

FINAL REPORT NUMBER: SPNCAP-TRC-20-005

**NEW CAR ASSESSMENT PROGRAM (NCAP)
SIDE IMPACT POLE TEST**

**KIA MOTORS CORPORATION
2020 Kia Soul 5-DR SUV
NHTSA NUMBER: Q20204213**

**PREPARED BY:
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Report Date: October 27, 2020


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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Report Prepared By: ILO Project Operations Group

Report Approved By: 
John Shultz

Approval Date: October 27, 2020

FINAL REPORT ACCEPTANCE BY OCWS:

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

Date: _____

FINAL REPORT ACCEPTANCE BY OCWS:

COTR, New Car Assessment Program
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Date: _____

Technical Report Documentation Page

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<p>16. Abstract</p> <p>A 32.2 km/h (20 mph), 75° oblique impact Side NCAP Test was conducted on the subject vehicle, a 2020 Kia Soul 5-DR SUV, 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. This test was conducted by Transportation Research Center Inc. in East Liberty, Ohio, on February 21, 2020.</p> <p>The impact velocity was 32.23 km/h, and the ambient temperature at the struck (left) side of the target vehicle at the time of impact was 20.7° C. The test vehicle's post-test maximum crush was 321 mm at Level 3.</p> <p>The test or target vehicle's performance is given below:</p> <table border="1"> <thead> <tr> <th></th> <th><u>Unit</u></th> <th><u>Threshold</u></th> <th><u>Front SID-IIs</u></th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC₃₆):</td> <td>NA</td> <td>1000</td> <td><u>322</u></td> </tr> <tr> <td>Resultant Lower Spine Acceleration:</td> <td>g's</td> <td>82</td> <td><u>46.2</u></td> </tr> <tr> <td>Total Pelvic Force: (sum of acetabular and iliac forces)</td> <td>N</td> <td>5525</td> <td><u>4848.7</u></td> </tr> <tr> <td>Maximum Thoracic Rib Deflection</td> <td>mm</td> <td>38*</td> <td><u>25.0</u></td> </tr> <tr> <td>Maximum Abdomen Rib Deflection</td> <td>mm</td> <td>45*</td> <td><u>26.5</u></td> </tr> </tbody> </table> <p>* Proposed IARV</p> <p>The doors on the struck side did not separate from the body at the hinges or latches and the opposite doors did not open during the side impact event.</p>					<u>Unit</u>	<u>Threshold</u>	<u>Front SID-IIs</u>	Head Injury Criteria (HIC ₃₆):	NA	1000	<u>322</u>	Resultant Lower Spine Acceleration:	g's	82	<u>46.2</u>	Total Pelvic Force: (sum of acetabular and iliac forces)	N	5525	<u>4848.7</u>	Maximum Thoracic Rib Deflection	mm	38*	<u>25.0</u>	Maximum Abdomen Rib Deflection	mm	45*	<u>26.5</u>
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17. Key Words New Car Assessment Program (NCAP) Side Impact Pole Part 572V SID-IIs		18. Distribution Statement Copies of this report are available from: National Highway Traffic Safety Administration Technical Information Services Division 1200 New Jersey Ave Washington, DC 20590																									
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SECTION 1
TEST PURPOSE AND PROCEDURE

TEST PURPOSE AND PROCEDURE

This side impact test was conducted as part of the MY20 New Car Assessment Program Side Impact Test Program, sponsored by the National Highway Traffic Safety Administration (NHTSA), under Contract No. DTNH22-14-D-00354. The purpose of this test is to generate comparative side impact performance in a 2020 Kia Soul 5-DR SUV manufactured by KIA MOTORS CORPORATION. The side impact test was conducted in accordance with the Office of Crashworthiness Standard's Side NCAP Pole Laboratory Test Procedure, dated October 2015.

SECTION 2

SUMMARY OF TEST RESULTS

A rigid pole side impact test was conducted on a model year 2020 Kia Soul 5-DR SUV. The subject vehicle was towed into the rigid pole at an angle of 75° and a velocity of 32.23 km/h. The side impact test was conducted by Transportation Research Center Inc. in East Liberty, OH, on February 21, 2020. Pre-test and post-test photographs of the test vehicle and the 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) dummy was instrumented accordingly:

- Primary and Redundant Head CG Triaxial Accelerometers
- Thorax Upper, Middle, and Lower Rib Displacement Potentiometers
- Abdomen Upper and Lower Rib Displacement Potentiometers
- Lower Spine (T12) Triaxial 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	Driver ATD (SID-IIs)		
	Units	IARV	Result
Head Injury Criteria (HIC ₃₆)	NA	1000	322
Lower Spine Acceleration Resultant	G	82	46.2
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	4848.7
Maximum Thoracic Rib Deflection	mm	38*	25.0
Maximum Abdominal Rib Deflection	mm	45*	26.5

* Proposed IARV

Supplemental restraint information is given below:

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

GENERAL COMMENTS

Left A-Pillar Sill Acceleration (Y); Channel failed after 16.0 ms

•LEFT B-POST @ SILL AY; Questionable spike at 44.0 ms

SECTION 3
OCCUPANT AND VEHICLE INFORMATION

**DATA SHEET NO. 1
GENERAL TEST AND VEHICLE PARAMETER DATA**

Test Vehicle: 2020 Kia Soul 5-DR SUV
Test Program: SPNCAP Side Impact

NHTSA No.: Q20204213
Test Date: 2/21/2020

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	Q20204213
Model Year	2020
Make	Kia
Model	Soul
Body Style	MPV
VIN	KNDJ23AU7L7718352
Body Color	Inferno Red
Odometer Reading (km/mi)	15 mi
Engine Displacement (L)	2.0
Type/No. Cylinders	Straight/4
Engine Placement	Front 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

Traction Control System (TCS)	Yes
Auto-Leveling System	No
Automatic Door Locks (ADL)	Yes
Power Window Auto-Reverse	No
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	No

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

No

DATA FROM CERTIFICATION LABEL

Manufactured By	KIA MOTORS CORPORATION
Date of Manufacturer	12/19
Vehicle Type	MPV

GVWR (LB)	4023
GAWR Front (LB)	2315
GAWR Rear (LB)	2094

VEHICLE SEATING AND WEIGHT CAPACITY DATA

	Front	Rear	Third	Total
Designated Seating Capacity (DSC)	2	3	N/A	5
Vehicle Capacity Weight (VCW) (kg)				390.0
DSC X 68.04 kg				340.2
Rated Cargo and Luggage Weight (RCLW) (kg)				49.8

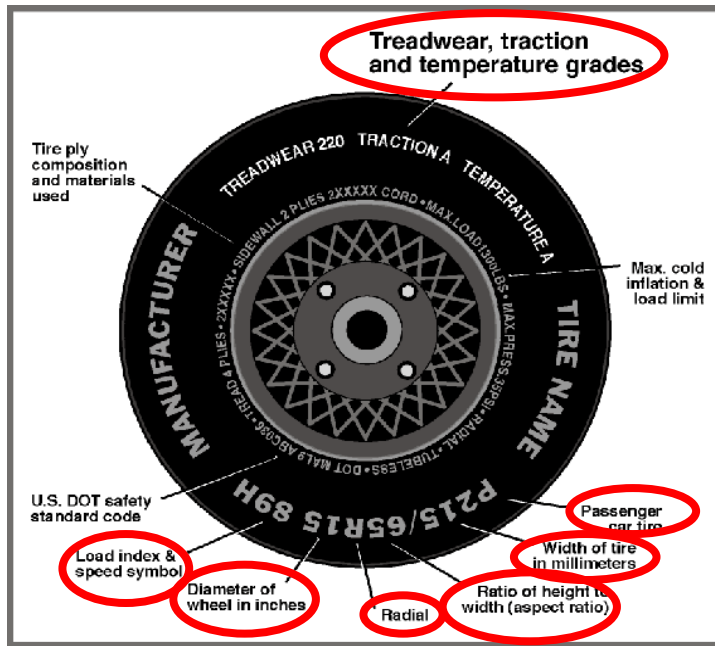
VEHICLE SEAT TYPE

Seating Location	Type of Seat Pan				Type of Seat Back		
	Bucket	Bench	Split Bench	Contoured	Fixed	Adjustable	
						W/ Lever	W/ Knob
Front Seat	Yes	N/A	N/A		N/A	Yes	N/A
Rear or Second Row Seat	N/A	N/A	Yes	Yes	Yes	N/A	N/A
Third row seat	N/A	N/A	N/A	N/A	N/A	N/A	N/A

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

Test Vehicle: 2020 Kia Soul 5-DR SUV
 Test Program: SPNCAP Side Impact

NHTSA No.: Q20204213
 Test Date: 2/21/2020



DATA FROM TIRE PLACARD

Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	350	350
Cold Pressure (kPa)	230	230
Recommended Tire Size	205/60R16	205/60R16
Tire Size on Vehicle	205/60R16	205/60R16
Tire Manufacturer	Hankook	Hankook
Tire Model	Kinergy GT	Kinergy GT
Treadwear	500	500
Traction	A	A
Temperature Grades	A	A
Tire Plies Sidewall	1	1
Tire Plies Body	4	4
Load Index/Speed Symbol	92H	92H
Tire Material	Steel, Polyester, Nylon	Steel, Polyester, Nylon
DOT Safety Code Left	1T79X 1B HO 4419	1T79X 1B HO 4419
DOT Safety Code Right	1T79X 1B HO 4419	1T79X 1B HO 4419

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

Test Vehicle: 2020 Kia Soul 5-DR SUV
 Test Program: SPNCAP Side Impact

NHTSA No.: Q20204213
 Test Date: 2/21/2020

TIRE PRESSURES

	Units	LF	RF	LR	RR
As Delivered	kPa	290	296	290	290
Tire Placard	kPa	230	230	230	230
Owner's Manual	kPa	230	230	230	230
As Tested	kPa	230	230	230	230

TEST VEHICLE AXLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)			Fully Loaded		
		Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total	Front Axle	Rear Axle	Total
Left	kg	409.6	256.2		428.2	292.8		425.4	301.8	
Right	kg	393.4	250.6		396.4	284.0		396.8	284.6	
Ratio	%	61.3	38.7		58.8	41.2		58.4	41.6	
Totals	kg	803.0	506.8	1309.8	824.6	576.8	1401.4	822.2	586.4	1408.6

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total As Delivered Weight (UVW)	kg	1309.8	(A)
Actual Weight of 1 P572V ATD (SID-ILs) Dummy Used	kg	49.0	(B)
Rated Cargo/Luggage Weight (RCLW)	kg	49.8	(C)
Calculated Vehicle Target Weight (TVTW)	kg	1408.6	(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 kg)? YES NO

TEST VEHICLE ATTITUDES AND CG

	Units	As Delivered	As Tested	Fully Loaded	Meets Requirement***
Driver Door Sill Angle (front-to-rear)*	Deg.	+0.1	-0.3	-0.4	Yes
Front Passenger Sill Angle (front-to-rear)*	Deg.	0.0	0.0	-0.3	Yes
Front Bumper-Line Angle (left-to-right)**	Deg.	-0.6	-0.6	-0.7	Yes
Rear Bumper-Line Angle (left-to-right)**	Deg.	-0.1	-0.1	+0.3	Yes
Vehicle CG (Aft of Front Axle)	mm	1008	1072	1084	
Vehicle CG (Left (+) / Right (-) from longitudinal Centerline)	mm	+13	+23	+26	

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

*** The "As Tested" vehicle attitude measurements must be equal to or between the "As Delivered" and "Fully Loaded" vehicle attitude measurements. Indicate "Yes" or "No" for "Meets Requirements".

WEIGHT OF BALLAST AND VEHICLE COMPONENTS REMOVED TO MEET TVTW

Component Description	Weight (kg)
Ballast: None	0.0
Components Removed: Rear bumper cover, tail lights, hatch trim, rear wiper & motor	12.4

Test height adjustable suspension setting, if applicable:

N/A

DATA SHEET NO. 2

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

Test Vehicle: 2020 Kia Soul 5-DR SUV

NHTSA No.: Q20204213

Test Program: SPNCAP Side Impact

Test Date: 2/21/2020

SEAT POSITIONING

The driver seat, front center seat (if applicable), and right 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 seats should be set to the rear-most, lowest, mid-angle position.

SCRL ANGLE RANGE

Seat	SCRL(°)		
	Max.	Min.	Mid
Driver Seat	16.1	13.0	14.5
Front Passenger Seat	Fixed	Fixed	13.7
Front Center Seat*	N/A	N/A	N/A
Struck Side Rear Seat	Fixed	Fixed	12.6
Non-Struck Side Rear Seat	Fixed	Fixed	12.8
Rear Center Seat*	Fixed	Fixed	9.9

* If applicable.

SEAT HEIGHT AND ANGLE

Seat	As Tested SCRL Angle (Mid) (°)	As Tested SCRIP Height (mm)	SCRIP Height Position	SCRIP Height (mm)		
				Rearmost	Mid-Fore/Aft	Forward-Most
Driver Seat	14.5	214	Max	N/A	N/A	N/A
			Mid	203	208	214
			Min	N/A	N/A	N/A
Front Passenger Seat	13.7	206	Max	N/A	N/A	N/A
			Mid	195	200	206
			Min	N/A	N/A	N/A
Front Center Seat*	N/A	N/A	Max	N/A	N/A	N/A
			Mid	N/A	N/A	N/A
			Min	N/A	N/A	N/A
Struck Side Rear Seat	12.6	195	Max	N/A	N/A	N/A
			Mid	N/A	195	N/A
			Min	N/A	N/A	N/A
Non-Struck Side Rear Seat	12.8	187	Max	N/A	N/A	N/A
			Mid	N/A	187	N/A
			Min	N/A	N/A	N/A
Rear Center Seat*	9.9	306	Max	N/A	N/A	N/A
			Mid	N/A	306	N/A
			Min	N/A	N/A	N/A

* If applicable.

DATA SHEET NO. 2 (CONTINUED)

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

Test Vehicle: 2020 Kia Soul 5-DR SUV

NHTSA No.: Q20204213

Test Program: SPNCAP Side Impact

Test Date: 2/21/2020

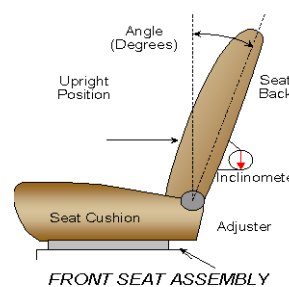
SEAT FORE/AFT POSITION

Seat	Total Fore/Aft Travel		Test Position from Forwardmost Position	
	mm	Detents*	mm	Detent*
Driver Seat	240	61	0	0
Front Passenger Seat	220	56	0	0
Front Center Seat*	N/A	N/A	N/A	N/A
Struck Side Rear Seat	0	Fixed	0	Fixed
Non-Struck Side Rear Seat	0	Fixed	0	Fixed
Rear Center Seat*	0	Fixed	0	Fixed

* If applicable.

SEAT BACK ANGLE ADJUSTMENT

The driver's seat back is positioned such that the dummy's head is level. The front center and front passenger's seat backs are positioned in a similar manner as the driver's seat back. The struck-side rear passenger seat back is positioned in accordance with the information provided by the manufacturer on Form No. 1. For the 5th 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	Total Seat Back Angle Range		Test Position from Most Upright	
	Degrees	Detents*	Degrees	Detent*
Driver Seat w/ Seated Dummy	56.8	28	-0.9	6
Front Passenger Seat	56.1	29	-0.8	6
Front Center Seat*	N/A	N/A	N/A	N/A
Struck Side Rear Seat	0	Fixed	24.2	Fixed
Non-Struck Side Rear Seat	0	Fixed	25.4	Fixed
Rear Center Seat*	0	Fixed	24.2	Fixed

* If applicable.

SEAT BELT ANCHORAGE ADJUSTMENT

Seat belt anchorages are adjusted with the information provided by the manufacturer on Form No. 1

	Total # of Positions	Placed in Position #
Driver Seat	3	3, Uppermost

HEAD RESTRAINT ADJUSTMENT

Head restraints are adjusted to the lowest and most full forward in-use position.

	Total # of Positions	Placed in Position #
Driver Seat	6	1, Lowermost

DATA SHEET NO. 2 (CONTINUED)

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

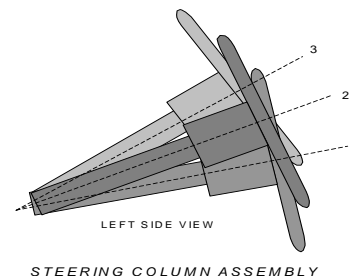
Test Vehicle: 2020 Kia Soul 5-DR SUV
 Test Program: SPNCAP Side Impact

NHTSA No.: Q20204213
 Test Date: 2/21/2020

STEERING COLUMN ADJUSTMENT

Steering wheel and column adjustments are made so that the steering wheel geometric locus it describes when moved through its full range of motion.

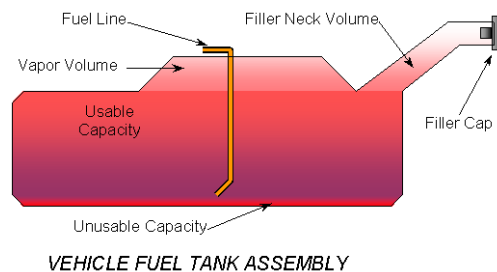
	Degrees	Fore/Aft Position, mm
Lowermost, Position No. 1	23.9	0
Geometric Center, Position No. 2	26.3	25
Uppermost, Position No. 3	28.7	50
Telescoping Steering Wheel Travel		50
Test Position	26.3	25



FUEL PUMP

Describe the fuel pump type, details about how it operates and the location of the fuel filler neck:

Fuel pump will operate when engine system is normally operating



FUEL TANK CAPACITY

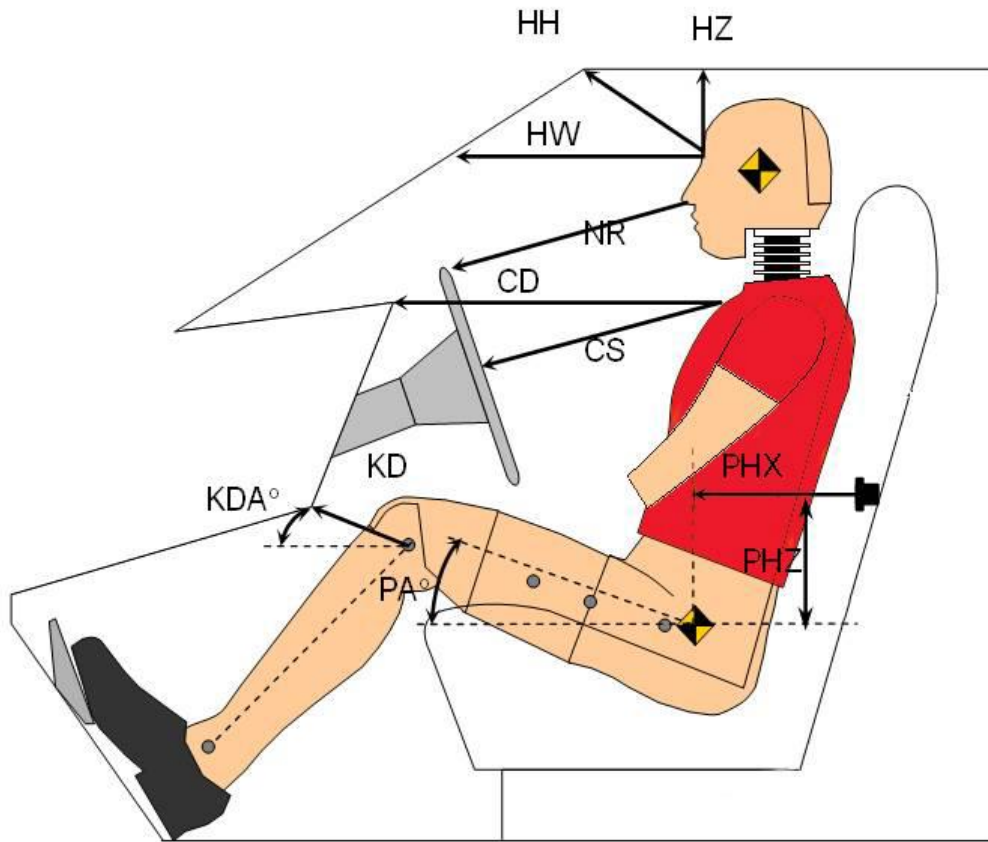
	Liters
Usable Capacity of "Standard Tank" (see Form No. 1)	54.0
Usable Capacity of "Optional" Tank (see Form No. 1)	N/A
Usable Capacity of Standard Tank (see Owner's Manual)	54.0
Usable Capacity of Optional Tank (see Owner's Manual)	N/A
93% of Usable Capacity	50.2
Actual Amount of Solvent Used in Test	50.2
1/3 of Usable Capacity	18.0

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

**DATA SHEET NO. 3
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS**

Test Vehicle: 2020 Kia Soul 5-DR SUV
Test Program: SPNCAP Side Impact

NHTSA No.: Q20204213
Test Date: 2/21/2020

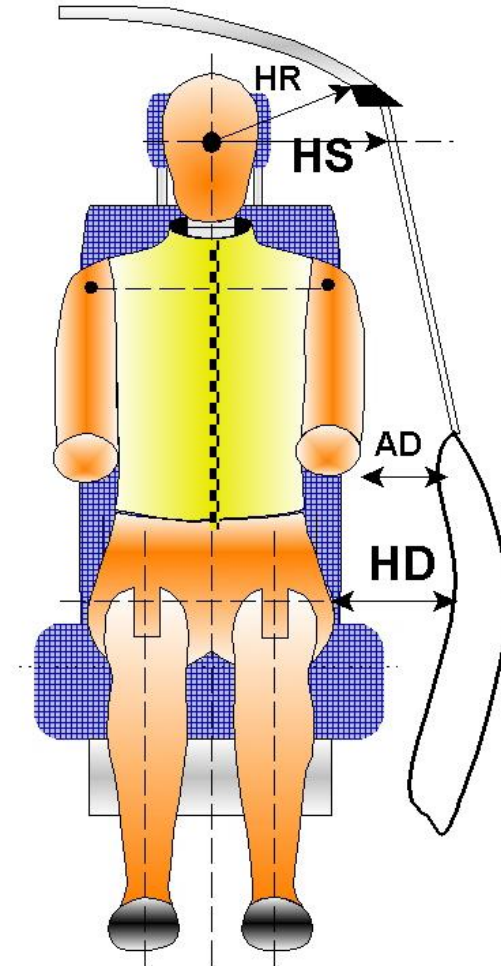


Code	Measurement Description	Driver	
		Length (mm)	Angle (°)
HH	Head to Header	406	
HW	Head to Windshield	693	
HZ	Head to Visor	265	
NR	Nose to Rim	305	
CD	Chest to Dashboard	459	
CS	Chest to Steering Wheel	232	
KDL/KDLA°	Left Knee to Dash	140	33.6
KDR/KDRA°	Right Knee to Dash	144	33.7
PAX°	Pelvic Tilt Angle (X-axis)		0.3
PAY°	Pelvic Tilt Angle (Y-axis)		18.6
PHX	Hip Point to Striker (X-Axis)	324	
PHZ	Hip Point to Striker (Z-Axis)	218	

**DATA SHEET NO. 4
DUMMY LATERAL CLEARANCE DIMENSIONS**

Test Vehicle: 2020 Kia Soul 5-DR SUV
 Test Program: SPNCAP Side Impact

NHTSA No.: Q20204213
 Test Date: 2/21/2020

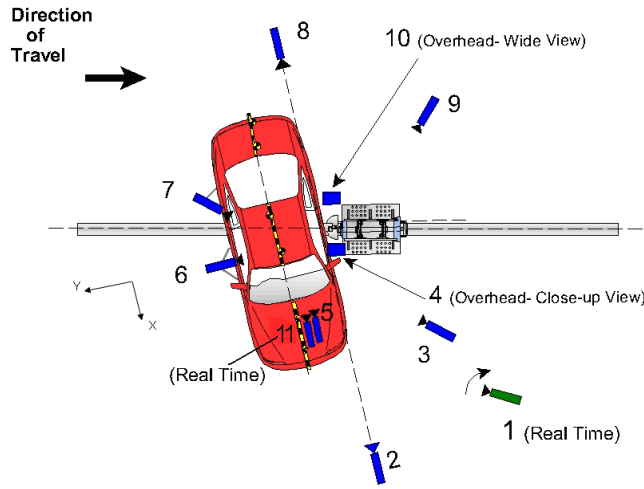


Code	Measurement Description	Length (mm)
HR	Head to Side Header	283
HS	Head to Side Window	357
AD	Arm to Door	151
HD	Hip Point to Door	161

**DATA SHEET NO. 5
CAMERA AND INSTRUMENTATION DATA**

Test Vehicle: 2020 Kia Soul 5-DR SUV
Test Program: SPNCAP Side Impact

NHTSA No.: Q20204213
Test Date: 2/21/2020



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 (mm)			Lens Length (mm)	Operating Frame Rate (fps)
		X	Y	Z		
1	Real time (24-30 fps) pan view of impact				Zoom	30
2	Front ground level – impact view	4939	0	-1721	20	1000
3	Impact side 45° – forward pole view	3868	-1094	-1628	20	1000
4	Overhead Close-up view of impact	0	0	-5759	28	1000
5	Onboard – dummy front view				25	1000
6	Onboard – dummy side view				12.5	1000
7	Onboard – dummy rear oblique view				12.5	1000
8	Rear ground level – impact view	-4823	0	-1631	20	1000
9	Impact side 45° – rearward pole view	-3865	-1792	-1600	20	1000
10	Overhead wide view of impact	-275	375	-5751	18.5	1000
11	Real time dummy front view				Zoom	30

All measurements accurate to +/- 6 mm.

NOTE: Vehicle was at a 75° angle to the rigid pole.
If applicable, explain why camera(s) did not run: NA

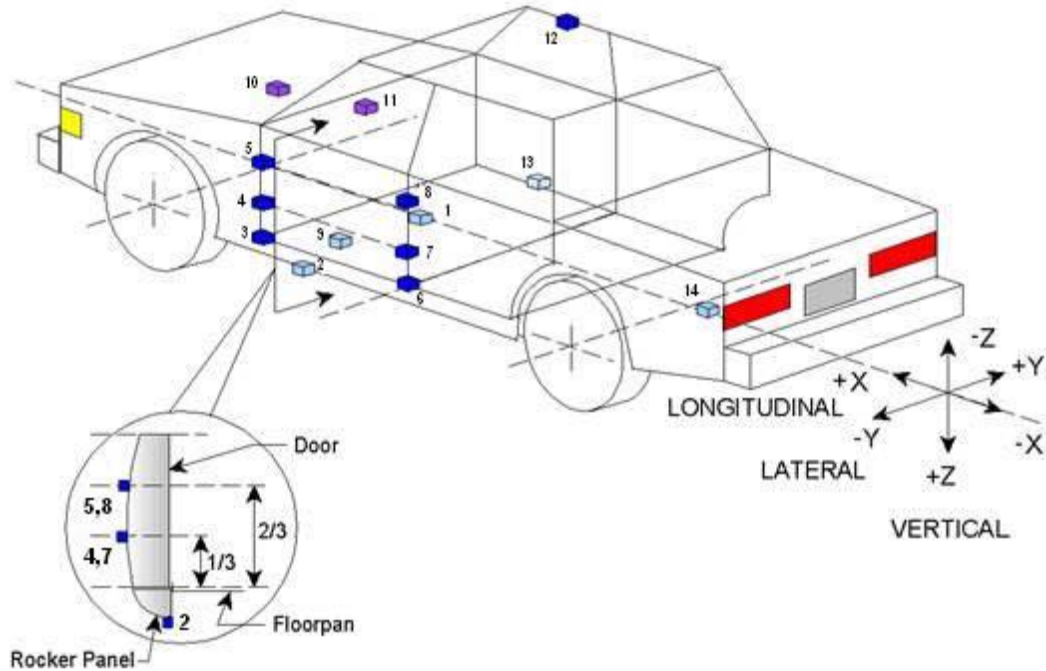
INSTRUMENTATION

	Number of Channels
Driver Dummy	16
Vehicle Structure	18
Pole Load Cells	8
TOTAL	42

**DATA SHEET NO. 6
VEHICLE ACCELEROMETER DATA**

Test Vehicle: 2020 Kia Soul 5-DR SUV
 Test Program: SPNCAP Side Impact

NHTSA No.: Q20204213
 Test Date: 2/21/2020



Accelerometer/Sensor Location				
ID		Coordinates (mm)		
		X	Y	Z
1	Vehicle CG	2455	140	-405
2	Left Floor Sill	2474	-720	-393
3	A-Pillar Sill	2765	-741	-466
4	A-Pillar Low	2850	-790	-547
5	A-Pillar Mid	2845	-775	-931
6	B-Pillar Sill	1690	-715	-408
7	B-Pillar Low	1810	-793	-603
8	B-Pillar Mid	1770	-770	-1031
9	Driver Seat Track	2075	-558	-444
10	Engine Top	3540	0	-832
11	Firewall	3270	0	-892
12	Right Roof	2000	602	-1568
13	Right Floor Sill	2483	720	-390
14	Rear Floorpan	425	0	-382

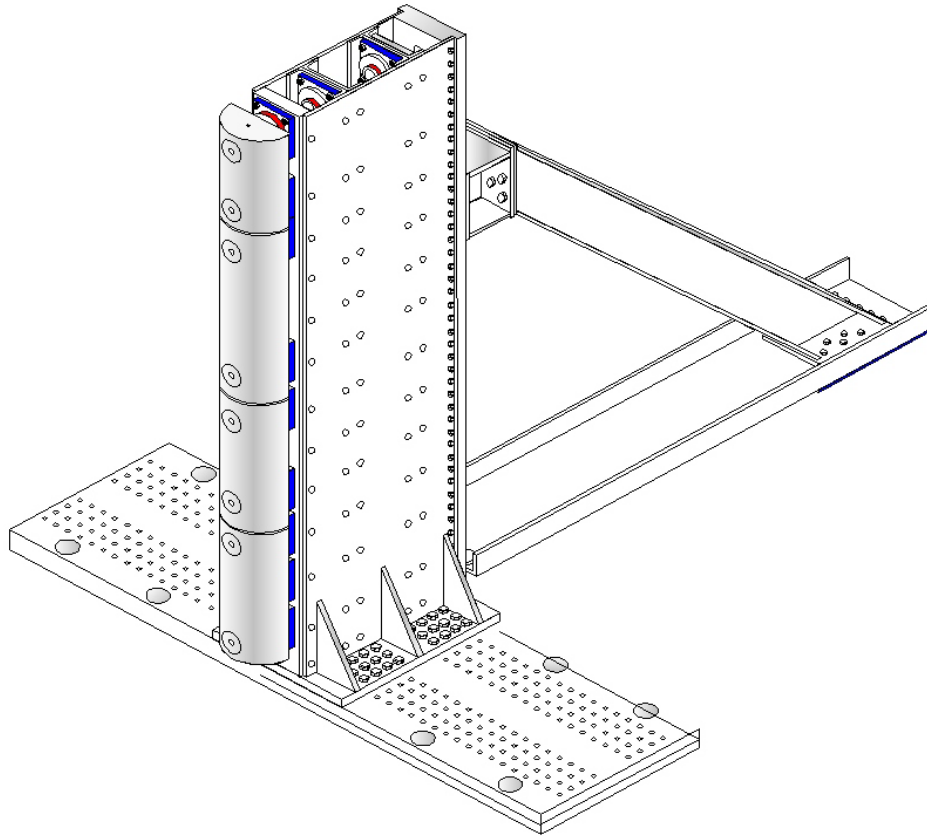
Reference: X - Test Vehicle Rear Bumper (+ forward)
 Y - Test Vehicle Centerline (+ to right)
 Z - Ground Plane (+ down)

DATA SHEET NO. 7
RIGID POLE LOAD CELL DATA

Test Vehicle: 2020 Kia Soul 5-DR SUV
Test Program: SPNCAP Side Impact

NHTSA No.: Q20204213
Test Date: 2/21/2020

FOIL 300K RIGID POLE



Load Cell Locations	
ID	Height From Top of Carrier (mm)
1	87
2	468
3	648
4	978
5	1168
6	1651
7	1816
8	2057

**DATA SHEET NO. 8
POST-TEST OBSERVATIONS**

Test Vehicle: 2020 Kia Soul 5-DR SUV
Test Program: SPNCAP Side Impact

NHTSA No.: Q20204213
Test Date: 2/21/2020

TEST DUMMY INFORMATION AND CONTACT POINTS

Dummy Body Part	Driver SID-IIs Dummy
Face	SCAB
Top of Head	SCAB
Left Side of Head	SCAB
Back of Head	SCAB, Head rest
Left Shoulder	Seat back bolster, SAB
Upper Torso	Seat back bolster, SAB
Lower Torso	Seat back bolster, SAB
Left Hip	SAB, Seat cushion bolster
Left Knee	None

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 Systems 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

* Indicate "Yes", "No", or "NA".

POST-TEST SEAT PERFORMANCE

Description	Struck Side		Non-Struck Side	
	Front	Rear	Front	Rear
Seat Movement Along Seat Track	No	N/A	No	N/A
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

* Indicate "Yes", "No", or "NA".

POST-TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Pillar Performance	Good
Sill Separation	None
Windshield Damage	Major damage across top
Side Window Damage	Driver window broken out
Other Notable Effects	None

**DATA SHEET NO. 8 (CONTINUED)
POST-TEST OBSERVATIONS**

Test Vehicle: 2020 Kia Soul 5-DR SUV
Test Program: SPNCAP Side Impact

NHTSA No.: Q20204213
Test Date: 2/21/2020

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Struck Side (Driver)		Struck Side (Rear Passenger)	
	Mounted	Deployed	Mounted	Deployed
Front Airbag	Yes	No		
Knee Airbag	No	N/A		
Side Curtain Airbag	Yes	Yes	Yes	Yes
Side Torso/Pelvis Airbag	Yes	Yes	No	N/A
Side Torso Airbag	No	N/A	No	N/A
Seat Belt Pretensioner	Yes	Yes	No	N/A
Seat Belt Load Limiter	Yes	Unknown	No	N/A
Other	No	N/A	No	N/A

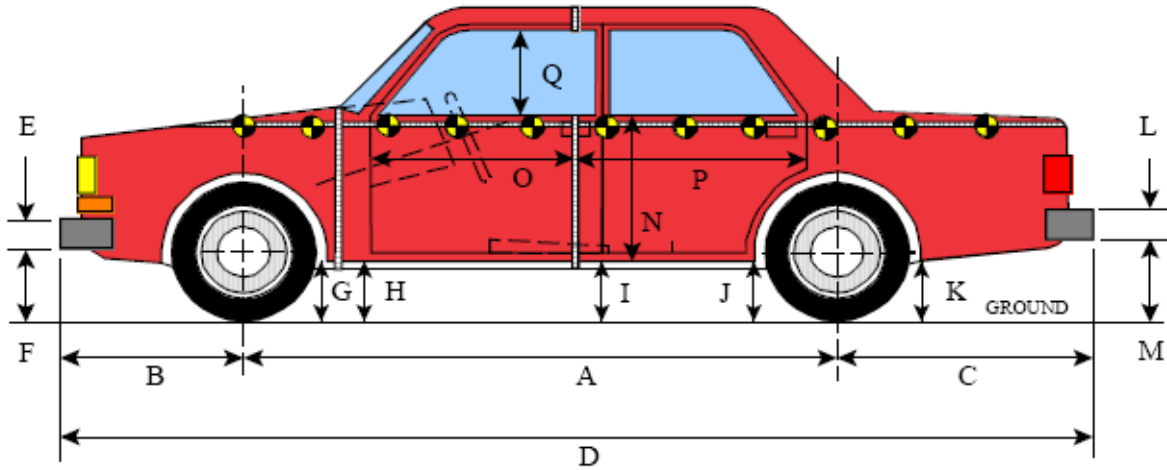
VEHICLE SPEED, VEHICLE ANGLE AT IMPACT AND IMPACT POINT LOCATION DATA

Measured Parameter	Units	Tolerance	Value
Vertical Impact Reference Line (Aft of Front Axle) (Intended Impact Point)	mm		1156
Actual Impact Point (Aft of Front Axle)	mm		1154
Horizontal Offset (+ forward / - rearward)	mm	+/- 38 of Intended Impact point	+2
Angle Between Vehicle's Longitudinal Centerline and Line of Motion	degrees	75 +/- 3	75
Trap No. 1 Velocity (Primary)	km/h	31.4 to 33.0	32.23
Trap No. 2 Velocity (Redundant)	km/h	31.4 to 33.0	32.23

**DATA SHEET NO. 9
VEHICLE PROFILE MEASUREMENTS**

Test Vehicle: 2020 Kia Soul 5-DR SUV
Test Program: SPNCAP Side Impact

NHTSA No.: Q20204213
Test Date: 2/21/2020



LEFT SIDE VIEW

All MEASUREMENTS IN (mm) WITH TOLERANCE OF ± 3 mm

VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

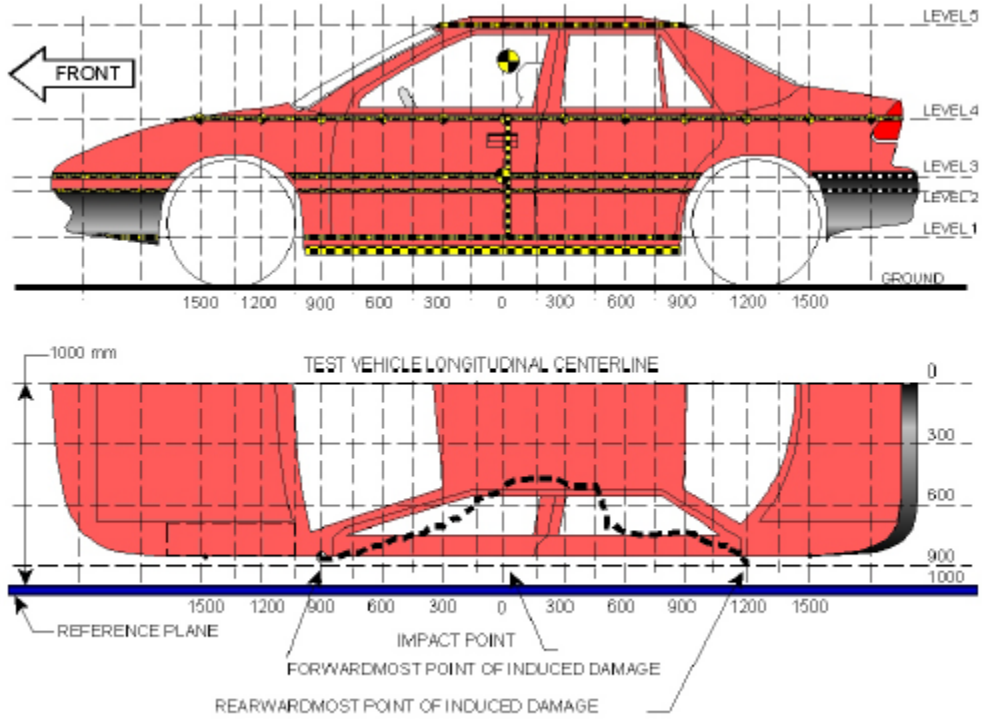
Code	Measurement Description	Pre-Test	Post-Test	Difference
A	Wheelbase	2604	2555	49
B	Front Axle to Front Surface of Vehicle	850	850	0
C	Rear Axle to Rear Surface of Vehicle	746	746	0
D	Total Length at Centerline	4200	4160	40
E	Front Bumper Thickness	95	95	0
F	Front Bumper Bottom to Ground	450	470	-20
G	Sill Height at Front Wheel Well	318	330	-12
H	Sill Height at Front Door Leading Edge	323	333	-10
I	Sill Height at B-Pillar	340	370	-30
J1	Sill Height at Rear Wheel Well	342	395	-53
J2	Pinch Weld Height at Rear Wheel Well	210	250	-40
K	Sill Height Aft of Rear Wheel Well	365	395	-30
L	Rear Bumper Thickness	77	77	0
M	Rear Bumper Bottom to Ground	420	445	-25
N	Sill Height to Bottom of Front Window Sill	781	797	-16
O	Front Door Leading Edge to Impact CL	670	612	58
P	Rear Door Trailing Edge to Impact CL	1396	1360	36
Q	Front Window Opening	400	362	38
R	Right Side Length	3945	3960	-15
S	Left Side Length	3945	3880	65
T ¹	Vehicle Width at B-Pillars	1765	1680	85

¹ Max width = 1800

**DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH MEASUREMENTS**

Test Vehicle: 2020 Kia Soul 5-DR SUV
 Test Program: SPNCAP Side Impact

NHTSA No.: Q20204213
 Test Date: 2/21/2020



NOTE: All measurements are in millimeters (mm)

MAXIMUM EXTERIOR CRUSH MEASUREMENTS

Level	Measurement Description	Height Above Ground	Maximum Exterior Static Crush	Distance from Impact
1	Sill Top	521	281	0
2	Occupant H-Point	674	317	0
3	Mid-Door	748	321	0
4	Window Sill	1067	257	0
5	Window Top	1535	115	0

NOTE: The above measurements should be taken along the vertical impact reference line. Vehicle measurements forward of the vertical impact reference line are negative.

DATA SHEET NO. 10 (CONTINUED)
VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2020 Kia Soul 5-DR SUV
 Test Program: SPNCAP Side Impact

NHTSA No.: Q20204213
 Test Date: 2/21/2020

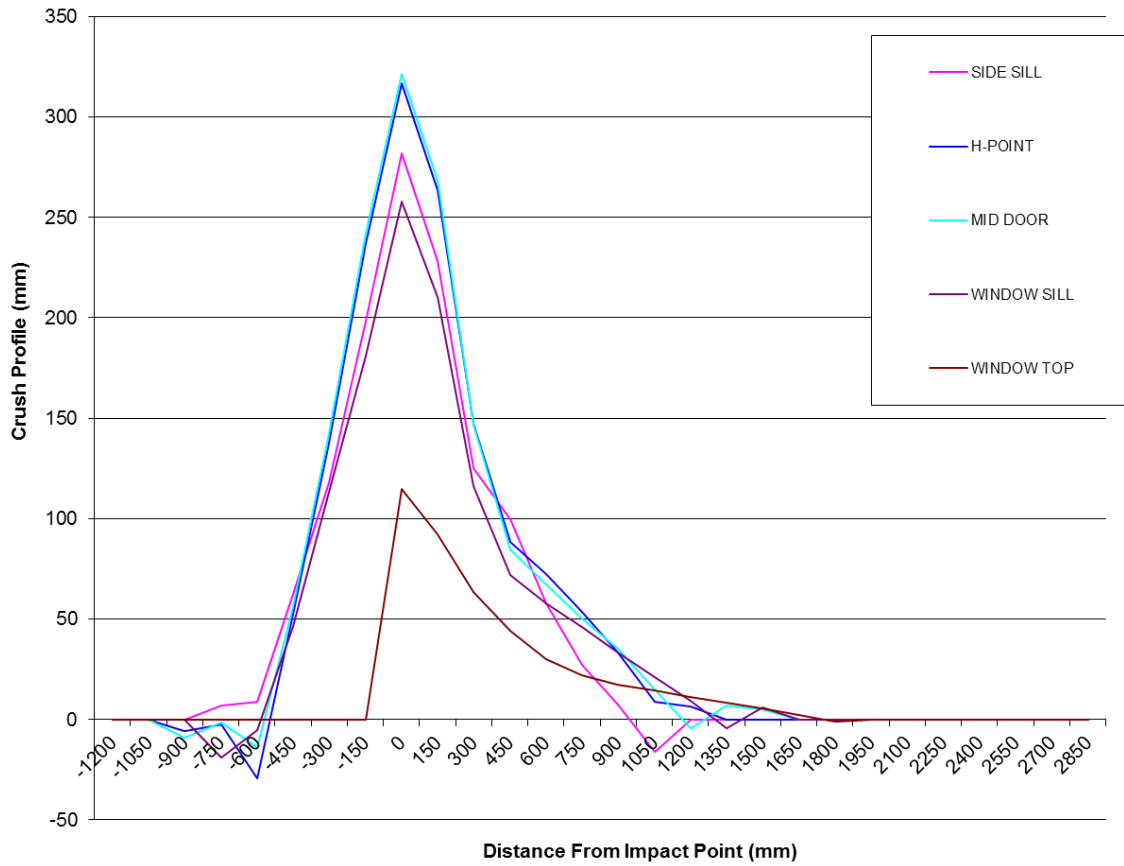
	Pre-Test					Post-Test					Difference				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-900	0	890	885	0	0	0	896	894	0	0	0	-6	-9	0	0
-750	876	884	874	745	0	869	887	876	764	0	7	-3	-2	-19	0
-600	868	871	867	758	0	860	900	881	763	0	8	-29	-14	-5	0
-450	850	870	869	768	0	788	818	813	721	0	62	52	56	47	0
-300	849	872	871	776	0	731	734	729	663	0	118	138	142	113	0
-150	851	873	873	785	0	652	636	630	604	0	199	237	243	181	0
0	852	873	873	791	609	571	556	552	534	494	281	317	321	257	115
150	853	872	873	796	613	625	608	605	585	521	228	264	268	211	92
300	854	871	873	800	615	729	724	726	684	552	125	147	147	116	63
450	855	869	871	804	617	755	780	786	732	573	100	89	85	72	44
600	855	865	868	805	616	797	793	801	747	586	58	72	67	58	30
750	859	862	864	805	614	831	808	814	759	592	28	54	50	46	22
900	871	869	865	806	612	864	836	830	773	595	7	33	35	33	17
1050	878	887	883	805	608	894	878	868	783	594	-16	9	15	22	14
1200	0	892	891	801	603	0	885	895	792	592	0	7	-4	9	11
1350	0	0	892	796	598	0	0	885	800	590	0	0	7	-4	8
1500	0	0	891	786	590	0	0	886	780	585	0	0	5	6	5
1650	0	0	0	0	579	0	0	0	0	576	0	0	0	0	3
1800	0	0	0	0	565	0	0	0	0	566	0	0	0	0	-1

NOTE: Pre-test measurements are taken when the vehicle is in the “As Tested” weight condition. Vehicle measurements forward of the vertical impact reference line are negative. The crush profile grid is established prior to the test based on an estimated impact point. The final distance from impact is determined after the final dummy positioning and the pole is aligned with the center of gravity of the dummy’s head.

DATA SHEET NO. 10 (CONTINUED)
VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2020 Kia Soul 5-DR SUV
Test Program: SPNCAP Side Impact

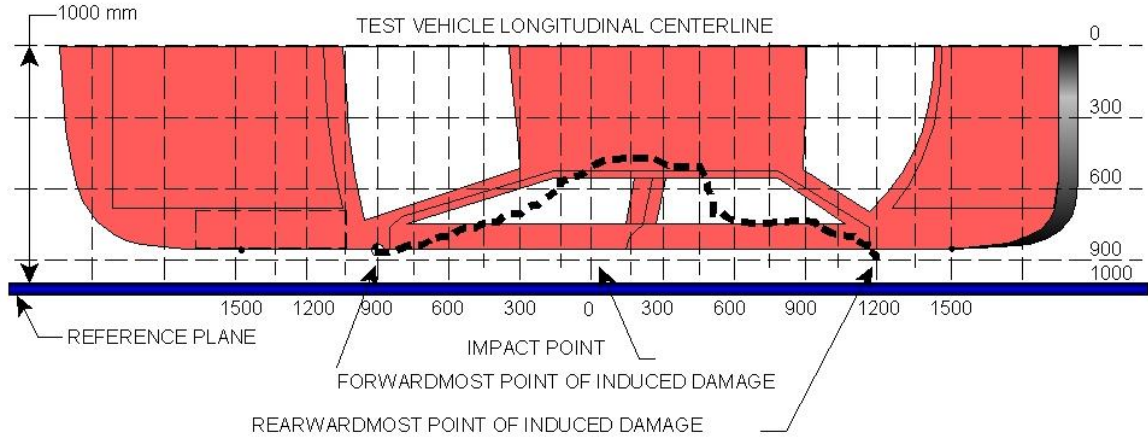
NHTSA No.: Q20204213
Test Date: 2/21/2020



**DATA SHEET NO. 11
VEHICLE DAMAGE PROFILE DISTANCES**

Test Vehicle: 2020 Kia Soul 5-DR SUV
Test Program: SPNCAP Side Impact

NHTSA No.: Q20204213
Test Date: 2/21/2020



VEHICLE DAMAGE PROFILE DISTANCES

DPD	Distance From Impact Point (mm)	Level	Post-Test (mm)	Pre-Test (mm)	Crush (mm)
1 ¹	1650	5	576	579	0
2	1200	5	592	603	11
3	750	2	808	862	54
4	150	3	605	873	268
5	-300	3	729	871	142
6 ¹	-750	1	869	876	0

¹ DPD 1 and 6 are defined as zero crush since the crush does not extend to the end of the vehicle.

DATA SHEET NO. 12

FMVSS NO. 301 FUEL SYSTEM INTEGRITY POST-IMPACT DATA

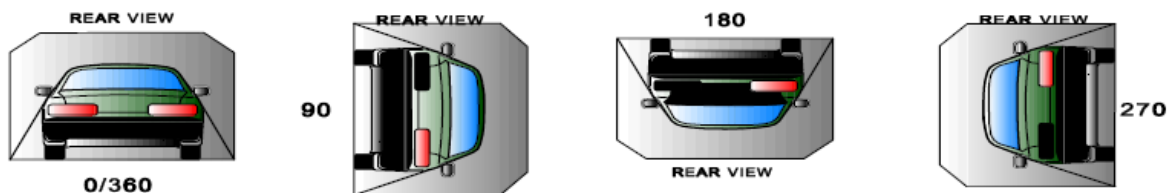
Test Vehicle: 2020 Kia Soul 5-DR SUV
 Test Program: SPNCAP Side Impact

NHTSA No.: Q20204213
 Test Date: 2/21/2020

Test Time: 14:14 **Temperature:** 21.1°C

- A. From impact until vehicle motion ceases: 0 oz.
(Maximum allowable is 1 ounce)
- B. For the 5 minute period after motion ceases: 0 oz.
(Maximum allowable is 5 ounces)
- C. For the following 25 minutes: 0 oz.
(Maximum allowable is 1 ounce/minute)
- D. Spillage Details: None

FMVSS 301 STATIC ROLLOVER DATA



ROLLOVER SOLVENT COLLECTION TIME TABLE IN SECONDS

Test Phase	Rotation Time	Hold Time	Total Time
0 to 90	90	330	420
90 to 180	90	330	840
180 to 270	90	330	1260
270 to 360	90	330	1680

FMVSS NO. 301 ROLLOVER SPILLAGE TABLE

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

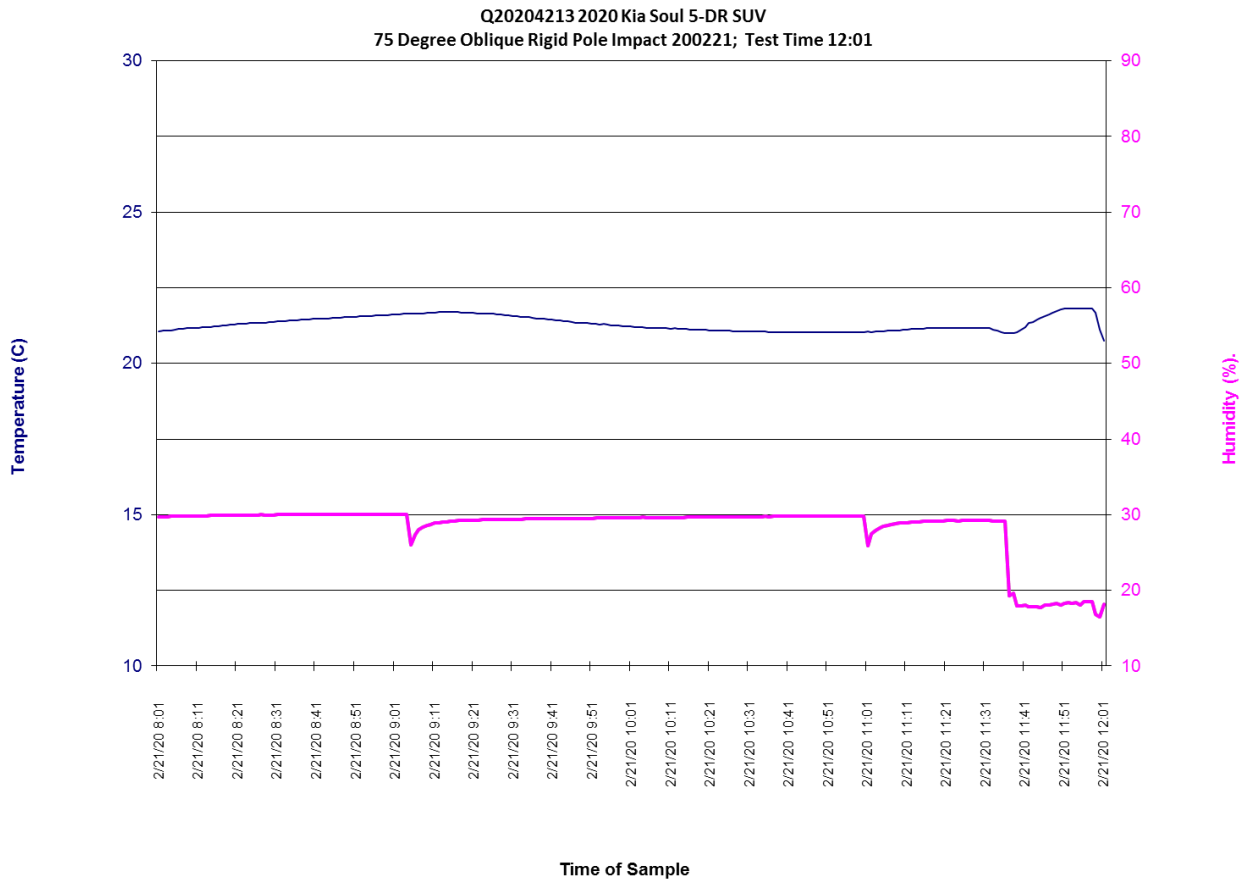
ROLLOVER SOLVENT SPILLAGE LOCATION TABLE

Test Phase	Spillage Location
0 to 90	None
90 to 180	None
180 to 270	None
270 to 360	None

DATA SHEET NO. 13
DUMMY/VEHICLE TEMPERATURE AND HUMIDITY STABILIZATION DATA

Test Vehicle: 2020 Kia Soul 5-DR SUV
Test Program: SPNCAP Side Impact

NHTSA No.: Q20204213
Test Date: 2/21/2020



**APPENDIX A
PHOTOGRAPHS**

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3	Pre-Test Frontal View of Test Vehicle	A-5
4	Post-Test Frontal View of Test Vehicle	A-5
5	Pre-Test Left Front $\frac{3}{4}$ View of Test Vehicle	A-6
6	Post-Test Left Front $\frac{3}{4}$ View of Test Vehicle	A-6
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8	Post-Test Left Side View of Test Vehicle	A-7
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23	Pre-Test Left Side View of Dummy Showing Belt and Chalking	A-15
24	Pre-Test Left Side View of Dummy Shoulder and Door Top View	A-16
25	Post-Test Left Side View of Dummy Shoulder and Door Top View	A-16
26	Pre-Test Front View of Seat Back Prior to Dummy Positioning	A-17
27	Pre-Test Front View of Dummy Head and Shoulders in Relation to Head Restraint	A-17
28	Pre-Test Front View of Seat Pan Prior to Dummy Positioning	A-18
29	Pre-Test Overhead View of Dummy Thighs on Seat Pan	A-18
30	Pre-Test Left Side View of Dummy's Neck Showing Position of Adjustable Neck Bracket	A-19
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39	Pre-Test Close-Up View of Driver Seat Back or Head Restraint	A-23
40	Pre-Test Dummy and Door Clearance View	A-24
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42	Pre-Test Right Side View of Dummy and Front Seat of Occupant Compartment	A-25
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50	Post-Test Dummy Close-Up Pelvis Contact with Vehicle Interior View	A-29
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52	Post-Test Dummy Close-Up Knee Contact with Vehicle Interior View	A-30
53	Pre-Test View of Fuel Filler Cap or Fuel Filler Neck	A-31
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60	Post-Test Pole Barrier Side View	A-34
61	Pre-Test Ballast View	A-35
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65	FMVSS No. 301 Static Rollover 180 Degrees	A-37
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No. 001 As Delivered Right Front ¾ View of Test Vehicle



No. 002 As Delivered Left Rear ¾ View of Test Vehicle



No. 003 Pre-Test Frontal View of Test Vehicle



No. 004 Post-Test Frontal View of Test Vehicle



No. 005 Pre-Test Left Front ¾ View of Test Vehicle



No. 006 Post-Test Left Front ¾ View of Test Vehicle



No. 007 Pre-Test Left Side View of Test Vehicle



No. 008 Post-Test Left Side View of Test Vehicle



No. 009 Pre-Test Left Rear 3/4 View of Test Vehicle



No. 010 Post-Test Left Rear 3/4 View of Test Vehicle



No. 011 Pre-Test Rear View of Test Vehicle



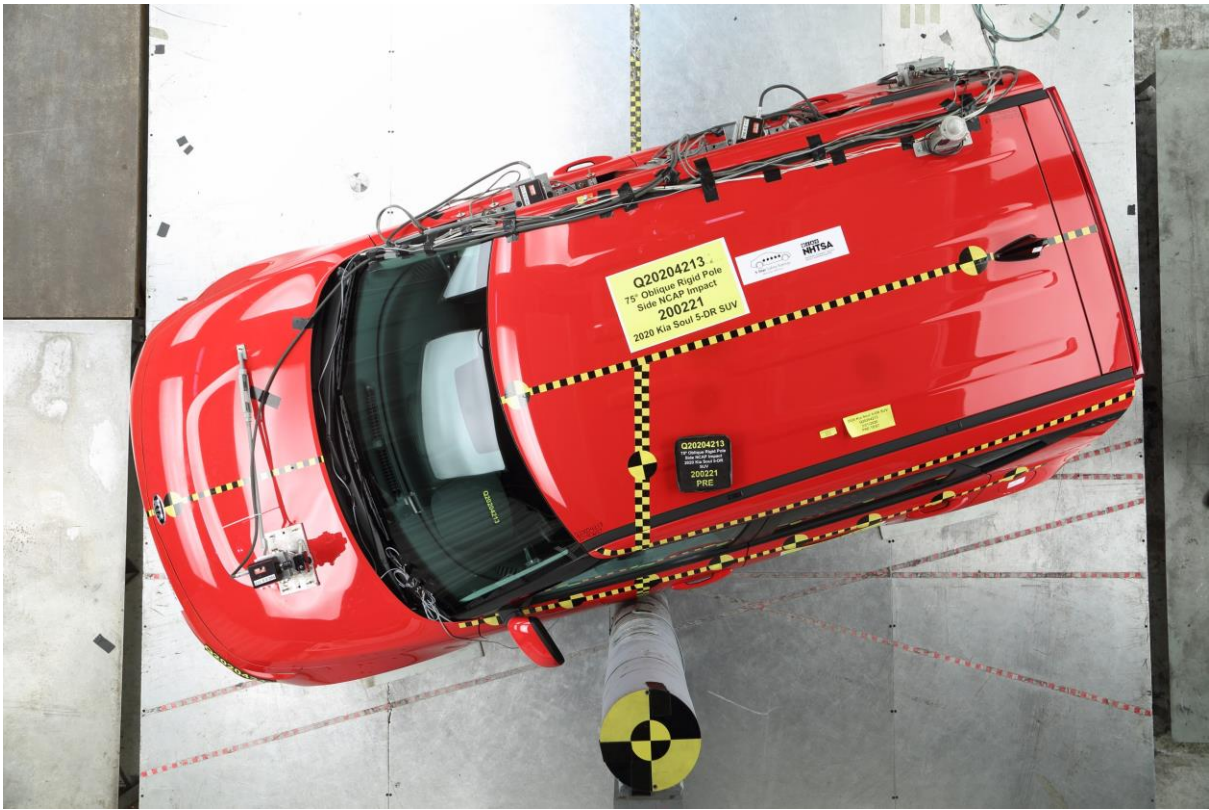
No. 012 Post-Test Rear View of Test Vehicle



No. 013 Pre-Test Right Side View of Test Vehicle



No. 014 Post-Test Right Side View of Test Vehicle



No. 015 Pre-Test Overhead View of Test Area



No. 016 Post-Test Overhead View of Test Area



No. 017 Pre-Test Left Side View of Pole Positioned Against Side of Vehicle



No. 018 Pre-Test Right Side View of Pole Positioned Against Side of Vehicle



No. 019 Pre-Test Close-Up View of Impact Point Target



No. 020 Post-Test Close-Up View of Impact Point Target Showing Impact Location



No. 021 Pre-Test Front Close-Up View of Dummy Head and Chest



No. 022 Post-Test Front Close-Up View of Dummy



No. 023 Pre-Test Left Side View of Dummy Showing Belt and Chalking

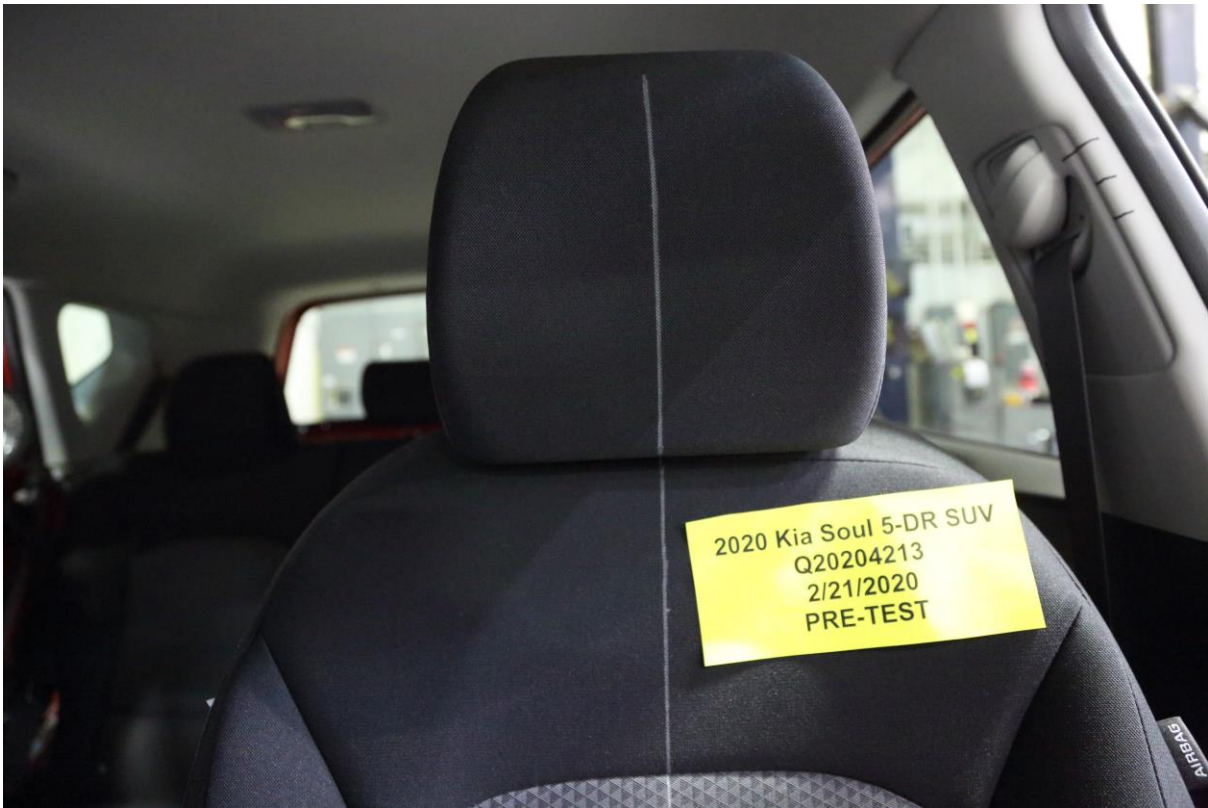
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No. 024 Pre-Test Left Side View of Dummy Shoulder and Door Top View



No. 025 Post-Test Left Side View of Dummy Shoulder and Door Top View



No. 026 Pre-Test Front View of Seat Back Prior to Dummy Positioning



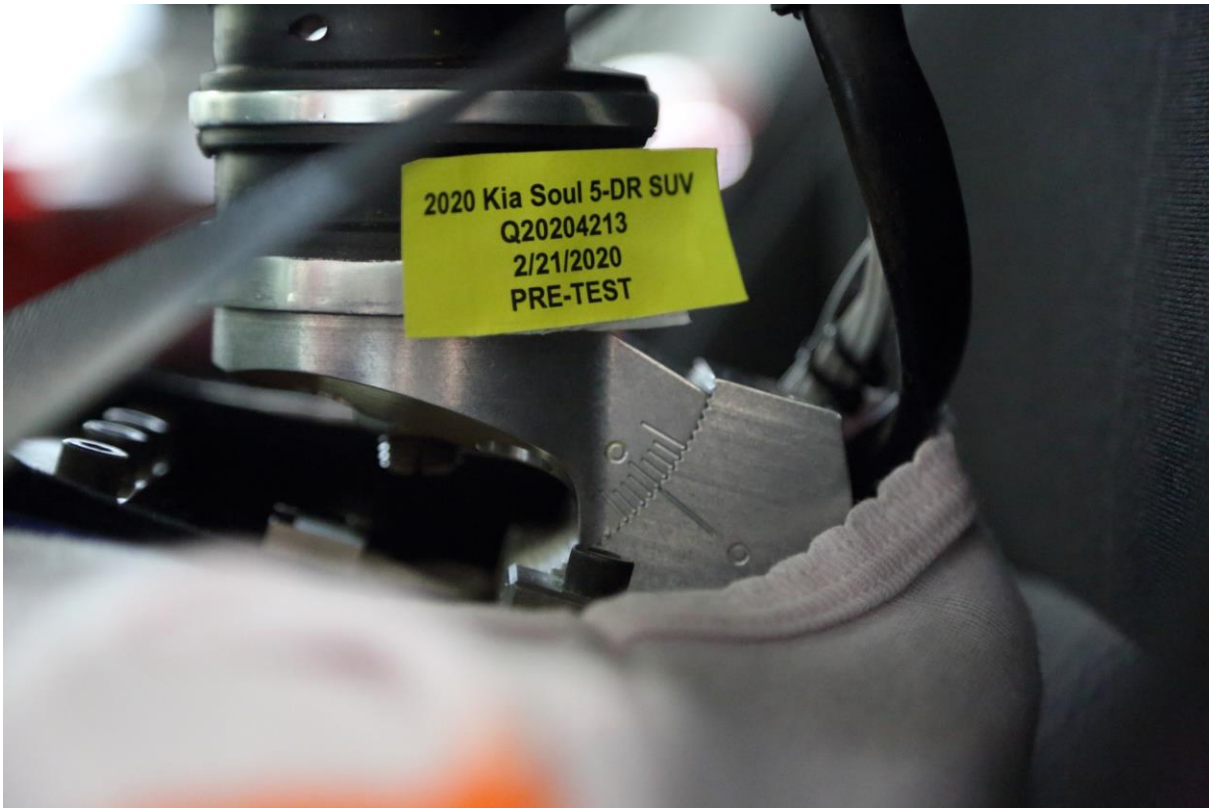
No. 027 Pre-Test Front Close-Up View of Dummy Head and Shoulders in Relation to Head Restraint



No. 028 Pre-Test Front View of Seat Pan Prior to Dummy Positioning



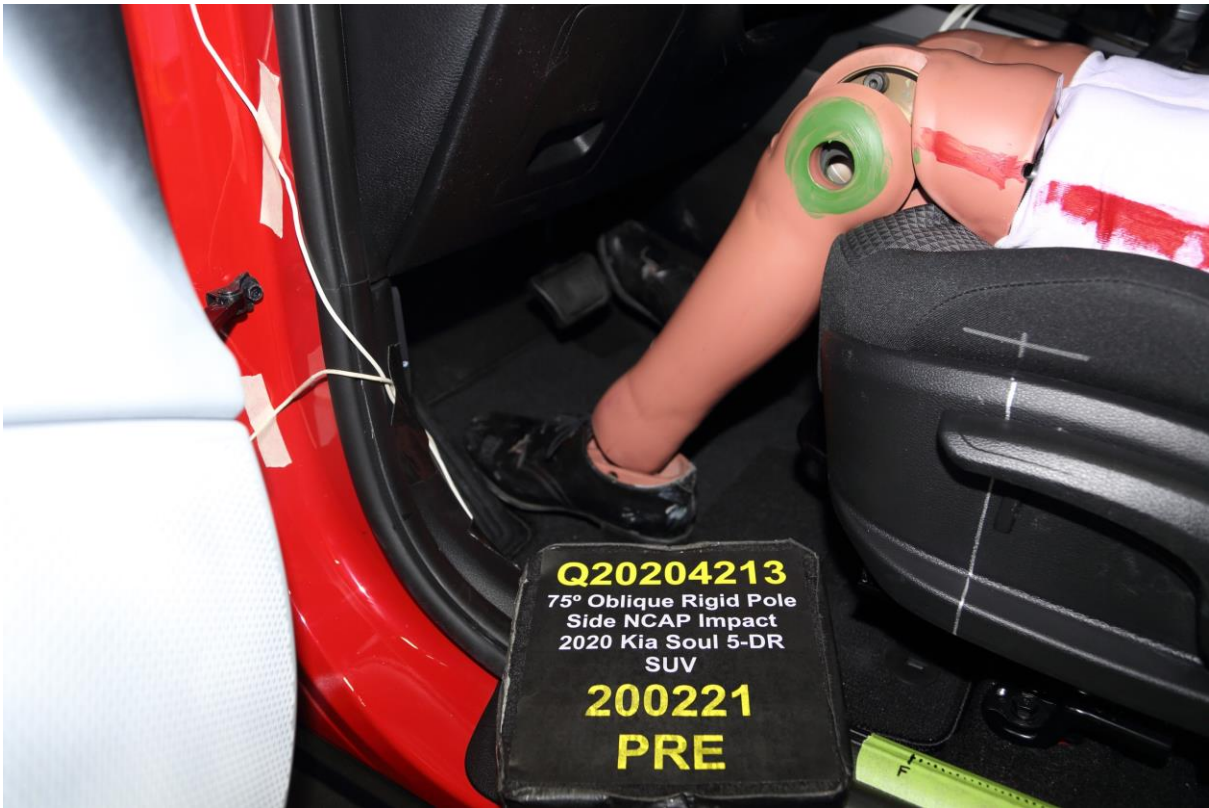
No. 029 Pre-Test Overhead View of Dummy Thighs on Seat Pan



No. 030 Pre-Test Left Side View of Dummy Neck Showing Position of Adjustable Neck Bracket



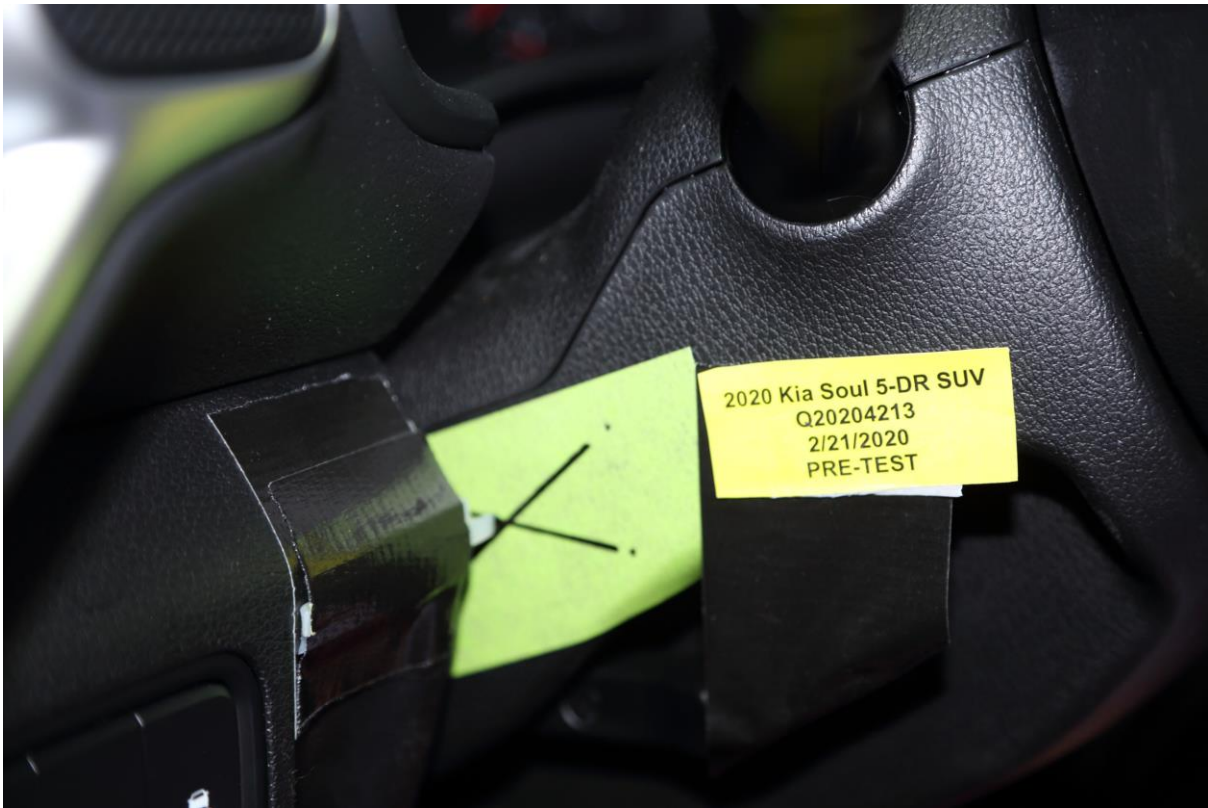
No. 031 Pre-Test Left Side View of Dummy Head Showing Dummy Head is Level



No. 032 Pre-Test Placement of Dummy Feet



No. 033 Pre-Test View of Belt Anchorage for Dummy



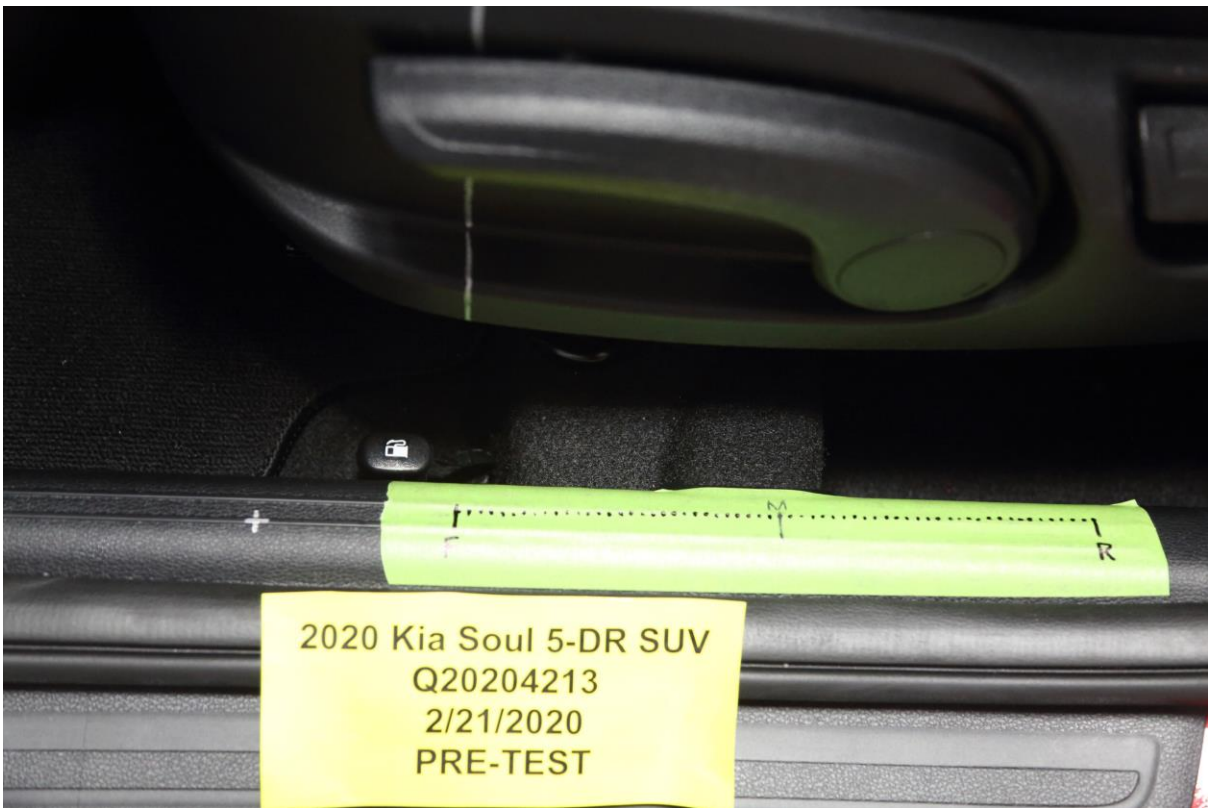
No. 034 Pre-Test Left Side View of Steering Wheel



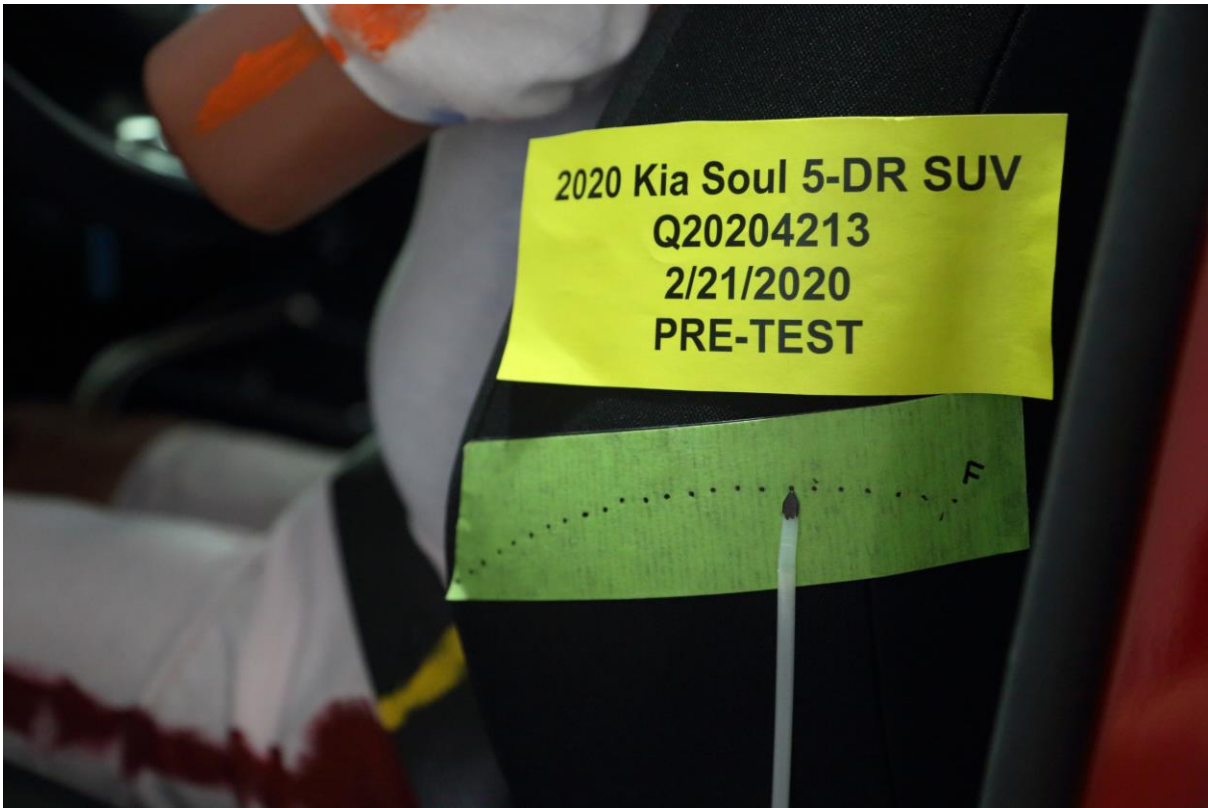
No. 035 Pre-Test View of Disengaged Parking Brake



No. 036 Pre-Test View of Parking Brake



No. 037 Pre-Test Close-Up Left Side View of Driver Seat Track



No. 038 Pre-Test Close-Up Left Side View of Driver Seat Back



No. 039 Pre-Test Close-Up View of Driver Seat Back or Head Restraint



No. 040 Pre-Test Dummy and Door Clearance View



No. 041 Post-Test Dummy and Door Clearance View



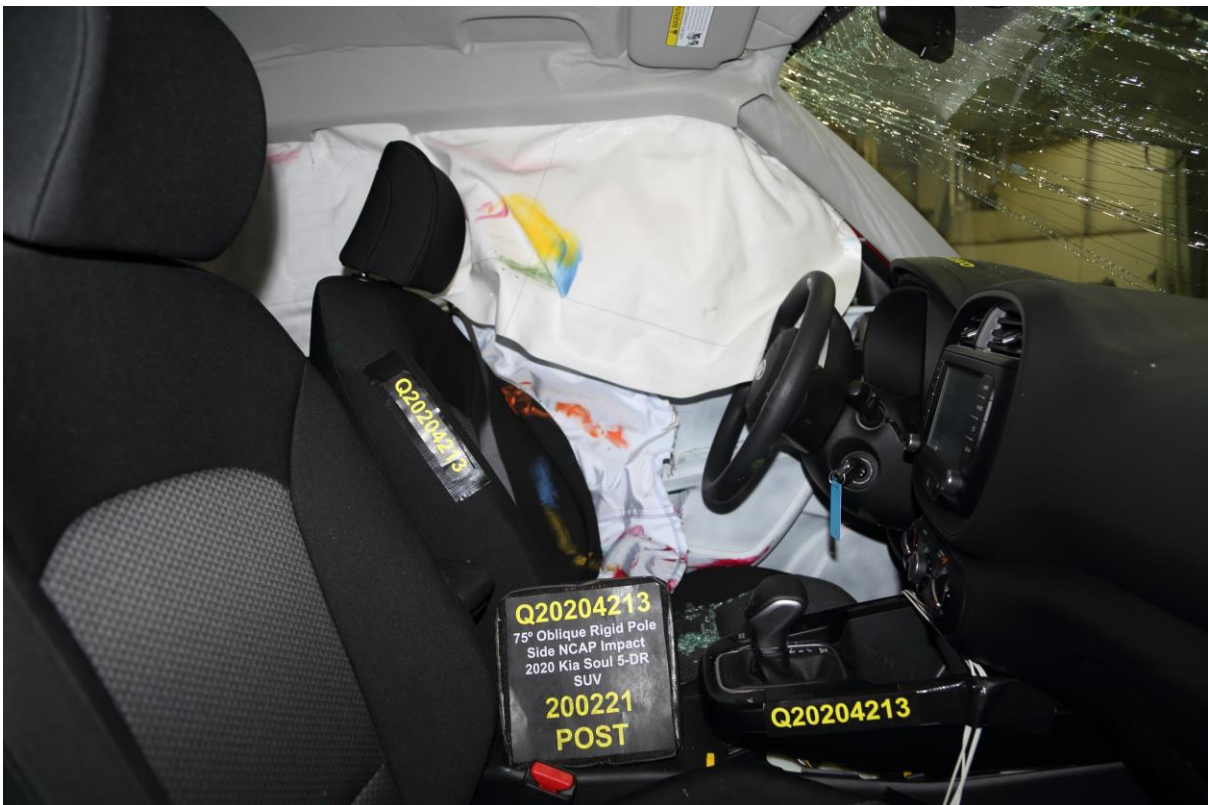
No. 042 Pre-Test Right Side View of Dummy and Front Seat of Occupant Compartment



No. 043 Post-Test Right Side View of Dummy and Front Seat of Occupant Compartment



No. 044 Pre-Test Inner Door Panel View



No. 045 Post-Test Inner Door Panel View Showing Dummy Contact Location

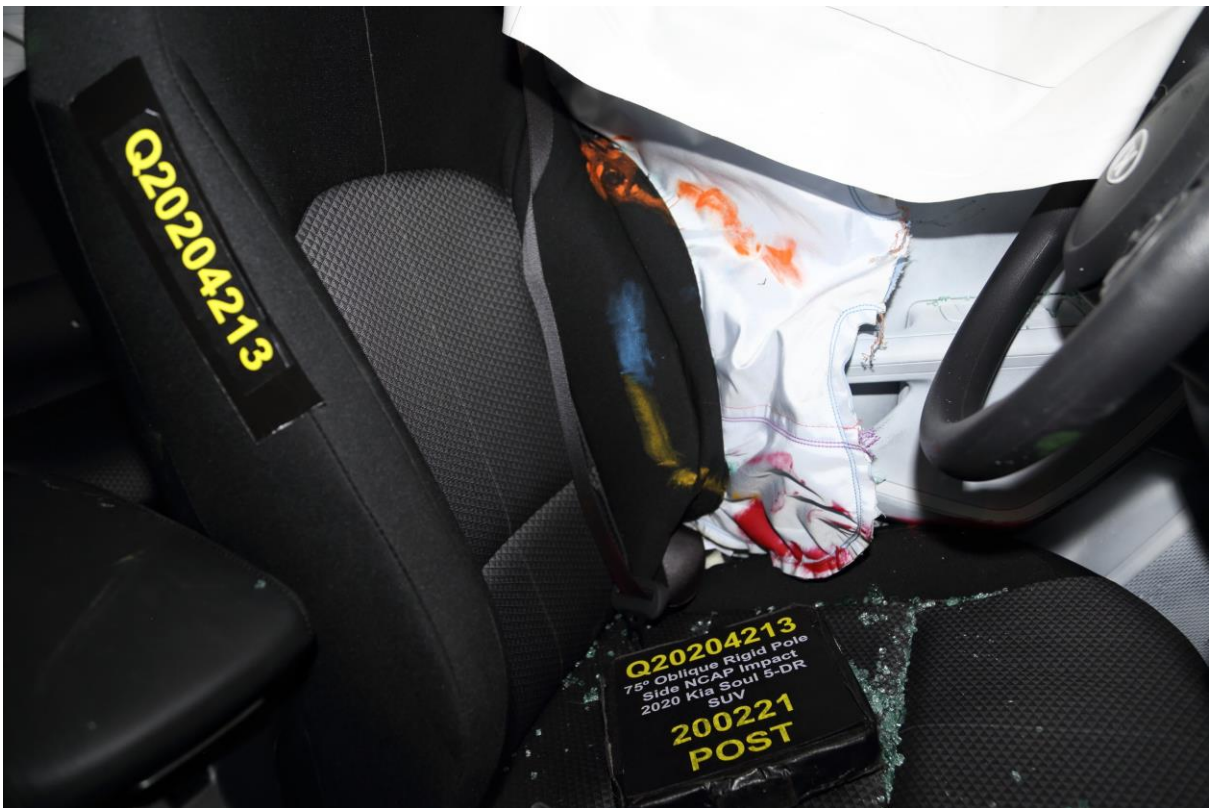
PHOTO NOT APPLICABLE

No. 046 Post-Test Dummy Close-Up Head Contact with Vehicle Interior View

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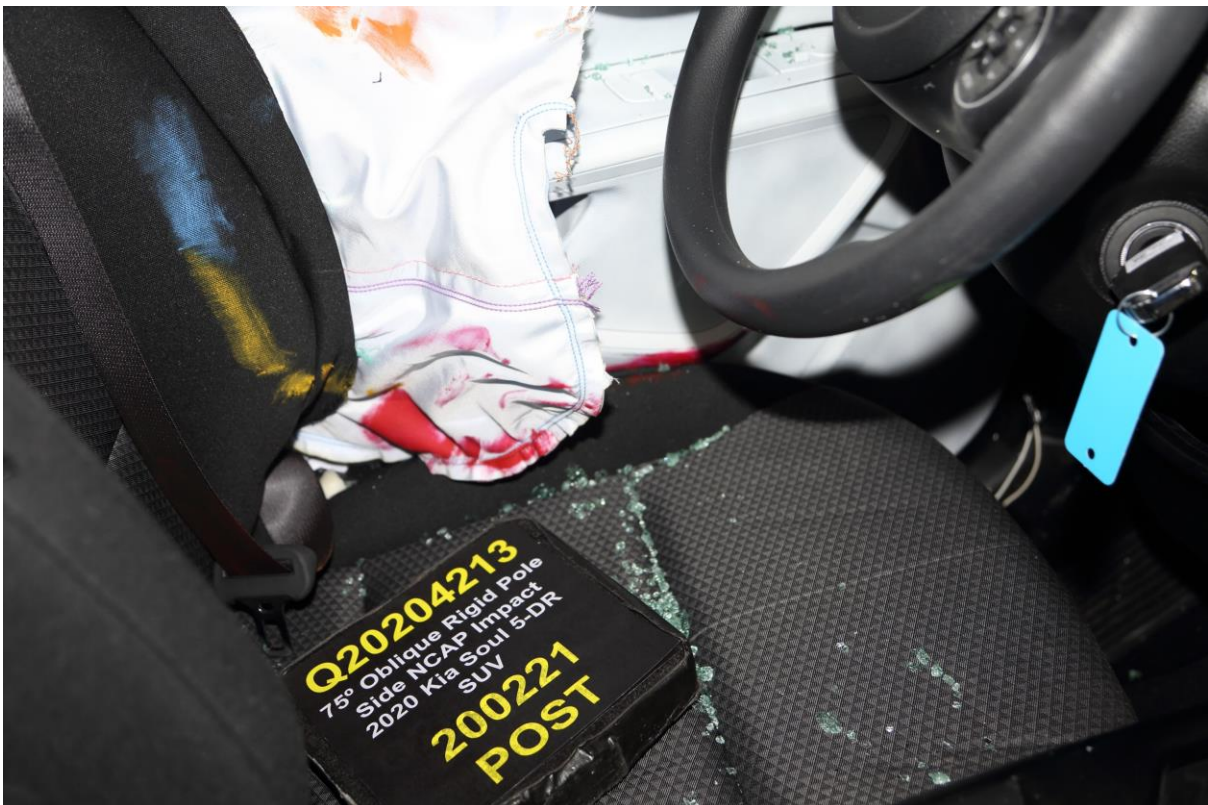
No. 047 Post-Test Dummy Close-Up Head Contact with Side Airbag View



No. 048 Post-Test Dummy Close-Up Torso Contact with Vehicle Interior View



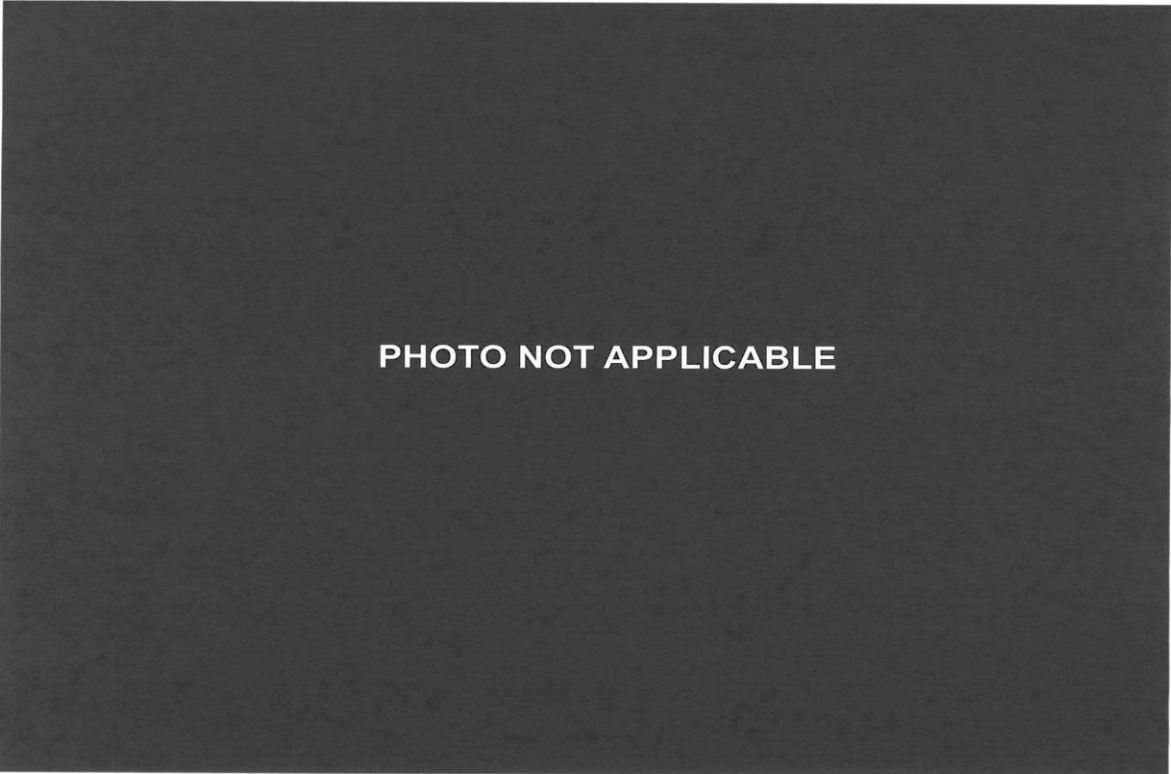
No. 049 Post-Test Dummy Close-Up Torso Contact with Side Airbag View



No. 050 Post-Test Dummy Close-Up Pelvis Contact with Vehicle Interior View



No. 051 Post-Test Dummy Close-Up Pelvis Contact with Side Airbag View



No. 052 Post-Test Dummy Close-Up Knee Contact with Vehicle Interior View



No. 053 Pre-Test View of Fuel Filler Cap or Fuel Filler Neck



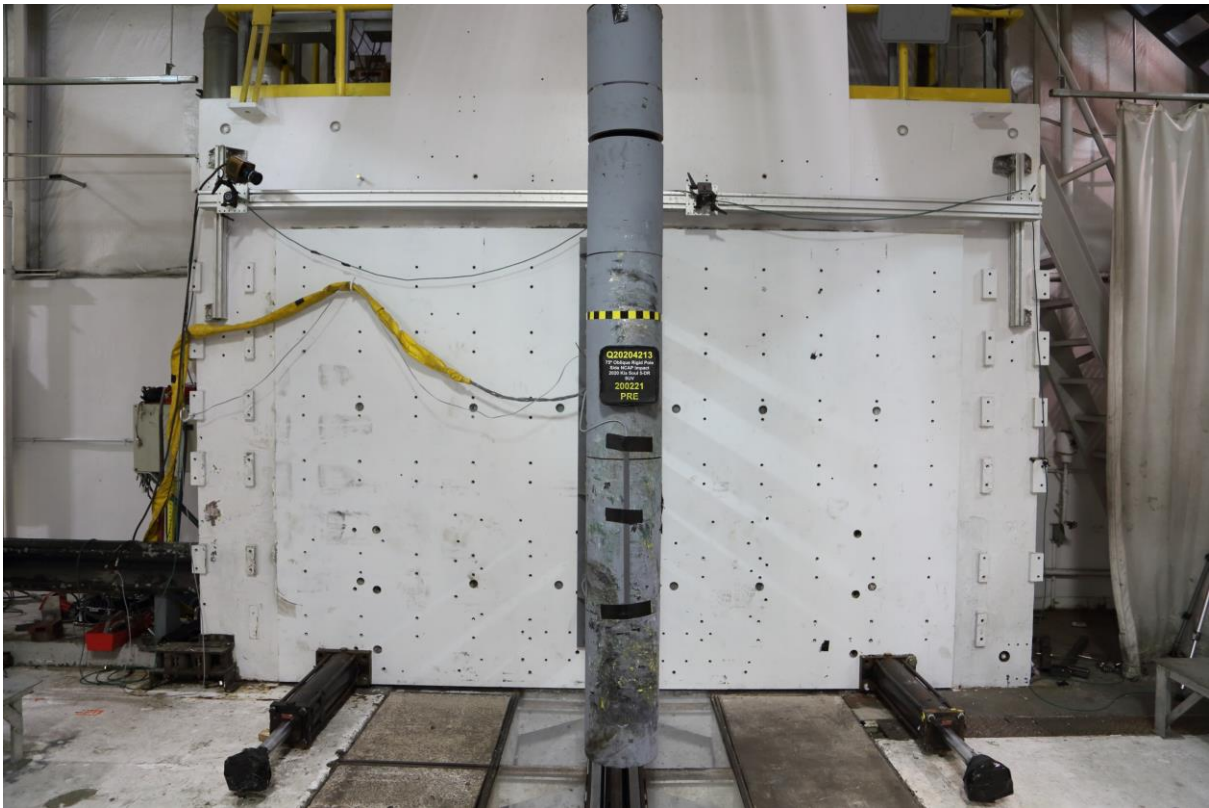
No. 054 Post-Test View of Fuel Filler Cap or Fuel Filler Neck



No. 055 Close-Up View of Vehicle Certification Label



No. 056 Close-Up View of Vehicle Tire Information Placard or Label



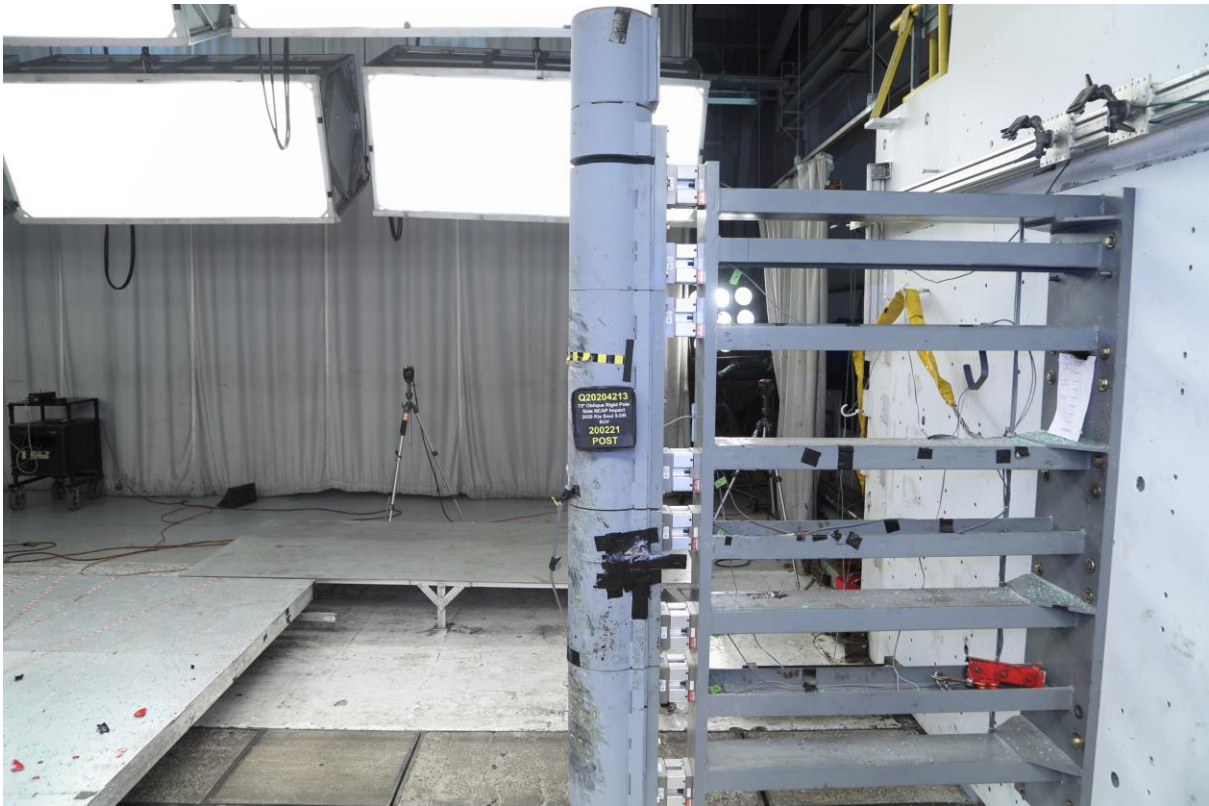
No. 057 Pre-Test Pole Barrier Front View



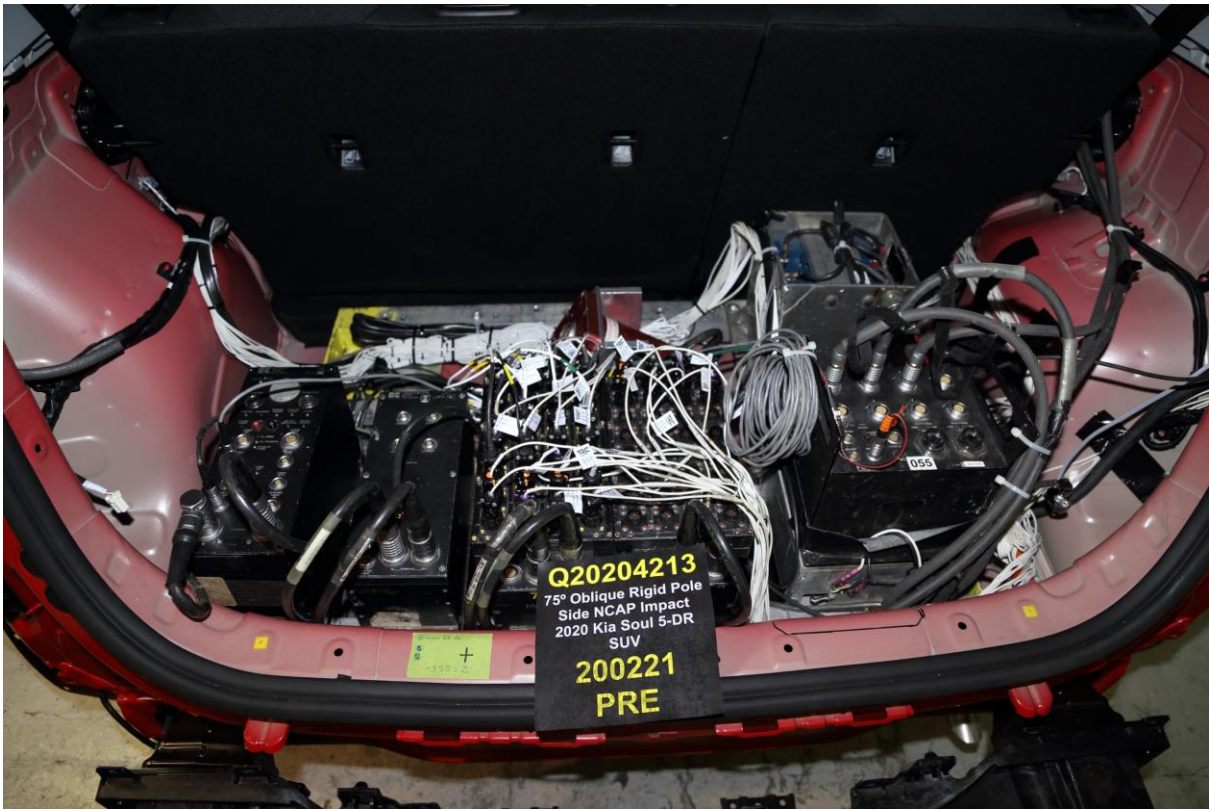
No. 058 Post-Test Pole Barrier Front View



No. 059 Pre-Test Pole Barrier Side View



No. 060 Post-Test Pole Barrier Side View



No. 061 Pre-Test Ballast View



No. 062 Post-Test Primary and Redundant Speed Trap Read Out



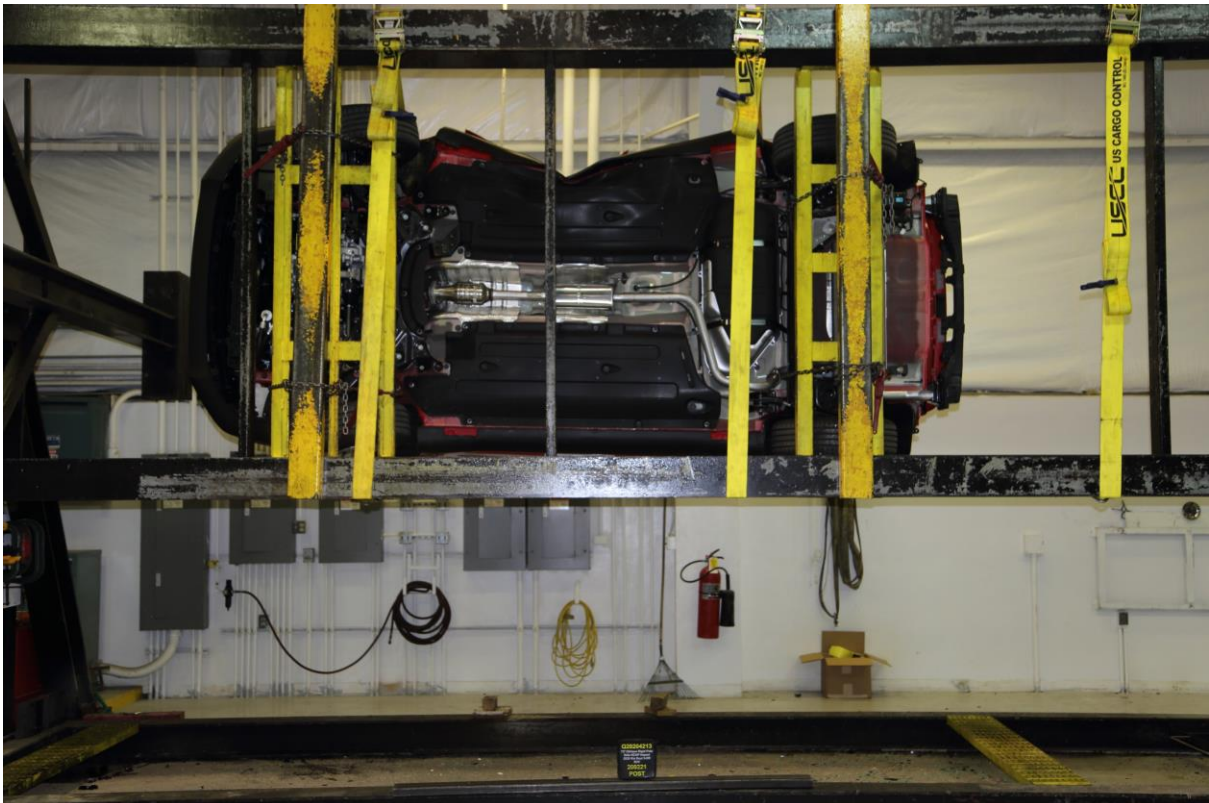
No. 063 FMVSS No. 301 Static Rollover 0 Degrees



No. 064 FMVSS No. 301 Static Rollover 90 Degrees



No. 065 FMVSS No. 301 Static Rollover 180 Degrees






No. 066 FMVSS No. 301 Static Rollover 270 Degrees



No. 067 FMVSS No. 301 Static Rollover 360 Degrees



No. 068 Impact Event

2020 SOUL LX AUTO MODEL/OPT CODE: B2522 / 010 EXTERIOR COLOR: INFERNO RED INTERIOR COLOR: BLACK VEHICLE ID NUMBER: KNDJ23AU7L7718352 PORT OF ENTRY: TACOMA	Sold To: IL051 Raymond Kia 119 ROUTE 173 ANTIPOCH IL 60002 Ship To: IL051	<div style="display: flex; justify-content: space-between;"> <div style="text-align: center;">  <p>#1 MASS MARKET BRAND IN J.D. POWER INITIAL QUALITY, 5 YEARS IN A ROW.</p> <p><small>For J.D. Power 2019 award information, go to jdpower.com/awards for more details.</small></p> </div> <div style="text-align: center;">  <p>GIVE IT EVERYTHING (KIA)</p> </div> </div>																								
<p style="text-align: center;">STANDARD FEATURES</p> <p>MECHANICAL 2.0L Multi-Point Fuel Injection (MPI) 4-Cyl Engine 16" Steel Wheels with Wheel Covers</p> <p>SAFETY Dual Front Advanced Airbags Dual Front Seat-Mounted Side Airbags Full-Length Side Curtain Airbags Lower Anchors and Tethers for Children (LATCH) Anti-Lock Braking System (ABS) w/ Brake Assist (BAS) Traction Control System (TCS) Electronic Stability Control (ESC) Vehicle Stability Management (VSM) Hill-start Assist Control (HAC) Tire Pressure Monitoring System (TPMS)</p> <p>INTERIOR, COMFORT & CONVENIENCE Android Auto & Apple CarPlay Smartphone Integration AM/FM/MP3 w/ 7" Touchscreen & Rear Camera Air Conditioning Power Windows, Door Locks & Outside Mirrors Bluetooth® Wireless Technology Steering Wheel Mounted Audio Controls Tilt & Telescopic Steering Column 60/40 Split-Folding Rear Seats</p> <p>EXTERIOR Auto-On/Off Headlights Roof Rack Ready (Mounting Points) Rear Privacy Glass</p> <p>WARRANTY 10 Year/100,000 Mile Limited Powertrain Warranty 5 Year/60,000 Mile Limited Basic Warranty 5 Year/60,000 Mile Roadside Assistance</p>	<p style="text-align: center;">MANUFACTURER'S SUGGESTED RETAIL PRICE ▶ \$ 18,990.00</p> <p>COMPARE SOUL LX AUTO FEATURES Added to/in place of standard LX MT features - Intelligent Variable Transmission (IVT) - Cruise Control - Center Console w/Armrest and Storage Bin - Remote Keyless Entry - Body Color Outside Mirrors/Door Handles</p> <p>ADDITIONAL INSTALLED EQUIPMENT: (In addition to or in place of standard features) Carpeted Floor Mats</p> <p style="text-align: right;">Included Included Included Included Included</p> <p style="text-align: right;">\$135.00</p> <hr/> <p style="text-align: center;">MSRP INCLUDING OPTIONS \$ 19,125.00</p> <p style="text-align: center;"><small>INLAND FREIGHT AND HANDLING</small> \$ 1,045.00</p> <p style="text-align: center;">TOTAL MANUFACTURER'S SUGGESTED RETAIL PRICE ▶ \$ 20,170.00</p>	<div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center;">EPA DOT Fuel Economy and Environment Gasoline Vehicle</p> <p style="text-align: center;">Fuel Economy</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>30 MPG</p> <p><small>combined city/hwy</small></p> </div> <div style="text-align: center;"> <p>27 MPG</p> <p><small>city</small></p> </div> <div style="text-align: center;"> <p>33 MPG</p> <p><small>highway</small></p> </div> </div> <p style="text-align: center;">3.3 gallons per 100 miles</p> <p style="text-align: right;">You Save \$750 in fuel costs over 5 years compared to the average new vehicle.</p> <p style="text-align: center;">Annual fuel Cost \$1,350</p> <p style="text-align: center;">Fuel Economy & Greenhouse Gas Rating (EPA only) Smog Rating (EPA only)</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>1</p> <p><small>Best</small></p> </div> <div style="text-align: center;"> <p>7</p> <p><small>Best</small></p> </div> <div style="text-align: center;"> <p>10</p> <p><small>Best</small></p> </div> </div> <p style="text-align: center;"><small>This vehicle emits 303 grams CO₂ per mile. The best emits 8 grams per mile (tailpipe only). Producing and transporting fuel also create emissions. Learn more at fuelconomy.gov.</small></p> <p style="text-align: center;">Actual results will vary for many reasons, including driving conditions and how you drive and maintain your vehicle. The average new vehicle gets 27 MPG and costs \$7,500 to fuel over 5 years. Cost estimates are based on 15,000 miles per year at \$2.70 per gallon. MPGs in miles per gasoline gallon equivalent. Vehicle emissions are a significant cause of climate change and smog.</p> <p style="text-align: center;">fuelconomy.gov Calculate personalized estimates and compare vehicles</p> <p style="text-align: center;">GOVERNMENT 5-STAR SAFETY RATINGS</p> <p>Overall Vehicle Score Not Rated <small>Based on the combined rating of frontal, side and rollover. Should ONLY be compared to other vehicles of similar size and weight.</small></p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td>Frontal</td> <td>Driver</td> <td>Not Rated</td> </tr> <tr> <td>Crash</td> <td>Passenger</td> <td>Not Rated</td> </tr> <tr> <td colspan="3"><small>Based on the risk of injury in a frontal impact. Should ONLY be compared to other vehicles of similar size and weight.</small></td> </tr> <tr> <td>Side</td> <td>Front seat</td> <td>Not Rated</td> </tr> <tr> <td>Crash</td> <td>Rear seat</td> <td>Not Rated</td> </tr> <tr> <td colspan="3"><small>Star ratings based on the risk of injury in a side impact.</small></td> </tr> <tr> <td>Rollover</td> <td></td> <td>Not Rated</td> </tr> <tr> <td colspan="3"><small>Star ratings based on the risk of rollover in a single-vehicle crash.</small></td> </tr> </table> <p><small>Star ratings range from 1 to 5 stars (★★★★★) with 5 being the highest. Source: National Highway Traffic Safety Administration (NHTSA). www.safercar.gov or 1-888-327-4235</small></p> <p style="text-align: center;"><small>Manufacturer's suggested retail price includes Manufacturer's recommended pre-delivery service. License and title fees, state and local taxes and other dealer-installed options and accessories are not included in the manufacturer's suggested retail price.</small></p> </div> <div style="border: 1px solid black; padding: 5px; margin-top: 5px;"> <p style="text-align: center;">PARTS CONTENT INFORMATION</p> <p>FOR VEHICLES IN THIS CAR LINE U.S./CANADIAN PARTS CONTENT: 1 %</p> <p>MAJOR SOURCES OF FOREIGN PARTS: OTHER: 5% KOREA: 94%</p> <p><small>NOTE: PARTS CONTENT DOES NOT INCLUDE FINAL ASSEMBLY, DISTRIBUTION, OR OTHER NON-PARTS COSTS.</small></p> <p>FOR THIS VEHICLE FINAL ASSEMBLY POINT: GWANGJU, KOREA</p> <p>COUNTRY OF ORIGIN: ENGINE: KOREA TRANSMISSION: KOREA</p> </div>	Frontal	Driver	Not Rated	Crash	Passenger	Not Rated	<small>Based on the risk of injury in a frontal impact. Should ONLY be compared to other vehicles of similar size and weight.</small>			Side	Front seat	Not Rated	Crash	Rear seat	Not Rated	<small>Star ratings based on the risk of injury in a side impact.</small>			Rollover		Not Rated	<small>Star ratings based on the risk of rollover in a single-vehicle crash.</small>		
Frontal	Driver	Not Rated																								
Crash	Passenger	Not Rated																								
<small>Based on the risk of injury in a frontal impact. Should ONLY be compared to other vehicles of similar size and weight.</small>																										
Side	Front seat	Not Rated																								
Crash	Rear seat	Not Rated																								
<small>Star ratings based on the risk of injury in a side impact.</small>																										
Rollover		Not Rated																								
<small>Star ratings based on the risk of rollover in a single-vehicle crash.</small>																										
<p>TOTAL ADDITIONAL WEIGHT: 6.0</p>																										

No. 069 Monroney Label

Safety features of your vehicle

⚠ WARNING

Headrest removal/adjustment

- Do not operate the vehicle with the headrests removed. Headrests can provide critical neck and head support in a crash.
- Do not adjust the headrest height while the vehicle is in motion. Driver may lose control of the vehicle.


⚠ CAUTION

Excessive pulling or pushing may damage the headrest.

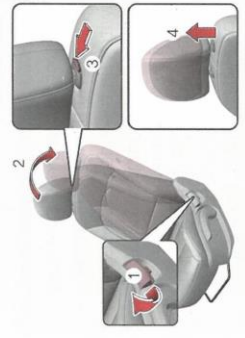
Seat

*** NOTICE**

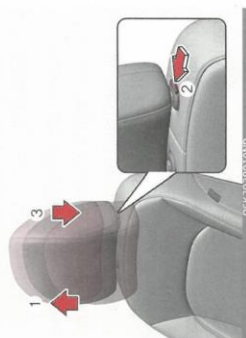
If you recline the seatback towards the front with the headrest and seat cushion raised, the headrest may come in contact with the sun visor or other parts of the vehicle.



Removal



Adjusting the height up and down



To raise the headrest:
1. Pull it up to the desired position (1).
2. To lower the headrest, push and hold the release button (2) on the headrest support.
3. Lower the headrest to the desired position (3).

No. 070 Head Restraint Use and Adjustment Information from Vehicle Owner Manual

PHOTO NOT APPLICABLE

No. 071 Post-Test View of Shattered Vehicle Inner Door Panel

APPENDIX B
VEHICLE AND DUMMY RESPONSE DATA PLOTS

TABLE OF DATA PLOTS

No.	Description	Page
1	Driver Head Acceleration (X) vs. Time	B-4
2	Driver Head Acceleration (Y) vs. Time	B-4
3	Driver Head Acceleration (Z) vs. Time	B-4
4	Driver Head Acceleration Resultant vs. Time	B-4
5	Driver Lower Spine T12 Acceleration (X) vs. Time	B-5
6	Driver Lower Spine T12 Acceleration (Y) vs. Time	B-5
7	Driver Lower Spine T12 Acceleration (Z) vs. Time	B-5
8	Driver Lower Spine T12 Acceleration Resultant vs. Time	B-5
9	Driver Iliac Wing Force on Impact Side (Y) vs. Time	B-6
10	Driver Acetabulum Force on Impact Side (Y) vs. Time	B-6
11	Driver Total Pelvis Force on Impact Side (Y) vs. Time	B-6

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.

Additional Driver Dummy Instrumentation Data

Driver Head Acceleration (X) Redundant
Driver Head Acceleration (Y) Redundant
Driver Head Acceleration (Z) Redundant
Driver Upper Thorax Rib Deflection (Y)
Driver Middle Thorax Rib Deflection (Y)
Driver Lower Thorax Rib Deflection (Y)
Driver Upper Abdomen Rib Deflection (Y)
Driver Lower Abdomen Rib Deflection (Y)
Driver Head Angular Velocity (X)
Driver Head Angular Velocity (Y)
Driver Head Angular Velocity (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 (Y)
 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 (X)
Load Cell Pole Barrier #2 Force (X)
Load Cell Pole Barrier #3 Force (X)
Load Cell Pole Barrier #4 Force (X)
Load Cell Pole Barrier #5 Force (X)
Load Cell Pole Barrier #6 Force (X)
Load Cell Pole Barrier #7 Force (X)
Load Cell Pole Barrier #8 Force (X)

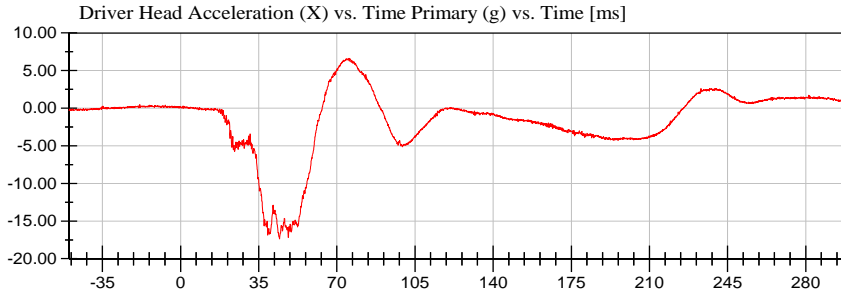
NHTSA

Position #1 SID IIs Dummy (297)

Test Date: 02/21/2020

Test Lab: CTF

Test Number: 200221 (Q20204213)



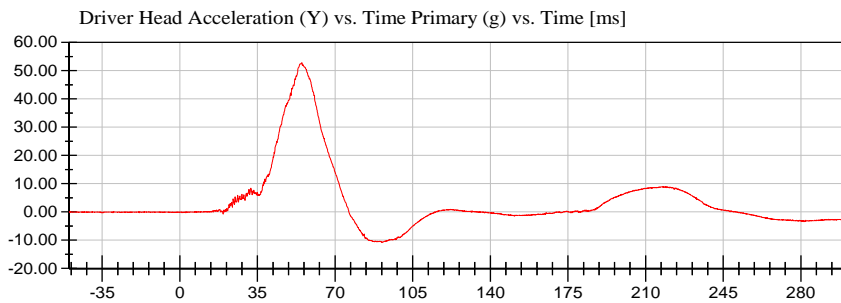
<Max>

6.65 g at 75.44 ms

<Min>

-17.39 g at 44.32 ms

CFC_1000



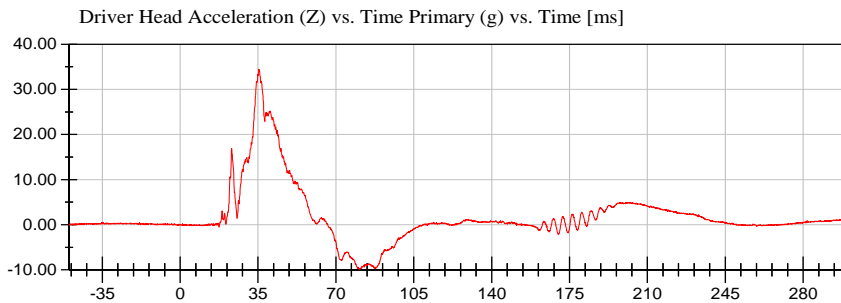
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52.83 g at 55.04 ms

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-10.75 g at 90.96 ms

CFC_1000



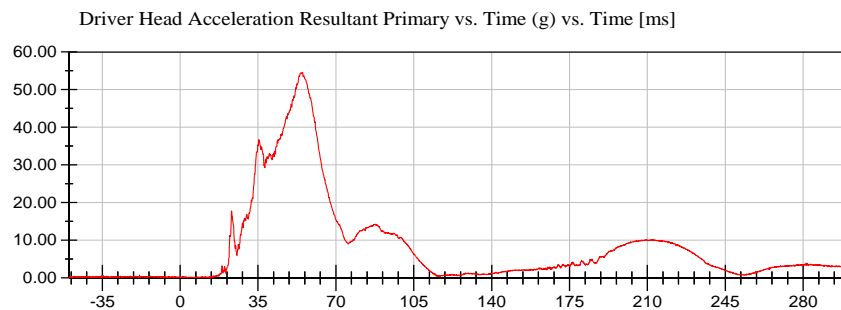
<Max>

34.44 g at 35.36 ms

<Min>

-9.89 g at 80.56 ms

CFC_1000



<Max>

54.54 g at 55.04 ms

<Min>

0.05 g at 3.28 ms

CFC_1000



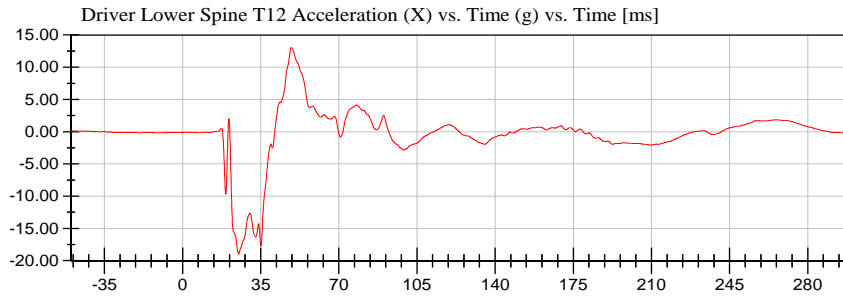
NHTSA

Position #1 SID IIs Dummy (297)

Test Date: 02/21/2020

Test Lab: CTF

Test Number: 200221 (Q20204213)



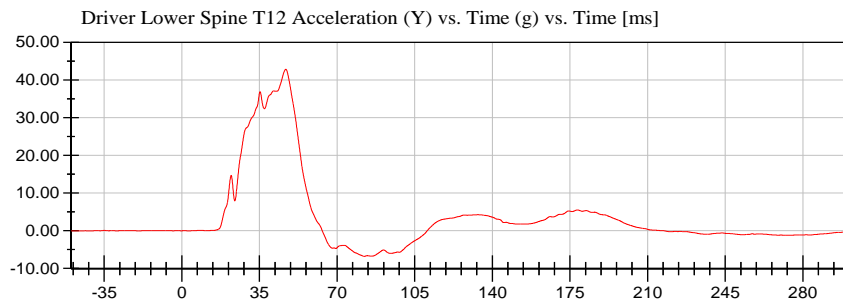
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13.03 g at 48.72 ms

<Min>

-18.96 g at 25.12 ms

CFC_180



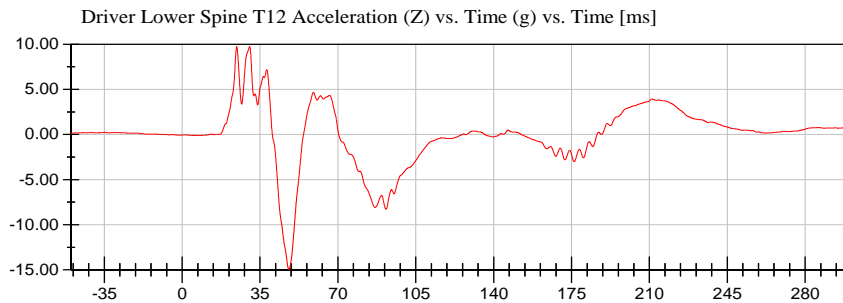
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42.89 g at 46.88 ms

<Min>

-6.78 g at 82.24 ms

CFC_180



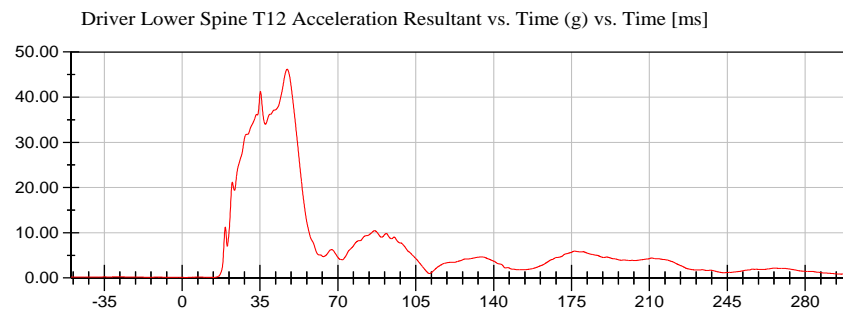
<Max>

9.74 g at 24.56 ms

<Min>

-14.95 g at 47.92 ms

CFC_180



<Max>

46.17 g at 47.20 ms

<Min>

0.10 g at 1.92 ms

CFC_180



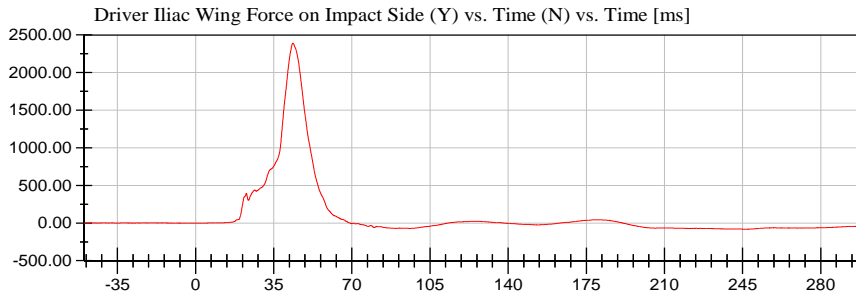
NHTSA

Position #1 SID IIs Dummy (297)

Test Date: 02/21/2020

Test Lab: CTF

Test Number: 200221 (Q20204213)



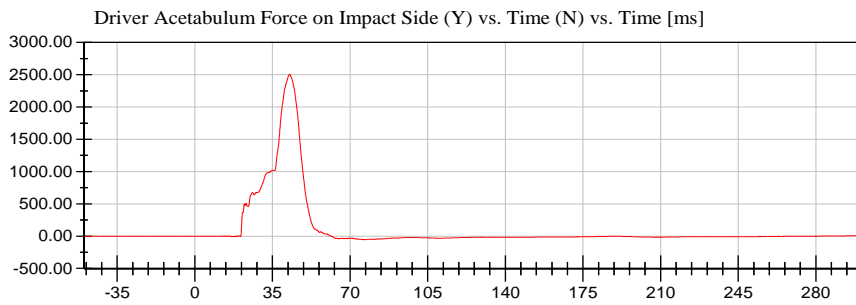
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2,389.99 N at 43.60 ms

<Min>

-81.67 N at 245.28 ms

CFC_600



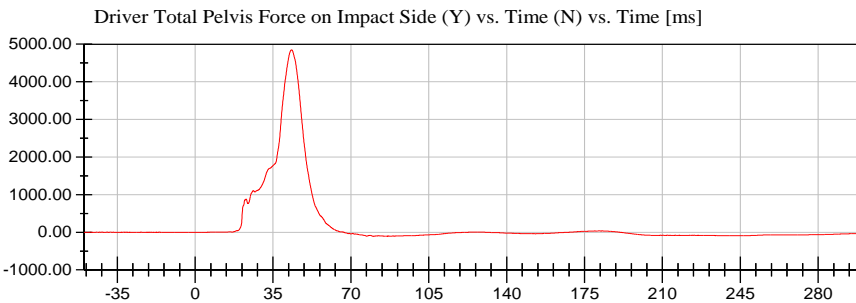
<Max>

2,504.85 N at 42.72 ms

<Min>

-56.36 N at 77.12 ms

CFC_600



<Max>

4,848.71 N at 43.36 ms

<Min>

-107.32 N at 79.92 ms

CFC_600



APPENDIX C
DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

TABLE OF CALIBRATION MEASUREMENTS AND PLOTS
SID-IIs (Driver) Dummy
Description

Table 1. External Measurements

Table 2. Head Drop Test

- Resultant Head Acceleration (G's) vs. Time (ms)
- Head (X) Acceleration (G's) vs. Time (ms)
- Head (Y) Acceleration (G's) vs. Time (ms)
- Head (Z) Acceleration (G's) vs. Time (ms)

Table 3. Lateral Neck Pendulum Test

- Pendulum Velocity (m/s) vs. Time (ms)
- Flexion Angle (°) vs. Time (ms)
- Moment About Occipital Condyle (Nm) vs. Time (ms)

Table 4. Shoulder Impact Test

- Impactor Acceleration (G's) vs. Time (ms)
- Shoulder Displacement (mm) vs. Time (ms)
- Upper Spine Acceleration (G's) vs. Time (ms)

Table 5. Thorax (With Arm) Impact Test

- Impactor Acceleration (G's) vs. Time (ms)
- Shoulder Displacement (mm) vs. Time (ms)
- Upper Rib Displacement (mm) vs. Time (ms)
- Middle Rib Displacement (mm) vs. Time (ms)
- Lower Rib Displacement (mm) vs. Time (ms)
- Upper Spine Acceleration (G's) vs. Time (ms)
- Lower Spine Acceleration (G's) vs. Time (ms)

Table 6. Thorax (Without Arm) Impact Test

- Impactor Acceleration (G's) vs. Time (ms)
- Upper Rib Displacement (mm) vs. Time (ms)
- Middle Rib Displacement (mm) vs. Time (ms)
- Lower Rib Displacement (mm) vs. Time (ms)
- Upper Spine Acceleration (G's) vs. Time (ms)
- Lower Spine Acceleration (G's) vs. Time (ms)

Table 7. Abdomen Impact Test

- Impactor Acceleration (G's) vs. Time (ms)
- Upper Abdominal Rib Displacement (mm) vs. Time (ms)
- Lower Abdominal Rib Displacement (mm) vs. Time (ms)
- Lower Spine Acceleration (G's) vs. Time (ms)

Table 8. Pelvis Plug Quasi-Static Test (Optional*)

Table 9. Pelvis Acetabulum Impact Test

- Impactor Acceleration (G's) vs. Time (ms)
- Pelvis (Y) Acceleration (G's) vs. Time (ms)
- Acetabulum Force (N) vs. Time (ms)

Table 10. Pelvis Iliac Impact Test

- Impactor Acceleration (G's) vs. Time (ms)
- Pelvis (Y) Acceleration (G's) vs. Time (ms)
- Iliac Force (N) vs. Time (ms)

Pre-Test Calibration Sheets
Driver S/N 297

Transportation Research Center Inc.
SIDIIs Dummy - Level D
External Dimensions
Serial No. 297 Calibration No. 45

Symbol	Description	Specification	Results	Pass
		mm	mm	
A	Sitting Height	772.0 - 788.0	781	Yes
B	Shoulder Pivot Height	437.0 - 453.0	450	Yes
C	H-Point Height	79.0 - 89.0	85	Yes
D	H-Point from Seat Back	141.0 - 151.0	147	Yes
E	Shoulder Pivot from Backline	97.0 - 107.0	102	Yes
F	Thigh Clearance	119.0 - 135.0	131	Yes
G	Head Breadth	140.0 - 148.0	147	Yes
H	Head Back from Backline	40.0 - 46.0	45	Yes
I	Head Depth	178.0 - 188.0	183	Yes
J	Head Circumference	541.0 - 551.0	544	Yes
K	Buttock to Knee Length	514.0 - 540.0	528	Yes
L	Popliteal Height	343.0 - 369.0	353	Yes
M	Knee Pivot to Floor Height	393.0 - 409.0	400	Yes
N	Buttock Popliteal Length	416.0 - 442.0	430	Yes
O	Chest Depth without Jacket	195.0 - 211.0	200	Yes
P	Foot Length (right)	216.0 - 232.0	223	Yes
P	Foot Length (left)	216.0 - 232.0	223	Yes
Q	Hip Breadth	313.0 - 323.0	320	Yes
R	Arm Length	249.0 - 259.0	254	Yes
S	Knee Joint to seat Back	478.0 - 493.0	485	Yes
V	Shoulder Width (only one arm installed)	341.0 - 357.0	347	Yes
W	Foot Width (right)	78.0 - 94.0	85	Yes
W	Foot Width (left)	78.0 - 94.0	85	Yes
Y	Chest Circumference with Jacket	851.0 - 881.0	879	Yes
Z	Waist Circumference	761.0 - 791.0	782	Yes

Transportation Research Center Inc.

Left Lateral Head Drop
SID IIs Serial No. 297 Certification No. 45-1
Test Date: 1/23/2020

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.5 °C	Yes
Relative Humidity	10 - 70 %	40 %	Yes
Peak Head Resultant Acceleration	115 - 137 g	127.0 g	Yes
Peak Head Longitudinal Acceleration	(-15) - 15 g	-5.5 g	Yes
Is Head Resultant Acceleration Curve Unimodal within 15% of Peak?	< 15 %	3.17 %	Yes

Test meets specifications.

Condition: Used

Comments:

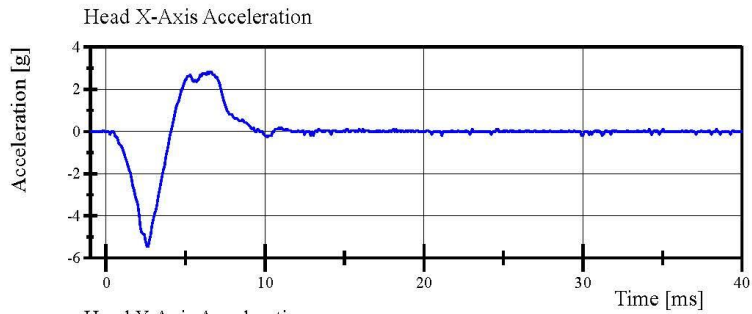
Head S/N: 1330

Transportation Research Center Inc.

Left Lateral Head Drop

SID IIS Serial No. 297 Certification No. 45-1

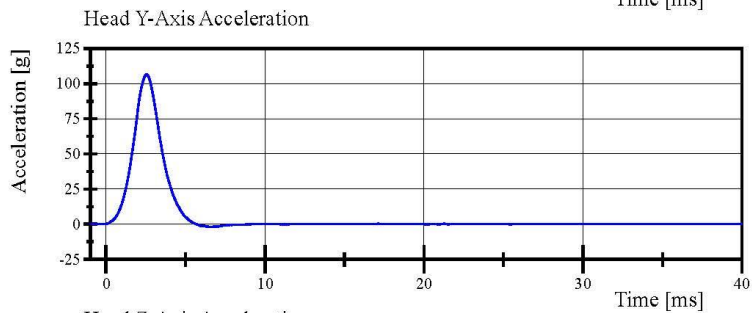
Test Date: 1/23/2020



Filter Class: CFC_1000

Max: 2.8 g at 6.4 ms

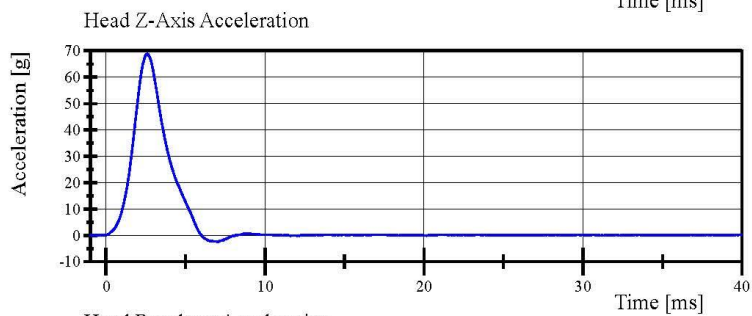
Min: -5.5 g at 2.6 ms



Filter Class: CFC_1000

Max: 106.6 g at 2.6 ms

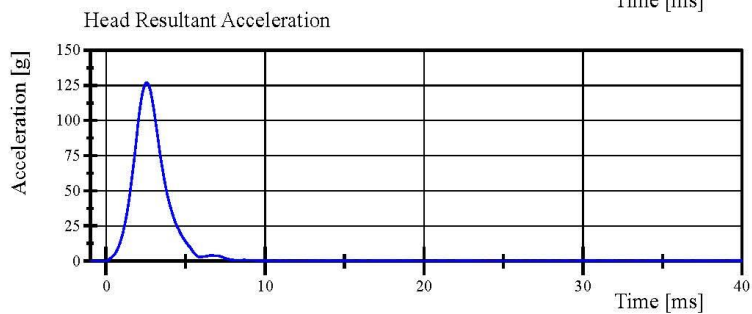
Min: -1.8 g at 6.6 ms



Filter Class: CFC_1000

Max: 68.8 g at 2.6 ms

Min: -2.5 g at 7.0 ms



Filter Class: CFC_1000

Max: 127.0 g at 2.6 ms

Min: 0.0 g at -1.0 ms

Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

01.23.2020 11:57:36 234



Transportation Research Center Inc.

Left Lateral Neck
SID IIS Serial No. 297 Certification No. 45-1
Test Date: 1/23/2020

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.6 °C	Yes
Relative Humidity	10 - 70 %	41 %	Yes
Pendulum Velocity	(-5.51) - (-5.63) m/s	-5.606 m/s	Yes
Pendulum Integrated Velocity			
Change at 10 ms	2.20 - 2.80 m/s	2.292 m/s	Yes
Change at 15 ms	3.30 - 4.10 m/s	3.382 m/s	Yes
Change at 20 ms	4.40 - 5.40 m/s	4.604 m/s	Yes
Change at 25 ms	5.40 - 6.10 m/s	5.567 m/s	Yes
Change at 25 to 100 ms	5.50 - 6.20 m/s	5.839 m/s	Yes
Maximum Headform Flexion occurring between 50ms and 70ms.			
Peak	(-71) - (-81) deg	-78.7 deg	Yes
Time of Peak	50 - 70 ms	63.5 ms	Yes
Total Neck Occipital Condyles Moment	36 - 44 N·m	38.4 N·m	Yes
Total Neck Occipital Condyles Moment Decay Time to 0 N·m	102 - 126 ms	124.6 ms	Yes

Test meets specifications.

Condition: Used

Comments:

Neck S/N: 779

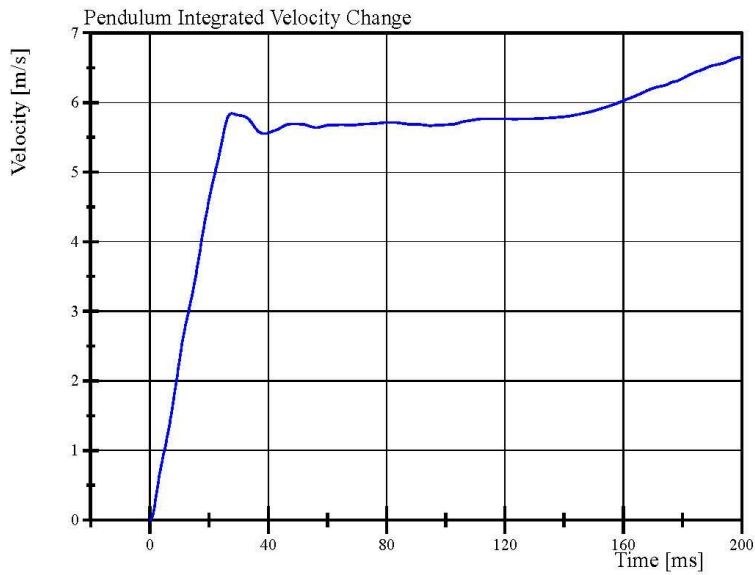
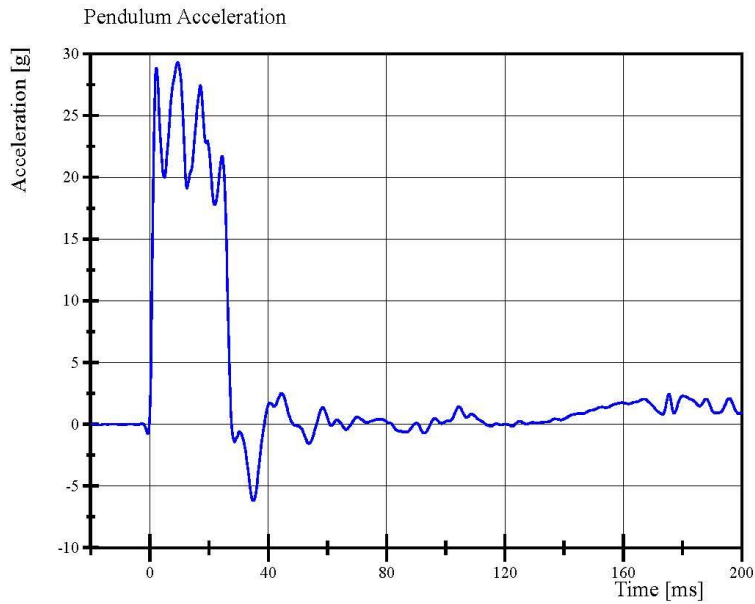
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

01.23.2020 14:28:41 748



Transportation Research Center Inc.

Left Lateral Neck
SID IIS Serial No. 297 Certification No. 45-1
Test Date: 1/23/2020



Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

01.23.2020 14:29:14 748

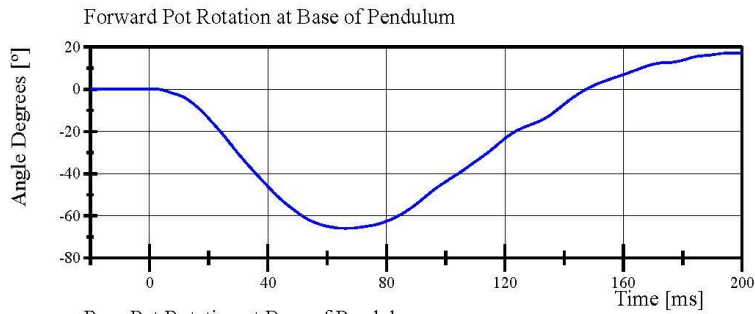


Transportation Research Center Inc.

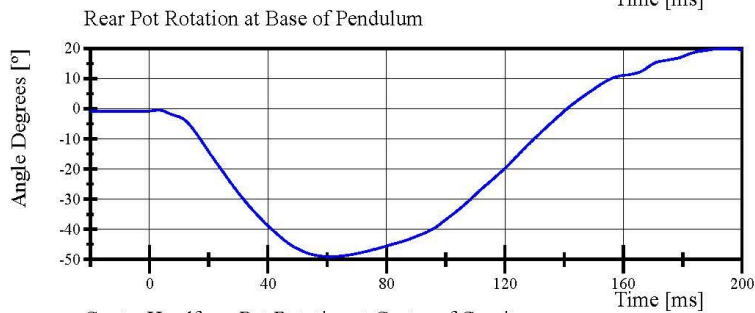
Left Lateral Neck

SID IIS Serial No. 297 Certification No. 45-1

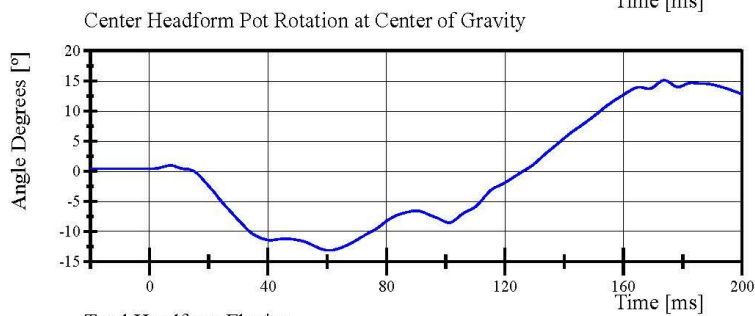
Test Date: 1/23/2020



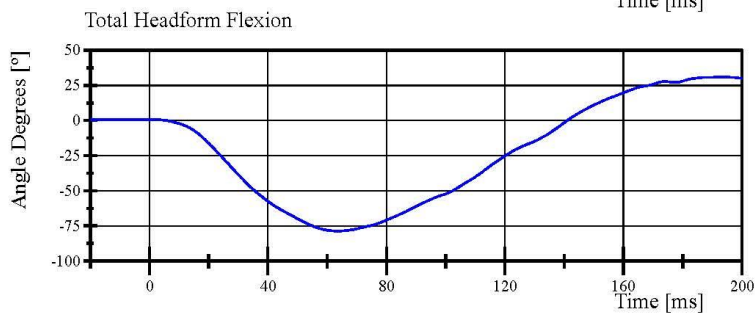
Filter Class: CFC_60
Max: 17.3 ° at 196.4 ms
Min: -66.0 ° at 66.2 ms



Filter Class: CFC_60
Max: 19.9 ° at 194.4 ms
Min: -49.1 ° at 61.2 ms



Filter Class: CFC_60
Max: 15.1 ° at 173.8 ms
Min: -13.1 ° at 60.6 ms



Filter Class: CFC_60
Max: 31.0 ° at 193.8 ms
Min: -78.7 ° at 63.5 ms

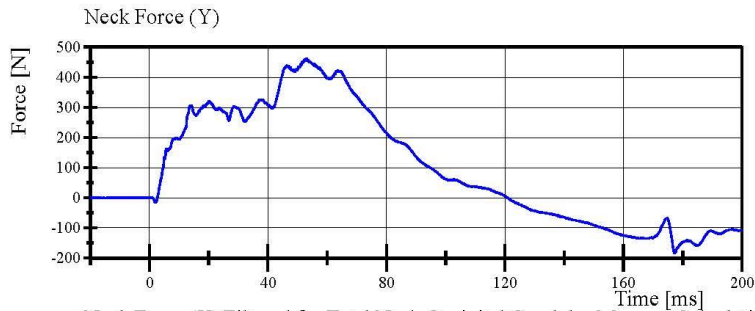
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

01.23.2020 14:29:14 748

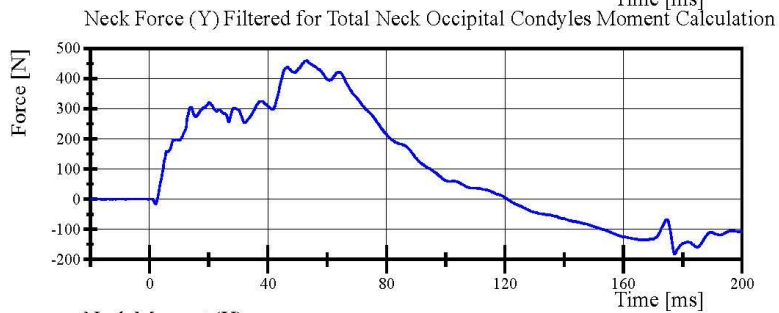


Transportation Research Center Inc.

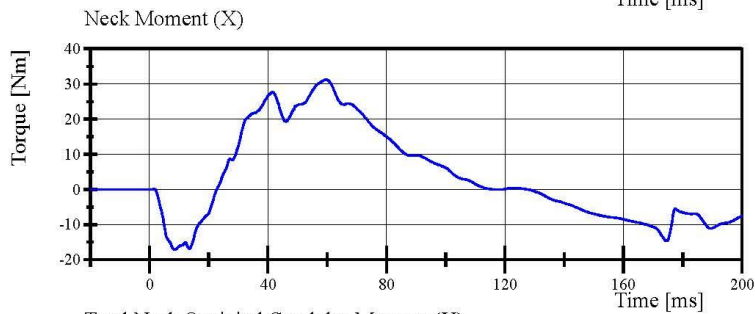
Left Lateral Neck
SID IIS Serial No. 297 Certification No. 45-1
Test Date: 1/23/2020



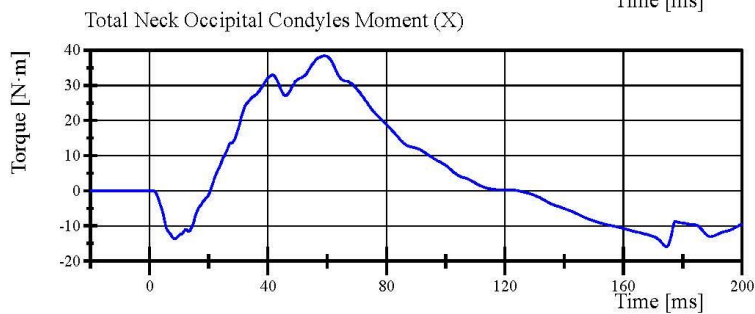
Filter Class: CFC_1000
Max: 461.9 N at 53.0 ms
Min: -184.1 N at 177.2 ms



Filter Class: CFC_600
Max: 459.8 N at 53.1 ms
Min: -183.3 N at 177.3 ms



Filter Class: CFC_600
Max: 31.2 Nm at 59.8 ms
Min: -17.1 Nm at 8.5 ms



Filter Class: Without_(Constar
Max: 38.4 N·m at 59.1 ms
Min: -15.9 N·m at 174.6 ms

Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

01.23.2020 14:29:14 748



Transportation Research Center Inc.

Left Lateral Shoulder
SID IIS Serial No. 297 Certification No. 45-1
Test Date: 1/23/2020

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	40 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.28 m/s	Yes
Impactor Acceleration	(-13) - (-18) g	-15.0 g	Yes
Shoulder Displacement	28 - 37 mm	31.8 mm	Yes
Upper Spine Lateral Acceleration	17 - 22 g	19.2 g	Yes

Test meets specifications.

Condition: Used

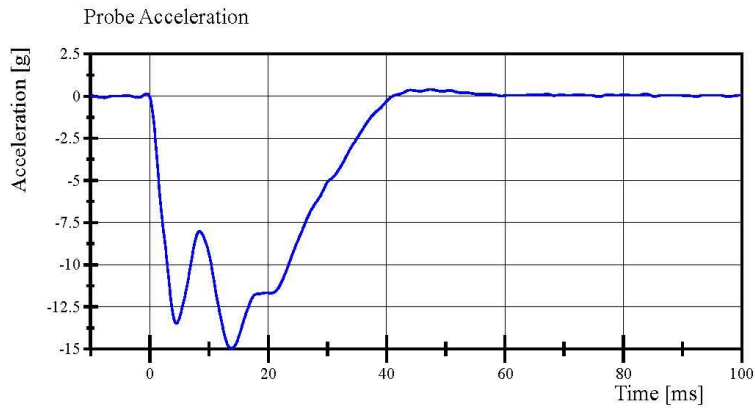
Comments:

Left Arm S/N: 940L

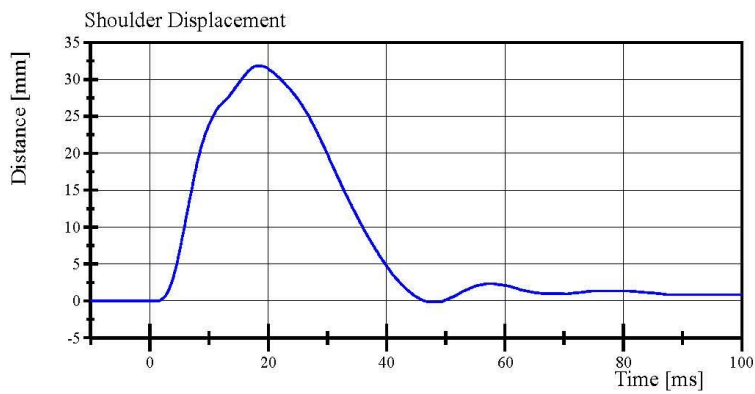
Shoulder Rib S/N: 180-3355 259

Transportation Research Center Inc.

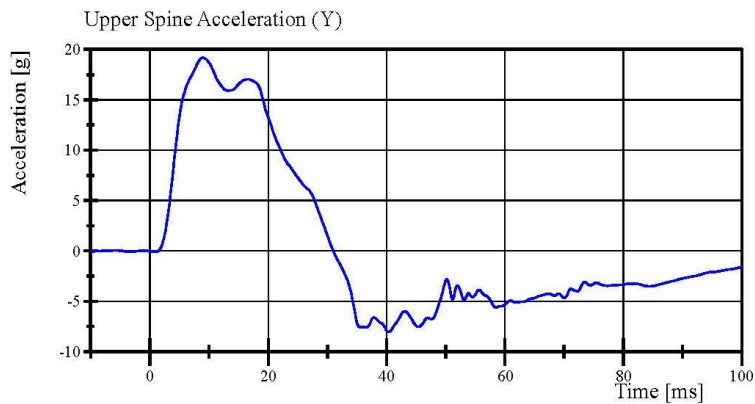
Left Lateral Shoulder
SID IIs Serial No. 297 Certification No. 45-1
Test Date: 1/23/2020



Filter Class: CFC_180
Max: 0.4 g at 47.4 ms
Min: -15.0 g at 13.8 ms



Filter Class: CFC_600
Max: 31.8 mm at 18.2 ms
Min: -0.2 mm at 48.8 ms



Filter Class: CFC_180
Max: 19.2 g at 8.9 ms
Min: -8.0 g at 40.3 ms

Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

01.23.2020 07:45:35 836



Transportation Research Center Inc.

Left Lateral Thorax with Arm
SID IIS Serial No. 297 Certification No. 45-1
Test Date: 1/23/2020

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	37 %	Yes
Impactor Velocity	6.60 - 6.80 m/s	6.758 m/s	Yes
Impactor Acceleration	(-30) - (-36) g	-33.2 g	Yes
Shoulder Displacement	31 - 40 mm	34.8 mm	Yes
Upper Thorax Rib Displacement	25 - 32 mm	27.0 mm	Yes
Center Thorax Rib Displacement	30 - 36 mm	31.6 mm	Yes
Lower Thorax Rib Displacement	32 - 38 mm	34.0 mm	Yes
Upper Spine Lateral Acceleration	34 - 43 g	37.5 g	Yes
Lower Spine Lateral Acceleration	29 - 37 g	35.7 g	Yes

Test meets specifications.

Condition: Used

Comments:

Left Arm S/N: 940L

Shoulder Rib S/N: 180-3355 259

Upper Thorax Rib #1 S/N: DM5020

Middle Thorax Rib #2 S/N: DM5021

Lower Thorax Rib #3 S/N: DM5022

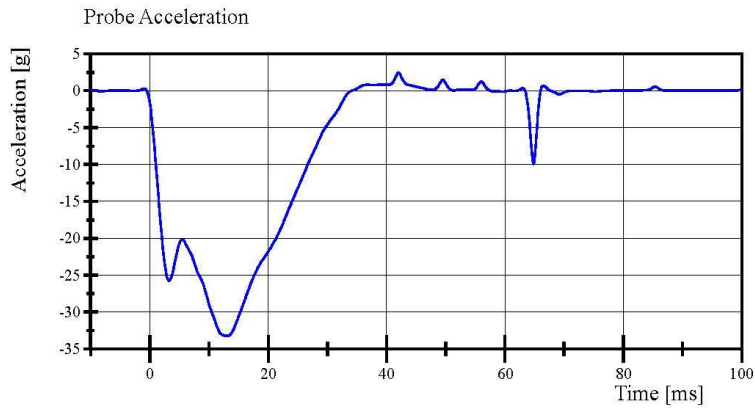
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

01.23.2020 09:01:34 631

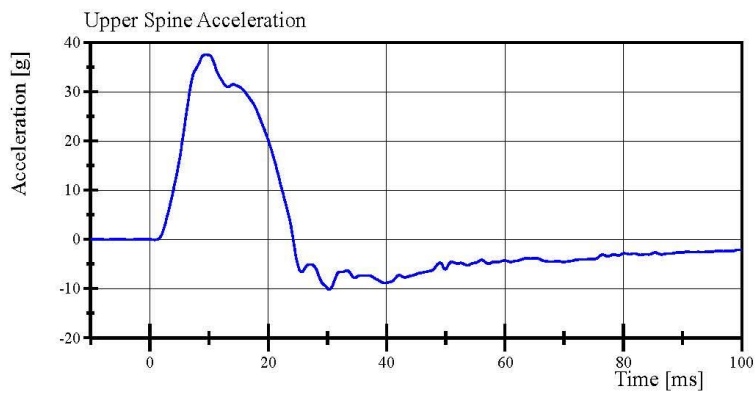


Transportation Research Center Inc.

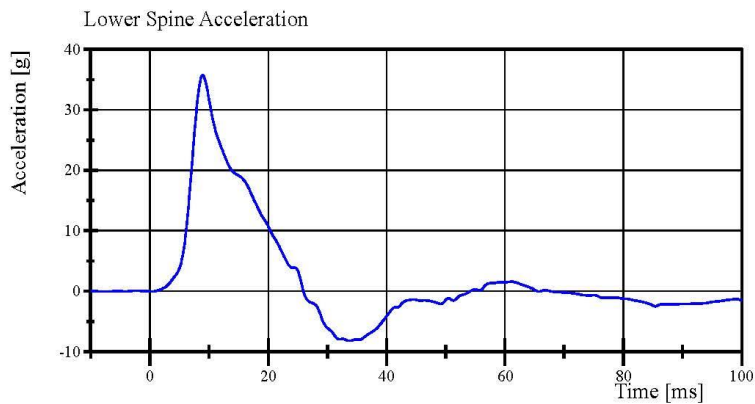
Left Lateral Thorax with Arm
SID IIS Serial No. 297 Certification No. 45-1
Test Date: 1/23/2020



Filter Class: CFC_180
Max: 2.5 g at 42.0 ms
Min: -33.2 g at 13.0 ms



Filter Class: CFC_180
Max: 37.5 g at 9.5 ms
Min: -10.2 g at 30.3 ms



Filter Class: CFC_180
Max: 35.7 g at 8.9 ms
Min: -8.2 g at 33.8 ms

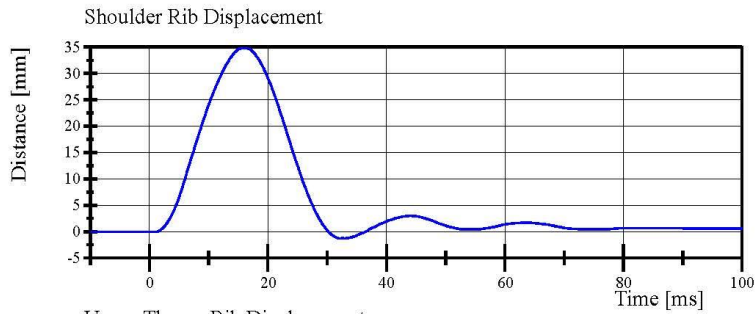
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

01.23.2020 09:02:40 631

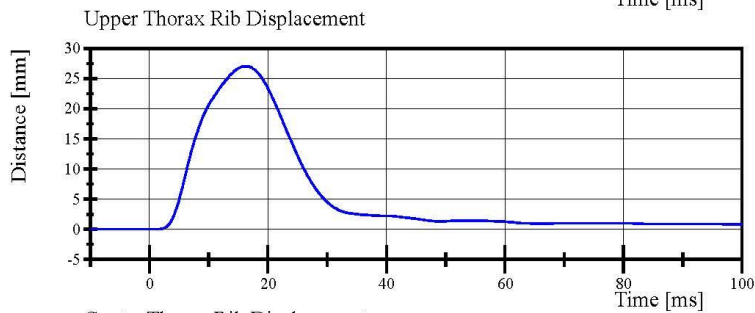


Transportation Research Center Inc.

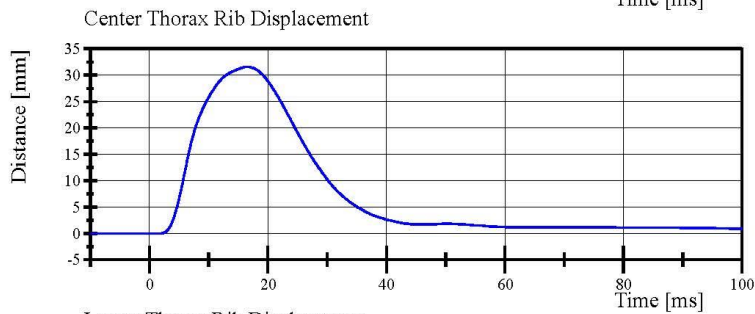
Left Lateral Thorax with Arm
SID IIS Serial No. 297 Certification No. 45-1
Test Date: 1/23/2020



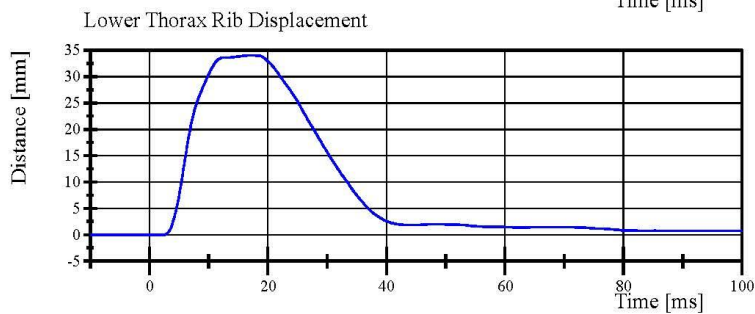
Filter Class: CFC_600
Max: 34.8 mm at 15.8 ms
Min: -1.2 mm at 32.2 ms



Filter Class: CFC_600
Max: 27.0 mm at 16.2 ms
Min: -0.0 mm at -7.0 ms



Filter Class: CFC_600
Max: 31.6 mm at 16.6 ms
Min: -0.0 mm at -2.5 ms



Filter Class: CFC_600
Max: 34.0 mm at 16.9 ms
Min: -0.0 mm at 2.3 ms

Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

01.23.2020 09:02:40 631



Transportation Research Center Inc.

Left Lateral Thorax without Arm
SID IIS Serial No. 297 Certification No. 45-1
Test Date: 1/23/2020

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	38 %	Yes
Impactor Velocity	4.20 - 4.40 m/s	4.332 m/s	Yes
Impactor Acceleration	(-14) - (-18) g	-15.4 g	Yes
Upper Thorax Rib Displacement	32 - 40 mm	36.3 mm	Yes
Center Thorax Rib Displacement	39 - 45 mm	41.2 mm	Yes
Lower Thorax Rib Displacement	35 - 43 mm	39.1 mm	Yes
Upper Spine Lateral Acceleration	13 - 17 g	14.4 g	Yes
Lower Spine Lateral Acceleration	7 - 11 g	9.4 g	Yes

Test meets specifications.

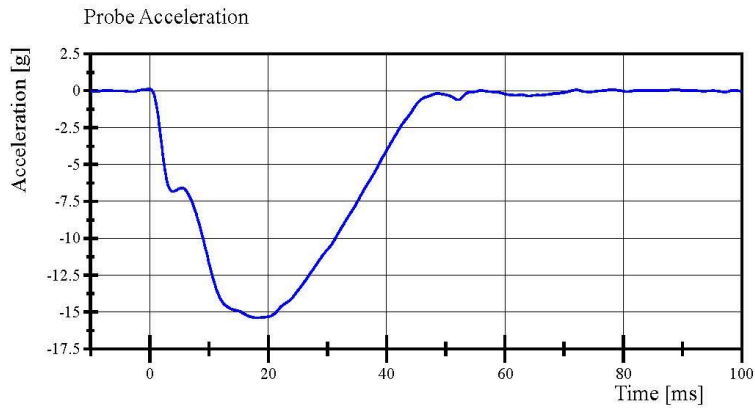
Condition: Used

Comments:

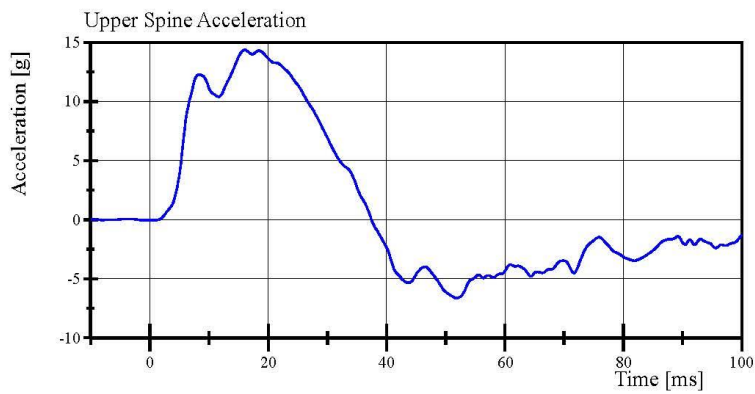
Upper Thorax Rib #1 S/N: DM5020
Middle Thorax Rib #2 S/N: DM5021
Lower Thorax Rib #3 S/N: DM5022

Transportation Research Center Inc.

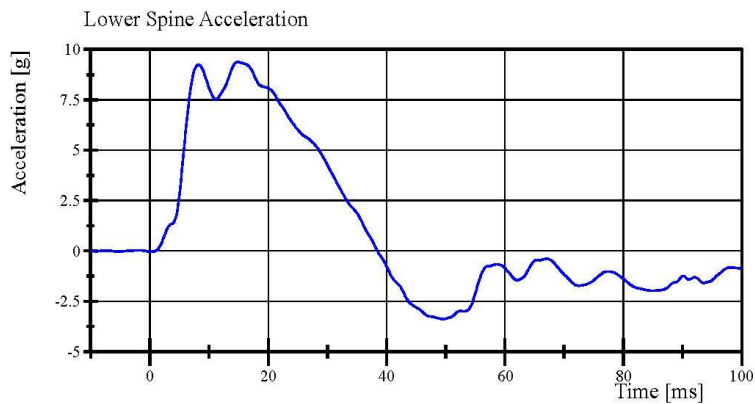
Left Lateral Thorax without Arm
SID IIS Serial No. 297 Certification No. 45-1
Test Date: 1/23/2020



Filter Class: CFC_180
Max: 0.1 g at -0.2 ms
Min: -15.4 g at 18.0 ms



Filter Class: CFC_180
Max: 14.4 g at 16.0 ms
Min: -6.6 g at 51.8 ms



Filter Class: CFC_180
Max: 9.4 g at 14.9 ms
Min: -3.4 g at 49.5 ms

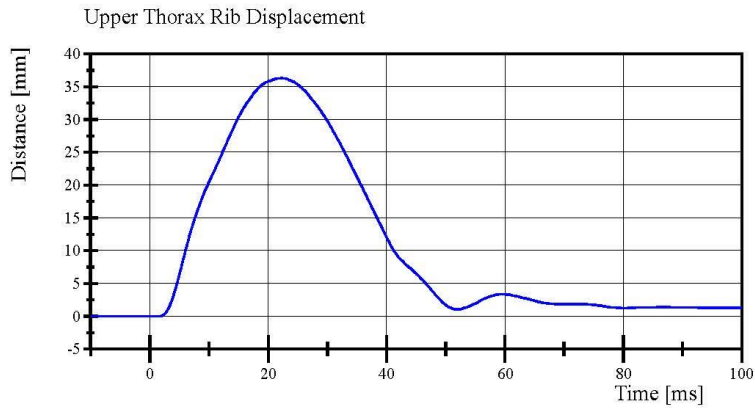
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

01.23.2020 08:27:38 796

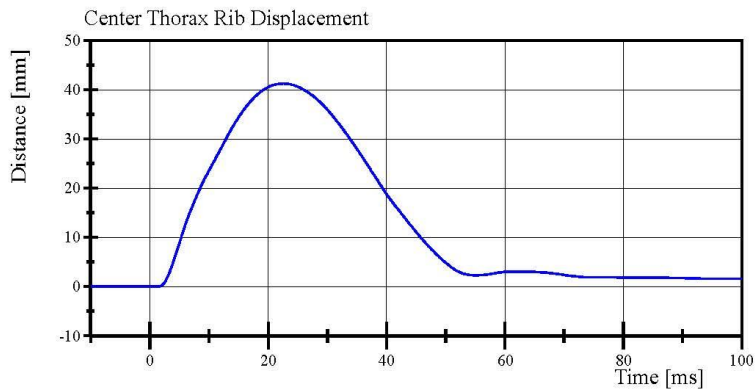


Transportation Research Center Inc.

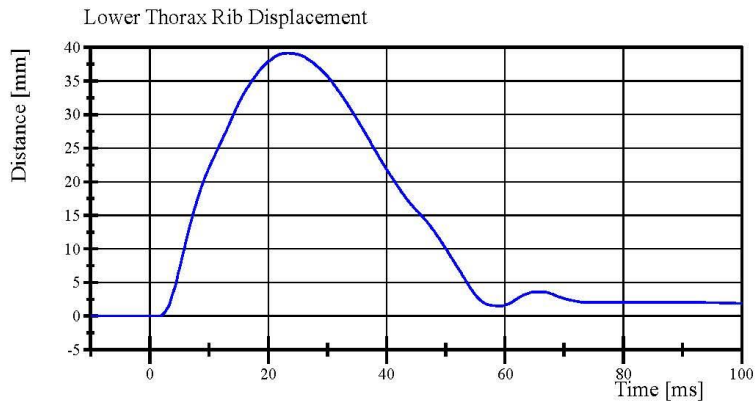
Left Lateral Thorax without Arm
SID IIs Serial No. 297 Certification No. 45-1
Test Date: 1/23/2020



Filter Class: CFC_600
Max: 36.3 mm at 22.3 ms
Min: -0.0 mm at 0.2 ms



Filter Class: CFC_600
Max: 41.2 mm at 22.6 ms
Min: -0.0 mm at -10.0 ms



Filter Class: CFC_600
Max: 39.1 mm at 23.4 ms
Min: -0.0 mm at 1.5 ms

Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

01.23.2020 08:27:38 796



Transportation Research Center Inc.

Left Lateral Abdomen
SID IIS Serial No. 297 Certification No. 45-1
Test Date: 1/23/2020

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.6 °C	Yes
Relative Humidity	10 - 70 %	38 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.28 m/s	Yes
Impactor Acceleration	(-12) - (-16) g	-14.4 g	Yes
Upper Abdominal Rib Displacement	36 - 47 mm	42.4 mm	Yes
Lower Abdominal Rib Displacement	33 - 44 mm	38.4 mm	Yes
Lower Spine Lateral Acceleration	9 - 14.0 g	10.74 g	Yes

Test meets specifications.

Condition: Used

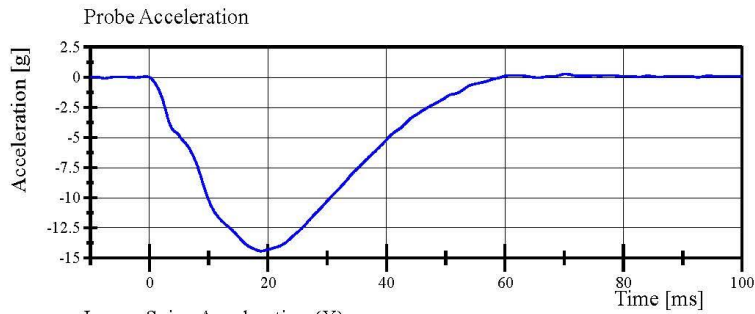
Comments:

Upper Abdominal Rib S/N: DM7281

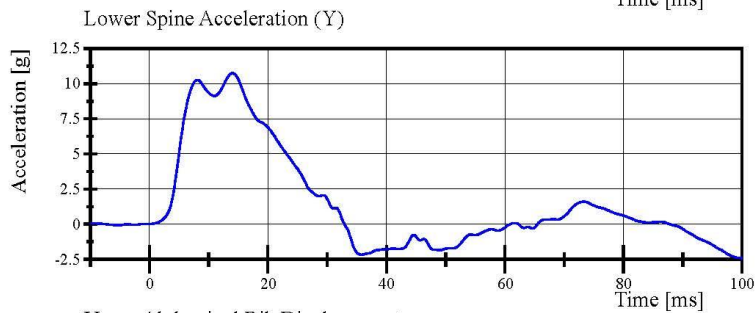
Lower Abdominal Rib S/N: DM7275

Transportation Research Center Inc.

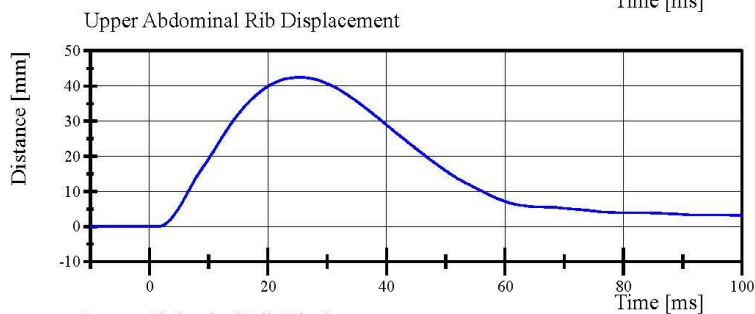
Left Lateral Abdomen
SID IIS Serial No. 297 Certification No. 45-1
Test Date: 1/23/2020



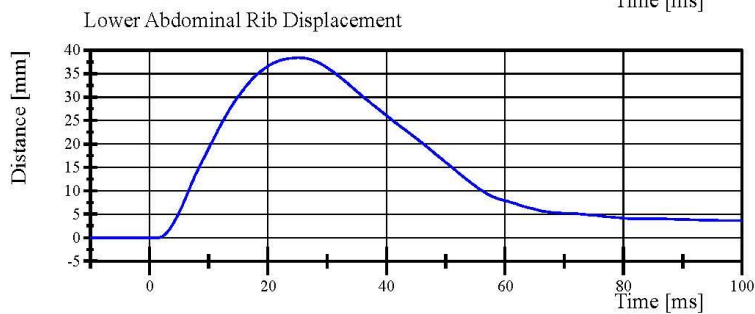
Filter Class: CFC_180
Max: 0.3 g at 70.2 ms
Min: -14.4 g at 18.9 ms



Filter Class: CFC_180
Max: 10.7 g at 14.0 ms
Min: -2.4 g at 100.0 ms



Filter Class: CFC_600
Max: 42.4 mm at 25.4 ms
Min: -0.0 mm at -9.8 ms



Filter Class: CFC_600
Max: 38.4 mm at 25.1 ms
Min: -0.0 mm at -10.0 ms

Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

01.23.2020 08:09:14 653



Transportation Research Center Inc.

Left Lateral Pelvis
SID IIS Serial No. 297 Certification No. 45-1
Test Date: 1/23/2020

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.5 °C	Yes
Relative Humidity	10 - 70 %	37 %	Yes
Pendulum Velocity	6.6 - 6.8 m/s	6.64 m/s	Yes
Impactor Acceleration	(-38.0) - (-47.0) g	-44.40 g	Yes
Peak Pelvis Lateral Acceleration after 6ms	34 - 42 g	37.8 g	Yes
Acetabulum Force	3,600 - 4,300 N	4,106.6 N	Yes

Test meets specifications.

Condition: Used

Comments:

Pelvis Skin S/N: EN1590

Pelvis Plug Info:

Manufacturer: Saco

S/N: 12580

Cal Date: 20181003

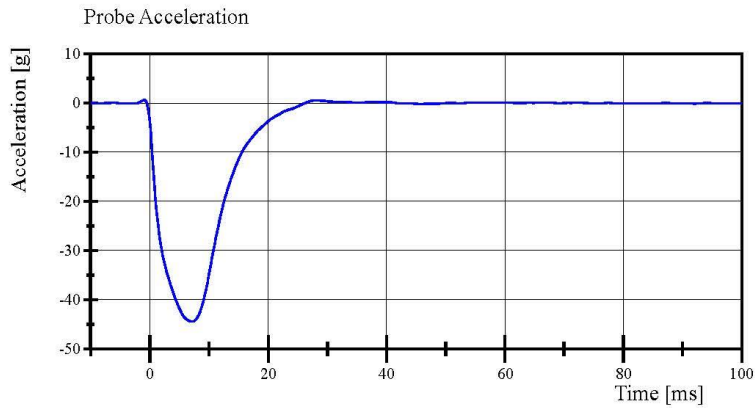
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

01.23.2020 07:34:40 465

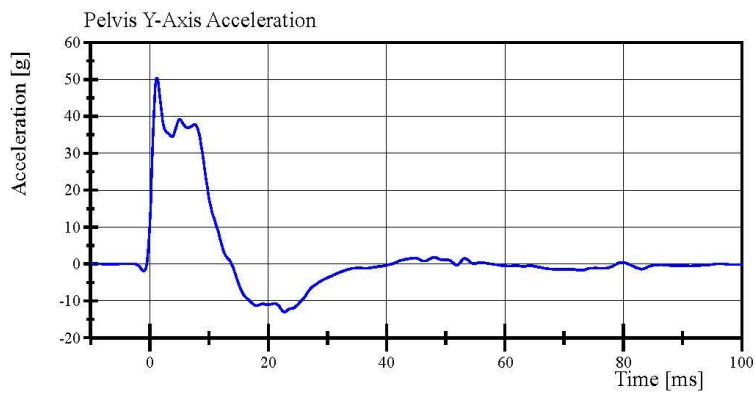


Transportation Research Center Inc.

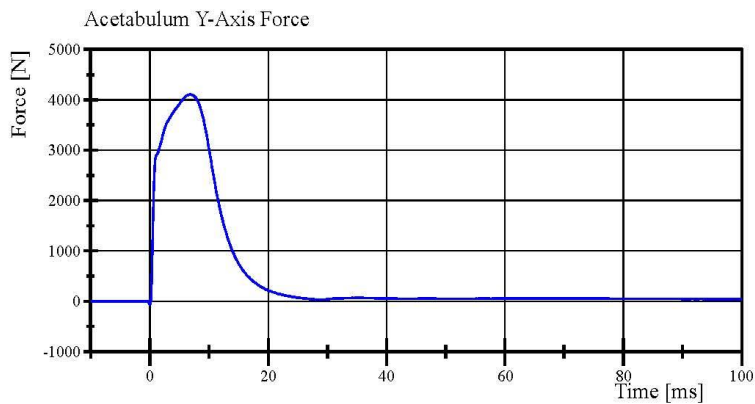
Left Lateral Pelvis
SID IIS Serial No. 297 Certification No. 45-1
Test Date: 1/23/2020



Filter Class: CFC_180
Max: 0.6 g at -1.0 ms
Min: -44.4 g at 7.1 ms



Filter Class: CFC_180
Max: 50.4 g at 1.2 ms
Min: -13.0 g at 22.7 ms



Filter Class: CFC_600
Max: 4,106.6 N at 6.8 ms
Min: -68.6 N at 0.0 ms

Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

01.23.2020 07:36:14 465



Transportation Research Center Inc.

Left Lateral Iliac
SID IIS Serial No. 297 Certification No. 45-1
Test Date: 1/23/2020

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	38 %	Yes
Pendulum Velocity	4.2 - 4.4 m/s	4.21 m/s	Yes
Impactor Acceleration	(-36) - (-45) g	-41.8 g	Yes
Peak Pelvis Lateral Acceleration	28 - 39 g	31.5 g	Yes
Iliac Force	4,100 - 5,100 N	4,862.3 N	Yes

Test meets specifications.

Condition: Used

Comments:

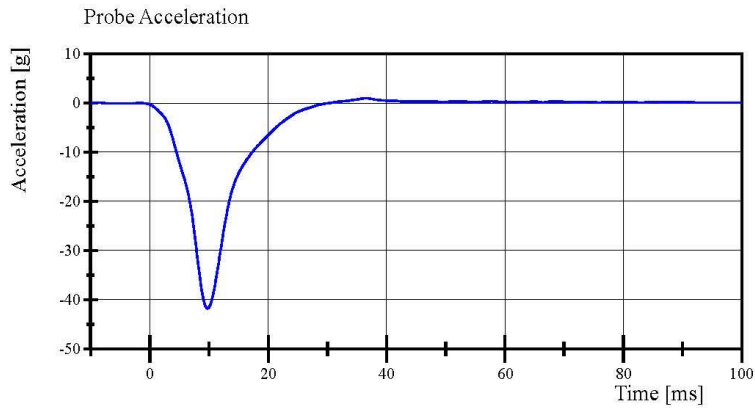
Pelvis S/N: EN1590

Transportation Research Center Inc.

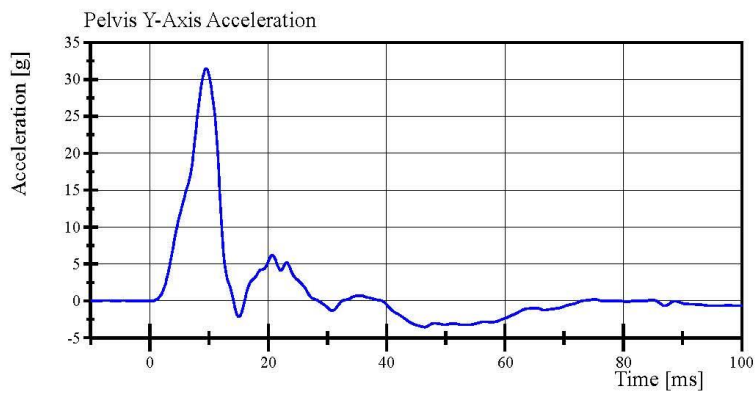
Left Lateral Iliac

SID IIs Serial No. 297 Certification No. 45-1

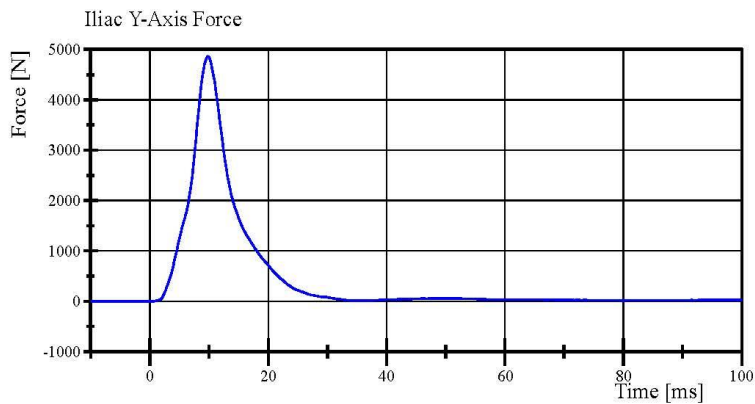
Test Date: 1/23/2020



Filter Class: CFC_180
Max: 1.0 g at 36.5 ms
Min: -41.8 g at 9.8 ms



Filter Class: CFC_180
Max: 31.5 g at 9.5 ms
Min: -3.6 g at 46.4 ms



Filter Class: CFC_600
Max: 4,862.3 N at 9.8 ms
Min: -0.9 N at -7.4 ms

Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

01.23.2020 10:10:17 690



Post-Test Calibration Sheets
Driver S/N 297

Transportation Research Center Inc.
SIDIIs Dummy - Level D
External Dimensions
Serial No. 297 Calibration No. 46

Symbol	Description	Specification	Results	Pass
		mm	mm	
A	Sitting Height	772.0 - 788.0	781	Yes
B	Shoulder Pivot Height	437.0 - 453.0	450	Yes
C	H-Point Height	79.0 - 89.0	85	Yes
D	H-Point from Seat Back	141.0 - 151.0	147	Yes
E	Shoulder Pivot from Backline	97.0 - 107.0	102	Yes
F	Thigh Clearance	119.0 - 135.0	131	Yes
G	Head Breadth	140.0 - 148.0	147	Yes
H	Head Back from Backline	40.0 - 46.0	45	Yes
I	Head Depth	178.0 - 188.0	183	Yes
J	Head Circumference	541.0 - 551.0	544	Yes
K	Buttock to Knee Length	514.0 - 540.0	528	Yes
L	Popliteal Height	343.0 - 369.0	353	Yes
M	Knee Pivot to Floor Height	393.0 - 409.0	400	Yes
N	Buttock Popliteal Length	416.0 - 442.0	430	Yes
O	Chest Depth without Jacket	195.0 - 211.0	200	Yes
P	Foot Length (right)	216.0 - 232.0	223	Yes
P	Foot Length (left)	216.0 - 232.0	223	Yes
Q	Hip Breadth	313.0 - 323.0	320	Yes
R	Arm Length	249.0 - 259.0	254	Yes
S	Knee Joint to seat Back	478.0 - 493.0	485	Yes
V	Shoulder Width (only one arm installed)	341.0 - 357.0	347	Yes
W	Foot Width (right)	78.0 - 94.0	85	Yes
W	Foot Width (left)	78.0 - 94.0	85	Yes
Y	Chest Circumference with Jacket	851.0 - 881.0	879	Yes
Z	Waist Circumference	761.0 - 791.0	782	Yes

Transportation Research Center Inc.

Left Lateral Head Drop
SID IIS Serial No. 297 Certification No. 46-1
Test Date: 2/24/2020

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.5 °C	Yes
Relative Humidity	10 - 70 %	37 %	Yes
Peak Head Resultant Acceleration	115 - 137 g	123.3 g	Yes
Peak Head Longitudinal Acceleration	(-15) - 15 g	1.5 g	Yes
Is Head Resultant Acceleration Curve Unimodal within 15% of Peak?	< 15 %	1.03 %	Yes

Test meets specifications.

Condition: Used

Comments:

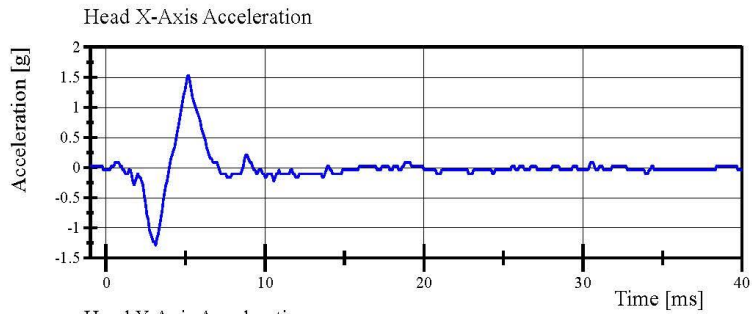
Head S/N: 1330

Transportation Research Center Inc.

Left Lateral Head Drop

SID IIS Serial No. 297 Certification No. 46-1

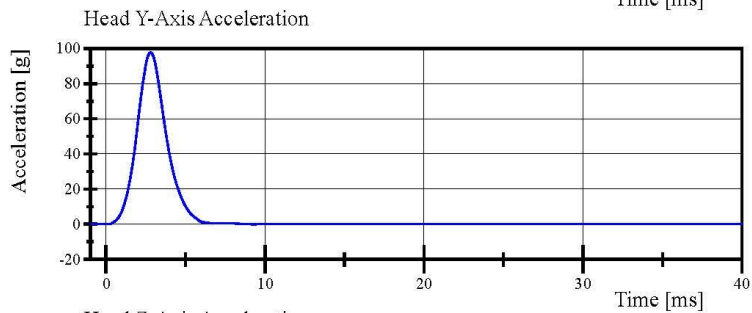
Test Date: 2/24/2020



Filter Class: CFC_1000

Max: 1.5 g at 5.1 ms

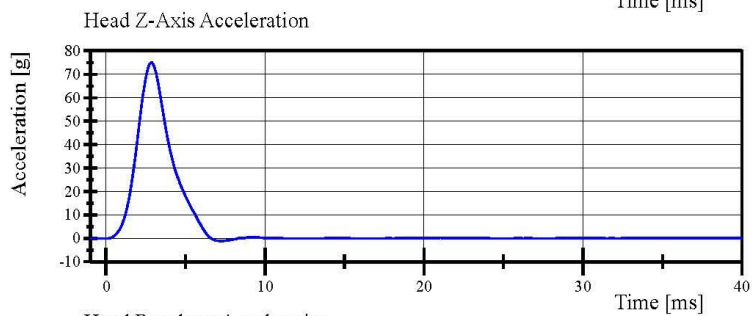
Min: -1.3 g at 3.1 ms



Filter Class: CFC_1000

Max: 97.9 g at 2.8 ms

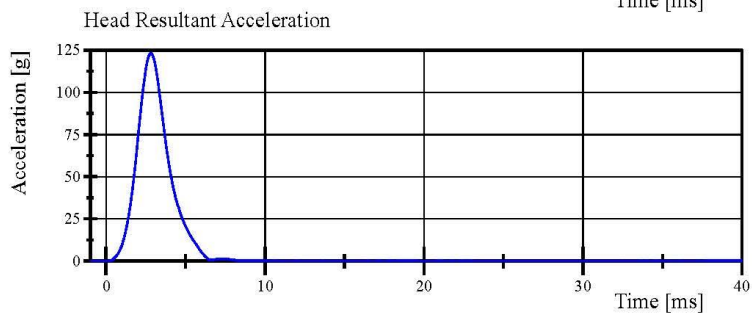
Min: -0.1 g at 9.2 ms



Filter Class: CFC_1000

Max: 75.0 g at 2.9 ms

Min: -1.1 g at 7.1 ms



Filter Class: CFC_1000

Max: 123.3 g at 2.8 ms

Min: 0.0 g at 16.7 ms

Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

02.24.2020 08:35:48 195



Transportation Research Center Inc.

Left Lateral Neck
SID IIS Serial No. 297 Certification No. 46-3
Test Date: 2/24/2020

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.6 °C	Yes
Relative Humidity	10 - 70 %	39 %	Yes
Pendulum Velocity	(-5.51) - (-5.63) m/s	-5.599 m/s	Yes
Pendulum Integrated Velocity			
Change at 10 ms	2.20 - 2.80 m/s	2.600 m/s	Yes
Change at 15 ms	3.30 - 4.10 m/s	3.778 m/s	Yes
Change at 20 ms	4.40 - 5.40 m/s	5.137 m/s	Yes
Change at 25 ms	5.40 - 6.10 m/s	5.918 m/s	Yes
Change at 25 to 100 ms	5.50 - 6.20 m/s	5.920 m/s	Yes
Maximum Headform Flexion occurring between 50ms and 70ms.			
Peak	(-71) - (-81) deg	-76.8 deg	Yes
Time of Peak	50 - 70 ms	64.3 ms	Yes
Total Neck Occipital Condyles Moment	36 - 44 N·m	42.9 N·m	Yes
Total Neck Occipital Condyles Moment Decay Time to 0 N·m	102 - 126 ms	121.4 ms	Yes

Test meets specifications.

Condition: Used

Comments:

Neck S/N: 779

Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

02.24.2020 10:22:55 718

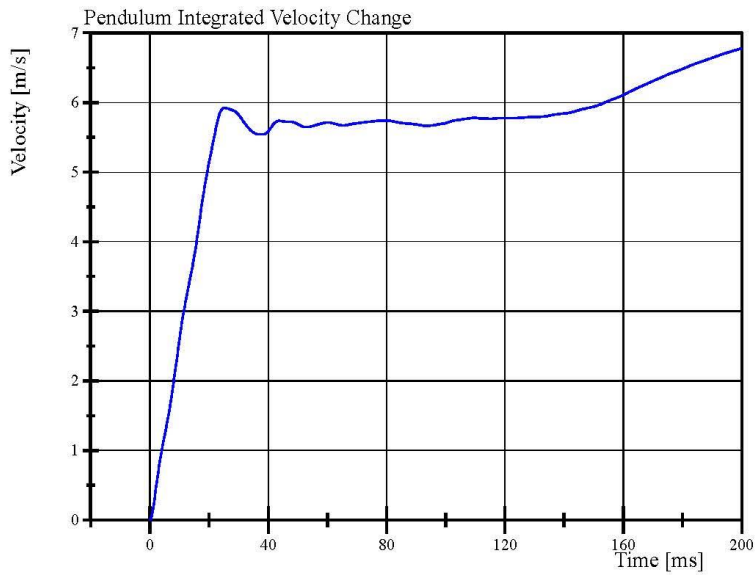
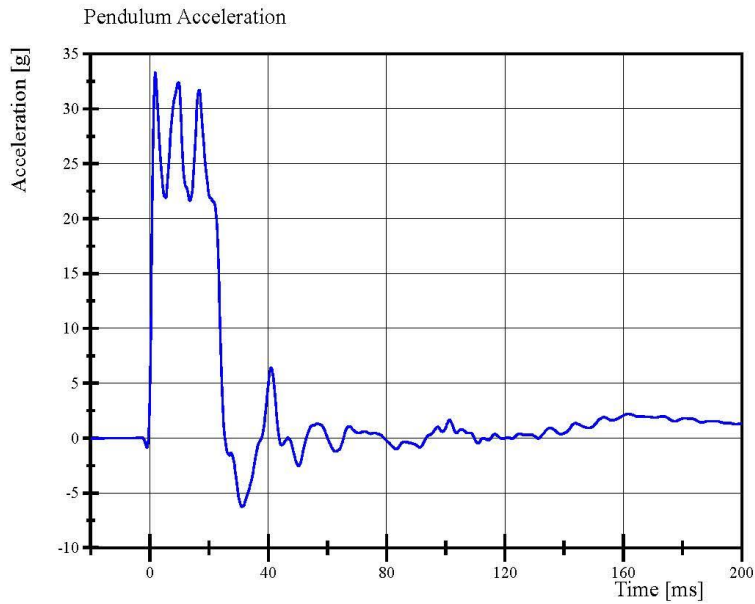


Transportation Research Center Inc.

Left Lateral Neck

SID IIS Serial No. 297 Certification No. 46-3

Test Date: 2/24/2020



Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

02.24.2020 10:23:11 718

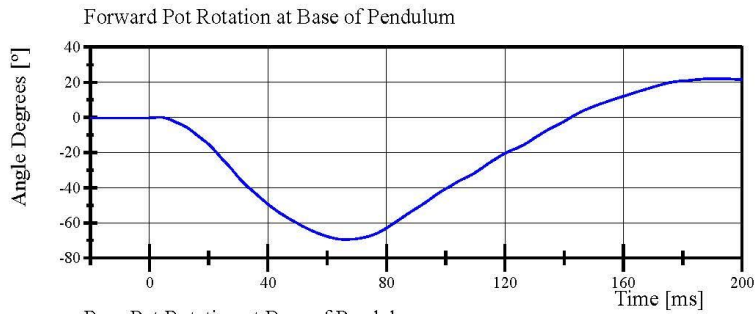


Transportation Research Center Inc.

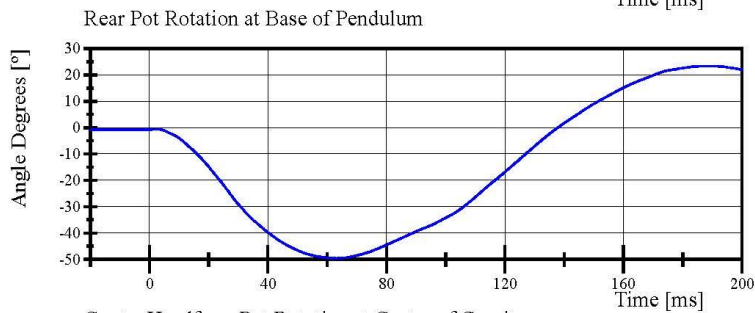
Left Lateral Neck

SID IIs Serial No. 297 Certification No. 46-3

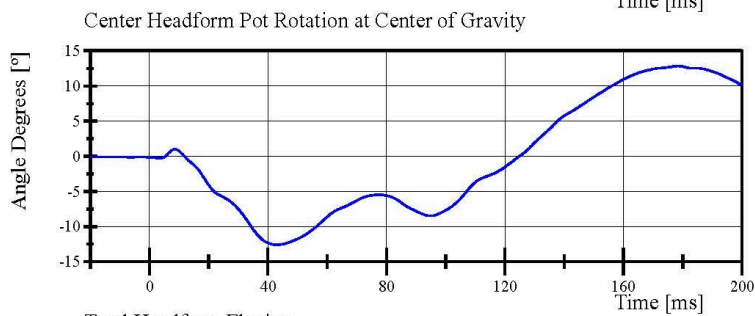
Test Date: 2/24/2020



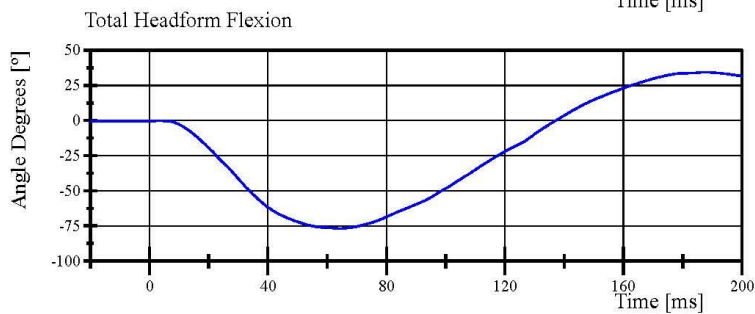
Filter Class: CFC_60
Max: 22.1 ° at 190.7 ms
Min: -69.5 ° at 66.2 ms



Filter Class: CFC_60
Max: 23.3 ° at 189.0 ms
Min: -49.6 ° at 63.0 ms



Filter Class: CFC_60
Max: 12.8 ° at 178.4 ms
Min: -12.6 ° at 43.0 ms



Filter Class: CFC_60
Max: 34.3 ° at 187.6 ms
Min: -76.8 ° at 64.3 ms

Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

02.24.2020 10:23:11 718

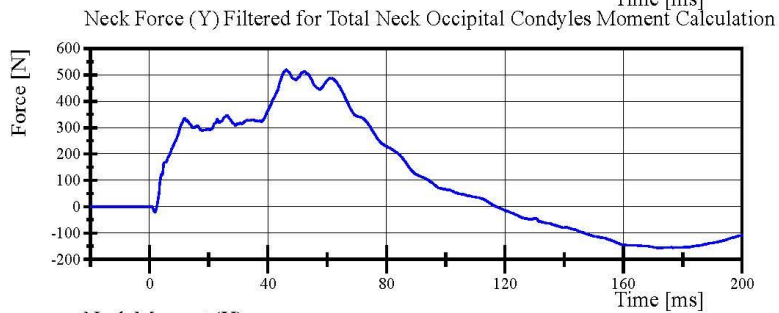


Transportation Research Center Inc.

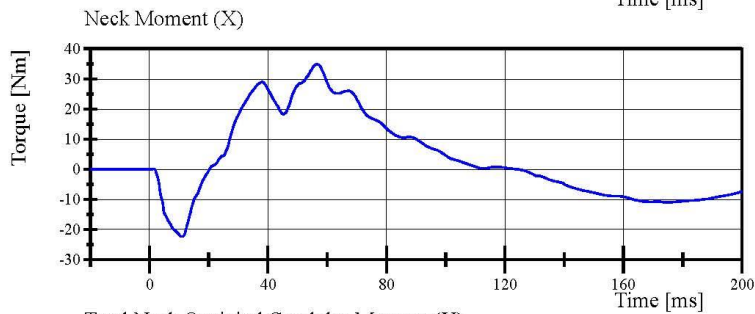
Left Lateral Neck
SID IIS Serial No. 297 Certification No. 46-3
Test Date: 2/24/2020



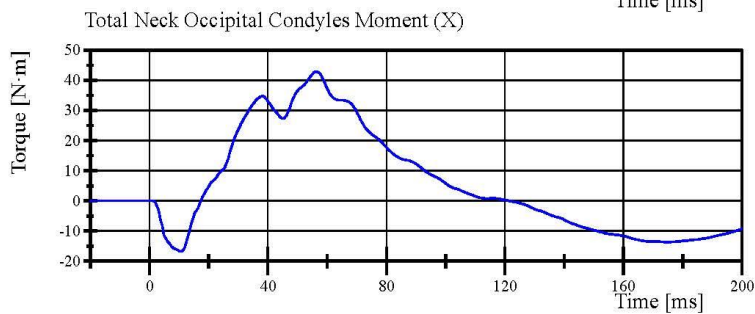
Filter Class: CFC_1000
Max: 521.2 N at 46.2 ms
Min: -156.9 N at 172.2 ms



Filter Class: CFC_600
Max: 519.9 N at 46.2 ms
Min: -156.7 N at 172.2 ms



Filter Class: CFC_600
Max: 34.9 Nm at 56.5 ms
Min: -22.3 Nm at 11.0 ms



Filter Class: Without_(Constar
Max: 42.9 N·m at 56.3 ms
Min: -16.7 N·m at 10.6 ms

Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

02.24.2020 10:23:11 718



Transportation Research Center Inc.

Left Lateral Shoulder
SID IIS Serial No. 297 Certification No. 46-1
Test Date: 2/24/2020

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.6 °C	Yes
Relative Humidity	10 - 70 %	40 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.28 m/s	Yes
Impactor Acceleration	(-13) - (-18) g	-14.9 g	Yes
Shoulder Displacement	28 - 37 mm	30.5 mm	Yes
Upper Spine Lateral Acceleration	17 - 22 g	19.4 g	Yes

Test meets specifications.

Condition: Used

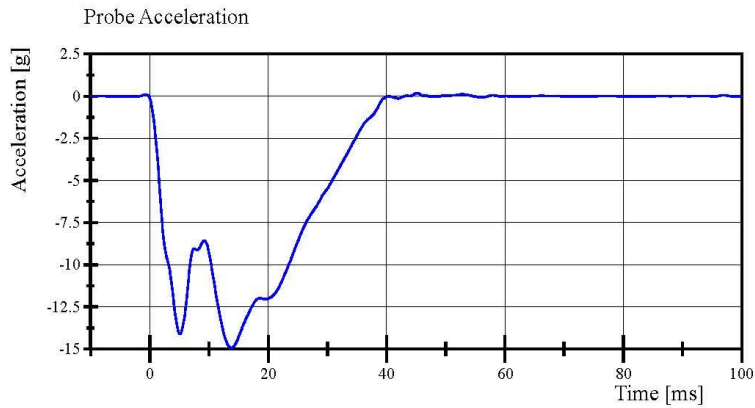
Comments:

Left Arm S/N: 940L

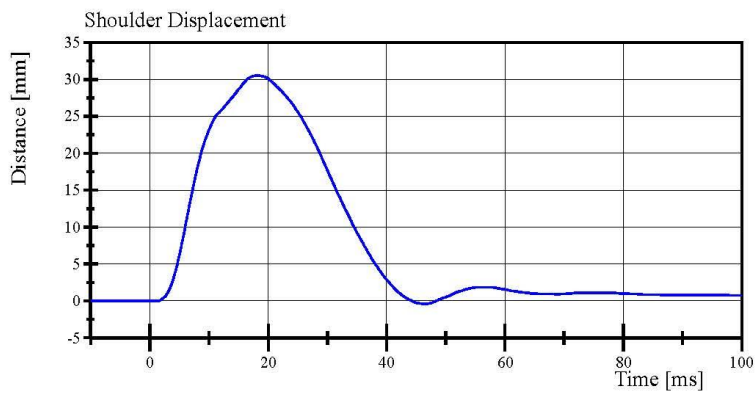
Shoulder Rib S/N: 180-3355 259

Transportation Research Center Inc.

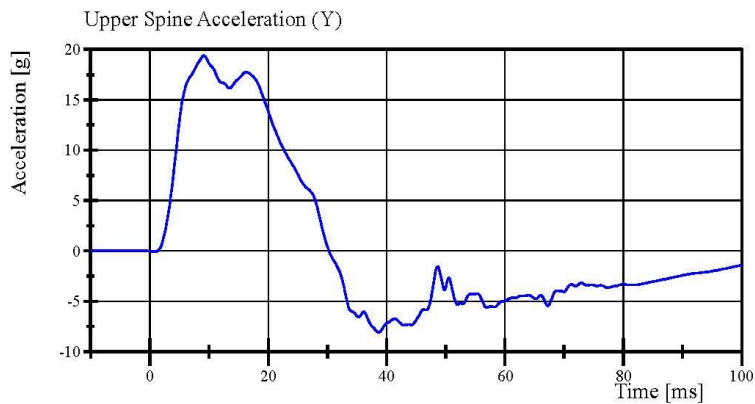
Left Lateral Shoulder
SID IIs Serial No. 297 Certification No. 46-1
Test Date: 2/24/2020



Filter Class: CFC_180
Max: 0.2 g at 45.1 ms
Min: -14.9 g at 13.8 ms



Filter Class: CFC_600
Max: 30.5 mm at 18.2 ms
Min: -0.4 mm at 46.4 ms



Filter Class: CFC_180
Max: 19.4 g at 9.1 ms
Min: -8.1 g at 38.6 ms

Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

02.24.2020 11:34:40 805



Transportation Research Center Inc.

Left Lateral Thorax with Arm
SID IIS Serial No. 297 Certification No. 46-1
Test Date: 2/24/2020

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	41 %	Yes
Impactor Velocity	6.60 - 6.80 m/s	6.749 m/s	Yes
Impactor Acceleration	(-30) - (-36) g	-33.8 g	Yes
Shoulder Displacement	31 - 40 mm	34.1 mm	Yes
Upper Thorax Rib Displacement	25 - 32 mm	26.9 mm	Yes
Center Thorax Rib Displacement	30 - 36 mm	32.0 mm	Yes
Lower Thorax Rib Displacement	32 - 38 mm	35.3 mm	Yes
Upper Spine Lateral Acceleration	34 - 43 g	38.1 g	Yes
Lower Spine Lateral Acceleration	29 - 37 g	36.1 g	Yes

Test meets specifications.

Condition: Used

Comments:

Left Arm S/N: 940L

Shoulder Rib S/N: 180-3355 259

Upper Thorax Rib #1 S/N: DM5020

Middle Thorax Rib #2 S/N: DM5021

Lower Thorax Rib #3 S/N: DM5022

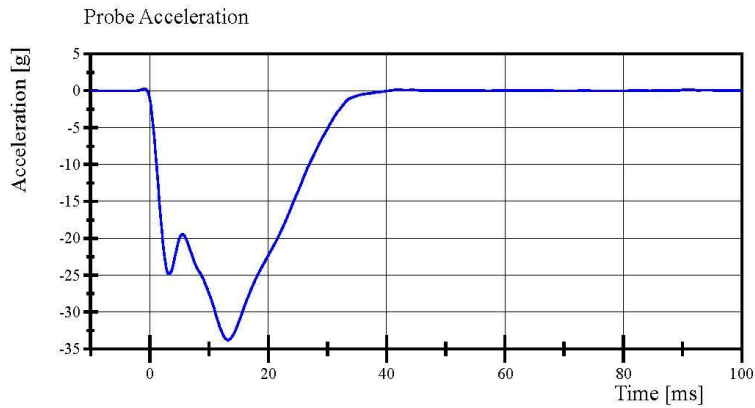
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

02.24.2020 13:32:26 615

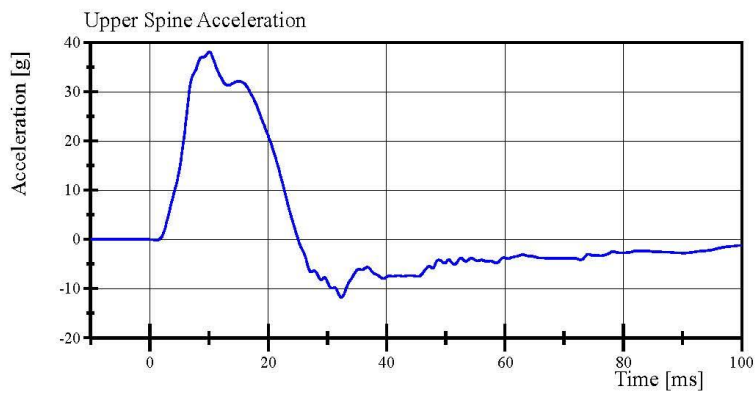


Transportation Research Center Inc.

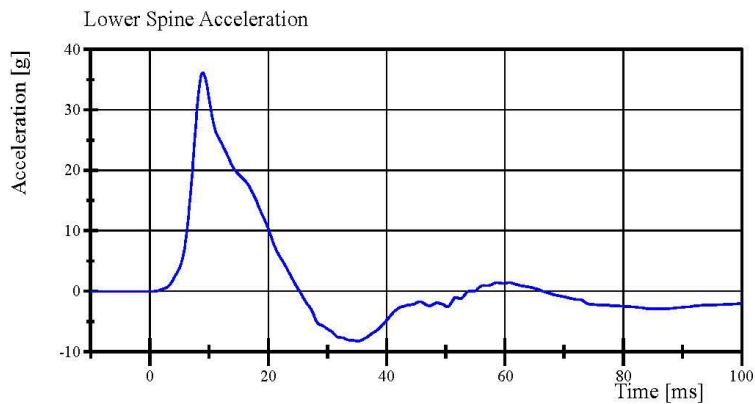
Left Lateral Thorax with Arm
SID IIS Serial No. 297 Certification No. 46-1
Test Date: 2/24/2020



Filter Class: CFC_180
Max: 0.3 g at -0.9 ms
Min: -33.8 g at 13.2 ms



Filter Class: CFC_180
Max: 38.1 g at 10.1 ms
Min: -11.8 g at 32.3 ms



Filter Class: CFC_180
Max: 36.1 g at 9.0 ms
Min: -8.3 g at 35.1 ms

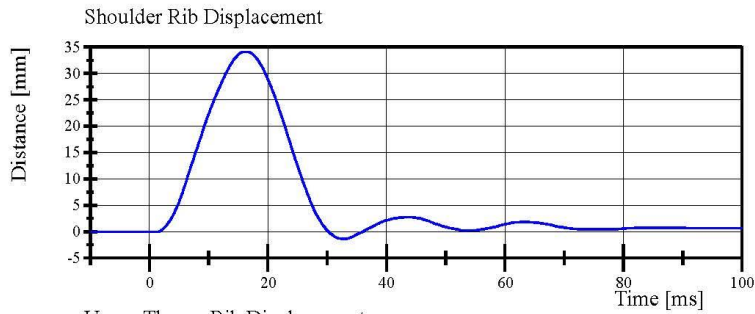
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

02.24.2020 13:33:14 615

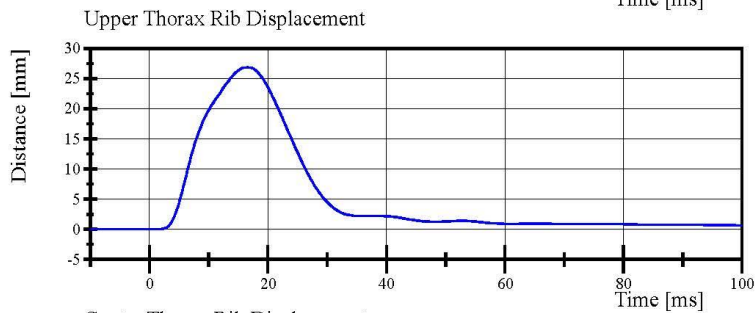


Transportation Research Center Inc.

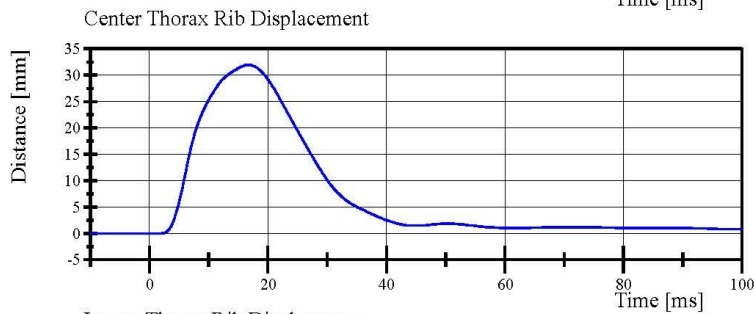
Left Lateral Thorax with Arm
SID IIS Serial No. 297 Certification No. 46-1
Test Date: 2/24/2020



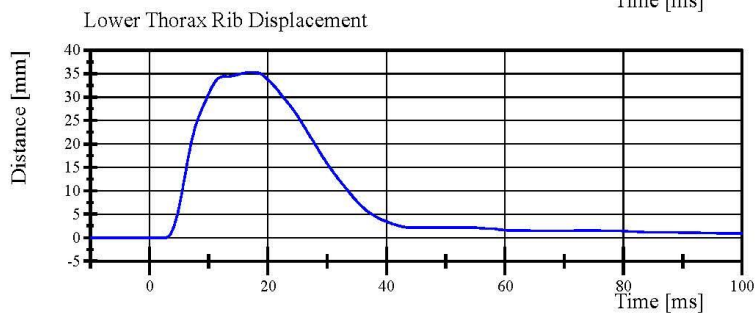
Filter Class: CFC_600
Max: 34.1 mm at 16.2 ms
Min: -1.4 mm at 32.9 ms



Filter Class: CFC_600
Max: 26.9 mm at 16.6 ms
Min: -0.0 mm at 1.1 ms



Filter Class: CFC_600
Max: 32.0 mm at 16.7 ms
Min: -0.0 mm at 1.0 ms



Filter Class: CFC_600
Max: 35.3 mm at 16.8 ms
Min: -0.0 mm at 2.7 ms

Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

02.24.2020 13:33:14 615



Transportation Research Center Inc.

Left Lateral Thorax without Arm
SID IIS Serial No. 297 Certification No. 46-1
Test Date: 2/24/2020

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	40 %	Yes
Impactor Velocity	4.20 - 4.40 m/s	4.327 m/s	Yes
Impactor Acceleration	(-14) - (-18) g	-15.5 g	Yes
Upper Thorax Rib Displacement	32 - 40 mm	36.0 mm	Yes
Center Thorax Rib Displacement	39 - 45 mm	41.3 mm	Yes
Lower Thorax Rib Displacement	35 - 43 mm	39.0 mm	Yes
Upper Spine Lateral Acceleration	13 - 17 g	14.6 g	Yes
Lower Spine Lateral Acceleration	7 - 11 g	9.5 g	Yes

Test meets specifications.

Condition: Used

Comments:

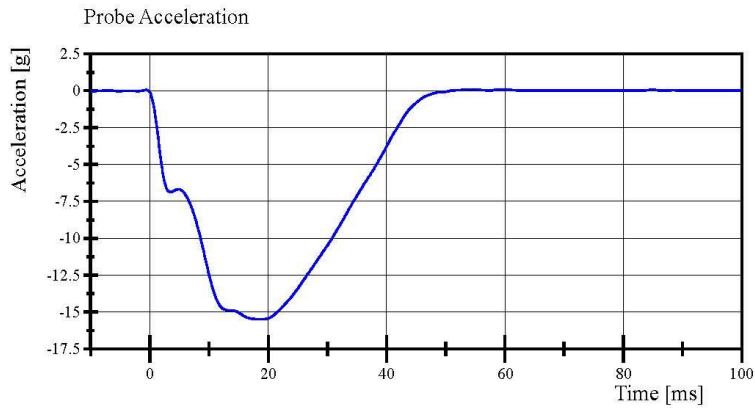
Upper Thorax Rib #1 S/N: DM5020

Middle Thorax Rib #2 S/N: DM5021

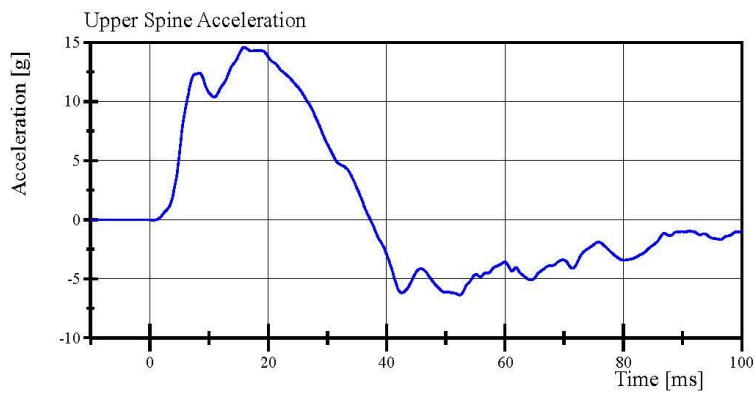
Lower Thorax Rib #3 S/N: DM5022

Transportation Research Center Inc.

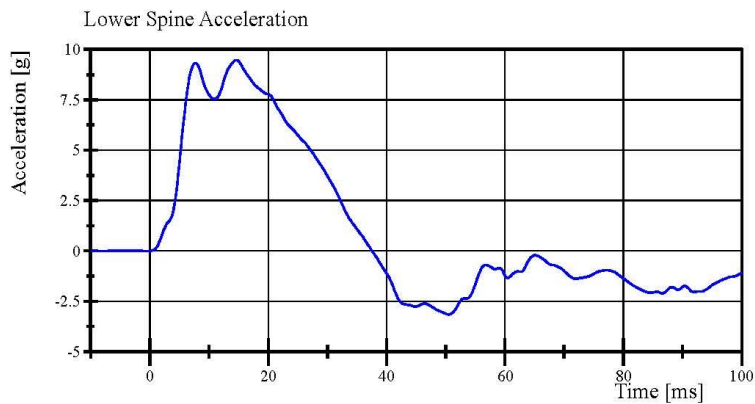
Left Lateral Thorax without Arm
SID IIS Serial No. 297 Certification No. 46-1
Test Date: 2/24/2020



Filter Class: CFC_180
Max: 0.1 g at 53.9 ms
Min: -15.5 g at 19.0 ms



Filter Class: CFC_180
Max: 14.6 g at 15.9 ms
Min: -6.4 g at 52.4 ms



Filter Class: CFC_180
Max: 9.5 g at 14.6 ms
Min: -3.2 g at 50.5 ms

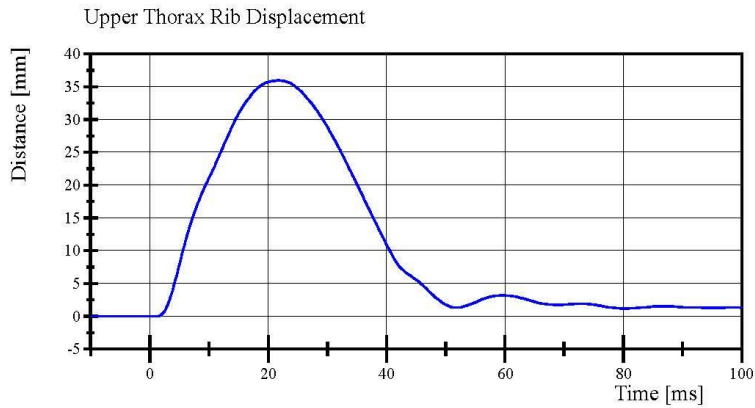
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

02.24.2020 12:56:38 849

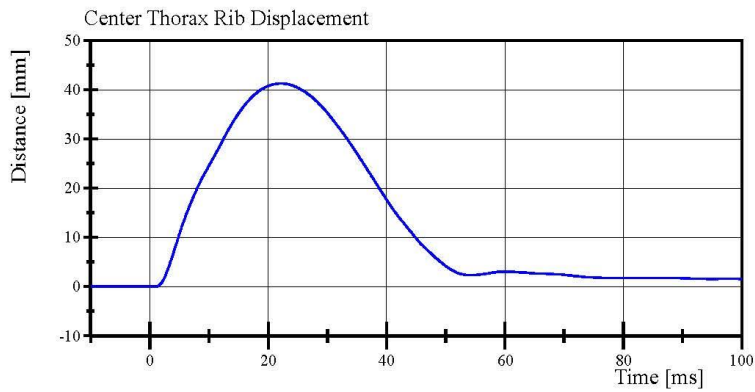


Transportation Research Center Inc.

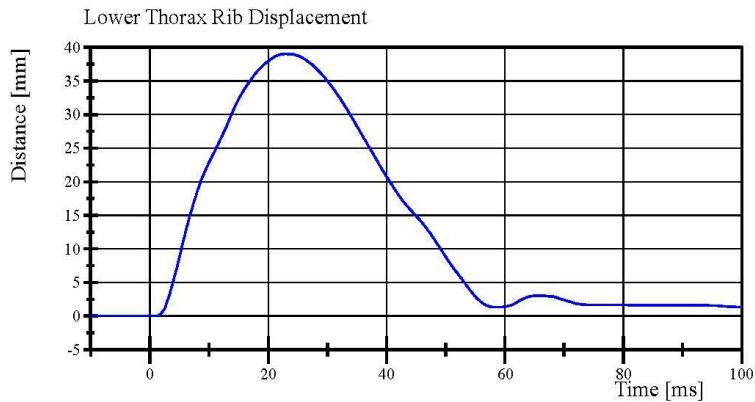
Left Lateral Thorax without Arm
SID IIS Serial No. 297 Certification No. 46-1
Test Date: 2/24/2020



Filter Class: CFC_600
Max: 36.0 mm at 21.8 ms
Min: -0.0 mm at -2.6 ms



Filter Class: CFC_600
Max: 41.3 mm at 22.2 ms
Min: -0.0 mm at 0.0 ms



Filter Class: CFC_600
Max: 39.0 mm at 23.0 ms
Min: -0.0 mm at 1.0 ms

Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

02.24.2020 12:56:38 849



Transportation Research Center Inc.

Left Lateral Abdomen
SID IIS Serial No. 297 Certification No. 46-1
Test Date: 2/24/2020

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	39 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.28 m/s	Yes
Impactor Acceleration	(-12) - (-16) g	-14.2 g	Yes
Upper Abdominal Rib Displacement	36 - 47 mm	41.2 mm	Yes
Lower Abdominal Rib Displacement	33 - 44 mm	39.3 mm	Yes
Lower Spine Lateral Acceleration	9 - 14.0 g	11.35 g	Yes

Test meets specifications.

Condition: Used

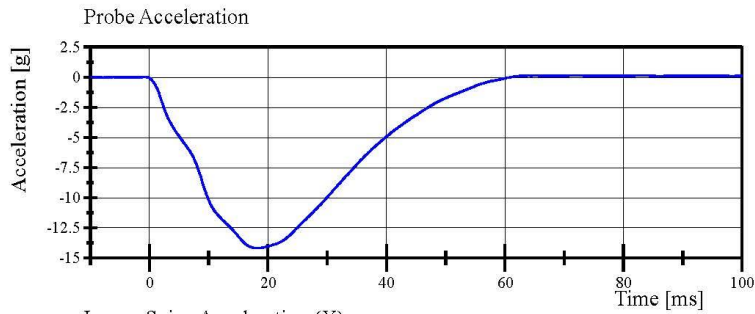
Comments:

Upper Abdominal Rib S/N: DM7281

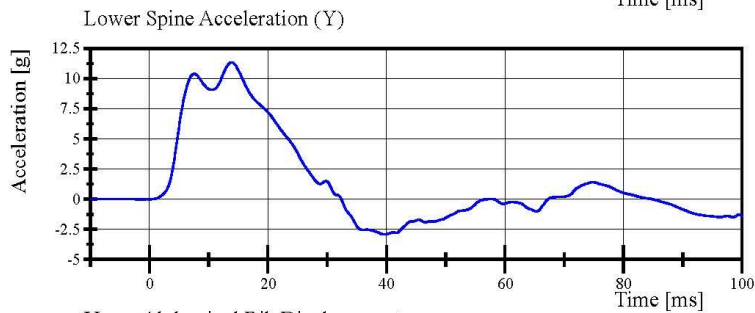
Lower Abdominal Rib S/N: DM7275

Transportation Research Center Inc.

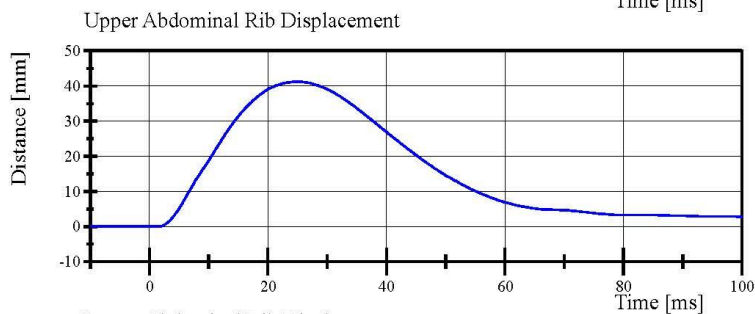
Left Lateral Abdomen
SID IIS Serial No. 297 Certification No. 46-1
Test Date: 2/24/2020



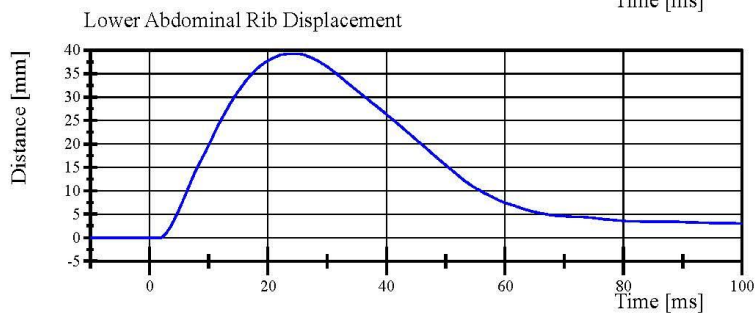
Filter Class: CFC_180
Max: 0.2 g at 83.1 ms
Min: -14.2 g at 18.2 ms



Filter Class: CFC_180
Max: 11.3 g at 13.8 ms
Min: -2.9 g at 39.6 ms



Filter Class: CFC_600
Max: 41.2 mm at 25.0 ms
Min: -0.0 mm at 1.4 ms



Filter Class: CFC_600
Max: 39.3 mm at 24.2 ms
Min: -0.0 mm at 1.8 ms

Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

02.24.2020 12:00:28 604



Transportation Research Center Inc.

Left Lateral Pelvis
SID IIS Serial No. 297 Certification No. 46-1
Test Date: 2/24/2020

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.5 °C	Yes
Relative Humidity	10 - 70 %	41 %	Yes
Pendulum Velocity	6.6 - 6.8 m/s	6.65 m/s	Yes
Impactor Acceleration	(-38.0) - (-47.0) g	-43.35 g	Yes
Peak Pelvis Lateral Acceleration after 6ms	34 - 42 g	40.8 g	Yes
Acetabulum Force	3,600 - 4,300 N	3,908.5 N	Yes

Test meets specifications.

Condition: Used

Comments:

Pelvis Skin S/N: EN1590

Pelvis Plug Info:

Manufacturer: Saco

S/N: 13110

Cal Date: 20190805

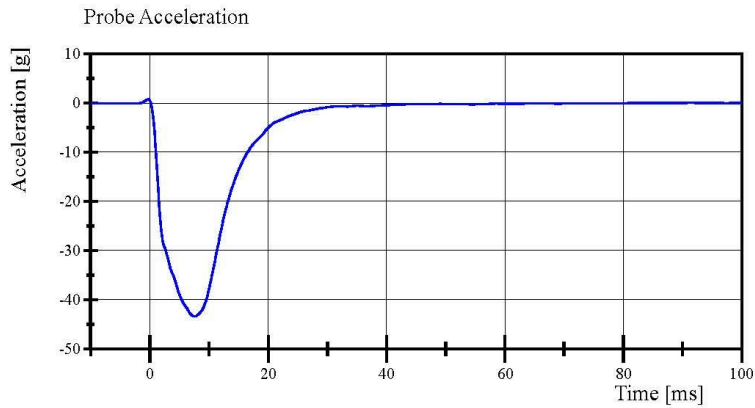
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

02.24.2020 11:18:31 406

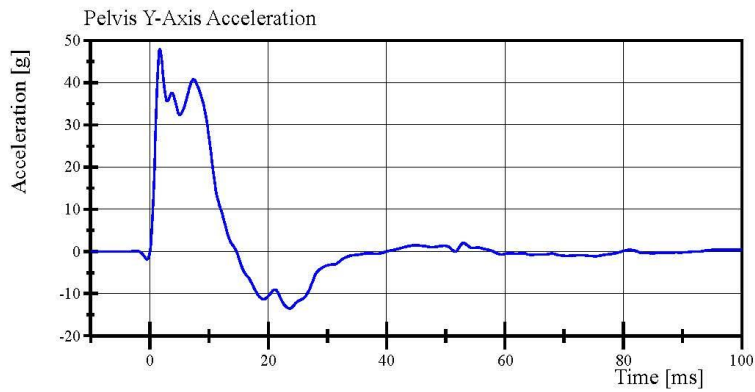


Transportation Research Center Inc.

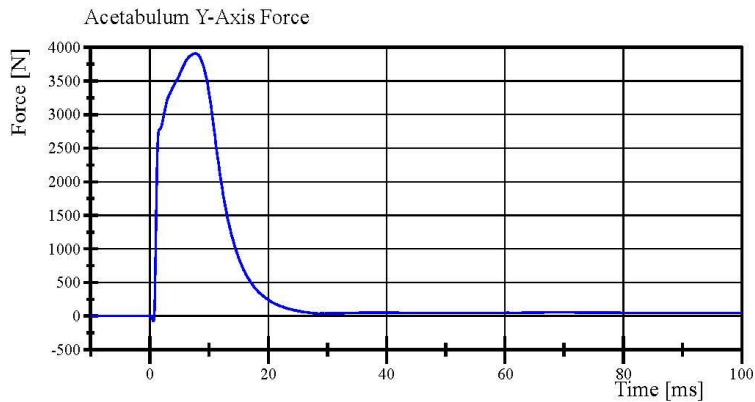
Left Lateral Pelvis
SID IIS Serial No. 297 Certification No. 46-1
Test Date: 2/24/2020



Filter Class: CFC_180
Max: 0.8 g at -0.3 ms
Min: -43.3 g at 7.6 ms



Filter Class: CFC_180
Max: 47.9 g at 1.7 ms
Min: -13.5 g at 23.6 ms



Filter Class: CFC_600
Max: 3,908.5 N at 7.7 ms
Min: -73.6 N at 0.6 ms

Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

02.24.2020 11:19:57 406



Transportation Research Center Inc.

Left Lateral Iliac

SID IIS Serial No. 297 Certification No. 46-1

Test Date: 2/24/2020

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	40 %	Yes
Pendulum Velocity	4.2 - 4.4 m/s	4.22 m/s	Yes
Impactor Acceleration	(-36) - (-45) g	-38.6 g	Yes
Peak Pelvis Lateral Acceleration	28 - 39 g	30.2 g	Yes
Iliac Force	4,100 - 5,100 N	4,424.7 N	Yes

Test meets specifications.

Condition: Used

Comments:

Pelvis S/N: EN1590

Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

02.24.2020 14:01:41 677

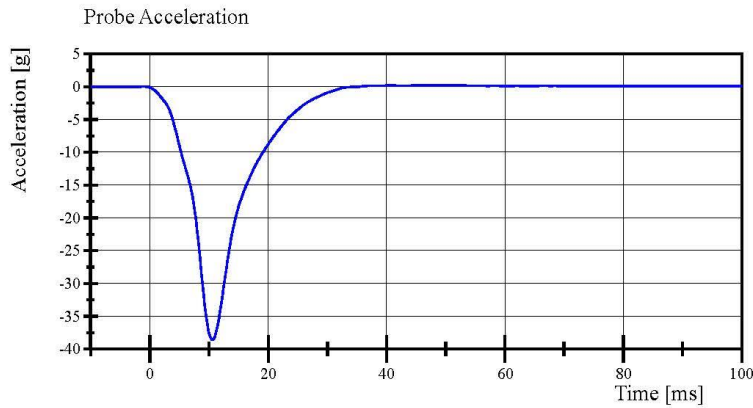


Transportation Research Center Inc.

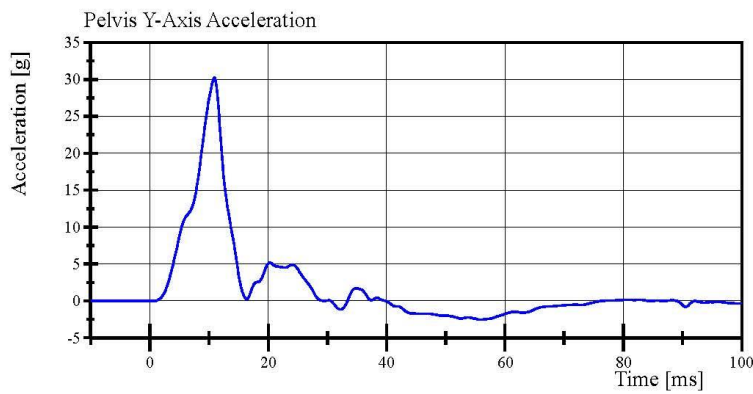
Left Lateral Iliac

SID IIs Serial No. 297 Certification No. 46-1

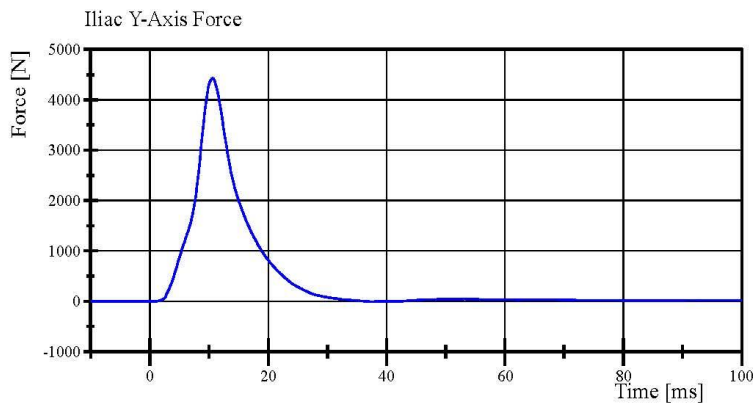
Test Date: 2/24/2020



Filter Class: CFC_180
Max: 0.2 g at 49.1 ms
Min: -38.6 g at 10.6 ms



Filter Class: CFC_180
Max: 30.2 g at 10.9 ms
Min: -2.6 g at 55.8 ms



Filter Class: CFC_600
Max: 4,424.7 N at 10.6 ms
Min: -8.9 N at 37.4 ms

Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

02.24.2020 14:02:25 677



APPENDIX D
TEST EQUIPMENT AND INSTRUMENTATION CALIBRATION DATA

TABLE 1 – Dummy Instrumentation (SID-IIs)

			SID-IIs S/N 297			
			Serial Number	Manufacturer	Calibration Date	
Head Accelerometers			X	P93539	Endevco	9-Oct-2019
			Y	P93549	Endevco	10-Oct-2019
			Z	P93776	Endevco	10-Oct-2019
Displacement Potentiometers	Shoulder		Y	N/A	N/A	N/A
	Thoracic Rib	Upper	Y	023	Servo	25-Sep-2019
		Middle	Y	063	Servo	18-Dec-2019
		Lower	Y	043	Servo	18-Apr-2019
	Abdominal Rib	Upper	Y	01811	Servo	9-Apr-2019
		Lower	Y	051	Servo	18-Apr-2019
Lower Spine Accelerometers (T12)			X	P94425	Endevco	10-Oct-2019
			Y	P91522	Endevco	10-Oct-2019
			Z	P91511	Endevco	10-Oct-2019
Acetabulum Load Cell			Y	235-FY	FTSS	18-Apr-2019
Iliac Wing Load Cell			Y	320-FY	FTSS	18-Apr-2019
Pelvis Plug (struck side)				13183	SACO	8-Aug-2019
Pelvis Plug (non-struck side)				12639	SACO	21-Nov-2018

TABLE 2 – Vehicle Instrumentation

Vehicle Instrumentation		Serial Number	Manufacturer	Calibration Date
Vehicle Center of Gravity	X	T11808	Endevco	21-Jan-2020
Vehicle Center of Gravity	Y	T16764	Endevco	21-Jan-2020
Vehicle Center of Gravity	Z	T11812	Endevco	21-Jan-2020
Left Floor Sill	Y	T11871	Endevco	22-Jan-2020
A-Pillar Sill	Y	T23826	Endevco	11-Feb-2020
A-Pillar Low	Y	P50491	Endevco	1-Nov-2019
A-Pillar Mid	Y	P50313	Endevco	1-Nov-2019
B-Pillar Sill	Y	T11806	Endevco	22-Jan-2020
B-Pillar Low	Y	P87822	Endevco	16-Dec-2019
B-Pillar Mid	Y	P94561	Endevco	11-Oct-2019
Driver Seat	Y	T11802	Endevco	7-Feb-2020
Engine Top	X	P44288	Endevco	1-Nov-2019
Engine Top	Y	T11449	Endevco	1-Nov-2019
Firewall	Y	P81065	Endevco	10-Jan-2020
Right Roof	Y	T23879	Endevco	11-Feb-2020
Right Floor Sill	Y	T23816	Endevco	11-Feb-2020
Rear Floor Pan	X	T16763	Endevco	21-Jan-2020
Rear Floor Pan	Y	T16772	Endevco	21-Jan-2020

TABLE 3 – Pole Instrumentation

Pole Instrumentation	Serial Number	Manufacturer	Calibration Date
Load Cell 1	DK7091S	Humanetics	13-Nov-2019
Load Cell 2	DK7120S	Humanetics	13-Nov-2019
Load Cell 3	DK7118S	Humanetics	13-Nov-2019
Load Cell 4	DK7124S	Humanetics	13-Nov-2019
Load Cell 5	DK7111S	Humanetics	13-Nov-2019
Load Cell 6	DK7126S	Humanetics	13-Nov-2019
Load Cell 7	DK7112S	Humanetics	13-Nov-2019
Load Cell 8	DK7074S	Humanetics	13-Nov-2019