

FINAL REPORT NUMBER: SPNCAP-TRC-17-004

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

**Toyota Motor Manufacturing Canada, Inc.
2017 Toyota Corolla 4DR Sedan
NHTSA NUMBER: M20175105**

**PREPARED BY:
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Report Date: December 20, 2016

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 20, 2016

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

1. Report No. SPNCAP-TRC-17-004	2. Government Accession No.	3. Recipient's Catalog No.																													
4. Title and Subtitle Final Report of New Car Assessment Program Side Impact Pole Testing of 2017 Toyota Corolla 4DR Sedan NHTSA No.: M20175105		5. Report Date December 20, 2016																													
		6. Performing Organization Code TRC Inc.																													
7. Author(s) John Shultz, Project Manager		8. Performing Organization Report No. 161115																													
9. Performing Organization Name and Address Transportation Research Center Inc. 10820 State Route 347 East Liberty, OH 43319		10. Work Unit No.																													
		11. Contract or Grant No. DTNH22-14-D-00354																													
12. Sponsoring Agency Name and Address 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, DC 20590		13. Type of Report and Period Covered Final Test Report November 15, 2016 – December 20, 2016																													
		14. Sponsoring Agency Code NRM-110																													
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 2017 Toyota Corolla 4DR 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 November 15, 2016. The impact velocity was 32.18 km/h, and the ambient temperature at the struck (left) side of the target vehicle at the time of impact was 21.5° C. The test vehicle's post-test maximum crush was 330 mm at Level 3. The test or target vehicle's performance is given below: <table border="1"> <thead> <tr> <th></th><th>Unit</th><th>Threshold</th><th>Front SID-IIs</th></tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC₃₆):</td><td>NA</td><td>1000</td><td>266</td></tr> <tr> <td>Resultant Lower Spine Acceleration:</td><td>g's</td><td>82</td><td>35.7</td></tr> <tr> <td>Total Pelvic Force:</td><td>N</td><td>5525</td><td>3580.11</td></tr> <tr> <td>(sum of acetabular and iliac forces)</td><td></td><td></td><td></td></tr> <tr> <td>Maximum Thoracic Rib Deflection</td><td>mm</td><td>38*</td><td>15.1</td></tr> <tr> <td>Maximum Abdomen Rib Deflection</td><td>mm</td><td>45*</td><td>21.8</td></tr> </tbody> </table> * 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.					Unit	Threshold	Front SID-IIs	Head Injury Criteria (HIC ₃₆):	NA	1000	266	Resultant Lower Spine Acceleration:	g's	82	35.7	Total Pelvic Force:	N	5525	3580.11	(sum of acetabular and iliac forces)				Maximum Thoracic Rib Deflection	mm	38*	15.1	Maximum Abdomen Rib Deflection	mm	45*	21.8
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17. Key Words New Car Assessment Program (NCAP) Side Impact Pole Part 572V SID-IIs		18. Distribution Statement Copies of this report are available from: National Highway Traffic Safety Administration Technical Information Services Division, NPO-411 1200 New Jersey Ave Washington, DC 20590 e-mail: tis@nhtsa.dot.gov FAX: 202-493-2833																													
19. Security Classification (of this report) Unclassified	20. Security Classification (of this page) Unclassified	21. Number of Pages 123	22. Price																												

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SECTION 1

TEST PURPOSE AND PROCEDURE

TEST PURPOSE AND PROCEDURE

This side impact test was conducted as part of the MY 17 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 2017 Toyota Corolla 4DR Sedan manufactured by Toyota Motor Manufacturing Canada, Inc.. 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 2017 Toyota Corolla 4DR Sedan. The subject vehicle was towed into the rigid pole at an angle of 75° and a velocity of 32.18 km/h. The side impact test was conducted by Transportation Research Center Inc. in East Liberty, OH, on November 15, 2016. Pre-test and post-test photographs of the test vehicle and the side impact dummy (SID-IIs) are included in Appendix A of this report.

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

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

- Primary and Redundant Head CG Triaxial Accelerometers
- Thorax Upper, Middle, and Lower Rib Displacement Potentiometers
- Abdomen Upper and Lower Rib Displacement Potentiometers
- Lower Spine (T12) Triaxial Accelerometers
- Iliac Load Cell
- Acetabulum Load Cell

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

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

Measurement Description	Driver ATD (SID-IIs)		
	Units	IARV	Result
Head Injury Criteria (HIC ₃₆)	NA	1000	266
Lower Spine Acceleration Resultant	G	82	35.7
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	3580.1
Maximum Thoracic Rib Deflection	mm	38*	15.1
Maximum Abdominal Rib Deflection	mm	45*	21.8

* Proposed IARV

Supplemental restraint information is given below:

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

GENERAL COMMENTS

None

SECTION 3
OCCUPANT AND VEHICLE INFORMATION

DATA SHEET NO. 1
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2017 Toyota Corolla 4DR Sedan
 Test Program: SPNCAP Side Impact

NHTSA No.: M20175105
 Test Date: 11/15/16

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	M20175105
Model Year	2017
Make	Toyota
Model	Corolla LE
Body Style	Sedan
VIN	2T1BURHE9HC747261
Body Color	Classic Silver Metallic
Odometer Reading (km/mi)	15 mi
Engine Displacement (L)	1.8
Type/No. Cylinders	Inline/4
Engine Placement	Transverse Front
Transmission Type	CVT
Transmission Speeds	N/A
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	Yes
Other Optional Feature	No
Driver Front Airbag	Yes
Driver Curtain Airbag	Yes
Driver Head/Torso Airbag	No
Driver Torso Airbag	No
Driver Torso/Pelvis Airbag	Yes
Driver Pelvis Airbag	No
Driver Knee Airbag	Yes
Rear Pass. Curtain Airbag	Yes
Rear Pass. Head/Torso Airbag	No
Rear Pass. Torso Airbag	No
Rear Pass. Torso/Pelvis Airbag	No
Rear Pass. Pelvis Airbag	No
Driver Seat Belt Pretensioner	Yes
Rear Pass. Seat Belt Pretensioner	No
Driver Load Limiter	Yes
Rear Pass. Load Limiter	No
Other Safety Restraint	Yes

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

Yes

DATA FROM CERTIFICATION LABEL

Manufactured By	Toyota Motor Manufacturing Canada, Inc.
Date of Manufacturer	08/16
Vehicle Type	Passenger Car

GVWR (lbs)	3820
GAWR Front (lbs)	2070
GAWR Rear (lbs)	1850

VEHICLE SEATING AND WEIGHT CAPACITY DATA

	Front	Rear	Third	Total
Designated Seating Capacity (DSC)	2	3	N/A	5
Vehicle Capacity Weight (VCW) (kg)				381
DSC X 68.04 kg				340.2
Rated Cargo and Luggage Weight (RCLW) (kg)				40.8

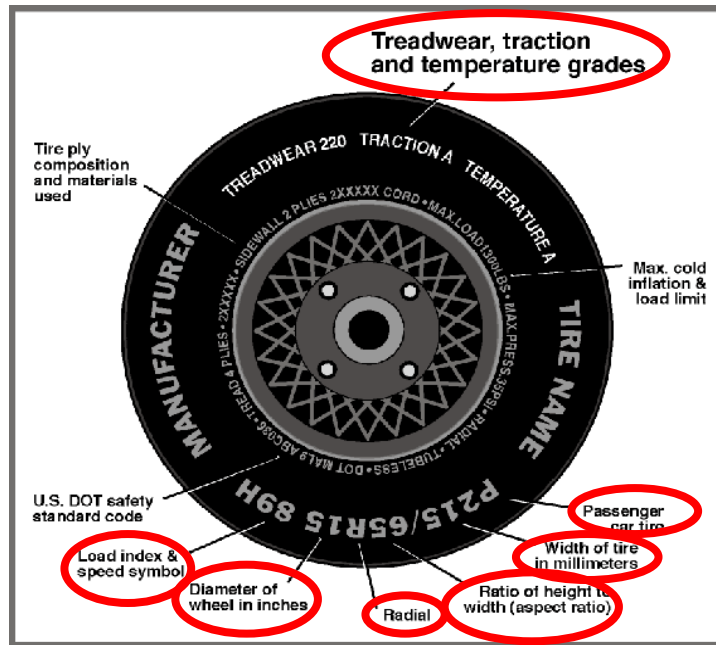
VEHICLE SEAT TYPE

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	N/A	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: 2017 Toyota Corolla 4DR Sedan
 Test Program: SPNCAP Side Impact

NHTSA No.: M20175105
 Test Date: 11/15/16



DATA FROM TIRE PLACARD

Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	350	350
Cold Pressure (kPa)	220	220
Recommended Tire Size	205/55R16	205/55R16
Tire Size on Vehicle	205/55R16	205/55R16
Tire Manufacturer	Michelin	Michelin
Tire Model	Primacy MXV4	Primacy MXV4
Treadwear	620	620
Traction	A	A
Temperature Grades	A	A
Tire Plies Sidewall	1	1
Tire Plies Body	4	4
Load Index/Speed Symbol	89H	89H
Tire Material	Polyester, Polyamide, Steel	Polyester, Polyamide, Steel
DOT Safety Code Left	B3WC 02NX 3216	B3WC 02NX 3216
DOT Safety Code Right	B3WC 02NX 3216	B3WC 02NX 3216

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

Test Vehicle: 2017 Toyota Corolla 4DR Sedan
 Test Program: SPNCAP Side Impact

NHTSA No.: M20175105
 Test Date: 11/15/16

TIRE PRESSURES

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

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	418.0	263.8		450.2	274.6		438.6	300.2	
Right	kg	384.0	249.8		407.4	265.4		393.4	273.4	
Ratio	%	61.0	39.0		61.4	38.6		59.2	40.8	
Totals	kg	802.0	513.6	1315.6	857.6	540.0	1397.6	832.0	573.6	1405.6

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
Total As Delivered Weight (UVW)	kg	1315.6
Actual Weight of 1 P572V ATD (SID-III) Dummy Used	kg	49.0
Rated Cargo/Luggage Weight (RCLW)	kg	40.8
Calculated Vehicle Target Weight (TVTW)	kg	1405.4

(A)
 (B)
 (C)
 (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	-0.4	-0.2	Yes
Front Passenger Sill Angle (front-to-rear)*	Deg.	0.0	-0.2	-0.3	Yes
Front Bumper-Line Angle (left-to-right)**	Deg.	0.0	-0.1	-0.3	Yes
Rear Bumper-Line Angle (left-to-right)**	Deg.	-0.2	-0.2	-0.5	Yes
Vehicle CG (Aft of Front Axle)	mm	1053	1042	1102	
Vehicle CG (Left (+) / Right (-) from longitudinal Centerline)	mm	+28	+28	+38	

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

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

WEIGHT OF BALLAST AND VEHICLE COMPONENTS REMOVED TO MEET TVTW

Component Description	Weight (kg)
Ballast: None	0.0
Components removed: Hub caps, tail lights, rear seat back, right exterior mirror and rear seat belts.	15.6

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: 2017 Toyota Corolla 4DR Sedan

NHTSA No.: M20175105

Test Program: SPNCAP Side Impact

Test Date: 11/15/16

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	19.0	15.9	17.5
Front Passenger Seat	N/A	Fixed	18.1
Front Center Seat*	N/A	N/A	N/A
Struck Side Rear Seat	N/A	Fixed	17.9
Non-Struck Side Rear Seat	N/A	Fixed	17.1
Rear Center Seat*	N/A	Fixed	15.9

* 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	17.5	230	Max	N/A	N/A	N/A
			Mid	210	220	230
			Min	N/A	N/A	N/A
Front Passenger Seat	18.1	124	Max	N/A	N/A	N/A
			Mid	114	124	133
			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	N/A	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	N/A	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*	N/A	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: 2017 Toyota Corolla 4DR Sedan

NHTSA No.: M20175105

Test Program: SPNCAP Side Impact

Test Date: 11/15/16

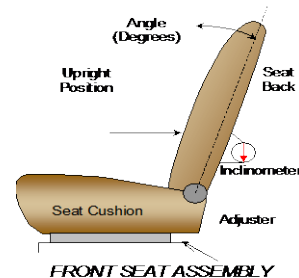
SEAT FORE/AFT POSITION

Seat	Total Fore/Aft Travel		Test Position from Forwardmost Position	
	mm	Detents*	mm	Detent*
Driver Seat	240	25	0	1
Front Passenger Seat	240	25	0	1
Front Center Seat*	N/A	N/A	N/A	N/A
Struck Side Rear Seat	Fixed	N/A	Fixed	N/A
Non-Struck Side Rear Seat	Fixed	N/A	Fixed	N/A
Rear Center Seat*	Fixed	N/A	Fixed	N/A

* If applicable.

SEAT BACK ANGLE ADJUSTMENT

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



Seat	Total Seat Back Angle Range		Test Position from Most Upright	
	Degrees	Detents*	Degrees	Detent*
Driver Seat w/ Seated Dummy	59.9	27	3.9	1
Front Passenger Seat	55.3	28	3.9	1
Front Center Seat*	N/A	N/A	N/A	N/A
Struck Side Rear Seat	Fixed	N/A	Fixed	N/A
Non-Struck Side Rear Seat	Fixed	N/A	Fixed	N/A
Rear Center Seat*	Fixed	N/A	Fixed	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	4, numbered from 0 to 3	3, Uppermost

HEAD RESTRAINT ADJUSTMENT

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

	Total # of Positions	Placed in Position #
Driver Seat	3, numbered from 0 to 2	0, Lowermost

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

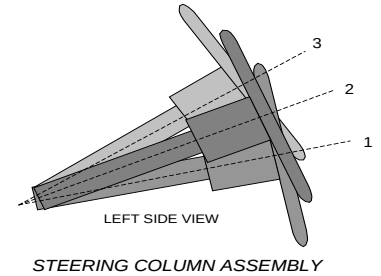
Test Vehicle: 2017 Toyota Corolla 4DR Sedan
 Test Program: SPNCAP Side Impact

NHTSA No.: M20175105
 Test Date: 11/15/16

STEERING COLUMN ADJUSTMENT

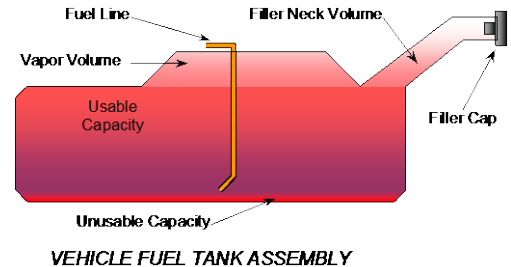
Steering wheel and column adjustments are made so that the steering wheel geometric locus it describes when moved through its full range of motion.

	Degrees	Fore/Aft Position, mm
Lowermost, Position No. 1	20.4	N/A
Geometric Center, Position No. 2	22.2	N/A
Uppermost, Position No. 3	23.9	N/A
Telescoping Steering Wheel Travel		70
Test Position	22.2	35

**FUEL PUMP**

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

The electric fuel pump is activated when the ignition is turned on.

**FUEL TANK CAPACITY**

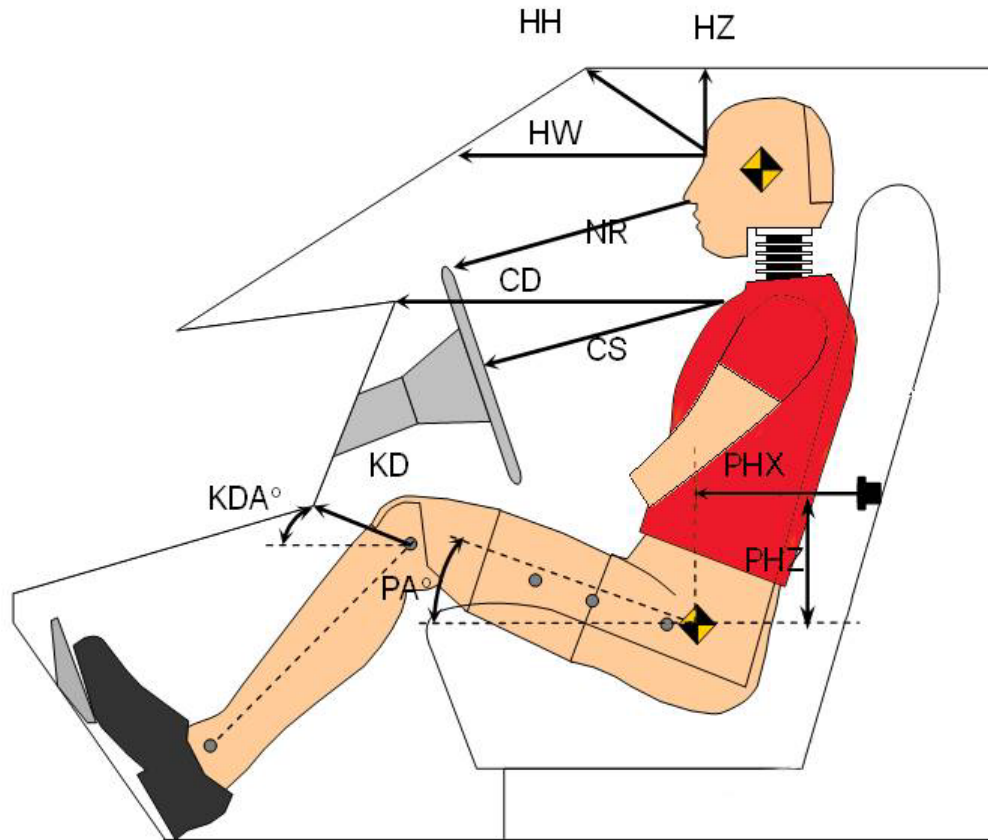
	Liters
Usable Capacity of "Standard Tank" (see Form No. 1)	48.8
Usable Capacity of "Optional" Tank (see Form No. 1)	N/A
Usable Capacity of Standard Tank (see Owner's Manual)	50.0
Usable Capacity of Optional Tank (see Owner's Manual)	N/A
93% of Usable Capacity	45.4
Actual Amount of Solvent Used in Test	45.4
1/3 of Usable Capacity	16.3

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

DATA SHEET NO. 3
DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2017 Toyota Corolla 4DR Sedan
 Test Program: SPNCAP Side Impact

NHTSA No.: M20175105
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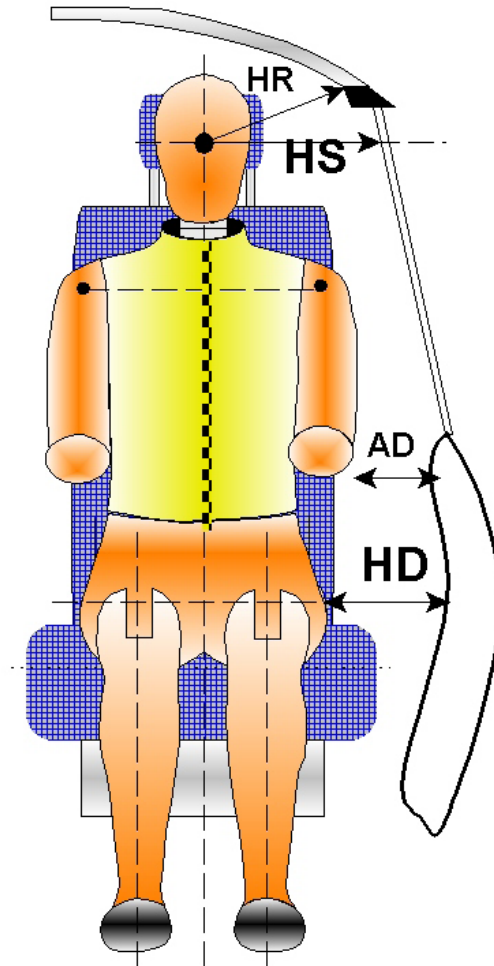


Code	Measurement Description	Driver	
		Length (mm)	Angle (°)
HH	Head to Header	255	
HW	Head to Windshield	584	
HZ	Head to Visor	175	
NR	Nose to Rim	234	
CD	Chest to Dashboard	375	
CS	Chest to Steering Wheel	169	
KDL/KDLA°	Left Knee to Dash	102	42.5
KDR/KDRA°	Right Knee to Dash	85	42.7
PAX°	Pelvic Tilt Angle (X-axis)		0.4
PAY°	Pelvic Tilt Angle (Y-axis)		21.5
PHX	Hip Point to Striker (X-Axis)	362	
PHZ	Hip Point to Striker (Z-Axis)	203	

DATA SHEET NO. 4
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2017 Toyota Corolla 4DR Sedan
 Test Program: SPNCAP Side Impact

NHTSA No.: M20175105
 Test Date: 11/15/16

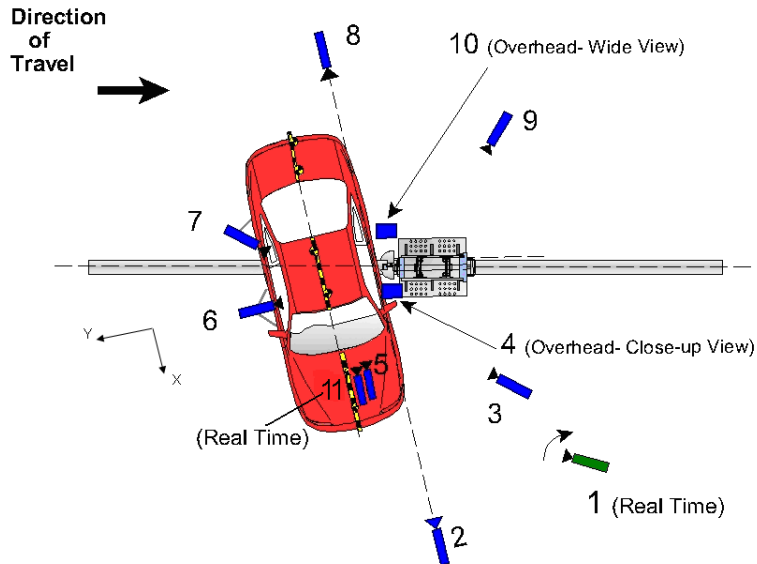


Code	Measurement Description	Length (mm)
HR	Head to Side Header	223
HS	Head to Side Window	341
AD	Arm to Door	139
HD	Hip Point to Door	165

DATA SHEET NO. 5
CAMERA AND INSTRUMENTATION DATA

Test Vehicle: 2017 Toyota Corolla 4DR Sedan
 Test Program: SPNCAP Side Impact

NHTSA No.: M20175105
 Test Date: 11/15/16



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	0	4784	1250	20	1000
3	Impact side 45° – forward pole view	-871	3349	1200	20	1000
4	Overhead Close-up view of impact	0	0	5700	50	1000
5	Onboard – dummy front view				25	1000
6	Onboard – dummy side view				12.5	1000
7	Onboard – dummy rear oblique view				12.5	1000
8	Rear ground level – impact view	0	5200	1210	20	1000
9	Impact side 45° – rearward pole view	-2384	-4067	1380	28	1000
10	Overhead wide view of impact	-150	410	5703	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: Not Applicable

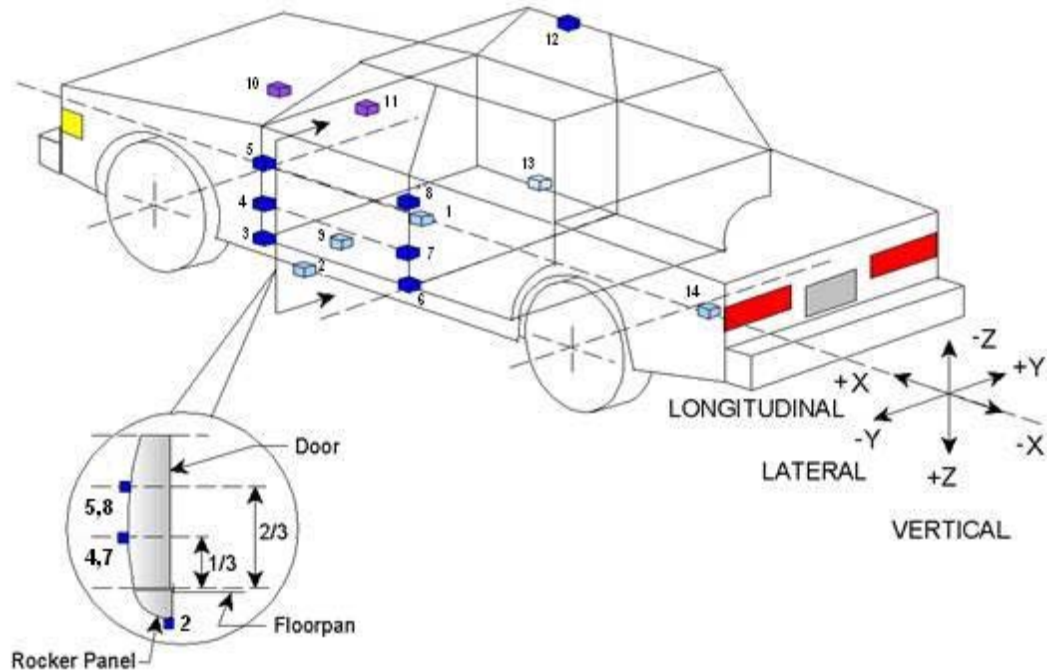
INSTRUMENTATION

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

DATA SHEET NO. 6
VEHICLE ACCELEROMETER DATA

Test Vehicle: 2017 Toyota Corolla 4DR Sedan
 Test Program: SPNCAP Side Impact

NHTSA No.: M20175105
 Test Date: 11/15/16



Accelerometer/Sensor Location				
	ID	Coordinates (mm)		
		X	Y	Z
1	Vehicle CG	2835	85	355
2	Left Floor Sill	2865	-625	282
3	A-Pillar Sill	3210	-682	573
4	A-Pillar Low	3240	-795	495
5	A-Pillar Mid	3225	-795	860
6	B-Pillar Sill	2038	-640	292
7	B-Pillar Low	2140	-795	356
8	B-Pillar Mid	2117	-795	890
9	Driver Seat Track	2500	-565	329
10	Engine Top	3813	17	839
11	Firewall	3521	24	844
12	Right Roof	2130	530	1435
13	Right Floor Sill	2792	625	268
14	Rear Floorpan	845	0	423

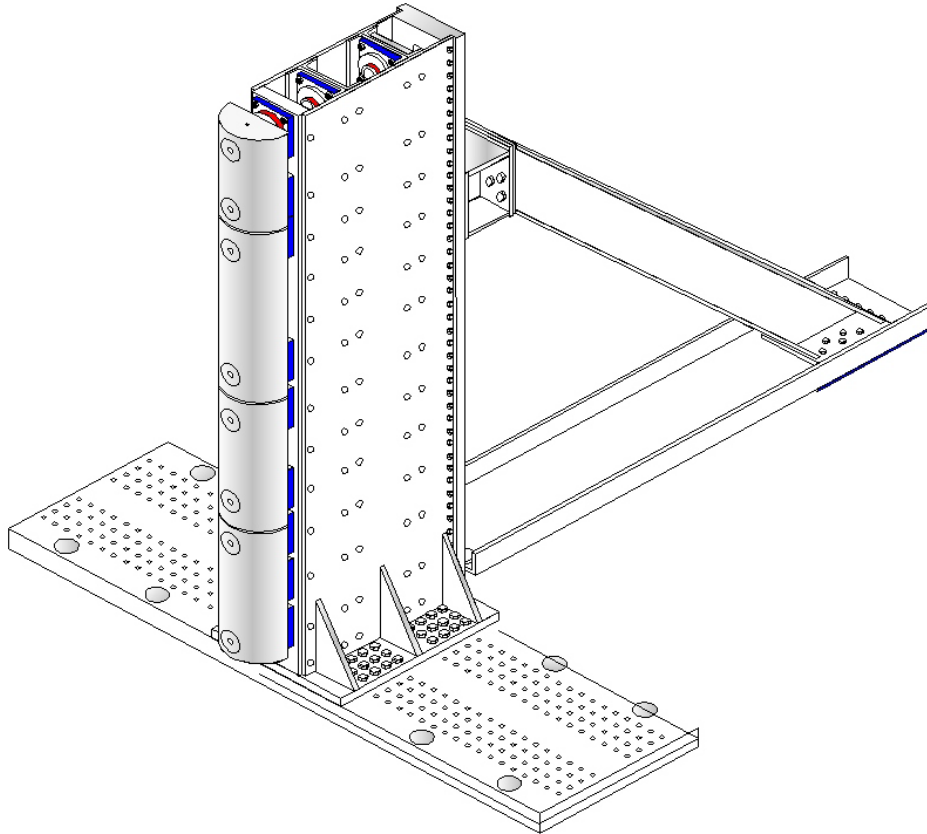
Reference: X - Test Vehicle Rear Bumper (+ forward)
 Y - Test Vehicle Centerline (+ to right)
 Z - Ground Plane (+ down)

DATA SHEET NO. 7
RIGID POLE LOAD CELL DATA

Test Vehicle: 2017 Toyota Corolla 4DR Sedan
Test Program: SPNCAP Side Impact

NHTSA No.: M20175105
Test Date: 11/15/16

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: 2017 Toyota Corolla 4DR Sedan
Test Program: SPNCAP Side Impact

NHTSA No.: M20175105
Test Date: 11/15/16

TEST DUMMY INFORMATION AND CONTACT POINTS

Dummy Body Part	Driver SID-IIs Dummy
Face	SCAB
Top of Head	SCAB
Left Side of Head	SCAB
Back of Head	SCAB, Head restraint
Left Shoulder	SAB
Upper Torso	Seat back bolster, SAB
Lower Torso	Seat back 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	No*
Total Separation from Vehicle at Hinges or Latches	No	No	No	No	No
Latch or Hinge Systems Pulled Out of Their Anchorages	No	No	No	No	No
Disengaged from Latched Position	No	No	No	No	No
Latch Separated from Striker	No	No	No	No	No
Jammed Shut	Yes	Yes	No	No	No
If Door Opened at Striker, Record Width of Opening at Striker (mm)	N/A	N/A	N/A	N/A	N/A

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

POST-TEST SEAT PERFORMANCE

Description	Struck Side		Non-Struck Side	
	Front	Rear	Front	Rear
Seat Movement Along Seat Track	No	N/A	No	N/A
Seat Disengagement from Floor pan	No	N/A	No	N/A
Seat Back Movement from Initial Position	No	N/A	No	N/A
Seat Back Collapse	No	N/A	No	N/A

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

POST-TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Pillar Performance	Moderate Deformation
Sill Separation	None
Windshield Damage	Along driver side A-pillar
Side Window Damage	Driver window broken out
Other Notable Effects	Trunk opened at impact due to release handle in impact area

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

Test Vehicle: 2017 Toyota Corolla 4DR Sedan
 Test Program: SPNCAP Side Impact

NHTSA No.: M20175105
 Test Date: 11/15/16

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

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

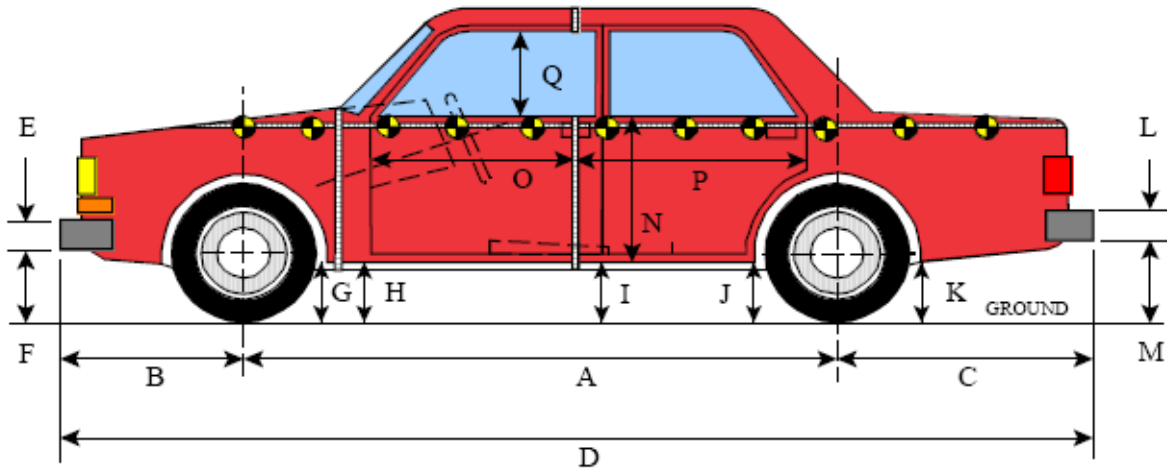
VEHICLE SPEED, VEHICLE ANGLE AT IMPACT AND IMPACT POINT LOCATION DATA

Measured Parameter	Units	Tolerance	Value
Vertical Impact Reference Line (Aft of Front Axle) (Intended Impact Point)	mm		1041
Actual Impact Point (Aft of Front Axle)	mm		1044
Horizontal Offset (+ forward / - rearward)	mm	+/- 38 of Intended Impact point	-3
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	32.18
Trap No. 2 Velocity (Redundant)	km/h	31.4 to 33.0	32.20

DATA SHEET NO. 9
VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2017 Toyota Corolla 4DR Sedan
 Test Program: SPNCAP Side Impact

NHTSA No.: M20175105
 Test Date: 11/15/16



LEFT SIDE VIEW

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

VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

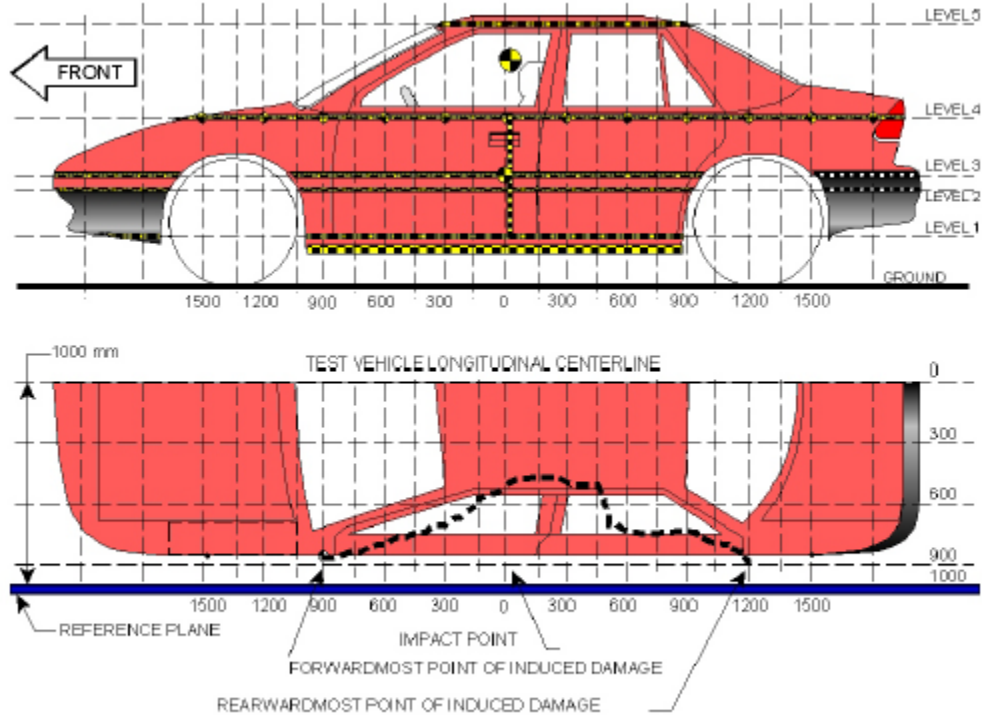
Code	Measurement Description	Pre-Test	Post-Test	Difference
A	Wheelbase	2700	2670	30
B	Front Axle to Front Surface of Vehicle	983	957	26
C	Rear Axle to Rear Surface of Vehicle	950	1003	-53
D	Total Length at Centerline	4633	4630	3
E	Front Bumper Thickness	104	104	0
F	Front Bumper Bottom to Ground	425	452	-27
G	Sill Height at Front Wheel Well	316	315	1
H	Sill Height at Front Door Leading Edge	327	340	-13
I	Sill Height at B-Pillar	345	378	-33
J1	Sill Height at Rear Wheel Well	322	372	-50
J2	Pinch Weld Height at Rear Wheel Well	155	196	-41
K	Sill Height Aft of Rear Wheel Well	355	400	-45
L	Rear Bumper Thickness	165	165	0
M	Rear Bumper Bottom to Ground	440	468	-28
N	Sill Height to Bottom of Front Window Sill	724	720	4
O	Front Door Leading Edge to Impact CL	631	630	1
P	Rear Door Trailing Edge to Impact CL	1593	1530	63
Q	Front Window Opening	397	372	25
R	Right Side Length	4541	4570	-29
S	Left Side Length	4540	4525	15
T ¹	Vehicle Width at B-Pillars	1753	1689	64

¹ maximum width not at B-Pillars; maximum width = 1763 mm

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2017 Toyota Corolla 4DR Sedan
 Test Program: SPNCAP Side Impact

NHTSA No.: M20175105
 Test Date: 11/15/16



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	317	279	0
2	Occupant H-Point	538	322	0
3	Mid-Door	626	330	0
4	Window Sill	899	306	0
5	Window Top	1401	85	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: 2017 Toyota Corolla 4DR Sedan
 Test Program: SPNCAP Side Impact

NHTSA No.: M20175105
 Test Date: 11/15/16

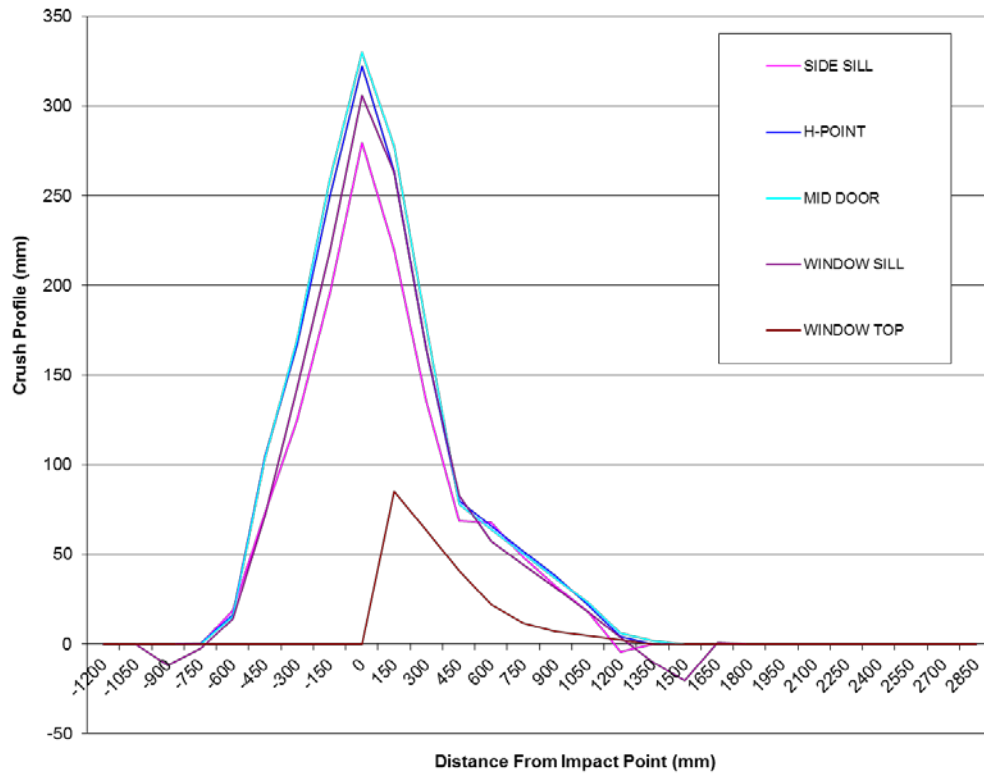
	Pre-Test					Post-Test					Difference				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-1200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-1050	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-900	0	0	0	785	0	0	0	0	797	0	0	0	0	-12	0
-750	0	879	879	790	0	0	879	879	792	0	0	0	0	-2	0
-600	851	875	874	798	0	832	859	859	785	0	19	16	15	13	0
-450	847	875	875	808	0	774	770	772	736	0	73	105	103	72	0
-300	850	876	877	816	0	725	709	708	674	0	125	167	169	142	0
-150	852	877	879	826	0	657	627	620	606	0	195	250	259	220	0
0	853	877	880	835	0	574	555	550	529	0	279	322	330	306	0
150	853	877	880	842	523	633	613	602	579	438	220	264	278	263	85
300	853	875	879	847	566	717	711	702	682	503	136	164	177	165	63
450	852	874	878	852	573	783	794	801	769	532	69	80	77	83	41
600	853	872	877	855	577	786	806	813	797	555	67	66	64	58	22
750	853	870	874	854	578	805	818	824	810	566	48	52	50	44	12
900	853	868	871	853	577	820	830	834	821	571	33	38	37	32	6
1050	851	870	869	850	572	833	848	846	832	568	18	22	23	18	4
1200	852	878	875	846	559	857	874	869	842	557	-5	4	6	4	2
1350	0	0	883	832	0	0	0	881	842	0	0	0	2	-10	0
1500	0	0	0	840	0	0	0	0	861	0	0	0	0	-21	0
1650	0	0	0	834	0	0	0	0	833	0	0	0	0	1	0
1800	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1950	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2250	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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: 2017 Toyota Corolla 4DR Sedan
Test Program: SPNCAP Side Impact

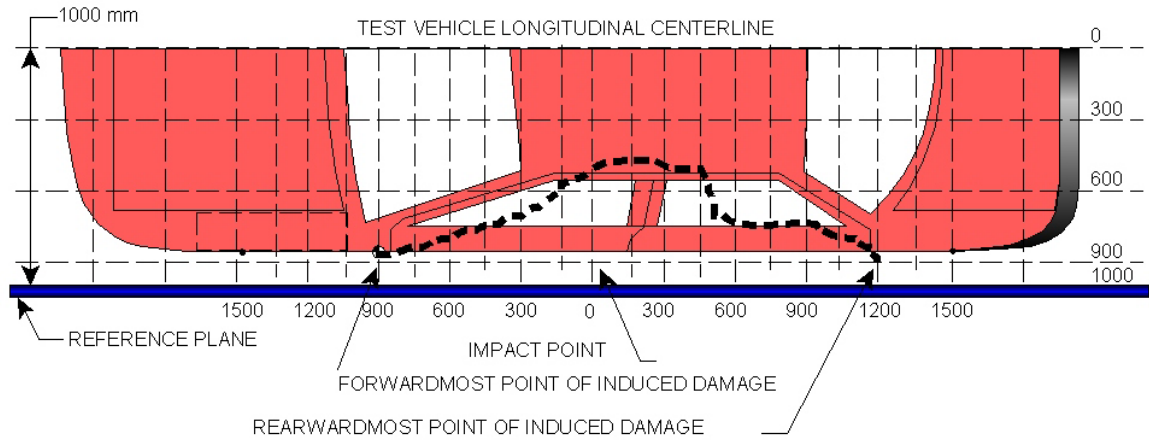
NHTSA No.: M20175105
Test Date: 11/15/16



DATA SHEET NO. 11
VEHICLE DAMAGE PROFILE DISTANCES

Test Vehicle: 2017 Toyota Corolla 4DR Sedan
 Test Program: SPNCAP Side Impact

NHTSA No.: M20175105
 Test Date: 11/15/16



VEHICLE DAMAGE PROFILE DISTANCES¹

DPD	Distance From Impact Point (mm)	Level	Post-Test (mm)	Pre-Test (mm)	Crush (mm)
1	1650	4	833	834	1
2	1200	3	869	875	6
3	750	2	818	870	52
4	300	3	702	879	177
5	-150	3	620	879	259
6	-600	1	832	851	0

¹ DPD 6 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: 2017 Toyota Corolla 4DR Sedan

NHTSA No.: M20175105

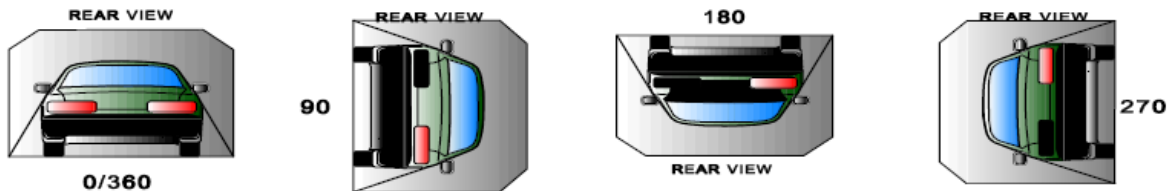
Test Program: SPNCAP Side Impact

Test Date: 11/15/16

Test Time: 15:46 Temperature: 21.1°C

- A. From impact until vehicle motion ceases: 0 oz.
(Maximum allowable is 1 ounce)
- B. For the 5 minute period after motion ceases: 0
(Maximum allowable is 5 ounces)
- C. For the following 25 minutes: 0
(Maximum allowable is 1 ounce/minute)
- D. Spillage Data1LS: 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

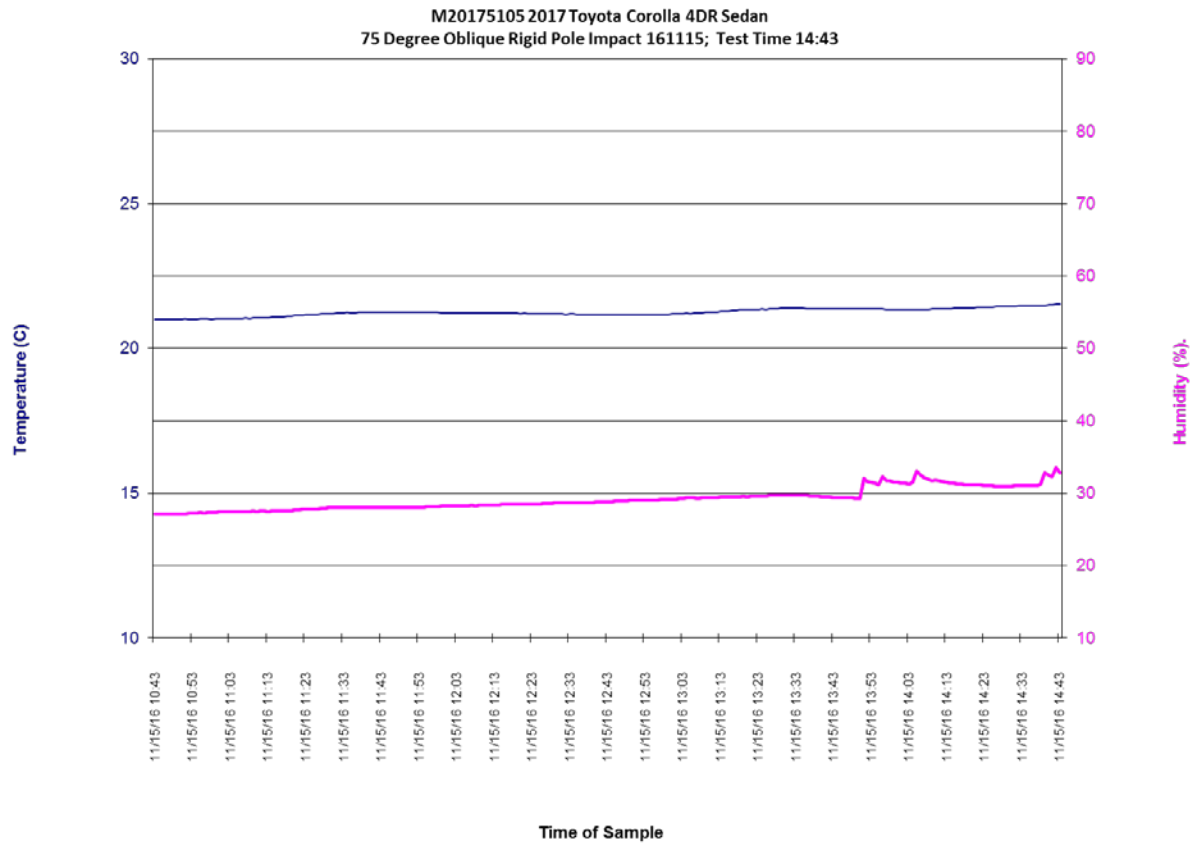
Test Phase	Spillage Location
0 to 90	None
90 to 180	None
180 to 270	None
270 to 360	None

DATA SHEET NO. 13

DUMMY/VEHICLE TEMPERATURE AND HUMIDITY STABILIZATION DATA

Test Vehicle: 2017 Toyota Corolla 4DR Sedan
Test Program: SPNCAP Side Impact

NHTSA No.: M20175105
Test Date: 11/15/16



APPENDIX A
PHOTOGRAPHS

TABLE OF PHOTOGRAPHS

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

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38	Pre-Test Close-Up Left Side View of Driver Seat Back	A-23
39	Pre-Test Close-Up View of Driver Seat Back or Head Restraint	A-23
40	Pre-Test Dummy and Door Clearance View	A-24
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43	Post-Test Right Side View of Dummy and Front Seat of Occupant Compartment	A-25
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49	Post-Test Dummy Close-Up Torso Contact with Side Airbag View	A-28
50	Post-Test Dummy Close-Up Pelvis Contact with Vehicle Interior View	A-29
51	Post-Test Dummy Close-Up Pelvis Contact with Side Airbag View	A-29
52	Post-Test Dummy Close-Up Knee Contact with Vehicle Interior View	A-30
53	Pre-Test View of Fuel Filler Cap or Fuel Filler Neck	A-30
54	Post-Test View of Fuel Filler Cap or Fuel Filler Neck	A-31
55	Close-Up View of Vehicle's Certification Label	A-31
55a	Reduced Load Capacity Label	A-32
56	Close-Up View of Vehicle's Tire Information Placard or Label	A-32
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60	Post-Test Pole Barrier Side View	A-34
61	Pre-Test Ballast View	A-35
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63	FMVSS No. 301 Static Rollover 0 Degrees	A-36
64	FMVSS No. 301 Static Rollover 90 Degrees	A-36
65	FMVSS No. 301 Static Rollover 180 Degrees	A-37
66	FMVSS No. 301 Static Rollover 270 Degrees	A-37
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69	Monroney Label	A-39
70	Head Restraint Use and Adjustment Information from Vehicle Owner's Manual	A-39
71	Post-Test View of Shattered Vehicle Inner Door Panel	A-40



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



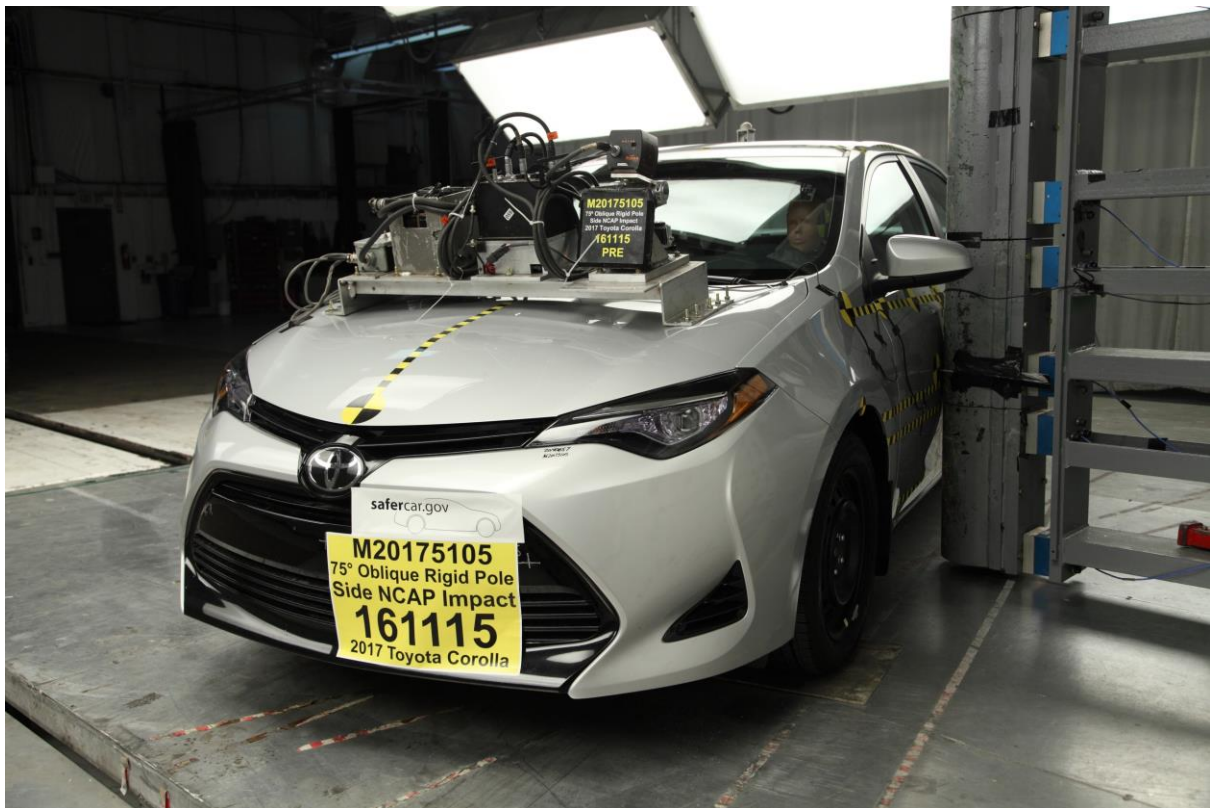
No. 002 As Delivered Left Rear $\frac{3}{4}$ View of Test Vehicle



No. 003 Pre-Test Frontal View of Test Vehicle



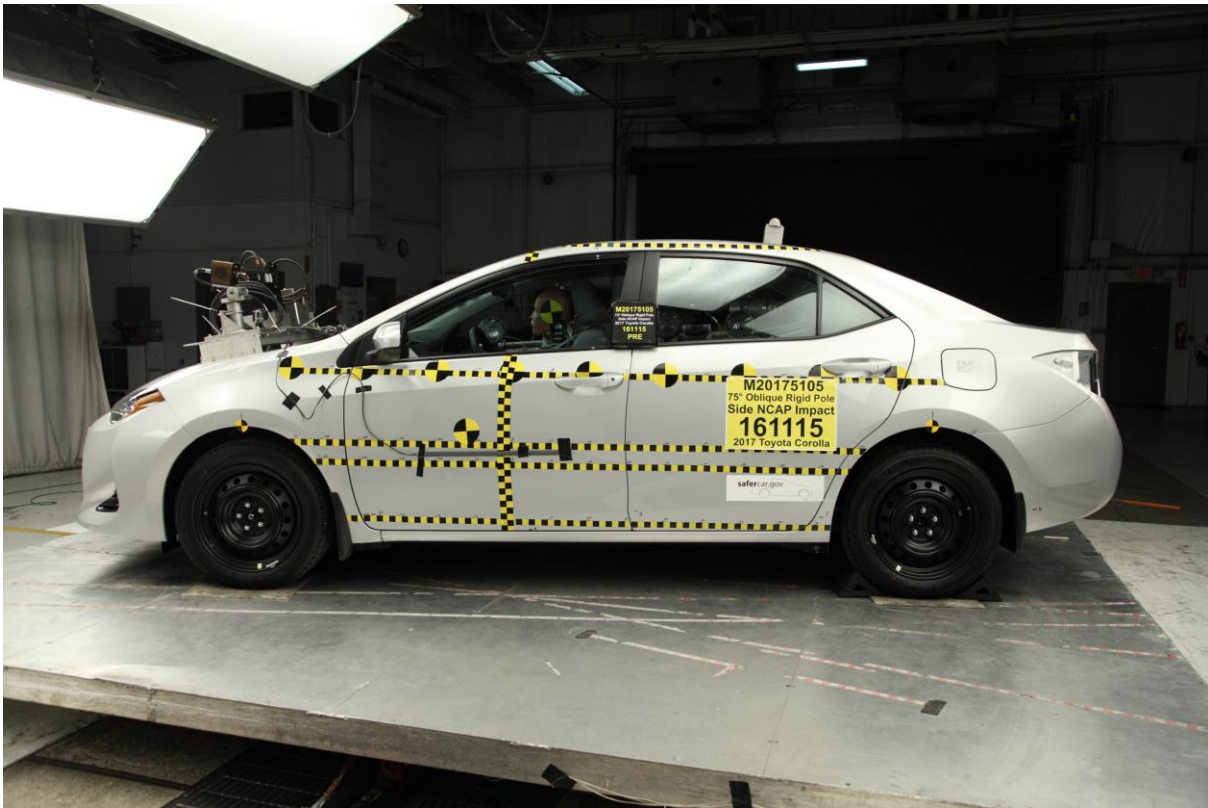
No. 004 Post-Test Frontal View of Test Vehicle



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



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



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



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



No. 009 Pre-Test Left Rear $\frac{3}{4}$ View of Test Vehicle



No. 010 Post-Test Left Rear $\frac{3}{4}$ View of Test Vehicle



No. 011 Pre-Test Rear View of Test Vehicle



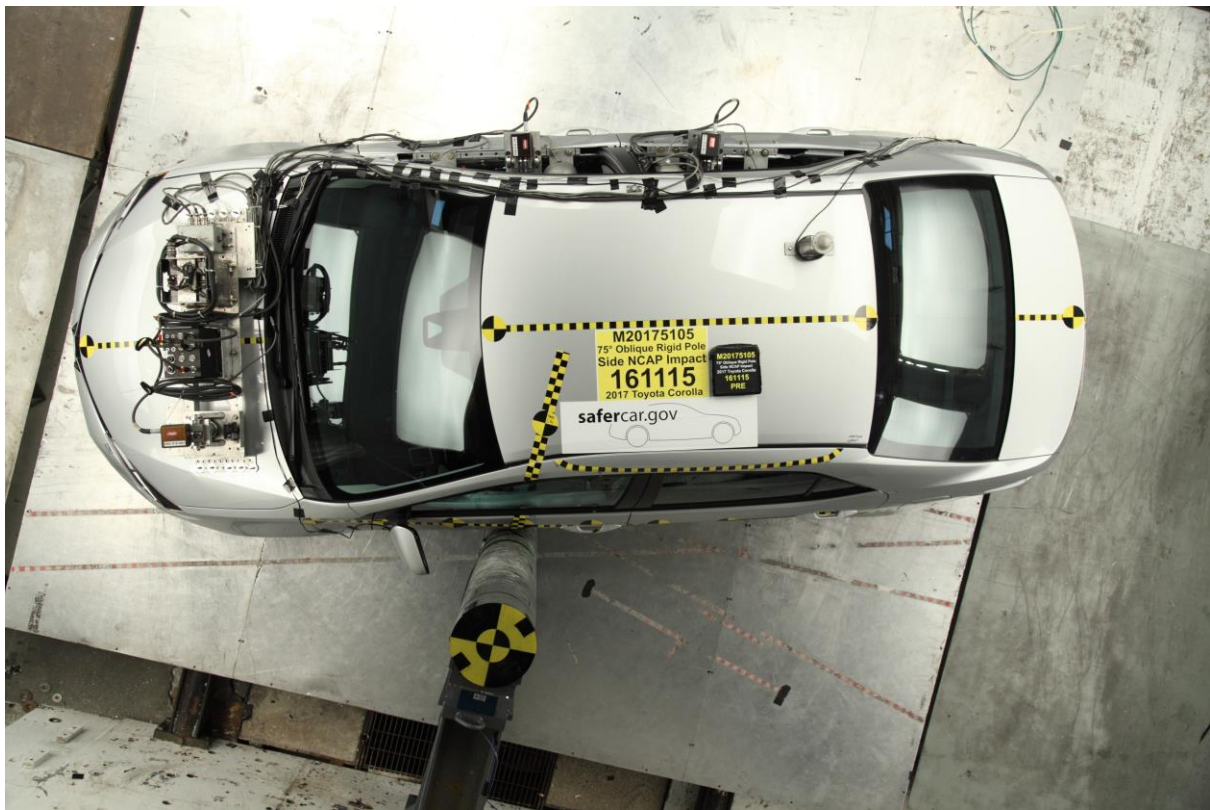
No. 012 Post-Test Rear View of Test Vehicle



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



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



No. 015 Pre-Test Overhead View of Test Area



No. 016 Post-Test Overhead View of Test Area



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



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



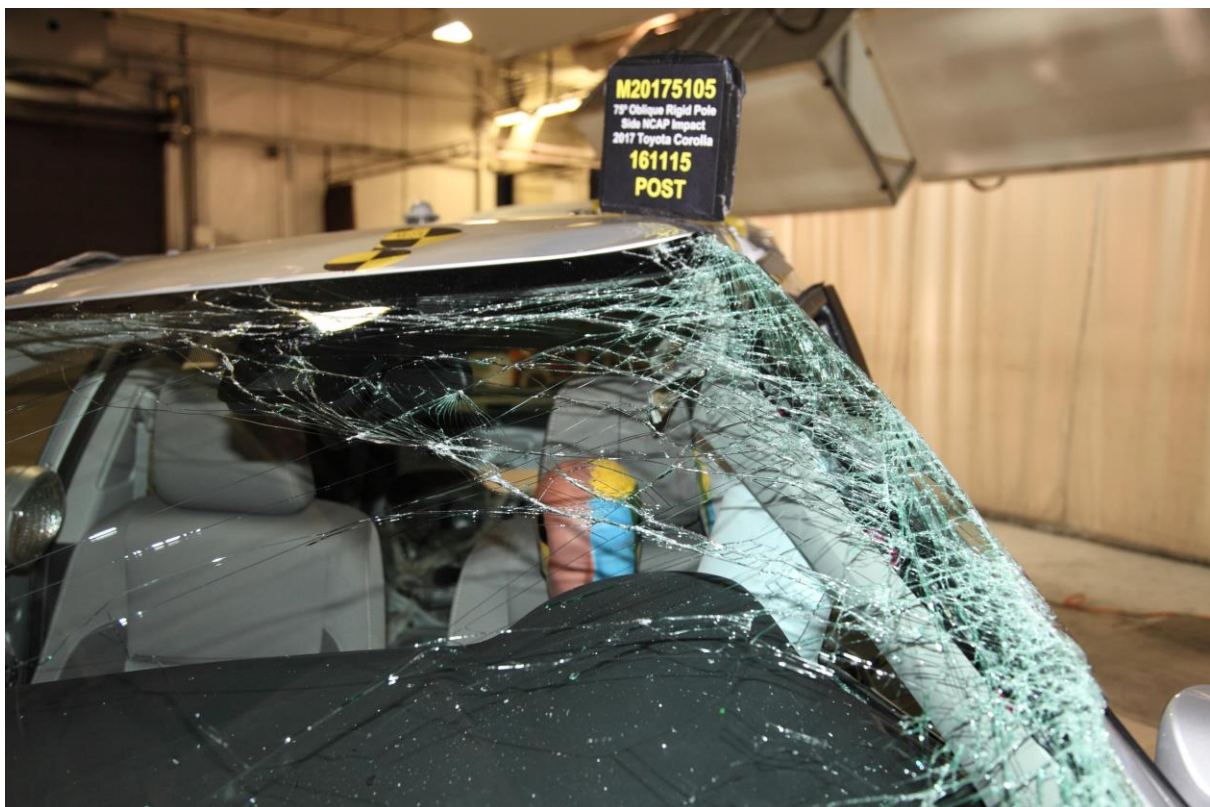
No. 019 Pre-Test Close-Up View of Impact Point Target



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



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



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



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

Intentionally Left Blank

PHOTO NOT AVAILABLE

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



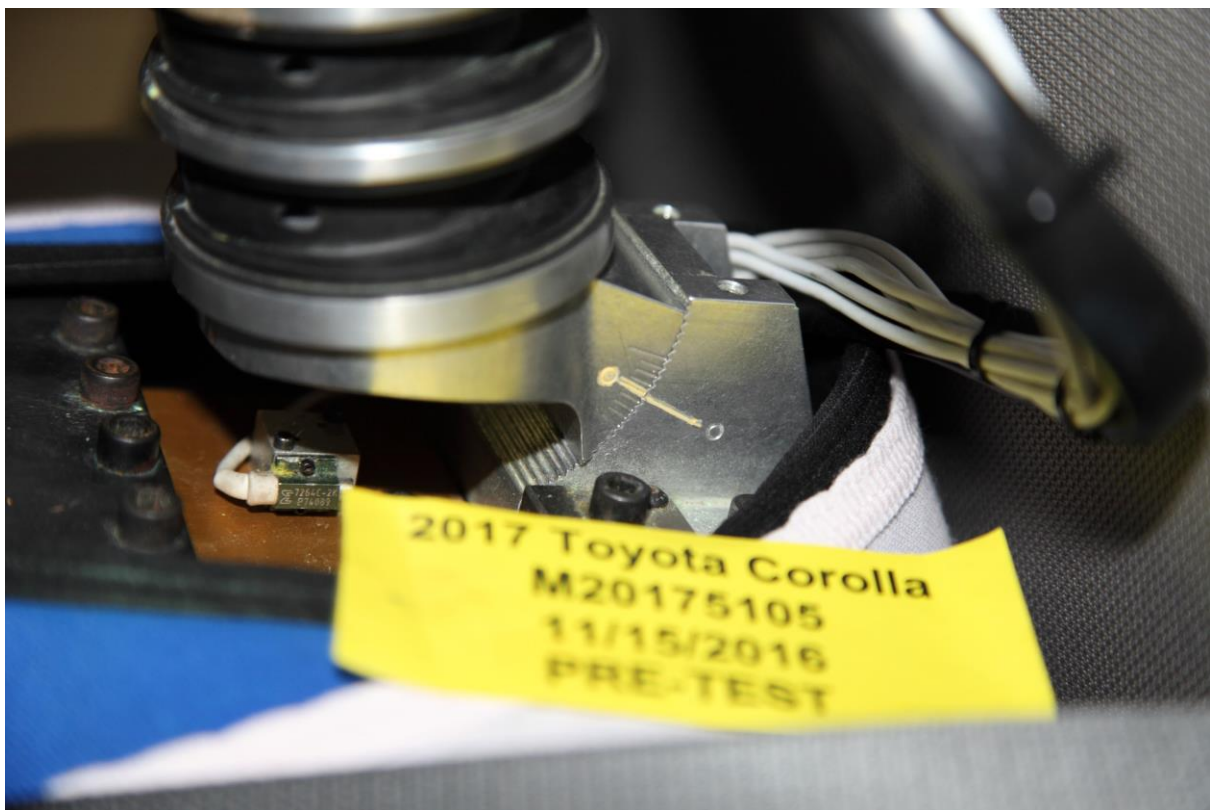
No. 027 Pre-Test Front Close-Up View of Dummy Head and Shoulders in Relation to Head Restraint



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



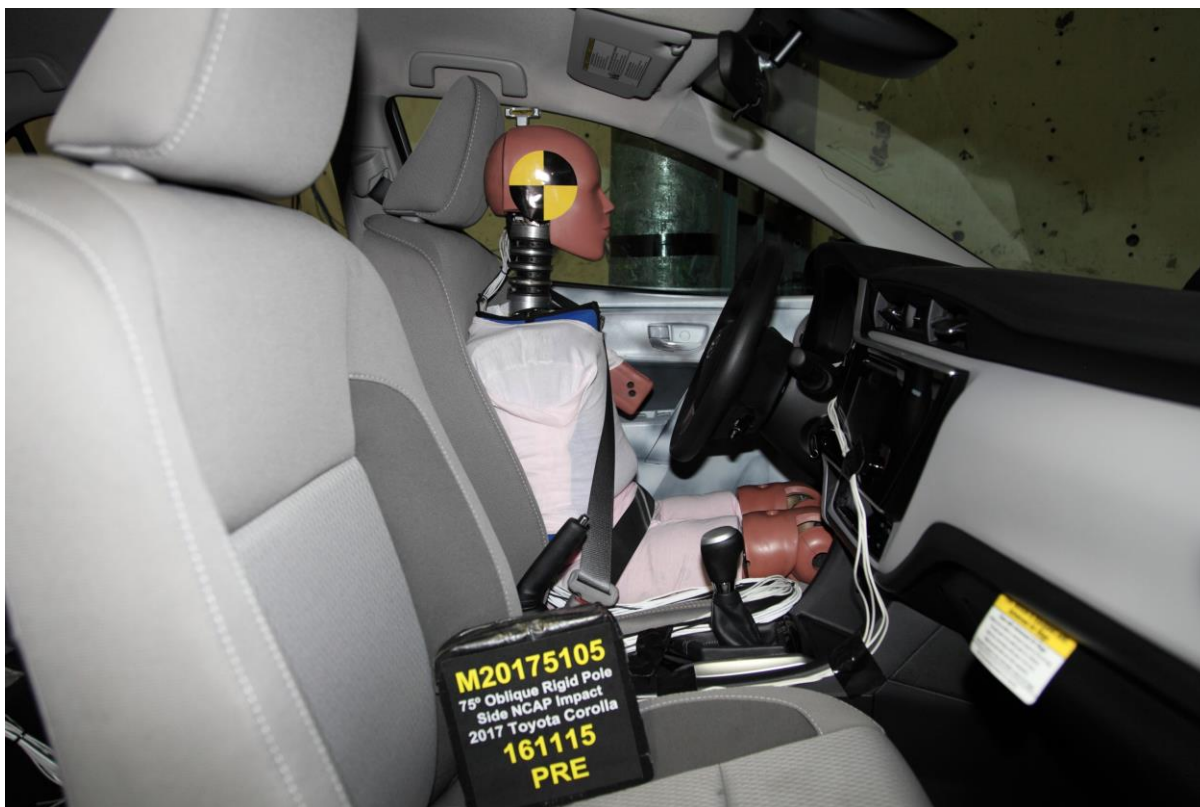
No. 039 Pre-Test Close-Up View of Driver Seat Back or Head Restraint



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



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



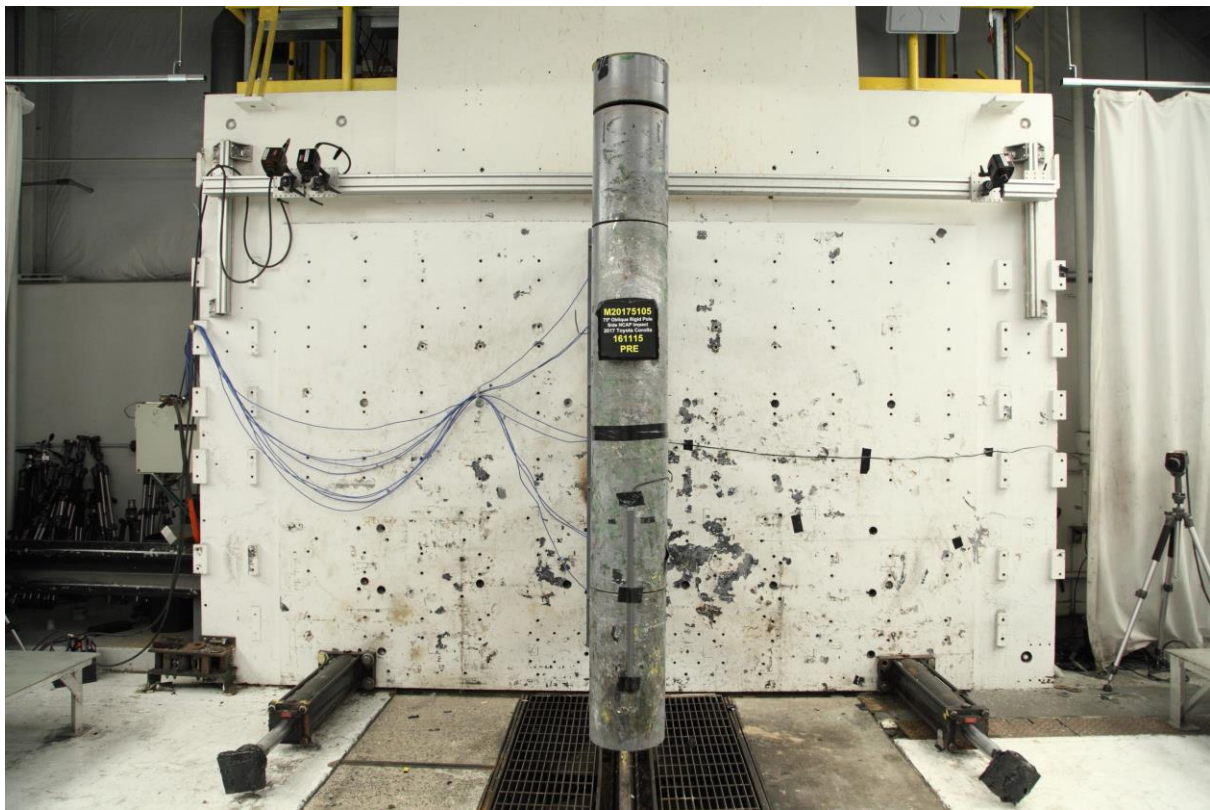
No. 055 Close-Up View of Vehicle Certification Label



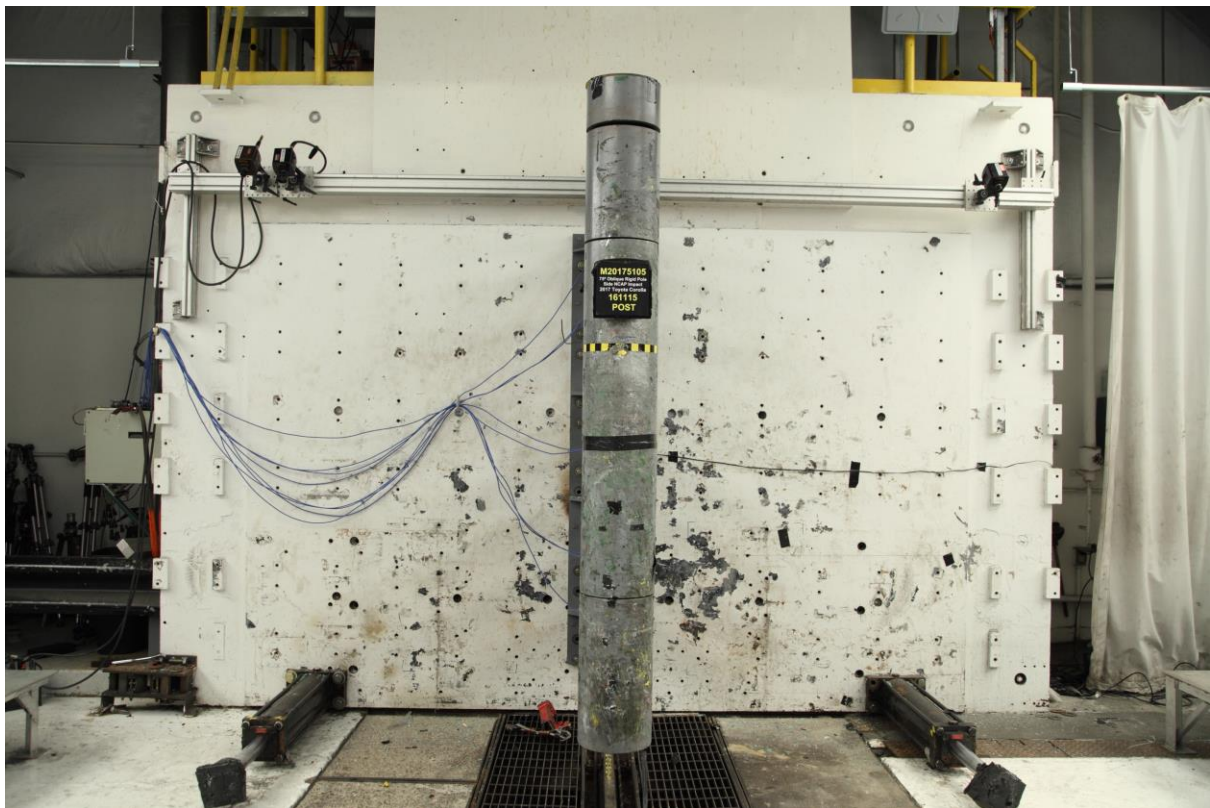
No. 055a Reduced Load Capacity Label



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



No. 057 Pre-Test Pole Barrier Front View



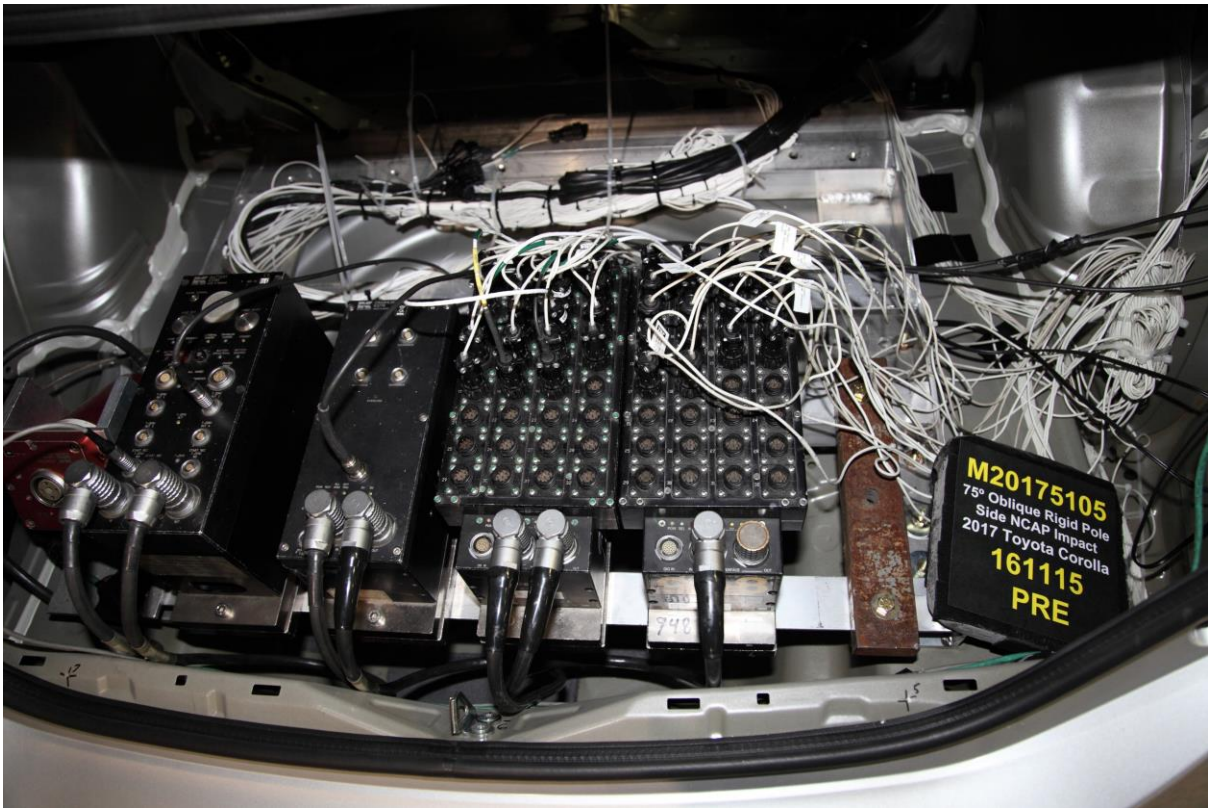
No. 058 Post-Test Pole Barrier Front View



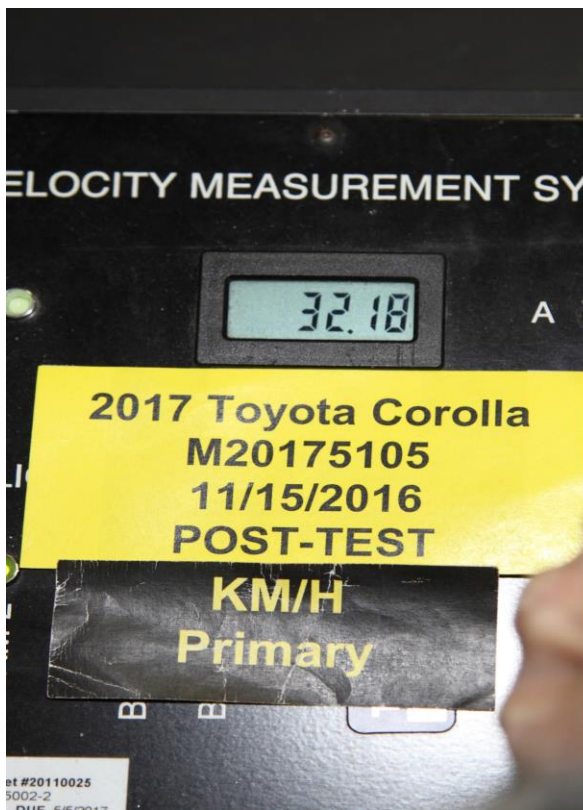
No. 059 Pre-Test Pole Barrier Side View



No. 060 Post-Test Pole Barrier Side View



No. 061 Pre-Test Ballast View



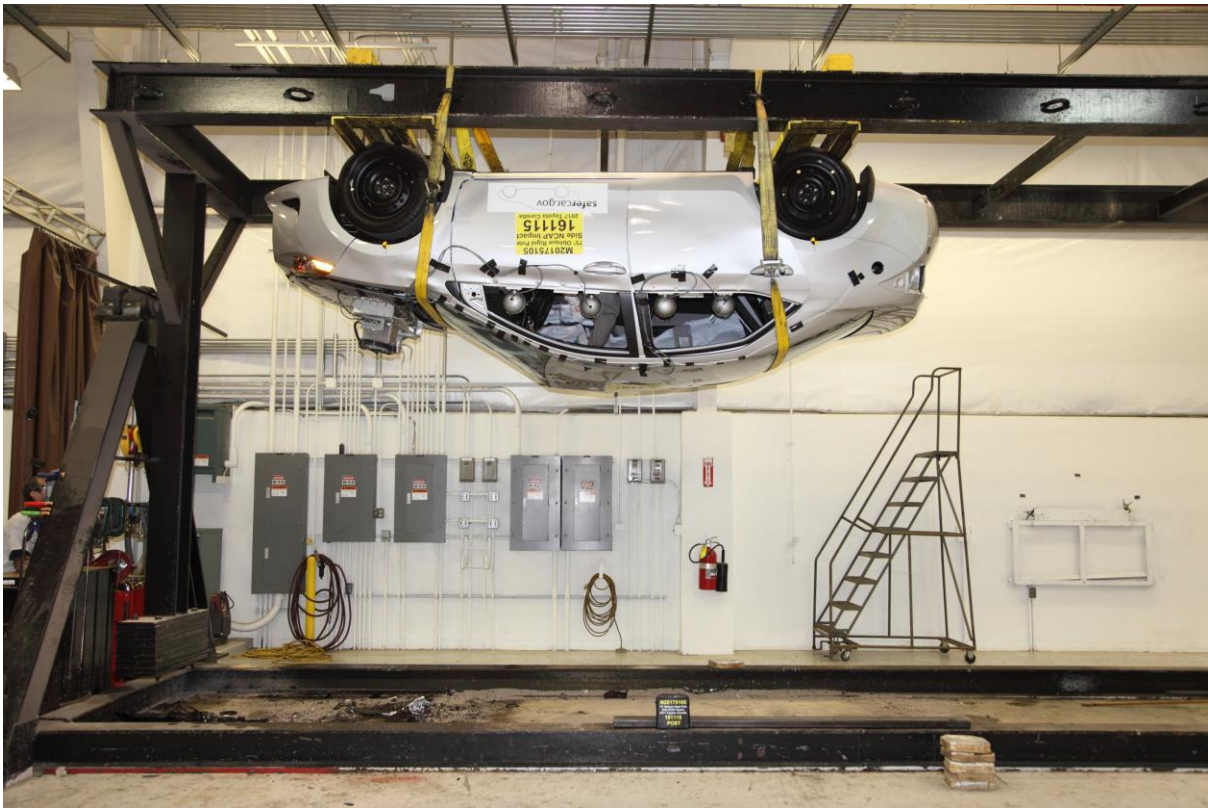
No. 062 Post-Test Primary and Redundant Speed Trap Read Out



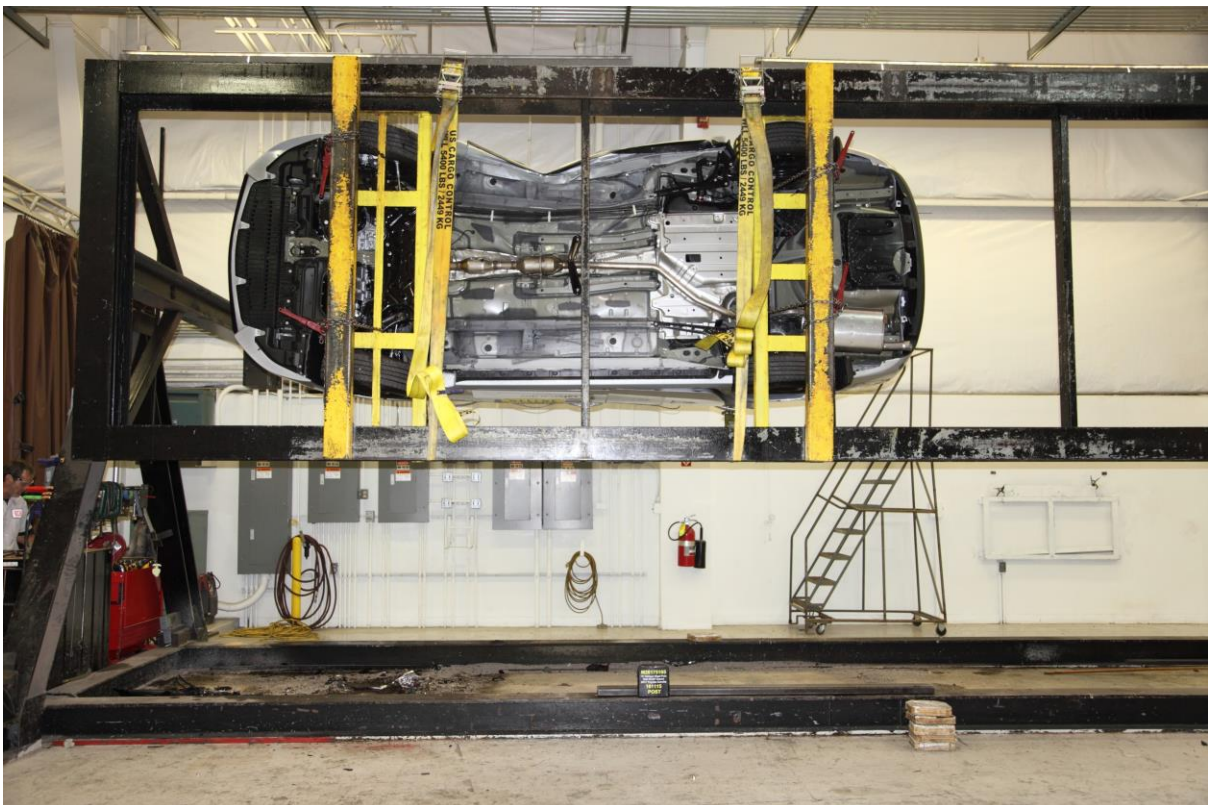
No. 063 FMVSS No. 301 Static Rollover 0 Degrees



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

TOYOTA
Let's Go Places

DESC: **COROLLA** LE
VIN: **2T1BURHE9HC747261**
YR/MDL: 2017/1852A
CLR: CLASSIC SILVER MET/FB11 (01/7/11)
FINAL ASSEMBLY POINT: CAMBRIDGE, ONTARIO, CANADA

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.

Crash	Driver Passenger	Not Rated
Frontal	Not Rated	Not Rated
Side	Not Rated	Not Rated
Rollover	★★★★	★★★★

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

STANDARD EQUIPMENT

MECHANICAL & PERFORMANCE

- 1.8L 4-cyl DOHC 16-Valve Dual VVT-i
- Continuously Variable Transmission
- 16-in Wide Vnt Steel Wheels
- And P205/55R16 Tires

SAFETY & CONVENIENCE

- Toyota Safety Sense-P: Pre-Collision Sys w/Pedestrian Detection, Dynamic Radar Cruise Control, Lane Departure Alert w/Steering Assist, Automatic High Beams
- Star Safety System Includes: VSC, TRAC, Anti-Lock Brake System, EBD, Brake Assist & Smart Stop Technology
- Airbags: Dr & Fr Pass Adv Airbag Sys, Dr & Fr Pass Seat-Mounted Side Airbags, Dr Knee Airbag, Pass Seat Cushion Airbag Front & Rear Side Curtain Airbags
- LATCH (Lwr Anchors/Retrainers for Children) for Outboard Rear Seating Positions Only
- Whiplash-Injury Lessening Front Seats

EXTERIOR

- 9-LED Headlights
- LED Daytime Running Lights in Headlight
- Color-Keyed Heated Power Outside Mirrors

INTERIOR

- Premium Fabric-Trimmed 6-Way Adj Dr Seat
- 4-Way Adj Fr Pass Seat w/Seatback Pocket
- Entune Audio w/6.1-in Touch-screen incl Entune Multimedia Bundle (AUX/USB/Bluetooth Voice Recognition), Siri Eyes Free
- 3.5-in Monochrome TFT Multi-Info Display
- Integrated Backup Camera w/Projected Pin
- Steering Wheel w/Audio & Bluetooth Hands-Free Phone Voice Command Controls and Push Button Controls
- Remote Keyless Entry System
- Power Door Locks and Windows
- **Full Tank of Gas***

MANUFACTURER'S SUGGESTED RETAIL PRICE \$18,935.00

OPTIONAL EQUIPMENT

FE	50 State Emissions	259.00
ZT	All Weather Floor Liners/Cargo Tray	129.00
MF	Mudguards	

EPA DOT Fuel Economy and Environment

Gasoline Vehicle

Fuel Economy

32 MPG
combined city/highway
28 city
36 highway
3.1 gallons per 100 miles

You Save \$1,250
in fuel costs over 5 years compared to the average new vehicle.

Annual fuel Cost \$1,150

Fuel Economy & Greenhouse Gas Rating (tailpipe only)

Smog Rating (tailpipe only)

Annual fuel Cost \$1,150

Actual results will vary for many reasons, including driving conditions and how you drive and maintain your vehicle. The average new vehicle gets 24 MPG and costs \$7,600 to fuel over 5 years. Cost estimates are based on 15,000 miles per year at \$2.45 per gallon. MPG is miles per gasoline gallon equivalent. Vehicle emissions are a significant cause of climate change and smog.

fuel economy.gov
Calculate personalized estimates and compare vehicles

DELIVERY PROCESSING AND HANDLING FEE 865.00

TOTAL \$20,175.00

The New Vehicle Limited Warranty provides 3-year/50,000-mile basic coverage, 5-year/100,000-mile powertrain coverage, plus 2-year/50,000-mile corrosion perforation coverage. See Warranty and Maintenance Guide for details. An extended service contract may be available for the vehicle.
Manufacturer's suggested retail price includes manufacturer's recommended pre-delivery service. Gasoline, license and title fees, applicable federal, state and local taxes and dealer and distributor installed options and accessories are not included in the manufacturer's suggested retail price.
*Optional, which covers normal factory scheduled maintenance for five years or 75,000 miles, whichever occurs first, is included as part of the sales price of the vehicle for qualifying buyers.
See participating dealer for eligibility and coverage details.

Delivered by Truck to: 31175
WEST HEBER TOWN/WILLIAMSVILLE
8129 MAIN STREET
WILLIAMSVILLE NY 14221

No. 069 Monroney Label

136 3-3. Adjusting the seats

Head restraints

Head restraints are provided for all seats.

Front seats

- Up
Pull the head restraints up.
- Down
Push the head restraint down while pressing the lock release button.

Rear seats

► Type A

- Up
Pull the head restraints up.
- Down
Push the head restraint down while pressing the lock release button.

► Type B

- Up
Pull the head restraints up.
- Down
Push the head restraint down while pressing the lock release button.

3-3. Adjusting the seats 137

► Removing the head restraints (except for fixed rear head restraints)

Pull the head restraint up while pressing the lock release button.

Installing the head restraints (except for fixed rear head restraints)

► Front seats and rear outside seats

Align the head restraint with the installation holes and push it down to the lock position. Press and hold the lock release button when lowering the head restraint.

► Rear center seat

Align the head restraint with the installation holes and push it down to the lowest lock position while pressing the lock release button.

► Adjusting the height of the head restraints (except for fixed rear head restraints)

Make sure that the head restraints are adjusted so that the center of the head restraint is closest to the top of your ears.

► Adjusting the rear center seat head restraint

Always raise the head restraint one level from the stowed position when using.

Operation of each component

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

PHOTO NOT APPLICABLE

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

APPENDIX B
VEHICLE AND DUMMY RESPONSE DATA PLOTS

TABLE OF DATA PLOTS

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

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

www.nhtsa.dot.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)

Vehicle Instrumentation Data

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

Pole Instrumentation Data

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

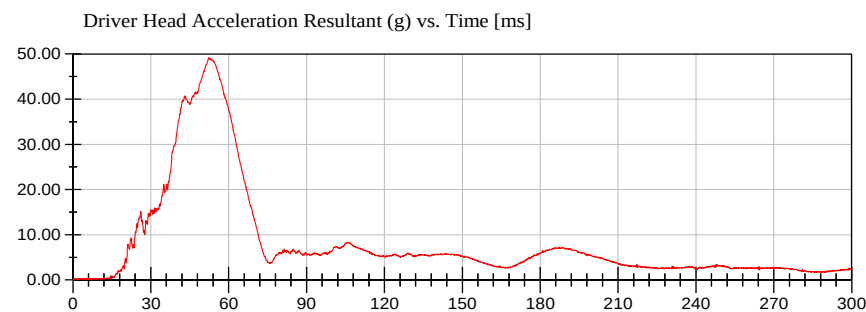
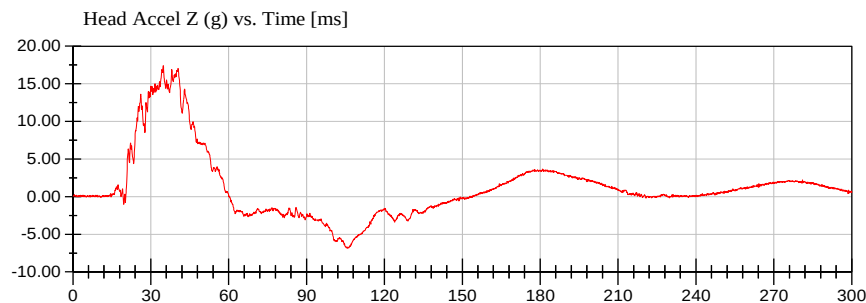
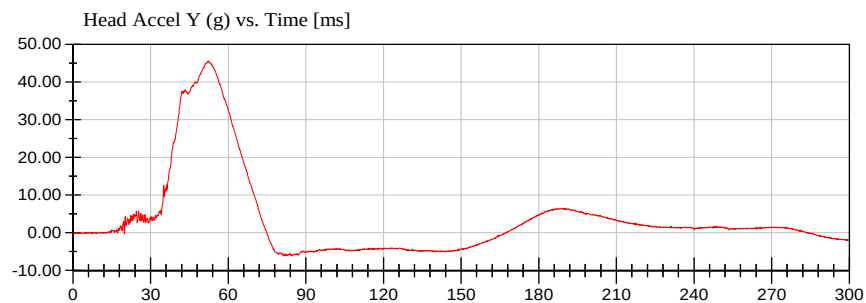
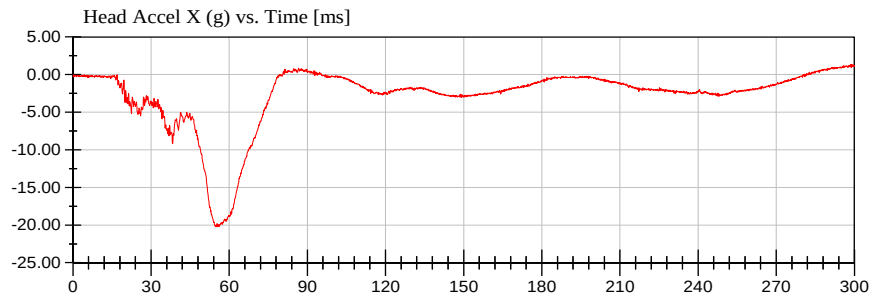
NHTSA

Test Lab: CTF

Test Number: 161115 (M20175105)

Position #1 SID IIs Dummy (297)

Test Date: 11/15/2016



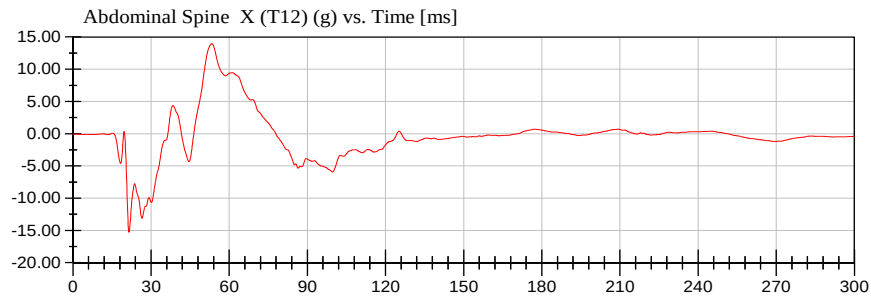
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Position #1 SID IIs Dummy (297)

Test Date: 11/15/2016

Test Lab: CTF

Test Number: 161115 (M20175105)

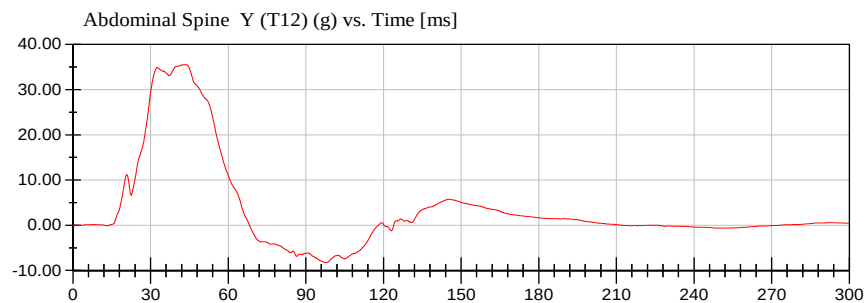


<Max>

13.94 g at 53.36 ms

<Min>

-15.27 g at 21.52 ms

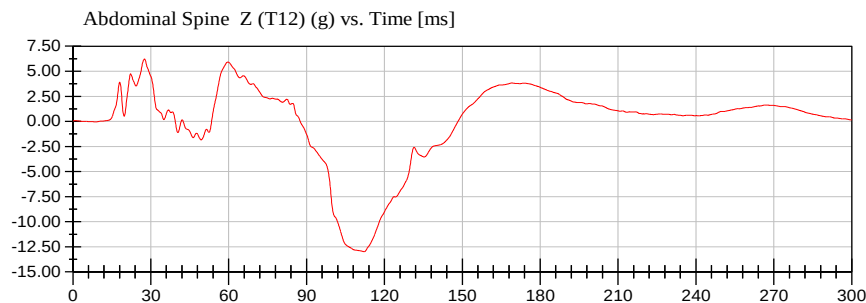


<Max>

35.55 g at 43.28 ms

<Min>

-8.26 g at 97.92 ms

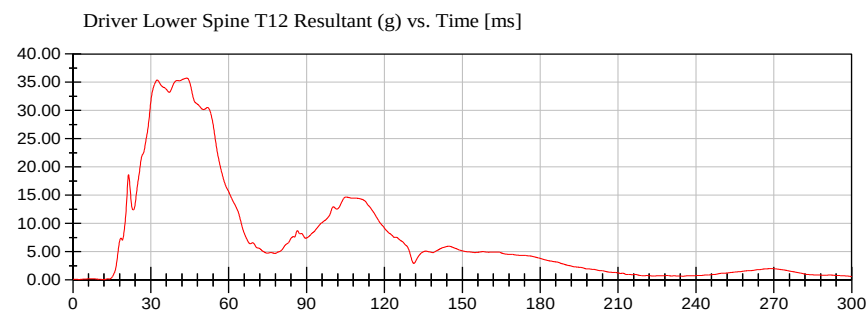


<Max>

6.23 g at 27.60 ms

<Min>

-12.98 g at 112.16 ms



<Max>

35.72 g at 43.84 ms

<Min>

0.05 g at 11.84 ms



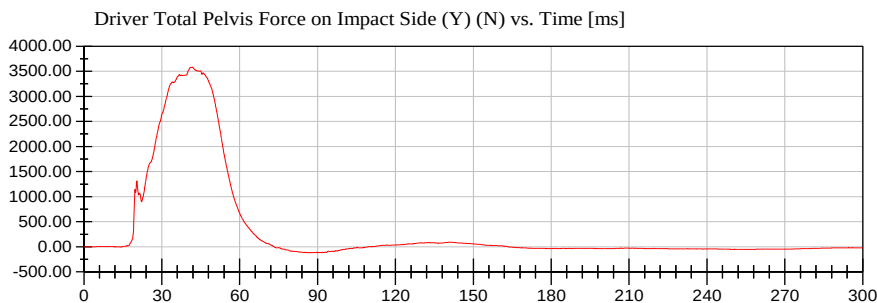
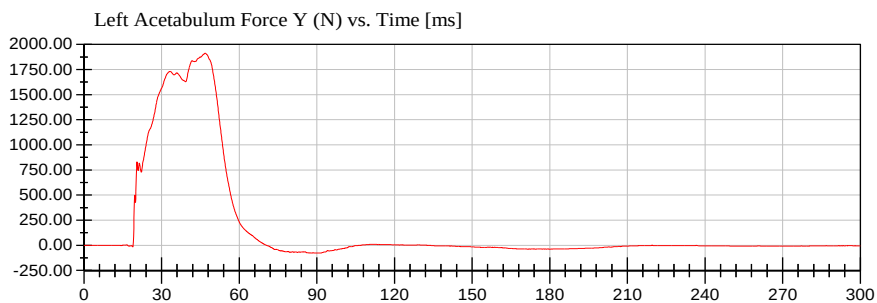
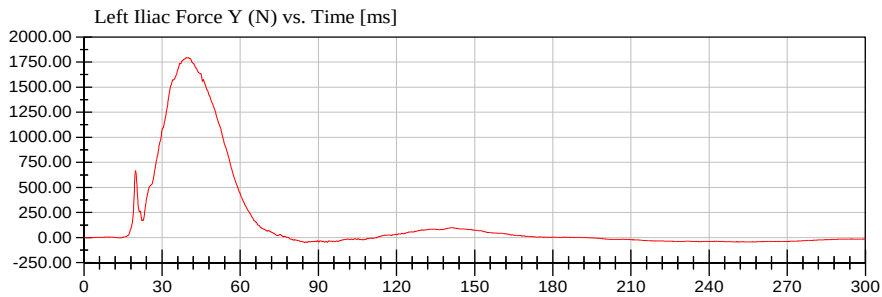
NHTSA

Test Lab: CTF

Test Number: 161115 (M20175105)

Position #1 SID IIs Dummy (297)

Test Date: 11/15/2016



APPENDIX C
DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

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

Table 1. External Measurements

Table 2. Head Drop Test

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

Table 3. Lateral Neck Pendulum Test

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

Table 4. Shoulder Impact Test

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

Table 5. Thorax (With Arm) Impact Test

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

Table 6. Thorax (Without Arm) Impact Test

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

Table 7. Abdomen Impact Test

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

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

Table 9. Pelvis Acetabulum Impact Test

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

Table 10. Pelvis Iliac Impact Test

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

Pre-Test Calibration Sheets
Driver S/N 297

Transportation Research Center Inc.
SIDIIs Dummy - Level D
External Dimensions
Serial No. 297 Calibration No.12

Symbol	Description	Specification	Results	Pass
		mm	mm	
A	Sitting Height	772.0 - 788.0	781	Yes
B	Shoulder Pivot Height	437.0 - 453.0	448	Yes
C	H-Point Height	79.0 - 89.0	85	Yes
D	H-Point from Seat Back	141.0 - 151.0	146	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	145	Yes
H	Head Back from Backline	40.0 - 46.0	44	Yes
I	Head Depth	178.0 - 188.0	182	Yes
J	Head Circumference	541.0 - 551.0	545	Yes
K	Buttock to Knee Length	514.0 - 540.0	528	Yes
L	Popliteal Height	343.0 - 369.0	355	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	203	Yes
P	Foot Length (right)	216.0 - 232.0	221	Yes
P	Foot Length (left)	216.0 - 232.0	221	Yes
Q	Hip Breadth	313.0 - 323.0	319	Yes
R	Arm Length	249.0 - 259.0	254	Yes
S	Knee Joint to seat Back	478.0 - 493.0	487	Yes
V	Shoulder Width (only one arm installed)	341.0 - 357.0	347	Yes
W	Foot Width (right)	78.0 - 94.0	84	Yes
W	Foot Width (left)	78.0 - 94.0	84	Yes
Y	Chest Circumference with Jacket	851.0 - 881.0	869	Yes
Z	Waist Circumference	761.0 - 791.0	778	Yes

Transportation Research Center Inc.

Left Lateral Head Drop

SID IIs Serial No. 297 Certification No. 12-1

Test Date: 11/9/2016

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	40 %	Yes
Peak Head Resultant Acceleration	115 - 137 g	131.8 g	Yes
Peak Head Longitudinal Acceleration	(-15) - 15 g	3.8 g	Yes
Is Head Resultant Acceleration Curve Unimodal within 15% of Peak?	Yes	Yes	Yes

Test meets specifications.

Comments:

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

11.09.2016 17:26:26 232

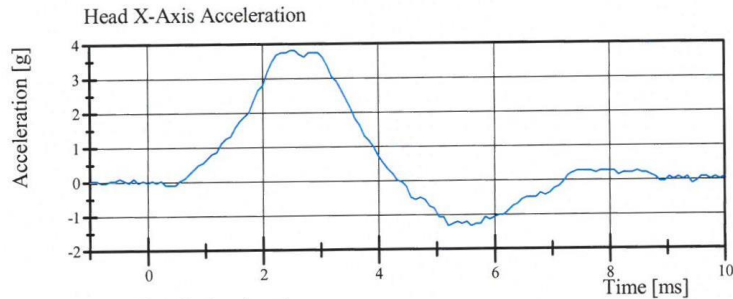


Transportation Research Center Inc.

Left Lateral Head Drop

SID IIs Serial No. 297 Certification No. 12-1

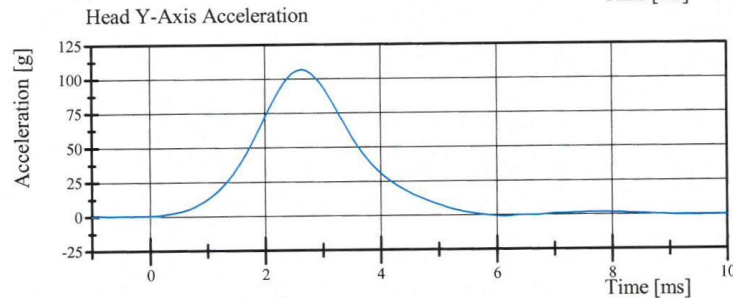
Test Date: 11/9/2016



Filter Class: CFC_1000

Max: 3.8 g at 2.5 ms

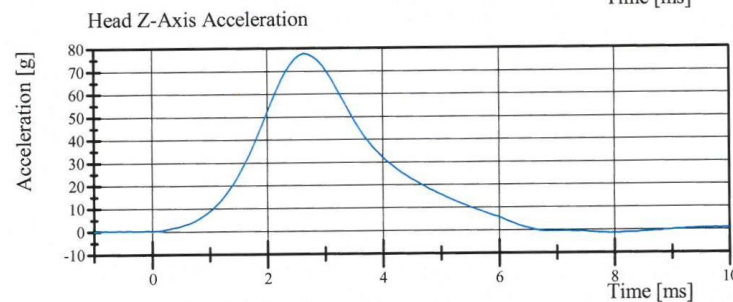
Min: -1.3 g at 5.2 ms



Filter Class: CFC_1000

Max: 106.5 g at 2.6 ms

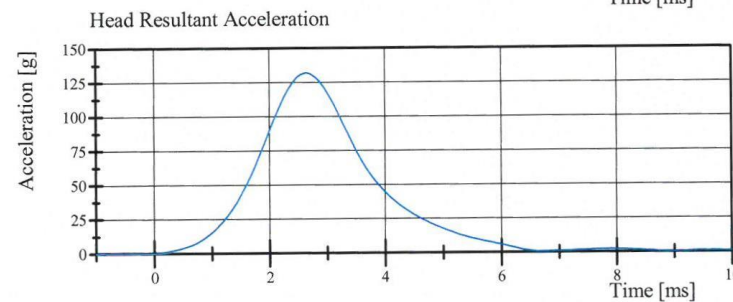
Min: -1.1 g at 6.1 ms



Filter Class: CFC_1000

Max: 77.7 g at 2.6 ms

Min: -1.4 g at 7.9 ms



Filter Class: CFC_1000

Max: 131.8 g at 2.6 ms

Min: 0.0 g at -1.0 ms

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

11.09.2016 17:26:39 232



Transportation Research Center Inc.

Left Lateral Neck

SID IIs Serial No. 297 Certification No. 12-1

Test Date: 11/9/2016

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.9 °C	Yes
Relative Humidity	10 - 70 %	35 %	Yes
Pendulum Velocity	(-5.51) - (-5.63) m/s	-5.613 m/s	Yes
Pendulum Integrated Velocity			
Change at 10 ms	2.20 - 2.80 m/s	2.659 m/s	Yes
Change at 15 ms	3.30 - 4.10 m/s	3.945 m/s	Yes
Change at 20 ms	4.40 - 5.40 m/s	5.342 m/s	Yes
Change at 25 ms	5.40 - 6.10 m/s	5.759 m/s	Yes
Change at 25 to 100 ms	5.50 - 6.20 m/s	5.760 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	57.3 ms	Yes
Total Neck Occipital Condyles Moment	36 - 44 N·m	42.5 N·m	Yes
Total Neck Occipital Condyles Moment			
Decay Time to 0 N·m	102 - 126 ms	108.1 ms	Yes

Test meets specifications.

Comments:

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

11.09.2016 17:55:41 711

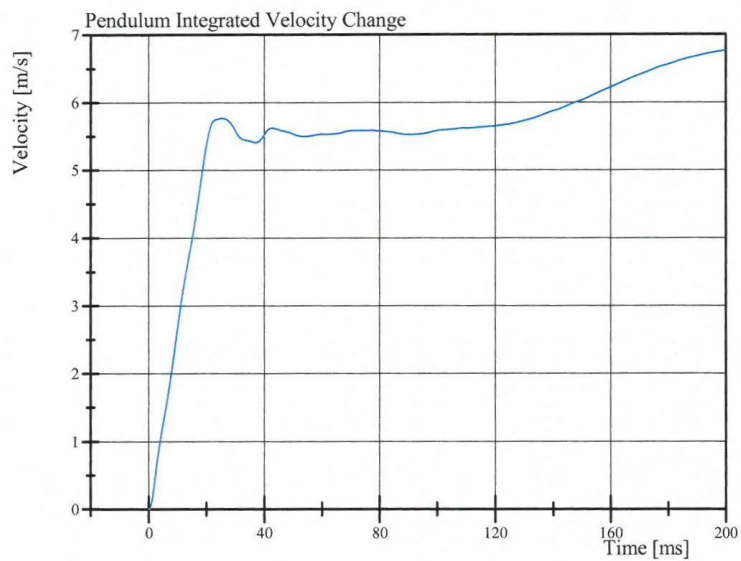
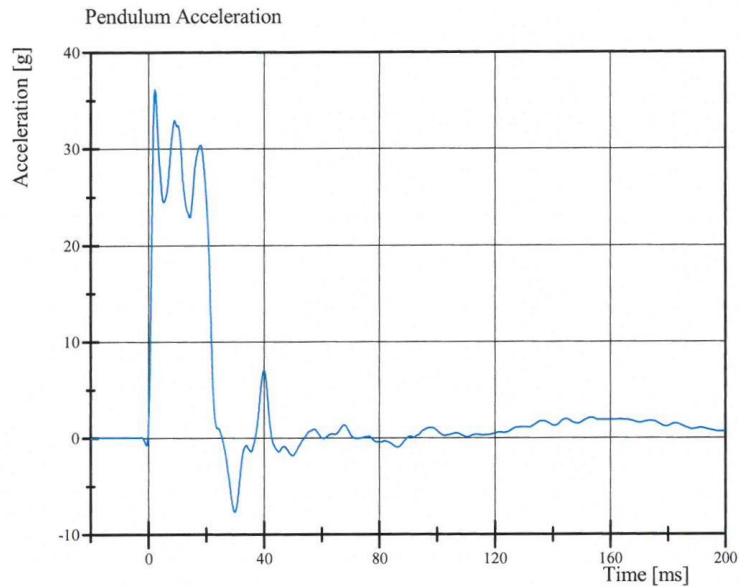


Transportation Research Center Inc.

Left Lateral Neck

SID IIs Serial No. 297 Certification No. 12-1

Test Date: 11/9/2016



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

11.09.2016 17:55:52 711

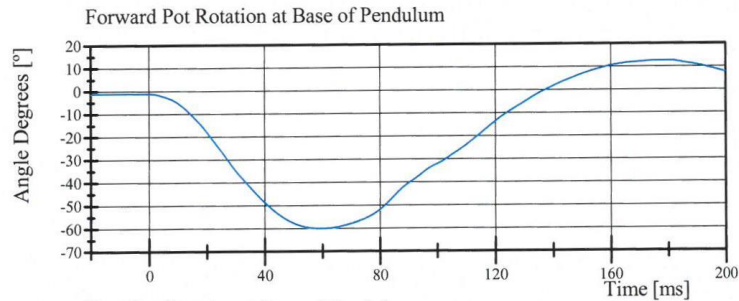


Transportation Research Center Inc.

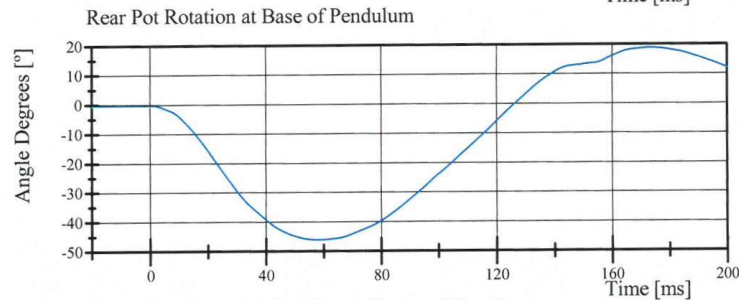
Left Lateral Neck

SID IIs Serial No. 297 Certification No. 12-1

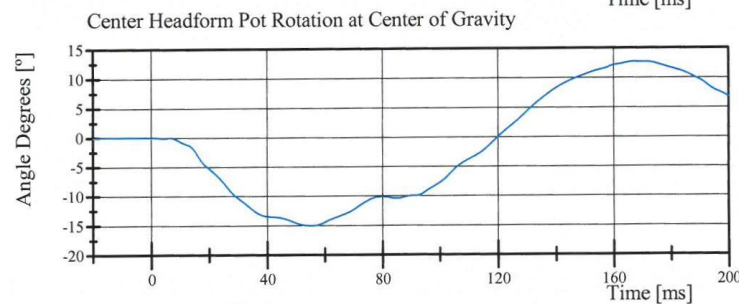
Test Date: 11/9/2016



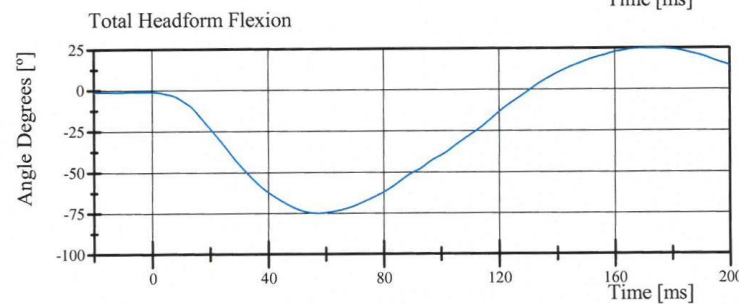
Filter Class: CFC_60
Max: 12.6 ° at 179.4 ms
Min: -60.3 ° at 59.6 ms



Filter Class: CFC_60
Max: 18.8 ° at 173.7 ms
Min: -46.2 ° at 58.2 ms



Filter Class: CFC_60
Max: 12.7 ° at 167.4 ms
Min: -15.1 ° at 55.2 ms



Filter Class: CFC_60
Max: 25.0 ° at 173.3 ms
Min: -75.2 ° at 57.3 ms

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

11.09.2016 17:55:52 711

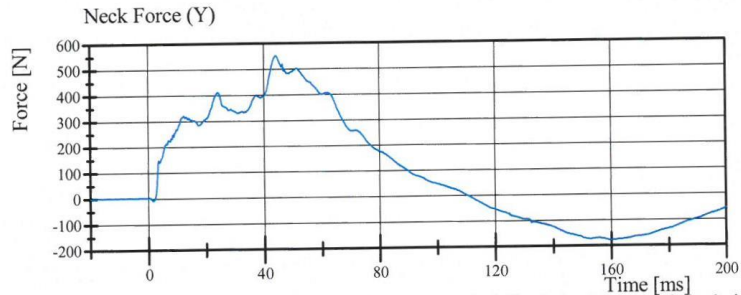


Transportation Research Center Inc.

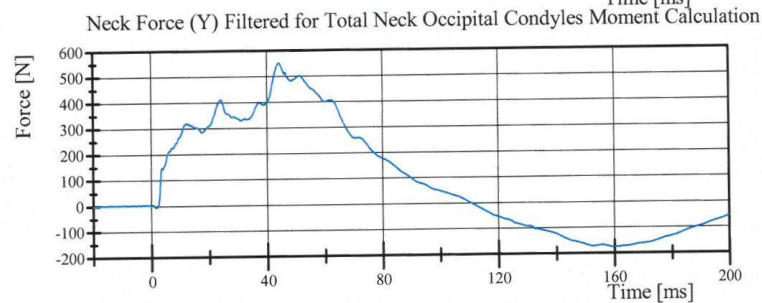
Left Lateral Neck

SID IIs Serial No. 297 Certification No. 12-1

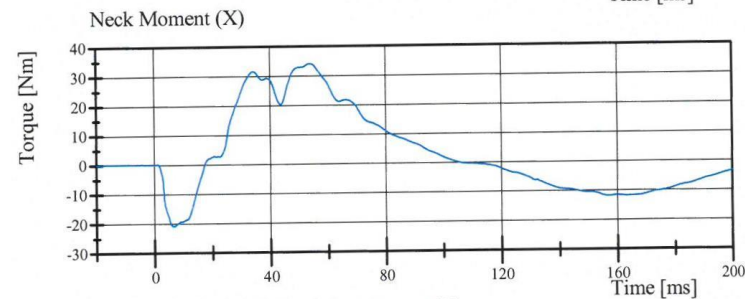
Test Date: 11/9/2016



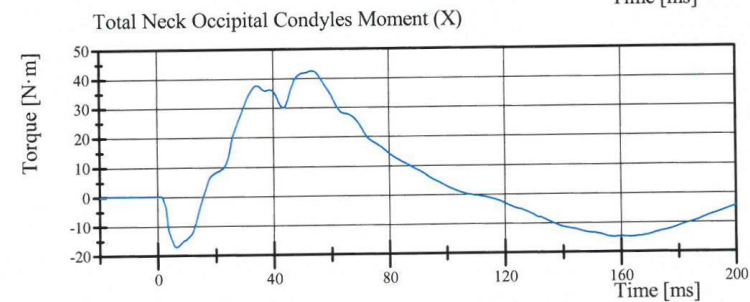
Filter Class: CFC_1000
Max: 550.1 N at 44.3 ms
Min: -177.1 N at 159.3 ms



Filter Class: CFC_600
Max: 550.1 N at 44.3 ms
Min: -176.9 N at 159.4 ms



Filter Class: CFC_600
Max: 34.0 Nm at 53.6 ms
Min: -21.0 Nm at 7.0 ms



Filter Class: Without_(Constar
Max: 42.5 N·m at 53.4 ms
Min: -17.2 N·m at 6.4 ms

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

11.09.2016 17:55:53 711



Transportation Research Center Inc.

Left Lateral Shoulder

SID IIs Serial No. 297 Certification No. 12-1

Test Date: 11/9/2016

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.9 °C	Yes
Relative Humidity	10 - 70 %	38 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.35 m/s	Yes
Impactor Acceleration	(-13) - (-18) g	-15.5 g	Yes
Shoulder Displacement	28 - 37 mm	31.1 mm	Yes
Upper Spine Lateral Acceleration	17 - 22 g	19.5 g	Yes

Test meets specifications.

Comments:

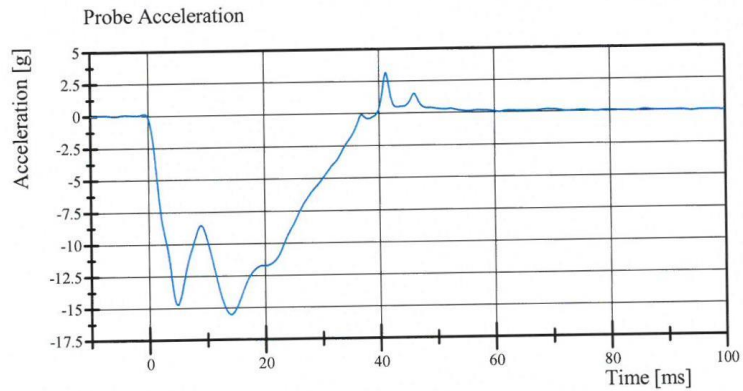
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

11.09.2016 15:03:55 825

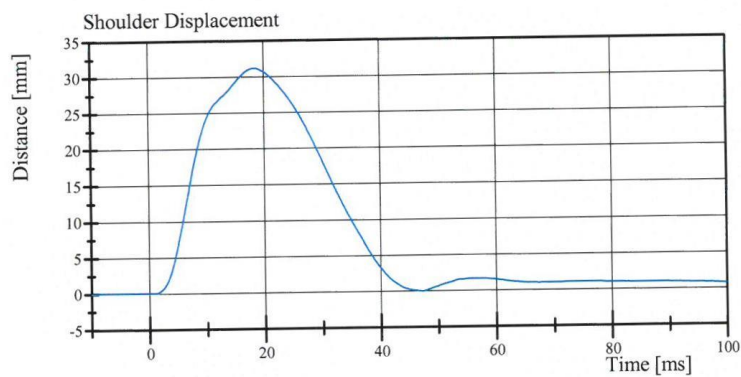


Transportation Research Center Inc.

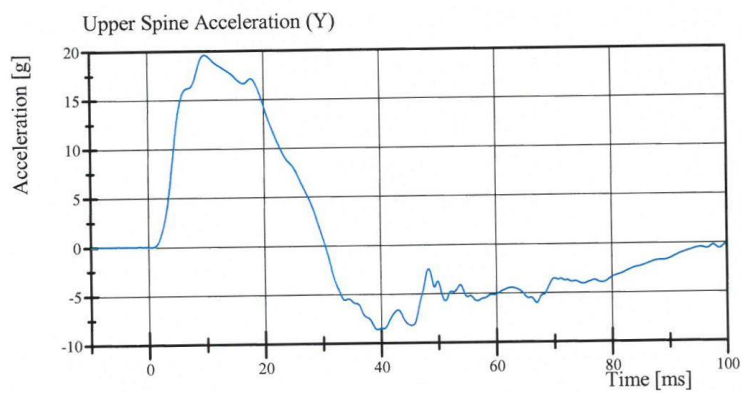
Left Lateral Shoulder
SID IIs Serial No. 297 Certification No. 12-1
Test Date: 11/9/2016



Filter Class: CFC_180
Max: 3.1 g at 41.3 ms
Min: -15.5 g at 14.1 ms



Filter Class: CFC_600
Max: 31.1 mm at 18.3 ms
Min: -0.0 mm at 47.2 ms



Filter Class: CFC_180
Max: 19.5 g at 9.8 ms
Min: -8.6 g at 39.4 ms

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

11.09.2016 15:04:10 825



Transportation Research Center Inc.

Left Lateral Thorax with Arm
SID IIs Serial No. 297 Certification No. 12-1
Test Date: 11/9/2016

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.9 °C	Yes
Relative Humidity	10 - 70 %	38 %	Yes
Impactor Velocity	6.60 - 6.80 m/s	6.726 m/s	Yes
Impactor Acceleration	(-30) - (-36) g	-33.6 g	Yes
Shoulder Displacement	31 - 40 mm	34.6 mm	Yes
Upper Thorax Rib Displacement	25 - 32 mm	27.0 mm	Yes
Center Thorax Rib Displacement	30 - 36 mm	31.3 mm	Yes
Lower Thorax Rib Displacement	32 - 38 mm	33.9 mm	Yes
Upper Spine Lateral Acceleration	34 - 43 g	34.9 g	Yes
Lower Spine Lateral Acceleration	29 - 37 g	35.4 g	Yes

Test meets specifications.

Comments:

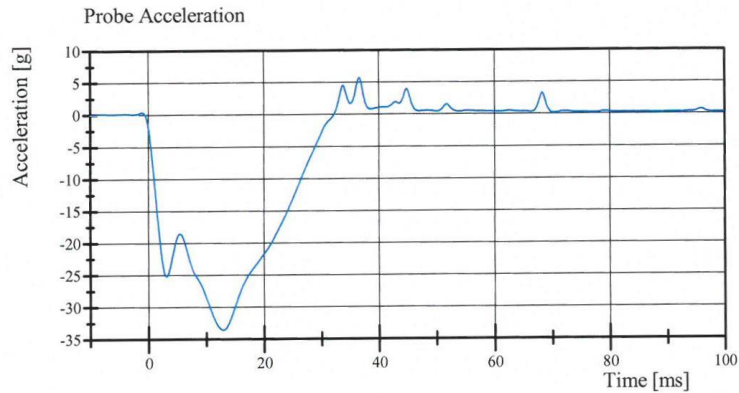
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

11.09.2016 16:41:03 604

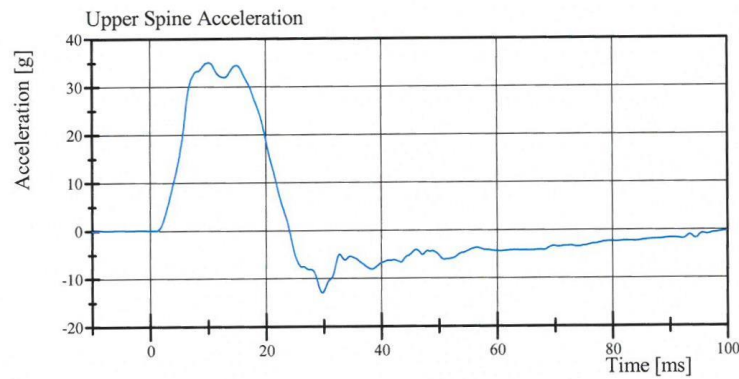


Transportation Research Center Inc.

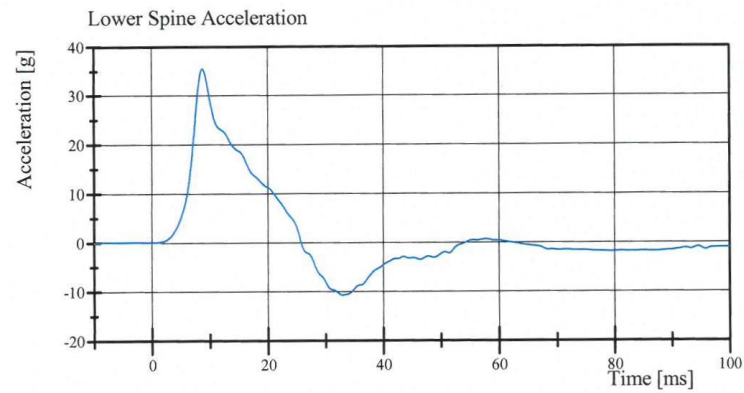
Left Lateral Thorax with Arm
SID IIs Serial No. 297 Certification No. 12-1
Test Date: 11/9/2016



Filter Class: CFC_180
Max: 5.6 g at 36.6 ms
Min: -33.6 g at 12.9 ms



Filter Class: CFC_180
Max: 34.9 g at 10.2 ms
Min: -13.0 g at 29.8 ms



Filter Class: CFC_180
Max: 35.4 g at 8.7 ms
Min: -10.8 g at 32.9 ms

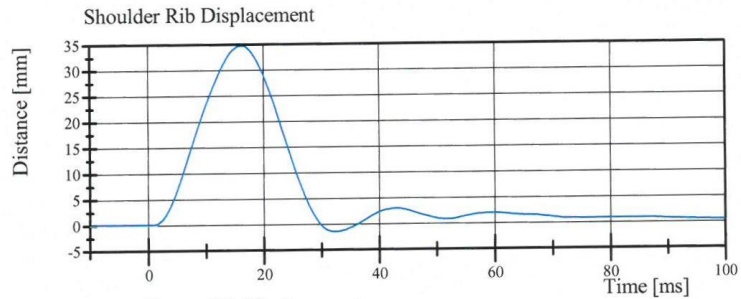
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

11.09.2016 16:41:14 604

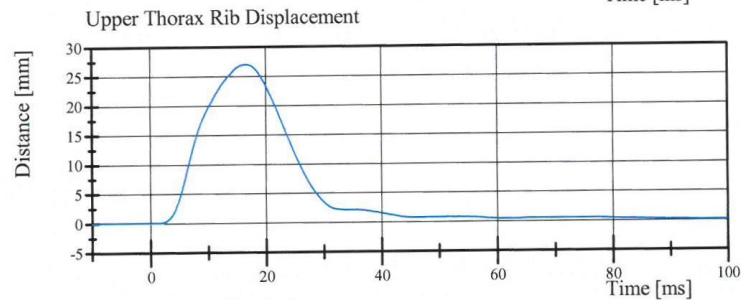


Transportation Research Center Inc.

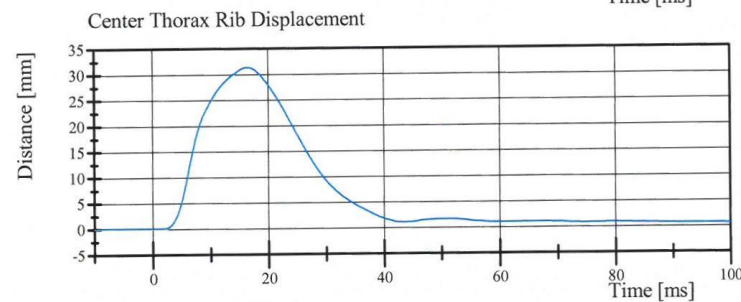
Left Lateral Thorax with Arm
SID IIs Serial No. 297 Certification No. 12-1
Test Date: 11/9/2016



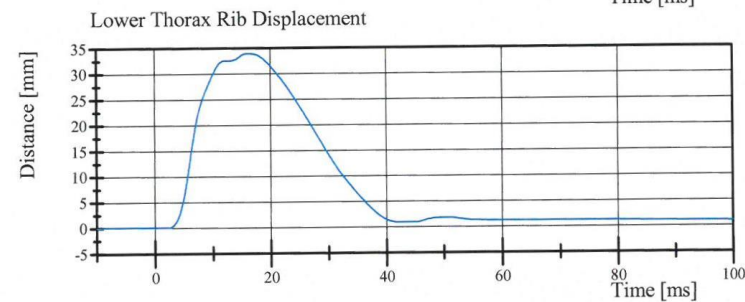
Filter Class: CFC_600
Max: 34.6 mm at 16.2 ms
Min: -1.5 mm at 32.4 ms



Filter Class: CFC_600
Max: 27.0 mm at 16.6 ms
Min: -0.0 mm at 1.3 ms



Filter Class: CFC_600
Max: 31.3 mm at 16.4 ms
Min: -0.0 mm at 1.5 ms



Filter Class: CFC_600
Max: 33.9 mm at 16.2 ms
Min: -0.0 mm at 2.5 ms

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

11.09.2016 16:41:15 604



Transportation Research Center Inc.

Left Lateral Thorax without Arm
SID IIs Serial No. 297 Certification No. 12-1
Test Date: 11/9/2016

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.9 °C	Yes
Relative Humidity	10 - 70 %	37 %	Yes
Impactor Velocity	4.20 - 4.40 m/s	4.348 m/s	Yes
Impactor Acceleration	(-14) - (-18) g	-16.3 g	Yes
Upper Thorax Rib Displacement	32 - 40 mm	35.3 mm	Yes
Center Thorax Rib Displacement	39 - 45 mm	40.3 mm	Yes
Lower Thorax Rib Displacement	35 - 43 mm	38.1 mm	Yes
Upper Spine Lateral Acceleration	13 - 17 g	15.3 g	Yes
Lower Spine Lateral Acceleration	7 - 11 g	9.3 g	Yes

Test meets specifications.

Comments:

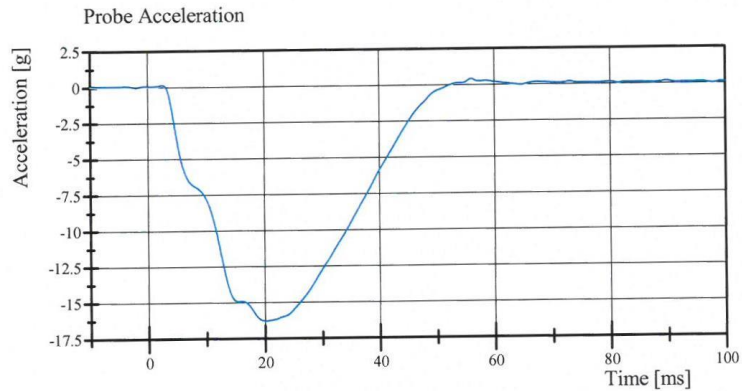
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

11.09.2016 16:11:25 796

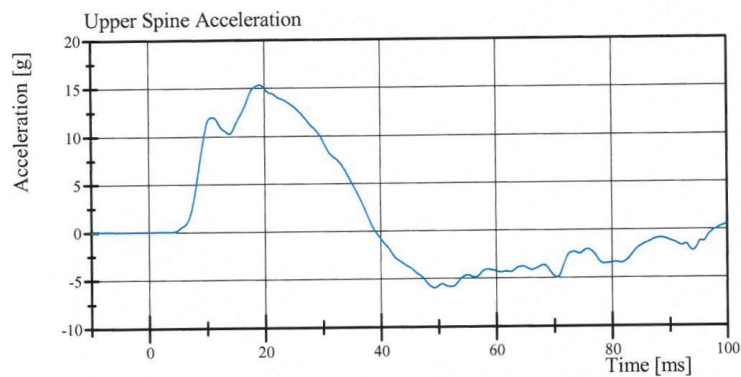


Transportation Research Center Inc.

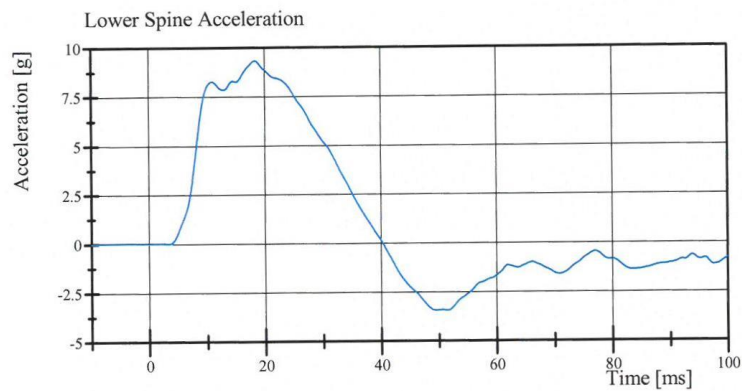
Left Lateral Thorax without Arm
SID IIs Serial No. 297 Certification No. 12-1
Test Date: 11/9/2016



Filter Class: CFC_180
Max: 0.4 g at 56.1 ms
Min: -16.3 g at 20.2 ms



Filter Class: CFC_180
Max: 15.3 g at 19.2 ms
Min: -6.0 g at 49.4 ms



Filter Class: CFC_180
Max: 9.3 g at 18.3 ms
Min: -3.5 g at 51.5 ms

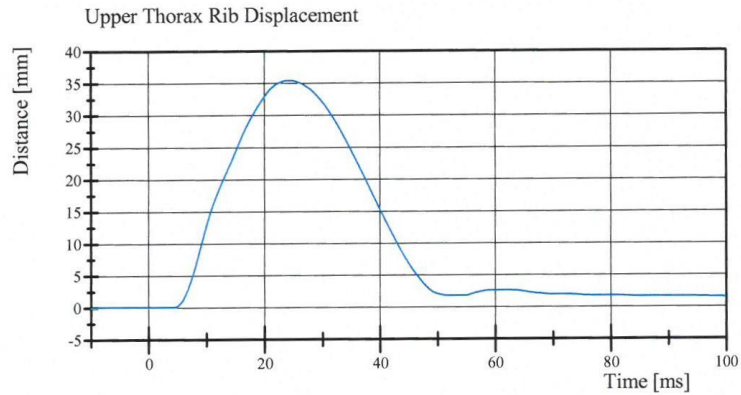
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

11.09.2016 16:11:40 796

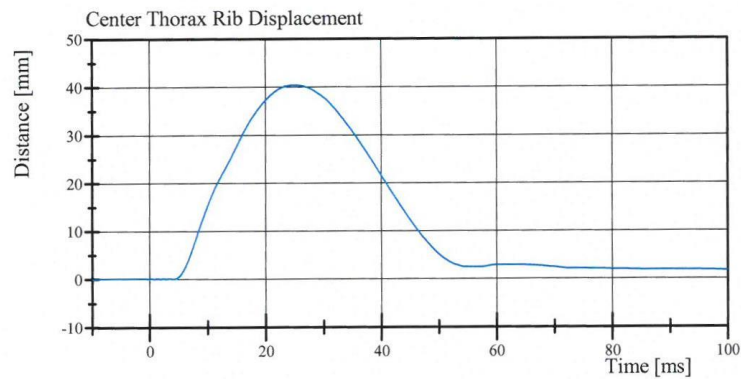


Transportation Research Center Inc.

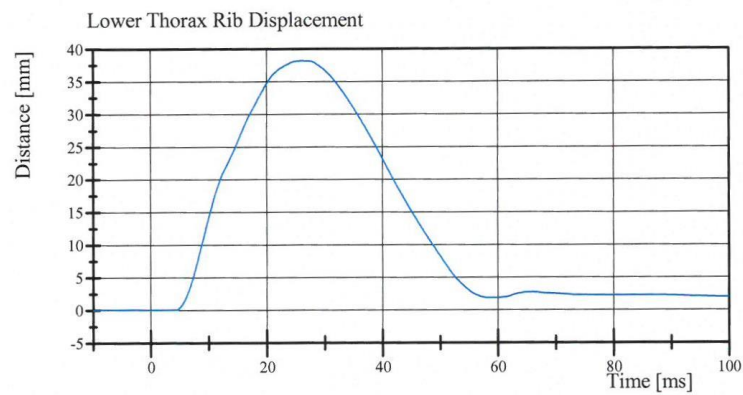
Left Lateral Thorax without Arm
SID IIs Serial No. 297 Certification No. 12-1
Test Date: 11/9/2016



Filter Class: CFC_600
Max: 35.3 mm at 24.2 ms
Min: -0.0 mm at 4.2 ms



Filter Class: CFC_600
Max: 40.3 mm at 25.1 ms
Min: -0.0 mm at 4.1 ms



Filter Class: CFC_600
Max: 38.1 mm at 26.0 ms
Min: -0.0 mm at 4.3 ms

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

11.09.2016 16:11:40 796



Transportation Research Center Inc.

Left Lateral Abdomen
SID IIs Serial No. 297 Certification No. 12-1
Test Date: 11/9/2016

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.1 °C	Yes
Relative Humidity	10 - 70 %	37 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.35 m/s	Yes
Impactor Acceleration	(-12) - (-16) g	-14.4 g	Yes
Upper Abdominal Rib Displacement	36 - 47 mm	41.5 mm	Yes
Lower Abdominal Rib Displacement	33 - 44 mm	39.2 mm	Yes
Lower Spine Lateral Acceleration	9 - 14.0 g	11.02 g	Yes

Test meets specifications.

Comments:

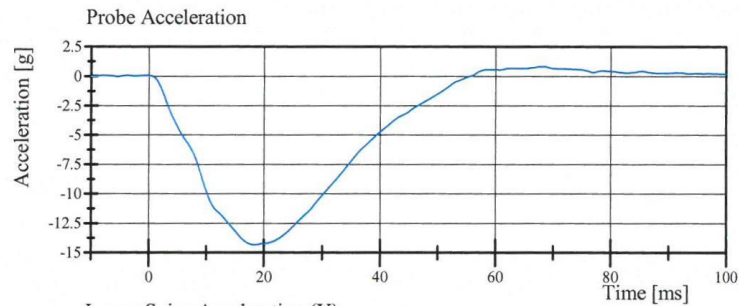
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

11.09.2016 15:35:21 653

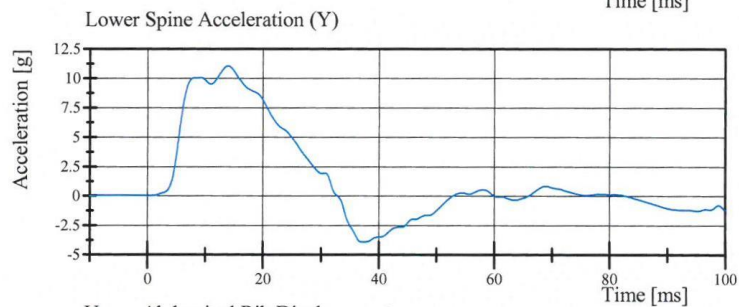


Transportation Research Center Inc.

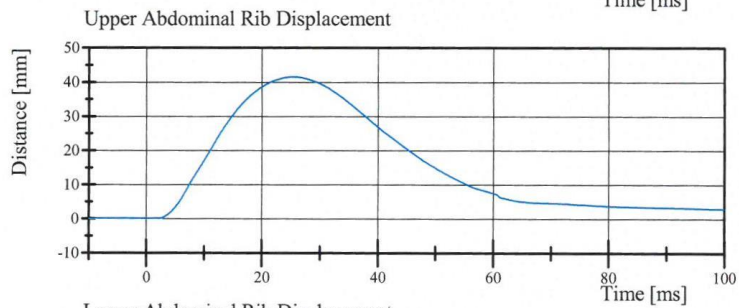
Left Lateral Abdomen
SID IIs Serial No. 297 Certification No. 12-1
Test Date: 11/9/2016



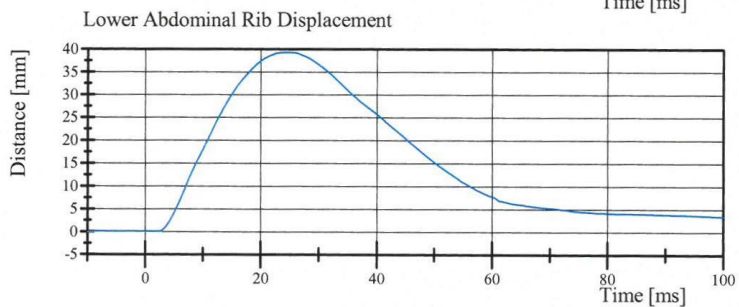
Filter Class: CFC_180
Max: 0.8 g at 68.3 ms
Min: -14.4 g at 18.5 ms



Filter Class: CFC_180
Max: 11.0 g at 13.9 ms
Min: -3.9 g at 37.0 ms



Filter Class: CFC_600
Max: 41.5 mm at 25.4 ms
Min: -0.0 mm at 2.2 ms



Filter Class: CFC_600
Max: 39.2 mm at 24.3 ms
Min: -0.0 mm at 2.5 ms

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

11.09.2016 15:35:33 653



Transportation Research Center Inc.

Left Lateral Pelvis

SID IIs Serial No. 297 Certification No. 12-3

Test Date: 11/9/2016

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	37 %	Yes
Pendulum Velocity	6.6 - 6.8 m/s	6.68 m/s	Yes
Impactor Acceleration	(-38.0) - (-47.0) g	-46.01 g	Yes
Peak Pelvis Lateral Acceleration after 6ms	34 - 42 g	41.8 g	Yes
Acetabulum Force	3,600 - 4,300 N	3,967.4 N	Yes

Test meets specifications.

Comments:

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

11.09.2016 21:01:42 429

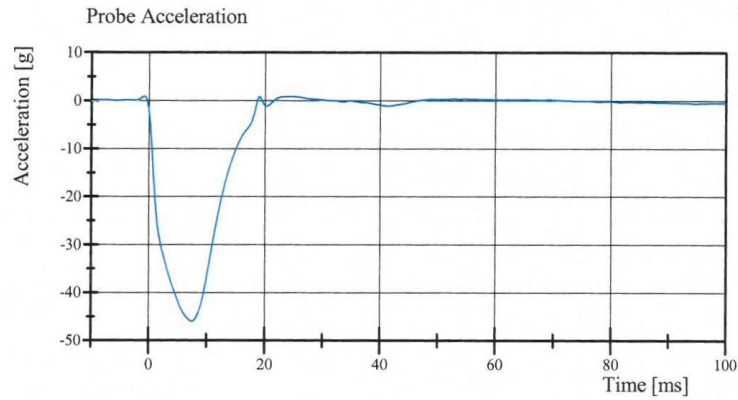


Transportation Research Center Inc.

Left Lateral Pelvis

SID IIs Serial No. 297 Certification No. 12-3

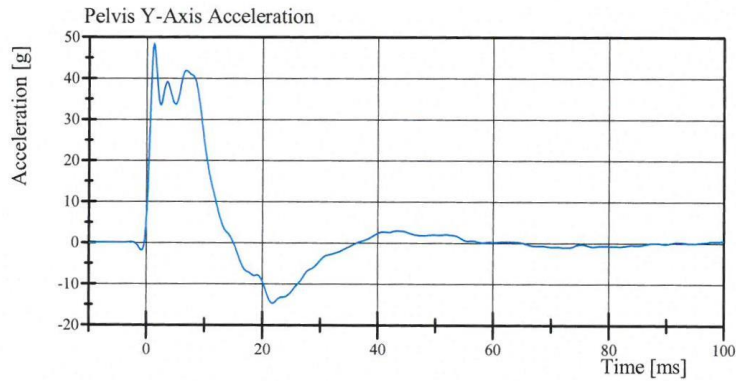
Test Date: 11/9/2016



Filter Class: CFC_180

Max: 0.8 g at 24.2 ms

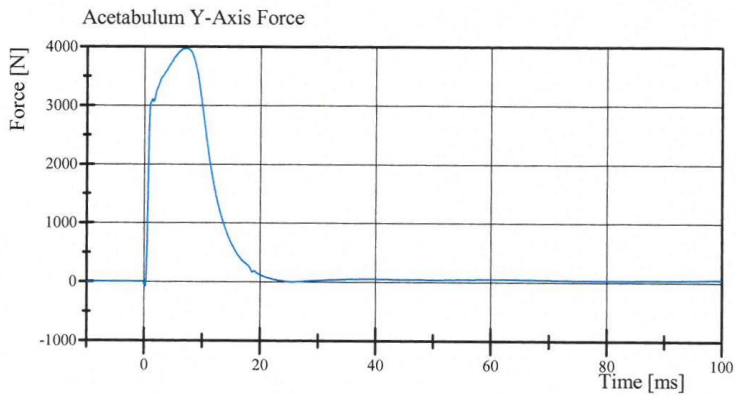
Min: -46.0 g at 7.4 ms



Filter Class: CFC_180

Max: 48.3 g at 1.3 ms

Min: -14.7 g at 21.8 ms



Filter Class: CFC_600

Max: 3,967.4 N at 7.2 ms

Min: -81.3 N at 0.2 ms

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

11.09.2016 21:01:58 429



Transportation Research Center Inc.

Left Lateral Iliac

SID IIs Serial No. 297 Certification No. 12-1

Test Date: 11/9/2016

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	36 %	Yes
Pendulum Velocity	4.2 - 4.4 m/s	4.35 m/s	Yes
Impactor Acceleration	(-36) - (-45) g	-43.4 g	Yes
Peak Pelvis Lateral Acceleration	28 - 39 g	32.5 g	Yes
Iliac Force	4,100 - 5,100 N	4,892.7 N	Yes

Test meets specifications.

Comments:

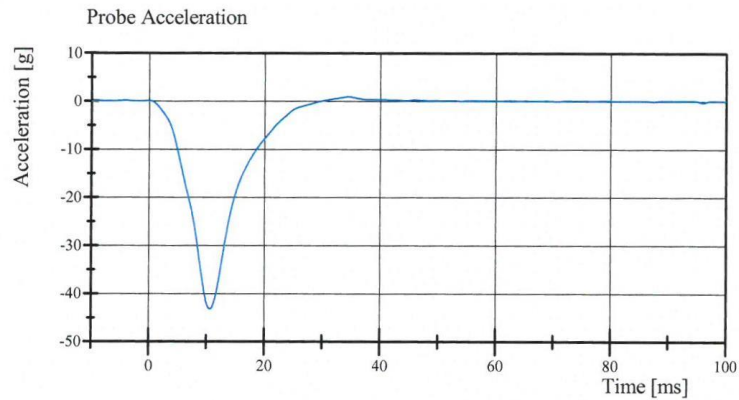
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

11.09.2016 14:43:23 637

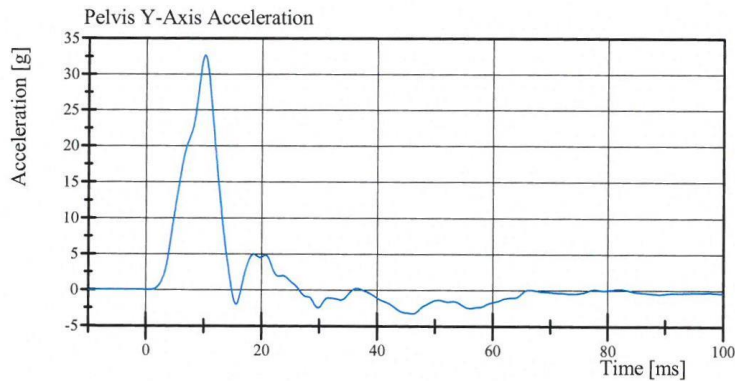


Transportation Research Center Inc.

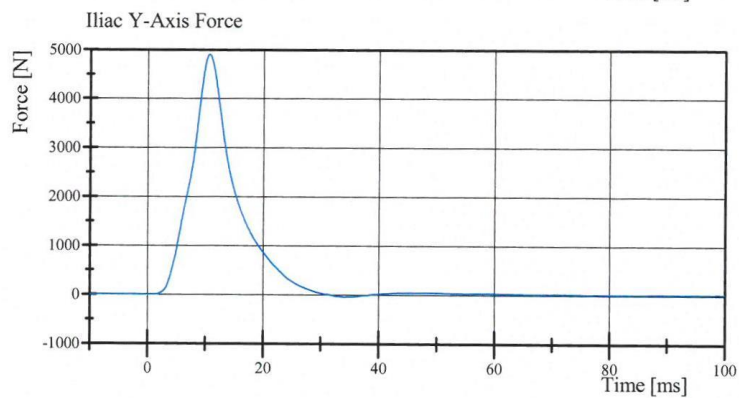
Left Lateral Iliac
SID IIs Serial No. 297 Certification No. 12-1
Test Date: 11/9/2016



Filter Class: CFC_180
Max: 0.9 g at 34.5 ms
Min: -43.4 g at 10.6 ms



Filter Class: CFC_180
Max: 32.5 g at 10.2 ms
Min: -3.3 g at 46.2 ms



Filter Class: CFC_600
Max: 4,892.7 N at 10.6 ms
Min: -43.0 N at 34.1 ms

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

11.09.2016 14:43:38 637



Post-Test Calibration Sheets
Driver S/N 297

Transportation Research Center Inc.
SIDIIs Dummy - Level D
External Dimensions
Serial No. 297 Calibration No.13

Symbol	Description	Specification	Results	Pass
		mm	mm	
A	Sitting Height	772.0 - 788.0	781	Yes
B	Shoulder Pivot Height	437.0 - 453.0	448	Yes
C	H-Point Height	79.0 - 89.0	85	Yes
D	H-Point from Seat Back	141.0 - 151.0	146	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	145	Yes
H	Head Back from Backline	40.0 - 46.0	44	Yes
I	Head Depth	178.0 - 188.0	182	Yes
J	Head Circumference	541.0 - 551.0	545	Yes
K	Buttock to Knee Length	514.0 - 540.0	528	Yes
L	Popliteal Height	343.0 - 369.0	355	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	203	Yes
P	Foot Length (right)	216.0 - 232.0	221	Yes
P	Foot Length (left)	216.0 - 232.0	221	Yes
Q	Hip Breadth	313.0 - 323.0	319	Yes
R	Arm Length	249.0 - 259.0	254	Yes
S	Knee Joint to seat Back	478.0 - 493.0	487	Yes
V	Shoulder Width (only one arm installed)	341.0 - 357.0	347	Yes
W	Foot Width (right)	78.0 - 94.0	84	Yes
W	Foot Width (left)	78.0 - 94.0	84	Yes
Y	Chest Circumference with Jacket	851.0 - 881.0	869	Yes
Z	Waist Circumference	761.0 - 791.0	778	Yes

Transportation Research Center Inc.

Left Lateral Head Drop

SID IIs Serial No. 297 Certification No. 13-1

Test Date: 11/16/2016

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	37 %	Yes
Peak Head Resultant Acceleration	115 - 137 g	131.3 g	Yes
Peak Head Longitudinal Acceleration	(-15) - 15 g	-1.6 g	Yes
Is Head Resultant Acceleration Curve Unimodal within 15% of Peak?	Yes	Yes	Yes

Test meets specifications.

Comments:

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

11.16.2016 12:57:56 232

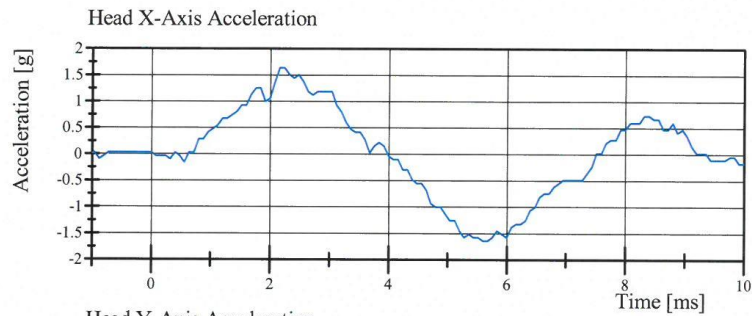


Transportation Research Center Inc.

Left Lateral Head Drop

SID IIs Serial No. 297 Certification No. 13-1

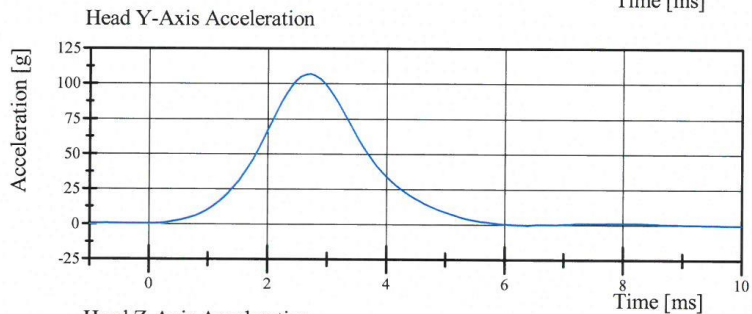
Test Date: 11/16/2016



Filter Class: CFC_1000

Max: 1.6 g at 2.2 ms

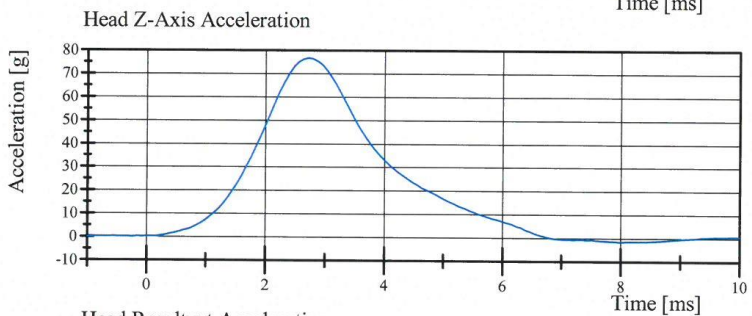
Min: -1.6 g at 5.6 ms



Filter Class: CFC_1000

Max: 106.7 g at 2.7 ms

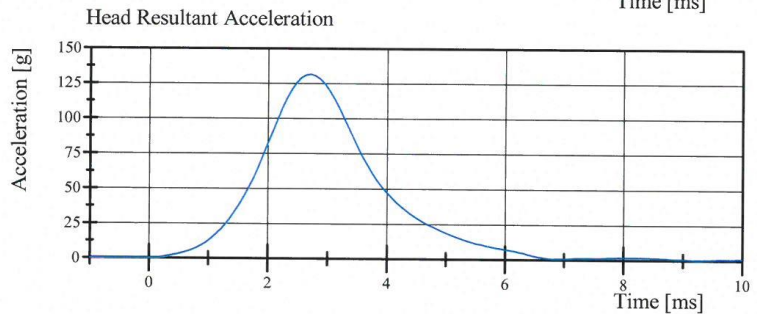
Min: -0.6 g at 6.4 ms



Filter Class: CFC_1000

Max: 76.6 g at 2.7 ms

Min: -1.5 g at 8.0 ms



Filter Class: CFC_1000

Max: 131.3 g at 2.7 ms

Min: 0.0 g at -0.5 ms

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

11.16.2016 12:58:09 232



Transportation Research Center Inc.

Left Lateral Neck

SID IIs Serial No. 297 Certification No. 13-1

Test Date: 11/16/2016

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.8 °C	Yes
Relative Humidity	10 - 70 %	38 %	Yes
Pendulum Velocity	(-5.51) - (-5.63) m/s	-5.609 m/s	Yes
Pendulum Integrated Velocity			
Change at 10 ms	2.20 - 2.80 m/s	2.697 m/s	Yes
Change at 15 ms	3.30 - 4.10 m/s	4.049 m/s	Yes
Change at 20 ms	4.40 - 5.40 m/s	5.348 m/s	Yes
Change at 25 ms	5.40 - 6.10 m/s	5.793 m/s	Yes
Change at 25 to 100 ms	5.50 - 6.20 m/s	5.797 m/s	Yes
Maximum Headform Flexion occurring between 50ms and 70ms.			
Peak	(-71) - (-81) deg	-76.3 deg	Yes
Time of Peak	50 - 70 ms	60.4 ms	Yes
Total Neck Occipital Condyles Moment	36 - 44 N·m	41.7 N·m	Yes
Total Neck Occipital Condyles Moment			
Decay Time to 0 N·m	102 - 126 ms	115.2 ms	Yes

Test meets specifications.

Comments:

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

11.16.2016 13:41:56 744

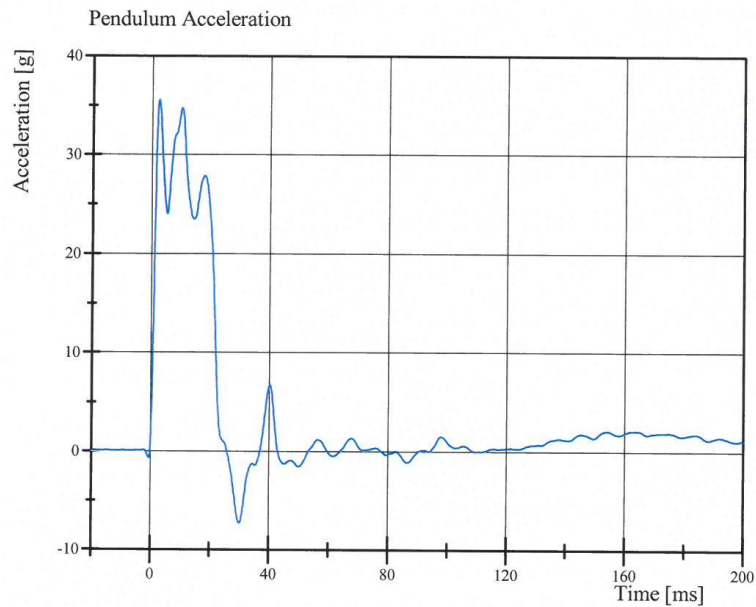


Transportation Research Center Inc.

Left Lateral Neck

SID II's Serial No. 297 Certification No. 13-1

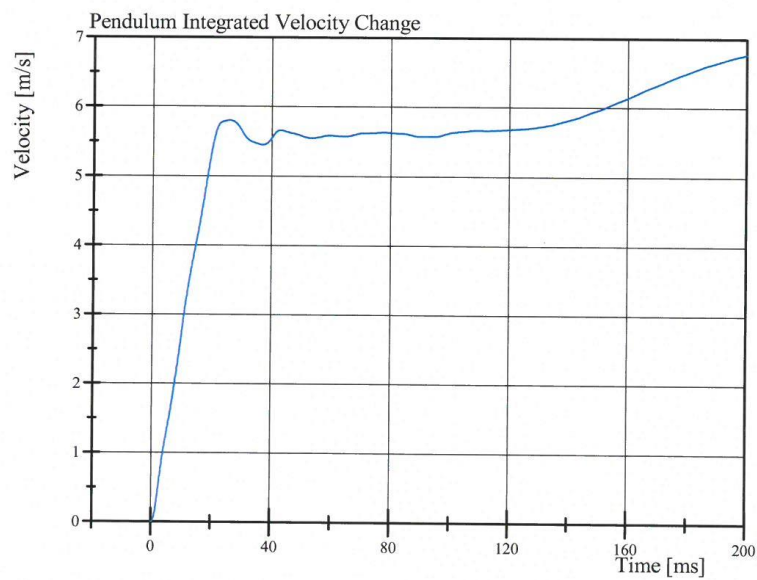
Test Date: 11/16/2016



Filter Class: CFC_180

Max: 35.5 g at 2.5 ms

Min: -7.3 g at 30.2 ms



Filter Class: CFC_180

Max: 6.8 m/s at 200.0 ms

Min: 0.0 m/s at 0.0 ms

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

11.16.2016 13:42:07 744

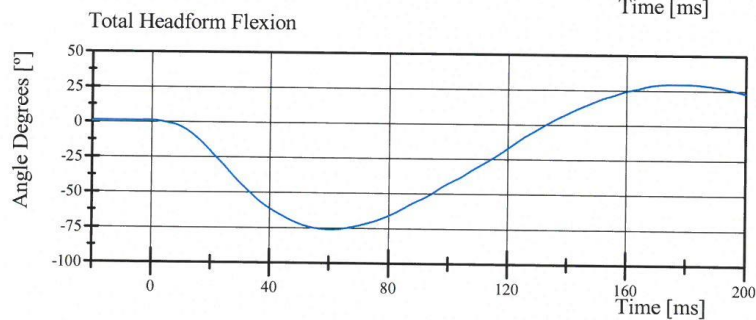
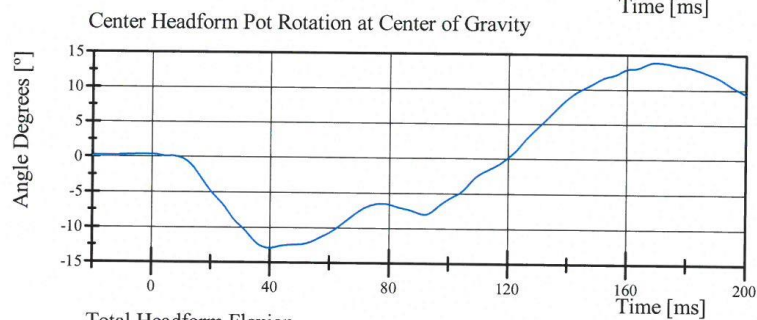
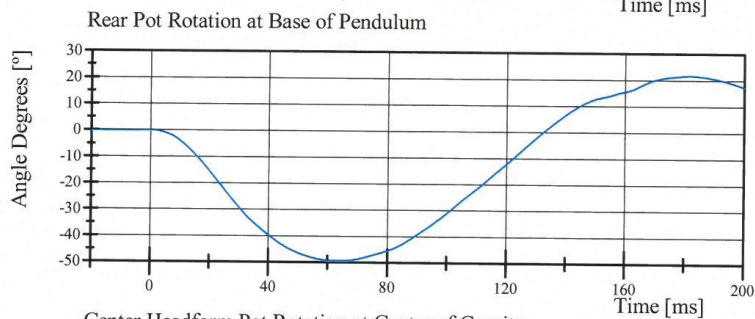
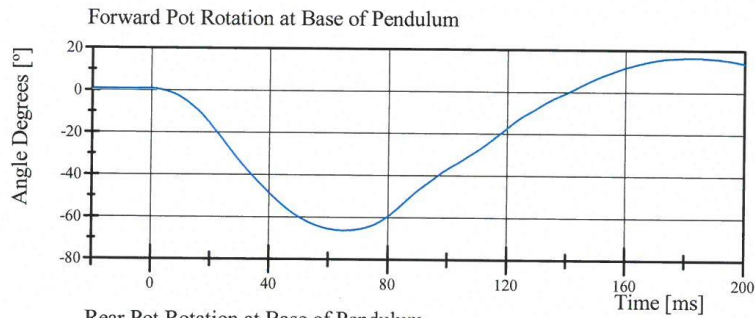


Transportation Research Center Inc.

Left Lateral Neck

SID IIs Serial No. 297 Certification No. 13-1

Test Date: 11/16/2016



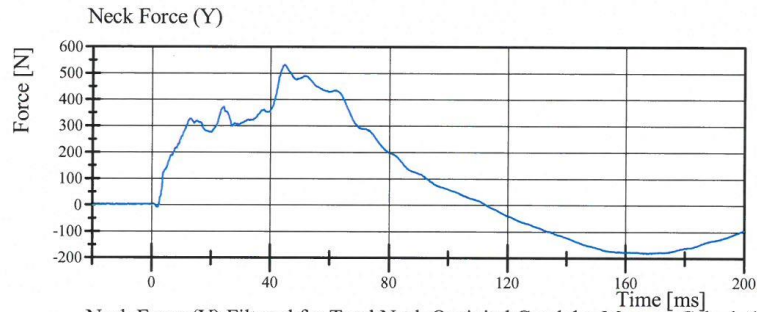
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

11.16.2016 13:42:08 744

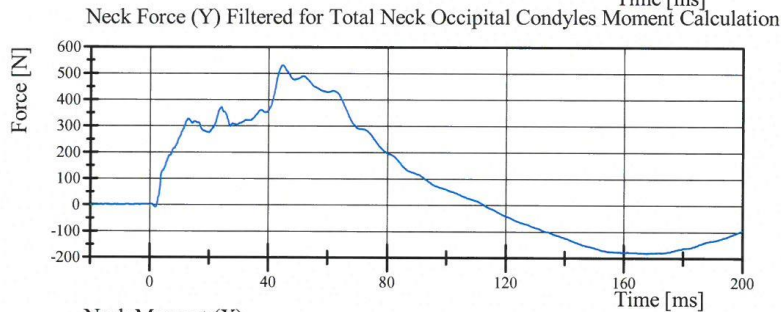


Transportation Research Center Inc.

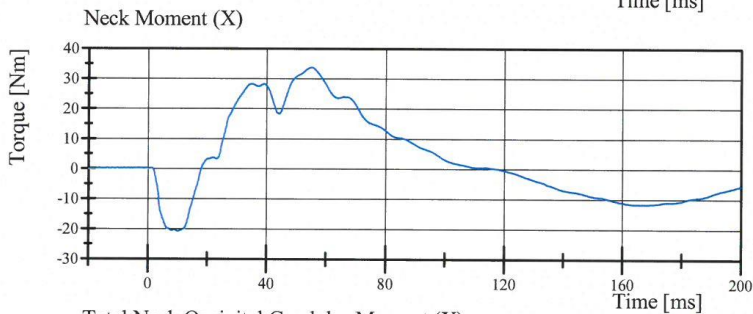
Left Lateral Neck
SID IIs Serial No. 297 Certification No. 13-1
Test Date: 11/16/2016



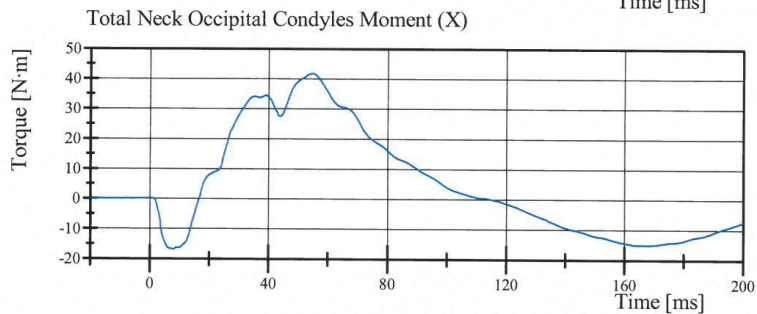
Filter Class: CFC_1000
Max: 530.8 N at 44.8 ms
Min: -181.5 N at 167.7 ms



Filter Class: CFC_600
Max: 529.8 N at 44.8 ms
Min: -181.4 N at 167.8 ms



Filter Class: CFC_600
Max: 33.7 Nm at 55.4 ms
Min: -21.0 Nm at 10.2 ms



Filter Class: Without_(Consta
Max: 41.7 N·m at 54.7 ms
Min: -16.9 N·m at 7.9 ms

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

11.16.2016 13:42:09 744



Transportation Research Center Inc.

Left Lateral Shoulder

SID IIs Serial No. 297 Certification No. 13-1

Test Date: 11/16/2016

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.1 °C	Yes
Relative Humidity	10 - 70 %	38 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.35 m/s	Yes
Impactor Acceleration	(-13) - (-18) g	-15.3 g	Yes
Shoulder Displacement	28 - 37 mm	29.9 mm	Yes
Upper Spine Lateral Acceleration	17 - 22 g	19.1 g	Yes

Test meets specifications.

Comments:

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

11.16.2016 13:21:13 844

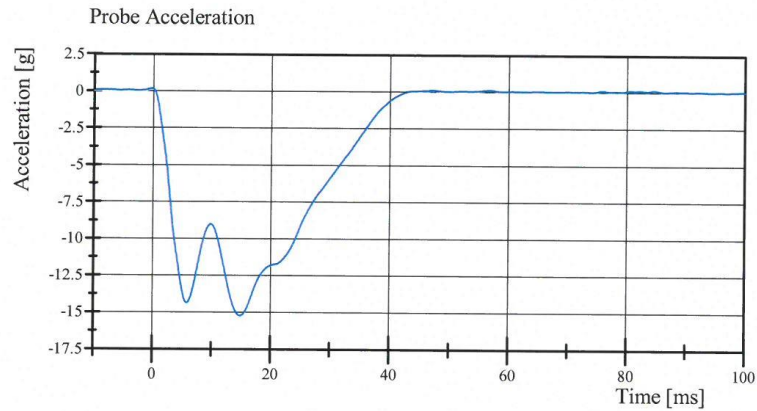


Transportation Research Center Inc.

Left Lateral Shoulder

SID IIs Serial No. 297 Certification No. 13-1

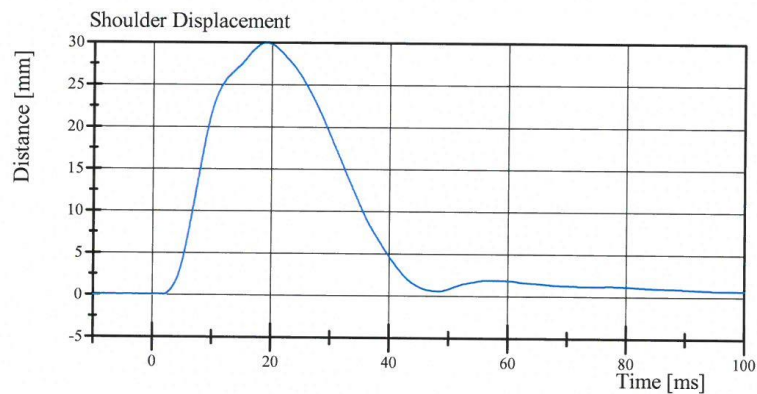
Test Date: 11/16/2016



Filter Class: CFC_180

Max: 0.1 g at -0.2 ms

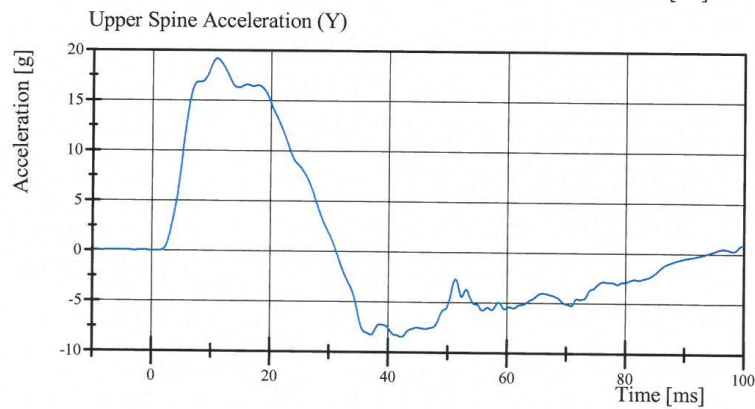
Min: -15.3 g at 14.9 ms



Filter Class: CFC_600

Max: 29.9 mm at 19.0 ms

Min: -0.0 mm at 2.0 ms



Filter Class: CFC_180

Max: 19.1 g at 10.9 ms

Min: -8.5 g at 42.2 ms

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

11.16.2016 13:21:23 844



Transportation Research Center Inc.

Left Lateral Thorax with Arm

SID IIs Serial No. 297 Certification No. 13-1

Test Date: 11/16/2016

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.9 °C	Yes
Relative Humidity	10 - 70 %	37 %	Yes
Impactor Velocity	6.60 - 6.80 m/s	6.759 m/s	Yes
Impactor Acceleration	(-30) - (-36) g	-34.1 g	Yes
Shoulder Displacement	31 - 40 mm	35.6 mm	Yes
Upper Thorax Rib Displacement	25 - 32 mm	27.4 mm	Yes
Center Thorax Rib Displacement	30 - 36 mm	31.4 mm	Yes
Lower Thorax Rib Displacement	32 - 38 mm	33.2 mm	Yes
Upper Spine Lateral Acceleration	34 - 43 g	36.2 g	Yes
Lower Spine Lateral Acceleration	29 - 37 g	36.3 g	Yes

Test meets specifications.

Comments:

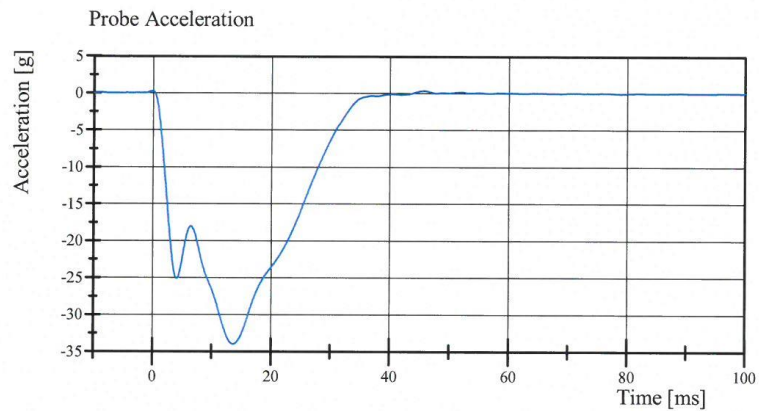
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

11.16.2016 14:31:48 621

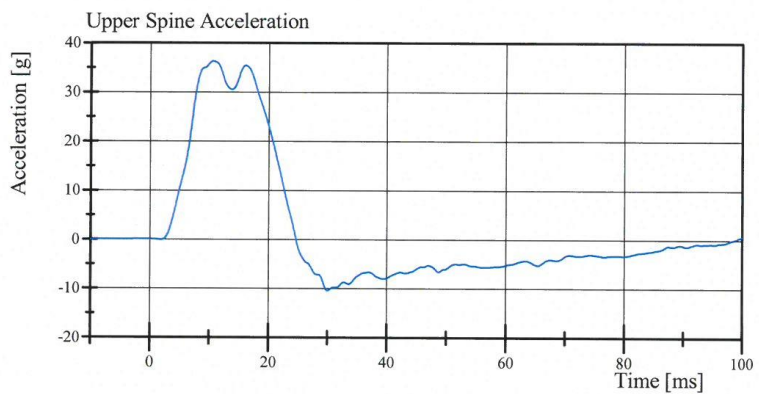


Transportation Research Center Inc.

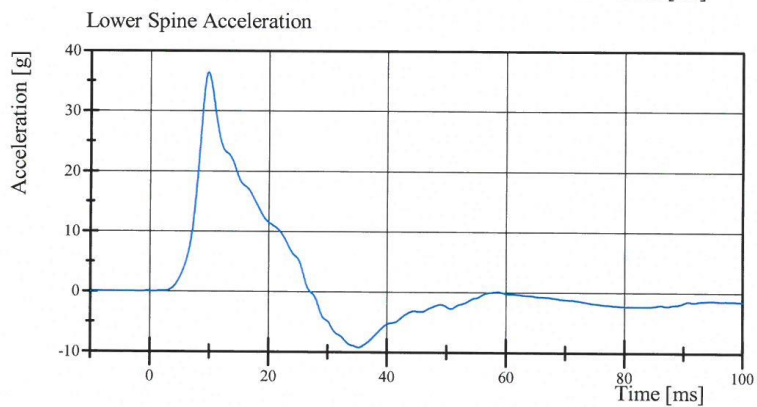
Left Lateral Thorax with Arm
SID IIs Serial No. 297 Certification No. 13-1
Test Date: 11/16/2016



Filter Class: CFC_180
Max: 0.3 g at 45.8 ms
Min: -34.1 g at 13.7 ms



Filter Class: CFC_180
Max: 36.2 g at 10.6 ms
Min: -10.4 g at 30.0 ms



Filter Class: CFC_180
Max: 36.3 g at 9.8 ms
Min: -9.2 g at 35.4 ms

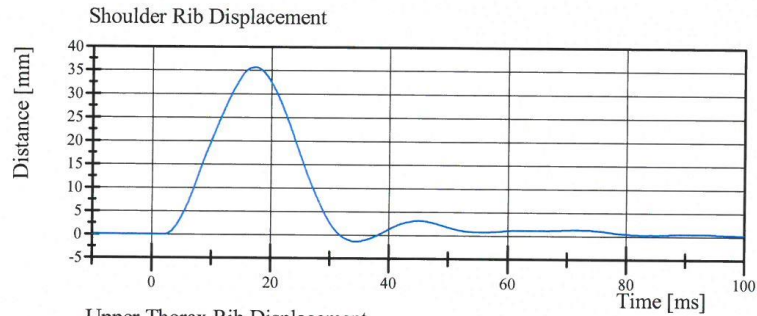
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

11.16.2016 14:31:58 621

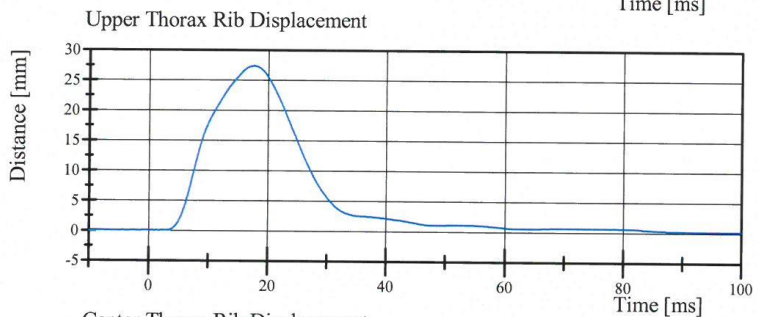


Transportation Research Center Inc.

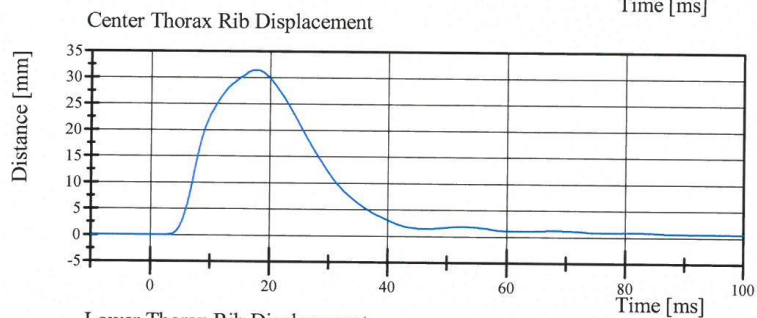
Left Lateral Thorax with Arm
SID IIs Serial No. 297 Certification No. 13-1
Test Date: 11/16/2016



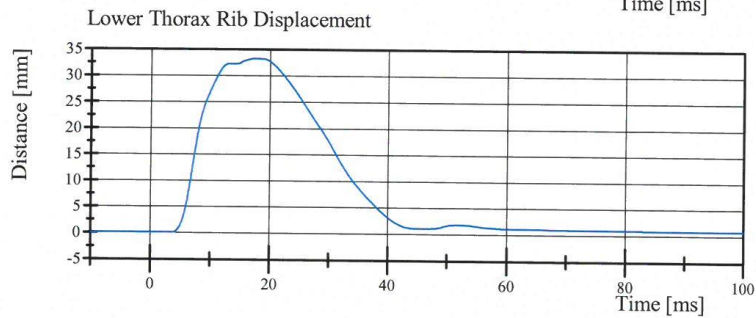
Filter Class: CFC_600
Max: 35.6 mm at 17.4 ms
Min: -1.4 mm at 34.3 ms



Filter Class: CFC_600
Max: 27.4 mm at 17.7 ms
Min: -0.0 mm at -3.7 ms



Filter Class: CFC_600
Max: 31.4 mm at 17.5 ms
Min: -0.0 mm at -8.3 ms



Filter Class: CFC_600
Max: 33.2 mm at 17.4 ms
Min: -0.0 mm at 3.8 ms

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

11.16.2016 14:31:59 621



Transportation Research Center Inc.

Left Lateral Thorax without Arm
SID II_s Serial No. 297 Certification No. 13-1
Test Date: 11/16/2016

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	37 %	Yes
Impactor Velocity	4.20 - 4.40 m/s	4.349 m/s	Yes
Impactor Acceleration	(-14) - (-18) g	-16.1 g	Yes
Upper Thorax Rib Displacement	32 - 40 mm	36.7 mm	Yes
Center Thorax Rib Displacement	39 - 45 mm	41.0 mm	Yes
Lower Thorax Rib Displacement	35 - 43 mm	38.1 mm	Yes
Upper Spine Lateral Acceleration	13 - 17 g	14.5 g	Yes
Lower Spine Lateral Acceleration	7 - 11 g	9.5 g	Yes

Test meets specifications.

Comments:

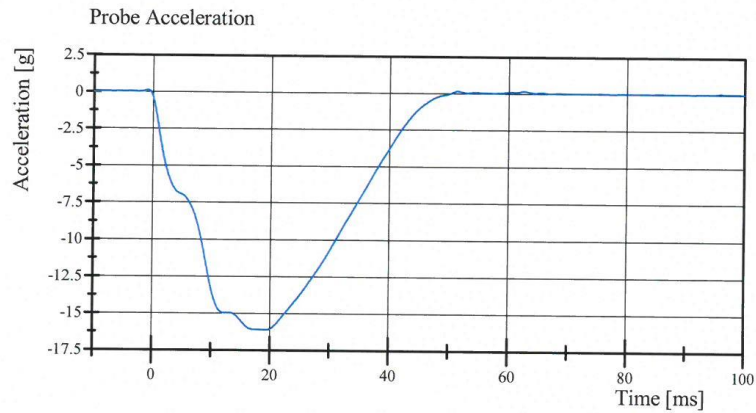
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

11.16.2016 13:58:02 847

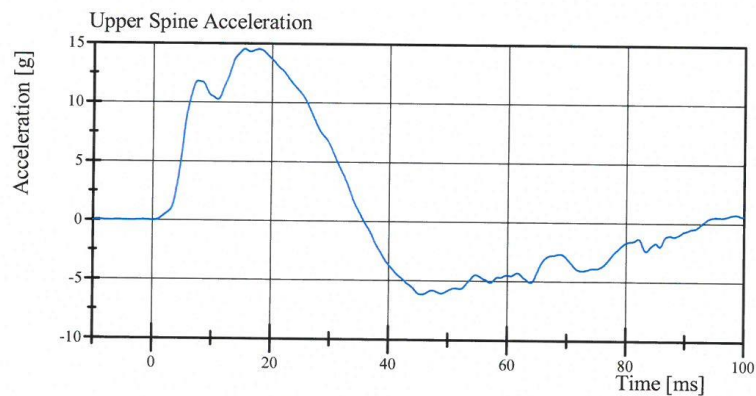


Transportation Research Center Inc.

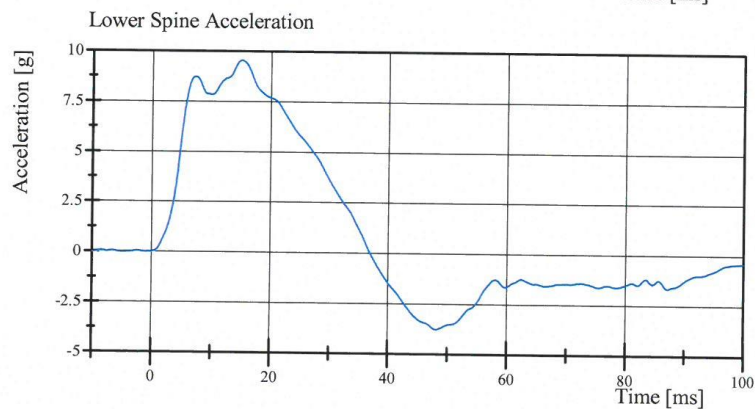
Left Lateral Thorax without Arm
SID IIa Serial No. 297 Certification No. 13-1
Test Date: 11/16/2016



Filter Class: CFC_180
Max: 0.2 g at 62.6 ms
Min: -16.1 g at 19.2 ms



Filter Class: CFC_180
Max: 14.5 g at 15.4 ms
Min: -6.1 g at 45.5 ms



Filter Class: CFC_180
Max: 9.5 g at 15.1 ms
Min: -3.8 g at 48.2 ms

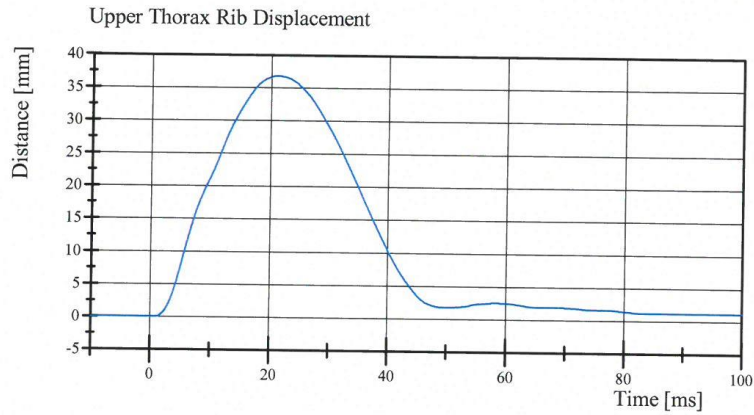
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

11.16.2016 13:58:32 847

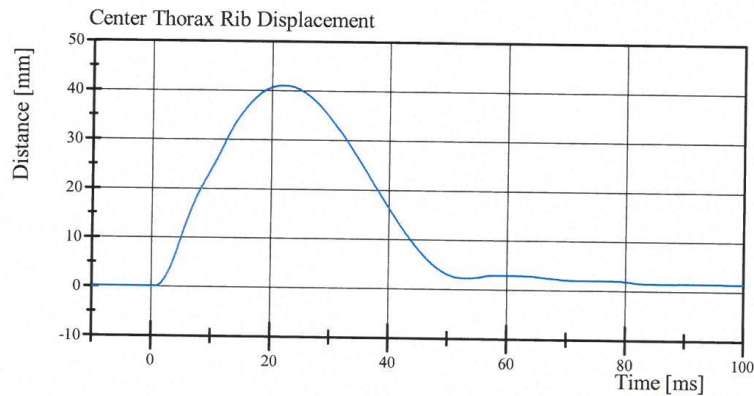


Transportation Research Center Inc.

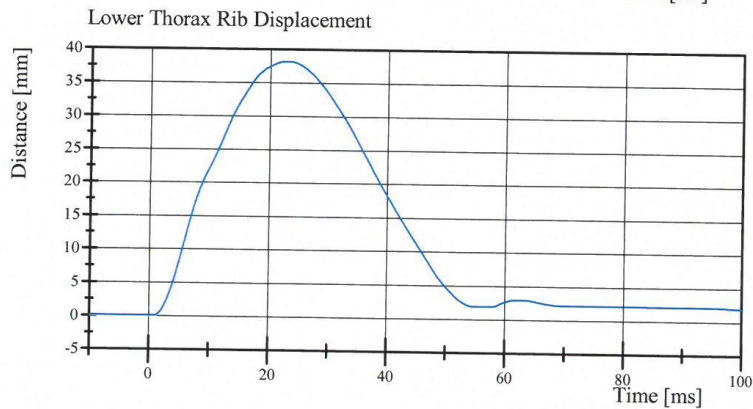
Left Lateral Thorax without Arm
SID IIa Serial No. 297 Certification No. 13-1
Test Date: 11/16/2016



Filter Class: CFC_600
Max: 36.7 mm at 21.2 ms
Min: -0.0 mm at -4.9 ms



Filter Class: CFC_600
Max: 41.0 mm at 22.2 ms
Min: -0.0 mm at 0.6 ms



Filter Class: CFC_600
Max: 38.1 mm at 22.6 ms
Min: -0.0 mm at -1.3 ms

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

11.16.2016 13:58:33 847



Transportation Research Center Inc.

Left Lateral Abdomen

SID IIs Serial No. 297 Certification No. 13-1

Test Date: 11/16/2016

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	38 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.35 m/s	Yes
Impactor Acceleration	(-12) - (-16) g	-14.5 g	Yes
Upper Abdominal Rib Displacement	36 - 47 mm	41.2 mm	Yes
Lower Abdominal Rib Displacement	33 - 44 mm	39.2 mm	Yes
Lower Spine Lateral Acceleration	9 - 14.0 g	11.20 g	Yes

Test meets specifications.

Comments:

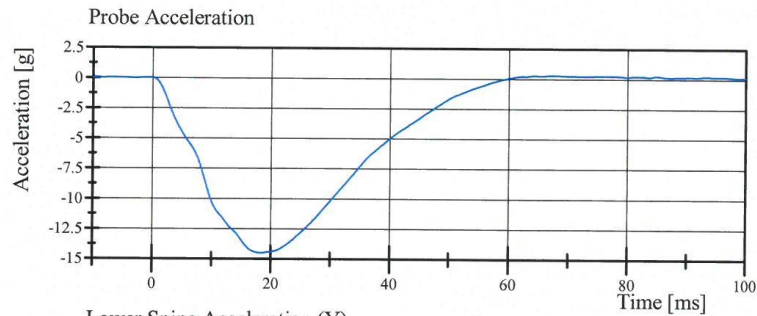
Specification Source: CFR49 Part 572 Subpart V
with Polarity in accordance with J211

11.16.2016 13:34:00 645

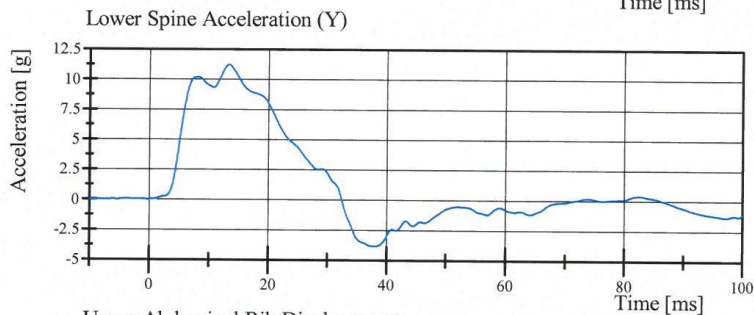


Transportation Research Center Inc.

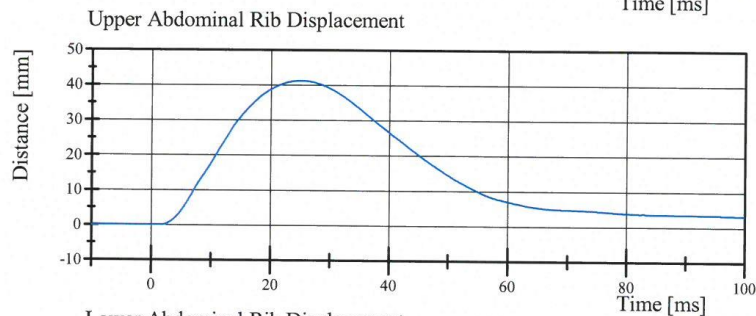
Left Lateral Abdomen
SID IIs Serial No. 297 Certification No. 13-1
Test Date: 11/16/2016



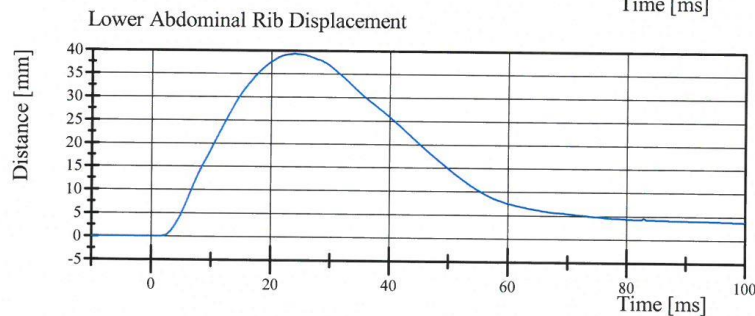
Filter Class: CFC_180
Max: 0.3 g at 67.3 ms
Min: -14.5 g at 18.3 ms



Filter Class: CFC_180
Max: 11.2 g at 13.4 ms
Min: -3.8 g at 38.1 ms



Filter Class: CFC_600
Max: 41.2 mm at 25.0 ms
Min: -0.0 mm at 1.8 ms



Filter Class: CFC_600
Max: 39.2 mm at 23.9 ms
Min: -0.0 mm at -5.1 ms

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

11.16.2016 13:34:12 645



Transportation Research Center Inc.

Left Lateral Pelvis
SID IIs Serial No. 297 Certification No. 13-3
Test Date: 11/17/2016

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.8 °C	Yes
Relative Humidity	10 - 70 %	30 %	Yes
Pendulum Velocity	6.6 - 6.8 m/s	6.66 m/s	Yes
Impactor Acceleration	(-38.0) - (-47.0) g	-43.73 g	Yes
Peak Pelvis Lateral Acceleration after 6ms	34 - 42 g	40.1 g	Yes
Acetabulum Force	3,600 - 4,300 N	3,655.2 N	Yes

Test meets specifications.

Comments: Pelvis Pug #11023

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

11.17.2016 07:31:43 463

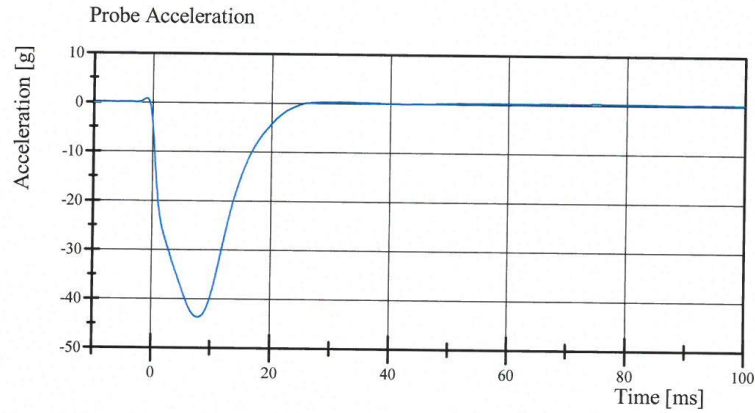


Transportation Research Center Inc.

Left Lateral Pelvis

SID IIs Serial No. 297 Certification No. 13-3

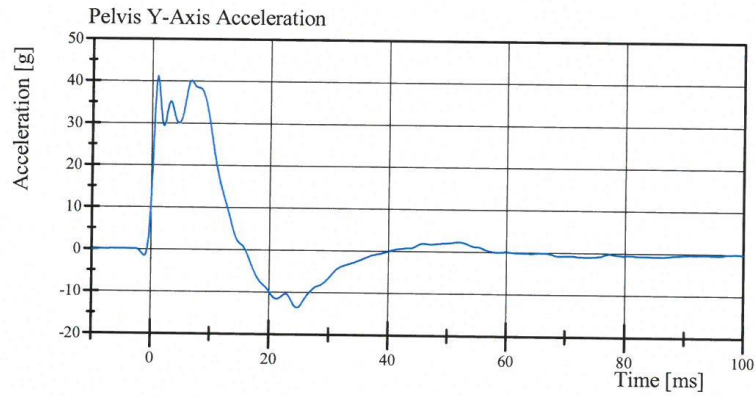
Test Date: 11/17/2016



Filter Class: CFC_180

Max: 0.6 g at -1.0 ms

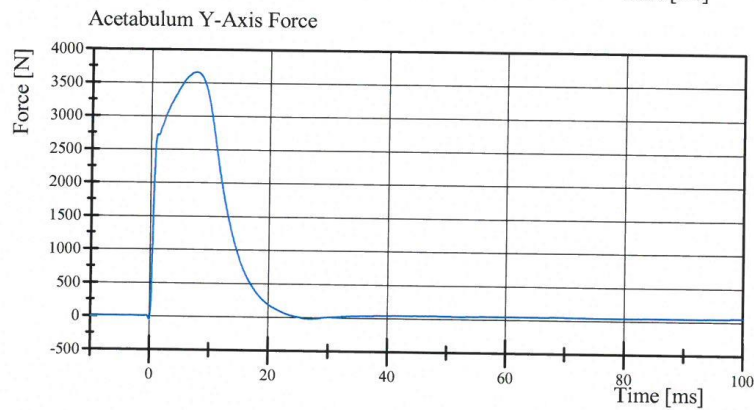
Min: -43.7 g at 8.0 ms



Filter Class: CFC_180

Max: 41.2 g at 1.0 ms

Min: -13.7 g at 24.8 ms



Filter Class: CFC_600

Max: 3,655.2 N at 7.6 ms

Min: -56.8 N at 0.0 ms

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

11.17.2016 07:32:40 463



Transportation Research Center Inc.

Left Lateral Iliac

SID IIs Serial No. 297 Certification No. 13-1

Test Date: 11/16/2016

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.9 °C	Yes
Relative Humidity	10 - 70 %	37 %	Yes
Pendulum Velocity	4.2 - 4.4 m/s	4.35 m/s	Yes
Impactor Acceleration	(-36) - (-45) g	-44.5 g	Yes
Peak Pelvis Lateral Acceleration	28 - 39 g	33.9 g	Yes
Iliac Force	4,100 - 5,100 N	5,065.8 N	Yes

Test meets specifications.

Comments:

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

11.16.2016 13:02:31 623

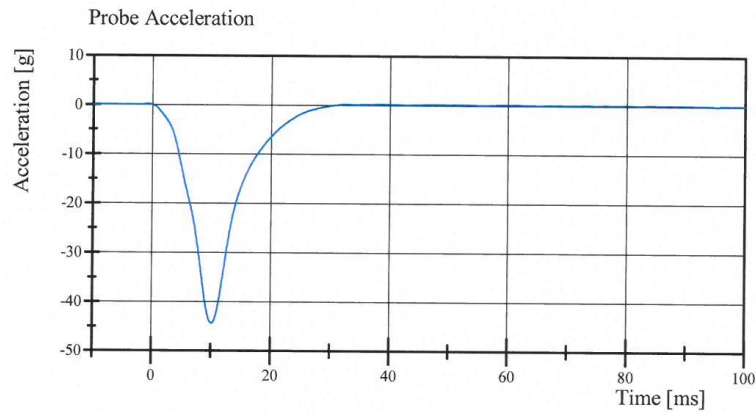


Transportation Research Center Inc.

Left Lateral Iliac

SID IIs Serial No. 297 Certification No. 13-1

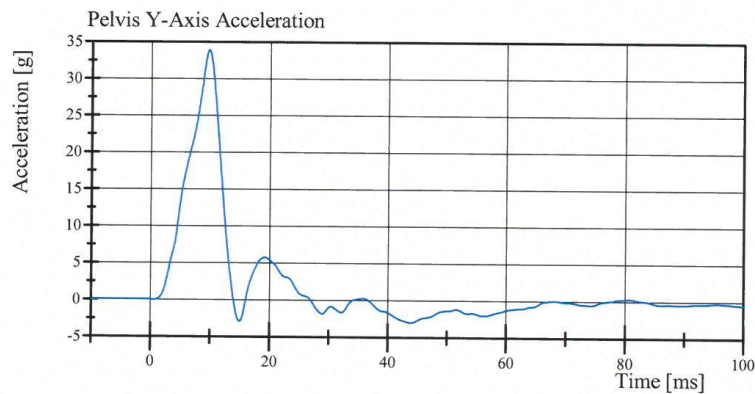
Test Date: 11/16/2016



Filter Class: CFC_180

Max: 0.2 g at 47.0 ms

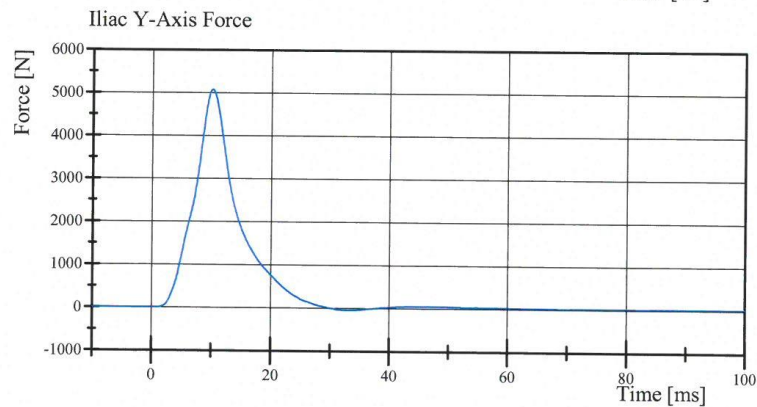
Min: -44.5 g at 10.2 ms



Filter Class: CFC_180

Max: 33.9 g at 9.8 ms

Min: -3.0 g at 43.8 ms



Filter Class: CFC_600

Max: 5,065.8 N at 10.2 ms

Min: -44.1 N at 33.0 ms

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

11.16.2016 13:02:43 623



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	29-Sep-2016
				Y	P93549	Endevco	29-Sep-2016
				Z	P93776	Endevco	29-Sep-2016
Displacement Potentiometers	Shoulder		Y	N/A	N/A	N/A	
	Thoracic Rib	Upper	Y	047	Servo	29-Sep-2016	
		Middle	Y	01815	Servo	29-Sep-2016	
		Lower	Y	043	Servo	29-Sep-2016	
	Abdominal Rib	Upper	Y	01811	Servo	29-Sep-2016	
		Lower	Y	051	Servo	29-Sep-2016	
Lower Spine Accelerometers (T12)				X	P94425	Endevco	23-Aug-2016
				Y	P91522	Endevco	22-Aug-2016
				Z	P91511	Endevco	21-Sep-2016
Acetabulum Load Cell				Y	235-FY	FTSS	28-Oct-2016
Iliac Wing Load Cell				Y	113-FY	FTSS	27-Oct-2016
Pelvis Plug (struck side)					81126	Humanetics	4-Dec-2014
Pelvis Plug (non-struck side)					36505	FTSS	24-Aug-2010

TABLE 2 – Vehicle Instrumentation

Vehicle Instrumentation		Serial Number	Manufacturer	Calibration Date
Vehicle Center of Gravity	X	P94564	Endevco	9-Nov-2016
Vehicle Center of Gravity	Y	P94503	Endevco	9-Nov-2016
Vehicle Center of Gravity	Z	P94557	Endevco	9-Nov-2016
Left Floor Sill	Y	P94560	Endevco	9-Nov-2016
A-Pillar Sill	Y	P91181	Endevco	12-Oct-2016
A-Pillar Low	Y	P41252	Endevco	30-Sep-2016
A-Pillar Mid	Y	P91196	Endevco	30-Sep-2016
B-Pillar Sill	Y	P87578	Endevco	5-Jul-2016
B-Pillar Low	Y	P29093	Endevco	25-Oct-2016
B-Pillar Mid	Y	P33817	Endevco	25-Oct-2016
Driver Seat	Y	P94525	Endevco	9-Nov-2016
Engine Top	X	P45023	Endevco	28-Sep-2016
Engine Top	Y	P91895	Endevco	25-Jul-2016
Firewall	Y	P94514	Endevco	9-Nov-2016
Right Roof	Y	P94517	Endevco	9-Nov-2016
Right Floor Sill	Y	P94492	Endevco	27-Jul-2016
Rear Floor Pan	X	P82047	Endevco	28-Sep-2016
Rear Floor Pan	Y	P61285	Endevco	28-Sep-2016

TABLE 3 – Pole Instrumentation

Pole Instrumentation	Serial Number	Manufacturer	Calibration Date
Load Cell 1	92-FX	Denton	29-Apr-2016
Load Cell 2	84-FX	Denton	29-Apr-2016
Load Cell 3	75-FX	Denton	20-Sep-2016
Load Cell 4	101-FX	Denton	28-Apr-2016
Load Cell 5	87-FX	Denton	29-Apr-2016
Load Cell 6	83-FX	Denton	5-Aug-2016
Load Cell 7	97-FX	Denton	29-Apr-2016
Load Cell 8	95-FX	Denton	26-Jul-2016