

FINAL REPORT NUMBER: SPNCAP-TRC-19-004

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

**FCA US LLC
2019 Ram 1500 Crew Cab
NHTSA NUMBER: M20190311**

**PREPARED BY:
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Report Date: July 30, 2019


FINAL REPORT

**PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
Office of Crashworthiness Standards
Mail Code: NRM-110
1200 New Jersey Ave, SE
Room W43-410
Washington, D.C. 20590**

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Report Prepared By: ILO Project Operations Group

Report Approved By: 
John Shultz

Approval Date: July 30, 2019

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
NHTSA, Office of Crashworthiness Standards

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 2019 Ram 1500 Crew Cab, 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 May 9, 2019.</p> <p>The impact velocity was 32.24 km/h, and the ambient temperature at the struck (left) side of the target vehicle at the time of impact was 21.2° C. The test vehicle's post-test maximum crush was 416 mm at Level 2 and 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>165</u></td> </tr> <tr> <td>Resultant Lower Spine Acceleration:</td> <td>g's</td> <td>82</td> <td><u>40.2</u></td> </tr> <tr> <td>Total Pelvic Force: (sum of acetabular and iliac forces)</td> <td>N</td> <td>5525</td> <td><u>2924.1</u></td> </tr> <tr> <td>Maximum Thoracic Rib Deflection</td> <td>mm</td> <td>38*</td> <td><u>18.6</u></td> </tr> <tr> <td>Maximum Abdomen Rib Deflection</td> <td>mm</td> <td>45*</td> <td><u>17.5</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>165</u>	Resultant Lower Spine Acceleration:	g's	82	<u>40.2</u>	Total Pelvic Force: (sum of acetabular and iliac forces)	N	5525	<u>2924.1</u>	Maximum Thoracic Rib Deflection	mm	38*	<u>18.6</u>	Maximum Abdomen Rib Deflection	mm	45*	<u>17.5</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, NPO-411 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 MY 19 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 2019 Ram 1500 Crew Cab manufactured by FCA US LLC. 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 2019 Ram 1500 Crew Cab. The subject vehicle was towed into the rigid pole at an angle of 75° and a velocity of 32.24 km/h. The side impact test was conducted by Transportation Research Center Inc. in East Liberty, OH, on May 9, 2019. 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	165
Lower Spine Acceleration Resultant	G	82	40.2
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	2924.1
Maximum Thoracic Rib Deflection	mm	38*	18.6
Maximum Abdominal Rib Deflection	mm	45*	17.5

* 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

NHTSA numbers were changed between receipt of the vehicles and testing therefore some incoming photos have the original number in them as prep work had already began

Left Lower A-Pillar Acceleration (Y); Channel failed

Driver Head Angular Velocity X; Channel failed

SECTION 3
OCCUPANT AND VEHICLE INFORMATION

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

Test Vehicle: 2019 Ram 1500 Crew Cab
Test Program: SPNCAP Side Impact

NHTSA No.: M20190311
Test Date: 5/9/2019

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	M20190311
Model Year	2019
Make	Ram
Model	1500 Crew Cab
Body Style	Truck
VIN	1C6RREGG4KN751001
Body Color	Billet Silver Metallic
Odometer Reading (km/mi)	7 mi
Engine Displacement (L)	3.6
Type/No. Cylinders	V/6
Engine Placement	Front Longitudinal
Transmission Type	Automatic
Transmission Speeds	8
Overdrive	Yes
Final Drive	RWD
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	Yes
Other Optional Feature	No
Driver Front Airbag	Yes
Driver Curtain Airbag	Yes
Driver Head/Torso Airbag	No
Driver Torso Airbag	No
Driver Torso/Pelvis Airbag	Yes
Driver Pelvis Airbag	No
Driver Knee Airbag	No
Rear Pass. Curtain Airbag	Yes
Rear Pass. Head/Torso Airbag	No
Rear Pass. Torso Airbag	No
Rear Pass. Torso/Pelvis Airbag	No
Rear Pass. Pelvis Airbag	No
Driver Seat Belt Pretensioner	Yes
Rear Pass. Seat Belt Pretensioner	No
Driver Load Limiter	Yes
Rear Pass. Load Limiter	No
Other Safety Restraint	No

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

No

DATA FROM CERTIFICATION LABEL

Manufactured By	FCA US LLC
Date of Manufacturer	1-19
Vehicle Type	Truck

GVWR (kg)	3130
GAWR Front (kg)	1679
GAWR Rear (kg)	1860

VEHICLE SEATING AND WEIGHT CAPACITY DATA

	Front	Rear	Third	Total
Designated Seating Capacity (DSC)	3	3	N/A	6
Vehicle Capacity Weight (VCW) (kg)				884.0
DSC X 68.04 kg				408.24
Rated Cargo and Luggage Weight (RCLW) (kg)				475.76

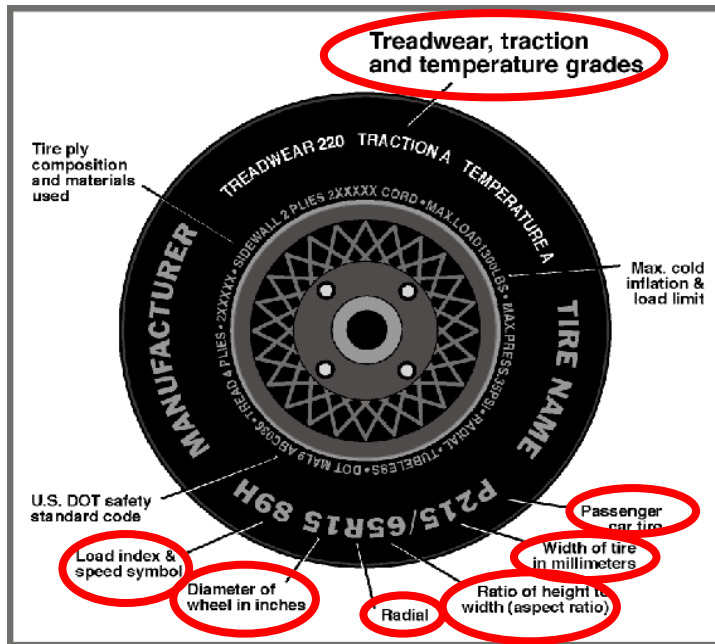
VEHICLE SEAT TYPE

Seating Location	Type of Seat Pan				Type of Seat Back		
	Bucket	Bench	Split Bench	Contoured	Fixed	Adjustable	
						W/ Lever	W/ Knob
Front Seat	N/A	N/A	Yes		N/A	Yes	N/A
Rear or Second Row Seat	N/A	Yes	N/A	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: 2019 Ram 1500 Crew Cab
 Test Program: SPNCAP Side Impact

NHTSA No.: M20190311
 Test Date: 5/9/2019



DATA FROM TIRE PLACARD

Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	300	300
Cold Pressure (kPa)	250	250
Recommended Tire Size	275/65R18 116T	275/65R18 116T
Tire Size on Vehicle	275/65R18	275/65R18
Tire Manufacturer	Bridgestone	Bridgestone
Tire Model	Dueler H/T	Dueler H/T
Treadwear	520	520
Traction	A	A
Temperature Grades	A	A
Tire Plies Sidewall	2	2
Tire Plies Body	5	5
Load Index/Speed Symbol	116T	116T
Tire Material	Polyester, Steel, Nylon	Polyester, Steel, Nylon
DOT Safety Code Left	9BYJ DHT 3618	9BYJ DHT 2918
DOT Safety Code Right	9BYJ DHT 2918	9BYJ DHT 2918

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

Test Vehicle: 2019 Ram 1500 Crew Cab NHTSA No.: M20190311
 Test Program: SPNCAP Side Impact Test Date: 5/9/2019

TIRE PRESSURES

	Units	LF	RF	LR	RR
As Delivered	kPa	276	276	276	276
Tire Placard	kPa	250	250	250	250
Owner's Manual	kPa	250	250	250	250
As Tested	kPa	250	250	250	250

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	645.4	505.6		672.2	564.8		676.2	590.6	
Right	kg	611.2	483.6		628.4	557.8		610.4	553.8	
Ratio	%	56.0	44.0		53.7	46.3		52.9	47.1	
Totals	kg	1256.6	989.2	2245.8	1300.6	1122.6	2423.2	1286.6	1144.4	2431.0

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total As Delivered Weight (UVW)	kg	2245.8	(A)
Actual Weight of 1 P572V ATD (SID-IIs) Dummy Used	kg	49.0	(B)
Rated Cargo/Luggage Weight (RCLW) ¹	kg	136.0	(C)
Calculated Vehicle Target Weight (TVTW)	kg	2430.8	(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.	-0.7	-0.7	-0.6	Yes
Front Passenger Sill Angle (front-to-rear)*	Deg.	-1.0	-1.0	-0.5	Yes
Front Bumper-Line Angle (left-to-right)**	Deg.	0.0	0.0	-0.2	Yes
Rear Bumper-Line Angle (left-to-right)**	Deg.	-0.1	0.0	-0.3	Yes
Vehicle CG (Aft of Front Axle)	mm	1619	1703	1730	
Vehicle CG (Left (+) / Right (-) from longitudinal Centerline)	mm	+22	+18	+37	

*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: Steel plate mounted in truck bed	64.6
Components Removed: None	0.0

Test height adjustable suspension setting, if applicable: N/A

¹ Rated cargo and luggage weight limited to 136.0 kg or 300.0 lbs.

DATA SHEET NO. 2

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

Test Vehicle: 2019 Ram 1500 Crew Cab
 Test Program: SPNCAP Side Impact

NHTSA No.: M20190311
 Test Date: 5/9/2019

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	14.8	14.8	14.8
Front Passenger Seat	14.1	14.1	14.1
Front Center Seat*	N/A	N/A	7.3
Struck Side Rear Seat	N/A	N/A	11.2
Non-Struck Side Rear Seat	N/A	N/A	11.6
Rear Center Seat*	N/A	N/A	11.2

* If applicable.

SEAT HEIGHT AND ANGLE

Seat	As Tested SCRL Angle (Mid) (°)	As Tested SCR Height (mm)	SCR Height Position	SCR Height (mm)		
				Rearmost	Mid-Fore/Aft	Forward-Most
Driver Seat	14.8	340	Max	N/A	N/A	N/A
			Mid	340	340	340
			Min	N/A	N/A	N/A
Front Passenger Seat	14.1	336	Max	N/A	N/A	N/A
			Mid	336	336	336
			Min	N/A	N/A	N/A
Front Center Seat*	7.3	Fixed	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	11.2	308	Max	N/A	N/A	N/A
			Mid	N/A	308	N/A
			Min	N/A	N/A	N/A
Non-Struck Side Rear Seat	11.6	320	Max	N/A	N/A	N/A
			Mid	N/A	320	N/A
			Min	N/A	N/A	N/A
Rear Center Seat*	11.2	Fixed	Max	N/A	N/A	N/A
			Mid	N/A	N/A	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: 2019 Ram 1500 Crew Cab
 Test Program: SPNCAP Side Impact

NHTSA No.: M20190311
 Test Date: 5/9/2019

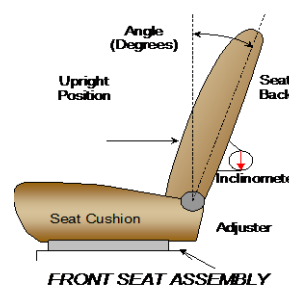
SEAT FORE/AFT POSITION

Seat	Total Fore/Aft Travel		Test Position from Forwardmost Position	
	mm	Detents*	mm	Detent*
Driver Seat	220	33	0	0
Front Passenger Seat	220	33	0	0
Front Center Seat*	0	Fixed	N/A	N/A
Struck Side Rear Seat	0	Fixed	N/A	N/A
Non-Struck Side Rear Seat	0	Fixed	N/A	N/A
Rear Center Seat*	0	Fixed	N/A	N/A

* 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	70.2	36	1.0	7
Front Passenger Seat	68.3	35	1.1	7
Front Center Seat*	0	Fixed	N/A	N/A
Struck Side Rear Seat	0	Fixed	N/A	N/A
Non-Struck Side Rear Seat	0	Fixed	N/A	N/A
Rear Center Seat*	0	Fixed	N/A	N/A

* 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	5	5, 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	5 Vertical; 11 Horizontal	Full down, full forward

DATA SHEET NO. 2 (CONTINUED)

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

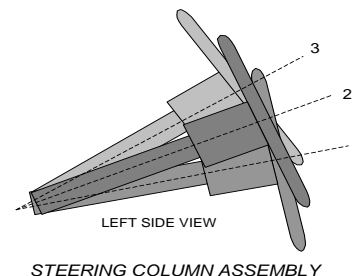
Test Vehicle: 2019 Ram 1500 Crew Cab
 Test Program: SPNCAP Side Impact

NHTSA No.: M20190311
 Test Date: 5/9/2019

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.

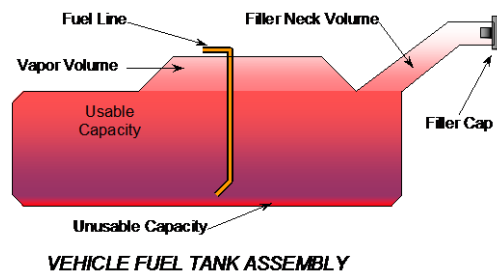
	Degrees	Fore/Aft Position, mm
Lowermost, Position No. 1	21.7	0
Geometric Center, Position No. 2	24.1	30
Uppermost, Position No. 3	26.4	60
Telescoping Steering Wheel Travel		60
Test Position	24.1	30



FUEL PUMP

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

Ignition key in and turned to the run position. For keyless system use start/stop button to set it run position.



FUEL TANK CAPACITY

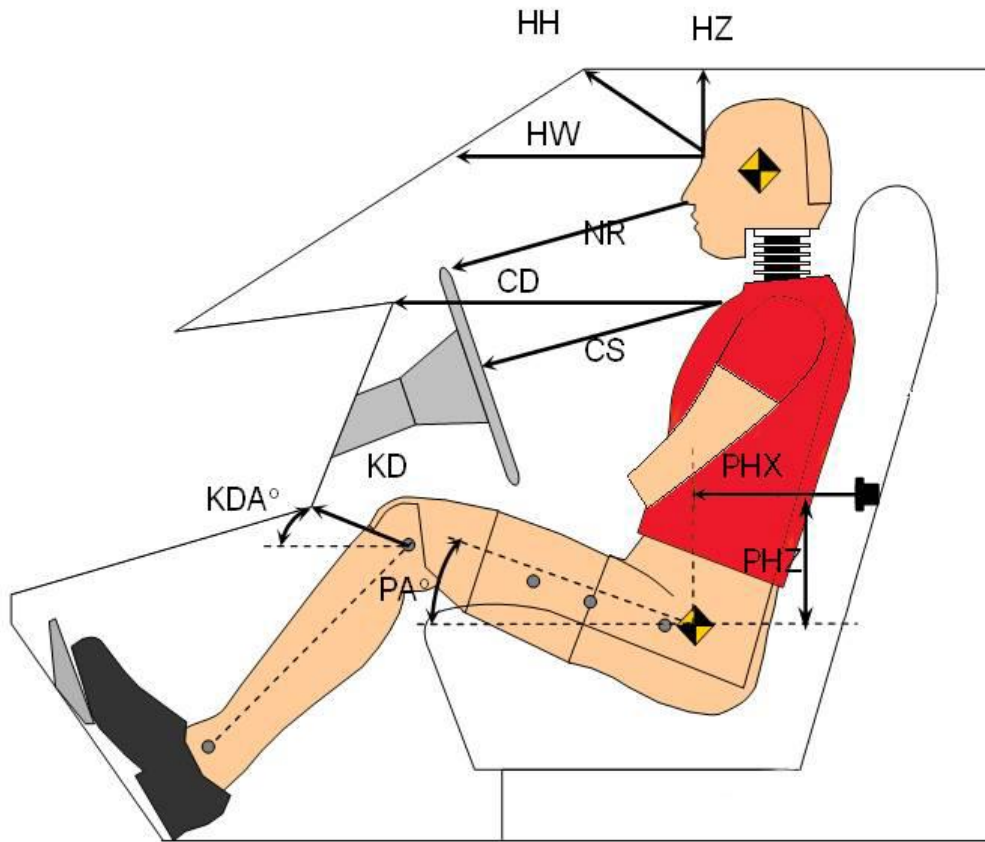
	Liters
Usable Capacity of "Standard Tank" (see Form No. 1)	87.0
Usable Capacity of "Optional" Tank (see Form No. 1)	124.9
Usable Capacity of Standard Tank (see Owner's Manual)	87.0
Usable Capacity of Optional Tank (see Owner's Manual)	124.9
93% of Usable Capacity	116.2
Actual Amount of Solvent Used in Test	116.2
1/3 of Usable Capacity	41.6

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: 2019 Ram 1500 Crew Cab
 Test Program: SPNCAP Side Impact

NHTSA No.: M20190311
 Test Date: 5/9/2019

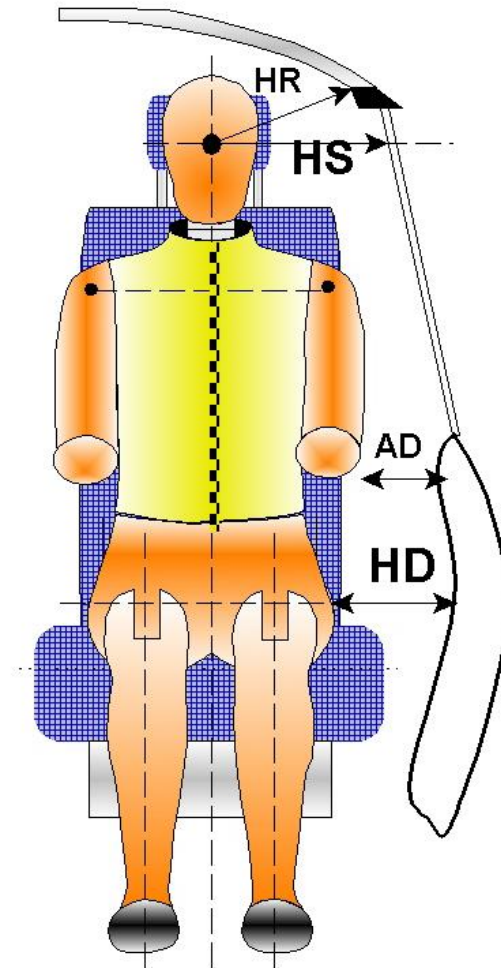


Code	Measurement Description	Driver	
		Length (mm)	Angle (°)
HH	Head to Header	271	
HW	Head to Windshield	732	
HZ	Head to Visor	417	
NR	Nose to Rim	304	
CD	Chest to Dashboard	477	
CS	Chest to Steering Wheel	231	
KDL/KDLA°	Left Knee to Dash	90	25.8
KDR/KDRA°	Right Knee to Dash	87	25.1
PAX°	Pelvic Tilt Angle (X-axis)		0.2
PAY°	Pelvic Tilt Angle (Y-axis)		20.5
PHX	Hip Point to Striker (X-Axis)	336	
PHZ	Hip Point to Striker (Z-Axis)	21	

DATA SHEET NO. 4
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2019 Ram 1500 Crew Cab
 Test Program: SPNCAP Side Impact

NHTSA No.: M20190311
 Test Date: 5/9/2019

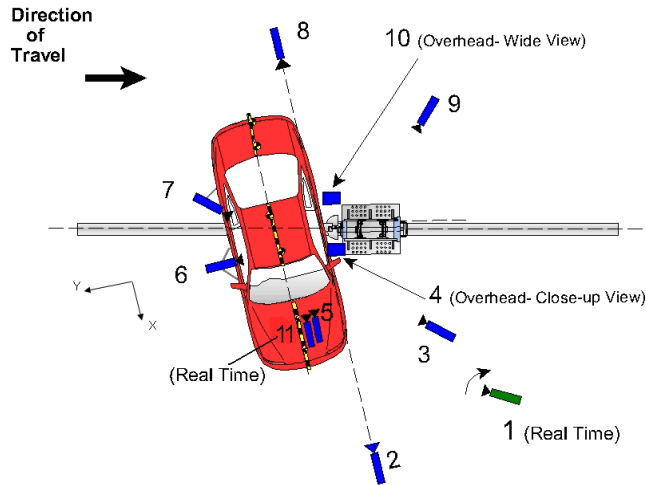


Code	Measurement Description	Length (mm)
HR	Head to Side Header	278
HS	Head to Side Window	369
AD	Arm to Door	158
HD	Hip Point to Door	170

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

Test Vehicle: 2019 Ram 1500 Crew Cab
Test Program: SPNCAP Side Impact

NHTSA No.: M20190311
Test Date: 5/9/2019



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	291	5274	-1352	20	1000
3	Impact side 45° – forward pole view	489	4154	-1342	20	1000
4	Overhead Close-up view of impact	0	0	-5150	25	1000
5	Onboard – dummy front view				25	1000
6	Onboard – dummy side view				16	1000
7	Onboard – dummy rear oblique view				12.5	1000
8	Rear ground level – impact view	510	-6612	-1490	20	1000
9	Impact side 45° – rearward pole view	3296	-4758	-1400	20	1000
10	Overhead wide view of impact	195	0	-5750	18	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: N/A

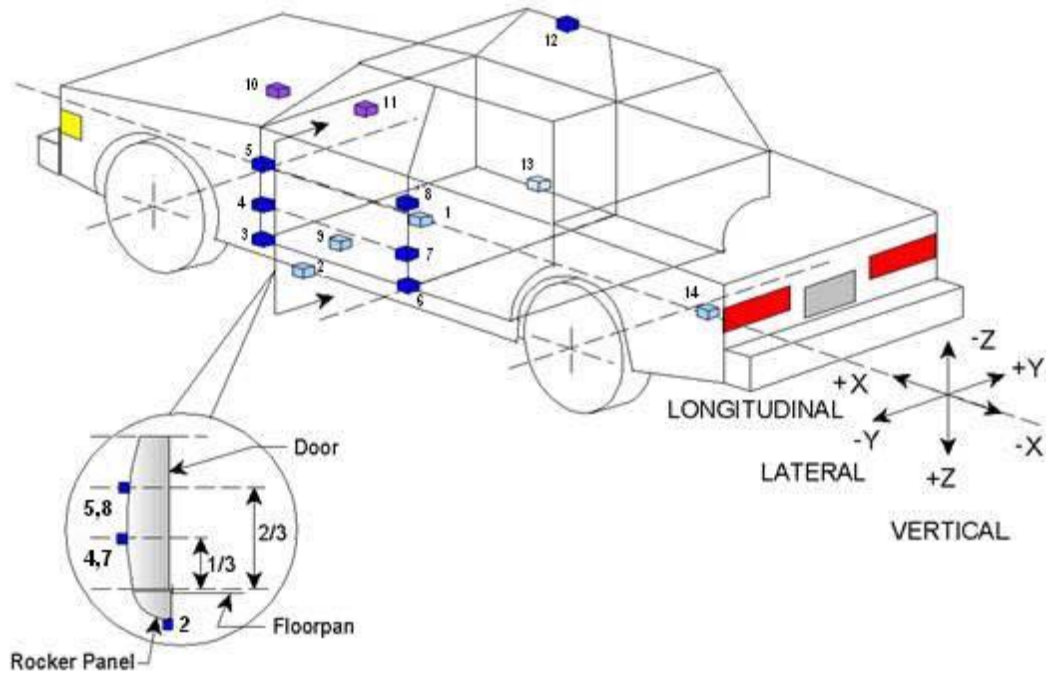
INSTRUMENTATION

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

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

Test Vehicle: 2019 Ram 1500 Crew Cab
Test Program: SPNCAP Side Impact

NHTSA No.: M20190311
Test Date: 5/9/2019



Accelerometer/Sensor Location				
ID		Coordinates (mm)		
		X	Y	Z
1	Vehicle CG	3890	230	-643
2	Left Floor Sill	3915	-730	-560
3	A-Pillar Sill	4280	-835	-578
4	A-Pillar Low	4295	-940	-665
5	A-Pillar Mid	4325	-908	-1204
6	B-Pillar Sill	3130	-814	-585
7	B-Pillar Low	3230	-922	-735
8	B-Pillar Mid	3245	-905	-1224
9	Driver Seat Track	3435	-670	-684
10	Engine Top	5036	25	-965
11	Firewall	4777	25	-1260
12	Right Roof	3367	695	-1880
13	Right Floor Sill	3960	810	-531
14	Rear Floorpan	965	0	-827

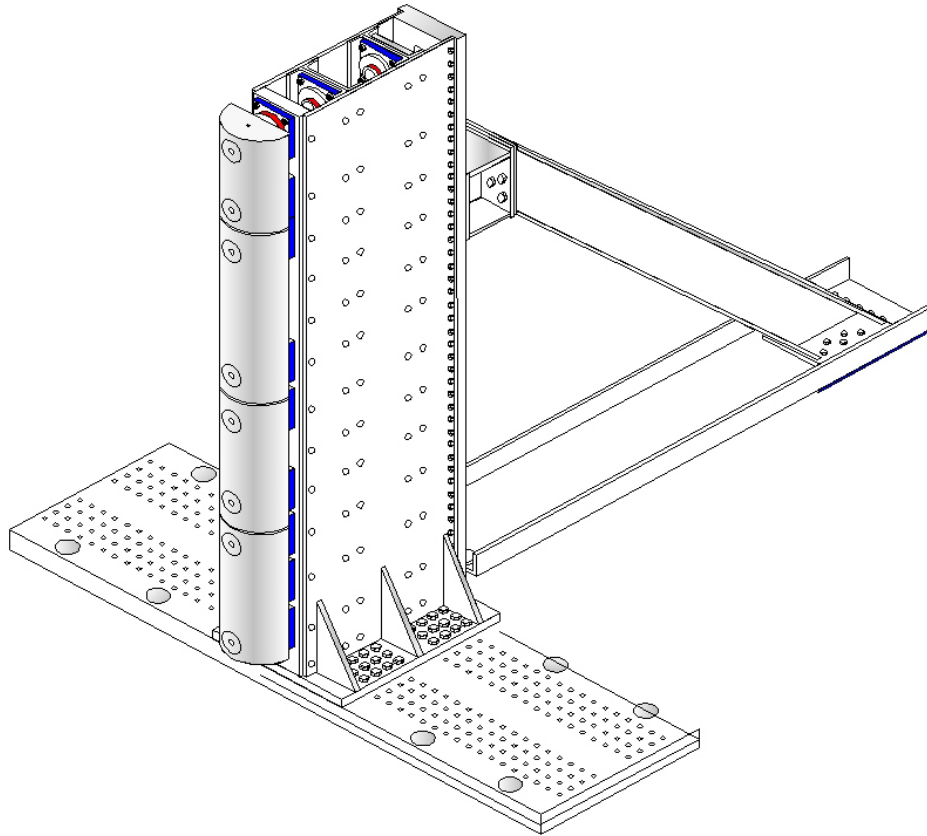
Reference: X - Test Vehicle Rear Bumper (+ forward)
Y - Test Vehicle Centerline (+ to right)
Z - Ground Plane (+ down)

DATA SHEET NO. 7
RIGID POLE LOAD CELL DATA

Test Vehicle: 2019 Ram 1500 Crew Cab
Test Program: SPNCAP Side Impact

NHTSA No.: M20190311
Test Date: 5/9/2019

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: 2019 Ram 1500 Crew Cab
 Test Program: SPNCAP Side Impact

NHTSA No.: M20190311
 Test Date: 5/9/2019

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 Restraint
Left Shoulder	Seatback bolster, SAB, Door Panel
Upper Torso	Seatback bolster, SAB
Lower Torso	Seatback bolster, SAB
Left Hip	Seat cushion bolster, SAB
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	No	No	No
Seat Disengagement from Floor pan	No	No	No	No
Seat Back Movement from Initial Position	No	No	No	No
Seat Back Collapse	No	No	No	No

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

POST-TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Pillar Performance	Good
Sill Separation	None
Windshield Damage	Completely broken
Side Window Damage	Driver window shattered but intact
Other Notable Effects	None

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

Test Vehicle: 2019 Ram 1500 Crew Cab
Test Program: SPNCAP Side Impact

NHTSA No.: M20190311
Test Date: 5/9/2019

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

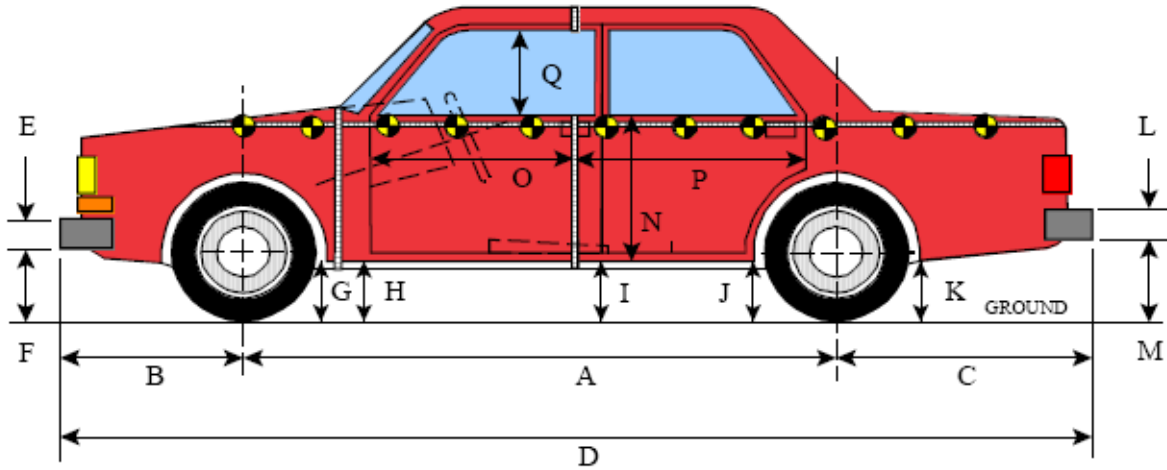
VEHICLE SPEED, VEHICLE ANGLE AT IMPACT AND IMPACT POINT LOCATION DATA

Measured Parameter	Units	Tolerance	Value
Vertical Impact Reference Line (Aft of Front Axle) (Intended Impact Point)	mm		1257
Actual Impact Point (Aft of Front Axle)	mm		1256
Horizontal Offset (+ forward / - rearward)	mm	+/- 38 of Intended Impact point	+1
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	32.24
Trap No. 2 Velocity (Redundant)	km/h	31.4 to 33.0	32.24

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

Test Vehicle: 2019 Ram 1500 Crew Cab
Test Program: SPNCAP Side Impact

NHTSA No.: M20190311
Test Date: 5/9/2019



LEFT SIDE VIEW

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

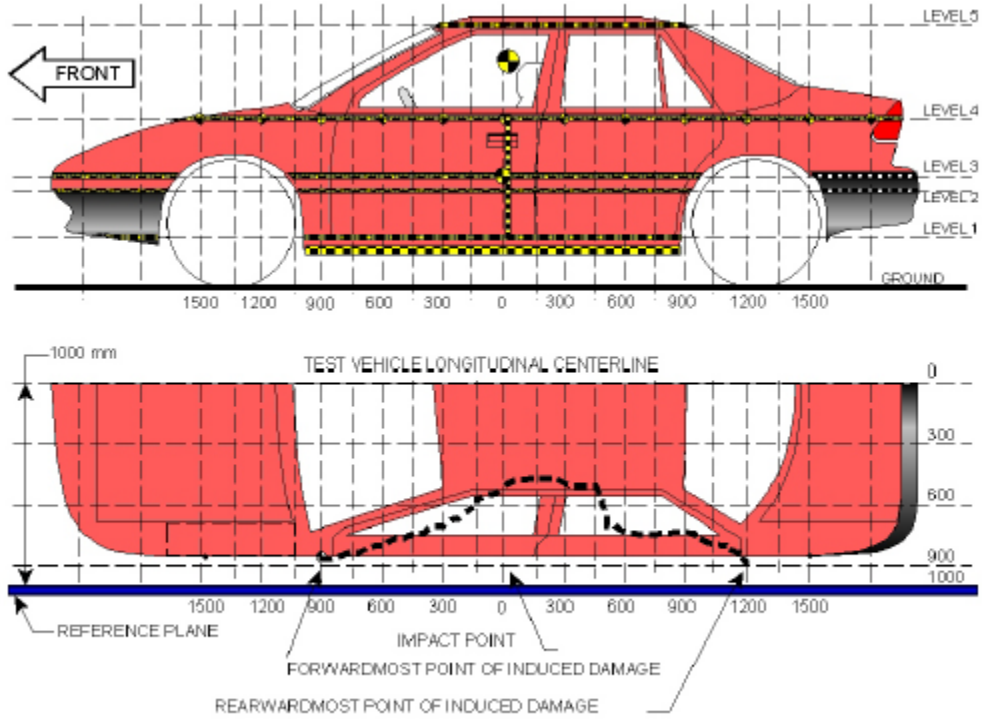
VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

Code	Measurement Description	Pre-Test	Post-Test	Difference
A	Wheelbase	3675	3670	5
B	Front Axle to Front Surface of Vehicle	1017	1009	8
C	Rear Axle to Rear Surface of Vehicle	1226	1226	0
D	Total Length at Centerline	5918	5905	13
E	Front Bumper Thickness	120	120	0
F	Front Bumper Bottom to Ground	533	543	-10
G	Sill Height at Front Wheel Well	421	449	-28
H	Sill Height at Front Door Leading Edge	422	454	-32
I	Sill Height at B-Pillar	438	460	-22
J1	Sill Height at Rear Wheel Well	422	462	-40
J2	Pinch Weld Height at Rear Wheel Well	370	406	-36
K	Sill Height Aft of Rear Wheel Well	558	598	-40
L	Rear Bumper Thickness	115	115	0
M	Rear Bumper Bottom to Ground	556	588	-32
N	Sill Height to Bottom of Front Window Sill	894	889	5
O	Front Door Leading Edge to Impact CL	697	604	93
P	Rear Door Trailing Edge to Impact CL	1492	1356	136
Q	Front Window Opening	481	462	19
R	Right Side Length	5630	5631	-1
S	Left Side Length	5628	5600	28
T	Vehicle Width at B-Pillars	2040	1960	80

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

Test Vehicle: 2019 Ram 1500 Crew Cab
 Test Program: SPNCAP Side Impact

NHTSA No.: M20190311
 Test Date: 5/9/2019



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	517	384	150
2	Occupant H-Point	960	416	150
3	Mid-Door	866	416	150
4	Window Sill	1251	398	150
5	Window Top	1832	203	150

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: 2019 Ram 1500 Crew Cab
 Test Program: SPNCAP Side Impact

NHTSA No.: M20190311
 Test Date: 5/9/2019

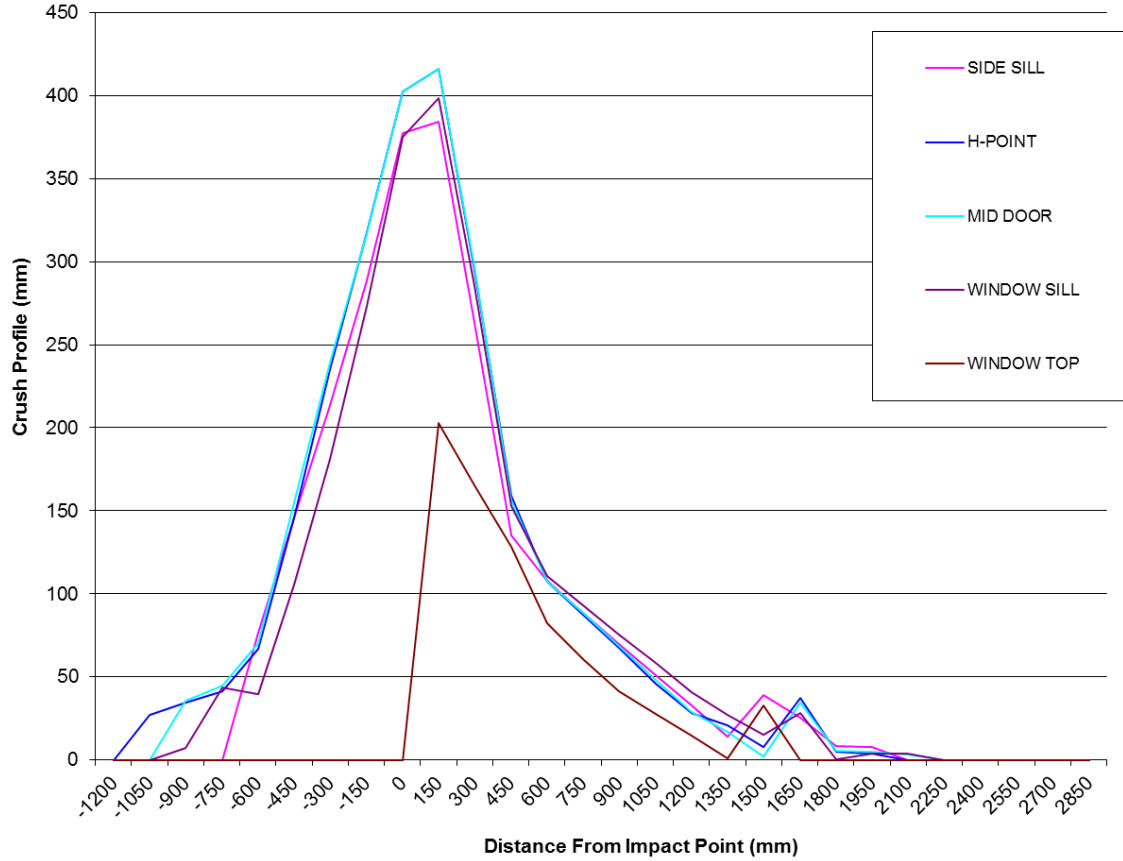
	Pre-Test					Post-Test					Difference				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-1050	0	1008	0	0	0	0	981	0	0	0	0	27	0	0	0
-900	0	1007	1008	894	0	0	972	973	886	0	0	35	35	8	0
-750	0	1003	1006	913	0	0	961	962	870	0	0	42	44	43	0
-600	981	999	1001	925	0	904	932	931	886	0	77	67	70	39	0
-450	967	995	995	935	0	821	849	840	829	0	146	146	155	106	0
-300	965	991	991	943	0	751	755	751	762	0	214	236	240	181	0
-150	966	988	988	950	0	678	670	671	676	0	288	318	317	274	0
0	968	987	988	956	0	590	585	586	581	0	378	402	402	375	0
150	968	988	990	962	713	584	572	574	564	510	384	416	416	398	203
300	968	990	993	967	724	705	695	696	682	558	263	295	297	285	166
450	968	992	995	971	726	833	833	839	818	598	135	159	156	153	128
600	968	991	995	974	733	860	884	888	864	650	108	107	107	110	83
750	967	991	997	977	738	878	904	908	884	677	89	87	89	93	61
900	966	992	998	979	741	896	924	929	903	700	70	68	69	76	41
1050	964	992	999	980	743	913	946	950	922	715	51	46	49	58	28
1200	962	992	999	981	745	929	963	970	940	730	33	29	29	41	15
1350	957	991	999	980	744	943	971	982	953	744	14	20	17	27	0
1500	949	989	996	978	743	910	981	995	963	710	39	8	1	15	33
1650	933	983	990	973	0	907	946	955	945	0	26	37	35	28	0
1800	943	981	985	963	0	935	976	980	962	0	8	5	5	1	0
1950	960	997	1000	965	0	952	994	995	961	0	8	3	5	4	0
2100	0	1009	1006	968	0	0	1007	1002	964	0	0	2	4	4	0

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: 2019 Ram 1500 Crew Cab
Test Program: SPNCAP Side Impact

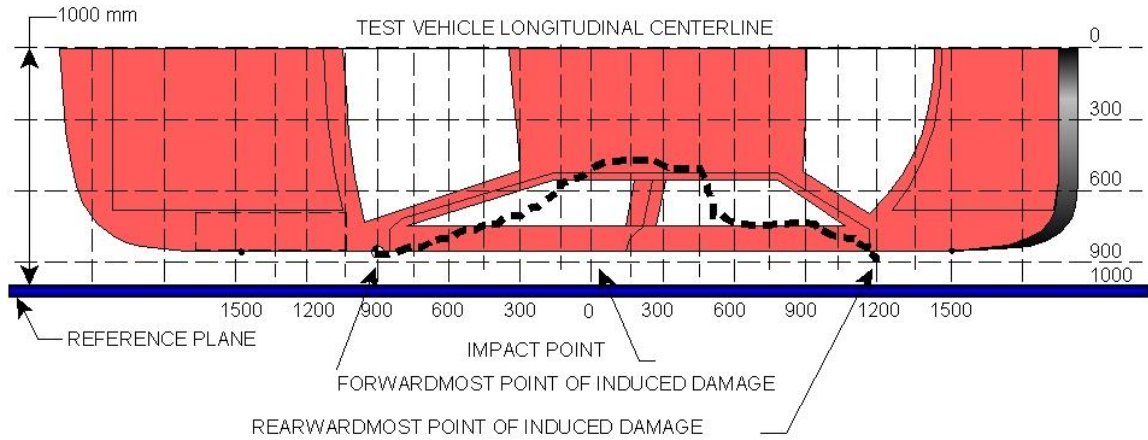
NHTSA No.: M20190311
Test Date: 5/9/2019



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

Test Vehicle: 2019 Ram 1500 Crew Cab
Test Program: SPNCAP Side Impact

NHTSA No.: M20190311
Test Date: 5/9/2019



VEHICLE DAMAGE PROFILE DISTANCES

DPD	Distance From Impact Point (mm)	Level	Post-Test (mm)	Pre-Test (mm)	Crush (mm)
1	2100	3	1002	1006	4
		4	964	968	
2	1500	1	910	949	39
3	900	4	903	979	76
4	150	2	572	988	416
		3	574	990	
5	-450	3	840	995	155
6	-1050	2	981	1008	27

DATA SHEET NO. 12

FMVSS NO. 301 FUEL SYSTEM INTEGRITY POST-IMPACT DATA

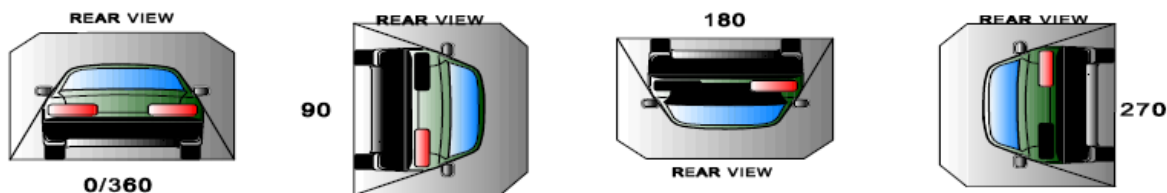
Test Vehicle: 2019 Ram 1500 Crew Cab
 Test Program: SPNCAP Side Impact

NHTSA No.: M20190311
 Test Date: 5/9/2019

Test Time: 16:34 **Temperature:** 22.4°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

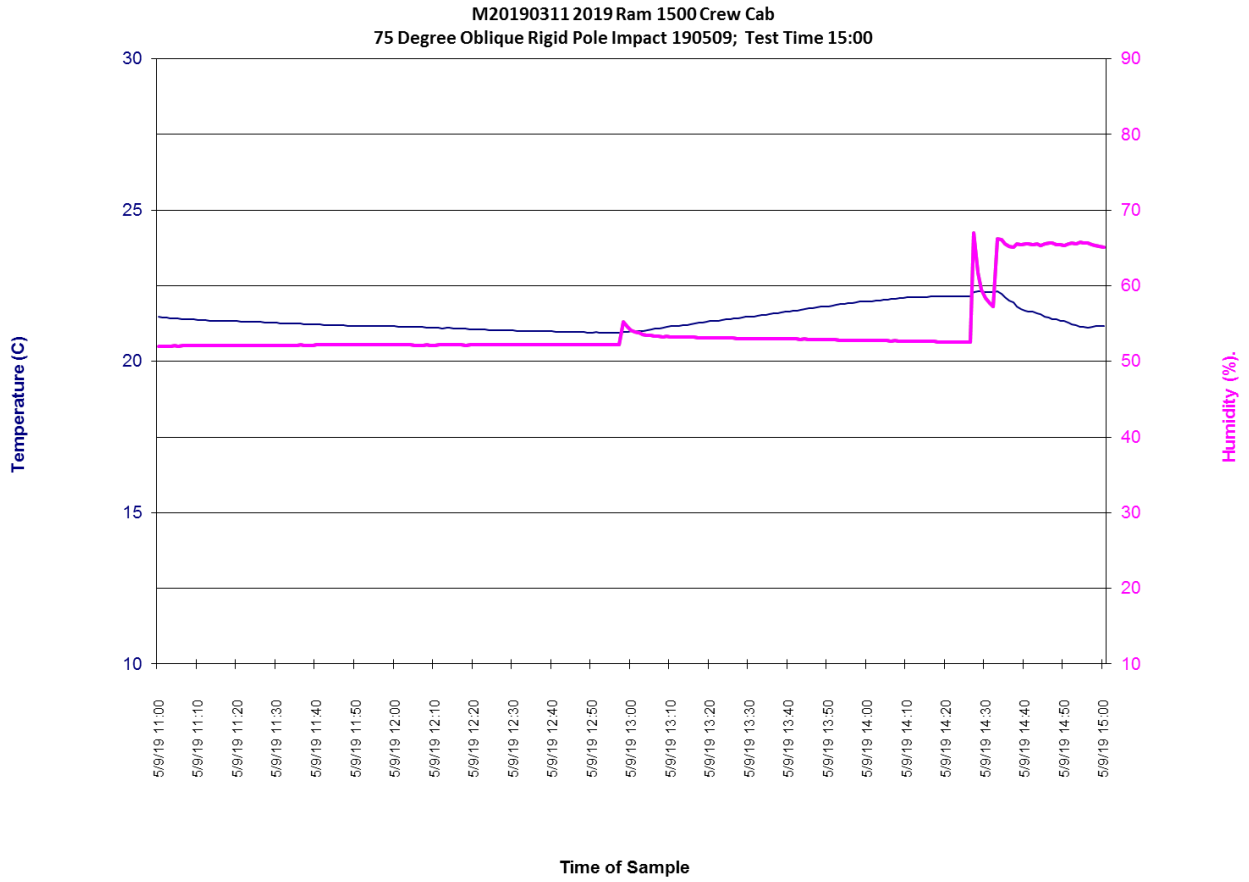
ROLLOVER SOLVENT SPILLAGE LOCATION TABLE

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: 2019 Ram 1500 Crew Cab
Test Program: SPNCAP Side Impact

NHTSA No.: M20190311
Test Date: 5/9/2019



**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
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17	Pre-Test Left Side View of Pole Positioned Against Side of Vehicle	A-12
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22	Post-Test Front Close-Up View of Dummy	A-14
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
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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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32	Pre-Test Placement of Dummy's Feet	A-20
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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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48	Post-Test Dummy Close-Up Torso Contact with Vehicle Interior View	A-28
49	Post-Test Dummy Close-Up Torso Contact with Side Airbag View	A-28
50	Post-Test Dummy Close-Up Pelvis Contact with Vehicle Interior View	A-29
51	Post-Test Dummy Close-Up Pelvis Contact with Side Airbag View	A-29
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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55	Close-Up View of Vehicle's Certification Label	A-32
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63	FMVSS No. 301 Static Rollover 0 Degrees	A-36
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66	FMVSS No. 301 Static Rollover 270 Degrees	A-37
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70	Head Restraint Use and Adjustment Information from Vehicle Owner's Manual	A-40
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71	Post-Test View of Shattered Vehicle Inner Door Panel	A-41



No. 001 As Delivered Right Front $\frac{3}{4}$ View of Test Vehicle



No. 002 As Delivered Left Rear $\frac{3}{4}$ View of Test Vehicle



No. 003 Pre-Test Frontal View of Test Vehicle



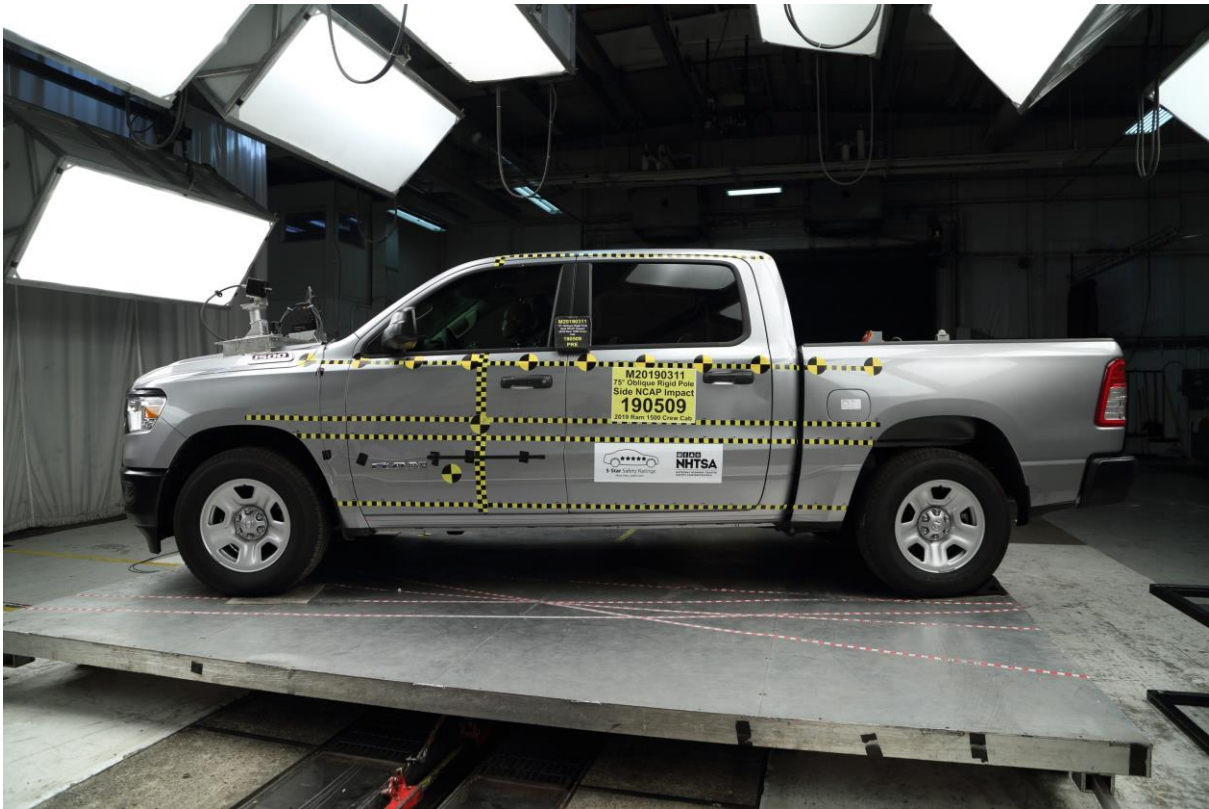
No. 004 Post-Test Frontal View of Test Vehicle



No. 005 Pre-Test Left Front $\frac{3}{4}$ View of Test Vehicle



No. 006 Post-Test Left Front $\frac{3}{4}$ 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



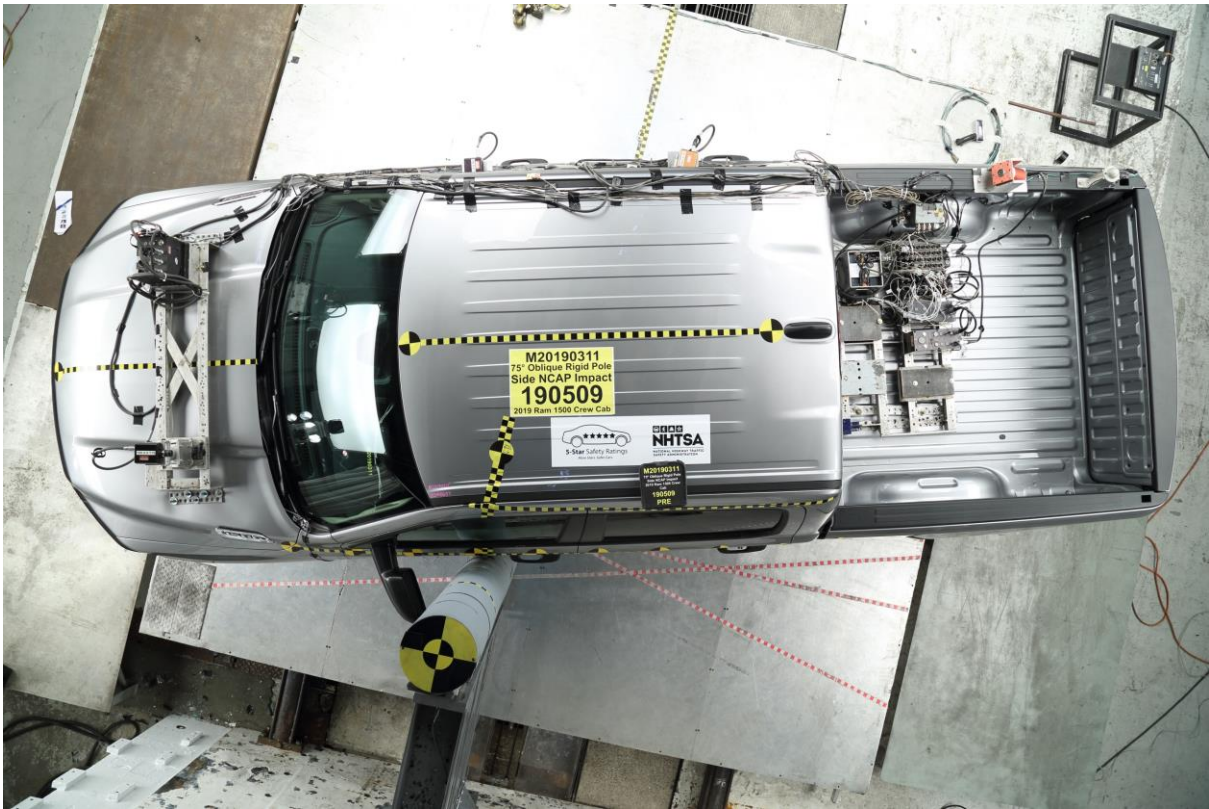
No. 012 Post-Test Rear View of Test Vehicle



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



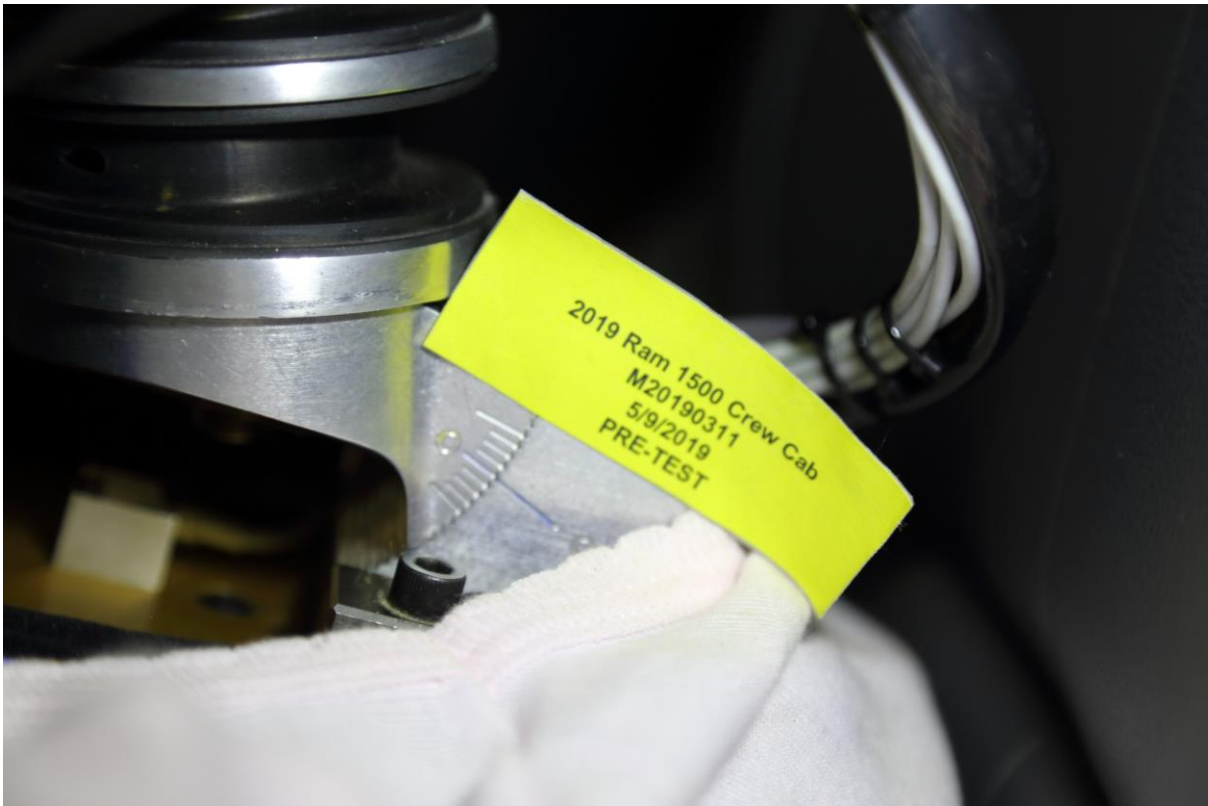
No. 027 Pre-Test Front Close-Up View of Dummy Head and Shoulders in Relation to Head Restraint



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



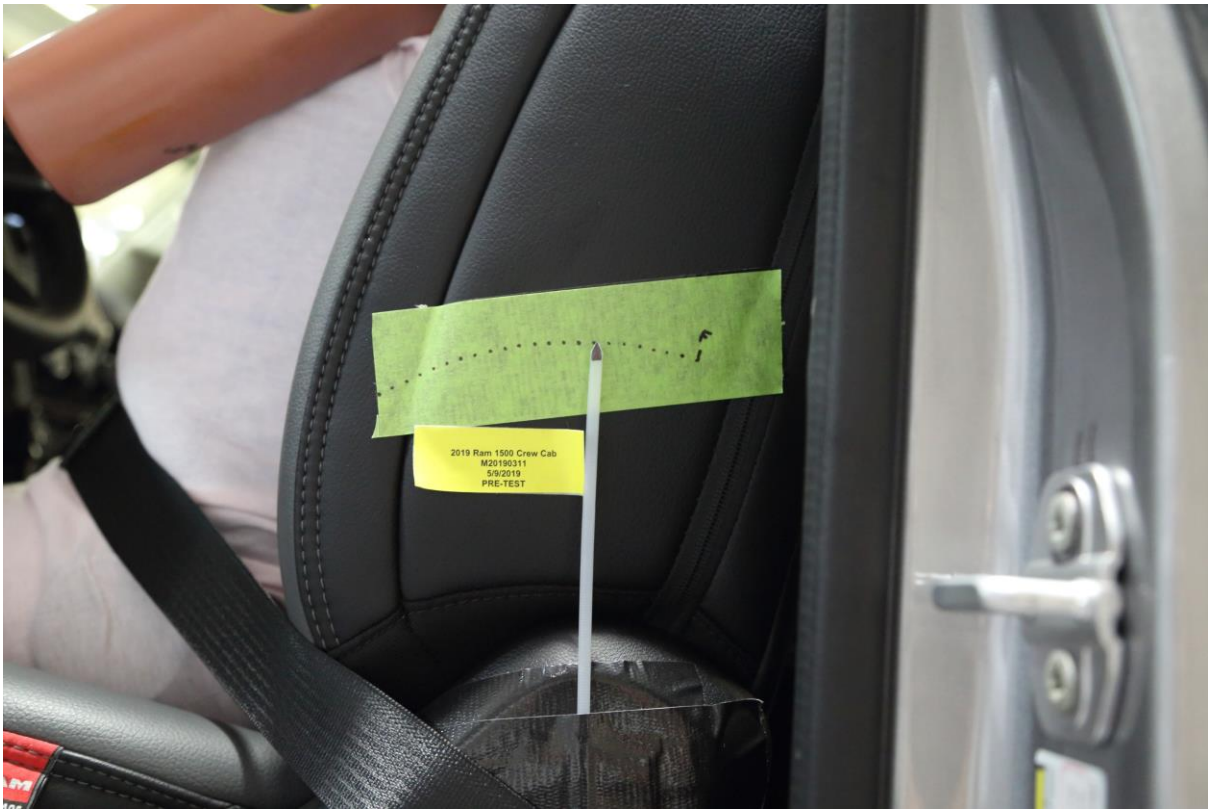
No. 035 Pre-Test View of Disengaged Parking Brake



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



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

PHOTO NOT APPLICABLE

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

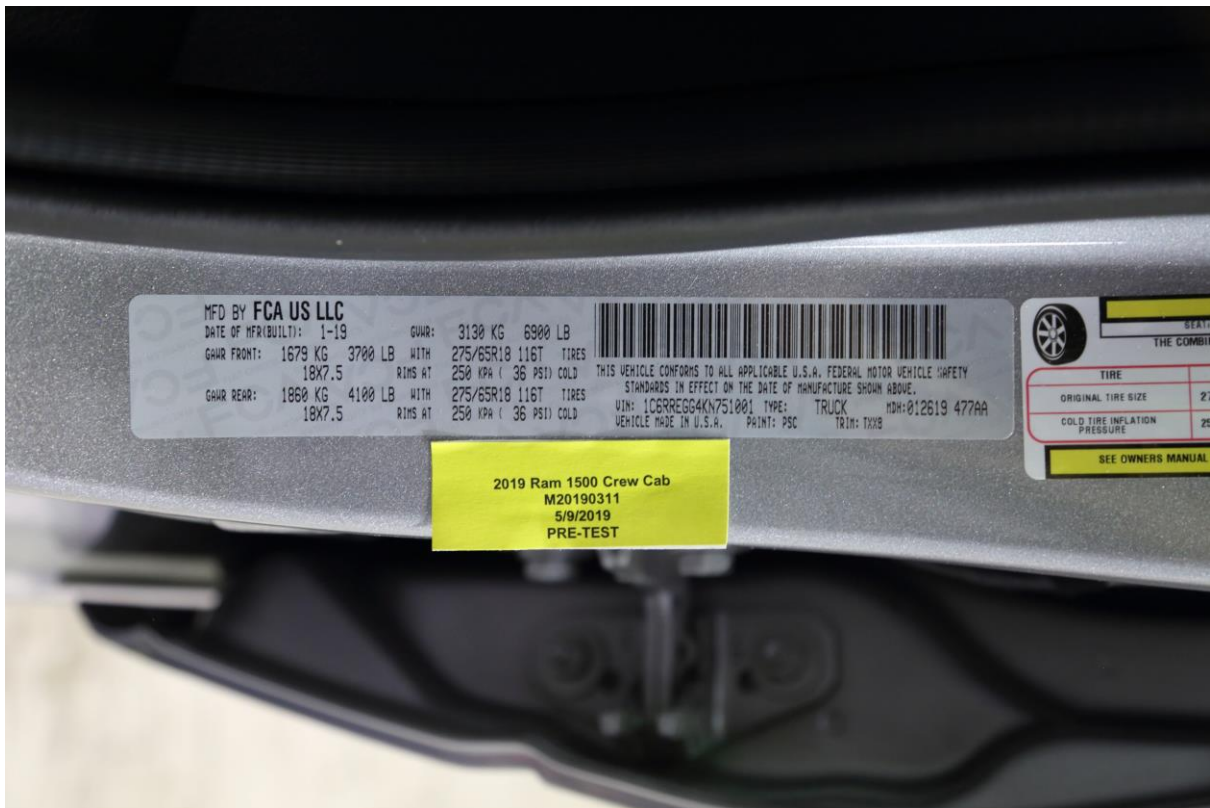
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No. 053 Pre-Test View of Fuel Filler Cap or Fuel Filler Neck



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



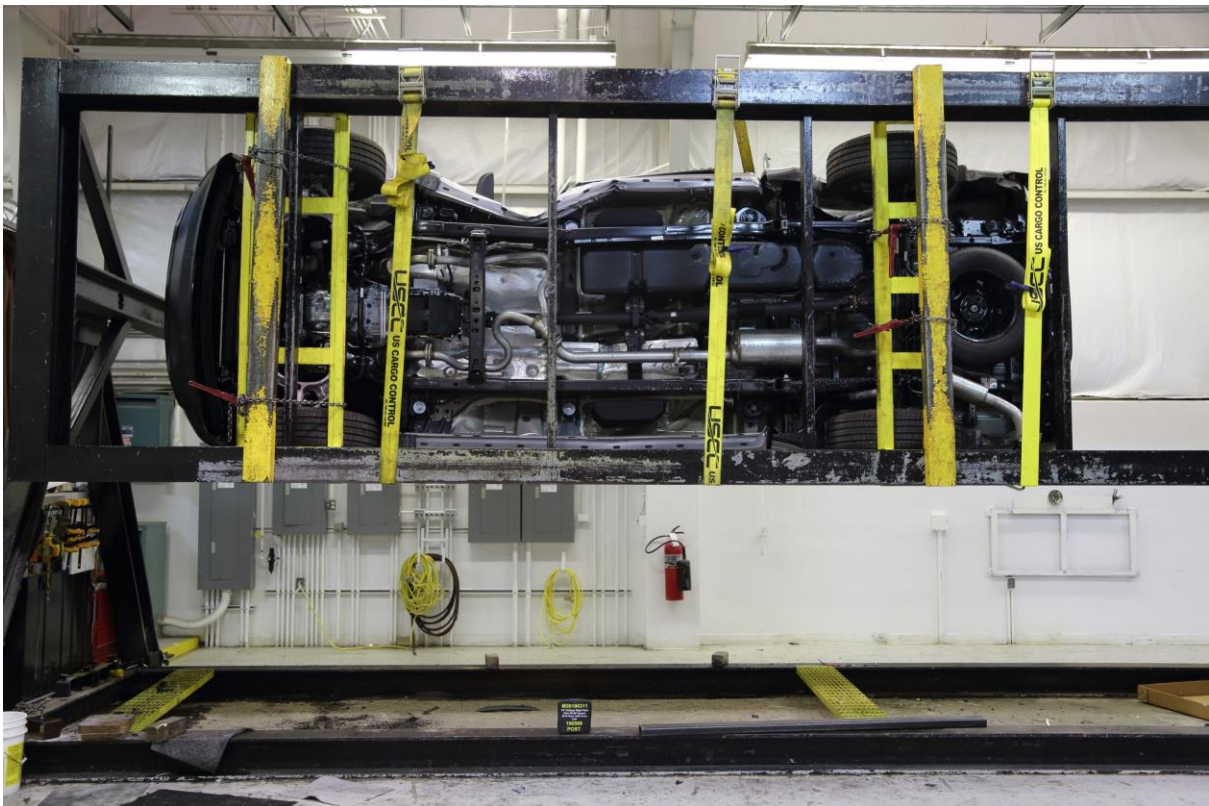
No. 063 FMVSS No. 301 Static Rollover 0 Degrees



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

2019 MODEL YEAR
RAM 1500 TRADESMAN CREW CAB 4X2

For more information visit: www.ramtrucks.com
or call 1-866-RAMINFO

FCA US LLC

Fuel Economy and Environment

Fuel Economy
22 20 25
combined city/hwy highway
4.5 gallons per 100 miles

Gasoline Vehicle

You spend \$1,750 more in fuel costs over 5 years
compared to the average new vehicle.

Annual fuel cost \$1,750

Fuel Economy & Greenhouse Gas Rating (subject to EPA's new methodology)

Smog Rating (subject to EPA's new methodology)

Annual results will vary for many reasons, including driving conditions and how you drive and maintain your vehicle. This vehicle may qualify for a 20% discount on fuel costs for 3 years. Cost estimated and based on 15,000 miles per year at \$2.95 per gallon. MPG is miles per gallon equivalent. Vehicle emissions and a equipment factor of annual change and usage.

GOVERNMENT 5-STAR SAFETY RATINGS
This vehicle has not been rated by the government for frontal crash, side crash or rollover risk.

PARTS CONTENT INFORMATION FOR VEHICLES IN THIS COUNTRY:
U.S./CANADIAN PARTS CONTENT: 57%
MAJOR SOURCES OF FOREIGN PARTS CONTENT:
MEXICO: 28%
OTHER: 15%
NOTE: PARTS CONTENT DOES NOT INCLUDE FINAL ASSEMBLY, DISTRIBUTION, OR OTHER NON-PARTS COSTS.

FOR THIS VEHICLE:
FINAL ASSEMBLY POINT: STERLING HTS, MICH., U.S.A.
COUNTRY OF ORIGIN: ENGINES: MEXICO
TRANSMISSION: UNITED STATES

VEHICLE PROTECTION
MOPAR. A PRODUCT OF FCA US LLC
Ask for More Vehicle Protection for your vehicle. We built it. We back it.

MANUFACTURER'S SUGGESTED RETAIL PRICE OF THIS MODEL, INCLUDING DEALER PREPARATION
Base Price: \$34,595

RAM 1500 TRADESMAN CREW CAB 4X2
Exterior Color: Billet Silver Metallic Clear Coat Exterior Paint
Interior Color: Black
Interior Trim: Interior Trim
Interior: 10 Vinyl Seats, 7" x 7" Split Bench Seat
Engine: 3.6L Gas V6 24V VVT w/ TorqueFlite Upgrade I
Transmission: 8-Speed Automatic 6500H Transmission

STANDARD EQUIPMENT (unless indicated by optional equipment)

FUNCTIONAL SAFETY FEATURES
Activated Multistage Front Air Bags
Supplemental Front Side Side Air Bags
Supplemental Side Curtain Front / Rear Air Bags
3.2 Rear Side Safety
Keyless Start*

OPTIONAL EQUIPMENT (also includes Standard Equipment)

Blind Spot Monitor Clear Coat Exterior Paint \$300
Customer Preferred Package 23A \$445
32 Gallon Fuel Tank \$1,690

DESTINATION CHARGE \$1,690

TOTAL PRICE: * \$36,935

WARRANTY COVERAGE
5-year or 100,000-mile Powertrain Limited Warranty
3-year or 36,000-mile Basic Limited Warranty
Ask Dealer for a copy of the limited warranties or see your owner's manual for details.

5 Year / 60,000 Mile Powertrain Warranty

INTERIOR FEATURES
Uconnect® 3 with 5 inch Display
Cluster 3.5-inch TFT 8.4M Display
Integrated Voice Command with Bluetooth®
Media Hub 2 USB, Full Function, Aux
12-Volt Auxiliary Power Outlet
8 Speakers
4-Way Manual Adjustable Driver Seat
Front Passenger Seat - Manual Adjust 4-Way

Assembly Plant of Origin: STERLING HTS, MICH., U.S.A.
VIN: 1C8RREGG4KN751001
Model: 1500

Finnegan
2019 Model Year

Stock: E6376
VIN: 1C8RREGG4KN751001
Year: 2019
Make: RAM
Model: 1500
Trim: DT
Manufacturer Rental Price: \$36,935.00

Window Tint Lifetime Warranty \$350.00

Wheel Locks \$250.00

Blue Steel Theft Protection \$596.00
\$600 Rental Allowance
\$1500 Replacement Credit
\$1500 Cash Reimbursement
Paint Protection
Interior Protection

Total Price: \$38,178.00

Finnegan Chrysler Jeep Dodge Ram
26433 Southwood Pkwy
Rosenberg, TX 77471

1C8RREGG4KN751001

THIS APPROXIMATE PRICE HAS BEEN ADDED BY THE DEALER. NOT THE MANUFACTURER. TO REFLECT ANY ADDITIONAL CHARGES FOR ITEMS NOT INCLUDED IN THE MSRP. THIS IS NOT AN AUTHORIZED FACTORY STICKER.

No. 069 Monroney Label

Intentionally Left Blank

NOTE:

The engine must be running for the ventilated seats to operate.

Vehicles Equipped With Remote Start



On models that are equipped with remote start, the ventilated seats can be programmed to come on during a remote start.


This feature can be programmed through the Uconnect system. Refer to "Uconnect Settings" in "Multimedia" in your Owner's Manual for further information.


Rear Ventilated Seats

On some models, the two outboard rear seats are equipped with ventilated seats. The rear ventilated seat control switches are located on the rear of the center console.

There are two ventilated seat switches that allow the rear passengers to operate the seats independently. The fans operate at three speeds: HI, MED, and LO.

- Push the ventilated seat button  once to choose HI.
- Push the ventilated seat button  a second time to choose MED.

- Push the ventilated seat button  a third time to choose LO.

- Push the ventilated seat button  a fourth time to turn the ventilated seat off.

NOTE:

The engine must be running for the ventilated seats to operate.

HEAD RESTRAINTS

Head restraints are designed to reduce the risk of injury by restricting head movement in the event of a rear impact. Head restraints should be adjusted so that the top of the head restraint is located above the top of your ear.

WARNING!

- All occupants, including the driver, should not operate a vehicle or sit in a vehicle's seat until the head restraints are placed in their proper positions in order to minimize the risk of neck injury in the event of a crash.
- Head restraints should never be adjusted while the vehicle is in motion.

WARNING!

Driving a vehicle with the head restraints improperly adjusted or removed could cause serious injury or death in the event of a collision.

NOTE:

Do not reverse the head restraints (making the rear of the head restraint face forward) in an attempt to gain additional clearance to the back of your head.

Front Head Restraints

Your vehicle is equipped with front four way driver and passenger head restraints.

To raise the head restraint, pull upward on the head restraint. To lower the head restraint, push the adjustment button, located at the base of the head restraint, and push downward on the head restraint.

To adjust the head restraint forward, pull the top of the head restraint toward the front of the vehicle as desired and release. To adjust the head restraint rearward, pull the top of

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

the head restraint to the forward most position and release. The head restraint will return to the rear most position.

NOTE:

If your vehicle is equipped with a front bench seat, the center head restraint is not adjustable or removable.



Head Restraint Adjustment Button

NOTE:

The head restraints should only be removed by qualified technicians, for service purposes only. If either of the head restraints require removal, see an authorized dealer.

WARNING!

- All occupants, including the driver, should not operate a vehicle or sit in a vehicle's seat until the head restraints are placed in their proper positions in order to minimize the risk of neck injury in the event of a crash.
- Head restraints should never be adjusted while the vehicle is in motion. Driving a vehicle with the head restraints improperly adjusted or removed could cause serious injury or death in the event of a collision.

Rear Head Restraints

The outboard head restraints are non-adjustable, but can be folded down for improved rearward visibility. Push the button on the outboard side of the head restraint to release. To return the head restraint to its upright position, push up on the head restraint until it locks back into place.



Release Button



No. 070a 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

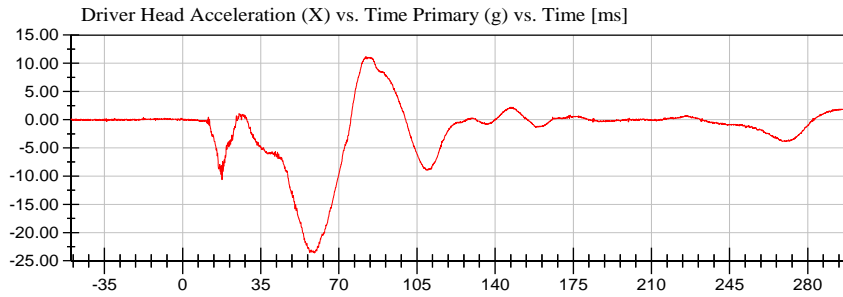
Load Cell Pole Barrier #1 Force (X)
Load Cell Pole Barrier #2 Force (X)
Load Cell Pole Barrier #3 Force (X)
Load Cell Pole Barrier #4 Force (X)
Load Cell Pole Barrier #5 Force (X)
Load Cell Pole Barrier #6 Force (X)
Load Cell Pole Barrier #7 Force (X)
Load Cell Pole Barrier #8 Force (X)

NHTSA

Test Lab: CTF
Test Number: 190509 (M20190311)

Position #1 SID IIs Dummy (297)

Test Date: 05/09/2019



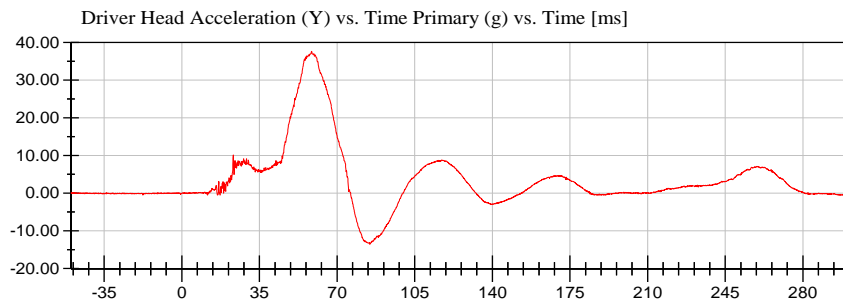
<Max>

11.13 g at 82.08 ms

<Min>

-23.61 g at 59.04 ms

CFC_1000



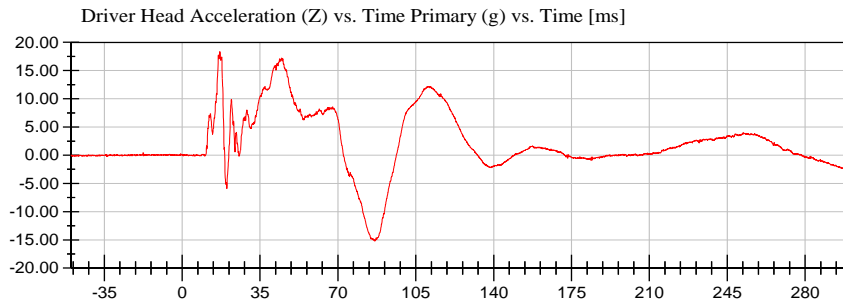
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37.68 g at 58.48 ms

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-13.56 g at 84.72 ms

CFC_1000



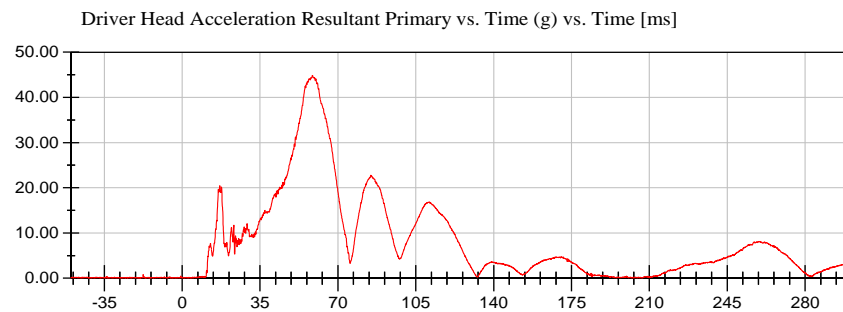
<Max>

18.34 g at 16.96 ms

<Min>

-15.18 g at 86.48 ms

CFC_1000



<Max>

44.86 g at 58.56 ms

<Min>

0.02 g at -34.64 ms

CFC_1000



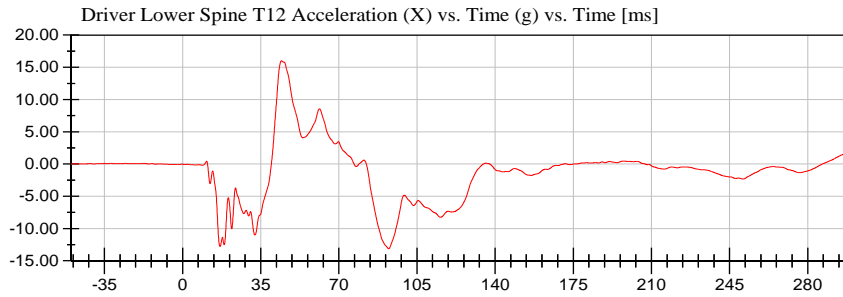
NHTSA

Position #1 SID IIs Dummy (297)

Test Date: 05/09/2019

Test Lab: CTF

Test Number: 190509 (M20190311)



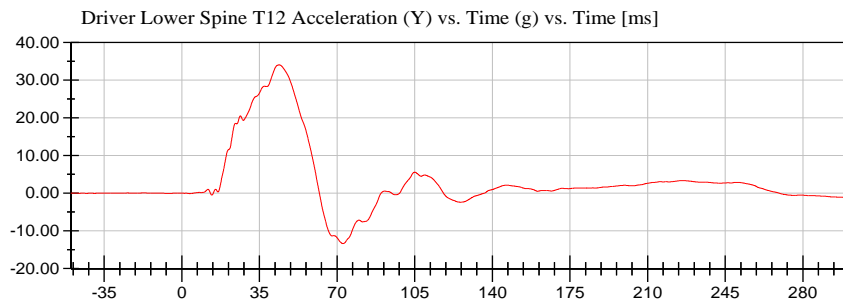
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16.01 g at 44.32 ms

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-13.12 g at 92.32 ms

CFC_180



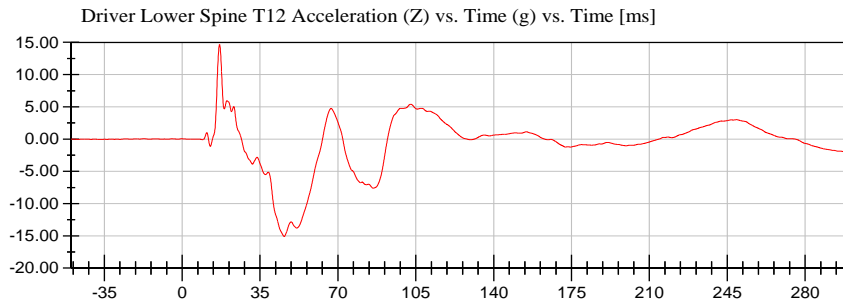
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34.07 g at 43.84 ms

<Min>

-13.35 g at 72.72 ms

CFC_180



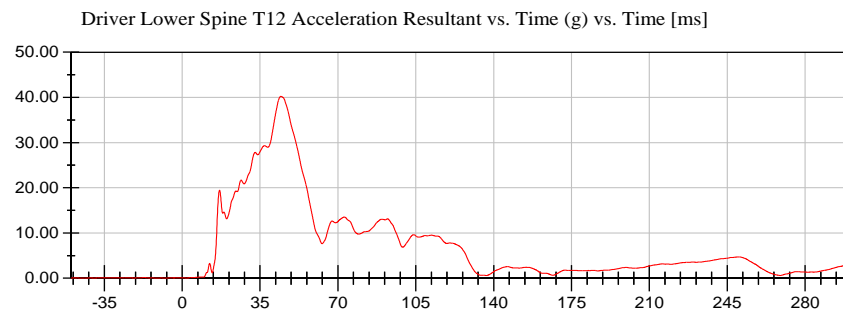
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14.67 g at 16.80 ms

<Min>

-15.10 g at 45.84 ms

CFC_180



<Max>

40.22 g at 44.40 ms

<Min>

0.01 g at -39.76 ms

CFC_180



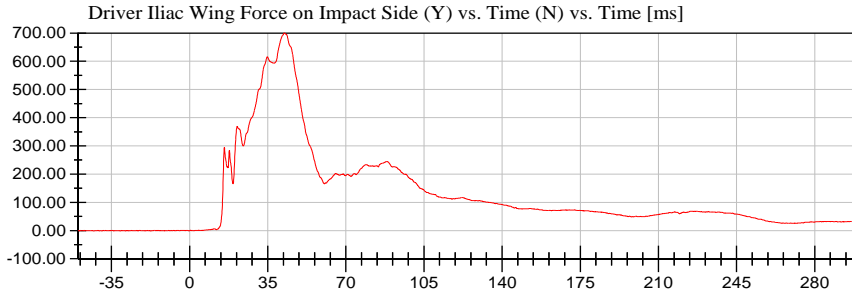
NHTSA

Position #1 SID IIs Dummy (297)

Test Date: 05/09/2019

Test Lab: CTF

Test Number: 190509 (M20190311)



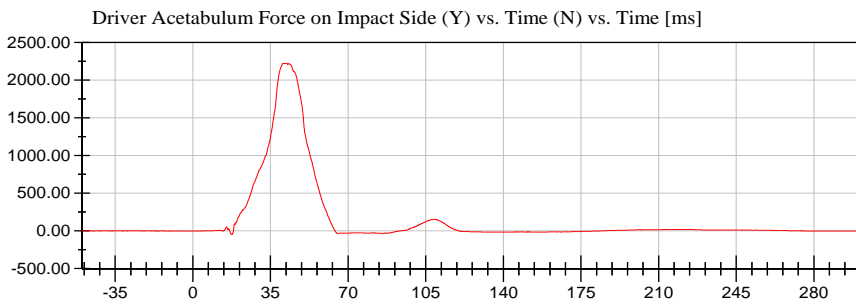
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700.07 N at 42.40 ms

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-1.22 N at -17.36 ms

CFC_600



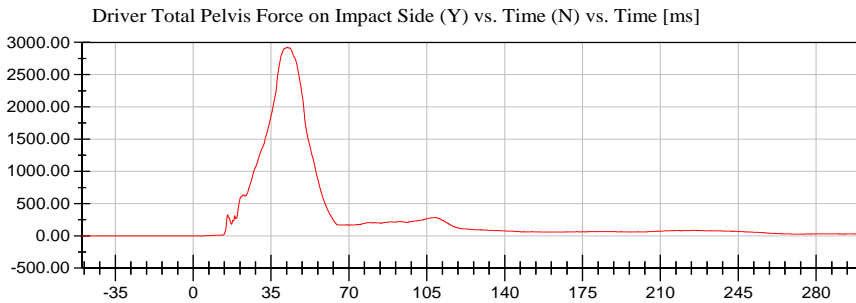
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2,224.92 N at 42.16 ms

<Min>

-47.89 N at 17.60 ms

CFC_600



<Max>

2,924.11 N at 42.24 ms

<Min>

-1.60 N at -0.32 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. 34

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	84	Yes
D	H-Point from Seat Back	141.0 - 151.0	147	Yes
E	Shoulder Pivot from Backline	97.0 - 107.0	103	Yes
F	Thigh Clearance	119.0 - 135.0	129	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	221	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	878	Yes
Z	Waist Circumference	761.0 - 791.0	781	Yes

Transportation Research Center Inc.

Left Lateral Head Drop
SID IIs Serial No. 297 Certification No. 34-2
Test Date: 3/21/2019

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.6 °C	Yes
Relative Humidity	10 - 70 %	39 %	Yes
Peak Head Resultant Acceleration	115 - 137 g	115.7 g	Yes
Peak Head Longitudinal Acceleration	(-15) - 15 g	-3.1 g	Yes
Is Head Resultant Acceleration Curve Unimodal within 15% of Peak?	Yes	Yes	Yes

Test meets specifications.

Condition: Used

Comments:

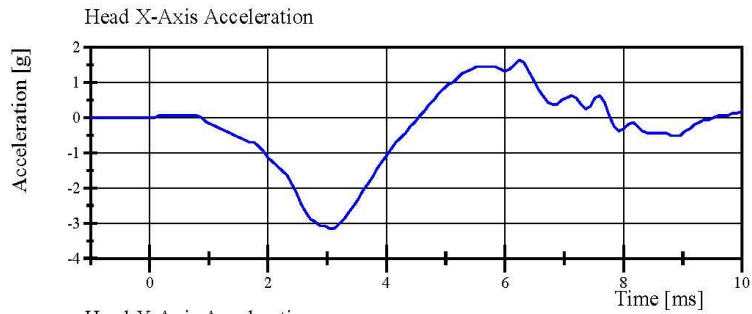
Head S/N: 1330

Transportation Research Center Inc.

Left Lateral Head Drop

SID IIS Serial No. 297 Certification No. 34-2

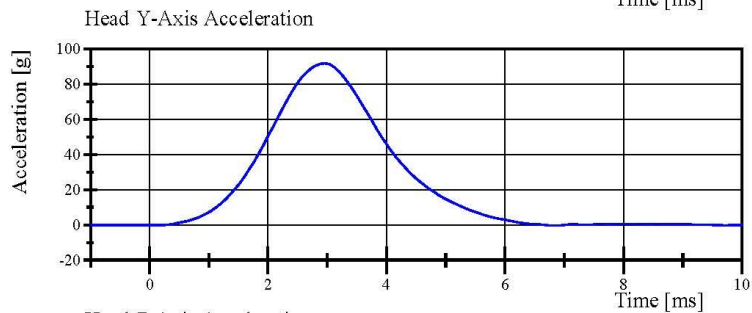
Test Date: 3/21/2019



Filter Class: CFC_1000

Max: 1.6 g at 6.2 ms

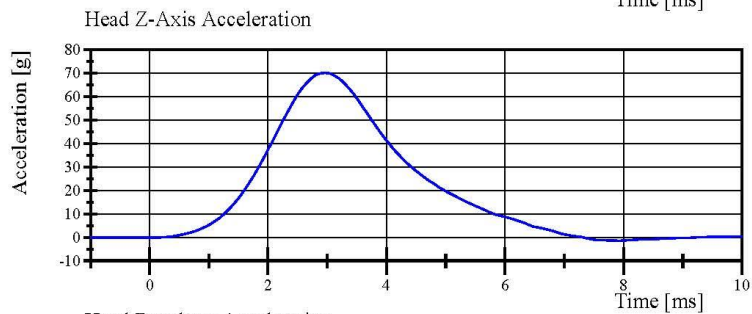
Min: -3.1 g at 3.0 ms



Filter Class: CFC_1000

Max: 91.9 g at 3.0 ms

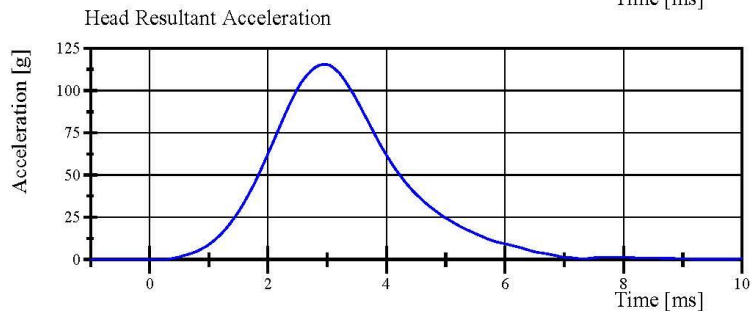
Min: -0.4 g at 6.8 ms



Filter Class: CFC_1000

Max: 70.2 g at 3.0 ms

Min: -1.4 g at 7.9 ms



Filter Class: CFC_1000

Max: 115.7 g at 3.0 ms

Min: 0.0 g at -1.0 ms

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

03.21.2019 12:40:47 193



Transportation Research Center Inc.

Left Lateral Neck

SID IIS Serial No. 297 Certification No. 34-2

Test Date: 3/21/2019

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.8 °C	Yes
Relative Humidity	10 - 70 %	41 %	Yes
Pendulum Velocity	(-5.51) - (-5.63) m/s	-5.605 m/s	Yes
Pendulum Integrated Velocity			
Change at 10 ms	2.20 - 2.80 m/s	2.404 m/s	Yes
Change at 15 ms	3.30 - 4.10 m/s	3.532 m/s	Yes
Change at 20 ms	4.40 - 5.40 m/s	4.749 m/s	Yes
Change at 25 ms	5.40 - 6.10 m/s	5.731 m/s	Yes
Change at 25 to 100 ms	5.50 - 6.20 m/s	5.991 m/s	Yes
Maximum Headform Flexion occurring between 50ms and 70ms.			
Peak	(-71) - (-81) deg	-71.3 deg	Yes
Time of Peak	50 - 70 ms	67.1 ms	Yes
Total Neck Occipital Condyles Moment	36 - 44 N·m	40.6 N·m	Yes
Total Neck Occipital Condyles Moment Decay Time to 0 N·m	102 - 126 ms	123.9 ms	Yes

Test meets specifications.

Condition: Used

Comments:

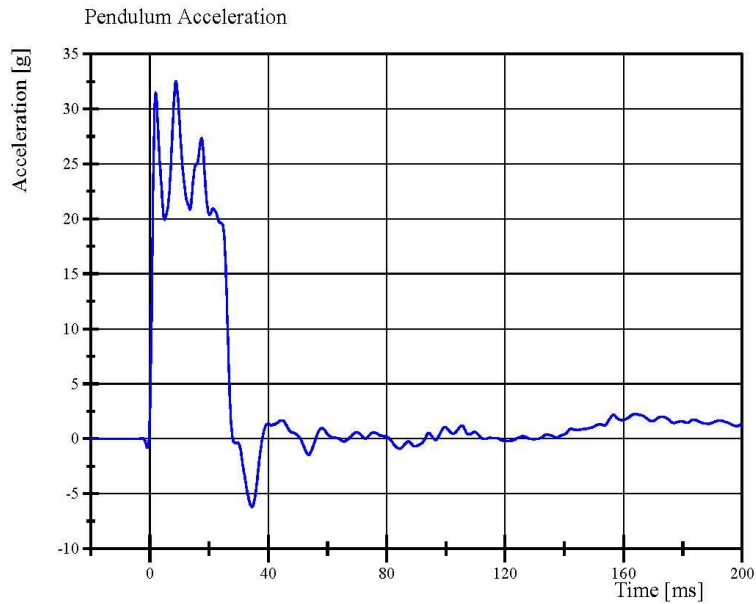
Neck S/N: 779

Transportation Research Center Inc.

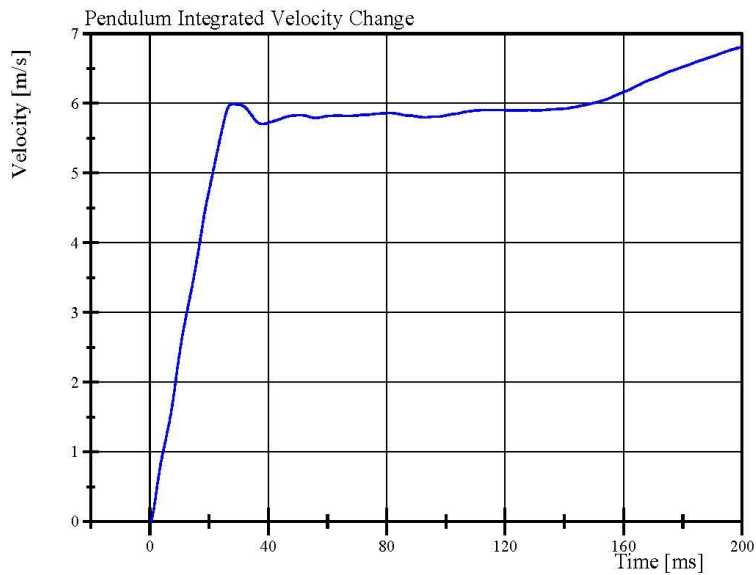
Left Lateral Neck

SID IIs Serial No. 297 Certification No. 34-2

Test Date: 3/21/2019



Filter Class: CFC_180
Max: 32.5 g at 8.8 ms
Min: -6.2 g at 34.5 ms



Filter Class: CFC_180
Max: 6.8 m/s at 200.0 ms
Min: 0.0 m/s at 0.0 ms

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

03.21.2019 11:25:11 716

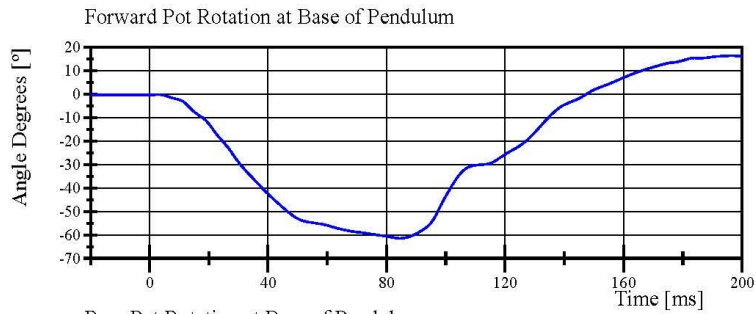


Transportation Research Center Inc.

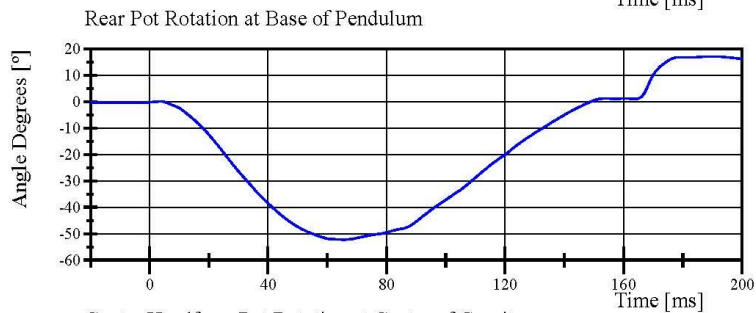
Left Lateral Neck

SID IIS Serial No. 297 Certification No. 34-2

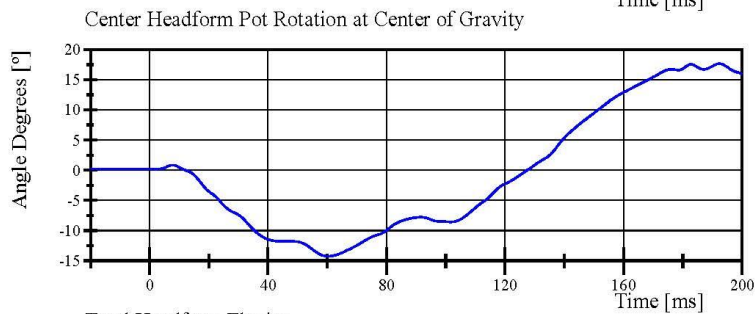
Test Date: 3/21/2019



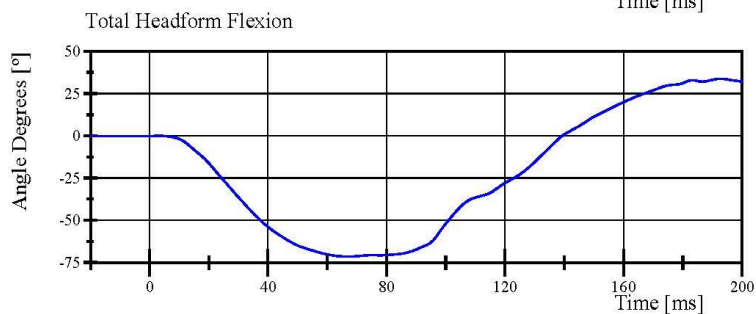
Filter Class: CFC_60
Max: 16.3 ° at 196.6 ms
Min: -61.4 ° at 84.5 ms



Filter Class: CFC_60
Max: 17.1 ° at 190.8 ms
Min: -52.2 ° at 65.5 ms



Filter Class: CFC_60
Max: 17.7 ° at 192.3 ms
Min: -14.2 ° at 60.3 ms



Filter Class: CFC_60
Max: 33.8 ° at 192.7 ms
Min: -71.3 ° at 67.1 ms

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

03.21.2019 11:25:12 716

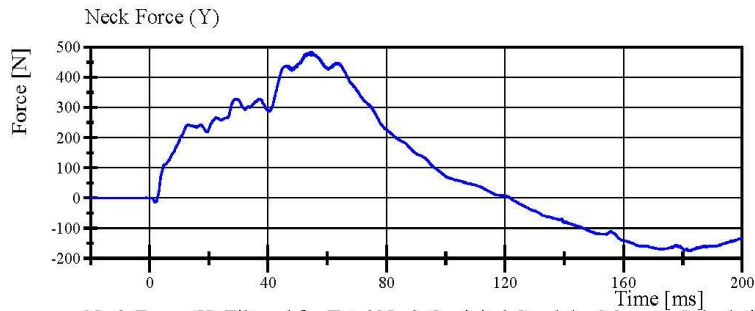


Transportation Research Center Inc.

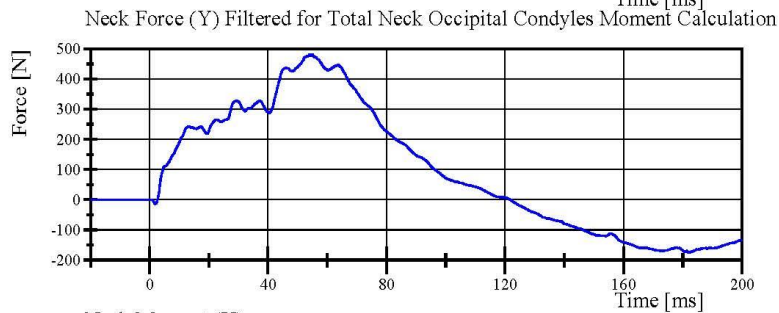
Left Lateral Neck

SID IIS Serial No. 297 Certification No. 34-2

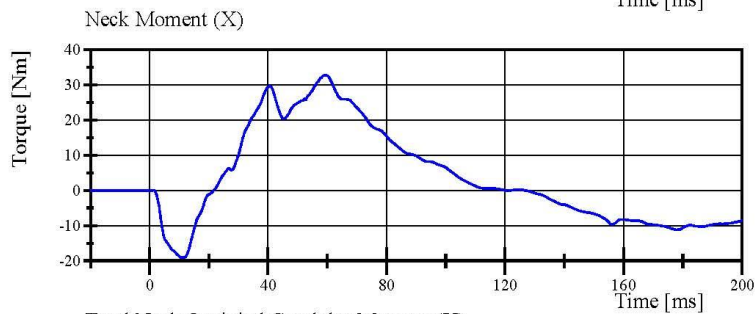
Test Date: 3/21/2019



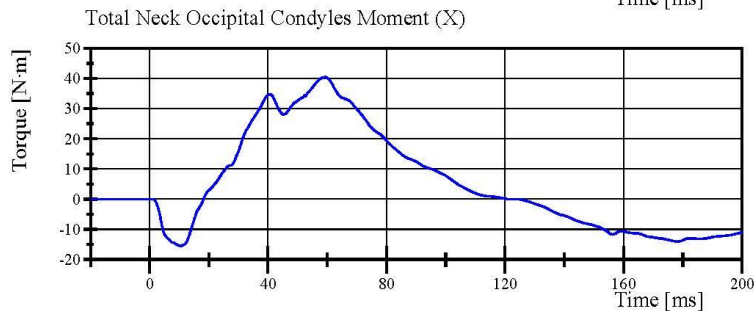
Filter Class: CFC_1000
Max: 484.0 N at 54.8 ms
Min: -174.9 N at 182.2 ms



Filter Class: CFC_600
Max: 481.8 N at 54.1 ms
Min: -174.0 N at 182.2 ms



Filter Class: CFC_600
Max: 32.9 Nm at 59.4 ms
Min: -19.1 Nm at 10.6 ms



Filter Class: Without_(Consta
Max: 40.6 N.m at 59.4 ms
Min: -15.5 N.m at 10.5 ms

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

03.21.2019 11:25:13 716



Transportation Research Center Inc.

Left Lateral Shoulder
SID IIs Serial No. 297 Certification No. 34-1
Test Date: 3/21/2019

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	41 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.27 m/s	Yes
Impactor Acceleration	(-13) - (-18) g	-14.9 g	Yes
Shoulder Displacement	28 - 37 mm	30.6 mm	Yes
Upper Spine Lateral Acceleration	17 - 22 g	19.2 g	Yes

Test meets specifications.

Condition: Used

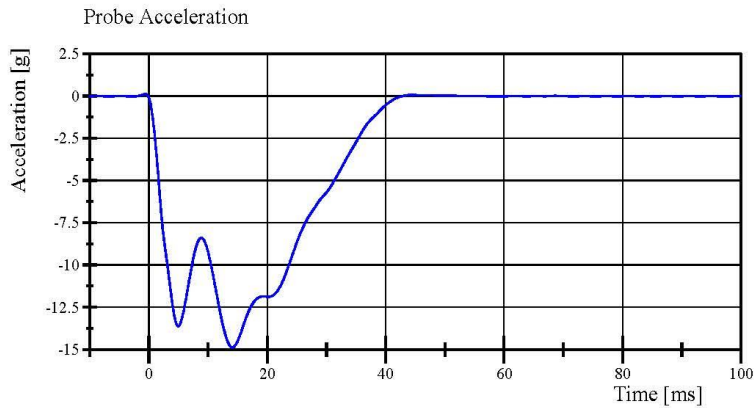
Comments:

Left Arm S/N: 940L

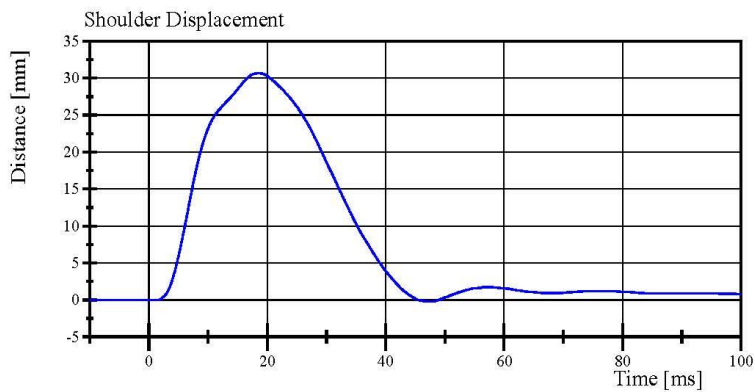
Shoulder Rib S/N: 180-3355 259

Transportation Research Center Inc.

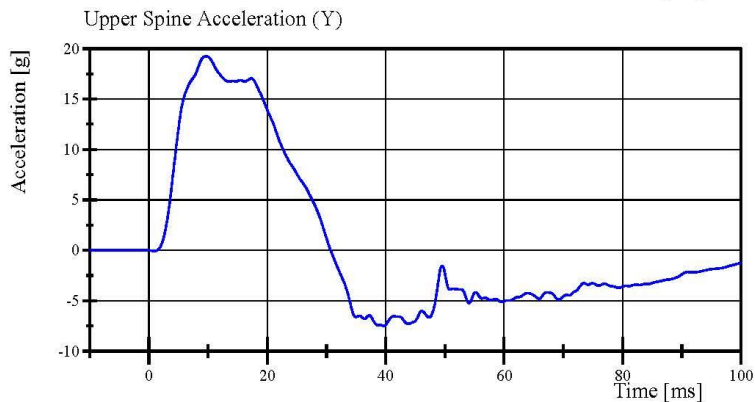
Left Lateral Shoulder
SID IIs Serial No. 297 Certification No. 34-1
Test Date: 3/21/2019



Filter Class: CFC_180
Max: 0.1 g at -0.6 ms
Min: -14.9 g at 14.1 ms



Filter Class: CFC_600
Max: 30.6 mm at 18.5 ms
Min: -0.2 mm at 48.0 ms



Filter Class: CFC_180
Max: 19.2 g at 9.7 ms
Min: -7.5 g at 39.7 ms

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

03.21.2019 08:01:09 859



Transportation Research Center Inc.

Left Lateral Thorax with Arm
SID IIS Serial No. 297 Certification No. 34-2
Test Date: 4/26/2019

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	49 %	Yes
Impactor Velocity	6.60 - 6.80 m/s	6.732 m/s	Yes
Impactor Acceleration	(-30) - (-36) g	-34.5 g	Yes
Shoulder Displacement	31 - 40 mm	33.7 mm	Yes
Upper Thorax Rib Displacement	25 - 32 mm	26.7 mm	Yes
Center Thorax Rib Displacement	30 - 36 mm	31.0 mm	Yes
Lower Thorax Rib Displacement	32 - 38 mm	35.2 mm	Yes
Upper Spine Lateral Acceleration	34 - 43 g	38.2 g	Yes
Lower Spine Lateral Acceleration	29 - 37 g	35.0 g	Yes

Test meets specifications.

Condition: New Upper Thorax Pad

Comments:

Left Arm S/N: 940L

Shoulder Rib S/N: 180-3355 259

Upper Thorax Rib #1 S/N: 2009

Middle Thorax Rib #2 S/N: 2010

Lower Thorax Rib #3 S/N: 2029

Upper Thorax Pad Part No: 180-3451-297

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

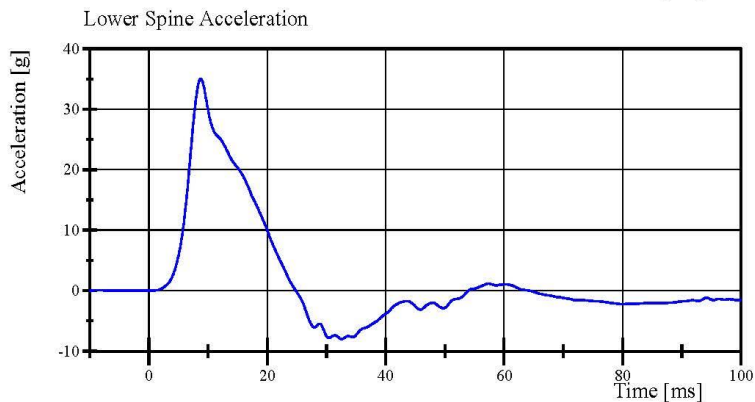
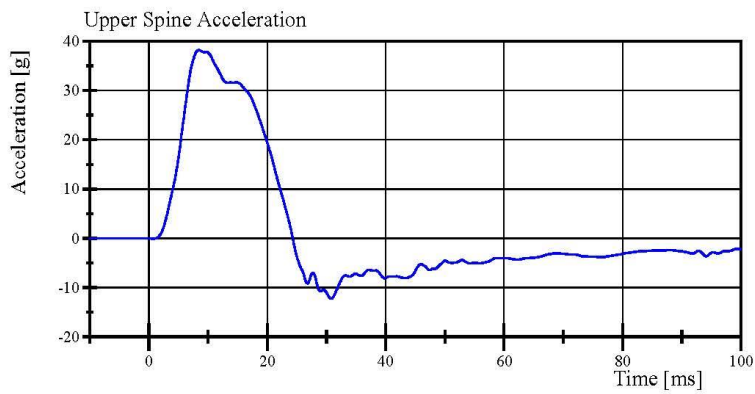
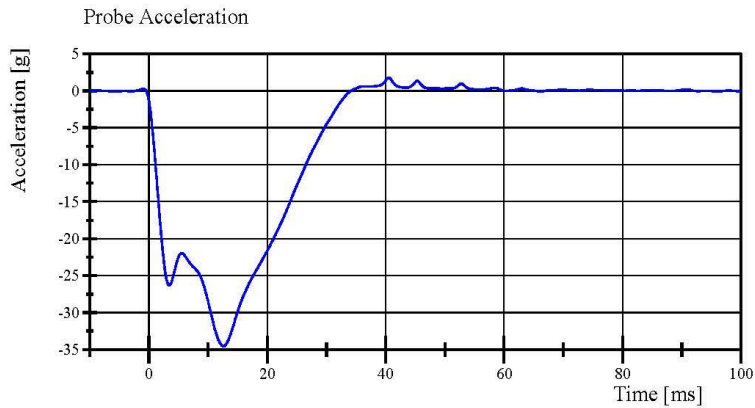
04.26.2019 08:27:46 629



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Transportation Research Center Inc.

Left Lateral Thorax with Arm
SID IIs Serial No. 297 Certification No. 34-2
Test Date: 4/26/2019



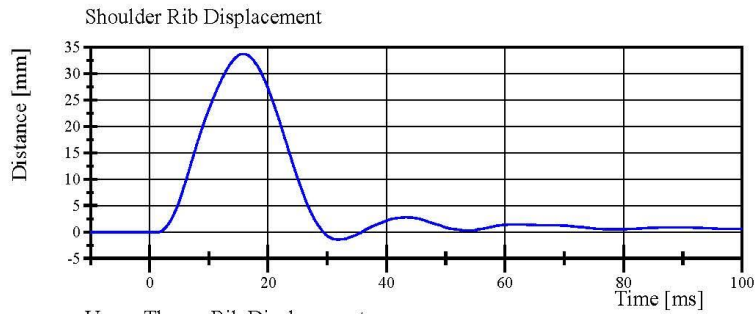
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

04.26.2019 08:30:33 629

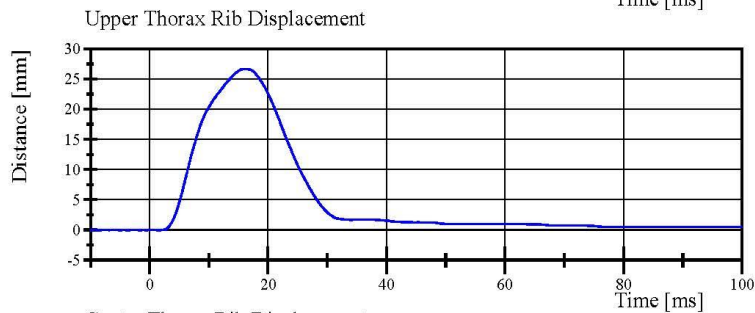


Transportation Research Center Inc.

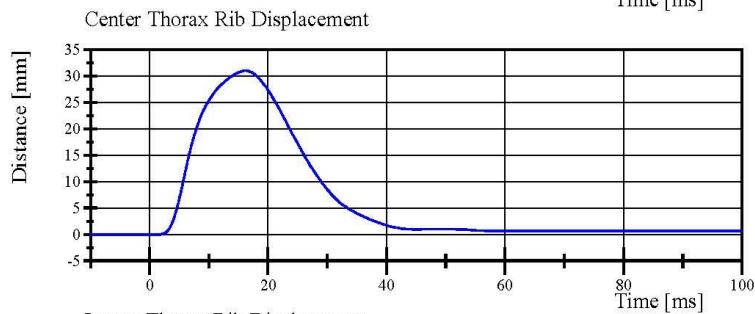
Left Lateral Thorax with Arm
SID IIs Serial No. 297 Certification No. 34-2
Test Date: 4/26/2019



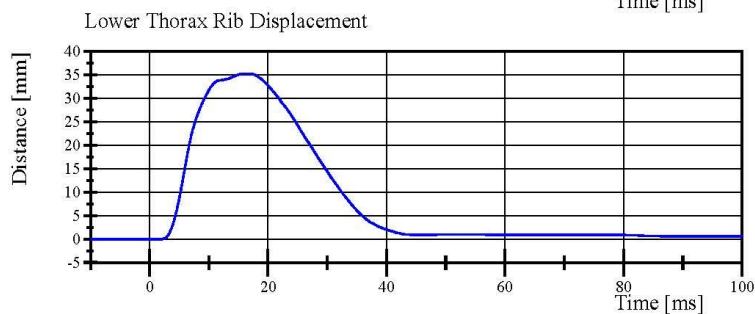
Filter Class: CFC_600
Max: 33.7 mm at 15.8 ms
Min: -1.4 mm at 31.8 ms



Filter Class: CFC_600
Max: 26.7 mm at 16.1 ms
Min: -0.0 mm at 1.6 ms



Filter Class: CFC_600
Max: 31.0 mm at 16.2 ms
Min: -0.0 mm at -8.6 ms



Filter Class: CFC_600
Max: 35.2 mm at 16.3 ms
Min: -0.0 mm at 1.8 ms

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

04.26.2019 08:30:34 629



Transportation Research Center Inc.

Left Lateral Thorax without Arm
SID IIS Serial No. 297 Certification No. 34-2
Test Date: 4/26/2019

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.9 °C	Yes
Relative Humidity	10 - 70 %	50 %	Yes
Impactor Velocity	4.20 - 4.40 m/s	4.332 m/s	Yes
Impactor Acceleration	(-14) - (-18) g	-15.8 g	Yes
Upper Thorax Rib Displacement	32 - 40 mm	35.0 mm	Yes
Center Thorax Rib Displacement	39 - 45 mm	40.5 mm	Yes
Lower Thorax Rib Displacement	35 - 43 mm	39.8 mm	Yes
Upper Spine Lateral Acceleration	13 - 17 g	15.0 g	Yes
Lower Spine Lateral Acceleration	7 - 11 g	9.8 g	Yes

Test meets specifications.

Condition: New Upper Thorax Pad

Comments:

Upper Thorax Rib #1 S/N: 2009

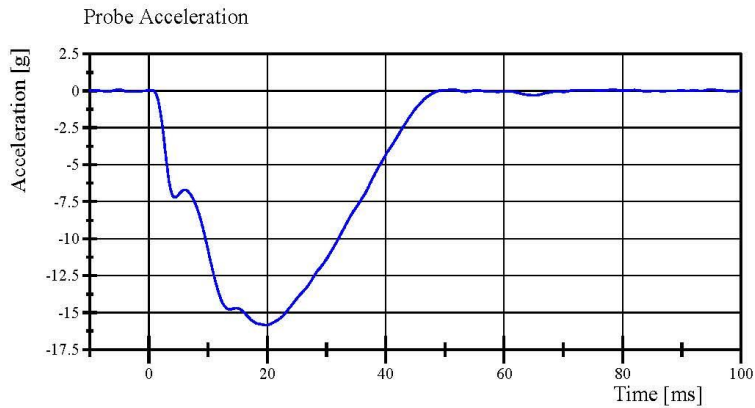
Middle Thorax Rib #2 S/N: 2010

Lower Thorax Rib #3 S/N: 2029

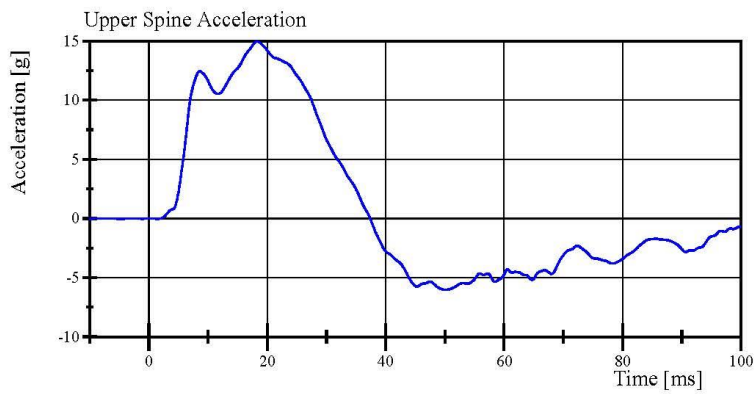
Upper Thorax Pad Part No: 180-3451-297

Transportation Research Center Inc.

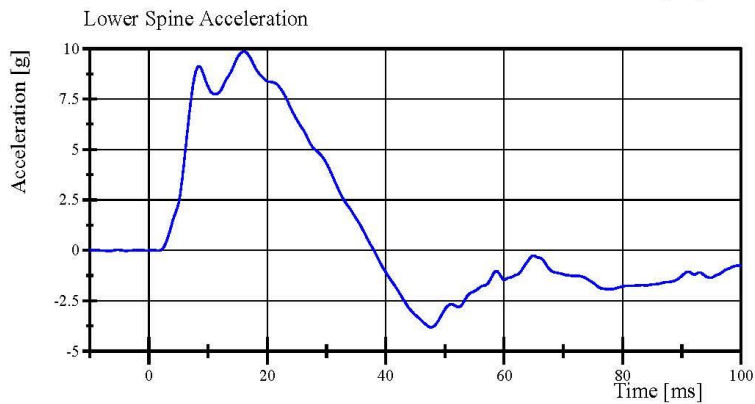
Left Lateral Thorax without Arm
SID IIs Serial No. 297 Certification No. 34-2
Test Date: 4/26/2019



Filter Class: CFC_180
Max: 0.1 g at 95.0 ms
Min: -15.8 g at 19.9 ms



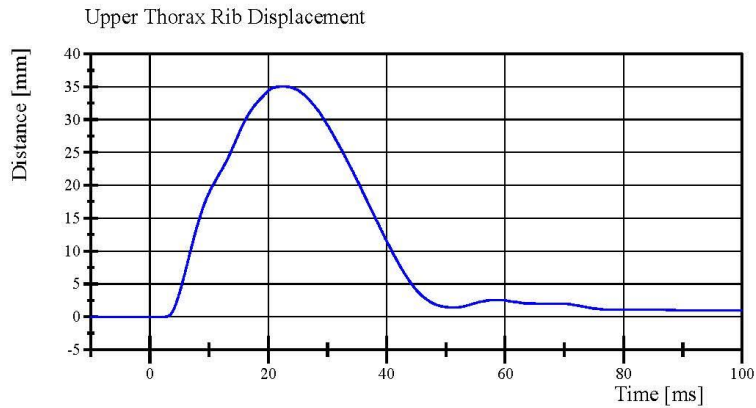
Filter Class: CFC_180
Max: 15.0 g at 18.3 ms
Min: -6.0 g at 50.2 ms



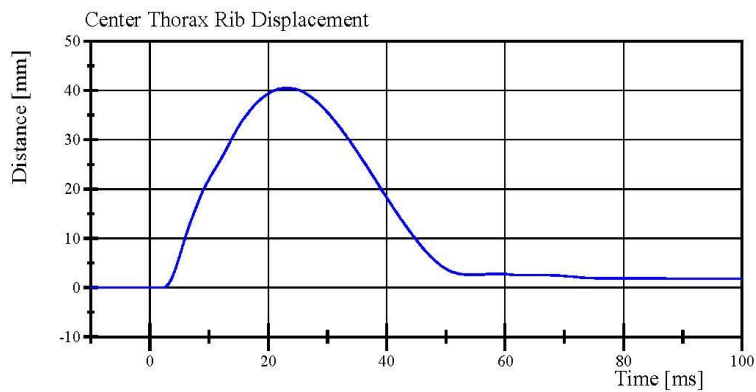
Filter Class: CFC_180
Max: 9.8 g at 16.1 ms
Min: -3.8 g at 47.7 ms

Transportation Research Center Inc.

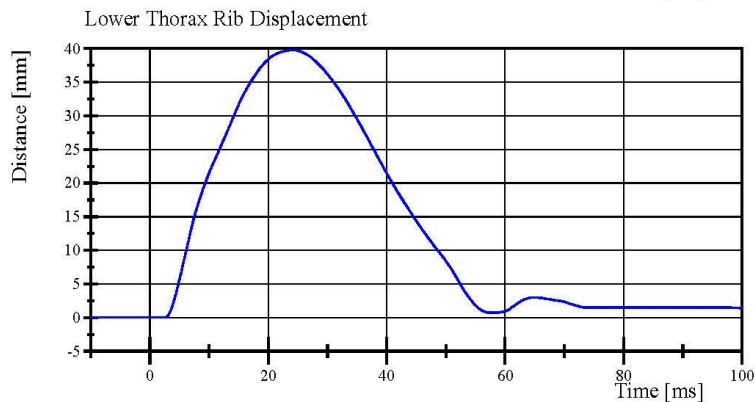
Left Lateral Thorax without Arm
SID IIs Serial No. 297 Certification No. 34-2
Test Date: 4/26/2019



Filter Class: CFC_600
Max: 35.0 mm at 22.6 ms
Min: -0.0 mm at -7.8 ms



Filter Class: CFC_600
Max: 40.5 mm at 22.9 ms
Min: -0.0 mm at 2.0 ms



Filter Class: CFC_600
Max: 39.8 mm at 24.5 ms
Min: -0.0 mm at 2.4 ms

Transportation Research Center Inc.

Left Lateral Abdomen
SID IIS Serial No. 297 Certification No. 34-2
Test Date: 4/26/2019

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	49 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.34 m/s	Yes
Impactor Acceleration	(-12) - (-16) g	-14.9 g	Yes
Upper Abdominal Rib Displacement	36 - 47 mm	39.4 mm	Yes
Lower Abdominal Rib Displacement	33 - 44 mm	36.1 mm	Yes
Lower Spine Lateral Acceleration	9 - 14.0 g	11.28 g	Yes

Test meets specifications.

Condition: New Abdomen Pad

Comments:

Upper Abdominal Rib S/N: DS1235

Lower Abdominal Rib S/N: DS1236

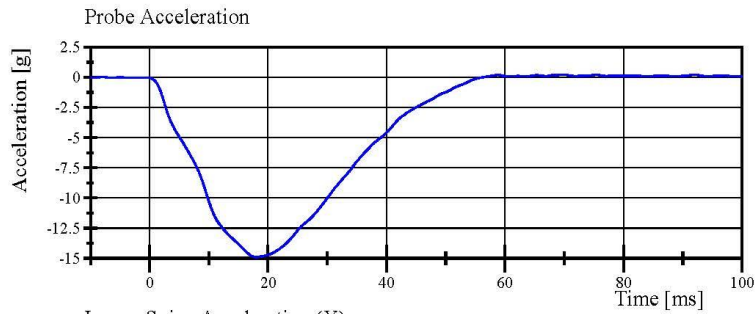
Lower Abdomen Pad Part No: 180-3455-297

Transportation Research Center Inc.

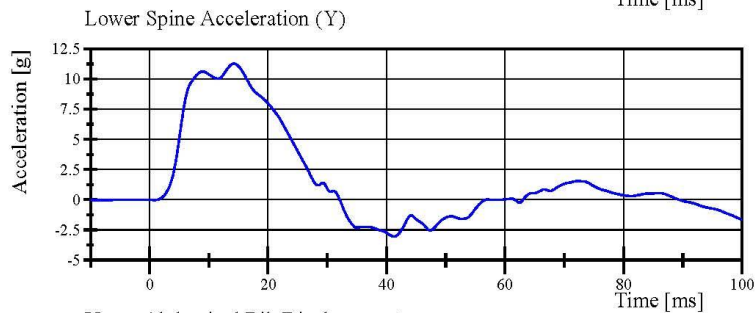
Left Lateral Abdomen

SID IIs Serial No. 297 Certification No. 34-2

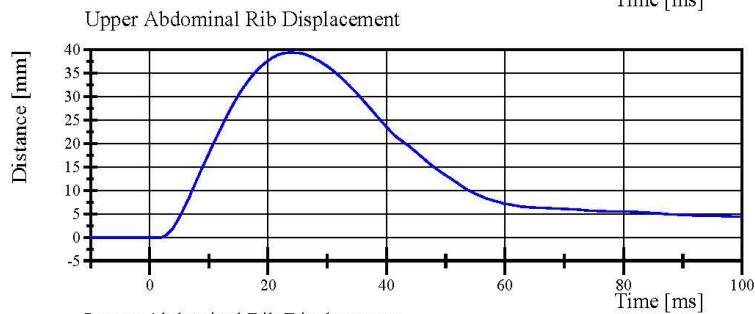
Test Date: 4/26/2019



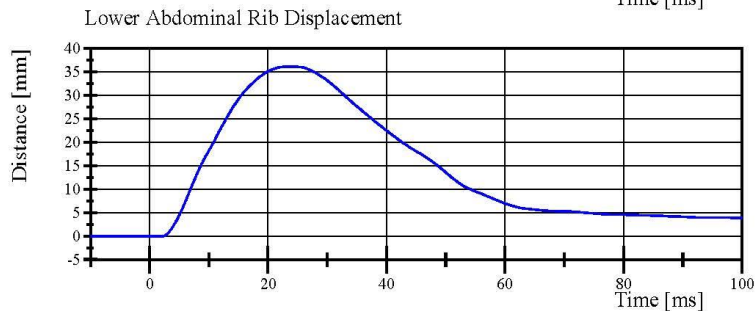
Filter Class: CFC_180
Max: 0.2 g at 69.8 ms
Min: -14.9 g at 18.0 ms



Filter Class: CFC_180
Max: 11.3 g at 14.2 ms
Min: -3.0 g at 41.2 ms



Filter Class: CFC_600
Max: 39.4 mm at 23.8 ms
Min: -0.0 mm at 1.7 ms



Filter Class: CFC_600
Max: 36.1 mm at 23.3 ms
Min: -0.0 mm at 2.2 ms

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

04.26.2019 08:13:04 665



Transportation Research Center Inc.

Left Lateral Pelvis
SID IIs Serial No. 297 Certification No. 34-1
Test Date: 3/21/2019

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	39 %	Yes
Pendulum Velocity	6.6 - 6.8 m/s	6.63 m/s	Yes
Impactor Acceleration	(-38.0) - (-47.0) g	-45.63 g	Yes
Peak Pelvis Lateral Acceleration after 6ms	34 - 42 g	37.3 g	Yes
Acetabulum Force	3,600 - 4,300 N	4,220.5 N	Yes

Test meets specifications.

Condition: Used

Comments:

Pelvis Skin S/N: 1141

Pelvis Plug Info:

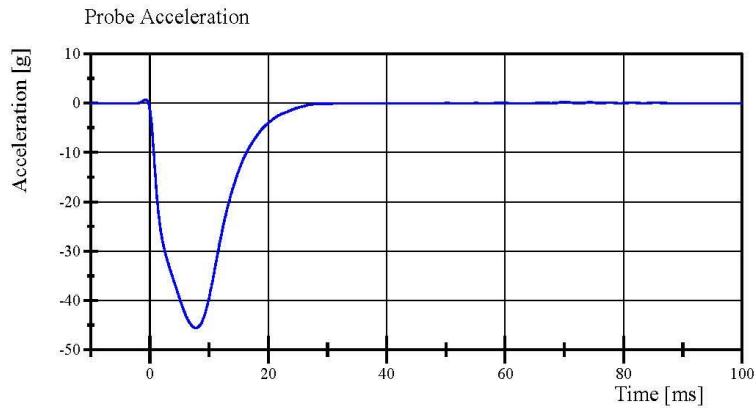
Manufacturer: Saco

S/N: 12277

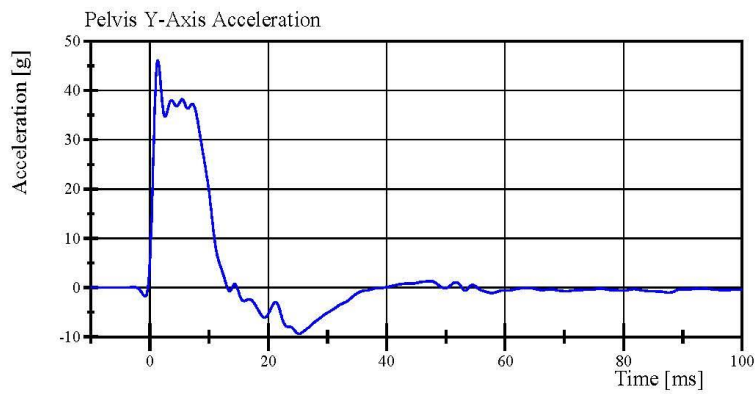
Cal Date: 20180315

Transportation Research Center Inc.

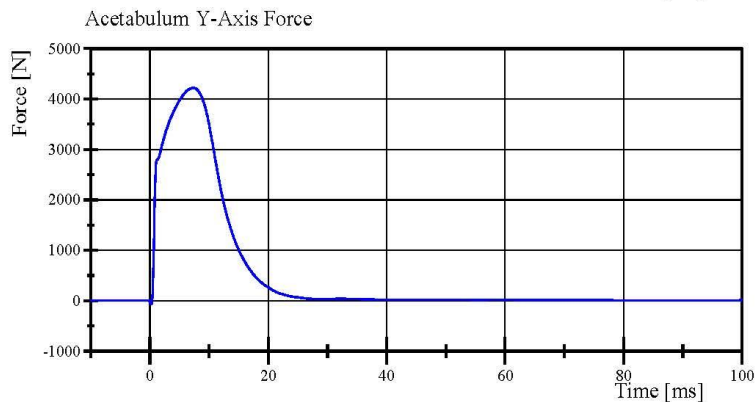
Left Lateral Pelvis
SID IIs Serial No. 297 Certification No. 34-1
Test Date: 3/21/2019



Filter Class: CFC_180
Max: 0.7 g at -0.7 ms
Min: -45.6 g at 7.8 ms



Filter Class: CFC_180
Max: 46.1 g at 1.4 ms
Min: -9.4 g at 25.2 ms



Filter Class: CFC_600
Max: 4,220.5 N at 7.4 ms
Min: -72.3 N at 0.2 ms

Transportation Research Center Inc.

Left Lateral Iliac

SID IIs Serial No. 297 Certification No. 34-1

Test Date: 3/21/2019

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.1 °C	Yes
Relative Humidity	10 - 70 %	44 %	Yes
Pendulum Velocity	4.2 - 4.4 m/s	4.24 m/s	Yes
Impactor Acceleration	(-36) - (-45) g	-41.6 g	Yes
Peak Pelvis Lateral Acceleration	28 - 39 g	33.3 g	Yes
Iliac Force	4,100 - 5,100 N	4,761.5 N	Yes

Test meets specifications.

Condition: Used

Comments:

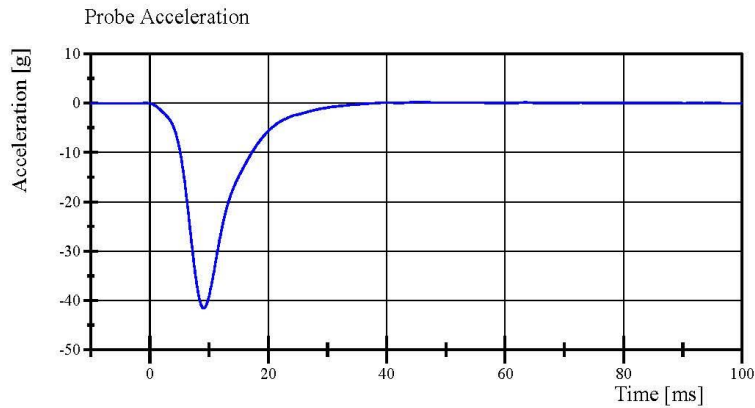
Pelvis Skin S/N: 1141

Transportation Research Center Inc.

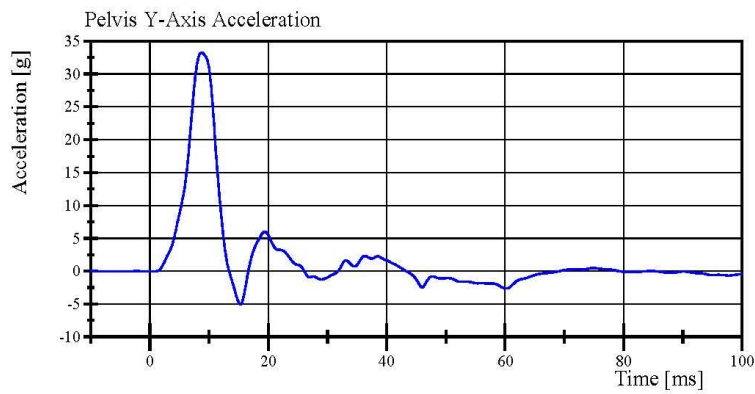
Left Lateral Iliac

SID IIS Serial No. 297 Certification No. 34-1

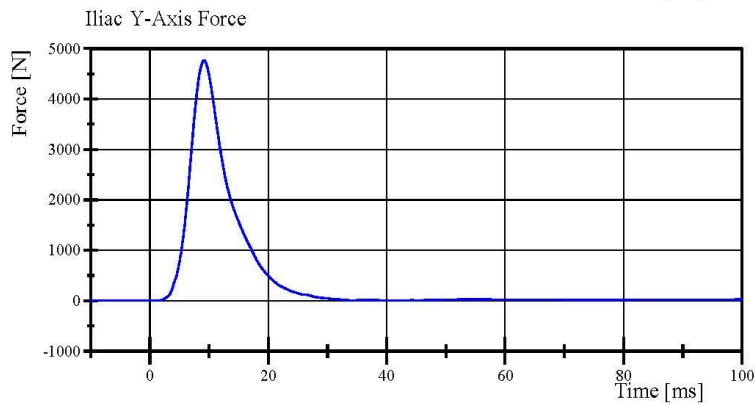
Test Date: 3/21/2019



Filter Class: CFC_180
Max: 0.3 g at 45.4 ms
Min: -41.6 g at 9.1 ms



Filter Class: CFC_180
Max: 33.3 g at 8.7 ms
Min: -5.1 g at 15.3 ms



Filter Class: CFC_600
Max: 4,761.5 N at 9.2 ms
Min: -0.7 N at -9.4 ms

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

03.21.2019 09:43:00 653



Post-Test Calibration Sheets
Driver S/N 297

Transportation Research Center Inc.
SIDIIs Dummy - Level D
External Dimensions
Serial No. 297 Calibration No. 35

Symbol	Description	Specification	Results	Pass
		mm	mm	
A	Sitting Height	772.0 - 788.0	780	Yes
B	Shoulder Pivot Height	437.0 - 453.0	451	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	103	Yes
F	Thigh Clearance	119.0 - 135.0	130	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	221	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	878	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. 35-1

Test Date: 5/13/2019

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.9 °C	Yes
Relative Humidity	10 - 70 %	43 %	Yes
Peak Head Resultant Acceleration	115 - 137 g	132.9 g	Yes
Peak Head Longitudinal Acceleration	(-15) - 15 g	1.6 g	Yes
Is Head Resultant Acceleration Curve Unimodal within 15% of Peak?	Yes	Yes	Yes

Test meets specifications.

Condition: Used

Comments:

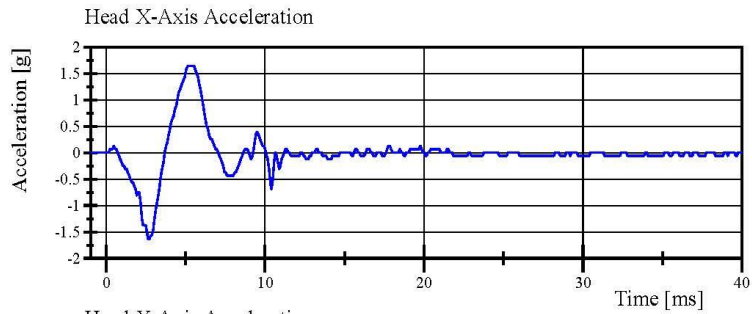
Head S/N: 1330

Transportation Research Center Inc.

Left Lateral Head Drop

SID IIS Serial No. 297 Certification No. 35-1

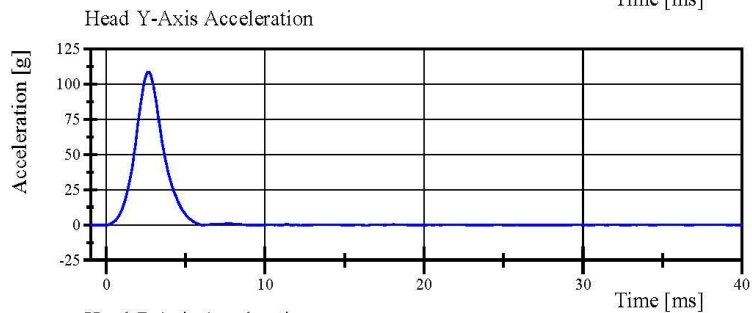
Test Date: 5/13/2019



Filter Class: CFC_1000

Max: 1.6 g at 5.1 ms

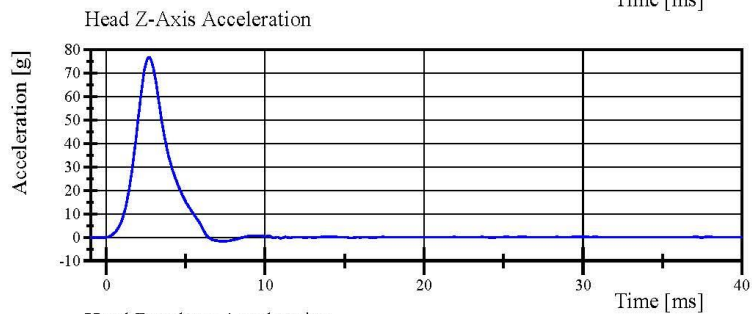
Min: -1.6 g at 2.6 ms



Filter Class: CFC_1000

Max: 108.6 g at 2.6 ms

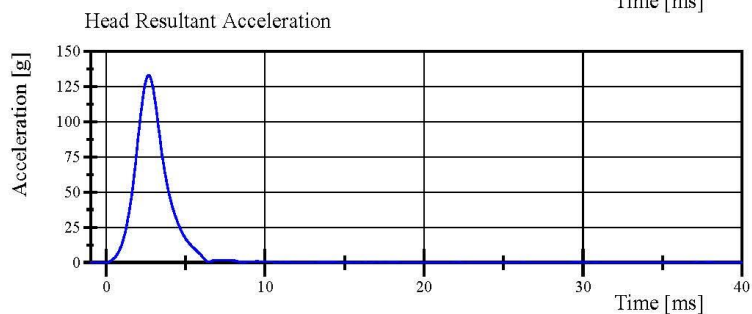
Min: -0.4 g at 16.3 ms



Filter Class: CFC_1000

Max: 76.7 g at 2.7 ms

Min: -1.7 g at 7.3 ms



Filter Class: CFC_1000

Max: 132.9 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

05.13.2019 12:53:48 197



Transportation Research Center Inc.

Left Lateral Neck

SID IIS Serial No. 297 Certification No. 35-1

Test Date: 5/13/2019

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.1 °C	Yes
Relative Humidity	10 - 70 %	43 %	Yes
Pendulum Velocity	(-5.51) - (-5.63) m/s	-5.605 m/s	Yes
Pendulum Integrated Velocity			
Change at 10 ms	2.20 - 2.80 m/s	2.317 m/s	Yes
Change at 15 ms	3.30 - 4.10 m/s	3.478 m/s	Yes
Change at 20 ms	4.40 - 5.40 m/s	4.722 m/s	Yes
Change at 25 ms	5.40 - 6.10 m/s	5.665 m/s	Yes
Change at 25 to 100 ms	5.50 - 6.20 m/s	5.987 m/s	Yes
Maximum Headform Flexion occurring between 50ms and 70ms.			
Peak	(-71) - (-81) deg	-74.6 deg	Yes
Time of Peak	50 - 70 ms	69.0 ms	Yes
Total Neck Occipital Condyles Moment	36 - 44 N·m	39.9 N·m	Yes
Total Neck Occipital Condyles Moment Decay Time to 0 N·m	102 - 126 ms	124.3 ms	Yes

Test meets specifications.

Condition: Used

Comments:

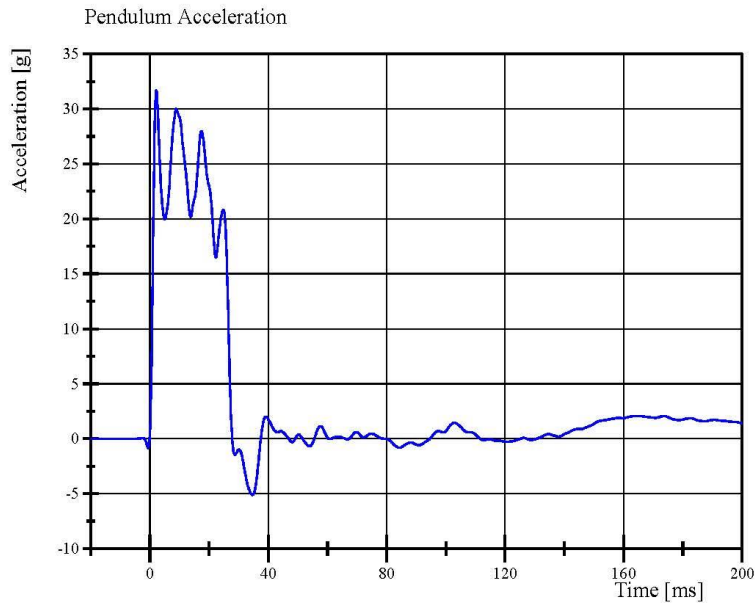
Neck S/N: 779

Transportation Research Center Inc.

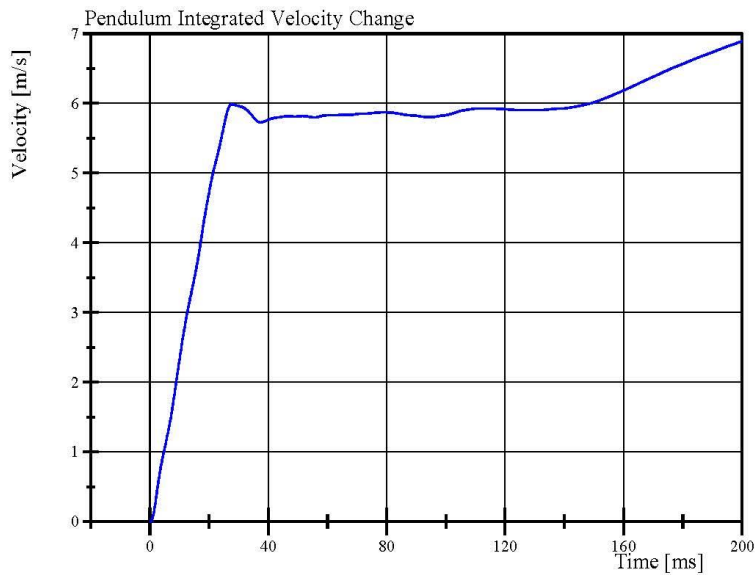
Left Lateral Neck

SID IIS Serial No. 297 Certification No. 35-1

Test Date: 5/13/2019



Filter Class: CFC_180
Max: 31.7 g at 2.2 ms
Min: -5.1 g at 34.6 ms



Filter Class: CFC_180
Max: 6.9 m/s at 200.0 ms
Min: 0.0 m/s at 0.0 ms

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

05.13.2019 12:55:19 714

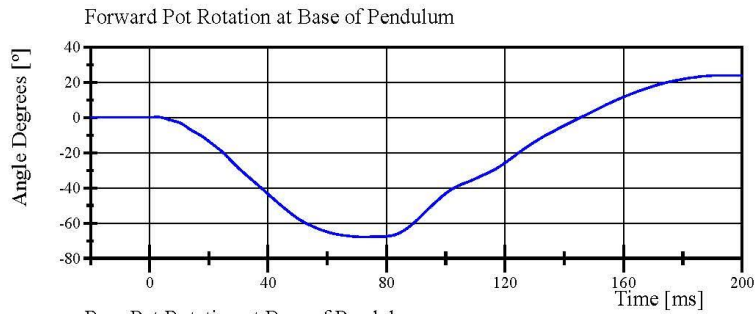


Transportation Research Center Inc.

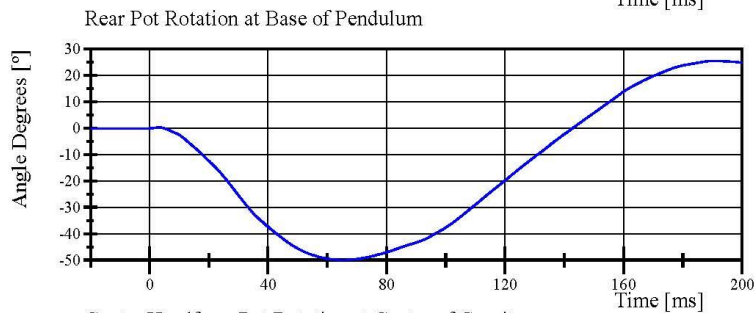
Left Lateral Neck

SID IIs Serial No. 297 Certification No. 35-1

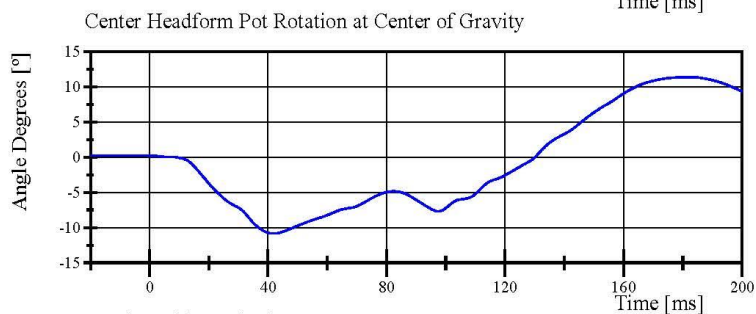
Test Date: 5/13/2019



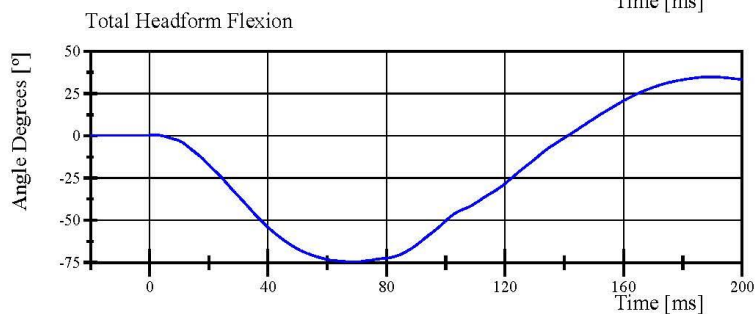
Filter Class: CFC_60
Max: 24.0 ° at 195.7 ms
Min: -67.7 ° at 72.0 ms



Filter Class: CFC_60
Max: 25.5 ° at 190.6 ms
Min: -49.9 ° at 65.3 ms



Filter Class: CFC_60
Max: 11.4 ° at 182.5 ms
Min: -10.8 ° at 41.8 ms



Filter Class: CFC_60
Max: 34.9 ° at 189.3 ms
Min: -74.6 ° at 69.0 ms

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

05.13.2019 12:55:20 714

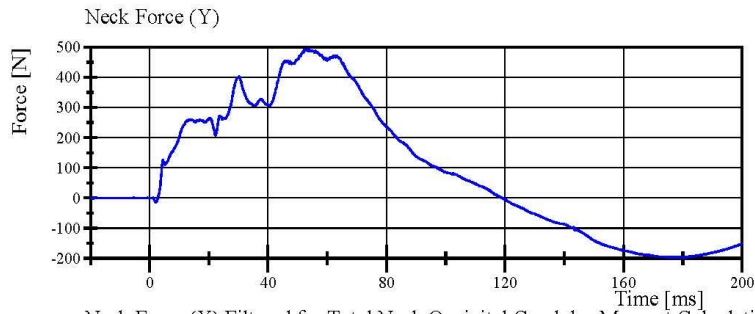


Transportation Research Center Inc.

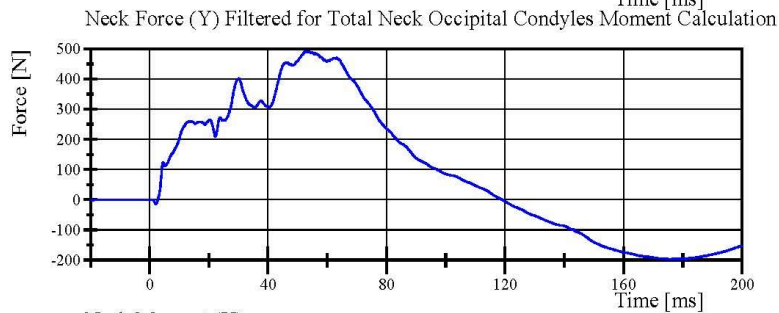
Left Lateral Neck

SID IIS Serial No. 297 Certification No. 35-1

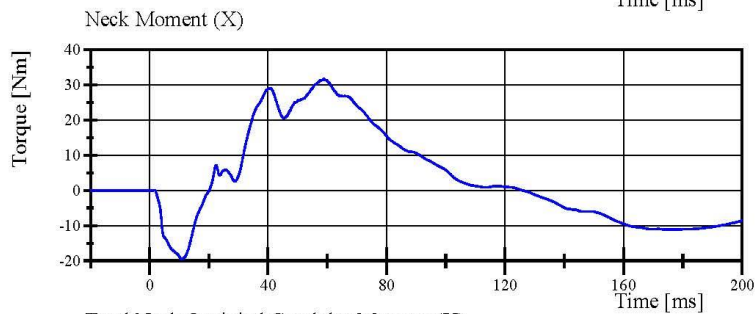
Test Date: 5/13/2019



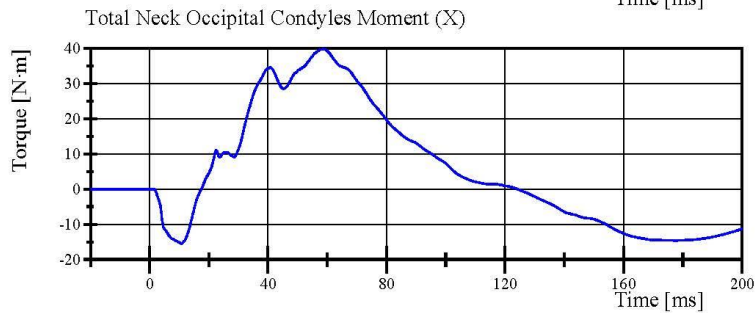
Filter Class: CFC_1000
Max: 493.6 N at 53.8 ms
Min: -196.8 N at 176.2 ms



Filter Class: CFC_600
Max: 491.7 N at 53.8 ms
Min: -196.6 N at 176.2 ms



Filter Class: CFC_600
Max: 31.7 Nm at 58.8 ms
Min: -19.5 Nm at 11.0 ms



Filter Class: Without_(Consta
Max: 39.9 N.m at 58.8 ms
Min: -15.4 N.m at 10.7 ms

Transportation Research Center Inc.

Left Lateral Shoulder
SID IIs Serial No. 297 Certification No. 35-1
Test Date: 5/13/2019

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	44 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.27 m/s	Yes
Impactor Acceleration	(-13) - (-18) g	-15.1 g	Yes
Shoulder Displacement	28 - 37 mm	30.1 mm	Yes
Upper Spine Lateral Acceleration	17 - 22 g	19.1 g	Yes

Test meets specifications.

Condition: Used

Comments:

Left Arm S/N: 940L

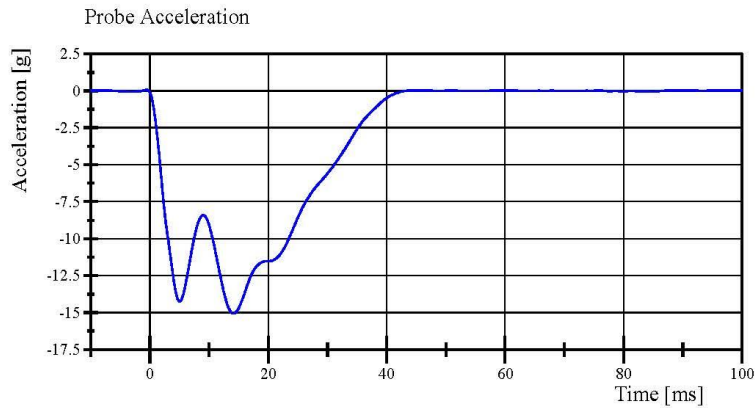
Shoulder Rib S/N: 180-3355 259

Transportation Research Center Inc.

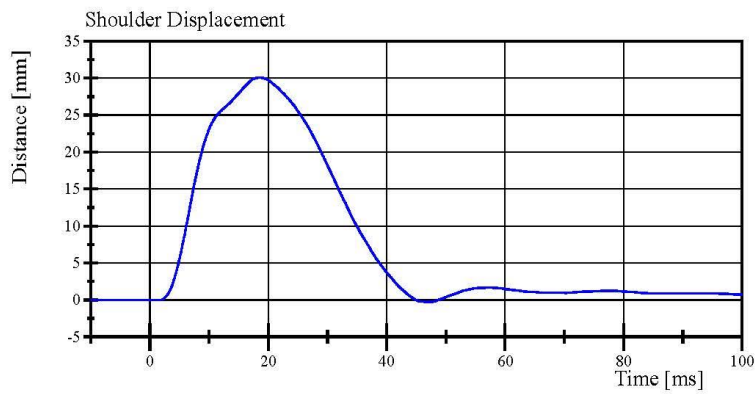
Left Lateral Shoulder

SID IIs Serial No. 297 Certification No. 35-1

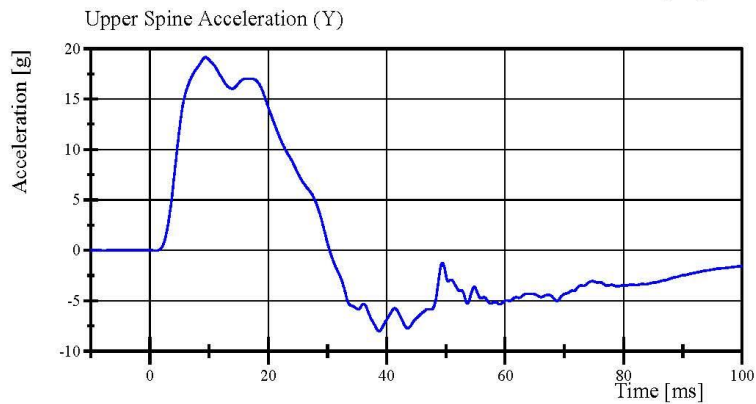
Test Date: 5/13/2019



Filter Class: CFC_180
Max: 0.1 g at -0.6 ms
Min: -15.1 g at 14.1 ms



Filter Class: CFC_600
Max: 30.1 mm at 18.6 ms
Min: -0.2 mm at 47.5 ms



Filter Class: CFC_180
Max: 19.1 g at 9.4 ms
Min: -8.0 g at 38.7 ms

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

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Transportation Research Center Inc.

Left Lateral Thorax with Arm
SID IIS Serial No. 297 Certification No. 35-1
Test Date: 5/13/2019

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.6 °C	Yes
Relative Humidity	10 - 70 %	43 %	Yes
Impactor Velocity	6.60 - 6.80 m/s	6.720 m/s	Yes
Impactor Acceleration	(-30) - (-36) g	-34.2 g	Yes
Shoulder Displacement	31 - 40 mm	33.5 mm	Yes
Upper Thorax Rib Displacement	25 - 32 mm	27.3 mm	Yes
Center Thorax Rib Displacement	30 - 36 mm	31.9 mm	Yes
Lower Thorax Rib Displacement	32 - 38 mm	36.4 mm	Yes
Upper Spine Lateral Acceleration	34 - 43 g	37.3 g	Yes
Lower Spine Lateral Acceleration	29 - 37 g	34.6 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: 2009

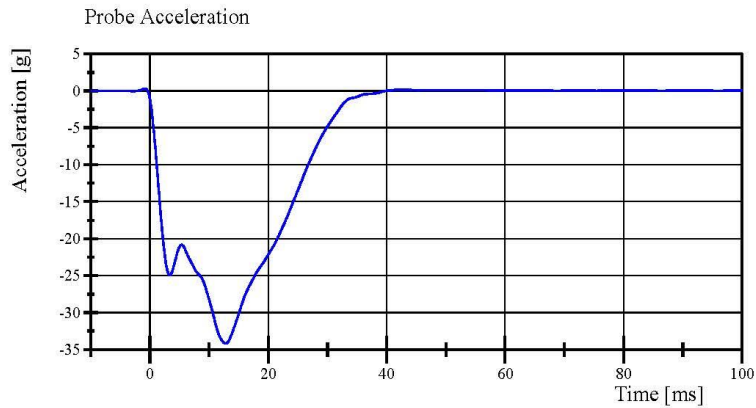
Middle Thorax Rib #2 S/N: 2010

Lower Thorax Rib #3 S/N: 2029

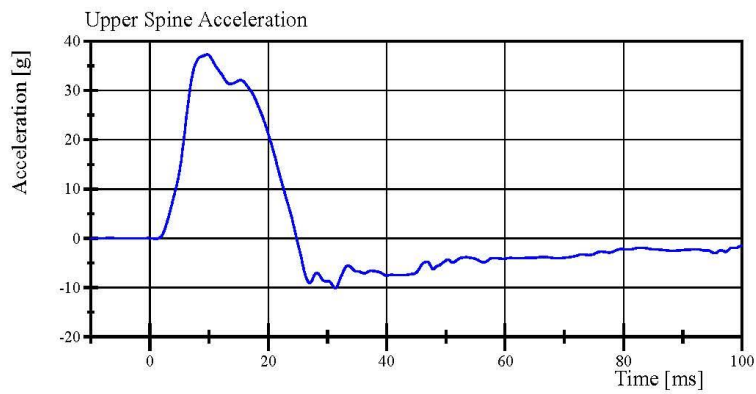
Upper Thorax Pad Part No: 180-3451-297

Transportation Research Center Inc.

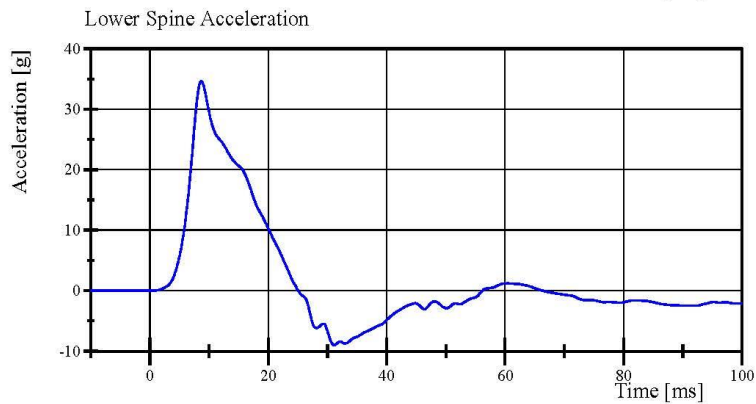
Left Lateral Thorax with Arm
SID IIs Serial No. 297 Certification No. 35-1
Test Date: 5/13/2019



Filter Class: CFC_180
Max: 0.3 g at -0.9 ms
Min: -34.2 g at 12.8 ms



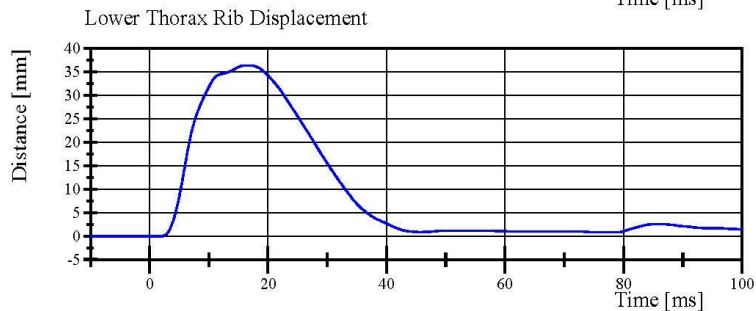
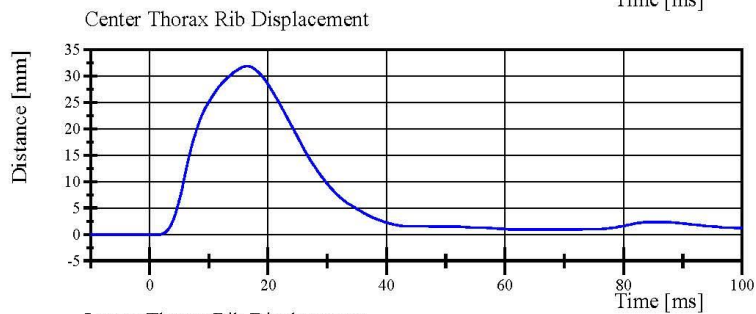
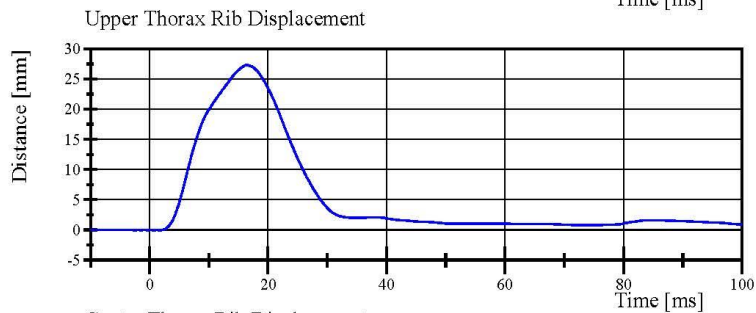
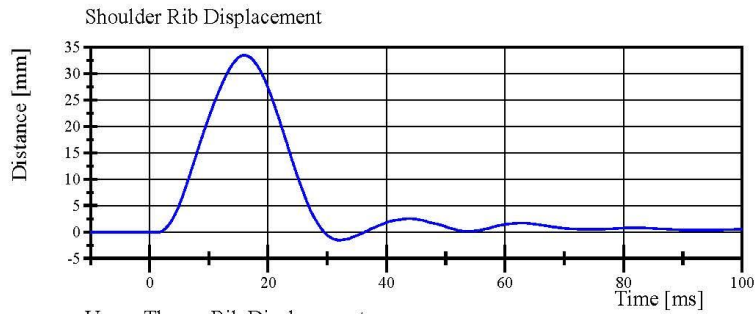
Filter Class: CFC_180
Max: 37.3 g at 9.7 ms
Min: -10.1 g at 31.4 ms



Filter Class: CFC_180
Max: 34.6 g at 8.7 ms
Min: -9.0 g at 31.1 ms

Transportation Research Center Inc.

Left Lateral Thorax with Arm
SID IIs Serial No. 297 Certification No. 35-1
Test Date: 5/13/2019



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

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Transportation Research Center Inc.

Left Lateral Thorax without Arm
SID IIS Serial No. 297 Certification No. 35-1
Test Date: 5/13/2019

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	43 %	Yes
Impactor Velocity	4.20 - 4.40 m/s	4.328 m/s	Yes
Impactor Acceleration	(-14) - (-18) g	-15.9 g	Yes
Upper Thorax Rib Displacement	32 - 40 mm	32.4 mm	Yes
Center Thorax Rib Displacement	39 - 45 mm	40.6 mm	Yes
Lower Thorax Rib Displacement	35 - 43 mm	42.0 mm	Yes
Upper Spine Lateral Acceleration	13 - 17 g	14.3 g	Yes
Lower Spine Lateral Acceleration	7 - 11 g	10.5 g	Yes

Test meets specifications.

Condition: Used

Comments:

Upper Thorax Rib #1 S/N: 2009

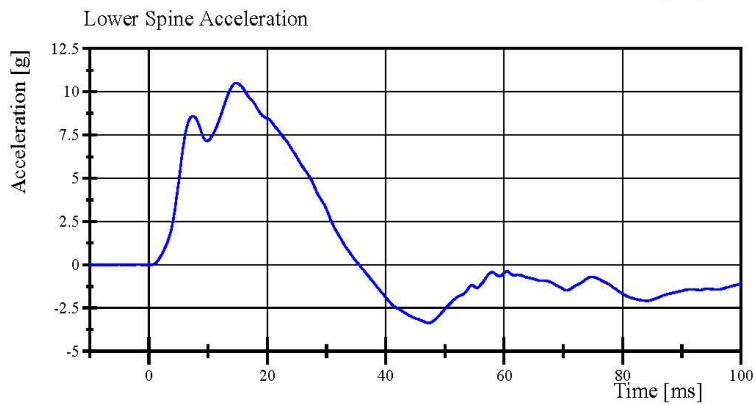
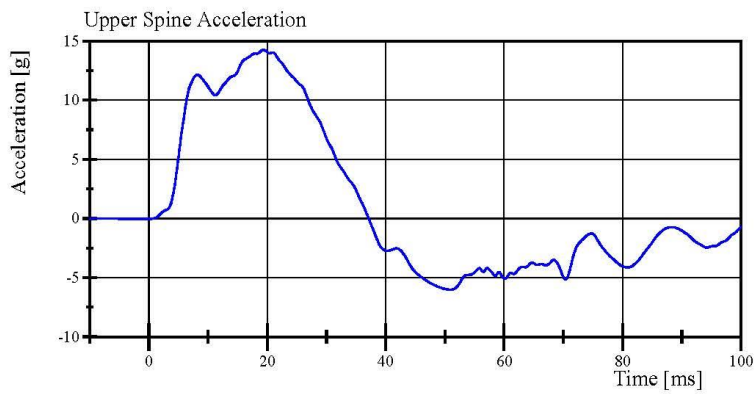
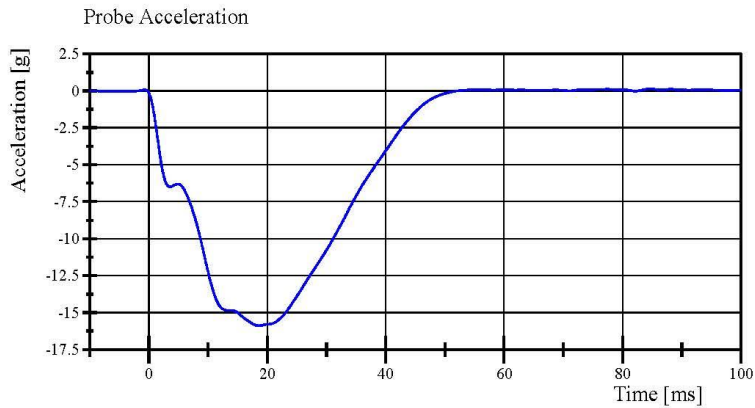
Middle Thorax Rib #2 S/N: 2010

Lower Thorax Rib #3 S/N: 2029

Upper Thorax Pad Part No: 180-3451-297

Transportation Research Center Inc.

Left Lateral Thorax without Arm
SID IIs Serial No. 297 Certification No. 35-1
Test Date: 5/13/2019



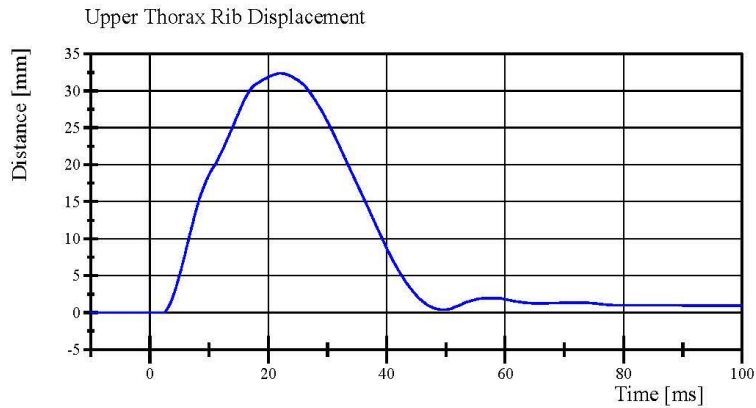
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

05.13.2019 13:00:20 856

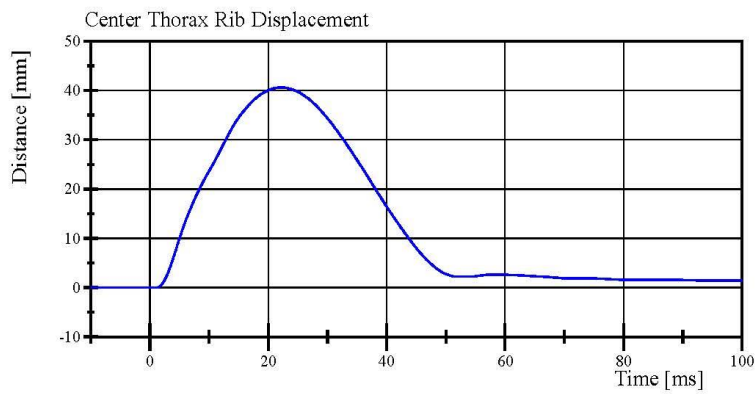


Transportation Research Center Inc.

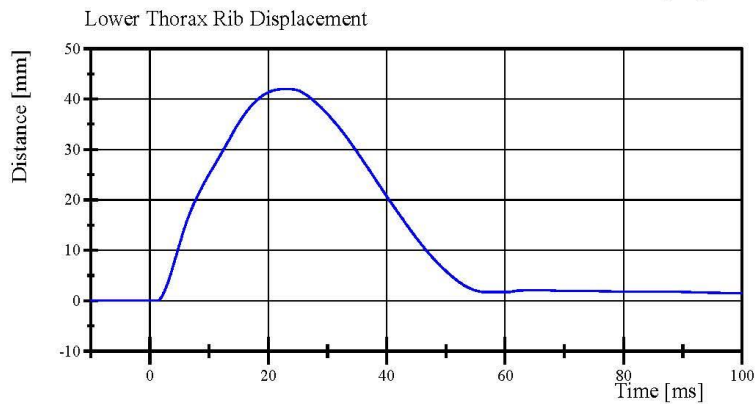
Left Lateral Thorax without Arm
SID IIs Serial No. 297 Certification No. 35-1
Test Date: 5/13/2019



Filter Class: CFC_600
Max: 32.4 mm at 21.9 ms
Min: -0.0 mm at 2.2 ms



Filter Class: CFC_600
Max: 40.6 mm at 22.2 ms
Min: -0.0 mm at 1.0 ms



Filter Class: CFC_600
Max: 42.0 mm at 23.3 ms
Min: -0.0 mm at 1.1 ms

Transportation Research Center Inc.

Left Lateral Abdomen
SID IIS Serial No. 297 Certification No. 35-1
Test Date: 5/13/2019

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.8 °C	Yes
Relative Humidity	10 - 70 %	42 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.33 m/s	Yes
Impactor Acceleration	(-12) - (-16) g	-14.6 g	Yes
Upper Abdominal Rib Displacement	36 - 47 mm	38.0 mm	Yes
Lower Abdominal Rib Displacement	33 - 44 mm	38.3 mm	Yes
Lower Spine Lateral Acceleration	9 - 14.0 g	11.19 g	Yes

Test meets specifications.

Condition: Used

Comments:

Upper Abdominal Rib S/N: DS1235

Lower Abdominal Rib S/N: DS1236

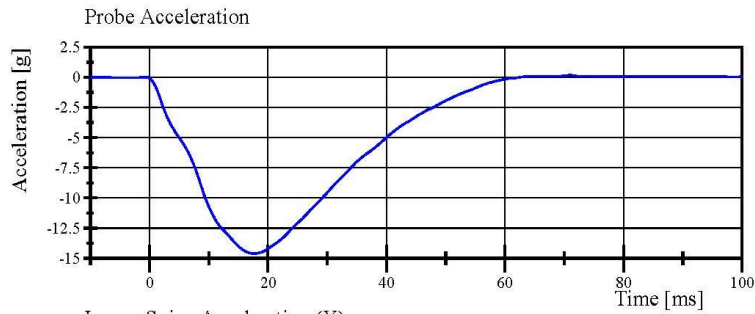
Lower Abdomen Pad Part No: 180-3455-297

Transportation Research Center Inc.

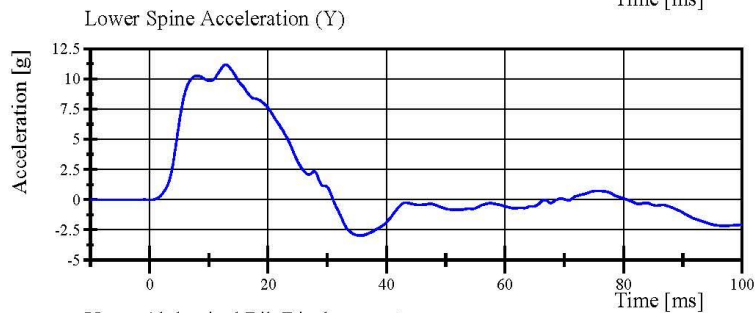
Left Lateral Abdomen

SID IIs Serial No. 297 Certification No. 35-1

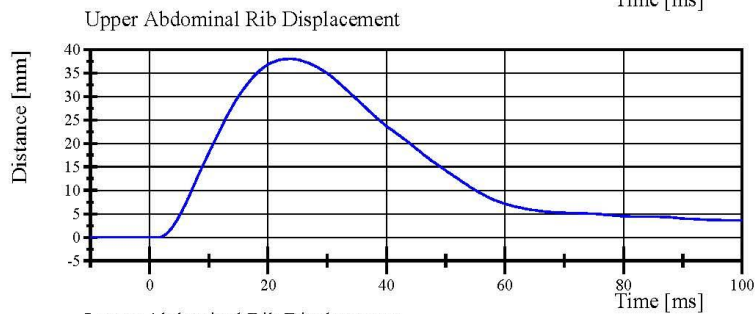
Test Date: 5/13/2019



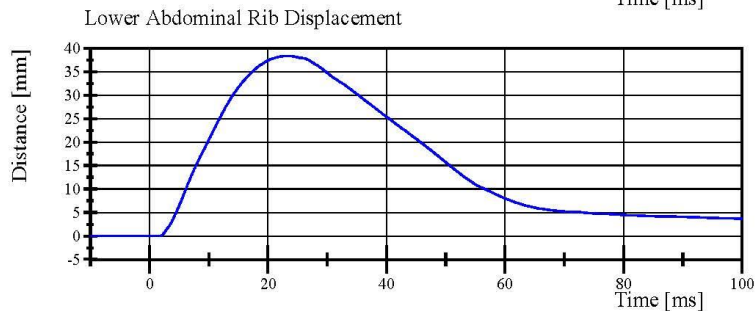
Filter Class: CFC_180
Max: 0.2 g at 71.0 ms
Min: -14.6 g at 17.7 ms



Filter Class: CFC_180
Max: 11.2 g at 12.8 ms
Min: -3.0 g at 35.6 ms



Filter Class: CFC_600
Max: 38.0 mm at 23.9 ms
Min: -0.0 mm at 1.4 ms



Filter Class: CFC_600
Max: 38.3 mm at 23.0 ms
Min: -0.0 mm at 1.8 ms

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

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Transportation Research Center Inc.

Left Lateral Pelvis
SID IIs Serial No. 297 Certification No. 35-1
Test Date: 5/13/2019

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.6 °C	Yes
Relative Humidity	10 - 70 %	43 %	Yes
Pendulum Velocity	6.6 - 6.8 m/s	6.62 m/s	Yes
Impactor Acceleration	(-38.0) - (-47.0) g	-45.01 g	Yes
Peak Pelvis Lateral Acceleration after 6ms	34 - 42 g	39.2 g	Yes
Acetabulum Force	3,600 - 4,300 N	4,184.9 N	Yes

Test meets specifications.

Condition: Used

Comments:

Pelvis Skin S/N: 1141

Pelvis Plug Info:

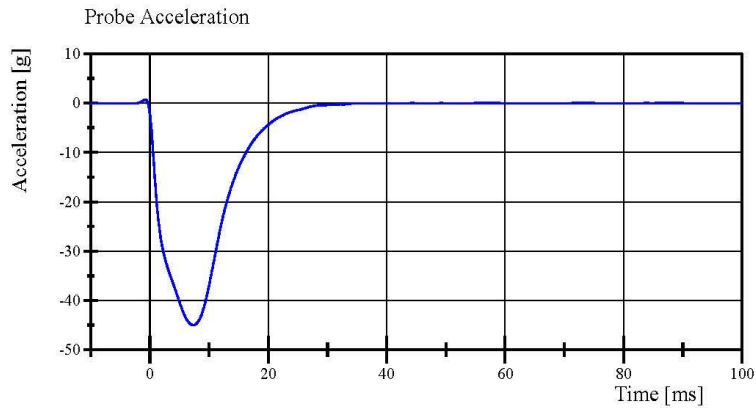
Manufacturer: Saco

S/N: 12306

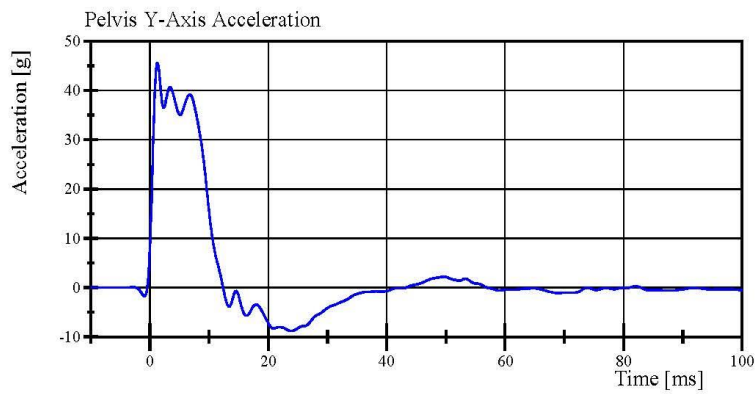
Cal Date: 20180321

Transportation Research Center Inc.

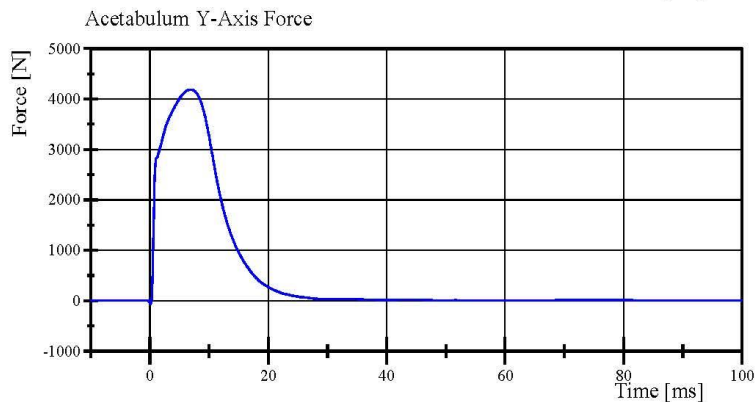
Left Lateral Pelvis
SID IIs Serial No. 297 Certification No. 35-1
Test Date: 5/13/2019



Filter Class: CFC_180
Max: 0.7 g at -0.8 ms
Min: -45.0 g at 7.4 ms



Filter Class: CFC_180
Max: 45.6 g at 1.3 ms
Min: -8.8 g at 23.9 ms



Filter Class: CFC_600
Max: 4,184.9 N at 7.0 ms
Min: -64.8 N at 0.2 ms

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

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Transportation Research Center Inc.

Left Lateral Iliac

SID IIs Serial No. 297 Certification No. 35-3

Test Date: 5/14/2019

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	4.21 m/s	Yes
Impactor Acceleration	(-36) - (-45) g	-43.4 g	Yes
Peak Pelvis Lateral Acceleration	28 - 39 g	35.2 g	Yes
Iliac Force	4,100 - 5,100 N	5,084.6 N	Yes

Test meets specifications.

Condition: Used

Comments:

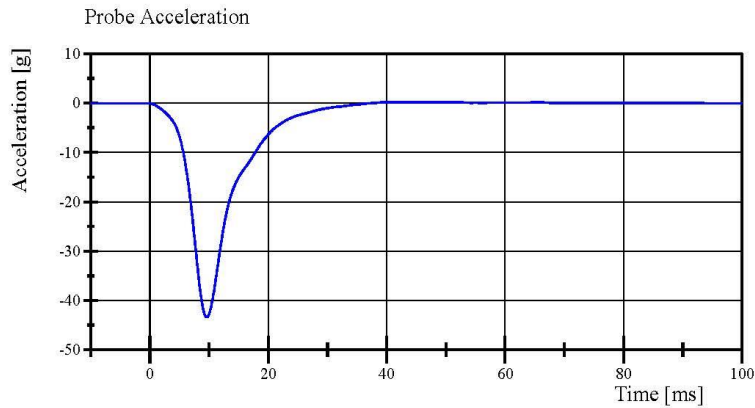
Pelvis Skin S/N: 1141

Transportation Research Center Inc.

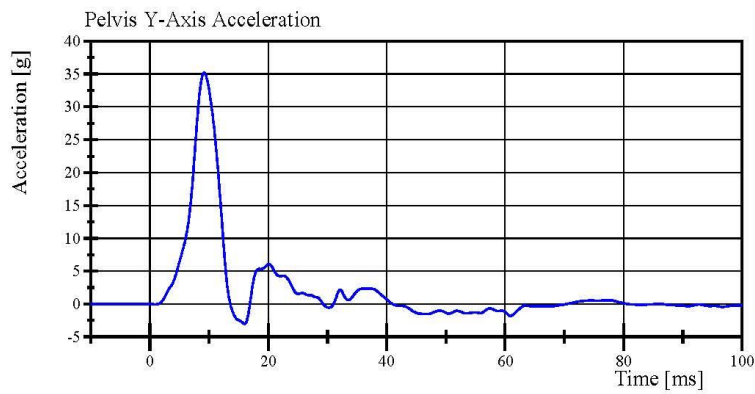
Left Lateral Iliac

SID IIs Serial No. 297 Certification No. 35-3

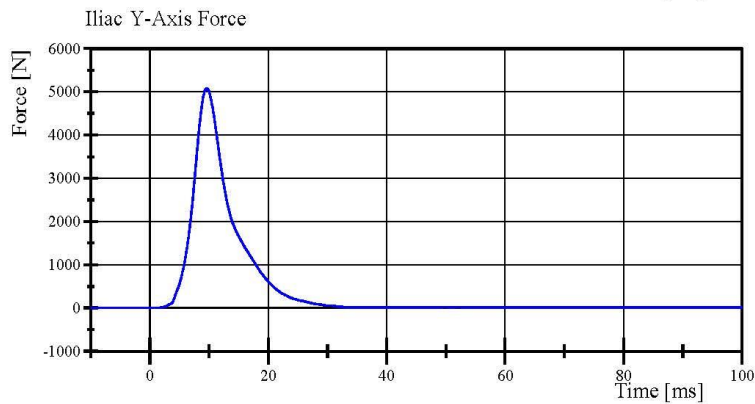
Test Date: 5/14/2019



Filter Class: CFC_180
Max: 0.2 g at 40.3 ms
Min: -43.4 g at 9.6 ms



Filter Class: CFC_180
Max: 35.2 g at 9.2 ms
Min: -3.0 g at 16.0 ms



Filter Class: CFC_600
Max: 5,084.6 N at 9.6 ms
Min: -0.6 N at -1.0 ms

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

05.14.2019 06:43:20 692



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	17-Apr-2019
			Y	P93549	Endevco	17-Apr-2019
			Z	P93776	Endevco	17-Apr-2019
Displacement Potentiometers	Shoulder		Y	N/A	N/A	N/A
	Thoracic Rib	Upper	Y	047	Servo	18-Apr-2019
		Middle	Y	01815	Servo	9-Apr-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	17-Apr-2019
			Y	P91522	Endevco	17-Apr-2019
			Z	P91511	Endevco	17-Apr-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)				12285	SACO	15-Mar-2018
Pelvis Plug (non-struck side)				36505	FTSS	24-Sep-2010

TABLE 2 – Vehicle Instrumentation

Vehicle Instrumentation		Serial Number	Manufacturer	Calibration Date
Vehicle Center of Gravity	X	P87822	Endevco	21-Dec-2018
Vehicle Center of Gravity	Y	P94524	Endevco	21-Dec-2018
Vehicle Center of Gravity	Z	P88460	Endevco	21-Dec-2018
Left Floor Sill	Y	P73587	Endevco	15-Apr-2019
A-Pillar Sill	Y	P66730	Endevco	19-Mar-2019
A-Pillar Low	Y	T11388	Endevco	3-Jan-2019
A-Pillar Mid	Y	T11448	Endevco	3-Jan-2019
B-Pillar Sill	Y	P97681	Endevco	2-Apr-2019
B-Pillar Low	Y	P88043	Endevco	15-Apr-2019
B-Pillar Mid	Y	P97719	Endevco	15-Apr-2019
Driver Seat	Y	T11839	Endevco	8-Jan-2019
Engine Top	X	P97729	Endevco	3-Jan-2019
Engine Top	Y	P97876	Endevco	3-Jan-2019
Firewall	Y	T11397	Endevco	19-Mar-2019
Right Roof	Y	P94485	Endevco	21-Dec-2018
Right Floor Sill	Y	T11396	Endevco	19-Mar-2019
Rear Floor Pan	X	T11822	Endevco	19-Mar-2019
Rear Floor Pan	Y	T11449	Endevco	19-Mar-2019

TABLE 3 – Pole Instrumentation

Pole Instrumentation	Serial Number	Manufacturer	Calibration Date
Load Cell 1	DK7091S	Humanetics	14-Nov-2018
Load Cell 2	DK7120S	Humanetics	14-Nov-2018
Load Cell 3	DK7118S	Humanetics	14-Nov-2018
Load Cell 4	DK7124S	Humanetics	14-Nov-2018
Load Cell 5	DK7111S	Humanetics	14-Nov-2018
Load Cell 6	DK7126S	Humanetics	14-Nov-2018
Load Cell 7	DK7112S	Humanetics	14-Nov-2018
Load Cell 8	DK7074S	Humanetics	14-Nov-2018