

**REPORT NUMBER: SPNCAP-KAR-19-026  
NEW CAR ASSESSMENT PROGRAM (NCAP)  
SIDE IMPACT POLE TEST**

**HONDA OF CANADA MFG.  
2019 HONDA CR-V LX 5-DOOR MPV**

**NHTSA No: M20195301**

**PREPARED BY:  
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ADELANTO, CA 92301**



**JUNE 11, 2019**


**FINAL REPORT**

**PREPARED FOR:  
U.S. DEPARTMENT OF TRANSPORTATION  
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION  
OFFICE OF CRASHWORTHINESS STANDARDS  
MAIL CODE: NRM-110  
1200 NEW JERSEY AVE, SE, ROOM W43-410  
WASHINGTON, D.C. 20590**

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Approval Date: June 11, 2019

FINAL REPORT ACCEPTANCE BY OCWS:

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

Date: \_\_\_\_\_

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

Date: \_\_\_\_\_

## TECHNICAL REPORT DOCUMENTATION PAGE

<b>1. Report No.</b> SPNCAP-KAR-19-026	<b>2. Government Accession No.</b>	<b>3. Recipient's Catalog No.</b>																												
<b>4. Title and Subtitle</b> Final Report of New Car Assessment Program Side Impact Pole Testing of a 2019 Honda CR-V LX 5-Door MPV NHTSA No. M20195301	<b>5. Report Date</b> June 11, 2019		<b>6. Performing Organization Code</b> KAR																											
	<b>8. Performing Organization Report No.</b> TR-P39175-01-NC																													
<b>7. Authors</b> Mr. Robert S. Ramos, Program Manager, Applus IDIADA KARCO Mr. Steven D. Matsusaka, Engineering Manager, Applus IDIADA KARCO	<b>10. Work Unit No.</b>																													
<b>9. Performing Organization Name and Address</b> Applus IDIADA KARCO Engineering, LLC. 9270 Holly Rd. Adelanto, CA 92301	<b>11. Contract or Grant No.</b> DTNH22-14-D-00355L																													
	<b>13. Type of Report and Period Covered</b> Final Test Report, May 28, 2019 -June 11, 2019																													
<b>12. Sponsoring Agency Name and Address</b> U. S. Department of Transportation National Highway Traffic Safety Administration Office of Crashworthiness Standards (NRM-110) 1200 New Jersey Ave., SE, Room W43-410 Washington, D.C. 20590	<b>14. Sponsoring Agency Code</b> NRM-110																													
	<b>15. Supplementary Notes</b>																													
<b>16. Abstract</b> A 32.20 km/h 75° rigid pole side NCAP impact test was conducted on the subject 2019 Honda CR-V LX 5-door MPV in accordance with the specifications of the Office of Crashworthiness Standards Side NCAP Pole Laboratory Test Procedure for the generation of consumer information on vehicle side pole crash protection. The test was conducted at the Applus IDIADA KARCO Engineering, LLC. facility in Adelanto, California on May 28, 2019. The impact velocity was 32.25 km/h and the outside ambient temperature at the struck (driver's) side of the vehicle was 26.1°C. The target vehicle's maximum post-test static crush was 308 mm located at level 2. The test vehicle's occupant performance data is as follows:																														
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2" style="text-align: center;">Measurement Description</th> <th colspan="3" style="text-align: center;">Driver ATD (SID-IIs)</th> </tr> <tr> <th style="text-align: center;">Units</th> <th style="text-align: center;">Threshold</th> <th style="text-align: center;">Result</th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC<sub>36</sub>)</td> <td></td> <td style="text-align: center;">1000</td> <td style="text-align: center;">385.7</td> </tr> <tr> <td>Resultant Lower Spine Acceleration</td> <td style="text-align: center;">g</td> <td style="text-align: center;">82</td> <td style="text-align: center;">35</td> </tr> <tr> <td>Total Pelvic Force (Sum of Acetabular and Iliac Forces)</td> <td style="text-align: center;">N</td> <td style="text-align: center;">5525</td> <td style="text-align: center;">2416</td> </tr> <tr> <td>Maximum Thoracic Rib Deflection</td> <td style="text-align: center;">mm</td> <td style="text-align: center;">38</td> <td style="text-align: center;">22</td> </tr> <tr> <td>Maximum Abdominal Rib Deflection</td> <td style="text-align: center;">mm</td> <td style="text-align: center;">45</td> <td style="text-align: center;">17</td> </tr> </tbody> </table>				Measurement Description	Driver ATD (SID-IIs)			Units	Threshold	Result	Head Injury Criteria (HIC <sub>36</sub> )		1000	385.7	Resultant Lower Spine Acceleration	g	82	35	Total Pelvic Force (Sum of Acetabular and Iliac Forces)	N	5525	2416	Maximum Thoracic Rib Deflection	mm	38	22	Maximum Abdominal Rib Deflection	mm	45	17
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The struck side doors of the vehicle were jammed shut and did not separate from the body at the hinges or latches. The remaining doors did not open during the side impact event.																														
<b>17. Key Words</b> New Car Assessment Program (NCAP) Side Impact Pole Part 572V SID-IIs		<b>18. Distribution Statement</b> Copies of this report are available from: National Highway Traffic Safety Admin. Technical Information Services Division, NPO-411 1200 New Jersey Ave., SE Washington, DC 20590																												
<b>19. Security Classification of this report</b> UNCLASSIFIED	<b>20. Security Classification of this page</b> UNCLASSIFIED	<b>21. No. of Pages</b> 105	<b>22. Price</b>																											

## TABLE OF CONTENTS

<u>Section</u>		<u>Page</u>
1	Test Purpose and Procedure	1
2	Summary of Test Results	2
3	Occupant and Vehicle Information / Data Sheets	4
<u>Data Sheet</u>		<u>Page</u>
1	General Test and Vehicle Parameter Data	5
2	Seat, Seat Belt, Steering Wheel Adjustment, and Fuel System Data	9
3	Dummy Longitudinal Clearance Dimensions	13
4	Dummy Lateral Clearance Dimensions	14
5	Camera and Instrumentation Data	15
6	Test Vehicle Accelerometer Locations	16
7	Rigid Pole Load Cell Data	17
8	Post-Test Observations	18
9	Test Vehicle Profile Measurements	20
10	Test Vehicle Exterior Crush Measurements	21
11	Vehicle Damage Profile Distances	24
12	FMVSS No. 301 Static Rollover Results	25
13	Dummy/Vehicle Temperature and Humidity Stabilization	26
<u>Appendix</u>		<u>Page</u>
A	Photographs	A
B	Vehicle and Dummy Response Data Plots	B
C	ATD Configuration and Performance Verification Data	C
D	Test Equipment and Instrumentation Calibration Data	D

**SECTION 1**  
**TEST PURPOSE AND PROCEDURE**

This side impact test is part of the MY 2019 New Car Assessment Program Side Impact Test Program, sponsored by the National Highway Traffic Safety Administration (NHTSA), under contract number DTNH22-14-D-00355L. The purpose of this test is to generate comparative side impact performance in a 2019 Honda CR-V LX 5-door MPV. The side impact test was conducted in accordance with the Office of Crashworthiness Standard's Laboratory Test Procedure date October 2015.

## SECTION 2

### SUMMARY OF TEST RESULTS

A rigid pole side impact test was conducted on a 2019 Honda CR-V LX 5-door MPV. The subject vehicle was towed into the rigid pole at an angle of 74.0° and a velocity of 32.25 km/h. The test was conducted by Applus IDIADA KARCO Engineering, LLC. in Adelanto, California on May 28, 2019. Pre- and post-test photographs of the test vehicle and side impact dummy (SID-IIs) are included in Appendix A of this report.

One Part 572V (SID-IIs) dummy was placed in the driver designated seating position according to instructions specified in the OCWS Side NCAP Pole Laboratory Test Procedure, dated October 2015. Camera locations and other pertinent camera information are included in this report.

The Part 572V (SID-IIs) was instrumented accordingly:

- Primary and Redundant Head CG tri-axial accelerometers
- Thorax upper, middle and lower rib displacement potentiometers
- Abdomen upper and lower rib displacement potentiometers
- Lower spine (12) tri-axial accelerometers
- Iliac load cell
- Acetabulum load cell

Appendix B contains the vehicle and dummy response data. Dummy configuration and performance verification data can be found in Appendix C of this report. Appendix D contains the test equipment and instrumentation calibration data.

Injury readings for the SID-IIs dummy were recorded as follows:

Measurement Description	Units	Driver ATD (SID-IIs)	
		IARV	Result
Head Injury Criteria (HIC <sub>36</sub> )		1000	385.7
Lower Spine (T12) Resultant Acceleration	g	82	35
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	2416
Maximum Thoracic Rib Deflection	mm	38*	22
Maximum Abdominal Rib Deflection	mm	45*	17

\*Proposed IARV

Supplemental restraint information is given below:

Restraint Type	Left Front (Driver) Occupant Location 1		Left Rear (Passenger) Occupant Location 4	
	Mounted	Deployed	Mounted	Deployed
Frontal Airbag	Yes	No	No	
Knee Airbag	No		No	
Side Airbag 1 (Curtain)	Yes	Yes	Yes	Yes
Side Airbag 2 (Torso/Pelvis)	Yes	Yes	No	
Seat Belt Pretensioner	Yes	Yes	No	
Seat Belt Load Limiter	Yes	Yes	No	

### GENERAL COMMENTS

The struck side doors of the vehicle were jammed shut. There was no separation at the hinges or latches. The remaining doors remained closed and latched. There were no ATD values that exceeded limits. The Load Cell Pole #3 Force Y channel failed and no data was collected.

### SECTION 3

#### OCCUPANT AND VEHICLE INFORMATION/DATA SHEETS

Test Vehicle: 2019 Honda CR-V LX 5-Door MPV NHTSA No. M20195301

Test Program: NCAP Side Pole Impact Test Test Date: 05/28/19

#### 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 <sup>2</sup>	kPa	6.895
Temperature	General Use	°F	°C	$=(T_f - 32)/1.8$
Force	Dynamic Forces	lbf	N	4.448
Moment	Torque	lbf-ft	N•m	1.355



**DATA SHEET NO. 1**

**GENERAL TEST AND VEHICLE PARAMETER DATA**

Test Vehicle: 2019 Honda CR-V LX 5-Door MPV NHTSA No. M20195301  
 Test Program: NCAP Side Pole Impact Test Test Date: 05/28/19

**TEST VEHICLE INFORMATION AND OPTIONS**

NHTSA Number	M20195301
Model Year	2019
Make	Honda
Model	CR-V LX
Body Style	5-Door MPV
VIN	2HKRW5H38KH409855
Body Color	Obsidian Blue
Odometer Reading (km / mi)	90 / 56
Engine Displacement (L)	2.4
Type / No. of Cylinders	Inline 4
Engine Placement	Transverse
Transmission Type	Automatic
Transmission Speeds	CVT
Overdrive	No
Final Drive	FWD
Roof Rack	No
Sunroof / T-Top	No
Running Boards	No
Tilt Steering Wheel	Yes
Power Seats	No
Anti-Lock Brakes (ABS)	Yes

Traction Control System (TCS)	Yes
Auto-Leveling System	No
Automatic Door Locks	Yes
Power Window Auto-Reverse	Yes
Other Optional Feature	No
Driver Front Airbag	Yes
Driver Curtain Airbag	Yes
Driver Head/Torso Airbag	No
Driver Torso Airbag	No
Driver Torso/Pelvis Airbag	Yes
Driver Pelvis Airbag	No
Driver Knee Airbag	No
Rear Pass. Curtain Airbag	Yes
Rear Pass. Head/Torso Airbag	No
Rear Pass. Torso Airbag	No
Rear Pass. Torso/Pelvis Airbag	No
Rear Pass. Pelvis Airbag	No
Driver Seat Belt Pretensioner	Yes
Rear Pass. Seat Belt Pretensioner	No
Driver Load Limiter	Yes
Rear Pass. Load Limiter	No
Other Safety Restraint	N/A

Does Owner's Manual provide instructions to turn off automatic door locks? No

**DATA FROM CERTIFICATION LABEL**

Manufactured By	Honda of Canada MFG.
Date of Manufacture	Mar-19
Vehicle Type	MPV

GVWR (kg)	2130
GAWR Front (kg)	1100
GAWR Rear (kg)	1040

**VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION**

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

**VEHICLE SEAT TYPE**

Seating Location	Type of Seat Pan				Type of Seat Back		
	Bucket	Bench	Split Bench	Contoured	Fixed	Adjustable	
						w/ Lever	w/ Knob
Front Seat	Yes					Yes	
Rear or Second Row Seat			Yes		Yes		
Third Row Seat							



**DATA SHEET NO. 1 ... (CONTINUED)**

**GENERAL TEST AND VEHICLE PARAMETER DATA**

Test Vehicle: 2019 Honda CR-V LX 5-Door MPV NHTSA No. M20195301  
 Test Program: NCAP Side Pole Impact Test Test Date: 05/28/19

**TIRE PRESSURES**

	Units	LF	RF	LR	RR
As Delivered	kPa	220	220	210	210
Tire Placard	kPa	220	220	210	210
Owner's Manual	kPa	220	220	210	210
As Tested	kPa	220	220	210	210

**TEST VEHICLE AXLE WEIGHTS**

	Units	As Delivered (UVW)			As Tested (ATW)			Fully Loaded		
		Front	Rear	Total	Front	Rear	Total	Front	Rear	Total
Left	kg	459.5	304.5		473.5	356.5		481.0	353.5	
Right	kg	437.0	299.5		430.0	327.0		430.0	331.0	
Ratio	%	59.7%	40.3%	100.0%	56.9%	43.1%	100.0%	57.1%	42.9%	100.0%
Total	kg	896.5	604.0	1500.5	903.5	683.5	1587.0	911.0	684.5	1595.5

**TARGET TEST WEIGHT CALCULATION**

Measured Parameter	Units	Value	
Total Delivered Weight (UVW)	kg	1500.5	A
Actual Weight of 1 P572V ATD Used	kg	49.0	B
Rated Cargo/Luggage Wt (RCLW)	kg	44.8	C
Calculated Vehicle Target Wt (TVTW)	kg	1594.3	A+B+C

**Does the measured As Tested Vehicle Weight lie within the required weight range (i.e.**

**Calculated Test Vehicle Target Weight -4.5 kg to -9.0 kg)?**  Yes  No

**TEST VEHICLE ATTITUDE AND CG**

Measurement Description	Units	As Delivered	As Tested	Fully Loaded	Meets Requirement***
Driver Door Sill Angle (front-to-rear)*	°	-0.4	-0.3	-0.1	Yes
Front Passenger Sill Angle (front-to-rear)*	°	-0.5	-0.5	-0.5	Yes
Front Bumper-Line Angle (left-to-right)**	°	-0.2	-0.6	-0.6	Yes
Rear Bumper-Line Angle (left-to-right)**	°	0.0	-0.1	-0.1	Yes
Vehicle CG (Aft of Front Axle)	mm	1071	1146	1141	
Vehicle CG (Left (+)/Right (-) from Longitudinal Centerline)	mm	15	37	37	

\*ND=Nose Down (-), NU=Nose Up (+) \*\*LD=Left Down (-), LU=Left Up (+)

\*\*\*The "As Tested" vehicle attitude angle measurements must be within "As Delivered" and the "Fully Loaded" vehicle attitude measurements at each location. Indicate "Yes" or "No" for "Meets Requirement"

**DATA SHEET NO. 1 ... (CONTINUED)**

**GENERAL TEST AND VEHICLE PARAMETER DATA**

Test Vehicle: 2019 Honda CR-V LX 5-Door MPV NHTSA No. M20195301

Test Program: NCAP Side Pole Impact Test Test Date: 05/28/19

**WEIGHT OF BALLAST AND VEHICLE COMPONENTS REMOVED TO MEET TVTW**

Component Description	Weight (kg)
Trunk Trim	7.0
Spare Tire and Tools	26.0
Non Struck Side Window	2.5
Ballast / Equipment Added	73.0

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

**DATA SHEET NO. 2**

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

Test Vehicle: 2019 Honda CR-V LX 5-Door MPV NHTSA No. M20195301  
 Test Program: NCAP Side Pole Impact Test Test Date: 05/28/19

**SEAT POSITIONING**

The driver’s seat, front center seat (if applicable), and front passenger’s seat should be set to the forward most, mid-height, mid-angle position. The struck side rear passenger’s seat, rear center seat, and non-struck side rear passenger’s seat should be set to the rear most, lowest, mid-angle position.

**SCRL ANGLE RANGE**

Seat	SCRL (°)		
	Max	Min	Mid
Driver Seat	4.8	0.0	2.4
Front Passenger Seat	Fixed	Fixed	Fixed
Front Center Seat			
Struck Side Rear Seat	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Fixed
Rear Center Seat	Fixed	Fixed	Fixed

**SEAT HEIGHT AND ANGLE**

Seat	As Tested SCRL Angle (Mid) (°)	As Tested SCRP Height (mm)	SCRP Height Position	SCRP Height (mm)		
				Rearmost	Mid Fore/Aft	Forwardmost
Driver Seat	2.4	283	Max			
			Mid	261	273	283
			Min			
Front Passenger Seat	Fixed	273	Max			
			Mid	250	263	273
			Min			
Front Center Seat			Max			
			Mid			
			Min			
Struck Side Rear Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
			Mid	Fixed	Fixed	Fixed
			Min	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
			Mid	Fixed	Fixed	Fixed
			Min	Fixed	Fixed	Fixed
Rear Center Seat	Fixed	Fixed	Max	Fixed	Fixed	Fixed
			Mid	Fixed	Fixed	Fixed
			Min	Fixed	Fixed	Fixed

**DATA SHEET NO. 2 ... (CONTINUED)**

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

Test Vehicle: 2019 Honda CR-V LX 5-Door MPV NHTSA No. M20195301  
 Test Program: NCAP Side Pole Impact Test Test Date: 05/28/19

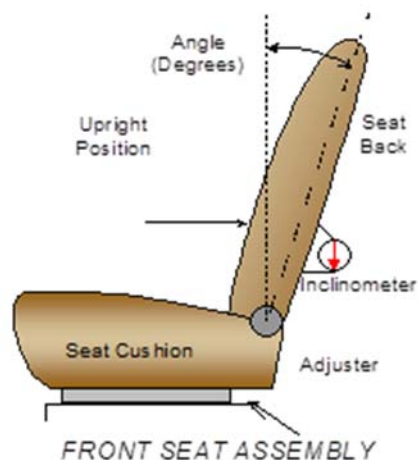
**SEAT FORE/AFT POSITION**

Seat	Total Fore/Aft Travel		Test Position From Forwardmost Position	
	mm	Detents*	mm	Detent*
Driver Seat	240	25	0	0
Front Passenger Seat	240	25	0	0
Front Center Seat				
Struck Side Rear Seat	Fixed	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Fixed	Fixed
Rear Center Seat	Fixed	Fixed	Fixed	Fixed

\*Detent zero (0) is the forward most detent

**SEAT BACK ADJUSTMENT**

The driver's seat back is positioned such that the dummy's head is level. The front passenger's seat back is positioned in a similar manner to the driver's seat. The struck side rear passenger seat back is positioned in accordance with the information provided by the manufacturer in Form 1 for the 5<sup>th</sup> percentile female dummy in a Side NCAP MDB Test. The rear center and non-struck side rear passenger's seat back is set to match the struck side rear seat back. Seat back angle is measured from the headrest post.



Seat	Total Seat Back Angle Range		Test Position from Most Upright	
	Degrees	Detents*	Degree	Detent*
Driver Seat w/Seated Dummy	51.0	20	5.8	0
Front Passenger Seat	52.0	20	5.8	0
Front Center Seat				
Struck Side Rear Seat w/Seated Dummy	Fixed	Fixed	Fixed	Fixed
Non-Struck Side Rear Seat	Fixed	Fixed	Fixed	Fixed
Rear Center Seat	Fixed	Fixed	Fixed	Fixed

\*Detent zero (0) is the forward most detent

**DATA SHEET NO. 2 ... (CONTINUED)**

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

Test Vehicle: 2019 Honda CR-V LX 5-Door MPV NHTSA No. M20195301

Test Program: NCAP Side Pole Impact Test Test Date: 05/28/19

**SEAT BELT ANCHORAGE ADJUSTMENT**

Seat belt anchorages are adjusted in accordance with the information provided by the manufacturer on Form No. 1. The positions are marked H, M3, M2, ..., L from top to bottom.

	Total No. of Positions	Placed in Position
Driver Seat	4	Highest

**HEAD RESTRAINT ADJUSTMENT**

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

	Total No. of Positions	Placed in Position
Driver Seat	5	Lowest

## DATA SHEET NO. 2 ... (CONTINUED)

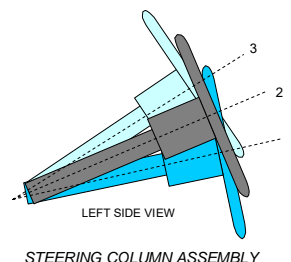
### SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT, AND FUEL SYSTEM DATA

Test Vehicle: 2019 Honda CR-V LX 5-Door MPV NHTSA No. M20195301  
 Test Program: NCAP Side Pole Impact Test Test Date: 05/28/19

#### STEERING COLUMN ADJUSTMENT

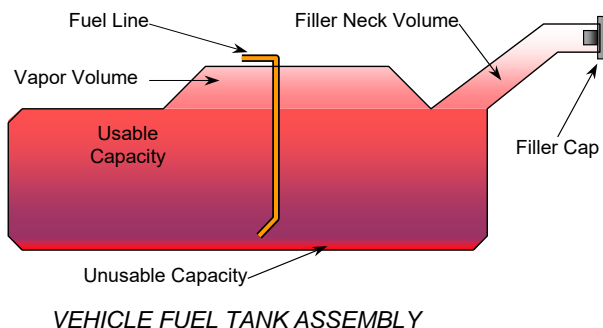
Steering wheel and column adjustments are made so that the steering wheel hub is at the center of the geometric locus it describes when it moves through its full range of motion.

	Degrees	Fore-Aft Position (mm)
Lowermost - Position 1	25.7	91
Geometric Center - Position 2	28.0	111
Uppermost - Position 3	30.2	130
Telescoping Steering Wheel Travel		39
Test Position	28.0	111



#### FUEL PUMP

The vehicle is equipped with an electronic fuel pump. The fuel pump operates after the ignition key is turned from LOCK (O) to ON (II) position. The pump will be filled up for two seconds and then the pressure is maintained.



#### FUEL TANK CAPACITY

Description	Liters
Usable Capacity of "Standard Tank" (see Form No. 1)	52.99
Usable Capacity of "Optional Tank" (see Form No. 1)	
Usable Capacity of "Standard Tank" (see Owner's Manual)	52.99
Usable Capacity of "Optional Tank" (see Owner's Manual)	
93% of Usable Capacity	49.28
Actual amount of Solvent Used in Test	49.28
1/3 of Usable Capacity	17.66

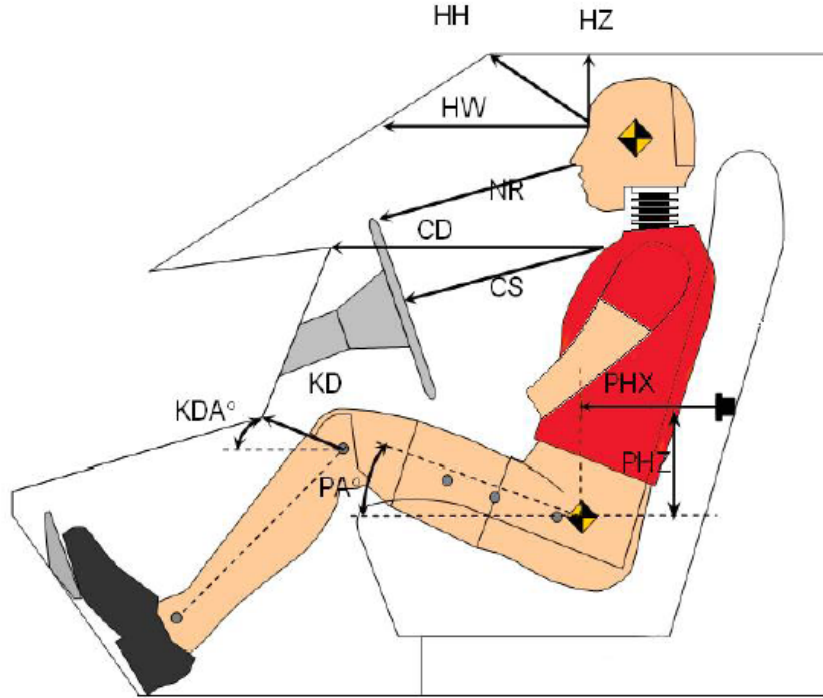
Is the Actual Amount of Solvent Used in the test equal to 93%  $\pm$  1% of the Usable Capacity stated in the Form No. 1?  Yes  No



**DATA SHEET NO. 3**

**DUMMY LONGITUDINAL CLEARANCE DIMENSIONS**

Test Vehicle: 2019 Honda CR-V LX 5-Door MPV NHTSA No. M20195301  
 Test Program: NCAP Side Pole Impact Test Test Date: 05/28/19

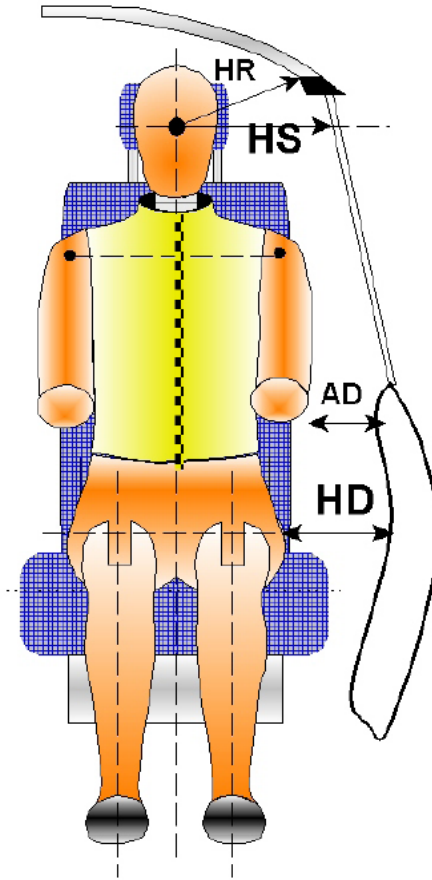


Driver Code	Description	Driver	
		Length (mm)	Angle (°)
HH	Head to Header	236	
HW	Head to Windshield	630	
HZ	Head to Roof	187	
NR	Nose to Rim	255	
CD	Chest to Dash	433	
CS	Chest to Steering Wheel	182	
KD(L)/KDA(L)°	Left Knee to Dash	103	15.6
KD(R)/KDA(R)°	Right Knee to Dash	93	16.7
PAX°	Pelvic Tilt Angle (x-axis)		18.8
PAY°	Pelvic Tilt Angle (y-axis)		0.2
PHX	Hip Point to Striker (x-axis)	391	
PHZ	Hip Point to Striker (z-axis)	235	

## DATA SHEET NO. 4

### DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2019 Honda CR-V LX 5-Door MPV      NHTSA No. M20195301  
 Test Program: NCAP Side Pole Impact Test      Test Date: 05/28/19

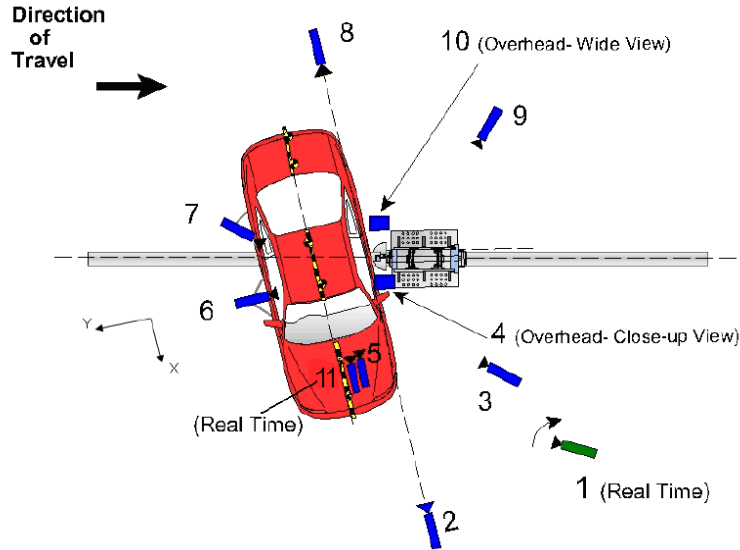


Code	Measurement Description	Units	Driver
HR	Head to Side Header	mm	247
HS	Head to Side Window	mm	365
AD	Arm to Door	mm	142
HD	Hip Point to Door	mm	165

## DATA SHEET NO. 5

### CAMERA AND INSTRUMENTATION DATA

Test Vehicle: 2019 Honda CR-V LX 5-Door MPV NHTSA No. M20195301  
 Test Program: NCAP Side Pole Impact Test Test Date: 05/28/19



Reference from Point of Impact for X and Y; from Ground for Z):  
 +X = Forward of Vehicle, +Y = Right of Vehicle, +Z = Down

Camera No.	View	Coordinates (m)			Lens (mm)	Film Speed (fps)
		X*	Y*	Z*		
1	Real Time Pan View of Impact	8.89	46.57	-3.04		30
2	Front Ground Level - Impact View	8.34	-0.05	-0.93	24	1000
3	Impact Side 45° - Forward Pole View	4.10	-2.15	-1.15	8.5	1000
4	Overhead Close-Up View of Impact	0.00	0.00	-5.79	12.5	1000
5	On-Board - Dummy Front View	1.23	0.52	-1.46	8.5	1000
6	On-Board - Dummy Side View	-0.06	1.74	-1.29	8.5	1000
7	On-Board - Dummy Rear Oblique View	-0.97	1.86	-1.37	8.5	1000
8	Rear Ground Level - Impact View	-6.12	-6.23	-0.96	24	1000
9	Impact Side 45° - Rearward Pole View	-8.02	0.04	-1.01	35	1000
10	Overhead Wide View of Impact	-0.06	0.22	-5.79	14	1000
11	Real Time Dummy Front View	1.24	0.50	-1.37		30

\*All measurements accurate to ±6 mm

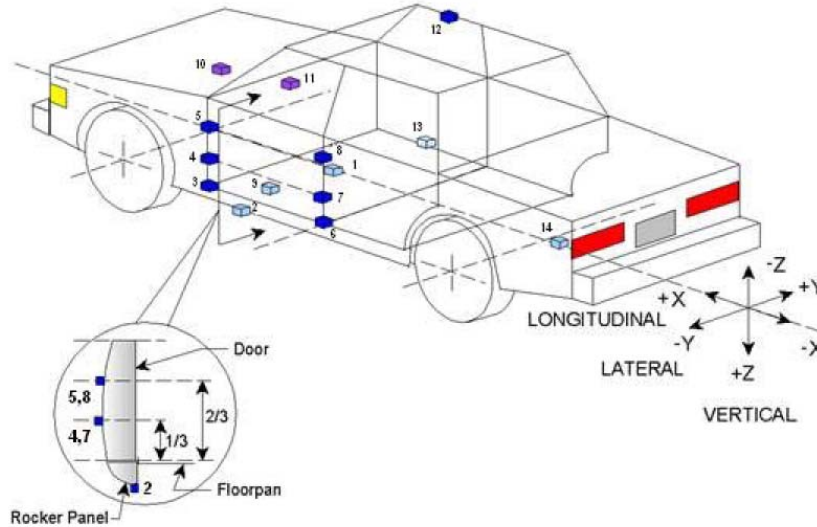
### INSTRUMENTATION

Driver Dummy Channels	19
Vehicle Structure Accelerometers	18
Pole Load Cells	8
<b>Total</b>	<b>45</b>

**DATA SHEET NO. 6**

**TEST VEHICLE ACCELEROMETER LOCATIONS**

Test Vehicle: 2019 Honda CR-V LX 5-Door MPV NHTSA No. M20195301  
 Test Program: NCAP Side Pole Impact Test Test Date: 05/28/19

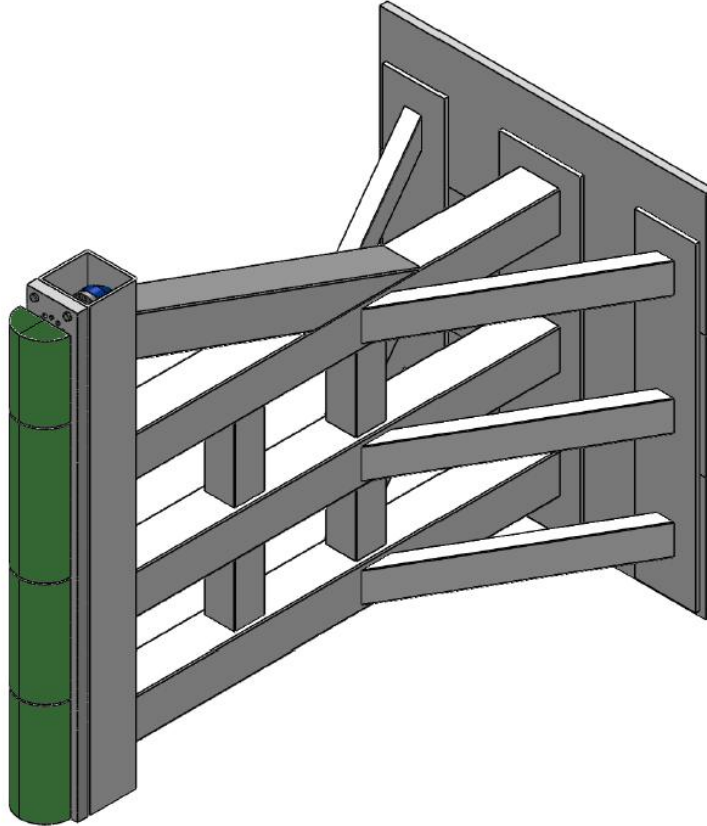


Loc. No.	Sensor Description	Coordinates (mm)		
		X	Y	Z
1	Vehicle CG	2160	0	-490
2	Left Floor Sill	2520	-730	-250
3	A-Pillar Sill	3125	-835	-520
4	A-Pillar Low	3145	-835	-700
5	A-Pillar Mid	3150	-820	-820
6	B-Pillar Sill	2200	-740	-450
7	B-Pillar Low	2250	-740	-700
8	B-Pillar Mid	2270	-750	-960
9	Driver Seat Track	2130	-590	-500
10	Engine Top	4010	315	-750
11	Firewall	3450	100	-910
12	Right Roof	2240	550	-1635
13	Right Floor Sill	2720	660	-450
14	Rear Floorpan	1130	0	-700

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

**DATA SHEET NO. 7**  
**RIGID POLE LOAD CELL DATA**

Test Vehicle: 2019 Honda CR-V LX 5-Door MPV NHTSA No. M20195301  
 Test Program: NCAP Side Pole Impact Test Test Date: 05/28/19



ID	Units	Height From Ground
1	mm	87
2	mm	468
3	mm	648
4	mm	978
5	mm	1168
6	mm	1651
7	mm	1816
8	mm	2057

**DATA SHEET NO. 8**

**POST-TEST OBSERVATIONS**

Test Vehicle: 2019 Honda CR-V LX 5-Door MPV NHTSA No. M20195301  
 Test Program: NCAP Side Pole Impact Test Test Date: 05/28/19

**TEST DUMMY INFORMATION AND CONTACT POINTS**

Dummy Body Part	Driver SID-IIs Dummy
Face	Curtain Airbag
Top of Head	Curtain Airbag
Left Side of Head	Curtain Airbag
Back of Head	Curtain Airbag, Headrest, Seatback
Left Shoulder	Side Airbag
Upper Torso	Side Airbag, Seatback
Lower Torso	Side Airbag, Seatback
Left Hip	Side Airbag
Left Knee	Door Panel

**POST-TEST DOOR PERFORMANCE**

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

**POST-TEST SEAT PERFORMANCE**

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

**DATA SHEET NO. 8 ... (CONTINUED)**

**POST-TEST OBSERVATIONS**

Test Vehicle: 2019 Honda CR-V LX 5-Door MPV NHTSA No. M20195301  
 Test Program: NCAP Side Pole Impact Test Test Date: 05/28/19

**POST-TEST STRUCTURAL OBSERVATIONS**

Critical Areas of Performance	Observations and Conclusions
Pillar Performance	No separation occurred
Sill Separation	No separation occurred
Windshield Damage	Broken
Side Window Damage	Left front window broken
Other Notable Effects	None

**SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION**

Restraint Type	Struck Side Driver		Struck Side Rear Passenger	
	Mounted	Deployed	Mounted	Deployed
Frontal Airbag	Yes	No	No	
Knee Airbag	No		No	
Side Airbag 1 (Curtain)	Yes	Yes	Yes	Yes
Side Airbag 2 (Torso/Pelvis)	Yes	Yes	No	
Seat Belt Pretensioner	Yes	Yes	No	
Seat Belt Load Limiter	Yes	Yes	No	

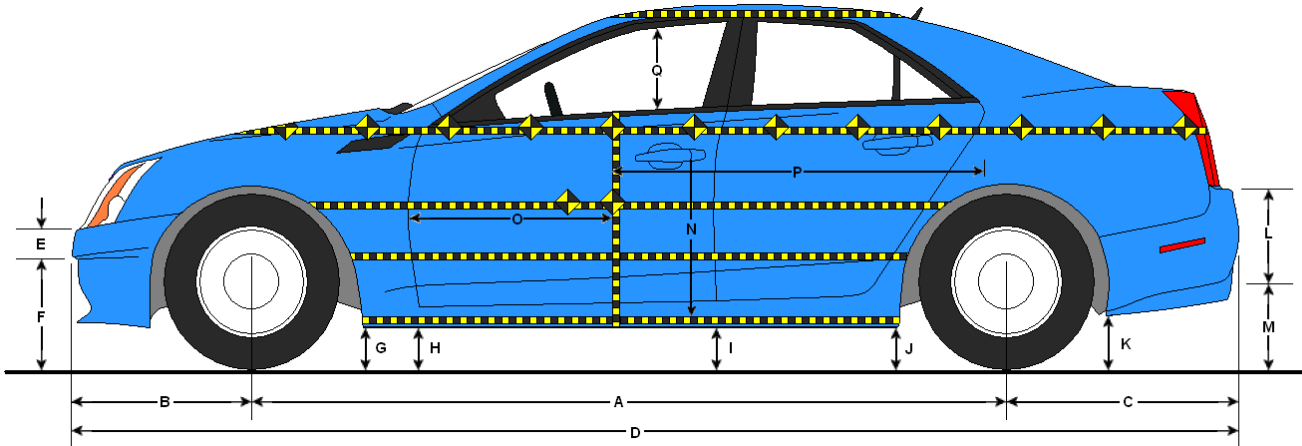
**IMPACT POINT LOCATION DATA**

Measured Parameter	Units	Tolerance	Value
Vertical Impact Reference Line (Aft of Front Axle)(Intended Impact Point)	mm		1075
Actual Impact Point (Aft of Front Axle)	mm		1100
Horizontal Offset (+ forward / - rearward)	mm	± 38 of Intended Impact Point	-25
Angle Between Vehicle's Longitudinal Centerline and Line of Forward Motion	°	75 ± 3	74.0
Trap No. 1 Velocity (Primary)	km/h	31.4 to 33.0	32.25
Trap No. 2 Velocity (Redundant)	km/h	31.4 to 33.0	32.24

**DATA SHEET NO. 9**

**TEST VEHICLE PROFILE MEASUREMENTS**

Test Vehicle: 2019 Honda CR-V LX 5-Door MPV NHTSA No. M20195301  
 Test Program: NCAP Side Pole Impact Test Test Date: 05/28/19



**LEFT SIDE VIEW**

All measurements in mm with tolerance of  $\pm 3\text{mm}$

**VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION**

Code	Description	Pre-Test	Post-Test	Difference
A	Wheelbase	2660	2660	0
B	Front Axle to FSOV	915	898	-17
C	Rear Axle to RSOV	1005	1003	-2
D	Total Length at Centerline	4567	4562	-5
E	Front Bumper Thickness	156	158	2
F	Front Bumper Bottom to Ground	444	437	-7
G	Sill Height at Front Wheel Well	264	249	-15
H	Sill Height at Front Door Leading Edge	263	259	-4
I	Sill Height at B-Pillar	273	280	7
J1	Sill Height at Rear Wheel Well	279	296	17
J2	Pinch Weld Height at Rear Wheel Well	265	272	7
K	Sill Height Aft of Rear Wheel Well	359	366	7
L	Rear Bumper Thickness	170	170	0
M	Rear Bumper Bottom to Ground	399	404	5
N	Sill Height to Bottom of Front Window Sill	613	743	130
O	Front Door Leading Edge to Impact CL	589	514	-75
P	Rear Door Trailing Edge to Impact CL	1549	1486	-63
Q	Front Window Opening	435	414	-21
R	Right Side Length	3241	3240	-1
S	Left Side Length	3243	3185	-58
T	Vehicle Width at B-Pillar	1842	1784	-58

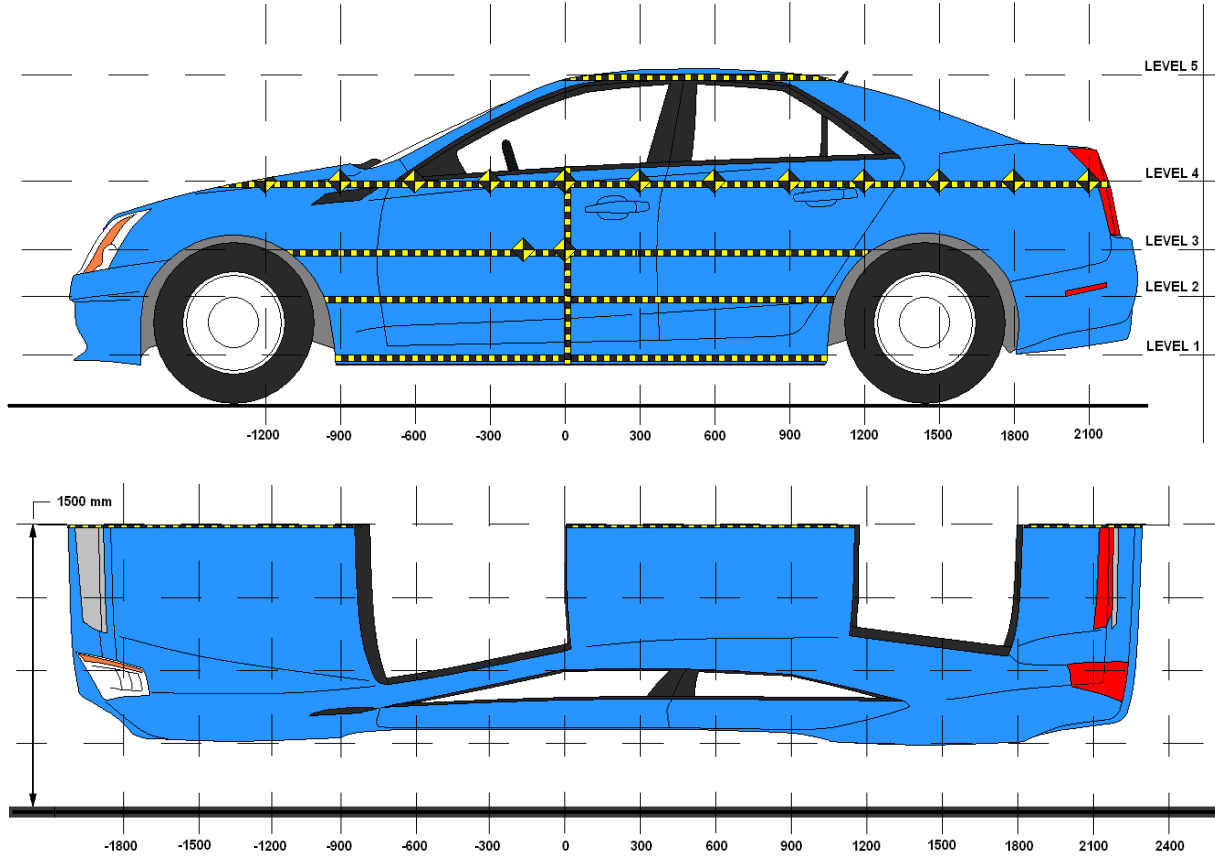


**DATA SHEET NO. 10**

**TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS**

Test Vehicle: 2019 Honda CR-V LX 5-Door MPV NHTSA No. M20195301

Test Program: NCAP Side Pole Impact Test Test Date: 05/28/19



**NOTE:** All measurements in mm with tolerance of  $\pm 3$ mm

**MAXIMUM EXTERIOR CRUSH MEASUREMENTS**

Level	Description	Height Above Ground (mm)	Maximum Exterior Static Crush	Distance from Impact
1	Sill Top	336	216	0
2	Occupant H-Point	698	308	0
3	Mid-Door	664	302	0
4	Window Sill	1052	295	150
5	Window Top	1567	96	150

**DATA SHEET NO. 10 ... (CONTINUED)**

**TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS**

Test Vehicle: 2019 Honda CR-V LX 5-Door MPV NHTSA No. M20195301  
 Test Program: NCAP Side Pole Impact Test Test Date: 05/28/19

**EXTERIOR CRUSH MEASUREMENTS AT EACH LEVEL**

	Pre-Test (mm)					Post-Test (mm)					Difference (mm)				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-900				698					666					-32	
-750		573	573	690			555	555	672			-18	-18	-18	
-600	612	582	582	684		603	536	540	677		-9	-46	-42	-7	
-450	613	584	586	665		633	632	639	703		20	48	53	38	
-300	611	579	582	644		697	729	732	740		86	150	150	96	
-150	610	576	580	626		765	807	805	803		155	231	225	177	
0	609	576	580	612		825	884	882	893		216	308	302	281	
150	607	577	581	604	870	800	871	868	899	966	193	294	287	295	96
300	607	581	584	577	873	722	780	776	780	944	115	199	192	203	71
450	605	587	589	580	875	646	675	676	686	921	41	88	87	106	46
600	596	590	591	600	879	648	640	641	647	904	52	50	50	47	25
750	587	588	588	604	883	622	625	624	638	897	35	37	36	34	14
900	582	581	581	607	887	601	603	601	629	894	19	22	20	22	7
1050	582	575	575	614	890	586	582	582	622	897	4	7	7	8	7
1200		577	578	619	893		572	574	614	898		-5	-4	-5	5
1350				628	897				606	902				-22	5
1500				626	902				596	906				-30	4
1650				630	909				633	911				3	2
1800				639	917				640	918				1	1
1950				653	928				652	929				-1	1
2100															
2250															
2400															
2550															
2700															
2850															

DATA SHEET NO. 10 ... (CONTINUED)

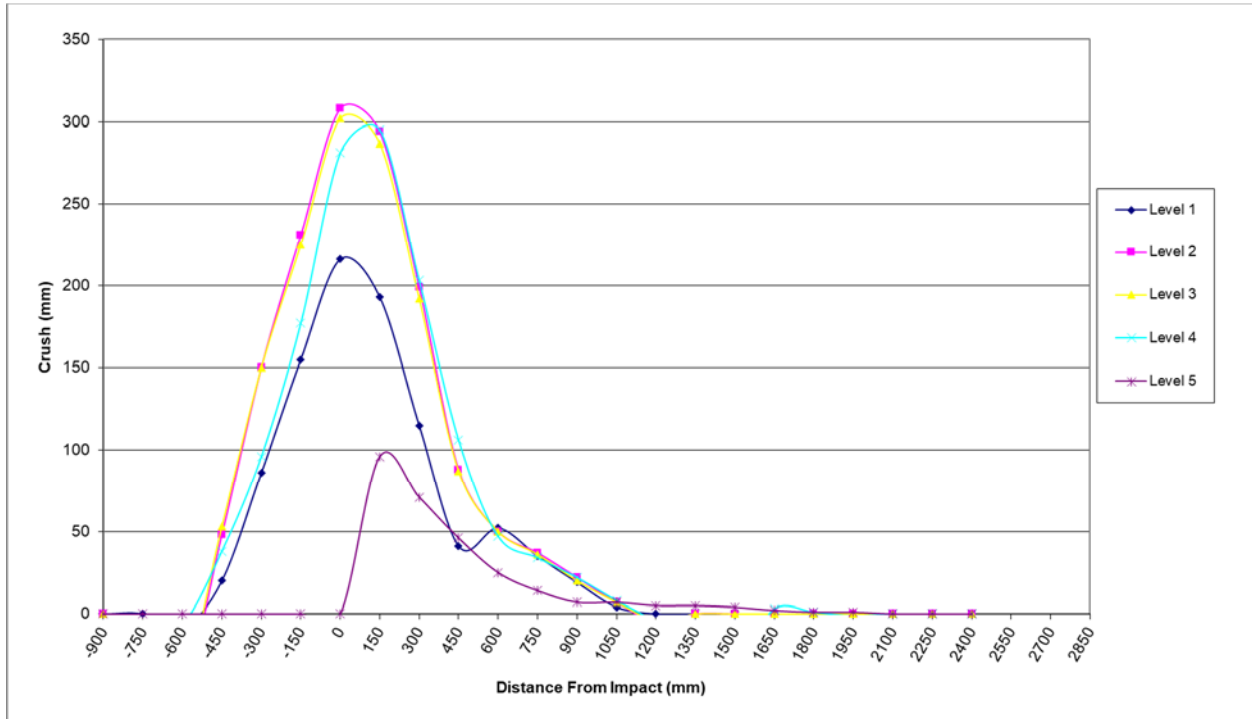
TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2019 Honda CR-V LX 5-Door MPV

NHTSA No. M20195301

Test Program: NCAP Side Pole Impact Test

Test Date: 05/28/19

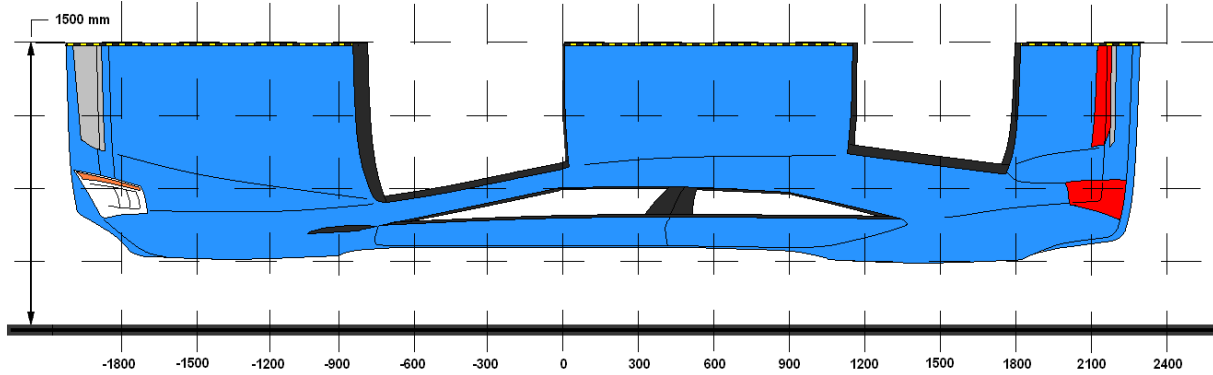


**DATA SHEET NO. 11**

**VEHICLE DAMAGE PROFILE DISTANCES**

Test Vehicle: 2019 Honda CR-V LX 5-Door MPV NHTSA No. M20195301

Test Program: NCAP Side Pole Impact Test Test Date: 05/28/19



DPD	Distance From Impact Point (mm)	Level	Pre-Test (mm)	Post-Test (mm)	Crush (mm)
1	1950	5	928	929	1
2	1350	5	897	902	5
3	750	2	588	625	37
4	300	4	577	780	203
5	-300	2	579	729	150
6	-900	4	698	666	-32

**DATA SHEET NO. 12**

**FMVSS NO. 301 STATIC ROLLOVER RESULTS**

Test Vehicle: 2019 Honda CR-V LX 5-Door MPV NHTSA No. M20195301  
 Test Program: NCAP Side Pole Impact Test Test Date: 05/28/19

Time of Impact: 21.4° C Test Time: 12:22 PM

From impact until vehicle motion ceases: 0 oz.

(Maximum allowable = 1 oz.)

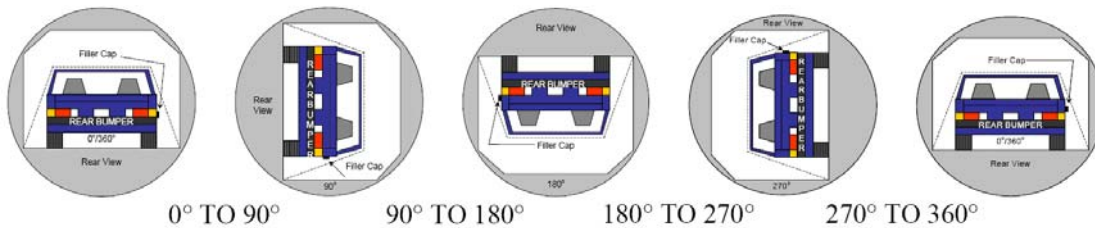
For the 5 minute period after motion ceases: 0 oz.

(Maximum allowable = 5 oz.)

For the following 25 minutes: 0 oz.

(Maximum allowable = 1 oz./minute)

Spillage Details: There was no Stoddard solvent spillage.  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_



**SOLVENT COLLECTION TIME TABLE IN SECONDS**

Test Phase	Rotation Time	Hold Time	Total Time
0° To 90°	78	300	378
90° To 180°	81	300	381
180° To 270°	79	300	379
270° To 360°	80	300	380

**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**

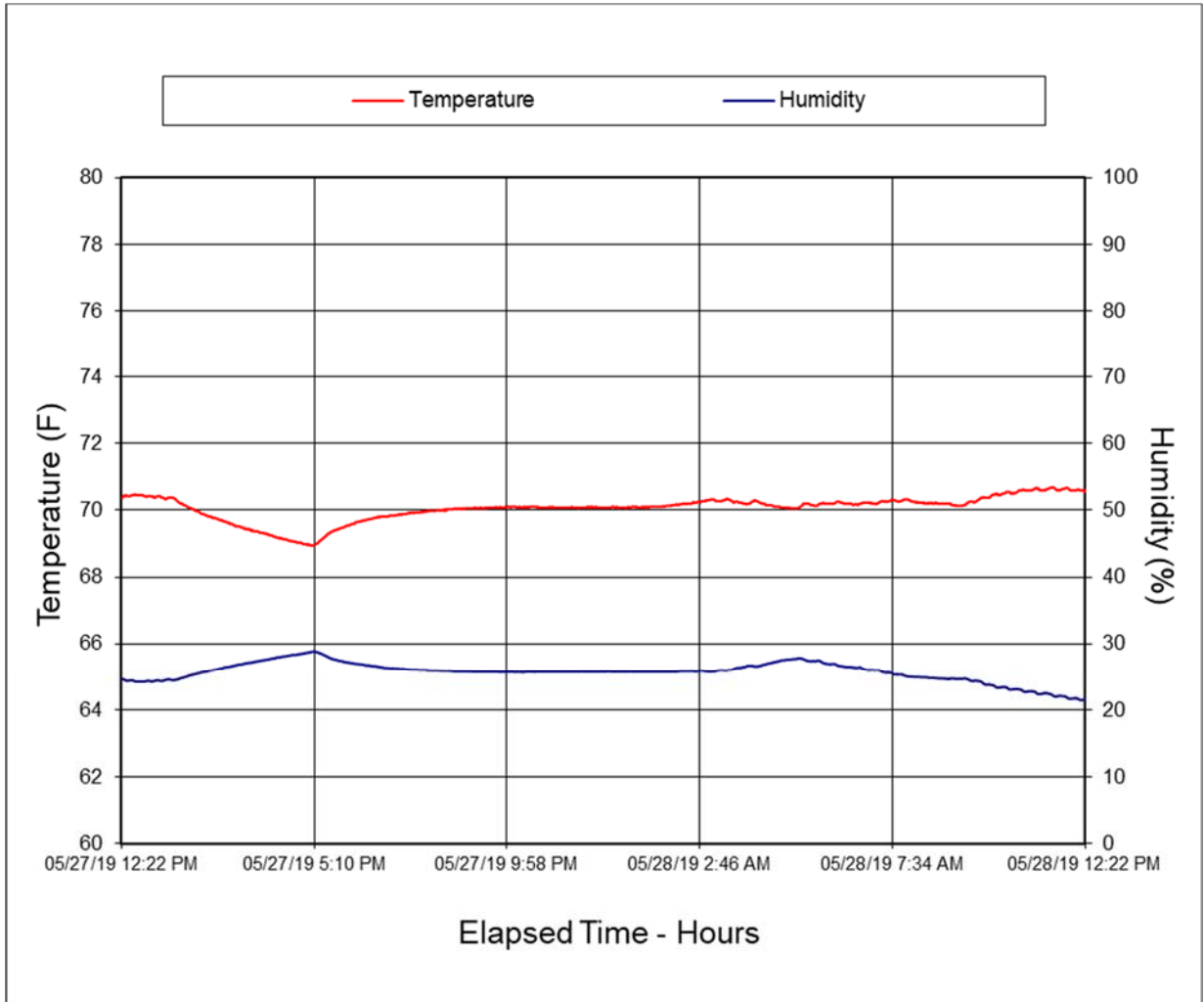
Test Phase	Spillage Location
0° To 90°	No Spillage Occurred
90° To 180°	No Spillage Occurred
180° To 270°	No Spillage Occurred
270° To 360°	No Spillage Occurred

**DATA SHEET NO. 13**

**DUMMY/VEHICLE TEMPERATURE AND HUMIDITY STABILIZATION**

Test Vehicle: 2019 Honda CR-V LX 5-Door MPV NHTSA No. M20195301

Test Program: NCAP Side Pole Impact Test Test Date: 05/28/19



**APPENDIX A  
PHOTOGRAPHS**

## TABLE OF PHOTOGRAPHS

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



## TABLE OF PHOTOGRAPHS ... (CONTINUED)

Figure		Page
31	Pre-Test Left Side View of Dummy's Head Showing Dummy's Head is Level	A-16
32	Pre-Test Placement of Dummy's Feet	A-16
33	Pre-Test View of Belt Anchorage for Dummy	A-17
34	Pre-Test Left Side View of Steering Wheel	A-17
35	View of Disengaged Parking Brake	A-18
36	Pre-Test View of Parking Brake	A-18
37	Pre-Test Close-Up Left Side View of Driver Seat Track	A-19
38	Pre-Test Close-Up Left Side View of Driver Seat Back	A-19
39	Pre-Test Close-Up View of Driver Seat Back or Head Restraint	A-20
40	Pre-Test Dummy and Door Clearance View	A-20
41	Post-Test Dummy and Door Clearance View	A-21
42	Pre-Test Right Side View of Dummy and Front Seat of Occupant Compartment	A-21
43	Post-Test Right Side View of Dummy and Front Seat of Occupant Compartment	A-22
44	Pre-Test Inner Door Panel View	A-22
45	Post-Test Inner Door Panel View Showing Dummy Contact Locations	A-23
46	Post-Test Dummy Close-Up Head Contact with Vehicle Interior View	A-23
47	Post-Test Dummy Close-Up Head Contact with Side Airbag View	A-24
48	Post-Test Dummy Close-Up Torso Contact with Vehicle Interior View	A-24
49	Post-Test Dummy Close-Up Torso Contact with Side Airbag View	A-25
50	Post-Test Dummy Close-Up Pelvis Contact with Vehicle Interior View	A-25
51	Post-Test Dummy Close-Up Pelvis Contact with Side Airbag View	A-26
52	Post-Test Dummy Close-Up Knee Contact with Vehicle Interior View	A-26
53	Pre-Test View of Fuel Filler Cap or Fuel Filler Neck	A-27
54	Post-Test View of Fuel Filler Cap or Fuel Filler Neck	A-27
55	Close-Up View of Vehicle's Certification Label	A-28
56	Close-Up View of Vehicle's Tire Information Placard or Label	A-28
57	Pre-Test Pole Barrier Front View	A-29
58	Post-Test Pole Barrier Front View	A-29
59	Pre-Test Pole Barrier Side View	A-30
60	Post-Test Pole Barrier Side View	A-30

## TABLE OF PHOTOGRAPHS ... (CONTINUED)

<u>Figure</u>		<u>Page</u>
61	Pre-Test Ballast View	A-31
62	Post-Test Primary and Redundant Speed Trap Read-Out	A-31
63	FMVSS No. 301 Static Rollover 0 Degrees	A-32
64	FMVSS No. 301 Static Rollover 90 Degrees	A-32
65	FMVSS No. 301 Static Rollover 180 Degrees	A-33
66	FMVSS No. 301 Static Rollover 270 Degrees	A-33
67	FMVSS No. 301 Static Rollover 360 Degrees	A-34
68	Impact Event	A-34
69	Monroney Label	A-35
70	Head Restraint Use and Adjustment Information from Vehicle Owner's Manual	A-35
71	Post-Test View of Shattered Vehicle Inner Door Panel	A-36



FIGURE 1. As-Delivered Right Front  $\frac{3}{4}$  View of Test Vehicle



FIGURE 2. As-Delivered Left Rear  $\frac{3}{4}$  View of Test Vehicle



FIGURE 3. Pre-Test Frontal View of Test Vehicle

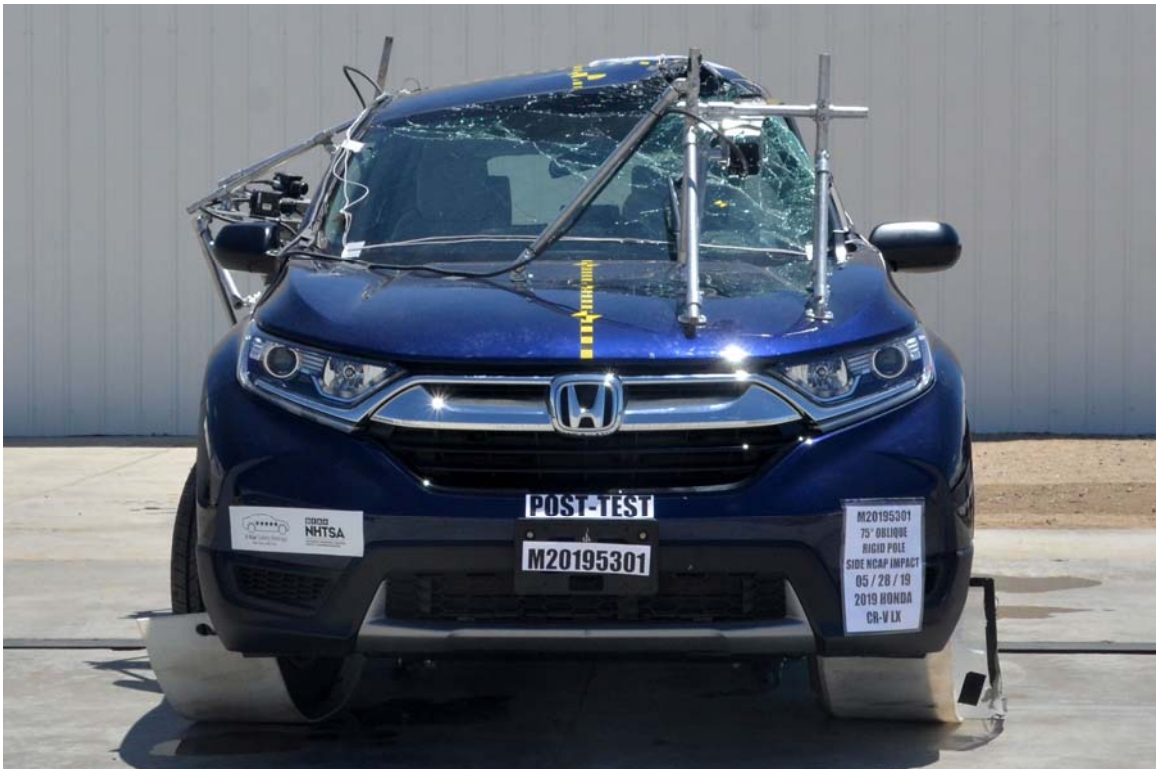


FIGURE 4. Post-Test Frontal View of Test Vehicle



FIGURE 5. Pre-Test Left Front  $\frac{3}{4}$  View of Test Vehicle



FIGURE 6. Post-Test Left Front  $\frac{3}{4}$  View of Test Vehicle



FIGURE 7. Pre-Test Left Side View of Test Vehicle



FIGURE 8. Post-Test Left Side View of Test Vehicle



FIGURE 9. Pre-Test Left Rear  $\frac{3}{4}$  View of Test Vehicle



FIGURE 10. Post-Test Left Rear  $\frac{3}{4}$  View of Test Vehicle



FIGURE 11. Pre-Test Rear View of Test Vehicle



FIGURE 12. Post-Test Rear View of Test Vehicle





FIGURE 13. Pre-Test Right Side View of Test Vehicle



FIGURE 14. Post-Test Right Side View of Test Vehicle



FIGURE 15. Pre-Test Overhead View of Test Area

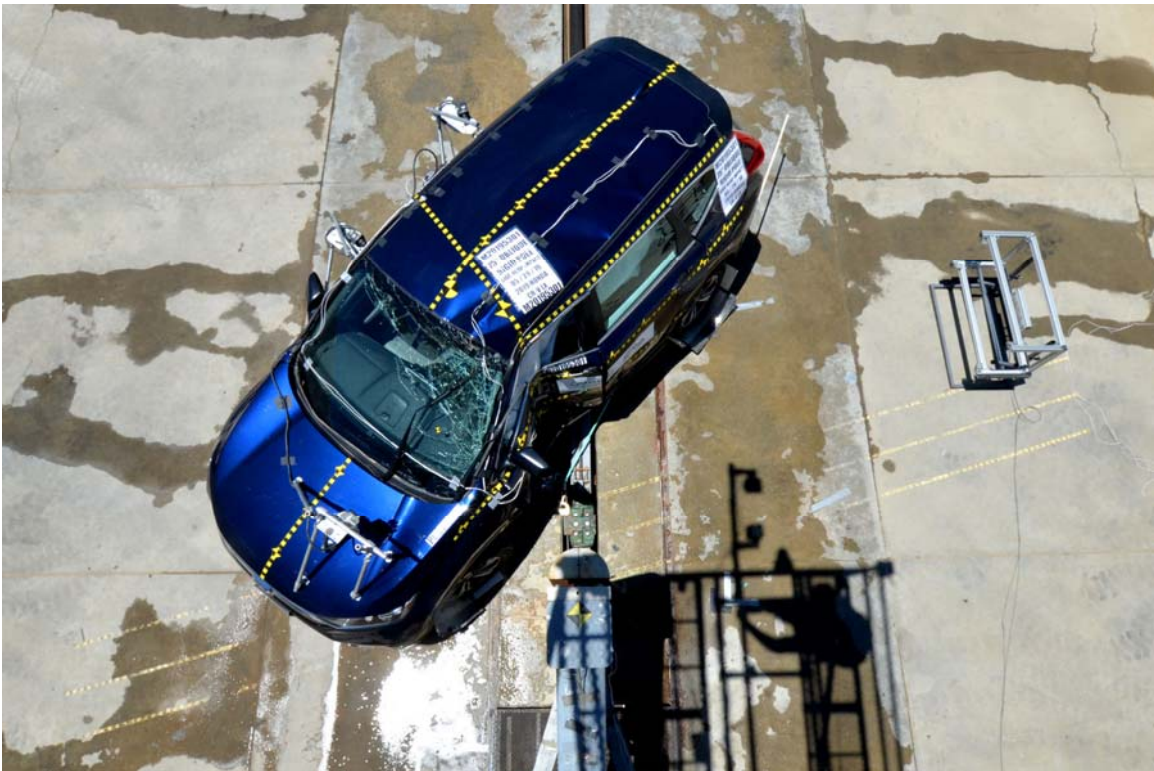


FIGURE 16. Post-Test Overhead View of Test Area



FIGURE 17. Pre-Test Left Side View of Pole Positioned Against Side of Vehicle

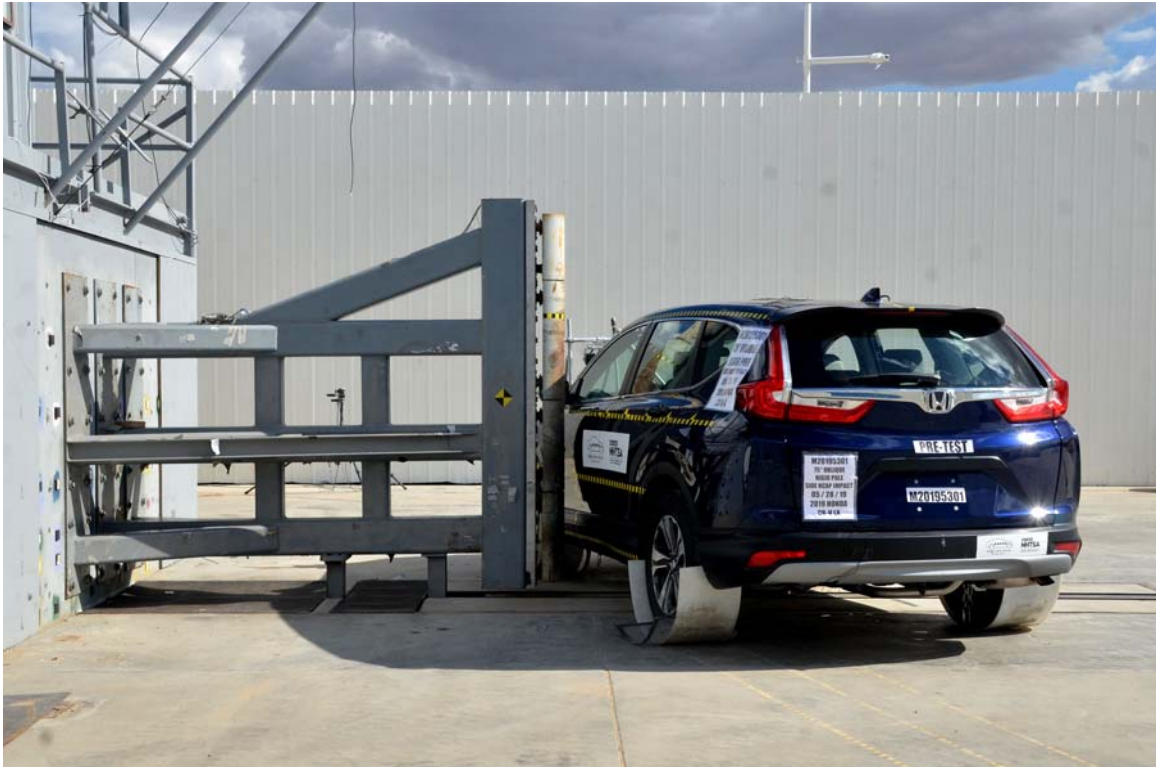


FIGURE 18. Pre-Test Right Side View of Pole Positioned Against Side of Vehicle



FIGURE 19. Pre-Test Close-Up View of Impact Point Target



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



FIGURE 21. Pre-Test Front Close-Up View of Dummy Head and Chest

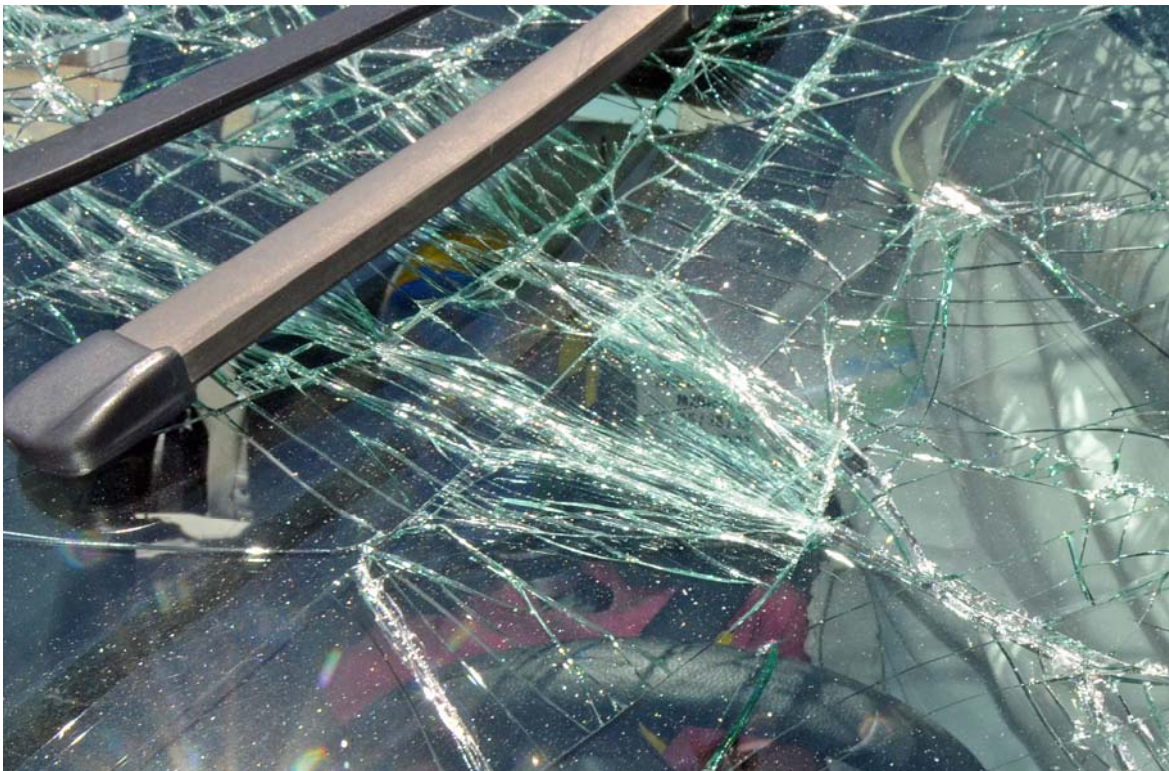


FIGURE 22. Post-Test Front Close-Up View of Dummy



FIGURE 23. Pre-Test Left Side View of Dummy Showing Belt and Chalking



FIGURE 24. Pre-Test Left Side View of Dummy Shoulder and Door Top View



FIGURE 25. Post-Test Left Side View of Dummy Shoulder and Door Top View



FIGURE 26. Pre-Test Frontal View of Seat Back Prior to Dummy Positioning



FIGURE 27. Pre-Test Frontal Close-Up View of Dummy Head and Shoulders in Relation to Head Restraint



FIGURE 28. Pre-Test Overhead View of Seat Pan Prior to Dummy Positioning





FIGURE 29. Pre-Test Overhead View of Dummy Thighs on Seat Pan

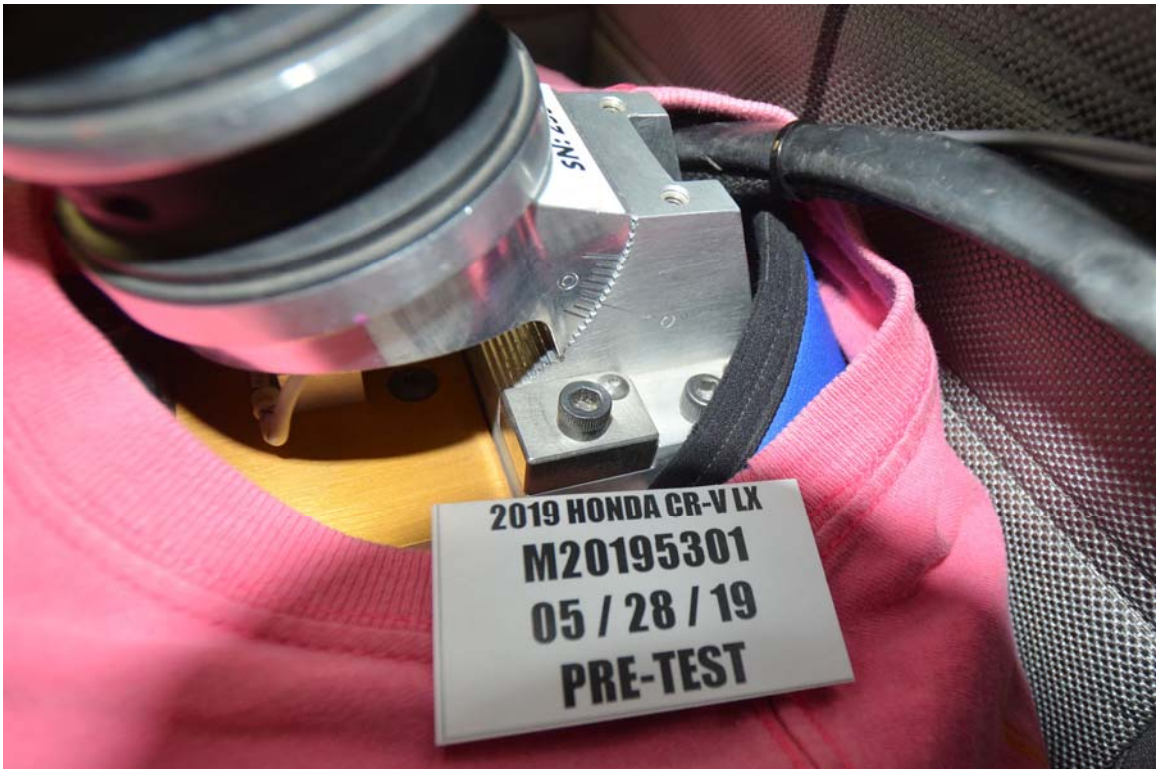


FIGURE 30. Pre-Test Left Side View of Dummy's Neck  
Showing Position of Adjustable Neck Bracket



FIGURE 31. Pre-Test Left Side View of Dummy's Head  
Showing Dummy's Head is Level



FIGURE 32. Pre-Test Placement of Dummy's Feet



FIGURE 33. Pre-Test View of Belt Anchorage for Dummy

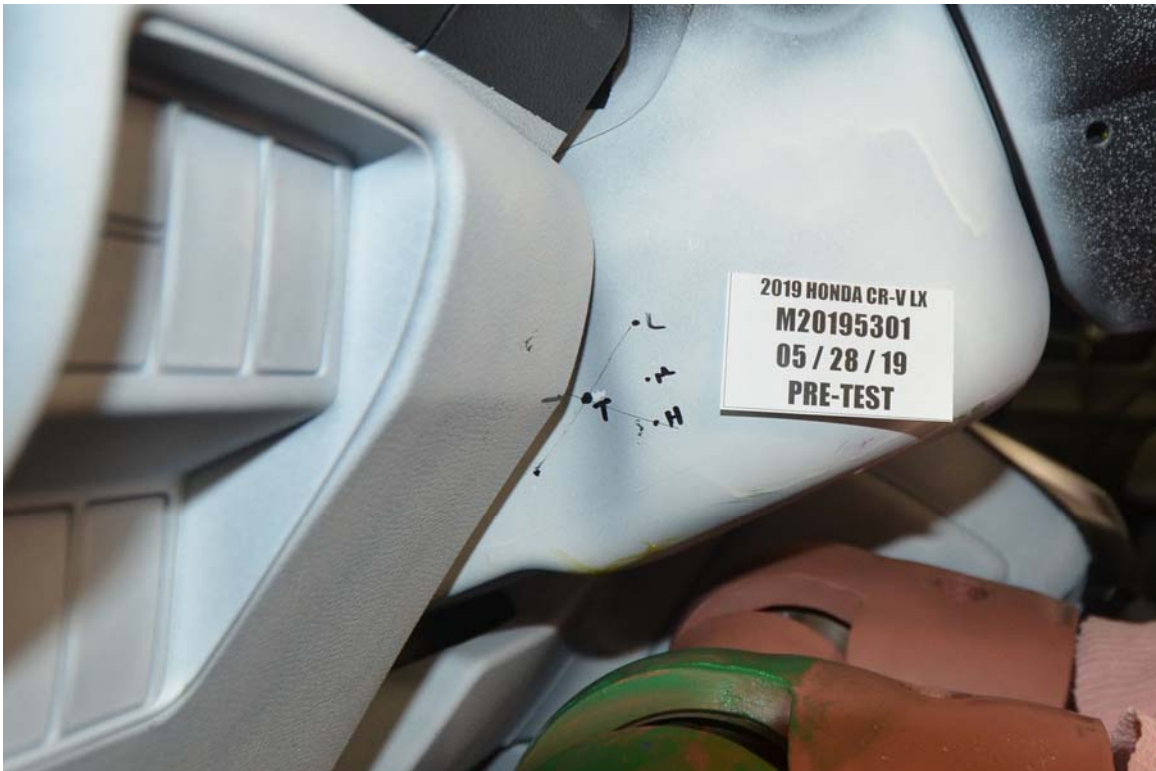


FIGURE 34. Pre-Test Left Side View of Steering Wheel



FIGURE 35. View of Disengaged Parking Brake



FIGURE 36. Pre-Test View of Parking Brake



FIGURE 37. Pre-Test Close-Up Left Side View of Driver Seat Track

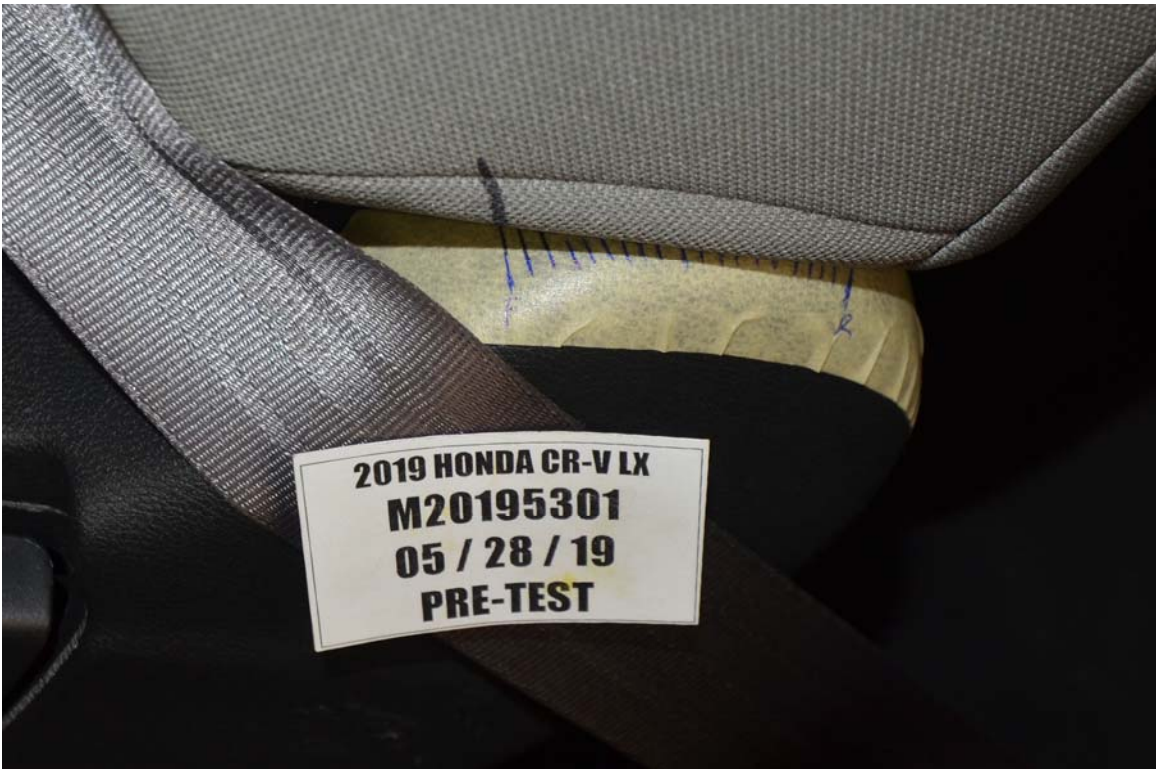


FIGURE 38. Pre-Test Close-Up Left Side View of Driver Seat Back



FIGURE 39. Pre-Test Close-Up View of Driver Seat Back or Head Restraint



FIGURE 40. Pre-Test Dummy and Door Clearance View



FIGURE 41. Post-Test Dummy and Door Clearance View



FIGURE 42. Pre-Test Right Side View of Dummy and Front Seat of Occupant Compartment



FIGURE 43. Post-Test Right Side View of Dummy and Front Seat of Occupant Compartment



FIGURE 44. Pre-Test Inner Door Panel View





FIGURE 45. Post-Test Inner Door Panel View Showing Dummy Contact Locations



FIGURE 46. Post-Test Dummy Close-Up Head Contact with Vehicle Interior View



FIGURE 47. Post-Test Dummy Close-Up Head Contact with Side Airbag View



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



FIGURE 49. Post-Test Dummy Close-Up Torso Contact with Side Airbag View



FIGURE 50. Post-Test Dummy Close-Up Pelvis Contact with Vehicle Interior View



FIGURE 51. Post-Test Dummy Close-Up Pelvis Contact with Side Airbag View



FIGURE 52. Post-Test Dummy Close-Up Knee Contact with Vehicle Interior View



FIGURE 53. Pre-Test View of Fuel Filler Cap or Fuel Filler Neck



FIGURE 54. Post-Test View of Fuel Filler Cap or Fuel Filler Neck



FIGURE 55. Close-Up View of Vehicle's Certification Label

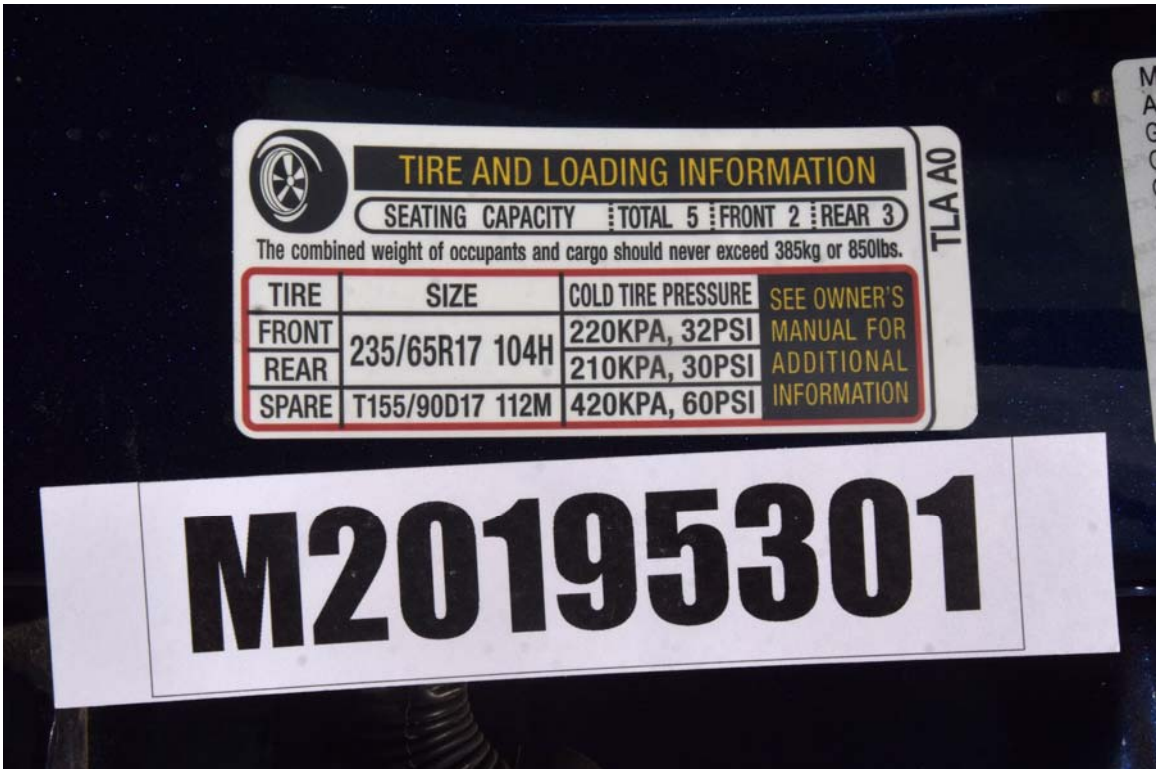


FIGURE 56. Close-Up View of Vehicle's Tire Information Placard or Label



FIGURE 57. Pre-Test Pole Barrier Front View



FIGURE 58. Post-Test Pole Barrier Front View



FIGURE 59. Pre-Test Pole Barrier Side View



FIGURE 60. Post-Test Pole Barrier Side View



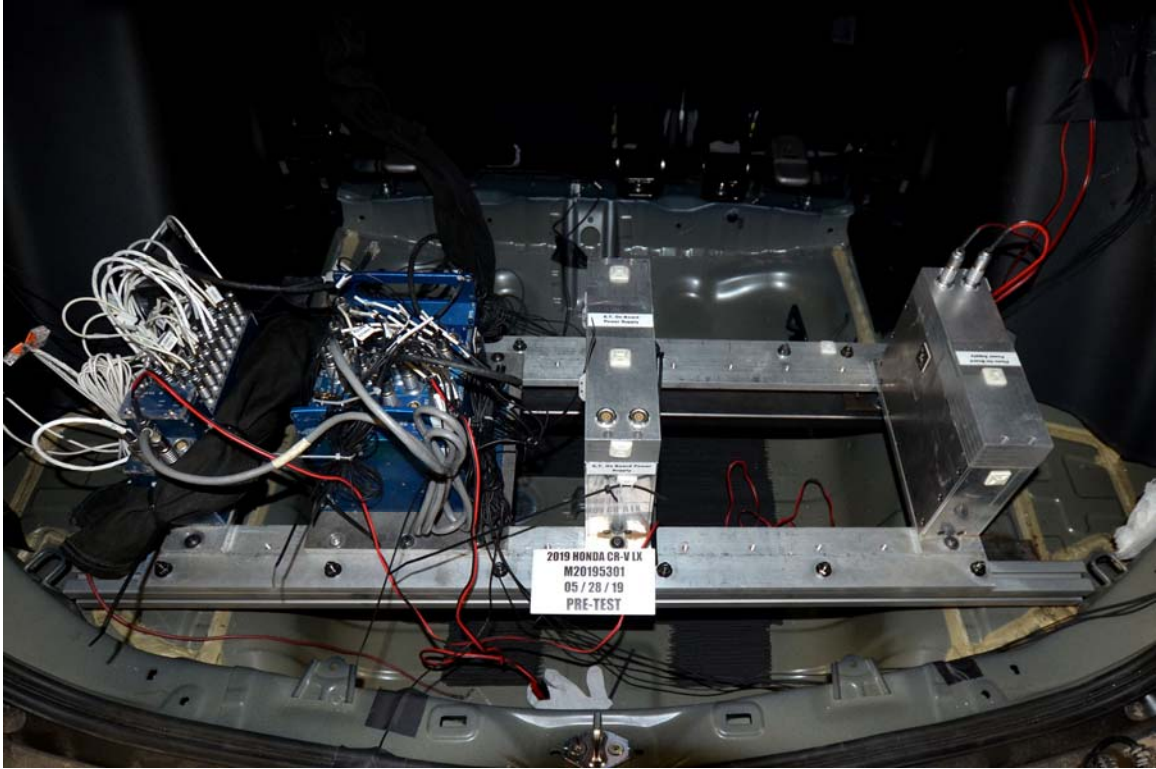


FIGURE 61. Pre-Test Ballast View



FIGURE 62. Post-Test Primary and Redundant Speed Trap Read-Out



FIGURE 63. FMVSS No. 301 Static Rollover 0 Degrees



FIGURE 64. FMVSS No. 301 Static Rollover 90 Degrees



FIGURE 65. FMVSS No. 301 Static Rollover 180 Degrees

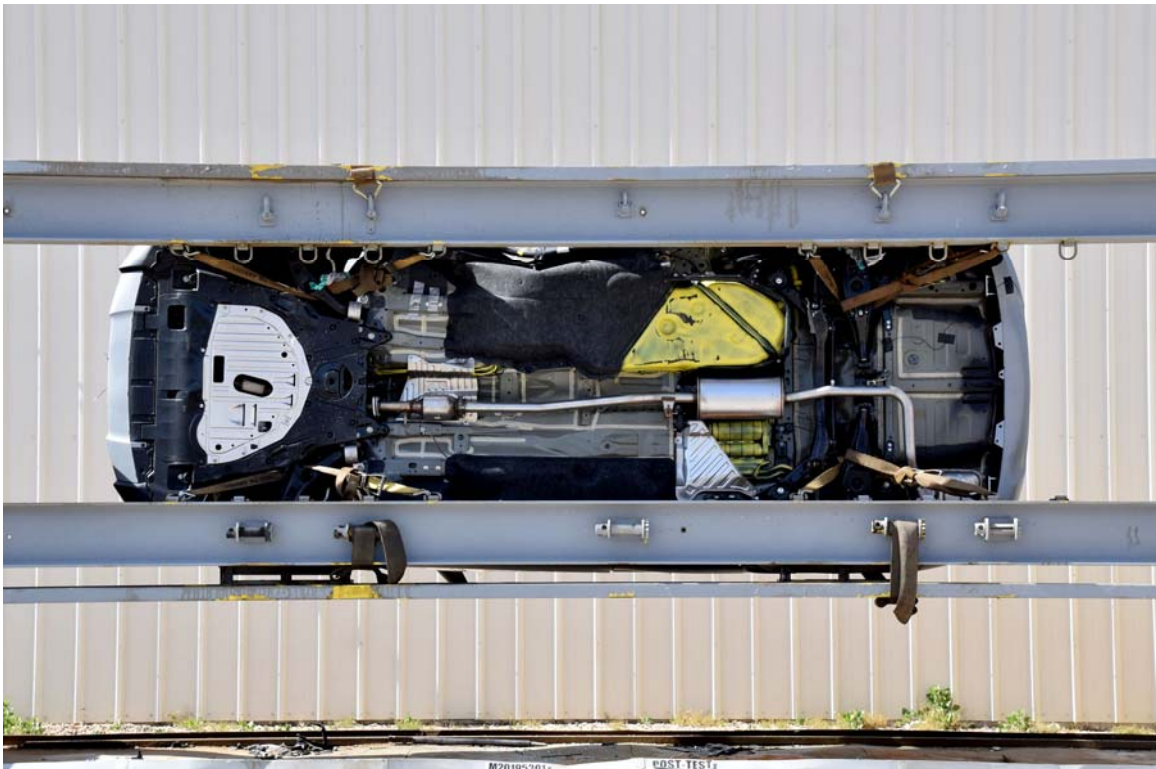


FIGURE 66. FMVSS No. 301 Static Rollover 270 Degrees



FIGURE 67. FMVSS No. 301 Static Rollover 360 Degrees



FIGURE 68. Impact Event

**2019 CR-V 2.4L 2WD LX**  
EXT. OBSIDIAN BLUE P. ENGINE NUMBER: K24V9-3026776  
INT. GRAY

**Fuel Economy and Environment**

**28 MPG** (combined city/hwy) | 26 city | 32 highway

3.6 gal/100 miles

**Annual fuel cost: \$1,350**

**Fuel Economy & Greenhouse Gas Rating: 6**

**Smog Rating: 5**

**Smartphone QR Code**

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

**STANDARD EQUIPMENT AT NO EXTRA COST**

- TECHNICAL FEATURES**
  - 184hp 2.4-Liter i-VTEC 4-Cyl. Direct-Injection Engine
  - Continuously Variable Transmission (CVT)
  - 4-Wheel Disc Brakes
  - Front MacPherson Strut Suspension
  - Rear Multi-Link Suspension
  - Electric Power Steering
- SAFETY FEATURES**
  - Driver's and Front Passenger's Airbags
  - Driver's and Front Passenger's Side Airbags
  - Side Curtain Airbags with Roll-over Sensor
  - Vehicle Stability Assist (VSA)
  - Anti-Lock Braking System (ABS)
  - Electronic Brake Distribution (EBD)
  - Brake Assist
  - Tire Pressure Monitoring System
  - LED Daytime Running Lights
  - LATCH System for Child Seats
- INTERIOR FEATURES**
  - Audio System with 4 Speakers
  - Color LCD Screen and Multi-View Rear Camera

*03/19  
55 miles  
7151310*

**EXTERIOR FEATURES**

- 17" Alloy Wheels
- 235/65 R17 All-Season Tires
- Auto-Vail Headlights
- Intermittent Windshield Wipers
- Power Door Mirrors
- Tailgate Spoiler
- Remote Entry System
- Capless Fuel Filler

**Manufacturer's Suggested Retail Price: \$24,350.00**

Full Tank of Fuel: No Charge

Destination and Handling: 1,045.00

**TOTAL VEHICLE PRICE: \$25,395.00**

**CONTINENTAL HONDA**  
5901 SO. LA GRANGE RD.  
COUNTRYSIDE, IL 60025  
VIN: 2HKR1V838KH00665

**PORT OF ENTRY: BUFFALO**  
**DELIVERY POINT: SCHAUMBURG**  
SHIP#: 209-095  
ROWSPACE: 209-095  
TRANSMETHOD: NSO ELWOOD

**ORIG. DLR: 200641**  
**REF. NO: 42373**  
**SRV. CODE: HN-2050**  
**EMISSION: 50 STATE**  
**CONTROL NO: 927809**  
**DEALER: 200641**

**EPA DOT Fuel Economy and Environment**

**Government 5-Star Safety Rating**

**Overall Vehicle Score: Not Rated**

**Frontal Crash: Driver Not Rated, Passenger Not Rated**

**Side Crash: Front seat Not Rated, Rear seat Not Rated**

**Rollover: ★★★★★**

**FOR THIS VEHICLE**  
Final Assembly Plant: ALLISTON, ONTARIO, CANADA  
Country of Origin: Canada  
Transmission: U.S.A.

FIGURE 69. Monroney Label

**VEHICLE CONTROLS**

**Press the bottom:** To move the lumbar support down.

**WARNING**  
Sitting too close to a front airbag can result in serious injury or death if the front airbags inflate. Always sit as far back from the front airbags as possible while maintaining control of the vehicle.

**WARNING**  
Reclining the seat back too far can result in serious injury or death in a crash. Adjust the seat back to an upright position, and sit well back in the seat.

**WARNING**  
Sitting improperly or out of position can result in serious injury or death in a crash. Always sit upright, well back in the seat, with your feet on the floor.

**Driving Position Memory System?**  
You can store two driver's seat (except for power lumbar) positions with the driving position memory system. When you unlock and open the driver's door with a remote transmitter, the seat adjusts to selected positions of one of the two preset positions automatically.

**Setting a Position in Memory**

- Adjust the seat, to your preferred position.
- Press SET.
- Press and hold memory button 1 or 2 within 3 seconds of pressing the SET button. You will hear two beeps when the memory is set.
- Press one of the memory buttons to recall previously stored positions.

**VEHICLE CONTROLS**

**Adjusting the Head Restraints**

Your vehicle is equipped with head restraints in all seating positions. Head restraints are most effective for protection against whiplash and other rear-impact crash injuries.

The center of the back of the occupant's head should rest against the center of the restraint. The tops of the occupant's ears should be level with the center height of the restraint.

For a head restraint system to work properly:

- Do not hang any items on the head restraints or from the restraint legs.
- Do not place any objects between an occupant and the seat back.
- Retract each restraint to its proper location.

**WARNING**  
Improperly positioning head restraints reduces their effectiveness and increases the likelihood of serious injury in a crash. Make sure head restraints are in place and positioned properly before driving.

**Adjusting the Front Head Restraints**

- To raise the head restraint: Pull it upward.
- To lower the head restraint: Push it down while pressing the release button.

**Removing and Reinstalling the Head Restraints**

Head restraints can be removed for cleaning or repair.

To remove the head restraint: Pull the restraint up as far as it will go. Then push the head restraint release button(s), and pull the restraint out and out.

**VEHICLE CONTROLS**

**Reinstalling a head restraint:** Insert the legs back in place, then adjust the head restraint to an appropriate height while pressing the release button(s). Pull up on the restraint to make sure it is locked in position.

**WARNING**  
Failure to retract, or correctly reinstall, the head restraints can result in severe injury during a crash. Always replace the head restraints before driving.

**Adjusting the Rear Seats**

**Adjusting the Second Row Passenger's Seat**

Second row passenger's seats can be adjusted manually.

**WARNING**  
An unsecured seat or seat back can move out of position or collapse without warning if there is sudden acceleration or stop or in a crash. A seat or seat-back that suddenly moves or collapses can result in severe injury or death. Always make sure all seats and seat-backs are securely locked into position before driving.

**VEHICLE CONTROLS**

**Folding Down the Rear Seats**

The rear seat back(s) can be folded down to accommodate bulky items in the cargo area.

To fold down the seat:

- Store the center seat belt.
- Insert the latch plate into the slot on the side of the anchor buckle.
- Release the seat belt into the holder on the ceiling.
- Lower the head restraint to its lowest position. Put the armrest back into the seat back.
- From the rear seat side: Pull up the release lever and fold down the seat-back.
- From the cargo area side: Pull the release lever and fold down the seat.

To return the seat to the original position, pull up the seat-back in the upright position.

FIGURE 70. Head Restraint Use and Adjustment



FIGURE 71. Post-Test View of Shattered Vehicle Inner Door Pane

**APPENDIX B**  
**DUMMY RESPONSE DATA**

## TABLE OF DATA PLOTS

Plot		Page
1	Driver Head Acceleration (X) Primary	B-1
2	Driver Head Acceleration (Y) Primary	B-1
3	Driver Head Acceleration (Z) Primary	B-1
4	Driver Head Acceleration Primary Resultant	B-1
5	Driver Lower Spine T12 Acceleration (X)	B-2
6	Driver Lower Spine T12 Acceleration (Y)	B-2
7	Driver Lower Spine T12 Acceleration (Z)	B-2
8	Driver Lower Spine T12 Acceleration Resultant	B-2
9	Driver Upper Thorax Rib Deflection (Y)	B-3
10	Driver Middle Thorax Rib Deflection (Y)	B-3
11	Driver Lower Thorax Rib Deflection (Y)	B-3
12	Driver Upper Abdomen Rib Deflection (Y)	B-3
13	Driver Lower Abdomen Rib Deflection (Y)	B-4
14	Driver Acetabulum Force on Impact Side (Y)	B-4
15	Driver Iliac Wing Force on Impact Side (Y)	B-4
16	Driver Total Pelvis Force on Impact Side (Y)	B-4

**The following additional data for this test can be obtained from the Research and Development section of the NHTSA website. The website can be found at**

**[www.NHTSA.gov](http://www.NHTSA.gov)**

### **Additional Driver Dummy Instrumentation Data**

Driver Head Acceleration Redundant (X)

Driver Head Acceleration Redundant (Y)

Driver Head Acceleration Redundant (Z)

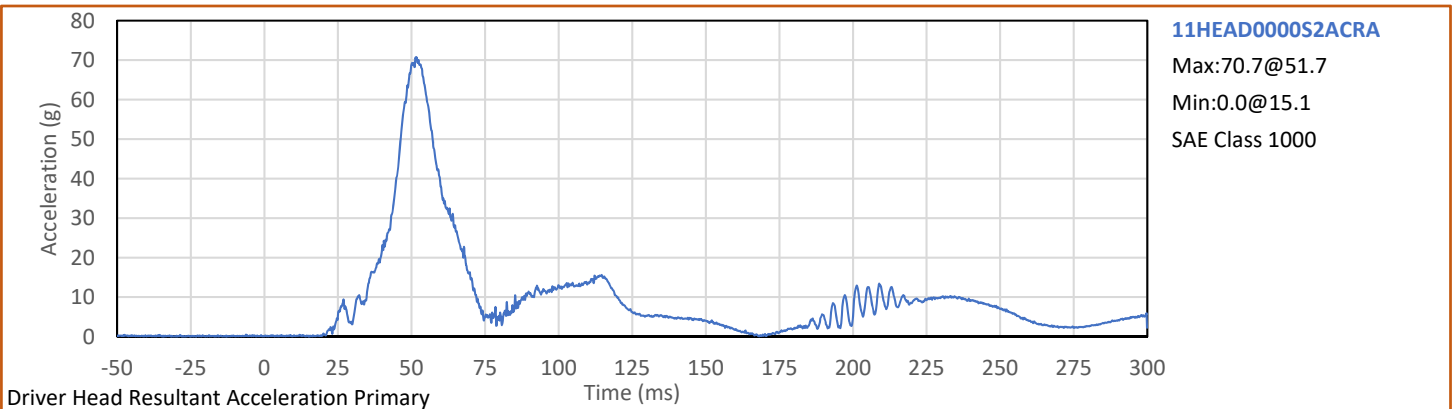
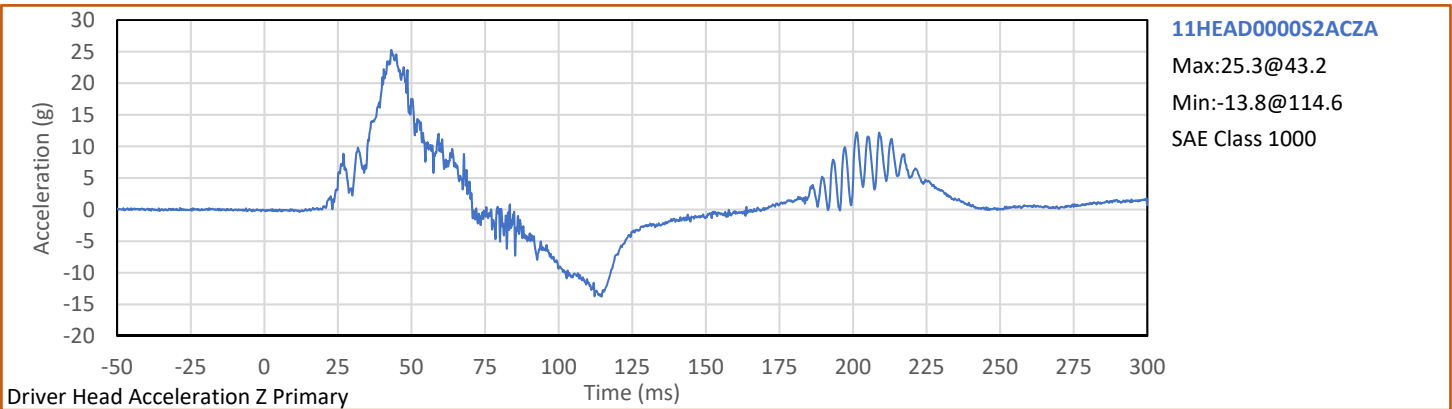
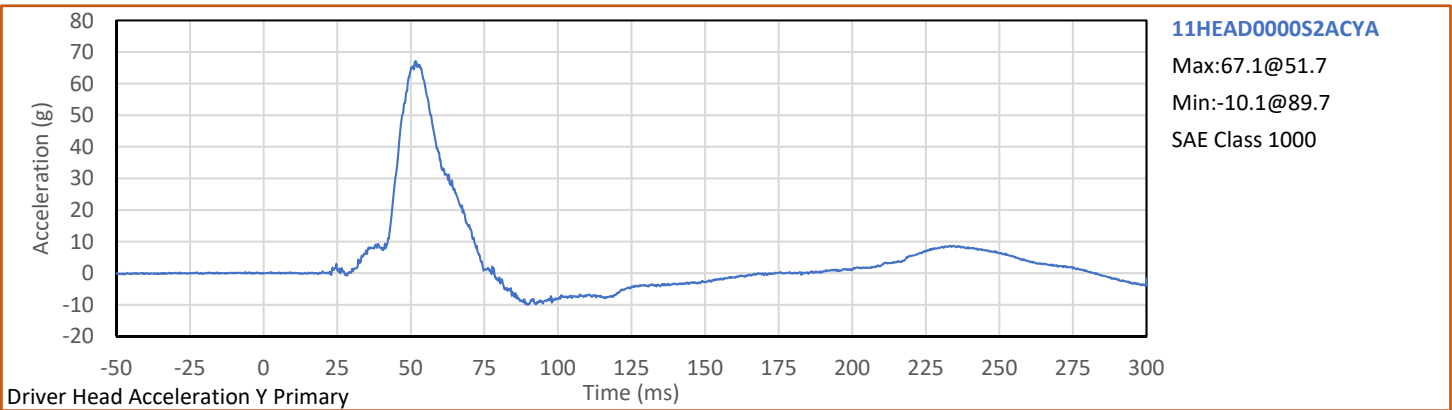
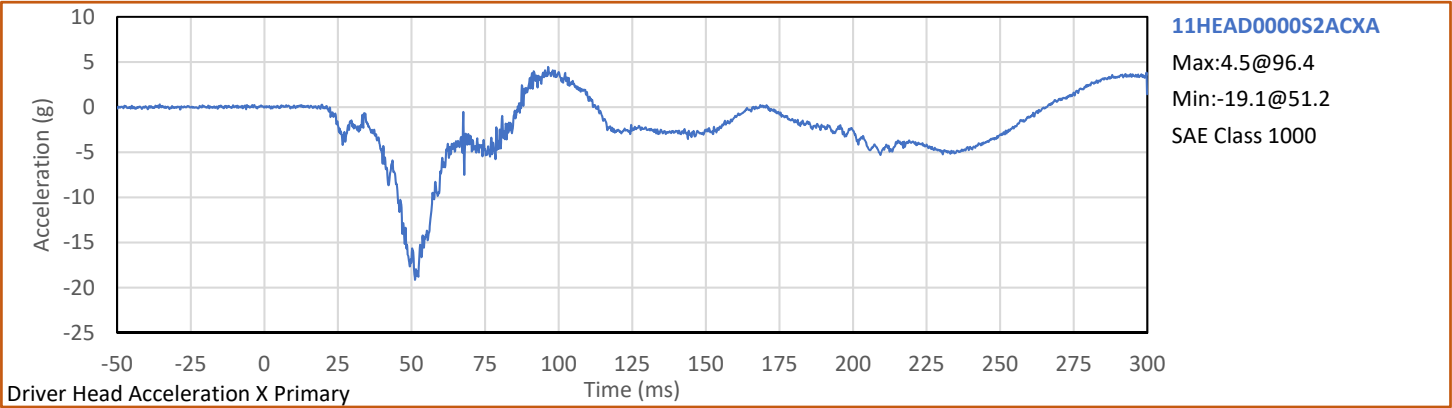


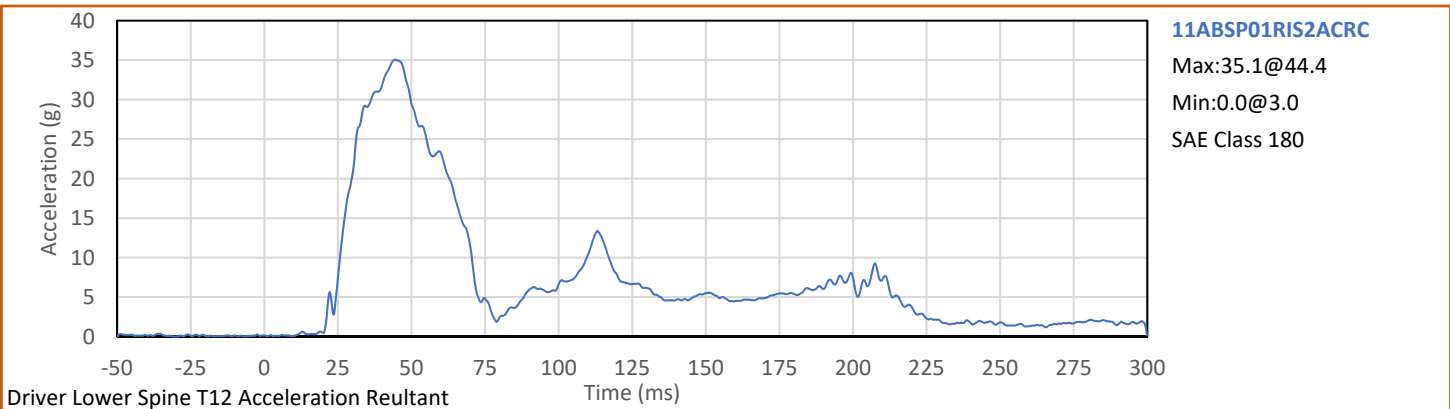
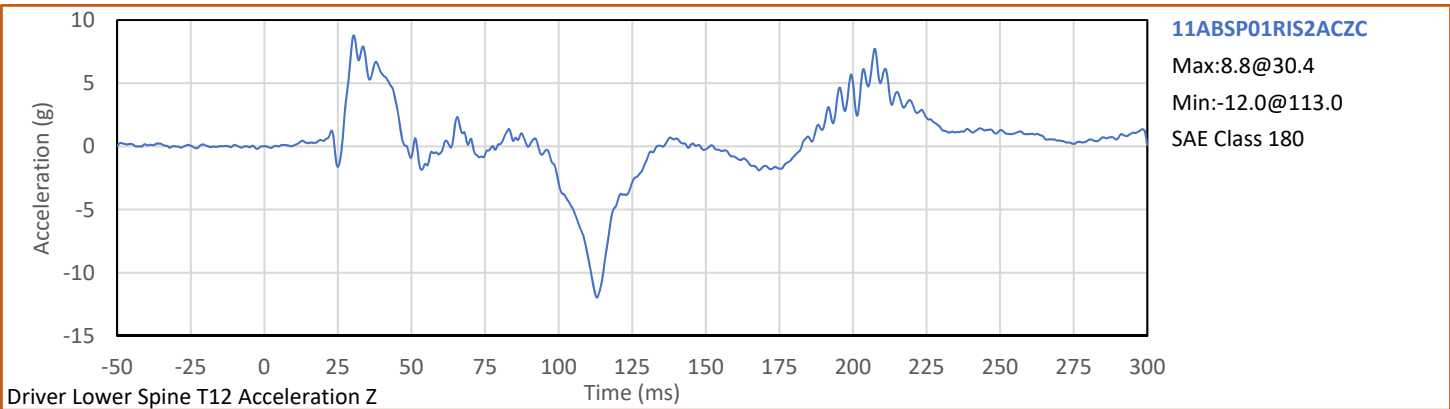
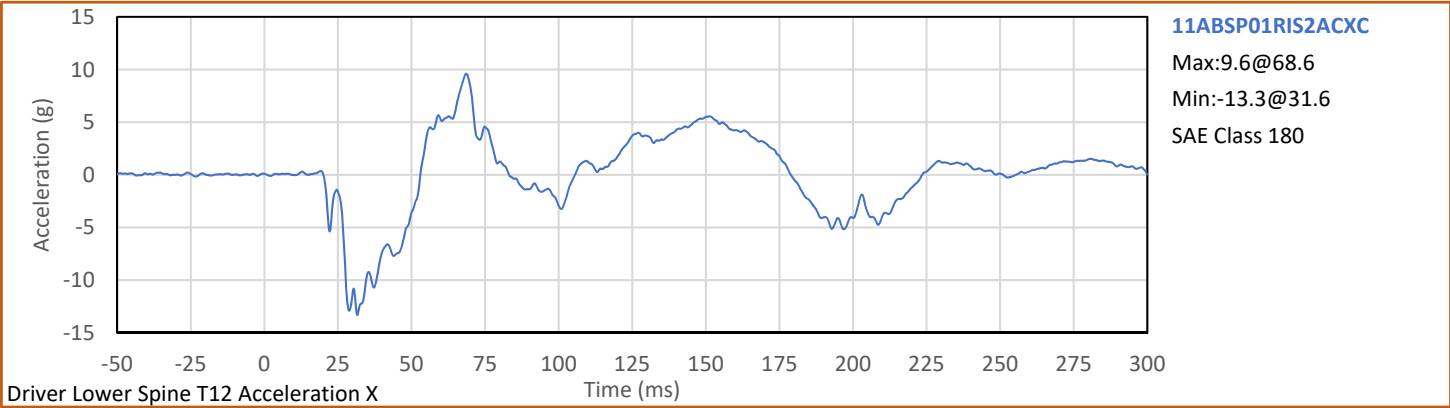
### **Vehicle Instrumentation Data**

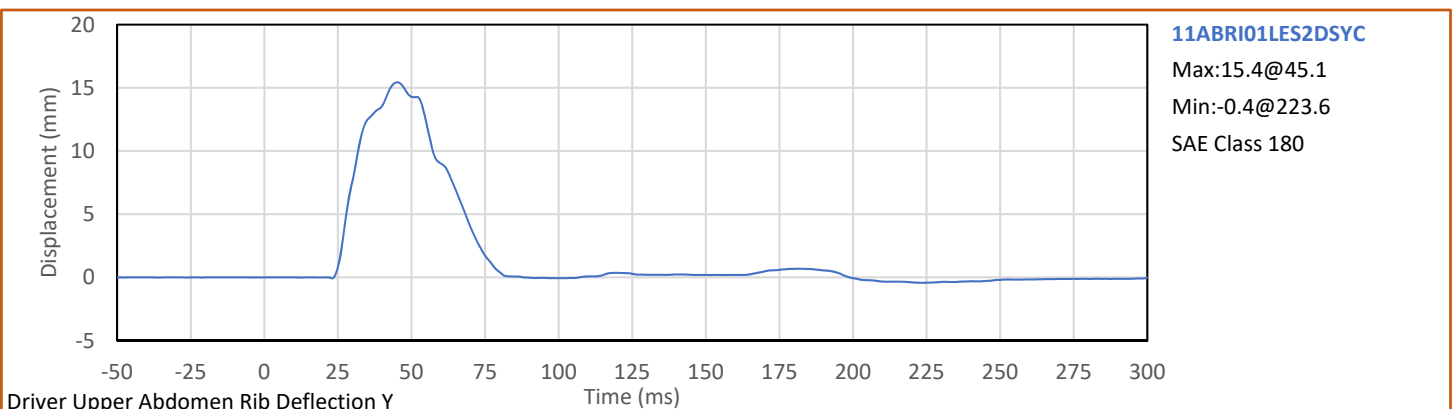
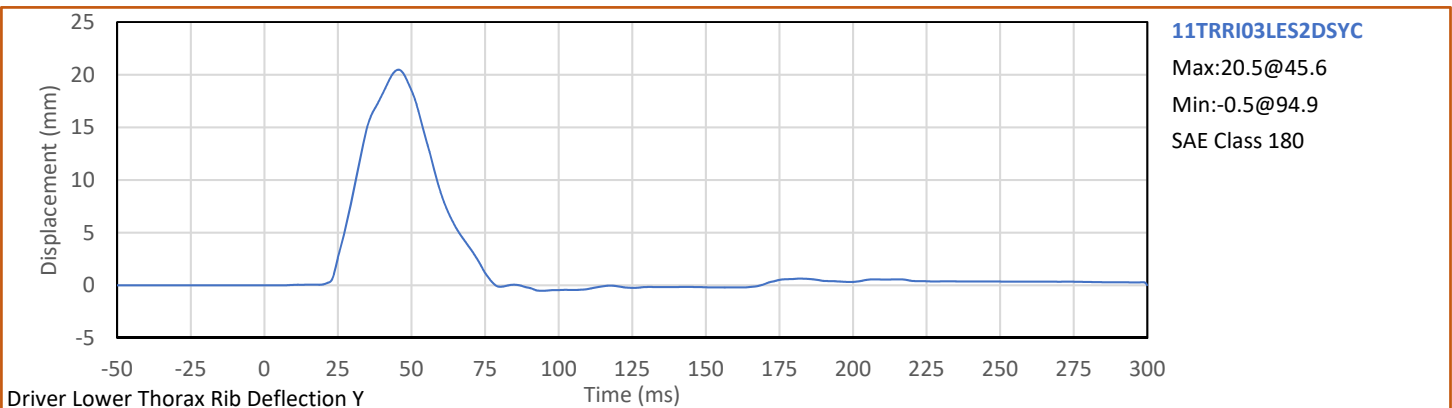
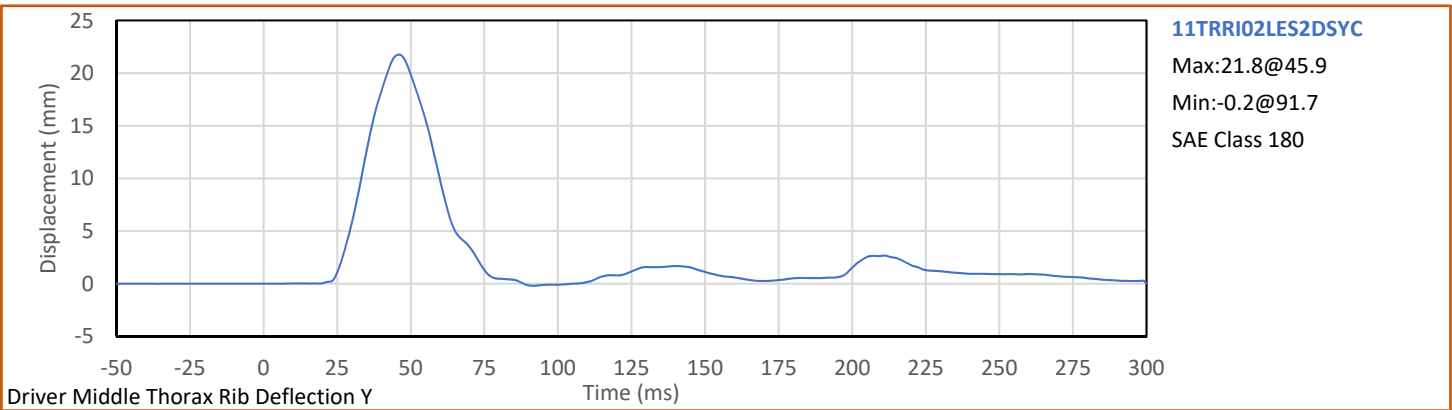
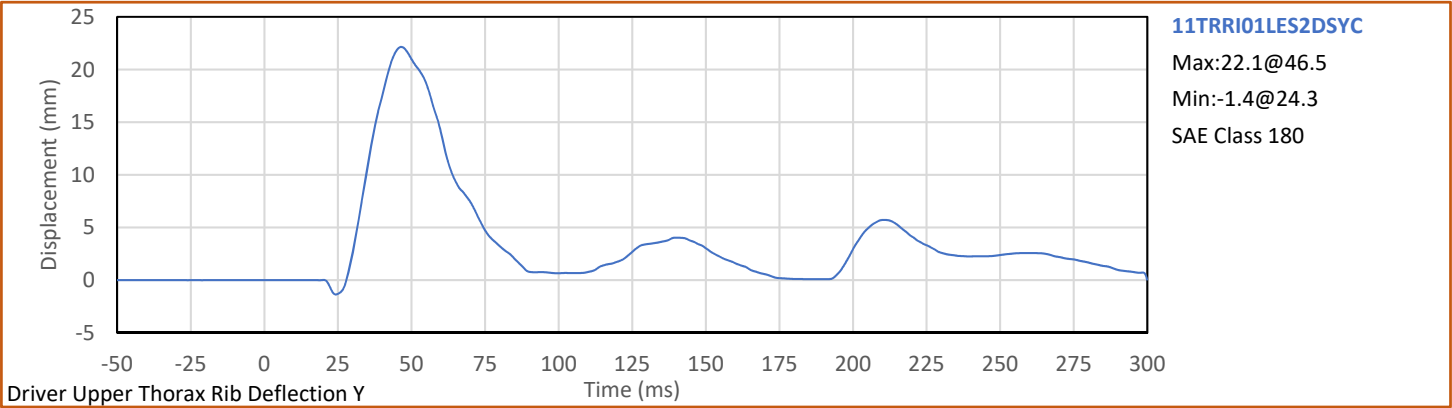
Vehicle Center of Gravity Acceleration (X)  
Vehicle Center of Gravity Acceleration (Y)  
Vehicle Center of Gravity Acceleration (Z)  
Left Floor Sill Acceleration (Y)  
Left A-Pillar Sill Acceleration (Y)  
Left Lower A-Pillar Acceleration (Y)  
Left Mid A-Pillar Acceleration (Y)  
Left B-Pillar Sill Acceleration  
Left Lower B-Pillar Acceleration (Y)  
Left Mid B-Pillar Acceleration (Y)  
Driver Seat Track at Dummy Hip Point Acceleration (Y)  
Engine Top Acceleration (X)  
Engine Top Acceleration (Y)  
Firewall Center Acceleration (Y)  
Right Roof at Vertical Impact Reference Line Acceleration (Y)  
Right Sill at Vertical Impact Reference Line Acceleration (Y)  
Rear Floorpan Behind Rear Axle at Centerline Acceleration (X)  
Rear Floorpan Behind Rear Axle at Centerline Acceleration (Y)

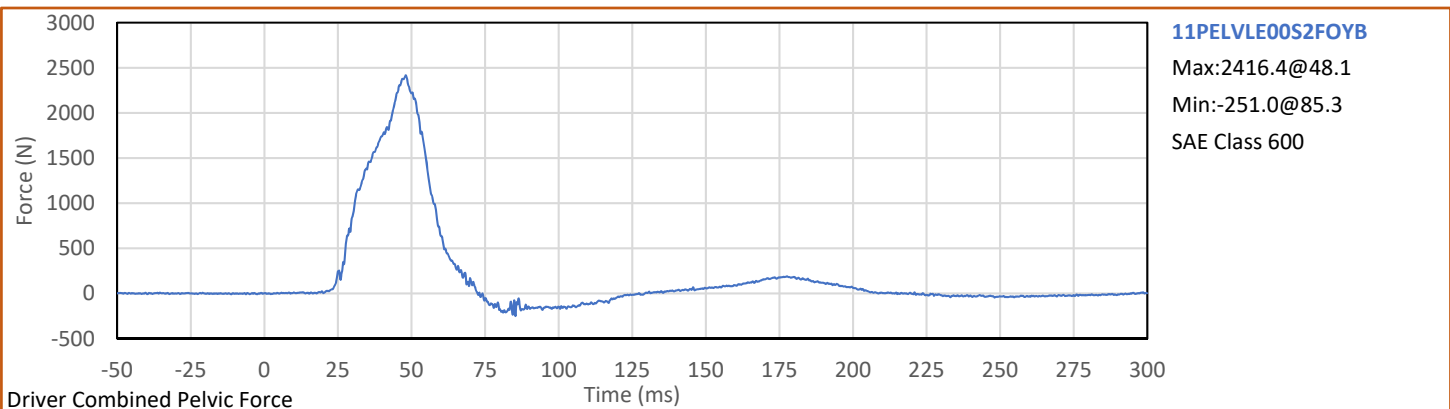
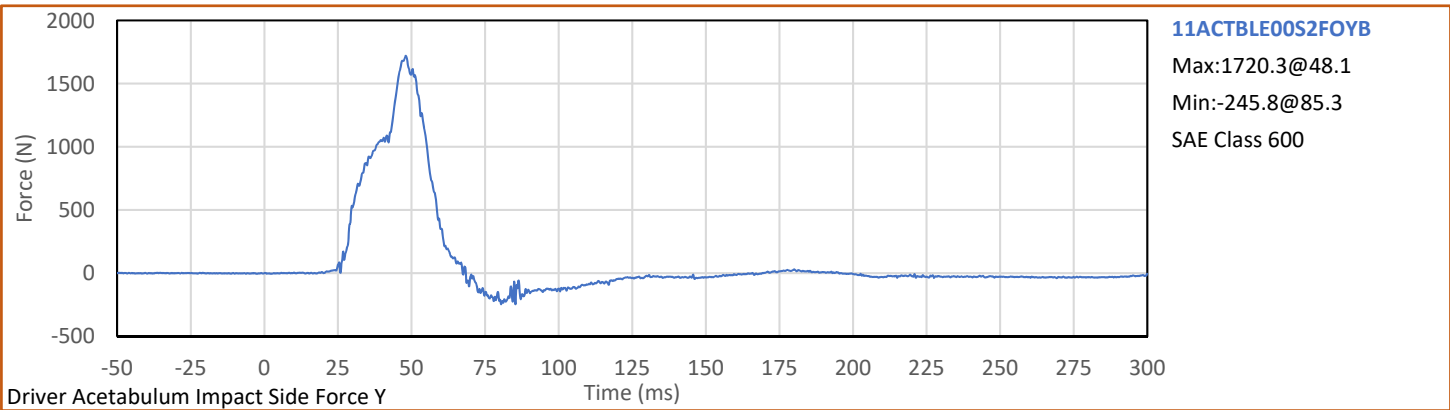
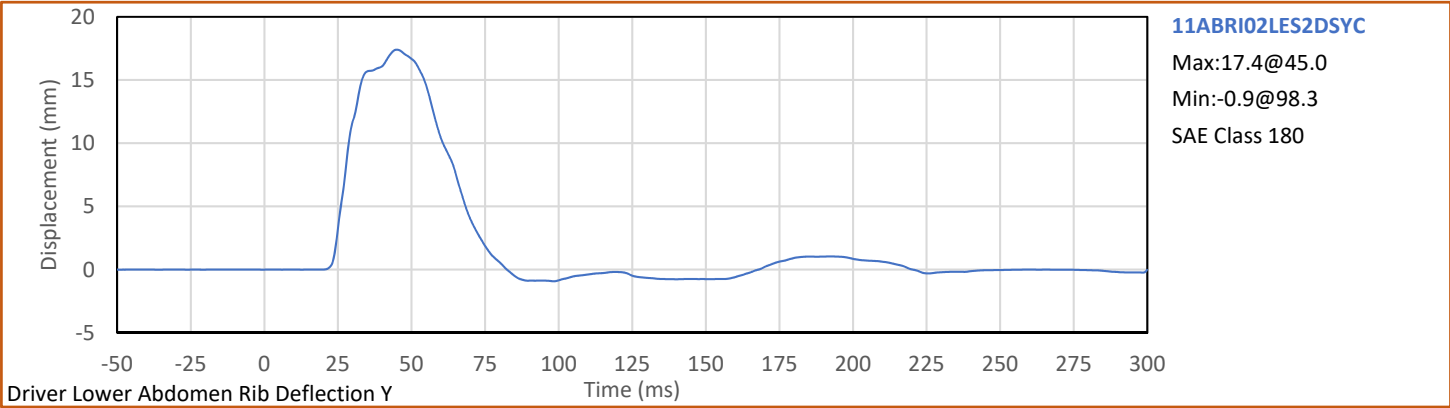
### **Pole Instrumentation Data**

Load Cell Pole Barrier #1 Force (Y)  
Load Cell Pole Barrier #2 Force (Y)  
Load Cell Pole Barrier #3 Force (Y)  
Load Cell Pole Barrier #4 Force (Y)  
Load Cell Pole Barrier #5 Force (Y)  
Load Cell Pole Barrier #6 Force (Y)  
Load Cell Pole Barrier #7 Force (Y)  
Load Cell Pole Barrier #8 Force (Y)





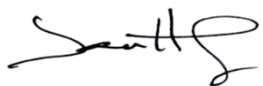





**APPENDIX C**  
**ATD CONFIGURATION AND PERFORMANCE VERIFICATION DATA**

**APPENDIX C**  
**Pre-Test ATD Configuration And Performance Verification Data**  
**SID-IIs Small Side Impact ATD**  
**S/N: 299**

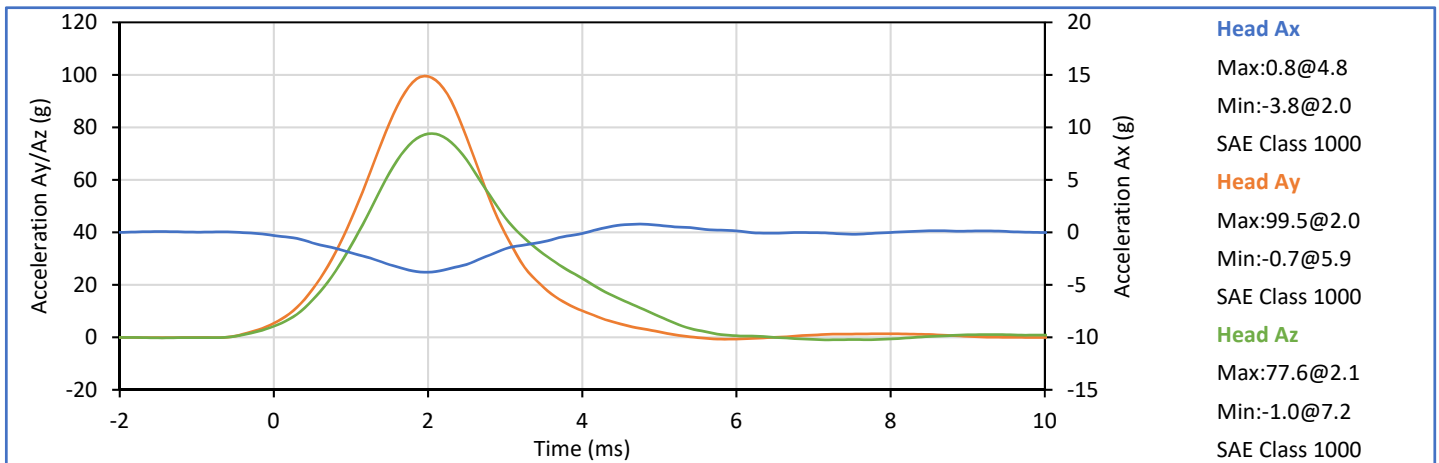
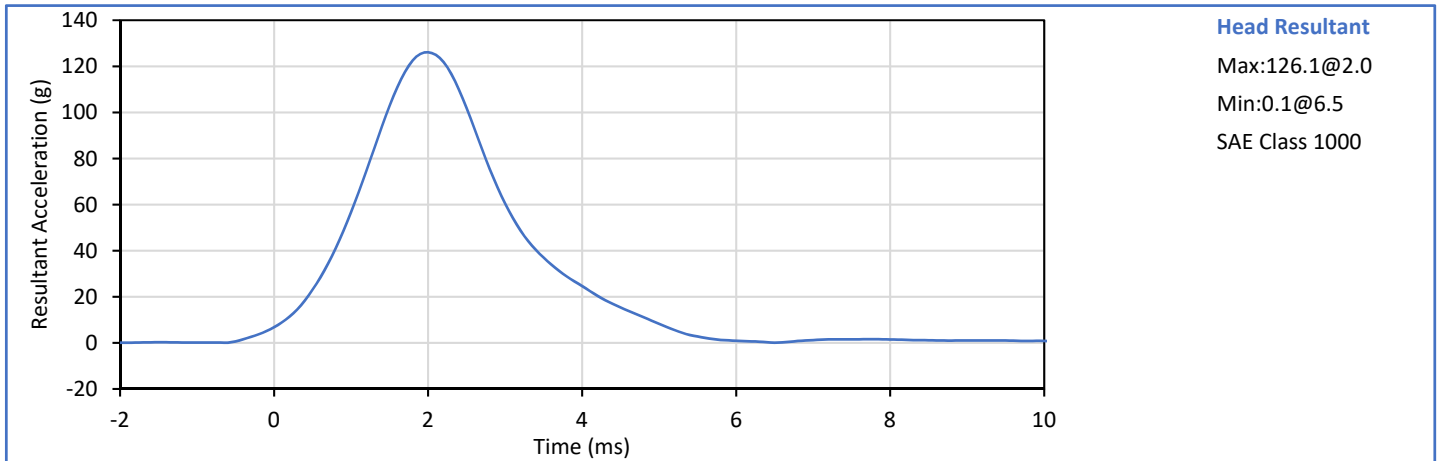
Tested Parameter	Units	Spec Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.2	Pass
Laboratory Relative Humidity	%	10	70	44	Pass
A - Sitting Height	mm	772	788	782	Pass
B - Shoulder Pivot Height	mm	437	453	450	Pass
C - Hpoint Height	mm	79	89	83	Pass
D - H Point From Seatback	mm	141	151	149	Pass
E - Shoulder Pivot From Backline	mm	97	107	105	Pass
F - Thigh Clearance	mm	119	135	126	Pass
G - Head Breadth	mm	140	148	143	Pass
H - Head Back From Backline	mm	40	46	42	Pass
I - Head Depth	mm	178	188	186	Pass
J - Head Circumference	mm	541	551	547	Pass
K - Buttock To Knee Length	mm	514	540	524	Pass
L - Popliteal Height	mm	343	369	350	Pass
K - Knee Pivot To Floor Height	mm	392	409	398	Pass
N - Buttock Popliteal Length	mm	416	442	437	Pass
O - Chest Depth W/O Jacket	mm	195	211	207	Pass
P - Foot Length	mm	216	232	221	Pass
Q - Hip Breadth (W/Pelvic Plugs)	mm	313	323	318	Pass
R - Arm Length	mm	249	259	256	Pass
S - Knee Joint To Seatback	mm	477	493	486	Pass
V - Shoulder Width	mm	341	357	345	Pass
W - Foot Width	mm	78	94	84	Pass
Y - Chest Circumference W/Jacket	mm	851	881	862	Pass
Z - Waist Circumference	mm	761	791	779	Pass
Overall Test Results					Pass

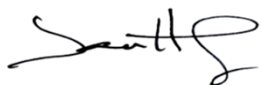
Technician:   
J. Hernandez


Approved By:   
P. Puzzuto



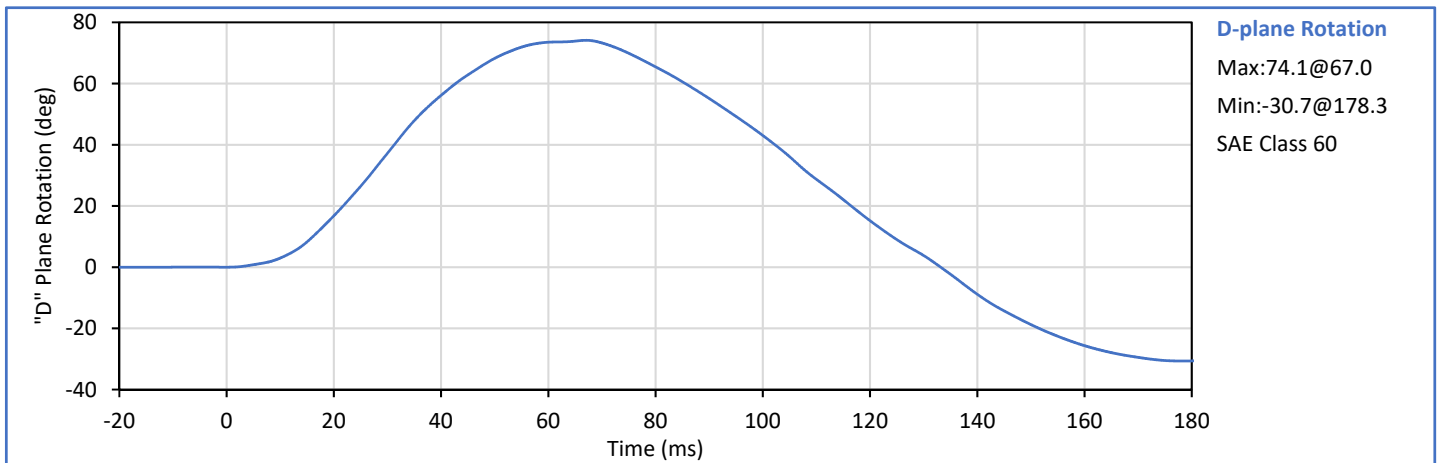
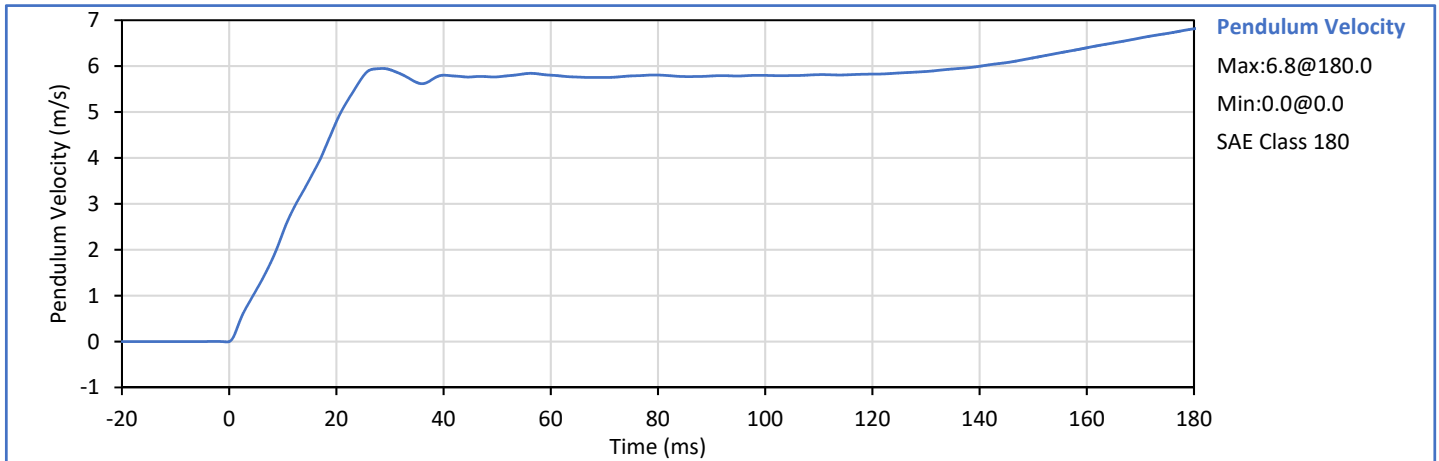
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	18.9	25.6	21.4	Pass
Laboratory Humidity	%	10	70	30	Pass
Peak Resultant Acceleration	g	115.0	137.0	126.1	Pass
Peak Head Ax	g	-15.0	15.0	-3.8	Pass
Oscillations After Main Pulse	%	0.0	15.0	1.3	Pass
Is Acceleration Unimodal?	Yes/No	Yes		Yes	Pass
Overall Test Results					Pass

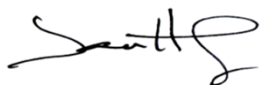



Technician:   
J. Hernandez

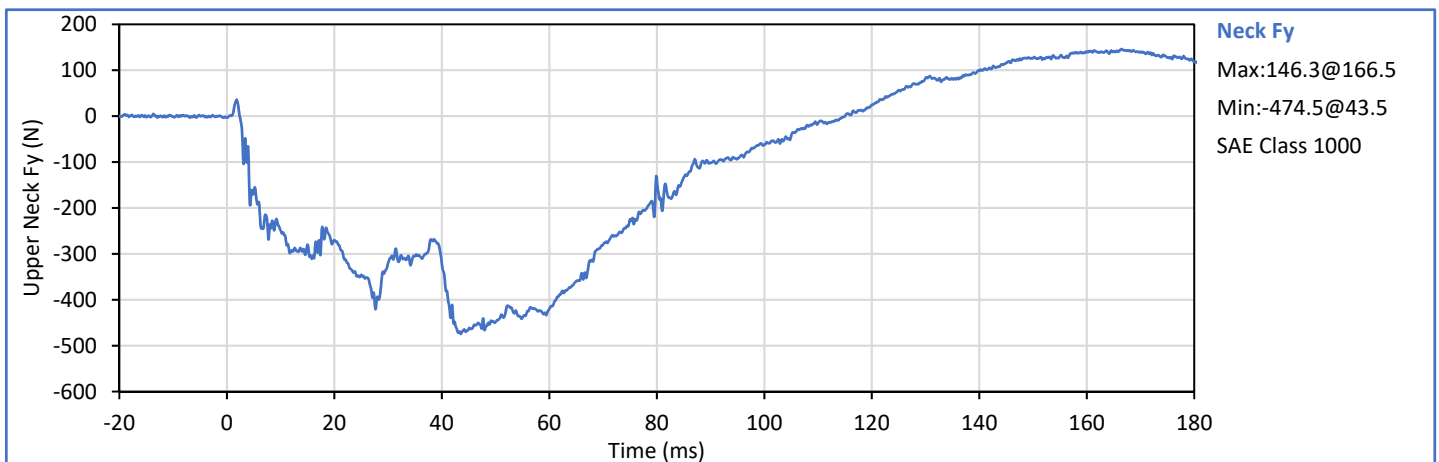
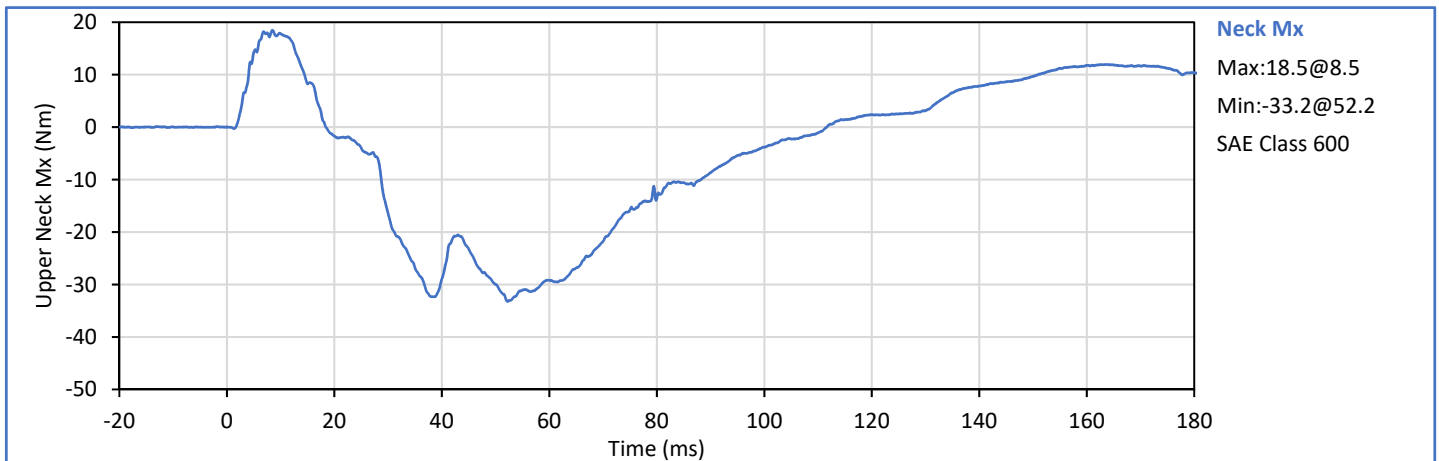
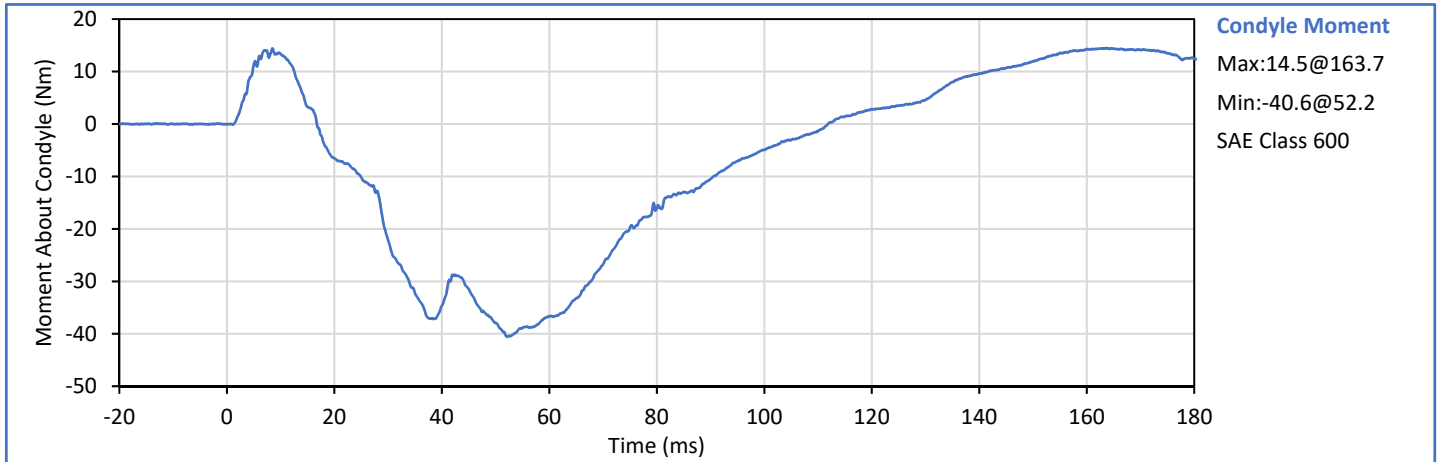
Approved By:   
P. Puzzuto

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.4	Pass
Laboratory Humidity	%	10	70	34	Pass
Pendulum Velocity	m/s	5.51	5.63	5.53	Pass
Pendulum Decel at 10 ms	m/s	2.20	2.80	2.36	Pass
Pendulum Decel at 15 ms	m/s	3.30	4.10	3.53	Pass
Pendulum Decel at 20 ms	m/s	4.40	5.40	4.79	Pass
Pendulum Decel at 25 ms	m/s	5.40	6.10	5.78	Pass
Pendulum Decel from 25-100 ms	m/s	5.50	6.20	5.95	Pass
Peak "D" Plane Rotation	deg	71.0	81.0	74.1	Pass
Time of Peak "D" Plane Rotation	ms	50.0	70.0	67.0	Pass
Peak Occ. Condyle Moment	Nm	-44.0	-36.0	-40.6	Pass
Time of Moment Decay to 0 Nm	ms	102.0	126.0	111.9	Pass
<b>Overall Test Results</b>					<b>Pass</b>

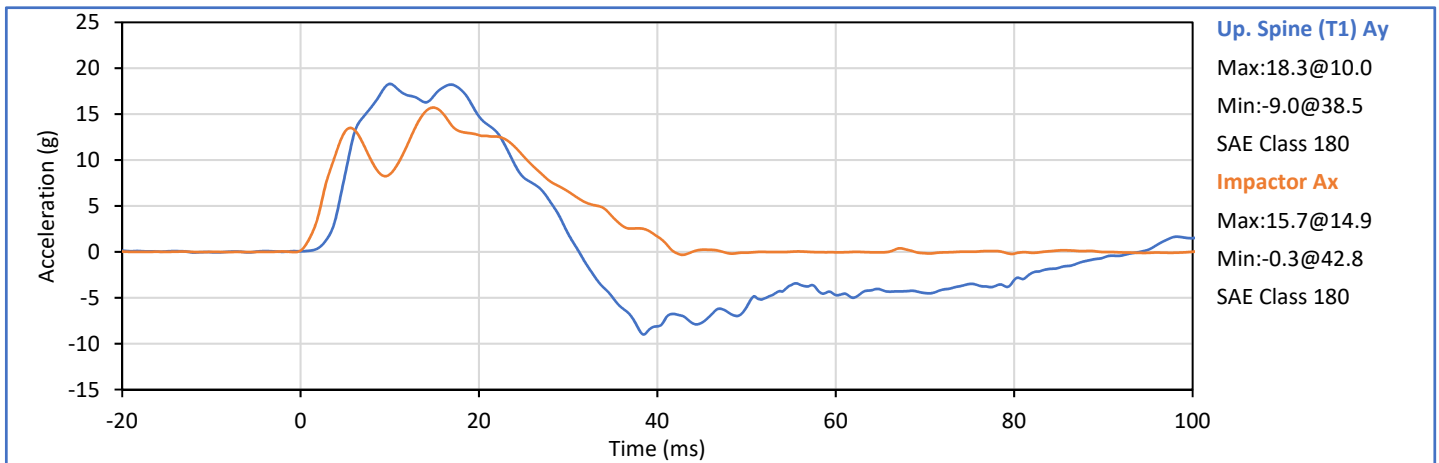
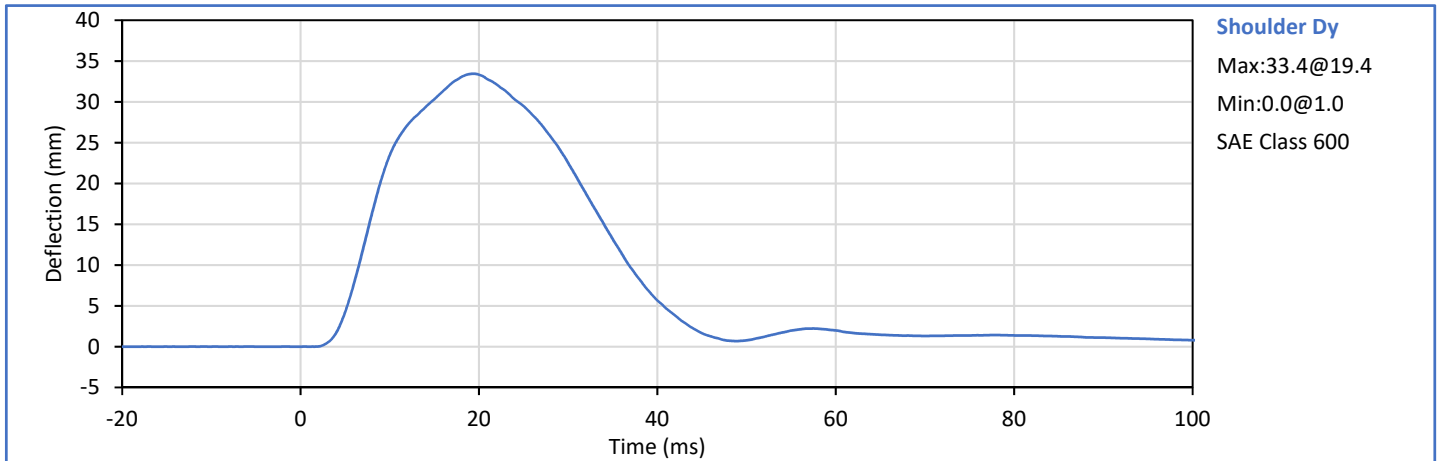


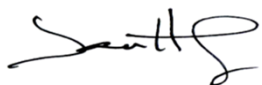
Technician:   
J. Hernandez


Approved By:   
P. Puzzuto



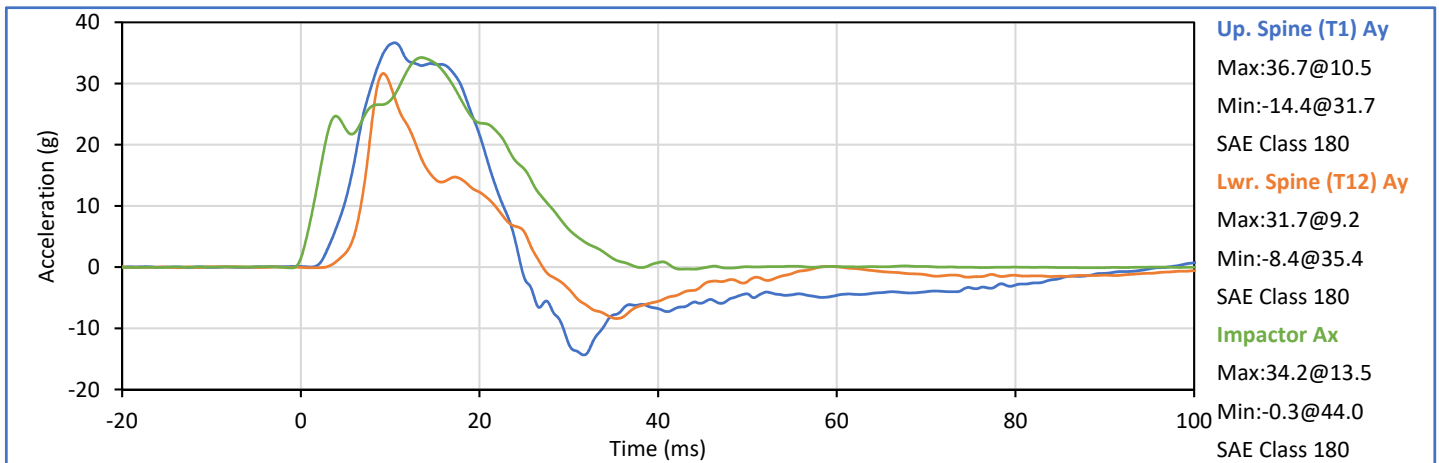
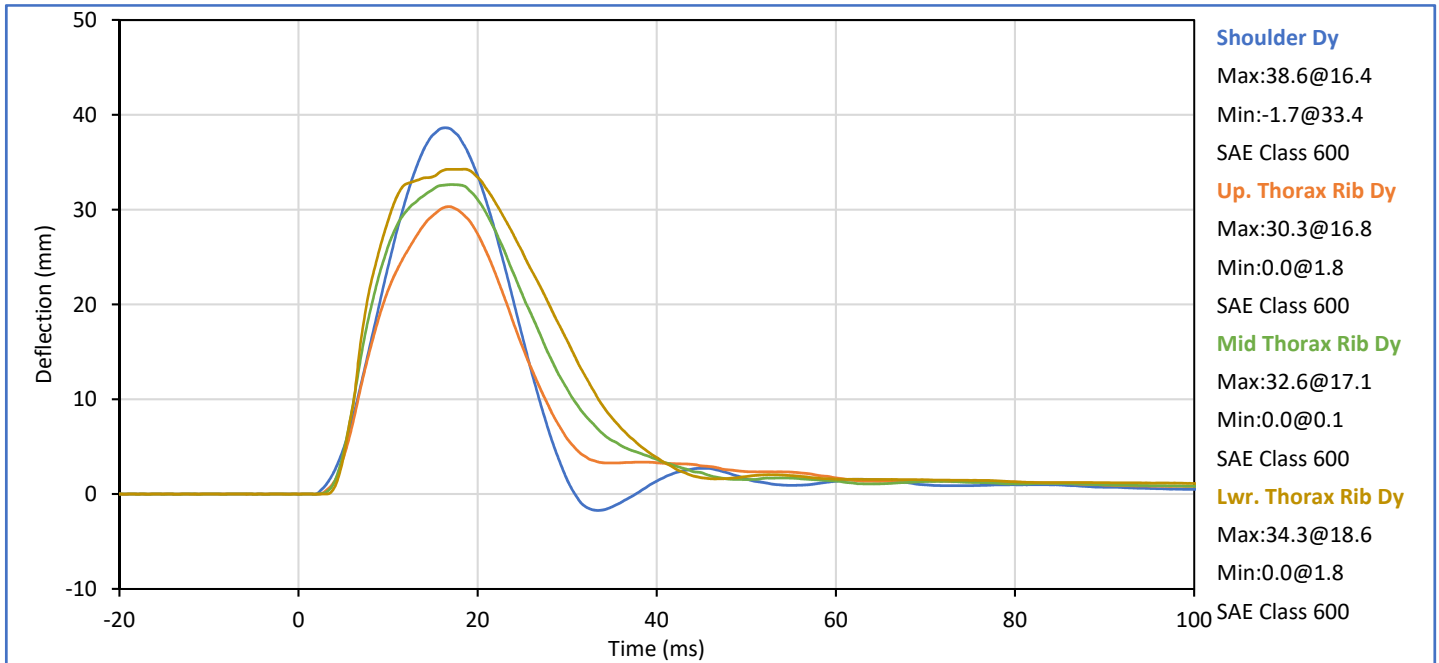
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.1	Pass
Laboratory Humidity	%	10	70	28	Pass
Impactor Velocity	m/s	4.20	4.40	4.33	Pass
Peak Shoulder Dy	mm	28.0	37.0	33.4	Pass
Peak Upper Spine (T1) Ay	g	17.0	22.0	18.3	Pass
Peak Impactor Ax	g	13.0	18.0	15.7	Pass
Overall Test Results					Pass

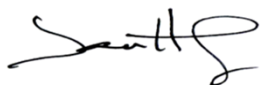



Technician:   
J. Hernandez

Approved By:   
P. Puzzuto

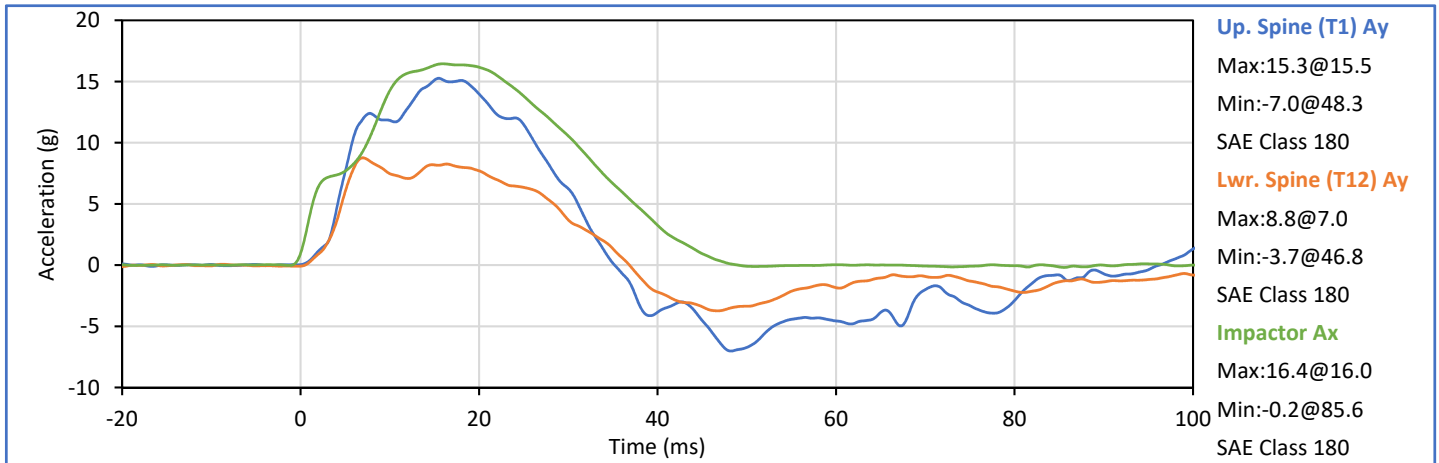
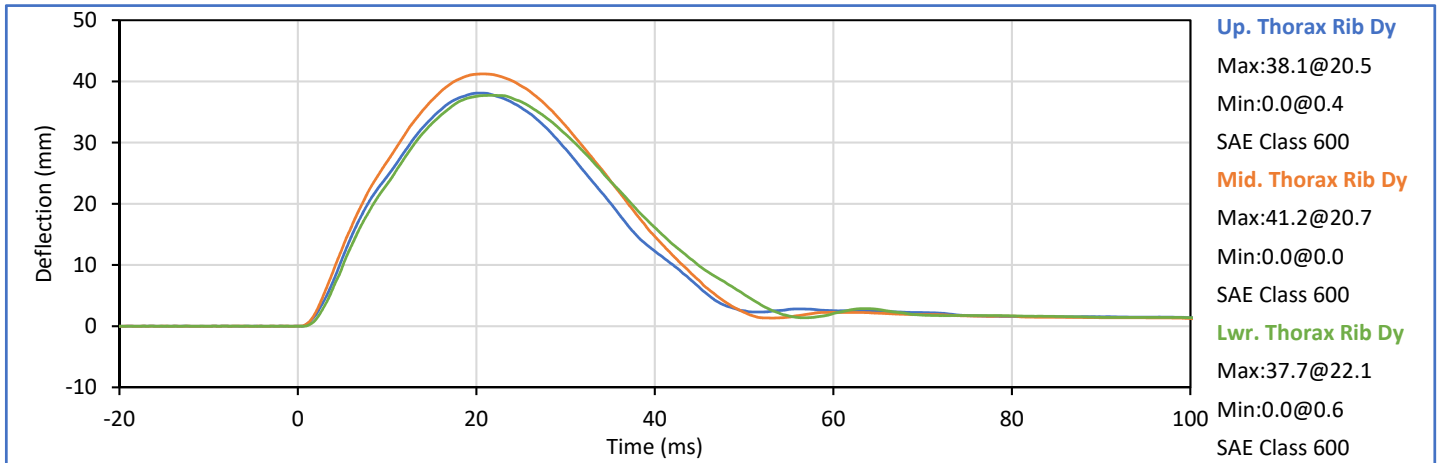
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.1	Pass
Laboratory Humidity	%	10	70	28	Pass
Impactor Velocity	m/s	6.60	6.80	6.68	Pass
Peak Shoulder Dy	mm	31.0	40.0	38.6	Pass
Peak Upper Rib Dy	mm	25.0	32.0	30.3	Pass
Peak Middle Rib Dy	mm	30.0	36.0	32.6	Pass
Peak Lower Rib Dy	mm	32.0	38.0	34.3	Pass
Peak Upper Spine (T1) Ay	g	34.0	43.0	36.7	Pass
Peak Lower Spine (T12) Ay	g	29.0	37.0	31.7	Pass
Peak Impactor Ax	g	30.0	36.0	34.2	Pass
<b>Overall Test Results</b>					<b>Pass</b>

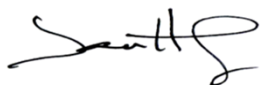



Technician:   
J. Hernandez

Approved By:   
P. Puzzuto

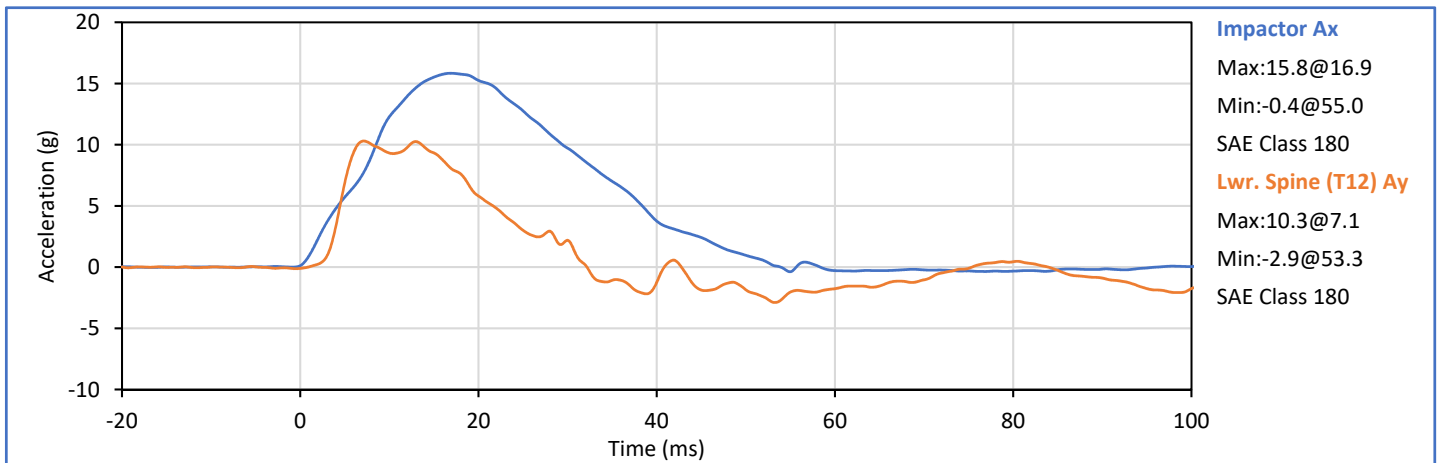
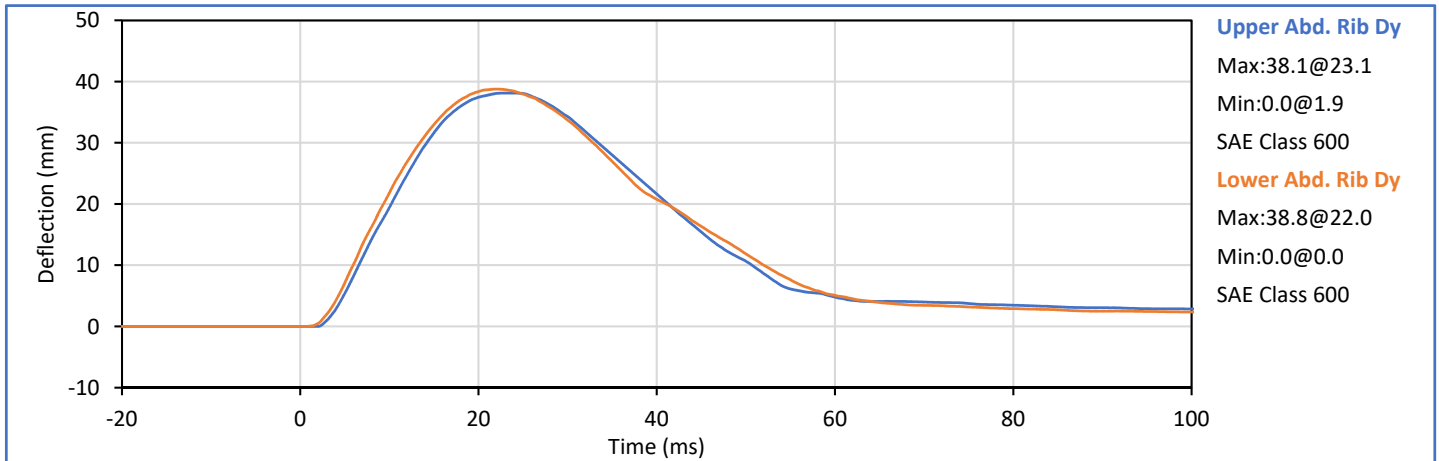
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.1	Pass
Laboratory Humidity	%	10	70	40	Pass
Impactor Velocity	m/s	4.20	4.40	4.23	Pass
Peak Upper Rib Dy	mm	32.0	40.0	38.1	Pass
Peak Middle Rib Dy	mm	39.0	45.0	41.2	Pass
Peak Lower Rib Dy	mm	35.0	43.0	37.7	Pass
Peak Upper Spine (T1) Ay	g	13.0	17.0	15.3	Pass
Peak Lower Spine (T12) Ay	g	7.0	11.0	8.8	Pass
Peak Impactor Ax	g	14.0	18.0	16.4	Pass
Overall Test Results					Pass

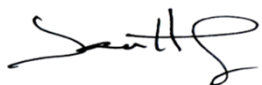



Technician:   
J. Hernandez

Approved By:   
P. Puzzuto

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.1	Pass
Laboratory Humidity	%	10	70	40	Pass
Impactor Velocity	m/s	4.20	4.40	4.30	Pass
Peak Upper Abdomen Rib Dy	mm	36.0	47.0	38.1	Pass
Peak Lower Abdomen Rib Dy	mm	33.0	44.0	38.8	Pass
Peak Lower Spine T12 Ay	mm	9.0	14.0	10.3	Pass
Peak Impactor Ax	g	12.0	16.0	15.8	Pass
<b>Overall Test Results</b>					<b>Pass</b>

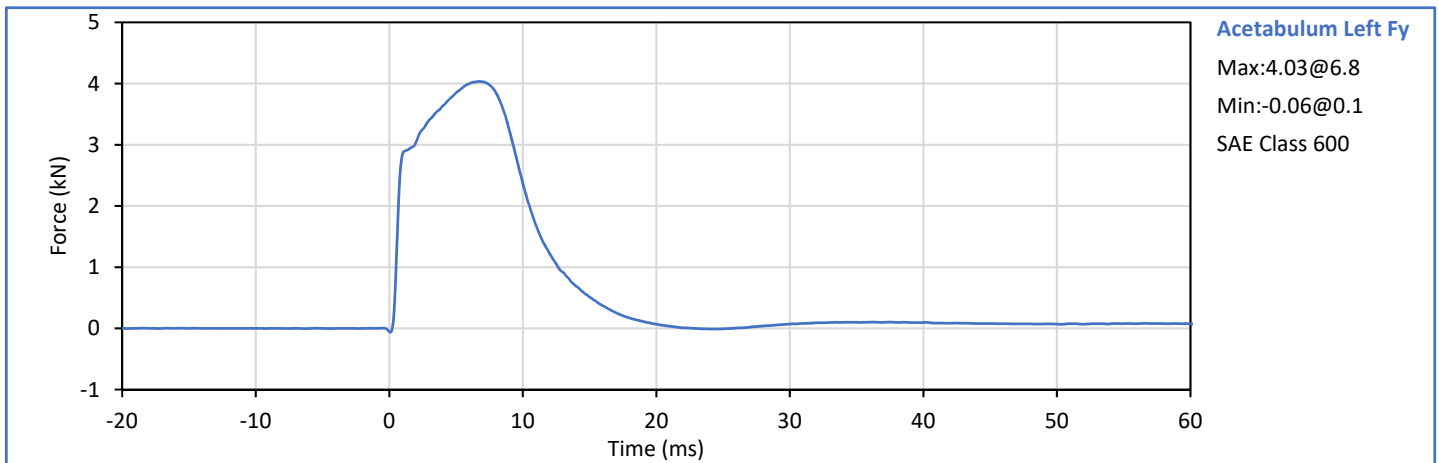
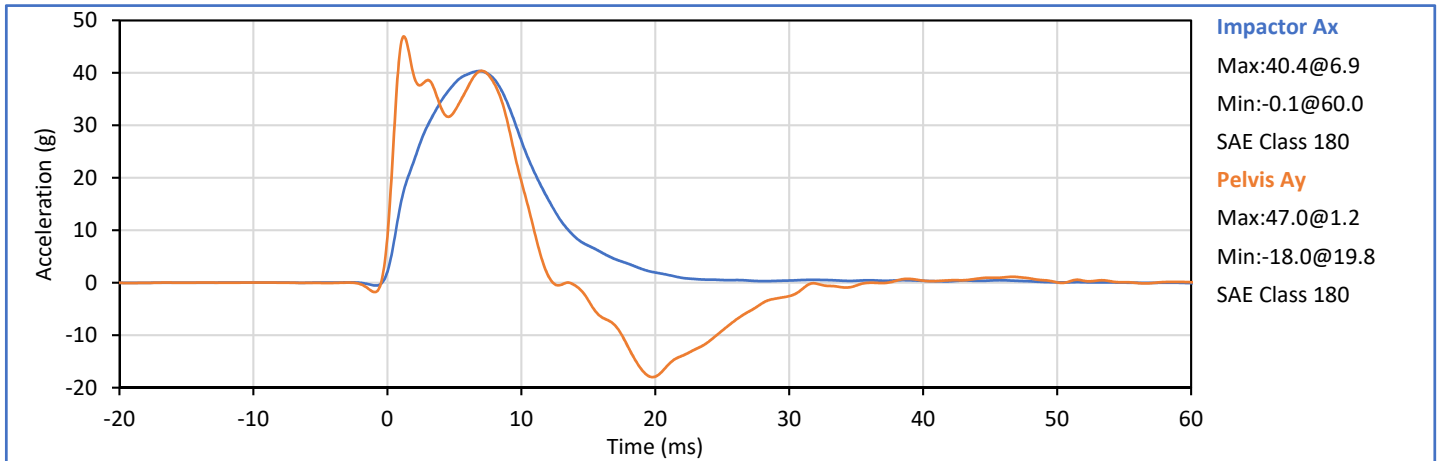


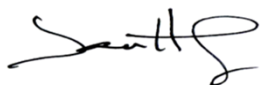
Technician:   
J. Hernandez


Approved By:   
P. Puzzuto

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.2	Pass
Laboratory Humidity	%	10	70	42	Pass
Impactor Velocity	m/s	6.60	6.80	6.67	Pass
Peak Acetabulum Fy	kN	3.60	4.30	4.03	Pass
Pelvis Ay after 6ms	g	34.0	42.0	40.4	Pass
Peak Impactor Ax	g	38.0	47.0	40.4	Pass
Overall Test Results					Pass

Pelvis Plug S/N: 11446 (SACO)



Technician:   
J. Hernandez

Approved By:   
P. Puzzuto



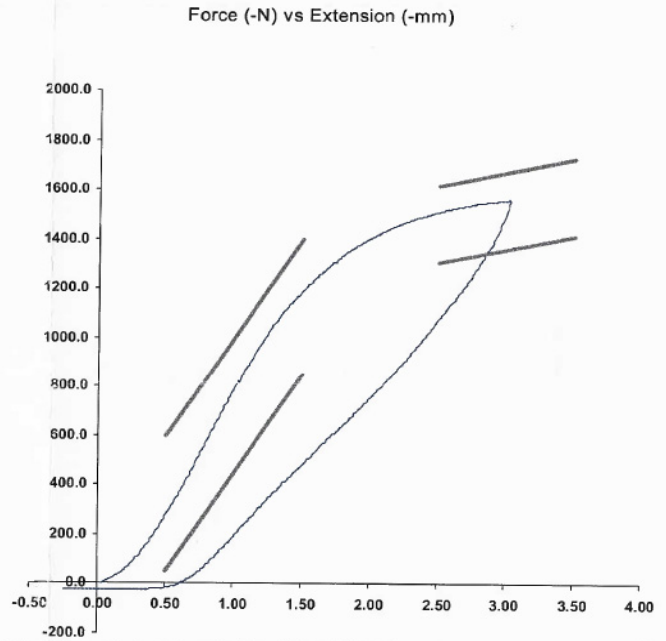


**SID-IIs Pelvis Plug Certification Test**

Plug S/N 11446  
Test Number 2915  
Report Number 2912  
Test Date 8/30/2016 9:07:07 AM

	Test Results	Spec. Min	Spec. Max
Force @ 0.5 mm (N)	279.70	50.00	600.00
Force @ 1.5 mm (N)	1,192.07	850.00	1,400.00
Force @ 2.5 mm (N)	1,512.46	1,306.00	1,618.00
Force @ 3.0 mm (N)	1,560.39	1,361.00	1,673.00

Testing Machine STM-20 5965542  
Load Cell S/N (TI240813), Units (LBS) 1000  
Crosshead Speed ( mm / min ) or Rate 12.7  
Extension or Position Measured by XHD\_100 ( XHD100 )  
Notes:



Operator DC  
Part Number 180-4450

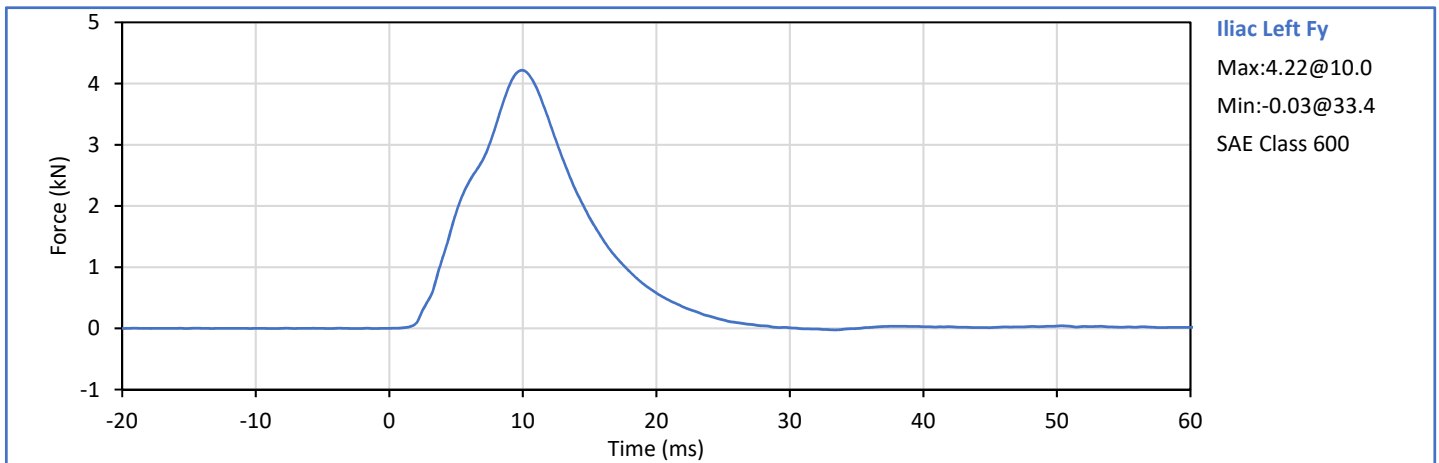
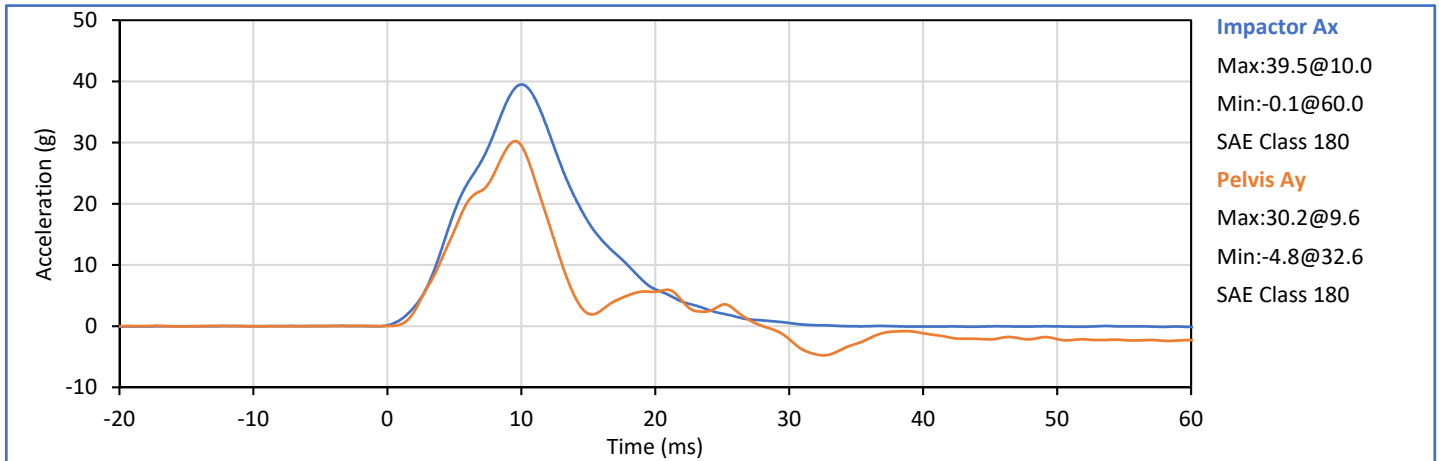
Template No 107 30-Aug-16  
SACO Research

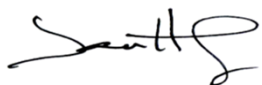
By: DC Date: 8/30/16  
SACO Research 41735 Elm St, #401 Murrieta, CA 92562 Tel 310-694-2082 FAX


Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.1	Pass
Laboratory Humidity	%	10	70	44	Pass
Impactor Velocity	m/s	4.20	4.40	4.30	Pass
Peak Iliac Fy	kN	4.10	5.10	4.22	Pass
Pelvis Ay after 6ms	g	28.0	39.0	30.2	Pass
Peak Impactor Ax	g	36.0	45.0	39.5	Pass
Overall Test Results					Pass

Pelvis Plug S/N: 12228 (SACO) \*

\* Plug is not impacted and remains certified



Technician:   
J. Hernandez

Approved By:   
P. Puzzuto

**APPENDIX C**  
**Post-Test ATD Configuration And Performance Verification Data**  
**SID-IIs Small Side Impact ATD**  
**S/N: 299**

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	26	Pass
A - Sitting Height	mm	772	788	785	Pass
B - Shoulder Pivot Height	mm	437	453	450	Pass
C - Hpoint Height	mm	79	89	82	Pass
D - H Point From Seatback	mm	141	151	148	Pass
E - Shoulder Pivot From Backline	mm	97	107	101	Pass
F - Thigh Clearance	mm	119	135	124	Pass
G - Head Breadth	mm	140	148	145	Pass
H - Head Back From Backline	mm	40	46	41	Pass
I - Head Depth	mm	178	188	186	Pass
J - Head Circumference	mm	541	551	546	Pass
K - Buttock To Knee Length	mm	514	540	530	Pass
L - Popliteal Height	mm	343	369	360	Pass
K - Knee Pivot To Floor Height	mm	392	409	399	Pass
N - Buttock Popliteal Length	mm	416	442	432	Pass
O - Chest Depth W/O Jacket	mm	195	211	206	Pass
P - Foot Length	mm	216	232	222	Pass
Q - Hip Breadth (W/Pelvic Plugs)	mm	313	323	316	Pass
R - Arm Length	mm	249	259	258	Pass
S - Knee Joint To Seatback	mm	477	493	486	Pass
V - Shoulder Width	mm	341	357	348	Pass
W - Foot Width	mm	78	94	84	Pass
Y - Chest Circumference W/Jacket	mm	851	881	870	Pass
Z - Waist Circumference	mm	761	791	776	Pass
Overall Test Results					Pass

Technician: \_\_\_\_\_



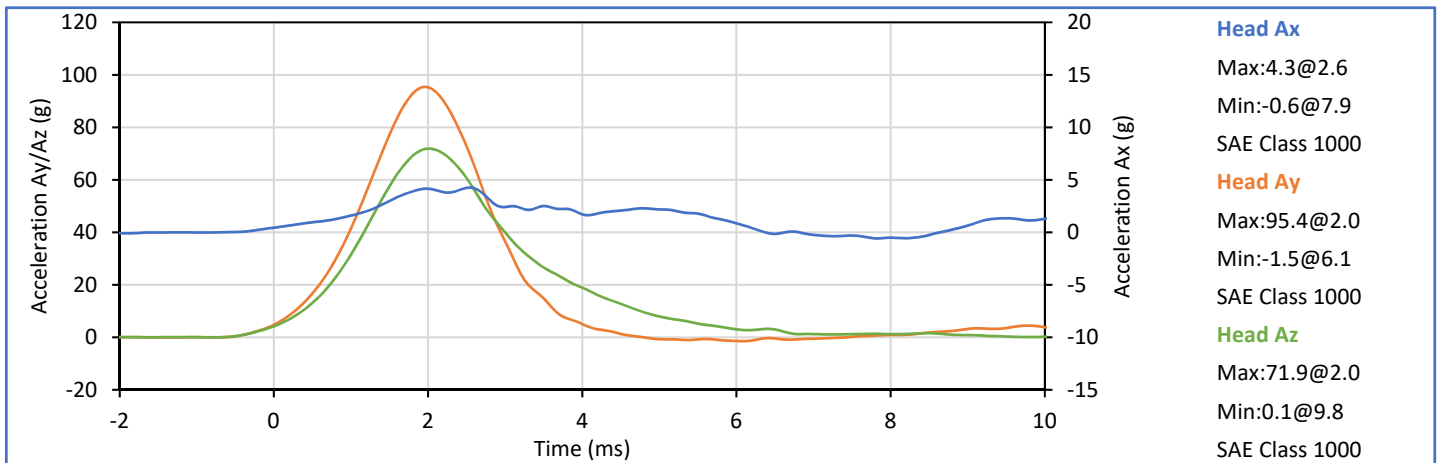
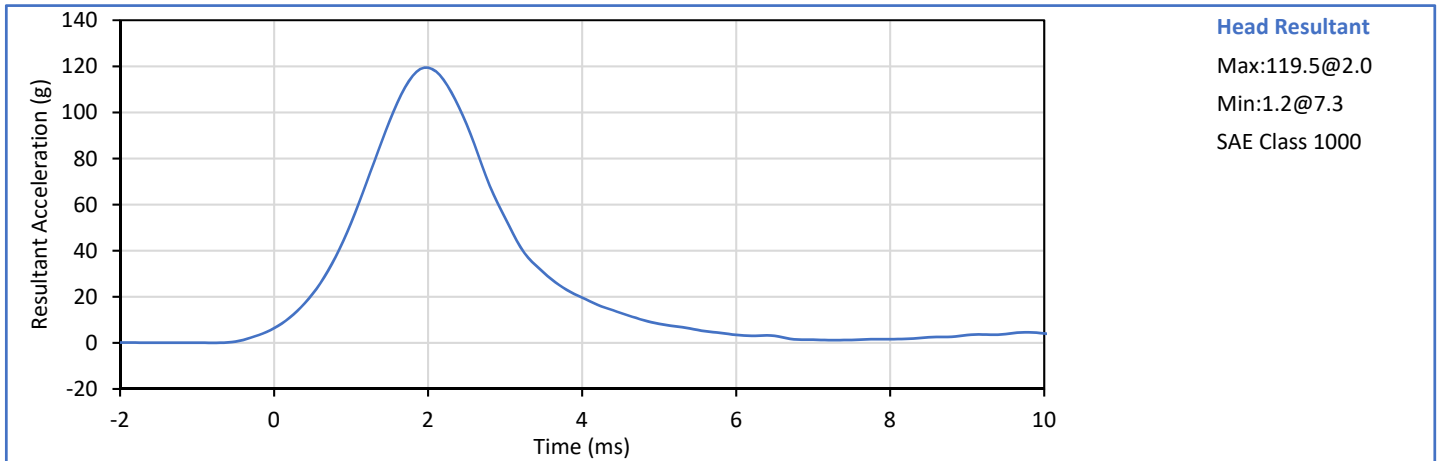
J. Hernandez

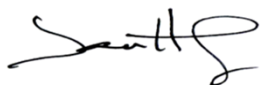
Approved By: \_\_\_\_\_




P. Puzzuto

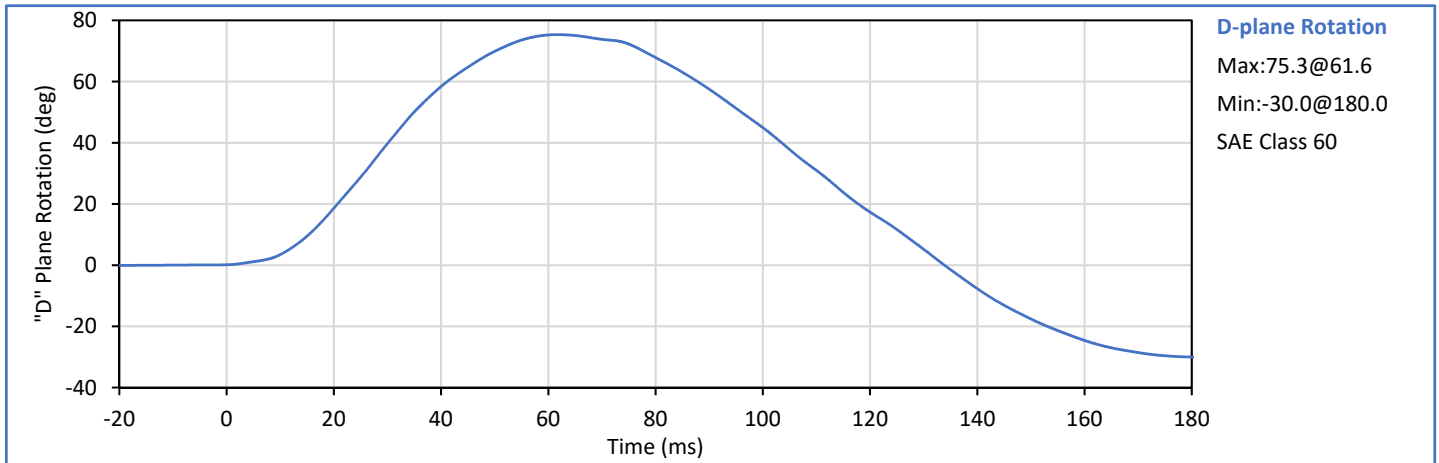
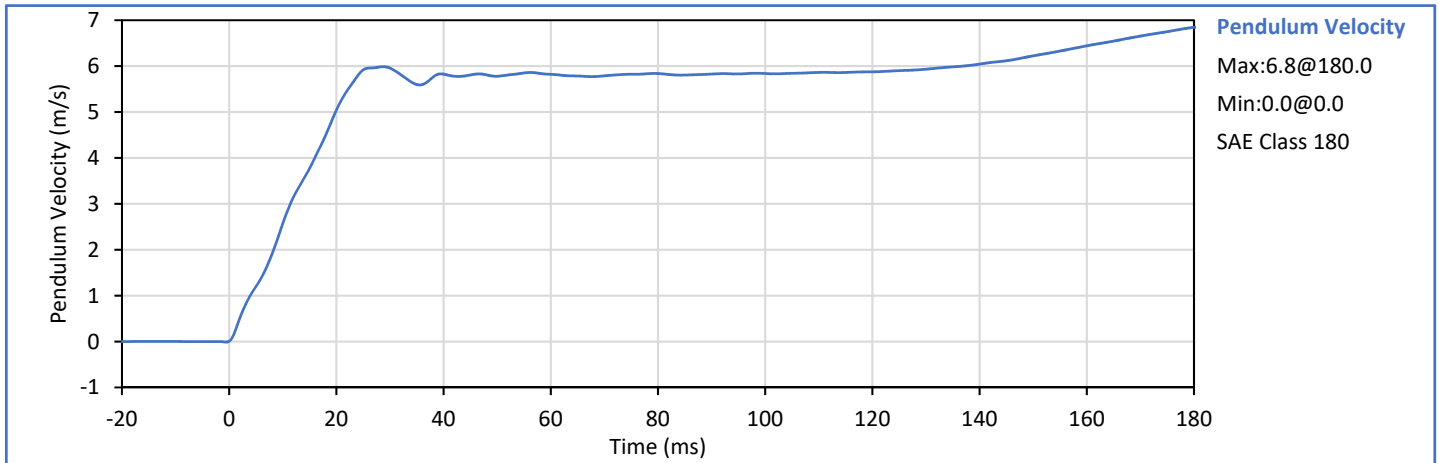
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	18.9	25.6	21.2	Pass
Laboratory Humidity	%	10	70	40	Pass
Peak Resultant Acceleration	g	115.0	137.0	119.5	Pass
Peak Head Ax	g	-15.0	15.0	-1.2	Pass
Oscillations After Main Pulse	%	0.0	15.0	3.8	Pass
Is Acceleration Unimodal?	Yes/No	Yes		Yes	Pass
Overall Test Results					Pass

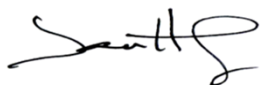



Technician:   
J. Hernandez

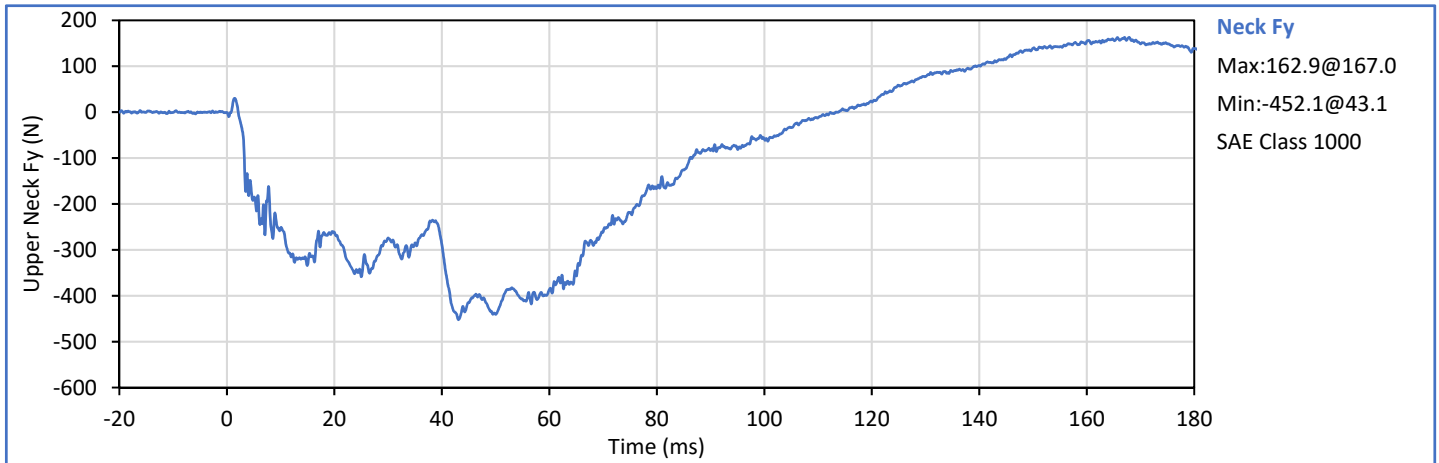
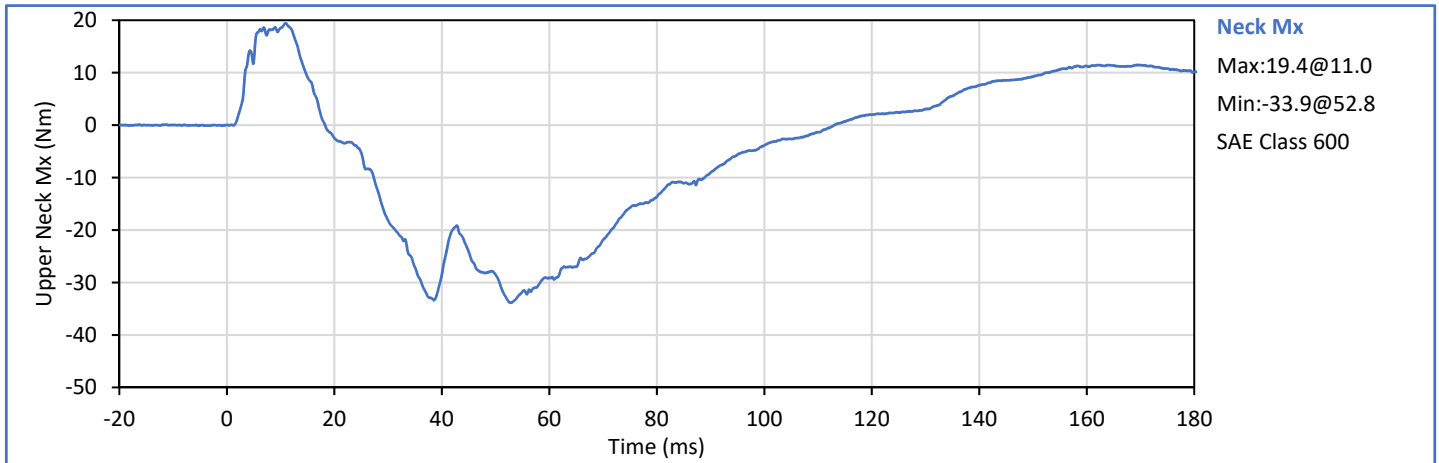
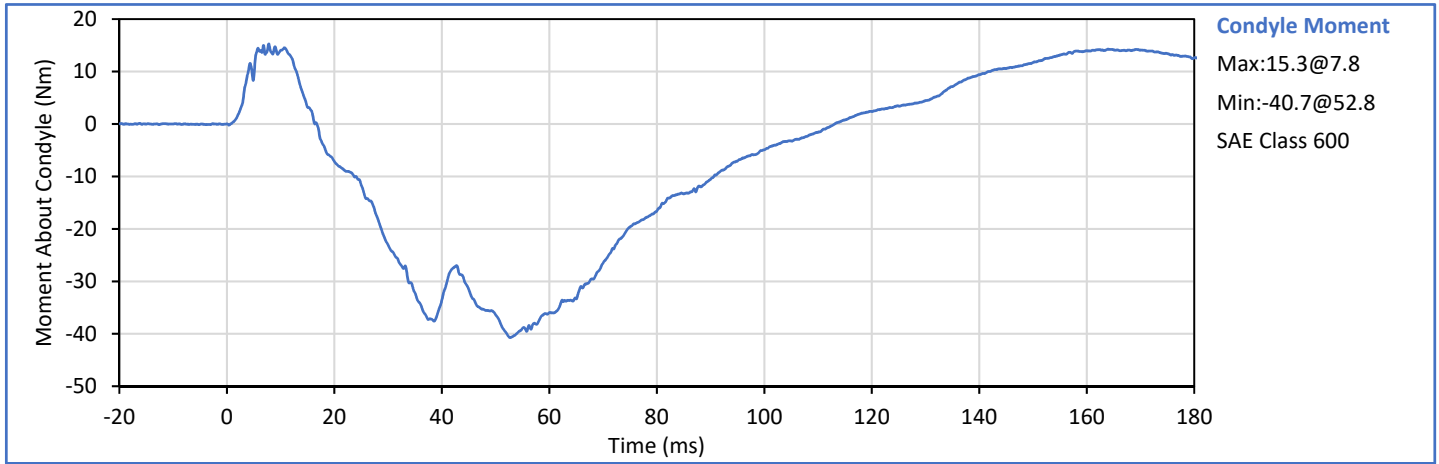
Approved By:   
P. Puzzuto

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.4	Pass
Laboratory Humidity	%	10	70	34	Pass
Pendulum Velocity	m/s	5.51	5.63	5.53	Pass
Pendulum Decel at 10 ms	m/s	2.20	2.80	2.57	Pass
Pendulum Decel at 15 ms	m/s	3.30	4.10	3.77	Pass
Pendulum Decel at 20 ms	m/s	4.40	5.40	5.04	Pass
Pendulum Decel at 25 ms	m/s	5.40	6.10	5.92	Pass
Pendulum Decel from 25-100 ms	m/s	5.50	6.20	5.99	Pass
Peak "D" Plane Rotation	deg	71.0	81.0	75.3	Pass
Time of Peak "D" Plane Rotation	ms	50.0	70.0	61.6	Pass
Peak Occ. Condyle Moment	Nm	-44.0	-36.0	-40.7	Pass
Time of Moment Decay to 0 Nm	ms	102.0	126.0	113.1	Pass
<b>Overall Test Results</b>					<b>Pass</b>

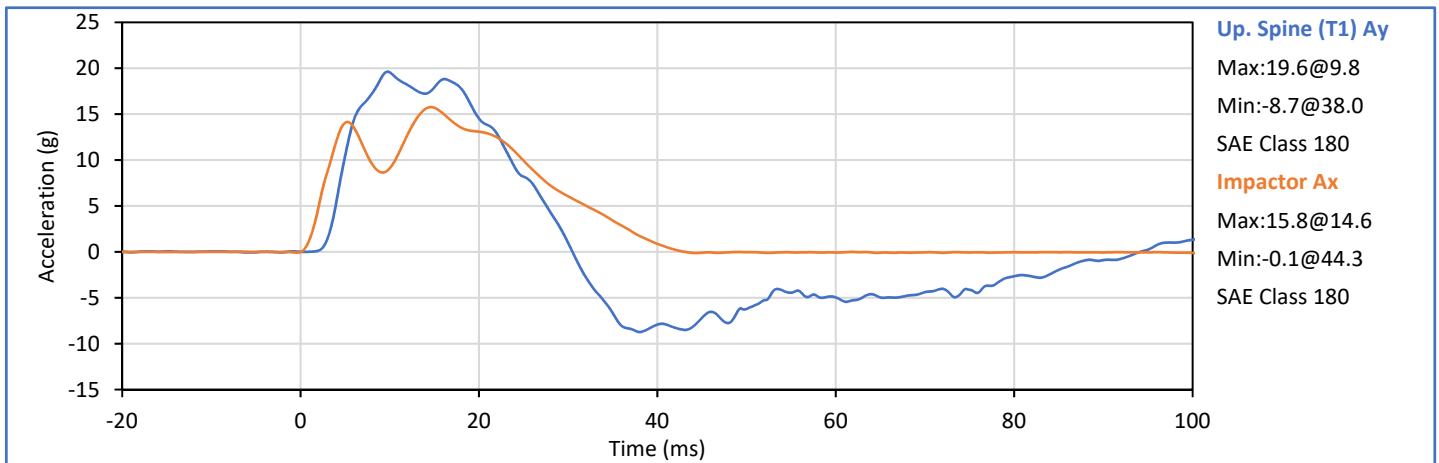
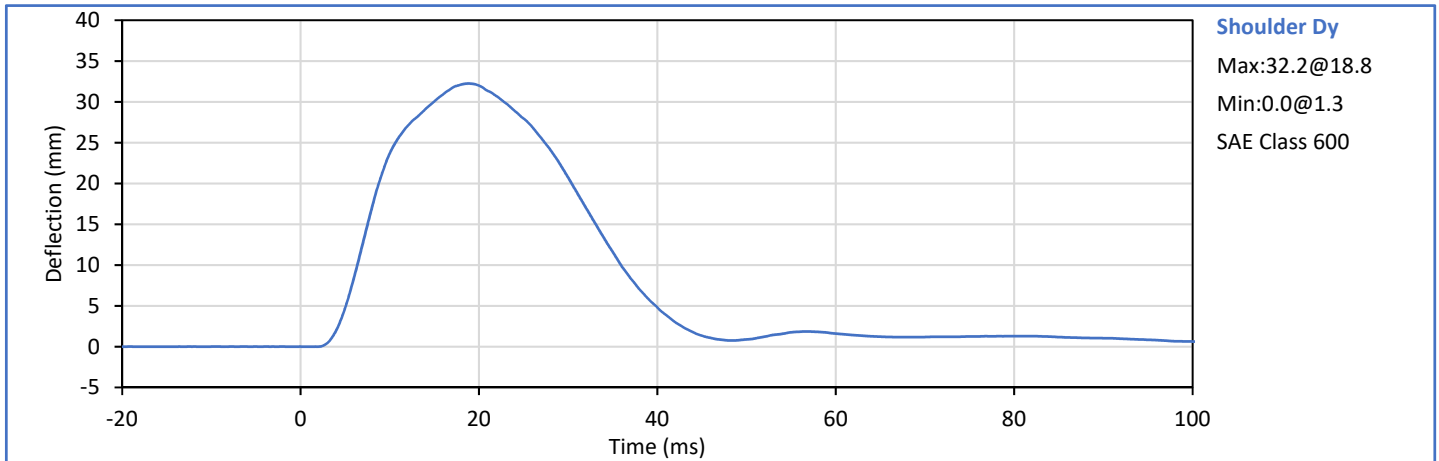


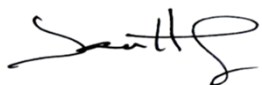
Technician:   
J. Hernandez


Approved By:   
P. Puzzuto



Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.1	Pass
Laboratory Humidity	%	10	70	29	Pass
Impactor Velocity	m/s	4.20	4.40	4.30	Pass
Peak Shoulder Dy	mm	28.0	37.0	32.2	Pass
Peak Upper Spine (T1) Ay	g	17.0	22.0	19.6	Pass
Peak Impactor Ax	g	13.0	18.0	15.8	Pass
Overall Test Results					Pass

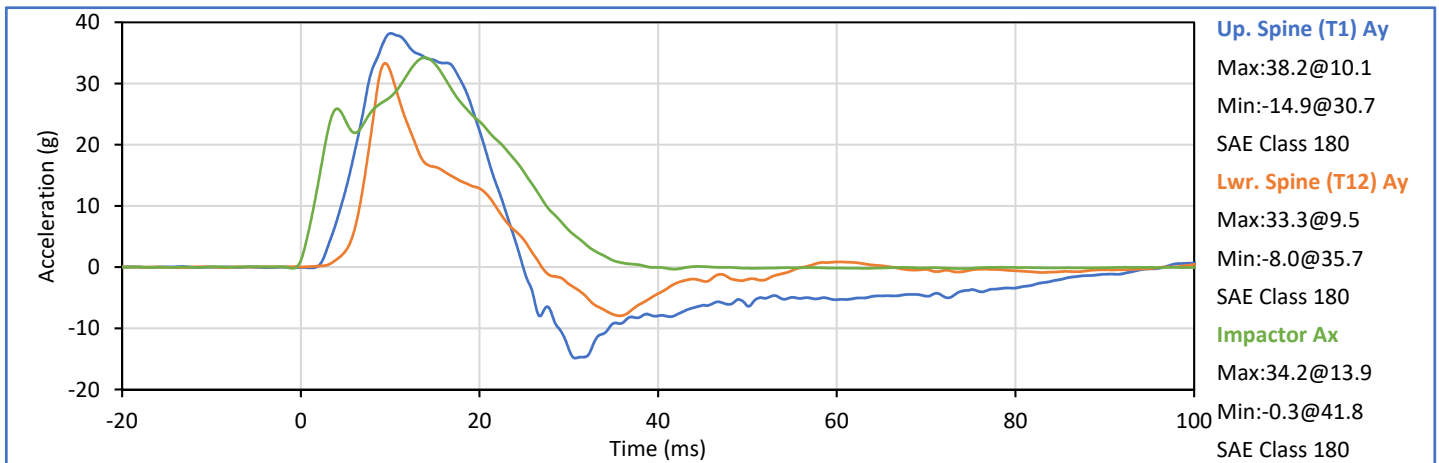
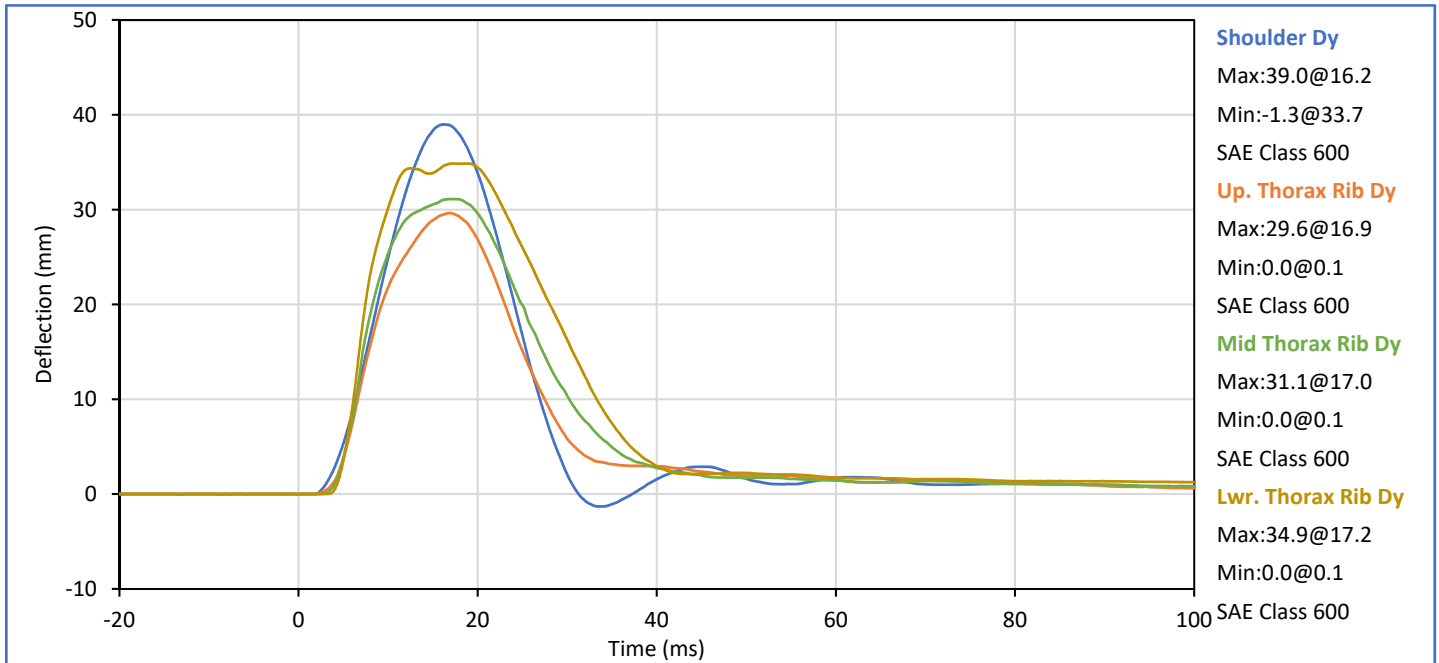


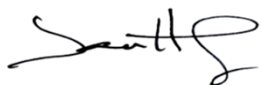
Technician:   
J. Hernandez


Approved By:   
P. Puzzuto



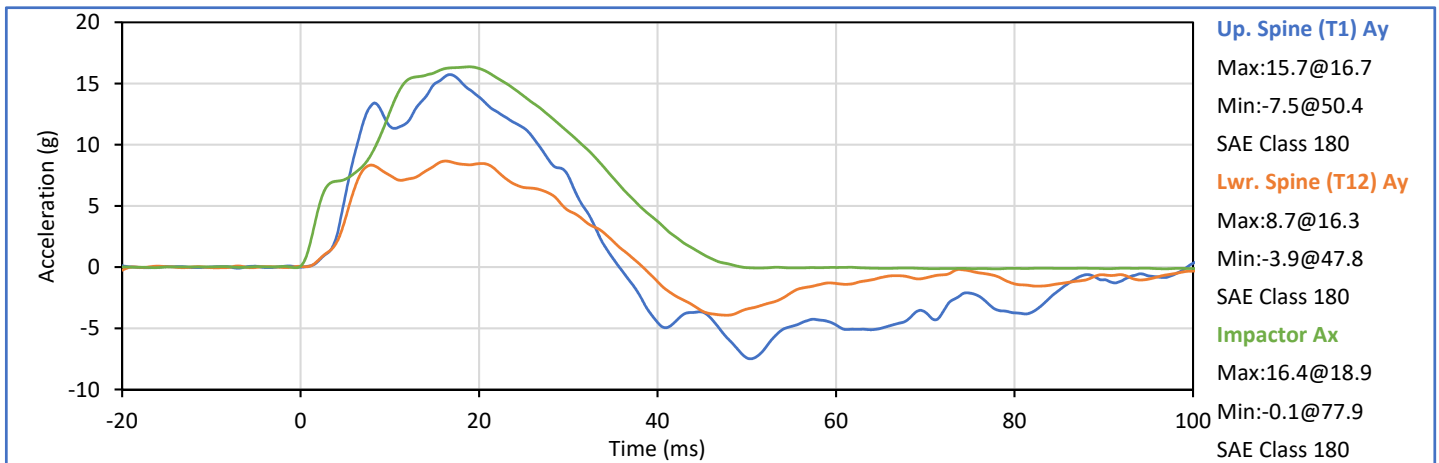
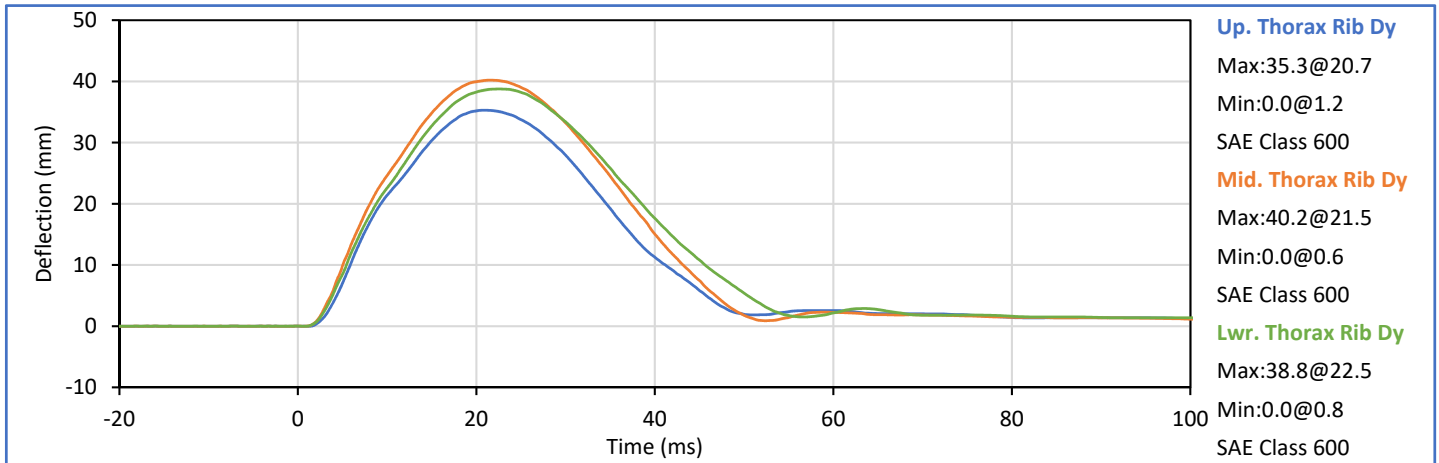
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.1	Pass
Laboratory Humidity	%	10	70	29	Pass
Impactor Velocity	m/s	6.60	6.80	6.70	Pass
Peak Shoulder Dy	mm	31.0	40.0	39.0	Pass
Peak Upper Rib Dy	mm	25.0	32.0	29.6	Pass
Peak Middle Rib Dy	mm	30.0	36.0	31.1	Pass
Peak Lower Rib Dy	mm	32.0	38.0	34.9	Pass
Peak Upper Spine (T1) Ay	g	34.0	43.0	38.2	Pass
Peak Lower Spine (T12) Ay	g	29.0	37.0	33.3	Pass
Peak Impactor Ax	g	30.0	36.0	34.2	Pass
<b>Overall Test Results</b>					<b>Pass</b>

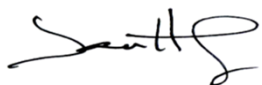



Technician:   
J. Hernandez

Approved By:   
P. Puzzuto

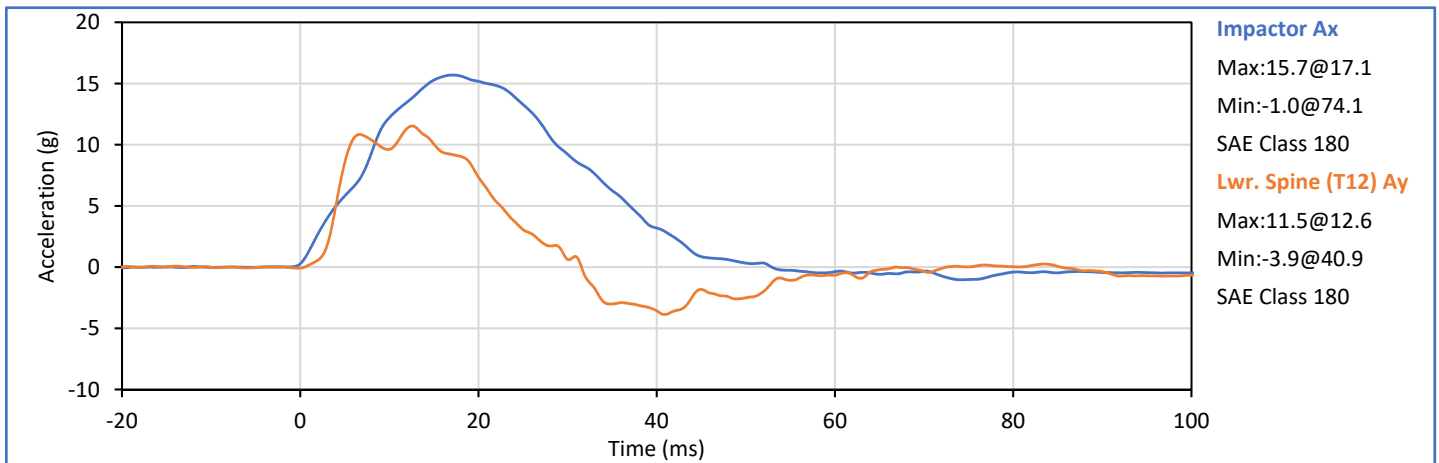
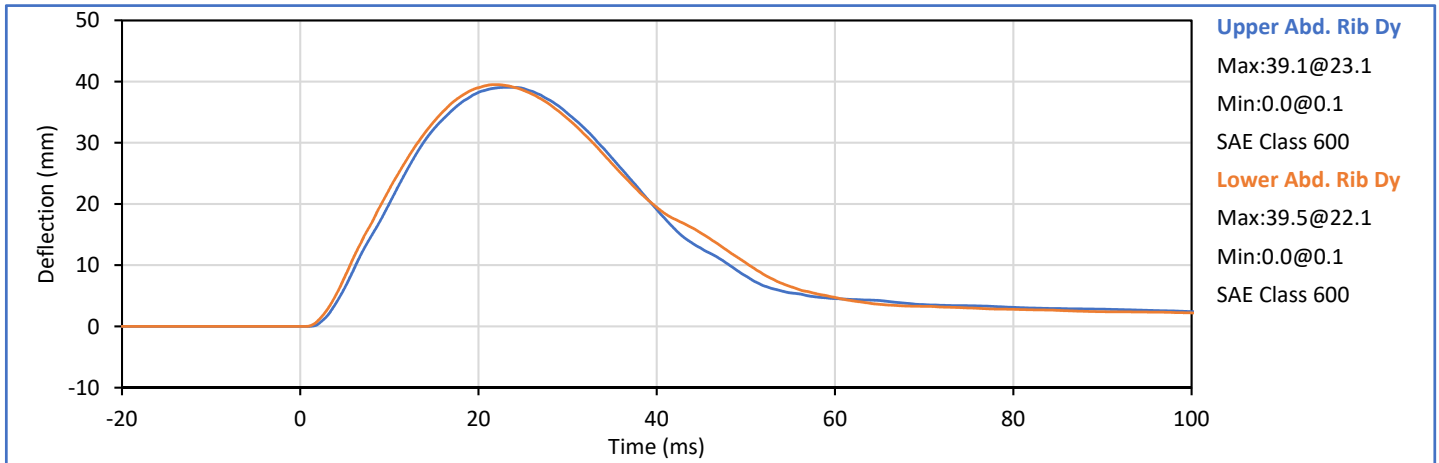
Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.1	Pass
Laboratory Humidity	%	10	70	29	Pass
Impactor Velocity	m/s	4.20	4.40	4.32	Pass
Peak Upper Rib Dy	mm	32.0	40.0	35.3	Pass
Peak Middle Rib Dy	mm	39.0	45.0	40.2	Pass
Peak Lower Rib Dy	mm	35.0	43.0	38.8	Pass
Peak Upper Spine (T1) Ay	g	13.0	17.0	15.7	Pass
Peak Lower Spine (T12) Ay	g	7.0	11.0	8.7	Pass
Peak Impactor Ax	g	14.0	18.0	16.4	Pass
Overall Test Results					Pass

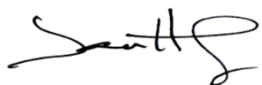



Technician:   
J. Hernandez

Approved By:   
P. Puzzuto

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.1	Pass
Laboratory Humidity	%	10	70	40	Pass
Impactor Velocity	m/s	4.20	4.40	4.32	Pass
Peak Upper Abdomen Rib Dy	mm	36.0	47.0	39.1	Pass
Peak Lower Abdomen Rib Dy	mm	33.0	44.0	39.5	Pass
Peak Lower Spine T12 Ay	mm	9.0	14.0	11.5	Pass
Peak Impactor Ax	g	12.0	16.0	15.7	Pass
<b>Overall Test Results</b>					<b>Pass</b>

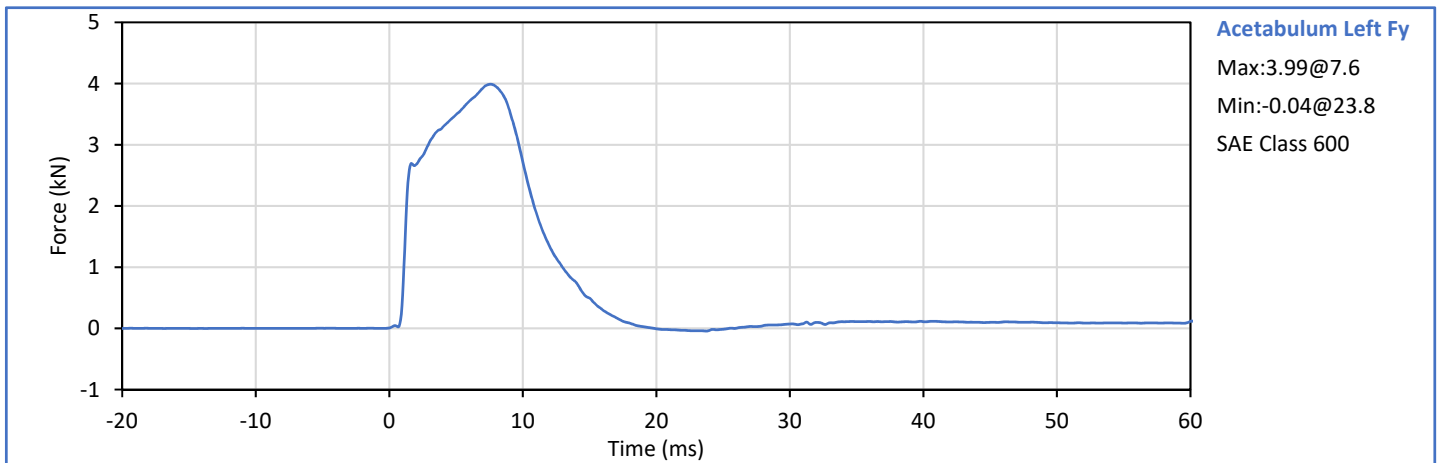
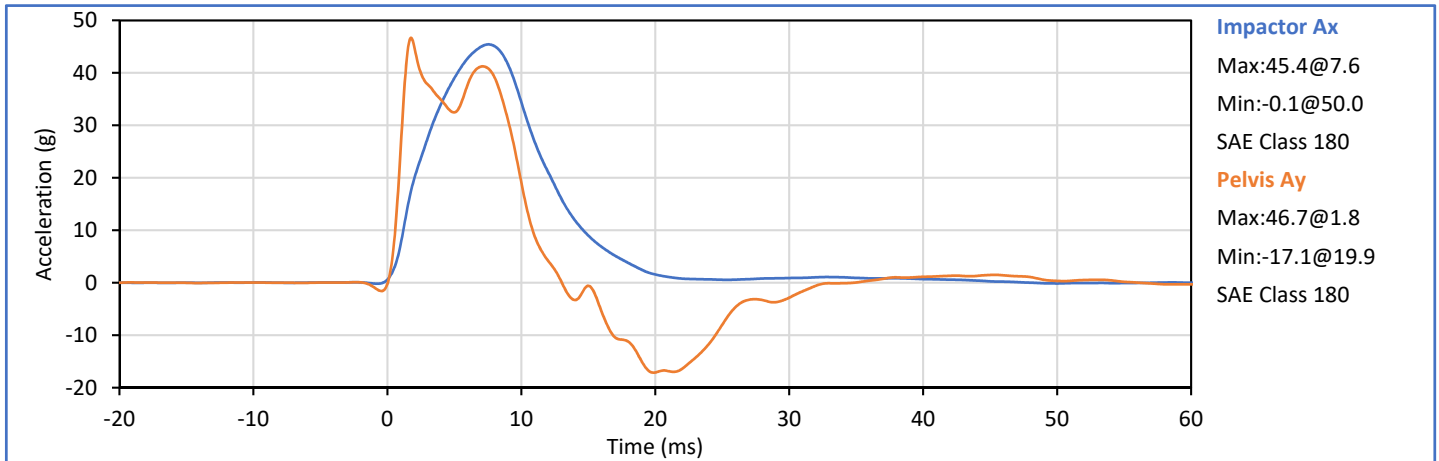


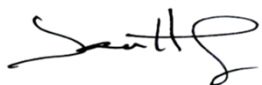
Technician:   
J. Hernandez


Approved By:   
P. Puzzuto

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.2	Pass
Laboratory Humidity	%	10	70	42	Pass
Impactor Velocity	m/s	6.60	6.80	6.73	Pass
Peak Acetabulum Fy	kN	3.60	4.30	3.99	Pass
Pelvis Ay after 6ms	g	34.0	42.0	41.2	Pass
Peak Impactor Ax	g	38.0	47.0	45.4	Pass
Overall Test Results					Pass

Pelvis Plug S/N: 11601 (SACO)



Technician:   
J. Hernandez

Approved By:   
P. Puzzuto



**SID-IIs Pelvis Plug Certification Test**

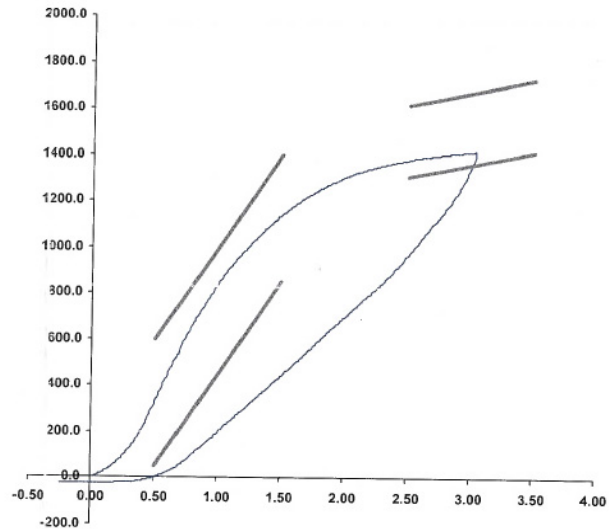
Plug S/N 11601  
Test Number 3144  
Report Number 3137  
Test Date 10/4/2016 1:16:23 PM

	Test Results	Spec Min	Spec Max
Force @ 0.5 mm (N)	331.41	50.00	600.00
Force @ 1.5 mm (N)	1,139.93	850.00	1,400.00
Force @ 2.5 mm (N)	1,381.36	1,306.00	1,618.00
Force @ 3.0 mm (N)	1,416.43	1,361.00	1,673.00

Testing Machine STM-20 5965542  
Load Cell S/N (TI240813), Units (LBS) 1000  
Crosshead Speed (mm / min) or Rate 12.7  
Extension or Position Measured by XHD\_100 (XHD100)

Notes:

Force (-N) vs Extension (-mm)



Operator DC

Part Number 180-4450

Template No 107 04-Oct-16  
SACO Research

By: DC Date: 10/4/16

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

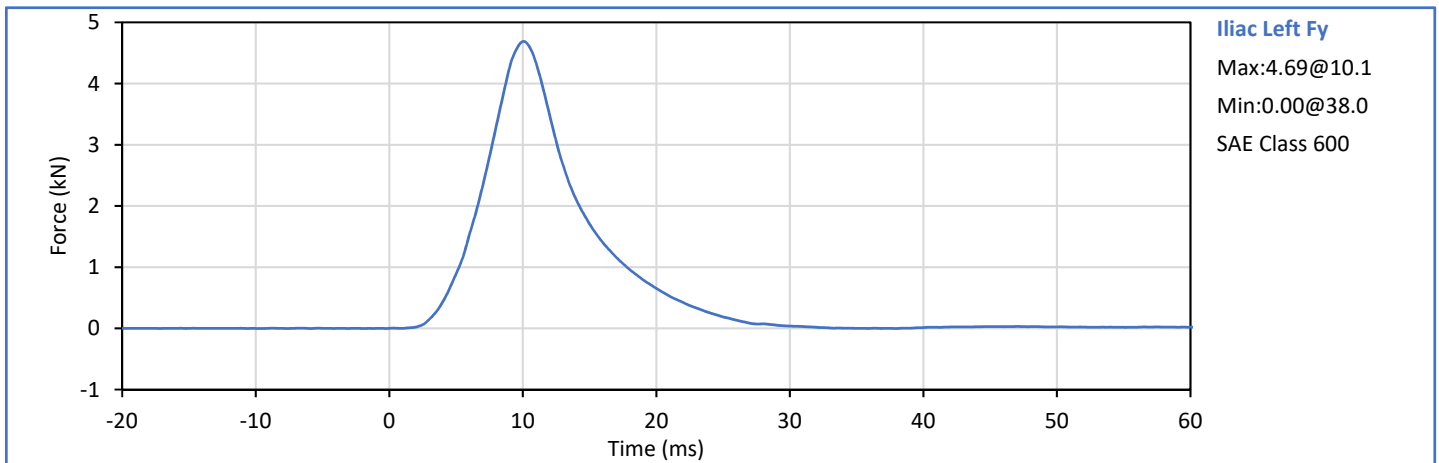
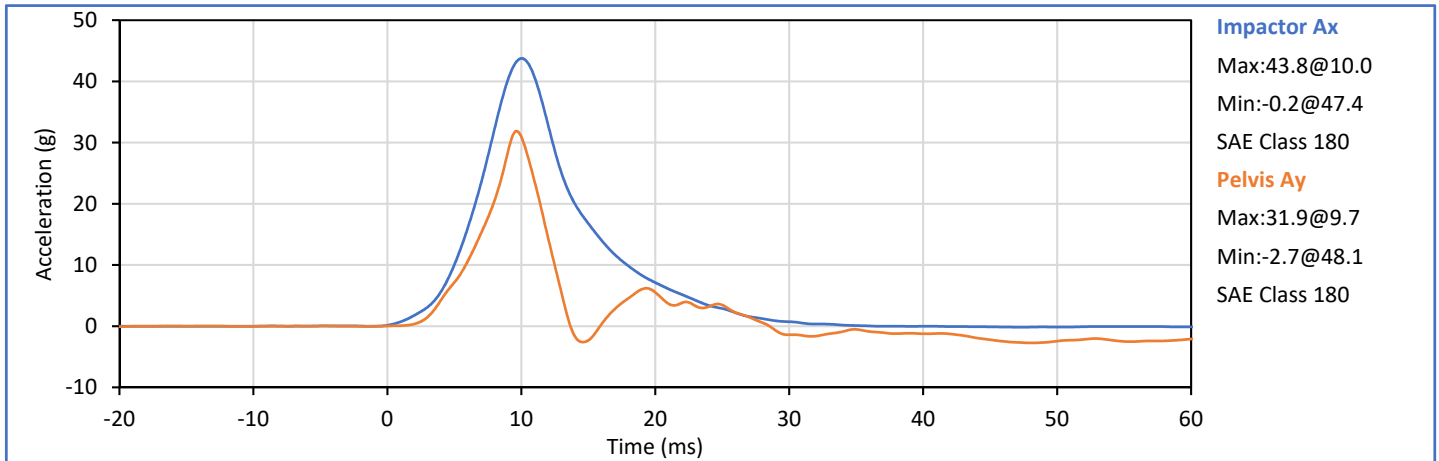
ATD Serial No.: 299

Test Date: 2019-05-31

Tested Parameter	Units	Spec. Low	Spec. High	Result	Pass/Fail
Laboratory Temperature	°C	20.6	22.2	21.1	Pass
Laboratory Humidity	%	10	70	23	Pass
Impactor Velocity	m/s	4.20	4.40	4.37	Pass
Peak Iliac Fy	kN	4.10	5.10	4.69	Pass
Pelvis Ay after 6ms	g	28.0	39.0	31.9	Pass
Peak Impactor Ax	g	36.0	45.0	43.8	Pass
Overall Test Results					Pass

Pelvis Plug S/N: 12228 (SACO) \*

\* Plug is not impacted and remains certified



Technician: *J. Hernandez*  
J. Hernandez

Approved By: *P. Puzzuto*  
P. Puzzuto

**APPENDIX D**  
**TEST EQUIPMENT AND INSTRUMENTATION CALIBRATION DATA**

Position: Driver  
 ATD Type: SID-IIs  
 ATD S\N: 299

**Table 1a - Driver ATD Instrumentation**

Sensor Location	Sensor S\N	Mfr	Model	Cal Due
Head Acceleration X Primary	P51929	Endevco	7264C-2k	2019-08-08
Head Acceleration Y Primary	P50086	Endevco	7264C-2k	2019-08-08
Head Acceleration Z Primary	P51931	Endevco	7264C-2k	2019-08-08
Head Acceleration X Redundant	P68604	Endevco	7264C-2k	2019-08-08
Head Acceleration Y Redundant	P51934	Endevco	7264C-2k	2019-08-08
Head Acceleration Z Redundant	P58736	Endevco	7264C-2k	2019-08-08
Upper Thorax Rib Deflection Y	1143	Servo	08TCI-3725	2019-08-15
Middle Thorax Rib Deflection Y	1160	Servo	08TCI-3725	2019-08-15
Lower Thorax Rib Deflection Y	1213	Servo	08TCI-3725	2019-08-15
Upper Abdomen Rib Deflection Y	1218	Servo	08TCI-3725	2019-08-15
Lower Abdomen Rib Deflection Y	1177	Servo	08TCI-3725	2019-08-15
Lower Spine T12 Acceleration X	04I20-Z04	Entran	EGEB6Q-2k	2019-08-16
Lower Spine T12 Acceleration Y	06A07-R08	Entran	EGEB6Q-2k	2019-08-16
Lower Spine T12 Acceleration Z	P58795	Endevco	7264C-2k	2019-08-16
Iliac Wing Impact Side Force Y	289 Fy (Iliac)	R.A. Denton	3228J	2019-10-11
Acetabulum Impact Side Force Y	277 Fy (Acetabulum)	R.A. Denton	3249J	2019-10-11

**Table 1b - Driver ATD Optional Instrumentation (Research Data Only)**

Sensor Location	Sensor S\N	Mfr	Model	Cal Due
Head Rotation Rate X	ARS15063	DTS	ARS PRO-8k (2000Hz)	2019-09-06
Head Rotation Rate Y	ARS15064	DTS	ARS PRO-8k (2000Hz)	2019-09-06
Head Rotation Rate Z	ARS15065	DTS	ARS PRO-8k (2000Hz)	2019-09-06



**Table 2 - Vehicle Instrumentation**

Sensor Location	Sensor S\N	Mfr	Model	Cal Due
Vehicle CG Ax	A267277	MSI	52F-2000	2019-08-02
Vehicle CG Ay	A267280	MSI	52F-2000	2019-08-02
Vehicle CG Az	A267306	MSI	52F-2000	2019-08-02
Left Floor Sill Ay	A248863	MSI	52F-2000	2019-11-28
A-Pillar Sill Ay	A254931	MSI	52F-2000	2019-06-19
A-Pillar Low Ay	A248840	MSI	52F-2000	2019-09-15
A-Pillar Mid Ay	A265867	MSI	52F-2000	2019-07-05
B-Pillar Sill Ay	A254840	MSI	52F-2000	2019-06-19
B-Pillar Low Ay	A185637	MSI	52F-2000	2019-09-21
B-Pillar Mid Ay	A248860	MSI	52F-2000	2019-09-15
Driver Seat Track at H-Point Ay	A273397	MSI	52F-2000	2019-09-17
Engine Top Ax	A273410	MSI	52F-2000	2019-09-17
Engine Top Ay	A273426	MSI	52F-2000	2019-09-17
Firewall Ay	A273438	MSI	52F-2000	2019-09-11
Right Roof Ay	A266324	MSI	52F-2000	2019-07-05
Right Floor Sill Ay	A273409	MSI	52F-2000	2019-09-17
Rear Floorpan Ax	A247327	MSI	52F-2000	2019-10-01
Rear Floorpan Ay	A145925	MSI	52F-2000	2019-11-28

**Table 3 - Rigid Pole Instrumentation**

Sensor Location	Sensor S\N	Mfr	Model	Cal Due
Load Cell Pole Barrier #1 Force Y	131822A	Interface	1220-FS	2020-05-06
Load Cell Pole Barrier #2 Force Y	132304A	Interface	1220-FS	2020-05-06
Load Cell Pole Barrier #3 Force Y	19477	Interface	1220-FS	2020-05-06
Load Cell Pole Barrier #4 Force Y	19325	Interface	1220-FS	2020-05-06
Load Cell Pole Barrier #5 Force Y	131827A	Interface	1220-FS	2020-05-06
Load Cell Pole Barrier #6 Force Y	132302A	Interface	1220-FS	2020-05-06
Load Cell Pole Barrier #7 Force Y	19267	Interface	1220-FS	2020-05-06
Load Cell Pole Barrier #8 Force Y	19321	Interface	1220-FS	2020-05-06