FINAL REPORT NUMBER: SPNCAP-TRC-19-008

NEW CAR ASSESSMENT PROGRAM (NCAP)
SIDE IMPACT POLE TEST

GENERAL MOTORS LLC
2019 Chevrolet Malibu 4-DR Sedan
NHTSA NUMBER: M20190121

PREPARED BY:
Transportation Research Center Inc.
10820 State Route 347
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East Liberty, OH 43319

Report Date: December 6, 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: December 6, 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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15. Supplemental Notes		

16. Abstract

A 32.2 km/h (20 mph), 75° oblique impact Side NCAP Test was conducted on the subject vehicle, a 2019 Chevrolet Malibu 4-DR Sedan, 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 October 22, 2019.

The impact velocity was 32.38 km/h, and the ambient temperature at the struck (left) side of the target vehicle at the time of impact was 21.1° C. The test vehicle's post-test maximum crush was 344 mm at Level 3.

The test or target vehicle's performance is given below:

	Unit	Threshold	Front SID-IIs
Head Injury Criteria (HIC_{36}):	NA	1000	279
Resultant Lower Spine Acceleration:	g's	82	27.4
Total Pelvic Force: (sum of acetabular and iliac forces)	N	5525	2443.8
Maximum Thoracic Rib Deflection	mm	38*	20.4
Maximum Abdomen Rib Deflection	mm	45*	18.3

* Proposed IARV

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.

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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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 Chevrolet Malibu 4-DR Sedan manufactured by GENERAL MOTORS 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 Chevrolet Malibu 4-DR Sedan. The subject vehicle was towed into the rigid pole at an angle of 75° and a velocity of 32.38 km/h. The side impact test was conducted by Transportation Research Center Inc. in East Liberty, OH, on October 22, 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 Trisxial 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	279
Lower Spine Acceleration Resultant	G	82	27.4
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	2443.8
Maximum Thoracic Rib Deflection	mm	38*	20.4
Maximum Abdominal Rib Deflection	mm	45*	18.3

* 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	Yes		
Knee Airbag	Yes	Yes		
Side Curtain Airbag	Yes	Yes	Yes	Yes
Side Torso/Pelvis Airbag	Yes	Yes	Yes	Yes
Side Torso Airbag	No	N/A	No	N/A
Seat Belt Pretensioner	Yes	Yes	No	N/A
Seat Belt Load Limiter	Yes	Unknown	No	N/A
Other Safety Restraint	No	N/A	No	N/A

GENERAL COMMENTS

Left A-Pillar Sill Acceleration (Y); Failed at 34.0 ms

Left B-Pillar Sill Acceleration (Y); Questionable data starting at 35.0 ms

SECTION 3
OCCUPANT AND VEHICLE INFORMATION

DATA SHEET NO. 1
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2019 Chevrolet Malibu 4-DR Sedan NHTSA No.: M20190121
Test Program: SPNCAP Side Impact Test Date: 10/22/2019

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	M20190121
Model Year	2019
Make	Chevrolet
Model	Malibu
Body Style	4-DR Sedan
VIN	1G1ZB5ST0KF213173
Body Color	Pacific Blue Metallic
Odometer Reading (km/mi)	31.0 mi
Engine Displacement (L)	1.5
Type/No. Cylinders	Gas/4
Engine Placement	Front Transverse
Transmission Type	Automatic
Transmission Speeds	CVT
Overdrive	Yes
Final Drive	FWD
Roof Rack	No
Sunroof/T-Top	No
Running Boards	No
Tilt Steering Wheel	Yes
Power Seats	No
Anti-Lock Brakes (ABS)	Yes

Traction Control System (TCS)	Yes
Auto-Leveling System	No
Automatic Door Locks (ADL)	Yes
Power Window Auto-Reverse	No
Other Optional Feature	No
Driver Front Airbag	Yes
Driver Curtain Airbag	Yes
Driver Head/Torso Airbag	No
Driver Torso Airbag	No
Driver Torso/Pelvis Airbag	Yes
Driver Pelvis Airbag	No
Driver Knee Airbag	Yes
Rear Pass. Curtain Airbag	Yes
Rear Pass. Head/Torso Airbag	No
Rear Pass. Torso Airbag	No
Rear Pass. Torso/Pelvis Airbag	Yes
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	GENERAL MOTORS LLC
Date of Manufacturer	05/19
Vehicle Type	PASS CAR

GVWR (kg)	1838
GAWR Front (kg)	946
GAWR Rear (kg)	892

VEHICLE SEATING AND WEIGHT CAPACITY DATA

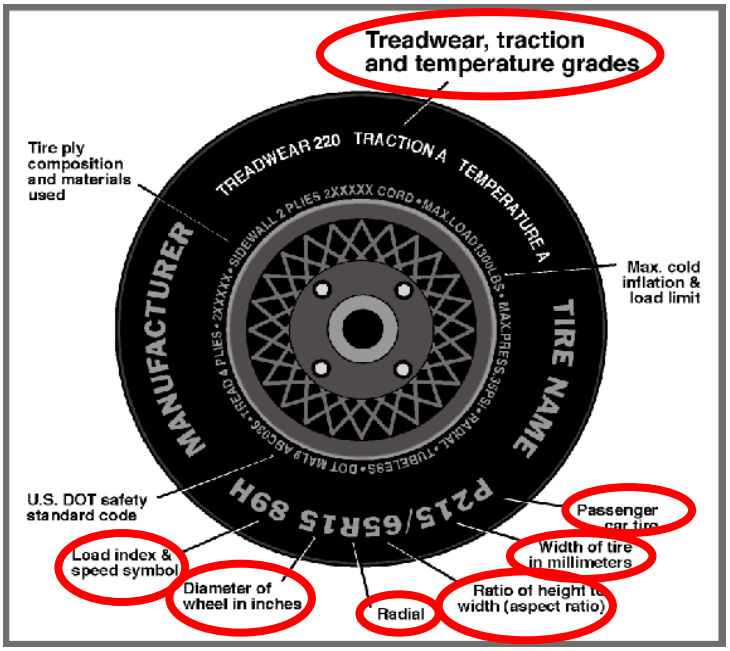
	Front	Rear	Third	Total
Designated Seating Capacity (DSC)	2	3	N/A	5
Vehicle Capacity Weight (VCW) (kg)				408.0
DSC X 68.04 kg				340.2
Rated Cargo and Luggage Weight (RCLW) (kg)				67.8

VEHICLE SEAT TYPE

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

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

Test Vehicle: 2019 Chevrolet Malibu 4-DR Sedan NHTSA No.: M20190121
Test Program: SPNCAP Side Impact Test Date: 10/22/2019



DATA FROM TIRE PLACARD

Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	300	300
Cold Pressure (kPa)	240	240
Recommended Tire Size	P205/65R16 H	P205/65R16 H
Tire Size on Vehicle	P205/65R16	P205/65R16
Tire Manufacturer	Firestone	Firestone
Tire Model	FT140	FT140
Treadwear	560	560
Traction	A	A
Temperature Grades	A	A
Tire Plies Sidewall	1	1
Tire Plies Body	4	4
Load Index/Speed Symbol	94H	94H
Tire Material	Polyester/Steel/Nylon	Polyester/Steel/Nylon
DOT Safety Code Left	8X84 FT0 1619	8X84 FT0 1619
DOT Safety Code Right	8X84 FT0 0419	8X84 FT0 1619

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

Test Vehicle: 2019 Chevrolet Malibu 4-DR Sedan NHTSA No.: M20190121
Test Program: SPNCAP Side Impact Test Date: 10/22/2019

TIRE PRESSURES

	Units	LF	RF	LR	RR
As Delivered	kPa	220	227	227	227
Tire Placard	kPa	240	240	240	240
Owner's Manual	kPa	240	240	240	240
As Tested	kPa	240	240	240	240

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	440.4	287.6		461.4	320.4		465.6	343.4	
Right	kg	419.0	267.4		432.6	309.0		419.2	303.0	
Ratio	%	60.8	39.2		58.7	41.3		57.8	42.2	
Totals	kg	859.4	555.0	1414.4	894.0	629.4	1523.4	884.8	646.4	1531.2

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total As Delivered Weight (UVW)	kg	1414.4	(A)
Actual Weight of 1 P572V ATD (SID-IIs) Dummy Used	kg	49.0	(B)
Rated Cargo/Luggage Weight (RCLW)	kg	67.8	(C)
Calculated Vehicle Target Weight (TVTW)	kg	1531.2	(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.	-0.5	-0.2	0.2	Yes
Front Passenger Sill Angle (front-to-rear)*	Deg.	-1.0	-0.3	0.2	Yes
Front Bumper-Line Angle (left-to-right)**	Deg.	-0.3	-0.2	-0.2	Yes
Rear Bumper-Line Angle (left-to-right)**	Deg.	-0.4	-0.4	-0.8	Yes
Vehicle CG (Aft of Front Axle)	mm	1110	1169	1194	
Vehicle CG (Left (+) / Right (-) from longitudinal Centerline)	mm	+23	+21	+45	

*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 rear cargo area	3.3
Components Removed: None	0.0

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

DATA SHEET NO. 2

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

Test Vehicle: 2019 Chevrolet Malibu 4-DR Sedan NHTSA No.: M20190121
Test Program: SPNCAP Side Impact Test Date: 10/22/2019

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	18.9	14.6	16.7
Front Passenger Seat	15.9	11.4	13.6
Front Center Seat*	N/A	N/A	N/A
Struck Side Rear Seat	N/A	N/A	15.5
Non-Struck Side Rear Seat	N/A	N/A	15.0
Rear Center Seat*	N/A	N/A	11.6

* If applicable.

SEAT HEIGHT AND ANGLE

Seat	As Tested SCRL Angle (Mid) (°)	As Tested SCRP Height (mm)	SCRP Height Position	SCRP Height (mm)		
				Rearmost	Mid-Fore/Aft	Forward-Most
Driver Seat	16.7	153	Max	N/A	N/A	N/A
			Mid	134	143	153
			Min	N/A	N/A	N/A
Front Passenger Seat	13.6	137	Max	N/A	N/A	N/A
			Mid	129	137	145
			Min	N/A	N/A	N/A
Front Center Seat*	N/A	N/A	Max	N/A	N/A	N/A
			Mid	N/A	N/A	N/A
			Min	N/A	N/A	N/A
Struck Side Rear Seat	15.5	Fixed	Max	N/A	N/A	N/A
			Mid	N/A	N/A	N/A
			Min	N/A	N/A	N/A
Non-Struck Side Rear Seat	15.0	Fixed	Max	N/A	N/A	N/A
			Mid	N/A	N/A	N/A
			Min	N/A	N/A	N/A
Rear Center Seat*	11.6	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 Chevrolet Malibu 4-DR Sedan NHTSA No.: M20190121
Test Program: SPNCAP Side Impact Test Date: 10/22/2019

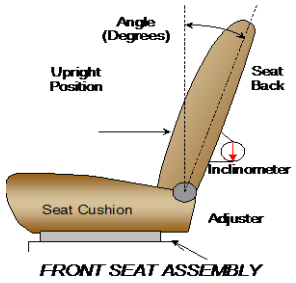
SEAT FORE/AFT POSITION

Seat	Total Fore/Aft Travel		Test Position from Forwardmost Position	
	mm	Detents*	mm	Detent*
Driver Seat	260	27	0	0
Front Passenger Seat	240	25	0	0
Front Center Seat*	N/A	N/A	N/A	N/A
Struck Side Rear Seat	0	Fixed	0	Fixed
Non-Struck Side Rear Seat	0	Fixed	0	Fixed
Rear Center Seat*	0	Fixed	0	Fixed

* If applicable.

SEAT BACK ANGLE ADJUSTMENT

The driver's seat back is positioned such that the dummy's head is level. The front center and front passenger's seat backs are positioned in a similar manner as the driver's seat back. The struck-side rear passenger seat back is positioned in accordance with the information provided by the manufacturer on Form No. 1. For the 5th percentile female dummy in a Side NCAP MDB test. The rear center and non-struck side rear passenger's seat back is set to match the struck-side rear seat back.



Seat	Total Seat Back Angle Range		Test Position from Most Upright	
	Degrees	Detents*	Degrees	Detent*
Driver Seat w/ Seated Dummy	66	33	23.2	4
Front Passenger Seat	66	33	24.1	4
Front Center Seat*	N/A	N/A	N/A	N/A
Struck Side Rear Seat	0	Fixed	21.9	N/A
Non-Struck Side Rear Seat	0	Fixed	21.8	N/A
Rear Center Seat*	0	Fixed	19.5	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	1; Fixed	1

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	9	0, Lowest

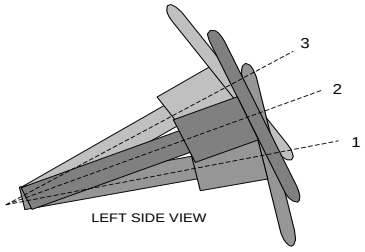
DATA SHEET NO. 2 (CONTINUED)
SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT AND FUEL SYSTEMS DATA

Test Vehicle: 2019 Chevrolet Malibu 4-DR Sedan NHTSA No.: M20190121
Test Program: SPNCAP Side Impact Test Date: 10/22/2019

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	20.1	0
Geometric Center, Position No. 2	22.3	30
Uppermost, Position No. 3	24.5	60
Telescoping Steering Wheel Travel		60
Test Position	22.3	30

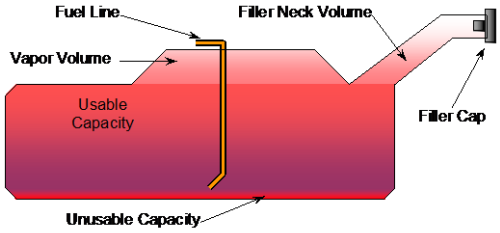


STEERING COLUMN ASSEMBLY

FUEL PUMP

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

Pump will run for about 3 seconds when the key is turned on and then will not run unless the engine is cranking or running.



VEHICLE FUEL TANK ASSEMBLY

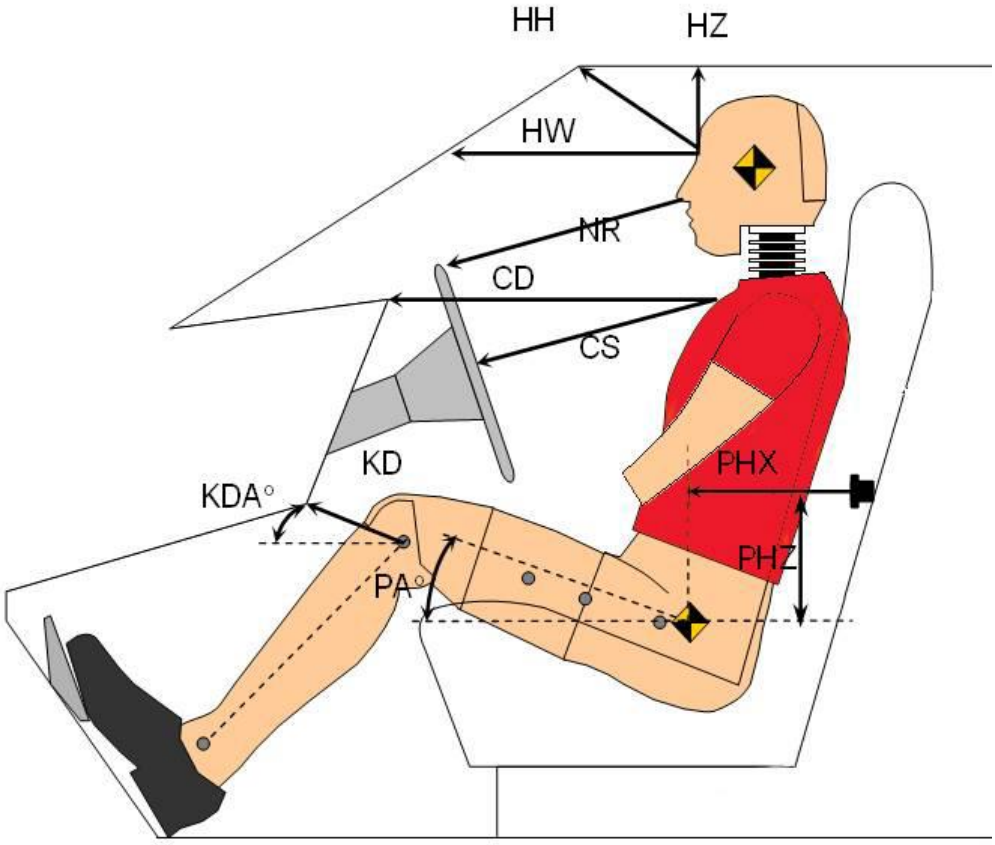
FUEL TANK CAPACITY

	Liters
Usable Capacity of "Standard Tank" (see Form No. 1)	59.8
Usable Capacity of "Optional" Tank (see Form No. 1)	N/A
Usable Capacity of Standard Tank (see Owner's Manual)	59.8
Usable Capacity of Optional Tank (see Owner's Manual)	N/A
93% of Usable Capacity	55.6
Actual Amount of Solvent Used in Test	55.6
1/3 of Usable Capacity	19.9

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

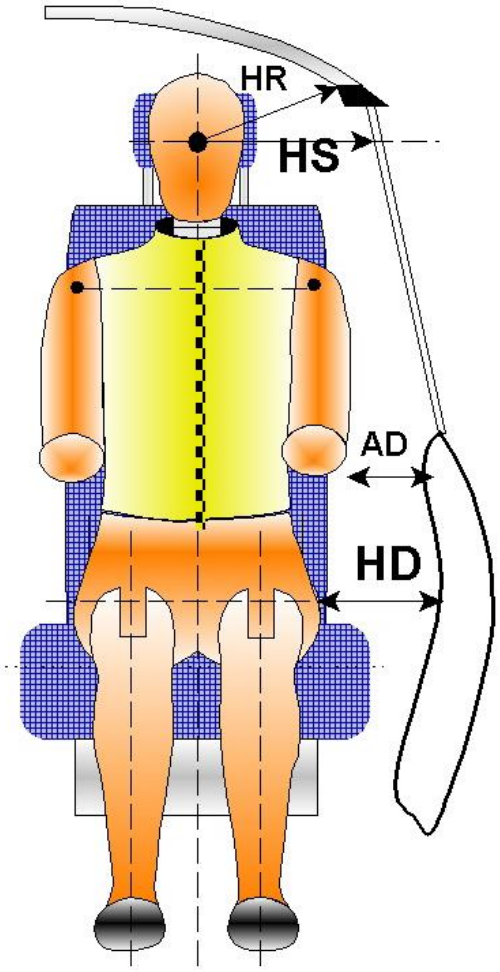
Test Vehicle: 2019 Chevrolet Malibu 4-DR Sedan NHTSA No.: M20190121
Test Program: SPNCAP Side Impact Test Date: 10/22/2019



Code	Measurement Description	Driver	
		Length (mm)	Angle (°)
HH	Head to Header	300	
HW	Head to Windshield	693	
HZ	Head to Visor	227	
NR	Nose to Rim	290	
CD	Chest to Dashboard	444	
CS	Chest to Steering Wheel	221	
KDL/KDLA°	Left Knee to Dash	148	33.5
KDR/KDRA°	Right Knee to Dash	140	24.8
PAX°	Pelvic Tilt Angle (X-axis)		0.4
PAY°	Pelvic Tilt Angle (Y-axis)		20.0
PHX	Hip Point to Striker (X-Axis)	304	
PHZ	Hip Point to Striker (Z-Axis)	163	

DATA SHEET NO. 4
DUMMY LATERAL CLEARANCE DIMENSIONS

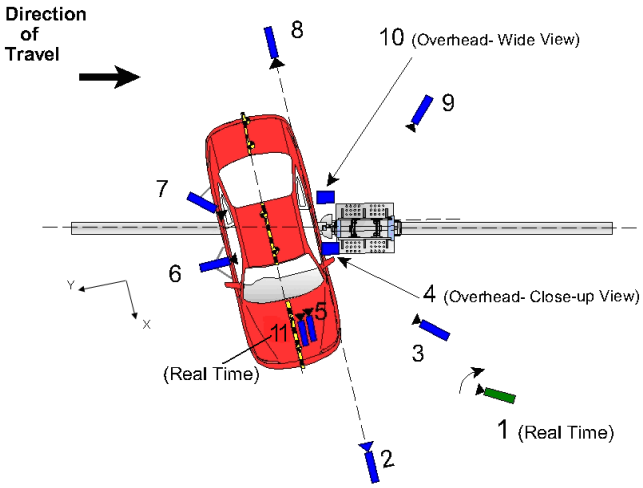
Test Vehicle: 2019 Chevrolet Malibu 4-DR Sedan NHTSA No.: M20190121
Test Program: SPNCAP Side Impact Test Date: 10/22/2019



Code	Measurement Description	Length (mm)
HR	Head to Side Header	263
HS	Head to Side Window	401
AD	Arm to Door	184
HD	Hip Point to Door	163

DATA SHEET NO. 5
CAMERA AND INSTRUMENTATION DATA

Test Vehicle: 2019 Chevrolet Malibu 4-DR Sedan NHTSA No.: M20190121
Test Program: SPNCAP Side Impact Test Date: 10/22/2019



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	4218	-1456	-1495	20	1000
3	Impact side 45° – forward pole view	2741	-1729	-1536	20	1000
4	Overhead Close-up view of impact	0	0	-5750	28	1000
5	Onboard – dummy front view				18	1000
6	Onboard – dummy side view				12.5	1000
7	Onboard – dummy rear oblique view				12.5	1000
8	Rear ground level – impact view	-4683	-1399	-1636	20	1000
9	Impact side 45° – rearward pole view	-3376	-1541	-1498	20	1000
10	Overhead wide view of impact	193	0	-5750	18	1000
11	Real time dummy front view				Zoom	30

All measurements accurate to +/- 6 mm.

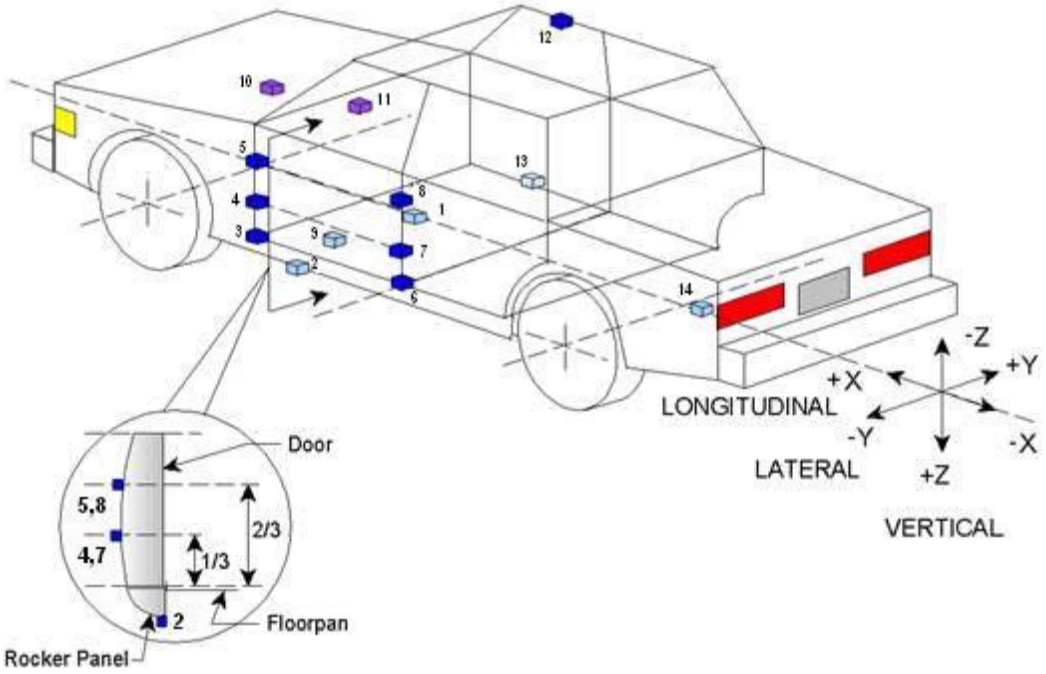
NOTE: Vehicle was at a 75° angle to the rigid pole.
If applicable, explain why camera(s) did not run: During testing our system had a trigger issue resulting in a trigger 29 seconds early resulting in no useable high speed video

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 Chevrolet Malibu 4-DR Sedan NHTSA No.: M20190121
Test Program: SPNCAP Side Impact Test Date: 10/22/2019



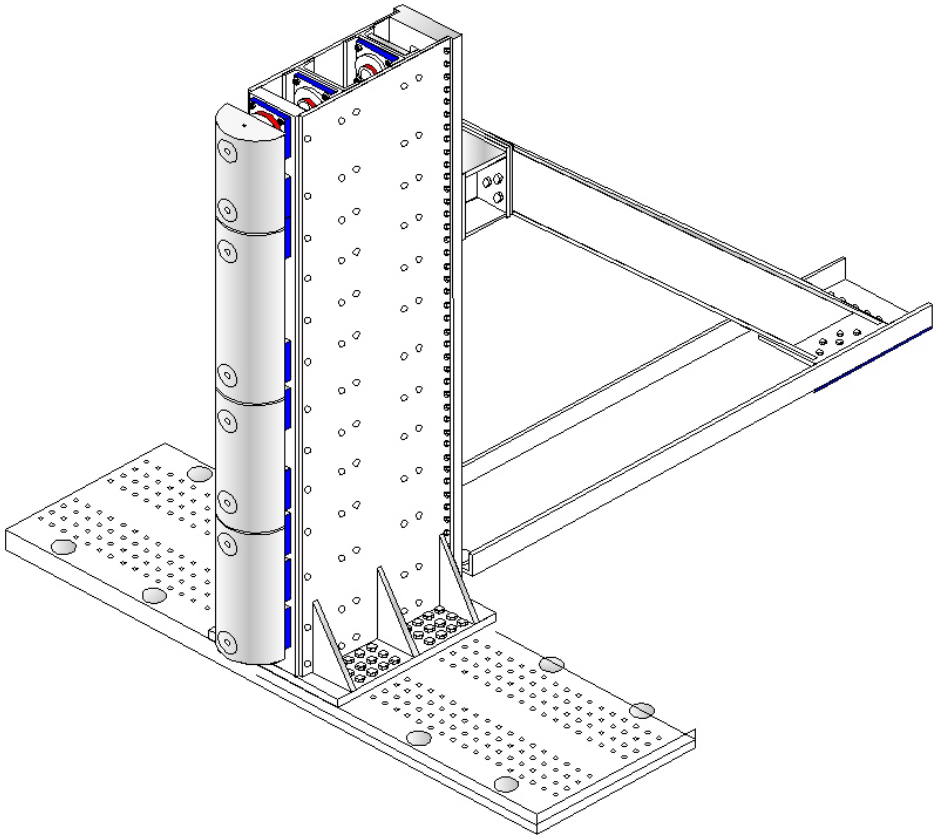
	Accelerometer/Sensor Location			
	ID	Coordinates (mm)		
		X	Y	Z
1	Vehicle CG	3109	-95	-273
2	Left Floor Sill	2985	745	-310
3	A-Pillar Sill	3393	760	-378
4	A-Pillar Low	3458	853	-450
5	A-Pillar Mid	3476	832	-840
6	B-Pillar Sill	2257	740	-327
7	B-Pillar Low	2312	833	-539
8	B-Pillar Mid	2285	810	-895
9	Driver Seat Track	2535	564	-281
10	Engine Top	4290	-60	-760
11	Firewall	3840	5	-831
12	Right Roof	2465	-600	-1420
13	Right Floor Sill	2977	740	-329
14	Rear Floorpan	1035	0	-507

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 Chevrolet Malibu 4-DR Sedan NHTSA No.: M20190121
Test Program: SPNCAP Side Impact Test Date: 10/22/2019

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 Chevrolet Malibu 4-DR Sedan NHTSA No.: M20190121
Test Program: SPNCAP Side Impact Test Date: 10/22/2019

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	None
Left Shoulder	Seatback bolster, SAB, door panel
Upper Torso	Seatback bolster
Lower Torso	Seatback bolster
Left Hip	Seat cushion bolster, SAB, door panel
Left Knee	Door panel

POST-TEST DOOR PERFORMANCE

Description	Struck Side		Non-Struck Side		Rear Hatch/ Other Door
	Front	Rear	Front	Rear	
Remained Closed and Operational	No	No	Yes	Yes	Yes
Total Separation from Vehicle at Hinges or Latches	No	No	No	No	No
Latch or Hinge 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	Shattered across top & along left A pillar
Side Window Damage	Driver side window broken out
Other Notable Effects	None

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

Test Vehicle: 2019 Chevrolet Malibu 4-DR Sedan NHTSA No.: M20190121
Test Program: SPNCAP Side Impact Test Date: 10/22/2019

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

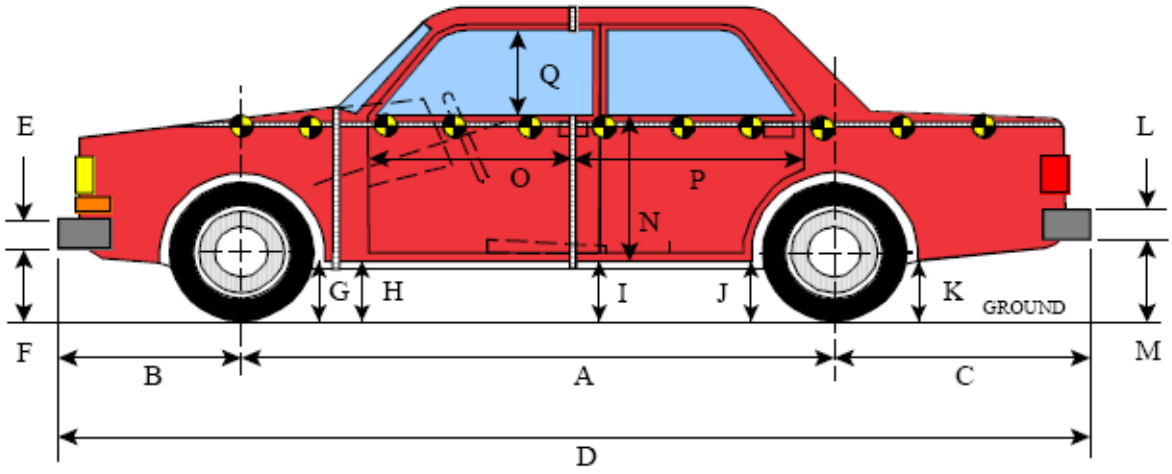
Restraint Type	Struck Side (Driver)		Struck Side (Rear Passenger)	
	Mounted	Deployed	Mounted	Deployed
Front Airbag	Yes	Yes		
Knee Airbag	Yes	Yes		
Side Curtain Airbag	Yes	Yes	Yes	Yes
Side Torso/Pelvis Airbag	Yes	Yes	Yes	Yes
Side Torso Airbag	No	N/A	No	N/A
Seat Belt Pretensioner	Yes	Yes	No	N/A
Seat Belt 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		1220
Actual Impact Point (Aft of Front Axle)	mm		1238
Horizontal Offset (+ forward / - rearward)	mm	+/- 38 of Intended Impact point	-18
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	32.38
Trap No. 2 Velocity (Redundant)	km/h	31.4 to 33.0	32.41

DATA SHEET NO. 9
VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2019 Chevrolet Malibu 4-DR Sedan NHTSA No.: M20190121
Test Program: SPNCAP Side Impact Test Date: 10/22/2019



LEFT SIDE VIEW
All MEASUREMENTS IN (mm) WITH TOLERANCE OF ± 3mm

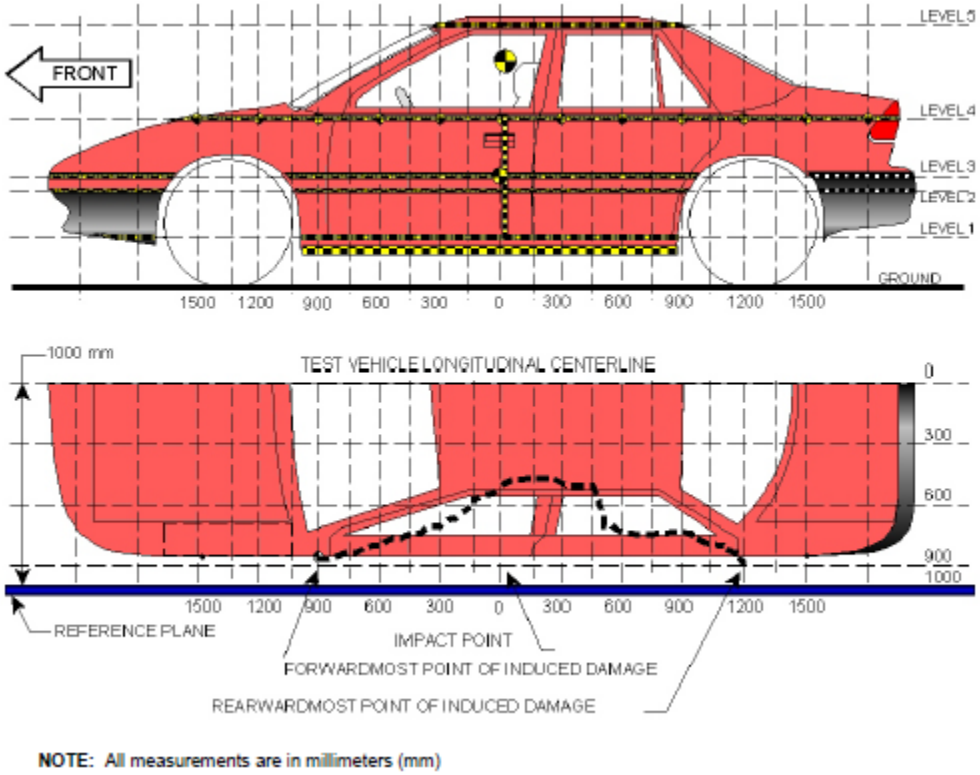
VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

Code	Measurement Description	Pre-Test	Post-Test	Difference
A	Wheelbase	2829	2770	59
B	Front Axle to Front Surface of Vehicle	978	978	0
C	Rear Axle to Rear Surface of Vehicle	1135	1135	0
D	Total Length at Centerline	4930	4880	50
E	Front Bumper Thickness	120	120	0
F	Front Bumper Bottom to Ground	403	422	-19
G	Sill Height at Front Wheel Well	263	264	-1
H	Sill Height at Front Door Leading Edge	273	270	3
I	Sill Height at B-Pillar	234	254	-20
J1	Sill Height at Rear Wheel Well	255	303	-48
J2	Pinch Weld Height at Rear Wheel Well	160	207	-47
K	Sill Height Aft of Rear Wheel Well	334	380	-46
L	Rear Bumper Thickness	165	165	0
M	Rear Bumper Bottom to Ground	464	500	-36
N	Sill Height to Bottom of Front Window Sill	745	740	5
O	Front Door Leading Edge to Impact CL	740	655	85
P	Rear Door Trailing Edge to Impact CL	1513	1470	43
Q	Front Window Opening	375	350	25
R	Right Side Length	4685	4704	-19
S	Left Side Length	4685	4640	45
T[1]	Vehicle Width at B-Pillars	1830	1720	110

[1] Max width = 1860

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2019 Chevrolet Malibu 4-DR Sedan NHTSA No.: M20190121
Test Program: SPNCAP Side Impact Test Date: 10/22/2019



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	314	311	0
2	Occupant H-Point	529	333	0
3	Mid-Door	622	344	0
4	Window Sill	905	327	0
5	Window Top	1386	139	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

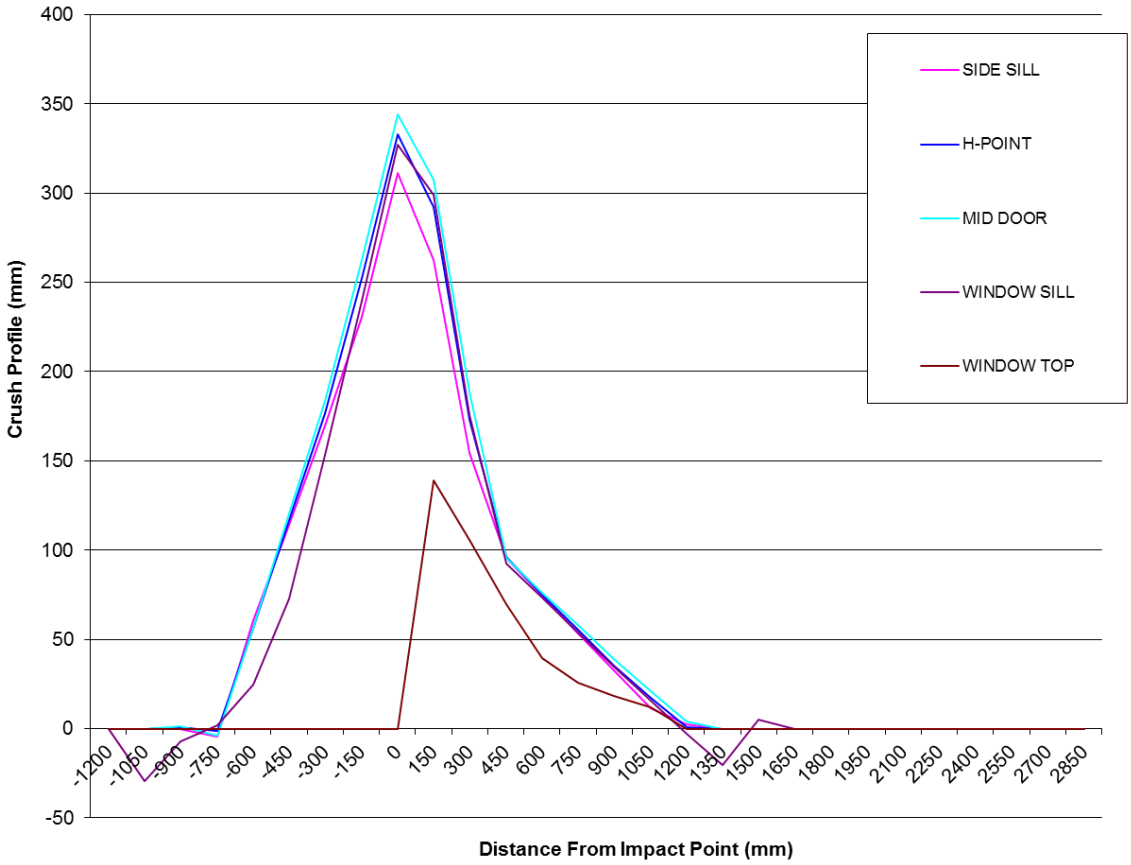
Test Vehicle: 2019 Chevrolet Malibu 4-DR Sedan NHTSA No.: M20190121
Test Program: SPNCAP Side Impact Test Date: 10/22/2019

	Pre-Test					Post-Test					Difference				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-1050	0	0	0	796	0	0	0	0	825	0	0	0	0	-29	0
-900	0	924	926	817	0	0	924	925	824	0	0	0	1	-7	0
-750	901	918	920	835	0	906	919	924	833	0	-5	-1	-4	2	0
-600	896	914	917	846	0	836	857	861	821	0	60	57	56	25	0
-450	898	912	916	857	0	783	795	795	784	0	115	117	121	73	0
-300	900	910	915	865	0	730	734	731	712	0	170	176	184	153	0
-150	902	910	915	872	0	671	657	652	633	0	231	253	263	239	0
0	904	910	915	877	0	593	577	571	550	0	311	333	344	327	0
150	906	909	915	879	628	643	617	608	580	489	263	292	307	299	139
300	904	909	915	877	639	750	736	727	701	534	154	173	188	176	105
450	902	908	913	875	640	806	812	818	783	570	96	96	95	92	70
600	899	907	913	873	638	824	832	837	800	598	75	75	76	73	40
750	894	907	912	871	635	841	852	854	817	610	53	55	58	54	25
900	890	909	913	870	629	858	873	874	835	611	32	36	39	35	18
1050	890	911	915	869	613	879	894	894	854	601	11	17	21	15	12
1200	900	915	919	899	0	897	915	915	902	0	3	0	4	-3	0
1350	0	0	0	877	0	0	0	0	898	0	0	0	0	-21	0
1500	0	0	0	869	0	0	0	0	864	0	0	0	0	5	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.

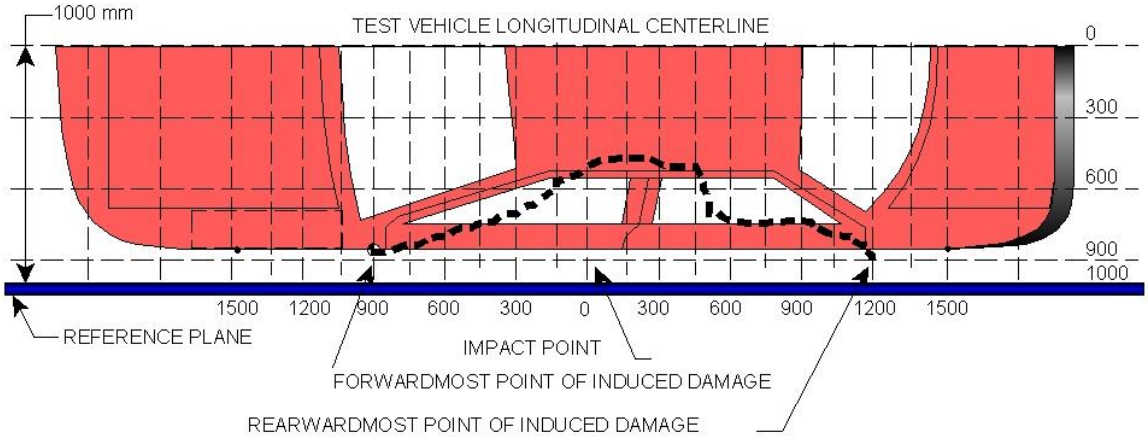
DATA SHEET NO. 10 (CONTINUED)
VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2019 Chevrolet Malibu 4-DR Sedan NHTSA No.: M20190121
Test Program: SPNCAP Side Impact Test Date: 10/22/2019



DATA SHEET NO. 11
VEHICLE DAMAGE PROFILE DISTANCES

Test Vehicle: 2019 Chevrolet Malibu 4-DR Sedan NHTSA No.: M20190121
Test Program: SPNCAP Side Impact Test Date: 10/22/2019



VEHICLE DAMAGE PROFILE DISTANCES

DPD	Distance From Impact Point (mm)	Level	Post-Test (mm)	Pre-Test (mm)	Crush (mm)
1	1500	4	864	869	5
2	1050	3	894	915	21
3	600	3	837	913	76
4	150	3	608	915	307
5	-300	3	731	915	184
6[1]	-750	4	833	835	0

[1] DPD 6 is defined as zero crush since the crush does not extend to the end of the vehicle.

DATA SHEET NO. 12

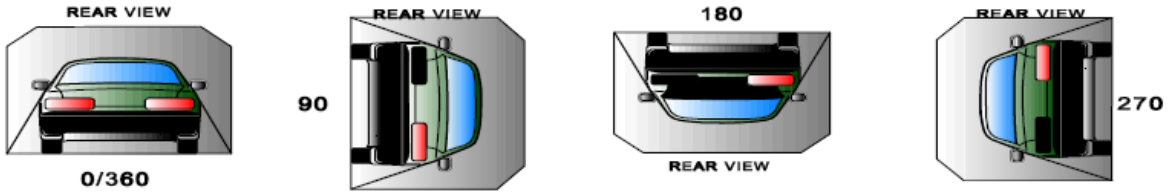
FMVSS NO. 301 FUEL SYSTEM INTEGRITY POST-IMPACT DATA

Test Vehicle: 2019 Chevrolet Malibu 4-DR Sedan NHTSA No.: M20190121
Test Program: SPNCAP Side Impact Test Date: 10/22/2019

Test Time: 14:54 **Temperature:** 21.3ºC

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

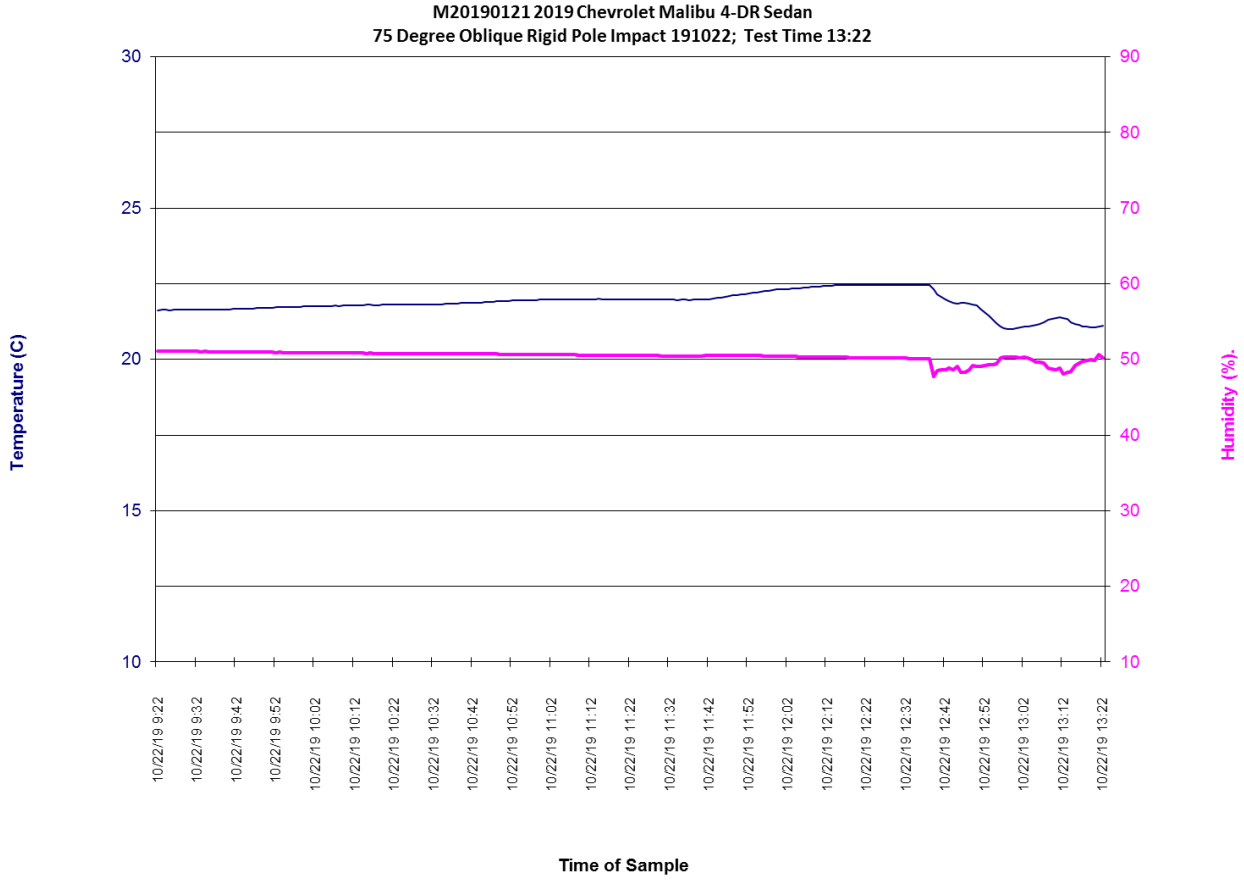
Test Phase	First 5 Minutes	Sixth Minute	Seventh Minute	Eighth Minute
0 to 90	0	0	0	0
90 to 180	0	0	0	0
180 to 270	0	0	0	0
270 to 360	0	0	0	0

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

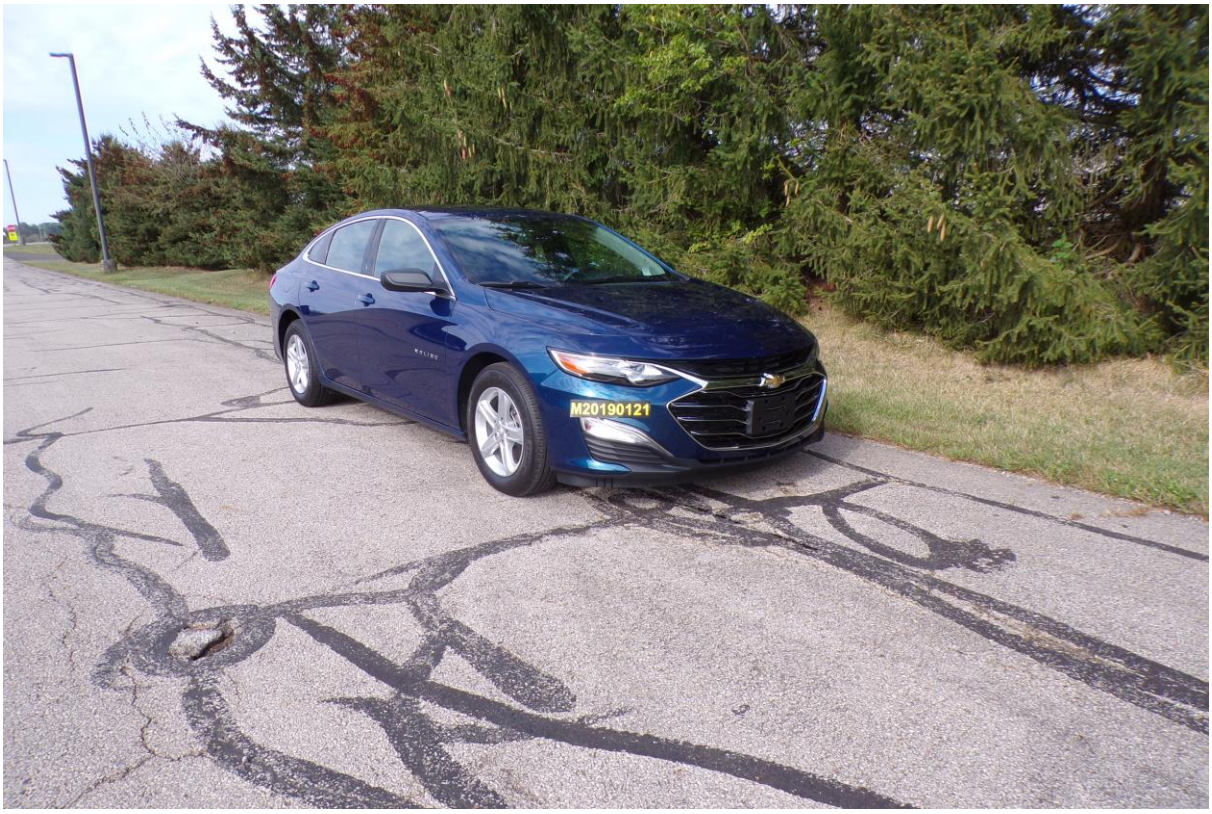
Test Vehicle: 2019 Chevrolet Malibu 4-DR Sedan NHTSA No.: M20190121
Test Program: SPNCAP Side Impact Test Date: 10/22/2019



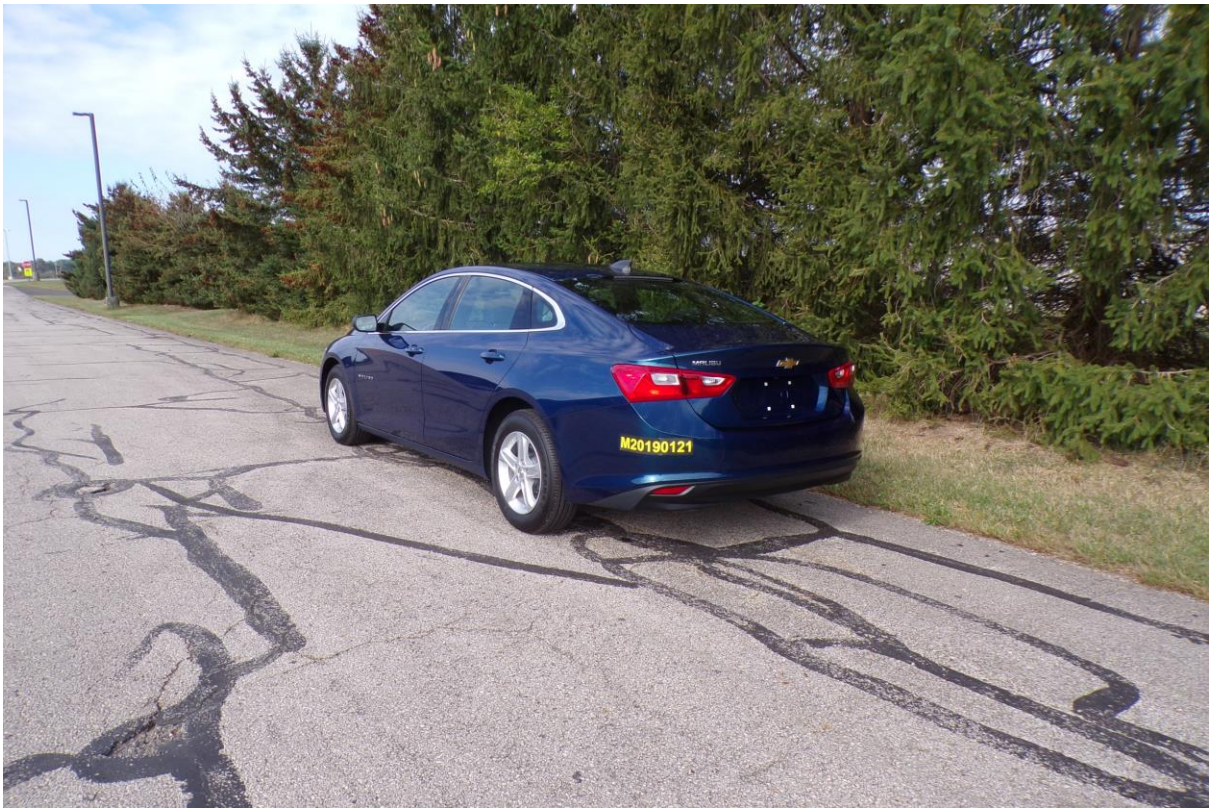
APPENDIX A
PHOTOGRAPHS

TABLE OF PHOTOGRAPHS

TABLE OF PHOTOGRAPHS (CONTINUED)

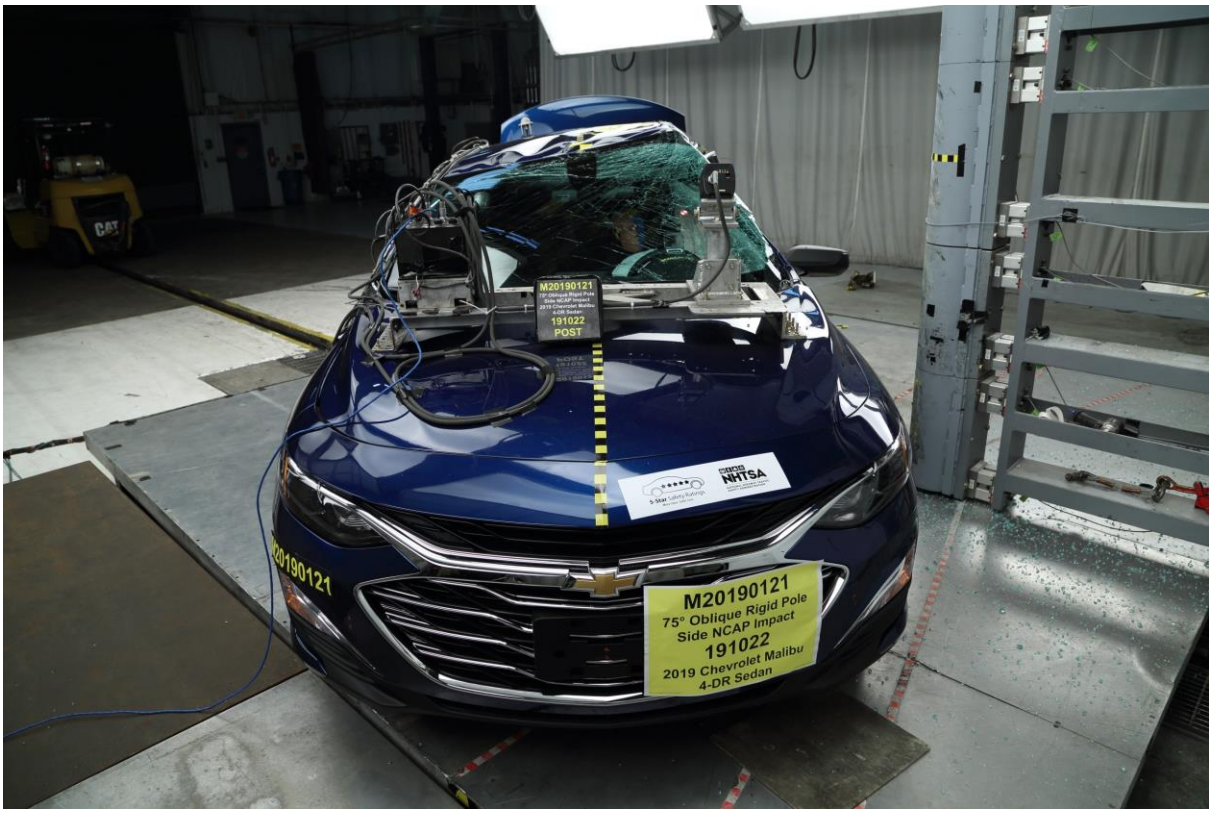


No. 001 As Delivered Right Front ¾ View of Test Vehicle

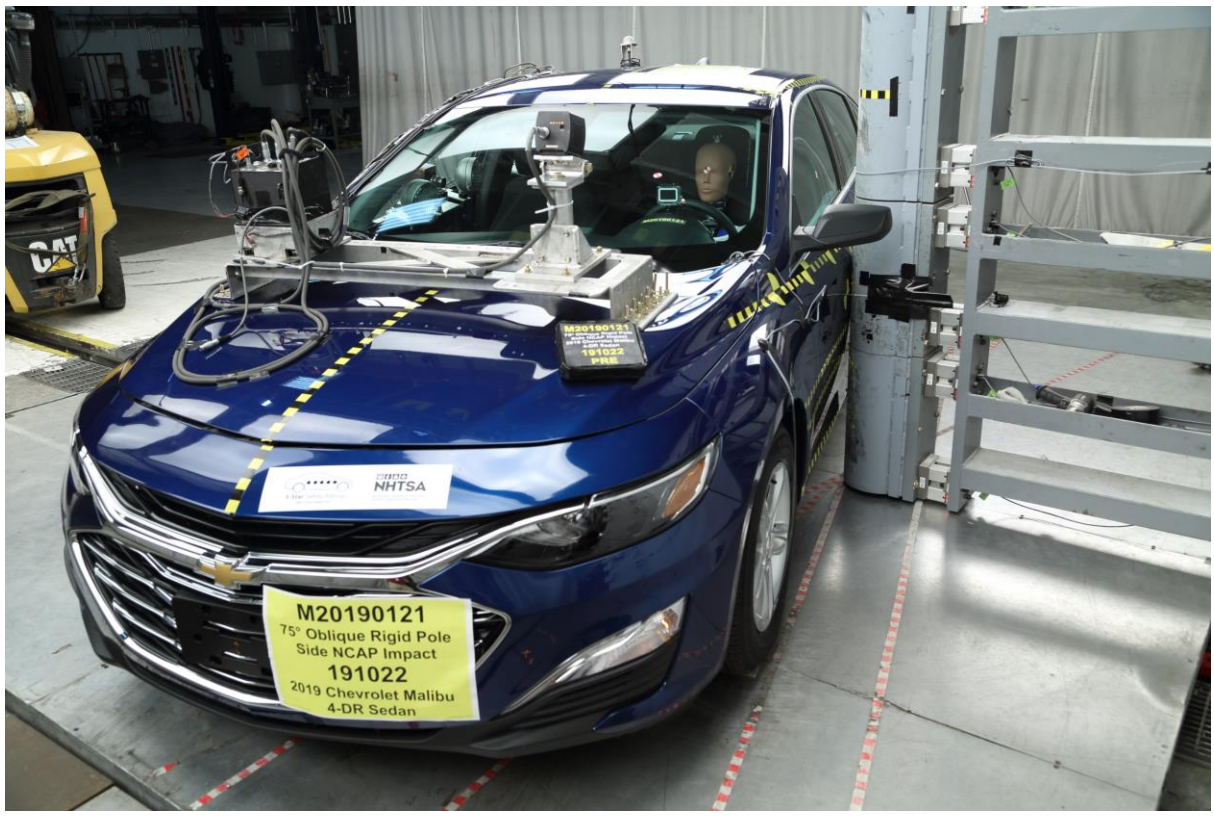


No. 002 As Delivered Left Rear ¾ View of Test Vehicle

No. 003 Pre-Test Frontal View of Test Vehicle



No. 004 Post-Test Frontal View of Test Vehicle



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

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

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

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

No. 009 Pre-Test Left Rear ¾ View of Test Vehicle

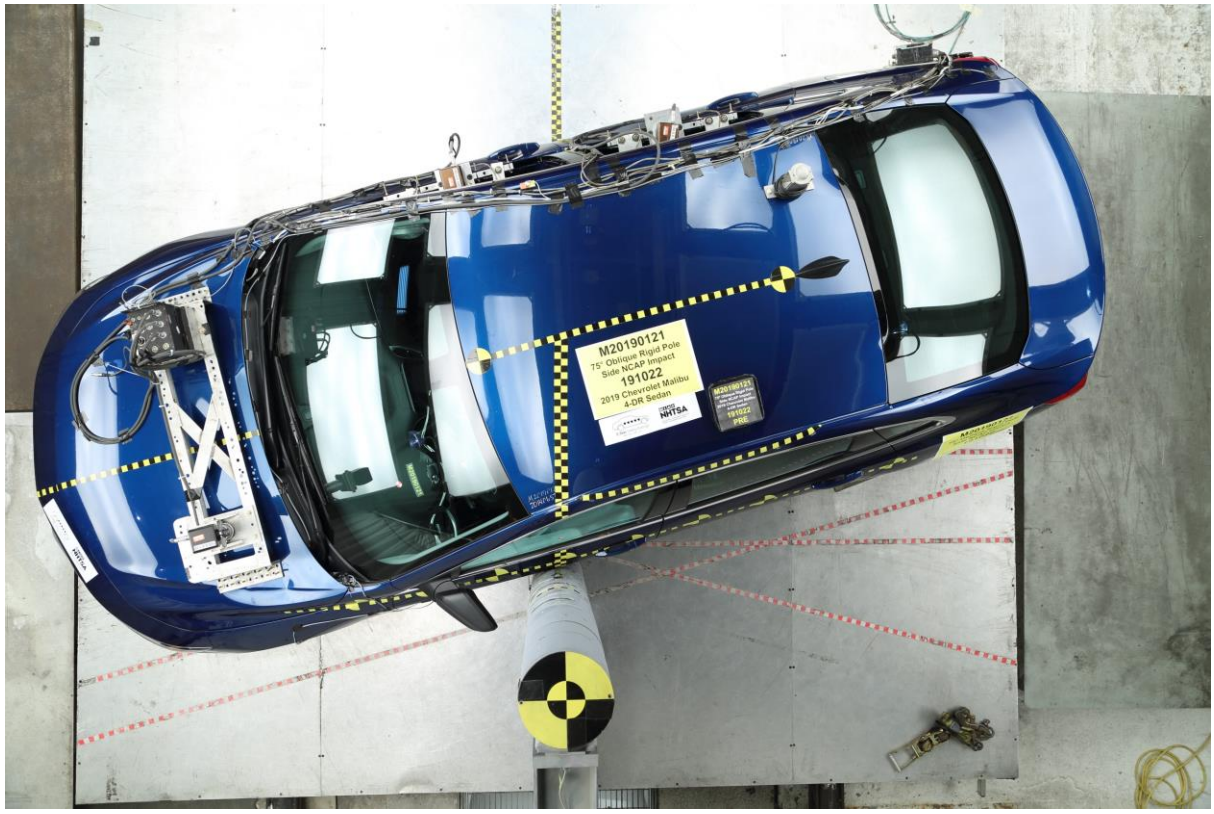
No. 010 Post-Test Left Rear ¾ View of Test Vehicle

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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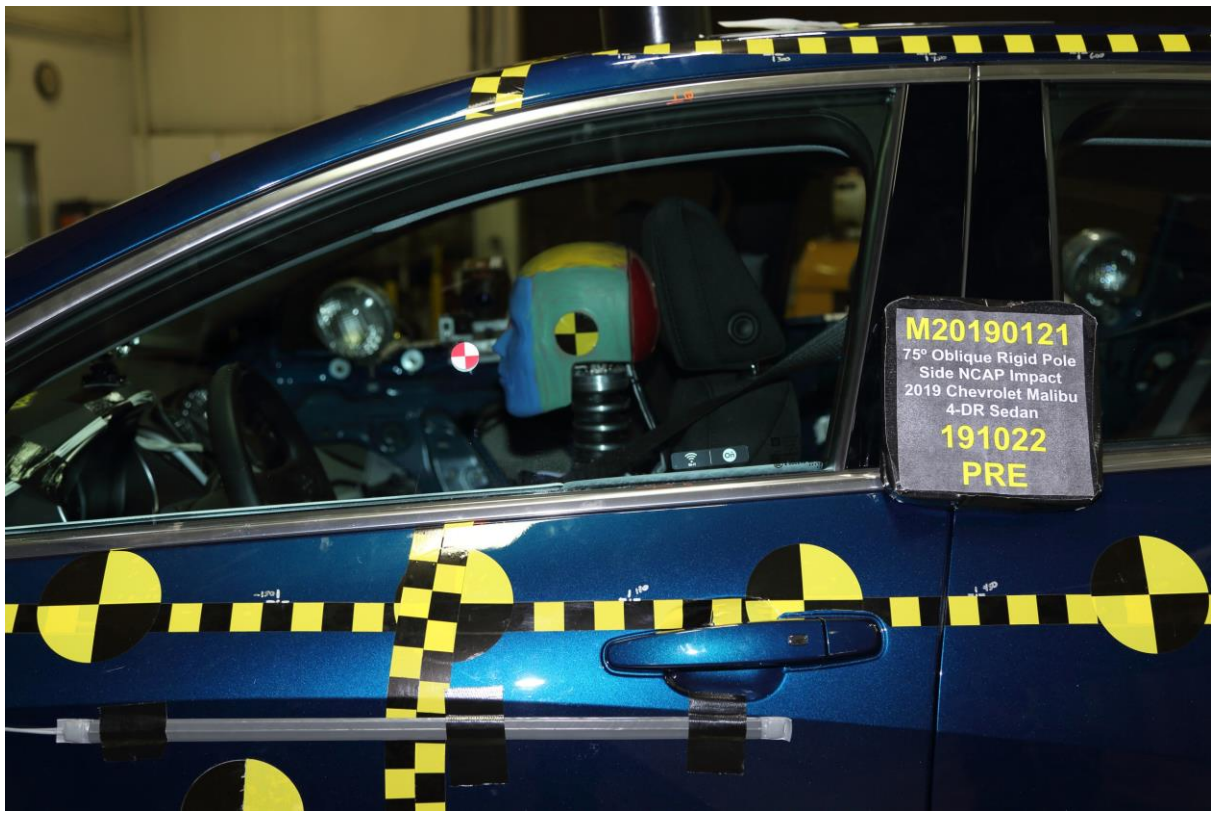
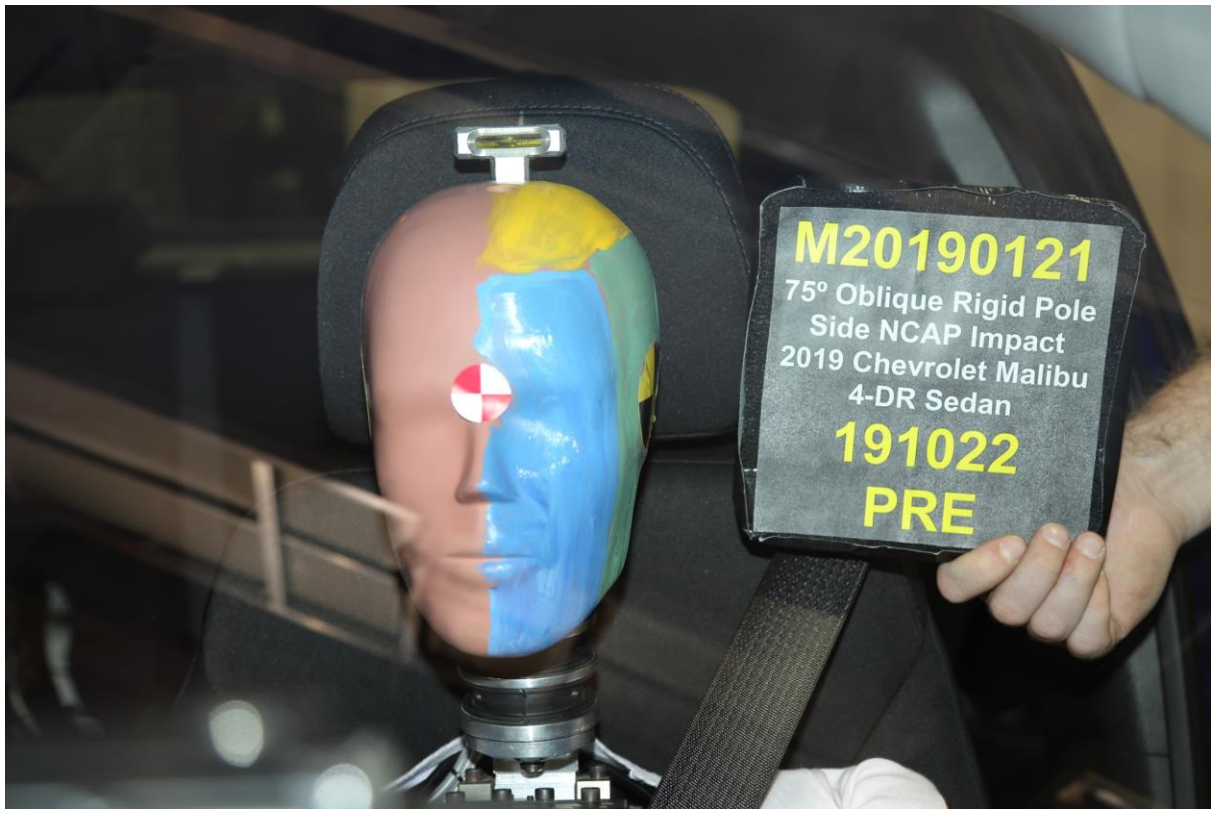


No. 024 Pre-Test Left Side View of Dummy Shoulder and Door Top View

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

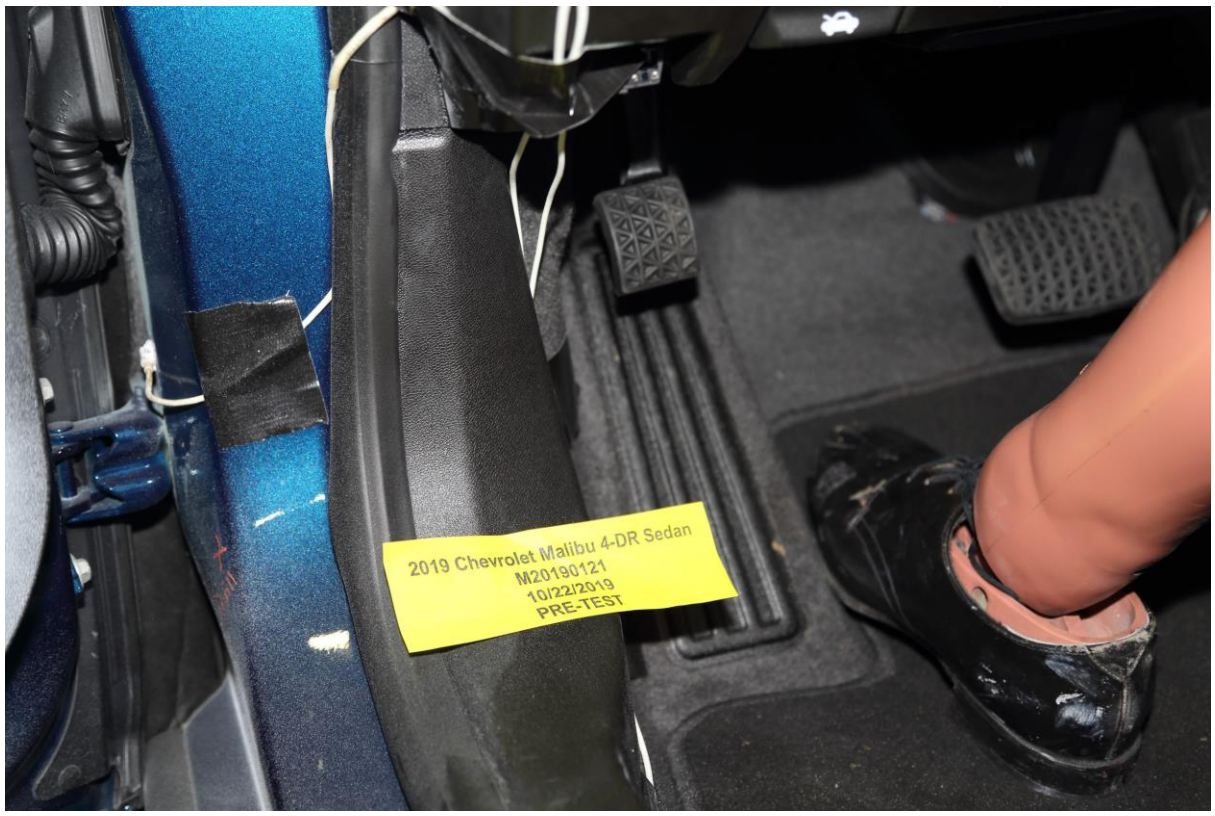
No. 031 Pre-Test Left Side View of Dummy Head Showing Dummy Head is Level

No. 032 Pre-Test Placement of Dummy Feet

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

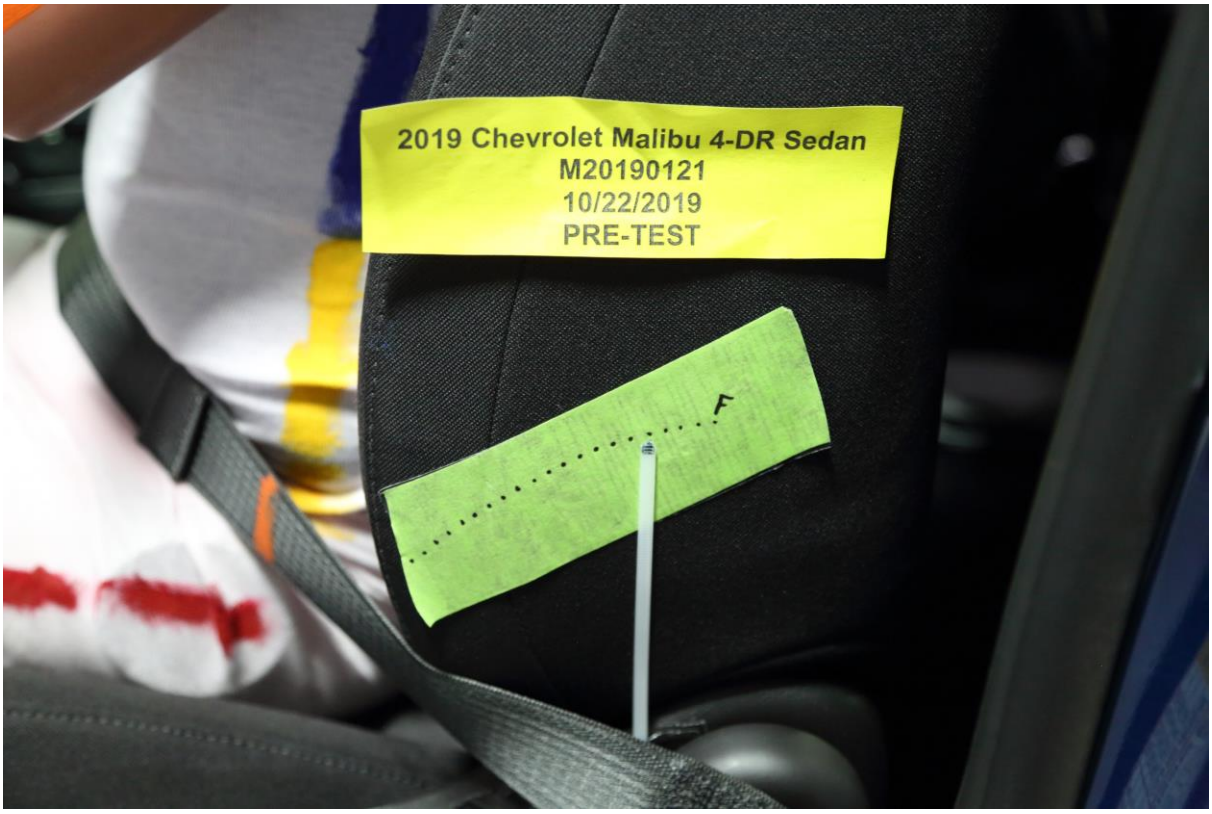
No. 034 Pre-Test Left Side View of Steering Wheel

No. 035 Pre-Test View of Disengaged Parking Brake



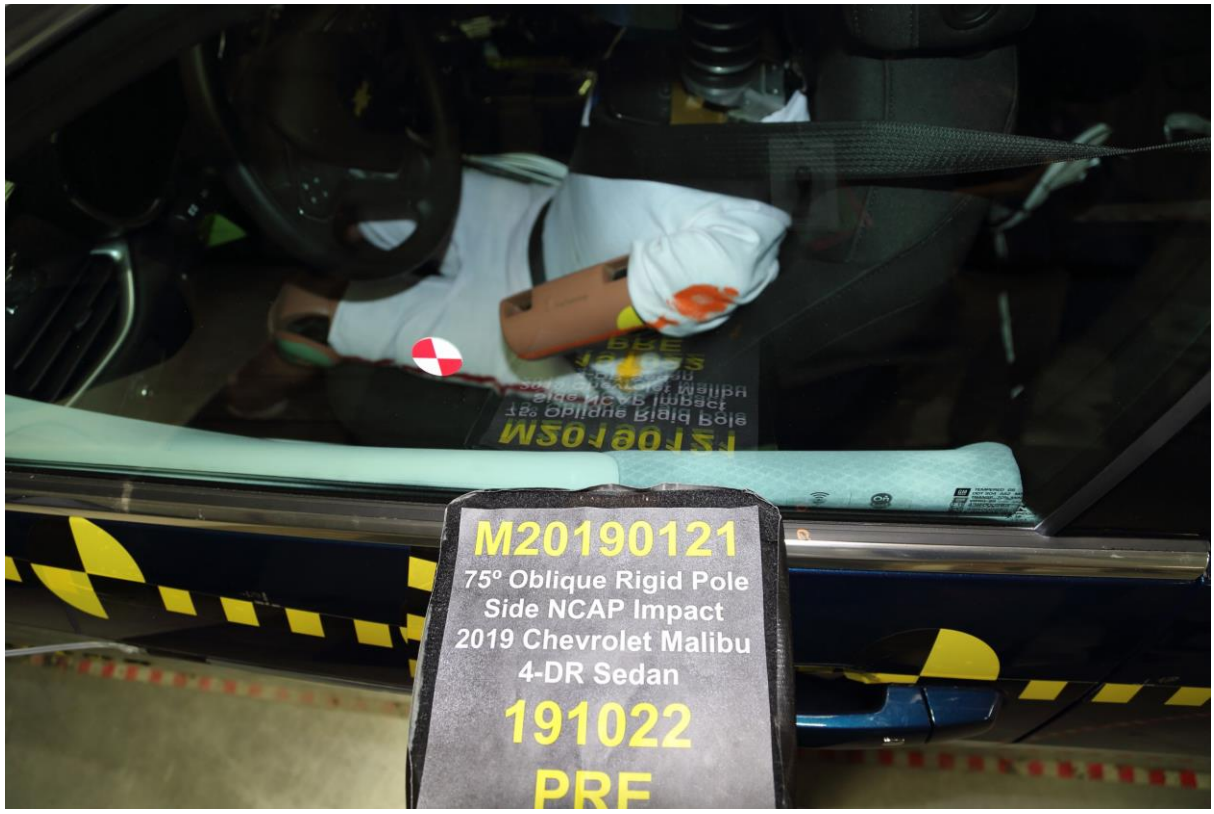
No. 036 Pre-Test View of Parking Brake

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



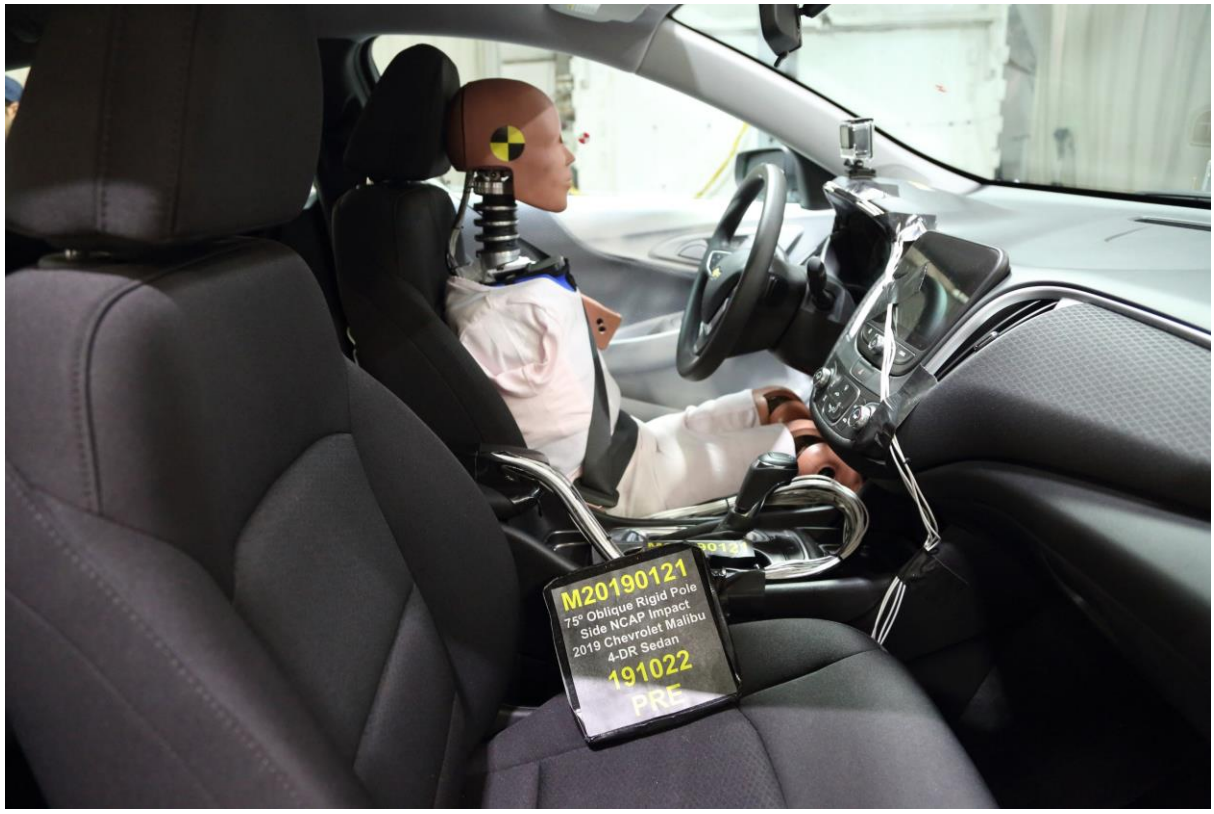
No. 038 Pre-Test Close-Up Left Side View of Driver Seat Back

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

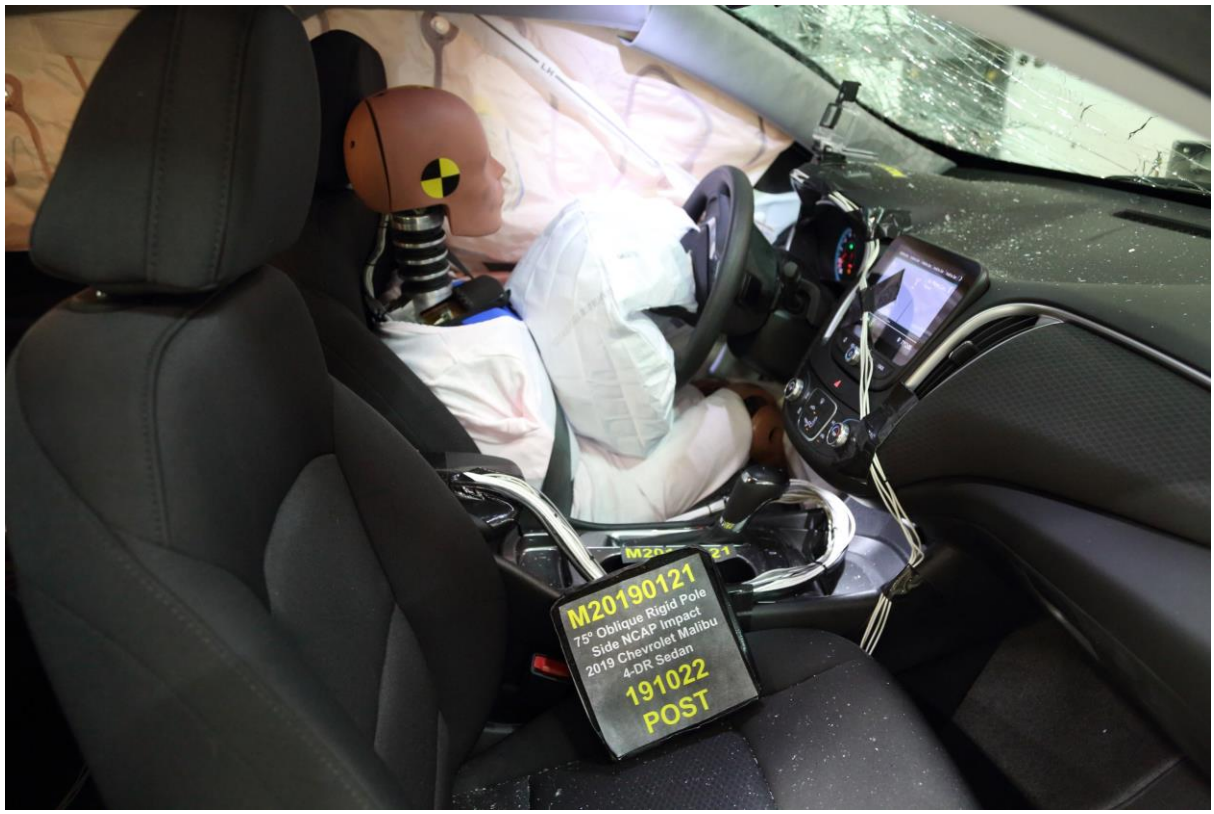


No. 040 Pre-Test Dummy and Door Clearance View

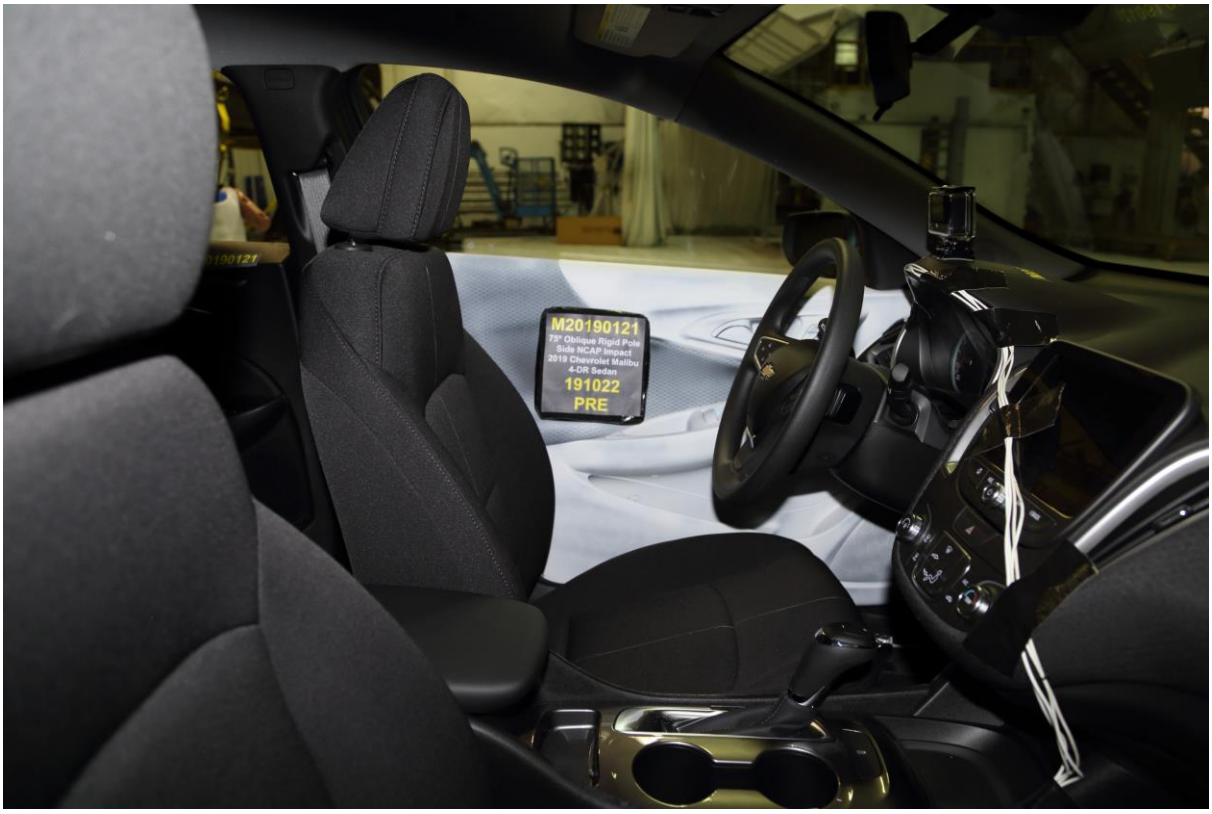
No. 041 Post-Test Dummy and Door Clearance View



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

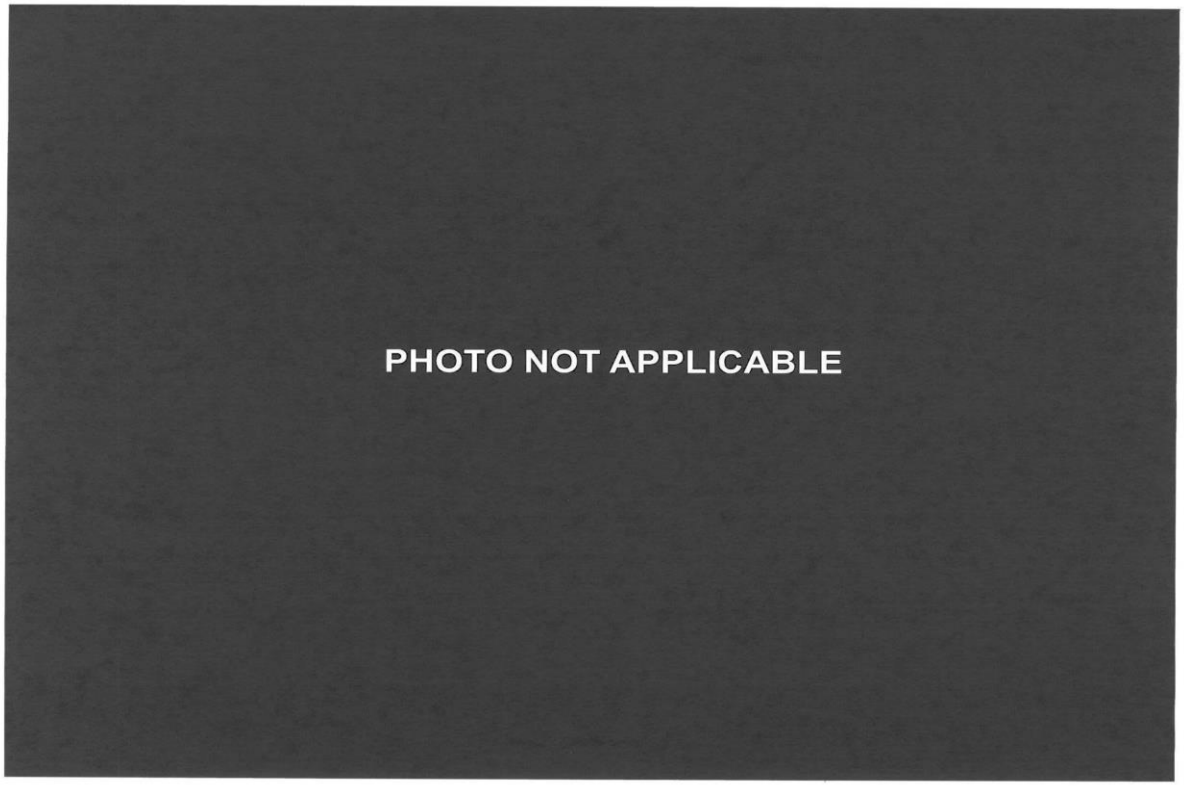


No. 043 Post-Test Right Side View of Dummy and Front Seat of Occupant Compartment



No. 044 Pre-Test Inner Door Panel View

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



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

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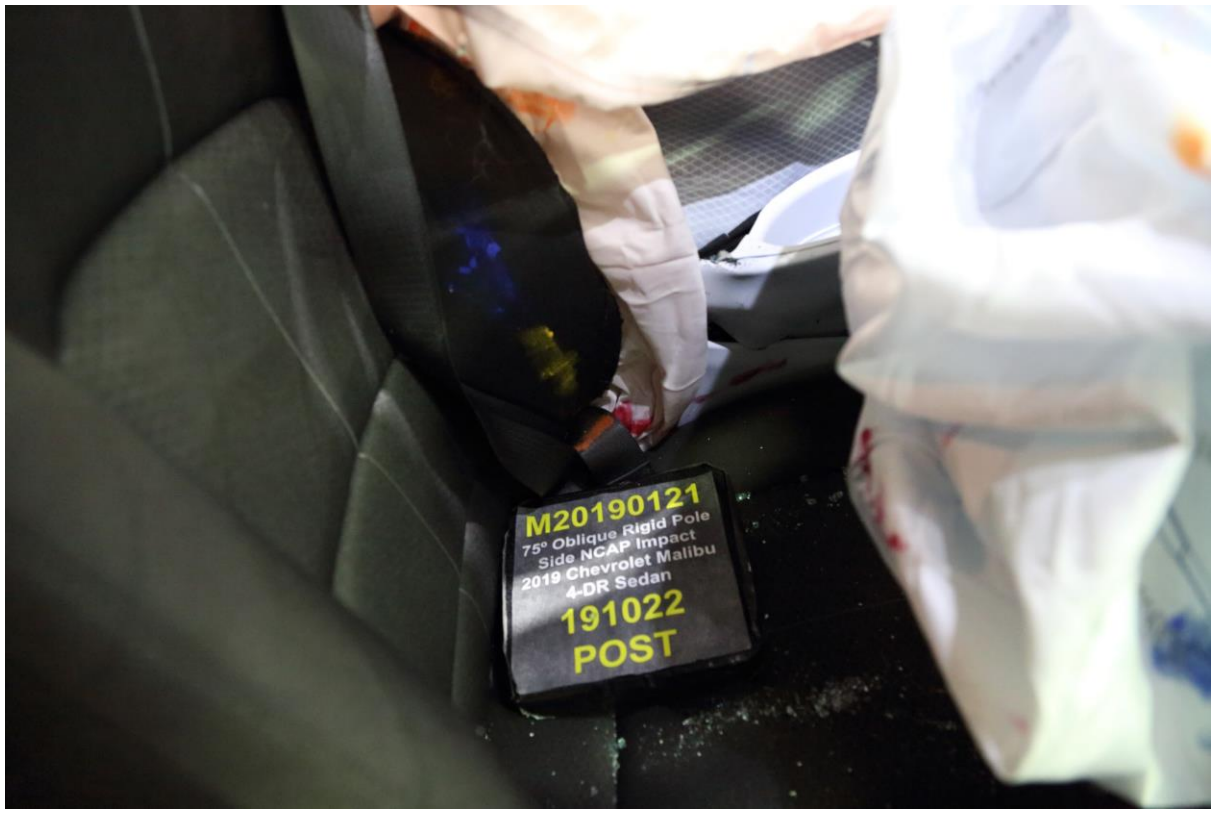
No. 047 Post-Test Dummy Close-Up Head Contact with Side Airbag View



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

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

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

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

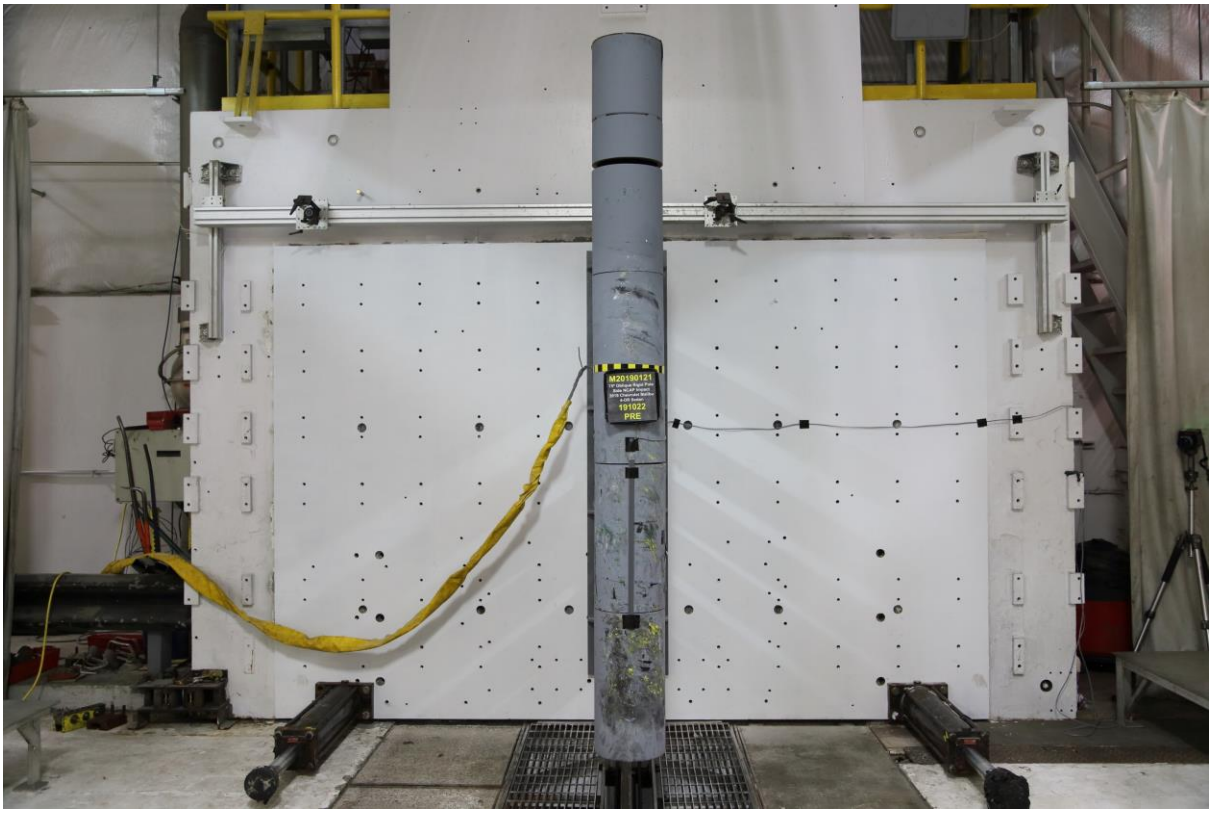
No. 052 Post-Test Dummy Close-Up Knee Contact with Vehicle Interior View

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

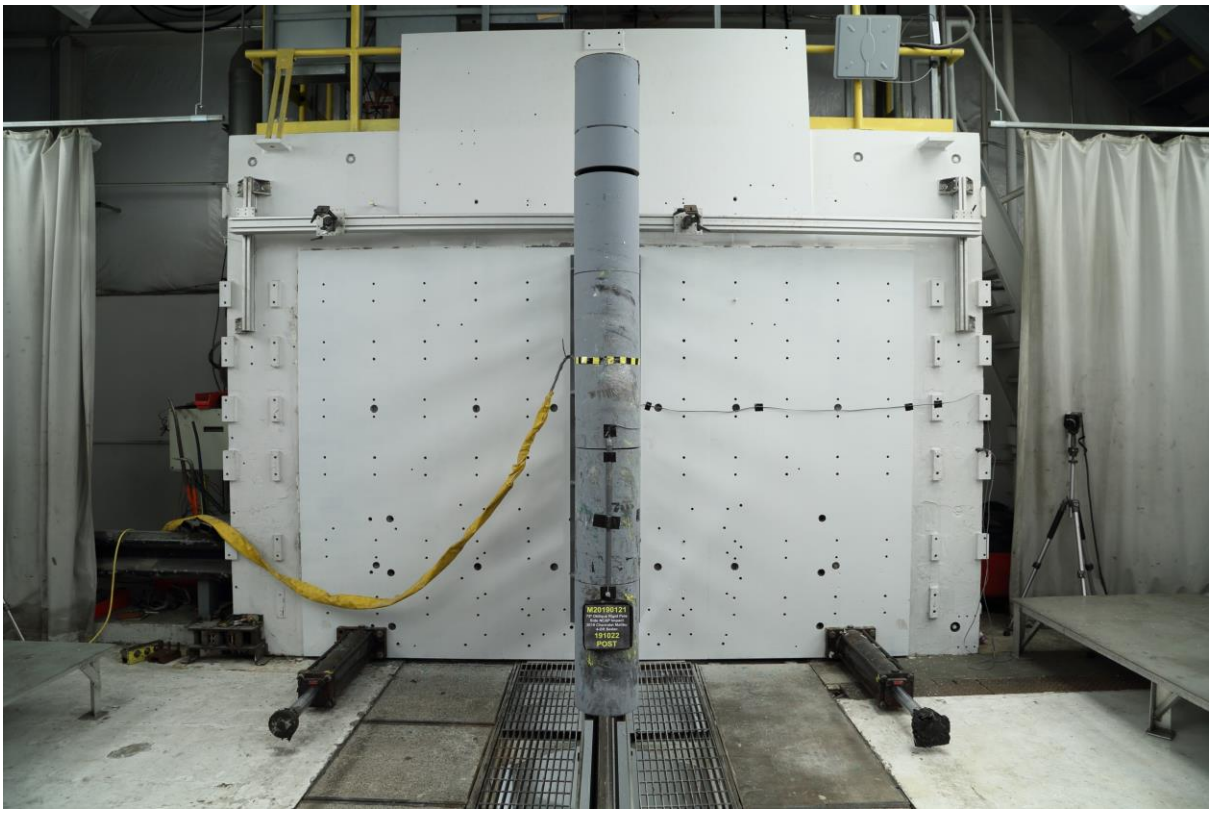
No. 054 Post-Test View of Fuel Filler Cap or Fuel Filler Neck

No. 055 Close-Up View of Vehicle Certification Label

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



No. 057 Pre-Test Pole Barrier Front View



No. 058 Post-Test Pole Barrier Front View

No. 059 Pre-Test Pole Barrier Side View

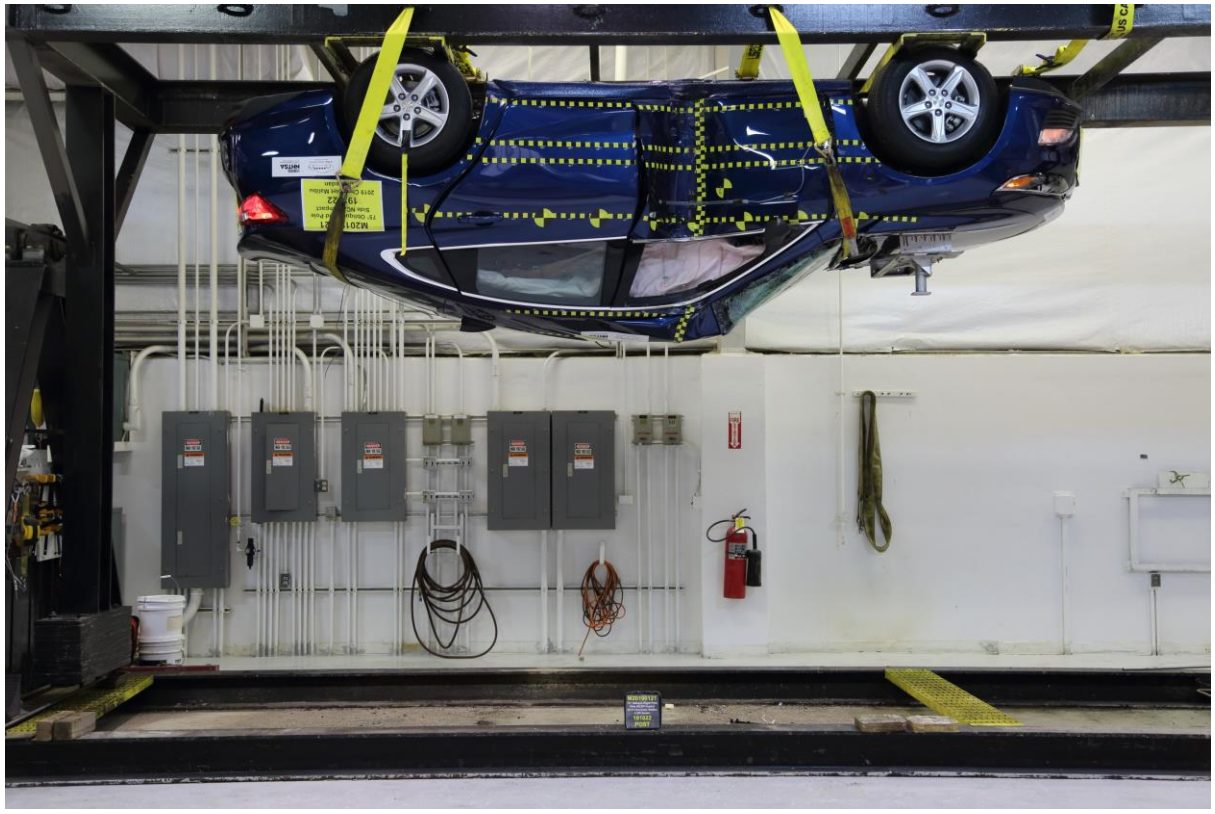
No. 060 Post-Test Pole Barrier Side View

No. 061 Pre-Test Ballast View

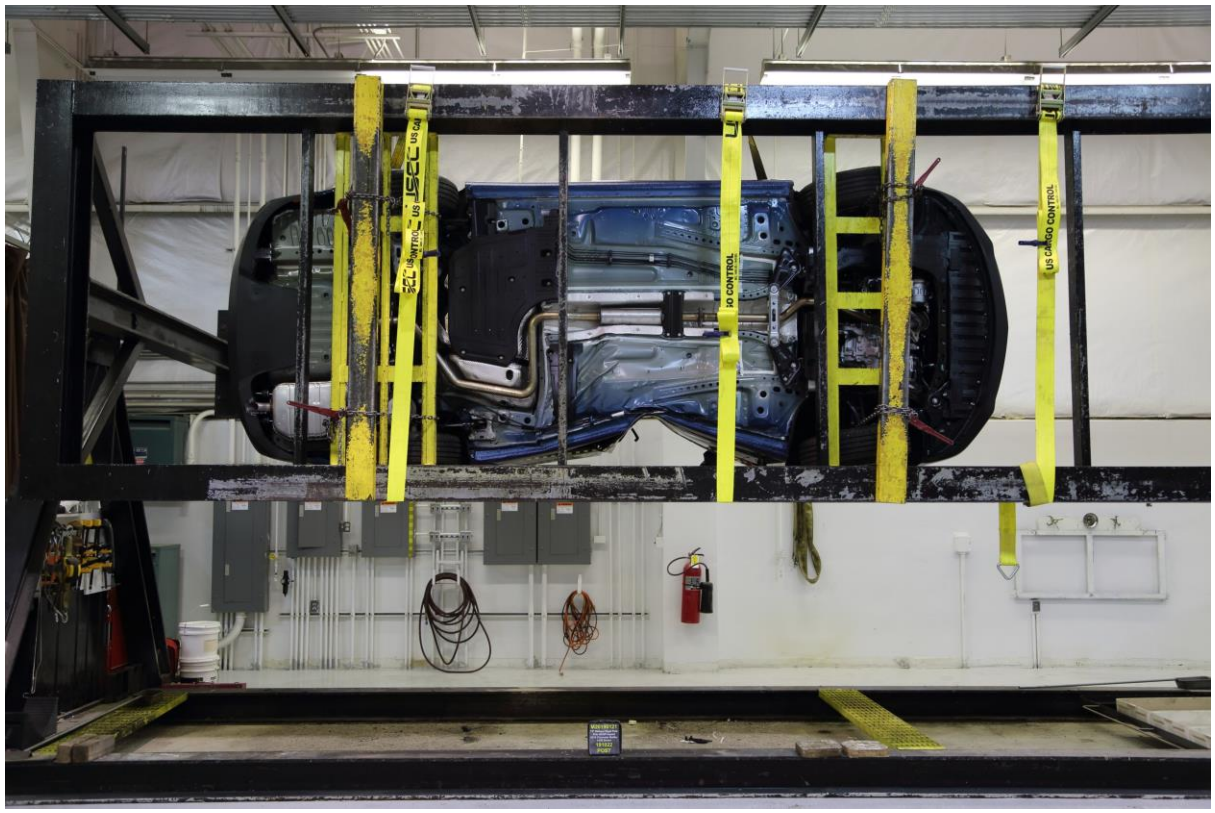
No. 062 Post-Test Primary and Redundant Speed Trap Read Out

No. 063 FMVSS No. 301 Static Rollover 0 Degrees

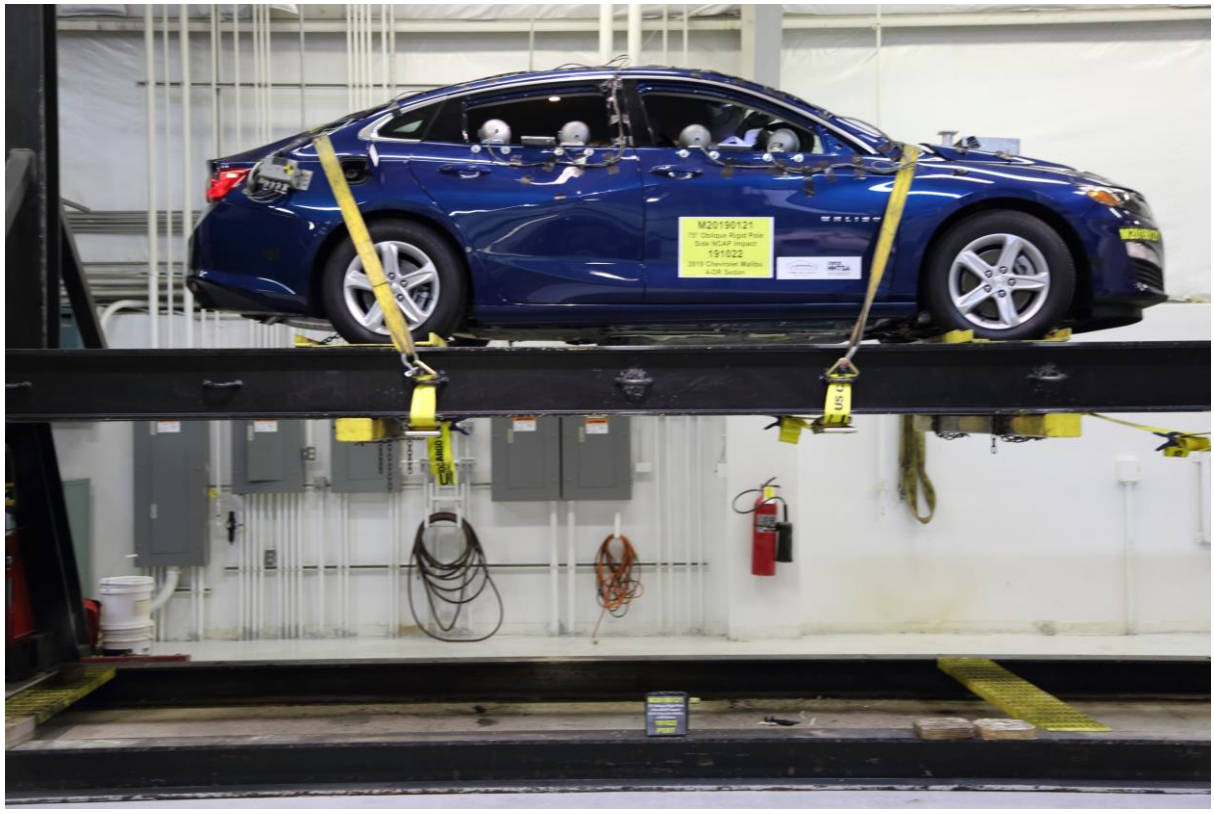
No. 064 FMVSS No. 301 Static Rollover 90 Degrees



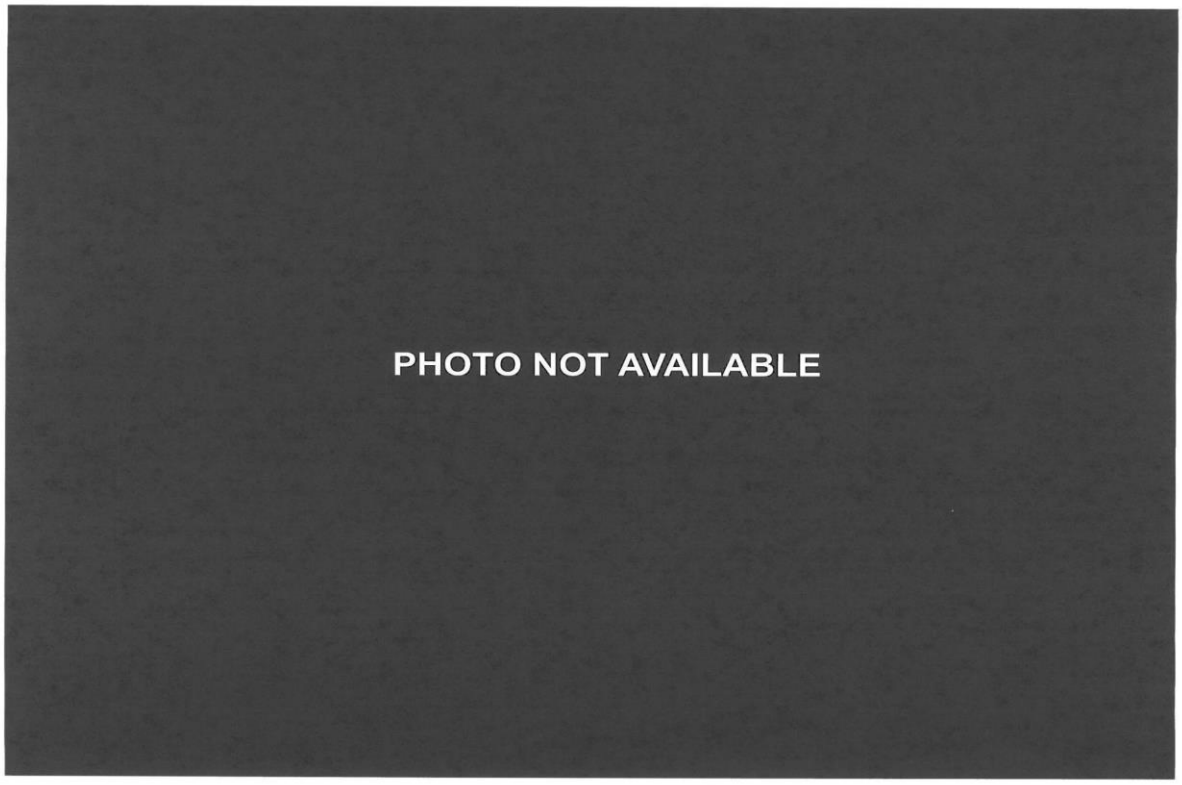
No. 065 FMVSS No. 301 Static Rollover 180 Degrees



No. 066 FMVSS No. 301 Static Rollover 270 Degrees



No. 067 FMVSS No. 301 Static Rollover 360 Degrees



No. 068 Impact Event

CHEVROLET

2019 MALIBU LS

EXTERIOR: PACIFIC BLUE METALLIC
INTERIOR: JET BLACK

ENGINE, 1.5L TURBO DOHC 4-CYL
TRANSMISSION, CONTINUOUSLY

Visit us at www.chevy.com

STANDARD EQUIPMENT

ITEMS FEATURED BELOW ARE INCLUDED AT NO EXTRA CHARGE IN THE STANDARD VEHICLE PRICE SHOWN

- CHEVROLET COMPLETE CARE
- SEE WWW.CHEVY.COM OR DEALER FOR TERMS, DETAILS & LIMITS
- FIRST MAINTENANCE VISIT OIL CHANGE AND TIRE ROTATION MULTI-POINT VEH. INSPECTION
- 3 YR/36,000 MILES BUMPER-TO-BUMPER WARRANTY
- 5 YR/60,000 MILES POWERTRAIN LIMITED WARRANTY
- ROADSIDE ASSISTANCE
- COURTESY TRANSPORTATION

MECHANICAL

- ENGINE, 1.5L TURBO DOHC 4-CYL
- STOP/START ENGINE SYSTEM

SAFETY & SECURITY

- STABILITRAK-STABILITY CONTROL INCLUDES TRACTION CONTROL
- ANTILOCK BRAKE SYSTEM, 4 WHEEL DISC
- THEFT DETERRENT SYSTEM, CONTENT THEFT ALARM
- REAR DR LOCKS,CHILD SECURITY
- TIRE, COMPACT SPARE
- REMOTE PANIC ALARM
- TIRE PRESSURE MONITOR SYSTEM
- REAR VISION CAMERA
- AIRBAGS

EXTERIOR

- HEADLAMPS, HALOGEN
- DAYTIME RUNNING LAMPS
- POWER DUAL OUTSIDE MIRRORS
- HEADLAMP CONTROL AUTOMATIC ON & OFF
- WHEELS, 16" ALUMINUM

INTERIOR

- KEYLESS START
- SEAT ADJUSTER, DRIVER 6-WAY MANUAL
- SEAT ADJUSTER, FRONT PASSENGER 6-WAY MANUAL
- VISORS, INCL VANITY MIRRORS
- STEERING COLUMN, TILT & TELESCOPIC
- DRIVER INFORMATION CENTER
- STEERING WHEEL CONTROLS, AUDIO, CRUISE, BLUETOOTH
- REAR SEAT, 60/40 SPLIT FOLDING SEATBACK
- WINDOWS, POWER WITH EXPRESS DOWN ALL

CONNECTIVITY FEATURES

- ONSTAR (R) SERVICES CAPABLE (SUBJECT TO TERMS SEE ONSTAR.COM)
- 4G LTE WI-FI (R) HOTSPOT CAPABLE (SUBJECT TO TERMS SEE ONSTAR.COM)
- CHEVROLET INFOTAINMENT 3 8" DIAG COLOR TOUCHSCREEN ADDITIONAL FEATURES FOR COMPATIBLE PHONES INCLUDE: BLUETOOTH AUDIO STREAMING VOICE COMMAND PASSTHROUGH TO PHONE, ANDROID, AUTO AND APPLE CARPLAY CAPABLE

OPTIONS & PRICING

MANUFACTURER'S SUGGESTED RETAIL PRICE	
STANDARD VEHICLE PRICE	**$23,220.00**
OPTIONS INSTALLED BY THE MANUFACTURER (MAY REPLACE STANDARD EQUIPMENT SHOWN)	
REMOTE START (DEALER INSTALLED)	325.00
TOTAL OPTIONS	$325.00
TOTAL VEHICLE & OPTIONS	$23,545.00
DESTINATION CHARGE	875.00
TOTAL VEHICLE PRICE*	**$24,420.00**

EPA DOT Fuel Economy and Environment — Gasoline Vehicle

Fuel Economy: **32 MPG** combined city/hwy — 29 city — 36 highway

3.1 gallons per 100 miles

Mid-size cars range from 14 to 136 MPG. The best vehicle rates 136 MPGe.

You save **$1,000** in fuel costs over 5 years compared to the average new vehicle.

Annual fuel cost **$1,200**

Fuel Economy & Greenhouse Gas Rating (tailpipe only): 7 (1 — 10 Best)

Smog Rating (tailpipe only): 7 (1 — 10 Best)

This vehicle emits 280 grams CO_2 per mile. The best emits 0 grams per mile (tailpipe only). Producing and distributing fuel also create emissions; learn more at fueleconomy.gov.

Actual results will vary for many reasons, including driving conditions and how you drive and maintain your vehicle. The average new vehicle gets 27 MPG and costs $7,000 to fuel over 5 years. Cost estimates are based on 15,000 miles per year at $2.55 per gallon. MPGe is miles per gasoline gallon equivalent. Vehicle emissions are a significant cause of climate change and smog.

fueleconomy.gov
Calculate personalized estimates and compare vehicles

Smartphone QR Code™

GOVERNMENT 5-STAR SAFETY RATINGS

Overall Vehicle Score — Not Rated
Based on the combined ratings of frontal, side and rollover.
Should ONLY be compared to other vehicles of similar size and weight.

Frontal Crash — Driver ★★★★★ Passenger ★★★★
Based on the risk of injury in a frontal impact.
Should ONLY be compared to other vehicles of similar size and weight.

Side Crash — Front seat: Not Rated; Rear seat: Not Rated
Based on the risk of injury in a side impact.

Rollover — ★★★★
Based on the risk of rollover in a single-vehicle crash.

Star ratings range from 1 to 5 stars (★★★★★) with 5 being the highest.
Source: National Highway Traffic Safety Administration (NHTSA)
www.safercar.gov or 1-888-327-4236

Equipped with the safety and security of OnStar®.
Visit onstar.com for details.
onstar.com/privacy

PARTS CONTENT INFORMATION

FOR VEHICLES IN THIS CARLINE:
U.S./CANADIAN PARTS CONTENT: 49%
MAJOR SOURCES OF FOREIGN PARTS CONTENT: MEXICO 28%

NOTE: PARTS CONTENT DOES NOT INCLUDE FINAL ASSEMBLY, DISTRIBUTION, OR OTHER NON-PARTS COSTS.

FOR THIS VEHICLE:
FINAL ASSEMBLY POINT:
KANSAS CITY, KS U.S.A.
COUNTRY OF ORIGIN:
ENGINE: UNITED STATES
TRANSMISSION: MEXICO

This label has been applied pursuant to Federal law – Do not remove prior to delivery to the ultimate purchaser. See Owner Manual for Manufacturer's Recommended Pre-Delivery Service. Does not include dealer installed options and accessories not listed above, local taxes or license fees.

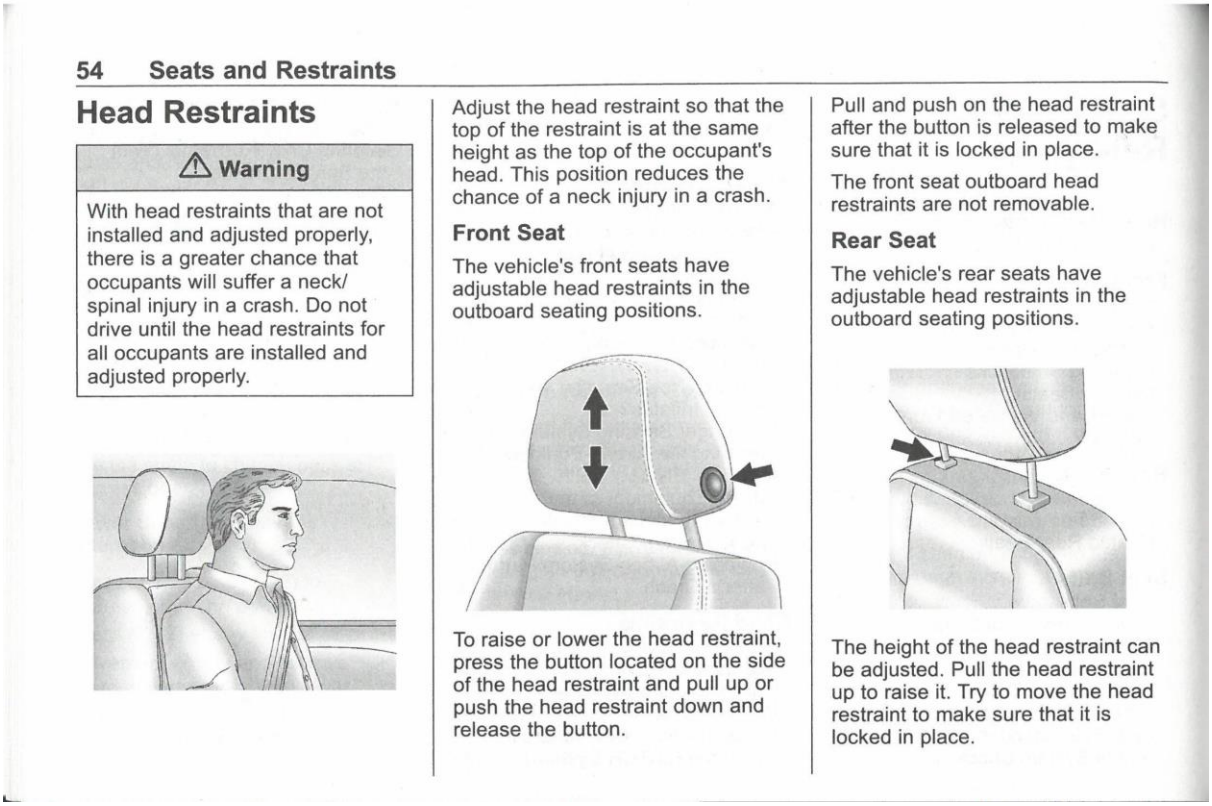
ORDER NO WVBFN0 SALES CODE E
SALES MODEL CODE 1ZC69
DEALER NO 15219
FINAL ASSEMBLY:
KANSAS CITY, KS U.S.A.

VIN 1G1ZB5ST0KF213173

DEALER TO WHOM DELIVERED
ELM CHEVROLET COMPANY, INC.
301 E CHURCH ST
ELMIRA, NY 14901-2703

UL
1AG3482948

No. 069 Monroney Label



54 Seats and Restraints

Head Restraints

⚠ Warning

With head restraints that are not installed and adjusted properly, there is a greater chance that occupants will suffer a neck/ spinal injury in a crash. Do not drive until the head restraints for all occupants are installed and adjusted properly.

Adjust the head restraint so that the top of the restraint is at the same height as the top of the occupant's head. This position reduces the chance of a neck injury in a crash.

Front Seat

The vehicle's front seats have adjustable head restraints in the outboard seating positions.

To raise or lower the head restraint, press the button located on the side of the head restraint and pull up or push the head restraint down and release the button.

Pull and push on the head restraint after the button is released to make sure that it is locked in place.

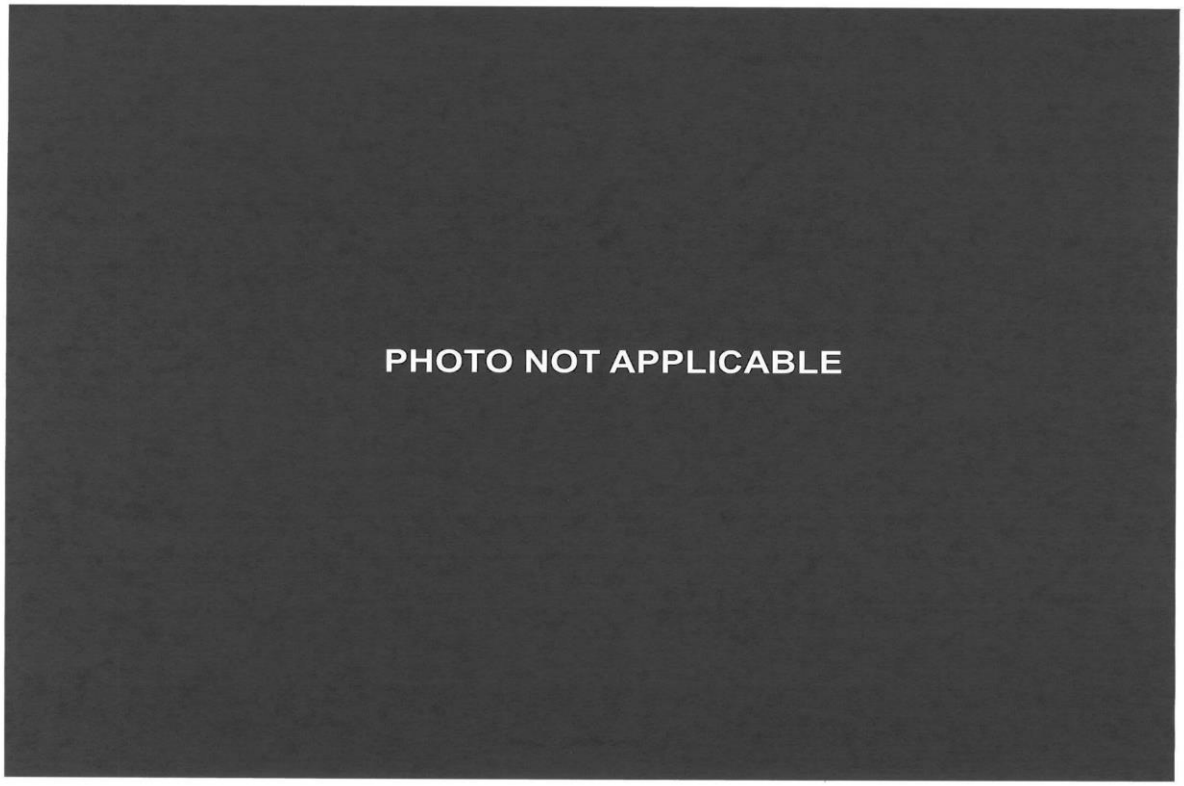
The front seat outboard head restraints are not removable.

Rear Seat

The vehicle's rear seats have adjustable head restraints in the outboard seating positions.

The height of the head restraint can be adjusted. Pull the head restraint up to raise it. Try to move the head restraint to make sure that it is locked in place.

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



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

APPENDIX B
VEHICLE AND DUMMY RESPONSE DATA PLOTS

TABLE OF DATA PLOTS

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

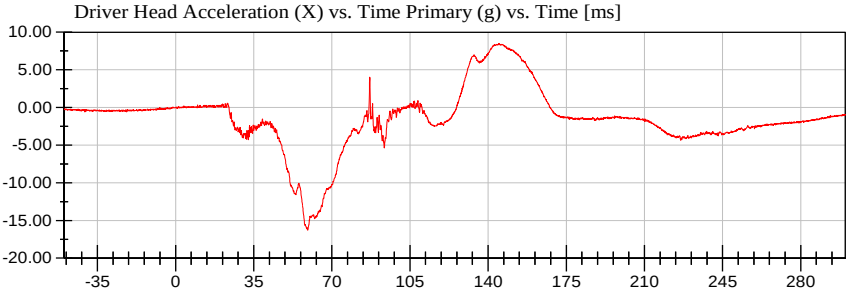
Test Date: 10/22/2019

Position #1 SID IIs Dummy (297)

Test Lab: CTF

Test Number: 191022 (M20190121)

Driver Head Acceleration (X) vs. Time Primary (g) vs. Time [ms]



<Max>

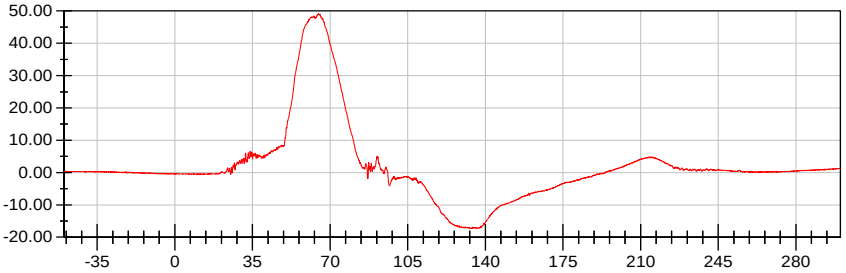
8.47 g at 144.64 ms

<Min>

-16.29 g at 59.12 ms

CFC_1000

Driver Head Acceleration (Y) vs. Time Primary (g) vs. Time [ms]



<Max>

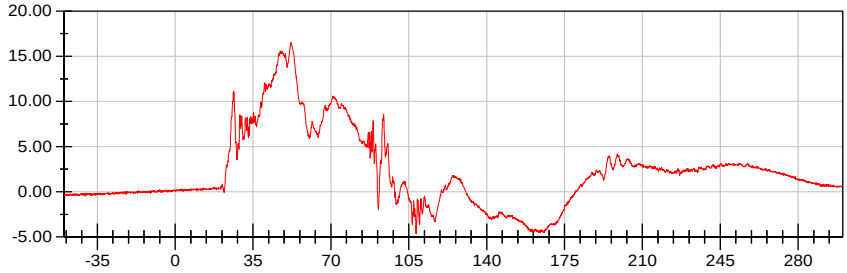
49.14 g at 64.80 ms

<Min>

-17.37 g at 133.84 ms

CFC_1000

Driver Head Acceleration (Z) vs. Time Primary (g) vs. Time [ms]



<Max>

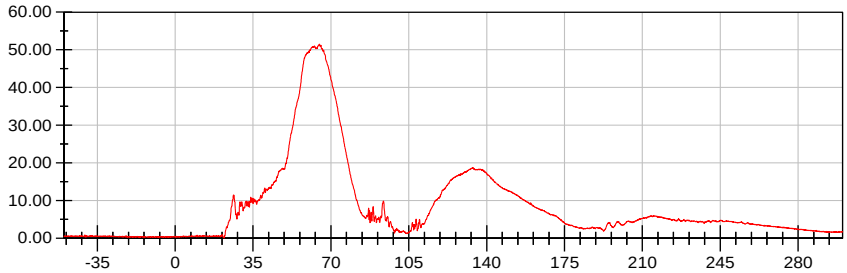
16.52 g at 52.00 ms

<Min>

-4.63 g at 108.24 ms

CFC_1000

Driver Head Acceleration Resultant Primary vs. Time (g) vs. Time [ms]



<Max>

51.50 g at 64.80 ms

<Min>

0.09 g at 22.08 ms

CFC_1000

NHTSA

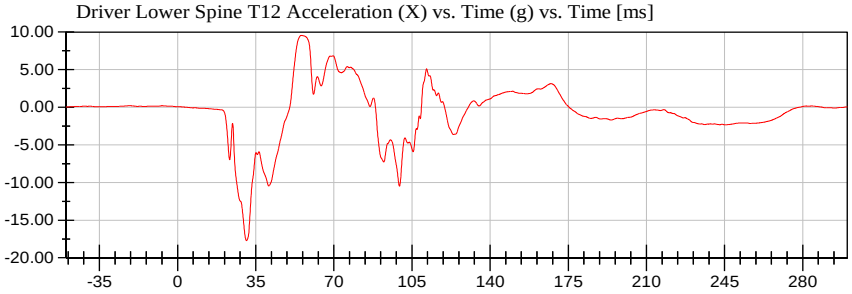
Test Date: 10/22/2019

Position #1 SID IIs Dummy (297)

Test Lab: CTF

Test Number: 191022 (M20190121)

Driver Lower Spine T12 Acceleration (X) vs. Time (g) vs. Time [ms]



<Max>

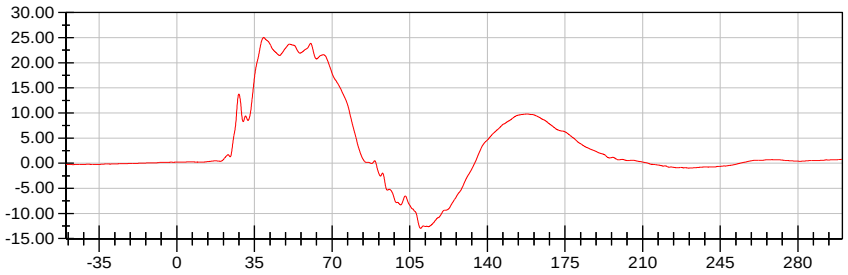
9.54 g at 55.44 ms

<Min>

-17.73 g at 30.88 ms

CFC_180

Driver Lower Spine T12 Acceleration (Y) vs. Time (g) vs. Time [ms]



<Max>

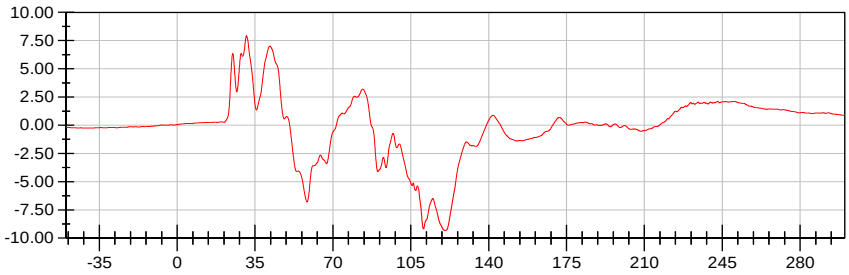
25.04 g at 39.12 ms

<Min>

-12.94 g at 109.92 ms

CFC_180

Driver Lower Spine T12 Acceleration (Z) vs. Time (g) vs. Time [ms]



<Max>

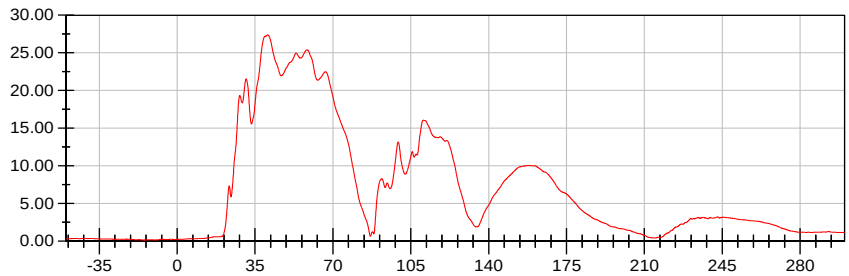
7.93 g at 31.12 ms

<Min>

-9.32 g at 120.88 ms

CFC_180

Driver Lower Spine T12 Acceleration Resultant vs. Time (g) vs. Time [ms]



<Max>

27.39 g at 40.72 ms

<Min>

0.16 g at -15.44 ms

CFC_180

NHTSA

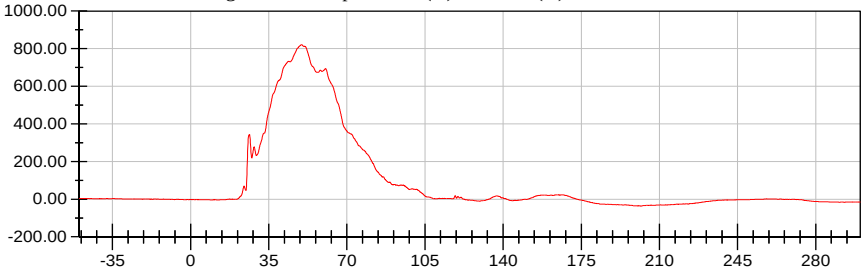
Test Date: 10/22/2019

Position #1 SID IIs Dummy (297)

Test Lab: CTF

Test Number: 191022 (M20190121)

Driver Iliac Wing Force on Impact Side (Y) vs. Time (N) vs. Time [ms]



<Max>

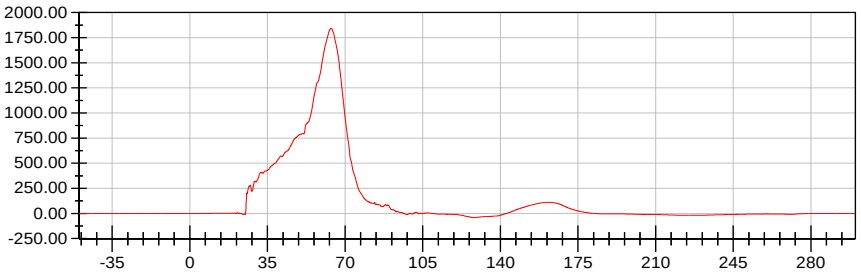
821.86 N at 49.76 ms

<Min>

-36.59 N at 201.84 ms

CFC_600

Driver Acetabulum Force on Impact Side (Y) vs. Time (N) vs. Time [ms]



<Max>

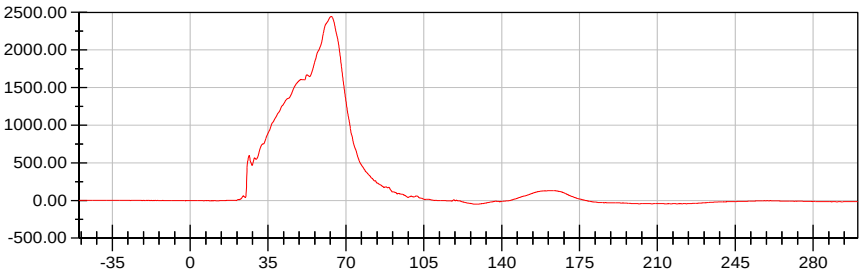
1,842.01 N at 63.84 ms

<Min>

-40.47 N at 127.52 ms

CFC_600

Driver Total Pelvis Force on Impact Side (Y) vs. Time (N) vs. Time [ms]



<Max>

2,443.83 N at 63.36 ms

<Min>

-49.59 N at 129.36 ms

CFC_600

APPENDIX C
DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

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

Pre-Test Calibration Sheets
Driver S/N 297

Transportation Research Center Inc.
SIDIIs Dummy - Level D
External Dimensions
Serial No. 297 Calibration No. 40

Symbol	Description	Specification	Results	Pass
		mm	mm	
A	Sitting Height	772.0 - 788.0	781	Yes
B	Shoulder Pivot Height	437.0 - 453.0	450	Yes
C	H-Point Height	79.0 - 89.0	85	Yes
D	H-Point from Seat Back	141.0 - 151.0	147	Yes
E	Shoulder Pivot from Backline	97.0 - 107.0	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	202	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	880	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. 40-1
Test Date: 9/25/2019

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	22.0 °C	Yes
Relative Humidity	10 - 70 %	50 %	Yes
Peak Head Resultant Acceleration	115 - 137 g	133.0 g	Yes
Peak Head Longitudinal Acceleration	(-15) - 15 g	-2.6 g	Yes
Is Head Resultant Acceleration Curve Unimodal within 15% of Peak?	< 15 %	1.57 %	Yes

Test meets specifications.

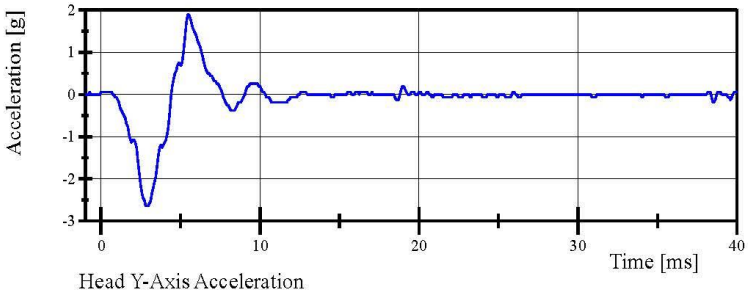
Condition: Used

Comments:
Head S/N: 1330

Transportation Research Center Inc.

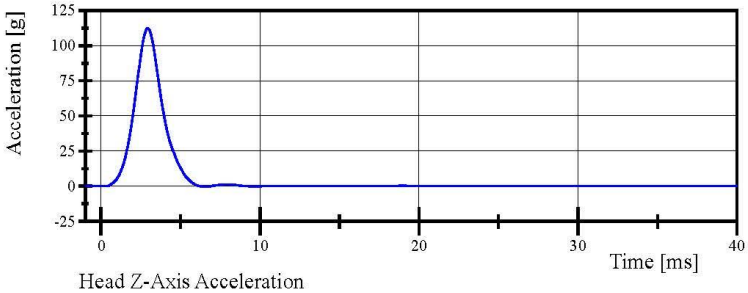
Left Lateral Head Drop
SID IIs Serial No. 297 Certification No. 40-1
Test Date: 9/25/2019

Head X-Axis Acceleration



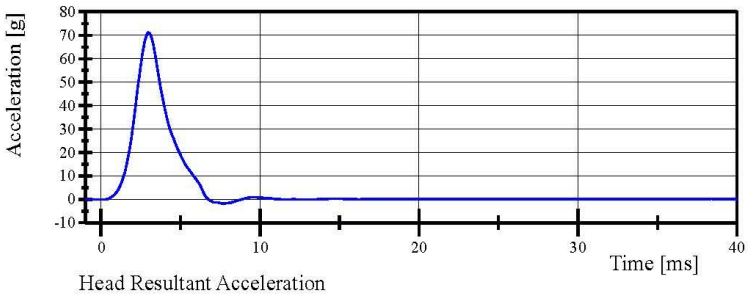
Filter Class: CFC_1000
Max: 1.9 g at 5.4 ms
Min: -2.6 g at 2.8 ms

Head Y-Axis Acceleration



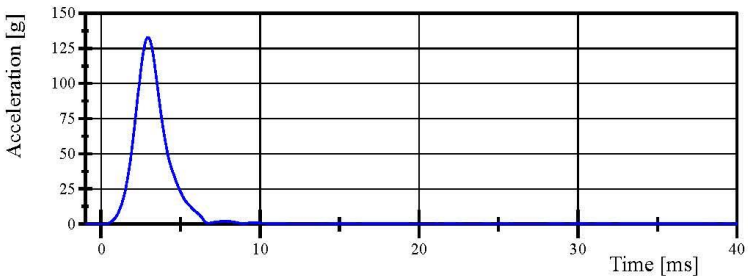
Filter Class: CFC_1000
Max: 112.3 g at 3.0 ms
Min: -0.2 g at 9.7 ms

Head Z-Axis Acceleration



Filter Class: CFC_1000
Max: 71.2 g at 3.0 ms
Min: -1.8 g at 7.6 ms

Head Resultant Acceleration



Filter Class: CFC_1000
Max: 133.0 g at 3.0 ms
Min: 0.0 g at -0.5 ms

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

09.25.2019 08:43:23 194

Transportation Research Center Inc.

Left Lateral Neck
SID IIs Serial No. 297 Certification No. 40-2
Test Date: 9/25/2019

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.1 °C	Yes
Relative Humidity	10 - 70 %	48 %	Yes
Pendulum Velocity	(-5.51) - (-5.63) m/s	-5.599 m/s	Yes
Pendulum Integrated Velocity Change at 10 ms	2.20 - 2.80 m/s	2.594 m/s	Yes
Change at 15 ms	3.30 - 4.10 m/s	3.726 m/s	Yes
Change at 20 ms	4.40 - 5.40 m/s	4.952 m/s	Yes
Change at 25 ms	5.40 - 6.10 m/s	5.865 m/s	Yes
Change at 25 to 100 ms	5.50 - 6.20 m/s	6.099 m/s	Yes
Maximum Headform Flexion occurring between 50ms and 70ms.			
Peak	(-71) - (-81) deg	-75.2 deg	Yes
Time of Peak	50 - 70 ms	65.9 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	120.6 ms	Yes

Test meets specifications.

Condition: Used

Comments:
Neck S/N: 779

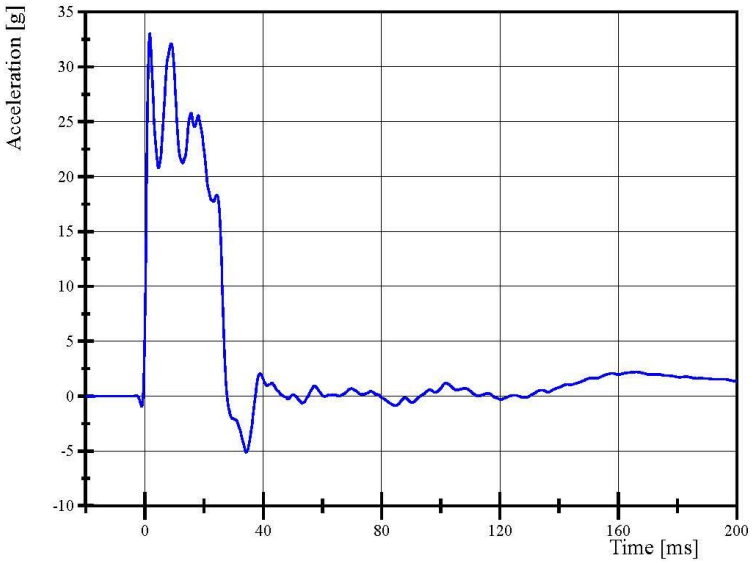
Specification Source: CFR49 Part 572 Subpart V with Polarity in accordance with J211

09.25.2019 10:59:10 722

Transportation Research Center Inc.

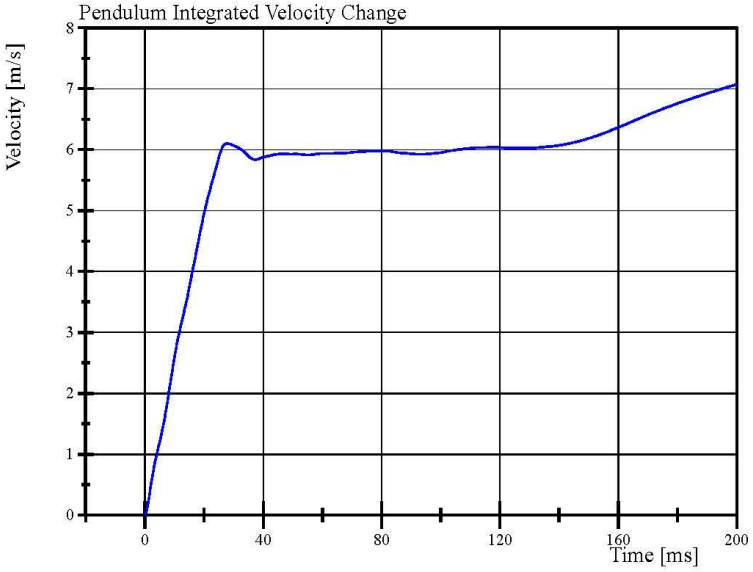
Left Lateral Neck
SID IIs Serial No. 297 Certification No. 40-2
Test Date: 9/25/2019

Pendulum Acceleration



Filter Class: CFC_180
Max: 33.0 g at 1.7 ms
Min: -5.1 g at 34.2 ms

Pendulum Integrated Velocity Change



Filter Class: CFC_180
Max: 7.1 m/s at 200.0 ms
Min: 0.0 m/s at 0.0 ms

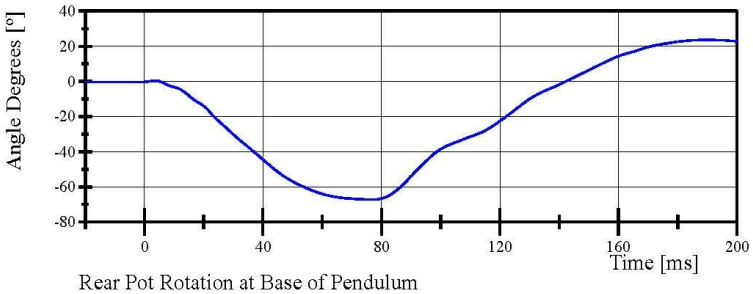
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

09.25.2019 10:59:39 722

Transportation Research Center Inc.

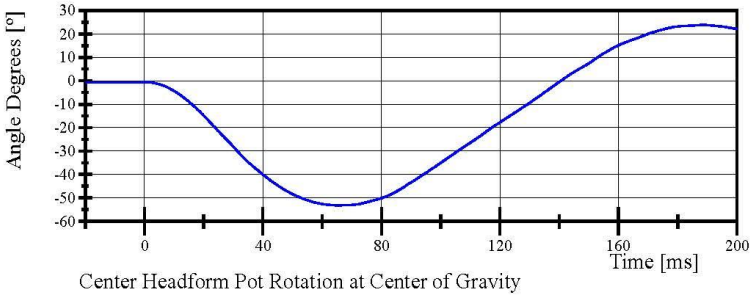
Left Lateral Neck
SID IIs Serial No. 297 Certification No. 40-2
Test Date: 9/25/2019

Forward Pot Rotation at Base of Pendulum



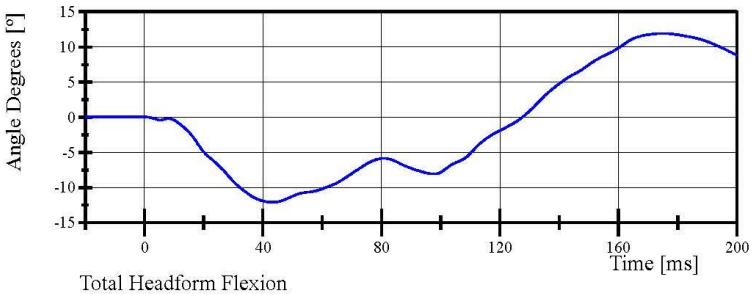
Filter Class: CFC_60
Max: 23.7 ° at 190.0 ms
Min: -67.2 ° at 77.0 ms

Rear Pot Rotation at Base of Pendulum



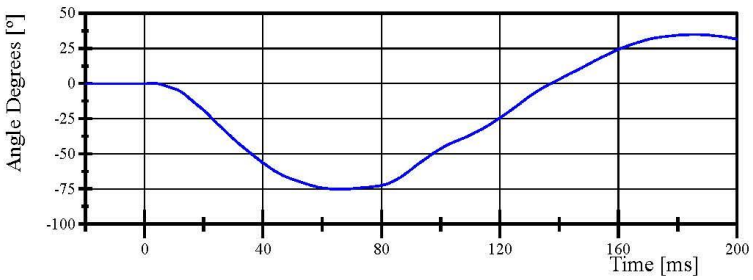
Filter Class: CFC_60
Max: 23.8 ° at 188.6 ms
Min: -53.1 ° at 65.4 ms

Center Headform Pot Rotation at Center of Gravity



Filter Class: CFC_60
Max: 11.9 ° at 174.9 ms
Min: -12.1 ° at 43.3 ms

Total Headform Flexion



Filter Class: CFC_60
Max: 34.8 ° at 185.8 ms
Min: -75.2 ° at 65.9 ms

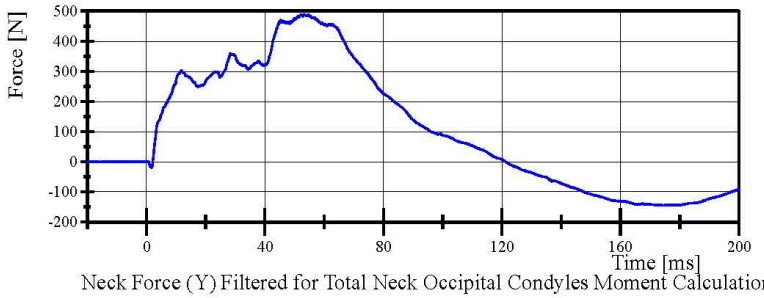
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

09.25.2019 10:59:39 722

Transportation Research Center Inc.

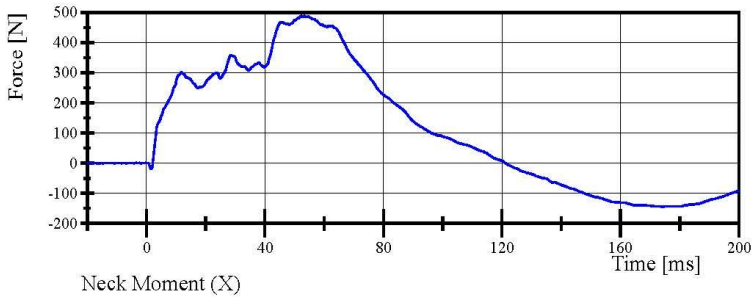
Left Lateral Neck
SID IIs Serial No. 297 Certification No. 40-2
Test Date: 9/25/2019

Neck Force (Y)



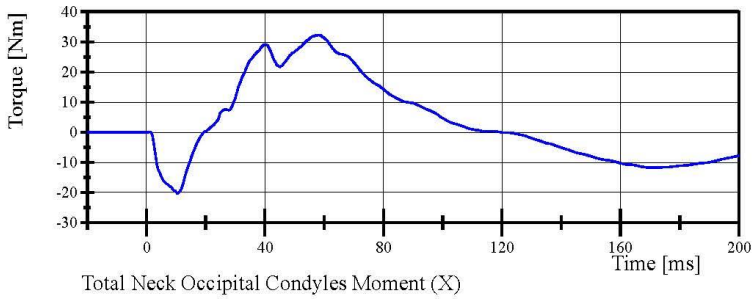
Filter Class: CFC_1000
Max: 488.7 N at 53.2 ms
Min: -145.1 N at 174.2 ms

Neck Force (Y) Filtered for Total Neck Occipital Condyles Moment Calculation



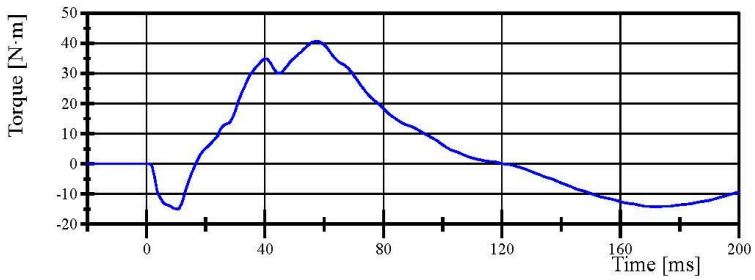
Filter Class: CFC_600
Max: 488.2 N at 52.3 ms
Min: -144.9 N at 174.4 ms

Neck Moment (X)



Filter Class: CFC_600
Max: 32.3 Nm at 58.1 ms
Min: -20.2 Nm at 10.6 ms

Total Neck Occipital Condyles Moment (X)



Filter Class: Without_(Constar
Max: 40.6 N·m at 57.0 ms
Min: -15.1 N·m at 10.4 ms

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

09.25.2019 10:59:40 722

Transportation Research Center Inc.

Left Lateral Shoulder
SID IIs Serial No. 297 Certification No. 40-1
Test Date: 9/26/2019

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.2 °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	-15.0 g	Yes
Shoulder Displacement	28 - 37 mm	30.6 mm	Yes
Upper Spine Lateral Acceleration	17 - 22 g	19.7 g	Yes

Test meets specifications.

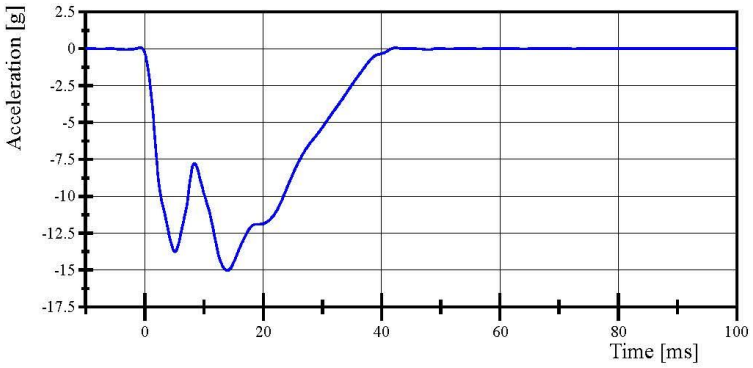
Condition: Used

Comments:
Left Arm S/N: 940L
Shoulder Rib S/N: 180-3355 259

Transportation Research Center Inc.

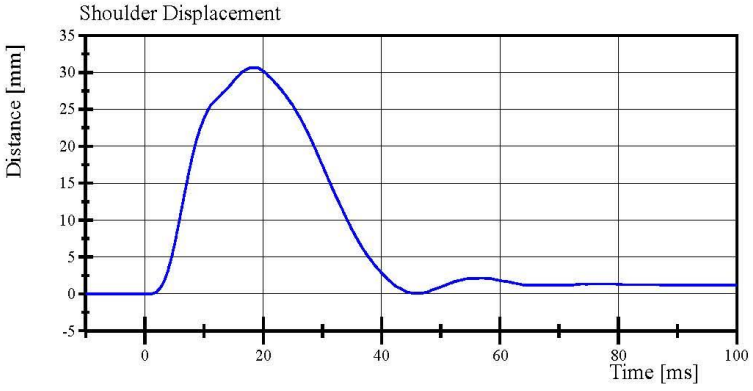
Left Lateral Shoulder
SID IIs Serial No. 297 Certification No. 40-1
Test Date: 9/26/2019

Probe Acceleration



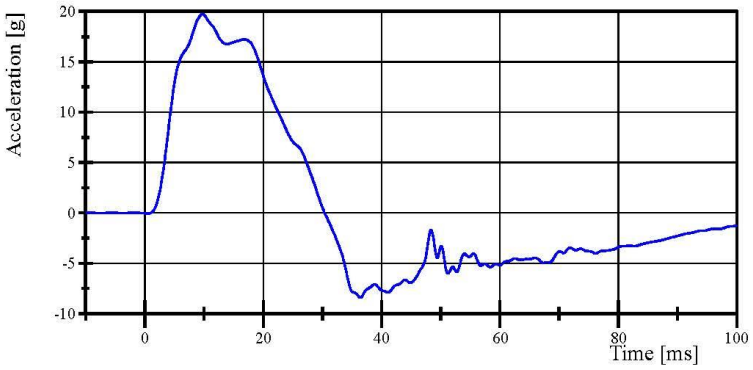
Filter Class: CFC_180
Max: 0.1 g at -0.8 ms
Min: -15.0 g at 13.9 ms

Shoulder Displacement



Filter Class: CFC_600
Max: 30.6 mm at 18.8 ms
Min: -0.0 mm at 0.7 ms

Upper Spine Acceleration (Y)



Filter Class: CFC_180
Max: 19.7 g at 9.8 ms
Min: -8.4 g at 36.4 ms

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

09.26.2019 16:10:31 807

Transportation Research Center Inc.

Left Lateral Thorax with Arm
SID IIs Serial No. 297 Certification No. 40-1
Test Date: 9/27/2019

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.1 °C	Yes
Relative Humidity	10 - 70 %	40 %	Yes
Impactor Velocity	6.60 - 6.80 m/s	6.738 m/s	Yes
Impactor Acceleration	(-30) - (-36) g	-33.1 g	Yes
Shoulder Displacement	31 - 40 mm	36.6 mm	Yes
Upper Thorax Rib Displacement	25 - 32 mm	27.6 mm	Yes
Center Thorax Rib Displacement	30 - 36 mm	30.8 mm	Yes
Lower Thorax Rib Displacement	32 - 38 mm	33.0 mm	Yes
Upper Spine Lateral Acceleration	34 - 43 g	38.9 g	Yes
Lower Spine Lateral Acceleration	29 - 37 g	35.5 g	Yes

Test meets specifications.

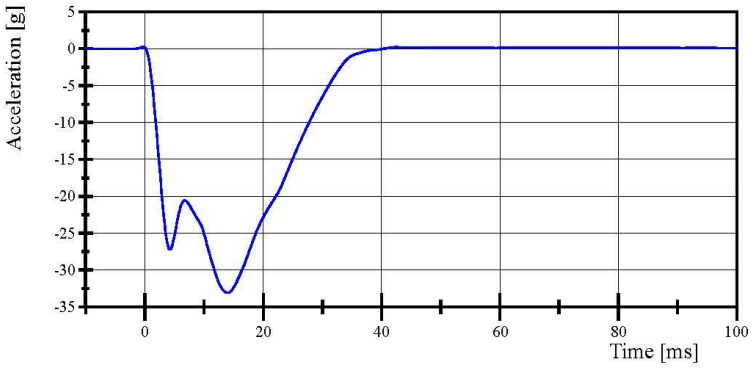
Condition: New

Comments:
Left Arm S/N: 940L
Shoulder Rib S/N: 180-3355 259
Upper Thorax Rib #1 S/N: DM5020
Middle Thorax Rib #2 S/N: DM5021
Lower Thorax Rib #3 S/N: DM5022

Transportation Research Center Inc.

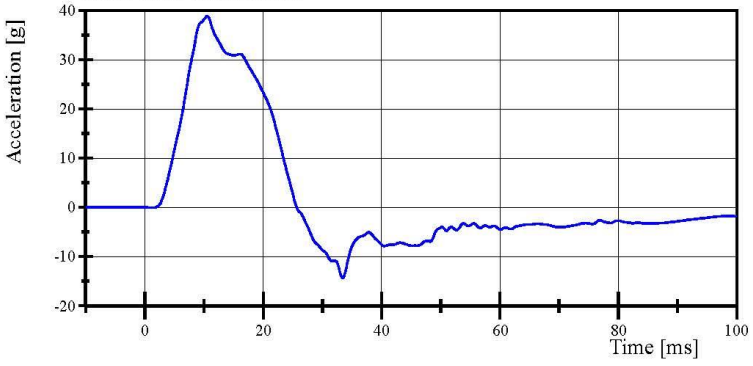
Left Lateral Thorax with Arm
SID IIs Serial No. 297 Certification No. 40-1
Test Date: 9/27/2019

Probe Acceleration



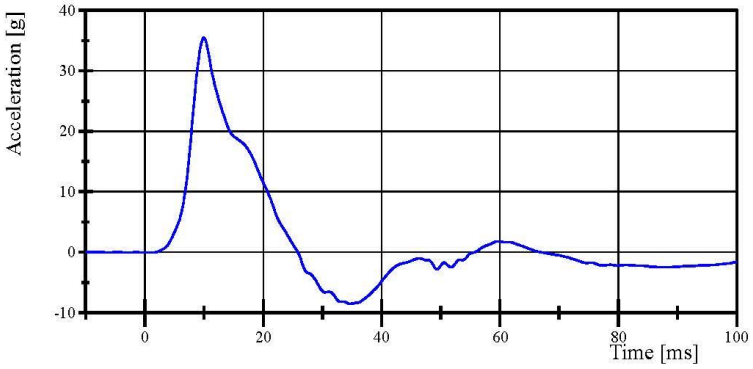
Filter Class: CFC_180
Max: 0.3 g at -0.3 ms
Min: -33.1 g at 14.0 ms

Upper Spine Acceleration



Filter Class: CFC_180
Max: 38.9 g at 10.6 ms
Min: -14.3 g at 33.4 ms

Lower Spine Acceleration



Filter Class: CFC_180
Max: 35.5 g at 9.9 ms
Min: -8.5 g at 34.7 ms

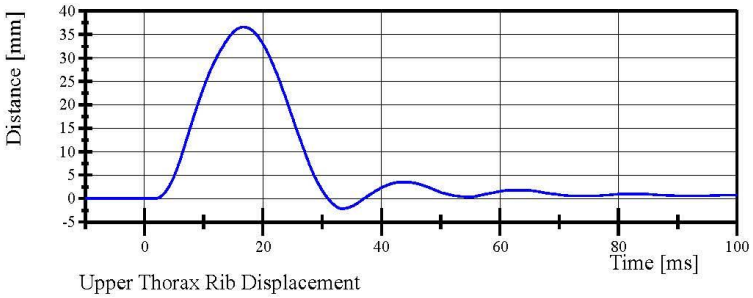
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

09.27.2019 09:22:15 596

Transportation Research Center Inc.

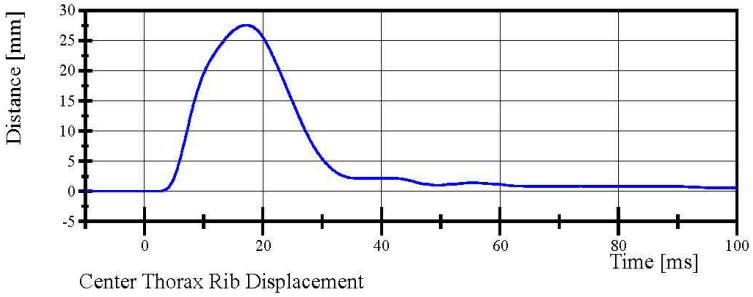
Left Lateral Thorax with Arm
SID IIs Serial No. 297 Certification No. 40-1
Test Date: 9/27/2019

Shoulder Rib Displacement



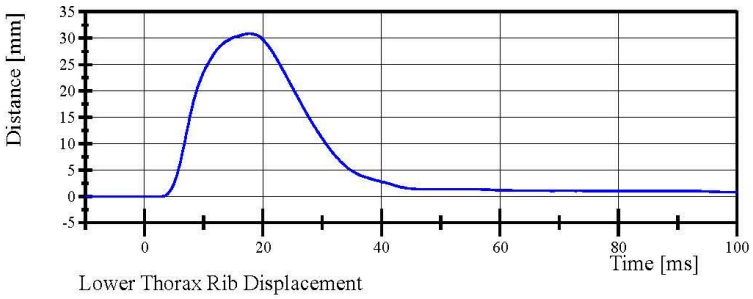
Filter Class: CFC_600
Max: 36.6 mm at 16.6 ms
Min: -2.1 mm at 33.4 ms

Upper Thorax Rib Displacement



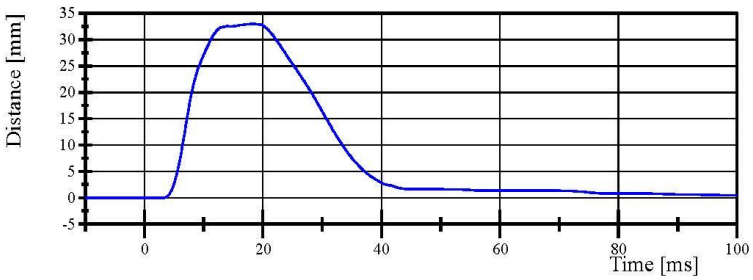
Filter Class: CFC_600
Max: 27.6 mm at 17.2 ms
Min: -0.0 mm at -5.8 ms

Center Thorax Rib Displacement



Filter Class: CFC_600
Max: 30.8 mm at 17.8 ms
Min: -0.0 mm at 2.8 ms

Lower Thorax Rib Displacement



Filter Class: CFC_600
Max: 33.0 mm at 18.3 ms
Min: -0.0 mm at 2.0 ms

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

09.27.2019 09:22:15 596

Transportation Research Center Inc.

Left Lateral Thorax without Arm
SID IIs Serial No. 297 Certification No. 40-1
Test Date: 9/27/2019

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.9 °C	Yes
Relative Humidity	10 - 70 %	37 %	Yes
Impactor Velocity	4.20 - 4.40 m/s	4.336 m/s	Yes
Impactor Acceleration	(-14) - (-18) g	-15.6 g	Yes
Upper Thorax Rib Displacement	32 - 40 mm	35.2 mm	Yes
Center Thorax Rib Displacement	39 - 45 mm	41.6 mm	Yes
Lower Thorax Rib Displacement	35 - 43 mm	40.5 mm	Yes
Upper Spine Lateral Acceleration	13 - 17 g	15.3 g	Yes
Lower Spine Lateral Acceleration	7 - 11 g	9.9 g	Yes

Test meets specifications.

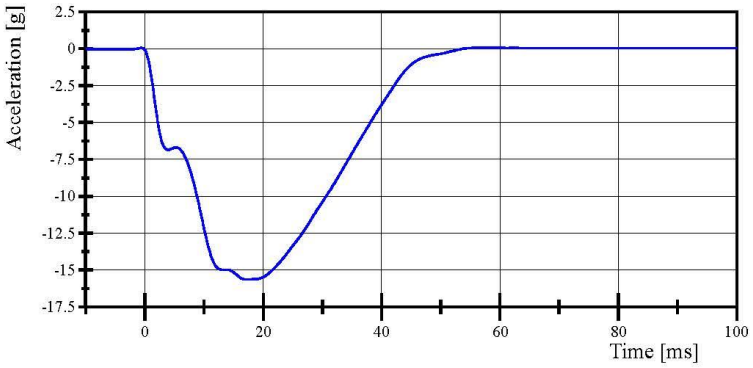
Condition: New

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

Transportation Research Center Inc.

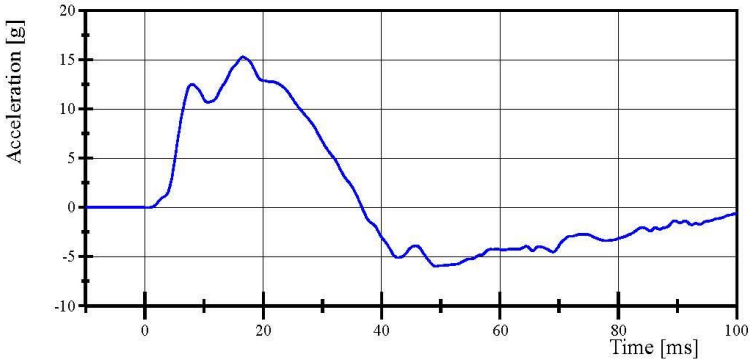
Left Lateral Thorax without Arm
SID IIs Serial No. 297 Certification No. 40-1
Test Date: 9/27/2019

Probe Acceleration



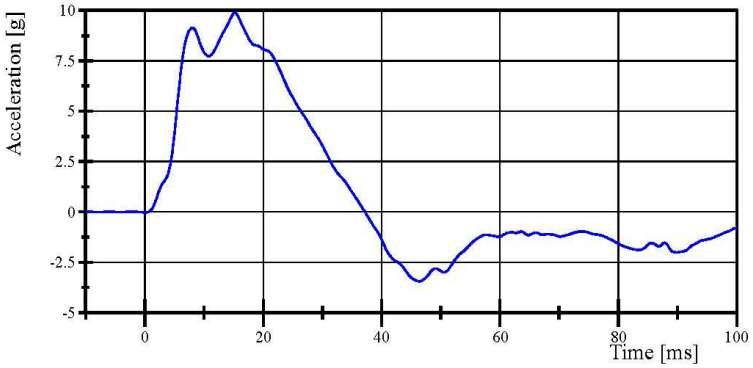
Filter Class: CFC_180
Max: 0.1 g at 59.8 ms
Min: -15.6 g at 17.2 ms

Upper Spine Acceleration



Filter Class: CFC_180
Max: 15.3 g at 16.6 ms
Min: -6.0 g at 49.1 ms

Lower Spine Acceleration



Filter Class: CFC_180
Max: 9.9 g at 15.2 ms
Min: -3.4 g at 46.3 ms

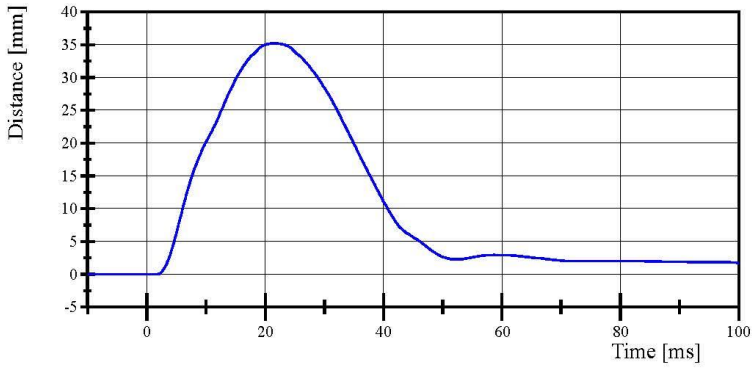
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

09.27.2019 07:47:17 822

Transportation Research Center Inc.

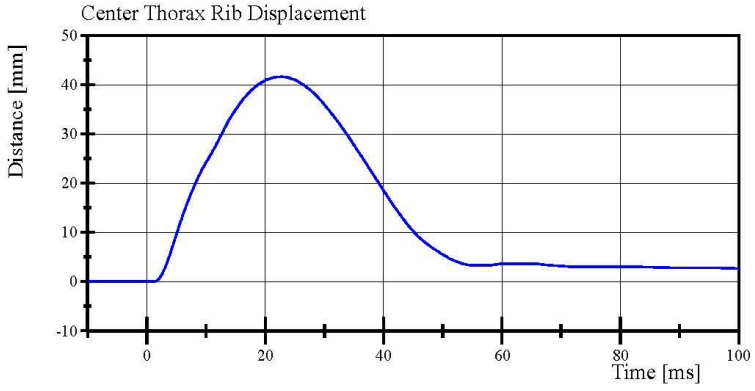
Left Lateral Thorax without Arm
SID IIs Serial No. 297 Certification No. 40-1
Test Date: 9/27/2019

Upper Thorax Rib Displacement



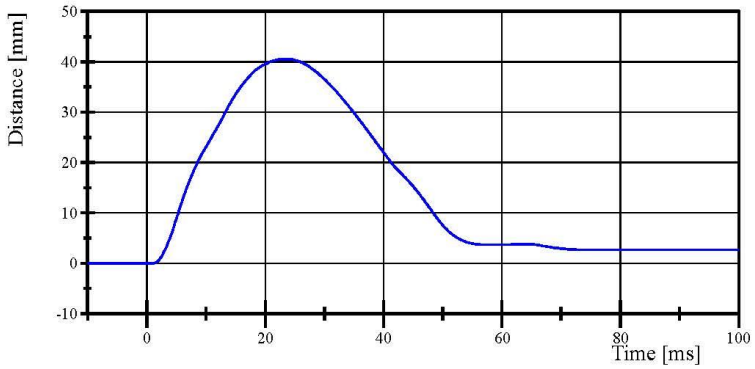
Filter Class: CFC_600
Max: 35.2 mm at 21.6 ms
Min: -0.0 mm at 0.6 ms

Center Thorax Rib Displacement



Filter Class: CFC_600
Max: 41.6 mm at 22.8 ms
Min: -0.0 mm at 1.0 ms

Lower Thorax Rib Displacement



Filter Class: CFC_600
Max: 40.5 mm at 23.4 ms
Min: -0.0 mm at 0.8 ms

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

09.27.2019 07:47:18 822

Transportation Research Center Inc.

Left Lateral Abdomen
SID IIs Serial No. 297 Certification No. 40-1
Test Date: 9/27/2019

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.9 °C	Yes
Relative Humidity	10 - 70 %	38 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.28 m/s	Yes
Impactor Acceleration	(-12) - (-16) g	-14.1 g	Yes
Upper Abdominal Rib Displacement	36 - 47 mm	41.4 mm	Yes
Lower Abdominal Rib Displacement	33 - 44 mm	39.2 mm	Yes
Lower Spine Lateral Acceleration	9 - 14.0 g	10.86 g	Yes

Test meets specifications.

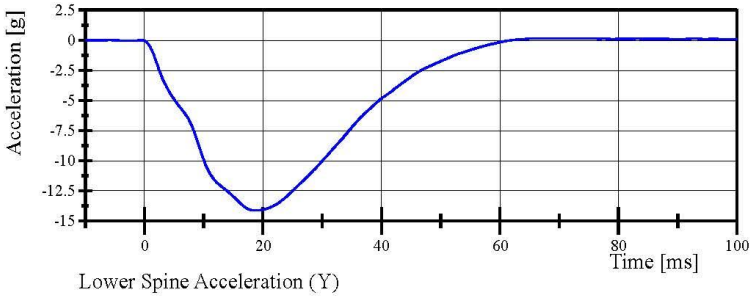
Condition: New

Comments:
Upper Abdominal Rib S/N: DM7281
Lower Abdominal Rib S/N: DM7275

Transportation Research Center Inc.

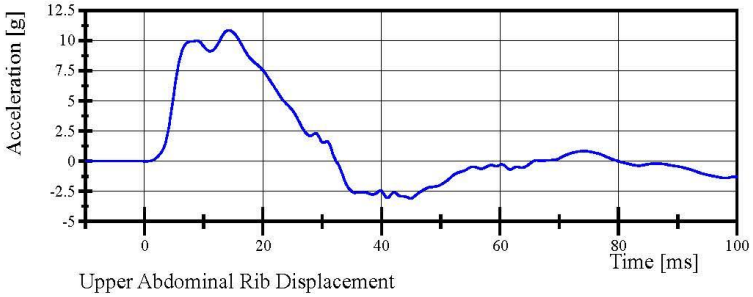
Left Lateral Abdomen
SID IIs Serial No. 297 Certification No. 40-1
Test Date: 9/27/2019

Probe Acceleration



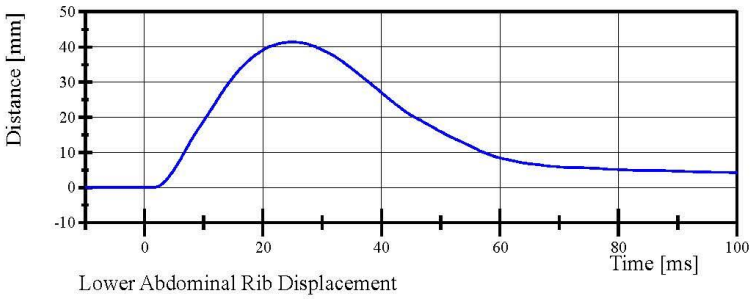
Filter Class: CFC_180
Max: 0.2 g at 69.4 ms
Min: -14.1 g at 18.8 ms

Lower Spine Acceleration (Y)



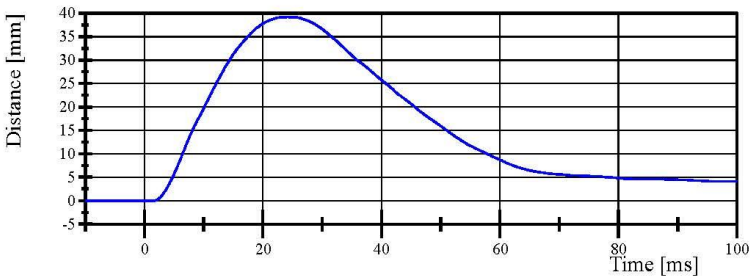
Filter Class: CFC_180
Max: 10.9 g at 14.2 ms
Min: -3.1 g at 45.0 ms

Upper Abdominal Rib Displacement



Filter Class: CFC_600
Max: 41.4 mm at 24.8 ms
Min: -0.0 mm at 1.4 ms

Lower Abdominal Rib Displacement



Filter Class: CFC_600
Max: 39.2 mm at 24.2 ms
Min: -0.0 mm at 1.4 ms

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

09.27.2019 07:18:05 655

Transportation Research Center Inc.

Left Lateral Pelvis
SID IIs Serial No. 297 Certification No. 40-1
Test Date: 9/26/2019

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	43 %	Yes
Pendulum Velocity	6.6 - 6.8 m/s	6.64 m/s	Yes
Impactor Acceleration	(-38.0) - (-47.0) g	-44.77 g	Yes
Peak Pelvis Lateral Acceleration after 6ms	34 - 42 g	39.3 g	Yes
Acetabulum Force	3,600 - 4,300 N	4,216.3 N	Yes

Test meets specifications.

Condition: Used

Comments:
Pelvis Skin S/N: 1141
Pelvis Plug Info:
Manufacturer: Saco
S/N: 12855
Cal Date: 20190118

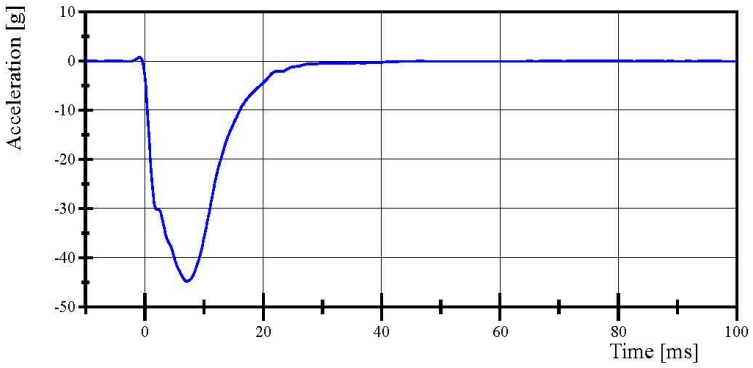
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

09.26.2019 15:23:35 417

Transportation Research Center Inc.

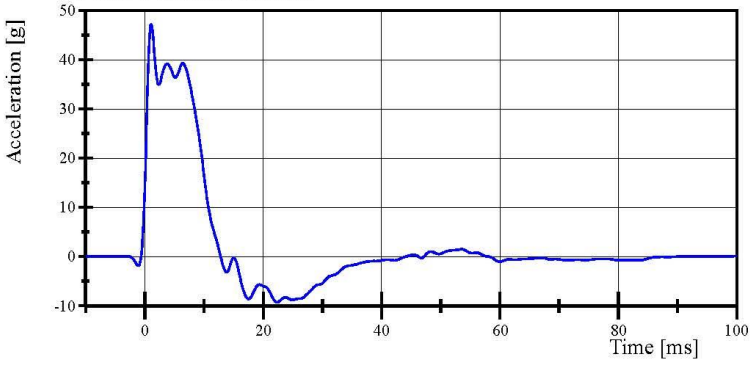
Left Lateral Pelvis
SID IIs Serial No. 297 Certification No. 40-1
Test Date: 9/26/2019

Probe Acceleration



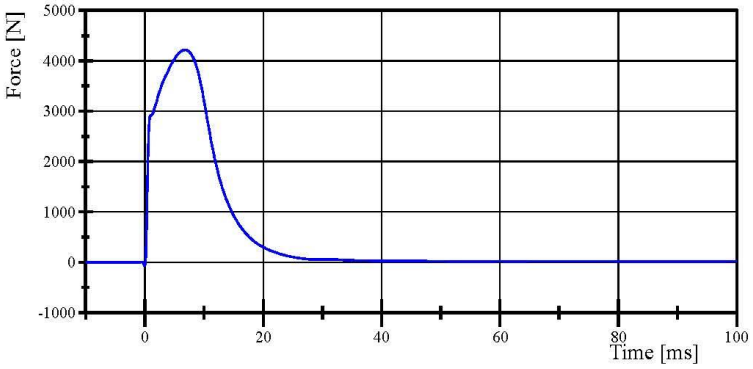
Filter Class: CFC_180
Max: 0.8 g at -0.9 ms
Min: -44.8 g at 7.1 ms

Pelvis Y-Axis Acceleration



Filter Class: CFC_180
Max: 47.2 g at 1.0 ms
Min: -9.3 g at 22.3 ms

Acetabulum Y-Axis Force



Filter Class: CFC_600
Max: 4,216.3 N at 6.8 ms
Min: -67.2 N at -0.1 ms

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

09.26.2019 15:24:53 417

Transportation Research Center Inc.

Left Lateral Iliac
SID IIs Serial No. 297 Certification No. 40-1
Test Date: 9/27/2019

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.5 °C	Yes
Relative Humidity	10 - 70 %	41 %	Yes
Pendulum Velocity	4.2 - 4.4 m/s	4.22 m/s	Yes
Impactor Acceleration	(-36) - (-45) g	-41.7 g	Yes
Peak Pelvis Lateral Acceleration	28 - 39 g	33.6 g	Yes
Iliac Force	4,100 - 5,100 N	4,868.2 N	Yes

Test meets specifications.

Condition: Used

Comments:
Pelvis Skin S/N: 1141

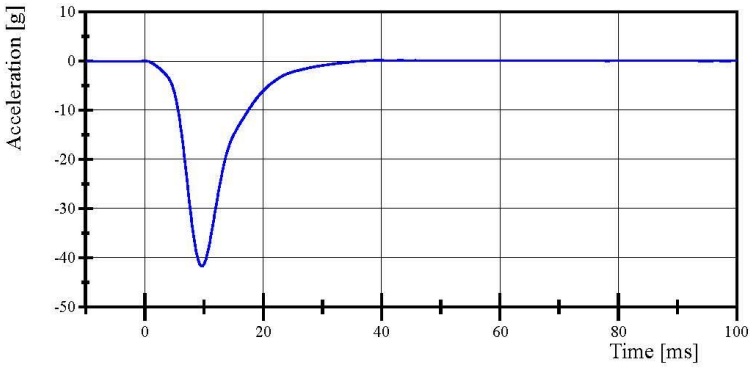
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

09.27.2019 10:02:53 639

Transportation Research Center Inc.

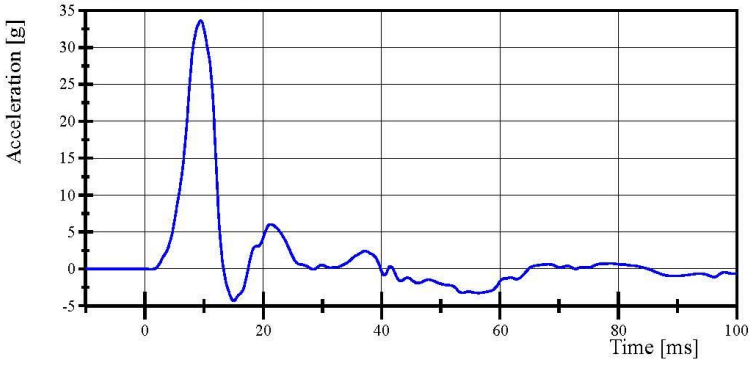
Left Lateral Iliac
SID IIs Serial No. 297 Certification No. 40-1
Test Date: 9/27/2019

Probe Acceleration



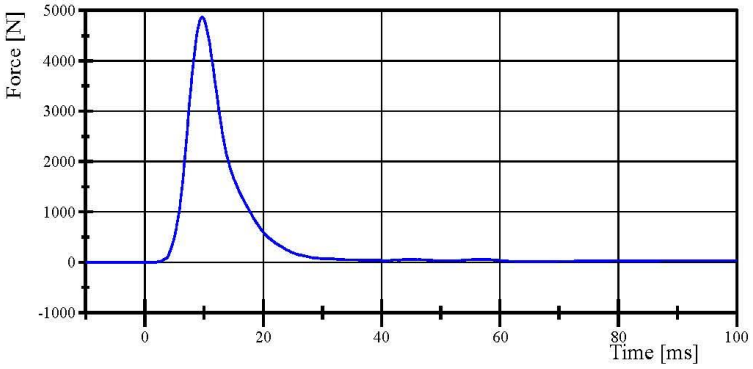
Filter Class: CFC_180
Max: 0.2 g at 39.4 ms
Min: -41.7 g at 9.6 ms

Pelvis Y-Axis Acceleration



Filter Class: CFC_180
Max: 33.6 g at 9.4 ms
Min: -4.3 g at 15.0 ms

Iliac Y-Axis Force



Filter Class: CFC_600
Max: 4,868.2 N at 9.7 ms
Min: -0.6 N at -6.6 ms

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

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Post-Test Calibration Sheets
Driver S/N 297

Transportation Research Center Inc.
SIDIIs Dummy - Level D
External Dimensions
Serial No. 297 Calibration No. 41

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	102	Yes
F	Thigh Clearance	119.0 - 135.0	128	Yes
G	Head Breadth	140.0 - 148.0	147	Yes
H	Head Back from Backline	40.0 - 46.0	45	Yes
I	Head Depth	178.0 - 188.0	183	Yes
J	Head Circumference	541.0 - 551.0	544	Yes
K	Buttock to Knee Length	514.0 - 540.0	528	Yes
L	Popliteal Height	343.0 - 369.0	353	Yes
M	Knee Pivot to Floor Height	393.0 - 409.0	400	Yes
N	Buttock Popliteal Length	416.0 - 442.0	430	Yes
O	Chest Depth without Jacket	195.0 - 211.0	200	Yes
P	Foot Length (right)	216.0 - 232.0	223	Yes
P	Foot Length (left)	216.0 - 232.0	223	Yes
Q	Hip Breadth	313.0 - 323.0	320	Yes
R	Arm Length	249.0 - 259.0	254	Yes
S	Knee Joint to seat Back	478.0 - 493.0	485	Yes
V	Shoulder Width (only one arm installed)	341.0 - 357.0	347	Yes
W	Foot Width (right)	78.0 - 94.0	85	Yes
W	Foot Width (left)	78.0 - 94.0	85	Yes
Y	Chest Circumference with Jacket	851.0 - 881.0	880	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. 41-1
Test Date: 10/23/2019

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.5 °C	Yes
Relative Humidity	10 - 70 %	37 %	Yes
Peak Head Resultant Acceleration	115 - 137 g	131.0 g	Yes
Peak Head Longitudinal Acceleration	(-15) - 15 g	-4.6 g	Yes
Is Head Resultant Acceleration Curve Unimodal within 15% of Peak?	< 15 %	1.31 %	Yes

Test meets specifications.

Condition: Used

Comments:
Head S/N: 1330

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

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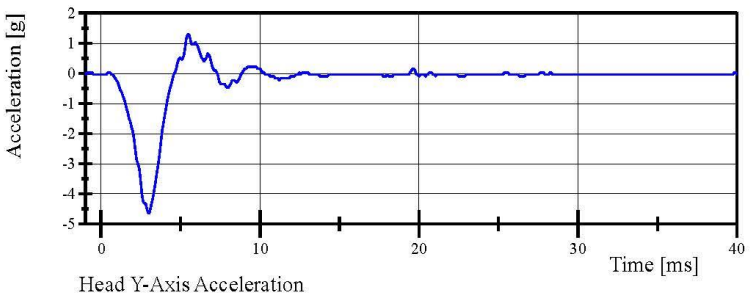
Transportation Research Center Inc.

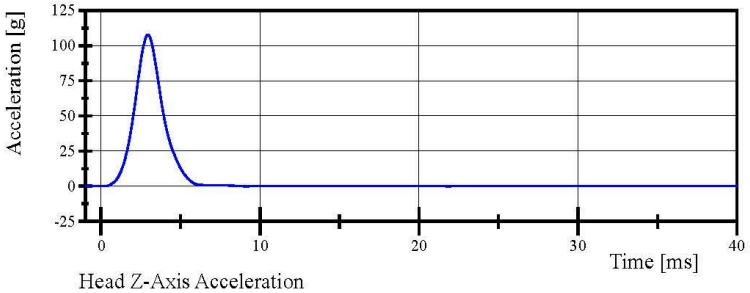
Left Lateral Head Drop
SID IIs Serial No. 297 Certification No. 41-1
Test Date: 10/23/2019

Head X-Axis Acceleration



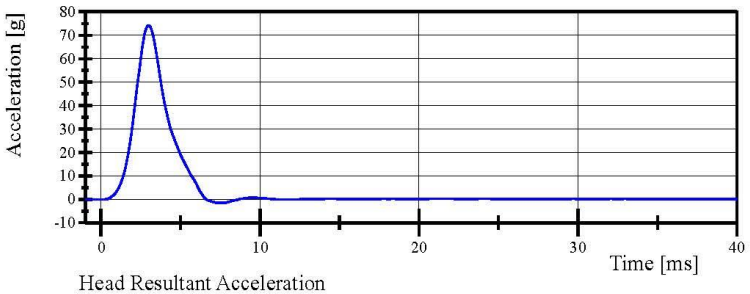
Filter Class: CFC_1000
Max: 1.3 g at 5.4 ms
Min: -4.6 g at 3.0 ms

Head Y-Axis Acceleration



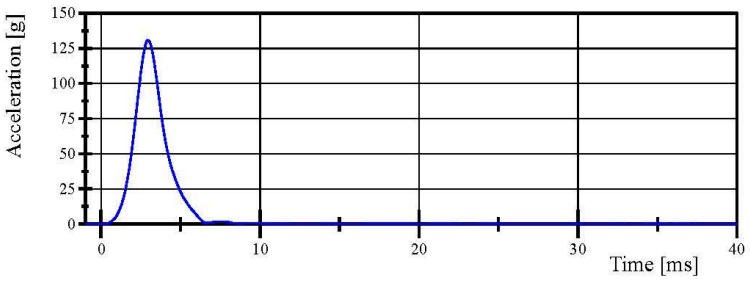
Filter Class: CFC_1000
Max: 107.8 g at 3.0 ms
Min: -0.2 g at 21.8 ms

Head Z-Axis Acceleration



Filter Class: CFC_1000
Max: 74.2 g at 3.0 ms
Min: -1.5 g at 7.4 ms

Head Resultant Acceleration



Filter Class: CFC_1000
Max: 131.0 g at 3.0 ms
Min: 0.0 g at -0.9 ms

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

10.23.2019 13:28:38 194

Transportation Research Center Inc.

Left Lateral Neck
SID IIs Serial No. 297 Certification No. 41-3
Test Date: 10/24/2019

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.9 °C	Yes
Relative Humidity	10 - 70 %	36 %	Yes
Pendulum Velocity	(-5.51) - (-5.63) m/s	-5.602 m/s	Yes
Pendulum Integrated Velocity Change at 10 ms	2.20 - 2.80 m/s	2.416 m/s	Yes
Change at 15 ms	3.30 - 4.10 m/s	3.499 m/s	Yes
Change at 20 ms	4.40 - 5.40 m/s	4.752 m/s	Yes
Change at 25 ms	5.40 - 6.10 m/s	5.701 m/s	Yes
Change at 25 to 100 ms	5.50 - 6.20 m/s	5.878 m/s	Yes
Maximum Headform Flexion occurring between 50ms and 70ms.			
Peak	(-71) - (-81) deg	-72.6 deg	Yes
Time of Peak	50 - 70 ms	67.9 ms	Yes
Total Neck Occipital Condyles Moment	36 - 44 N·m	41.6 N·m	Yes
Total Neck Occipital Condyles Moment Decay Time to 0 N·m	102 - 126 ms	116.9 ms	Yes

Test meets specifications.

Condition: Used

Comments:
Neck S/N: 779

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

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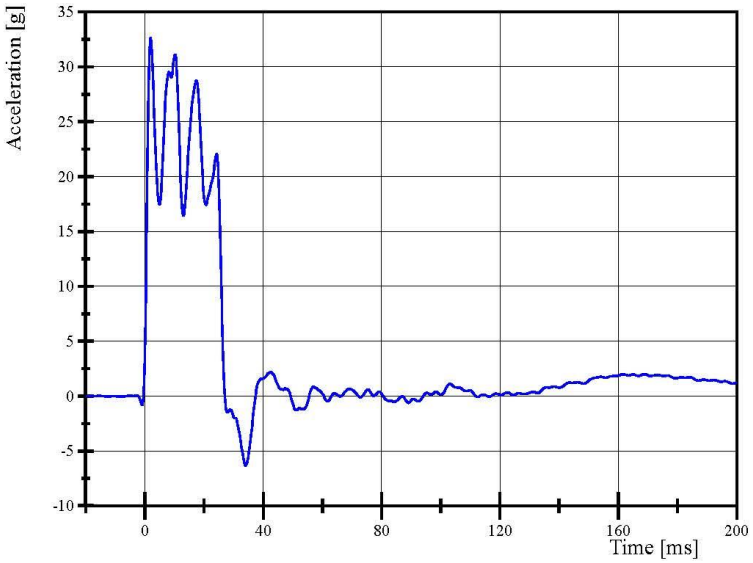
Transportation Research Center Inc.

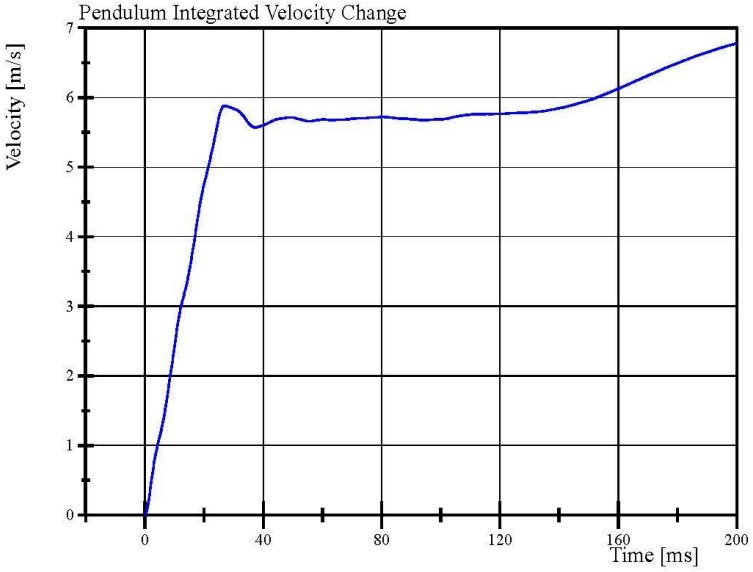
Left Lateral Neck
SID IIs Serial No. 297 Certification No. 41-3
Test Date: 10/24/2019

Pendulum Acceleration



Filter Class: CFC_180
Max: 32.6 g at 1.9 ms
Min: -6.3 g at 34.0 ms

Pendulum Integrated Velocity Change



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

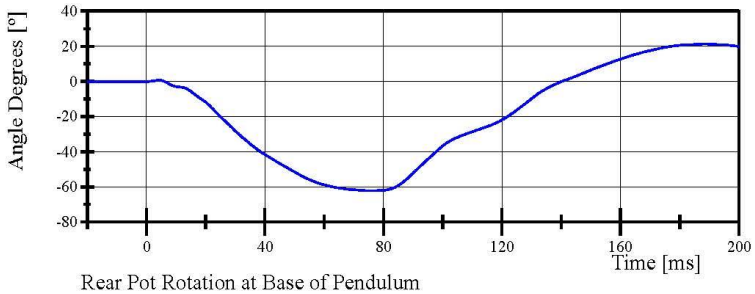
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

10.24.2019 07:14:20 719

Transportation Research Center Inc.

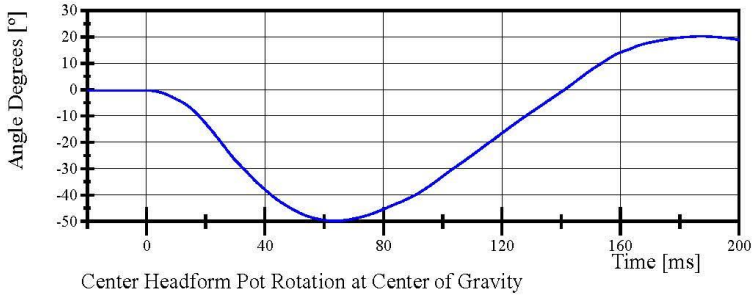
Left Lateral Neck
SID IIs Serial No. 297 Certification No. 41-3
Test Date: 10/24/2019

Forward Pot Rotation at Base of Pendulum



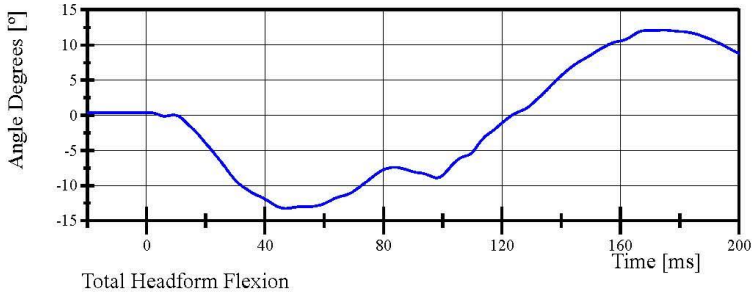
Filter Class: CFC_60
Max: 21.3 ° at 188.6 ms
Min: -62.2 ° at 75.5 ms

Rear Pot Rotation at Base of Pendulum



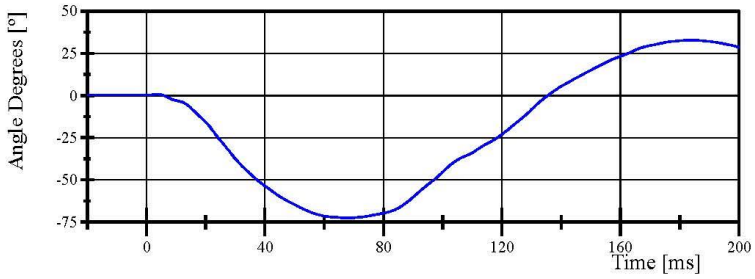
Filter Class: CFC_60
Max: 20.2 ° at 187.4 ms
Min: -49.8 ° at 63.7 ms

Center Headform Pot Rotation at Center of Gravity



Filter Class: CFC_60
Max: 12.1 ° at 174.6 ms
Min: -13.3 ° at 47.0 ms

Total Headform Flexion



Filter Class: CFC_60
Max: 32.7 ° at 183.9 ms
Min: -72.6 ° at 67.9 ms

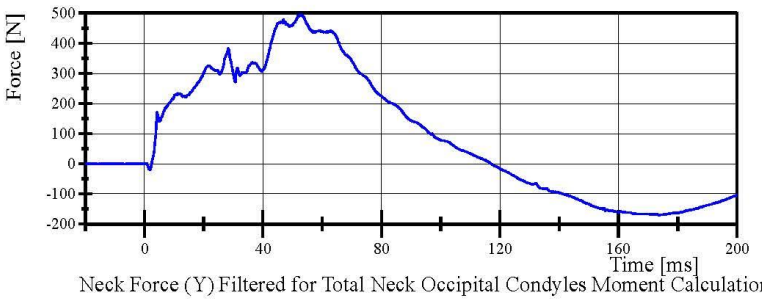
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

10.24.2019 07:14:21 719

Transportation Research Center Inc.

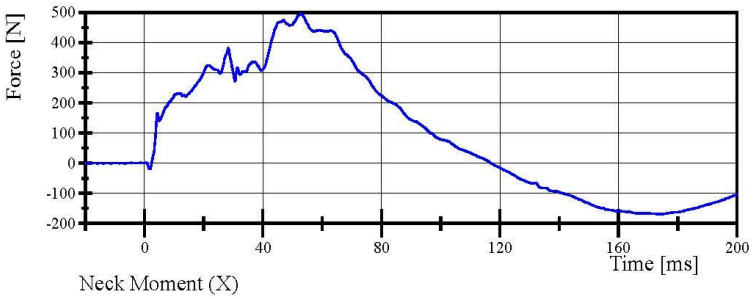
Left Lateral Neck
SID IIs Serial No. 297 Certification No. 41-3
Test Date: 10/24/2019

Neck Force (Y)



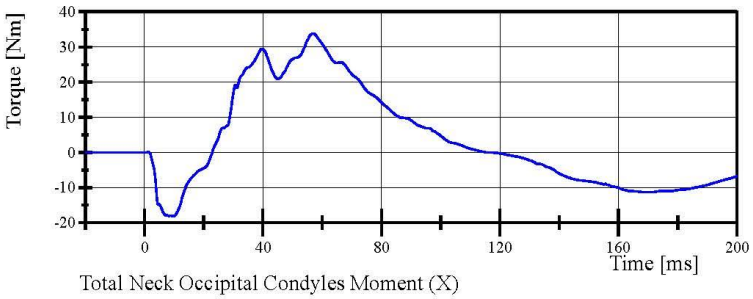
Filter Class: CFC_1000
Max: 496.7 N at 52.8 ms
Min: -169.7 N at 173.4 ms

Neck Force (Y) Filtered for Total Neck Occipital Condyles Moment Calculation



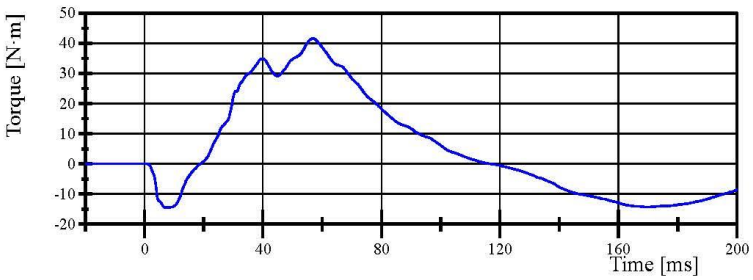
Filter Class: CFC_600
Max: 495.6 N at 52.8 ms
Min: -169.7 N at 173.8 ms

Neck Moment (X)



Filter Class: CFC_600
Max: 33.8 Nm at 56.9 ms
Min: -18.1 Nm at 9.4 ms

Total Neck Occipital Condyles Moment (X)



Filter Class: Without_(Constar
Max: 41.6 N·m at 56.7 ms
Min: -14.6 N·m at 7.1 ms

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

10.24.2019 07:14:21 719

Transportation Research Center Inc.

Left Lateral Shoulder
SID IIs Serial No. 297 Certification No. 41-1
Test Date: 10/23/2019

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.9 °C	Yes
Relative Humidity	10 - 70 %	37 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.28 m/s	Yes
Impactor Acceleration	(-13) - (-18) g	-15.0 g	Yes
Shoulder Displacement	28 - 37 mm	30.6 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

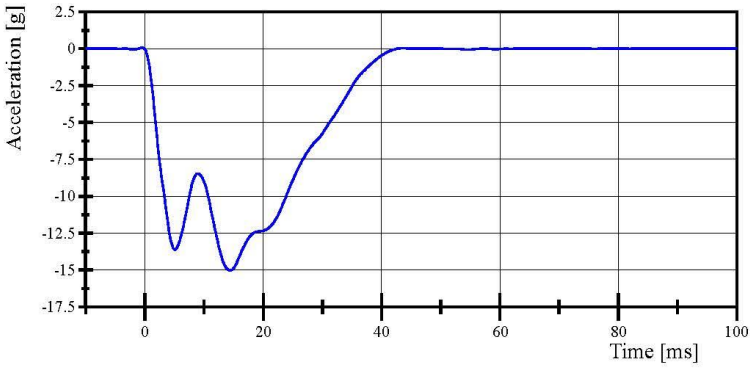
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

10.23.2019 09:08:21 833

Transportation Research Center Inc.

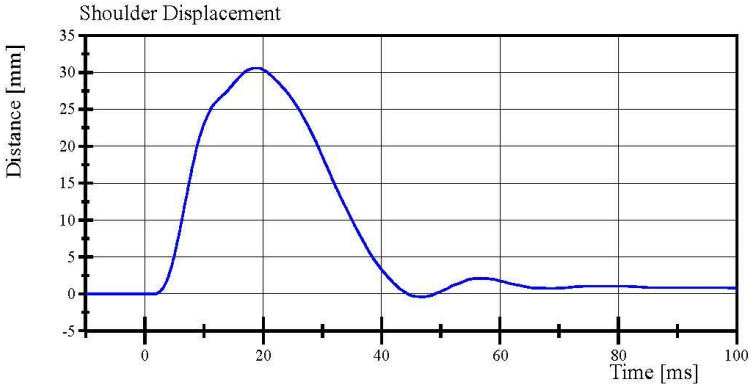
Left Lateral Shoulder
SID IIs Serial No. 297 Certification No. 41-1
Test Date: 10/23/2019

Probe Acceleration



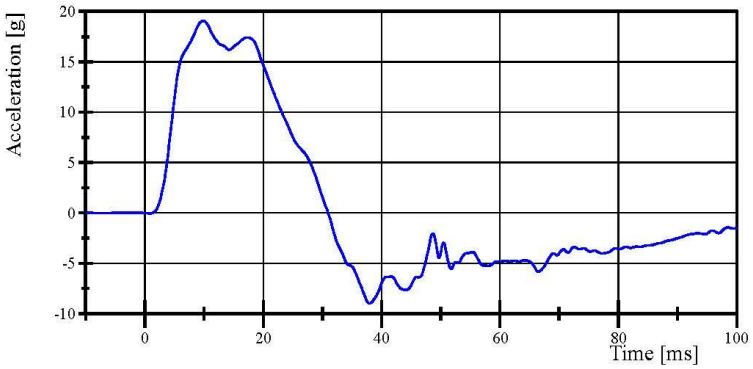
Filter Class: CFC_180
Max: 0.1 g at -0.4 ms
Min: -15.0 g at 14.4 ms

Shoulder Displacement



Filter Class: CFC_600
Max: 30.6 mm at 19.2 ms
Min: -0.4 mm at 46.5 ms

Upper Spine Acceleration (Y)



Filter Class: CFC_180
Max: 19.1 g at 9.9 ms
Min: -9.0 g at 37.9 ms

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

10.23.2019 09:08:58 833

Transportation Research Center Inc.

Left Lateral Thorax with Arm
SID IIs Serial No. 297 Certification No. 41-1
Test Date: 10/23/2019

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.9 °C	Yes
Relative Humidity	10 - 70 %	37 %	Yes
Impactor Velocity	6.60 - 6.80 m/s	6.622 m/s	Yes
Impactor Acceleration	(-30) - (-36) g	-32.0 g	Yes
Shoulder Displacement	31 - 40 mm	33.8 mm	Yes
Upper Thorax Rib Displacement	25 - 32 mm	25.7 mm	Yes
Center Thorax Rib Displacement	30 - 36 mm	30.0 mm	Yes
Lower Thorax Rib Displacement	32 - 38 mm	33.0 mm	Yes
Upper Spine Lateral Acceleration	34 - 43 g	36.6 g	Yes
Lower Spine Lateral Acceleration	29 - 37 g	33.8 g	Yes

Test meets specifications.

Condition: Used

Comments:
Left Arm S/N: 940L
Shoulder Rib S/N: 180-3355 259
Upper Thorax Rib #1 S/N: DM5020
Middle Thorax Rib #2 S/N: DM5021
Lower Thorax Rib #3 S/N: DM5022

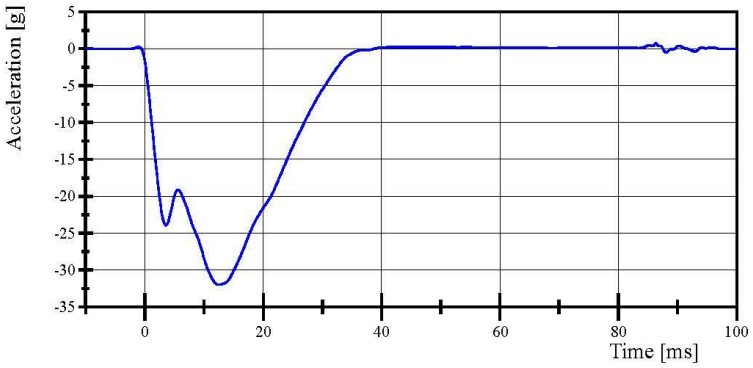
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

10.23.2019 11:13:16 595

Transportation Research Center Inc.

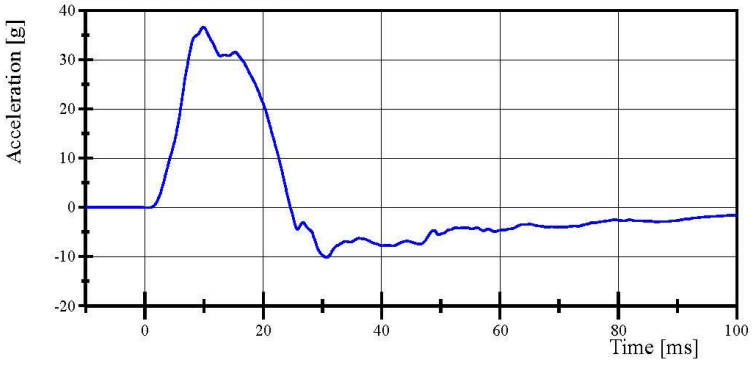
Left Lateral Thorax with Arm
SID IIs Serial No. 297 Certification No. 41-1
Test Date: 10/23/2019

Probe Acceleration



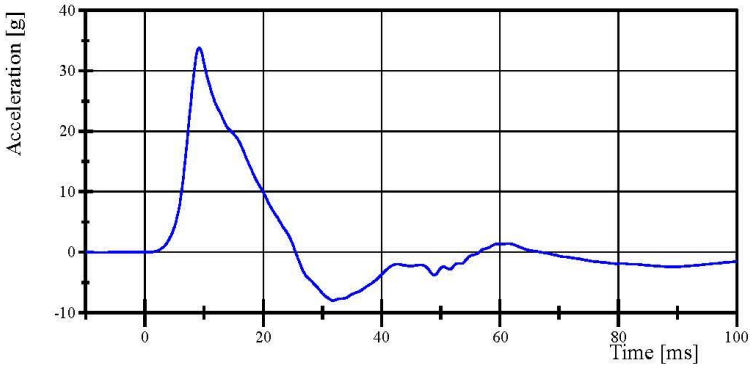
Filter Class: CFC_180
Max: 0.7 g at 86.3 ms
Min: -32.0 g at 12.5 ms

Upper Spine Acceleration



Filter Class: CFC_180
Max: 36.6 g at 9.9 ms
Min: -10.1 g at 30.6 ms

Lower Spine Acceleration



Filter Class: CFC_180
Max: 33.8 g at 9.2 ms
Min: -8.0 g at 31.8 ms

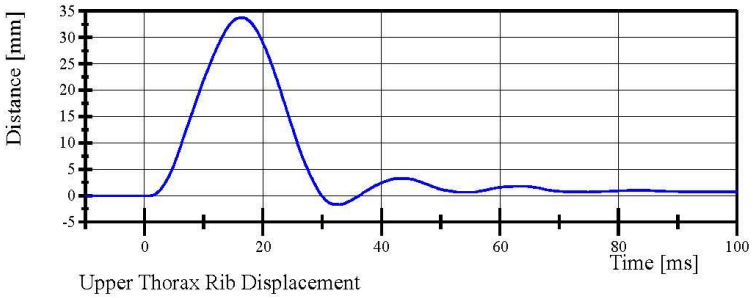
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

10.23.2019 11:15:27 595

Transportation Research Center Inc.

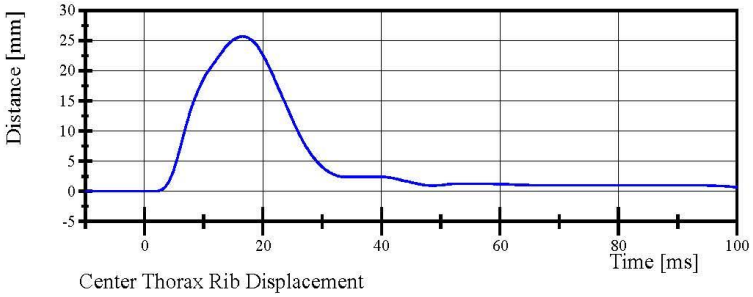
Left Lateral Thorax with Arm
SID IIs Serial No. 297 Certification No. 41-1
Test Date: 10/23/2019

Shoulder Rib Displacement



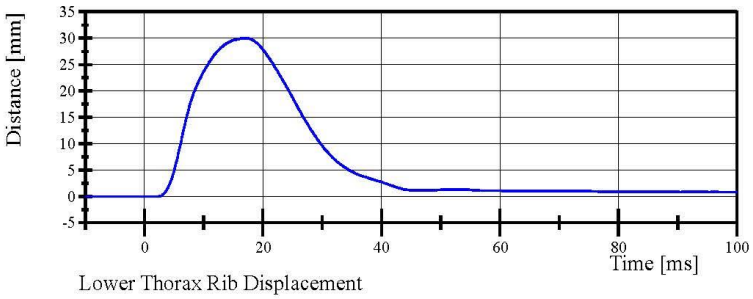
Filter Class: CFC_600
Max: 33.8 mm at 16.4 ms
Min: -1.7 mm at 33.0 ms

Upper Thorax Rib Displacement



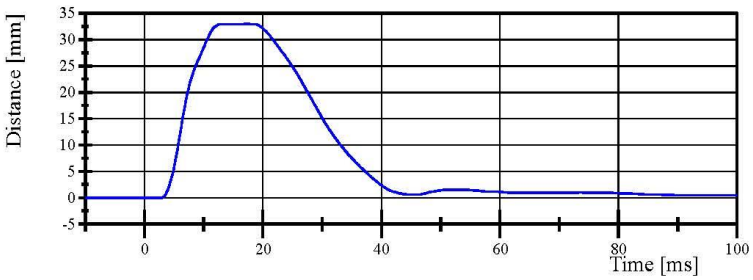
Filter Class: CFC_600
Max: 25.7 mm at 16.6 ms
Min: -0.0 mm at 0.8 ms

Center Thorax Rib Displacement



Filter Class: CFC_600
Max: 30.0 mm at 16.9 ms
Min: -0.0 mm at 2.1 ms

Lower Thorax Rib Displacement



Filter Class: CFC_600
Max: 33.0 mm at 17.1 ms
Min: -0.0 mm at 2.8 ms

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

10.23.2019 11:15:27 595

Transportation Research Center Inc.

Left Lateral Thorax without Arm
SID IIs Serial No. 297 Certification No. 41-1
Test Date: 10/23/2019

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	20.8 °C	Yes
Relative Humidity	10 - 70 %	35 %	Yes
Impactor Velocity	4.20 - 4.40 m/s	4.289 m/s	Yes
Impactor Acceleration	(-14) - (-18) g	-15.5 g	Yes
Upper Thorax Rib Displacement	32 - 40 mm	36.7 mm	Yes
Center Thorax Rib Displacement	39 - 45 mm	40.8 mm	Yes
Lower Thorax Rib Displacement	35 - 43 mm	37.5 mm	Yes
Upper Spine Lateral Acceleration	13 - 17 g	14.6 g	Yes
Lower Spine Lateral Acceleration	7 - 11 g	9.5 g	Yes

Test meets specifications.

Condition: Used

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

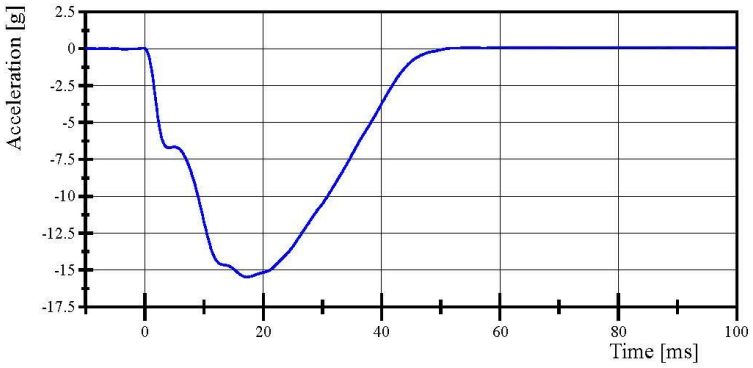
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

10.23.2019 10:26:14 821

Transportation Research Center Inc.

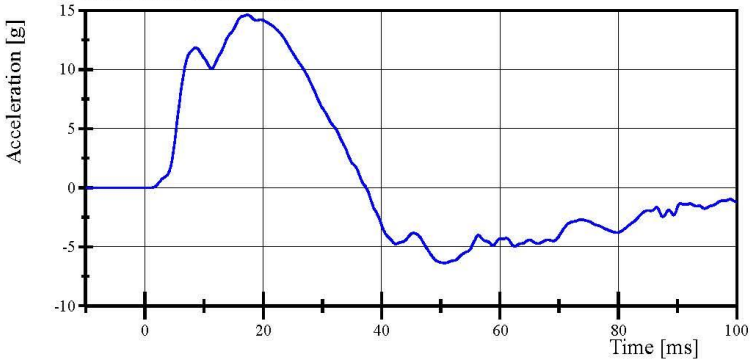
Left Lateral Thorax without Arm
SID IIs Serial No. 297 Certification No. 41-1
Test Date: 10/23/2019

Probe Acceleration



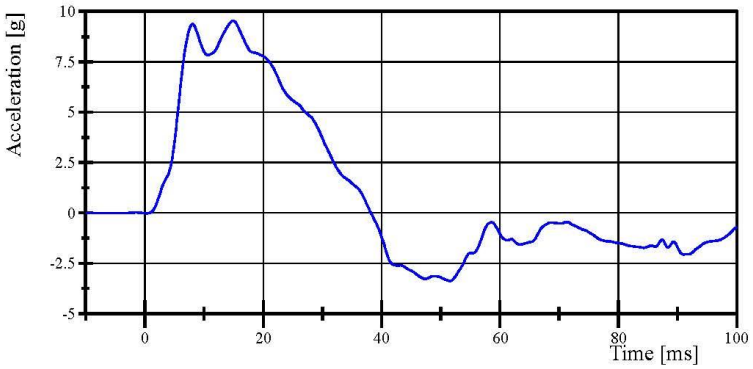
Filter Class: CFC_180
Max: 0.1 g at 81.8 ms
Min: -15.5 g at 17.3 ms

Upper Spine Acceleration



Filter Class: CFC_180
Max: 14.6 g at 17.4 ms
Min: -6.4 g at 50.6 ms

Lower Spine Acceleration



Filter Class: CFC_180
Max: 9.5 g at 14.9 ms
Min: -3.4 g at 51.5 ms

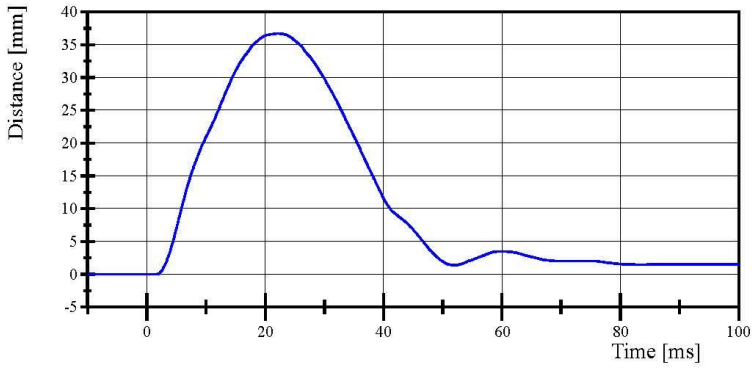
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

10.23.2019 10:27:19 821

Transportation Research Center Inc.

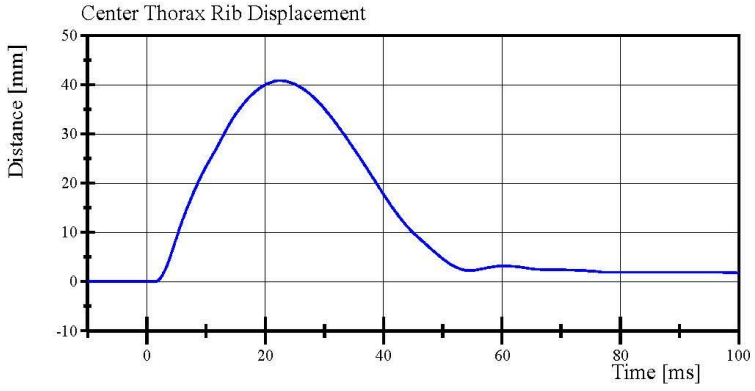
Left Lateral Thorax without Arm
SID IIs Serial No. 297 Certification No. 41-1
Test Date: 10/23/2019

Upper Thorax Rib Displacement



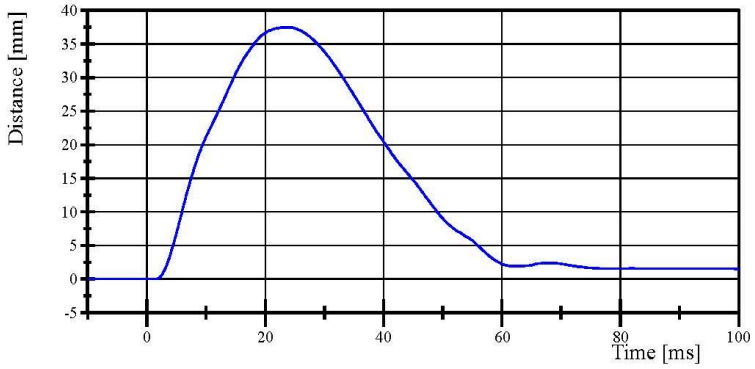
Filter Class: CFC_600
Max: 36.7 mm at 22.2 ms
Min: -0.0 mm at 1.4 ms

Center Thorax Rib Displacement



Filter Class: CFC_600
Max: 40.8 mm at 22.5 ms
Min: -0.0 mm at 1.3 ms

Lower Thorax Rib Displacement



Filter Class: CFC_600
Max: 37.5 mm at 23.3 ms
Min: -0.0 mm at 1.4 ms

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

10.23.2019 10:27:19 821

Transportation Research Center Inc.

Left Lateral Abdomen
SID IIs Serial No. 297 Certification No. 41-1
Test Date: 10/23/2019

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.8 °C	Yes
Relative Humidity	10 - 70 %	36 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.33 m/s	Yes
Impactor Acceleration	(-12) - (-16) g	-14.4 g	Yes
Upper Abdominal Rib Displacement	36 - 47 mm	41.2 mm	Yes
Lower Abdominal Rib Displacement	33 - 44 mm	37.8 mm	Yes
Lower Spine Lateral Acceleration	9 - 14.0 g	11.71 g	Yes

Test meets specifications.

Condition: Used

Comments:
Upper Abdominal Rib S/N: DM7281
Lower Abdominal Rib S/N: DM7275

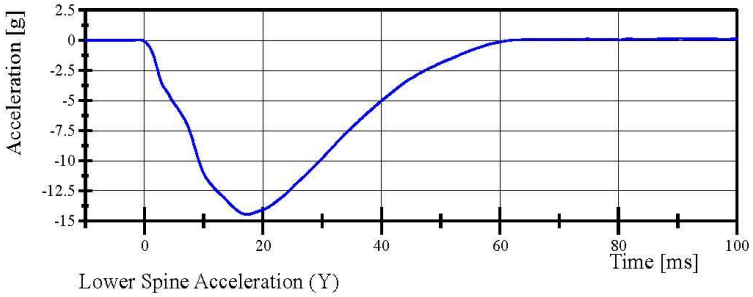
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

10.23.2019 09:26:43 666

Transportation Research Center Inc.

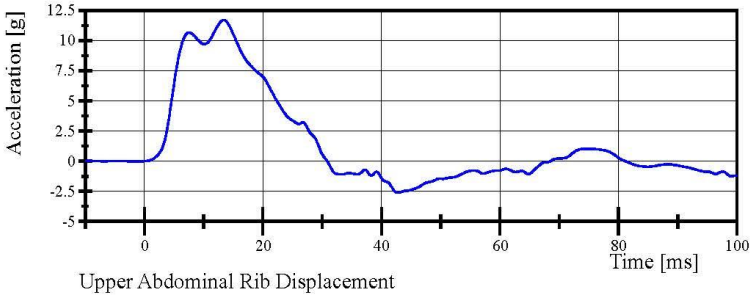
Left Lateral Abdomen
SID IIs Serial No. 297 Certification No. 41-1
Test Date: 10/23/2019

Probe Acceleration



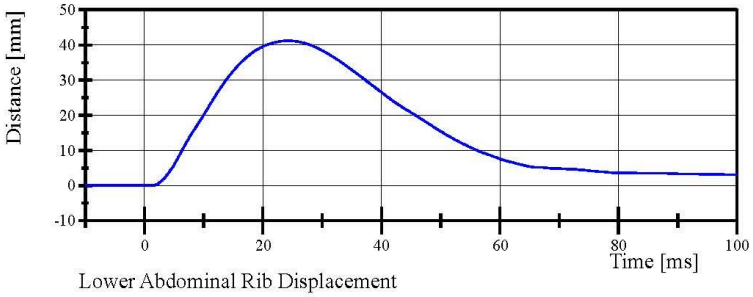
Filter Class: CFC_180
Max: 0.1 g at 90.6 ms
Min: -14.4 g at 17.4 ms

Lower Spine Acceleration (Y)



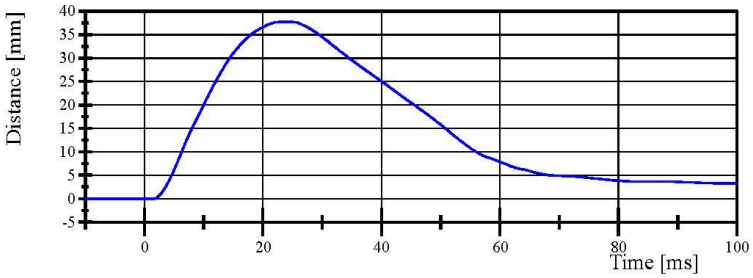
Filter Class: CFC_180
Max: 11.7 g at 13.4 ms
Min: -2.6 g at 42.7 ms

Upper Abdominal Rib Displacement



Filter Class: CFC_600
Max: 41.2 mm at 24.2 ms
Min: -0.0 mm at 1.2 ms

Lower Abdominal Rib Displacement



Filter Class: CFC_600
Max: 37.8 mm at 24.2 ms
Min: -0.0 mm at 1.6 ms

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

10.23.2019 09:29:20 666

Transportation Research Center Inc.

Left Lateral Pelvis
SID IIs Serial No. 297 Certification No. 41-2
Test Date: 10/25/2019

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	22.0 °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	-43.69 g	Yes
Peak Pelvis Lateral Acceleration after 6ms	34 - 42 g	37.6 g	Yes
Acetabulum Force	3,600 - 4,300 N	4,139.1 N	Yes

Test meets specifications.

Condition: New

Comments:
Pelvis Skin S/N: EN1590
New Iliac Wing S/N: AB8879
Pelvis Plug Info:
Manufacturer: Saco
S/N: 12531
Cal Date: 20181002

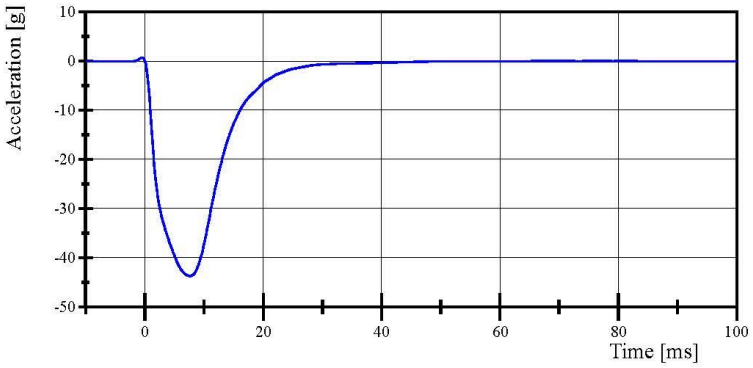
Specification Source: CFR49 Part 572 Subpart V with Polarity in accordance with J211

10.25.2019 13:24:21 437

Transportation Research Center Inc.

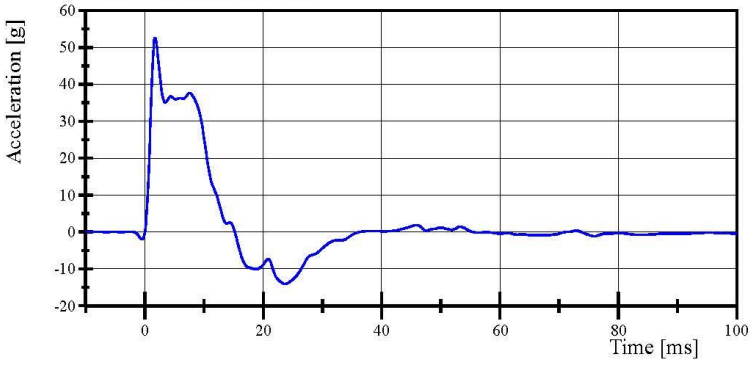
Left Lateral Pelvis
SID IIs Serial No. 297 Certification No. 41-2
Test Date: 10/25/2019

Probe Acceleration



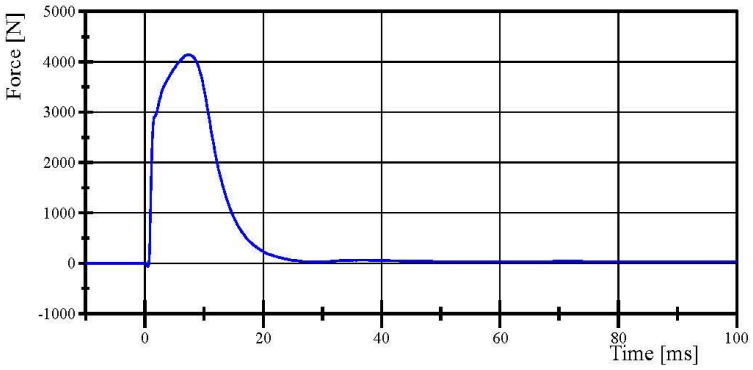
Filter Class: CFC_180
Max: 0.7 g at -0.5 ms
Min: -43.7 g at 7.6 ms

Pelvis Y-Axis Acceleration



Filter Class: CFC_180
Max: 52.6 g at 1.8 ms
Min: -14.1 g at 23.7 ms

Acetabulum Y-Axis Force



Filter Class: CFC_600
Max: 4,139.1 N at 7.4 ms
Min: -64.8 N at 0.6 ms

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

10.25.2019 13:26:41 437

Transportation Research Center Inc.

Left Lateral Iliac
SID IIs Serial No. 297 Certification No. 41-6
Test Date: 10/25/2019

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	37 %	Yes
Pendulum Velocity	4.2 - 4.4 m/s	4.22 m/s	Yes
Impactor Acceleration	(-36) - (-45) g	-40.1 g	Yes
Peak Pelvis Lateral Acceleration	28 - 39 g	31.3 g	Yes
Iliac Force	4,100 - 5,100 N	4,609.1 N	Yes

Test meets specifications.

Condition: New

Comments:
Pelvis S/N: EN1590
New Iliac Wing S/N: AB8879

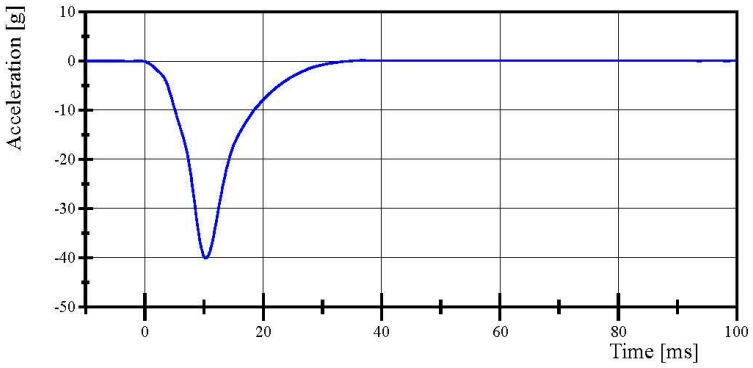
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

10.25.2019 12:49:24 638

Transportation Research Center Inc.

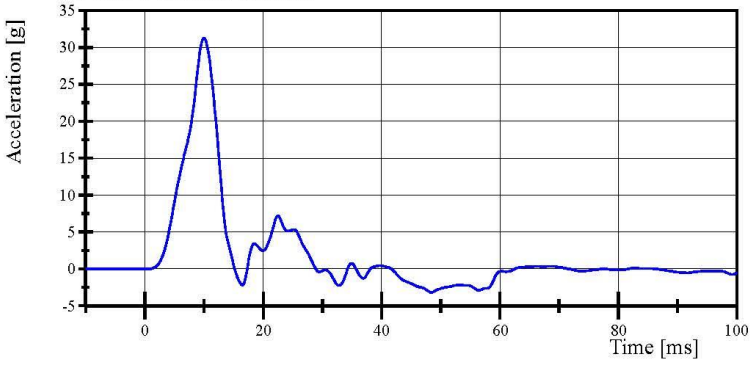
Left Lateral Iliac
SID IIs Serial No. 297 Certification No. 41-6
Test Date: 10/25/2019

Probe Acceleration



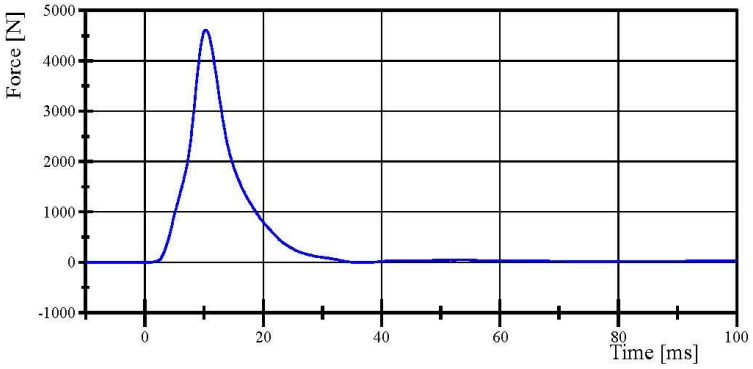
Filter Class: CFC_180
Max: 0.2 g at 36.7 ms
Min: -40.1 g at 10.3 ms

Pelvis Y-Axis Acceleration



Filter Class: CFC_180
Max: 31.3 g at 10.0 ms
Min: -3.2 g at 48.4 ms

Iliac Y-Axis Force



Filter Class: CFC_600
Max: 4,609.1 N at 10.2 ms
Min: -6.4 N at 37.7 ms

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

10.25.2019 12:51:28 638

APPENDIX D
TEST EQUIPMENT AND INSTRUMENTATION CALIBRATION DATA

TABLE 1 – Dummy Instrumentation (SID-IIs)

				SID-IIs S/N 297		
				Serial Number	**Manufacturer**	**Calibration Date**
Head Accelerometers			X	P93539	Endevco	9-Oct-2019
			Y	P93549	Endevco	10-Oct-2019
			Z	P93776	Endevco	10-Oct-2019
Displacement Potentiometers	Shoulder		Y	N/A	N/A	N/A
	Thoracic Rib	Upper	Y	023	Servo	25-Sep-2019
		Middle	Y	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	10-Oct-2019
			Y	P91522	Endevco	10-Oct-2019
			Z	P91511	Endevco	10-Oct-2019
Acetabulum Load Cell			Y	235-FY	FTSS	18-Apr-2019
Iliac Wing Load Cell			Y	320-FY	FTSS	18-Apr-2019
Pelvis Plug (struck side)				12529	SACO	2-Oct-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	T11841	Endevco	5-Sep-2019
Vehicle Center of Gravity	Y	T11815	Endevco	5-Sep-2019
Vehicle Center of Gravity	Z	T11813	Endevco	5-Sep-2019
Left Floor Sill	Y	T11829	Endevco	10-May-2019
A-Pillar Sill	Y	T11830	Endevco	10-Sep-2019
A-Pillar Low	Y	P44288	Endevco	8-May-2019
A-Pillar Mid	Y	T11449	Endevco	18-Jun-2019
B-Pillar Sill	Y	T11839	Endevco	10-Sep-2019
B-Pillar Low	Y	P50313	Endevco	8-May-2019
B-Pillar Mid	Y	P50491	Endevco	8-May-2019
Driver Seat	Y	T11818	Endevco	10-Sep-2019
Engine Top	X	P80720	Endevco	7-May-2019
Engine Top	Y	P50428	Endevco	7-May-2019
Firewall	Y	P97889	Endevco	8-May-2019
Right Roof	Y	P50400	Endevco	7-May-2019
Right Floor Sill	Y	P91492	Endevco	7-May-2019
Rear Floor Pan	X	P57917	Endevco	8-May-2019
Rear Floor Pan	Y	P57192	Endevco	16-Jul-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