

**REPORT NUMBER: NCAP-MGA-2004-008**

**NEW CAR ASSESSMENT PROGRAM  
FRONTAL BARRIER IMPACT TEST**

**Daimler Chrysler Corporation  
2004 Dodge Durango 4 Door  
NHTSA NUMBER: M40303**

**PREPARED BY:  
MGA RESEARCH CORPORATION  
5000 WARREN ROAD  
BURLINGTON, WI 53105**



**Test Date: February 17, 2004**

**Report Date: February 24, 2004**

**FINAL REPORT**

**PREPARED FOR:  
U.S. DEPARTMENT OF TRANSPORTATION  
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION  
RULEMAKING  
OFFICE OF CRASHWORTHINESS STANDARDS  
400 SEVENTH STREET, SW, ROOM 5311  
WASHINGTON, D.C. 20590**

This final test report was prepared for the U.S. Department of Transportation, National Highway Traffic Safety Administration, in response to Contract Number DTNH22-01-D-12005.

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Manager, New Car Assessment Program

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Date of Acceptance

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Date of Acceptance

### Technical Report Documentation Page

| 1. <i>Report No.</i><br>NCAP-MGA-2004-008                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 2. <i>Government Accession No.</i>                          | 3. <i>Recipient's Catalog No.</i>                                                                                                                                                                                            |                   |                                |              |                  |                   |                  |                            |     |      |     |     |                                 |     |    |    |    |                  |        |       |       |       |                   |        |       |       |       |
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| 4. <i>Title and Subtitle</i><br>Final Report of New Car Assessment Program Testing of a 2004 Dodge Durango 4 Door<br>NHTSA No.: M40303                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                             | 5. <i>Report Date</i><br>February 24, 2004                                                                                                                                                                                   |                   |                                |              |                  |                   |                  |                            |     |      |     |     |                                 |     |    |    |    |                  |        |       |       |       |                   |        |       |       |       |
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| 7. <i>Author(s)</i><br>Shefalika Agarwal, Project Engineer                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                             | 8. <i>Performing Organization Report No.</i><br>NCAP-MGA-2004-008                                                                                                                                                            |                   |                                |              |                  |                   |                  |                            |     |      |     |     |                                 |     |    |    |    |                  |        |       |       |       |                   |        |       |       |       |
| 9. <i>Performing Organization Name and Address</i><br>MGA Research Corporation<br>5000 Warren Road<br>Burlington, WI 53105                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                             | 10. <i>Work Unit No.</i>                                                                                                                                                                                                     |                   |                                |              |                  |                   |                  |                            |     |      |     |     |                                 |     |    |    |    |                  |        |       |       |       |                   |        |       |       |       |
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| 12. <i>Sponsoring Agency Name and Address</i><br><br>U.S. Department of Transportation<br>National Highway Traffic Safety Administration<br>Rulemaking, Office of Crashworthiness Standards<br>400 Seventh Street, SW, Room 5311<br>Washington, D.C. 20590                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                             | 13. <i>Type of Report and Period Covered</i><br>2/17/04 to 2/24/04                                                                                                                                                           |                   |                                |              |                  |                   |                  |                            |     |      |     |     |                                 |     |    |    |    |                  |        |       |       |       |                   |        |       |       |       |
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| 15. <i>Supplementary Notes</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                             |                                                                                                                                                                                                                              |                   |                                |              |                  |                   |                  |                            |     |      |     |     |                                 |     |    |    |    |                  |        |       |       |       |                   |        |       |       |       |
| 16. <i>Abstract</i><br>A 35.0 mph (56.3 km/h) frontal barrier impact was conducted on a 2004 Dodge Durango 4 Door at MGA Research Corporation on February 17, 2004. This test was conducted to obtain data indicant of FMVSS 208, 212, 219 (partial), 301, and foot well intrusion performance. The impact velocity was 56.3 km/h. The ambient temperature at the barrier face at the time of impact was 21 degrees Celsius. The vehicle's maximum post test static crush is 577 mm located at the vehicle centerline. The test vehicle is equipped with a 3-point continuous belt system and an airbag in both front outboard seating positions. With respect to FMVSS 208 "Occupant Crash Protection", the occupant injury criteria summary is as follows: <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th style="text-align: left;"><u>Measurement Description</u></th> <th style="text-align: left;"><u>Units</u></th> <th style="text-align: left;"><u>Threshold</u></th> <th style="text-align: left;"><u>Driver ATD</u></th> <th style="text-align: left;"><u>Pass. ATD</u></th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC)</td> <td>N/A</td> <td>1000</td> <td>395</td> <td>457</td> </tr> <tr> <td>Max. Thorax Accel. (3msec Clip)</td> <td>G's</td> <td>60</td> <td>36</td> <td>37</td> </tr> <tr> <td>Left Femur Force</td> <td>Newton</td> <td>10009</td> <td>-3385</td> <td>-2985</td> </tr> <tr> <td>Right Femur Force</td> <td>Newton</td> <td>10009</td> <td>-4107</td> <td>-2414</td> </tr> </tbody> </table> |                                                             |                                                                                                                                                                                                                              |                   | <u>Measurement Description</u> | <u>Units</u> | <u>Threshold</u> | <u>Driver ATD</u> | <u>Pass. ATD</u> | Head Injury Criteria (HIC) | N/A | 1000 | 395 | 457 | Max. Thorax Accel. (3msec Clip) | G's | 60 | 36 | 37 | Left Femur Force | Newton | 10009 | -3385 | -2985 | Right Femur Force | Newton | 10009 | -4107 | -2414 |
| <u>Measurement Description</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <u>Units</u>                                                | <u>Threshold</u>                                                                                                                                                                                                             | <u>Driver ATD</u> | <u>Pass. ATD</u>               |              |                  |                   |                  |                            |     |      |     |     |                                 |     |    |    |    |                  |        |       |       |       |                   |        |       |       |       |
| Head Injury Criteria (HIC)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | N/A                                                         | 1000                                                                                                                                                                                                                         | 395               | 457                            |              |                  |                   |                  |                            |     |      |     |     |                                 |     |    |    |    |                  |        |       |       |       |                   |        |       |       |       |
| Max. Thorax Accel. (3msec Clip)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | G's                                                         | 60                                                                                                                                                                                                                           | 36                | 37                             |              |                  |                   |                  |                            |     |      |     |     |                                 |     |    |    |    |                  |        |       |       |       |                   |        |       |       |       |
| Left Femur Force                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Newton                                                      | 10009                                                                                                                                                                                                                        | -3385             | -2985                          |              |                  |                   |                  |                            |     |      |     |     |                                 |     |    |    |    |                  |        |       |       |       |                   |        |       |       |       |
| Right Femur Force                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Newton                                                      | 10009                                                                                                                                                                                                                        | -4107             | -2414                          |              |                  |                   |                  |                            |     |      |     |     |                                 |     |    |    |    |                  |        |       |       |       |                   |        |       |       |       |
| 17. <i>Key Words</i><br><br>56.3 km/h NCAP Frontal Barrier Impact Test<br>New Car Assessment Program (NCAP)<br>2004 Dodge Durango 4 Door<br>NHTSA No: M40303                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                             | 18. <i>Distribution Statement</i><br>Copies of this report are available from:<br>National Highway Traffic Safety Admin., Technical Ref. Division, Room 5108 (NPO-230)<br>400 Seventh Street, S.W.<br>Washington, D.C. 20590 |                   |                                |              |                  |                   |                  |                            |     |      |     |     |                                 |     |    |    |    |                  |        |       |       |       |                   |        |       |       |       |
| 19. <i>Security Classif. (of this report)</i><br>Unclassified                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 20. <i>Security Classif. (of this page)</i><br>Unclassified | 21. <i>No. of Pages</i><br>221                                                                                                                                                                                               | 22. <i>Price</i>  |                                |              |                  |                   |                  |                            |     |      |     |     |                                 |     |    |    |    |                  |        |       |       |       |                   |        |       |       |       |

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## **SECTION 1**

### **PURPOSE AND SUMMARY OF TEST**

#### **PURPOSE**

This 56.5 km/h frontal barrier impact test is part of the Vehicle Barrier Impact Testing Program sponsored by the National Highway Traffic Safety Administration (NHTSA) under contract number DTNH22-01-D-12005. The purpose of this test was to obtain vehicle crashworthiness and occupant restraint system performance data for an impact in excess of the current 48.3 kph requirements.

#### **SUMMARY**

A load cell barrier consisting of 30 load cells was impacted by a 2004 Dodge Durango 4 Door at a velocity of 56.3 kph. The test was performed at MGA Research Corporation on February 17, 2004. Pre-and post-test photographs of the vehicle and dummies can be found in Appendix A.

One real-time camera and sixteen high-speed cameras were used to document the frontal barrier impact event. Camera locations and other pertinent camera information can be found in this report.

Two Part 572E, 50<sup>th</sup> percentile male anthropomorphic test devices (ATDs), were placed in the driver and right-front passenger seating positions according to dummy placement instructions specified in the Laboratory Indicant Test Procedure.

Both ATDs were fully instrumented with head, chest and pelvis tri-axial accelerometers, chest displacement potentiometer, upper neck transducers, right/left femur load cells, and lower leg instrumentation. The driver (position 1) ATD (Serial No. 066) and right-front passenger (position 2) ATD (Serial No. 065) were calibrated previous to this test. Certification details, along with instrumentation calibration data, are found in Appendix C.

The 161 channels of data were recorded on an on-board data acquisition system. Appendix B contains the vehicle, load cell barrier and dummy response data traces.

There was 100 percent windshield retention and no intrusion into the protected zone of the windshield during the event. There was no Stoddard Solvent leakage after the event or during any phase of the static rollover.

The maximum static crush of the vehicle was 577 mm and both the driver and passenger side doors remained closed and latched during the impact event and were operable after the impact.

The driver's head and chest contacted the airbag. The driver's head also contacted the headrest. The driver's knees contacted the bolster. The driver's abdomen contacted the airbag. The passenger's head, chest and abdomen contacted the airbag. The passenger's head contacted the headrest. The passenger's knees contacted the knee bolster.

The occupant data is summarized below:

| ATD position | HIC   | Clip (g) | Chest Disp. (mm) | Left Femur (N) | Right Femur (N) | Belt Spool (mm) |
|--------------|-------|----------|------------------|----------------|-----------------|-----------------|
| Driver       | 394.7 | 36.3     | *                | -3385          | -4107           | **              |
| Passenger    | 457.2 | 37.3     | -26.0            | -2985          | -2414           | **              |

\* No valid data collected

\*\* Not recorded

### TEST NOTES

There was no valid data collected for the following channels:

Driver Chest Displacement

**SECTION 2**  
**OCCUPANT AND VEHICLE INFORMATION / DATA SHEETS**

Test Vehicle: 2004 Dodge Durango 4 Door  
 Test Program: 35mph Frontal Impact

NHTSA No.: M40303  
 Test Date: 2/17/04

**CONVERSION FACTORS USED IN THIS REPORT\***

| Quantity           | Typical Application | English Units       | Metric Unit | Multiply By   |
|--------------------|---------------------|---------------------|-------------|---------------|
| Mass               | Vehicle Weight      | lb                  | kg          | 0.4536        |
| Linear Velocity    | Impact Velocity     | mile/h              | km/h        | 1.609         |
| Length or Distance | Measurements        | in                  | mm          | 25.4          |
| Volume             | Fuel Systems        | gal                 | liter       | 3.785         |
| Volume             | Small Fluids        | oz                  | mL          | 29.573        |
| Pressure           | Tire Pressure       | lbf/in <sup>2</sup> | kPa         | 7.0           |
| Volume             | Liquid              | gal                 | liter       | 3.785         |
| Temperature        | General Use         | °F                  | °C          | =(tf -32)/1.8 |
| Force              | Dynamic Forces      | lbf                 | N           | 4.448         |
| Moment             | Torque              | lbf/ft              | Nm          | 1.355         |

\*Based on the Recommended Practice in SAE J916, May 85

**DATA SHEET NO. 1  
CRASH TEST SUMMARY**

Test Vehicle: 2004 Dodge Durango 4 Door  
Test Program: 35mph Frontal Impact

NHTSA No.: M40303  
Test Date: 2/17/04

**PRIMARY IMPACT DATA**

| Measured Parameter   | Units   | Value  |
|----------------------|---------|--------|
| Velocity at Impact   | km/hr   | 56.3   |
| Test Weight          | kg      | 2566.5 |
| Average Rebound      | mm      | 940    |
| Maximum Static Crush | mm      | 577    |
| Impact Angle         | degrees | 0      |

**DOOR OPENING AND SEAT TRACK INFORMATION**

| Description           | Driver                                                                                                                                         | Passenger                                                      |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|
| Locked/Unlocked Doors | Doors were unlocked                                                                                                                            | Doors were unlocked                                            |
| Front Door Opening    | Door remained closed and latched;<br>Door opened without tools                                                                                 | Door remained closed and latched;<br>Door opened without tools |
| Rear Door Opening     | Door remained closed and latched;<br>Door opened without tools                                                                                 | Door remained closed and latched;<br>Door opened without tools |
| Seat Track Shift (mm) | 0                                                                                                                                              | 0                                                              |
| Seat Back Failure     | None                                                                                                                                           | None                                                           |
| Glazing Damage        | The windshield molding came off from both driver and passenger side. However, the windshield remained attached to the car. See Photos 64 & 65. |                                                                |

**TEST DUMMY INFORMATION**

| Description             | Driver                      | Passenger                   |
|-------------------------|-----------------------------|-----------------------------|
| Dummy Type / Serial No. | HIII 50 <sup>th</sup> / 066 | HIII 50 <sup>th</sup> / 065 |
| Head Contact            | Airbag, Head Rest           | Airbag, Head Rest           |
| Chest Contact           | Airbag                      | Airbag                      |
| Abdomen Contact         | Airbag                      | Airbag                      |
| Left Knee Contact       | Knee Bolster                | Knee Bolster                |
| Right Knee Contact      | Knee Bolster                | Knee Bolster                |

**16mm MOVIE COVERAGE**

|            |    |
|------------|----|
| High Speed | 16 |
| Real Time  | 1  |
| Total      | 17 |

|                                  |     |
|----------------------------------|-----|
| Driver ATD Sensors               | 48  |
| Passenger ATD Sensors            | 48  |
| Belt Assessment Sensors          | 4   |
| Vehicle Structure Accelerometers | 9   |
| Rigid Barrier Load Cells         | 6   |
| Total                            | 115 |

**DATA SHEET NO. 2****GENERAL TEST AND VEHICLE PARAMETER DATA**

Test Vehicle: 2004 Dodge Durango 4 Door  
 Test Program: 35mph Frontal Impact

NHTSA No.: M40303  
 Test Date: 2/17/04

**TEST VEHICLE INFORMATION**

|                                                          |                   |
|----------------------------------------------------------|-------------------|
| Manufacturer                                             | Daimler Chrysler  |
| Model                                                    | 2004 Durango ST   |
| Body Style                                               | MPV               |
| NHTSA No.                                                | M40303            |
| VIN                                                      | 1D4HB38N64F141417 |
| Color                                                    | Red               |
| Delivery Date                                            | 2/10/04           |
| Odometer Reading (mile)                                  | 29                |
| Dealer                                                   | Miller Motors     |
| Transmission                                             | Automatic         |
| Final Drive                                              | 4 Wheel           |
| Number of Cylinders                                      | 8                 |
| Engine Displacement (L)                                  | 4.7               |
| Engine Placement                                         | Longitudinal      |
| Automatic Door Lock (ADL)                                | No                |
| Owner's Manual Details<br>Instructions on Disabling ADLs | Not Applicable    |

**TEST VEHICLE OPTIONS**

|                    |     |
|--------------------|-----|
| Driver Airbag      | Yes |
| Passenger Airbag   | Yes |
| Force Limiter      | Yes |
| Pretensioner       | Yes |
| Power Windows      | Yes |
| Power Steering     | Yes |
| Power Door Locks   | Yes |
| Tilt Wheel         | Yes |
| Air Conditioning   | Yes |
| Power Brakes       | Yes |
| Disc Brakes, Front | Yes |
| Disc Brakes, Rear  | Yes |
| Anti-lock Brakes   | Yes |
| AM/FM/CD           | Yes |
| Anti-theft System  | Yes |
| Cruise Control     | Yes |

**DATA FROM CERTIFICATION LABEL**

|                     |                  |                 |      |
|---------------------|------------------|-----------------|------|
| Manufactured By     | Daimler Chrysler | GVWR (kg)       | 2994 |
| Date of Manufacture | 12/03            | GAWR Front (kg) | 1633 |
|                     |                  | GAWR Rear (kg)  | 1770 |

**DATA FROM TIRE PLACARD**

| Measured Parameter          | Front      | Rear       |
|-----------------------------|------------|------------|
| Maximum Tire Pressure (kPa) | 300        | 300        |
| Cold Pressure (kPa)         | 227        | 227        |
| Recommended Tire Size       | P245/70R17 | P245/70R17 |
| Tire Size on Vehicle        | P245/70R17 | P245/70R17 |
| Tire Manufacturer           | Goodyear   | Goodyear   |

| Measured Parameter      | Front  | Rear        | Third | Total |
|-------------------------|--------|-------------|-------|-------|
| Type of Seats           | Bucket | Split Bench | NA    |       |
| Number Of Occupants     | 2      | 3           | 0     | 5     |
| Capacity Wt. (VCW) (kg) |        |             |       | 370.1 |
| Cargo Wt. (RCLW) (kg)   |        |             |       | 136.1 |

## DATA SHEET NO. 2... (continued)

### GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2004 Dodge Durango 4 Door  
 Test Program: 35mph Frontal Impact

NHTSA No.: M40303  
 Test Date: 2/17/04

#### TEST VEHICLE WEIGHTS

|        | Units | As Delivered (UVW) (Axle) |        |        | As Tested (ATW) (Axle) |        |        |
|--------|-------|---------------------------|--------|--------|------------------------|--------|--------|
|        |       | Front                     | Rear   | Total  | Front                  | Rear   | Total  |
| Left   | kg    | 645.0                     | 507.6  |        | 672.2                  | 611.5  |        |
| Right  | kg    | 623.2                     | 507.6  |        | 658.6                  | 624.2  |        |
| Ratio  | %     | 55.5                      | 44.5   |        | 51.9                   | 48.1   |        |
| Totals | kg    | 1268.2                    | 1015.2 | 2283.4 | 1330.8                 | 1235.7 | 2566.5 |

#### TARGET TEST WEIGHT CALCULATION

| Measured Parameter                      | Units | Value  |
|-----------------------------------------|-------|--------|
| Total Delivered Weight (UVW)            | kg    | 2283.4 |
| Weight of 2 P572E ATDs                  | kg    | 156.0  |
| Rated Cargo/Luggage Weight (RCLW)       | kg    | 136.1  |
| Calculated Vehicle Target Weight (TVTW) | kg    | 2575.5 |

#### TEST VEHICLE ATTITUDES AND CG

|              | Units | LF  | RF  | LR  | RR  | CG(aft of front axle) |
|--------------|-------|-----|-----|-----|-----|-----------------------|
| As Delivered | mm    | 846 | 849 | 920 | 927 | 1345                  |
| As Tested    | mm    | 844 | 845 | 891 | 891 | 1457                  |
| Post Test    | mm    | 837 | 834 | 896 | 891 |                       |

Vehicle Wheelbase (mm): 3025

Weight of Ballast secured in cargo area (kg): 0

Vehicle Components Removed: Rear cargo tub

Ballast weight does not include cameras, instrumentation, and data acquisition system.

#### FUEL SYSTEM DATA

Fuel System Capacity From Owner's Manual (L): 102.2

Usable Capacity Figure Furnished by COTR (L): 102.2

Actual Test Volume (L): 96.1

Test Fluid Type: Stoddard Solvent; Specific Gravity: 0.77

Is Vehicle Fuel Pump Electric or Mechanical? Electric

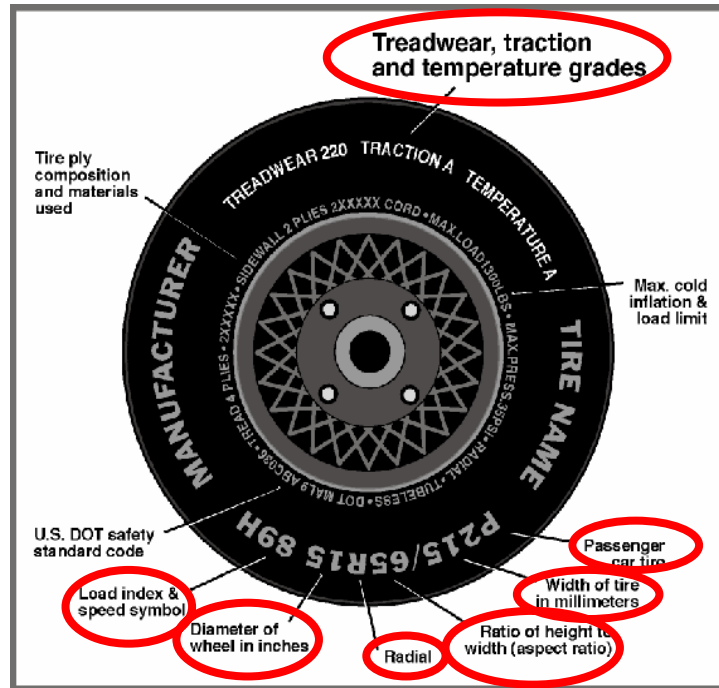
If electric, does pump operate with ignition switch "ON" & engine "OFF"? Yes

**DATA SHEET NO. 3**  
**TEST VEHICLE TIRE INFORMATION**

Test Vehicle: 2004 Dodge Durango 4 Door  
 Test Program: 35mph Frontal Impact

NHTSA No.: M40303  
 Test Date: 2/17/04

|              |                   |               |             |
|--------------|-------------------|---------------|-------------|
| Vehicle Year | 2004              | Vehicle Make  | Dodge       |
| VIN          | 1D4HB38N64F141417 | Vehicle Model | Durango STE |



|                                         | Front        | Rear         |
|-----------------------------------------|--------------|--------------|
| Tire Manufacturer                       | Goodyear     | Goodyear     |
| Tire Name                               | Wrangler SRA | Wrangler SRA |
| Tire Type                               | P            | P            |
| Tire Width (mm)                         | 245          | 245          |
| Ratio of Height to Width (aspect ratio) | 70           | 70           |
| Radial                                  | R            | R            |
| Wheel Diameter                          | 17           | 17           |
| Load Index & Speed Symbol               | 108S         | 108S         |
| Treadwear                               | 360          | 360          |
| Traction Grade                          | A            | A            |
| Temperature Grade                       | B            | B            |

**DATA SHEET NO. 4**  
**POST IMPACT DATA**

Test Vehicle: 2004 Dodge Durango 4 Door  
Test Program: 35mph Frontal Impact

NHTSA No.: M40303  
Test Date: 2/17/04

| Measured Parameter              | Units | Requirement | Value |
|---------------------------------|-------|-------------|-------|
| Trap No. 1 Velocity (Primary)   | km/h  | 55.5 – 57.1 | 56.3  |
| Trap No. 1 Entry Distance       | mm    | <1524       | 1300  |
| Trap No. 1 Exit Distance        | mm    | <1524       | 300   |
| Trap No. 2 Velocity (Redundant) | km/h  | 55.5 – 57.1 | 56.5  |
| Trap No. 2 Entry Distance       | mm    | <1524       | 1425  |
| Trap No. 2 Exit Distance        | mm    | <1524       | 425   |

**VEHICLE STATIC CRUSH**

| Measured Parameter | Units | Pre-Test | Post-Test | Difference |
|--------------------|-------|----------|-----------|------------|
| Left Side          | mm    | 4845     | 4538      | 307        |
| Center             | mm    | 5045     | 4468      | 577        |
| Right Side         | mm    | 4845     | 4497      | 348        |

**VEHICLE REBOUND FROM BARRIER**

| Measured Parameter | Units | Value |
|--------------------|-------|-------|
| Left Side          | mm    | 942   |
| Center             | mm    | 858   |
| Right Side         | mm    | 1020  |
| Average            | mm    | 940   |



**DATA SHEET NO. 5**  
**TEST VEHICLE INFORMATION**

Test Vehicle: 2004 Dodge Durango 4 Door  
Test Program: 35mph Frontal Impact

NHTSA No.: M40303  
Test Date: 2/17/04

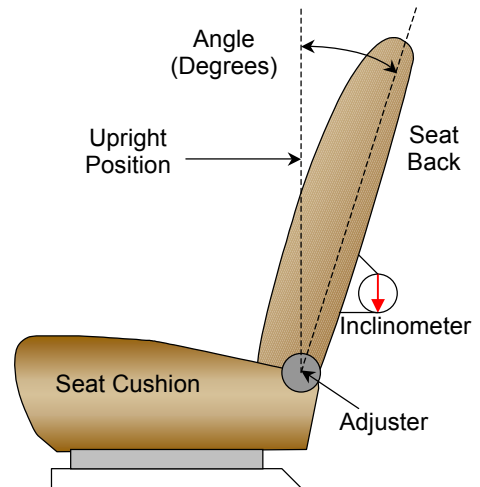
**NORMAL DESIGN RIDING POSITION**

The driver and passenger seat back is positioned to the manufacturer's designated angle. The procedure is as follows:

For driver and passenger seats, measure on H/R rods from vertical plane. The designated driver and passenger seat back angle is 12.0°.

Driver seat back angle: 12.1°

Passenger seat back angle: 12.5°



*FRONT SEAT ASSEMBLY*

**SEAT FORE/AFT POSITIONS**

Positioning of driver and passenger seat: Seat adjuster mid position is 110mm rear of full forward position.

Driver seat fore/aft total travel: 220 mm

Passenger seat fore/aft total travel: 220 mm

Driver seat fore/aft position: 110 of 220 mm

Passenger seat fore/aft position: 110 of 220 mm

**SEAT BELT UPPER ANCHORAGE**

Third from the bottom including the bottom.

## DATA SHEET NO. 5... (continued)

### TEST VEHICLE INFORMATION

Test Vehicle: 2004 Dodge Durango 4 Door  
Test Program: 35mph Frontal Impact

NHTSA No.: M40303  
Test Date: 2/17/04

### FUEL TANK CAPACITY DATA

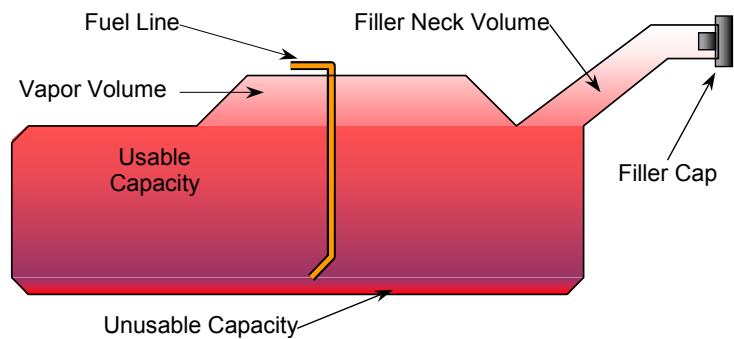
The "Usable Capacity" of the standard equipment fuel tank is: 102.2 liters

The "Usable Capacity" of any optional equipment fuel tank is: N/A liters

The "Usable Capacity" used for certification to FMVSS 301 requirements: 102.2 liters

Actual amount of Stoddard solvent added to vehicle for certification test: 96.1 liters

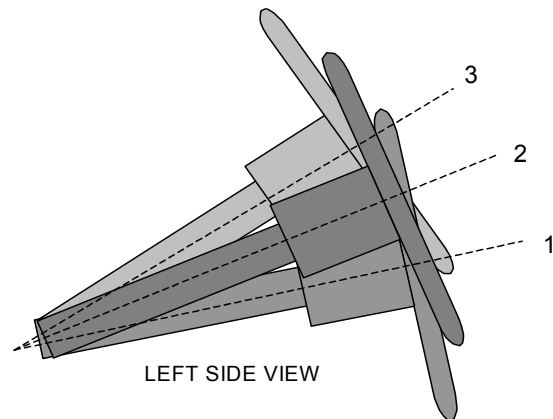
The fuel door is located on the left hand side of the vehicle.



VEHICLE FUEL TANK ASSEMBLY

### STEERING COLUMN ADJUSTMENT

Adjustable steering controls are made so that the steering wheel hub is at the geometric center of the locus it describes when it is moved through its full range of driving positions. Column is brought to full up position and angle recorded and then to full down position and angle recorded. Column is then set to the average angle.



STEERING COLUMN ASSEMBLY

Lowermost, position 1: 16.5°

Geometric center, position 2: 26.0°

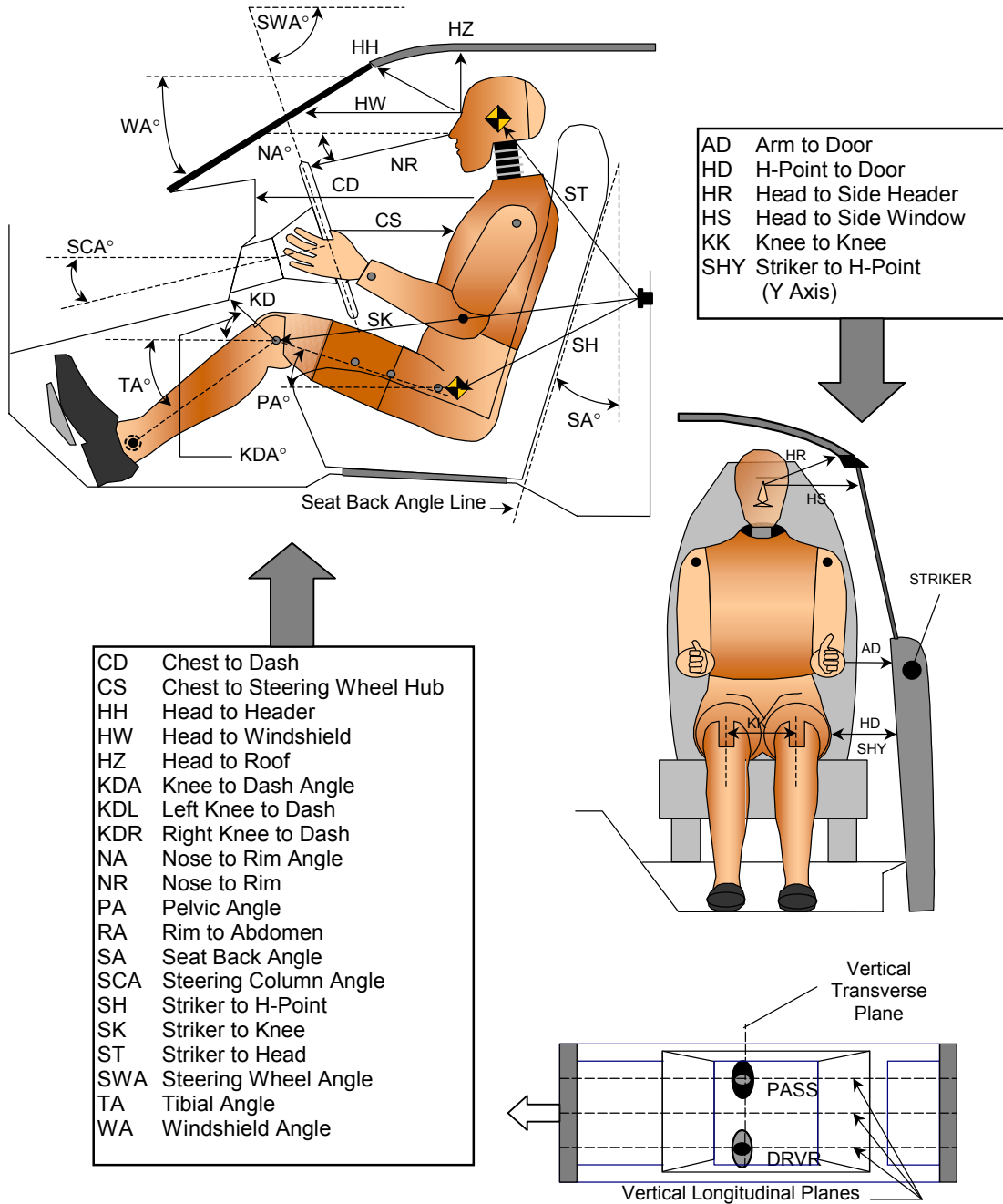
Uppermost. Position 3: 35.4°

# **DATA SHEET NO. 6** **DUMMY POSITIONING IN VEHICLE**

Test Vehicle: 2004 Dodge Durango 4 Door  
 Test Program: 35mph Frontal Impact

NHTSA No.: M40303  
 Test Date: 2/17/04

## **DUMMY MEASUREMENTS FOR FRONT SEAT OCCUPANTS**



**DATA SHEET NO. 6... (continued)**  
**DUMMY POSITIONING IN VEHICLE**

Test Vehicle: 2004 Dodge Durango 4 Door  
 Test Program: 35mph Frontal Impact

NHTSA No.: M40303  
 Test Date: 2/17/04

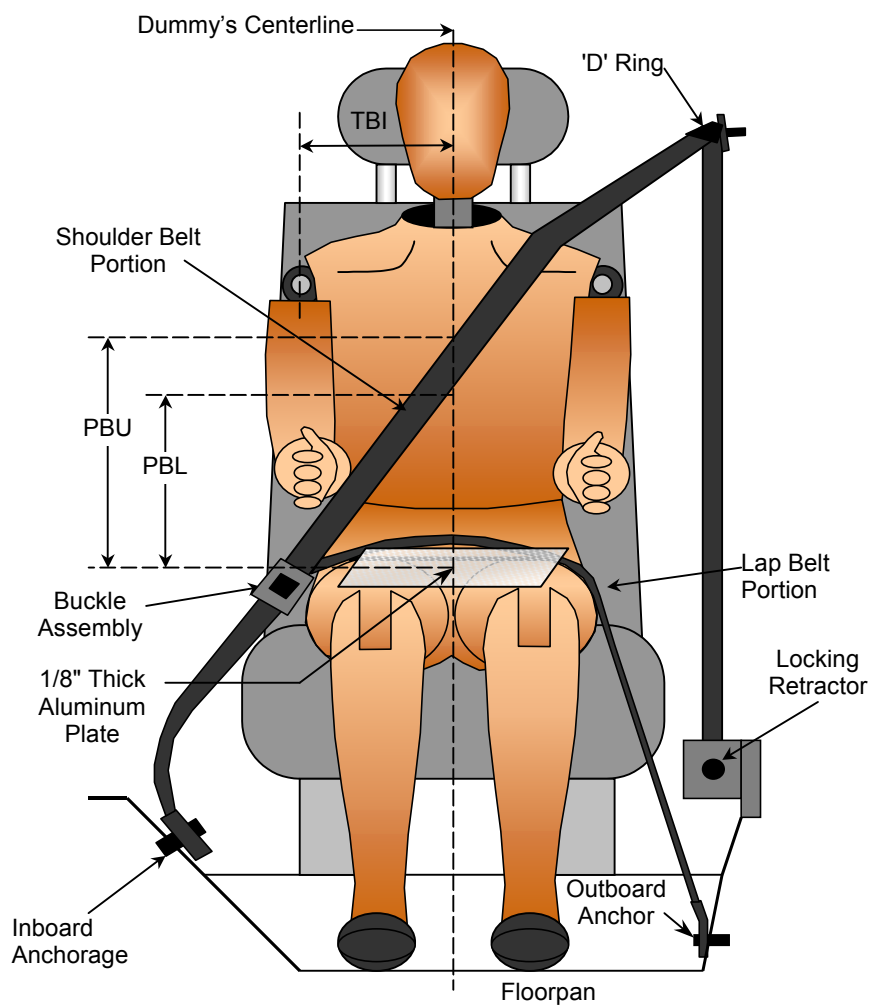
**TEST DUMMY POSITION MEASUREMENTS**

| Code | Measurement Description | Driver      |           | Passenger   |           |
|------|-------------------------|-------------|-----------|-------------|-----------|
|      |                         | Length (mm) | Angle (°) | Length (mm) | Angle (°) |
| WA   | Windshield Angle        |             | 31.7      |             |           |
| SWA  | Steering Wheel Angle    |             | 64.2      |             |           |
| SCA  | Steering Column Angle   |             | 26.0      |             |           |
| SA   | Seat Back Angle         |             | 12.1      |             | 12.5      |
| HZ   | Head to Roof (Z)        | 219         | 90.0      | 211         | 90.0      |
| HH   | Head to Header          | 513         | 10.9      | 531         | 12.4      |
| HW   | Head to Windshield      | 744         | 0.0       | 737         | 0.0       |
| HR   | Head to Side Header (Y) | 191         |           | 179         |           |
| NR   | Nose to Rim             | 436         | 12.3      |             |           |
| CD   | Chest to Dash           | 568         |           | 587         |           |
| CS   | Chest to Steering Hub   | 359         | 12.6      |             |           |
| RA   | Rim to Abdomen          | 206         | 0.0       |             |           |
| KDL  | Left Knee to Dash       | 153         | 28.5      | 151         |           |
| KDR  | Right Knee to Dash      | 151         |           | 151         | 32.0      |
| PA   | Pelvic Angle            |             | 21.4      |             | 21.4      |
| TA   | Tibia Angle             |             | 53.5      |             | 54.8      |
| KK   | Knee to Knee (Y)        | 291         |           | 224         |           |
| SK   | Striker to Knee         | 603         | 83.8      | 589         | 82.2      |
| ST   | Striker to Head         | 656         | 4.2       | 682         | 5.5       |
| SH   | Striker to H-Point      | 196         | 89.1      | 181         | 89.8      |
| SHY  | Striker to H-Point (Y)  | 264         |           | 255         |           |
| HS   | Head to Side Window     | 351         |           | 356         |           |
| HD   | H-Point to Door (Y)     | 168         |           | 154         |           |
| AD   | Arm to Door (Y)         | 108         |           | 112         |           |
| AA   | Ankle to Ankle          | 282         |           | 183         |           |

# **DATA SHEET NO. 7** **SEAT BELT POSITIONING DATA**

Test Vehicle: 2004 Dodge Durango 4 Door  
 Test Program: 35mph Frontal Impact

NHTSA No.: M40303  
 Test Date: 2/17/04



## **SEAT BELT POSITIONING MEASUREMENTS**

| Measurement Description                           | Units | Driver | Passenger |
|---------------------------------------------------|-------|--------|-----------|
| TBI - Dummy centerline to shoulder bolt           | mm    | 170    | 170       |
| PBU - Top surface of reference to belt upper edge | mm    | 329    | 351       |
| PBL - To surface of reference to belt lower edge  | mm    | 250    | 275       |

## DATA SHEET NO. 8

### VEHICLE ACCELEROMETER LOCATION AND DATA SUMMARY

Test Vehicle: 2004 Dodge Durango 4 Door  
 Test Program: 35mph Frontal Impact

NHTSA No.: M40303  
 Test Date: 2/17/04

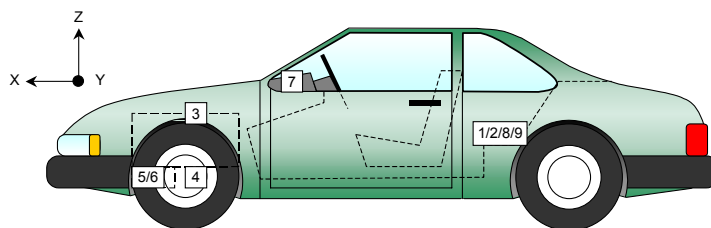
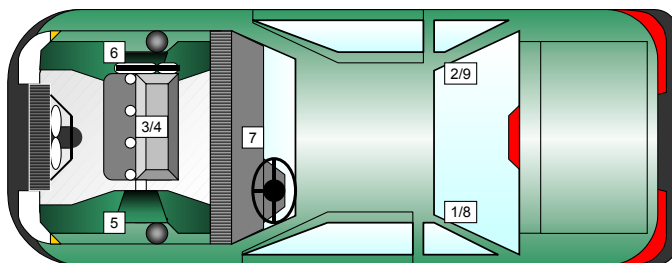
### VEHICLE ACCELEROMETER PEAK DATA AND PRE-TEST LOCATIONS

| No. | Accelerometer Location | Measurements (mm) |      |      | Peak Values |      |      |        |      |
|-----|------------------------|-------------------|------|------|-------------|------|------|--------|------|
|     |                        | X                 | Y    | Z    | Units       | Max  | Time | Min    | Time |
| 1   | Left Rear X-Member X   | 2087              | -382 | 618  | G's         | 1.9  | 98   | -35.9  | 16   |
| 2   | Right Rear X-Member X  | 2087              | 382  | 620  | G's         | 3.0  | 97   | -36.6  | 16   |
| 3   | Engine Top X           | 4190              | 90   | 985  | G's         | 15.1 | 60   | -100.7 | 45   |
| 4   | Engine Bottom X        | 4174              | 52   | 465  | G's         | 6.1  | 68   | -63.7  | 49   |
| 5   | Left Brake Caliper X   | 4220              | -674 | 350  | G's         | 17.5 | 83   | -56.0  | 53   |
| 6   | Right Brake Caliper X  | 4220              | 683  | 342  | G's         | 15.5 | 83   | -57.5  | 52   |
| 7   | Instrument Panel X     | 3384              | 30   | 1335 | G's         | 16.3 | 93   | -51.4  | 21   |
| 8   | Left Rear X-Member Z   | 2087              | -382 | 618  | G's         | 11.2 | 43   | -19.1  | 23   |
| 9   | Right Rear X-Member Z  | 2087              | 382  | 620  | G's         | 12.1 | 39   | -17.9  | 71   |

Reference Points: X - Rear Surface of Vehicle (+ forward)

Y - Vehicle Centerline (+ to right)

Z - Ground Plane (+ up)



**DATA SHEET NO. 9**  
**HYBRID III ATD INJURY CRITERIA AND SENSOR DATA**

Test Vehicle: 2004 Dodge Durango 4 Door  
 Test Program: 35mph Frontal Impact

NHTSA No.: M40303  
 Test Date: 2/17/04

**HEAD PRIMARY PEAK ACCELERATIONS**

| Location          | Axis | Units | Driver |      |       |      | Passenger |      |       |      |
|-------------------|------|-------|--------|------|-------|------|-----------|------|-------|------|
|                   |      |       | Max    | Time | Min   | Time | Max       | Time | Min   | Time |
| Head CG           | X    | G's   | 8.5    | 32   | -48.4 | 77   | 2.6       | 50   | -38.0 | 83   |
| Head CG           | Y    | G's   | 3.5    | 196  | -5.5  | 51   | 31.3      | 51   | -25.4 | 51   |
| Head CG           | Z    | G's   | 26.4   | 70   | -4.9  | 24   | 42.8      | 76   | -1.1  | 19   |
| Head CG Resultant | N/A  | G's   | 52.8   | 73   |       |      | 54.8      | 78   |       |      |

**CHEST PRIMARY PEAK ACCELERATIONS**

| Location           | Axis | Units | Driver |      |       |      | Passenger |      |       |      |
|--------------------|------|-------|--------|------|-------|------|-----------|------|-------|------|
|                    |      |       | Max    | Time | Min   | Time | Max       | Time | Min   | Time |
| Chest CG           | X    | G's   | 2.2    | 127  | -38.3 | 48   | 0.6       | 160  | -38.4 | 52   |
| Chest CG           | Y    | G's   | 3.2    | 100  | -5.8  | 44   | 9.4       | 78   | -5.7  | 98   |
| Chest CG           | Z    | G's   | 6.2    | 75   | -8.9  | 104  | 10.1      | 84   | -6.9  | 108  |
| Chest CG Resultant | N/A  | G's   | 38.6   | 48   |       |      | 38.5      | 52   |       |      |

**FEMUR PEAK FORCES**

| Location    | Axis | Units   | Driver |      |       |      | Passenger |      |       |      |
|-------------|------|---------|--------|------|-------|------|-----------|------|-------|------|
|             |      |         | Max    | Time | Min   | Time | Max       | Time | Min   | Time |
| Left Femur  | Z    | Newtons | 526    | 36   | -3385 | 49   | 473       | 41   | -2985 | 65   |
| Right Femur | Z    | Newtons | 543    | 35   | -4107 | 47   | 829       | 68   | -2414 | 42   |

**SEAT BELT SENSOR PEAK VALUES**

| Location            | Axis | Units   | Driver |      |     |      | Passenger |      |     |      |
|---------------------|------|---------|--------|------|-----|------|-----------|------|-----|------|
|                     |      |         | Max    | Time | Min | Time | Max       | Time | Min | Time |
| Lap Belt Force      | N/A  | Newtons | 5923   | 48   |     |      | 7128      | 53   |     |      |
| Shoulder Belt Force | N/A  | Newtons | 6166   | 47   |     |      | 6966      | 50   |     |      |

**HEAD INJURY CRITERIA (HIC)**

| Location        | Driver |          |                |                | Passenger |          |                |                |
|-----------------|--------|----------|----------------|----------------|-----------|----------|----------------|----------------|
|                 | HIC    | Avg. G's | T <sup>1</sup> | T <sup>2</sup> | HIC       | Avg. G's | T <sup>1</sup> | T <sup>2</sup> |
| Head CG Primary | 394.7  | 41.9     | 57.5           | 92.3           | 457.2     | 43.8     | 65.8           | 101.8          |

**CHEST CLIP (3MSEC)**

| Location         | Driver |                |                | Passenger |                |                |
|------------------|--------|----------------|----------------|-----------|----------------|----------------|
|                  | CLIP   | T <sup>1</sup> | T <sup>2</sup> | CLIP      | T <sup>1</sup> | T <sup>2</sup> |
| Chest CG Primary | 36.3   | 45.9           | 48.9           | 37.3      | 49.9           | 52.9           |

**DATA SHEET NO. 9... (continued)**  
**HYBRID III ATD INJURY CRITERIA AND SENSOR DATA**

Test Vehicle: 2004 Dodge Durango 4 Door  
 Test Program: 35mph Frontal Impact

NHTSA No.: M40303  
 Test Date: 2/17/04

**PELVIC PEAK ACCELERATIONS**

| Location | Axis | Units | Driver |      |       |      | Passenger |      |       |      |
|----------|------|-------|--------|------|-------|------|-----------|------|-------|------|
|          |      |       | Max    | Time | Min   | Time | Max       | Time | Min   | Time |
| Pelvis   | X    | G's   | 3.8    | 103  | -68.9 | 49   | 4.7       | 125  | -59.9 | 48   |
| Pelvis   | Y    | G's   | 7.0    | 81   | -9.2  | 40   | 5.7       | 56   | -8.2  | 82   |
| Pelvis   | Z    | G's   | 1.6    | 32   | -16.4 | 59   | 2.1       | 25   | -18.9 | 54   |

**UPPER NECK PEAK FORCES AND MOMENTS**

| Location    | Axis | Units   | Driver |      |       |      | Passenger |      |       |      |
|-------------|------|---------|--------|------|-------|------|-----------|------|-------|------|
|             |      |         | Max    | Time | Min   | Time | Max       | Time | Min   | Time |
| Neck Force  | X    | Newtons | 307    | 65   | -519  | 128  | 6         | 20   | -515  | 78   |
| Neck Force  | Y    | Newtons | 190    | 62   | -125  | 71   | 171       | 61   | -100  | 107  |
| Neck Force  | Z    | Newtons | 2005   | 64   | -179  | 20   | 1704      | 76   | -476  | 34   |
| Neck Moment | X    | N•m     | 4.8    | 121  | -19.4 | 89   | 22.7      | 91   | -2.9  | 176  |
| Neck Moment | Y    | N•m     | 46.5   | 136  | -17.2 | 50   | 27.2      | 145  | -22.3 | 68   |
| Neck Moment | Z    | N•m     | 3.4    | 68   | -2.8  | 61   | 12.7      | 106  | -6.1  | 165  |

**FOOT PEAK ACCELERATIONS**

| Location        | Axis | Units | Driver |      |        |      | Passenger |      |       |      |
|-----------------|------|-------|--------|------|--------|------|-----------|------|-------|------|
|                 |      |       | Max    | Time | Min    | Time | Max       | Time | Min   | Time |
| Left Foot Aft   | X    | G's   | 22.1   | 78   | -112.3 | 55   | 26.1      | 94   | -59.9 | 41   |
| Left Foot Aft   | Z    | G's   | 5.0    | 57   | -30.1  | 48   | 6.3       | 104  | -40.0 | 38   |
| Left Foot Fore  | Z    | G's   | 45.7   | 62   | -154.2 | 53   | 37.4      | 104  | -81.3 | 60   |
| Right Foot Aft  | X    | G's   | 16.1   | 93   | -68.5  | 51   | 13.8      | 92   | -67.6 | 41   |
| Right Foot Aft  | Z    | G's   | 3.1    | 158  | -54.8  | 55   | 3.0       | 197  | -44.5 | 39   |
| Right Foot Fore | Z    | G's   | 35.7   | 46   | -101.8 | 39   | 29.3      | 34   | -59.6 | 23   |

**UPPER AND LOWER TIBIA PEAK FORCES AND MOMENTS**

| Location           | Axis | Units   | Driver |      |        |      | Passenger |      |        |      |
|--------------------|------|---------|--------|------|--------|------|-----------|------|--------|------|
|                    |      |         | Max    | Time | Min    | Time | Max       | Time | Min    | Time |
| Left Lower Moment  | X    | N•m     | 8.6    | 67   | -15.1  | 56   | 28.8      | 66   | -13.0  | 91   |
| Left Lower Moment  | Y    | N•m     | 135.6  | 54   | -40.1  | 76   | 44.6      | 61   | -38.7  | 93   |
| Left Lower Force   | Z    | Newtons | 182    | 49   | -1724  | 55   | 164       | 109  | -2523  | 38   |
| Left Upper Moment  | X    | N•m     | 20.3   | 42   | -33.0  | 55   | 30.0      | 79   | -21.2  | 53   |
| Left Upper Moment  | Y    | N•m     | 143.0  | 50   | 0.0    | 0    | 15.7      | 109  | -152.4 | 46   |
| Left Upper Force   | Z    | Newtons | 258    | 39   | -1880  | 55   | 89        | 114  | -2410  | 43   |
| Right Lower Moment | X    | N•m     | 17.0   | 96   | -8.4   | 43   | 6.3       | 91   | -10.5  | 40   |
| Right Lower Moment | Y    | N•m     | 33.5   | 92   | -37.7  | 54   | 38.3      | 91   | -45.0  | 44   |
| Right Lower Force  | Z    | Newtons | 114    | 112  | -3117  | 56   | 96        | 118  | -2640  | 41   |
| Right Upper Moment | X    | N•m     | 33.5   | 52   | -26.0  | 86   | 14.7      | 134  | -39.4  | 54   |
| Right Upper Moment | Y    | N•m     | 21.8   | 105  | -126.2 | 56   | 11.5      | 98   | -144.4 | 43   |
| Right Upper Force  | Z    | Newtons | 110    | 113  | -2565  | 57   | 136       | 112  | -2378  | 42   |



**DATA SHEET NO. 9... (continued)**  
**HYBRID III ATD INJURY CRITERIA AND SENSOR DATA**

Test Vehicle: 2004 Dodge Durango 4 Door  
 Test Program: 35mph Frontal Impact

NHTSA No.: M40303  
 Test Date: 2/17/04

**CHEST PEAK DISPLACEMENTS**

| Location | Axis | Units | Driver |      |     |      | Passenger |      |       |      |
|----------|------|-------|--------|------|-----|------|-----------|------|-------|------|
|          |      |       | Max    | Time | Min | Time | Max       | Time | Min   | Time |
| Chest    | X    | mm    |        |      | *   | *    |           |      | -26.0 | 77   |

\* No valid data was collected

**HEAD REDUNDANT PEAK ACCELERATIONS**

| Location          | Axis | Units | Driver |      |       |      | Passenger |      |       |      |
|-------------------|------|-------|--------|------|-------|------|-----------|------|-------|------|
|                   |      |       | Max    | Time | Min   | Time | Max       | Time | Min   | Time |
| Head CG           | X    | G's   | 7.3    | 31   | -52.6 | 74   | 4.6       | 50   | -35.1 | 83   |
| Head CG           | Y    | G's   | 4.1    | 24   | -5.8  | 67   | 27.8      | 51   | -28.7 | 51   |
| Head CG           | Z    | G's   | 27.2   | 65   | -5.5  | 24   | 43.0      | 76   | -2.2  | 28   |
| Head CG Resultant | N/A  | G's   | 57.4   | 73   |       |      | 54.0      | 78   |       |      |

**CHEST REDUNDANT PEAK ACCELERATIONS**

| Location           | Axis | Units | Driver |      |       |      | Passenger |      |       |      |
|--------------------|------|-------|--------|------|-------|------|-----------|------|-------|------|
|                    |      |       | Max    | Time | Min   | Time | Max       | Time | Min   | Time |
| Chest CG           | X    | G's   | 2.2    | 170  | -38.5 | 47   | 0.7       | 160  | -38.1 | 51   |
| Chest CG           | Y    | G's   | 3.0    | 100  | -5.1  | 47   | 9.8       | 78   | -5.5  | 98   |
| Chest CG           | Z    | G's   | 7.0    | 74   | -9.0  | 104  | 10.6      | 84   | -7.5  | 108  |
| Chest CG Resultant | N/A  | G's   | 38.9   | 47   |       |      | 38.3      | 52   |       |      |

**REDUNDANT HEAD INJURY CRITERIA (HIC)**

| Location                  | Driver |      |                |                | Passenger |      |                |                |
|---------------------------|--------|------|----------------|----------------|-----------|------|----------------|----------------|
|                           | HIC    | Avg. | T <sup>1</sup> | T <sup>2</sup> | HIC       | Avg. | T <sup>1</sup> | T <sup>2</sup> |
| Head CG Primary Redundant | 413.7  | 42.9 | 57.9           | 92.2           | 432.8     | 42.9 | 65.7           | 101.7          |

**REDUNDANT CHEST CLIP (3MSEC)**

| Location                   | Driver |                |                | Passenger |                |                |
|----------------------------|--------|----------------|----------------|-----------|----------------|----------------|
|                            | CLIP   | T <sup>1</sup> | T <sup>2</sup> | CLIP      | T <sup>1</sup> | T <sup>2</sup> |
| Chest CG Primary Redundant | 36.8   | 45.8           | 48.8           | 37.1      | 49.8           | 52.8           |

**DATA SHEET NO. 10**  
**SEAT BELT PERFORMANCE ASSESSMENT TEST DATA**

Test Vehicle: 2004 Dodge Durango 4 Door  
 Test Program: 35mph Frontal Impact

NHTSA No.: M40303  
 Test Date: 2/17/04

**SEAT BELT PLACEMENT MEASUREMENTS**

| Measurement Description                           | Units | Driver | Passenger |
|---------------------------------------------------|-------|--------|-----------|
| TBI - Dummy centerline to shoulder bolt           | mm    | 170    | 170       |
| PBU - Top surface of reference to belt upper edge | mm    | 329    | 351       |
| PBL - Top surface of reference to belt lower edge | mm    | 250    | 275       |

**BELT LENGTH DATA**

| Measurement Description                          | Units | Driver | Passenger |
|--------------------------------------------------|-------|--------|-----------|
| Retractor reel to "D" ring                       | mm    | 181    | 181       |
| Shoulder belt length as measured on ATD          | mm    | 804    | 795       |
| Lap belt length as measured on ATD               | mm    | 667    | 632       |
| Remainder of belt on reel                        | mm    | 1173   | 1217      |
| Total belt length for continuous webbing systems | mm    | 2825   | 2825      |

**SHOULDER BELT SPOOL-OUT DATA**

| Measurement Description      | Units | Driver       | Passenger |
|------------------------------|-------|--------------|-----------|
| As determined mechanically   | mm    | Not recorded |           |
| As determined electronically | mm    | Not recorded |           |

**DATA SHEET NO. 11**  
**SUMMARY OF FMVSS 212 DATA**

Test Vehicle: 2004 Dodge Durango 4 Door  
 Test Program: 35mph Frontal Impact

NHTSA No.: M40303  
 Test Date: 2/17/04

**Windshield Mounting Details:**

Windshield glass is secured to the vehicle frame with a rubber trim and glue.

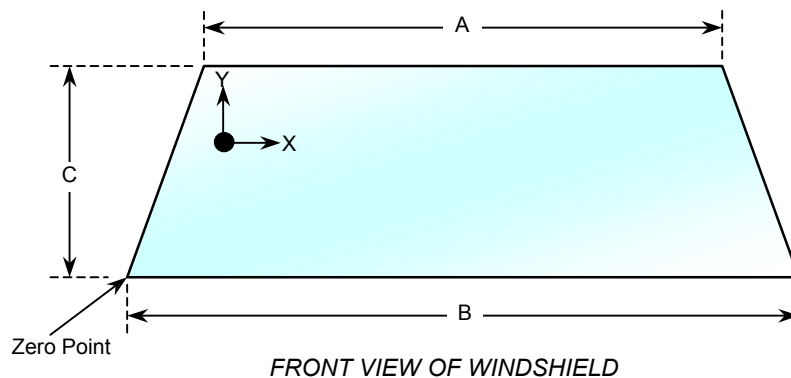
The standard requires that the post-test retention measurement be a minimum of 75 percent of the pretest total periphery measurement for vehicles not equipped with occupant passive restraints and 50 percent for each side of the windshield for vehicles, which are equipped with occupant passive restraints.

Temperature of windshield molding during test: 21 °C

The windshield molding came off from both driver and passenger side. However, the windshield remained attached to the car. There was no loss of retention. See Photos 64 and 65.

**WINDSHIELD PERIPHERY MEASUREMENTS**

| Measurement | Pre-Test (mm) | Post-Test (mm) | % of Retention |
|-------------|---------------|----------------|----------------|
| Left Side   | 2318          | 2318           | 100            |
| Right Side  | 2276          | 2276           | 100            |
| Total       | 4594          | 4594           | 100            |



**WINDSHIELD DIMENSIONS**

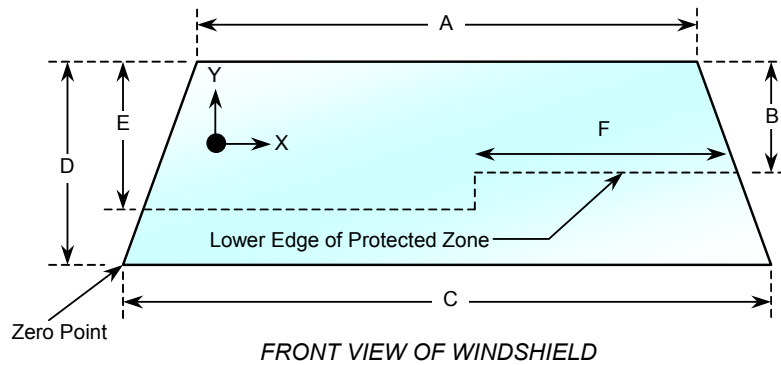
| Item | Units | Segment Length | Molding Width |
|------|-------|----------------|---------------|
| A    | mm    | 1258           | 0             |
| B    | mm    | 1597           | 14            |
| C    | mm    | 867            | 23            |

## DATA SHEET NO. 12

### WINDSHIELD ZONE INTRUSION FMVSS 219 (Partial) DATA

Test Vehicle: 2004 Dodge Durango 4 Door  
 Test Program: 35mph Frontal Impact

NHTSA No.: M40303  
 Test Date: 2/17/04



| Item | Units | Value |
|------|-------|-------|
| A    | mm    | 1258  |
| B    | mm    | 544   |
| C    | mm    | 1597  |
| D    | mm    | 867   |
| E    | mm    | 551   |
| F    | mm    | 590   |

#### AREA OF PROTECTED ZONE FAILURES - NONE

- A. Provide coordinates of the area that the protected zone was penetrated more than 0.25 inches by a vehicle component other than one that is normally in contact with the windshield. **None**

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

- B. Provide coordinates of the area beneath the protected zone that the inner surface of the windshield was penetrated by a vehicle component. **None**

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

**DATA SHEET NO. 13**

**FMVSS 301 FUEL SYSTEM INTEGRITY POST IMPACT DATA**

Test Vehicle: 2004 Dodge Durango 4 Door  
Test Program: 35mph Frontal Impact

NHTSA No.: M40303  
Test Date: 2/17/04

Temperature at Time of Impact: 21° C

Test Time: 11:45 am

**Stoddard Solvent Spillage Measurements**

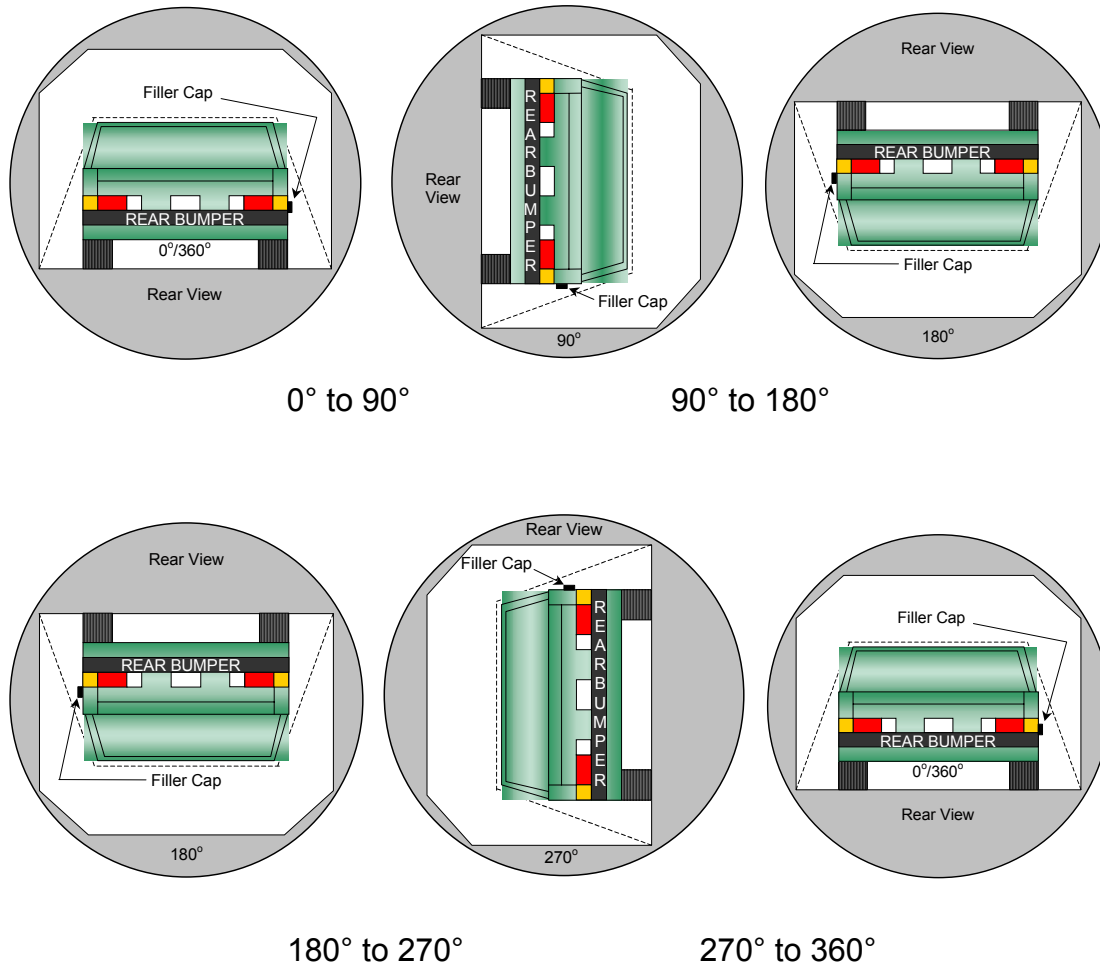
- A. From impact until vehicle motion ceases: 0 oz.  
(Maximum Allowable = 1 ounce)
- B. For the 5 minute period after motion ceases: 0 oz.  
(Maximum Allowable = 5 ounces)
- C. For the following 25 minutes: 0 oz.  
(Maximum Allowable = 1 oz. /minute)
- D. Spillage: None

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

Test Vehicle: 2004 Dodge Durango 4 Door  
 Test Program: 35mph Frontal Impact

NHTSA No.: M40303  
 Test Date: 2/17/04

Test Time: 12:42 pm



1. The specified fixture rollover rate for each 90° of rotation is 60 to 180 seconds.
2. The position hold time at each position is 300 seconds (minimum).
3. Details of Stoddard Solvent spillage locations: None

| Test Phase   | Rotation Time (sec.) | Hold Time (sec.) | Spillage (oz.) |
|--------------|----------------------|------------------|----------------|
| 0° to 90°    | 166                  | 300              | 0              |
| 90° to 180°  | 155                  | 300              | 0              |
| 180° to 270° | 140                  | 300              | 0              |
| 270° to 360° | 158                  | 300              | 0              |

**DATA SHEET NO. 15**  
**VEHICLE MEASUREMENTS**

Test Vehicle: 2004 Dodge Durango 4 Door  
Test Program: 35mph Frontal Impact

NHTSA No.: M40303  
Test Date: 2/17/04

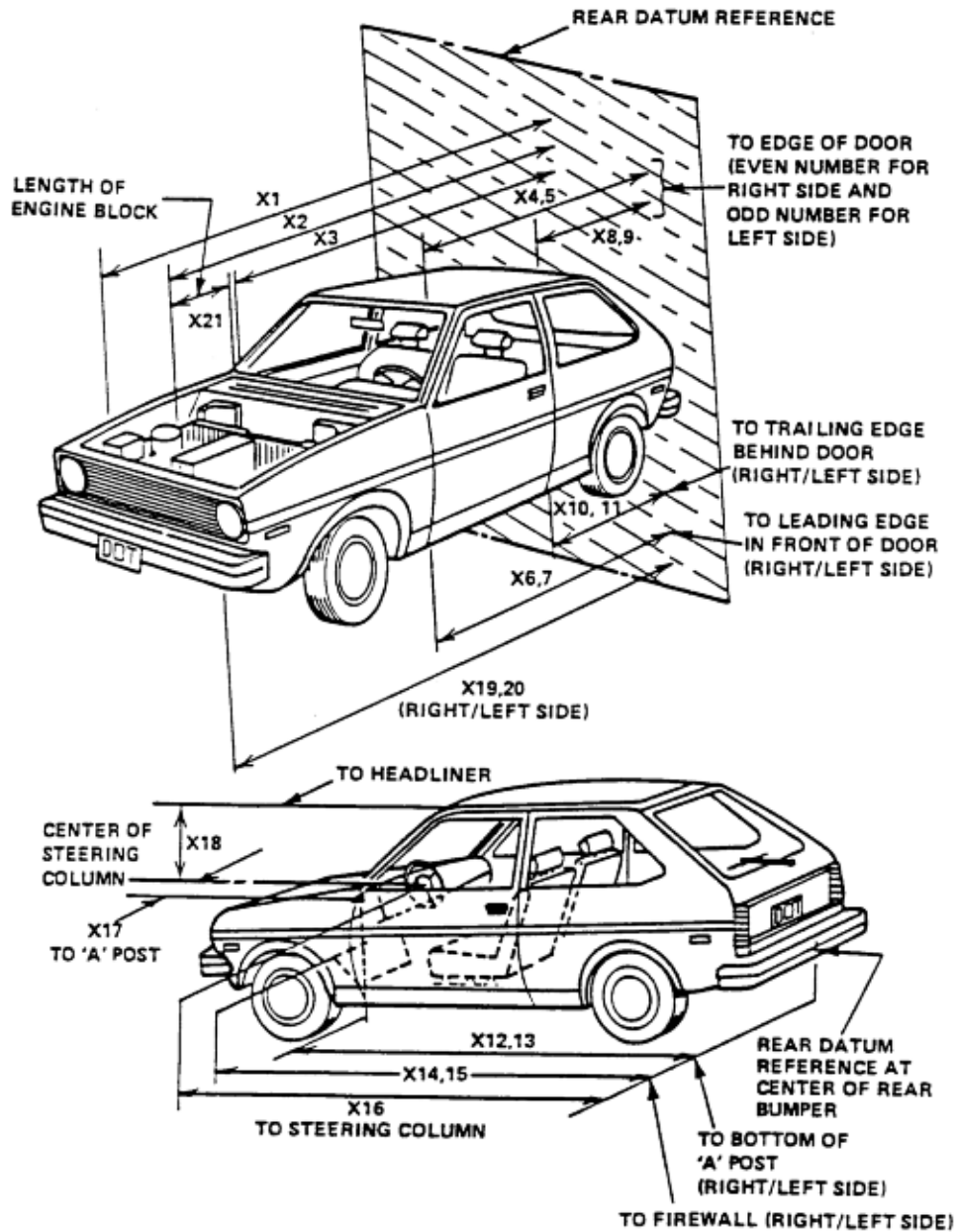
| No. | Measurement Description                      | Units | Pre-Test | Post-Test | Difference |
|-----|----------------------------------------------|-------|----------|-----------|------------|
| 1   | Total length of vehicle at centerline        | mm    | 5045     | 4468      | 577        |
| 2   | RSOV to front of engine                      | mm    | 4363     | 4075      | 288        |
| 3   | RSOV to firewall centerline                  | mm    | 4105     | 3941      | 164        |
| 4   | RSOV to leading edge of right door           | mm    | 3505     | 3536      | -31        |
| 5   | RSOV to leading edge of left door            | mm    | 3509     | 3524      | -15        |
| 6   | RSOV to lower leading edge of right door     | mm    | 3388     | 3420      | -32        |
| 7   | RSOV to lower leading edge of left door      | mm    | 3382     | 3407      | -25        |
| 8   | RSOV to upper leading edge of right door     | mm    | 2383     | 2410      | -27        |
| 9   | RSOV to upper leading edge of left door      | mm    | 2383     | 2404      | -21        |
| 10  | RSOV to lower trailing edge of right door    | mm    | 2338     | 2370      | -32        |
| 11  | RSOV to lower trailing edge of left door     | mm    | 2347     | 2363      | -16        |
| 12  | RSOV to bottom of right 'A' pillar           | mm    | 3378     | 3409      | -31        |
| 13  | RSOV to bottom of left 'A' pillar            | mm    | 3380     | 3414      | -34        |
| 14  | RSOV to firewall on right side               | mm    | 4118     | 4038      | 80         |
| 15  | RSOV to firewall on left side                | mm    | 4125     | 4154      | -29        |
| 16  | RSOV to steering column                      | mm    | 2900     | 2976      | -76        |
| 17  | Center of steering column to left 'A' pillar | mm    | 397      | 354       | 43         |
| 18  | Center of steering column to headlining      | mm    | 460      | 423       | 37         |
| 19  | RSOV to right side of front bumper           | mm    | 4845     | 4497      | 348        |
| 20  | RSOV to left side of front bumper            | mm    | 4845     | 4538      | 307        |
| 21  | Length of engine block                       | mm    | 496      | 496       | 0          |
| RD  | RSOV to right side of dash panel             | mm    | 3285     | 3316      | -31        |
| CD  | RSOV to center of dash panel                 | mm    | 3203     | 3241      | -38        |
| LD  | RSOV to left side of dash panel              | mm    | 3266     | 3283      | -17        |

DATA SHEET NO. 15... (continued)

VEHICLE MEASUREMENTS

Test Vehicle: 2004 Dodge Durango 4 Door  
Test Program: 35mph Frontal Impact

NHTSA No.: M40303  
Test Date: 2/17/04





**DATA SHEET NO. 15... (continued)****VEHICLE MEASUREMENTS**Test Vehicle: 2004 Dodge Durango 4 DoorNHTSA No.: M40303Test Program: 35mph Frontal ImpactTest Date: 2/17/04**Target Vehicle Structural Measurement**

|    | Elements                              | Pre-Test (mm) |
|----|---------------------------------------|---------------|
| 1  | Total Length                          | 5045          |
| 2  | Total Width                           | 1902          |
| 3  | Bumper Top Height                     | 608           |
| 4  | Bumper Bottom Height                  | 381           |
| 5  | Longitudinal Member Top Height        | 536           |
| 6  | Distance between Longitudinal Members | 703           |
| 7  | Longitudinal Member Width             | 95            |
| 8  | Engine Top Height                     | 1116          |
| 9  | Engine Bottom Height                  | 448           |
| 10 | Engine and gearbox width              | 608           |
| 11 | Front bumper-engine distance          | 486           |
| 12 | Front shock absorber fixing height    | 656           |
| 13 | Bonnet leading edge height            | 1049          |
| 14 | Front shock absorber fixing width     | 879           |
| 15 | Front bumper – front axle distance    | 932           |
| 16 | Front axle – a pillar distance        | 688           |
| 17 | A-pillar – B-pillar distance          | 1051          |
| 18 | B-Pillar – rear axle distance         | 1294          |
| 19 | B-pillar – C-pillar distance          | 1114          |
| 20 | Roof sill bottom height               | 1687          |
| 21 | Roof sill top height                  | 1779          |
| 22 | Floor sill bottom height              | 407           |
| 23 | Floor sill top height                 | 485           |

**DATA SHEET NO. 16**  
**CAMERA LOCATIONS**

Test Vehicle: 2004 Dodge Durango 4 Door  
Test Program: 35mph Frontal Impact

NHTSA No.: M40303  
Test Date: 2/17/04

| No. | Camera View              | Location (mm) * |        |       | Lens (mm) | Speed (fps) |
|-----|--------------------------|-----------------|--------|-------|-----------|-------------|
|     |                          | X               | Y      | Z     |           |             |
| 1   | Real-Time Left Side View |                 |        |       | 13        | 24          |
| 2   | Left Front View          | 1000            | -8000  | 1620  | 25        | 1042        |
| 3   | Steering Column Top      | 2000            | -8000  | 1560  | 25        | 1015        |
| 4   | Steering Column Bottom   | 2000            | -8000  | 1030  | 25        | 1031        |
| 5   | Driver Close-up          | 1500            | -10240 | 1490  | 50        | 1070        |
| 6   | Driver Angle             | 4500            | -5000  | 2020  | 50        | **          |
| 7   | Left Rear                |                 |        |       | 13        | 513         |
| 8   | Right Rear               |                 |        |       | 13        | 1047        |
| 9   | Right Overall            | 2330            | 8000   | 1650  | 13        | 1020        |
| 10  | Right Passenger Half     | 1000            | 8000   | 1650  | 25        | 1026        |
| 11  | Right Close-up           | 1620            | 10000  | 1640  | 50        | 1117        |
| 12  | Right Angle              | 4900            | 5600   | 2100  | 50        | 1015        |
| 13  | Windshield               | 460             | 0      | 2960  | 13        | 1026        |
| 14  | Top Driver               | -120            | -500   | 2280  | 13        | 1010        |
| 15  | Top Passenger            | -120            | 550    | 2280  | 13        | 1005        |
| 16  | Pit Front                | 1000            | 0      | -3020 | 13        | 1010        |
| 17  | Pit Rear                 | 2760            | 0      | -3020 | 13        | 1020        |

\*COORDINATES:

+X = film plane rearward of barrier

\*\* No timing marks

+Y = film plane to right of monorail centerline

+Z = film plane above ground level

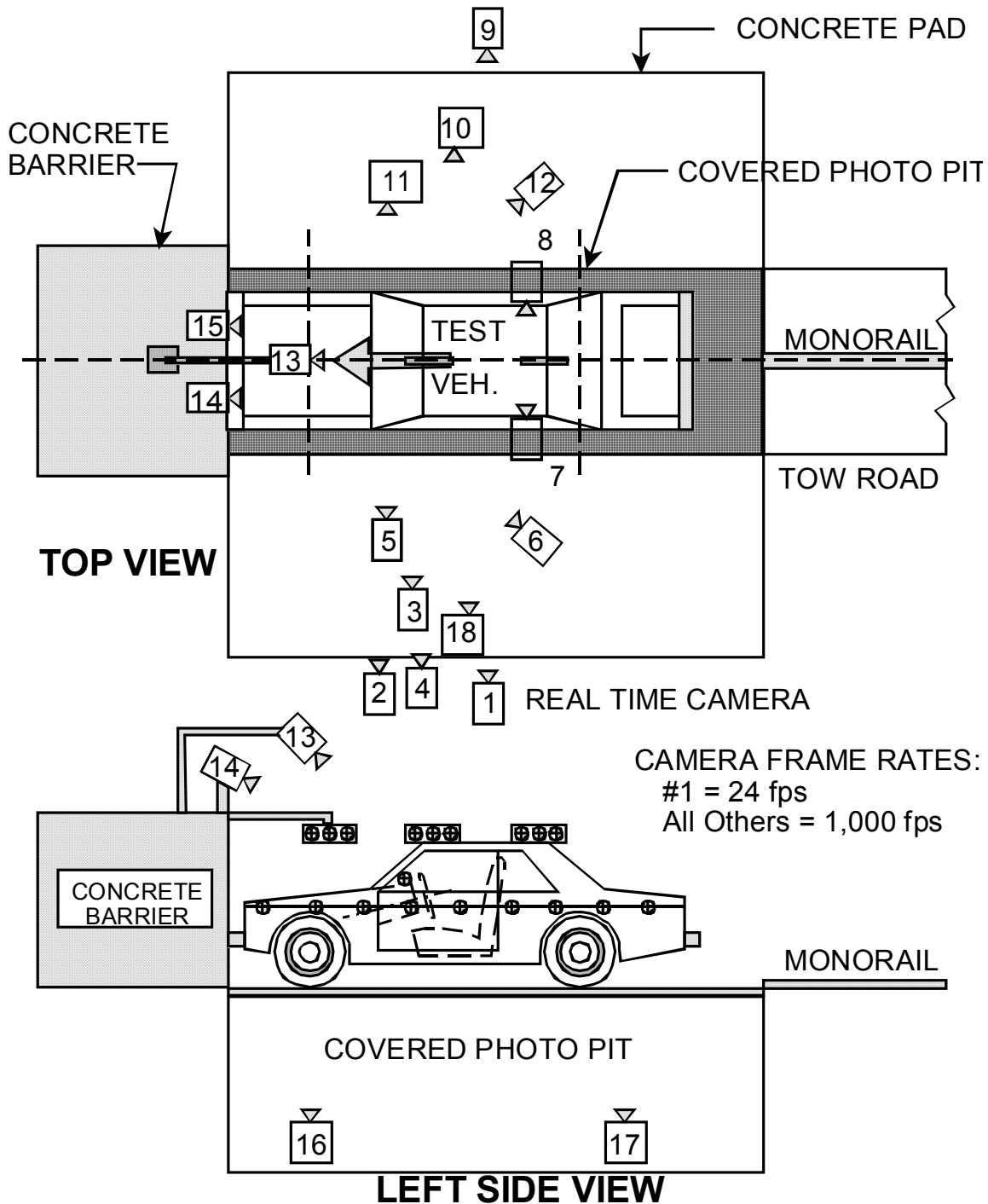
DATA SHEET NO. 16... (continued)

CAMERA LOCATIONS

Test Vehicle: 2004 Dodge Durango 4 Door  
Test Program: 35mph Frontal Impact

NHTSA No.: M40303  
Test Date: 2/17/04

CAMERA POSITIONS FOR FRONTAL IMPACTS



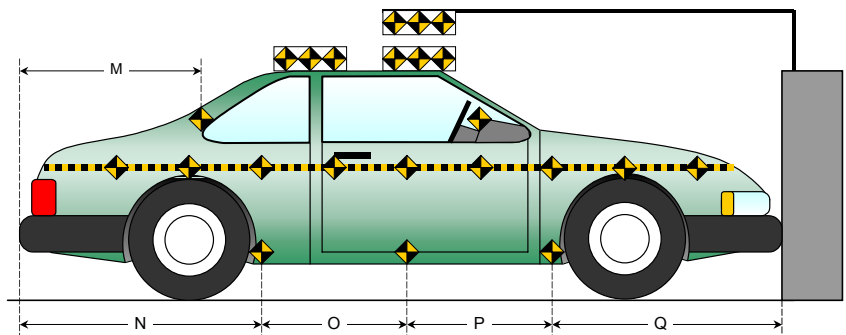
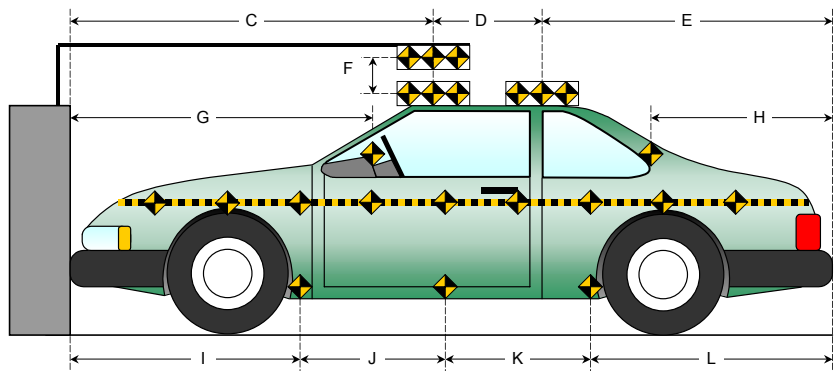
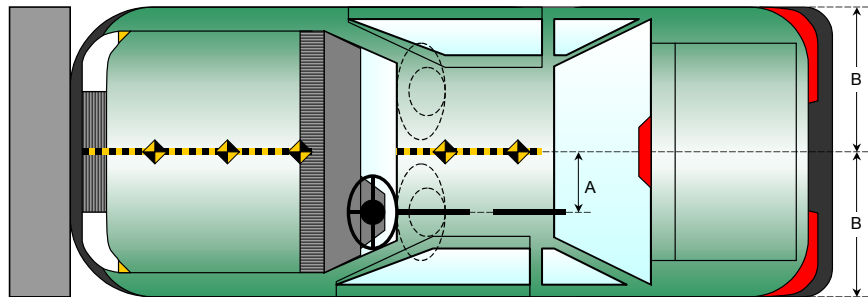
## DATA SHEET NO. 17

### PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

Test Vehicle: 2004 Dodge Durango 4 Door  
 Test Program: 35mph Frontal Impact

NHTSA No.: M40303  
 Test Date: 2/17/04

| Item | Value |
|------|-------|
| A    | 380   |
| B    | 933   |
| C    | 2538  |
| D    | 609   |
| E    | 1898  |
| F    | 85    |
| G    |       |
| H    | 1309  |
| I    | 1498  |
| J    | 979   |
| K    | 973   |
| L    | 1595  |
| M    | 1307  |
| N    | 1580  |
| O    | 978   |
| P    | 980   |
| Q    | 1507  |



**DATA SHEET NO. 18**  
**VEHICLE INTRUSION MEASUREMENTS**

Test Vehicle: 2004 Dodge Durango 4 Door  
 Test Program: 35mph Frontal Impact

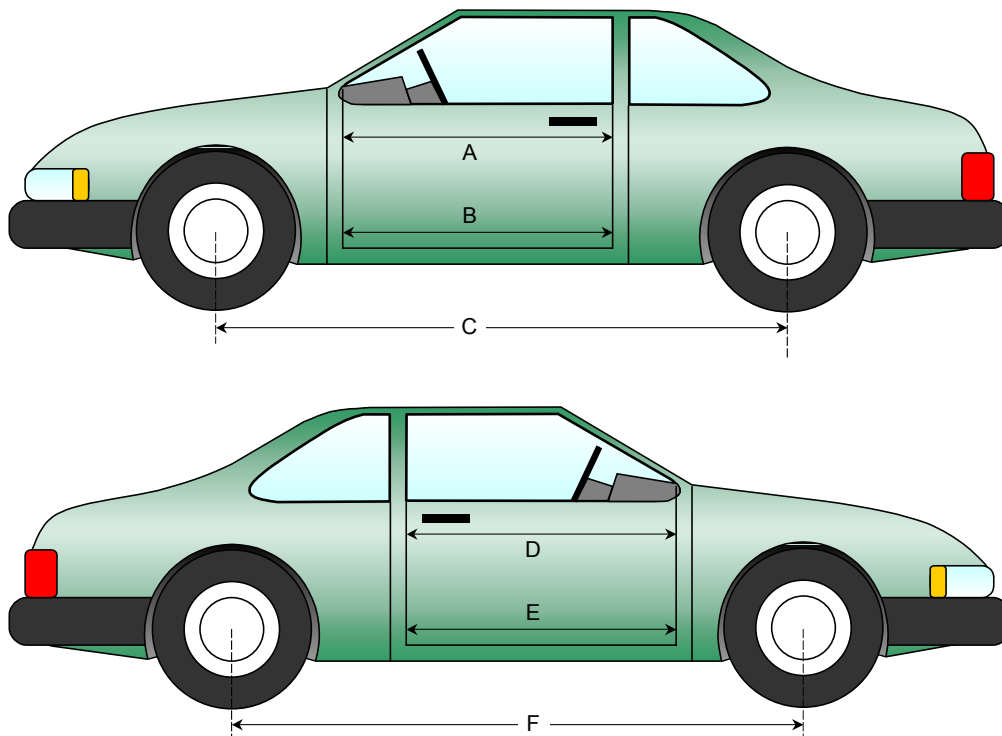
NHTSA No.: M40303  
 Test Date: 2/17/04

**DOOR OPENING WIDTH**

| Item | Description      | Units | Pre-Test | Post-Test | Difference |
|------|------------------|-------|----------|-----------|------------|
| A    | Left Side Upper  | mm    | 1022     | 1026      | -4         |
| B    | Left Side Lower  | mm    | 935      | 945       | -10        |
| D    | Right Side Upper | mm    | 1018     | 1022      | -4         |
| E    | Right Side Lower | mm    | 934      | 937       | -3         |

**WHEELBASE MEASUREMENTS**

| Item | Description          | Units | Pre-Test | Post-Test | Difference |
|------|----------------------|-------|----------|-----------|------------|
| C    | Left Side Wheelbase  | mm    | 3025     | 3010      | 15         |
| F    | Right Side Wheelbase | mm    | 3025     | 3018      | 7          |



**DATA SHEET NO. 18... (continued)**  
**VEHICLE INTRUSION MEASUREMENTS**

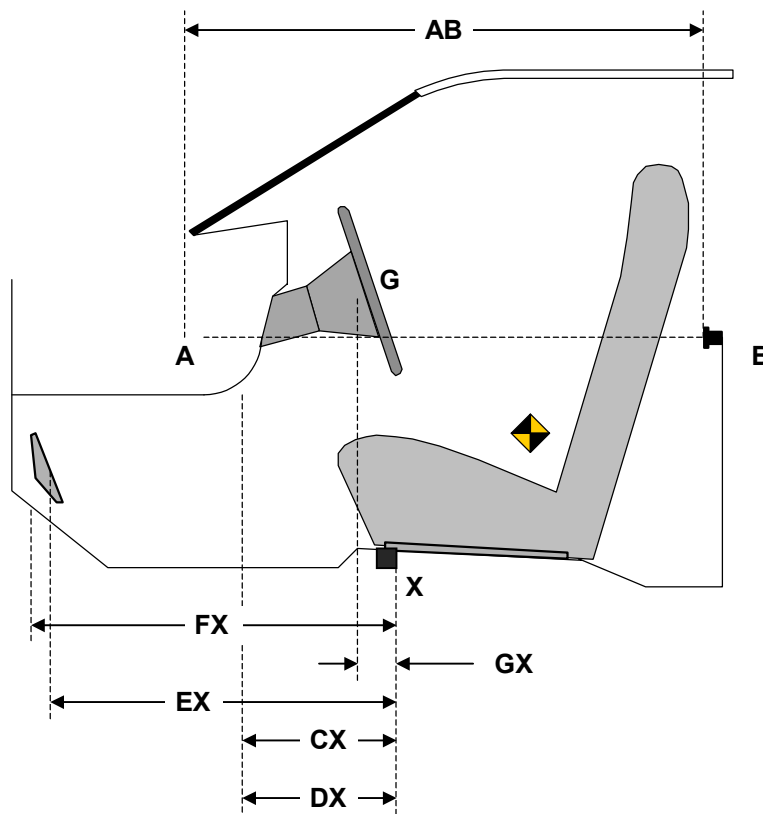
Test Vehicle: 2004 Dodge Durango 4 Door  
 Test Program: 35mph Frontal Impact

NHTSA No.: M40303  
 Test Date: 2/17/04

**DRIVER COMPARTMENT INTRUSION**

| Item | Description                              | Units | Pre-Test | Post-Test | Difference |
|------|------------------------------------------|-------|----------|-----------|------------|
| AB   | Door Opening (Inside window jam)         | mm    | 1022     | 1026      | -4         |
| CX   | Left Knee Bolster to X                   | mm    | 296      | 321       | -25        |
| DX   | Right Knee Bolster to X                  | mm    | 304      | 313       | -9         |
| EX   | Brake Pedal to X                         | mm    | 509      | 510       | -1         |
| FX   | Foot Rest to X                           | mm    | 624      | 638       | -14        |
| GX   | Center of Steering Column Wheel Hub to X | mm    | 52       | 43        | 9          |

X = Front of Seat Track (stationary)



**DRIVER COMPARTMENT**

**DATA SHEET NO. 18... (continued)**  
**VEHICLE INTRUSION MEASUREMENTS**

Test Vehicle: 2004 Dodge Durango 4 Door  
 Test Program: 35mph Frontal Impact

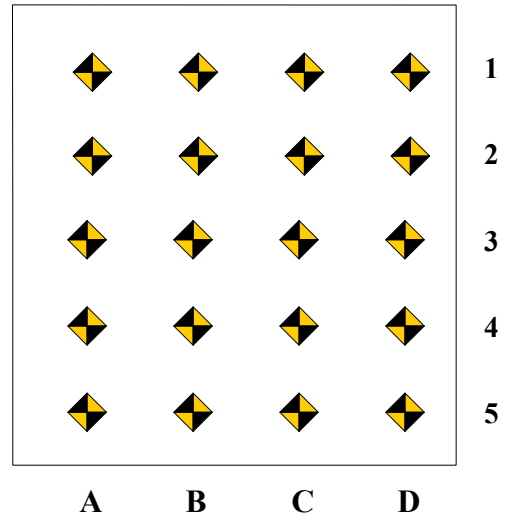
NHTSA No.: M40303  
 Test Date: 2/17/04

Measurement reference point for X and Z axis is the forward outboard seat mounting bolt.

Columns A through D are evenly spaced.

Rows 1 and 2 are on the toe kick portion of the floor pan. Rows 3, 4, and 5 are located on the most level portion of the floor pan.

Row 3 will be at the intersection of the toe kick and the level sections of the floor pan.



**DRIVER FLOOR PAN X-AXIS**

|   | Pre-Test |     |     |     | Post-Test |     |     |     | Difference |    |    |    |
|---|----------|-----|-----|-----|-----------|-----|-----|-----|------------|----|----|----|
|   | A        | B   | C   | D   | A         | B   | C   | D   | A          | B  | C  | D  |
| 1 |          | 767 | 767 | 755 |           | 761 | 741 | 737 |            | 6  | 26 | 18 |
| 2 |          | 698 | 697 | 695 |           | 688 | 686 | 679 |            | 10 | 11 | 16 |
| 3 | 554      | 554 | 554 | 546 | 553       | 550 | 545 | 543 | 1          | 4  | 9  | 3  |
| 4 | 312      | 305 | 308 | 308 | 312       | 304 | 308 | 305 | 0          | 1  | 0  | 3  |
| 5 | 157      | 152 | 150 |     | 153       | 147 | 150 |     | 4          | 5  | 0  |    |

**DRIVER FLOOR PAN Z-AXIS**

|   | Pre-Test |     |     |     | Post-Test |     |     |     | Difference |     |     |     |
|---|----------|-----|-----|-----|-----------|-----|-----|-----|------------|-----|-----|-----|
|   | A        | B   | C   | D   | A         | B   | C   | D   | A          | B   | C   | D   |
| 1 |          | 62  | 71  | 82  |           | 62  | 63  | 76  |            | 0   | 8   | 6   |
| 2 |          | 38  | 30  | 31  |           | 13  | 18  | 26  |            | 25  | 12  | 5   |
| 3 | -49      | -53 | -48 | -48 | -35       | -35 | -33 | -32 | -14        | -18 | -15 | -16 |
| 4 | -78      | -74 | -72 | -75 | -78       | -75 | -75 | -83 | 0          | 1   | 3   | 8   |
| 5 | -75      | -71 | -72 |     | -87       | -73 | -76 |     | 12         | 2   | 4   |     |

**DATA SHEET NO. 18... (continued)**  
**VEHICLE INTRUSION MEASUREMENTS**

Test Vehicle: 2004 Dodge Durango 4 Door  
 Test Program: 35mph Frontal Impact

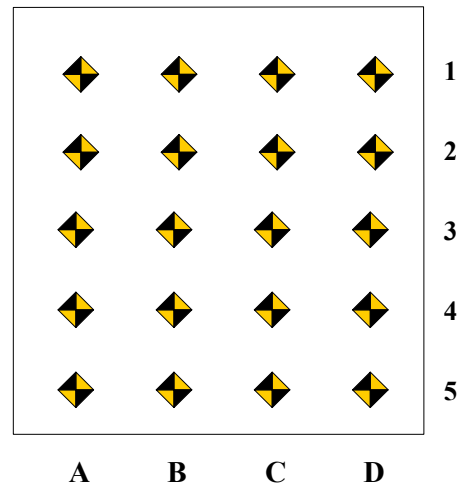
NHTSA No.: M40303  
 Test Date: 2/17/04

Measurement reference point for X and Z axis is the forward outboard seat mounting bolt.

Columns A through D are evenly spaced.

Rows 1 and 2 are on the toe kick portion of the floor pan. Rows 3, 4, and 5 are located on the most level portion of the floor pan.

Row 3 will be at the intersection of the toe kick and the level sections of the floor pan.



**PASSENGER FLOOR PAN X-AXIS**

|   | Pre-Test |     |     |     | Post-Test |     |     |     | Difference |    |    |   |
|---|----------|-----|-----|-----|-----------|-----|-----|-----|------------|----|----|---|
|   | A        | B   | C   | D   | A         | B   | C   | D   | A          | B  | C  | D |
| 1 | 635      | 638 | 640 | 635 | 614       | 618 | 621 | 626 | 21         | 20 | 19 | 9 |
| 2 | 531      | 541 | 536 | 536 | 523       | 528 | 524 | 532 | 8          | 13 | 12 | 4 |
| 3 | 445      | 450 | 448 | 444 | 437       | 440 | 436 | 441 | 8          | 10 | 12 | 3 |
| 4 | 300      | 304 | 304 | 300 | 291       | 292 | 292 | 295 | 9          | 12 | 12 | 5 |
| 5 | 210      | 210 | 210 | 210 | 201       | 200 | 200 | 206 | 9          | 10 | 10 | 4 |

**PASSENGER FLOOR PAN Z-AXIS**

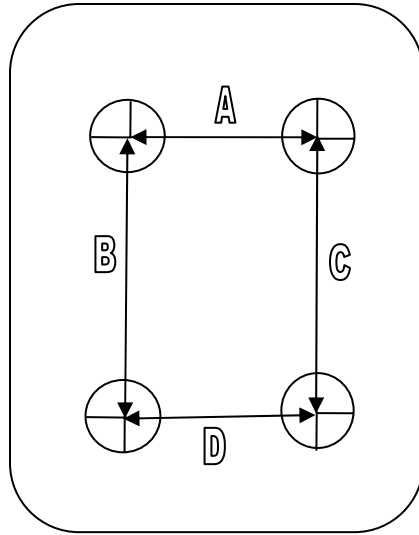
|   | Pre-Test |     |     |     | Post-Test |     |     |     | Difference |     |     |     |
|---|----------|-----|-----|-----|-----------|-----|-----|-----|------------|-----|-----|-----|
|   | A        | B   | C   | D   | A         | B   | C   | D   | A          | B   | C   | D   |
| 1 | 54       | 50  | 50  | 52  | 46        | 45  | 52  | 53  | 8          | 5   | -2  | -1  |
| 2 | 150      | 145 | 150 | 152 | 147       | 146 | 155 | 150 | 3          | -1  | -5  | 2   |
| 3 | 153      | 148 | 148 | 158 | 157       | 152 | 149 | 160 | -4         | -4  | -1  | -2  |
| 4 | 150      | 142 | 142 | 142 | 158       | 151 | 153 | 151 | -8         | -9  | -11 | -9  |
| 5 | 148      | 142 | 138 | 140 | 160       | 153 | 153 | 156 | -12        | -11 | -15 | -16 |



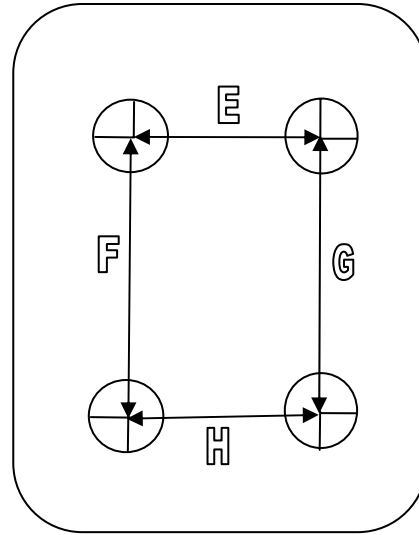
**DATA SHEET NO. 18... (continued)**  
**VEHICLE INTRUSION MEASUREMENTS**

Test Vehicle: 2004 Dodge Durango 4 Door  
 Test Program: 35mph Frontal Impact

NHTSA No.: M40303  
 Test Date: 2/17/04



Driver



Passenger

**UNDERBODY FLOORBOARD DEFORMATION**

| Measurement | Pre-Test | Post-Test | Difference |
|-------------|----------|-----------|------------|
| A           | 241      | 237       | 4          |
| B           | 260      | 265       | -5         |
| C           | 281      | 280       | 1          |
| D           | 238      | 237       | 1          |
| E           | 199      | 198       | 1          |
| F           | 288      | 282       | 6          |
| G           | 240      | 242       | -2         |
| H           | 241      | 237       | 4          |

## DATA SHEET NO. 19

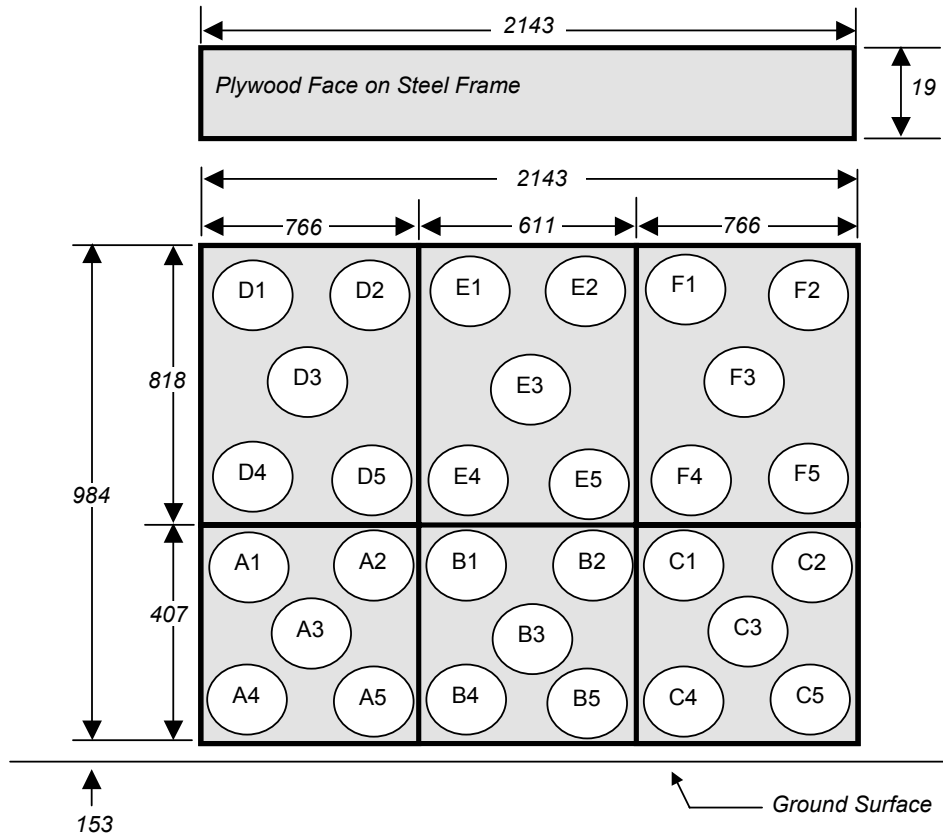
### LOAD CELL LOCATIONS ON FIXED BARRIER

Test Vehicle: 2004 Dodge Durango 4 Door  
 Test Program: 35mph Frontal Impact

NHTSA No.: M40303  
 Test Date: 2/17/04

#### 30 Load Cell Rigid Barrier

#### Load Cell Locations on Fixed Barrier



|                  |                  |                  |
|------------------|------------------|------------------|
| Group 4<br>D1-D5 | Group 5<br>E1-E5 | Group 6<br>F1-F5 |
| Group 1<br>A1-A5 | Group 2<br>B1-B5 | Group 3<br>C1-C5 |

6 Groups of 5 Load Cells Each

The Data is presented in Appendix B with the following requirements:

1. Sum data from 6 groupings shown above (5 cells/group)
2. Sum of left 2 groupings, center 2 groupings and right 2 groupings.
3. Total or sum of all 30 individual load cells.
4. Total versus average rear seat cross member displacement.

**DATA SHEET NO. 20****ACCIDENT INVESTIGATION DIVISION DATA**

Test Vehicle: 2004 Dodge Durango 4 Door  
Test Program: 35mph Frontal Impact

NHTSA No.: M40303  
Test Date: 2/17/04

**VEHICLE INFORMATION**

VIN: 1D4HB38N64F141417 Wheelbase (mm) : 3025  
Vehicle Size Category: MPV Test Weight (kg) : 2566.5

**ACCELEROMETER DATA**

Accelerometer Locations: As per measurements on Page 14  
Cal. Procedure/Interval: MGA procedure / 6 month  
Integration Algorithm: Trapezoidal Linearity: > 99%  
Impact Velocity (km/h): 56.3  
Velocity Change (km/h): 58.9 Time of Separation (msec): 93

**CRUSH PROFILE**

Collision Deformation Classification: Frontal Midpoint of Damage: Centerline  
Damage Region Length (mm): 1795 Impact Mode: Frontal

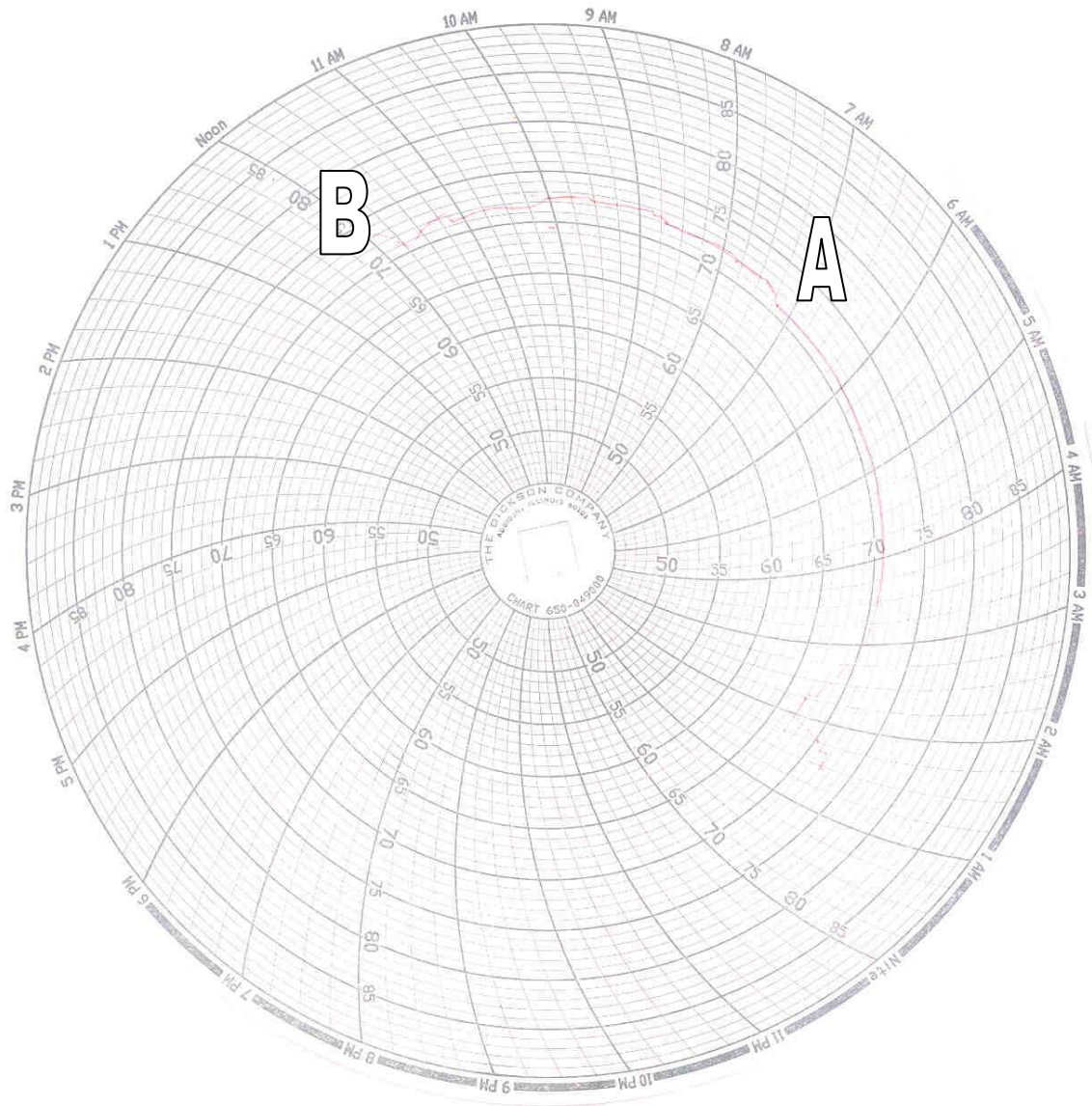
| No. | Measurement Description    | Units | Pre-Test | Post-Test | Difference |
|-----|----------------------------|-------|----------|-----------|------------|
| C1  | Crush zone 1 at left side  | mm    | 4845     | 4538      | 307        |
| C2  | Crush zone 2 at left side  | mm    | 4981     | 4464      | 517        |
| C3  | Crush zone 3 at left side  | mm    | 5033     | 4488      | 545        |
| C4  | Crush zone 4 at right side | mm    | 5027     | 4480      | 547        |
| C5  | Crush zone 5 at right side | mm    | 4981     | 4504      | 477        |
| C6  | Crush zone 6 at right side | mm    | 4845     | 4497      | 348        |
| L   | C1 TO C6                   | mm    | 1795     | 1752      | 43         |

## DATA SHEET NO. 21

### DUMMY / VEHICLE TEMPERATURE STABILIZATION CHART

Test Vehicle: 2004 Dodge Durango 4 Door  
Test Program: 35mph Frontal Impact

NHTSA No.: M40303  
Test Date: 2/17/04



A = Dummies installed in vehicle at 7:00 am

B = Test conducted at 11:45 am

**APPENDIX A**  
**PHOTOGRAPHS**

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A-1.



Load Cell Location

MFD BY DAIMLERCHRYSLER CORPORATION  
 DATE OF MFR 12-03  
 GVWR 2994 KG(6600 LB)

|                  |                |          |                 |
|------------------|----------------|----------|-----------------|
| GAWR FRONT       | WITH TIRES     | RIMS AT  | COLD            |
| 1633 KG(3600 LB) | P245/70R17 BSW | 17 X 7.0 | 227 KPA(33 PSI) |
| GAWR REAR        | WITH TIRES     | RIMS AT  | COLD            |
| 1770 KG(3900 LB) | P245/70R17 BSW | 17 X 7.0 | 227 KPA(33 PSI) |

THIS VEHICLE CONFORMS TO ALL APPLICABLE FEDERAL MOTOR VEHICLE SAFETY AND THEFT  
 PREVENTION STANDARDS IN EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE.

VIN: 1D4HB38N64F141417 TYPE: MPV SINGLE X DUAL



MDH: 121600 085AA PNT:PR4 VEHICLE MADE IN U.S.A. TRM:B5D5 4648503



Right Front View of Test Vehicle, as received



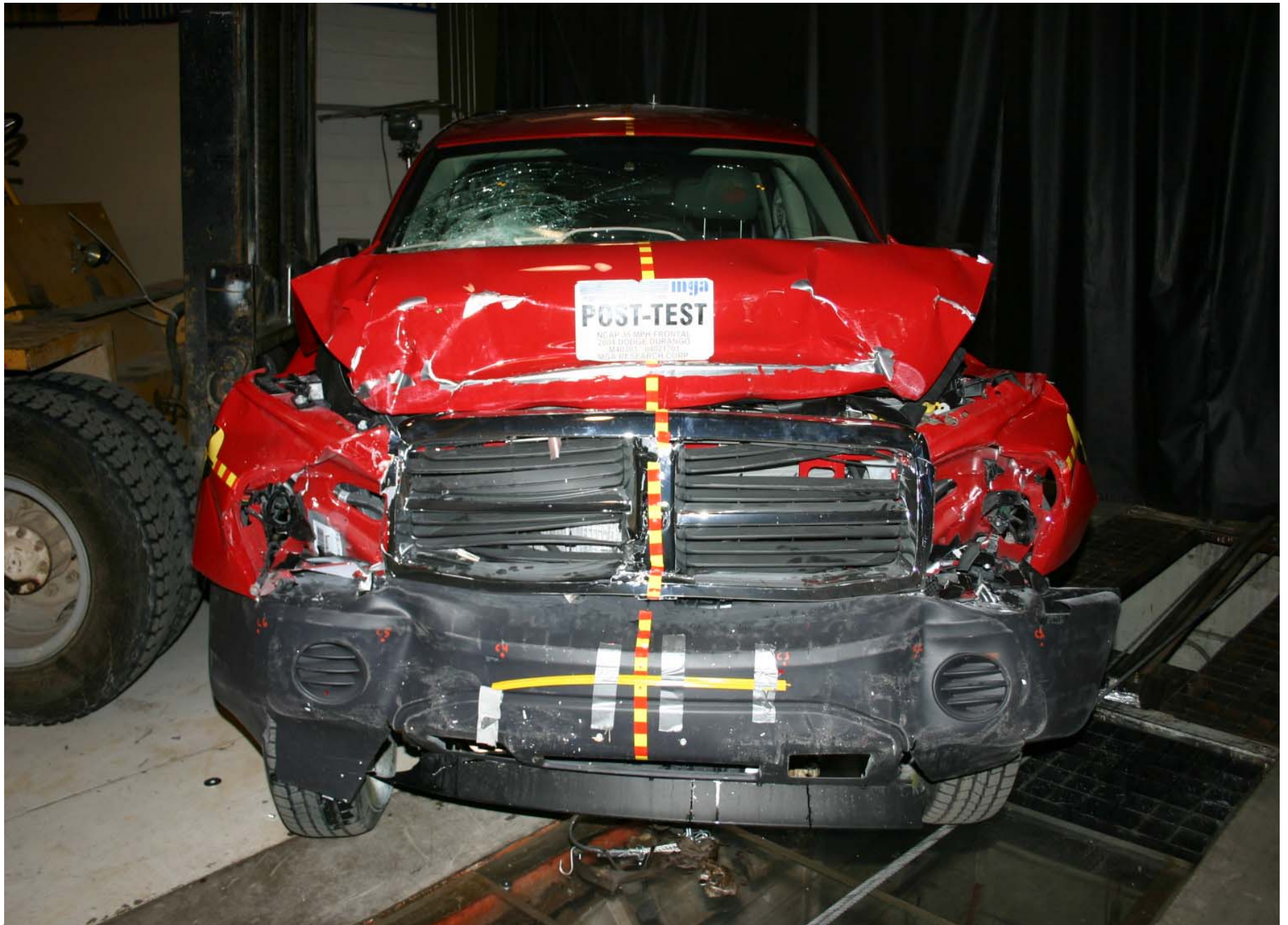
Left Rear View of Test Vehicle, as received





Pre-Test Front View of Test Vehicle





Post-Test Front View of Test Vehicle





Pre-Test Left Side View of Test Vehicle

A-8.



Post-Test Left Side View of Test Vehicle





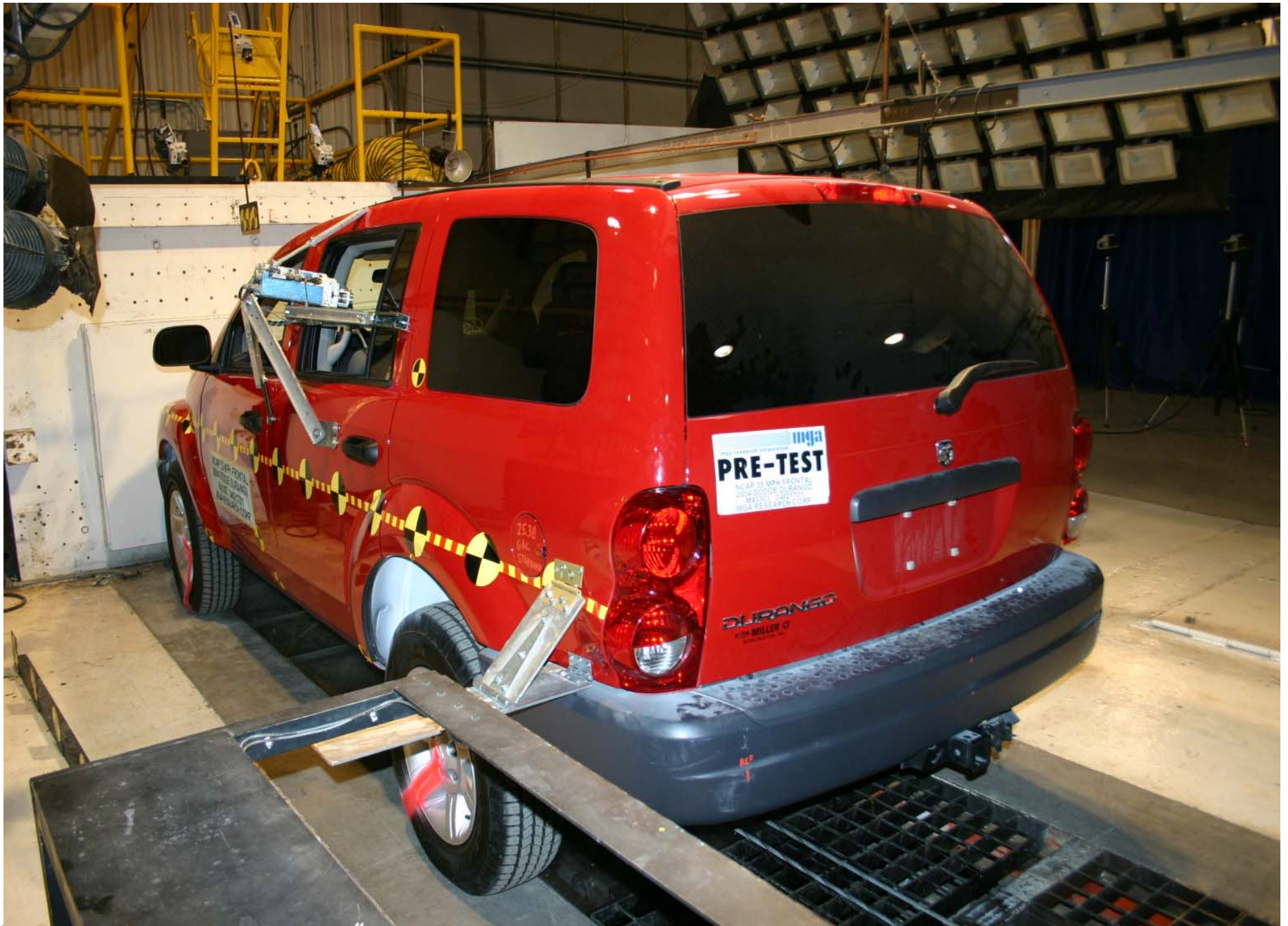
Pre-Test Right Side View of Test Vehicle





Post-Test Right Side View of Test Vehicle





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





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



Pre-Test Right Rear Three-Quarter View of Doors Before Impact





Post-Test Right Rear Three-Quarter View of Doors After Impact



Pre-Test Left Rear Three-Quarter View of Doors Before Impact





Post-Test Left Rear Three-Quarter View of Doors After Impact





Pre-Test Windshield View



Post-Test Windshield View





Pre-Test Engine Compartment View





Post-Test Engine Compartment View



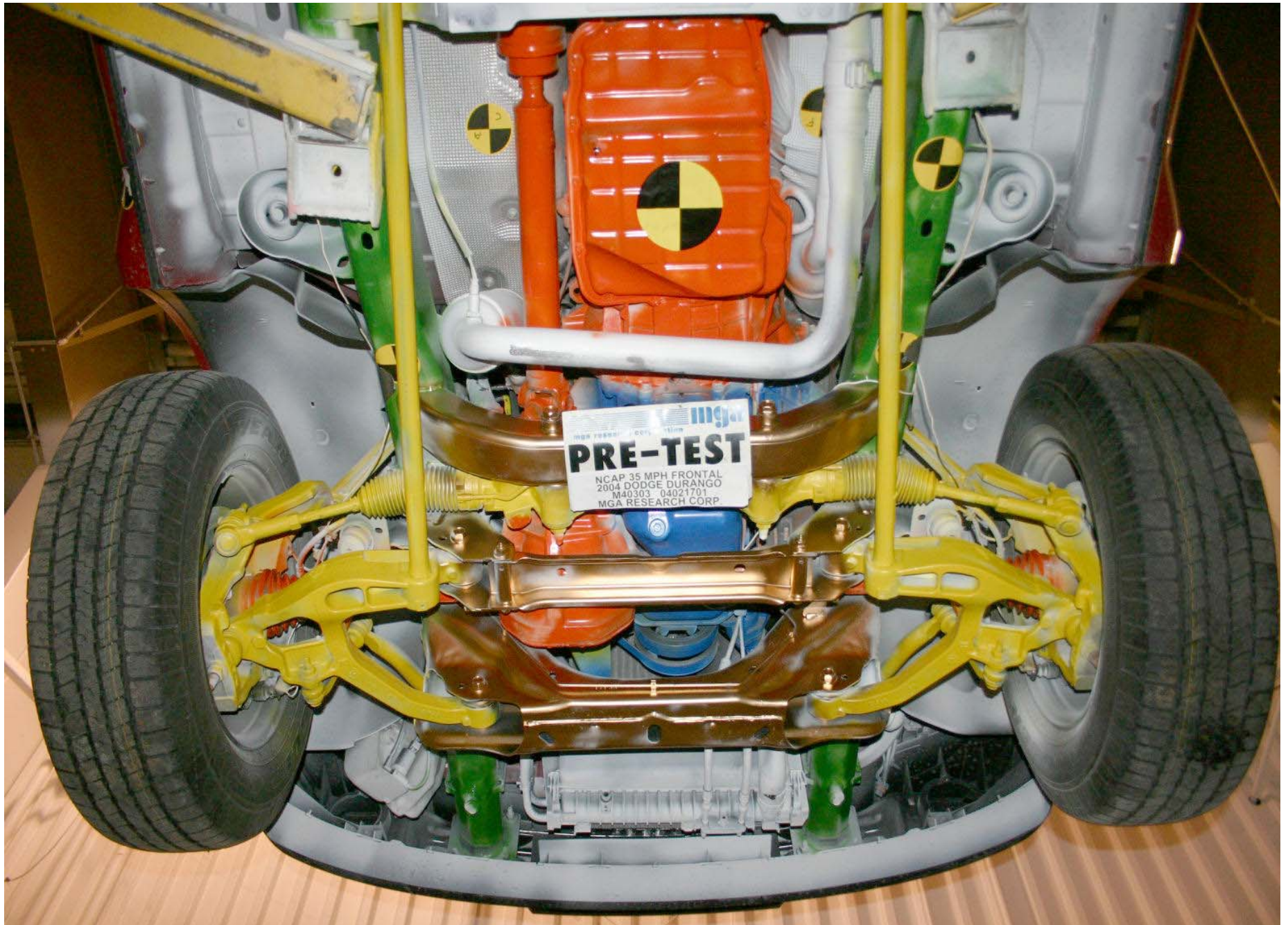
Pre-Test Fuel Filler Cap View





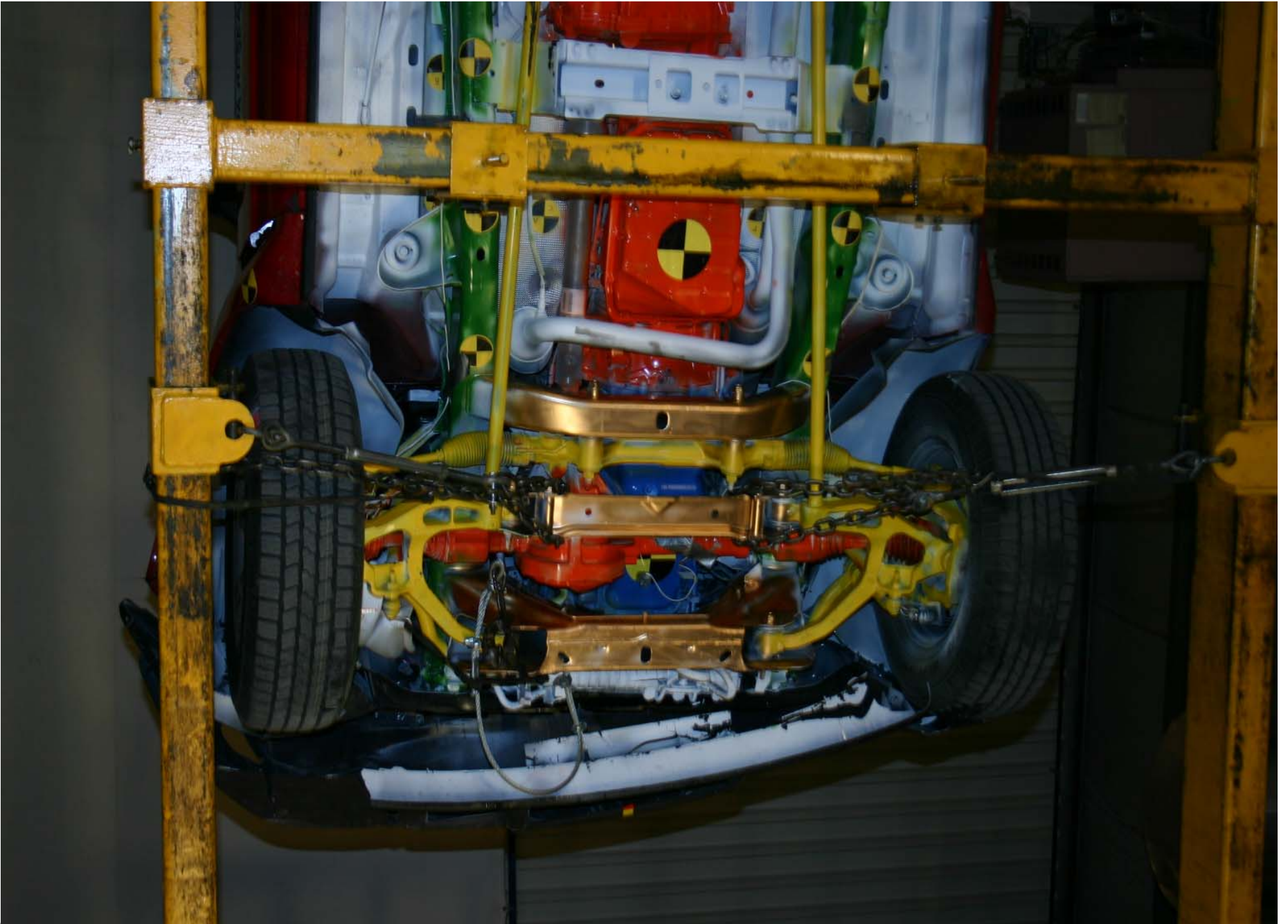
Post-Test Fuel Filler Cap View





Pre-Test Front Underbody View



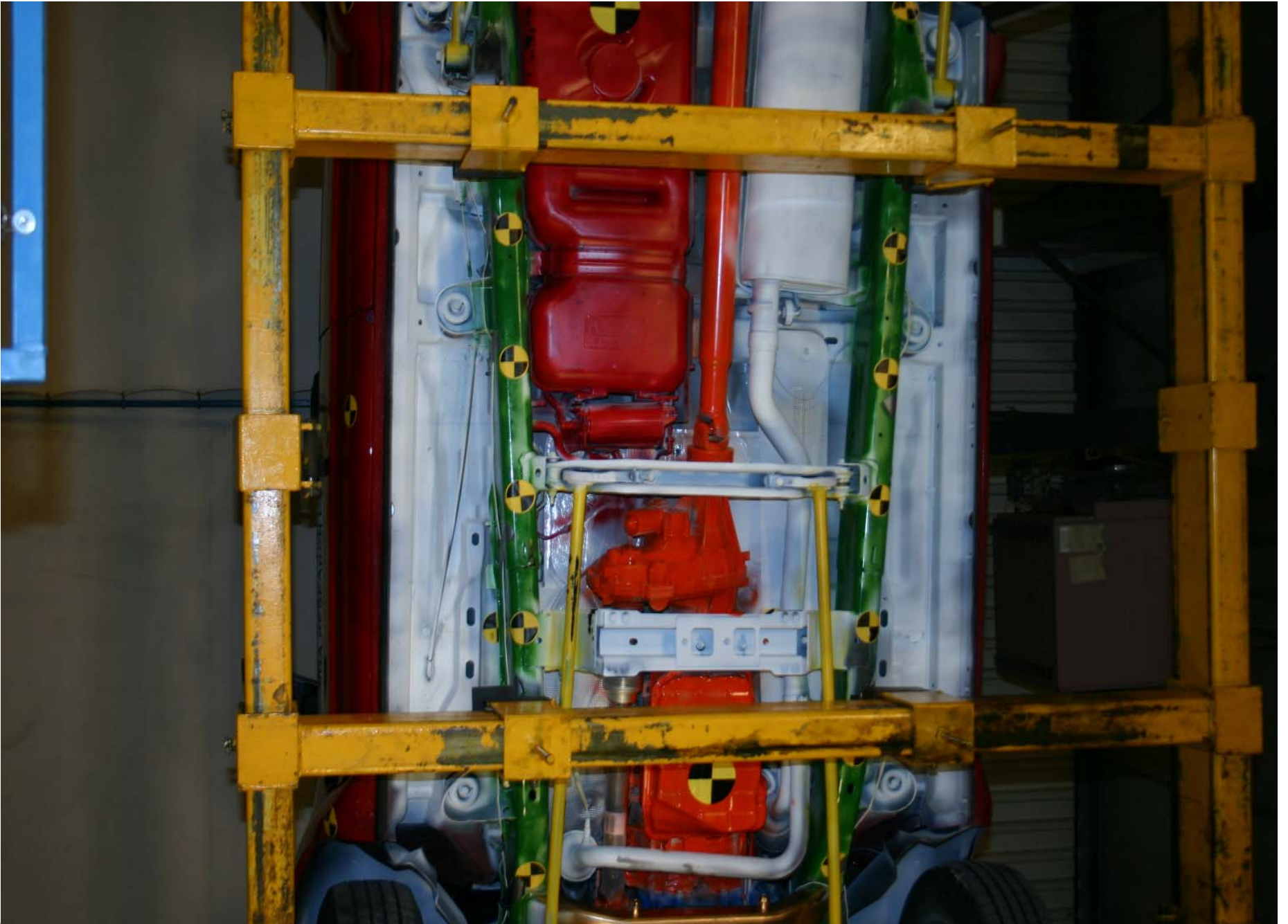


Post-Test Front Underbody View



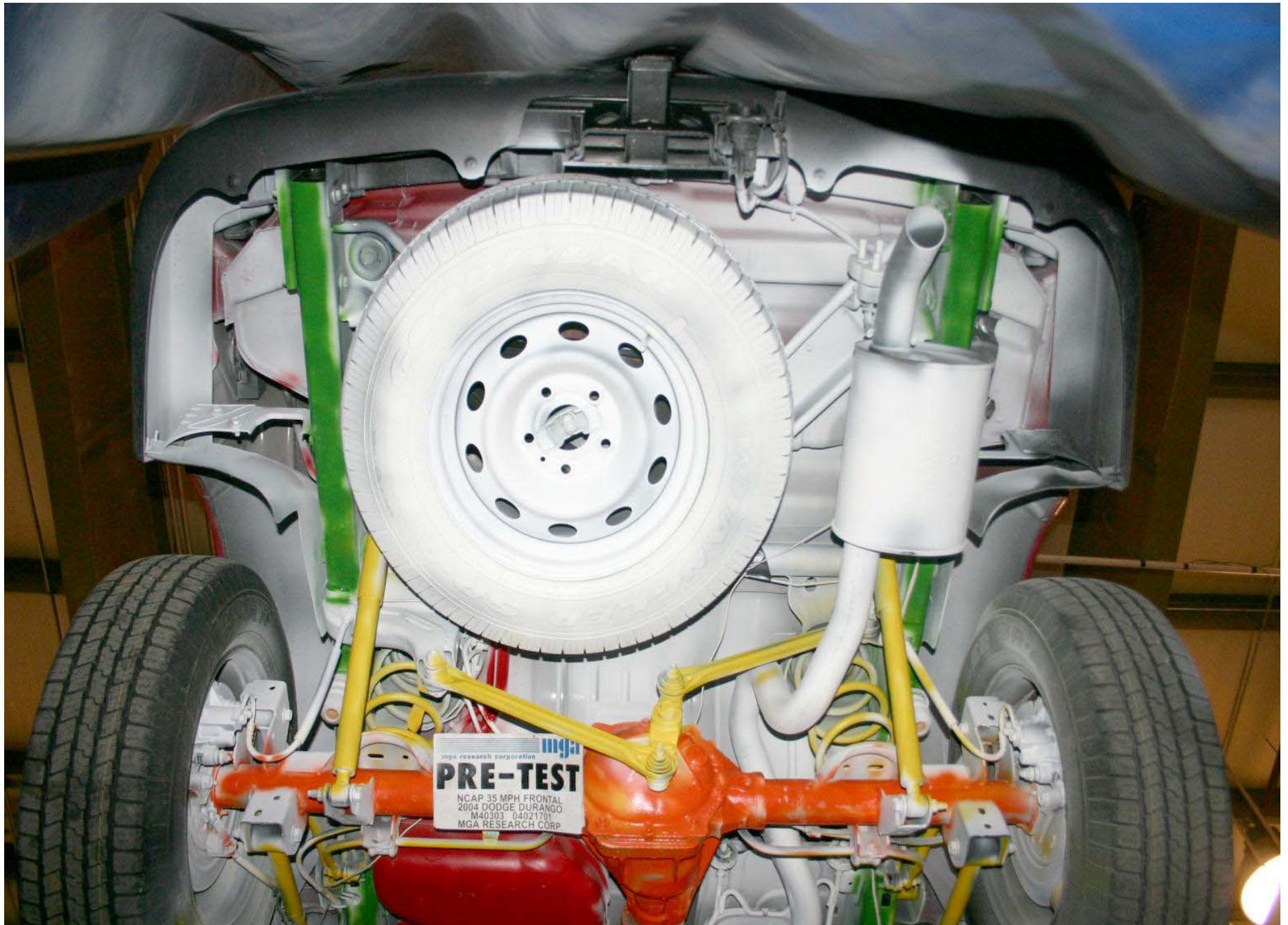


Pre-Test Mid Underbody



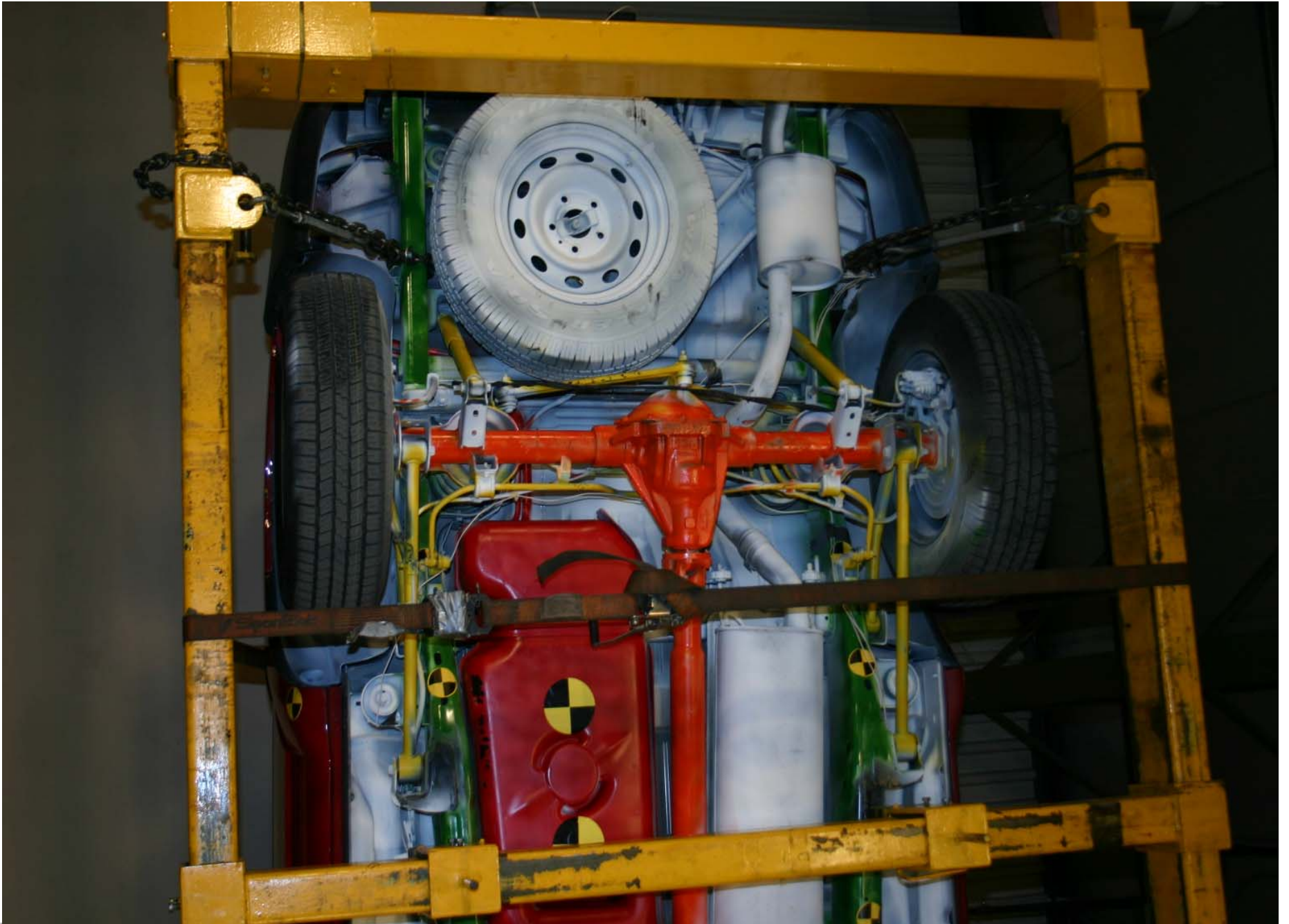
Post-Test Mid Underbody





Pre-Test Rear Underbody View





Post-Test Rear Underbody View



Pre-Test Driver Dummy Front View (head position)





Post-Test Driver Dummy Front View (head position)





Pre-Test Driver Dummy Position Left Side View



Post-Test Driver Dummy Position Left Side View





Pre-Test Driver Dummy Position Left Side View (Door Open)



Post-Test Driver Dummy Position Left Side View (Door Open)





Pre-Test Driver Dummy Feet Position



Post-Test Driver Dummy Feet Position





Pre-Test Driver Side Knee Bolster View



Post-Test Driver Side Knee Bolster View





Post-Test Driver Side Floor Pan View



Post-Test Driver Dummy Head Contact



A-41.



Post-Test Driver Dummy Knee Contact



Post-Test Driver Dummy Airbag Contact





Pre-Test Passenger Dummy Front View (head position)



Post-Test Passenger Dummy Front View (head position)



A-45.



Pre-Test Passenger Dummy Position Right Side View





Post-Test Passenger Dummy Position Right Side View



Pre-Test Passenger Dummy Position Right Side View (Door Open)





Post-Test Passenger Dummy Position Right Side View (Door Open)



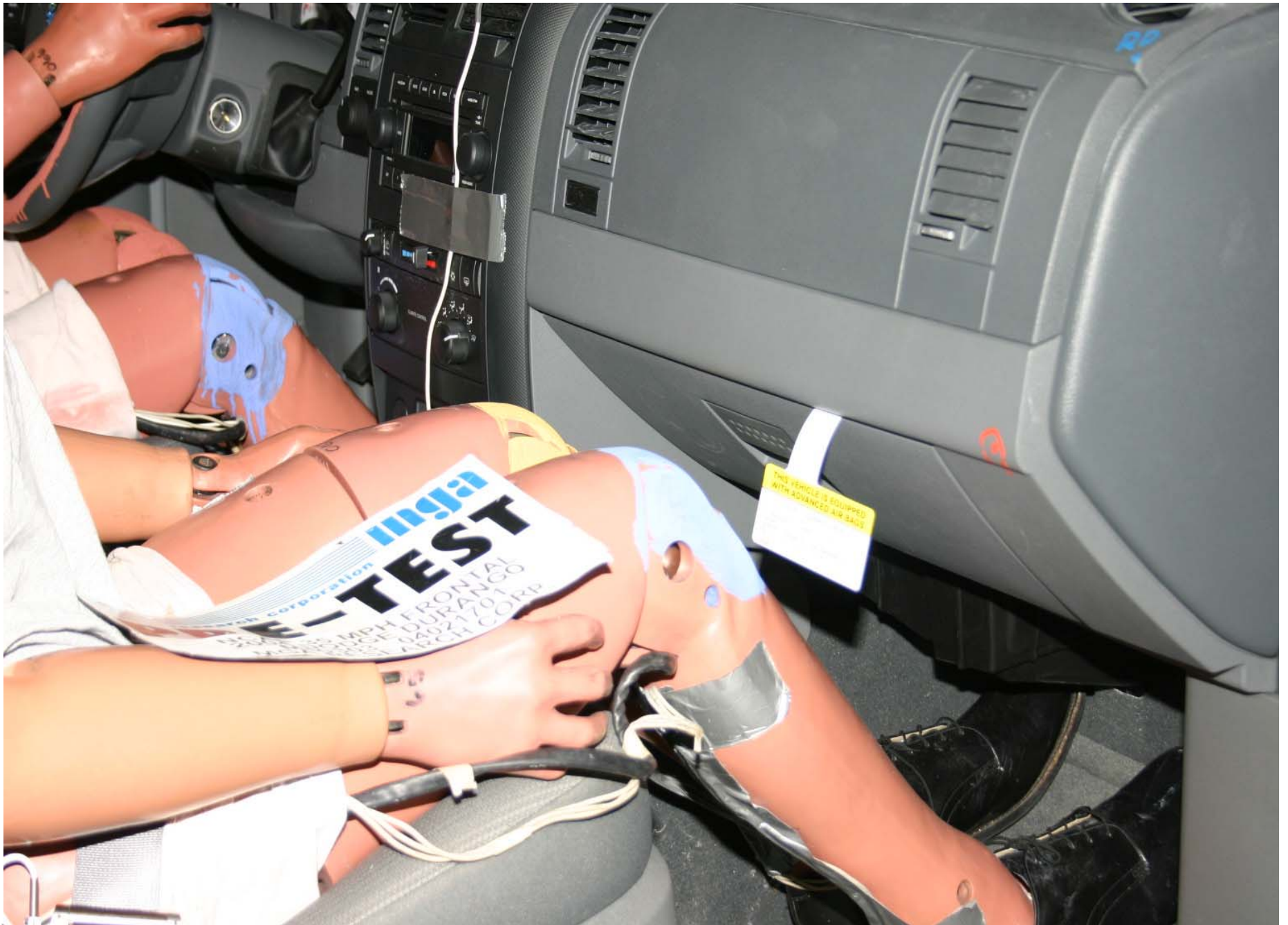


Pre-Test Passenger Dummy Feet Position



Post-Test Passenger Dummy Feet Position





Pre-Test Passenger Side Knee Bolster View





Post-Test Passenger Side Knee Bolster View



Post-Test Passenger Side Floor Pan View





Post-Test Passenger Dummy Head Contact





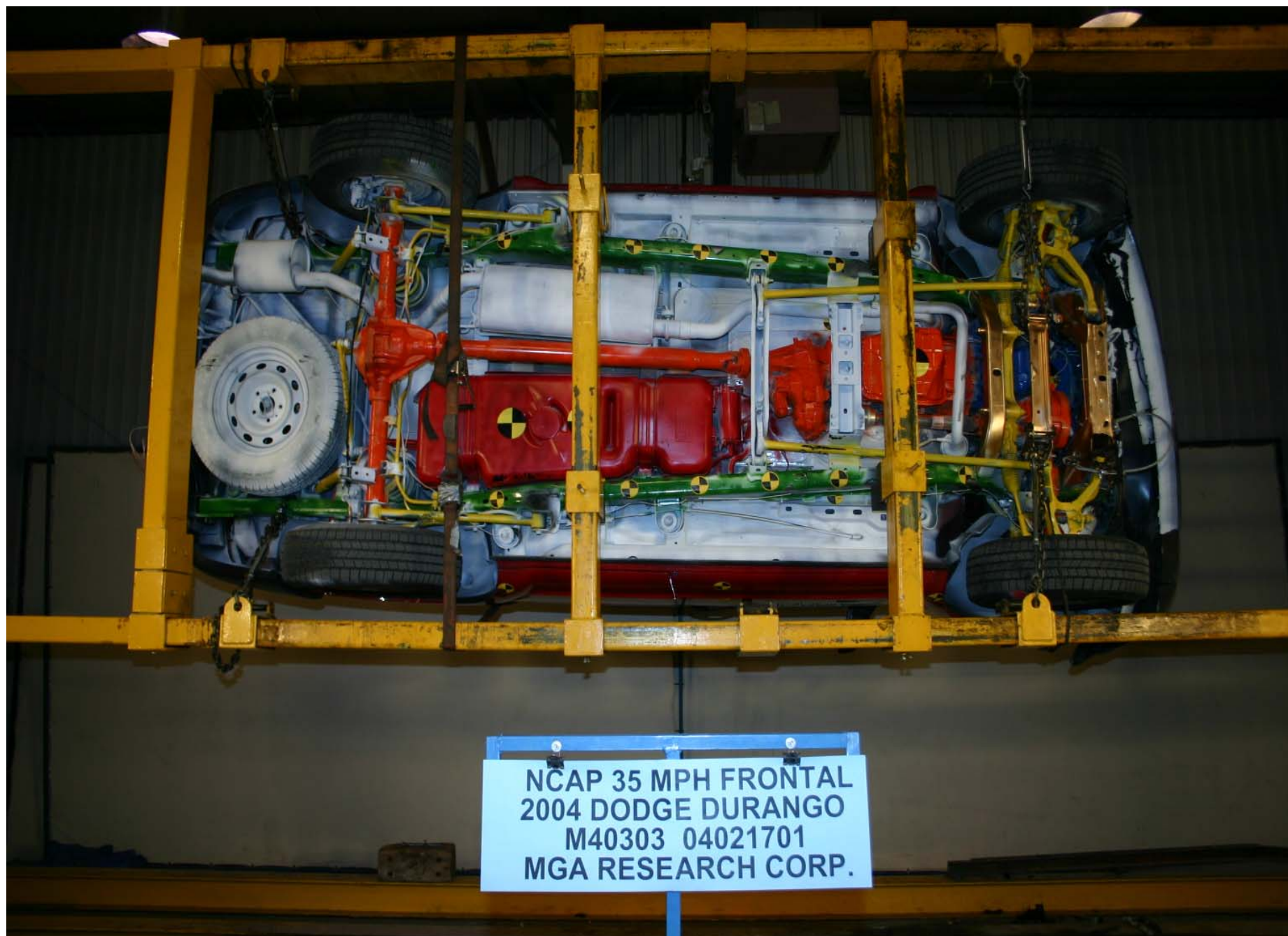
Post-Test Passenger Dummy Knee Contact



Post-Test Passenger Dummy Airbag Contact



A-57.



Rollover 90 Degrees





Rollover 180 Degrees



Rollover 270 Degrees





Rollover 360 Degrees





Vehicle Impact



Post-Test Left Side Windshield Molding





Post-Test Right Side Windshield Molding



## **APPENDIX B**

### **DUMMY AND VEHICLE RESPONSE DATA TRACES**

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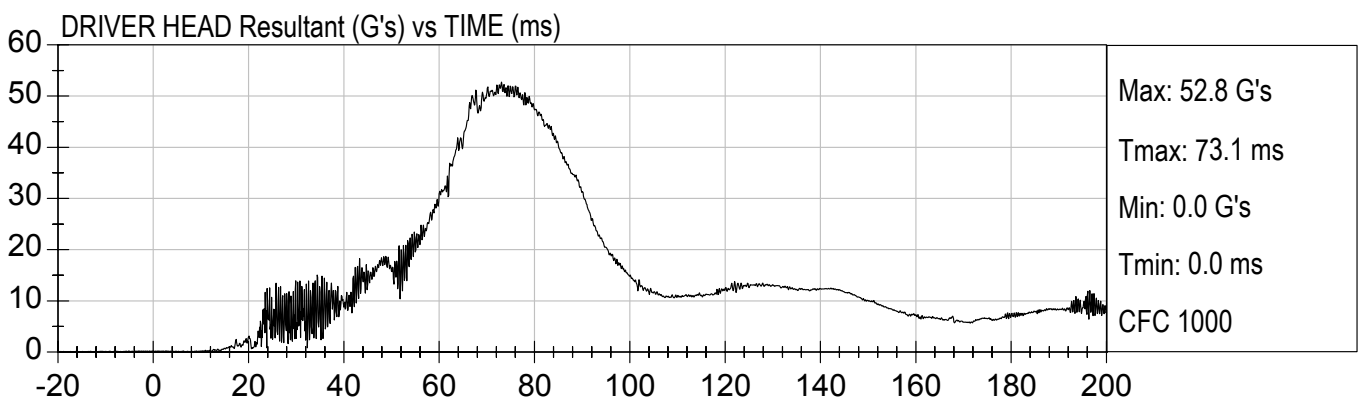
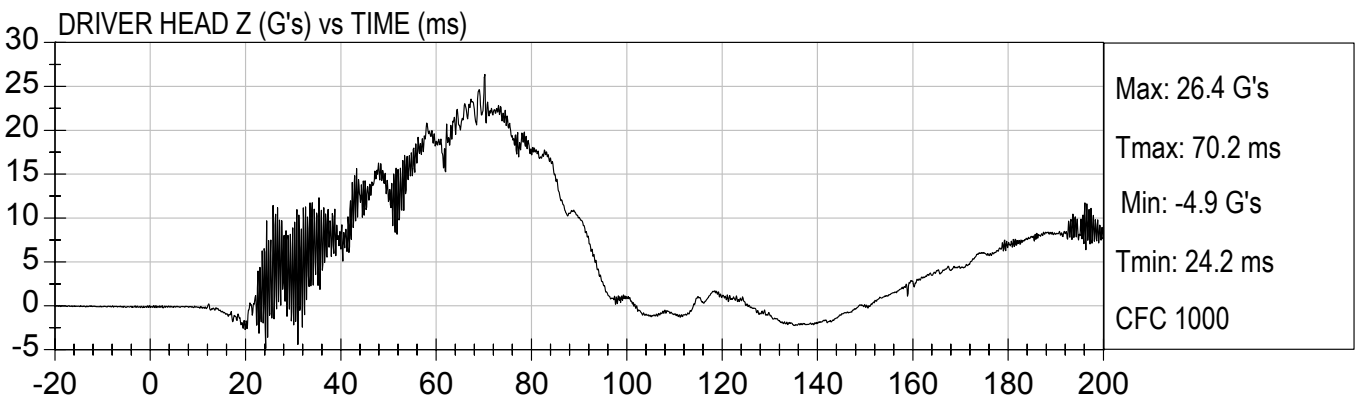
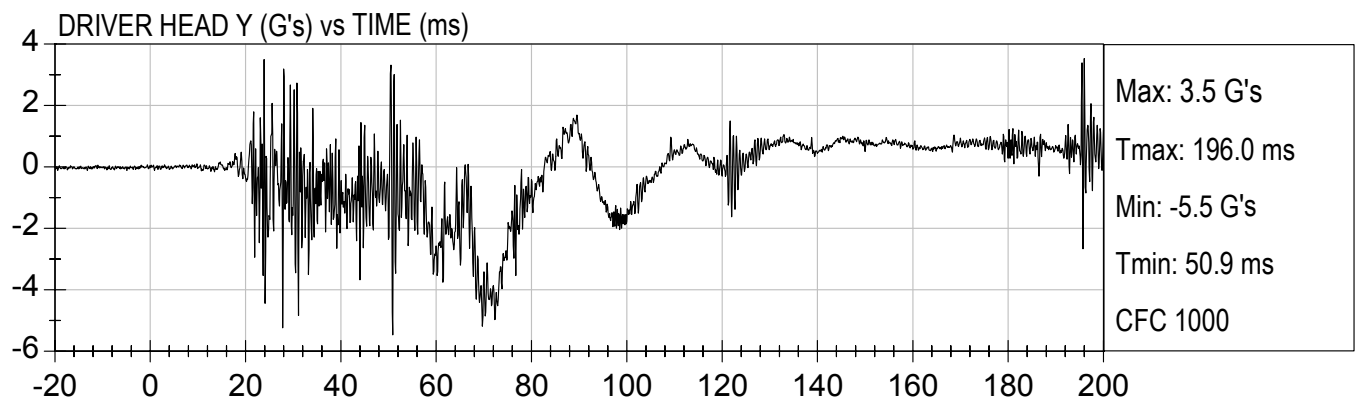
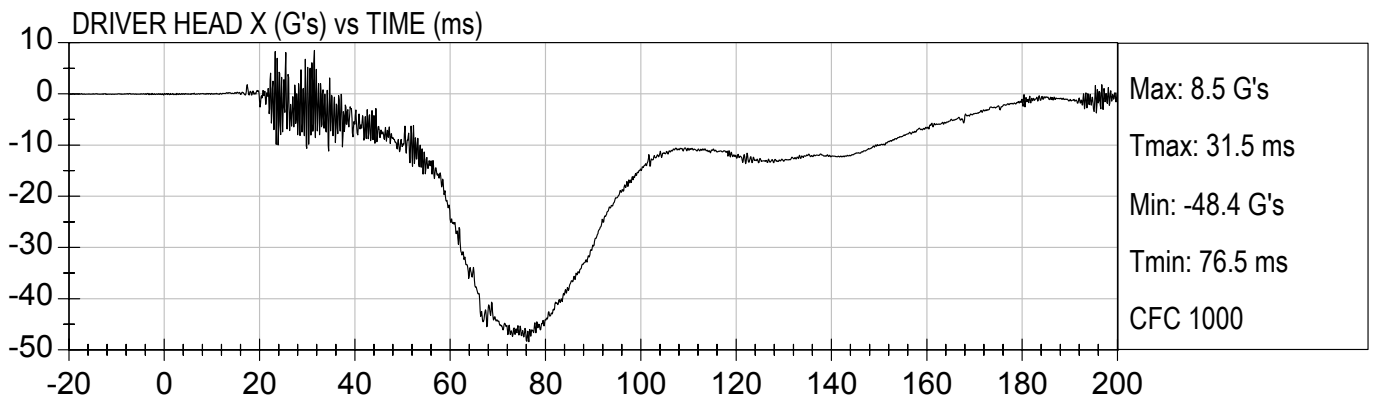


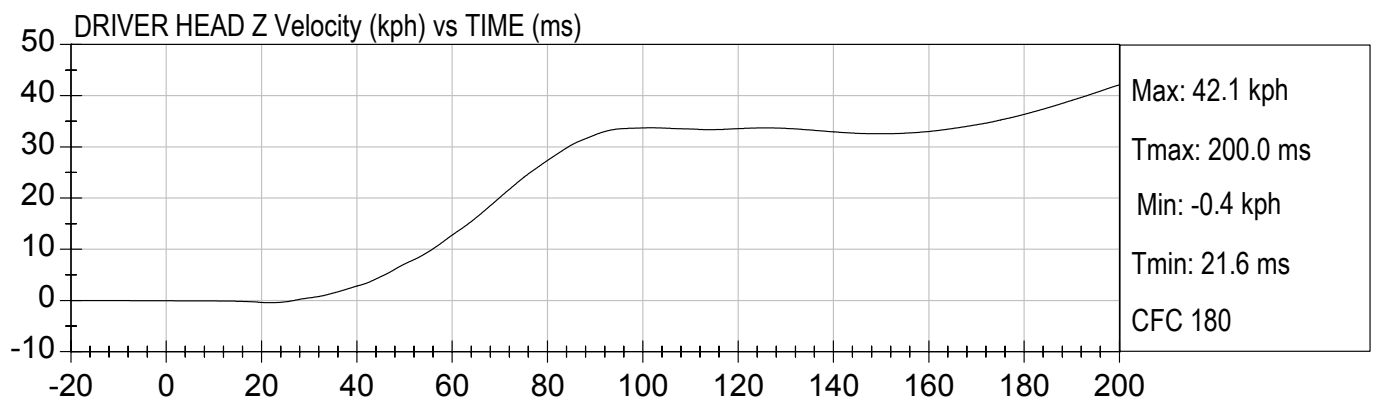
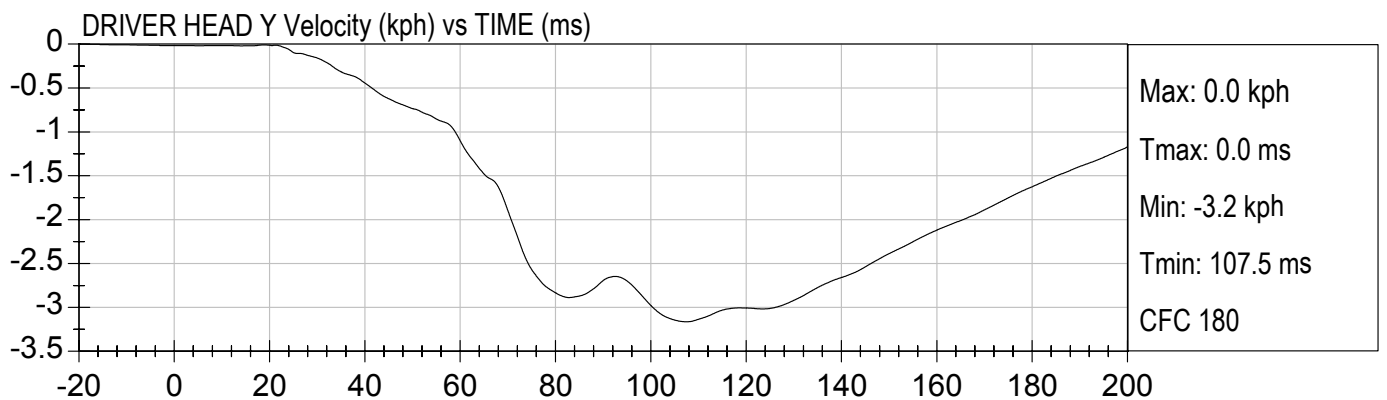
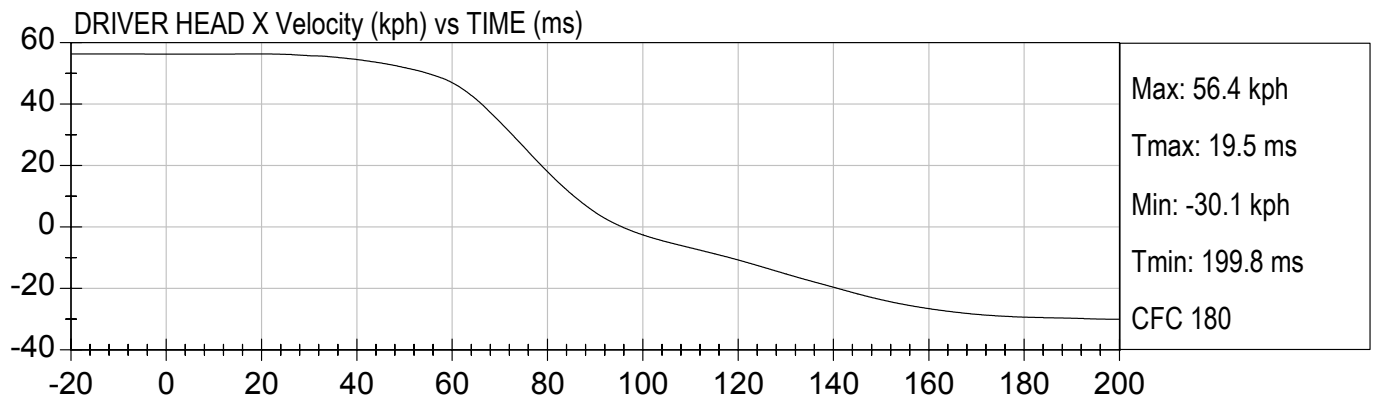
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35MPH NCAP FRONTAL  
2004 DODGE DURANGO STE (M40303)

Test Date: 2/17/2004  
Speed: 35.0 mph (56.3 km/h)



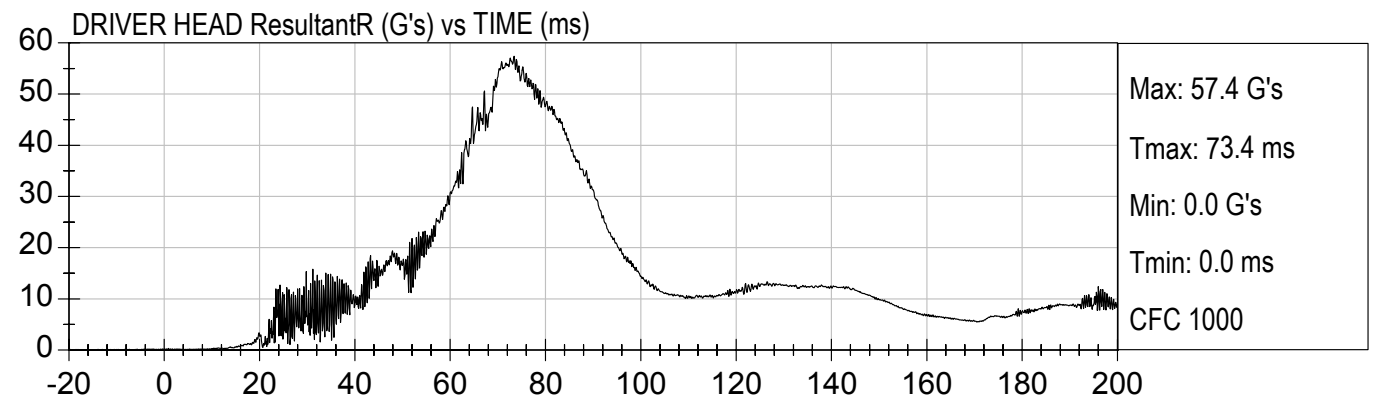
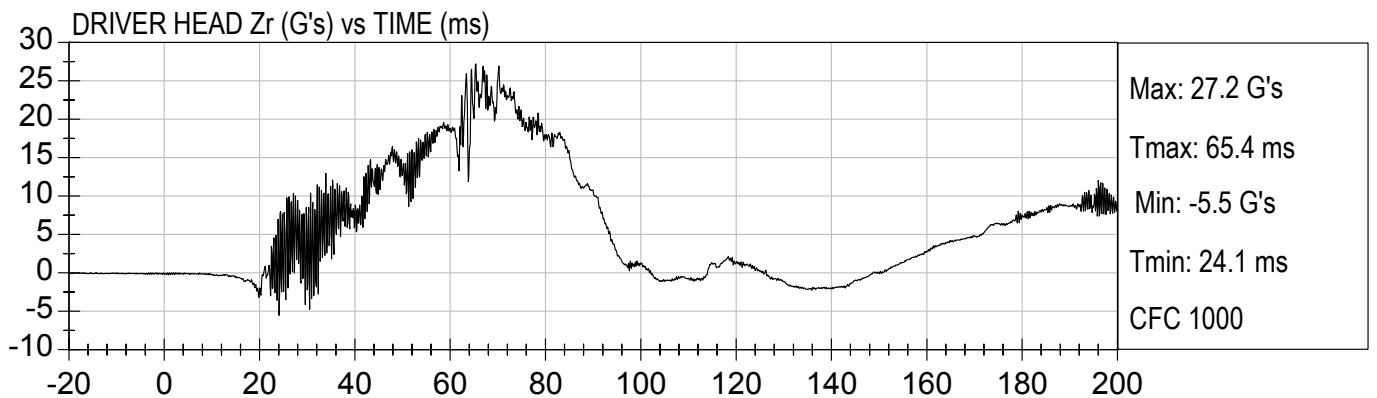
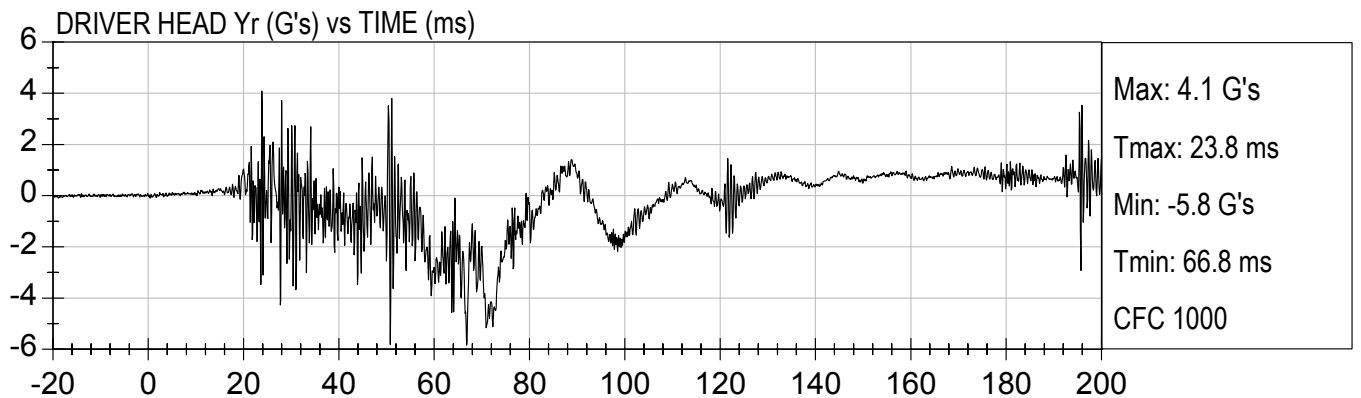
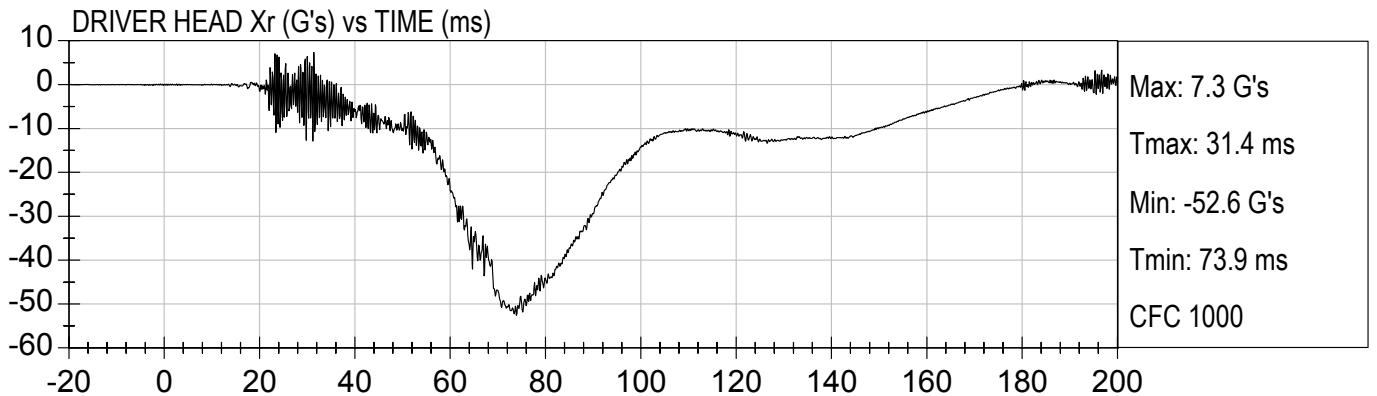


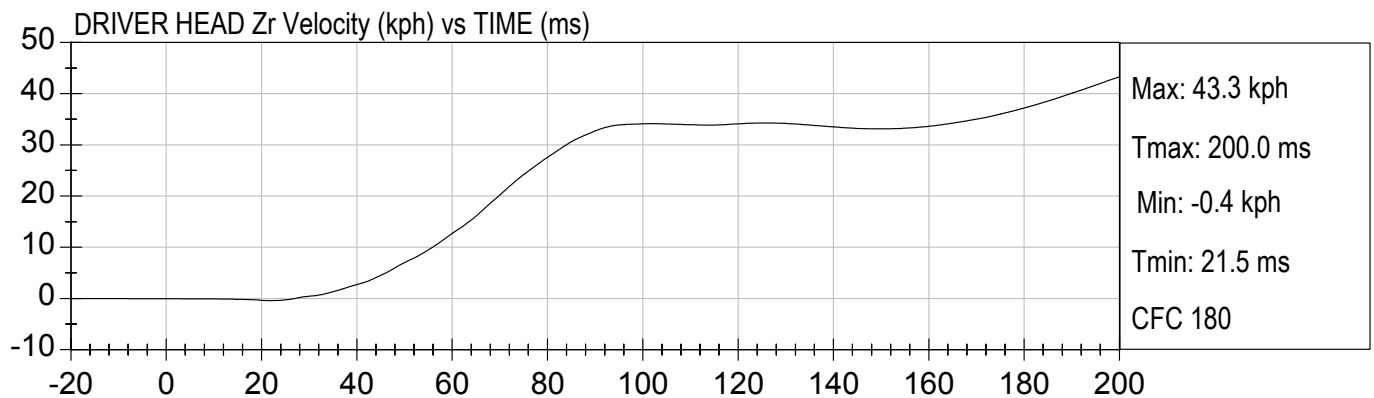
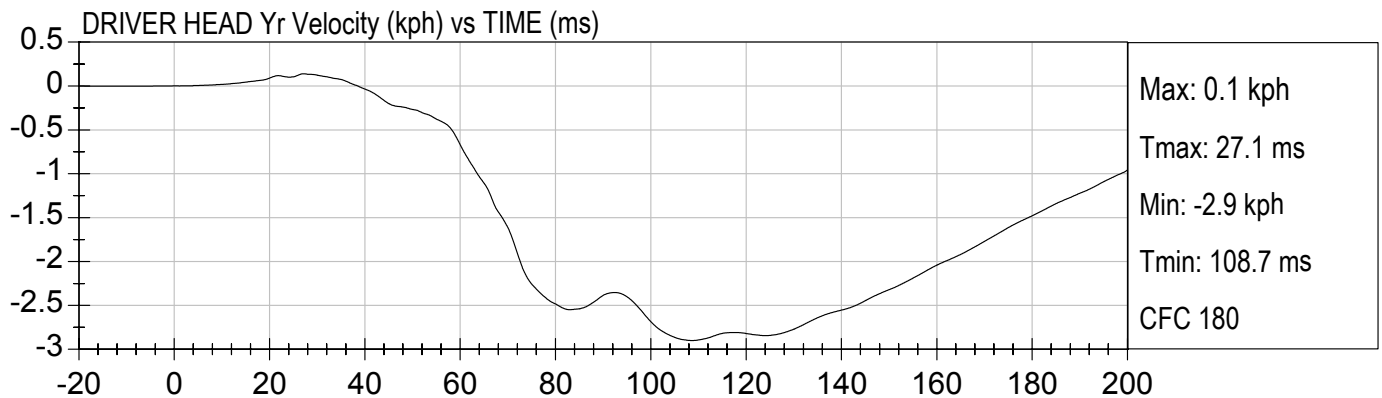
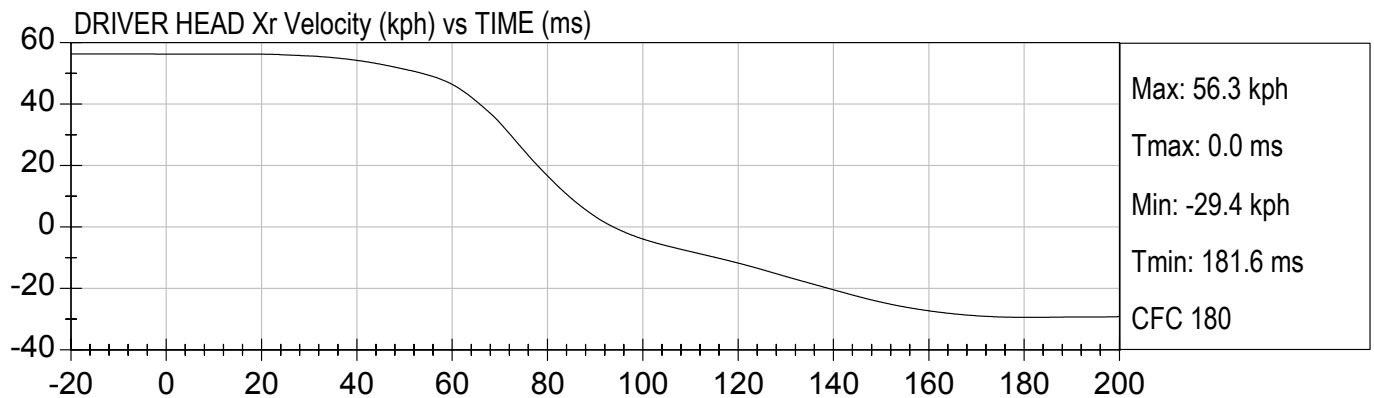




35MPH NCAP FRONTAL  
2004 DODGE DURANGO STE (M40303)

Test Date: 2/17/2004  
Speed: 35.0 mph (56.3 km/h)



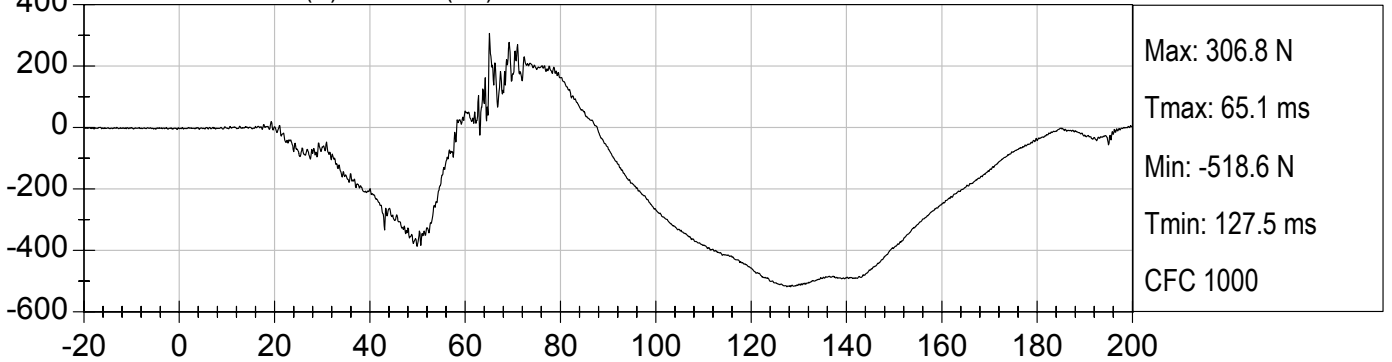




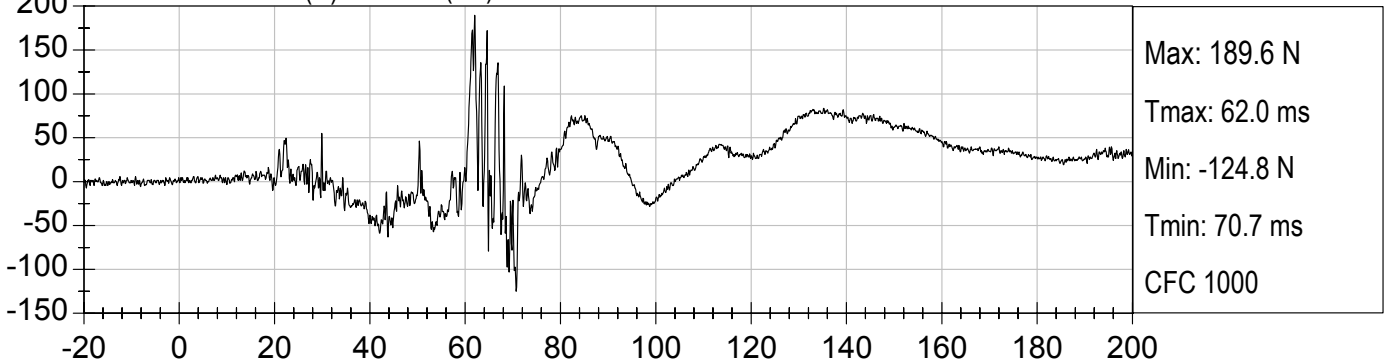
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2004 DODGE DURANGO STE (M40303)

Test Date: 2/17/2004  
Speed: 35.0 mph (56.3 km/h)

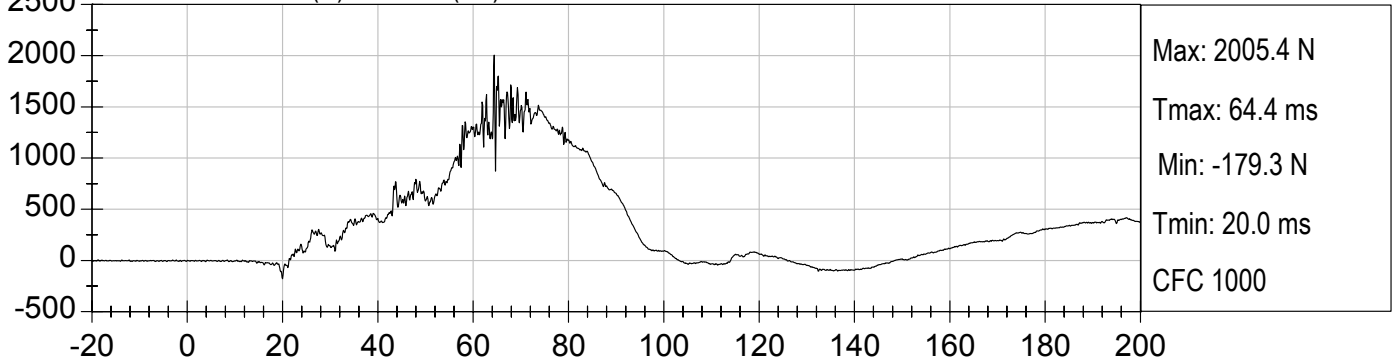
DRIVER NECK FX (N) vs TIME (ms)



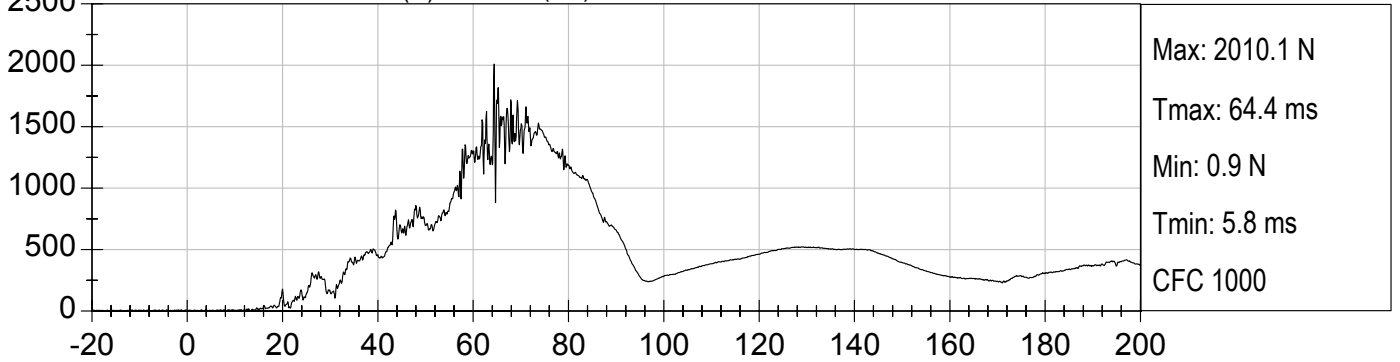
DRIVER NECK FY (N) vs TIME (ms)



DRIVER NECK FZ (N) vs TIME (ms)



DRIVER NECK FResultant (N) vs TIME (ms)

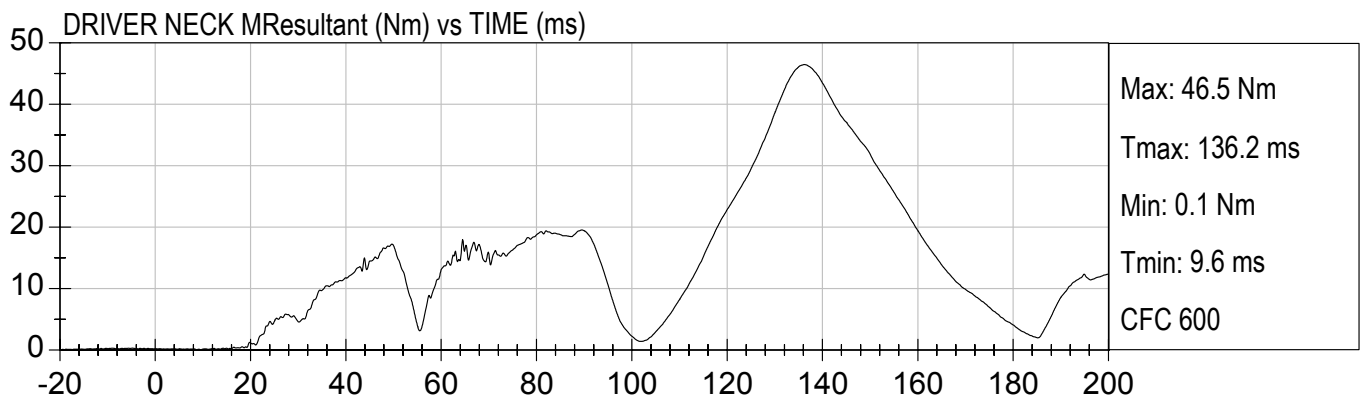
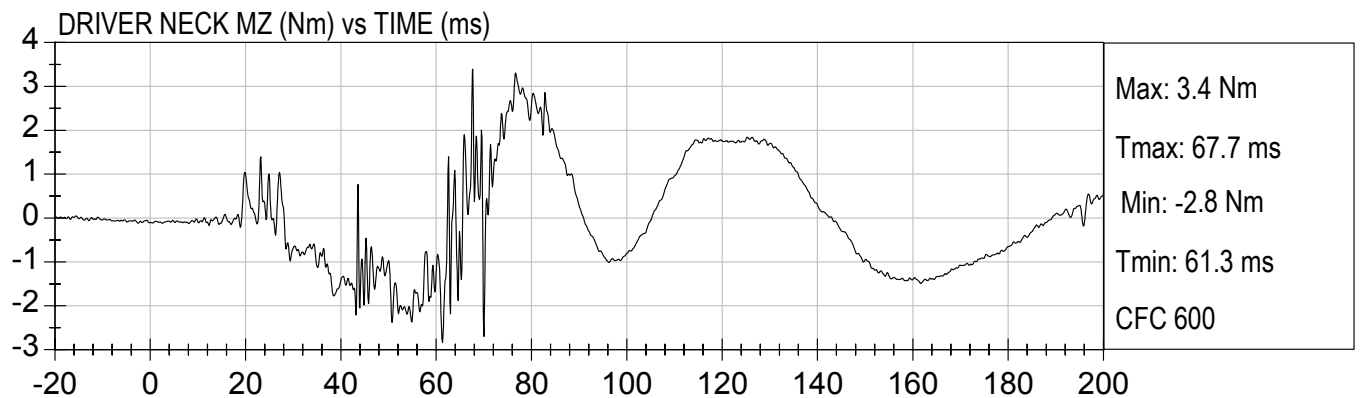
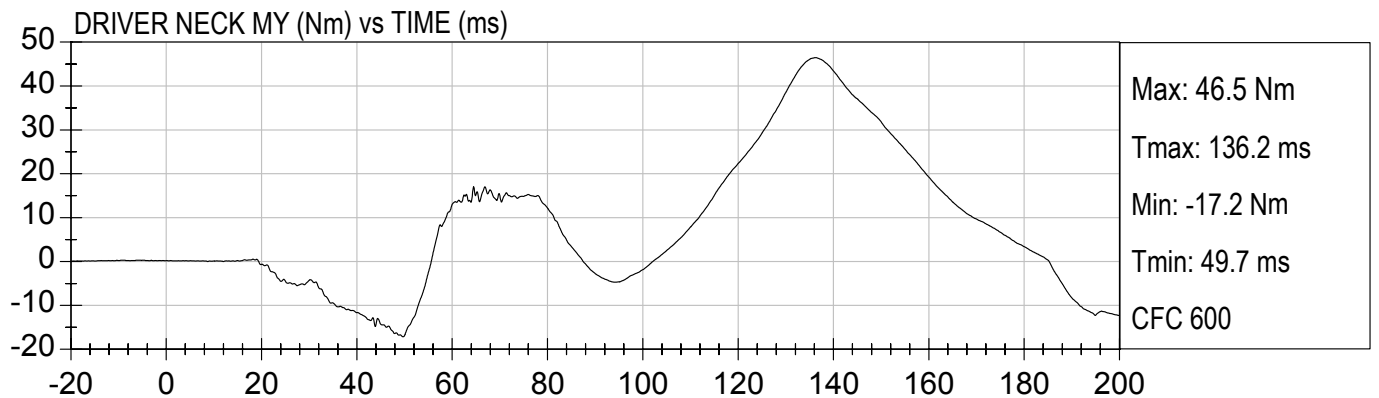
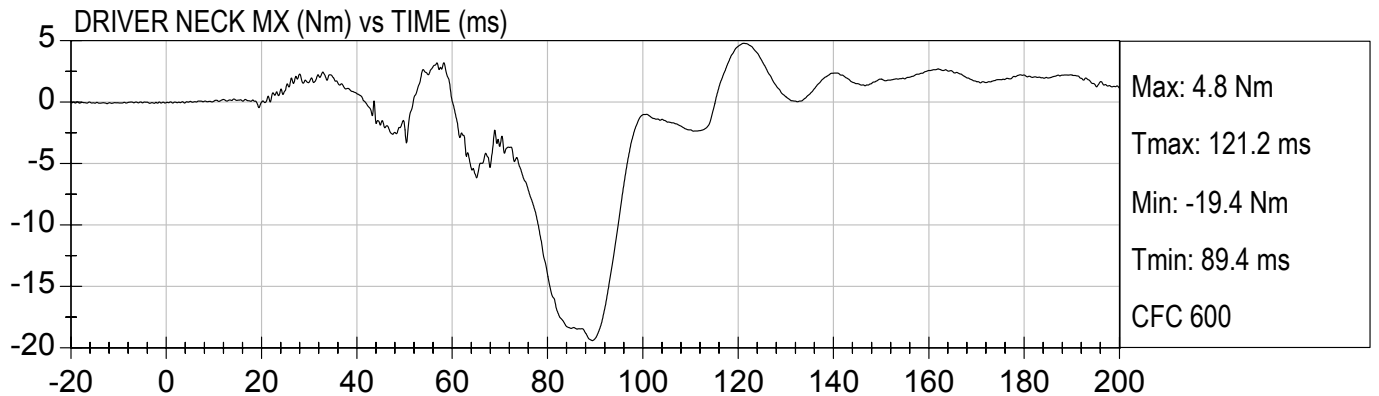






35MPH NCAP FRONTAL  
2004 DODGE DURANGO STE (M40303)

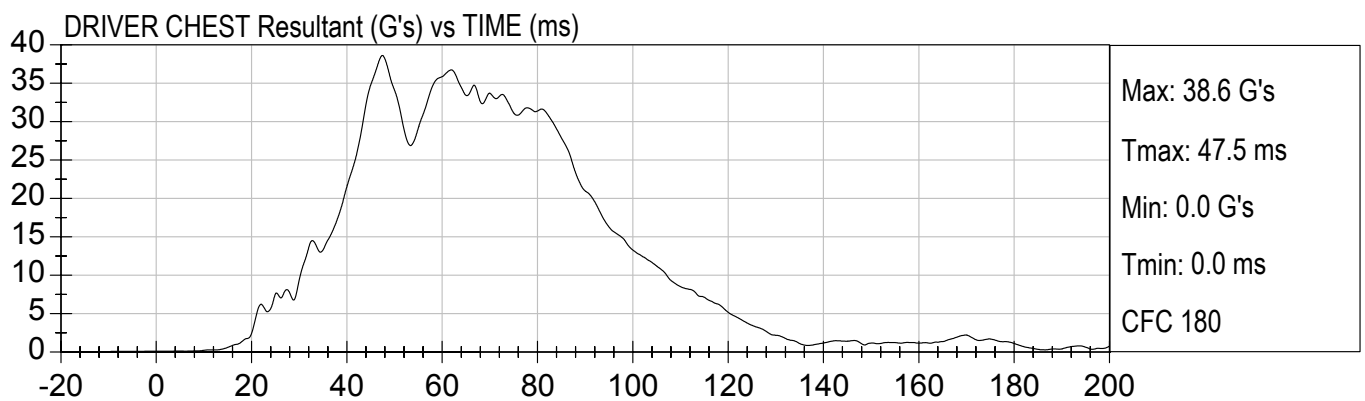
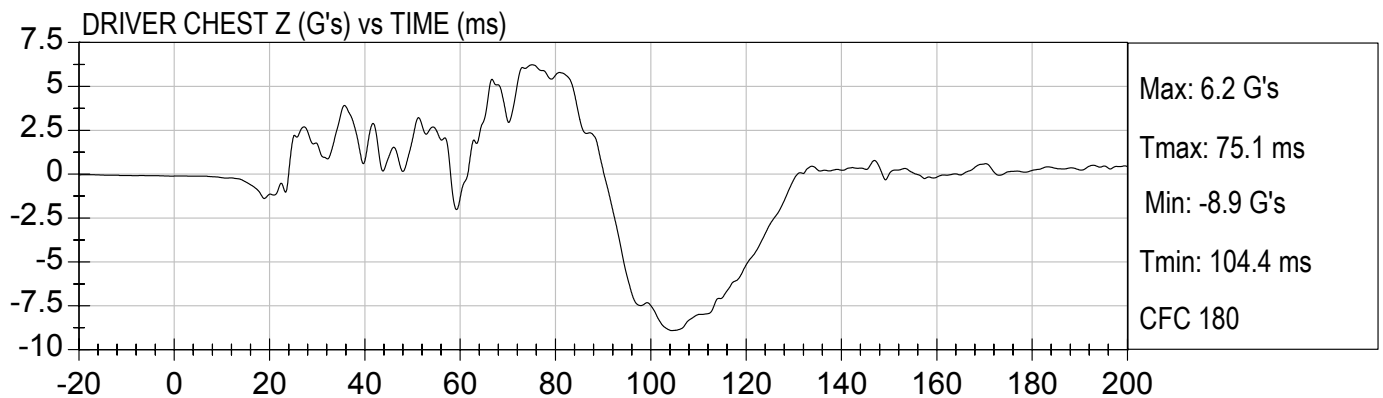
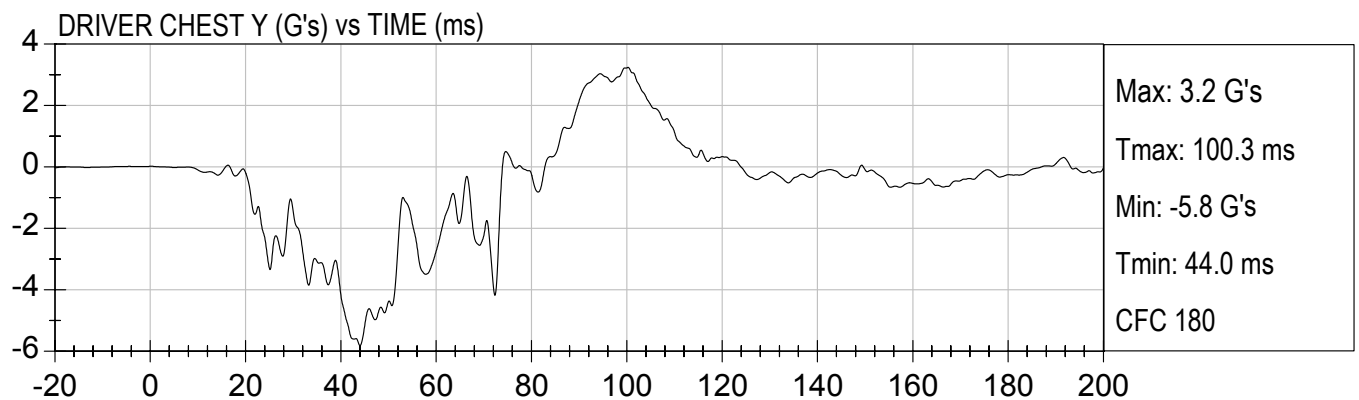
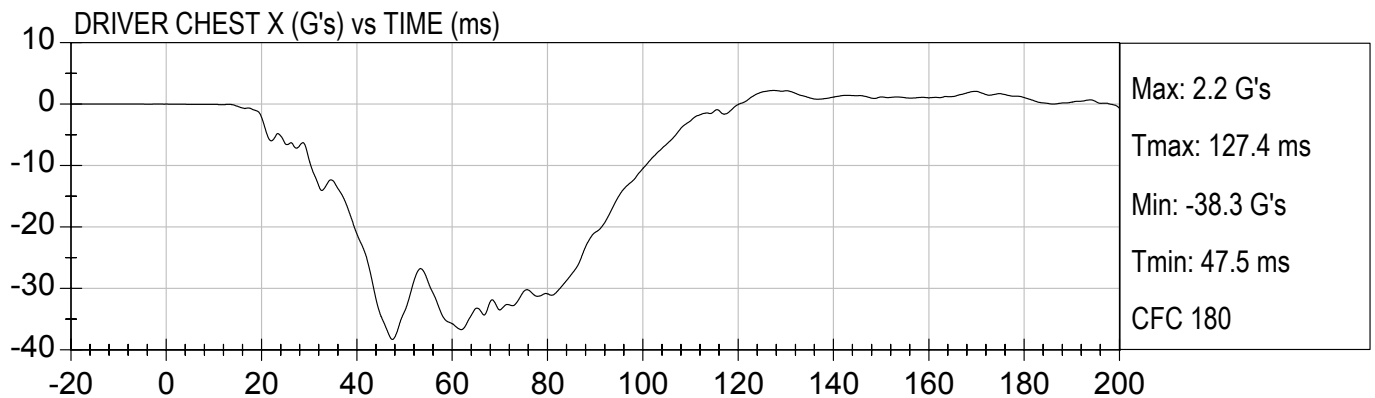
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Speed: 35.0 mph (56.3 km/h)

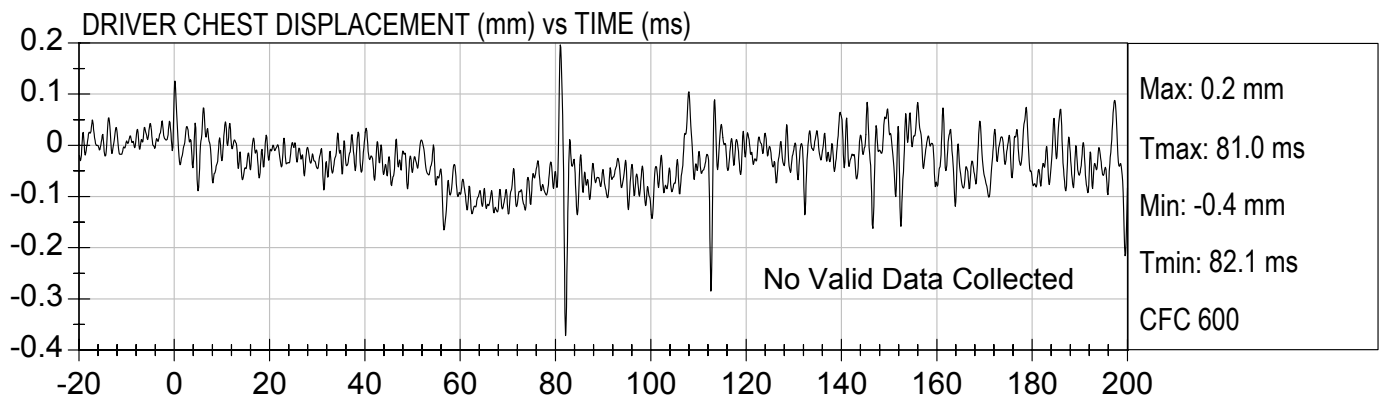
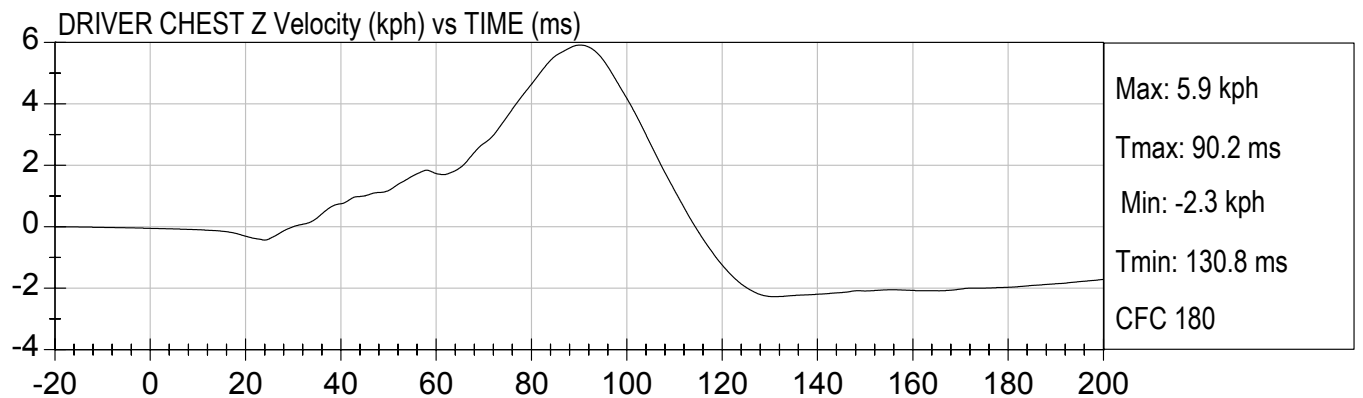
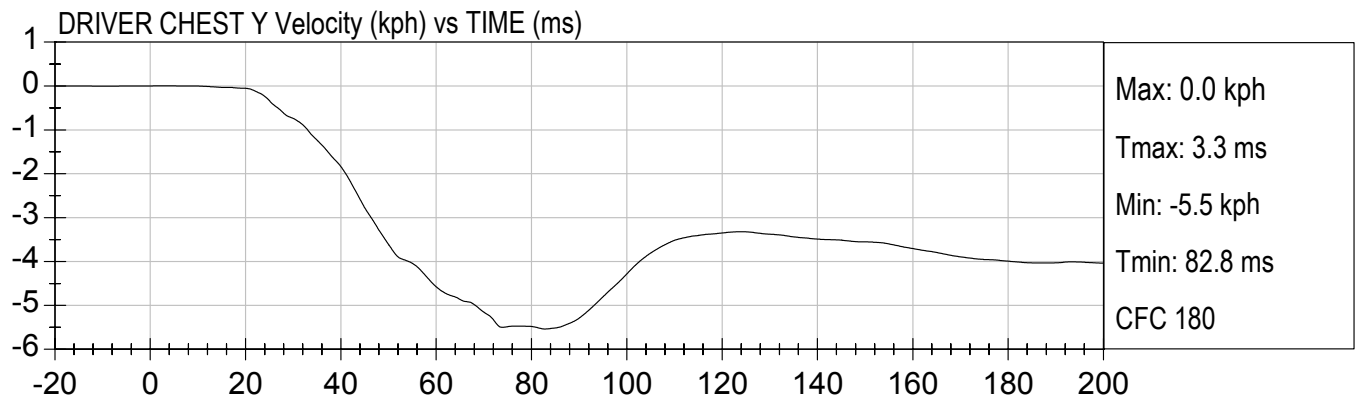
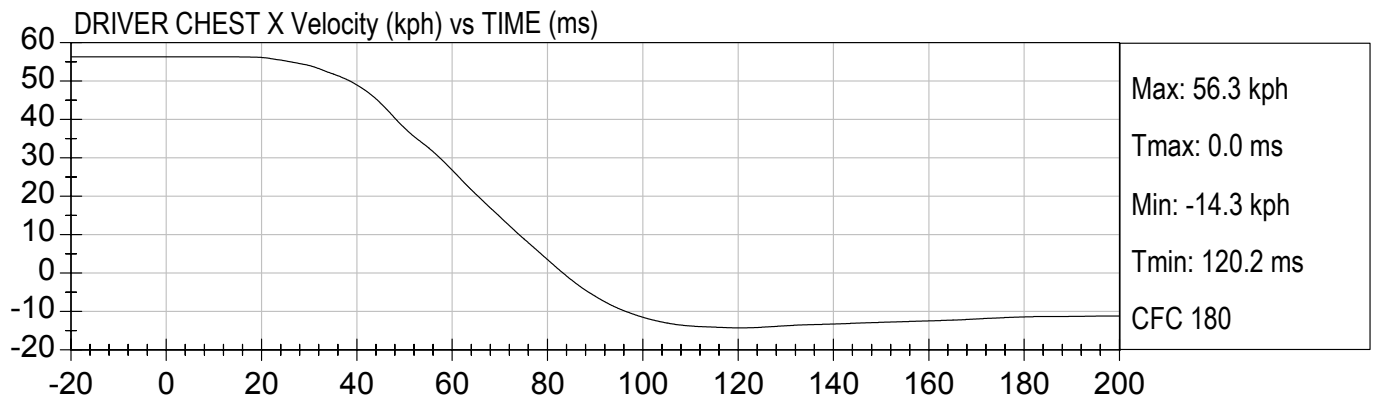




35MPH NCAP FRONTAL  
2004 DODGE DURANGO STE (M40303)

Test Date: 2/17/2004  
Speed: 35.0 mph (56.3 km/h)



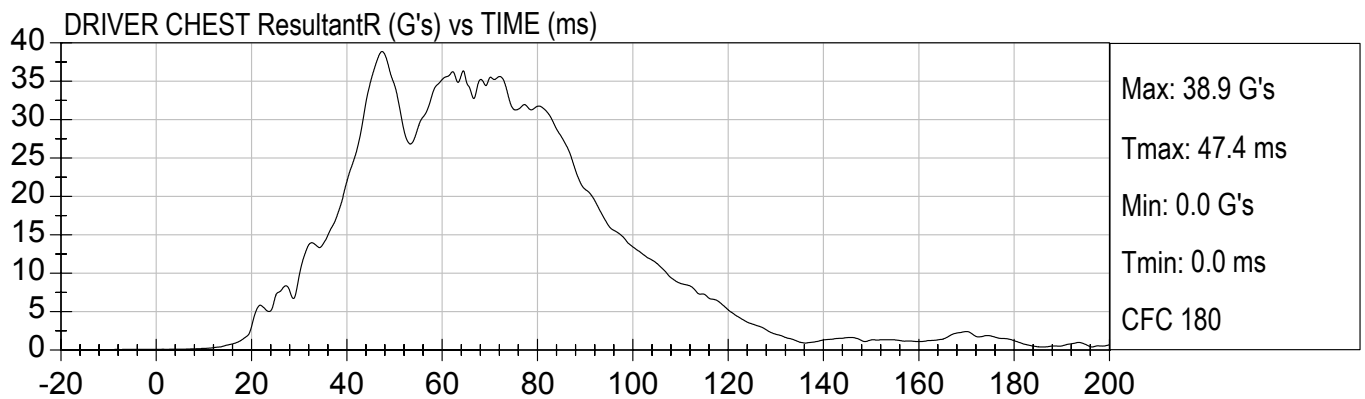
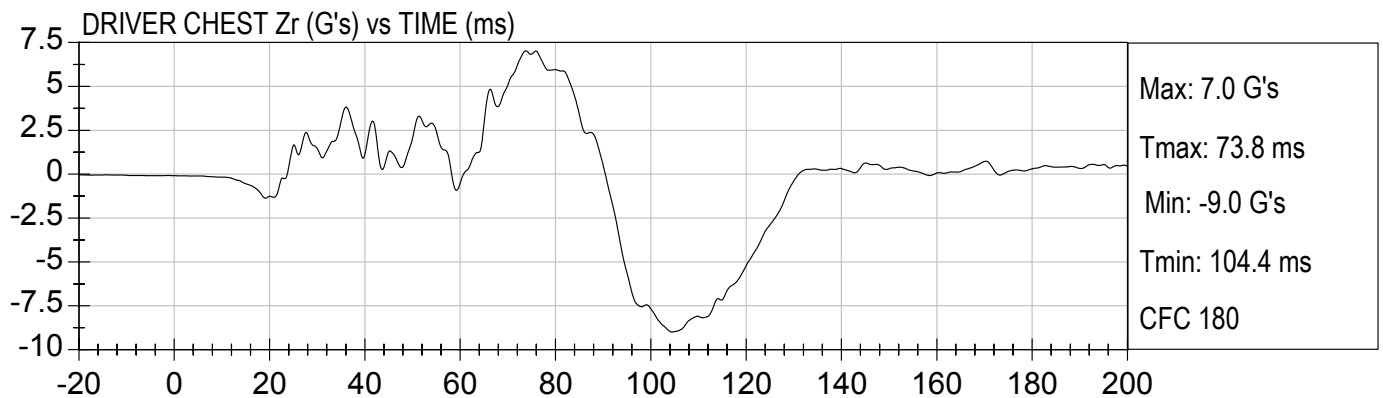
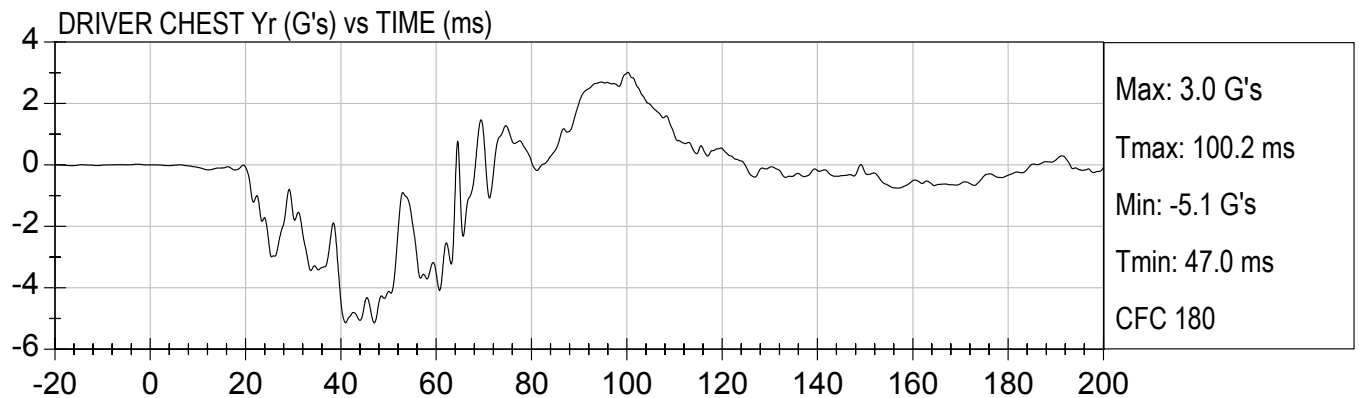
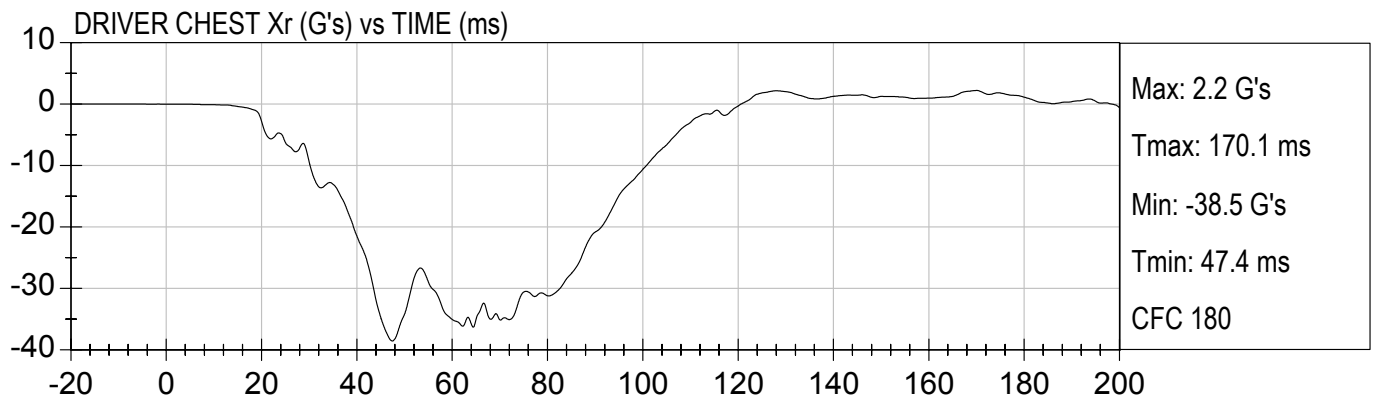


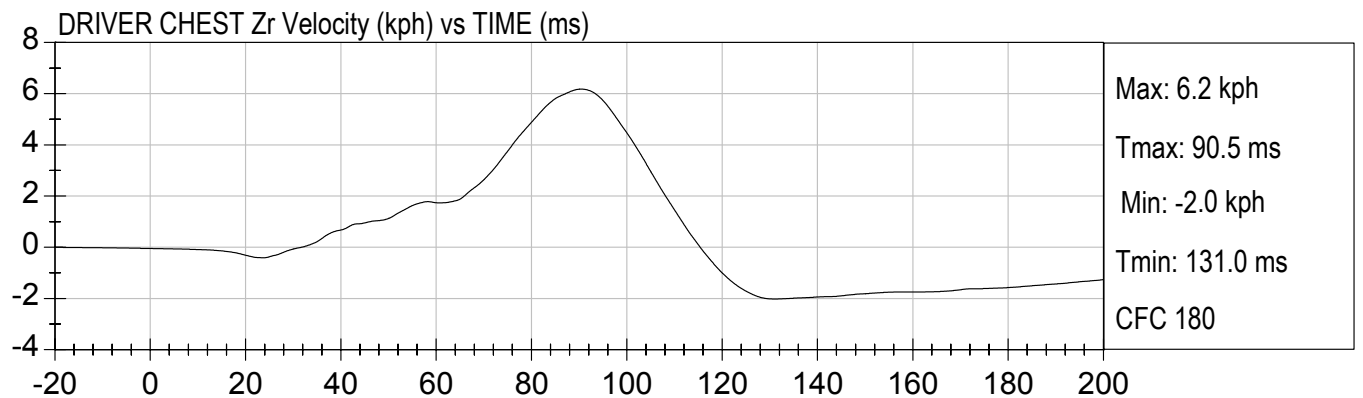
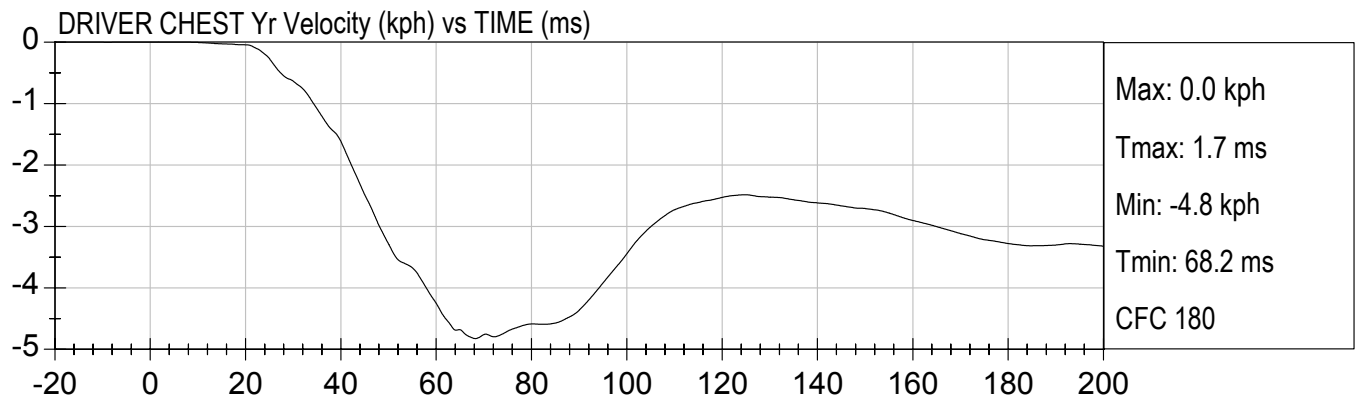
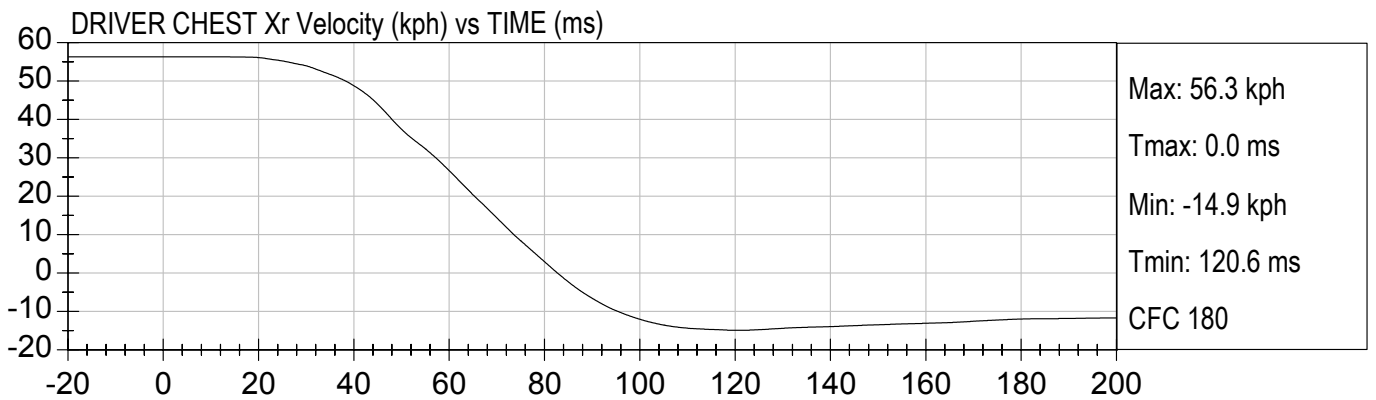




35MPH NCAP FRONTAL  
2004 DODGE DURANGO STE (M40303)

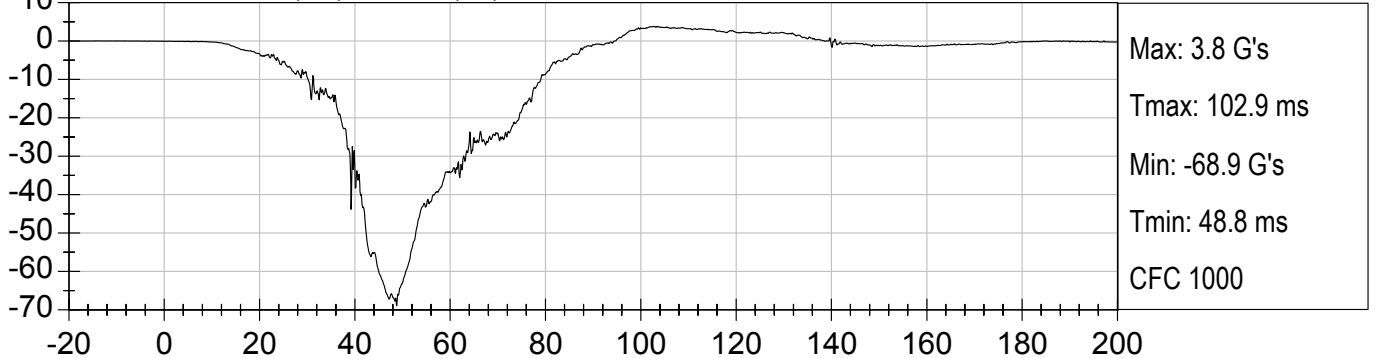
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Speed: 35.0 mph (56.3 km/h)



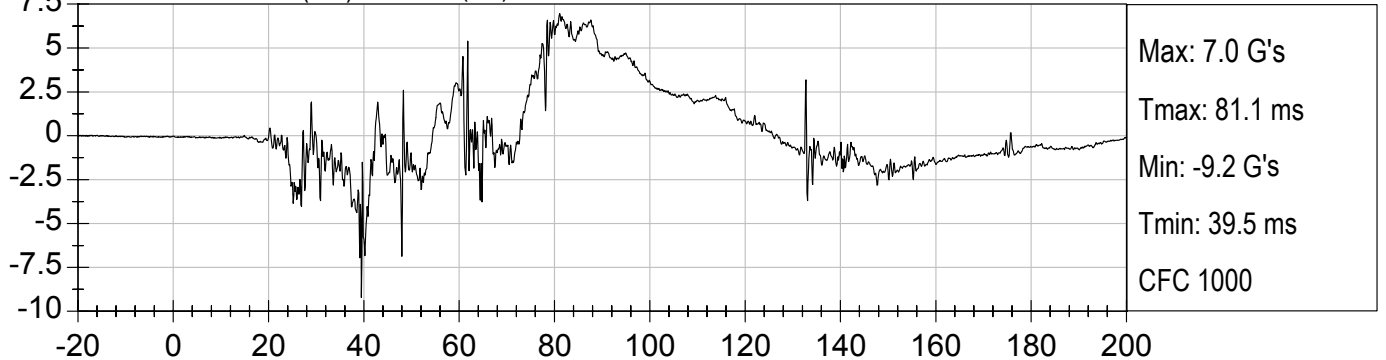




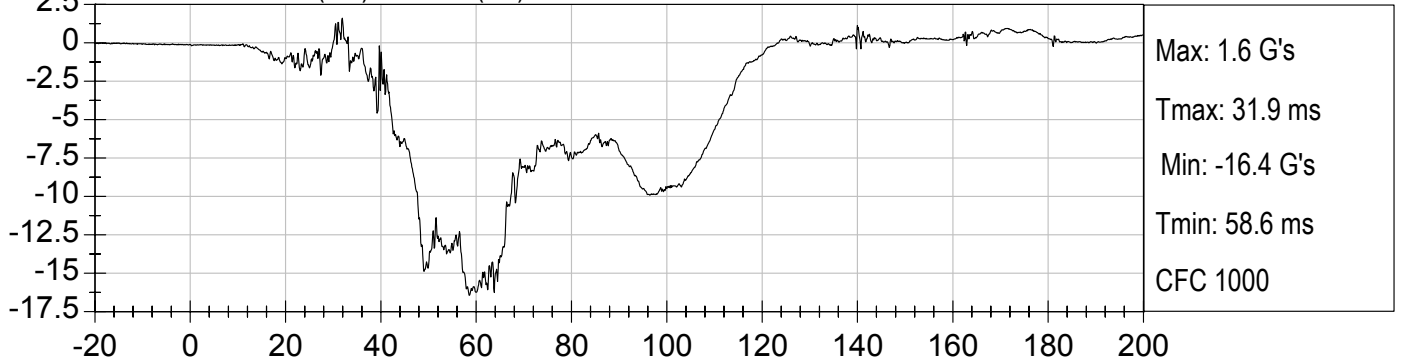
DRIVER PELVIS X (G's) vs TIME (ms)



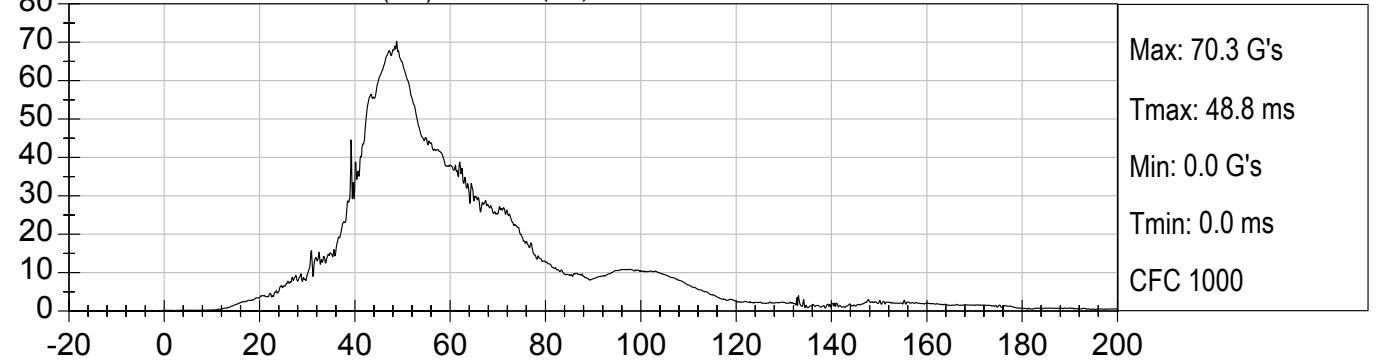
DRIVER PELVIS Y (G's) vs TIME (ms)



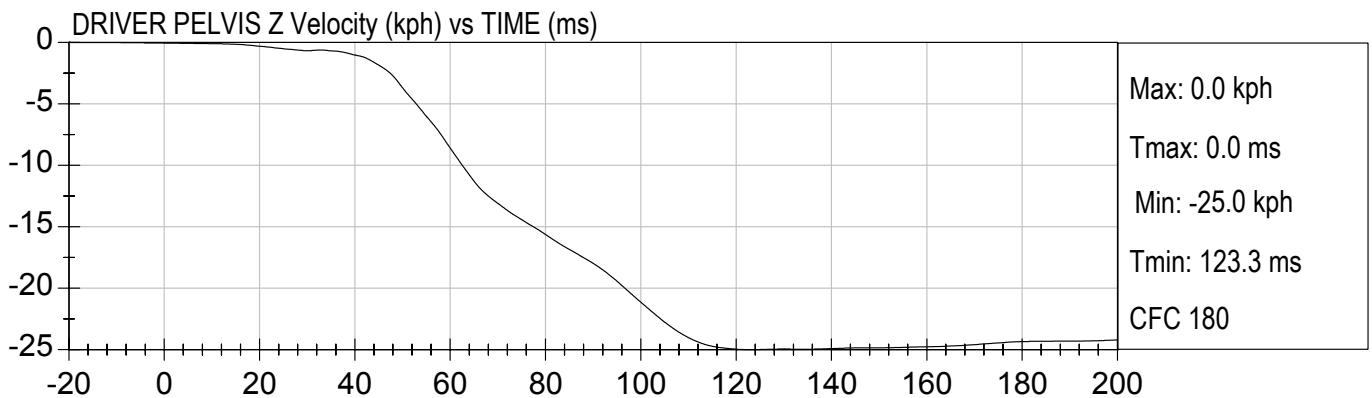
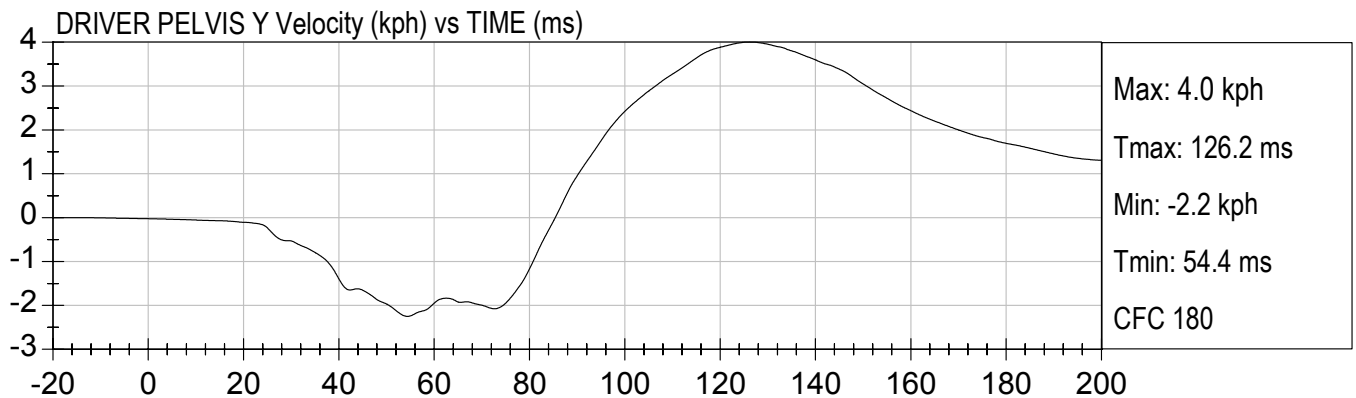
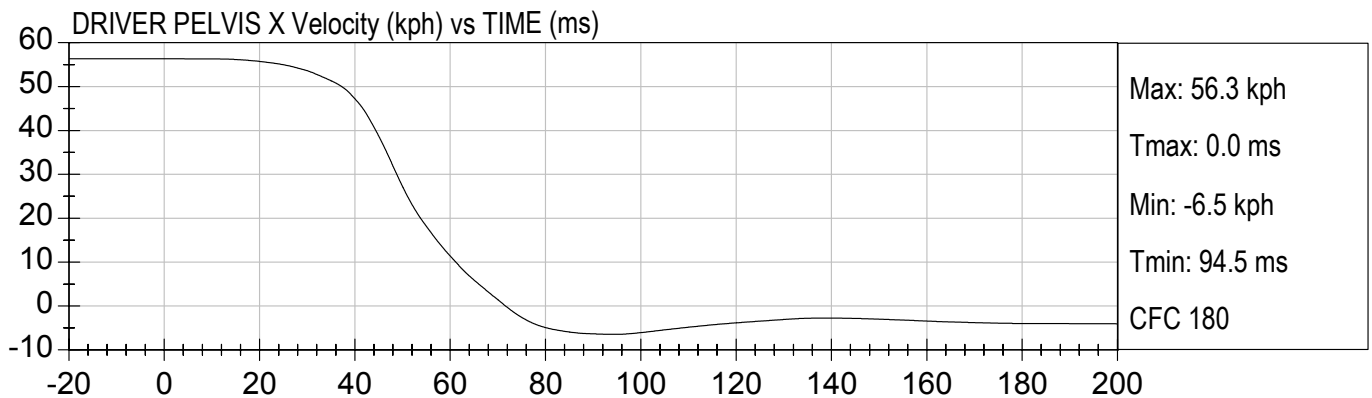
DRIVER PELVIS Z (G's) vs TIME (ms)



DRIVER PELVIS Resultant (G's) vs TIME (ms)



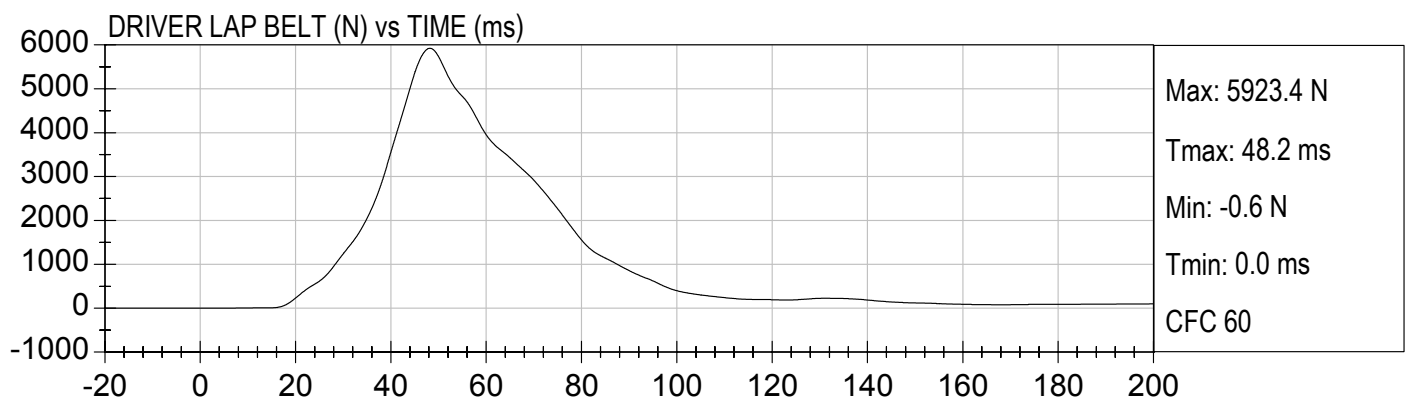
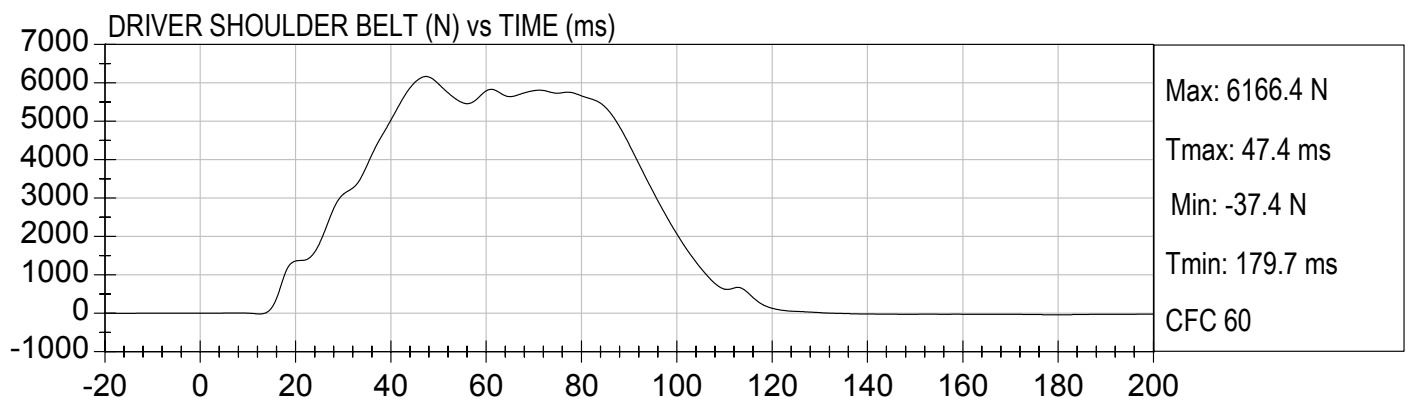
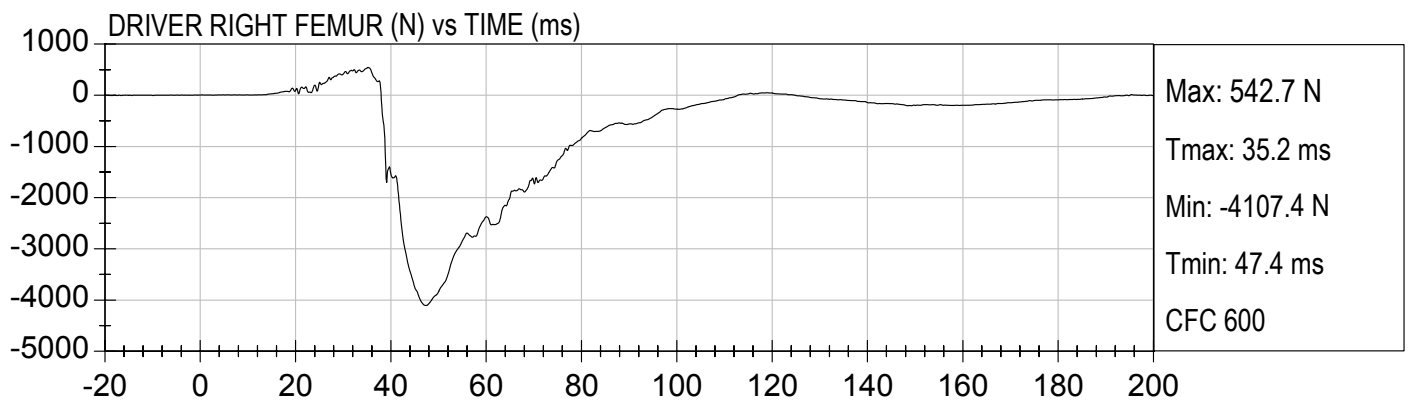
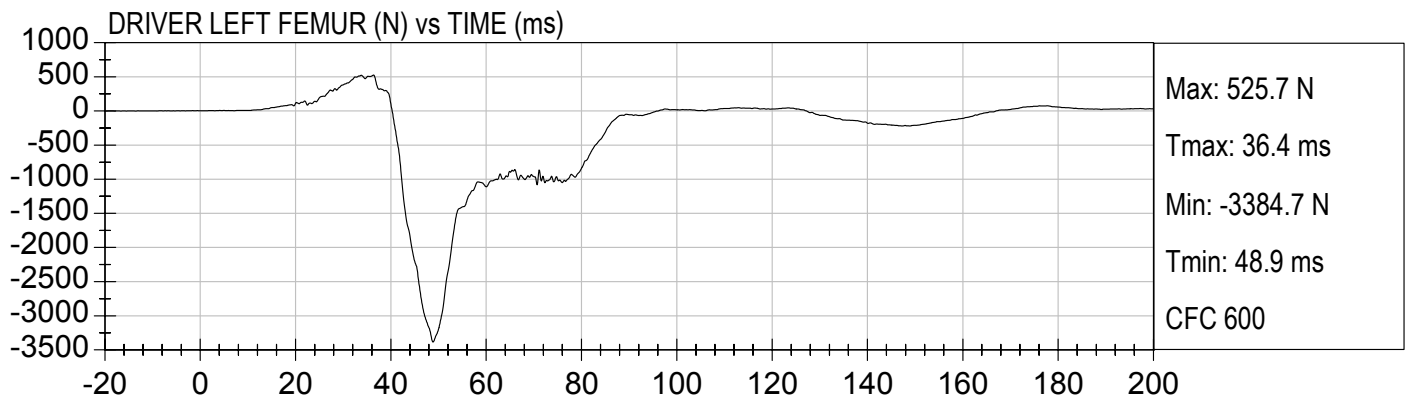


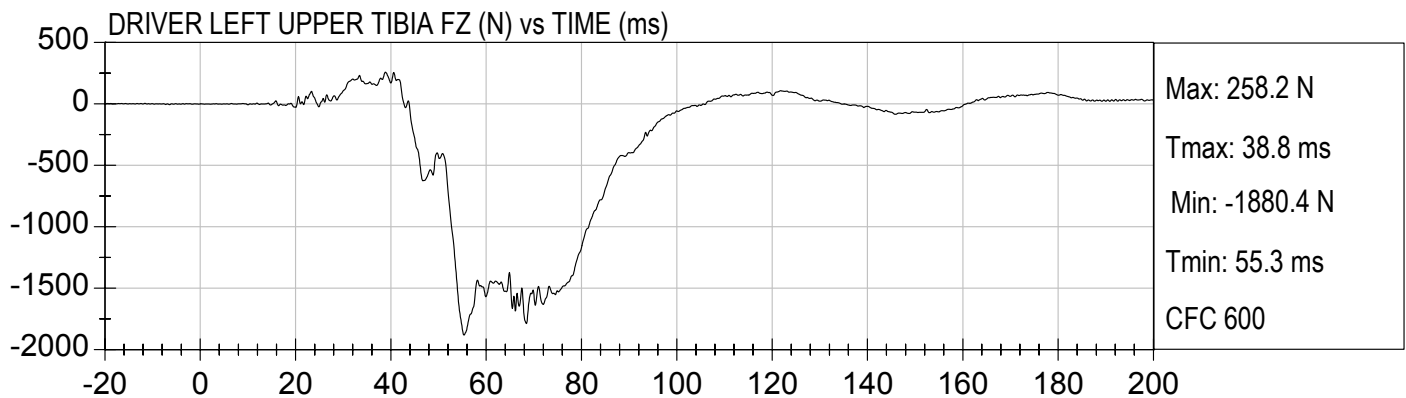
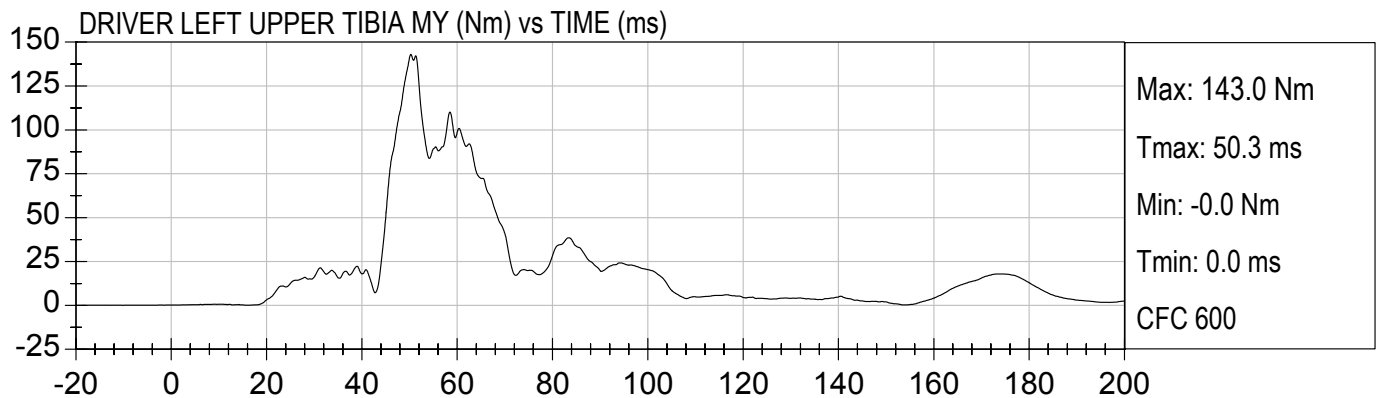
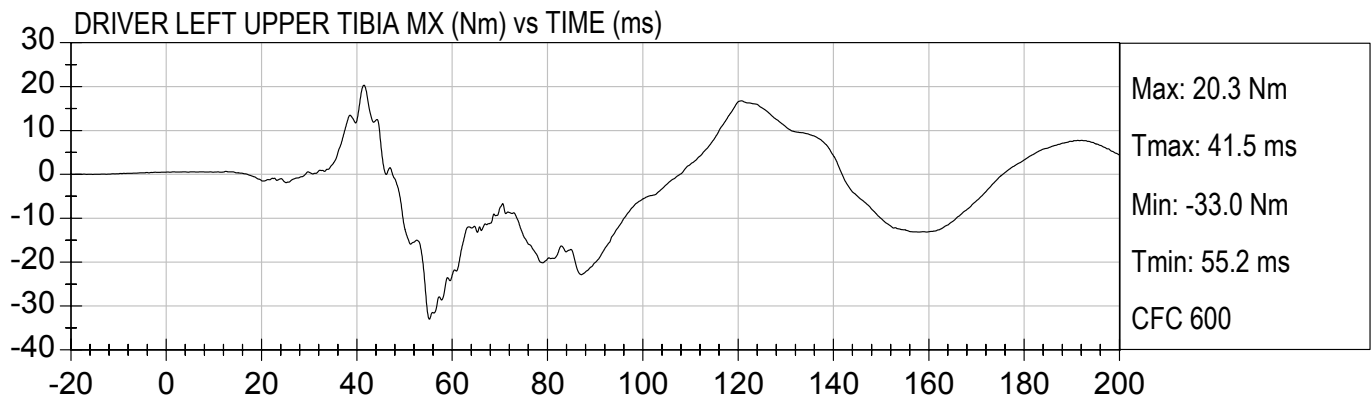




35MPH NCAP FRONTAL  
2004 DODGE DURANGO STE (M40303)

Test Date: 2/17/2004  
Speed: 35.0 mph (56.3 km/h)

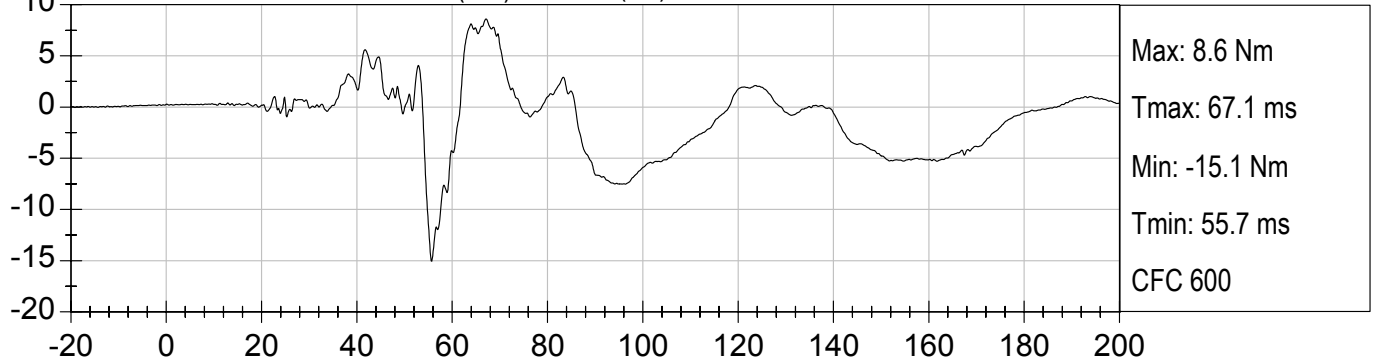




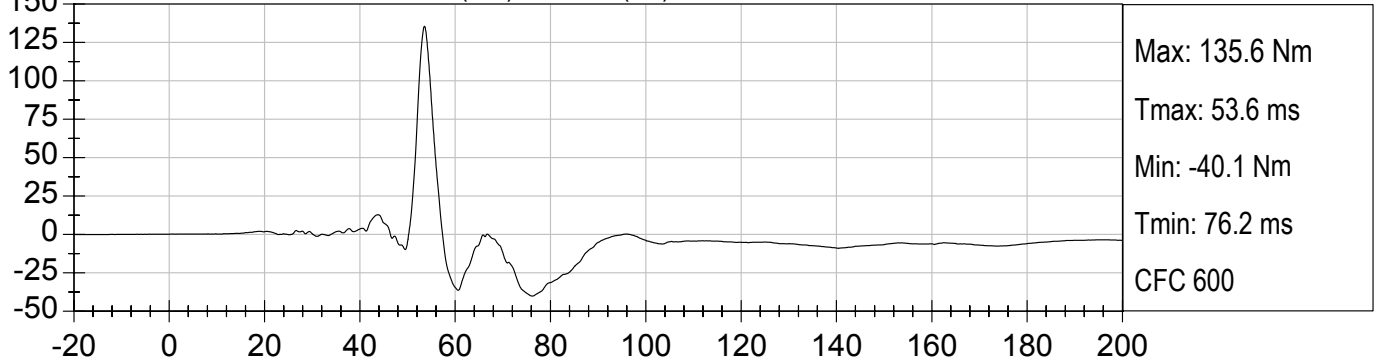




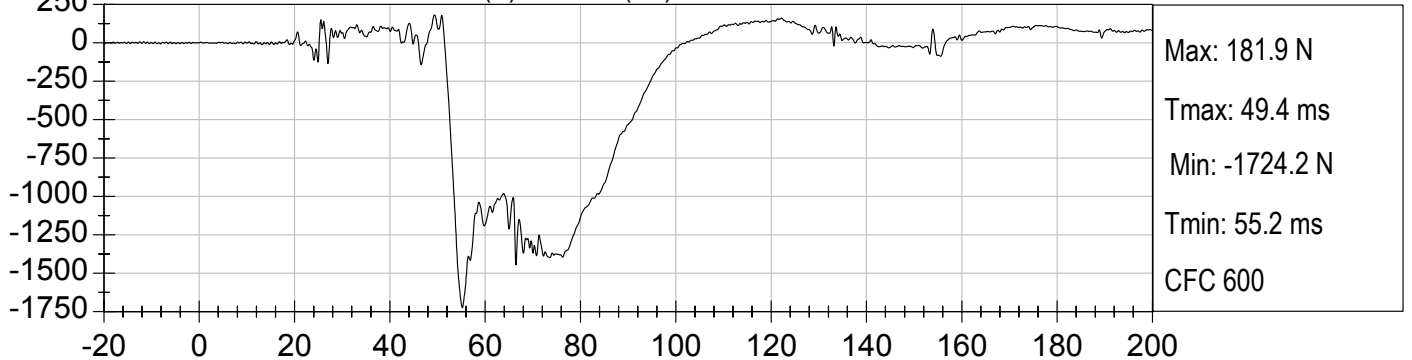
DRIVER LEFT LOWER TIBIA MX (Nm) vs TIME (ms)



DRIVER LEFT LOWER TIBIA MY (Nm) vs TIME (ms)

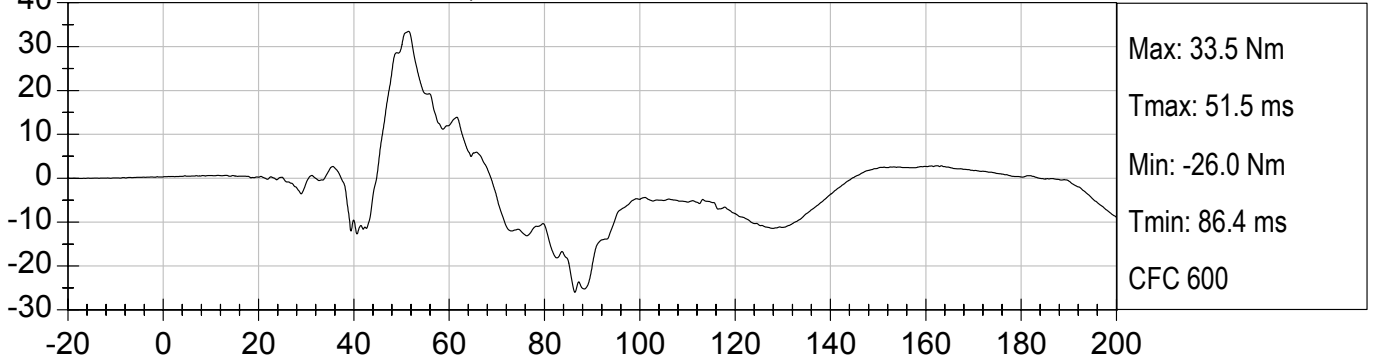


DRIVER LEFT LOWER TIBIA FZ (N) vs TIME (ms)

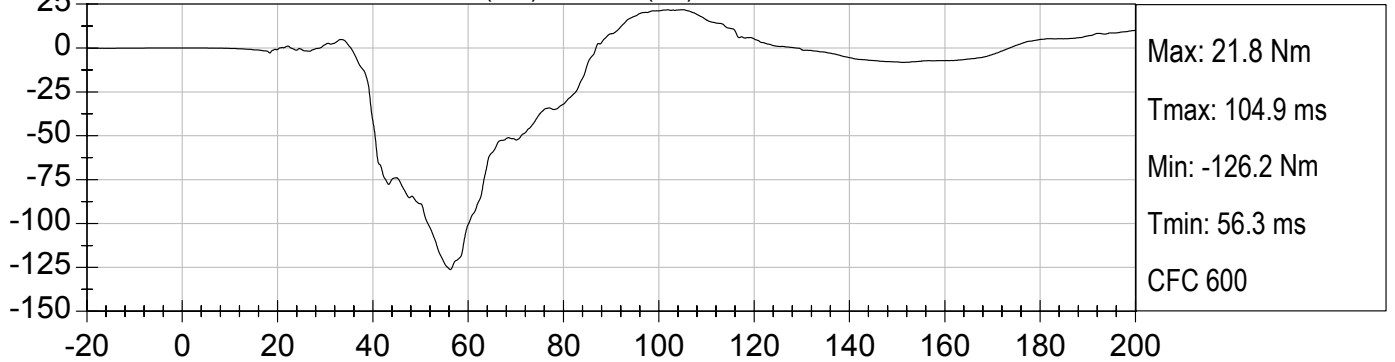




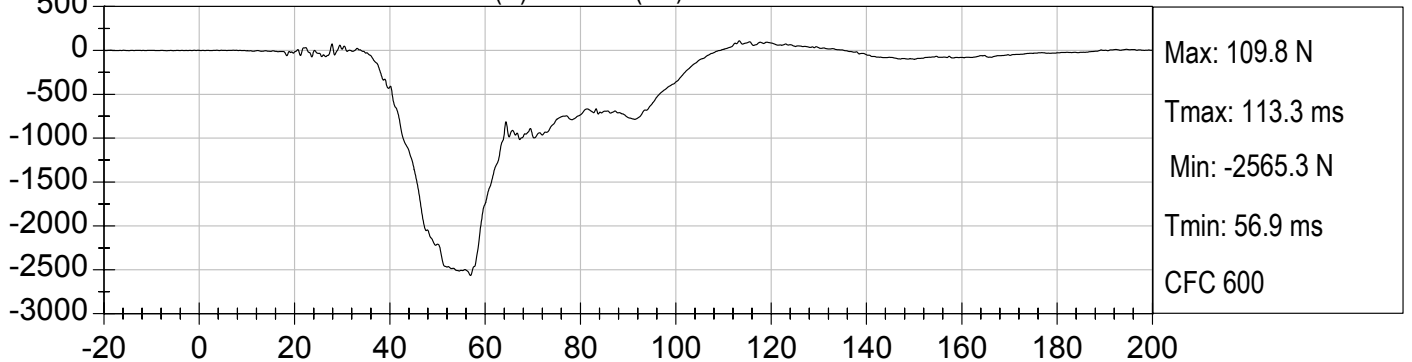
DRIVER RIGHT UPPER TIBIA MX (Nm) vs TIME (ms)

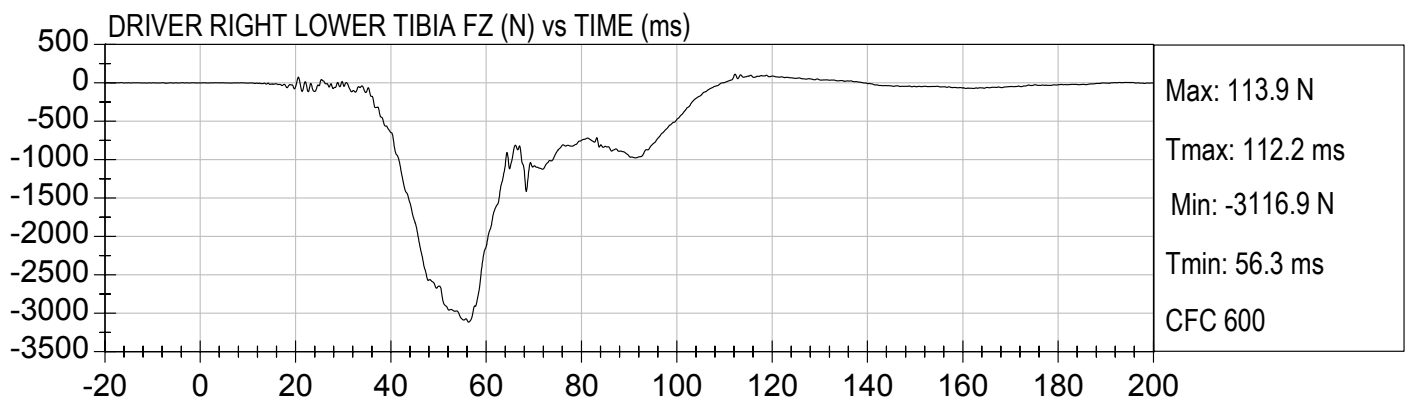
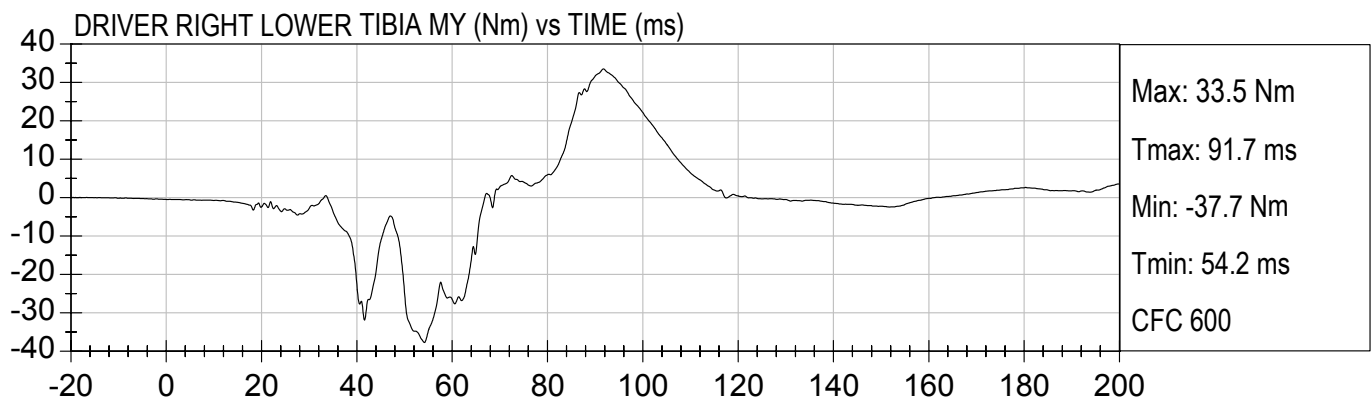
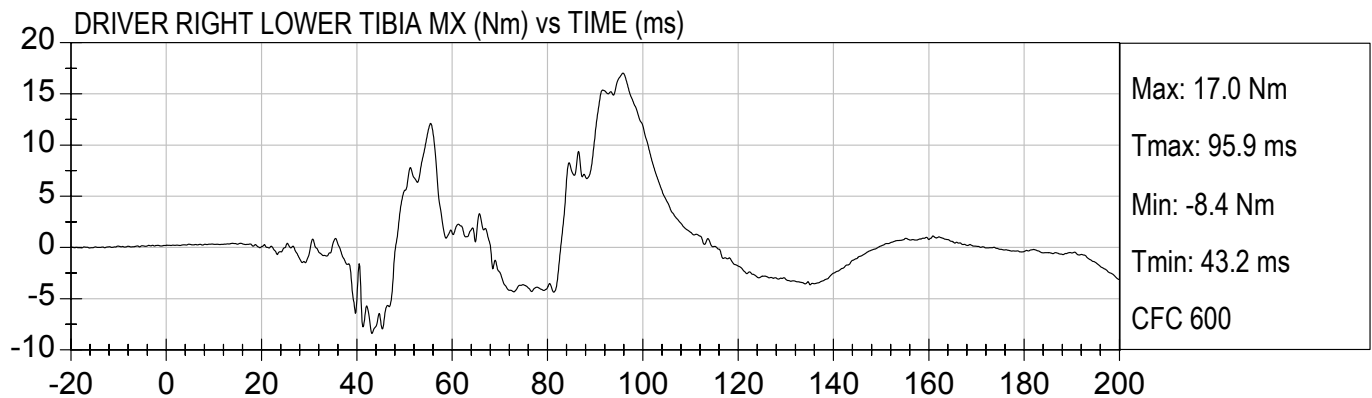


DRIVER RIGHT UPPER TIBIA MY (Nm) vs TIME (ms)

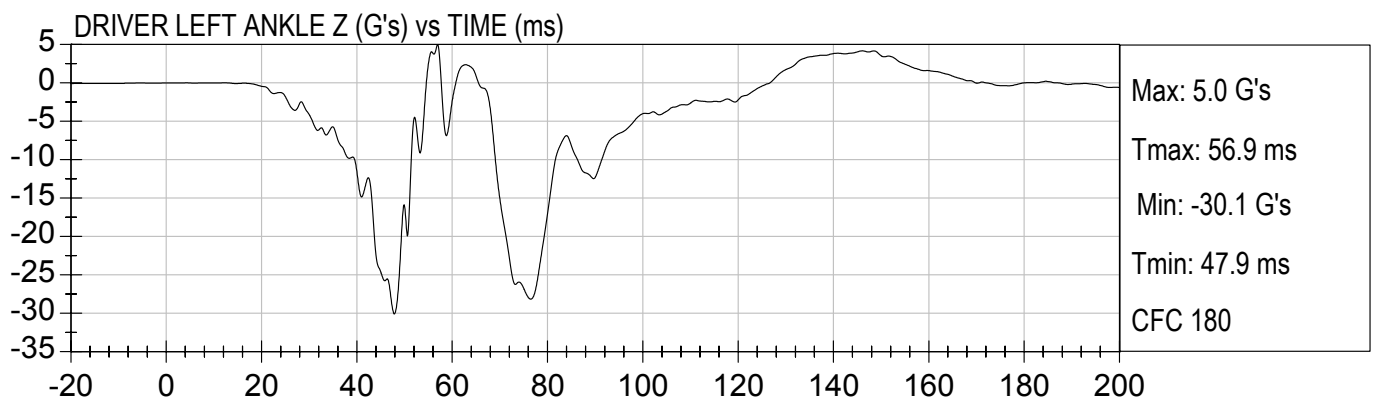
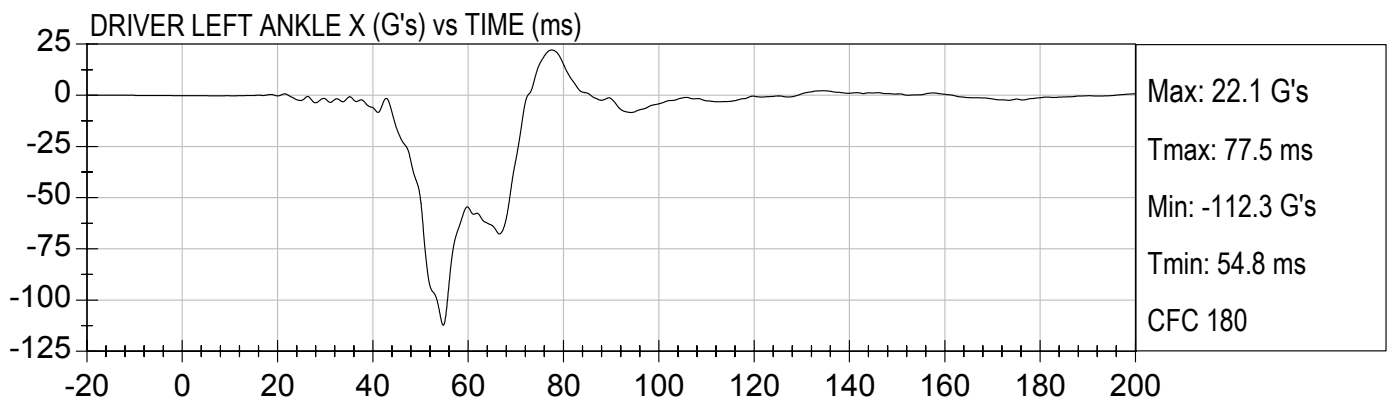
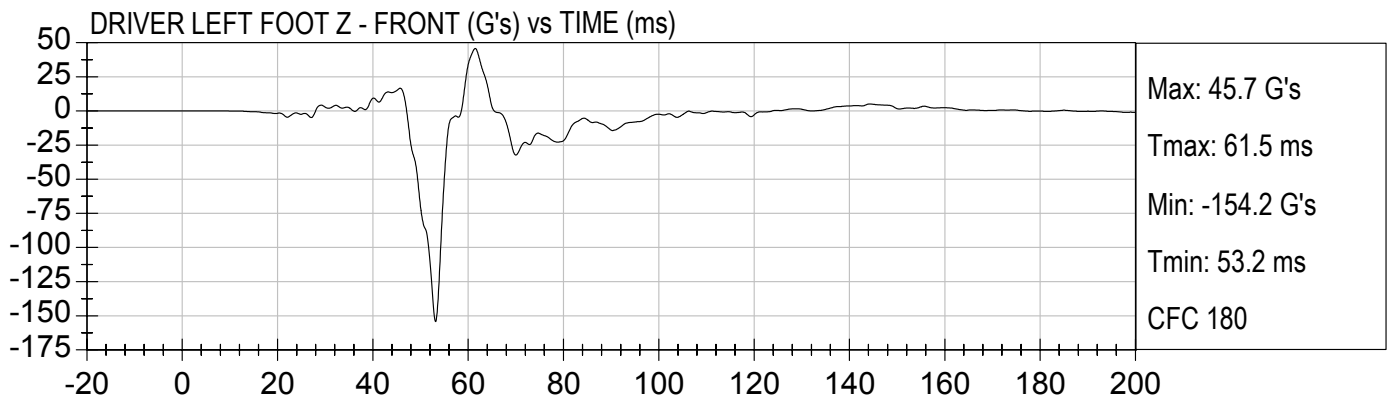


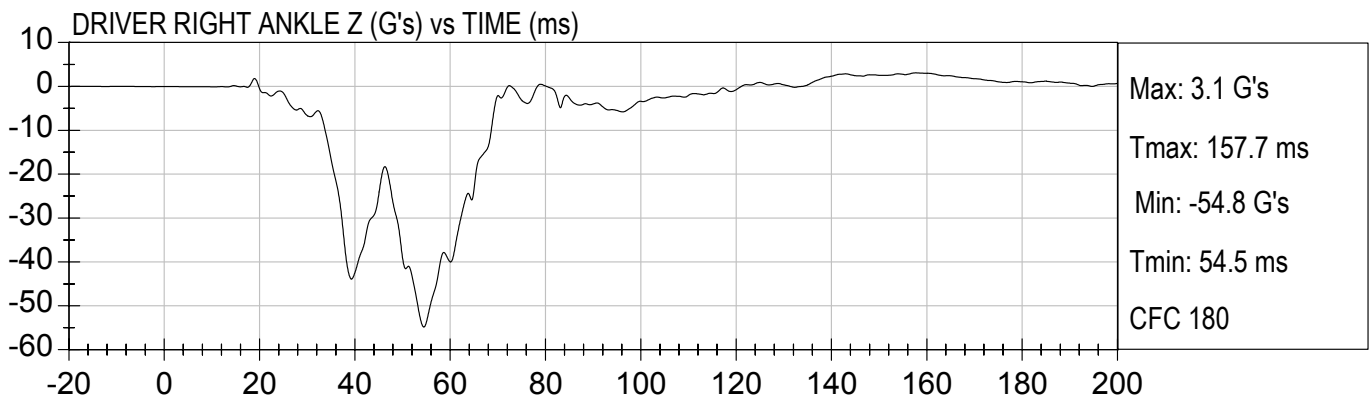
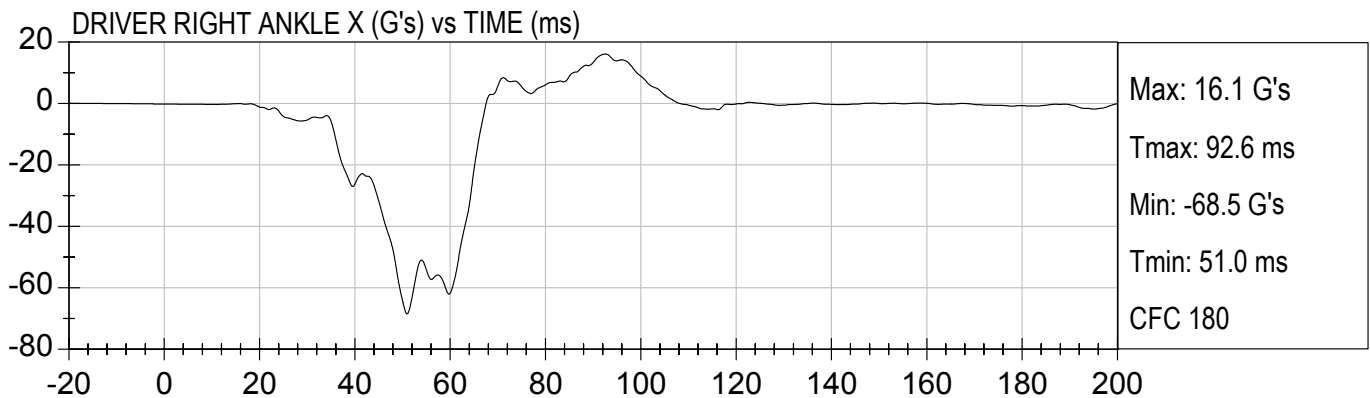
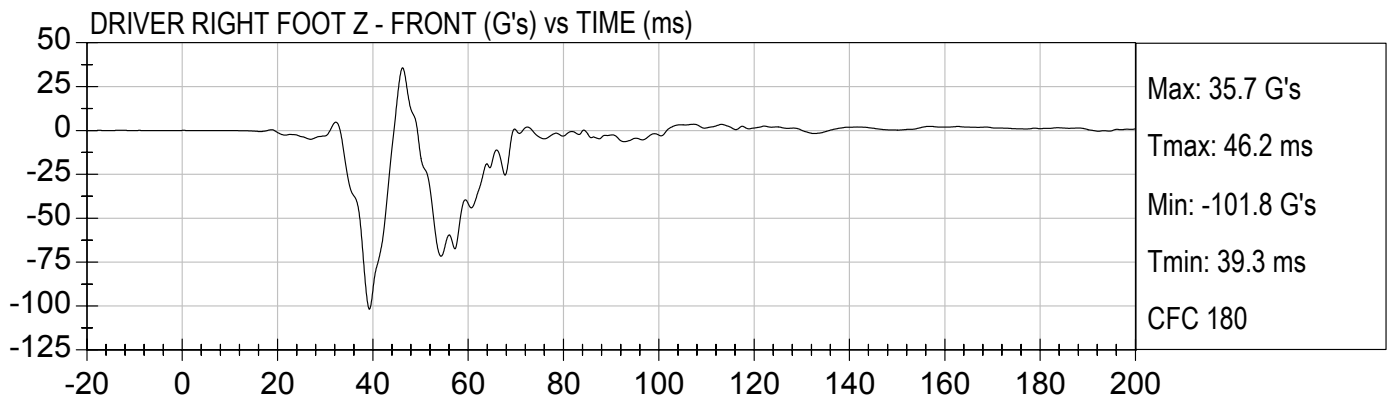
DRIVER RIGHT UPPER TIBIA FZ (N) vs TIME (ms)







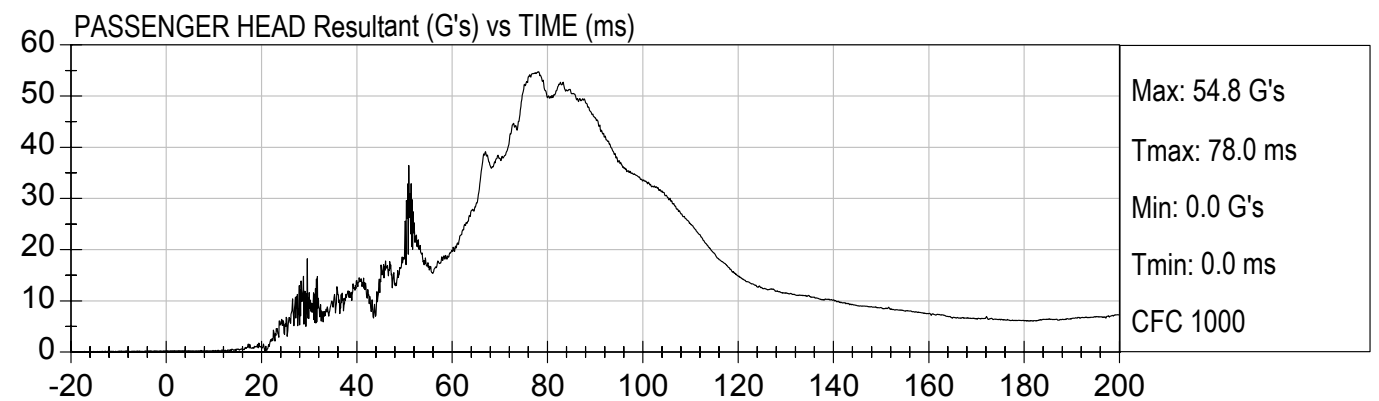
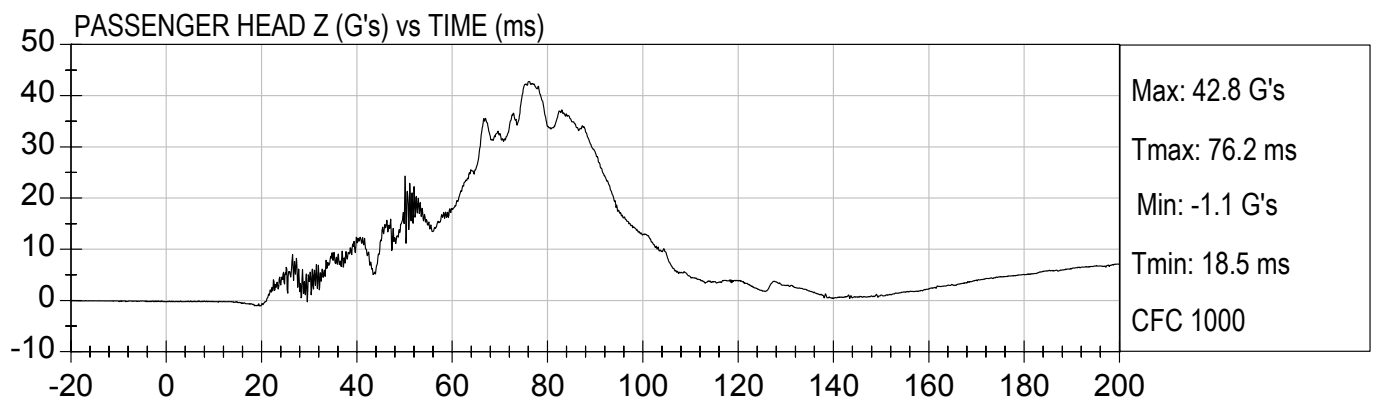
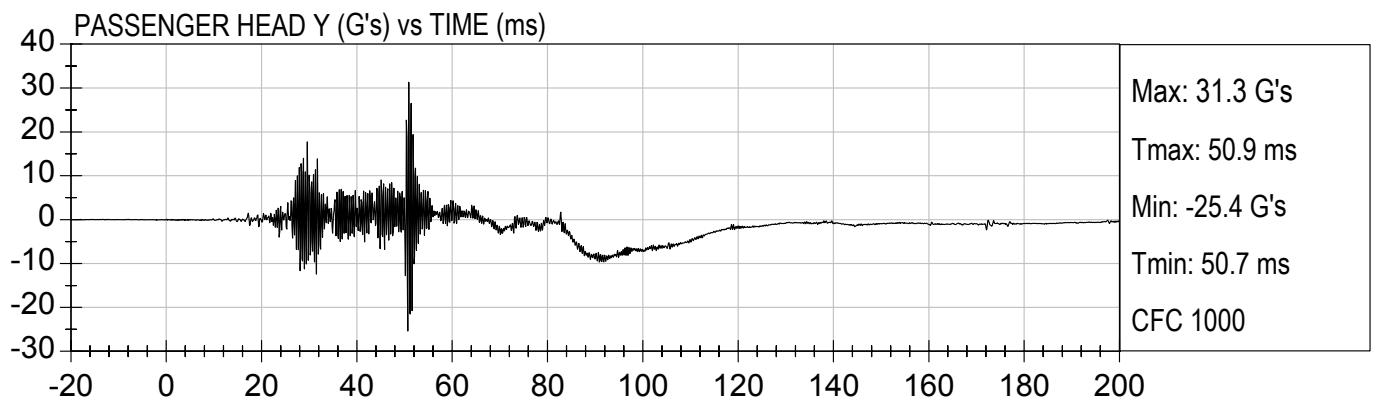
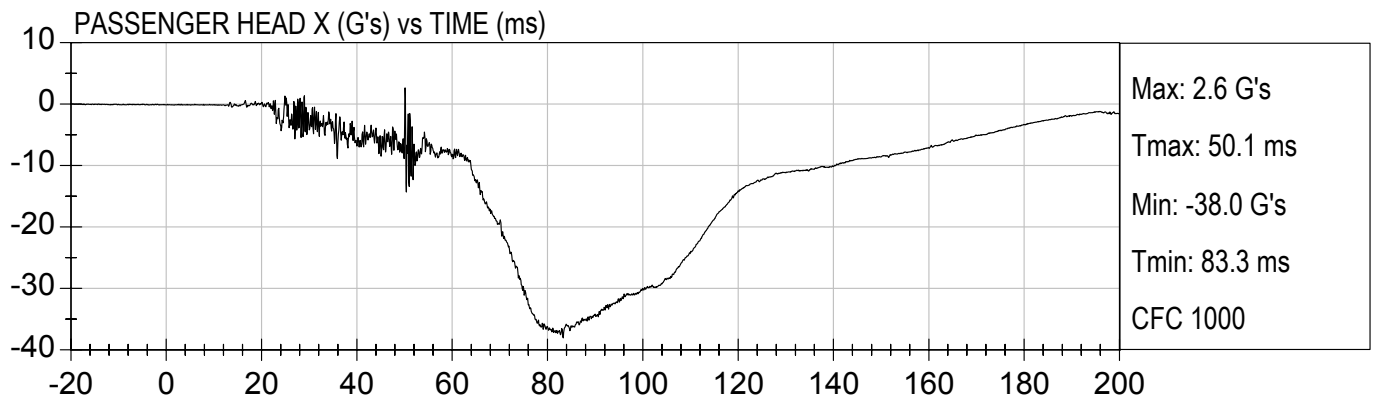




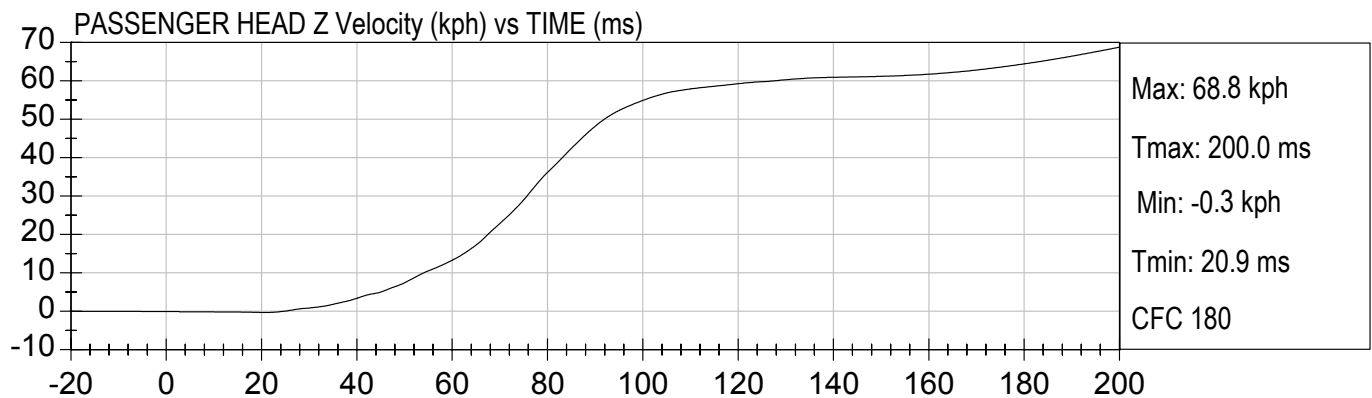
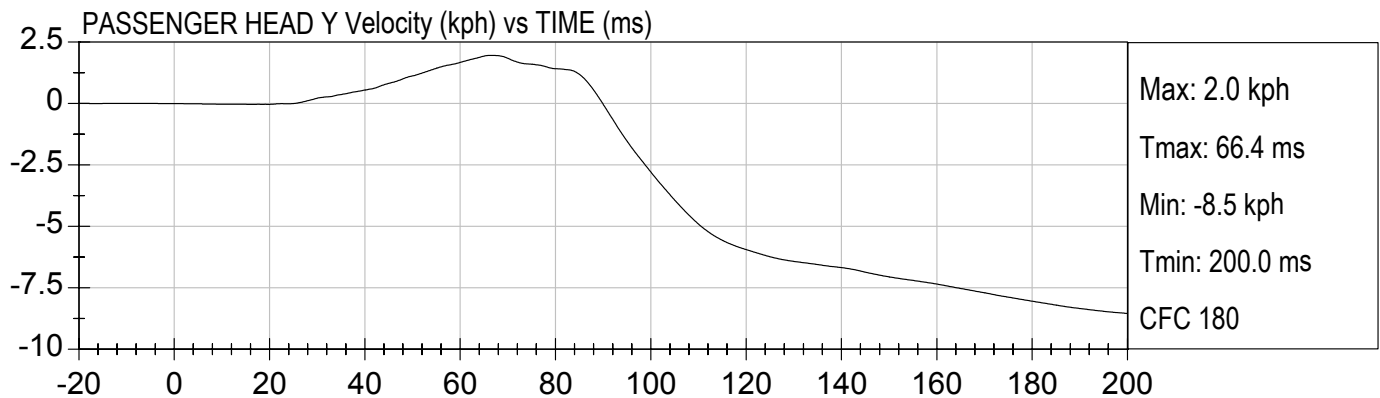
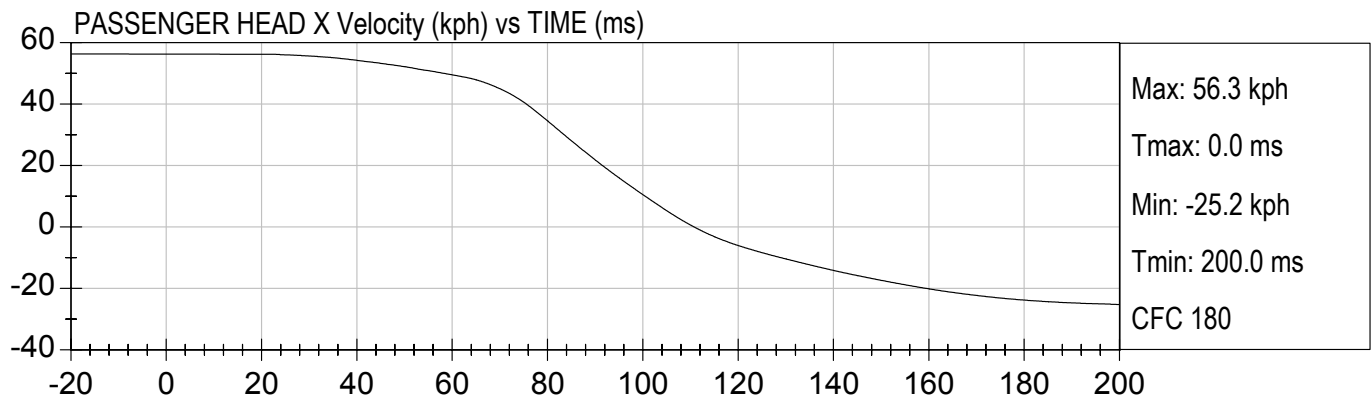


35MPH NCAP FRONTAL  
2004 DODGE DURANGO STE (M40303)

Test Date: 2/17/2004  
Speed: 35.0 mph (56.3 km/h)



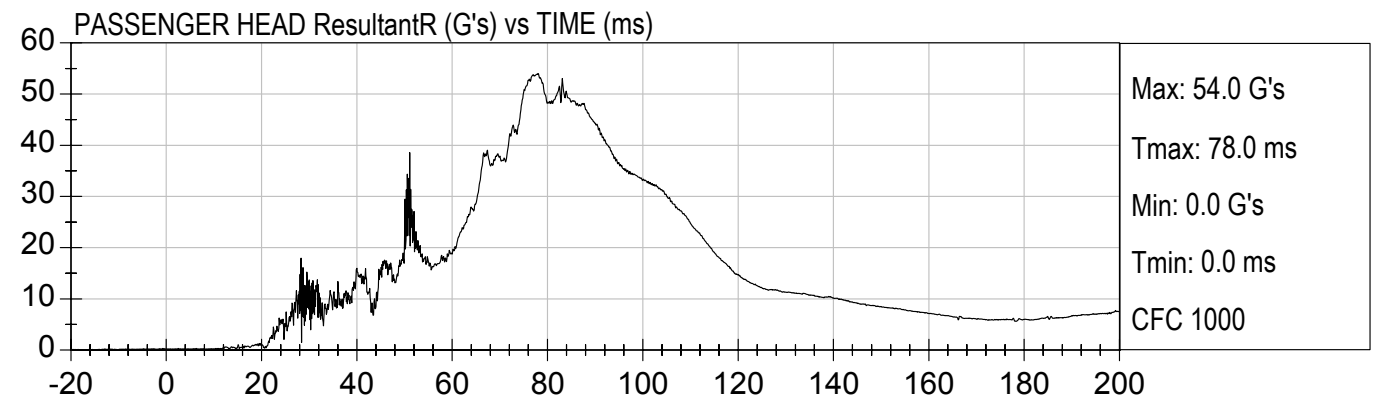
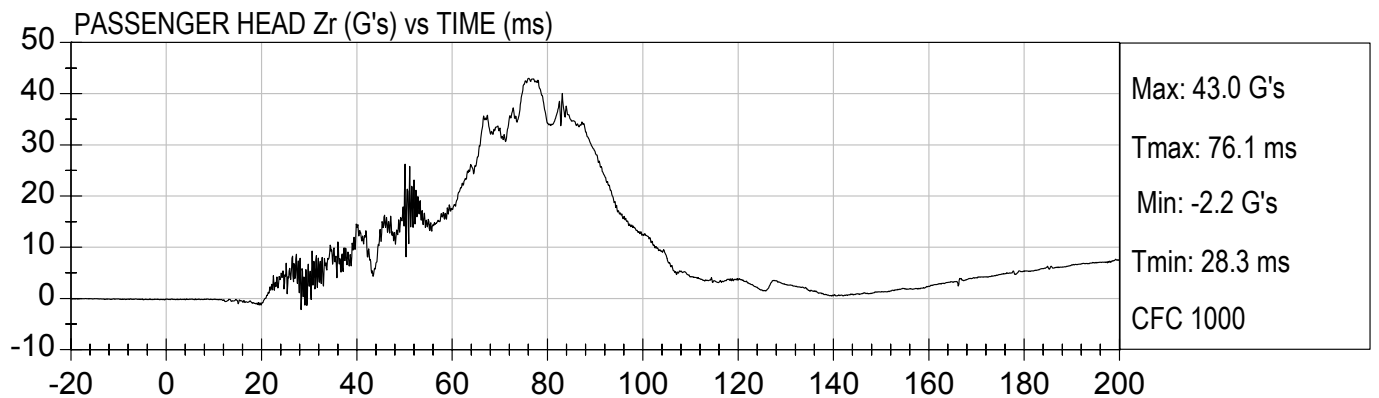
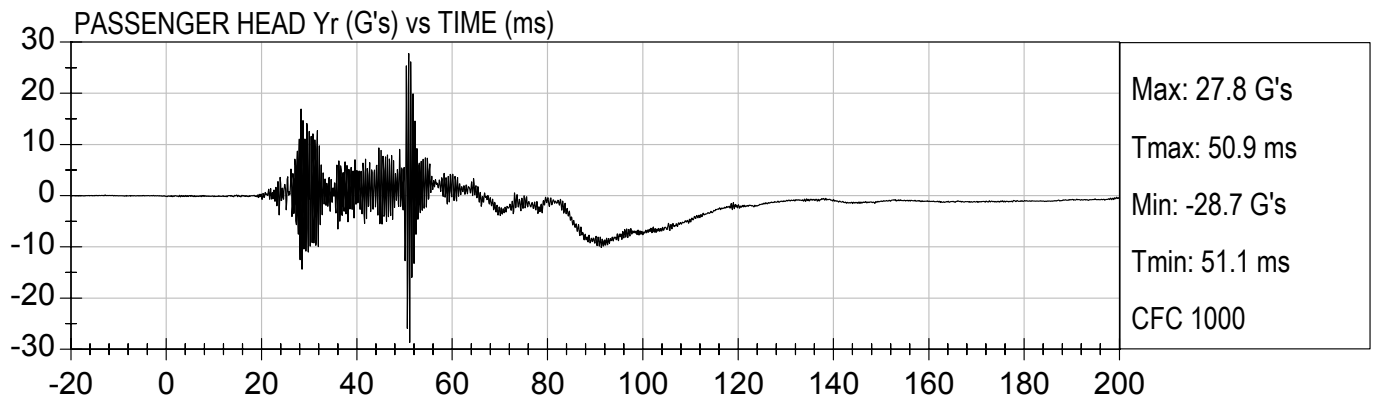
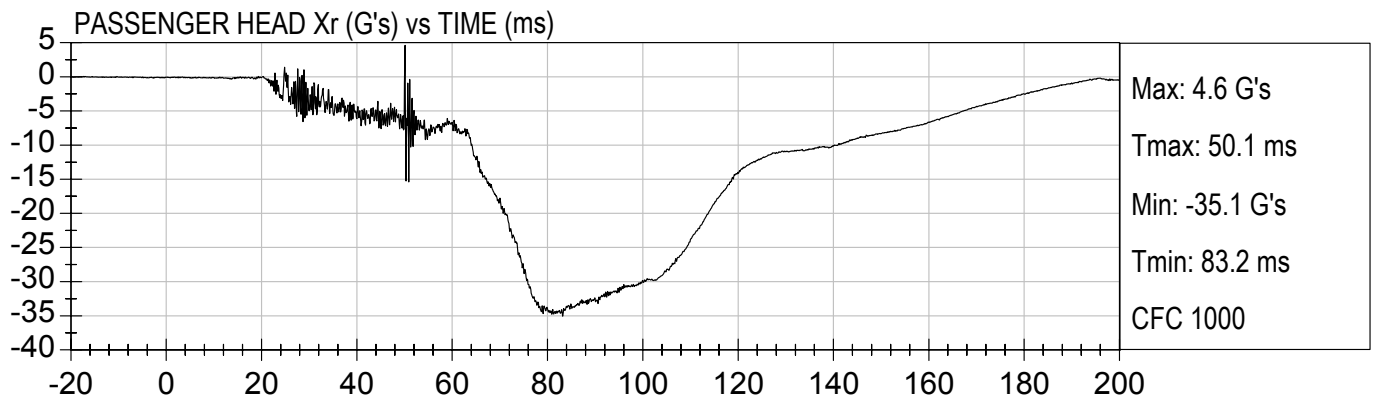


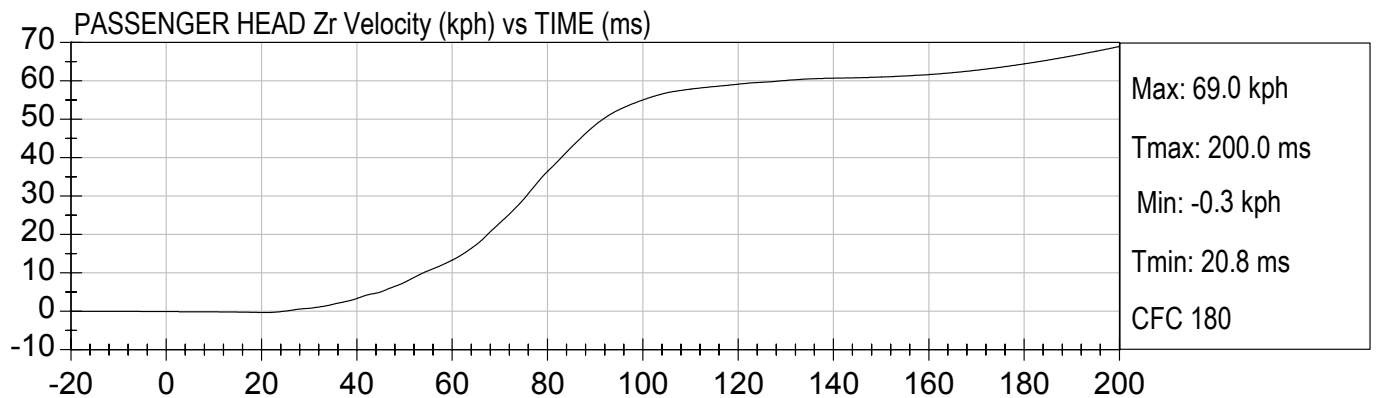
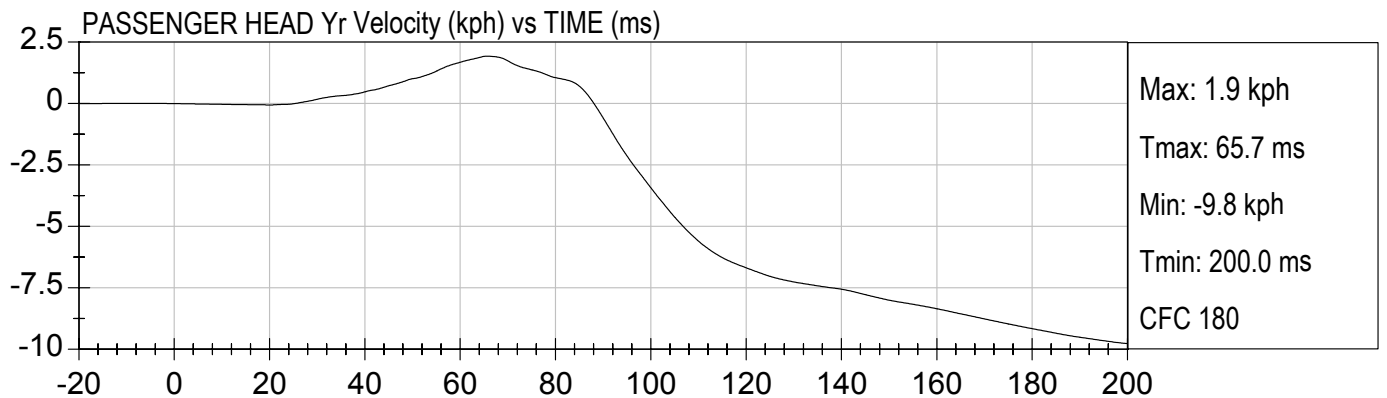
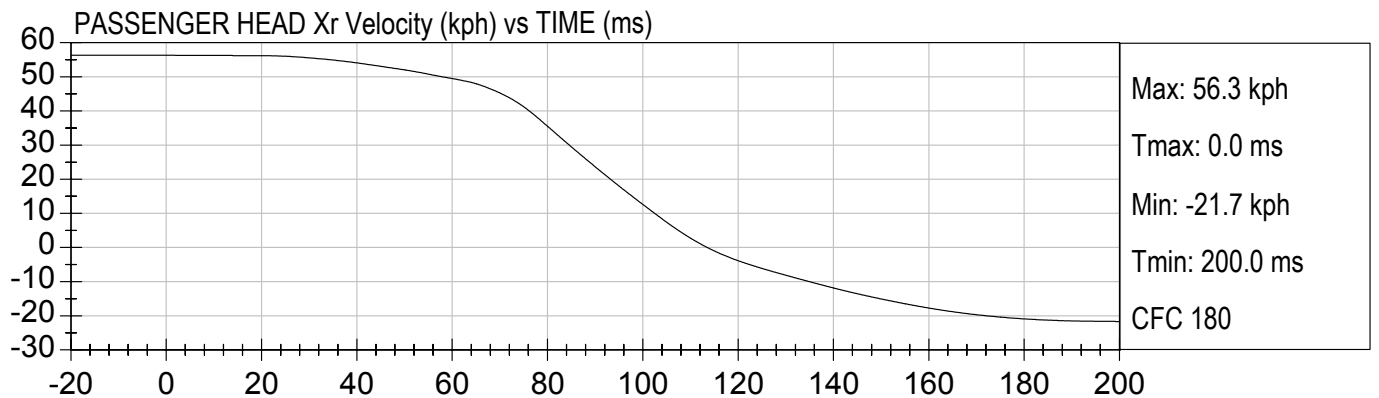




35MPH NCAP FRONTAL  
2004 DODGE DURANGO STE (M40303)

Test Date: 2/17/2004  
Speed: 35.0 mph (56.3 km/h)



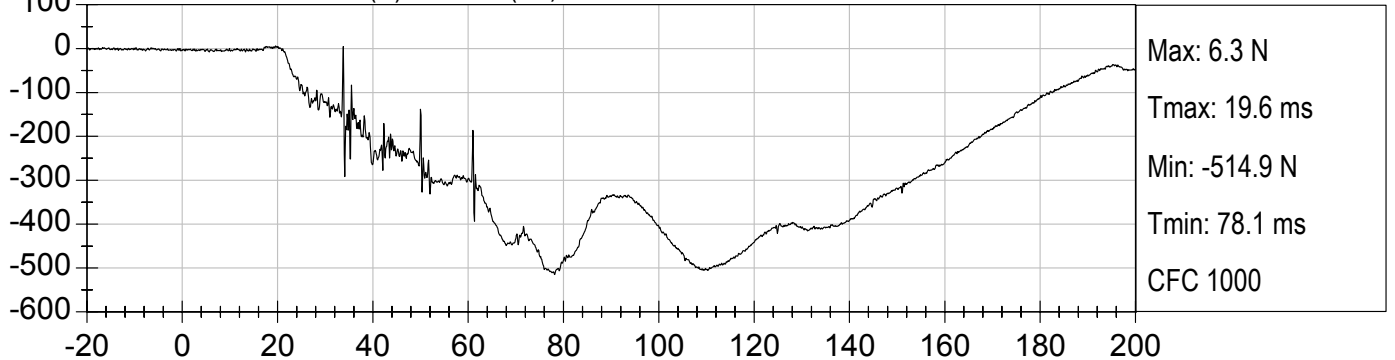




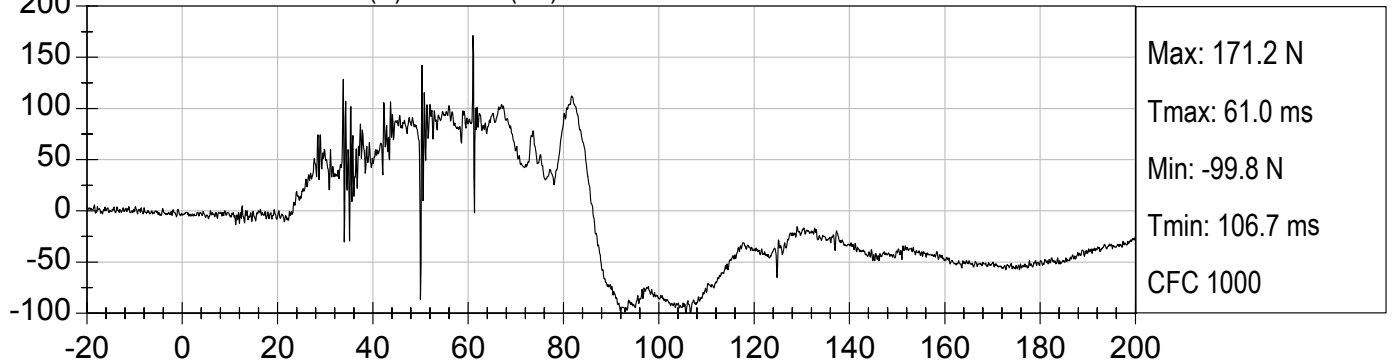
35MPH NCAP FRONTAL  
2004 DODGE DURANGO STE (M40303)

Test Date: 2/17/2004  
Speed: 35.0 mph (56.3 km/h)

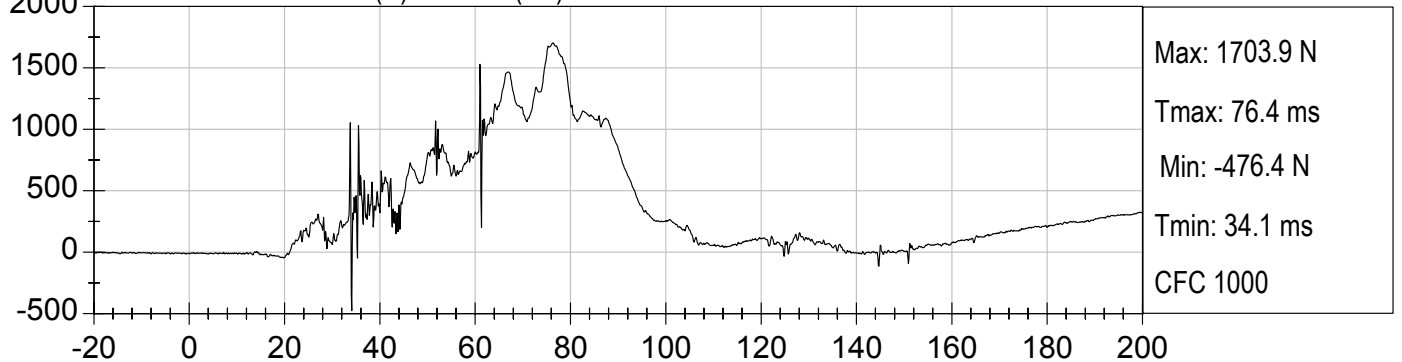
PASSENGER NECK FX (N) vs TIME (ms)



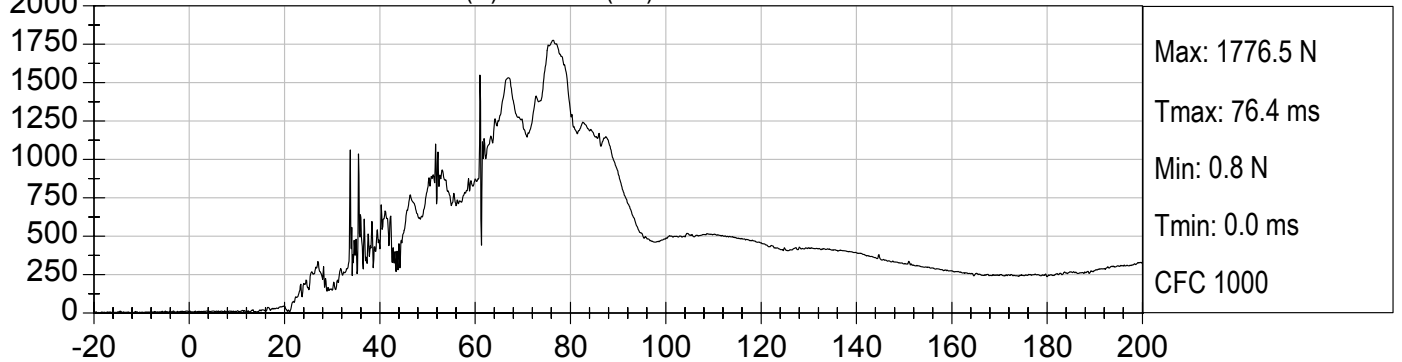
PASSENGER NECK FY (N) vs TIME (ms)



PASSENGER NECK FZ (N) vs TIME (ms)



PASSENGER NECK FResultant (N) vs TIME (ms)



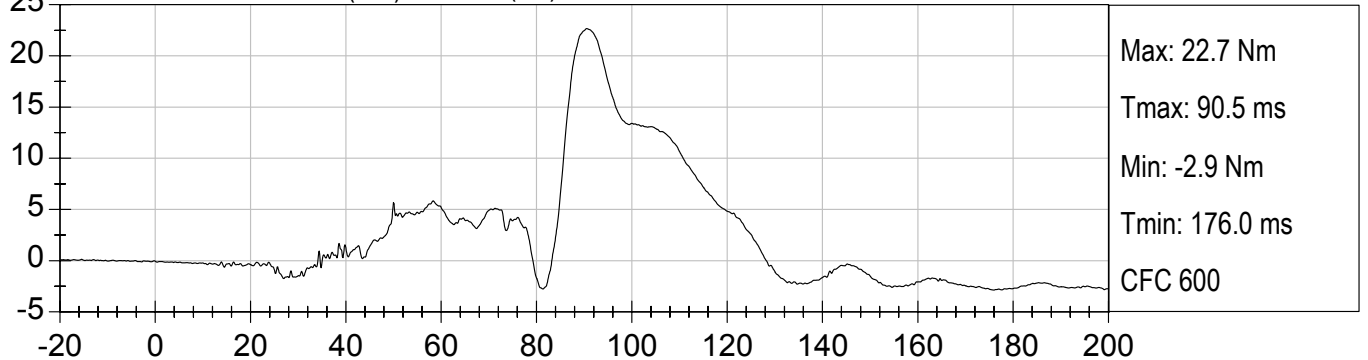




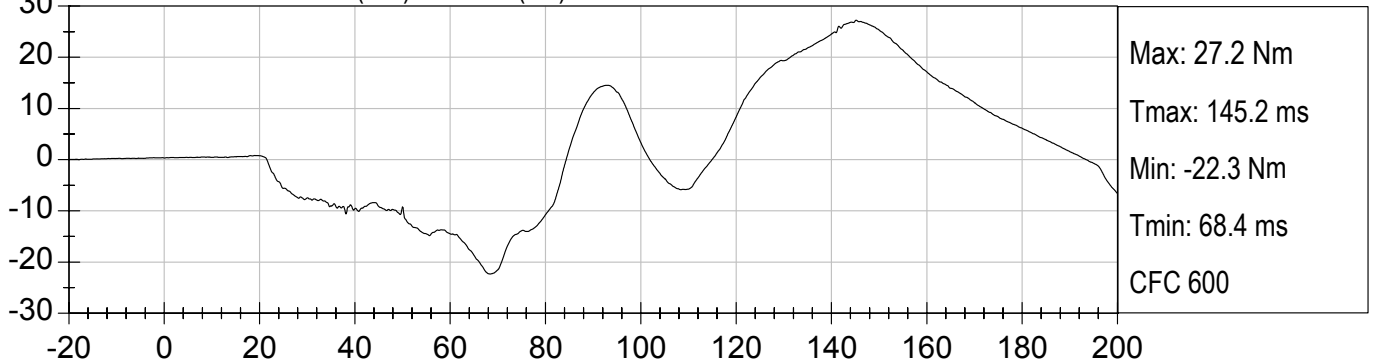
35MPH NCAP FRONTAL  
2004 DODGE DURANGO STE (M40303)

Test Date: 2/17/2004  
Speed: 35.0 mph (56.3 km/h)

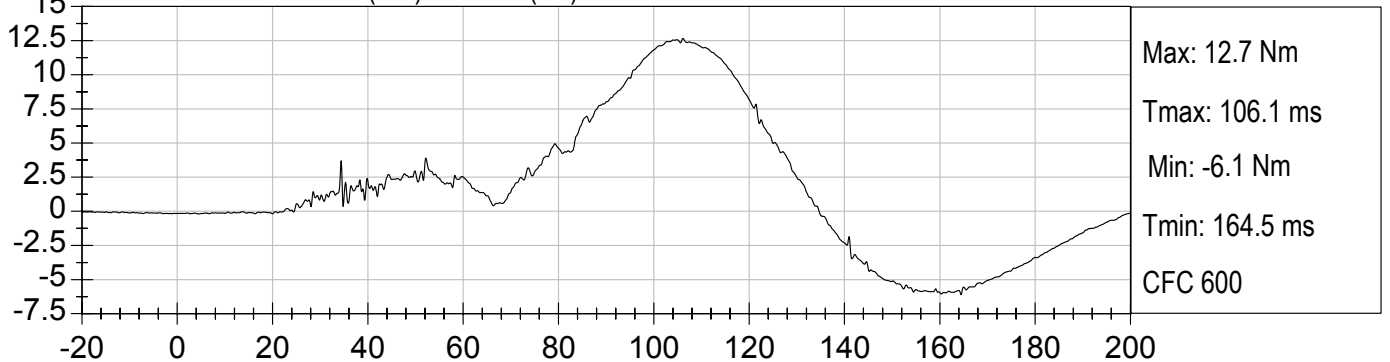
PASSENGER NECK MX (Nm) vs TIME (ms)



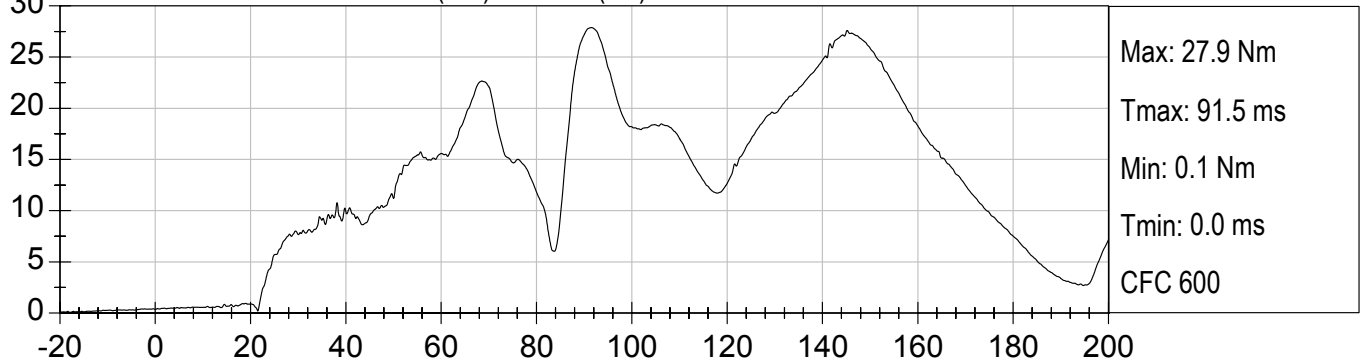
PASSENGER NECK MY (Nm) vs TIME (ms)

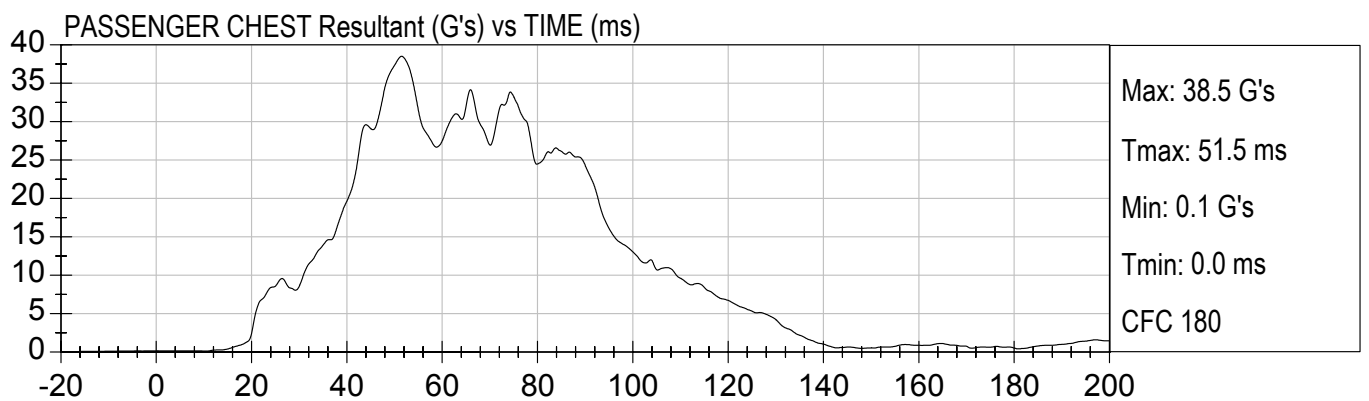
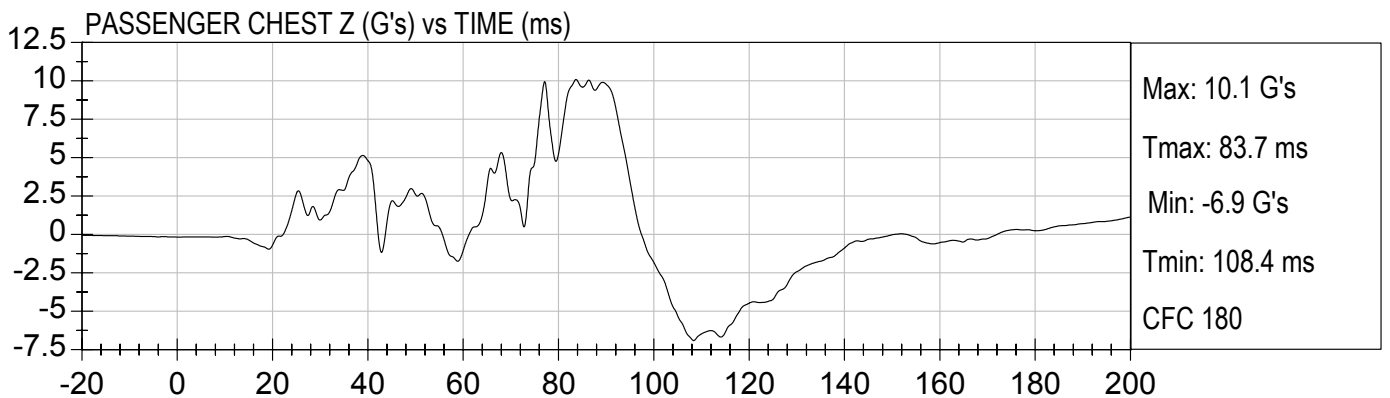
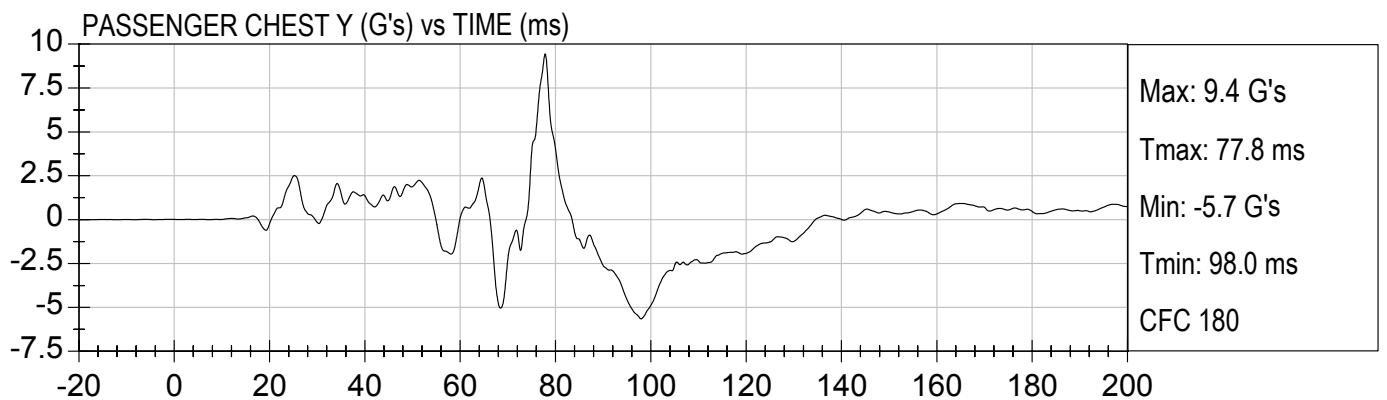
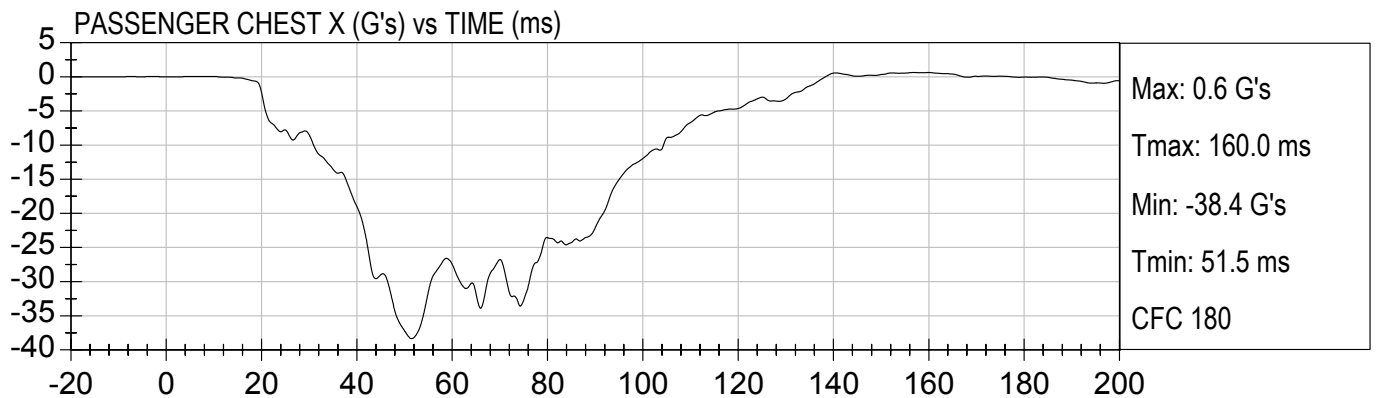


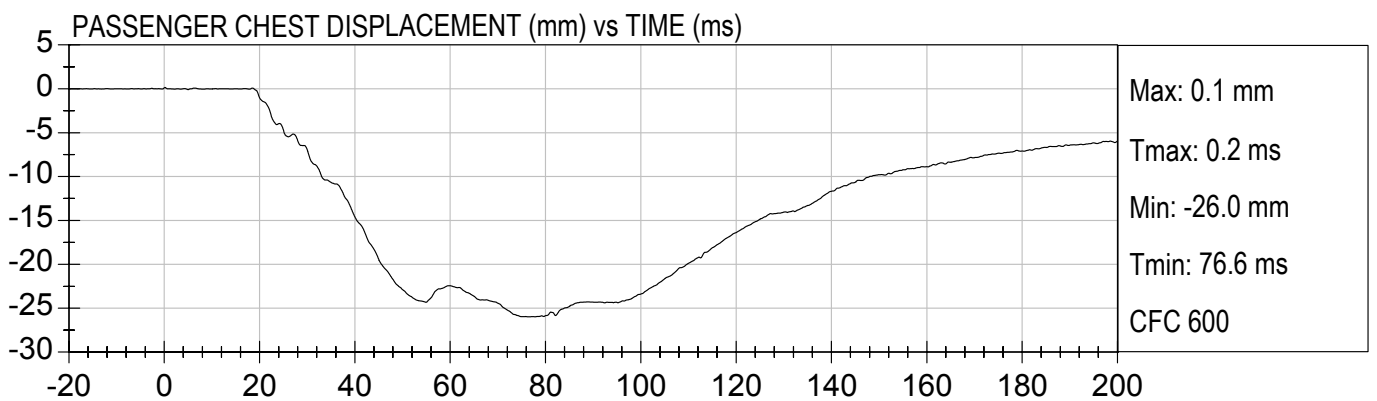
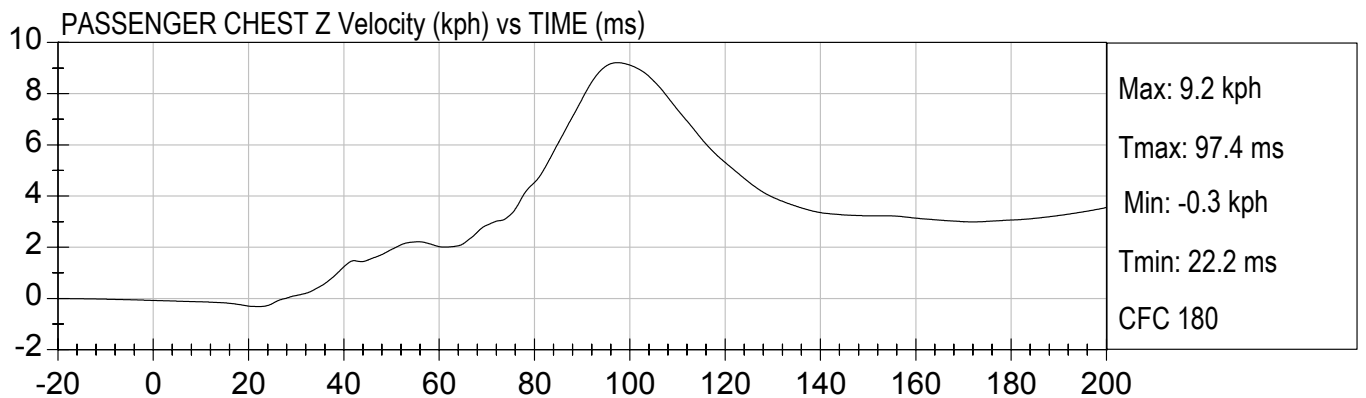
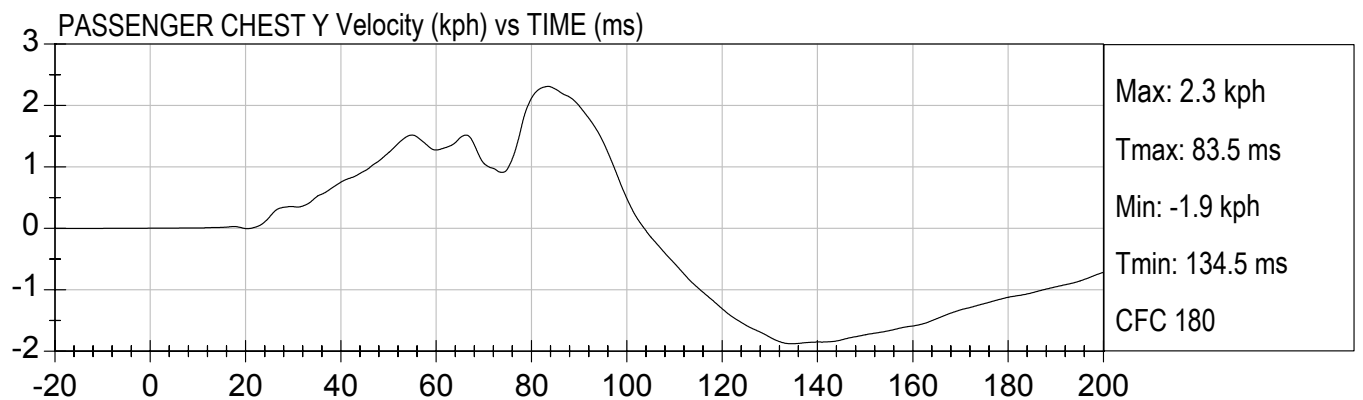
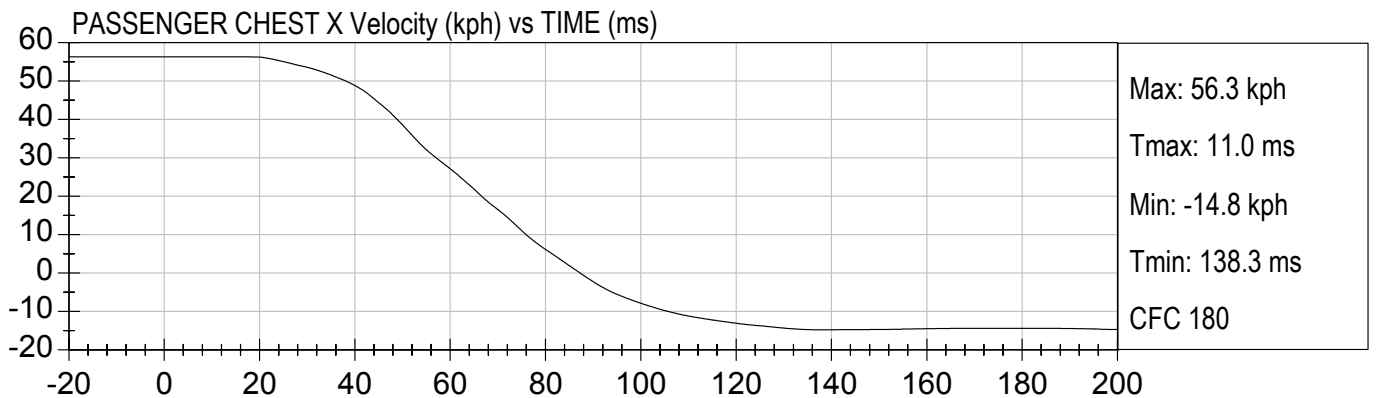
PASSENGER NECK MZ (Nm) vs TIME (ms)



PASSENGER NECK MResultant (Nm) vs TIME (ms)



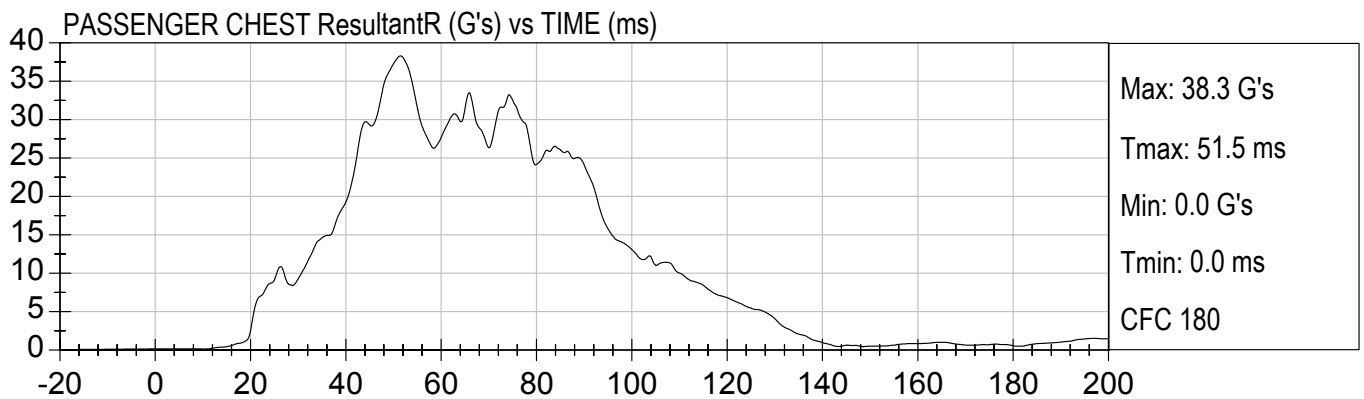
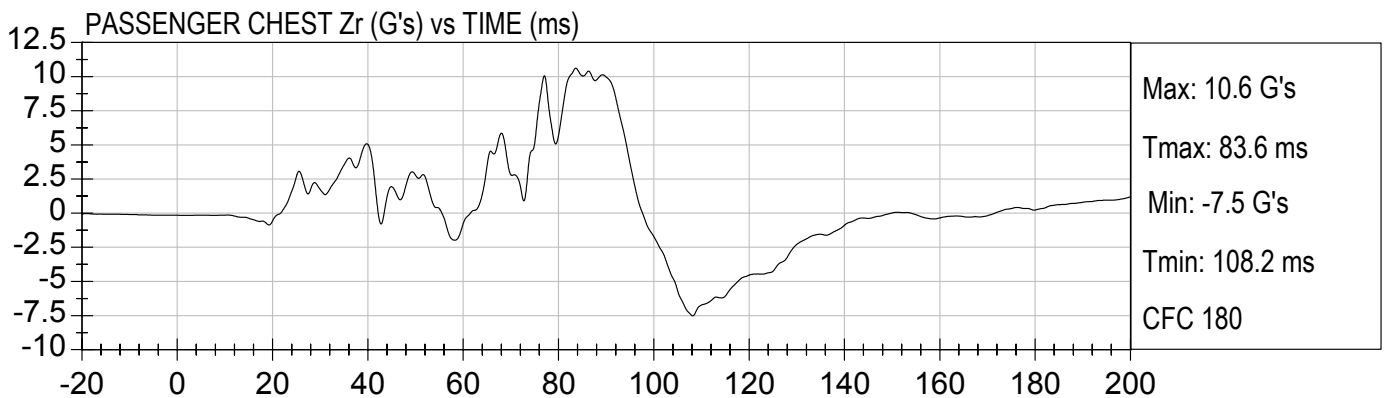
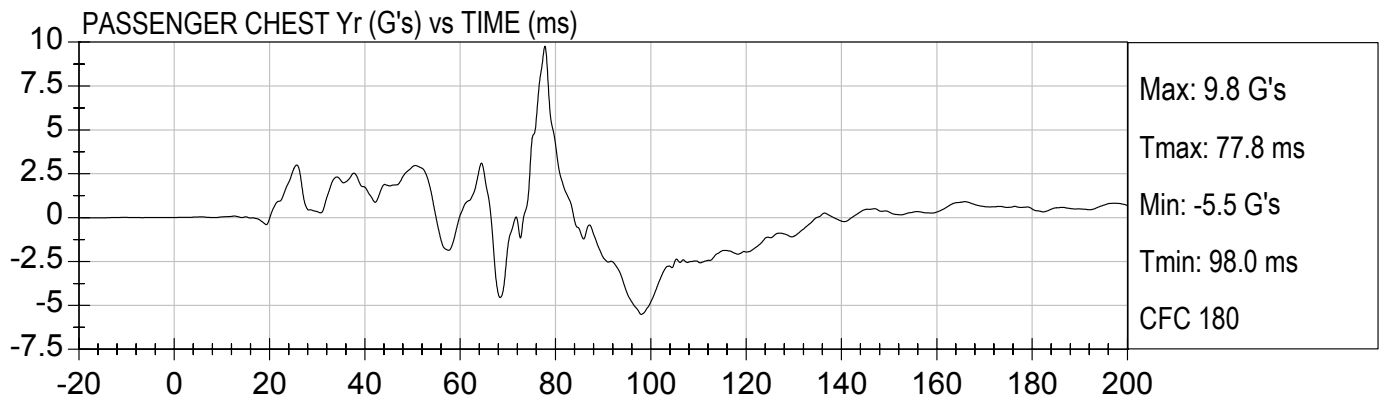
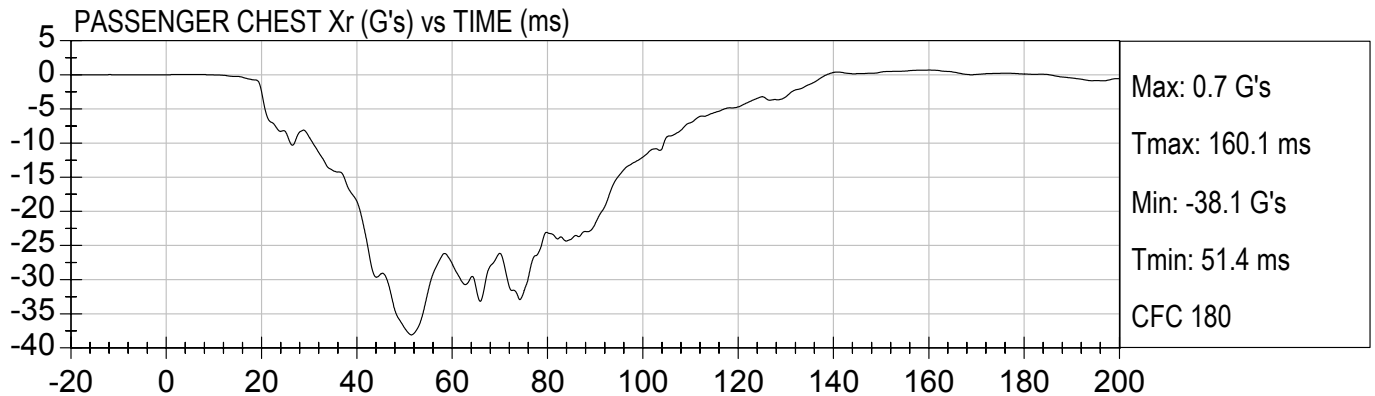




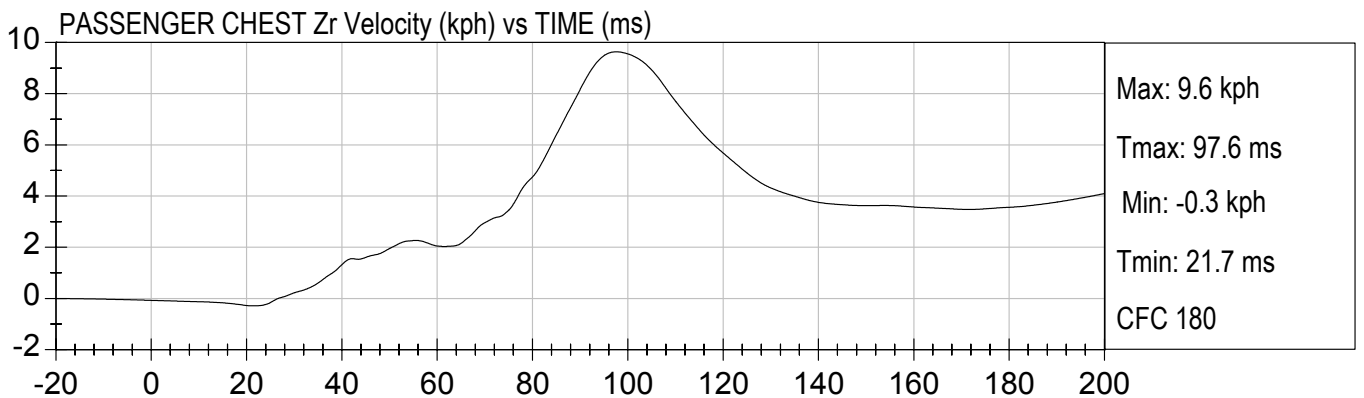
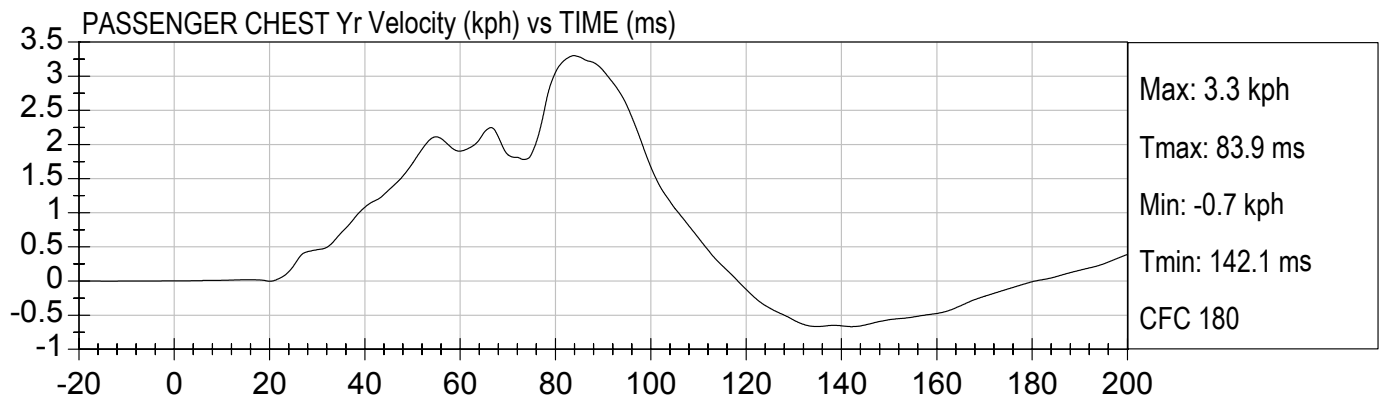
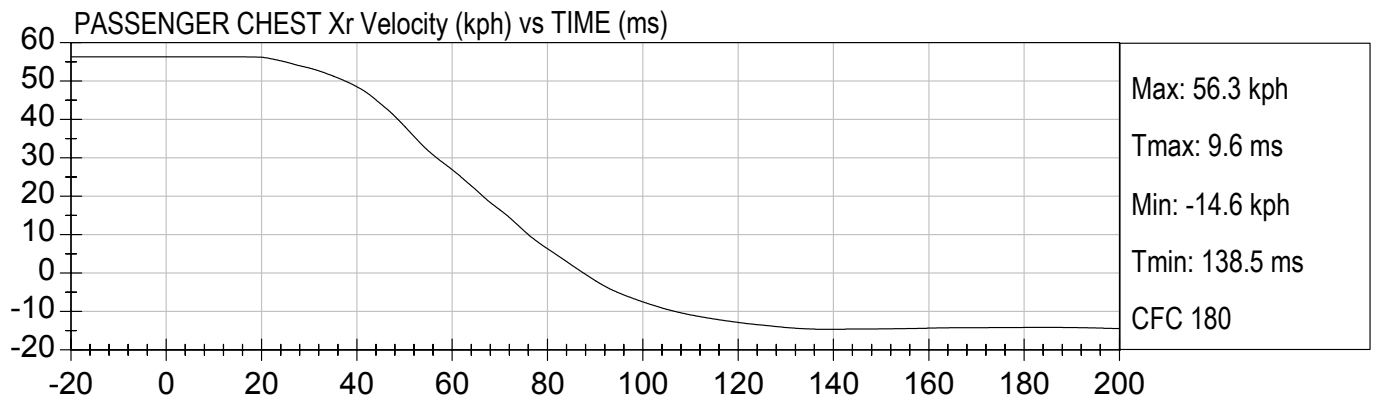


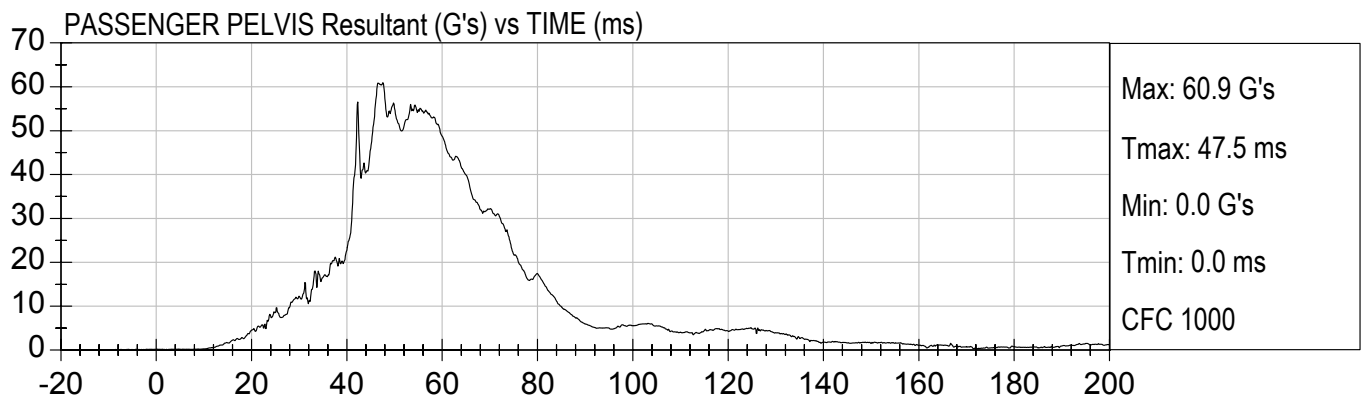
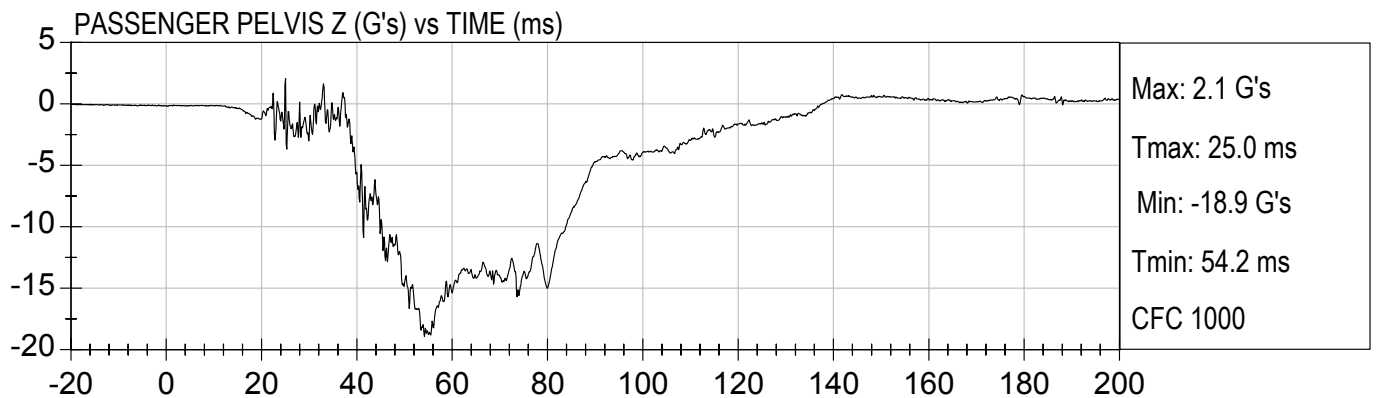
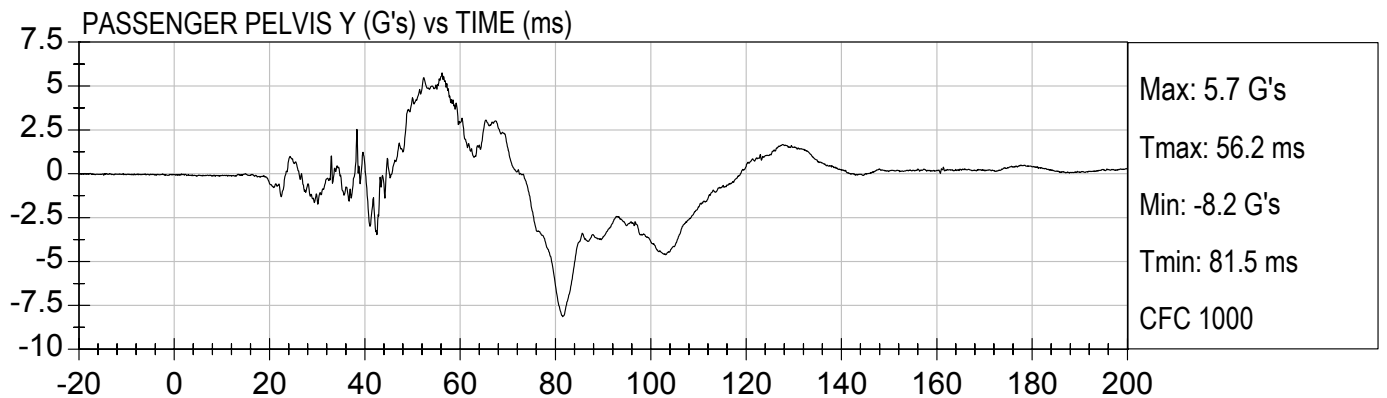
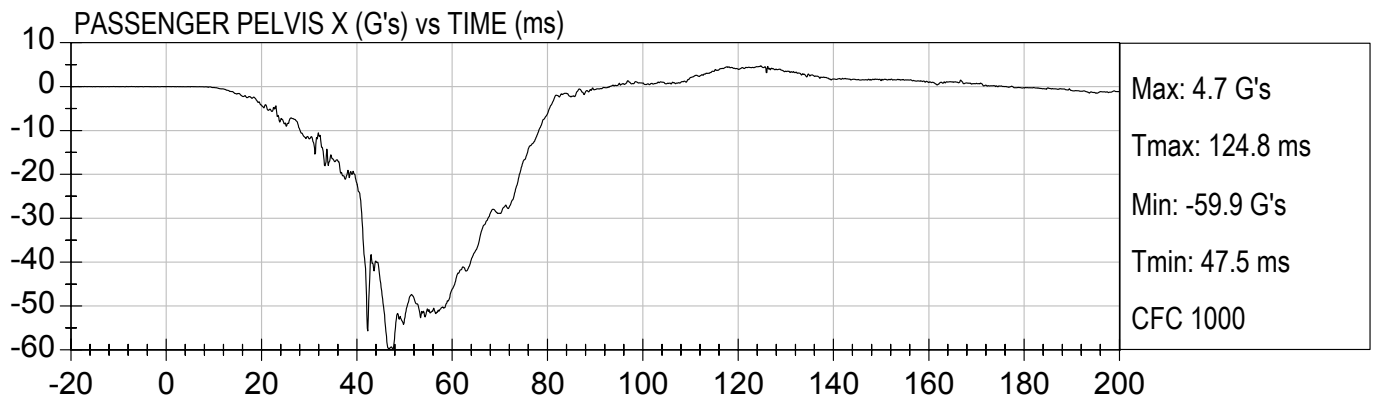
35MPH NCAP FRONTAL  
2004 DODGE DURANGO STE (M40303)

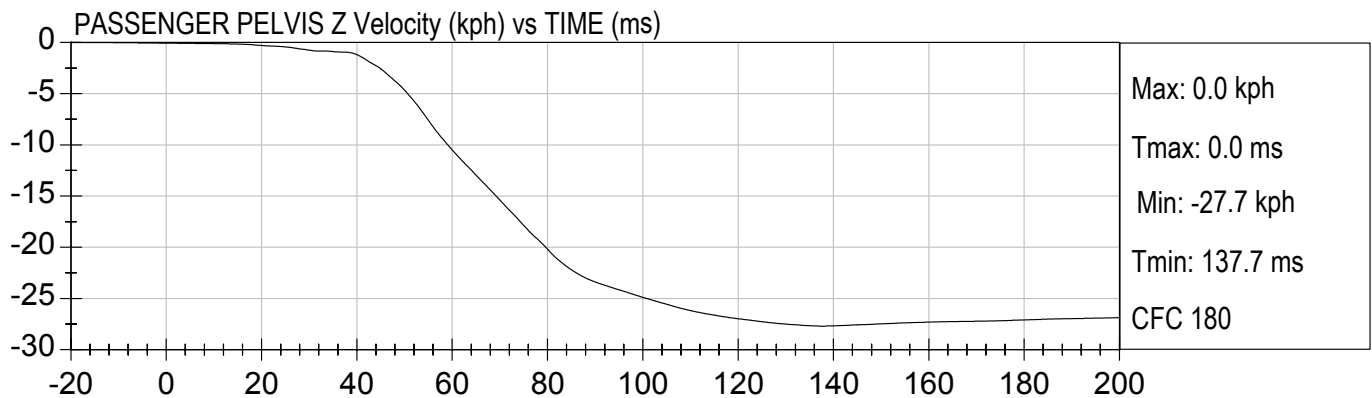
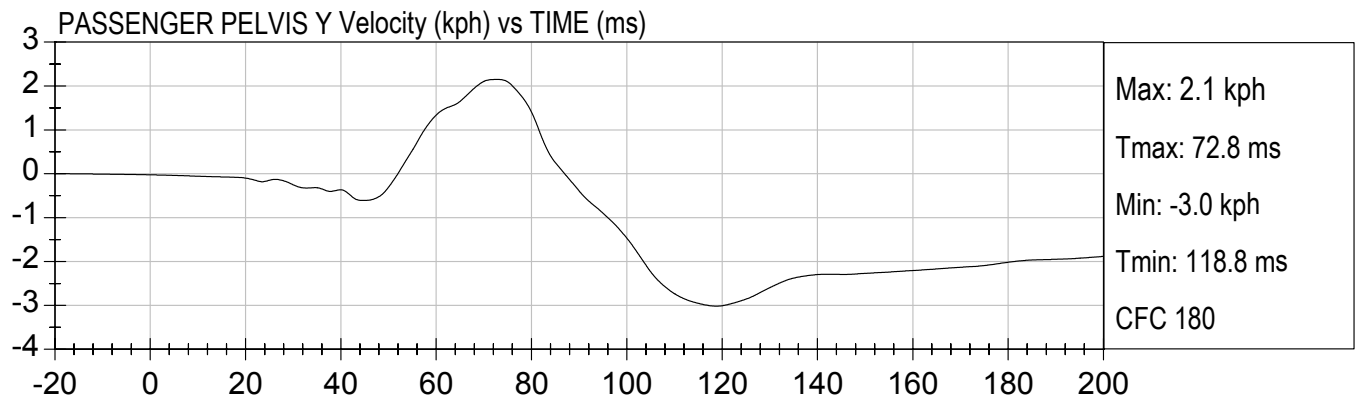
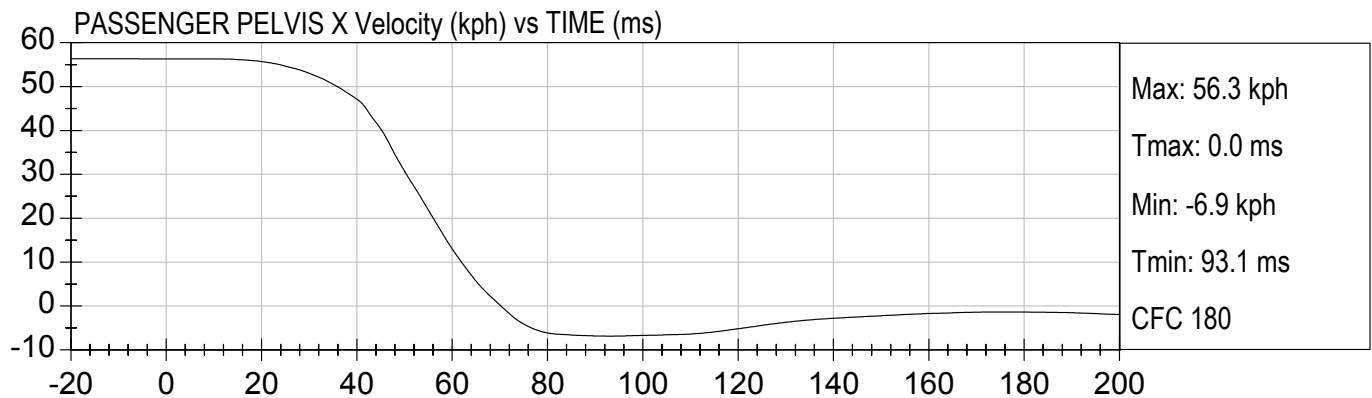
Test Date: 2/17/2004  
Speed: 35.0 mph (56.3 km/h)







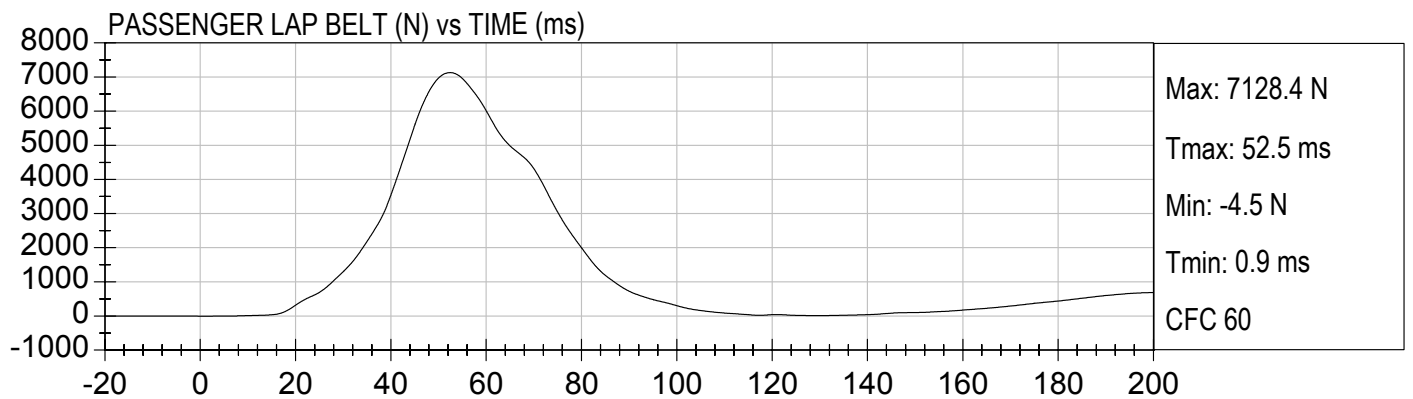
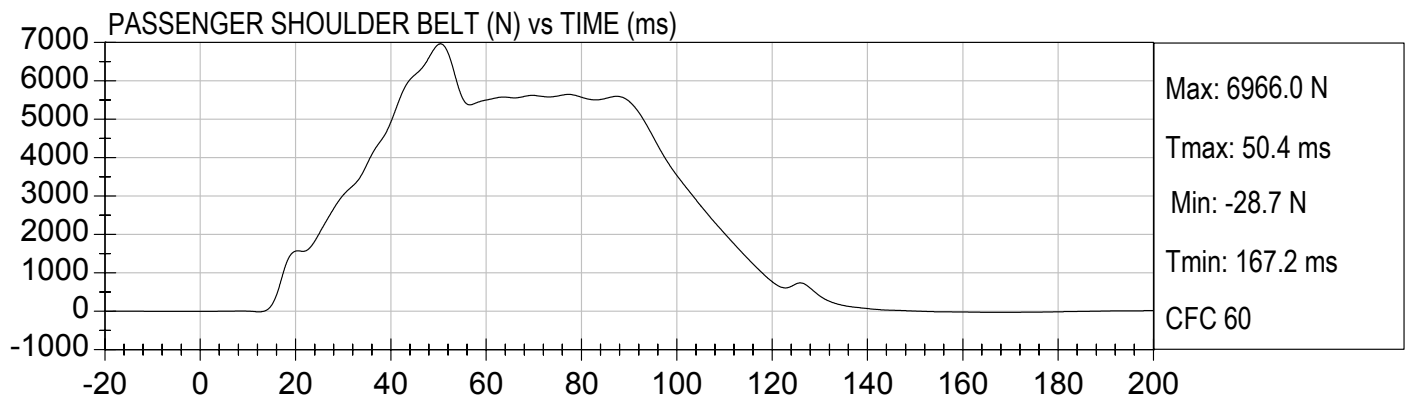
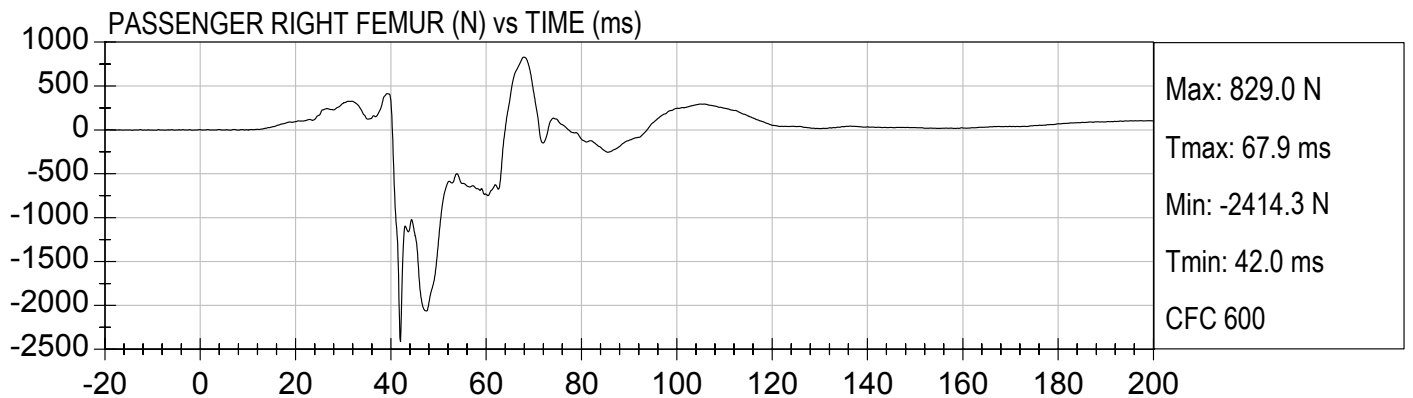
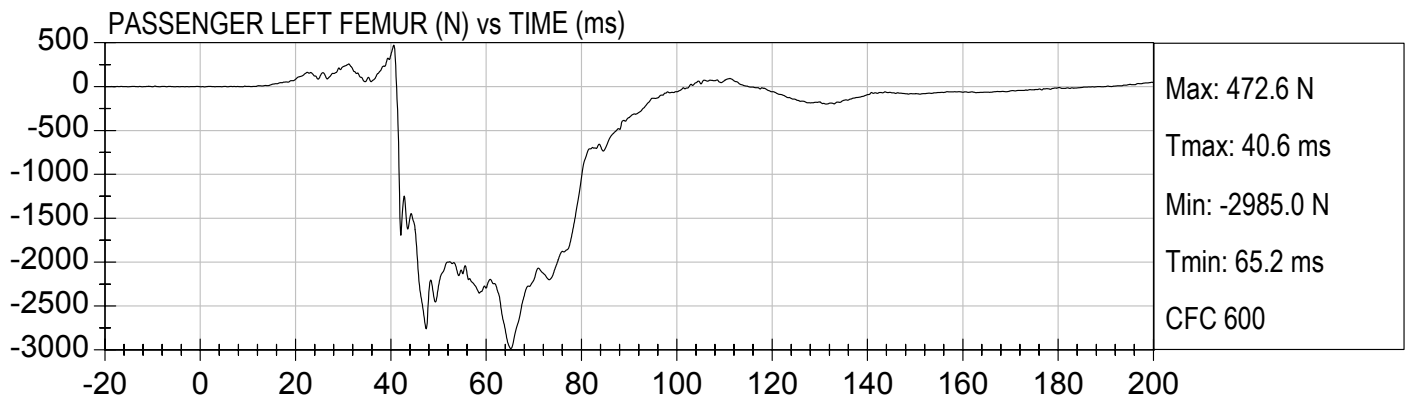






35MPH NCAP FRONTAL  
2004 DODGE DURANGO STE (M40303)

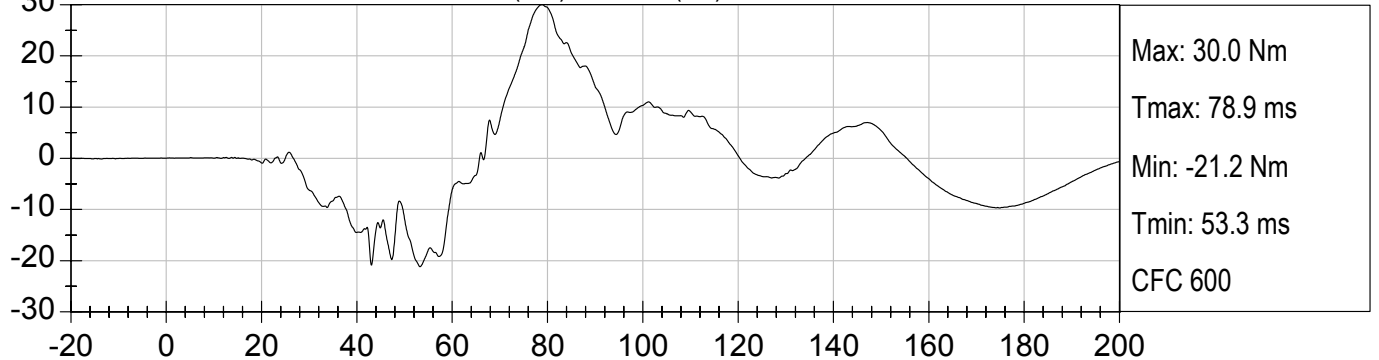
Test Date: 2/17/2004  
Speed: 35.0 mph (56.3 km/h)



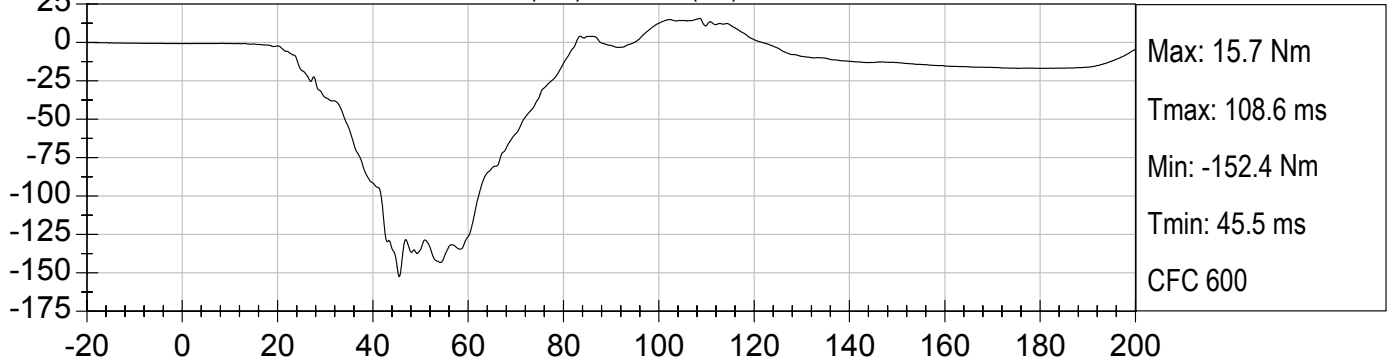




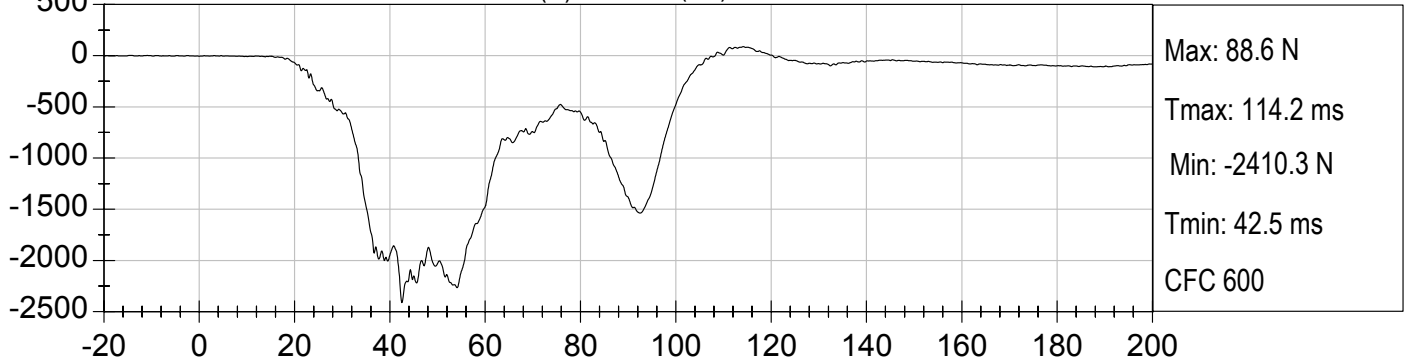
PASSENGER LEFT UPPER TIBIA MX (Nm) vs TIME (ms)



PASSENGER LEFT UPPER TIBIA MY (Nm) vs TIME (ms)

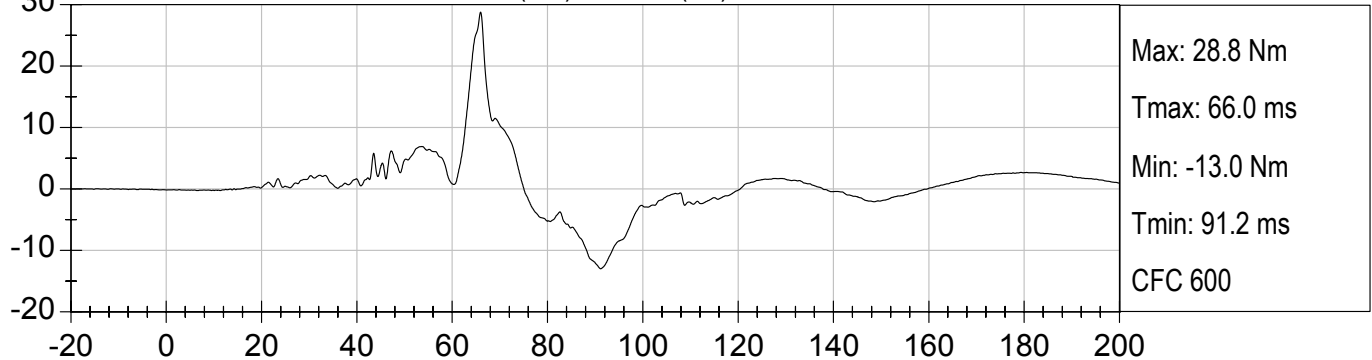


PASSENGER LEFT UPPER TIBIA FZ (N) vs TIME (ms)

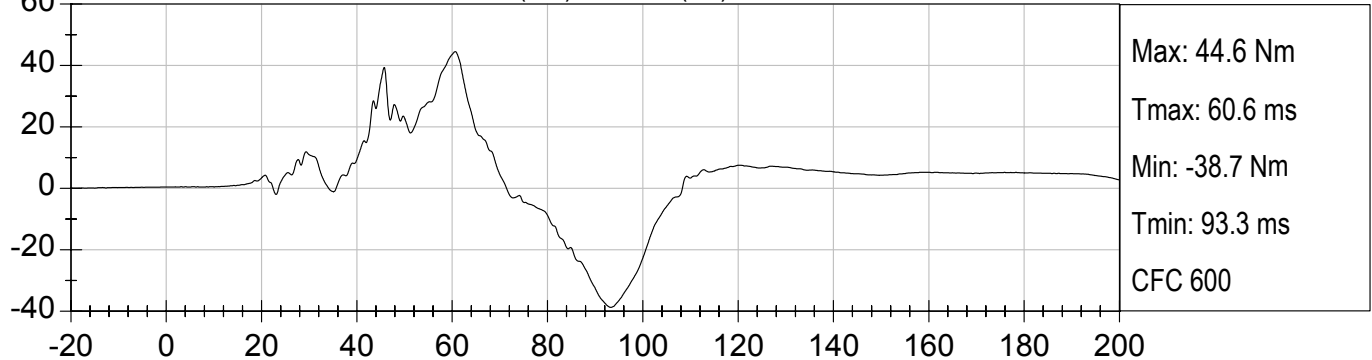




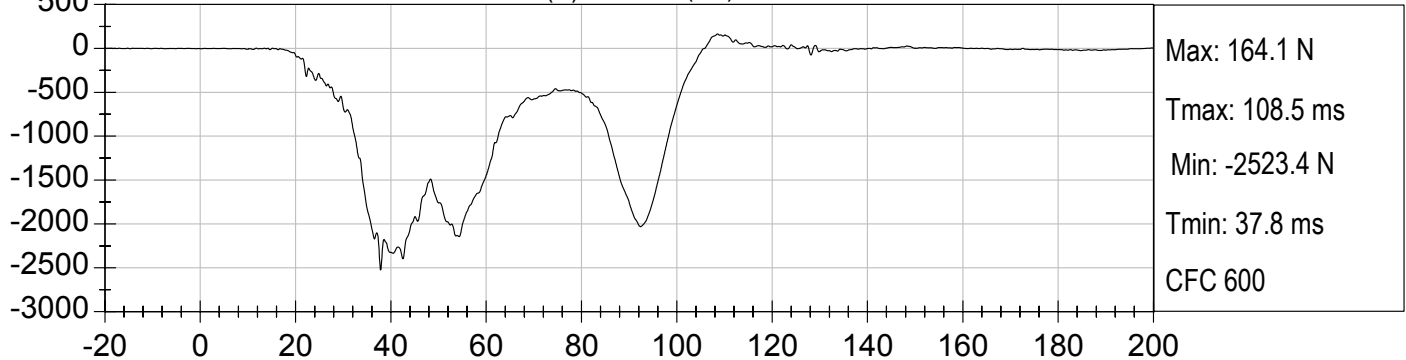
PASSENGER LEFT LOWER TIBIA MX (Nm) vs TIME (ms)



PASSENGER LEFT LOWER TIBIA MY (Nm) vs TIME (ms)

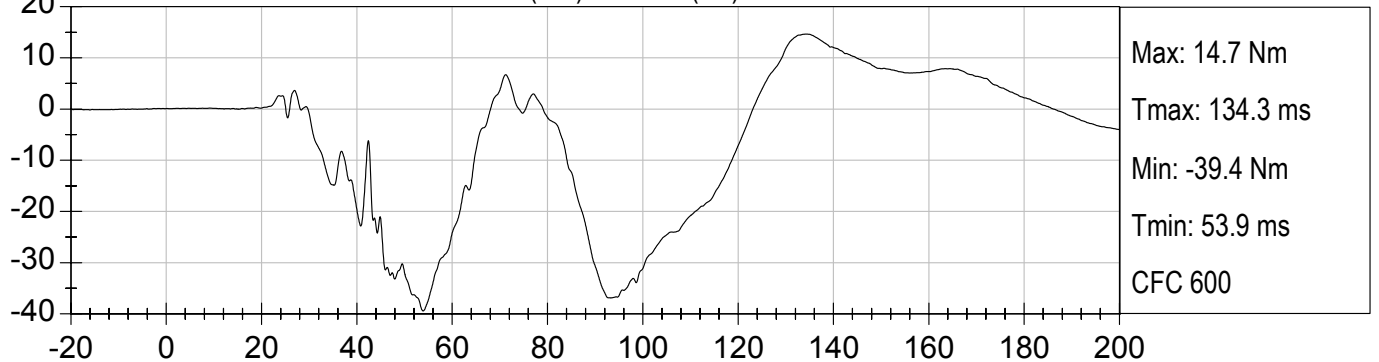


PASSENGER LEFT LOWER TIBIA FZ (N) vs TIME (ms)

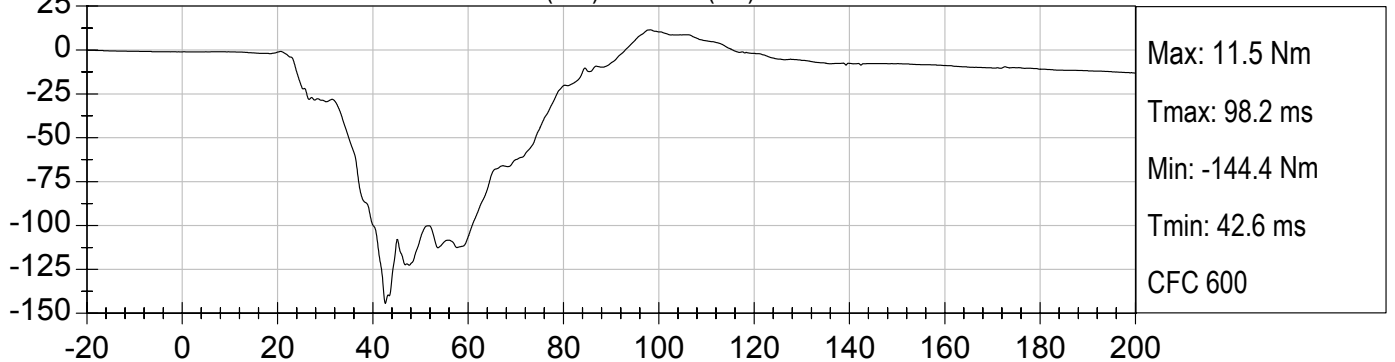




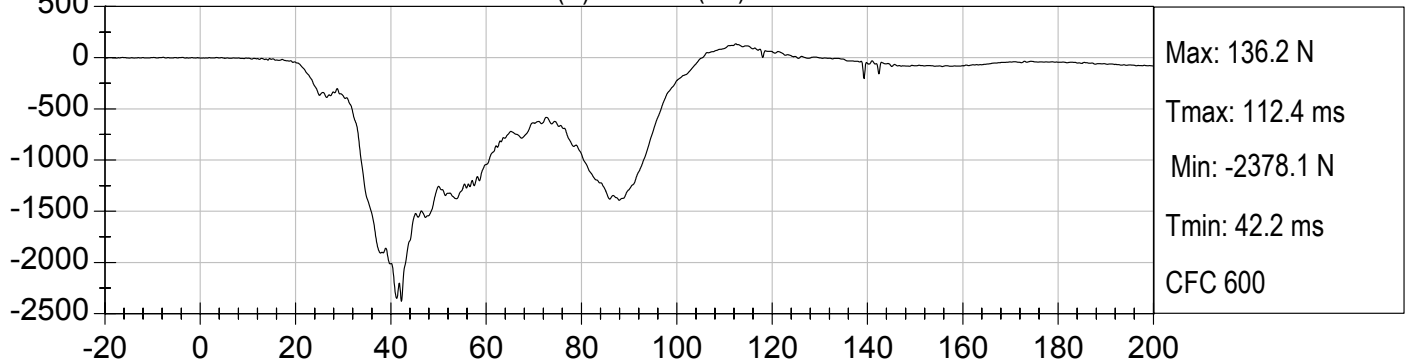
PASSENGER RIGHT UPPER TIBIA MX (Nm) vs TIME (ms)

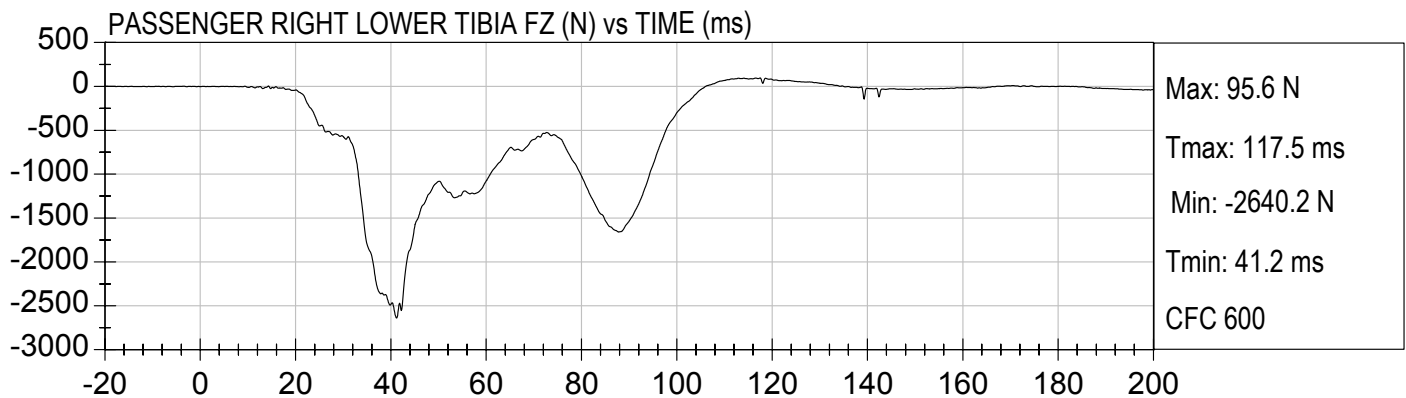
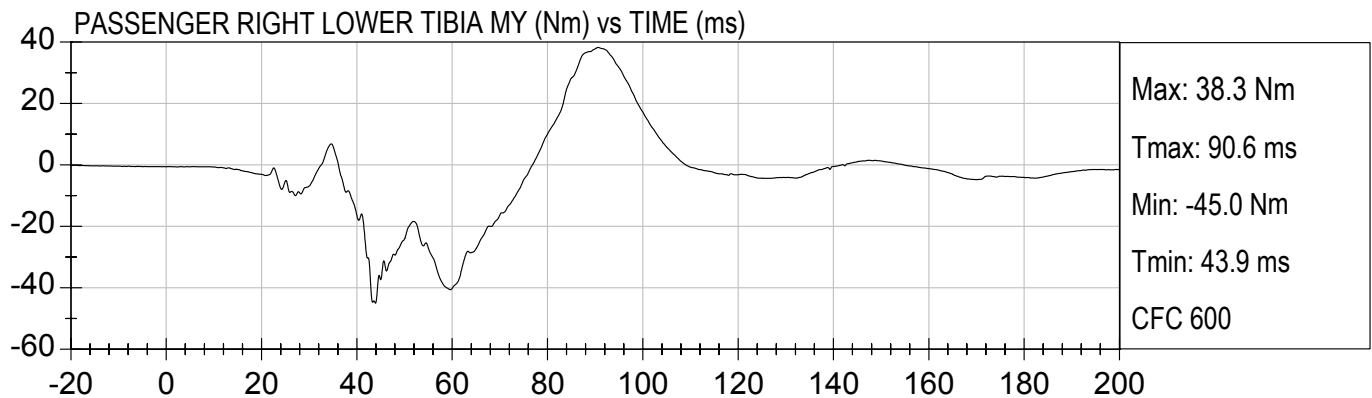
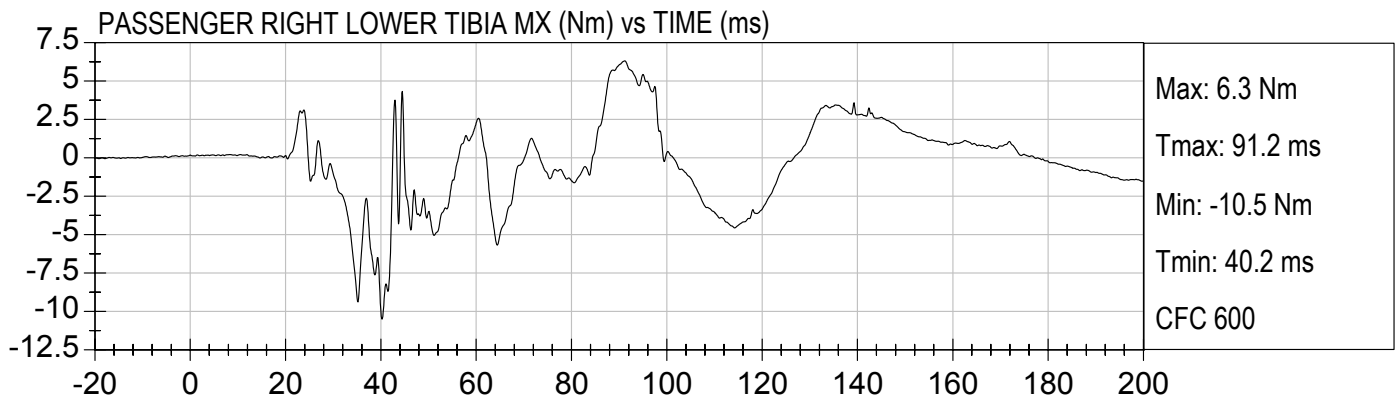


PASSENGER RIGHT UPPER TIBIA MY (Nm) vs TIME (ms)

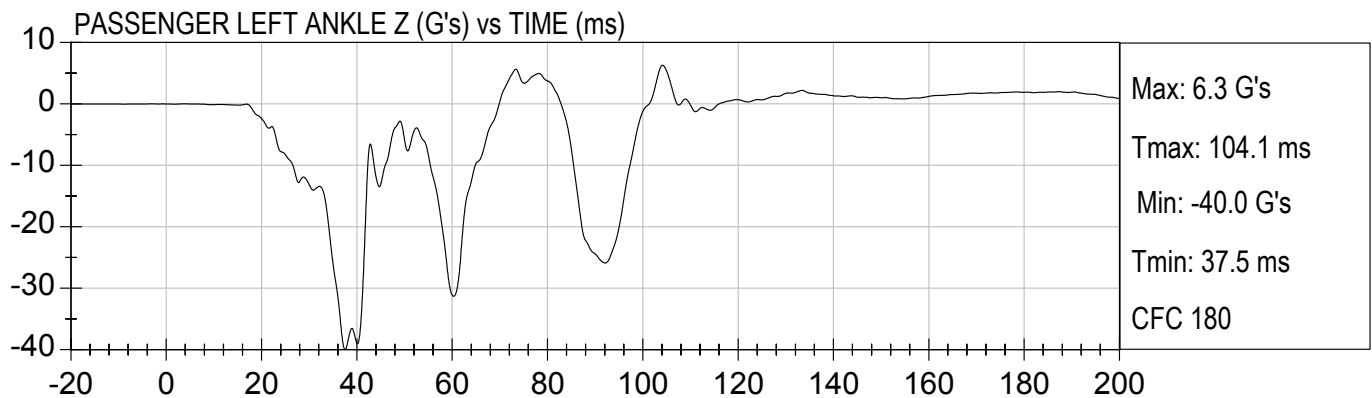
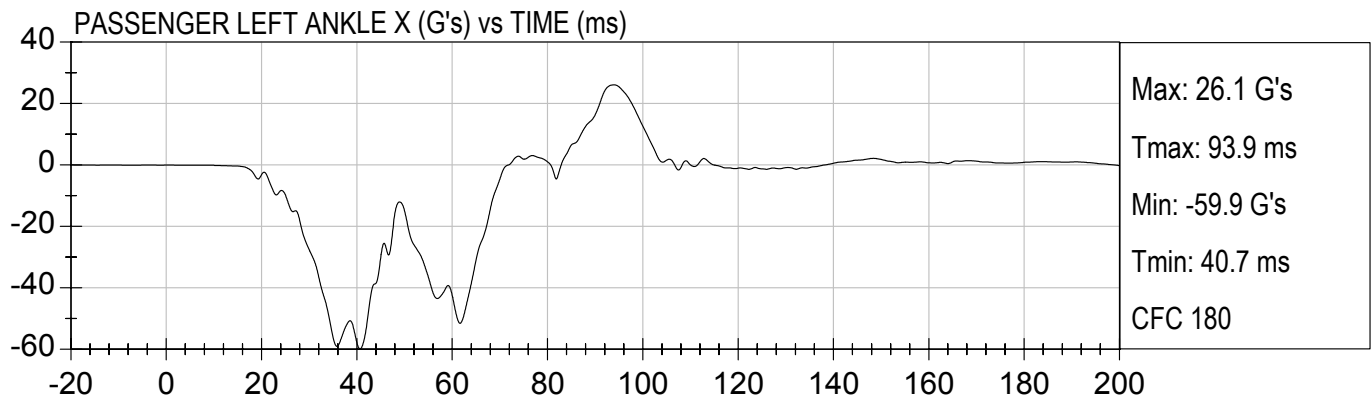
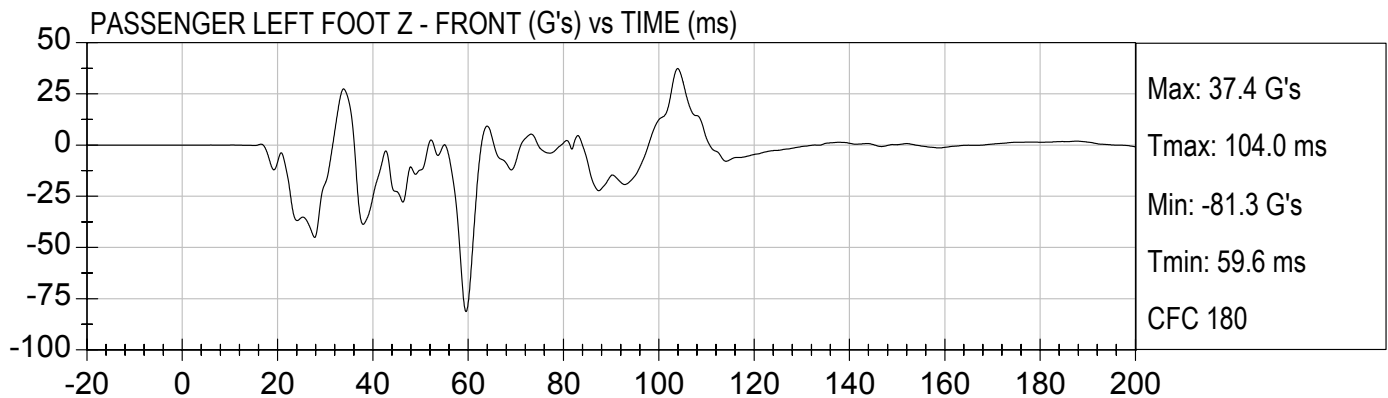


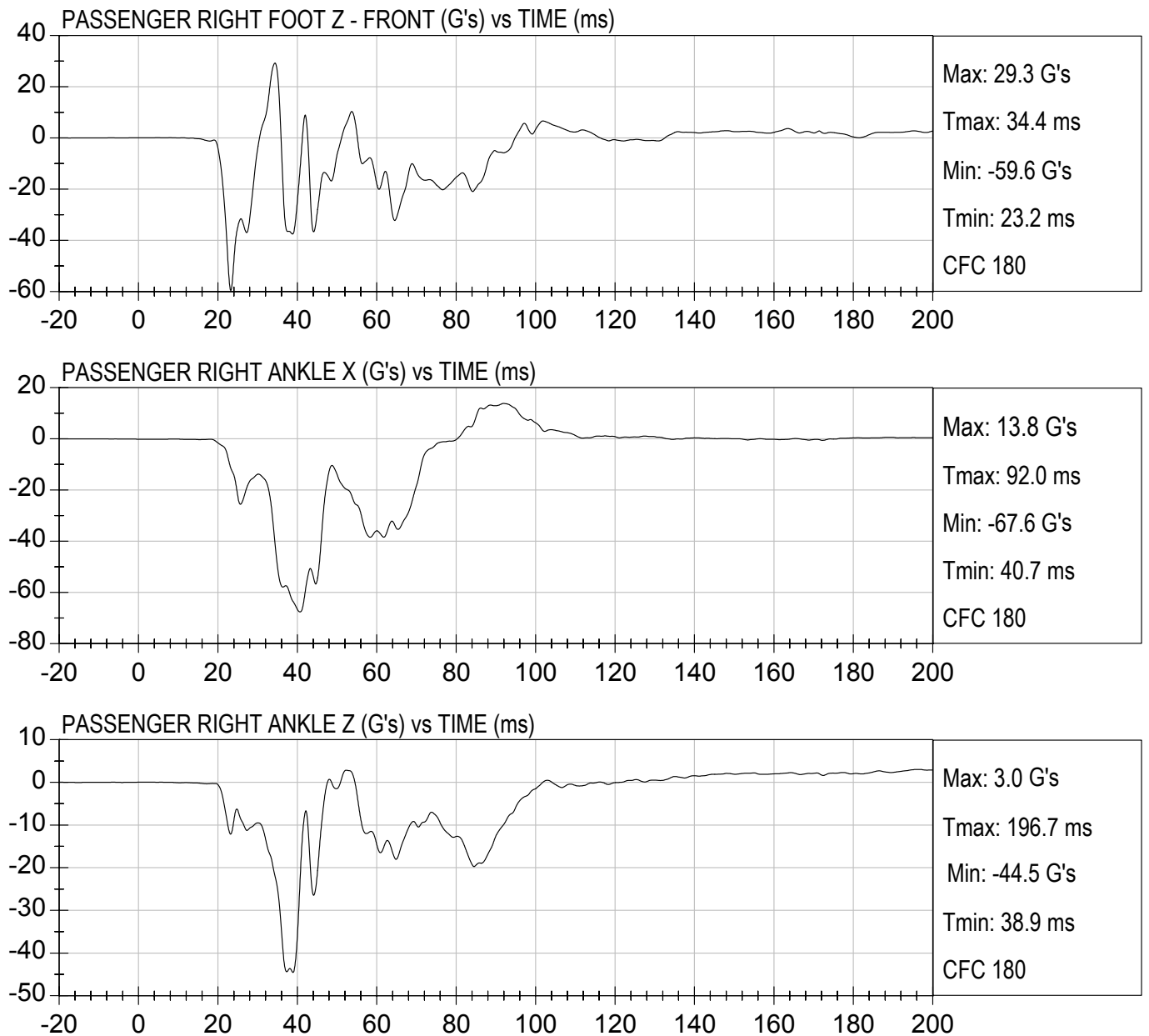
PASSENGER RIGHT UPPER TIBIA FZ (N) vs TIME (ms)

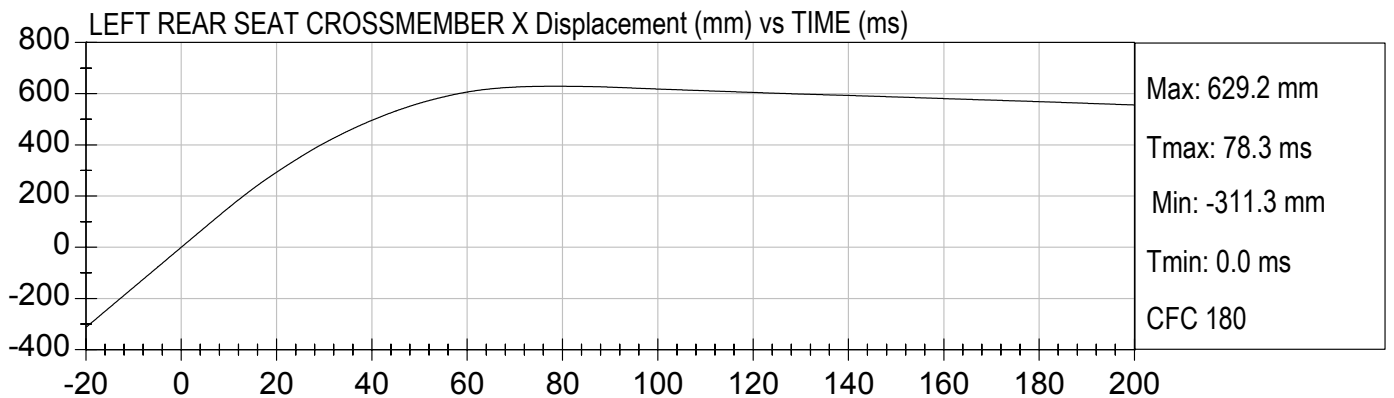
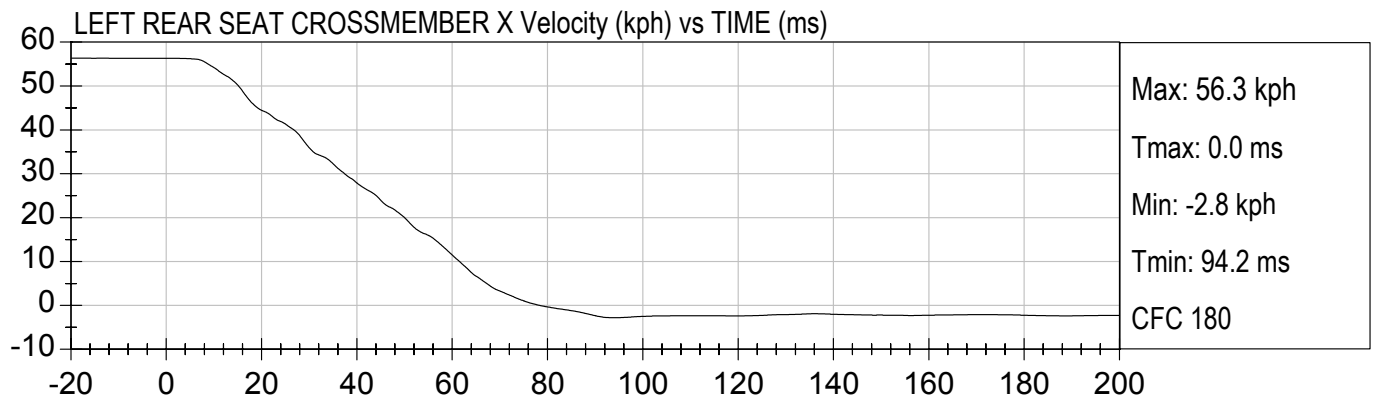
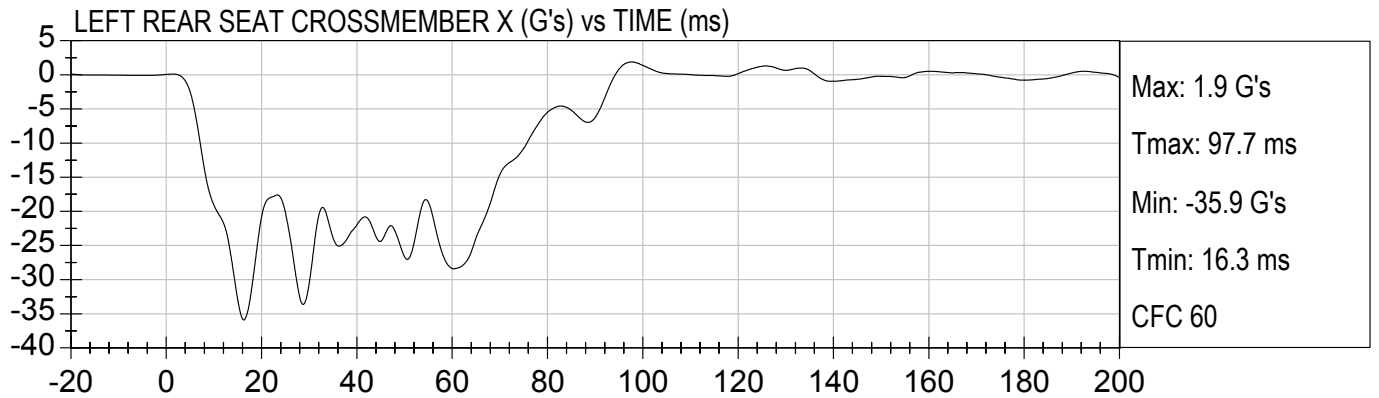


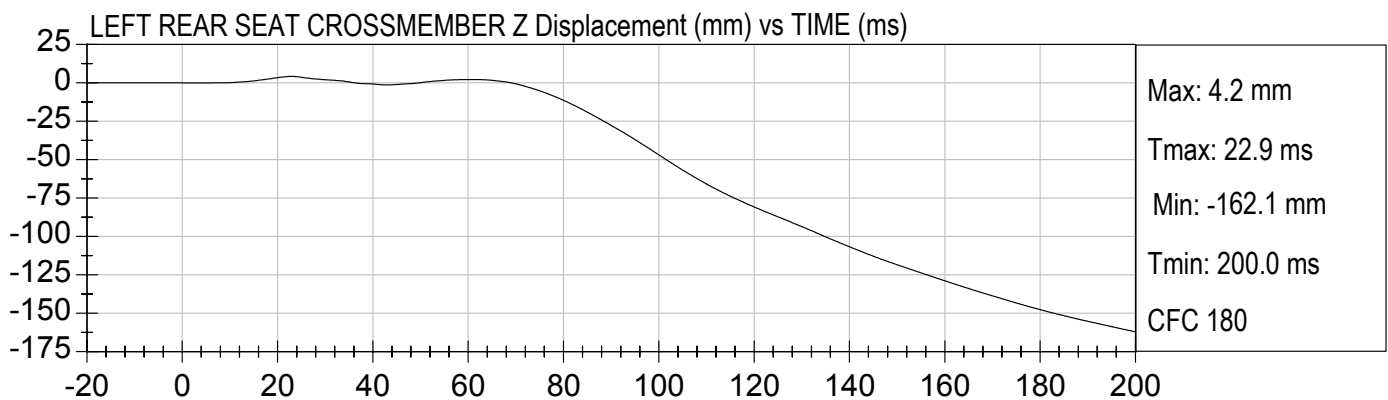
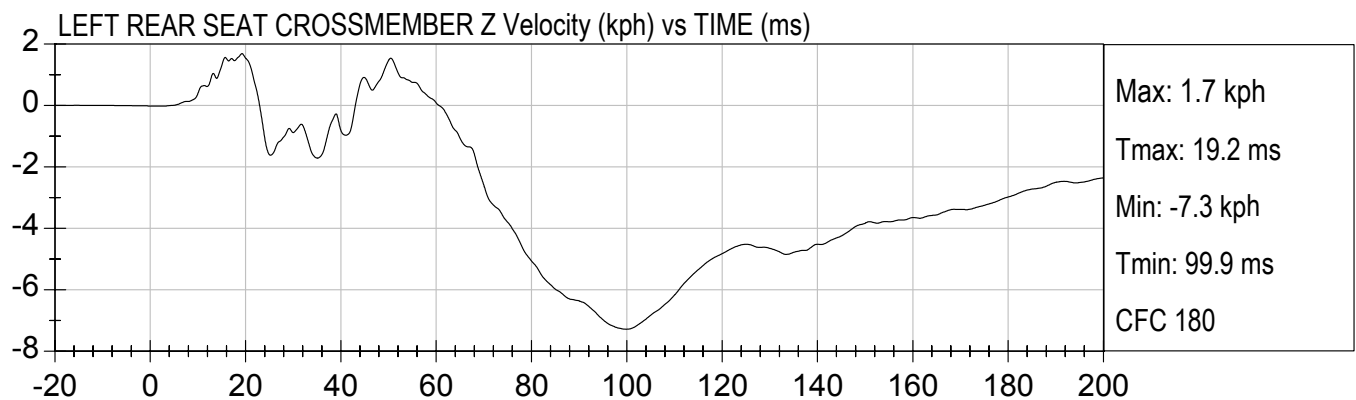
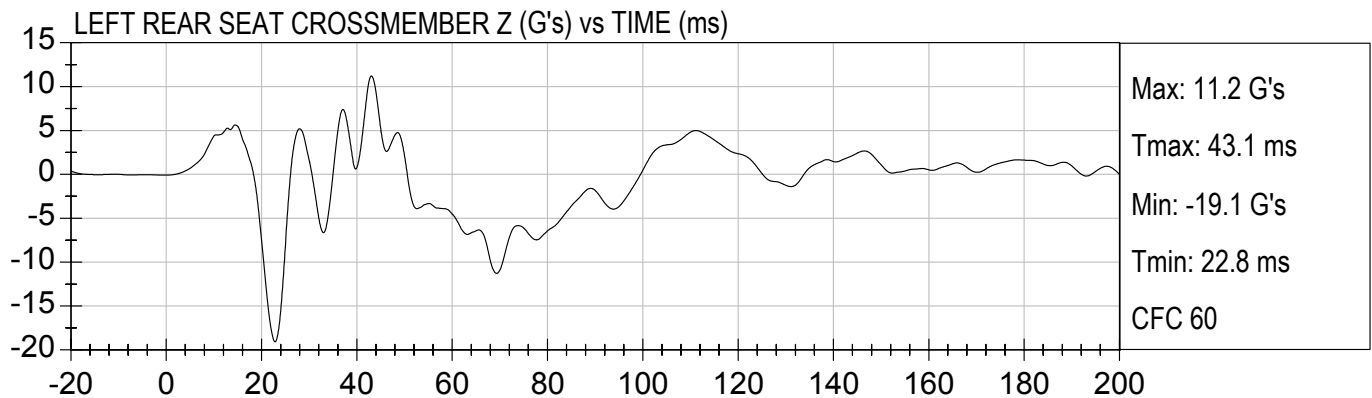




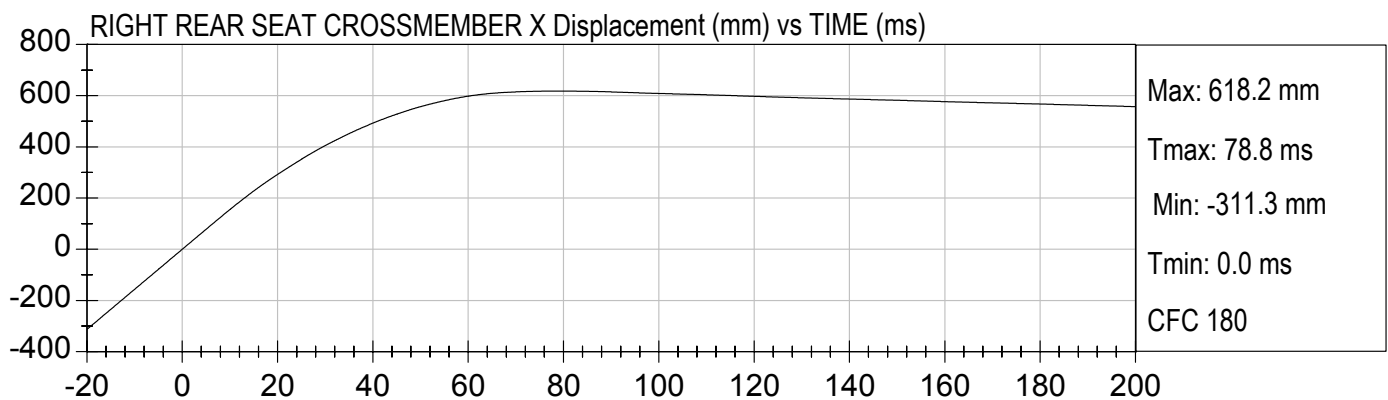
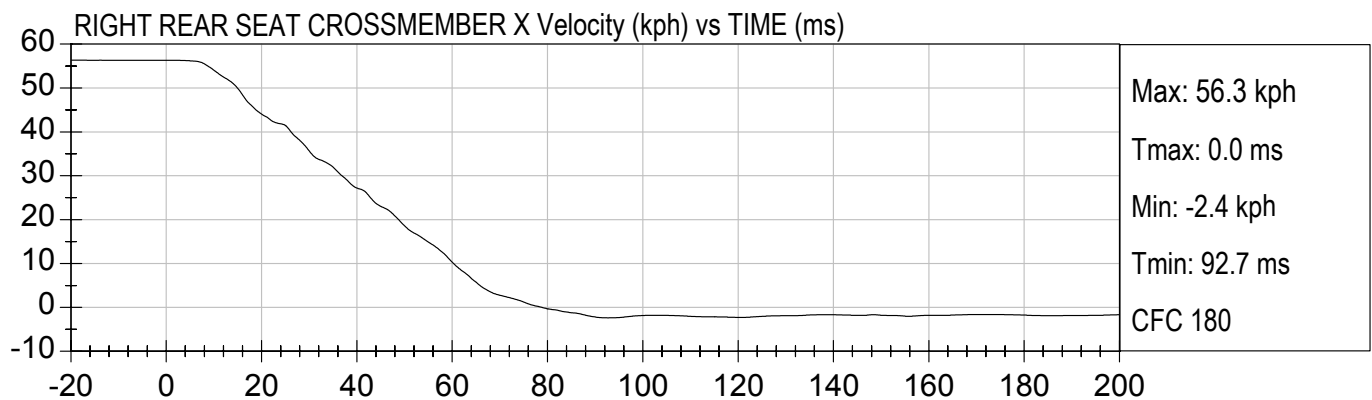
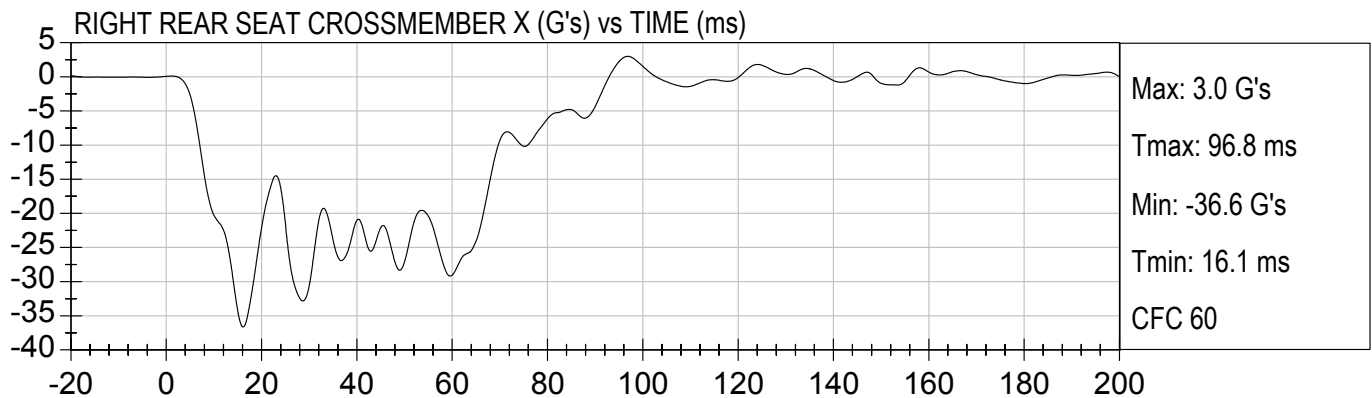


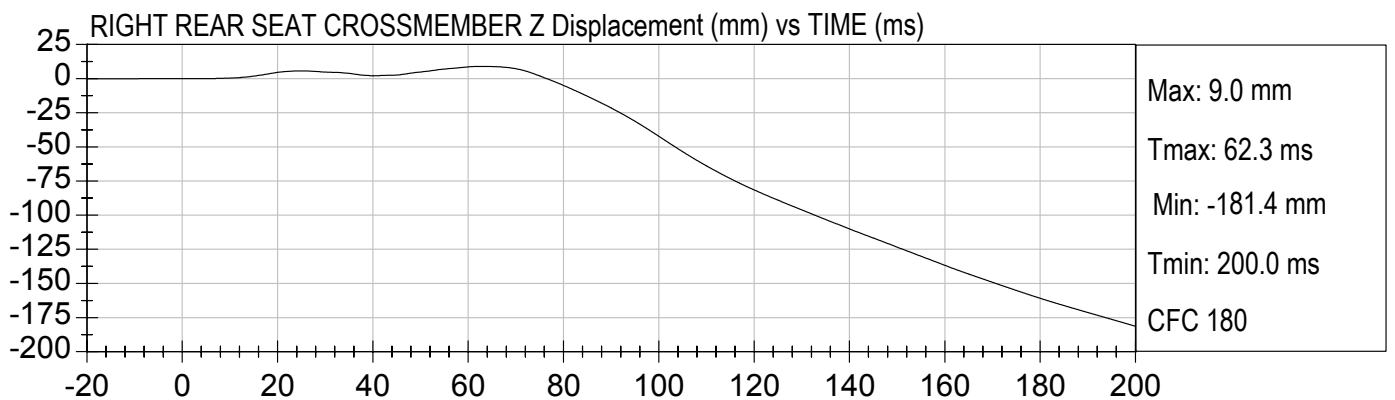
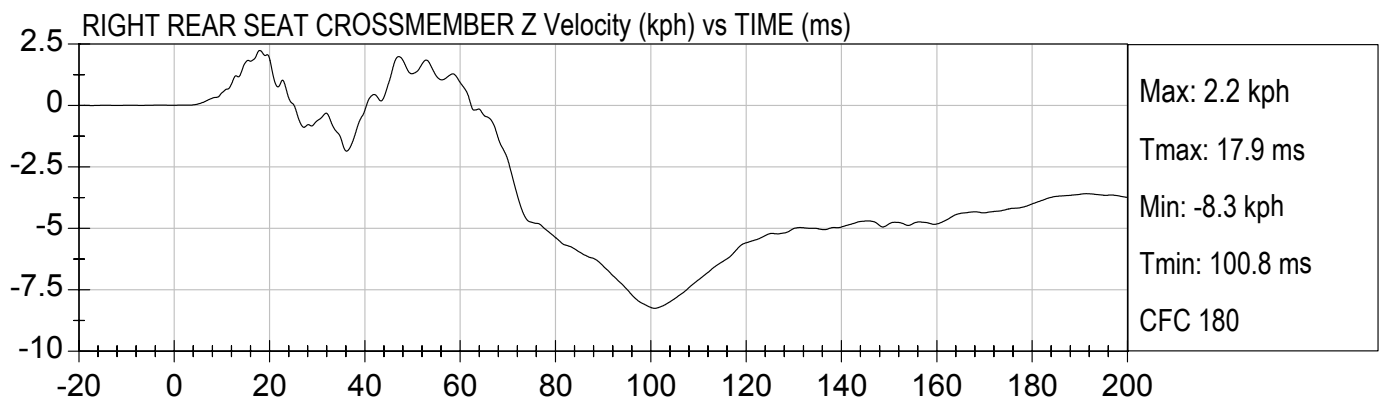
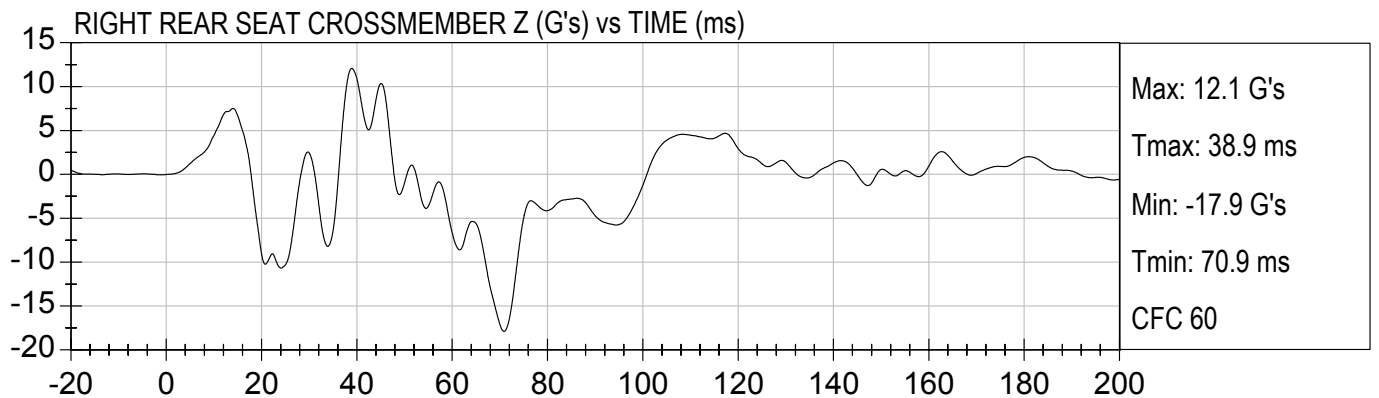


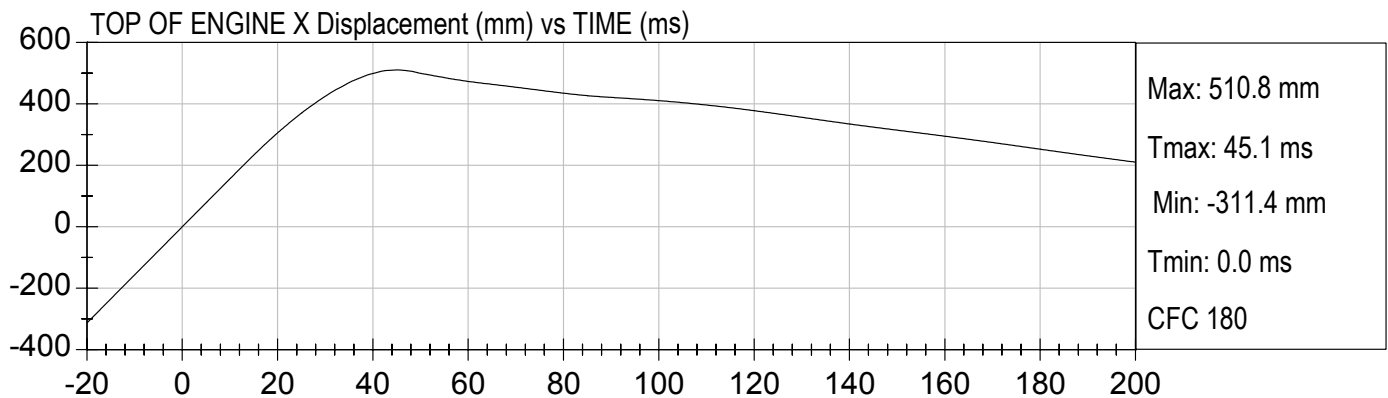
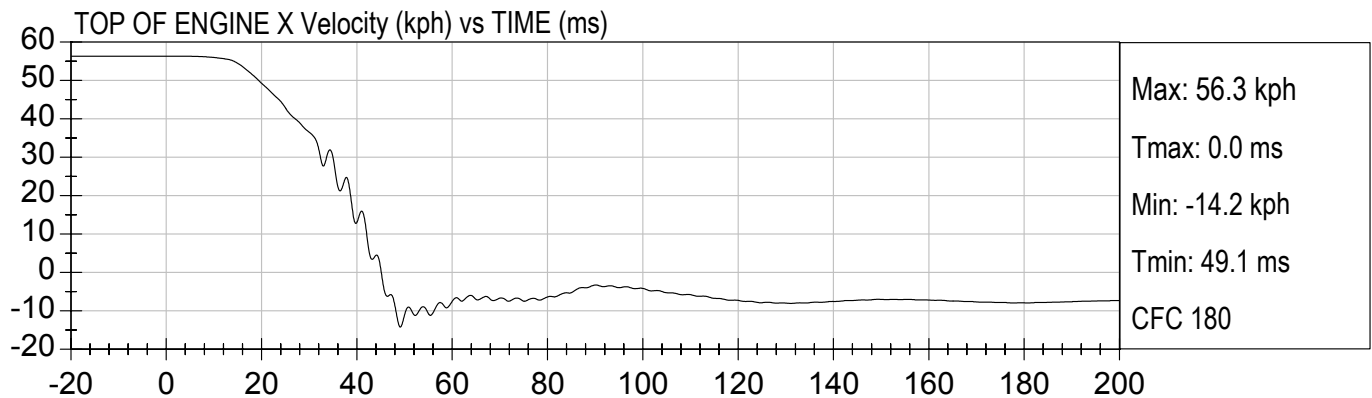
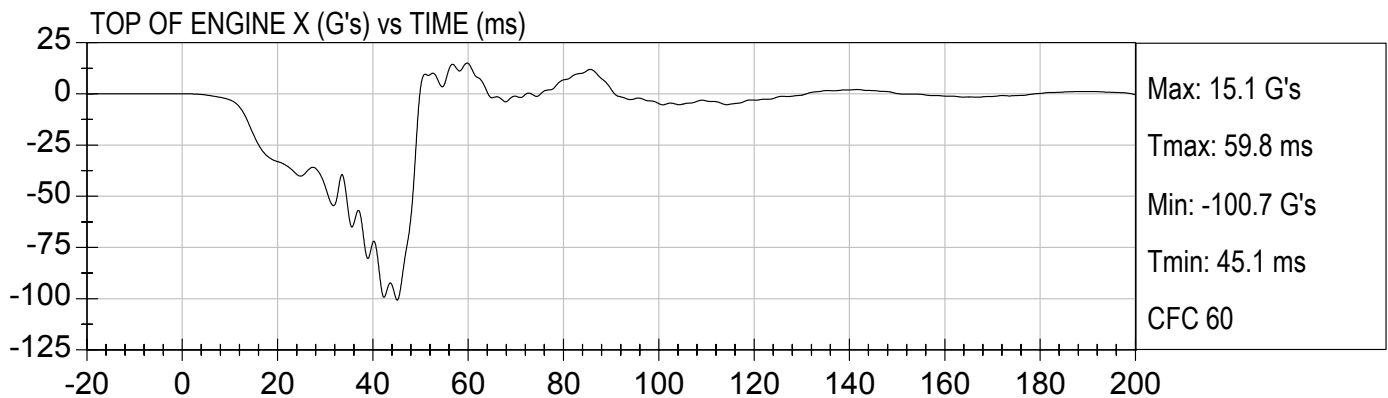


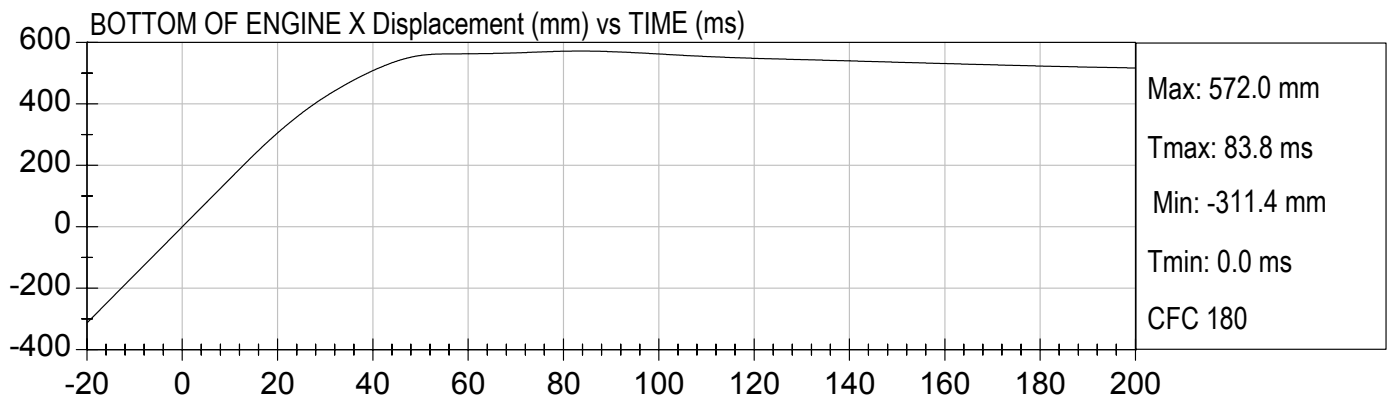
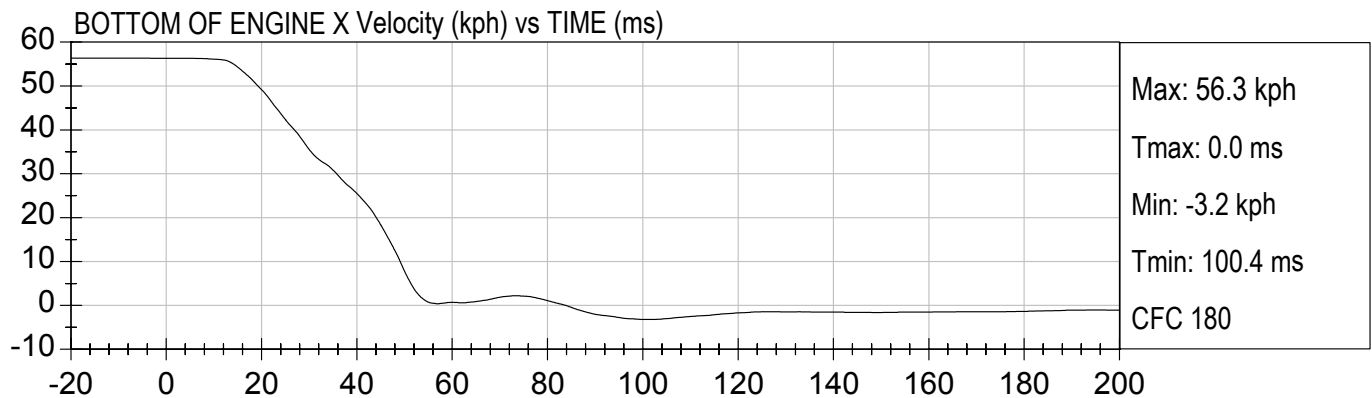
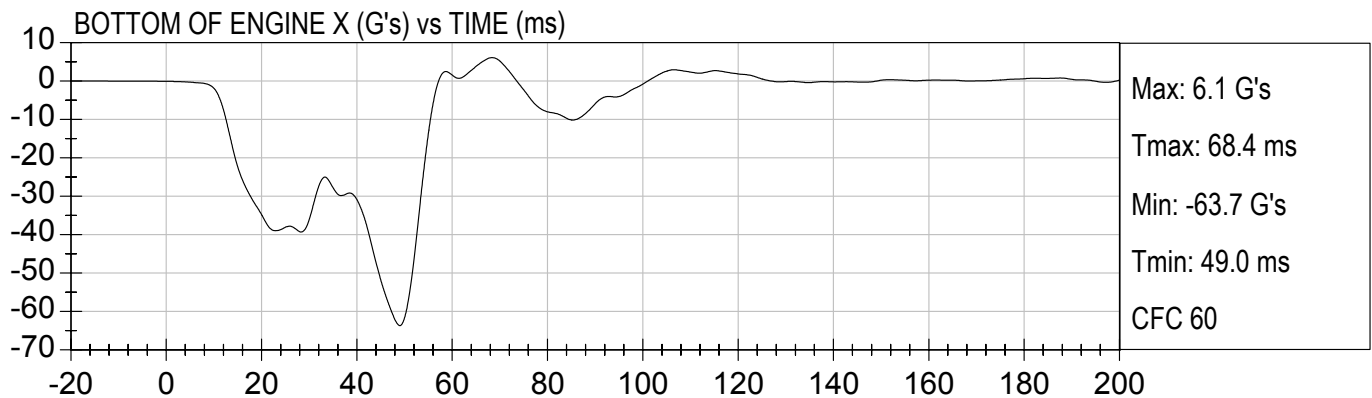




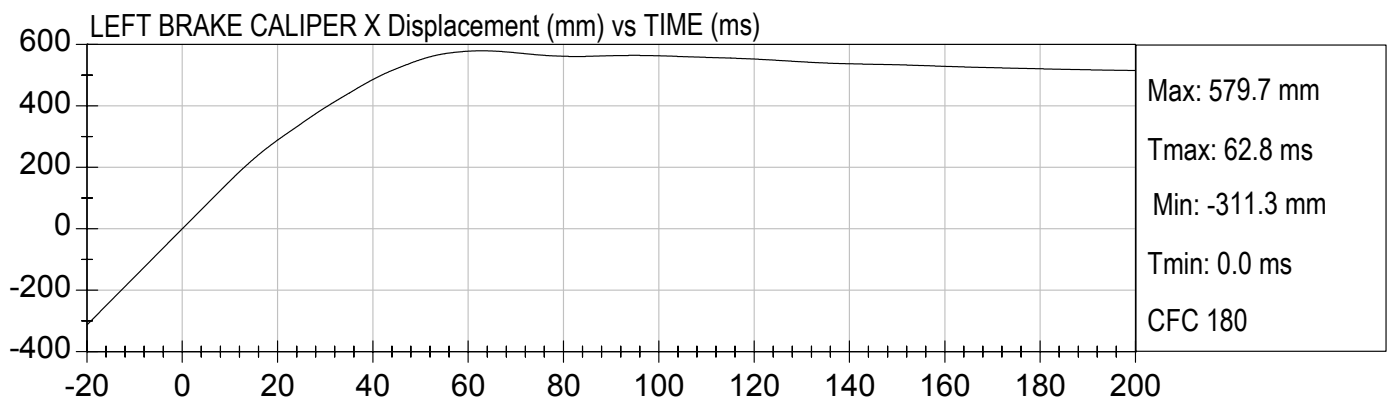
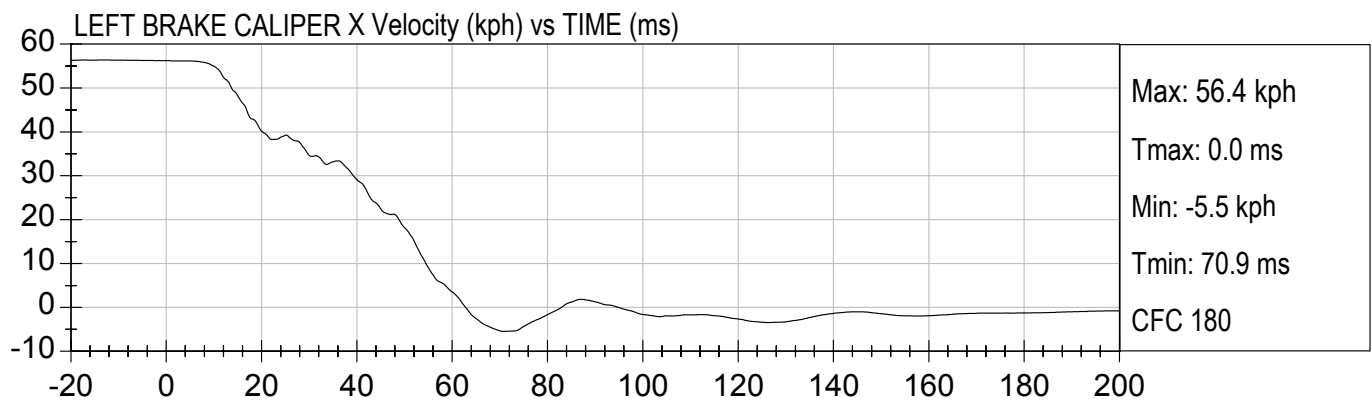
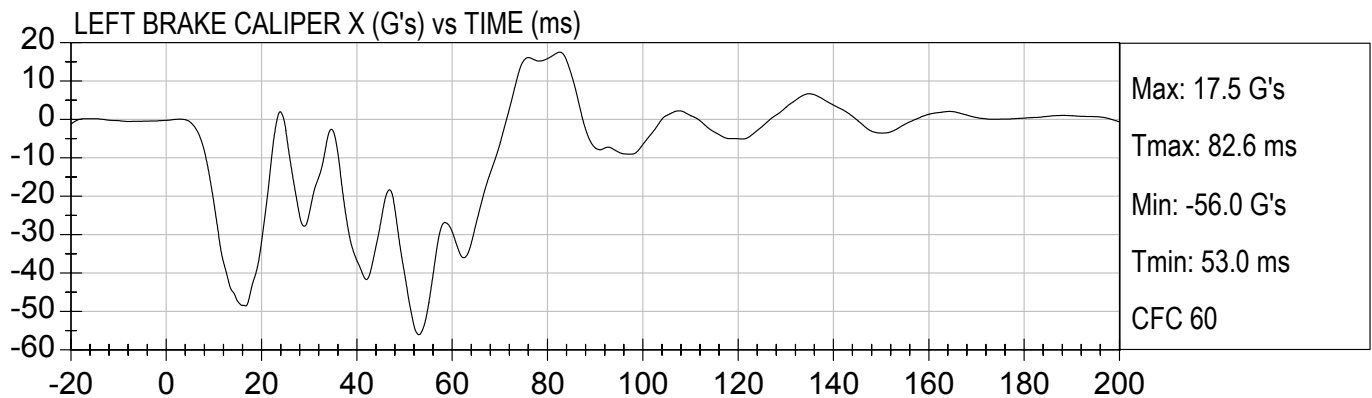


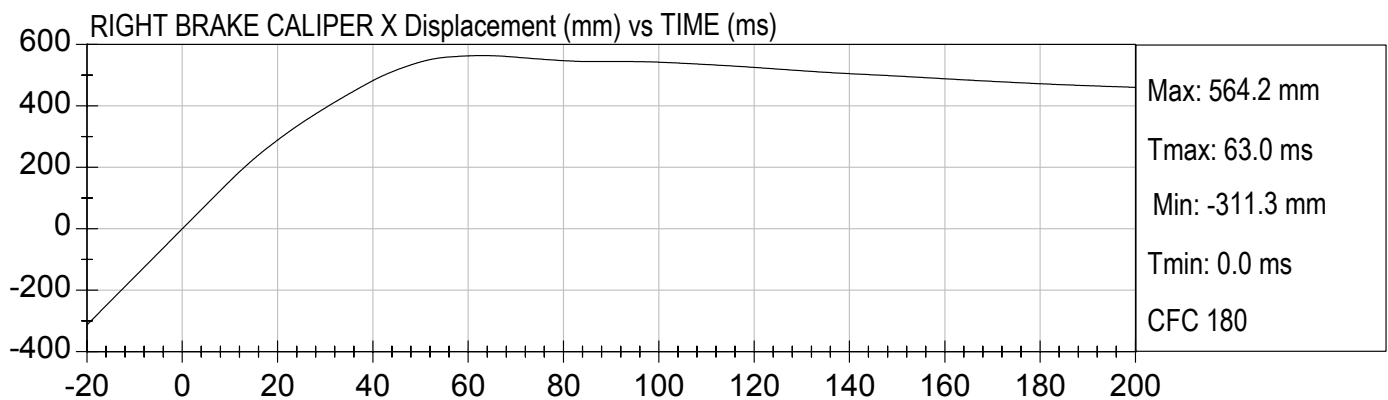
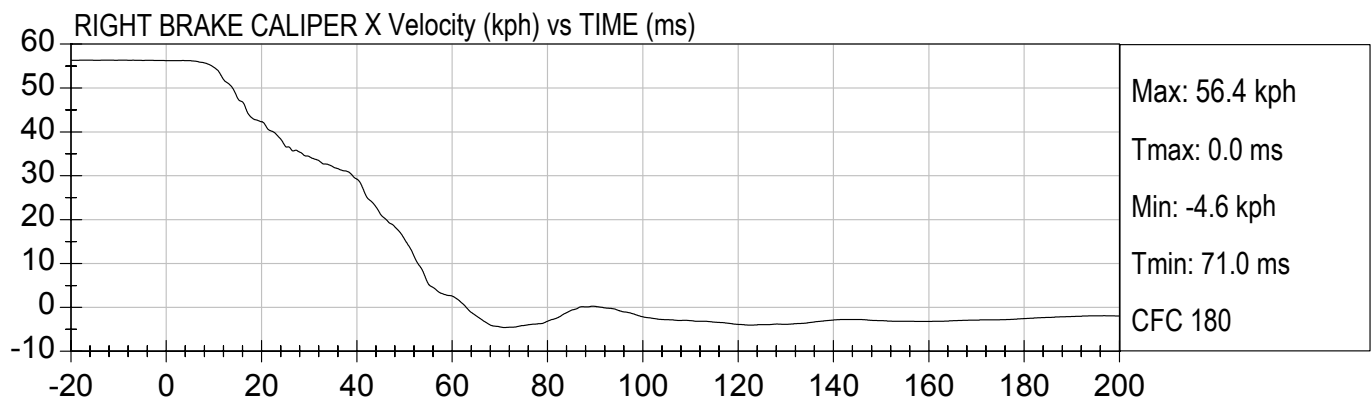
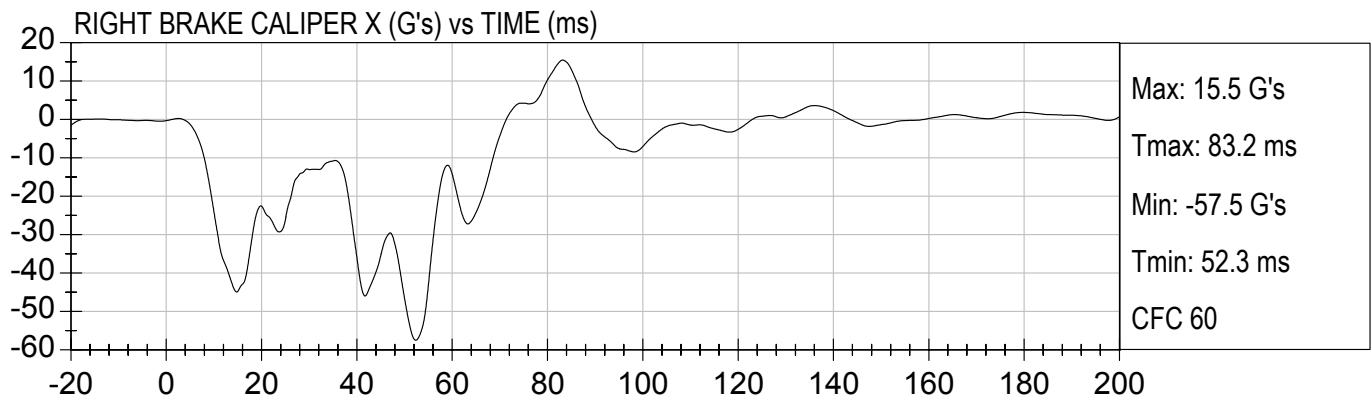


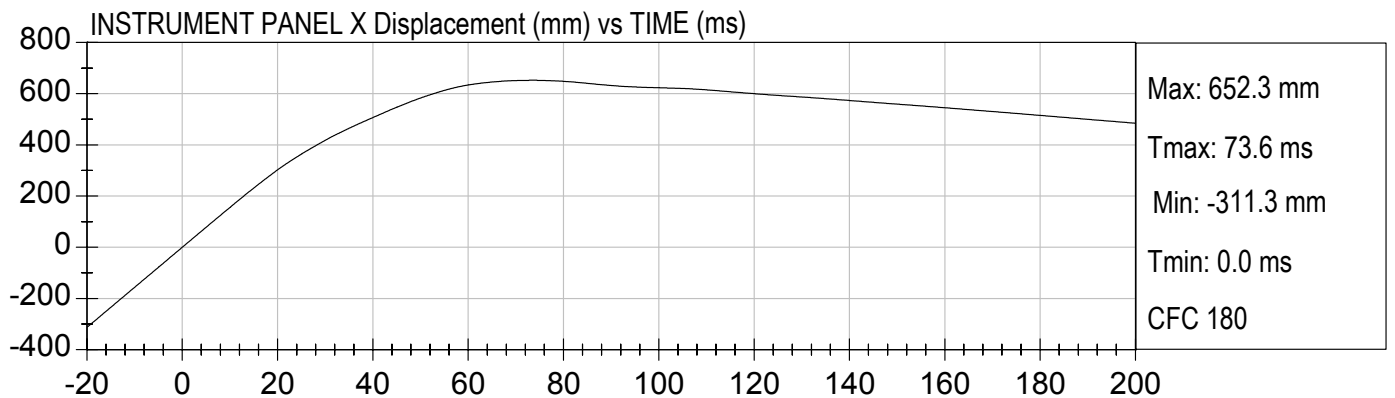
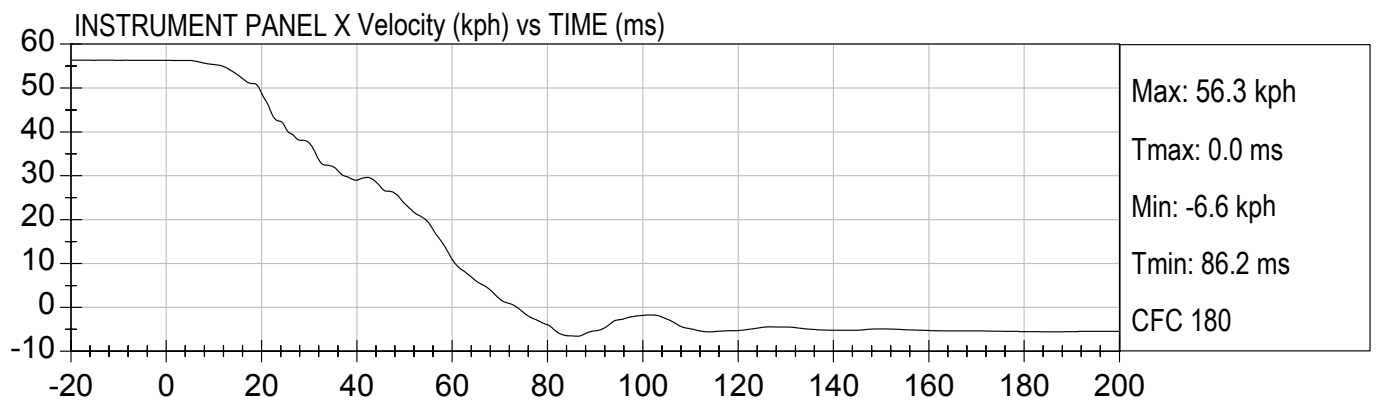
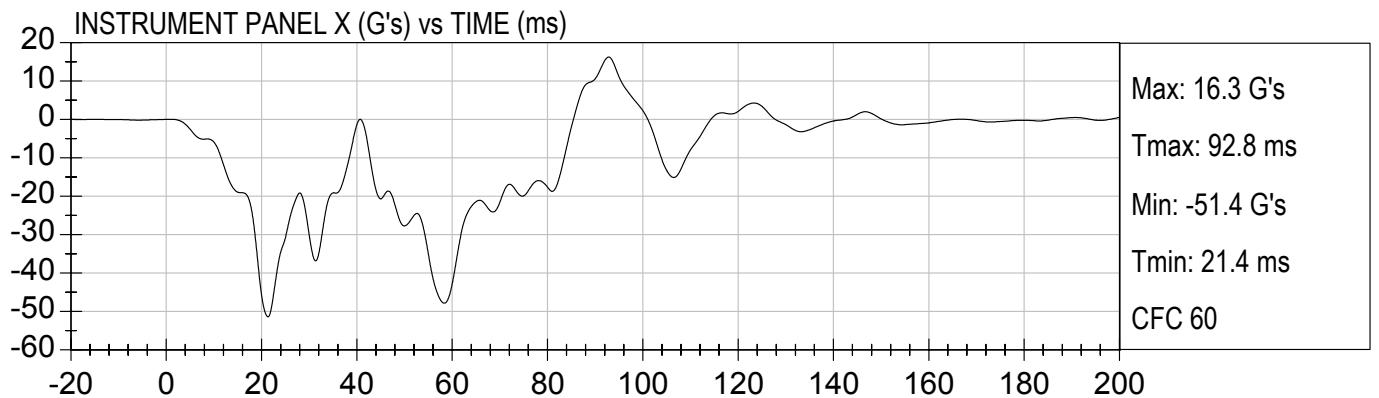






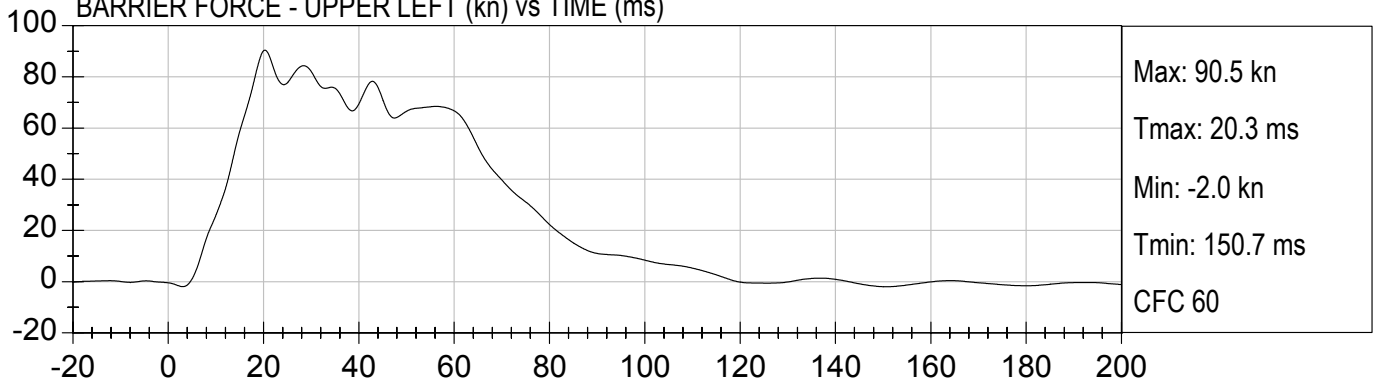




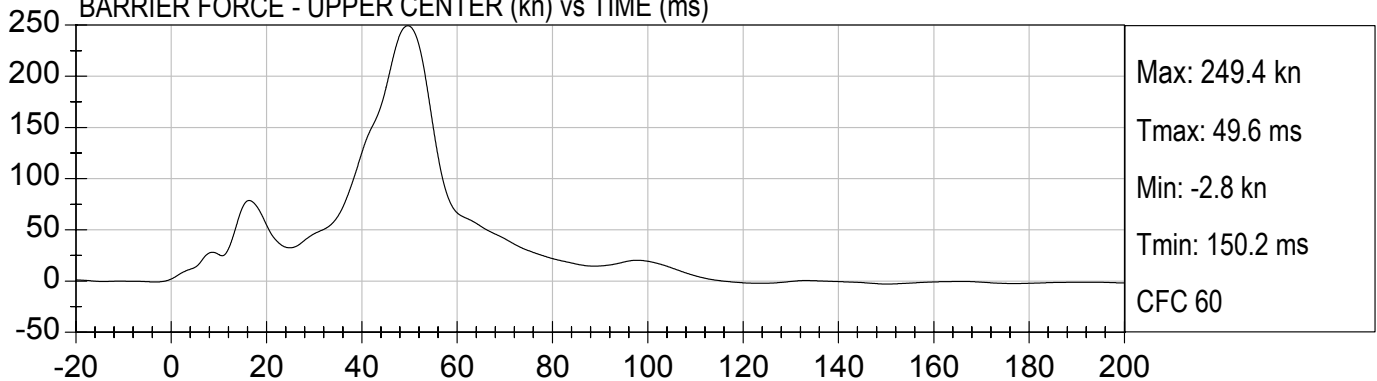




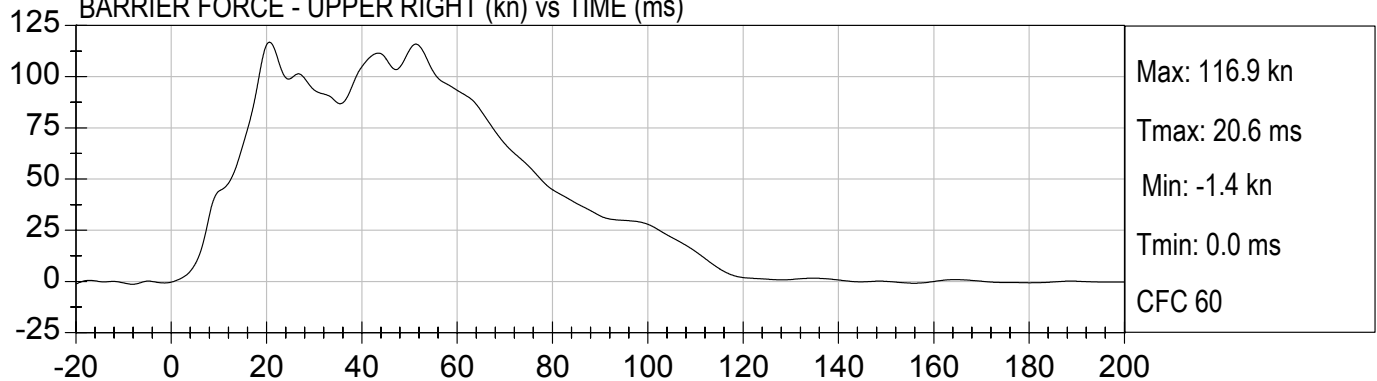
BARRIER FORCE - UPPER LEFT (kn) vs TIME (ms)



BARRIER FORCE - UPPER CENTER (kn) vs TIME (ms)



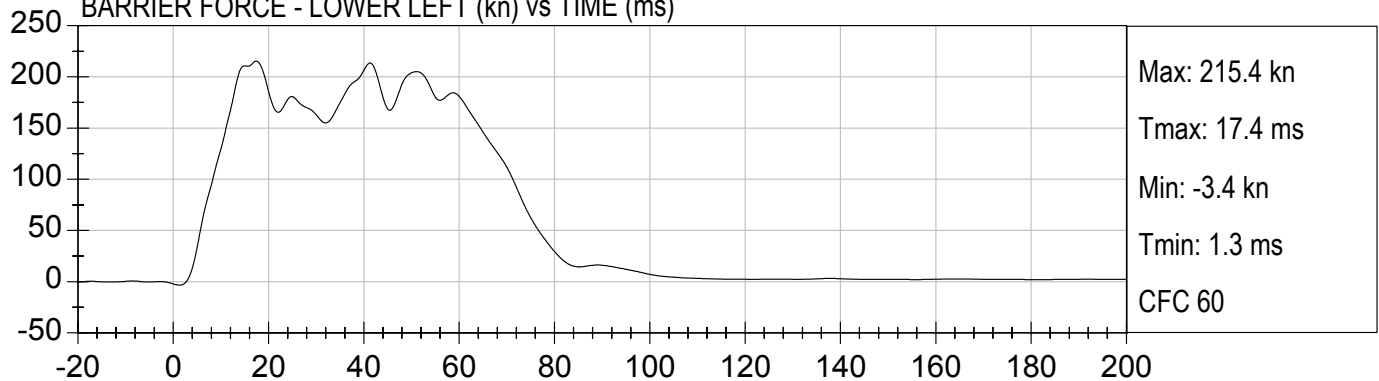
BARRIER FORCE - UPPER RIGHT (kn) vs TIME (ms)



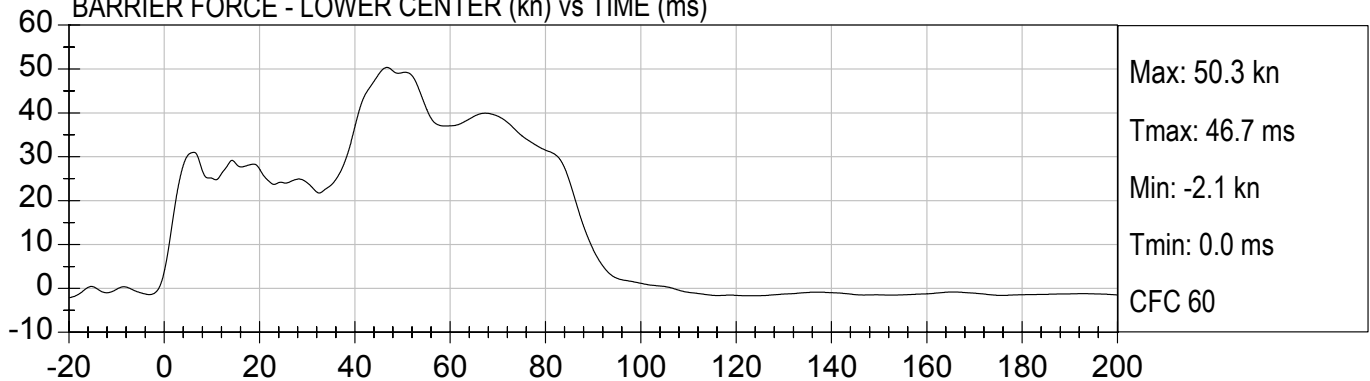




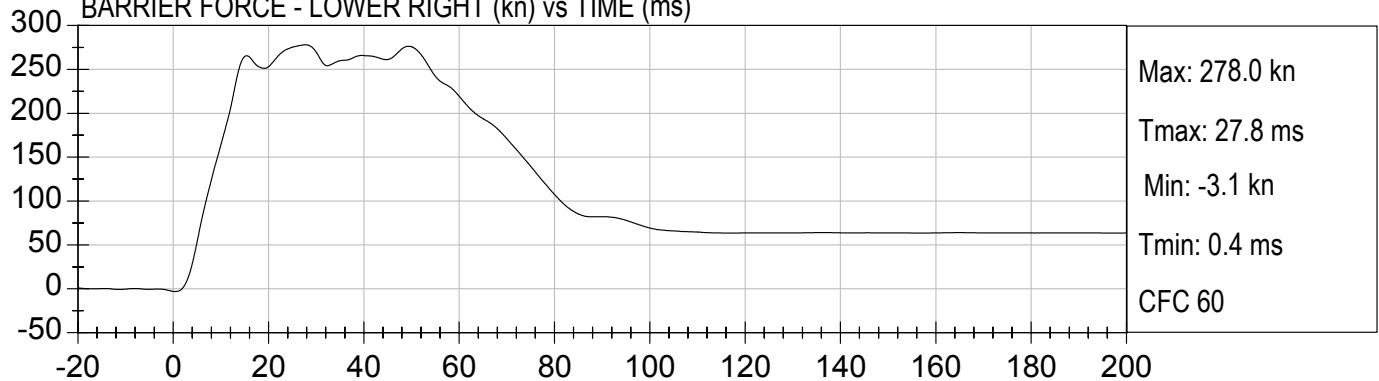
BARRIER FORCE - LOWER LEFT (kn) vs TIME (ms)



BARRIER FORCE - LOWER CENTER (kn) vs TIME (ms)



BARRIER FORCE - LOWER RIGHT (kn) vs TIME (ms)

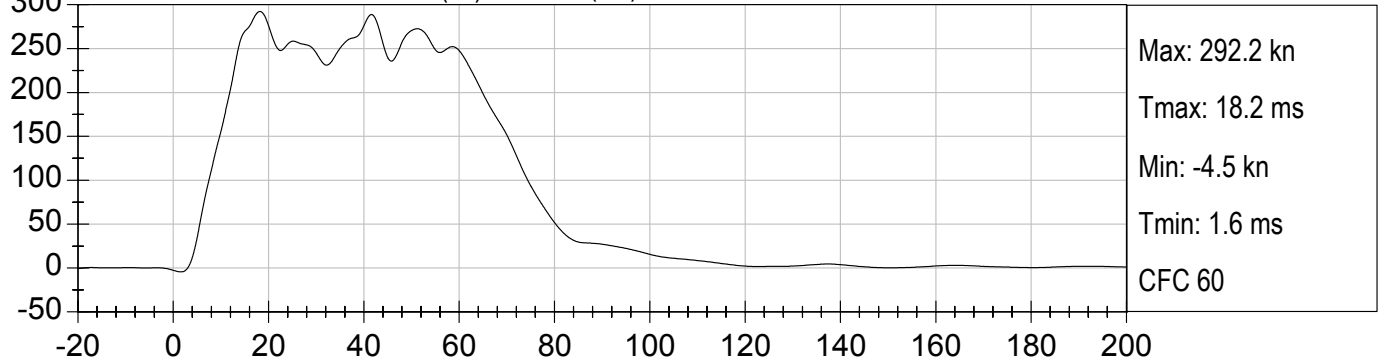




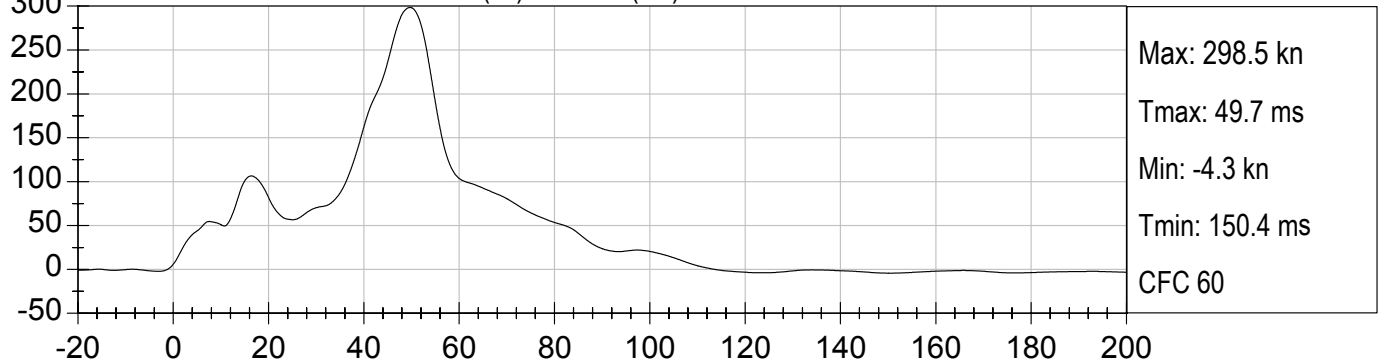
35MPH NCAP FRONTAL  
2004 DODGE DURANGO STE (M40303)

Test Date: 2/17/2004  
Speed: 35.0 mph (56.3 km/h)

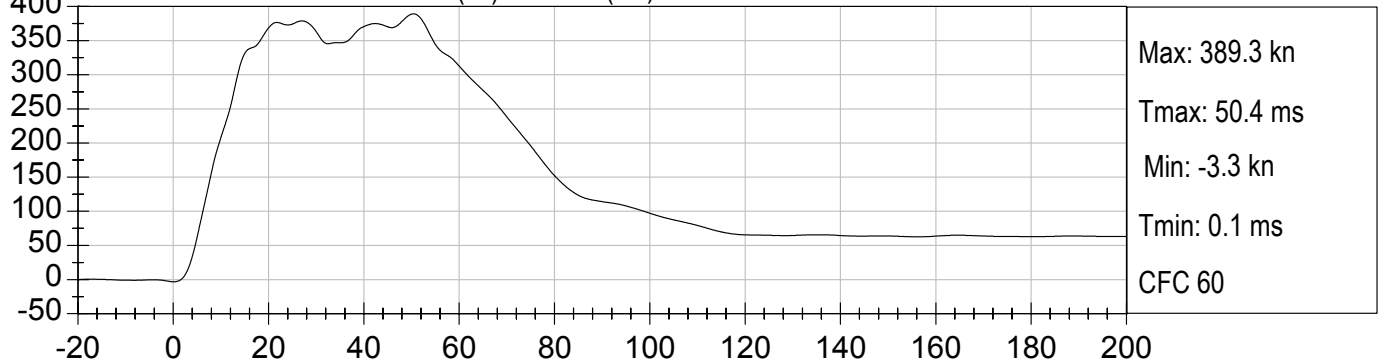
BARRIER FORCE - SUM LEFT (kn) vs TIME (ms)



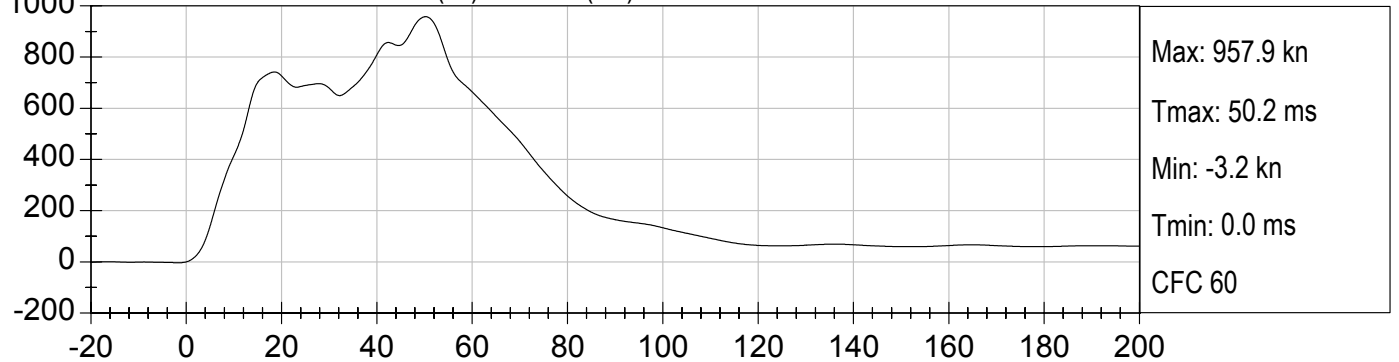
BARRIER FORCE - SUM CENTER (kn) vs TIME (ms)



BARRIER FORCE - SUM RIGHT (kn) vs TIME (ms)



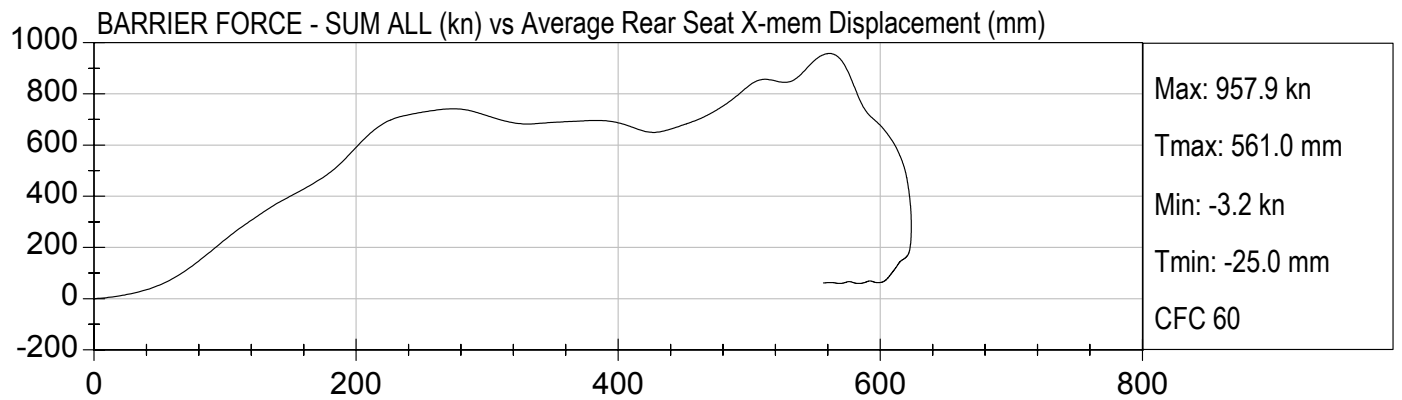
BARRIER FORCE - SUM ALL (kn) vs TIME (ms)





35MPH NCAP FRONTAL  
2004 DODGE DURANGO STE (M40303)

Test Date: 2/17/2004  
Speed: 35.0 mph (56.3 km/h)



**APPENDIX C**  
**DUMMY CALIBRATION DATA TRACES AND TABLES**

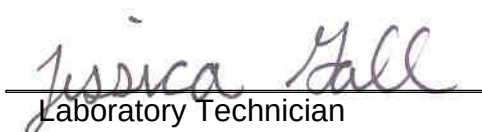


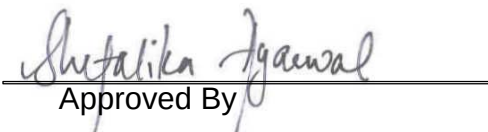
**Hybrid III Calibration Data Sheet**  
**50th Percentile Male**  
**Head Drop Calibration**

**ATD Serial No:** 066

**Test I.D:** D04061

| Tested Parameter             | Units  | Specification  | Result | Pass/Fail |
|------------------------------|--------|----------------|--------|-----------|
| Laboratory Temperature       | deg C  | 18.9 to 25.5   | 22.0   | Pass      |
| Laboratory Relative Humidity | %      | 10 to 70       | 27     | Pass      |
| Peak Resultant Acceleration  | G's    | 225.0 to 275.0 | 260.6  | Pass      |
| Peak Lateral Acceleration    | G's    | <= +/- 15.0    | 9.1    | Pass      |
| Is Acceleration Unimodal?    | Yes/No | < 10% Peak     | Yes    | Pass      |
| Overall Test Results         |        |                |        | Pass      |

  
Laboratory Technician

  
Approved By

01/15/2004  
Test Date



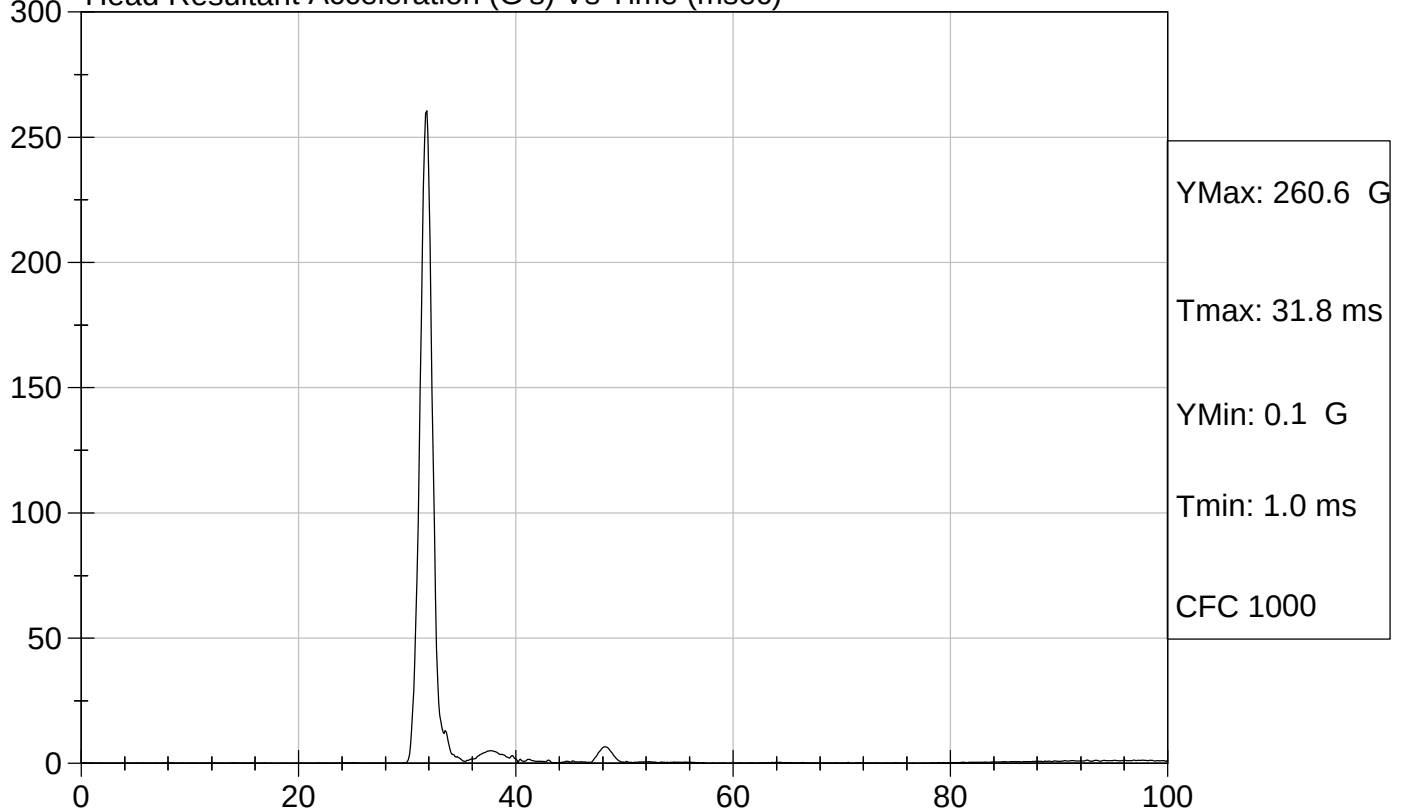
Test Description: Head Drop

Test Date: 01/15/2004

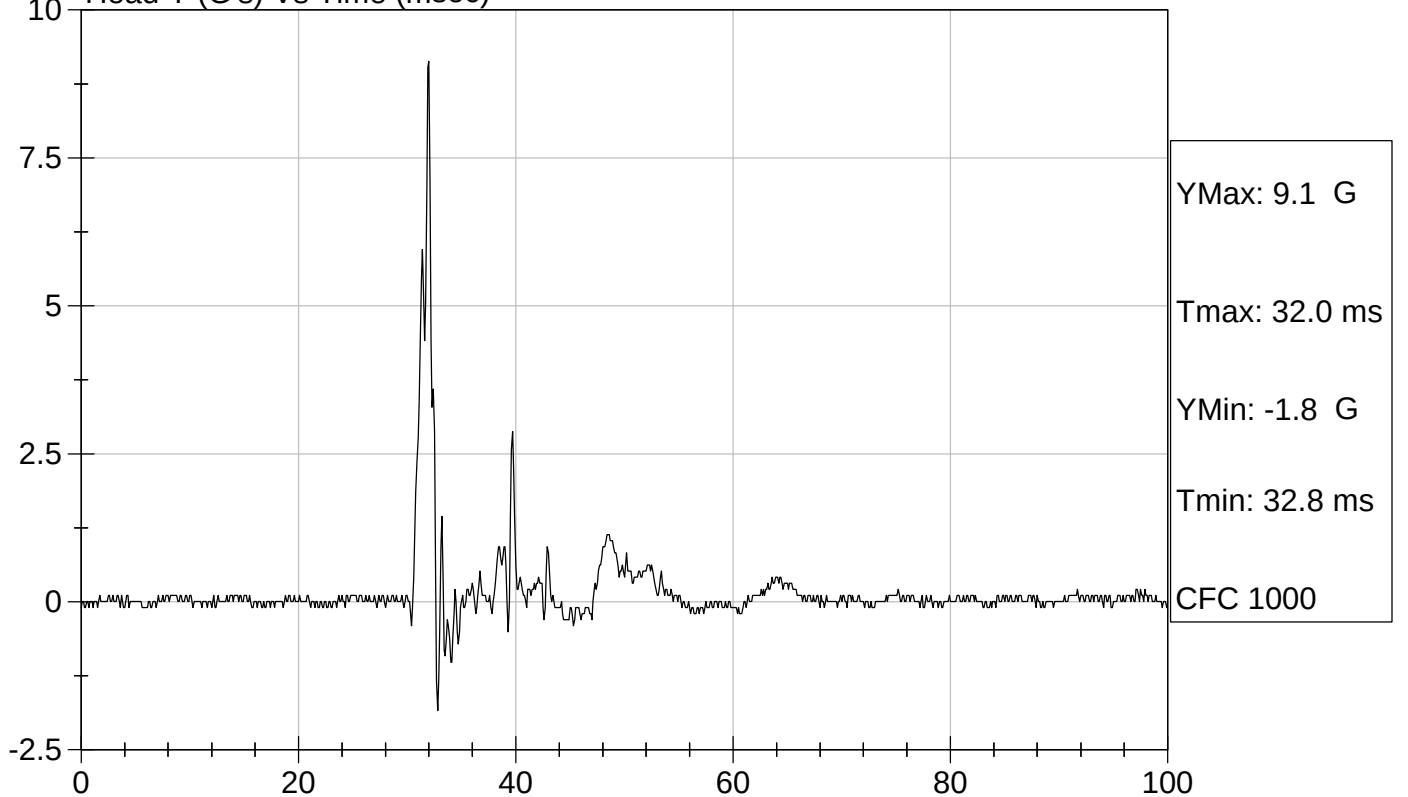
Component: D04061

Speed: 0 ft/s, 0.00 m/s

Head Resultant Acceleration (G's) Vs Time (msec)



Head Y (G's) Vs Time (msec)



**Hybrid III Calibration Data Sheet**  
**50th Percentile Male**  
**Neck Flexion Test**

**ATD Serial No:** 066

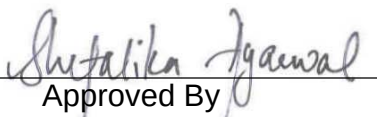
**Test I.D:** D04062

| 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       | 22     | Pass      |
| Pendulum Velocity                              |         | m/s     | 6.89 to 7.13   | 7.02   | Pass      |
| Pendulum Deceleration                          | 10 msec | G's     | 22.50 to 27.50 | 23.72  | Pass      |
|                                                | 20 msec | G's     | 17.60 to 22.60 | 20.40  | Pass      |
|                                                | 30 msec | G's     | 12.50 to 18.50 | 16.83  | Pass      |
| Peak Pendulum Deceleration After 30 msec       |         | G's     | <= 29.0        | 16.83  | Pass      |
| Deceleration Decay Time to Cross 5 G's         |         | msec    | 34.0 to 42.0   | 36.4   | Pass      |
| Maximum "D" Plane Rotation                     | Maximum | Degrees | 64.0 to 78.0   | 71.3   | Pass      |
|                                                | Time    | msec    | 57.0 to 64.0   | 57.5   | Pass      |
| "D" Plane Rotation Decay Time To Zero Crossing |         | msec    | 113.0 to 128.0 | 114.2  | Pass      |
| Moment About Occipital Condyle                 | Maximum | N m     | 84.1 to 108.5  | 95.6   | Pass      |
|                                                | Time    | msec    | 47.0 to 58.0   | 48.9   | Pass      |
| Positive Moment Decay Time To Zero Crossing    |         | msec    | 97.0 to 107.0  | 101.7  | Pass      |
| Overall Test Results                           |         |         |                |        | Pass      |

  
 Laboratory Technician

01/16/2004

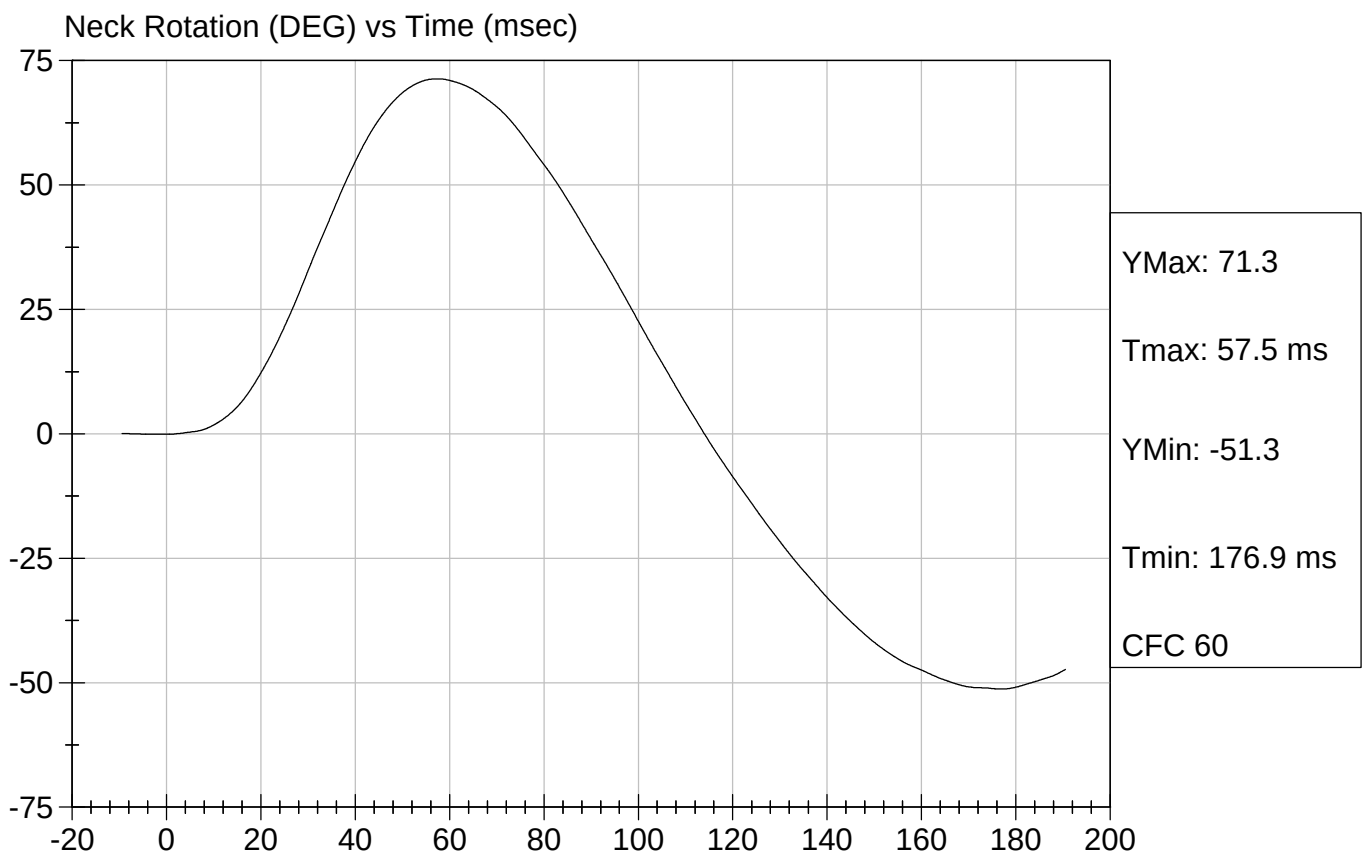
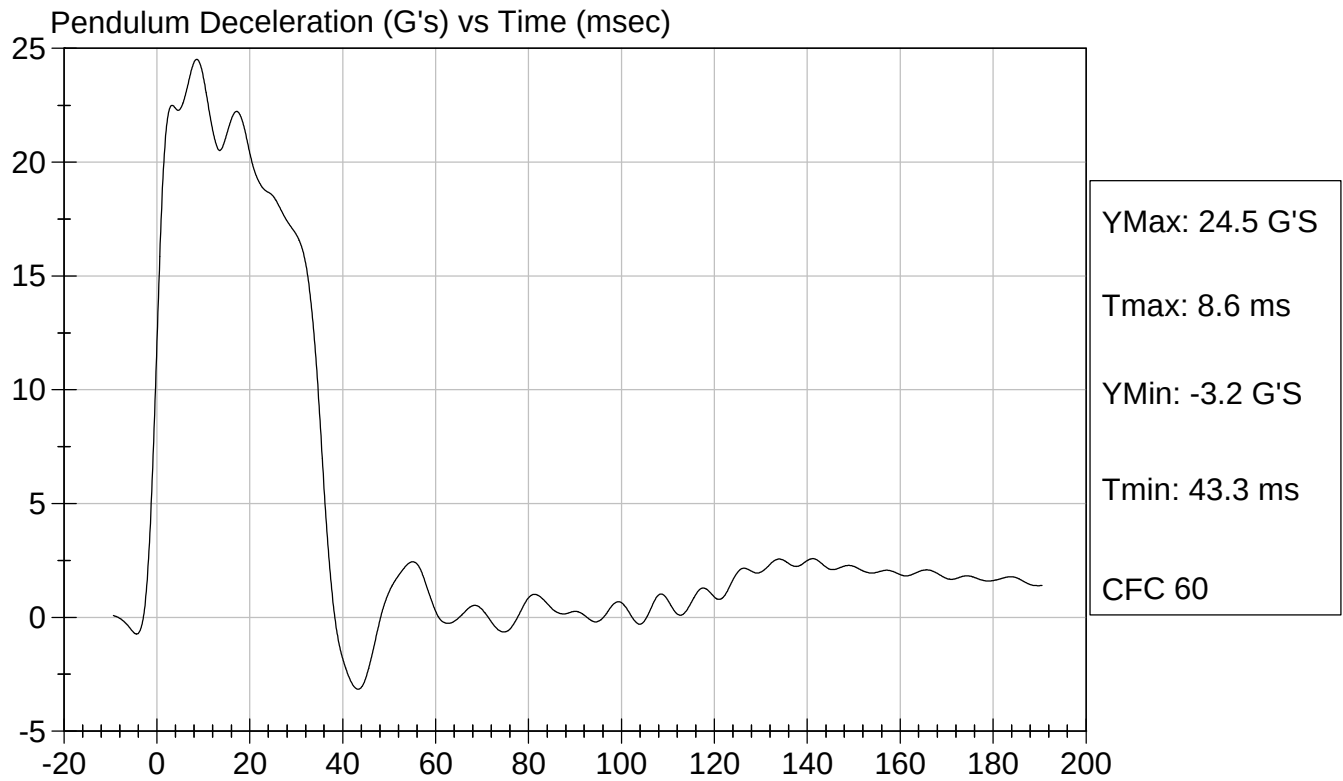
Test Date

  
 Approved By



Test Desc: Neck Flexion  
Component ID: D04062

Test Date: 01/16/2004  
Speed: 23.03 ft/sec, 7.02 m/sec

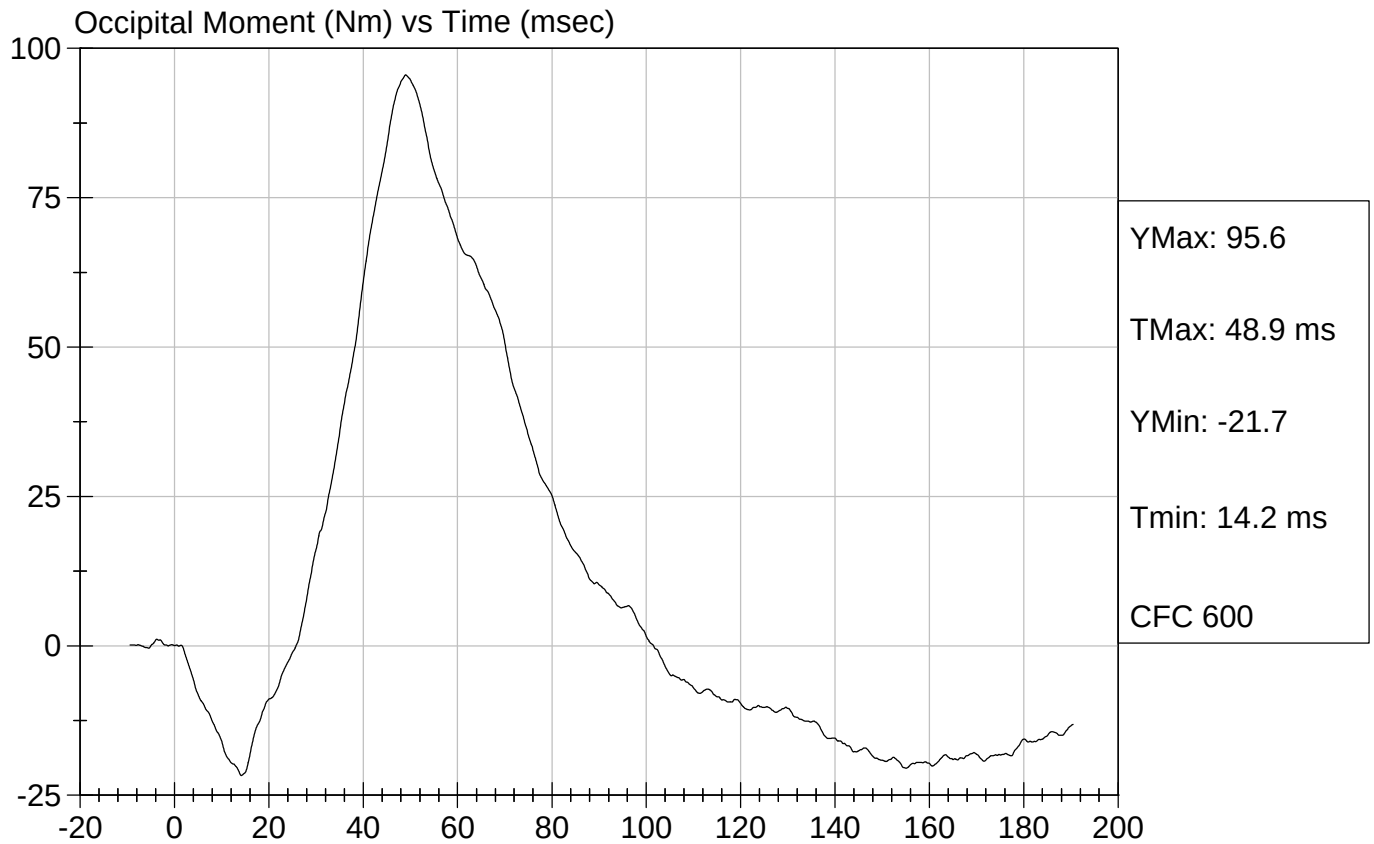






Test Desc: Neck Flexion  
Component ID: D04062

Test Date: 01/16/2004  
Speed: 23.03 ft/sec, 7.02 m/sec



**Hybrid III Calibration Data Sheet**  
**50th Percentile Male**  
**Neck Extension Test**

**ATD Serial No:** 066

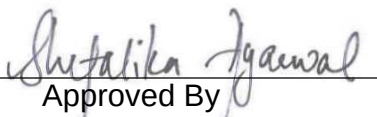
**Test I.D:** D04063

| 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       | 22     | Pass      |
| Pendulum Velocity                              |         | m/s     | 5.95 to 6.19   | 6.18   | Pass      |
| Pendulum Deceleration                          | 10 msec | G's     | 17.20 to 21.20 | 18.88  | Pass      |
|                                                | 20 msec | G's     | 14.00 to 19.00 | 16.55  | Pass      |
|                                                | 30 msec | G's     | 11.00 to 16.00 | 13.10  | Pass      |
| Peak Pendulum Deceleration After 30 msec       |         | G's     | <= 22.0        | 13.1   | Pass      |
| Deceleration Decay Time to Cross 5 G's         |         | msec    | 38.0 to 46.0   | 43.7   | Pass      |
| Maximum "D" Plane Rotation                     | Maximum | Degrees | 81.0 to 106.0  | 98.1   | Pass      |
|                                                | Time    | msec    | 72.0 to 82.0   | 77.4   | Pass      |
| "D" Plane Rotation Decay Time To Zero Crossing |         | msec    | 147.0 to 174.0 | 155.8  | Pass      |
| Moment About Occipital Condyle                 | Minimum | N m     | -52.9 to -79.9 | -62.2  | Pass      |
|                                                | Time    | msec    | 65.0 to 79.0   | 73.6   | Pass      |
| Negative Moment Decay Time To Zero Crossing    |         | msec    | 120.0 to 148.0 | 142.8  | Pass      |
| Overall Test Results                           |         |         |                |        | Pass      |

  
Laboratory Technician

01/16/2004

Test Date

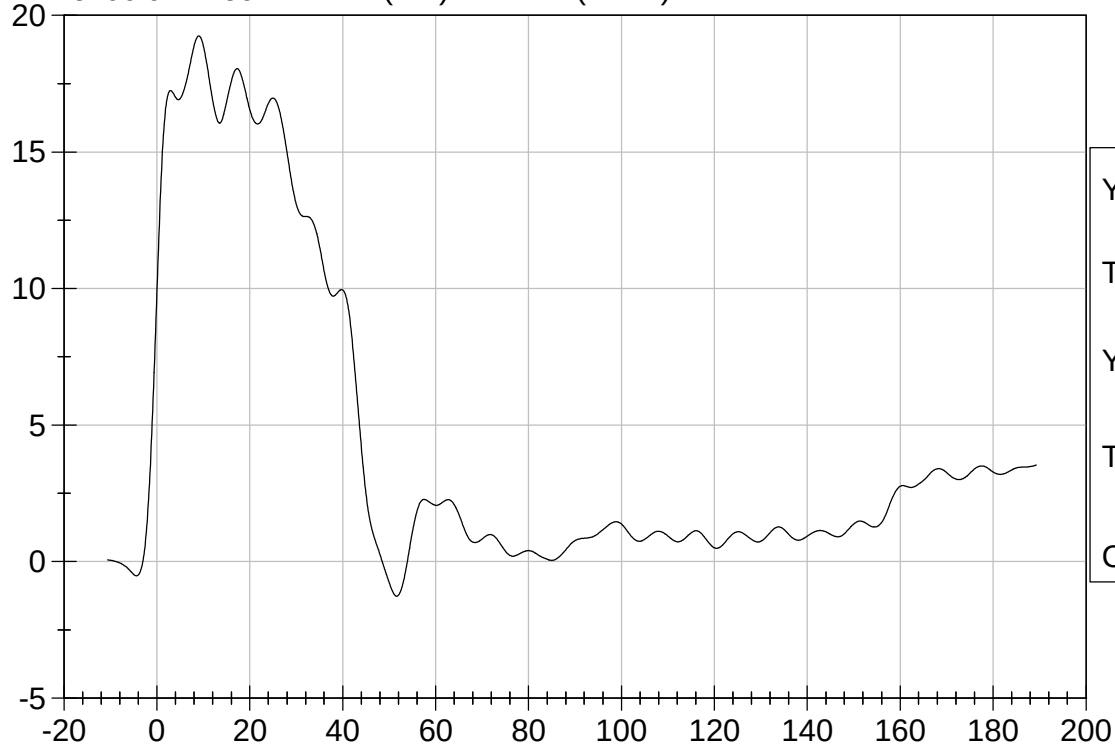
  
Approved By



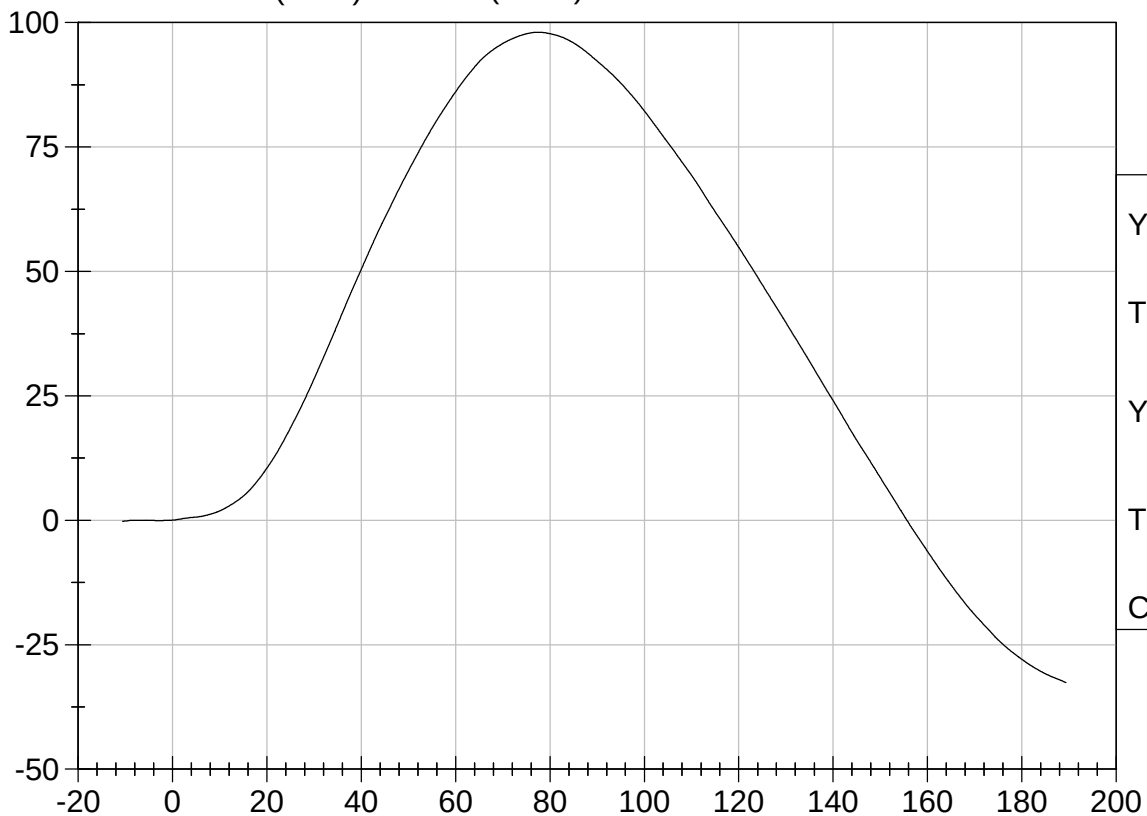
Test Desc: Neck Extension  
Component ID: D04063

Test Date: 01/16/2004  
Speed: 20.28 ft/sec, 6.18 m/sec

Pendulum Deceleration (G's) vs Time (msec)



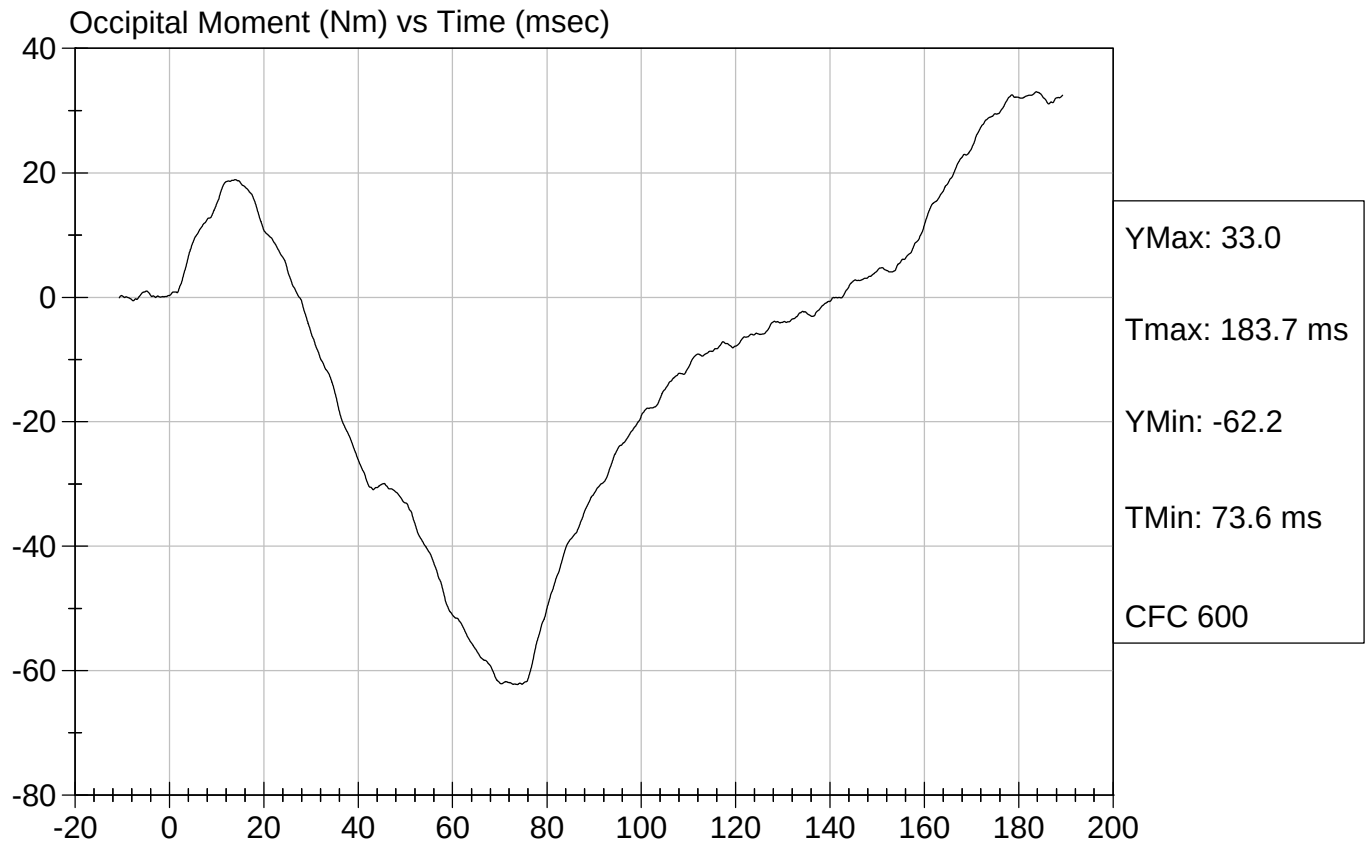
Neck Rotation (DEG) vs Time (msec)





Test Desc: Neck Extension  
Component ID: D04063

Test Date: 01/16/2004  
Speed: 20.28 ft/sec, 6.18 m/sec



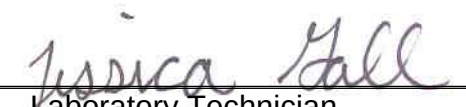


**Hybrid III Calibration Data Sheet**  
**50th Percentile Male**  
**Thorax Impact Test**

**ATD Serial No:** 066

**Test I.D:** D04064

| Tested Parameter             | Units   | Specification | Result | Pass/Fail |
|------------------------------|---------|---------------|--------|-----------|
| Laboratory Temperature       | deg C   | 20.6 to 22.2  | 20.9   | Pass      |
| Laboratory Relative Humidity | %       | 10 to 70      | 14     | Pass      |
| Probe Velocity               | m/s     | 6.58 to 6.82  | 6.69   | Pass      |
| Peak Probe Force             | Newtons | 5159 to 5893  | 5,802  | Pass      |
| Peak Sternum Displacement    | cm      | 6.35 to 7.26  | 6.42   | Pass      |
| Internal Hysteresis          | %       | 69 to 85      | 70     | Pass      |
| Overall Test Results         |         |               |        | Pass      |

  
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01/19/2004  
Test Date

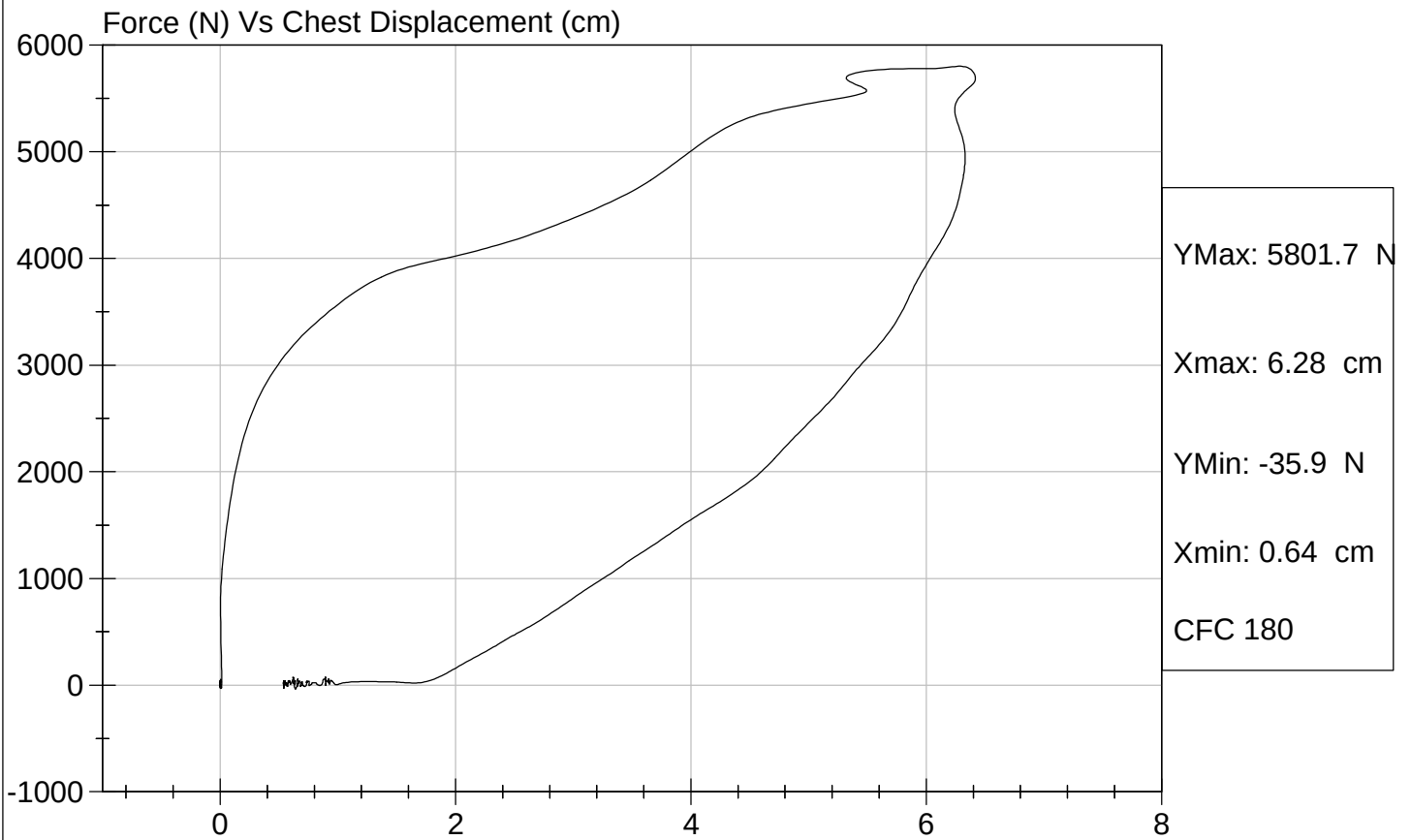


Test Description: Thorax Impact

Test Date: 01/19/2004

Component: D04064

Speed: 21.96 ft/sec, 6.69 m/sec

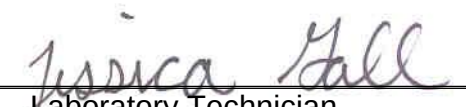


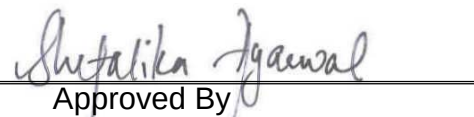
**Hybrid III Calibration Data Sheet**  
**50th Percentile Male**  
**Right Knee Impact Test**

**ATD Serial No:** 066

**Test I.D:** D04065

| Tested Parameter             | Units   | Specification | Result | Pass/Fail |
|------------------------------|---------|---------------|--------|-----------|
| Laboratory Temperature       | deg C   | 18.9 to 25.5  | 21.4   | Pass      |
| Laboratory Relative Humidity | %       | 10 to 70      | 22     | Pass      |
| Probe Velocity               | m/s     | 2.07 to 2.13  | 2.13   | Pass      |
| Peak Probe Force             | Newtons | 4715 to 5782  | 5,053  | Pass      |
| Overall Test Results         |         |               |        | Pass      |

  
Laboratory Technician

  
Approved By

01/16/2004  
Test Date

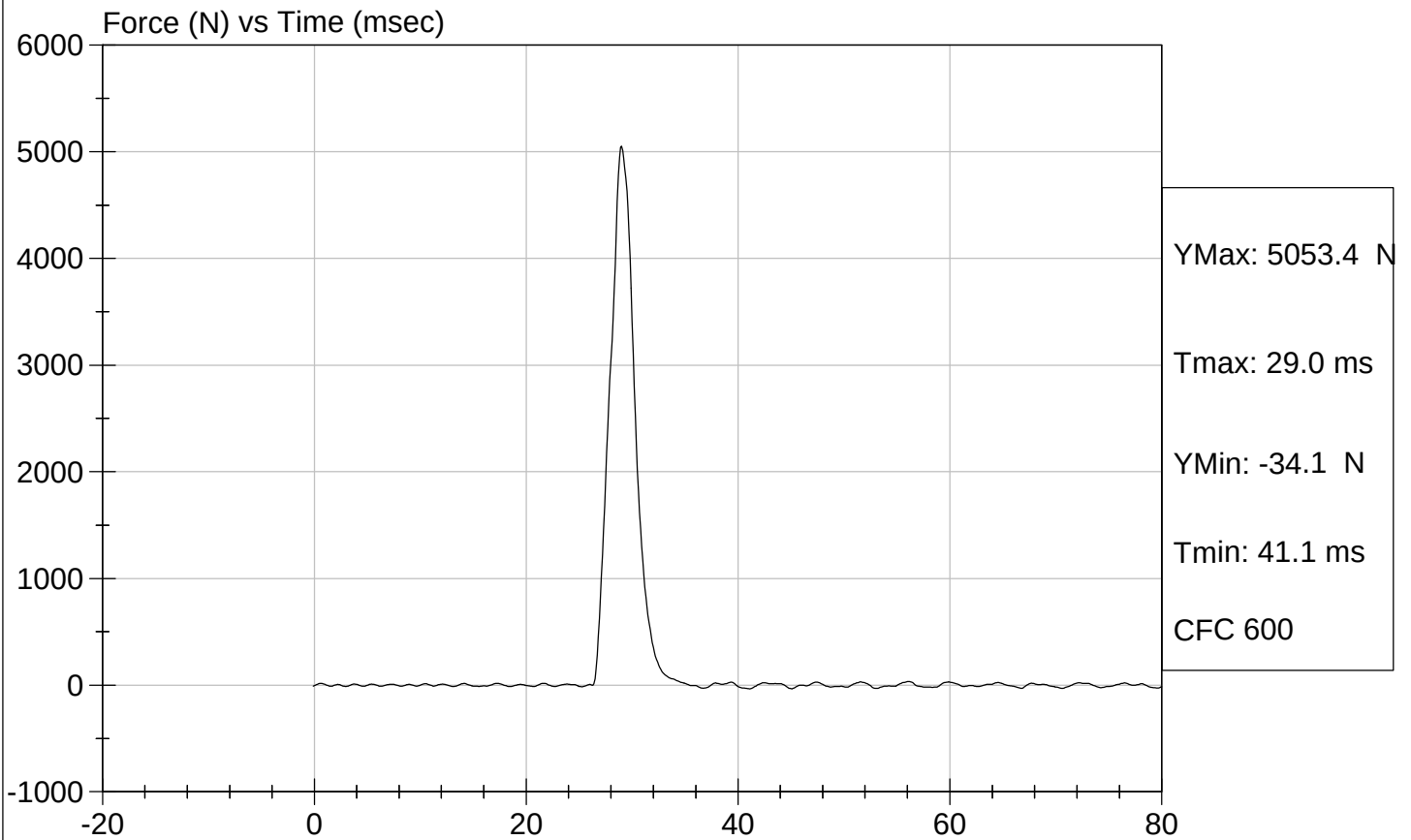


Test Description: Right Knee

Test Date: 01/16/2004

Component: D04065

Speed: 6.98 ft/sec, 2.128 m/sec



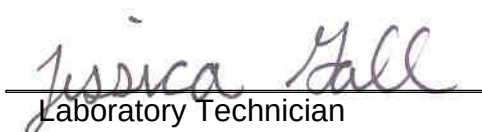


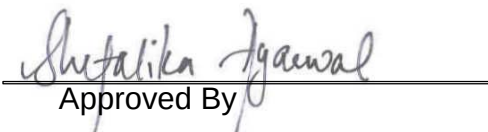
**Hybrid III Calibration Data Sheet**  
**50th Percentile Male**  
**Left Knee Impact Test**

**ATD Serial No:** 066

**Test I.D:** D04066

| Tested Parameter             | Units   | Specification | Result | Pass/Fail |
|------------------------------|---------|---------------|--------|-----------|
| Laboratory Temperature       | deg C   | 18.9 to 25.5  | 21.4   | Pass      |
| Laboratory Relative Humidity | %       | 10 to 70      | 22     | Pass      |
| Probe Velocity               | m/s     | 2.07 to 2.13  | 2.10   | Pass      |
| Peak Probe Force             | Newtons | 4715 to 5782  | 4,928  | Pass      |
| Overall Test Results         |         |               |        | Pass      |

  
Laboratory Technician

  
Approved By

01/16/2004  
Test Date

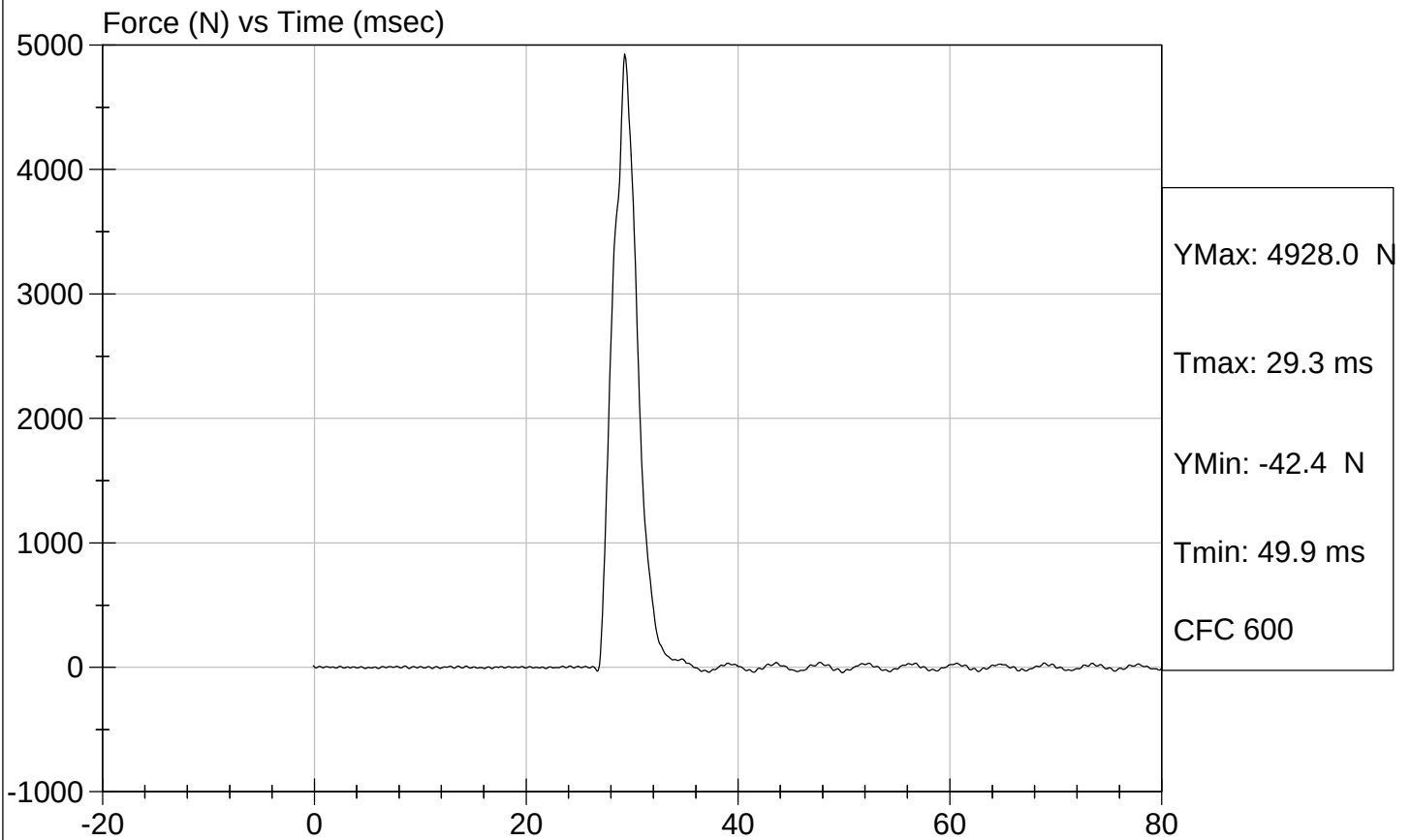


Test Description: Left Knee

Test Date: 01/16/2004

Component: D04066

Speed: 6.9 ft/sec, 2.103 m/sec



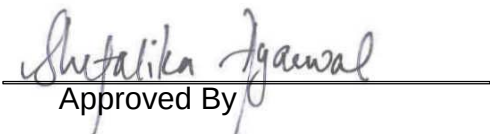
**Hybrid III Calibration Data Sheet**  
**50th Percentile Male**  
**Hip-Femur Flexion Test**

**ATD Serial No:** 066

**Test I.D:** D04060

| Tested Parameter             | Units   | Specification                 | Result |      | Pass/Fail |
|------------------------------|---------|-------------------------------|--------|------|-----------|
|                              |         |                               | Right  | Left |           |
| Laboratory Temperature       | deg C   | 18.9 to 25.6                  | 22.0   | 22.0 | Pass      |
| Laboratory Relative Humidity | %       | 10 to 70                      | 27     | 27   | Pass      |
| Rotation Rate                | deg/sec | 5 -10                         | 8      | 8    | Pass      |
| 30 Degrees                   | Nm      | 94.9 Nm Max                   | 80.7   | 88.5 | Pass      |
| 150 ft-lbf / 203.4 Nm        | Deg     | 40- 50 Degree<br>Max Rotation | 43     | 40   | Pass      |
| Overall Test Results         |         |                               |        |      | Pass      |

  
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01/19/2004  
 Test Date

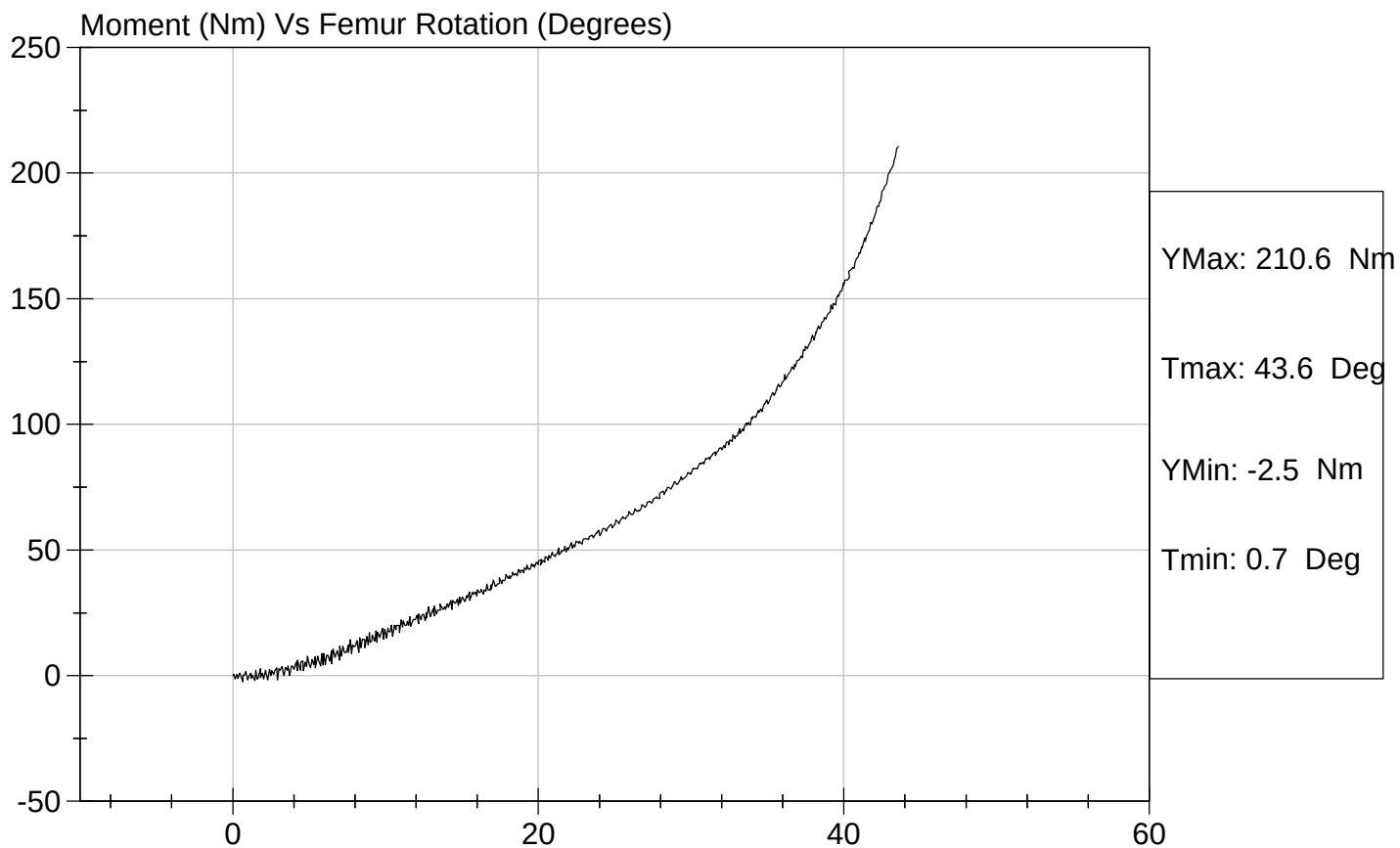


Test Description: Hip Femur Flexion

Test Date: 01/16/2004

Component: D04069

Speed: 0 ft/sec, 0.00 m/sec





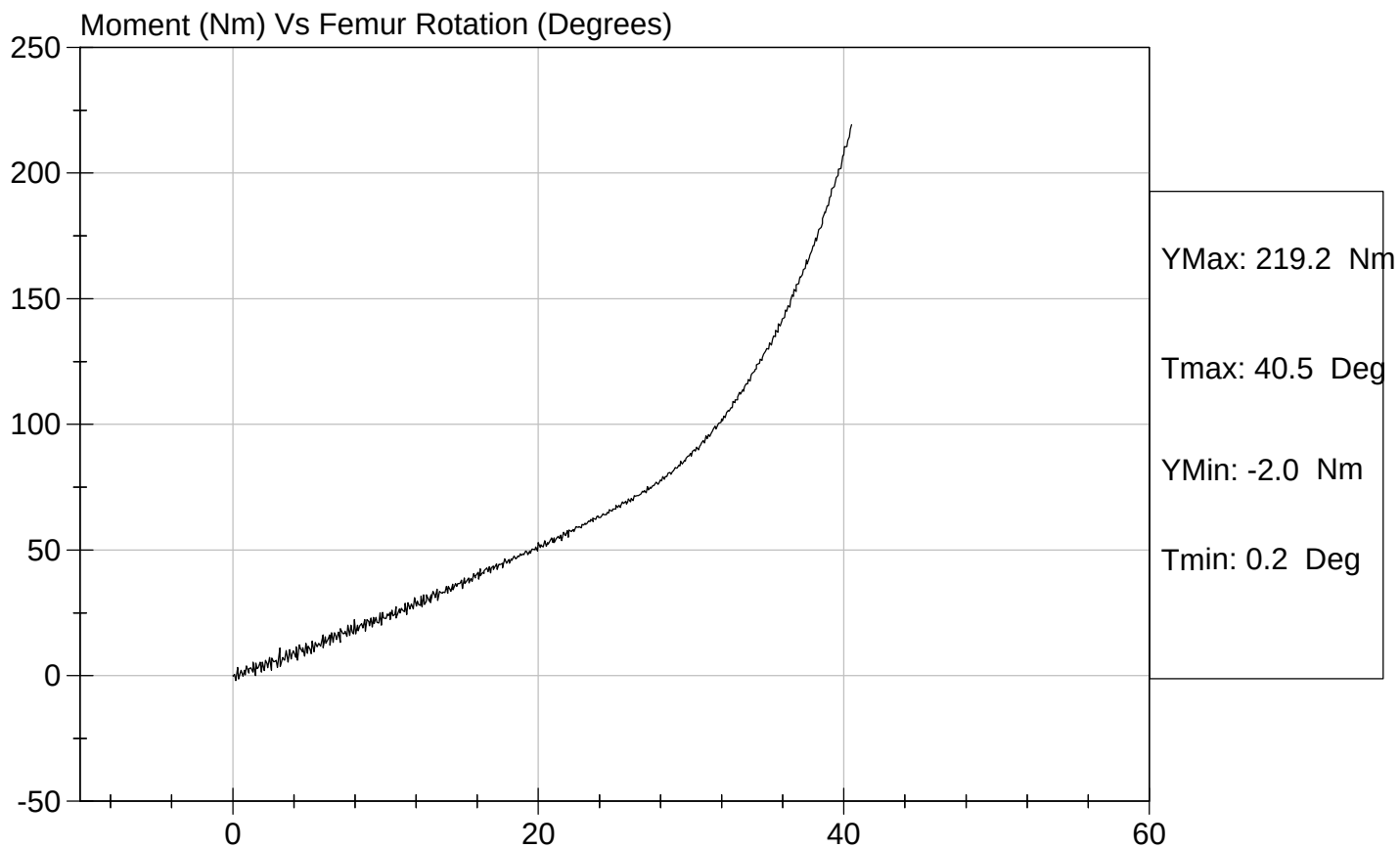


Test Description: Hip Femur Flexion

Test Date: 01/19/2004

Component: D04060

Speed: 0 ft/sec, 0.00 m/sec

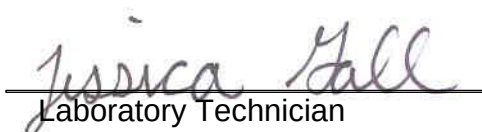


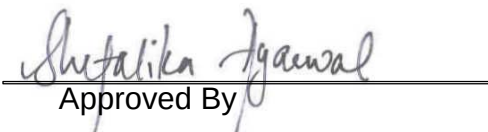
**Hybrid III Calibration Data Sheet**  
**50th Percentile Male**  
**Head Drop Calibration**

**ATD Serial No:** 065

**Test I.D:** D04051

| Tested Parameter             | Units  | Specification  | Result | Pass/Fail |
|------------------------------|--------|----------------|--------|-----------|
| Laboratory Temperature       | deg C  | 18.9 to 25.5   | 22.0   | Pass      |
| Laboratory Relative Humidity | %      | 10 to 70       | 27     | Pass      |
| Peak Resultant Acceleration  | G's    | 225.0 to 275.0 | 252.5  | Pass      |
| Peak Lateral Acceleration    | G's    | <= +/- 15.0    | 6.7    | Pass      |
| Is Acceleration Unimodal?    | Yes/No | < 10% Peak     | Yes    | Pass      |
| Overall Test Results         |        |                |        | Pass      |

  
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Approved By

01/15/2004  
Test Date



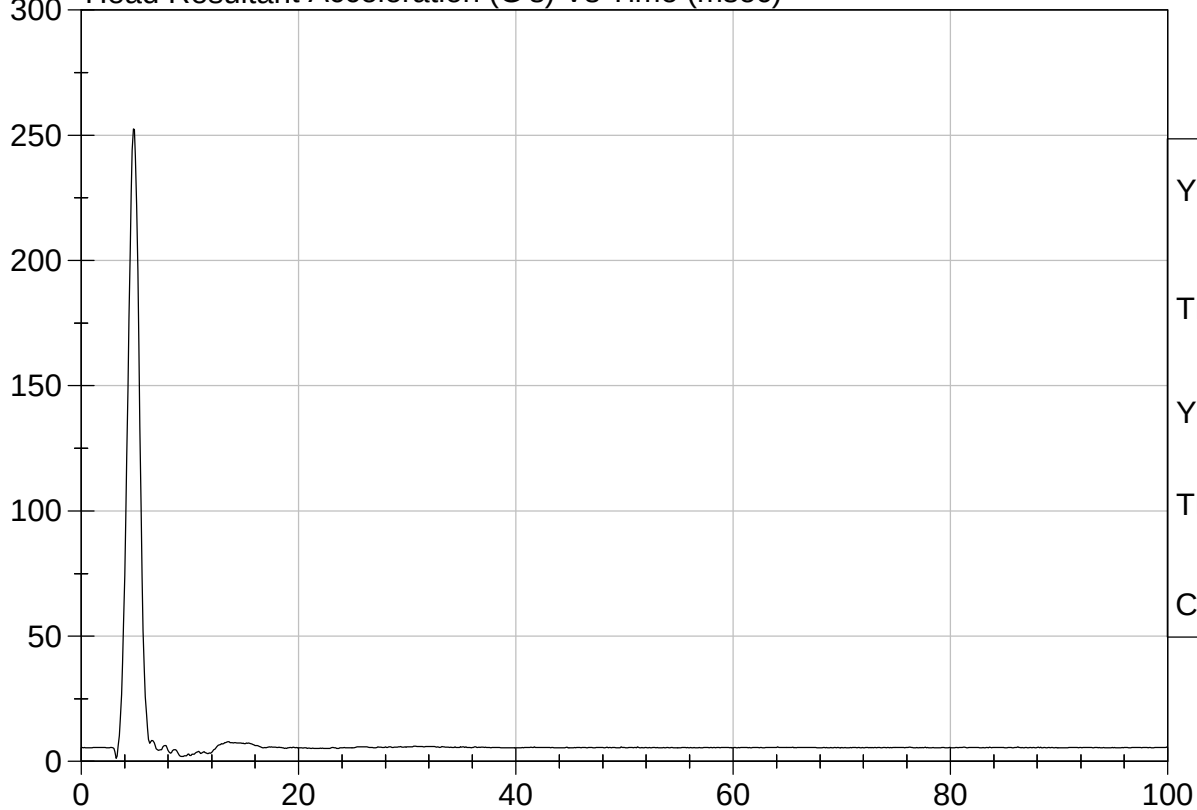
Test Description: Head Drop

Test Date: 01/15/2004

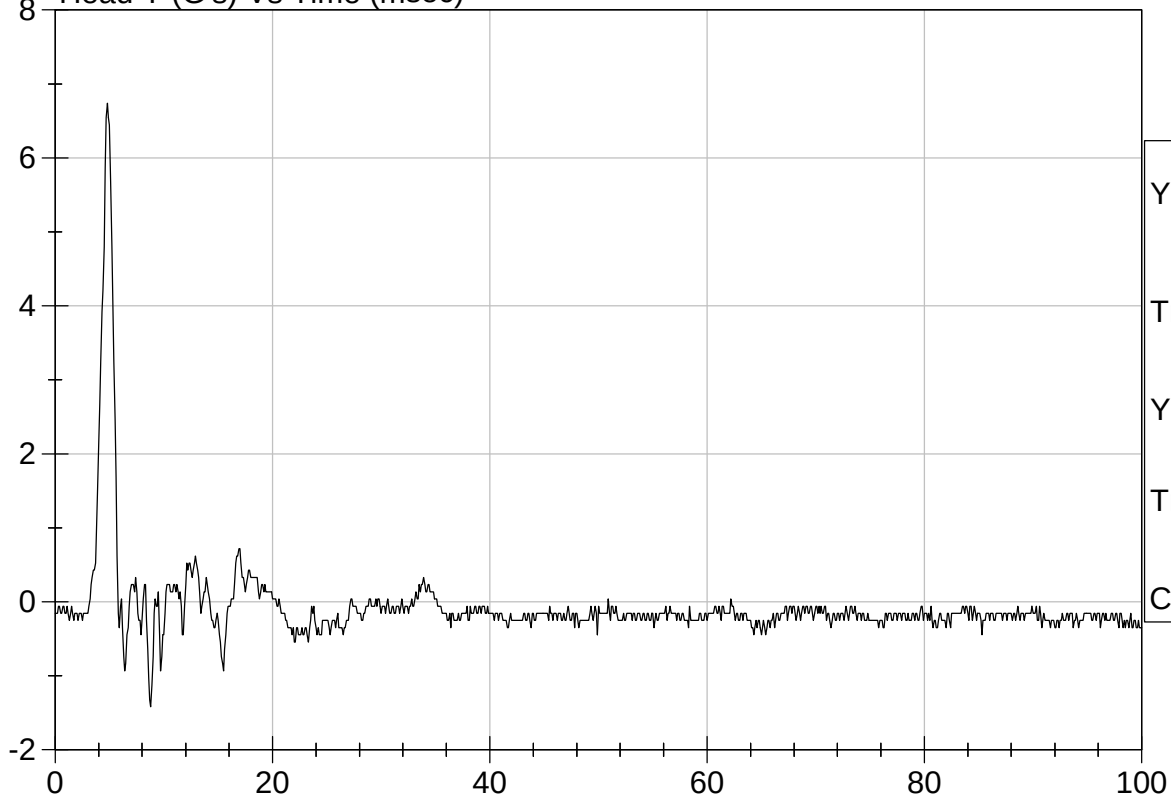
Component: D04051

Speed: 0 ft/s, 0.00 m/s

Head Resultant Acceleration (G's) Vs Time (msec)



Head Y (G's) Vs Time (msec)



**Hybrid III Calibration Data Sheet**  
**50th Percentile Male**  
**Neck Flexion Test**

**ATD Serial No:** 065

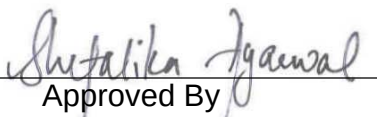
**Test I.D:** D04052

| 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       | 23     | Pass      |
| Pendulum Velocity                              |         | m/s     | 6.89 to 7.13   | 7.03   | Pass      |
| Pendulum Deceleration                          | 10 msec | G's     | 22.50 to 27.50 | 22.75  | Pass      |
|                                                | 20 msec | G's     | 17.60 to 22.60 | 19.98  | Pass      |
|                                                | 30 msec | G's     | 12.50 to 18.50 | 14.48  | Pass      |
| Peak Pendulum Deceleration After 30 msec       |         | G's     | <= 29.0        | 14.48  | Pass      |
| Deceleration Decay Time to Cross 5 G's         |         | msec    | 34.0 to 42.0   | 39.2   | Pass      |
| Maximum "D" Plane Rotation                     | Maximum | Degrees | 64.0 to 78.0   | 72.7   | Pass      |
|                                                | Time    | msec    | 57.0 to 64.0   | 59.2   | Pass      |
| "D" Plane Rotation Decay Time To Zero Crossing |         | msec    | 113.0 to 128.0 | 115.2  | Pass      |
| Moment About Occipital Condyle                 | Maximum | N m     | 84.1 to 108.5  | 96.3   | Pass      |
|                                                | Time    | msec    | 47.0 to 58.0   | 51.8   | Pass      |
| Positive Moment Decay Time To Zero Crossing    |         | msec    | 97.0 to 107.0  | 104.6  | Pass      |
| Overall Test Results                           |         |         |                |        | Pass      |

  
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01/16/2004

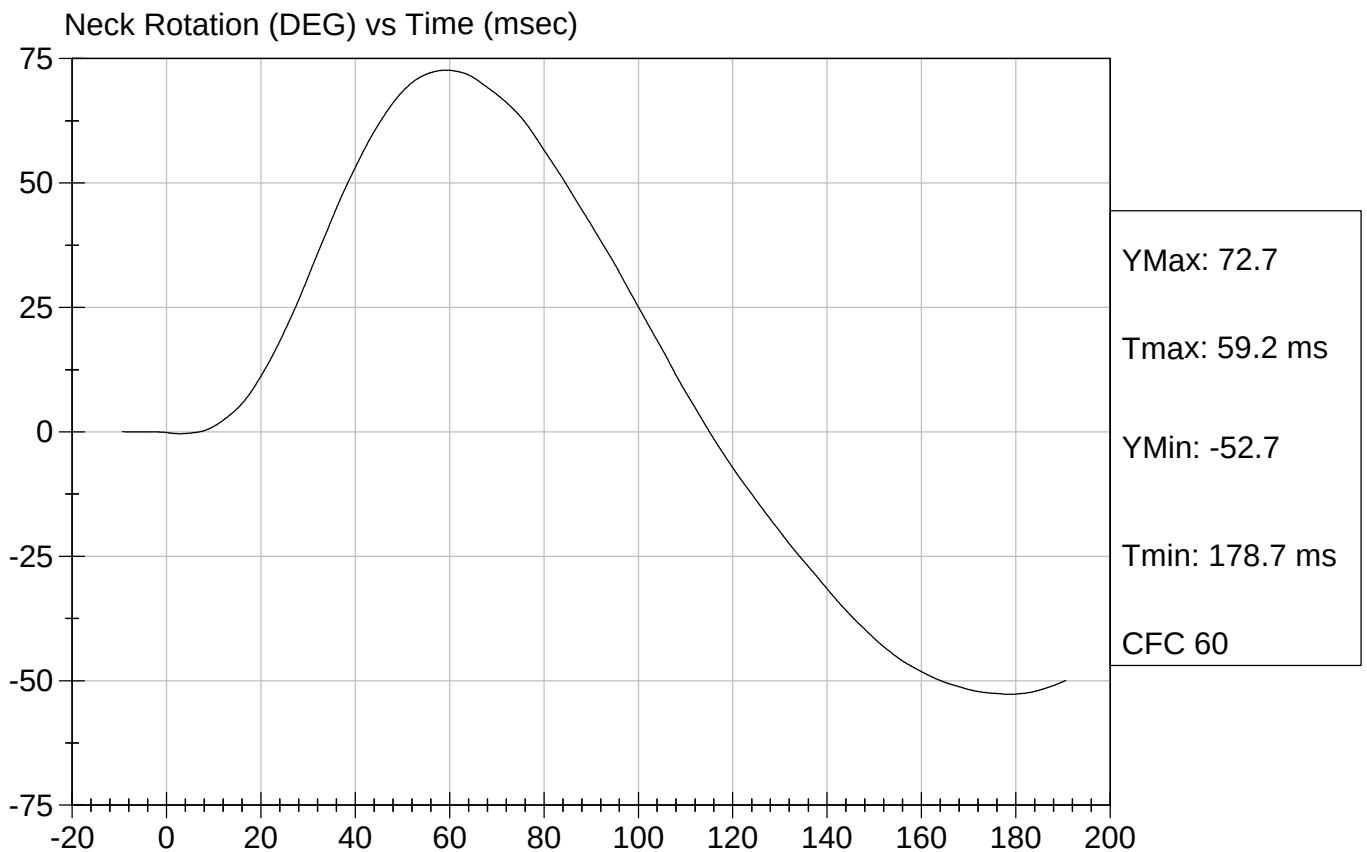
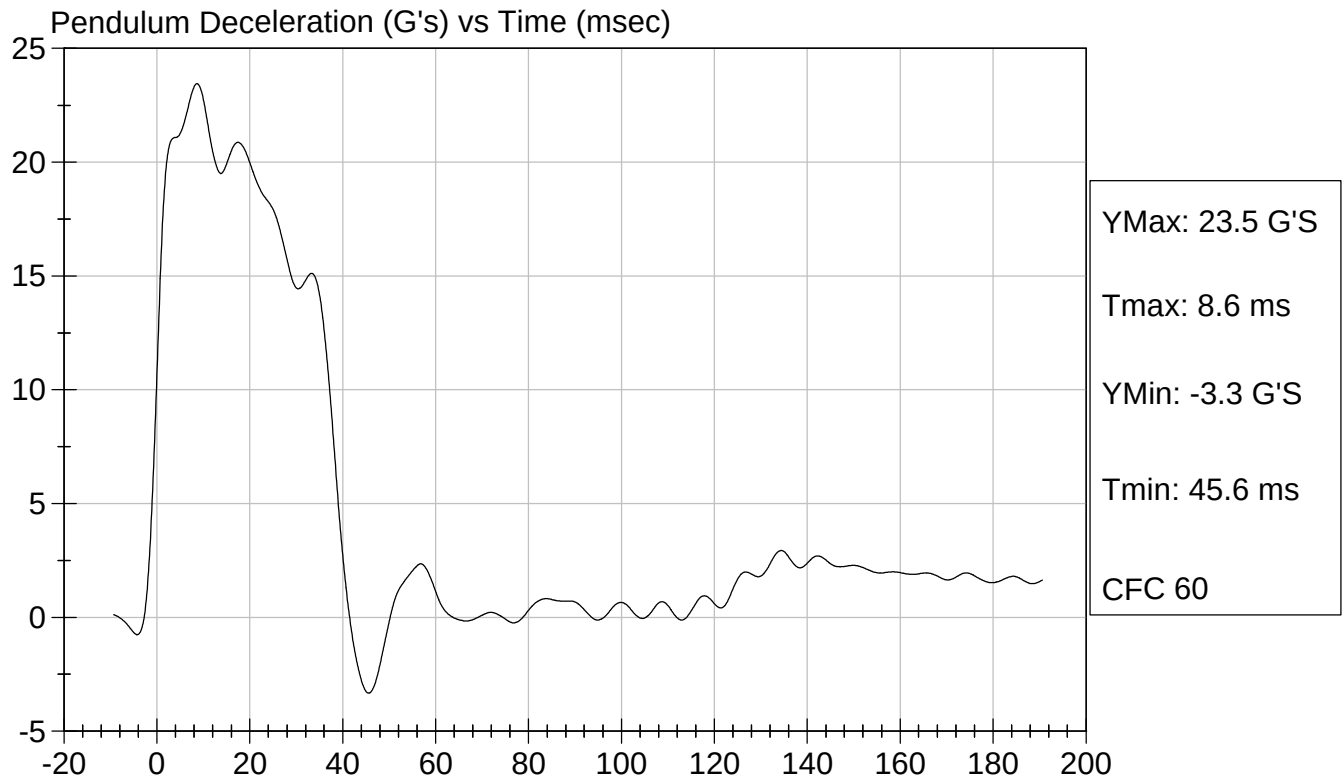
Test Date

  
Approved By



Test Desc: Neck Flexion  
Component ID: D04052

Test Date: 01/16/2004  
Speed: 23.05 ft/sec, 7.03 m/sec

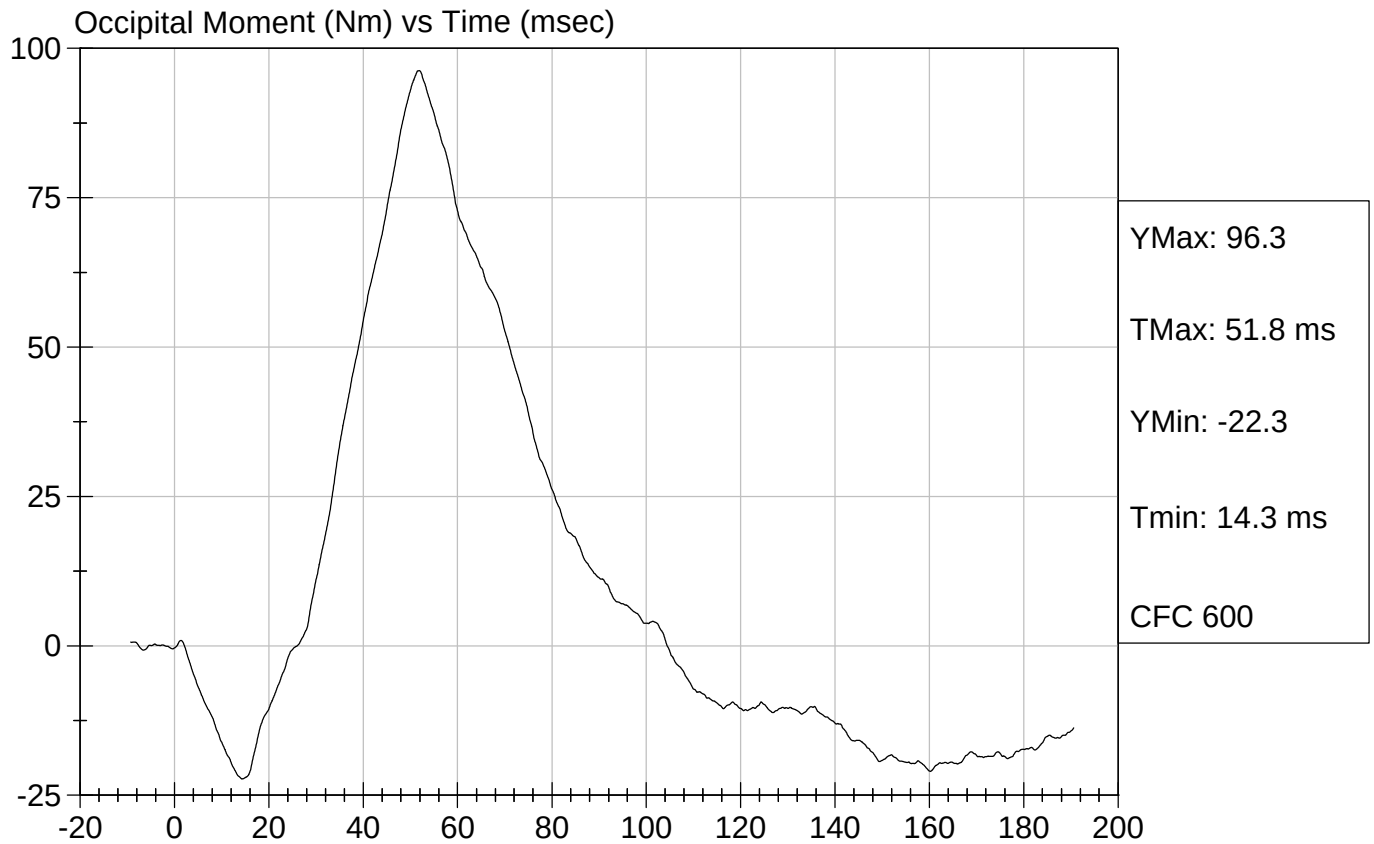






Test Desc: Neck Flexion  
Component ID: D04052

Test Date: 01/16/2004  
Speed: 23.05 ft/sec, 7.03 m/sec



**Hybrid III Calibration Data Sheet**  
**50th Percentile Male**  
**Neck Extension Test**

**ATD Serial No:** 065

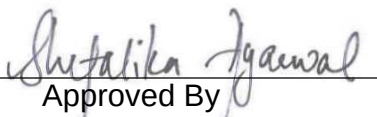
**Test I.D:** D04053

| 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       | 22     | Pass      |
| Pendulum Velocity                              |         | m/s     | 5.95 to 6.19   | 6.18   | Pass      |
| Pendulum Deceleration                          | 10 msec | G's     | 17.20 to 21.20 | 18.15  | Pass      |
|                                                | 20 msec | G's     | 14.00 to 19.00 | 16.17  | Pass      |
|                                                | 30 msec | G's     | 11.00 to 16.00 | 13.60  | Pass      |
| Peak Pendulum Deceleration After 30 msec       |         | G's     | <= 22.0        | 14.0   | Pass      |
| Deceleration Decay Time to Cross 5 G's         |         | msec    | 38.0 to 46.0   | 41.9   | Pass      |
| Maximum "D" Plane Rotation                     | Maximum | Degrees | 81.0 to 106.0  | 99.0   | Pass      |
|                                                | Time    | msec    | 72.0 to 82.0   | 77.1   | Pass      |
| "D" Plane Rotation Decay Time To Zero Crossing |         | msec    | 147.0 to 174.0 | 156.7  | Pass      |
| Moment About Occipital Condyle                 | Minimum | N m     | -52.9 to -79.9 | -68.1  | Pass      |
|                                                | Time    | msec    | 65.0 to 79.0   | 72.7   | Pass      |
| Negative Moment Decay Time To Zero Crossing    |         | msec    | 120.0 to 148.0 | 145.4  | Pass      |
| Overall Test Results                           |         |         |                |        | Pass      |

  
 Laboratory Technician

01/16/2004

Test Date

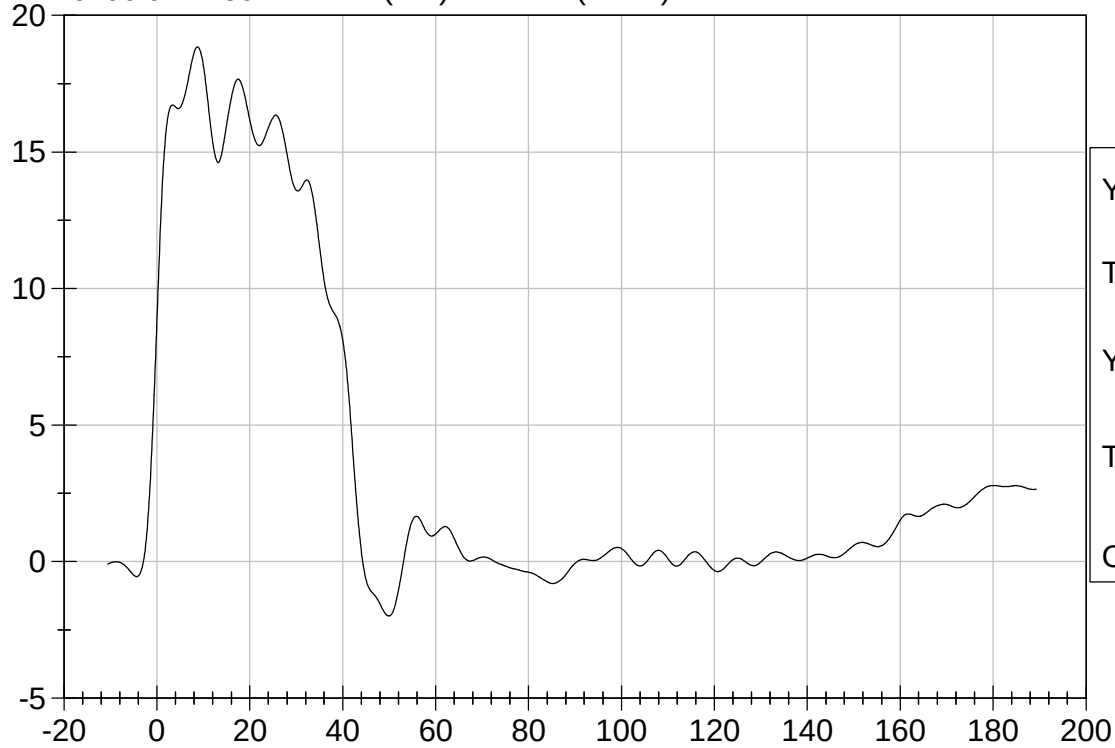
  
 Approved By



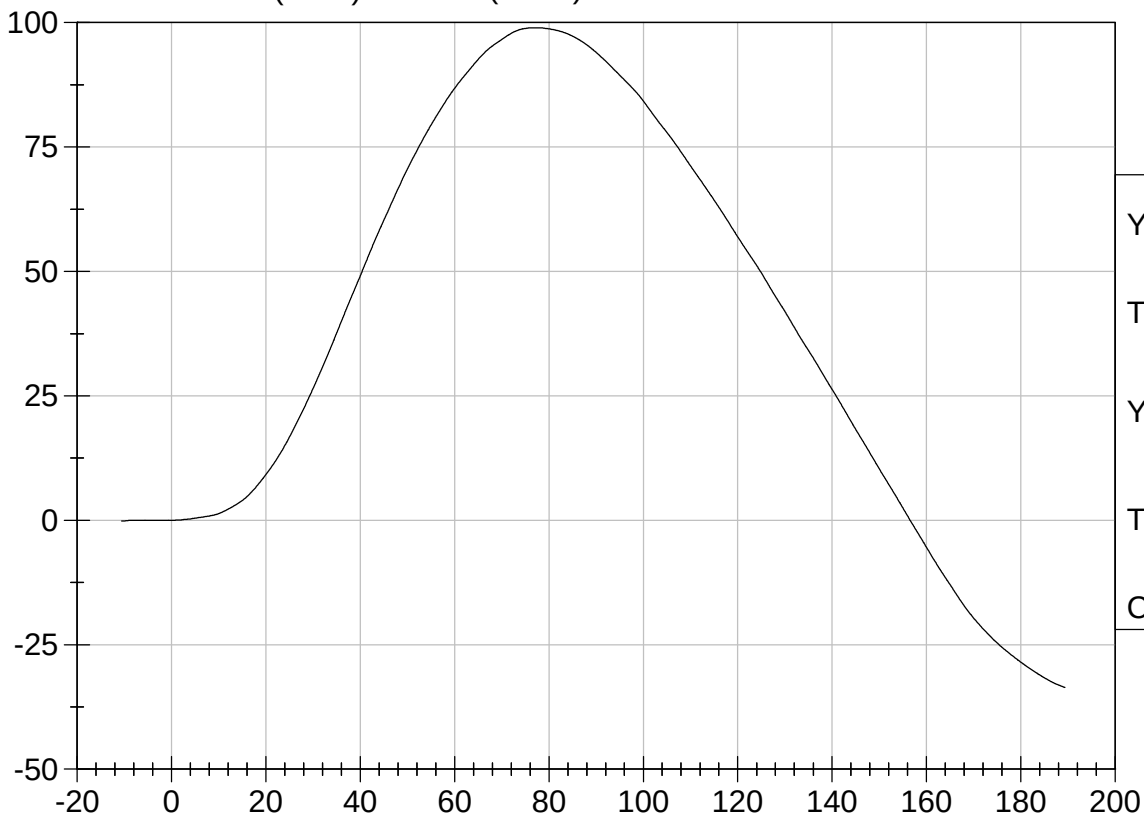
Test Desc: Neck Extension  
Component ID: D04053

Test Date: 01/16/2004  
Speed: 20.28 ft/sec, 6.18 m/sec

Pendulum Deceleration (G's) vs Time (msec)



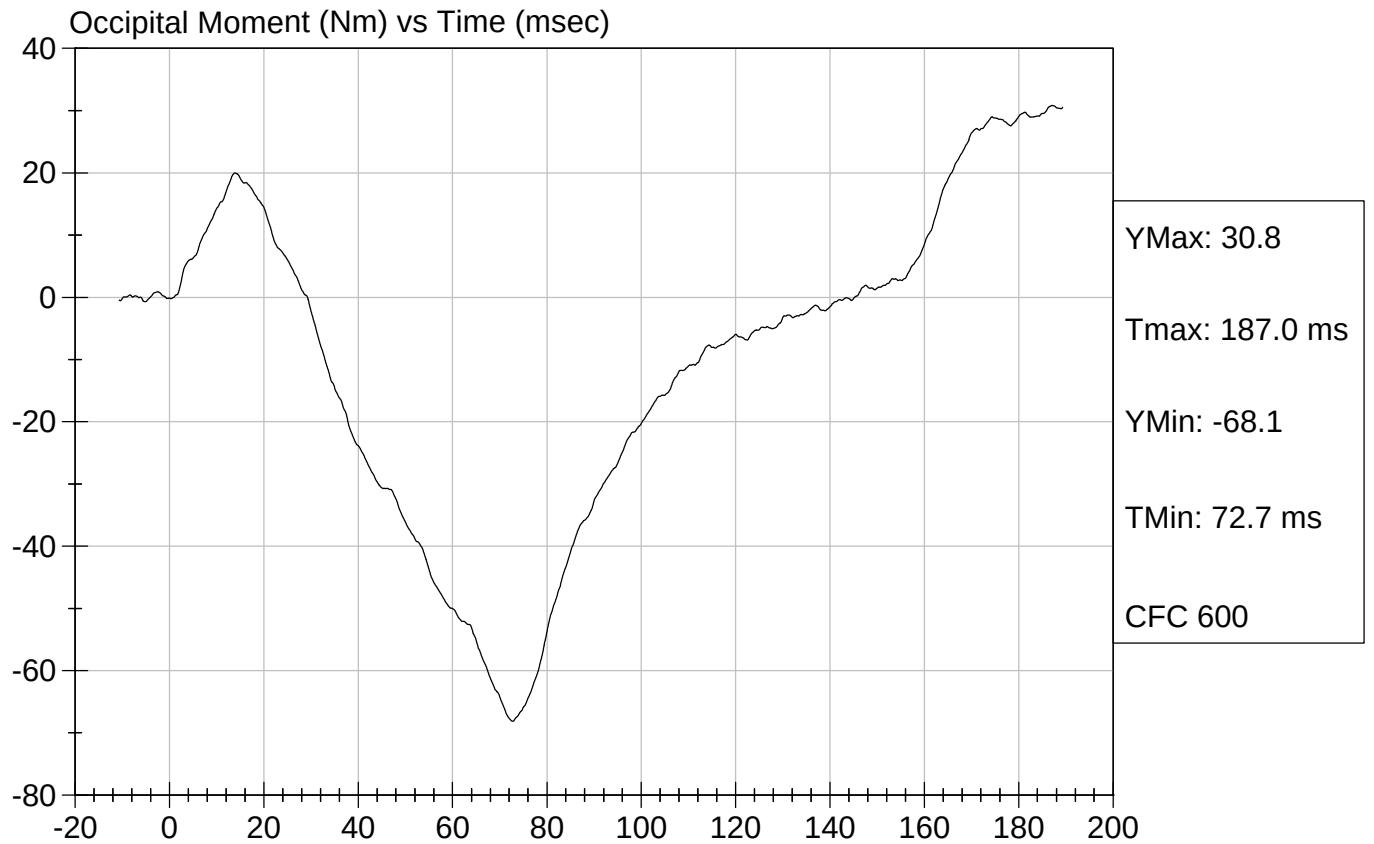
Neck Rotation (DEG) vs Time (msec)





Test Desc: Neck Extension  
Component ID: D04053

Test Date: 01/16/2004  
Speed: 20.28 ft/sec, 6.18 m/sec

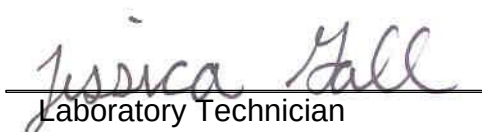


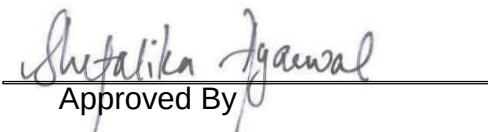
**Hybrid III Calibration Data Sheet**  
**50th Percentile Male**  
**Thorax Impact Test**

**ATD Serial No:** 065

**Test I.D:** D04054

| Tested Parameter             | Units   | Specification | Result | Pass/Fail |
|------------------------------|---------|---------------|--------|-----------|
| Laboratory Temperature       | deg C   | 20.6 to 22.2  | 20.6   | Pass      |
| Laboratory Relative Humidity | %       | 10 to 70      | 20     | Pass      |
| Probe Velocity               | m/s     | 6.58 to 6.82  | 6.72   | Pass      |
| Peak Probe Force             | Newtons | 5159 to 5893  | 5,669  | Pass      |
| Peak Sternum Displacement    | cm      | 6.35 to 7.26  | 6.52   | Pass      |
| Internal Hysteresis          | %       | 69 to 85      | 71     | Pass      |
| Overall Test Results         |         |               |        | Pass      |

  
Laboratory Technician

  
Approved By

01/19/2004  
Test Date



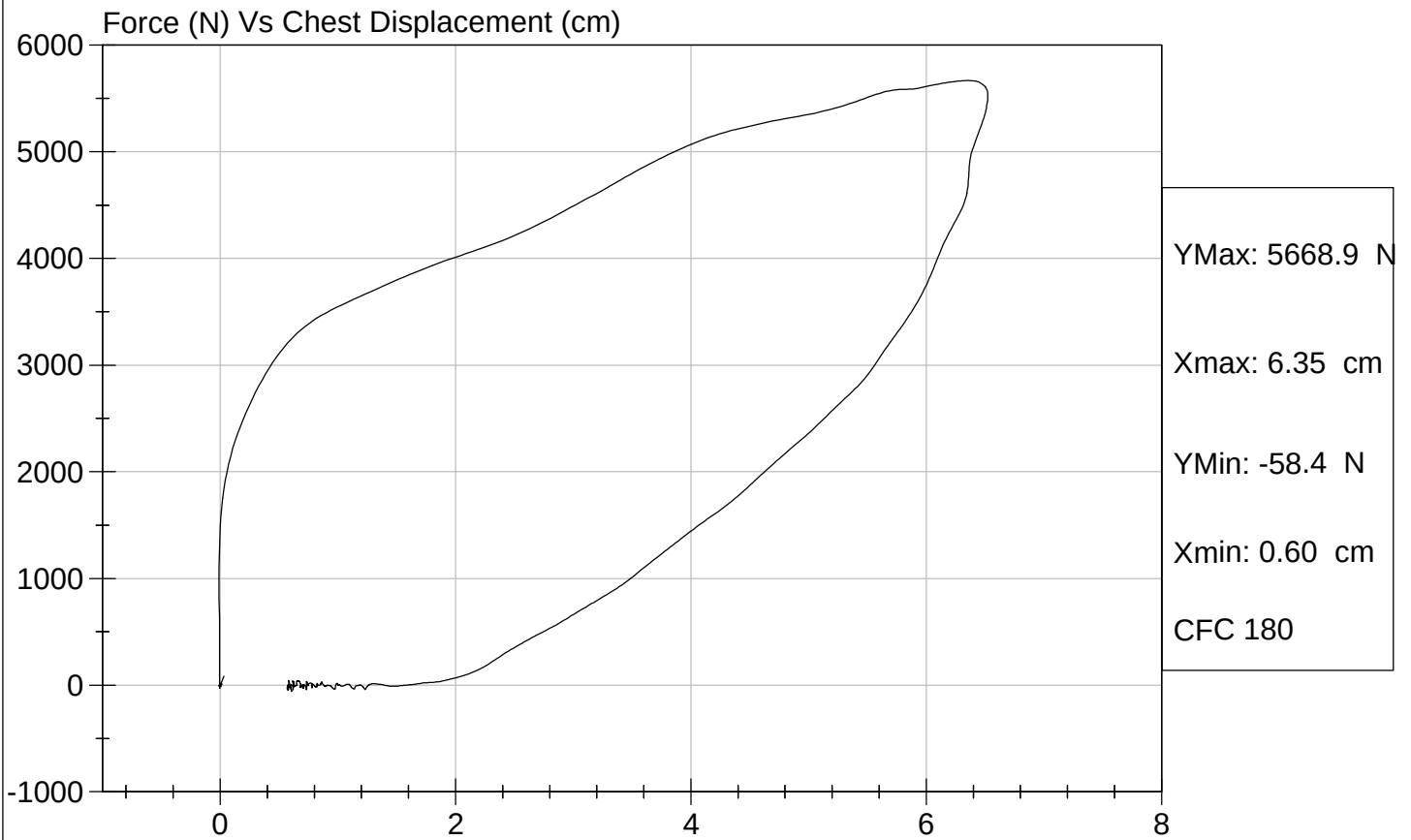


Test Description: Thorax Impact

Test Date: 01/19/2004

Component: D04054

Speed: 22.05 ft/sec, 6.72 m/sec

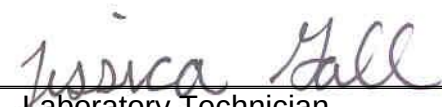


**Hybrid III Calibration Data Sheet**  
**50th Percentile Male**  
**Right Knee Impact Test**

**ATD Serial No:** 065

**Test I.D:** D04055

| Tested Parameter             | Units   | Specification | Result | Pass/Fail |
|------------------------------|---------|---------------|--------|-----------|
| Laboratory Temperature       | deg C   | 18.9 to 25.5  | 21.4   | Pass      |
| Laboratory Relative Humidity | %       | 10 to 70      | 22     | Pass      |
| Probe Velocity               | m/s     | 2.07 to 2.13  | 2.10   | Pass      |
| Peak Probe Force             | Newtons | 4715 to 5782  | 5,194  | Pass      |
| Overall Test Results         |         |               |        | Pass      |

  
\_\_\_\_\_  
Laboratory Technician

  
\_\_\_\_\_  
Approved By

01/17/2004  
Test Date

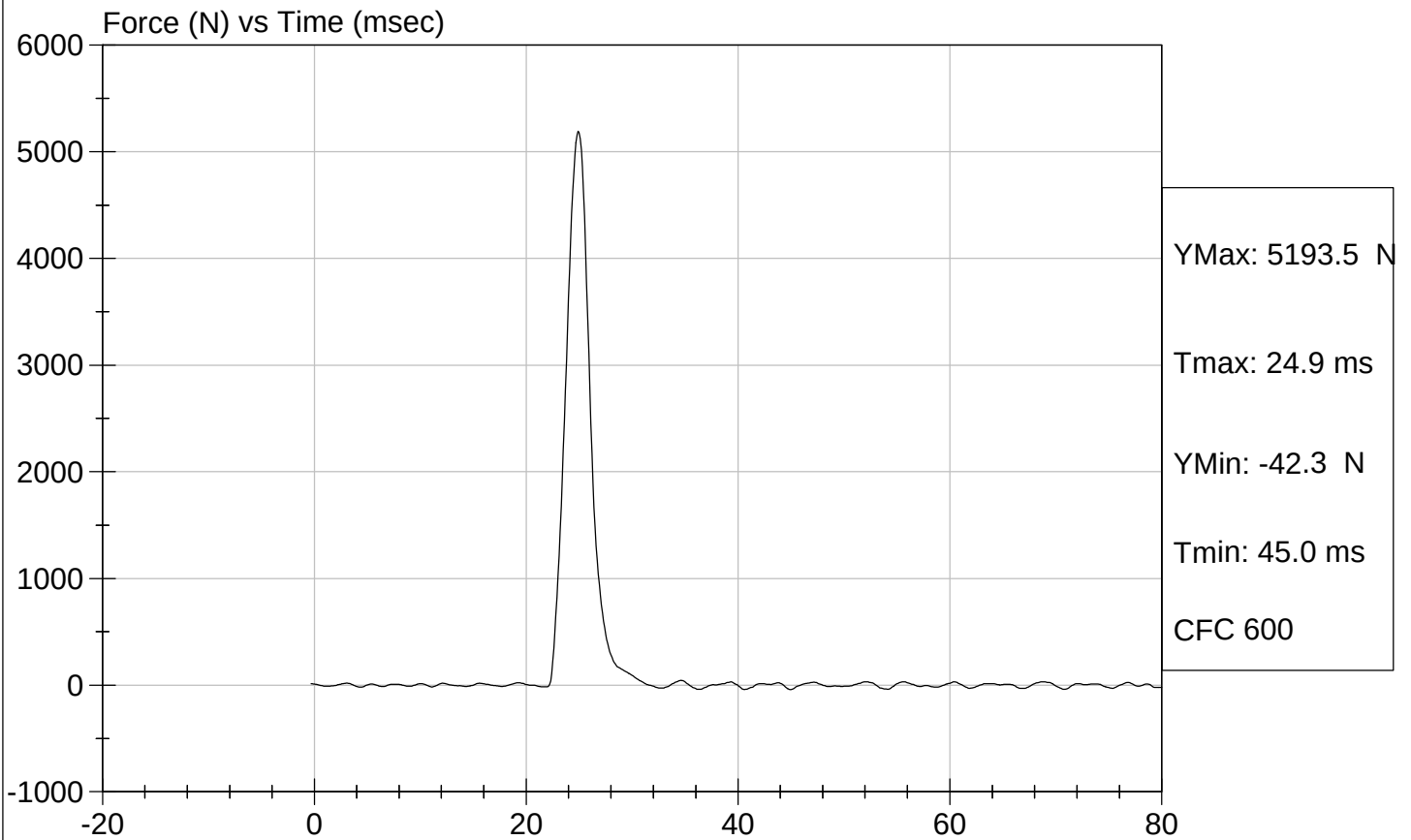


Test Description: Right Knee

Test Date: 01/17/2004

Component: D04055

Speed: 6.89 ft/sec, 2.100 m/sec

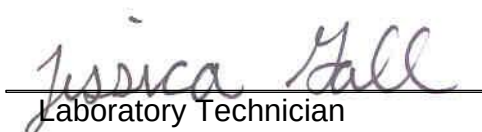


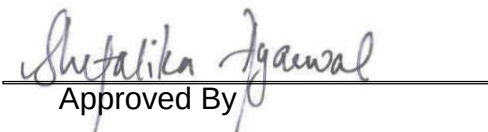
**Hybrid III Calibration Data Sheet**  
**50th Percentile Male**  
**Left Knee Impact Test**

**ATD Serial No:** 065

**Test I.D:** D04056

| Tested Parameter             | Units   | Specification | Result | Pass/Fail |
|------------------------------|---------|---------------|--------|-----------|
| Laboratory Temperature       | deg C   | 18.9 to 25.5  | 21.4   | Pass      |
| Laboratory Relative Humidity | %       | 10 to 70      | 22     | Pass      |
| Probe Velocity               | m/s     | 2.07 to 2.13  | 2.07   | Pass      |
| Peak Probe Force             | Newtons | 4715 to 5782  | 4,925  | Pass      |
| Overall Test Results         |         |               |        | Pass      |

  
Laboratory Technician

  
Approved By

01/16/2004  
Test Date

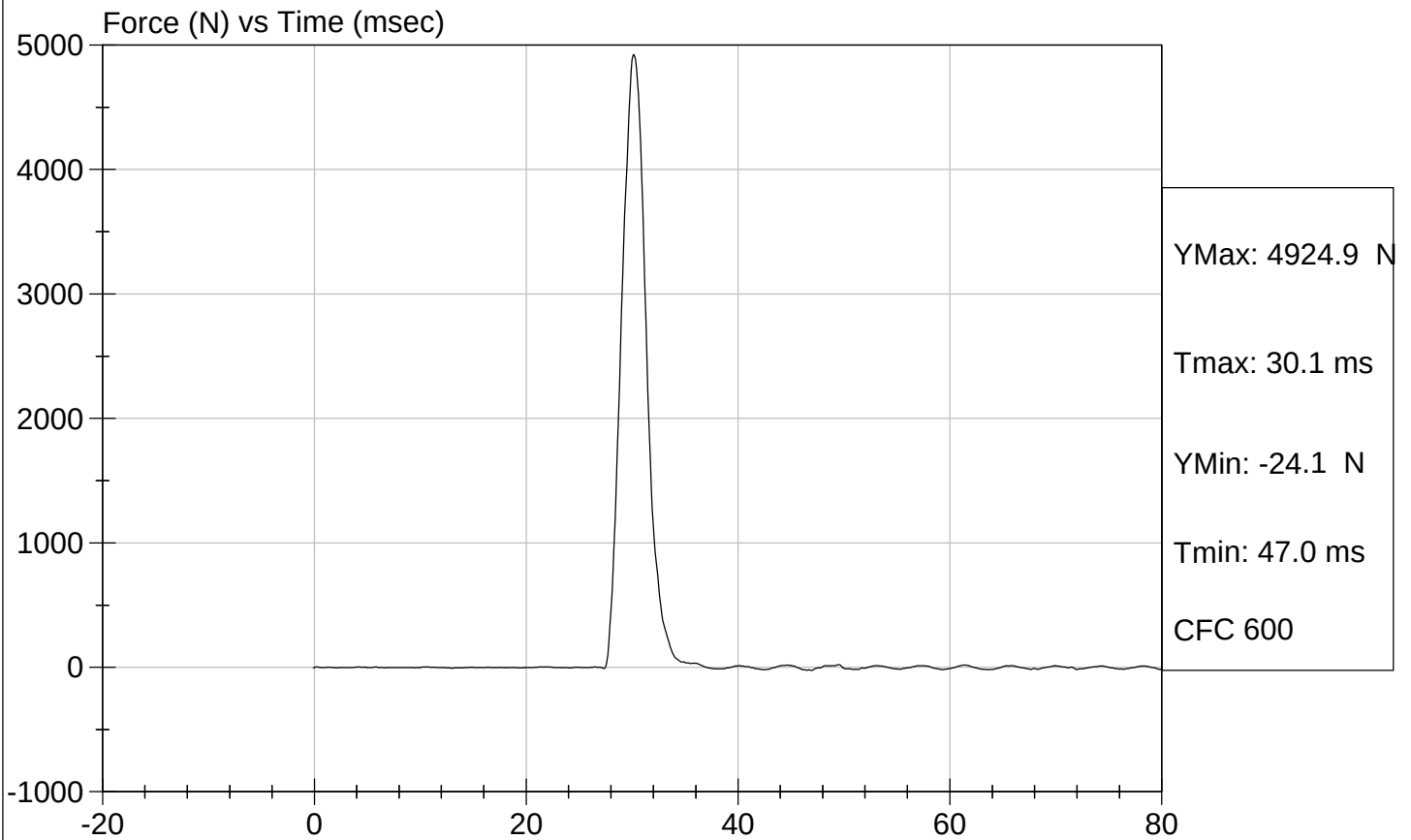


Test Description: Left Knee

Test Date: 01/16/2004

Component: D04056

Speed: 6.8 ft/sec, 2.073 m/sec



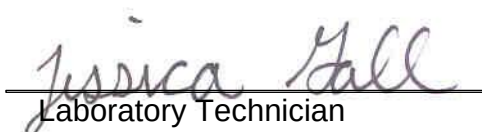


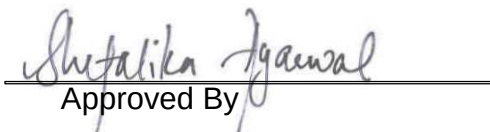
**Hybrid III Calibration Data Sheet**  
**50th Percentile Male**  
**Hip-Femur Flexion Test**

**ATD Serial No:** 065

**Test I.D:** D04050

| Tested Parameter             | Units   | Specification                 | Result |      | Pass/Fail |
|------------------------------|---------|-------------------------------|--------|------|-----------|
|                              |         |                               | Right  | Left |           |
| Laboratory Temperature       | deg C   | 18.9 to 25.6                  | 21.5   | 21.5 | Pass      |
| Laboratory Relative Humidity | %       | 10 to 70                      | 26     | 26   | Pass      |
| Rotation Rate                | deg/sec | 5 -10                         | 8      | 8    | Pass      |
| 30 Degrees                   | Nm      | 94.9 Nm Max                   | 71.4   | 66.9 | Pass      |
| 150 ft-lbf / 203.4 Nm        | Deg     | 40- 50 Degree<br>Max Rotation | 44     | 44   | Pass      |
| Overall Test Results         |         |                               |        |      | Pass      |

  
 Laboratory Technician

  
 Approved By

01/15/2004  
 Test Date

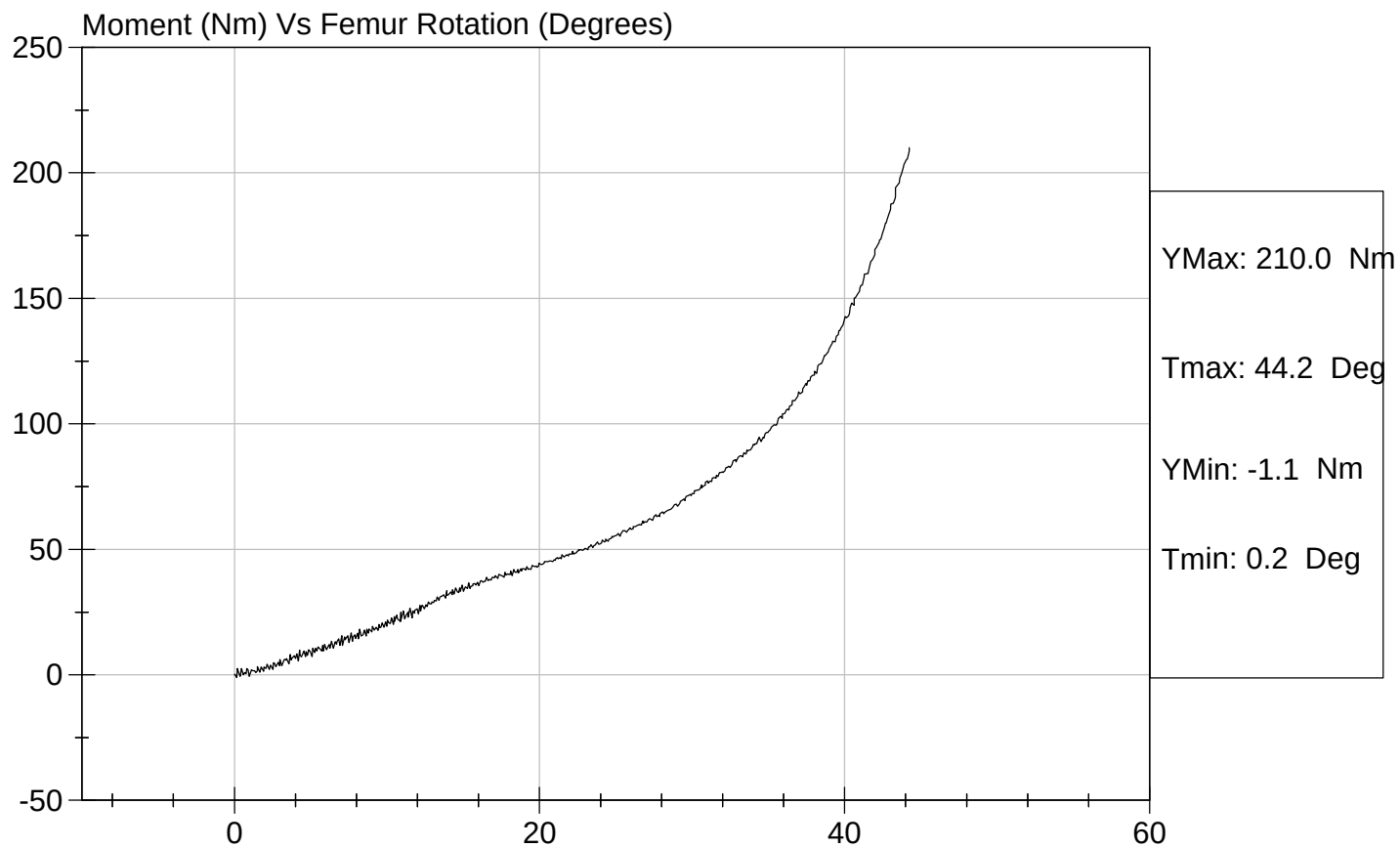


Test Description: Head Drop

Test Date: 01/15/2004

Component: D04059

Speed: 0 ft/sec, 0.00 m/sec



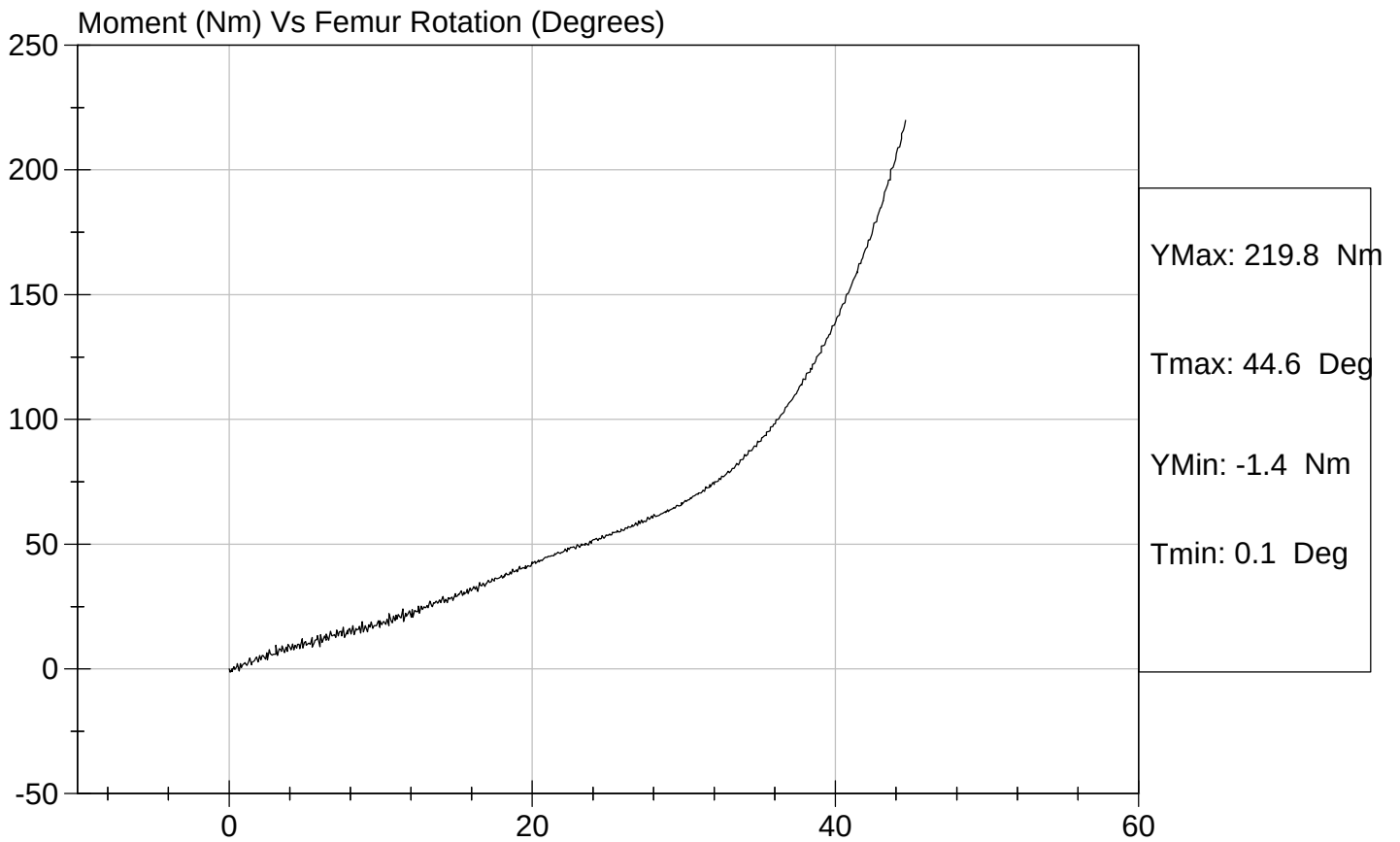


Test Description: Hip Femur Flexion

Test Date: 01/15/2004

Component: D04050

Speed: 0 ft/sec, 0.00 m/sec



**APPENDIX D**

**TEST EQUIPMENT AND INSTRUMENTATION CALIBRATION**

## INSTRUMENTS FOR DRIVER DUMMY NO. 066

|                             | SERIAL NO. | MANUFACTURER | CALIBRATION DATE |
|-----------------------------|------------|--------------|------------------|
| Head X                      | ACC61      | Endevco      | 10/03/03         |
| Head Y                      | AAMN8      | Endevco      | 10/03/03         |
| Head Z                      | ACCW9      | Endevco      | 10/03/03         |
| Head X Redundant            | J21988     | Endevco      | 10/03/03         |
| Head Y Redundant            | J19884     | Endevco      | 10/03/03         |
| Head Z Redundant            | J28986     | Endevco      | 10/03/03         |
| Head Y – Front              | AH0D1      | Endevco      | 12/05/03         |
| Head Z – Front              | AH0M0      | Endevco      | 12/05/03         |
| Head X – Left               | J22034     | Endevco      | 12/05/03         |
| Head Z – Left               | AHRP6      | Endevco      | 12/05/03         |
| Head X – Upper              | AP170      | Endevco      | 12/05/03         |
| Head Y – Upper              | AP2G9      | Endevco      | 12/05/03         |
| Neck Load Cell              | 443        | Denton       | 8/20/03          |
| Chest X                     | ACCY1      | Endevco      | 10/06/03         |
| Chest Y                     | ACCC8      | Endevco      | 10/06/03         |
| Chest Z                     | ACCT7      | Endevco      | 10/06/03         |
| Chest Displacement          | 066        | Servo        | 9/30/03          |
| Chest X Redundant           | J13541     | Endevco      | 10/06/03         |
| Chest Y Redundant           | J20093     | Endevco      | 10/06/03         |
| Chest Z Redundant           | J19440     | Endevco      | 10/06/03         |
| Pelvis X                    | J22033     | Endevco      | 10/03/03         |
| Pelvis Y                    | J21691     | Endevco      | 10/03/03         |
| Pelvis Z                    | J21970     | Endevco      | 10/03/03         |
| Left Femur Load Cell        | 262        | Denton       | 8/20/03          |
| Right Femur Load Cell       | 261        | Denton       | 8/20/03          |
| Left Upper Tibia Load Cell  | 109        | Denton       | 8/19/03          |
| Left Lower Tibia Load Cell  | 138        | Denton       | 8/19/03          |
| Right Upper Tibia Load Cell | 106        | Denton       | 8/20/03          |
| Right Lower Tibia Load Cell | 135        | Denton       | 8/20/03          |
| Left Foot Z – Front         | J28988     | Endevco      | 10/03/03         |
| Left Ankle X                | J22036     | Endevco      | 10/03/03         |
| Left Ankle Z                | J20569     | Endevco      | 10/03/03         |
| Right Foot Z – Front        | P22696     | Endevco      | 12/05/03         |
| Right Ankle X               | AP122      | Endevco      | 9/04/03          |
| Right Ankle Z               | J18925     | Endevco      | 9/04/03          |
| Shoulder Belt Load Cell     | 162        | Denton       | 9/18/03          |
| Lap Belt Load Cell          | 198        | Denton       | 12/09/03         |



# INSTRUMENTS FOR PASSENGER DUMMY NO. 065

|                             | SERIAL NO. | MANUFACTURER | CALIBRATION DATE |
|-----------------------------|------------|--------------|------------------|
| Head X                      | J13941     | Endevco      | 10/06/03         |
| Head Y                      | ACCY6      | Endevco      | 10/03/03         |
| Head Z                      | AAMW5      | Endevco      | 10/03/03         |
| Head X Redundant            | J18724     | Endevco      | 10/06/03         |
| Head Y Redundant            | J14235     | Endevco      | 10/08/03         |
| Head Z Redundant            | AJ5R0      | Endevco      | 10/03/03         |
| Head Y – Front              | ALBA7      | Endevco      | 11/10/03         |
| Head Z – Front              | AMP82      | Endevco      | 11/10/03         |
| Head X – Left               | AKAA6      | Endevco      | 11/10/03         |
| Head Z – Left               | AP2C4      | Endevco      | 11/10/03         |
| Head X – Upper              | J18953     | Endevco      | 11/10/03         |
| Head Y – Upper              | J18843     | Endevco      | 11/10/03         |
| Neck Load Cell              | 442        | Denton       | 8/20/03          |
| Chest X                     | ACC78      | Endevco      | 10/03/03         |
| Chest Y                     | ACCE6      | Endevco      | 10/03/03         |
| Chest Z                     | ACCY3      | Endevco      | 10/03/03         |
| Chest Displacement          | 065        | Servo        | 9/30/03          |
| Chest X Redundant           | J19927     | Endevco      | 10/03/03         |
| Chest Y Redundant           | J20580     | Endevco      | 10/03/03         |
| Chest Z Redundant           | J23914     | Endevco      | 10/03/03         |
| Pelvis X                    | AHTN3      | Endevco      | 10/03/03         |
| Pelvis Y                    | AH0C3      | Endevco      | 10/03/03         |
| Pelvis Z                    | AHT12      | Endevco      | 10/03/03         |
| Left Femur Load Cell        | 259        | Denton       | 8/20/03          |
| Right Femur Load Cell       | 256        | Denton       | 8/20/03          |
| Left Upper Tibia Load Cell  | 105        | Denton       | 8/20/03          |
| Left Lower Tibia Load Cell  | 133        | Denton       | 8/19/03          |
| Right Upper Tibia Load Cell | 103        | Denton       | 8/19/03          |
| Right Lower Tibia Load Cell | 134        | Denton       | 8/20/03          |
| Left Foot Z – Front         | J14120     | Endevco      | 10/08/03         |
| Left Ankle X                | J23774     | Endevco      | 10/06/03         |
| Left Ankle Z                | APYY3      | Endevco      | 10/08/03         |
| Right Foot Z – Front        | J18736     | Endevco      | 10/06/03         |
| Right Ankle X               | J23946     | Endevco      | 10/06/03         |
| Right Ankle Z               | J27513     | Endevco      | 10/06/03         |
| Shoulder Belt Load Cell     | 160        | Denton       | 9/18/03          |
| Lap Belt Load Cell          | 199        | Denton       | 12/09/03         |

## INSTRUMENTS FOR VEHICLE AND LABORATORY

|                               | SERIAL NO. | MANUFACTURER | CALIBRATION DATE |
|-------------------------------|------------|--------------|------------------|
| Left Rear Seat Crossmember X  | L18-N20    | Entran       | 1/23/04          |
| Left Rear Seat Crossmember Z  | L19-K03    | Entran       | 1/23/04          |
| Right Rear Seat Crossmember X | F04-N04    | Entran       | 10/08/03         |
| Right Rear Seat Crossmember Z | G03-N13    | Entran       | 10/08/03         |
| Top of Engine X               | H14-N13    | Entran       | 11/07/03         |
| Bottom of Engine X            | I16-B06    | Entran       | 11/11/03         |
| Left Brake Caliper X          | I16-B03    | Entran       | 11/11/03         |
| Right Brake Caliper X         | I15-Z12    | Entran       | 11/12/03         |
| Instrument Panel X            | C12-M08    | Entran       | 10/08/03         |

Note: All Endevco accelerometers are Model No. 7264-2000  
All Entran accelerometers are Model No. EGE-72

**APPENDIX E**  
**DUMMY HEAD RESPONSE DATA TRACES**

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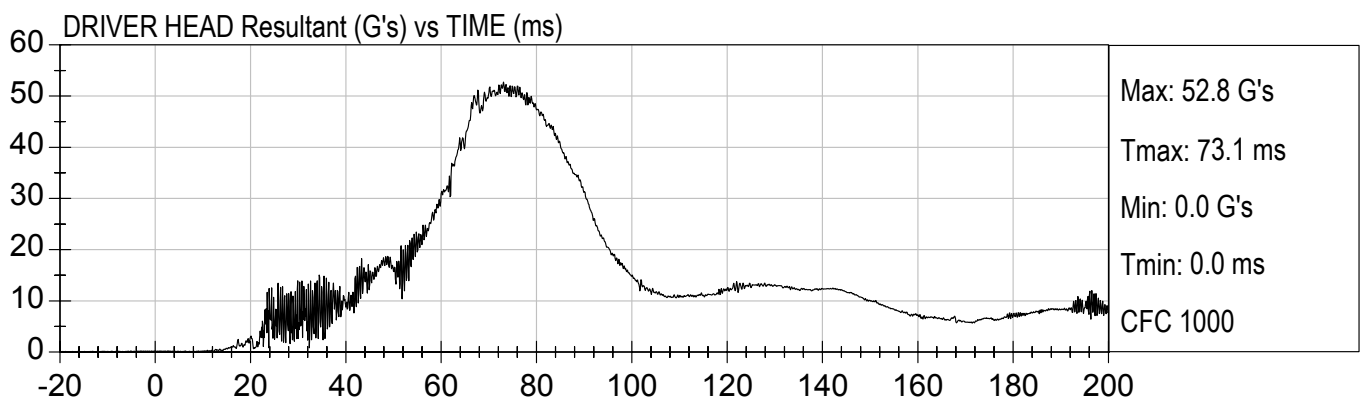
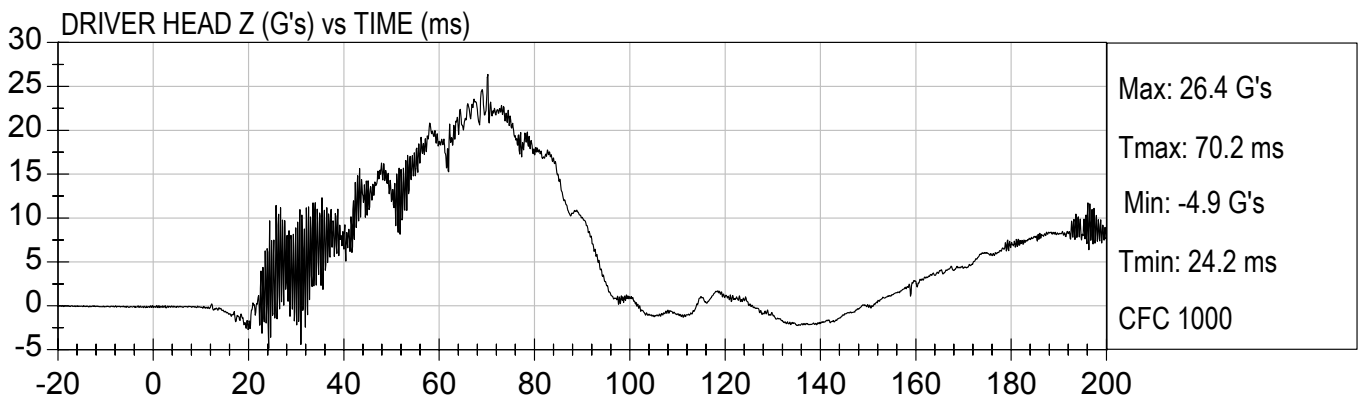
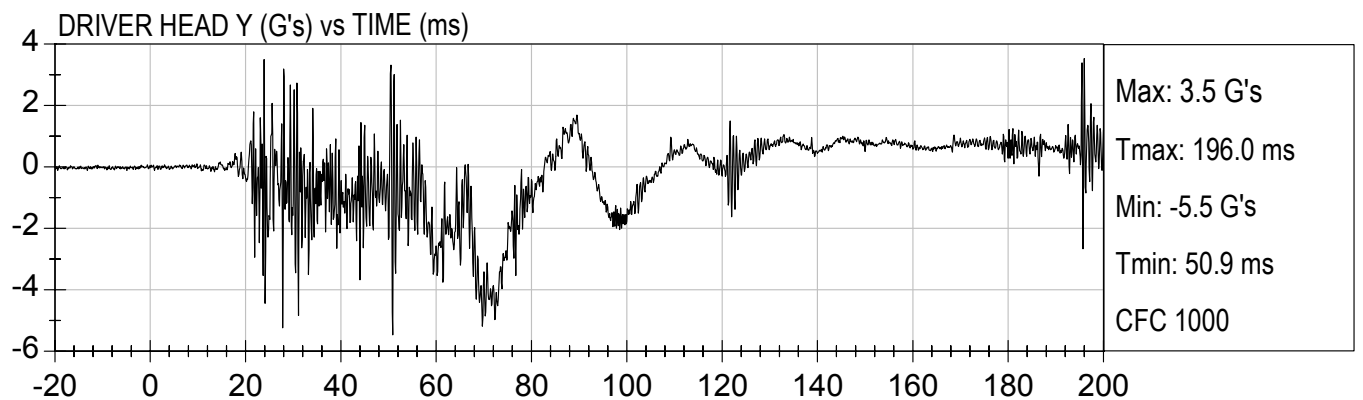
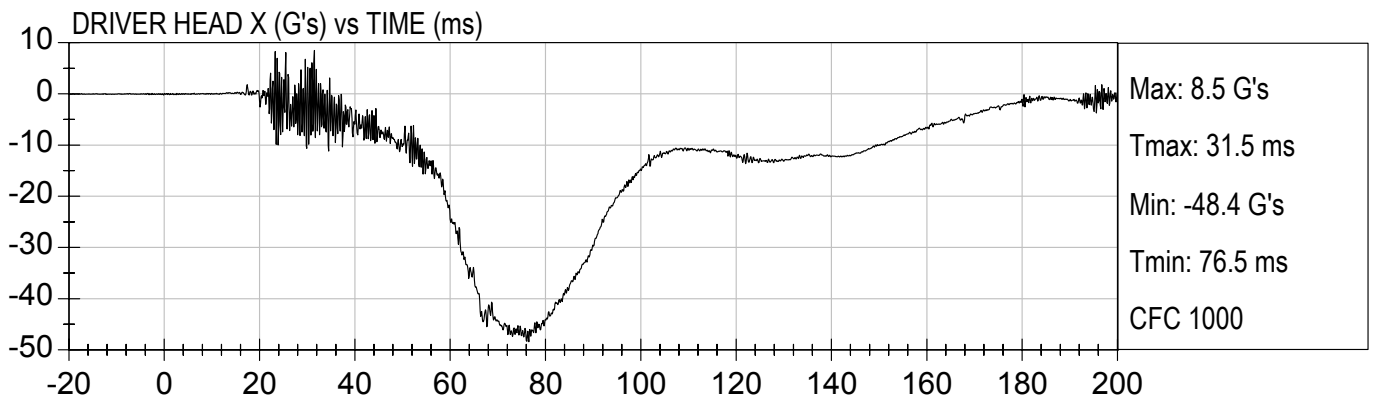
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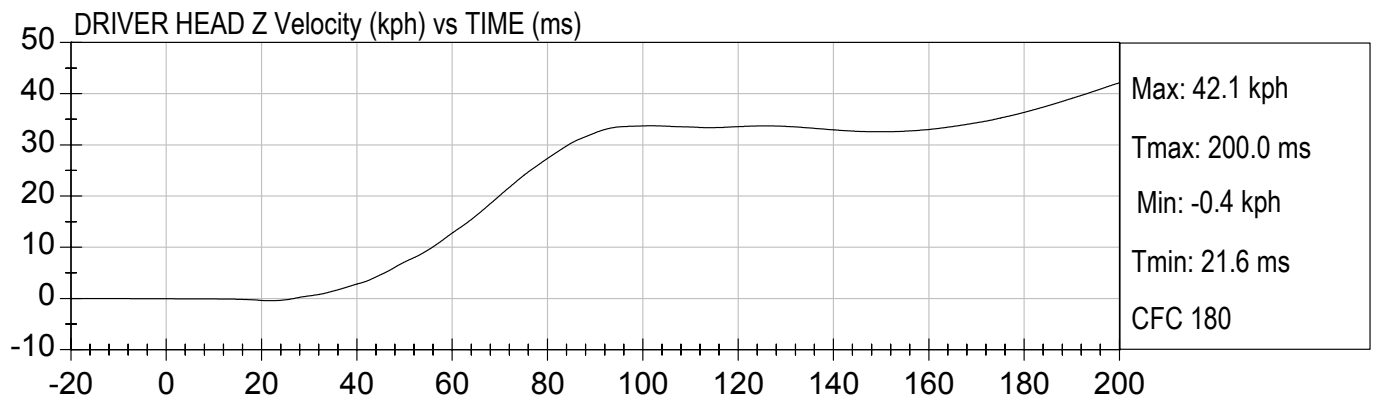
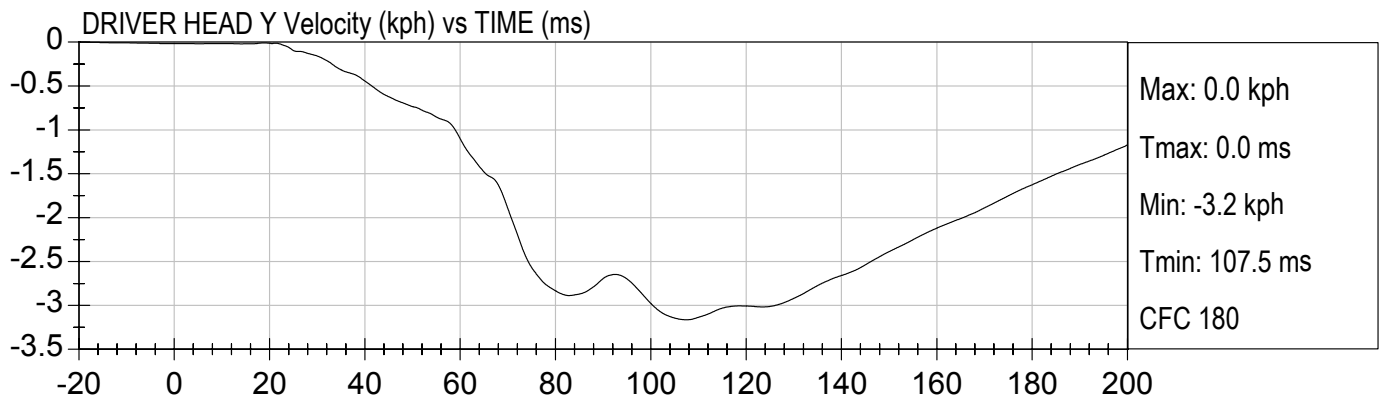
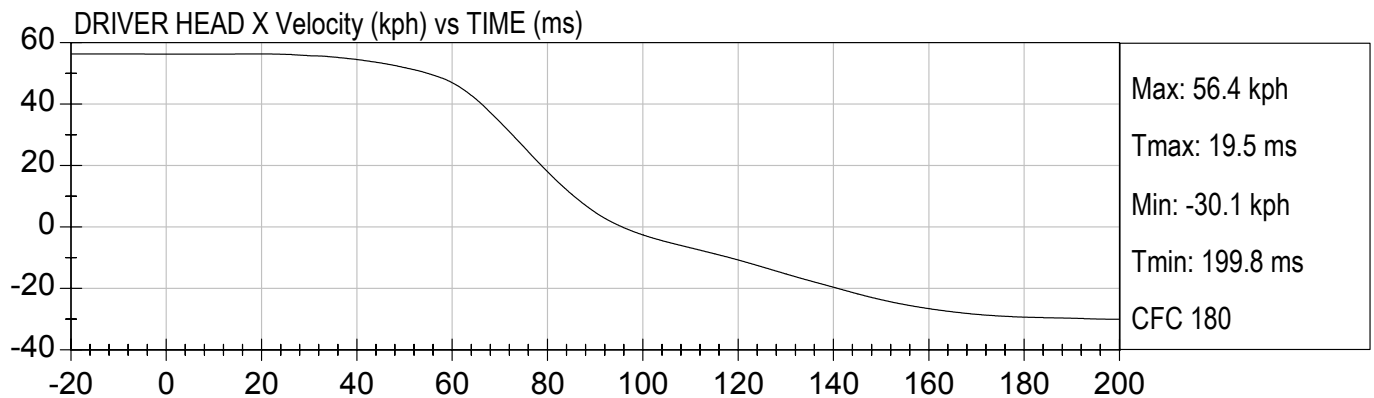




35MPH NCAP FRONTAL  
2004 DODGE DURANGO STE (M40303)

Test Date: 2/17/2004  
Speed: 35.0 mph (56.3 km/h)

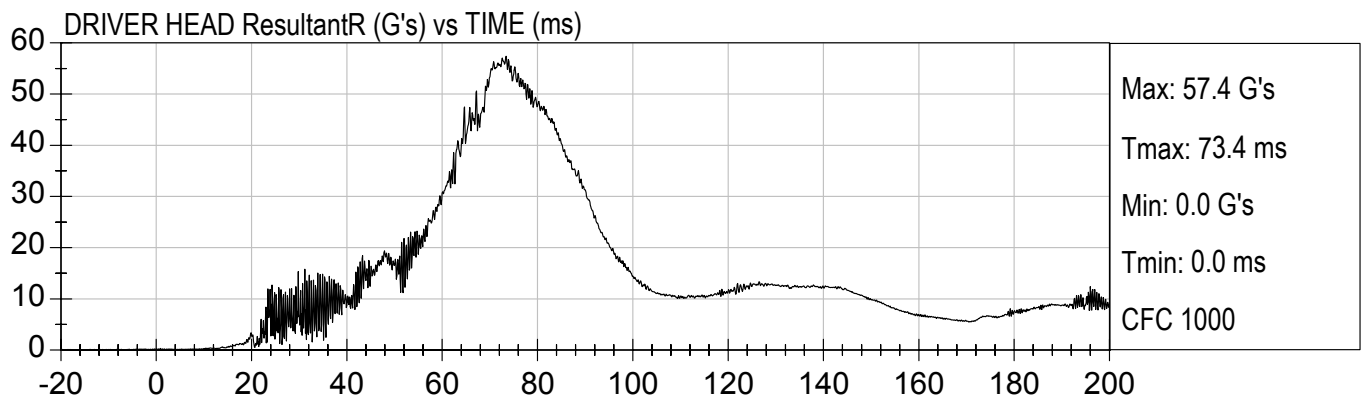
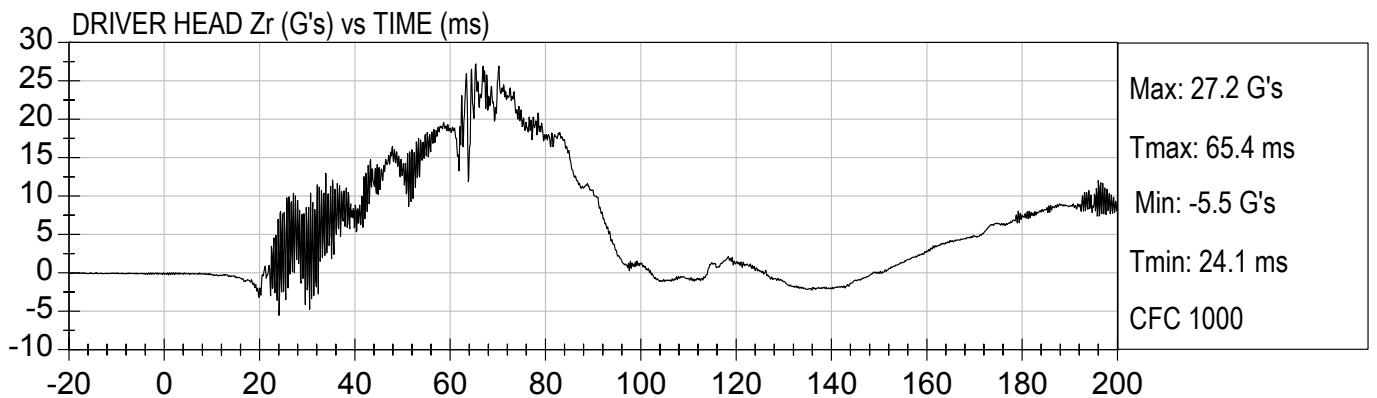
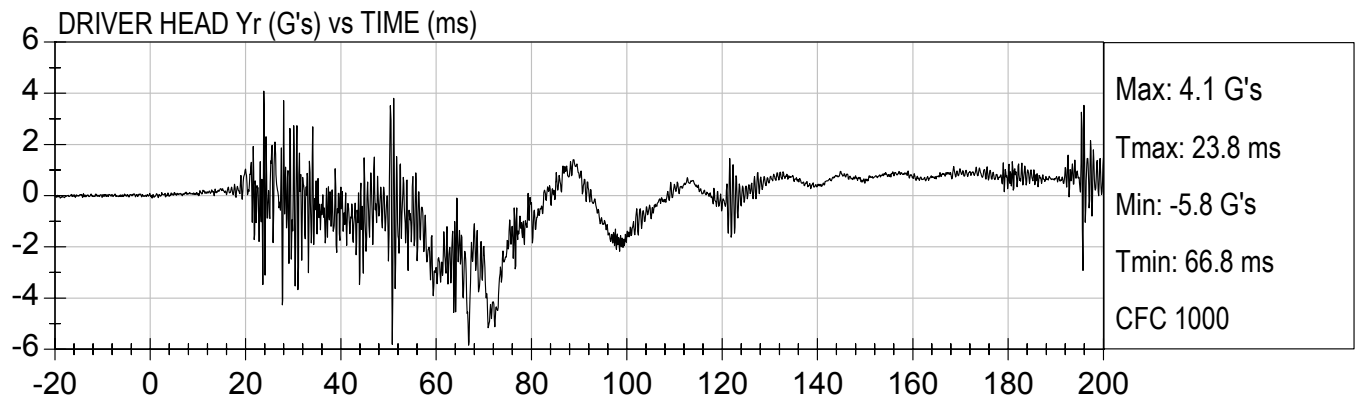
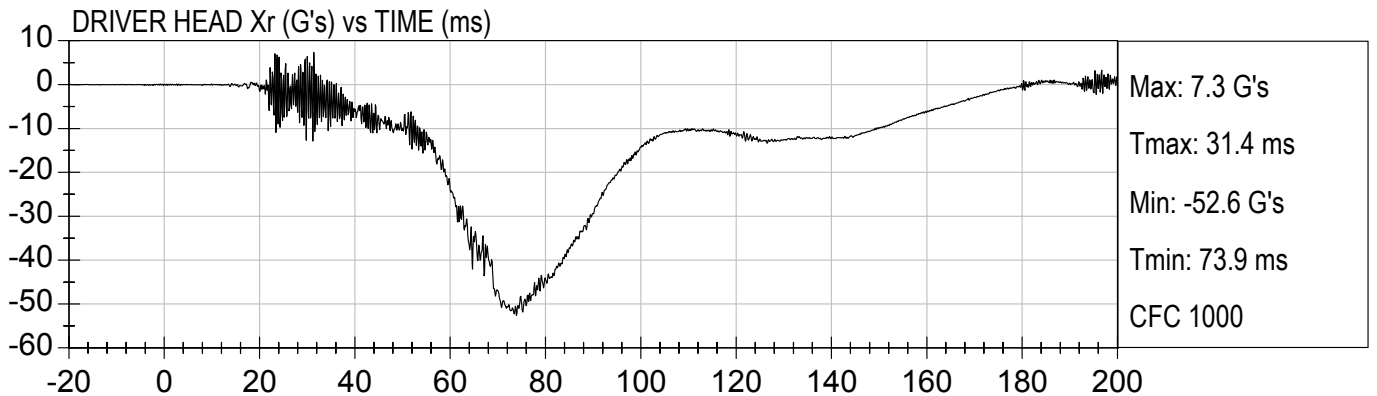


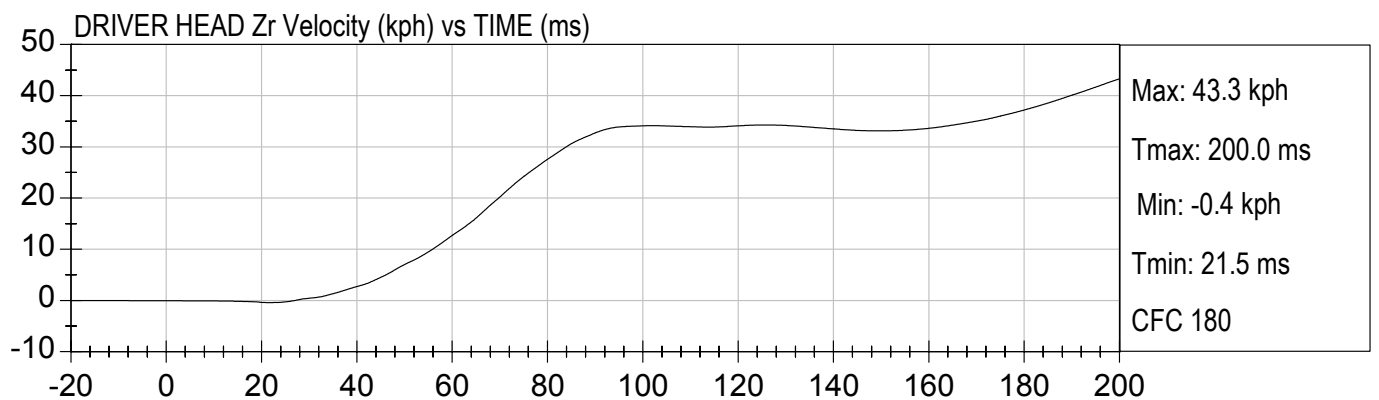
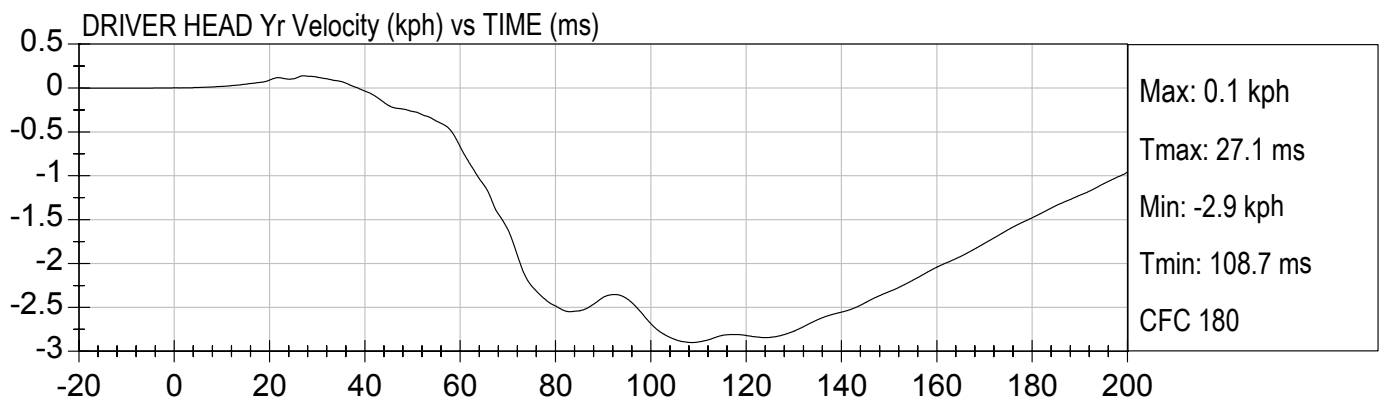
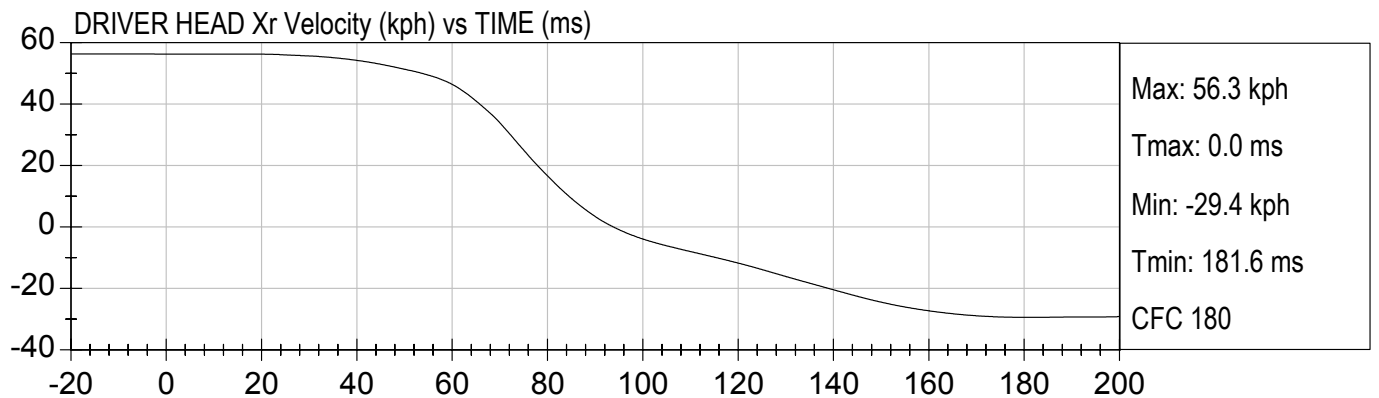




35MPH NCAP FRONTAL  
2004 DODGE DURANGO STE (M40303)

Test Date: 2/17/2004  
Speed: 35.0 mph (56.3 km/h)



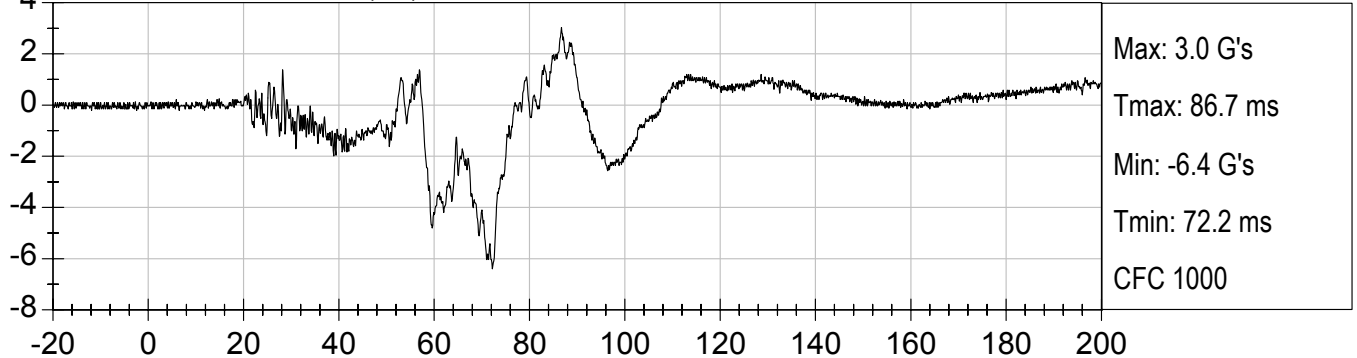




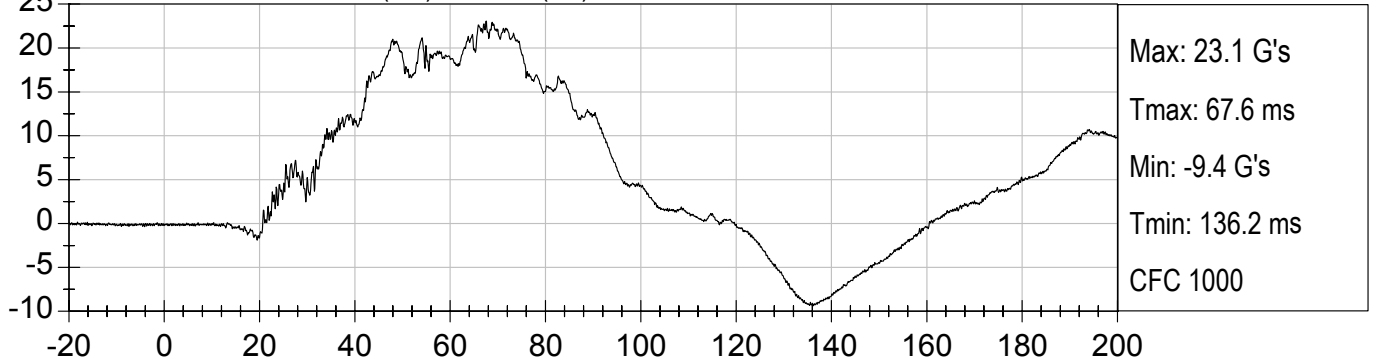
35MPH NCAP FRONTAL  
2004 DODGE DURANGO STE (M40303)

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Speed: 35.0 mph (56.3 km/h)

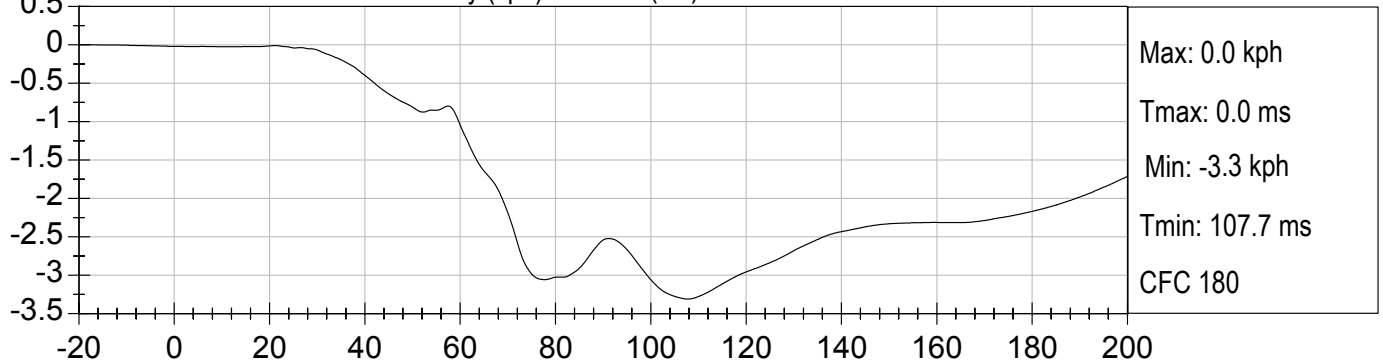
DRIVER HEAD Y - FRONT (G's) vs TIME (ms)



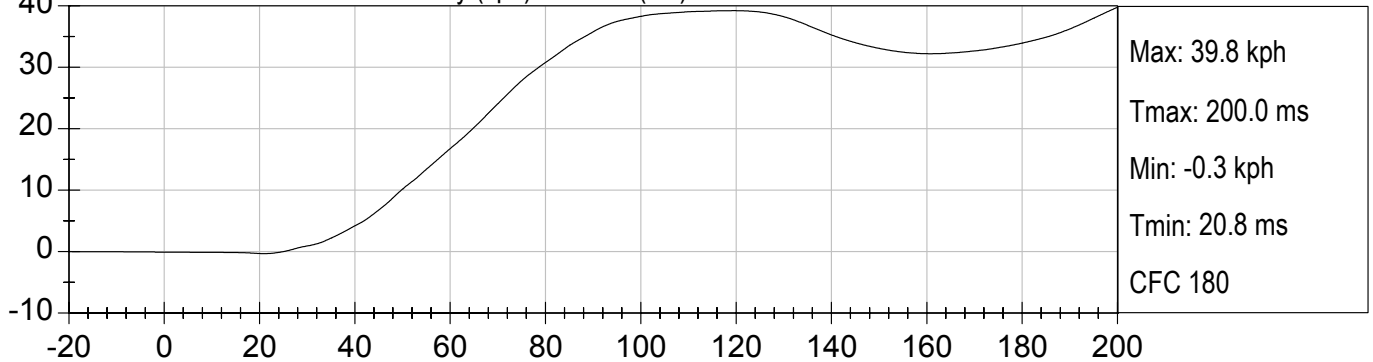
DRIVER HEAD Z - FRONT (G's) vs TIME (ms)



DRIVER HEAD Y - FRONT Velocity (kph) vs TIME (ms)

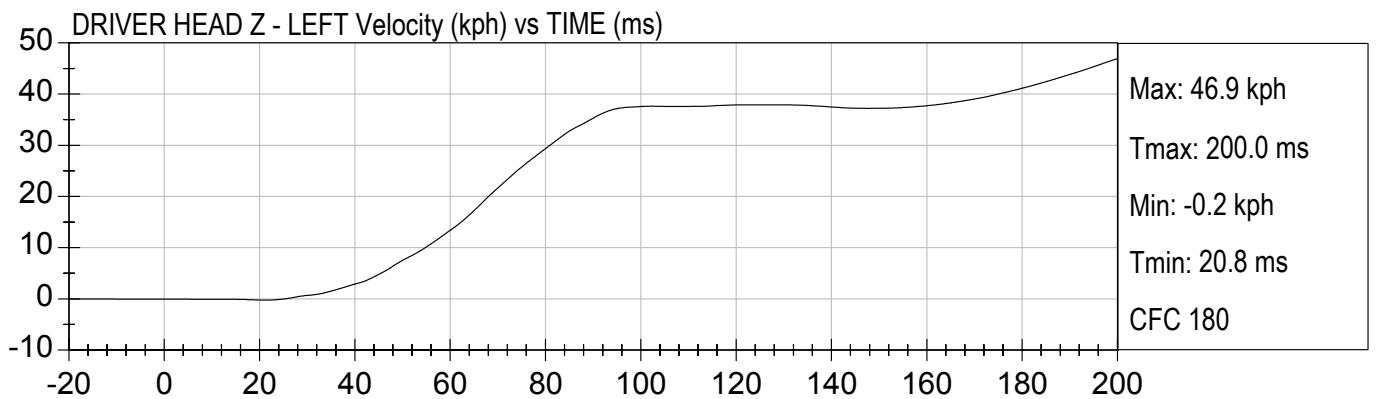
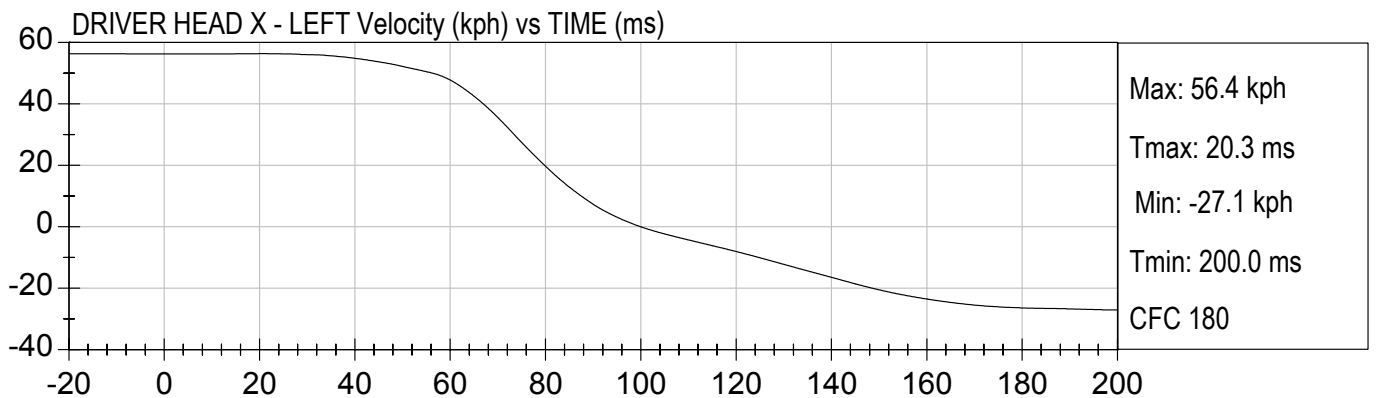
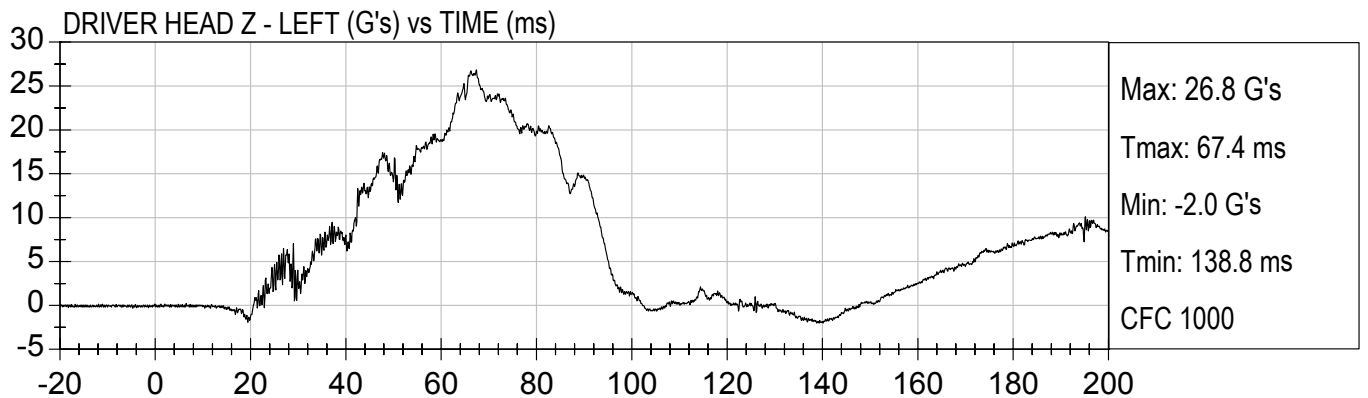
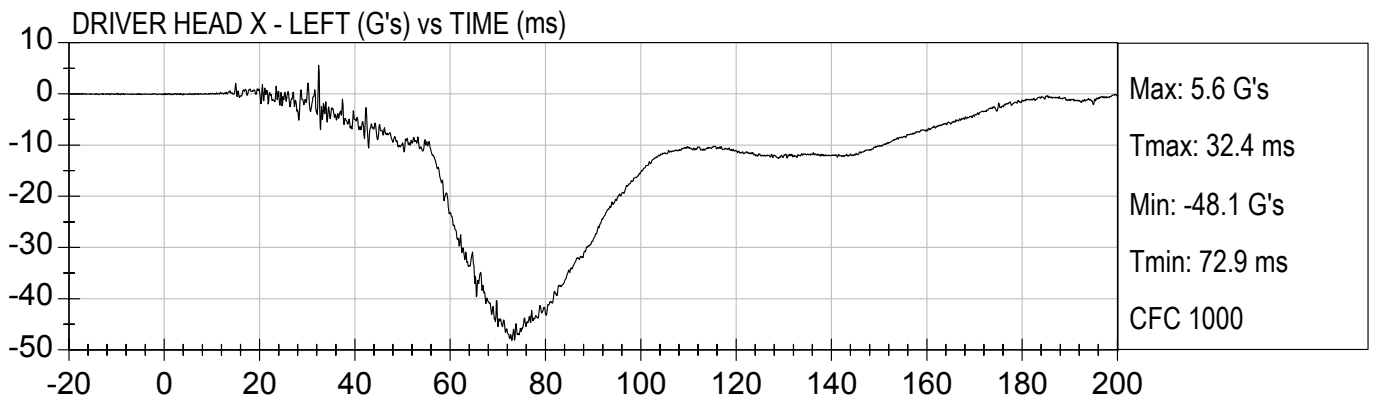


DRIVER HEAD Z - FRONT Velocity (kph) vs TIME (ms)



E-5

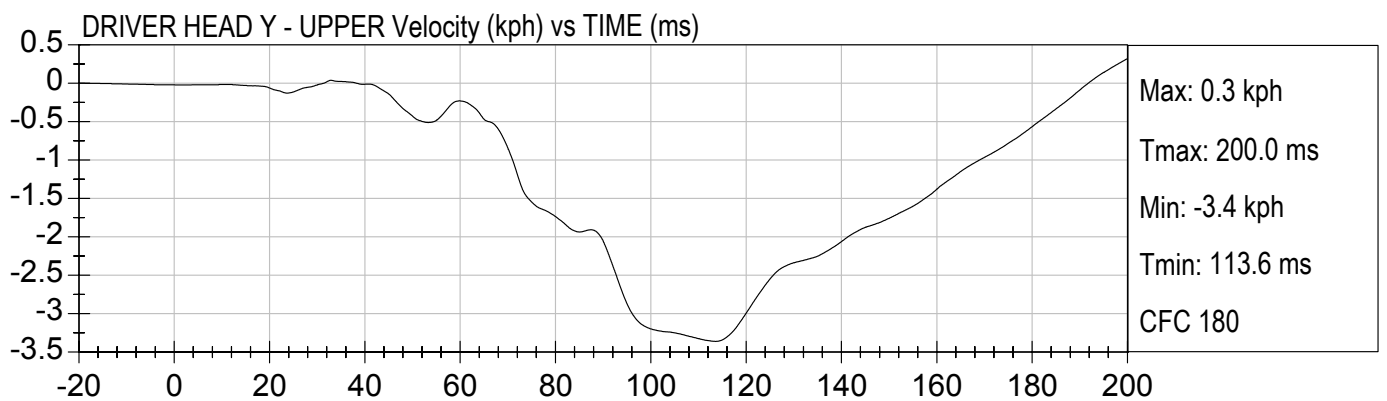
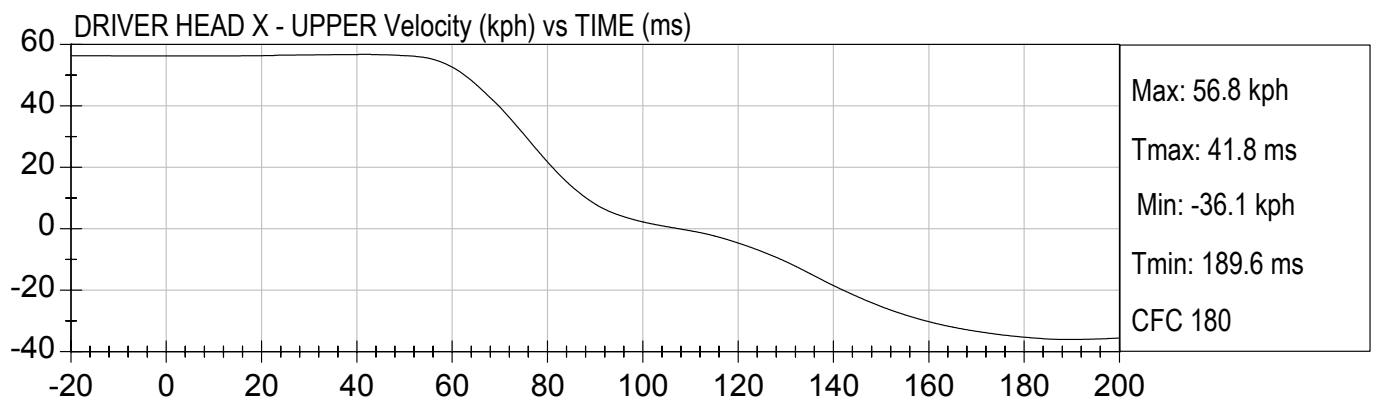
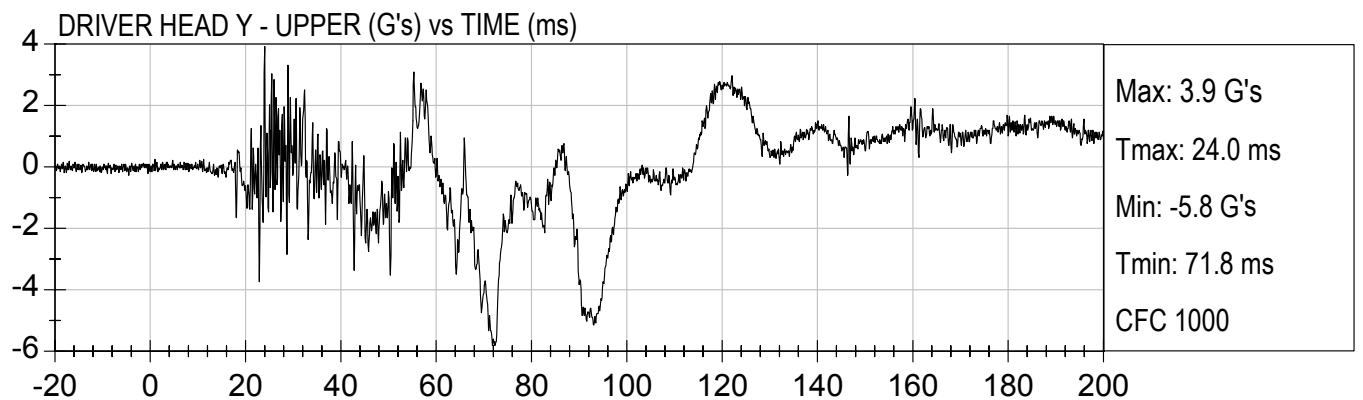
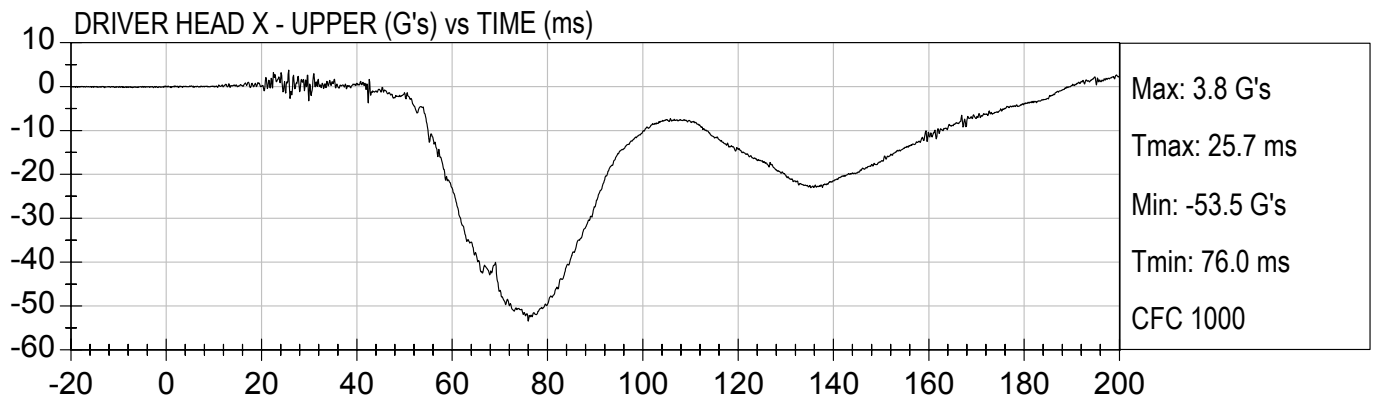






35MPH NCAP FRONTAL  
2004 DODGE DURANGO STE (M40303)

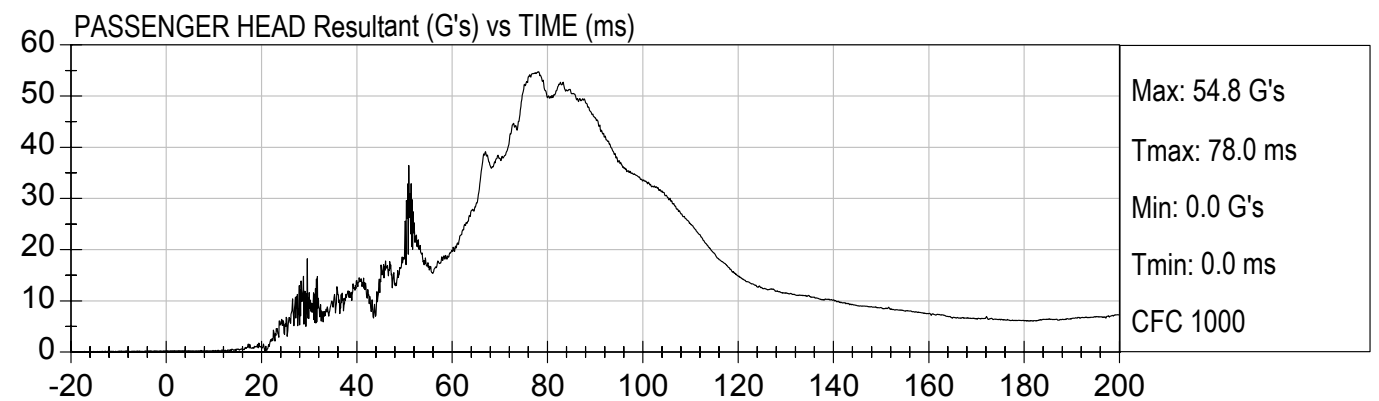
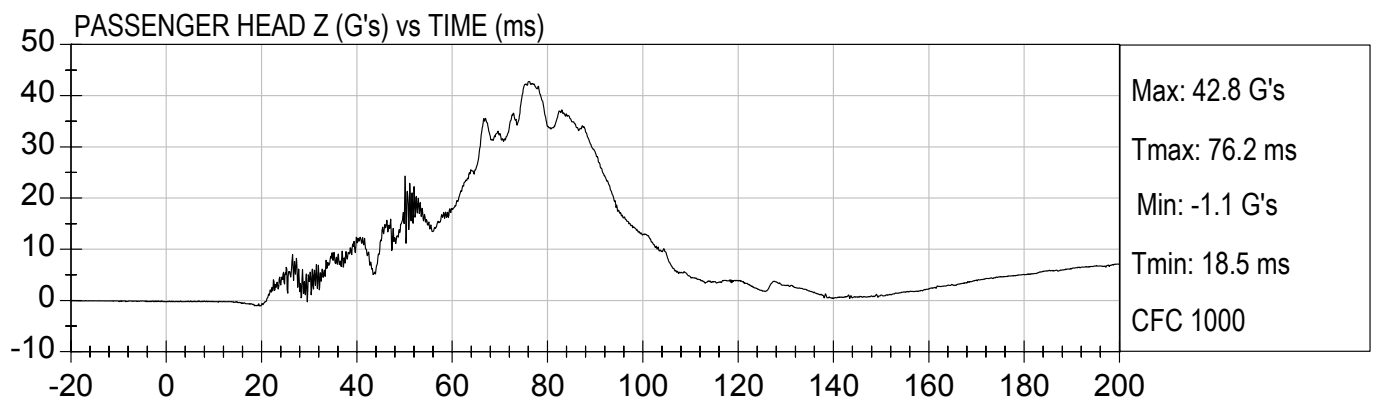
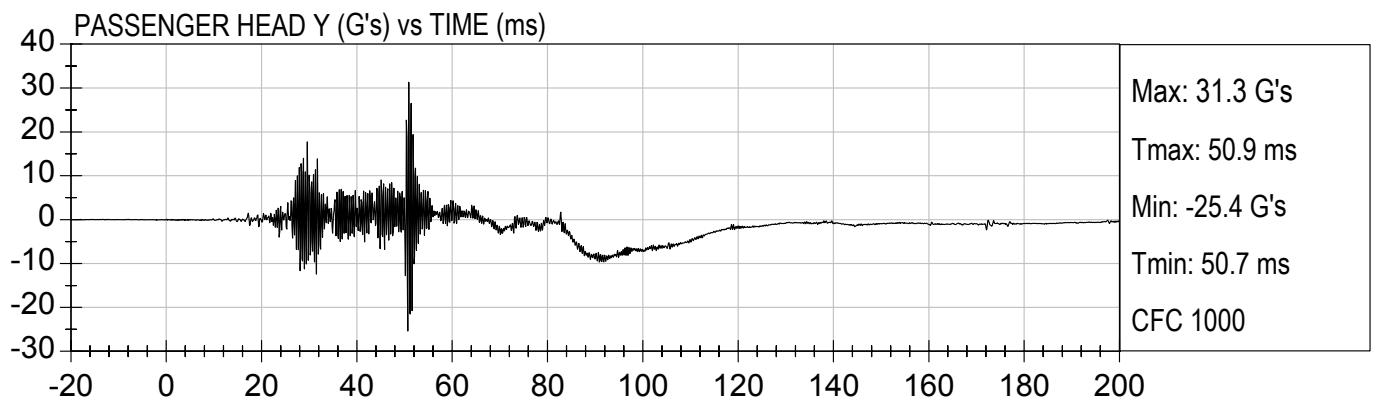
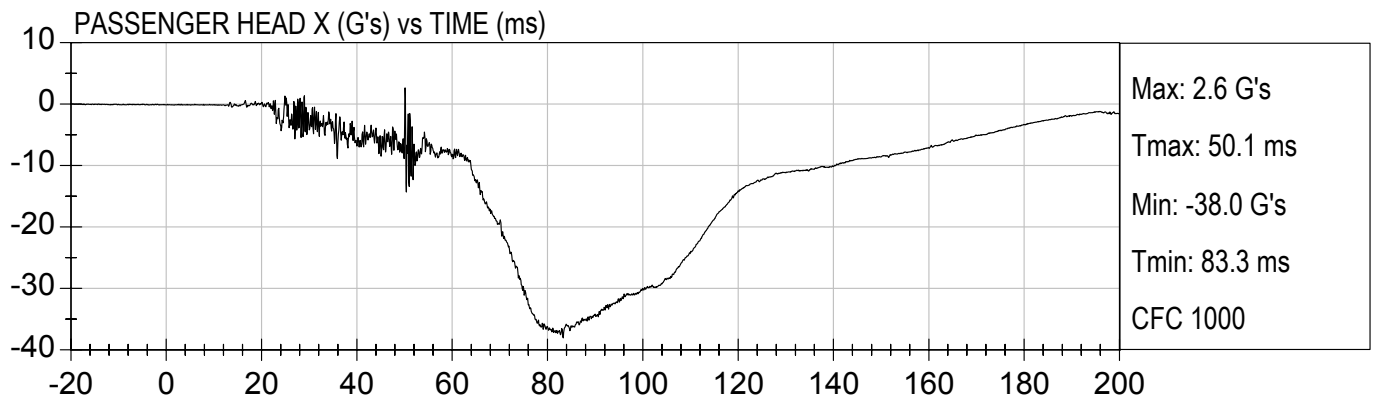
Test Date: 2/17/2004  
Speed: 35.0 mph (56.3 km/h)

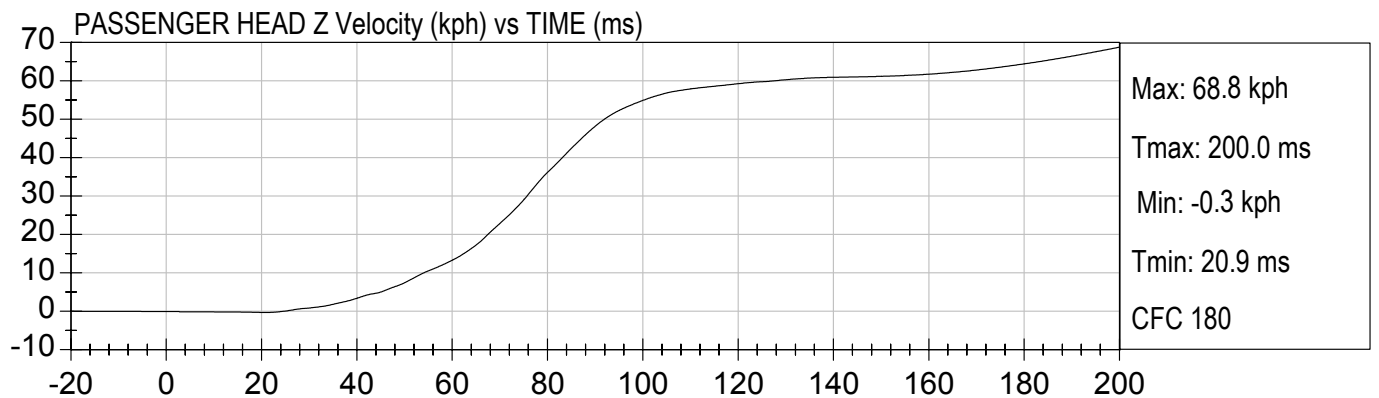
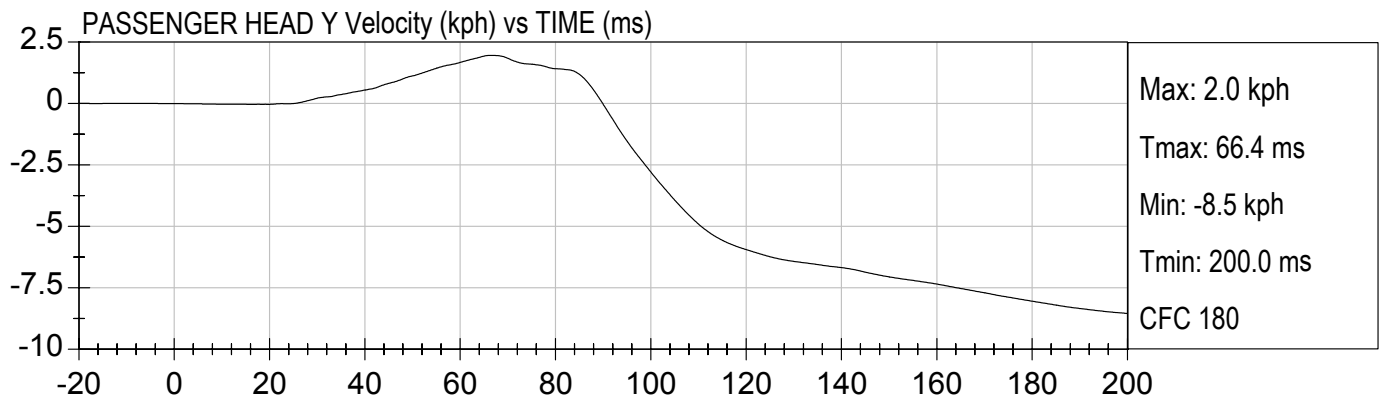
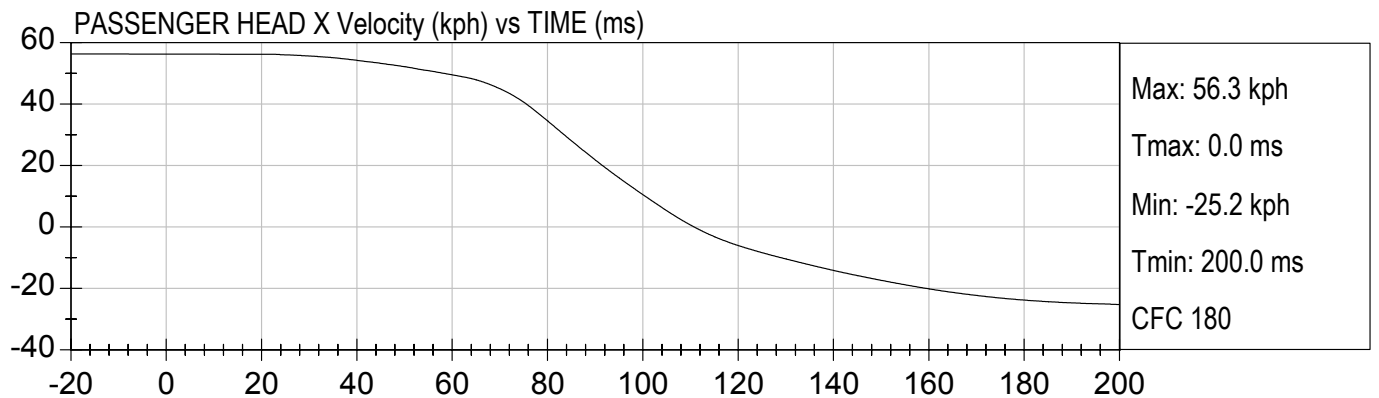




35MPH NCAP FRONTAL  
2004 DODGE DURANGO STE (M40303)

Test Date: 2/17/2004  
Speed: 35.0 mph (56.3 km/h)

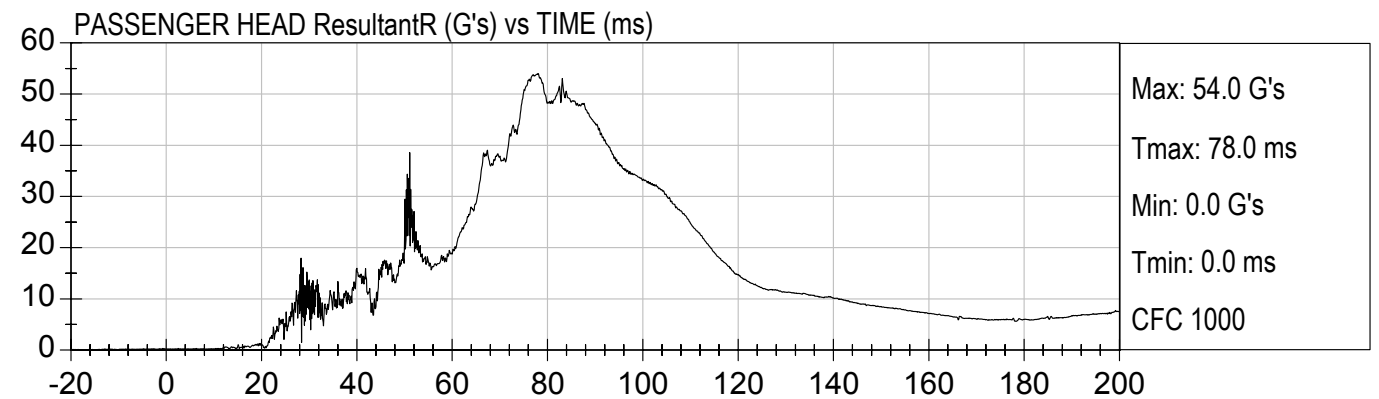
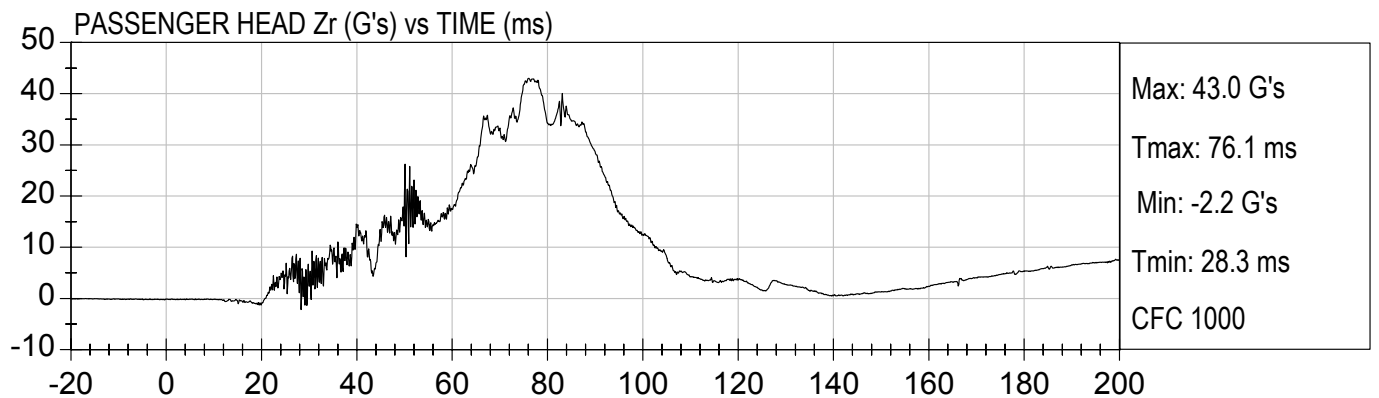
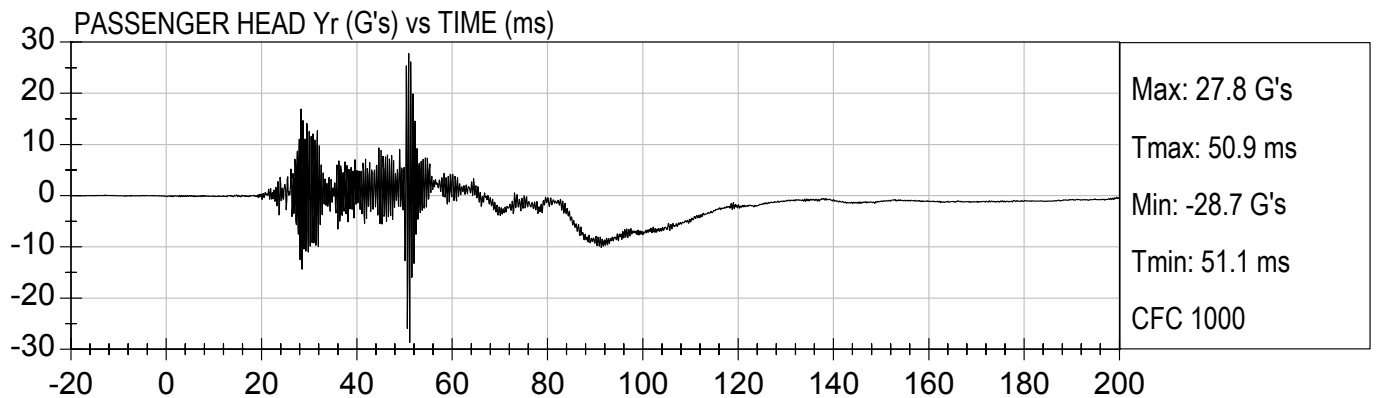
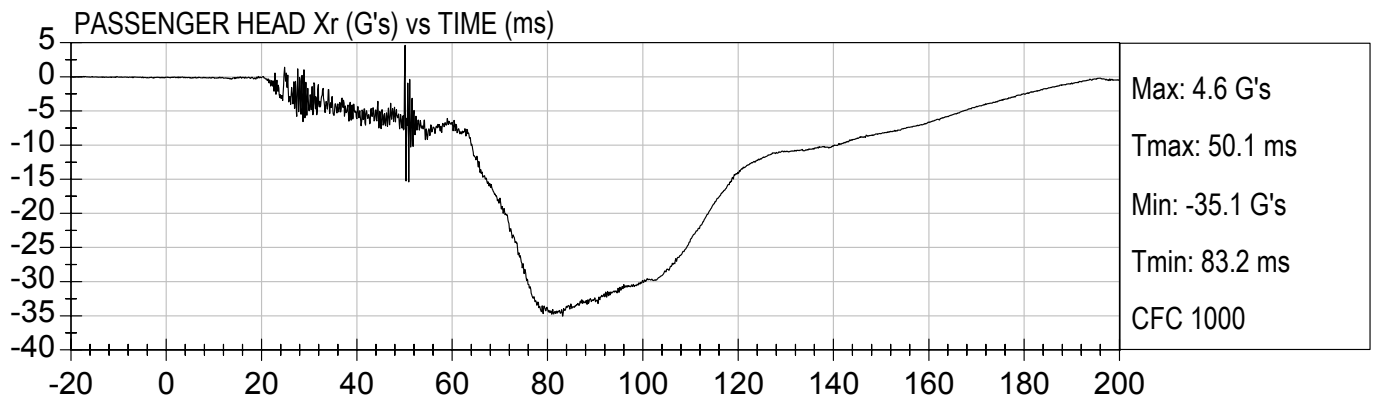




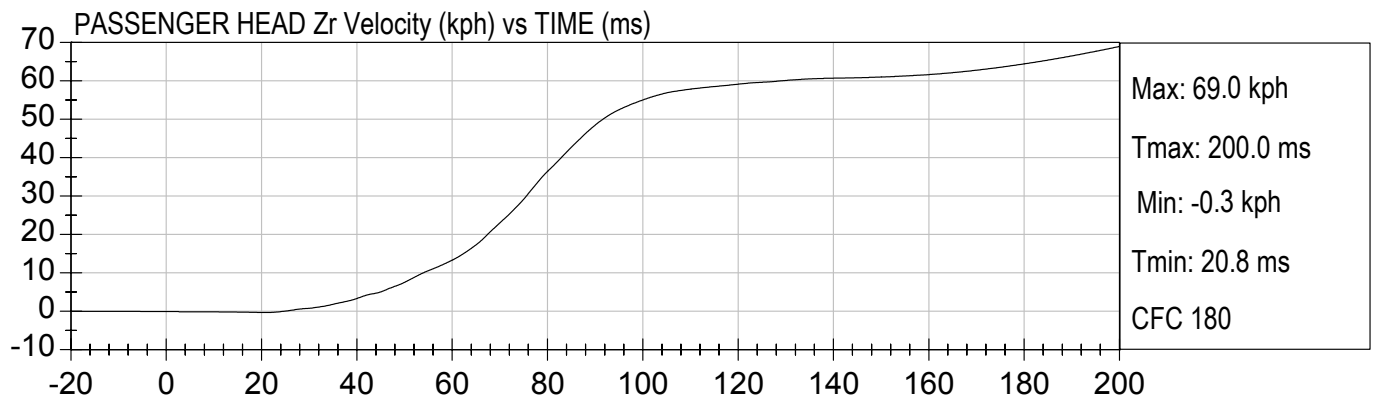
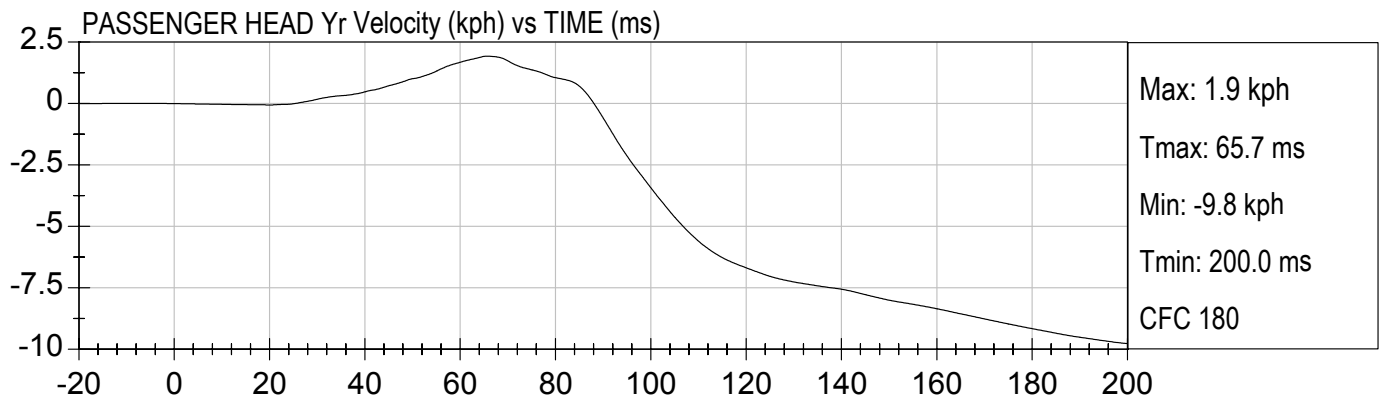
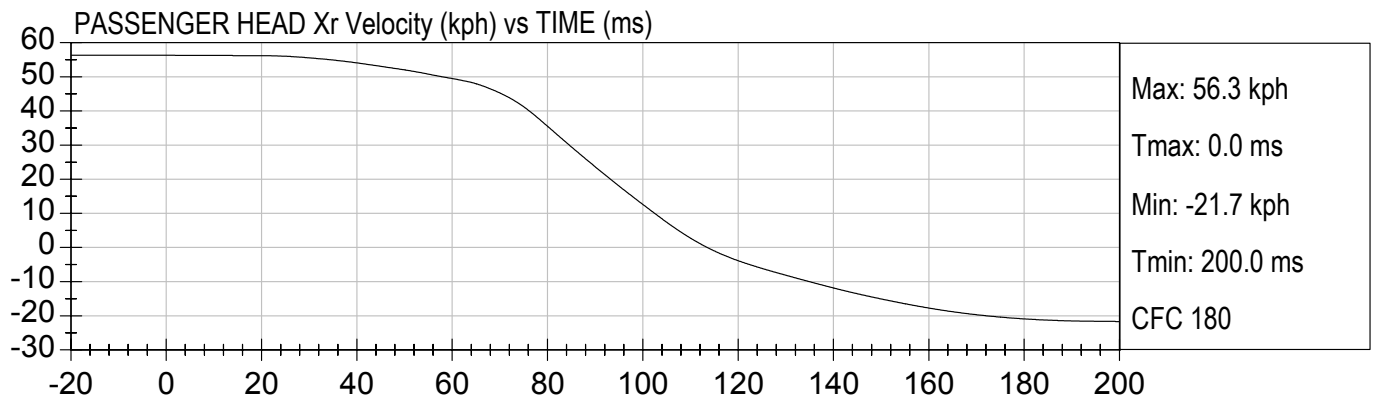


35MPH NCAP FRONTAL  
2004 DODGE DURANGO STE (M40303)

Test Date: 2/17/2004  
Speed: 35.0 mph (56.3 km/h)





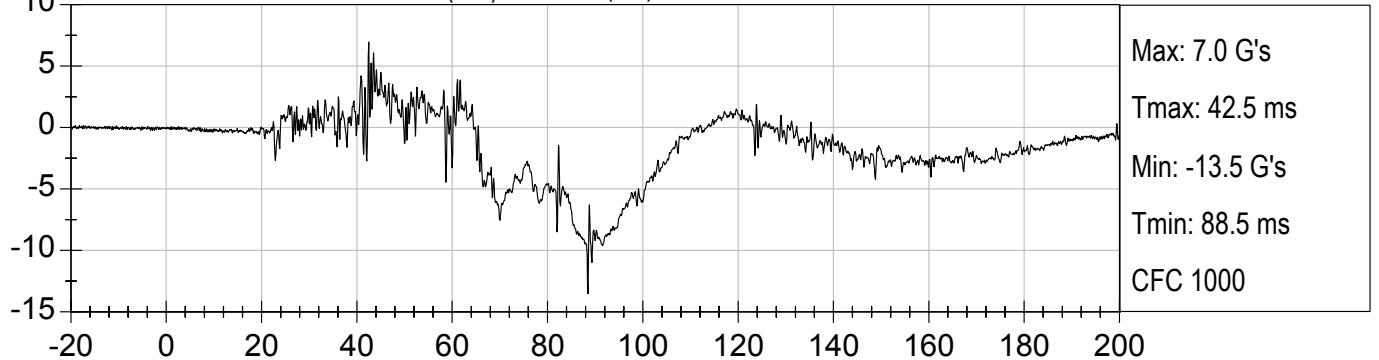




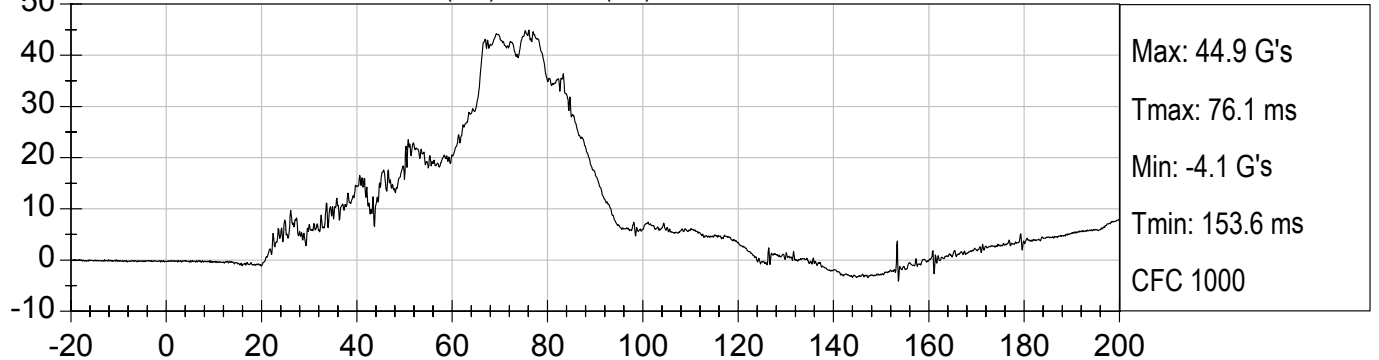
35MPH NCAP FRONTAL  
2004 DODGE DURANGO STE (M40303)

Test Date: 2/17/2004  
Speed: 35.0 mph (56.3 km/h)

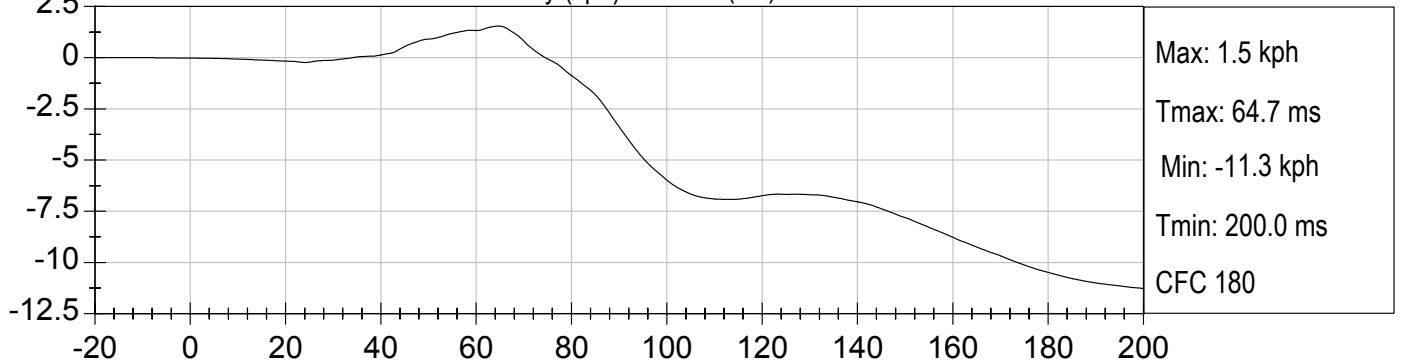
PASSENGER HEAD Y - FRONT (G's) vs TIME (ms)



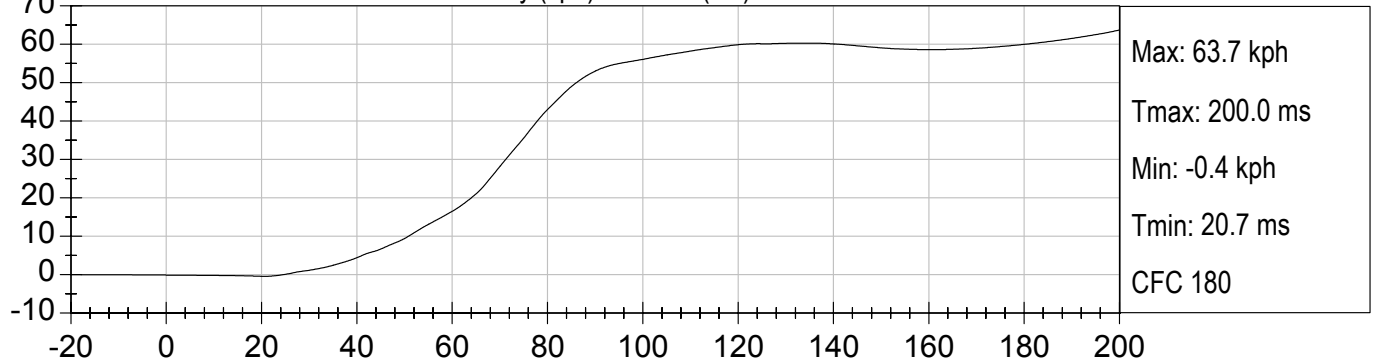
PASSENGER HEAD Z - FRONT (G's) vs TIME (ms)

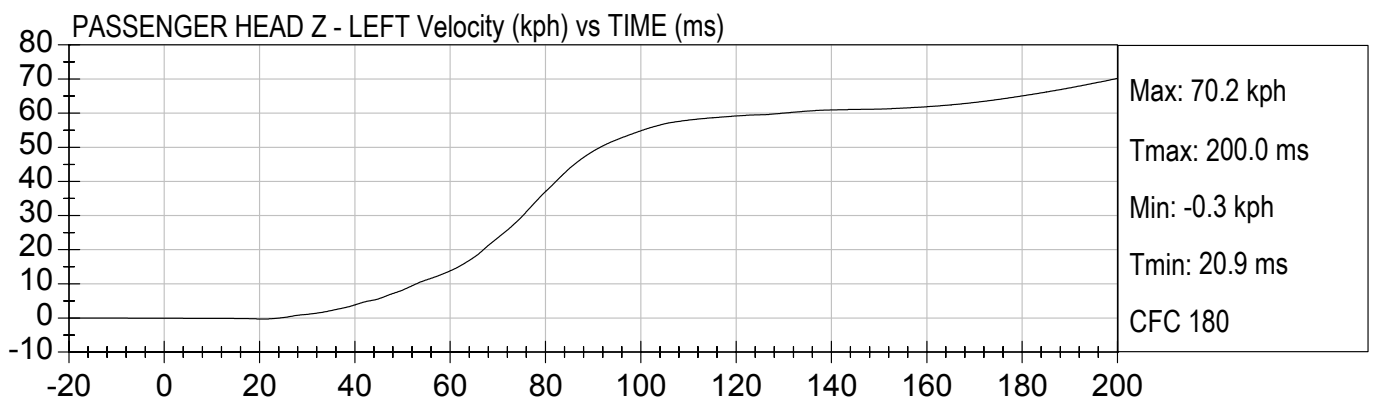
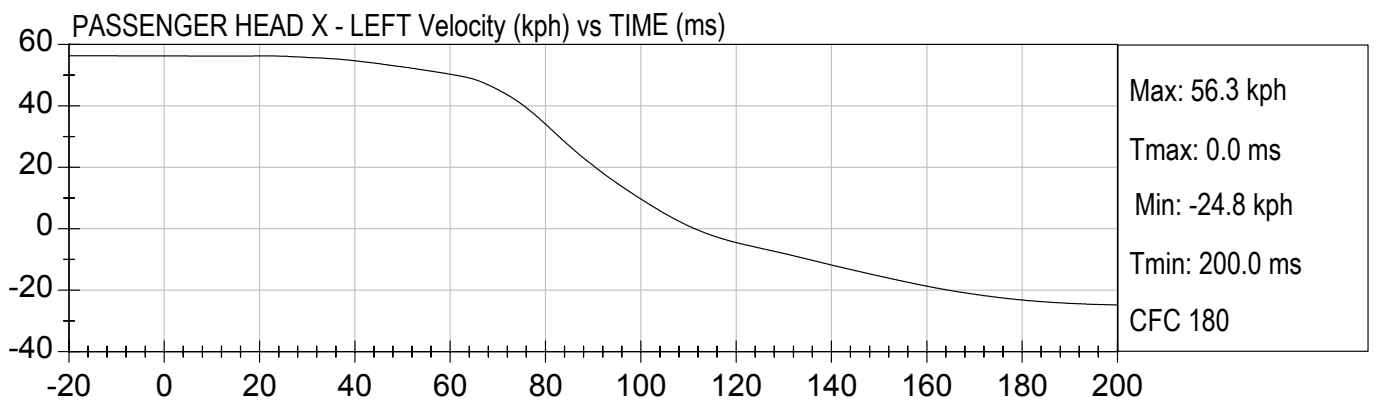
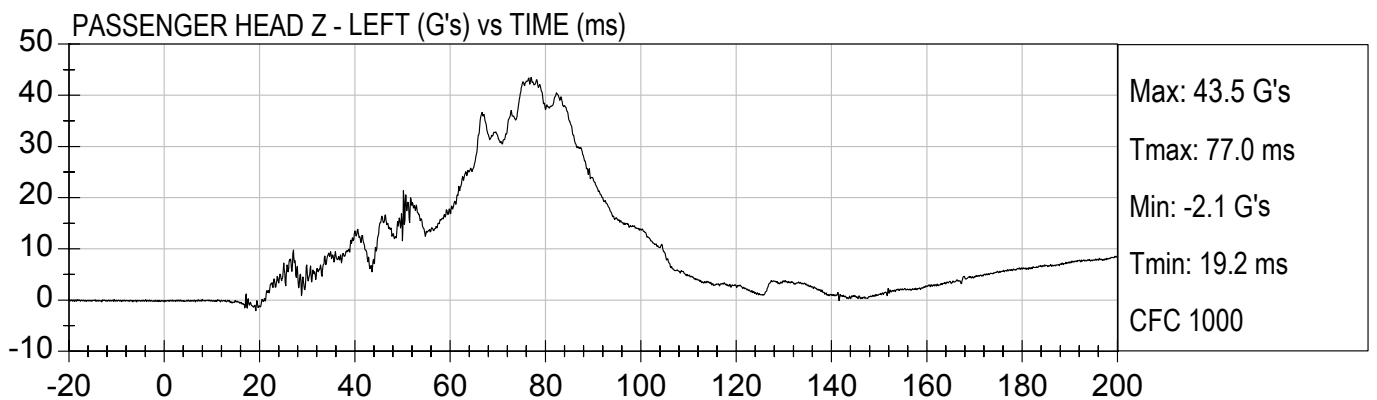
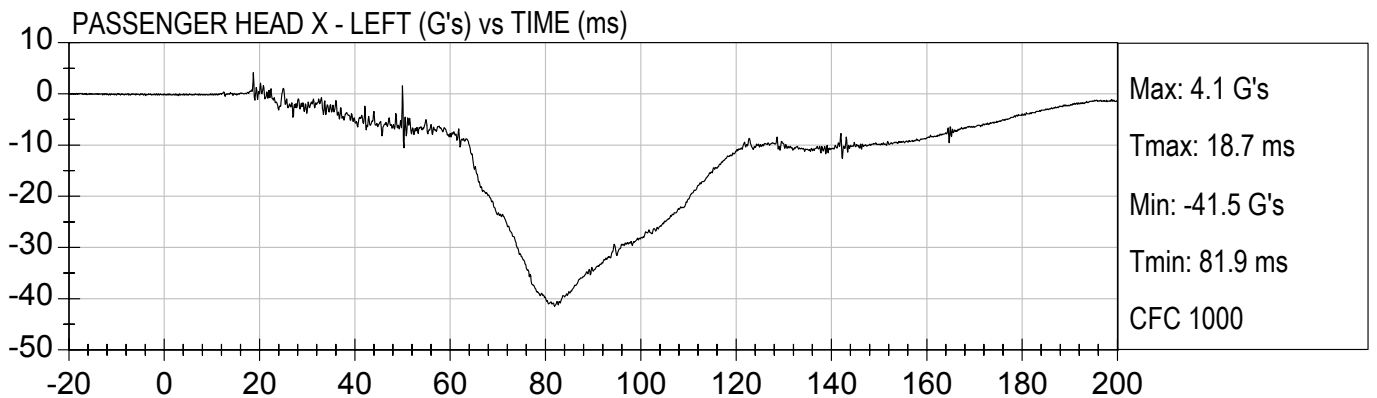


PASSENGER HEAD Y - FRONT Velocity (kph) vs TIME (ms)



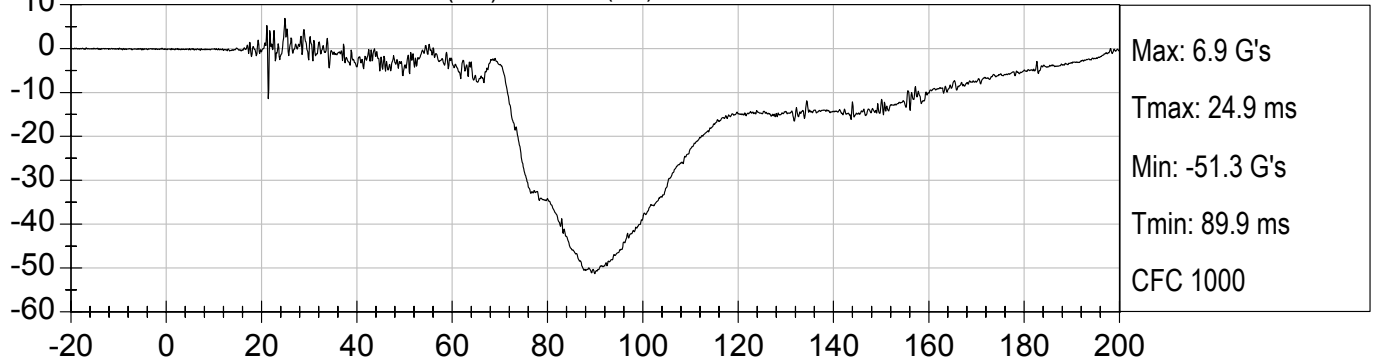
PASSENGER HEAD Z - FRONT Velocity (kph) vs TIME (ms)



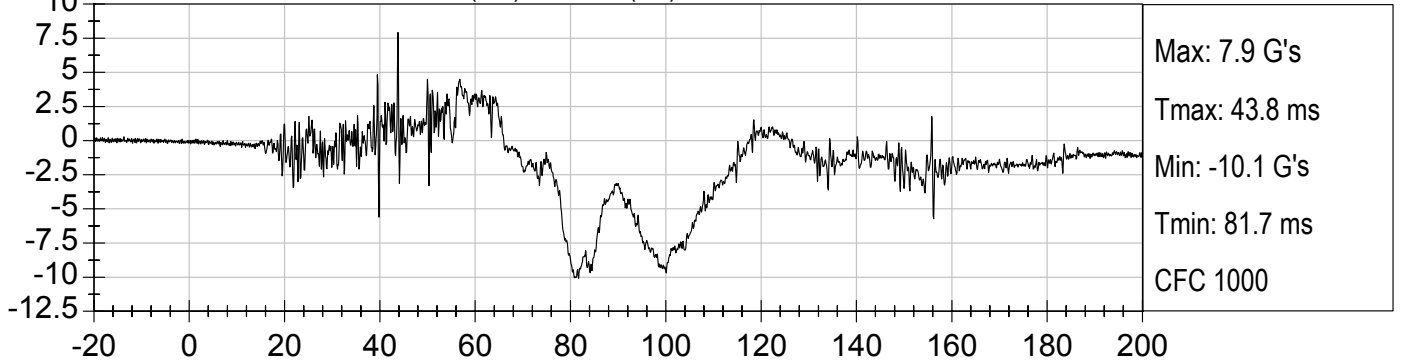




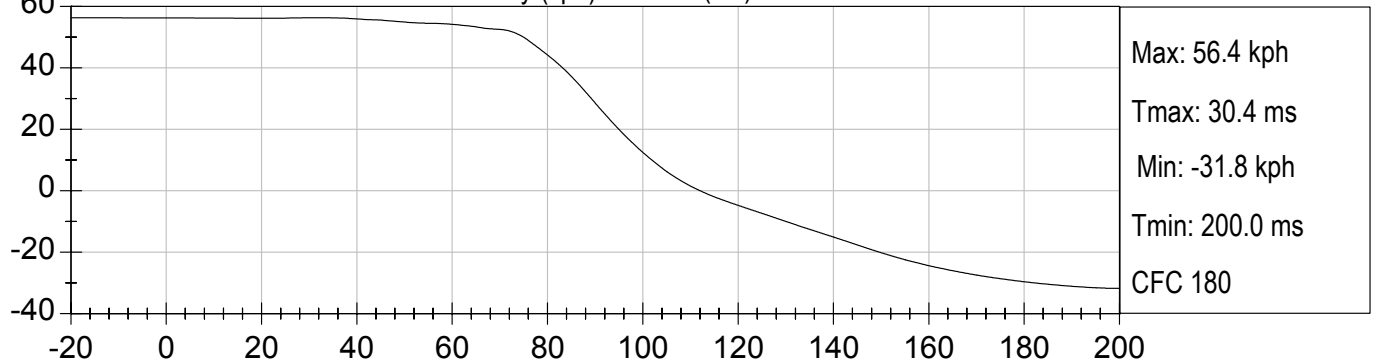
PASSENGER HEAD X - UPPER (G's) vs TIME (ms)



PASSENGER HEAD Y - UPPER (G's) vs TIME (ms)



PASSENGER HEAD X - UPPER Velocity (kph) vs TIME (ms)



PASSENGER HEAD Y - UPPER Velocity (kph) vs TIME (ms)

