

REPORT NUMBER: NCAP-KAR-11-059

**NEW CAR ASSESSMENT PROGRAM (NCAP)
FRONTAL BARRIER IMPACT TEST**

**FORD MOTOR CO.
2011 FORD F-150 XLT 4X4 SUPERCREW 4-DOOR TRUCK**

NHTSA NUMBER: MB0208

**PREPARED BY:
KARCO ENGINEERING, LLC.
9270 HOLLY ROAD
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FEBRUARY 15, 2011

FINAL REPORT

**U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
SAFETY PERFORMANCE STANDARDS
OFFICE OF CRASHWORTHINESS STANDARDS
1200 NEW JERSEY AVE, SE
ROOM W43-410
WASHINGTON, DC 20590**

TECHNICAL REPORT DOCUMENTATION PAGE

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| 9. Performing Organization Name and Address KARCO Engineering, LLC. 9270 Holly Rd. Adelanto, CA, 92301 | | 10. Work Unit No. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 12. Sponsoring Agency Name and Address U. S. Department of Transportation National Highway Traffic Safety Administration Office of Crashworthiness Standards 1200 New Jersey Ave., SE, Room W43-410 Washington, D.C 20590 | | 13. Type of Report and Period Covered Final Test Report, February 2011 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 15. Supplementary Notes | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16. Abstract <p>A 56.3 km/h NCAP Frontal Impact Test was conducted on a 2011 Ford F-150 XLT 4x4 SuperCrew 4-Door Truck in accordance with the specifications of the Office of Crashworthiness Standards Frontal NCAP Laboratory Test Procedure. This test was conducted to obtain data indicant of FMVSS 208, 212, 219 (partial), 301 and footwell intrusion performance. The test was conducted at the KARCO Engineering, LLC. facility in Adelanto, California on February 15, 2011.</p> <p>The impact velocity of the vehicle was 56.16 km/h and the ambient temperature at the barrier face at the time of impact was 17.8 deg. C. The target vehicle's post-test maximum crush was 610 mm at the vehicle centerline. The test vehicle's performance is as follows:</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th rowspan="2">Measurement Description</th> <th rowspan="2">Units</th> <th colspan="2">Driver ATD</th> <th colspan="2">Passenger ATD</th> </tr> <tr> <th>Threshold</th> <th>Result</th> <th>Threshold</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC₁₅)</td> <td>N/A</td> <td>700.0</td> <td>309.8</td> <td>700.0</td> <td>474.0</td> </tr> <tr> <td>Maximum Chest Compression</td> <td>mm</td> <td>63</td> <td>-28</td> <td>52</td> <td>-15</td> </tr> <tr> <td>Nij</td> <td>N/A</td> <td>1</td> <td>0.31</td> <td>1</td> <td>0.60</td> </tr> <tr> <td>Neck Tension</td> <td>N</td> <td>4170</td> <td>808.4</td> <td>2620</td> <td>807.3</td> </tr> <tr> <td>Neck Compression</td> <td>N</td> <td>4000</td> <td>-176.0</td> <td>2520</td> <td>-450.2</td> </tr> <tr> <td>Left Femur Force</td> <td>N</td> <td>10008</td> <td>-4765.5</td> <td>6805</td> <td>-1527.0</td> </tr> <tr> <td>Right Femur Force</td> <td>N</td> <td>10008</td> <td>-2212.5</td> <td>6805</td> <td>-3481.0</td> </tr> </tbody> </table> | | | | Measurement Description | Units | Driver ATD | | Passenger ATD | | Threshold | Result | Threshold | Result | Head Injury Criteria (HIC ₁₅) | N/A | 700.0 | 309.8 | 700.0 | 474.0 | Maximum Chest Compression | mm | 63 | -28 | 52 | -15 | Nij | N/A | 1 | 0.31 | 1 | 0.60 | Neck Tension | N | 4170 | 808.4 | 2620 | 807.3 | Neck Compression | N | 4000 | -176.0 | 2520 | -450.2 | Left Femur Force | N | 10008 | -4765.5 | 6805 | -1527.0 | Right Femur Force | N | 10008 | -2212.5 | 6805 | -3481.0 |
| Measurement Description | Units | Driver ATD | | | | Passenger ATD | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Threshold | Result | Threshold | Result | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Head Injury Criteria (HIC ₁₅) | N/A | 700.0 | 309.8 | 700.0 | 474.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum Chest Compression | mm | 63 | -28 | 52 | -15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Nij | N/A | 1 | 0.31 | 1 | 0.60 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Neck Tension | N | 4170 | 808.4 | 2620 | 807.3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Neck Compression | N | 4000 | -176.0 | 2520 | -450.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Left Femur Force | N | 10008 | -4765.5 | 6805 | -1527.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Right Femur Force | N | 10008 | -2212.5 | 6805 | -3481.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 17. Key Words 35 mph Frontal Barrier Impact Test New Car Assessment Program (NCAP) | | 18. Distribution Statement Copies of this report are available from: National Highway Traffic Safety Admin. Technical Reference Division 1200 New Jersey Ave., SE Washington, DC 20590 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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SECTION 1

PURPOSE AND SUMMARY OF TEST

PURPOSE

This 56.3 km/h frontal barrier impact test is part of the Vehicle Barrier Impact Testing Program, sponsored by the National Highway Traffic Safety Administration (NHTSA) under contract number DTNH22-06-D-00027. The purpose of this test was to obtain vehicle crashworthiness and occupant restraint system performance data for consumer information purposes.

The 56.3 km/h frontal barrier impact test was conducted in accordance with the Office of Crashworthiness Standards Frontal NCAP Laboratory Test Procedure, dated January, 2010.

SUMMARY

A load cell barrier consisting of 36 load cells was impacted by a 2011 Ford F-150 XLT 4x4 SuperCrew 4-Door Truck at a velocity of 56.16 km/h. The test was performed at KARCO Engineering, LLC. on February 15, 2011. Pre- and post-test photographs of the vehicle and dummies can be found in Appendix A of this report.

Three (3) real-time cameras and sixteen (16) high-speed cameras were used to document the frontal barrier impact event. Camera locations and other pertinent camera information can be found in Data Sheet 6 of this report.

One Part 572E 50th percentile male anthropomorphic test device (ATD) was placed in the driver seating position and one Part 572O 5th percentile female ATD was placed in the right-front passenger seating position according to dummy placement instructions specified in the Frontal NCAP Laboratory Test Procedure.

Both ATDs were fully instrumented with head, chest and pelvis tri-axial accelerometers, chest displacement potentiometers, upper neck force transducers, right / left femur load cells, and lower leg instrumentation. Seat belt load cells were also on the driver's lap and shoulder belt and the passenger's lap belt to measure the dummy torso and pelvic section loading. The driver (position 1) ATD (Serial No. 034) and the right-front passenger (position 2) ATD (Serial No. 141) were calibrated prior to this test. Certification details, along with instrumentation calibration data, are found in Appendix C of this report.

The 136 channels of data were recorded on an on-board data acquisition system. Appendix B contains the dummy response data traces.

There was 100.0% windshield retention and no intrusion into the protected zone of the windshield during the event. There was no Stoddard solvent leakage after the event or during any phase of the static rollover.

The maximum static crush of the test vehicle was 610 mm located at the vehicle centerline. Both the driver and passenger side doors remained closed during the impact event and were operable after the impact.

The driver's visible contact points were as follows: The driver ATD's head contacted the airbag and the head restraint. The upper torso contacted the airbag. The left knee contacted the knee bolster. The right knee contacted the knee bolster and the steering column.

The passenger's visible contact points were as follows: The passenger ATD's head contacted the airbag and the head restraint. The upper torso contacted the airbag. Both the left and right knees contacted the glovebox.

The occupant data is summarized below:

| ATD Position | HIC ₁₅ | T ¹ | T ² | Chest Disp. (mm) | Nij | Neck Tension (N) | Neck Comp. (N) | Left Femur (N) | Right Femur (N) |
|-----------------|-------------------|----------------|----------------|------------------|------|------------------|----------------|----------------|-----------------|
| Driver (50th) | 309.8 | 67.3 | 82.3 | -28 | 0.31 | 808.4 | -176.0 | -4765.5 | -2212.5 |
| Passenger (5th) | 474.0 | 66.2 | 81.2 | -15 | 0.60 | 807.3 | -450.2 | -1527.0 | -3481.0 |

SECTION 2
DATA SHEETS

Test Vehicle: 2011 Ford F-150 XLT 4x4 SuperCrew 4-Door Truck NHTSA No.: MB0208
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 02/15/11

CONVERSION FACTORS

| Quantity | Typical Application | Std Units | Metric Unit | Multiply By |
|--------------------|---------------------|---------------------|-------------|---------------|
| Mass | Vehicle Weight | lb | kg | 0.4536 |
| Linear Velocity | Impact Velocity | miles/hr | km/hr | 1.609344 |
| Length or Distance | Measurements | in | mm | 25.4 |
| Volume | Fuel Systems | gal | liter | 3.785 |
| Volume | Small Fluids | oz | mL | 29.573 |
| Pressure | Tire Pressures | lbf/in ² | kPa | 7.0 |
| Volume | Liquid | gal | liter | 3.785 |
| Temperature | General Use | °F | °C | =(tf -32)/1.8 |
| Force | Dynamic Forces | lbf | N | 4.448 |
| Moment | Torque | lbf•ft | N•m | 1.355 |

DATA SHEET NO. 1

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2011 Ford F-150 XLT 4x4 SuperCrew 4-Door Truck NHTSA No.: MB0208
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 02/15/11

TEST VEHICLE INFORMATION AND OPTIONS

| | |
|-------------------------|-------------------------|
| NHTSA Number | MB0208 |
| Make | Ford |
| Model | F-150 XLT 4x4 SuperCrew |
| Body Style | 4-Door Truck |
| VIN | 1FTFW1EF5BFA43714 |
| Body Color | Sterling Gray Metallic |
| Delivery Date | 1/26/2011 |
| Odometer Reading (mi) | 28 |
| Odometer Reading (km) | 45 |
| Dealer | Galpin Ford |
| Transmission | 6-Speed Automatic |
| Final Drive | 4x4 |
| Type / No. of Cylinders | V8 |
| Engine Displacement (L) | 5.0 |
| Engine Placement | Longitudinal |
| Roof Rack | No |
| Sunroof / T-Top | No |
| Tinted Glass | Yes |
| Traction Control | Yes |
| Power Brakes | Yes |
| Front Disc | Yes |
| Rear Disc | Yes |

| | |
|----------------------------|-----|
| Anti-Lock Brakes | Yes |
| All Wheel Drive | Yes |
| Power Steering | Yes |
| Driver Front Airbag | Yes |
| Driver Curtain Airbag | Yes |
| Driver Head/Torso Airbag | No |
| Driver Torso Airbag | No |
| Driver Torso/Pelvis Airbag | Yes |
| Driver Pelvis Airbag | No |
| Driver Knee Airbag | No |
| Pass. Front Airbag | Yes |
| Pass. Curtain Airbag | Yes |
| Pass. Head/Torso Airbag | No |
| Pass. Torso Airbag | No |
| Pass. Torso/Pelvis Airbag | Yes |
| Pass. Pelvis Airbag | No |
| Pass. Knee Airbag | No |
| Pre-Tensioners | Yes |
| Load Limiters | Yes |
| Automatic Door Locks | Yes |
| Tilt Steering | Yes |
| Other | |

Does Owner's Manual provide instructions to turn off automatic door locks? Yes

DATA FROM CERTIFICATION LABEL

| | |
|---------------------|----------------|
| Manufactured By | Ford Motor Co. |
| Date of Manufacture | Dec-10 |

| | |
|-----------------|------|
| GVWR (kg) | 3266 |
| GAWR Front (kg) | 1701 |
| GAWR Rear (kg) | 1746 |

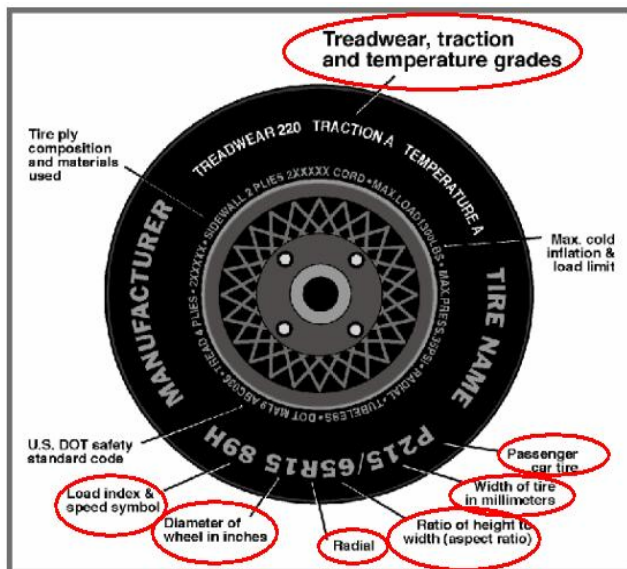
VEHICLE SEATING AND CAPACITY WEIGHT INFORMATION

| Measured Parameter | Front | Rear | Third | Total |
|----------------------------|--------|-------|-------|-------|
| Type of Seats | Bucket | Bench | | |
| Number of Occupants | 3 | 3 | | 6 |
| Capacity Weight (VCW) (kg) | | | | 643.0 |
| Cargo Weight (RCLW) (kg) | | | | 136.0 |

DATA SHEET NO. 1 ... (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2011 Ford F-150 XLT 4x4 SuperCrew 4-Door Truck NHTSA No.: MB0208
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 02/15/11



VEHICLE TIRE INFORMATION

| Measured Parameter | Front | Rear |
|---------------------------|-----------------------------------|-----------------------------------|
| Max. Tire Pressure (kPa) | 300 | 300 |
| Cold Pressure (kPa) | 240 | 240 |
| Recommended Tire Size | P265/70R17 | P265/70R17 |
| Tire Size on Vehicle | P265/70R17 | P265/70R17 |
| Tire Manufacturer | Michelin | Michelin |
| Tire Model | LTX | LTX |
| Treadwear | 500 | 500 |
| Traction | A | A |
| Temperature Grades | B | B |
| Tire Plies Sidewall | 2 Polyester | 2 Polyester |
| Tire Plies Body | 2 Polyester, 1 Polyamide, 2 Steel | 2 Polyester, 1 Polyamide, 2 Steel |
| Load Index / Speed Symbol | 113S | 113S |
| Tire Material | Polyester, Polyamide, Steel | Polyester, Polyamide, Steel |
| DOT Safety Code Left | APKP 00EX 4710 | APKP 00EX 4710 |
| DOT Safety Code Right | APKP 00EX 4710 | APKP 00EX 4710 |

DATA SHEET NO. 1 ... (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2011 Ford F-150 XLT 4x4 SuperCrew 4-Door Truck NHTSA No.: MB0208
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 02/15/11

TEST VEHICLE WEIGHTS

| | Units | As Delivered Weights (UVW) | | | As Tested Weights (ATW) | | |
|-------|-------|----------------------------|-----------|--------|-------------------------|-----------|--------|
| | | Front Axle | Rear Axle | Total | Front Axle | Rear Axle | Total |
| Left | kg | 756.0 | 572.5 | | 795.0 | 686.0 | |
| Right | kg | 696.5 | 557.0 | | 714.5 | 658.0 | |
| Ratio | % | 56.3% | 43.7% | 100.0% | 52.9% | 47.1% | 100.0% |
| Total | kg | 1452.5 | 1129.5 | 2582.0 | 1509.5 | 1344.0 | 2853.5 |

TARGET TEST WEIGHT CALCULATION

| Measured Parameter | Units | Value | |
|---|-------|--------|-------|
| Total Delivered Weight (UVW) | kg | 2582.0 | A |
| Weight of 1 P572E ATD & 1 P572O ATD | kg | 141.0 | B |
| Rated Cargo/Luggage Weight (RCLW) | kg | 136.0 | C |
| Calculated Vehicle Target Weightt (TVTWT) | kg | 2859.0 | A+B+C |

TEST VEHICLE ATTITUDES

| Condition | Units | LF | RF | LR | RR | CG Aft of Front Axle |
|--------------|-------|-----|-----|------|------|----------------------|
| As Delivered | mm | 963 | 962 | 1014 | 1016 | 1609 |
| As Tested | mm | 948 | 953 | 981 | 982 | 1732 |
| Post-Test | mm | 899 | 921 | 1011 | 975 | |

GENERAL TEST VEHICLE DATA

| Measurement Description | Units | Value |
|---|-------|--------|
| Total Vehicle Wheel Base | mm | 3677 |
| Total Vehicle Length at Left Side | mm | 5365 |
| Total Vehicle Length at Centerline | mm | 5900 |
| Total Vehicle Length at Right Side | mm | 5369 |
| Weight of Ballast in Cargo Area | kg | 133.0 |
| Weight of Vehicle Components Removed | kg | 7.0 |
| Amount of Stoddard Solvent in Fuel Tank | L | 126.72 |

VEHICLE COMPONENTS REMOVED TO MEET TEST WEIGHT:

Spare tire tools (6.0 kg), Tire Caps (1.0 kg)

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

Test Vehicle: 2011 Ford F-150 XLT 4x4 SuperCrew 4-Door Truck NHTSA No.: MB0208
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 02/15/11

TARGET VEHICLE STRUCTURAL MEASUREMENTS

| No. | Description | Pre-Test | Post-Test | Difference |
|-----|---------------------------------------|----------|-----------|------------|
| 1 | Total Length | 5900 | 5290 | -610 |
| 2 | Total Width | 1942 | 2367 | 425 |
| 3 | Bumper Top Height | 652 | 645 | -7 |
| 4 | Bumper Bottom Height | 397 | 403 | 6 |
| 5 | Longitudinal Member Top Height | 638 | 555 | -83 |
| 6 | Distance Between Longitudinal Members | 825 | 760 | -65 |
| 7 | Longitudinal Member Width | 80 | 123 | 43 |
| 8 | Engine Top Height | 1060 | 1045 | -15 |
| 9 | Engine Bottom Height | 332 | 257 | -75 |
| 10 | Engine and Gearbox Width | 721 | 721 | 0 |
| 11 | Front Bumper to Engine Distance | 813 | 510 | -303 |
| 12 | Front Shock Absorber Fixing Height | 824 | 855 | 31 |
| 13 | Bonnet Leading Edge Height | 1134 | 1200 | 66 |
| 14 | Front Shock Absorber Fixing Width | 911 | 1190 | 279 |
| 15 | Front Bumper to Front Axle Distance | 983 | 520 | -463 |
| 16 | Front Axle to A-Pillar Distance | 607 | 535 | -72 |
| 17 | A-Pillar to B-Pillar Distance | 1023 | 1143 | 120 |
| 18 | B-Pillar to Rear Axle Distance | 1788 | 1795 | 7 |
| 19 | B-Pillar to C-Pillar Distance | 837 | 839 | 2 |
| 20 | Roof Sill Bottom Height | 1752 | 1764 | 12 |
| 21 | Roof Sill Top Height | 1859 | 1867 | 8 |
| 22 | Floor Sill Bottom Height | 438 | 452 | 14 |
| 23 | Floor Sill Top Height | 625 | 581 | -44 |

All measurements in millimeters.

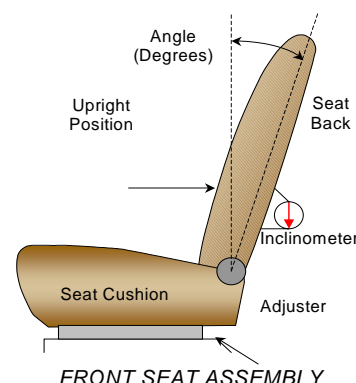
DATA SHEET NO. 2

SEAT ADJUSTMENT, FUEL SYSTEMS, AND STEERING WHEEL DATA

Test Vehicle: 2011 Ford F-150 XLT 4x4 SuperCrew 4-Door Truck NHTSA No.: MB0208
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 02/15/11

NOMINAL DESIGN RIDING POSITION

The procedure for the driver is as follows: the seat back is set to the manufacturer's designated angle. The procedure for the passenger is as follows: the seat back is set to position the transverse instrumentation platform of the dummy's head at $0^\circ \pm 0.5^\circ$. Seat back angle is measured 330 mm above the recliner pivot on the seat back using a digital inclinometer.

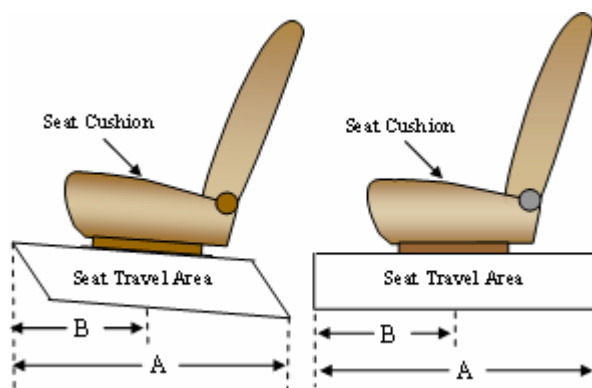


SEAT BACK ANGLE

| Seating Position | Degrees |
|---------------------------|---------|
| Driver Seat Back Angle | 17.6 |
| Passenger Seat Back Angle | 15.3 |

SEAT FORE / AFT POSITIONING

The total seat travel is measured from the forward most possible position to the rear most possible position. The driver's seat is set to the middle of the fore-aft travel. The passenger's seat is set to the forward most position where the ATD will not contact any interior panels; full forward for this test.



SEAT FORE/AFT POSITIONS

| Seating Position | Total Fore-Aft Travel | Placed in Position |
|------------------|-----------------------|--------------------|
| Driver Seat | 290 mm | 145 mm |
| Passenger Seat | 232 mm | 0 mm |

SEAT BELT UPPER ANCHORAGE

The seat belt upper anchorage is positioned to the manufacturer's design position for a 50th percentile adult male ATD for the driver, and a 5th percentile adult female ATD for the passenger. Position zero (0) is the uppermost position.

SEAT BELT UPPER ANCHORAGES

| Seating Position | Total No. of Positions | Placed in Position |
|------------------|------------------------|--------------------|
| Driver Seat | 4 | 1 |
| Passenger Seat | 4 | 0 |

DATA SHEET NO. 2 ... (CONTINUED)

SEAT ADJUSTMENT, FUEL SYSTEMS, AND STEERING WHEEL DATA

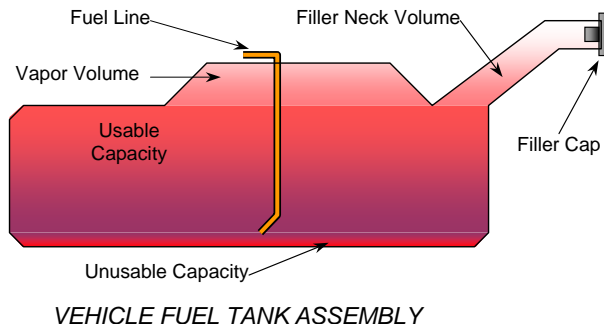
Test Vehicle: 2011 Ford F-150 XLT 4x4 SuperCrew 4-Door Truck NHTSA No.: MB0208
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 02/15/11

FUEL TANK CAPACITY

| Description | Liters |
|--|------------------|
| Usable Capacity of "Standard Tank" | 136.26 |
| Usable Capacity of "Optional Tank" | 136.26 |
| 92 - 94% of Usable Capacity | 125.36 to 128.08 |
| Actual Amount of Stoddard Solvent Used | 126.72 |
| 1/3 of Usable Capacity | 45.42 |

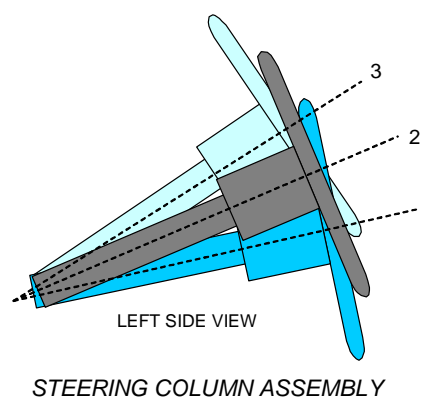
FUEL PUMP

The test vehicle is equipped with an electric fuel pump. The fuel pump is activated when the ignition is turned to the 'ON' position and continuously operates while the engine is running. The fuel filler door is located on the left side of the bed. The standard fuel tank occupies the area under the rear seat and the bed on the left side of the vehicle.



STEERING COLUMN ADJUSTMENT

Steering wheel and column adjustments are made so that the steering wheel hub is at the geometric center of the locus it describes when moved through its full range of motion. A digital inclinometer is used to measure a plate which is placed across the rim of the steering wheel for angular measurements. The telescoping steering wheel travel is fixed.



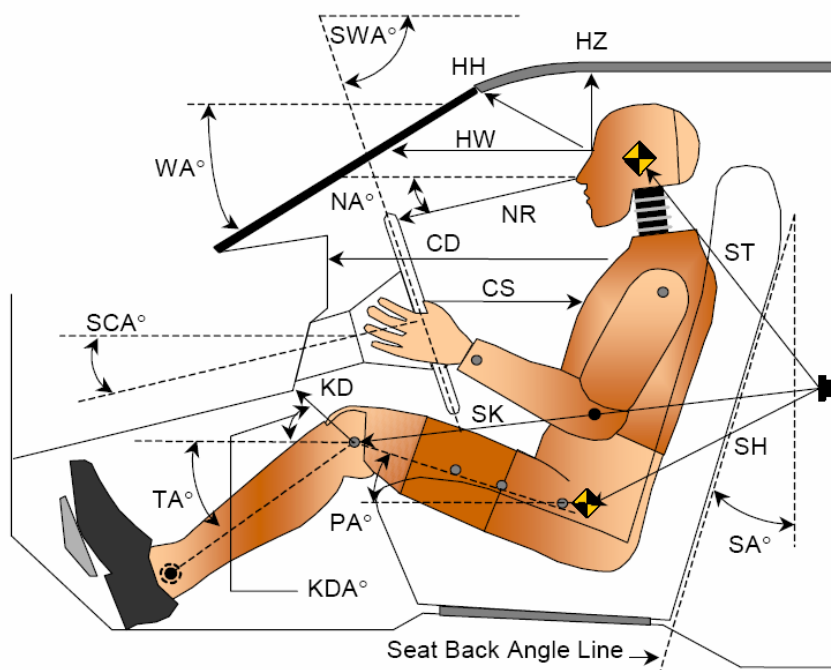
STEERING COLUMN POSITIONING

| | Degrees | Fore-Aft Position (mm) |
|-----------------------------------|---------|------------------------|
| Lowermost Position, No. 1 | 19.7 | |
| Geometric Center Position, No. 2 | 21.5 | |
| Uppermost Position, No. 3 | 23.3 | |
| Telescoping Steering Wheel Travel | | 0 |
| Test Position | 21.5 | |

DATA SHEET NO. 3

DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

Test Vehicle: 2011 Ford F-150 XLT 4x4 SuperCrew 4-Door Truck NHTSA No.: MB0208
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 02/15/11

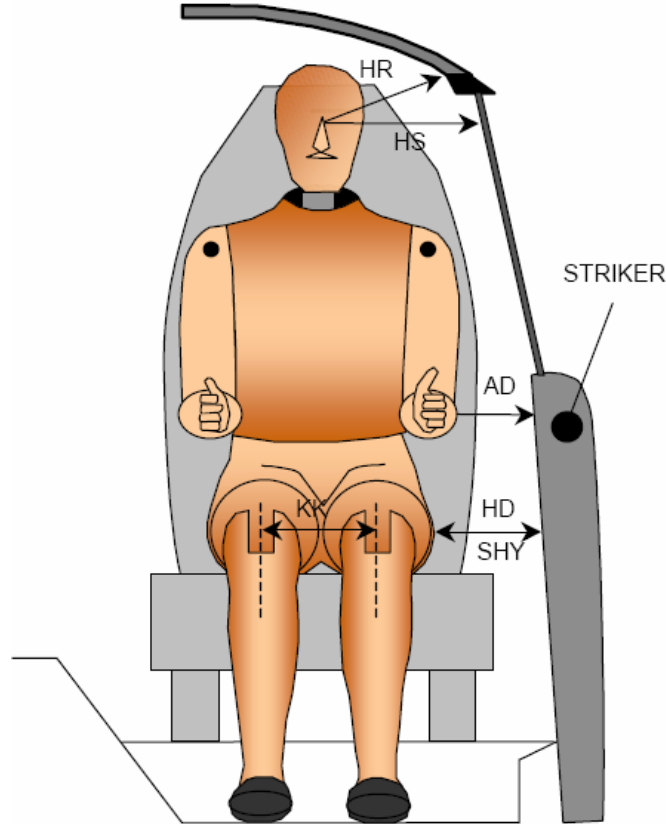


| Code | Measurement Description | Driver | | Passenger | |
|------|------------------------------------|-------------|-----------|-------------|-----------|
| | | Length (mm) | Angle (°) | Length (mm) | Angle (°) |
| WA° | Windshield Angle | | 32.1 | | |
| SWA° | Steering Wheel Angle | | 67.8 | | |
| SCA° | Steering Column Angle | | 22.2 | | |
| SA° | Seat Back Angle (On Headrest Post) | | 17.6 | | 15.3 |
| HZ | Head to Roof | 280 | 90.0 | 280 | 90.0 |
| HH | Head to Header | 421 | 28.7 | 352 | 44.3 |
| HW | Head to Windshield | 735 | 0.0 | 688 | 0.0 |
| HR | Head to Side Header | 270 | 41.8 | 317 | 47.9 |
| NR | Nose to Rim | 400 | 8.5 | 524 | 22.8 |
| CD | Chest to Dash | 580 | 17.5 | 461 | 7.9 |
| CS | Chest to Steering Hub | 363 | 10.8 | | |
| RA | Rim to Abdomen | 221 | 0.0 | | |
| KDL | Left Knee to Dash | 185 | 29.5 | 113 | 33.2 |
| KDR | Right Knee to Dash | 168 | 37.4 | 114 | 32.2 |
| PA° | Pelvic Angle | | 21.4 | | 22.3 |
| TA° | Tibia Angle | | 44.7 | | 61.4 |
| SK | Striker to Knee | 768 | 1.9 | 840 | 0.3 |
| ST | Striker to Head | 655 | 62.5 | 619 | 58.2 |
| SH | Striker to H-Point | 378 | 14.4 | 511 | 6.3 |

DATA SHEET NO. 4

DUMMY LATERAL CLEARANCE DIMENSIONS

Test Vehicle: 2011 Ford F-150 XLT 4x4 SuperCrew 4-Door Truck NHTSA No.: MB0208
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 02/15/11



| Code | Description | Driver (mm) | Passenger (mm) |
|------|----------------------------------|-------------|----------------|
| AD | Arm to Door | 147 | 99 |
| HD | H-Point to Door | 146 | 191 |
| HR | Head to Side Header | 211 | 317 |
| HS | Head to Side Window | 378 | 408 |
| KK | Knee to Knee | 300 | 224 |
| SHY | Striker to H-Point (Y-Direction) | 268 | 321 |
| AA | Ankle to Ankle | 261 | 185 |

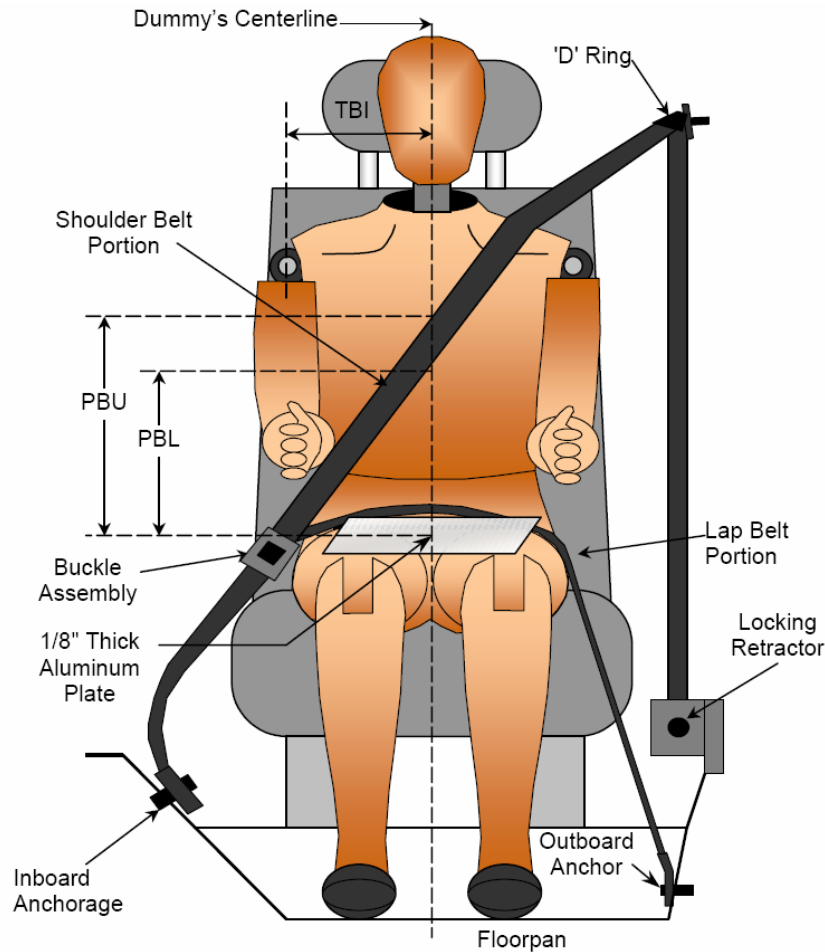
DATA SHEET NO. 5
SEAT BELT POSITIONING DATA

Test Vehicle: 2011 Ford F-150 XLT 4x4 SuperCrew 4-Door Truck

NHTSA No.: MB0208

Test Program: 56 km/h Frontal Impact NCAP Test

Test Date: 02/15/11



FRONT VIEW OF DUMMY

SEAT BELT POSITIONING MEASUREMENTS

| Code | Measurement Description | Units | Driver | Passenger |
|------|--|-------|--------|-----------|
| PBU | Top Surface of Aluminum Plate to Belt Upper Edge | mm | 325 | 286 |
| PBL | Top Surface of Aluminum Plate to Belt Lower Edge | mm | 240 | 195 |

BELT LENGTH DATA

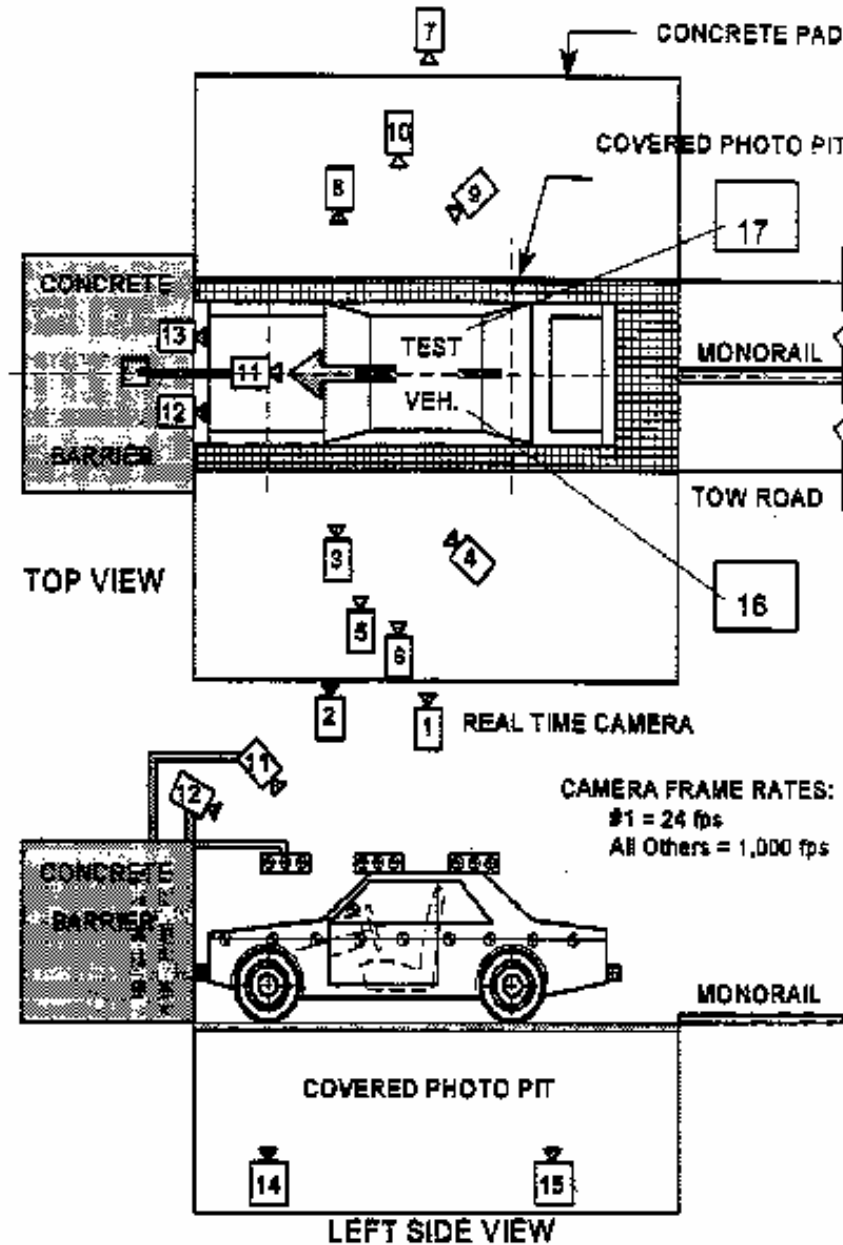
| Measurement Description | Units | Driver | Passenger |
|--|-------|--------|-----------|
| Shoulder Belt Length as Measured on ATD | mm | 991 | 1022 |
| Lap Belt Length as Measured on ATD | mm | 581 | 545 |
| Remainder of Belt on Reel | mm | 779 | 964 |
| Total Belt Length for Continuous Webbing Systems | mm | 2351 | 2531 |

DATA SHEET NO. 6

HIGH-SPEED CAMERA LOCATIONS AND DATA

Test Vehicle: 2011 Ford F-150 XLT 4x4 SuperCrew 4-Door Truck NHTSA No.: MB0208
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 02/15/11

CAMERA POSITIONS FOR FRONTAL IMPACTS



DATA SHEET NO. 6 ... (CONTINUED)

HIGH-SPEED CAMERA LOCATIONS AND DATA

Test Vehicle: 2011 Ford F-150 XLT 4x4 SuperCrew 4-Door Truck NHTSA No.: MB0208
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 02/15/11

CAMERA LOCATIONS

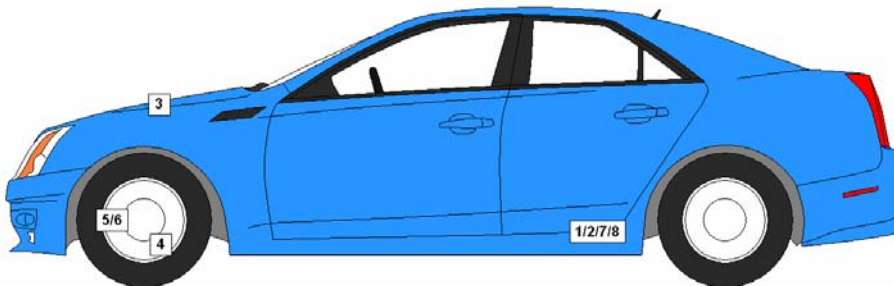
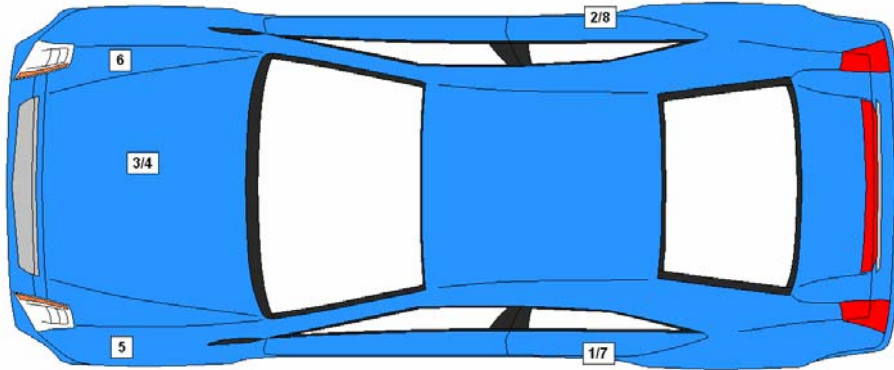
| No. | Description | Location | | | Angle (°) | Film Plane to Head Target | Lens (mm) | Speed (fps) |
|-----|--------------------------------|----------|--------|-------|--------------|------------------------------|--------------|----------------|
| | | X | Y | Z | | | | |
| 1 | Real-Time Left Overall | -11412 | -8150 | -1484 | | | | 30 |
| 2 | Overall Left Side | -2590 | -7950 | -1371 | 0 | 9881 | 24 | 1000 |
| 3 | Left Side A-Pillar | -1701 | -6197 | -1701 | 0 | 7921 | 50 | 1000 |
| 4 | Left Side B-Pillar | -6696 | -10308 | -3211 | -17 | 11281 | ZOOM | 1000 |
| 5 | Steering Column Upper | -1966 | -10412 | -3688 | -13 | 9887 | 50 | 1000 |
| 6 | Steering Column Lower | -1972 | -10412 | -3379 | -13 | 9870 | 50 | 1000 |
| 7 | Overall Right Side | -2336 | 7569 | -1012 | 0 | 9417 | 24 | 1000 |
| 8 | Right Side A-Pillar | -1733 | 7581 | -1408 | 0 | 7789 | 50 | 1000 |
| 9 | Passenger IP View | -1600 | 8214 | -1811 | 0 | 7795 | ZOOM | 1000 |
| 10 | Right Side B-Pillar | -6217 | 9516 | -4830 | -10 | 12626 | ZOOM | 1000 |
| 11 | Overhead Windshield View | -354 | 0 | -5749 | -90 | | 12 | 1000 |
| 12 | Overhead Driver View | 297 | -366 | -2460 | -34 | | 12 | 1000 |
| 13 | Overhead Passenger View | 297 | 366 | -2460 | -34 | | 24 | 1000 |
| 14 | Pit View of Engine Compartment | -756 | 0 | 1495 | 90 | | 12 | 1000 |
| 15 | Pit View of Fuel Tank | -3398 | 0 | 1495 | 90 | | 8 | 1000 |
| 16 | Driver's On Board View | -3537 | 680 | -1785 | -22 | | 12 | 1000 |
| 17 | Passenger's On Board View | -3537 | -680 | -1785 | -22 | | 12 | 1000 |
| 18 | Real-Time Left View of Impact | | | | | | | |
| 19 | Real-Time Right View of Impact | | | | | | | |

Coordinates: +X = forward impact plane
 +Y = right of monorail center
 +Z = into ground

DATA SHEET NO. 7

VEHICLE ACCELEROMETER LOCATIONS

Test Vehicle: 2011 Ford F-150 XLT 4x4 SuperCrew 4-Door Truck NHTSA No.: MB0208
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 02/15/11



VEHICLE ACCELEROMETER PRE-TEST LOCATIONS

| No. | Description | Location | | |
|-----|---------------------------|----------|------|-------|
| | | X | Y | Z |
| 1 | Left Rear Cross Member X | 2593 | -780 | -575 |
| 2 | Right Rear Cross Member X | 2593 | 780 | -575 |
| 3 | Engine Top X | 4875 | -55 | -1060 |
| 4 | Engine Bottom X | 4720 | 25 | -332 |
| 5 | Left Brake Caliper X | 4747 | -670 | -295 |
| 6 | Right Brake Caliper X | 4747 | 670 | -295 |
| 7 | Left Rear Cross Member Z | 2593 | -780 | -575 |
| 8 | Right Rear Cross Member Z | 2593 | 780 | -575 |

Reference Points: X – Rear Surface of Vehicle (+ forward)
 Y – Vehicle Centerline (+ to right)
 Z – Ground Plane (+ down)

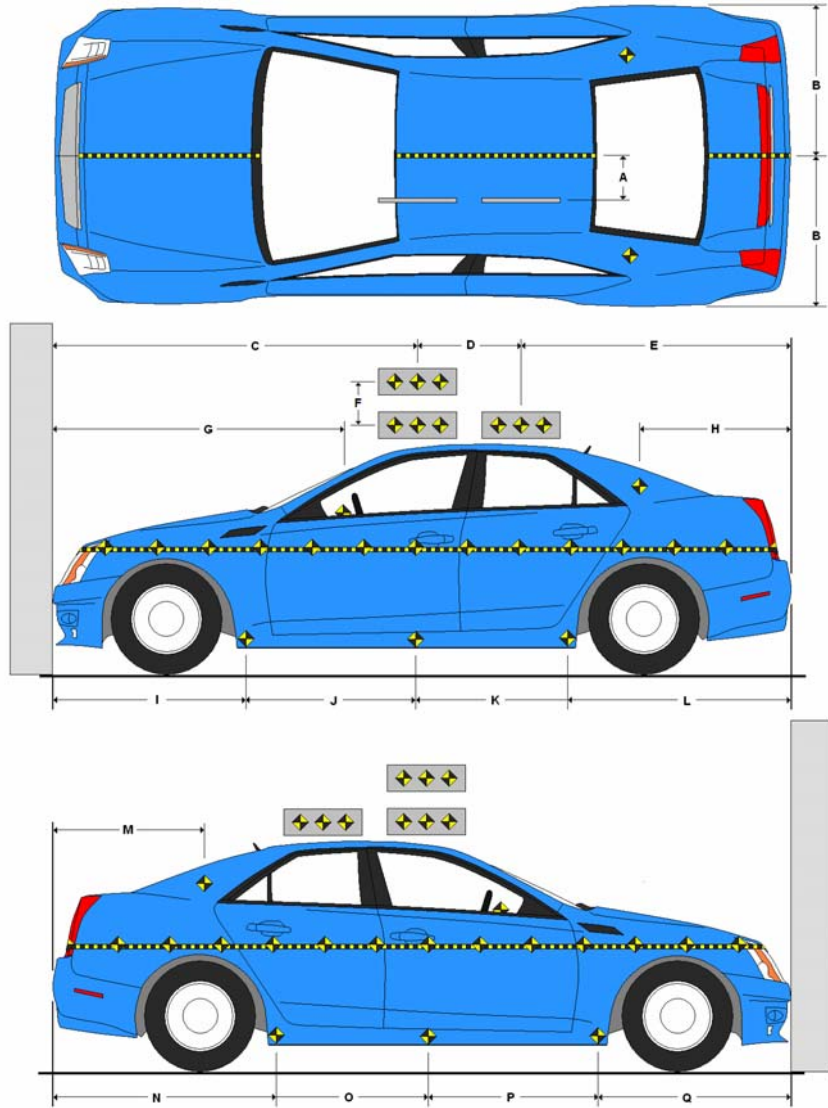
DATA SHEET NO. 8

PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Test Vehicle: 2011 Ford F-150 XLT 4x4 SuperCrew 4-Door Truck NHTSA No.: MB0208

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 02/15/11

| Item | Value |
|------|-------|
| A | 468 |
| B | 741 |
| C | 2277 |
| D | 609 |
| E | 3022 |
| F | 305 |
| G | 1871 |
| H | 2022 |
| I | 1555 |
| J | 1276 |
| K | 1276 |
| L | 1788 |
| M | 2040 |
| N | 1788 |
| O | 1277 |
| P | 1277 |
| Q | 1555 |



All measurements in millimeters.

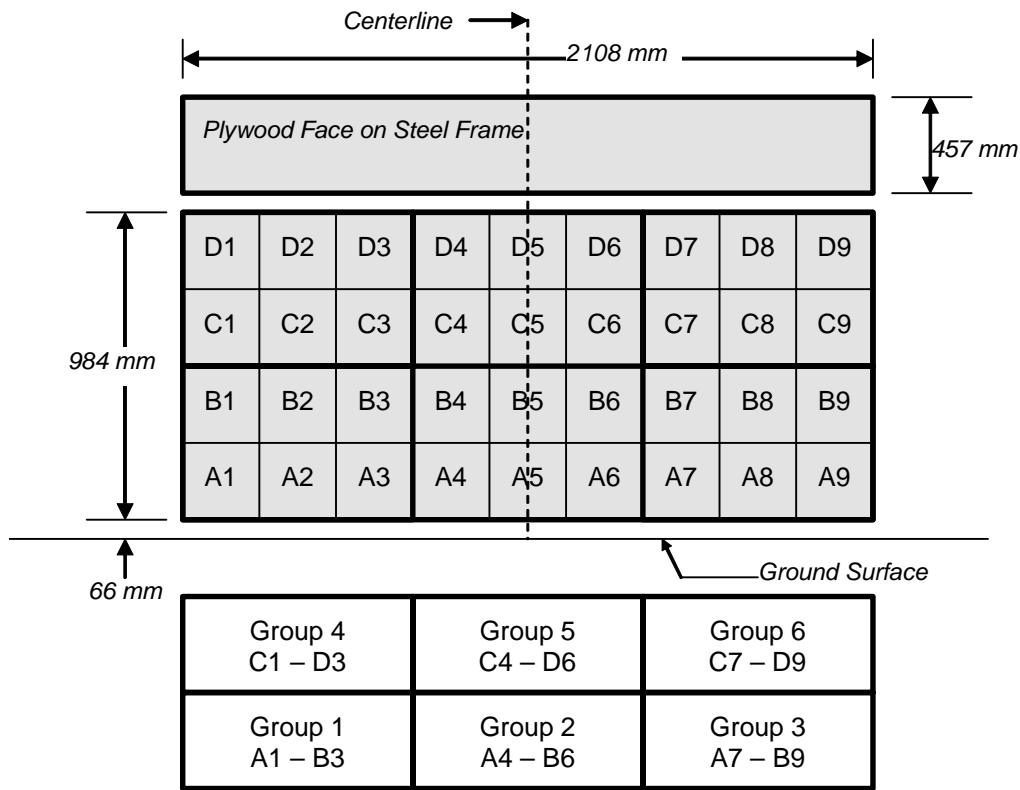
DATA SHEET NO. 9

LOAD CELL LOCATIONS ON FIXED BARRIER

Test Vehicle: 2011 Ford F-150 XLT 4x4 SuperCrew 4-Door Truck NHTSA No.: MB0208

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 02/15/11

**36 Load Cell Rigid Barrier (NHTSA Standard)
Load Cell Locations on Fixed Barrier**



6 Groups of 6 Load Cells Each

DATA SHEET NO. 10

TEST VEHICLE CAMERA AND INSTRUMENTATION SUMMARY

Test Vehicle: 2011 Ford F-150 XLT 4x4 SuperCrew 4-Door Truck NHTSA No.: MB0208
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 02/15/11

INSTRUMENTATION

| | |
|----------------------------------|-----|
| Driver Dummy Accelerometers | 46 |
| Passenger Dummy Accelerometers | 46 |
| Vehicle Structure Accelerometers | 8 |
| Load Cell Barrier | 36 |
| Total | 136 |

CAMERA COVERAGE

| | |
|-----------------------------|----|
| High-Speed Vehicle On Board | 2 |
| High-Speed Offboard | 14 |
| Real Time | 3 |
| Total | 19 |

DATA SHEET NO. 11
POST-TEST OBSERVATIONS

Test Vehicle: 2011 Ford F-150 XLT 4x4 SuperCrew 4-Door Truck NHTSA No.: MB0208
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 02/15/11

TEST DUMMY INFORMATION AND CONTACT

| Description | Driver | Passenger |
|-----------------------|--------------------------------------|---------------------------------------|
| Dummy Type/Serial No. | P572E 50th Percentile Male ATD / 034 | P572O 5th Percentile Female ATD / 141 |
| Head Contact | Airbag, Head Restraint | Airbag, Head Restraint |
| Upper Torso Contact | Airbag | Airbag |
| Lower Torso Contact | None | None |
| Left Knee Contact | Knee Bolster | Glovebox |
| Right Knee Contact | Knee Bolster, Steering Column | Glovebox |

DOOR OPENING AND SEAT TRACK INFORMATION

| Description | Driver | Passenger |
|-------------------------|--|--|
| Locked / Unlocked Doors | Unlocked | Unlocked |
| Front Door Opening | Remained closed and latched, operational | Remained closed and latched, operational |
| Rear Door Opening | Remained closed and latched, operational | Remained closed and latched, operational |
| Seat Track Shift (mm) | 30 | 21 |
| Seat Back Failure | None | None |
| Glazing Damage | None | None |

POST TEST STRUCTURAL OBSERVATIONS

| Critical Areas of Performance | Observations and Conclusions |
|-------------------------------|------------------------------|
| Windshield Damage | None |
| Window Damage | None |
| Other Notable Effects | None |

VEHICLE REBOUND FROM BARRIER

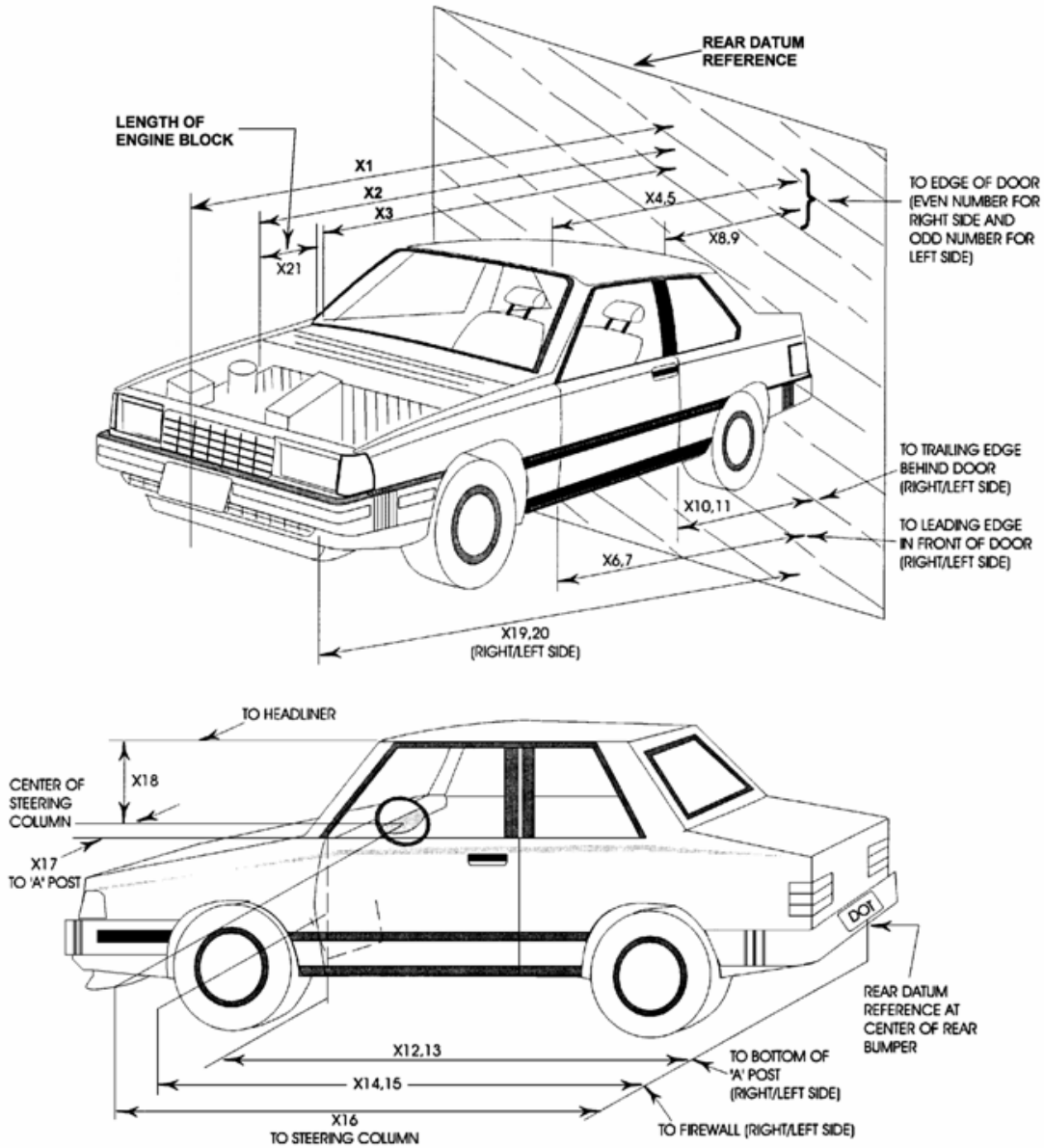
| Measured Parameter | Units | Value |
|--------------------|-------|-------|
| Left Side | mm | 485 |
| Center | mm | 491 |
| Right Side | mm | 456 |
| Average | mm | 477 |

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

| Restraint Type | Driver | | Passenger | |
|------------------------|-----------|----------|-----------|----------|
| | Installed | Operated | Installed | Operated |
| Front Airbag | Yes | Yes | Yes | Yes |
| Curtain Airbag | Yes | No | Yes | No |
| Torso/Pelvis Airbag | Yes | No | Yes | No |
| Knee Airbag | No | | No | |
| Seat Belt Pretensioner | Yes | Yes | Yes | Yes |
| Seat Belt Load Limiter | Yes | Yes | Yes | Yes |
| Other | | | | |

DATA SHEET NO. 12
VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2011 Ford F-150 XLT 4x4 SuperCrew 4-Door Truck NHTSA No.: MB0208
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 02/15/11



DATA SHEET NO. 12 ... (CONTINUED)

VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2011 Ford F-150 XLT 4x4 SuperCrew 4-Door Truck NHTSA No.: MB0208
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 02/15/11

| No. | Description | Pre-Test | Post-Test | Difference |
|-----|--|----------|-----------|------------|
| 1 | Total Length of Vehicle at Centerline | 5900 | 5290 | -610 |
| 2 | Rear Surface of Vehicle to Front of Engine | 5076 | 4900 | -176 |
| 3 | RSOV to Firewall | 4702 | 4685 | -17 |
| 4 | RSOV to Upper Leading Edge of Right Door | 4302 | 4313 | 11 |
| 5 | RSOV to Upper Leading Edge of Left Door | 4300 | 4307 | 7 |
| 6 | RSOV to Lower Leading Edge of Right Door | 4285 | 4290 | 5 |
| 7 | RSOV to Lower Leading Edge of Left Door | 4280 | 4278 | -2 |
| 8 | RSOV to Upper Trailing Edge of Right Door | 3043 | 3058 | 15 |
| 9 | RSOV to Upper Trailing Edge of Left Door | 3041 | 3050 | 9 |
| 10 | RSOV to Lower Trailing Edge of Right Door | 3043 | 3041 | -2 |
| 11 | RSOV to Lower Trailing Edge of Left Door | 3030 | 3032 | 2 |
| 12 | RSOV to Bottom of A-Pillar of Right Side | 4194 | 4268 | 74 |
| 13 | RSOV to Bottom of A-Pillar Left Side | 4181 | 4273 | 92 |
| 14 | RSOV to Firewall, Right Side | 4704 | 4705 | 1 |
| 15 | RSOV to Firewall, Left Side | 4737 | 4703 | -34 |
| 16 | RSOV to Steering Column | 3802 | 3818 | 16 |
| 17 | Center of Steering Column to A-Pillar | 477 | 480 | 3 |
| 18 | Center of Steering Column to Headliner | 471 | 430 | -41 |
| 19 | RSOV to Right Side of Front Bumper | 5369 | 5122 | -247 |
| 20 | RSOV to Left Side of Front Bumper | 5365 | 5040 | -325 |
| 21 | Length of Engine Block | 560 | 560 | 0 |
| RD | RSOV to Right Side of Dash Panel | 4030 | 4043 | 13 |
| CD | RSOV to Center of Dash Panel | 4003 | 4037 | 34 |
| LD | RSOV to Left Side of Dash Panel | 4024 | 4038 | 14 |

All measurements in millimeters.

DATA SHEET NO. 13
ACCIDENT INVESTIGATION DATA

Test Vehicle: 2011 Ford F-150 XLT 4x4 SuperCrew 4-Door Truck NHTSA No.: MB0208
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 02/15/11

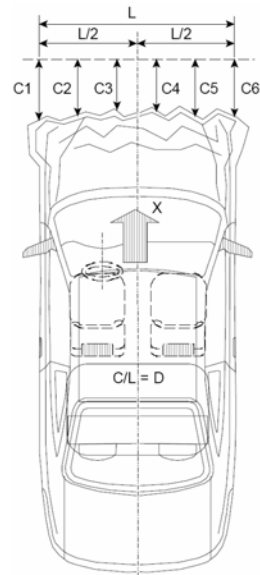
VEHICLE INFORMATION

VIN: 1FTFW1EF5BFA43714 Wheelbase (mm): 3677
 Vehicle Size Category: 4-Door Truck Test Weight (kg): 2853.5

ACCELEROMETER DATA

Accelerometer Locations: Left Rear Crossmember
 Cal. Procedure/Interval: Drop Test / 6 months
 Integration Algorithm: NHTSA Standard
 Impact Velocity (km/h): 56.16
 Velocity Change (km/h): 64.0
 Time of Separation (msec): 77.1

Linearity: Good



CRUSH PROFILE

Collision Deformation Classification: 12FDEW2
 Midpoint of Damage: Vehicle Centerline
 Damage Region Length (mm): 1810
 Impact Mode: Full Frontal

| No. | Measurement Description | Units | Pre-Test | Post-Test | Difference |
|-----|----------------------------|-------|----------|-----------|------------|
| C1 | Crush Zone 1 at Left Side | mm | 340 | 704 | 364 |
| C2 | Crush Zone 2 at Left Side | mm | 90 | 585 | 495 |
| C3 | Crush Zone 3 at Left Side | mm | 19 | 610 | 591 |
| C4 | Crush Zone 4 at Right Side | mm | 18 | 613 | 595 |
| C5 | Crush Zone 5 at Right Side | mm | 87 | 620 | 533 |
| C6 | Crush Zone 6 at Right Side | mm | 340 | 640 | 300 |
| L | C1 to C6 | mm | 1810 | | |

DATA SHEET NO. 14

VEHICLE INTRUSION MEASUREMENTS

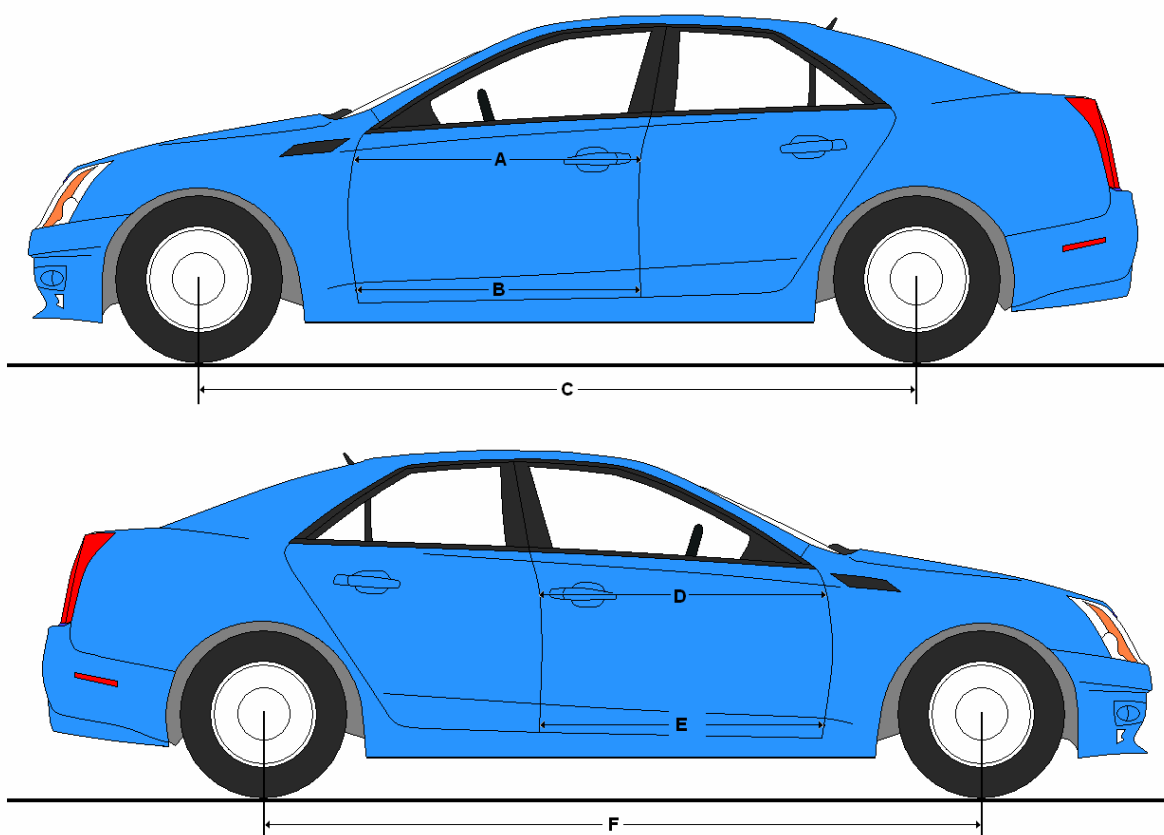
Test Vehicle: 2011 Ford F-150 XLT 4x4 SuperCrew 4-Door Truck NHTSA No.: MB0208
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 02/15/11

DOOR OPENING WIDTH

| Item | Description | Units | Pre-Test | Post-Test | Difference |
|------|------------------|-------|----------|-----------|------------|
| A | Left Side Upper | mm | 1138 | 1143 | -5 |
| B | Left Side Lower | mm | 1140 | 1133 | 7 |
| D | Right Side Upper | mm | 1131 | 1133 | -2 |
| E | Right Side Lower | mm | 1127 | 1128 | -1 |

WHEELBASE MEASUREMENTS

| Item | Description | Units | Pre-Test | Post-Test | Difference |
|------|----------------------|-------|----------|-----------|------------|
| C | Left Side Wheelbase | mm | 3677 | 3552 | 125 |
| F | Right Side Wheelbase | mm | 3677 | 3525 | 152 |



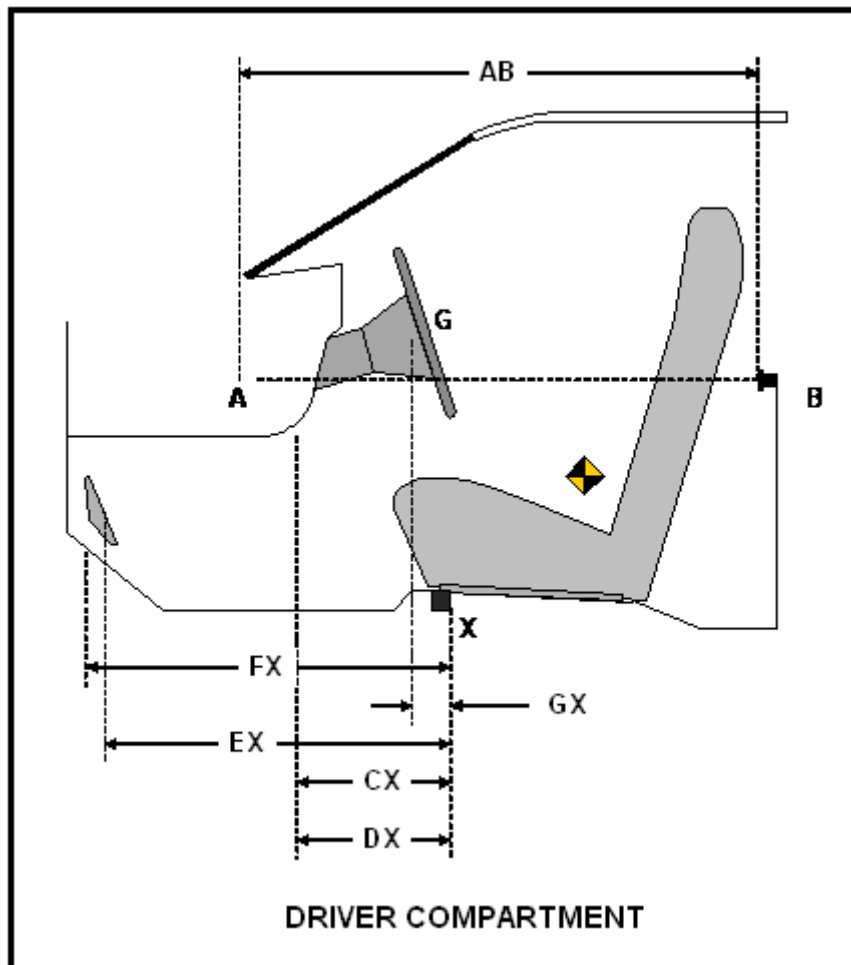
DATA SHEET NO. 14 ... (CONTINUED)
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2011 Ford F-150 XLT 4x4 SuperCrew 4-Door Truck NHTSA No.: MB0208
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 02/15/11

DRIVER COMPARTMENT INTRUSION

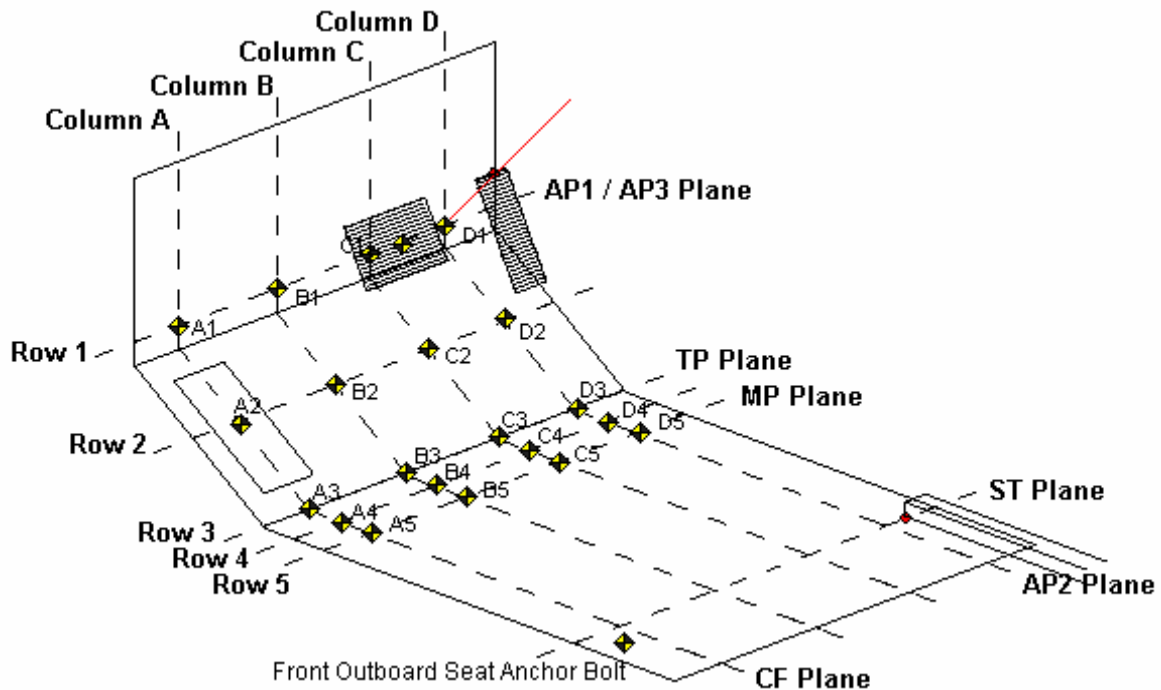
| Item | Description | Units | Pre-Test | Post-Test | Difference |
|------|-----------------------------------|-------|----------|-----------|------------|
| AB | Door Opening (Inside Window Jam) | mm | 1023 | 1020 | 3 |
| CX | Left Knee Bolster to X | mm | 268 | 370 | -102 |
| DX | Right Knee Bolster to X | mm | 276 | 340 | -64 |
| EX | Brake Pedal to X | mm | 529 | 560 | -31 |
| FX | Foot Rest to X | mm | 610 | 620 | -10 |
| GX | Center of Steering Wheel Hub to X | mm | 65 | 90 | -25 |

X = Front of Seat Track (Stationary)



DATA SHEET NO. 14 ... (CONTINUED)
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2011 Ford F-150 XLT 4x4 SuperCrew 4-Door Truck NHTSA No.: MB0208
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 02/15/11



AP1: Y-Z Plane passing through D1

AP2: X-Z Plane passing through D1

AP3: X-Y plane passing through D1

MP: Y-Z plane, halfway between the ST plane and AP1 plane

CF Plane: X-Z plane passes through center of footrest.

BP Plane: X-Z plane passes through center of brake pedal

TP Plane: Y-Z plane, intersection of BP Plane and the intersection of the toe pan and floorboard

Column A: intersection of vehicle and CF plane

Column D: Intersection of vehicle and AP2 plane

Row 1: intersection of the vehicle and the AP3 Plane

Row 3: intersection of the vehicle and TP plane

Row 5: intersection of the vehicle and MP plane

Row 2: evenly spaced between row 1 and 3

Row 4: evenly spaced between row 3 and 5

DATA SHEET NO. 14 ... (CONTINUED)
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2011 Ford F-150 XLT 4x4 SuperCrew 4-Door Truck NHTSA No.: MB0208
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 02/15/11

DRIVER FLOORPAN X-AXIS

| | Pre-Test | | | | Post-Test | | | | Difference | | | |
|---|----------|-----|-----|-----|-----------|-----|-----|-----|------------|-----|-----|-----|
| | A | B | C | D | A | B | C | D | A | B | C | D |
| 1 | 689 | 687 | 686 | 681 | 665 | 658 | 646 | 633 | -24 | -29 | -40 | -48 |
| 2 | 596 | 594 | 592 | 591 | 579 | 576 | 572 | 560 | -17 | -18 | -20 | -31 |
| 3 | 498 | 494 | 494 | 495 | 481 | 477 | 476 | 465 | -17 | -17 | -18 | -30 |
| 4 | 390 | 386 | 388 | 390 | 372 | 368 | 371 | 367 | -18 | -18 | -17 | -23 |
| 5 | 279 | 277 | 278 | 275 | 262 | 260 | 261 | 257 | -17 | -17 | -17 | -18 |

DRIVER FLOORPAN Y-AXIS

| | Pre-Test | | | | Post-Test | | | | Difference | | | |
|---|----------|------|------|------|-----------|------|------|------|------------|----|----|----|
| | A | B | C | D | A | B | C | D | A | B | C | D |
| 1 | -102 | -185 | -258 | -398 | -107 | -189 | -260 | -400 | -5 | -4 | -2 | -2 |
| 2 | -100 | -186 | -261 | -400 | -102 | -187 | -262 | -400 | -2 | -1 | -1 | 0 |
| 3 | -99 | -186 | -262 | -401 | -97 | -183 | -259 | -397 | 2 | 3 | 3 | 4 |
| 4 | -101 | -180 | -267 | -408 | -98 | -177 | -263 | -383 | 3 | 3 | 4 | 25 |
| 5 | -96 | -180 | -269 | -408 | -94 | -177 | -264 | -403 | 2 | 3 | 5 | 5 |

DRIVER FLOORPAN Z-AXIS

| | Pre-Test | | | | Post-Test | | | | Difference | | | |
|---|----------|-----|------|------|-----------|------|------|------|------------|-----|-----|-----|
| | A | B | C | D | A | B | C | D | A | B | C | D |
| 1 | 1 | -1 | -1 | 1 | 5 | 3 | 7 | 13 | 4 | 4 | 8 | 12 |
| 2 | -54 | -56 | -56 | -56 | -59 | -66 | -67 | -56 | -5 | -10 | -11 | 0 |
| 3 | -98 | -93 | -100 | -100 | -103 | -103 | -116 | -101 | -5 | -10 | -16 | -1 |
| 4 | -101 | -96 | -102 | -100 | -109 | -105 | -117 | -111 | -8 | -9 | -15 | -11 |
| 5 | -106 | -96 | -104 | -104 | -116 | -105 | -116 | -127 | -10 | -9 | -12 | -23 |

All measurements in millimeters

DATA SHEET NO. 14 ... (CONTINUED)
VEHICLE INTRUSION MEASUREMENTS

Test Vehicle: 2011 Ford F-150 XLT 4x4 SuperCrew 4-Door Truck NHTSA No.: MB0208
 Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 02/15/11

PASSENGER FLOORPAN X-AXIS

| | Pre-Test | | | | Post-Test | | | | Difference | | | |
|---|----------|-----|-----|-----|-----------|-----|-----|-----|------------|-----|-----|-----|
| | A | B | C | D | A | B | C | D | A | B | C | D |
| 1 | 627 | 647 | 650 | 653 | 573 | 591 | 607 | 623 | -54 | -56 | -43 | -30 |
| 2 | 563 | 559 | 559 | 557 | 527 | 527 | 539 | 542 | -36 | -32 | -20 | -15 |
| 3 | 453 | 456 | 456 | 456 | 434 | 441 | 443 | 442 | -19 | -15 | -13 | -14 |
| 4 | 350 | 347 | 348 | 347 | 334 | 334 | 334 | 334 | -16 | -13 | -14 | -13 |
| 5 | 240 | 239 | 241 | 241 | 225 | 225 | 226 | 228 | -15 | -14 | -15 | -13 |

PASSENGER FLOORPAN Y-AXIS

| | Pre-Test | | | | Post-Test | | | | Difference | | | |
|---|----------|-----|-----|----|-----------|-----|-----|----|------------|----|----|----|
| | A | B | C | D | A | B | C | D | A | B | C | D |
| 1 | 400 | 256 | 168 | 85 | 394 | 249 | 163 | 81 | -6 | -7 | -5 | -4 |
| 2 | 404 | 250 | 171 | 85 | 402 | 251 | 176 | 90 | -2 | 1 | 5 | 5 |
| 3 | 404 | 250 | 169 | 85 | 406 | 252 | 175 | 91 | 2 | 2 | 6 | 6 |
| 4 | 409 | 251 | 169 | 91 | 411 | 254 | 173 | 96 | 2 | 3 | 4 | 5 |
| 5 | 408 | 254 | 173 | 85 | 411 | 257 | 174 | 90 | 3 | 3 | 1 | 5 |

PASSENGER FLOORPAN Z-AXIS

| | Pre-Test | | | | Post-Test | | | | Difference | | | |
|---|----------|------|------|------|-----------|------|------|------|------------|----|----|----|
| | A | B | C | D | A | B | C | D | A | B | C | D |
| 1 | -2 | -28 | -27 | -21 | 40 | 10 | 0 | -3 | 42 | 38 | 27 | 18 |
| 2 | -73 | -74 | -77 | -77 | -38 | -50 | -65 | -72 | 35 | 24 | 12 | 5 |
| 3 | -107 | -107 | -106 | -106 | -101 | -112 | -104 | -106 | 6 | -5 | 2 | 0 |
| 4 | -105 | -105 | -105 | -104 | -108 | -107 | -103 | -110 | -3 | -2 | 2 | -6 |
| 5 | -104 | -105 | -101 | -105 | -110 | -102 | -99 | -109 | -6 | 3 | 2 | -4 |

All measurements in millimeters

DATA SHEET NO. 15

SUMMARY OF FMVSS 212 AND 219 (PARTIAL) DATA

Test Vehicle: 2011 Ford F-150 XLT 4x4 SuperCrew 4-Door Truck NHTSA No.: MB0208

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 02/15/11

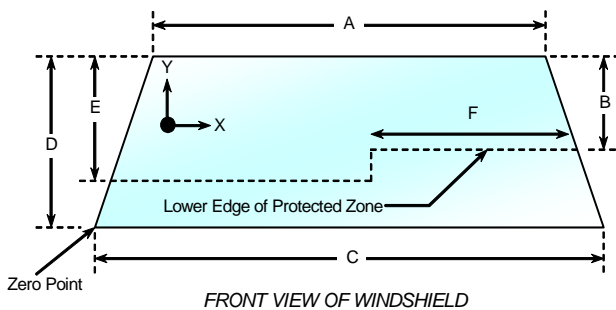
Windshield Mounting Details: Windshield glass is secured to the vehicle frame with rubber plastic and rubber molding sealed with rubber cement.

The standard requires that the post-test retention measurement be a minimum of 75% of the pre-test total periphery measurement for vehicles not equipped with occupant passive restraints and 50% for each side of the windshield for vehicles which are equipped with occupant passive restraints.

Temperature of windshield molding during test: 21.1° C

WINDSHIELD PERIPHERY MEASUREMENTS

| Measurement | Pre-Test (mm) | Post-Test (mm) | % Retention |
|-------------|---------------|----------------|-------------|
| Left Side | 2417.5 | 2417.5 | 100.0% |
| Right Side | 2417.5 | 2417.5 | 100.0% |
| Total | 4835 | 4835 | 100.0% |



| Item | Units | Value |
|------|-------|-------|
| A | mm | 1465 |
| B | mm | 387 |
| C | mm | 1850 |
| D | mm | 760 |
| E | mm | 462 |
| F | mm | 769 |

AREAS OF PROTECTED ZONE FAILURES

A. Provide Coordinates of the area that the protected zone was penetrated more than 0.25 inches by a vehicle component other than one that is normally in contact with the windshield.

| X | Y |
|---|---|
| | |
| | |
| | |
| | |

B. Provide coordinates of the area beneath the protected zone that the inner surface of the windshield was penetrated by a vehicle component.

| X | Y |
|---|---|
| | |
| | |
| | |
| | |

DATA SHEET NO. 16

FMVSS 301 FUEL SYSTEM INTEGRITY POST-IMPACT DATA

Test Vehicle: 2011 Ford F-150 XLT 4x4 SuperCrew 4-Door Truck NHTSA No.: MB0208
Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 02/15/11

FMVSS 301 FUEL SYSTEM INTEGRITY DATA

Temperature at Time of Impact: 17.8° C Test Time: 12:55 PM

Stoddard Solvent Spillage Measurements

- A. From impact until vehicle motion ceases: 0 oz.
(Maximum allowable = 1 oz.)
- B. For the 5 minute period after motion ceases: 0 oz.
(Maximum allowable = 5 oz.)
- C. For the following 25 minutes: 0 oz.
(Maximum allowable = 1 oz./minute)
- D. Spillage: No spillage occurred

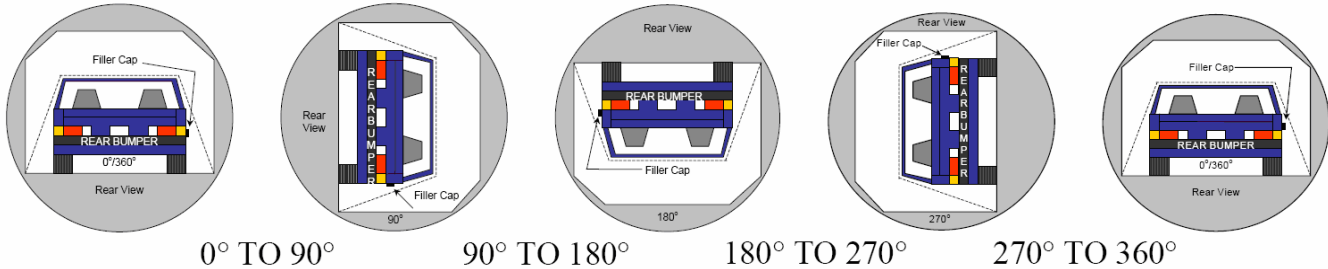
DATA SHEET NO. 17
FMVSS 301 STATIC ROLLOVER

Test Vehicle: 2011 Ford F-150 XLT 4x4 SuperCrew 4-Door Truck

NHTSA No.: MB0208

Test Program: 56 km/h Frontal Impact NCAP Test

Test Date: 02/15/11



1. The specified fixture rollover rate for each 90° of rotation is 60 to 180 seconds.
2. The position hold time at each position is 300 seconds (minimum).
3. Details of Stoddard solvent spillage: No spillage occurred

SOLVENT COLLECTION TIME TABLE IN SECONDS

| Test Phase | Rotation Time | Hold Time | Total Time |
|--------------|---------------|-----------|------------|
| 0° To 90° | 80 | 303 | 383 |
| 90° To 180° | 80 | 304 | 384 |
| 180° To 270° | 80 | 305 | 385 |
| 270° To 360° | 79 | 300 | 379 |

FMVSS 301 SPILLAGE TABLE

| Test Phase | First 5 Minutes | Sixth Minute | Seventh Minute | Eighth Minute |
|--------------|-----------------|--------------|----------------|---------------|
| 0° To 90° | 0 | 0 | | |
| 90° To 180° | 0 | 0 | | |
| 180° To 270° | 0 | 0 | | |
| 270° To 360° | 0 | | | |

SOLVENT SPILLAGE LOCATION TABLE

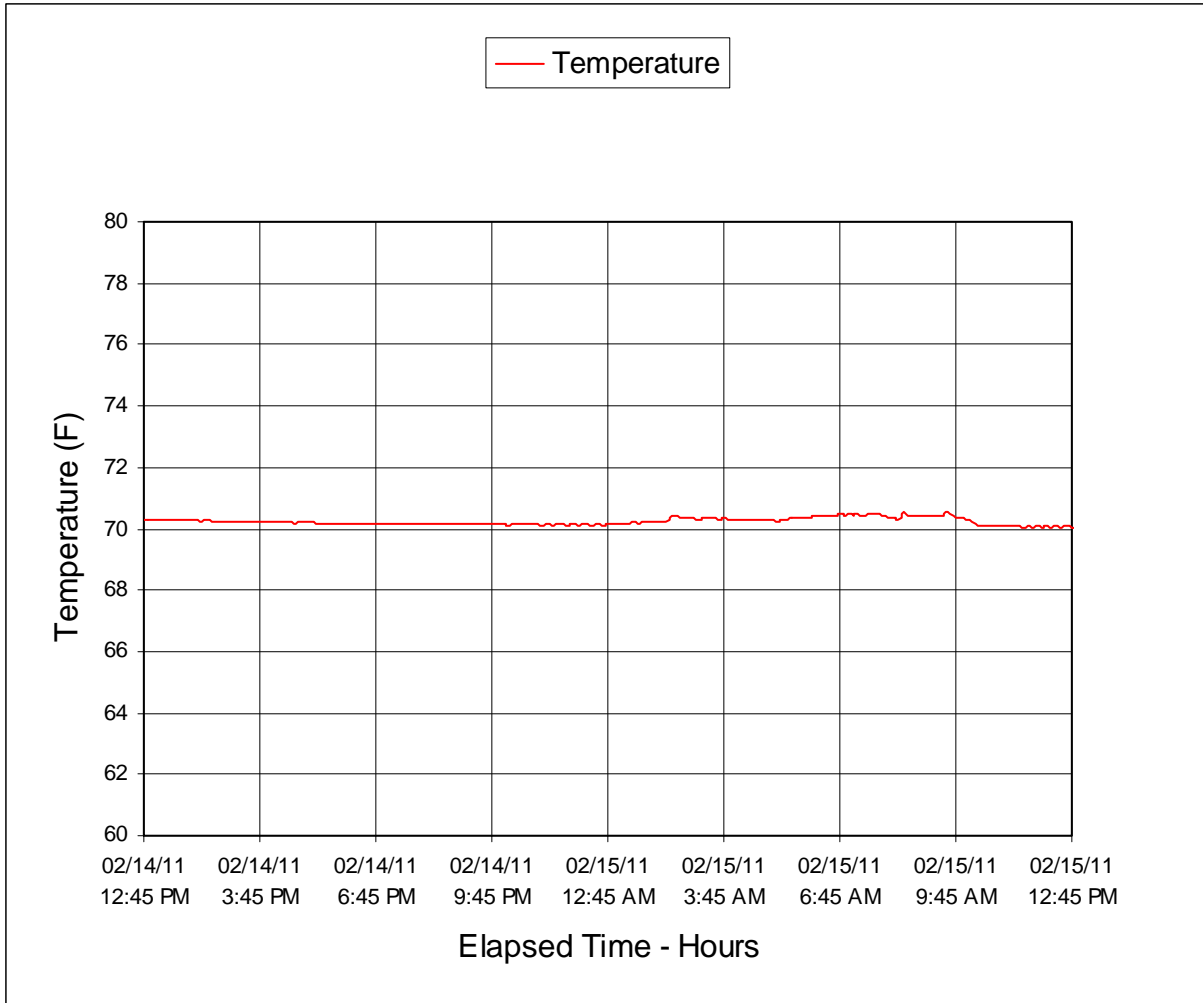
| Test Phase | Spillage Location |
|--------------|-------------------|
| 0° To 90° | None |
| 90° To 180° | None |
| 180° To 270° | None |
| 270° To 360° | None |

DATA SHEET NO. 18

DUMMY / VEHICLE TEMPERATURE STABILIZATION CHART

Test Vehicle: 2011 Ford F-150 XLT 4x4 SuperCrew 4-Door Truck NHTSA No.: MB0208

Test Program: 56 km/h Frontal Impact NCAP Test Test Date: 02/15/11



**APPENDIX A
PHOTOGRAPHS**

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FIGURE 1. Load Cell Location



FIGURE 2. Load Cell Wall



FIGURE 3. Manufacturer's Label



FIGURE 4. Tire Placard



FIGURE 5. Right Front $\frac{3}{4}$ View, As Delivered



FIGURE 6. Left Rear $\frac{3}{4}$ View, As Delivered



FIGURE 7. Pre-Test Front View of Test Vehicle

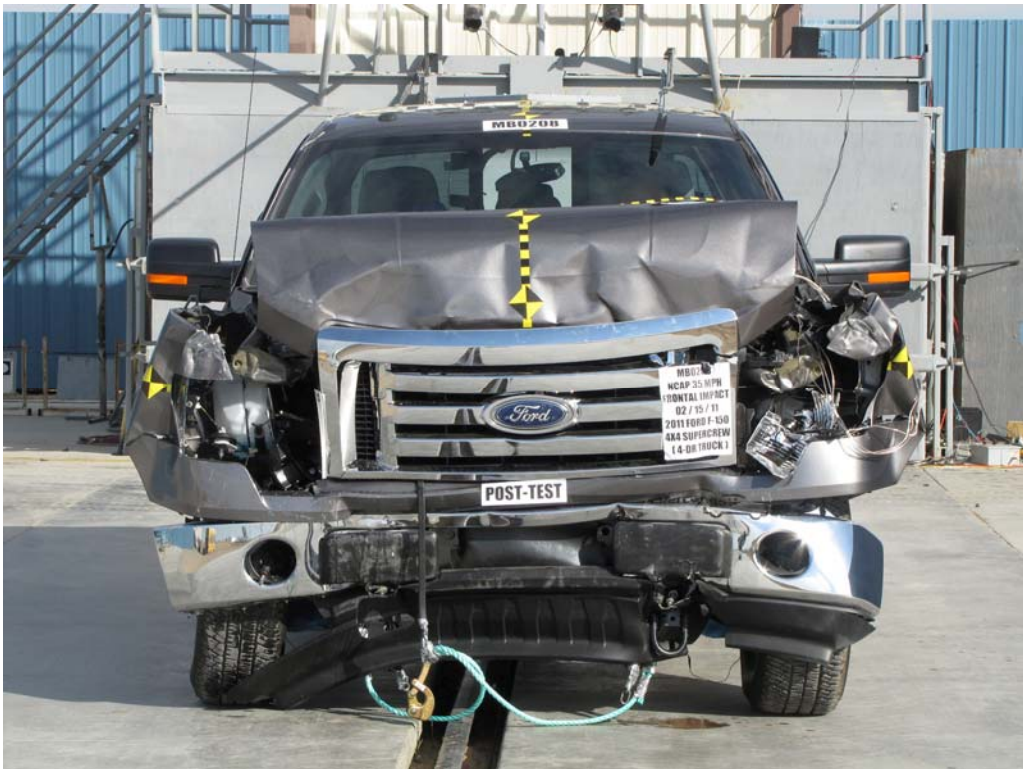


FIGURE 8. Post-Test Front View of Test Vehicle



FIGURE 9. Pre-Test Left View of Test Vehicle



FIGURE 10. Post-Test Left View of Test Vehicle



FIGURE 11. Pre-Test Right View of Test Vehicle



FIGURE 12. Post-Test Right View of Test Vehicle



FIGURE 13. Pre-Test Right Front $\frac{3}{4}$ View



FIGURE 14. Post-Test Right Front $\frac{3}{4}$ View



FIGURE 15. Pre-Test Left Rear $\frac{3}{4}$ View



FIGURE 16. Post-Test Left Rear $\frac{3}{4}$ View



FIGURE 17. Pre-Test Windshield View



FIGURE 18. Post-Test Windshield View



FIGURE 19. Pre-Test Engine Compartment View



FIGURE 20. Post-Test Engine Compartment View



FIGURE 21. Pre-Test Fuel Filler Cap View



FIGURE 22. Post-Test Fuel Filler Cap View

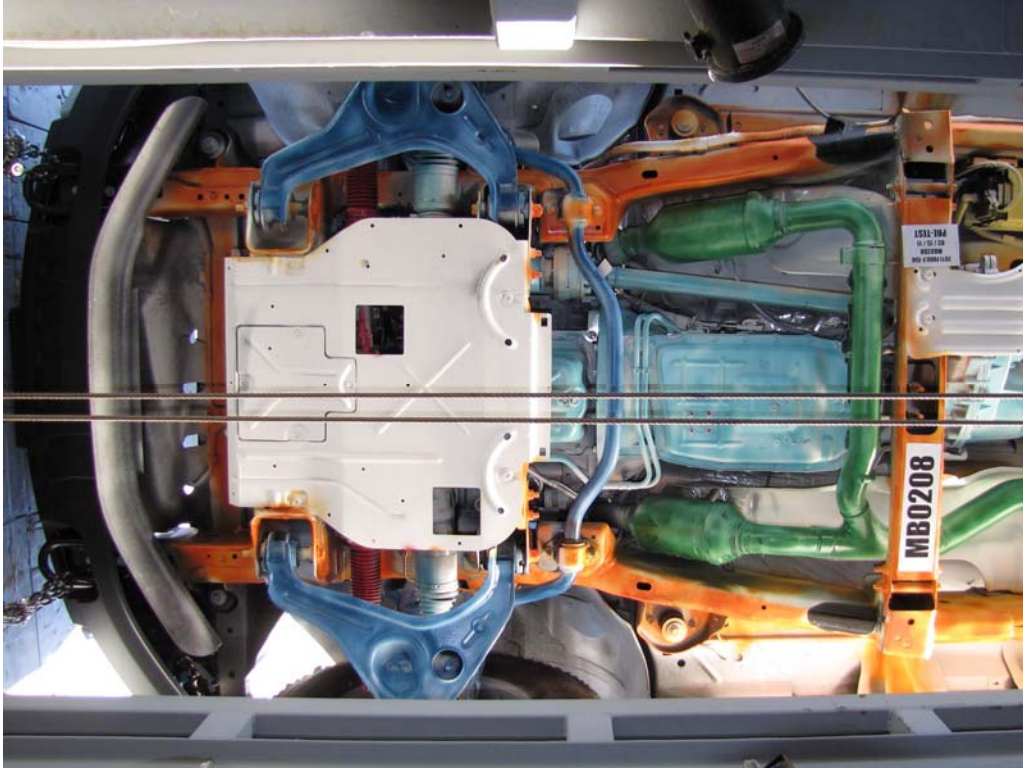


FIGURE 23. Pre-Test Front Underbody View

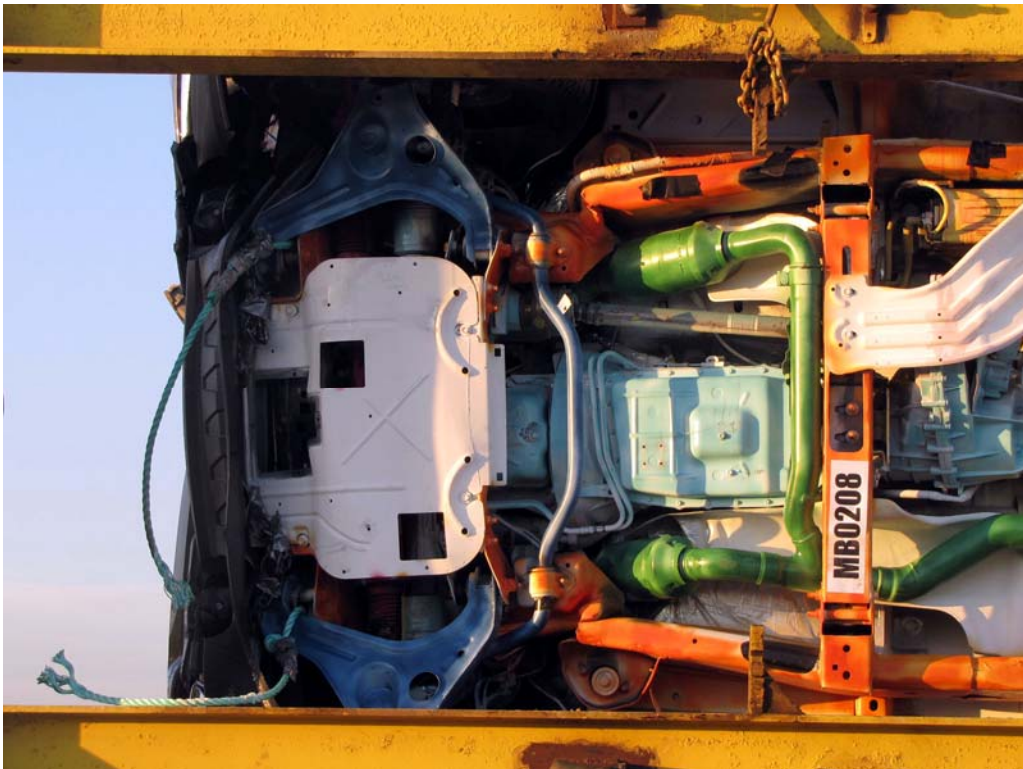


FIGURE 24. Post-Test Front Underbody View

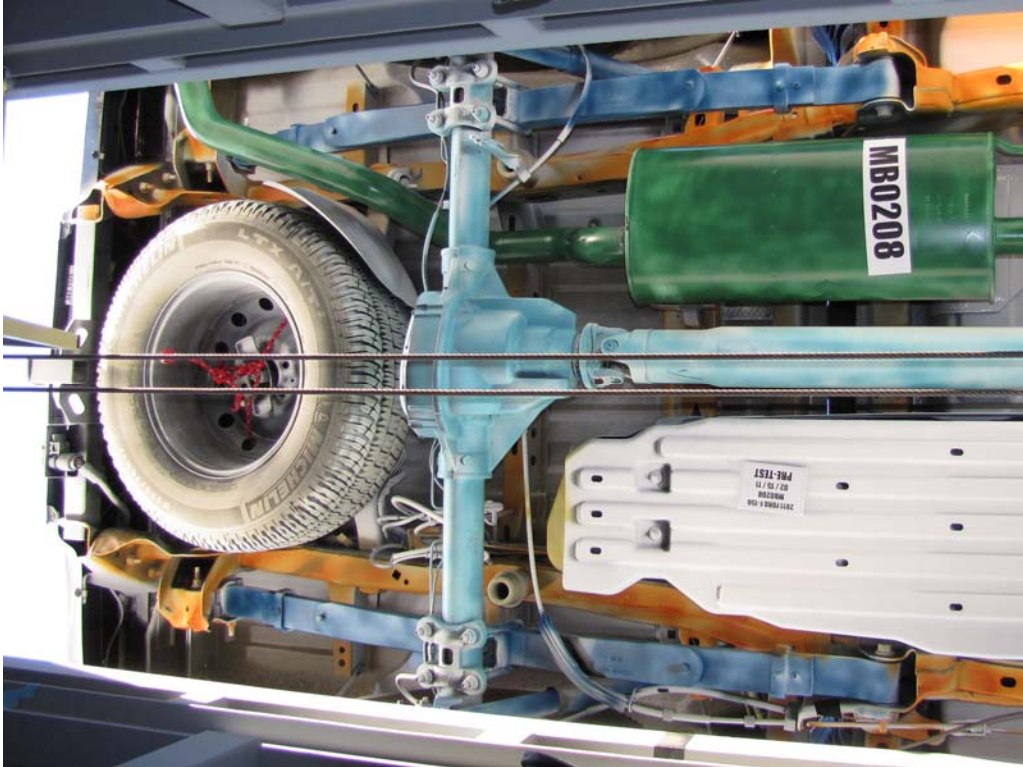


FIGURE 25. Pre-Test Rear Underbody View

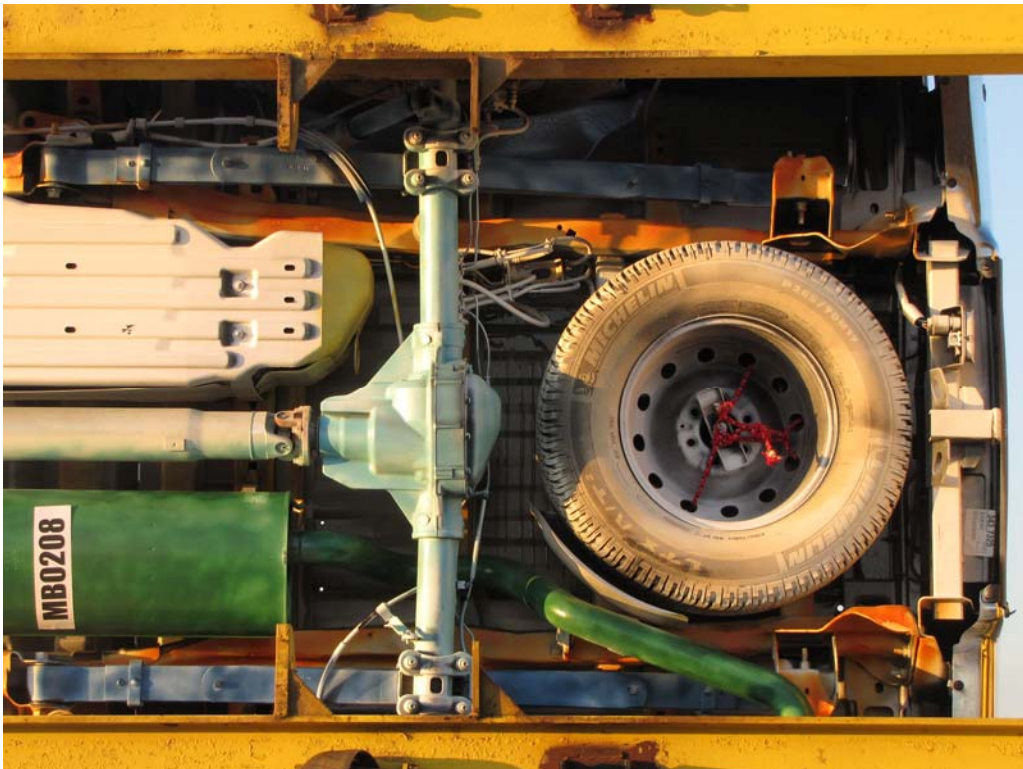


FIGURE 26. Post-Test Rear Underbody View



FIGURE 27. Pre-Test Dummy Cable Routing



FIGURE 28. Post-Test Dummy Cable Routing



FIGURE 29. Pre-Test Driver Dummy Front View



FIGURE 30. Post-Test Driver Dummy Front View



FIGURE 31. Pre-Test Driver Dummy Window View



FIGURE 32. Post-Test Driver Dummy Window View



FIGURE 33. Pre-Test Driver Dummy and Vehicle Interior View



FIGURE 34. Post-Test Driver Dummy and Vehicle Interior View



FIGURE 35. Pre-Test Driver's Seat Fore-Aft Markings



FIGURE 36. Post-Test Driver's Seat Fore-Aft Markings



FIGURE 37. Pre-Test Driver Dummy Feet



FIGURE 38. Post-Test Driver Dummy Feet



FIGURE 39. Pre-Test Driver's Side Knee Bolster



FIGURE 40. Post-Test Driver's Side Knee Bolster



FIGURE 41. Pre-Test Driver's Side Floorpan



FIGURE 42. Post-Test Driver's Side Floorpan



FIGURE 43. Post-Test Driver Dummy Contact With Airbag



FIGURE 43a. Post-Test Driver Dummy Contact With Head Restraint



FIGURE 43b. Post-Test Driver Dummy Contact With Knee Bolster



FIGURE 43c. Post-Test Driver Dummy Contact With Steering Column



FIGURE 44. Pre-Test View of Steering Column Shear Capsule



FIGURE 45. Post-Test View of Steering Column Shear Capsule



FIGURE 46. Pre-Test Passenger Dummy Front View



FIGURE 47. Post-Test Passenger Dummy Front View



FIGURE 48. Pre-Test Passenger Dummy Window View



FIGURE 49. Post-Test Passenger Dummy Window View



FIGURE 50. Pre-Test Passenger Dummy and Vehicle Interior View



FIGURE 51. Post-Test Passenger Dummy and Vehicle Interior View



FIGURE 52. Pre-Test Passenger's Seat Fore-Aft Markings



FIGURE 53. Post-Test Passenger's Seat Fore-Aft Markings



FIGURE 54. Pre-Test Passenger Dummy Feet



FIGURE 55. Post-Test Passenger Dummy Feet



FIGURE 56. Pre-Test Passenger's Side Knee Bolster



FIGURE 57. Post-Test Passenger's Side Knee Bolster

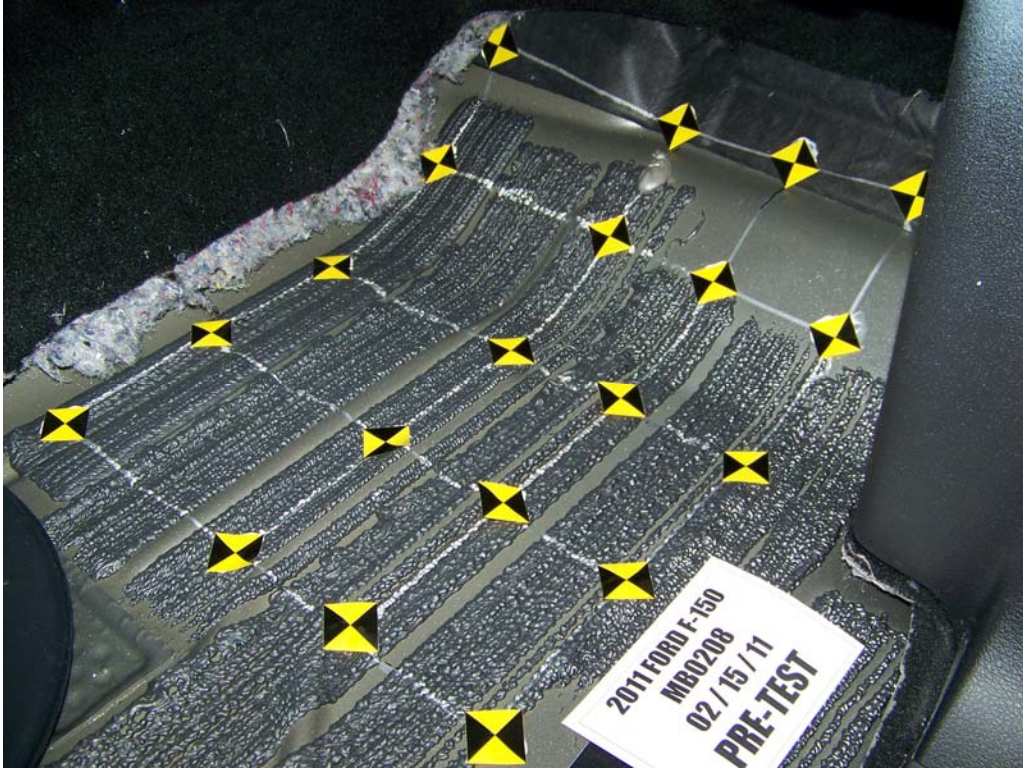


FIGURE 58. Pre-Test Passenger's Side Floorpan



FIGURE 59. Post-Test Passenger's Side Floorpan



FIGURE 60. Post-Test Passenger Dummy Contact With Airbag



FIGURE 60a. Post-Test Passenger Dummy Contact With Head Restraint



FIGURE 60b. Post-Test Passenger Dummy Contact With Knee Bolster

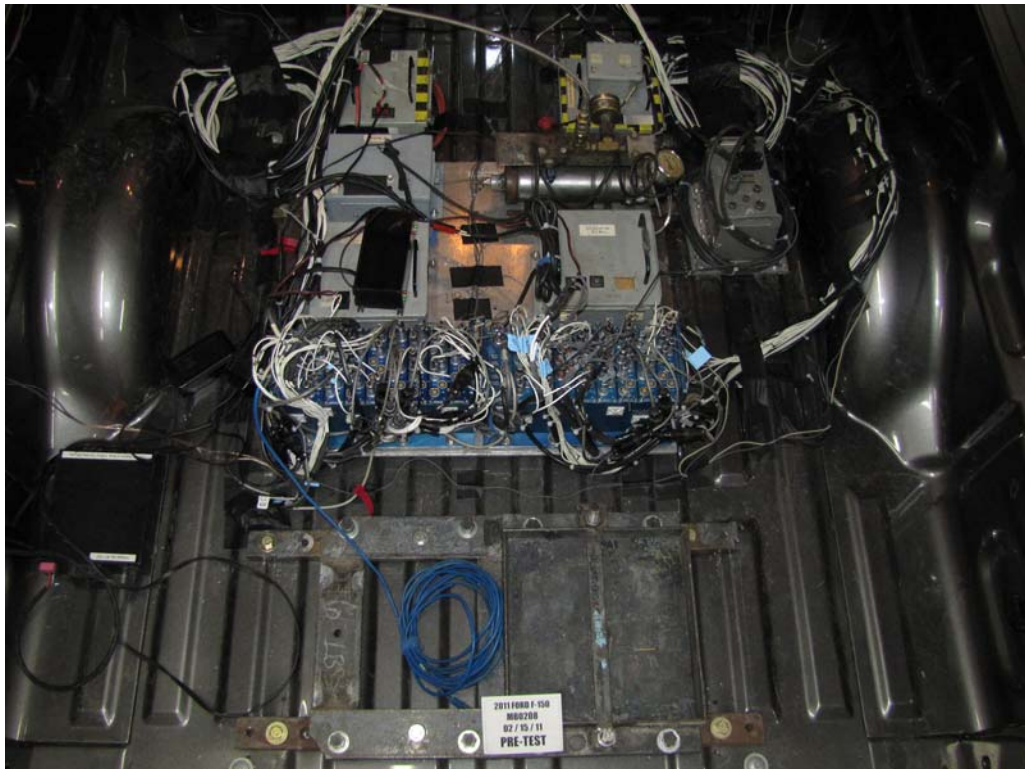


FIGURE 61. Pre-Test of Ballast Installed in Vehicle

Photograph Not Applicable No Stoddard Solvent Spillage

FIGURE 62. Post-Test Stoddard Solvent Spillage Location



FIGURE 63. Post-Test Speed Trap Read Out

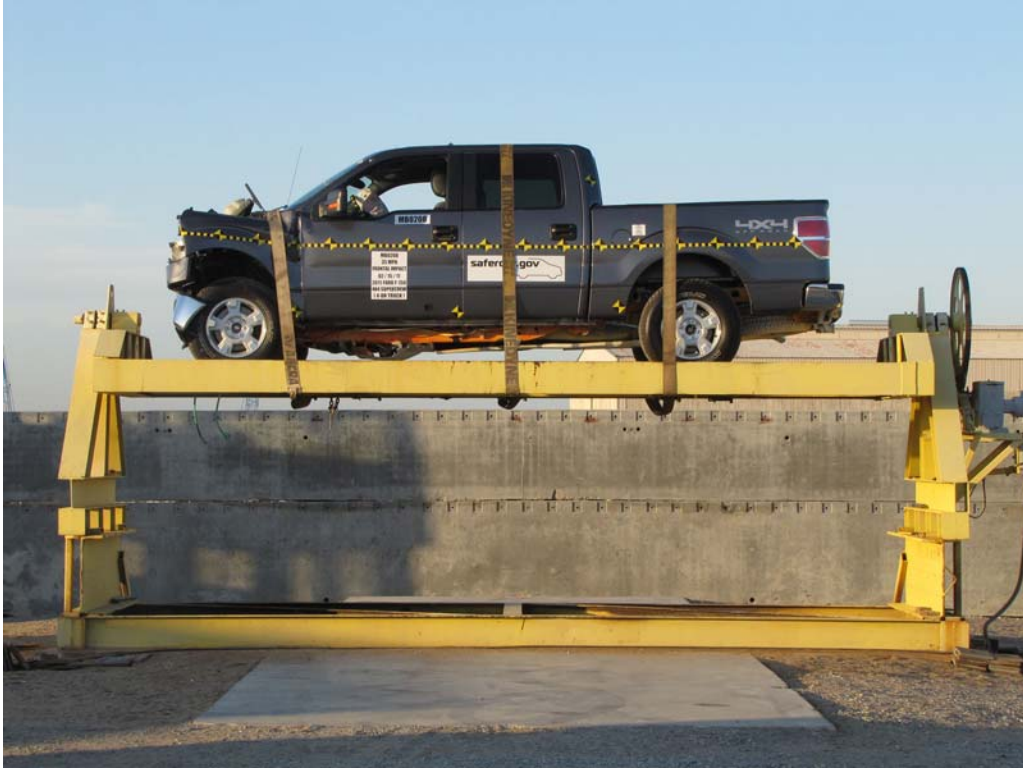


FIGURE 64. Vehicle at 0°on Static Rollover Device



FIGURE 65. Vehicle at 90°on Static Rollover Device



FIGURE 66. Vehicle at 180°on Static Rollover Device

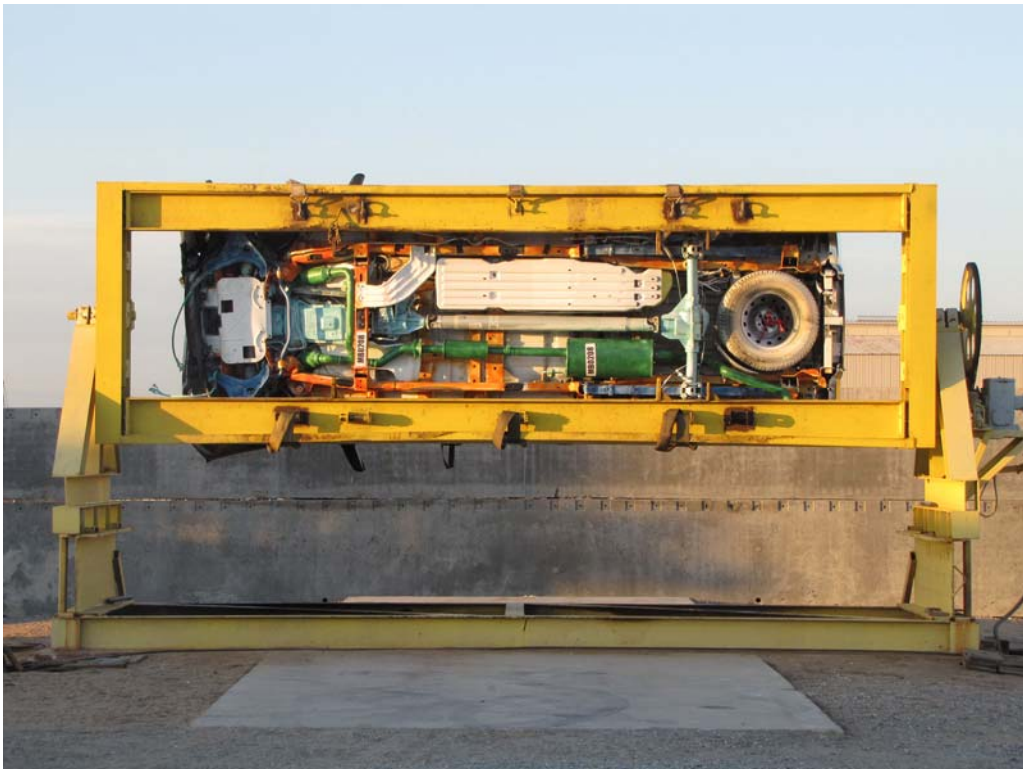


FIGURE 67. Vehicle at 270°on Static Rollover Device



FIGURE 68. Vehicle at 360° on Static Rollover Device



FIGURE 69. Impact Event

APPENDIX B
DUMMY RESPONSE DATA TRACES

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The following additional dummy and vehicle response data can be found in the R&D section of the NHTSA website at www.nhtsa.dot.gov

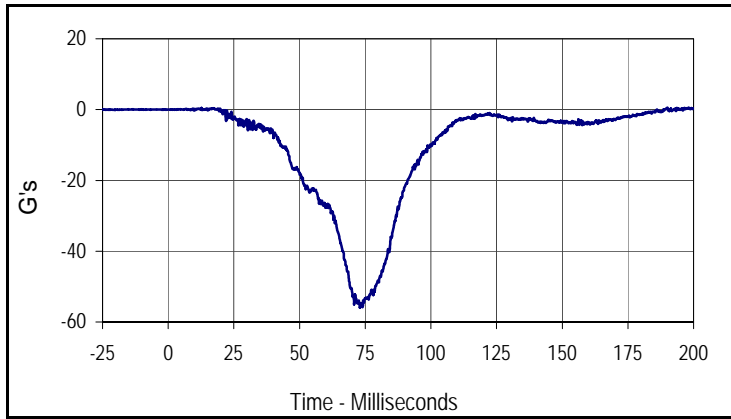
Driver Head X Acceleration Redundant
Driver Head Y Acceleration Redundant
Driver Head Z Acceleration Redundant
Driver Upper Neck Force Y
Driver Upper Neck Moment X
Driver Upper Neck Moment Z
Driver Chest X Acceleration Redundant
Driver Chest Y Acceleration Redundant
Driver Chest Z Acceleration Redundant
Driver Pelvis X
Driver Pelvis Y
Driver Pelvis Z
Driver Left Femur Force Z Redundant
Driver Right Femur Force Z Redundant
Driver Shoulder Belt Force
Driver Lap Belt Force
Driver Left Upper Tibia Moment X
Driver Left Upper Tibia Moment Y
Driver Left Upper Tibia Force Z
Driver Left Lower Tibia Moment X
Driver Left Lower Tibia Moment Y
Driver Left Lower Tibia Force Z
Driver Right Upper Tibia Moment X
Driver Right Upper Tibia Moment Y
Driver Right Upper Tibia Force Z
Driver Right Lower Tibia Moment X
Driver Right Lower Tibia Moment Y
Driver Right Lower Tibia Force Z
Driver Left Foot Fore Z
Driver Left Foot Aft X
Driver Left Foot Aft Z
Driver Right Foot Fore Z
Driver Right Foot Aft X

Driver Right Foot Aft Z
Passenger Head X Acceleration Redundant
Passenger Head Y Acceleration Redundant
Passenger Head Z Acceleration Redundant
Passenger Upper Neck Force X
Passenger Upper Neck Force Z
Passenger Upper Neck Moment Y
Passenger Chest X Acceleration Redundant
Passenger Chest Y Acceleration Redundant
Passenger Chest Z Acceleration Redundant
Passenger Pelvis X
Passenger Pelvis Y
Passenger Pelvis Z
Passenger Left Femur Force Z Redundant
Passenger Right Femur Force Z Redundant
Passenger Shoulder Belt Force
Passenger Lap Belt Force
Passenger Left Upper Tibia Moment X
Passenger Left Upper Tibia Moment Y
Passenger Left Upper Tibia Force Z
Passenger Left Lower Tibia Moment X
Passenger Left Lower Tibia Moment Y
Passenger Left Lower Tibia Force Z
Passenger Right Upper Tibia Moment X
Passenger Right Upper Tibia Moment Y
Passenger Right Upper Tibia Force Z
Passenger Right Lower Tibia Moment X
Passenger Right Lower Tibia Moment Y
Passenger Right Lower Tibia Force Z
Passenger Left Foot Fore Z
Passenger Left Foot Aft X
Passenger Left Foot Aft Z
Passenger Right Foot Fore Z
Passenger Right Foot Aft X
Passenger Right Foot Aft Z
Left Rear Seat Crossmember X

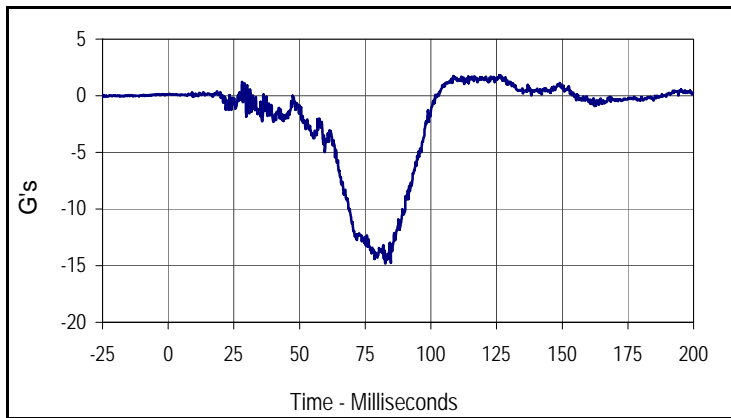
Left Rear Seat Crossmember Z
Right Rear Seat Crossmember X
Right Rear Seat Crossmember Z
Vehicle Engine Top X
Vehicle Engine Bottom X
Vehicle Left Brake Caliper X
Vehicle Right Brake Caliper X
Load Cell Barrier A1-A9
Load Cell Barrier B1-A9
Load Cell Barrier C1-A9
Load Cell Barrier D1-A9

Test Vehicle: 2011 Ford F-150 XLT 4x4 SuperCrew 4-Door Truck
 Test Program: 56 km/h (35 mph) Frontal Impact NCAP Rigid Barrier Test

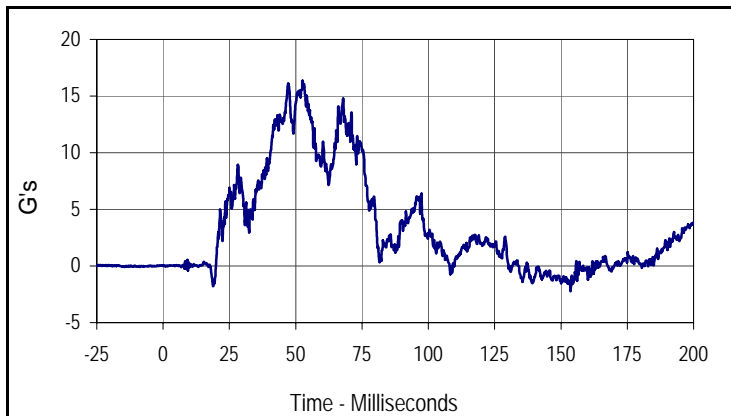
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 NHTSA No.: MB0208



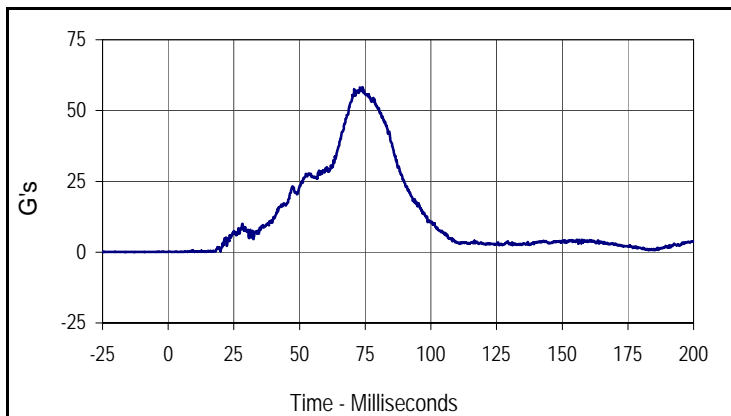
| Curve Description | | | |
|------------------------------------|-------|-----------|-------|
| Driver Head Acceleration X Primary | | | |
| CURNO | Type | SAE Class | Units |
| 001 | FIL | 1000 | G's |
| Max | Time | Min | Time |
| 0.6 | 198.1 | -55.9 | 73.0 |



| Curve Description | | | |
|------------------------------------|-------|-----------|-------|
| Driver Head Acceleration Y Primary | | | |
| CURNO | Type | SAE Class | Units |
| 002 | FIL | 1000 | G's |
| Max | Time | Min | Time |
| 1.8 | 126.0 | -14.8 | 82.7 |



| Curve Description | | | |
|------------------------------------|------|-----------|-------|
| Driver Head Acceleration Z Primary | | | |
| CURNO | Type | SAE Class | Units |
| 003 | FIL | 1000 | G's |
| Max | Time | Min | Time |
| 16.4 | 52.6 | -2.2 | 153.6 |



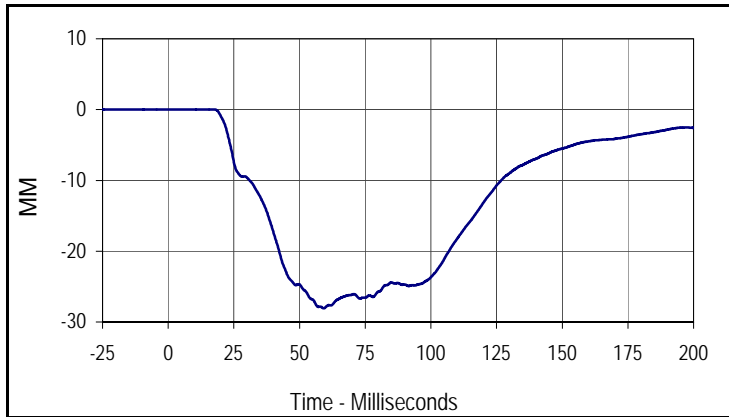
| Curve Description | | | |
|--|------|-----------|-------|
| Driver Head Resultant Acceleration Primary | | | |
| CURNO | Type | SAE Class | Units |
| 001 | RES | 1000 | G's |
| Max | Time | Min | Time |
| 58.3 | 73.9 | 0.0 | 14.0 |

Test Vehicle: 2011 Ford F-150 XLT 4x4 SuperCrew 4-Door Truck

Test Date: 2/15/11

Test Program: 56 km/h (35 mph) Frontal Impact NCAP Rigid Barrier Test

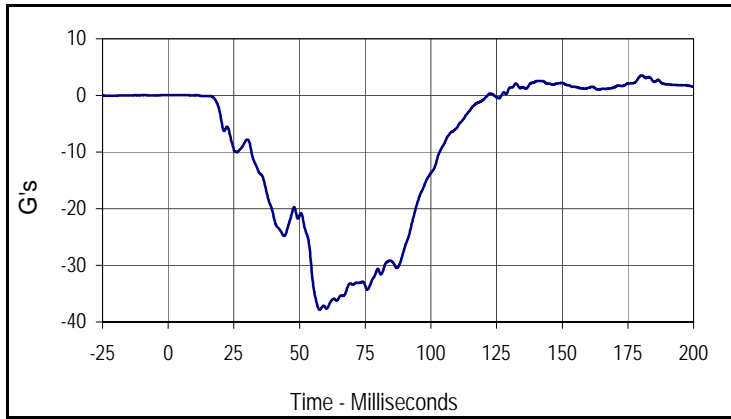
NHTSA No.: MB0208



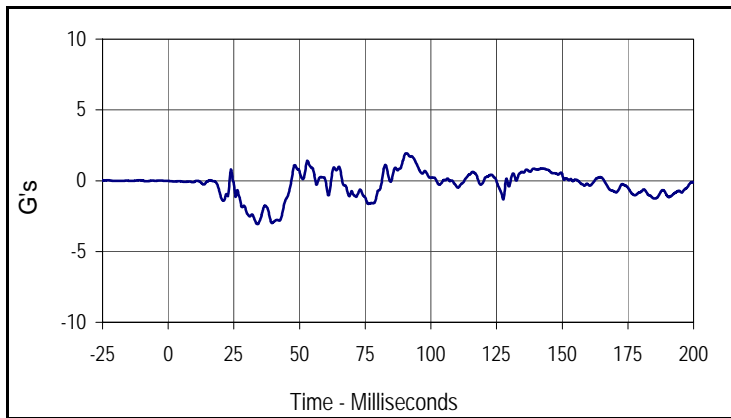
| Curve Description | | | |
|-------------------------|------|-----------|-------|
| Driver Chest Deflection | | | |
| CURNO | Type | SAE Class | Units |
| 019 | FIL | 180 | MM |
| Max | Time | Min | Time |
| 0.0 | 12.6 | -28.1 | 59.2 |

Test Vehicle: 2011 Ford F-150 XLT 4x4 SuperCrew 4-Door Truck
 Test Program: 56 km/h (35 mph) Frontal Impact NCAP Rigid Barrier Test

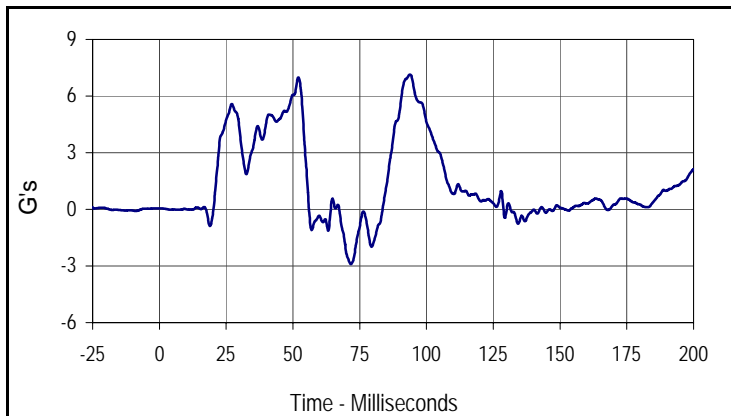
Test Date: 2/15/11
 NHTSA No.: MB0208



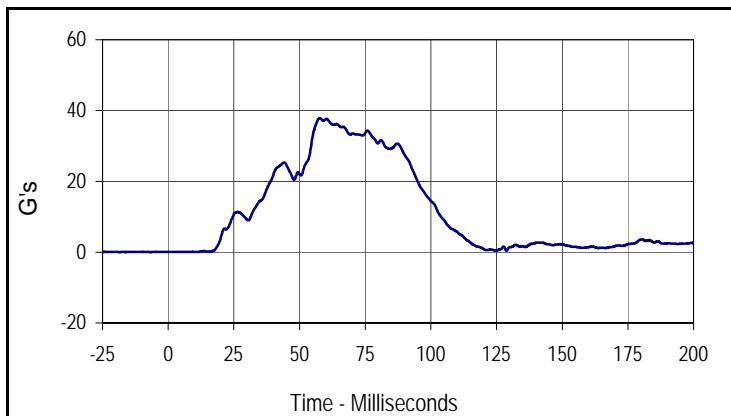
| Curve Description | | | |
|-------------------------------------|-------|-----------|-------|
| Driver Chest Acceleration X Primary | | | |
| CURNO | Type | SAE Class | Units |
| 013 | FIL | 180 | G's |
| Max | Time | Min | Time |
| 3.5 | 180.3 | -37.8 | 57.7 |



| Curve Description | | | |
|-------------------------------------|------|-----------|-------|
| Driver Chest Acceleration Y Primary | | | |
| CURNO | Type | SAE Class | Units |
| 014 | FIL | 180 | G's |
| Max | Time | Min | Time |
| 1.9 | 90.6 | -3.1 | 34.0 |



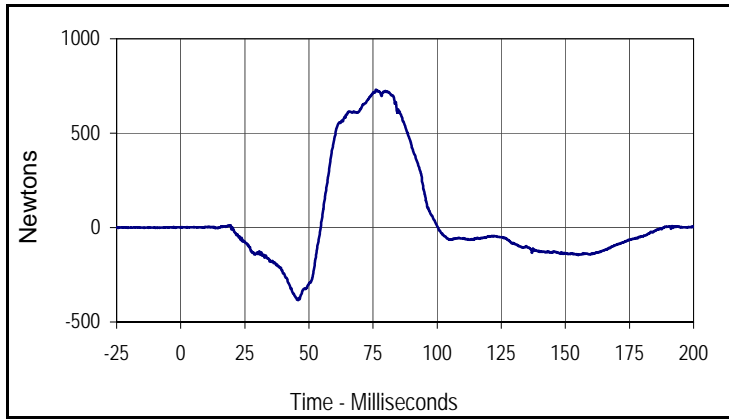
| Curve Description | | | |
|-------------------------------------|------|-----------|-------|
| Driver Chest Acceleration Z Primary | | | |
| CURNO | Type | SAE Class | Units |
| 015 | FIL | 180 | G's |
| Max | Time | Min | Time |
| 7.1 | 93.8 | -2.9 | 71.7 |



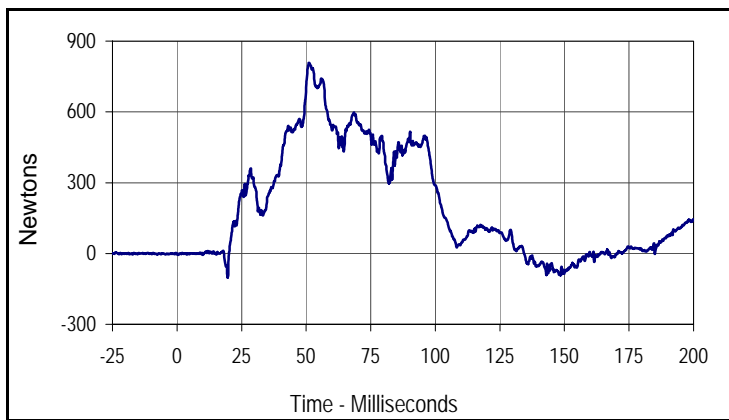
| Curve Description | | | |
|---|------|-----------|-------|
| Driver Chest Resultant Acceleration Primary | | | |
| CURNO | Type | SAE Class | Units |
| 013 | RES | 180 | G's |
| Max | Time | Min | Time |
| 37.8 | 57.7 | 0.0 | 11.5 |

Test Vehicle: 2011 Ford F-150 XLT 4x4 SuperCrew 4-Door Truck
 Test Program: 56 km/h (35 mph) Frontal Impact NCAP Rigid Barrier Test

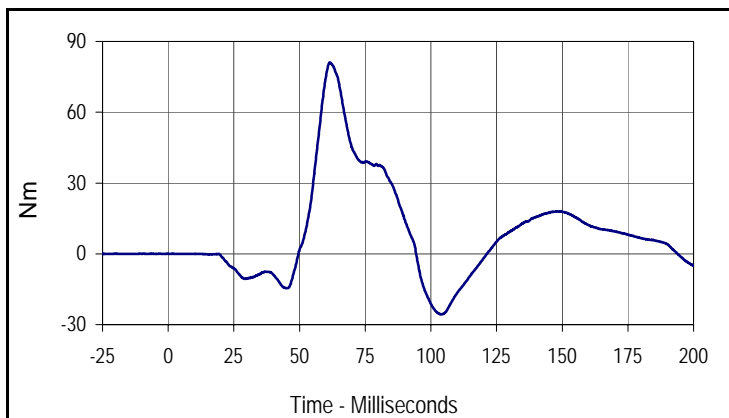
Test Date: 2/15/11
 NHTSA No.: MB0208



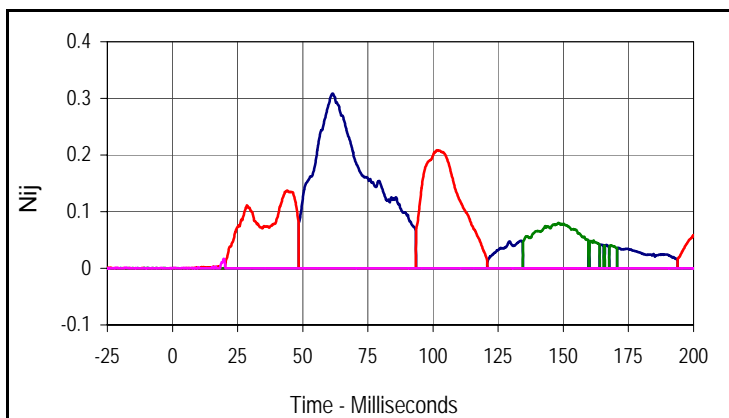
| Curve Description | | | |
|---------------------------|------|-----------|---------|
| Driver Upper Neck Force X | | | |
| CURNO | Type | SAE Class | Units |
| 007 | FIL | 1000 | Newtons |
| Max | Time | Min | Time |
| 731.1 | 76.1 | -385.1 | 45.7 |



| Curve Description | | | |
|---------------------------|------|-----------|---------|
| Driver Upper Neck Force Z | | | |
| CURNO | Type | SAE Class | Units |
| 009 | FIL | 1000 | Newtons |
| Max | Time | Min | Time |
| 808.4 | 51.1 | -101.8 | 19.6 |



| Curve Description | | | |
|----------------------------|------|-----------|-------|
| Driver Upper Neck Moment Y | | | |
| CURNO | Type | SAE Class | Units |
| 011 | FIL | 600 | Nm |
| Max | Time | Min | Time |
| 81.1 | 61.6 | -25.6 | 103.8 |



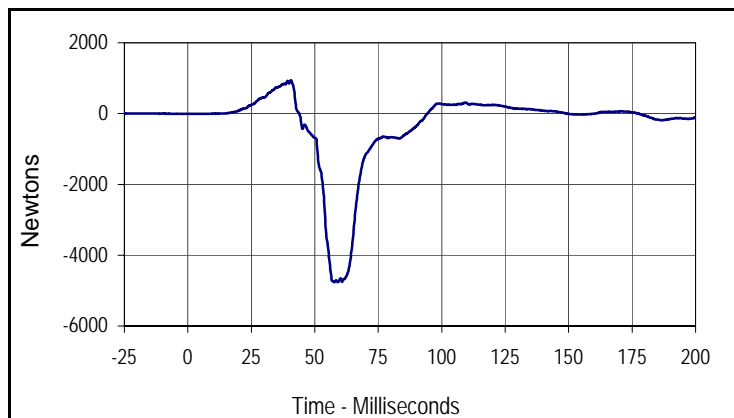
| Curve Description | | | |
|-------------------|------|------|-------|
| Driver Nij | | | |
| Units | Type | Max | Time |
| Ntf | FIL | 0.31 | 61.5 |
| Units | Type | Max | Time |
| Nte | FIL | 0.21 | 101.5 |
| Units | Type | Max | Time |
| Ncf | FIL | 0.08 | 148.1 |
| Units | Type | Max | Time |
| Nce | FIL | 0.06 | 268.4 |

Test Vehicle: 2011 Ford F-150 XLT 4x4 SuperCrew 4-Door Truck

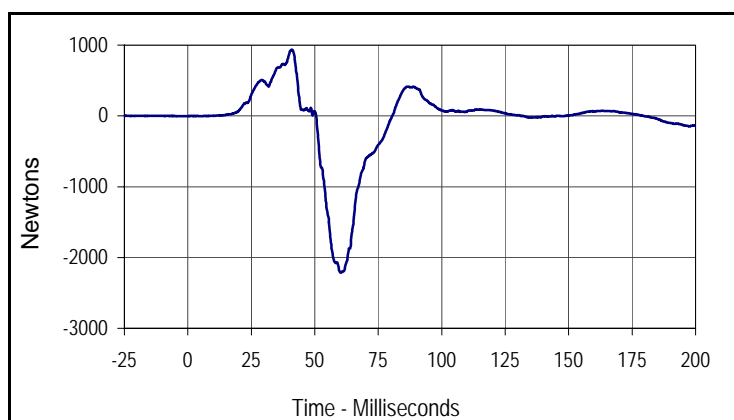
Test Date: 2/15/11

Test Program: 56 km/h (35 mph) Frontal Impact NCAP Rigid Barrier Test

NHTSA No.: MB0208



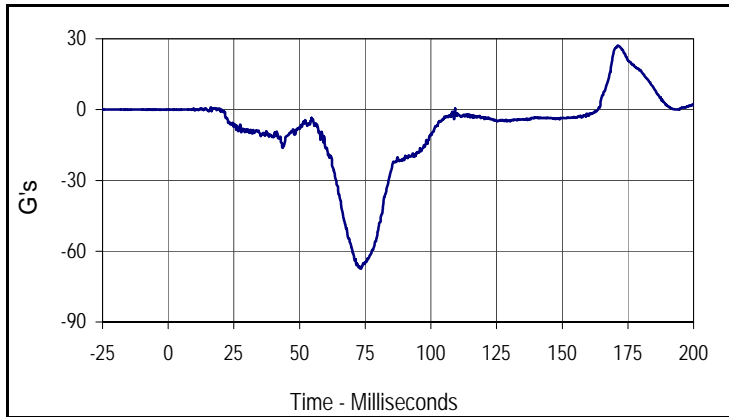
| Curve Description | | | |
|--------------------------|------|-----------|---------|
| Driver Driver Left Femur | | | |
| CURNO | Type | SAE Class | Units |
| 023 | FIL | 600 | Newtons |
| Max | Time | Min | Time |
| 943.3 | 40.6 | -4765.5 | 57.7 |



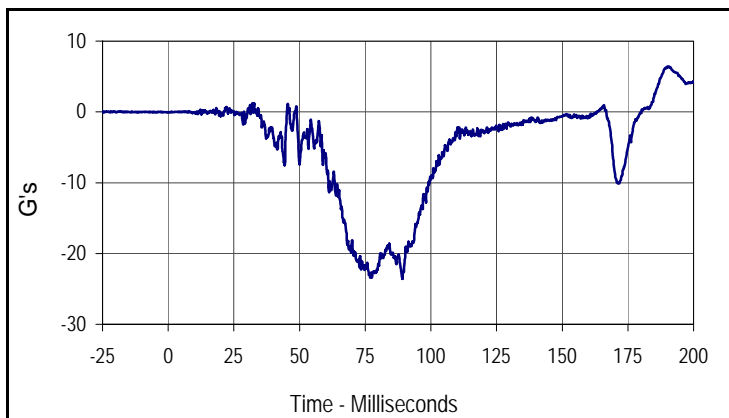
| Curve Description | | | |
|---------------------------|------|-----------|---------|
| Driver Driver Right Femur | | | |
| CURNO | Type | SAE Class | Units |
| 024 | FIL | 600 | Newtons |
| Max | Time | Min | Time |
| 935.5 | 41.0 | -2212.5 | 60.2 |

Test Vehicle: 2011 Ford F-150 XLT 4x4 SuperCrew 4-Door Truck
 Test Program: 56 km/h (35 mph) Frontal Impact NCAP Rigid Barrier Test

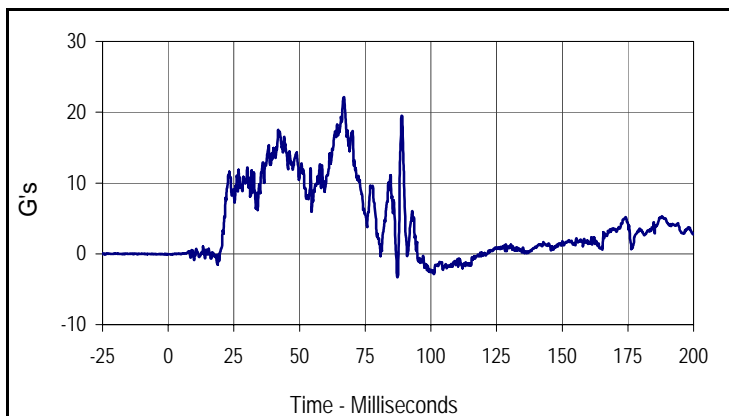
Test Date: 2/15/11
 NHTSA No.: MB0208



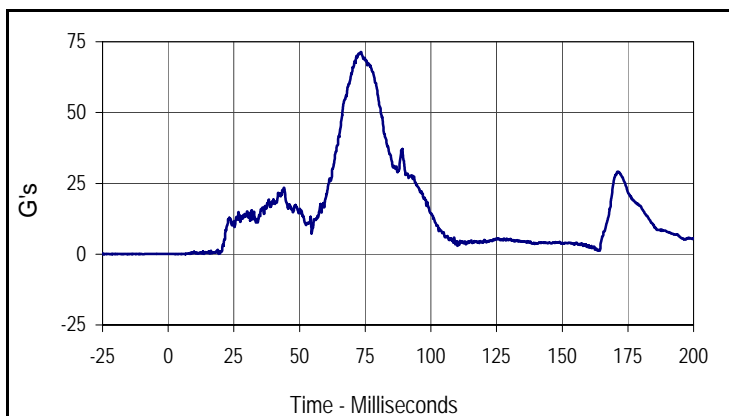
| Curve Description | | | |
|---------------------------------------|-------|-----------|-------|
| Passenger Head Acceleration X Primary | | | |
| CURNO | Type | SAE Class | Units |
| 045 | FIL | 1000 | G's |
| Max | Time | Min | Time |
| 27.1 | 171.3 | -67.4 | 73.2 |



| Curve Description | | | |
|---------------------------------------|-------|-----------|-------|
| Passenger Head Acceleration Y Primary | | | |
| CURNO | Type | SAE Class | Units |
| 046 | FIL | 1000 | G's |
| Max | Time | Min | Time |
| 6.4 | 190.5 | -23.6 | 89.1 |



| Curve Description | | | |
|---------------------------------------|------|-----------|-------|
| Passenger Head Acceleration Z Primary | | | |
| CURNO | Type | SAE Class | Units |
| 047 | FIL | 1000 | G's |
| Max | Time | Min | Time |
| 22.2 | 66.9 | -3.3 | 87.3 |



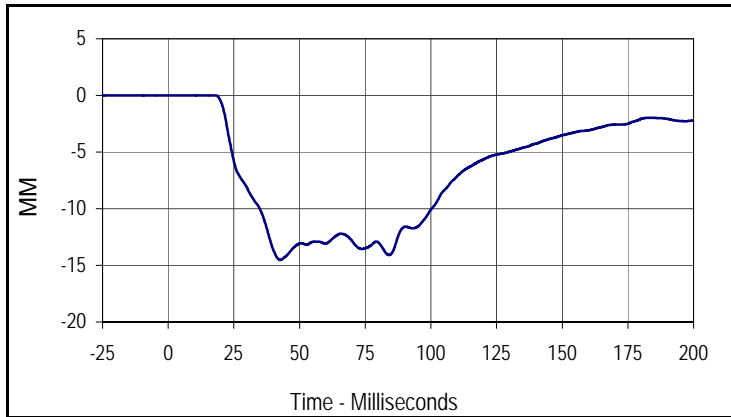
| Curve Description | | | |
|---|------|-----------|-------|
| Passenger Head Resultant Acceleration Primary | | | |
| CURNO | Type | SAE Class | Units |
| 045 | RES | 1000 | G's |
| Max | Time | Min | Time |
| 71.4 | 73.4 | 0.0 | 3.6 |

Test Vehicle: 2011 Ford F-150 XLT 4x4 SuperCrew 4-Door Truck

Test Date: 2/15/11

Test Program: 56 km/h (35 mph) Frontal Impact NCAP Rigid Barrier Test

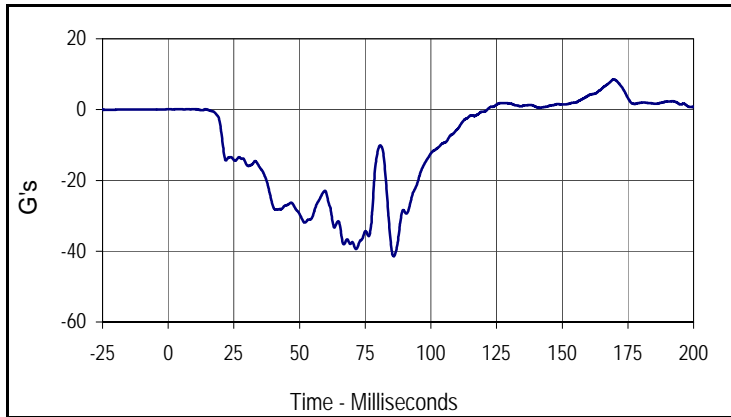
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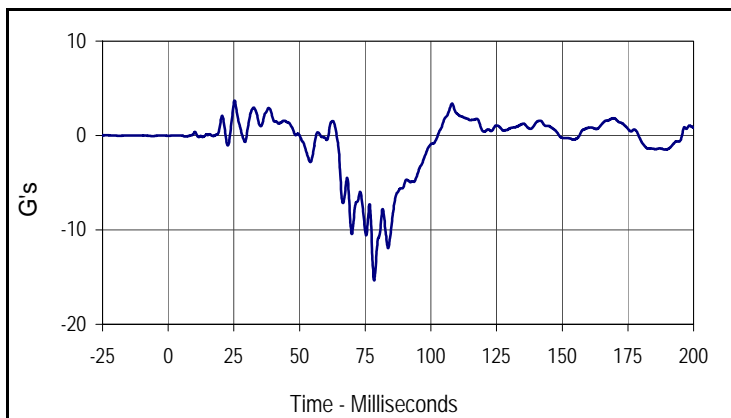
| Curve Description | | | |
|----------------------------|------|-----------|-------|
| Passenger Chest Deflection | | | |
| CURNO | Type | SAE Class | Units |
| 063 | FIL | 180 | MM |
| Max | Time | Min | Time |
| 0.0 | 17.8 | -14.5 | 42.7 |

Test Vehicle: 2011 Ford F-150 XLT 4x4 SuperCrew 4-Door Truck
 Test Program: 56 km/h (35 mph) Frontal Impact NCAP Rigid Barrier Test

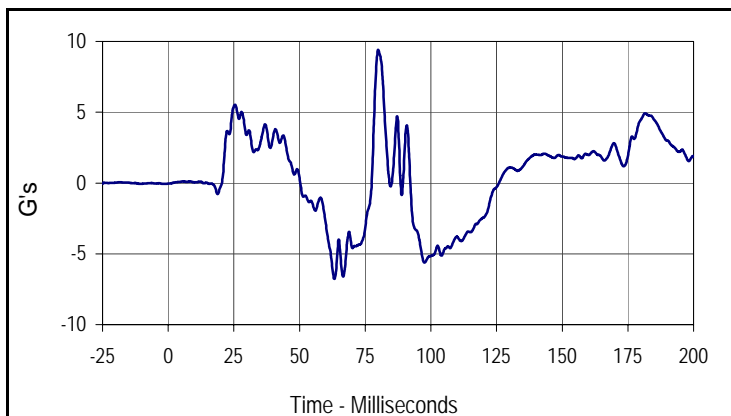
Test Date: 2/15/11
 NHTSA No.: MB0208



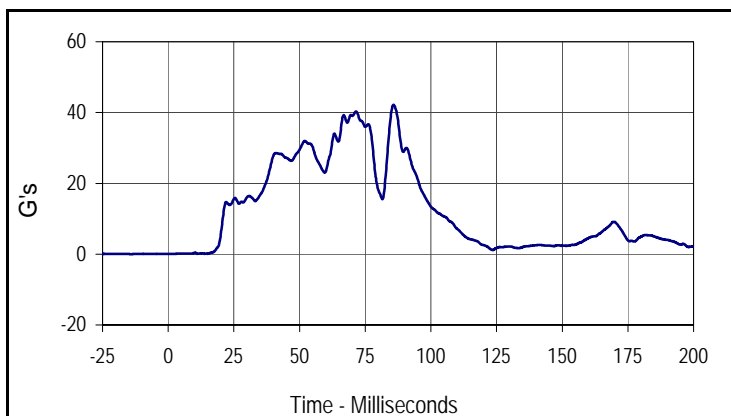
| Curve Description | | | |
|--|-------|-----------|-------|
| Passenger Chest Acceleration X Primary | | | |
| CURNO | Type | SAE Class | Units |
| 057 | FIL | 180 | G's |
| Max | Time | Min | Time |
| 8.5 | 169.6 | -41.4 | 85.8 |



| Curve Description | | | |
|--|------|-----------|-------|
| Passenger Chest Acceleration Y Primary | | | |
| CURNO | Type | SAE Class | Units |
| 058 | FIL | 180 | G's |
| Max | Time | Min | Time |
| 3.7 | 25.3 | -15.3 | 78.4 |



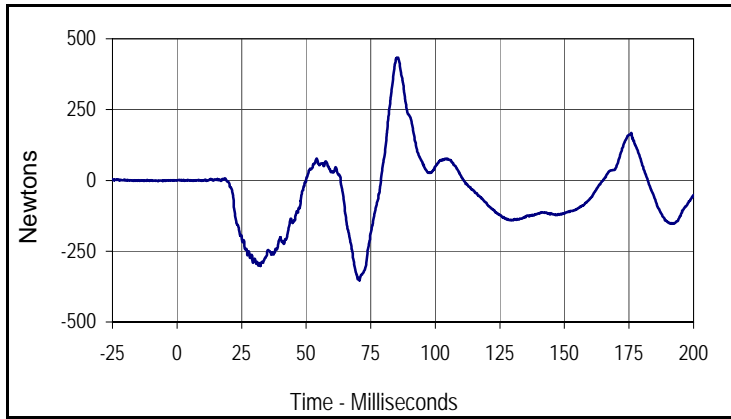
| Curve Description | | | |
|--|------|-----------|-------|
| Passenger Chest Acceleration Z Primary | | | |
| CURNO | Type | SAE Class | Units |
| 059 | FIL | 180 | G's |
| Max | Time | Min | Time |
| 9.4 | 79.9 | -6.8 | 63.2 |



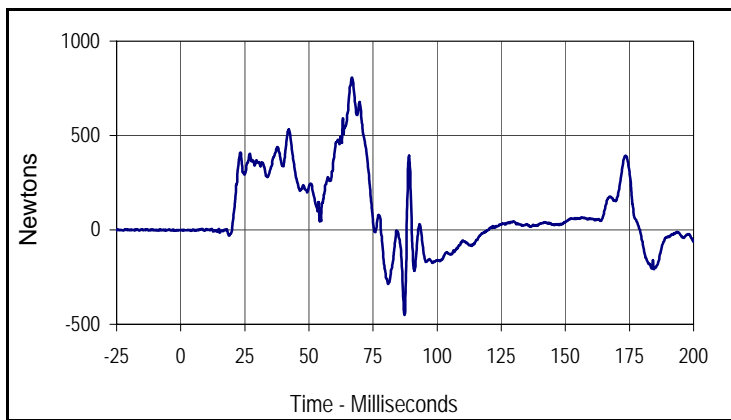
| Curve Description | | | |
|--|------|-----------|-------|
| Passenger Chest Resultant Acceleration Primary | | | |
| CURNO | Type | SAE Class | Units |
| 057 | RES | 180 | G's |
| Max | Time | Min | Time |
| 42.2 | 85.7 | 0.1 | 1.8 |

Test Vehicle: 2011 Ford F-150 XLT 4x4 SuperCrew 4-Door Truck
 Test Program: 56 km/h (35 mph) Frontal Impact NCAP Rigid Barrier Test

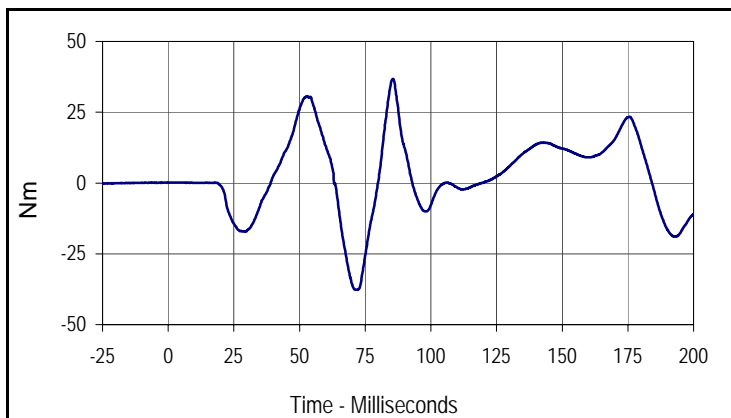
Test Date: 2/15/11
 NHTSA No.: MB0208



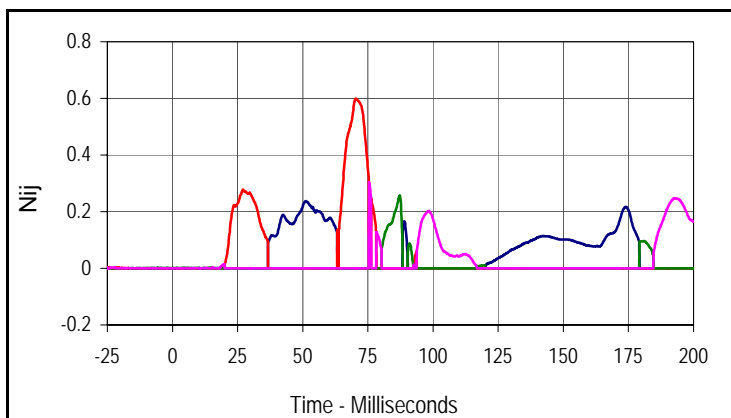
| Curve Description | | | |
|------------------------------|------|-----------|---------|
| Passenger Upper Neck Force X | | | |
| CURNO | Type | SAE Class | Units |
| 051 | FIL | 1000 | Newtons |
| Max | Time | Min | Time |
| 433.8 | 85.5 | -353.4 | 70.7 |



| Curve Description | | | |
|------------------------------|------|-----------|---------|
| Passenger Upper Neck Force Z | | | |
| CURNO | Type | SAE Class | Units |
| 053 | FIL | 1000 | Newtons |
| Max | Time | Min | Time |
| 807.3 | 66.8 | -450.2 | 87.3 |



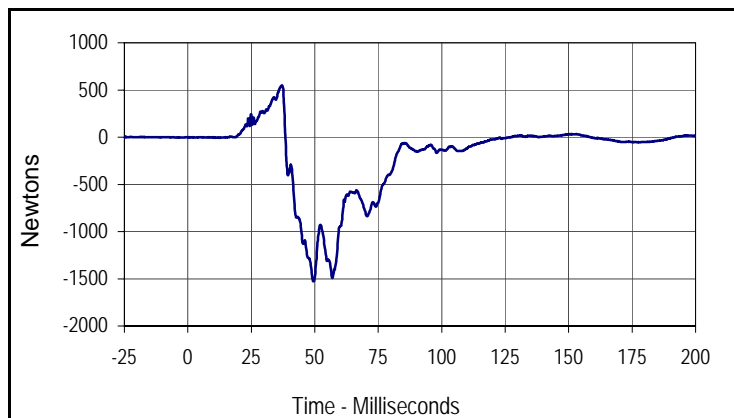
| Curve Description | | | |
|-------------------------------|------|-----------|-------|
| Passenger Upper Neck Moment Y | | | |
| CURNO | Type | SAE Class | Units |
| 055 | FIL | 600 | Nm |
| Max | Time | Min | Time |
| 36.7 | 85.5 | -37.7 | 71.9 |



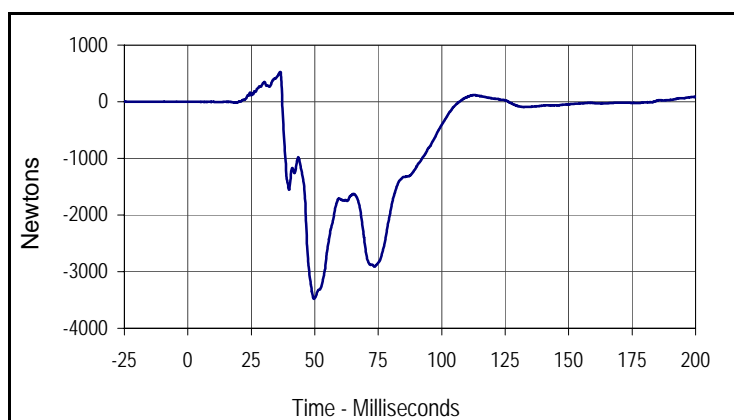
| Curve Description | | | |
|-------------------|------|------|------|
| Passenger Nij | | | |
| Units | Type | Max | Time |
| Ntf | FIL | 0.24 | 51.1 |
| Units | Type | Max | Time |
| Nte | FIL | 0.60 | 70.3 |
| Units | Type | Max | Time |
| Ncf | FIL | 0.26 | 87.2 |
| Units | Type | Max | Time |
| Nce | FIL | 0.30 | 75.5 |

Test Vehicle: 2011 Ford F-150 XLT 4x4 SuperCrew 4-Door Truck
 Test Program: 56 km/h (35 mph) Frontal Impact NCAP Rigid Barrier Test

Test Date: 2/15/11
 NHTSA No.: MB0208



| Curve Description | | | |
|--------------------------------|------|-----------|---------|
| Passenger Passenger Left Femur | | | |
| CURNO | Type | SAE Class | Units |
| 067 | FIL | 600 | Newtons |
| Max | Time | Min | Time |
| 548.7 | 37.0 | -1527.0 | 49.5 |



| Curve Description | | | |
|---------------------------------|------|-----------|---------|
| Passenger Passenger Right Femur | | | |
| CURNO | Type | SAE Class | Units |
| 068 | FIL | 600 | Newtons |
| Max | Time | Min | Time |
| 527.7 | 36.4 | -3481.0 | 49.6 |

APPENDIX C
DUMMY CALIBRATION AND PERFORMANCE VERIFICATION DATA

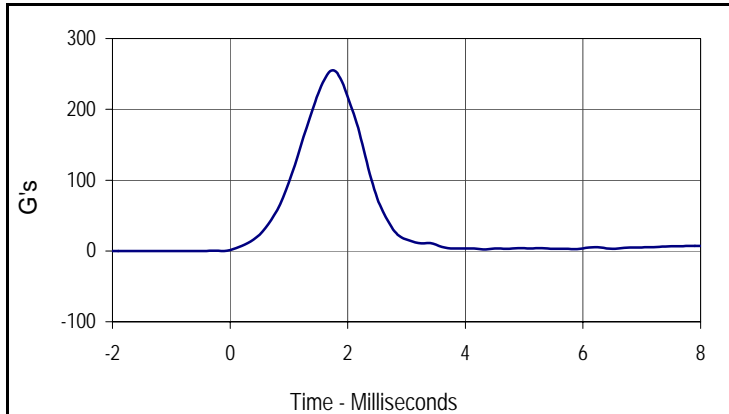
APPENDIX C
PRE-TEST / ATD CONFIGURATION AND PERFORMANCE VERIFICATION DATA

Test Program: Hybrid III 50th Percentile Male Head Drop Test
 ATD Serial No.: 034

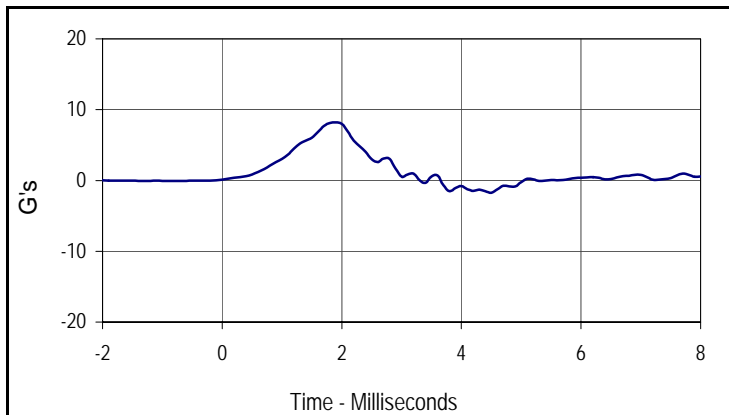
Test Date: 2/8/11
 Test I.D.: HDM02A



| Tested Parameter | Units | Specification | Result | Pass/Fail |
|------------------------------|--------|----------------|--------|-----------|
| Laboratory Temperature | °C | 18.9 to 25.6 | 21.06 | Pass |
| Laboratory Relative Humidity | % | 10 to 70 | 26.23 | Pass |
| Peak Resultant Acceleration | G's | 225.0 to 275.0 | 253.9 | Pass |
| Peak Lateral Acceleration | G's | ≤15.0 | 8.2 | Pass |
| Is Acceleration Unimodal? | Yes/No | Yes | Yes | Pass |
| Overall Test Results | | | Pass | |



| Curve Description | | | |
|-------------------|------|-----------|-------|
| Head Resultant | | | |
| CURNO | Type | SAE Class | Units |
| 001 | RES | 1000 | G's |
| Max | Time | Min | Time |
| 253.9 | 1.7 | 0.0 | -1.9 |



| Curve Description | | | |
|-------------------|------|-----------|-------|
| Head Y | | | |
| CURNO | Type | SAE Class | Units |
| 002 | FIL | 1000 | G's |
| Max | Time | Min | Time |
| 8.2 | 1.9 | -1.7 | 4.5 |

Test Program: Hybrid III 50th Percentile Male Thorax Impact Test

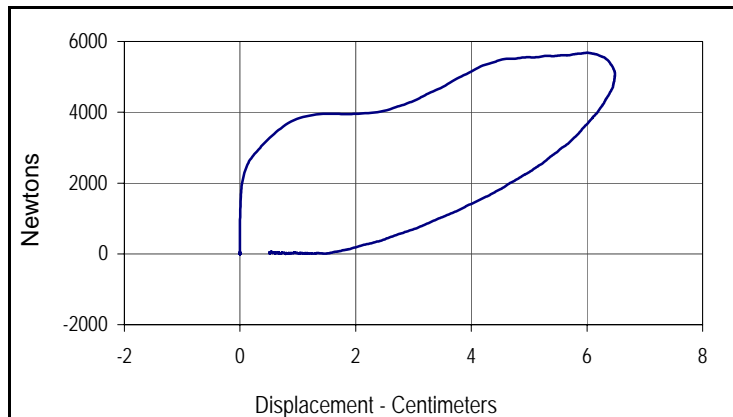
Test Date: 2/8/11

ATD Serial No.: 034

Test I.D.: CHM02A



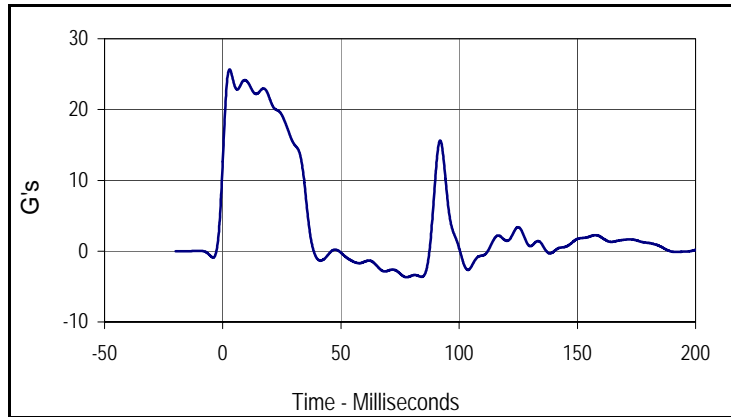
| Tested Parameter | Units | Specification | Result | Pass/Fail |
|------------------------------|---------|---------------|--------|-----------|
| Laboratory Temperature | °C | 20.6 to 22.2 | 21.00 | Pass |
| Laboratory Relative Humidity | % | 10 to 70 | 25.96 | Pass |
| Probe Velocity | m/s | 6.58 to 6.82 | 6.75 | Pass |
| Peak Probe Force | Newtons | 5159 to 5893 | 5680 | Pass |
| Peak Sternum Deflection | CM | 6.35 to 7.26 | 6.48 | Pass |
| Internal Hysteresis | % | 69 to 85 | 71.9 | Pass |
| Overall Test Results | | | | Pass |



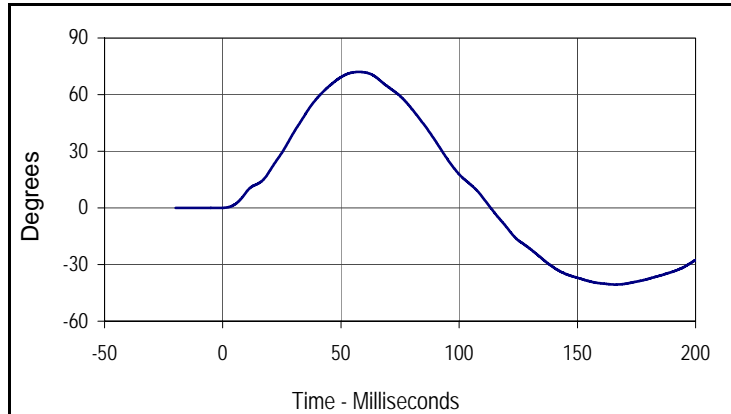
| Curve Description | | | |
|----------------------------------|------|-----------------------|------------|
| Probe Force vs. Chest Deflection | | | |
| CURNO | Type | SAE Class | Hysteresis |
| 001 | FIL | 180 | 71.9 |
| Peak Probe Force | | Peak Chest Deflection | |
| 5680 | | 6.48 | |



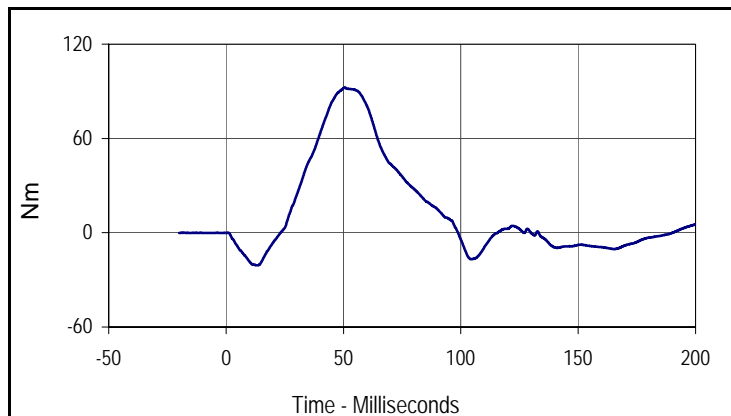
| Tested Parameter | Units | Specification | Result | Pass/Fail | |
|---|----------|----------------|---------------|-------------|------|
| Laboratory Temperature | °C | 20.6 to 22.2 | 20.94 | Pass | |
| Laboratory Relative Humidity | % | 10 to 70 | 26.01 | Pass | |
| Pendulum Velocity | m/s | 6.89 to 7.13 | 7.03 | Pass | |
| Pendulum Deceleration | 10 Msec. | G's | 22.5 to 27.5 | 24.1 | Pass |
| | 20 Msec. | G's | 17.6 to 22.6 | 21.4 | Pass |
| | 30 Msec. | G's | 12.5 to 18.5 | 15.2 | Pass |
| Peak Pendulum Decel. after 30 Msec. | G's | ≤ 29.0 | 15.6 | Pass | |
| Deceleration Decay, Time to Cross 5 G's | Msec. | 34.0 to 42.0 | 36 | Pass | |
| Maximum "D" Plane Rotation | Max | Degrees | 64.0 to 78.0 | 72.0 | Pass |
| | Time | Msec. | 57.0 to 64.0 | 57.5 | Pass |
| "D" Plane Rotation Decay, Time To Zero Crossing | Msec. | 113.0 to 128.0 | 113.4 | Pass | |
| Moment About Occ. Condyle | Max | Nm | 84.1 to 108.5 | 92.6 | Pass |
| | Time | Msec. | 47.0 to 58.0 | 50.7 | Pass |
| Positive Moment Decay, Time To Zero Crossing | Msec. | 97.0 to 107.0 | 98.8 | Pass | |
| Overall Test Results | | | | Pass | |



| Curve Description | | | |
|-----------------------|------|-----------|-------|
| Pendulum Deceleration | | | |
| CURNO | Type | SAE Class | Units |
| 001 | FIL | 60 | G's |
| Max | Time | Min | Time |
| 25.7 | 2.9 | -3.7 | 77.8 |



| Curve Description | | | |
|--------------------|------|-----------|---------|
| "D" Plane Rotation | | | |
| CURNO | Type | SAE Class | Units |
| 003 | FIL | 60 | Degrees |
| Max | Time | Min | Time |
| 72.0 | 57.5 | -40.6 | 166.0 |



| Curve Description | | | |
|--------------------------------|------|-----------|-------|
| Moment About Occipital Condyle | | | |
| CURNO | Type | SAE Class | Units |
| 004 | FIL | 600 | Nm |
| Max | Time | Min | Time |
| 92.6 | 50.7 | -20.8 | 13.0 |

Test Program: Hybrid III 50th Percentile Male Neck Extension Test

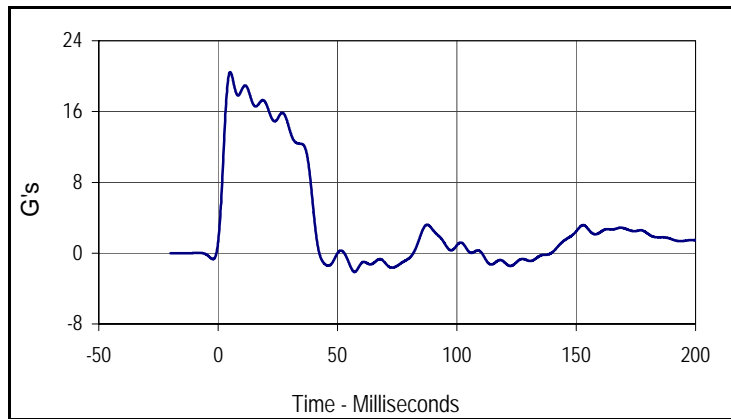
Test Date: 2/8/11

ATD Serial No.: 034

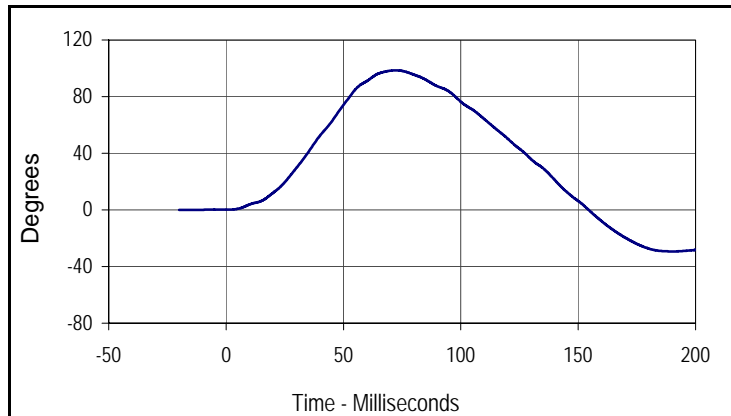
Test I.D.: NFM02A



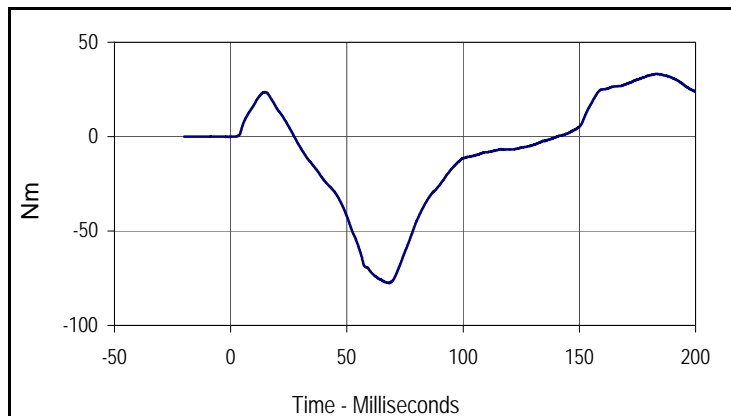
| Tested Parameter | Units | Specification | Result | Pass/Fail | |
|---|----------|----------------|----------------|-------------|------|
| Laboratory Temperature | °C | 20.6 to 22.2 | 20.94 | Pass | |
| Laboratory Relative Humidity | % | 10 to 70 | 26.15 | Pass | |
| Pendulum Velocity | m/s | 5.94 to 6.19 | 6.07 | Pass | |
| Pendulum Deceleration | 10 Msec. | G's | 17.2 to 21.2 | 18.5 | Pass |
| | 20 Msec. | G's | 14.0 to 19.0 | 16.9 | Pass |
| | 30 Msec. | G's | 11.0 to 16.0 | 13.9 | Pass |
| Peak Pendulum Decel. after 30 Msec. | G's | ≤ 22.0 | 13.9 | Pass | |
| Deceleration Decay, Time to Cross 5 G's | Msec. | 38.0 to 46.0 | 39.9 | Pass | |
| Maximum "D" Plane Rotation | Max | Degrees | 81.0 to 106.0 | 98.5 | Pass |
| | Time | Msec. | 72.0 to 82.0 | 72.2 | Pass |
| "D" Plane Rotation Decay, Time To Zero Crossing | Msec. | 147.0 to 174.0 | 154.5 | Pass | |
| Moment About Occ. Condyle | Max | Nm | -52.9 to- 79.9 | -77.5 | Pass |
| | Time | Msec. | 65.0 to 79.0 | 68.2 | Pass |
| Positive Moment Decay, Time To Zero Crossing | Msec. | 120.0 to 148.0 | 140.6 | Pass | |
| Overall Test Results | | | | Pass | |



| Curve Description | | | |
|-----------------------|------|-----------|-------|
| Pendulum Deceleration | | | |
| CURNO | Type | SAE Class | Units |
| 001 | FIL | 60 | G's |
| Max | Time | Min | Time |
| 20.5 | 5.0 | -2.1 | 57.2 |



| Curve Description | | | |
|--------------------|------|-----------|---------|
| "D" Plane Rotation | | | |
| CURNO | Type | SAE Class | Units |
| 003 | FIL | 60 | Degrees |
| Max | Time | Min | Time |
| 98.5 | 72.2 | -29.3 | 190.4 |



| Curve Description | | | |
|--------------------------------|-------|-----------|-------|
| Moment About Occipital Condyle | | | |
| CURNO | Type | SAE Class | Units |
| 004 | FIL | 600 | Nm |
| Max | Time | Min | Time |
| 33.2 | 183.3 | -77.5 | 68.2 |

Test Program: Hybrid III 50th Percentile Male Knee Impact Test

Test Date: 2/8/11

ATD Serial No.: 034

Test I.D.: LKM02A , RKM02A

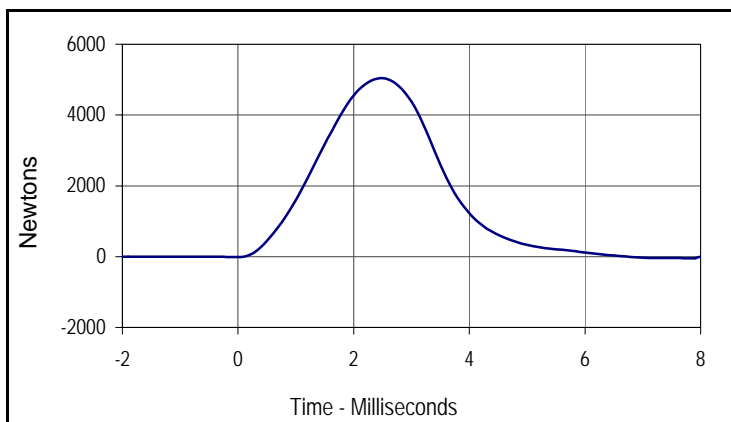


Left Knee

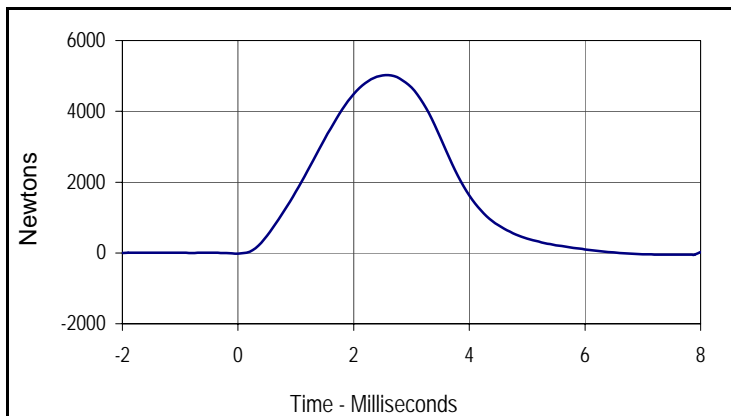
| Tested Parameter | Units | Specification | Result | Pass/Fail |
|------------------------------|---------|---------------|--------|-------------|
| Laboratory Temperature | °C | 18.9 to 25.6 | 20.94 | Pass |
| Laboratory Relative Humidity | % | 10 to 70 | 26.24 | Pass |
| Pendulum Velocity at T=0 | m/sec | 2.07 to 2.13 | 2.100 | Pass |
| Peak Probe Force | Newtons | 4715 to 5782 | 5039 | Pass |
| Overall Test Results | | | | Pass |

Right Knee

| | | | | |
|-----------------------------|---------|--------------|-------|-------------|
| Pendulum Velocity at T=0 | m/sec | 2.07 to 2.13 | 2.106 | Pass |
| Peak Probe Force | Newtons | 4715 to 5782 | 5025 | Pass |
| Overall Test Results | | | | Pass |



| Curve Description | | | |
|-----------------------|------|-----------|---------|
| Left Knee Probe Force | | | |
| CURNO | Type | SAE Class | Units |
| 001 | FIL | 600 | Newtons |
| Max | Time | Min | Time |
| 5039.1 | 2.5 | -46.3 | 7.9 |



| Curve Description | | | |
|------------------------|------|-----------|---------|
| Right Knee Probe Force | | | |
| CURNO | Type | SAE Class | Units |
| 002 | FIL | 600 | Newtons |
| Max | Time | Min | Time |
| 5024.5 | 2.6 | -48.5 | 7.8 |

Test Program: Hybrid III 50th Percentile Male External Measurements

Test Date: 2/8/11

ATD Serial No.: 034

Test I.D.: N/A



| Tested Parameter | Units | Specification | Result | Pass/Fail |
|---------------------------------------|-------|---------------|--------|-----------|
| Laboratory Temperature | °C | 20.6 to 22.2 | 20.94 | Pass |
| Laboratory Relative Humidity | % | 10 to 70 | 26.15 | Pass |
| A - Total sitting height | mm | 879 to 889 | 881 | Pass |
| B - Shoulder pivot height | mm | 505 to 521 | 516 | Pass |
| C - "H" point height | mm | 84 to 89 | 85 | Pass |
| D - "H" point from seat back | mm | 135 to 140 | 138 | Pass |
| E - Shoulder pivot from back | mm | 84 to 94 | 85 | Pass |
| F - Thigh clearance | mm | 140 to 155 | 147 | Pass |
| G - Elbow back to wrist pivot | mm | 290 to 305 | 298 | Pass |
| H - Skull cap to back line | mm | 41 to 46 | 44 | Pass |
| I - Shoulder to elbow length | mm | 330 to 345 | 334 | Pass |
| J - Elbow rest height | mm | 190 to 211 | 206 | Pass |
| K - Buttock to knee length | mm | 579 to 604 | 589 | Pass |
| L - Popliteal length | mm | 429 to 455 | 437 | Pass |
| M - Knee pivot height | mm | 485 to 500 | 488 | Pass |
| N - Buttock popliteal length | mm | 452 to 477 | 472 | Pass |
| O - Chest depth | mm | 213 to 229 | 226 | Pass |
| P - Foot length | mm | 251 to 267 | 260 | Pass |
| V - Shoulder breadth | mm | 422 to 437 | 433 | Pass |
| W - Foot breadth | mm | 91 to 107 | 99 | Pass |
| Y - Chest circumference | mm | 970 to 1001 | 986 | Pass |
| Z - Waist circumference | mm | 836 to 866 | 864 | Pass |
| AA - Location for chest circumference | mm | 429 to 434 | 433 | Pass |
| BB - Location for waist circumference | mm | 226 to 231 | 230 | Pass |
| Overall Test Results | | | | Pass |

Test Program: Hybrid III 5th Percentile Female Head Drop Test

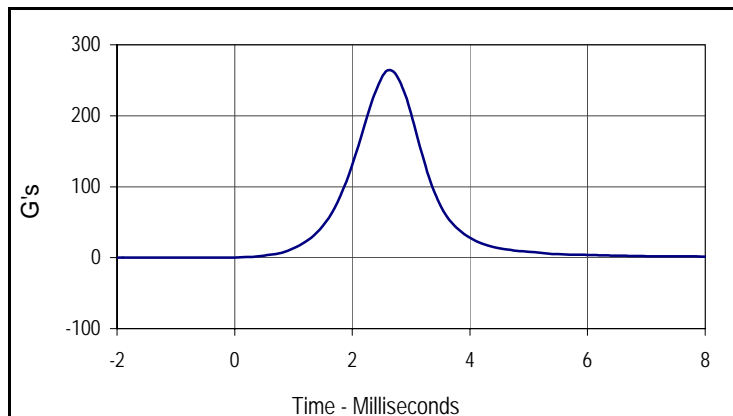
Test Date: 2/3/11

ATD Serial No.: 141

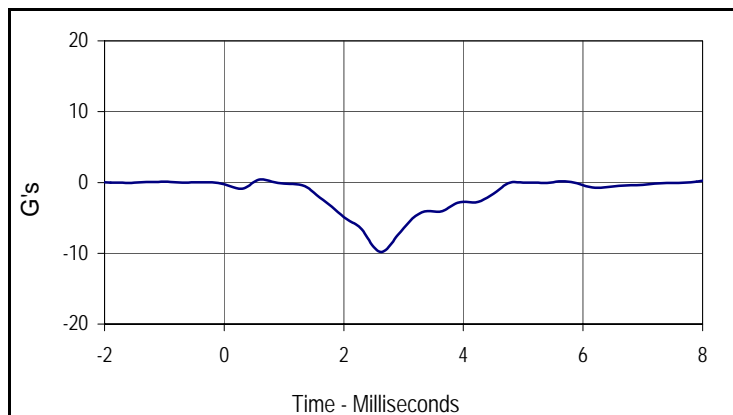
Test I.D.: HDF02B



| Tested Parameter | Units | Specification | Result | Pass/Fail |
|------------------------------|--------|----------------|--------|-----------|
| Laboratory Temperature | °C | 18.9 to 25.6 | 21.19 | Pass |
| Laboratory Relative Humidity | % | 10 to 70 | 29.17 | Pass |
| Peak Resultant Acceleration | G's | 250.0 to 300.0 | 263.8 | Pass |
| Peak Lateral Acceleration | G's | ≤15.0 | 9.8 | Pass |
| Is Acceleration Unimodal? | Yes/No | Yes | Yes | Pass |
| Overall Test Results | | | Pass | |



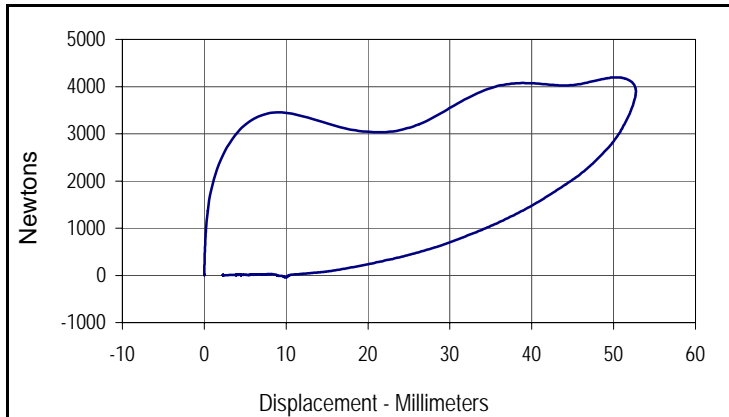
| Curve Description | | | |
|-------------------|------|-----------|-------|
| Head Resultant | | | |
| CURNO | Type | SAE Class | Units |
| 001 | RES | 1000 | G's |
| Max | Time | Min | Time |
| 263.8 | 2.6 | 0.0 | -1.5 |



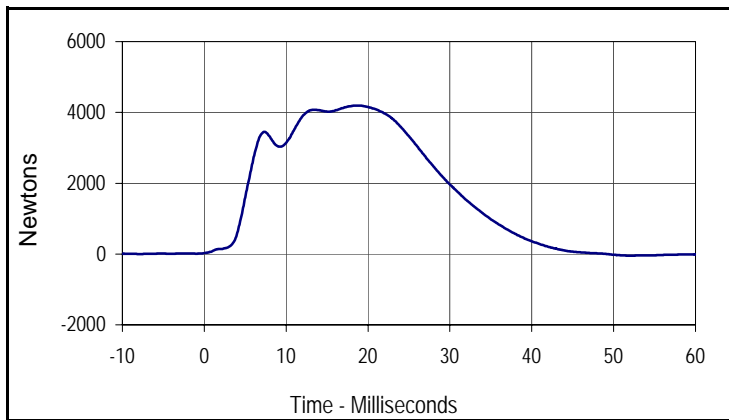
| Curve Description | | | |
|-------------------|------|-----------|-------|
| Head Y | | | |
| CURNO | Type | SAE Class | Units |
| 002 | FIL | 1000 | G's |
| Max | Time | Min | Time |
| 0.4 | 0.6 | -9.8 | 2.6 |



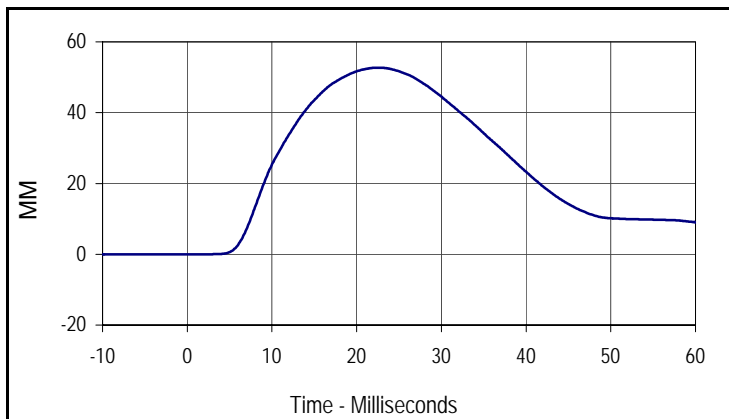
| Tested Parameter | Units | Specification | Result | Pass/Fail |
|---------------------------------|---------|---------------|--------|-------------|
| Laboratory Temperature | °C | 20.6 to 22.2 | 21.20 | Pass |
| Laboratory Relative Humidity | % | 10 to 70 | 28.79 | Pass |
| Probe Velocity | m/s | 6.59 to 6.83 | 6.63 | Pass |
| Peak Chest Deflection | MM | 50.0 to 58.0 | 52.7 | Pass |
| Peak Force Between 50 and 58 MM | Newtons | 3900 to 4400 | 4194 | Pass |
| Peak Force Between 18 and 50 MM | Newtons | ≤4600 | 4194 | Pass |
| Internal Hysteresis | % | 69 to 85 | 75.2 | Pass |
| Overall Test Results | | | | Pass |



| Curve Description | | | |
|----------------------------------|------|-------------------|------------|
| Probe Force vs. Chest Deflection | | | |
| CURNO | Type | SAE Class | Hysteresis |
| 003 | FIL | 180 | 75.2 |
| Peak Probe Force | | Peak Chest Displ. | |
| 4194.5 | | 52.7 | |



| Curve Description | | | |
|-------------------|------|-----------|---------|
| Probe Force | | | |
| CURNO | Type | SAE Class | Units |
| 002 | FIL | 180 | Newtons |
| Max | Time | Min | Time |
| 4194.5 | 18.6 | -46.3 | 52.1 |



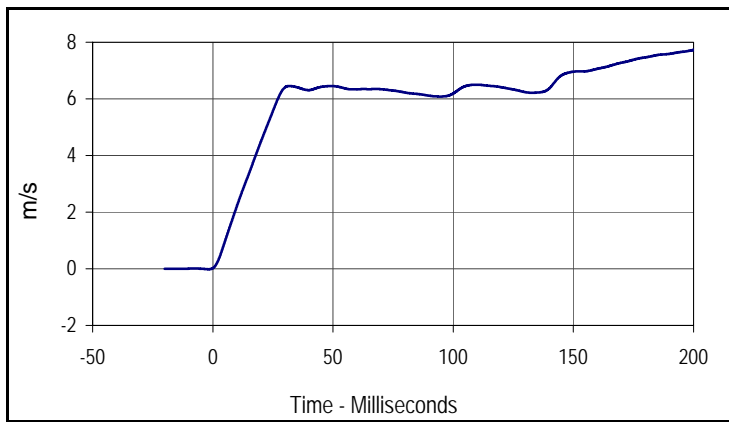
| Curve Description | | | |
|-------------------|------|-----------|-------|
| Chest Deflection | | | |
| CURNO | Type | SAE Class | Units |
| 001 | FIL | 180 | MM |
| Max | Time | Min | Time |
| 52.7 | 22.6 | 0.0 | -1.2 |

Test Program: Hybrid III 5th Percentile Female Neck Flexion Test
 ATD Serial No.: 141

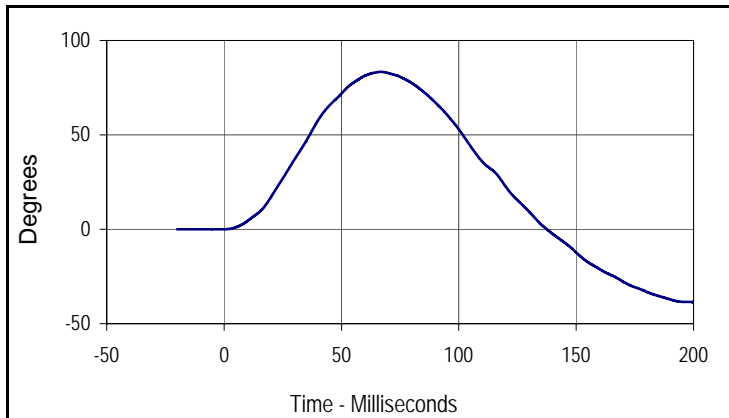
Test Date: 2/3/11
 Test I.D.: NF02B



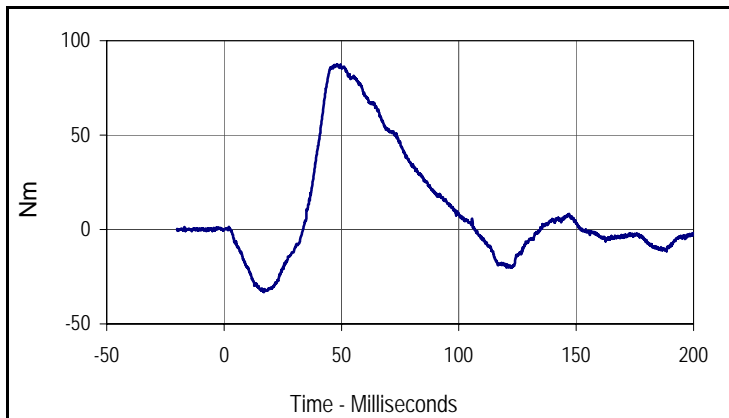
| Tested Parameter | Units | Specification | Result | Pass/Fail | |
|--------------------------------------|----------|---------------|---------------|-----------|------|
| Laboratory Temperature | °C | 20.6 to 22.2 | 21.32 | Pass | |
| Laboratory Relative Humidity | % | 10 to 70 | 29.16 | Pass | |
| Pendulum Velocity | m/s | 6.89 to 7.13 | 7.00 | Pass | |
| Pendulum Deceleration | 10 Msec. | m/s | 2.1 to 2.5 | 2.2 | Pass |
| | 20 Msec. | m/s | 4.0 to 5.0 | 4.5 | Pass |
| | 30 Msec. | m/s | 5.8 to 7.0 | 6.4 | Pass |
| "D" Plane Rotation | Max | Degrees | 77.0 to 91.0 | 83.4 | Pass |
| Peak Moment in Rotation | Max | Nm | 69.0 to 83.0 | 81.4 | Pass |
| Positive Moment Decay, Time To 10 Nm | Msec. | | 80.0 to 100.0 | 97.7 | Pass |
| Overall Test Results | | | | Pass | |



| Curve Description | | | |
|-------------------|-------|-----------|-------|
| Pendulum Velocity | | | |
| CURNO | Type | SAE Class | Units |
| 001 | FIL | 60 | m/s |
| Max | Time | Min | Time |
| 7.7 | 200.0 | 0.0 | -1.7 |



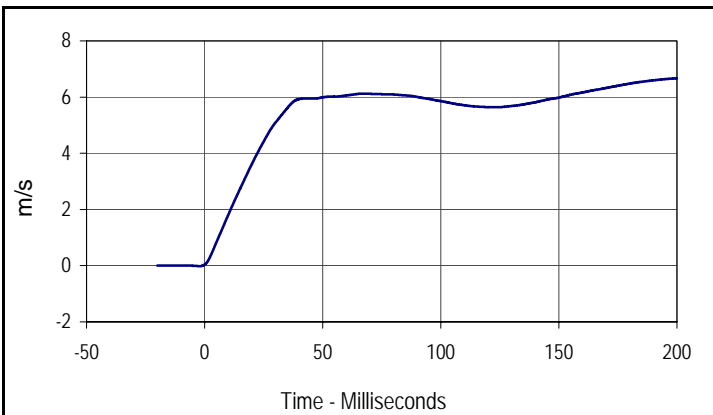
| Curve Description | | | |
|--------------------|------|-----------|---------|
| "D" Plane Rotation | | | |
| CURNO | Type | SAE Class | Units |
| 003 | FIL | 60 | Degrees |
| Max | Time | Min | Time |
| 83.4 | 66.8 | -38.6 | 200.0 |



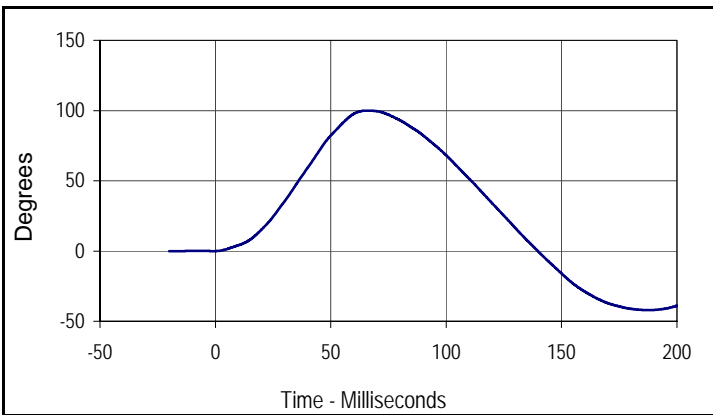
| Curve Description | | | |
|--------------------------------|------|-----------|-------|
| Moment About Occipital Condyle | | | |
| CURNO | Type | SAE Class | Units |
| 002 | FIL | 600 | Nm |
| Max | Time | Min | Time |
| 87.4 | 48.0 | -33.2 | 16.9 |



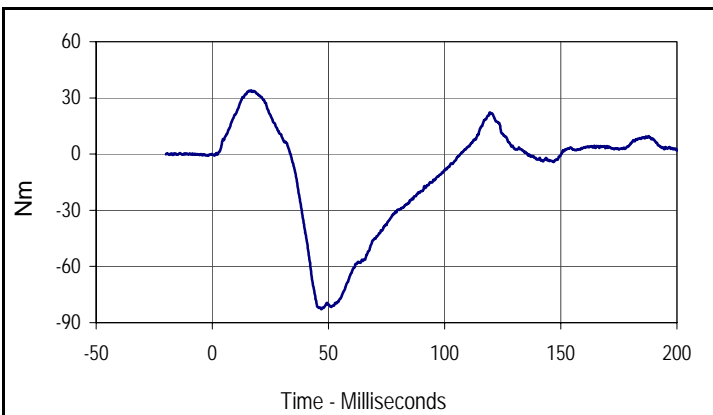
| Tested Parameter | Units | Specification | Result | Pass/Fail | |
|---------------------------------------|----------|---------------|----------------|-----------|------|
| Laboratory Temperature | °C | 20.6 to 22.2 | 21.27 | Pass | |
| Laboratory Relative Humidity | % | 10 to 70 | 28.95 | Pass | |
| Pendulum Velocity | m/s | 5.95 to 6.19 | 6.05 | Pass | |
| Pendulum Deceleration | 10 Msec. | m/s | 1.5 to 1.9 | 1.8 | Pass |
| | 20 Msec. | m/s | 3.1 to 3.9 | 3.6 | Pass |
| | 30 Msec. | m/s | 4.6 to 5.6 | 5.1 | Pass |
| "D" Plane Rotation | Max | Degrees | 99.0 to 114.0 | 99.9 | Pass |
| Peak Moment in Rotation | Max | Nm | -53.0 to -65.0 | -56.4 | Pass |
| Positive Moment Decay, Time To -10 Nm | Msec. | | 94.0 to 114.0 | 98.8 | Pass |
| Overall Test Results | | | | Pass | |



| Curve Description | | | |
|-------------------|-------|-----------|-------|
| Pendulum Velocity | | | |
| CURNO | Type | SAE Class | Units |
| 001 | FIL | 60 | m/s |
| Max | Time | Min | Time |
| 6.7 | 200.0 | 0.0 | -2.1 |



| Curve Description | | | |
|--------------------|------|-----------|---------|
| "D" Plane Rotation | | | |
| CURNO | Type | SAE Class | Units |
| 003 | FIL | 60 | Degrees |
| Max | Time | Min | Time |
| 99.9 | 65.4 | -42.1 | 187.9 |



| Curve Description | | | |
|--------------------------------|------|-----------|-------|
| Moment About Occipital Condyle | | | |
| CURNO | Type | SAE Class | Units |
| 002 | FIL | 600 | Nm |
| Max | Time | Min | Time |
| 34.1 | 16.7 | -82.9 | 46.9 |

Test Program: Hybrid III 5th Percentile Female Knee Impact Test

Test Date: 2/3/11

ATD Serial No.: 141

Test I.D.: LKF12B , RKB12B

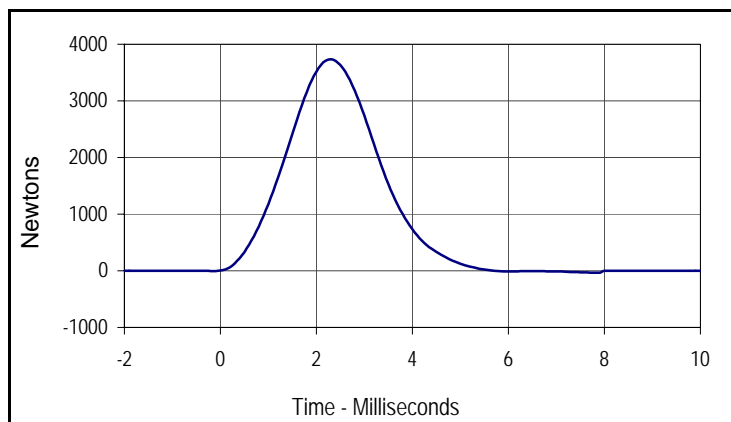


Left Knee

| Tested Parameter | Units | Specification | Result | Pass/Fail |
|------------------------------|---------|---------------|--------|-----------|
| Laboratory Temperature | °C | 18.9 to 25.6 | 21.22 | Pass |
| Laboratory Relative Humidity | % | 10 to 70 | 28.43 | Pass |
| Pendulum Velocity at T=0 | m/sec | 2.07 to 2.13 | 2.08 | Pass |
| Peak Probe Force | Newtons | 3450 to 4060 | 3735 | Pass |
| Overall Test Results | | | | Pass |

Right Knee

| | | | | |
|--------------------------|---------|--------------|------|------|
| Pendulum Velocity at T=0 | m/sec | 2.07 to 2.13 | 2.08 | Pass |
| Peak Probe Force | Newtons | 3450 to 4060 | 3671 | Pass |
| Overall Test Results | | | | Pass |



| Curve Description | | | |
|-----------------------|------|-----------|---------|
| Left Knee Probe Force | | | |
| CURNO | Type | SAE Class | Units |
| 001 | FIL | 600 | Newtons |
| Max | Time | Min | Time |
| 3734.8 | 2.3 | -36.2 | 7.9 |



| Curve Description | | | |
|------------------------|------|-----------|---------|
| Right Knee Probe Force | | | |
| CURNO | Type | SAE Class | Units |
| 002 | FIL | 600 | Newtons |
| Max | Time | Min | Time |
| 3671.0 | 2.5 | -27.2 | 7.1 |

Test Program: Hybrid III 5th Percentile Female Torso Flexion Test

Test Date: 2/3/11

ATD Serial No.: 141

Test I.D.: TF02B



| Tested Parameter | Units | Specification | Result | Pass/Fail |
|---------------------------------|---------|----------------|--------|-----------|
| Laboratory Temperature | °C | 18.9 to 25.6 | 21.19 | Pass |
| Laboratory Relative Humidity | % | 10 to 70 | 28.15 | Pass |
| Initial reference plane angle | Degrees | ≤20.0 | 0.23 | Pass |
| Peak Force at 45 +/-0.5 degrees | Newtons | 320.0 to 390.0 | 322.4 | Pass |
| Torso rotation rate | deg/sec | 0.5 to 1.5 | 0.98 | Pass |
| Final reference plane angle | Degrees | +/-8 | 0.25 | Pass |
| Overall Test Results | | | | Pass |

Test Program: Hybrid III 5th Percentile Female External Measurements

Test Date: 2/3/11

ATD Serial No.: 141

Test I.D.: N/A



| Tested Parameter | Units | Specification | Result | Pass/Fail |
|---------------------------------------|-------|----------------|--------|-----------|
| Laboratory temperature | °C | 20.6 to 22.2 | 21.21 | Pass |
| Laboratory relative humidity | % | 10 to 70 | 29.57 | Pass |
| A - Total sitting height | mm | 774.7 to 800.1 | 784 | Pass |
| B - Shoulder pivot height | mm | 431.8 to 457.2 | 441 | Pass |
| C - "H" point height (Reference) | mm | 81.3 to 86.3 | 84 | Pass |
| D - "H" point from seat back (Ref.) | mm | 144.8 to 149.8 | 146 | Pass |
| E - Shoulder pivot from backline | mm | 68.6 to 83.8 | 78 | Pass |
| F - Thigh clearance | mm | 119.4 to 134.6 | 130 | Pass |
| G - Back of elbow to wrist pivot | mm | 243.9 to 259.1 | 254 | Pass |
| H - Head to back line | mm | 40.7 to 45.7 | 43 | Pass |
| I - Shoulder to elbow length | mm | 276.8 to 297.2 | 281 | Pass |
| J - Elbow rest height | mm | 182.8 to 203.2 | 200 | Pass |
| K - Buttock to knee length | mm | 520.7 to 546.1 | 535 | Pass |
| L - Popliteal height | mm | 355.6 to 376.0 | 365 | Pass |
| M - Knee pivot height | mm | 393.7 to 419.1 | 413 | Pass |
| N - Buttock popliteal length | mm | 414.0 to 439.4 | 421 | Pass |
| O - Chest depth without jacket | mm | 175.3 to 190.5 | 182 | Pass |
| P - Foot length | mm | 218.5 to 233.7 | 227 | Pass |
| R - Buttock to knee pivot length | mm | 457.2 to 482.6 | 464 | Pass |
| S - Head breadth | mm | 137.1 to 147.3 | 142 | Pass |
| T - Head depth | mm | 177.8 to 188.0 | 181 | Pass |
| U - Hip breadth | mm | 299.7 to 314.9 | 308 | Pass |
| V - Shoulder breadth | mm | 350.5 to 365.7 | 361 | Pass |
| W - Foot breadth | mm | 78.8 to 94.0 | 89 | Pass |
| X - Head circumference | mm | 528.3 to 548.7 | 542 | Pass |
| Y - Chest circumference with jacket | mm | 850.8 to 881.3 | 854 | Pass |
| Z - Waist circumference | mm | 759.5 to 789.9 | 778 | Pass |
| AA - Location for chest circumference | mm | 299.7 to 309.9 | 302 | Pass |
| BB - Location for waist circumference | mm | 160.1 to 170.2 | 167 | Pass |
| Overall Test Results | | | | Pass |

Test Program: Dummy Damage Checklist
 ATD Serial No.: 034

Test Date: 2/8/11
 Test I.D.: N/A



| GENERAL | DAMAGED | OK |
|--|---------|----|
| Outer skin on entire dummy | | X |
| Head ballast secure | | X |
| Gashes, rips, general appearance, etc. | | X |
| Neck-Broken or cracks in rubber | | X |
| Check that upper neck bracket is firmly attached to lwr neck bracket | | X |
| Three rubber bumpers in place | | X |
| Spine- Broken or cracks in rubber | | X |
| Check for looseness at the condyle joint | | X |
| Nodding blocks- cracked or out of position | | X |
| Ribs- Check all ribs and rib supports for damage (bent or broken) | | X |
| Check damping material or separation or cracks | | X |
| OTHER | | |
| | | |
| | | |
| CHEST DISPLACEMENT ASSEMBLY | | |
| Bent shaft | | X |
| Slider arm riding correctly, in track | | X |
| TRANSDUCER LEADS | | |
| Torn cables | | X |
| ACCELEROMETER MOUNTINGS | | |
| Check for secure mounting | | X |
| KNEES | | |
| Check outer skin, insert and casting (without removing insert) | | X |
| Knee sliders - Wires intact | | X |
| Knee sliders- Rubber returned to "at rest position" | | X |
| LIMBS | | |
| Check for normal movement and adjustment | | X |
| PELVIS | | |
| Inspect for breakage, especially at iliac crest | | X |

Comments on repair or replacement parts:

Test Program: Dummy Damage Checklist
 ATD Serial No.: 141

Test Date: 2/3/11
 Test I.D.: N/A



| GENERAL | DAMAGED | OK |
|--|---------|----|
| Outer skin on entire dummy | | X |
| Head ballast secure | | X |
| Gashes, rips, general appearance, etc. | | X |
| Neck-Broken or cracks in rubber | | X |
| Check that upper neck bracket is firmly attached to lwr neck bracket | | X |
| Three rubber bumpers in place | | X |
| Spine- Broken or cracks in rubber | | X |
| Check for looseness at the condyle joint | | X |
| Nodding blocks- cracked or out of position | | X |
| Ribs- Check all ribs and rib supports for damage (bent or broken) | | X |
| Check damping material or separation or cracks | | X |
| OTHER | | |
| | | |
| | | |
| CHEST DISPLACEMENT ASSEMBLY | | |
| Bent shaft | | X |
| Slider arm riding correctly, in track | | X |
| TRANSDUCER LEADS | | |
| Torn cables | | X |
| ACCELEROMETER MOUNTINGS | | |
| Check for secure mounting | | X |
| KNEES | | |
| Check outer skin, insert and casting (without removing insert) | | X |
| Knee sliders - Wires intact | | X |
| Knee sliders- Rubber returned to "at rest position" | | X |
| LIMBS | | |
| Check for normal movement and adjustment | | X |
| PELVIS | | |
| Inspect for breakage, especially at iliac crest | | X |

Comments on repair or replacement parts:

APPENDIX C
POST-TEST / ATD CONFIGURATION AND PERFORMANCE VERIFICATION DATA

Test Program: Hybrid III 50th Percentile Male Head Drop Test

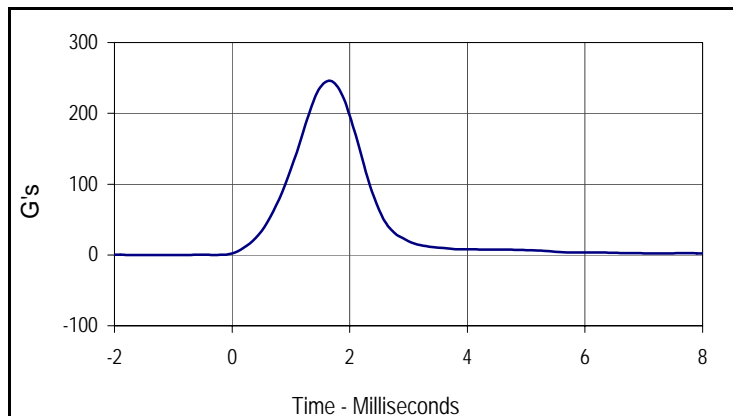
Test Date: 2/18/11

ATD Serial No.: 034

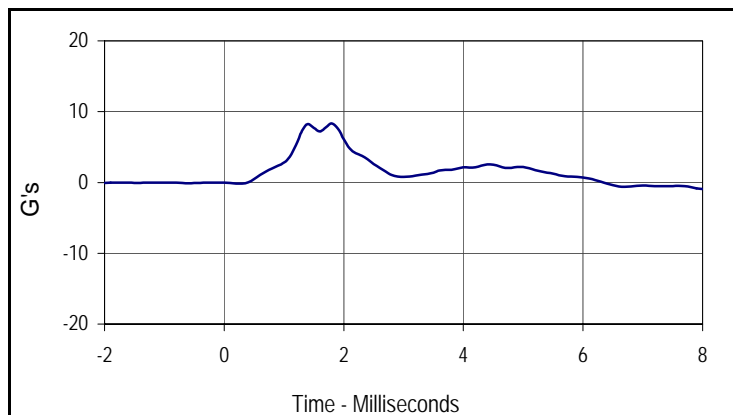
Test I.D.: HDM02B



| Tested Parameter | Units | Specification | Result | Pass/Fail |
|------------------------------|--------|----------------|--------|-----------|
| Laboratory Temperature | °C | 18.9 to 25.6 | 21.15 | Pass |
| Laboratory Relative Humidity | % | 10 to 70 | 29.26 | Pass |
| Peak Resultant Acceleration | G's | 225.0 to 275.0 | 245.5 | Pass |
| Peak Lateral Acceleration | G's | ≤15.0 | 8.4 | Pass |
| Is Acceleration Unimodal? | Yes/No | Yes | Yes | Pass |
| Overall Test Results | | | Pass | |



| Curve Description | | | |
|-------------------|------|-----------|-------|
| Head Resultant | | | |
| CURNO | Type | SAE Class | Units |
| 001 | RES | 1000 | G's |
| Max | Time | Min | Time |
| 245.5 | 1.7 | 0.0 | -1.2 |



| Curve Description | | | |
|-------------------|------|-----------|-------|
| Head Y | | | |
| CURNO | Type | SAE Class | Units |
| 002 | FIL | 1000 | G's |
| Max | Time | Min | Time |
| 8.4 | 1.8 | -0.2 | 0.3 |

Test Program: Hybrid III 50th Percentile Male Thorax Impact Test

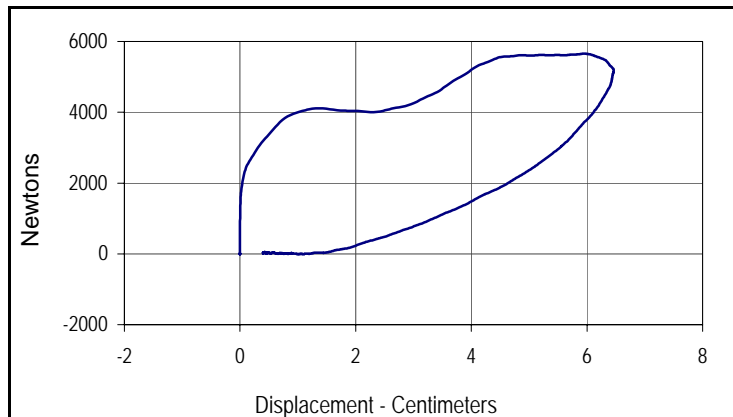
Test Date: 2/18/11

ATD Serial No.: 034

Test I.D.: CHM02B



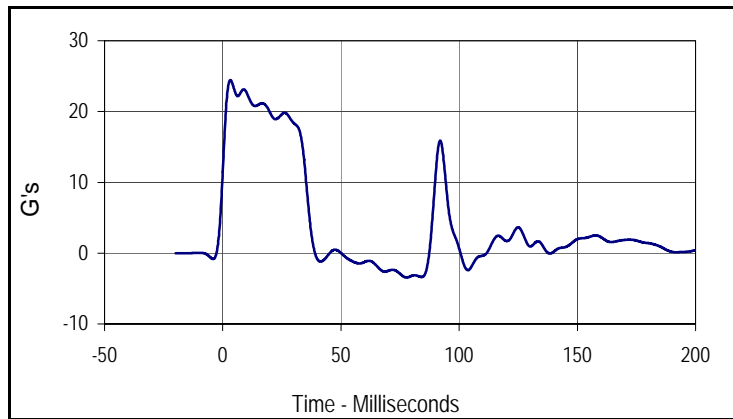
| Tested Parameter | Units | Specification | Result | Pass/Fail |
|------------------------------|---------|---------------|--------|-----------|
| Laboratory Temperature | °C | 20.6 to 22.2 | 21.54 | Pass |
| Laboratory Relative Humidity | % | 10 to 70 | 26.30 | Pass |
| Probe Velocity | m/s | 6.58 to 6.82 | 6.63 | Pass |
| Peak Probe Force | Newtons | 5159 to 5893 | 5654 | Pass |
| Peak Sternum Deflection | CM | 6.35 to 7.26 | 6.46 | Pass |
| Internal Hysteresis | % | 69 to 85 | 71.1 | Pass |
| Overall Test Results | | | | Pass |



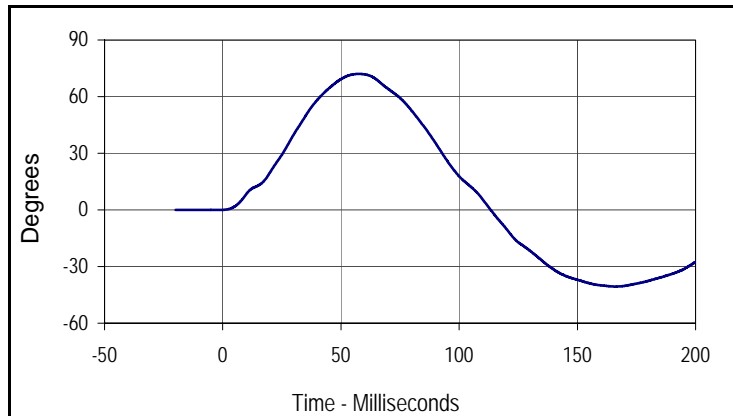
| Curve Description | | | |
|----------------------------------|------|-----------------------|------------|
| Probe Force vs. Chest Deflection | | | |
| CURNO | Type | SAE Class | Hysteresis |
| 001 | FIL | 180 | 71.1 |
| Peak Probe Force | | Peak Chest Deflection | |
| 5654 | | 6.46 | |



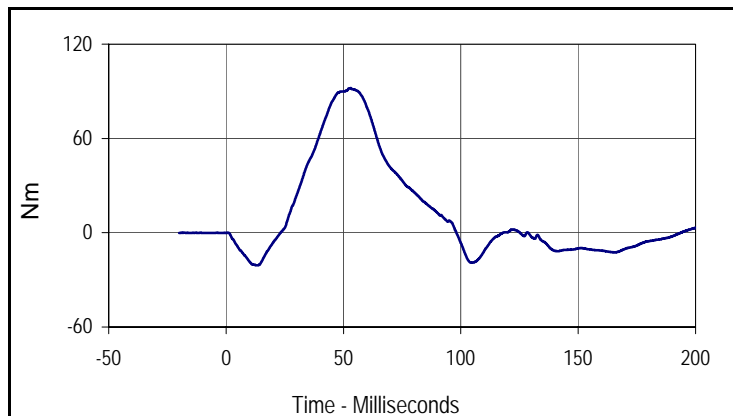
| Tested Parameter | Units | Specification | Result | Pass/Fail | |
|---|----------|----------------|---------------|-------------|------|
| Laboratory Temperature | °C | 20.6 to 22.2 | 21.33 | Pass | |
| Laboratory Relative Humidity | % | 10 to 70 | 26.49 | Pass | |
| Pendulum Velocity | m/s | 6.89 to 7.13 | 7.00 | Pass | |
| Pendulum Deceleration | 10 Msec. | G's | 22.5 to 27.5 | 22.7 | Pass |
| | 20 Msec. | G's | 17.6 to 22.6 | 19.8 | Pass |
| | 30 Msec. | G's | 12.5 to 18.5 | 18.4 | Pass |
| Peak Pendulum Decel. after 30 Msec. | G's | ≤ 29.0 | 18.4 | Pass | |
| Deceleration Decay, Time to Cross 5 G's | Msec. | 34.0 to 42.0 | 36.7 | Pass | |
| Maximum "D" Plane Rotation | Max | Degrees | 64.0 to 78.0 | 72.0 | Pass |
| | Time | Msec. | 57.0 to 64.0 | 57.5 | Pass |
| "D" Plane Rotation Decay, Time To Zero Crossing | Msec. | 113.0 to 128.0 | 113.4 | Pass | |
| Moment About Occ. Condyle | Max | Nm | 84.1 to 108.5 | 92.0 | Pass |
| | Time | Msec. | 47.0 to 58.0 | 53.1 | Pass |
| Positive Moment Decay, Time To Zero Crossing | Msec. | 97.0 to 107.0 | 98.2 | Pass | |
| Overall Test Results | | | | Pass | |



| Curve Description | | | |
|-----------------------|------|-----------|-------|
| Pendulum Deceleration | | | |
| CURNO | Type | SAE Class | Units |
| 001 | FIL | 60 | G's |
| Max | Time | Min | Time |
| 24.4 | 3.2 | -3.4 | 77.8 |



| Curve Description | | | |
|--------------------|------|-----------|---------|
| "D" Plane Rotation | | | |
| CURNO | Type | SAE Class | Units |
| 003 | FIL | 60 | Degrees |
| Max | Time | Min | Time |
| 72.0 | 57.5 | -40.6 | 166.0 |



| Curve Description | | | |
|--------------------------------|------|-----------|-------|
| Moment About Occipital Condyle | | | |
| CURNO | Type | SAE Class | Units |
| 004 | FIL | 600 | Nm |
| Max | Time | Min | Time |
| 92.0 | 53.1 | -20.8 | 13.0 |

Test Program: Hybrid III 50th Percentile Male Neck Extension Test

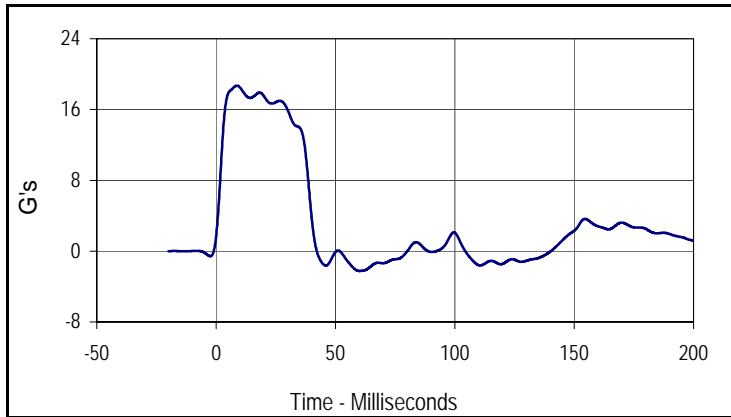
Test Date: 2/18/11

ATD Serial No.: 034

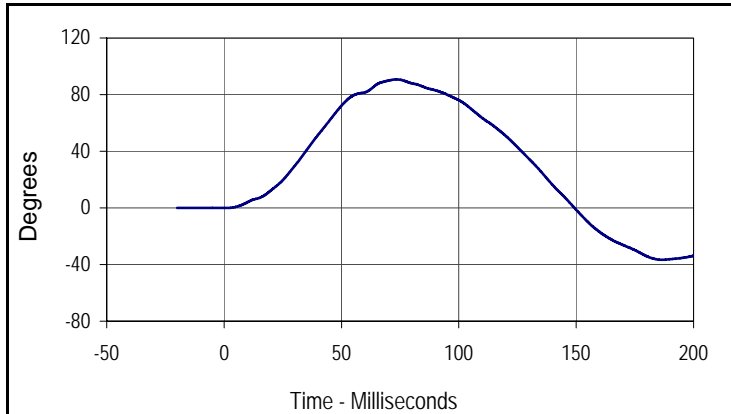
Test I.D.: NEM02B



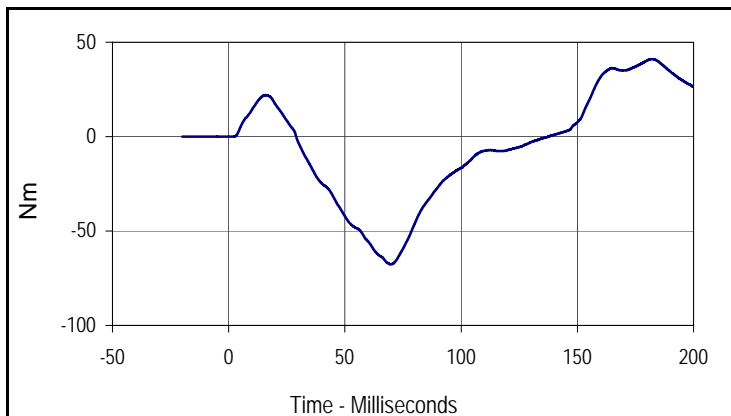
| Tested Parameter | Units | Specification | Result | Pass/Fail | |
|---|----------|----------------|----------------|-------------|------|
| Laboratory Temperature | °C | 20.6 to 22.2 | 21.27 | Pass | |
| Laboratory Relative Humidity | % | 10 to 70 | 26.59 | Pass | |
| Pendulum Velocity | m/s | 5.94 to 6.19 | 6.04 | Pass | |
| Pendulum Deceleration | 10 Msec. | G's | 17.2 to 21.2 | 18.5 | Pass |
| | 20 Msec. | G's | 14.0 to 19.0 | 17.5 | Pass |
| | 30 Msec. | G's | 11.0 to 16.0 | 15.9 | Pass |
| Peak Pendulum Decel. after 30 Msec. | G's | ≤ 22.0 | 15.9 | Pass | |
| Deceleration Decay, Time to Cross 5 G's | Msec. | 38.0 to 46.0 | 39.6 | Pass | |
| Maximum "D" Plane Rotation | Max | Degrees | 81.0 to 106.0 | 90.7 | Pass |
| | Time | Msec. | 72.0 to 82.0 | 73.5 | Pass |
| "D" Plane Rotation Decay, Time To Zero Crossing | Msec. | 147.0 to 174.0 | 149.3 | Pass | |
| Moment About Occ. Condyle | Max | Nm | -52.9 to- 79.9 | -67.6 | Pass |
| | Time | Msec. | 65.0 to 79.0 | 69.9 | Pass |
| Positive Moment Decay, Time To Zero Crossing | Msec. | 120.0 to 148.0 | 137.7 | Pass | |
| Overall Test Results | | | | Pass | |



| Curve Description | | | |
|-----------------------|------|-----------|-------|
| Pendulum Deceleration | | | |
| CURNO | Type | SAE Class | Units |
| 001 | FIL | 60 | G's |
| Max | Time | Min | Time |
| 18.7 | 8.7 | -2.2 | 60.2 |



| Curve Description | | | |
|--------------------|------|-----------|---------|
| "D" Plane Rotation | | | |
| CURNO | Type | SAE Class | Units |
| 003 | FIL | 60 | Degrees |
| Max | Time | Min | Time |
| 90.7 | 73.5 | -36.6 | 186.5 |



| Curve Description | | | |
|--------------------------------|-------|-----------|-------|
| Moment About Occipital Condyle | | | |
| CURNO | Type | SAE Class | Units |
| 004 | FIL | 600 | Nm |
| Max | Time | Min | Time |
| 41.0 | 181.7 | -67.6 | 69.9 |

Test Program: Hybrid III 50th Percentile Male Knee Impact Test

Test Date: 2/18/11

ATD Serial No.: 034

Test I.D.: LKM02B , RKM02B

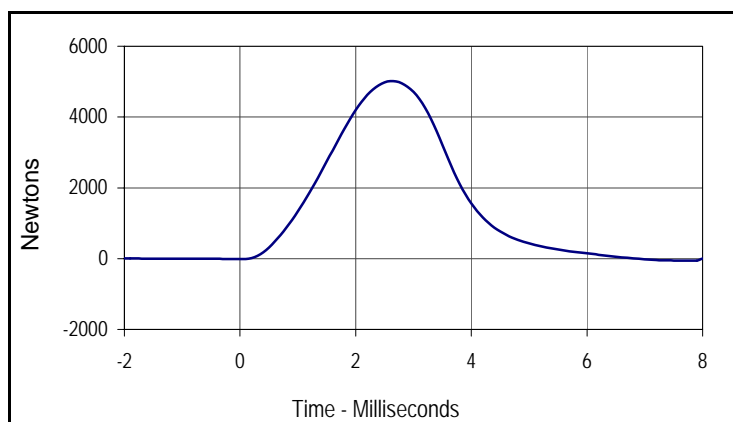


Left Knee

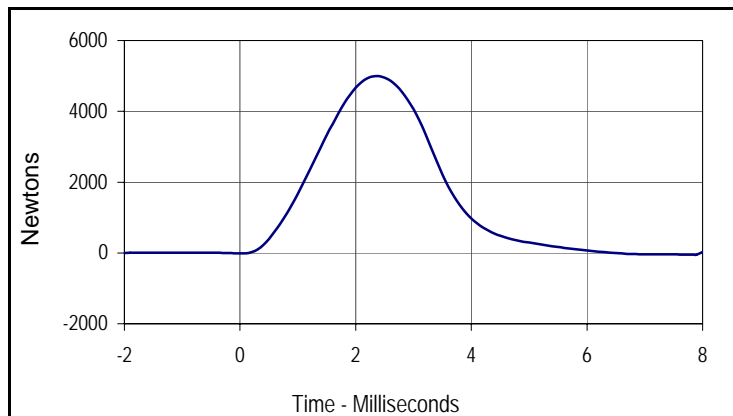
| Tested Parameter | Units | Specification | Result | Pass/Fail |
|------------------------------|---------|---------------|--------|-----------|
| Laboratory Temperature | °C | 18.9 to 25.6 | 21.22 | Pass |
| Laboratory Relative Humidity | % | 10 to 70 | 26.82 | Pass |
| Pendulum Velocity at T=0 | m/sec | 2.07 to 2.13 | 2.076 | Pass |
| Peak Probe Force | Newtons | 4715 to 5782 | 5014 | Pass |
| Overall Test Results | | | | Pass |

Right Knee

| | | | | |
|--------------------------|---------|--------------|-------|------|
| Pendulum Velocity at T=0 | m/sec | 2.07 to 2.13 | 2.078 | Pass |
| Peak Probe Force | Newtons | 4715 to 5782 | 4995 | Pass |
| Overall Test Results | | | | Pass |



| Curve Description | | | |
|-----------------------|------|-----------|---------|
| Left Knee Probe Force | | | |
| CURNO | Type | SAE Class | Units |
| 001 | FIL | 600 | Newtons |
| Max | Time | Min | Time |
| 5013.9 | 2.6 | -54.5 | 7.7 |



| Curve Description | | | |
|------------------------|------|-----------|---------|
| Right Knee Probe Force | | | |
| CURNO | Type | SAE Class | Units |
| 002 | FIL | 600 | Newtons |
| Max | Time | Min | Time |
| 4994.8 | 2.4 | -49.3 | 7.9 |

Test Program: Hybrid III 50th Percentile Male External Measurements

Test Date: 2/18/11

ATD Serial No.: 034

Test I.D.: N/A



| Tested Parameter | Units | Specification | Result | Pass/Fail |
|---------------------------------------|-------|---------------|--------|-----------|
| Laboratory Temperature | °C | 20.6 to 22.2 | 21.27 | Pass |
| Laboratory Relative Humidity | % | 10 to 70 | 26.59 | Pass |
| A - Total sitting height | mm | 879 to 889 | 881 | Pass |
| B - Shoulder pivot height | mm | 505 to 521 | 516 | Pass |
| C - "H" point height | mm | 84 to 89 | 85 | Pass |
| D - "H" point from seat back | mm | 135 to 140 | 138 | Pass |
| E - Shoulder pivot from back | mm | 84 to 94 | 85 | Pass |
| F - Thigh clearance | mm | 140 to 155 | 147 | Pass |
| G - Elbow back to wrist pivot | mm | 290 to 305 | 298 | Pass |
| H - Skull cap to back line | mm | 41 to 46 | 44 | Pass |
| I - Shoulder to elbow length | mm | 330 to 345 | 334 | Pass |
| J - Elbow rest height | mm | 190 to 211 | 206 | Pass |
| K - Buttock to knee length | mm | 579 to 604 | 589 | Pass |
| L - Popliteal length | mm | 429 to 455 | 437 | Pass |
| M - Knee pivot height | mm | 485 to 500 | 488 | Pass |
| N - Buttock popliteal length | mm | 452 to 477 | 472 | Pass |
| O - Chest depth | mm | 213 to 229 | 226 | Pass |
| P - Foot length | mm | 251 to 267 | 260 | Pass |
| V - Shoulder breadth | mm | 422 to 437 | 433 | Pass |
| W - Foot breadth | mm | 91 to 107 | 99 | Pass |
| Y - Chest circumference | mm | 970 to 1001 | 986 | Pass |
| Z - Waist circumference | mm | 836 to 866 | 864 | Pass |
| AA - Location for chest circumference | mm | 429 to 434 | 433 | Pass |
| BB - Location for waist circumference | mm | 226 to 231 | 230 | Pass |
| Overall Test Results | | | | Pass |

Test Program: Hybrid III 5th Percentile Female Head Drop Test

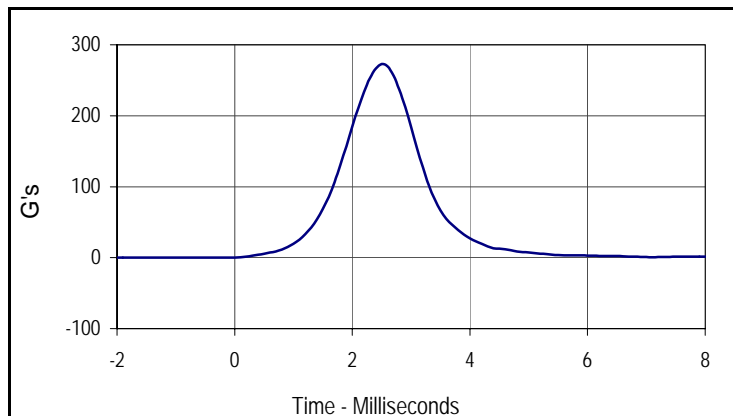
Test Date: 2/15/11

ATD Serial No.: 141

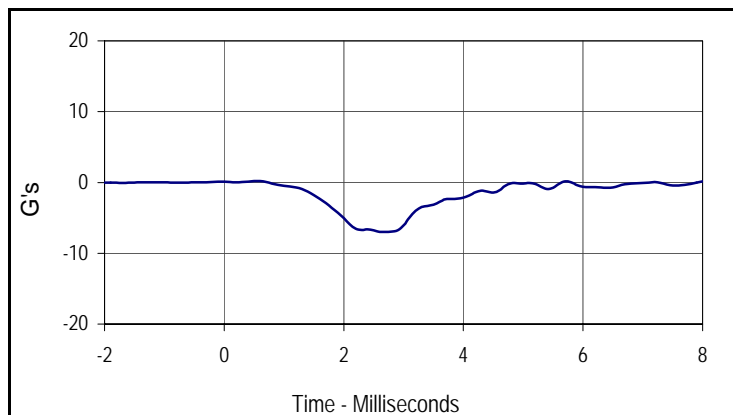
Test I.D.: HDF02C



| Tested Parameter | Units | Specification | Result | Pass/Fail |
|------------------------------|--------|----------------|--------|-----------|
| Laboratory Temperature | °C | 18.9 to 25.6 | 21.16 | Pass |
| Laboratory Relative Humidity | % | 10 to 70 | 27.24 | Pass |
| Peak Resultant Acceleration | G's | 250.0 to 300.0 | 273.1 | Pass |
| Peak Lateral Acceleration | G's | ≤15.0 | 7.0 | Pass |
| Is Acceleration Unimodal? | Yes/No | Yes | Yes | Pass |
| Overall Test Results | | | Pass | |



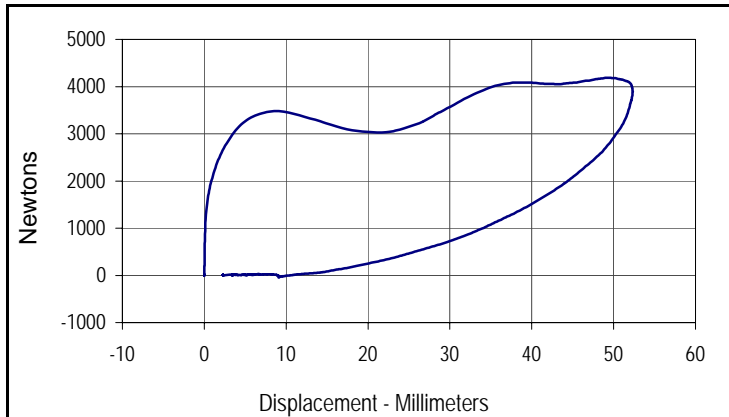
| Curve Description | | | |
|-------------------|------|-----------|-------|
| Head Resultant | | | |
| CURNO | Type | SAE Class | Units |
| 001 | RES | 1000 | G's |
| Max | Time | Min | Time |
| 273.1 | 2.5 | 0.0 | -2.0 |



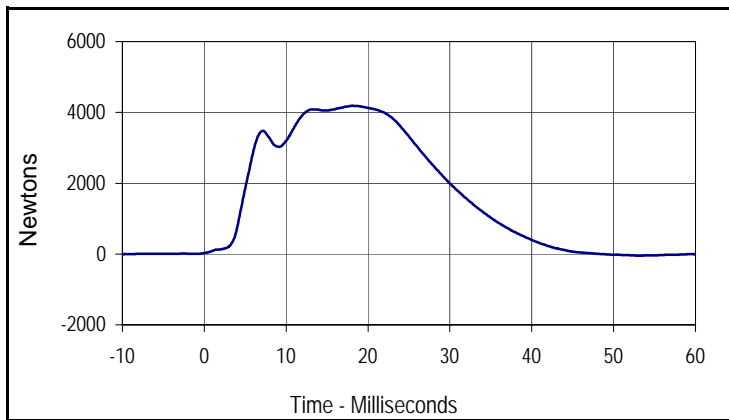
| Curve Description | | | |
|-------------------|------|-----------|-------|
| Head Y | | | |
| CURNO | Type | SAE Class | Units |
| 002 | FIL | 1000 | G's |
| Max | Time | Min | Time |
| 0.2 | 0.5 | -7.0 | 2.7 |



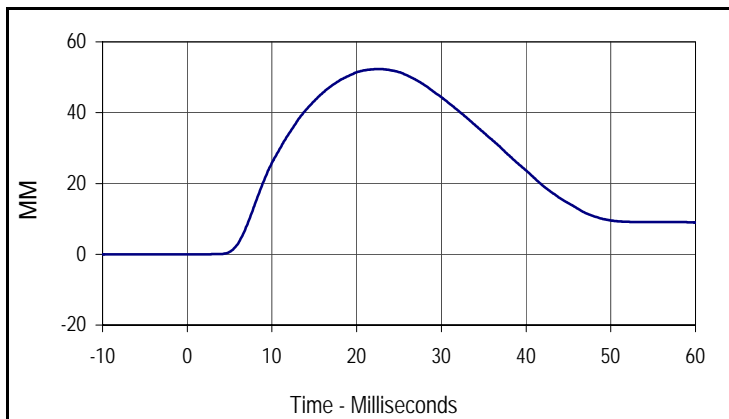
| Tested Parameter | Units | Specification | Result | Pass/Fail |
|---------------------------------|---------|---------------|--------|-----------|
| Laboratory Temperature | °C | 20.6 to 22.2 | 21.16 | Pass |
| Laboratory Relative Humidity | % | 10 to 70 | 27.33 | Pass |
| Probe Velocity | m/s | 6.59 to 6.83 | 6.66 | Pass |
| Peak Chest Deflection | MM | 50.0 to 58.0 | 52.3 | Pass |
| Peak Force Between 50 and 58 MM | Newtons | 3900 to 4400 | 4188 | Pass |
| Peak Force Between 18 and 50 MM | Newtons | ≤4600 | 4181 | Pass |
| Internal Hysteresis | % | 69 to 85 | 75.3 | Pass |
| Overall Test Results | | | | Pass |



| Curve Description | | | |
|----------------------------------|------|-------------------|------------|
| Probe Force vs. Chest Deflection | | | |
| CURNO | Type | SAE Class | Hysteresis |
| 003 | FIL | 180 | 75.3 |
| Peak Probe Force | | Peak Chest Displ. | |
| 4188.0 | | 52.3 | |



| Curve Description | | | |
|-------------------|------|-----------|---------|
| Probe Force | | | |
| CURNO | Type | SAE Class | Units |
| 002 | FIL | 180 | Newtons |
| Max | Time | Min | Time |
| 4188.0 | 18.1 | -44.9 | 53.0 |



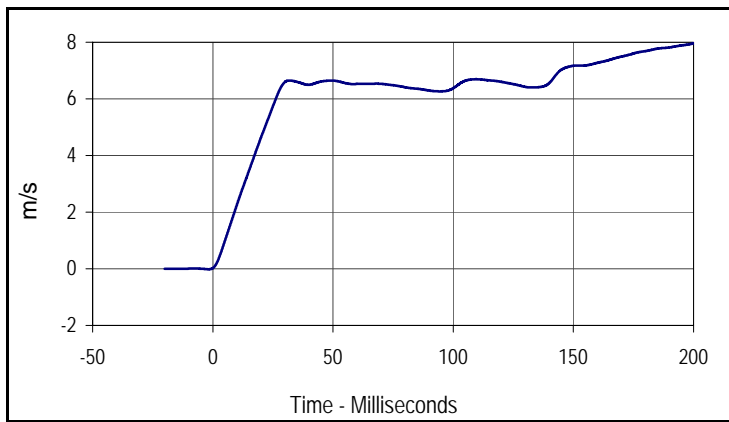
| Curve Description | | | |
|-------------------|------|-----------|-------|
| Chest Deflection | | | |
| CURNO | Type | SAE Class | Units |
| 001 | FIL | 180 | MM |
| Max | Time | Min | Time |
| 52.3 | 22.7 | 0.0 | -1.9 |

Test Program: Hybrid III 5th Percentile Female Neck Flexion Test
 ATD Serial No.: 141

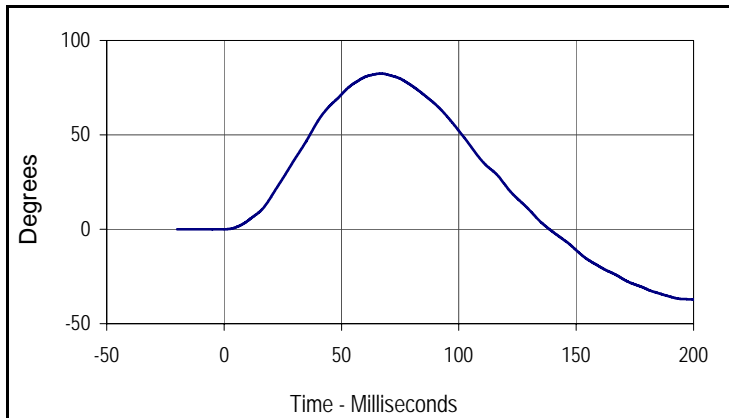
Test Date: 2/15/11
 Test I.D.: NFF02C



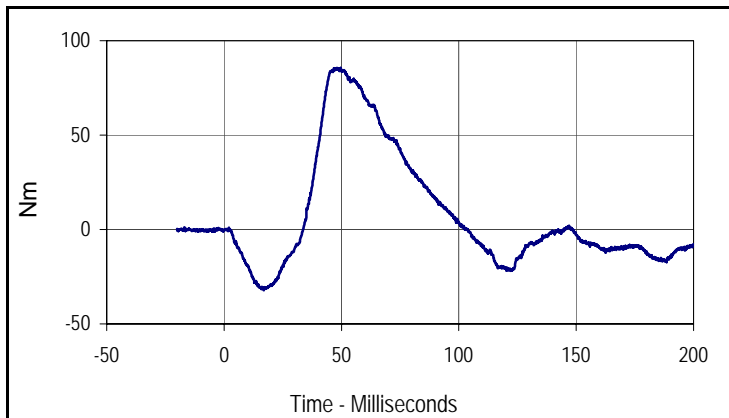
| Tested Parameter | Units | Specification | Result | Pass/Fail | |
|--------------------------------------|----------|---------------|---------------|-----------|------|
| Laboratory Temperature | °C | 20.6 to 22.2 | 21.16 | Pass | |
| Laboratory Relative Humidity | % | 10 to 70 | 27.51 | Pass | |
| Pendulum Velocity | m/s | 6.89 to 7.13 | 6.98 | Pass | |
| Pendulum Deceleration | 10 Msec. | m/s | 2.1 to 2.5 | 2.3 | Pass |
| | 20 Msec. | m/s | 4.0 to 5.0 | 4.6 | Pass |
| | 30 Msec. | m/s | 5.8 to 7.0 | 6.6 | Pass |
| "D" Plane Rotation | Max | Degrees | 77.0 to 91.0 | 82.5 | Pass |
| Peak Moment in Rotation | Max | Nm | 69.0 to 83.0 | 79.8 | Pass |
| Positive Moment Decay, Time To 10 Nm | Msec. | | 80.0 to 100.0 | 93.4 | Pass |
| Overall Test Results | | | | Pass | |



| Curve Description | | | |
|-------------------|-------|-----------|-------|
| Pendulum Velocity | | | |
| CURNO | Type | SAE Class | Units |
| 001 | FIL | 60 | m/s |
| Max | Time | Min | Time |
| 8.0 | 200.0 | 0.0 | -1.8 |



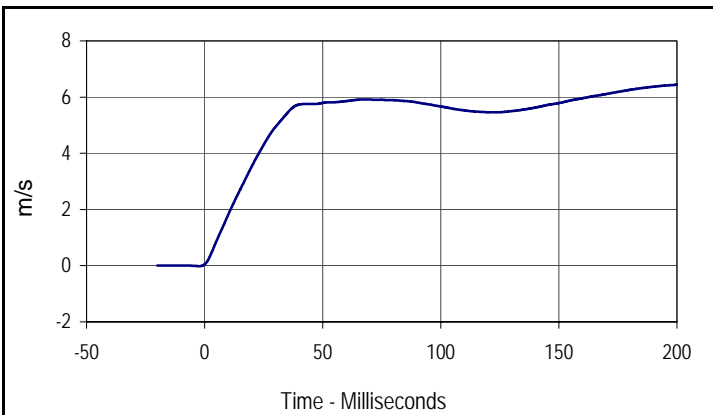
| Curve Description | | | |
|--------------------|------|-----------|---------|
| "D" Plane Rotation | | | |
| CURNO | Type | SAE Class | Units |
| 003 | FIL | 60 | Degrees |
| Max | Time | Min | Time |
| 82.5 | 66.8 | -37.1 | 200.0 |



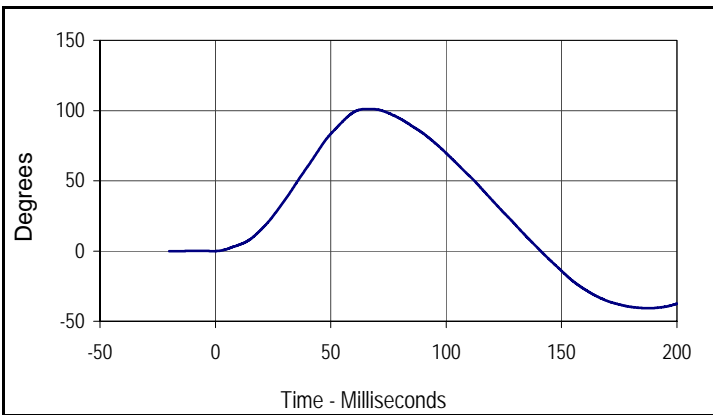
| Curve Description | | | |
|--------------------------------|------|-----------|-------|
| Moment About Occipital Condyle | | | |
| CURNO | Type | SAE Class | Units |
| 002 | FIL | 600 | Nm |
| Max | Time | Min | Time |
| 85.6 | 48.0 | -32.1 | 16.9 |



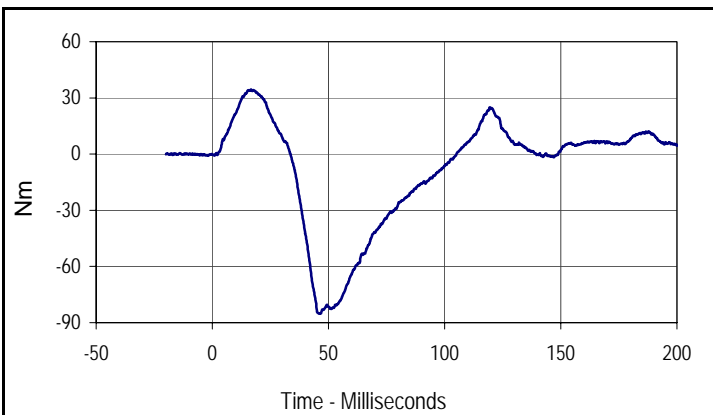
| Tested Parameter | Units | Specification | Result | Pass/Fail | |
|---------------------------------------|----------|---------------|----------------|-----------|------|
| Laboratory Temperature | °C | 20.6 to 22.2 | 21.16 | Pass | |
| Laboratory Relative Humidity | % | 10 to 70 | 27.24 | Pass | |
| Pendulum Velocity | m/s | 5.95 to 6.19 | 6.13 | Pass | |
| Pendulum Deceleration | 10 Msec. | m/s | 1.5 to 1.9 | 1.8 | Pass |
| | 20 Msec. | m/s | 3.1 to 3.9 | 3.5 | Pass |
| | 30 Msec. | m/s | 4.6 to 5.6 | 4.9 | Pass |
| "D" Plane Rotation | Max | Degrees | 99.0 to 114.0 | 101.1 | Pass |
| Peak Moment in Rotation | Max | Nm | -53.0 to -65.0 | -53.2 | Pass |
| Positive Moment Decay, Time To -10 Nm | Msec. | 94.0 to 114.0 | 96.7 | Pass | |
| Overall Test Results | | | | Pass | |



| Curve Description | | | |
|-------------------|-------|-----------|-------|
| Pendulum Velocity | | | |
| CURNO | Type | SAE Class | Units |
| 001 | FIL | 60 | m/s |
| Max | Time | Min | Time |
| 6.4 | 200.0 | 0.0 | -2.3 |



| Curve Description | | | |
|--------------------|------|-----------|---------|
| "D" Plane Rotation | | | |
| CURNO | Type | SAE Class | Units |
| 003 | FIL | 60 | Degrees |
| Max | Time | Min | Time |
| 101.1 | 65.3 | -40.7 | 187.8 |



| Curve Description | | | |
|--------------------------------|------|-----------|-------|
| Moment About Occipital Condyle | | | |
| CURNO | Type | SAE Class | Units |
| 002 | FIL | 600 | Nm |
| Max | Time | Min | Time |
| 34.5 | 16.7 | -85.2 | 46.0 |

Test Program: Hybrid III 5th Percentile Female Knee Impact Test

Test Date: 2/15/11

ATD Serial No.: 141

Test I.D.: LKF02C , RKF02C

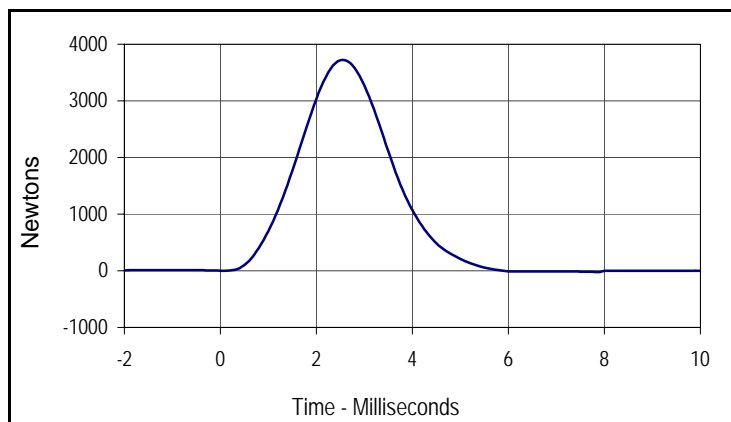


Left Knee

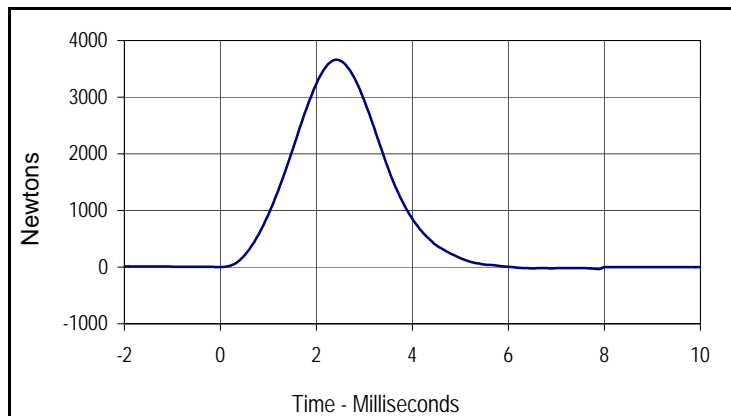
| Tested Parameter | Units | Specification | Result | Pass/Fail |
|------------------------------|---------|---------------|--------|-----------|
| Laboratory Temperature | °C | 18.9 to 25.6 | 21.16 | Pass |
| Laboratory Relative Humidity | % | 10 to 70 | 27.33 | Pass |
| Pendulum Velocity at T=0 | m/sec | 2.07 to 2.13 | 2.079 | Pass |
| Peak Probe Force | Newtons | 3450 to 4060 | 3719 | Pass |
| Overall Test Results | | | | Pass |

Right Knee

| | | | | |
|--------------------------|---------|--------------|-------|------|
| Pendulum Velocity at T=0 | m/sec | 2.07 to 2.13 | 2.073 | Pass |
| Peak Probe Force | Newtons | 3450 to 4060 | 3658 | Pass |
| Overall Test Results | | | | Pass |



| Curve Description | | | |
|-----------------------|------|-----------|---------|
| Left Knee Probe Force | | | |
| CURNO | Type | SAE Class | Units |
| 001 | FIL | 600 | Newtons |
| Max | Time | Min | Time |
| 3719.3 | 2.6 | -23.4 | 7.9 |



| Curve Description | | | |
|------------------------|------|-----------|---------|
| Right Knee Probe Force | | | |
| CURNO | Type | SAE Class | Units |
| 002 | FIL | 600 | Newtons |
| Max | Time | Min | Time |
| 3658.3 | 2.4 | -33.9 | 7.9 |

Test Program: Hybrid III 5th Percentile Female Torso Flexion Test

Test Date: 2/15/11

ATD Serial No.: 141

Test I.D.: TF02C



| Tested Parameter | Units | Specification | Result | Pass/Fail |
|---------------------------------|---------|----------------|--------|-----------|
| Laboratory Temperature | °C | 18.9 to 25.6 | 21.16 | Pass |
| Laboratory Relative Humidity | % | 10 to 70 | 27.51 | Pass |
| Initial reference plane angle | Degrees | ≤20.0 | 0.172 | Pass |
| Peak Force at 45 +/-0.5 degrees | Newtons | 320.0 to 390.0 | 339.0 | Pass |
| Torso rotation rate | deg/sec | 0.5 to 1.5 | 0.859 | Pass |
| Final reference plane angle | Degrees | +/-8 | 0.215 | Pass |
| Overall Test Results | | | | Pass |

Test Program: Hybrid III 5th Percentile Female External Measurements

Test Date: 2/15/11

ATD Serial No.: 141

Test I.D.: N/A



| Tested Parameter | Units | Specification | Result | Pass/Fail |
|---------------------------------------|-------|----------------|--------|-----------|
| Laboratory temperature | °C | 20.6 to 22.2 | 21.61 | Pass |
| Laboratory relative humidity | % | 10 to 70 | 28.16 | Pass |
| A - Total sitting height | mm | 774.7 to 800.1 | 784 | Pass |
| B - Shoulder pivot height | mm | 431.8 to 457.2 | 441 | Pass |
| C - "H" point height (Reference) | mm | 81.3 to 86.3 | 84 | Pass |
| D - "H" point from seat back (Ref.) | mm | 144.8 to 149.8 | 146 | Pass |
| E - Shoulder pivot from backline | mm | 68.6 to 83.8 | 78 | Pass |
| F - Thigh clearance | mm | 119.4 to 134.6 | 130 | Pass |
| G - Back of elbow to wrist pivot | mm | 243.9 to 259.1 | 254 | Pass |
| H - Head to back line | mm | 40.7 to 45.7 | 43 | Pass |
| I - Shoulder to elbow length | mm | 276.8 to 297.2 | 281 | Pass |
| J - Elbow rest height | mm | 182.8 to 203.2 | 200 | Pass |
| K - Buttock to knee length | mm | 520.7 to 546.1 | 535 | Pass |
| L - Popliteal height | mm | 355.6 to 376.0 | 365 | Pass |
| M - Knee pivot height | mm | 393.7 to 419.1 | 413 | Pass |
| N - Buttock popliteal length | mm | 414.0 to 439.4 | 421 | Pass |
| O - Chest depth without jacket | mm | 175.3 to 190.5 | 182 | Pass |
| P - Foot length | mm | 218.5 to 233.7 | 227 | Pass |
| R - Buttock to knee pivot length | mm | 457.2 to 482.6 | 464 | Pass |
| S - Head breadth | mm | 137.1 to 147.3 | 142 | Pass |
| T - Head depth | mm | 177.8 to 188.0 | 181 | Pass |
| U - Hip breadth | mm | 299.7 to 314.9 | 308 | Pass |
| V - Shoulder breadth | mm | 350.5 to 365.7 | 361 | Pass |
| W - Foot breadth | mm | 78.8 to 94.0 | 89 | Pass |
| X - Head circumference | mm | 528.3 to 548.7 | 542 | Pass |
| Y - Chest circumference with jacket | mm | 850.8 to 881.3 | 854 | Pass |
| Z - Waist circumference | mm | 759.5 to 789.9 | 778 | Pass |
| AA - Location for chest circumference | mm | 299.7 to 309.9 | 302 | Pass |
| BB - Location for waist circumference | mm | 160.1 to 170.2 | 167 | Pass |
| Overall Test Results | | | | Pass |

Test Program: Dummy Damage Checklist
 ATD Serial No.: 034

Test Date: 2/18/11
 Test I.D.: N/A



| GENERAL | DAMAGED | OK |
|--|---------|----|
| Outer skin on entire dummy | | X |
| Head ballast secure | | X |
| Gashes, rips, general appearance, etc. | | X |
| Neck-Broken or cracks in rubber | | X |
| Check that upper neck bracket is firmly attached to lwr neck bracket | | X |
| Three rubber bumpers in place | | X |
| Spine- Broken or cracks in rubber | | X |
| Check for looseness at the condyle joint | | X |
| Nodding blocks- cracked or out of position | | X |
| Ribs- Check all ribs and rib supports for damage (bent or broken) | | X |
| Check damping material or separation or cracks | | X |
| OTHER | | |
| | | |
| | | |
| CHEST DISPLACEMENT ASSEMBLY | | |
| Bent shaft | | X |
| Slider arm riding correctly, in track | | X |
| TRANSDUCER LEADS | | |
| Torn cables | | X |
| ACCELEROMETER MOUNTINGS | | |
| Check for secure mounting | | X |
| KNEES | | |
| Check outer skin, insert and casting (without removing insert) | | X |
| Knee sliders - Wires intact | | X |
| Knee sliders- Rubber returned to "at rest position" | | X |
| LIMBS | | |
| Check for normal movement and adjustment | | X |
| PELVIS | | |
| Inspect for breakage, especially at iliac crest | | X |

Comments on repair or replacement parts:

Test Program: Dummy Damage Checklist
 ATD Serial No.: 141

Test Date: 2/15/11
 Test I.D.: N/A



| GENERAL | DAMAGED | OK |
|--|---------|----|
| Outer skin on entire dummy | | X |
| Head ballast secure | | X |
| Gashes, rips, general appearance, etc. | | X |
| Neck-Broken or cracks in rubber | | X |
| Check that upper neck bracket is firmly attached to lwr neck bracket | | X |
| Three rubber bumpers in place | | X |
| Spine- Broken or cracks in rubber | | X |
| Check for looseness at the condyle joint | | X |
| Nodding blocks- cracked or out of position | | X |
| Ribs- Check all ribs and rib supports for damage (bent or broken) | | X |
| Check damping material or separation or cracks | | X |
| OTHER | | |
| | | |
| | | |
| CHEST DISPLACEMENT ASSEMBLY | | |
| Bent shaft | | X |
| Slider arm riding correctly, in track | | X |
| TRANSDUCER LEADS | | |
| Torn cables | | X |
| ACCELEROMETER MOUNTINGS | | |
| Check for secure mounting | | X |
| KNEES | | |
| Check outer skin, insert and casting (without removing insert) | | X |
| Knee sliders - Wires intact | | X |
| Knee sliders- Rubber returned to "at rest position" | | X |
| LIMBS | | |
| Check for normal movement and adjustment | | X |
| PELVIS | | |
| Inspect for breakage, especially at iliac crest | | X |

Comments on repair or replacement parts:
