**FINAL REPORT NUMBER: SPNCAP-TRC-14-004**

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

**Ford Motor Company**
**2014 Ford Fiesta 4-Door Sedan**
**NHTSA NUMBER: M20140200**

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

**Report Date: February 6, 2014**

**FINAL REPORT**

**PREPARED FOR:**
**U.S. DEPARTMENT OF TRANSPORTATION**
**National Highway Traffic Safety Administration**
**Office of Crashworthiness Standards**
**Mail Code: NVS-111**
**1200 New Jersey Ave, SE**
**Room W43-410**
**Washington, D.C. 20590**

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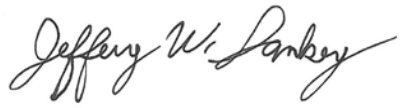
Report Prepared By: ILO Project Operations Group

Report Approved By: 

Jeffery W. Sankey, Manager, Project Operations

Approval Date: February 6, 2014

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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| 1. Report No.<br>SPNCAP-TRC-14-004 | 2. Government Accession No. | 3. Recipient's Catalog No. |
| 4. Title and Subtitle<br>Final Report of New Car Assessment Program<br>Side Impact Pole Testing of<br>2014 Ford Fiesta 4-Door Sedan,<br>NHTSA No.: M20140200 | | 5. Report Date<br>February 6, 2014<br>6. Performing Organization Code<br>TRC Inc. |
| 7. Author(s)<br>Jeffery W. Sankey, Manager, Project Operations | | 8. Performing Organization Report No.<br>140108 |
| 9. Performing Organization Name and Address<br>Transportation Research Center Inc.<br>10820 State Route 347<br>East Liberty, OH 43319 | | 10. Work Unit No.<br>11. Contract or Grant No.<br>DTNH22-09-D-00125 |
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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 2014 Ford Fiesta 4-Door Sedan, in accordance with the specifications of the Office of Crashworthiness Standards Side NCAP Pole Laboratory Test Procedure for the generation of consumer information on vehicle side pole crash protection. This test was conducted by Transportation Research Center Inc. in East Liberty, Ohio, on January 8, 2014.

The impact velocity was 32.54 km/h, and the ambient temperature at the struck (left) side of the target vehicle at the time of impact was 21° C. The test vehicle's post-test maximum crush was 303 mm at Level 3.

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

| | Unit | Threshold | Front SID-IIs |
|---|---|---|---|
| Head Injury Criteria ($HIC_{36}$): | NA | 1000 | 180 |
| Resultant Lower Spine Acceleration: | g's | 82 | 53.1 |
| Total Pelvic Force:<br>(sum of acetabular and iliac forces) | N | 5525 | 3187.8 |
| Maximum Thoracic Rib Deflection | mm | 38 | 21.5 |
| Maximum Abdomen Rib Deflection | mm | 45 | 17.9 |

The door struck by the pole did not separate from the body at the hinges or latches and the opposite doors did not open during the side impact event.

| | |
|---|---|
| 17. Key Words<br>New Car Assessment Program (NCAP)<br>Side Impact<br>Pole<br>Part 572V<br>SID-IIs | 18. Distribution Statement<br>Copies of this report are available from:<br>National Highway Traffic Safety Administration<br>Technical Information Services Division, NPO-411<br>1200 New Jersey Ave<br>Washington, DC 20590<br>e-mail: tis@nhtsa.dot.gov<br>FAX: 202-493-2833 |

| | | | |
|---|---|---|---|
| 19. Security Classification<br>(of this report)<br>Unclassified | 20. Security Classification<br>(of this page)<br>Unclassified | 21. Number of Pages<br>122 | 22. Price |

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# SECTION 1
# TEST PURPOSE AND PROCEDURE

## TEST PURPOSE AND PROCEDURE

This side impact test was conducted as part of the MY14 New Car Assessment Program Side Impact Test Program, sponsored by the National Highway Traffic Safety Administration (NHTSA), under Contract No. DTNH22-09-D-00125. The purpose of this test is to generate comparative side impact performance in a 2014 Ford Fiesta 4-Door Sedan manufactured by Ford Motor Company. The side impact test was conducted in accordance with the Office of Crashworthiness Standard's Side NCAP Pole Laboratory Test Procedure, dated September 2013.

## SECTION 2
## SUMMARY OF TEST RESULTS

A rigid pole side impact test was conducted on a model year 2014 Ford Fiesta 4-Door Sedan. The subject vehicle was towed into the rigid pole at an angle of 75° and a velocity of 32.54 km/h. The side impact test was conducted by Transportation Research Center Inc. in East Liberty, OH, on January 8, 2014. 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 September 2013. Camera locations and other pertinent camera information are included in this report.

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

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.

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 | 180 |
| Lower Spine Acceleration | G | 82 | 53.1 |
| Total Pelvic Force (sum of acetabular and iliac forces) | N | 5525 | 3187.8 |
| Maximum Thoracic Rib Deflection | mm | 38* | 21.5 |
| Maximum Abdominal Rib Deflection | mm | 45* | 17.9 |

* Proposed IARV

Supplemental restraint information is given below:

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

## GENERAL COMMENTS

None

## SECTION 3
## OCCUPANT AND VEHICLE INFORMATION

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

Test Vehicle: 2014 Ford Fiesta 4-Door Sedan NHTSA No.: M20140200
Test Program: SPNCAP Side Impact Test Date: 1/8/14

**TEST VEHICLE INFORMATION AND OPTIONS**

| | |
|---|---|
| NHTSA No. | M20140200 |
| Model Year | 2014 |
| Make | Ford |
| Model | Fiesta |
| Body Style | Sedan |
| VIN | 3FADP4AJ5EM148120 |
| Body Color | Silver |
| Odometer Reading (km/mi) | 103 mi |
| Engine Displacement (L) | 1.6 |
| Type/No. Cylinders | Gas/4 |
| Engine Placement | Front/Transverse |
| Transmission Type | Manual |
| Transmission Speeds | 5 |
| Overdrive | Yes |
| Final Drive | FWD |
| Roof Rack | No |
| Sunroof/T-Top | No |
| Running Boards | No |
| Tilt Steering Wheel | Yes |
| Power Seats | No |
| Anti-Lock Brakes (ABS) | Yes |

| | |
|---|---|
| Traction Control System (TCS) | Yes |
| Auto-Leveling System | No |
| Automatic Door Locks (ADL) | Yes |
| Power Window Auto-Reverse | No |
| Other Optional Feature | None |
| Driver Front Airbag | Yes |
| Driver Curtain Airbag | Yes |
| Driver Head/Torso Airbag | No |
| Driver Torso Airbag | No |
| Driver Torso/Pelvis Airbag | Yes |
| Driver Pelvis Airbag | No |
| Driver Knee Airbag | Yes |
| Rear Pass. Curtain Airbag | Yes |
| Rear Pass. Head/Torso Airbag | No |
| Rear Pass. Torso Airbag | No |
| Rear Pass. Torso/Pelvis Airbag | No |
| Rear Pass. Pelvis Airbag | No |
| Driver Seat Belt Pretensioner | Yes |
| Rear Pass. Seat Belt Pretensioner | No |
| Driver Load Limiter | Yes |
| Rear Pass. Load Limiter | No |
| Other Safety Restraint | None |

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

**DATA FROM CERTIFICATION LABEL**

| | |
|---|---|
| Manufactured By | Ford Motor Company |
| Date of Manufacturer | 09/13 |
| Vehicle Type | Passenger Car |

| | |
|---|---|
| GVWR (kg) | 1642 |
| GAWR Front (kg) | 839 |
| GAWR Rear (kg) | 816 |

**VEHICLE SEATING AND WEIGHT CAPACITY DATA**

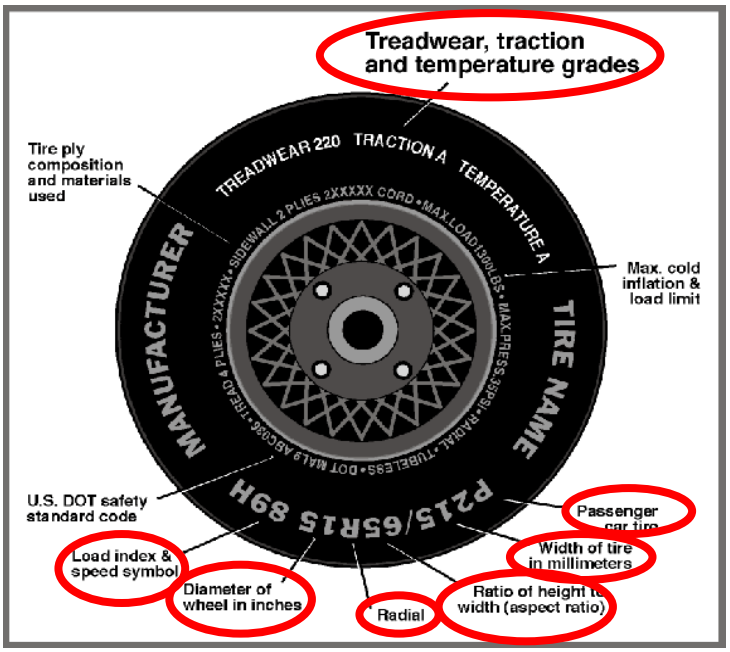
| | Front | Rear | Third | Total |
|---|---|---|---|---|
| Designated Seating Capacity (DSC) | 2 | 3 | N/A | 5 |
| Vehicle Capacity Weight (VCW) (kg) | | | | 375 |
| DSC X 68.04 kg | | | | 340.2 |
| Rated Cargo and Luggage Weight (RCLW) (kg) | | | | 34.8 |

**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 | No | No | | No | Yes | No |
| Rear or Second Row Seat | No | No | Yes | No | Yes | No | No |
| Third row seat | N/A | N/A | N/A | N/A | N/A | N/A | N/A |

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

Test Vehicle: 2014 Ford Fiesta 4-Door Sedan NHTSA No.: M20140200
Test Program: SPNCAP Side Impact Test Date: 1/8/14




**DATA FROM TIRE PLACARD**

| Measured Parameter | Front | Rear |
|---|---|---|
| Maximum Tire Pressure (kPa) | 350 | 350 |
| Cold Pressure (kPa) | 220 | 220 |
| Recommended Tire Size | 185/60R15 | 185/60R15 |
| Tire Size on Vehicle | 185/60R15 | 185/60R15 |
| Tire Manufacturer | Hankook | Hankook |
| Tire Model | Optimo H426 | Optimo H426 |
| Treadwear | 380 | 380 |
| Traction | A | A |
| Temperature Grades | A | A |
| Tire Plies Sidewall | 1 | 1 |
| Tire Plies Body | 4 | 4 |
| Load Index/Speed Symbol | 84H | 84H |
| Tire Material | Steel, Polyester, Nylon | Steel, Polyester, Nylon |
| DOT Safety Code Left | 5MBT PDL H 2613 | 5MBT PDL H 2613 |
| DOT Safety Code Right | 5MBT PDL H 2613 | 5MBT PDL H 2613 |

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

Test Vehicle: 2014 Ford Fiesta 4-Door Sedan NHTSA No.: M20140200
Test Program: SPNCAP Side Impact Test Date: 1/8/14

### TIRE PRESSURES

| | Units | LF | RF | LR | RR |
|---|---|---|---|---|---|
| As Delivered | kPa | 241 | 241 | 241 | 248 |
| 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 | 344.2 | 250.6 | | 341.6 | 281.6 | | 363.8 | 292.4 | |
| Right | kg | 332.2 | 239.0 | | 340.6 | 279.6 | | 334.4 | 259.6 | |
| Ratio | % | 58.0 | 42.0 | | 54.9 | 45.1 | | 55.8 | 44.2 | |
| Totals | kg | 676.4 | 489.6 | 1166.0 | 682.2 | 561.2 | 1243.4 | 698.2 | 552.0 | 1250.2 |

### TARGET TEST WEIGHT CALCULATION

| Measured Parameter | Units | Value | |
|---|---|---|---|
| Total As Delivered Weight (UVW) | kg | 1166.0 | (A) |
| Actual Weight of 1 P572V ATD (SID-IIs) Dummy Used | kg | 49.0 | (B) |
| Rated Cargo/Luggage Weight (RCLW) | kg | 34.8 | (C) |
| Calculated Vehicle Target Weight (TVTW) | kg | 1249.8 | (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)?** X YES □ NO

### WEIGHT OF BALLAST AND VEHICLE COMPONENTS REMOVED TO MEET TVTW

| Component Description | Weight (kg) |
|---|---|
| None | 0.0 |
| Components removed: Front and rear fascias, rear bumper beam, trunk lid, seal and liner, tail lights, headlights, brake rotors, and calipers, hub caps, washer bottle, horns, serpentine belt, A/C compressor and lines. | 71.0 |

### TEST VEHICLE ATTITUDES AND CG

| | Units | As Delivered | As Tested | Fully Loaded | Meets Requirement*** |
|---|---|---|---|---|---|
| Driver Door Sill Angle (front-to-rear)* | Deg. | -0.4 | 0.0 | +0.1 | Yes |
| Front Passenger Sill Angle (front-to-rear)* | Deg. | -0.3 | -0.1 | +0.2 | Yes |
| Front Bumper-Line Angle (left-to-right)** | Deg. | -0.3 | -0.3 | -0.7 | Yes |
| Rear Bumper-Line Angle (left-to-right)** | Deg. | -0.3 | -0.4 | -0.6 | Yes |
| Vehicle CG (Aft of Front Axle) | mm | 1050 | 1128 | 1104 | |
| Vehicle CG (Left (+) / Right (-) from longitudinal Centerline) | mm | +15 | +2 | +36 | |

*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".

**DATA SHEET NO. 2**

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

Test Vehicle: 2014 Ford Fiesta 4-Door Sedan NHTSA No.: M20140200

Test Program: SPNCAP Side Impact Test Date: 1/8/14

**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 | 15.0 | 9.8 | 12.4 |
| Front Passenger Seat | N/A | N/A | 15.3 |
| Front Center Seat* | N/A | N/A | N/A |
| Struck Side Rear Seat | Fixed | Fixed | 10.1 |
| Non-Struck Side Rear Seat | Fixed | Fixed | 9.8 |
| Rear Center Seat* | Fixed | Fixed | 11.2 |

* 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 | 12.4 | 198 | Max | N/A | N/A | N/A |
| | | | Mid | 168 | 178 | 198 |
| | | | Min | N/A | N/A | N/A |
| Front Passenger Seat | 15.3 | 174 | Max | N/A | N/A | N/A |
| | | | Mid | 155 | 164 | 174 |
| | | | 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 | 10.1 | 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 | 9.8 | Fixed | Max | N/A | N/A | N/A |
| | | | Mid | N/A | N/A | N/A |
| | | | Min | N/A | N/A | N/A |
| Rear Center Seat* | 11.2 | Fixed | Max | N/A | N/A | N/A |
| | | | Mid | N/A | N/A | N/A |
| | | | Min | N/A | N/A | N/A |

* If applicable.

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

Test Vehicle: 2014 Ford Fiesta 4-Door Sedan NHTSA No.: M20140200
Test Program: SPNCAP Side Impact Test Date: 1/8/14

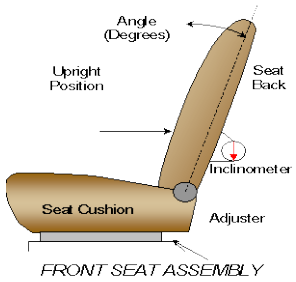
**SEAT FORE/AFT POSITION**

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

* If applicable.

**SEAT BACK ANGLE ADJUSTMENT**

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




| Seat | Total Seat Back Angle Range | | Test Position from Most Upright | |
|---|---|---|---|---|
| | Degrees | Detents* | Degrees | Detent* |
| Driver Seat w/ Seated Dummy | 55.7 | 29 | 0.8 forward | 5 |
| Front Passenger Seat | 55.7 | 29 | 0.8 forward | 5 |
| Front Center Seat* | N/A | N/A | N/A | N/A |
| Struck Side Rear Seat | Fixed | N/A | 26.9 | N/A |
| Non-Struck Side Rear Seat | Fixed | N/A | 25.9 | N/A |
| Rear Center Seat* | Fixed | N/A | 25.8 | 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 4 | 0, Uppermost |

**HEAD RESTRAINT ADJUSTMENT**

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

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

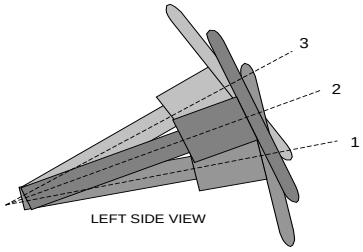
**DATA SHEET NO. 2 (CONTINUED)**
**SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT AND FUEL SYSTEMS DATA**

Test Vehicle: 2014 Ford Fiesta 4-Door Sedan NHTSA No.: M20140200
Test Program: SPNCAP Side Impact Test Date: 1/8/14

## STEERING COLUMN ADJUSTMENT

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

| | Degrees | Fore/Aft Position, mm |
|---|---|---|
| Lowermost, Position No. 1 | 21.0 | 40 |
| Geometric Center, Position No. 2 | 23.0 | 40 |
| Uppermost, Position No. 3 | 24.9 | 40 |
| Telescoping Steering Wheel Travel | | 40 |
| Test Position | 23.0 | 20 |

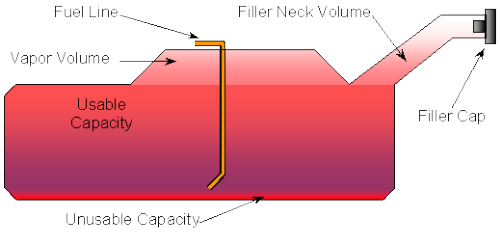


*STEERING COLUMN ASSEMBLY*

## FUEL PUMP

Describe the fuel pump type, deta1LS about how it operates and the location of the fuel filler neck:

Fuel tank is located in front of the rear axle. Filler neck enters the right side of the tank. Cap is on right rear quarter panel. Fuel pump will run when engine is running. Also, it will run briefly when ignition key is turned to the "ON" position without starting the engine.



*VEHICLE FUEL TANK ASSEMBLY*

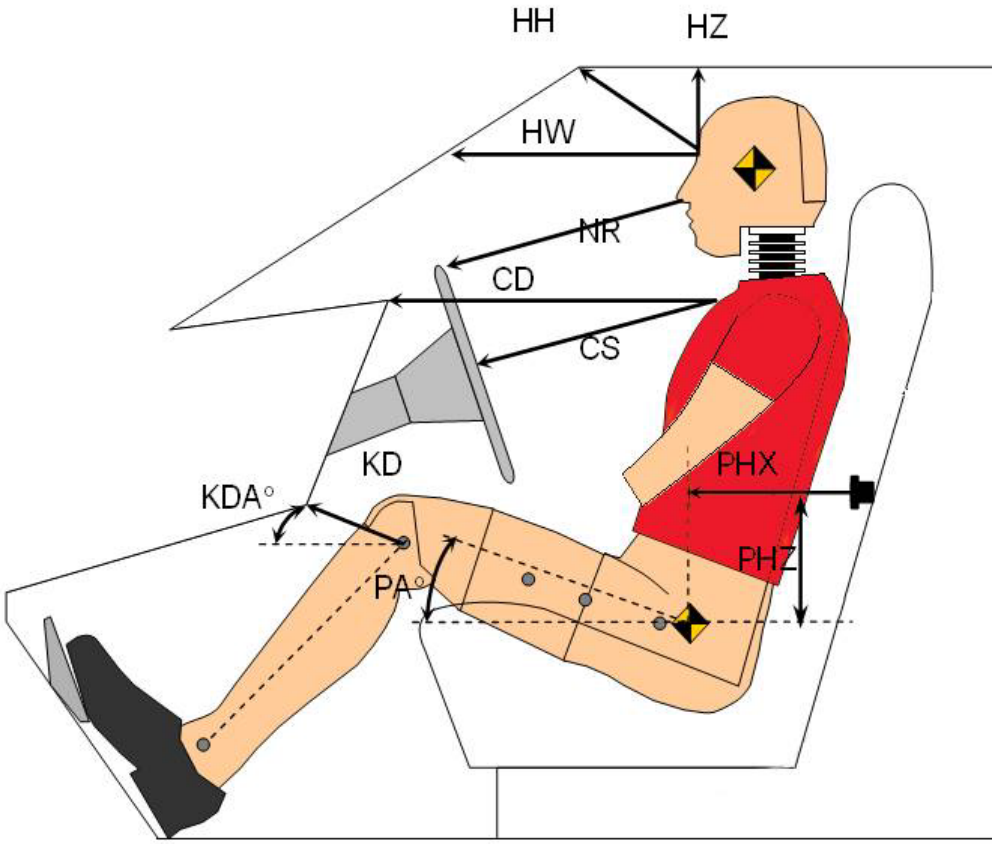
## FUEL TANK CAPACITY

| | Liters |
|---|---|
| Usable Capacity of "Standard Tank" (see Form No. 1) | 46.9 |
| Usable Capacity of "Optional" Tank (see Form No. 1) | N/A |
| Usable Capacity of Standard Tank (see Owner's Manual) | 48.0 |
| Usable Capacity of Optional Tank (see Owner's Manual) | N/A |
| 93% of Usable Capacity | 43.5 |
| Actual Amount of Solvent Used in Test | 43.5 |
| 1/3 of Usable Capacity | 14.5 |

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

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

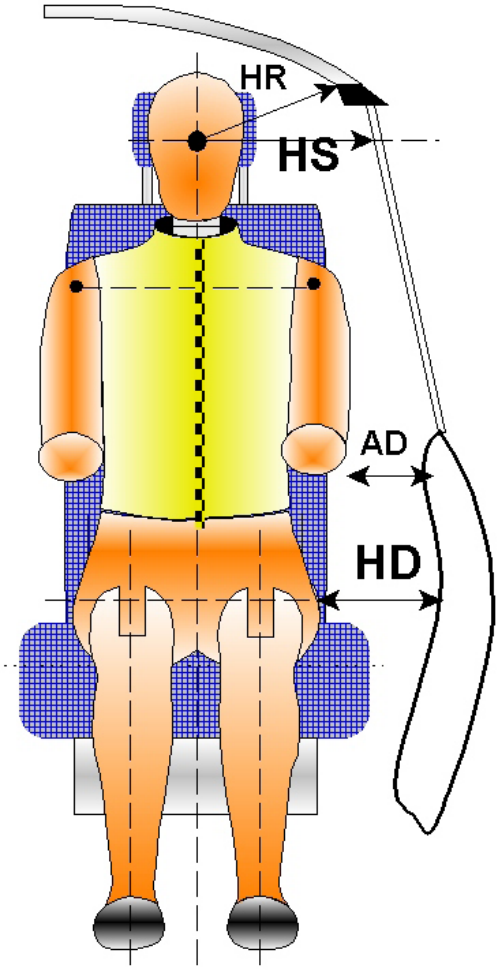
Test Vehicle: 2014 Ford Fiesta 4-Door Sedan NHTSA No.: M20140200
Test Program: SPNCAP Side Impact Test Date: 1/8/14




| Code | Measurement Description | Driver | |
|---|---|---|---|
| | | Length (mm) | Angle (°) |
| HH | Head to Header | 223 | |
| HW | Head to Windshield | 580 | |
| HZ | Head to Roof Liner | 178 | |
| NR | Nose to Rim | 158 | |
| CD | Chest to Dashboard | 370 | |
| CS | Chest to Steering Wheel | 126 | |
| KDL/KDLA° | Left Knee to Dash | 145 | 48.0 |
| KDR/KDRA° | Right Knee to Dash | 115 | 45.0 |
| PAX° | Pelvic Tilt Angle (X-axis) | | 0.3 |
| PAY° | Pelvic Tilt Angle (Y-axis) | | 21.4 |
| PHX | Hip Point to Striker (X-Axis) | 318 | |
| PHZ | Hip Point to Striker (Z-Axis) | 105 | |

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

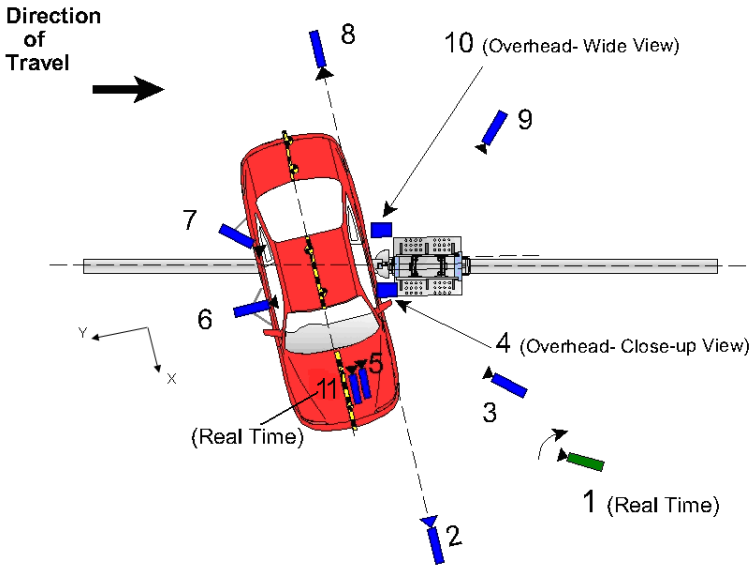
Test Vehicle: 2014 Ford Fiesta 4-Door Sedan NHTSA No.: M20140200
Test Program: SPNCAP Side Impact Test Date: 1/8/14




| Code | Measurement Description | Length (mm) |
|---|---|---|
| HR | Head to Side Header | 218 |
| HS | Head to Side Window | 347 |
| AD | Arm to Door | 144 |
| HD | Hip Point to Door | 147 |

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

Test Vehicle: 2014 Ford Fiesta 4-Door Sedan NHTSA No.: M20140200
Test Program: SPNCAP Side Impact Test Date: 1/8/14




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 | 5817 | 259 | -1345 | Zoom | 1000 |
| 3 | Impact side 45° – forward pole view | 3076 | -1134 | -1326 | Zoom | 1000 |
| 4 | Overhead Close-up view of impact | 0 | 0 | -5605 | 50 | 1000 |
| 5 | Onboard – dummy front view | | | | 8.5 | 1000 |
| 6 | Onboard – dummy side view | | | | 8.5 | 1000 |
| 7 | Onboard – dummy rear oblique view | | | | 8.5 | 1000 |
| 8 | Rear ground level – impact view | -6473 | 0 | -1300 | Zoom | 1000 |
| 9 | Impact side 45° – rearward pole view | -2875 | -3112 | -1403 | Zoom | 1000 |
| 10 | Overhead wide view of impact | 305 | -102 | -5605 | 12.5 | 1000 |
| 11 | Real time dummy front view | | | | Zoom | 30 |

All measurements accurate to +/- 6 mm.

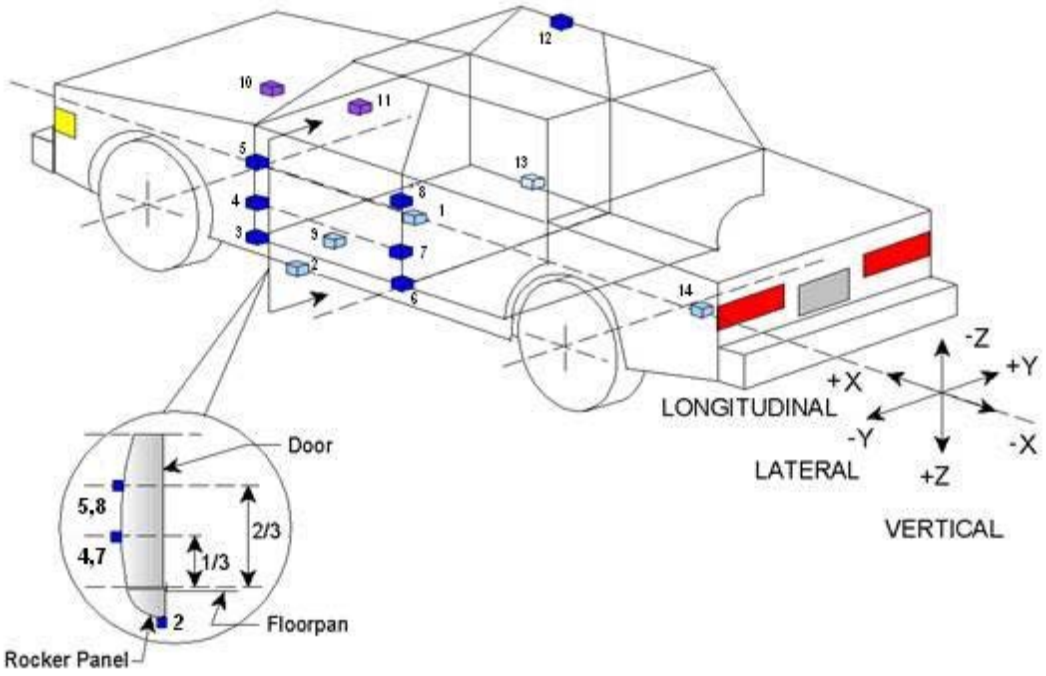
**NOTE**: Vehicle was at a 75° angle to the rigid pole.
If applicable, explain why camera(s) did not run: Not Applicable

**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: 2014 Ford Fiesta 4-Door Sedan NHTSA No.: M20140200
Test Program: SPNCAP Side Impact Test Date: 1/8/14



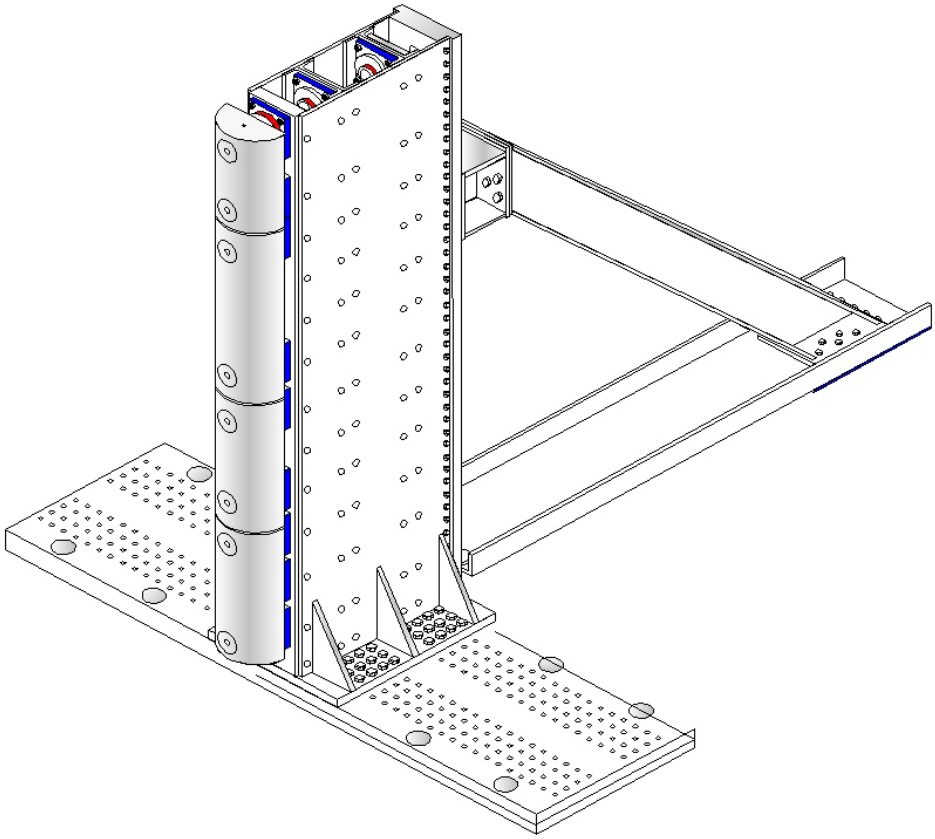

| | Accelerometer/Sensor Location | | | |
|---|---|---|---|---|
| | ID | Coordinates (mm) | | |
| | | X | Y | Z |
| 1 | Vehicle CG | 2693 | 83 | -362 |
| 2 | Left Floor Sill | 2659 | 620 | -301 |
| 3 | A-Pillar Sill | 3112 | -625 | -344 |
| 4 | A-Pillar Low | 3210 | -758 | -518 |
| 5 | A-Pillar Mid | 3225 | -732 | -851 |
| 6 | B-Pillar Sill | 2120 | -625 | -316 |
| 7 | B-Pillar Low | 2165 | -769 | -485 |
| 8 | B-Pillar Mid | 2110 | -760 | -903 |
| 9 | Driver Seat Track | 2566 | -530 | -304 |
| 10 | Engine Top | 3675 | 0 | -792 |
| 11 | Firewall | 3315 | -75 | -710 |
| 12 | Right Roof | 1892 | 597 | -1438 |
| 13 | Right Floor Sill | 2815 | 597 | -302 |
| 14 | Rear Floorpan | 1209 | 0 | -465 |

*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: 2014 Ford Fiesta 4-Door Sedan NHTSA No.: M20140200
Test Program: SPNCAP Side Impact Test Date: 1/8/14

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: 2014 Ford Fiesta 4-Door Sedan NHTSA No.: M20140200
Test Program: SPNCAP Side Impact Test Date: 1/8/14

### TEST DUMMY INFORMATION AND CONTACT POINTS

| Dummy Body Part | Driver SID-IIs Dummy |
|---|---|
| Face | SCAB |
| Top of Head | SCAB |
| Left Side of Head | SCAB |
| Back of Head | SCAB, Head Restraint |
| Left Shoulder | Torso/Pelvis Bag |
| Upper Torso | None |
| Lower Torso | Seat Side Bolster |
| Left Hip | Door Panel |
| Left Knee | None |

### POST TEST DOOR PERFORMANCE

| Description | Struck Side | | Non-Struck Side | | Rear Hatch/ Other Door |
|---|---|---|---|---|---|
| | Front | Rear | Front | Rear | |
| Remained Closed and Operational | No | No | Yes | Yes | N/A |
| Total Separation from Vehicle at Hinges or Latches | No | No | No | No | N/A |
| Latch or Hinge Systems Pulled Out of Their Anchorages | No | No | No | No | N/A |
| Disengaged from Latched Position | No | No | No | No | N/A |
| Latch Separated from Striker | No | No | No | No | N/A |
| Jammed Shut | Yes | Yes | No | No | N/A |
| 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 |
| Windshield Damage | Broken |
| Side Window Damage | Shattered |
| Other Notable Effects | None |

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

Test Vehicle: 2014 Ford Fiesta 4-Door Sedan NHTSA No.: M20140200
Test Program: SPNCAP Side Impact Test Date: 1/8/14

**SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION**

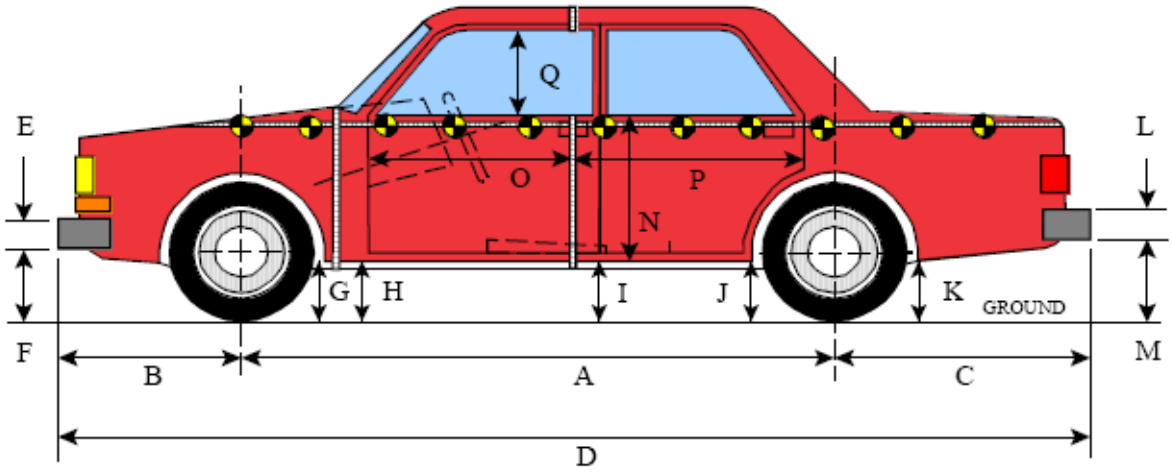
| Restraint Type | Struck Side (Driver) | | Struck Side (Rear Passenger) | |
|---|---|---|---|---|
| | Mounted | Deployed | Mounted | Deployed |
| Front Airbag | Yes | No | | |
| Knee Airbag | Yes | No | | |
| Curtain | Yes | Yes | Yes | Yes |
| Side Torso/Pelvis Airbag | Yes | Yes | No | N/A |
| Seat Belt Pretensioner | Yes | Yes | No | N/A |
| Seat Belt Load Limiter | Yes | No | 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 | | 1023 |
| Actual Impact Point (Aft of Front Axle) | mm | | 1022 |
| Horizontal Offset ( + forward / - rearward) | mm | +/- 38 of Intended Impact point | +1 |
| Angle Between Vehicle's Longitudinal Centerline and Line of Motion | degrees | 75 +/- 3 | 75 |
| Trap No. 1 Velocity (Primary) | km/h | 31.4 to 33.0 | 32.54 |
| Trap No. 2 Velocity (Redundant) | km/h | 31.4 to 33.0 | 32.52 |

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

Test Vehicle: 2014 Ford Fiesta 4-Door Sedan NHTSA No.: M20140200
Test Program: SPNCAP Side Impact Test Date: 1/8/14



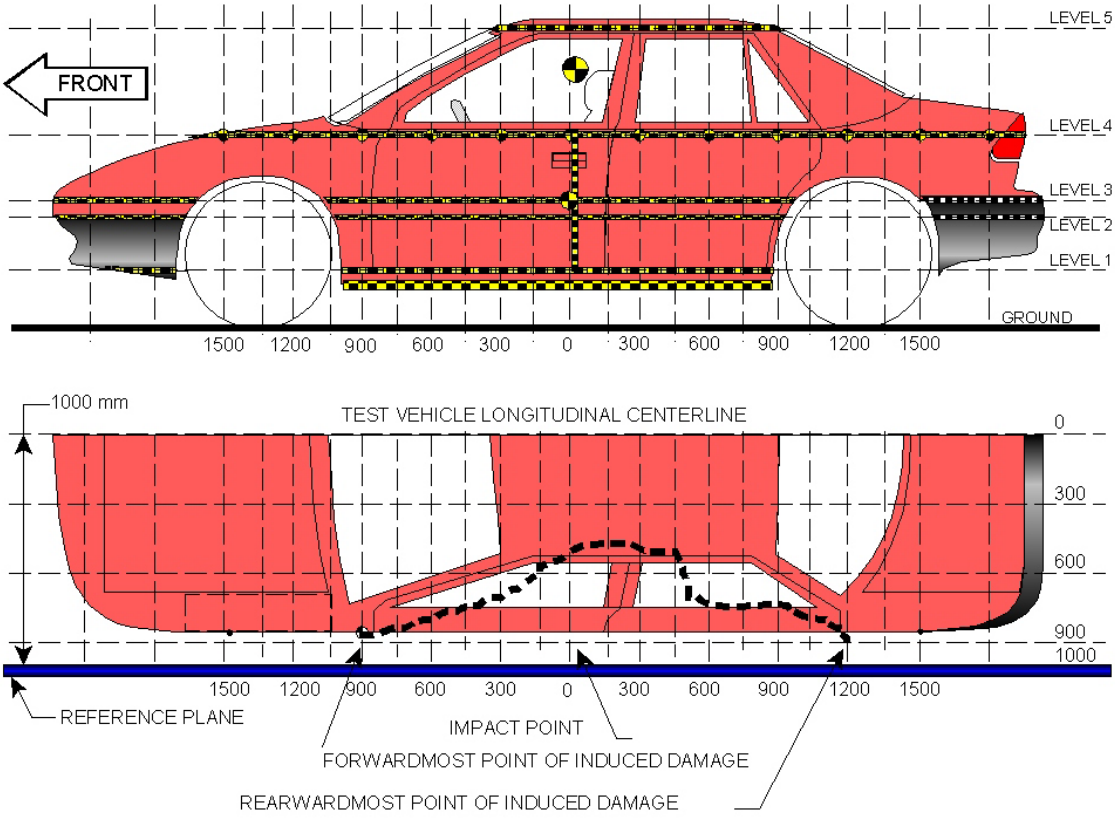

**LEFT SIDE VIEW**
All MEASUREMENTS IN (mm) WITH TOLERANCE OF ± 3mm

**VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION**

| Code | Measurement Description | Pre-Test | Post-Test | Difference |
|---|---|---|---|---|
| A | Wheelbase | 2500 | 2452 | 48 |
| B | Front Axle to Front Surface of Vehicle | 842 | 865 | -23 |
| C | Rear Axle to Rear Surface of Vehicle | 1073 | 1045 | 28 |
| D | Total Length at Centerline | 4415 | 4400 | 15 |
| E | Front Bumper Thickness | 90 | 90 | 0 |
| F | Front Bumper Bottom to Ground | 386 | 433 | -47 |
| G | Sill Height at Front Wheel Well | 260 | 267 | -7 |
| H | Sill Height at Front Door Leading Edge | 260 | 267 | -7 |
| I | Sill Height at B-Pillar | 260 | 298 | -38 |
| J1 | Sill Height at Rear Wheel Well | 275 | 320 | -45 |
| J2 | Pinch Weld Height at Rear Wheel Well | 195 | 231 | -36 |
| K | Sill Height Aft of Rear Wheel Well | 280 | 312 | -32 |
| L | Rear Bumper Thickness | 80 | 80 | 0 |
| M | Rear Bumper Bottom to Ground | 555 | 581 | -26 |
| N | Sill Height to Bottom of Front Window Sill | 705 | 700 | 5 |
| O | Front Door Leading Edge to Impact CL | 611 | 597 | 14 |
| P | Rear Door Trailing Edge to Impact CL | 1400 | 1160 | 240 |
| Q | Front Window Opening | 383 | 361 | 22 |
| R | Right Side Length | 4250 | 4277 | -27 |
| S | Left Side Length | 4240 | 4230 | 10 |
| T | Vehicle Width at "B" Pillars | 1670 | 1591 | 79 |

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

Test Vehicle: 2014 Ford Fiesta 4-Door Sedan NHTSA No.: M20140200
Test Program: SPNCAP Side Impact Test Date: 1/8/14




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 | 337 | 272 | -150 |
| 2 | Occupant H-Point | 554 | 295 | -150 |
| 3 | Mid-Door | 618 | 303 | 0 |
| 4 | Window Sill | 869 | 301 | 0 |
| 5 | Window Top | 1402 | 92 | 150 |

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

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

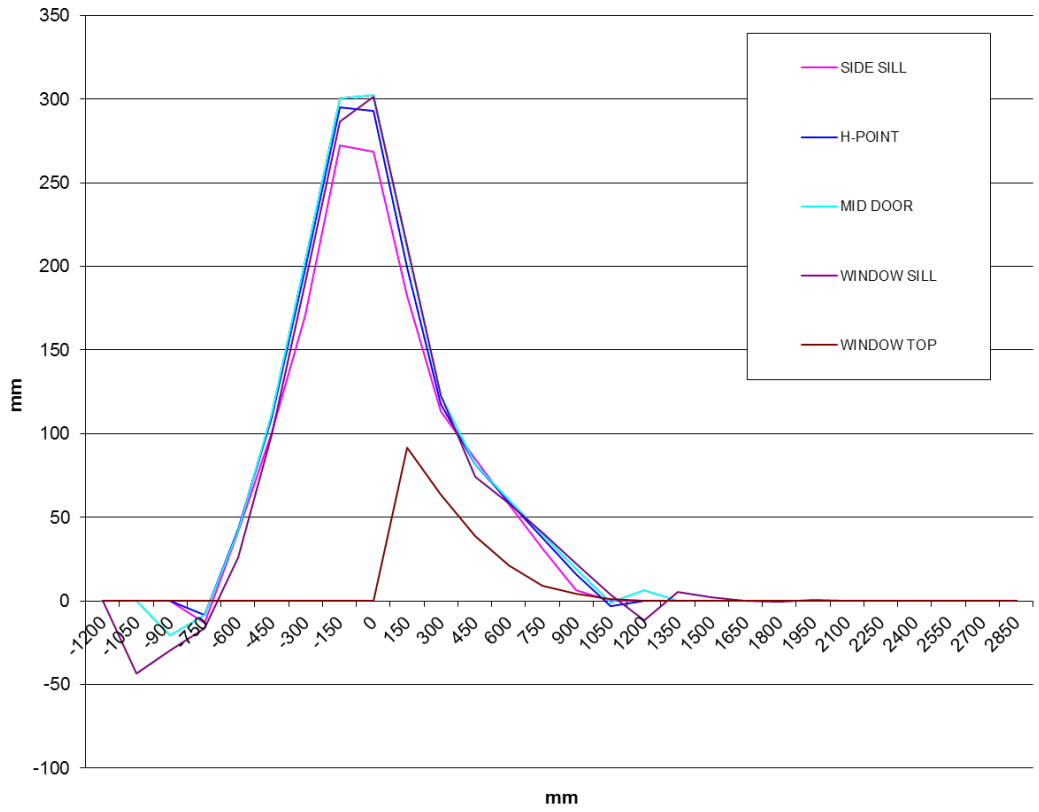
Test Vehicle: 2014 Ford Fiesta 4-Door Sedan NHTSA No.: M20140200
Test Program: SPNCAP Side Impact Test Date: 1/8/14

| | Pre-Test | | | | | Post-Test | | | | | Difference | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| -900 | 0 | 0 | 850 | 766 | 0 | 0 | 0 | 871 | 796 | 0 | 0 | 0 | -21 | -30 | 0 |
| -750 | 829 | 844 | 838 | 774 | 0 | 842 | 853 | 846 | 790 | 0 | -13 | -9 | -8 | -16 | 0 |
| -600 | 830 | 836 | 835 | 831 | 0 | 788 | 793 | 793 | 805 | 0 | 42 | 43 | 42 | 26 | 0 |
| -450 | 833 | 840 | 840 | 803 | 0 | 733 | 730 | 728 | 703 | 0 | 100 | 110 | 112 | 100 | 0 |
| -300 | 833 | 842 | 843 | 813 | 0 | 662 | 643 | 639 | 623 | 0 | 171 | 199 | 204 | 190 | 0 |
| -150 | 832 | 843 | 845 | 822 | 0 | 560 | 548 | 545 | 535 | 0 | 272 | 295 | 300 | 287 | 0 |
| 0 | 830 | 844 | 846 | 829 | 0 | 561 | 551 | 543 | 528 | 0 | 269 | 293 | 303 | 301 | 0 |
| 150 | 827 | 843 | 845 | 818 | 554 | 645 | 643 | 635 | 606 | 462 | 182 | 200 | 210 | 212 | 92 |
| 300 | 822 | 842 | 844 | 834 | 563 | 709 | 724 | 721 | 711 | 500 | 113 | 118 | 123 | 123 | 63 |
| 450 | 817 | 839 | 842 | 830 | 563 | 732 | 757 | 760 | 755 | 524 | 85 | 82 | 82 | 75 | 39 |
| 600 | 809 | 833 | 837 | 821 | 560 | 751 | 774 | 776 | 763 | 538 | 58 | 59 | 61 | 58 | 22 |
| 750 | 800 | 827 | 831 | 813 | 554 | 769 | 790 | 792 | 773 | 545 | 31 | 37 | 39 | 40 | 9 |
| 900 | 805 | 824 | 825 | 809 | 544 | 799 | 807 | 806 | 787 | 540 | 6 | 17 | 19 | 22 | 4 |
| 1050 | 0 | 837 | 833 | 803 | 527 | 0 | 840 | 835 | 799 | 526 | 0 | -3 | -2 | 4 | 1 |
| 1200 | 0 | 0 | 847 | 795 | 0 | 0 | 0 | 840 | 807 | 0 | 0 | 0 | 7 | -12 | 0 |
| 1350 | 0 | 0 | 0 | 786 | 0 | 0 | 0 | 0 | 781 | 0 | 0 | 0 | 0 | 5 | 0 |
| 1500 | 0 | 0 | 0 | 776 | 0 | 0 | 0 | 0 | 774 | 0 | 0 | 0 | 0 | 2 | 0 |
| 1650 | 0 | 0 | 0 | 762 | 0 | 0 | 0 | 0 | 762 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1800 | 0 | 0 | 0 | 746 | 0 | 0 | 0 | 0 | 747 | 0 | 0 | 0 | 0 | -1 | 0 |
| 1950 | 0 | 0 | 0 | 724 | 0 | 0 | 0 | 0 | 724 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2250 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

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

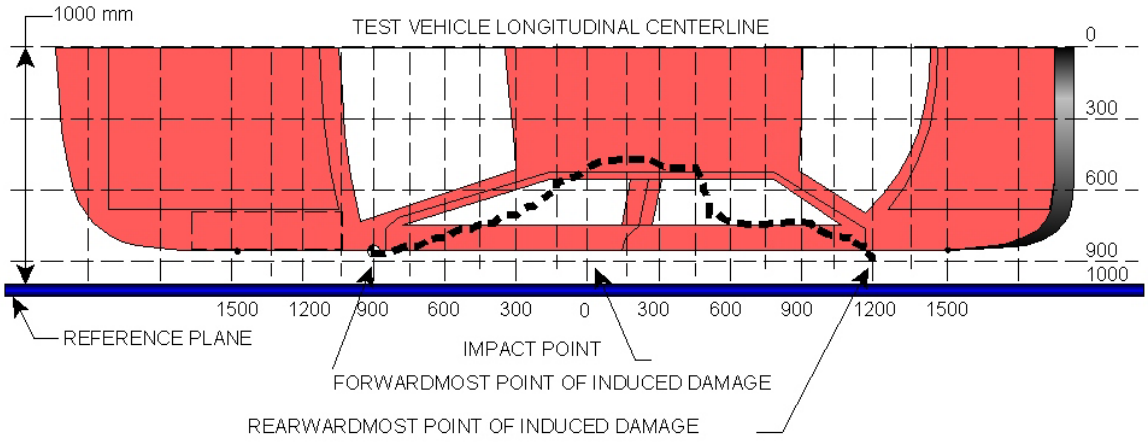
**DATA SHEET NO. 10 (CONTINUED)**
**VEHICLE EXTERIOR CRUSH MEASUREMENTS**

Test Vehicle: 2014 Ford Fiesta 4-Door Sedan NHTSA No.: M20140200
Test Program: SPNCAP Side Impact Test Date: 1/8/14



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

Test Vehicle: 2014 Ford Fiesta 4-Door Sedan
Test Program: SPNCAP Side Impact
NHTSA No.: M20140200
Test Date: 1/8/14




**VEHICLE DAMAGE PROFILE DISTANCES**

| DPD | Distance From Impact Point (mm) | Level | Post-Test (mm) | Pre-Test (mm) | Crush (mm) |
|---|---|---|---|---|---|
| 1 | -600 | 2 | 793 | 836 | 43 |
| 2 | -150 | 3 | 545 | 845 | 300 |
| 3 | 300 | 3 | 721 | 844 | 123 |
| 4 | 750 | 3 | 792 | 831 | 39 |
| 5 | 1200 | 3 | 840 | 847 | 7 |
| 6 | 1500 | 4 | 774 | 776 | 2 |

**DATA SHEET NO. 12**
**FMVSS NO. 301 FUEL SYSTEM INTEGRITY POST-IMPACT DATA**

Test Vehicle: 2014 Ford Fiesta 4-Door Sedan NHTSA No.: M20140200
Test Program: SPNCAP Side Impact Test Date: 1/8/14

**Test Time:** 14:58 **Temperature:** 20.6ºC

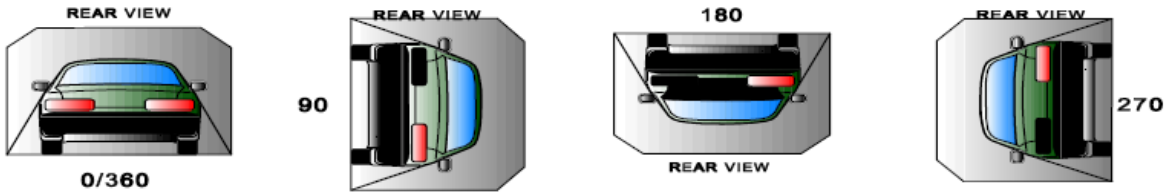
A. From impact until vehicle motion ceases: 0 oz.
(Maximum allowable is 1 ounce)

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 Deta1LS: None

**FMVSS 301 STATIC ROLLOVER DATA**




**ROLLOVER SOLVENT COLLECTION TIME TABLE IN SECONDS**

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

**FMVSS NO. 301 ROLLOVER SPILLAGE TABLE**

| Test Phase | First 5 Minutes | Sixth Minute | Seventh Minute | Eighth Minute |
|---|---|---|---|---|
| 0 to 90 | 0 | 0 | 0 | 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 |

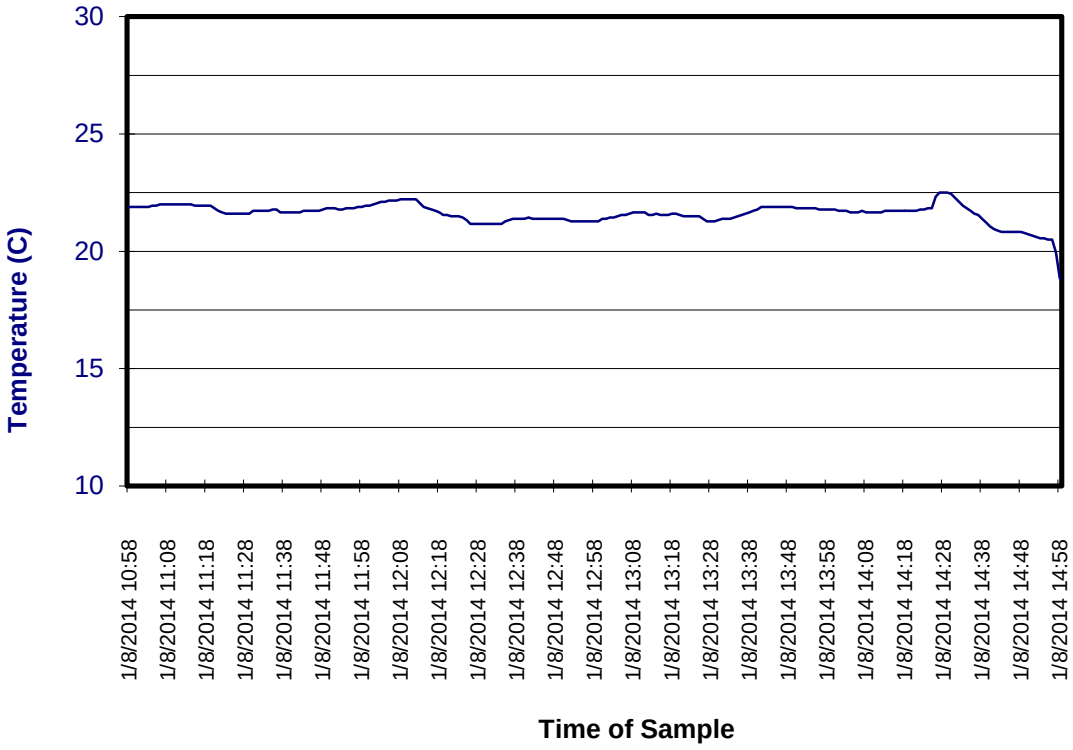
**ROLLOVER SOLVENT SPILLAGE LOCATION TABLE**

| 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: 2014 Ford Fiesta 4-Door Sedan NHTSA No.: M20140200
Test Program: SPNCAP Side Impact Test Date: 1/8/14

**M20140200 2014 Ford Fiesta 4-Door Sedan**
**75 Degree Oblique Rigid Pole Impact 140108; Test Time 14:58**



**APPENDIX A**

**PHOTOGRAPHS**

## TABLE OF PHOTOGRAPHS

## TABLE OF PHOTOGRAPHS (CONTINUED)

**001** As Delivered Right Front 3-4 View of Test Vehicle

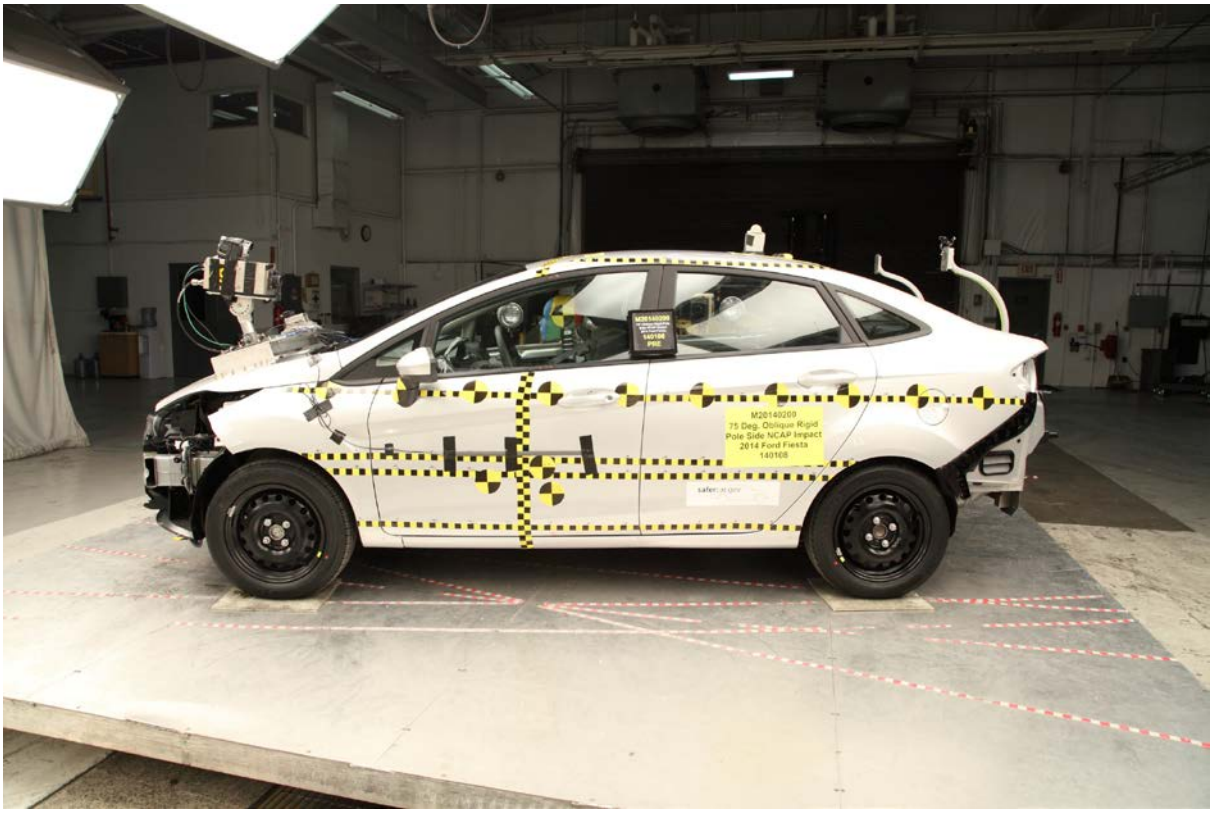
**002** As Delivered Left Rear 3-4 View of Test Vehicle


**003** Pre-Test Frontal View of Test Vehicle


**004** Post-Test Frontal View of Test Vehicle


**005** Pre-Test Left Front 3-4 View of Test Vehicle


**006** Post-Test Left Front 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 3-4 View of Test Vehicle

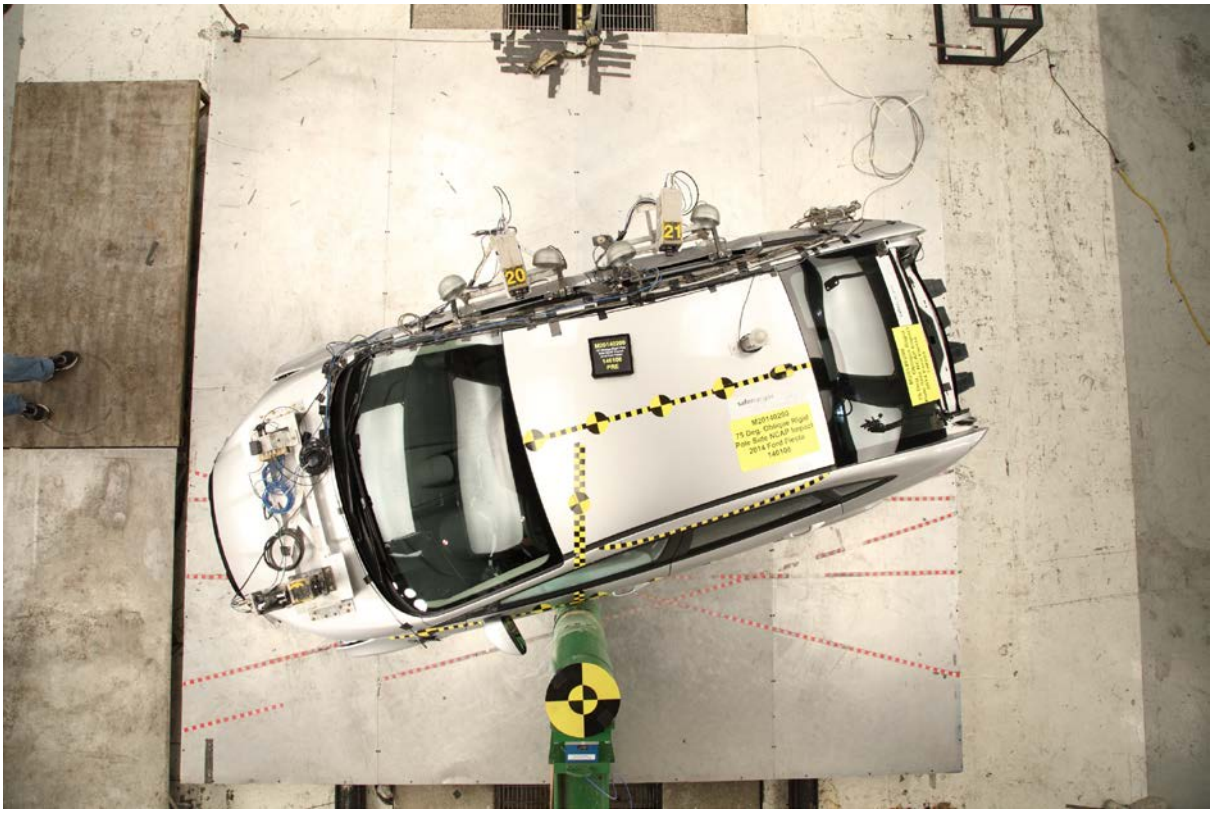

**010** Post-Test Left Rear 3-4 View of Test Vehicle


**011** Pre-Test Rear View of Test Vehicle

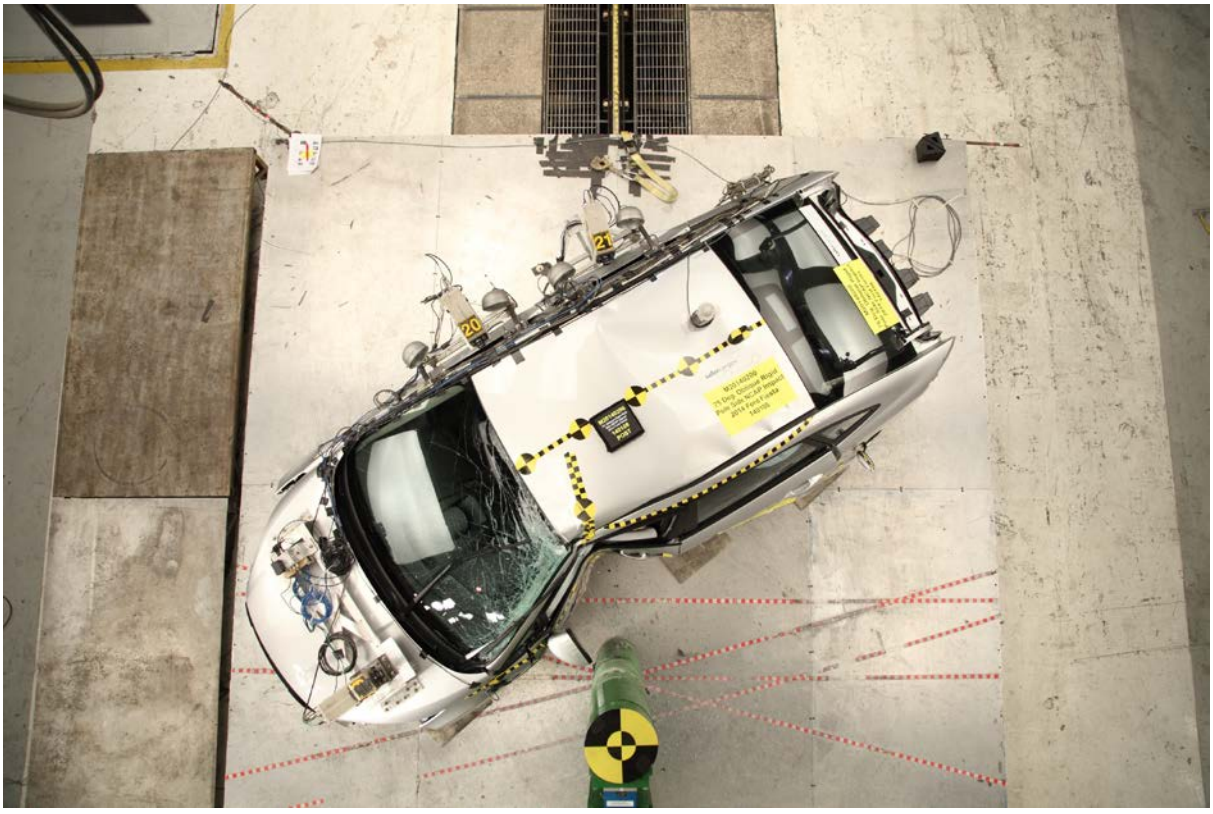

**012** Post-Test Rear View of Test Vehicle


**013** Pre-Test Right Side View of Test Vehicle


**014** Post-Test Right Side View of Test Vehicle

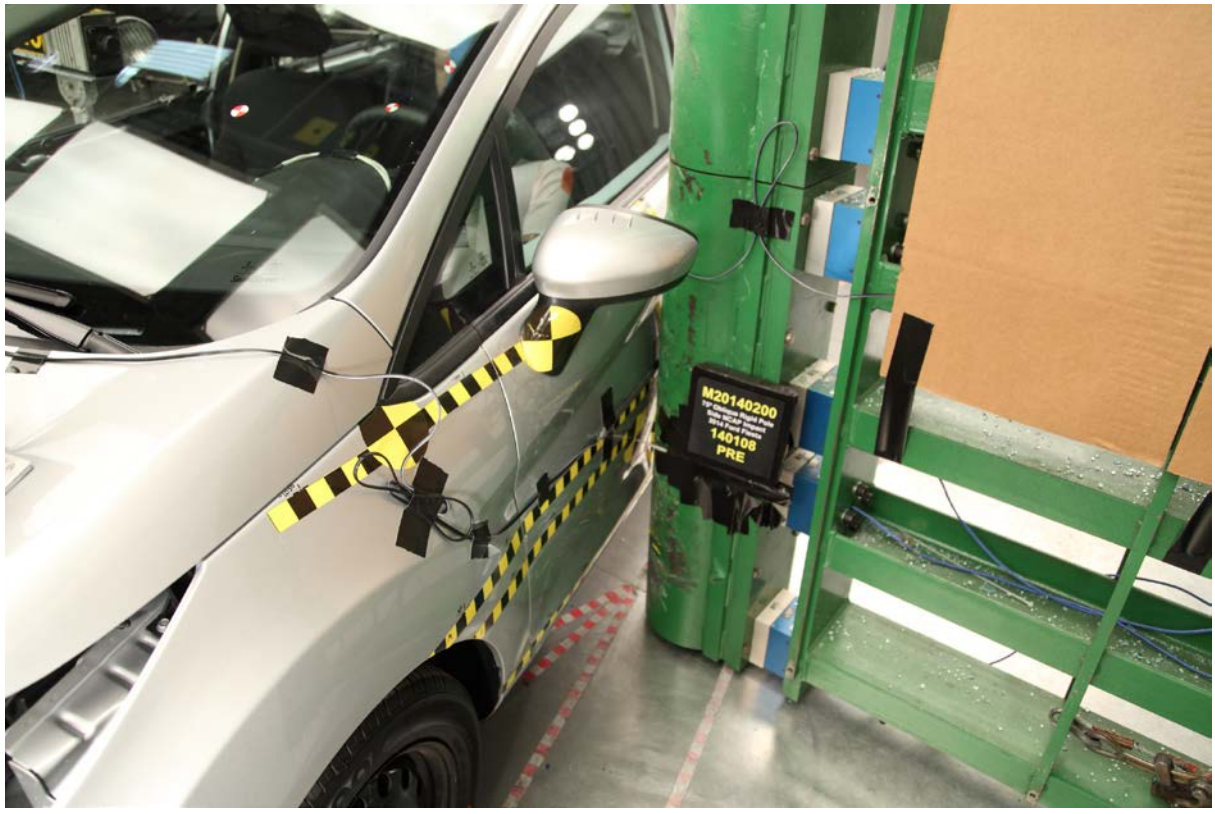


**015** Pre-Test Overhead View of Test Area



**016** Post-Test Overhead View of Test Area

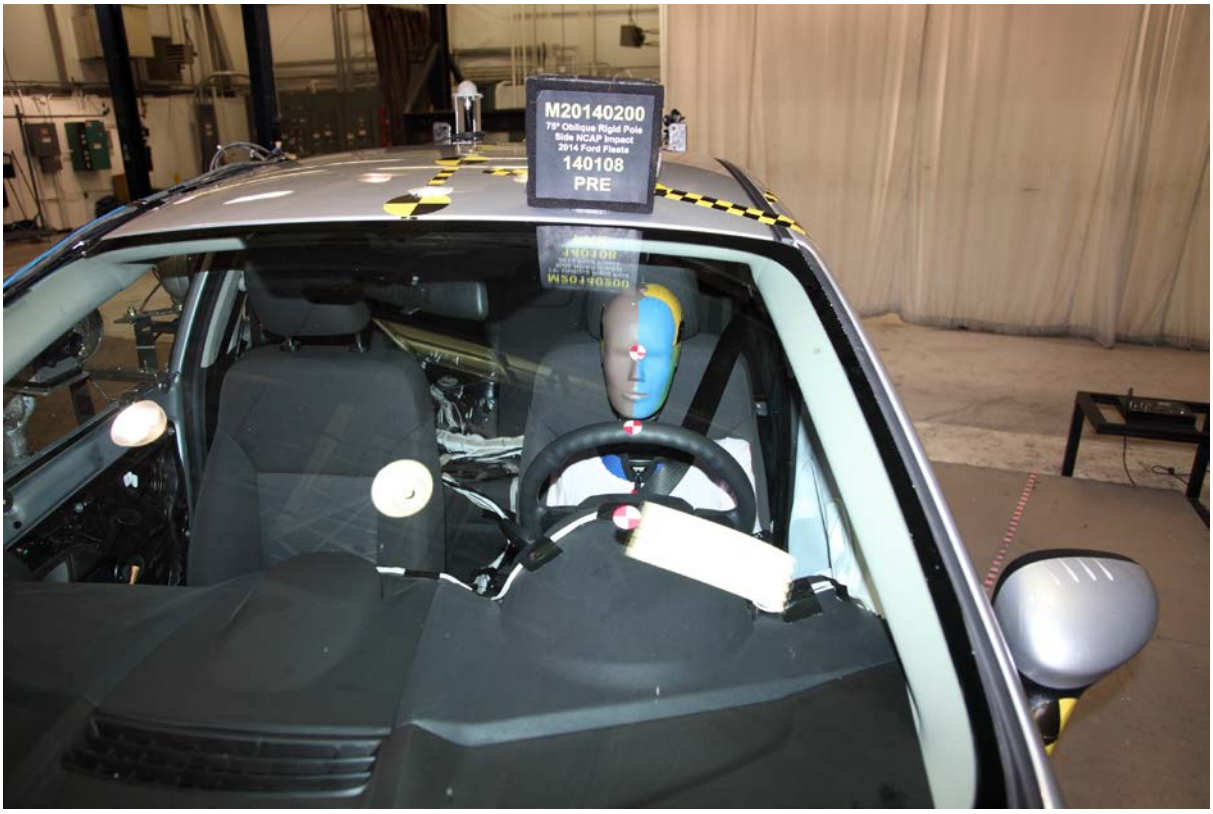

**017** Pre-Test Left Side View of Pole Positioned Against Side of Vehicle




**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



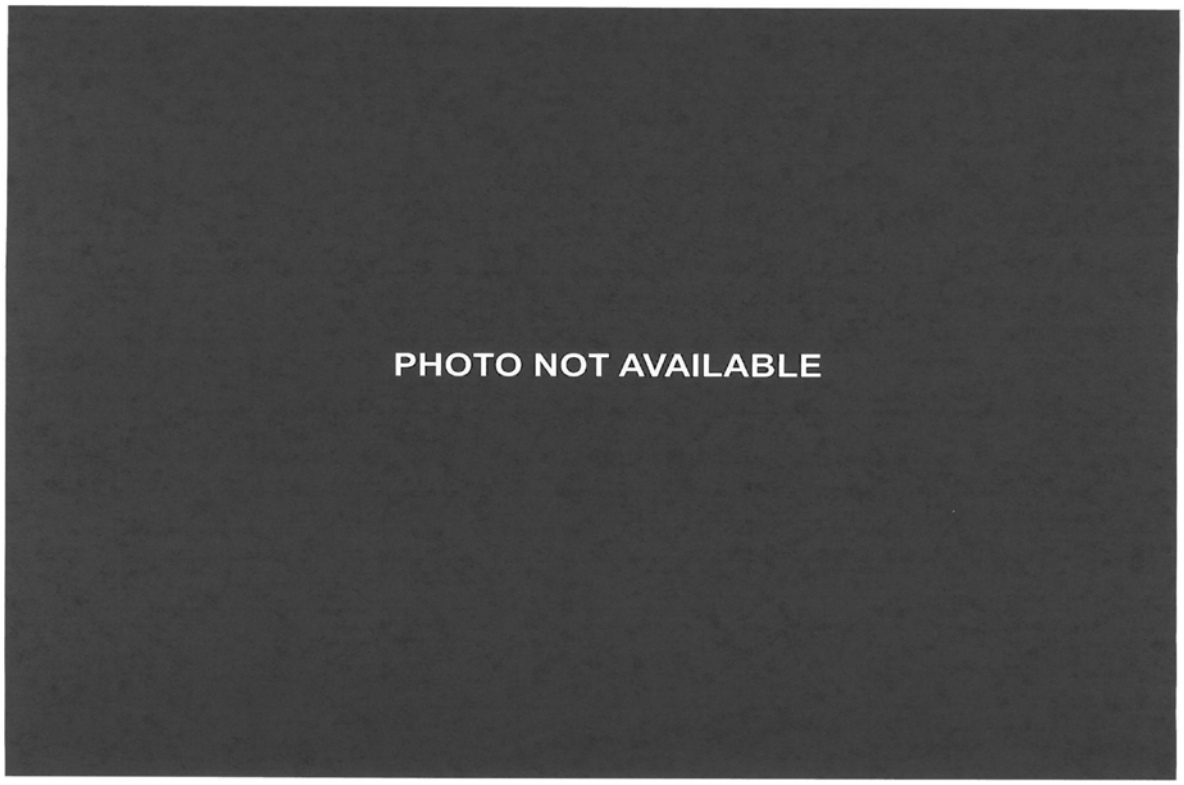

**021** Pre-Test Front Close-Up View of Dummy Head and Chest


**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

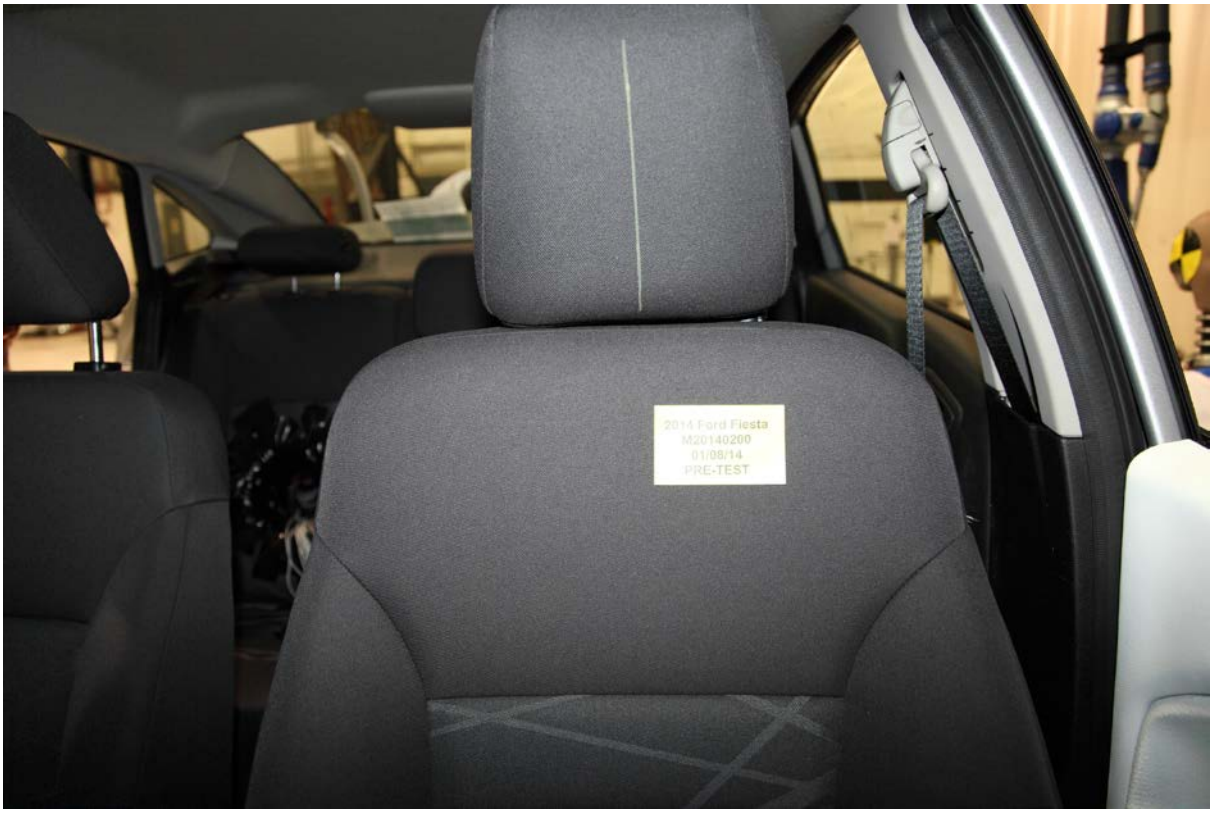

**034** Pre-Test Left Side View of Steering Wheel


**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

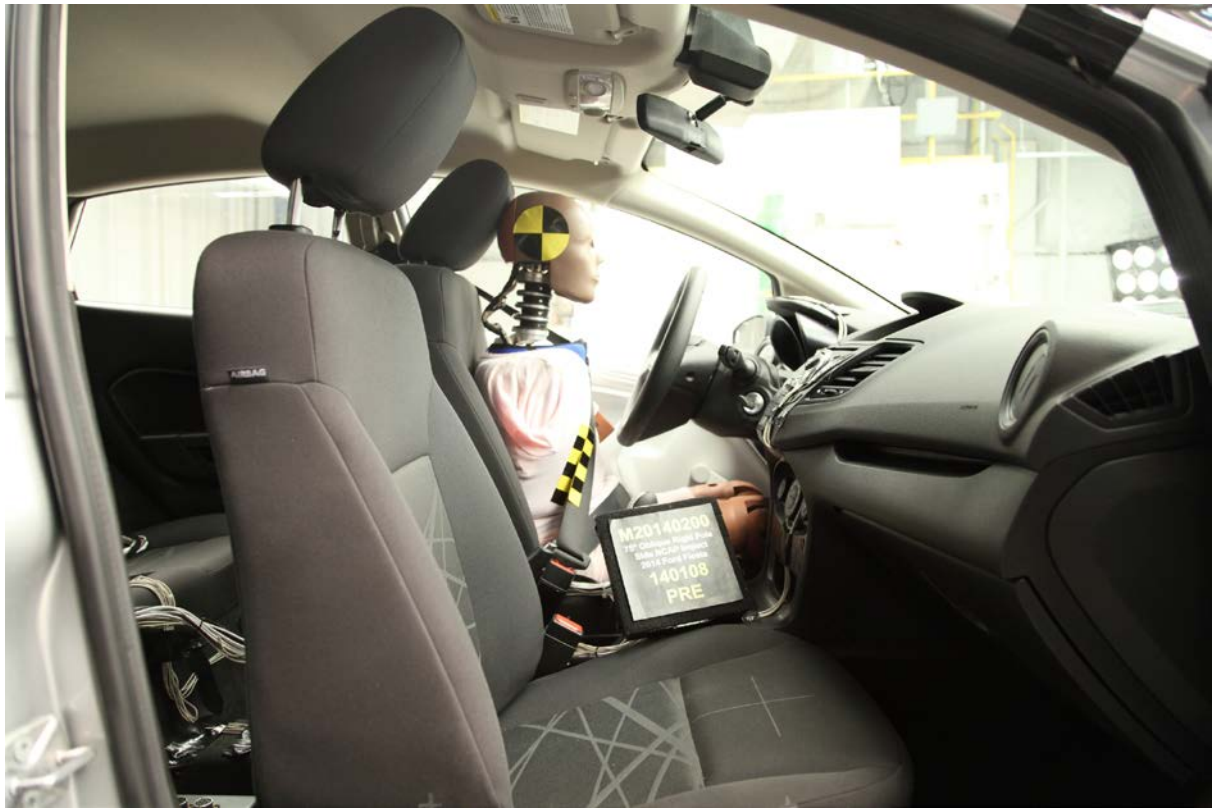

**038** Pre-Test Close-Up Left Side View of Driver Seat Back




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


**040** Pre-Test Dummy and Door Clearance View

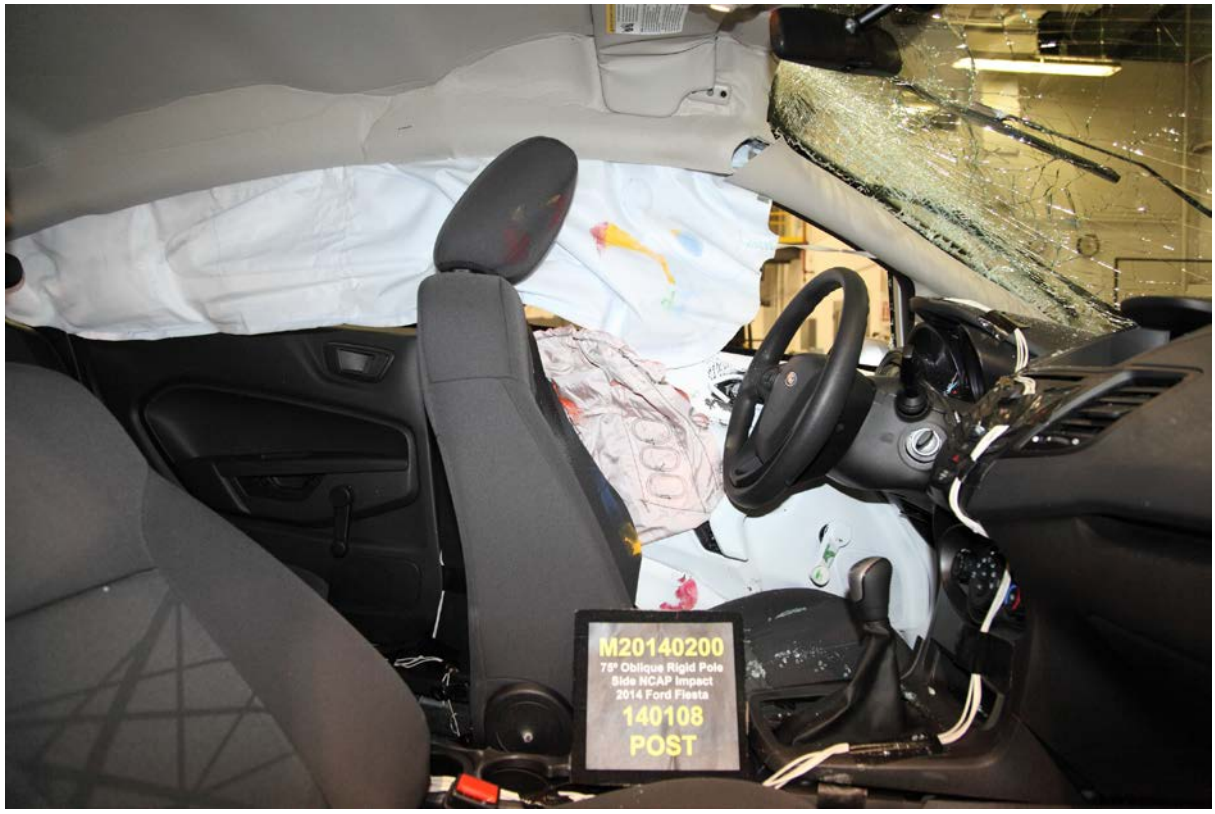

**041** Post-Test Dummy and Door Clearance View




**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

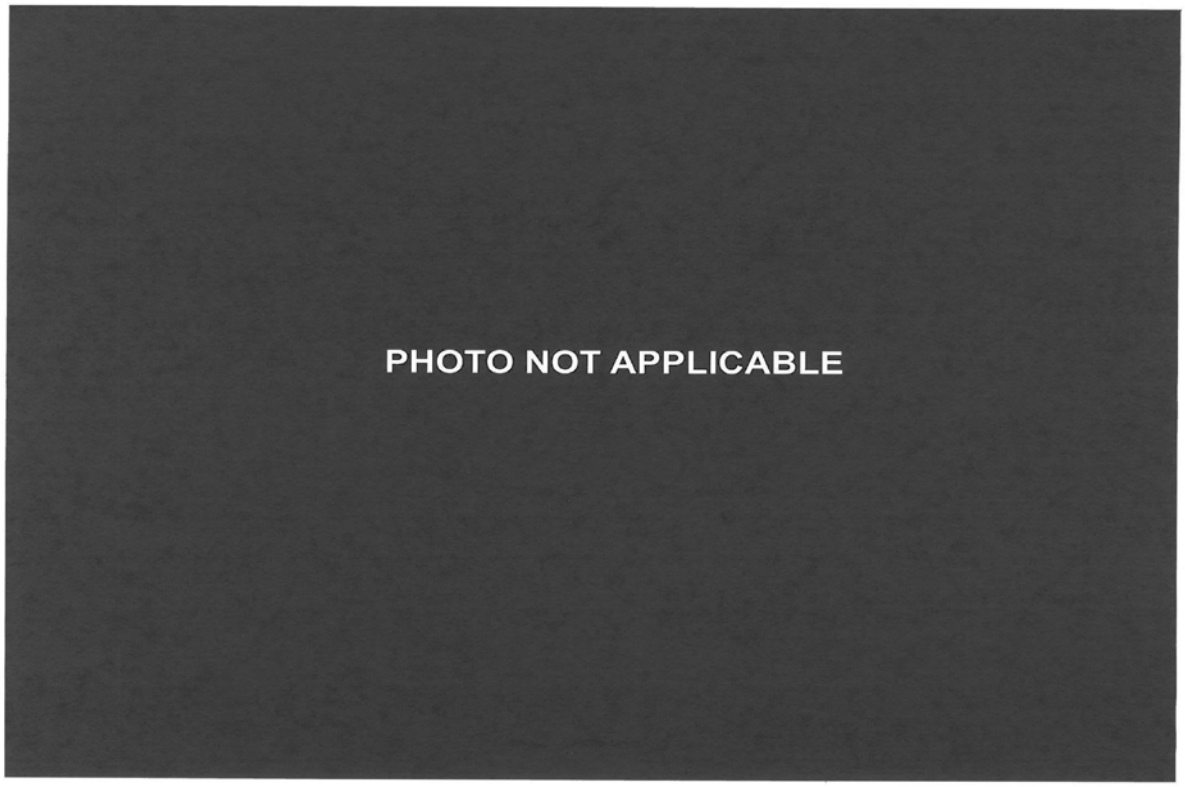

**046** Post-Test Dummy Close-Up Head Contact with Vehicle View


**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

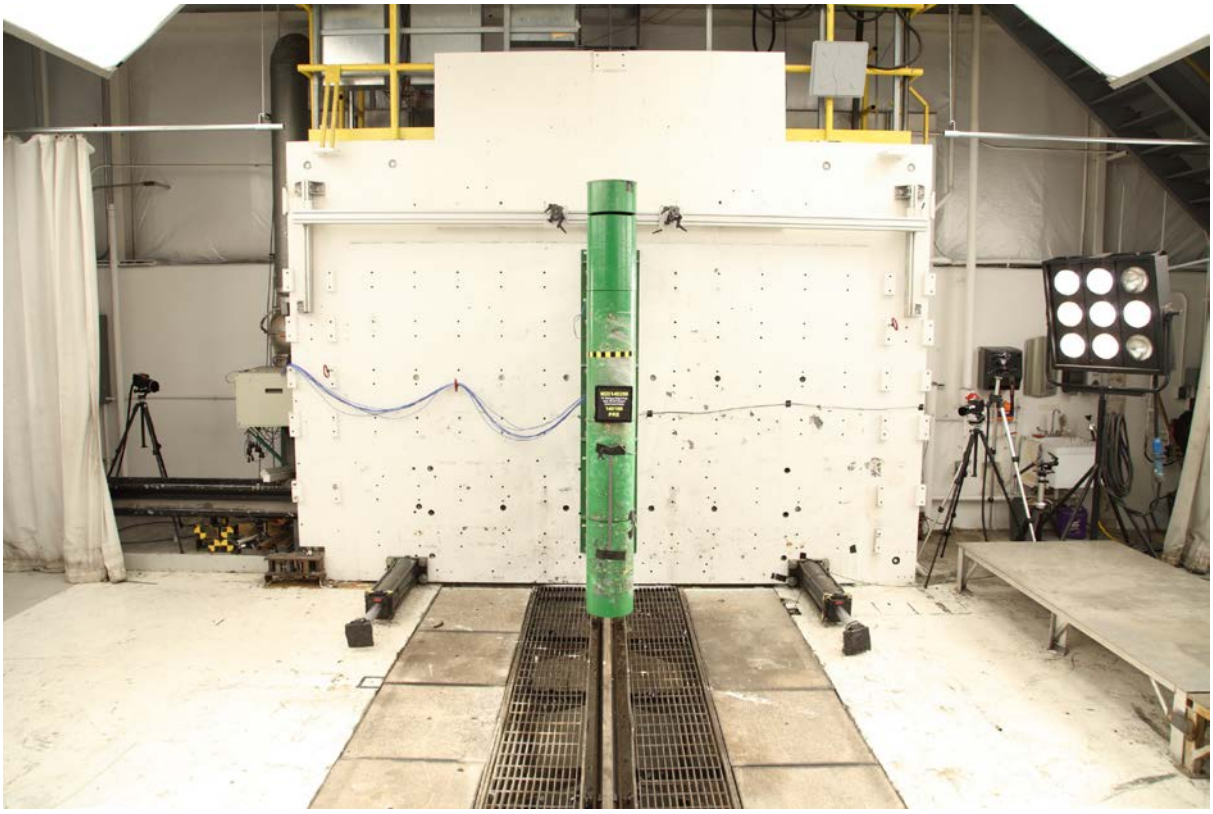

**052** Post-Test Dummy Close-Up Knee Contact with Vehicle Interior View


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

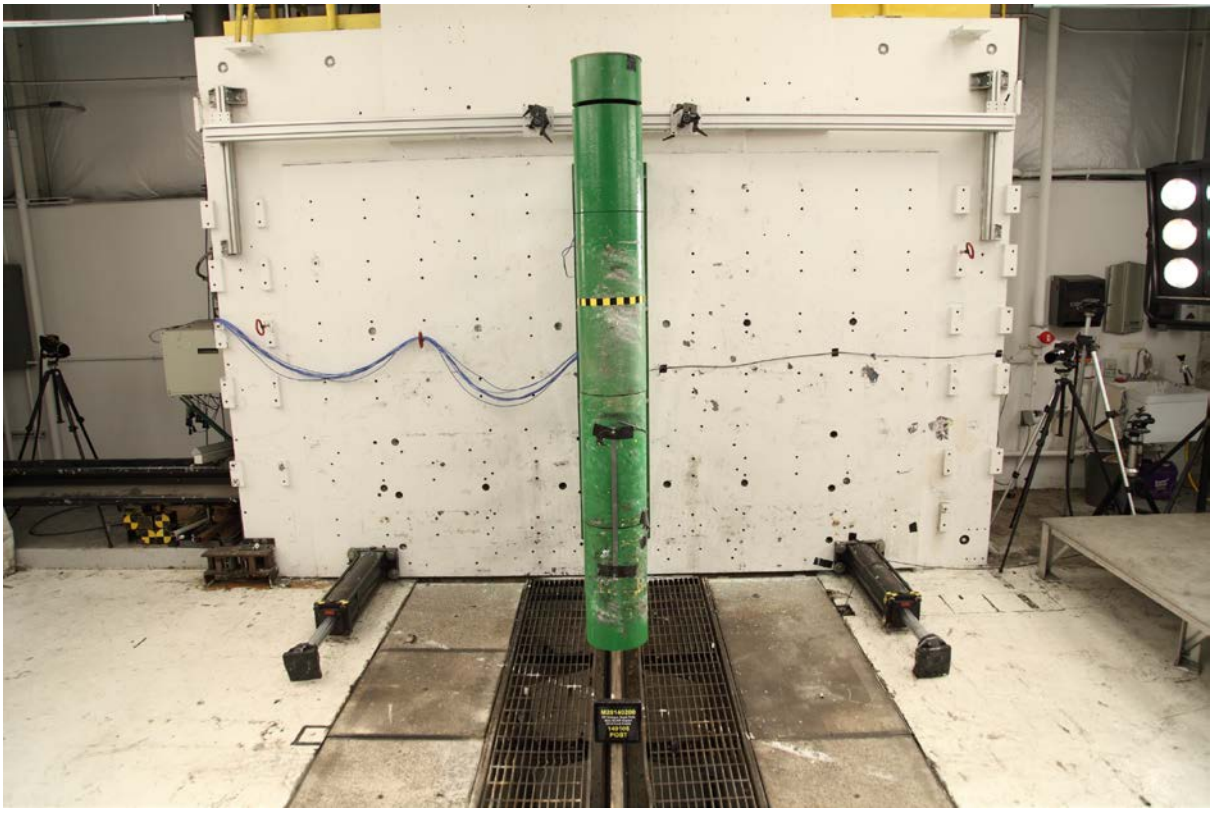

**054** Post-Test View of Fuel Filler Cap or Fuel Filler Neck


**055** Close-Up View of Vehicle Certification Label


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

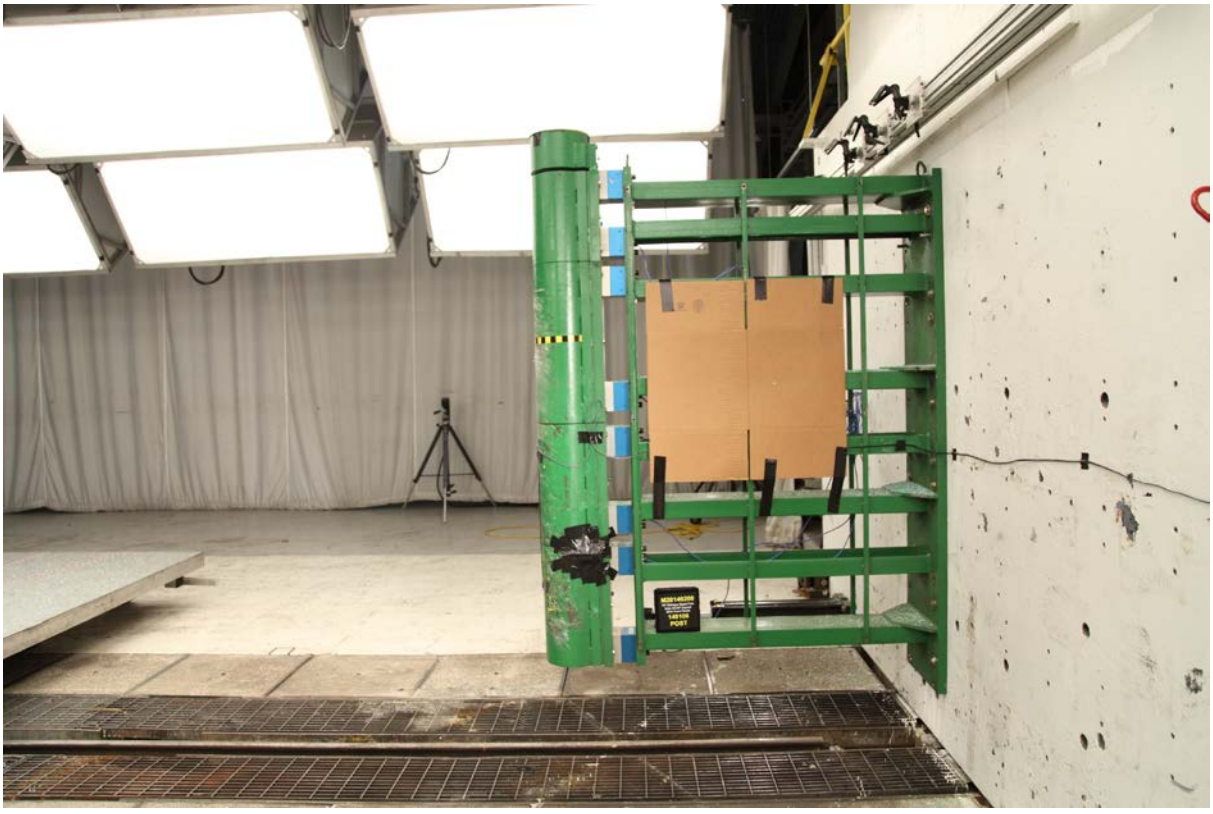


**057** Pre-Test Pole Barrier Front View



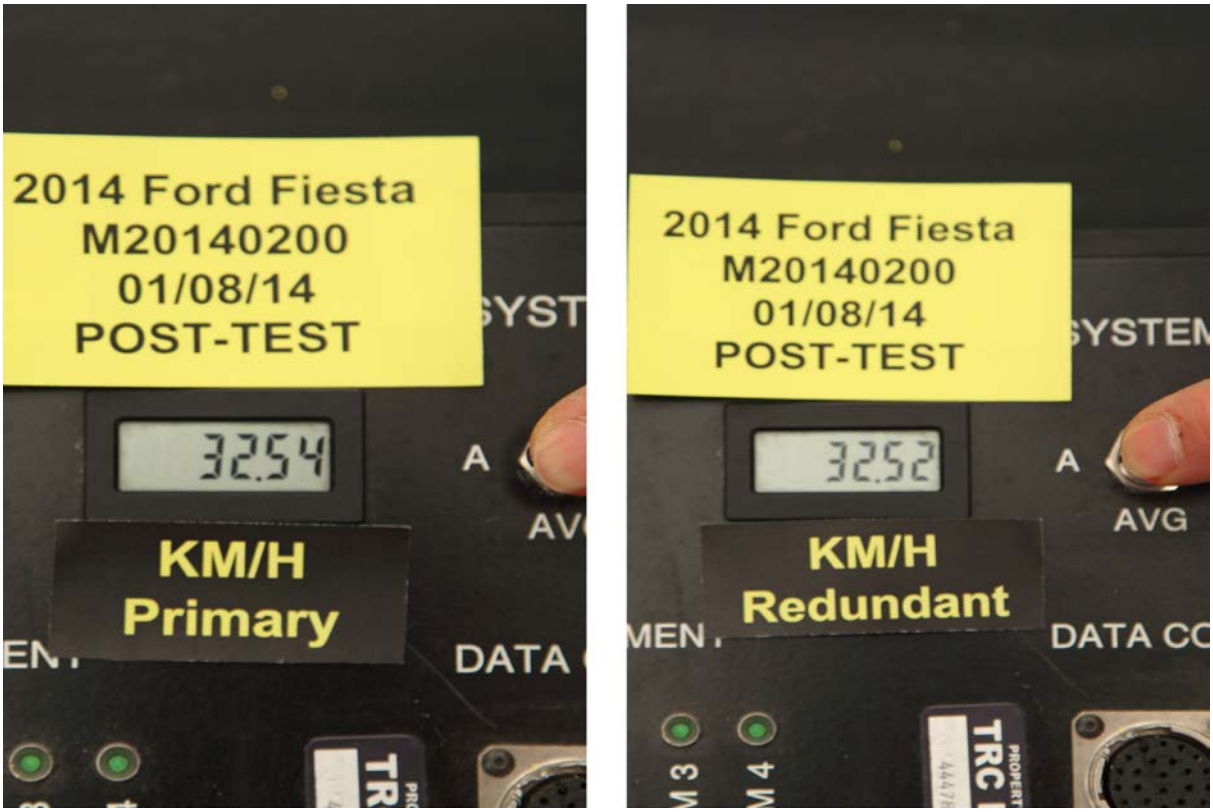
**058** Post-Test Pole Barrier Front View

**059** Pre-Test Pole Barrier Side View

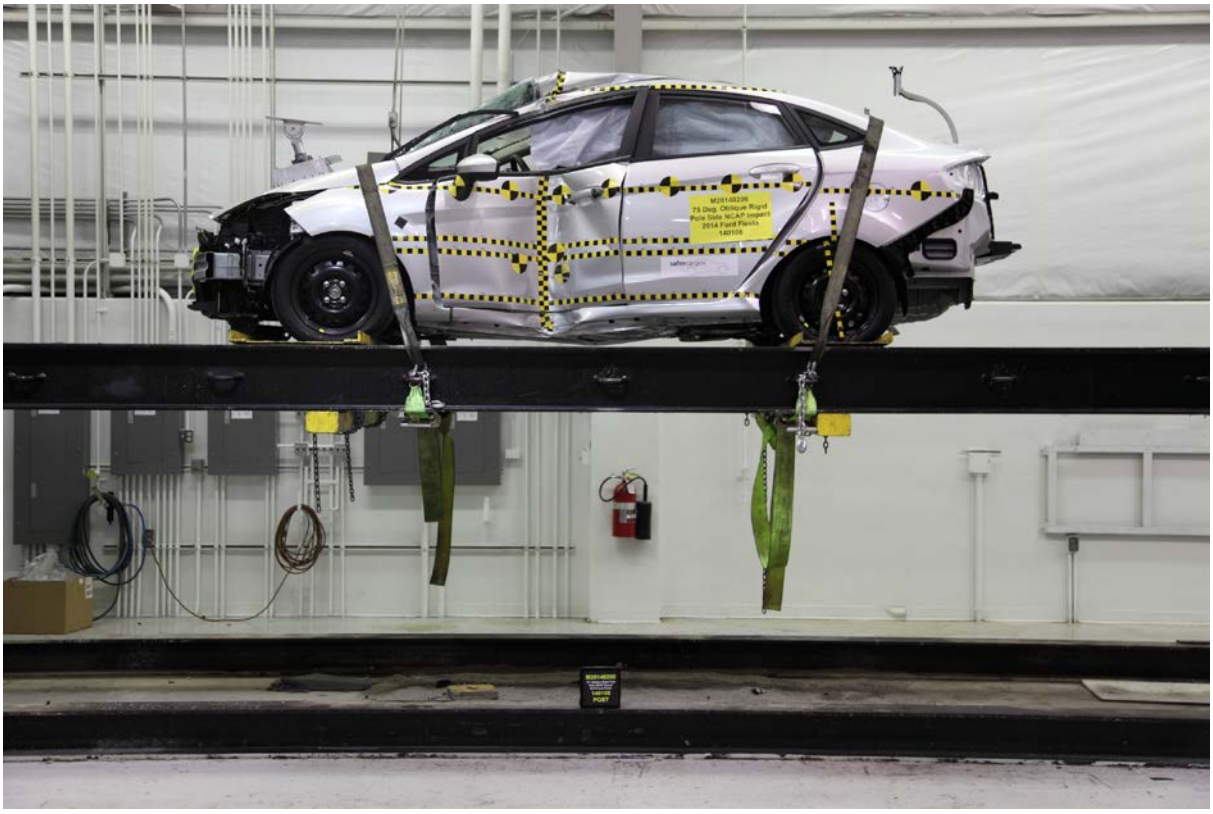


**060** Post-Test Pole Barrier Side View

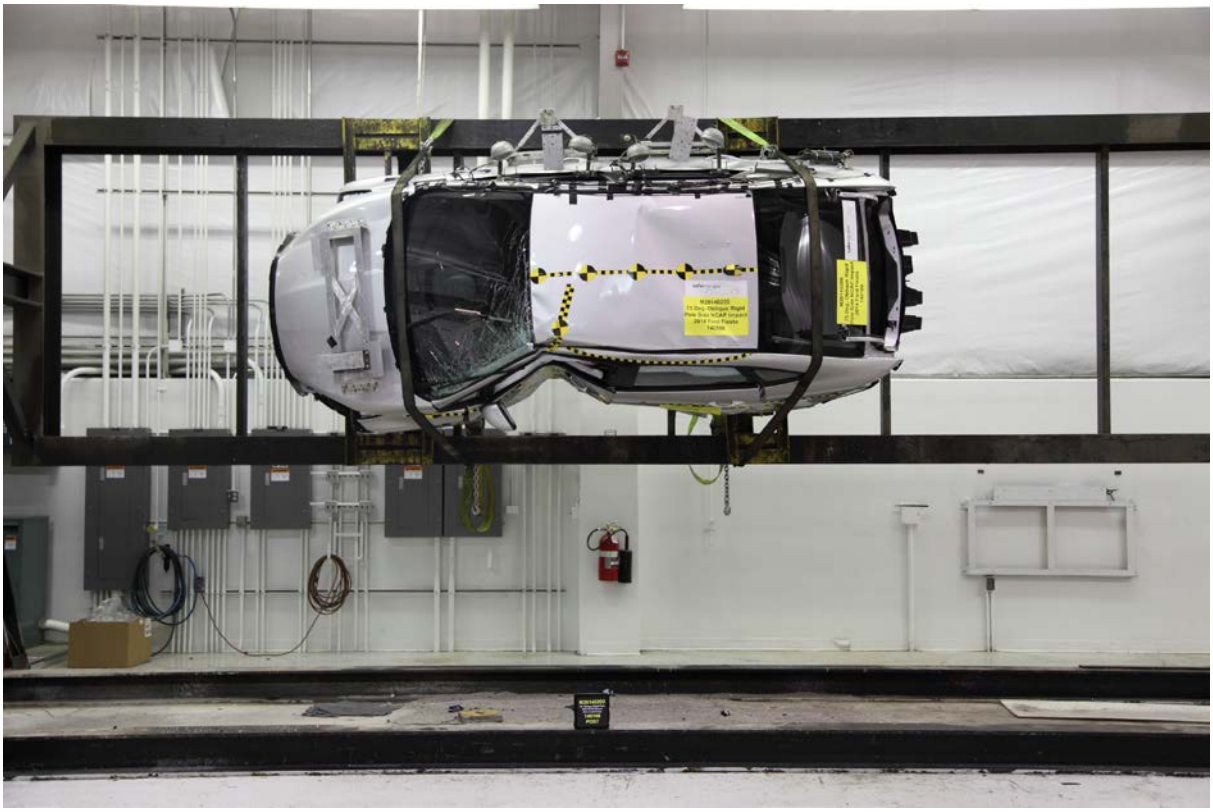

**061** Pre-Test Ballast View



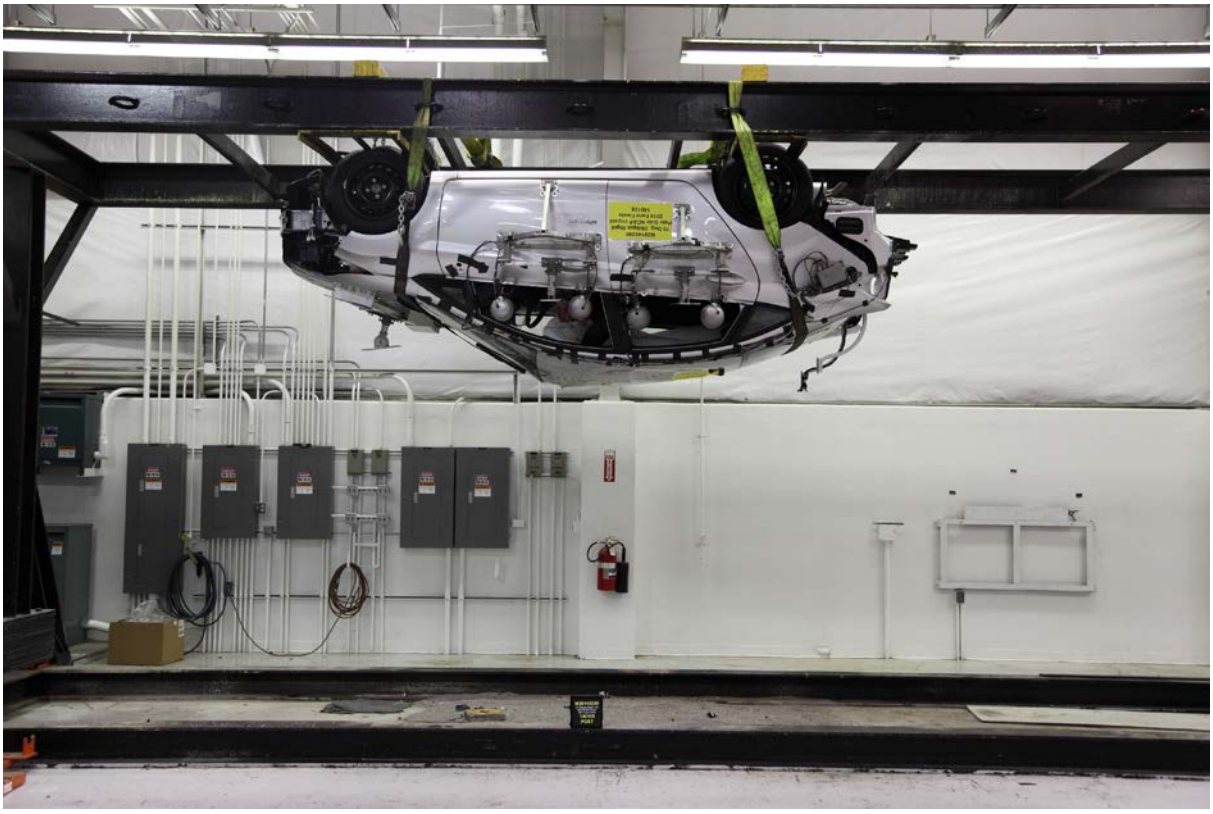

**062** Post-Test Primary and Redundant Speed Trap Read-Out



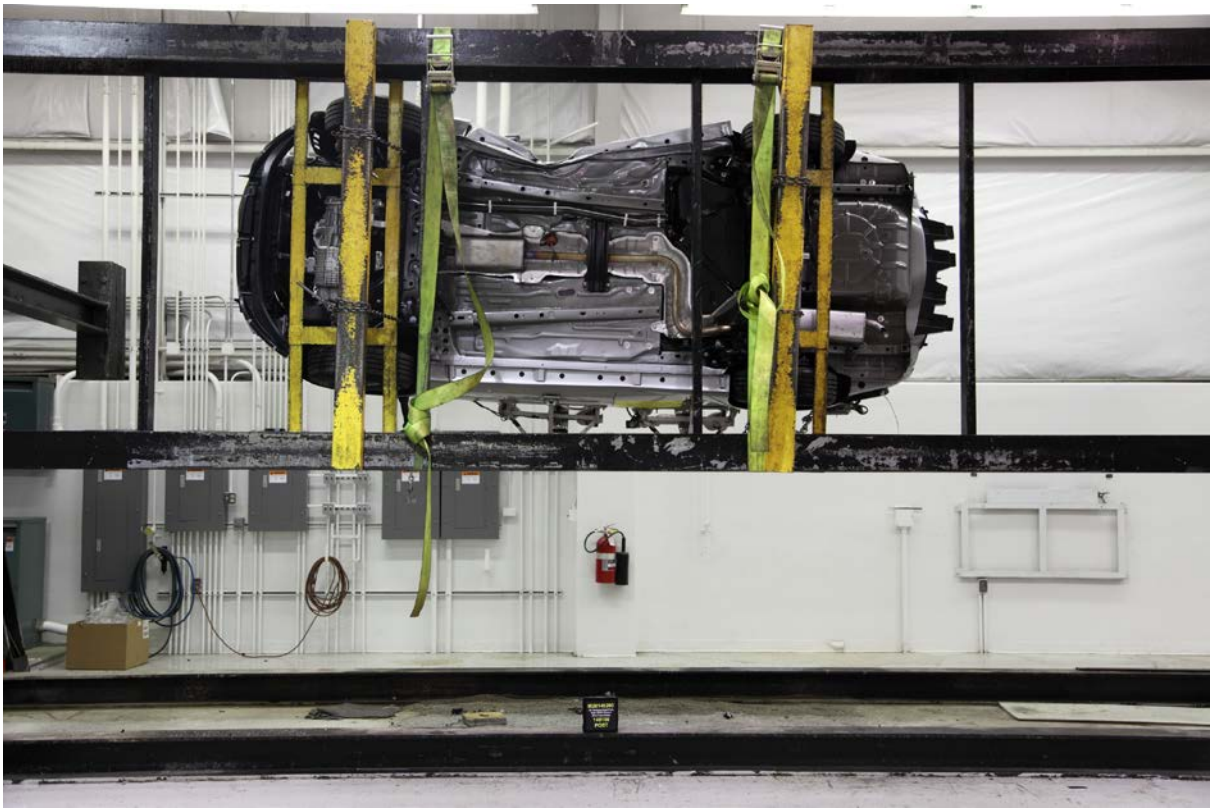
**063** FMVSS No. 301 Static Rollover 0 Degrees



**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

VEHICLE DESCRIPTION
FIESTA
2014 4-DOOR SEDAN S
5-PASSENGER
1.6L TIVCT DURATECH DOHC I4
5-SPD MANUAL TRANSMISSION
EM 148120
EXTERIOR
INGOT SILVER METALLIC
INTERIOR
CHARCOAL BLACK CLOTH SEATS

Go Further
ford.com

STANDARD EQUIPMENT INCLUDED AT NO EXTRA CHARGE

EXTERIOR
• 16" STEEL WHEELS
• DUAL POWER MIRRORS
• EASY FUEL CAPLESS FILLER
• GRILLE - 5 BAR, CHROME
• INTEGRATED SPOTTER MIRRORS

INTERIOR
• BUCKET SEATS-MANUAL 6-WAY DRIVER, 4-WAY FRONT PASS
• 60/40 SPLIT FOLD REAR SEAT
• DUAL VANITY MIRRORS
• FRONT FLOOR MATS
• TILT/TELESCOPE COLUMN

FUNCTIONAL
• ADVANCETRAC W/ESC
• AIR CONDITIONING
• AM/FM SINGLE CD/MP3, 6SPKR
• DOME LAMP & MAP LIGHTS
• FRONT DISC REAR DRUM BRAKES (ABS)
• MESSAGE CENTER
• POWER LOCKS
• 12V POWERPOINT
• POWER STEERING W/EPAS
• REAR WINDOW DEFROSTER
• SYNC
• VARIABLE INTERVAL WIPERS

SAFETY/SECURITY
• ADJUSTABLE SAFETY BELTS
• AIRBAG - DRIVER KNEE
• AIRBAGS - DUAL STAGE FRONT
• AIRBAGS - FRONT SEAT MOUNTED SIDE IMPACT
• AIRBAGS - SIDE AIR CURTAIN
• CHILDPROOF REAR DOOR LOCKS
• SECURITY ANTI-THEFT ENGINE IMMOBILIZER
• TIRE PRESSURE MONITOR SYS

WARRANTY
• 3YR/36,000 BUMPER / BUMPER
• 5YR/60,000 POWERTRAIN
• 5YR/60,000 ROADSIDE ASSIST

| INCLUDED ON THIS VEHICLE | (MSRP) |
|---|---|
| EQUIPMENT GROUP 100A | |
| OPTIONAL EQUIPMENT | |
| SYNC VOICE ACTIVATED SYSTEMS | |
| FRONT LICENSE PLATE BRACKET | NO CHARGE |
| CALIFORNIA EMISSIONS SYSTEM | NO CHARGE |

| PRICE INFORMATION | (MSRP) |
|---|---|
| BASE PRICE | $14,000.00 |
| TOTAL OPTIONS | |
| TOTAL VEHICLE & OPTIONS | 14,000.00 |
| DESTINATION & DELIVERY | 795.00 |

| SOLD TO | 44F 054 | RAMP ONE | DEALER NO. | TOTAL MSRP $14,795.00 |
|---|---|---|---|---|
| Genesee Valley Ford, LLC<br>1675 Interstate Drive<br>Avon NY 14414 | | RA43 | 44F 054 | This label is affixed pursuant to the Federal Automobile Information Disclosure Act. Gasoline, License, and Title Fees, State and Local taxes are not included. Dealer installed options or accessories are not included unless listed above. |
| SHIP TO (IF OTHER THAN SOLD TO) | | RAMP TWO | FINAL ASSEMBLY PLANT | |
| | | | CUAUTITLAN | |
| SHIP THROUGH | | METHOD OF TRANSP. | ITEM #: 44-D100 O/T 2 | |
| | | RAIL | DH231 N RA 2X 415 001579 08 23 13 | |

EPA DOT Fuel Economy and Environment — Gasoline Vehicle

Fuel Economy
31 MPG
combined city/hwy
27 city
38 highway
3.2 gallons per 100 miles
Subcompacts range from 14 to 112 MPG. The best vehicle rates 121 MPGe.

You save $3,000 in fuel costs over 5 years compared to the average new vehicle.

Annual fuel cost $1,700

Fuel Economy & Greenhouse Gas Rating (tailpipe only): 8 (1 Worst, 10 Best)
Smog Rating (tailpipe only): 6 (1 Worst, 10 Best)
This vehicle emits 284 grams $CO_2$ per mile. The best emits 0 grams per mile (tailpipe only). Producing and distributing fuel also creates emissions; learn more at fueleconomy.gov.

Actual results will vary for many reasons, including driving conditions and how you drive and maintain your vehicle. The average new vehicle gets 23 MPG and costs $11,500 to fuel over 5 years. Cost estimates are based on 15,000 miles per year at $2.50 per gallon. MPGe is miles per gasoline gallon equivalent. Vehicle emissions are a significant cause of climate change and smog.

fueleconomy.gov
Calculate personalized estimates and compare vehicles

Smartphone QR Codes

GOVERNMENT 5-STAR SAFETY RATINGS

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

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

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

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

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

3FADP4AJ8EM148120

IIHS Ratings
Top Safety Pick Award Winner

| | |
|---|---|
| Frontal Offset | GOOD |
| Side Impact | GOOD |
| Rear Impact | GOOD |
| Roof Strength | GOOD |

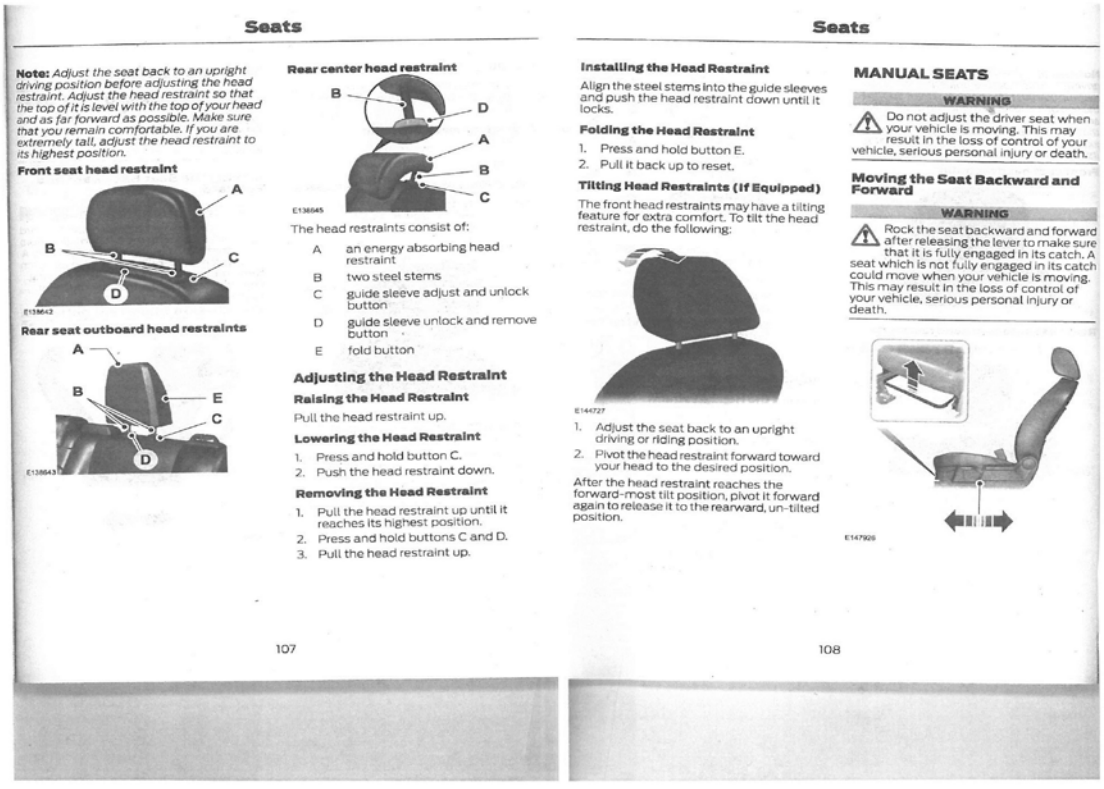
The Institute rates vehicles Good, Acceptable, Marginal, or Poor based on performance.

Scan this code to experience this vehicle or text 3FEM148120 to 48028 or Visit ford.com/windowsticker
Standard messaging & data plan rates may apply.

Ford Extended Service Plan — Ford ESP is the only extended service plan honored at every Ford dealership in the U.S. and Canada. See your dealer for additional details or visit www.FordOwner.com for more information.

FordCredit — Choose the vehicle you want. Whether you decide to lease or finance, you'll find the choices that are right for you. See your Ford Dealer for details or visit www.FordCredit.com.

**069** Monroney Label



## Seats

**Note:** *Adjust the seat back to an upright driving position before adjusting the head restraint. Adjust the head restraint so that the top of it is level with the top of your head and as far forward as possible. Make sure that you remain comfortable. If you are extremely tall, adjust the head restraint to its highest position.*

**Front seat head restraint**




**Rear seat outboard head restraints**




**Rear center head restraint**




The head restraints consist of:

| | |
|---|---|
| A | an energy absorbing head restraint |
| B | two steel stems |
| C | guide sleeve adjust and unlock button |
| D | guide sleeve unlock and remove button |
| E | fold button |

### Adjusting the Head Restraint

**Raising the Head Restraint**

Pull the head restraint up.

**Lowering the Head Restraint**

1. Press and hold button C.
2. Push the head restraint down.

**Removing the Head Restraint**

1. Pull the head restraint up until it reaches its highest position.
2. Press and hold buttons C and D.
3. Pull the head restraint up.



## Seats

**Installing the Head Restraint**

Align the steel stems into the guide sleeves and push the head restraint down until it locks.

**Folding the Head Restraint**

1. Press and hold button E.
2. Pull it back up to reset.

**Tilting Head Restraints (If Equipped)**

The front head restraints may have a tilting feature for extra comfort. To tilt the head restraint, do the following:




1. Adjust the seat back to an upright driving or riding position.
2. Pivot the head restraint forward toward your head to the desired position.

After the head restraint reaches the forward-most tilt position, pivot it forward again to release it to the rearward, un-tilted position.

### MANUAL SEATS

**WARNING**

Do not adjust the driver seat when your vehicle is moving. This may result in the loss of control of your vehicle, serious personal injury or death.

**Moving the Seat Backward and Forward**

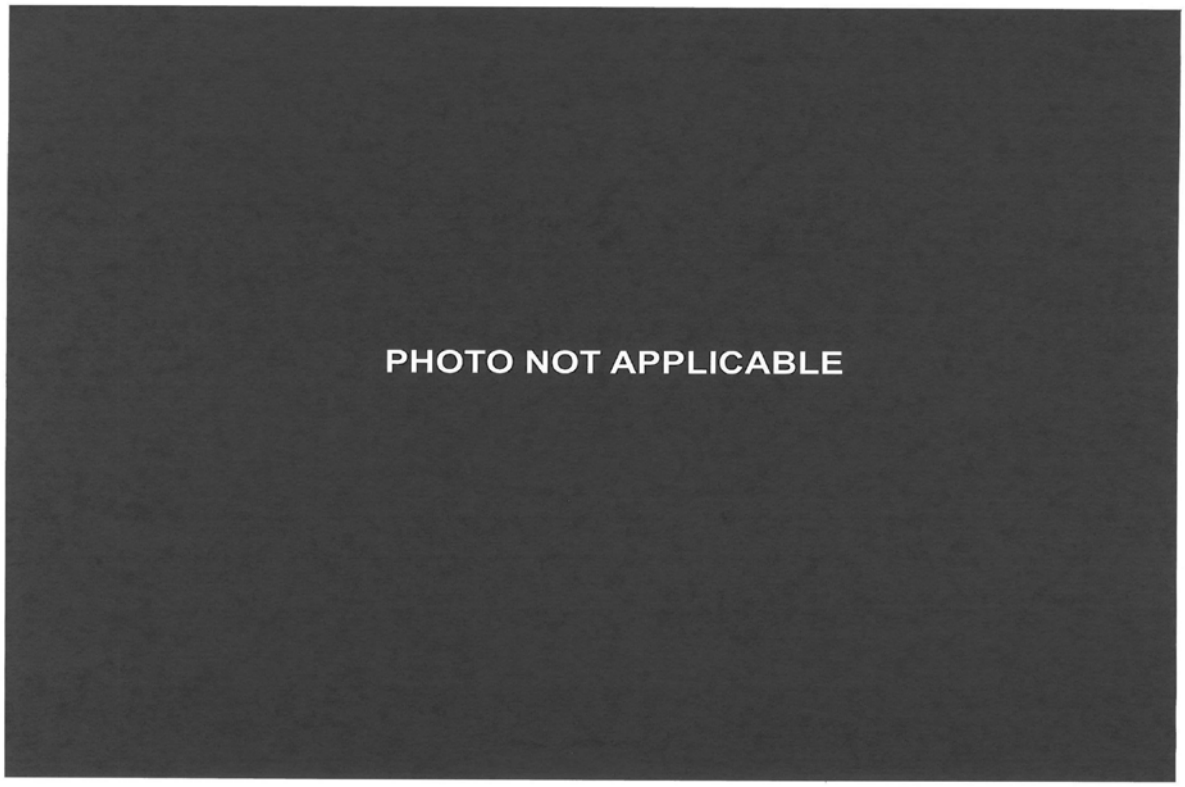
**WARNING**

Rock the seat backward and forward after releasing the lever to make sure that it is fully engaged in its catch. A seat which is not fully engaged in its catch could move when your vehicle is moving. This may result in the loss of control of your vehicle, serious personal injury or death.






**070** Head Restraint Use and Adjustment Information from Vehicle Owner Manual




**071** Post-Test View of Shattered Vehicle Inner Door Panel

# APPENDIX B
# VEHICLE AND DUMMY RESPONSE DATA PLOTS

## TABLE OF DATA PLOTS



The following additional data for this test can be obtained from the Research and Development section of the NHTSA website. The website can be found at: www.nhtsa.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 (Y)
Load Cell Pole Barrier #2 Force (Y)
Load Cell Pole Barrier #3 Force (Y)
Load Cell Pole Barrier #4 Force (Y)
Load Cell Pole Barrier #5 Force (Y)
Load Cell Pole Barrier #6 Force (Y)
Load Cell Pole Barrier #7 Force (Y)
Load Cell Pole Barrier #8 Force (Y)

**NHTSA**

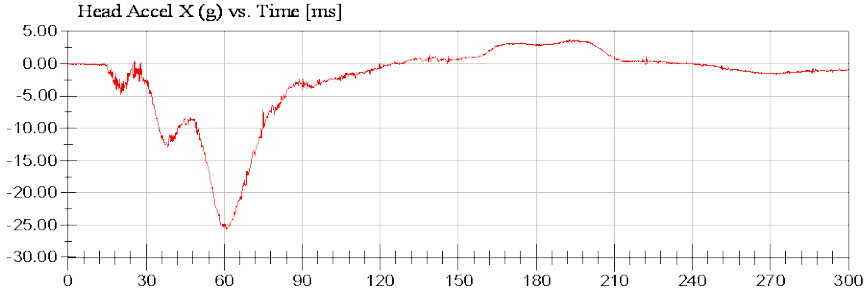
Test Date: 01/08/2014

Position #1 SID IIs Dummy (DI8818)

Test Lab: CTF

Test Number: 140108 (M20140200)

Head Accel X (g) vs. Time [ms]




**<Max>**

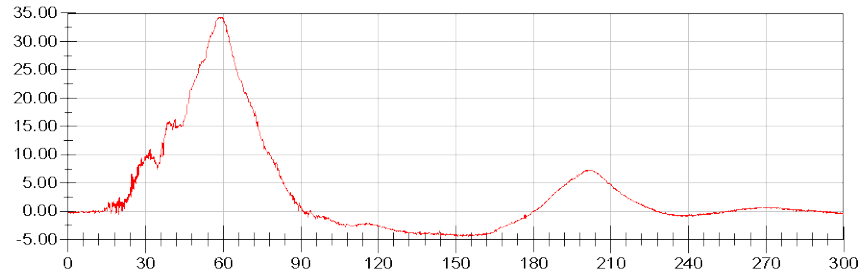
3.73 g at 192.88 ms

**<Min>**

-25.64 g at 60.88 ms

CFC_1000

Head Accel Y (g) vs. Time [ms]




**<Max>**

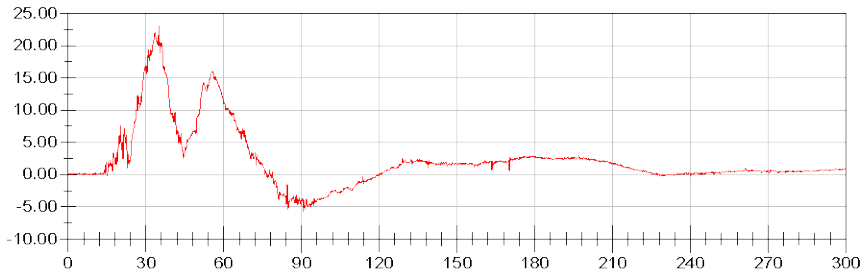
34.33 g at 58.64 ms

**<Min>**

-4.53 g at 144.16 ms

CFC_1000

Head Accel Z (g) vs. Time [ms]




**<Max>**

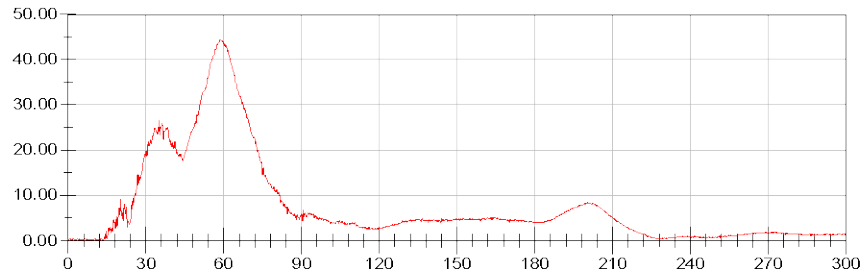
23.01 g at 35.04 ms

**<Min>**

-5.76 g at 90.80 ms

CFC_1000

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




**<Max>**

44.37 g at 58.56 ms

**<Min>**

0.06 g at 6.00 ms

CFC_1000

**NHTSA**

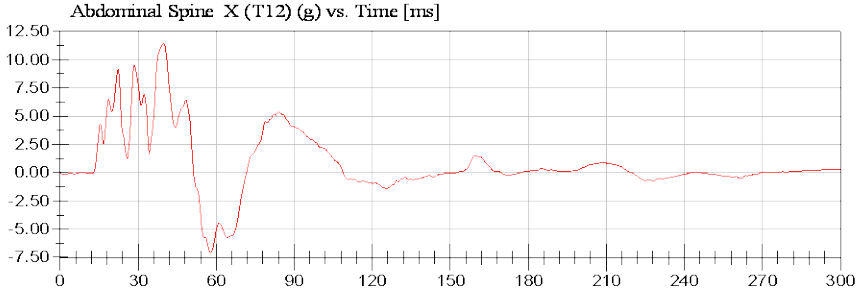
Test Date: 01/08/2014

Position #1 SID IIs Dummy (DI8818)

Test Lab: CTF

Test Number: 140108 (M20140200)

Abdominal Spine X (T12) (g) vs. Time [ms]




**<Max>**

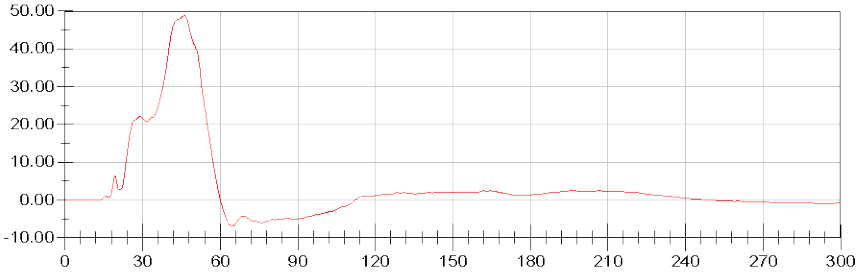
11.41 g at 39.76 ms

**<Min>**

-7.07 g at 57.84 ms

CFC_180

Abdominal Spine Y (T12) (g) vs. Time [ms]




**<Max>**

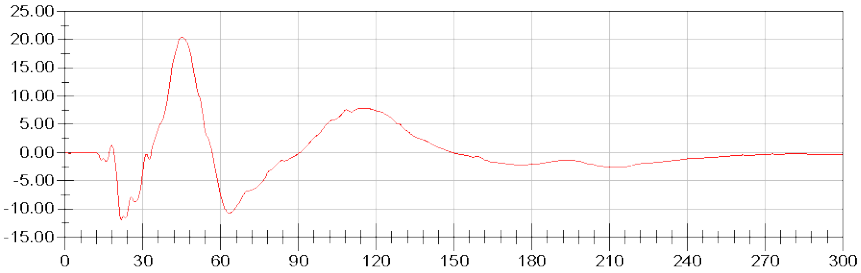
48.80 g at 46.08 ms

**<Min>**

-6.98 g at 64.64 ms

CFC_180

Abdominal Spine Z (T12) (g) vs. Time [ms]




**<Max>**

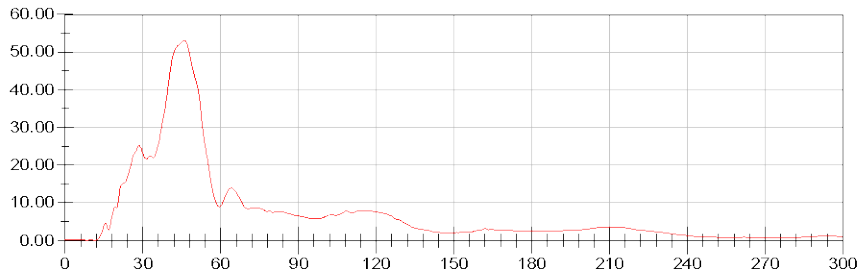
20.44 g at 45.28 ms

**<Min>**

-11.87 g at 21.60 ms

CFC_180

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




**<Max>**

53.08 g at 46.00 ms

**<Min>**

0.06 g at 11.52 ms

CFC_180

**NHTSA**

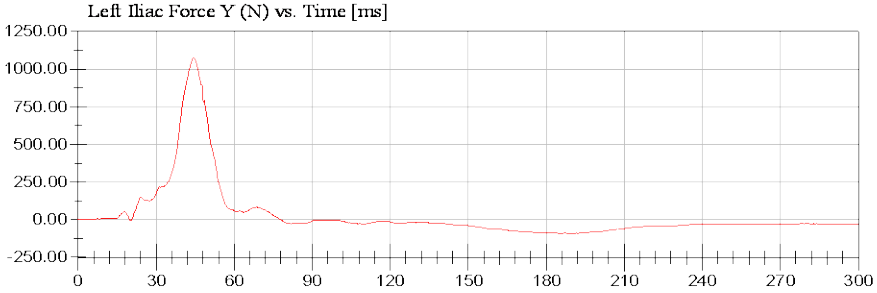
Test Date: 01/08/2014

Position #1 SID IIs Dummy (DI8818)

Test Lab: CTF

Test Number: 140108 (M20140200)

Left Iliac Force Y (N) vs. Time [ms]




**<Max>**

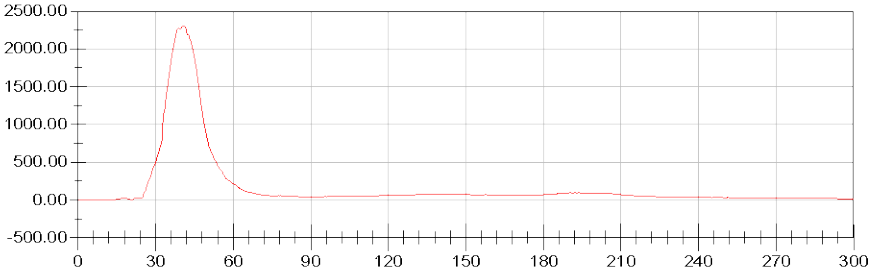
1,075.48 N at 44.40 ms

**<Min>**

-91.65 N at 185.04 ms

CFC_600

Left Acetabulum Force Y (N) vs. Time [ms]




**<Max>**

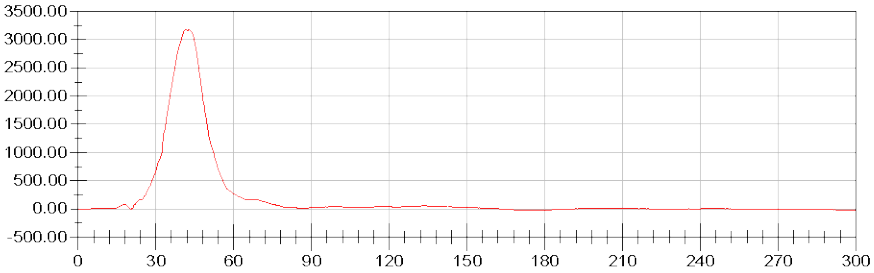
2,307.24 N at 40.88 ms

**<Min>**

-3.16 N at 20.96 ms

CFC_600

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




**<Max>**

3,187.75 N at 41.60 ms

**<Min>**

-21.85 N at 176.96 ms

CFC_600

# APPENDIX C
# DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

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

**Pre-Test Calibration Sheets**
**Driver S/N DI8818**

**Transportation Research Center Inc.**
**SIDIIs Dummy - Level D**
**External Dimensions**
**Serial No. DI8818 Calibration No.07**

| Symbol | Description | Specification | Results | Pass |
|---|---|---|---|---|
| | | mm | mm | |
| A | Sitting Height | 772.0 - 788.0 | 781 | Yes |
| B | Shoulder Pivot Height | 437.0 - 453.0 | 440 | Yes |
| C | H-Point Height | 79.0 - 89.0 | 82 | Yes |
| D | H-Point from Seat Back | 141.0 - 151.0 | 142 | Yes |
| E | Shoulder Pivot from Backline | 97.0 - 107.0 | 100 | Yes |
| F | Thigh Clearance | 119.0 - 135.0 | 128 | Yes |
| G | Head Breadth | 140.0 - 148.0 | 143 | Yes |
| H | Head Back from Backline | 40.0 - 46.0 | 45 | Yes |
| I | Head Depth | 178.0 - 188.0 | 182 | Yes |
| J | Head Circumference | 541.0 - 551.0 | 544 | Yes |
| K | Buttock to Knee Length | 514.0 - 540.0 | 536 | Yes |
| L | Popliteal Height | 343.0 - 369.0 | 352 | Yes |
| M | Knee Pivot to Floor Height | 393.0 - 409.0 | 397 | Yes |
| N | Buttock Popliteal Length | 416.0 - 442.0 | 427 | Yes |
| O | Chest Depth without Jacket | 195.0 - 211.0 | 203 | 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 | 313 | Yes |
| R | Arm Length | 249.0 - 259.0 | 255 | Yes |
| S | Knee Joint to seat Back | 478.0 - 493.0 | 483 | Yes |
| V | Shoulder Width (only one arm installed) | 341.0 - 357.0 | 350 | 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 | 871 | Yes |
| Z | Waist Circumference | 761.0 - 791.0 | 771 | Yes |

Technician

Approved

Revised 9/29/2005

# Transportation Research Center Inc.

Left Lateral Head Drop
SID IIs Serial No. DI8818 Certification No. 7-1
Test Date: 12/17/2013

| Test Parameter | Specification | Test Results | Pass |
|---|---|---|---|
| Temperature | 18.9 - 25.6 °C | 21.2 °C | Yes |
| Relative Humidity | 10 - 70 % | 36 % | Yes |
| Peak Head Resultant Acceleration | 115 - 137 g | 132.6 g | Yes |
| Peak Head Longitudinal Acceleration | (-15) - 15 g | 7.9 g | Yes |
| Is Head Resultant Acceleration Curve Unimodal within 15% of Peak? | Yes | Yes | Yes |

**Test meets specifications.**

**Comments:**

Technician

Approved

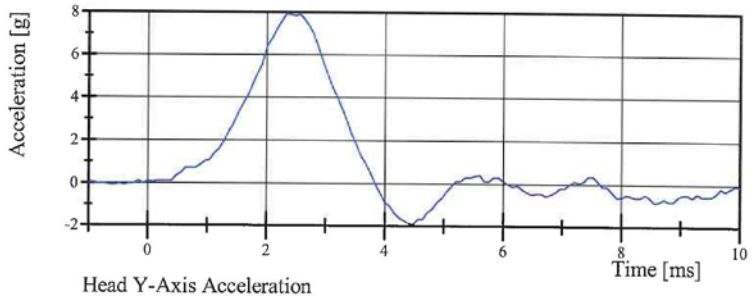
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

12.17.2013 08:30:12 235

# Transportation Research Center Inc.

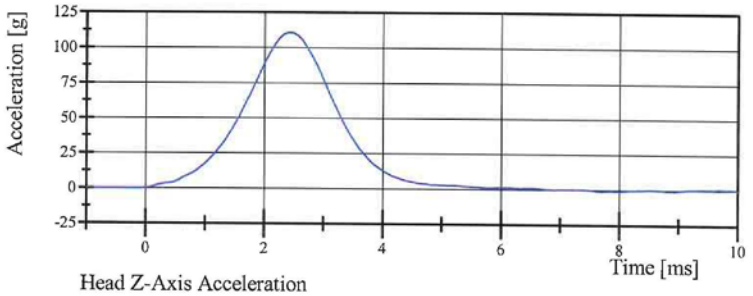
Left Lateral Head Drop
SID IIs Serial No. DI8818 Certification No. 7-1
Test Date: 12/17/2013

Head X-Axis Acceleration



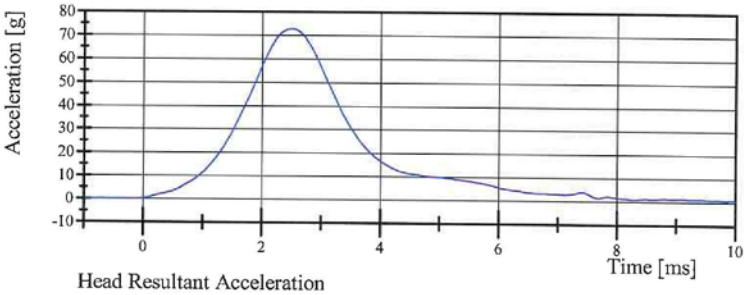

Filter Class: CFC_1000
Max: 7.9 g at 2.3 ms
Min: -1.9 g at 4.5 ms

Head Y-Axis Acceleration



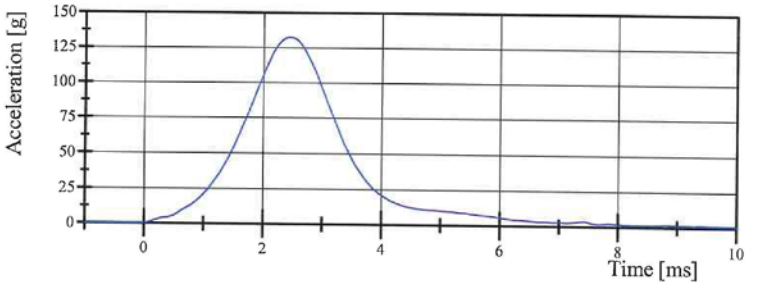

Filter Class: CFC_1000
Max: 110.8 g at 2.4 ms
Min: -1.2 g at 7.7 ms

Head Z-Axis Acceleration




Filter Class: CFC_1000
Max: 72.8 g at 2.5 ms
Min: -0.1 g at -0.6 ms

Head Resultant Acceleration




Filter Class: CFC_1000
Max: 132.6 g at 2.5 ms
Min: 0.0 g at -0.9 ms

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

12.17.2013 08:30:20 235

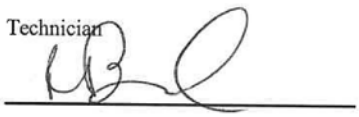
# Transportation Research Center Inc.

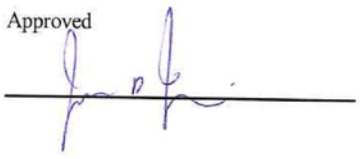
Left Lateral Neck
SID IIs Serial No. DI8818 Certification No. 7-3
Test Date: 12/23/2013

| Test Parameter | Specification | Test Results | Pass |
|---|---|---|---|
| Temperature | 20.6 - 22.2 °C | 21.7 °C | Yes |
| Relative Humidity | 10 - 70 % | 34 % | Yes |
| Pendulum Velocity | (-5.51) - (-5.63) m/s | -5.625 m/s | Yes |
| Pendulum Integrated Velocity Change at 10 ms | 2.20 - 2.80 m/s | 2.382 m/s | Yes |
| Change at 15 ms | 3.30 - 4.10 m/s | 3.475 m/s | Yes |
| Change at 20 ms | 4.40 - 5.40 m/s | 4.667 m/s | Yes |
| Change at 25 ms | 5.40 - 6.10 m/s | 5.551 m/s | Yes |
| Change at 25 to 100 ms | 5.50 - 6.20 m/s | 5.818 m/s | Yes |
| Maximum Headform Flexion occurring between 50ms and 70ms. | | | |
| Peak | (-71) - (-81) deg | -75.5 deg | Yes |
| Time of Peak | 50 - 70 ms | 69.8 ms | Yes |
| Total Neck Occipital Condyles Moment | 36 - 44 N·m | 39.8 N·m | Yes |
| Total Neck Occipital Condyles Moment Decay Time to 0 N·m | 102 - 126 ms | 114.2 ms | Yes |

**Test meets specifications.**

**Comments:**

Technician 

Approved 

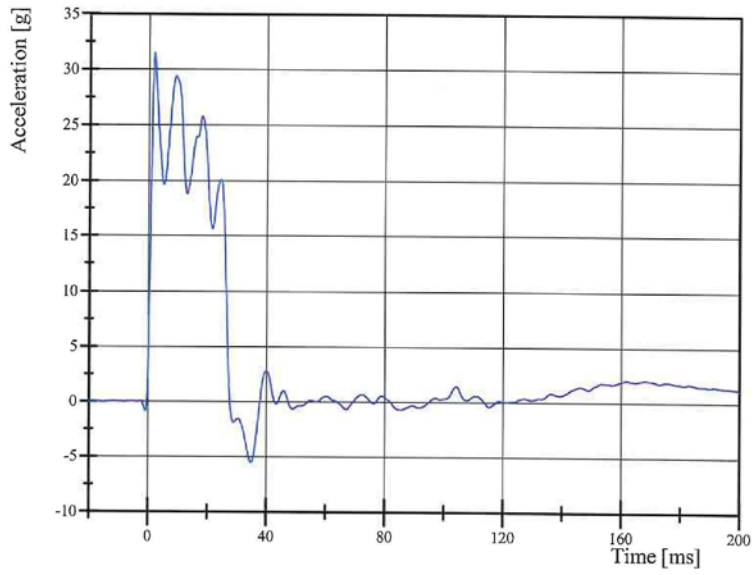
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

12.23.2013 08:09:57 637

# Transportation Research Center Inc.

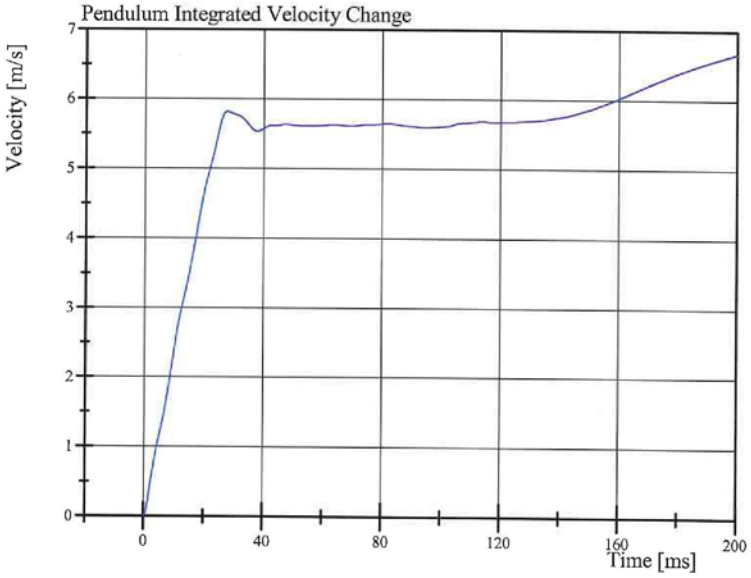
Left Lateral Neck
SID IIs Serial No. DI8818 Certification No. 7-3
Test Date: 12/23/2013

Pendulum Acceleration




Filter Class: CFC_180
Max: 31.5 g at 1.8 ms
Min: -5.5 g at 34.9 ms

Pendulum Integrated Velocity Change




Filter Class: CFC_180
Max: 6.7 m/s at 200.0 ms
Min: 0.0 m/s at 0.0 ms

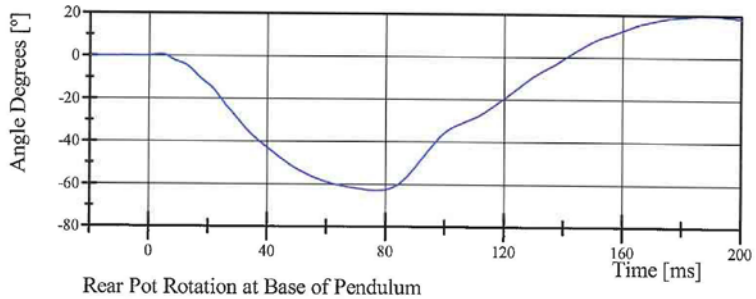
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

12.23.2013 08:10:08 637

# Transportation Research Center Inc.

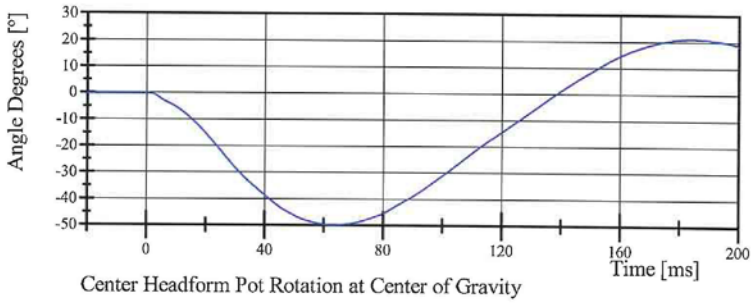
Left Lateral Neck
SID IIs Serial No. DI8818 Certification No. 7-3
Test Date: 12/23/2013

Forward Pot Rotation at Base of Pendulum



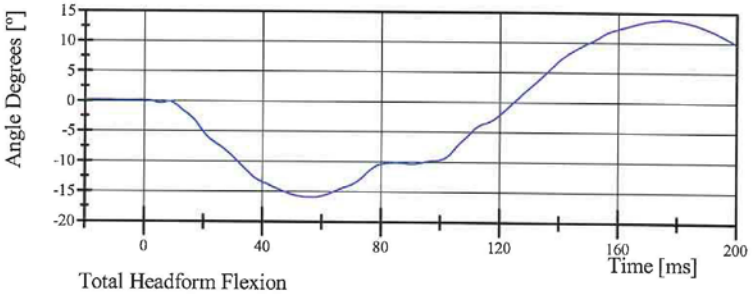

Filter Class: CFC_60
Max: 19.5 ° at 188.6 ms
Min: -62.7 ° at 76.4 ms

Rear Pot Rotation at Base of Pendulum



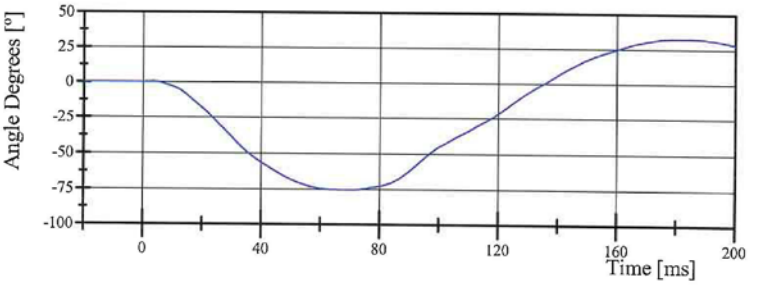

Filter Class: CFC_60
Max: 21.0 ° at 183.8 ms
Min: -49.9 ° at 63.4 ms

Center Headform Pot Rotation at Center of Gravity




Filter Class: CFC_60
Max: 13.8 ° at 176.1 ms
Min: -15.9 ° at 56.6 ms

Total Headform Flexion




Filter Class: CFC_60
Max: 32.6 ° at 182.5 ms
Min: -75.5 ° at 69.8 ms

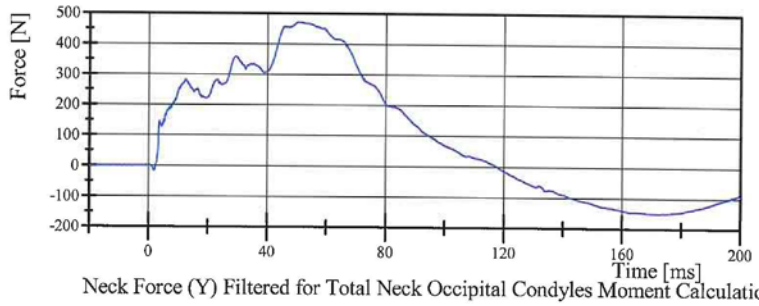
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

12.23.2013 08:10:08 637

# Transportation Research Center Inc.

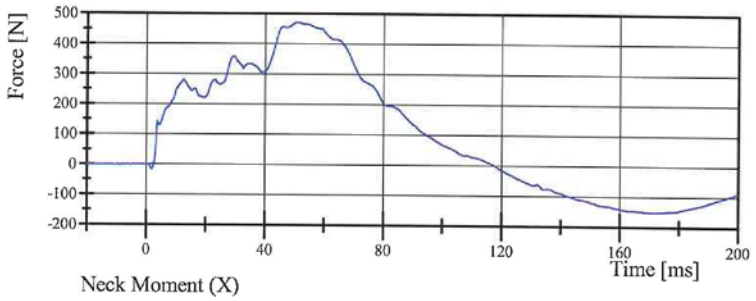
Left Lateral Neck
SID IIs Serial No. DI8818 Certification No. 7-3
Test Date: 12/23/2013

Neck Force (Y)



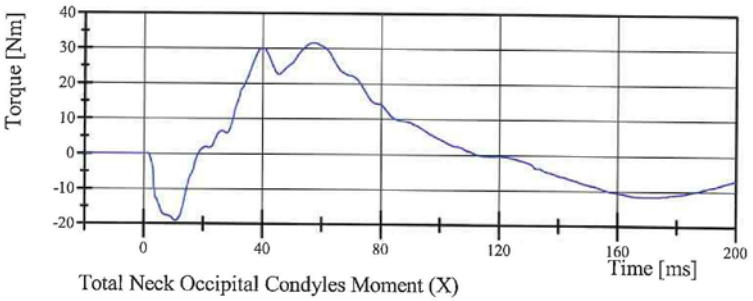

Filter Class: CFC_1000
Max: 471.8 N at 50.2 ms
Min: -152.5 N at 172.2 ms

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



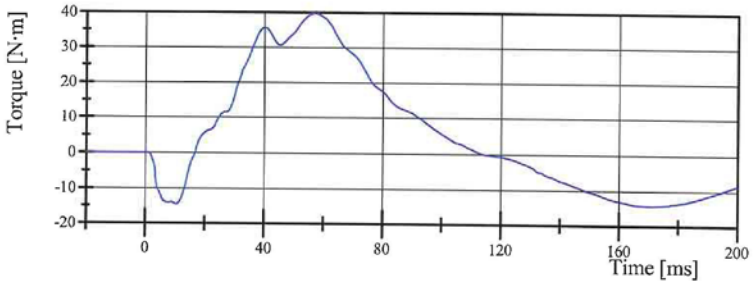

Filter Class: CFC_600
Max: 471.8 N at 50.5 ms
Min: -152.3 N at 172.3 ms

Neck Moment (X)




Filter Class: CFC_600
Max: 31.7 Nm at 57.4 ms
Min: -19.1 Nm at 10.7 ms

Total Neck Occipital Condyles Moment (X)




Filter Class: Without_(Consta
Max: 39.8 N·m at 56.9 ms
Min: -14.6 N·m at 10.6 ms

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

12.23.2013 08:10:09 637

# Transportation Research Center Inc.

Left Lateral Shoulder
SID IIs Serial No. DI8818 Certification No. 7-1
Test Date: 12/17/2013

| Test Parameter | Specification | Test Results | Pass |
|---|---|---|---|
| Temperature | 20.6 - 22.2 °C | 21.5 °C | Yes |
| Relative Humidity | 10 - 70 % | 38 % | Yes |
| Impactor Velocity | 4.2 - 4.4 m/s | 4.33 m/s | Yes |
| Impactor Acceleration | (-13) - (-18) g | -14.4 g | Yes |
| Shoulder Displacement | 28 - 37 mm | 32.4 mm | Yes |
| Upper Spine Lateral Acceleration | 17 - 22 g | 20.0 g | Yes |

**Test meets specifications.**

**Comments:**

Technician

Approved

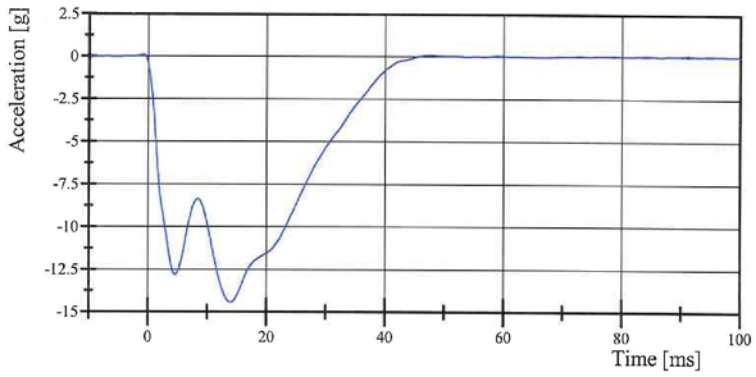
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

12.17.2013 10:06:26 836

# Transportation Research Center Inc.

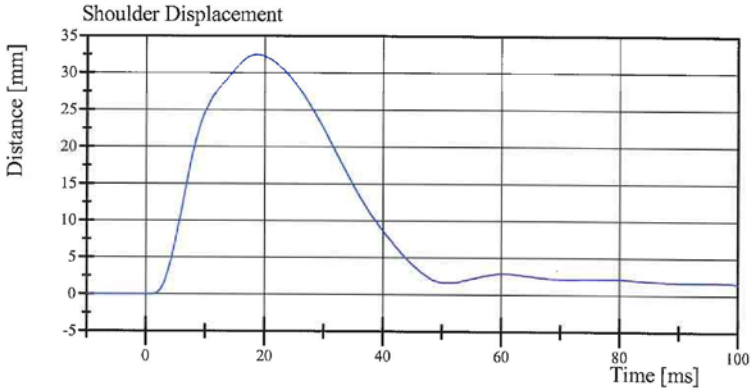
Left Lateral Shoulder
SID IIs Serial No. DI8818 Certification No. 7-1
Test Date: 12/17/2013

Probe Acceleration



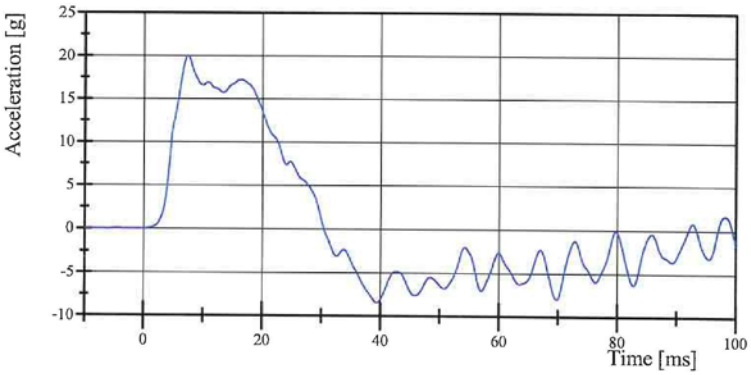

Filter Class: CFC_180
Max: 0.1 g at -0.9 ms
Min: -14.4 g at 14.0 ms

Shoulder Displacement




Filter Class: CFC_600
Max: 32.4 mm at 18.6 ms
Min: -0.0 mm at -2.8 ms

Upper Spine Acceleration (Y)




Filter Class: CFC_180
Max: 20.0 g at 7.4 ms
Min: -8.4 g at 39.4 ms

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

12.17.2013 10:06:33 836

# Transportation Research Center Inc.

Left Lateral Thorax with Arm
SID IIs Serial No. DI8818 Certification No. 7-1
Test Date: 12/17/2013

| Test Parameter | Specification | Test Results | Pass |
|---|---|---|---|
| Temperature | 20.6 - 22.2 °C | 21.5 °C | Yes |
| Relative Humidity | 10 - 70 % | 36 % | Yes |
| Impactor Velocity | 6.60 - 6.80 m/s | 6.743 m/s | Yes |
| Impactor Acceleration | (-30) - (-36) g | -33.4 g | Yes |
| Shoulder Displacement | 31 - 40 mm | 35.1 mm | Yes |
| Upper Thorax Rib Displacement | 25 - 32 mm | 28.3 mm | Yes |
| Center Thorax Rib Displacement | 30 - 36 mm | 31.6 mm | Yes |
| Lower Thorax Rib Displacement | 32 - 38 mm | 33.6 mm | Yes |
| Upper Spine Lateral Acceleration | 34 - 43 g | 37.8 g | Yes |
| Lower Spine Lateral Acceleration | 29 - 37 g | 32.3 g | Yes |

**Test meets specifications.**

**Comments:**

Technician

Approved

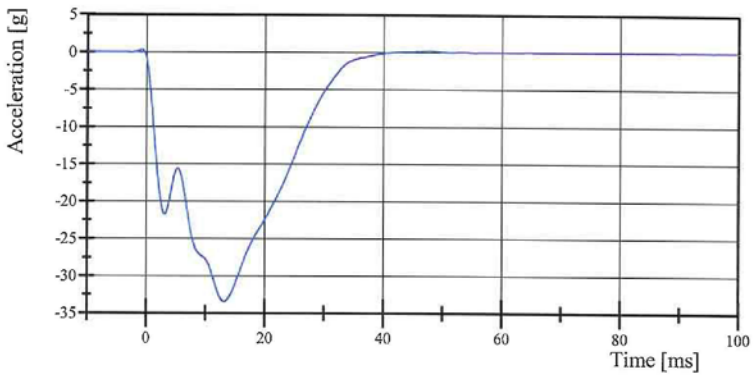
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

12.17.2013 10:22:18 597

# Transportation Research Center Inc.

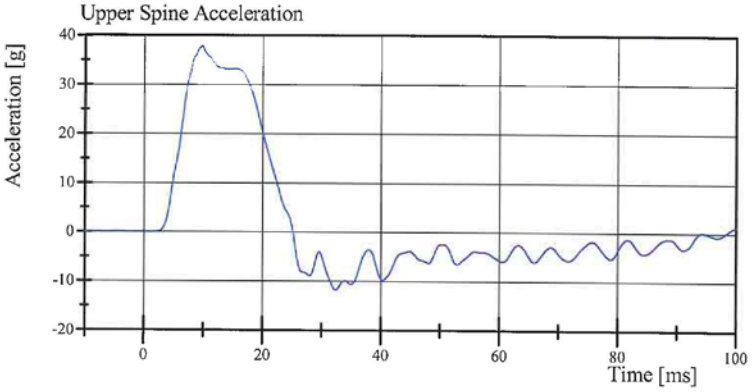
Left Lateral Thorax with Arm
SID IIs Serial No. DI8818 Certification No. 7-1
Test Date: 12/17/2013

Probe Acceleration



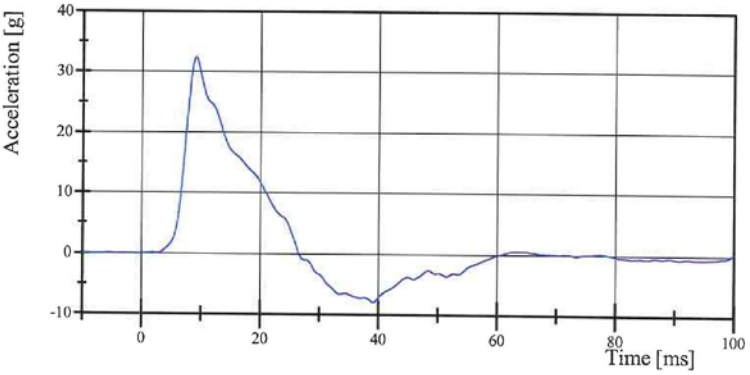

Filter Class: CFC_180
Max: 0.3 g at -0.8 ms
Min: -33.4 g at 13.2 ms

Upper Spine Acceleration




Filter Class: CFC_180
Max: 37.8 g at 9.8 ms
Min: -11.8 g at 32.4 ms

Lower Spine Acceleration




Filter Class: CFC_180
Max: 32.3 g at 9.0 ms
Min: -8.0 g at 39.1 ms

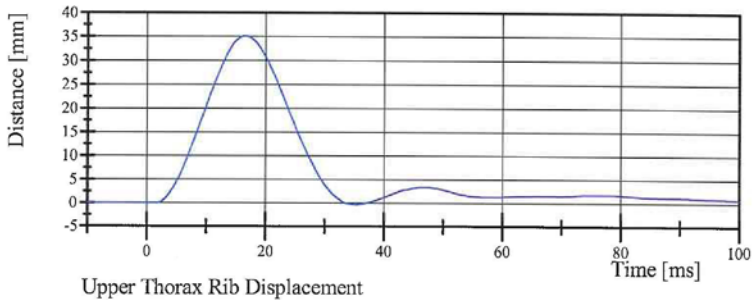
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

12.17.2013 10:22:27 597

# Transportation Research Center Inc.

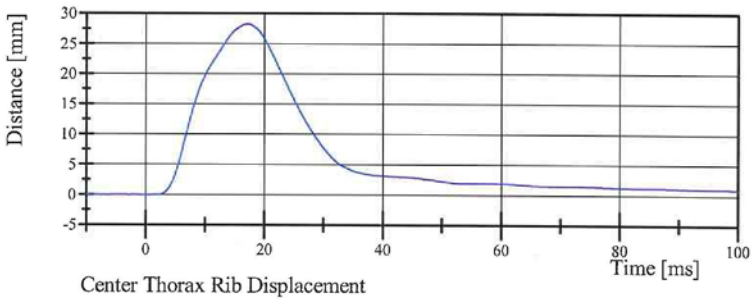
Left Lateral Thorax with Arm
SID IIs Serial No. DI8818 Certification No. 7-1
Test Date: 12/17/2013

Shoulder Rib Displacement



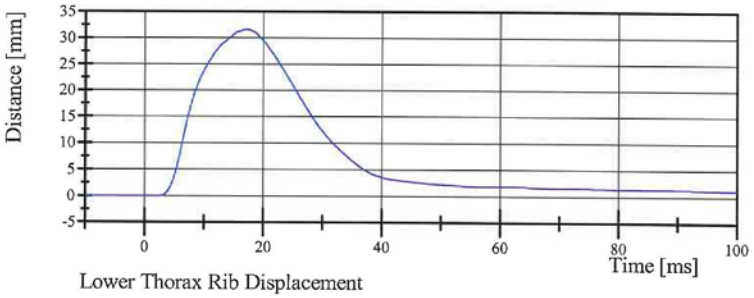

Filter Class: CFC_600
Max: 35.1 mm at 16.6 ms
Min: -0.4 mm at 35.2 ms

Upper Thorax Rib Displacement



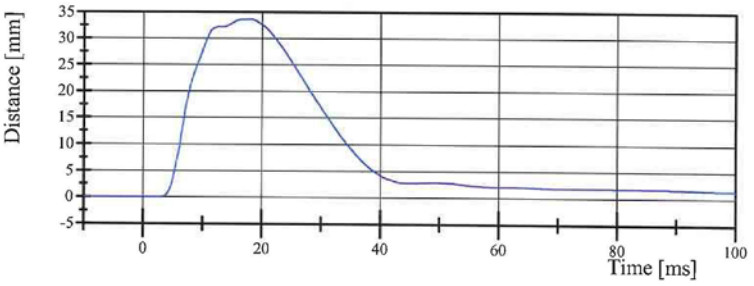

Filter Class: CFC_600
Max: 28.3 mm at 17.1 ms
Min: -0.0 mm at 1.0 ms

Center Thorax Rib Displacement




Filter Class: CFC_600
Max: 31.6 mm at 17.2 ms
Min: -0.0 mm at -9.0 ms

Lower Thorax Rib Displacement




Filter Class: CFC_600
Max: 33.6 mm at 18.2 ms
Min: -0.0 mm at 1.4 ms

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

12.17.2013 10:22:28 597

# Transportation Research Center Inc.

Left Lateral Thorax without Arm
SID IIs Serial No. DI8818 Certification No. 7-1
Test Date: 12/17/2013

| Test Parameter | Specification | Test Results | Pass |
|---|---|---|---|
| Temperature | 20.6 - 22.2 °C | 21.6 °C | Yes |
| Relative Humidity | 10 - 70 % | 32 % | Yes |
| Impactor Velocity | 4.20 - 4.40 m/s | 4.248 m/s | Yes |
| Impactor Acceleration | (-14) - (-18) g | -15.6 g | Yes |
| Upper Thorax Rib Displacement | 32 - 40 mm | 37.3 mm | Yes |
| Center Thorax Rib Displacement | 39 - 45 mm | 40.8 mm | Yes |
| Lower Thorax Rib Displacement | 35 - 43 mm | 37.0 mm | Yes |
| Upper Spine Lateral Acceleration | 13 - 17 g | 14.9 g | Yes |
| Lower Spine Lateral Acceleration | 7 - 11 g | 8.4 g | Yes |

**Test meets specifications.**

**Comments:**

Technician

Approved

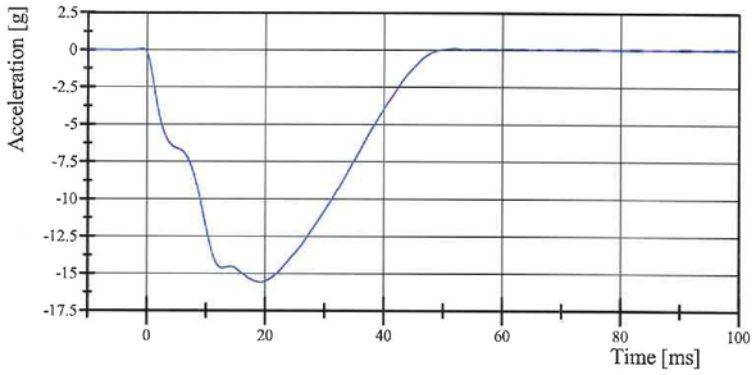
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

12.17.2013 10:55:13 844

# Transportation Research Center Inc.

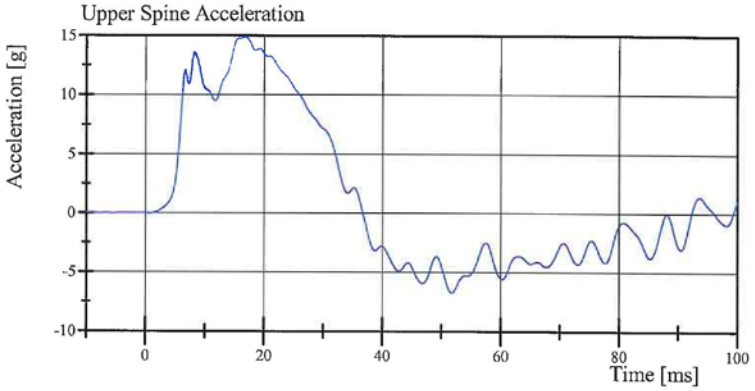
Left Lateral Thorax without Arm
SID IIs Serial No. DI8818 Certification No. 7-1
Test Date: 12/17/2013

Probe Acceleration



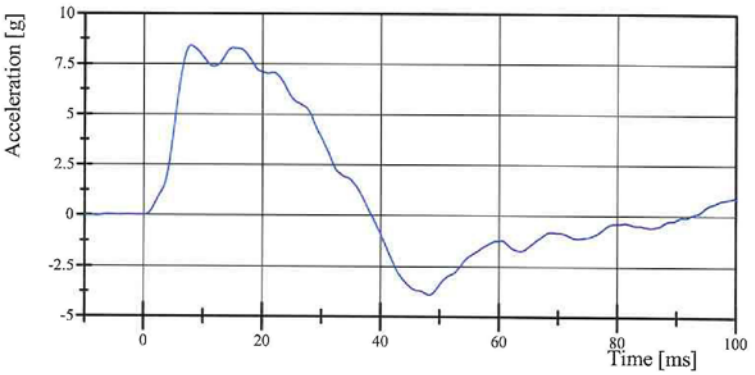

Filter Class: CFC_180
Max: 0.1 g at 51.9 ms
Min: -15.6 g at 19.3 ms

Upper Spine Acceleration




Filter Class: CFC_180
Max: 14.9 g at 16.9 ms
Min: -6.7 g at 51.8 ms

Lower Spine Acceleration




Filter Class: CFC_180
Max: 8.4 g at 7.9 ms
Min: -3.9 g at 48.2 ms

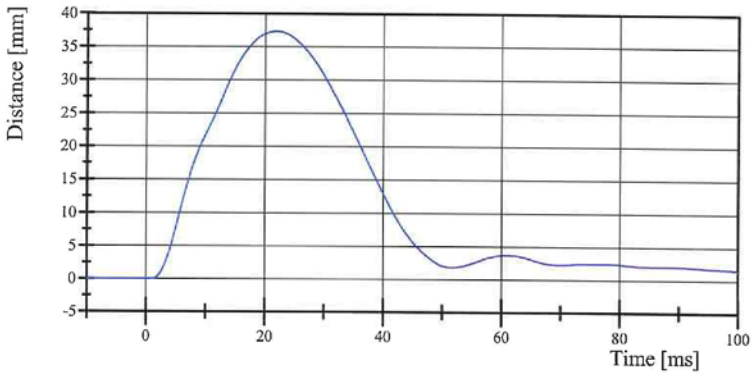
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

12.17.2013 10:55:21 844

# Transportation Research Center Inc.

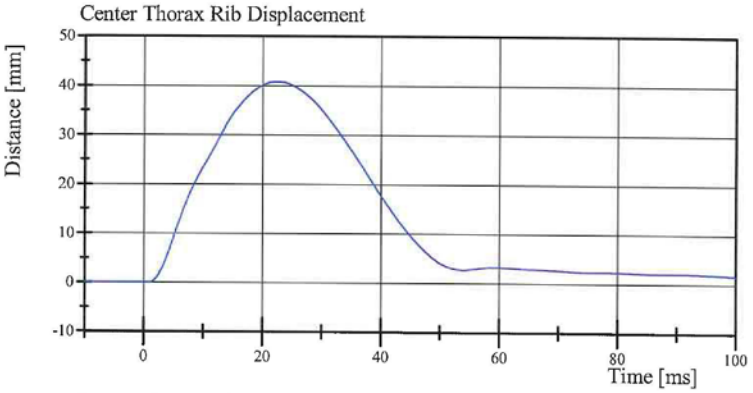
Left Lateral Thorax without Arm
SID IIs Serial No. DI8818 Certification No. 7-1
Test Date: 12/17/2013

Upper Thorax Rib Displacement



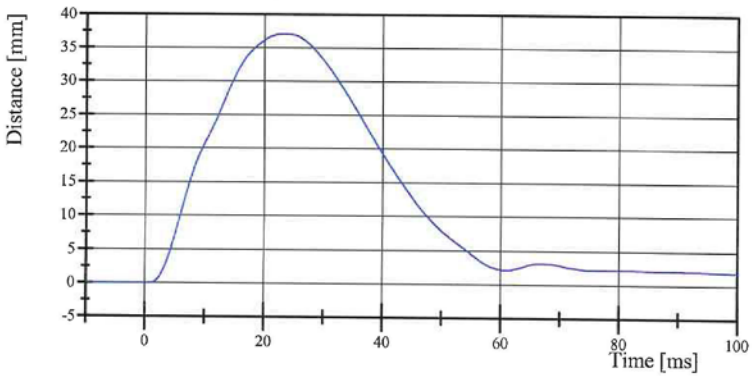

Filter Class: CFC_600
Max: 37.3 mm at 21.9 ms
Min: -0.0 mm at -5.4 ms

Center Thorax Rib Displacement




Filter Class: CFC_600
Max: 40.8 mm at 22.3 ms
Min: -0.0 mm at -5.8 ms

Lower Thorax Rib Displacement




Filter Class: CFC_600
Max: 37.0 mm at 23.4 ms
Min: -0.0 mm at -5.3 ms

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

12.17.2013 10:55:22 844

# Transportation Research Center Inc.

Left Lateral Abdomen
SID IIs Serial No. DI8818 Certification No. 7-3
Test Date: 12/19/2013

| Test Parameter | Specification | Test Results | Pass |
|---|---|---|---|
| Temperature | 20.6 - 22.2 °C | 21.1 °C | Yes |
| Relative Humidity | 10 - 70 % | 37 % | Yes |
| Impactor Velocity | 4.2 - 4.4 m/s | 4.28 m/s | Yes |
| Impactor Acceleration | (-12) - (-16) g | -14.4 g | Yes |
| Upper Abdominal Rib Displacement | 36 - 47 mm | 40.1 mm | Yes |
| Lower Abdominal Rib Displacement | 33 - 44 mm | 34.4 mm | Yes |
| Lower Spine Lateral Acceleration | 9 - 14.0 g | 11.70 g | Yes |

**Test meets specifications.**

**Comments:**

Technician

Approved

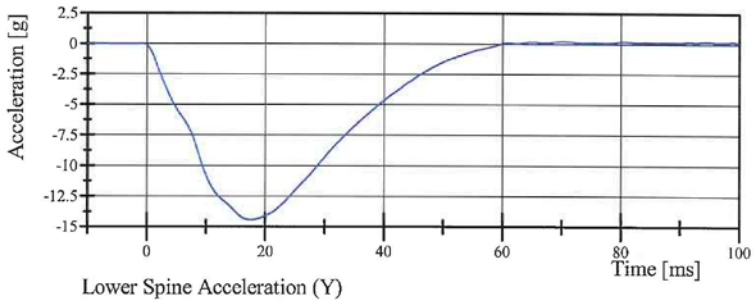
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

12.19.2013 11:24:01 688

# Transportation Research Center Inc.

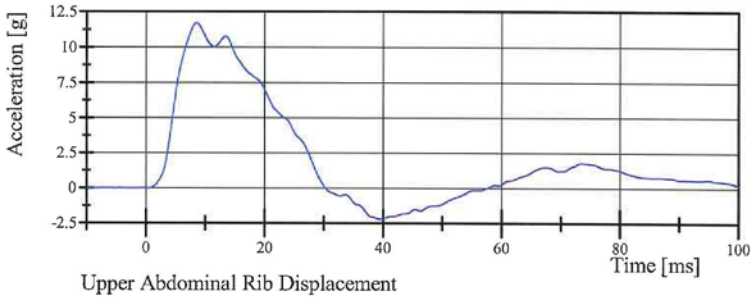
Left Lateral Abdomen
SID IIs Serial No. DI8818 Certification No. 7-3
Test Date: 12/19/2013

Probe Acceleration



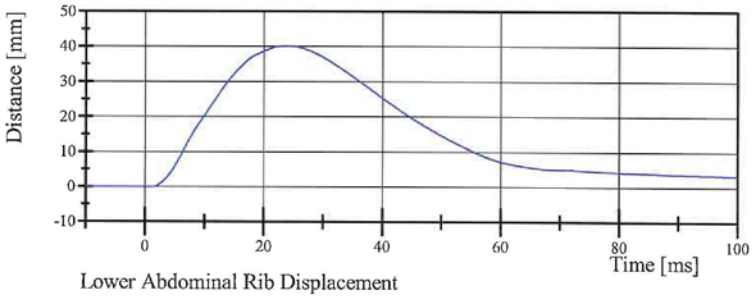

Filter Class: CFC_180
Max: 0.2 g at 70.1 ms
Min: -14.4 g at 17.5 ms

Lower Spine Acceleration (Y)



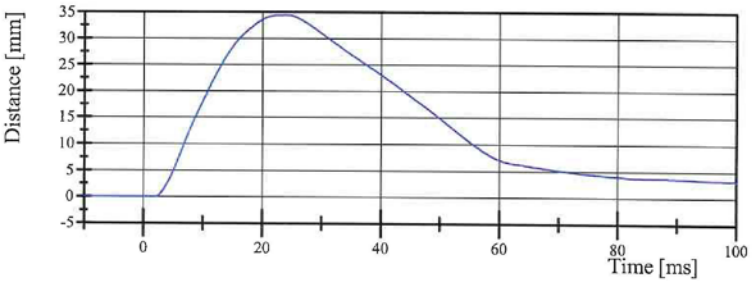

Filter Class: CFC_180
Max: 11.7 g at 8.5 ms
Min: -2.2 g at 39.5 ms

Upper Abdominal Rib Displacement




Filter Class: CFC_600
Max: 40.1 mm at 23.8 ms
Min: -0.0 mm at 1.5 ms

Lower Abdominal Rib Displacement




Filter Class: CFC_600
Max: 34.4 mm at 23.6 ms
Min: -0.0 mm at 2.0 ms

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

12.19.2013 11:24:13 688

# Transportation Research Center Inc.

Left Lateral Iliac
SID IIs Serial No. DI8818 Certification No. 7-1
Test Date: 12/17/2013

| Test Parameter | Specification | Test Results | Pass |
|---|---|---|---|
| Temperature | 20.6 - 22.2 °C | 21.3 °C | Yes |
| Relative Humidity | 10 - 70 % | 32 % | Yes |
| Pendulum Velocity | 4.2 - 4.4 m/s | 4.27 m/s | Yes |
| Impactor Acceleration | (-36) - (-45) g | -42.2 g | Yes |
| Peak Pelvis Lateral Acceleration | 28 - 39 g | 34.4 g | Yes |
| Iliac Force | 4,100 - 5,100 N | 4,825.9 N | Yes |

**Test meets specifications.**

**Comments:**

Technician

Approved

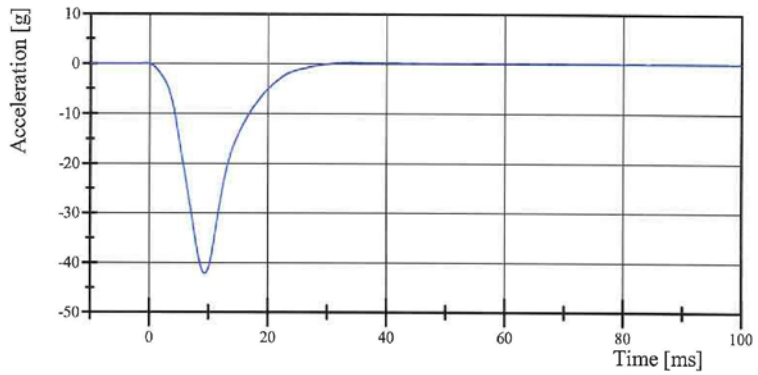
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

12.17.2013 13:02:17 682

# Transportation Research Center Inc.

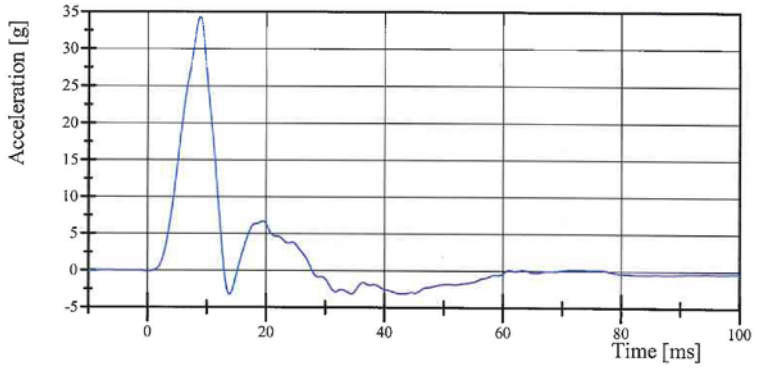
Left Lateral Iliac
SID IIs Serial No. DI8818 Certification No. 7-1
Test Date: 12/17/2013

Probe Acceleration



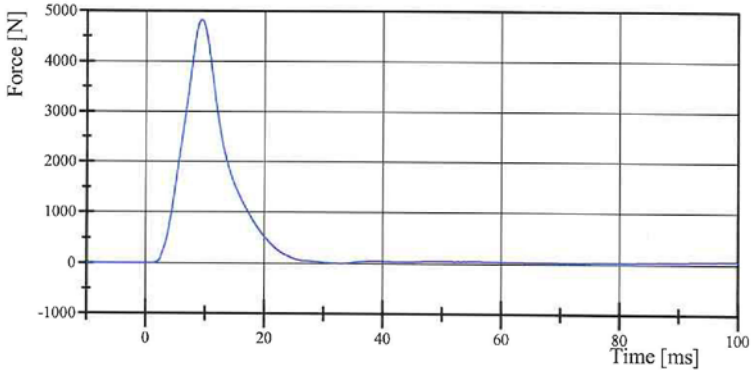

Filter Class: CFC_180
Max: 0.3 g at 33.8 ms
Min: -42.2 g at 9.4 ms

Pelvis Y-Axis Acceleration




Filter Class: CFC_180
Max: 34.4 g at 8.8 ms
Min: -3.2 g at 13.8 ms

Iliac Y-Axis Force




Filter Class: CFC_600
Max: 4,825.9 N at 9.4 ms
Min: -0.8 N at -5.0 ms

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

12.17.2013 13:02:24 682

# Transportation Research Center Inc.

Left Lateral Pelvis
SID IIs Serial No. DI8818 Certification No. 7-1
Test Date: 12/17/2013

| Test Parameter | Specification | Test Results | Pass |
|---|---|---|---|
| Temperature | 20.6 - 22.2 °C | 21.4 °C | Yes |
| Relative Humidity | 10 - 70 % | 35 % | Yes |
| Pendulum Velocity | 6.6 - 6.8 m/s | 6.69 m/s | Yes |
| Impactor Acceleration | (-38.0) - (-47.0) g | -44.41 g | Yes |
| Peak Pelvis Lateral Acceleration after 6ms | 34 - 42 g | 41.1 g | Yes |
| Acetabulum Force | 3,600 - 4,300 N | 3,900.3 N | Yes |

**Test meets specifications.**

**Comments:**

Technician

Approved

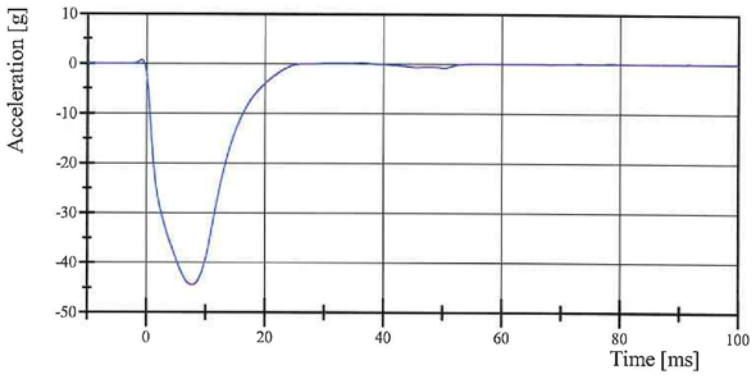
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

12.17.2013 15:03:57 439

# Transportation Research Center Inc.

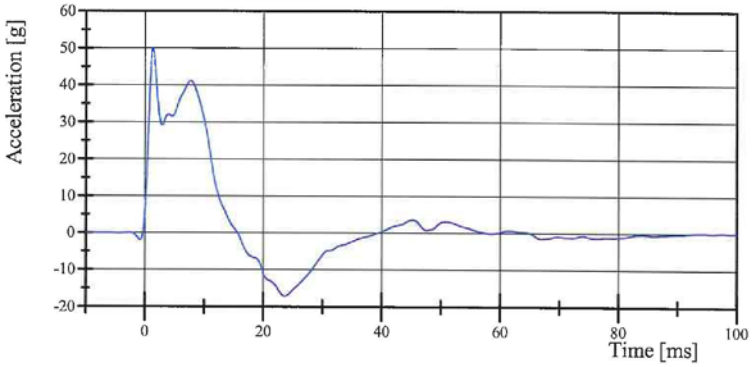
Left Lateral Pelvis
SID IIs Serial No. DI8818 Certification No. 7-1
Test Date: 12/17/2013

Probe Acceleration



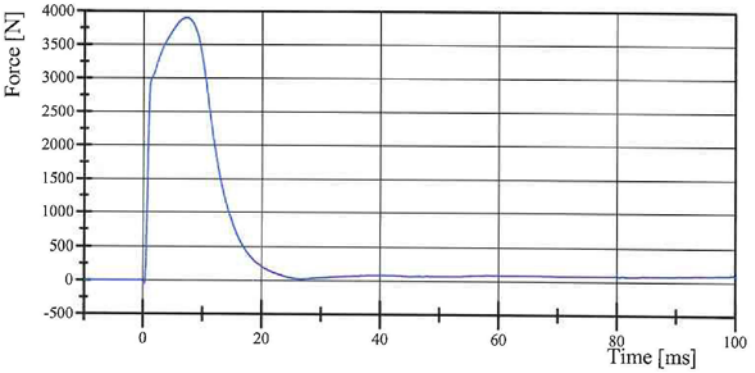

Filter Class: CFC_180
Max: 0.6 g at -0.8 ms
Min: -44.4 g at 7.7 ms

Pelvis Y-Axis Acceleration




Filter Class: CFC_180
Max: 50.1 g at 1.4 ms
Min: -17.1 g at 23.6 ms

Acetabulum Y-Axis Force




Filter Class: CFC_600
Max: 3,900.3 N at 7.3 ms
Min: -53.0 N at 0.2 ms

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

12.17.2013 15:04:06 439

**Driver S/N DI8818**

**Post-Test Calibration Sheets**

**Transportation Research Center Inc.**
**SIDIIs Dummy - Level D**
**External Dimensions**
**Serial No. DI8818 Calibration No.08**

| Symbol | Description | Specification | Results | Pass |
|---|---|---|---|---|
| | | mm | mm | |
| A | Sitting Height | 772.0 - 788.0 | 780 | Yes |
| B | Shoulder Pivot Height | 437.0 - 453.0 | 440 | Yes |
| C | H-Point Height | 79.0 - 89.0 | 82 | Yes |
| D | H-Point from Seat Back | 141.0 - 151.0 | 142 | Yes |
| E | Shoulder Pivot from Backline | 97.0 - 107.0 | 100 | Yes |
| F | Thigh Clearance | 119.0 - 135.0 | 129 | Yes |
| G | Head Breadth | 140.0 - 148.0 | 143 | Yes |
| H | Head Back from Backline | 40.0 - 46.0 | 45 | Yes |
| I | Head Depth | 178.0 - 188.0 | 182 | Yes |
| J | Head Circumference | 541.0 - 551.0 | 544 | Yes |
| K | Buttock to Knee Length | 514.0 - 540.0 | 536 | Yes |
| L | Popliteal Height | 343.0 - 369.0 | 352 | Yes |
| M | Knee Pivot to Floor Height | 393.0 - 409.0 | 397 | Yes |
| N | Buttock Popliteal Length | 416.0 - 442.0 | 427 | Yes |
| O | Chest Depth without Jacket | 195.0 - 211.0 | 203 | 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 | 313 | Yes |
| R | Arm Length | 249.0 - 259.0 | 255 | Yes |
| S | Knee Joint to seat Back | 478.0 - 493.0 | 483 | Yes |
| V | Shoulder Width (only one arm installed) | 341.0 - 357.0 | 350 | 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 | 771 | Yes |

Technician

Approved

Revised 9/29/2005

# Transportation Research Center Inc.

Left Lateral Head Drop
SID IIs Serial No. DI8818 Certification No. 8-1
Test Date: 1/9/2014

| Test Parameter | Specification | Test Results | Pass |
|---|---|---|---|
| Temperature | 18.9 - 25.6 °C | 21.7 °C | Yes |
| Relative Humidity | 10 - 70 % | 31 % | Yes |
| Peak Head Resultant Acceleration | 115 - 137 g | 134.9 g | Yes |
| Peak Head Longitudinal Acceleration | (-15) - 15 g | 5.0 g | Yes |
| Is Head Resultant Acceleration Curve Unimodal within 15% of Peak? | Yes | Yes | Yes |

**Test meets specifications.**

**Comments:**

Technician

Approved

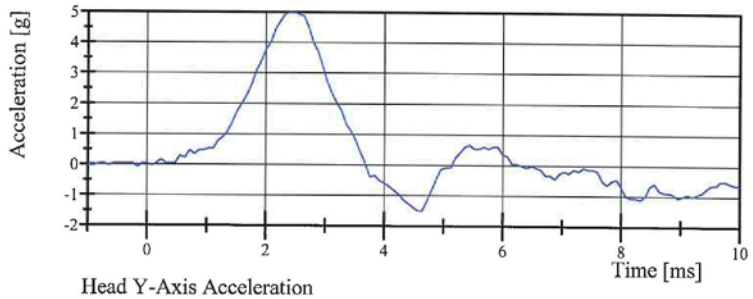
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

01.09.2014 10:23:06 234

# Transportation Research Center Inc.

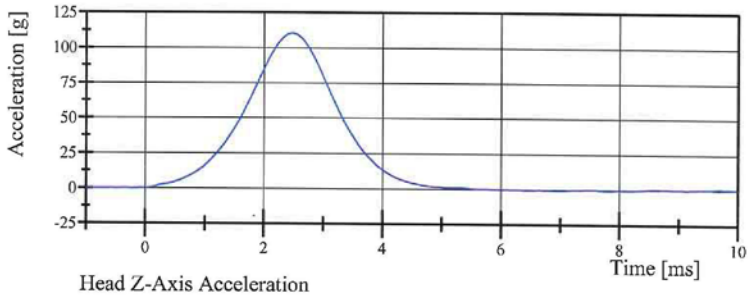
Left Lateral Head Drop
SID IIs Serial No. DI8818 Certification No. 8-1
Test Date: 1/9/2014

Head X-Axis Acceleration



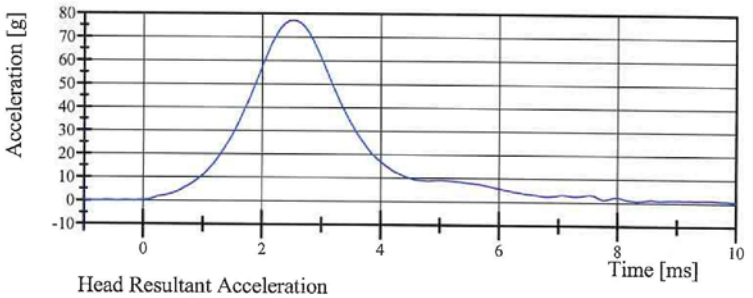

Filter Class: CFC_1000
Max: 5.0 g at 2.4 ms
Min: -1.5 g at 4.6 ms

Head Y-Axis Acceleration



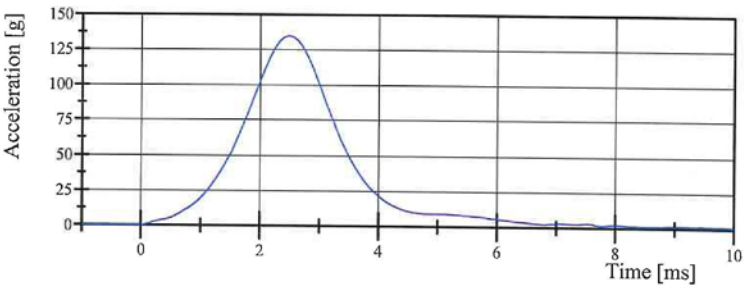

Filter Class: CFC_1000
Max: 110.6 g at 2.5 ms
Min: -0.8 g at 7.8 ms

Head Z-Axis Acceleration




Filter Class: CFC_1000
Max: 77.2 g at 2.5 ms
Min: -0.0 g at -0.9 ms

Head Resultant Acceleration




Filter Class: CFC_1000
Max: 134.9 g at 2.5 ms
Min: 0.1 g at -0.8 ms

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

01.09.2014 10:23:14 234

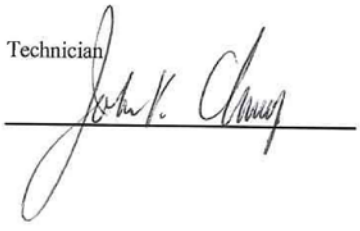
# Transportation Research Center Inc.

Left Lateral Neck
SID IIs Serial No. DI8818 Certification No. 8-1
Test Date: 1/9/2014

| Test Parameter | Specification | Test Results | Pass |
|---|---|---|---|
| Temperature | 20.6 - 22.2 °C | 21.2 °C | Yes |
| Relative Humidity | 10 - 70 % | 41 % | Yes |
| Pendulum Velocity | (-5.51) - (-5.63) m/s | -5.617 m/s | Yes |
| Pendulum Integrated Velocity Change at 10 ms | 2.20 - 2.80 m/s | 2.311 m/s | Yes |
| Change at 15 ms | 3.30 - 4.10 m/s | 3.344 m/s | Yes |
| Change at 20 ms | 4.40 - 5.40 m/s | 4.522 m/s | Yes |
| Change at 25 ms | 5.40 - 6.10 m/s | 5.470 m/s | Yes |
| Change at 25 to 100 ms | 5.50 - 6.20 m/s | 5.785 m/s | Yes |
| Maximum Headform Flexion occurring between 50ms and 70ms. | | | |
| Peak | (-71) - (-81) deg | -74.3 deg | Yes |
| Time of Peak | 50 - 70 ms | 65.8 ms | Yes |
| Total Neck Occipital Condyles Moment | 36 - 44 N·m | 39.9 N·m | Yes |
| Total Neck Occipital Condyles Moment Decay Time to 0 N·m | 102 - 126 ms | 113.4 ms | Yes |

**Test meets specifications.**

**Comments:**

Technician 

Approved 

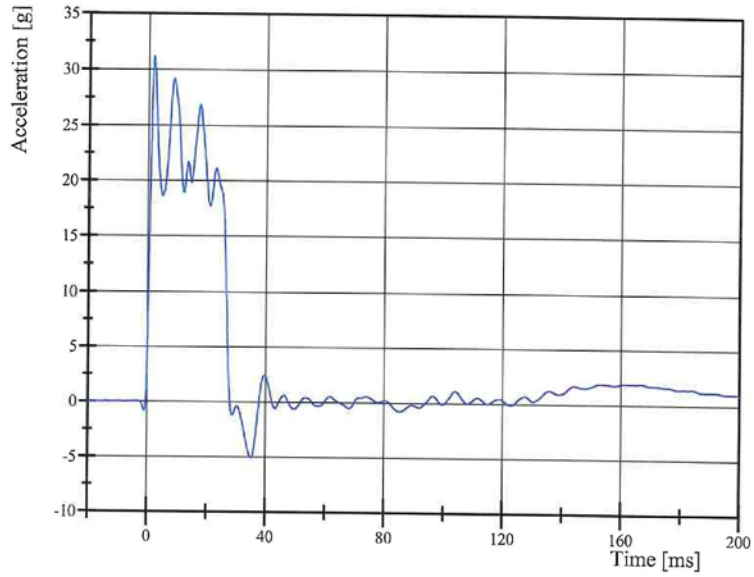
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

01.09.2014 11:13:16 639

# Transportation Research Center Inc.

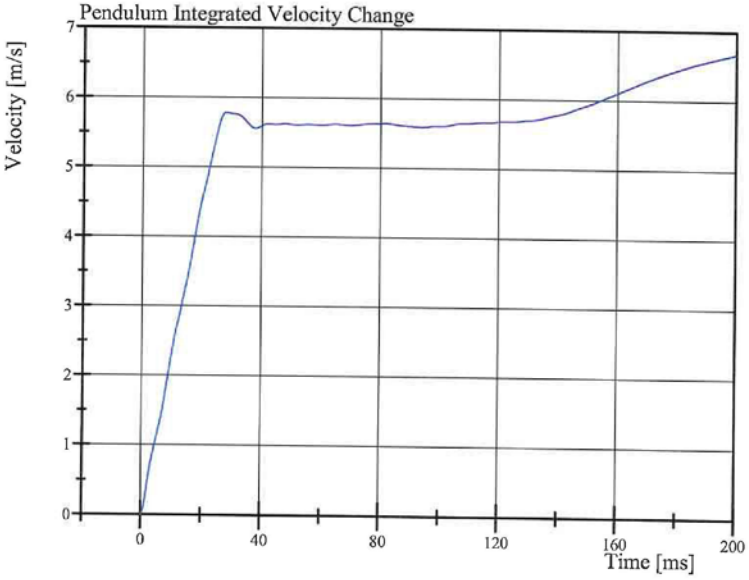
Left Lateral Neck
SID IIs Serial No. DI8818 Certification No. 8-1
Test Date: 1/9/2014

Pendulum Acceleration




Filter Class: CFC_180
Max: 31.2 g at 1.8 ms
Min: -5.1 g at 35.2 ms

Pendulum Integrated Velocity Change




Filter Class: CFC_180
Max: 6.7 m/s at 200.0 ms
Min: 0.0 m/s at 0.0 ms

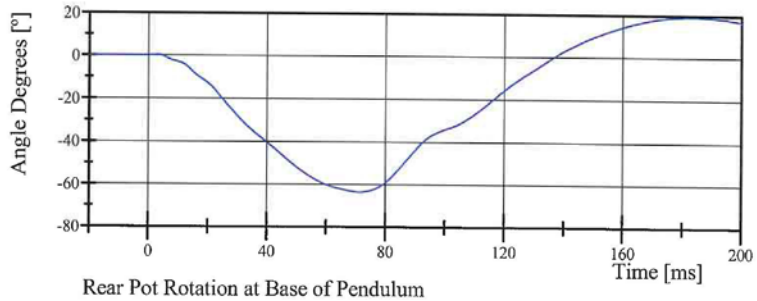
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

01.09.2014 11:13:27 639

# Transportation Research Center Inc.

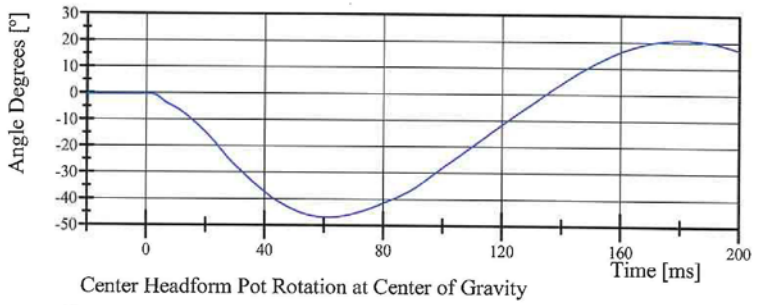
Left Lateral Neck
SID IIs Serial No. DI8818 Certification No. 8-1
Test Date: 1/9/2014

Forward Pot Rotation at Base of Pendulum



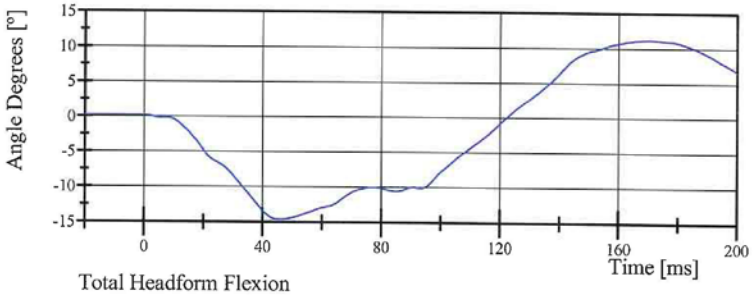

Filter Class: CFC_60
Max: 19.3 ° at 183.4 ms
Min: -63.5 ° at 71.4 ms

Rear Pot Rotation at Base of Pendulum



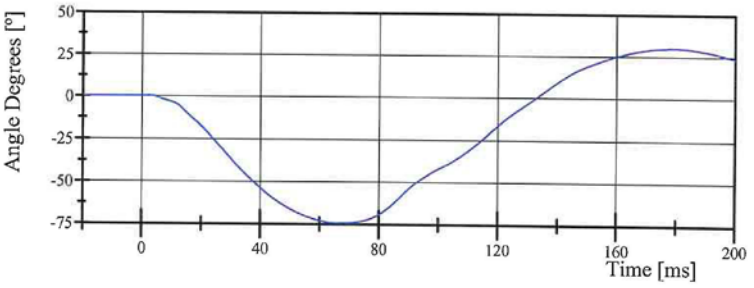

Filter Class: CFC_60
Max: 20.7 ° at 180.8 ms
Min: -47.0 ° at 61.3 ms

Center Headform Pot Rotation at Center of Gravity




Filter Class: CFC_60
Max: 11.1 ° at 170.0 ms
Min: -14.6 ° at 45.8 ms

Total Headform Flexion




Filter Class: CFC_60
Max: 29.9 ° at 179.0 ms
Min: -74.3 ° at 65.8 ms

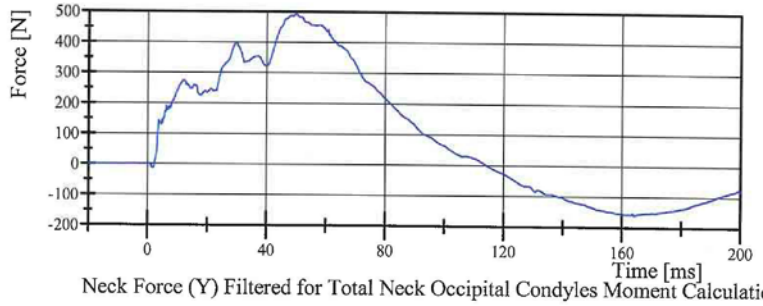
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

01.09.2014 11:13:28 639

# Transportation Research Center Inc.

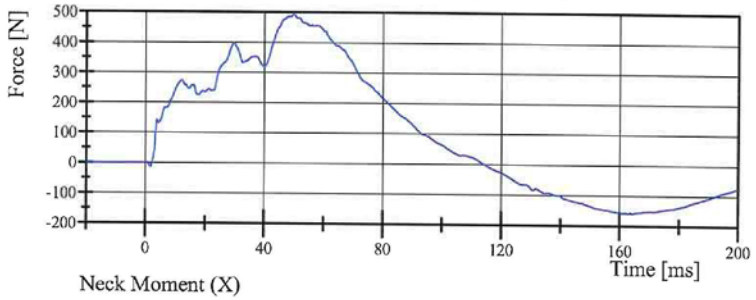
Left Lateral Neck
SID IIs Serial No. DI8818 Certification No. 8-1
Test Date: 1/9/2014

Neck Force (Y)



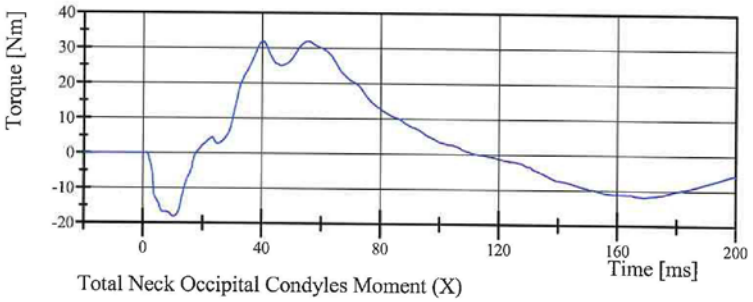

Filter Class: CFC_1000
Max: 493.0 N at 49.7 ms
Min: -160.9 N at 164.5 ms

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



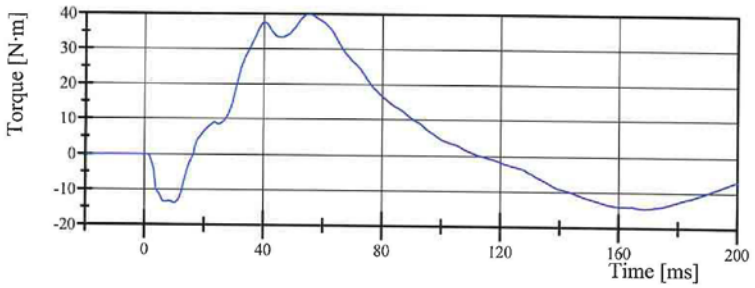

Filter Class: CFC_600
Max: 492.8 N at 49.8 ms
Min: -159.8 N at 164.4 ms

Neck Moment (X)




Filter Class: CFC_600
Max: 31.8 Nm at 40.2 ms
Min: -18.2 Nm at 10.2 ms

Total Neck Occipital Condyles Moment (X)




Filter Class: Without_(Consta
Max: 39.9 N·m at 55.5 ms
Min: -14.6 N·m at 168.9 ms

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

01.09.2014 11:13:28 639

# Transportation Research Center Inc.

Left Lateral Shoulder
SID IIs Serial No. DI8818 Certification No. 8-1
Test Date: 1/9/2014

| Test Parameter | Specification | Test Results | Pass |
|---|---|---|---|
| Temperature | 20.6 - 22.2 °C | 21.3 °C | Yes |
| Relative Humidity | 10 - 70 % | 39 % | Yes |
| Impactor Velocity | 4.2 - 4.4 m/s | 4.33 m/s | Yes |
| Impactor Acceleration | (-13) - (-18) g | -14.6 g | Yes |
| Shoulder Displacement | 28 - 37 mm | 32.5 mm | Yes |
| Upper Spine Lateral Acceleration | 17 - 22 g | 19.9 g | Yes |

**Test meets specifications.**

**Comments:**

Technician John K. Chang

Approved

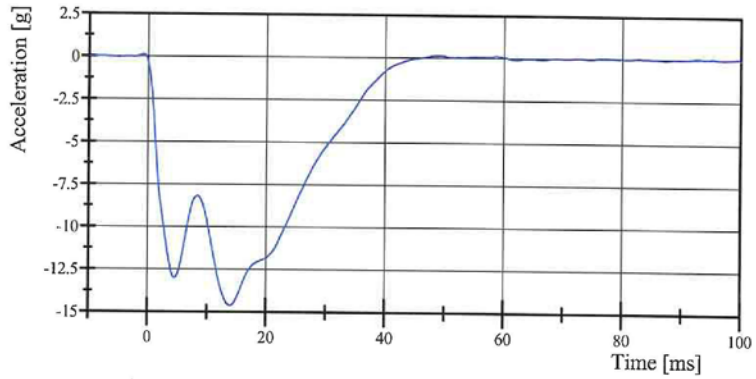
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

01.09.2014 12:54:19 839

# Transportation Research Center Inc.

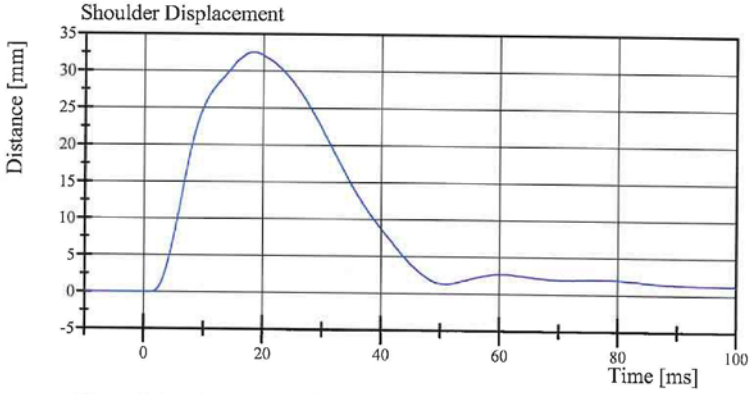
Left Lateral Shoulder
SID IIs Serial No. DI8818 Certification No. 8-1
Test Date: 1/9/2014

Probe Acceleration



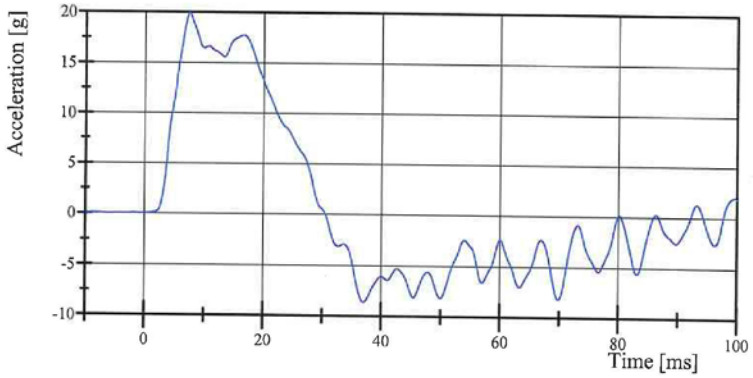

Filter Class: CFC_180
Max: 0.1 g at 48.9 ms
Min: -14.6 g at 14.0 ms

Shoulder Displacement




Filter Class: CFC_600
Max: 32.5 mm at 18.2 ms
Min: -0.0 mm at -5.4 ms

Upper Spine Acceleration (Y)




Filter Class: CFC_180
Max: 19.9 g at 7.4 ms
Min: -8.6 g at 37.0 ms

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

01.09.2014 12:54:30 839

# Transportation Research Center Inc.

Left Lateral Thorax with Arm
SID IIs Serial No. DI8818 Certification No. 8-3
Test Date: 1/10/2014

| Test Parameter | Specification | Test Results | Pass |
|---|---|---|---|
| Temperature | 20.6 - 22.2 °C | 21.2 °C | Yes |
| Relative Humidity | 10 - 70 % | 35 % | Yes |
| Impactor Velocity | 6.60 - 6.80 m/s | 6.734 m/s | Yes |
| Impactor Acceleration | (-30) - (-36) g | -34.0 g | Yes |
| Shoulder Displacement | 31 - 40 mm | 38.2 mm | Yes |
| Upper Thorax Rib Displacement | 25 - 32 mm | 28.9 mm | Yes |
| Center Thorax Rib Displacement | 30 - 36 mm | 31.2 mm | Yes |
| Lower Thorax Rib Displacement | 32 - 38 mm | 32.2 mm | Yes |
| Upper Spine Lateral Acceleration | 34 - 43 g | 37.6 g | Yes |
| Lower Spine Lateral Acceleration | 29 - 37 g | 34.1 g | Yes |

**Test meets specifications.**

**Comments:**

Technician

Approved

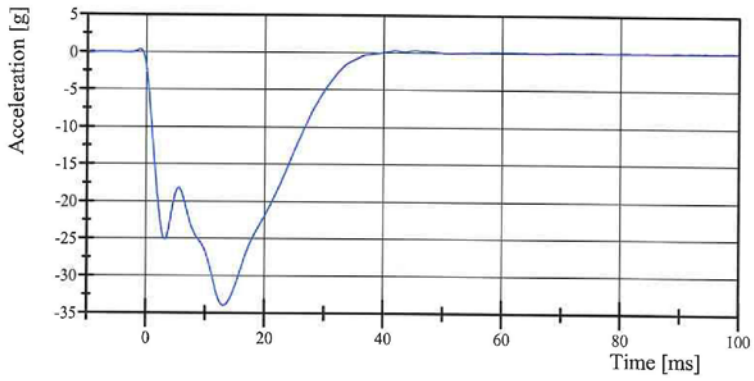
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

01.10.2014 08:17:59 621

# Transportation Research Center Inc.

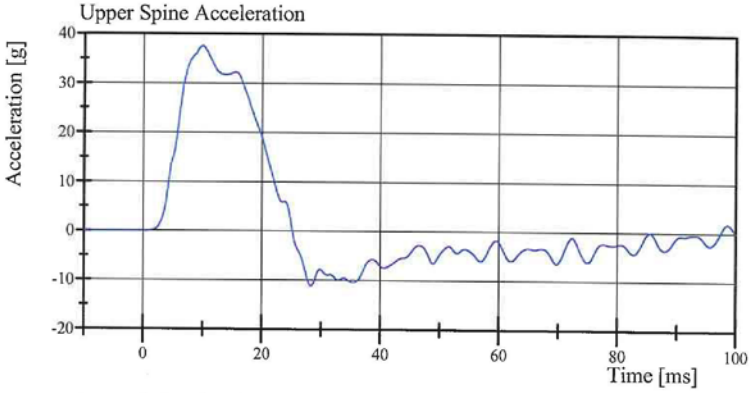
Left Lateral Thorax with Arm
SID IIs Serial No. DI8818 Certification No. 8-3
Test Date: 1/10/2014

Probe Acceleration



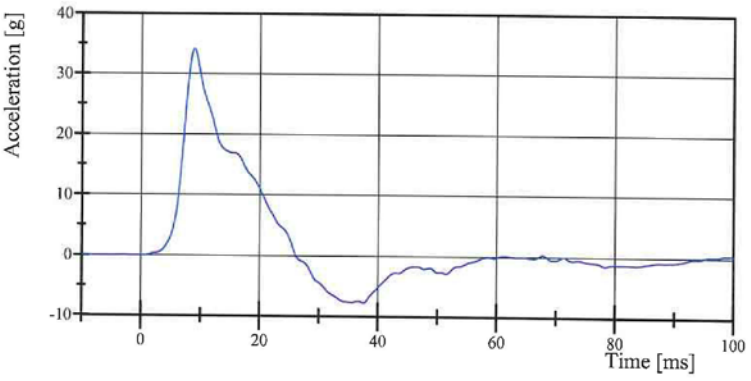

Filter Class: CFC_180
Max: 0.3 g at -1.0 ms
Min: -34.0 g at 13.1 ms

Upper Spine Acceleration




Filter Class: CFC_180
Max: 37.6 g at 9.9 ms
Min: -11.2 g at 28.3 ms

Lower Spine Acceleration




Filter Class: CFC_180
Max: 34.1 g at 8.9 ms
Min: -7.8 g at 37.6 ms

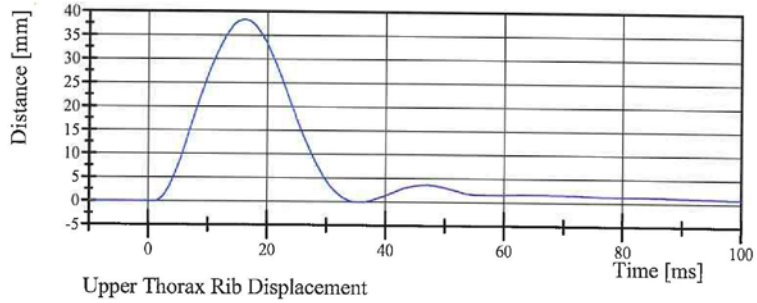
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

01.10.2014 08:18:12 621

# Transportation Research Center Inc.

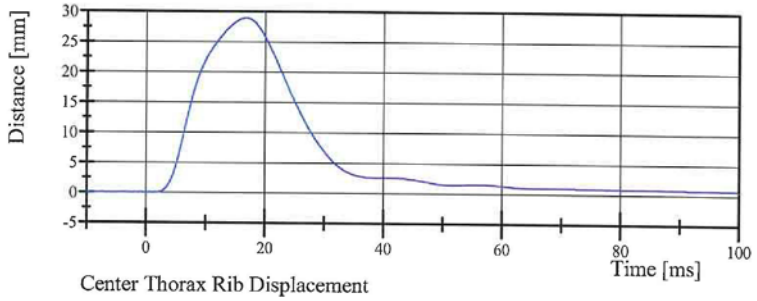
Left Lateral Thorax with Arm
SID IIs Serial No. DI8818 Certification No. 8-3
Test Date: 1/10/2014

Shoulder Rib Displacement



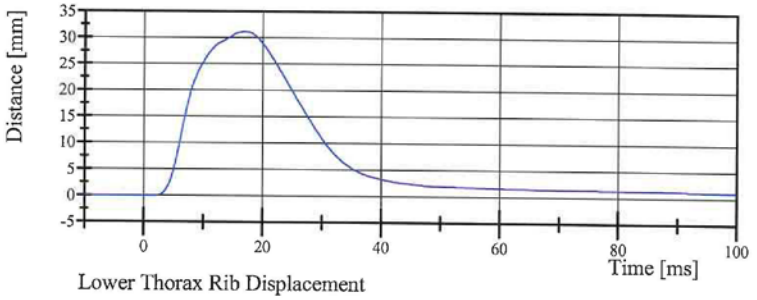

Filter Class: CFC_600
Max: 38.2 mm at 16.1 ms
Min: -0.1 mm at 35.4 ms

Upper Thorax Rib Displacement



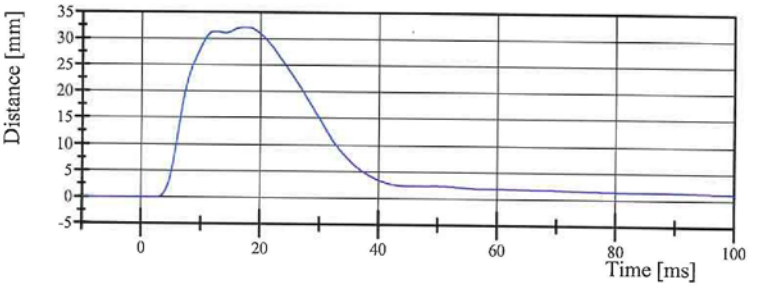

Filter Class: CFC_600
Max: 28.9 mm at 16.7 ms
Min: -0.0 mm at -6.6 ms

Center Thorax Rib Displacement




Filter Class: CFC_600
Max: 31.2 mm at 17.0 ms
Min: -0.0 mm at 1.0 ms

Lower Thorax Rib Displacement




Filter Class: CFC_600
Max: 32.2 mm at 17.2 ms
Min: -0.0 mm at -0.3 ms

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

01.10.2014 08:18:13 621

# Transportation Research Center Inc.

Left Lateral Thorax without Arm
SID IIs Serial No. DI8818 Certification No. 8-1
Test Date: 1/9/2014

| Test Parameter | Specification | Test Results | Pass |
|---|---|---|---|
| Temperature | 20.6 - 22.2 °C | 21.3 °C | Yes |
| Relative Humidity | 10 - 70 % | 36 % | Yes |
| Impactor Velocity | 4.20 - 4.40 m/s | 4.238 m/s | Yes |
| Impactor Acceleration | (-14) - (-18) g | -15.6 g | Yes |
| Upper Thorax Rib Displacement | 32 - 40 mm | 38.9 mm | Yes |
| Center Thorax Rib Displacement | 39 - 45 mm | 41.3 mm | Yes |
| Lower Thorax Rib Displacement | 35 - 43 mm | 36.3 mm | Yes |
| Upper Spine Lateral Acceleration | 13 - 17 g | 15.0 g | Yes |
| Lower Spine Lateral Acceleration | 7 - 11 g | 8.9 g | Yes |

**Test meets specifications.**

**Comments:**

Technician

Approved

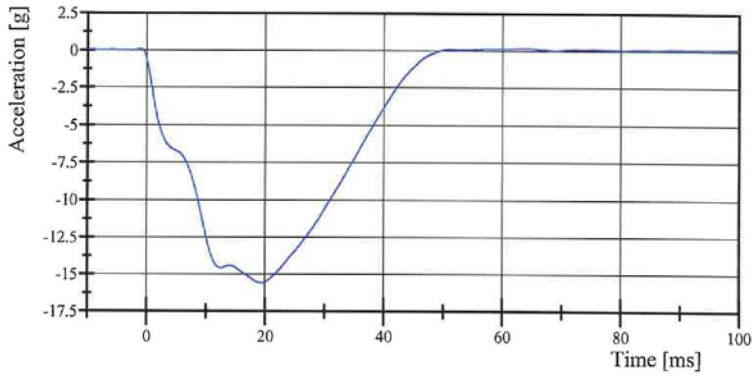
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

01.09.2014 14:37:14 873

# Transportation Research Center Inc.

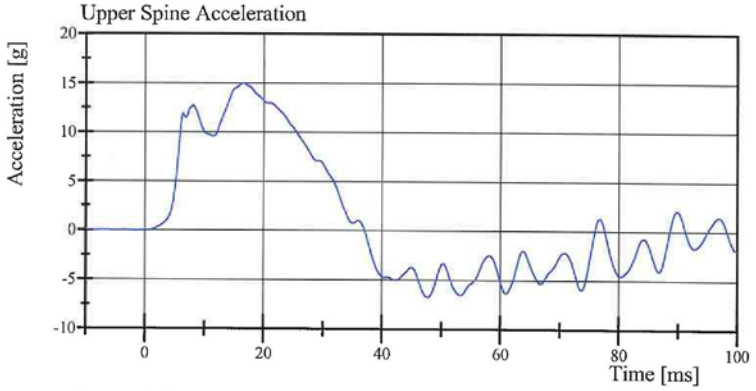
Left Lateral Thorax without Arm
SID IIs Serial No. DI8818 Certification No. 8-1
Test Date: 1/9/2014

Probe Acceleration



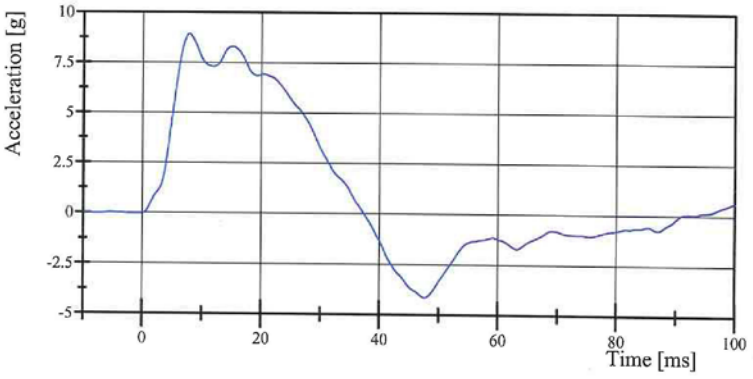

Filter Class: CFC_180
Max: 0.1 g at 64.2 ms
Min: -15.6 g at 19.3 ms

Upper Spine Acceleration




Filter Class: CFC_180
Max: 15.0 g at 16.5 ms
Min: -6.7 g at 47.7 ms

Lower Spine Acceleration




Filter Class: CFC_180
Max: 8.9 g at 7.8 ms
Min: -4.1 g at 47.6 ms

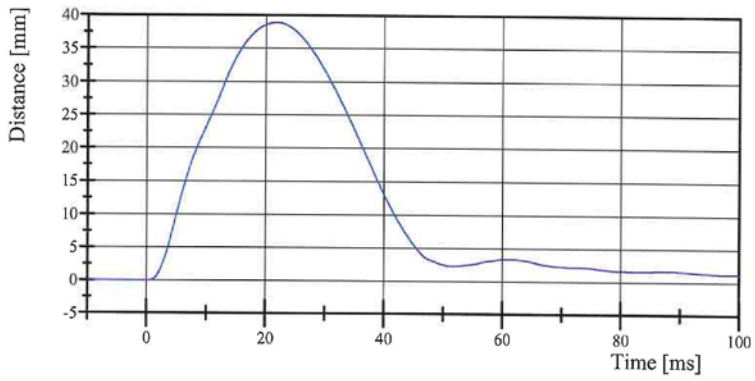
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

01.09.2014 14:37:28 873

# Transportation Research Center Inc.

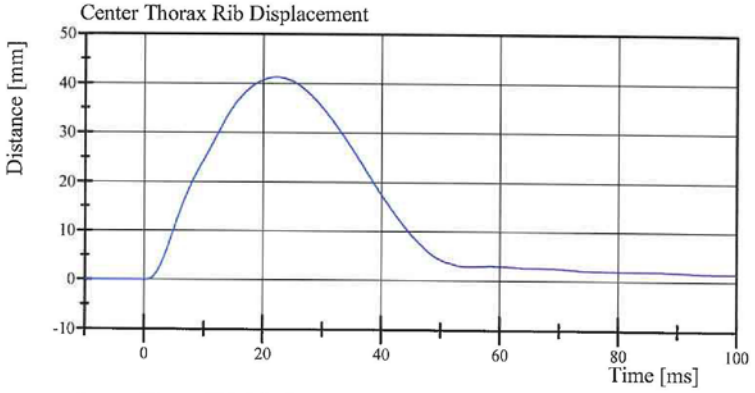
Left Lateral Thorax without Arm
SID IIs Serial No. DI8818 Certification No. 8-1
Test Date: 1/9/2014

Upper Thorax Rib Displacement



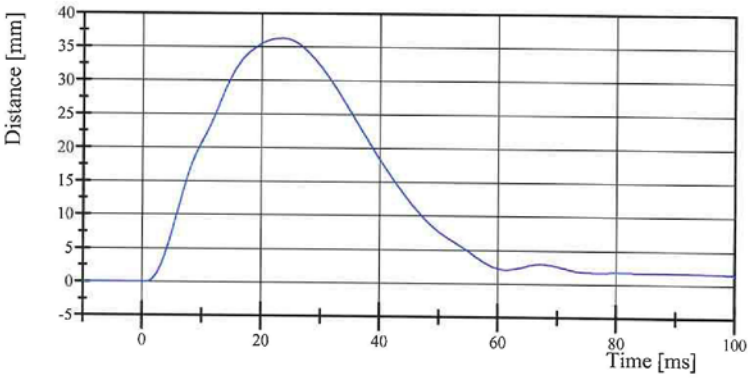

Filter Class: CFC_600
Max: 38.9 mm at 21.8 ms
Min: -0.0 mm at 0.3 ms

Center Thorax Rib Displacement




Filter Class: CFC_600
Max: 41.3 mm at 22.2 ms
Min: -0.0 mm at -4.5 ms

Lower Thorax Rib Displacement




Filter Class: CFC_600
Max: 36.3 mm at 23.4 ms
Min: -0.0 mm at 0.3 ms

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

01.09.2014 14:37:29 873

# Transportation Research Center Inc.

Left Lateral Abdomen
SID IIs Serial No. DI8818 Certification No. 8-3
Test Date: 1/10/2014

| Test Parameter | Specification | Test Results | Pass |
|---|---|---|---|
| Temperature | 20.6 - 22.2 °C | 21.4 °C | Yes |
| Relative Humidity | 10 - 70 % | 40 % | Yes |
| Impactor Velocity | 4.2 - 4.4 m/s | 4.27 m/s | Yes |
| Impactor Acceleration | (-12) - (-16) g | -14.4 g | Yes |
| Upper Abdominal Rib Displacement | 36 - 47 mm | 40.7 mm | Yes |
| Lower Abdominal Rib Displacement | 33 - 44 mm | 34.5 mm | Yes |
| Lower Spine Lateral Acceleration | 9 - 14.0 g | 11.64 g | Yes |

**Test meets specifications.**

**Comments:**

Technician

Approved

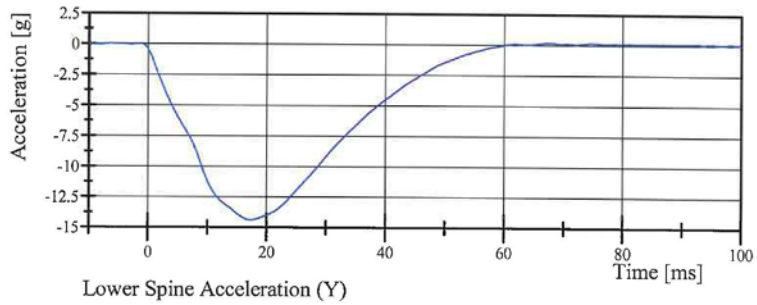
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

01.10.2014 14:01:29 656

# Transportation Research Center Inc.

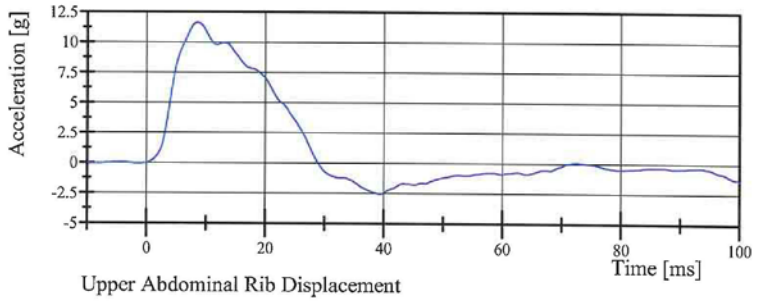
Left Lateral Abdomen
SID IIs Serial No. DI8818 Certification No. 8-3
Test Date: 1/10/2014

Probe Acceleration



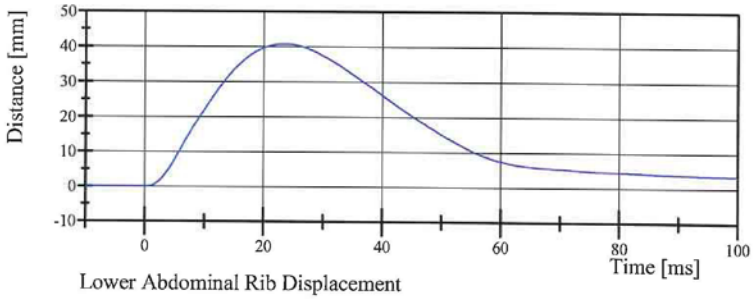

Filter Class: CFC_180
Max: 0.2 g at 67.6 ms
Min: -14.4 g at 17.4 ms

Lower Spine Acceleration (Y)



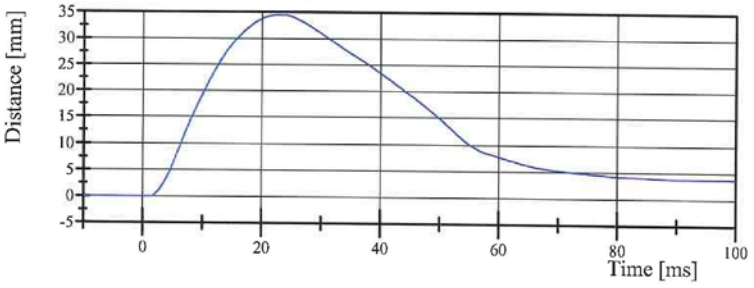

Filter Class: CFC_180
Max: 11.6 g at 8.6 ms
Min: -2.5 g at 39.4 ms

Upper Abdominal Rib Displacement




Filter Class: CFC_600
Max: 40.7 mm at 23.3 ms
Min: -0.0 mm at -9.4 ms

Lower Abdominal Rib Displacement




Filter Class: CFC_600
Max: 34.5 mm at 22.8 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.

01.10.2014 14:01:40 656

# Transportation Research Center Inc.

Left Lateral Pelvis
SID IIs Serial No. DI8818 Certification No. 8-3
Test Date: 1/10/2014

| Test Parameter | Specification | Test Results | Pass |
|---|---|---|---|
| Temperature | 20.6 - 22.2 °C | 21.5 °C | Yes |
| Relative Humidity | 10 - 70 % | 38 % | Yes |
| Pendulum Velocity | 6.6 - 6.8 m/s | 6.67 m/s | Yes |
| Impactor Acceleration | (-38.0) - (-47.0) g | -45.36 g | Yes |
| Peak Pelvis Lateral Acceleration after 6ms | 34 - 42 g | 42.0 g | Yes |
| Acetabulum Force | 3,600 - 4,300 N | 4,093.1 N | Yes |

**Test meets specifications.**

**Comments:**

Technician

Approved

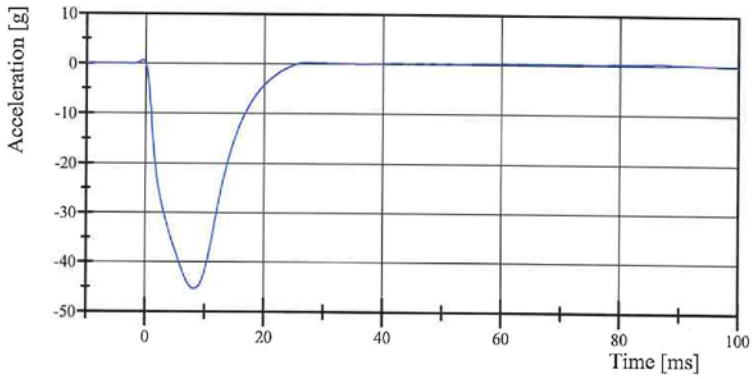
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

01.10.2014 08:53:50 429

# Transportation Research Center Inc.

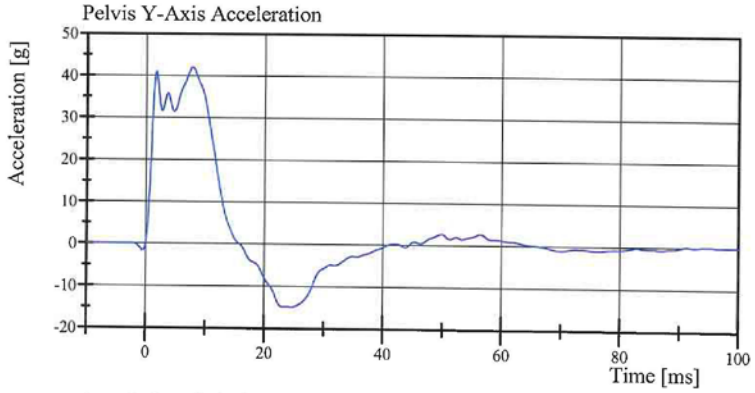
Left Lateral Pelvis
SID IIs Serial No. DI8818 Certification No. 8-3
Test Date: 1/10/2014

Probe Acceleration



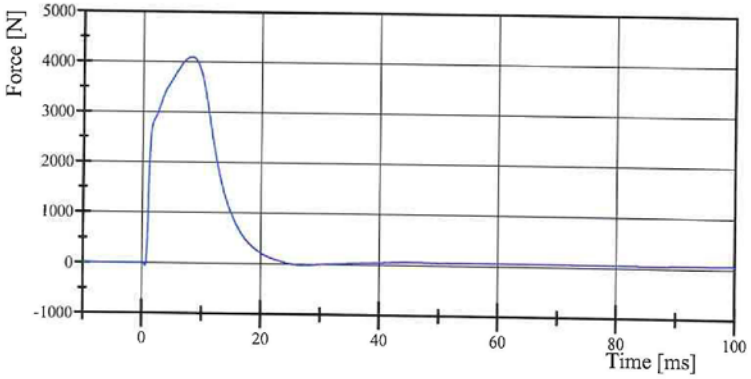

Filter Class: CFC_180
Max: 0.6 g at -0.5 ms
Min: -45.4 g at 8.2 ms

Pelvis Y-Axis Acceleration




Filter Class: CFC_180
Max: 42.0 g at 7.8 ms
Min: -14.9 g at 24.6 ms

Acetabulum Y-Axis Force




Filter Class: CFC_600
Max: 4,093.1 N at 8.2 ms
Min: -52.6 N at 0.6 ms

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

01.10.2014 08:54:13 429

# Transportation Research Center Inc.

Left Lateral Iliac
SID IIs Serial No. DI8818 Certification No. 8-1
Test Date: 1/10/2014

| Test Parameter | Specification | Test Results | Pass |
|---|---|---|---|
| Temperature | 20.6 - 22.2 °C | 21.3 °C | Yes |
| Relative Humidity | 10 - 70 % | 37 % | Yes |
| Pendulum Velocity | 4.2 - 4.4 m/s | 4.27 m/s | Yes |
| Impactor Acceleration | (-36) - (-45) g | -37.4 g | Yes |
| Peak Pelvis Lateral Acceleration | 28 - 39 g | 28.0 g | Yes |
| Iliac Force | 4,100 - 5,100 N | 4,245.5 N | Yes |

**Test meets specifications.**

**Comments:**

Technician

Approved

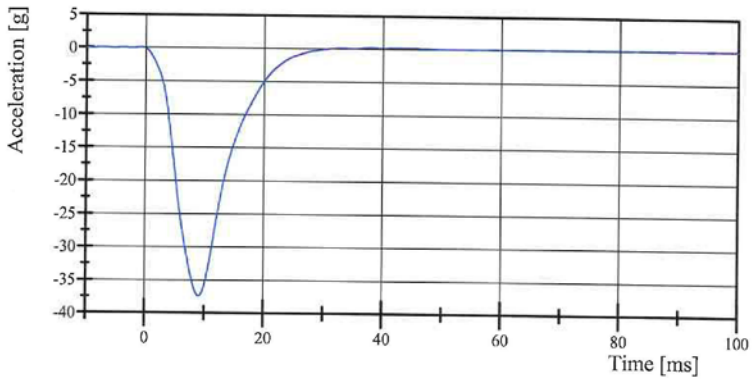
Specification Source: Procedures based on Final Rule effective 8/24/2009
Polarity in accordance with SAE J211.

01.10.2014 14:50:26 681

# Transportation Research Center Inc.

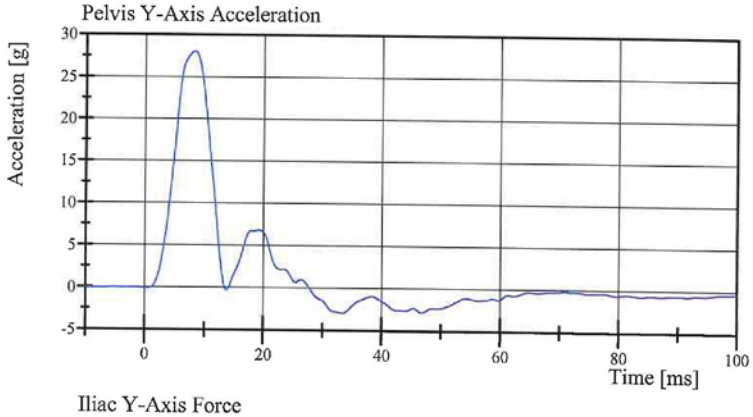
Left Lateral Iliac
SID IIs Serial No. DI8818 Certification No. 8-1
Test Date: 1/10/2014

Probe Acceleration



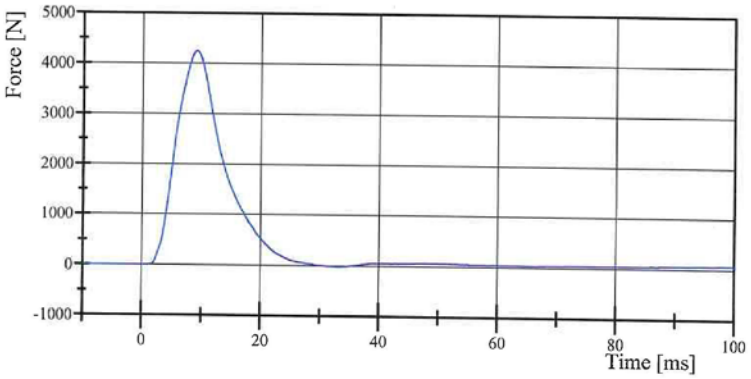

Filter Class: CFC_180
Max: 0.2 g at 37.9 ms
Min: -37.4 g at 9.1 ms

Pelvis Y-Axis Acceleration




Filter Class: CFC_180
Max: 28.0 g at 8.3 ms
Min: -2.9 g at 33.4 ms

Iliac Y-Axis Force




Filter Class: CFC_600
Max: 4,245.5 N at 9.1 ms
Min: -18.1 N at 33.4 ms

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

01.10.2014 14:50:36 681

# APPENDIX D
# TEST EQUIPMENT AND INSTRUMENTATION CALIBRATION DATA

**TABLE 1 – Dummy Instrumentation (SID-IIs)**

| | | | | SID-IIs S/N DI8818 | | |
|---|---|---|---|---|---|---|
| | | | | **Serial Number** | **Manufacturer** | **Calibration Date** |
| Head Accelerometers | | | X | J32214 | Endevco | 9-Dec-2013 |
| | | | Y | J27040 | Endevco | 9-Dec-2013 |
| | | | Z | AGAC4 | Endevco | 9-Dec-2013 |
| Displacement Potentiometers | Shoulder | | Y | N/A | N/A | N/A |
| | Thoracic Rib | Upper | Y | 3787-047 | Servo | 10-Dec-2013 |
| | | Middle | Y | 3745-01815 | Servo | 10-Dec-2013 |
| | | Lower | Y | 03745-01803 | Servo | 10-Dec-2013 |
| | Abdominal Rib | Upper | Y | 3745-01811 | Servo | 10-Dec-2013 |
| | | Lower | Y | 3787-051 | Servo | 18-Dec-2013 |
| Lower Spine Accelerometers (T12) | | | X | 00L13-F05 | Entran | 9-Dec-2013 |
| | | | Y | 04J04I20-A17 | Entran | 9-Dec-2013 |
| | | | Z | P64093 | Endevco | 9-Dec-2013 |
| Acetabulum Load Cell | | | Y | 235-FY | FTSS | 6-Nov-13 |
| Iliac Wing Load Cell | | | Y | 113-FY | FTSS | 6-Nov-13 |
| Pelvis Plug (struck side) | | | | 63306 | FTSS | 24-Jan-13 |
| Pelvis Plug (non-struck side) | | | | 63609 | FTSS | 20-Sep-11 |

**TABLE 2 – Vehicle Instrumentation**

| Vehicle Instrumentation | | Serial Number | Manufacturer | Calibration Date |
|---|---|---|---|---|
| Vehicle Center of Gravity | X | P79368 | Endevco | 17-Dec-2013 |
| Vehicle Center of Gravity | Y | P82271 | Endevco | 4-Nov-2013 |
| Vehicle Center of Gravity | Z | P77741 | Endevco | 17-Jul-2013 |
| Left Floor Sill | Y | P81603 | Endevco | 12-Nov-2013 |
| A-Pillar Sill | Y | P82059 | Endevco | 4-Nov-2013 |
| A-Pillar Low | Y | P81084 | Endevco | 5-Nov-2013 |
| A-Pillar Mid | Y | P81081 | Endevco | 5-Nov-2013 |
| B-Pillar Sill | Y | P80709 | Endevco | 17-Sep-2013 |
| B-Pillar Low | Y | P82006 | Endevco | 14-Nov-2013 |
| B-Pillar Mid | Y | P81080 | Endevco | 5-Nov-2013 |
| Driver Seat | Y | P80454 | Endevco | 22-Sep-2013 |
| Engine Top | X | P79310 | Endevco | 12-Aug-2013 |
| Engine Top | Y | P79093 | Endevco | 16-Aug-2013 |
| Firewall | Y | P81636 | Endevco | 15-Nov-2013 |
| Right Roof | Y | P76403 | Endevco | 25-Sep-2013 |
| Right Floor Sill | Y | P80691 | Endevco | 17-Sep-2013 |
| Rear Floor Pan | X | P81537 | Endevco | 5-Nov-2013 |
| Rear Floor Pan | Y | P81096 | Endevco | 5-Nov-2013 |

**TABLE 3 – Pole Instrumentation**

| Pole Instrumentation | Serial Number | Manufacturer | Calibration Date |
|---|---|---|---|
| Load Cell 1 | 5763-87-FX | Denton | 9-Dec-2013 |
| Load Cell 2 | 5763-97-FX | Denton | 9-Dec-2013 |
| Load Cell 3 | 5763-84-FX | Denton | 9-Dec-2013 |
| Load Cell 4 | 5764-81-FX | Denton | 9-Dec-2013 |
| Load Cell 5 | 5763-89-FX | Denton | 9-Dec-2013 |
| Load Cell 6 | 5763-77-FX | Denton | 9-Dec-2013 |
| Load Cell 7 | 5764-89-FX | Denton | 9-Dec-2013 |
| Load Cell 8 | 5764-77-FX | Denton | 9-Dec-2013 |