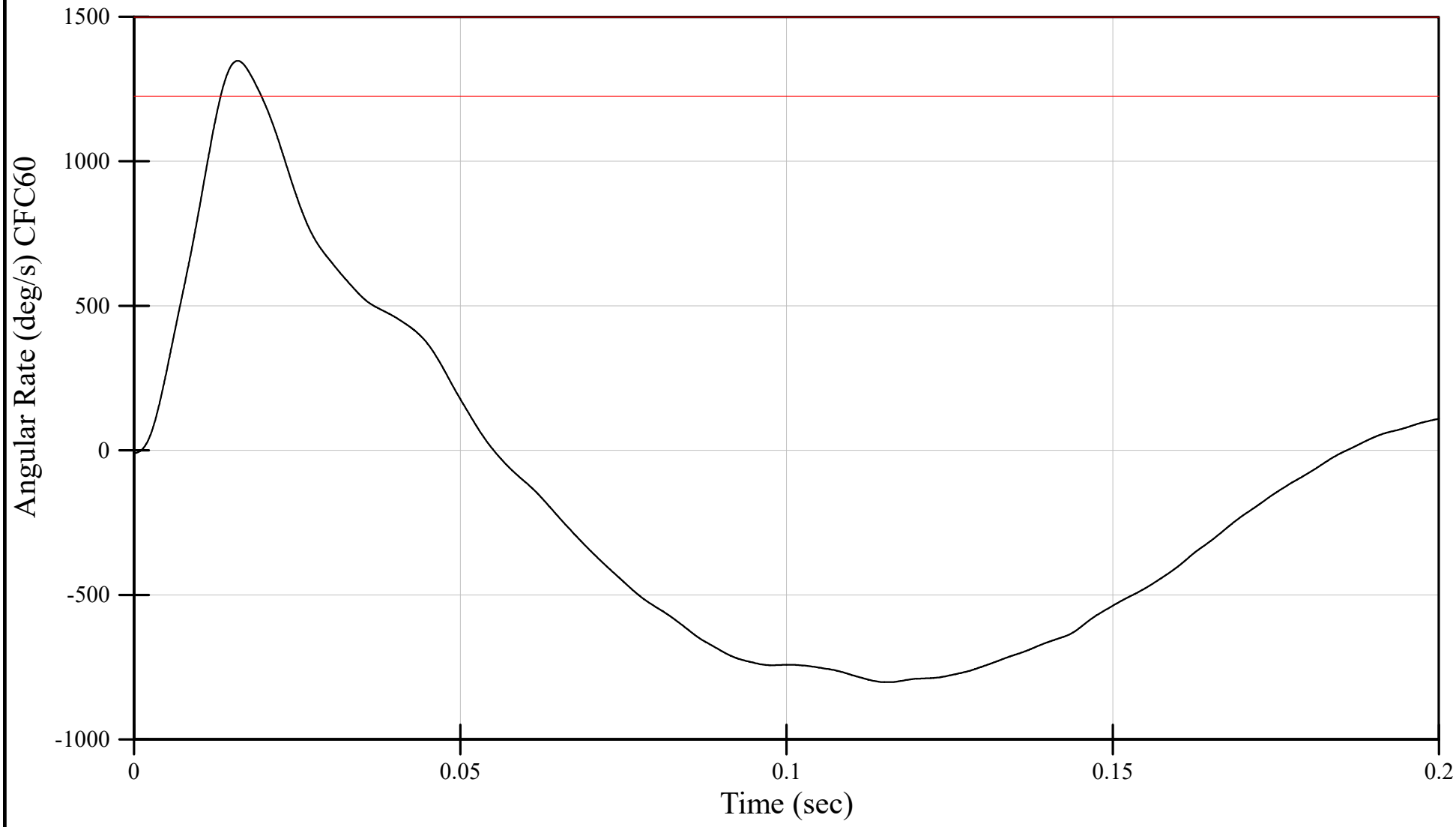


File Name: DO9799 NeckLateralRight200723-01_Processed
07/23/2020 14:27:56.0000

Software Version: 2.7.1

Test Temperature: 21.0° C
Relative Humidity: 59%
Test Velocity: 3.37 m/s

THOR Neck Right Lateral Qualification
Peak Angular Rate
Serial Number: DO9799

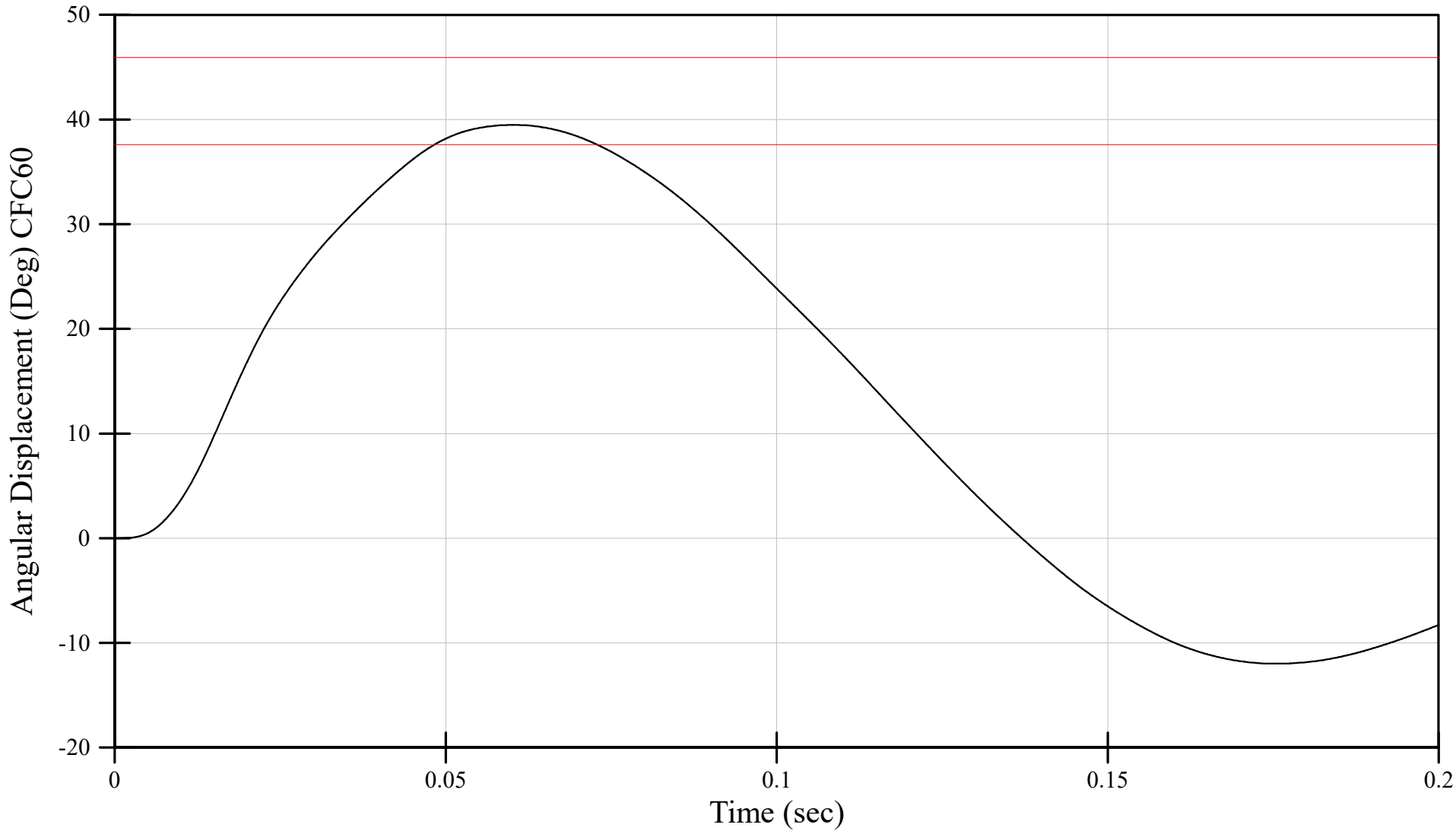


File Name: DO9799 NeckLateralRight200723-01_Processed
07/23/2020 14:27:56.0000

Software Version: 2.7.1

Test Temperature: 21.0° C
Relative Humidity: 59%
Test Velocity: 3.37 m/s

THOR Neck Right Lateral Qualification
Neck Rotation
Serial Number: DO9799

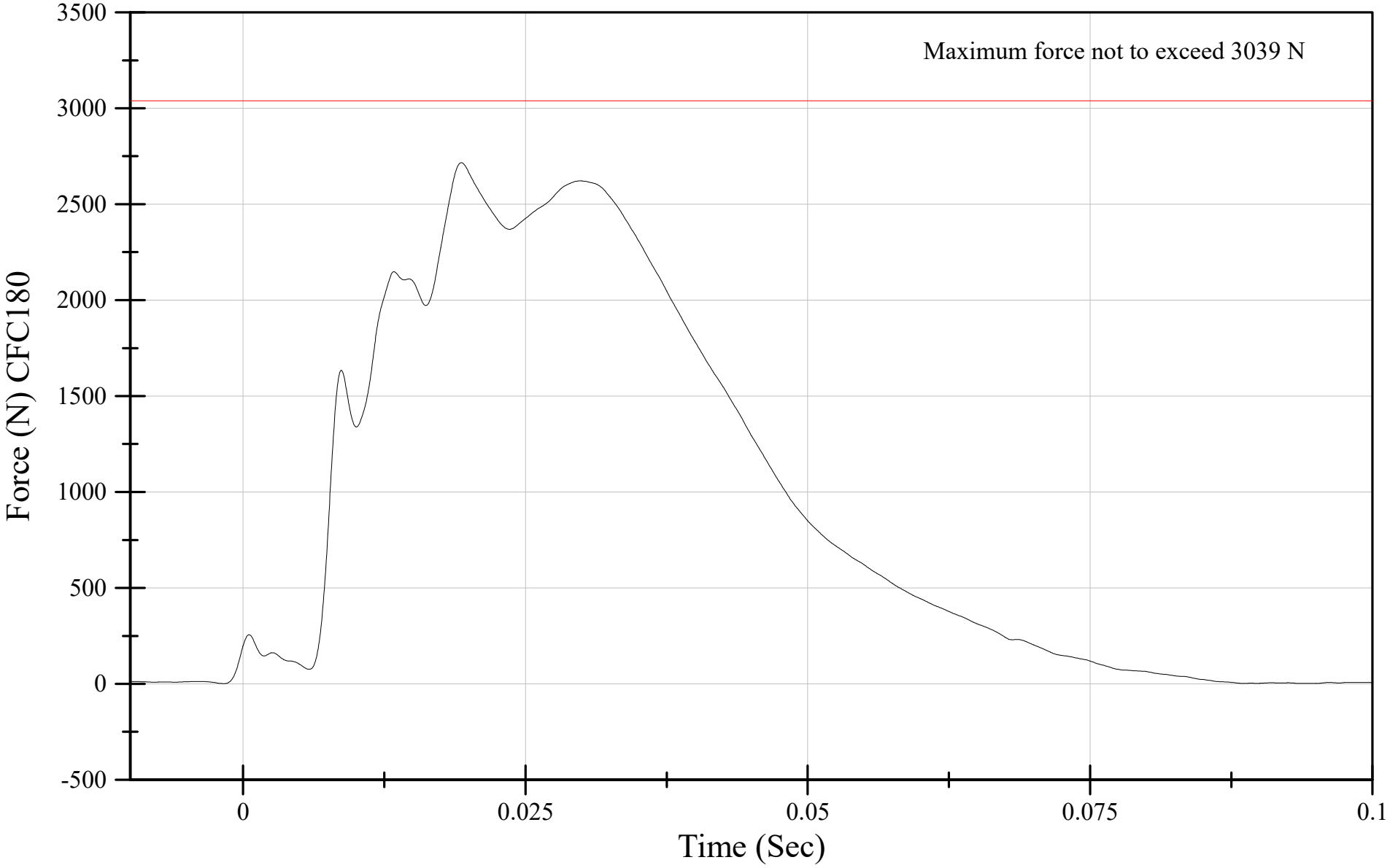


File Name: DO9799 NeckLateralRight200723-01_Processed
07/23/2020 14:27:56.0000

Software Version: 2.7.1

Test Temperature: 20.9° C
Relative Humidity: 59%
Test Velocity: 4.25 m/s

THOR Upper Thorax Qualification
Probe Force
Serial Number: DO9799

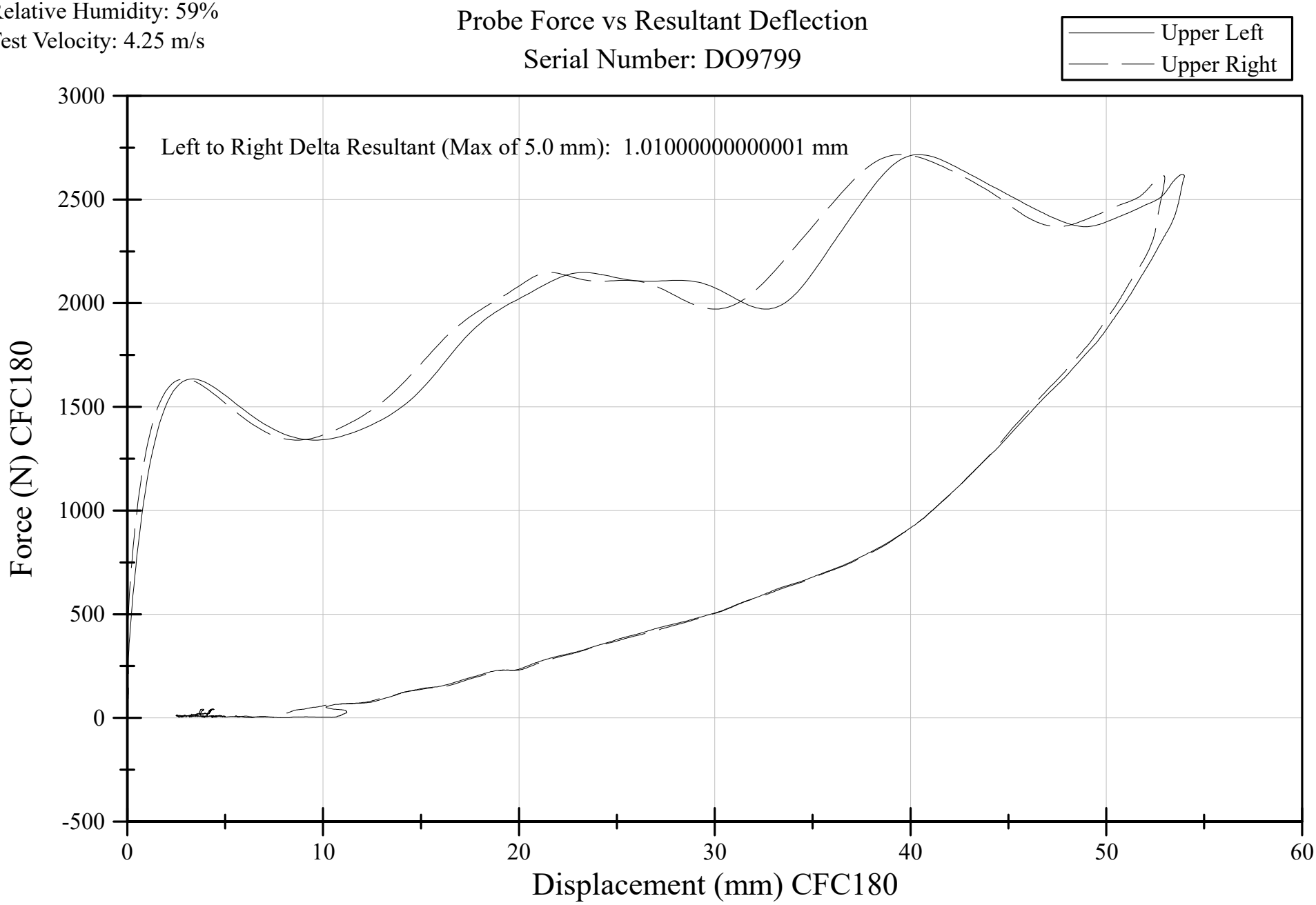


File Name: DO9799 ThoraxUpper200717-01_Processed
07/17/2020 10:43:16.0000

Software Version: 2.7.1

Test Temperature: 20.9° C
Relative Humidity: 59%
Test Velocity: 4.25 m/s

THOR Upper Thorax Qualification
Probe Force vs Resultant Deflection
Serial Number: DO9799

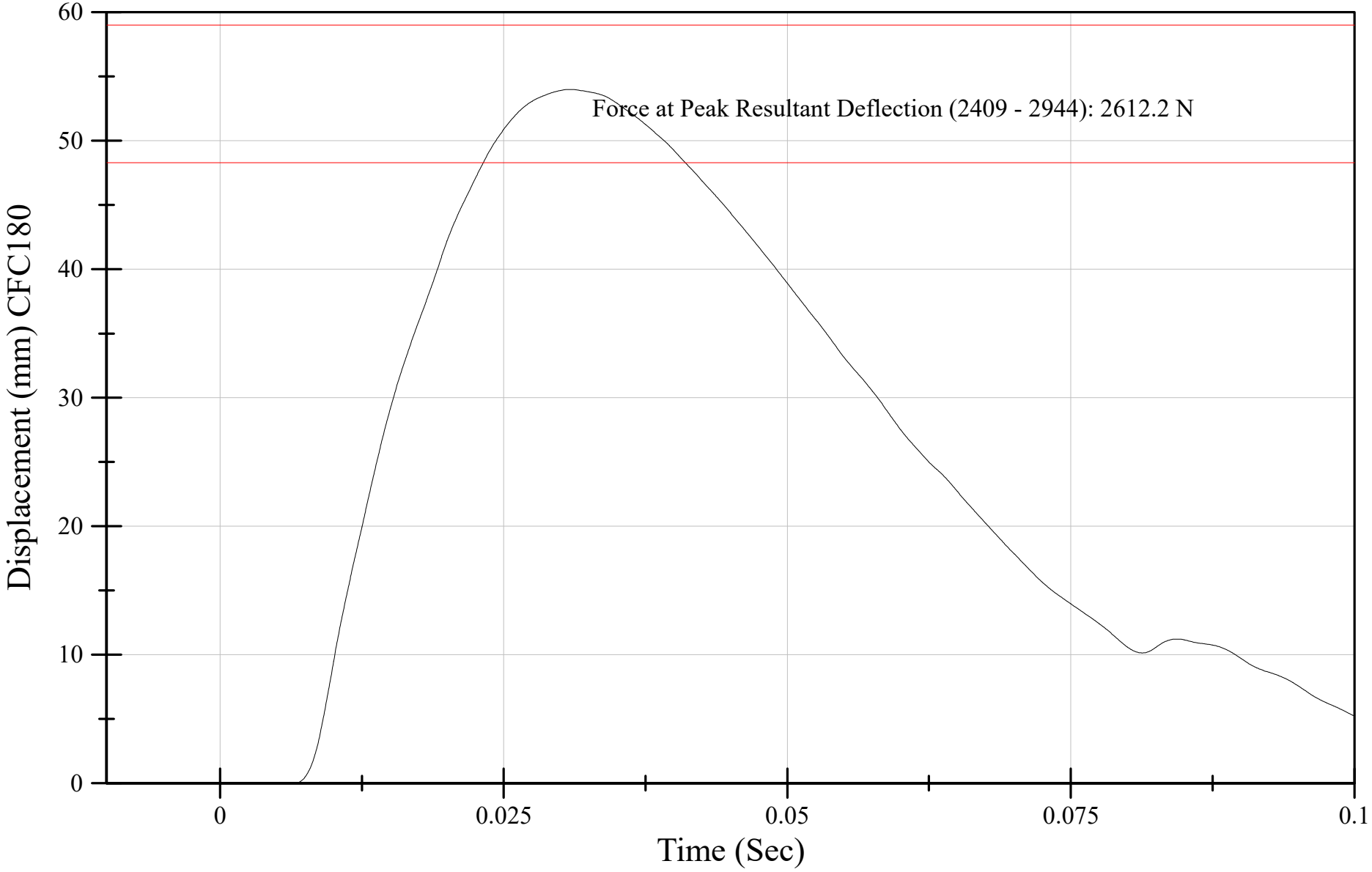


File Name: DO9799 ThoraxUpper200717-01_Processed
07/17/2020 10:43:16.0000

Software Version: 2.7.1

Test Temperature: 20.9° C
Relative Humidity: 59%
Test Velocity: 4.25 m/s

THOR Upper Thorax Qualification
Left Resultant Deflection
Serial Number: DO9799

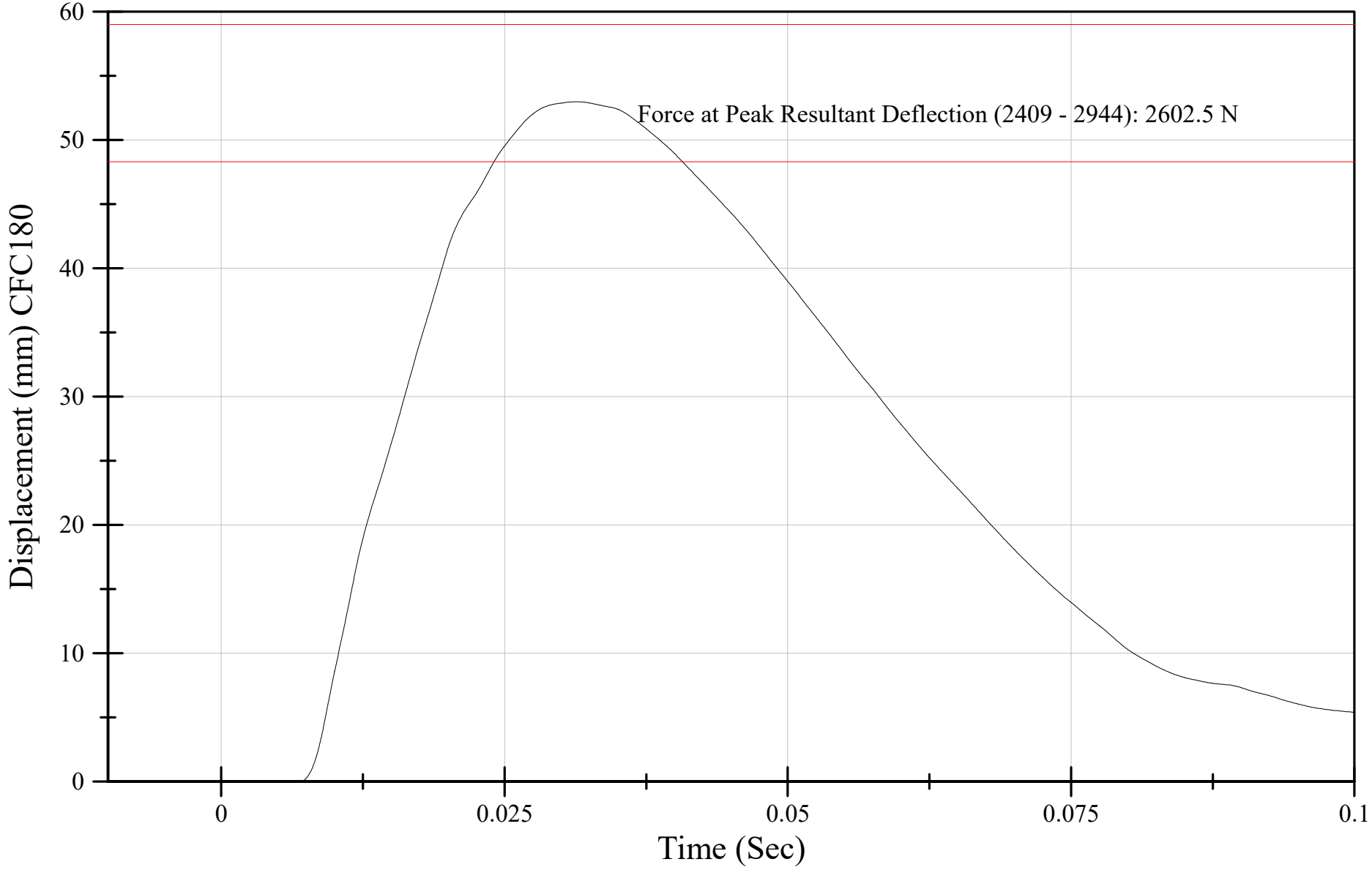


File Name: DO9799 ThoraxUpper200717-01_Processed
07/17/2020 10:43:16.0000

Software Version: 2.7.1

Test Temperature: 20.9° C
Relative Humidity: 59%
Test Velocity: 4.25 m/s

THOR Upper Thorax Qualification
Right Resultant Deflection
Serial Number: DO9799

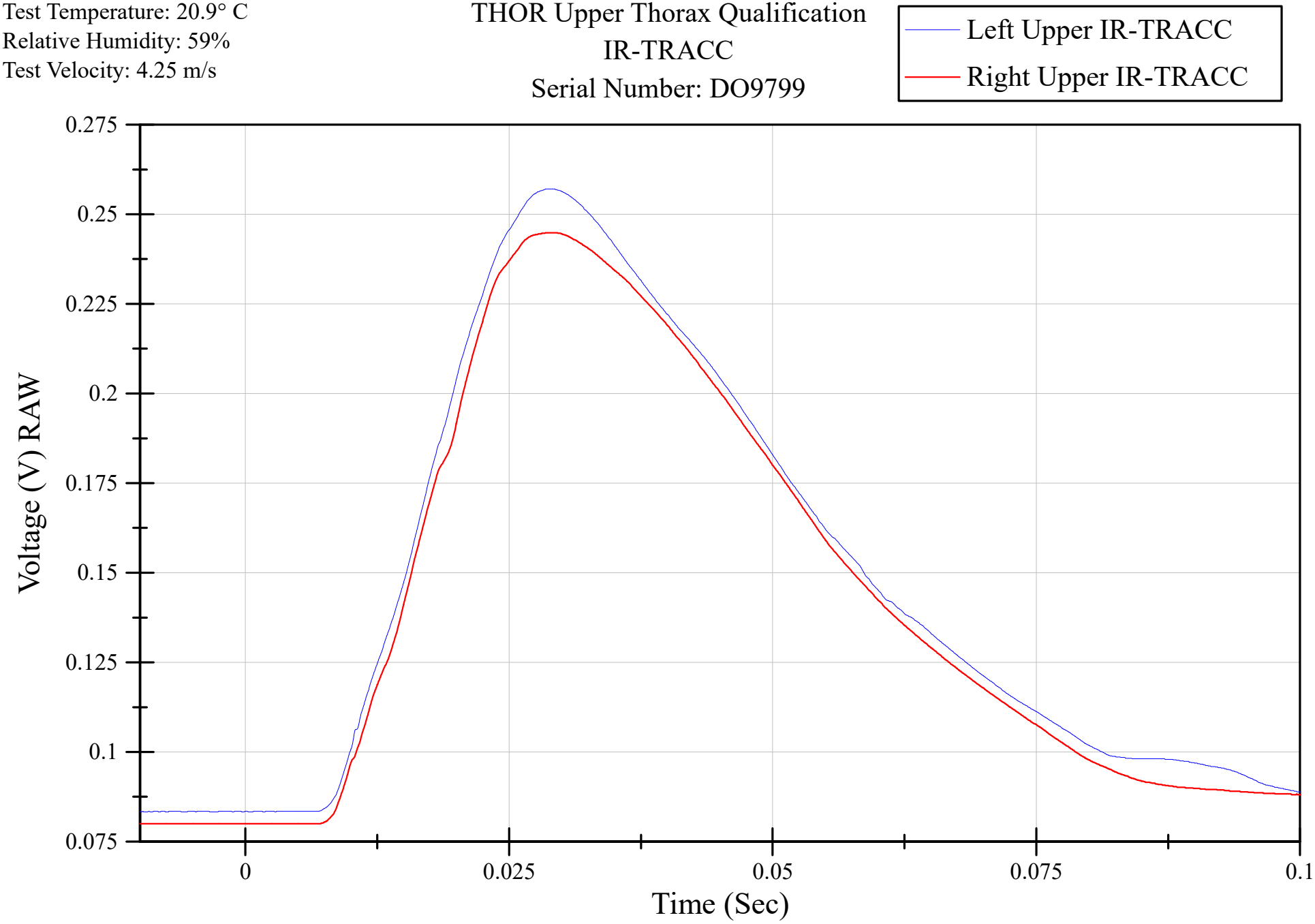


File Name: DO9799 ThoraxUpper200717-01_Processed
07/17/2020 10:43:16.0000

Software Version: 2.7.1

Test Temperature: 20.9° C
Relative Humidity: 59%
Test Velocity: 4.25 m/s

THOR Upper Thorax Qualification
IR-TRACC
Serial Number: DO9799

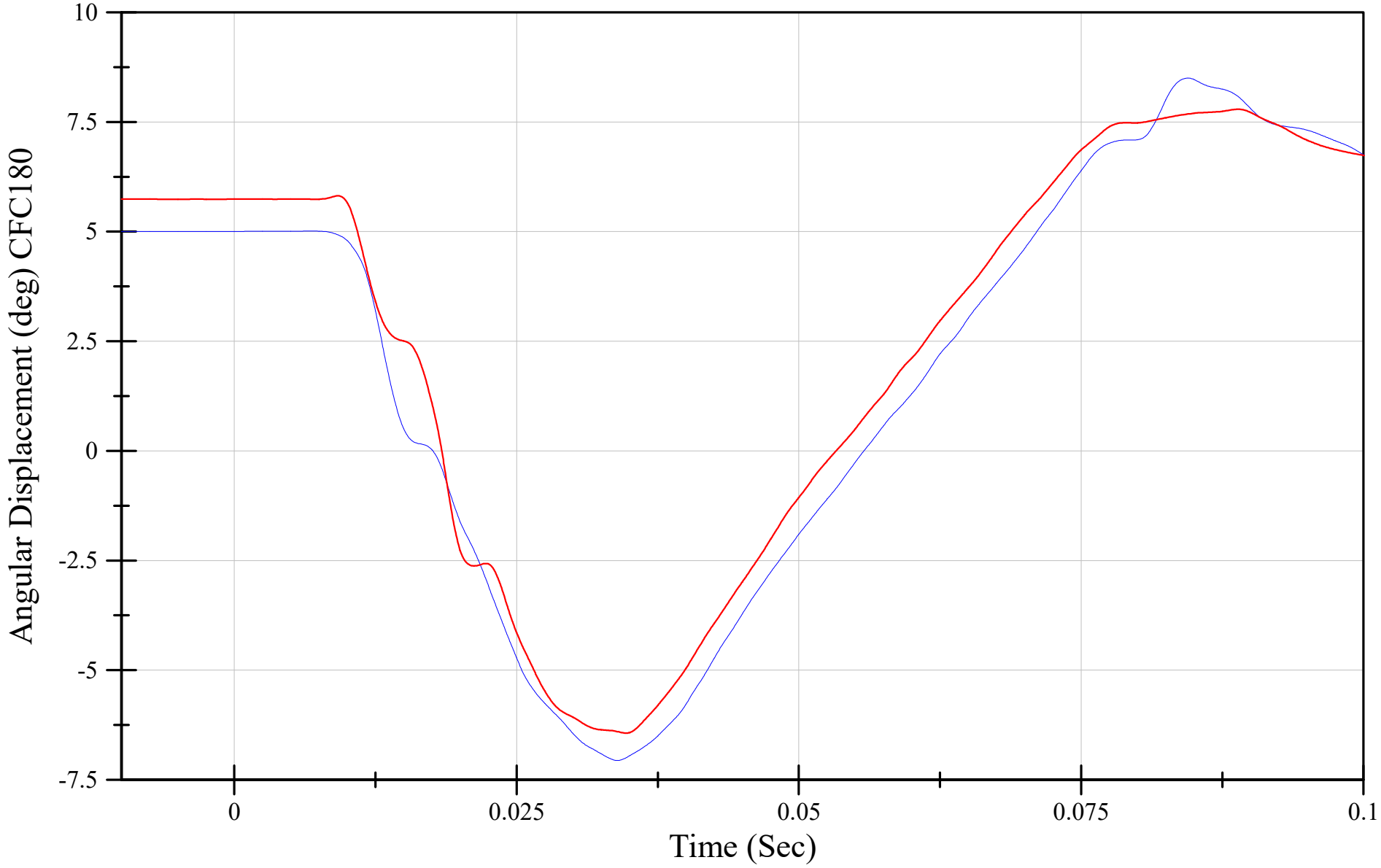


File Name: DO9799 ThoraxUpper200717-01_Processed
07/17/2020 10:43:16.0000

Software Version: 2.7.1

Test Temperature: 20.9° C
Relative Humidity: 59%
Test Velocity: 4.25 m/s

THOR Upper Thorax Qualification
Y-Potentiometer
Serial Number: DO9799

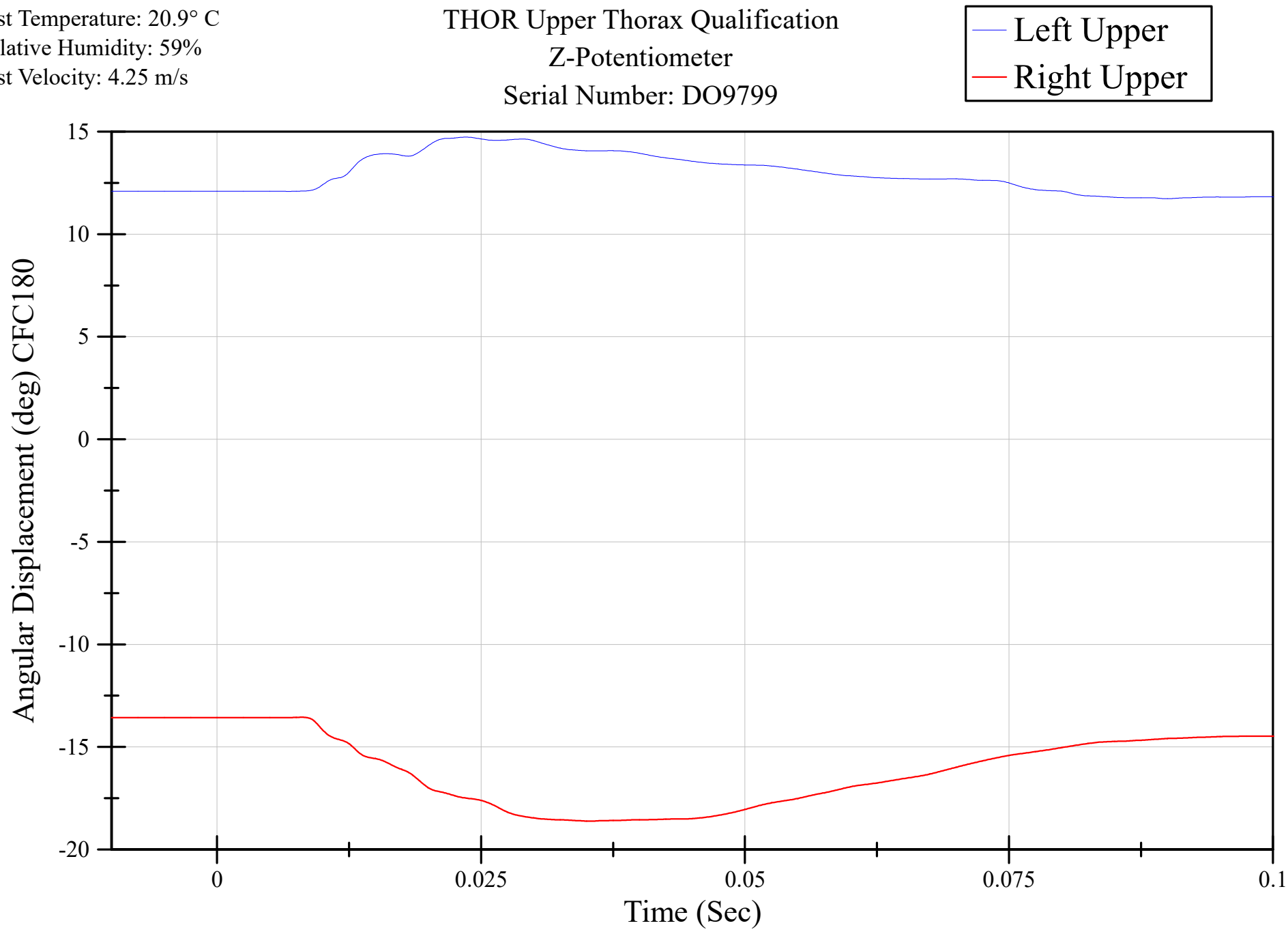


File Name: DO9799 ThoraxUpper200717-01_Processed
07/17/2020 10:43:16.0000

Software Version: 2.7.1

Test Temperature: 20.9° C
Relative Humidity: 59%
Test Velocity: 4.25 m/s

THOR Upper Thorax Qualification
Z-Potentiometer
Serial Number: DO9799

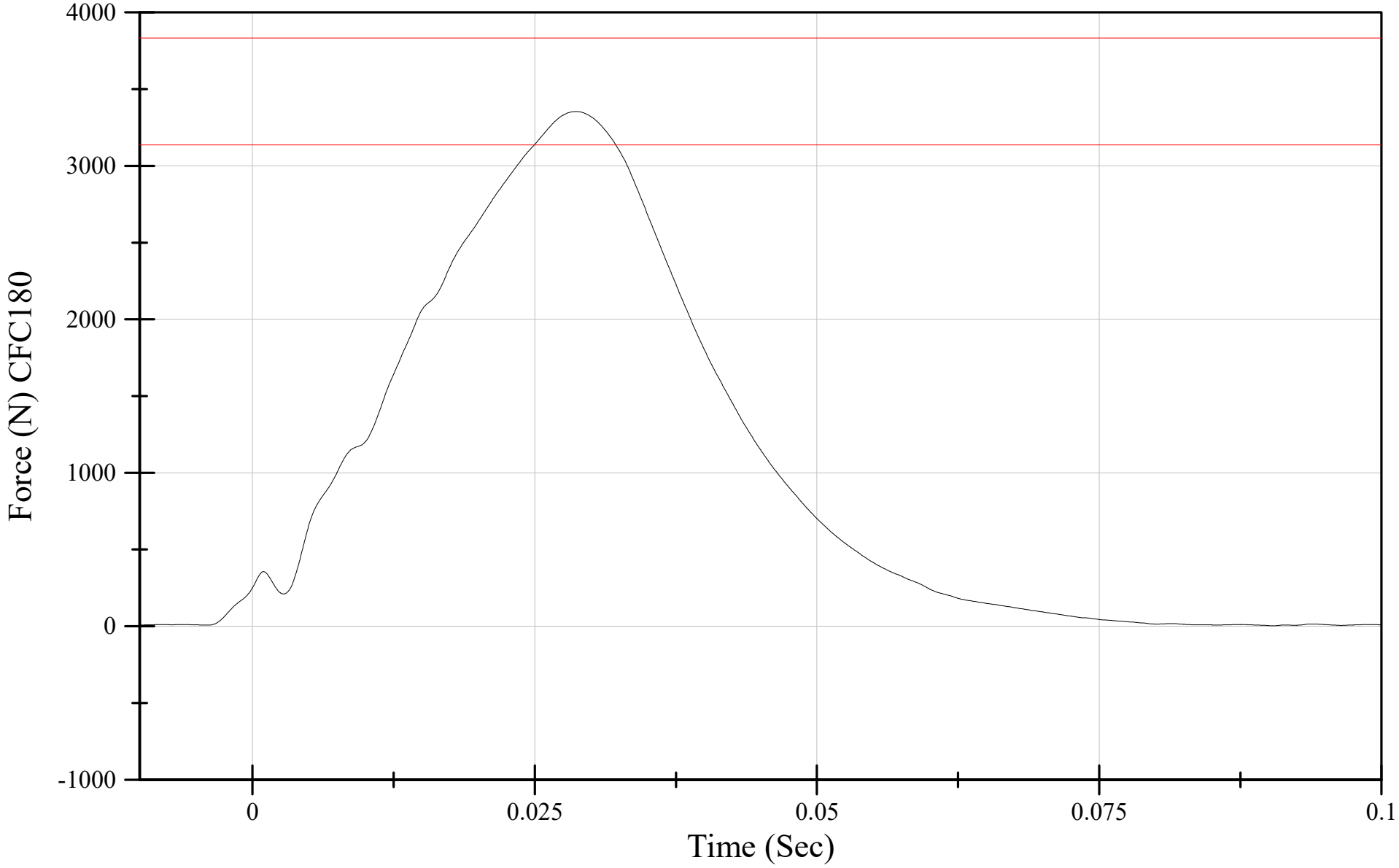


File Name: DO9799 ThoraxUpper200717-01_Processed
07/17/2020 10:43:16.0000

Software Version: 2.7.1

Test Temperature: 21.0° C
Relative Humidity: 60%
Test Velocity: 4.25 m/s

THOR Lower Left Thorax Qualification
Peak Probe Force
Serial Number: DO9799

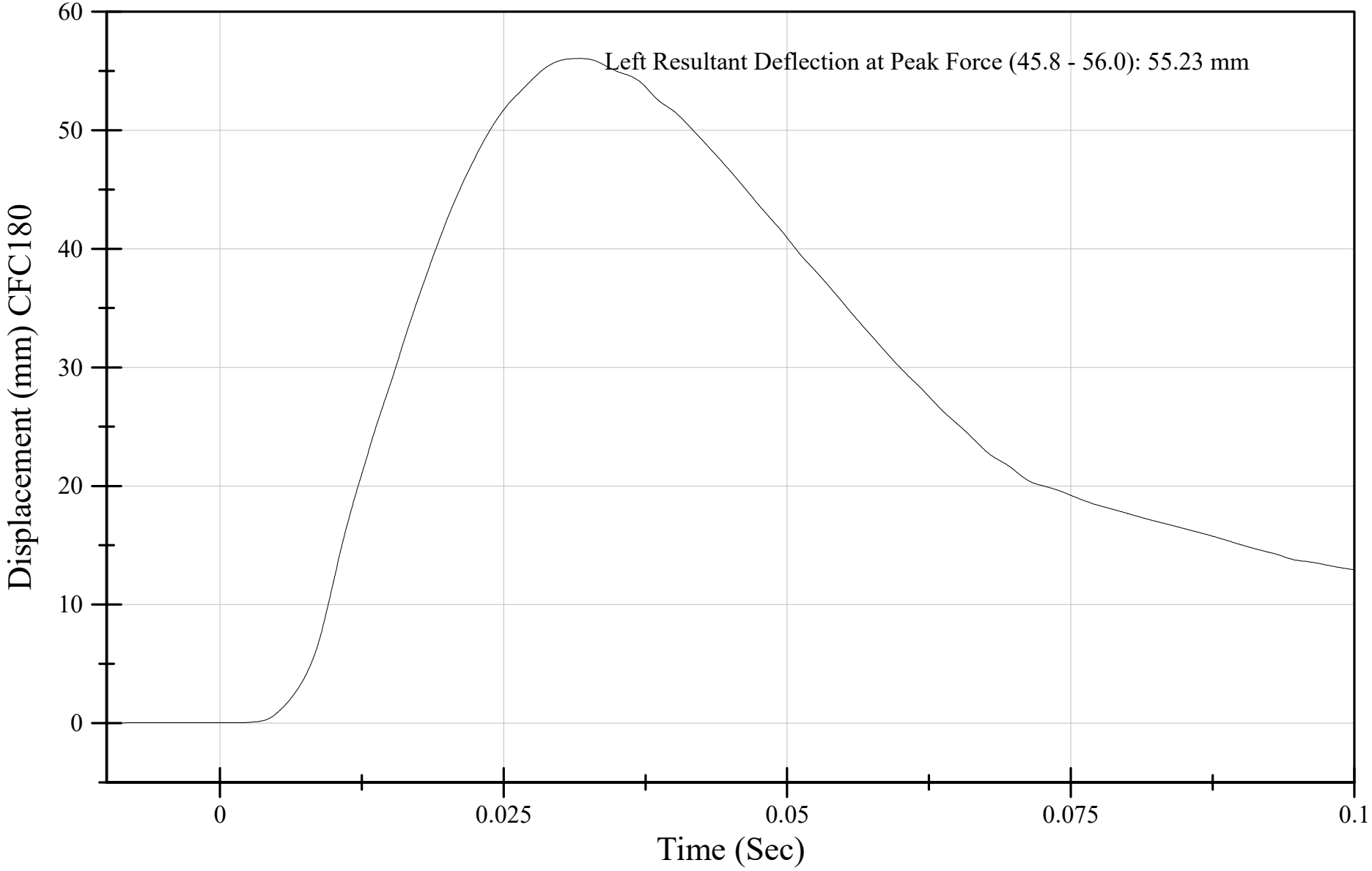


File Name: DO9799 ThoraxLowerLeft200717-01_Processed
07/17/2020 11:55:12.0000

Software Version: 2.7.1

Test Temperature: 21.0° C
Relative Humidity: 60%
Test Velocity: 4.25 m/s

THOR Lower Left Thorax Qualification
Left Resultant Deflection
Serial Number: DO9799

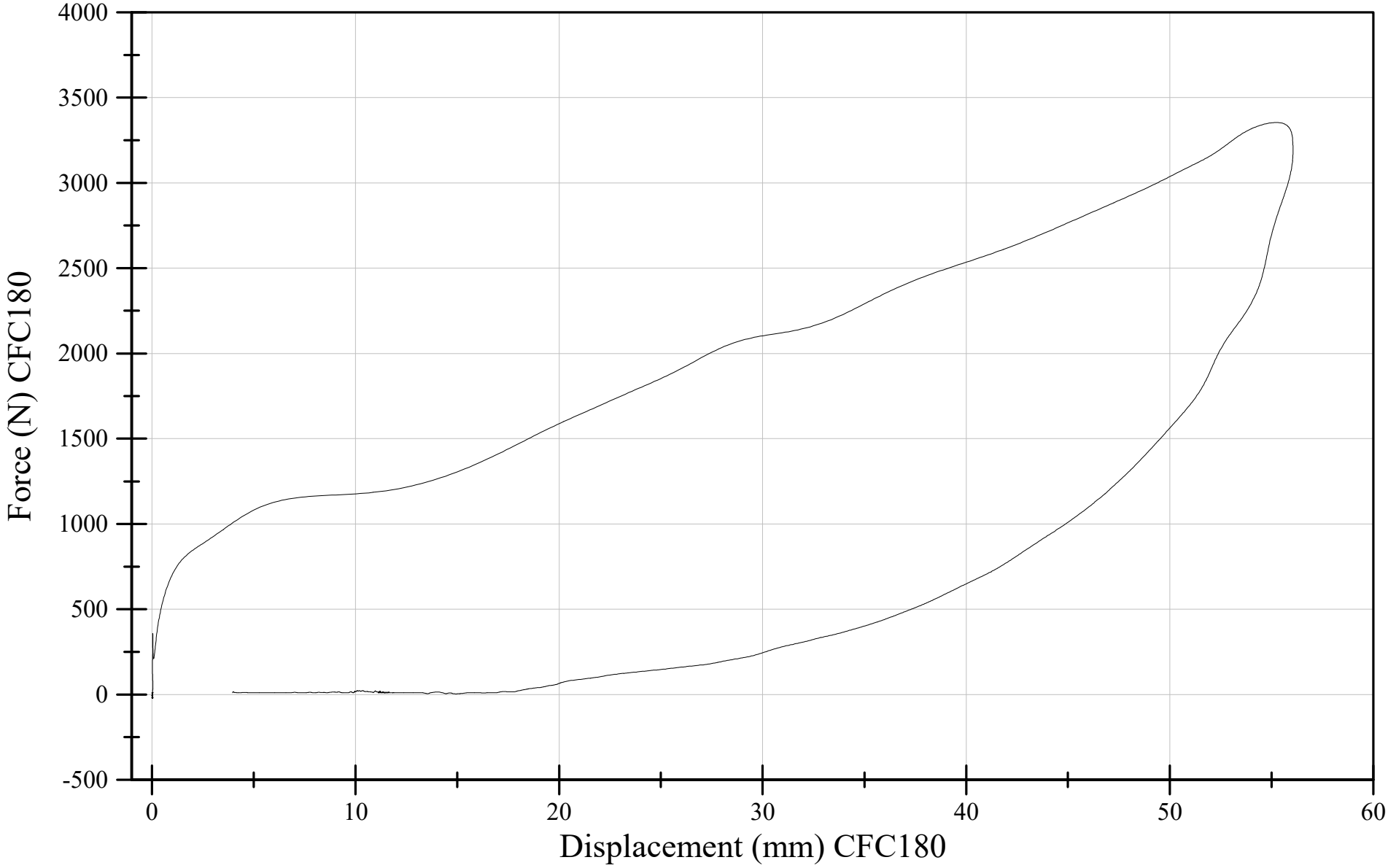


File Name: DO9799 ThoraxLowerLeft200717-01_Processed
07/17/2020 11:55:12.0000

Software Version: 2.7.1

Test Temperature: 21.0° C
Relative Humidity: 60%
Test Velocity: 4.25 m/s

THOR Lower Left Thorax Qualification
Left Resultant Force vs Deflection
Serial Number: DO9799

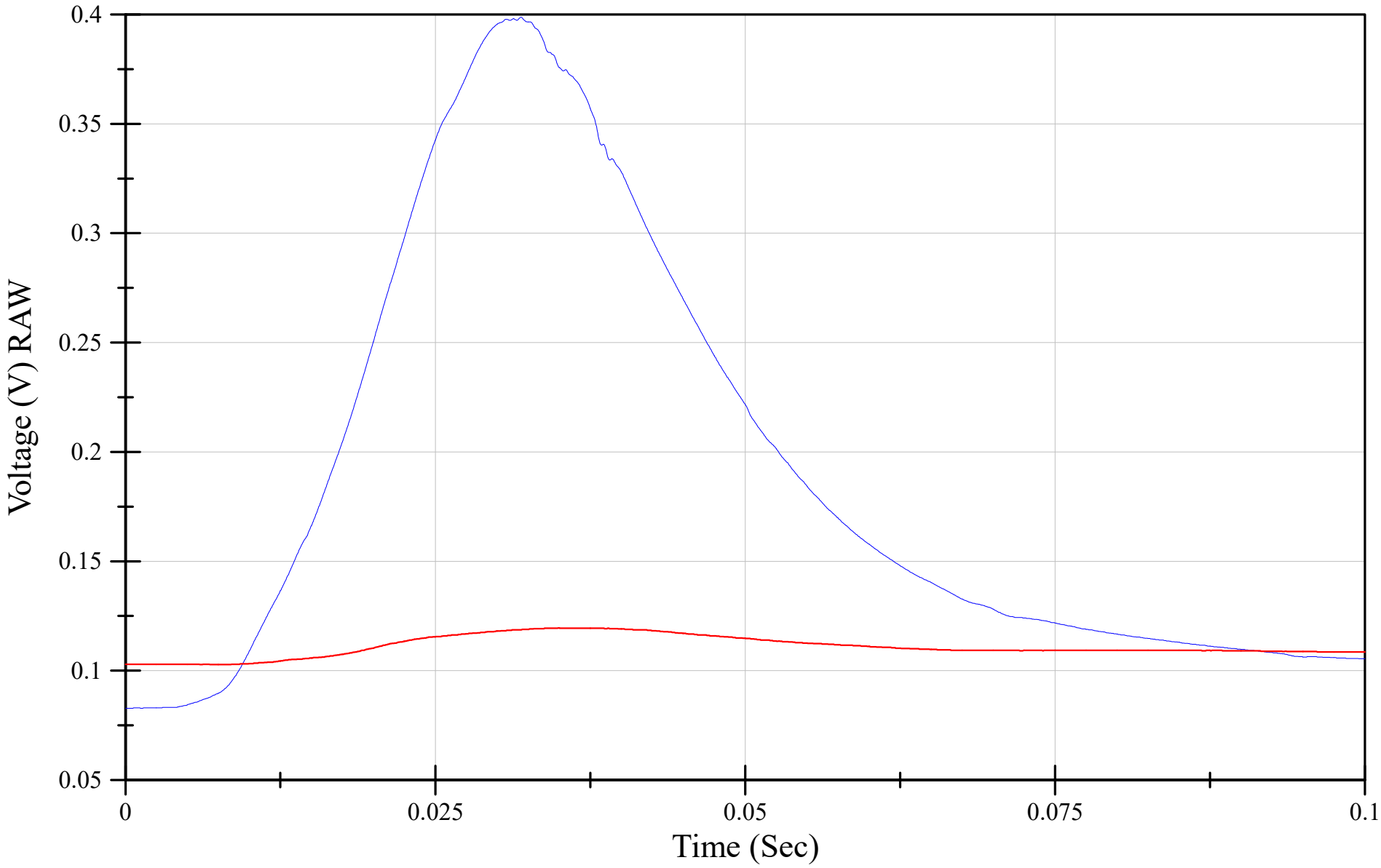


File Name: DO9799 ThoraxLowerLeft200717-01_Processed
07/17/2020 11:55:12.0000

Software Version: 2.7.1

Test Temperature: 21.0° C
Relative Humidity: 60%
Test Velocity: 4.25 m/s

THOR Lower Left Thorax Qualification
IR-TRACC RAW Voltage
Serial Number: DO9799

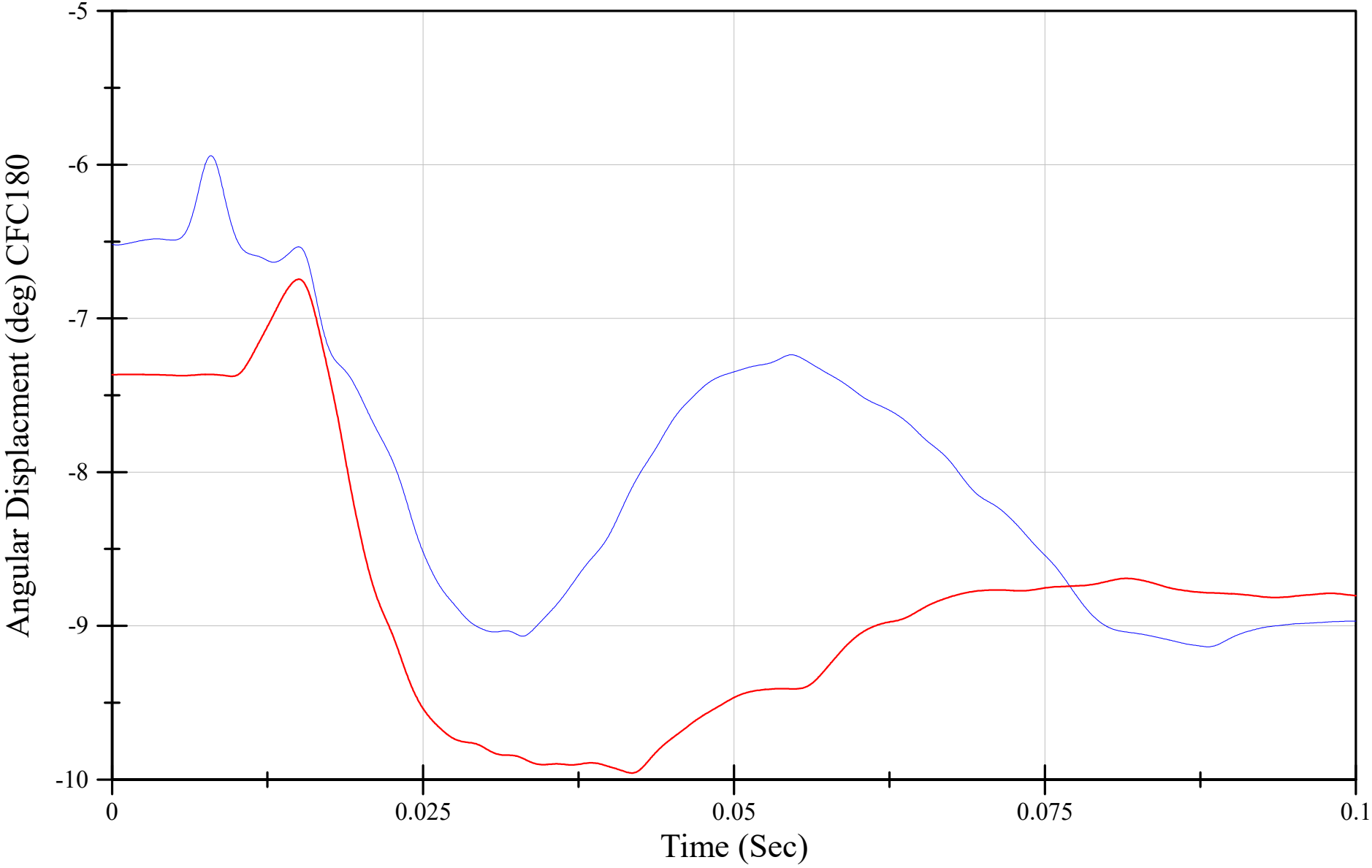


File Name: DO9799 ThoraxLowerLeft200717-01_Processed
07/17/2020 11:55:12.0000

Software Version: 2.7.1

Test Temperature: 21.0° C
Relative Humidity: 60%
Test Velocity: 4.25 m/s

THOR Lower Left Thorax Qualification
Y-Potentiometer
Serial Number: DO9799

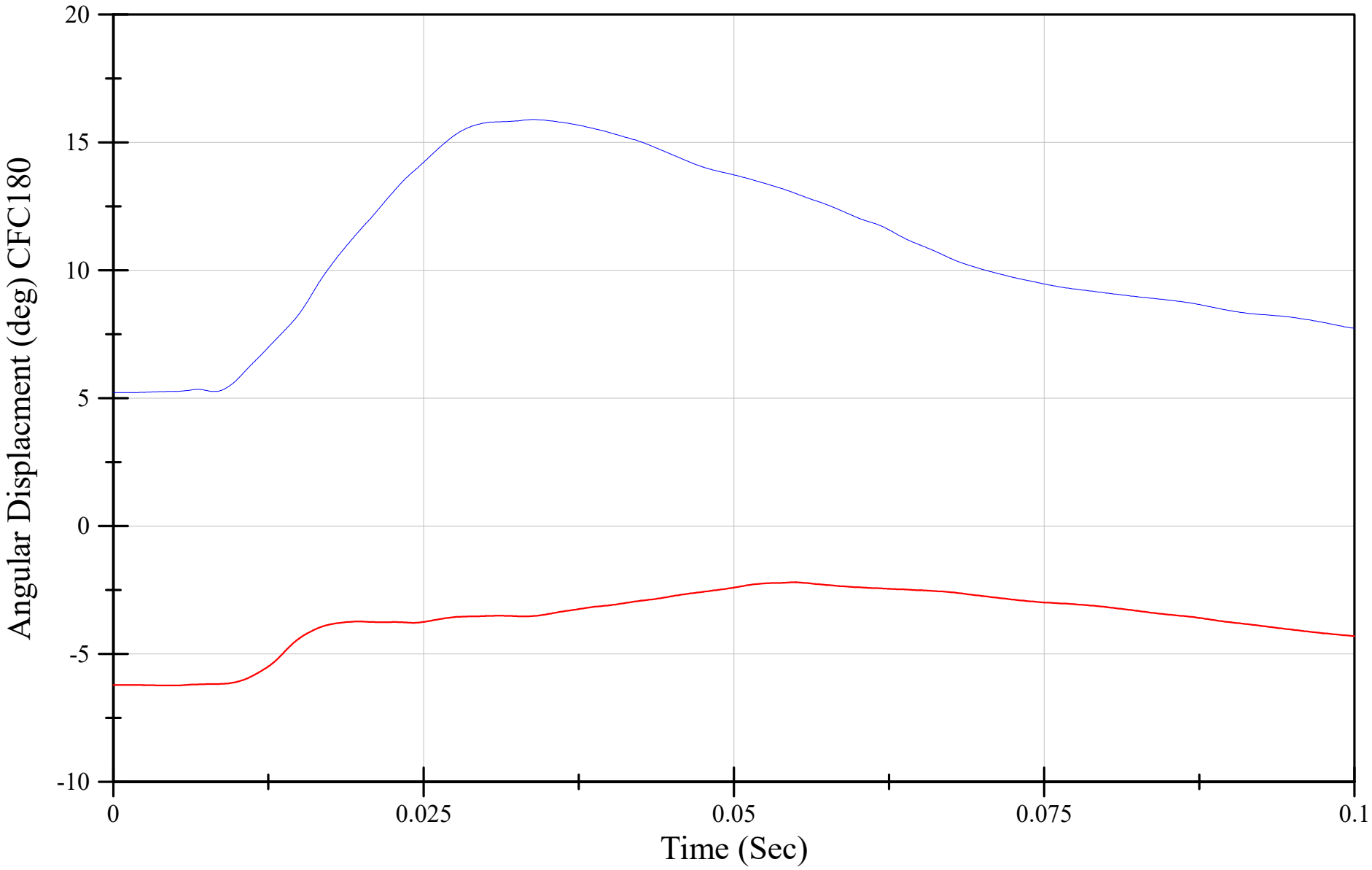


File Name: DO9799 ThoraxLowerLeft200717-01_Processed
07/17/2020 11:55:12.0000

Software Version: 2.7.1

Test Temperature: 21.0° C
Relative Humidity: 60%
Test Velocity: 4.25 m/s

THOR Lower Left Thorax Qualification
Z-Potentiometer
Serial Number: DO9799

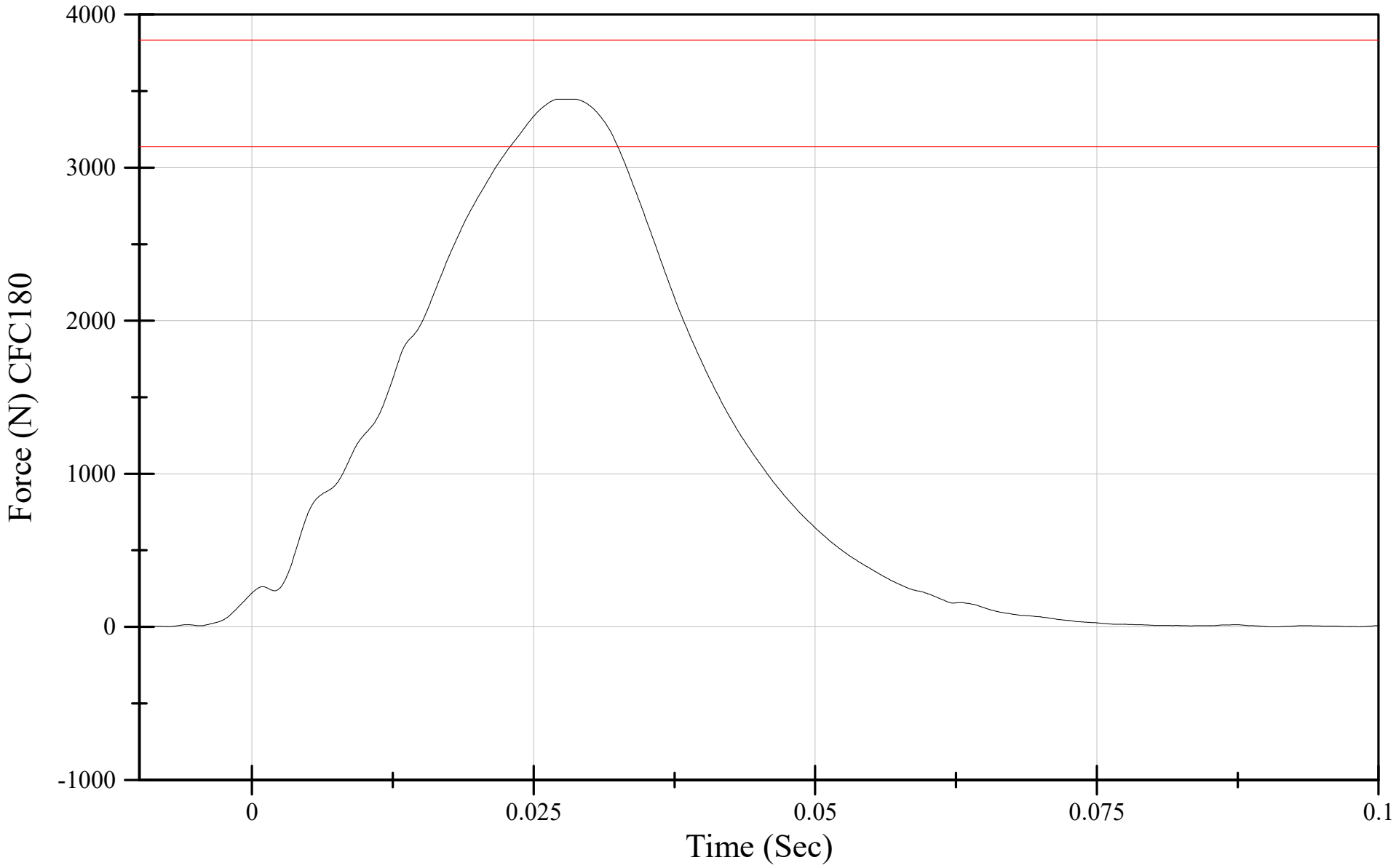


File Name: DO9799 ThoraxLowerLeft200717-01_Processed
07/17/2020 11:55:12.0000

Software Version: 2.7.1

Test Temperature: 21.1° C
Relative Humidity: 59%Test
Velocity: 4.26 m/s

THOR Lower Right Thorax Qualification
Peak Probe Force
Serial Number: DO9799

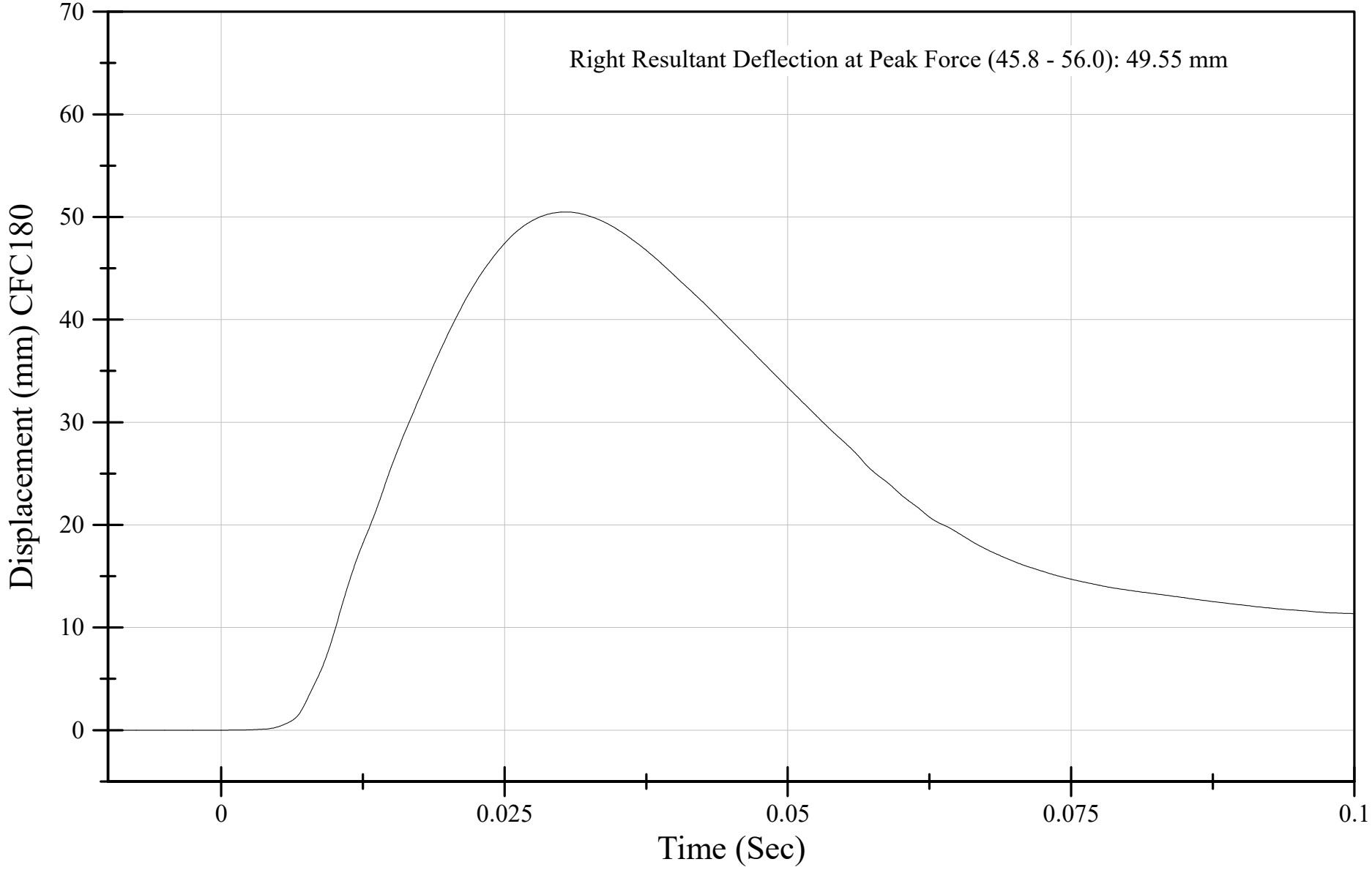


File Name: DO9799 ThoraxLowerRight200717-01_Processed
07/17/2020 13:10:14.0000

Software Version: 2.7.1

Test Temperature: 21.1° C
Relative Humidity: 59%Test
Velocity: 4.26 m/s

THOR Lower Right Thorax Qualification
Right Resultant Deflection
Serial Number: DO9799



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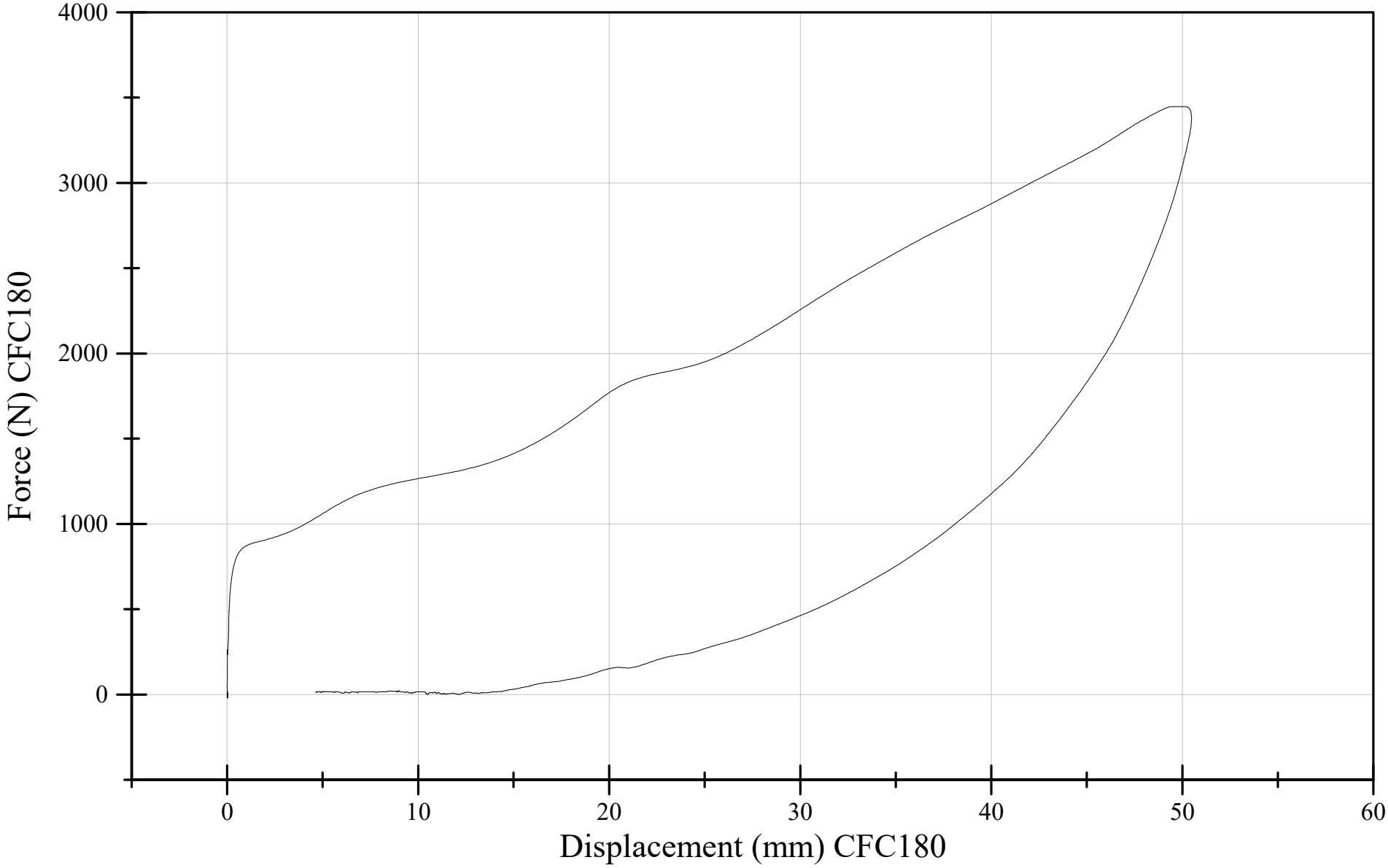
07/17/2020 13:10:14.0000

Software Version: 2.7.1

Test Temperature: 21.1° C
Relative Humidity: 59%Test
Velocity: 4.26 m/s

THOR Lower Right Thorax Qualification
Right Resultant Force vs Deflection
Serial Number: DO9799

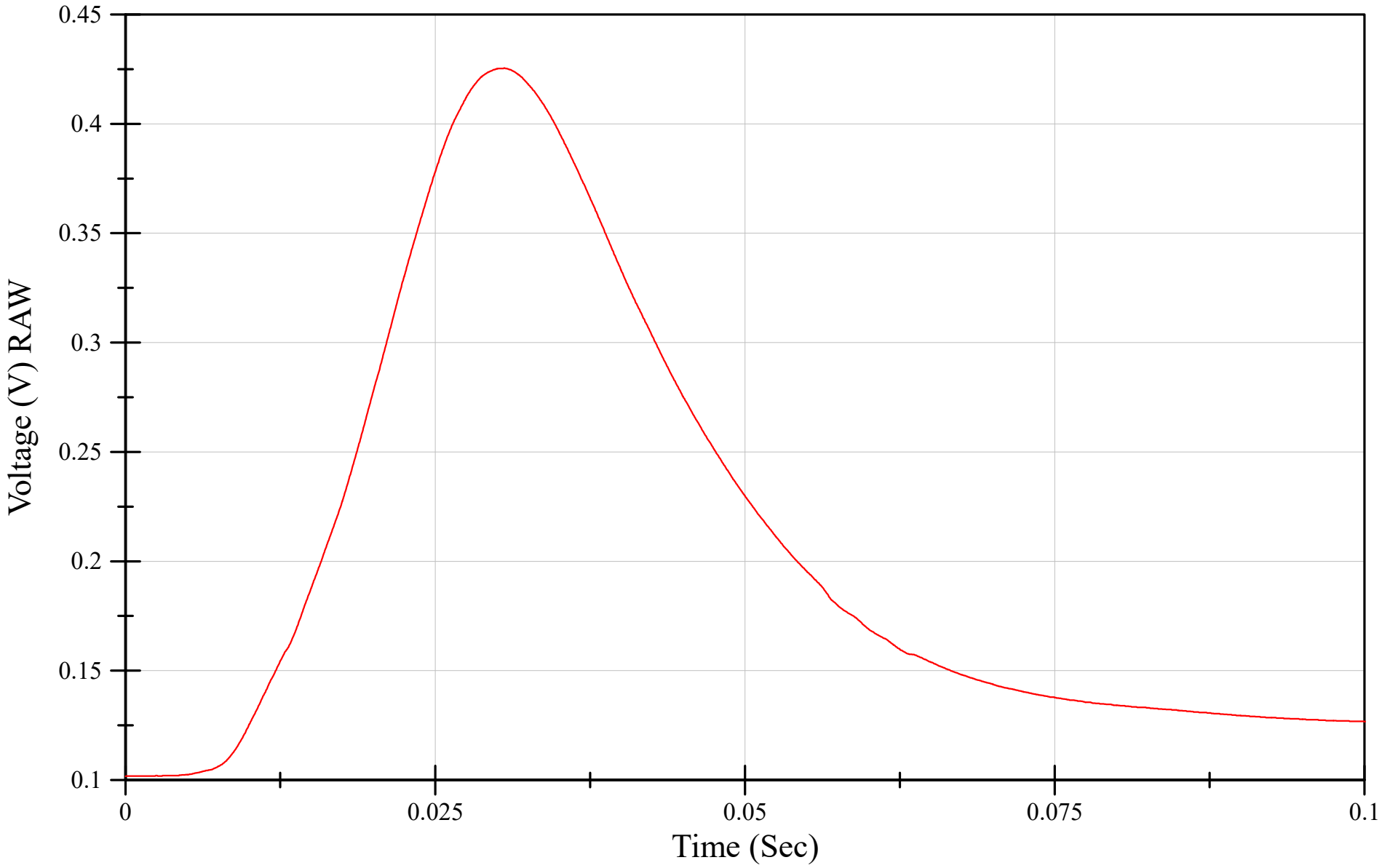


File Name: DO9799 ThoraxLowerRight200717-01_Processed
07/17/2020 13:10:14.0000

Software Version: 2.7.1

Test Temperature: 21.1° C
Relative Humidity: 59%Test
Velocity: 4.26 m/s

THOR Lower Right Thorax Qualification
IR-TRACC RAW Voltage
Serial Number: DO9799

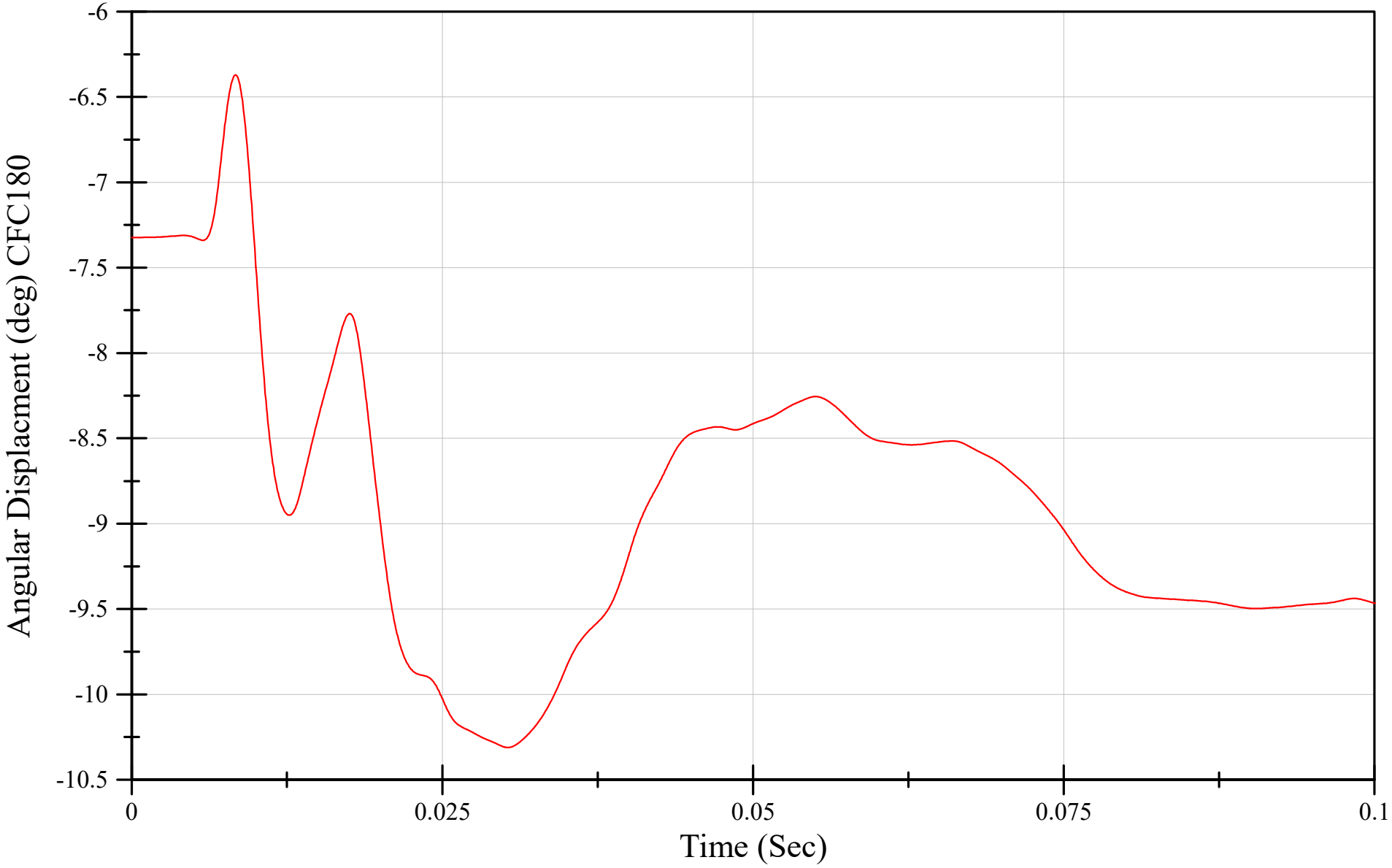


File Name: DO9799 ThoraxLowerRight200717-01_Processed
07/17/2020 13:10:14.0000

Software Version: 2.7.1

Test Temperature: 21.1° C
Relative Humidity: 59%Test
Velocity: 4.26 m/s

THOR Lower Right Thorax Qualification
Y-Potentiometer
Serial Number: DO9799



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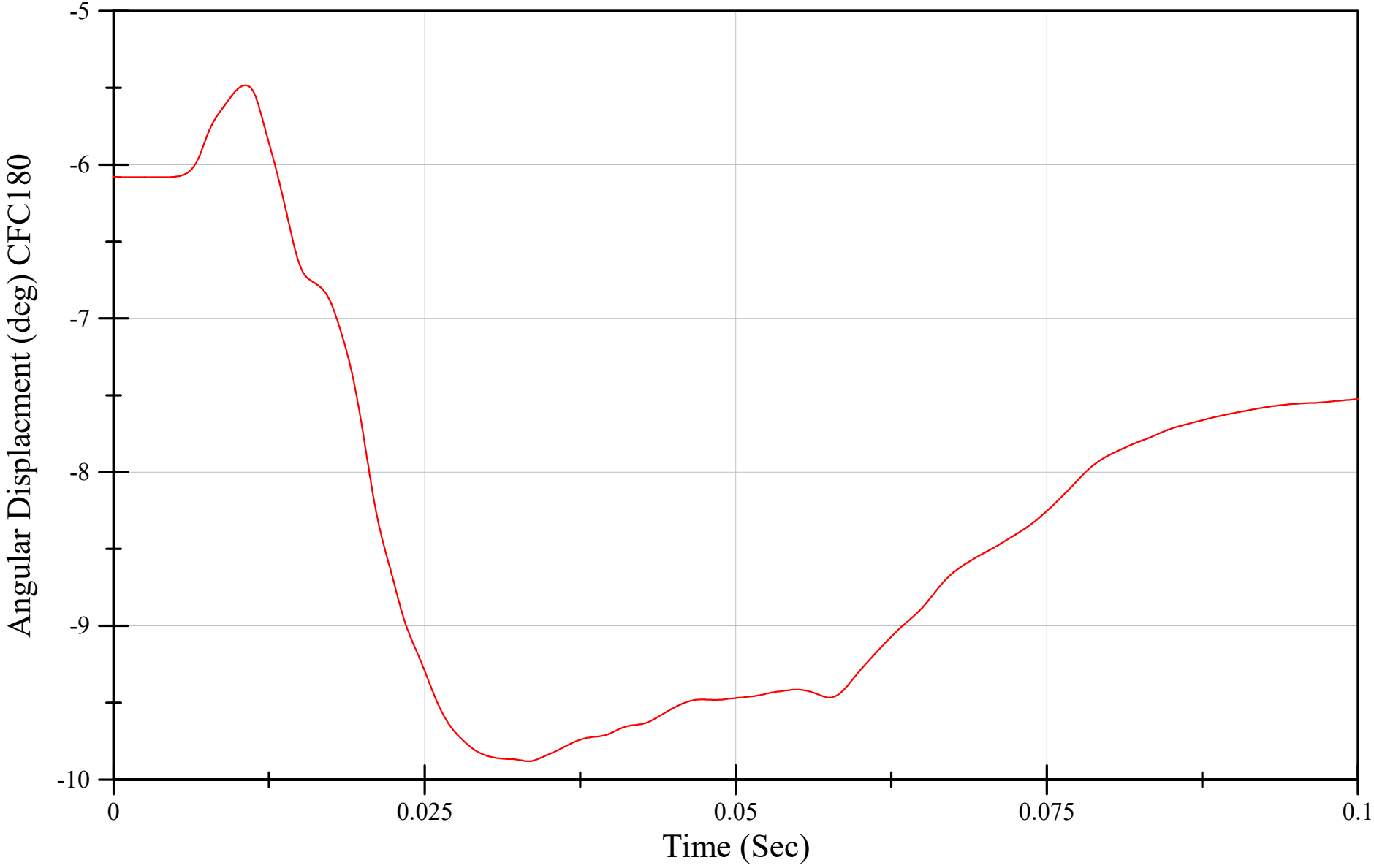
07/17/2020 13:10:14.0000

Software Version: 2.7.1

Test Temperature: 21.1° C
Relative Humidity: 59%Test
Velocity: 4.26 m/s

THOR Lower Right Thorax Qualification
Z-Potentiometer
Serial Number: DO9799

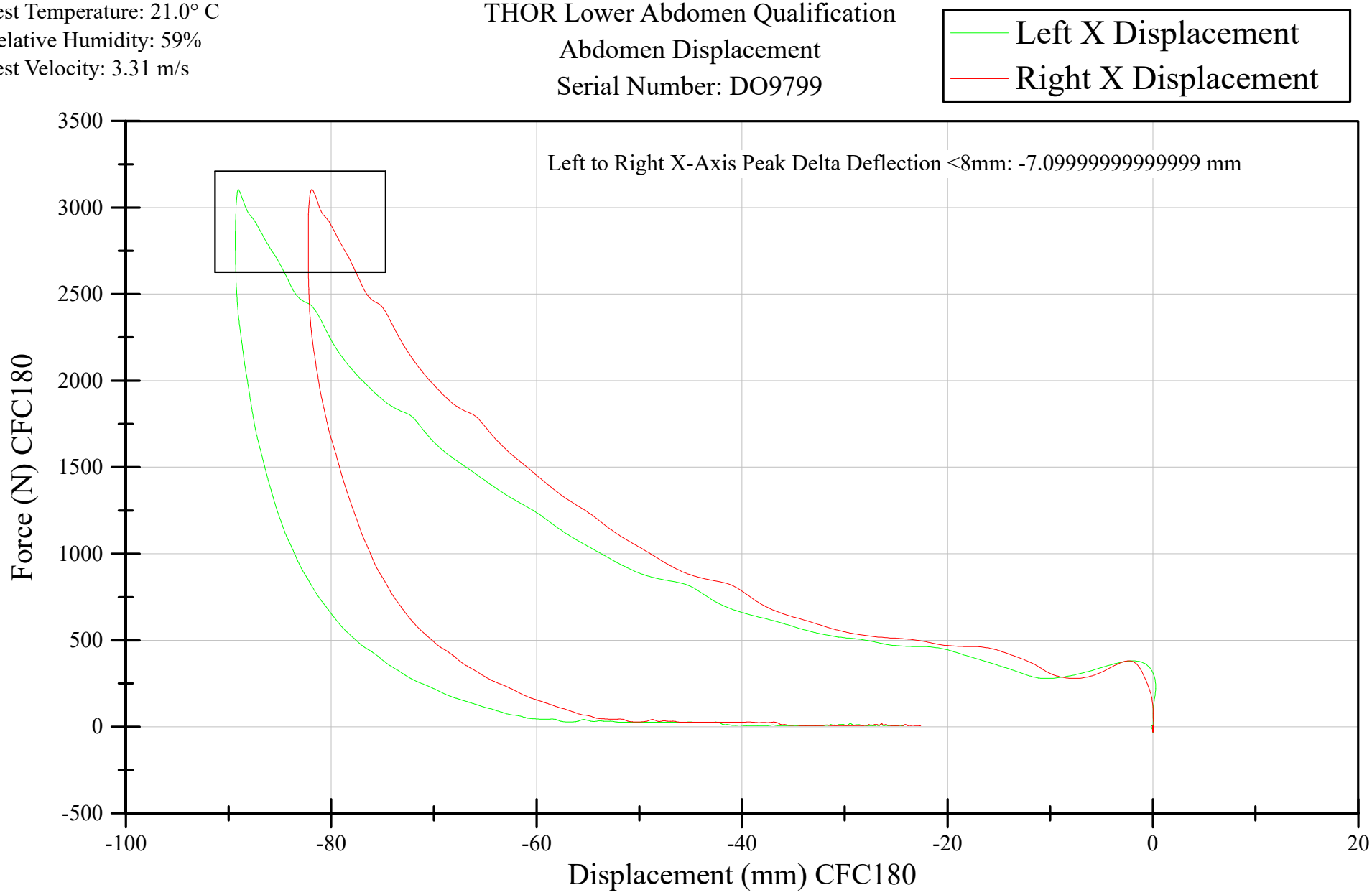


File Name: DO9799 ThoraxLowerRight200717-01_Processed
07/17/2020 13:10:14.0000

Software Version: 2.7.1

Test Temperature: 21.0° C
Relative Humidity: 59%
Test Velocity: 3.31 m/s

THOR Lower Abdomen Qualification
Abdomen Displacement
Serial Number: DO9799

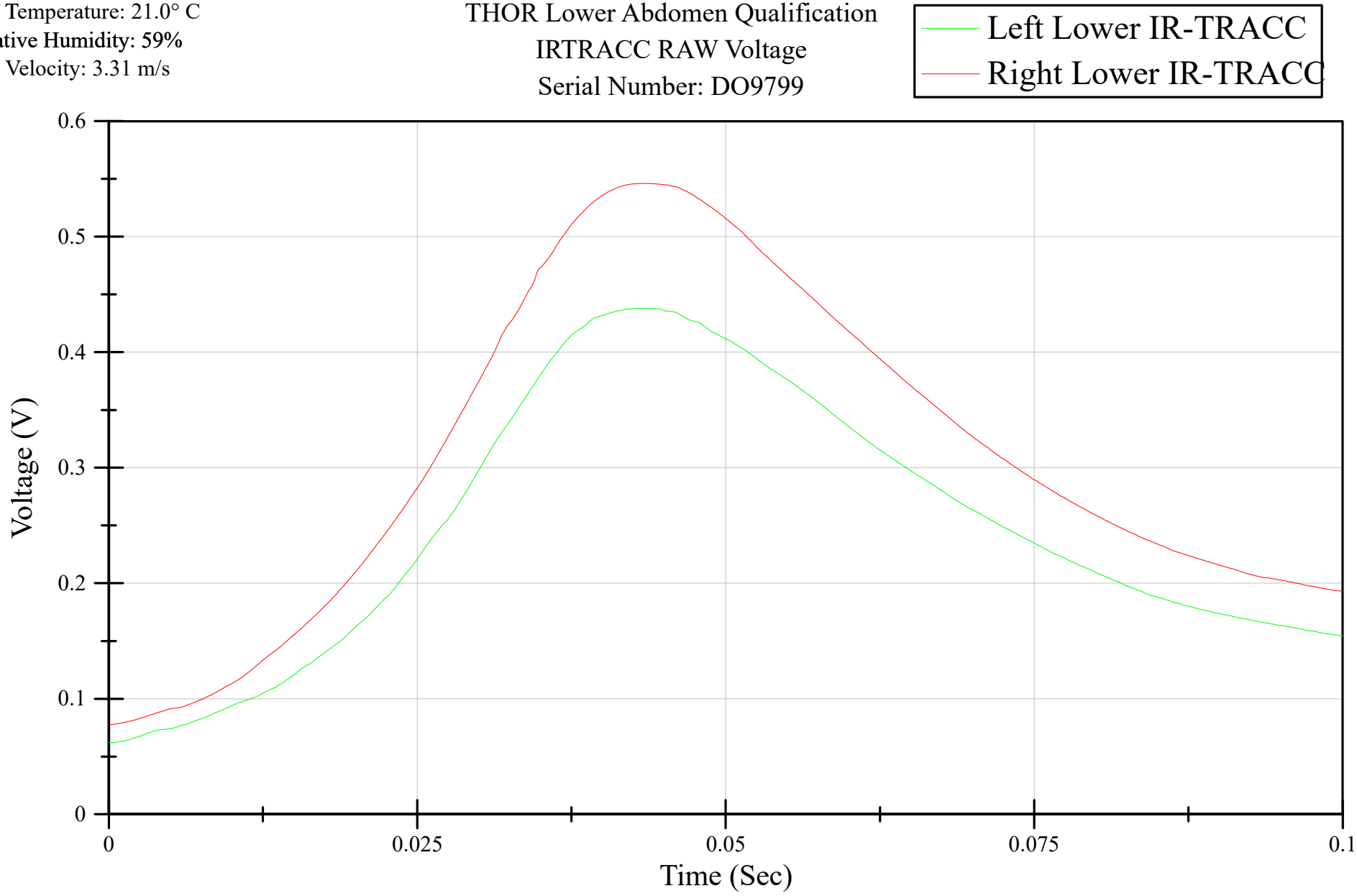


File Name: Archived-DO9799 Abdomen200720-03_Processed
07/20/2020 14:40:42.0000

Software Version: 2.7.1

Test Temperature: 21.0° C
Relative Humidity: 59%
Test Velocity: 3.31 m/s

THOR Lower Abdomen Qualification
IRTRACC RAW Voltage
Serial Number: DO9799

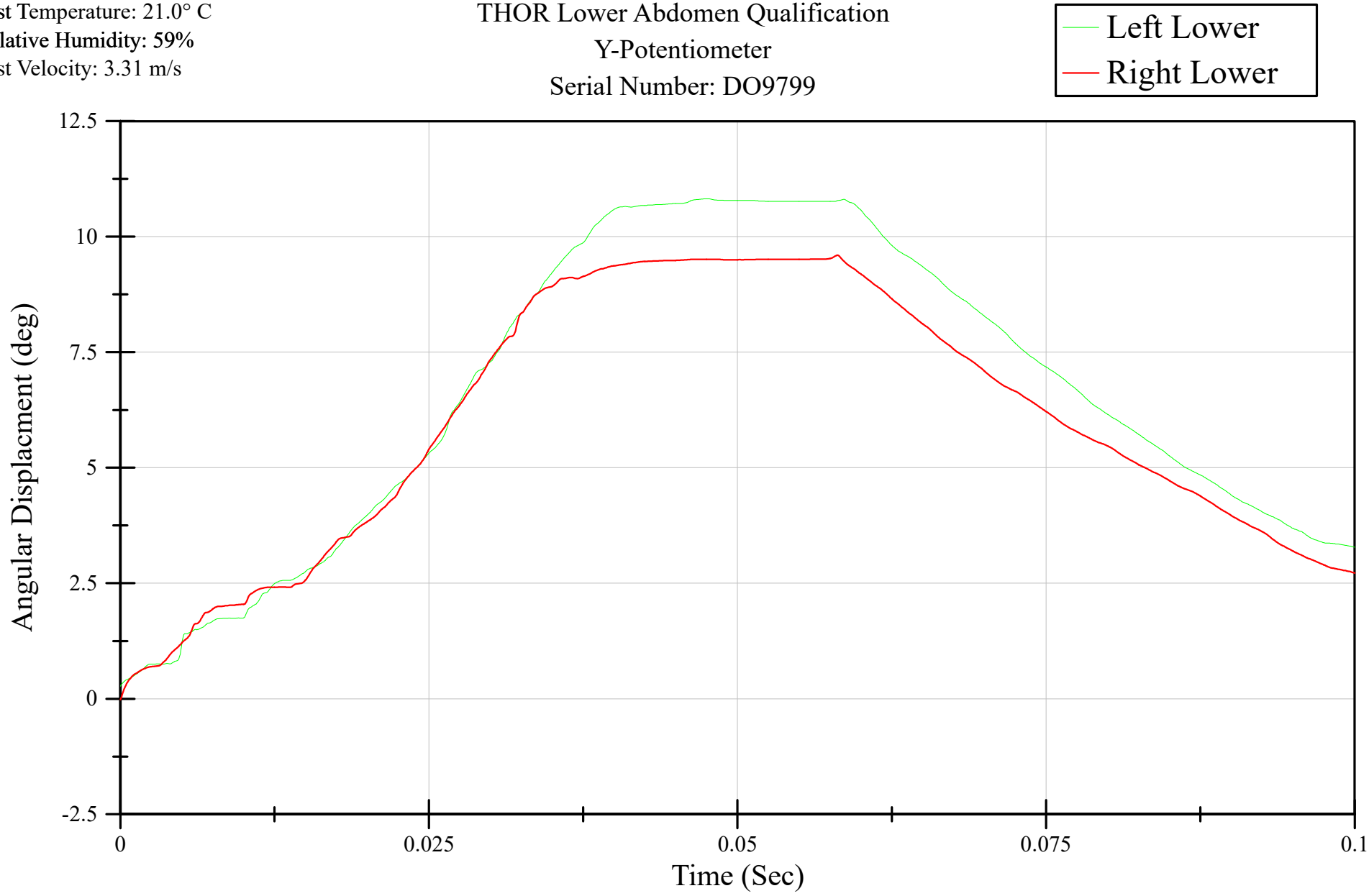


File Name: Archived-DO9799 Abdomen200720-03_Processed
07/20/2020 14:40:42.0000

Software Version: 2.7.1

Test Temperature: 21.0° C
Relative Humidity: 59%
Test Velocity: 3.31 m/s

THOR Lower Abdomen Qualification
Y-Potentiometer
Serial Number: DO9799

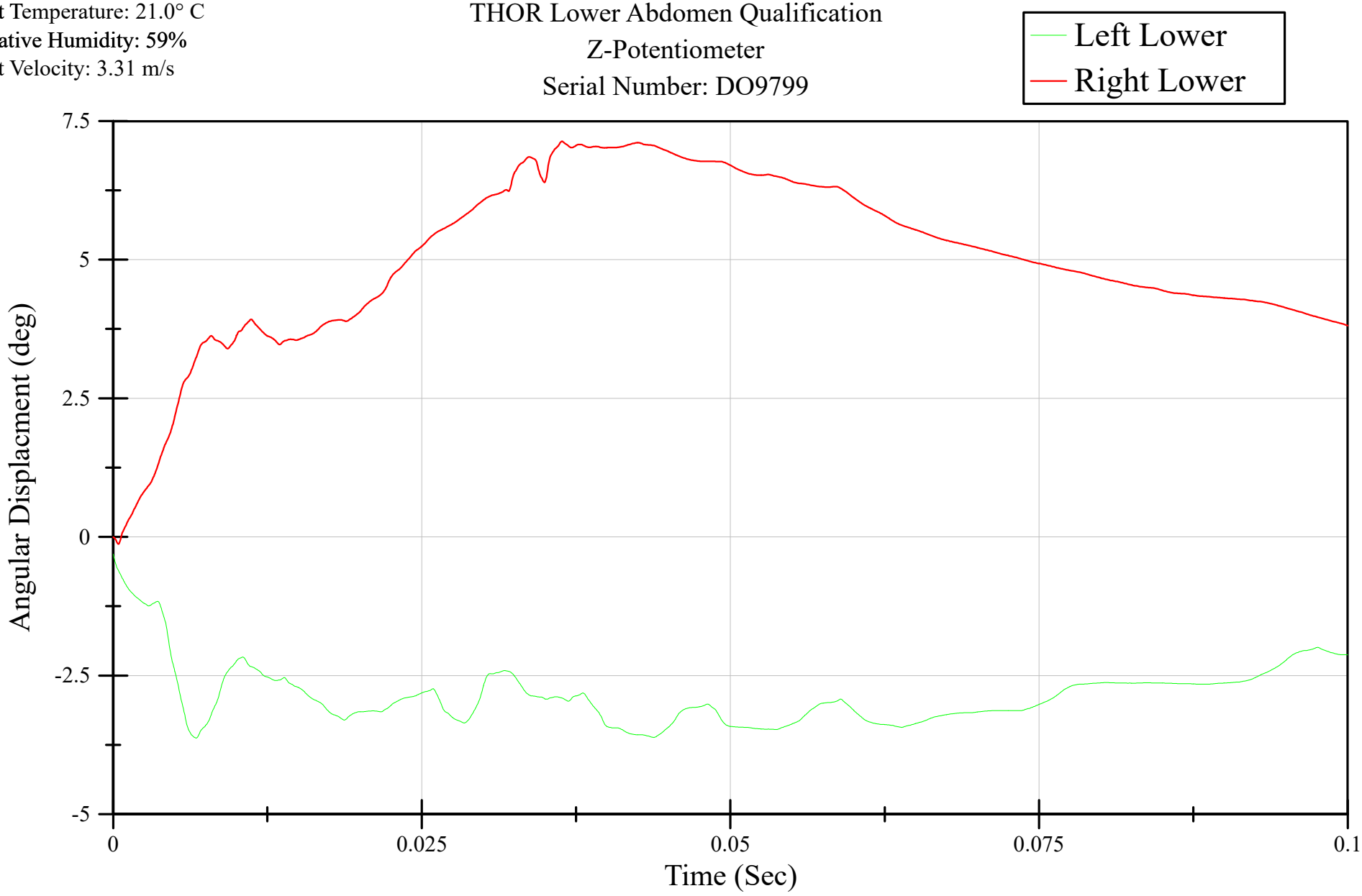


File Name: Archived-DO9799 Abdomen200720-03_Processed
07/20/2020 14:40:42.0000

Software Version: 2.7.1

Test Temperature: 21.0° C
Relative Humidity: 59%
Test Velocity: 3.31 m/s

THOR Lower Abdomen Qualification
Z-Potentiometer
Serial Number: DO9799

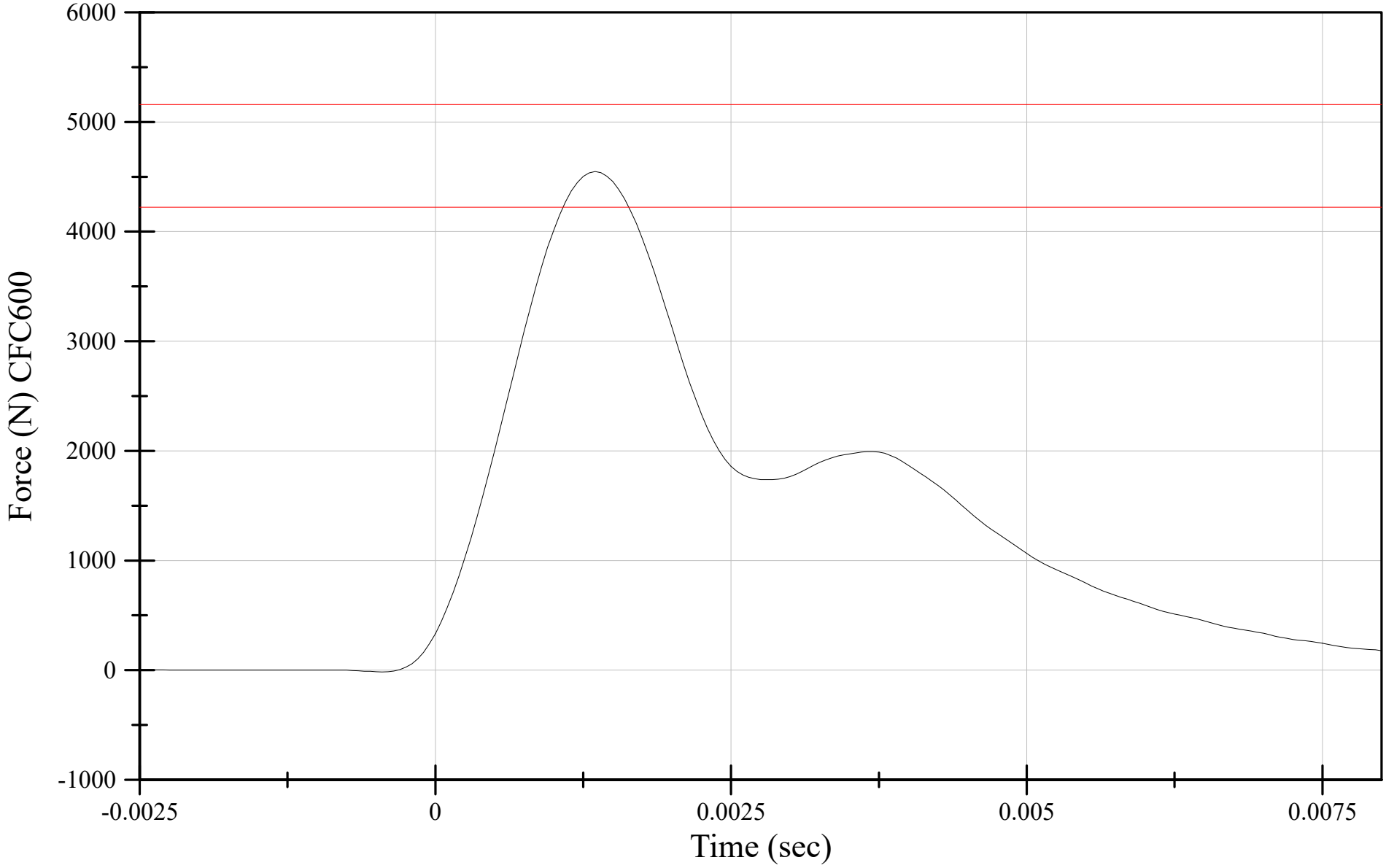


File Name: Archived-DO9799 Abdomen200720-03_Processed
07/20/2020 14:40:42.0000

Software Version: 2.7.1

Test Temperature: 20.8° C
Relative Humidity: 59%
Test Velocity: 2.57 m/s

THOR Left Upper Leg Qualification
Probe Force
Serial Number: DO9799

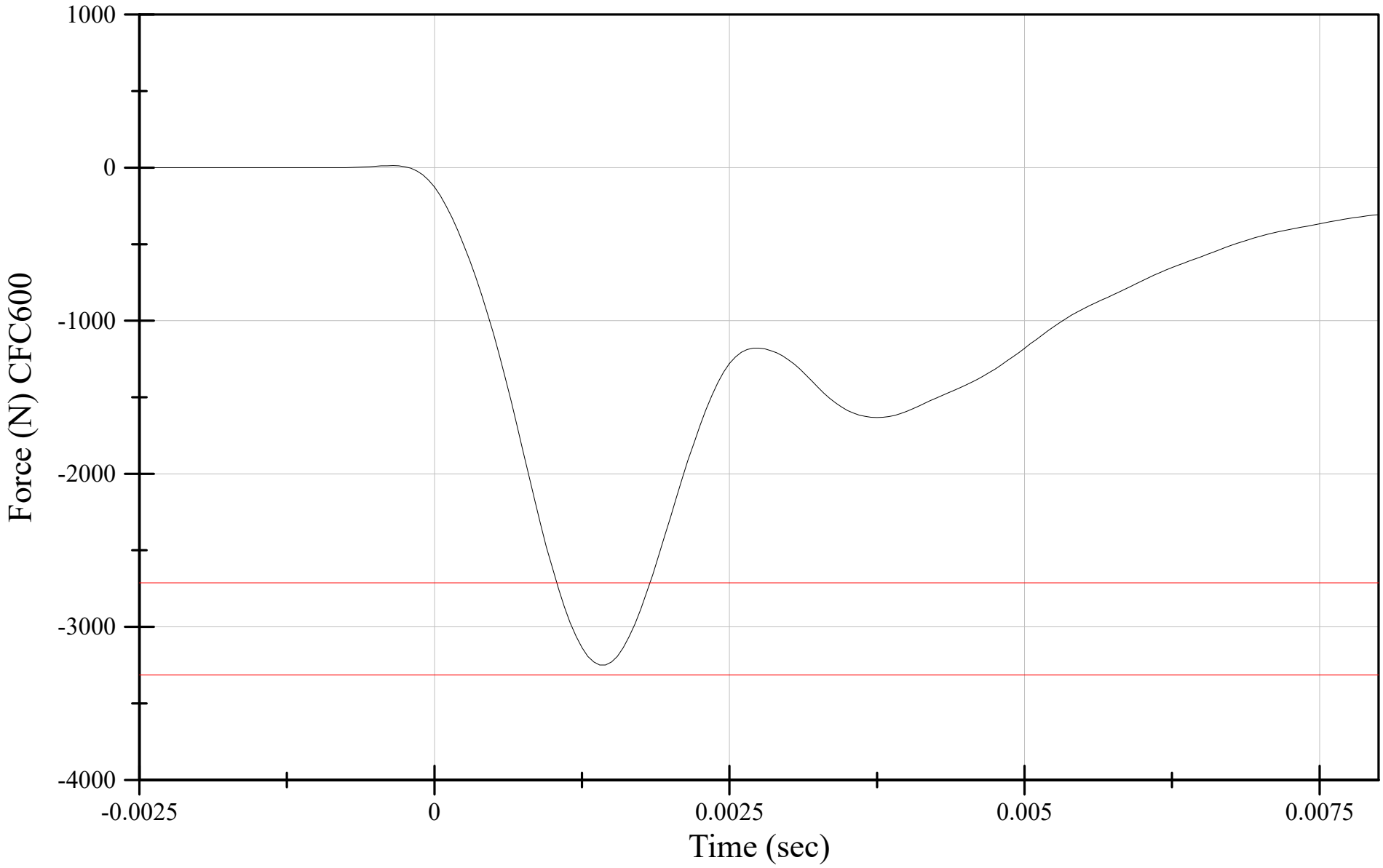


File Name: DO9799 FemurLeft200713-02_Processed
07/13/2020 13:55:22.0000

Software Version: 2.7.1

Test Temperature: 20.8° C
Relative Humidity: 59%
Test Velocity: 2.57 m/s

THOR Left Upper Leg Qualification
Femur Z-Force
Serial Number: DO9799

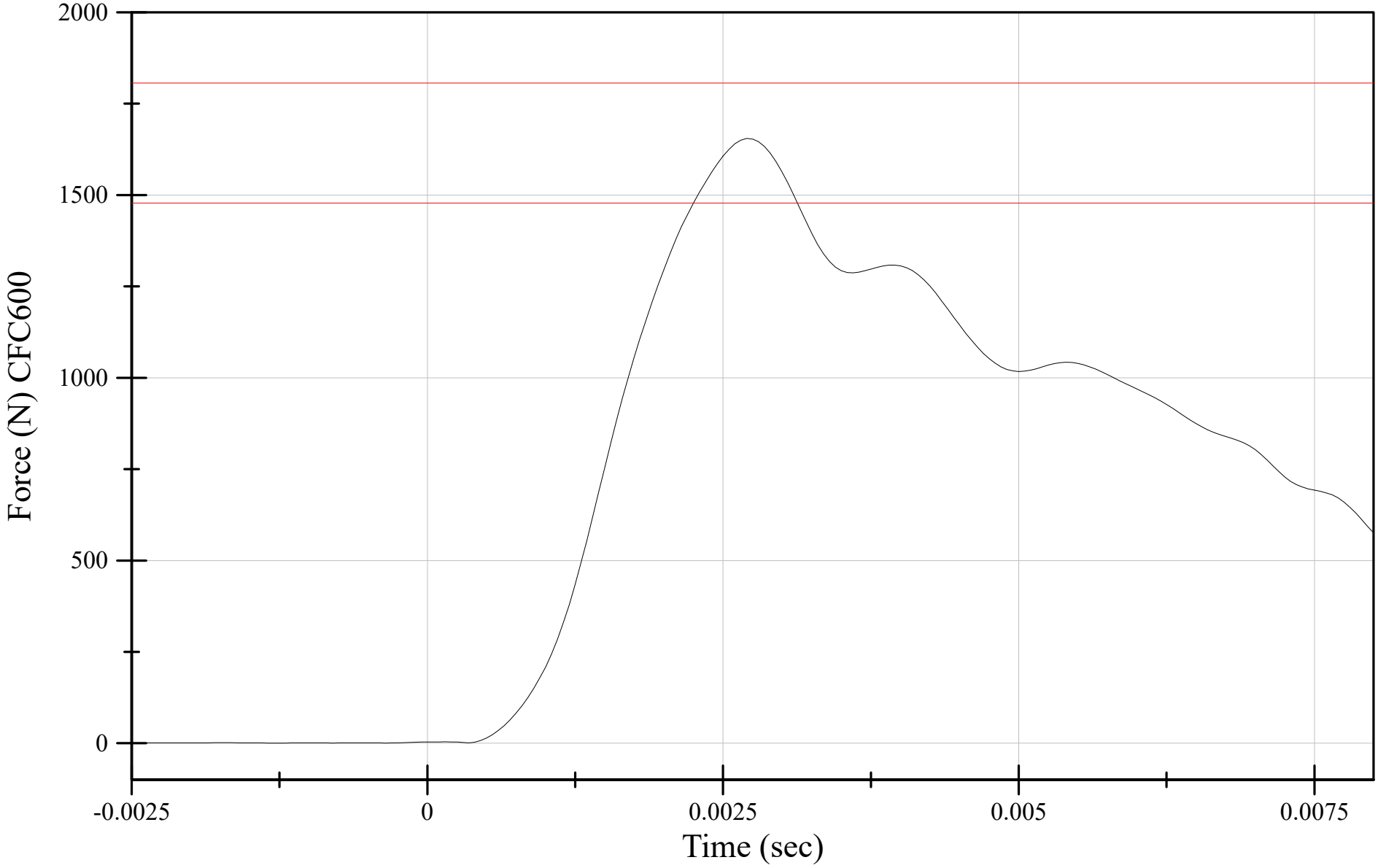


File Name: DO9799 FemurLeft200713-02_Processed
07/13/2020 13:55:22.0000

Software Version: 2.7.1

Test Temperature: 20.8° C
Relative Humidity: 59%
Test Velocity: 2.57 m/s

THOR Left Upper Leg Qualification
Peak Acetabulum Resultant Force
Serial Number: DO9799

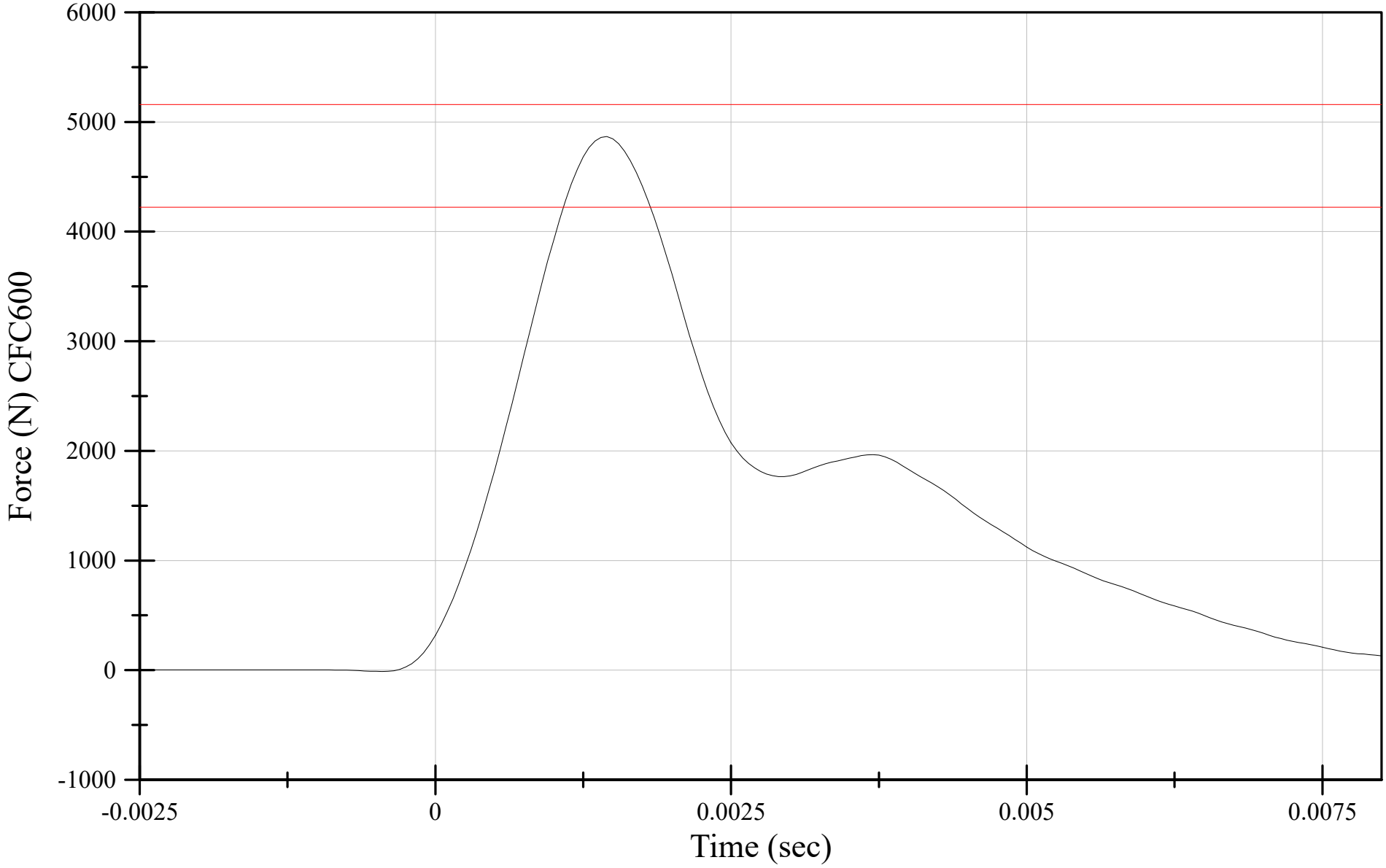


File Name: DO9799 FemurLeft200713-02_Processed
07/13/2020 13:55:22.0000

Software Version: 2.7.1

Test Temperature: 20.8° C
Relative Humidity: 59%
Test Velocity: 2.57 m/s

THOR Right Upper Leg Qualification
Probe Force
Serial Number: DO9799

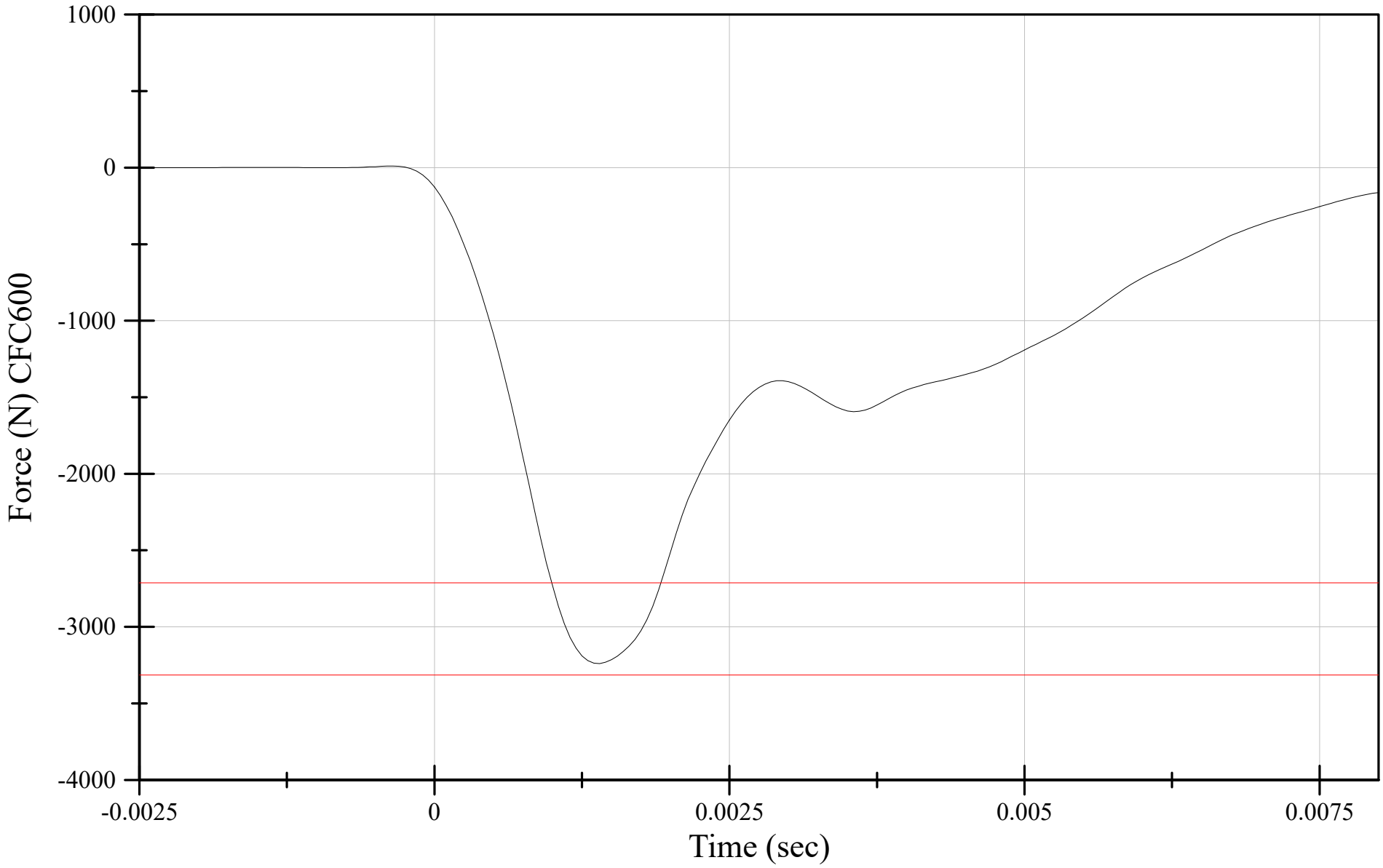


File Name: DO9799 FemurRight200713-02_Processed
07/13/2020 15:17:48.0000

Software Version: 2.7.1

Test Temperature: 20.8° C
Relative Humidity: 59%
Test Velocity: 2.57 m/s

THOR Right Upper Leg Qualification
Femur Z-Force
Serial Number: DO9799

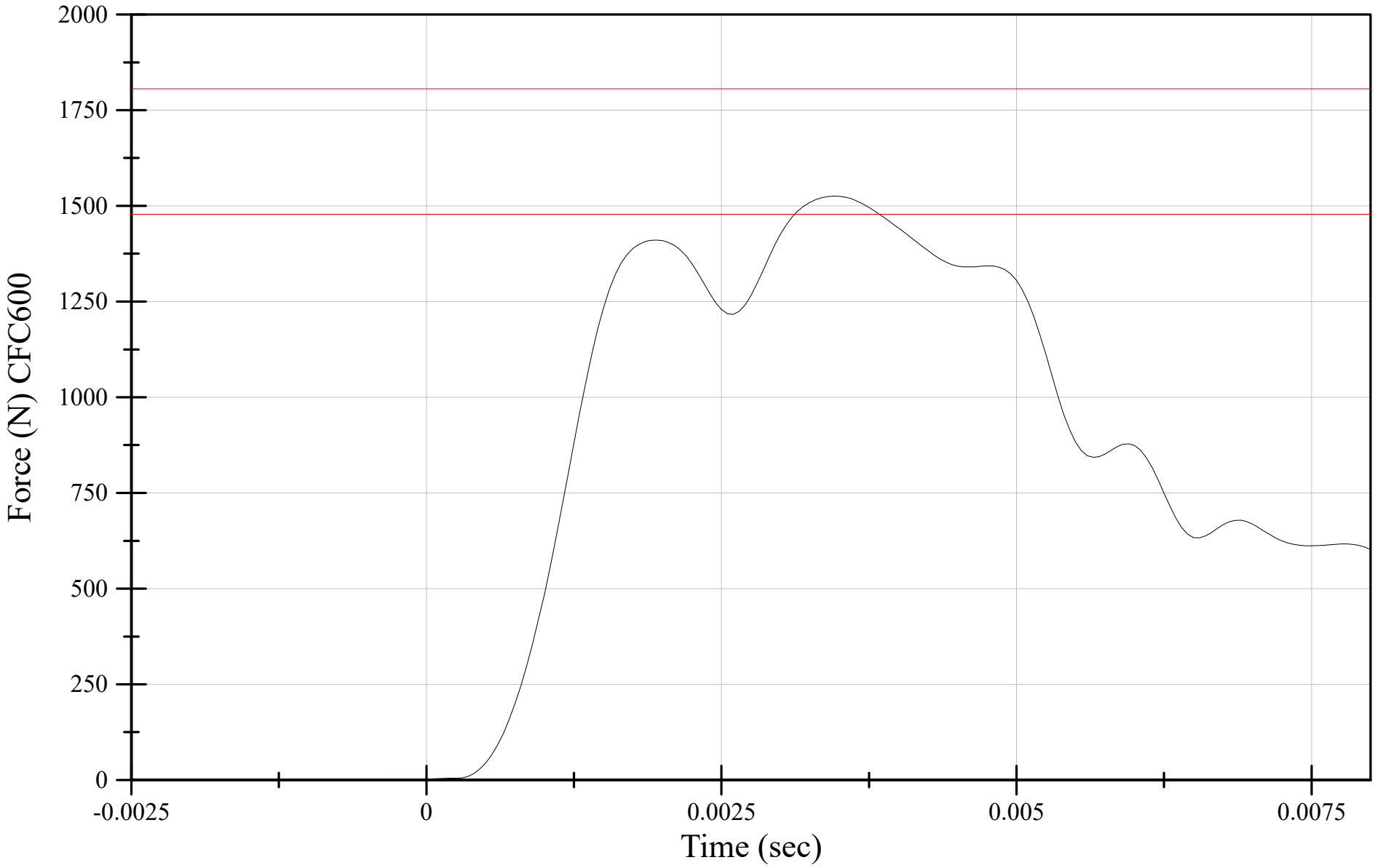


File Name: DO9799 FemurRight200713-02_Processed
07/13/2020 15:17:48.0000

Software Version: 2.7.1

Test Temperature: 20.8° C
Relative Humidity: 59%
Test Velocity: 2.57 m/s

THOR Right Upper Leg Qualification
Peak Acetabulum Resultant Force
Serial Number: DO9799

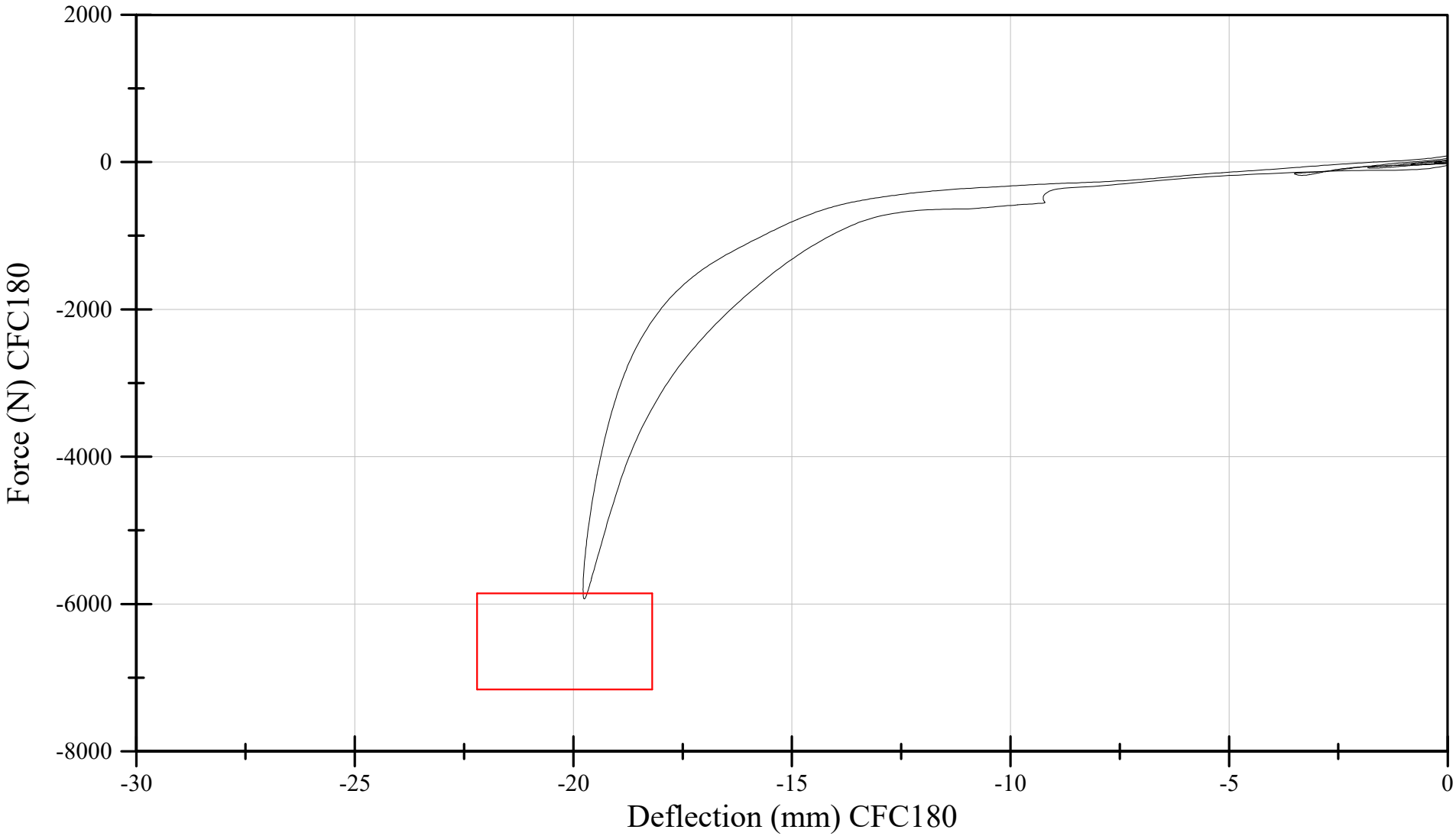


File Name: DO9799 FemurRight200713-02_Processed
07/13/2020 15:17:48.0000

Software Version: 2.7.1

Test Temperature: 20.9° C
Relative Humidity: 60%
Test Velocity: 2.21 m/s

THOR Left Knee Qualification
Peak Deflection at Peak Force
Serial Number: DO9799

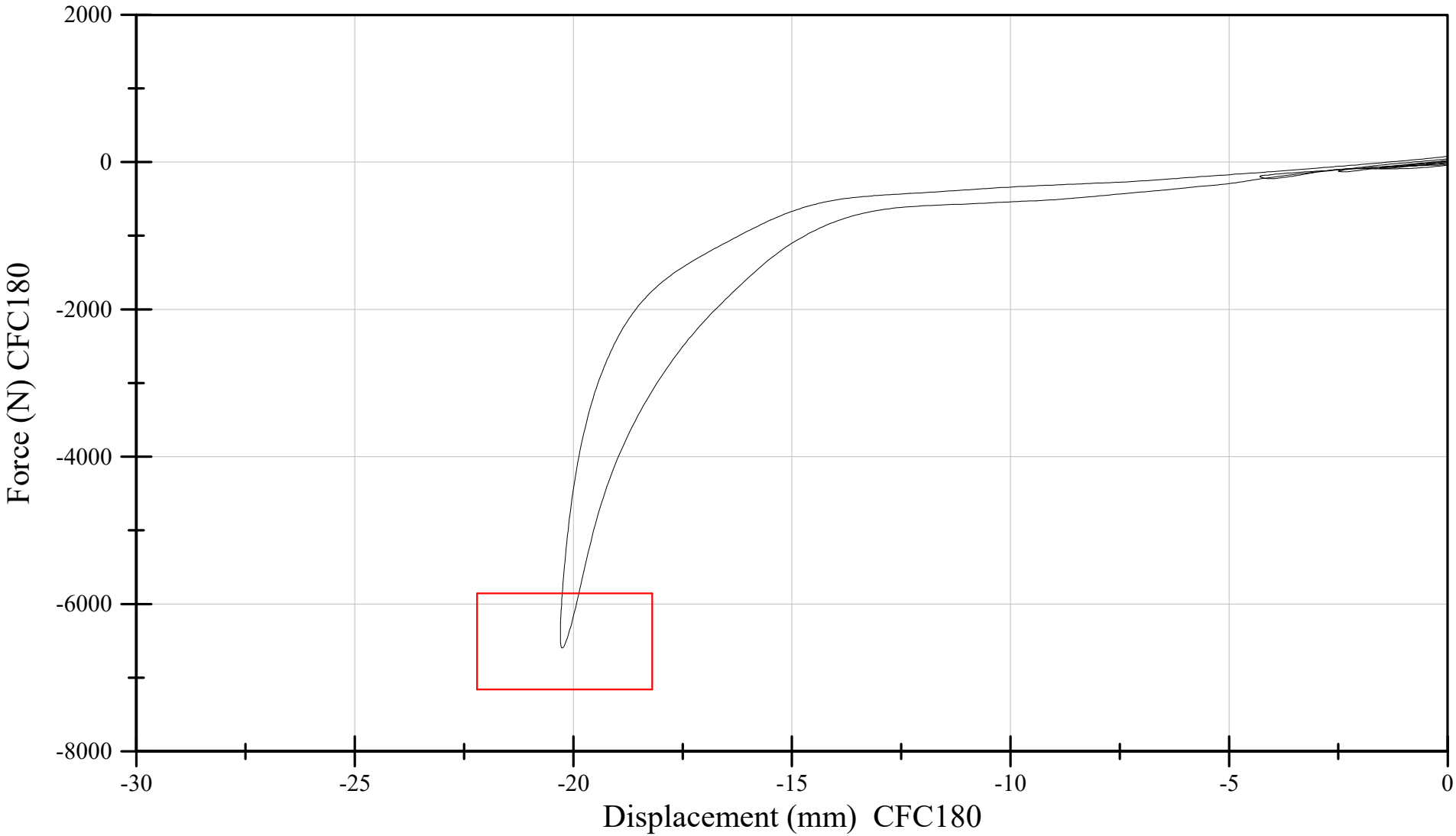


File Name: DO9799 LeftKneeSlider200716-01_Processed
07/16/2020 14:22:13.0000

Software Version: 2.7.1

Test Temperature: 20.9° C
Relative Humidity: 61%
Test Velocity: 2.22 m/s

THOR Right Knee Qualification
Femur Force vs. Knee Displacement
Serial Number: DO9799



File Name: DO9799 RightKneeSlider200716-01_Processed
07/16/2020 15:35:31.0000

Software Version: 2.7.1

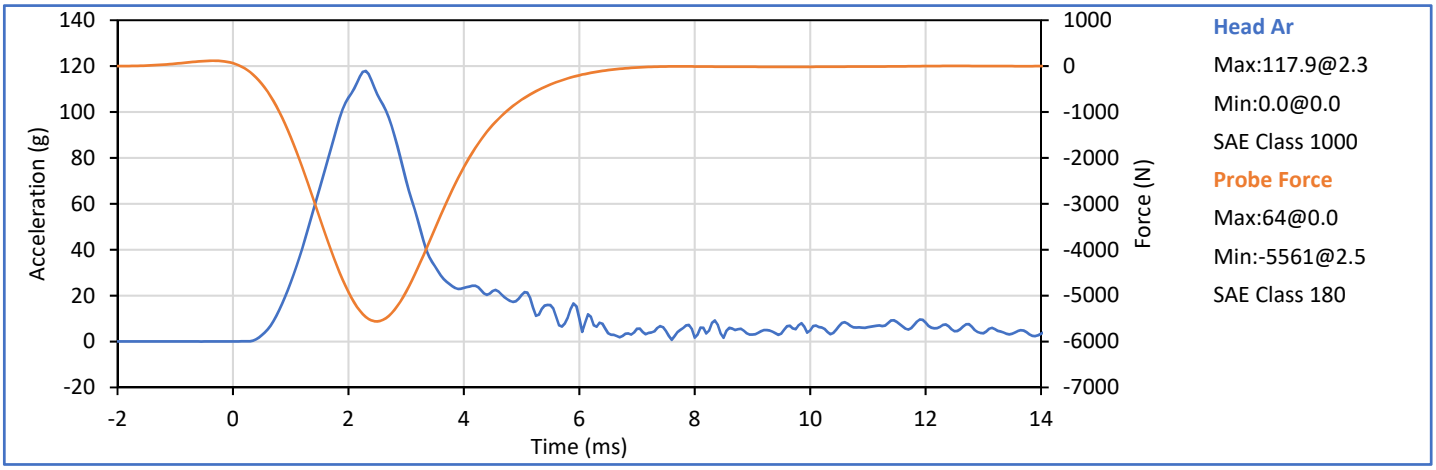
APPENDIX C
Post-Test ATD Qualification and Performance Verification
THOR-50M 50th Percentile Male ATD, (Reduced Certification)
S/N: D09799

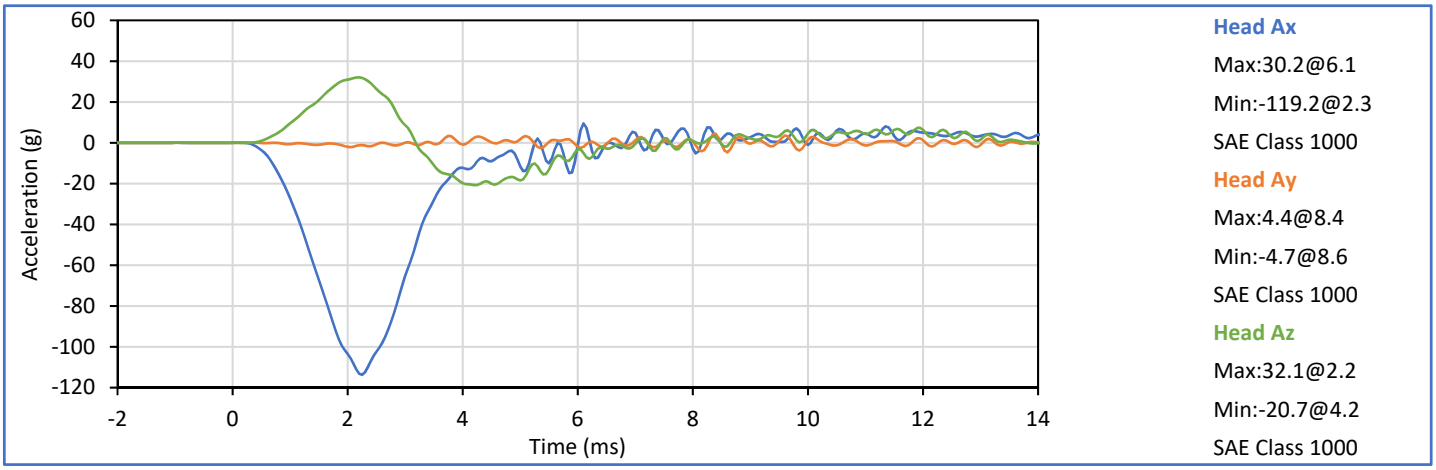
Applus IDIADA KARCO

THOR-50M 50th Percentile Male ATD
Head Qualification

ATD Serial No.: D09799 Test Date: 2020-09-16

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	2.00	Pass
Peak Probe Force	kN	-6138	-5022	-5561	Pass
Peak Head Resultant Acceleration	g	105.3	128.7	117.9	Pass
NHTSA Corridor 2019-05			Overall Test Results		Pass





Technician: J. Hernandez

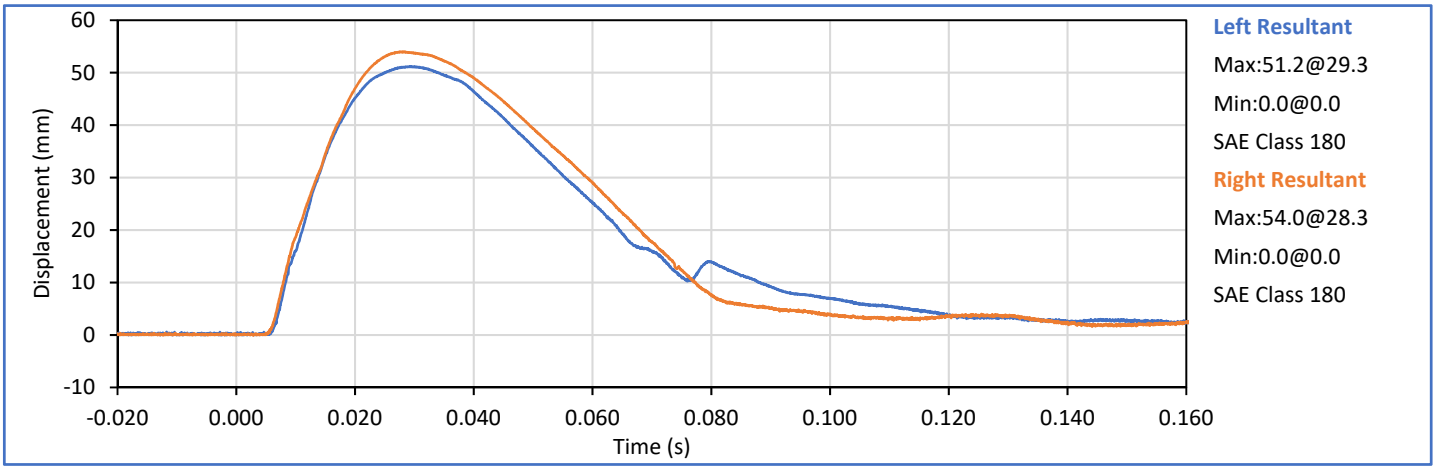
Approved By: P. Puzzuto

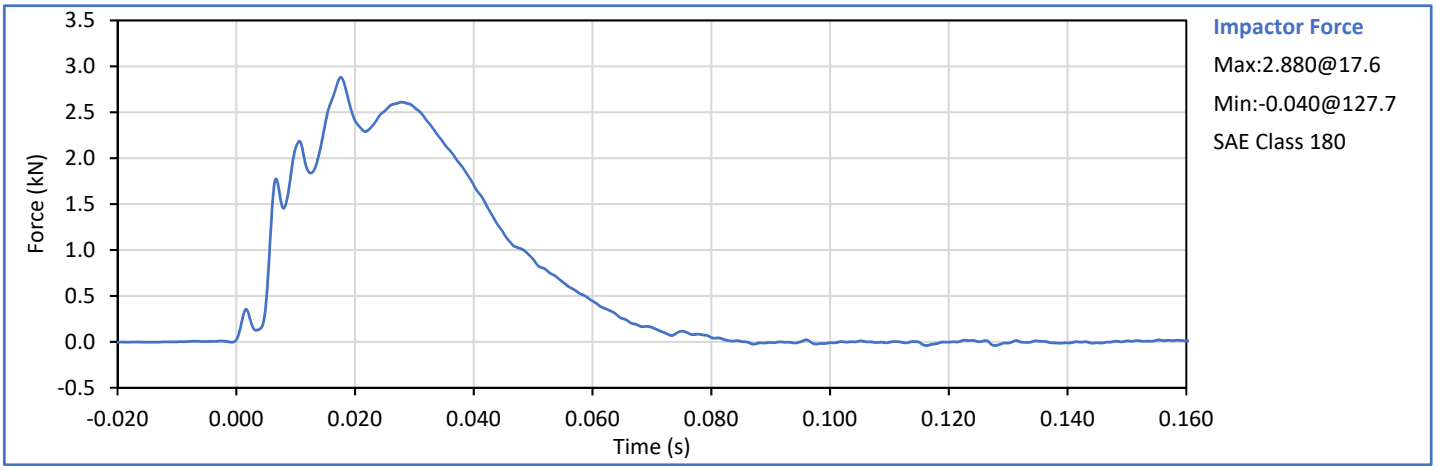
Applus IDIADA KARCO

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

ATD Serial No.: D09799 Test Date: 2020-09-15

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	4.30	Pass
Peak Probe Force	kN		3.039	2.880	Pass
Peak Upper Left Deflection Resultant	mm	48.3	59.0	51.2	Pass
Peak Upper Right Deflection Resultar	mm			54.0	Pass
Absolute Difference L/R Dx Resultant	mm	0.0	5.0	2.8	Pass
Force at Peak Upper Left Resultant	mm	2.409	2.944	2.587	Pass
Force at Peak Upper Right Resultant	mm			2.605	Pass
NHTSA Corridor 2019-05			Overall Test Results		Pass





Technician: J. Hernandez

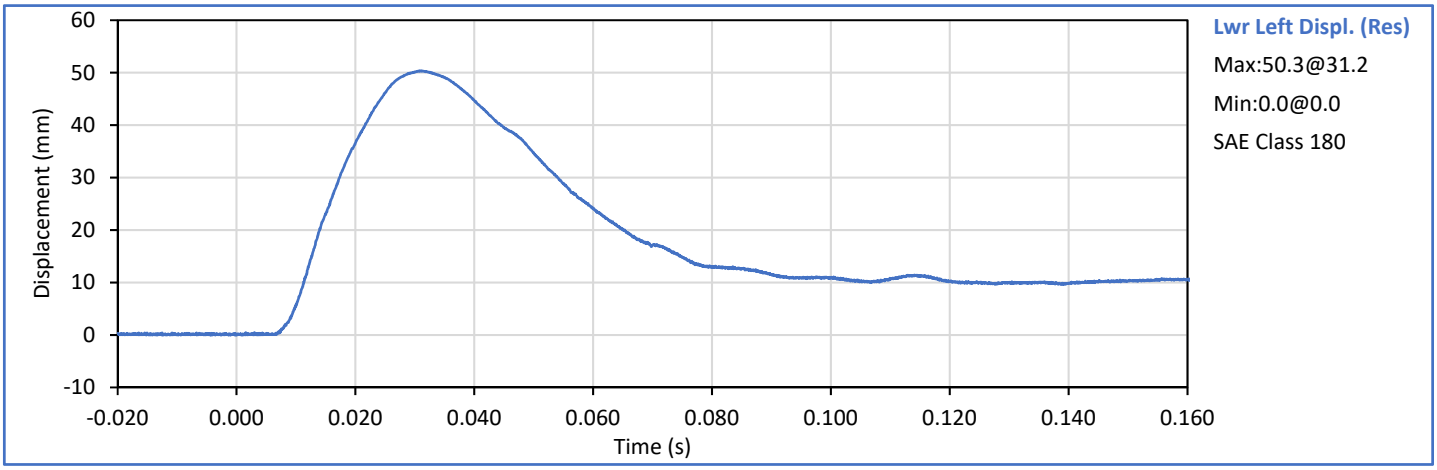
Approved By: P. Puzzuto

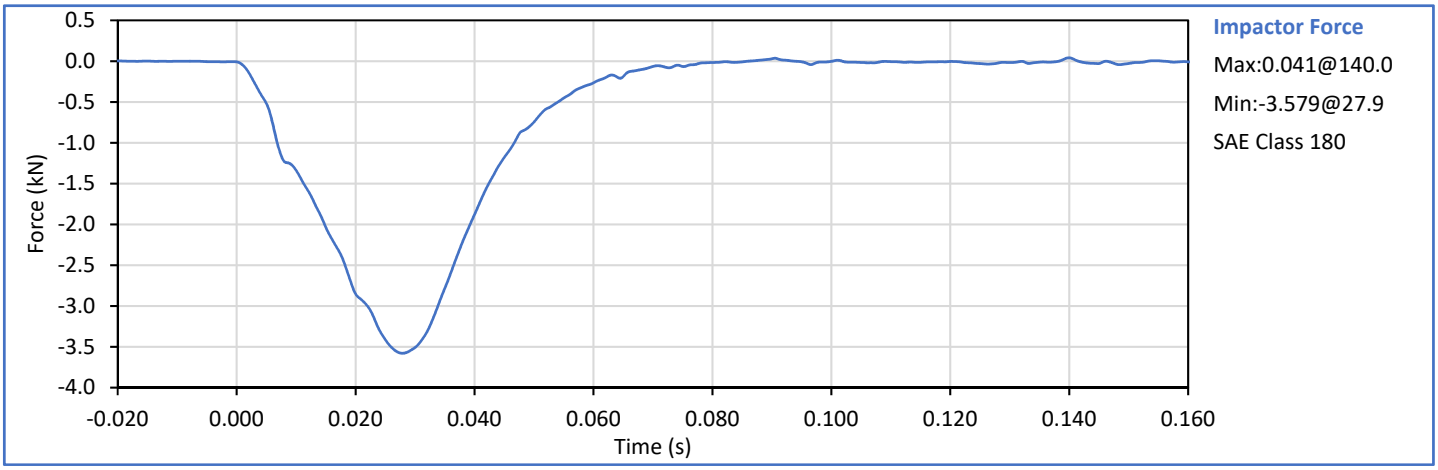
Applus IDIADA KARCO

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

ATD Serial No.: D09799 Test Date: 2020-09-16

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	36	Pass
Probe Velocity	m/sec	4.25	4.35	4.33	Pass
Peak Probe Force	kN	-3.832	-3.136	-3.579	Pass
Lower Left Resultant Dx at Peak Fx	mm	45.8	56.0	49.3	Pass
NHTSA Corridor 2019-05			Overall Test Results		Pass





Technician: J. Hernandez

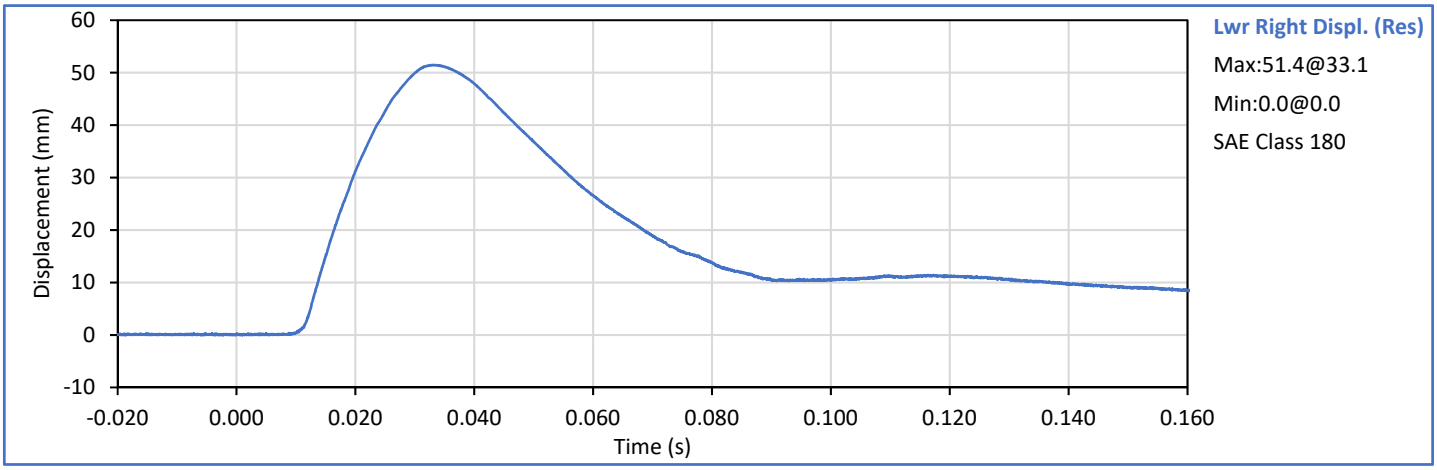
Approved By: P. Puzzuto

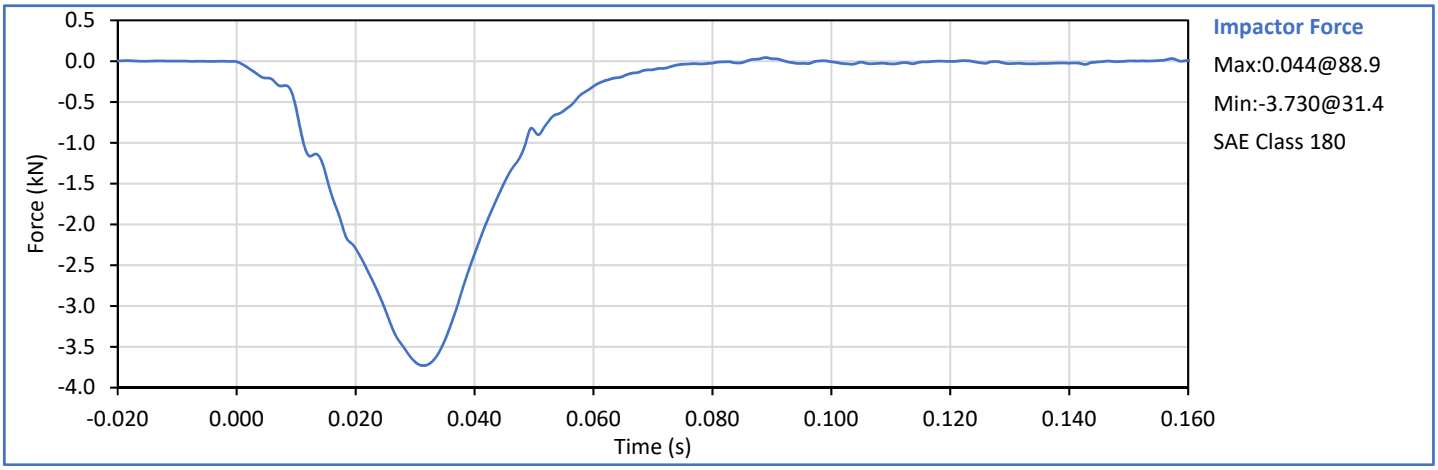
Applus IDIADA KARCO

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

ATD Serial No.: D09799 Test Date: 2020-09-16

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	24	Pass
Probe Velocity	m/sec	4.25	4.35	4.33	Pass
Peak Probe Force	kN	-3.832	-3.136	-3.730	Pass
Lower Right Resultant Dx at Peak Fx	mm	45.8	56.0	51.1	Pass
NHTSA Corridor 2019-05			Overall Test Results		Pass





Technician: J. Hernandez

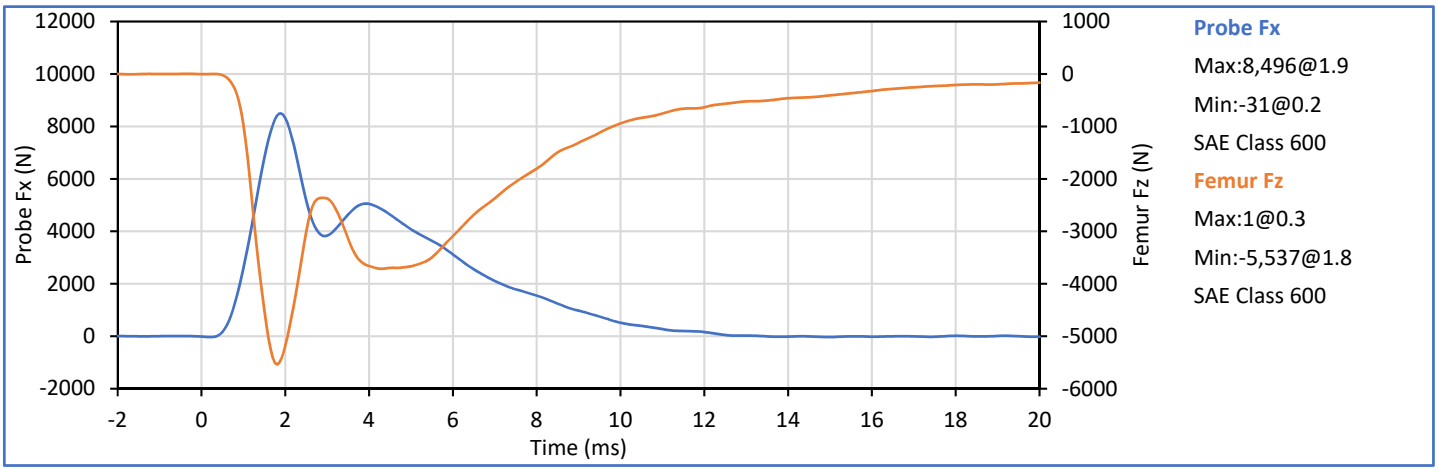
Approved By: P. Puzzuto

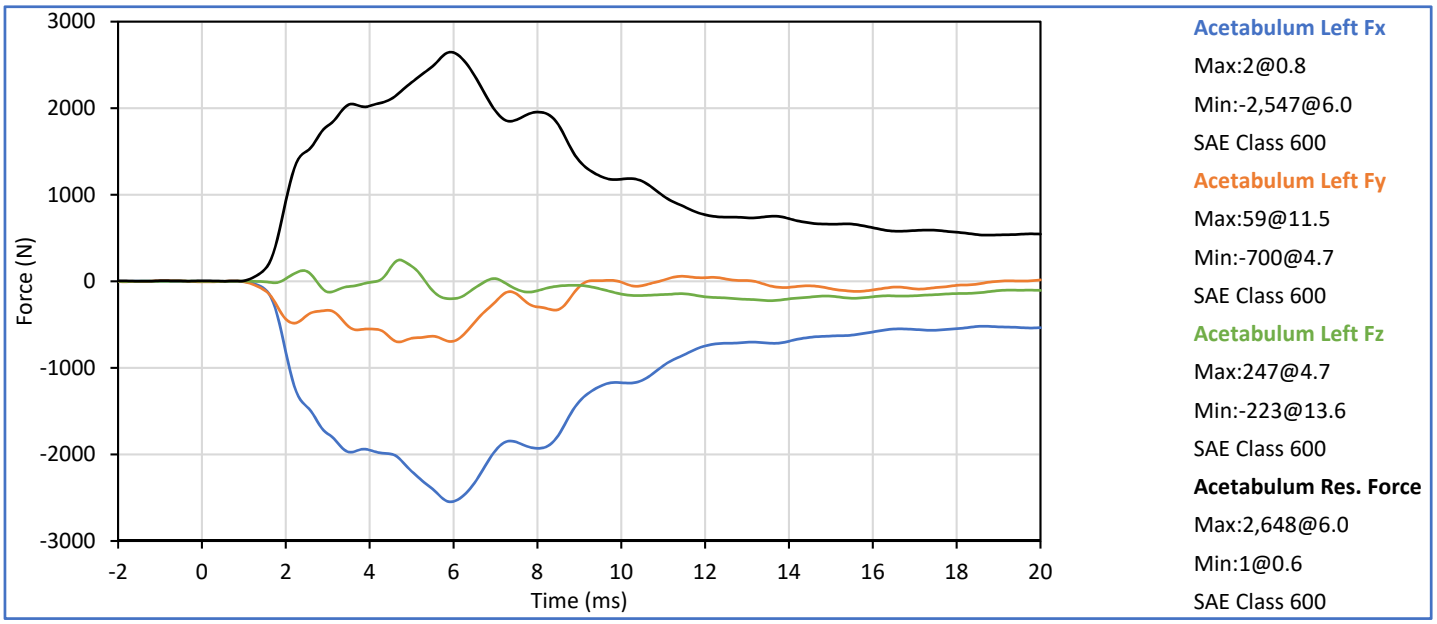
Applus IDIADA KARCO

THOR-50M 50th Percentile Male ATD
Upper Leg (Left) Qualification
2020-09-15 TH DO9799 Leg Left 001

ATD Serial No.: D09799 Test Date: 2020-09-15

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	3.30	Pass
Peak Probe Force	N	*	*	8496	*
Peak Femur Fz	N	*	*	-5537	*
Acetabulum Force Resultant	N	*	*	2648	*
* Research data. No defined P/F corridor			Overall Test Results		Pass





Technician: J. Hernandez

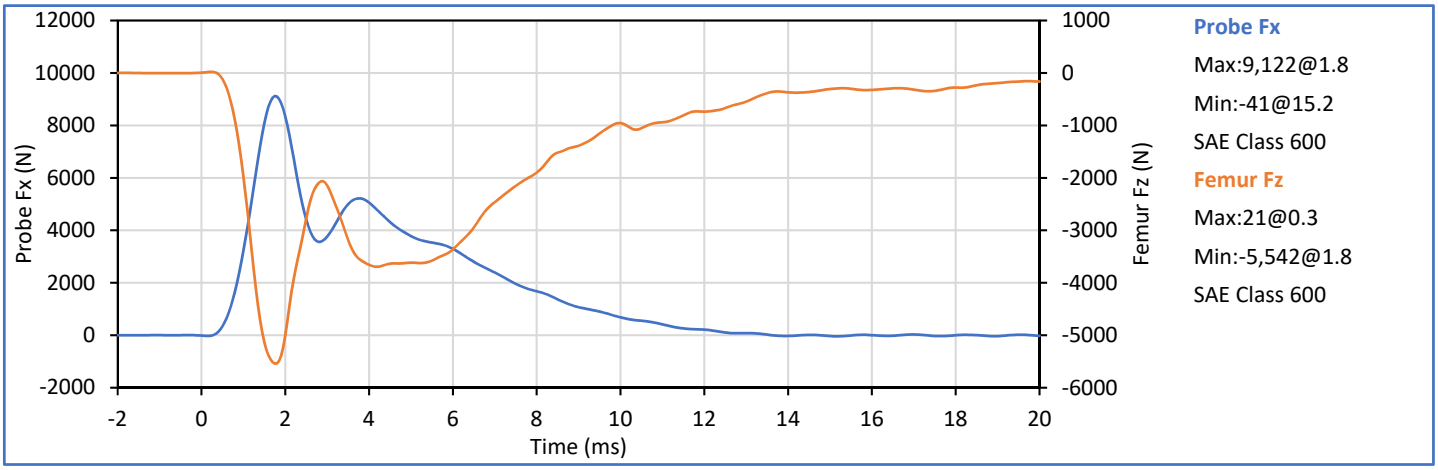
Approved By: P. Puzzuto

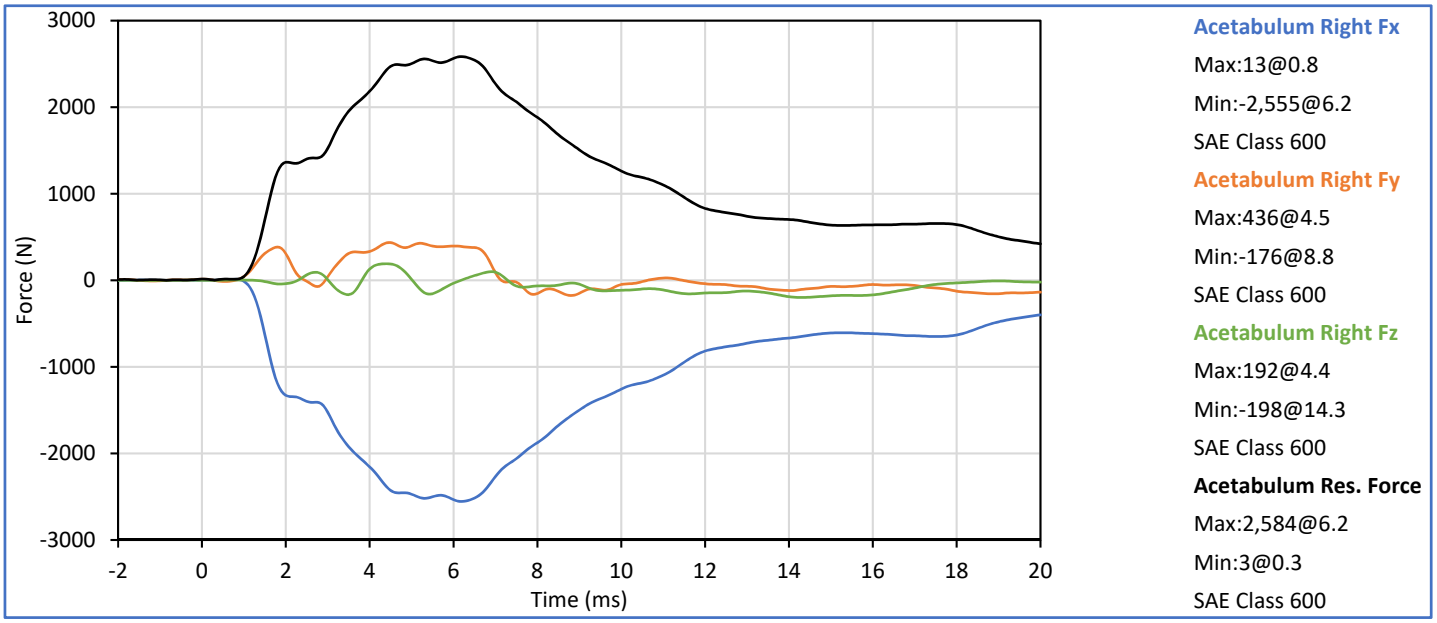
Applus IDIADA KARCO

THOR-50M 50th Percentile Male ATD
Upper Leg (Right) Qualification
2020-09-15 TH DO9799 Leg Right 001

ATD Serial No.: D09799 Test Date: 2020-09-15

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	3.30	Pass
Peak Probe Force	N	*	*	9122	*
Peak Femur Fz	N	*	*	-5542	*
Acetabulum Force Resultant	N	*	*	2584	*
* Research data. No defined P/F corridor			Overall Test Results		Pass





Technician: J. Hernandez

Approved By: P. Puzzuto

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

Applus IDIADA KARCO

Hybrid III 50th Percentile Male ATD
ATD Damage Checklist

ATD Serial No.: 168 Test Date: 2020-09-22

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

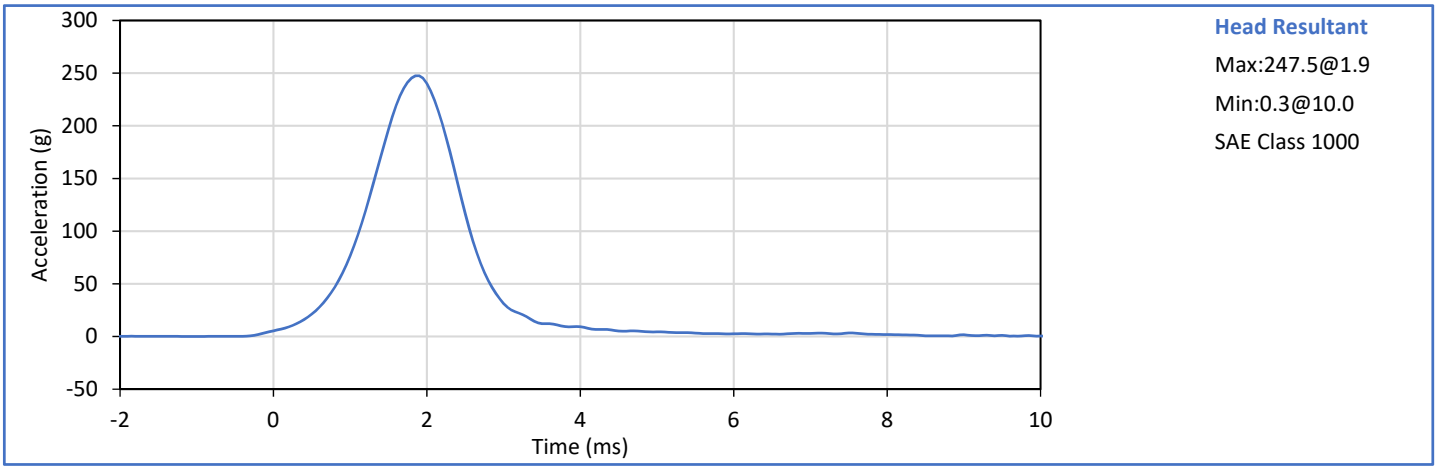
Applus IDIADA
KARCO

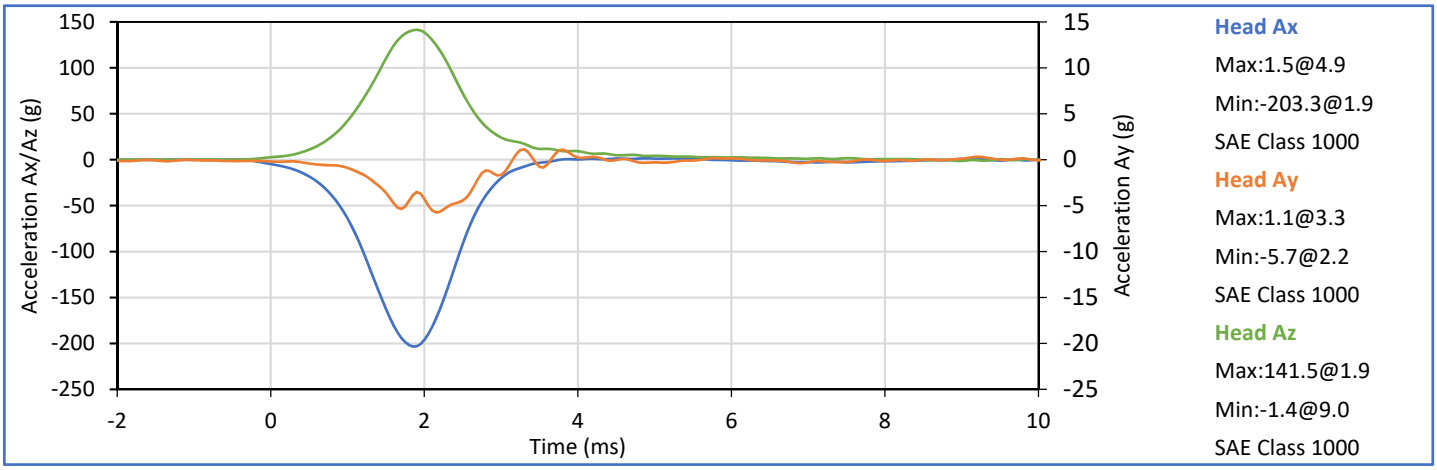
Hybrid III 50th Percentile Male ATD
Head Drop

ATD Serial No.: 168

Test Date: 2020-09-22

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	18.9	25.6	21.2	Pass
Laboratory Relative Humidity	%	10	70	33	Pass
Peak Resultant Acceleration	g	225.0	275.0	247.5	Pass
Peak Lateral Acceleration	g	-15.0	15.0	-5.7	Pass
Oscillations After Main Pulse	%	0.0	10.0	1.3	Pass
Is Acceleration Unimodal?	Yes/No	Yes		Yes	Pass
			Overall Test Results		Pass





Technician: J. Hernandez

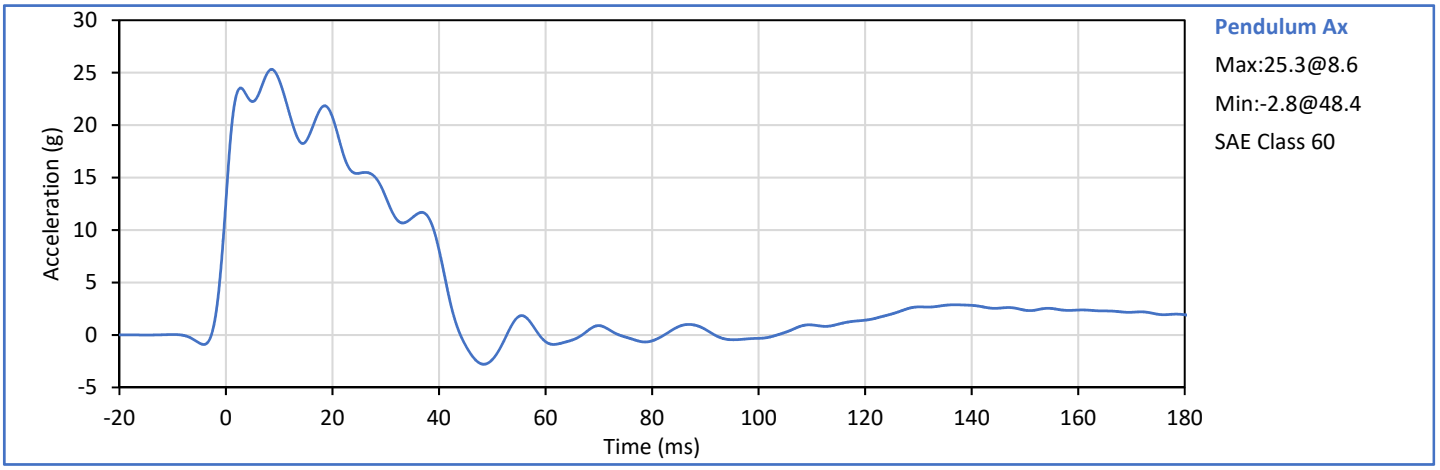
Approved By: P. Puzzuto

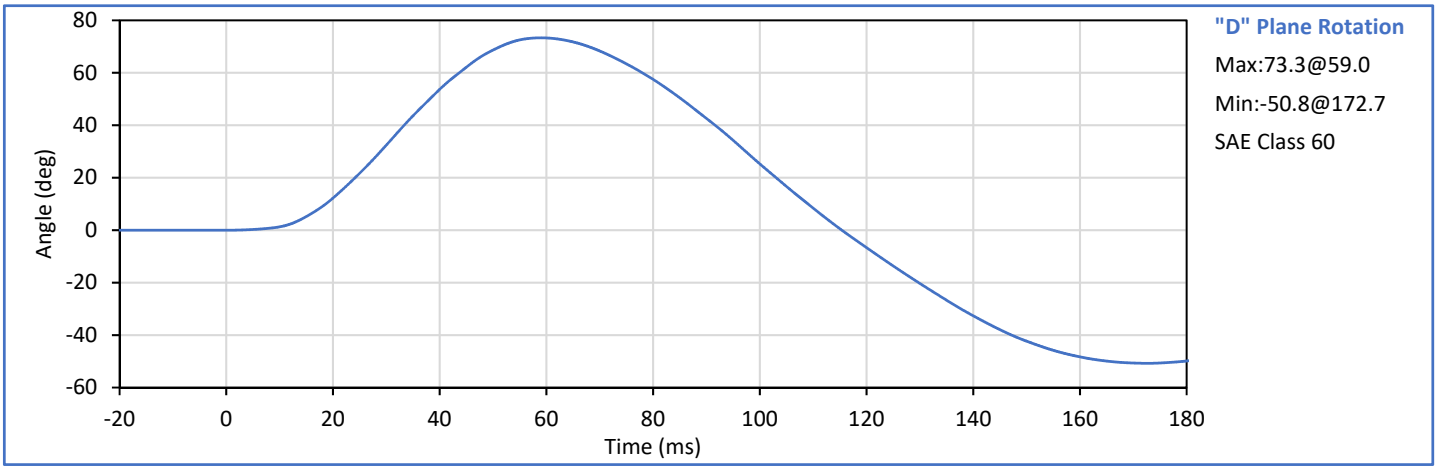
Applus IDIADA KARCO

Hybrid III 50th Percentile Male ATD
Neck Flexion Test

ATD Serial No.: 168 Test Date: 2020-09-22

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	6.89	7.13	7.00	Pass
Pendulum Deceleration at 10 ms	g	22.5	27.5	24.3	Pass
Pendulum Deceleration at 20 ms	g	17.6	22.6	20.8	Pass
Pendulum Deceleration at 30 ms	g	12.5	18.5	13.1	Pass
Peak Pendulum Decel. after 30 ms	g	0.0	29.0	13.1	Pass
Deceleration Decay to Cross 5 g	ms	34.0	42.0	41.3	Pass
"D" Plane Rotation peak	deg	64.0	78.0	73.3	Pass
	ms	57.0	64.0	59.0	Pass
"D" Plane Rotation Decay To Zero	ms	113.0	128.0	115.4	Pass
Moment About Occipital Condyle	Nm	88.1	108.5	99.2	Pass
	ms	47.0	58.0	54.6	Pass
Moment Decay, Peak to Zero	ms	97.0	107.0	101.8	Pass
			Overall Test Results		Pass





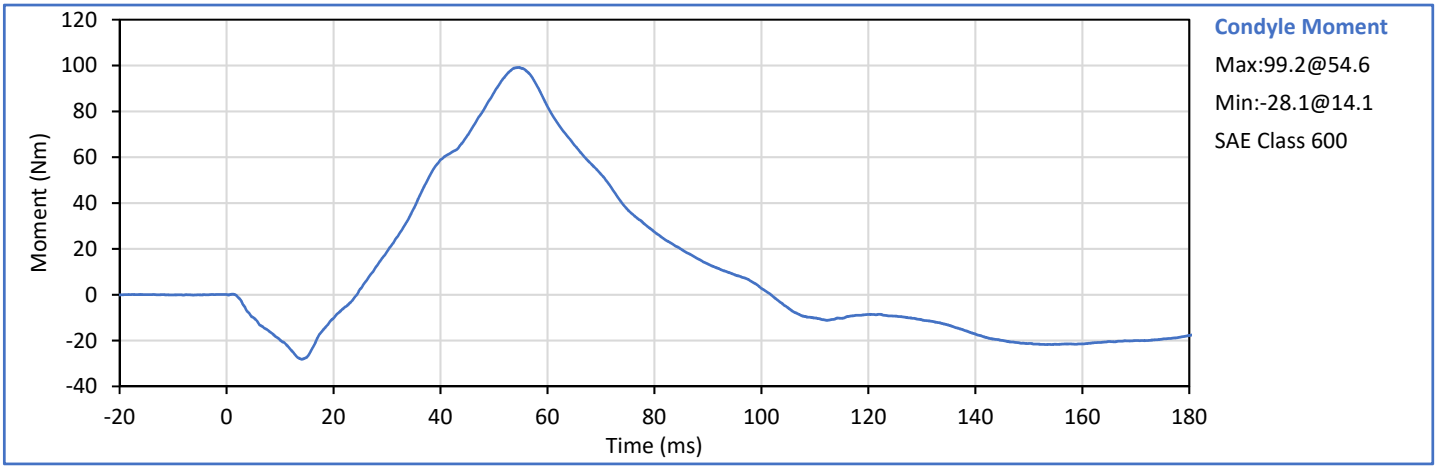
Technician: J. Hernandez

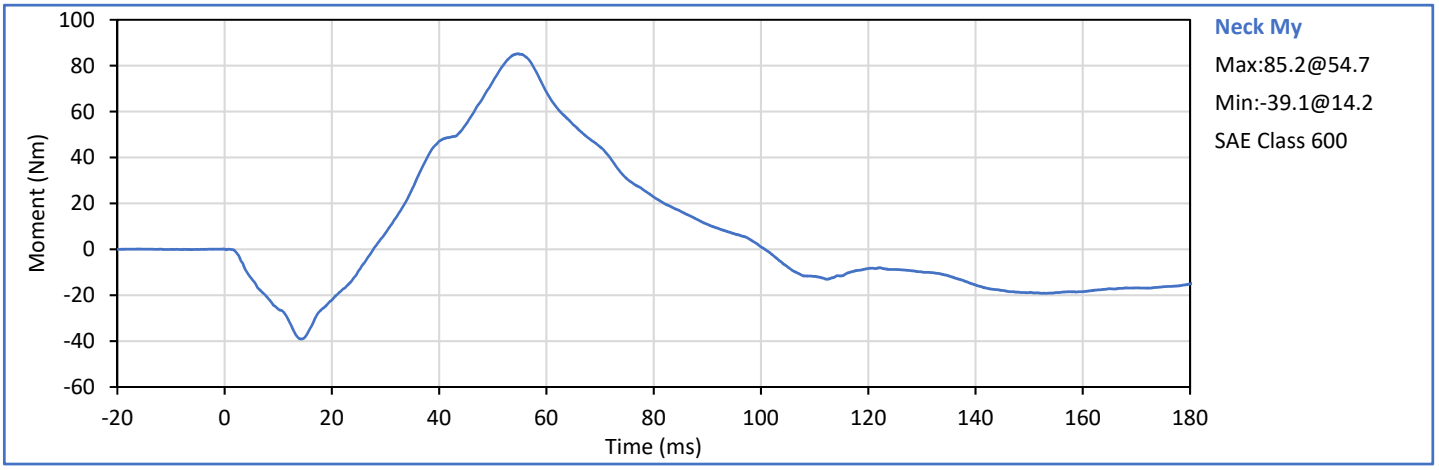
Approved By: P. Puzzuto

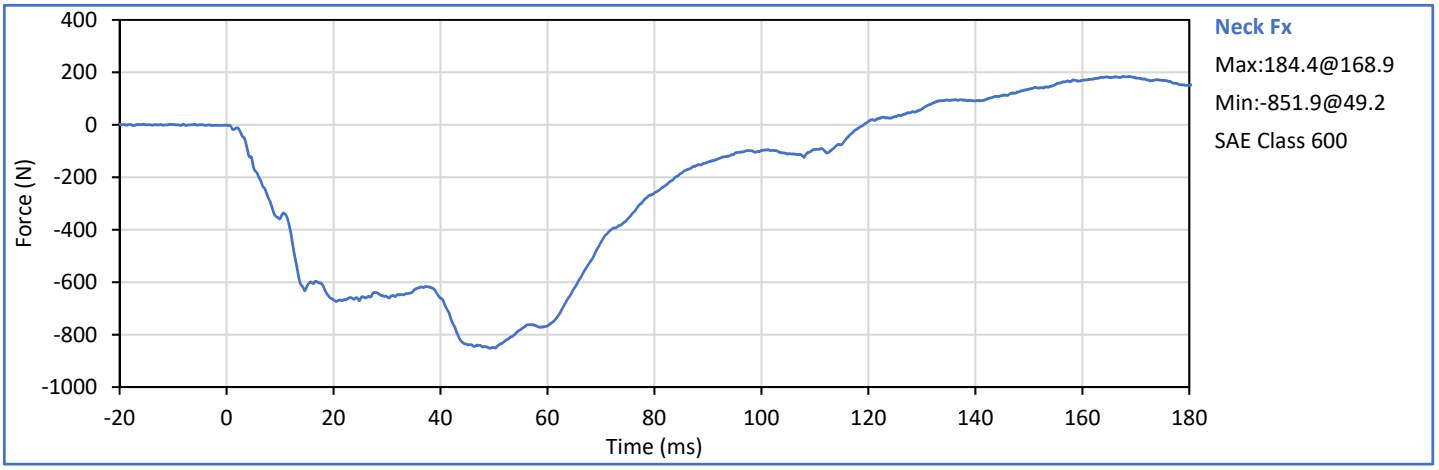
Applus IDIADA
KARCO

Hybrid III 50th Percentile Male ATD
Neck Flexion Test

ATD Serial No.: 168 Test Date: 2020-09-22





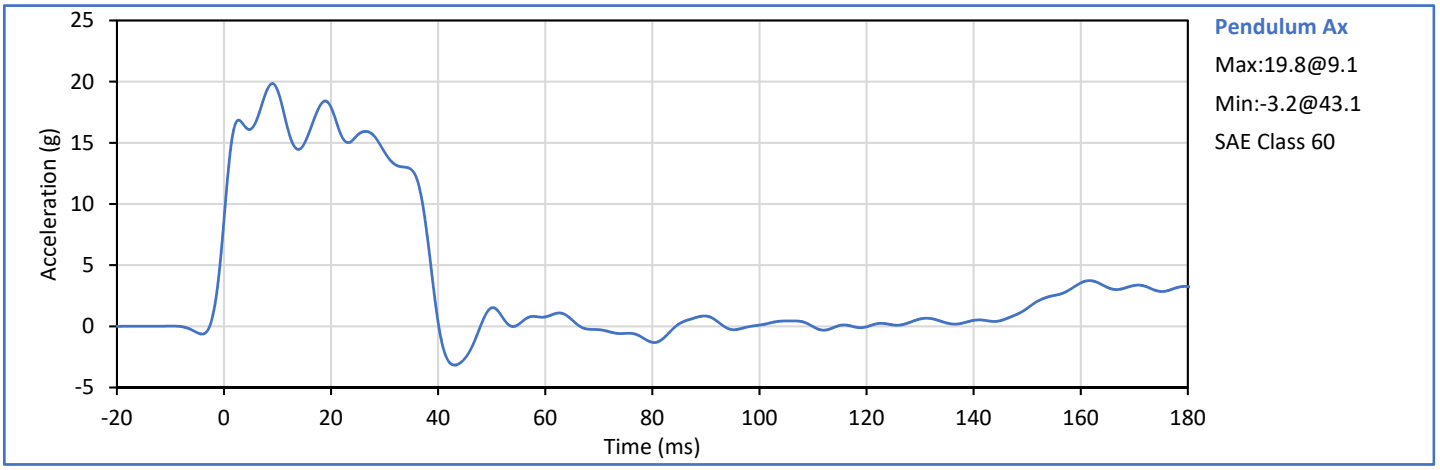


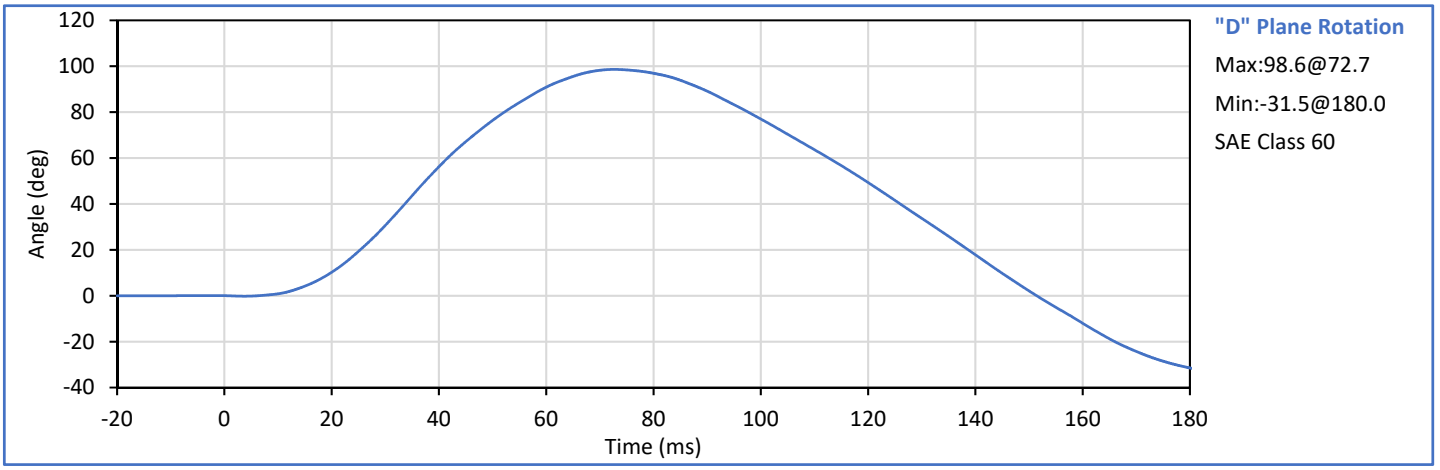
Applus IDIADA KARCO

Hybrid III 50th Percentile Male ATD
Neck Extension Test

ATD Serial No.: 168 Test Date: 2020-09-22

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	19.3	Pass
Pendulum Deceleration at 20 ms	g	14.0	19.0	17.9	Pass
Pendulum Deceleration at 30 ms	g	11.0	16.0	14.2	Pass
Peak Pendulum Decel. after 30 ms	g	0.0	22.0	14.2	Pass
Deceleration Decay to Cross 5 g	ms	38.0	46.0	38.6	Pass
"D" Plane Rotation peak	deg	81.0	106.0	98.6	Pass
	ms	72.0	82.0	72.7	Pass
"D" Plane Rotation Decay To Zero	ms	147.0	174.0	151.5	Pass
Moment About Occipital Condyle	Nm	-79.9	-52.9	-76.9	Pass
	ms	65.0	79.0	68.0	Pass
Moment Decay, Peak to Zero	ms	120.0	148.0	137.1	Pass
			Overall Test Results		Pass





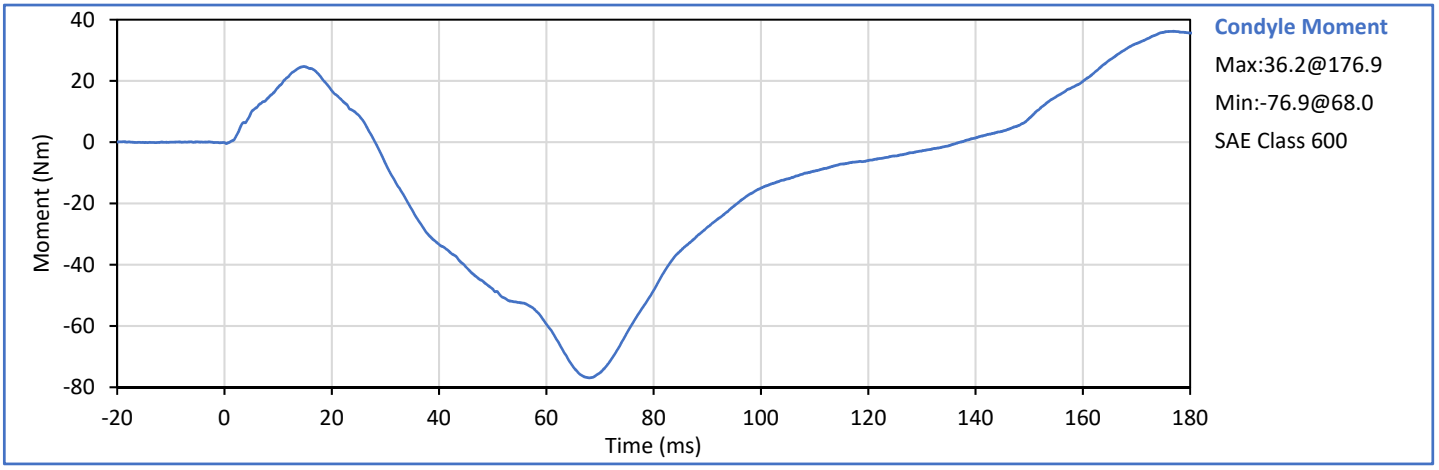
Technician: J. Hernandez

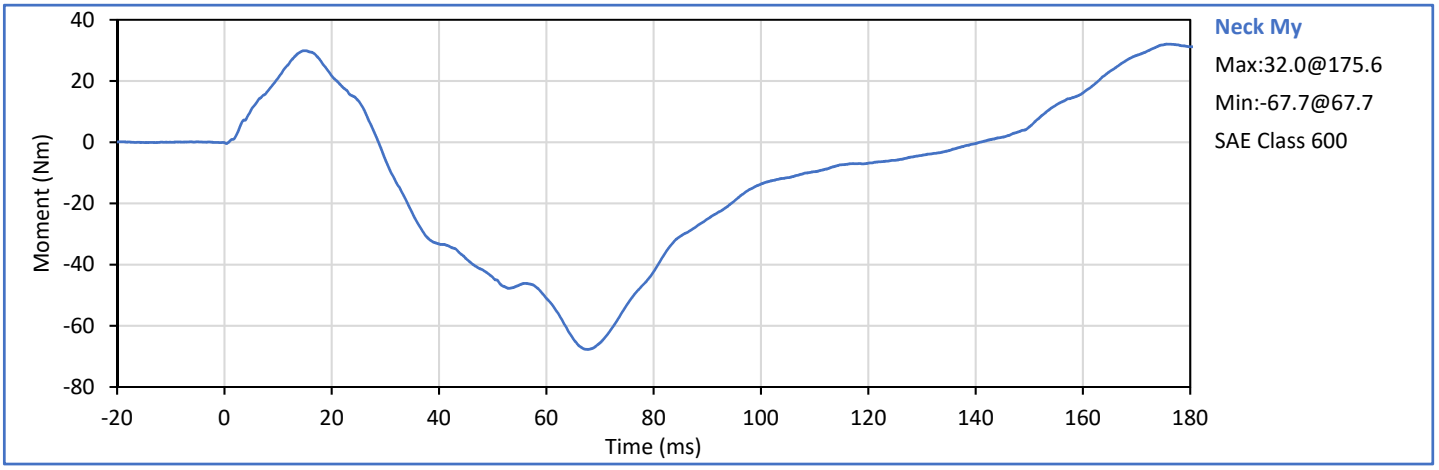
Approved By: P. Puzzuto

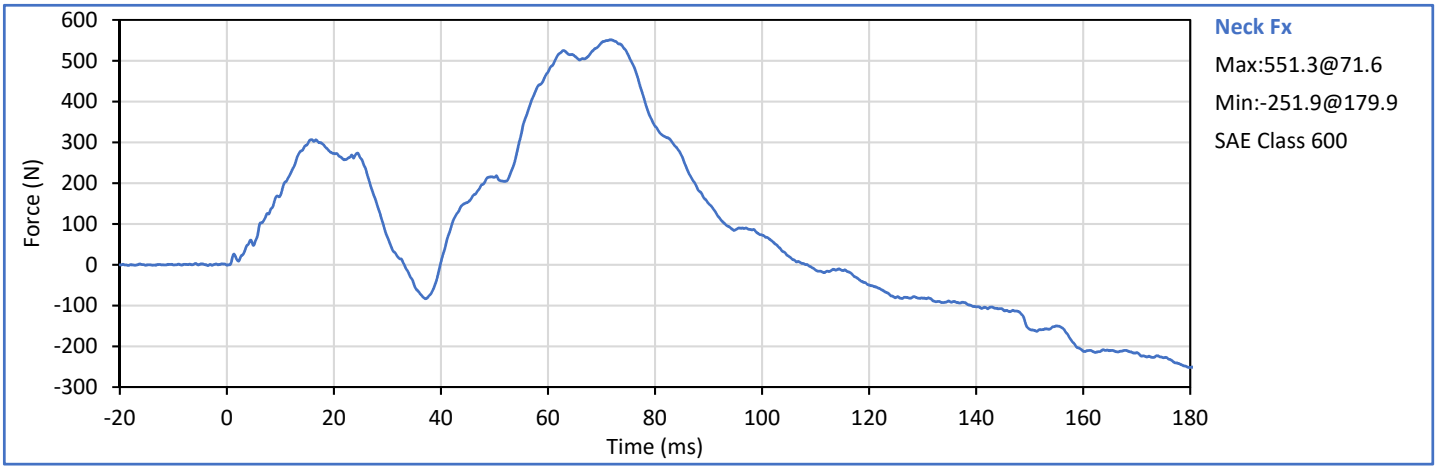
Applus IDIADA KARCO

Hybrid III 50th Percentile Male ATD
Neck Extension Test

ATD Serial No.: 168 Test Date: 2020-09-22





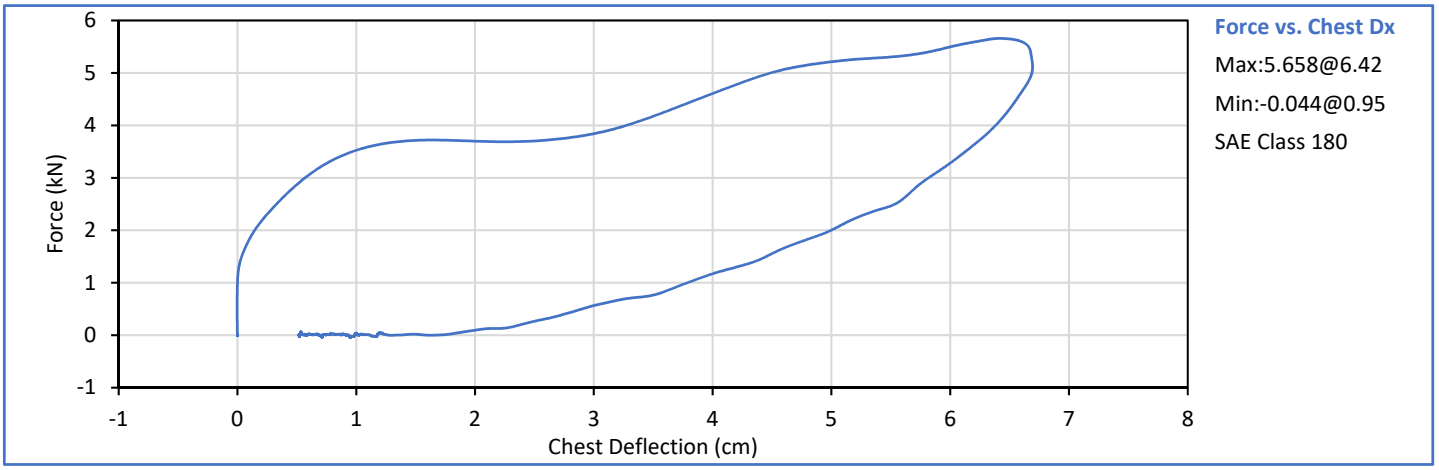


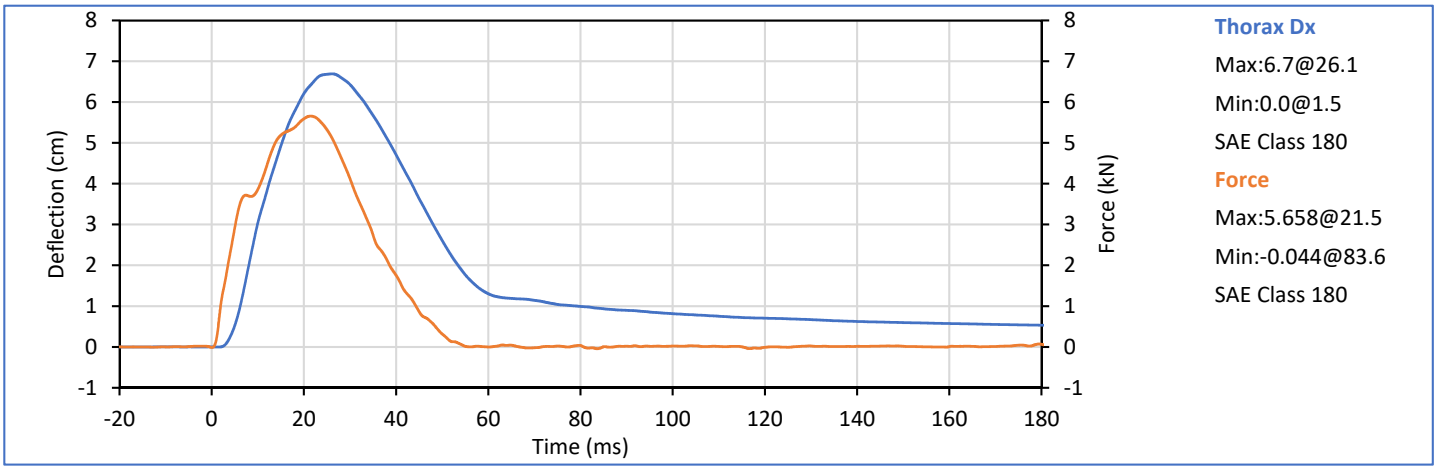
Applus IDIADA KARCO

Hybrid III 50th Percentile Male ATD
Thorax Impact

ATD Serial No.: 168 Test Date: 2020-09-21

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.4	Pass
Laboratory Relative Humidity	%	10	70	26	Pass
Probe Velocity	m/s	6.58	6.82	6.70	Pass
Peak Chest Deflection	cm	6.35	7.26	6.69	Pass
Peak Probe Force	kN	5.159	5.893	5.658	Pass
Internal Hysterisis	%	69.0	85.0	71.9	Pass
			Overall Test Results		Pass





Technician: J. Hernandez

Approved By: P. Puzzuto