

REPORT NUMBER: SINCAP-MGA-2015-025

**NEW CAR ASSESSMENT PROGRAM (NCAP)
Moving Deformable Barrier Side Impact Test**

**FORD MOTOR COMPANY
2015 Ford Transit 150 LR Wagon XLT
NHTSA No.: M20150205**

**MGA RESEARCH CORPORATION
5000 Warren Road
Burlington, WI 53105**



Test Date: October 28, 2014

Final Report Date: December 11, 2014

FINAL REPORT

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

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Approved by: 
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Approval Date: December 11, 2014

FINAL REPORT ACCEPTANCE BY OCWS:

Division Chief, New Car Assessment Program
NHTSA, Office of Crashworthiness Standards

Date: _____

COTR, New Car Assessment Program
NHTSA, Office of Crashworthiness Standards

Date: _____

Technical Report Documentation Page

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| 4. Title and Subtitle Final Report of New Car Assessment Program Side Impact MDB Testing of 2015 Ford Transit 150 LR Wagon XLT, NHTSA No.: M20150205 | | 5. Report Date December 11, 2014 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 9. Performing Organization Name and Address MGA Research Corporation 5000 Warren Road Burlington, WI 53105 | | 10. Work Unit No. | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 15. Supplementary Notes | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16. Abstract A 55/28 km/h 90° Moving Deformable Barrier NCAP Side Impact Test was conducted on the 2015 Ford Transit 150 LR Wagon XLT in accordance with the specifications of the Office of Crashworthiness Standards NCAP Side Laboratory Test Procedure for the generation of consumer information on vehicle side crash protection. The test was conducted at MGA Research Corporation, in Burlington, Wisconsin, on October 28, 2014. The impact velocity of the Moving Deformable Barrier (MDB) was 61.8 km/h, and the ambient temperature at the struck (driver's) side of the target vehicle at the time of impact was 21.0° C. The target vehicle post-test maximum crush was 274 mm at level 1. The test vehicle's performance was as follows: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1" style="margin: auto; border-collapse: collapse;"> <thead> <tr> <th rowspan="2" style="text-align: left;">Measurement Description</th> <th colspan="3" style="text-align: center;">Driver ATD (ES-2re)</th> </tr> <tr> <th style="text-align: center;">Units</th> <th style="text-align: center;">Threshold</th> <th style="text-align: center;">Result</th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC₃₆)</td> <td style="text-align: center;">N/A</td> <td style="text-align: center;">1000</td> <td style="text-align: center;">35</td> </tr> <tr> <td>Maximum Thorax Rib Deflection</td> <td style="text-align: center;">mm</td> <td style="text-align: center;">44</td> <td style="text-align: center;">11</td> </tr> <tr> <td>Total Abdominal Force</td> <td style="text-align: center;">N</td> <td style="text-align: center;">2500</td> <td style="text-align: center;">358</td> </tr> <tr> <td>Pubic Symphysis Force</td> <td style="text-align: center;">N</td> <td style="text-align: center;">6000</td> <td style="text-align: center;">648</td> </tr> </tbody> </table> | | | | Measurement Description | Driver ATD (ES-2re) | | | Units | Threshold | Result | Head Injury Criteria (HIC ₃₆) | N/A | 1000 | 35 | Maximum Thorax Rib Deflection | mm | 44 | 11 | Total Abdominal Force | N | 2500 | 358 | Pubic Symphysis Force | N | 6000 | 648 | | | | |
| Measurement Description | Driver ATD (ES-2re) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Units | Threshold | Result | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Head Injury Criteria (HIC ₃₆) | N/A | 1000 | 35 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum Thorax Rib Deflection | mm | 44 | 11 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total Abdominal Force | N | 2500 | 358 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Pubic Symphysis Force | N | 6000 | 648 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| Measurement Description | Passenger ATD (SID-IIs) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Units | Threshold | Result | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Head Injury Criteria (HIC ₃₆) | N/A | 1000 | 24 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Resultant Lower Spine Acceleration | Gs | 82 | 37 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total Pelvic Force (sum of acetabular and iliac forces) | N | 5525 | 1755 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum Thoracic Rib Deflection | mm | 38* | 8 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum Abdomen Rib Deflection | mm | 45* | 9 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| *Proposed IARV | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| The door on the struck side of the vehicle did not separate from the body at the hinges or latches and the opposite doors did not open during the side impact event. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 17. Key Words New Car Assessment Program (NCAP) Side Impact MDB ES-2re SID-IIs | | 18. Distribution Statement Copies of this report are available from: National Highway Traffic Safety Administration Technical Information Services Division, NPO-411 1200 New Jersey Ave, SE Washington, DC 20590 e-mail: tis@nhtsa.dot.gov FAX: 202-493-2833 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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SECTION 1
TEST PURPOSE AND PROCEDURE

This moving deformable barrier side impact test is part of the MY 2015 New Car Assessment Program Side Impact Test Program, sponsored by the National Highway Traffic Safety Administration (NHTSA), under Contract No. DTNH22-09-D-00124. The purpose of this test is to generate comparative side impact performance in a 2015 Ford Transit 150 LR Wagon XLT. The side impact test was conducted in accordance with the Office of Crashworthiness Standard's Side NCAP Laboratory Test Procedure dated September 2013.

SECTION 2 SUMMARY OF TEST RESULTS

A 2015 Ford Transit 150 LR Wagon XLT was impacted on the left (driver's) side by a Moving Deformable Barrier (MDB) which was moving forward in a 27° crabbed position to the tow road guidance system at a velocity of 61.8 km/h. The target vehicle was stationary and was positioned at an angle of 63° to the line of forward motion. The side impact test was conducted by MGA Research Corporation in Burlington, Wisconsin, on October 28, 2014. Pre-test and post-test photographs of the test vehicle, the MDB, and the dummies (ES-2re and SID-IIs) are included in this report.

Dummies were placed in the driver and left rear designated seating positions according to instructions specified in the OCWS NCAP Side Laboratory Test Procedure dated September 2013. The side impact event was documented by eleven (11) cameras. Camera locations are included in this report.

The dummies were instrumented in the following manner:

DRIVER ATD (ES-2re)

Primary and Redundant Head CG Triaxial Accelerometers
 Chest Upper Rib, Middle Rib, and Lower Rib Y-Axis Displacement Potentiometers
 Abdomen Forward, Middle, and Rear Y-Axis Load Cells
 Lower Spine (T12) Triaxial Accelerometers
 Pubic Symphysis Y-Axis Load Cell

PASSENGER ATD (SID-IIs)

Primary and Redundant Head CG Triaxial Accelerometers
 Chest Upper Rib, Middle Rib, and Lower Rib Y-Axis Displacement Potentiometers
 Abdomen Upper Rib and Lower Rib Y-Axis Displacement Potentiometers
 Lower Spine (T12) Triaxial Accelerometers
 Acetabulum and Iliac Wing Y-Axis Load Cells

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

Dummy Injury readings were recorded as follows:

DUMMY INJURY VALUES

| Measurement Description | Driver ATD (ES-2re) | | |
|---|---------------------|-----------|--------|
| | Units | Threshold | Result |
| Head Injury Criteria (HIC ₃₆) | N/A | 1000 | 35 |
| Maximum Thorax Rib Deflection | mm | 44 | 11 |
| Total Abdominal Force | N | 2500 | 358 |
| Pubic Symphysis Force | N | 6000 | 648 |

| Measurement Description | Passenger ATD (SID-IIs) | | |
|--|-------------------------|-----------|--------|
| | Units | Threshold | Result |
| Head Injury Criteria (HIC ₃₆) | N/A | 1000 | 24 |
| Resultant Lower Spine Acceleration | Gs | 82 | 37 |
| Total Pelvic Force (sum of acetabular and iliac forces) | N | 5525 | 1755 |
| Maximum Thoracic Rib Deflection | mm | 38* | 8 |
| Maximum Abdomen Rib Deflection | mm | 45* | 9 |

*Proposed IARV

Supplemental restraint information is given below:

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

| Restraint Type | Struck Side Driver | | Struck Side Rear Passenger | |
|--------------------------|--------------------|----------|----------------------------|----------|
| | Mounted | Deployed | Mounted | Deployed |
| Frontal Airbag | Yes | No | | |
| Knee Airbag | No | | | |
| Side Curtain Airbag | Yes | Yes | Yes | Yes |
| Side Torso/Pelvis Airbag | Yes | Yes | No | |
| Seat Belt Pretensioner | Yes | Yes | No | |
| Seat Belt Load Limiter | Yes | | No | |
| Other | | | | |

The test data can be found on the NHTSA website at www.nhtsa.dot.gov

GENERAL COMMENTS

None

MGA does not endorse or certify products. The manufacturer's name appears solely for identification purposes.

SECTION 3
OCCUPANT AND VEHICLE INFORMATION / DATA SHEETS

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

Test Vehicle: 2015 Ford Transit 150 LR Wagon XLT
Test Program: NCAP Side MDB Impact Test

NHTSA No. M20150205
Test Date: 10/28/2014

TEST VEHICLE INFORMATION AND OPTIONS

| | | | |
|--------------------------|-------------------|-----------------------------------|-----|
| NHTSA No. | M20150205 | Traction Control System (TCS) | Yes |
| Model Year | 2015 | Auto-Leveling System | No |
| Make | Ford | Automatic Door Locks (ADL) | Yes |
| Model | Transit | Power Window Auto-Reverse | Yes |
| Body Style | MPV | Other Optional Feature | N/A |
| VIN | 1FMZK1YG0FKA06138 | Driver Front Airbag | Yes |
| Body Color | Sterling Grey | Driver Curtain Airbag | Yes |
| Odometer Reading (km/mi) | 161 / 100 | Driver Head/Torso Airbag | No |
| Engine Displacement (L) | 3.5 | Driver Torso Airbag | No |
| Type/No. Cylinders | 6 | Driver Torso/Pelvis Airbag | Yes |
| Engine Placement | Longitudinal | Driver Pelvis Airbag | No |
| Transmission Type | Automatic | Driver Knee Airbag | No |
| Transmission Speeds | 6 | Rear Pass. Curtain Airbag | Yes |
| Overdrive | Yes | Rear Pass. Head/Torso Airbag | No |
| Final Drive | Rear | Rear Pass. Torso Airbag | No |
| Roof Rack | No | Rear Pass. Torso/Pelvis Airbag | No |
| Sunroof/T-Top | No | Rear Pass. Pelvis Airbag | No |
| Running Boards | No | Driver Seat Belt Pretensioner | Yes |
| Tilt Steering Wheel | Yes | Rear Pass. Seat Belt Pretensioner | No |
| Power Seats | Yes | Driver Load Limiter | Yes |
| Anti-Lock Brakes (ABS) | Yes | Rear Pass. Load Limiter | No |
| | | Other Restraint Feature | N/A |

| | |
|---|-----|
| Does owner's manual provide instruction to turn off automatic door locks? | Yes |
|---|-----|

DATA FROM CERTIFICATION LABEL

| | | | |
|---------------------|--------------------|-----------------|------|
| Manufactured By | Ford Motor Company | GVWR (kg) | 3878 |
| Date of Manufacture | 07/14 | GAWR Front (kg) | 1873 |
| Vehicle Type | MPV | GAWR Rear (kg) | 2300 |

VEHICLE SEATING AND WEIGHT CAPACITY DATA

| Measured Parameter | Front | Rear | Third | Total | |
|---------------------------------------|-------|------|-------|-------|-------|
| Designated Seating Capacity (DSC) | 2 | 3 | 3 | 8 | |
| Capacity Weight (VCW) (kg) | | | | 1242 | (A) |
| DSC x 68.04 kg | | | | 544 | (B) |
| Rated Cargo and Luggage Weight (RCLW) | | | | 698 | (A-B) |

VEHICLE SEAT TYPE

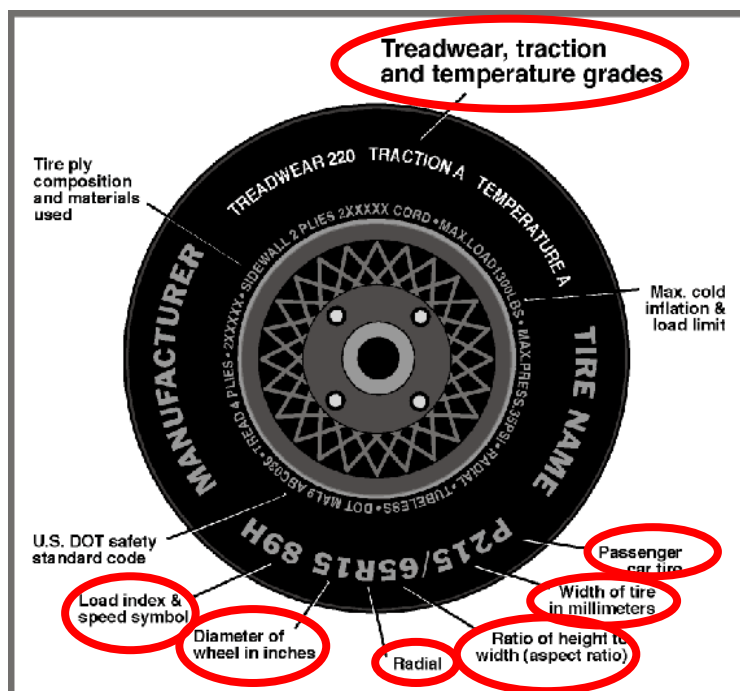
| Seating Location | Type of Seat Pan | | | | Type of Seat Back | | |
|--------------------|------------------|-------|-------------|-----------|-------------------|------------|-------|
| | Bucket | Bench | Split Bench | Contoured | Fixed | Adjustable | |
| | | | | | | Manual | Power |
| Front Seat | X | | | | | | X |
| Rear or Second Row | | | X | | | w/strap | |
| Third Row Seat | | | X | | | w/strap | |

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

Test Vehicle: 2015 Ford Transit 150 LR Wagon XLT
 Test Program: NCAP Side MDB Impact Test

NHTSA No. M20150205
 Test Date: 10/28/2014

VEHICLE TIRE INFORMATION



| Measured Parameter | Front | Rear |
|--------------------------|--------------------------------------|--------------------------------------|
| Max. Tire Pressure (kPa) | 619 | 619 |
| Cold Pressure (kPa) | 340 | 490 |
| Recommended Tire Size | 235/65R16 | 235/65R16 |
| Tire Size on Vehicle | 235/65R16 | 235/65R16 |
| Tire Manufacturer | Continental | Continental |
| Tire Model | Vanco Four Season | Vanco Four Season |
| Treadwear | | |
| Traction | | |
| Temperature Grade | | |
| Tire Plies Sidewall | 2 Polyester | 2 Polyester |
| Tire Plies Body | 2 Polyester, 2 Steel, 2 Polyamide | 2 Polyester, 2 Steel, 2 Polyamide |
| Load Index/Speed Symbol | 121/119R | 121/119R |
| Tire Material | Rubber | Rubber |
| DOT Safety Code Left | 65BO HN6C 1414 | 65BO HN6C 1414 |
| DOT Safety Code Right | 65BO HN6C 1514 | 65BO HN6C 1514 |

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

Test Vehicle: 2015 Ford Transit 150 LR Wagon XLT
 Test Program: NCAP Side MDB Impact Test

NHTSA No. M20150205
 Test Date: 10/28/2014

TEST PRESSURES

| | Units | LF | RF | LR | RR |
|----------------|-------|-----|-----|-----|-----|
| As Delivered | kPa | 372 | 379 | 531 | 496 |
| Tire Placard | kPa | 340 | 340 | 490 | 490 |
| Owner's Manual | kPa | | | | |
| As Tested | kPa | 340 | 340 | 490 | 490 |

MDB TIRE SPECIFICATIONS

| | Requirement | Units | LF | RF | LR | RR |
|---------------|-------------|-------|------------|------------|------------|------------|
| Tire Size | P205/75R15 | N/A | P205/75R15 | P205/75R15 | P205/75R15 | P205/75R15 |
| Tire Pressure | 200 ± 21 | kPa | 200 | 200 | 200 | 200 |

TEST VEHICLE AXLE WEIGHTS

| | Units | As Delivered (UVW) | | | As Tested (ATW) | | | Fully Loaded | | |
|--------|-------|--------------------|--------|--------|-----------------|--------|--------|--------------|--------|--------|
| | | Front | Rear | Total | Front | Rear | Total | Front | Rear | Total |
| Left | kg | 672.0 | 602.5 | | 714.5 | 701.5 | | 711.0 | 730.0 | |
| Right | kg | 711.5 | 574.5 | | 732.0 | 670.5 | | 705.5 | 678.5 | |
| Ratio | % | 54.0 | 46.0 | | 51.3 | 48.7 | | 50.1 | 49.9 | |
| Totals | kg | 1383.5 | 1177.0 | 2560.5 | 1446.5 | 1372.0 | 2818.5 | 1416.5 | 1408.5 | 2825.0 |

TARGET TEST WEIGHT CALCULATION

| Measured Parameter | Units | Value | |
|---|-------|--------|---------|
| Total Delivered Weight (UVW) | kg | 2560.5 | (A) |
| Sum of Actual Weight of 2 P572 ATDs Used | kg | 129.3 | (B) |
| Rated Cargo/Luggage Weight (RCLW) | kg | 136 | (C) |
| Calculated Test Vehicle Target Weight (TVT _W) | kg | 2825.8 | (A+B+C) |

Does the measured As Tested Vehicle Weight lie within the required weight range (i.e. Calculated Test Vehicle Target Weight – 4.5 kg to 9 kg)? **YES**

TEST VEHICLE ATTITUDES AND CG

| | Units | Fully Loaded | As Tested | Meets Requirement*** |
|--|-------|--------------|-----------|----------------------|
| Left Front | mm | 777 | 767 | Yes |
| Right Front | mm | 780 | 780 | Yes |
| Right Rear | mm | 805 | 805 | Yes |
| Left Rear | mm | 798 | 801 | Yes |
| Vehicle CG (Aft of Front Axle) | mm | 1645 | 1606 | |
| Vehicle CG (Left (+) / Right (-) from Longitudinal Centerline) | mm | 17 | 4 | |

*** The "As Tested" vehicle attitude measurements must be equal to or within ± 10 mm of the "Fully Loaded" vehicle attitude measurements at each wheel well.

| | |
|---|----------------|
| Test height adjustable suspension setting, if applicable: | Not Applicable |
|---|----------------|

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

Test Vehicle: 2015 Ford Transit 150 LR Wagon XLT
Test Program: NCAP Side MDB Impact Test

NHTSA No. M20150205
Test Date: 10/28/2014

WEIGHT OF BALLAST AND VEHICLE COMPONENTS REMOVED TO MEET TVTW

| Component Description | Weight (kg) |
|---------------------------|-------------|
| Weight of Ballast, if any | 121.6 |
| None | 0.0 |

DATA SHEET NO. 2
SEAT, SEAT BELT, STEERING WHEEL ADJUSTMENT AND FUEL SYSTEM DATA

Test Vehicle: 2015 Ford Transit 150 LR Wagon XLT
 Test Program: NCAP Side MDB Impact Test

NHTSA No. M20150205
 Test Date: 10/28/2014

SEAT POSITIONING

The driver's seat, front center seat (if applicable), and right front passenger's seat should be set to the mid-track, lowest, mid-angle position. The struck-side rear passenger's seat, rear center seat, and non-struck side rear passenger's seats should be set to the rear-most, lowest, mid-angle position.

SCRL ANGLE RANGE

| Seat | SCRL (°) | | |
|---------------------------|----------|-------|-------|
| | Max | Min | Mid |
| Driver Seat | 15.2 | 9.0 | 12.1 |
| Front Passenger Seat | 14.2 | 8.2 | 11.2 |
| Front Center Seat | | | |
| Struck Side Rear Seat | Fixed | Fixed | Fixed |
| Non-Struck Side Rear Seat | Fixed | Fixed | Fixed |
| Rear Center Seat | Fixed | Fixed | Fixed |

SEAT HEIGHT AND ANGLE

| Seat | As Tested SCRL Angle (Mid) (°) | As Tested SCRP Height (mm) | SCRP Height Position | SCRP Height (mm) | | |
|---------------------------|--------------------------------|----------------------------|----------------------|------------------|--------------|--------------|
| | | | | Rear-most | Mid-Fore/Aft | Forward-Most |
| Driver Seat | 12.1 | 0 | Max | 68 | 68 | 68 |
| | | | Mid | 34 | 34 | 34 |
| | | | Min | 0 | 0 | 0 |
| Front Passenger Seat | 11.2 | 0 | Max | 66 | 66 | 66 |
| | | | Mid | 33 | 33 | 33 |
| | | | Min | 0 | 0 | 0 |
| Front Center Seat | | | Max | | | |
| | | | Mid | | | |
| | | | Min | | | |
| Struck Side Rear Seat | Fixed | Fixed | Max | Fixed | Fixed | Fixed |
| | | | Mid | Fixed | Fixed | Fixed |
| | | | Min | Fixed | Fixed | Fixed |
| Non-Struck Side Rear Seat | Fixed | Fixed | Max | Fixed | Fixed | Fixed |
| | | | Mid | Fixed | Fixed | Fixed |
| | | | Min | Fixed | Fixed | Fixed |
| Rear Center Seat | Fixed | Fixed | Max | Fixed | Fixed | Fixed |
| | | | Mid | Fixed | Fixed | Fixed |
| | | | Min | Fixed | Fixed | Fixed |

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

Test Vehicle: 2015 Ford Transit 150 LR Wagon XLT
 Test Program: NCAP Side MDB Impact Test

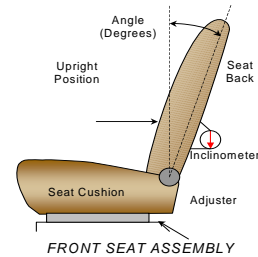
NHTSA No. M20150205
 Test Date: 10/28/2014

SEAT FORE/AFT POSITIONS

| Seat | Total Fore/Aft Travel | | Test Position from Forward-most Position | |
|-----------------------|-----------------------|---------|--|--------|
| | mm | Detents | mm | Detent |
| Driver Seat | 246 | | 123 | |
| Front Passenger Seat | 248 | | 124 | |
| Front Center Seat | | | | |
| Struck Side Rear Seat | Fixed | Fixed | Fixed | Fixed |
| Non-Struck Side | Fixed | Fixed | Fixed | Fixed |
| Rear Center Seat | Fixed | Fixed | Fixed | Fixed |

SEAT BACK ANGLE ADJUSTMENT

The driver's seat back is positioned to the manufacturer's designated design angle. The front passenger's seat back is positioned in a similar manner as the driver's seat back. The struck side rear seat back is adjusted following Appendix C, "Positioning Dummies in the Test Vehicle" in the NCAP Laboratory Test Procedure dated September 2013. The rear center and non-struck side rear outboard seat backs are positioned to match the struck side rear seat back.



| Seat | Total Seat Back Angle Range | | Test Position from Vertical | |
|----------------------------|-----------------------------|--------------------------|-----------------------------|--|
| | Degrees | Detents | Degrees | Detent |
| Driver Seat w/Seated Dummy | 91.2 | | 1.4 | |
| Front Passenger Seat | 91.5 | | 1.5 | |
| Front Center Seat | | | | |
| Struck Side Rear Seat | 11.8 | 7 (1 st as 1) | 2.2 | 0 th (1 st as 0) |
| Non-Struck Side Rear Seat | 11.8 | 7 (1 st as 1) | 2.2 | 0 th (1 st as 0) |
| Rear Center Seat | 11.8 | 7 (1 st as 1) | 2.2 | 0 th (1 st as 0) |

Seat back angles measured on headrest post.

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

Test Vehicle: 2015 Ford Transit 150 LR Wagon XLT
 Test Program: NCAP Side MDB Impact Test

NHTSA No. M20150205
 Test Date: 10/28/2014

SEAT BELT ANCHORAGE ADJUSTMENT

Seat belt anchorages are adjusted in accordance with the information provided by the manufacturer on Form No. 1.

| | Total # of Positions | Placed in Position # |
|-------------|----------------------------------|----------------------|
| Driver Seat | 4 detents (1 st as 1) | 0 (uppermost as 0) |
| Rear Seat | Fixed | Not Applicable |

HEAD RESTRAINT ADJUSTMENT

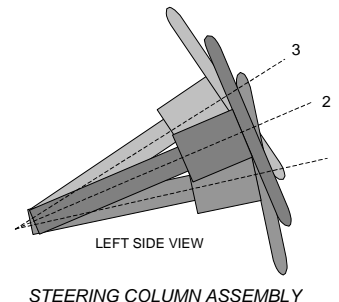
The driver's head restraint is adjusted to the highest and most full forward in-use position. The struck-side rear passenger's head restraint is adjusted to the lowest and most full forward in-use position.

| | Total # of Positions | Placed in Position # |
|-------------|----------------------|----------------------|
| Driver Seat | 5 | Highest |
| Rear Seat | 2 | Lowest |

STEERING COLUMN ADJUSTMENT

Steering wheel and column adjustments are made so that the steering wheel hub is at the center of its geometric locus it describes when it moves through its full range of motion.

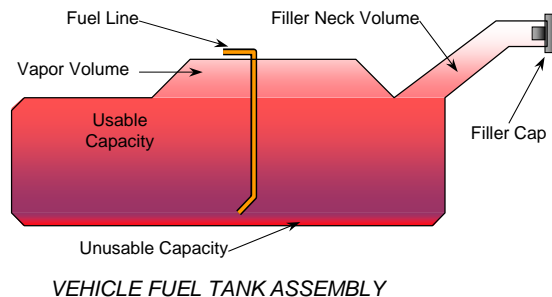
| | Degrees | Fore/Aft Position (mm) |
|-----------------------------------|---------|------------------------|
| Lowermost, Position 1 | 58.8 | 232 |
| Geometric Center, Position 2 | 56.6 | 207 |
| Uppermost, Position 3 | 54.4 | 182 |
| Telescoping Steering Wheel Travel | | 50 |
| Test Position | 56.6 | 207 |



FUEL PUMP

Describe the fuel pump type, details about how it operates and the location of the fuel filler pipe.

The vehicle is equipped with an electric fuel pump. The electric fuel pump operates for 2 seconds to pressurize the fuel system following actuation of the ignition. If no attempt has been made to start the engine within 2 seconds following ignition actuation the fuel pump will shut off. The fuel pump operates continuously while the engine is running. If the engine stalls the fuel pump is deactivated. Also, fuel pump shut-off is provided via the RC, designed to stop fuel flow to the engine if the vehicle sustains an impact above a certain magnitude. The fuel pipe is on the left side.



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

Test Vehicle: 2015 Ford Transit 150 LR Wagon XLT
 Test Program: NCAP Side MDB Impact Test

NHTSA No. M20150205
 Test Date: 10/28/2014

FUEL TANK CAPACITY DATA

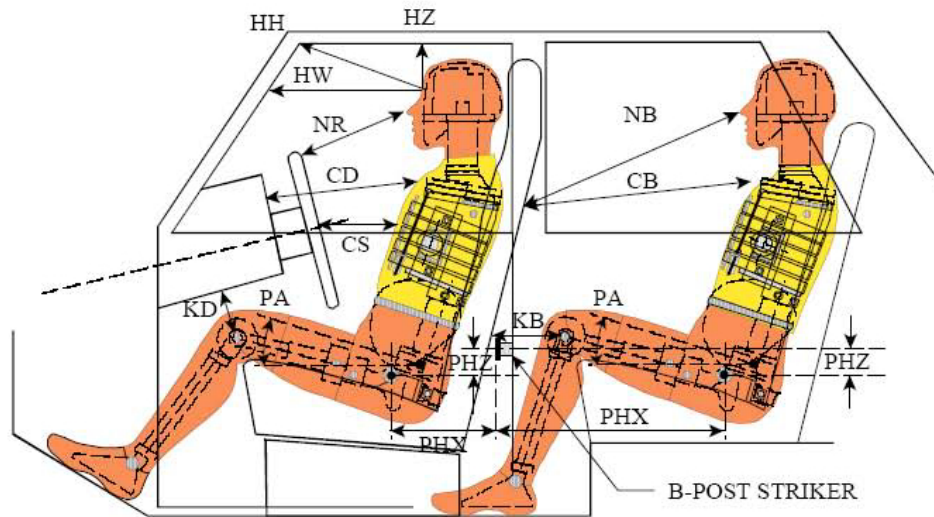
| | Liters |
|---|--------|
| Usable Capacity of "Standard" Tank (see Form No. 1) | 96.5 |
| Usable Capacity of "Optional" Tank (see Form No. 1) | |
| Usable Capacity of Standard Tank as Specified in Owner's Manual | 95.0 |
| Usable Capacity of Optional Tank as Specified in Owner's Manual | |
| 93% of Usable Capacity | 89.7 |
| Actual Amount of Solvent Used | 89.7 |
| 1/3 of Usable Capacity | 32.2 |

Is the actual amount of solvent used in the test equal to 93% \pm 1%
 of the Usable Capacity stated in Form No. 1? **YES**

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

Test Vehicle: 2015 Ford Transit 150 LR Wagon XLT
 Test Program: NCAP Side MDB Impact Test

NHTSA No. M20150205
 Test Date: 10/28/2014



LEFT SIDE VIEW

NOTE: 2-DOOR VEHICLE SHOWN.
 REAR DUMMY PHX & PHZ
 MEASUREMENTS FOR A 4-DOOR
 VEHICLE WOULD USE THE C-POST
 STRIKER AS A REFERENCE POINT

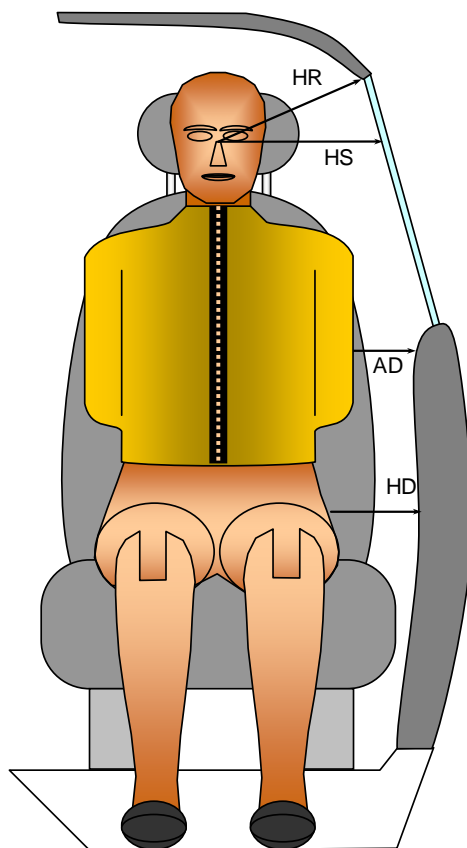
DUMMY LONGITUDINAL CLEARANCE DIMENSION INFORMATION

| Driver Code | Pass. Code | Measurement Description | Driver | | Passenger | |
|-------------|------------|-------------------------------|-------------|----------|-------------|----------|
| | | | Length (mm) | Angle(°) | Length (mm) | Angle(°) |
| HH | | Head to Header | 387 | 22.9 | | |
| HW | | Head to Windshield | 662 | | | |
| HZ | HZ | Head to Roof Liner | 248 | | 336 | |
| NR | NB | Nose to Rim/Seat Back | 466 | 14.7 | 648 | 12.2 |
| CD | CB | Chest to Dashboard/Seat Back | 631 | 0.0 | 647 | 0.9 |
| CS | | Chest to Steering Wheel | 389 | 10.3 | | |
| KDL | KBL | Left Knee to Dash/Seat Back | 148 | 13.5 | 327 | 15.7 |
| KDR | KBR | Right Knee to Dash/Seat Back | 167 | 14.1 | 325 | 14.9 |
| PAX | PAX | Pelvic Tilt Angle X | | 17.4 | | 21.9 |
| | PAY | Pelvic Tilt Angle Y | | -0.8 | | 0.4 |
| PHX | PHX | Hip Point to Striker (X-Axis) | 202 | | N/A | |
| PHZ | PHZ | Hip Point to Striker (Z-Axis) | 4 | | N/A | |

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

Test Vehicle: 2015 Ford Transit 150 LR Wagon XLT
 Test Program: NCAP Side MDB Impact Test

NHTSA No. M20150205
 Test Date: 10/28/2014



FRONT VIEW OF DUMMY

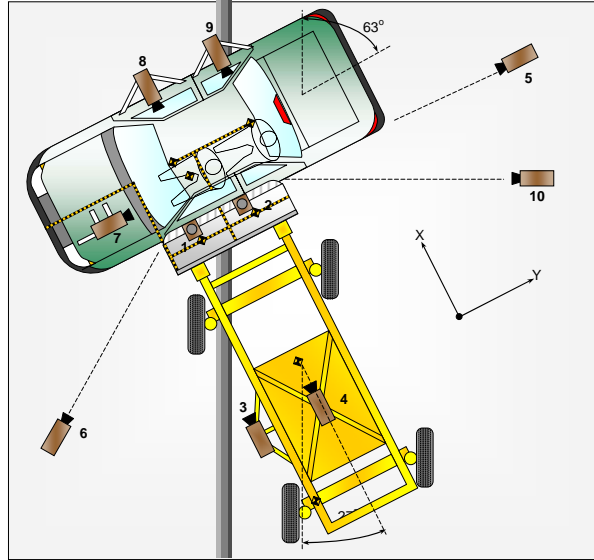
DUMMY LATERAL CLEARANCE DIMENSION INFORMATION

| Code | Measurement Description | Units | Driver | Passenger |
|------|-------------------------|-------|--------|-----------|
| HR | Head to Side Header | mm | 320 | 277 |
| HS | Head to Side Window | mm | 444 | 340 |
| AD | Arm to Door | mm | 186 | 26 |
| HD | Hip Point to Door | mm | 161 | 94 |

DATA SHEET NO. 5
CAMERA AND INSTRUMENTATION DATA

Test Vehicle: 2015 Ford Transit 150 LR Wagon XLT
Test Program: NCAP Side MDB Impact Test

NHTSA No. M20150205
Test Date: 10/28/2014



CAMERA LOCATIONS AND DATA

| No. | Camera View | Coordinates (mm) | | | Lens Length (mm) | Operating Frame Rate (fps) |
|-----|-------------------------|------------------|-------|-------|------------------|----------------------------|
| | | X* | Y* | Z* | | |
| 1 | Overhead Overall | -130 | 160 | -5050 | 14 | 1000 |
| 2 | Overhead Close-Up | 60 | 40 | -5050 | 20 | 1000 |
| 3 | Left Impact Point (MDB) | | | | 50 | 1000 |
| 4 | Side Overall (MDB) | | | | 16 | 1000 |
| 5 | Rear | 70 | 5000 | -1100 | 24 | 1000 |
| 6 | Left Front | 4260 | -4960 | -1160 | 24 | 1000 |
| 7 | Driver Front (OB) | | | | 16 | 1000 |
| 8 | Driver Side (OB) | | | | 8 | 1000 |
| 9 | Passenger Side (OB) | | | | 8 | 1000 |
| 10 | Real Time Left Rear | | | | | 30 |
| 11 | Real Time Inrun | | | | | 30 |

Reference: Impact Point projected to Ground; +X = To Front of MDB, +Y = To Right of MDB, +Z = Down

* All measurements accurate to ± 6 mm

Explain why camera(s) did not operate as intended: None

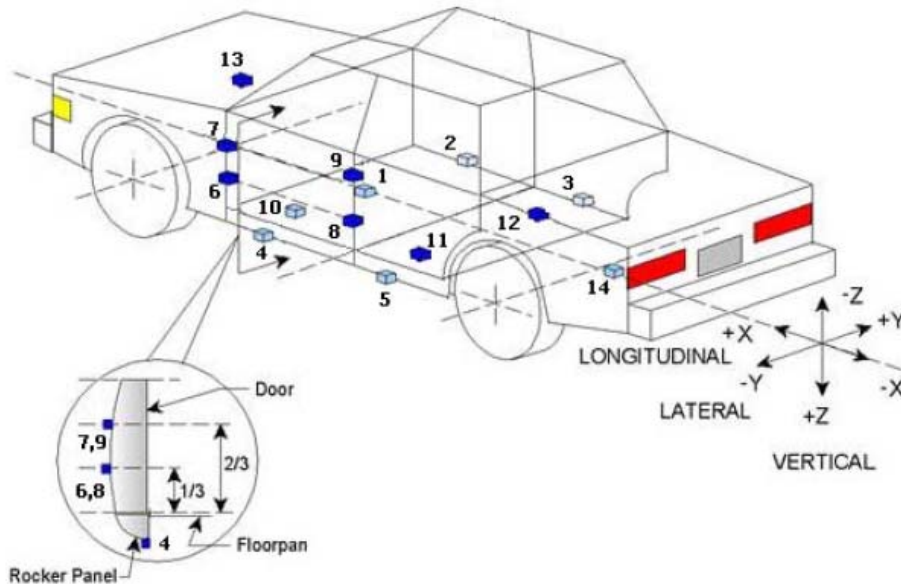
INSTRUMENTATION

| | Number of Channels |
|--------------------|--------------------|
| Driver Dummy | 16 |
| Passenger Dummy | 16 |
| Vehicle Structure | 23 |
| MDB Accelerometers | 5 |
| MDB Contacts | 2 |
| Total | 62 |

DATA SHEET NO. 6
TEST VEHICLE ACCELEROMETER LOCATIONS

Test Vehicle: 2015 Ford Transit 150 LR Wagon XLT
Test Program: NCAP Side MDB Impact Test

NHTSA No. M20150205
Test Date: 10/28/2014



TEST VEHICLE ACCELEROMETER LOCATIONS

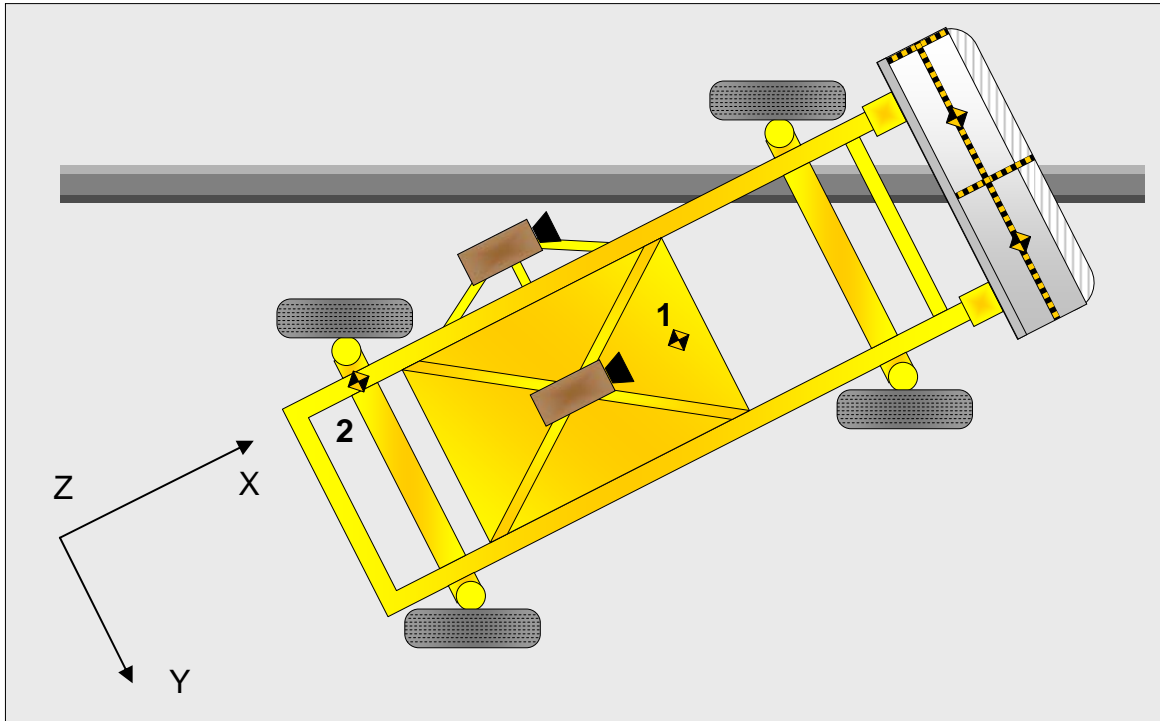
| Accelerometer Location | | | | |
|------------------------|---------------------------|------------------|------|-------|
| No. | ID | Coordinates (mm) | | |
| | | X | Y | Z |
| 1 | Vehicle CG | 3048 | 462 | -490 |
| 2 | Right Sill at Front Seat | 3500 | 854 | -300 |
| 3 | Right Sill at Rear Seat | 2489 | 855 | -310 |
| 4 | Left Sill at Front Door | 3778 | -854 | -285 |
| 5 | Left Sill at Rear Door | 2616 | -855 | -308 |
| 6 | Left Lower A-Post | 4445 | -937 | -875 |
| 7 | Left Middle A-Post | 4444 | -927 | -1045 |
| 8 | Left Lower B-Post | 3271 | -827 | -943 |
| 9 | Left Middle B-Post | 3270 | -836 | -1138 |
| 10 | Front Seat Track | 3335 | -440 | -605 |
| 11 | Rear Seat Structure | 2628 | -680 | -615 |
| 12 | Rt. Rear Occ. Compartment | 2306 | 770 | -640 |
| 13 | Engine Block | 4720 | 50 | -1060 |
| 14 | Rear Above Axle | 1378 | 0 | -665 |

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

**DATA SHEET NO. 7
MDB ACCELEROMETER LOCATIONS**

Test Vehicle: 2015 Ford Transit 150 LR Wagon XLT
 Test Program: NCAP Side MDB Impact Test

NHTSA No. M20150205
 Test Date: 10/28/2014



MDB ACCELEROMETER LOCATIONS

| Loc. No. | Accelerometer Location | Measurements (mm) | | |
|----------|------------------------|-------------------|------|------|
| | | X | Y | Z |
| 1 | MDB CG | -1105 | 0 | -330 |
| 2 | MDB Rear | -2580 | -650 | -625 |

Reference: X - MDB Face (+ forward)
 Y - MDB Centerline (+ to right)
 Z - Ground Plane (+ down)

**DATA SHEET NO. 8
POST-TEST OBSERVATIONS**

Test Vehicle: 2015 Ford Transit 150 LR Wagon XLT
 Test Program: NCAP Side MDB Impact Test

NHTSA No. M20150205
 Test Date: 10/28/2014

TEST DUMMY INFORMATION AND CONTACT POINTS

| Description | Front Seat Dummy (ES-2re) | Rear Seat Dummy (SID-IIs) |
|-------------------|-------------------------------------|---------------------------|
| Face | None | Curtain Airbag |
| Top of Head | Headliner | Curtain Airbag, Headliner |
| Left Side of Head | Curtain Airbag, Headliner | None |
| Back of Head | Curtain Airbag, Headliner, Headrest | Curtain Airbag |
| Left Shoulder | None | Door Panel |
| Upper Torso | Side Airbag, Seatback | None |
| Lower Torso | Side Airbag, Seatback | Door Panel |
| Left Hip | Side Airbag, Seatpan | Door Panel, Seatpan |
| Left Knee | Door Panel | Door Panel |

POST-TEST DOOR PERFORMANCE

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

POST-TEST SEAT PERFORMANCE

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

POST-TEST STRUCTURAL OBSERVATIONS

| Critical Areas of Performance | Observations and Conclusions |
|-------------------------------|------------------------------|
| Pillar Performance | No Separation |
| Sill Separation | None |
| Windshield Damage | None |
| Side Window Damage | None |
| Other Notable Effects | None |

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

Test Vehicle: 2015 Ford Transit 150 LR Wagon XLT
 Test Program: NCAP Side MDB Impact Test

NHTSA No. M20150205
 Test Date: 10/28/2014

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

| Restraint Type | Struck Side Driver | | Struck Side Rear Passenger | |
|--------------------------|--------------------|----------|----------------------------|----------|
| | Mounted | Deployed | Mounted | Deployed |
| Frontal Airbag | Yes | No | | |
| Knee Airbag | No | | | |
| Side Curtain Airbag | Yes | Yes | Yes | Yes |
| Side Torso/Pelvis Airbag | Yes | Yes | No | |
| Seat Belt Pretensioner | Yes | Yes | No | |
| Seat Belt Load Limiter | Yes | | No | |
| Other | | | | |

IMPACT POINT LOCATION DATA

| Measured Parameter | Units | Tolerance | Value |
|---|-------|---------------------------------|-------|
| Vehicle Wheel Base | mm | | 3300 |
| Vertical Impact Reference Line (Aft of Front Axle) (Intended Impact Point) | mm | | 508 |
| Actual Impact Point (Aft of Front Axle) | mm | | 523 |
| Horizontal Offset (+forward / -rearward) | mm | +/- 50 of intended impact point | -15 |
| Vertical Offset (+down / -up) | mm | +/- 20 of intended impact point | +2 |

**DATA SHEET NO. 9
MDB SUMMARY OF RESULTS**

Test Vehicle: 2015 Ford Transit 150 LR Wagon XLT
 Test Program: NCAP Side MDB Impact Test

NHTSA No. M20150205
 Test Date: 10/28/2014

MDB SPECIFICATIONS

| Measurement Description | Length (mm) |
|---|-------------|
| Overall Width of Framework Carriage | 1251 |
| Overall Length Including Honeycomb Face | 4115 |
| Wheelbase of Framework Carriage | 2595 |
| CG Location aft of Front Axle | 1134 |

MDB WEIGHTS

| | Units | Front Axle | Rear Axle | Total |
|--------|-------|------------|-----------|--------|
| Left | kg | 390.0 | 300.1 | |
| Right | kg | 376.8 | 294.7 | |
| Ratio | % | 56.3 | 43.7 | |
| Totals | kg | 766.8 | 594.8 | 1361.6 |

SPEED AND ANGLE AT IMPACT DATA

| Measured Parameter | Units | Requirement | Value |
|---|---------|--------------|-------|
| Trap No. 1 Velocity (Primary) | km/h | 61.1 to 62.7 | 61.2 |
| Trap No. 2 Velocity (Redundant) | km/h | 61.1 to 62.7 | 62.1 |
| MDB CL to Target Vehicle CL | degrees | 88.5 to 91.5 | 90.0 |
| MDB Forward Line of Motion to Target Vehicle CL | degrees | 62.5 to 63.5 | 62.9 |
| MDB Crabbed Angle to MDB Forward Line of Motion | degrees | 26 to 28 | 27.1 |

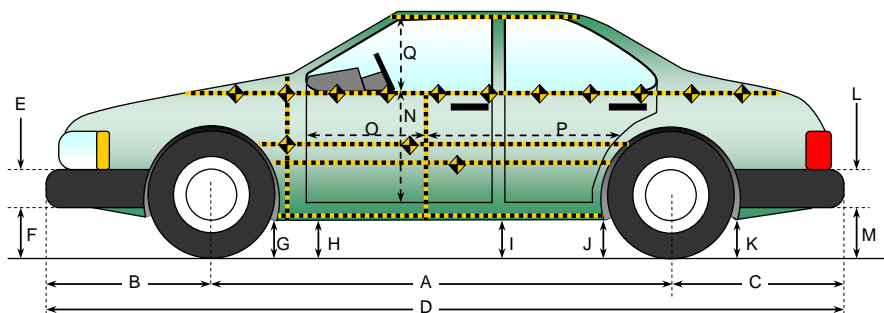
MAXIMUM STATIC CRUSH OF HONEYCOMB IMPACT FACE

| Row | Vertical Location | | From Centerline | | Maximum Crush |
|-----|-------------------|--------|-----------------|-----------|---------------|
| | Description | Height | Distance | Direction | |
| A | Center of Bumper | 432 | 800 | Left | 234 |
| B | Top of Bumper | 533 | 800 | Left | 219 |
| C | Mid-Level | 686 | 800 | Right | 179 |
| D | Top of Stack | 813 | 400 | Left | 184 |

DATA SHEET NO. 10
TEST VEHICLE PROFILE MEASUREMENTS

Test Vehicle: 2015 Ford Transit 150 LR Wagon XLT
Test Program: NCAP Side MDB Impact Test

NHTSA No. M20150205
Test Date: 10/28/2014



All measurements in (mm) with tolerance of ± 3 mm

LEFT SIDE VIEW

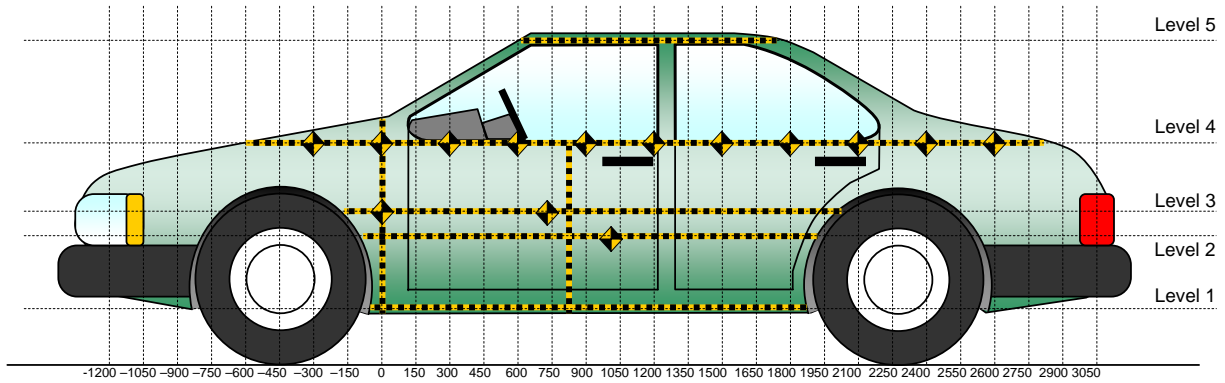
VEHICLE PRE- AND POST-TEST MEASUREMENT INFORMATION

| Code | Measurement Description | Pre-Test | Post-Test | Difference |
|------|--|----------|-----------|------------|
| A | Wheelbase | 3300 | 3270 | 30 |
| B | Front Axle to FSOV | 1030 | 1042 | -12 |
| C | Rear Axle to RSOV | 1252 | 1274 | -22 |
| D | Total Length at Centerline | 5582 | 5586 | -4 |
| E | Front Bumper Thickness | 140 | 140 | 0 |
| F | Front Bumper Bottom to Ground | 252 | 328 | -76 |
| G | Sill Height at Front Wheel Well | 273 | 286 | -13 |
| H | Sill Height at Front Door Leading Edge | 275 | 290 | -15 |
| I | Sill Height at B Pillar | 284 | 330 | -46 |
| J1 | Sill Height at Rear Wheel Well | 295 | 367 | -72 |
| J2 | Pinch Weld Height at Rear Wheel Well | 288 | 336 | -48 |
| K | Sill Height Aft of Rear Wheel Well | 367 | 378 | -11 |
| L | Rear Bumper Thickness | 80 | 80 | 0 |
| M | Rear Bumper Bottom to Ground | 375 | 399 | -24 |
| N | Sill Height to Window Bottom Sill | 990 | 955 | 35 |
| O | Front Door Leading Edge to Impact CL | 1194 | 1174 | 20 |
| P | Rear Door Trailing Edge to Impact CL | | | |
| Q | Front Window Opening | 639 | 631 | 8 |
| R | Right Side Length | 4682 | 4693 | -11 |
| S | Left Side Length | 4682 | 4655 | 27 |
| T | Vehicle Width at B Post | 2018 | 1925 | 93 |

DATA SHEET NO. 11
TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2015 Ford Transit 150 LR Wagon XLT
 Test Program: NCAP Side MDB Impact Test

NHTSA No. M20150205
 Test Date: 10/28/2014



All Measurements Shown in mm

LEFT SIDE VIEW

MAXIMUM EXTERIOR CRUSH MEASUREMENTS

| Level | Measurement Description | Height Above Ground (mm) | Maximum Exterior Static Crush | Distance from Impact |
|-------|-------------------------|--------------------------|-------------------------------|----------------------|
| 1 | Sill Top | 390 | 274 | 1650 |
| 2 | Mid Door | 795 | 209 | 1500 |
| 3 | Occupant Hip Point | 1010 | 131 | 1050 |
| 4 | Window Sill | 1131 | 108 | 1050 |
| 5 | Window Top | 1955 | 19 | 900 |

Note: The measurements are taken along the vertical impact reference line.
 Vehicle measurements forward of the vertical impact reference line are negative.

DATA SHEET NO. 11 (CONTINUED)
TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2015 Ford Transit 150 LR Wagon XLT
 Test Program: NCAP Side MDB Impact Test

NHTSA No. M20150205
 Test Date: 10/28/2014

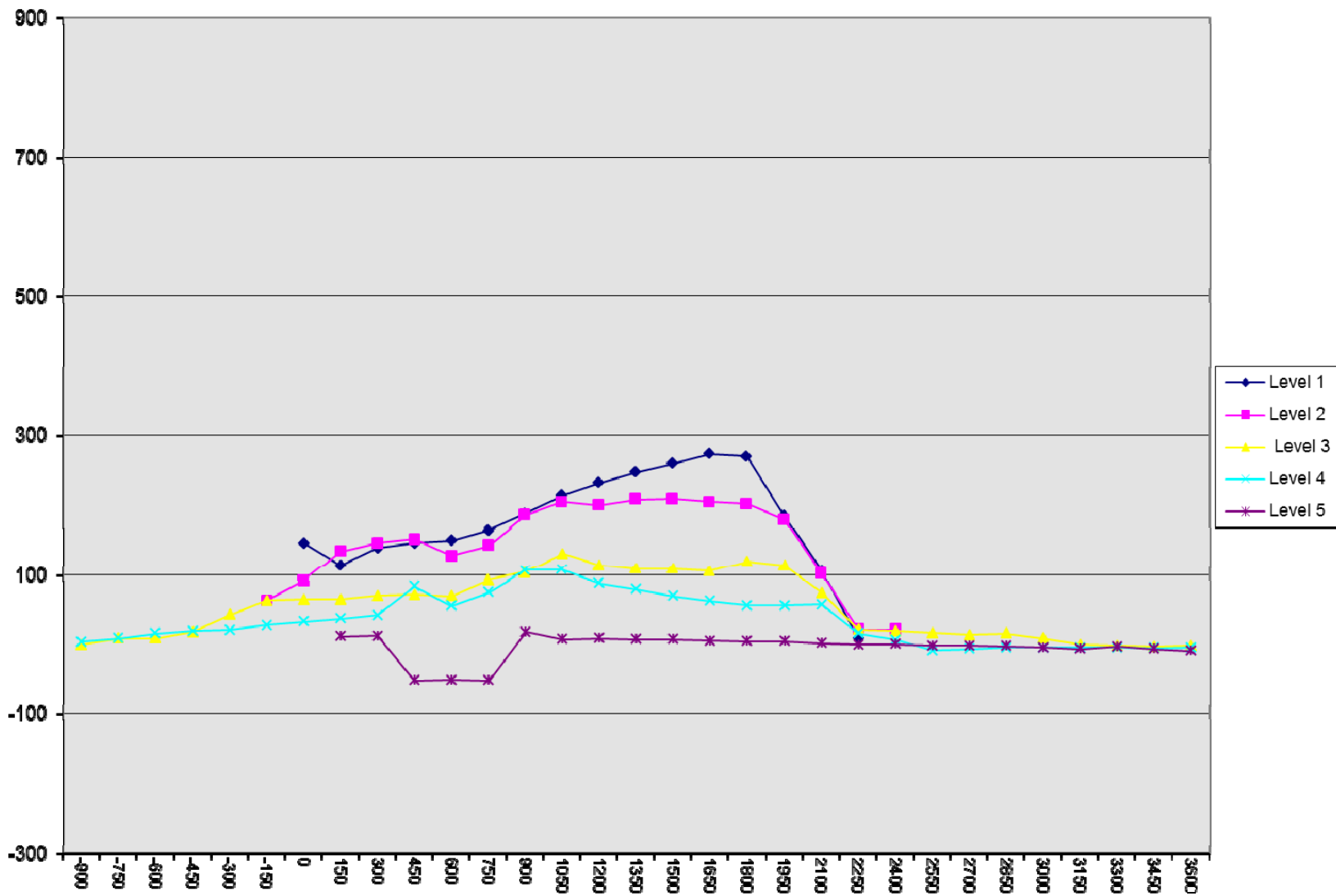
| | Pre-Test | | | | | Post-Test | | | | | Difference | | | | |
|------|----------|-----|-----|-----|-----|-----------|-----|-----|-----|-----|------------|-----|-----|-----|-----|
| | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| -900 | | | 169 | 189 | | | | 170 | 194 | | | | 1 | 5 | |
| -750 | | | 152 | 170 | | | | 162 | 180 | | | | 10 | 10 | |
| -600 | | | 141 | 156 | | | | 151 | 173 | | | | 10 | 17 | |
| -450 | | | 135 | 149 | | | | 154 | 170 | | | | 19 | 21 | |
| -300 | | | 131 | 140 | | | | 175 | 162 | | | | 44 | 22 | |
| -150 | | 109 | 128 | 131 | | | 173 | 192 | 160 | | | 64 | 64 | 29 | |
| 0 | 147 | 129 | 128 | 124 | | 200 | 221 | 193 | 158 | | 146 | 92 | 65 | 34 | |
| 150 | 147 | 128 | 126 | 119 | 265 | 261 | 262 | 194 | 157 | 278 | 114 | 134 | 65 | 38 | 13 |
| 300 | 147 | 124 | 124 | 114 | 238 | 286 | 270 | 195 | 157 | 252 | 139 | 146 | 71 | 43 | 14 |
| 450 | 147 | 122 | 121 | 109 | 232 | 293 | 274 | 193 | 193 | 182 | 146 | 152 | 72 | 84 | -50 |
| 600 | 146 | 121 | 117 | 110 | 226 | 296 | 249 | 187 | 166 | 177 | 150 | 128 | 70 | 56 | -49 |
| 750 | 148 | 119 | 113 | 103 | 221 | 312 | 262 | 206 | 179 | 171 | 164 | 143 | 93 | 76 | -50 |
| 900 | 146 | 118 | 111 | 103 | 216 | 334 | 304 | 215 | 210 | 232 | 188 | 186 | 104 | 107 | 19 |
| 1050 | 147 | 117 | 108 | 102 | 214 | 361 | 322 | 239 | 210 | 223 | 214 | 205 | 131 | 108 | 9 |
| 1200 | 147 | 115 | 105 | 100 | 210 | 379 | 315 | 219 | 188 | 220 | 232 | 200 | 114 | 88 | 10 |
| 1350 | 148 | 115 | 102 | 99 | 206 | 395 | 323 | 211 | 179 | 215 | 247 | 208 | 109 | 80 | 9 |
| 1500 | 150 | 113 | 99 | 100 | 204 | 410 | 322 | 208 | 170 | 213 | 260 | 209 | 109 | 70 | 9 |
| 1650 | 152 | 111 | 98 | 99 | 201 | 426 | 316 | 204 | 162 | 208 | 274 | 205 | 106 | 63 | 7 |
| 1800 | 154 | 110 | 96 | 101 | 200 | 424 | 312 | 216 | 158 | 206 | 270 | 202 | 120 | 57 | 6 |
| 1950 | 154 | 110 | 96 | 102 | 198 | 339 | 290 | 210 | 159 | 204 | 185 | 180 | 114 | 57 | 6 |
| 2100 | 157 | 109 | 95 | 103 | 198 | 264 | 212 | 170 | 161 | 201 | 107 | 103 | 75 | 58 | 3 |
| 2250 | 161 | 109 | 95 | 106 | 198 | 171 | 132 | 118 | 123 | 199 | 10 | 23 | 23 | 17 | 1 |
| 2400 | | 98 | 96 | 106 | 197 | | 121 | 117 | 114 | 199 | | 23 | 21 | 8 | 2 |
| 2550 | | | 96 | 108 | 196 | | | 114 | 101 | 196 | | | 18 | -7 | 0 |
| 2700 | | | 93 | 112 | 196 | | | 108 | 107 | 196 | | | 15 | -5 | 0 |
| 2850 | | | 93 | 113 | 197 | | | 110 | 110 | 196 | | | 17 | -3 | -1 |
| 3000 | | | 103 | 117 | 198 | | | 113 | 114 | 195 | | | 10 | -3 | -3 |
| 3150 | | | 112 | 120 | 200 | | | 113 | 117 | 195 | | | 1 | -3 | -5 |
| 3300 | | | 117 | 122 | 202 | | | 117 | 119 | 200 | | | 0 | -3 | -2 |
| 3450 | | | 121 | 123 | 207 | | | 119 | 119 | 202 | | | -2 | -4 | -5 |
| 3600 | | | 121 | 123 | 217 | | | 121 | 120 | 209 | | | 0 | -3 | -8 |

NOTE: Pre-test measurements are taken when the vehicle is in the "As Tested" weight condition. Vehicle measurements forward of the vertical impact reference line are negative. The crush profile grid is established prior to the test based on an estimated impact point.

DATA SHEET NO. 11 (CONTINUED)
TEST VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2015 Ford Transit 150 LR Wagon XLT
 Test Program: NCAP Side MDB Impact Test

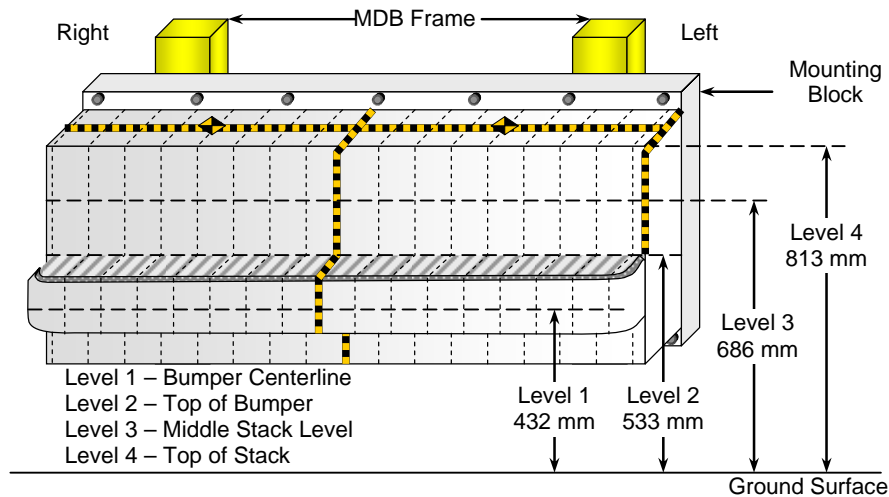
NHTSA No. M20150205
 Test Date: 10/28/2014



DATA SHEET NO. 12
MDB EXTERIOR STATIC CRUSH MEASUREMENTS

Test Vehicle: 2015 Ford Transit 150 LR Wagon XLT
 Test Program: NCAP Side MDB Impact Test

NHTSA No. M20150205
 Test Date: 10/28/2014



FRONT VIEW

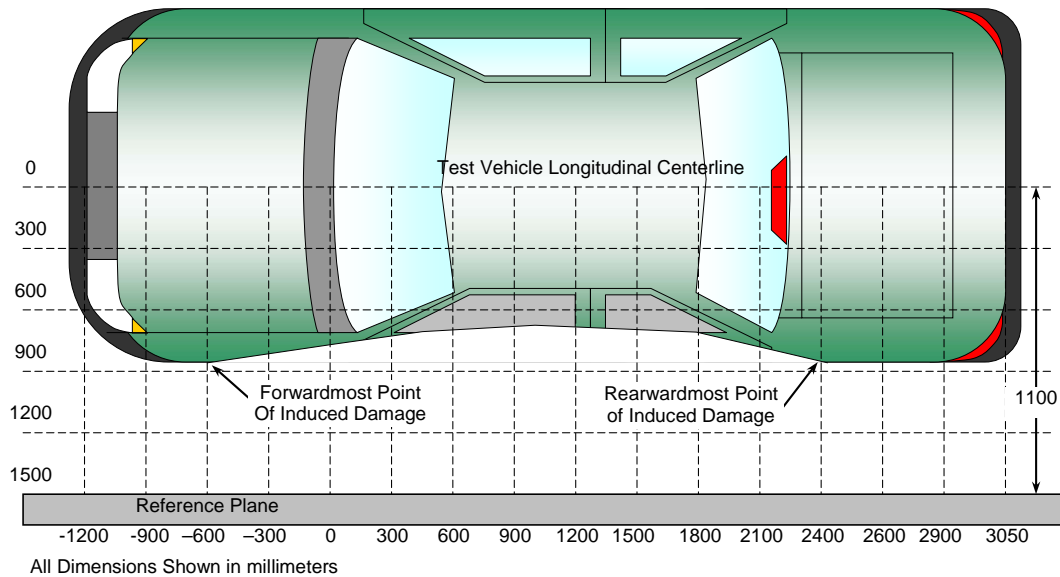
DEFORMABLE BARRIER STATIC CRUSH

| Stack Level | Distance Right of Center (mm) | | | | | | | | C _L | Distance Left of Center (mm) | | | | | | | |
|-------------|-------------------------------|-----|-----|-----|-----|-----|-----|-----|----------------|------------------------------|-----|-----|-----|-----|-----|-----|-----|
| | 800 | 700 | 600 | 500 | 400 | 300 | 200 | 100 | | 0 | 100 | 200 | 300 | 400 | 500 | 600 | 700 |
| 4 | 154 | 132 | 117 | 105 | 100 | 97 | 100 | 100 | 112 | 132 | 168 | 178 | 184 | 162 | 145 | 152 | 168 |
| 3 | 179 | 141 | 129 | 120 | 104 | 118 | 131 | 130 | 130 | 139 | 154 | 161 | 173 | 145 | 137 | 138 | 155 |
| 2 | 160 | 135 | 139 | 145 | 152 | 157 | 163 | 168 | 174 | 188 | 207 | 215 | 214 | 214 | 212 | 218 | 219 |
| 1 | 125 | 117 | 118 | 126 | 135 | 144 | 152 | 160 | 172 | 195 | 221 | 222 | 223 | 224 | 227 | 231 | 234 |

**DATA SHEET NO. 13
VEHICLE AND MDB DAMAGE PROFILE DISTANCES**

Test Vehicle: 2015 Ford Transit 150 LR Wagon XLT
 Test Program: NCAP Side MDB Impact Test

NHTSA No. M20150205
 Test Date: 10/28/2014



TOP VIEW

VEHICLE DAMAGE PROFILE DISTANCES

| DPD | Distance from Impact Point (mm) | Level | Pre-Test (mm) | Post-Test (mm) | Max. Static Crush (mm) |
|-----|---------------------------------|-------|---------------|----------------|------------------------|
| 1 | 2389 | 3 | 96 | 117 | 21 |
| 2 | 1791 | 3 | 97 | 209 | 112 |
| 3 | 1193 | 3 | 106 | 211 | 105 |
| 4 | 595 | 3 | 118 | 180 | 62 |
| 5 | -3 | 3 | 128 | 186 | 58 |
| 6 | -601 | 3 | 141 | 147 | 6 |

MDB DAMAGE PROFILE DISTANCES

| DPD | Distance from Center of MDB | Level | Post-Test (mm) |
|-----|-----------------------------|-------|----------------|
| 1 | 800 mm right of center | 1 | 125 |
| 2 | 480 mm right of center | 1 | 124 |
| 3 | 160 mm right of center | 1 | 156 |
| 4 | 160 mm left of center | 1 | 203 |
| 5 | 480 mm left of center | 1 | 224 |
| 6 | 800 mm left of center | 1 | 234 |

DATA SHEET NO. 14
FMVSS NO. 301 STATIC ROLLOVER RESULTS

Test Vehicle: 2015 Ford Transit 150 LR Wagon XLT
 Test Program: NCAP Side MDB Impact Test

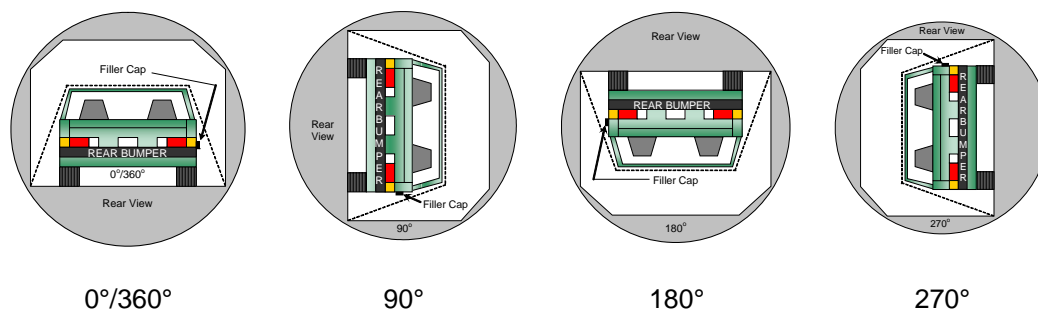
NHTSA No. M20150205
 Test Date: 10/28/2014

Test Time: 6:33 pm

Temperature: 21.0° C

- A. From impact until vehicle motion ceases: 0 oz.
 (Maximum Allowable = 1 ounce)
- B. For the 5 minute period after motion ceases: None
 (Maximum allowable = 5 ounces)
- C. For the following 25 minutes: None
 (Maximum allowable = 1 oz./minute)
- D. Spillage Details: None

FMVSS 301 STATIC ROLLOVER DATA



ROLLOVER SOLVENT COLLECTION TIME TABLE IN SECONDS

| Test Phase | Rotation Time | Hold Time | Total Time |
|--------------|---------------|-----------|------------|
| 0° to 90° | 168 | 300 | 468 |
| 90° to 180° | 155 | 300 | 455 |
| 180° to 270° | 131 | 300 | 431 |
| 270° to 360° | 154 | 300 | 454 |

FMVSS 301 ROLLOVER SPILLAGE TABLE (units in ounces)

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

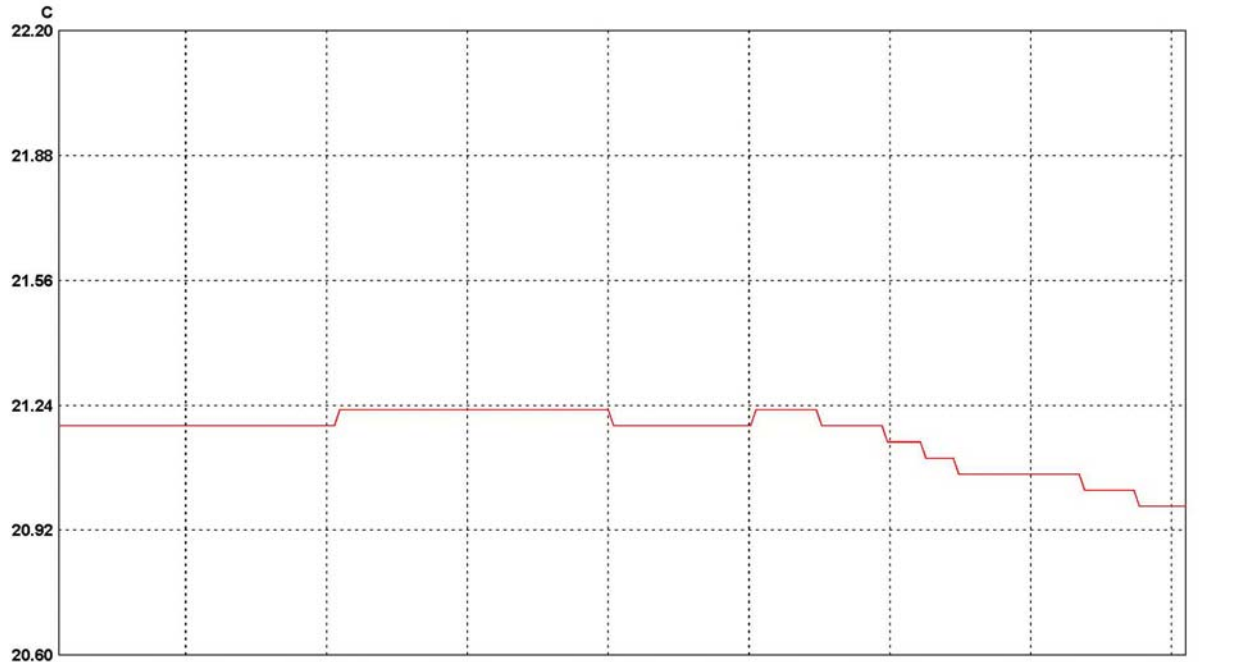
ROLLOVER SOLVENT SPILLAGE LOCATION TABLE

| Test Phase | Spillage Location |
|--------------|-------------------|
| 0° to 90° | |
| 90° to 180° | |
| 180° to 270° | |
| 270° to 360° | |

DATA SHEET NO. 15
DUMMY/VEHICLE TEMPERATURE STABILIZATION DATA

Test Vehicle: 2015 Ford Transit 150 LR Wagon XLT
 Test Program: NCAP Side MDB Impact Test

NHTSA No. M20150205
 Test Date: 10/28/2014



30 minutes/div 4 hours (M/d/yyyy h:mm:ss tt) Central Time Graph file (truncated): 2015 Ford Transit SINCAP 10-28-14.spg

| LN | Serial # | Description | CH | Value | Maximum | Average | Minimum | Units | CH description | Logger file |
|----------------|--|------------------|----|-------|---------|---------|---------|-------------|-------------------------------|-----------------------------------|
| 1 | 10102162 | MGATemp_10102162 | 1 | 21.23 | 21.17 | 20.98 | C | Temperature | 10102162_MGATemp_10102162.spl | |
| LN Logger file | | | | | | | | | | |
| 1 | C:\Program Files (x86)\Veriteq Instruments\ivLog 4.4\2015 NCAP\10102162_MGATemp_10102162.spl | | | | | | | | ID # | Security Created by Creation time |

**APPENDIX A
PHOTOGRAPHS**

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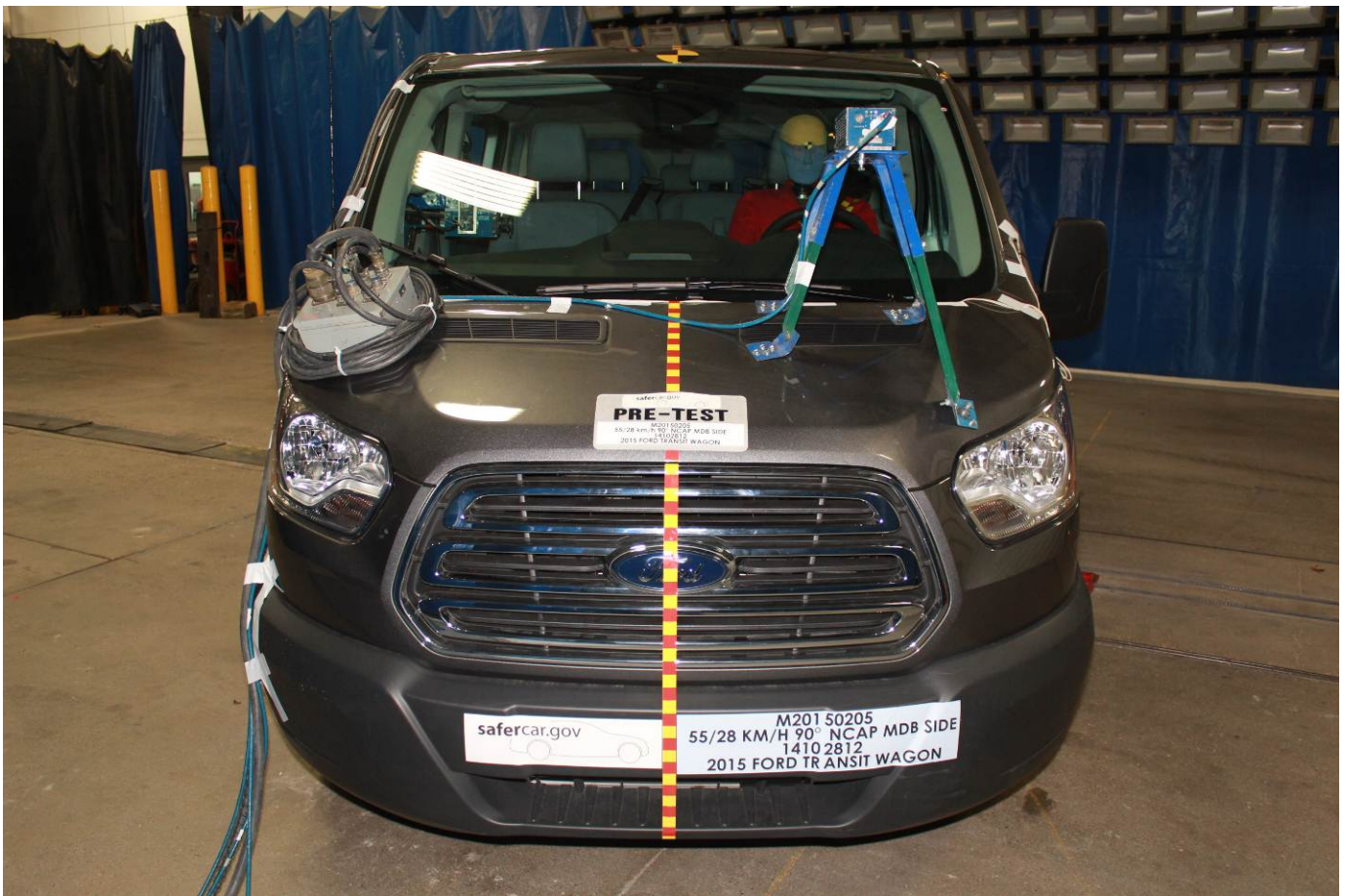
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As Delivered Right Front Three-Quarter View of Test Vehicle



As Delivered Left Rear Three-Quarter View of Test Vehicle



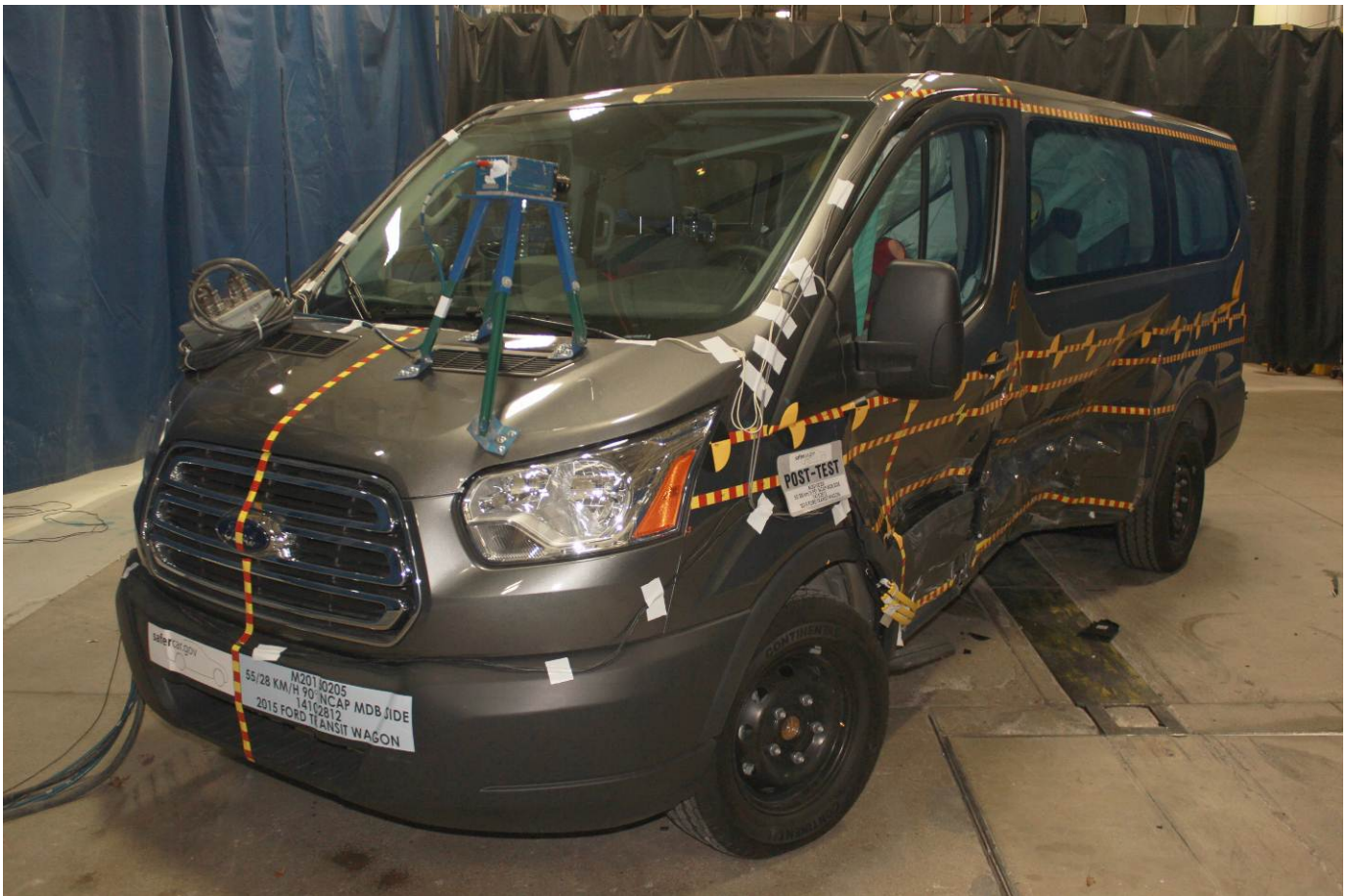
Pre-Test Frontal View of Test Vehicle



Post-Test Frontal View of Test Vehicle



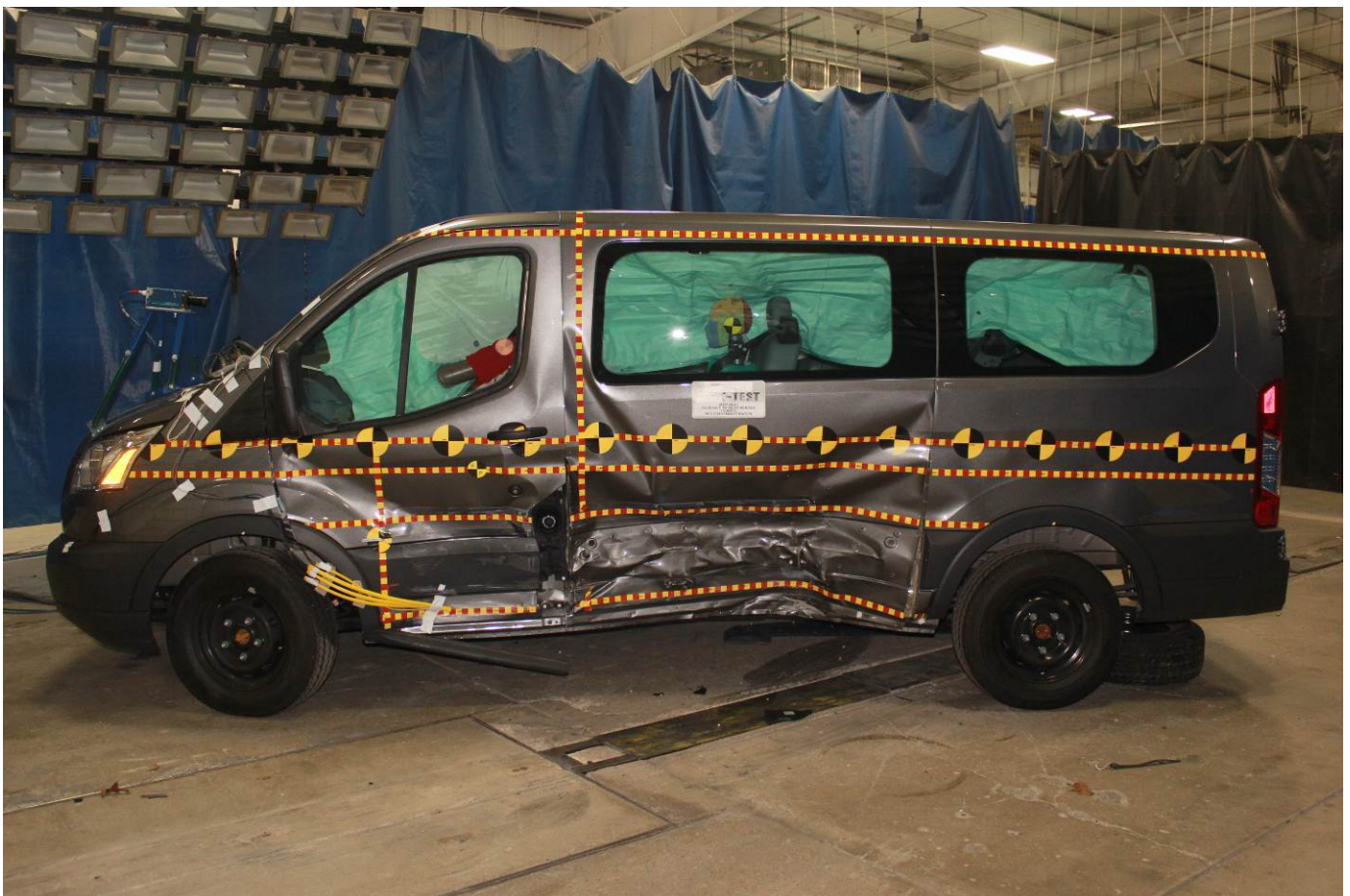
Pre-Test Left Front Three-Quarter View of Test Vehicle



Post-Test Left Front Three-Quarter View of Test Vehicle



Pre-Test Left Side View of Test Vehicle



Post-Test Left Side View of Test Vehicle



Pre-Test Left Three-Quarter Rear View of Test Vehicle



Post-Test Left Three-Quarter Rear View of Test Vehicle



Pre-Test Rear View of Test Vehicle



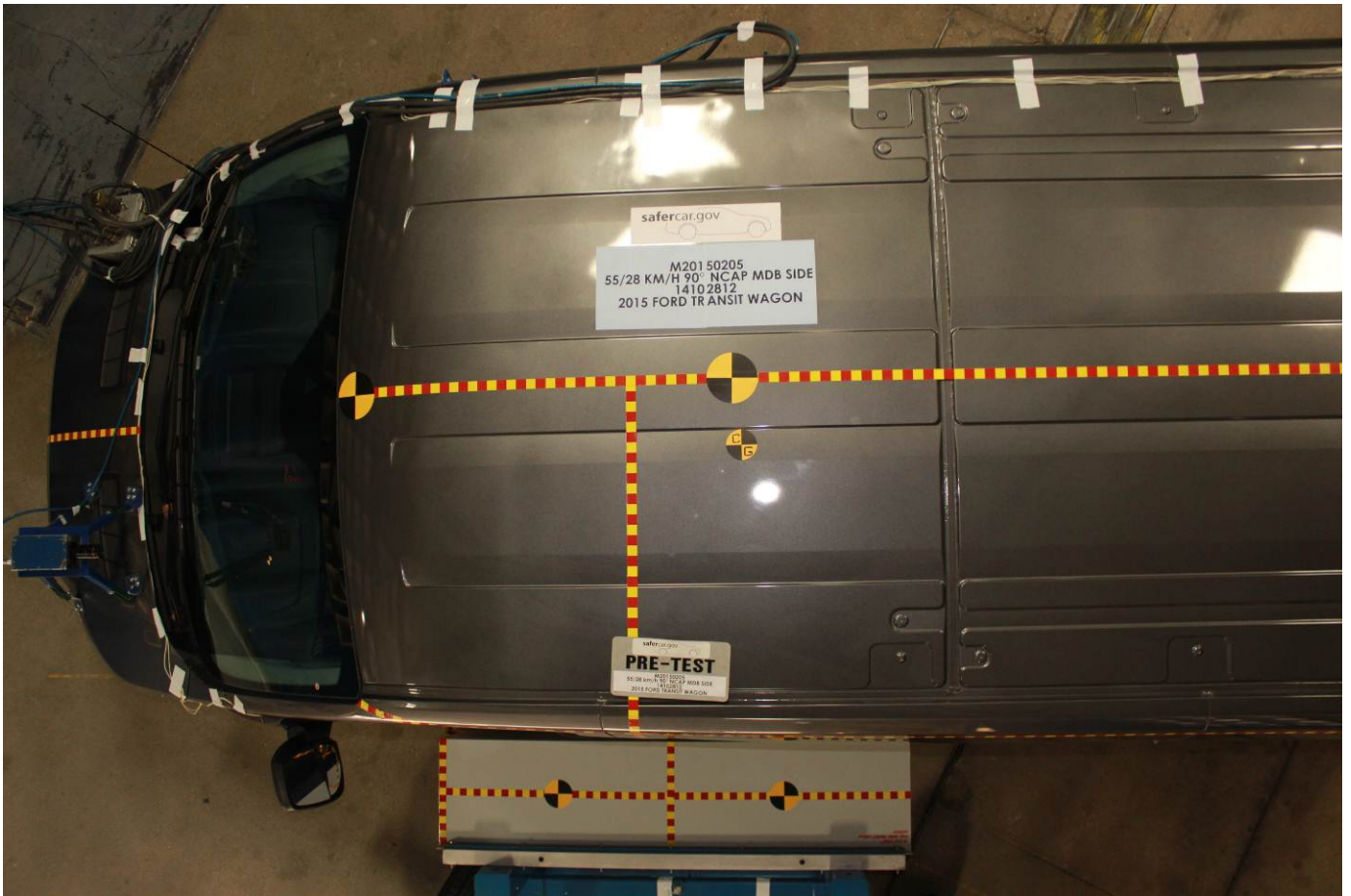
Post-Test Rear View of Test Vehicle



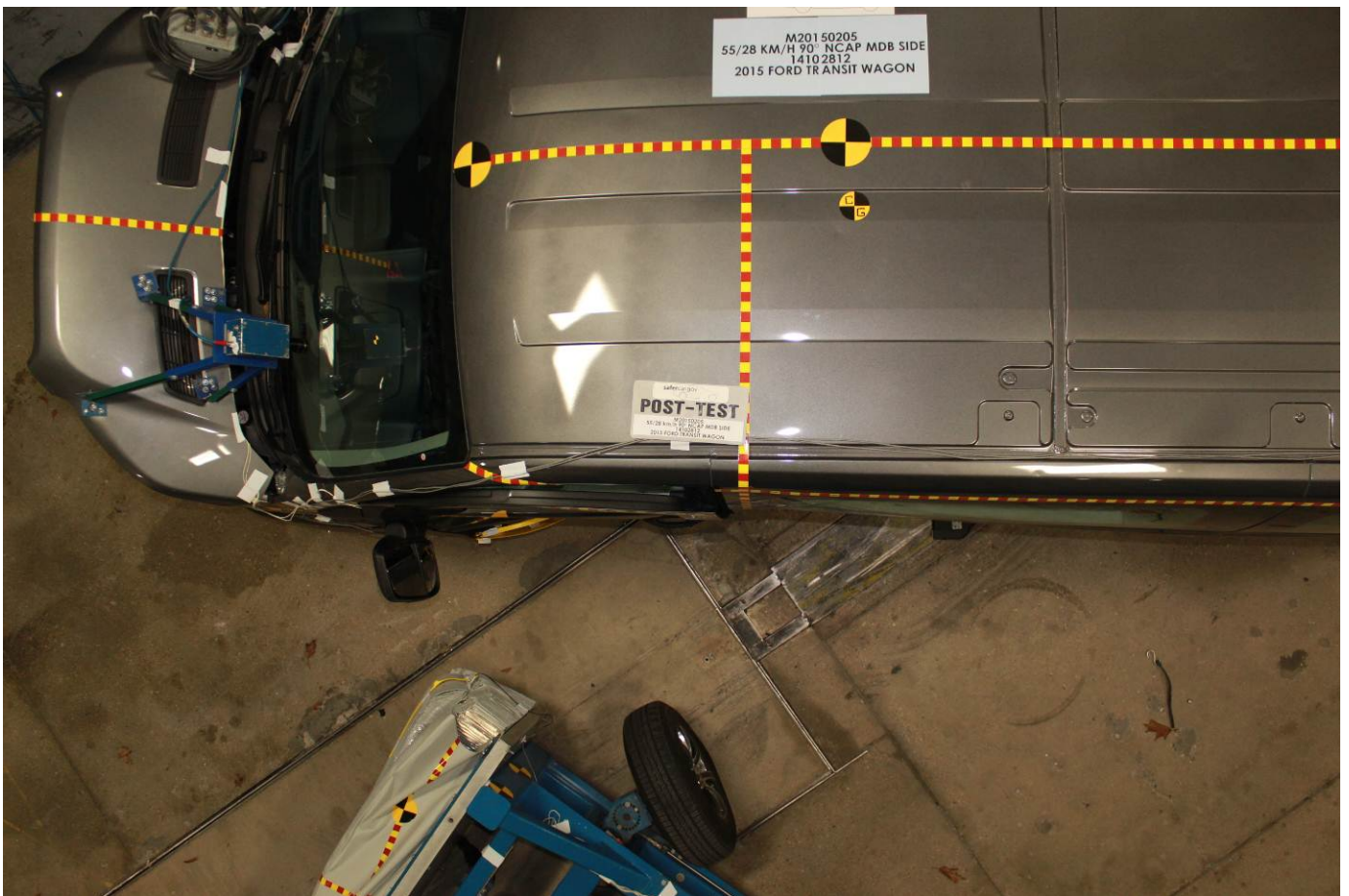
Pre-Test Right Side View of Test Vehicle



Post-Test Right Side View of Test Vehicle



Pre-Test Overhead View of Test Area



Post-Test Overhead View of Test Area



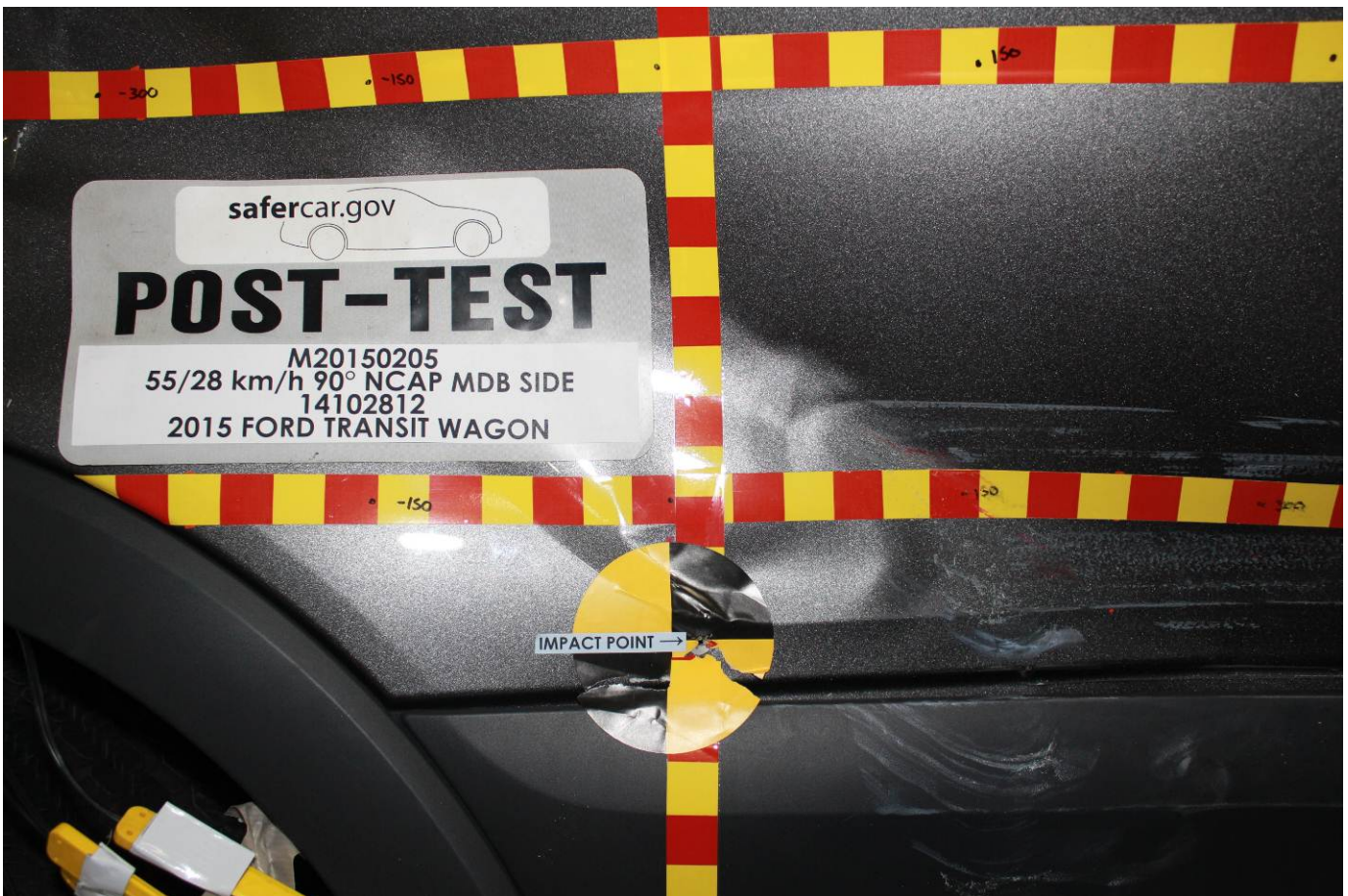
Pre-Test Left Side View of MDB Positioned Against Side of Test Vehicle



Pre-Test Right Side View of MDB Positioned Against Side of Test Vehicle



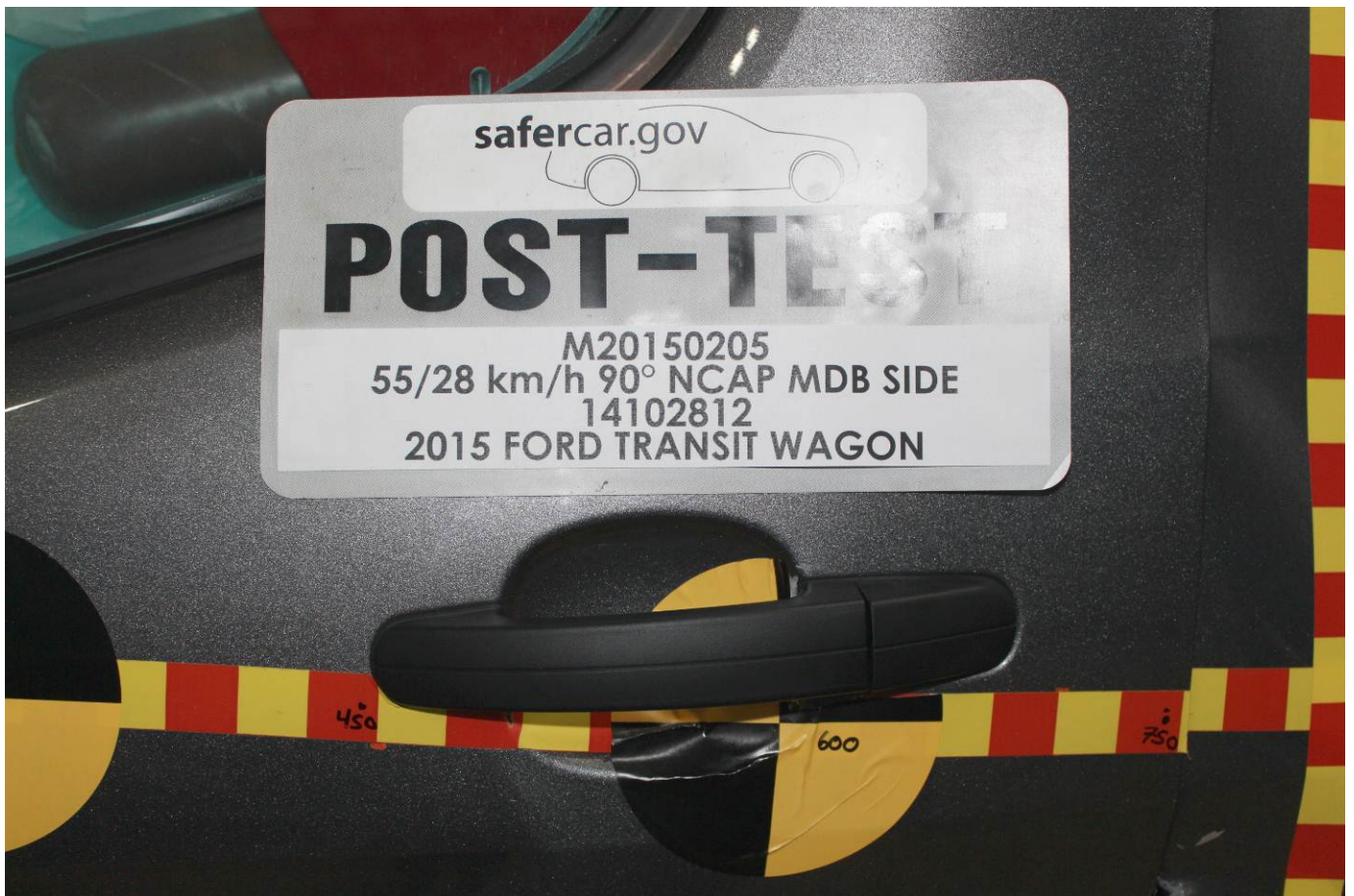
Pre-Test Close-Up View of Impact Point Target



Post-Test Close-Up View of Impact Point Target



Pre-Test Left Front Door Latch Close-Up



Post-Test Left Front Door Latch Close-Up

PHOTOGRAPH NOT APPLICABLE

Pre-Test Left Rear Door Latch Close-Up

PHOTOGRAPH NOT APPLICABLE

Post-Test Left Rear Door Latch Close-Up



Pre-Test Front Close-Up View of Driver Dummy



Post-Test Front Close-Up View of Driver Dummy



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



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



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



Pre-Test Frontal View of Driver Seat Back Prior to Dummy Positioning



Pre-Test Frontal View of Driver Dummy Head and Shoulders in Relation to Head Restraint



Pre-Test Frontal View of Driver Seat Pan Prior to Dummy Positioning



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



Pre-Test Placement of Driver Dummy's Feet



Pre-Test View of Belt Anchorage for Driver Dummy



Pre-Test Left Side View of Steering Wheel



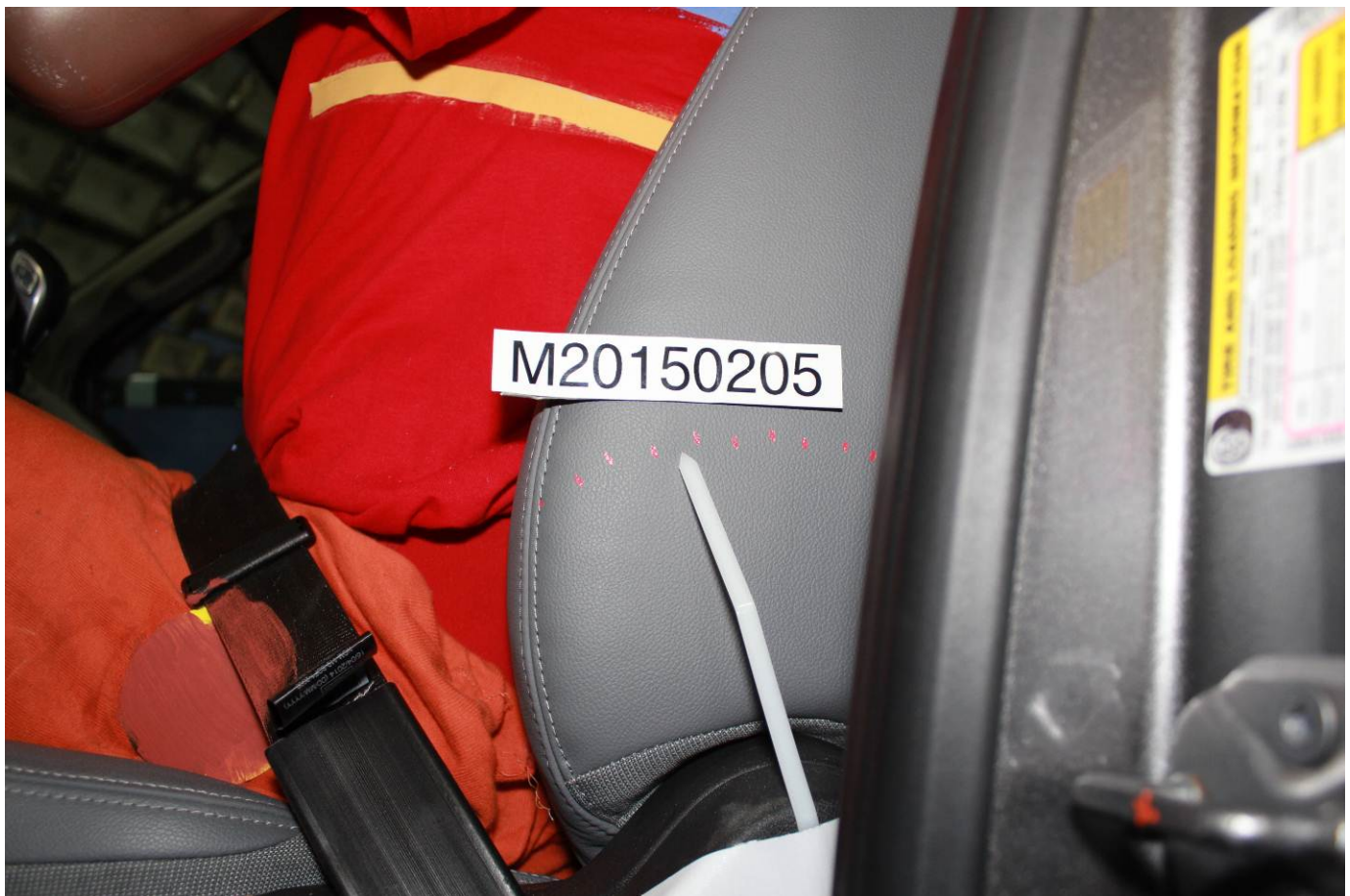
Pre-Test View of Disengaged Parking Brake



Pre-Test View of Parking Brake



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



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



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



Pre-Test Driver Dummy and Door Clearance View



Post-Test Driver Dummy and Door Clearance View



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



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



Pre-Test Driver Inner Door Panel View



Post-Test Driver Inner Door Panel View



Post-Test Driver Dummy Close-up Head Contact with Vehicle Interior View



Post-Test Driver Dummy Close-up Head Contact with Side Airbag View



Post-Test Driver Dummy Close-up Torso Contact with Vehicle Interior View



Post-Test Driver Dummy Close-up Torso Contact with Side Airbag View



Post-Test Driver Dummy Close-up Pelvis Contact with Vehicle Interior View



Post-Test Driver Dummy Close-up Pelvis Contact with Side Airbag View



Post-Test Driver Dummy Close-up Knee Contact View

PHOTOGRAPH NOT APPLICABLE

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



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



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



Pre-Test Frontal View of Rear Passenger Seat Back Prior to Dummy Positioning



Pre-Test Frontal View of Rear Passenger Dummy Head and Shoulders in Relation to Head Restraint



Pre-Test Overhead View of Rear Passenger Seat Pan Prior to Dummy Positioning



Pre-Test Overhead View of Rear Passenger Dummy Thighs on Seat Pan



Pre-Test View of Rear Passenger Dummy's Neck Showing Position of Adjustable Neck Bracket



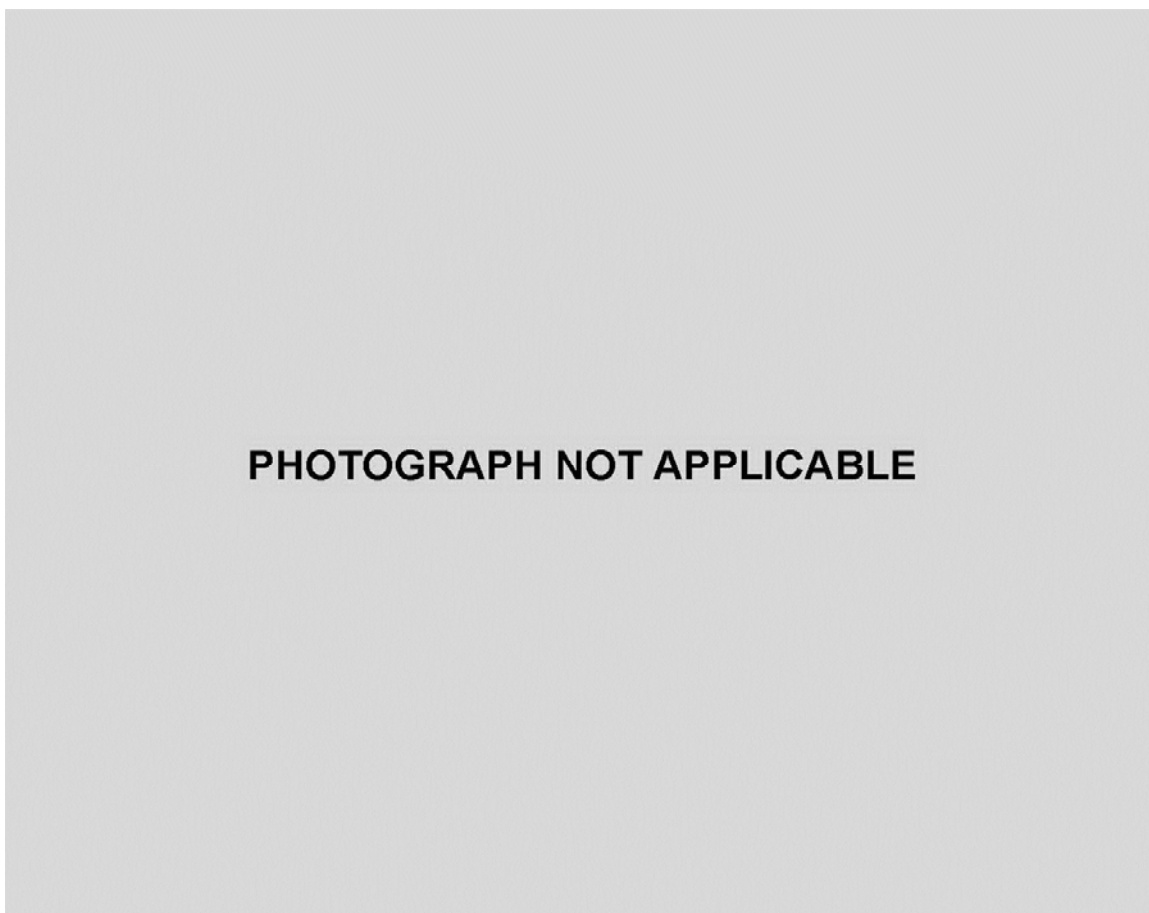
Pre-Test View of Rear Passenger Dummy's Head Showing Dummy's Head is Level



Pre-Test Placement of Rear Passenger Dummy's Feet



Pre-Test View of Belt Anchorage for Rear Passenger Dummy



Pre-Test Close-Up Left Side View of Rear Passenger Seat Track

PHOTOGRAPH NOT APPLICABLE

Pre-Test Close-Up Left Side View of Rear Passenger Seat Back



Pre-Test Close-up View of Rear Passenger Seat Back or Head Restraint



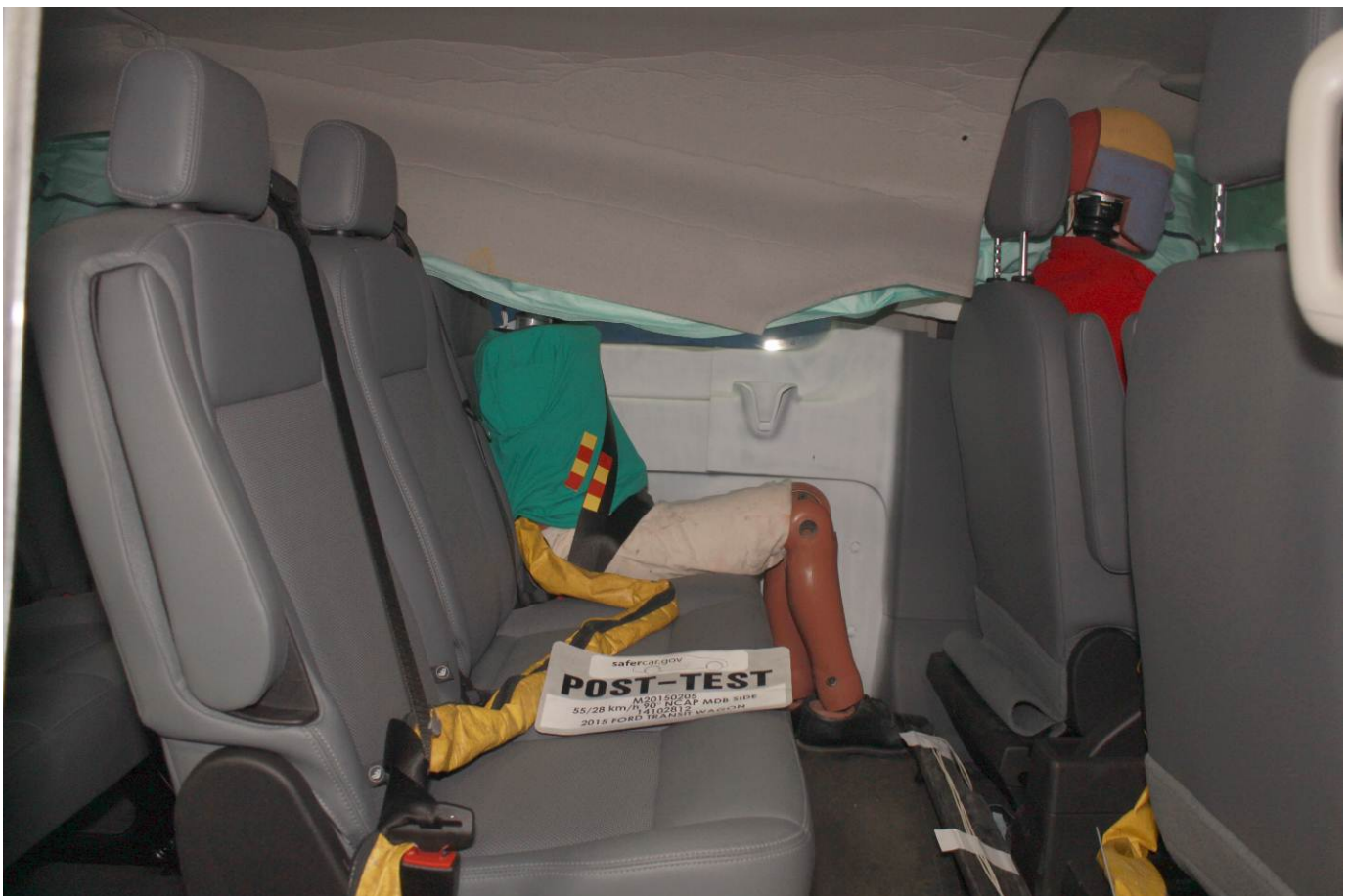
Pre-Test Rear Passenger Dummy and Door Clearance View



Post-Test Rear Passenger Dummy and Door Clearance View



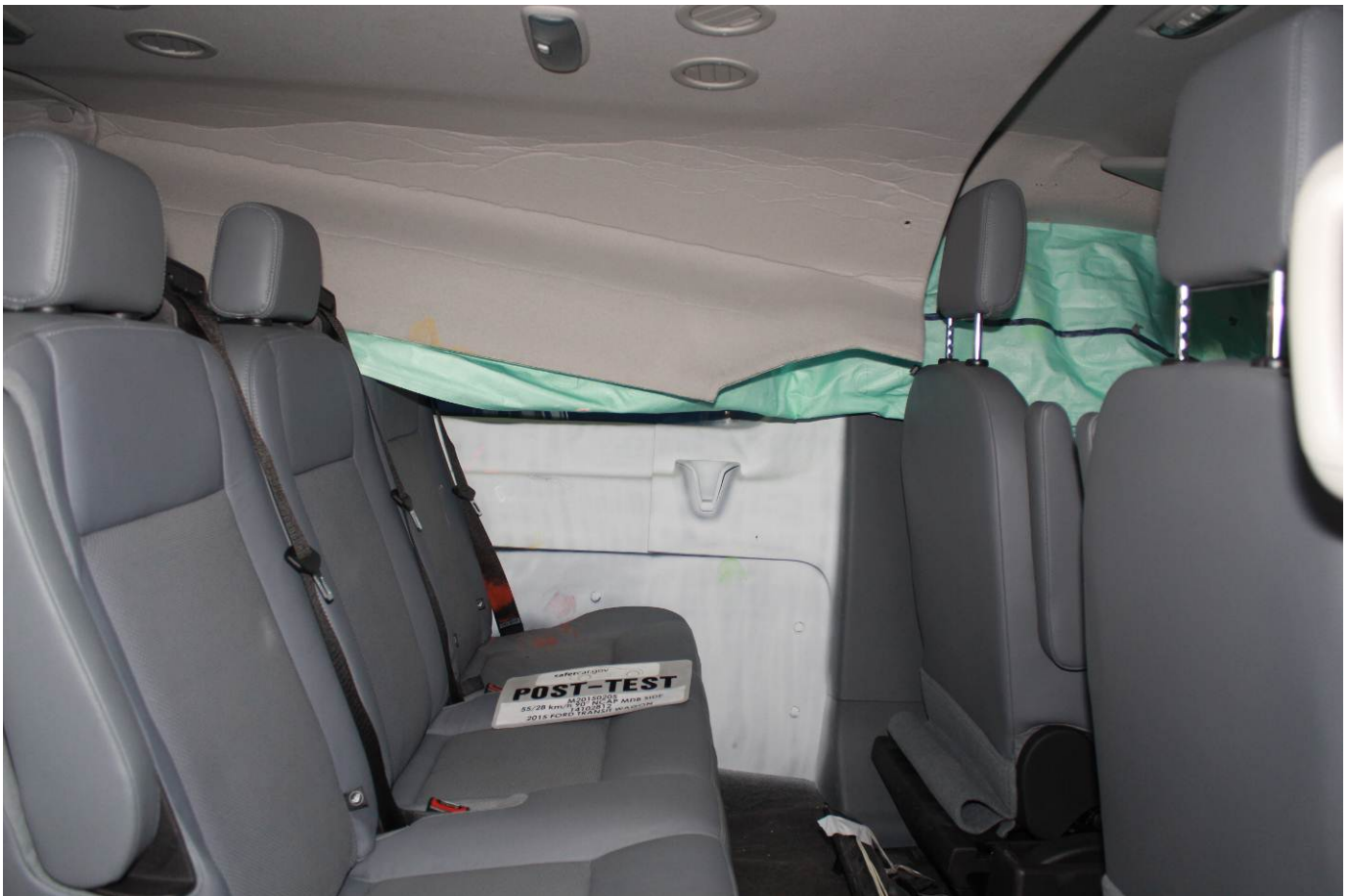
Pre-Test Right Side View of Rear Passenger Dummy and Rear Seat Occupant Compartment



Post-Test Right Side View of Rear Passenger Dummy and Rear Seat Occupant Compartment



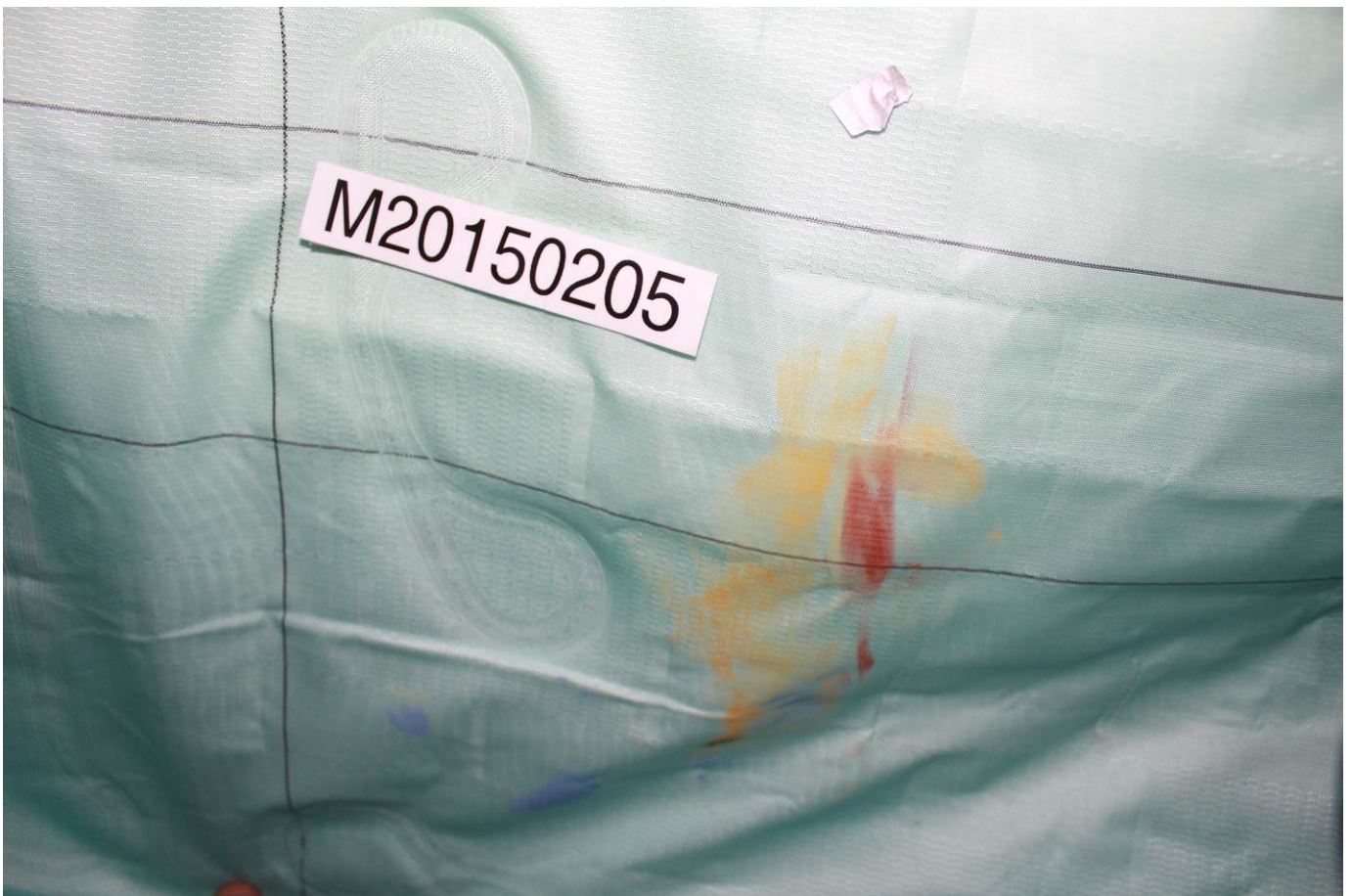
Pre-Test Rear Passenger Inner Door Panel View



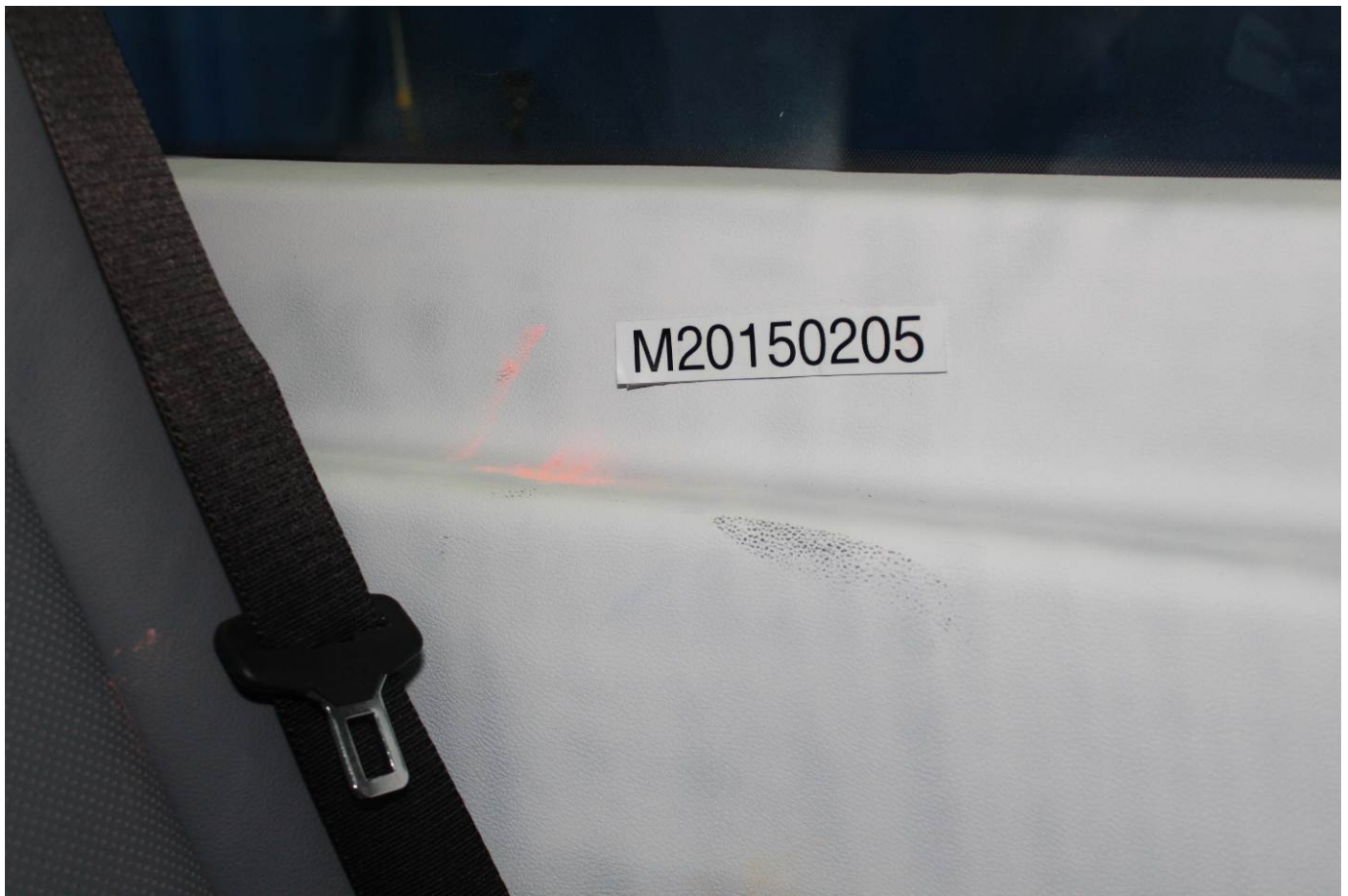
Post-Test Rear Passenger Inner Door Panel View



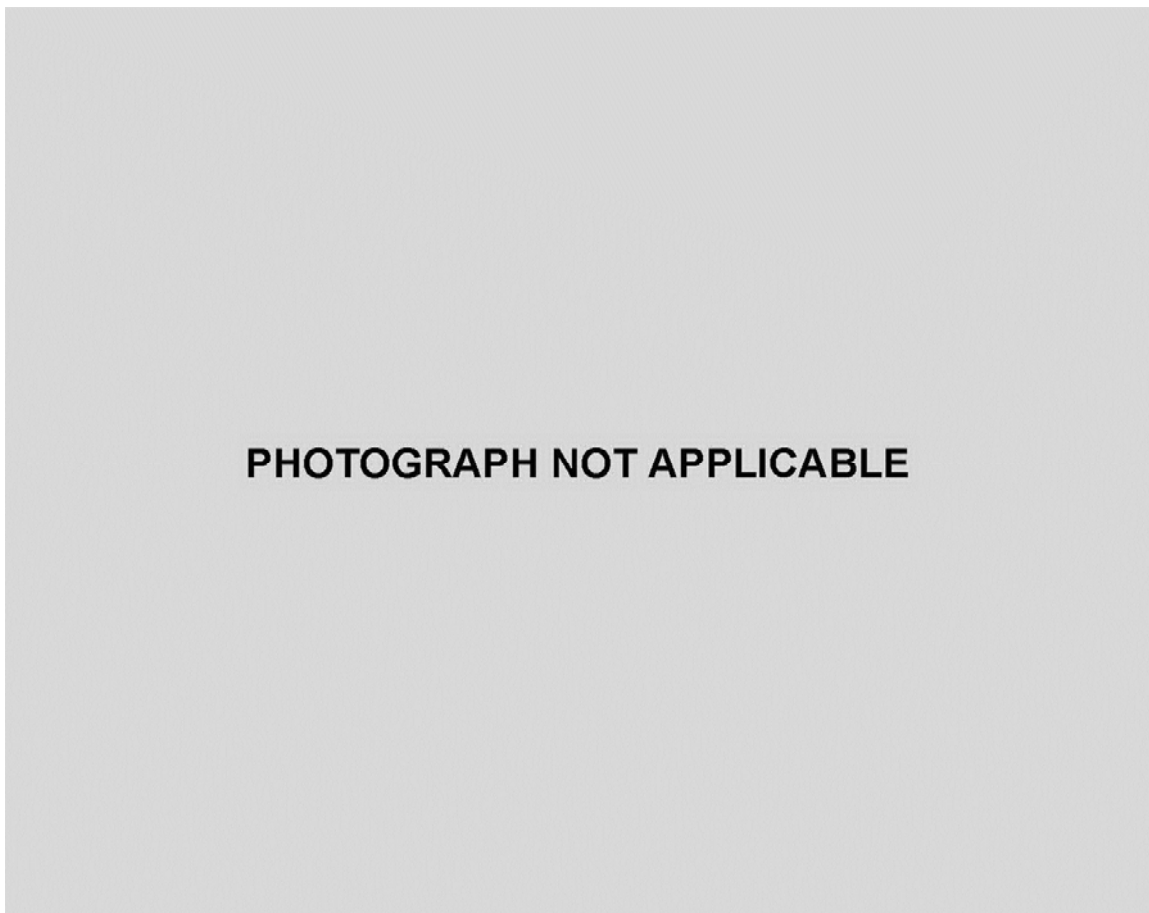
Post-Test Rear Passenger Dummy Close-up Head Contact with Vehicle Interior View



Post-Test Rear Passenger Dummy Close-up Head Contact with Side Airbag View



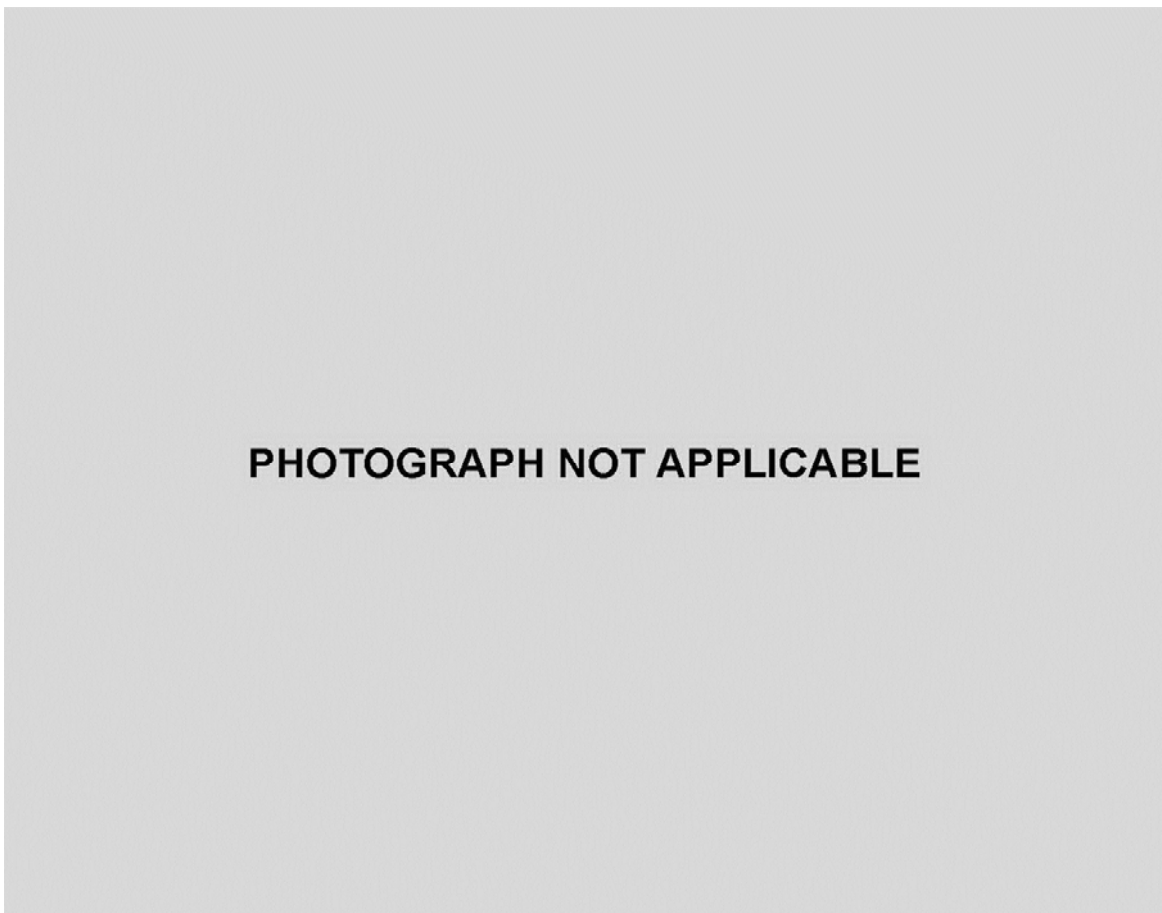
Post-Test Rear Passenger Dummy Close-up Torso Contact with Vehicle Interior View



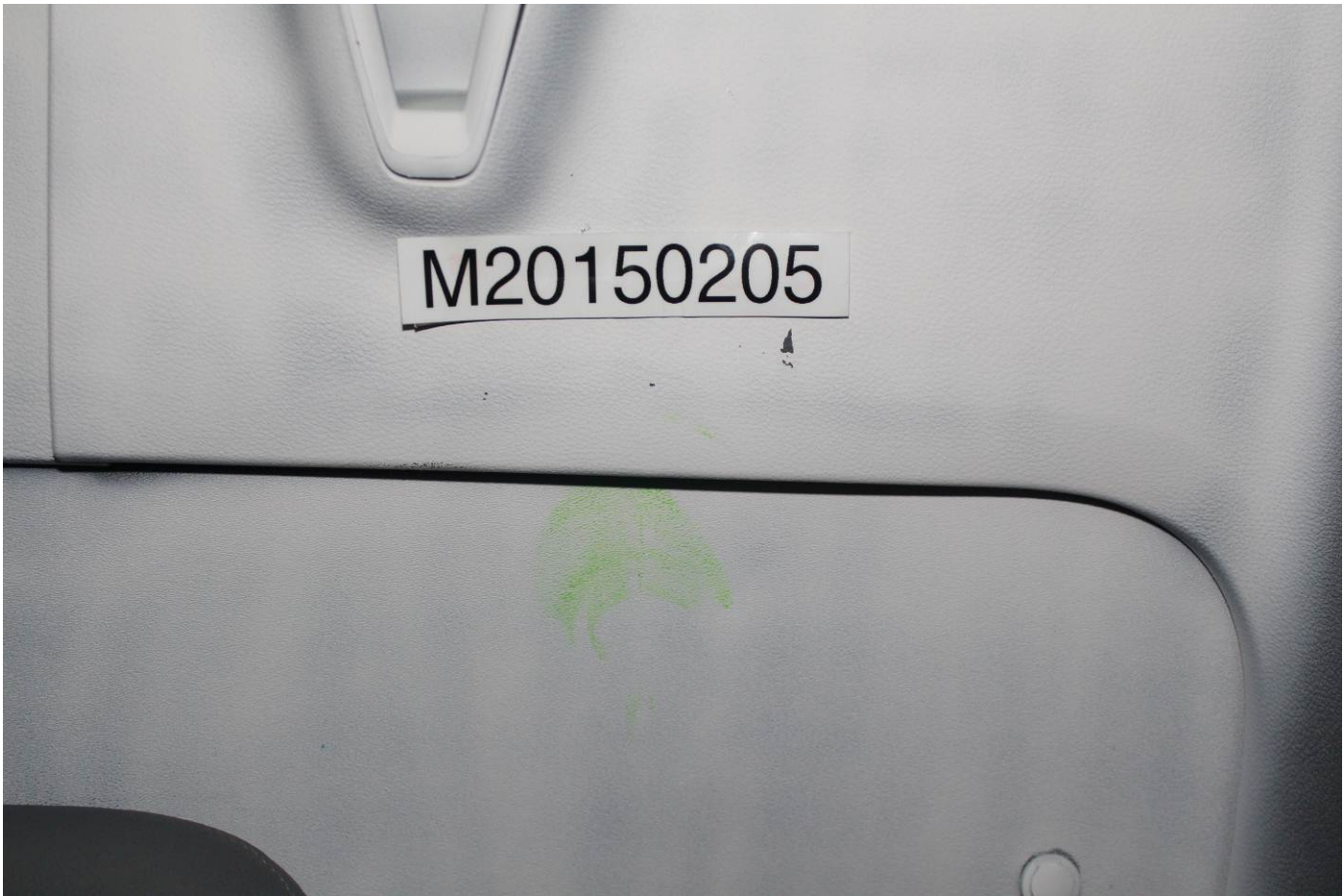
Post-Test Rear Passenger Dummy Close-up Torso Contact with Side Airbag View



Post-Test Rear Passenger Dummy Close-up Pelvis Contact with Vehicle Interior View



Post-Test Rear Passenger Dummy Close-up Pelvis Contact with Side Airbag View



Post-Test Rear Passenger Dummy Close-up Knee Contact View



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



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



Pre-Test Front View of MDB Impactor Face



Post-Test Front View of MDB Impactor Face



Pre-Test Top View of MDB Impactor Face



Post-Test Top View of MDB Impactor Face



Pre-Test Left Side View of MDB Impactor Face



Post-Test Left Side View of MDB Impactor Face



Pre-Test Right Side View of MDB Impactor Face



Post-Test Right Side View of MDB Impactor Face



Close-Up View of Vehicle's Certification Label



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



Pre-Test Ballast View



Post-Test Primary and Redundant Speed Trap Read-Out



FMVSS No. 301 Static Rollover 0 Degrees



M201 50205
55/28 KM/H 90° NCAP MDB SIDE
14102812
2015 FORD TRANSIT WAGON

FMVSS No. 301 Static Rollover 90 Degrees



M201 50205
55/28 KM/H 90° NCAP MDB SIDE
14102812
2015 FORD TRANSIT WAGON

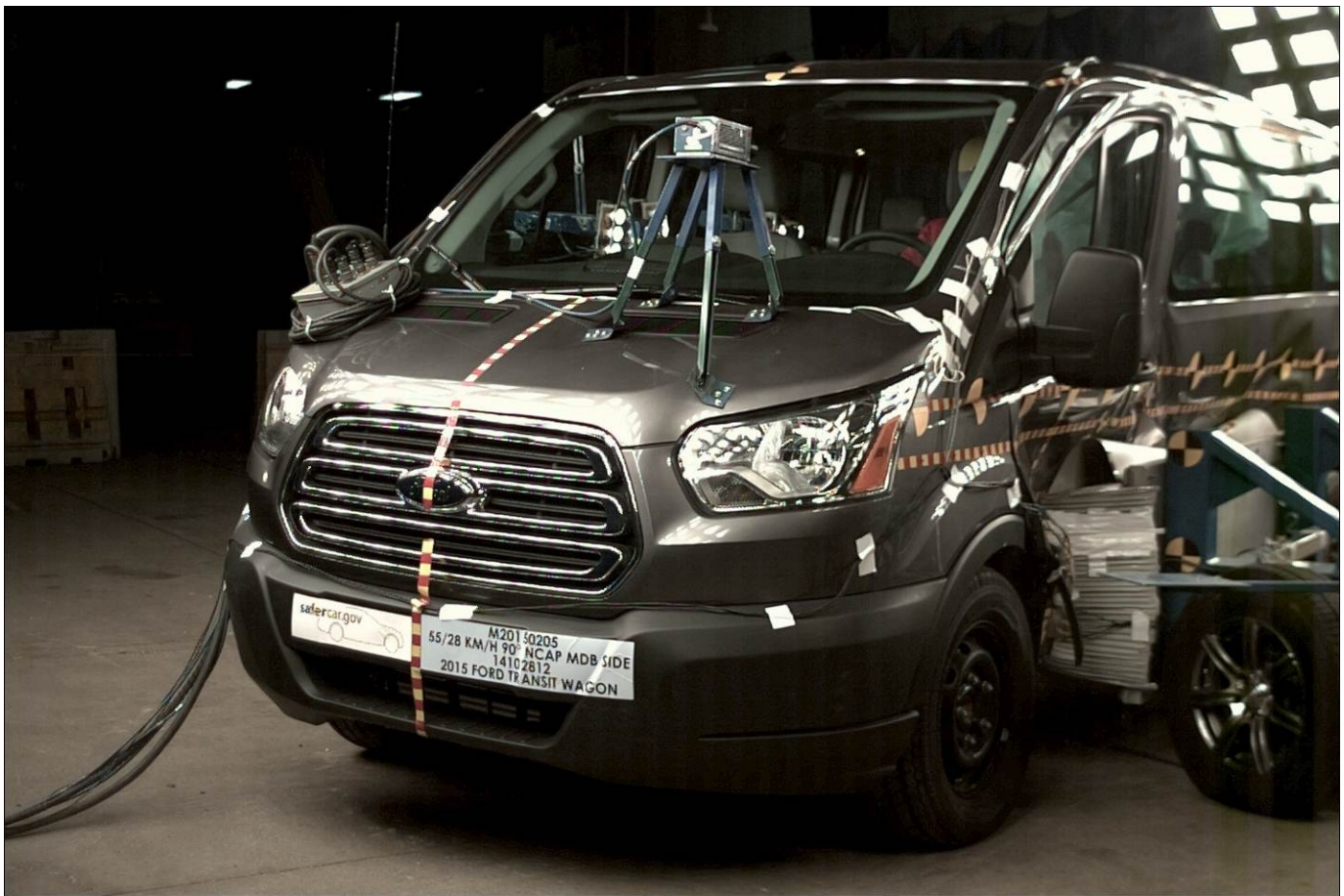
FMVSS No. 301 Static Rollover 180 Degrees



FMVSS No. 301 Static Rollover 270 Degrees



FMVSS No. 301 Static Rollover 360 Degrees



Impact Event

| | | | | | | | |
|--|--|---|--|---|--|---|--|
| <p>Go Further ford.com</p> | | VEHICLE DESCRIPTION TRANSIT 2015 TRANSIT 150 LR WAGON XLT TRIM 3.5L GTDI V6 ENGINE 6-SPD AUTO SELECT SHIFT TR | | FK A06138 EXTERIOR: STERLING GREY INTERIOR: PEWTER LEATHER | | EPA DOT Fuel Economy and Environment Gasoline Vehicle | |
| STANDARD EQUIPMENT INCLUDED AT NO EXTRA CHARGE | | EXTERIOR • SPRAY TIRE AND WHEEL • RAIN SENSING WIPERS • BUMPERS - BLACK • SINGLE SLIDING SIDE DOOR • DUAL POWER MIRRORS | | INTERIOR • CLOTH HEADLINER • CENTER CONSOLE • FLOOR COVERING - CARPETED | | FUNCTIONAL • POWER STEERING • AIR CONDITIONING • AM/FM SINGLE CD W/BLU JACK • 50.0 GALLON FUEL TANK • POWER LOCKS AND WINDOWS • ALTERNATOR 150 AMP | |
| INCLUDED ON THIS VEHICLE | | SAFETY/SECURITY • DRIVER/PASSENGER AIR BAGS • 3 POINT SAFETY BELTS • 4-WHEEL DISC BRAKES W/ABS • ADVANCETRAK W/ESC • TIRE PRESSURE MONITOR SYS • AIRBAGS - SAFETY CANOPY • SIDE AIRBAGS | | SAFETY/SECURITY • DRIVER/PASSENGER AIR BAGS • 3 POINT SAFETY BELTS • 4-WHEEL DISC BRAKES W/ABS • ADVANCETRAK W/ESC • TIRE PRESSURE MONITOR SYS • AIRBAGS - SAFETY CANOPY • SIDE AIRBAGS | | SAFETY/SECURITY • DRIVER/PASSENGER AIR BAGS • 3 POINT SAFETY BELTS • 4-WHEEL DISC BRAKES W/ABS • ADVANCETRAK W/ESC • TIRE PRESSURE MONITOR SYS • AIRBAGS - SAFETY CANOPY • SIDE AIRBAGS | |
| OPTIONAL EQUIPMENT 2015 MODEL YEAR STERLING GREY PREFERRED EQUIPMENT PKG.302A 3.5L GTDI V6 ENGINE 3.91 RATIO REGULAR AXLE X31 HEADLINER COMPLETE FRONT LICENSE PLATE BRACKET 8500W GVWR PACKAGE PEWTER LEATHER 10WAY W/GD ABAG 50 STATE EMISSIONS AM/FM STEREO SGL-CD W/SYNC FRONT FLOOR MATS TINTED GLASS | | PRICE INFORMATION BASE PRICE \$83,290.00 TOTAL OPTIONS 3,860.00 TOTAL VEHICLE & OPTIONS \$87,150.00 DESTINATION & DELIVERY \$95.00 | | Fuel Economy 16 14 19 MPG combined city/hwy city highway 6.2 gallons per 100 miles Vans range from 11 to 18 MPG. The best vehicle rates 119 MPG. | | You spend \$5,500 more in fuel costs over 5 years compared to the average new vehicle. | |
| Annual fuel cost \$3,300 | | Fuel Economy & Greenhouse Gas Rating (tailpipe only) Smog Rating (tailpipe only) | | 1 3 10 1 2 10 | | This vehicle emits 556 grams CO ₂ per mile. The best emits 0 grams per mile (tailpipe only). Producing and distributing fuel also create emissions; learn more at fueleconomy.gov | |
| fueleconomy.gov Calculate personalized estimates and compare vehicles | | GOVERNMENT 5-STAR SAFETY RATINGS | | Overall Vehicle Score Not Rated Based on the combined ratings of frontal, side and rollover. Should ONLY be compared to other vehicles of similar size and weight. | | <p>Go Further</p> | |
| Frontal Crash Driver Not Rated Passenger Not Rated | | Side Crash Front seat Not Rated Rear seat Not Rated | | Rollover Not Rated | | Star ratings range from 1 to 5 stars (★★★★★), with 5 being the highest. Source: National Highway Traffic Safety Administration (NHTSA). www.safercar.gov or 1-888-327-4236 | |
| SOLD TO Louisa-Holly Ford 2800 South Union Blvd, PO Box Davidsonville AR 72712 | | RAMP ONE CH15 | | DEALER NO. 238 189 | | TOTAL MSRP \$38,545.00 | |
| RAMP TWO | | FINAL ASSEMBLY PLANT KANSAS CITY | | YEAR # 23-5889 017 3 | | This label is affixed pursuant to the Federal Automobile Information Disclosure Act. Gasoline, Lubes, and Title Fees, State and Local taxes are not included. Dealer installed options or accessories are not included unless listed above. | |
| MSRP THROUGH | | METHOD OF TRANSIT CONVOY | | DATE 2014 07 16 14 | | <p>1FMZK1YGDFKA06138</p> | |
| Extended Service Plan | | FORD CREDIT | | Ford ESP is the only extended service plan honored at every Ford dealership in the U.S. and Canada. See your dealer for additional details or visit www.FordOwner.com for more information. | | Choose the vehicle you want. Whether you decide to lease or finance, you'll find the choices that are right for you. See your Ford Dealer for details or visit www.FordCredit.com. | |

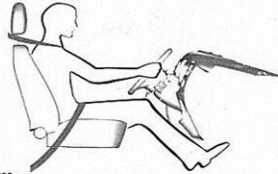
Monroney Label

Seats

SITTING IN THE CORRECT POSITION

WARNINGS

- ⚠ Do not recline the seat backrest too far as this can cause the occupant to slide under the safety belt, resulting in serious injury in the event of a crash.
- ⚠ Sitting improperly, out of position or with the seat backrest reclined too far, can result in serious injury or death in the event of a crash. Always sit upright against your seat backrest, with your feet on the floor.
- ⚠ Do not place objects higher than the seat backrest to reduce the risk of serious injury in the event of a crash or during heavy braking.



E66595

When you use them properly, the seat, head restraint, safety belt and airbags will provide optimum protection in the event of a crash.

We recommend that you follow these guidelines:

- Sit in an upright position with the base of your spine as far back as possible.
- Do not recline the seat backrest more than 30 degrees.

- Adjust the head restraint so that the top of it is level with the top of your head and as far forward as possible. Make sure that you remain comfortable.
 - Keep sufficient distance between yourself and the steering wheel. We recommend a minimum of 10 inches (25 centimeters) between your breastbone and the airbag cover.
 - Hold the steering wheel with your arms slightly bent.
 - Bend your legs slightly so that you can press the pedals fully.
 - Position the shoulder strap of the safety belt over the center of your shoulder and position the lap strap tightly across your hips.
- Make sure that your driving position is comfortable and that you can maintain full control of your vehicle.

HEAD RESTRAINTS

WARNING

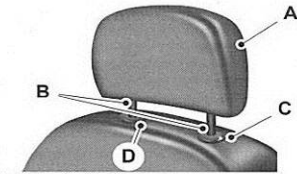
- ⚠ The adjustable head restraint is a safety device. Whenever possible it should be installed and correctly adjusted when the seat is occupied. An incorrectly adjusted head restraint may provide reduced protection to an occupant during certain rear impacts.

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

Seats

The head restraint consists of:



E138642

- A Energy absorbing head restraint.
- B Steel stems.
- C Guide sleeve adjust and unlock button.
- D Guide sleeve unlock and remove button.

Adjusting the Head Restraint

WARNINGS

- ⚠ Adjust the head restraints for all passengers before you drive your vehicle. This will help minimize the risk of neck injury in the event of a crash. Do not adjust the head restraints when your vehicle is moving.
- ⚠ Do not adjust the head restraints when your vehicle is moving.

Adjust the head restraint so that the top of it is level with the top of your head.

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

Raising the Head Restraint

Lift the head restraint up.

Lowering the Head Restraint

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

Removing the Head Restraint

WARNING

- ⚠ Do not remove the head restraint from an occupied seat.
1. Lift the head restraint up until it reaches its highest position.
 2. Press and hold buttons C and D.
 3. Remove the head restraint.

Installing the Head Restraint

WARNING

- ⚠ Install head restraints correctly to help minimize the risk of neck injury in the event of a crash.
1. Align the steel stems into the guide sleeves and push the head restraint down until in locks.
 2. Adjust the head restraint.

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

APPENDIX B
DUMMY RESPONSE DATA PLOTS

TABLE OF DATA PLOTS
Driver Dummy Instrumentation Plots

| <u>No.</u> | <u>Description</u> | <u>Page No.</u> |
|-------------------|---|------------------------|
| Figure No. 1. | Driver Head Acceleration (X) Primary vs. Time | B-1 |
| Figure No. 2. | Driver Head Acceleration (Y) Primary vs. Time | B-1 |
| Figure No. 3. | Driver Head Acceleration (Z) Primary vs. Time | B-1 |
| Figure No. 4. | Driver Head Resultant Acceleration Primary vs. Time | B-1 |
| Figure No. 5. | Driver Upper Thorax Rib Deflection (Y) vs. Time | B-2 |
| Figure No. 6. | Driver Middle Thorax Rib Deflection (Y) vs. Time | B-2 |
| Figure No. 7. | Driver Lower Thorax Rib Deflection (Y) vs. Time | B-2 |
| Figure No. 8. | Driver Thorax Rib Deflection Maximum vs. Time | B-2 |
| Figure No. 9. | Driver Anterior Abdomen Force (Y) vs. Time | B-3 |
| Figure No. 10. | Driver Middle Abdomen Force (Y) vs. Time | B-3 |
| Figure No. 11. | Driver Posterior Abdomen Force (Y) vs. Time | B-3 |
| Figure No. 12. | Driver Total Abdominal Force (Y) vs. Time | B-3 |
| Figure No. 13. | Driver Pubic Symphysis Force (Y) vs. Time | B-4 |
| Figure No. 14. | Passenger Head Acceleration (X) Primary vs. Time | B-5 |
| Figure No. 15. | Passenger Head Acceleration (Y) Primary vs. Time | B-5 |
| Figure No. 16. | Passenger Head Acceleration (Z) Primary vs. Time | B-5 |
| Figure No. 17. | Passenger Head Resultant Acceleration Primary vs. Time | B-5 |
| Figure No. 18. | Passenger Lower Spine T12 Acceleration (X) vs. Time | B-6 |
| Figure No. 19. | Passenger Lower Spine T12 Acceleration (Y) vs. Time | B-6 |
| Figure No. 20. | Passenger Lower Spine T12 Acceleration (Z) vs. Time | B-6 |
| Figure No. 21. | Passenger Lower Spine T12 Resultant Acceleration vs. Time | B-6 |
| Figure No. 22. | Passenger Iliac Force on Impact Side (Y) vs. Time | B-7 |
| Figure No. 23. | Passenger Acetabulum Force on Impact Side (Y) vs. Time | B-7 |
| Figure No. 24. | Passenger Total Pelvic Force on Impact Side (Y) vs. Time | B-7 |

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

Additional Driver & Passenger Dummy Instrumentation Data

Driver Lower Spine T12 Acceleration (X)

Driver Lower Spine T12 Acceleration (Y)

Driver Lower Spine T12 Acceleration (Z)

Passenger Upper Thorax Rib Deflection (Y)

Passenger Middle Thorax Rib Deflection (Y)

Passenger Lower Thorax Rib Deflection (Y)

Passenger Upper Abdomen Rib Deflection (Y)

Passenger Lower Abdomen Rib Deflection (Y)

Driver Head Acceleration Redundant (X)

Driver Head Acceleration Redundant (Y)

Driver Head Acceleration Redundant (Z)

Passenger Head Acceleration Redundant (X)

Passenger Head Acceleration Redundant (Y)

Passenger Head Acceleration Redundant (Z)

Vehicle Instrumentation Data

Vehicle Center of Gravity Acceleration (X)
Vehicle Center of Gravity Acceleration (Y)
Vehicle Center of Gravity Acceleration (Z)
Right Side Sill at Front Seat Acceleration (X)
Right Side Sill at Front Seat Acceleration (Y)
Right Side Sill at Front Seat Acceleration (Z)
Right Side Sill at Rear Seat Acceleration (X)
Right Side Sill at Rear Seat Acceleration (Y)
Right Side Sill at Rear Seat Acceleration (Z)
Left Side Sill at Front Seat Acceleration (Y)
Left Side Sill at Rear Seat Acceleration (Y)
Lower A-Post Acceleration (Y)
Middle A-Post Acceleration (Y)
Lower B-Post Acceleration (Y)
Middle B-Post Acceleration (Y)
Front Seat Track Acceleration (Y)
Rear Seat Track Acceleration (Y)
Right Rear Occupant Compartment Acceleration (Y)
Engine Block (X)
Engine Block (Y)
Rear Floorpan Above Axle Acceleration (X)
Rear Floorpan Above Axle Acceleration (Y)
Rear Floorpan Above Axle Acceleration (Z)

MDB Instrumentation Data

MDB Center of Gravity Acceleration (X)

MDB Center of Gravity Acceleration (Y)

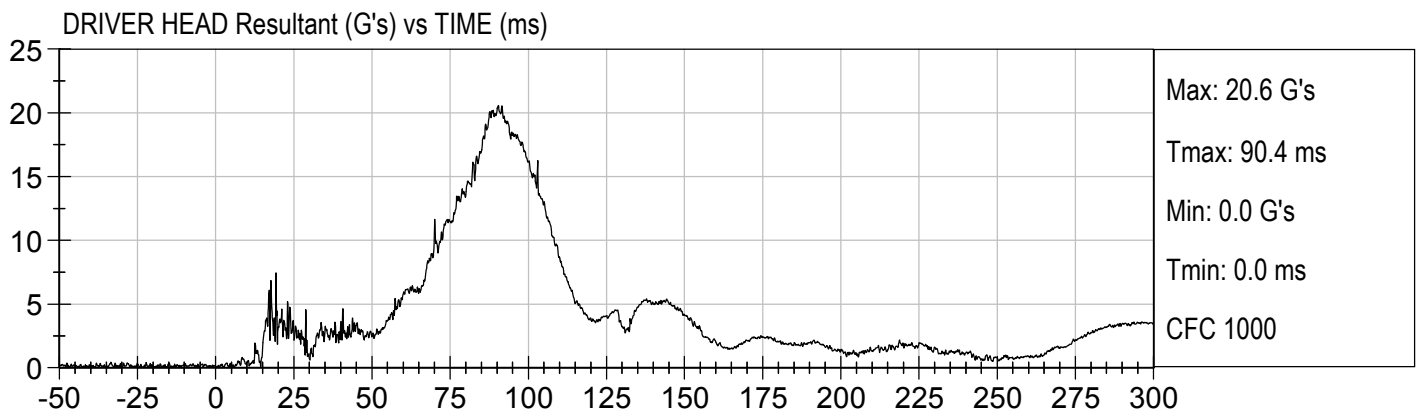
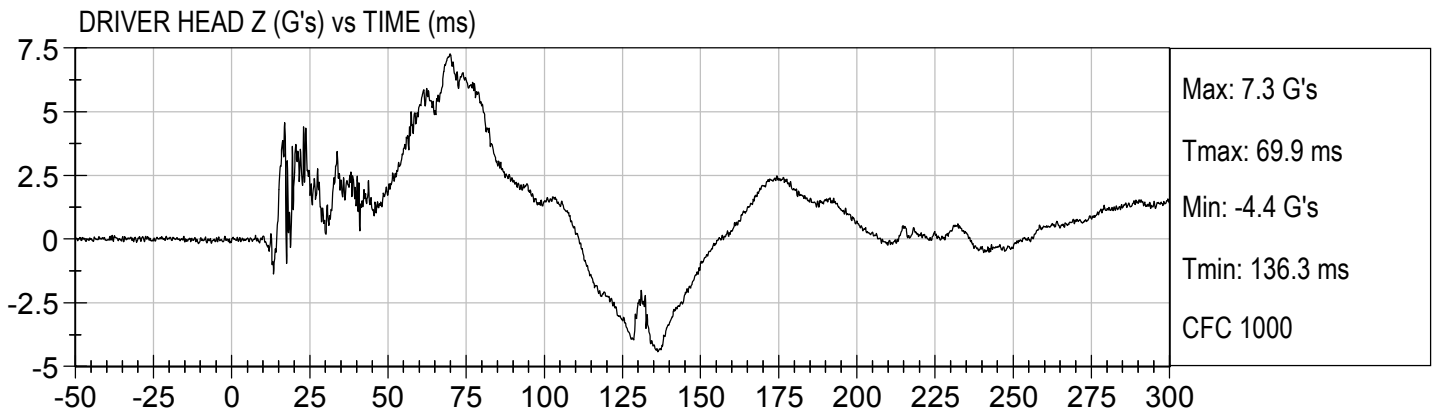
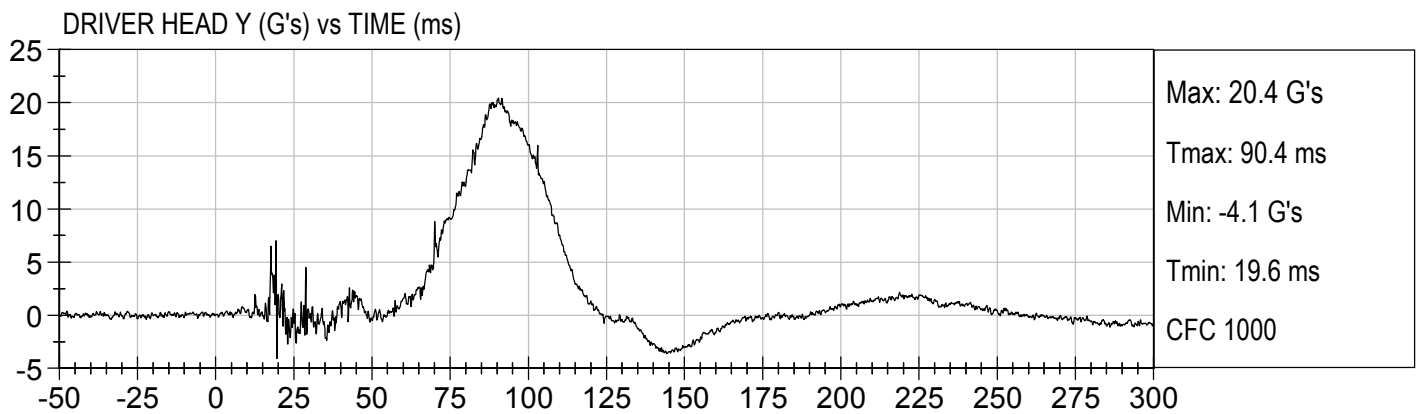
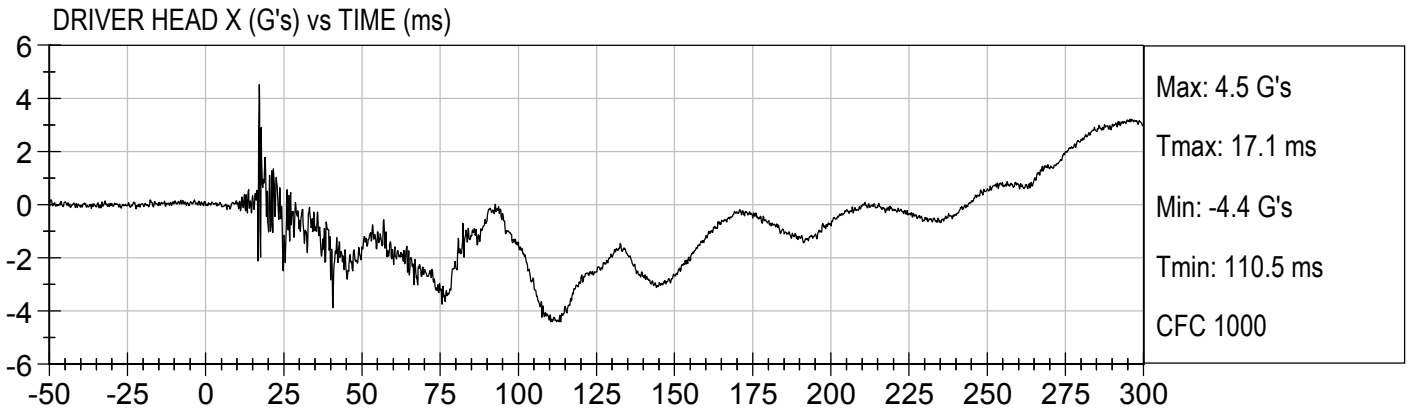
MDB Center of Gravity Acceleration (Z)

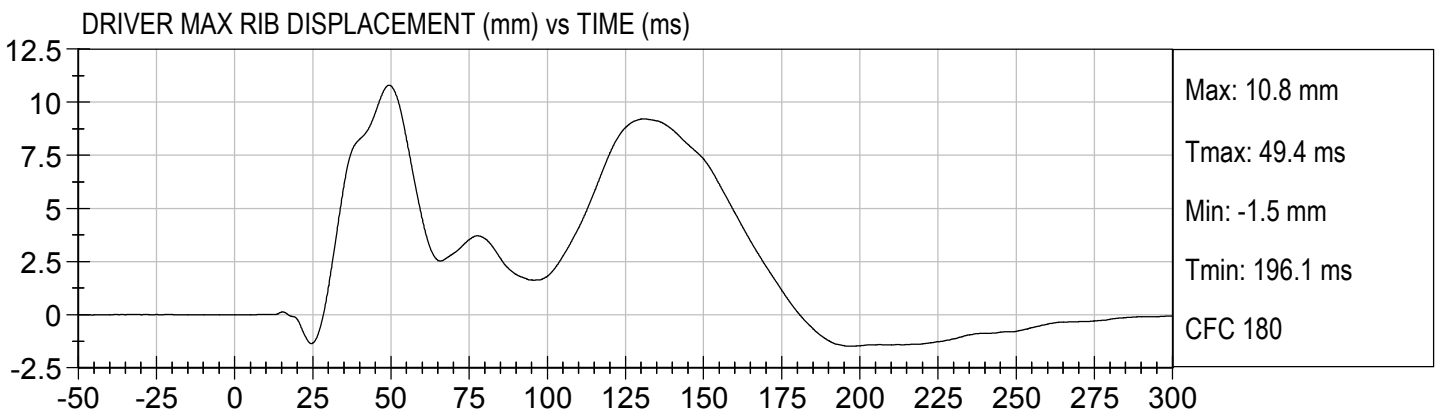
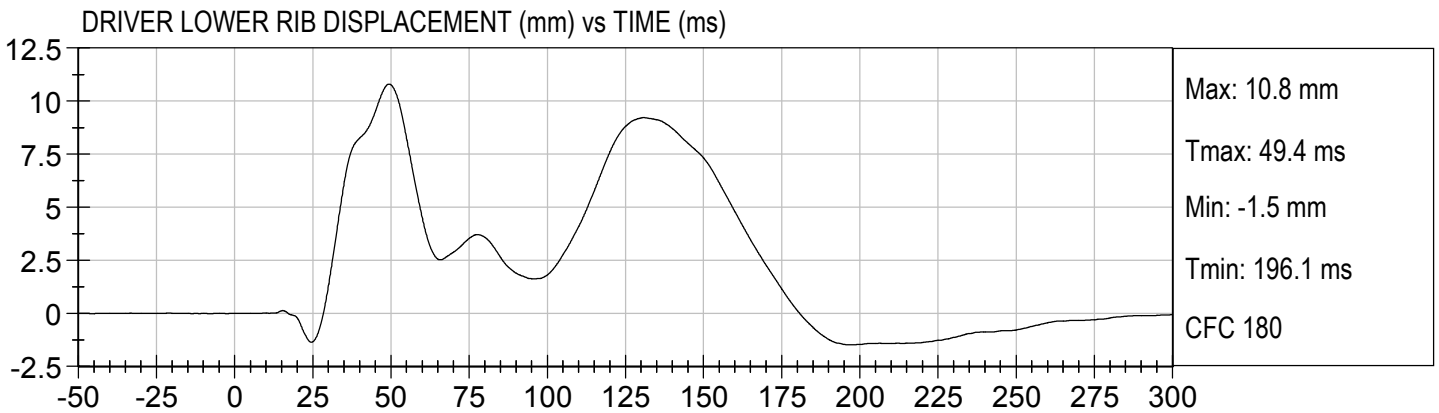
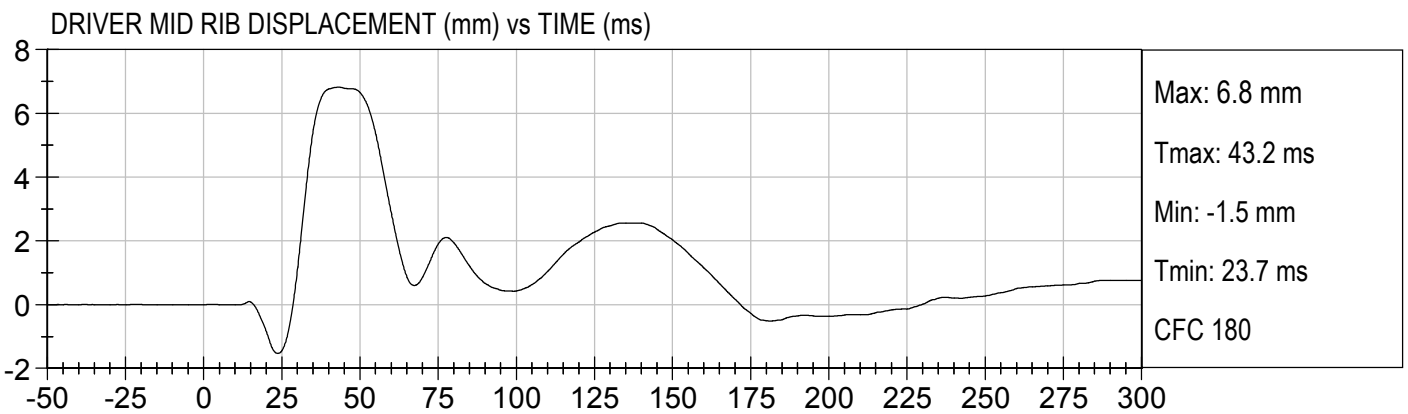
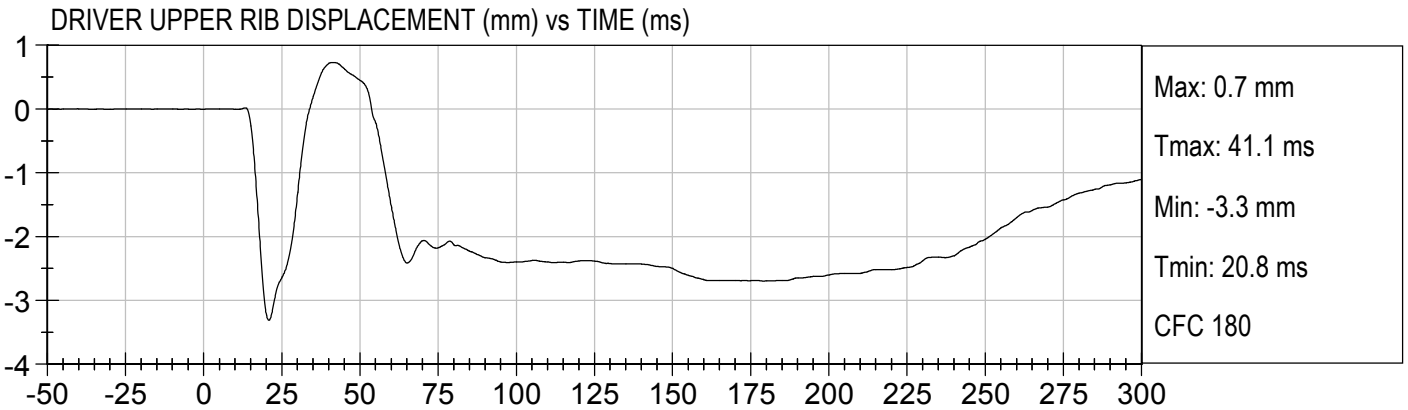
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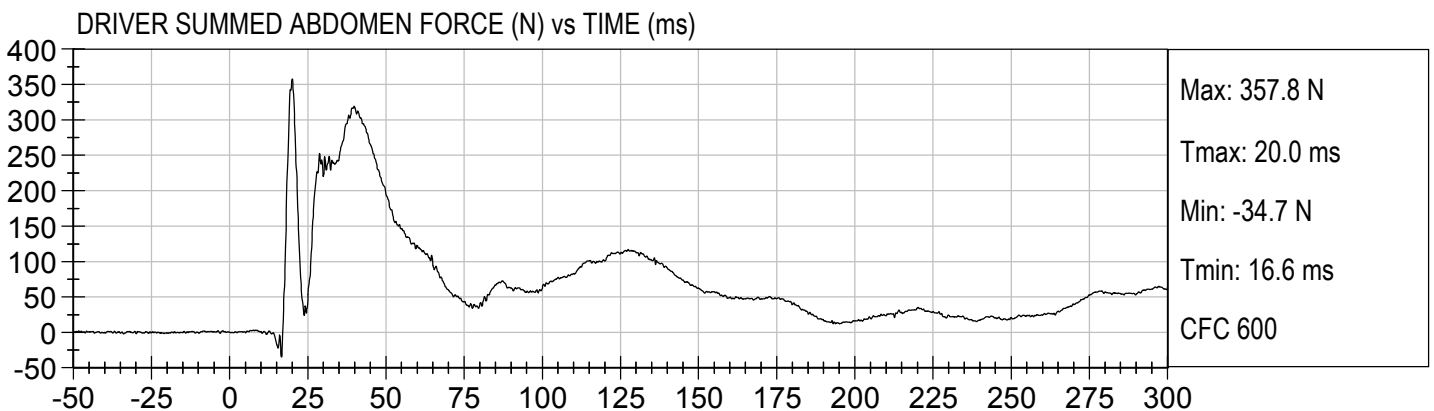
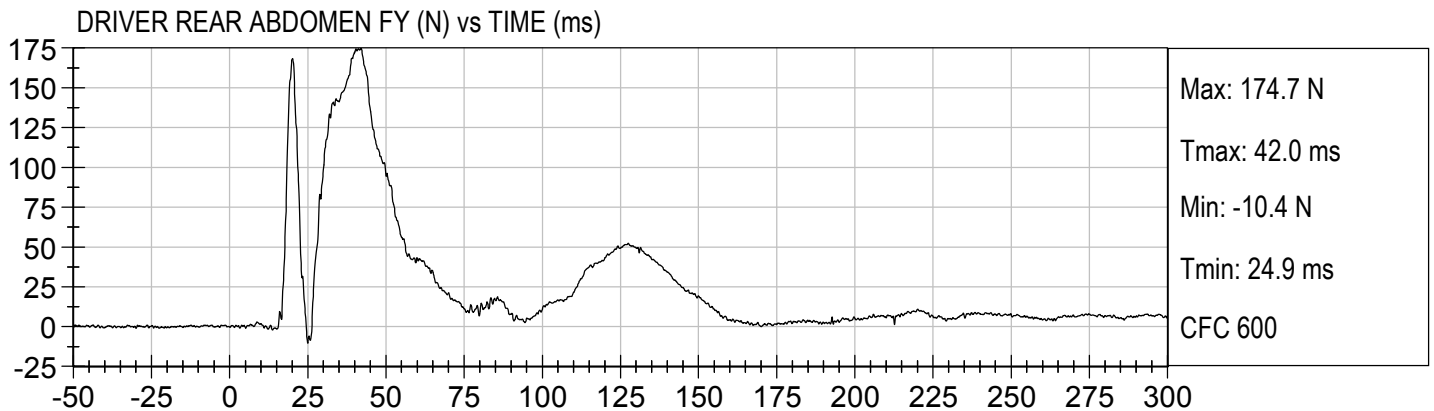
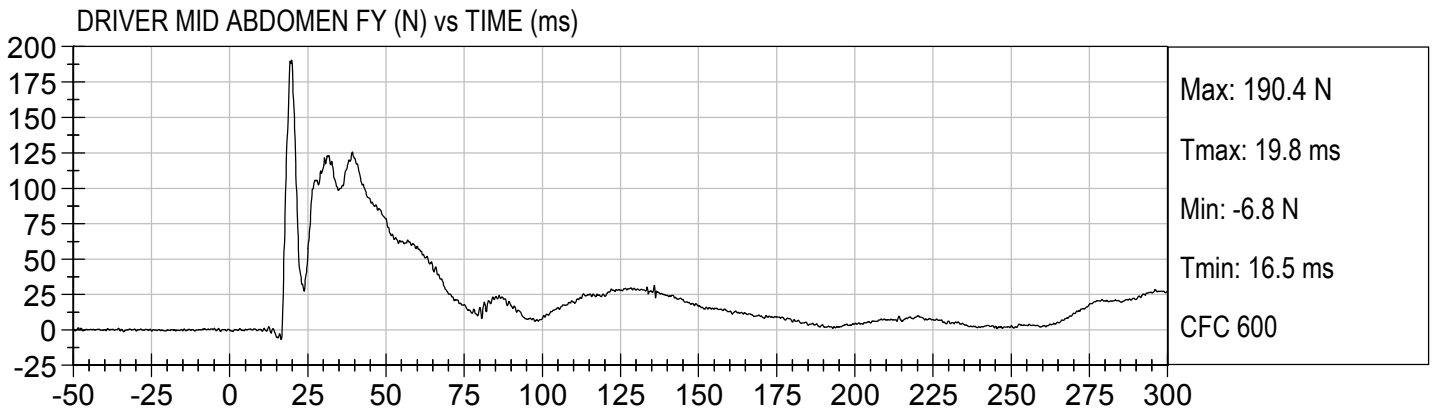
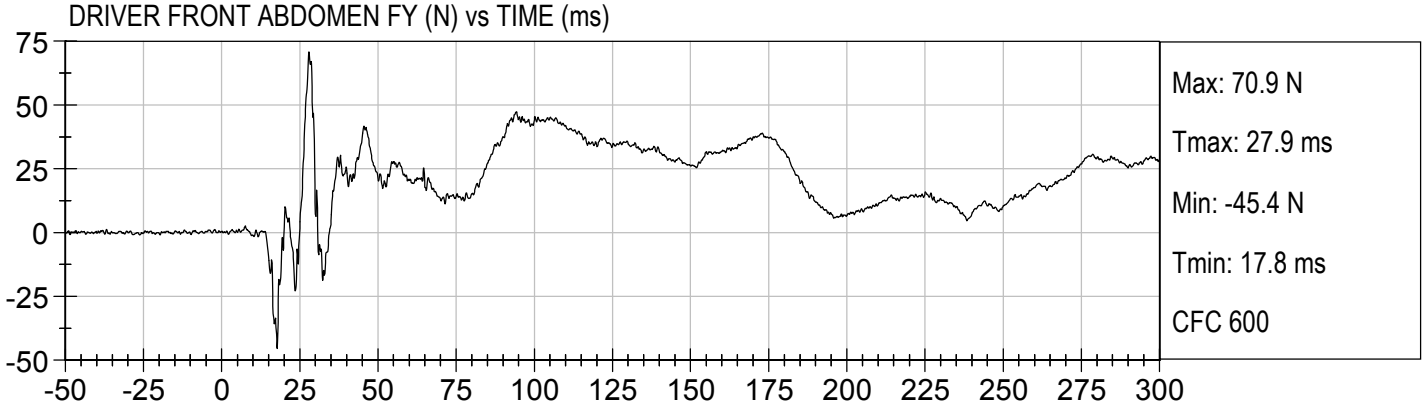
MDB Rear Acceleration (Y)

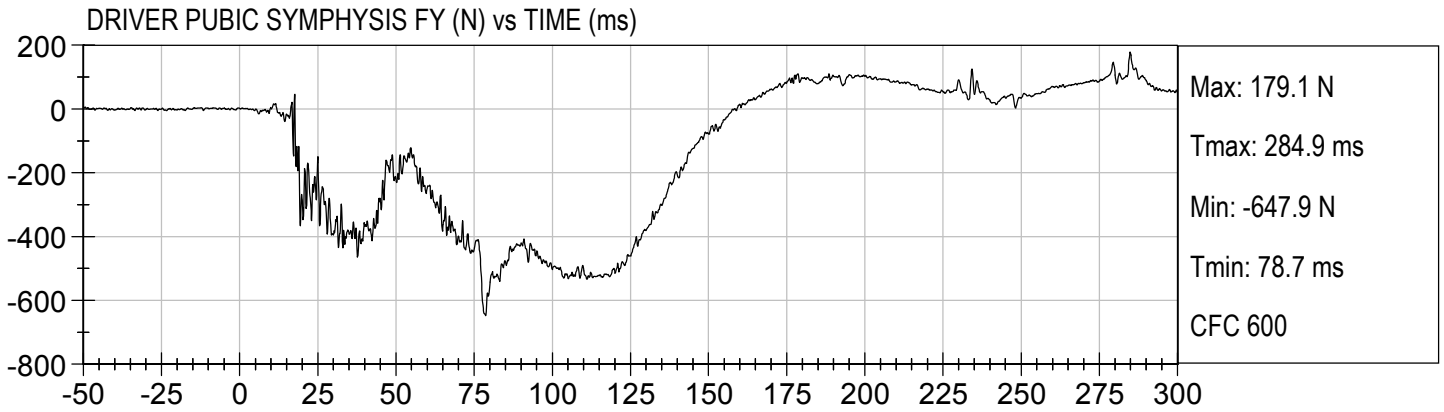
Left MDB Contact Switch

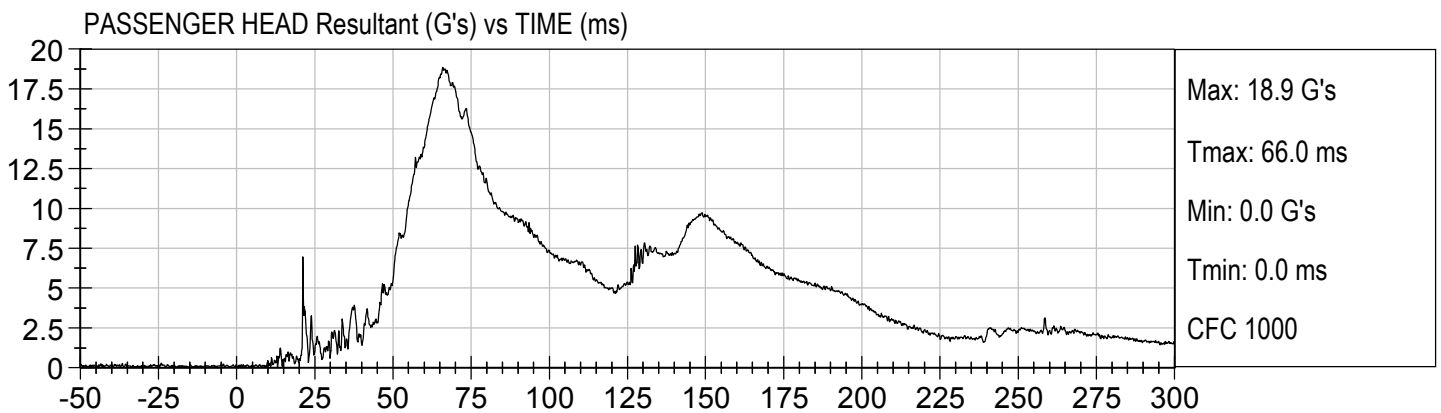
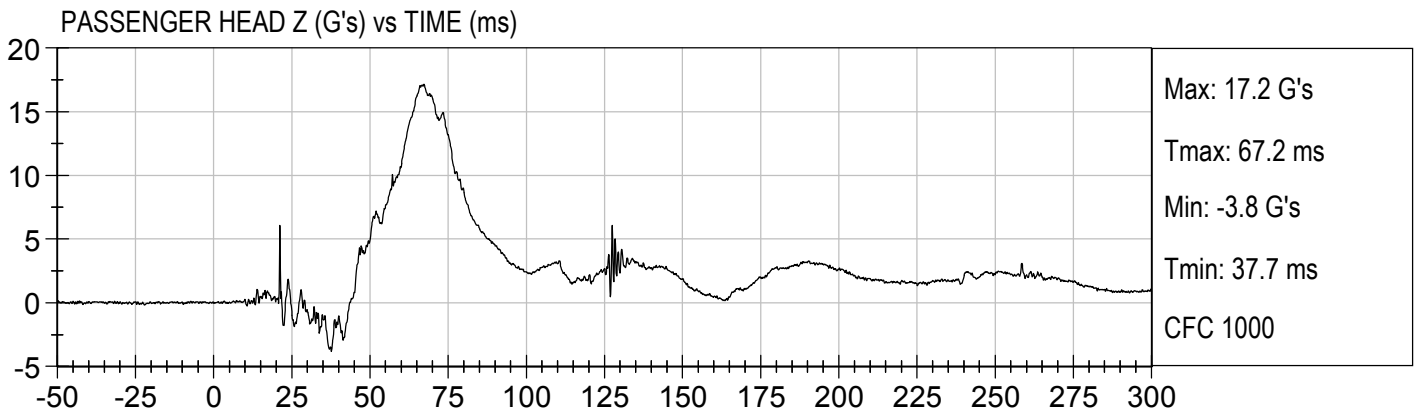
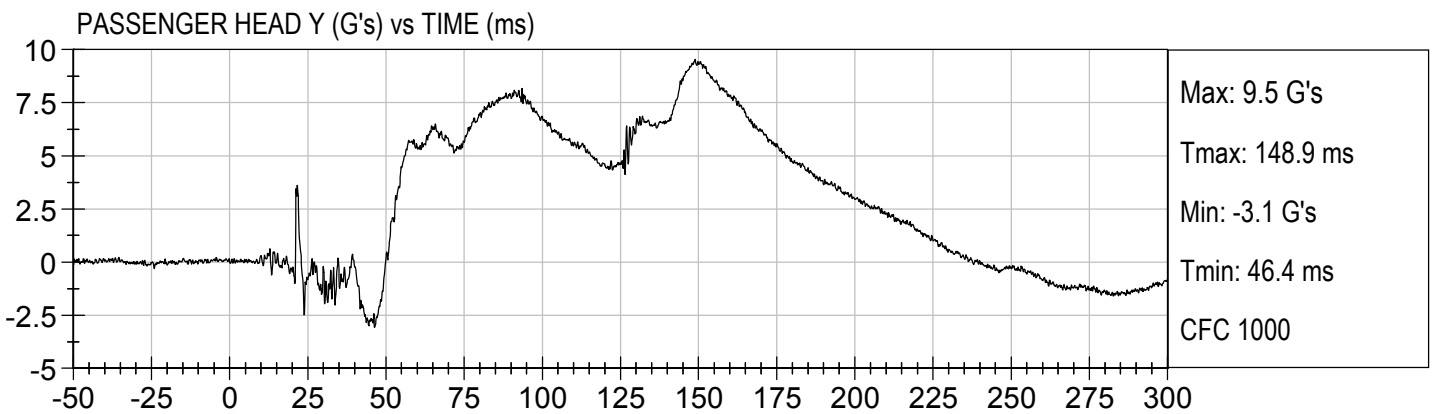
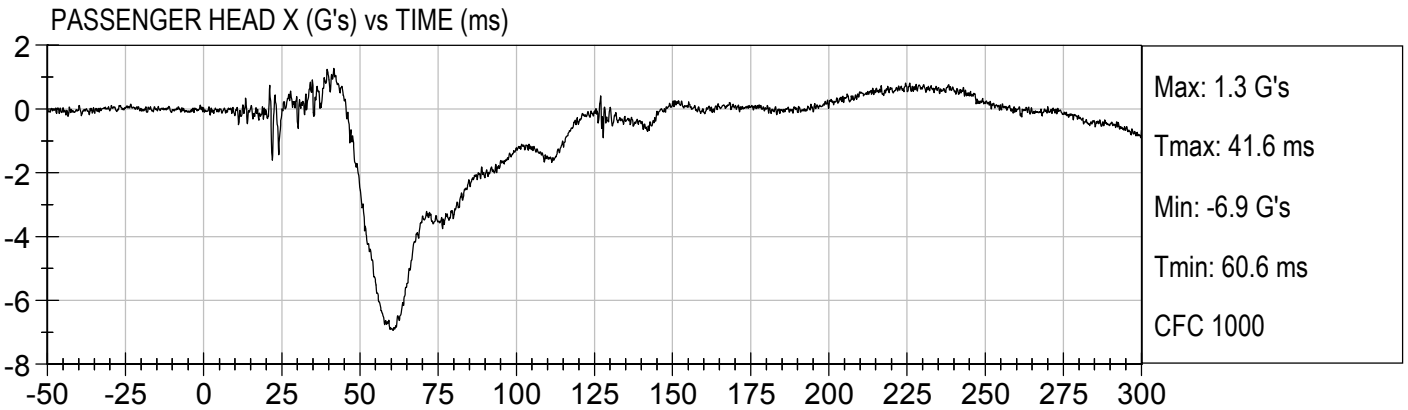
Right MDB Contact Switch

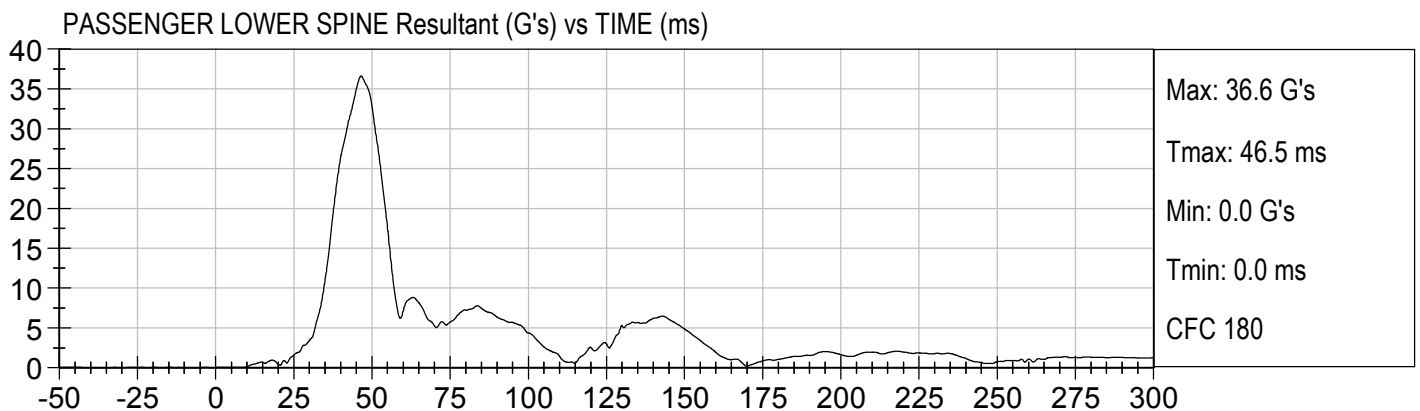
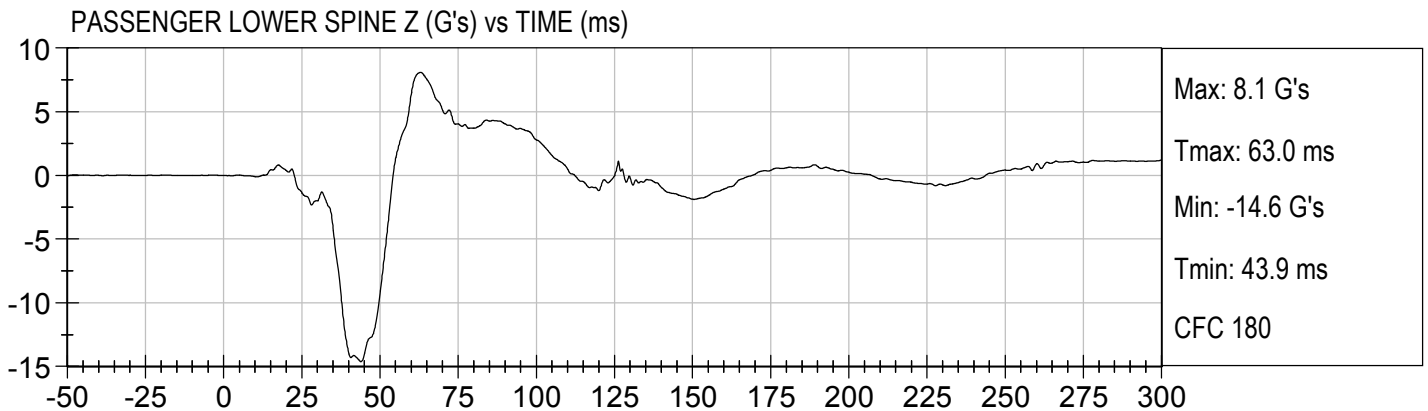
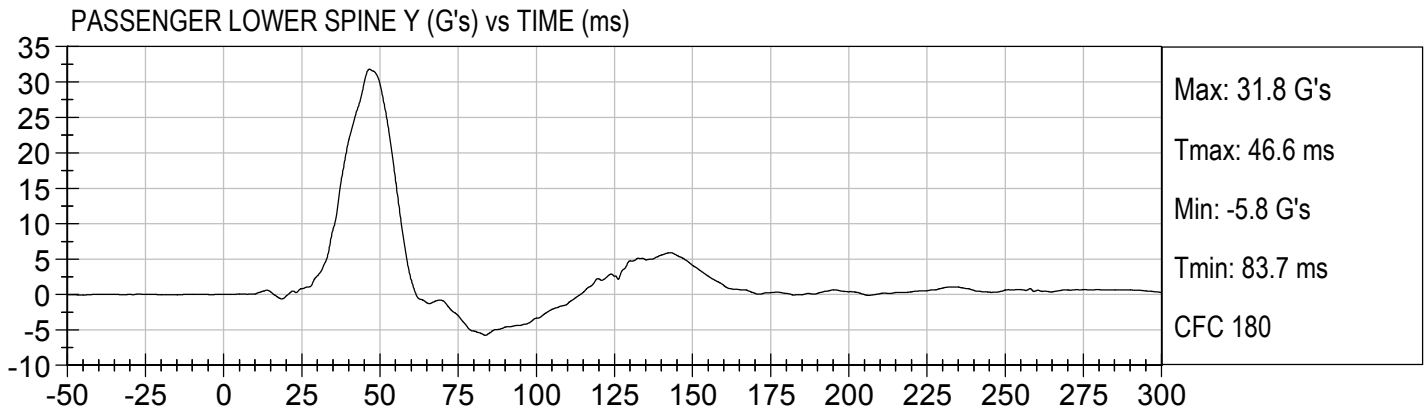
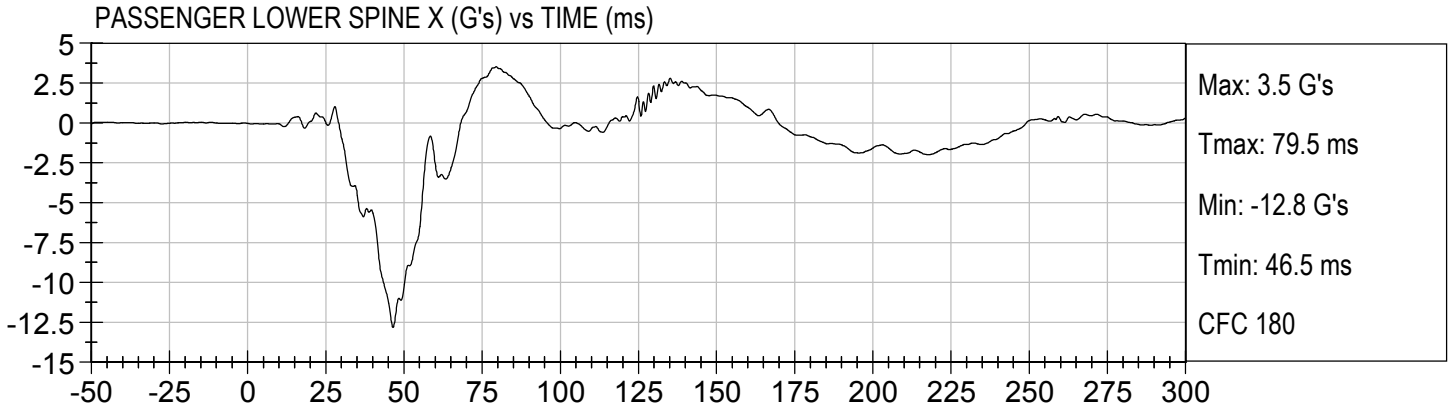


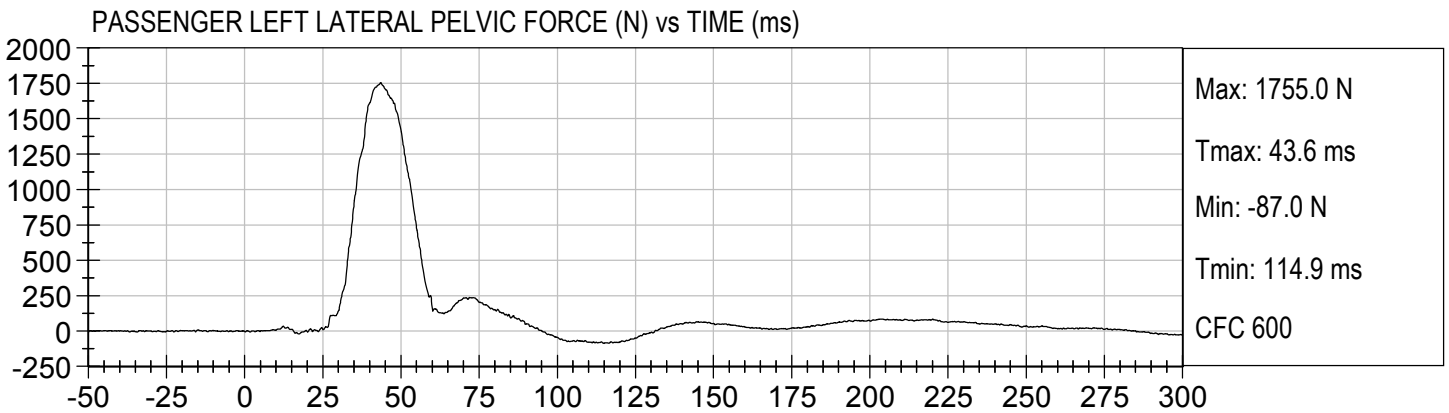
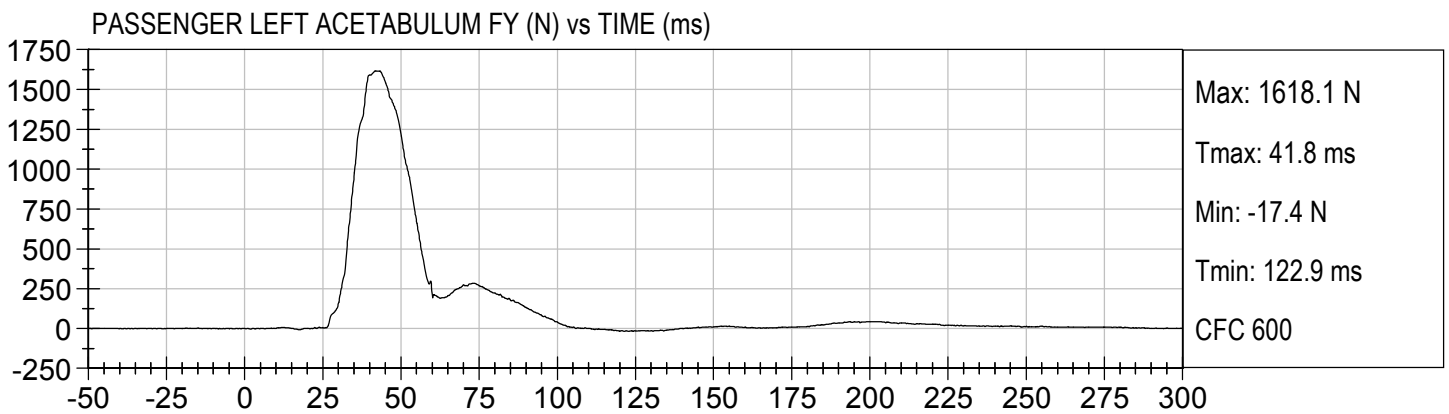
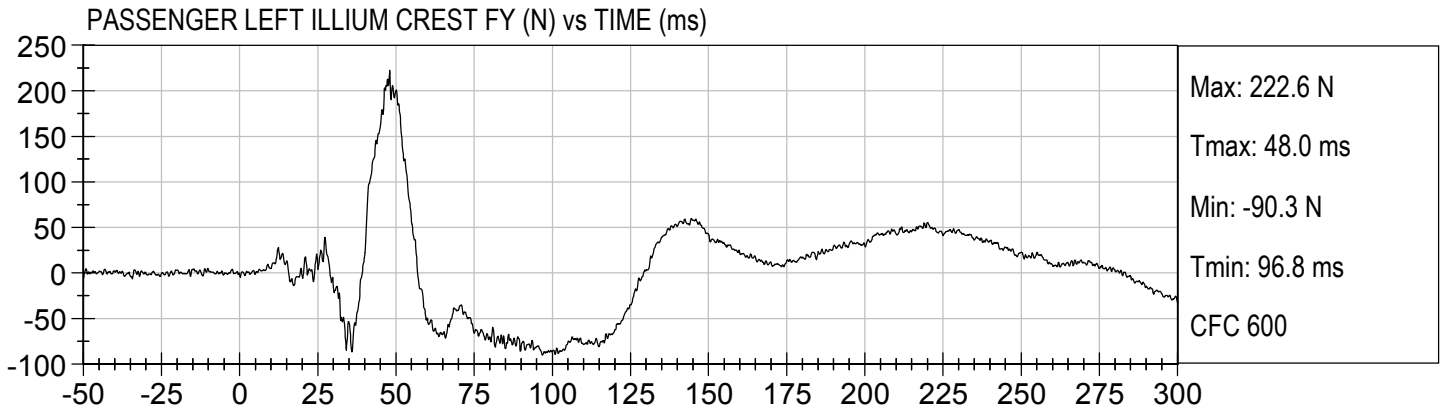












APPENDIX C
DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

ES-2re External Measurements
SN: 032

| No. | Name | Spec. (mm) | Result | Pass/Fail |
|------------|--|-------------------|---------------|------------------|
| 1 | Sitting Height | 900 - 918 | 915 | Pass |
| 2 | Seat to Shoulder Joint | 558 - 572 | 568 | Pass |
| 3 | Seat to Lower Face of Thoracic Spine Box | 346 - 356 | 355 | Pass |
| 4 | Seat to Hip Joint (center of bolt) | 97 - 103 | 98 | Pass |
| 5 | Sole to Seat, Sitting | 333 - 451 | 440 | Pass |
| 6 | Head Width | 152 - 158 | 157 | Pass |
| 7 | Shoulder/Arm Width | 461 - 479 | 464 | Pass |
| 8 | Thorax Width | 322 - 332 | 323 | Pass |
| 9 | Abdomen Width | 273 - 287 | 281 | Pass |
| 10 | Pelvis Lap Width | 359 - 373 | 370 | Pass |
| 11 | Head Depth | 196 - 206 | 203 | Pass |
| 12 | Thorax Depth | 262 - 272 | 264 | Pass |
| 13 | Abdomen Depth | 194 - 204 | 196 | Pass |
| 14 | Pelvis Depth | 235 - 245 | 236 | Pass |
| 15 | Back of Buttocks to Hip Joint (center of bolt) | 150 - 160 | 151 | Pass |
| 16 | Back of Buttocks to Front Knee | 597 - 615 | 607 | Pass |

MGA RESEARCH CORPORATION
HEAD DROP TEST
ES-2re DUMMY

ATD Serial No: 032

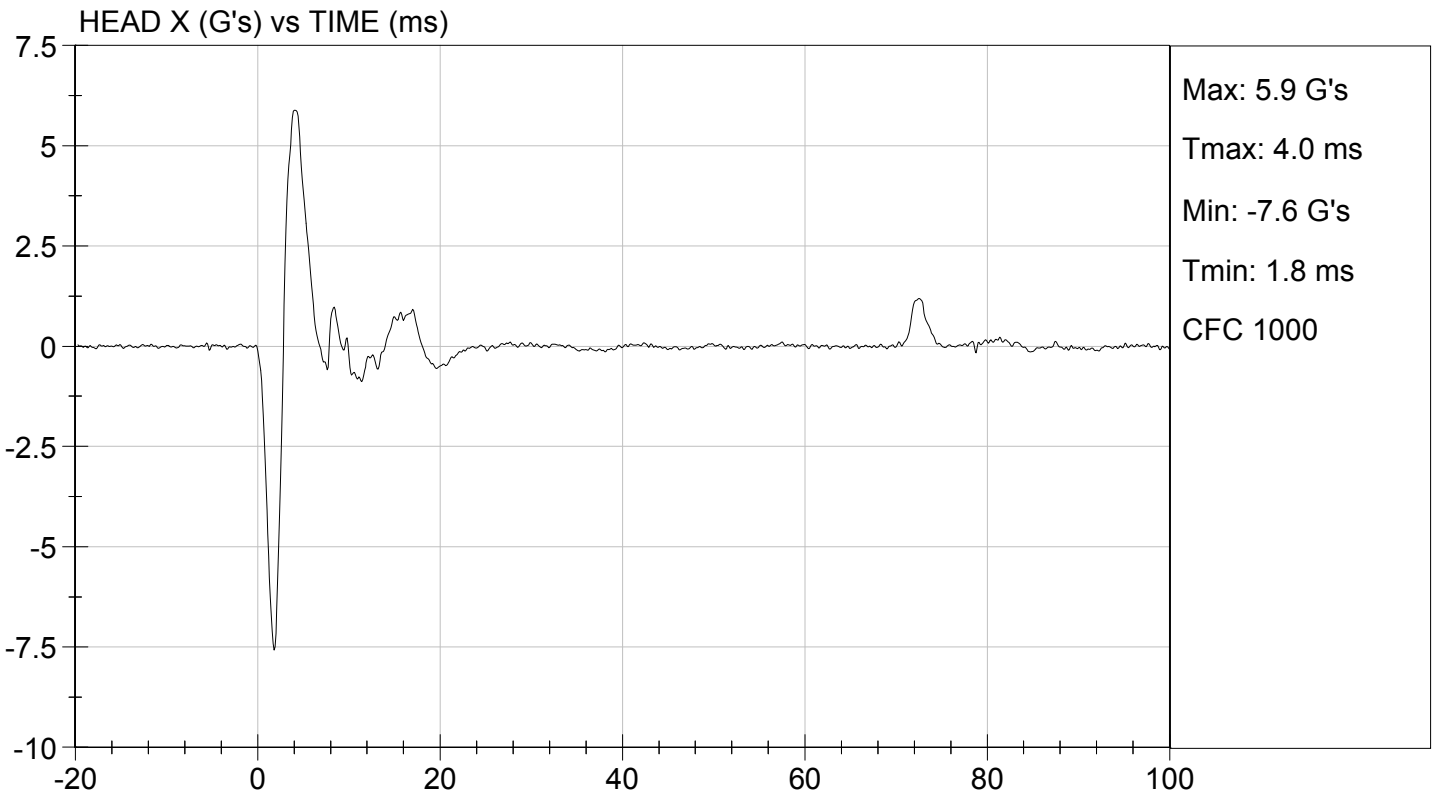
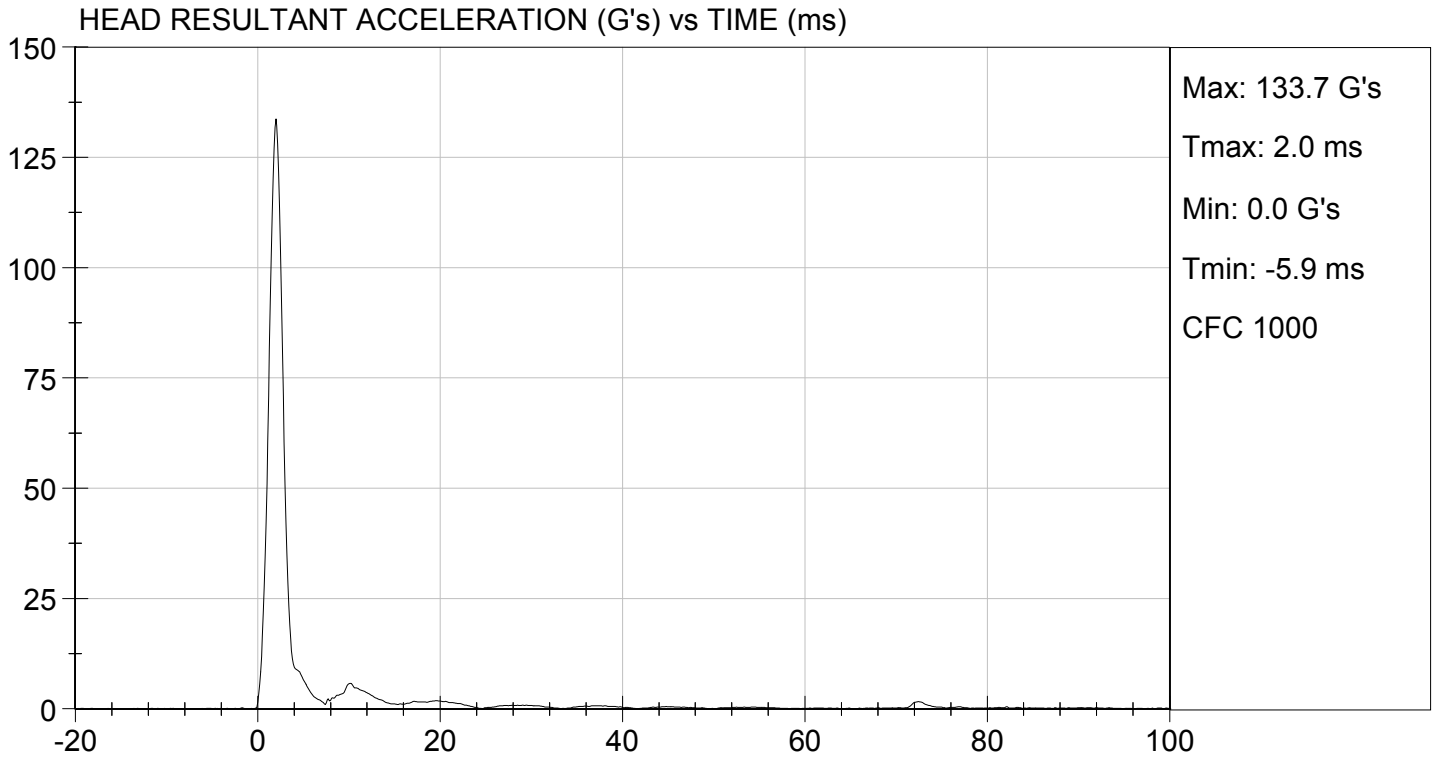
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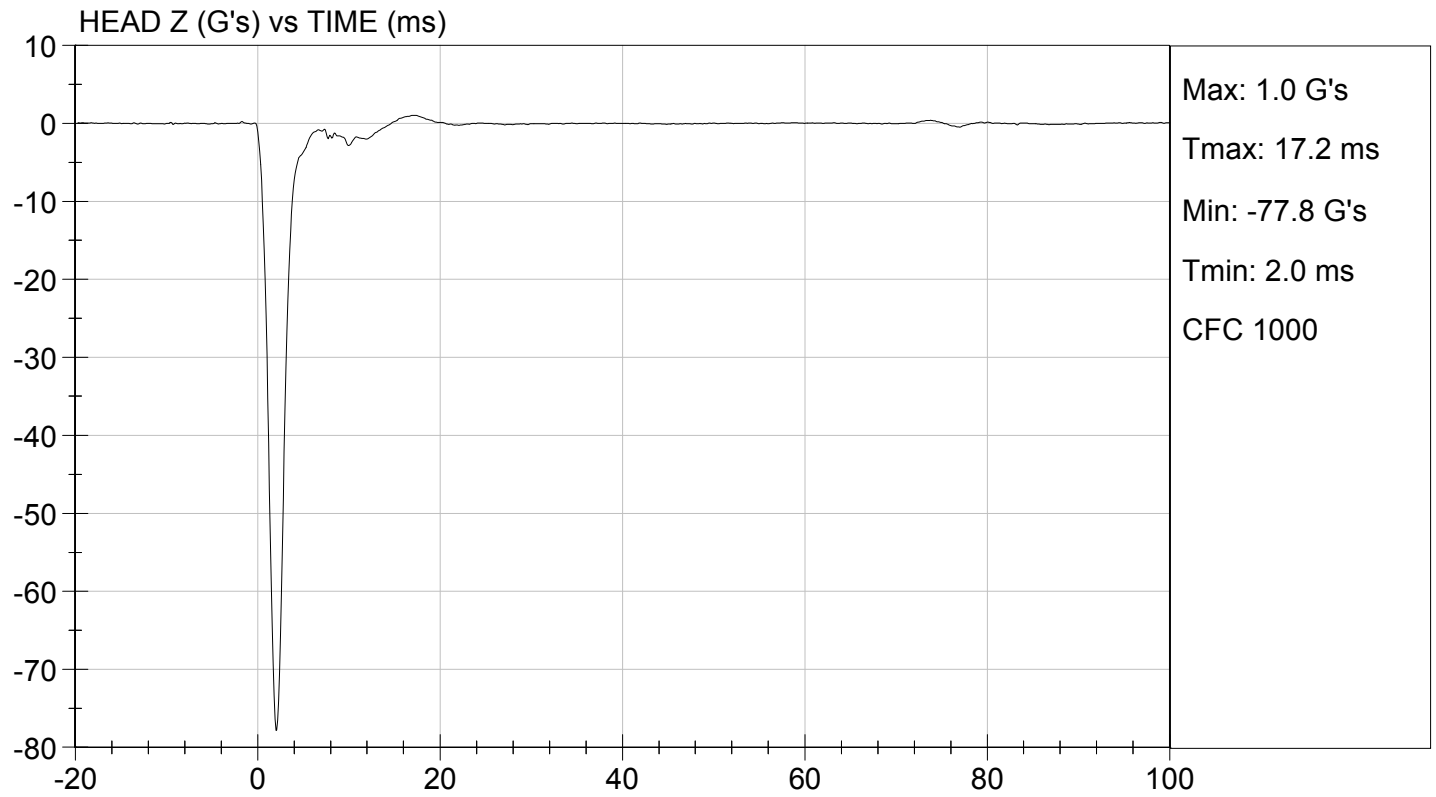
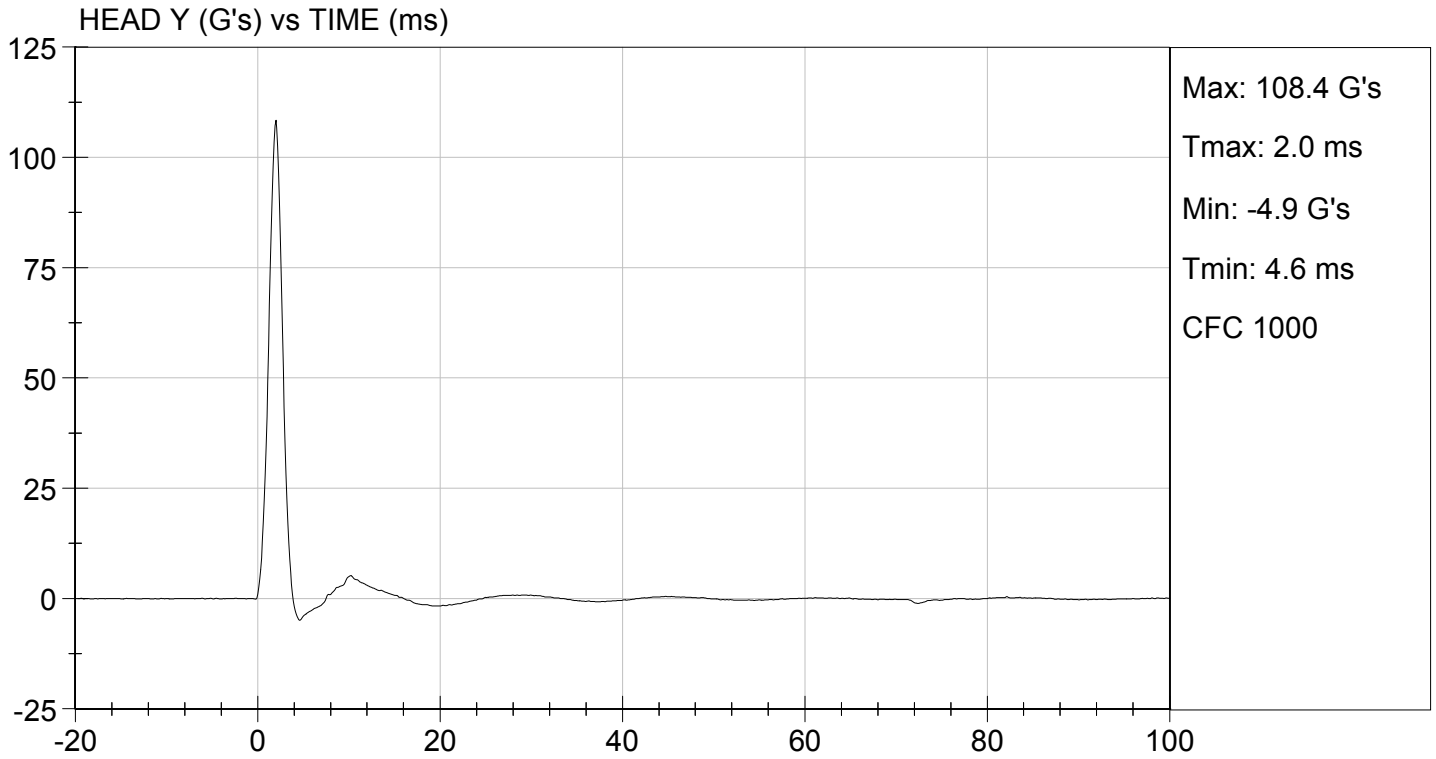
| Tested Parameter | Units | Specification | Result | Pass/Fail |
|--------------------------------|-------|--------------------|--------|-------------|
| Laboratory Temperature | deg C | 18.9 to 25.6 | 22.0 | Pass |
| Laboratory Relative Humidity | % | 10 to 70 | 49 | Pass |
| Peak Resultant Acceleration | G's | 125 to 155 | 134 | Pass |
| Peak Longitudinal Acceleration | G's | <= +/- 15.0 | -7.6 | Pass |
| Unimodal | N/A | Yes | Yes | Pass |
| Oscillations | N/A | within 15% of peak | Yes | Pass |
| Overall Test Results | | | | Pass |

Maxime Chamberland
 Laboratory Technician

10/02/2014
 Test Date

Jessica Hall
 Approved By





**MGA RESEARCH CORPORATION
NECK PENDULUM TEST
ES-2re DUMMY**

ATD Serial No: 032

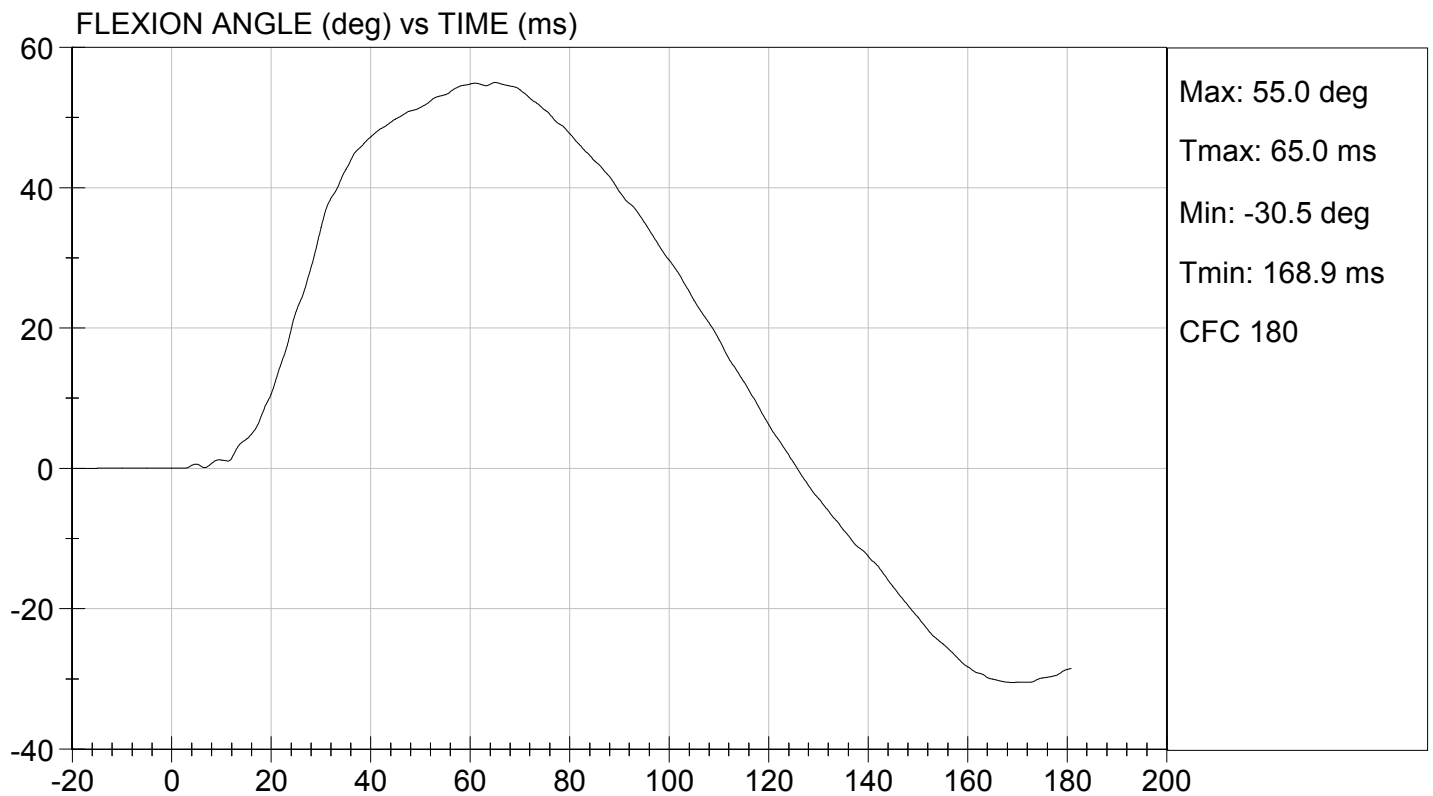
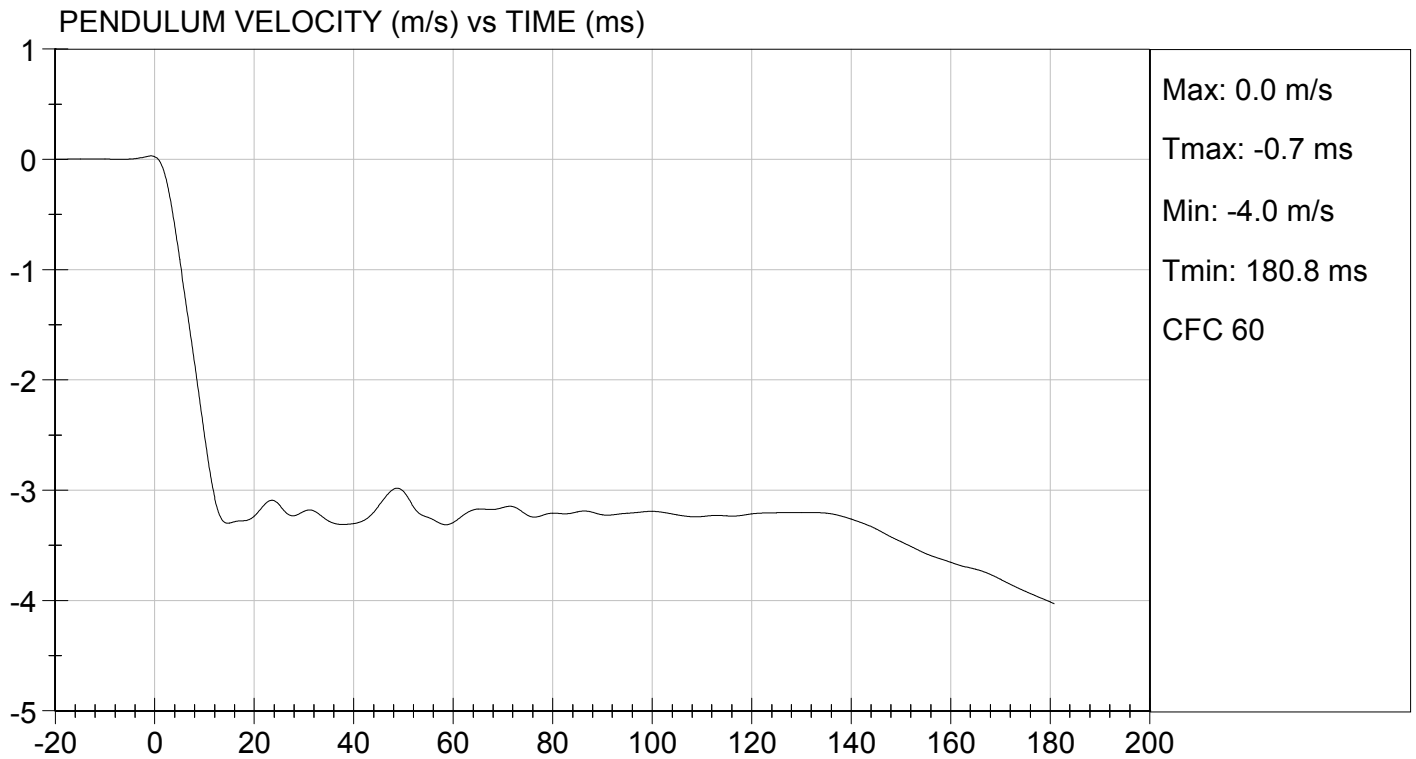
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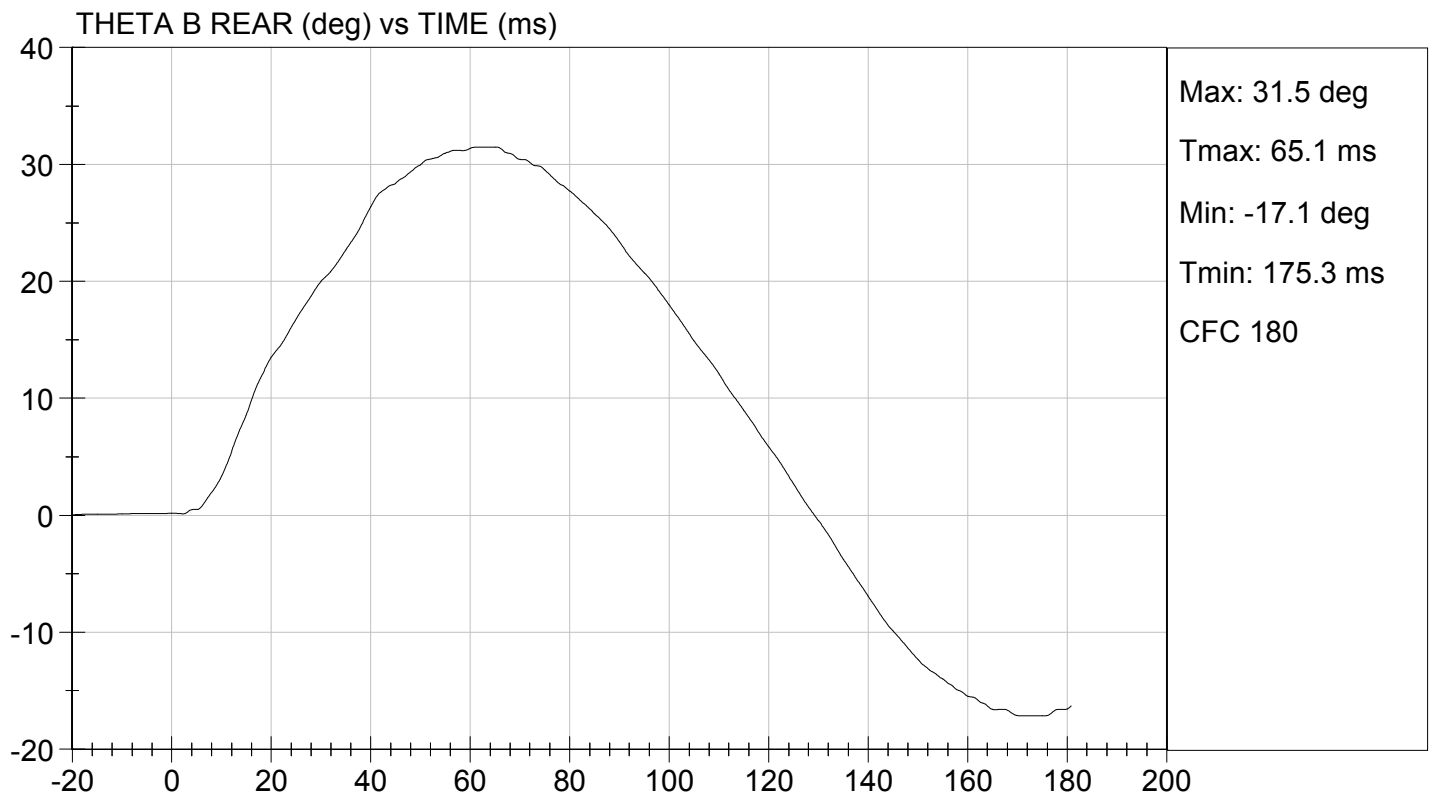
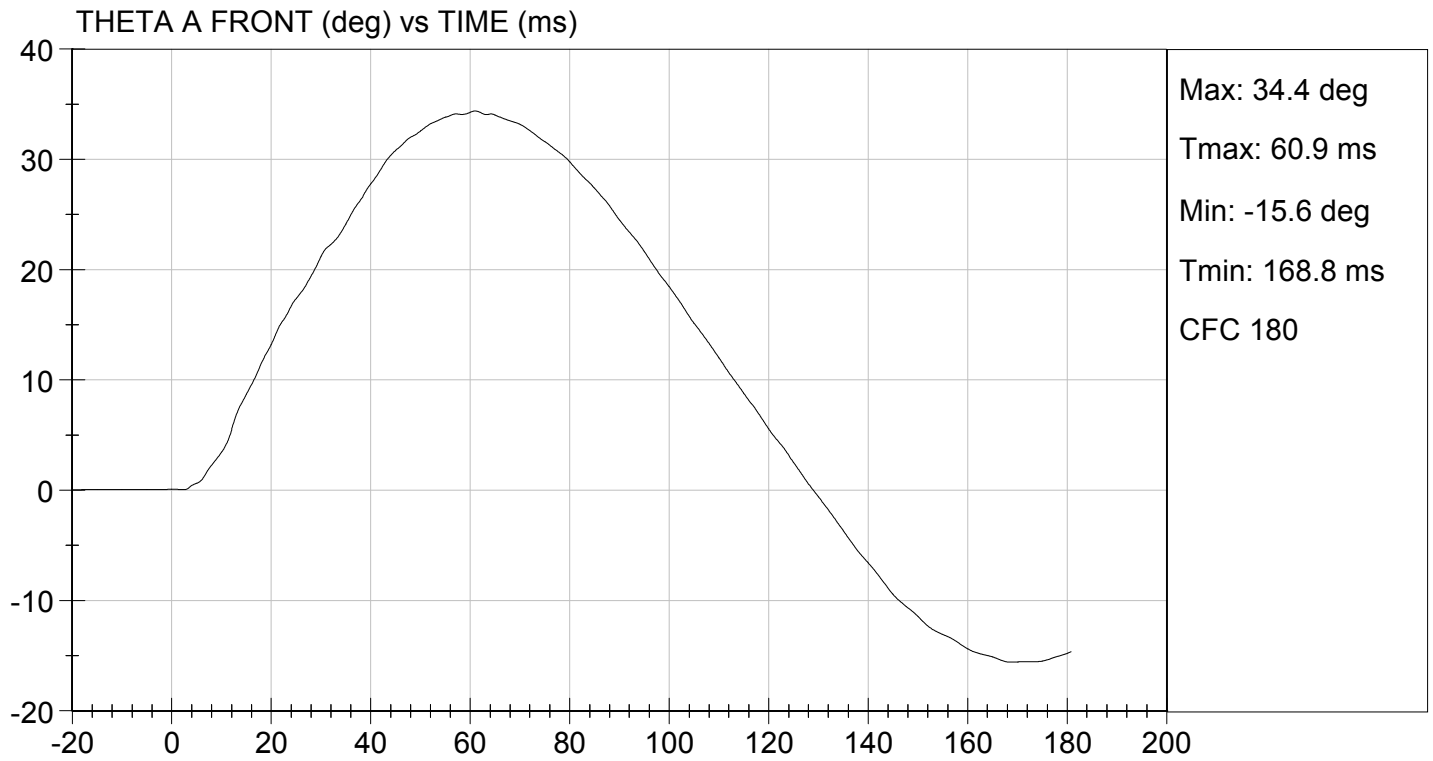
| Tested Parameter | Units | Specification | Result | Pass/Fail | |
|--------------------------------------|-------|---------------|-----------------|-----------|------|
| Laboratory Temperature | deg C | 20.6 to 22.2 | 22.0 | Pass | |
| Laboratory Relative Humidity | % | 10 to 70 | 51 | Pass | |
| Pendulum Speed | m/s | 3.30 to 3.50 | 3.46 | Pass | |
| Pendulum Velocity | 1 ms | m/s | -0.05 to 0.00 | -0.02 | Pass |
| | 3 ms | m/s | -0.25 to -0.375 | -0.34 | Pass |
| | 14 ms | m/s | -3.20 to -3.70 | -3.29 | Pass |
| | 17 ms | m/s | >= -3.70 | -3.28 | Pass |
| Maximum Flexion Angle | deg | 49.0 to 59.0 | 55.0 | Pass | |
| Time of Maximum Flexion Angle | ms | 54.0 to 66.0 | 65.0 | Pass | |
| Head Rotation Decay Time to 0 Degree | ms | 53.0 to 88.0 | 65.1 | Pass | |
| Overall Results | | | | Pass | |

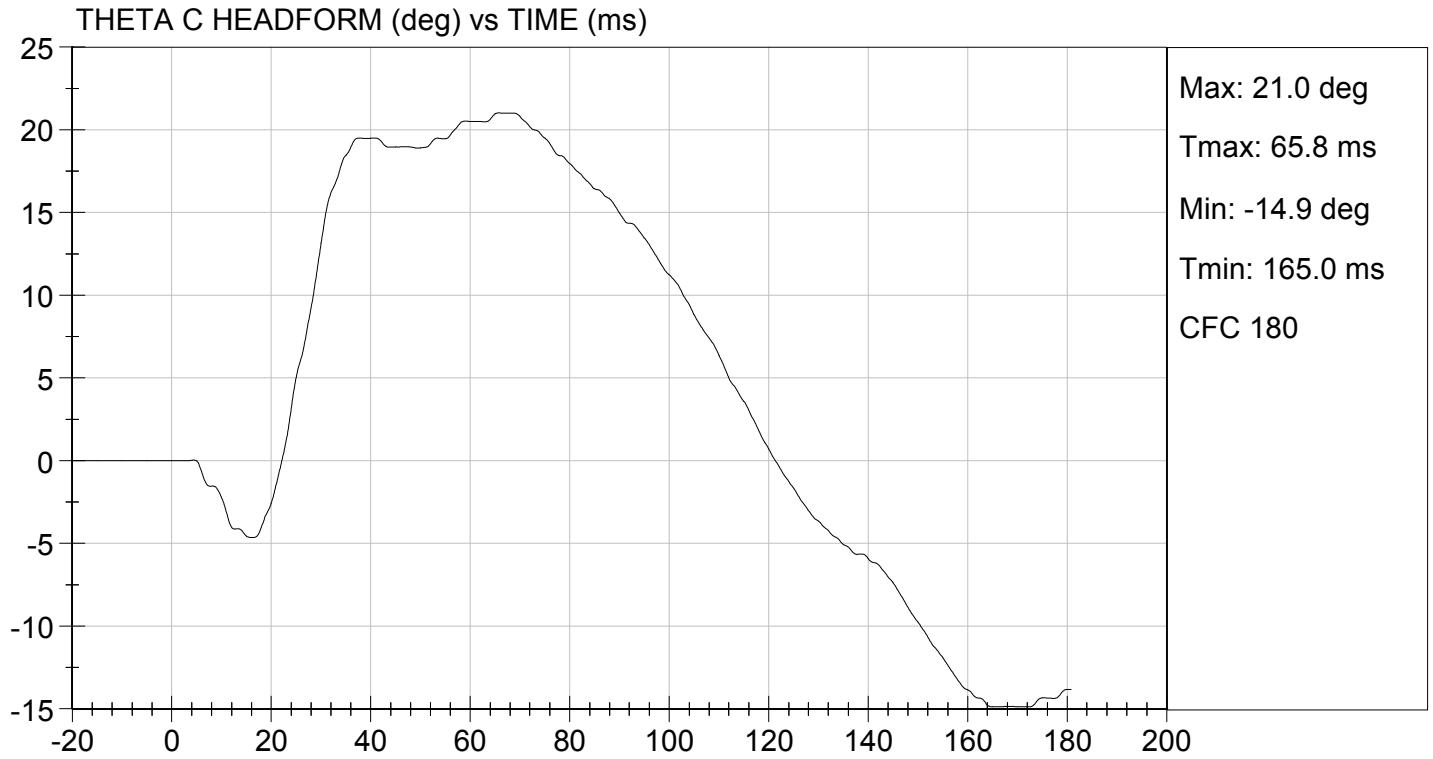
Maxime Chamberland
Laboratory Technician

10/03/2014
Test Date

Jessica Hall
Approved By







MGA RESEARCH CORPORATION
SHOULDER IMPACT TEST
ES-2re DUMMY

ATD Serial No: 032

Test I.D: D143483

| Tested Parameter | Units | Specification | Result | Pass/Fail |
|------------------------------|-------|---------------|--------|-----------|
| Laboratory Temperature | deg C | 20.6 to 22.2 | 22.1 | Pass |
| Laboratory Relative Humidity | % | 10 to 70 | 47 | Pass |
| Pendulum Speed | m/s | 4.20 to 4.40 | 4.40 | Pass |
| Peak Impactor Acceleration | G's | 7.5 to 10.5 | 9.1 | Pass |
| Overall Test Results | | | | Pass |

Maxime Chamberland
 Laboratory Technician

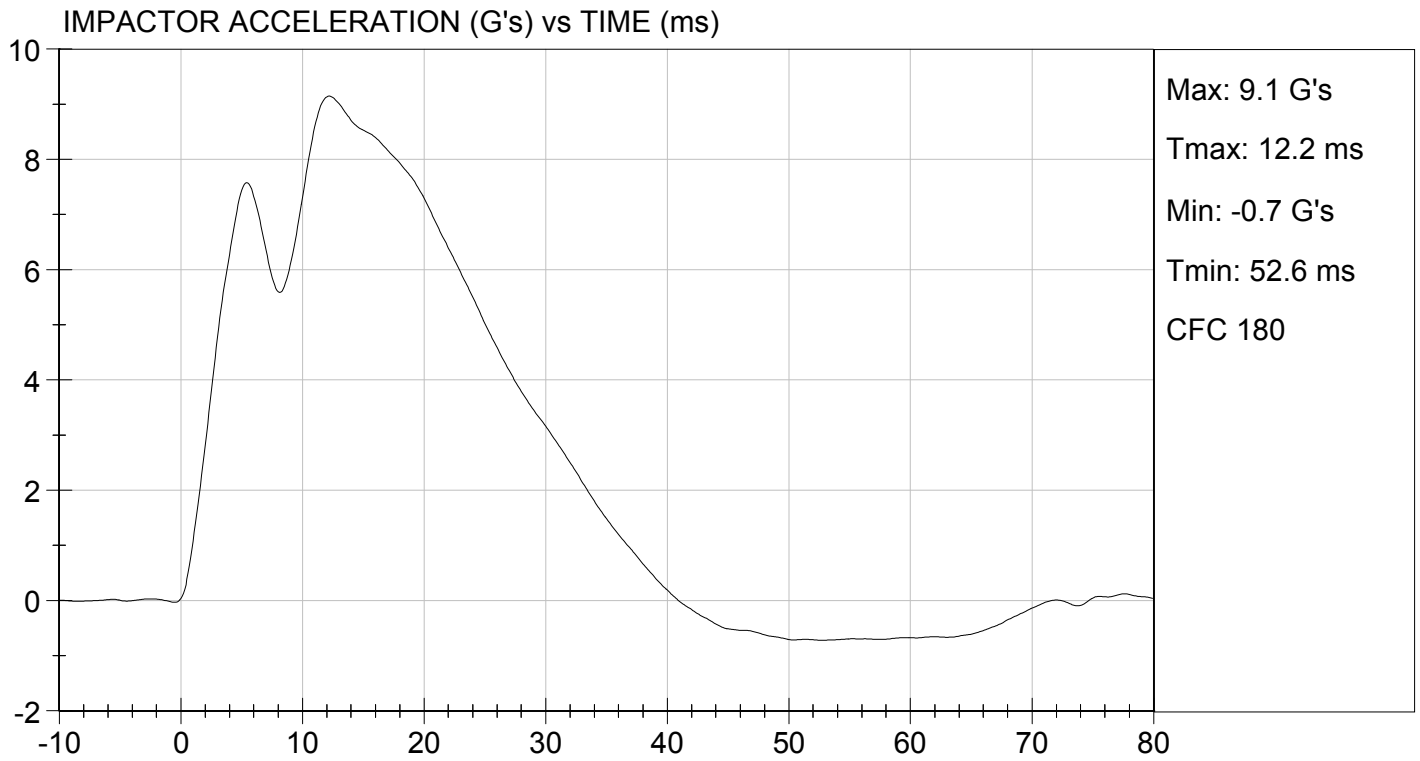
10/03/2014
 Test Date

Jessica Hall
 Approved By



TEST DESC: SHOULDER IMPACT
VELOCITY: 14.43 ft/s, 4.4 m/s

TEST DATE: 10/03/2014
TEST #: D143483



MGA RESEARCH CORPORATION

UPPER RIB TEST

ES-2re DUMMY

ATD Serial No: 032

Test I.D: D143484

| Tested Parameter | Units | Specification | Result | Pass/Fail |
|------------------------------|-------|---------------|--------|-----------|
| Laboratory Temperature | deg C | 20.6 to 22.2 | 21.9 | Pass |
| Laboratory Relative Humidity | % | 10 to 70 | 50 | Pass |
| Displacement at 459 mm | mm | 36.0 to 40.0 | 39.4 | Pass |
| Displacement at 815 mm | mm | 46.0 to 51.0 | 49.1 | Pass |
| Overall Test Results | | | | Pass |

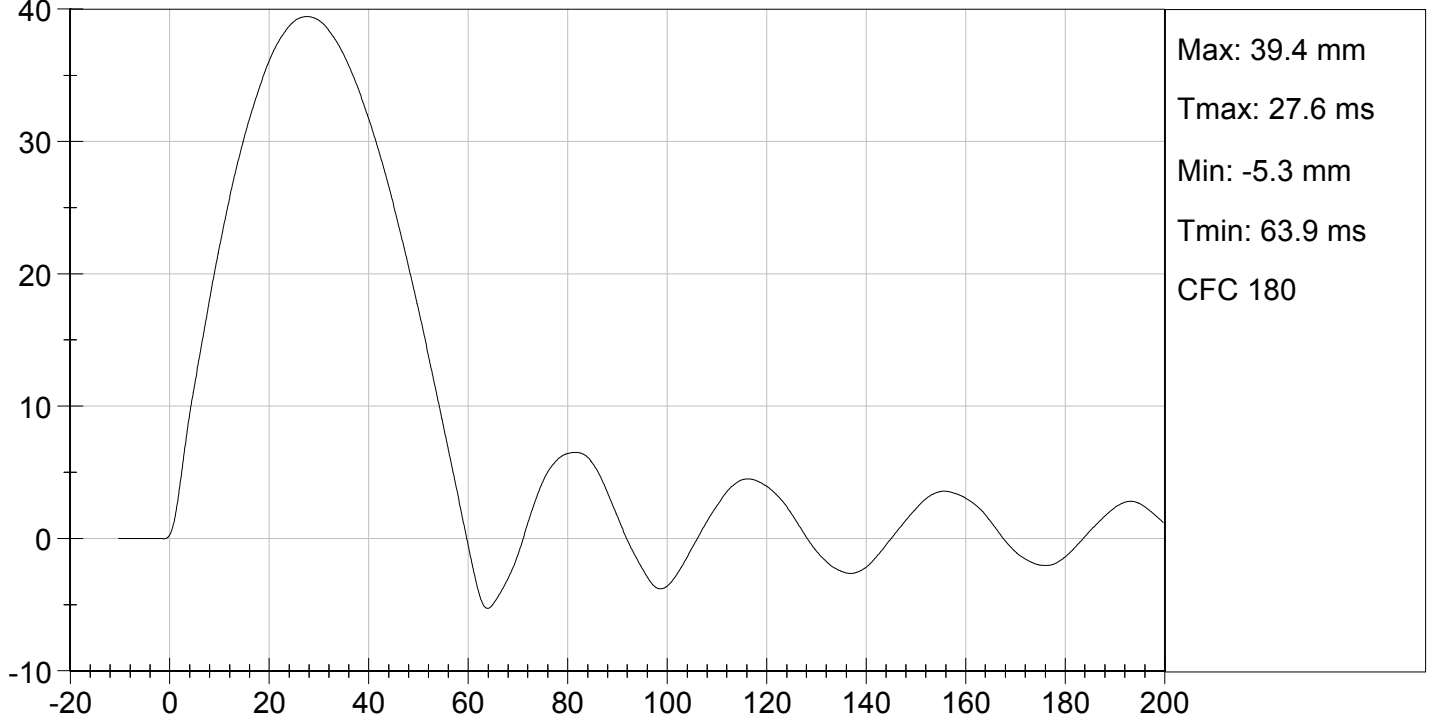
Maxime Chamberland
Laboratory Technician

10/03/2014
Test Date

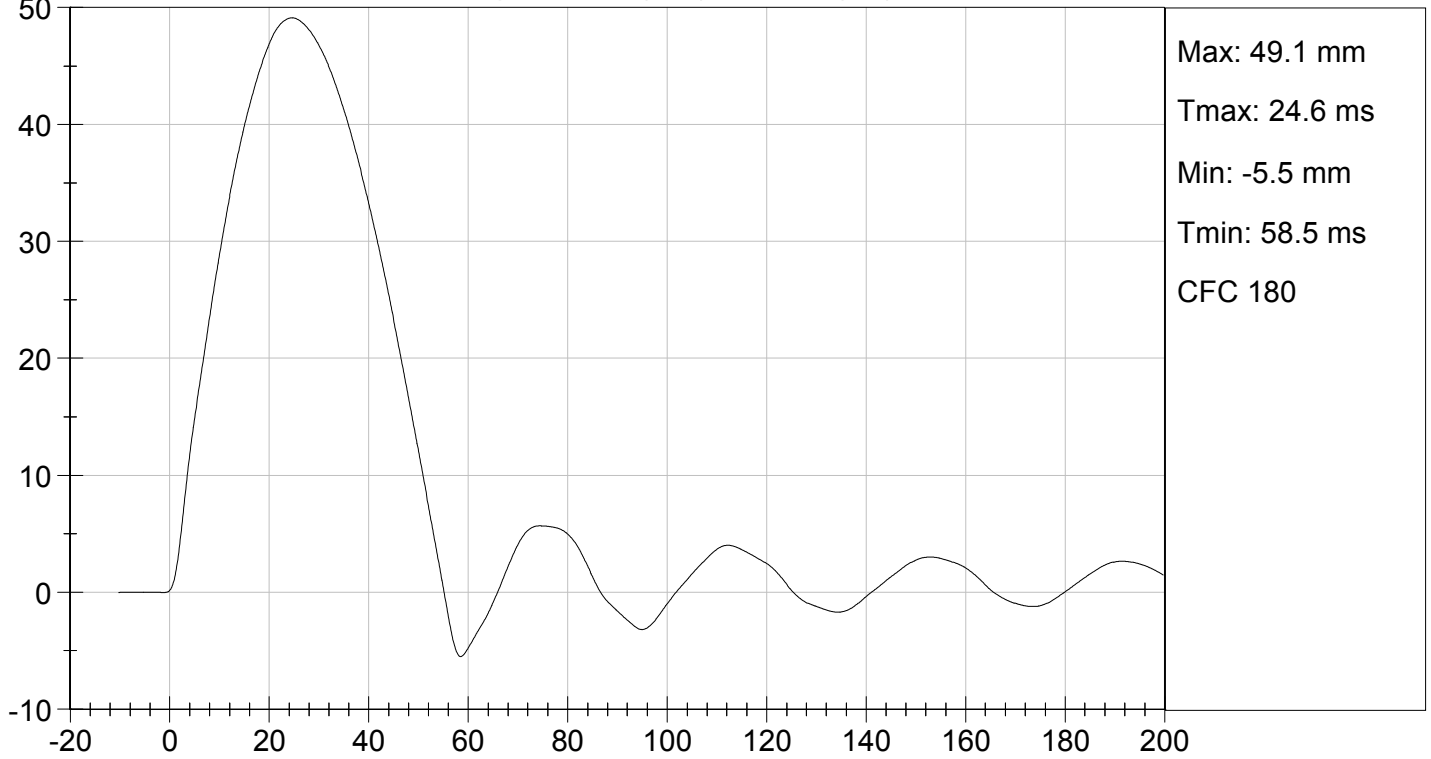
Jessica Hall
Approved By



UPPER RIB DISPLACEMENT @ 459 mm (mm) vs TIME (ms)



UPPER RIB DISPLACEMENT @ 815 mm (mm) vs TIME (ms)



MGA RESEARCH CORPORATION

MID RIB TEST

ES-2re DUMMY

ATD Serial No: 032

Test I.D: D143485

| Tested Parameter | Units | Specification | Result | Pass/Fail |
|------------------------------|-------|---------------|--------|-----------|
| Laboratory Temperature | deg C | 20.6 to 22.2 | 21.9 | Pass |
| Laboratory Relative Humidity | % | 10 to 70 | 50 | Pass |
| Displacement at 459 mm | mm | 36.0 to 40.0 | 39.5 | Pass |
| Displacement at 815 mm | mm | 46.0 to 51.0 | 49.0 | Pass |
| Overall Test Results | | | | Pass |

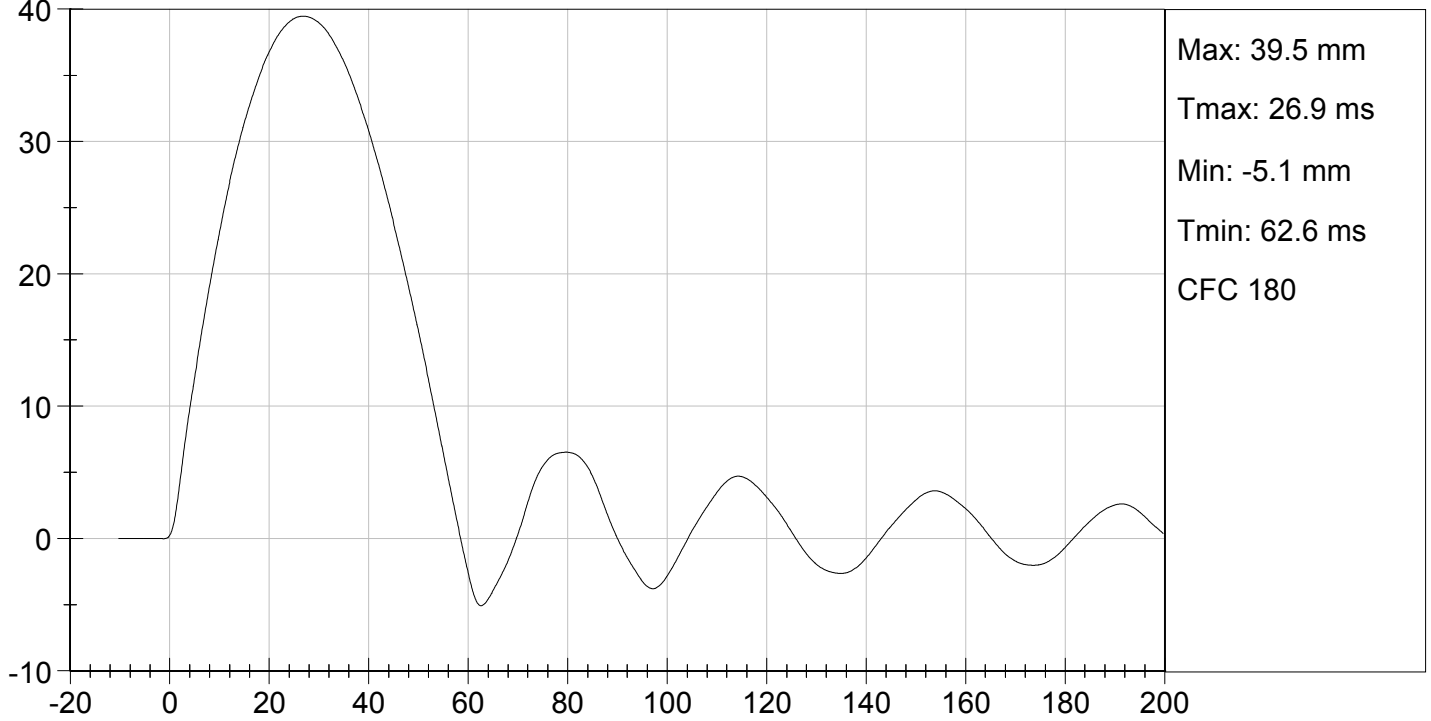
Maxime Chamberland
Laboratory Technician

10/03/2014
Test Date

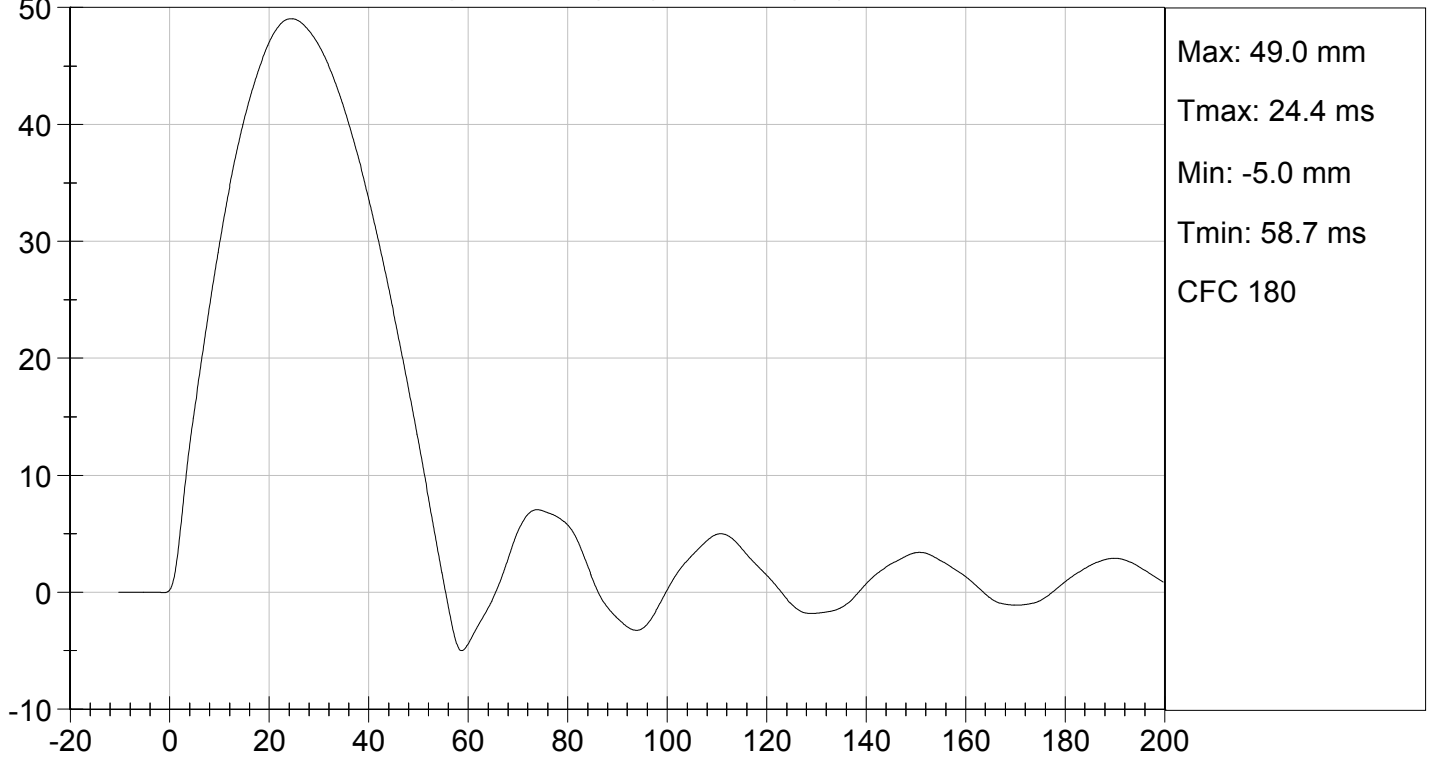
Jessica Hall
Approved By



MID RIB DISPLACEMENT @ 459 mm (mm) vs TIME (ms)



MID RIB DISPLACEMENT @ 815 mm (mm) vs TIME (ms)



MGA RESEARCH CORPORATION

LOWER RIB TEST

ES-2re DUMMY

ATD Serial No: 032

Test I.D: D143486

| Tested Parameter | Units | Specification | Result | Pass/Fail |
|------------------------------|-------|---------------|--------|-----------|
| Laboratory Temperature | deg C | 20.6 to 22.2 | 21.9 | Pass |
| Laboratory Relative Humidity | % | 10 to 70 | 50 | Pass |
| Displacement at 459 mm | mm | 36.0 to 40.0 | 38.7 | Pass |
| Displacement at 815 mm | mm | 46.0 to 51.0 | 49.6 | Pass |
| Overall Test Results | | | | Pass |

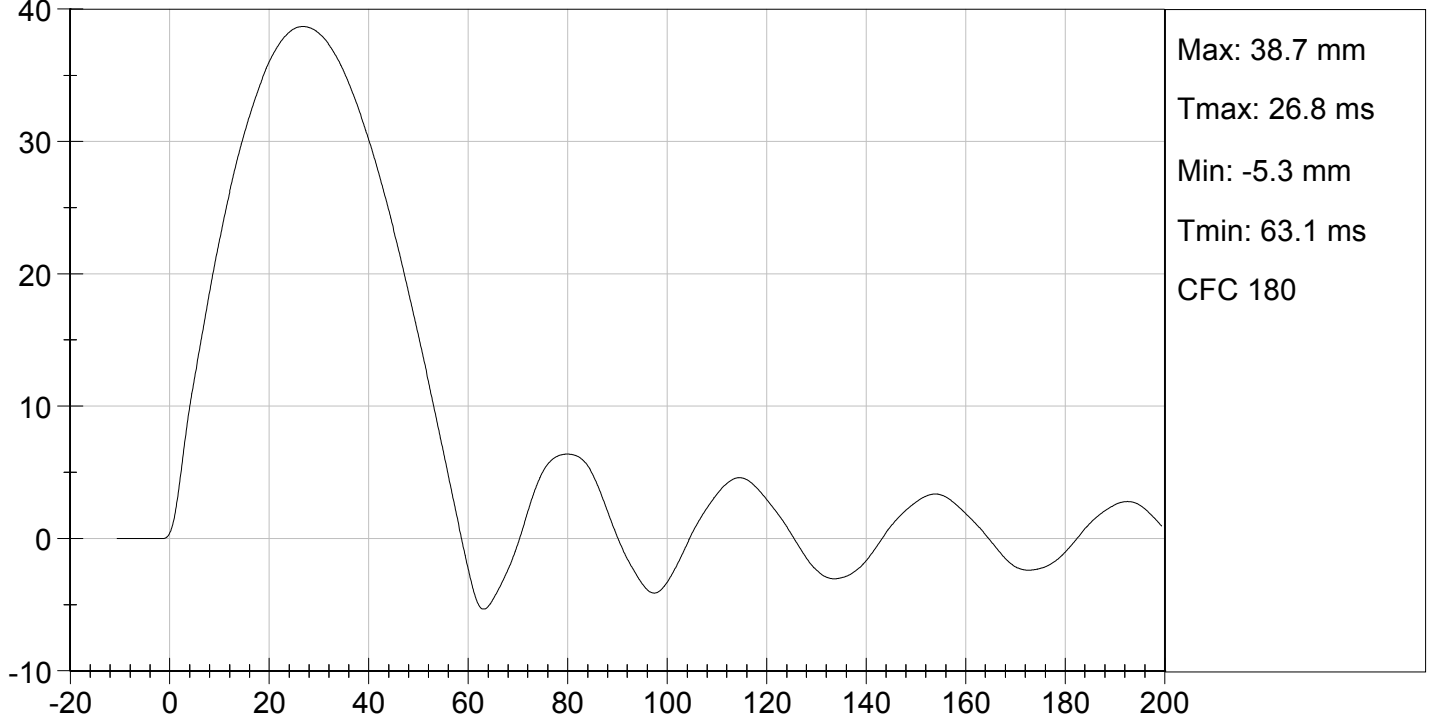
Maxime Chamberland
Laboratory Technician

10/03/2014
Test Date

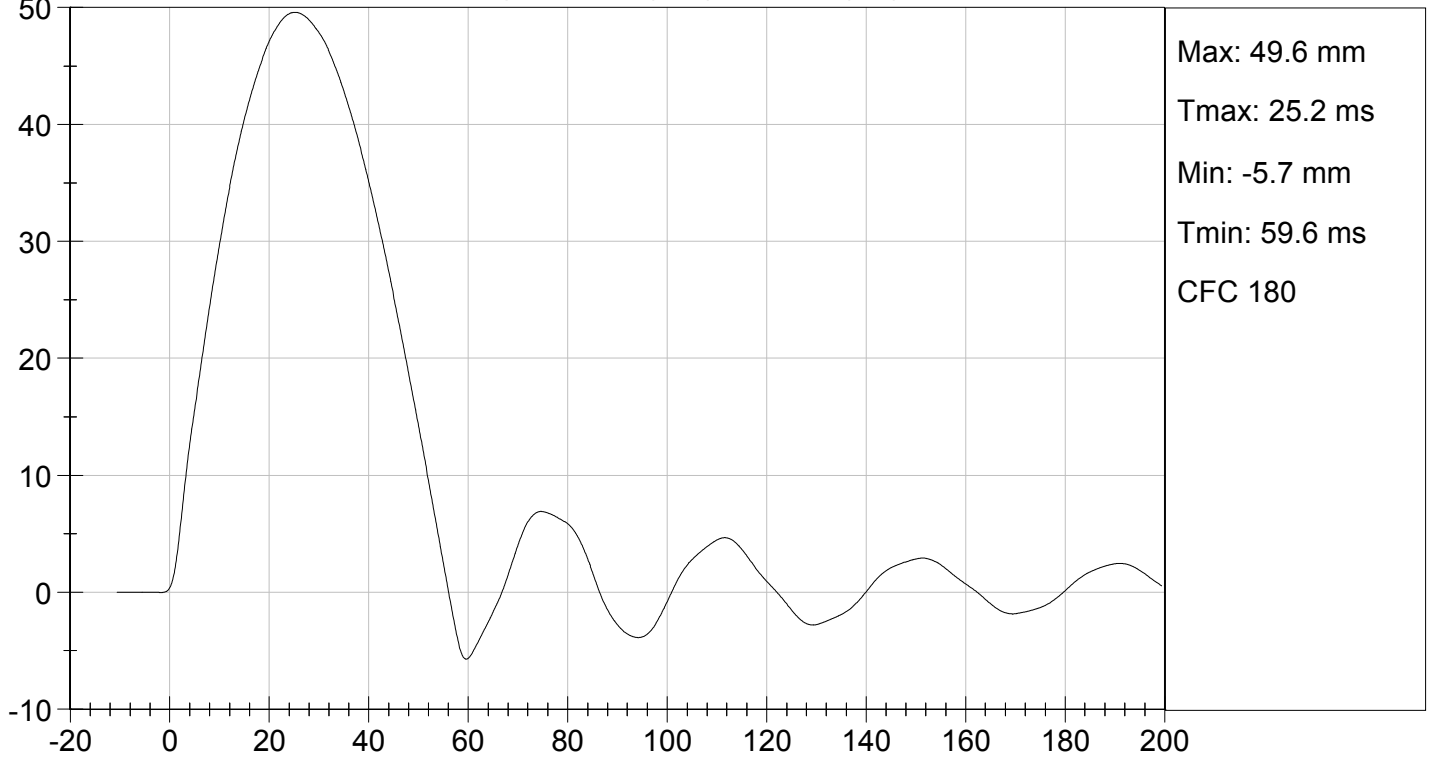
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LOWER RIB DISPLACEMENT @ 459 mm (mm) vs TIME (ms)



LOWER RIB DISPLACEMENT @ 815 mm (mm) vs TIME (ms)



MGA RESEARCH CORPORATION
THORAX IMPACT TEST
ES-2re DUMMY

ATD Serial No: 032

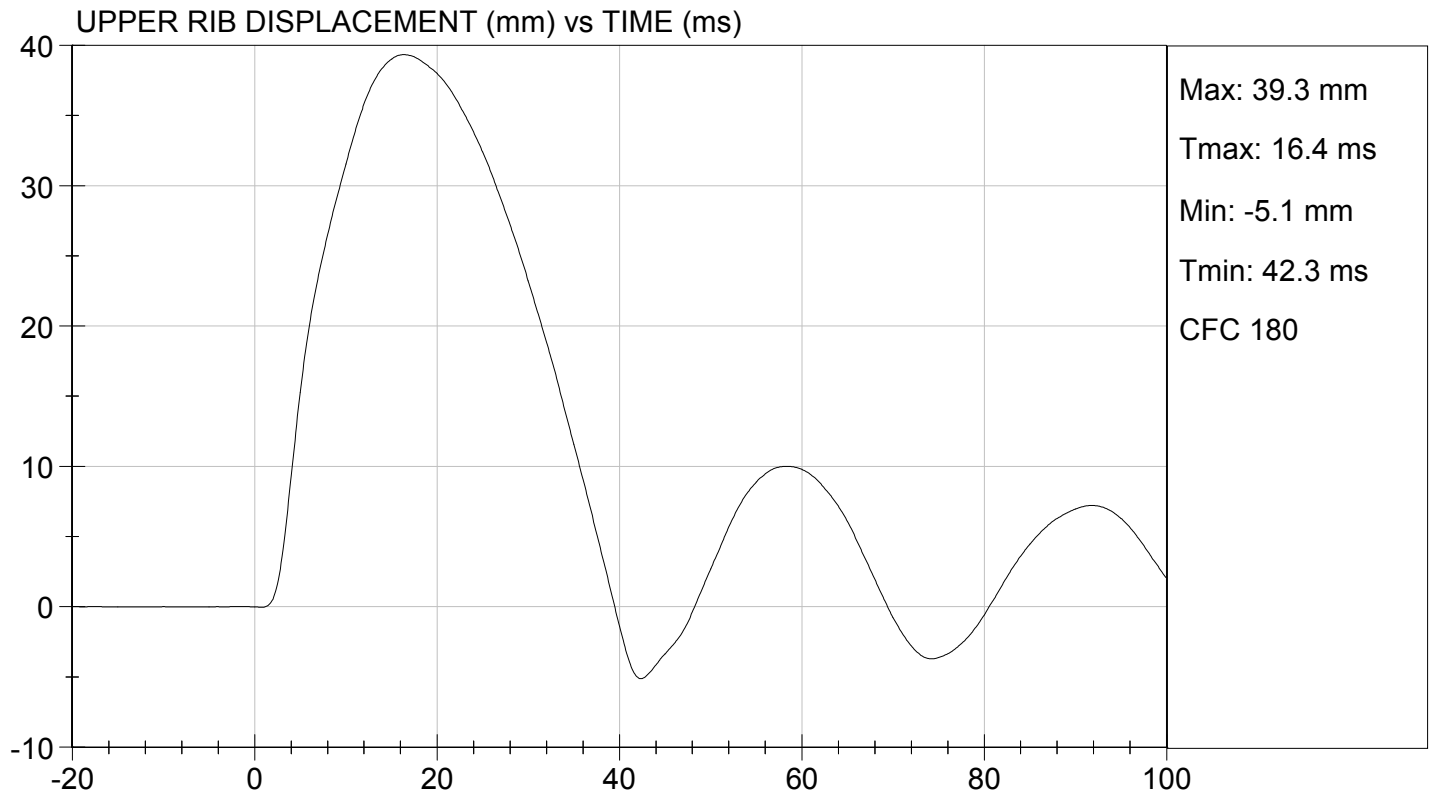
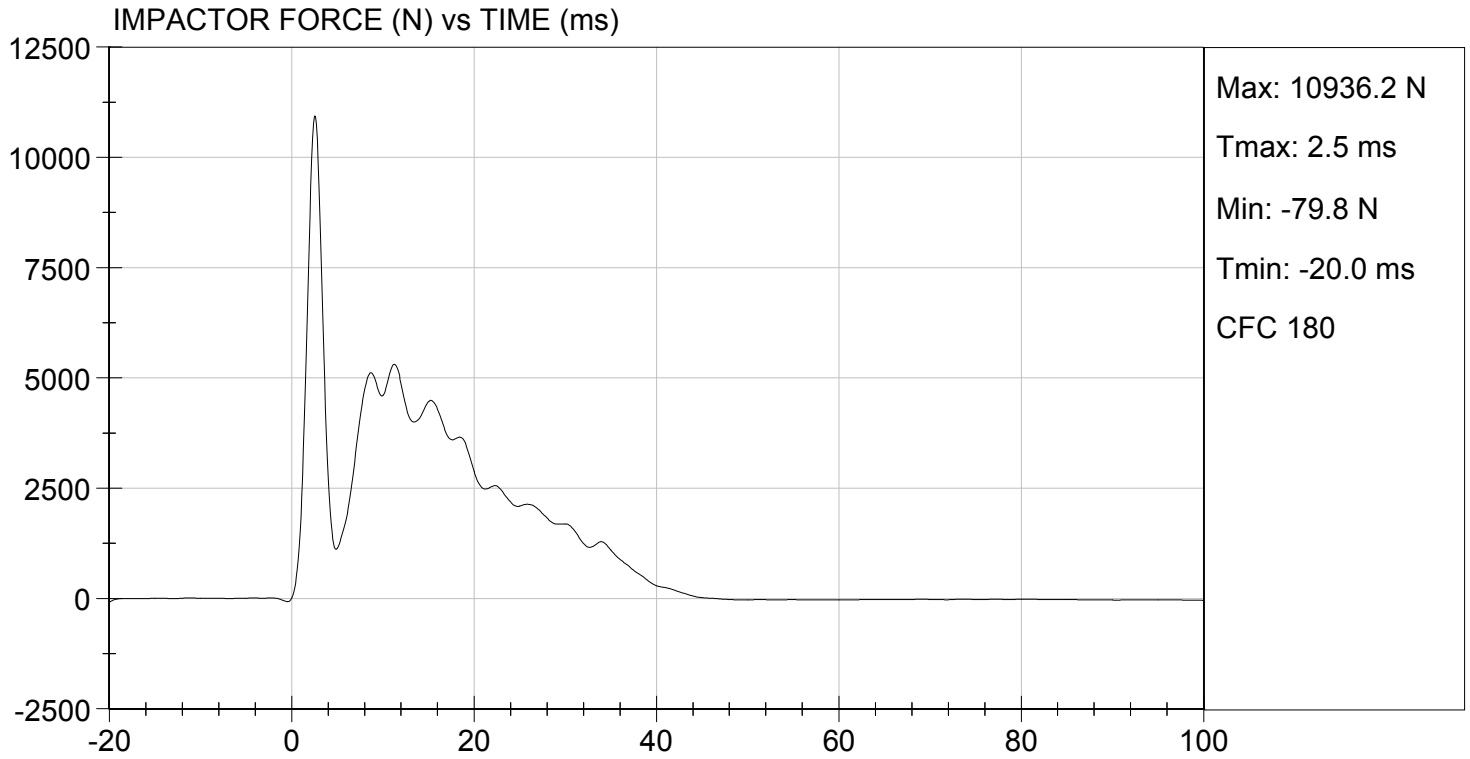
Test I.D: D143480

| Tested Parameter | Units | Specification | Result | Pass/Fail |
|-------------------------------------|-------|---------------|--------|-----------|
| Temperature | deg C | 20.6 to 22.2 | 21.4 | Pass |
| Humidity | % | 10 to 70 | 45 | Pass |
| Probe Speed | m/s | 5.40 to 5.60 | 5.40 | Pass |
| Maximum Impactor Force (after 6 ms) | N | 5100 to 6200 | 5308 | Pass |
| Upper Rib Displacement | mm | 34.0 to 41.0 | 39.3 | Pass |
| Middle Rib Displacement | mm | 37.0 to 45.0 | 42.0 | Pass |
| Lower Rib Displacement | mm | 37.0 to 44.0 | 40.4 | Pass |
| Overall Test Results | | | | Pass |

Maxime Chamberland
 Laboratory Technician

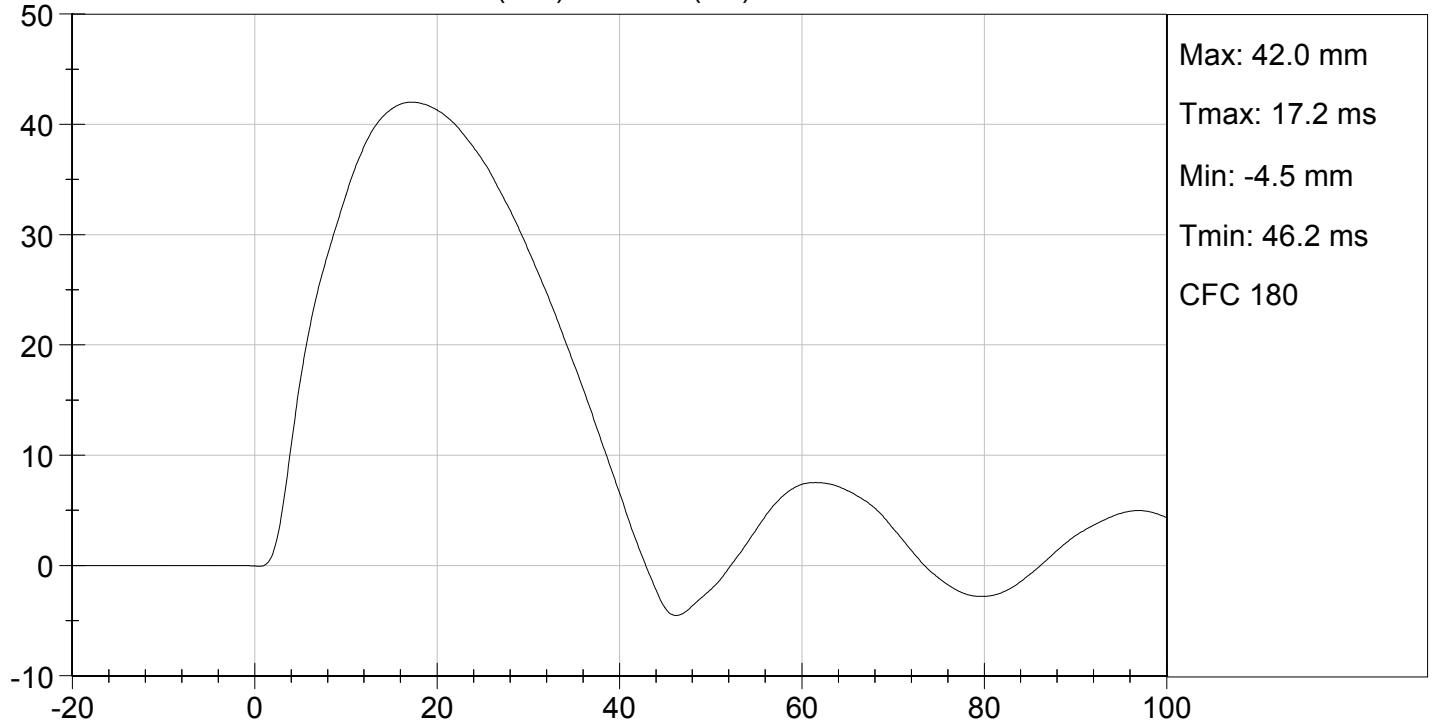
10/03/2014
 Test Date

Jessica Hall
 Approved By

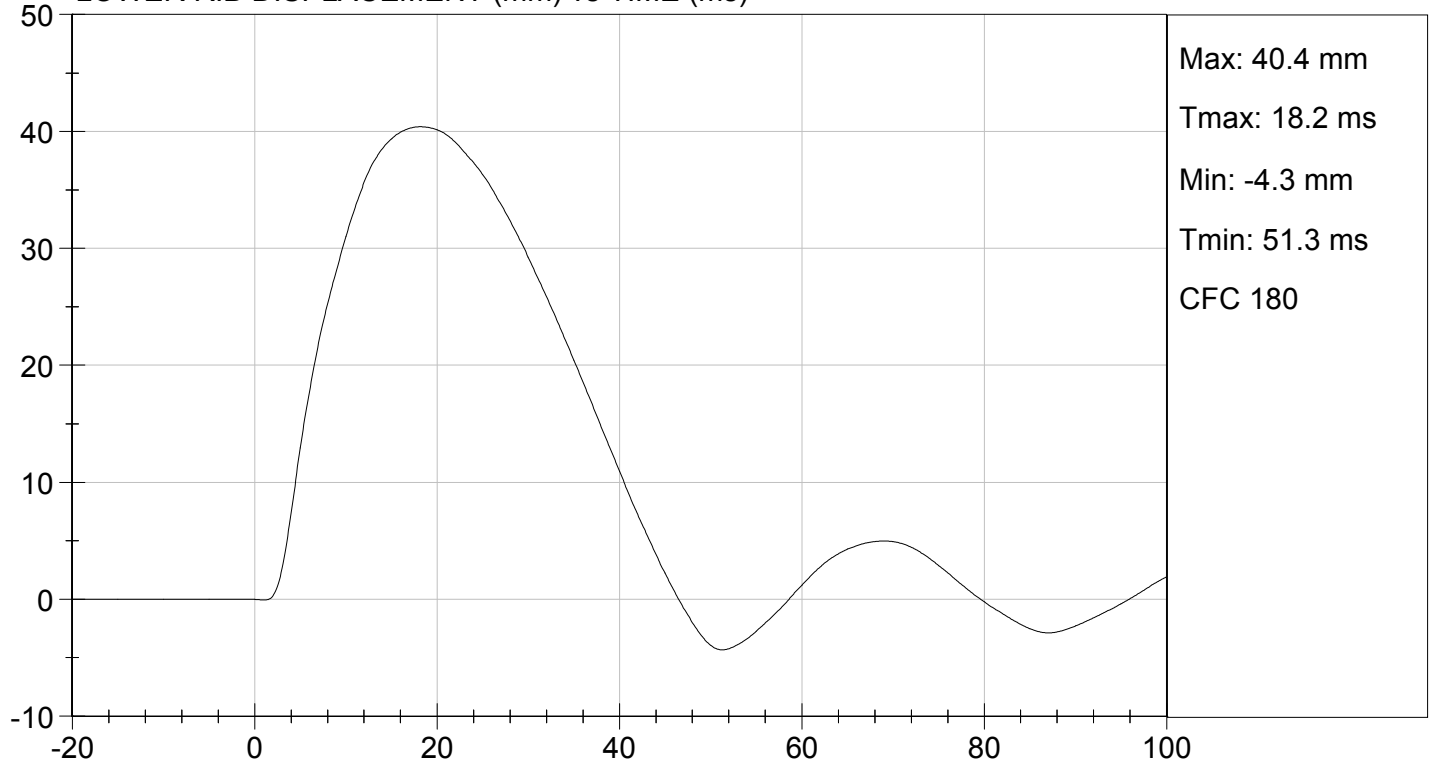




MIDDLE RIB DISPLACEMENT (mm) vs TIME (ms)



LOWER RIB DISPLACEMENT (mm) vs TIME (ms)



MGA RESEARCH CORPORATION

ABDOMEN TEST

ES-2re DUMMY

ATD Serial No: 032

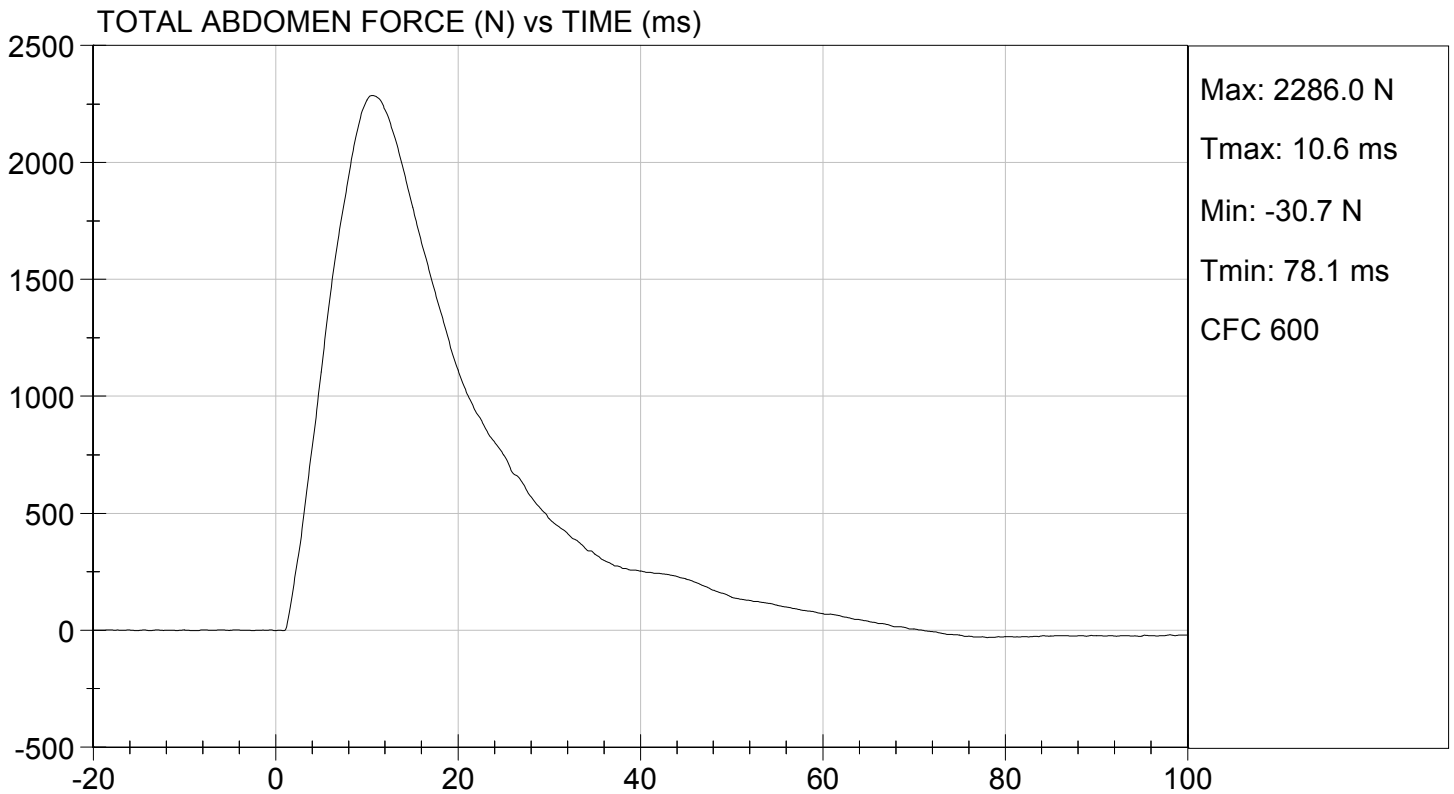
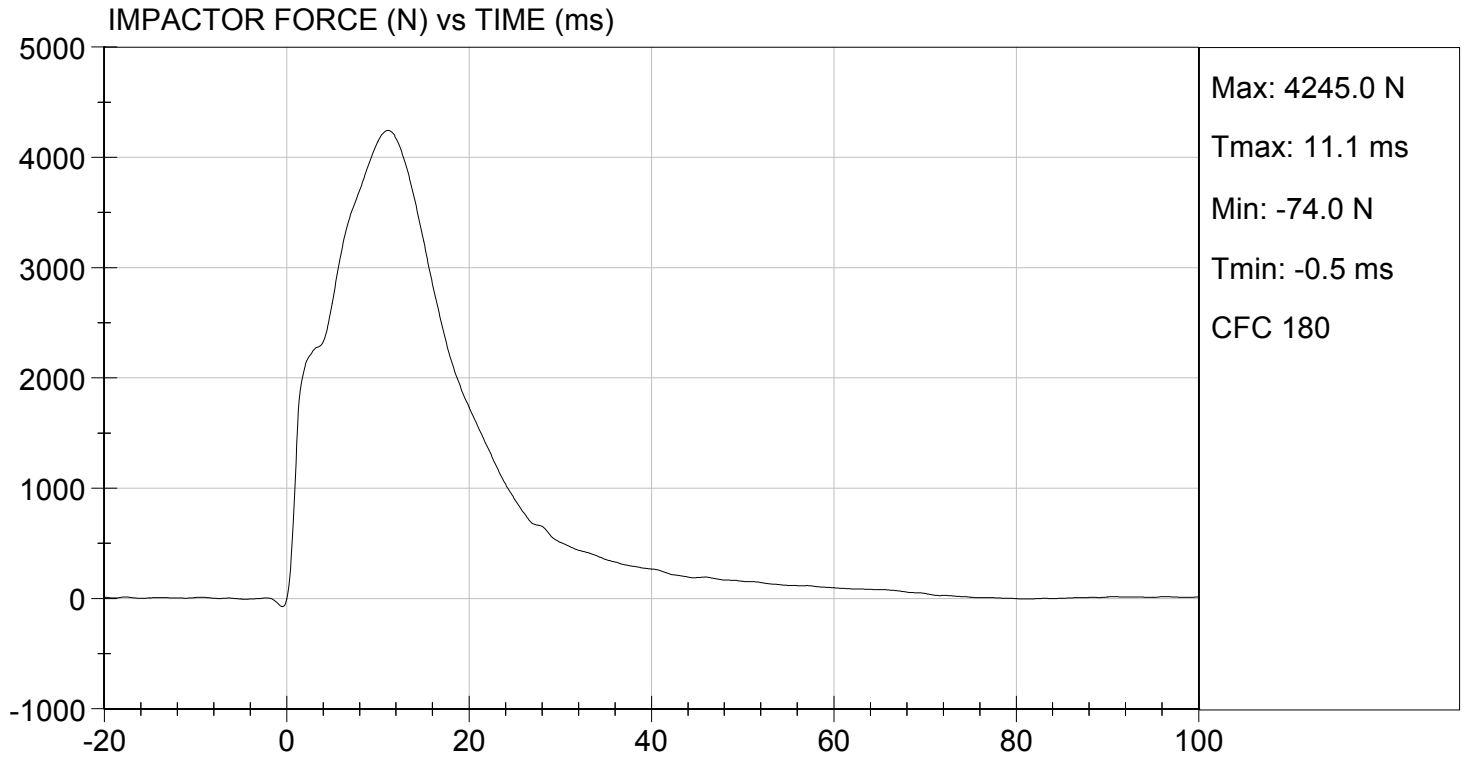
Test I.D: D143487

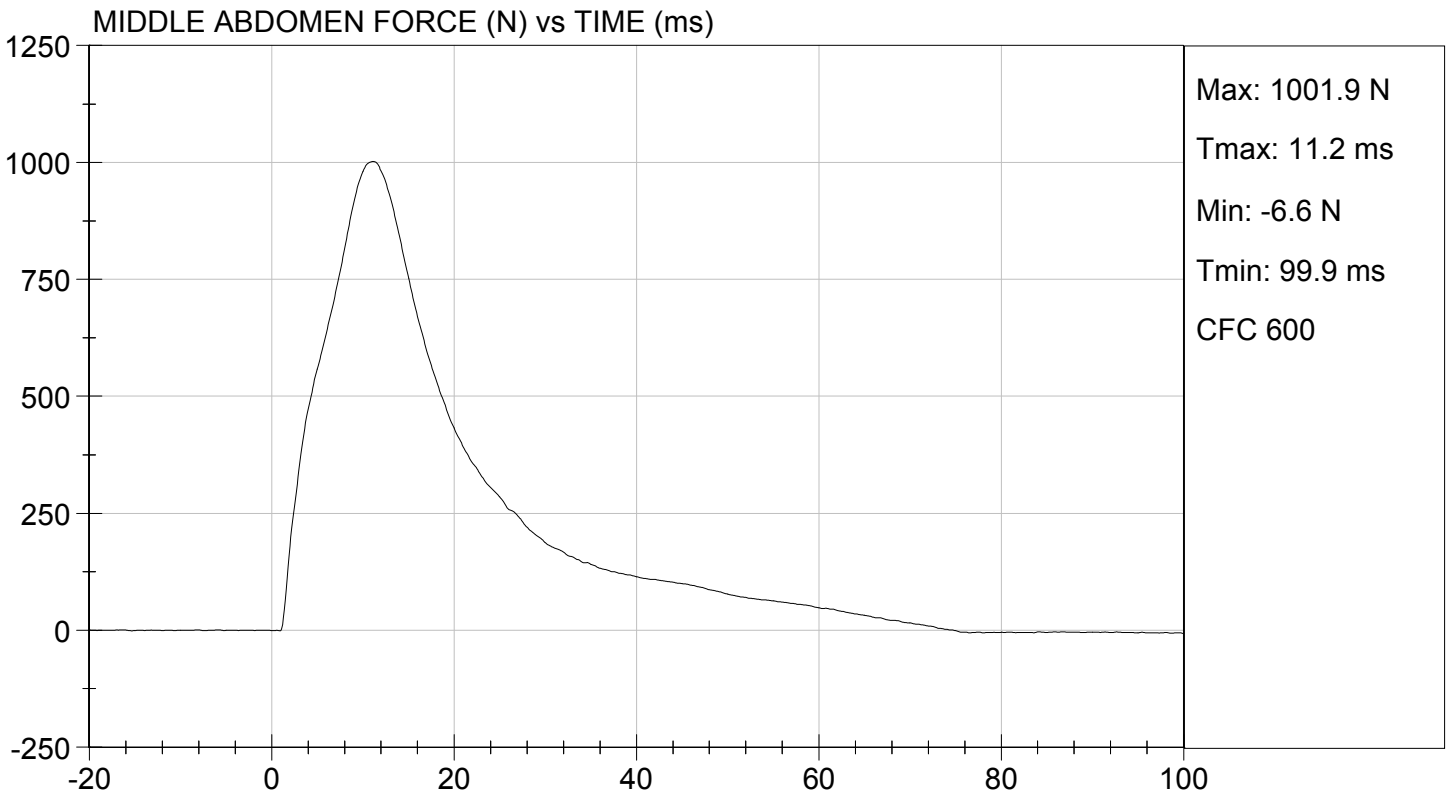
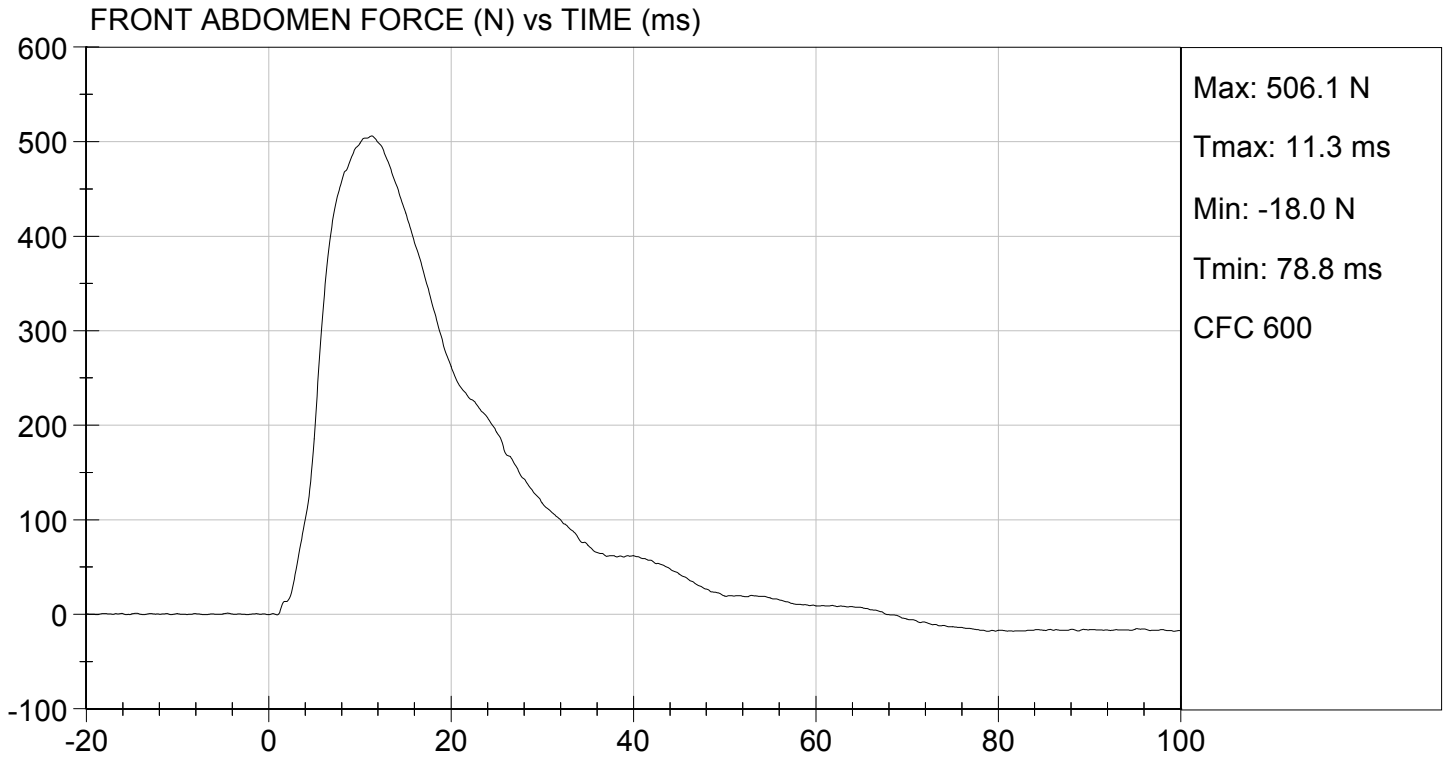
| Tested Parameter | Units | Specification | Result | Pass/Fail |
|--------------------------------|-------|---------------|--------|-----------|
| Laboratory Temperature | deg C | 20.6 to 22.2 | 21.6 | Pass |
| Laboratory Relative Humidity | % | 10 to 70 | 44 | Pass |
| Probe Speed | m/s | 3.90 to 4.10 | 3.94 | Pass |
| Maximum Impactor Force | N | 4000 to 4800 | 4245 | Pass |
| Time of Maximum Impactor Force | ms | 10.6 to 13.0 | 11.1 | Pass |
| Maximum Total Abdomen Force | N | 2200 to 2700 | 2286 | Pass |
| Time of Maximum Abdomen Force | ms | 10.0 to 12.3 | 10.6 | Pass |
| Overall Test Results | | | | Pass |

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Laboratory Technician

10/03/2014
Test Date

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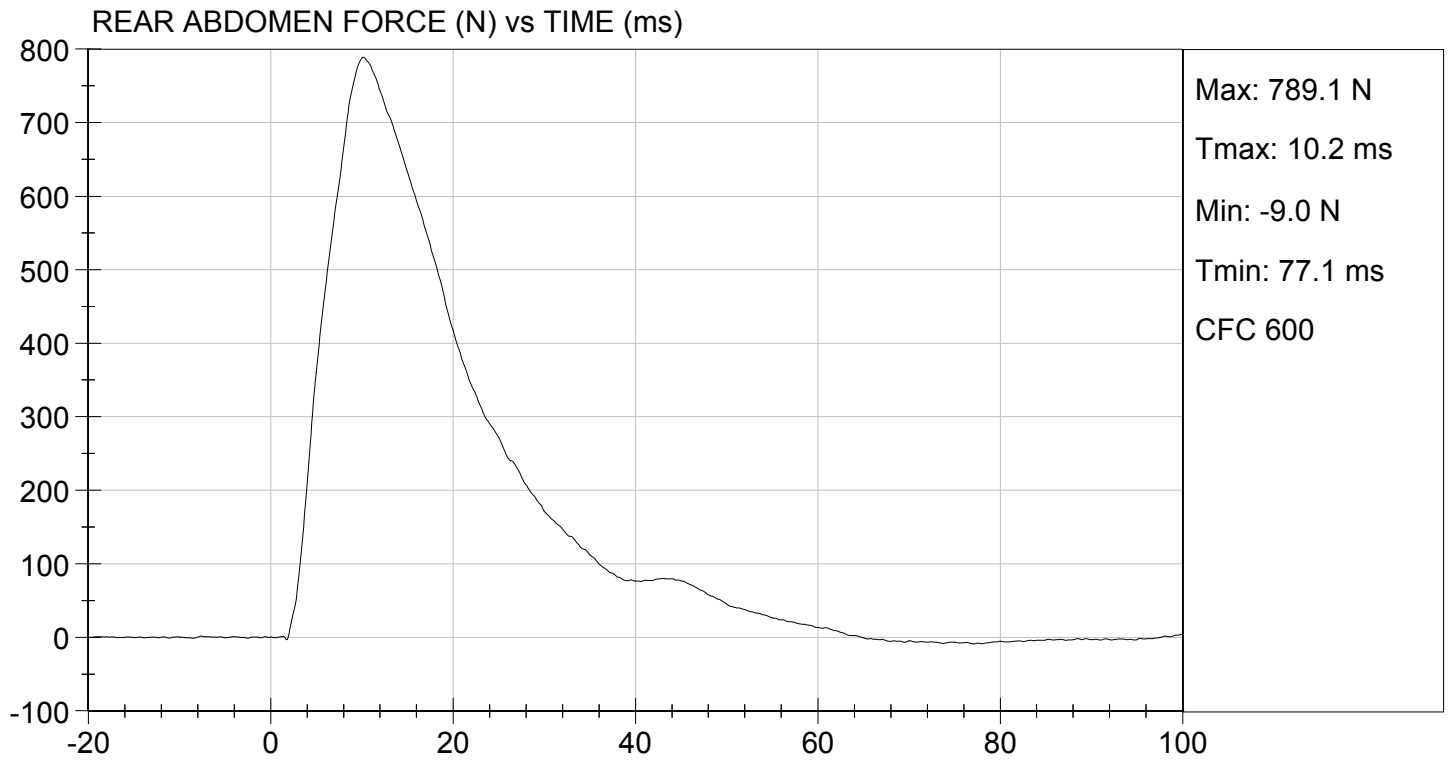






TEST DESC: ABDOMEN IMPACT
VELOCITY: 12.92 ft/s, 3.94 m/s

TEST DATE: 10/03/2014
TEST #: D143487



MGA RESEARCH CORPORATION
LUMBAR SPINE TEST
ES-2re DUMMY

ATD Serial No: 032

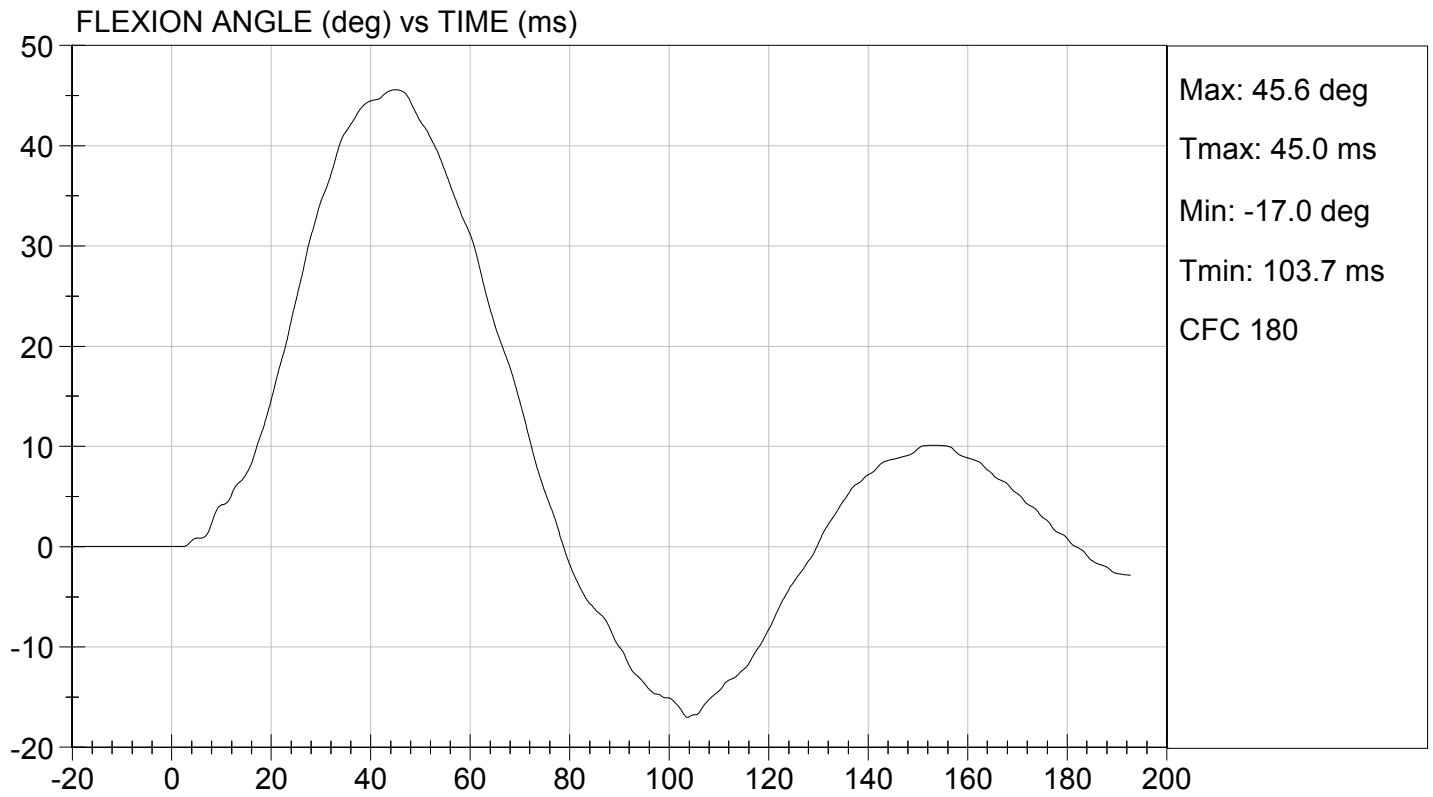
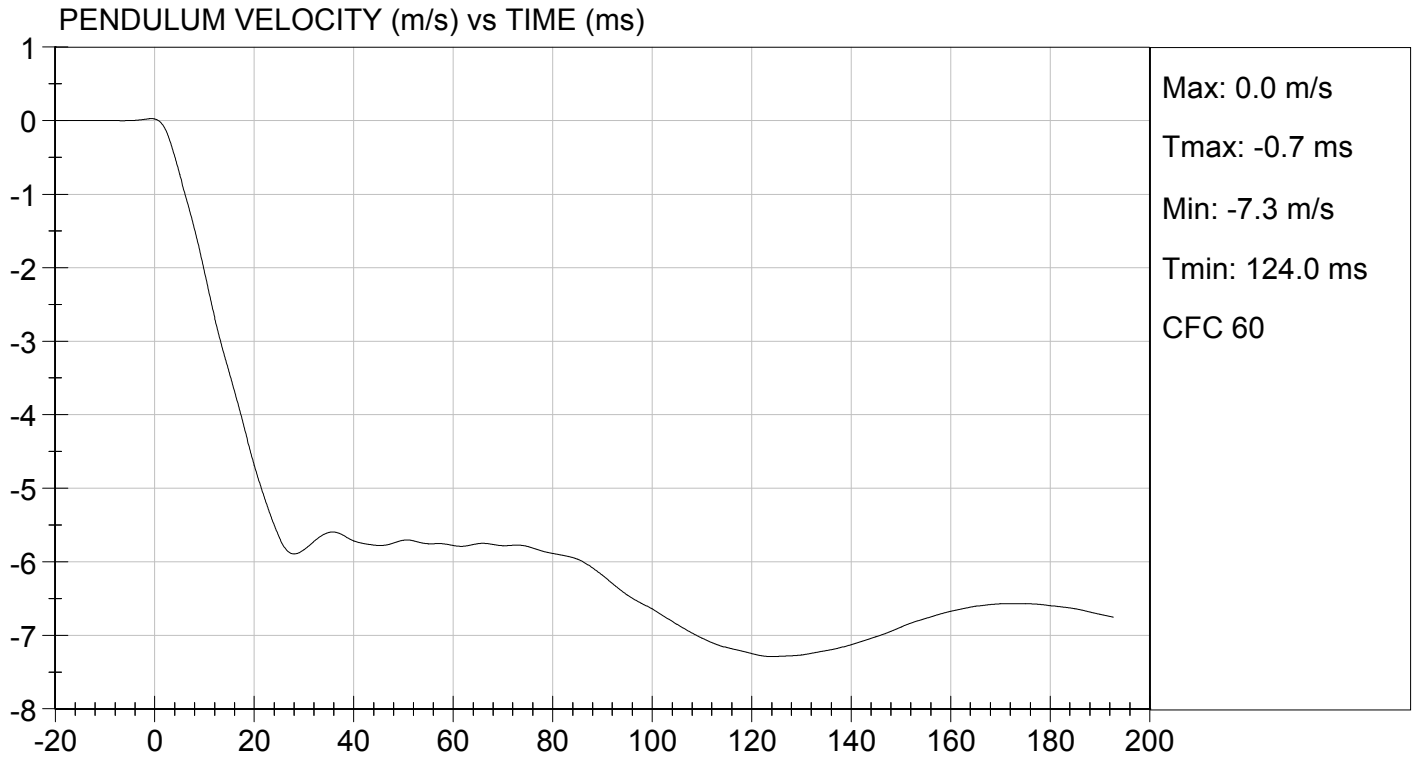
Test I.D.: D143488

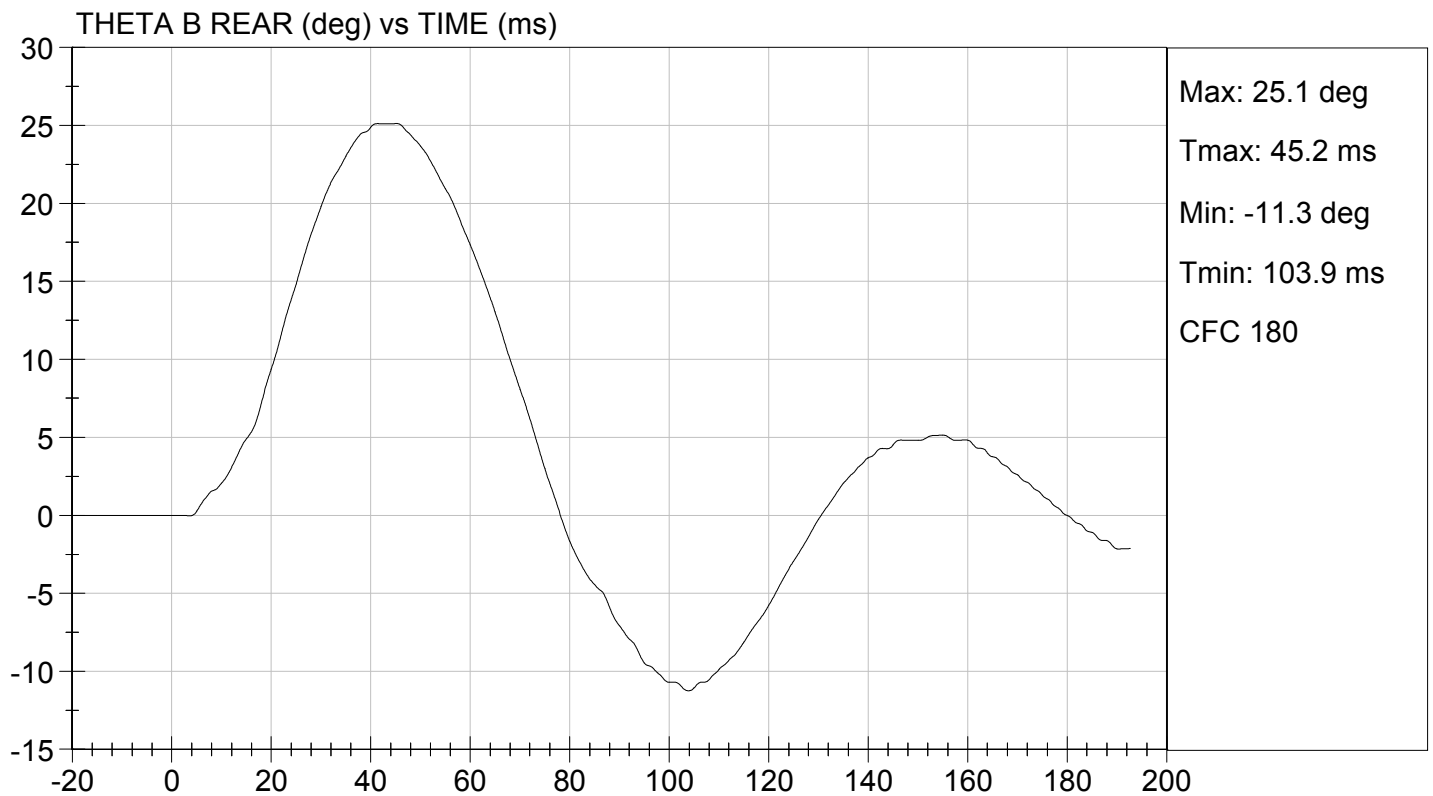
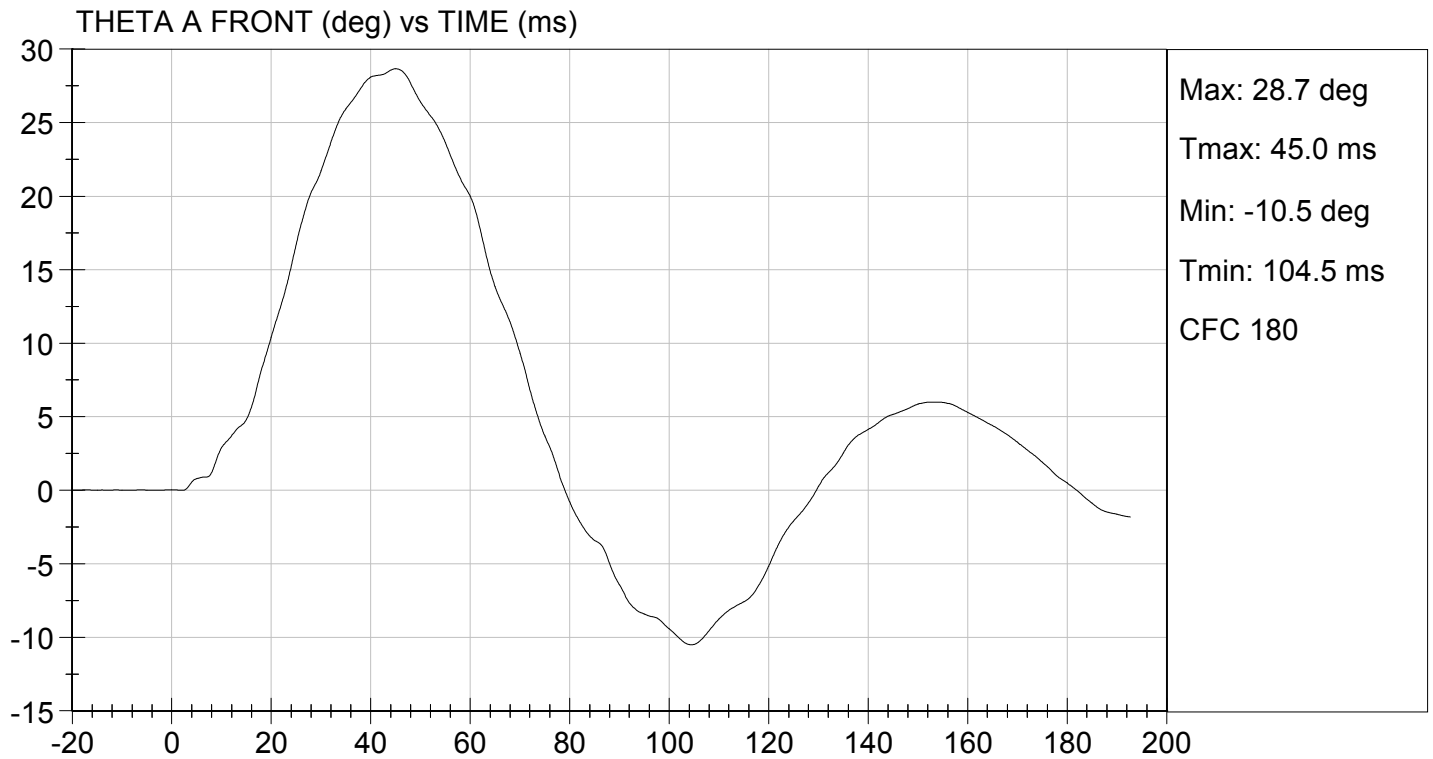
| Tested Parameter | Units | Specification | Result | Pass/Fail | |
|---|--------|---------------|-----------------|-----------|------|
| Laboratory Temperature | deg C | 20.6 to 22.2 | 21.9 | Pass | |
| Laboratory Relative Humidity | % | 10 to 70 | 50 | Pass | |
| Pendulum Speed | m/s | 5.95 to 6.15 | 6.12 | Pass | |
| Pendulum Velocity | 1 ms | m/s | -0.05 to 0.00 | -0.01 | Pass |
| | 3.7 ms | m/s | -0.425 to -0.24 | -0.420 | Pass |
| | 27 ms | m/s | -6.50 to -5.80 | -5.87 | Pass |
| | 30 ms | m/s | >= -6.50 | -5.83 | Pass |
| Maximum Flexion Angle | deg | 45.0 to 55.0 | 45.6 | Pass | |
| Time of Maximum Flexion Angle | ms | 39.0 to 53.0 | 45.0 | Pass | |
| Headform Rotation Decay to Initial Position | ms | 37 to 57 | 45 | Pass | |
| Overall Results | | | | Pass | |

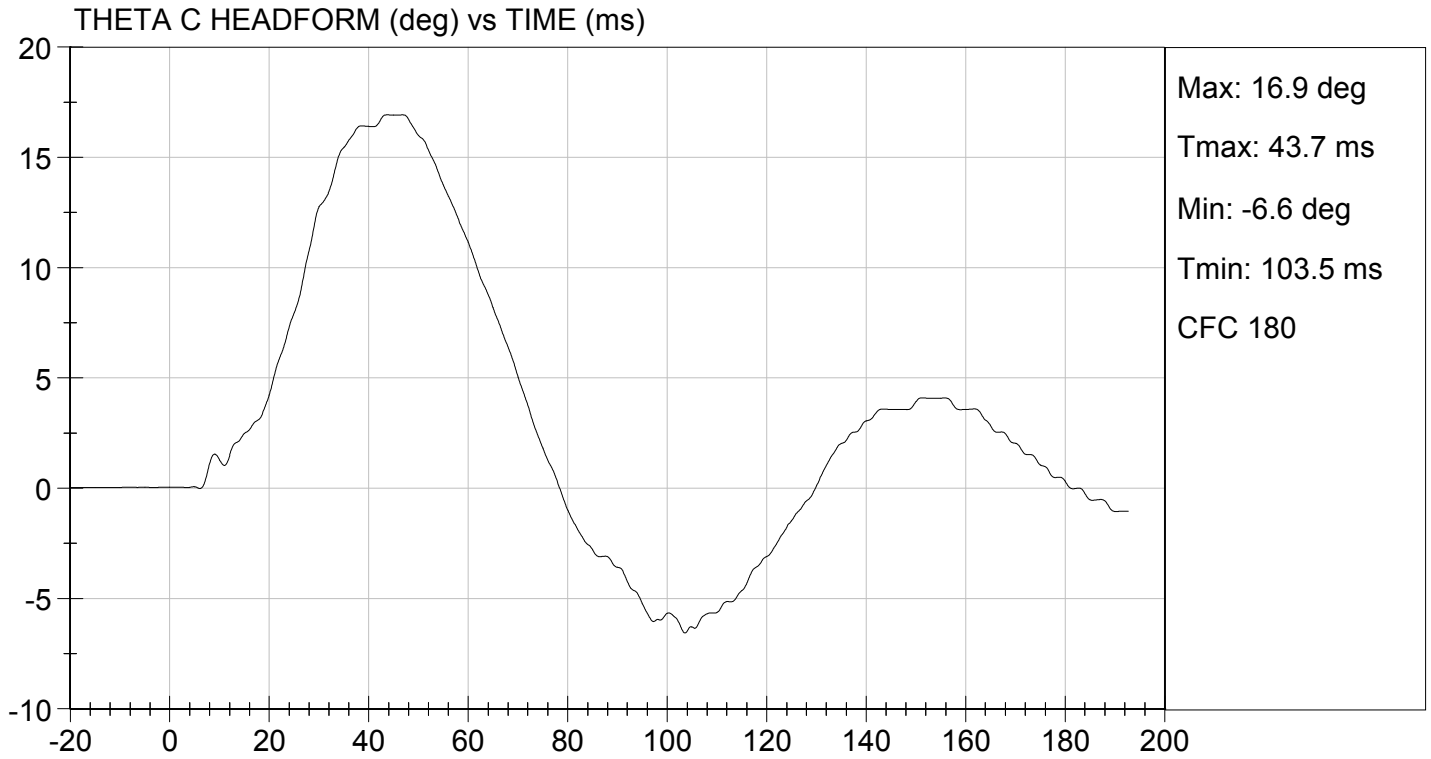
Maxime Chamberland
 Laboratory Technician

10/03/2014
 Test Date

Jessica Hall
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MGA RESEARCH CORPORATION

PELVIS TEST
ES-2re DUMMY

ATD Serial No: 032

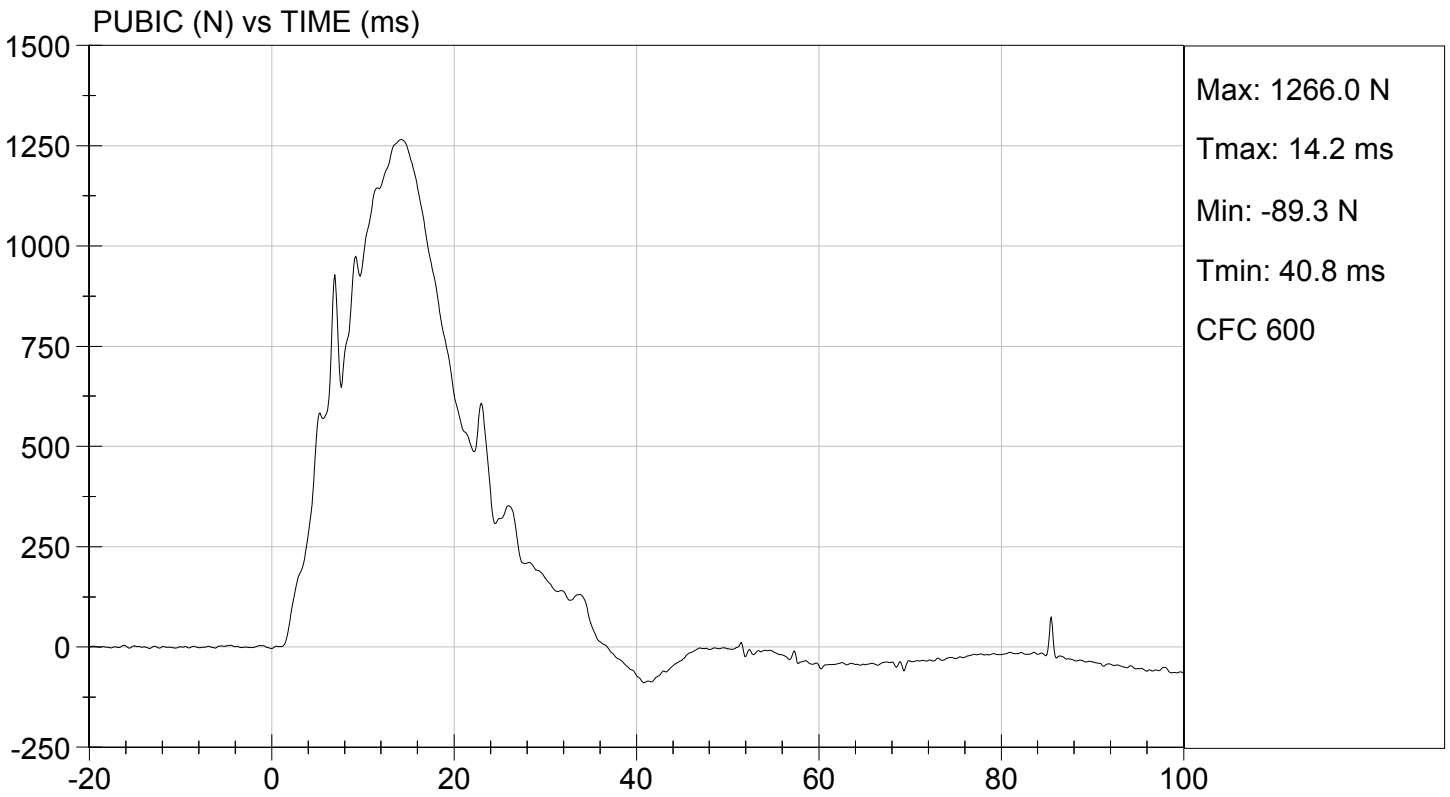
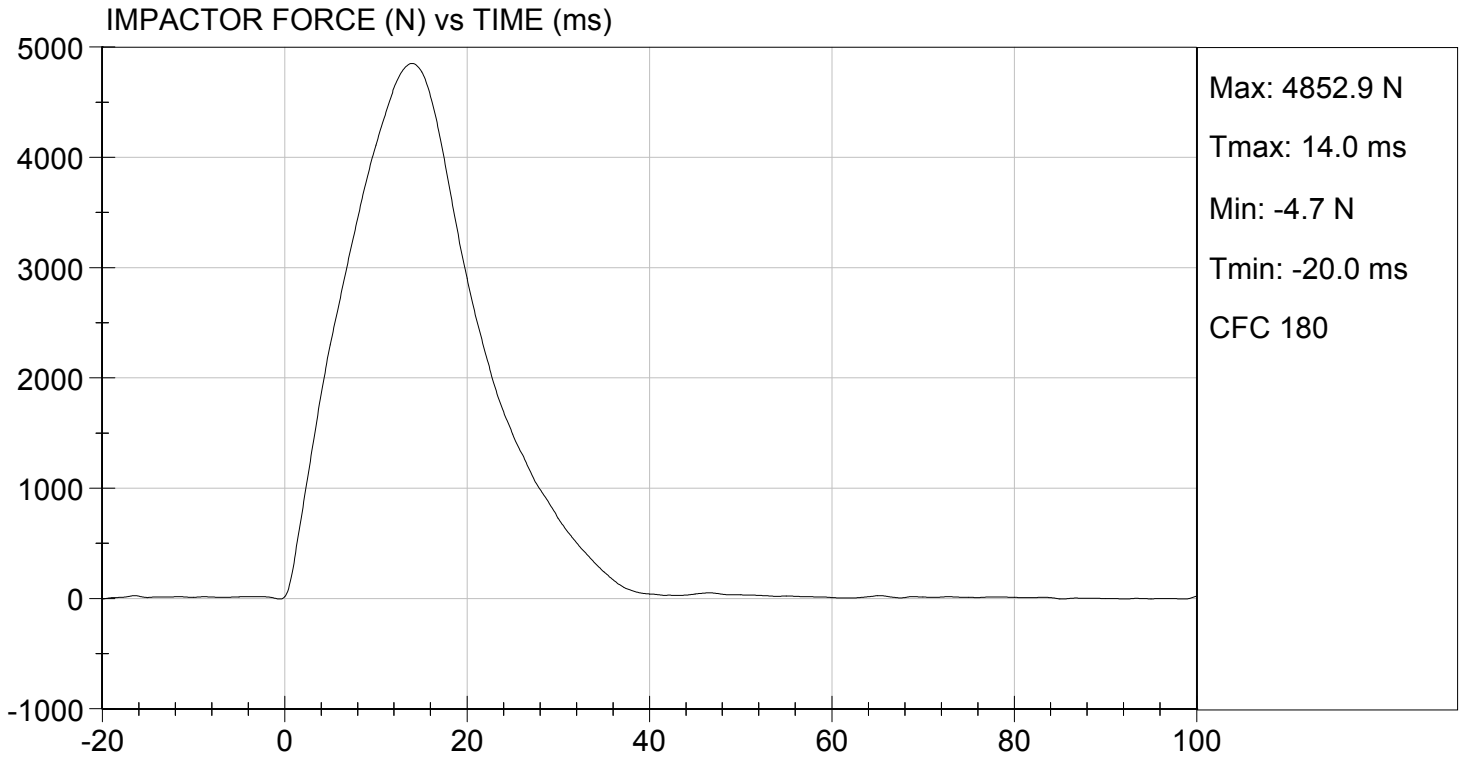
Test I.D: D143489

| Tested Parameter | Units | Specification | Result | Pass/Fail |
|--------------------------------|-------|---------------|--------|-----------|
| Laboratory Temperature | deg C | 20.6 to 22.2 | 21.5 | Pass |
| Laboratory Relative Humidity | % | 10 to 70 | 46 | Pass |
| Probe Speed | m/s | 4.20 to 4.40 | 4.30 | Pass |
| Maximum Impactor Force | N | 4700 to 5400 | 4853 | Pass |
| Time of Maximum Impactor Force | ms | 11.8 to 16.1 | 14.0 | Pass |
| Maximum Pubic Force | N | 1230 to 1590 | 1266 | Pass |
| Time of Maximum Pubic Force | ms | 12.2 to 17.0 | 14.2 | Pass |
| Overall Test Results | | | | Pass |

Maxime Chamberland
Laboratory Technician

10/03/2014
Test Date

Jessica Hall
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MGA RESEARCH CORPORATION
HEAD DROP TEST
ES-2re DUMMY

ATD Serial No: 032

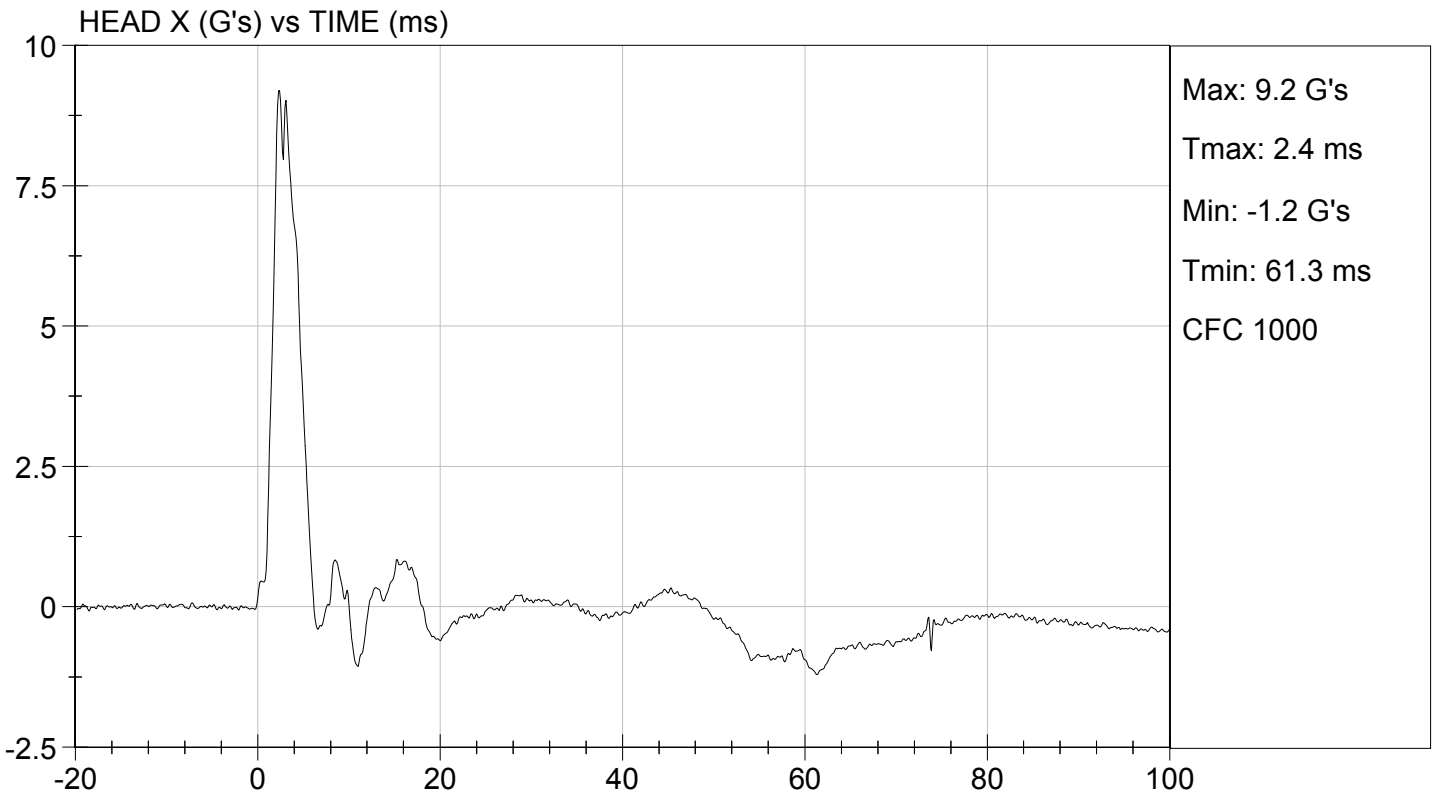
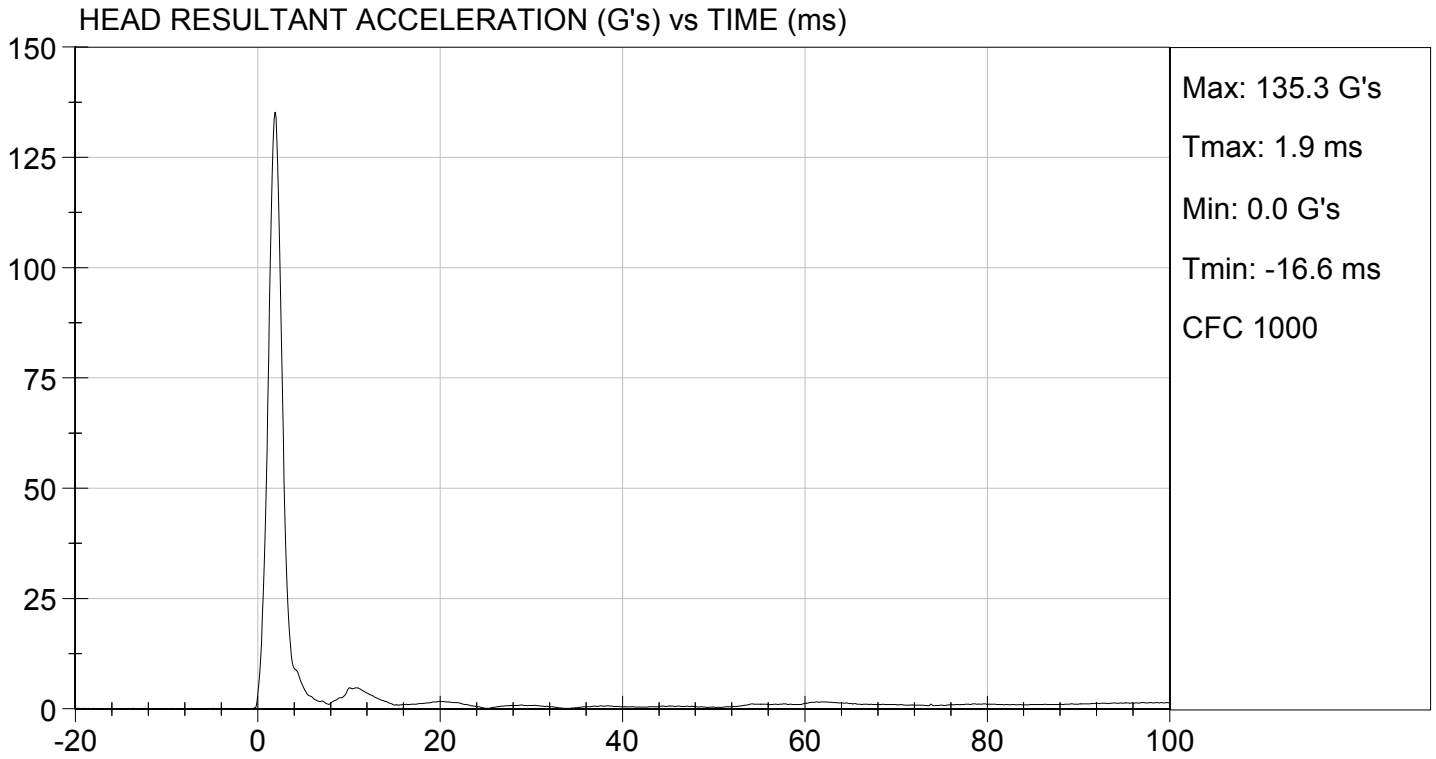
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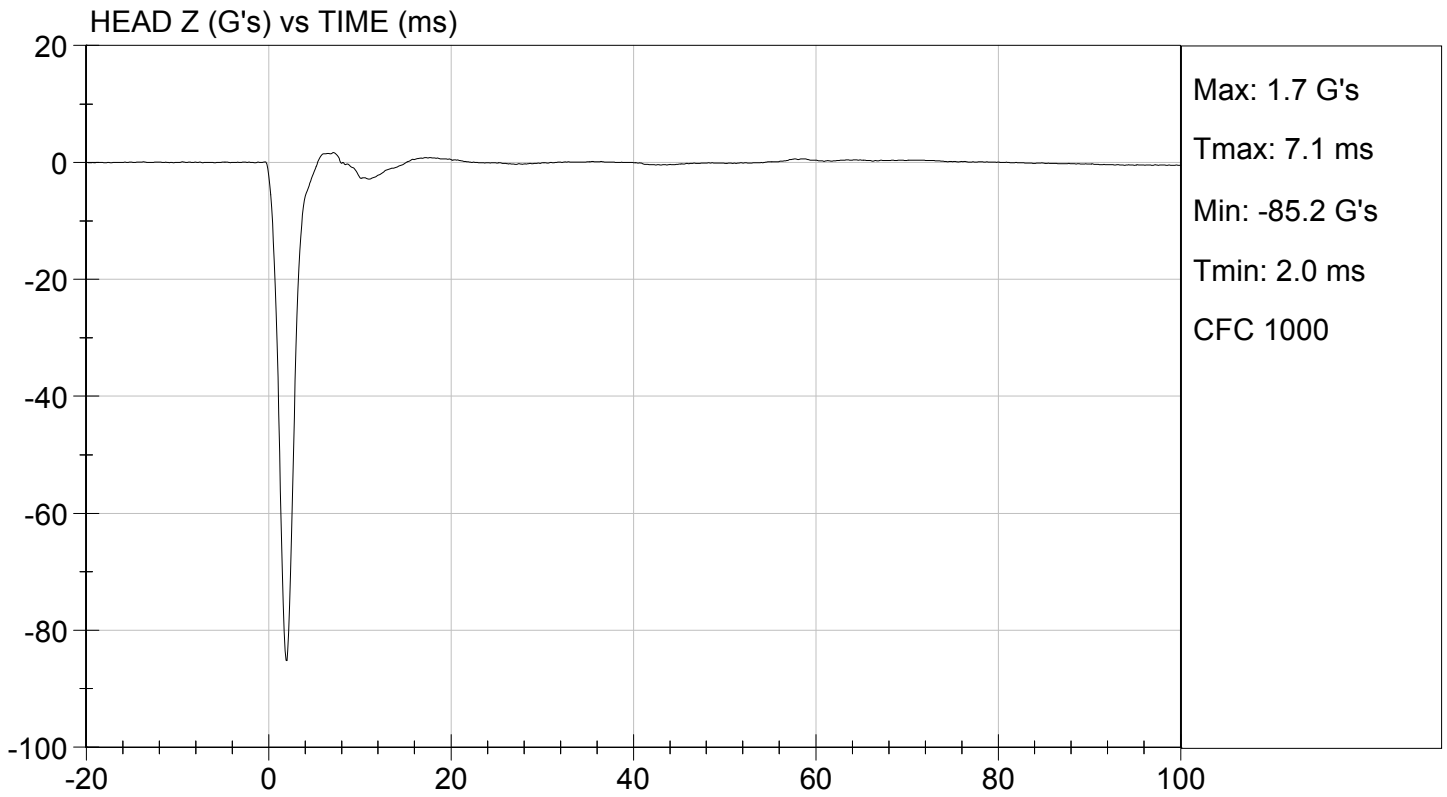
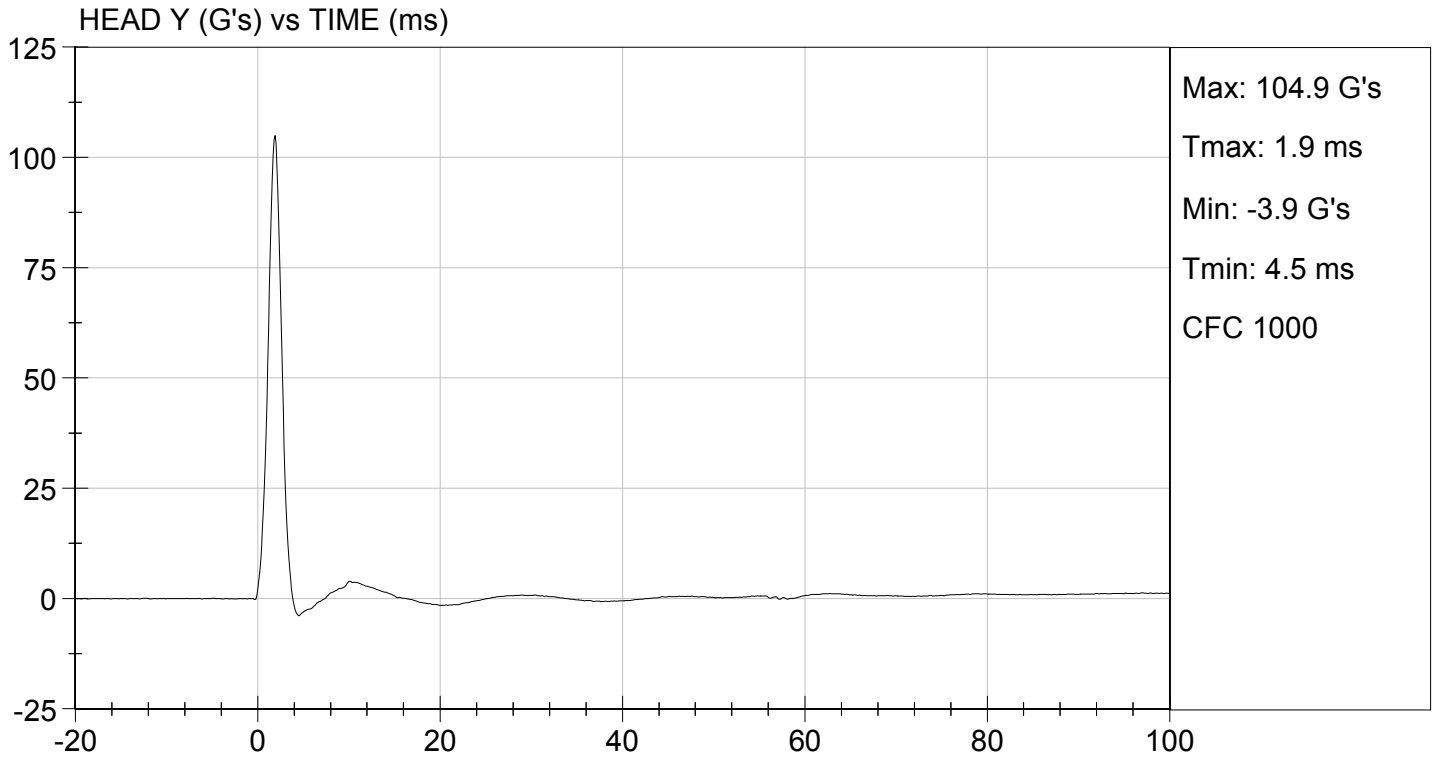
| Tested Parameter | Units | Specification | Result | Pass/Fail |
|--------------------------------|-------|--------------------|--------|-------------|
| Laboratory Temperature | deg C | 18.9 to 25.6 | 21.3 | Pass |
| Laboratory Relative Humidity | % | 10 to 70 | 33 | Pass |
| Peak Resultant Acceleration | G's | 125 to 155 | 135 | Pass |
| Peak Longitudinal Acceleration | G's | <= +/- 15.0 | 9.2 | Pass |
| Unimodal | N/A | Yes | Yes | Pass |
| Oscillations | N/A | within 15% of peak | Yes | Pass |
| Overall Test Results | | | | Pass |

David Schoedel
 Laboratory Technician

10/29/2014
 Test Date

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**MGA RESEARCH CORPORATION
NECK PENDULUM TEST
ES-2re DUMMY**

ATD Serial No: 032

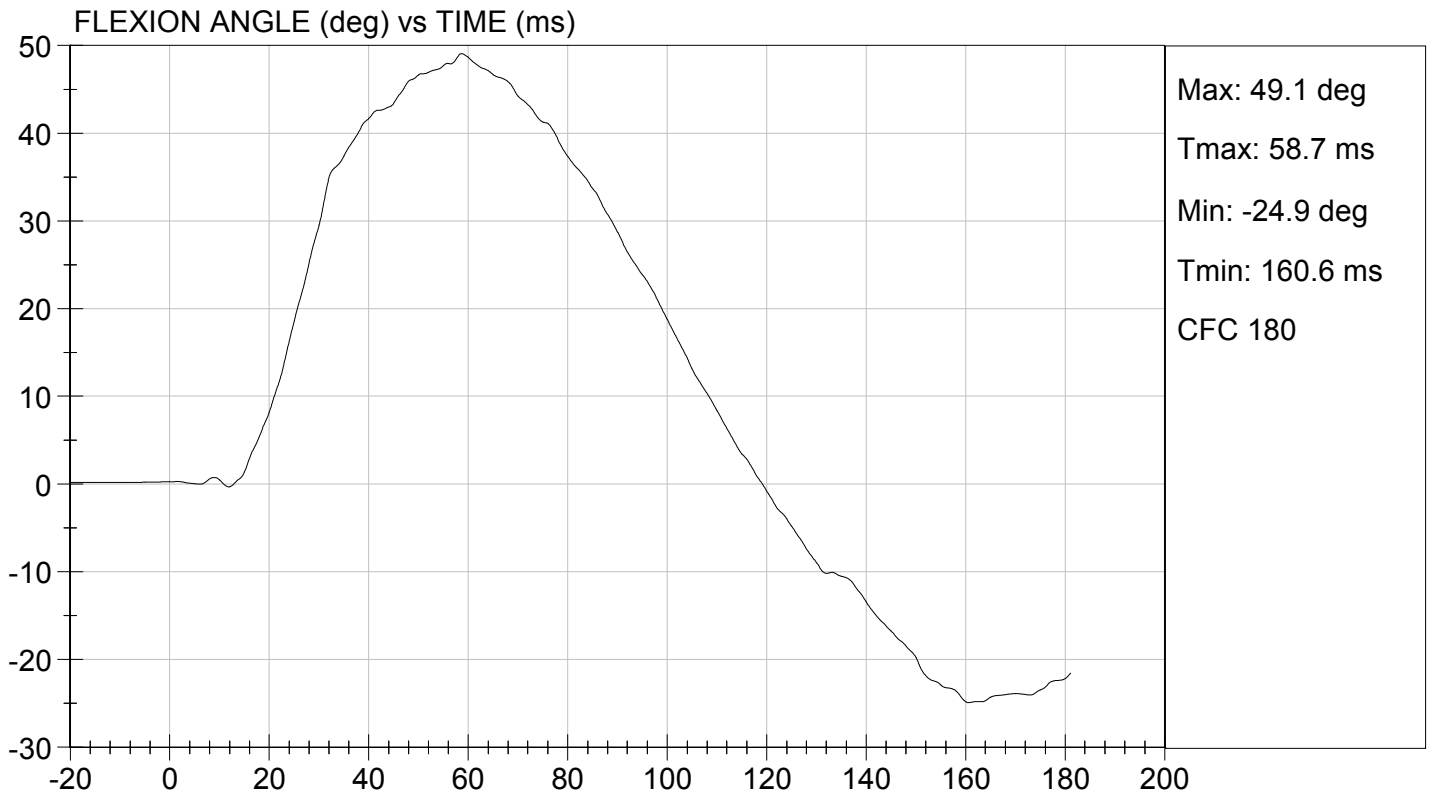
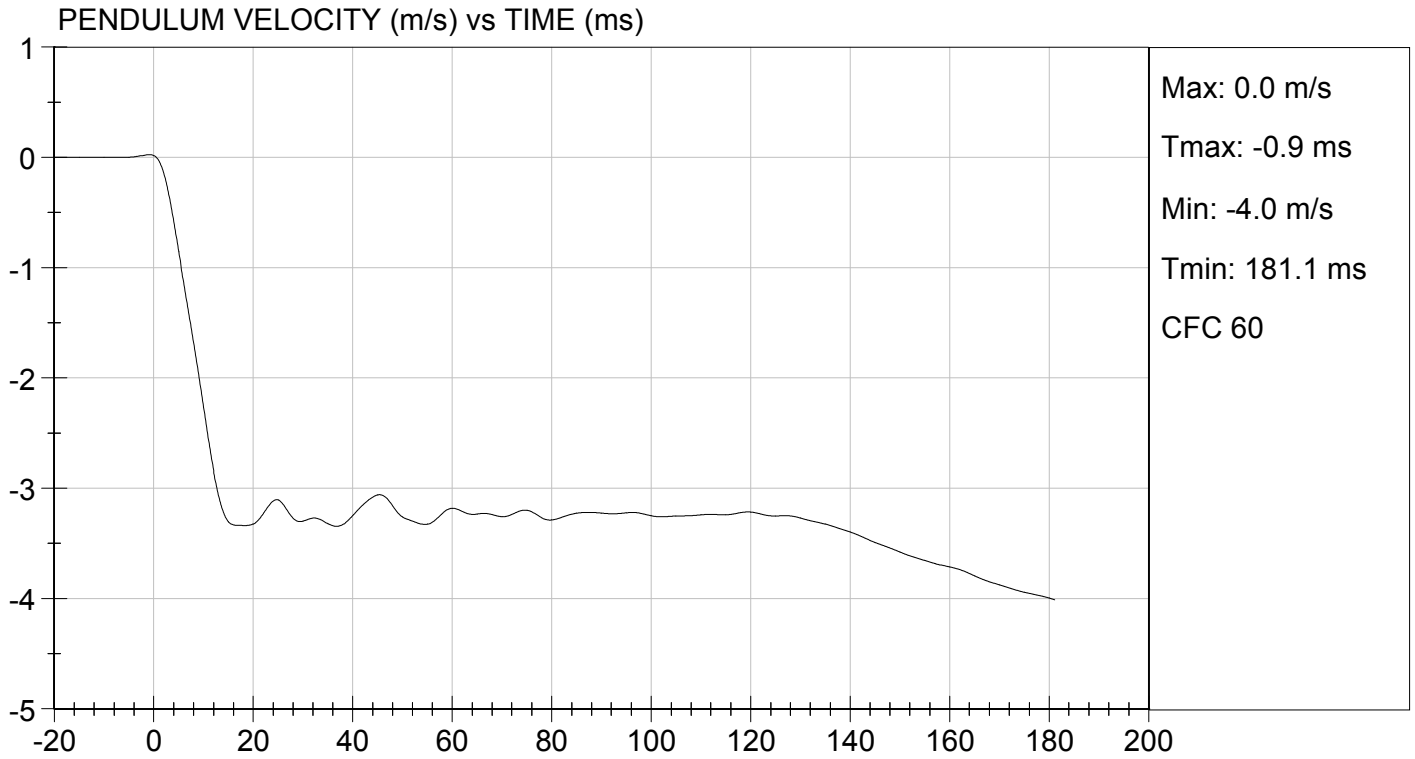
Test I.D.: D143812

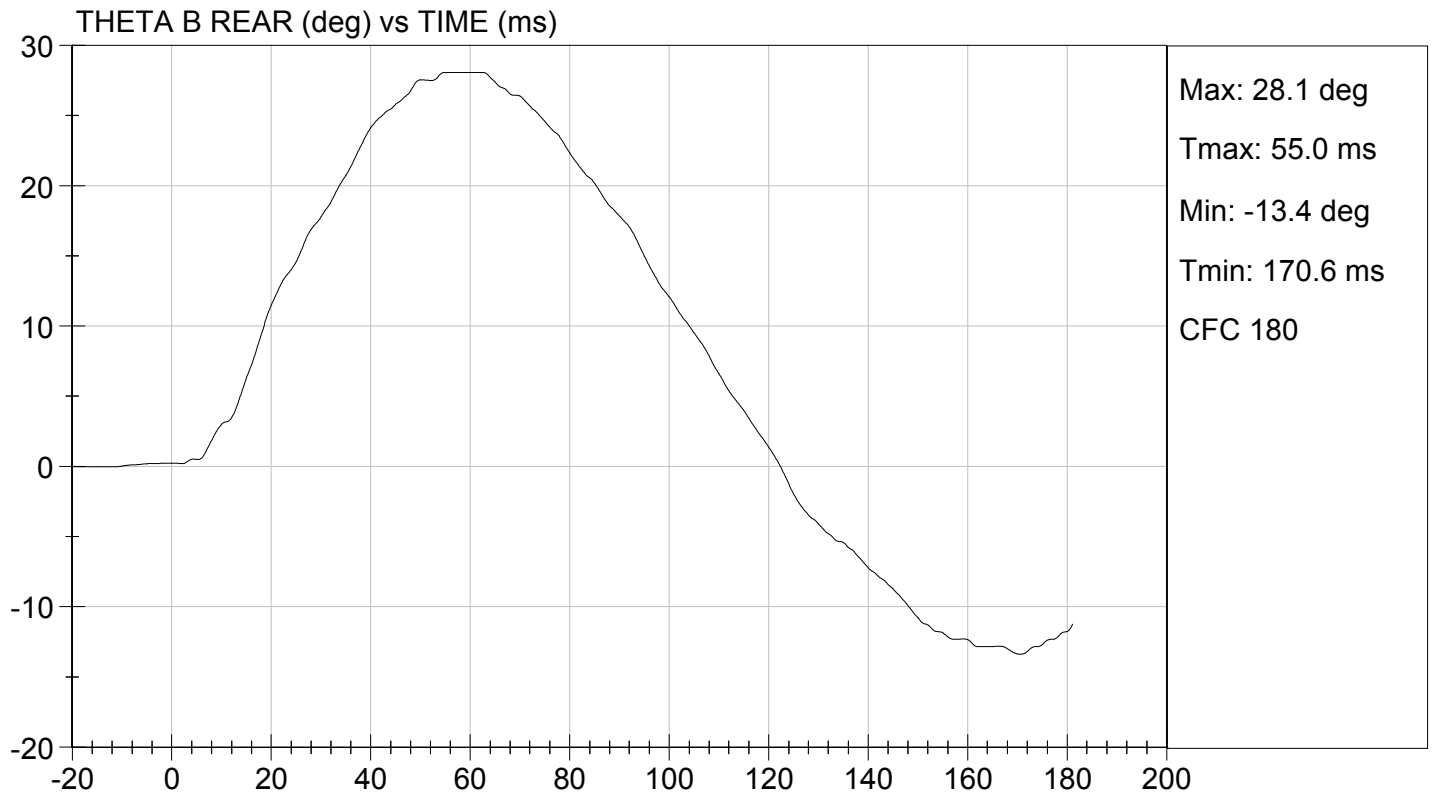
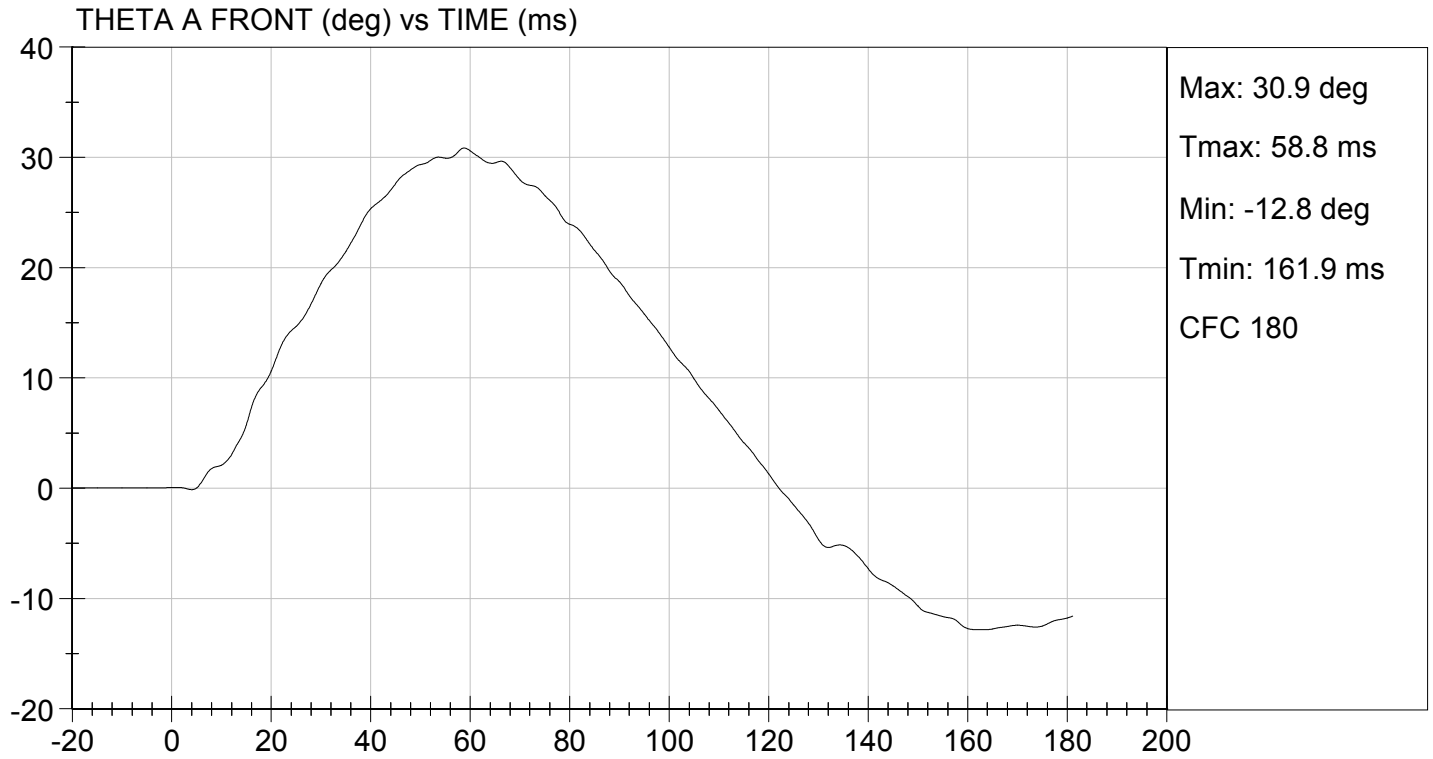
| Tested Parameter | Units | Specification | Result | Pass/Fail | |
|--------------------------------------|-------|---------------|-----------------|-----------|------|
| Laboratory Temperature | deg C | 20.6 to 22.2 | 21.4 | Pass | |
| Laboratory Relative Humidity | % | 10 to 70 | 32 | Pass | |
| Pendulum Speed | m/s | 3.30 to 3.50 | 3.39 | Pass | |
| Pendulum Velocity | 1 ms | m/s | -0.05 to 0.00 | -0.03 | Pass |
| | 3 ms | m/s | -0.25 to -0.375 | -0.33 | Pass |
| | 14 ms | m/s | -3.20 to -3.70 | -3.22 | Pass |
| | 17 ms | m/s | >= -3.70 | -3.34 | Pass |
| Maximum Flexion Angle | deg | 49.0 to 59.0 | 49.1 | Pass | |
| Time of Maximum Flexion Angle | ms | 54.0 to 66.0 | 58.7 | Pass | |
| Head Rotation Decay Time to 0 Degree | ms | 53.0 to 88.0 | 55.0 | Pass | |
| Overall Results | | | | Pass | |

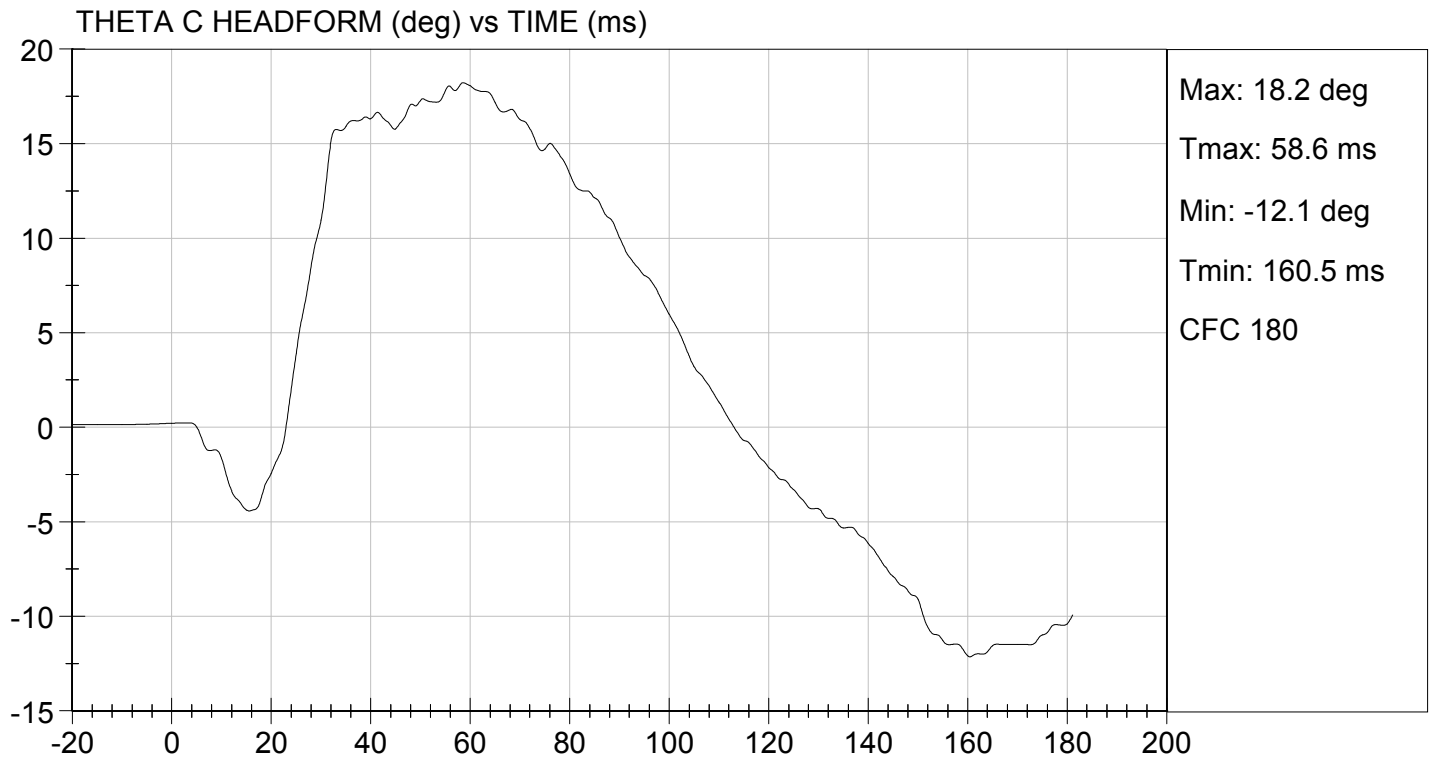
David Schoedel
Laboratory Technician

10/29/2014
Test Date

Jessica Hall
Approved By







MGA RESEARCH CORPORATION
SHOULDER IMPACT TEST
ES-2re DUMMY


ATD Serial No: 032

Test I.D: D143813

| Tested Parameter | Units | Specification | Result | Pass/Fail |
|------------------------------|-------|---------------|--------|-----------|
| Laboratory Temperature | deg C | 20.6 to 22.2 | 21.6 | Pass |
| Laboratory Relative Humidity | % | 10 to 70 | 31 | Pass |
| Pendulum Speed | m/s | 4.20 to 4.40 | 4.34 | Pass |
| Peak Impactor Acceleration | G's | 7.5 to 10.5 | 9.5 | Pass |
| Overall Test Results | | | | Pass |


Laboratory Technician

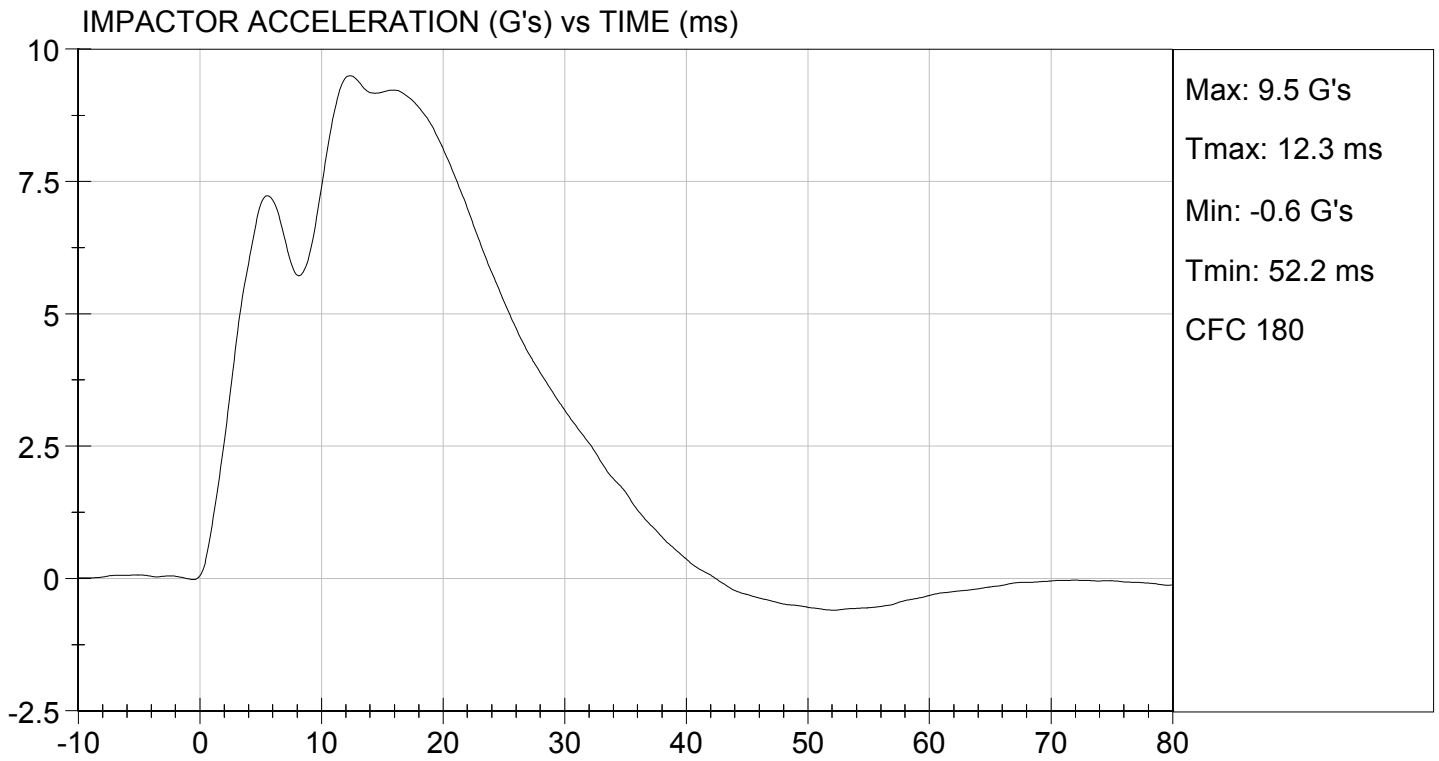
10/29/2014
Test Date


Approved By



TEST DESC: SHOULDER IMPACT
VELOCITY: 14.25 ft/s, 4.34 m/s

TEST DATE: 10/29/2014
TEST #: D143813



MGA RESEARCH CORPORATION

UPPER RIB TEST

ES-2re DUMMY


ATD Serial No: 032

Test I.D: D143814

| Tested Parameter | Units | Specification | Result | Pass/Fail |
|------------------------------|-------|---------------|--------|-----------|
| Laboratory Temperature | deg C | 20.6 to 22.2 | 21.4 | Pass |
| Laboratory Relative Humidity | % | 10 to 70 | 32 | Pass |
| Displacement at 459 mm | mm | 36.0 to 40.0 | 38.9 | Pass |
| Displacement at 815 mm | mm | 46.0 to 51.0 | 48.1 | Pass |
| Overall Test Results | | | | Pass |

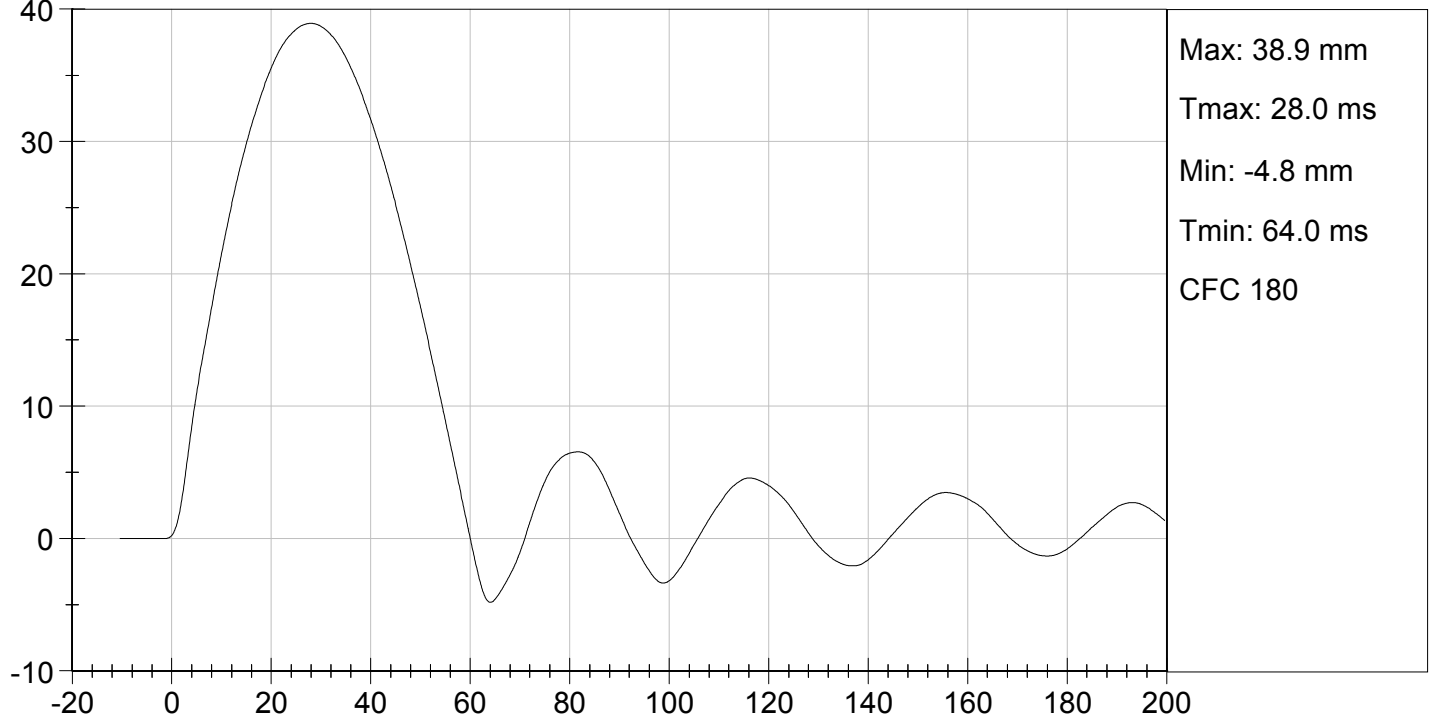

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10/29/2014
Test Date

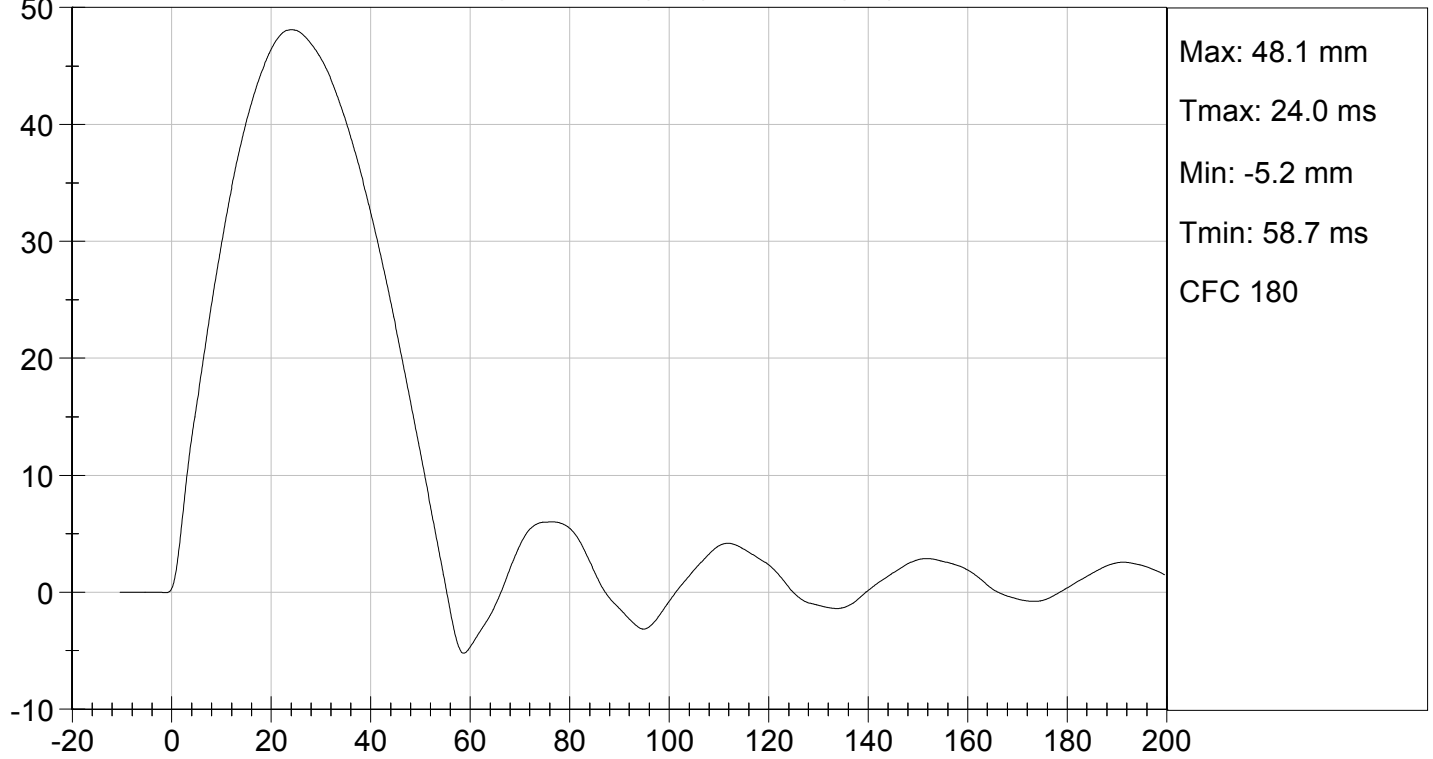

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UPPER RIB DISPLACEMENT @ 459 mm (mm) vs TIME (ms)



UPPER RIB DISPLACEMENT @ 815 mm (mm) vs TIME (ms)



MGA RESEARCH CORPORATION

MID RIB TEST

ES-2re DUMMY

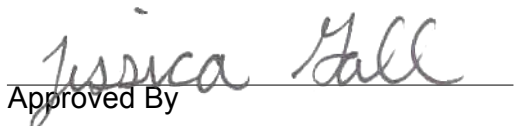
ATD Serial No: 032

Test I.D: D143815

| Tested Parameter | Units | Specification | Result | Pass/Fail |
|------------------------------|-------|---------------|--------|-----------|
| Laboratory Temperature | deg C | 20.6 to 22.2 | 21.4 | Pass |
| Laboratory Relative Humidity | % | 10 to 70 | 32 | Pass |
| Displacement at 459 mm | mm | 36.0 to 40.0 | 38.7 | Pass |
| Displacement at 815 mm | mm | 46.0 to 51.0 | 48.7 | Pass |
| Overall Test Results | | | | Pass |

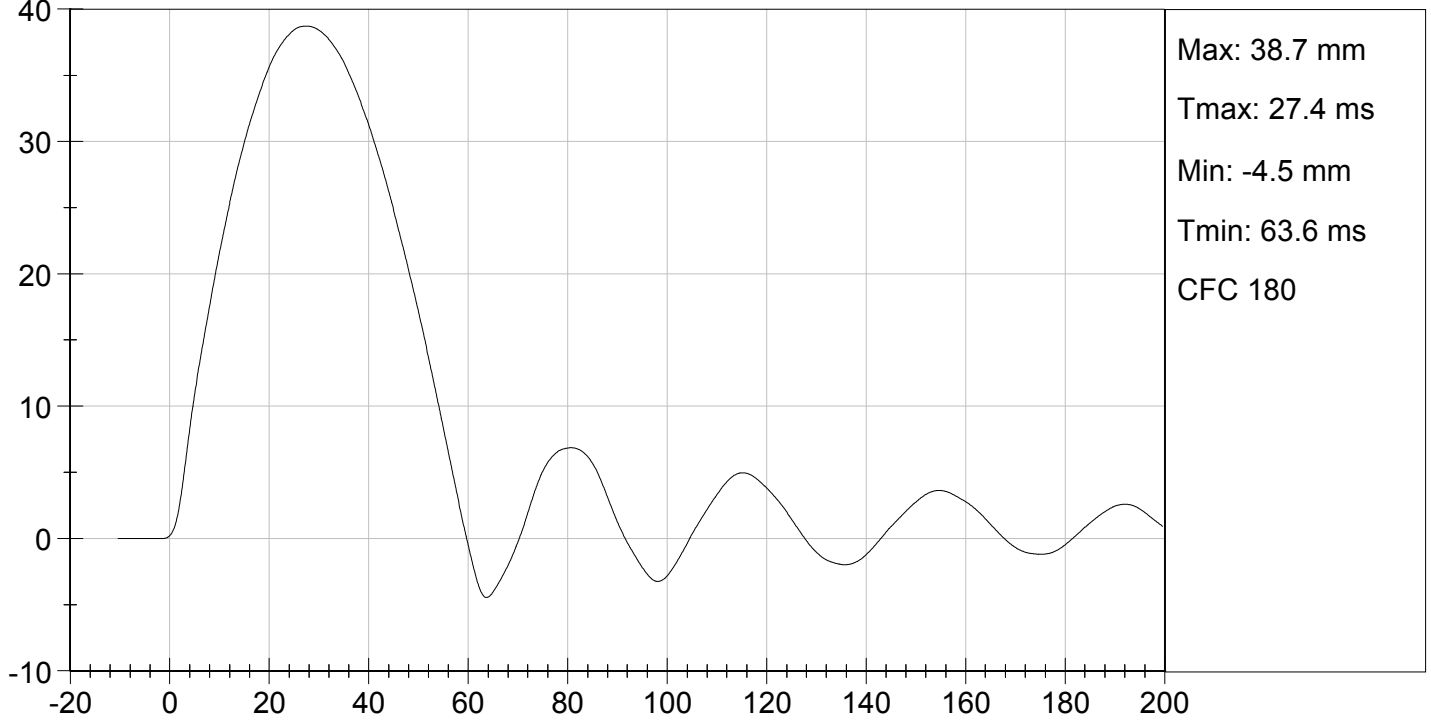

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10/29/2014
Test Date

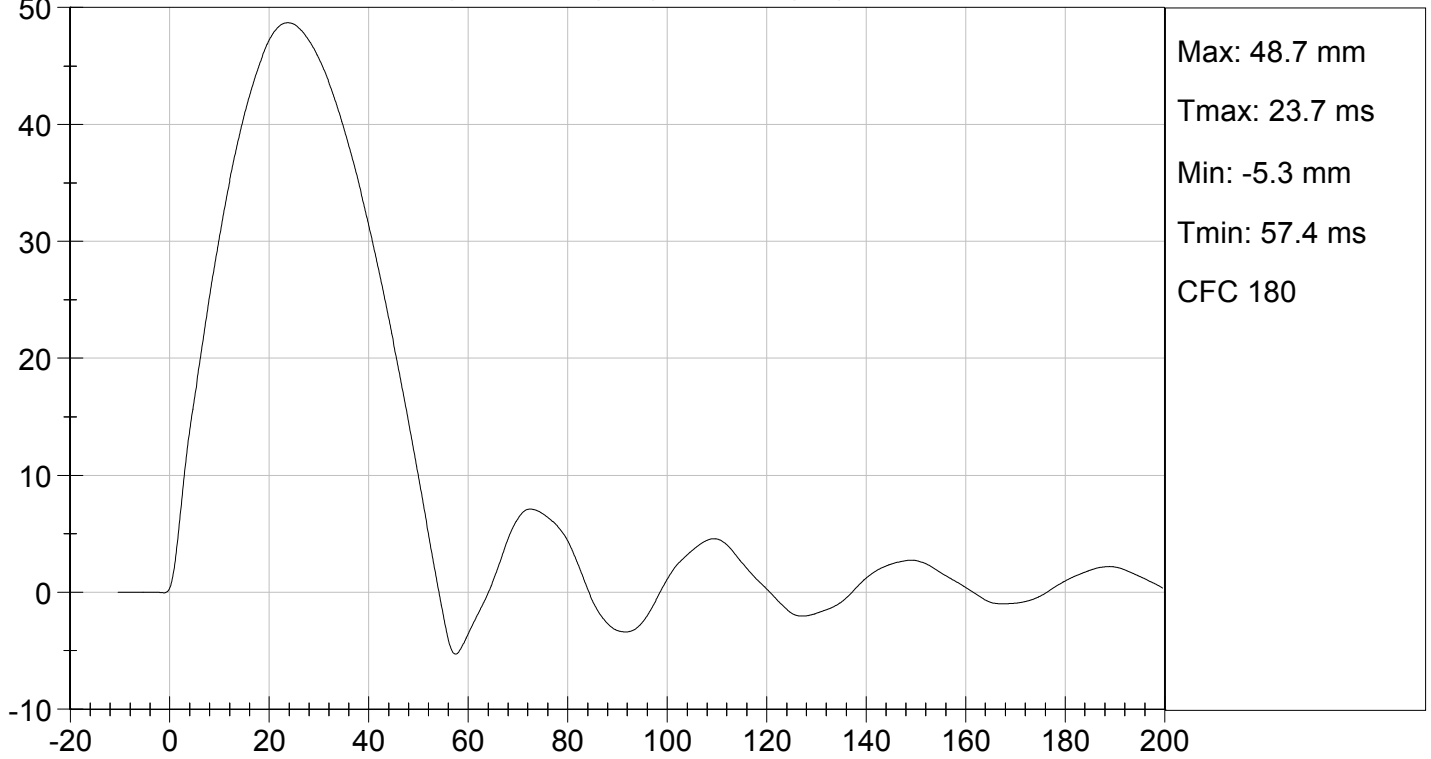

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MID RIB DISPLACEMENT @ 459 mm (mm) vs TIME (ms)



MID RIB DISPLACEMENT @ 815 mm (mm) vs TIME (ms)



MGA RESEARCH CORPORATION

LOWER RIB TEST

ES-2re DUMMY


ATD Serial No: 032

Test I.D: D143816

| Tested Parameter | Units | Specification | Result | Pass/Fail |
|------------------------------|-------|---------------|--------|-----------|
| Laboratory Temperature | deg C | 20.6 to 22.2 | 21.4 | Pass |
| Laboratory Relative Humidity | % | 10 to 70 | 32 | Pass |
| Displacement at 459 mm | mm | 36.0 to 40.0 | 38.0 | Pass |
| Displacement at 815 mm | mm | 46.0 to 51.0 | 49.3 | Pass |
| Overall Test Results | | | | Pass |

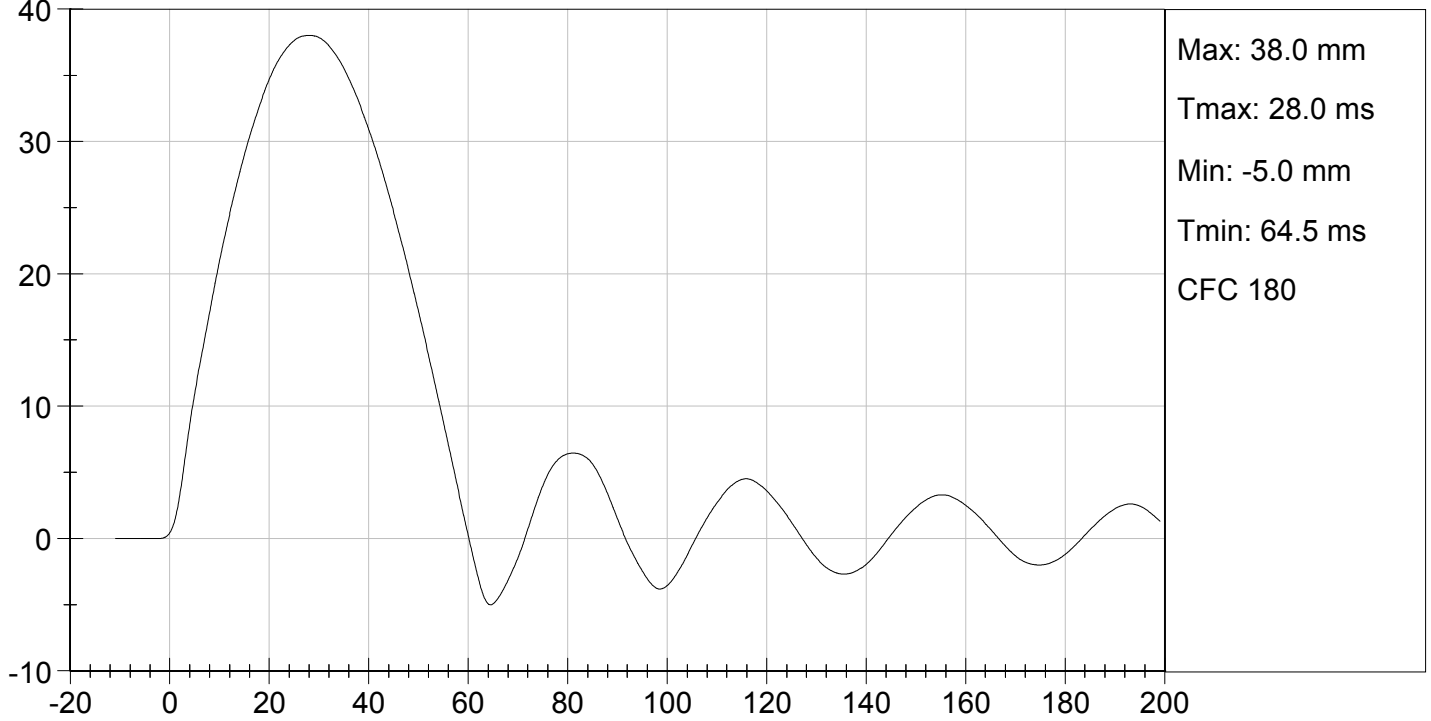

Laboratory Technician

10/29/2014
Test Date

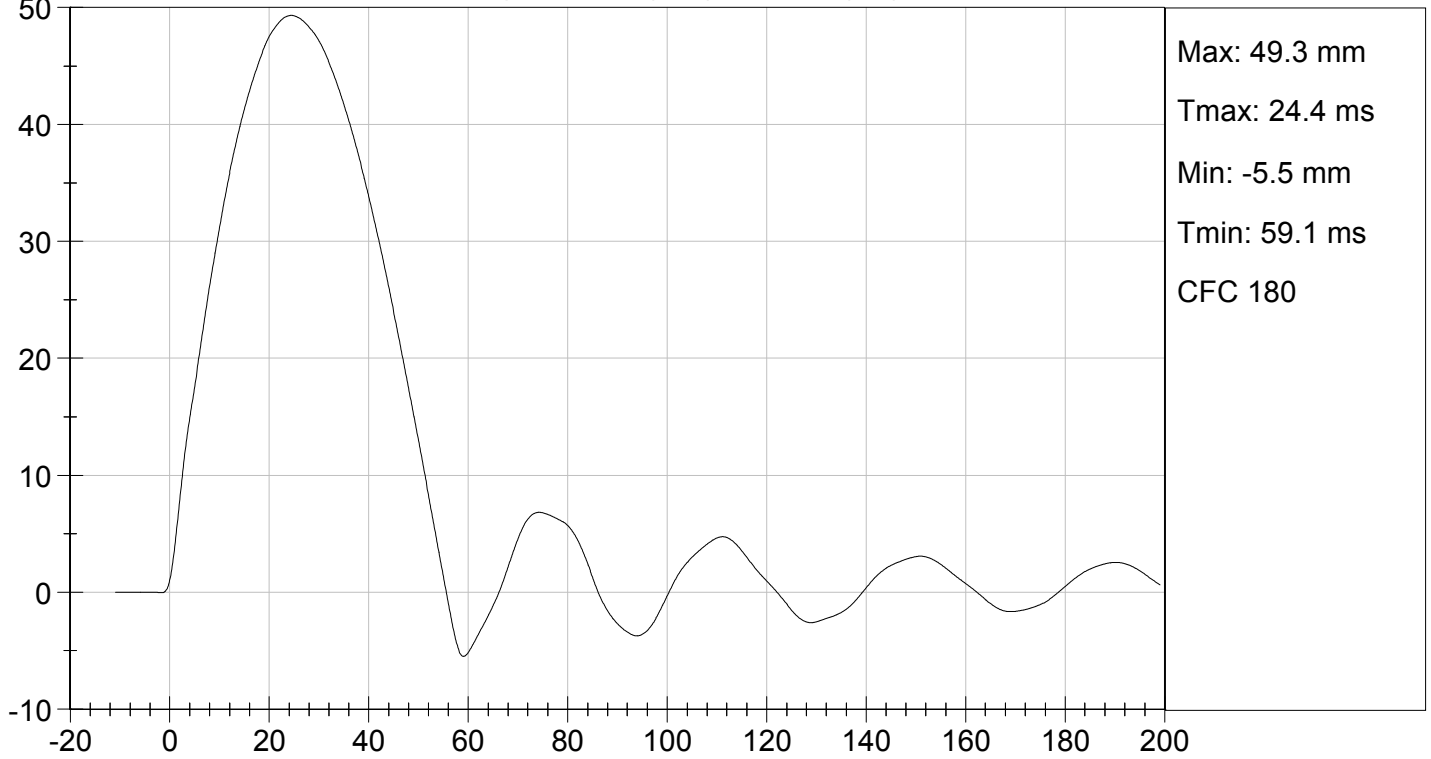

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LOWER RIB DISPLACEMENT @ 459 mm (mm) vs TIME (ms)



LOWER RIB DISPLACEMENT @ 815 mm (mm) vs TIME (ms)



MGA RESEARCH CORPORATION
THORAX IMPACT TEST
ES-2re DUMMY


ATD Serial No: 032

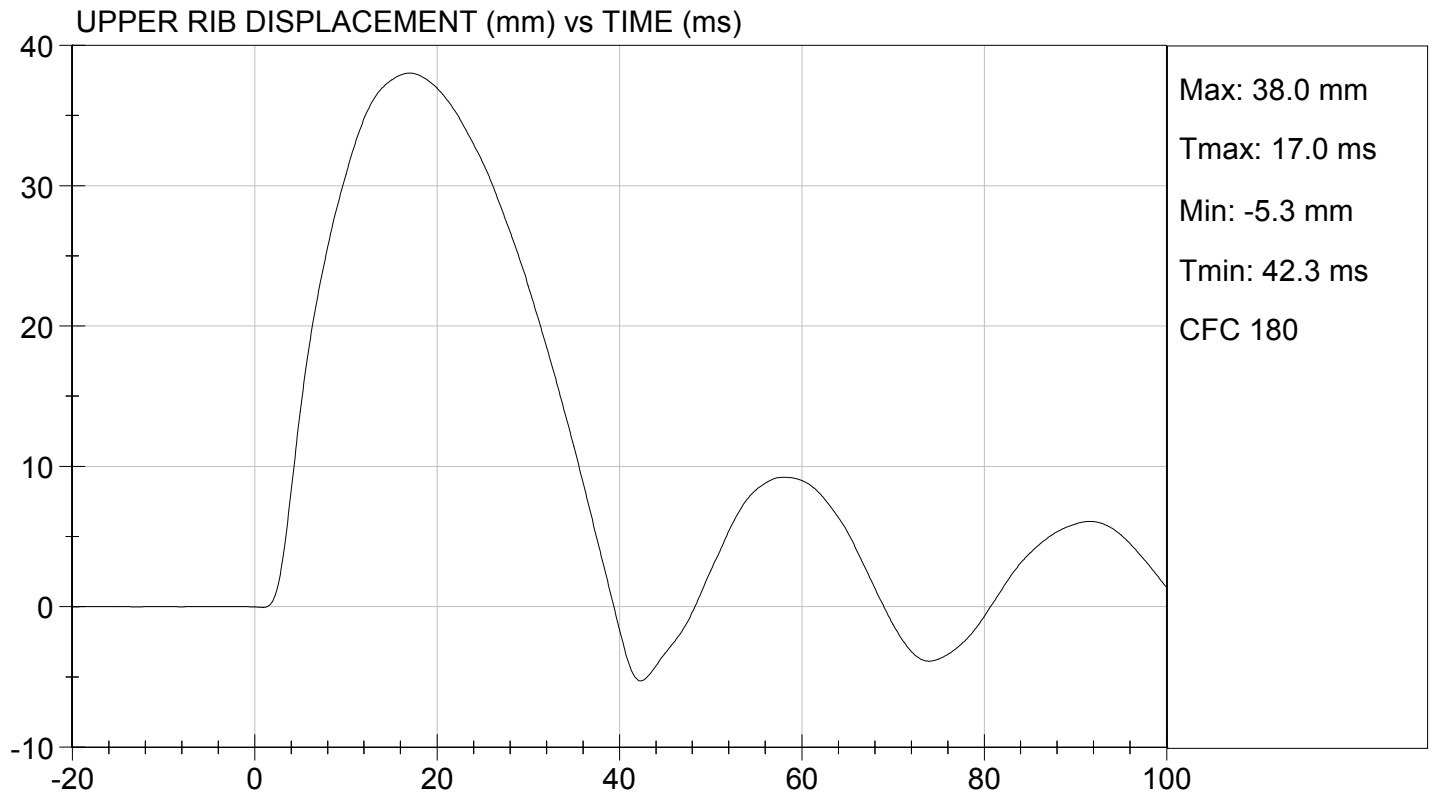
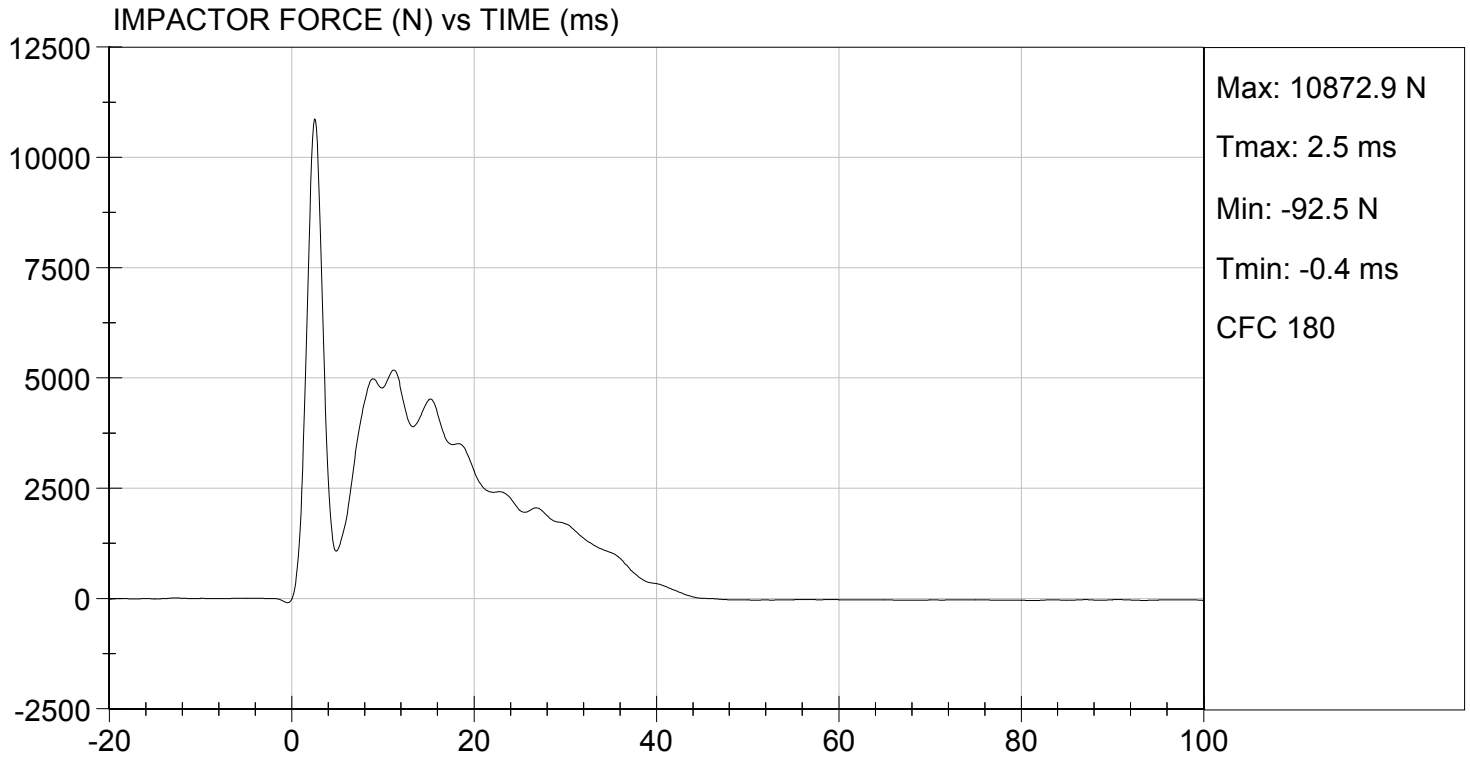
Test I.D: D143810

| Tested Parameter | Units | Specification | Result | Pass/Fail |
|-------------------------------------|-------|---------------|--------|-----------|
| Temperature | deg C | 20.6 to 22.2 | 21.6 | Pass |
| Humidity | % | 10 to 70 | 31 | Pass |
| Probe Speed | m/s | 5.40 to 5.60 | 5.58 | Pass |
| Maximum Impactor Force (after 6 ms) | N | 5100 to 6200 | 5179 | Pass |
| Upper Rib Displacement | mm | 34.0 to 41.0 | 38.0 | Pass |
| Middle Rib Displacement | mm | 37.0 to 45.0 | 41.4 | Pass |
| Lower Rib Displacement | mm | 37.0 to 44.0 | 40.3 | Pass |
| Overall Test Results | | | | Pass |


 Laboratory Technician

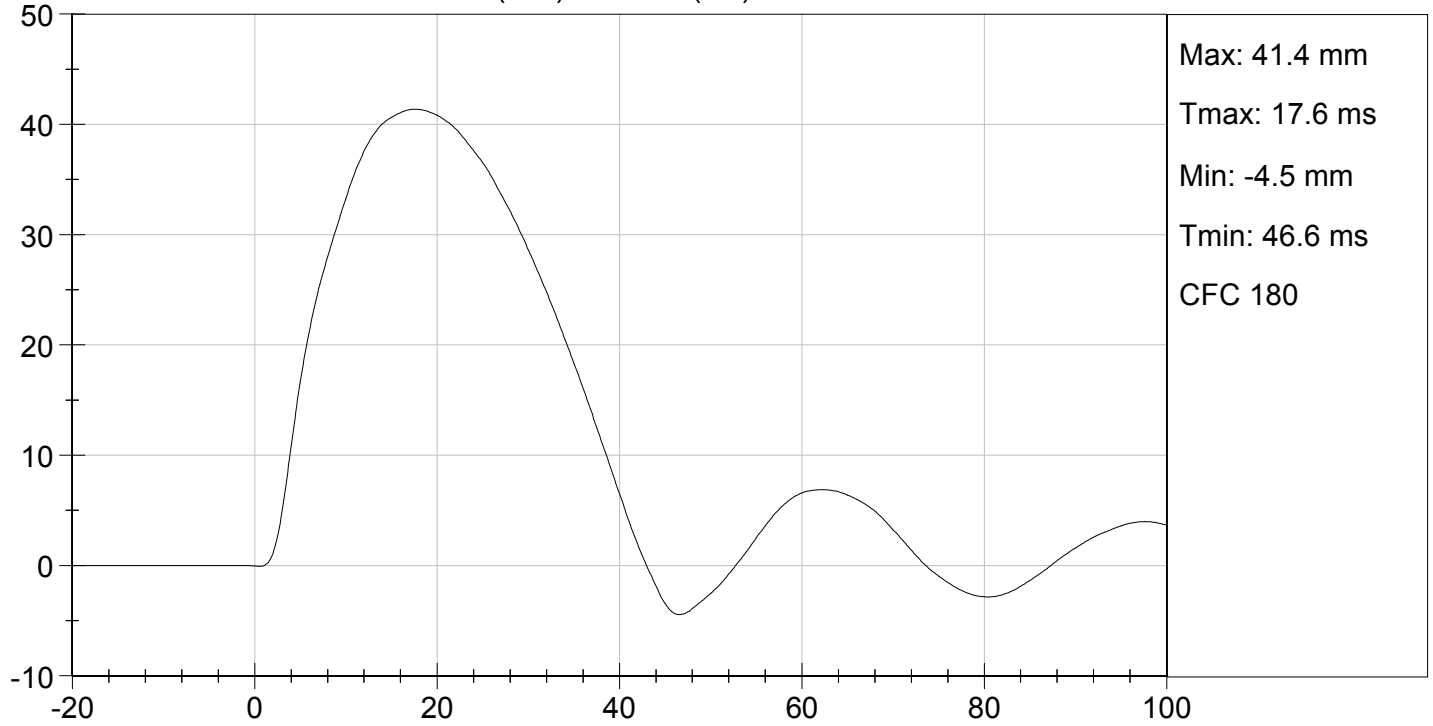
10/29/2014
 Test Date


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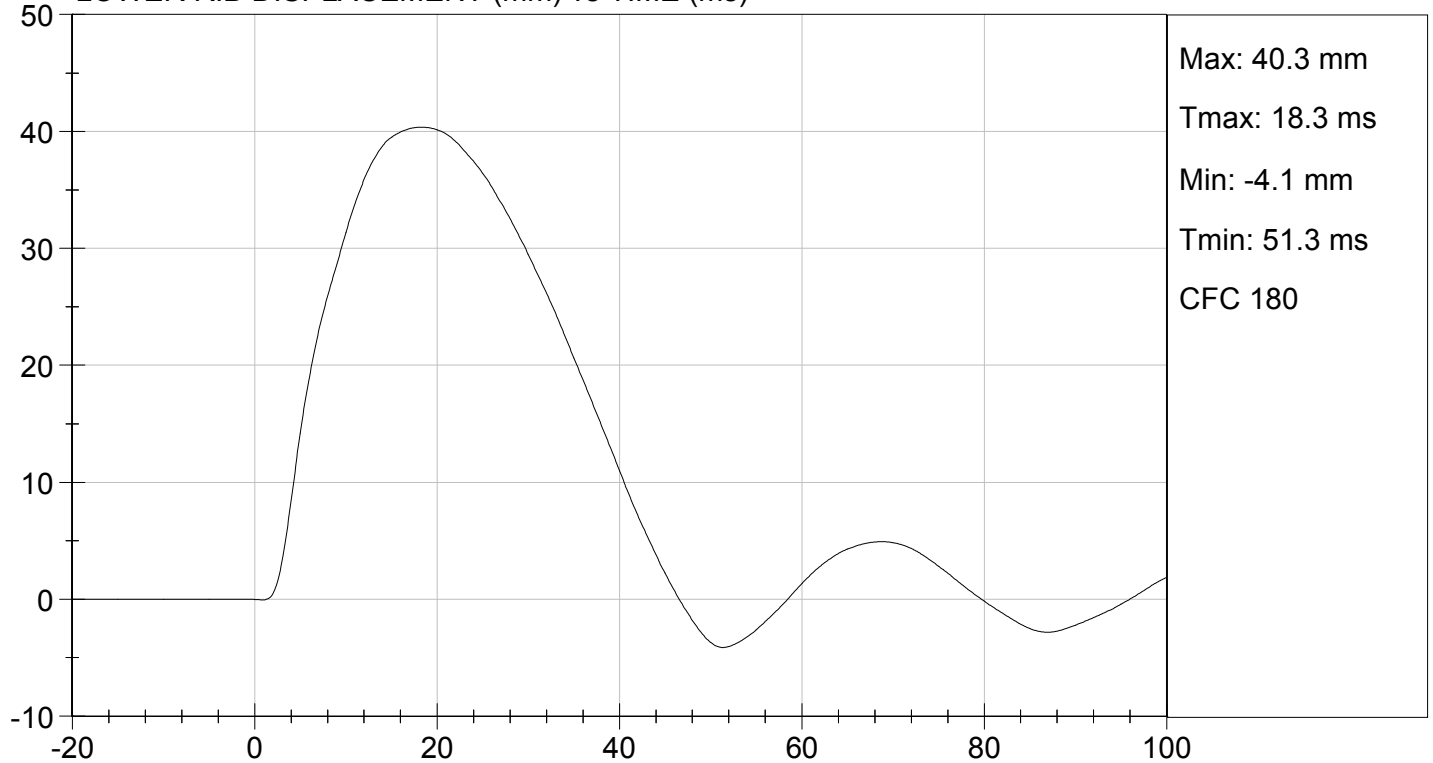




MIDDLE RIB DISPLACEMENT (mm) vs TIME (ms)



LOWER RIB DISPLACEMENT (mm) vs TIME (ms)



MGA RESEARCH CORPORATION

ABDOMEN TEST

ES-2re DUMMY

ATD Serial No: 032

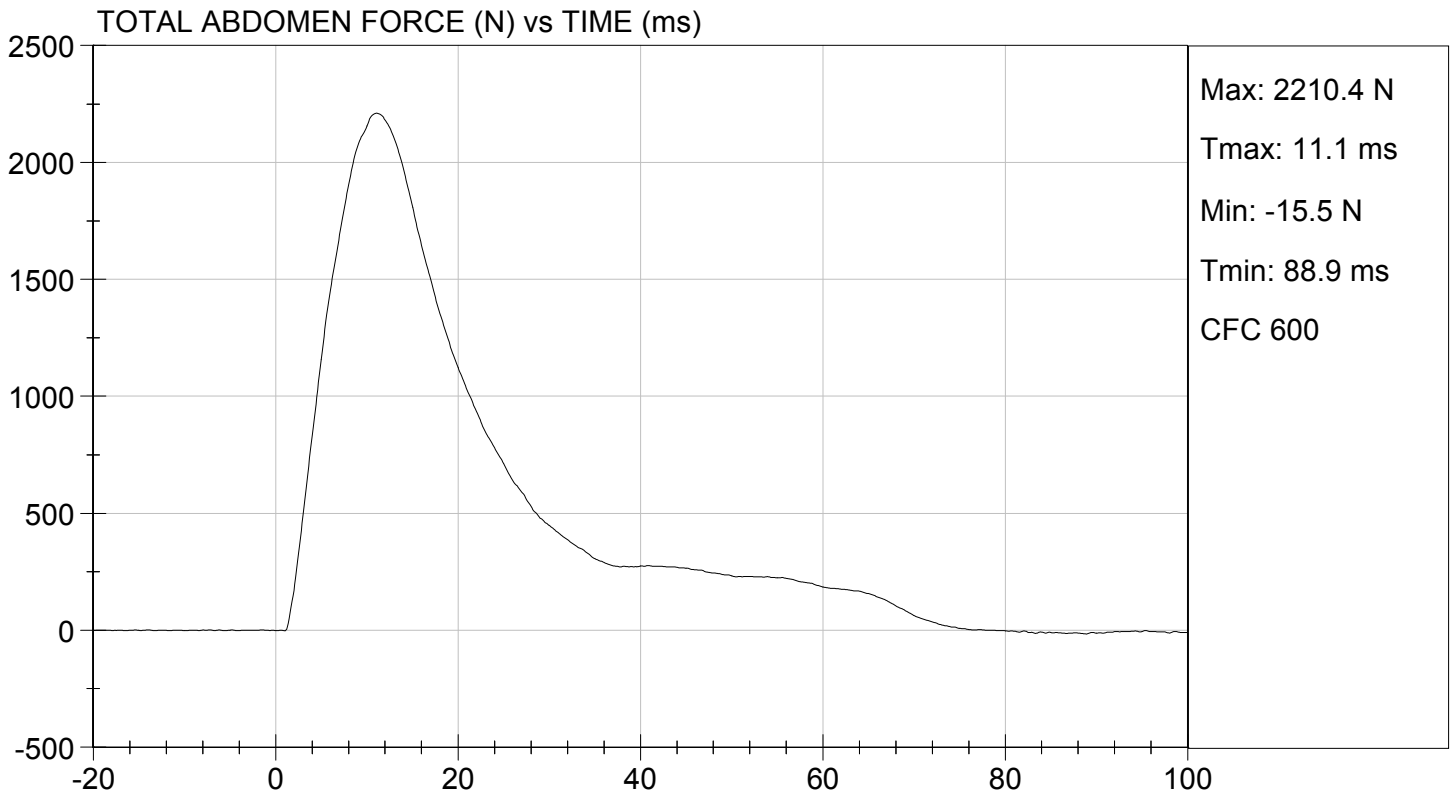
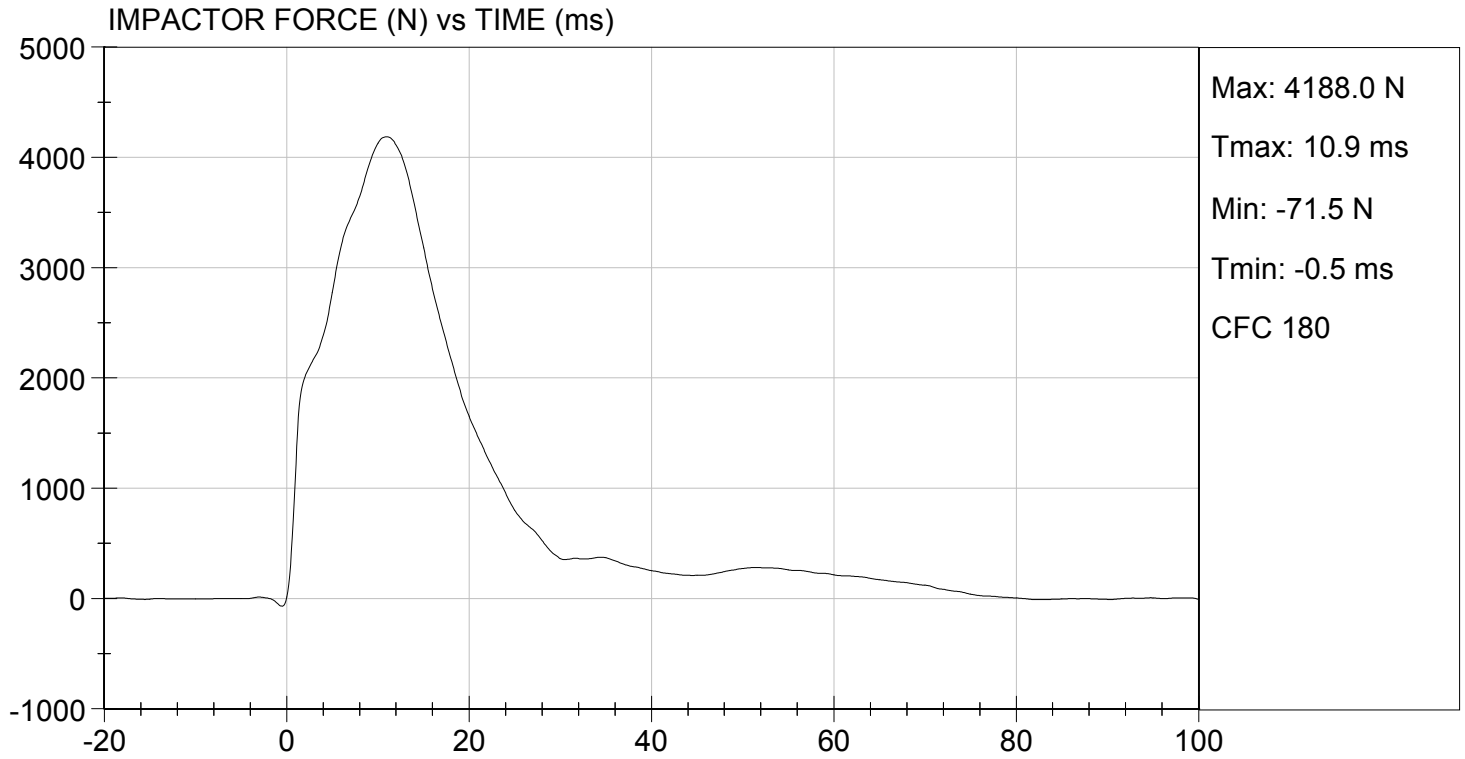
Test I.D: D143817

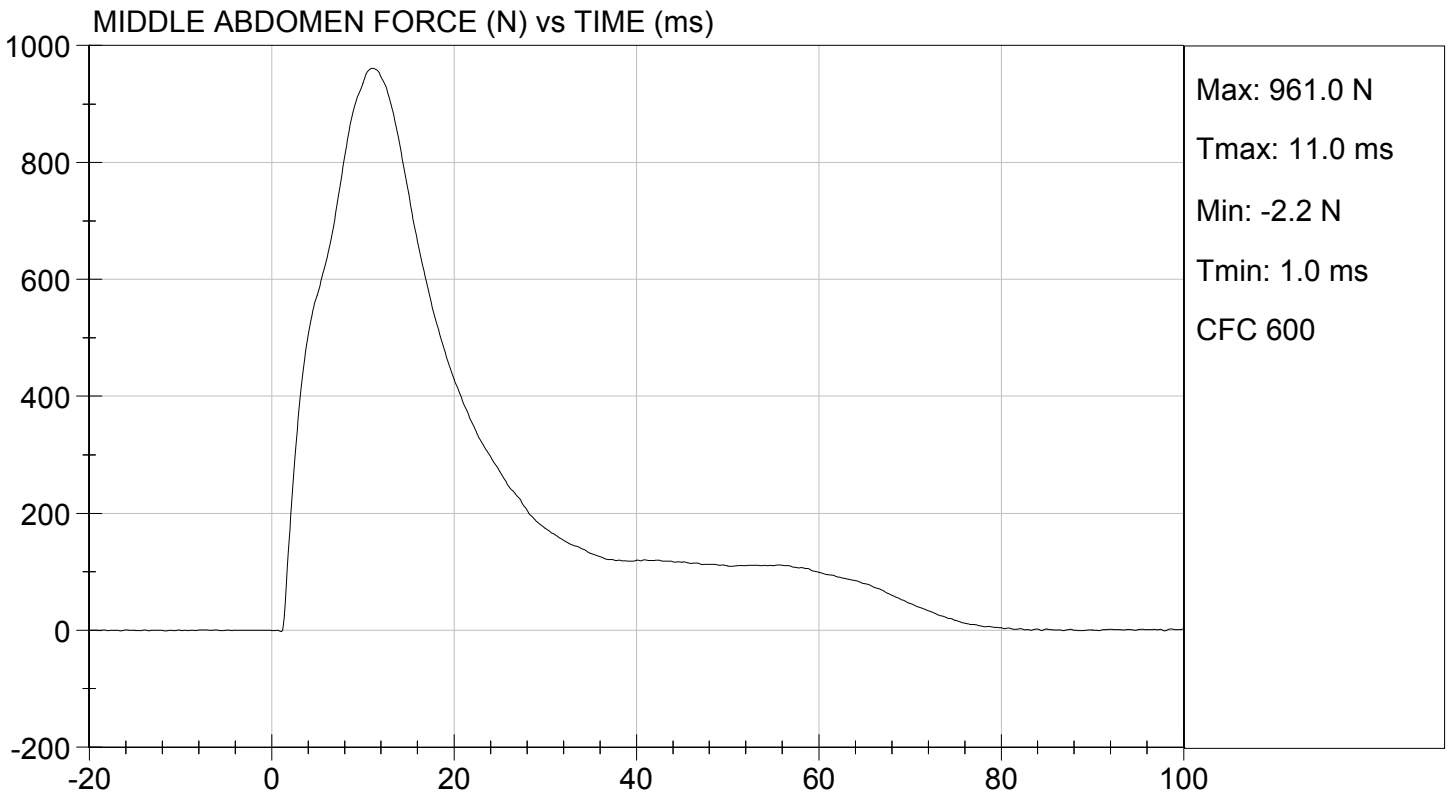
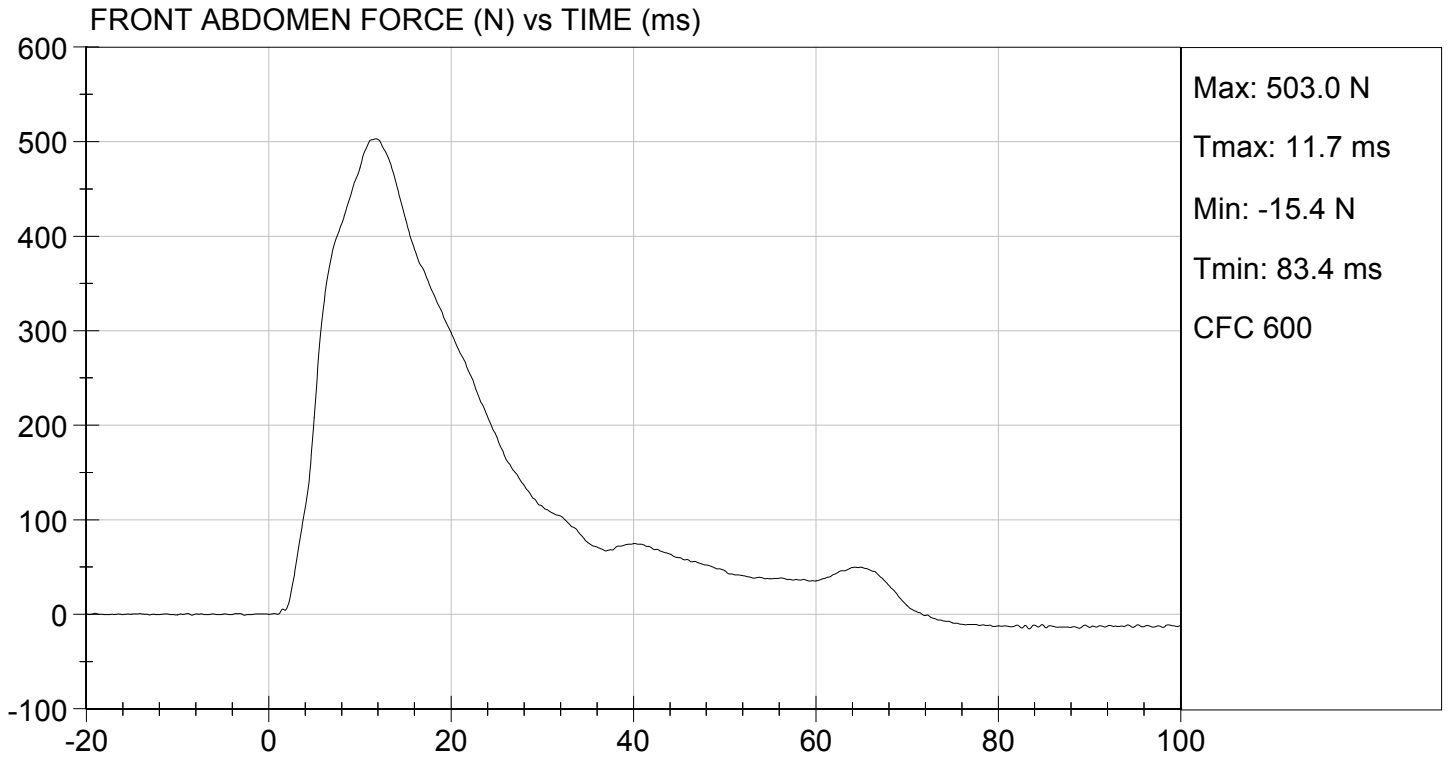
| Tested Parameter | Units | Specification | Result | Pass/Fail |
|--------------------------------|-------|---------------|--------|-----------|
| Laboratory Temperature | deg C | 20.6 to 22.2 | 21.7 | Pass |
| Laboratory Relative Humidity | % | 10 to 70 | 31 | Pass |
| Probe Speed | m/s | 3.90 to 4.10 | 4.06 | Pass |
| Maximum Impactor Force | N | 4000 to 4800 | 4188 | Pass |
| Time of Maximum Impactor Force | ms | 10.6 to 13.0 | 10.9 | Pass |
| Maximum Total Abdomen Force | N | 2200 to 2700 | 2210 | Pass |
| Time of Maximum Abdomen Force | ms | 10.0 to 12.3 | 11.1 | Pass |
| Overall Test Results | | | | Pass |


Laboratory Technician

10/29/2014
Test Date


Approved By

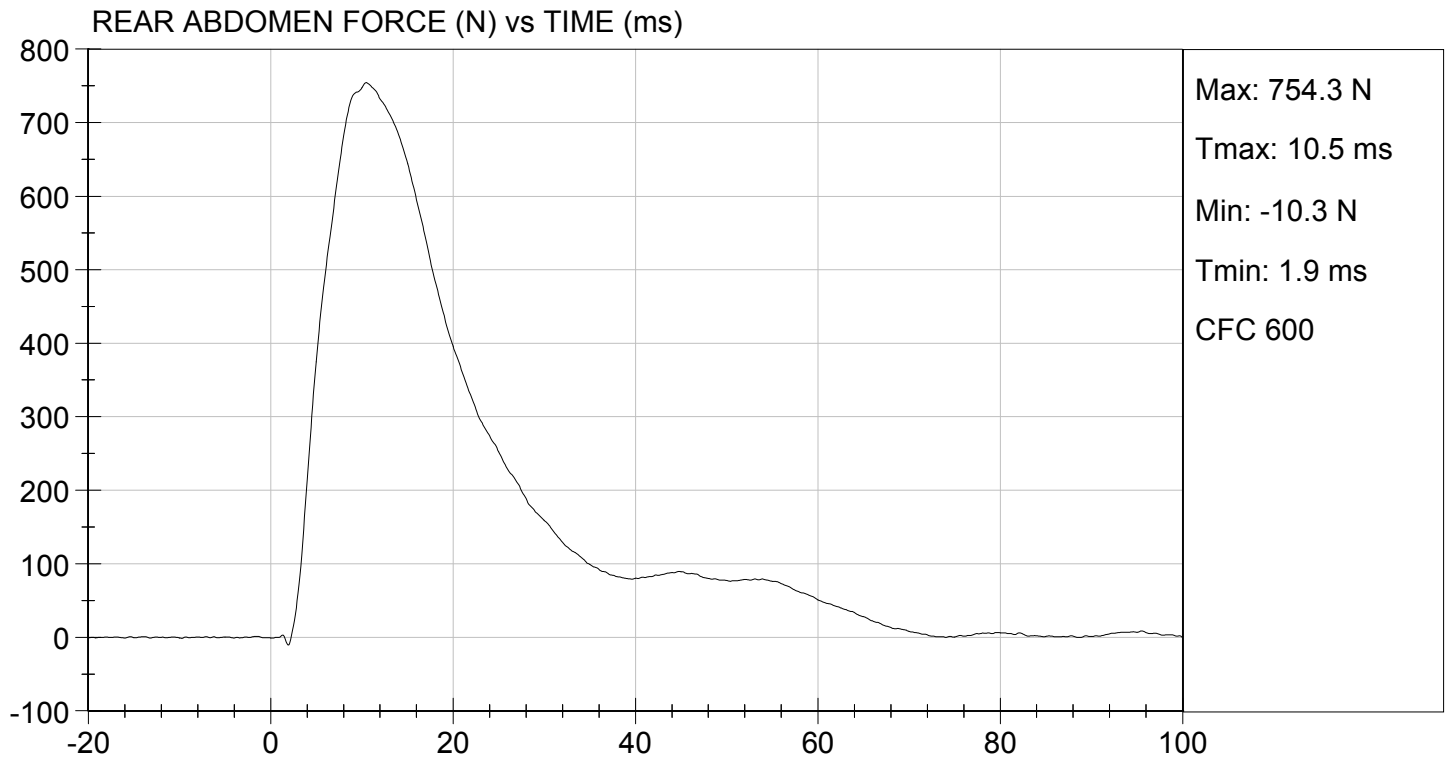






TEST DESC: ABDOMEN IMPACT
VELOCITY: 13.33 ft/s, 4.06 m/s

TEST DATE: 10/29/2014
TEST #: D143817



MGA RESEARCH CORPORATION
LUMBAR SPINE TEST
ES-2re DUMMY

ATD Serial No: 032

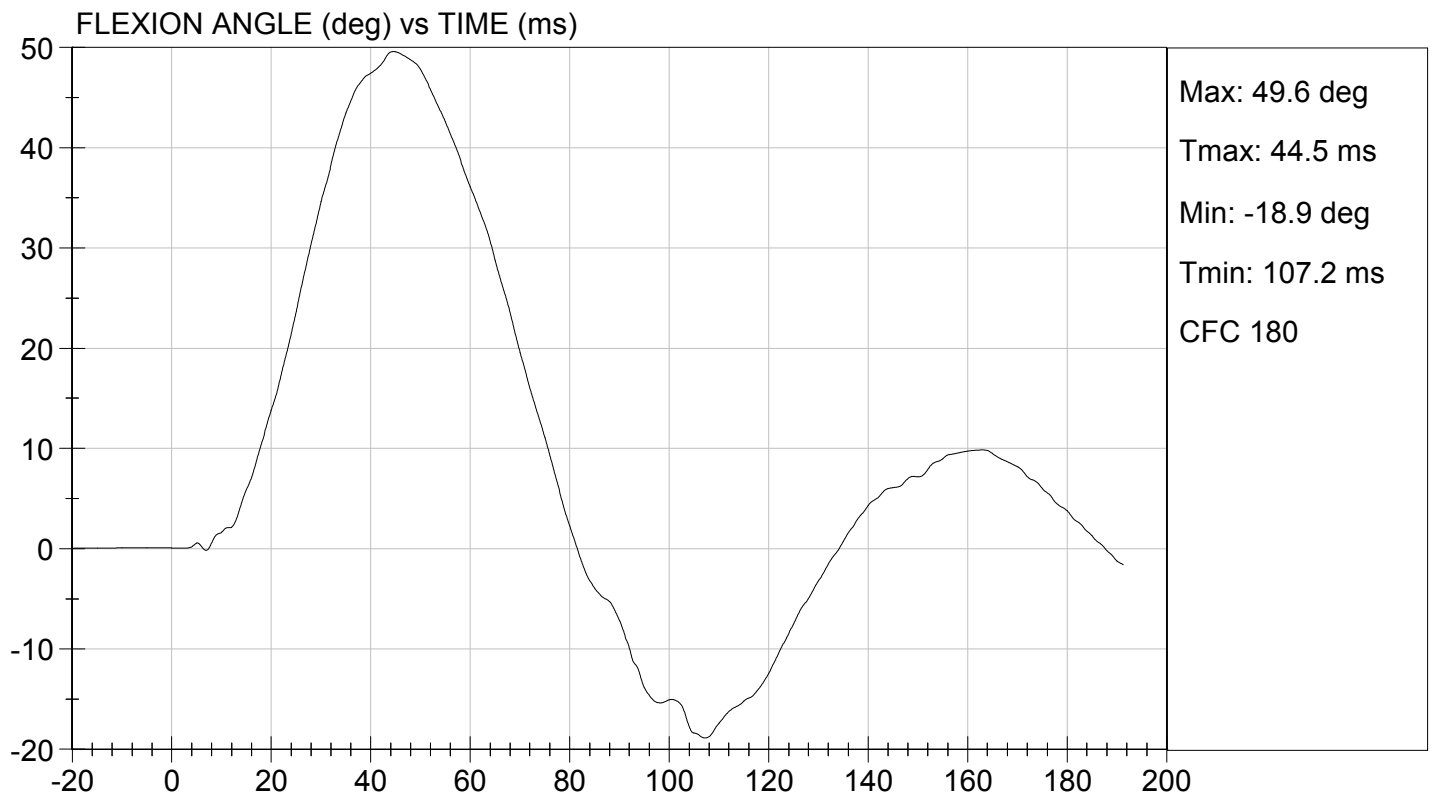
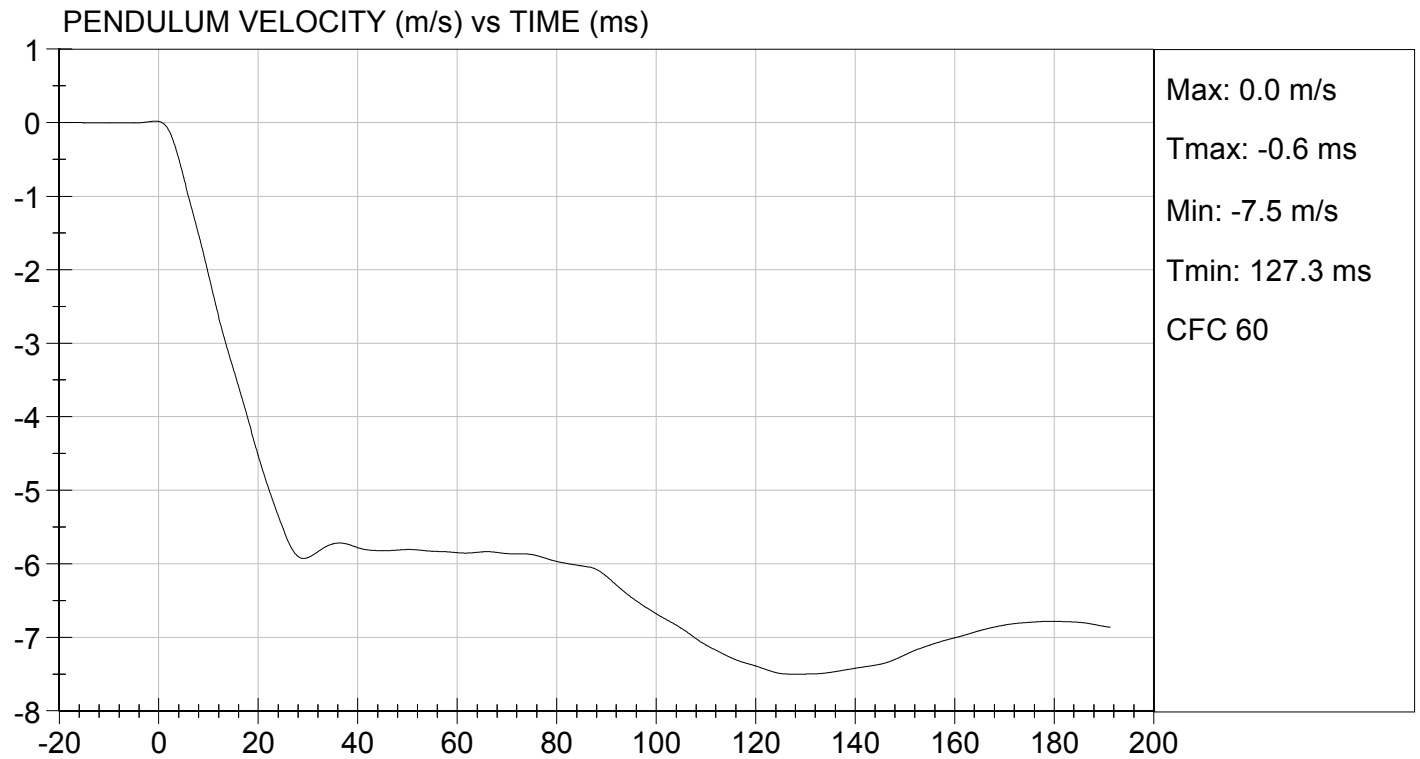
Test I.D.: D143818

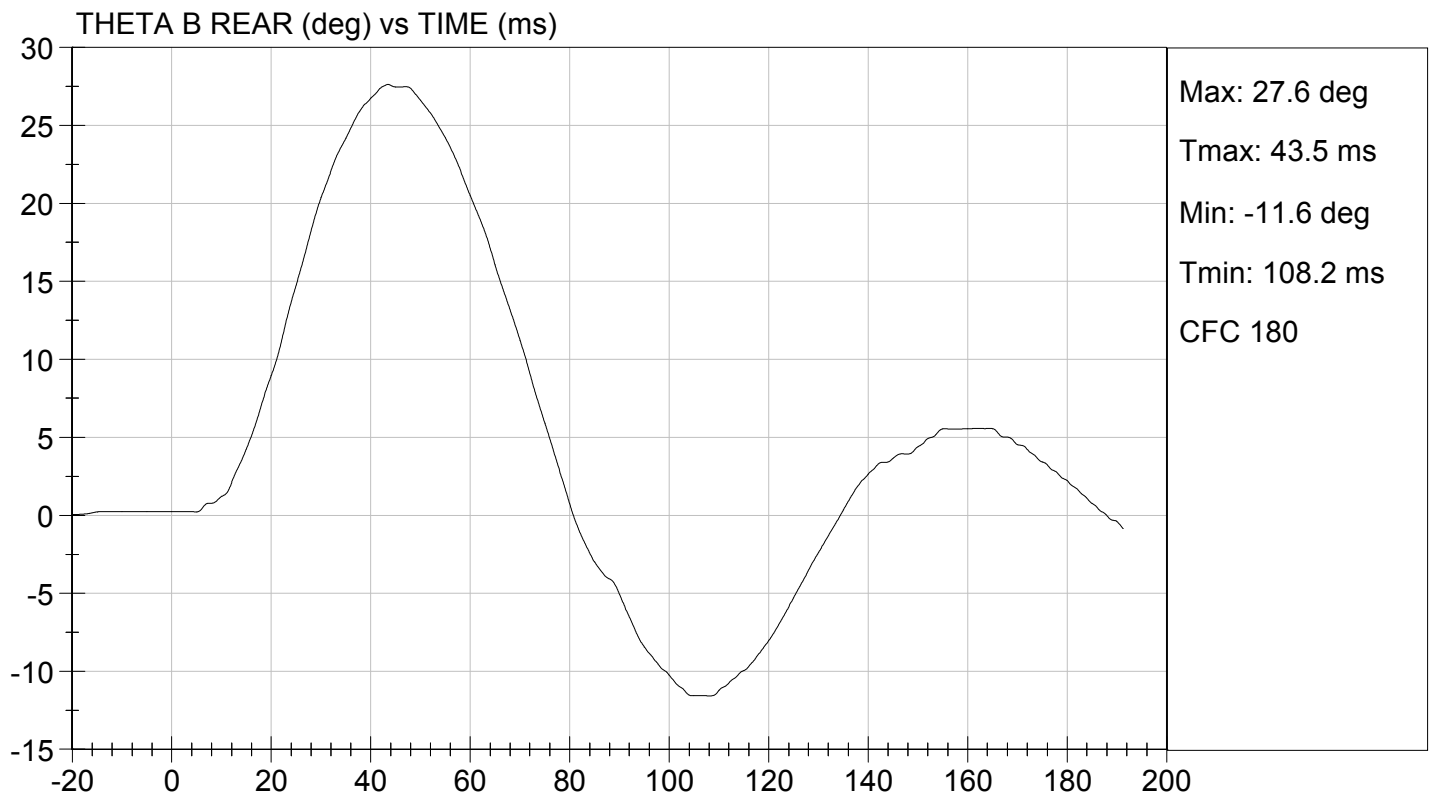
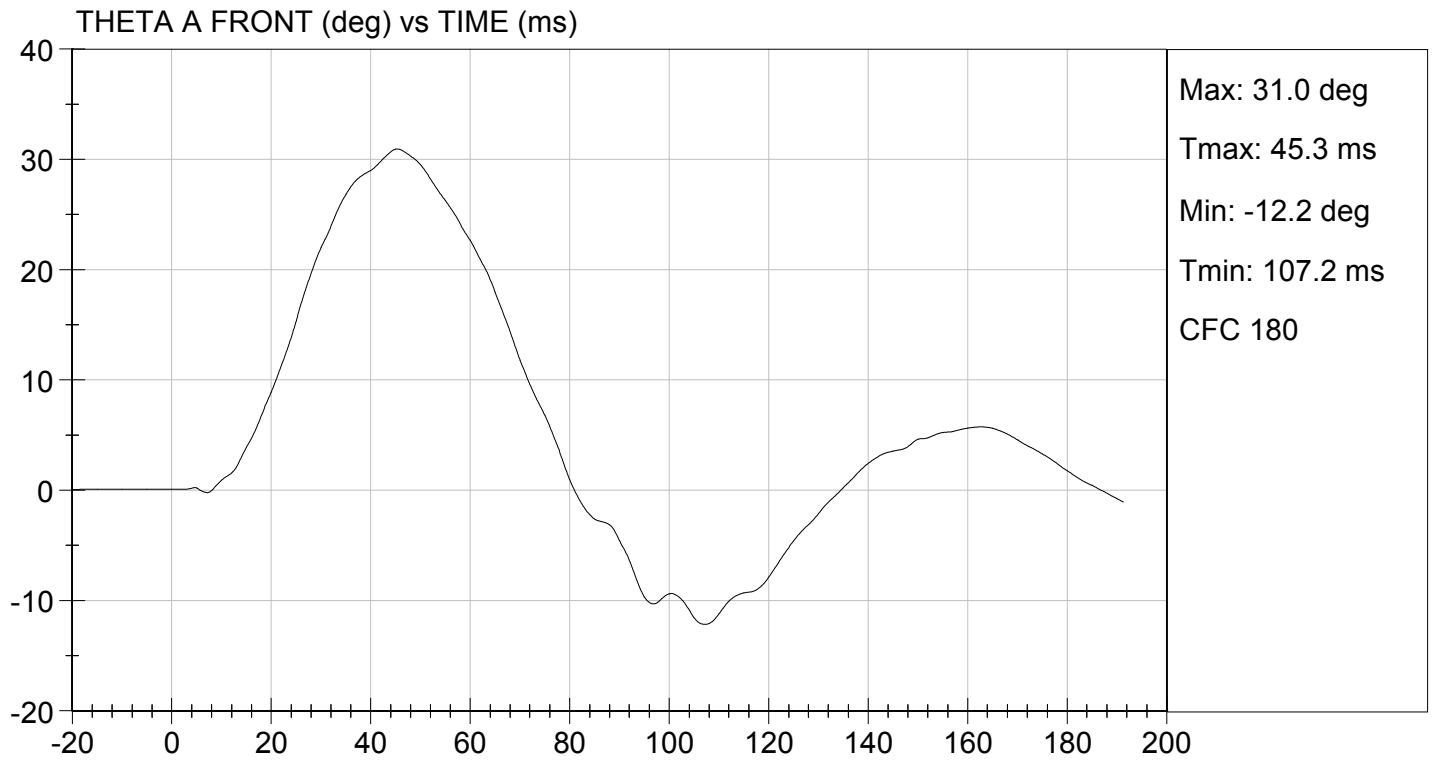
| Tested Parameter | Units | Specification | Result | Pass/Fail | |
|---|--------|---------------|-----------------|-------------|------|
| Laboratory Temperature | deg C | 20.6 to 22.2 | 21.4 | Pass | |
| Laboratory Relative Humidity | % | 10 to 70 | 32 | Pass | |
| Pendulum Speed | m/s | 5.95 to 6.15 | 6.12 | Pass | |
| Pendulum Velocity | 1 ms | m/s | -0.05 to 0.00 | -0.02 | Pass |
| | 3.7 ms | m/s | -0.425 to -0.24 | -0.421 | Pass |
| | 27 ms | m/s | -6.50 to -5.80 | -5.82 | Pass |
| | 30 ms | m/s | >= -6.50 | -5.91 | Pass |
| Maximum Flexion Angle | deg | 45.0 to 55.0 | 49.6 | Pass | |
| Time of Maximum Flexion Angle | ms | 39.0 to 53.0 | 44.5 | Pass | |
| Headform Rotation Decay to Initial Position | ms | 37 to 57 | 44 | Pass | |
| Overall Results | | | | Pass | |

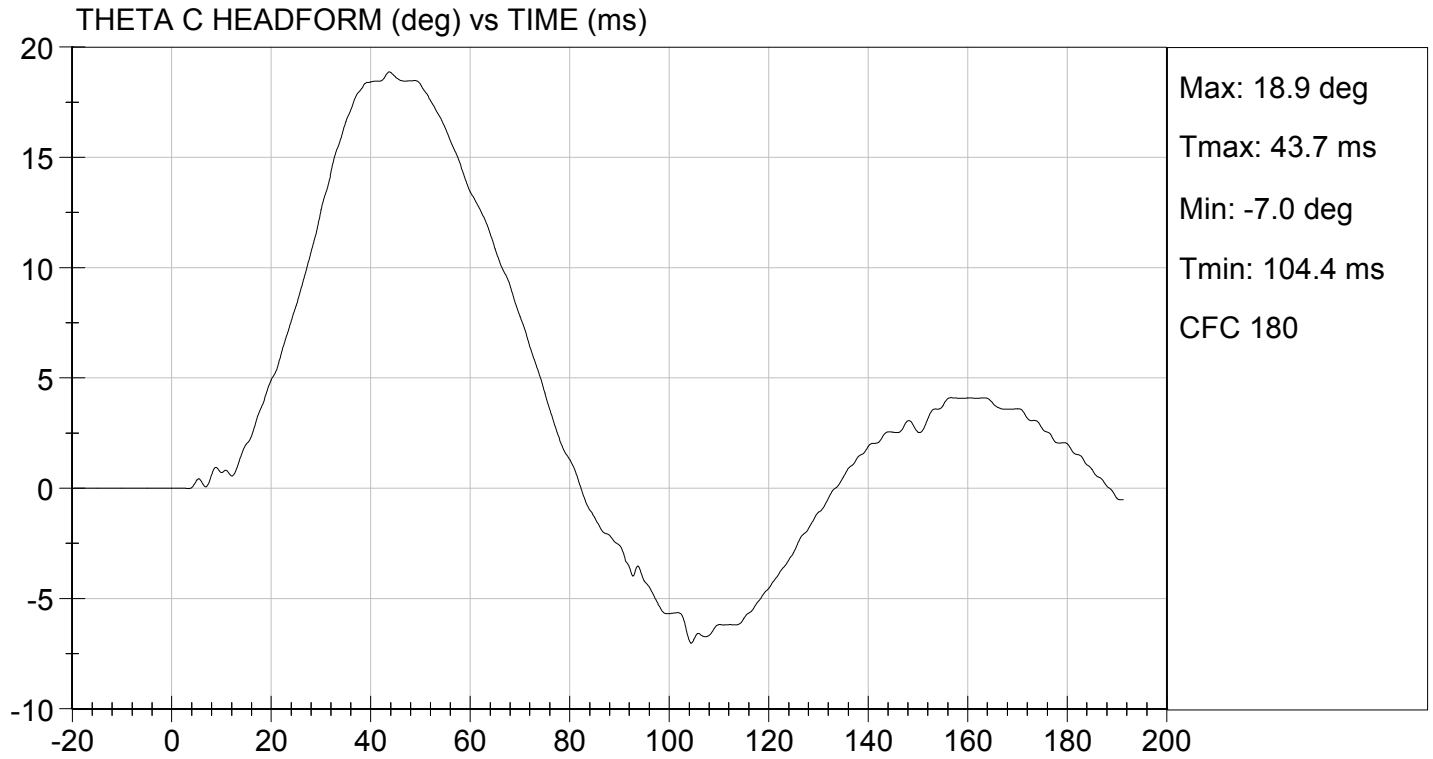
Maxime Chamberland
 Laboratory Technician

10/29/2014
 Test Date

Jessica Hall
 Approved By







MGA RESEARCH CORPORATION

PELVIS TEST
ES-2re DUMMY

ATD Serial No: 032

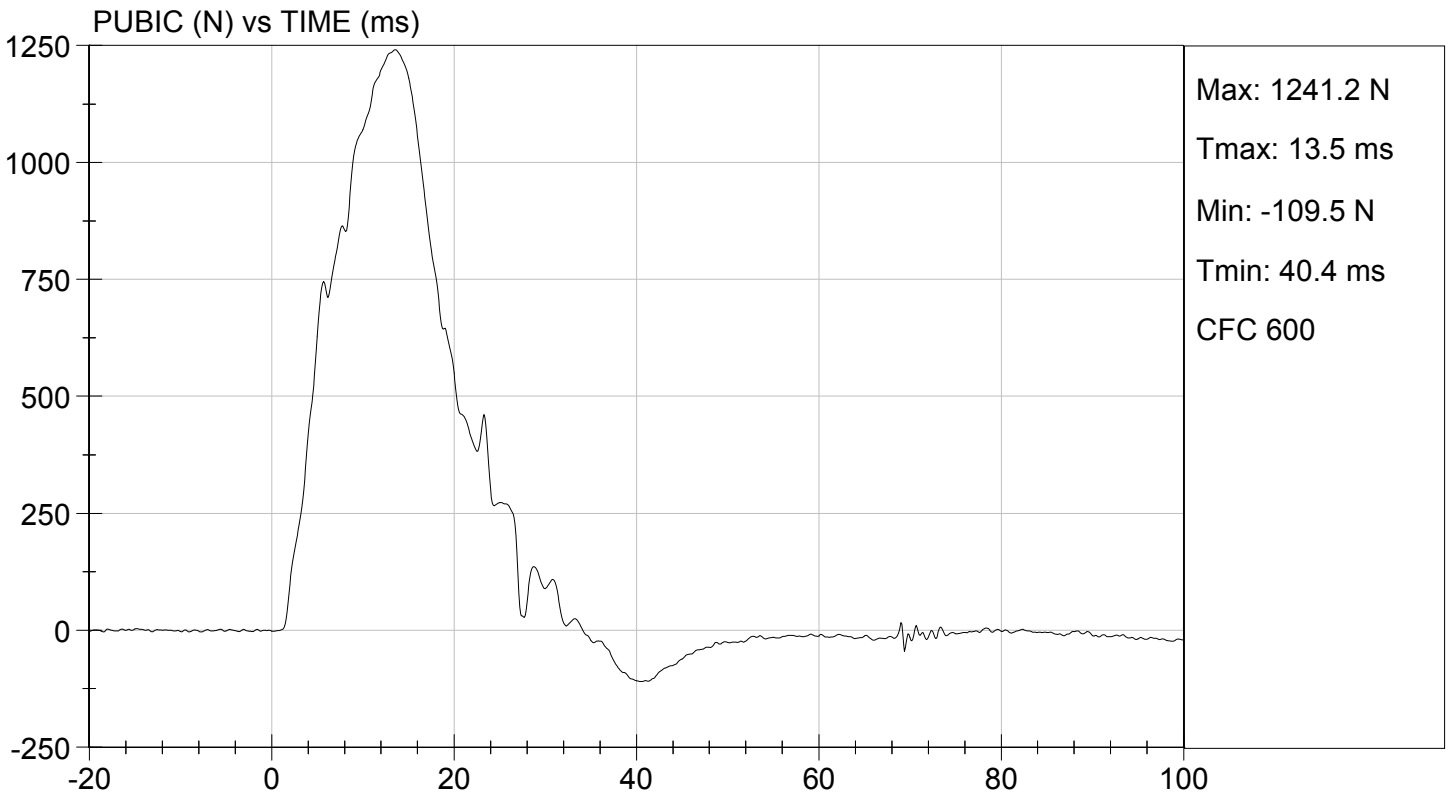
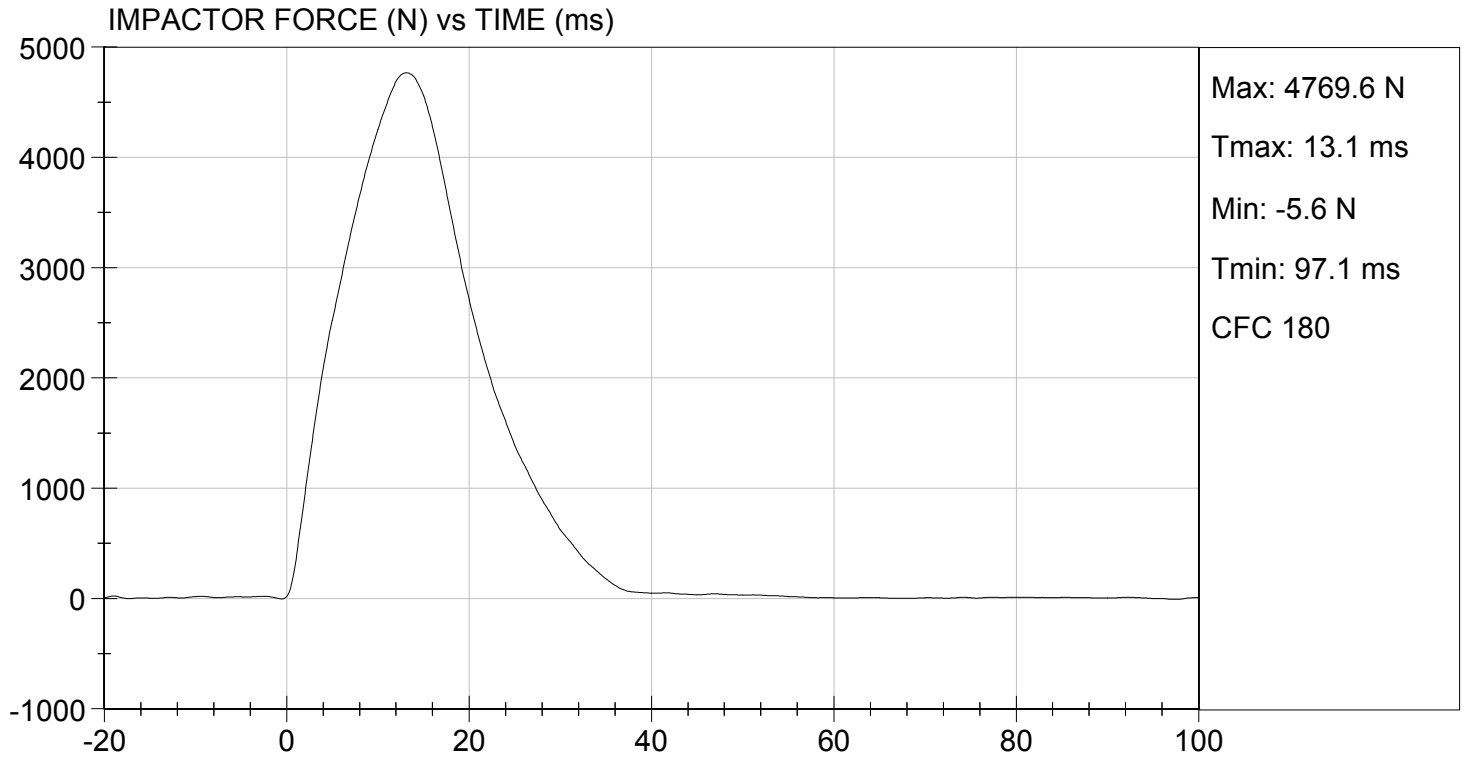
Test I.D: D143819

| Tested Parameter | Units | Specification | Result | Pass/Fail |
|--------------------------------|-------|---------------|--------|-----------|
| Laboratory Temperature | deg C | 20.6 to 22.2 | 21.7 | Pass |
| Laboratory Relative Humidity | % | 10 to 70 | 31 | Pass |
| Probe Speed | m/s | 4.20 to 4.40 | 4.34 | Pass |
| Maximum Impactor Force | N | 4700 to 5400 | 4770 | Pass |
| Time of Maximum Impactor Force | ms | 11.8 to 16.1 | 13.1 | Pass |
| Maximum Pubic Force | N | 1230 to 1590 | 1241 | Pass |
| Time of Maximum Pubic Force | ms | 12.2 to 17.0 | 13.5 | Pass |
| Overall Test Results | | | | Pass |

Maxime Chamberland
Laboratory Technician

10/29/2014
Test Date

Jessica Hall
Approved By



SID-IIsD External Measurements
SN: 296

| No. | Name | Spec. (mm) | Result | Pass/Fail |
|------------|-------------------------------|-------------------|---------------|------------------|
| A | Sitting Height | 772 - 788 | 784 | Pass |
| B | Shoulder Pivot Height | 437 - 453 | 442 | Pass |
| C | H-point Height | 79 - 89 | 83 | Pass |
| D | H-point from Seatback | 141 - 151 | 145 | Pass |
| E | Shoulder Pivot from Backline | 97 - 107 | 99 | Pass |
| F | Thigh Clearance | 119 - 135 | 121 | Pass |
| G | Head Breadth | 140 - 148 | 142 | Pass |
| H | Head Back from Backline | 40 - 46 | 45 | Pass |
| I | Head Depth | 178 - 188 | 180 | Pass |
| J | Head Circumference | 541 - 551 | 548 | Pass |
| K | Buttock to Knee Length | 514 - 540 | 535 | Pass |
| L | Popliteal Height | 343 - 369 | 358 | Pass |
| M | Knee Pivot to Floor Height | 392 - 409 | 404 | Pass |
| N | Buttock Popliteal Length | 416 - 442 | 435 | Pass |
| O | Chest Depth w/o Jacket | 195 - 211 | 206 | Pass |
| P | Foot Length | 216 - 232 | 219 | Pass |
| Q | Hip Breadth (w/ pelvic plugs) | 313 - 323 | 316 | Pass |
| R | Arm Length | 249 - 259 | 250 | Pass |
| S | Knee Joint to Seatback | 477 - 493 | 481 | Pass |
| V | Shoulder Width | 341 - 357 | 346 | Pass |
| W | Foot Width | 78 - 94 | 85 | Pass |
| Y | Chest Circumference w/ jacket | 851 - 881 | 870 | Pass |
| Z | Waist Circumference | 761 - 791 | 772 | Pass |

**MGA RESEARCH CORPORATION
HEAD DROP TEST
SID-IIs BUILD LEVEL D DUMMY**

ATD Serial No: 296

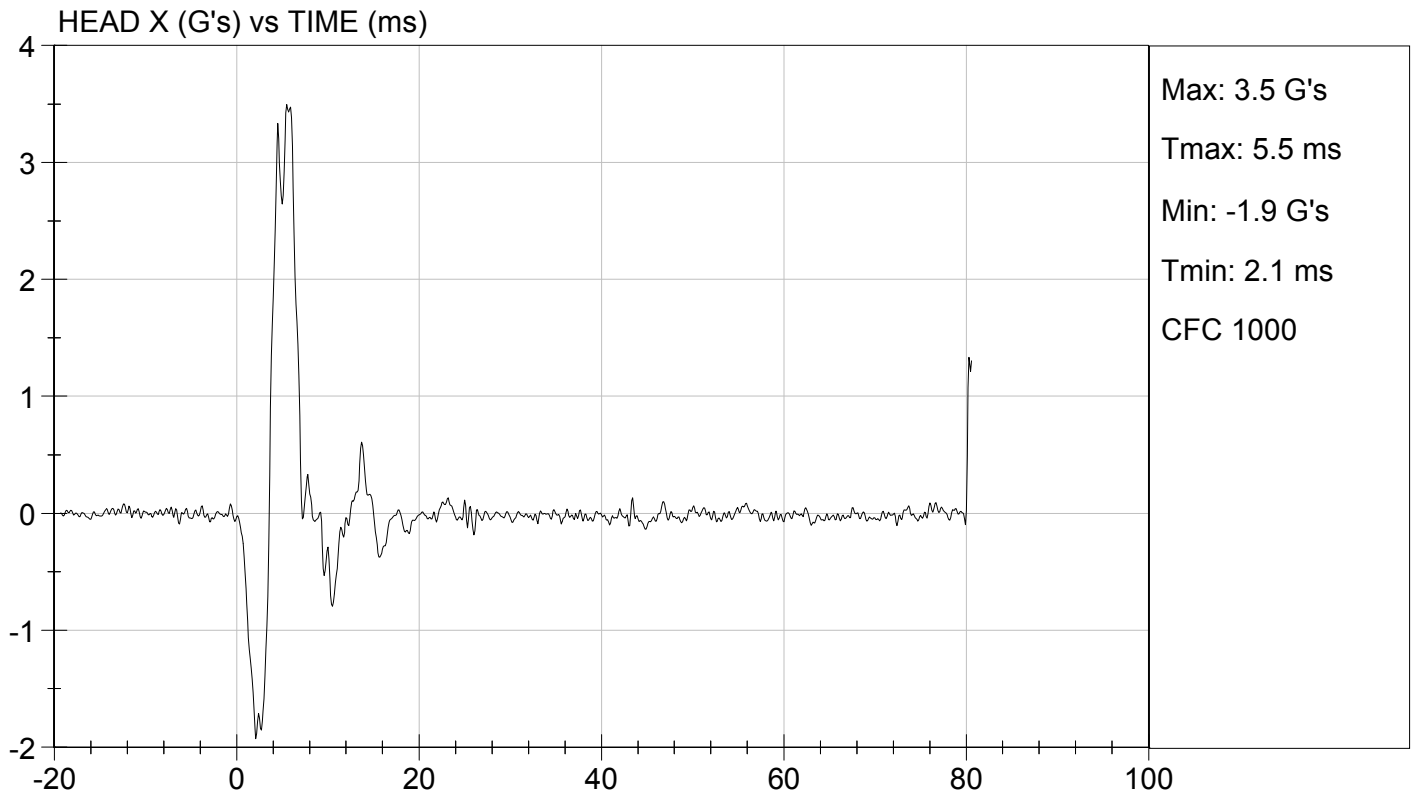
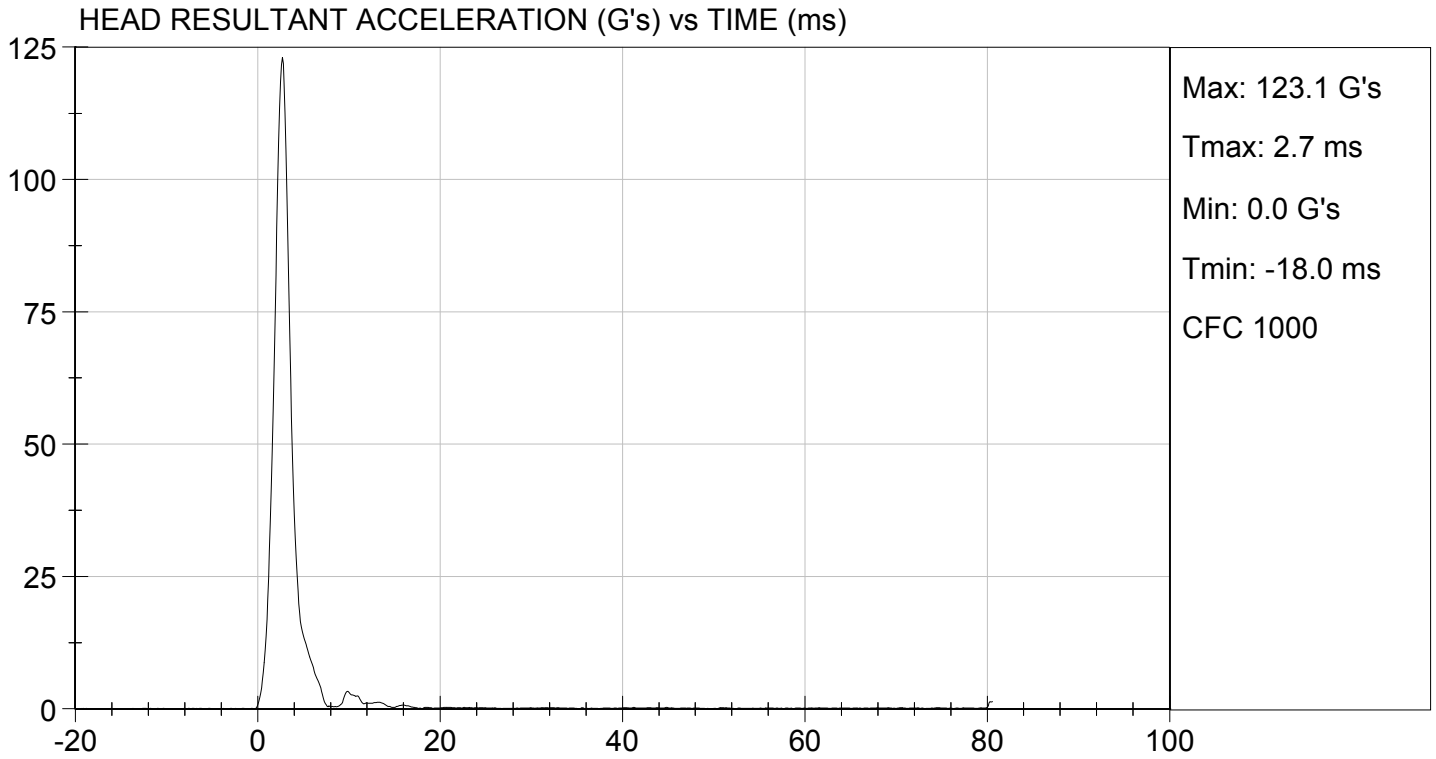
Test ID: D143491

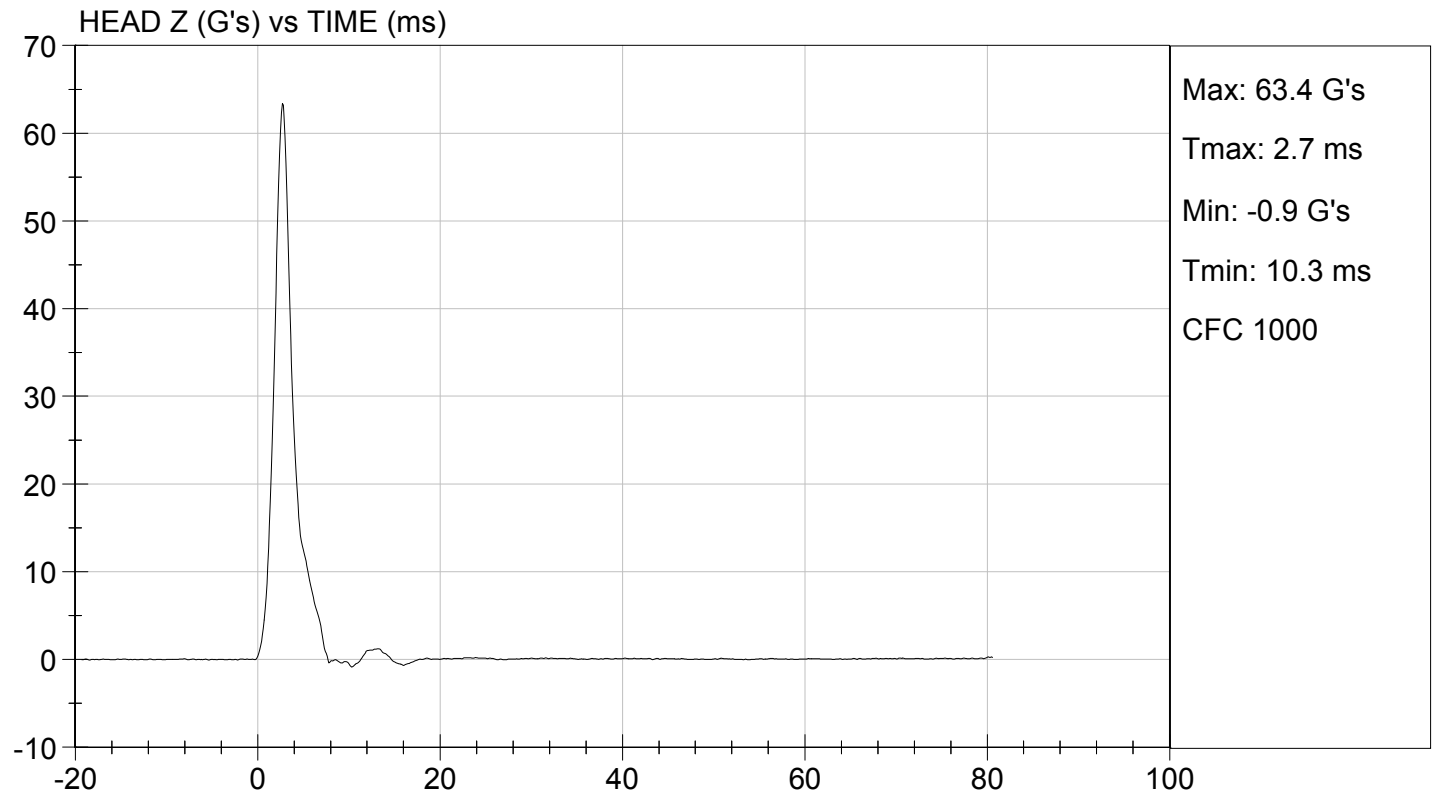
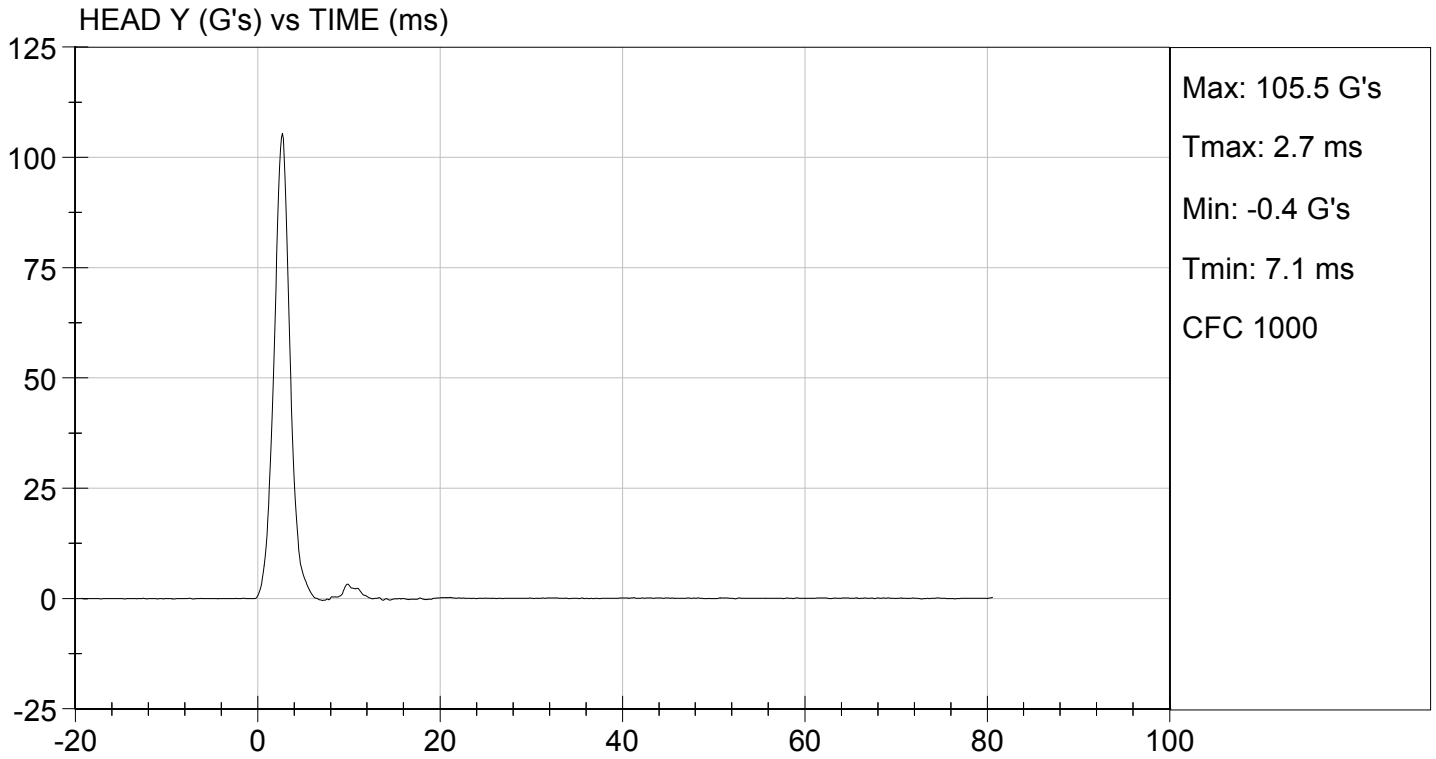
| Tested Parameter | Units | Specification | Result | Pass/Fail |
|--------------------------------|-------|---------------|--------|-----------|
| Laboratory Temperature | deg C | 20.6 to 22.2 | 21.5 | Pass |
| Laboratory Relative Humidity | % | 10 to 70 | 49 | Pass |
| Peak Resultant Acceleration | G's | 115 to 137 | 123 | Pass |
| Peak Longitudinal Acceleration | G's | +/- 15 | 3.5 | Pass |
| Unimodal | N/A | Yes | Yes | Pass |
| Oscillations | N/A | <15% | Yes | Pass |
| Overall Test Results | | | | Pass |

Maxime Chamberland
Laboratory Technician

10/02/2014
Test Date

Jessica Hall
Approved By





**MGA RESEARCH CORPORATION
LATERAL NECK PENDULUM TEST
SID-IIs BUILD LEVEL D DUMMY**

ATD Serial No: 296

Test I.D: D143492

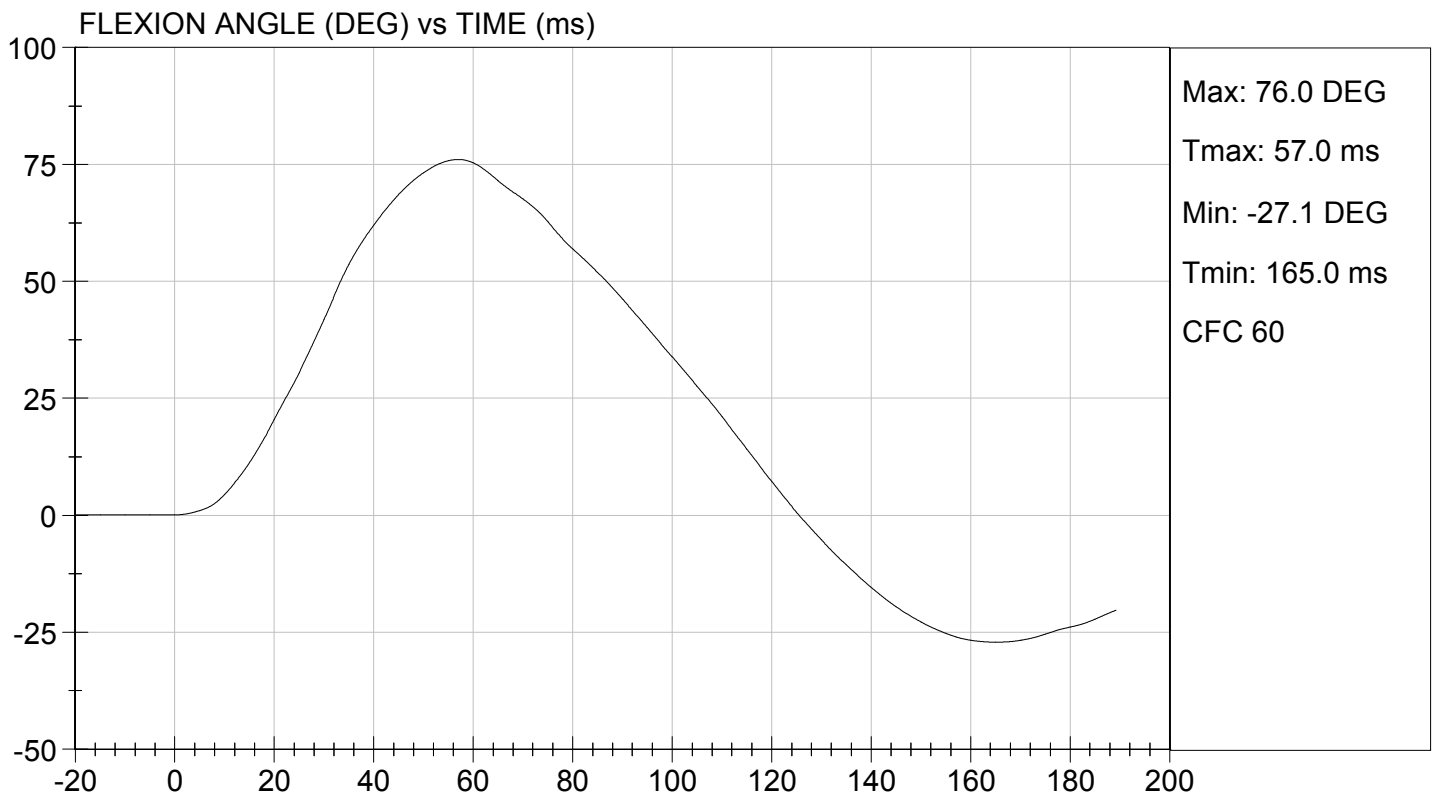
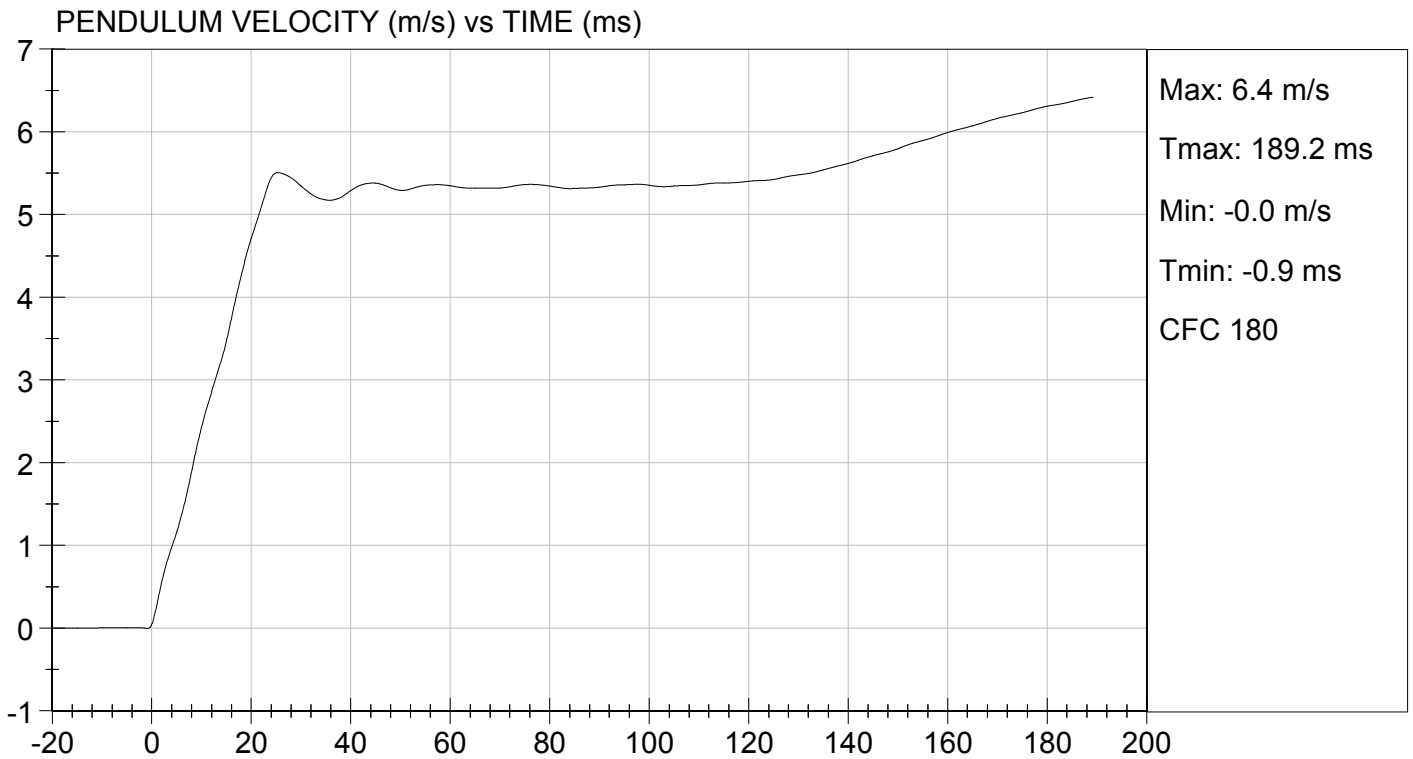
| Tested Parameter | Units | Specification | Result | Pass/Fail | |
|----------------------------------|-----------|---------------|--------------|-------------|------|
| Temperature | deg C | 20.6 to 22.2 | 21.8 | Pass | |
| Humidity | % | 10 to 70 | 49 | Pass | |
| Impact Velocity | m/s | 5.51 to 5.63 | 5.52 | Pass | |
| Pendulum Velocity | 10 ms | m/s | 2.20 to 2.80 | 2.43 | Pass |
| | 15 ms | m/s | 3.30 to 4.10 | 3.47 | Pass |
| | 20 ms | m/s | 4.40 to 5.40 | 4.71 | Pass |
| | 25 ms | m/s | 5.40 to 6.10 | 5.50 | Pass |
| | 25-100 ms | m/s | 5.50 to 6.20 | 5.51 | Pass |
| Maximum D-Plane Rotation | deg | 71 to 81 | 76 | Pass | |
| Time of Maximum D-Plane Rotation | ms | 50 to 70 | 57 | Pass | |
| Maximum Occipital Condyle Moment | Nm | -44 to -36 | -41 | Pass | |
| Time of Moment Decay to 0 Nm | ms | 102 to 126 | 112 | Pass | |
| Overall Test Results | | | | Pass | |

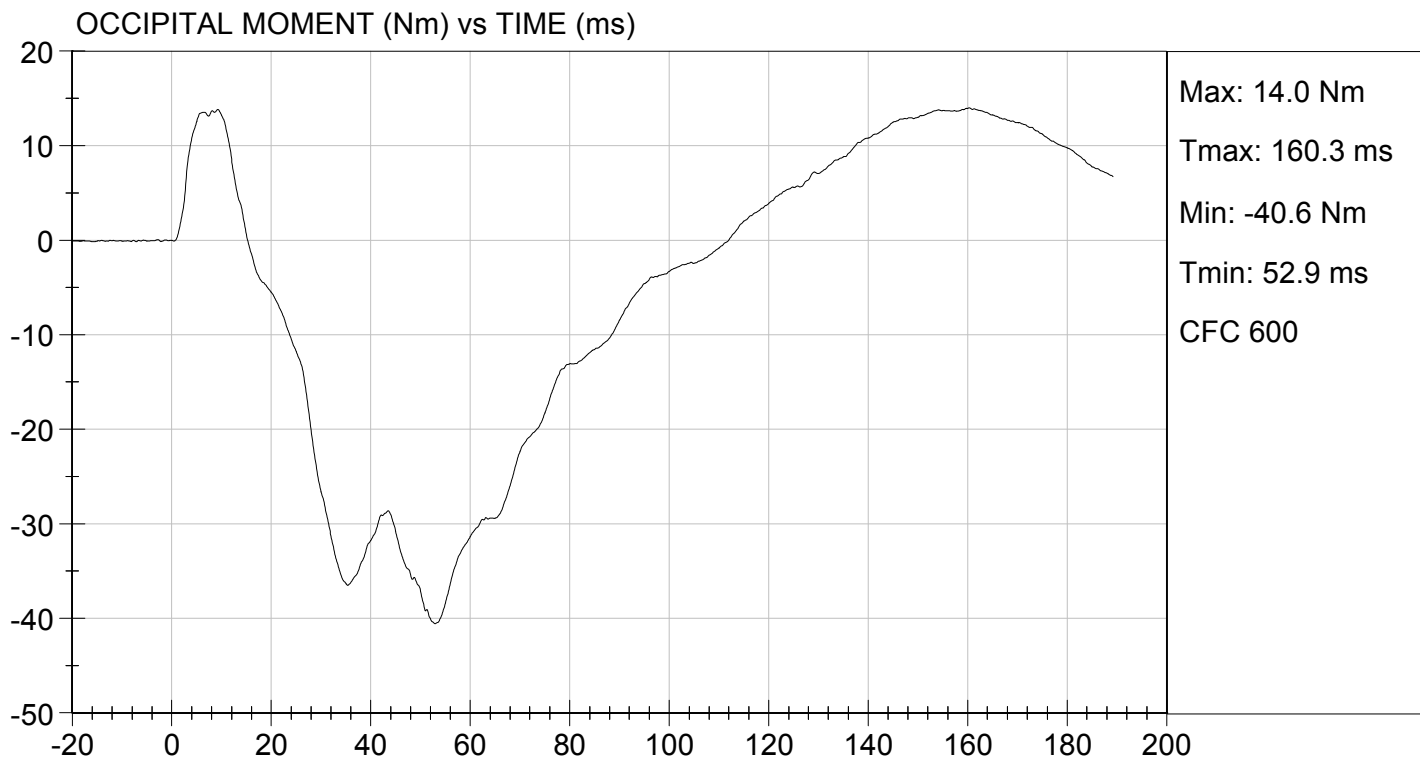
Maxime Chamberland
Laboratory Technician

10/02/2014

Test Date

Jessica Hall
Approved By





**MGA RESEARCH CORPORATION
SHOULDER IMPACT TEST
SID-IIs BUILD LEVEL D DUMMY**

ATD Serial No: 296

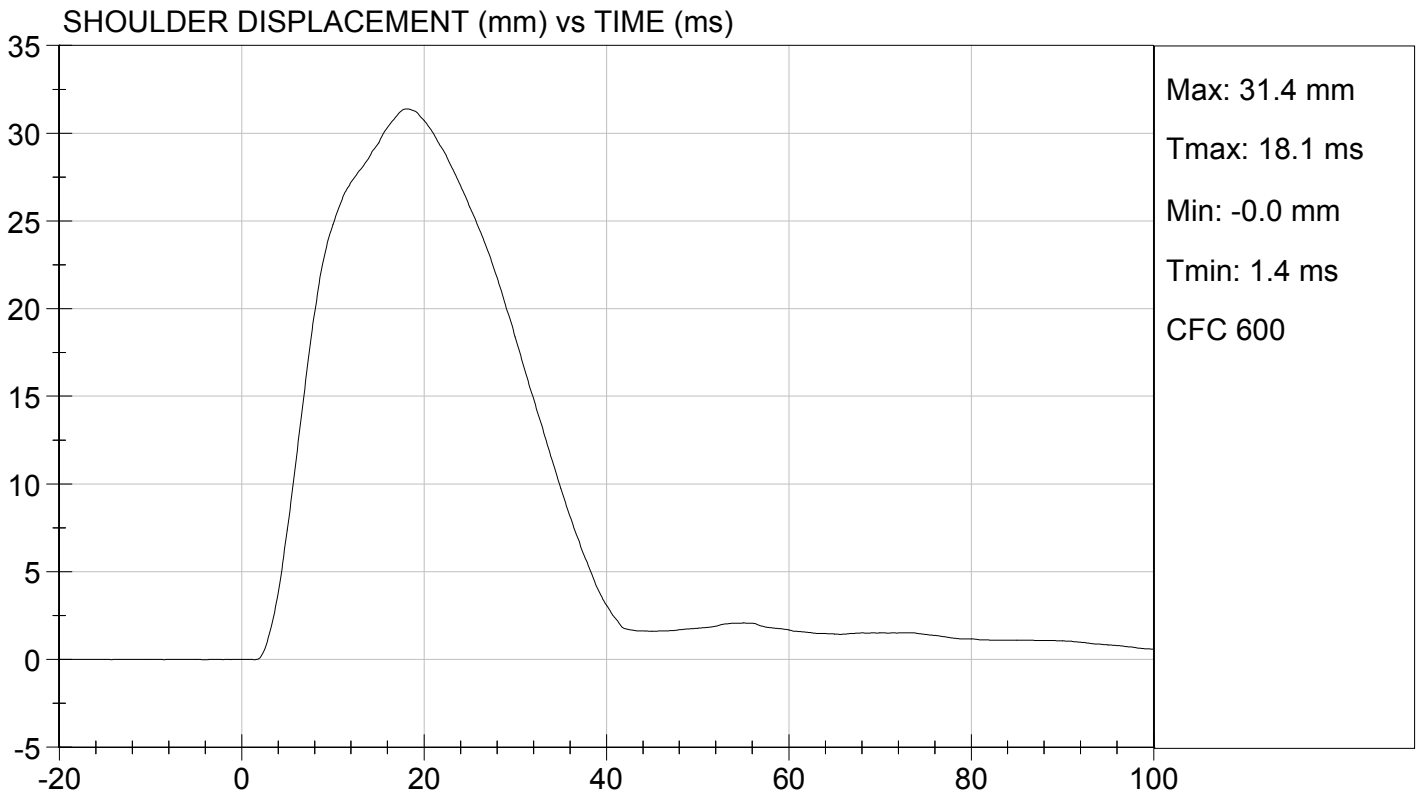
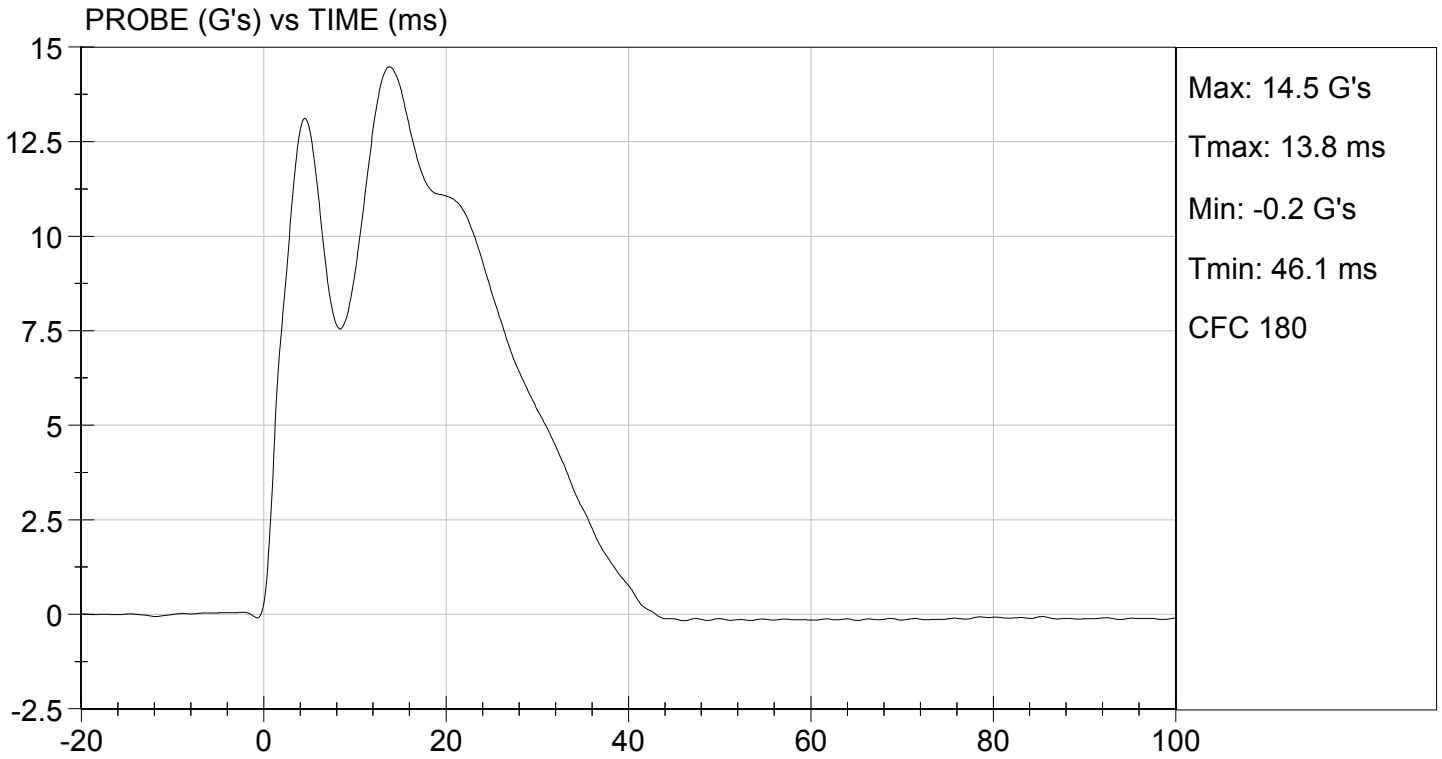
Test ID: D143493

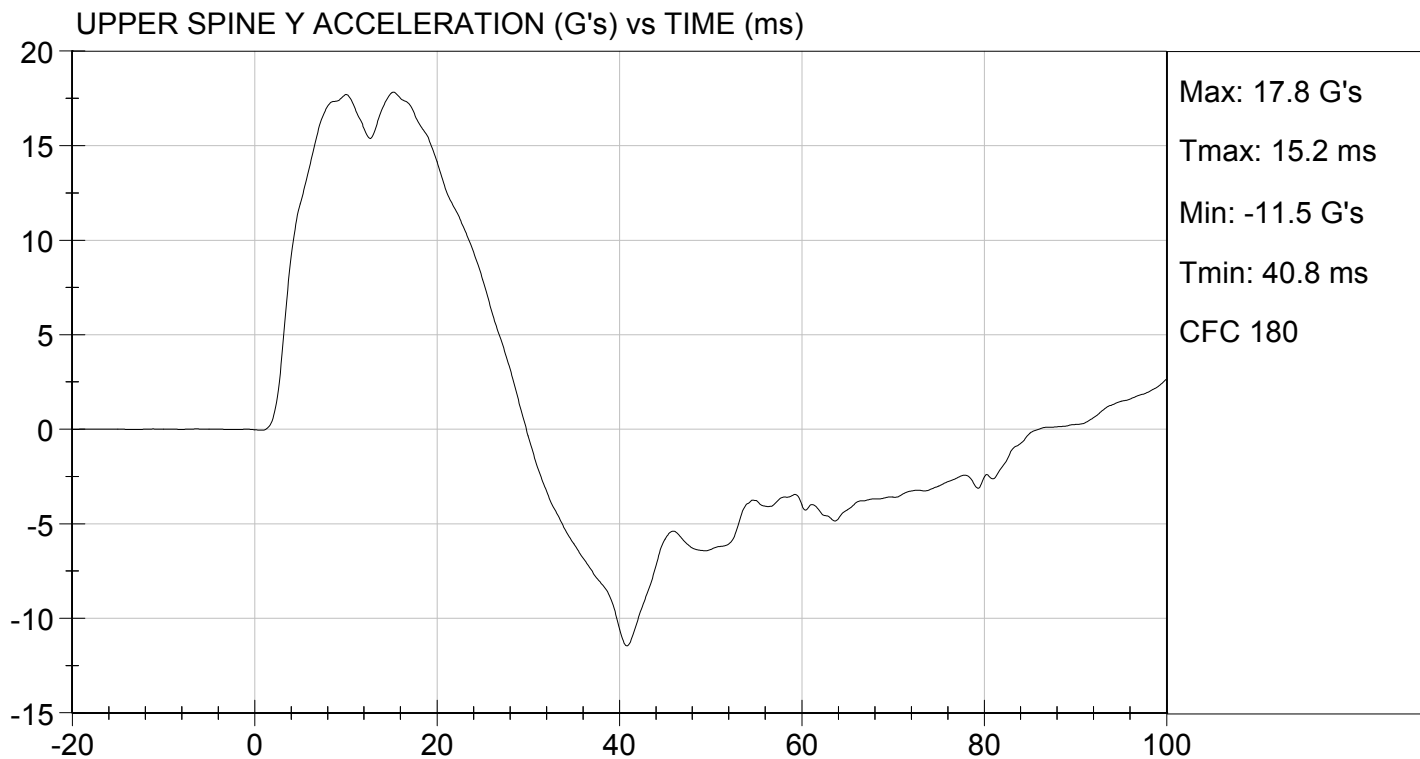
| Tested Parameter | Units | Specification | Result | Pass/Fail |
|---------------------------------|-------|---------------|--------|-----------|
| Laboratory Temperature | deg C | 20.6 to 22.2 | 21.4 | Pass |
| Laboratory Relative Humidity | % | 10 to 70 | 50 | Pass |
| Impact Velocity | m/s | 4.20 to 4.40 | 4.30 | Pass |
| Maximum Probe Acceleration | G's | 13 to 18 | 14 | Pass |
| Shoulder Displacement | mm | 28 to 37 | 31 | Pass |
| Upper Spine (T1) Y Acceleration | G's | 17 to 22 | 18 | Pass |
| Overall Test Results | | | | Pass |

David Schoedel
Laboratory Technician

10/03/2014
Test Date

Jessica Hall
Approved By





**MGA RESEARCH CORPORATION
THORAX (WITH ARM) IMPACT TEST
SID-IIs BUILD LEVEL D DUMMY**

ATD Serial No: 296

Test I.D: D143494

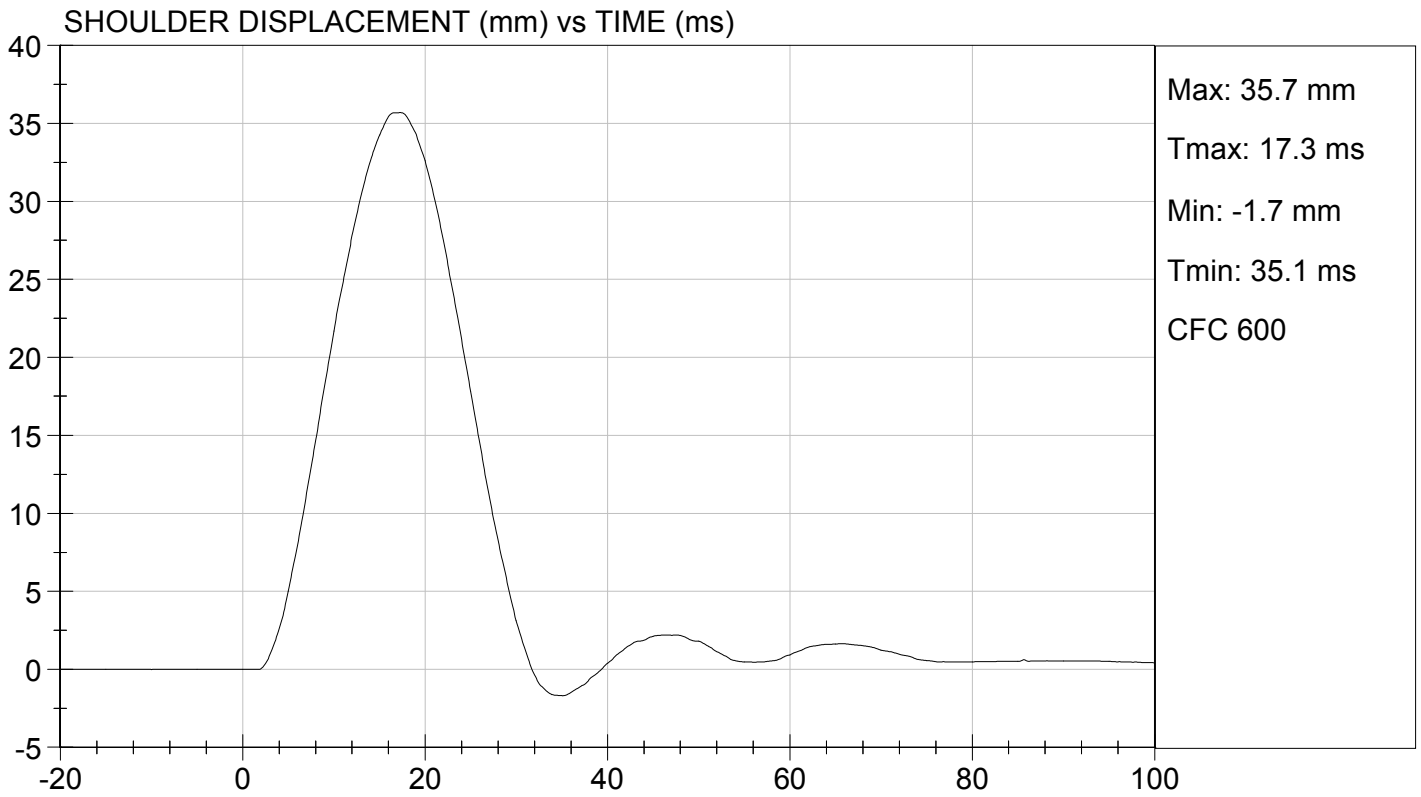
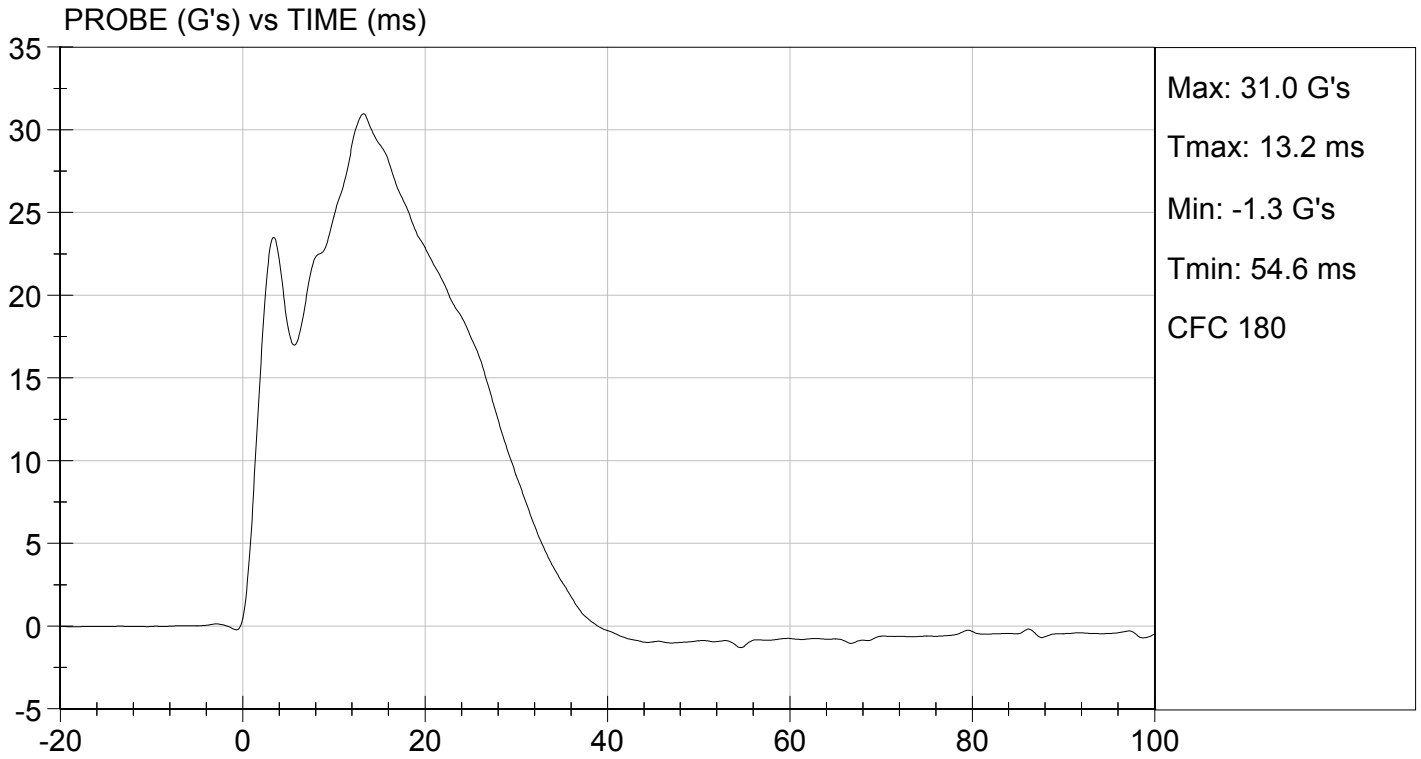
| Tested Parameter | Units | Specification | Result | Pass/Fail |
|----------------------------------|-------|---------------|--------|-----------|
| Temperature | deg C | 20.6 to 22.2 | 21.4 | Pass |
| Humidity | % | 10 to 70 | 50 | Pass |
| Impact Velocity | m/s | 6.60 to 6.80 | 6.77 | Pass |
| Maximum Probe Acceleration | G's | 30 to 36 | 31 | Pass |
| Shoulder Displacement | mm | 31 to 40 | 36 | Pass |
| Upper Rib Displacement | mm | 25 to 32 | 29 | Pass |
| Middle Rib Displacement | mm | 30 to 36 | 33 | Pass |
| Lower Rib Displacement | mm | 32 to 38 | 35 | Pass |
| Upper Spine (T1) Y Acceleration | G's | 34 to 43 | 35 | Pass |
| Lower Spine (T12) Y Acceleration | G's | 29 to 37 | 31 | Pass |
| Overall Test Results | | | | Pass |

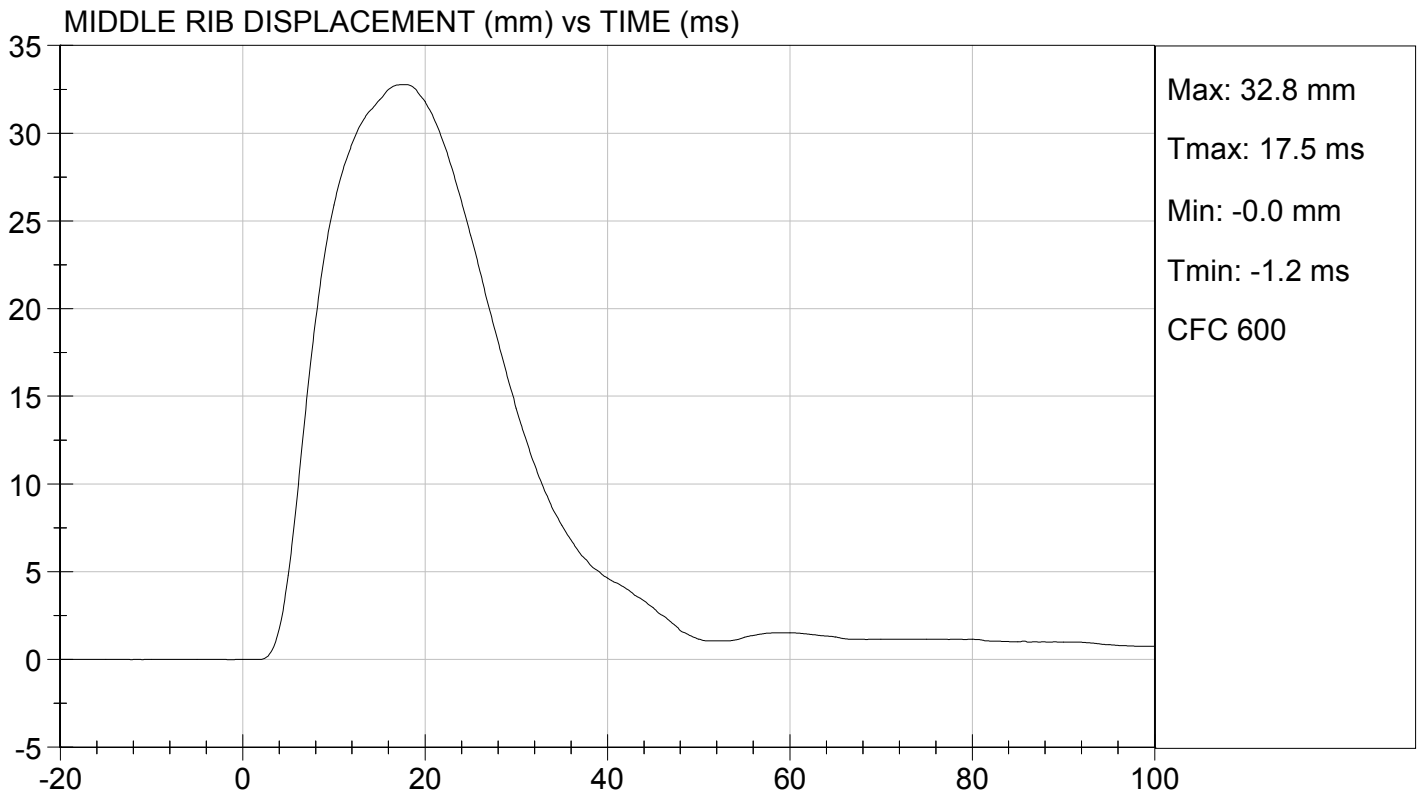
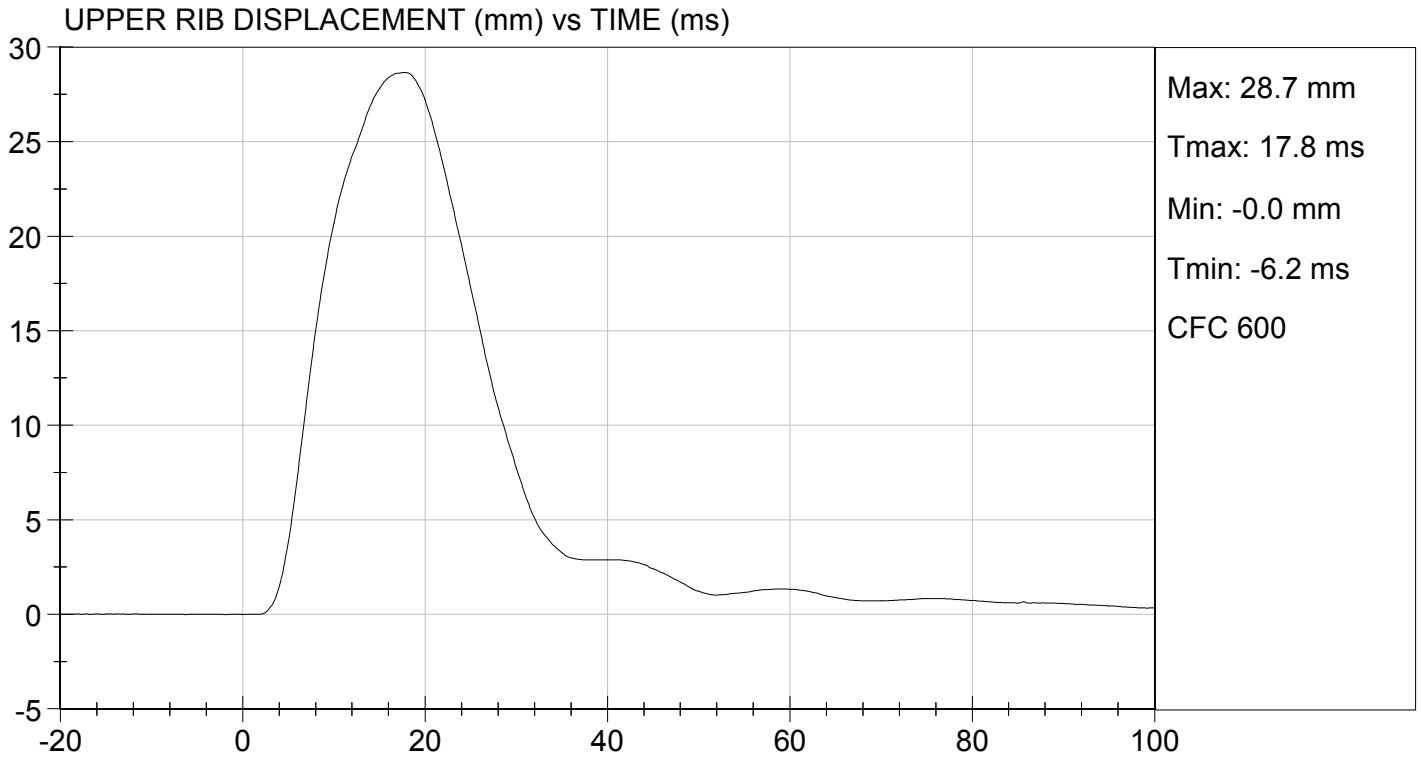
David Schoedel
Laboratory Technician

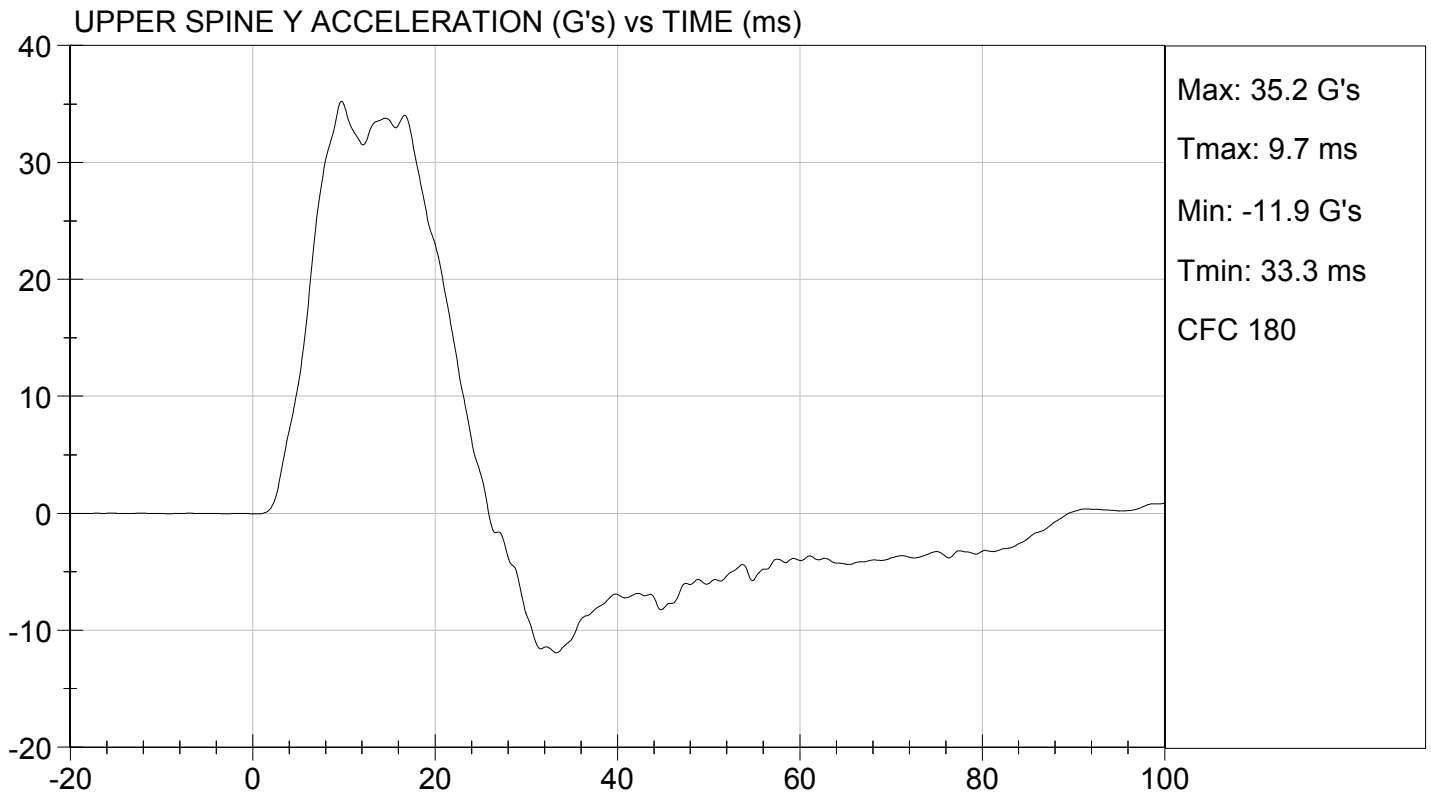
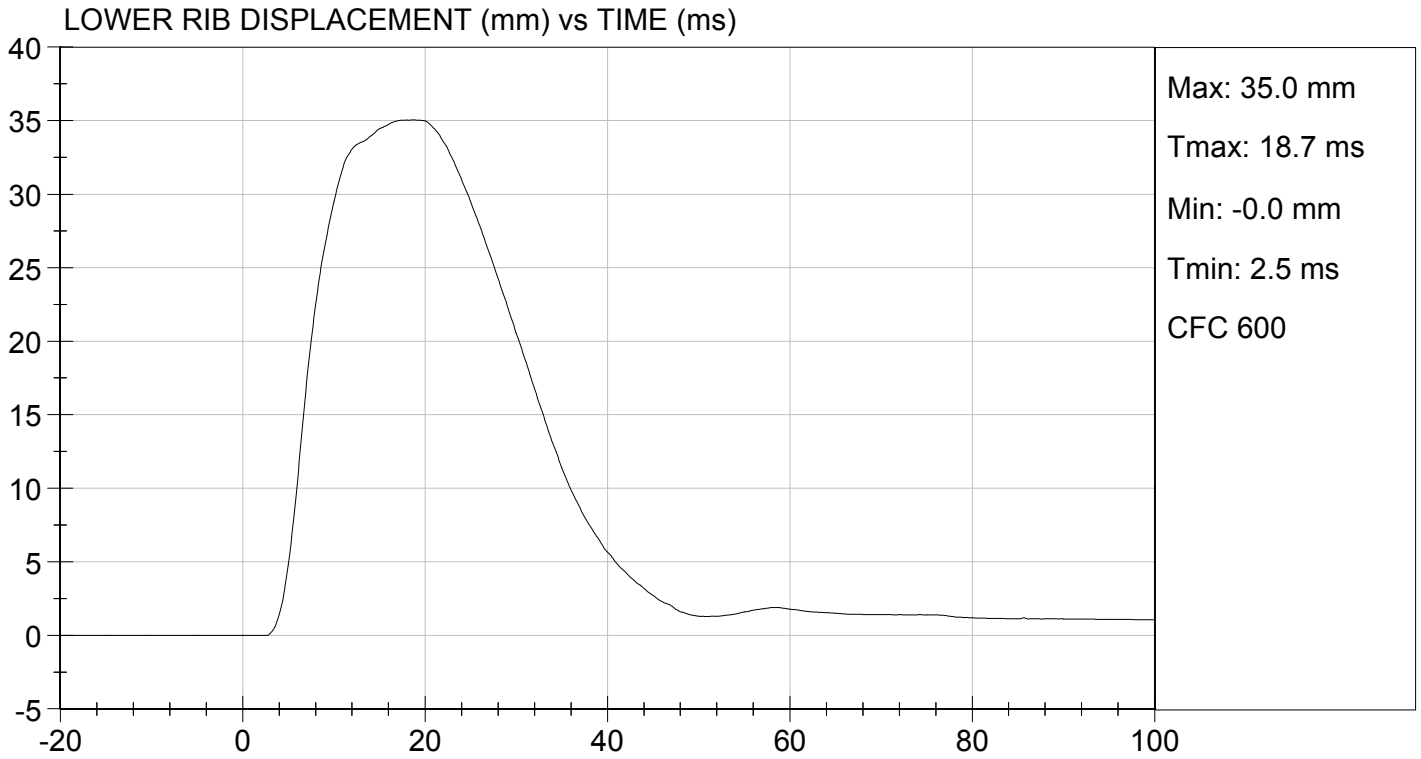
10/03/2014

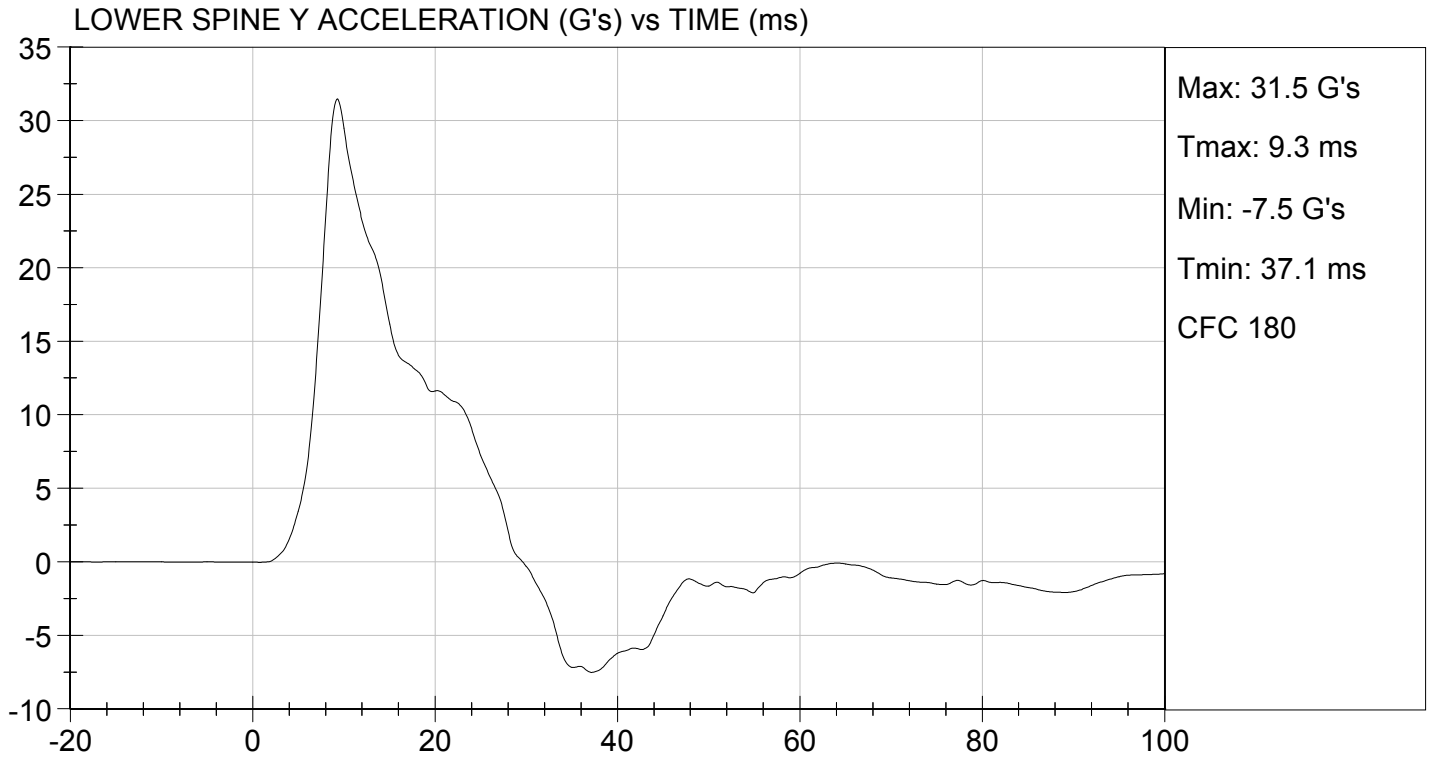
Test Date

Jessica Hall
Approved By









MGA RESEARCH CORPORATION
THORAX (WITHOUT ARM) IMPACT TEST
SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 296

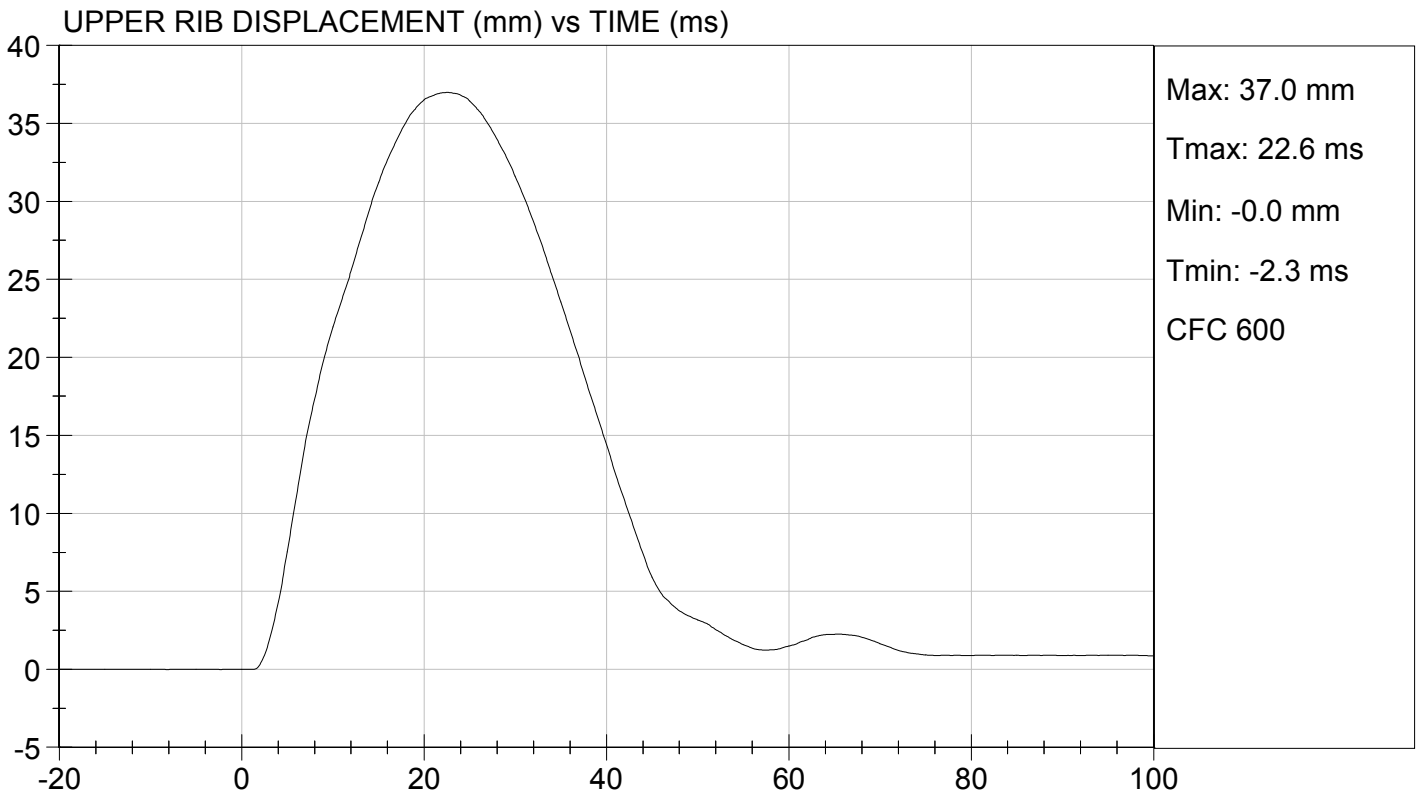
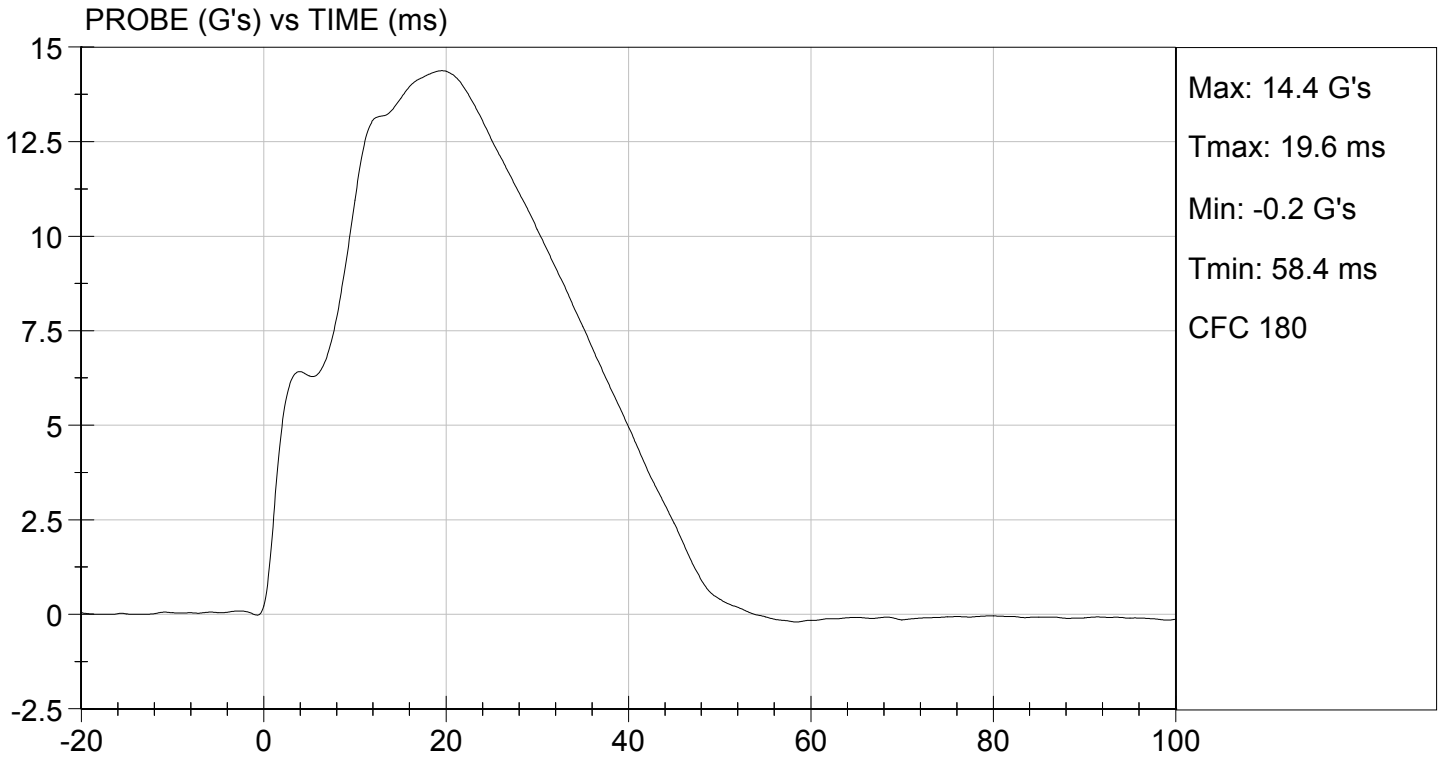
Test I.D: D143495

| Tested Parameter | Units | Specification | Result | Pass/Fail |
|----------------------------------|-------|---------------|--------|-----------|
| Temperature | deg C | 20.6 to 22.2 | 21.4 | Pass |
| Humidity | % | 10 to 70 | 50 | Pass |
| Impact Velocity | m/s | 4.20 to 4.40 | 4.30 | Pass |
| Maximum Probe Acceleration | G's | 14 to 18 | 14 | Pass |
| Upper Rib Displacement | mm | 32 to 40 | 37 | Pass |
| Middle Rib Displacement | mm | 39 to 45 | 42 | Pass |
| Lower Rib Displacement | mm | 35 to 43 | 39 | Pass |
| Upper Spine (T1) Y Acceleration | G's | 13 to 17 | 13 | Pass |
| Lower Spine (T12) Y Acceleration | G's | 7 to 11 | 8 | Pass |
| Overall Test Results | | | | Pass |

David Schoedel
 Laboratory Technician

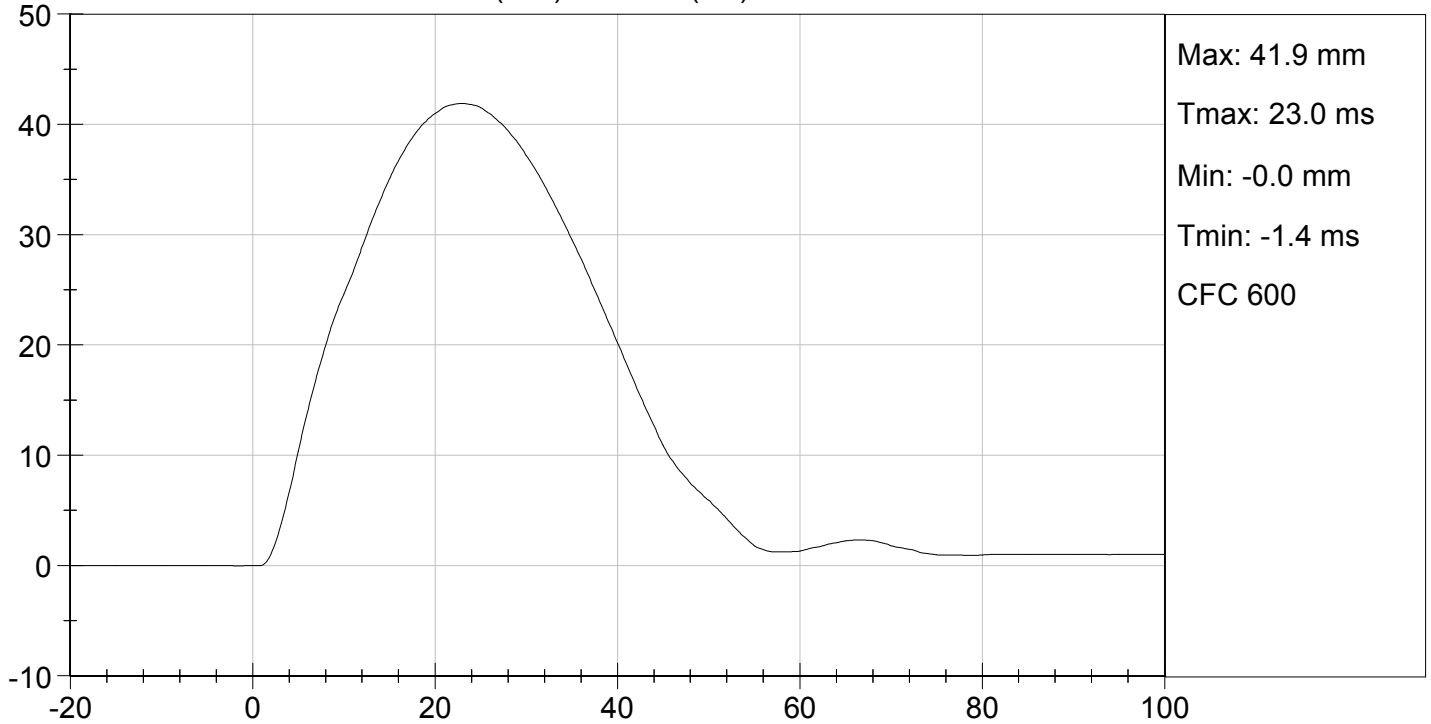
10/03/2014
 Test Date

Jessica Hall
 Approved By

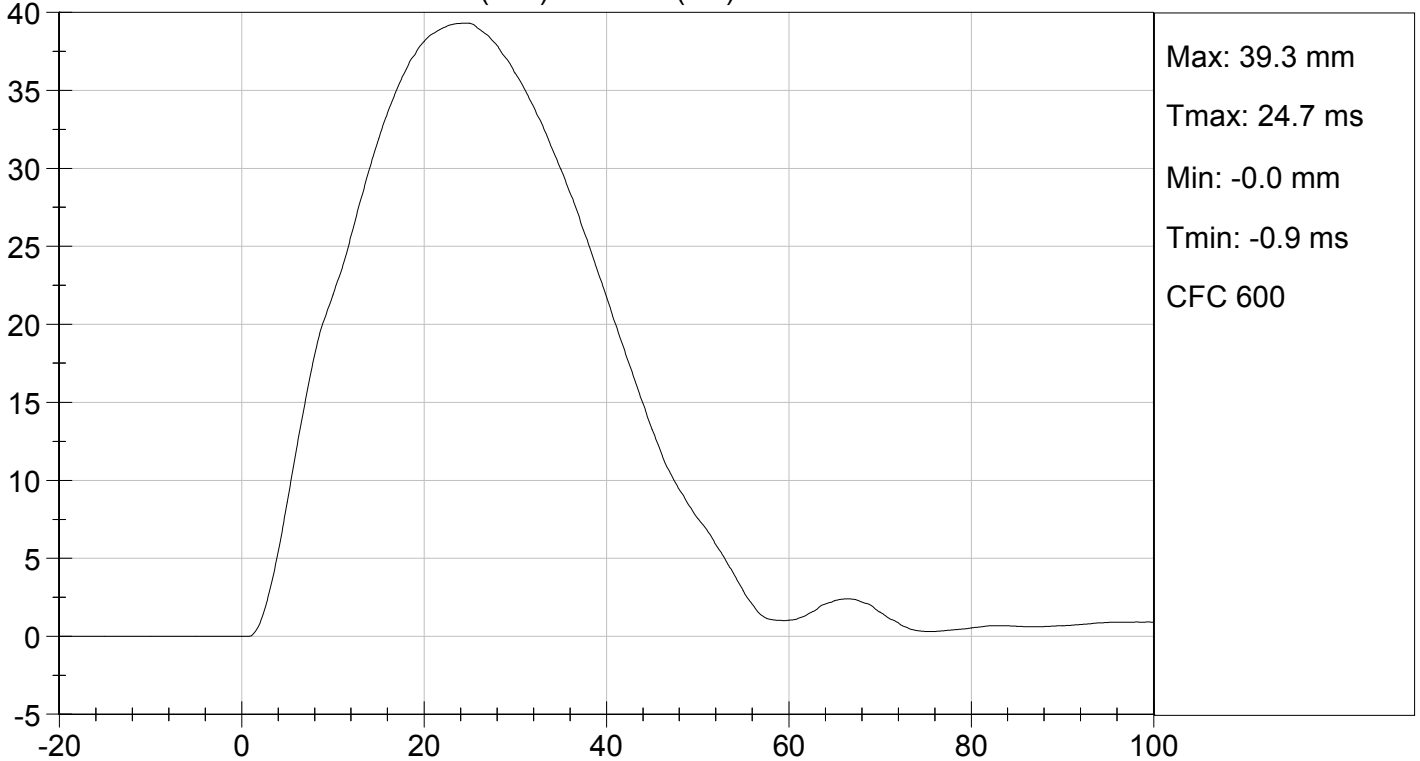


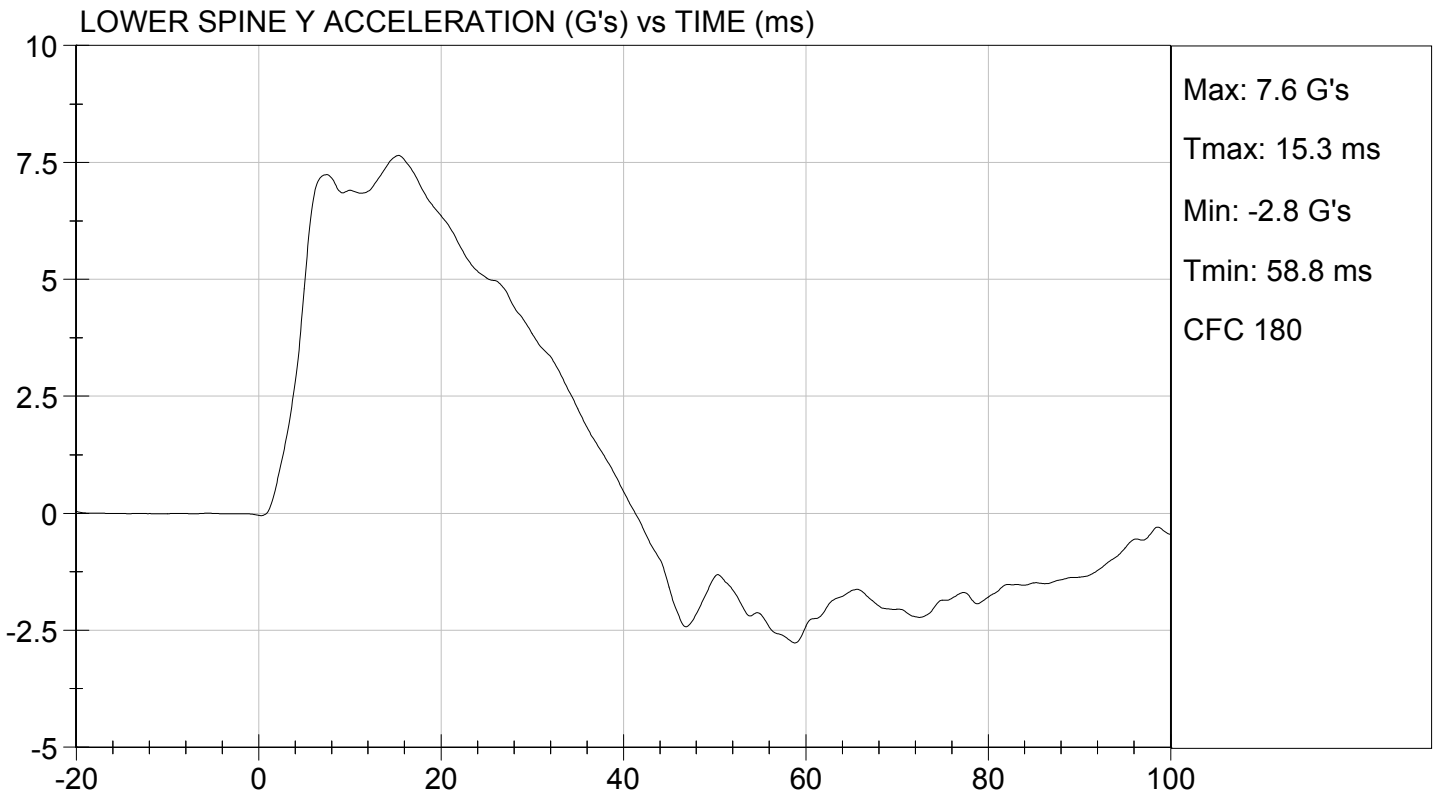
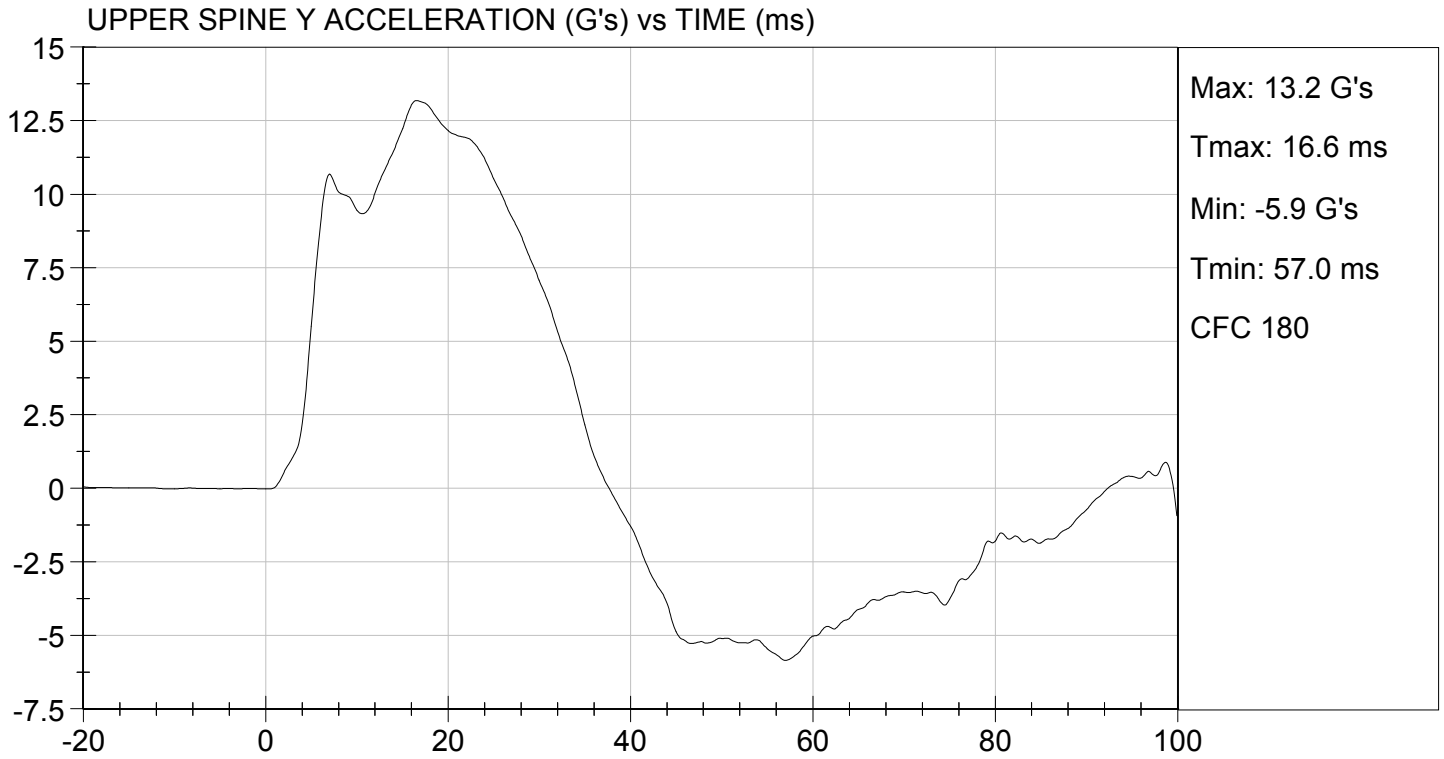


MIDDLE RIB DISPLACEMENT (mm) vs TIME (ms)



LOWER RIB DISPLACEMENT (mm) vs TIME (ms)





MGA RESEARCH CORPORATION
ABDOMINAL IMPACT TEST
SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 296

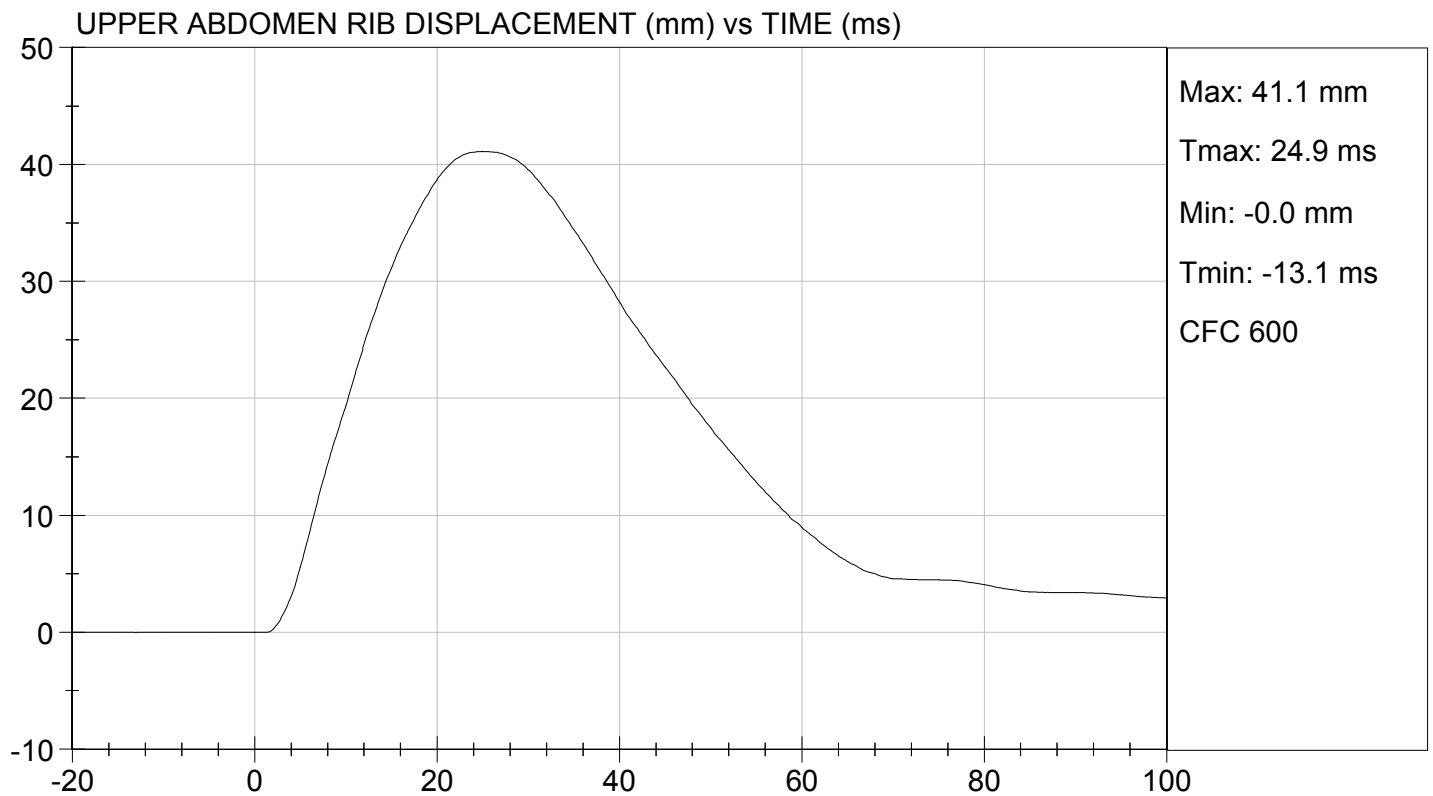
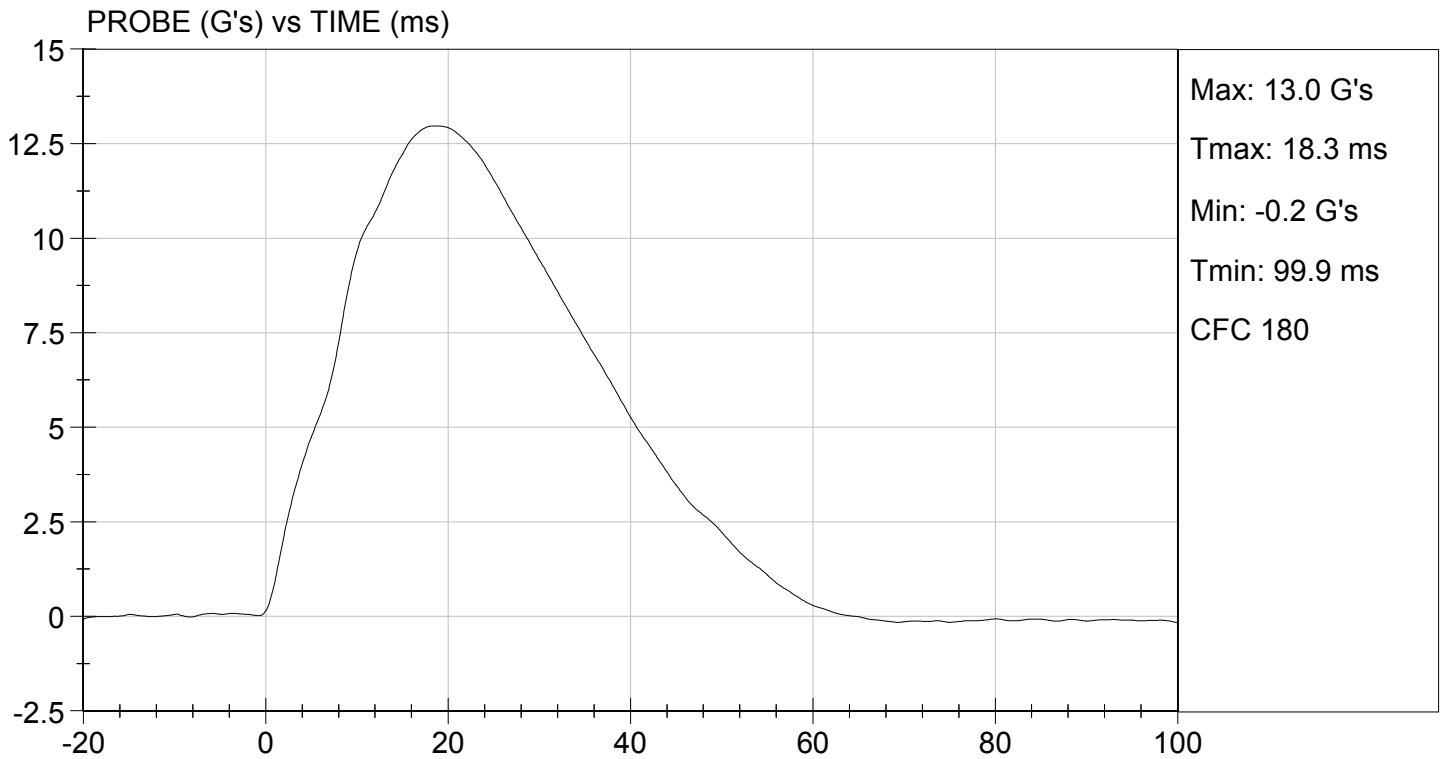
Test I.D: D143496

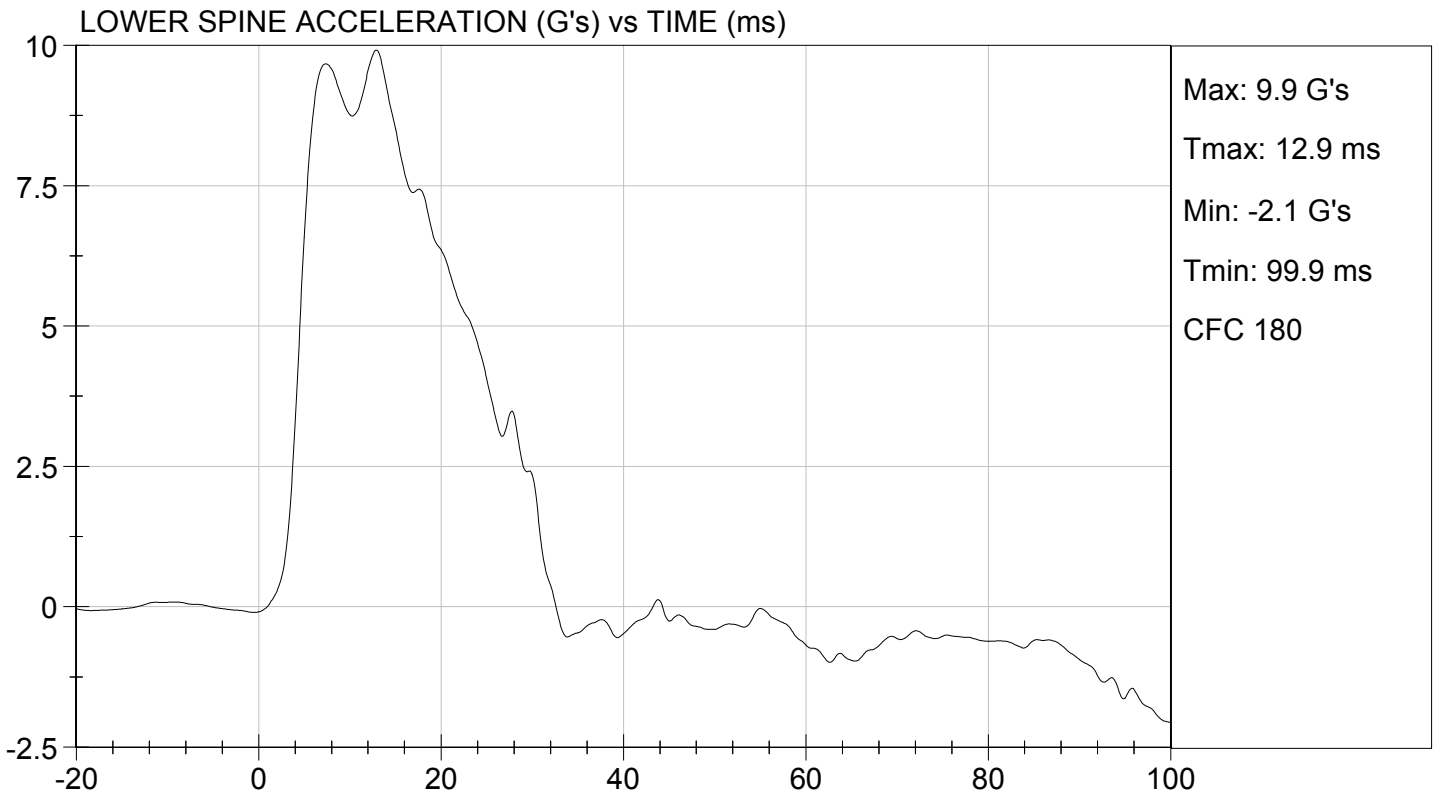
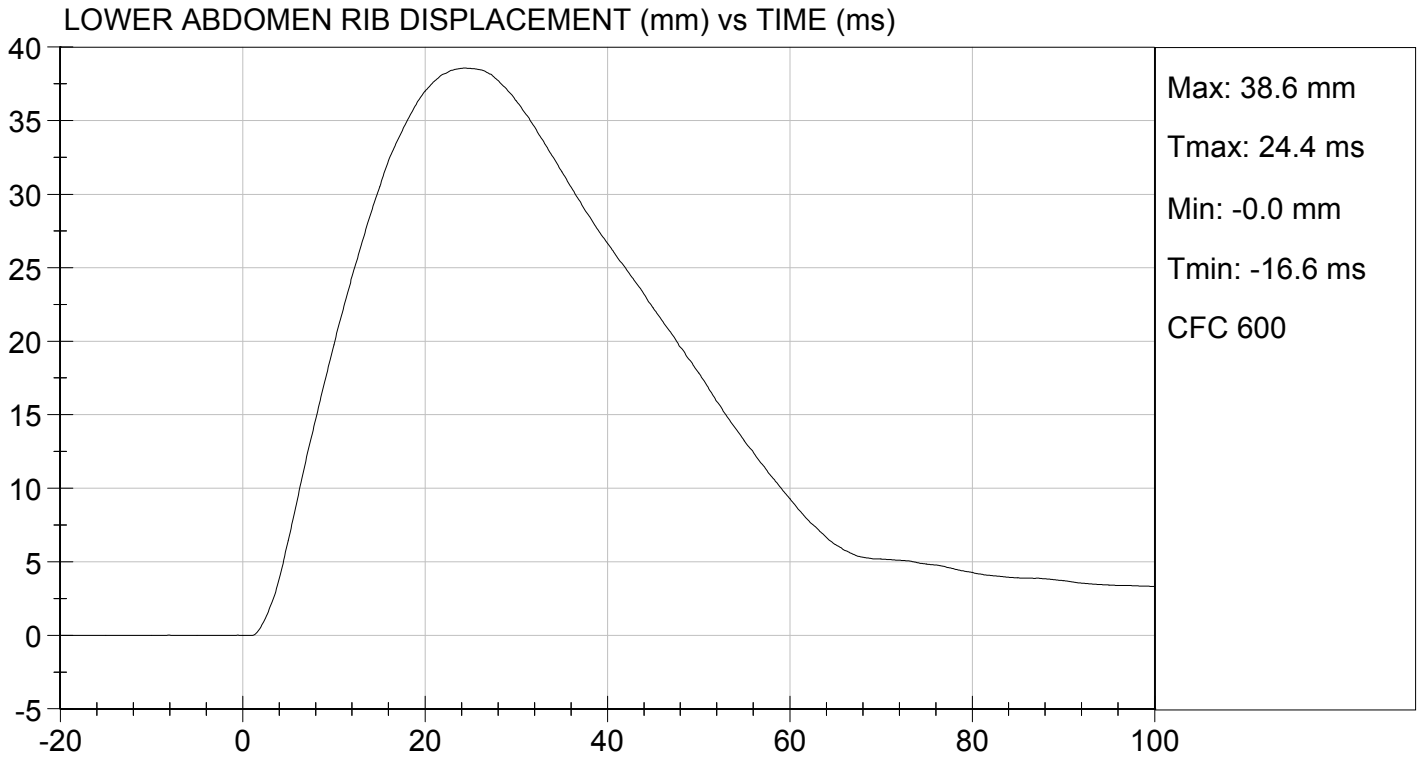
| Tested Parameter | Units | Specification | Result | Pass/Fail |
|----------------------------------|-------|---------------|--------|-----------|
| Temperature | deg C | 20.6 to 22.2 | 21.4 | Pass |
| Humidity | % | 10 to 70 | 50 | Pass |
| Impact Velocity | m/s | 4.20 to 4.40 | 4.30 | Pass |
| Maximum Probe Acceleration | G's | 12 to 16 | 13 | Pass |
| Upper Abdomen Rib Displacement | mm | 36 to 47 | 41 | Pass |
| Lower Abdomen Rib Displacement | mm | 33 to 44 | 39 | Pass |
| Lower Spine (T12) Y Acceleration | G's | 9 to 14 | 10 | Pass |
| Overall Test Results | | | | Pass |

David Schoedel
 Laboratory Technician

10/03/2014
 Test Date

Jessica Hall
 Approved By





MGA RESEARCH CORPORATION
PELVIS IMPACT TEST
SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 296

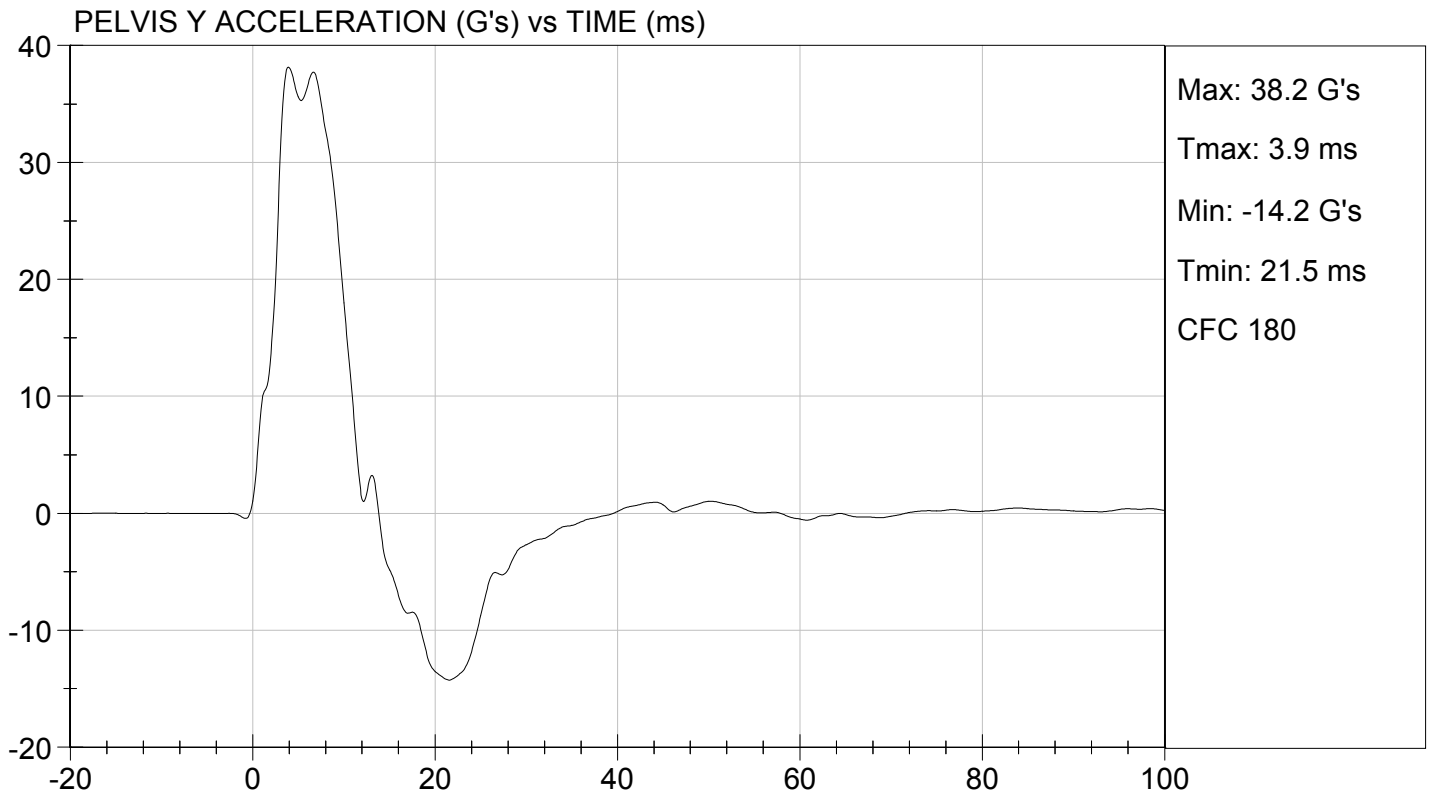
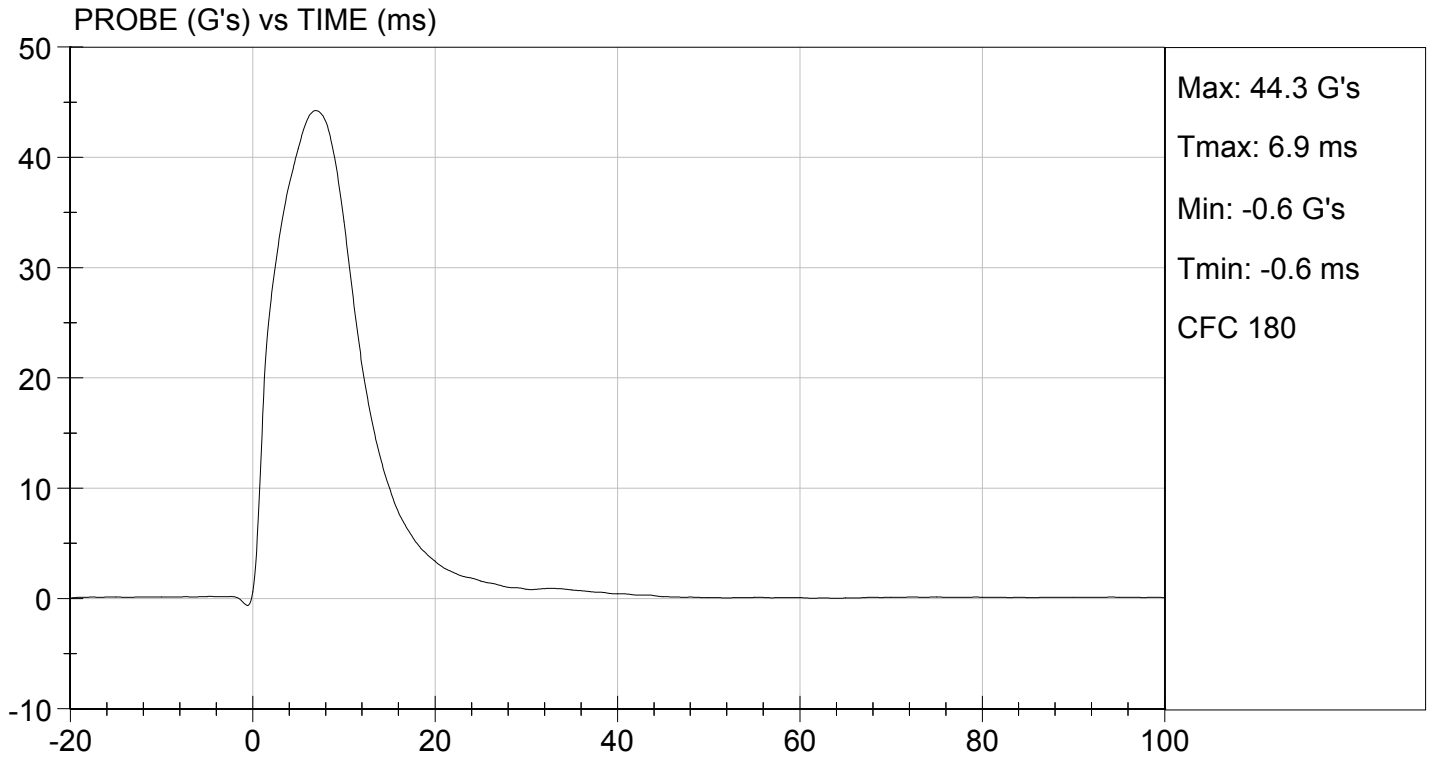
Test I.D: D143497

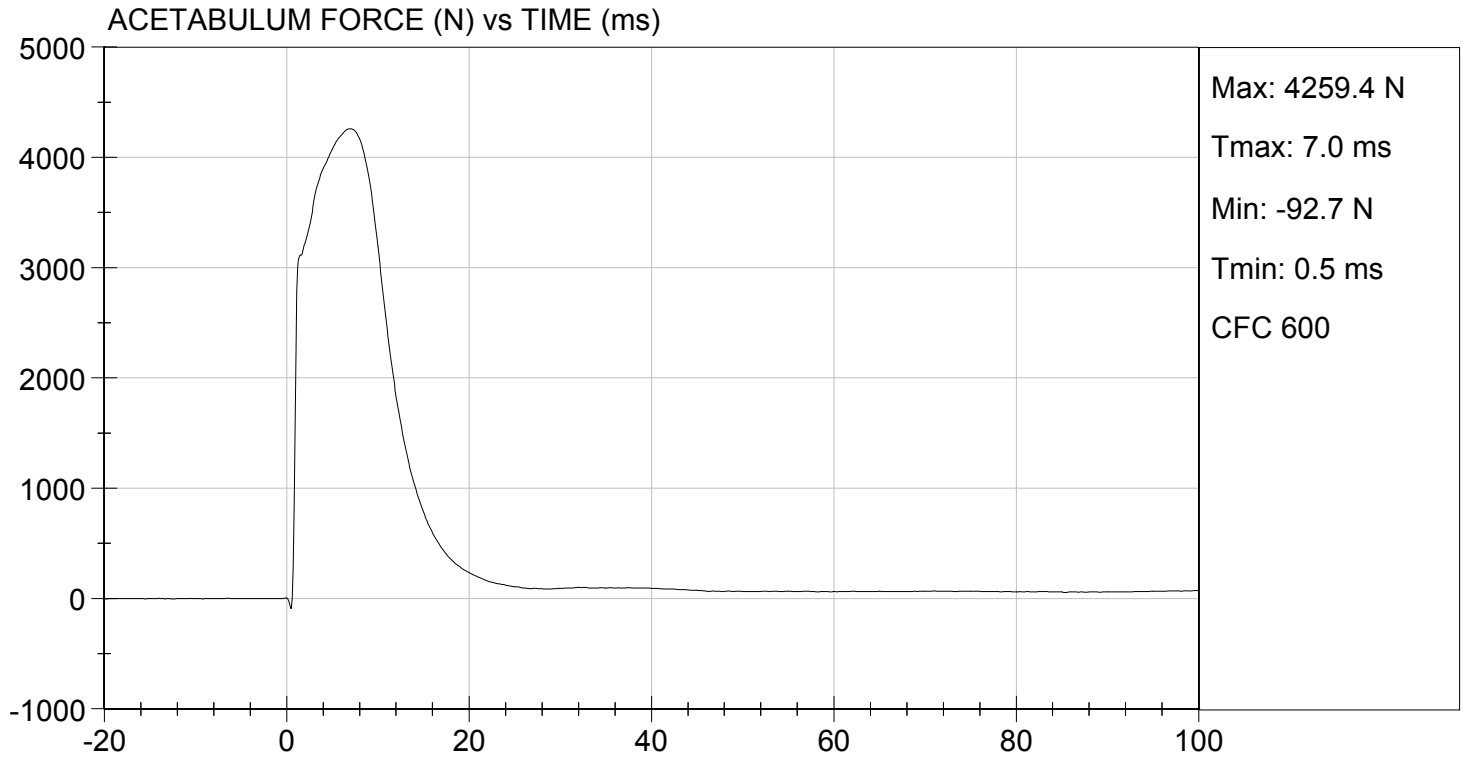
| Tested Parameter | Units | Specification | Result | Pass/Fail |
|----------------------------------|-------|---------------|--------|-----------|
| Temperature | deg C | 20.6 to 22.2 | 21.4 | Pass |
| Humidity | % | 10 to 70 | 50 | Pass |
| Impact Velocity | m/s | 6.60 to 6.80 | 6.68 | Pass |
| Maximum Probe Acceleration | G's | 38 to 47 | 44 | Pass |
| Pelvis Y Acceleration After 6 ms | G's | 34 to 42 | 38 | Pass |
| Peak Acetabulum Force | N | 3600 to 4300 | 4,259 | Pass |
| Overall Test Results | | | | Pass |

David Schoedel
 Laboratory Technician

10/03/2014
 Test Date

Jessica Hall
 Approved By





MGA RESEARCH CORPORATION
ILIAC IMPACT TEST
SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 296

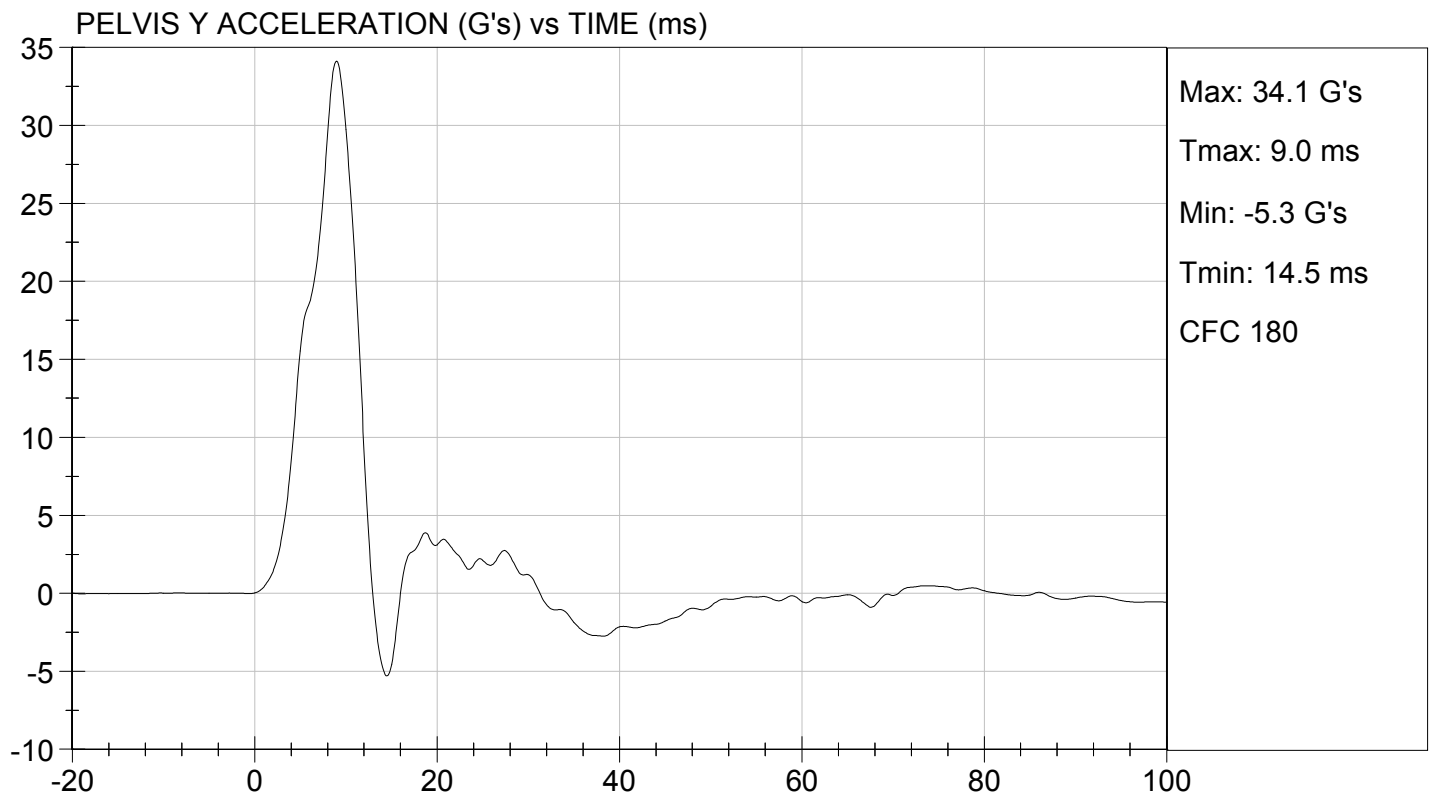
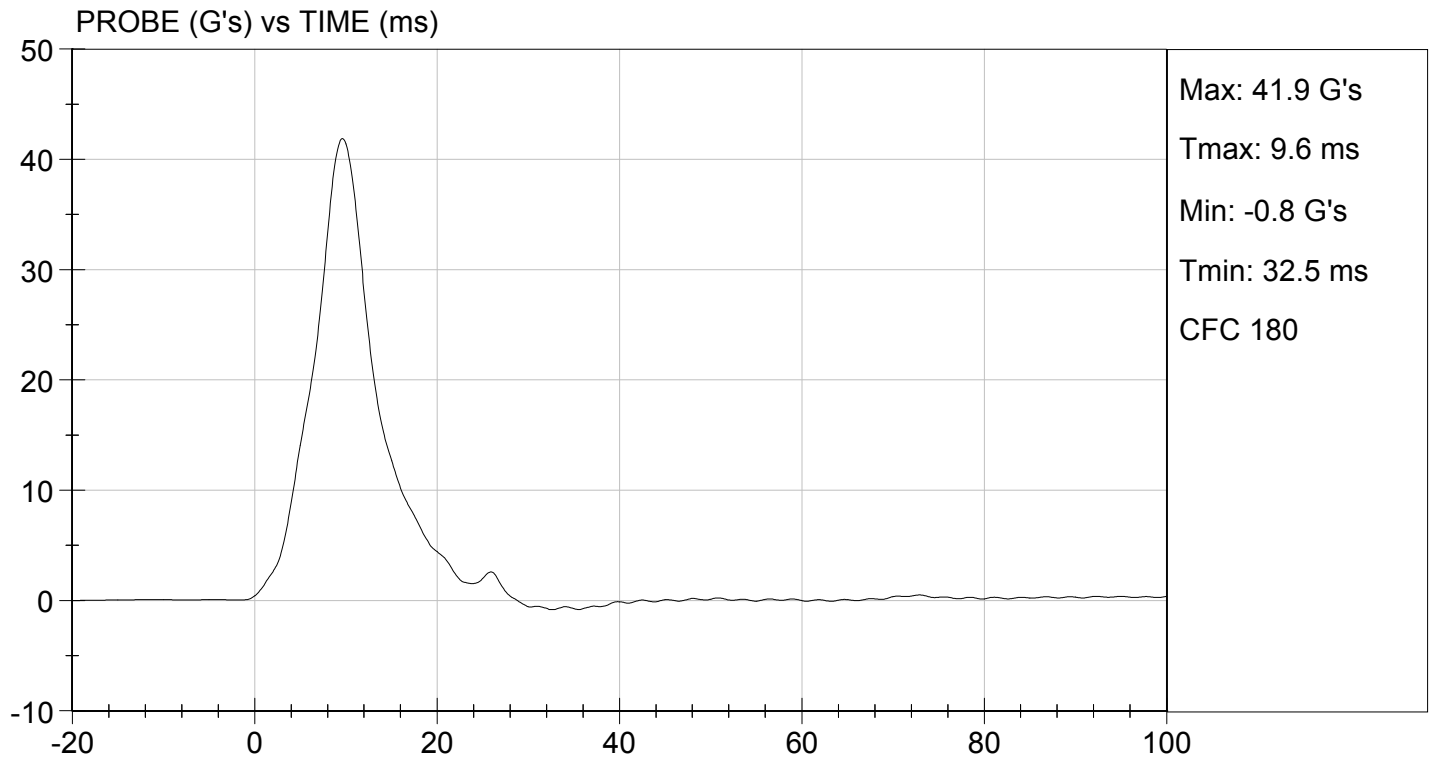
Test I.D: D143498

| Tested Parameter | Units | Specification | Result | Pass/Fail |
|-----------------------------|-------|---------------|--------|-------------|
| Temperature | deg C | 20.6 to 22.2 | 21.4 | Pass |
| Humidity | % | 10 to 70 | 50 | Pass |
| Impact Velocity | m/s | 4.20 to 4.40 | 4.34 | Pass |
| Maximum Probe Acceleration | G's | 36 to 45 | 42 | Pass |
| Pelvis Y Acceleration | G's | 28 to 39 | 34 | Pass |
| Peak Pelvis Iliac Force | N | 4100 to 5100 | 5,087 | Pass |
| Overall Test Results | | | | Pass |

David Schoedel
 Laboratory Technician

10/03/2014
 Test Date

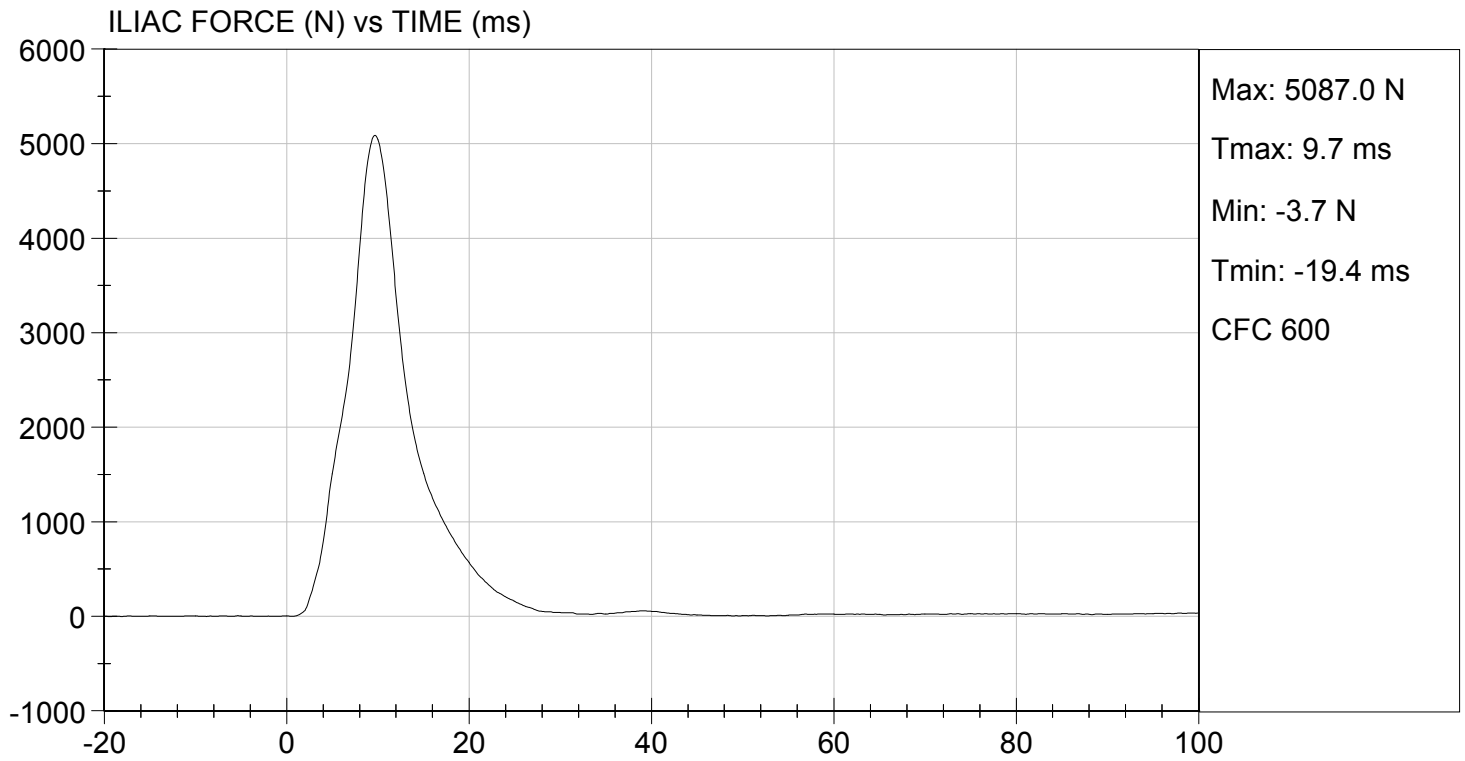
Jessica Hall
 Approved By





TEST DESC: ILLIAC
VELOCITY: 14.25 ft/s, 4.34 m/s

TEST DATE: 10/03/2014
TEST #: D143498



**MGA RESEARCH CORPORATION
HEAD DROP TEST
SID-IIs BUILD LEVEL D DUMMY**

ATD Serial No: 296

Test ID: D143801

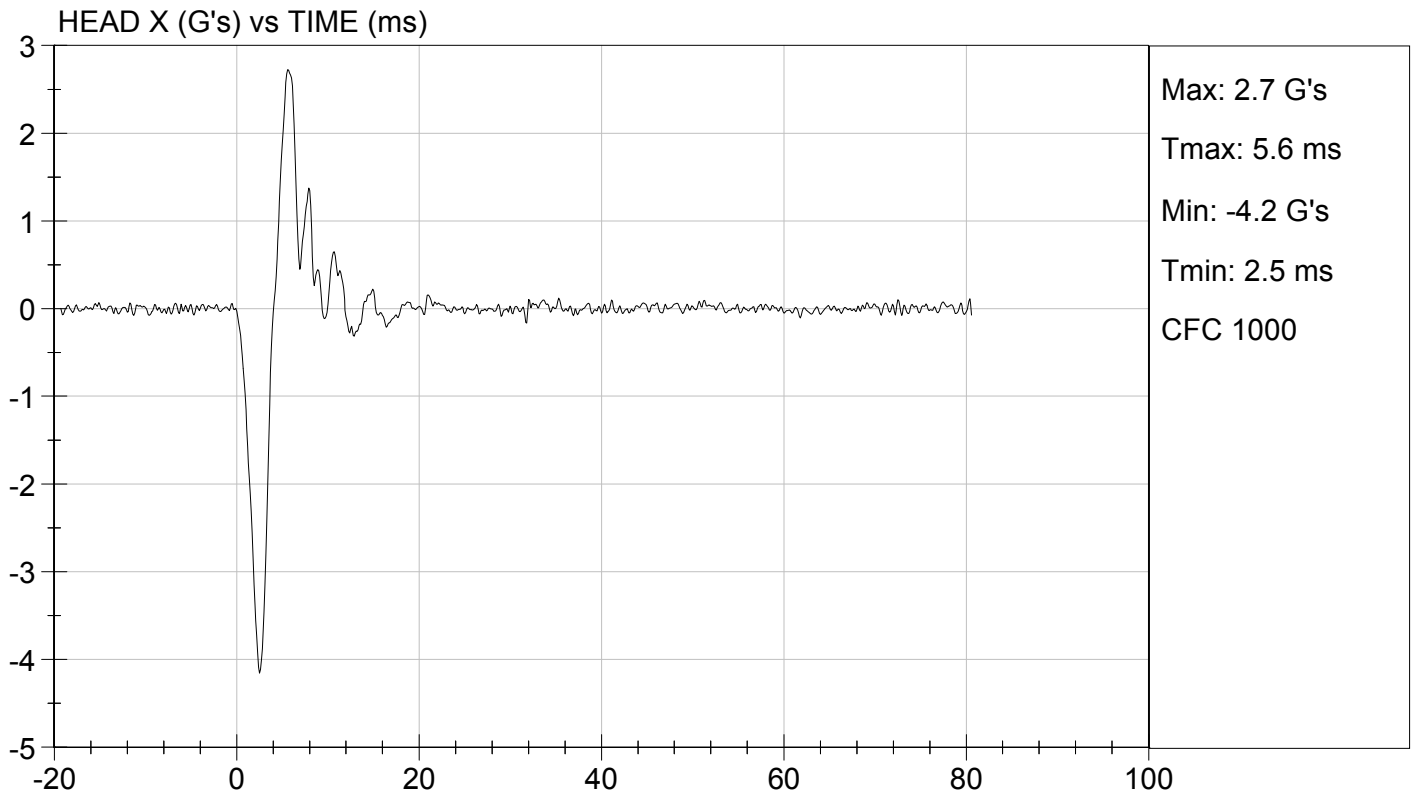
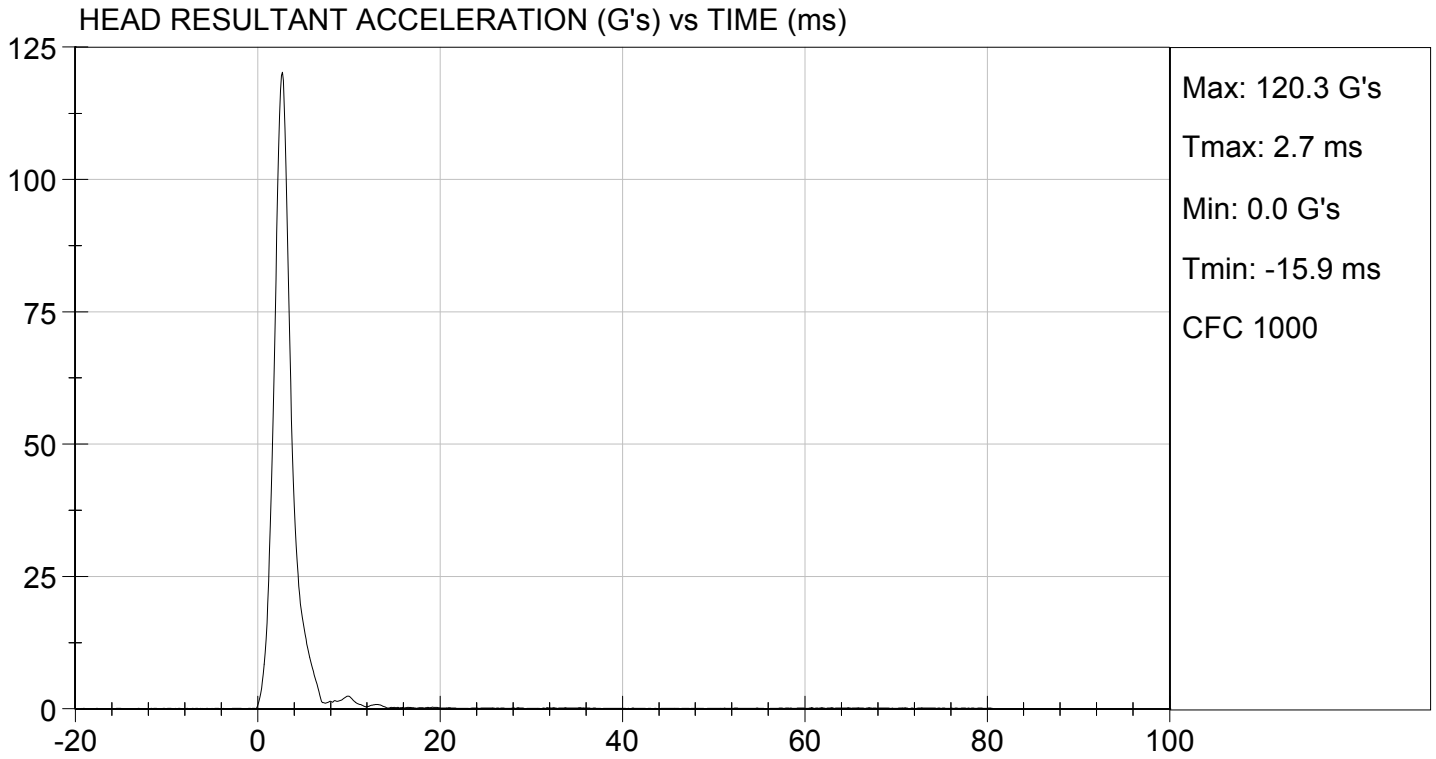
| Tested Parameter | Units | Specification | Result | Pass/Fail |
|--------------------------------|-------|---------------|--------|-----------|
| Laboratory Temperature | deg C | 20.6 to 22.2 | 21.3 | Pass |
| Laboratory Relative Humidity | % | 10 to 70 | 33 | Pass |
| Peak Resultant Acceleration | G's | 115 to 137 | 120 | Pass |
| Peak Longitudinal Acceleration | G's | +/- 15 | -4.2 | Pass |
| Unimodal | N/A | Yes | Yes | Pass |
| Oscillations | N/A | <15% | Yes | Pass |
| Overall Test Results | | | | Pass |

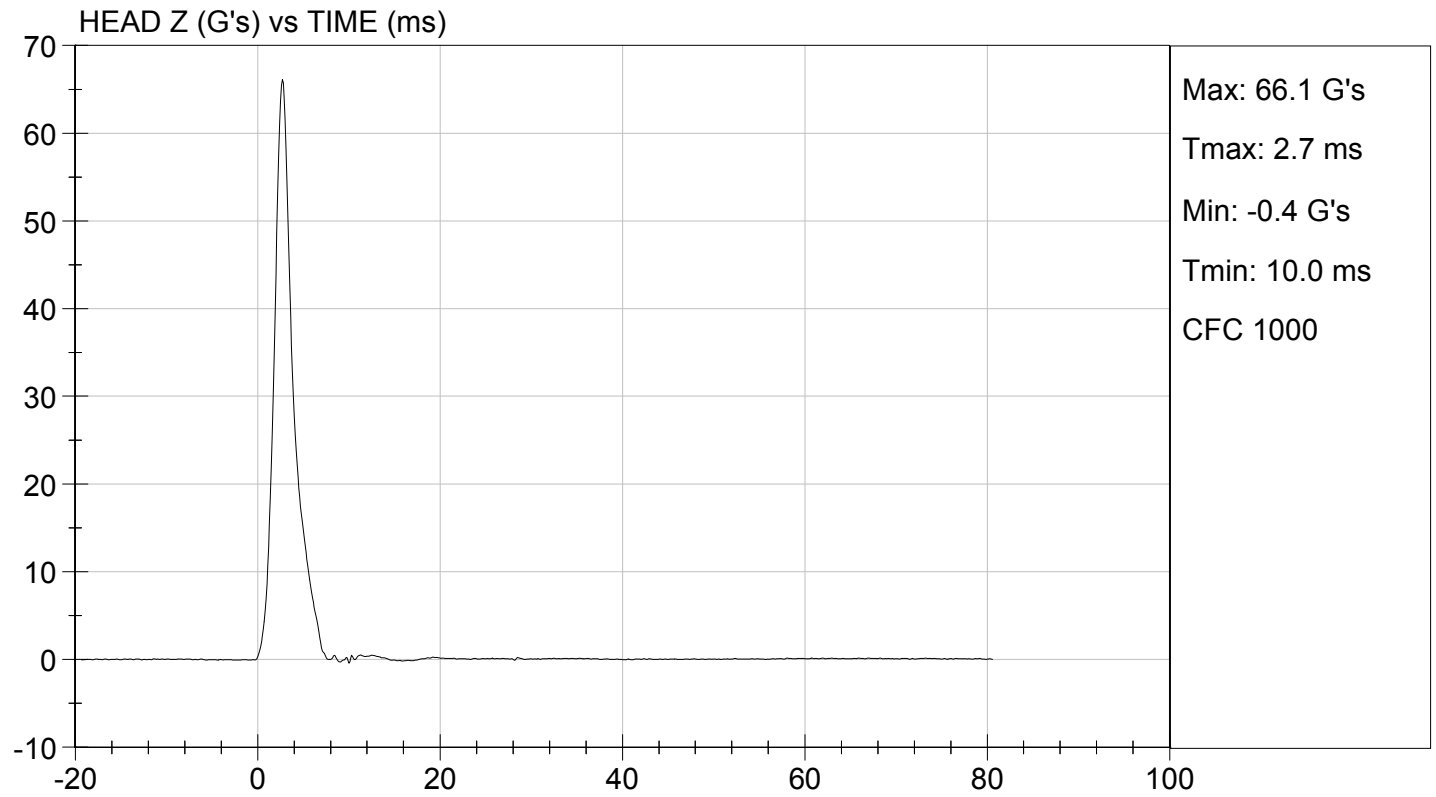
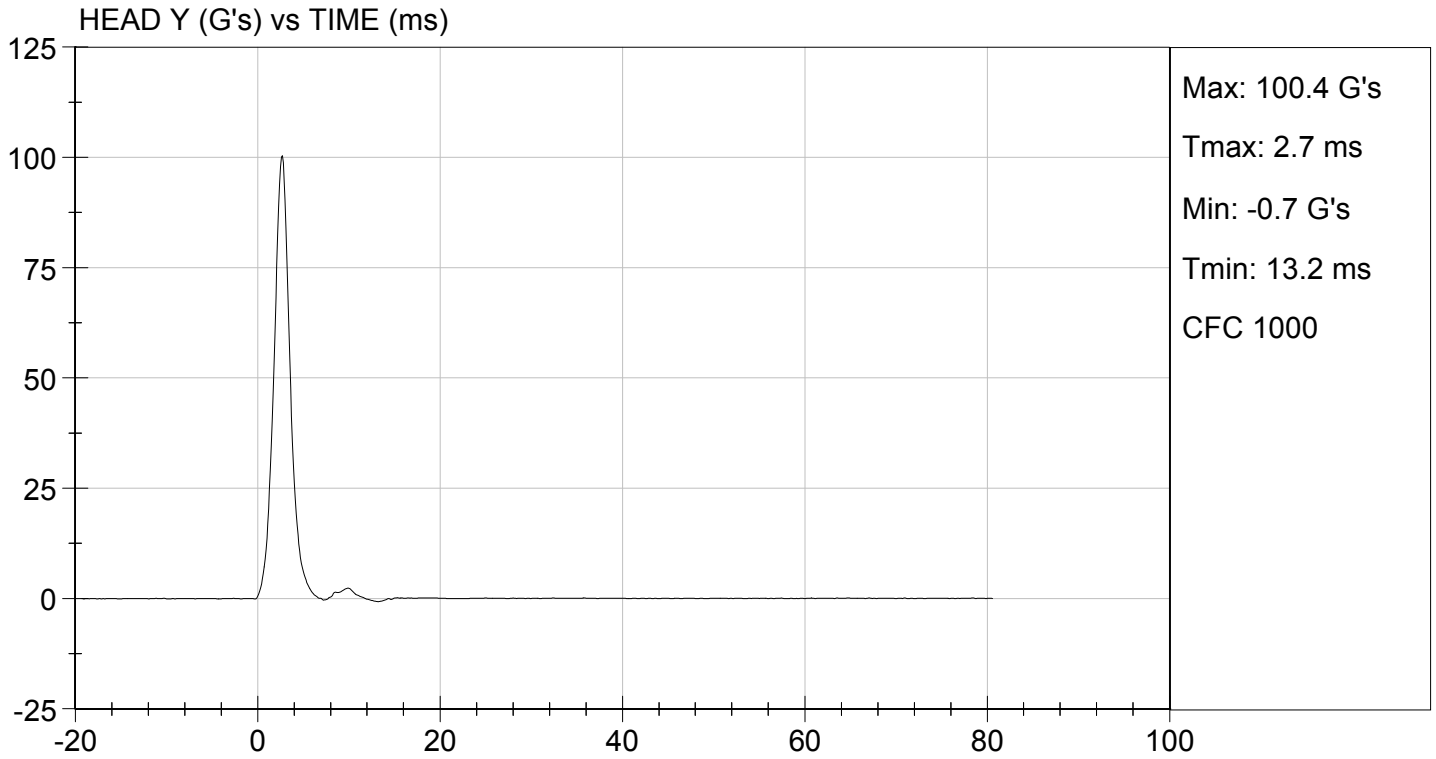
David Schoedel
Laboratory Technician

10/29/2014

Test Date

Jessica Hall
Approved By





**MGA RESEARCH CORPORATION
LATERAL NECK PENDULUM TEST
SID-IIs BUILD LEVEL D DUMMY**

ATD Serial No: 296

Test I.D.: D143802

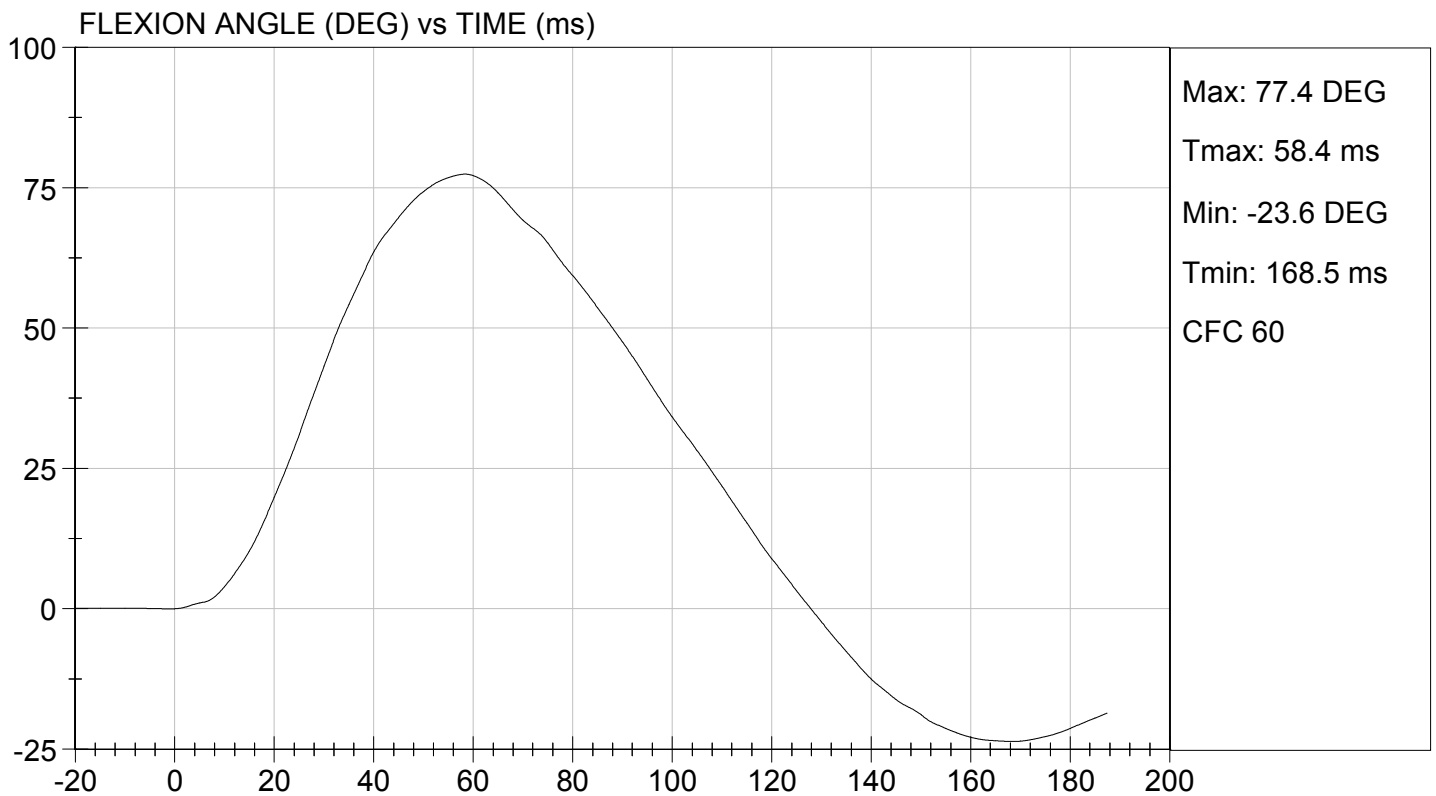
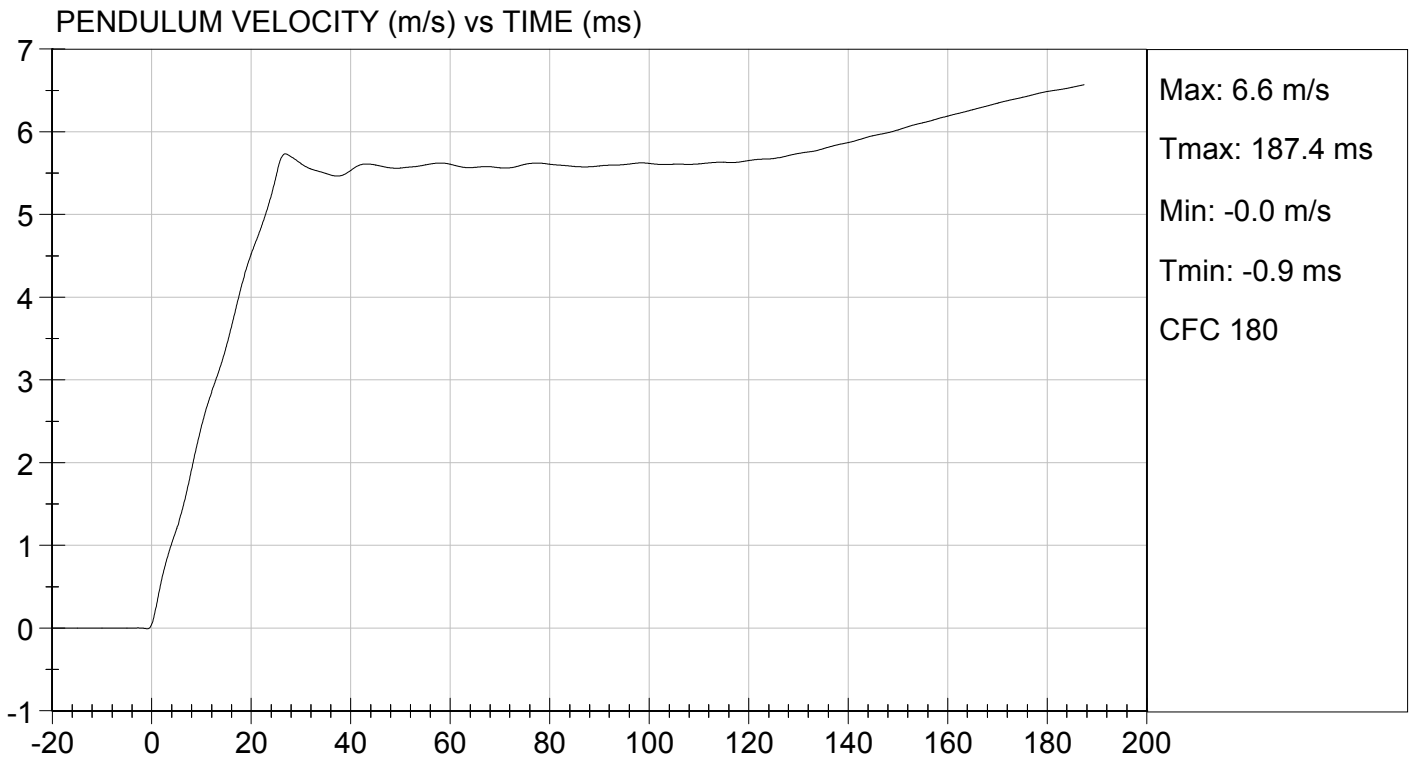
| Tested Parameter | Units | Specification | Result | Pass/Fail | |
|----------------------------------|-----------|---------------|--------------|-------------|------|
| Temperature | deg C | 20.6 to 22.2 | 21.6 | Pass | |
| Humidity | % | 10 to 70 | 31 | Pass | |
| Impact Velocity | m/s | 5.51 to 5.63 | 5.58 | Pass | |
| Pendulum Velocity | 10 ms | m/s | 2.20 to 2.80 | 2.45 | Pass |
| | 15 ms | m/s | 3.30 to 4.10 | 3.41 | Pass |
| | 20 ms | m/s | 4.40 to 5.40 | 4.52 | Pass |
| | 25 ms | m/s | 5.40 to 6.10 | 5.47 | Pass |
| | 25-100 ms | m/s | 5.50 to 6.20 | 5.74 | Pass |
| Maximum D-Plane Rotation | deg | 71 to 81 | 77 | Pass | |
| Time of Maximum D-Plane Rotation | ms | 50 to 70 | 58 | Pass | |
| Maximum Occipital Condyle Moment | Nm | -44 to -36 | -40 | Pass | |
| Time of Moment Decay to 0 Nm | ms | 102 to 126 | 112 | Pass | |
| Overall Test Results | | | | Pass | |

David Schoedel
Laboratory Technician

10/29/2014

Test Date

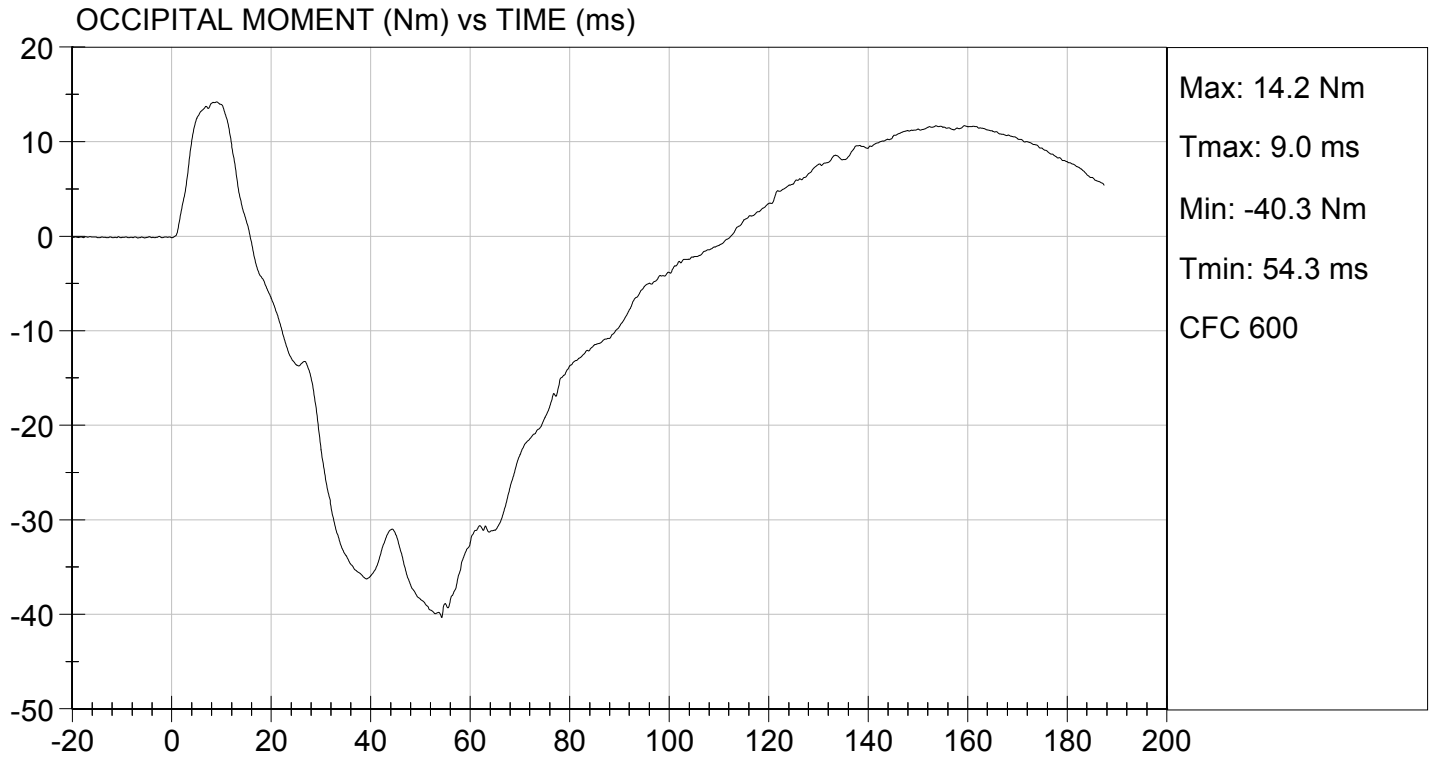
Jessica Hall
Approved By





TEST DESC: NECK BENDING
VELOCITY: 18.32 ft/s, 5.58 m/s

TEST DATE: 10/29/2014
TEST #: D143802



MGA RESEARCH CORPORATION
SHOULDER IMPACT TEST
SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 296

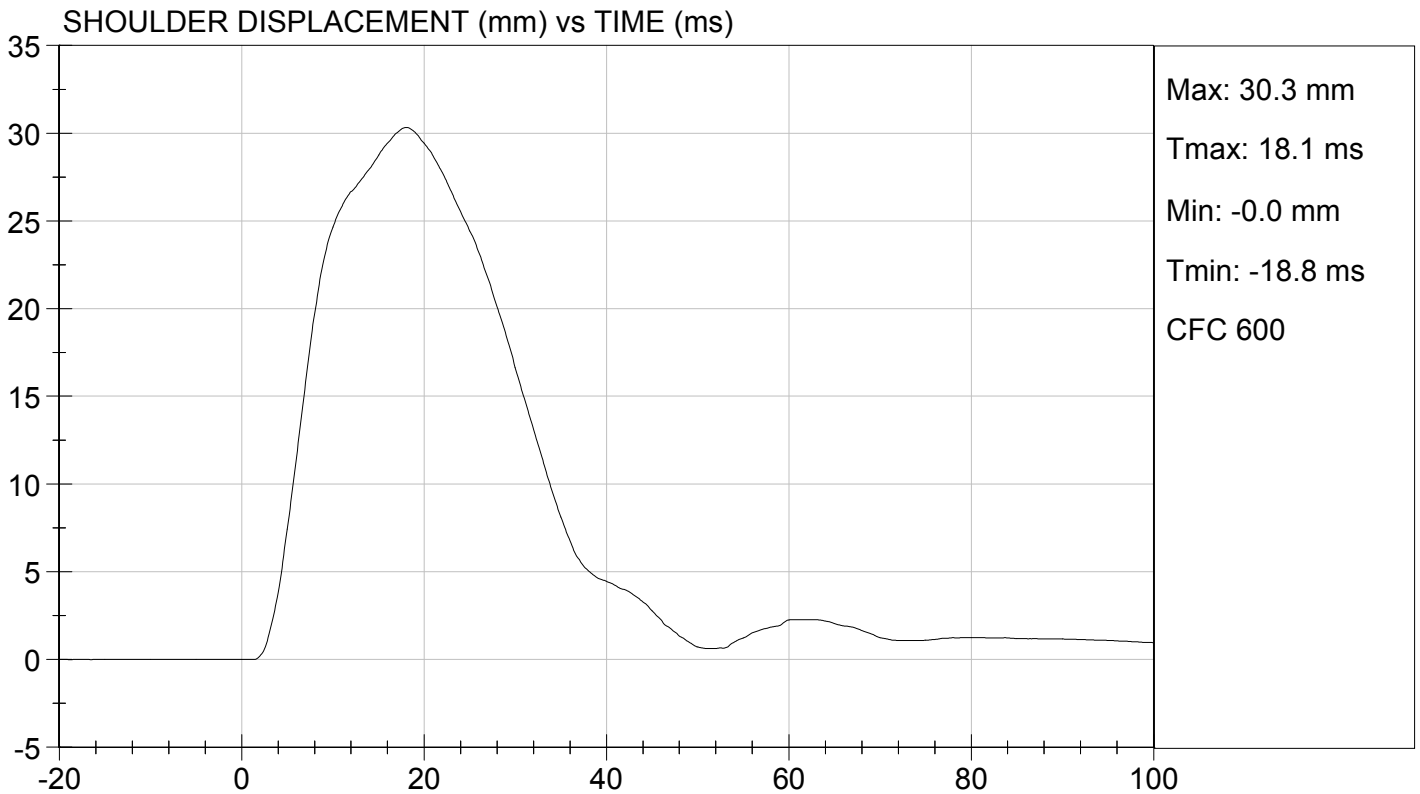
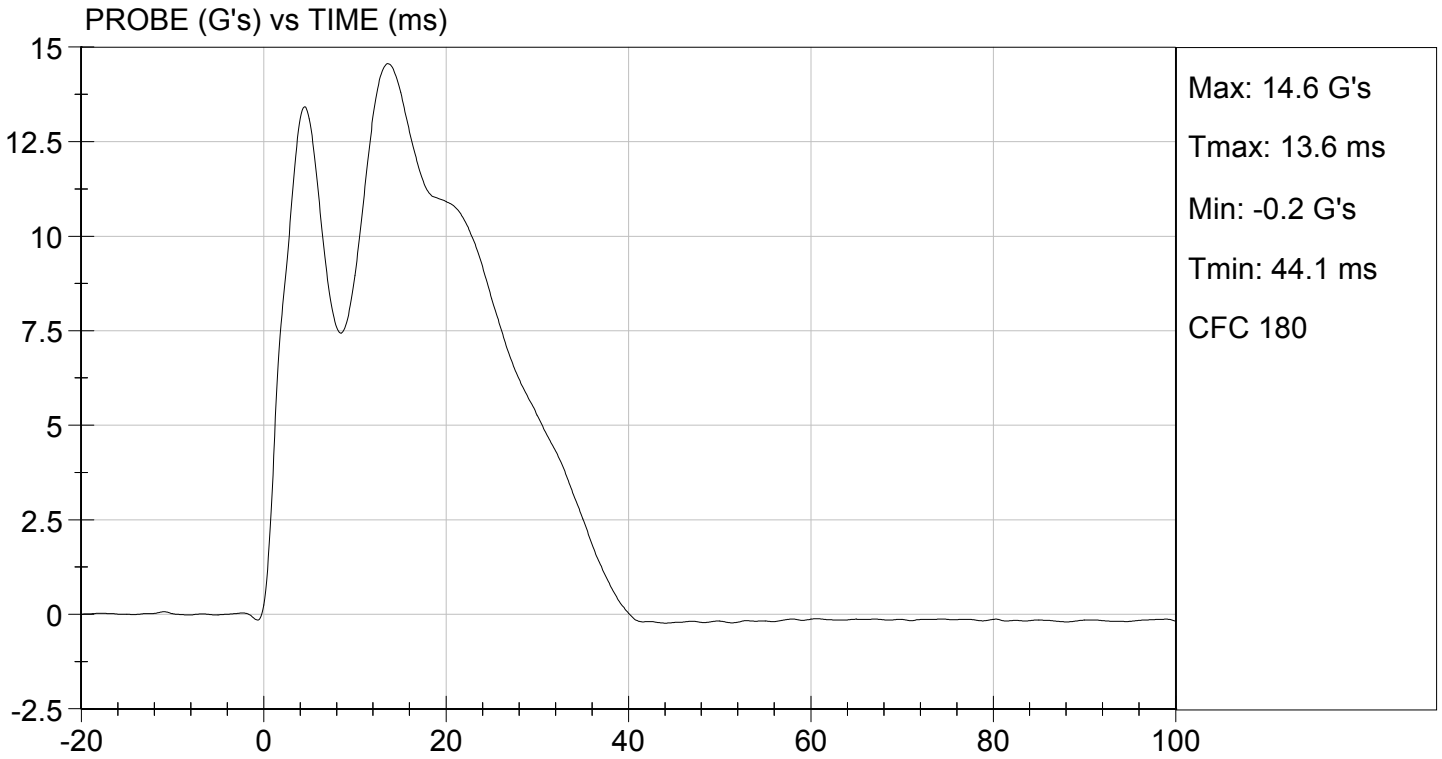
Test ID: D143803

| Tested Parameter | Units | Specification | Result | Pass/Fail |
|---------------------------------|-------|---------------|--------|-----------|
| Laboratory Temperature | deg C | 20.6 to 22.2 | 21.3 | Pass |
| Laboratory Relative Humidity | % | 10 to 70 | 33 | Pass |
| Impact Velocity | m/s | 4.20 to 4.40 | 4.30 | Pass |
| Maximum Probe Acceleration | G's | 13 to 18 | 15 | Pass |
| Shoulder Displacement | mm | 28 to 37 | 30 | Pass |
| Upper Spine (T1) Y Acceleration | G's | 17 to 22 | 18 | Pass |
| Overall Test Results | | | | Pass |

David Schoedel
 Laboratory Technician

10/29/2014
 Test Date

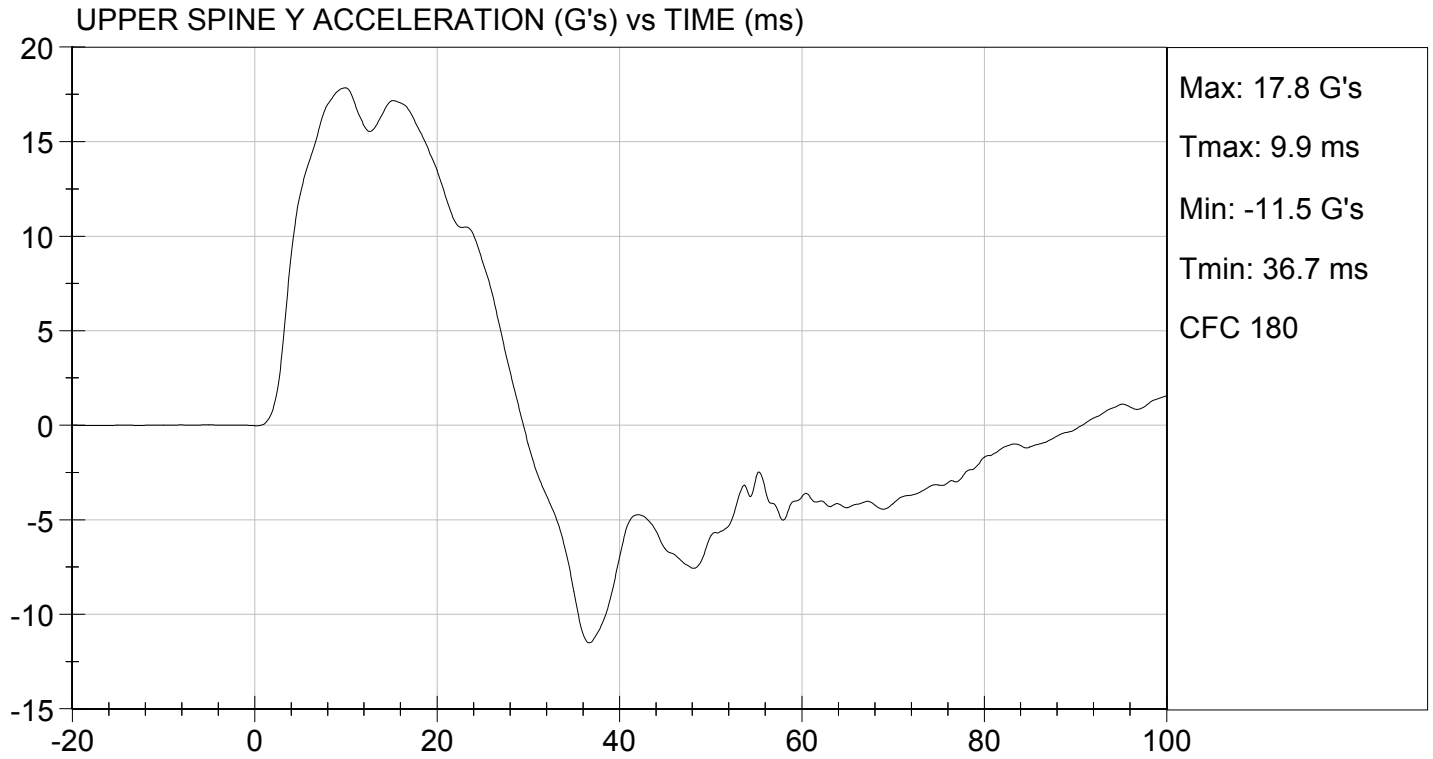
Jessica Hall
 Approved By





TEST DESC: SHOULDER IMPACT
VELOCITY: 14.12 ft/s, 4.30 m/s

TEST DATE: 10/29/2014
TEST #: D143803



**MGA RESEARCH CORPORATION
THORAX (WITH ARM) IMPACT TEST
SID-IIs BUILD LEVEL D DUMMY**

ATD Serial No: 296

Test I.D: D143804

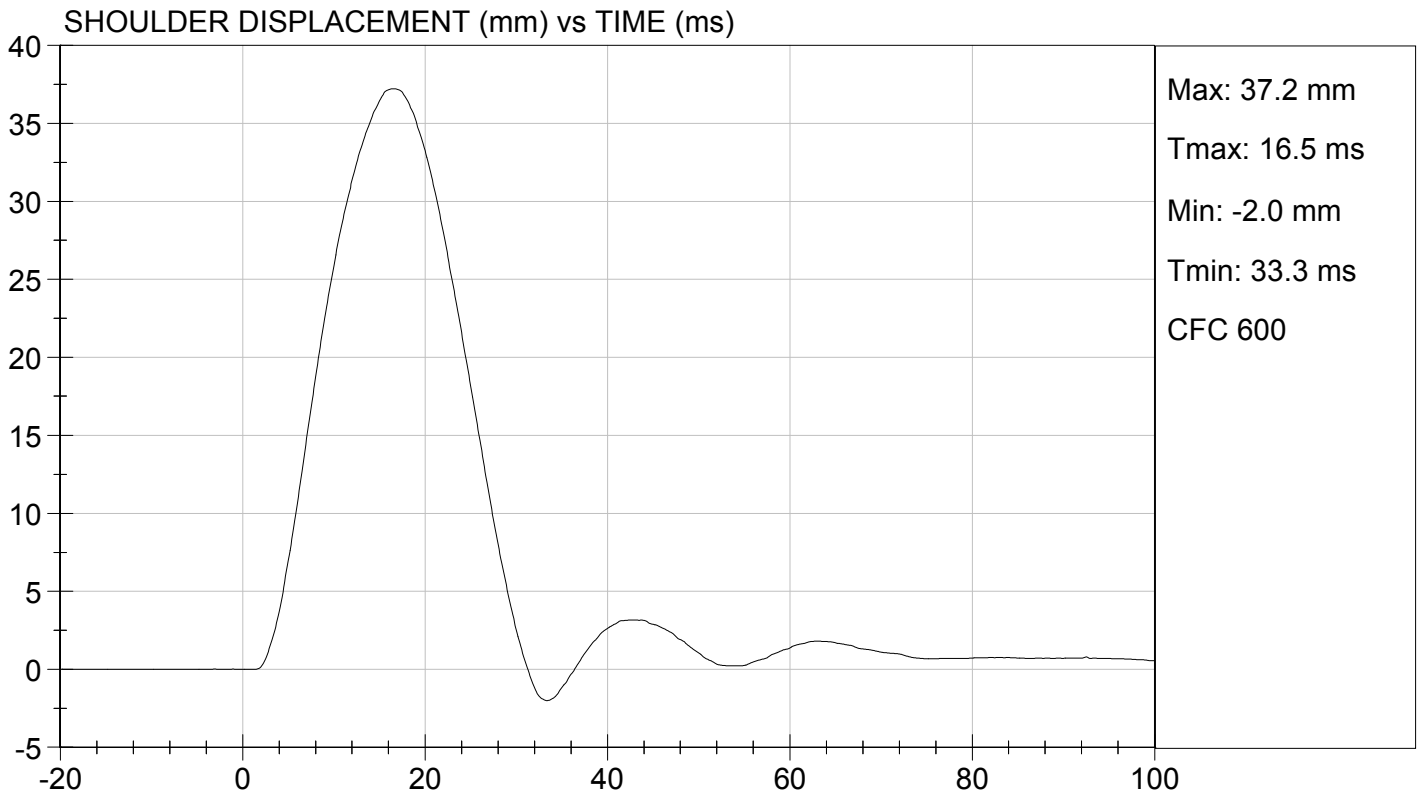
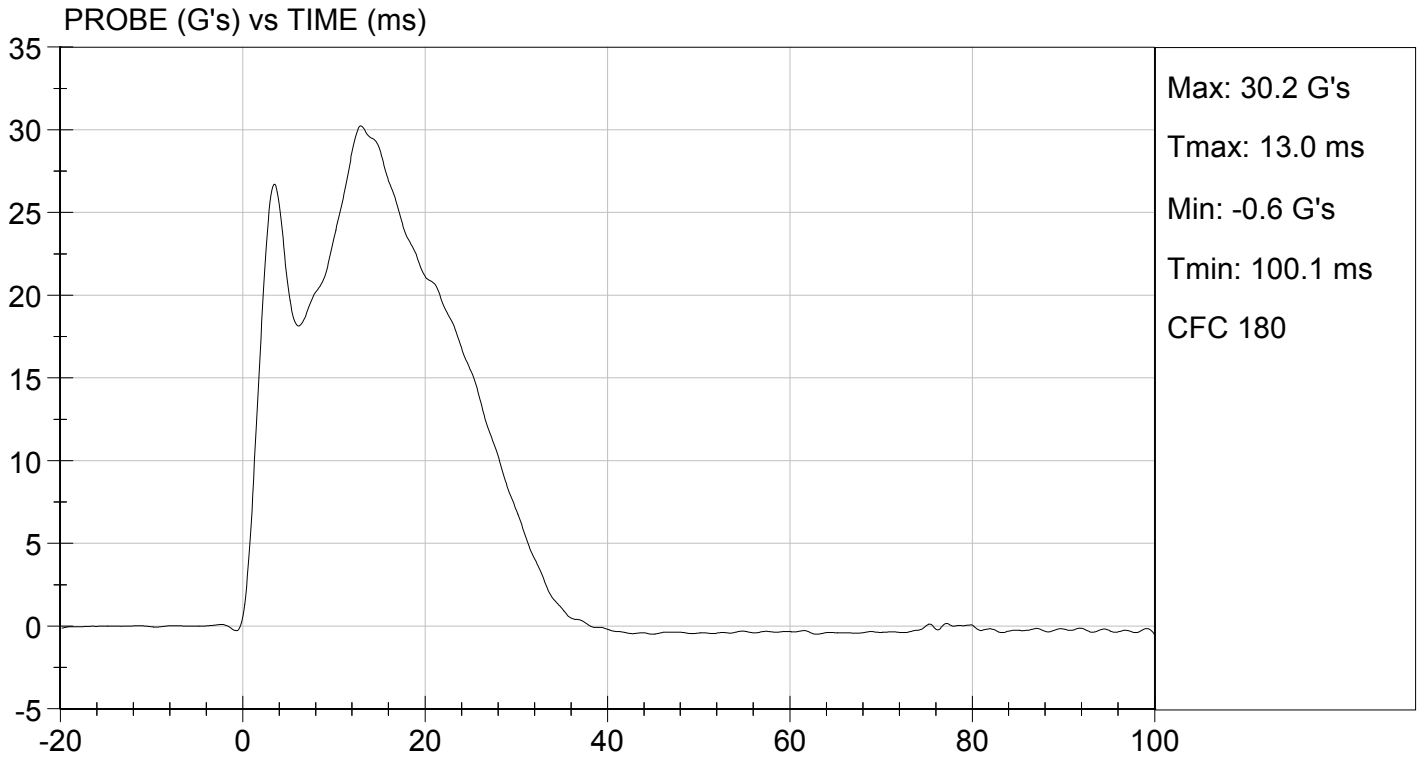
| Tested Parameter | Units | Specification | Result | Pass/Fail |
|----------------------------------|-------|---------------|--------|-----------|
| Temperature | deg C | 20.6 to 22.2 | 21.3 | Pass |
| Humidity | % | 10 to 70 | 33 | Pass |
| Impact Velocity | m/s | 6.60 to 6.80 | 6.77 | Pass |
| Maximum Probe Acceleration | G's | 30 to 36 | 30 | Pass |
| Shoulder Displacement | mm | 31 to 40 | 37 | Pass |
| Upper Rib Displacement | mm | 25 to 32 | 29 | Pass |
| Middle Rib Displacement | mm | 30 to 36 | 32 | Pass |
| Lower Rib Displacement | mm | 32 to 38 | 34 | Pass |
| Upper Spine (T1) Y Acceleration | G's | 34 to 43 | 35 | Pass |
| Lower Spine (T12) Y Acceleration | G's | 29 to 37 | 30 | Pass |
| Overall Test Results | | | | Pass |

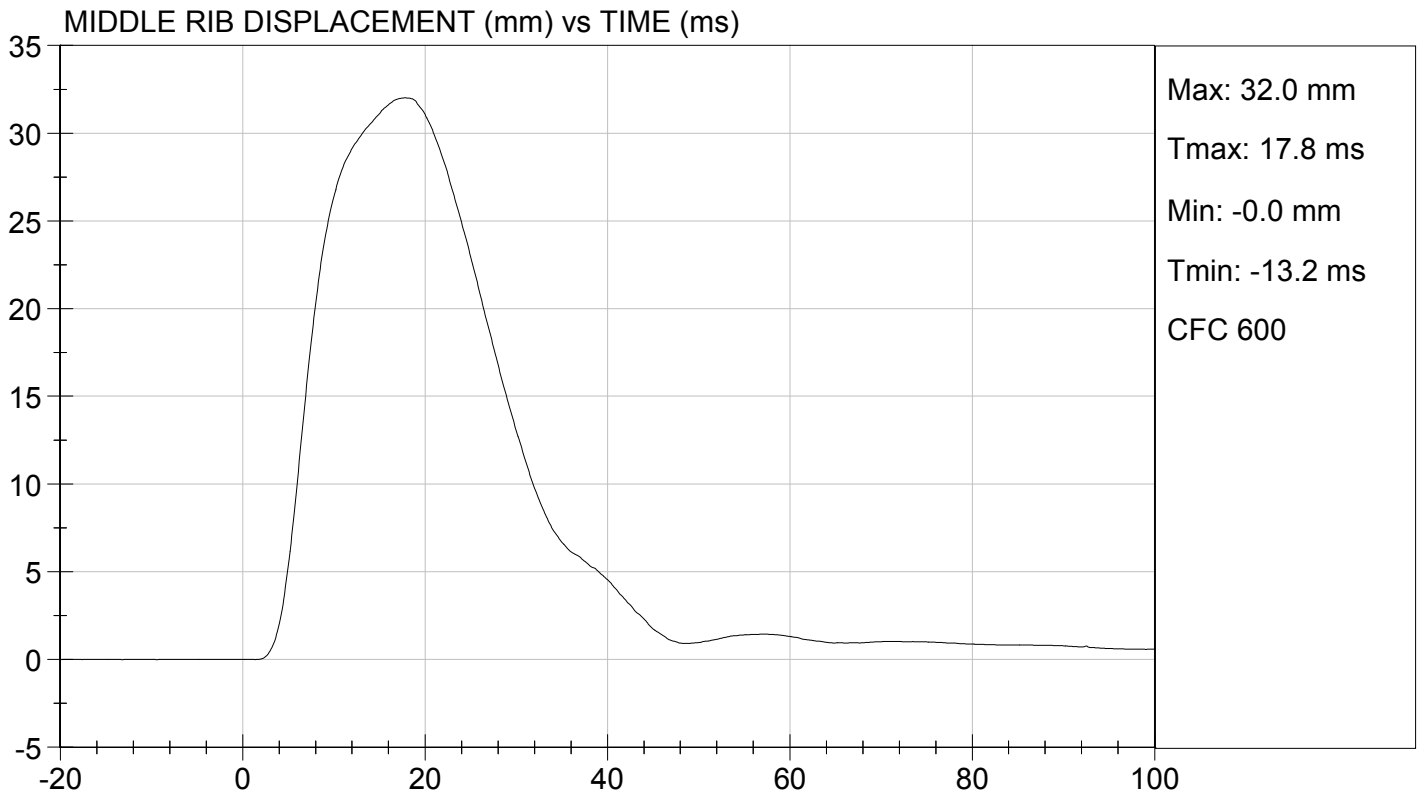
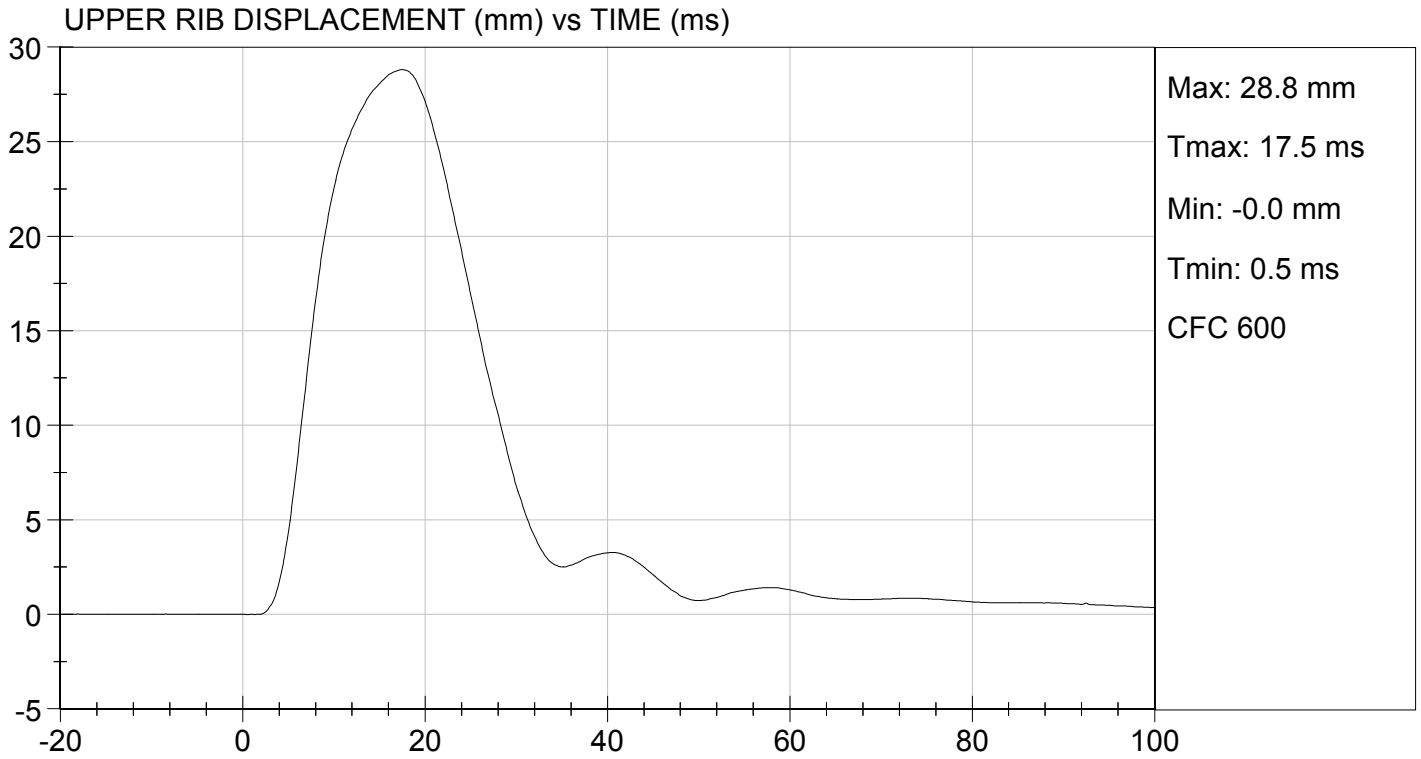
David Schoedel
Laboratory Technician

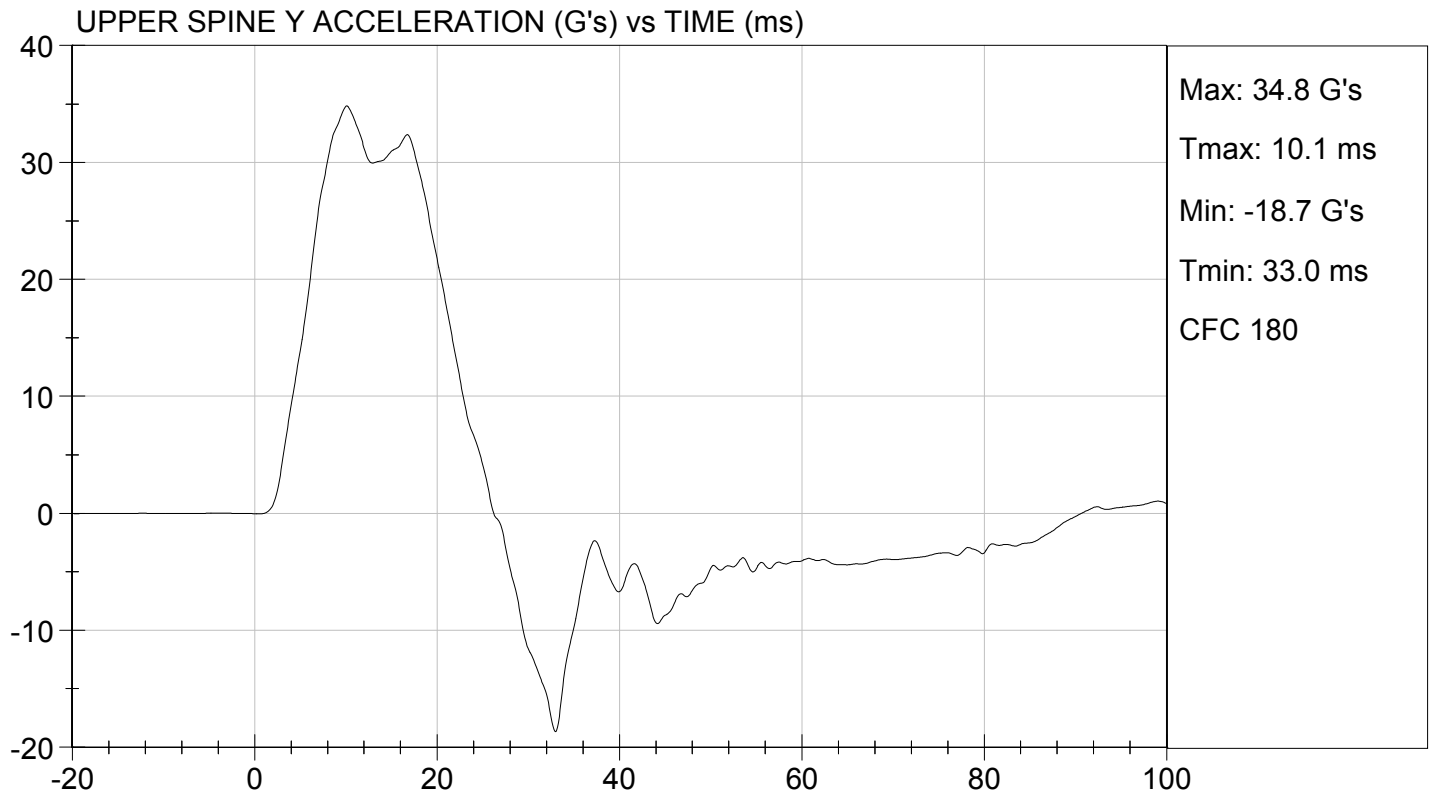
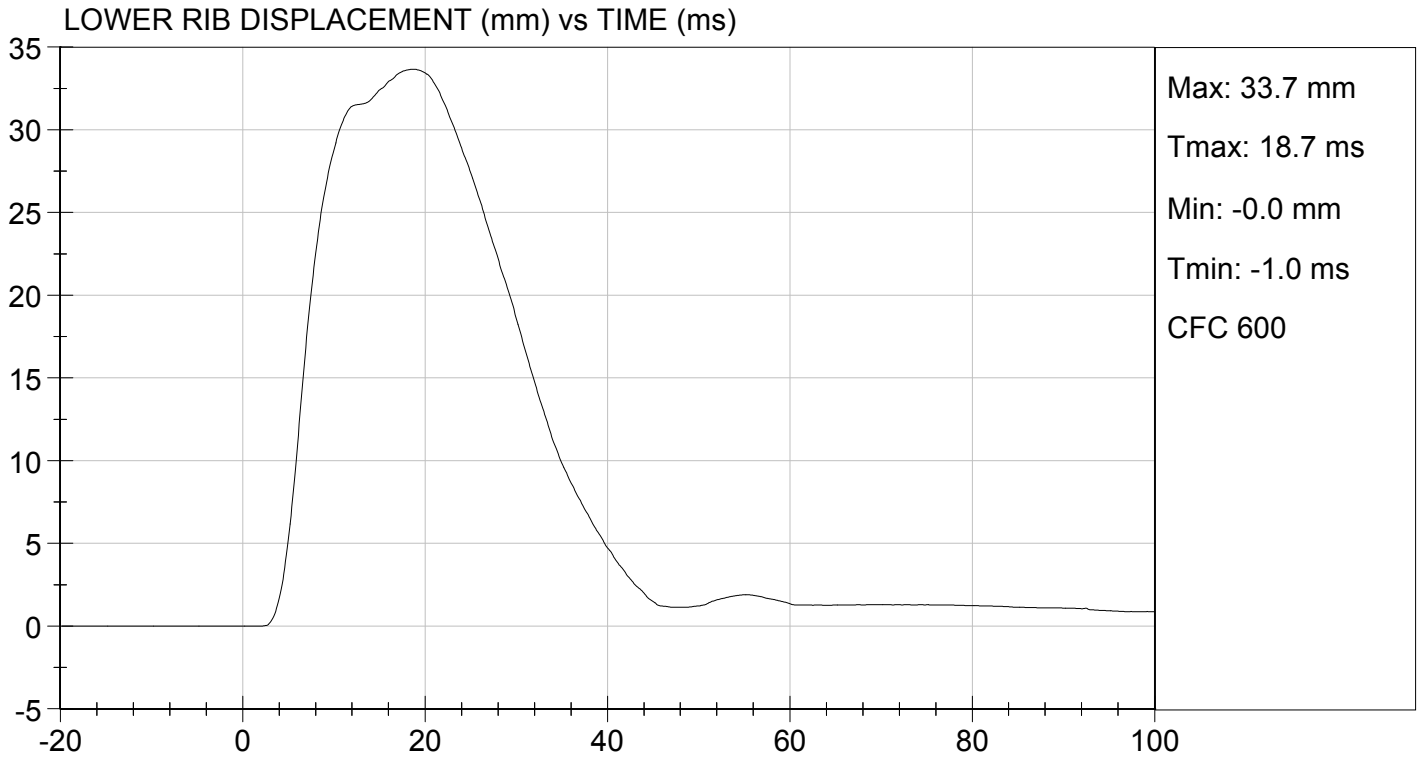
10/29/2014

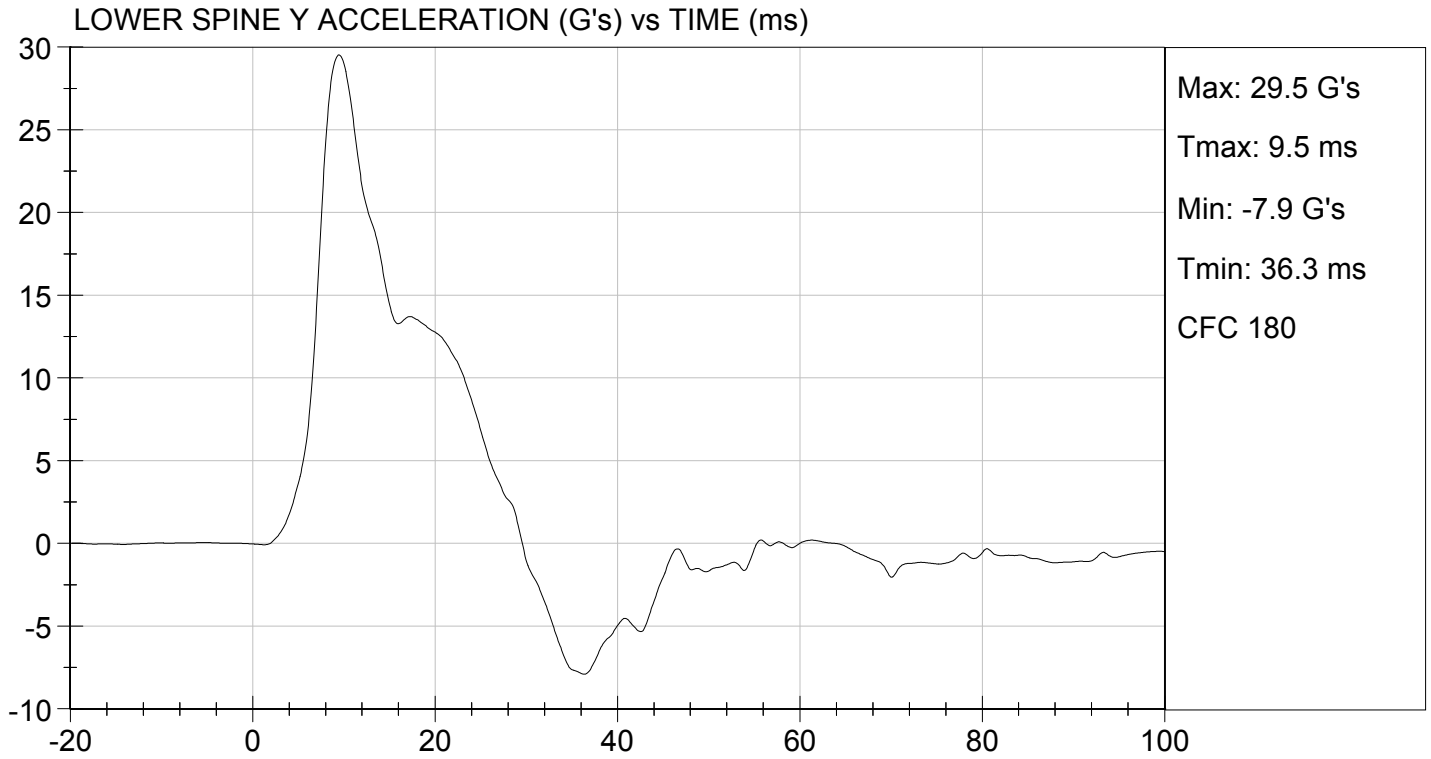
Test Date

Jessica Hall
Approved By









MGA RESEARCH CORPORATION
THORAX (WITHOUT ARM) IMPACT TEST
SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 296

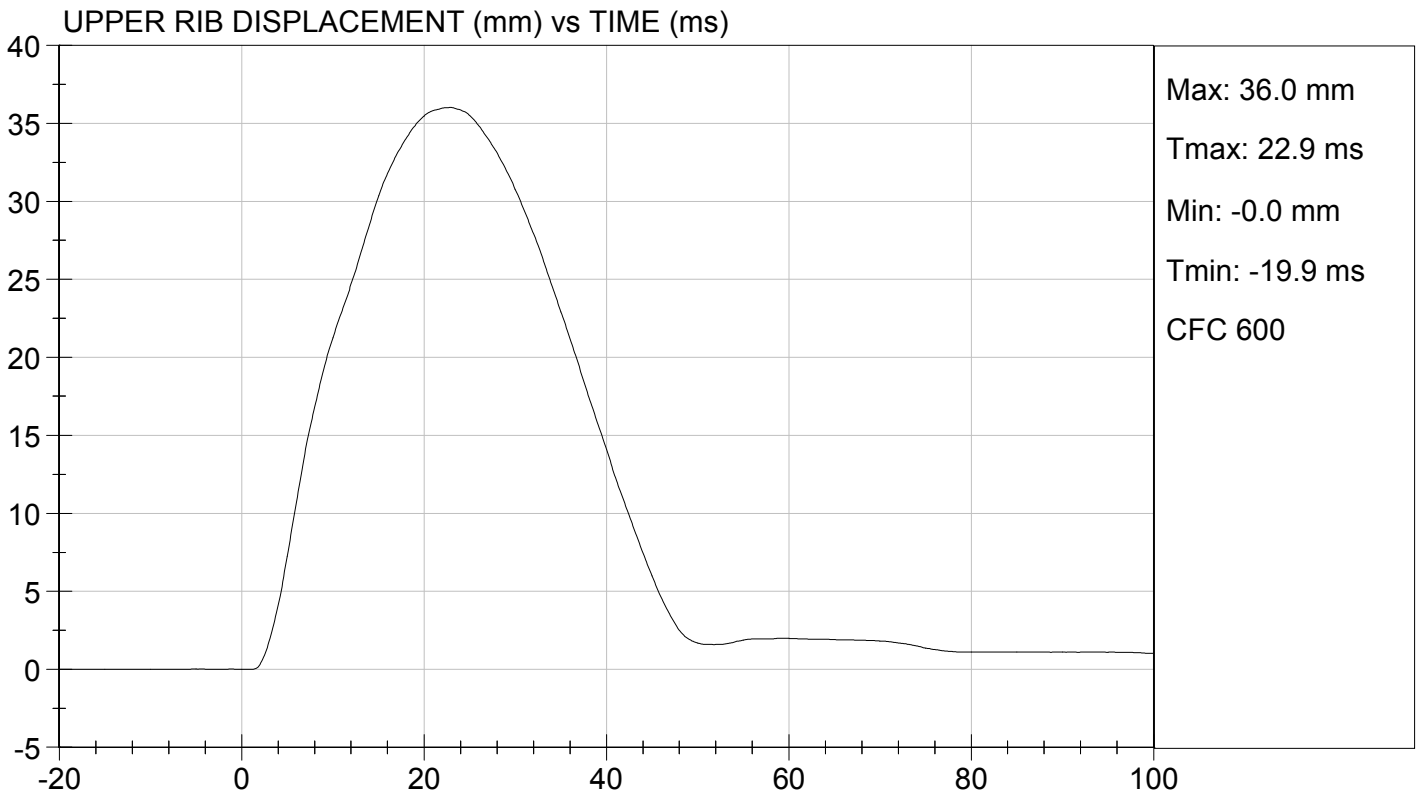
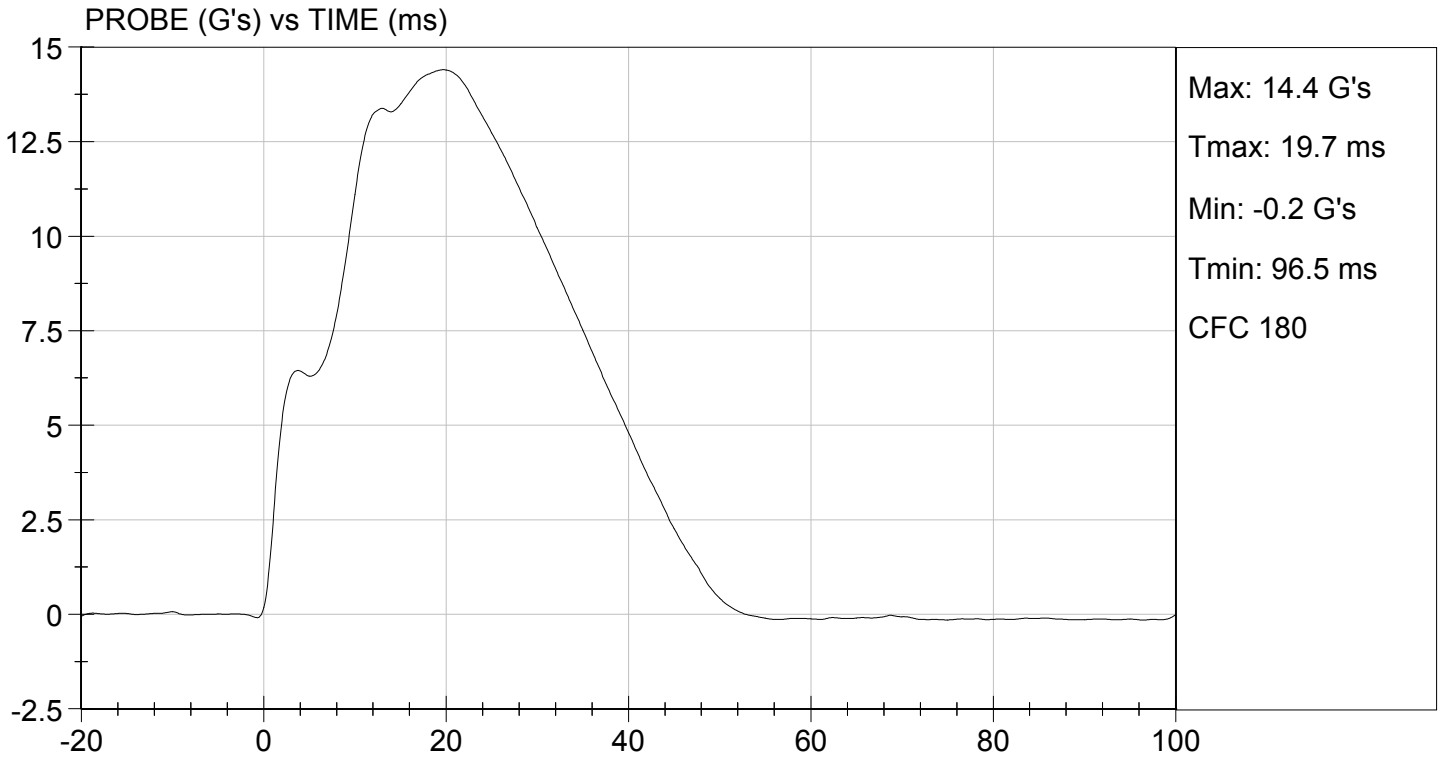
Test I.D: D143805

| Tested Parameter | Units | Specification | Result | Pass/Fail |
|----------------------------------|-------|---------------|--------|-------------|
| Temperature | deg C | 20.6 to 22.2 | 21.3 | Pass |
| Humidity | % | 10 to 70 | 33 | Pass |
| Impact Velocity | m/s | 4.20 to 4.40 | 4.30 | Pass |
| Maximum Probe Acceleration | G's | 14 to 18 | 14 | Pass |
| Upper Rib Displacement | mm | 32 to 40 | 36 | Pass |
| Middle Rib Displacement | mm | 39 to 45 | 42 | Pass |
| Lower Rib Displacement | mm | 35 to 43 | 40 | Pass |
| Upper Spine (T1) Y Acceleration | G's | 13 to 17 | 13 | Pass |
| Lower Spine (T12) Y Acceleration | G's | 7 to 11 | 8 | Pass |
| Overall Test Results | | | | Pass |

David Schoedel
 Laboratory Technician

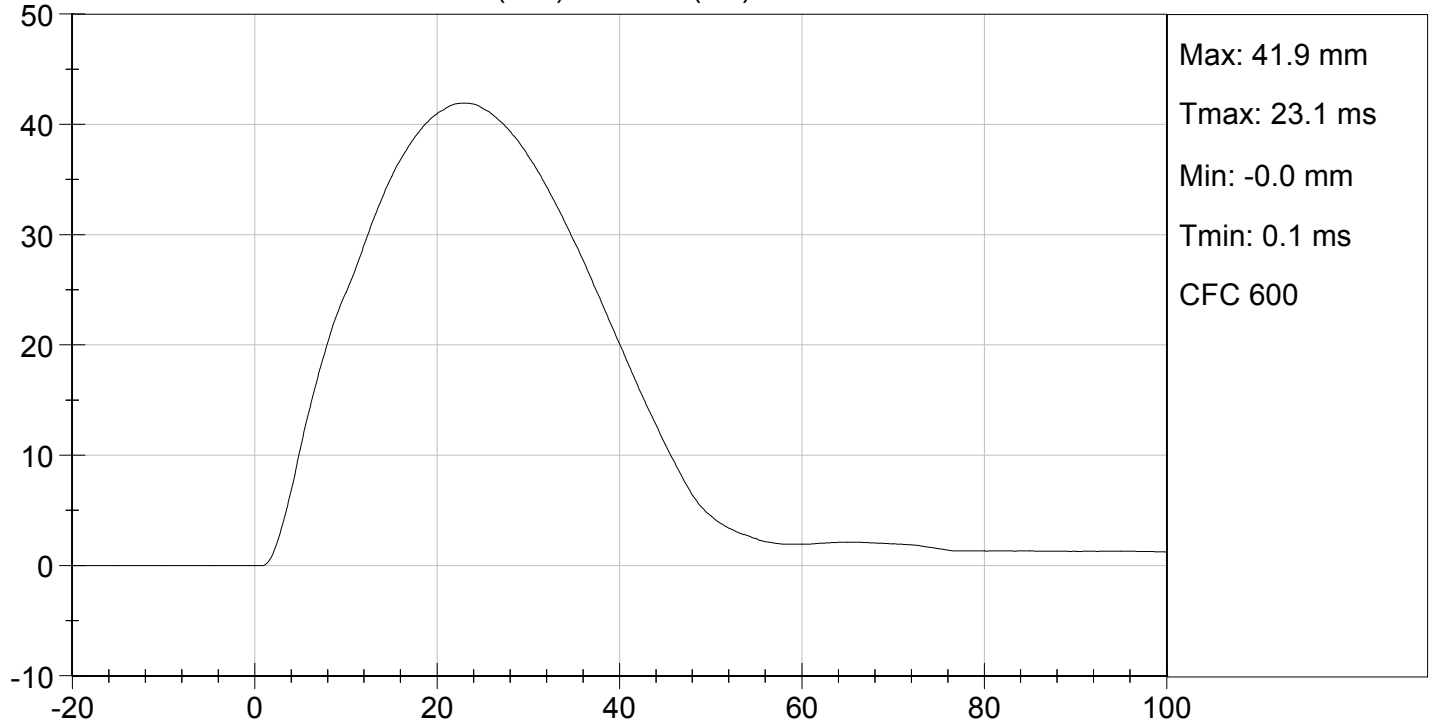
10/29/2014
 Test Date

Jessica Hall
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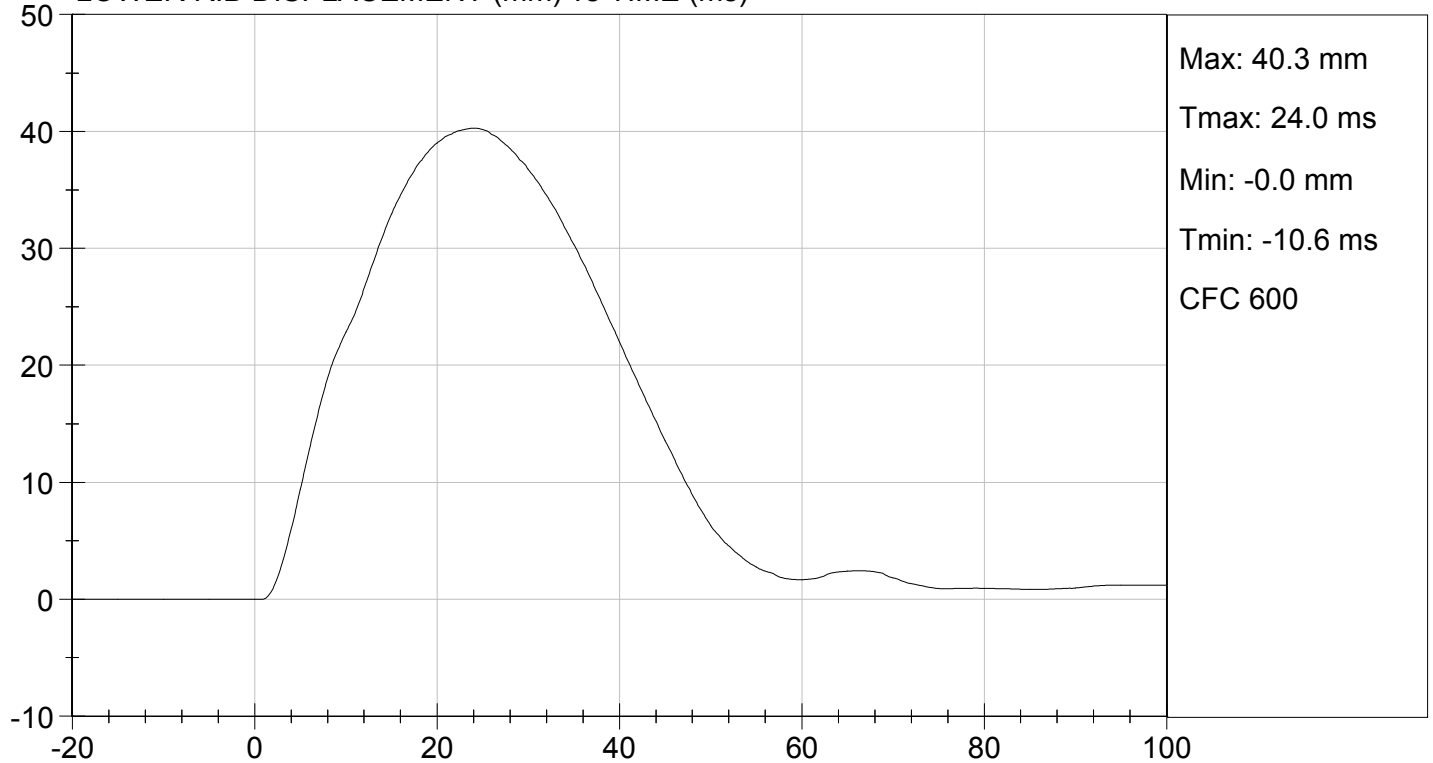


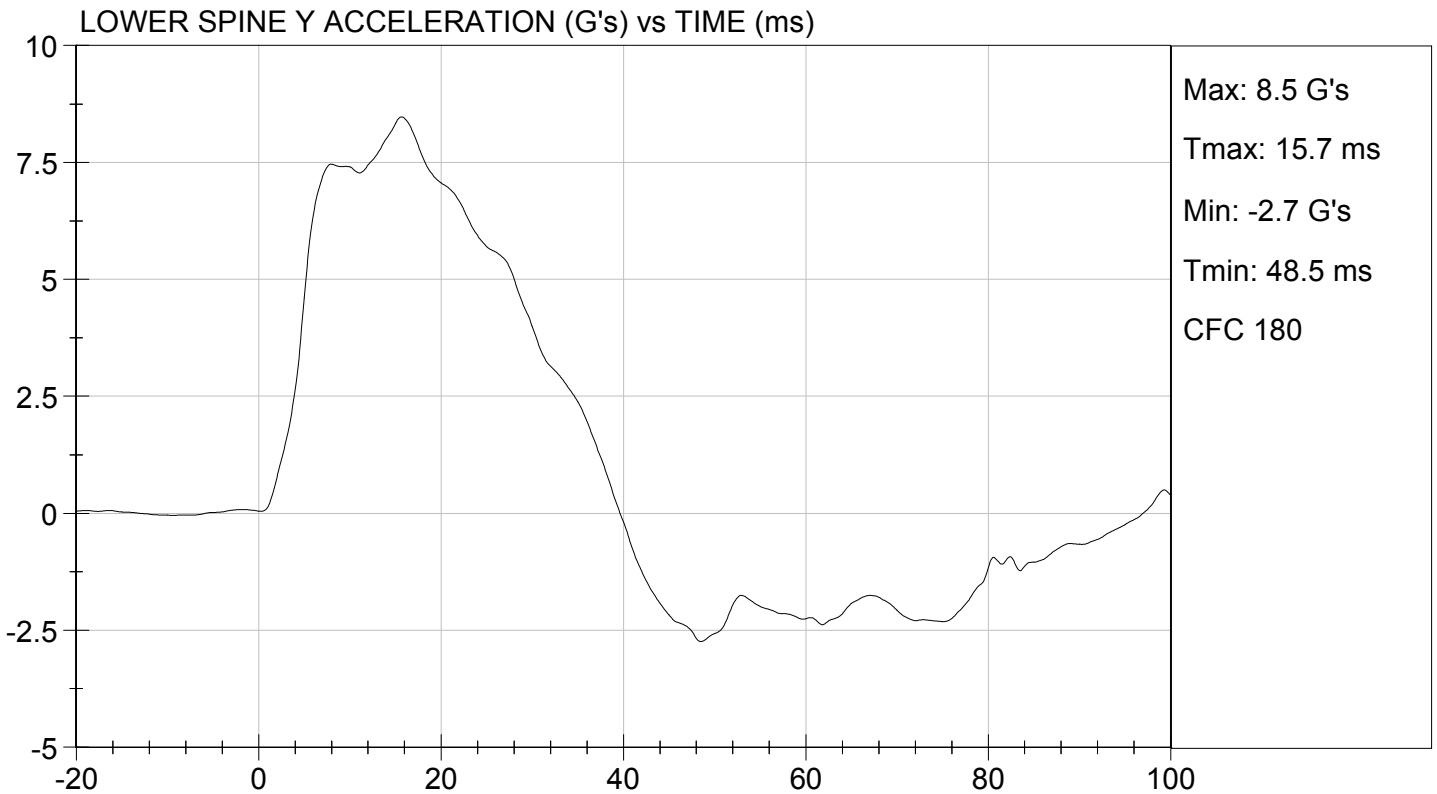
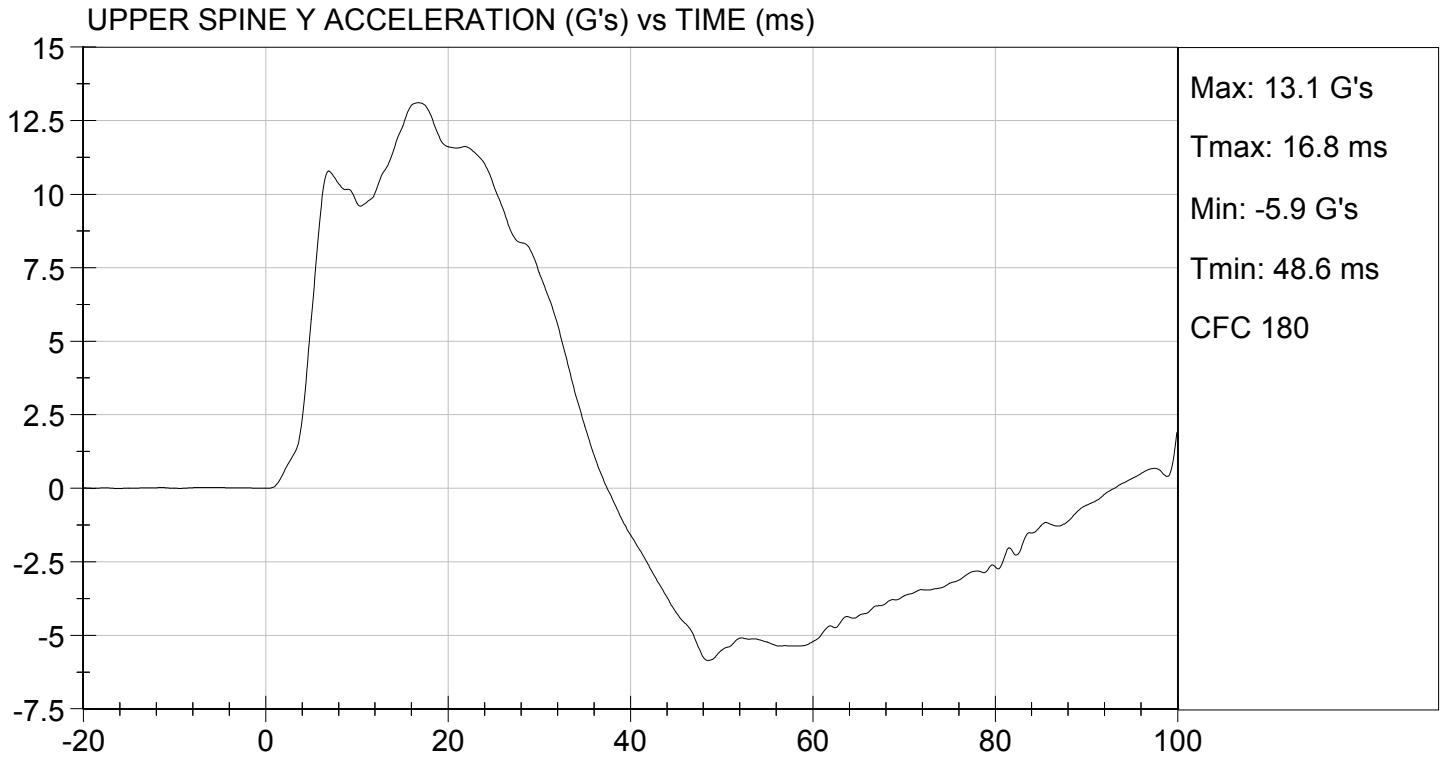


MIDDLE RIB DISPLACEMENT (mm) vs TIME (ms)



LOWER RIB DISPLACEMENT (mm) vs TIME (ms)





MGA RESEARCH CORPORATION
ABDOMINAL IMPACT TEST
SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 296

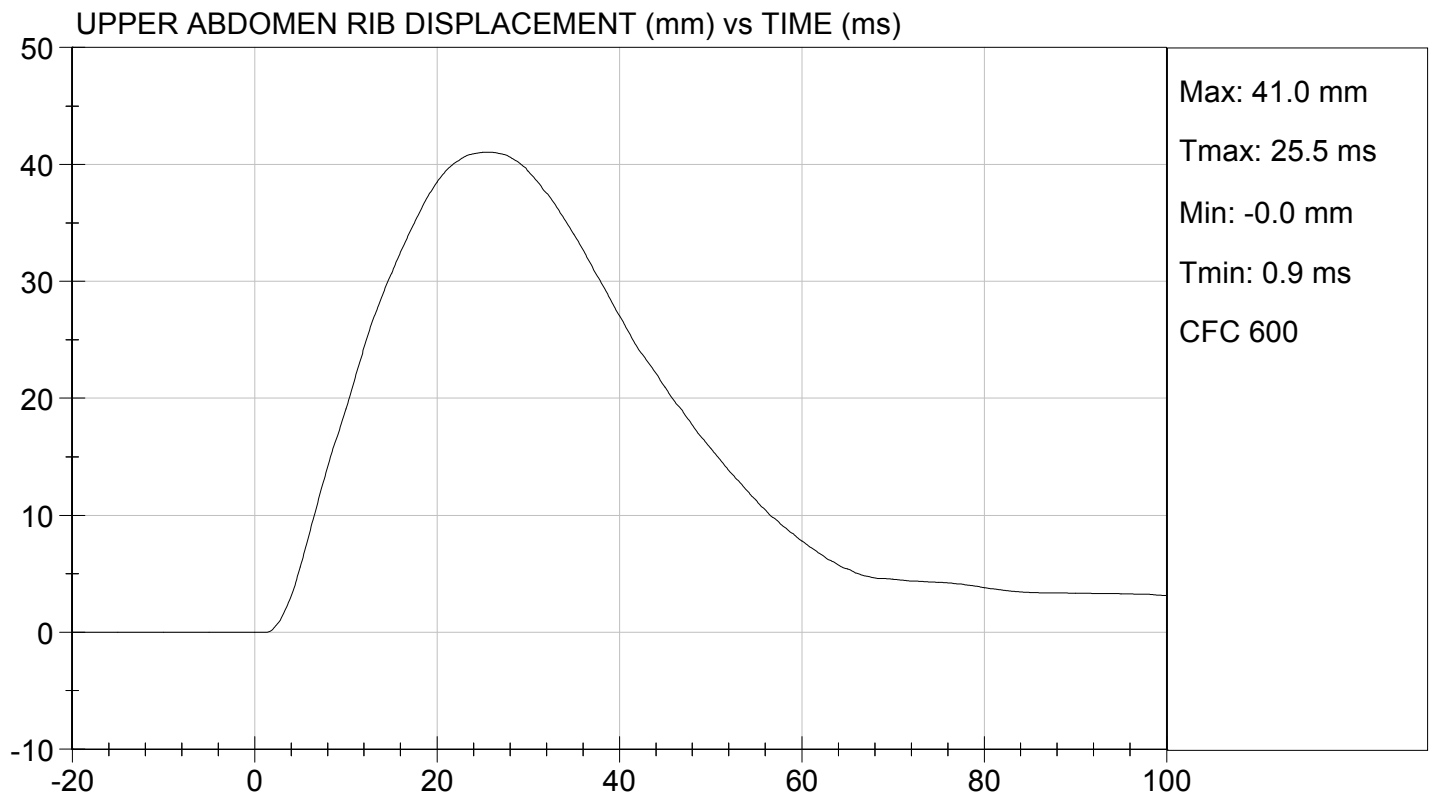
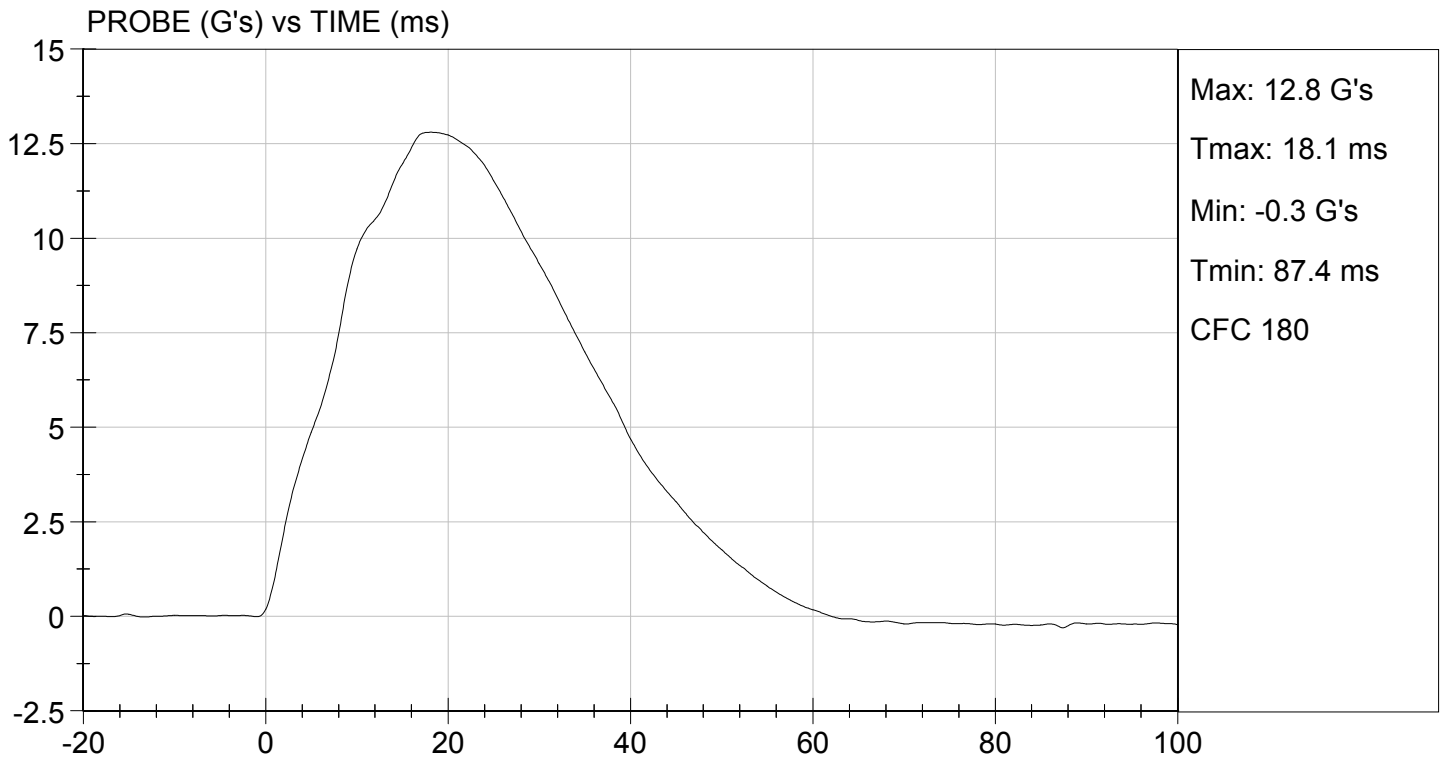
Test I.D: D143806

| Tested Parameter | Units | Specification | Result | Pass/Fail |
|----------------------------------|-------|---------------|--------|-----------|
| Temperature | deg C | 20.6 to 22.2 | 21.3 | Pass |
| Humidity | % | 10 to 70 | 33 | Pass |
| Impact Velocity | m/s | 4.20 to 4.40 | 4.30 | Pass |
| Maximum Probe Acceleration | G's | 12 to 16 | 13 | Pass |
| Upper Abdomen Rib Displacement | mm | 36 to 47 | 41 | Pass |
| Lower Abdomen Rib Displacement | mm | 33 to 44 | 41 | Pass |
| Lower Spine (T12) Y Acceleration | G's | 9 to 14 | 10 | Pass |
| Overall Test Results | | | | Pass |

David Schoedel
 Laboratory Technician

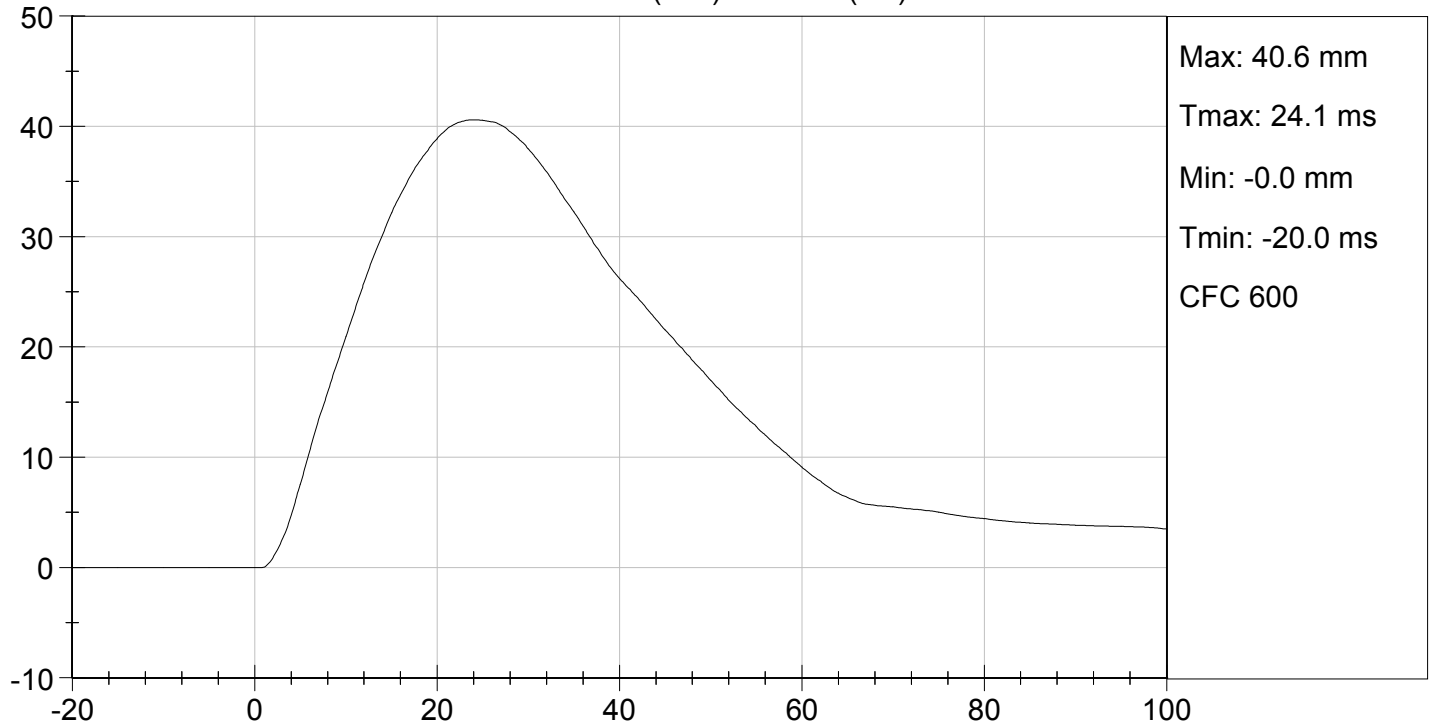
10/29/2014
 Test Date

Jessica Hall
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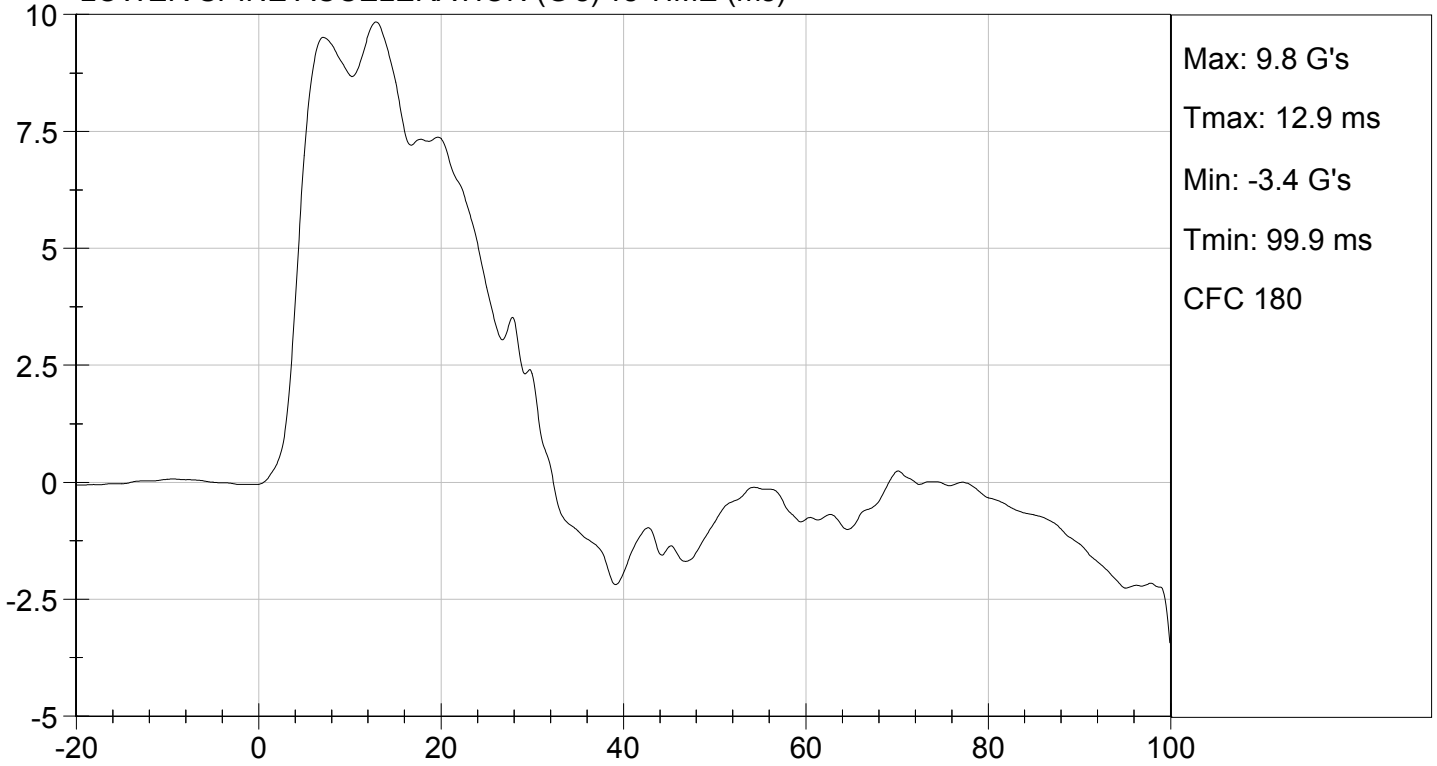




LOWER ABDOMEN RIB DISPLACEMENT (mm) vs TIME (ms)



LOWER SPINE ACCELERATION (G's) vs TIME (ms)



MGA RESEARCH CORPORATION
PELVIS IMPACT TEST
SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 296

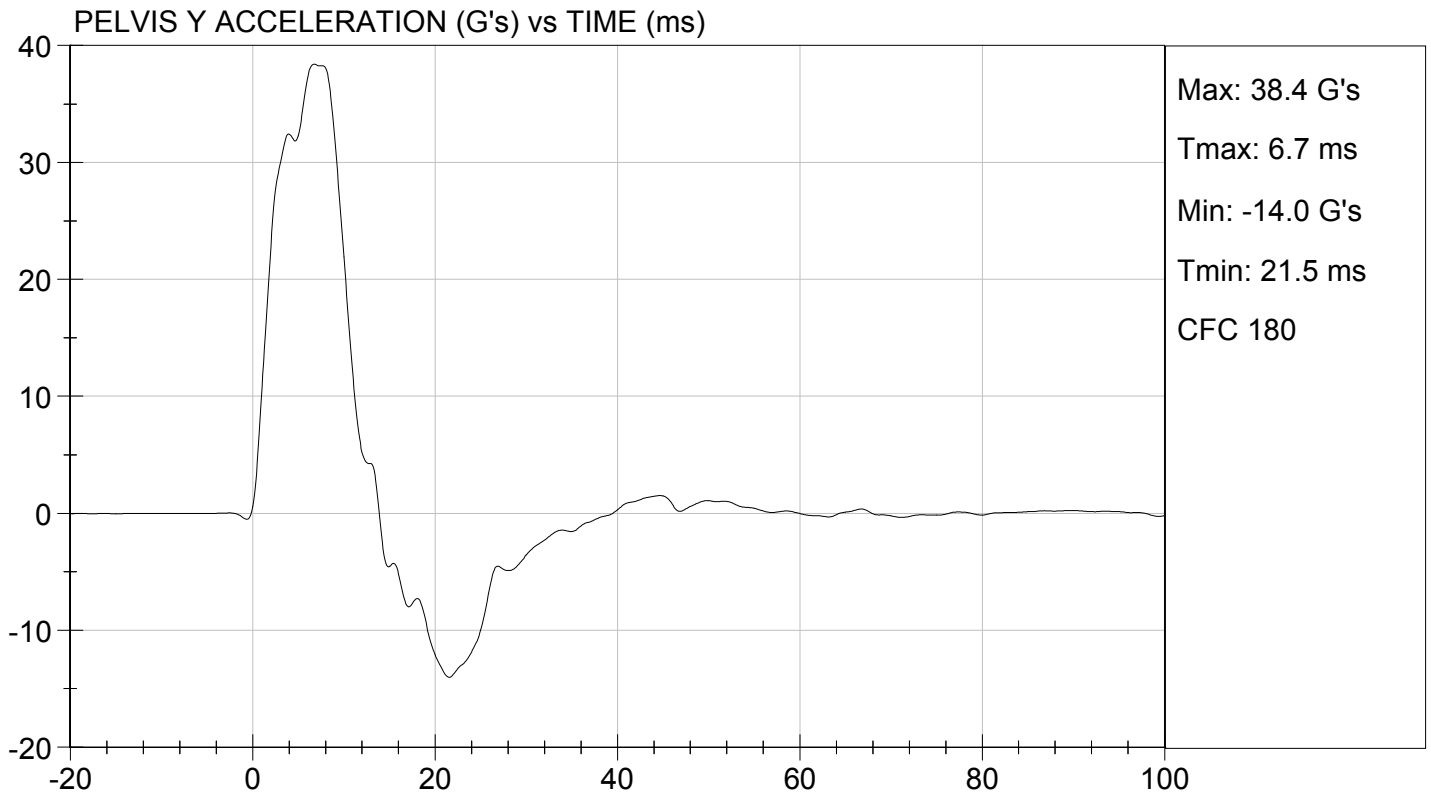
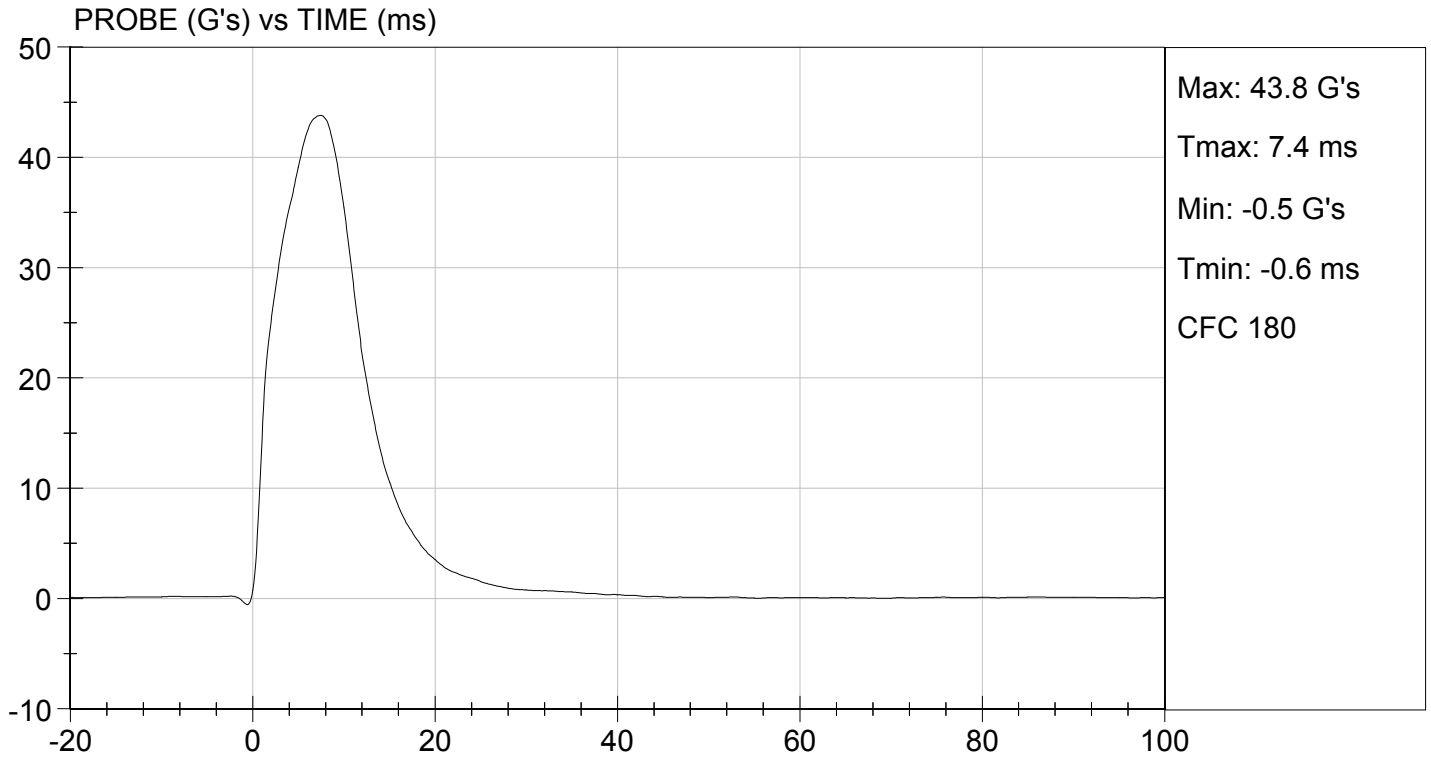
Test I.D: D143807

| Tested Parameter | Units | Specification | Result | Pass/Fail |
|----------------------------------|-------|---------------|--------|-------------|
| Temperature | deg C | 20.6 to 22.2 | 21.3 | Pass |
| Humidity | % | 10 to 70 | 33 | Pass |
| Impact Velocity | m/s | 6.60 to 6.80 | 6.77 | Pass |
| Maximum Probe Acceleration | G's | 38 to 47 | 44 | Pass |
| Pelvis Y Acceleration After 6 ms | G's | 34 to 42 | 38 | Pass |
| Peak Acetabulum Force | N | 3600 to 4300 | 4,165 | Pass |
| Overall Test Results | | | | Pass |

David Schoedel
 Laboratory Technician

10/29/2014
 Test Date

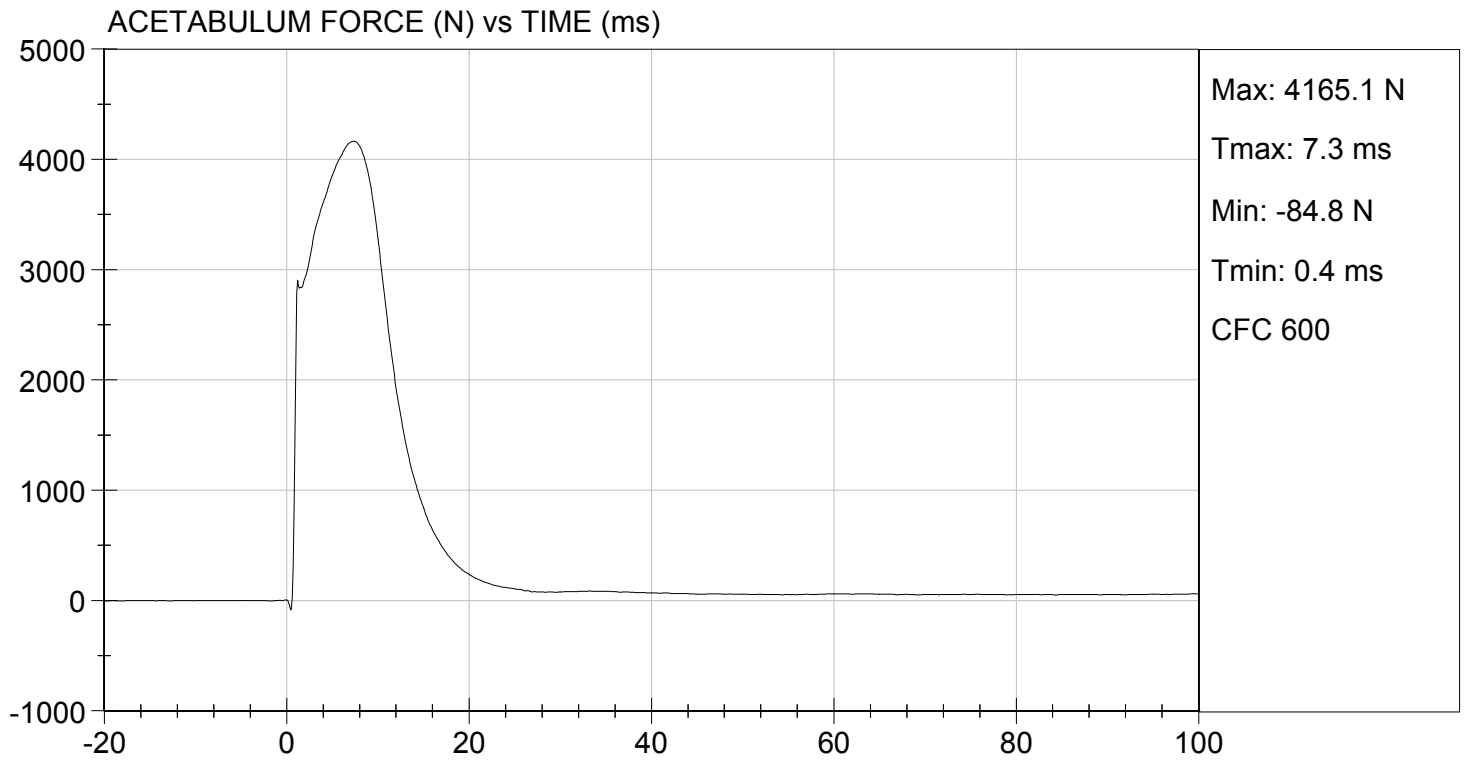
Jessica Hall
 Approved By





TEST DESC: PELVIS IMPACT
VELOCITY: 22.22 ft/s, 6.77 m/s

TEST DATE: 10/29/2014
TEST #: D143807



MGA RESEARCH CORPORATION
ILIAC IMPACT TEST
SID-IIs BUILD LEVEL D DUMMY

ATD Serial No: 296

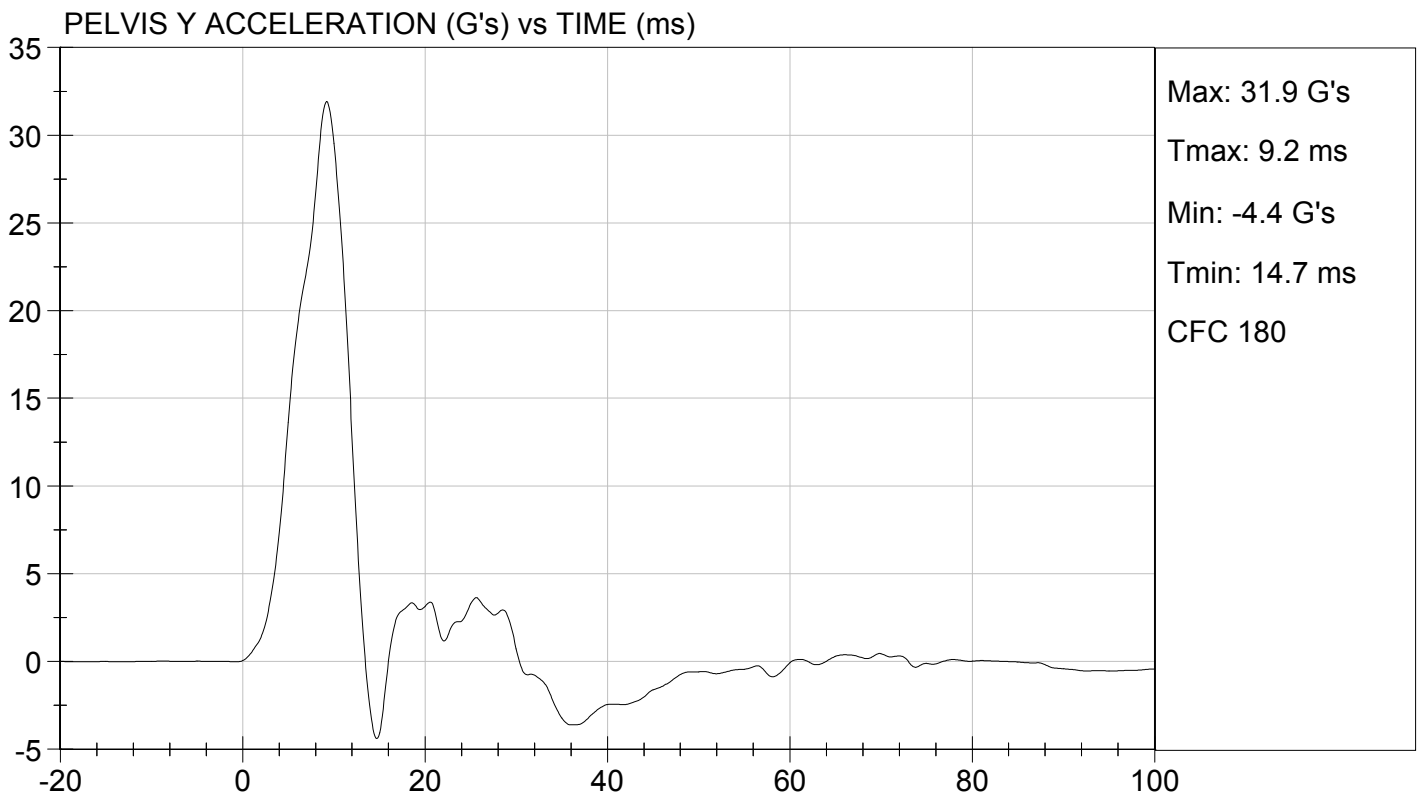
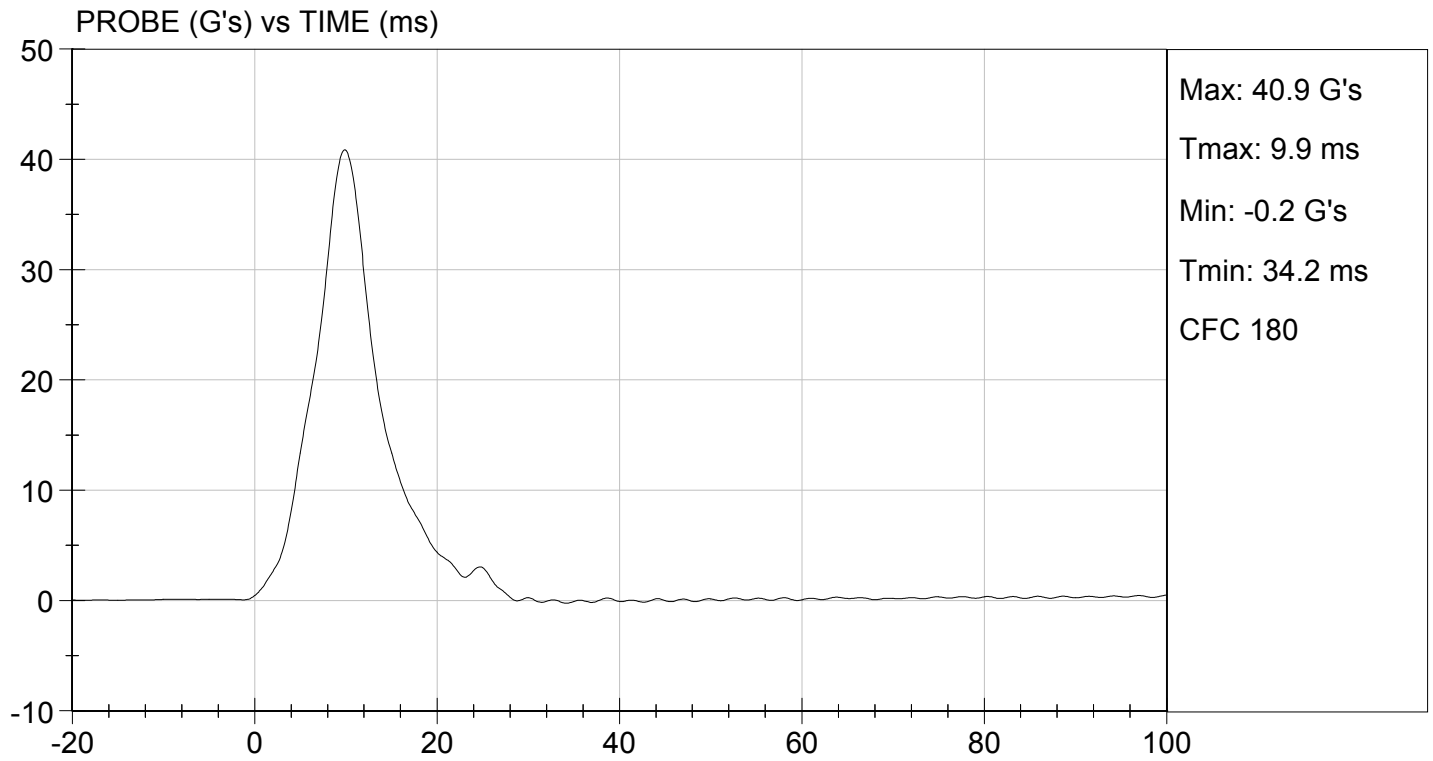
Test I.D: D143808

| Tested Parameter | Units | Specification | Result | Pass/Fail |
|-----------------------------|-------|---------------|--------|-------------|
| Temperature | deg C | 20.6 to 22.2 | 21.3 | Pass |
| Humidity | % | 10 to 70 | 33 | Pass |
| Impact Velocity | m/s | 4.20 to 4.40 | 4.30 | Pass |
| Maximum Probe Acceleration | G's | 36 to 45 | 41 | Pass |
| Pelvis Y Acceleration | G's | 28 to 39 | 32 | Pass |
| Peak Pelvis Iliac Force | N | 4100 to 5100 | 4,894 | Pass |
| Overall Test Results | | | | Pass |

David Schoedel
 Laboratory Technician

10/29/2014
 Test Date

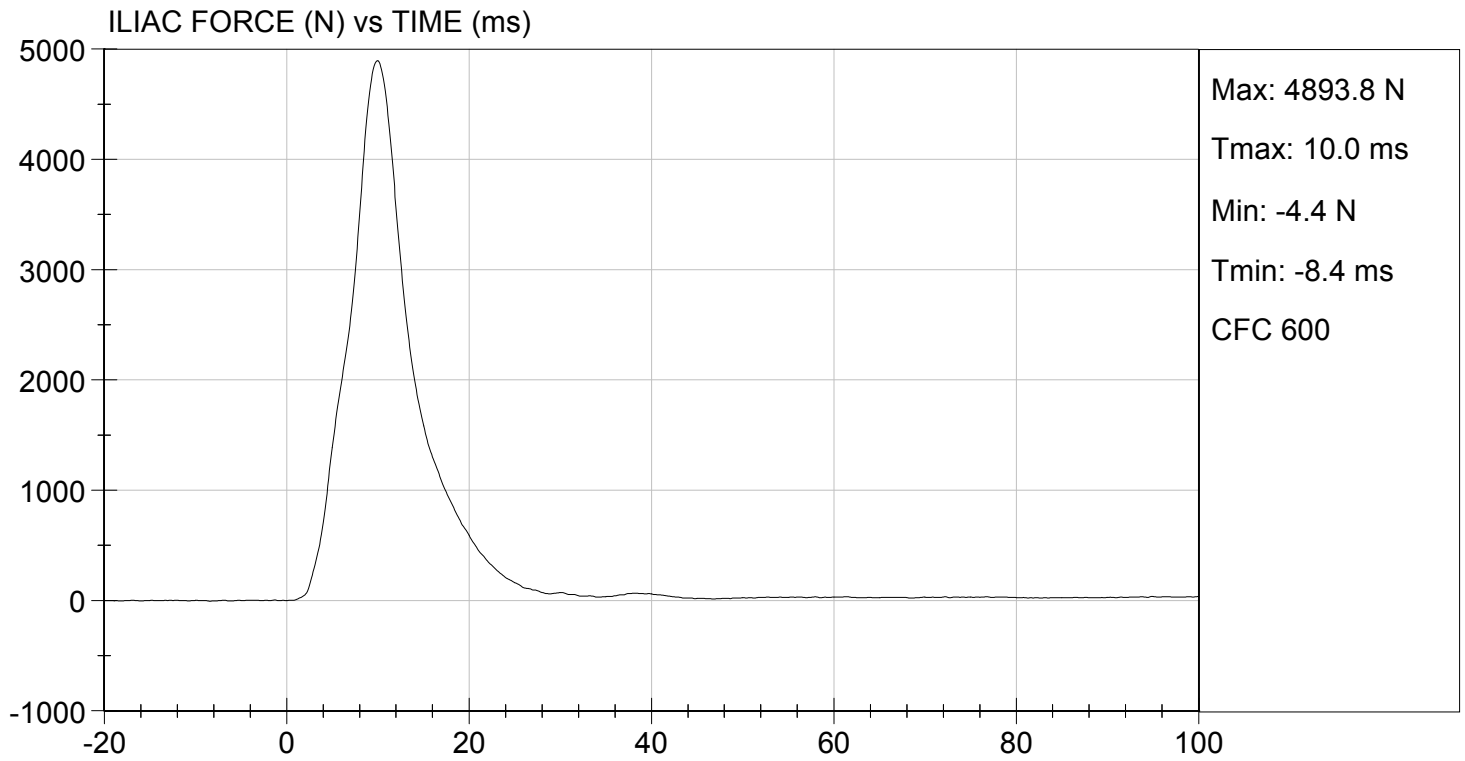
Jessica Hall
 Approved By



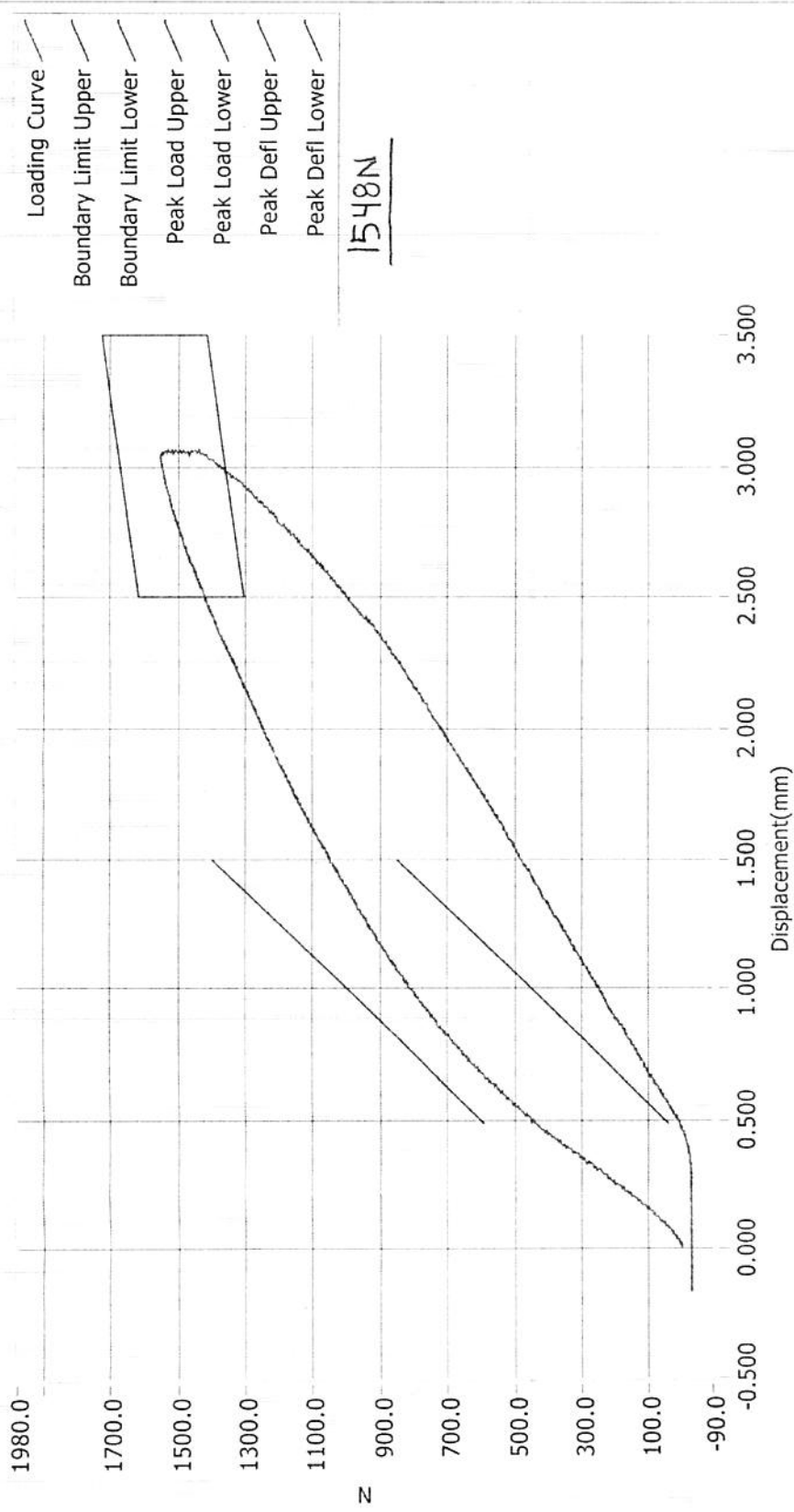


TEST DESC: ILLIAC
VELOCITY: 14.12 ft/s, 4.30 m/s

TEST DATE: 10/29/2014
TEST #: D143808



Resultant Data - SIDIIs Plug Compression



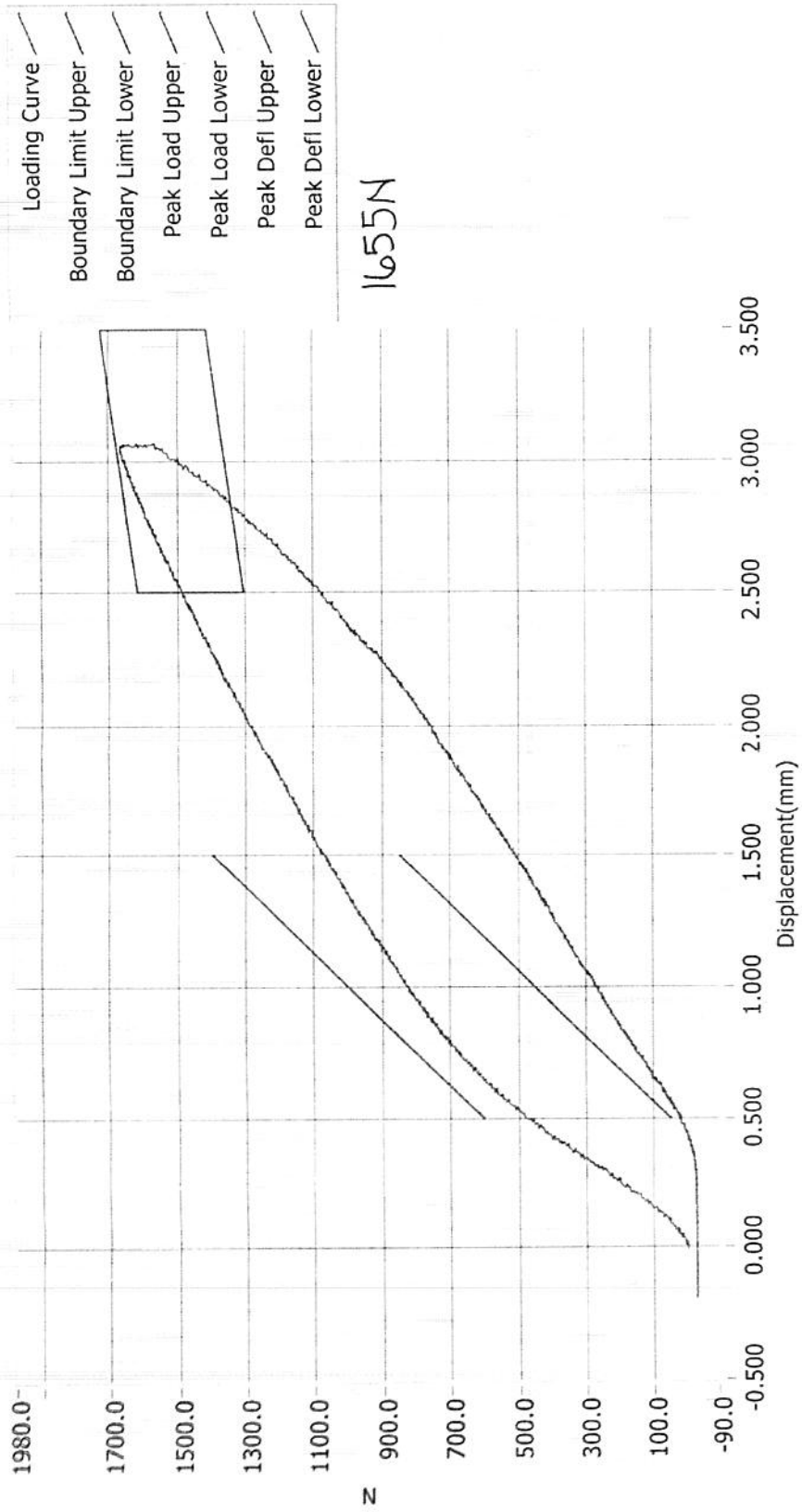
ATD Calibration Lab

| Test ID | Part Serial Number | Test Date | Test Time |
|---------|--------------------|------------|-----------|
| | 70605 | 12/12/2013 | 7:51 PM |
| Cert ID | ATD Serial Number | ATD Type | |
| | N/A | SIDIIs | |

Current Date : 12/12/2013

Current Time : 19:52:30

Resultant Data - SIDIIs Plug Compression



ATD Calibration Lab

| Test ID | Part Serial Number | Test Date | Test Time |
|---------|--------------------|------------|-----------|
| | 70682 | 12/12/2013 | 9:20 PM |
| Cert ID | ATD Serial Number | ATD Type | |
| | N/A | SIDIIs | |

Current Date : 12/12/2013

Current Time : 21:20:38

APPENDIX D
TEST EQUIPMENT AND INSTRUMENTATION CALIBRATION DATA

Table 1 – Dummy Instrumentation (ES-2re)

| | | ES-2re S/N 032 | | | |
|--|---------|----------------|--------------|------------------|----------|
| | | Serial Number | Manufacturer | Calibration Date | |
| Head CG Accelerometers | | X | P79575 | Endevco | 08/11/14 |
| | | Y | P79577 | Endevco | 08/11/14 |
| | | Z | P79578 | Endevco | 08/11/14 |
| | | Xr | P79799 | Endevco | 08/11/14 |
| | | Yr | P79802 | Endevco | 08/11/14 |
| | | Zr | P79803 | Endevco | 08/11/14 |
| Thorax Rib Displacement Potentiometers | Upper | Y | G176 | Honeywell | 08/11/14 |
| | Middle | Y | G169 | Honeywell | 08/11/14 |
| | Lower | Y | G164 | Honeywell | 08/11/14 |
| Abdomen Load Cells | Forward | Y | ABG1532 | Denton | 01/09/14 |
| | Middle | Y | ABG1534 | Denton | 01/09/14 |
| | Rear | Y | ABG1535 | Denton | 01/09/14 |
| Lower Spine Accelerometers (T12) | | X | P78853 | Endevco | 08/08/14 |
| | | Y | P78861 | Endevco | 08/08/14 |
| | | Z | P78863 | Endevco | 08/08/14 |
| Public Symphysis Load Cell | | Y | PG461 | Denton | 01/09/14 |

Table 2 – Dummy Instrumentation (SID-IIs)

| | | | | SID-IIs S/N 296 | | | |
|----------------------------------|---------------|--------|---|-----------------|--------------|------------------|----------|
| | | | | Serial Number | Manufacturer | Calibration Date | |
| Head CG Accelerometers | | | | X | P84436 | Endevco | 08/11/14 |
| | | | | Y | P84439 | Endevco | 08/11/14 |
| | | | | Z | P84440 | Endevco | 08/11/14 |
| | | | | Xr | P84450 | Endevco | 08/11/14 |
| | | | | Yr | P84456 | Endevco | 08/11/14 |
| | | | | Zr | P84457 | Endevco | 08/11/14 |
| Displacement Potentiometers | Thoracic Rib | Upper | Y | G012 | Servo | 08/12/14 | |
| | | Middle | Y | G1163 | FTSS | 08/12/14 | |
| | | Lower | Y | G1158 | FTSS | 08/12/14 | |
| | Abdominal Rib | Upper | Y | G1146 | FTSS | 08/12/14 | |
| | | Lower | Y | G1126 | FTSS | 08/12/14 | |
| Lower Spine Accelerometers (T12) | | | | X | P84437 | Endevco | 08/11/14 |
| | | | | Y | P84442 | Endevco | 08/11/14 |
| | | | | Z | P84443 | Endevco | 08/11/14 |
| Acetabulum Load Cell | | | | Y | ACG268 | Denton | 01/09/14 |
| Iliac Wing Load Cell | | | | Y | IWG282 | Denton | 01/09/14 |
| Pelvis Plug (struck side) | | | | | 70605 | FTSS | 12/12/13 |
| Pelvis Plug (non-struck side) | | | | | 70682 | FTSS | 12/12/13 |

Table 3 – Vehicle Instrumentation

| | | | Serial Number | Manufacturer | Calibration Date |
|----|------------------------------|---|---------------|--------------|------------------|
| 1 | Vehicle Center of Gravity | X | P77630 | Endevco | 08/25/14 |
| | Vehicle Center of Gravity | Y | P77631 | Endevco | 08/25/14 |
| | Vehicle Center of Gravity | Z | P76632 | Endevco | 08/25/14 |
| 2 | Right Sill at Front Seat | X | P74566 | Endevco | 07/16/14 |
| | Right Sill at Front Seat | Y | P74568 | Endevco | 07/16/14 |
| | Right Sill at Front Seat | Z | P74567 | Endevco | 07/16/14 |
| 3 | Right Sill at Rear Seat | X | P74667 | Endevco | 09/04/14 |
| | Right Sill at Rear Seat | Y | P74668 | Endevco | 09/04/14 |
| | Right Sill at Rear Seat | Z | P74666 | Endevco | 09/04/14 |
| 4 | Left Sill at Front Door | Y | P77714 | Endevco | 05/07/14 |
| 5 | Left Sill at Rear Door | Y | P66581 | Endevco | 06/06/14 |
| 6 | Left A-Post Lower | Y | P63902 | Endevco | 08/18/14 |
| 7 | Left A-Post Middle | Y | P73158 | Endevco | 08/21/14 |
| 8 | Left B-Post Lower | Y | P79404 | Endevco | 07/28/14 |
| 9 | Left B-Post Middle | Y | P68889 | Endevco | 09/08/14 |
| 10 | Front Seat Track | Y | P74686 | Endevco | 07/16/14 |
| 11 | Rear Seat Track or Structure | Y | P68868 | Endevco | 10/02/14 |
| 12 | Right Rear Occ. Compartment | Y | P73999 | Endevco | 09/23/14 |
| 13 | Engine Block | X | P77598 | Endevco | 08/21/14 |
| | Engine Block | Y | P77597 | Endevco | 08/20/14 |
| 14 | Rear Floorpan Above Axle | X | P85136 | Endevco | 09/18/14 |
| | Rear Floorpan Above Axle | Y | P85135 | Endevco | 09/18/14 |
| | Rear Floorpan Above Axle | Z | P85134 | Endevco | 09/18/14 |

Table 4 – MDB Instrumentation

| | | Serial Number | Manufacturer | Calibration Date |
|------------------------------------|---|---------------|--------------|------------------|
| MDB Center of Gravity | X | P85036 | Endevco | 08/08/14 |
| MDB Center of Gravity | Y | P85038 | Endevco | 08/08/14 |
| MDB Center of Gravity | Z | P85037 | Endevco | 08/08/14 |
| Left Frame at Rear Axle Centerline | X | P67517 | Endevco | 08/18/14 |
| Left Frame at Rear Axle Centerline | Y | P67518 | Endevco | 08/18/14 |