

FINAL REPORT NUMBER: SPNCAP-TRC-16-006

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

**Toyota Manufacturing, Texas, Inc.
2016 Toyota Tacoma Double Cab
NHTSA NUMBER: M20165113**

**PREPARED BY:
Transportation Research Center Inc.
10820 State Route 347
P. O. Box B-67
East Liberty, OH 43319**



Report Date: June 3, 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 Approved By: Melinda Lackey

Melinda Lackey, Project Manager

Approval Date: June 3, 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

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15. Supplemental Notes																															
16. Abstract A 32.2 km/h (20 mph), 75° oblique impact Side NCAP Test was conducted on the subject vehicle, a 2016 Toyota Tacoma Double Cab, in accordance with the specifications of the Office of Crashworthiness Standards Side NCAP Pole Laboratory Test Procedure for the generation of consumer information on vehicle side pole crash protection. This test was conducted by Transportation Research Center Inc. in East Liberty, Ohio, on April 11, 2016. The impact velocity was 31.96 km/h, and the ambient temperature at the struck (left) side of the target vehicle at the time of impact was 22° C. The test vehicle's post-test maximum crush was 325 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>412</td></tr> <tr> <td>Resultant Lower Spine Acceleration:</td><td>g's</td><td>82</td><td>53.5</td></tr> <tr> <td>Total Pelvic Force:</td><td>N</td><td>5525</td><td>4,405.0</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>26.1</td></tr> <tr> <td>Maximum Abdomen Rib Deflection</td><td>mm</td><td>45*</td><td>29.5</td></tr> </tbody> </table> * Proposed IARV The two 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	412	Resultant Lower Spine Acceleration:	g's	82	53.5	Total Pelvic Force:	N	5525	4,405.0	(sum of acetabular and iliac forces)				Maximum Thoracic Rib Deflection	mm	38*	26.1	Maximum Abdomen Rib Deflection	mm	45*	29.5
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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																													
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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 16 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 2016 Toyota Tacoma Double Cab manufactured by Toyota Manufacturing, Texas, 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 2016 Toyota Tacoma Double Cab. The subject vehicle was towed into the rigid pole at an angle of 75° and a velocity of 31.96 km/h. The side impact test was conducted by Transportation Research Center Inc. in East Liberty, OH, on April 11, 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	412
Lower Spine Acceleration Resultant	G	82	53.5
Total Pelvic Force (sum of acetabular and iliac forces)	N	5525	4405.0
Maximum Thoracic Rib Deflection	mm	38*	26.1
Maximum Abdominal Rib Deflection	mm	45*	29.5

* Proposed IARV

Supplemental restraint information is given below:

Restraint Type	Left Front (Driver) Occupant Location 1		Left Rear (Passenger) Occupant Location 4	
	Mounted	Deployed	Mounted	Deployed
Frontal Airbag	Yes	Yes		
Knee Airbag	Yes	Yes		
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	Yes	No	N/A
Other	No	N/A	No	N/A

GENERAL COMMENTS

Lower Abdominal Rib Deflection data channel failed to record any valid data.

SECTION 3
OCCUPANT AND VEHICLE INFORMATION

DATA SHEET NO. 1

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2016 Toyota Tacoma Double Cab
 Test Program: SPNCAP Side Impact

NHTSA No.: M20165113
 Test Date: 4/11/16

TEST VEHICLE INFORMATION AND OPTIONS

NHTSA No.	M20165113	Traction Control System (TCS)	Yes
Model Year	2016	Auto-Leveling System	No
Make	Toyota	Automatic Door Locks (ADL)	Yes
Model	Tacoma	Power Window Auto-Reverse	No
Body Style	Double Cab	Other Optional Feature	No
VIN	5TFAX5GN4GX059634	Driver Front Airbag	Yes
Body Color	Sliver Sky Metallic	Driver Curtain Airbag	Yes
Odometer Reading (km/mi)	237	Driver Head/Torso Airbag	No
Engine Displacement (L)	2.7	Driver Torso Airbag	No
Type/No. Cylinders	Straight/4	Driver Torso/Pelvis Airbag	Yes
Engine Placement	Front/Longitudinal	Driver Pelvis Airbag	No
Transmission Type	Automatic	Driver Knee Airbag	Yes
Transmission Speeds	6	Rear Pass. Curtain Airbag	Yes
Overdrive	Yes	Rear Pass. Head/Torso Airbag	No
Final Drive	RWD	Rear Pass. Torso Airbag	No
Roof Rack	No	Rear Pass. Torso/Pelvis Airbag	No
Sunroof/T-Top	No	Rear Pass. Pelvis Airbag	No
Running Boards	No	Driver Seat Belt Pretensioner	Yes
Tilt Steering Wheel	Yes	Rear Pass. Seat Belt Pretensioner	No
Power Seats	No	Driver Load Limiter	Yes
Anti-Lock Brakes (ABS)	Yes	Rear Pass. Load Limiter	No
		Other Safety Restraint	No

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

Yes

DATA FROM CERTIFICATION LABEL

Manufactured By	Toyota Manufacturing, Texas, Inc.	GVWR (kg)	2545
Date of Manufacturer	1/16	GAWR Front (kg)	1320
Vehicle Type	Truck	GAWR Rear (kg)	1490

VEHICLE SEATING AND WEIGHT CAPACITY DATA

	Front	Rear	Third	Total
Designated Seating Capacity (DSC)	2	3	N/A	5
Vehicle Capacity Weight (VCW) (kg)				633
DSC X 68.04 kg				340.2
Rated Cargo and Luggage Weight (RCLW) (kg) ¹				292.8

VEHICLE SEAT TYPE

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

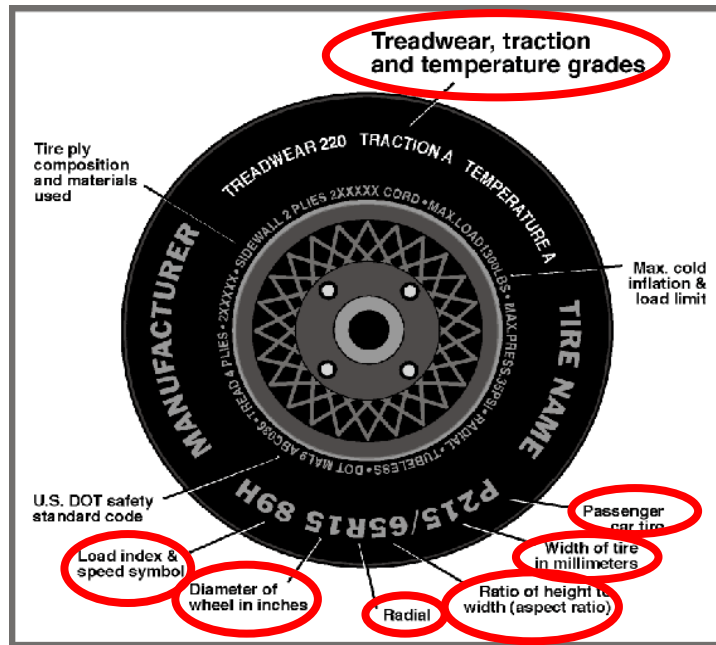
¹ Rated cargo and luggage weight limited to 136.0 kg or 300.0 lbs.

DATA SHEET NO. 1 (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2016 Toyota Tacoma Double Cab
 Test Program: SPNCAP Side Impact

NHTSA No.: M20165113
 Test Date: 4/11/16



DATA FROM TIRE PLACARD

Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	300	300
Cold Pressure (kPa)	220	220
Recommended Tire Size	P245/75R16	P245/75R16
Tire Size on Vehicle	P245/75R16	P245/75R16
Tire Manufacturer	Firestone	Firestone
Tire Model	Destination LE ²	Destination LE ²
Treadwear	520	520
Traction	A	A
Temperature Grades	B	B
Tire Plies Sidewall	2	2
Tire Plies Body	5	5
Load Index/Speed Symbol	109S	109S
Tire Material	Polyester, Steel, Nylon	Polyester, Steel, Nylon
DOT Safety Code Left	8X70 DE2 4115	8X70 DE2 4215
DOT Safety Code Right	8X70 DE2 4115	8X70 DE2 4115

DATA SHEET NO. 1 (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2016 Toyota Tacoma Double Cab

NHTSA No.: M20165113

Test Program: SPNCAP Side Impact

Test Date: 4/11/16

TIRE PRESSURES

	Units	LF	RF	LR	RR
As Delivered	kPa	228	234	228	228
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	499.2	430.0		528.0	494.8		521.0	515.0	
Right	kg	493.6	406.0		509.4	477.0		493.6	484.6	
Ratio	%	54.3	45.7		51.6	48.4		50.4	49.6	
Totals	kg	992.8	836.0	1828.8	1037.4	971.8	2009.2	1014.6	999.6	2014.2

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value	
Total As Delivered Weight (UVW)	kg	1828.8	(A)
Actual Weight of 1 P572V ATD (SID-11s) Dummy Used	kg	49.0	(B)
Rated Cargo/Luggage Weight (RCLW) ¹	kg	136.0	(C)
Calculated Vehicle Target Weight (TVTW)	kg	2013.8	(A+B+C)

Does the measured As Tested Vehicle Weight lie within the required weight range (i.e. Calculated Test Vehicle Target Weight – 4.5 kg to 9 kg)? ☒ YES ☐ NO

TEST VEHICLE ATTITUDES AND CG

	Units	As Delivered	As Tested	Fully Loaded	Meets Requirement***
Driver Door Sill Angle (front-to-rear)*	Deg.	-0.2	-0.2	+0.3	Yes
Front Passenger Sill Angle (front-to-rear)*	Deg.	-0.5	-0.3	-0.1	Yes
Front Bumper-Line Angle (left-to-right)**	Deg.	-0.1	-0.1	-0.3	Yes
Rear Bumper-Line Angle (left-to-right)**	Deg.	-0.1	0.0	-0.3	Yes
Vehicle CG (Aft of Front Axle)	mm	1488	1574	1615	
Vehicle CG (Left (+) / Right (-) from longitudinal Centerline)	mm	+13	+15	+23	

*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: shot bags and plate behind 2 nd row seats	59.6
Components removed:	N/A

Test height adjustable suspension setting, if applicable:

N/A

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

DATA SHEET NO. 2

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

Test Vehicle: 2016 Toyota Tacoma Double Cab

NHTSA No.: M20165113

Test Program: SPNCAP Side Impact

Test Date: 4/11/16

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	N/A	N/A	19.1
Front Passenger Seat	N/A	N/A	19.4
Front Center Seat*	N/A	N/A	N/A
Struck Side Rear Seat	N/A	N/A	19.9
Non-Struck Side Rear Seat	N/A	N/A	19.6
Rear Center Seat*	N/A	N/A	19.4

* 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	19.1	226	Max	N/A	N/A	N/A
			Mid	205	216	226
			Min	N/A	N/A	N/A
Front Passenger Seat	19.4	222	Max	N/A	N/A	N/A
			Mid	206	215	222
			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	19.9	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	19.6	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*	19.4	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: 2016 Toyota Tacoma Double Cab
 Test Program: SPNCAP Side Impact

NHTSA No.: M20165113
 Test Date: 4/11/16

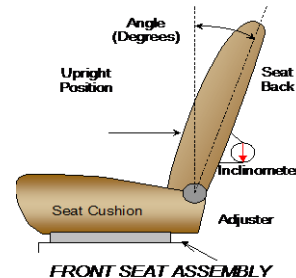
SEAT FORE/AFT POSITION

Seat	Total Fore/Aft Travel		Test Position from Forwardmost Position	
	mm	Detents*	mm	Detent*
Driver Seat	240	17	0	1
Front Passenger Seat	240	17	0	1
Front Center Seat*	N/A	N/A	N/A	N/A
Struck Side Rear Seat	Fixed	N/A	N/A	N/A
Non-Struck Side Rear Seat	Fixed	N/A	N/A	N/A
Rear Center Seat*	Fixed	N/A	N/A	N/A

* If applicable.

SEAT BACK ANGLE ADJUSTMENT

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



Seat	Total Seat Back Angle Range		Test Position from Most Upright	
	Degrees	Detents*	Degrees	Detent*
Driver Seat w/ Seated Dummy	50.3	26	N/A	1
Front Passenger Seat	50.8	26	4.6 forward	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	4, numbered from 0 to 3	0, Lowermost

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

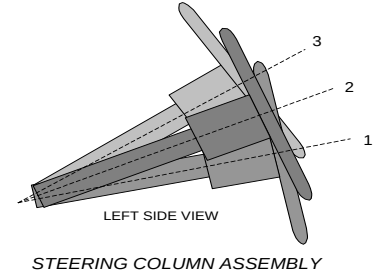
Test Vehicle: 2016 Toyota Tacoma Double Cab
Test Program: SPNCAP Side Impact

NHTSA No.: M20165113
Test Date: 4/11/16

STEERING COLUMN ADJUSTMENT

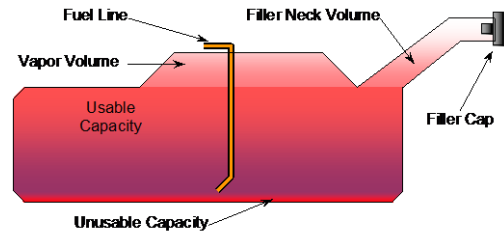
Steering wheel and column adjustments are made so that the steering wheel geometric locus it describes when moved through its full range of motion.

	Degrees	Fore/Aft Position, mm
Lowermost, Position No. 1	23.3	N/A
Geometric Center, Position No. 2	24.9	N/A
Uppermost, Position No. 3	26.5	N/A
Telescoping Steering Wheel Travel		22
Test Position	24.9	11

**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 active when the ignition is turned on.

**FUEL TANK CAPACITY****VEHICLE FUEL TANK ASSEMBLY**

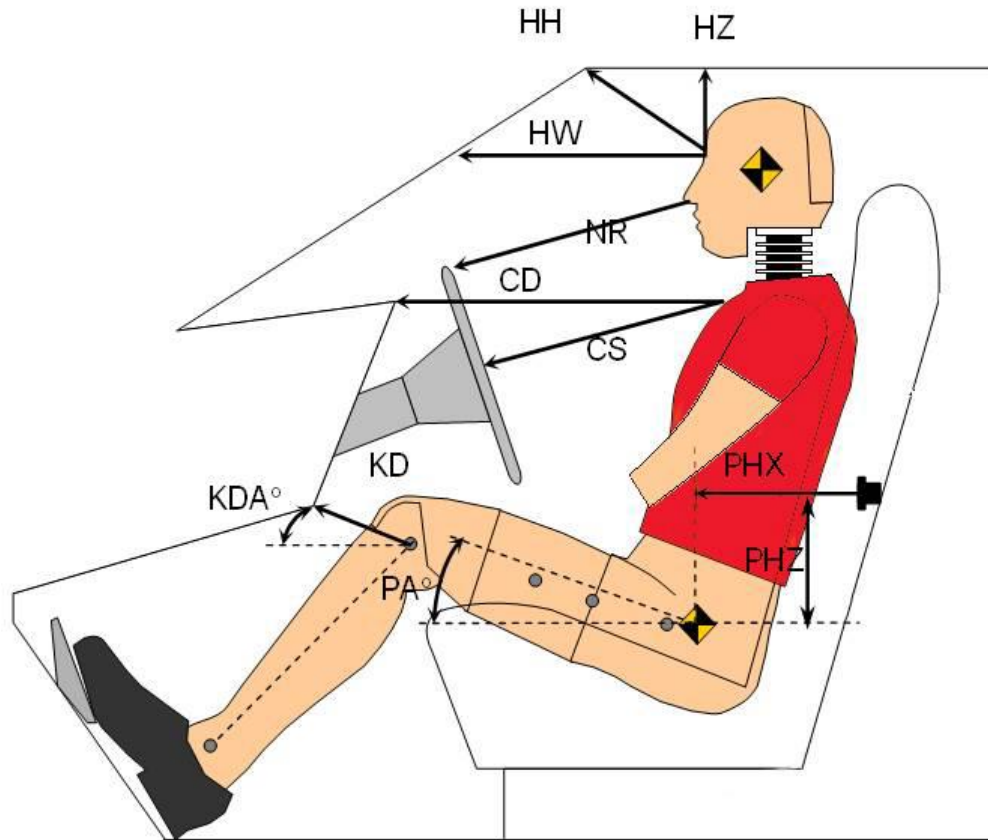
	Liters
Usable Capacity of "Standard Tank" (see Form No. 1)	79.9
Usable Capacity of "Optional" Tank (see Form No. 1)	N/A
Usable Capacity of Standard Tank (see Owner's Manual)	80.0
Usable Capacity of Optional Tank (see Owner's Manual)	N/A
93% of Usable Capacity	74.3
Actual Amount of Solvent Used in Test	74.3
1/3 of Usable Capacity	26.6

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: 2016 Toyota Tacoma Double Cab
 Test Program: SPNCAP Side Impact

NHTSA No.: M20165113
 Test Date: 4/11/16

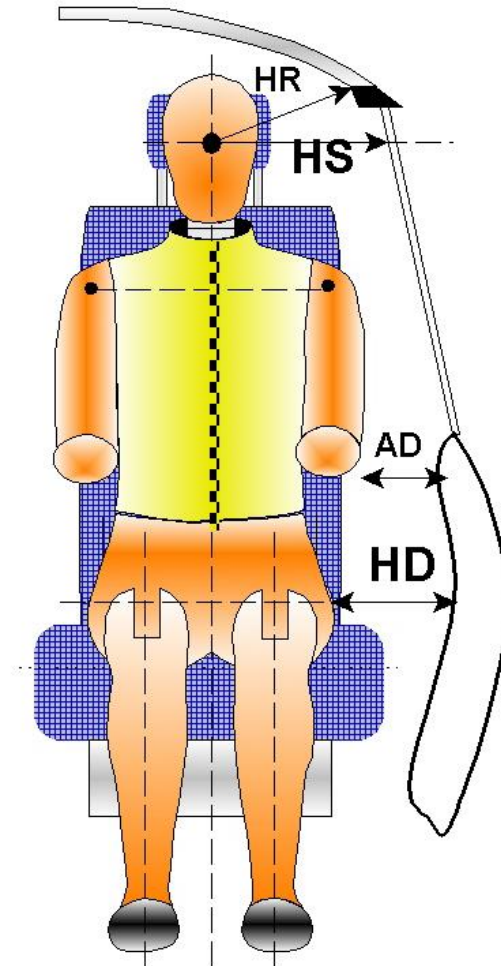


Code	Measurement Description	Driver	
		Length (mm)	Angle (°)
HH	Head to Header	320	
HW	Head to Windshield	526	
HZ	Head to Visor	228	
NR	Nose to Rim	274	
CD	Chest to Dashboard	432	
CS	Chest to Steering Wheel	193	
KDL/KDLA°	Left Knee to Dash	138	36
KDR/KDRA°	Right Knee to Dash	141	36
PAX°	Pelvic Tilt Angle (X-axis)		0.2
PAY°	Pelvic Tilt Angle (Y-axis)		20.4
PHX	Hip Point to Striker (X-Axis)	325	
PHZ	Hip Point to Striker (Z-Axis)	133	

DATA SHEET NO. 4
DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2016 Toyota Tacoma Double Cab
Test Program: SPNCAP Side Impact

NHTSA No.: M20165113
Test Date: 4/11/16

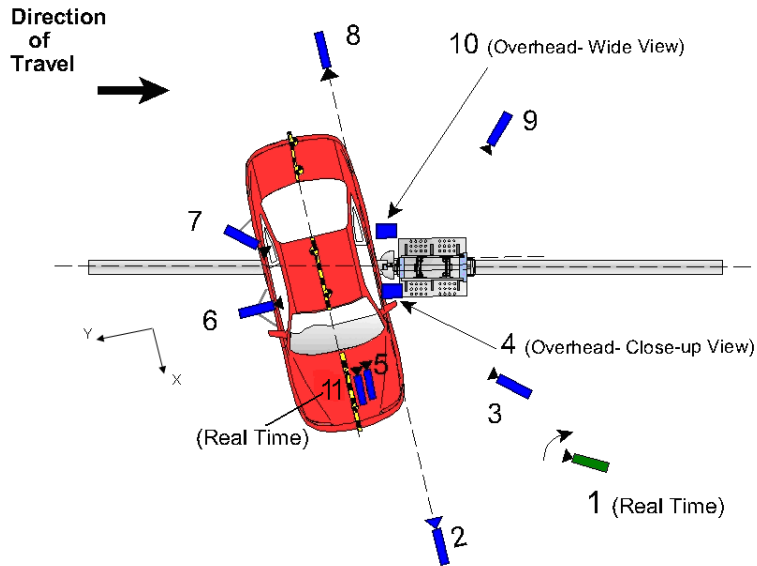


Code	Measurement Description	Length (mm)
HR	Head to Side Header	259
HS	Head to Side Window	379
AD	Arm to Door	158
HD	Hip Point to Door	186

DATA SHEET NO. 5
CAMERA AND INSTRUMENTATION DATA

Test Vehicle: 2016 Toyota Tacoma Double Cab
 Test Program: SPNCAP Side Impact

NHTSA No.: M20165113
 Test Date: 4/11/16



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	5274	0	-1386	18	1000
3	Impact side 45° – forward pole view	3330	-889	-1432	20	1000
4	Overhead Close-up view of impact	0	0	5702	18	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	-6337	-340	-1543	Zoom	1000
9	Impact side 45° – rearward pole view	-3073	-2425	-1528	18	1000
10	Overhead wide view of impact	-137	400	-5727	8.5	1000
11	Real time dummy front view				Zoom	30

All measurements accurate to +/- 6 mm.

NOTE: Vehicle was at a 75° angle to the rigid pole.

If applicable, explain why camera(s) did not run: Not Applicable

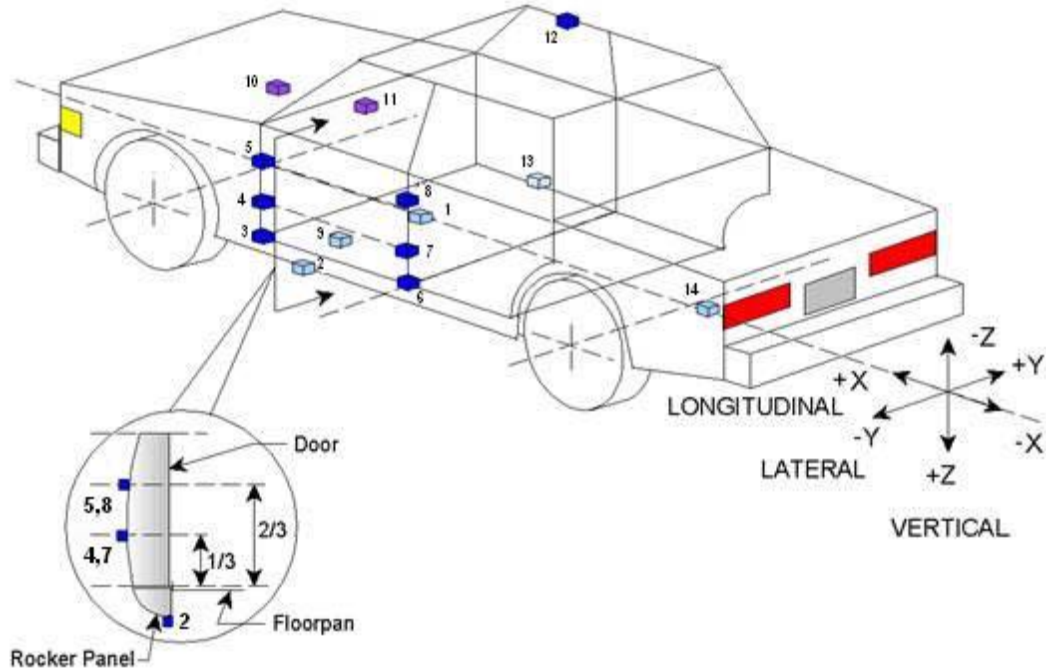
INSTRUMENTATION

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

DATA SHEET NO. 6
VEHICLE ACCELEROMETER DATA

Test Vehicle: 2016 Toyota Tacoma Double Cab
 Test Program: SPNCAP Side Impact

NHTSA No.: M20165113
 Test Date: 4/11/16



Accelerometer/Sensor Location				
	ID	Coordinates (mm)		
		X	Y	Z
1	Vehicle CG	3461	165	-575
2	Left Floor Sill	3535	-732	-560
3	A-Pillar Sill	3756	-732	-969
4	A-Pillar Low	3874	-842	-695
5	A-Pillar Mid	3870	-842	-1060
6	B-Pillar Sill	2680	-735	-655
7	B-Pillar Low	2810	-855	-714
8	B-Pillar Mid	2790	-835	-1150
9	Driver Seat Track	3052	-585	-584
10	Engine Top	4485	160	-1008
11	Firewall	4115	20	-1128
12	Right Roof	2752	665	-1720
13	Right Floor Sill	3528	732	-555
14	Rear Floorpan	995	0	-785

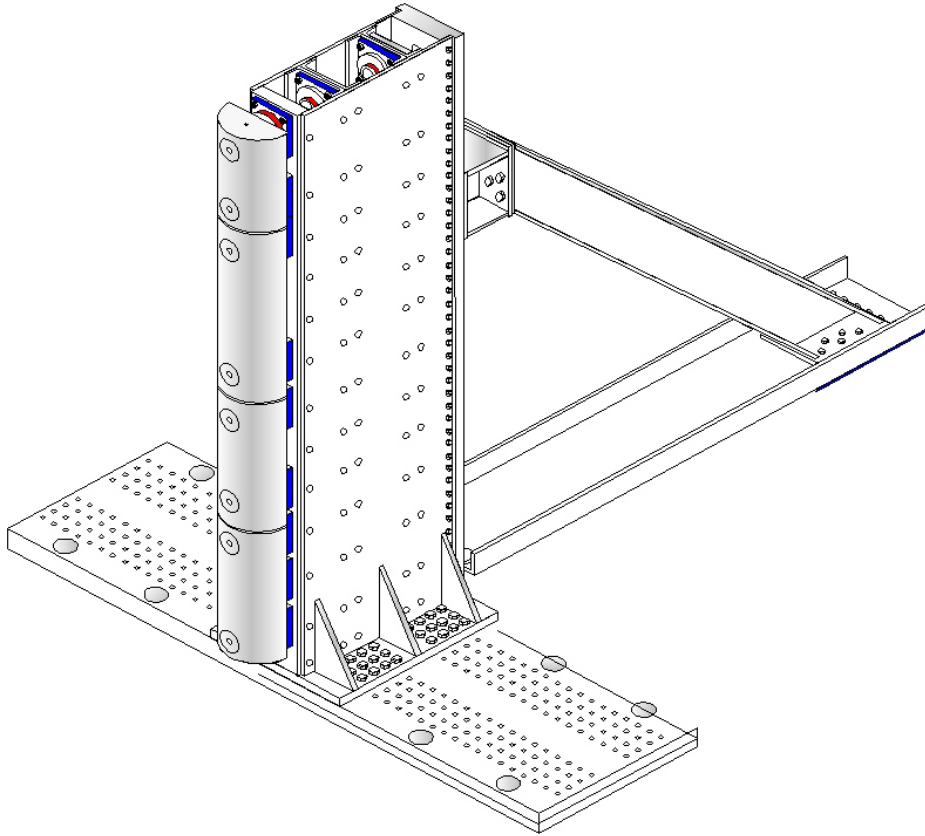
Reference: X - Test Vehicle Rear Bumper (+ forward)
 Y - Test Vehicle Centerline (+ to right)
 Z - Ground Plane (+ down)

DATA SHEET NO. 7
RIGID POLE LOAD CELL DATA

Test Vehicle: 2016 Toyota Tacoma Double Cab
Test Program: SPNCAP Side Impact

NHTSA No.: M20165113
Test Date: 4/11/16

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: 2016 Toyota Tacoma Double Cab
Test Program: SPNCAP Side Impact

NHTSA No.: M20165113
Test Date: 4/11/16

TEST DUMMY INFORMATION AND CONTACT POINTS

Dummy Body Part	Driver SID-IIs Dummy
Face	SCAB/Frontal Airbag
Top of Head	SCAB
Left Side of Head	SCAB
Back of Head	SCAB/Head Restraint
Left Shoulder	Torso/Pelvis Airbag/ Seat Bight
Upper Torso	Seat Bight
Lower Torso	Seat Bight
Left Hip	Torso/Pelvis Airbag/Seat Bight
Left Knee	Knee Airbag

POST-TEST DOOR PERFORMANCE

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

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

POST-TEST SEAT PERFORMANCE

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

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

POST-TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Pillar Performance	Major deformation
Sill Separation	None visible
Windshield Damage	Broken
Side Window Damage	Left front window shattered
Other Notable Effects	None

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

Test Vehicle: 2016 Toyota Tacoma Double Cab
 Test Program: SPNCAP Side Impact

NHTSA No.: M20165113
 Test Date: 4/11/16

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type	Struck Side (Driver)		Struck Side (Rear Passenger)	
	Mounted	Deployed	Mounted	Deployed
Front Airbag	Yes	Yes		
Knee Airbag	Yes	Yes		
Side Curtain Airbag	Yes	Yes	Yes	Yes
Side Torso/Pelvis Airbag	Yes	Yes	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	Yes	No	N/A
Other	No	N/A	No	N/A

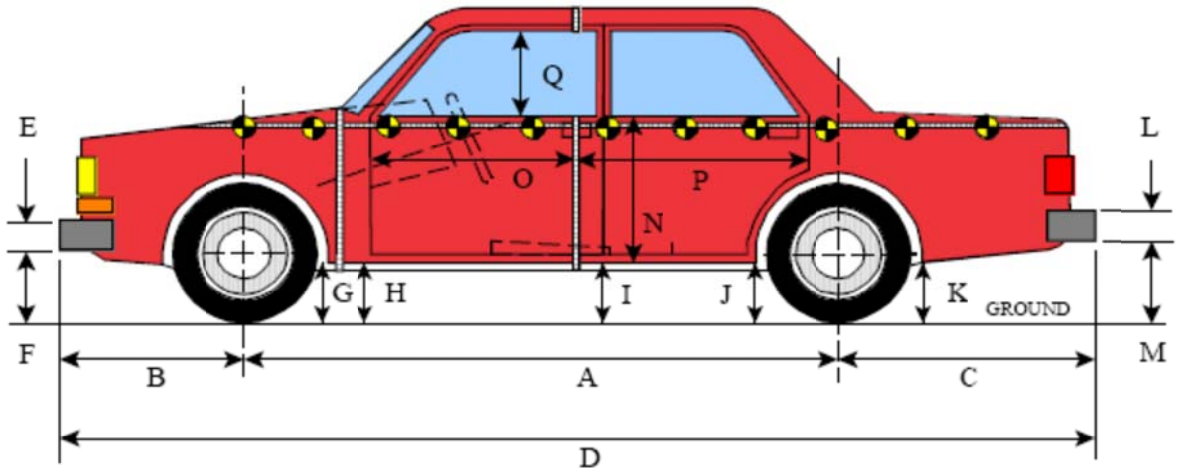
VEHICLE SPEED, VEHICLE ANGLE AT IMPACT AND IMPACT POINT LOCATION DATA

Measured Parameter	Units	Tolerance	Value
Vertical Impact Reference Line (Aft of Front Axle) (Intended Impact Point)	mm		1215
Actual Impact Point (Aft of Front Axle)	mm		1215
Horizontal Offset (+ forward / - rearward)	mm	+/- 38 of Intended Impact point	0
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	31.96
Trap No. 2 Velocity (Redundant)	km/h	31.4 to 33.0	31.93

DATA SHEET NO. 9
VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2016 Toyota Tacoma Double Cab
 Test Program: SPNCAP Side Impact

NHTSA No.: M20165113
 Test Date: 4/11/16



LEFT SIDE VIEW

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

VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

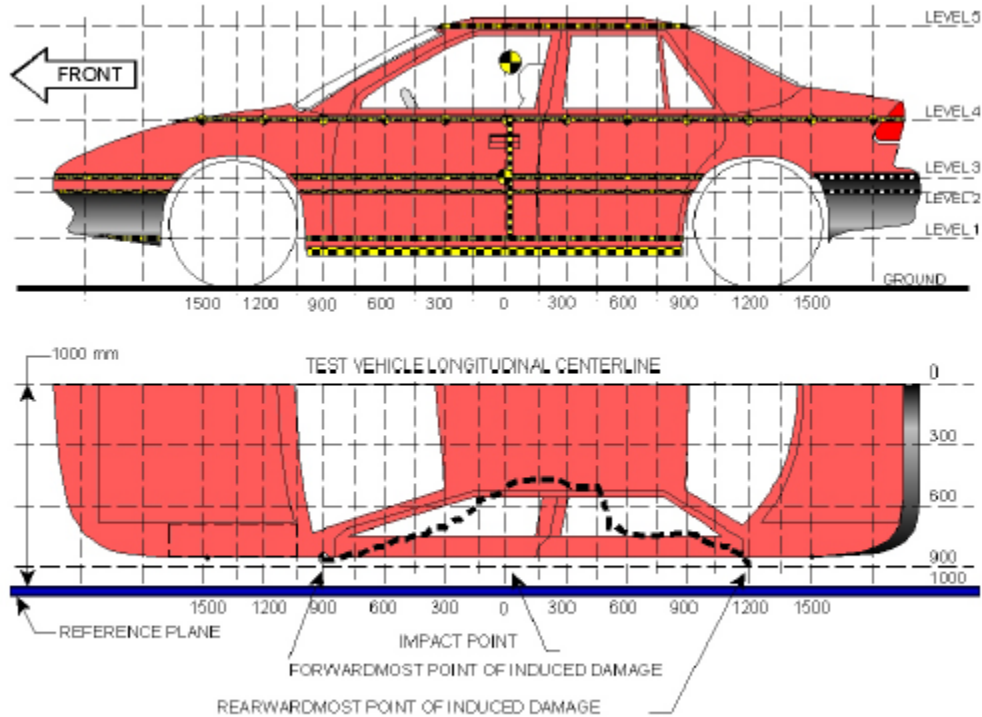
Code	Measurement Description	Pre-Test	Post-Test	Difference
A	Wheelbase	3255	3235	20
B	Front Axle to Front Surface of Vehicle	948	948	0
C	Rear Axle to Rear Surface of Vehicle	1207	1207	0
D	Total Length at Centerline	5410	5380	30
E	Front Bumper Thickness	110	110	0
F	Front Bumper Bottom to Ground	531	550	-19
G	Sill Height at Front Wheel Well	527	520	7
H	Sill Height at Front Door Leading Edge	506	520	-14
I	Sill Height at B-Pillar	527	545	-18
J1	Sill Height at Rear Wheel Well	530	580	-50
J2	Pinch Weld Height at Rear Wheel Well	430	475	-45
K	Sill Height Aft of Rear Wheel Well	570	649	-79
L	Rear Bumper Thickness	115	115	0
M	Rear Bumper Bottom to Ground	547	560	-13
N	Sill Height to Bottom of Front Window Sill	747	760	-13
O	Front Door Leading Edge to Impact CL	625	555	70
P	Rear Door Trailing Edge to Impact CL	1390	1270	120
Q	Front Window Opening	430	410	20
R	Right Side Length	5239	5200	39
S	Left Side Length	5223	5205	18
T ¹	Vehicle Width at B-Pillars	1807	1700	107

¹ Vehicle maximum width is 1890 mm.

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2016 Toyota Tacoma Double Cab
 Test Program: SPNCAP Side Impact

NHTSA No.: M20165113
 Test Date: 4/11/16



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	575	304	0
2	Occupant H-Point	829	321	0
3	Mid-Door	880	325	0
4	Window Sill	1193	296	0
5	Window Top	1702	143	0

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

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

Test Vehicle: 2016 Toyota Tacoma Double Cab
 Test Program: SPNCAP Side Impact

NHTSA No.: M20165113
 Test Date: 4/11/16

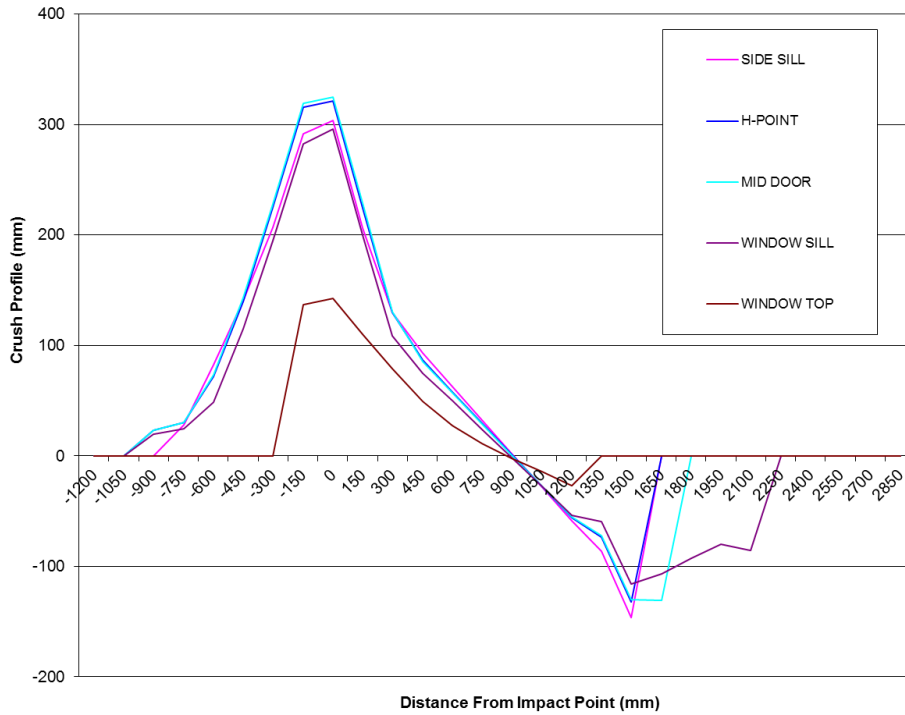
	Pre-Test					Post-Test					Difference				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
-900	0	942	935	828	0	0	919	912	809	0	0	23	23	19	0
-750	915	923	919	835	0	887	892	889	810	0	28	31	30	25	0
-600	882	899	897	839	0	799	828	824	791	0	83	71	73	48	0
-450	884	892	894	845	0	743	753	751	730	0	141	139	143	115	0
-300	885	894	896	850	0	678	668	668	655	0	207	226	228	195	0
-150	886	895	897	855	610	595	580	578	572	473	291	315	319	283	137
0	887	896	899	859	637	583	575	574	563	494	304	321	325	296	143
150	887	897	900	862	647	681	673	671	663	537	206	224	229	199	110
300	887	899	901	864	652	757	769	771	756	574	130	130	130	108	78
450	886	898	901	866	657	793	812	816	791	607	93	86	85	75	50
600	885	897	900	867	657	823	839	843	817	630	62	58	57	50	27
750	884	896	899	868	658	852	867	870	844	647	32	29	29	24	11
900	881	895	898	868	659	879	894	897	870	661	2	1	1	-2	-2
1050	878	894	896	868	658	907	922	924	896	672	-29	-28	-28	-28	-14
1200	875	892	895	867	654	934	948	951	921	681	-59	-56	-56	-54	-27
1350	856	881	883	855	0	942	954	955	915	0	-86	-73	-72	-60	0
1500	903	922	920	851	0	1050	1054	1050	967	0	-147	-132	-130	-116	0
1650	0	0	944	852	0	0	0	1075	959	0	0	0	-131	-107	0
1800	0	0	0	855	0	0	0	0	948	0	0	0	0	-93	0
1950	0	0	0	858	0	0	0	0	939	0	0	0	0	-81	0
2100	0	0	0	862	0	0	0	0	948	0	0	0	0	-86	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: 2016 Toyota Tacoma Double Cab
Test Program: SPNCAP Side Impact

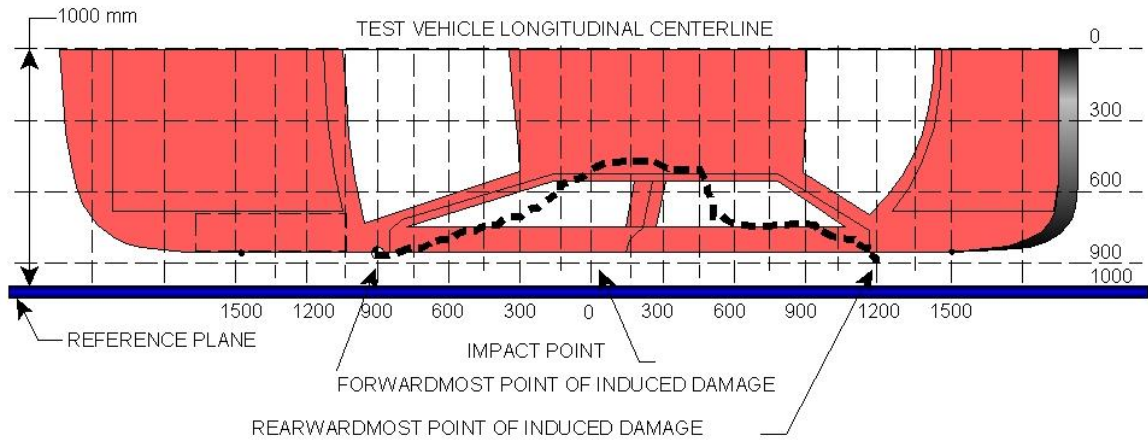
NHTSA No.: M20165113
Test Date: 4/11/16



DATA SHEET NO. 11
VEHICLE DAMAGE PROFILE DISTANCES

Test Vehicle: 2016 Toyota Tacoma Double Cab
 Test Program: SPNCAP Side Impact

NHTSA No.: M20165113
 Test Date: 4/11/16



VEHICLE DAMAGE PROFILE DISTANCES¹

DPD	Distance From Impact Point (mm)	Level	Post-Test (mm)	Pre-Test (mm)	Crush (mm)
1	900	1	879	881	0
2	600	1	823	885	62
3	150	3	671	900	229
4	-150	3	578	897	319
5	-600	1	799	882	83
6	-900	2,3	919,912	942,935	0

¹ DPD 1 and 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: 2016 Toyota Tacoma Double Cab

NHTSA No.: M20165113

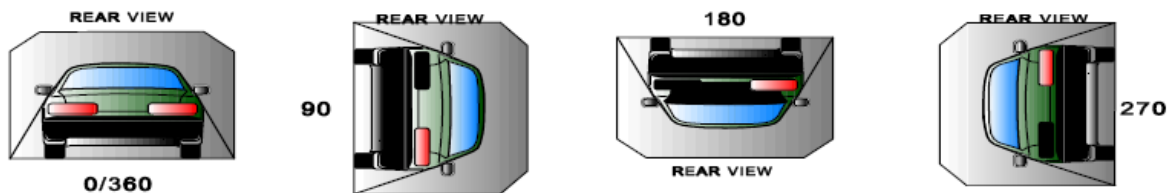
Test Program: SPNCAP Side Impact

Test Date: 4/11/16

Test Time: 13:53 Temperature: 22.1°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 Detected: 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	720
90 to 180	90	330	1440
180 to 270	90	330	2160
270 to 360	90	330	2880

FMVSS NO. 301 ROLLOVER SPILLAGE TABLE

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

ROLLOVER SOLVENT SPILLAGE LOCATION TABLE

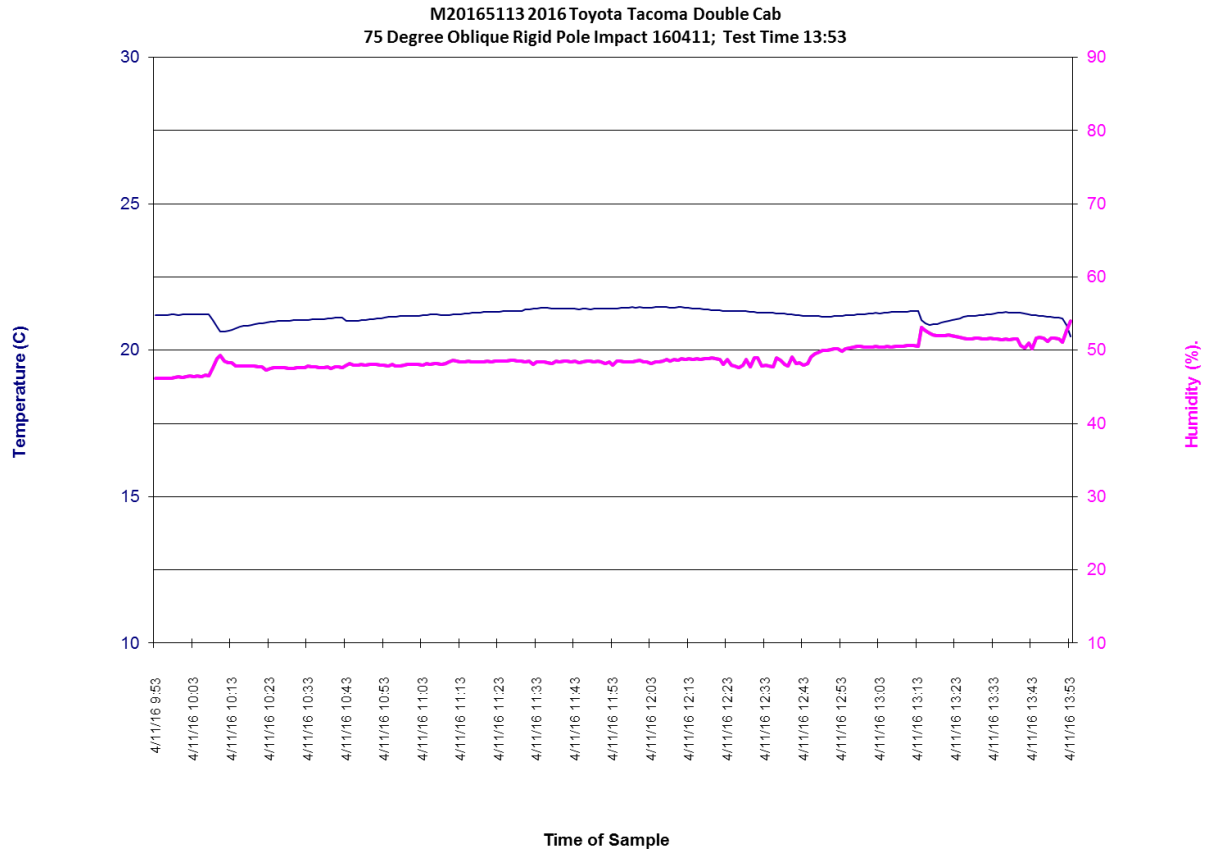
Test Phase	Spillage Location
0 to 90	None
90 to 180	None
180 to 270	None
270 to 360	None

DATA SHEET NO. 13

DUMMY/VEHICLE TEMPERATURE AND HUMIDITY STABILIZATION DATA

Test Vehicle: 2016 Toyota Tacoma Double Cab
Test Program: SPNCAP Side Impact

NHTSA No.: M20165113
Test Date: 4/11/16



APPENDIX A
PHOTOGRAPHS

TABLE OF PHOTOGRAPHS

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3	Pre-Test Frontal View of Test Vehicle	A-5
4	Post-Test Frontal View of Test Vehicle	A-5
5	Pre-Test Left Front $\frac{3}{4}$ View of Test Vehicle	A-6
6	Post-Test Left Front $\frac{3}{4}$ View of Test Vehicle	A-6
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10	Post-Test Left Rear $\frac{3}{4}$ View of Test Vehicle	A-8
11	Pre-Test Rear View of Test Vehicle	A-9
12	Post-Test Rear View of Test Vehicle	A-9
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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
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23	Pre-Test Left Side View of Dummy Showing Belt and Chalking	A-15
24	Pre-Test Left Side View of Dummy Shoulder and Door Top View	A-15
25	Post-Test Left Side View of Dummy Shoulder and Door Top View	A-16
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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-17
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-18
31	Pre-Test Left Side View of Dummy's Head Showing Dummy's Head is Level	A-19
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37	Pre-Test Close-Up Left Side View of Driver Seat Track	A-22
38	Pre-Test Close-Up Left Side View of Driver Seat Back	A-22
39	Pre-Test Close-Up View of Driver Seat Back or Head Restraint	A-23
40	Pre-Test Dummy and Door Clearance View	A-23
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50	Post-Test Dummy Close-Up Pelvis Contact with Vehicle Interior View	A-28
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-29
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60	Post-Test Pole Barrier Side View	A-34
61	Pre-Test Ballast View	A-35
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70	Head Restraint Use and Adjustment Information from Vehicle Owner's Manual	A-39



001 As Delivered Right Front $\frac{3}{4}$ View of Test Vehicle



002 As Delivered Left Rear $\frac{3}{4}$ View of Test Vehicle



003 Pre-Test Frontal View of Test Vehicle



004 Post-Test Frontal View of Test Vehicle



005 Pre-Test Left Front $\frac{3}{4}$ View of Test Vehicle



006 Post-Test Left Front $\frac{3}{4}$ View of Test Vehicle



007 Pre-Test Left Side View of Test Vehicle



008 Post-Test Left Side View of Test Vehicle



009 Pre-Test Left Rear $\frac{3}{4}$ View of Test Vehicle



010 Post-Test Left Rear $\frac{3}{4}$ View of Test Vehicle



011 Pre-Test Rear View of Test Vehicle



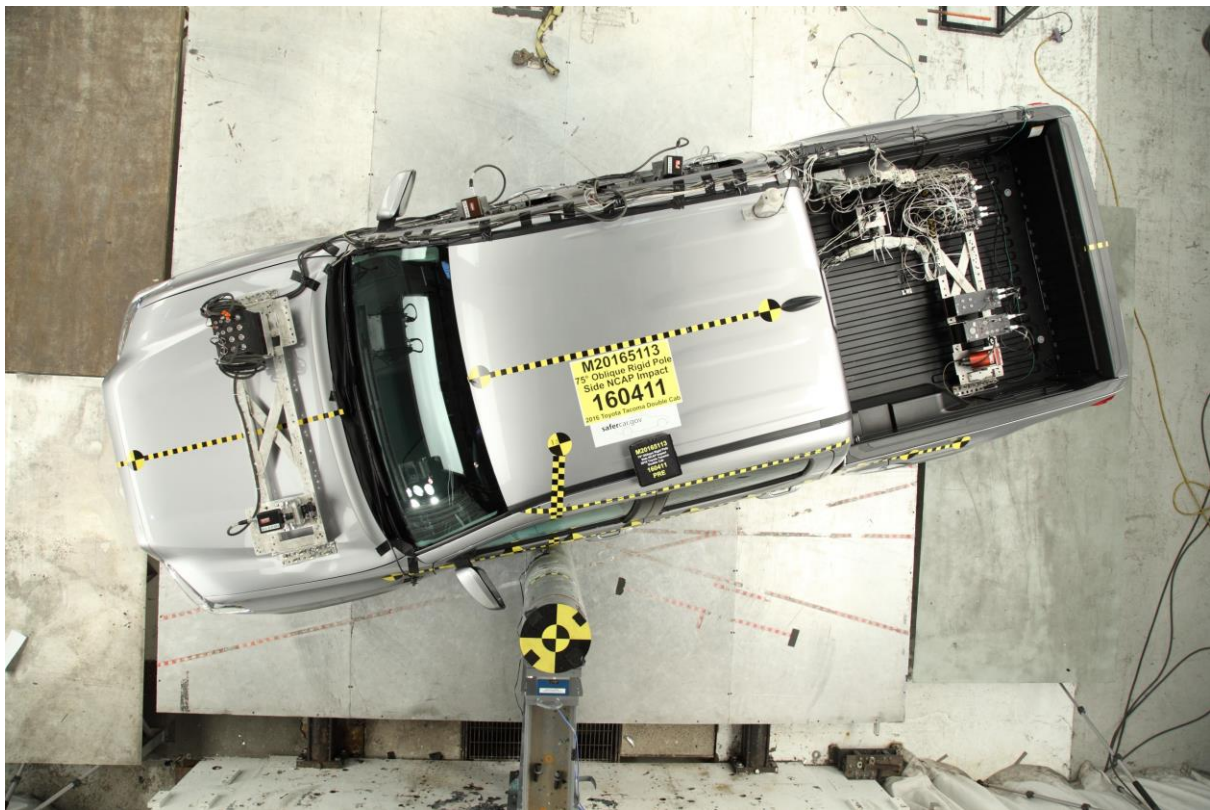
012 Post-Test Rear View of Test Vehicle



013 Pre-Test Right Side View of Test Vehicle



014 Post-Test Right Side View of Test Vehicle



015 Pre-Test Overhead View of Test Area



016 Post-Test Overhead View of Test Area



017 Pre-Test Left Side View of Pole Positioned Against Side of Vehicle



018 Pre-Test Right Side View of Pole Positioned Against Side of Vehicle



019 Pre-Test Close-Up View of Impact Point Target



020 Post-Test Close-Up View of Impact Point Target Showing Impact Location



021 Pre-Test Front Close-Up View of Dummy Head and Chest



022 Post-Test Front Close-Up View of Dummy



023 Pre-Test Left Side View of Dummy Showing Belt and Chalking



024 Pre-Test Left Side View of Dummy Shoulder and Door Top View



025 Post-Test Left Side View of Dummy Shoulder and Door Top View



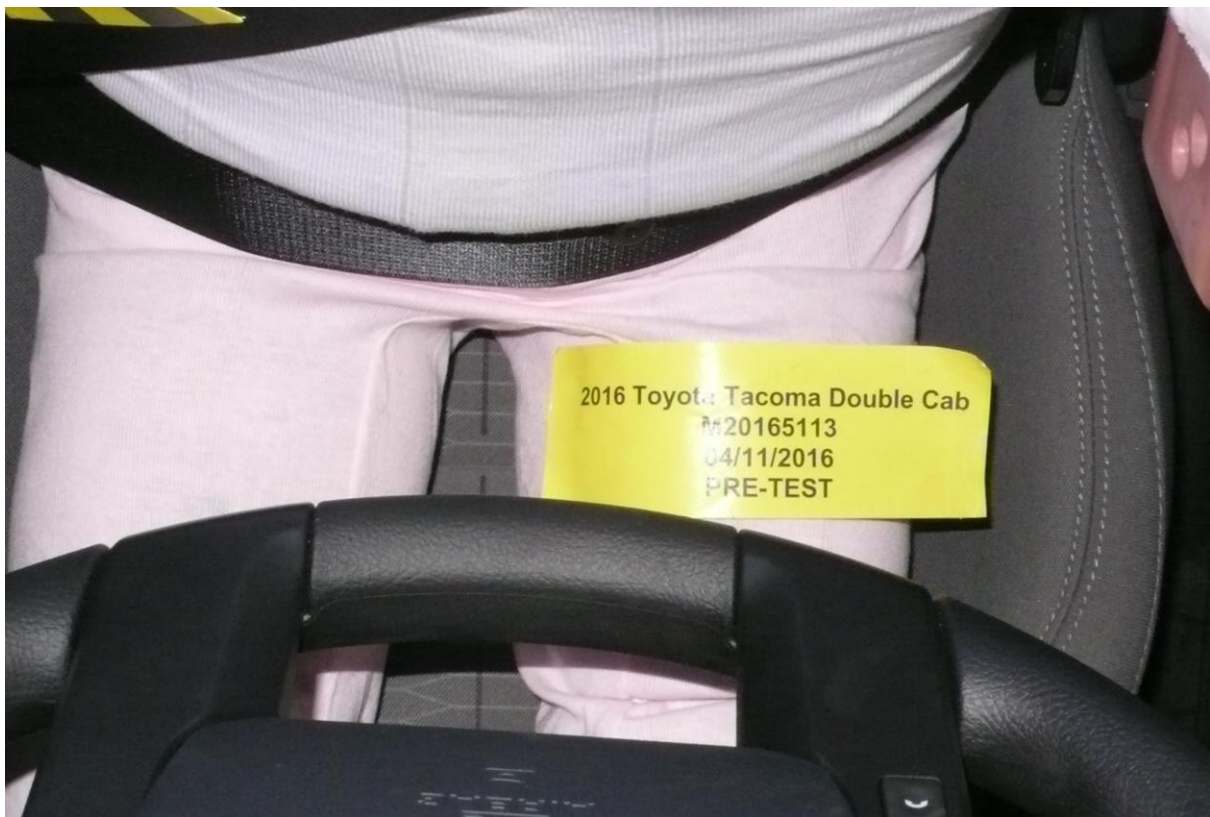
026 Pre-Test Front View of Seat Back Prior to Dummy Positioning



027 Pre-Test Front View of Dummy Head and Shoulders in Relation to Head Restraint



028 Pre-Test Front View of Seat Pan Prior to Dummy Positioning



029 Pre-Test Overhead View of Dummy Thighs on Seat Pan



030 Pre-Test Left Side View of Dummy Neck Showing Position of Adjustable Neck Bracket



031 Pre-Test Left Side View of Dummy Head Showing Dummy Head is Level



032 Pre-Test Placement of Dummy Feet



033 Pre-Test View of Belt Anchorage for Dummy



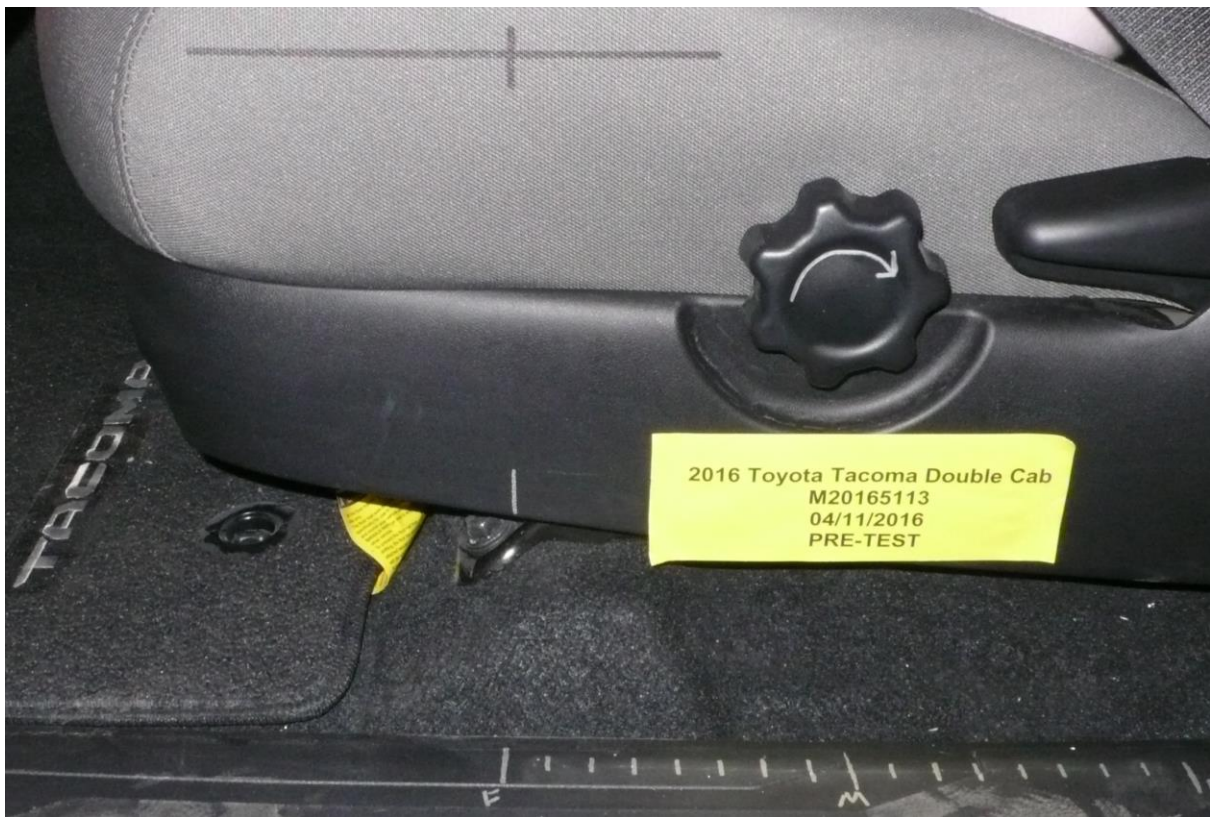
034 Pre-Test Left Side View of Steering Wheel



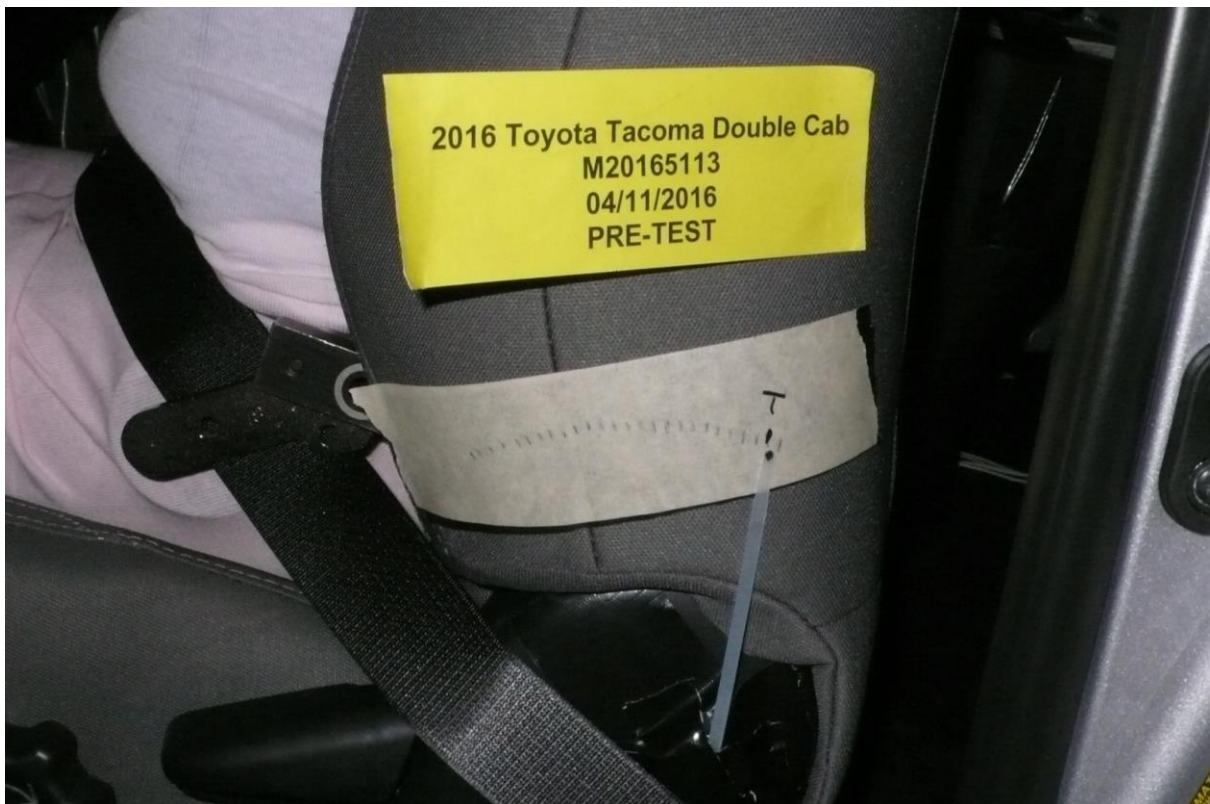
035 Pre-Test View of Disengaged Parking Brake



036 Pre-Test View of Parking Brake



037 Pre-Test Close-Up Left Side View of Driver Seat Track



038 Pre-Test Close-Up Left Side View of Driver Seat Back



039 Pre-Test Close-Up View of Driver Seat Back or Head Restraint



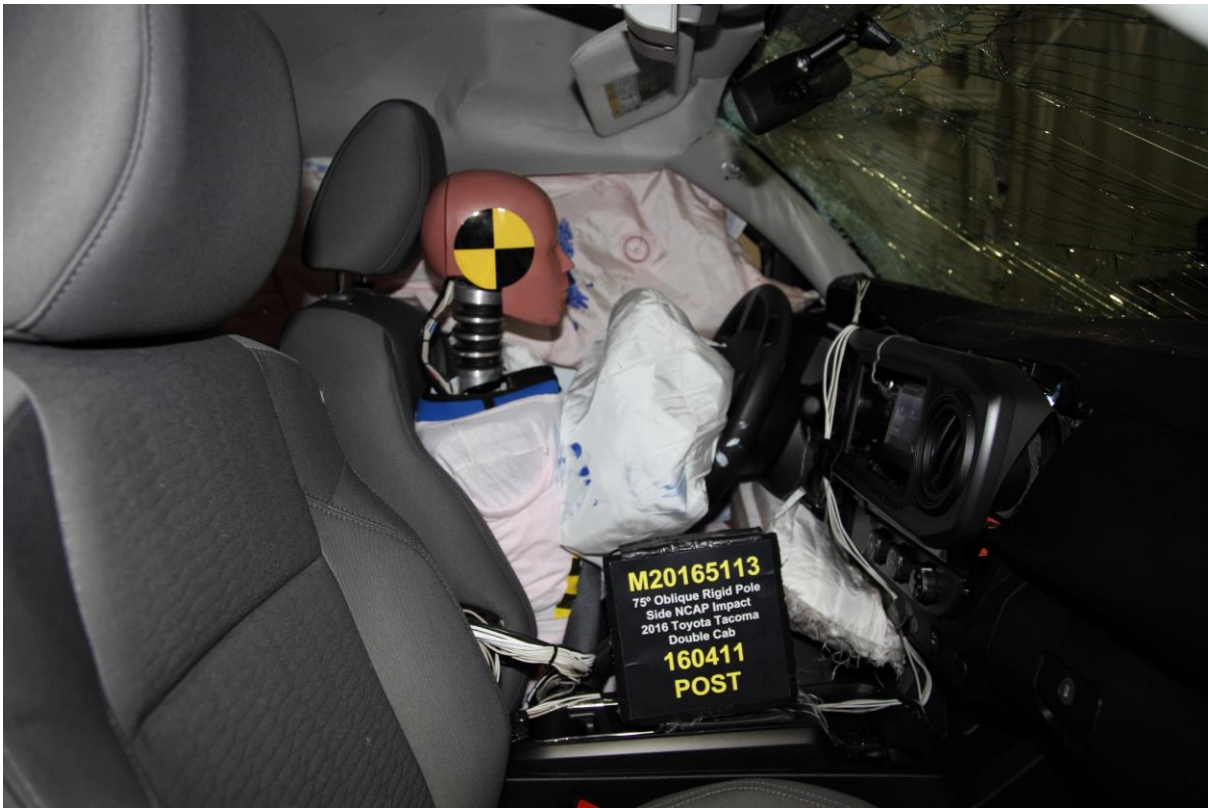
040 Pre-Test Dummy and Door Clearance View



041 Post-Test Dummy and Door Clearance View



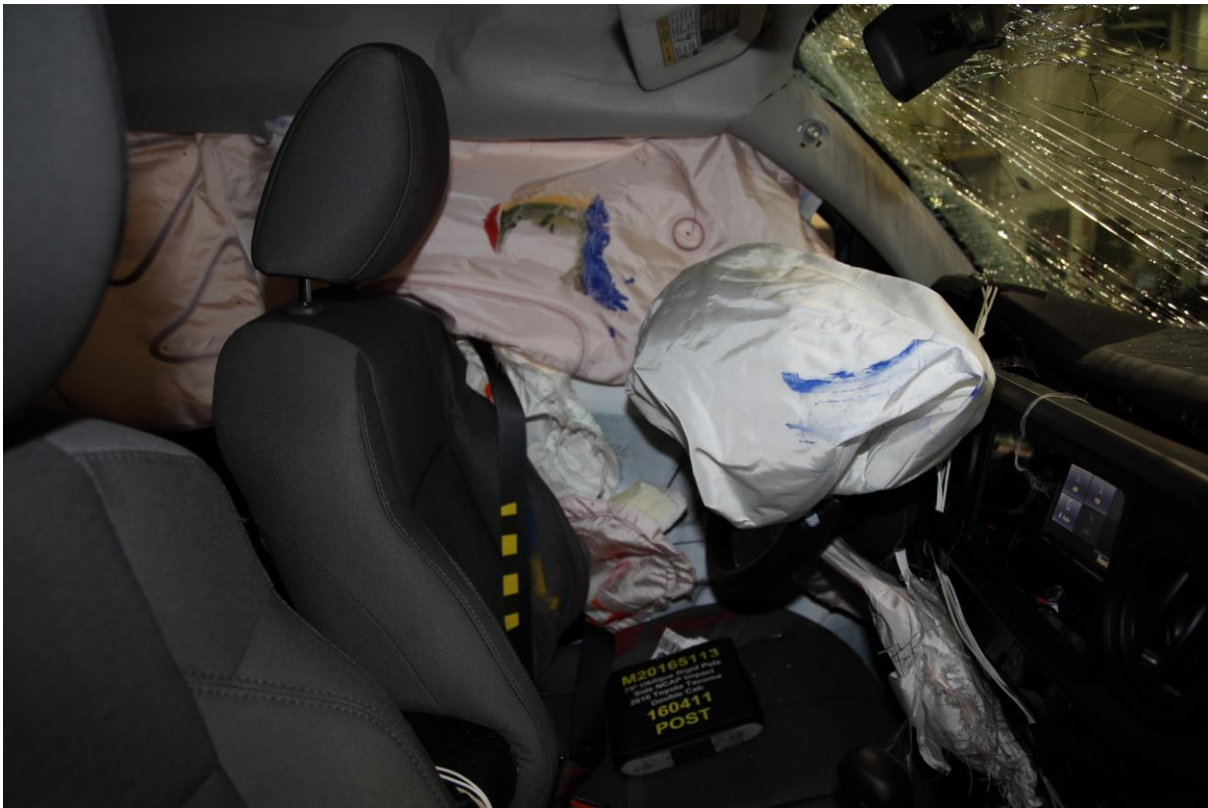
042 Pre-Test Right Side View of Dummy and Front Seat of Occupant Compartment



043 Post-Test Right Side View of Dummy and Front Seat of Occupant Compartment



044 Pre-Test Inner Driver Door Panel View



045 Post-Test Inner Driver Door Panel View Showing Dummy Contact Location



046 Post-Test Dummy Close-Up Head Contact with Vehicle Interior View



047 Post-Test Dummy Close-Up Head Contact with Side Airbag View



048 Post-Test Dummy Close-Up Torso Contact with Vehicle Interior View



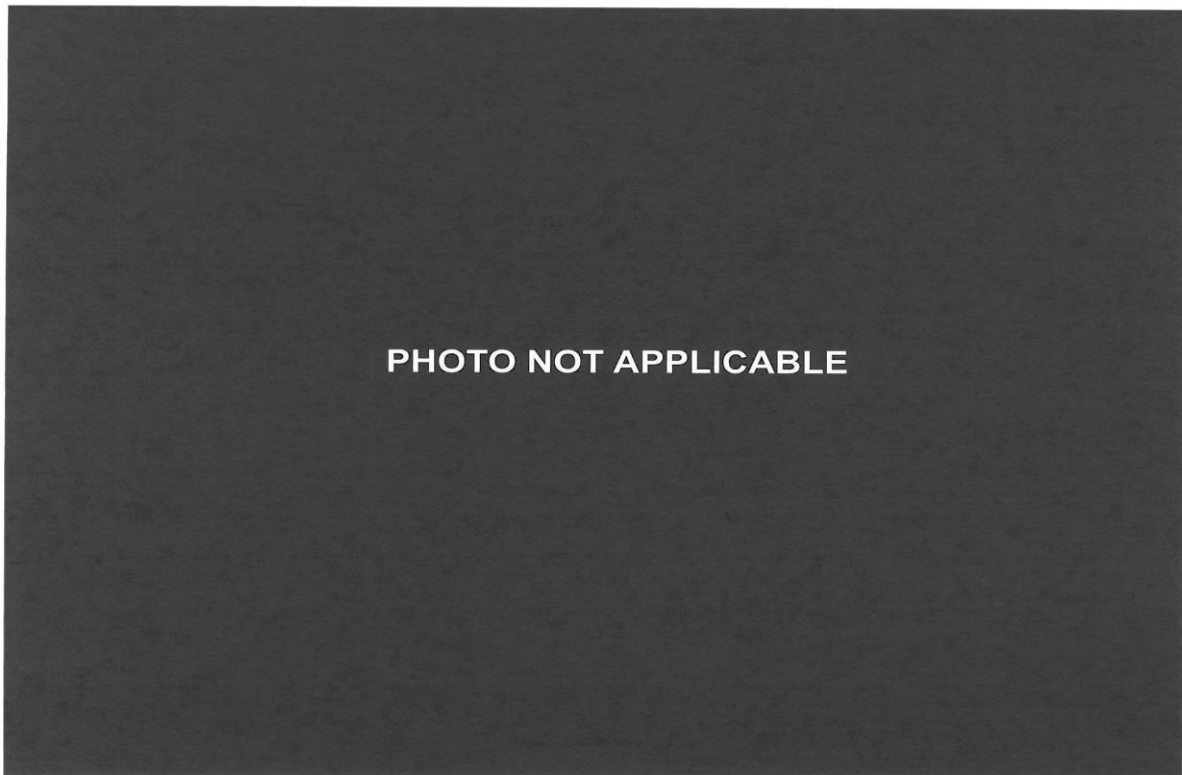
049 Post-Test Dummy Close-Up Torso Contact with Side Airbag View



050 Post-Test Dummy Close-Up Pelvis Contact with Vehicle Interior View



051 Post-Test Dummy Close-Up Pelvis Contact with Side Airbag View



052 Post-Test Dummy Close-Up Knee Contact with Vehicle Interior View



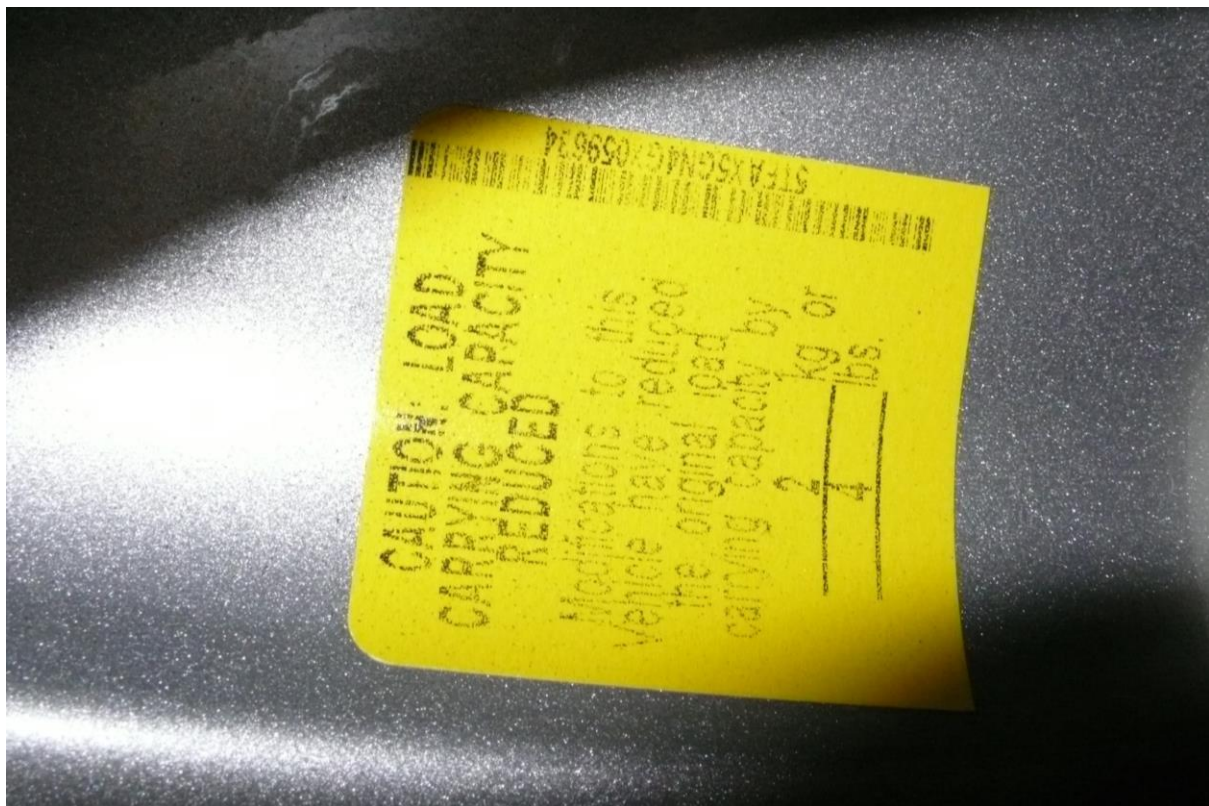
053 Pre-Test View of Fuel Filler Cap or Fuel Filler Neck



054 Post-Test View of Fuel Filler Cap or Fuel Filler Neck



055 Close-Up View of Vehicle's Certification Label



55a Close-Up View of Vehicle's Load Capacity Label



056 Close-Up View of Vehicle's Tire Information Placard or Label

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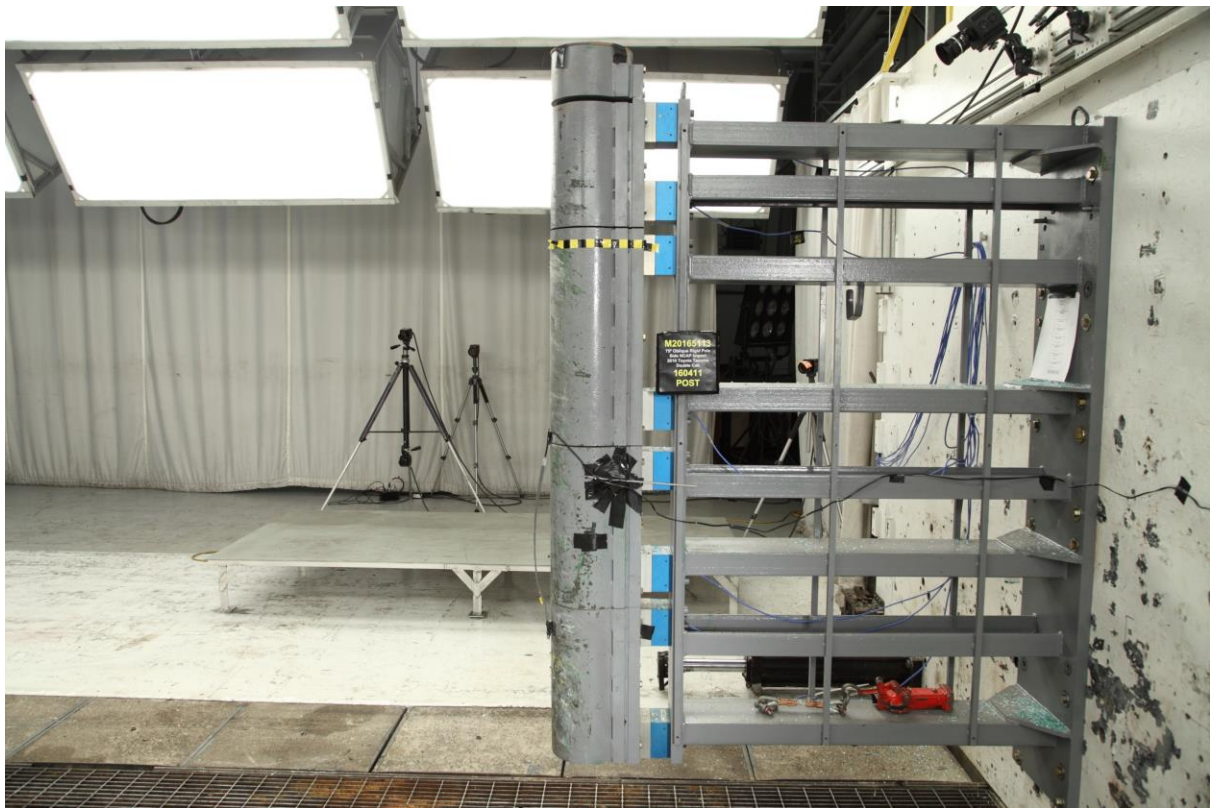
057 Pre-Test Pole Barrier Front View



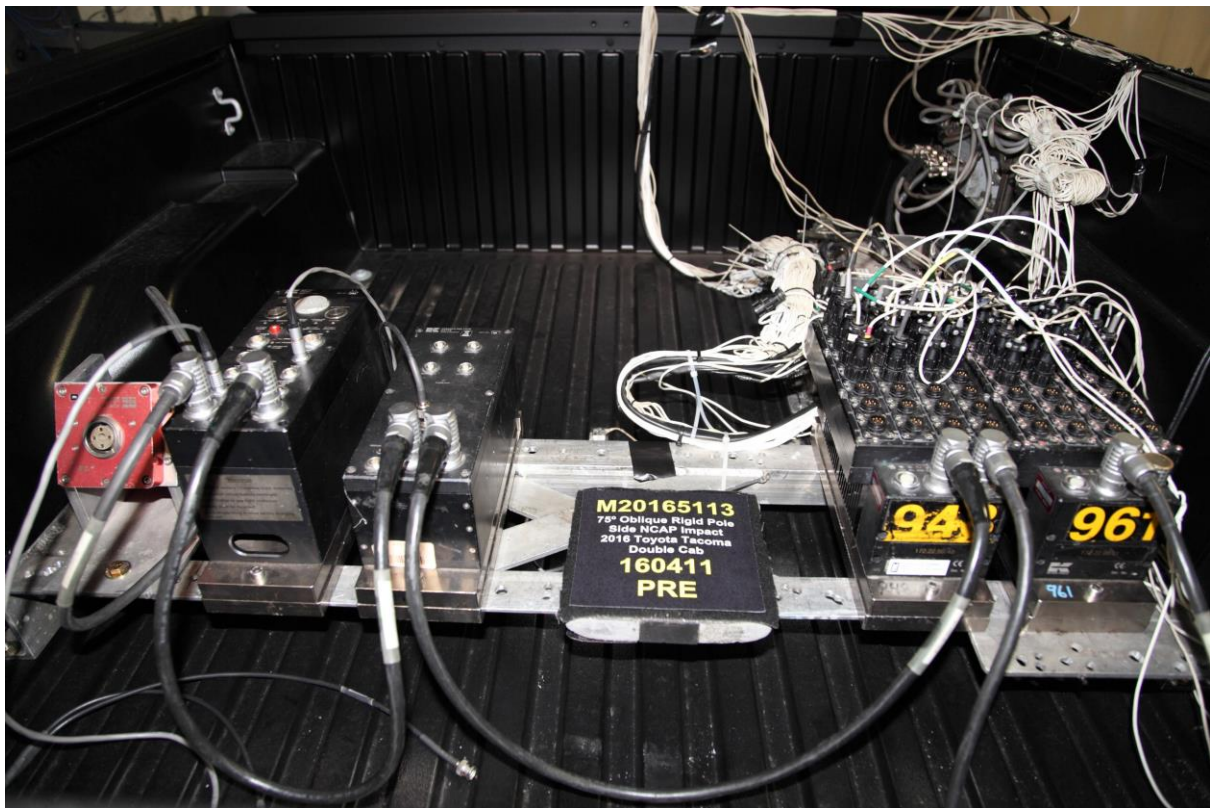
058 Post-Test Pole Barrier Front View



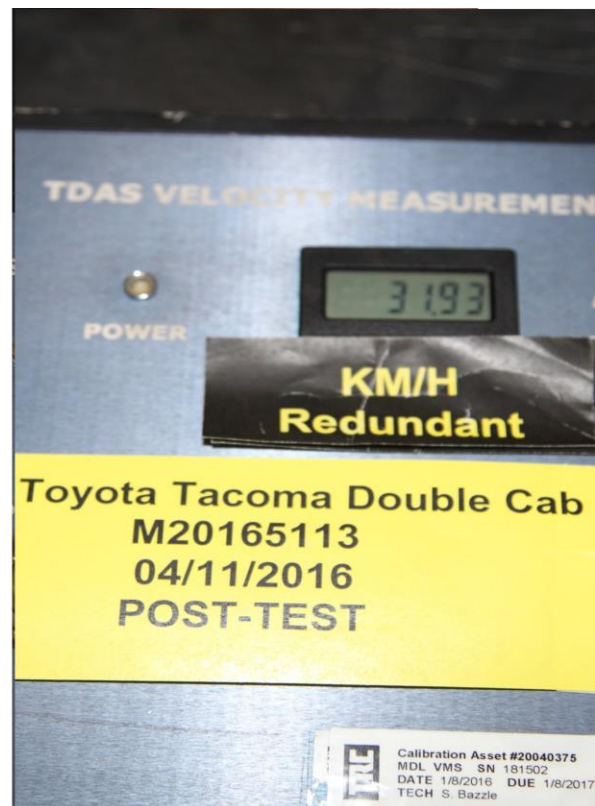
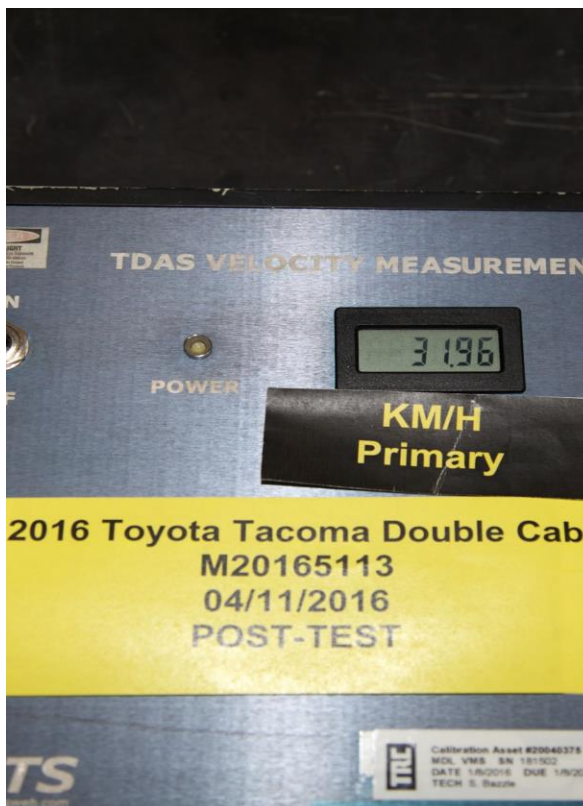
059 Pre-Test Pole Barrier Side View



060 Post-Test Pole Barrier Side View



061 Pre-Test Ballast View



062 Post-Test Primary and Redundant Speed Trap Read-Out



063 FMVSS No. 301 Static Rollover 0 Degrees



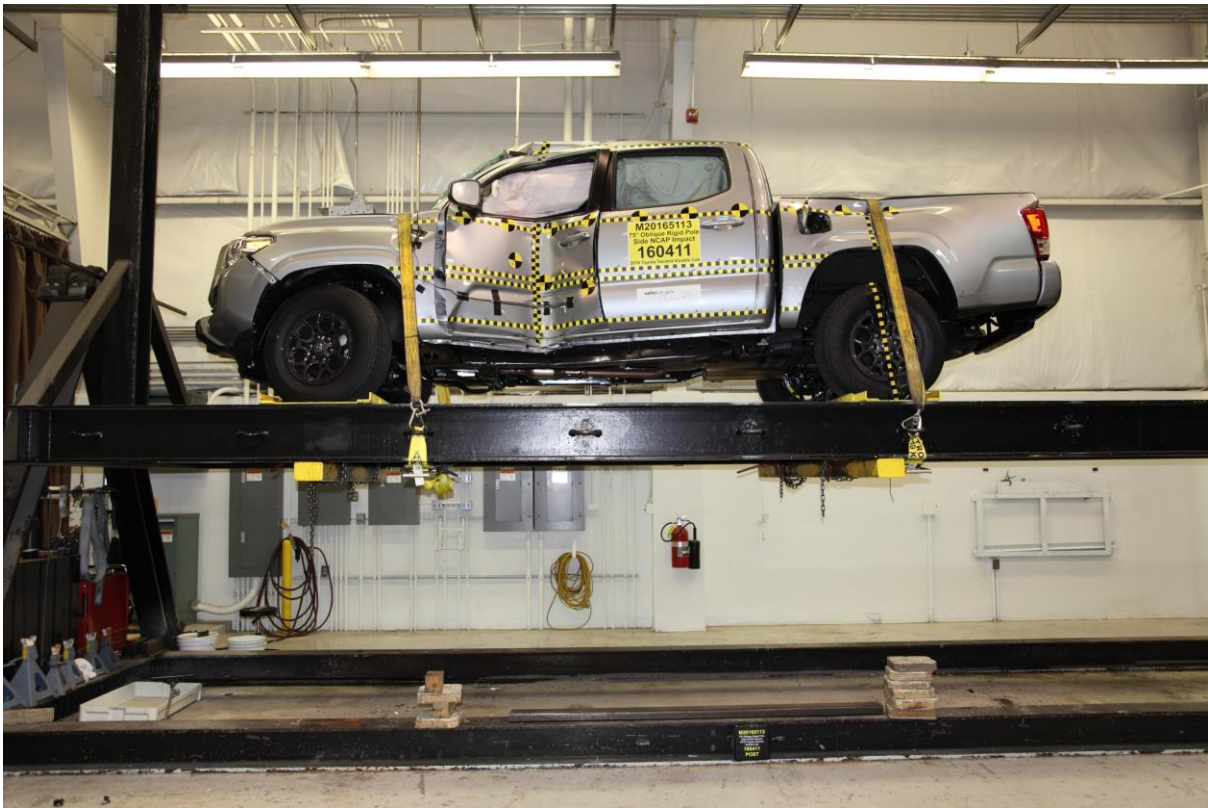
064 FMVSS No. 301 Static Rollover 90 Degrees



065 FMVSS No. 301 Static Rollover 180 Degrees



066 FMVSS No. 301 Static Rollover 270 Degrees



067 FMVSS No. 301 Static Rollover 360 Degrees



068 Impact Event

TOYOTA
Let's Go Places

DESC: **TACOMA SR** 4X2 DOUBLE CAB
VIN: **5TFAX5GN4GX059634**
YR/MDL: 2016/7186G
CLR: **SILVER SKY METALLIC/FB14** (01D6/14)
FINAL ASSEMBLY POINT: **SAN ANTONIO, TEXAS, U.S.A.**

GOVERNMENT 5-STAR SAFETY RATINGS

Overall Vehicle Score **Not Rated**

Based on the combined ratings of frontal, side and rollover. Should ONLY be compared to other vehicles of similar size and weight.

Frontal Crash	Driver: Not Rated Passenger: Not Rated
Side Crash	Front seat: Not Rated Rear seat: 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

- 2.7L D4CH 18V 4-cyl Engine w/ Dual VVTi 158hp @ 5200rpm/180 lb-ft @ 3800rpm
- 6-Spd Automatic Transmission
- Automatic Limited-Slip Differential
- Coil Spring Double Wishbone Fr & Leaf Spring Sr Suspension
- 16" Steel Wheel w/P245/75R16 Tires

SAFETY & CONVENIENCE

- Rear Backup Camera
- Star Safety System - includes Vehicle Stability Control, Traction Control, Anti-lock Brake System (ABS), Electronic Brake Force Distribution, Brake Assist, & Smart Stop Technology (SST)
- Dr & Fr Pass Advanced Airbag System
- Seat-Mounted Side & Side Curtain Airbags
- 3-Point Seatbelts for All Seating Positions, Driver-Side ELR & ALJ/ELR on All Pass Sits, Dr & Fr Pass Active Headrest
- Side-Impact Door Beams
- Tire Pressure Monitor System

EXTERIOR

- Projector Beam Headlights
- Per Side Mirrors
- Composite Bed
- Deck Rail System w/Adi Tie-Down Cleats
- Easy Lower/Lockable & Removable Tailgate

INTERIOR

- Fabric Trim Seats w/Dr Lumbar Support
- Urethane Steering Wheel w/ Audio Controls
- Per Windows w/Dr Auto Dim and Per Door Locks
- Entune Audio w/AM/FM & CD
- 6.1" Touch-Screen and BT & USB
- ***Full Tank of Gas***

MANUFACTURER'S SUGGESTED RETAIL PRICE \$24,130.00

OPTIONAL EQUIPMENT

FE	50 State Emissions	
AA	16" Dark Satin Alloy Wheel (Requires SR Convenience Package)	435.00
LL	5" Convenience Package	480.00
CF	Cricket Floor Mats w/Door Sill	209.00
DK	Preferred Owner's Portfolio	

DELIVER, PROCESSING AND HANDLING FEE 900.00

TOTAL \$26,154.00

The New Vehicle Limited Warranty provides 3-year/50,000-mile basic coverage, 5-year/100,000-mile powertrain coverage, plus 24-hour roadside assistance and 24-hour towing coverage. See Warranty and Maintenance Guide for details. An extended service contract may be available for the vehicle. Maintenance - most new vehicles require a recommended pre-delivery service. Gasoline, engine oil and this item, available before, with and used items and dealer and distributor installed options and accessories are not included in the manufacturer's suggested retail price.

ToyotaCare, which covers normal factory scheduled maintenance for two years or 25,000 miles, whichever occurs first. It, included as part of the sales price of the vehicle for qualifying new buyers. See participating dealer for eligibility and coverage details.

Delivered by Truck to: 37065 THOMPSON TOYOTA 132 W. SWAMP ROAD DOYLESTOWN PA 18001

EPA DOT Fuel Economy and Environment

Fuel Economy

21 MPG combined city/hwy

19 city **23** highway

4.8 gallons per 100 miles

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

Annual fuel cost \$2,150

Fuel Economy & Greenhouse Gas Rating

Smog Rating

Actual results may vary for many reasons, including driving conditions and how the vehicle is driven. The average new vehicle gets 23 MPG and costs \$9,000 to fuel over 5 years. Cost estimates are based on 15,000 miles per year at \$3.00 per gallon. Emissions in miles per gallon equivalent. Vehicle emissions are a significant factor of climate change and smog.

fuel economy.gov

069 Monroney Label

134 3-3. Adjusting the seats

Head restraints

Head restraints are provided for all seats.

Front seats

Vertical adjustment

① Up
Pull the head restraints up.

② Down
Push the head restraint down while pressing the lock release button.

Rear seats

► Access Cab models

Folding the head restraints

① To use
Lift up the head restraint until it locks.

② To fold
Pull the head restraint lock release lever to fold the head restraint.

3-3. Adjusting the seats **135**

► Double Cab models

Folding the head restraints (outer head restraints)

① To use
Lift up and push down the head restraint to the lowest lock position.

② To fold
Pull the head restraint up while pressing the lock release buttons.

Vertical adjustment (center head restraint)

① Up
Pull the head restraints up.

② Down
Push the head restraint down while pressing the lock release button.

Operation of each component

070 Head Restraint Use and Adjustment Information from Vehicle Owner's Manual

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)

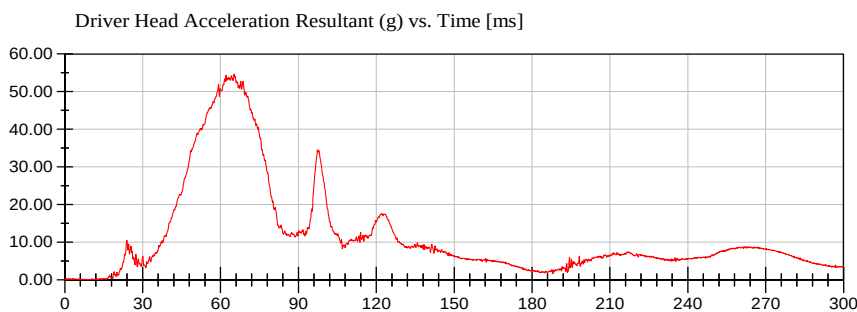
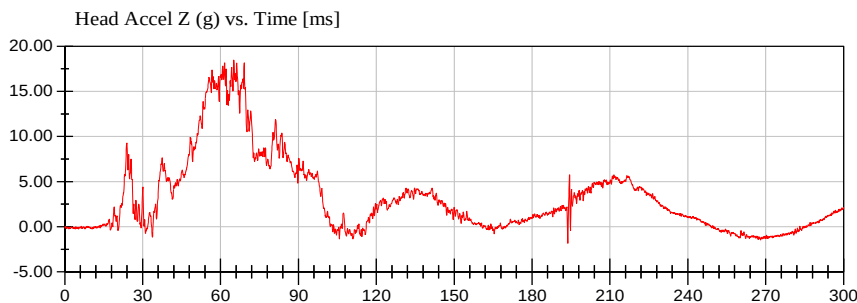
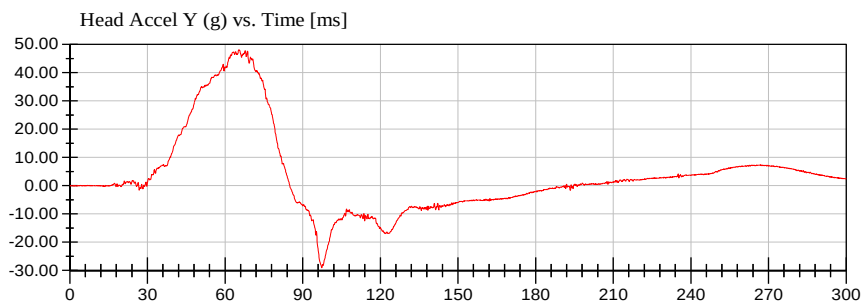
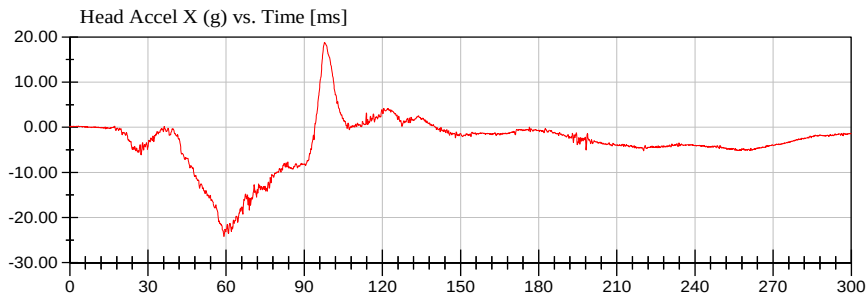
NHTSA

Position #1 SID IIs Dummy (297)

Test Date: 04/11/2016

Test Lab: Transportation Research Center, Inc.

Test Number: 160411 (M20165113)



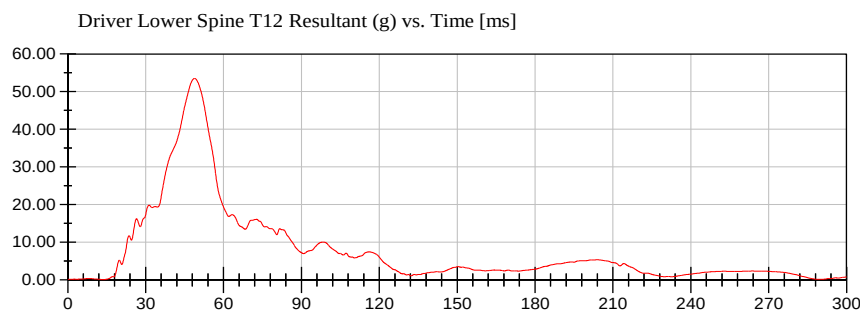
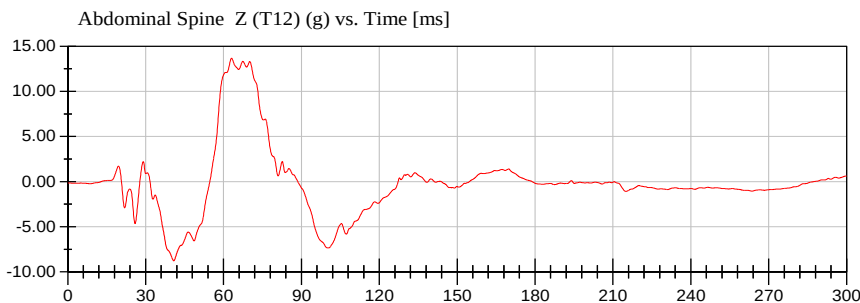
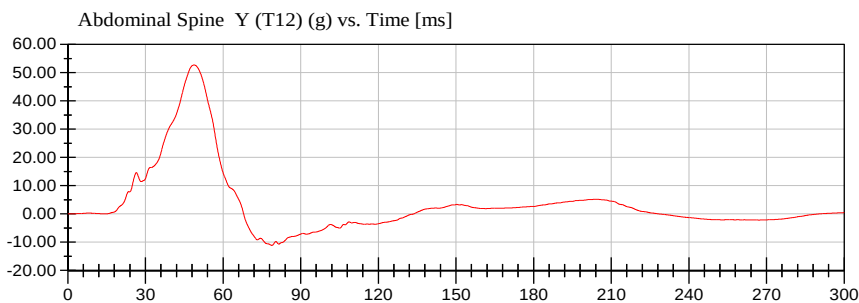
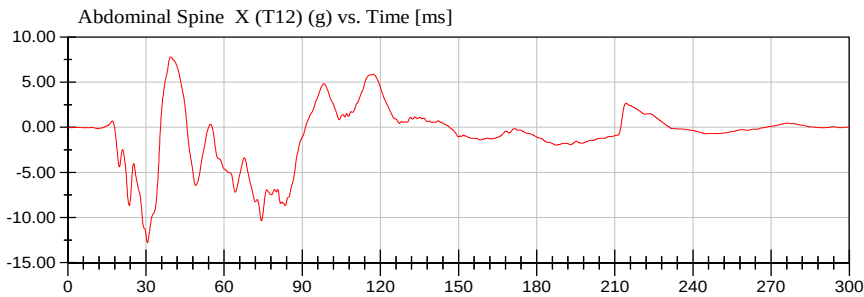
NHTSA

Position #1 SID IIs Dummy (297)

Test Date: 04/11/2016

Test Lab: Transportation Research Center, Inc.

Test Number: 160411 (M20165113)



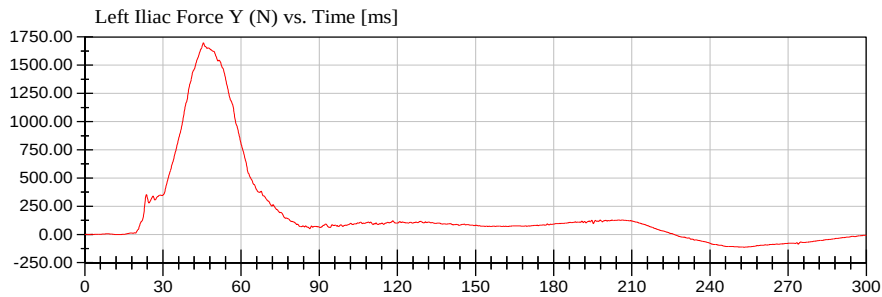
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Position #1 SID IIs Dummy (297)

Test Date: 04/11/2016

Test Lab: Transportation Research Center, Inc.

Test Number: 160411 (M20165113)



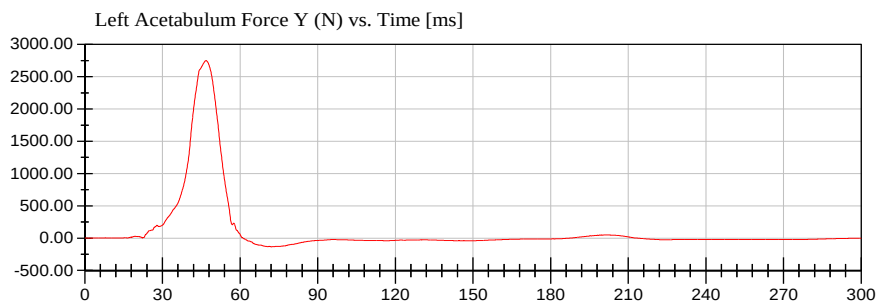
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1,697.88 N at 45.52 ms

<Min>

-113.05 N at 253.12 ms

CFC_600



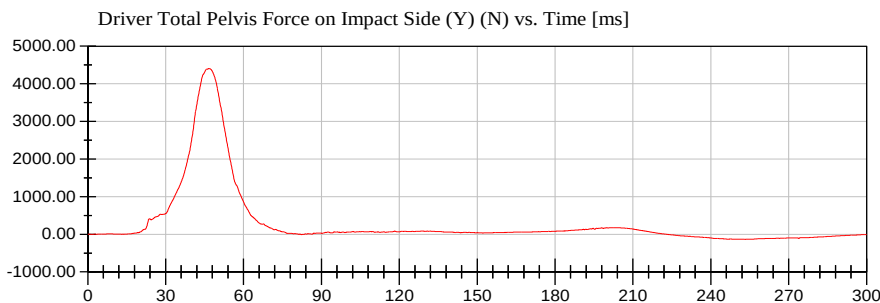
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2,751.36 N at 46.88 ms

<Min>

-134.35 N at 72.08 ms

CFC_600



<Max>

4,405.01 N at 46.56 ms

<Min>

-134.27 N at 253.20 ms

CFC_600



APPENDIX C
DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

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

Table 1. External Measurements

Table 2. Head Drop Test

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

Table 3. Lateral Neck Pendulum Test

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

Table 4. Shoulder Impact Test

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

Table 5. Thorax (With Arm) Impact Test

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

Table 6. Thorax (Without Arm) Impact Test

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

Table 7. Abdomen Impact Test

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

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

Table 9. Pelvis Acetabulum Impact Test

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

Table 10. Pelvis Iliac Impact Test

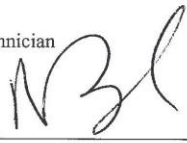
Impactor Acceleration (G's) vs. Time (ms)
Pelvis (Y) Acceleration (G's) vs. Time (ms)
Iliac Force (N) vs. Time (ms)

Pre-Test Calibration Sheets
Driver S/N 297

Transportation Research Center Inc.
SIDIIs Dummy - Level D
External Dimensions
Serial No. 297 Calibration No.05

Symbol	Description	Specification	Results	Pass
		mm	mm	
A	Sitting Height	772.0 - 788.0	780	Yes
B	Shoulder Pivot Height	437.0 - 453.0	445	Yes
C	H-Point Height	79.0 - 89.0	85	Yes
D	H-Point from Seat Back	141.0 - 151.0	145	Yes
E	Shoulder Pivot from Backline	97.0 - 107.0	101	Yes
F	Thigh Clearance	119.0 - 135.0	130	Yes
G	Head Breadth	140.0 - 148.0	145	Yes
H	Head Back from Backline	40.0 - 46.0	45	Yes
I	Head Depth	178.0 - 188.0	183	Yes
J	Head Circumference	541.0 - 551.0	545	Yes
K	Buttock to Knee Length	514.0 - 540.0	525	Yes
L	Popliteal Height	343.0 - 369.0	355	Yes
M	Knee Pivot to Floor Height	393.0 - 409.0	401	Yes
N	Buttock Popliteal Length	416.0 - 442.0	428	Yes
O	Chest Depth without Jacket	195.0 - 211.0	200	Yes
P	Foot Length (right)	216.0 - 232.0	220	Yes
P	Foot Length (left)	216.0 - 232.0	220	Yes
Q	Hip Breadth	313.0 - 323.0	318	Yes
R	Arm Length	249.0 - 259.0	253	Yes
S	Knee Joint to seat Back	478.0 - 493.0	484	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	870	Yes
Z	Waist Circumference	761.0 - 791.0	780	Yes

Technician



Approved



Revised 9/29/2005



Transportation Research Center Inc.

Left Lateral Head Drop

SID IIs Serial No. 297 Certification No. 5-1

Test Date: 4/5/2016

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	17 %	Yes
Peak Head Resultant Acceleration	115 - 137 g	134.7 g	Yes
Peak Head Longitudinal Acceleration	(-15) - 15 g	4.4 g	Yes
Is Head Resultant Acceleration Curve Unimodal within 15% of Peak?	Yes	Yes	Yes

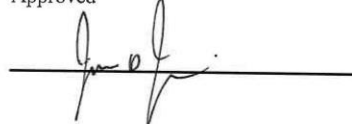
Test meets specifications.

Comments:

Technician



Approved



Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

04.05.2016 10:41:22 1912

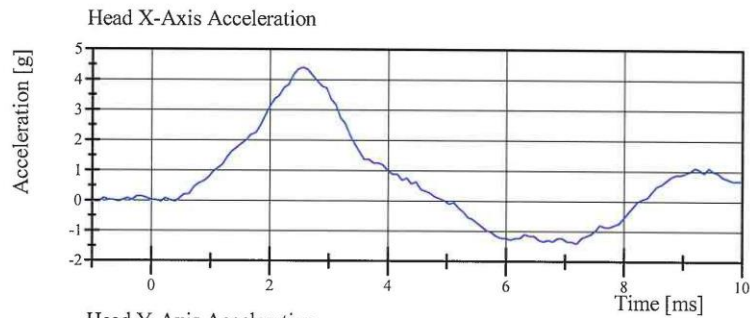


Transportation Research Center Inc.

Left Lateral Head Drop

SID IIs Serial No. 297 Certification No. 5-1

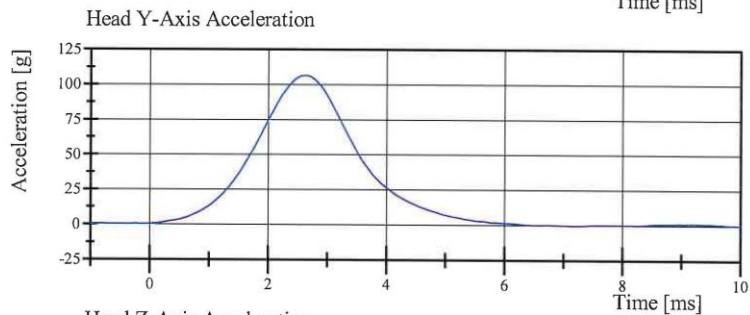
Test Date: 4/5/2016



Filter Class: CFC_1000

Max: 4.4 g at 2.6 ms

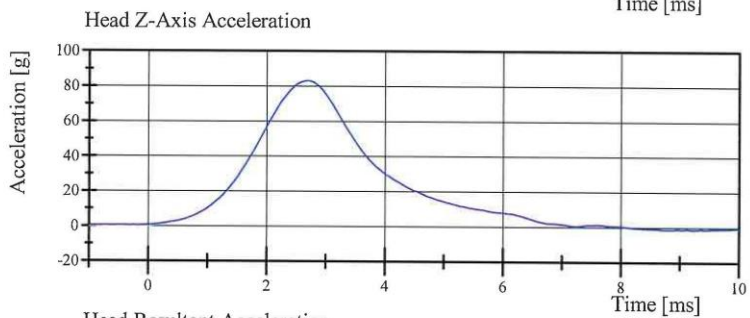
Min: -1.4 g at 7.2 ms



Filter Class: CFC_1000

Max: 106.3 g at 2.6 ms

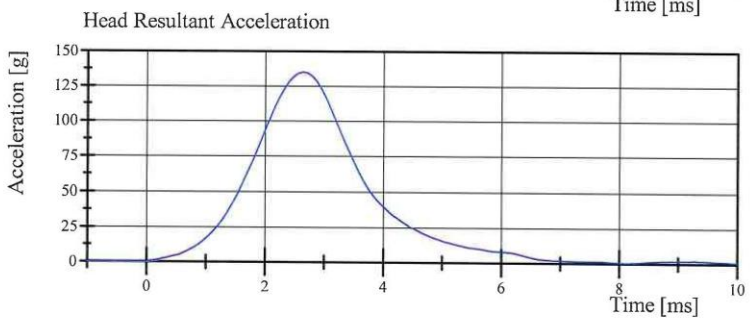
Min: -0.5 g at 7.2 ms



Filter Class: CFC_1000

Max: 82.9 g at 2.7 ms

Min: -1.4 g at 8.8 ms



Filter Class: CFC_1000

Max: 134.7 g at 2.6 ms

Min: 0.0 g at -0.3 ms

Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

04.05.2016 10:41:30 1912



Transportation Research Center Inc.

Left Lateral Neck

SID IIs Serial No. 297 Certification No. 5-3

Test Date: 4/8/2016

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.9 °C	Yes
Relative Humidity	10 - 70 %	37 %	Yes
Pendulum Velocity	(-5.51) - (-5.63) m/s	-5.608 m/s	Yes
Pendulum Integrated Velocity			
Change at 10 ms	2.20 - 2.80 m/s	2.485 m/s	Yes
Change at 15 ms	3.30 - 4.10 m/s	3.665 m/s	Yes
Change at 20 ms	4.40 - 5.40 m/s	4.911 m/s	Yes
Change at 25 ms	5.40 - 6.10 m/s	5.814 m/s	Yes
Change at 25 to 100 ms	5.50 - 6.20 m/s	5.829 m/s	Yes
Maximum Headform Flexion occurring between 50ms and 70ms.			
Peak	(-71) - (-81) deg	-73.6 deg	Yes
Time of Peak	50 - 70 ms	63.8 ms	Yes
Total Neck Occipital Condyles Moment	36 - 44 N·m	38.5 N·m	Yes
Total Neck Occipital Condyles Moment			
Decay Time to 0 N·m	102 - 126 ms	114.6 ms	Yes

Test meets specifications.

Comments:

Technician



Approved



Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

04.08.2016 15:10:36 639

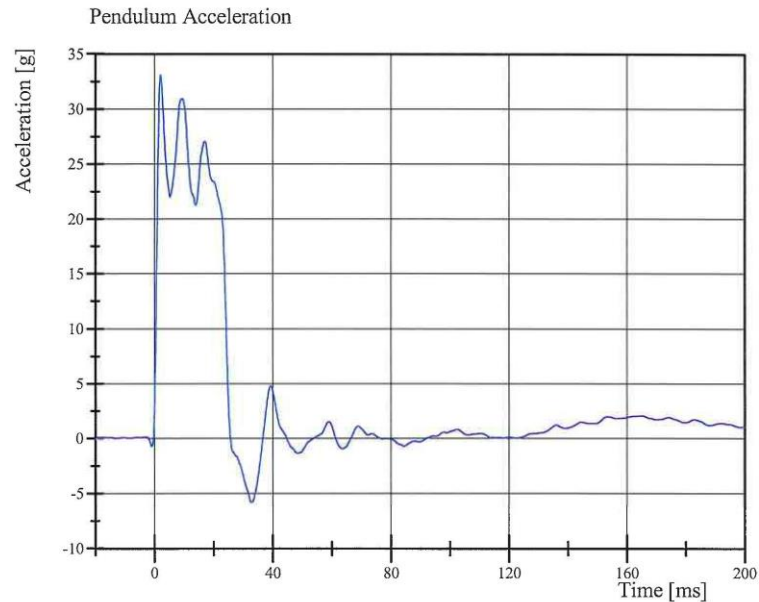


Transportation Research Center Inc.

Left Lateral Neck

SID II_s Serial No. 297 Certification No. 5-3

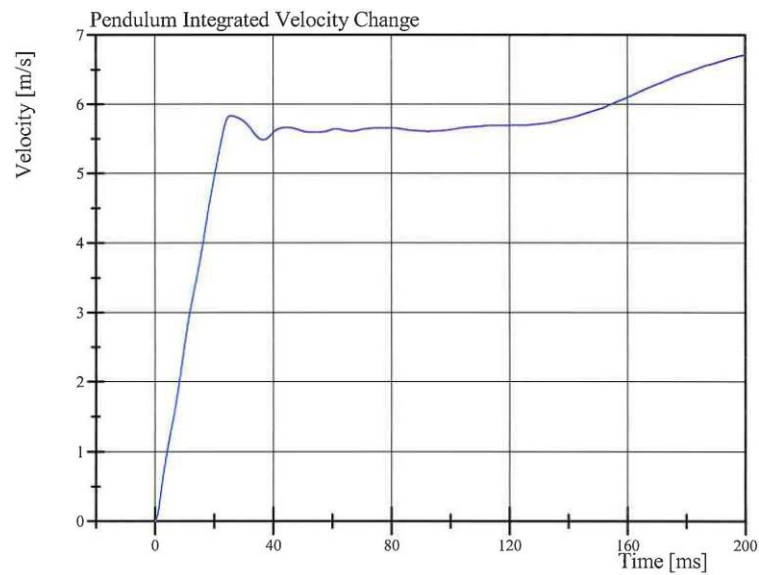
Test Date: 4/8/2016



Filter Class: CFC_180

Max: 33.0 g at 2.2 ms

Min: -5.9 g at 32.8 ms



Filter Class: CFC_180

Max: 6.7 m/s at 200.0 ms

Min: 0.0 m/s at 0.0 ms

Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

04.08.2016 15:10:43 639

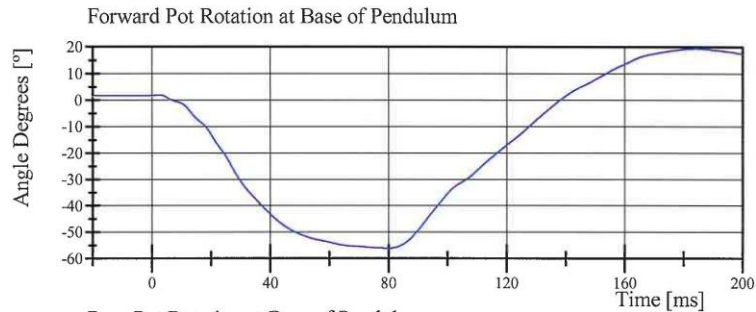


Transportation Research Center Inc.

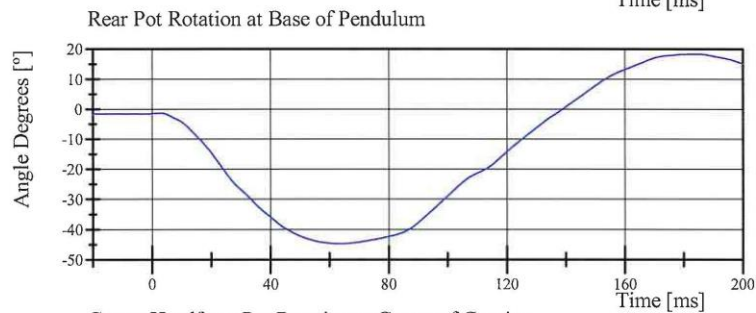
Left Lateral Neck

SID IIs Serial No. 297 Certification No. 5-3

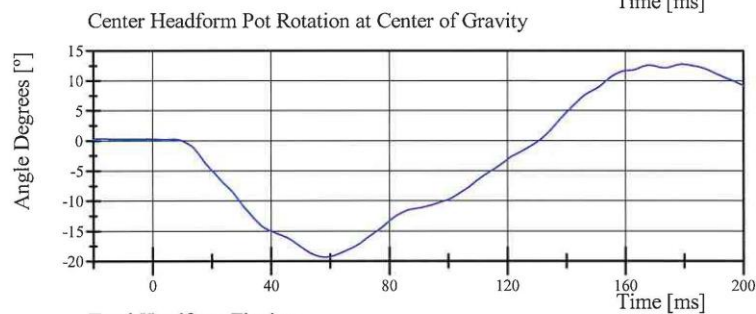
Test Date: 4/8/2016



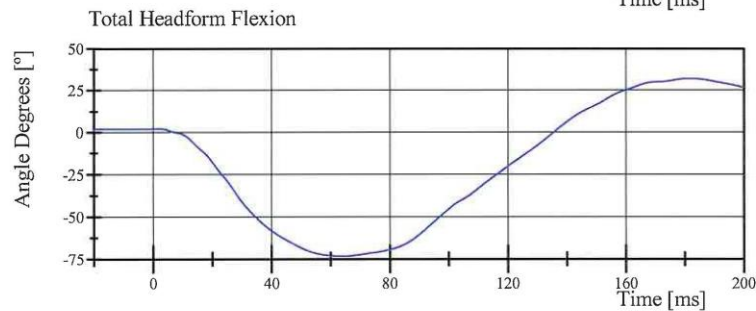
Filter Class: CFC_60
Max: 19.4 ° at 184.2 ms
Min: -56.2 ° at 80.3 ms



Filter Class: CFC_60
Max: 18.4 ° at 184.4 ms
Min: -44.8 ° at 63.5 ms



Filter Class: CFC_60
Max: 12.8 ° at 179.3 ms
Min: -19.4 ° at 58.3 ms



Filter Class: CFC_60
Max: 31.9 ° at 181.8 ms
Min: -73.6 ° at 63.8 ms

Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

04.08.2016 15:10:43 639

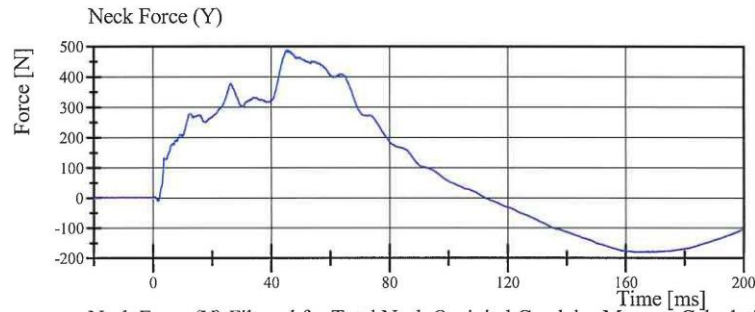


Transportation Research Center Inc.

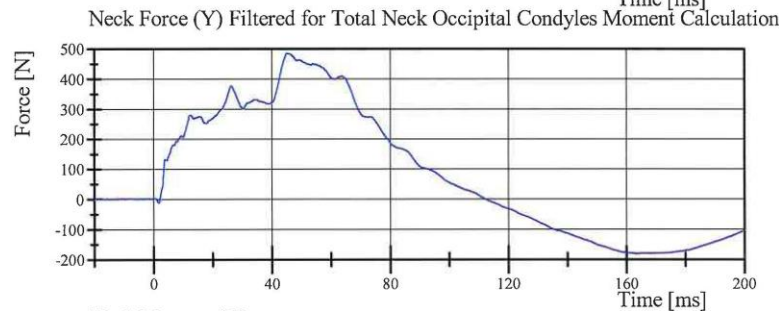
Left Lateral Neck

SID II_s Serial No. 297 Certification No. 5-3

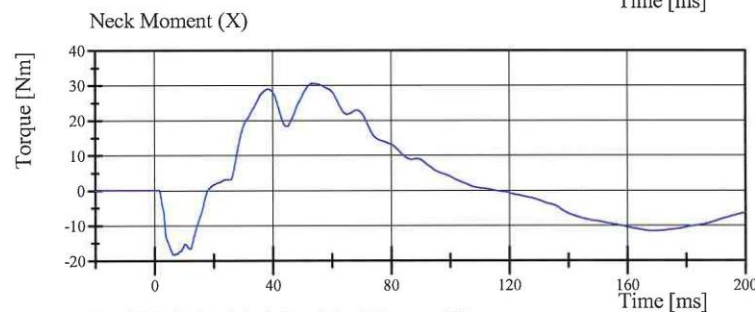
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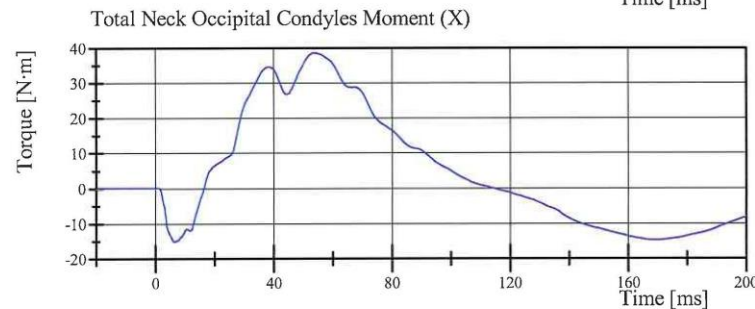
Filter Class: CFC_1000
Max: 487.3 N at 45.5 ms
Min: -180.7 N at 163.9 ms



Filter Class: CFC_600
Max: 484.4 N at 45.4 ms
Min: -180.4 N at 164.0 ms



Filter Class: CFC_600
Max: 30.6 Nm at 53.4 ms
Min: -18.5 Nm at 6.7 ms



Filter Class: Without_(Consta
Max: 38.5 N·m at 53.4 ms
Min: -15.3 N·m at 6.6 ms

Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

04.08.2016 15:10:44 639



Transportation Research Center Inc.

Left Lateral Shoulder

SID IIs Serial No. 297 Certification No. 5-2

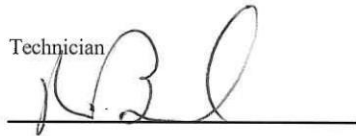
Test Date: 4/5/2016

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	17 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.34 m/s	Yes
Impactor Acceleration	(-13) - (-18) g	-15.7 g	Yes
Shoulder Displacement	28 - 37 mm	31.1 mm	Yes
Upper Spine Lateral Acceleration	17 - 22 g	20.0 g	Yes

Test meets specifications.

Comments:

Technician



Approved



Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

04.05.2016 14:03:17 854

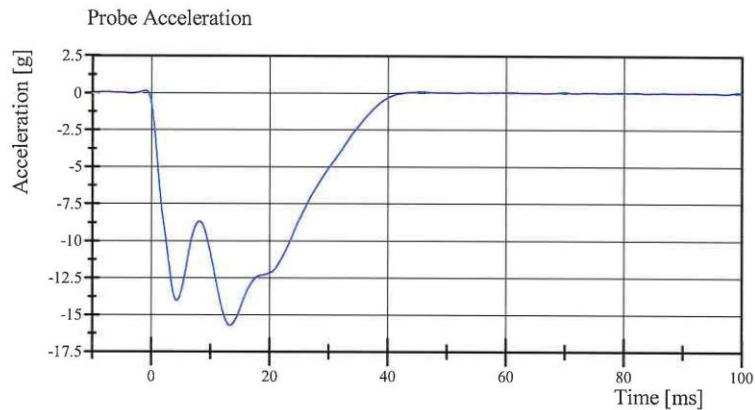


Transportation Research Center Inc.

Left Lateral Shoulder

SID IIs Serial No. 297 Certification No. 5-2

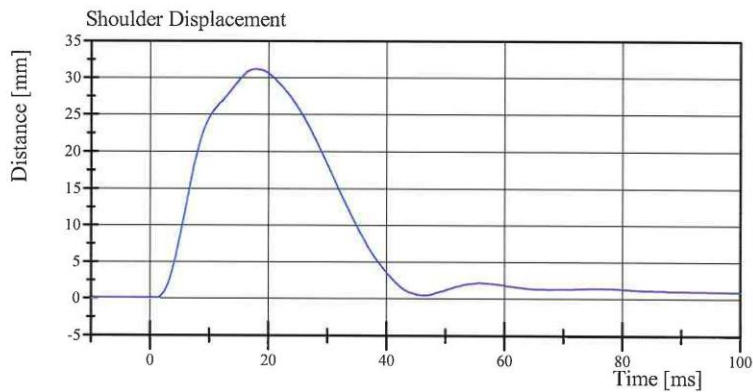
Test Date: 4/5/2016



Filter Class: CFC_180

Max: 0.1 g at -1.0 ms

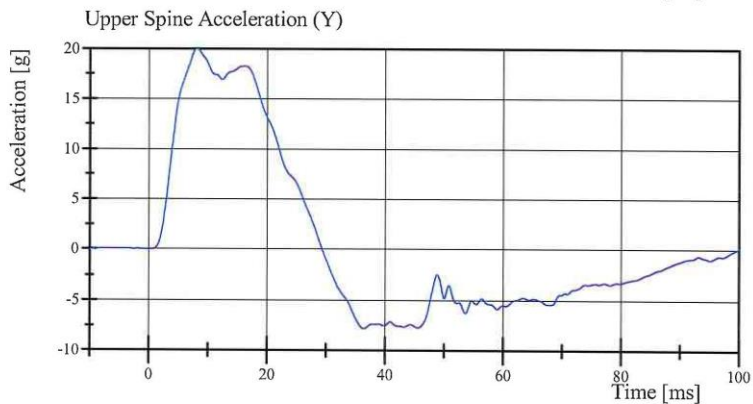
Min: -15.7 g at 13.4 ms



Filter Class: CFC_600

Max: 31.1 mm at 17.8 ms

Min: -0.0 mm at -4.2 ms



Filter Class: CFC_180

Max: 20.0 g at 8.2 ms

Min: -7.8 g at 36.5 ms

Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

04.05.2016 14:03:23 854



Transportation Research Center Inc.

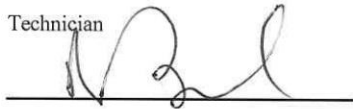
Left Lateral Thorax with Arm
SID IIs Serial No. 297 Certification No. 5-1
Test Date: 4/5/2016

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.8 °C	Yes
Relative Humidity	10 - 70 %	18 %	Yes
Impactor Velocity	6.60 - 6.80 m/s	6.759 m/s	Yes
Impactor Acceleration	(-30) - (-36) g	-34.5 g	Yes
Shoulder Displacement	31 - 40 mm	34.7 mm	Yes
Upper Thorax Rib Displacement	25 - 32 mm	26.5 mm	Yes
Center Thorax Rib Displacement	30 - 36 mm	30.9 mm	Yes
Lower Thorax Rib Displacement	32 - 38 mm	32.8 mm	Yes
Upper Spine Lateral Acceleration	34 - 43 g	36.8 g	Yes
Lower Spine Lateral Acceleration	29 - 37 g	36.9 g	Yes

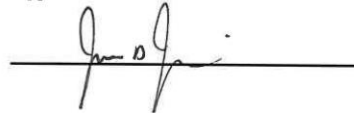
Test meets specifications.

Comments:

Technician



Approved



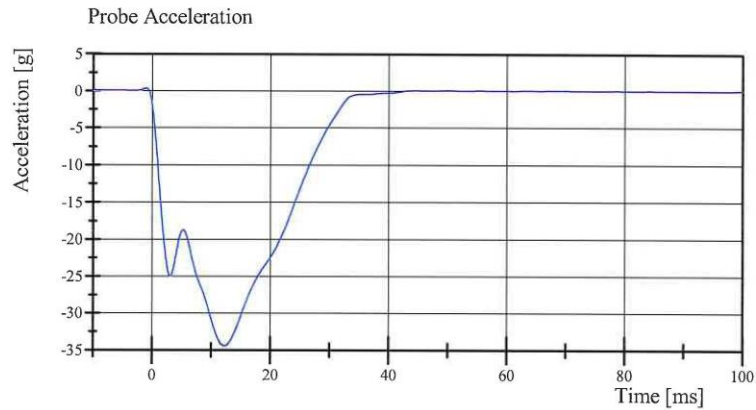
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

04.05.2016 17:03:46 635

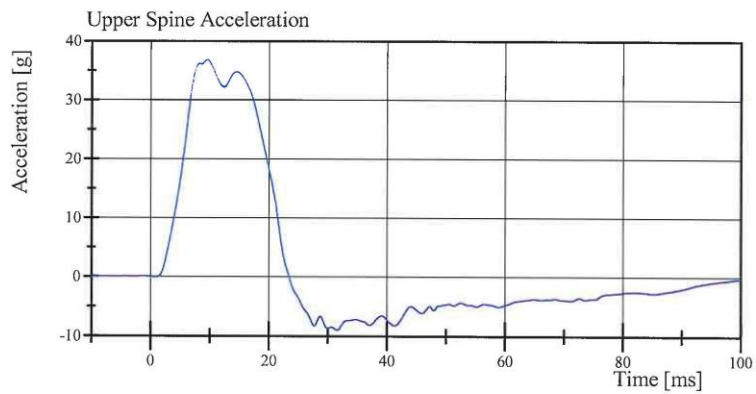


Transportation Research Center Inc.

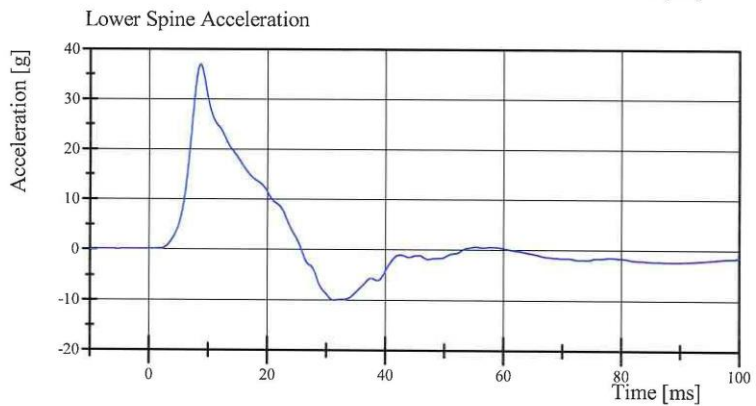
Left Lateral Thorax with Arm
SID II_s Serial No. 297 Certification No. 5-1
Test Date: 4/5/2016



Filter Class: CFC_180
Max: 0.3 g at -1.0 ms
Min: -34.5 g at 12.3 ms



Filter Class: CFC_180
Max: 36.8 g at 9.6 ms
Min: -9.0 g at 31.6 ms



Filter Class: CFC_180
Max: 36.9 g at 8.7 ms
Min: -10.1 g at 31.4 ms

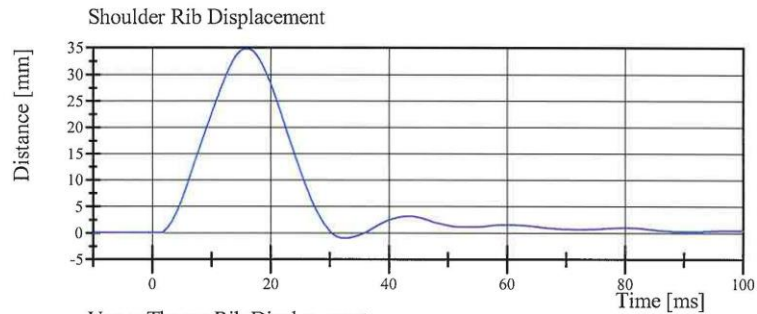
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

04.05.2016 17:03:56 635

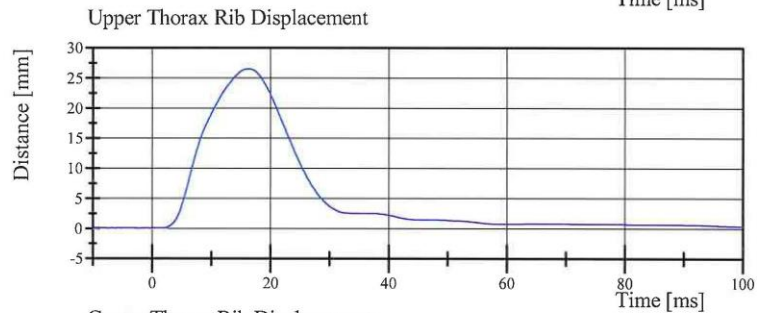


Transportation Research Center Inc.

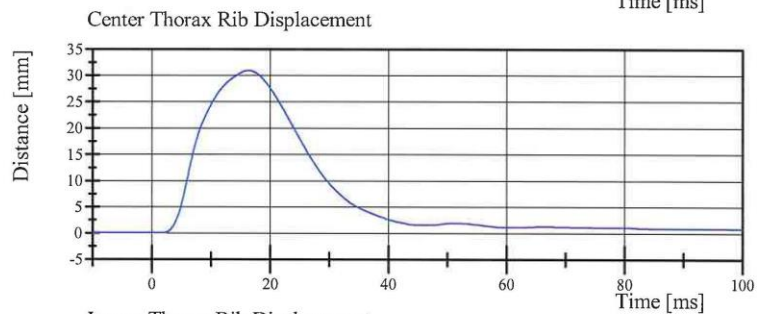
Left Lateral Thorax with Arm
SID IIs Serial No. 297 Certification No. 5-1
Test Date: 4/5/2016



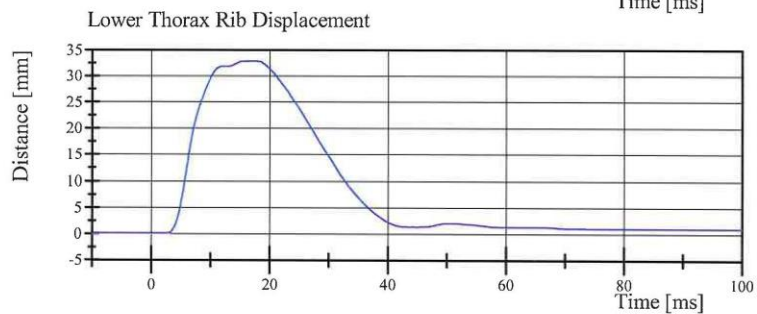
Filter Class: CFC_600
Max: 34.7 mm at 16.0 ms
Min: -1.0 mm at 32.5 ms



Filter Class: CFC_600
Max: 26.5 mm at 16.3 ms
Min: -0.0 mm at -6.2 ms



Filter Class: CFC_600
Max: 30.9 mm at 16.3 ms
Min: -0.0 mm at -9.6 ms



Filter Class: CFC_600
Max: 32.8 mm at 16.5 ms
Min: -0.0 mm at -6.1 ms

Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

04.05.2016 17:03:57 635



Transportation Research Center Inc.

Left Lateral Thorax without Arm
SID IIs Serial No. 297 Certification No. 5-3
Test Date: 4/5/2016

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.8 °C	Yes
Relative Humidity	10 - 70 %	21 %	Yes
Impactor Velocity	4.20 - 4.40 m/s	4.370 m/s	Yes
Impactor Acceleration	(-14) - (-18) g	-16.4 g	Yes
Upper Thorax Rib Displacement	32 - 40 mm	35.6 mm	Yes
Center Thorax Rib Displacement	39 - 45 mm	40.3 mm	Yes
Lower Thorax Rib Displacement	35 - 43 mm	36.8 mm	Yes
Upper Spine Lateral Acceleration	13 - 17 g	15.3 g	Yes
Lower Spine Lateral Acceleration	7 - 11 g	9.4 g	Yes

Test meets specifications.

Comments:

Technician



Approved



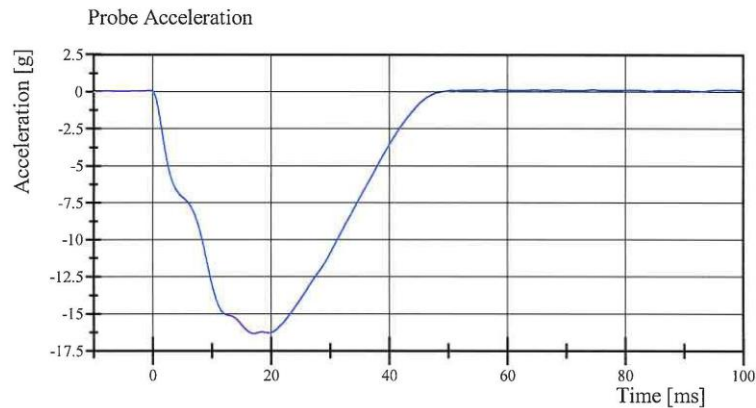
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

04.05.2016 16:17:11 850

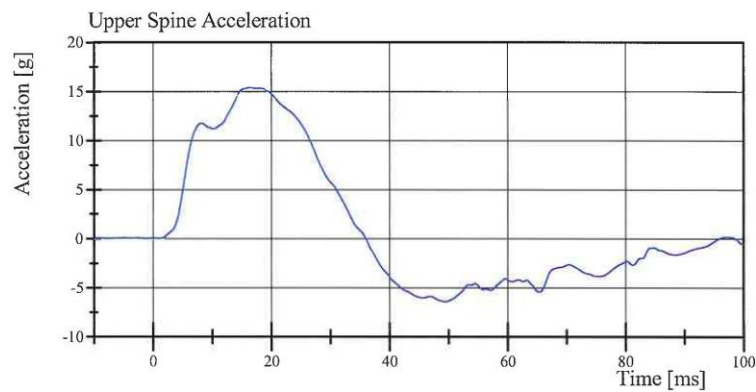


Transportation Research Center Inc.

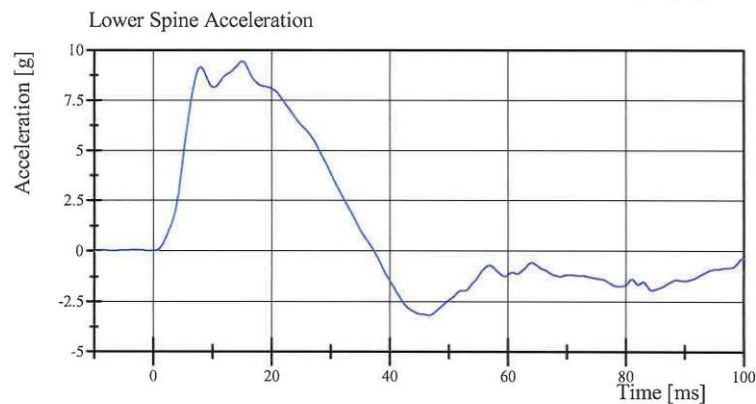
Left Lateral Thorax without Arm
SID II_s Serial No. 297 Certification No. 5-3
Test Date: 4/5/2016



Filter Class: CFC_180
Max: 0.1 g at 96.0 ms
Min: -16.4 g at 17.1 ms



Filter Class: CFC_180
Max: 15.3 g at 16.3 ms
Min: -6.4 g at 49.5 ms



Filter Class: CFC_180
Max: 9.4 g at 15.1 ms
Min: -3.2 g at 46.6 ms

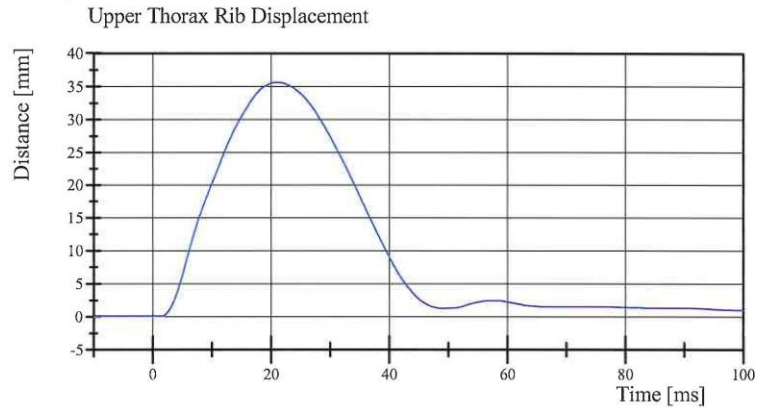
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

04.05.2016 16:17:29 850

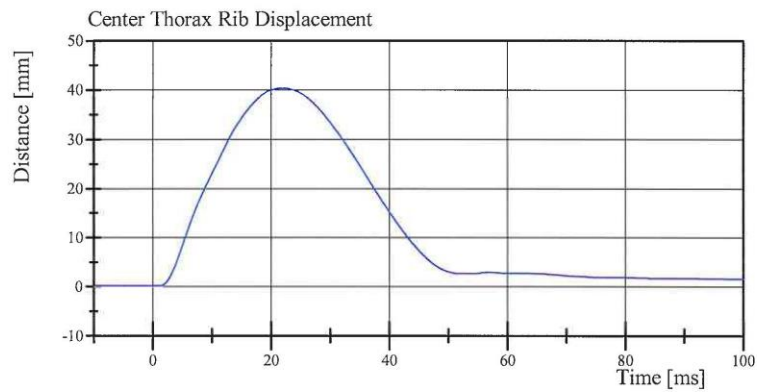


Transportation Research Center Inc.

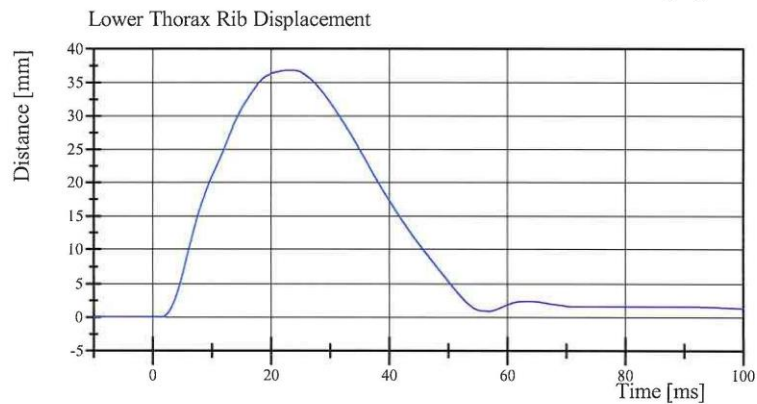
Left Lateral Thorax without Arm
SID II_s Serial No. 297 Certification No. 5-3
Test Date: 4/5/2016



Filter Class: CFC_600
Max: 35.6 mm at 21.0 ms
Min: -0.0 mm at -1.2 ms



Filter Class: CFC_600
Max: 40.3 mm at 22.1 ms
Min: -0.0 mm at -7.8 ms



Filter Class: CFC_600
Max: 36.8 mm at 23.9 ms
Min: -0.0 mm at 1.5 ms

Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

04.05.2016 16:17:29 850



Transportation Research Center Inc.

Left Lateral Abdomen

SID IIs Serial No. 297 Certification No. 5-1

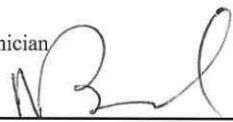
Test Date: 4/5/2016

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	16 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.40 m/s	Yes
Impactor Acceleration	(-12) - (-16) g	-15.6 g	Yes
Upper Abdominal Rib Displacement	36 - 47 mm	38.2 mm	Yes
Lower Abdominal Rib Displacement	33 - 44 mm	38.1 mm	Yes
Lower Spine Lateral Acceleration	9 - 14.0 g	11.33 g	Yes

Test meets specifications.

Comments:

Technician



Approved



Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

04.05.2016 13:37:28 673

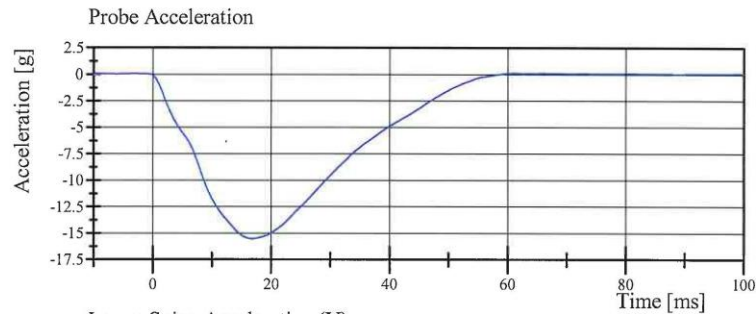


Transportation Research Center Inc.

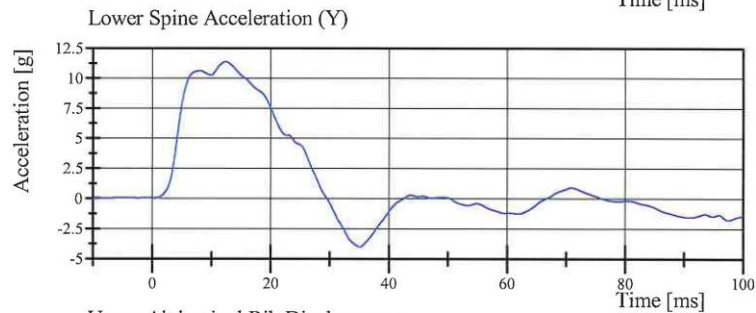
Left Lateral Abdomen

SID II_s Serial No. 297 Certification No. 5-1

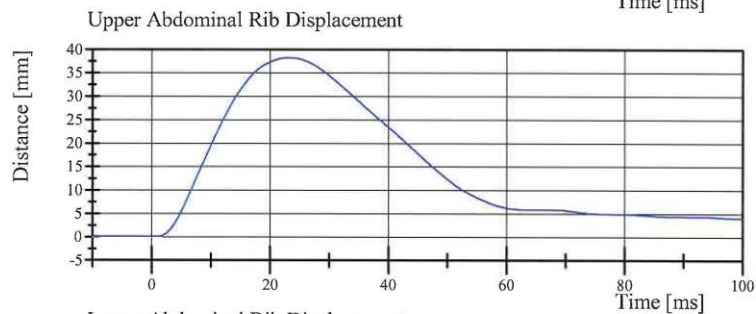
Test Date: 4/5/2016



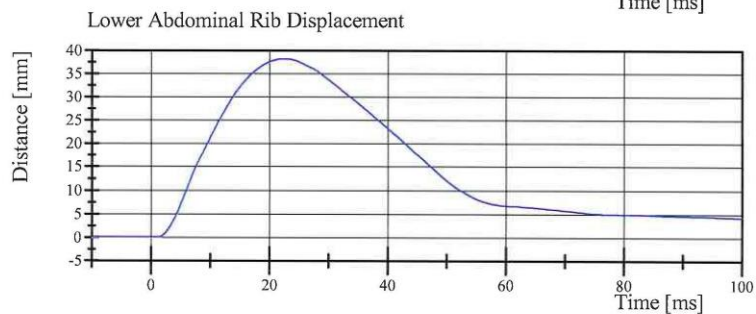
Filter Class: CFC_180
Max: 0.1 g at 61.1 ms
Min: -15.6 g at 16.8 ms



Filter Class: CFC_180
Max: 11.3 g at 12.5 ms
Min: -4.0 g at 35.1 ms



Filter Class: CFC_600
Max: 38.2 mm at 23.2 ms
Min: -0.0 mm at -1.9 ms



Filter Class: CFC_600
Max: 38.1 mm at 22.4 ms
Min: -0.0 mm at 1.3 ms

Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

04.05.2016 13:37:44 673



Transportation Research Center Inc.

Left Lateral Pelvis

SID IIs Serial No. 297 Certification No. 5-6

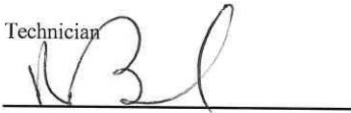
Test Date: 4/7/2016

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	39 %	Yes
Pendulum Velocity	6.6 - 6.8 m/s	6.66 m/s	Yes
Impactor Acceleration	(-38.0) - (-47.0) g	-45.07 g	Yes
Peak Pelvis Lateral Acceleration after 6ms	34 - 42 g	39.5 g	Yes
Acetabulum Force	3,600 - 4,300 N	4,154.1 N	Yes

Test meets specifications.

Comments:

Technician



Approved



Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

04.07.2016 14:07:30 450

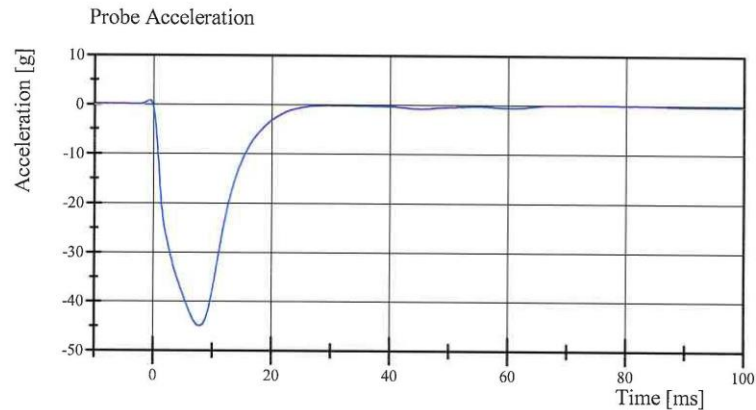


Transportation Research Center Inc.

Left Lateral Pelvis

SID IIs Serial No. 297 Certification No. 5-6

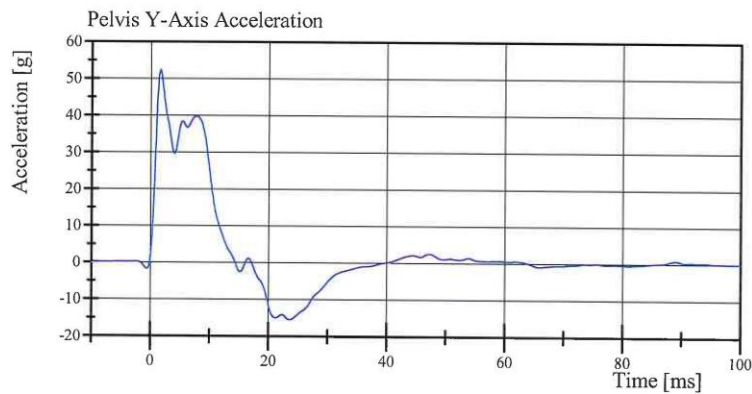
Test Date: 4/7/2016



Filter Class: CFC_180

Max: 0.6 g at -0.6 ms

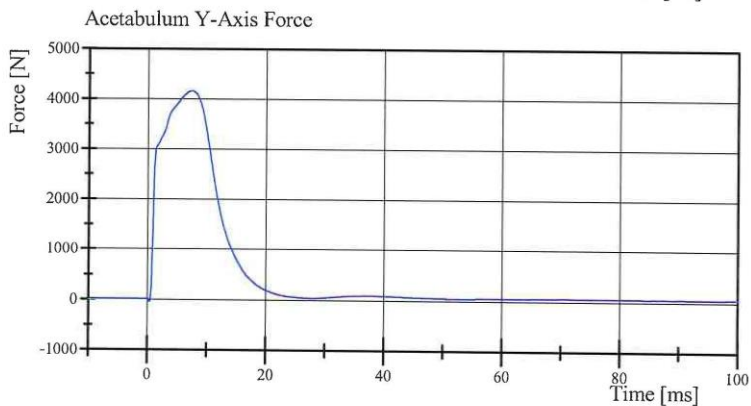
Min: -45.1 g at 7.9 ms



Filter Class: CFC_180

Max: 52.2 g at 1.7 ms

Min: -15.7 g at 23.6 ms



Filter Class: CFC_600

Max: 4,154.1 N at 7.4 ms

Min: -49.8 N at 0.4 ms

Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

04.07.2016 14:11:12 450



Transportation Research Center Inc.

Left Lateral Iliac

SID IIs Serial No. 297 Certification No. 5-1

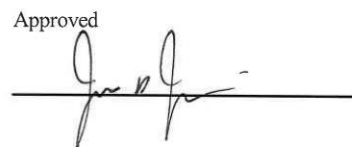
Test Date: 4/7/2016

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.1 °C	Yes
Relative Humidity	10 - 70 %	39 %	Yes
Pendulum Velocity	4.2 - 4.4 m/s	4.29 m/s	Yes
Impactor Acceleration	(-36) - (-45) g	-37.5 g	Yes
Peak Pelvis Lateral Acceleration	28 - 39 g	29.5 g	Yes
Iliac Force	4,100 - 5,100 N	4,237.9 N	Yes

Test meets specifications.

Comments:

Technician


Approved


Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

04.07.2016 16:33:47 682

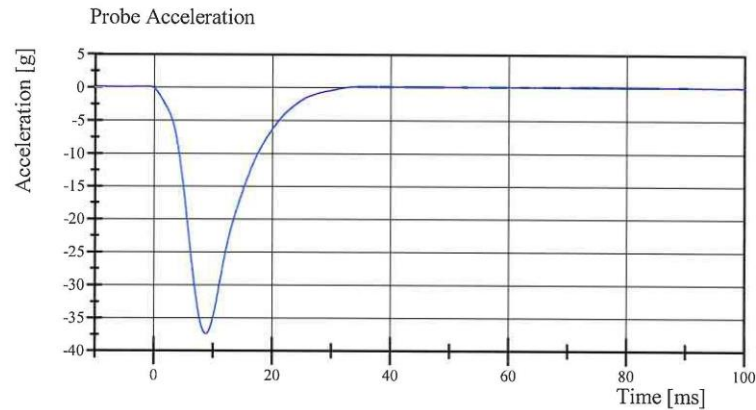


Transportation Research Center Inc.

Left Lateral Iliac

SID IIs Serial No. 297 Certification No. 5-1

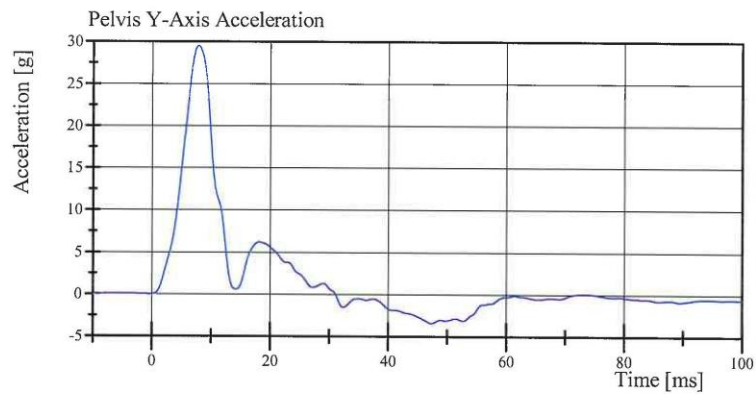
Test Date: 4/7/2016



Filter Class: CFC_180

Max: 0.2 g at 72.8 ms

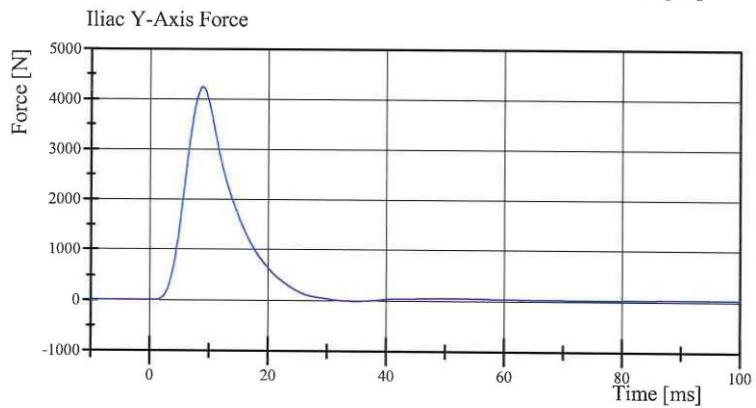
Min: -37.5 g at 8.9 ms



Filter Class: CFC_180

Max: 29.5 g at 7.8 ms

Min: -3.4 g at 47.4 ms



Filter Class: CFC_600

Max: 4,237.9 N at 8.9 ms

Min: -8.0 N at 34.4 ms

Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J2111.

04.07.2016 16:33:56 682



Post-Test Calibration Sheets
Driver S/N 297

Transportation Research Center Inc.
SIDIIs Dummy - Level D
External Dimensions
Serial No. 297 Calibration No.06

Symbol	Description	Specification	Results	Pass
		mm	mm	
A	Sitting Height	772.0 - 788.0	779	Yes
B	Shoulder Pivot Height	437.0 - 453.0	444	Yes
C	H-Point Height	79.0 - 89.0	85	Yes
D	H-Point from Seat Back	141.0 - 151.0	145	Yes
E	Shoulder Pivot from Backline	97.0 - 107.0	101	Yes
F	Thigh Clearance	119.0 - 135.0	131	Yes
G	Head Breadth	140.0 - 148.0	145	Yes
H	Head Back from Backline	40.0 - 46.0	45	Yes
I	Head Depth	178.0 - 188.0	183	Yes
J	Head Circumference	541.0 - 551.0	545	Yes
K	Buttock to Knee Length	514.0 - 540.0	525	Yes
L	Popliteal Height	343.0 - 369.0	355	Yes
M	Knee Pivot to Floor Height	393.0 - 409.0	401	Yes
N	Buttock Popliteal Length	416.0 - 442.0	428	Yes
O	Chest Depth without Jacket	195.0 - 211.0	201	Yes
P	Foot Length (right)	216.0 - 232.0	220	Yes
P	Foot Length (left)	216.0 - 232.0	220	Yes
Q	Hip Breadth	313.0 - 323.0	318	Yes
R	Arm Length	249.0 - 259.0	253	Yes
S	Knee Joint to seat Back	478.0 - 493.0	484	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	870	Yes
Z	Waist Circumference	761.0 - 791.0	780	Yes

Technician



Approved



Revised 9/29/2005



Transportation Research Center Inc.

Left Lateral Head Drop

SID IIs Serial No. 297 Certification No. 6-1

Test Date: 4/12/2016

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.6 °C	22.1 °C	Yes
Relative Humidity	10 - 70 %	38 %	Yes
Peak Head Resultant Acceleration	115 - 137 g	123.2 g	Yes
Peak Head Longitudinal Acceleration	(-15) - 15 g	6.7 g	Yes
Is Head Resultant Acceleration Curve Unimodal within 15% of Peak?	Yes	Yes	Yes

Test meets specifications.

Comments:

Technician



Approved



Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

04.12.2016 09:27:54 234

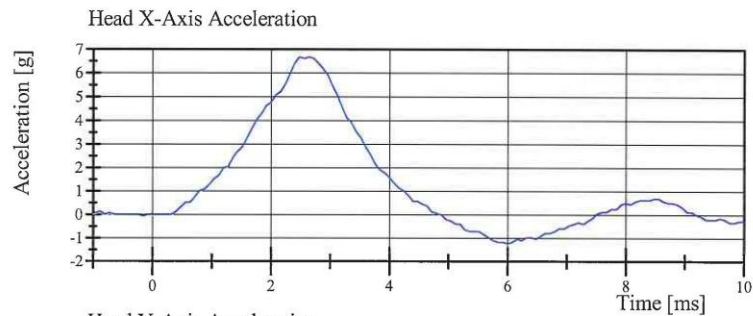


Transportation Research Center Inc.

Left Lateral Head Drop

SID IIs Serial No. 297 Certification No. 6-1

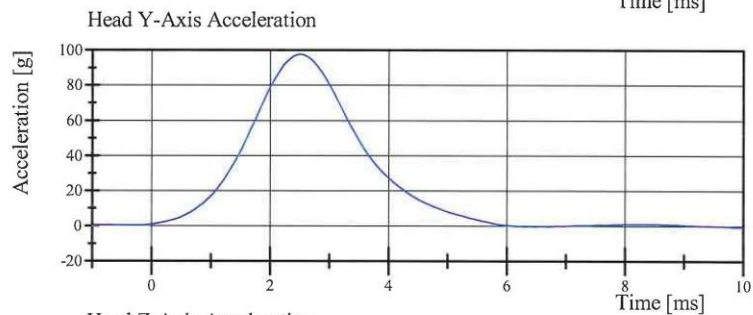
Test Date: 4/12/2016



Filter Class: CFC_1000

Max: 6.7 g at 2.5 ms

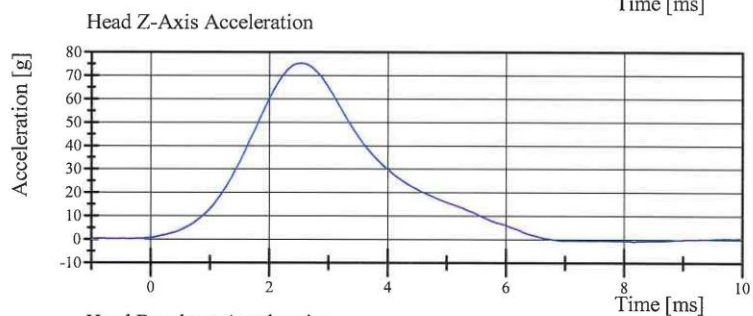
Min: -1.2 g at 6.0 ms



Filter Class: CFC_1000

Max: 97.5 g at 2.5 ms

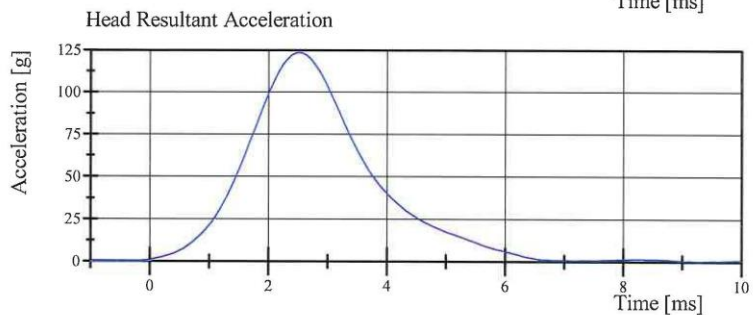
Min: -0.6 g at 9.9 ms



Filter Class: CFC_1000

Max: 75.2 g at 2.6 ms

Min: -0.9 g at 8.2 ms



Filter Class: CFC_1000

Max: 123.2 g at 2.5 ms

Min: 0.0 g at -1.0 ms

Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

04.12.2016 09:28:15 234



Transportation Research Center Inc.

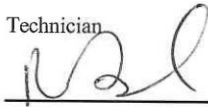
Left Lateral Neck
SID IIs Serial No. 297 Certification No. 6-1
Test Date: 4/12/2016

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	35 %	Yes
Pendulum Velocity	(-5.51) - (-5.63) m/s	-5.604 m/s	Yes
Pendulum Integrated Velocity			
Change at 10 ms	2.20 - 2.80 m/s	2.580 m/s	Yes
Change at 15 ms	3.30 - 4.10 m/s	3.747 m/s	Yes
Change at 20 ms	4.40 - 5.40 m/s	5.006 m/s	Yes
Change at 25 ms	5.40 - 6.10 m/s	5.830 m/s	Yes
Change at 25 to 100 ms	5.50 - 6.20 m/s	5.836 m/s	Yes
Maximum Headform Flexion occurring between 50ms and 70ms.			
Peak	(-71) - (-81) deg	-76.5 deg	Yes
Time of Peak	50 - 70 ms	63.9 ms	Yes
Total Neck Occipital Condyles Moment	36 - 44 N·m	39.0 N·m	Yes
Total Neck Occipital Condyles Moment			
Decay Time to 0 N·m	102 - 126 ms	119.0 ms	Yes

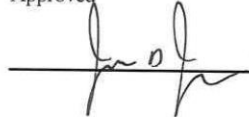
Test meets specifications.

Comments:

Technician



Approved



Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

04.12.2016 10:12:34 640

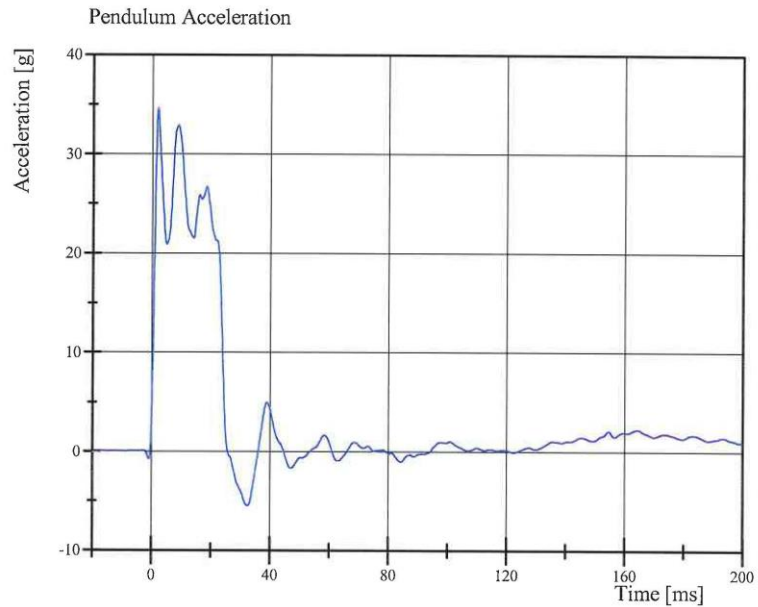


Transportation Research Center Inc.

Left Lateral Neck

SID IIs Serial No. 297 Certification No. 6-1

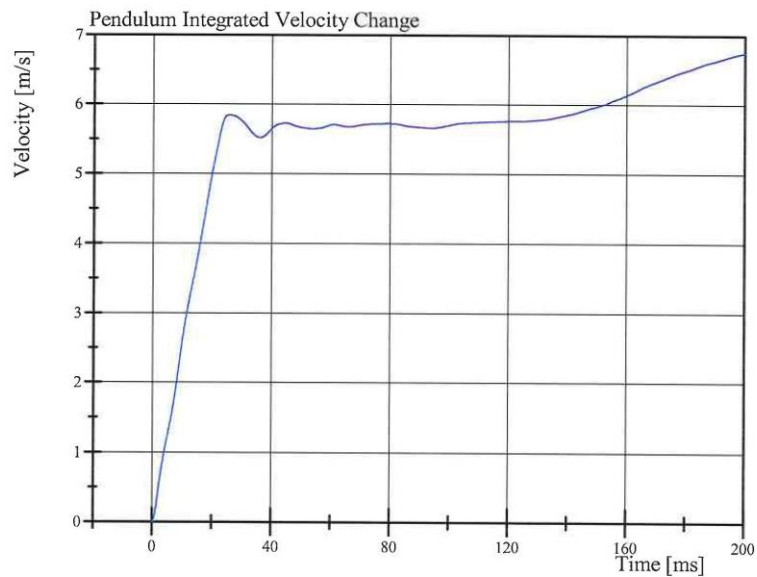
Test Date: 4/12/2016



Filter Class: CFC_180

Max: 34.5 g at 1.9 ms

Min: -5.6 g at 32.4 ms



Filter Class: CFC_180

Max: 6.7 m/s at 200.0 ms

Min: 0.0 m/s at 0.0 ms

Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

04.12.2016 10:12:45 640

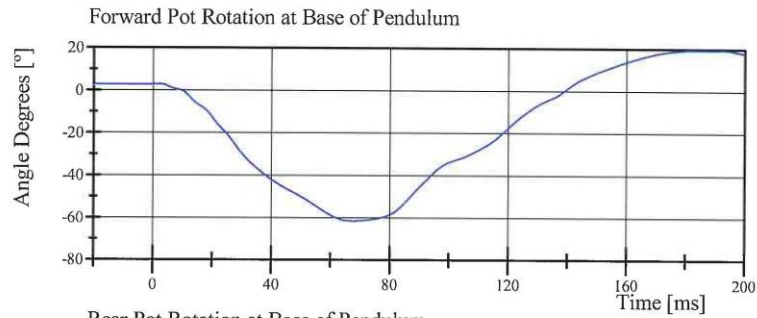


Transportation Research Center Inc.

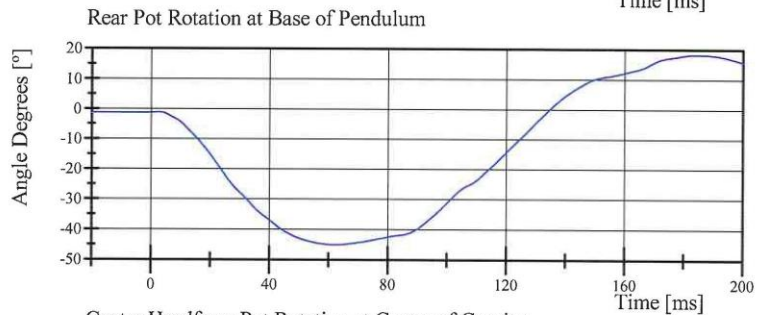
Left Lateral Neck

SID IIs Serial No. 297 Certification No. 6-1

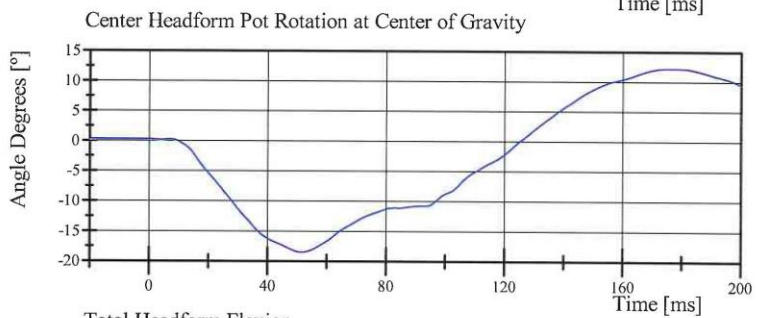
Test Date: 4/12/2016



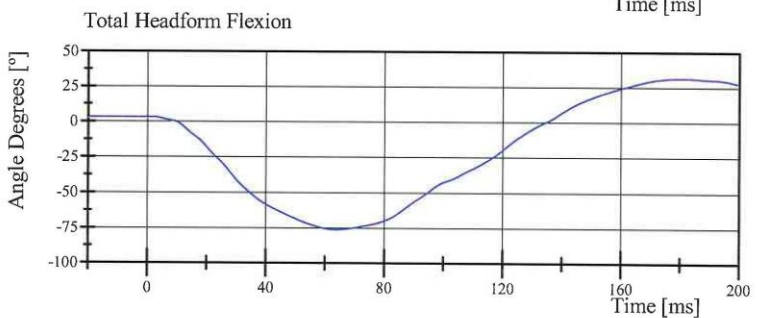
Filter Class: CFC_60
Max: 19.4 ° at 192.5 ms
Min: -61.7 ° at 67.9 ms



Filter Class: CFC_60
Max: 18.3 ° at 184.5 ms
Min: -45.1 ° at 61.9 ms



Filter Class: CFC_60
Max: 12.2 ° at 176.2 ms
Min: -18.6 ° at 51.5 ms



Filter Class: CFC_60
Max: 31.5 ° at 181.2 ms
Min: -76.5 ° at 63.9 ms

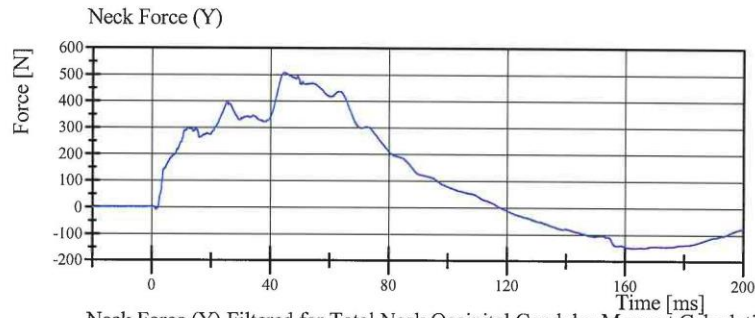
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

04.12.2016 10:12:46 640

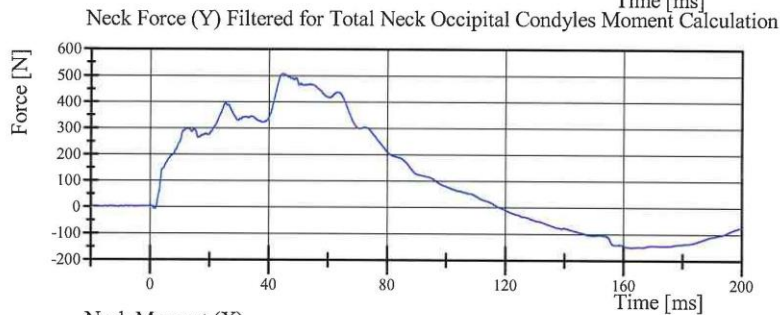


Transportation Research Center Inc.

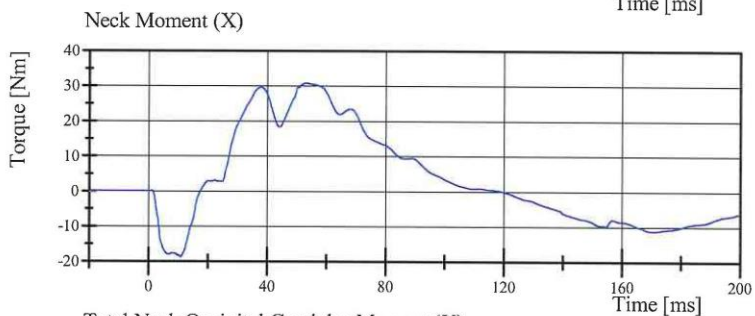
Left Lateral Neck
SID IIs Serial No. 297 Certification No. 6-1
Test Date: 4/12/2016



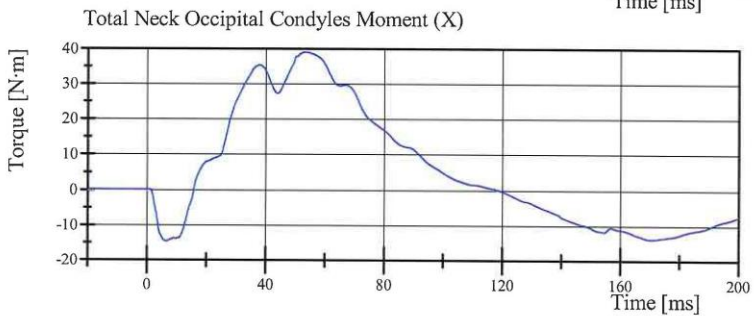
Filter Class: CFC_1000
Max: 506.3 N at 44.6 ms
Min: -151.6 N at 162.7 ms



Filter Class: CFC_600
Max: 506.1 N at 44.6 ms
Min: -151.4 N at 162.8 ms



Filter Class: CFC_600
Max: 30.8 Nm at 52.7 ms
Min: -18.8 Nm at 10.9 ms



Filter Class: Without_(Consta
Max: 39.0 N·m at 52.7 ms
Min: -14.8 N·m at 6.7 ms

Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

04.12.2016 10:12:47 640



Transportation Research Center Inc.

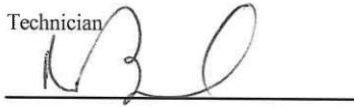
Left Lateral Shoulder
SID IIs Serial No. 297 Certification No. 6-1
Test Date: 4/12/2016

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	4.34 m/s	Yes
Impactor Acceleration	(-13) - (-18) g	-15.3 g	Yes
Shoulder Displacement	28 - 37 mm	31.2 mm	Yes
Upper Spine Lateral Acceleration	17 - 22 g	19.2 g	Yes

Test meets specifications.

Comments:

Technician



Approved



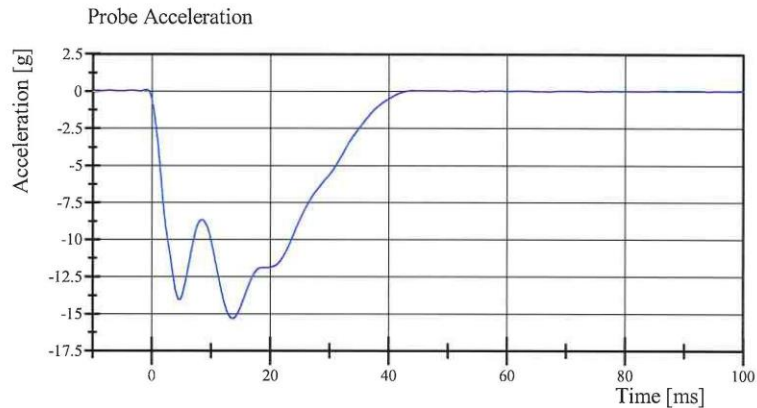
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

04.12.2016 12:04:40 846

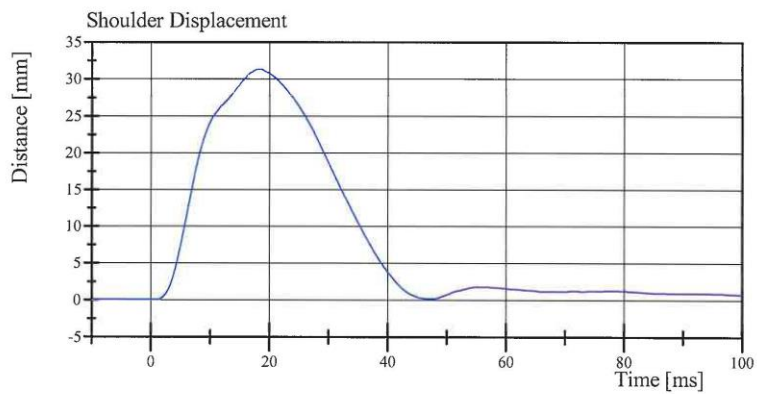


Transportation Research Center Inc.

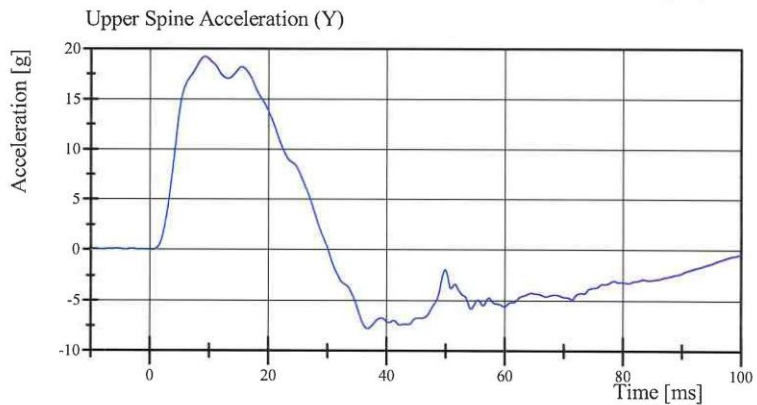
Left Lateral Shoulder
SID IIs Serial No. 297 Certification No. 6-1
Test Date: 4/12/2016



Filter Class: CFC_180
Max: 0.1 g at -1.0 ms
Min: -15.3 g at 13.7 ms



Filter Class: CFC_600
Max: 31.2 mm at 18.2 ms
Min: -0.0 mm at -8.6 ms



Filter Class: CFC_180
Max: 19.2 g at 9.3 ms
Min: -7.8 g at 36.9 ms

Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

04.12.2016 12:04:48 846



Transportation Research Center Inc.

Left Lateral Thorax with Arm
SID II_s Serial No. 297 Certification No. 6-1
Test Date: 4/12/2016

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.1 °C	Yes
Relative Humidity	10 - 70 %	36 %	Yes
Impactor Velocity	6.60 - 6.80 m/s	6.755 m/s	Yes
Impactor Acceleration	(-30) - (-36) g	-34.5 g	Yes
Shoulder Displacement	31 - 40 mm	35.6 mm	Yes
Upper Thorax Rib Displacement	25 - 32 mm	27.2 mm	Yes
Center Thorax Rib Displacement	30 - 36 mm	31.3 mm	Yes
Lower Thorax Rib Displacement	32 - 38 mm	33.3 mm	Yes
Upper Spine Lateral Acceleration	34 - 43 g	37.3 g	Yes
Lower Spine Lateral Acceleration	29 - 37 g	36.6 g	Yes

Test meets specifications.

Comments:

Technician


Approved

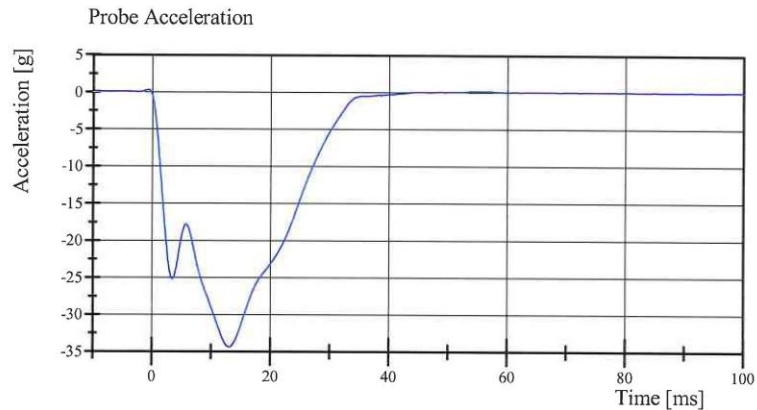

Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

04.12.2016 13:58:10 623

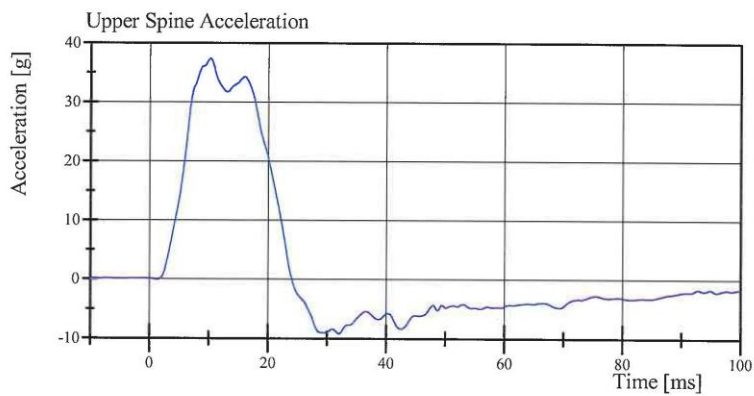


Transportation Research Center Inc.

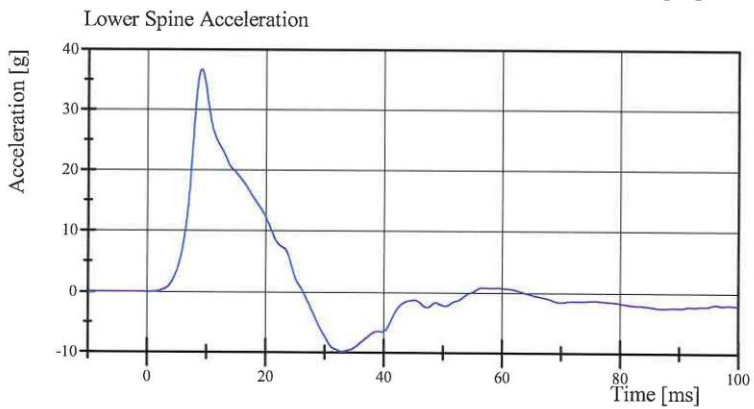
Left Lateral Thorax with Arm
SID IIs Serial No. 297 Certification No. 6-1
Test Date: 4/12/2016



Filter Class: CFC_180
Max: 0.2 g at -0.7 ms
Min: -34.5 g at 13.0 ms



Filter Class: CFC_180
Max: 37.3 g at 10.2 ms
Min: -9.2 g at 32.0 ms



Filter Class: CFC_180
Max: 36.6 g at 9.1 ms
Min: -9.9 g at 33.0 ms

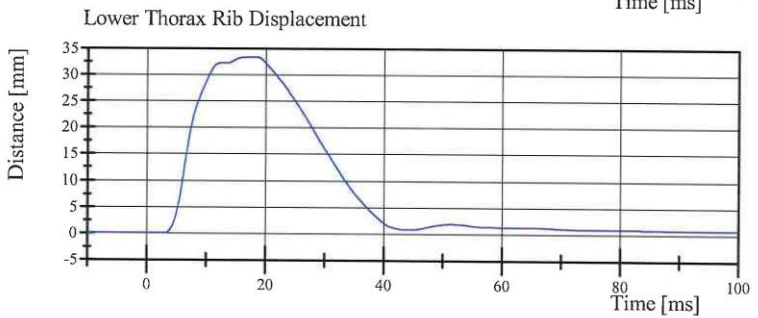
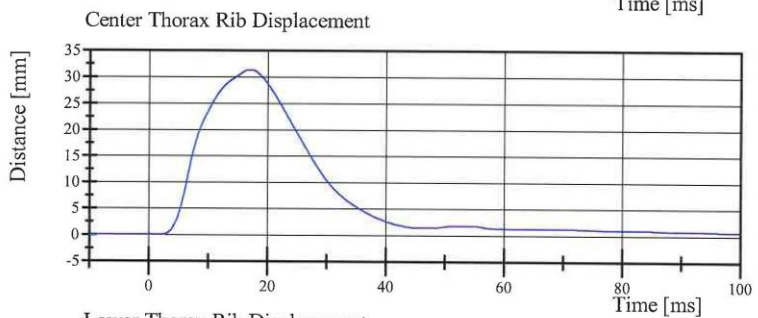
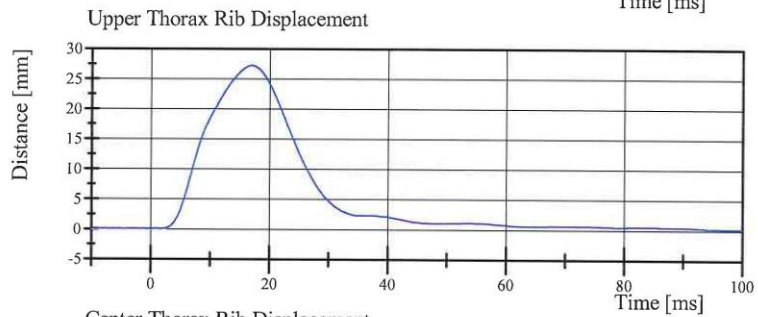
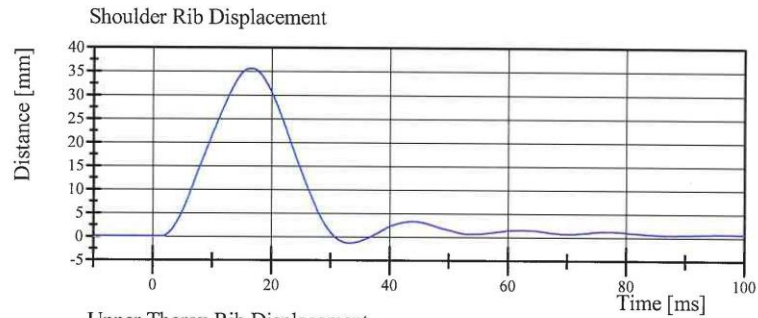
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

04.12.2016 13:58:24 623



Transportation Research Center Inc.

Left Lateral Thorax with Arm
SID IIs Serial No. 297 Certification No. 6-1
Test Date: 4/12/2016



Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

04.12.2016 13:58:25 623



Transportation Research Center Inc.

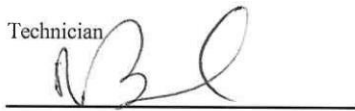
Left Lateral Thorax without Arm
SID IIs Serial No. 297 Certification No. 6-1
Test Date: 4/12/2016

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	36 %	Yes
Impactor Velocity	4.20 - 4.40 m/s	4.346 m/s	Yes
Impactor Acceleration	(-14) - (-18) g	-16.3 g	Yes
Upper Thorax Rib Displacement	32 - 40 mm	36.9 mm	Yes
Center Thorax Rib Displacement	39 - 45 mm	41.4 mm	Yes
Lower Thorax Rib Displacement	35 - 43 mm	38.0 mm	Yes
Upper Spine Lateral Acceleration	13 - 17 g	15.6 g	Yes
Lower Spine Lateral Acceleration	7 - 11 g	9.8 g	Yes

Test meets specifications.

Comments:

Technician



Approved



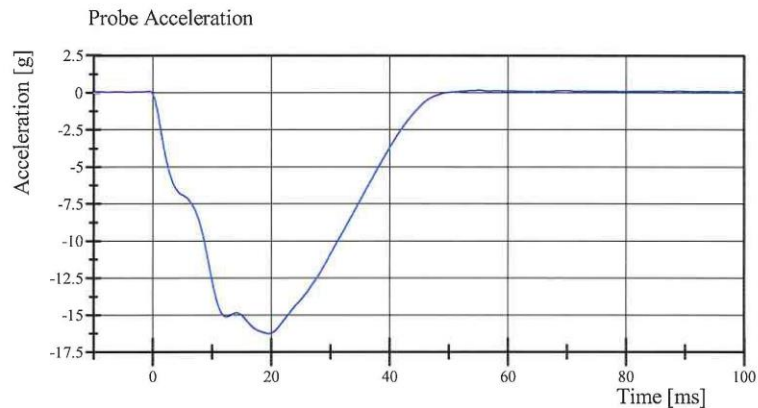
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

04.12.2016 13:04:56 832

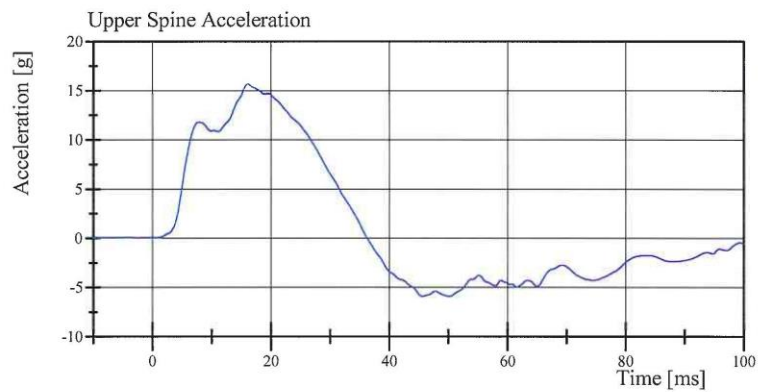


Transportation Research Center Inc.

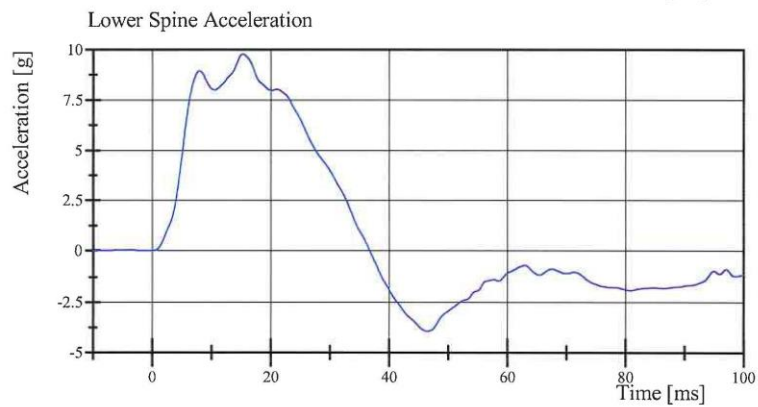
Left Lateral Thorax without Arm
SID IIs Serial No. 297 Certification No. 6-1
Test Date: 4/12/2016



Filter Class: CFC_180
Max: 0.1 g at 55.2 ms
Min: -16.3 g at 19.6 ms



Filter Class: CFC_180
Max: 15.6 g at 16.1 ms
Min: -5.9 g at 45.6 ms



Filter Class: CFC_180
Max: 9.8 g at 15.3 ms
Min: -3.9 g at 46.5 ms

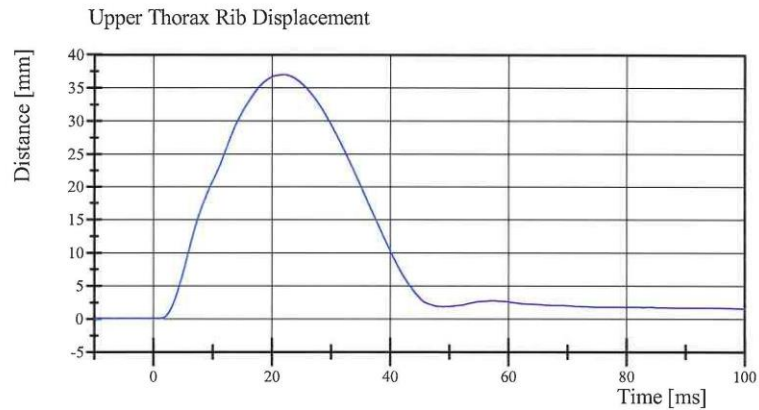
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

04.12.2016 13:05:28 832

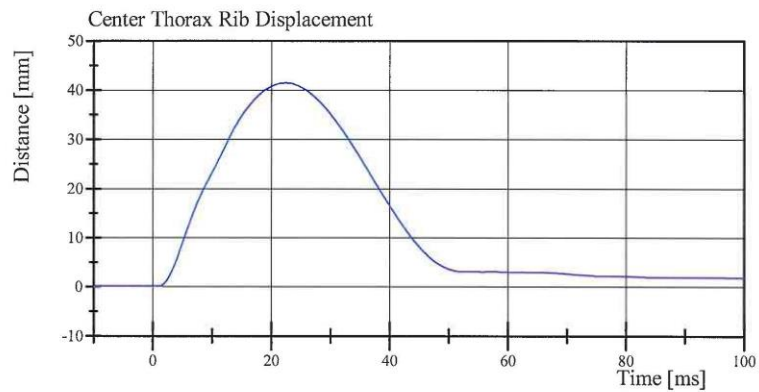


Transportation Research Center Inc.

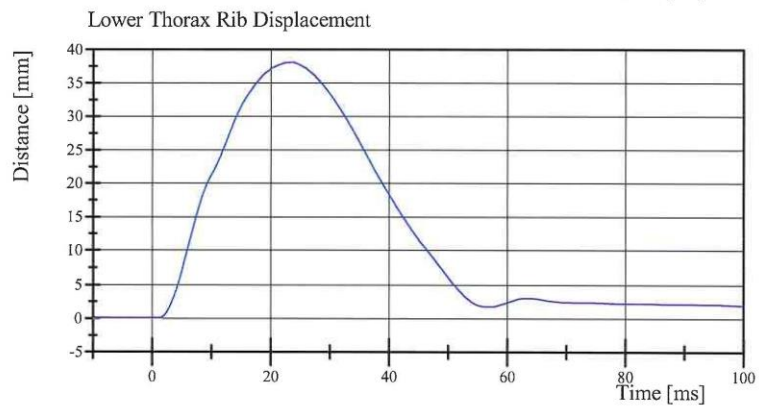
Left Lateral Thorax without Arm
SID IIs Serial No. 297 Certification No. 6-1
Test Date: 4/12/2016



Filter Class: CFC_600
Max: 36.9 mm at 22.1 ms
Min: -0.0 mm at 1.0 ms



Filter Class: CFC_600
Max: 41.4 mm at 22.4 ms
Min: -0.0 mm at -1.8 ms



Filter Class: CFC_600
Max: 38.0 mm at 23.5 ms
Min: -0.0 mm at 1.0 ms

Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

04.12.2016 13:05:29 832



Transportation Research Center Inc.

Left Lateral Abdomen

SID IIs Serial No. 297 Certification No. 6-1

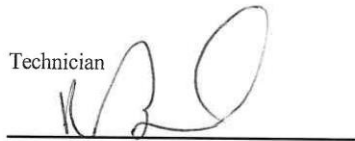
Test Date: 4/12/2016

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	38 %	Yes
Impactor Velocity	4.2 - 4.4 m/s	4.40 m/s	Yes
Impactor Acceleration	(-12) - (-16) g	-15.0 g	Yes
Upper Abdominal Rib Displacement	36 - 47 mm	39.2 mm	Yes
Lower Abdominal Rib Displacement	33 - 44 mm	38.6 mm	Yes
Lower Spine Lateral Acceleration	9 - 14.0 g	11.76 g	Yes

Test meets specifications.

Comments:

Technician



Approved



Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

04.12.2016 11:40:26 628

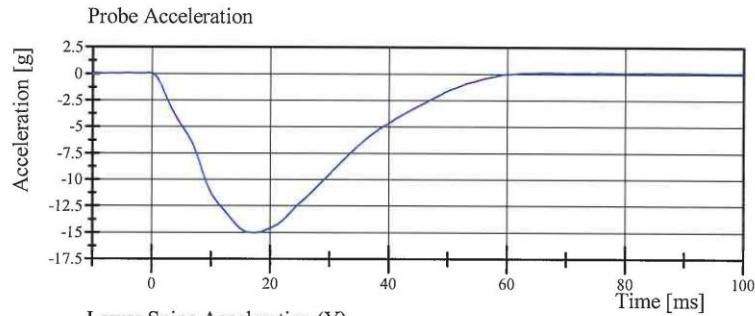


Transportation Research Center Inc.

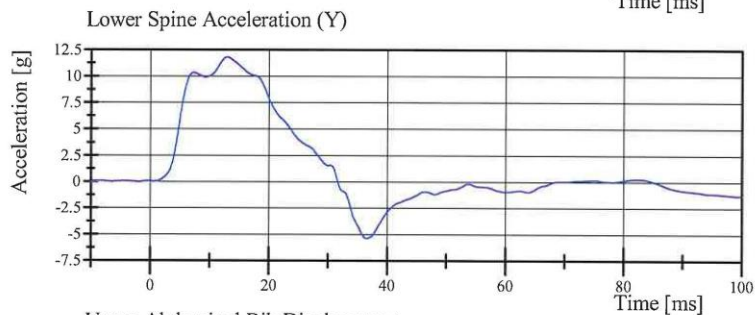
Left Lateral Abdomen

SID IIIs Serial No. 297 Certification No. 6-1

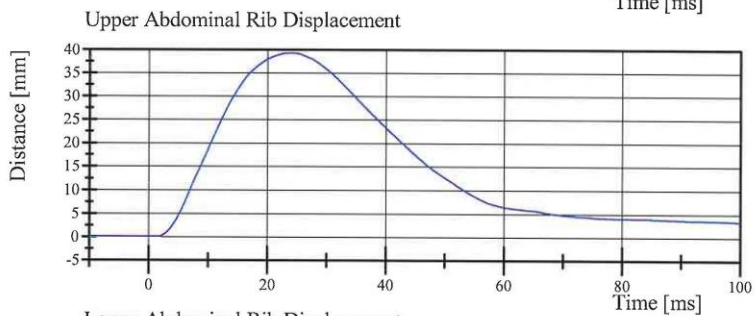
Test Date: 4/12/2016



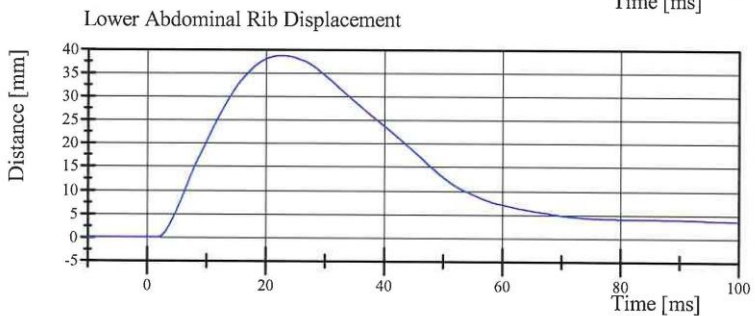
Filter Class: CFC_180
Max: 0.1 g at 84.2 ms
Min: -15.0 g at 17.4 ms



Filter Class: CFC_180
Max: 11.8 g at 13.0 ms
Min: -5.4 g at 36.6 ms



Filter Class: CFC_600
Max: 39.2 mm at 23.7 ms
Min: -0.0 mm at -1.8 ms



Filter Class: CFC_600
Max: 38.6 mm at 22.5 ms
Min: -0.0 mm at 1.8 ms

Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

04.12.2016 11:40:49 628



Transportation Research Center Inc.

Left Lateral Pelvis

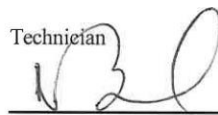
SID IIs Serial No. 297 Certification No. 6-4

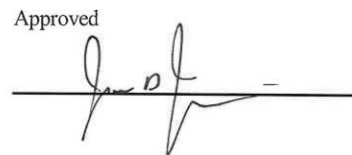
Test Date: 4/13/2016

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.8 °C	Yes
Relative Humidity	10 - 70 %	38 %	Yes
Pendulum Velocity	6.6 - 6.8 m/s	6.66 m/s	Yes
Impactor Acceleration	(-38.0) - (-47.0) g	-44.81 g	Yes
Peak Pelvis Lateral Acceleration after 6ms	34 - 42 g	39.9 g	Yes
Acetabulum Force	3,600 - 4,300 N	4,293.6 N	Yes

Test meets specifications.

Comments:

Technician


Approved


Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

04.13.2016 07:34:15 446

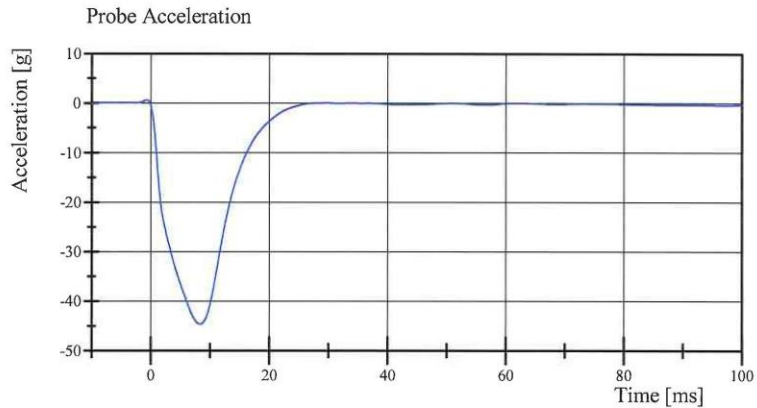


Transportation Research Center Inc.

Left Lateral Pelvis

SID IIs Serial No. 297 Certification No. 6-4

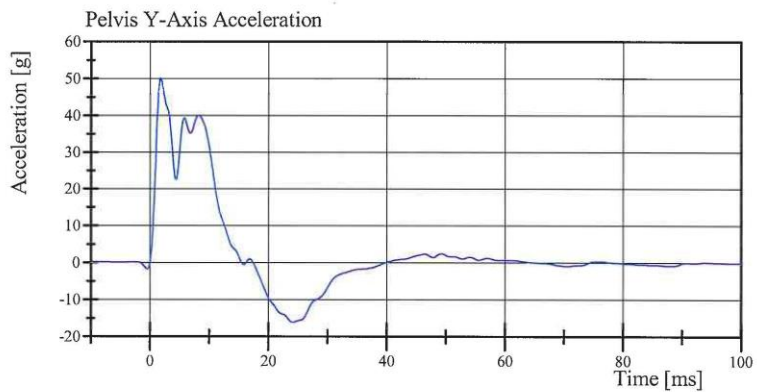
Test Date: 4/13/2016



Filter Class: CFC_180

Max: 0.5 g at -0.6 ms

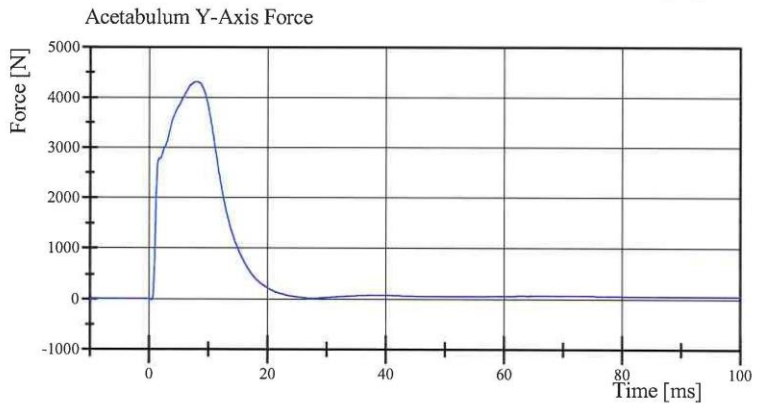
Min: -44.8 g at 8.3 ms



Filter Class: CFC_180

Max: 50.2 g at 1.8 ms

Min: -16.3 g at 24.2 ms



Filter Class: CFC_600

Max: 4,293.6 N at 8.0 ms

Min: -29.9 N at 0.5 ms

Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

04.13.2016 07:34:35 446



Transportation Research Center Inc.

Left Lateral Iliac

SID IIs Serial No. 297 Certification No. 6-1

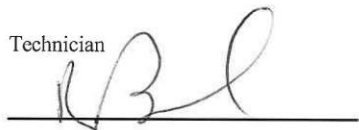
Test Date: 4/13/2016

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.5 °C	Yes
Relative Humidity	10 - 70 %	38 %	Yes
Pendulum Velocity	4.2 - 4.4 m/s	4.30 m/s	Yes
Impactor Acceleration	(-36) - (-45) g	-39.2 g	Yes
Peak Pelvis Lateral Acceleration	28 - 39 g	32.5 g	Yes
Iliac Force	4,100 - 5,100 N	4,615.6 N	Yes

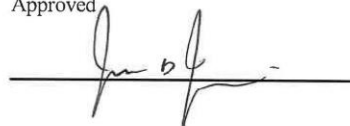
Test meets specifications.

Comments:

Technician



Approved



Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

04.13.2016 11:26:07 670

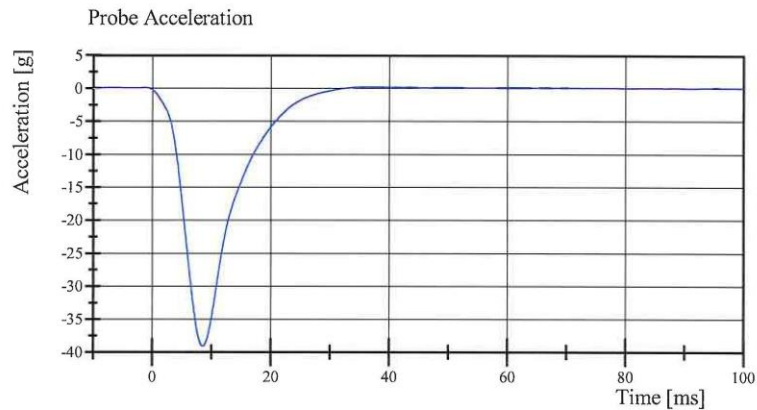


Transportation Research Center Inc.

Left Lateral Iliac

SID IIs Serial No. 297 Certification No. 6-1

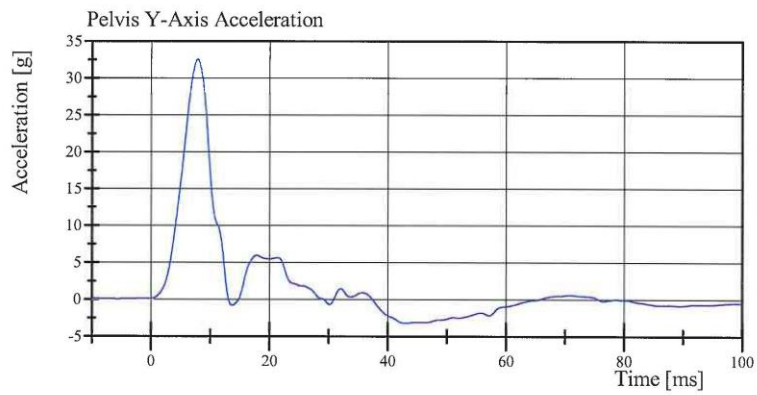
Test Date: 4/13/2016



Filter Class: CFC_180

Max: 0.2 g at 38.4 ms

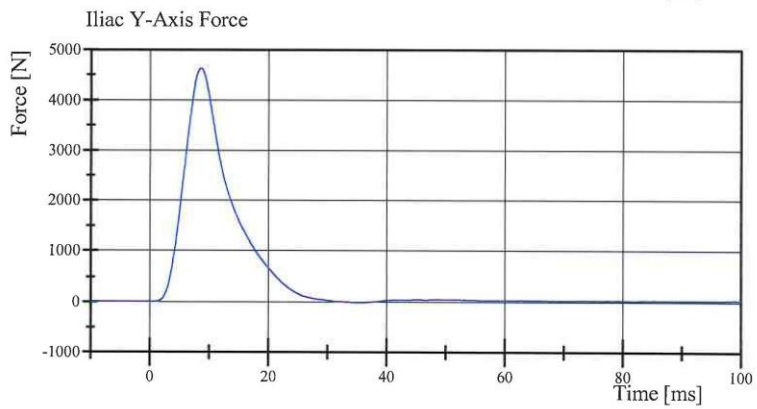
Min: -39.2 g at 8.6 ms



Filter Class: CFC_180

Max: 32.5 g at 7.8 ms

Min: -3.2 g at 43.0 ms



Filter Class: CFC_600

Max: 4,615.6 N at 8.6 ms

Min: -10.8 N at 35.0 ms

Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

04.13.2016 11:26:15 670



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	J32214	Endevco	1-Oct-2015
				Y	J27040	Endevco	1-Oct-2015
				Z	AGAC4	Endevco	1-Oct-2015
Displacement Potentiometers	Shoulder		Y	N/A	N/A	N/A	
	Thoracic Rib	Upper	Y	047	Servo	1-Oct-2015	
		Middle	Y	01815	Servo	1-Oct-2015	
		Lower	Y	043	Servo	1-Oct-2015	
	Abdominal Rib	Upper	Y	01811	Servo	1-Oct-2015	
		Lower	Y	151	Servo	1-Oct-2015	
Lower Spine Accelerometers (T12)				X	P64150	Endevco	1-Oct-2015
				Y	P64142	Endevco	1-Oct-2015
				Z	P64100	Endevco	1-Oct-2015
Acetabulum Load Cell				Y	235-FY	FTSS	1-Oct-2015
Iliac Wing Load Cell				Y	113-FY	FTSS	1-Oct-2015
Pelvis Plug (struck side)					12832	FTSS	07-Jul-2007
Pelvis Plug (non-struck side)					36505	FTSS	24-Sep-2010

TABLE 2 – Vehicle Instrumentation

Vehicle Instrumentation		Serial Number	Manufacturer	Calibration Date
Vehicle Center of Gravity	X	P33817	Endevco	22-Feb-2016
Vehicle Center of Gravity	Y	P91177	Endevco	29-Feb-2016
Vehicle Center of Gravity	Z	P91180	Endevco	3-Mar-2016
Left Floor Sill	Y	P81667	Endevco	4-Apr-2016
A-Pillar Sill	Y	P88463	Endevco	4-Apr-2016
A-Pillar Low	Y	P91173	Endevco	29-Feb-2016
A-Pillar Mid	Y	P91482	Endevco	25-Feb-2016
B-Pillar Sill	Y	P89124	Endevco	24-Mar-2016
B-Pillar Low	Y	P91960	Endevco	29-Feb-2016
B-Pillar Mid	Y	P79650	Endevco	15-Mar-2016
Driver Seat	Y	P84582	Endevco	14-Jan-2016
Engine Top	X	P61350	Endevco	1-Feb-2016
Engine Top	Y	P50430	Endevco	14-Mar-2016
Firewall	Y	P87151	Endevco	14-Jan-2016
Right Roof	Y	P92001	Endevco	29-Feb-2016
Right Floor Sill	Y	P46078	Endevco	3-Feb-2016
Rear Floor Pan	X	P81064	Endevco	22-Feb-2016
Rear Floor Pan	Y	P81542	Endevco	22-Feb-2016

TABLE 3 – Pole Instrumentation

Pole Instrumentation	Serial Number	Manufacturer	Calibration Date
Load Cell 1	88-FX	Denton	13-Nov-2015
Load Cell 2	77-FX	Denton	13-Nov-2015
Load Cell 3	103-FX	Denton	13-Nov-2015
Load Cell 4	101-FX	Denton	13-Nov-2015
Load Cell 5	92-FX	Denton	13-Nov-2015
Load Cell 6	84-FX	Denton	13-Nov-2015
Load Cell 7	97-FX	Denton	13-Nov-2015
Load Cell 8	87-FX	Denton	13-Nov-2015