**REPORT NUMBER: 201-MGA-2006-001**

# SAFETY COMPLIANCE TESTING FOR FMVSS 201
# RIGID POLE SIDE IMPACT TEST

**HONDA OF AMERICA MFG. INC.**
**2006 HONDA CIVIC 4-DR DX**
**NHTSA NUMBER: C65305**

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

**TEST DATE: SEPTEMBER 5, 2006**

**FINAL REPORT**

**PREPARED FOR:**
**U.S. DEPARTMENT OF TRANSPORTATION**
**NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION**
**OFFICE OF VEHICLE SAFETY COMPLIANCE**
**400 SEVENTH STREET, SW, ROOM 6111 (NVS-220)**
**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-01033.



Prepared by: _____ Date: September 12, 2006
Ben Fischer, Project Engineer

Reviewed by: David Winkelbauer Date: September 12, 2006
David Winkelbauer, Director of Operations

FINAL REPORT ACCEPTED BY:

_____
COTR, Side Impact

10.4.2006
Date of Acceptance

**Technical Report Documentation Page**

| | | | |
|---|---|---|---|
| *1. Report No.*<br>201-MGA-2006-001 | *2. Government Accession No.* | *3. Recipient's Catalog No.* | |
| *4. Title and Subtitle*<br>Final Report of FMVSS 201 Safety Compliance<br>Rigid Pole Side Impact Test<br>of a 2006 Honda Civic 4-Dr. DX<br>NHTSA No.: C65305 | | *5. Report Date*<br>October 4, 2006<br>*6. Performing Organization Code*<br>MGA | |
| *7. Author(s)*<br>Ben Fischer, Project Engineer | | *8. Performing Organization Report No.*<br>201-MGA-2006-001 | |
| *9. Performing Organization Name and Address*<br>MGA Research Corporation<br>5000 Warren Road<br>Burlington, WI 53105 | | *10. Work Unit No.*<br>*11. Contract or Grant No.*<br>DTNH22-01-D-01033 | |
| *12. Sponsoring Agency Name and Address*<br>U.S. Department of Transportation<br>National Highway Traffic Safety Administration<br>Office of Vehicle Safety Compliance<br>400 Seventh St., S.W. Washington, D.C. 20590 | | *13. Type of Report and Period Covered*<br>Final Report – 9/05/06 to 10/4/06<br>*14. Sponsoring Agency Code*<br>NVS-220 | |
| *15. Supplementary Notes* | | | |
| *16. Abstract*<br>A rigid pole side impact test was conducted on a 2006 Honda Civic 4-Dr. DX in accordance with FMVSS 201, "Occupant Protection in Interior Impact", S6.2(b)(3) and the Office of Vehicle Safety Compliance Test Procedure No. TP-201P-02 "Rigid Pole Side Impact Test". The test was conducted at MGA Research Corporation in Burlington, Wisconsin on September 5, 2006.<br><br>The impact velocity of the vehicle was 28.3 kph, and the ambient temperature at the struck side (driver's) of the target vehicle at the time of impact was 21$^{o}$C. The post-test maximum crush was 306 mm at level 3. The test vehicle's occupant performance is as follows:<br><br>HIC: REQUIREMENT ≤ 1000; DRIVER 222<br><br>The doors on the struck side of the vehicle did not separate from the body at the hinges or latches and the opposite doors did not open during the side impact event. | | | |
| *17. Key Words*<br>Compliance Testing<br>Rigid Pole Side Impact Test<br>FMVSS 201 | | *18. Distribution Statement*<br>Copies of this report are available from:<br>National Highway Traffic Safety Adm.<br>Technical Ref. Division, (NPO-230)<br>400 Seventh Street, S.W.<br>Washington, D.C. 20590 | |
| *19. Security Classif. (of this report)*<br>Unclassified | *20. Security Classif. (of this page)*<br>Unclassified | *21. No. of Pages*<br>134 | 22. Price |

Form DOT F17007.7 (8-72)

TABLE OF CONTENTS

# SECTION 1
# PURPOSE AND TEST PROCEDURE

## 1.1 PURPOSE

This rigid pole side impact test is conducted as part of the FY' 2006 test program sponsored by the National Highway Traffic Safety Administration (NHTSA), under contract No. DTNH22-01-D-01033. The purpose of this test was to evaluate occupant protection in interior impact in a 2006 Honda Civic manufactured by Honda of America Mfg, Inc.

## 1.2 TEST PROCEDURE

The rigid pole side impact test was conducted in accordance with the current National Highway Traffic Safety Administration (NHTSA), Office of Vehicle Safety Compliance (OVSC), laboratory test procedure TP-201P-02, dated October 21, 2001 and the corresponding MGA Research Corporation Test Procedure MGA-NHTSA8. The procedures for receiving, inspection, testing, and reporting of test results are described in the test procedures and are not repeated in this report.

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

## SECTION 2
## SUMMARY OF RIGID POLE SIDE IMPACT TEST

### 2.1 SUMMARY OF RIGID POLE SIDE IMPACT TEST

A rigid pole side impact test was performed on a 2006 Honda Civic 4-Dr. DX. The subject vehicle was towed into a rigid pole at a velocity of 28.3 km/h. The specified impact velocity range is from 27.2 to 28.8 km/h. The test vehicle was positioned 90° to the line of forward motion. The weight of the vehicle as tested was 1307.7 kg. The test was conducted at MGA Research Corporation in Burlington, Wisconsin, on September 5, 2006.

One (1) real-time motion picture camera and eleven (11) high-speed motion picture cameras were used to document the impact event. Camera locations and pertinent camera information are documented in the data sheets. Pre- and post-test photographs of the vehicle and SID/HIII can be found in Appendix A. One SID/HIII was placed in the left front outboard designated seating position according to instructions specified in the TP-201P-02 dated October 21, 2001. The SID/HIII was instrumented in the following locations:

- Head Center of Gravity (CG) tri-axial accelerometers (X, Y, and Z axis)
- Upper Neck 6 channel load cell (X, Y, Z force and moment)
- Left Upper Rib (LUR) uni-axial accelerometer (Y-axis primary and redundant)
- Left Lower Rib (LLR) uni-axial accelerometer (Y-axis primary and redundant)
- Lower Thoracic Spine (T12) uni-axial accelerometer (Y-axis primary and redundant)
- Pelvic (PEV) section uni-axial accelerometer (Y-axis primary and redundant)

The test vehicle was instrumented with twenty (20) structural accelerometers. All data channels were recorded with a fully self contained on-board DTS TDAS Pro. The data was digitally sampled at 10,000 samples per second and processed per Section 12.2 of the Test Procedure.

## 2.2 GENERAL COMMENTS

The test vehicle sustained a maximum static crush of 306 mm at level 3, at the vertical impact line. The driver SID/HIII, Serial No. 036, was calibrated just prior to this test. The SID/HIII's injury criteria are summarized as follows:

| Measurements | Units | Driver |
|---|---|---|
| HIC | | 222 |
| TTI* | G's | 54.2 |
| Pelvis* | G's | 44.7 |
| Neck Force X* | N | -455 |
| Neck Force Y* | N | 830 |
| Neck Force Z* | N | 1032 |
| Neck Moment X* | Nm | -91.1 |
| Neck Moment Y* | Nm | 26.2 |
| Neck Moment Z* | Nm | -26.7 |

* For Information Purposes Only

Test summaries and post-test observations are presented in Section 3. The vehicle, camera, and occupant measurements are presented in Section 4. Appendix A contains the still photograph prints. Appendix B contains the SID/HIII and vehicle data traces. Appendix C contains the SID/HIII's configuration and performance verification data. Appendix D contains the calibration information data.

## TEST NOTES

The following channels were not used in test:

- A Pillar Upper Y
- B Pillar Upper Y
- Left Roof Y
- Right Roof Y

There was no valid data collected for Right Floor Y.

The static rollover was not performed per COTR.

**SECTION 3**
**SIDE IMPACT DUMMY (SID/HIII) AND VEHICLE TEST DATA**

Test Vehicle: 2006 Honda Civic 4-Dr. DX NHTSA No. C65305
Test Program: FMVSS 201P Test Date: September 5, 2006

**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 | Small Fluids | oz | mL | 29.573 |
| Pressure | Tire Pressure | $lbf/in^2$ | kPa | 7.0 |
| Volume | Liquid | gal | liter | 3.785 |
| Temperature | General Use | °F | °C | =(tf -32)/1.8 |
| Force | Dynamic Forces | lbf | N | 4.448 |
| Moment | Torque | lbf/ft | Nm | 1.355 |

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

## DATA SHEET NO. 1

## GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2006 Honda Civic 4-Dr. DX NHTSA No. C65305
Test Program: FMVSS 201P Test Date: September 5, 2006

### TEST VEHICLE INFORMATION

| | |
|---|---|
| Make | Honda |
| Model | Civic |
| Body Style | Sedan |
| NHTSA No. | C65305 |
| VIN | 1HGFA15246L040968 |
| Color | Atomic Blue Metal |
| Delivery Date | 2/22/06 |
| Odometer Reading (mile) | 53 |
| Dealer | Wilde Honda |
| Transmission | Manual |
| Final Drive | Front |
| Number of Cylinders | 4 |
| Engine Displacement (L) | 1.8 |
| Engine Placement | Lateral |

### TEST VEHICLE OPTIONS

| | |
|---|---|
| Front Airbag | Yes |
| Side Airbags | side & curtain |
| Power Windows | Yes |
| Power Steering | Yes |
| Power Door Locks | No |
| Tilt Wheel | Yes |
| Air Conditioning | No |
| Power Brakes | Yes |
| Disc Brakes, Front | Yes |
| Disc Brakes, Rear | No |
| Anti-lock Brakes | Yes |
| Radio | No |
| Anti-theft System | Yes |
| Cruise Control | No |

### DATA FROM CERTIFICATION LABEL

| | |
|---|---|
| Manufactured By | Honda of America Mfg. |
| Date of Manufacture | 12/05 |

| | |
|---|---|
| GVWR (kg) | 1665 |
| GAWR Front (kg) | 880 |
| GAWR Rear (kg) | 785 |

### DATA FROM TIRE PLACARD

| Measured Parameter | Front | Rear |
|---|---|---|
| Maximum Tire Pressure (kPa) | 300 | 300 |
| Cold Pressure (kPa) | 210 | 210 |
| Recommended Tire Size | P195/65R15 | P195/65R15 |
| Tire Size on Vehicle | P195/65R15 | P195/65R15 |
| Tire Manufacturer | Dunlop | Dunlop |

| Measured Parameter | Front | Rear | Third | Total |
|---|---|---|---|---|
| Type of Seats | Buckets | Bench | | |
| Number Of Occupants | 2 | 3 | | 5 |
| Capacity Wt. (VCW) (kg) | | | | 385 |
| Cargo Wt. (RCLW) (kg) | | | | 45 |

## DATA SHEET NO. 1... (continued)

## GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2006 Honda Civic 4-Dr. DX NHTSA No. C65305
Test Program: FMVSS 201P Test Date: September 5, 2006

### TEST VEHICLE WEIGHTS

| | Units | As Delivered (UVW) (Axle) | | | As Tested (ATW) (Axle) | | |
|---|---|---|---|---|---|---|---|
| | | Front | Rear | Total | Front | Rear | Total |
| Left | kg | 354.3 | 243.1 | | 381.5 | 293.0 | |
| Right | kg | 354.7 | 236.8 | | 358.8 | 274.4 | |
| Ratio | % | 59.6 | 40.4 | | 56.6 | 43.4 | |
| Totals | kg | 709.0 | 479.9 | 1188.9 | 740.3 | 567.4 | 1307.7 |

### TARGET TEST WEIGHT CALCULATION

| Measured Parameter | Units | Value |
|---|---|---|
| Total Delivered Weight (UVW) | kg | 1188.9 |
| Weight of SID/HIII Side Impact Dummy | kg | 80.7 |
| Rated Cargo/Luggage Weight (RCLW) | kg | 45 |
| Calculated Vehicle Target Weight (TVTW) | kg | 1314.6 |

### TEST VEHICLE ATTITUDES

| | Units | As Delivered | Fully Loaded | Ready For Test |
|---|---|---|---|---|
| Right Front | mm | 658 | 650 | 728 |
| Left Front | mm | 667 | 650 | 724 |
| Right Rear | mm | 673 | 656 | 716 |
| Left Rear | mm | 668 | 648 | 714 |
| Right Door Sill Angle | deg | 1.0 ND | 0.9 ND | 0.9 ND |
| Left Door Sill Angle | deg | 1.1 ND | 0.5 ND | 0.5 ND |
| Front Bumper Angle | deg | 0.2 RD | 0.1 LD | 0.1 LD |
| Rear Bumper Angle | deg | 0.3 RD | 0.0 | 0.0 |

ND = NOSE DOWN, BD = BACK DOWN, LD = LEFT DOWN, RD = RIGHT DOWN, RU = RIGHT UP

### GENERAL TEST VEHICLE DATA

| Measurement Description | Units | Value |
|---|---|---|
| Test Vehicle Wheel Base | mm | 2703 |
| Total Vehicle Length at Left Side | mm | 3660 |
| Total Vehicle Length at Centerline | mm | 4477 |
| Total Vehicle Length at Right Side | mm | 3660 |
| Total Vehicle Width at B-Post | mm | 1739 |
| Weight of Ballast in Cargo Area | kg | 0 |
| Amount of Stoddard Solvent in Fuel Tank | liters | 46.2 |

**DATA SHEET NO. 1… (Continued)**

**GENERAL TEST AND VEHICLE PARAMETER DATA**

Test Vehicle: 2006 Honda Civic 4-Dr. DX NHTSA No. C65305
Test Program: FMVSS 201P Test Date: September 5, 2006

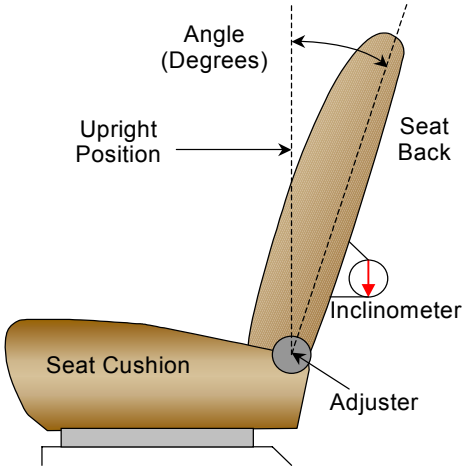
**TEST VEHICLE VERTICAL IMPACT LINE DATA**

| Measurement Description | Units | Value |
|---|---|---|
| Target Impact Point Aft of Front Axle | mm | 1395 |
| Actual Impact Point Aft of Front Axle | mm | 1385 |

**NORMAL DESIGN RIDING POSITION**

The driver's seat back is positioned to the manufacturer's designated angle. The procedure for the seat is as follows: The seat back is adjusted to the 4th latch position from the first locking position, "0".

Initial driver seat back angle: 4th latch from the first locking position, 1st as 0; 14.0 degrees from headrest post.
Final driver seat back angle: 3rd latch from the first locking position, 1st as 0; 12.0 degrees from headrest post.



*FRONT SEAT ASSEMBLY*

**SEAT FORE/AFT POSITIONS**

Manufacturer: Adjustable driver's seat position is 10th step from the frontmost locking position.
Seat position: The fore/aft was set to 10th position from the full forward 1st lock position, 1st as 0.

**SEAT BELT UPPER ANCHORAGE**

The test vehicle is equipped with adjustable "D" ring anchorage for the driver's seat position. The driver's "D" ring anchorage was placed in the highest position of the available positions.

**DATA SHEET NO. 1… (continued)**

**GENERAL TEST AND VEHICLE PARAMETER DATA**

Test Vehicle: 2006 Honda Civic 4-Dr. DX NHTSA No. C65305
Test Program: FMVSS 201P Test Date: September 5, 2006

## FUEL TANK CAPACITY DATA

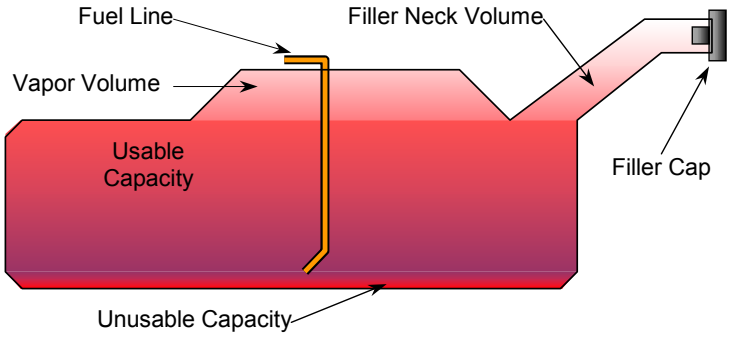
The "Usable Capacity" of the standard equipment fuel tank is: 50.0 liters

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

92-94% of "Usable Capacity" for certification to FMVSS 301 requirements: 46.0 – 47.0 liters

Actual amount of Stoddard solvent added to vehicle for certification test 46.2 liters

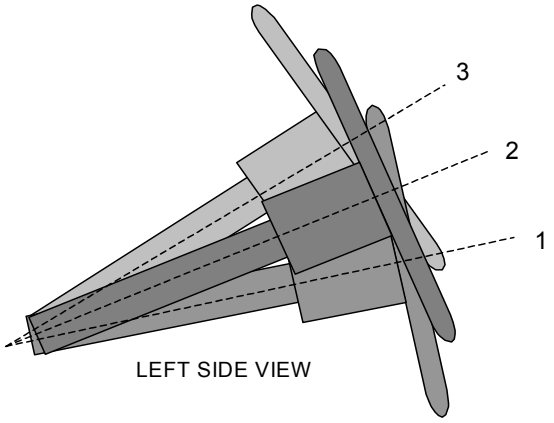
The vehicle is equipped with electric fuel pump. It operates after the ignition key is turned from LOCK (0) to ON (II) position, the pump will be filled up for two seconds, and then the pressure is maintained.




*VEHICLE FUEL TANK ASSEMBLY*

## STEERING COLUMN ADJUSTMENT

Steering wheel and column adjustments are made so that the steering wheel hub is at the geometric center of the locus it describes, when it is moved through its full range of motion. Manufacturer Information: The adjustment position is located midway between the inmost and outmost position and midway between the highest and lowest position.




*STEERING COLUMN ASSEMBLY*

The telescopic range was placed in the mid-position for the test.

The steering column was placed in the mid-position for the test.

## DATA SHEET NO. 2

## TEST VEHICLE SUMMARY OF RESULTS

Test Vehicle: 2006 Honda Civic 4-Dr. DX NHTSA No. C65305
Test Program: FMVSS 201P Test Date: September 5, 2006

### TEST VEHICLE WEIGHTS

| | Units | As Delivered (UVW) | | | As Tested (ATW) | | |
|---|---|---|---|---|---|---|---|
| | | Front Axle | Rear Axle | Total | Front Axle | Rear Axle | Total |
| Left | kg | 354.3 | 243.1 | | 381.5 | 293.0 | |
| Right | kg | 354.7 | 236.8 | | 358.8 | 274.4 | |
| Weight Ratio | % | 59.6 | 40.4 | | 56.6 | 43.4 | |
| Totals | kg | 709.0 | 479.9 | 1188.9 | 740.3 | 567.4 | 1307.7 |

### MAXIMUM EXTERIOR STATIC CRUSH

| Level | Measured Parameter | Units | Maximum Crush | Above Ground |
|---|---|---|---|---|
| Level 1 | Sill Top Height | mm | 274 | 261 |
| Level 2 | Occupant H-Point | mm | 285 | 468 |
| Level 3 | Mid Door | mm | 306 | 622 |
| Level 4 | Window Sill | mm | 253 | 933 |
| Level 5 | Window Top | mm | 109 | 1370 |
| N/A | Maximum Penetration | mm | 306 | 622 |

### INSTRUMENTATION

| | |
|---|---|
| SID/HIII Instrumentation | 17 |
| Vehicle Structure Accelerometers | 20 |
| Total | 37 |

### CAMERAS

| | |
|---|---|
| Onboard Vehicle | 3 |
| Offboard Vehicle | 8 |
| Total | 11 |

### IMPACT POINT DATA

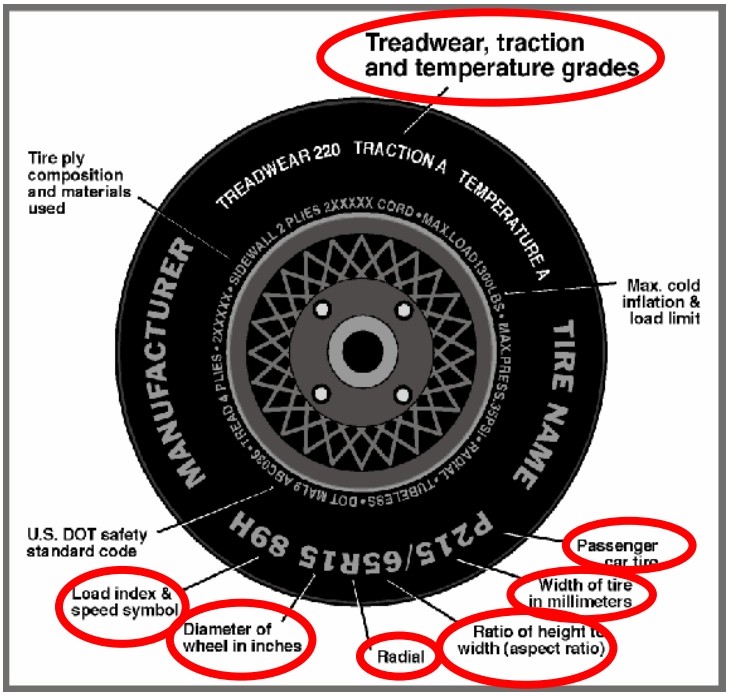
| Measured Parameter | Units | Requirement | Value |
|---|---|---|---|
| Horizontal Offset | mm | +/- 38 | 10 forward |

**DATA SHEET NO. 3**

**TEST VEHICLE TIRE INFORMATION**

Test Vehicle: 2006 Honda Civic 4-Dr. DX NHTSA No. C65305
Test Program: FMVSS 201P Test Date: September 5, 2006

| | | | |
|---|---|---|---|
| Vehicle Year | 2006 | Vehicle Make | Honda |
| VIN | 1HGFA15246L040968 | Vehicle Model | Civic |




| | Front | Rear |
|---|---|---|
| Tire Manufacturer | Dunlop | Dunlop |
| Tire Name | SP Sport 5000 | SP Sport 5000 |
| Tire Type | M+S | M+S |
| Tire Width (mm) | 195 | 195 |
| Ratio of Height to Width (aspect ratio) | 65 | 65 |
| Radial | R | R |
| Wheel Diameter | 15 | 15 |
| Load Index & Speed Symbol | 89H | 89H |
| Treadwear | 340 | 340 |
| Traction Grade | A | A |
| Temperature Grade | A | A |

## DATA SHEET NO. 4

## POST TEST OBSERVATIONS

Test Vehicle: 2006 Honda Civic 4-Dr. DX NHTSA No. C65305
Test Program: FMVSS 201P Test Date: September 5, 2006

### TEST DUMMY INFORMATION AND CONTACT POINTS

| Description | Left Front Seating Position |
|---|---|
| Dummy Type / Serial No. | SID/HIII / 036 |
| Head Contact | Curtain Airbag, Headrest |
| Upper Torso Contact | Side Airbag |
| Lower Torso Contact | Side Airbag |
| Left Knee Contact | Door Panel |
| Right Knee Contact | Left Knee |

### POST TEST DOOR OPENING AND SEAT TRACK INFORMATION

| Description | Front | Rear |
|---|---|---|
| Left Side Door Opening | Door remained closed and latched | Door remained closed and latched |
| Right Side Door Opening | Door remained closed and latched | Door remained closed and latched |
| Seat Movement | 0 | 0 |
| Seat Back Failure | None | None |

### POST TEST STRUCTURAL OBSERVATIONS

| Critical Areas of Performance | Observations and Conclusions |
|---|---|
| Pillar Performance | No failures |
| Sill Separation | None |
| Windshield Damage | Cracked |
| Window Damage | Left side windows down for test |
| Other Notable Effects | Curtain airbag caught on B-post cover |

### AIRBAG DEPLOYMENT

| | Driver |
|---|---|
| Front | No |
| Side | Yes |
| Curtain | Yes |

### ARMREST LOCATION AND SEAT CRUSH

| | Driver |
|---|---|
| Front Armrest (from bottom of window) | 244 |
| Front Seat Back Crush | 92 |
| Front Seat Cushion Crush | 50 |

## SECTION 4
## OCCUPANT AND VEHICLE INFORMATION

## DATA SHEET NO. 5

## SID/HIII INJURY CRITERIA AND SENSOR DATA

Test Vehicle: 2006 Honda Civic 4-Dr. DX NHTSA No. C65305
Test Program: FMVSS 201P Test Date: September 5, 2006

### THORAX AND PELVIS PEAK ACCELERATIONS (FIR 100 Filtered)

| Location | Axis | Units | Driver | | | |
|---|---|---|---|---|---|---|
| | | | Max | Time | Min | Time |
| Upper Rib (LUR) | Y | G's | 56.2 | 45 | -15.1 | 18 |
| Upper Rib (LUR) (R) | Y | G's | 53.7 | 45 | -13.1 | 18 |
| Lower Rib (LLR) | Y | G's | 50.2 | 46 | -17.3 | 17 |
| Lower Rib (LLR) (R) | Y | G's | 49.2 | 46 | -15.3 | 17 |
| Lower Spine ($T_{12}$) | Y | G's | 52.1 | 46 | -9.5 | 20 |
| Lower Spine ($T_{12}$) (R) | Y | G's | 52.0 | 46 | -9.4 | 20 |
| Pelvis (PEV) | Y | G's | 44.7 | 47 | -4.9 | 78 |
| Pelvis (PEV) (R) | Y | G's | 44.6 | 47 | -4.8 | 78 |

### THORACIC TRAUMA INDEX (TTI) AND PELVIC ACCELERATION (FIR 100 Filtered)

| Location | Driver | | | |
|---|---|---|---|---|
| | LUR | $T_{12}$ | TTI(g) | PEV(g) |
| Rib, Spine, and Pelvis | 56.2 | 52.1 | 54.2 | 44.7 |
| Rib, Spine, and Pelvis (R) | 53.7 | 52.0 | 52.9 | 44.6 |

### UPPER NECK FORCES AND MOMENTS (SAE CLASS 1000/600 Filtered)

| Location | Axis | Units | Driver | | | |
|---|---|---|---|---|---|---|
| | | | Max | Time | Min | Time |
| Neck Force | X | N | 37 | 121 | -455 | 61 |
| Neck Force | Y | N | 830 | 53 | -110 | 158 |
| Neck Force | Z | N | 1032 | 53 | -273 | 70 |
| Neck Moment | X | Nm | 16.9 | 79 | -91.1 | 53 |
| Neck Moment | Y | Nm | 26.2 | 80 | -21.9 | 58 |
| Neck Moment | Z | Nm | 22.1 | 68 | -26.7 | 176 |

### HEAD CG PEAK ACCELERATIONS (SAE CLASS 1000 Filtered)

| Location | Axis | Units | Driver | | | |
|---|---|---|---|---|---|---|
| | | | Max | Time | Min | Time |
| Head CG | X | G's | 8.3 | 117 | -18.5 | 69 |
| Head CG | Y | G's | 52.2 | 69 | -10.7 | 158 |
| Head CG | Z | G's | 1.9 | 20 | -22.4 | 53 |
| Head CG Resultant | | G's | 55.6 | 69 | | |

### HEAD INJURY CRITERIA (SAE CLASS 1000 Filtered)

| Location | Driver | | |
|---|---|---|---|
| | HIC | T1 | T2 |
| Head CG Resultant | 222 | 49.5 | 74.6 |

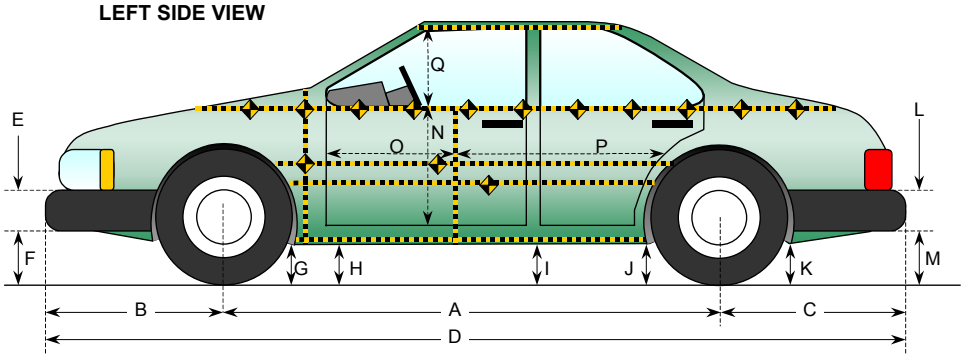
Positive Acceleration Polarities: Longitudinal (X) = + Forward
(Conforms to SAE J211) Lateral (Y) = + Right
Vertical (Z) = + Down

## DATA SHEET NO. 6

## VEHICLE PRE-TEST AND POST-TEST MEASUREMENTS

Test Vehicle: 2006 Honda Civic 4-Dr. DX NHTSA No. C65305
Test Program: FMVSS 201P Test Date: September 5, 2006

LEFT SIDE VIEW



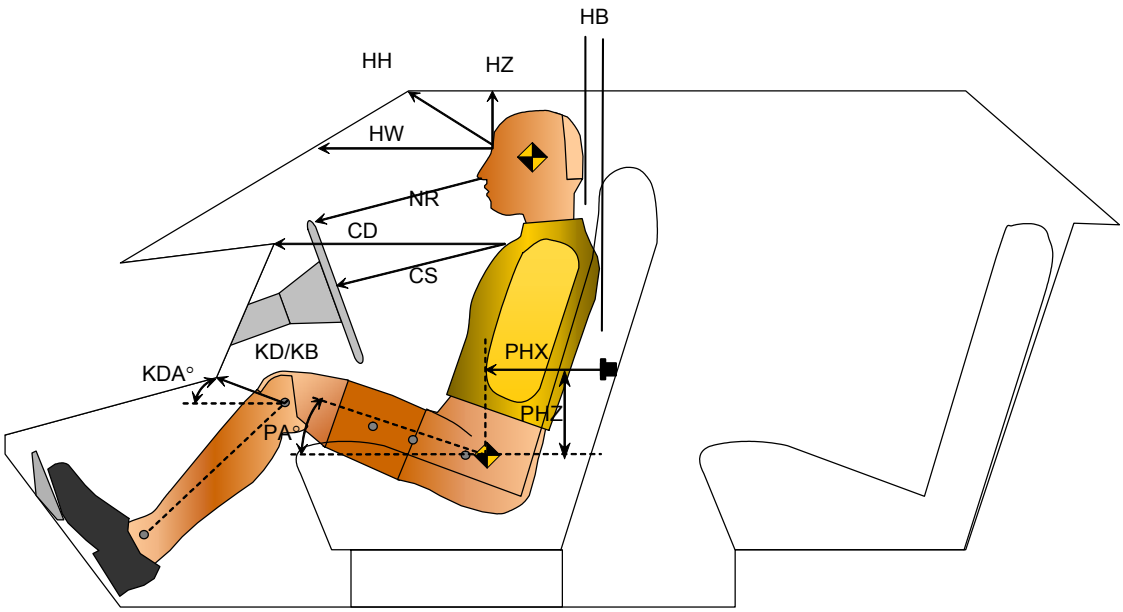

All Measurements in mm

| Code | Measurement Description | Pre-Test | Post-Test | Difference |
|---|---|---|---|---|
| A | Wheelbase | 2703 | 2655 | 48 |
| B | Front Axle to FSOV | 878 | 878 | 0 |
| C | Rear Axle to RSOV | 896 | 895 | 1 |
| D | Total Length at Centerline | 4477 | 4428 | 49 |
| E | Front Bumper Thickness | 113 | 113 | 0 |
| F | Front Bumper Bottom to Ground | 457 | 472 | -15 |
| G | Sill Height at Front Wheel Well | 228 | 225 | 3 |
| H | Sill Height at Front Door Leading Edge | 235 | 225 | 10 |
| I | Sill Height at "B" Pillar | 241 | 292 | -51 |
| J1 | Sill Height at Rear Wheel Well | 232 | 248 | -16 |
| J2 | Pinch Weld Height at Rear Wheel Well | 222 | 238 | -16 |
| K | Sill Height Aft of Rear Wheel Well | 289 | 274 | 15 |
| L | Rear Bumper Thickness | 223 | 223 | 0 |
| M | Rear Bumper Bottom to Ground | 400 | 372 | 28 |
| N | Sill Height to Window Bottom Sill | 691 | 670 | 21 |
| O | Front Door Leading Edge to Impact CL | 1033 | 1028 | 5 |
| P | Rear Door Trailing Edge to Impact CL | 978 | 999 | -21 |
| Q | Front Window Opening | 400 | 382 | 18 |
| R | Right Side Length | 3660 | 3670 | -10 |
| S | Left Side Length | 3660 | 3599 | 61 |
| T | Vehicle Width at "B" Post | 1739 | 1585 | 154 |

**DATA SHEET NO. 7**

**SID/HIII LONGITUDINAL CLEARANCE DIMENSIONS**

Test Vehicle: 2006 Honda Civic 4-Dr. DX NHTSA No. C65305
Test Program: FMVSS 201P Test Date: September 5, 2006

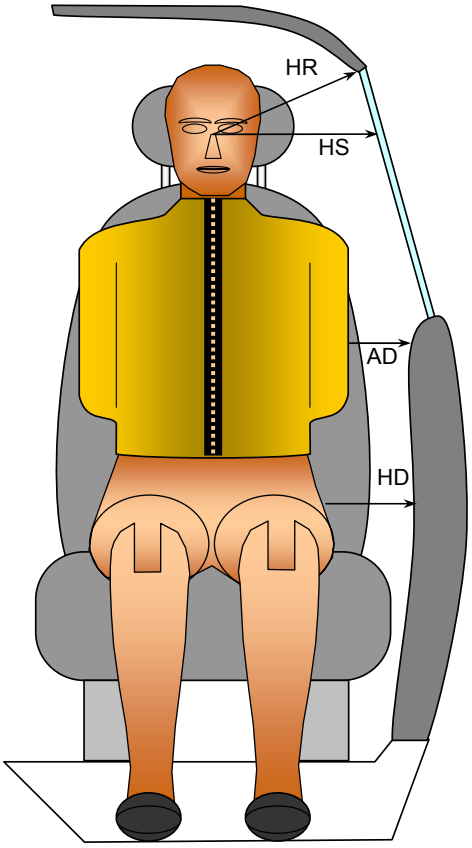



| Driver Code | Measurement Description | Driver | |
|---|---|---|---|
| | | Length(mm) | Angle(°) |
| HH | Head to Header | 381 | |
| HW | Head to Windshield | 684 | |
| HZ | Head to Roof | 186 | |
| NR | Nose to Rim | 406 | |
| CD | Chest to Dash | 575 | |
| CS | Chest to Steering Wheel | 321 | |
| KDL | Left Knee to Dash | 127 | 38.6 |
| KDR | Right Knee to Dash | 135 | 38.5 |
| PA | Pelvic Angle | | 23.2 |
| PHX | H-Point to Striker (X-Axis) | 254 | |
| PHZ | H-Point to Striker (Z-Axis) | 186 | |
| HB | Head to Seatback Clearance | 51 | |

**DATA SHEET NO. 8**

**SID/HIII LATERAL CLEARANCE DIMENSIONS**

Test Vehicle: 2006 Honda Civic 4-Dr. DX NHTSA No. C65305
Test Program: FMVSS 201P Test Date: September 5, 2006




*FRONT VIEW OF DUMMY*

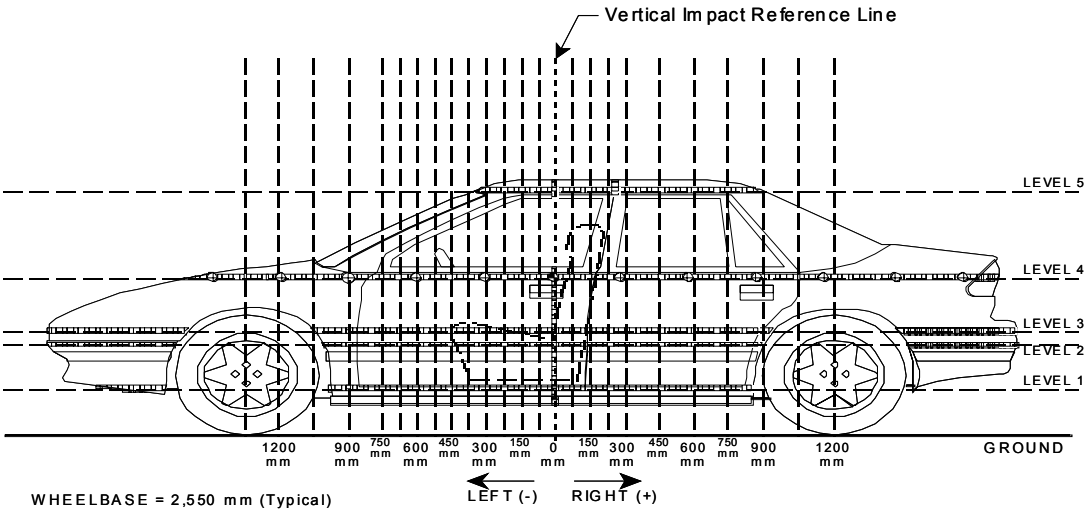
| Code | Measurement Description | Units | Driver |
|---|---|---|---|
| HR | Head to Side Header | mm | 199 |
| HS | Head to Side Window | mm | 282 |
| AD | Arm to Door | mm | 114 |
| HD | H-Point to Door | mm | 164 |

**DATA SHEET NO. 9**

**VEHICLE SIDE MEASUREMENTS**

Test Vehicle: 2006 Honda Civic 4-Dr. DX NHTSA No. C65305
Test Program: FMVSS 201P Test Date: September 5, 2006

PRETEST AND POST TEST EXTERIOR PROFILE MEASUREMENTS




LEFT SIDE VIEW

Measurements are taken with vehicle in the as tested condition.
Measurements along the vertical 0 mm.

| Level | Measurement Description | Units | Height Above Ground |
|---|---|---|---|
| 5 | Window | mm | 1370 |
| 4 | Window Sill | mm | 933 |
| 3 | Mid Door | mm | 622 |
| 2 | Occupant H-Point | mm | 468 |
| 1 | Sill Top | mm | 261 |

**DATA SHEET NO. 10**

**VEHICLE EXTERIOR CRUSH PROFILES**

Test Vehicle: 2006 Honda Civic 4-Dr. DX NHTSA No. C65305
Test Program: FMVSS 201P Test Date: September 5, 2006

| | Pre-Test | | | | | Post-Test | | | | | Difference | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| -1800 | | | | 350 | | | | | 357 | | | | | 7 | |
| -1650 | | | | 331 | | | | | 337 | | | | | 6 | |
| -1500 | | | | 321 | | | | | 330 | | | | | 9 | |
| -1350 | | | | 310 | | | | | 316 | | | | | 6 | |
| -1200 | | | 223 | 307 | | | | 239 | 312 | | | | 16 | 5 | |
| -1125 | | | 224 | 303 | | | | 238 | 307 | | | | 14 | 4 | |
| -1050 | | 232 | 226 | 300 | | | 241 | 237 | 305 | | | 9 | 11 | 5 | |
| -975 | 258 | 234 | 229 | 298 | | 267 | 238 | 236 | 310 | | 9 | 4 | 7 | 12 | |
| -900 | 258 | 235 | 230 | 298 | | 264 | 258 | 246 | 305 | | 6 | 23 | 16 | 7 | |
| -825 | 257 | 235 | 230 | 297 | | 292 | 266 | 258 | 316 | | 35 | 31 | 28 | 19 | |
| -750 | 257 | 235 | 231 | 296 | | 304 | 275 | 270 | 322 | | 47 | 40 | 39 | 26 | |
| -675 | 256 | 234 | 231 | 294 | | 317 | 284 | 283 | 329 | | 61 | 50 | 52 | 35 | |
| -600 | 255 | 234 | 231 | 291 | | 331 | 294 | 293 | 334 | | 76 | 60 | 62 | 43 | |
| -525 | 254 | 234 | 231 | 290 | | 345 | 304 | 317 | 346 | | 91 | 70 | 86 | 56 | |
| -450 | 254 | 233 | 231 | 289 | 471 | 360 | 326 | 342 | 368 | 504 | 106 | 93 | 111 | 79 | 33 |
| -375 | 254 | 232 | 230 | 288 | 466 | 379 | 359 | 369 | 394 | 509 | 125 | 127 | 139 | 106 | 43 |
| -300 | 253 | 232 | 229 | 288 | 464 | 399 | 393 | 399 | 423 | 519 | 146 | 161 | 170 | 135 | 55 |
| -225 | 253 | 231 | 229 | 288 | 465 | 425 | 424 | 431 | 457 | 529 | 172 | 193 | 202 | 169 | 64 |
| -150 | 252 | 231 | 229 | 290 | 465 | 459 | 458 | 460 | 484 | 543 | 207 | 227 | 231 | 194 | 78 |
| -75 | 250 | 230 | 228 | 290 | 466 | 499 | 483 | 494 | 515 | 564 | 249 | 253 | 266 | 225 | 98 |
| 0 | 250 | 230 | 227 | 290 | 468 | 524 | 505 | 533 | 543 | 577 | 274 | 275 | 306 | 253 | 109 |
| 75 | 249 | 230 | 227 | 291 | 472 | 490 | 515 | 506 | 519 | 560 | 241 | 285 | 279 | 228 | 88 |
| 150 | 248 | 230 | 227 | 293 | 474 | 447 | 463 | 450 | 472 | 551 | 199 | 233 | 223 | 179 | 77 |
| 225 | 248 | 230 | 226 | 293 | 476 | 410 | 387 | 387 | 450 | 545 | 162 | 157 | 161 | 157 | 69 |
| 300 | 248 | 229 | 226 | 297 | 479 | 381 | 368 | 366 | 412 | 538 | 133 | 139 | 140 | 115 | 59 |
| 375 | 248 | 229 | 226 | 300 | 480 | 352 | 347 | 347 | 403 | 531 | 104 | 118 | 121 | 103 | 51 |
| 450 | 247 | 229 | 225 | 300 | 484 | 323 | 327 | 328 | 396 | 524 | 76 | 98 | 103 | 96 | 40 |
| 600 | 248 | 229 | 226 | 302 | 486 | 300 | 307 | 313 | 389 | 520 | 52 | 78 | 87 | 87 | 34 |
| 750 | 243 | 228 | 225 | 304 | 491 | 255 | 267 | 280 | 373 | 513 | 12 | 39 | 55 | 69 | 22 |
| 900 | 239 | 228 | 224 | 309 | 499 | 227 | 229 | 247 | 357 | 510 | -12 | 1 | 23 | 48 | 11 |
| 1050 | | | 223 | 318 | 513 | | | 236 | 349 | 526 | | | 13 | 31 | 13 |
| 1200 | | | 219 | 325 | | | | 235 | 331 | | | | 16 | 6 | |
| 1350 | | | | 336 | | | | | 333 | | | | | -3 | |
| 1500 | | | | 349 | | | | | 319 | | | | | -30 | |
| 1650 | | | | 363 | | | | | 306 | | | | | -57 | |
| 1800 | | | | 381 | | | | | 299 | | | | | -82 | |

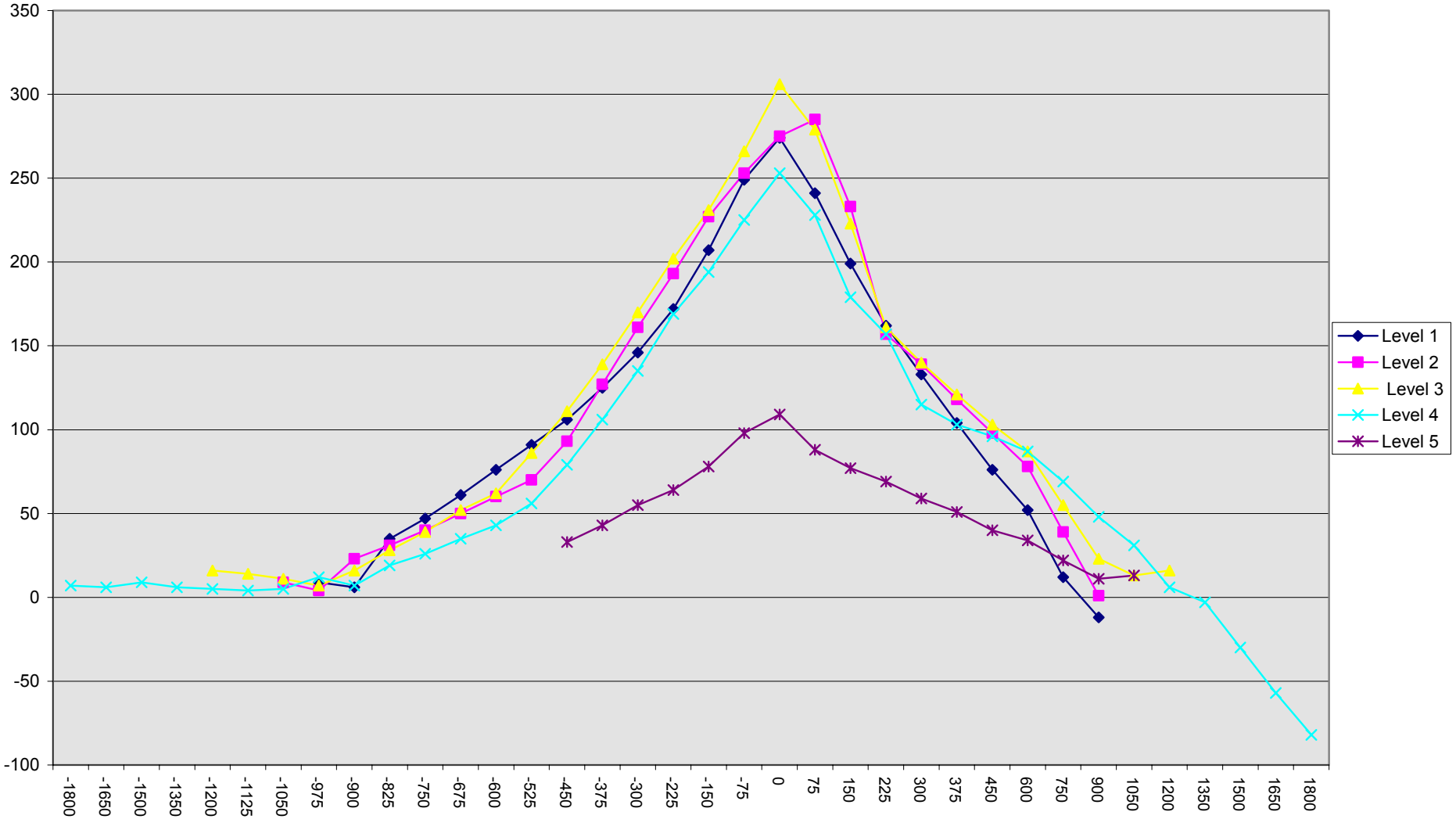
Reference plane is parallel to test vehicle longitudinal centerline Units = mm

Given dimensions = Reference plane to car body

**DATA SHEET NO. 10... (continued)**

**VEHICLE EXTERIOR CRUSH PROFILES**

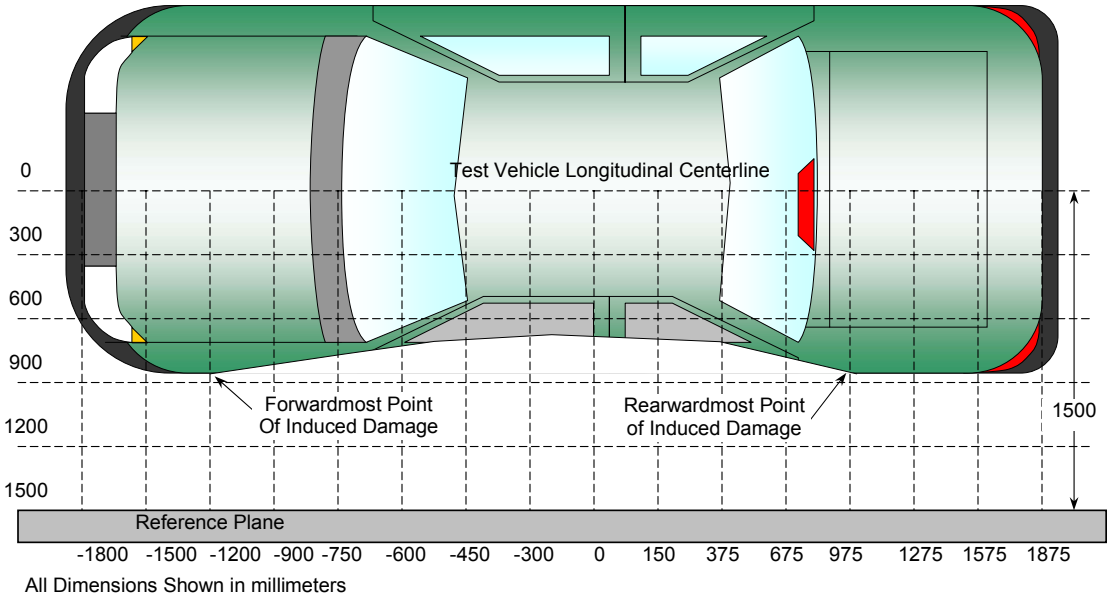
Test Vehicle: 2006 Honda Civic 4-Dr. DX NHTSA No. C65305
Test Program: FMVSS 201P Test Date: September 5, 2006



**DATA SHEET NO. 11**

**VEHICLE DAMAGE PROFILE DISTANCES**

Test Vehicle: 2006 Honda Civic 4-Dr. DX NHTSA No. C65305
Test Program: FMVSS 201P Test Date: September 5, 2006




**TOP VIEW**

**Damage Profile Distances**

| DPD | Distance from Impact Point in mm | Level | Pre-Test (mm) | Post-Test (mm) | Max Static Crush (mm) |
|---|---|---|---|---|---|
| 1 | 1050 mm | 4 | 318 | 349 | 31 |
| 2 | 648 mm | 4 | 303 | 383 | 80 |
| 3 | 231 mm | 1 | 248 | 408 | 160 |
| 4 | -169 mm | 3 | 229 | 454 | 225 |
| 5 | -580 mm | 1 | 255 | 333 | 78 |
| 6 | -975 mm | 4 | 298 | 310 | 12 |

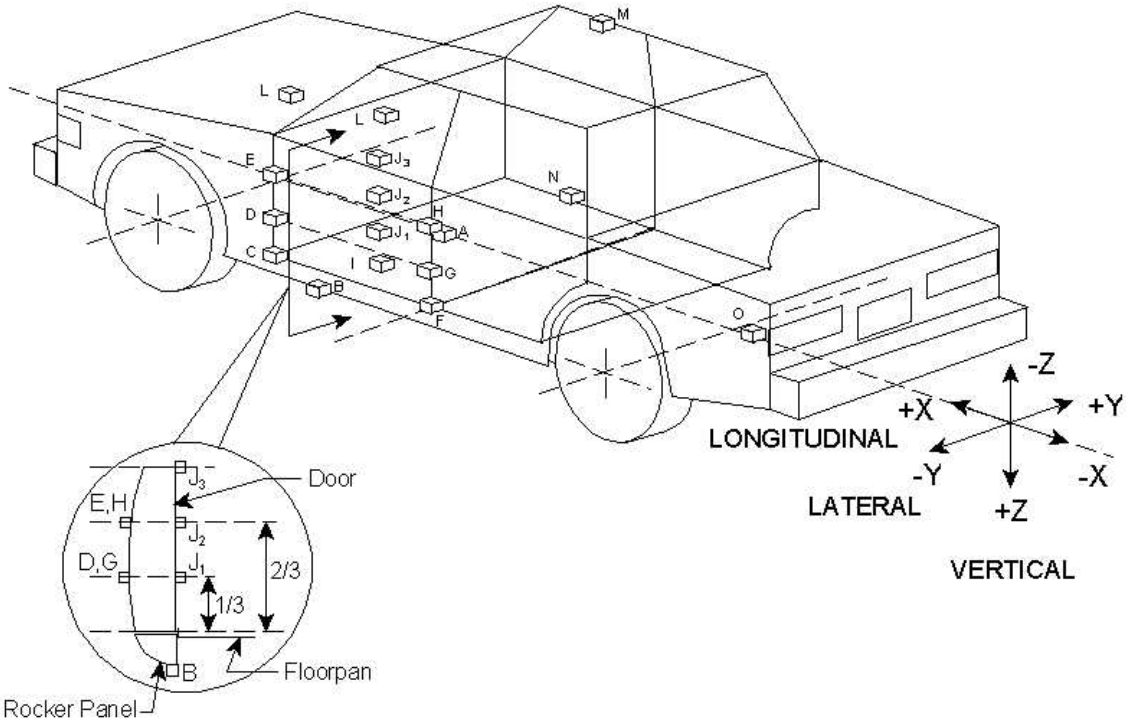
Reference plane is parallel to test vehicle longitudinal centerline

Given dimensions = Reference plane to car body

**DATA SHEET NO. 12**

**VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY**

Test Vehicle: 2006 Honda Civic 4-Dr. DX NHTSA No. C65305
Test Program: FMVSS 201P Test Date: September 5, 2006




| No. | Location |
|---|---|
| A | Vehicle CG |
| B | Left Floor Sill |
| C | A Pillar Sill |
| D | A Pillar Low |
| E | A Pillar Mid |
| G | B Pillar Sill |
| H | B Pillar Low |
| I | B Pillar Mid |

| No. | Location |
|---|---|
| L | Driver Seat |
| M1 | Driver Door Rib |
| M2 | Driver Door Pelvis |
| M3 | Driver Door Knee |
| N | Engine |
| O | Firewall |
| Q | Right Floor Sill |
| R | Rear Deck |

**DATA SHEET NO. 12... (continued)**

**VEHICLE ACCELEROMETER LOCATION AND DATA SUMMARY**

Test Vehicle: 2006 Honda Civic 4-Dr. DX NHTSA No. C65305
Test Program: FMVSS 201P Test Date: September 5, 2006

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

| Loc. No. | Accelerometer Location | Peak Values (G's) | | | | |
|---|---|---|---|---|---|---|
| | | Axis | Max | Time | Min | Time |
| A | Vehicle CG | X | 11.7 | 46 | -15.8 | 52 |
| | | Y | 22.1 | 46 | -1.5 | 0 |
| | | Z | 21.1 | 46 | -13.8 | 18 |
| | | RES | 32.6 | 46 | | |
| B | Left Floor | Y | 30.4 | 20 | -1.5 | 233 |
| C | A Pillar Sill | Y | 62.3 | 17 | -6.8 | 23 |
| D | A Pillar Low | Y | 34.2 | 18 | -7.7 | 13 |
| E | A Pillar Mid | Y | 17.5 | 9 | -3.3 | 3 |
| G | B Pillar Sill | Y | 42.7 | 17 | -1.7 | 41 |
| H | B Pillar Low | Y | 46.3 | 11 | -4.1 | 36 |
| I | B Pillar Mid | Y | 40.1 | 13 | -7.6 | 35 |
| L | Driver Seat | Y | 47.5 | 26 | -30.9 | 18 |
| M1 | Driver Door Upper | Y | 70.6 | 25 | -81.5 | 20 |
| M2 | Driver Door Mid | Y | 64.3 | 13 | -28.8 | 9 |
| M3 | Driver Door Lower | Y | 29.7 | 9 | -6.5 | 24 |
| N | Engine | X | 6.2 | 86 | -2.6 | 53 |
| | | Y | 15.4 | 44 | -2.9 | 186 |
| O | Firewall | Y | 13.1 | 55 | -1.6 | 0 |
| Q | Right Floor Sill | Y | * | * | * | * |
| R | Rear Deck | X | 4.0 | 20 | -1.7 | 7 |
| | | Y | 14.7 | 49 | -1.4 | 300 |

* No valid data collected

Positive Acceleration Polarities: Longitudinal (X) = + Forward
(Conforms to SAE J211) Lateral (Y) = + Right
Vertical (Z) = + Down

**DATA SHEET NO. 12... (continued)**

**VEHICLE ACCELEROMETER LOCATION AND DATA SUMMARY**

Test Vehicle: 2006 Honda Civic 4-Dr. DX NHTSA No. C65305
Test Program: FMVSS 201P Test Date: September 5, 2006

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

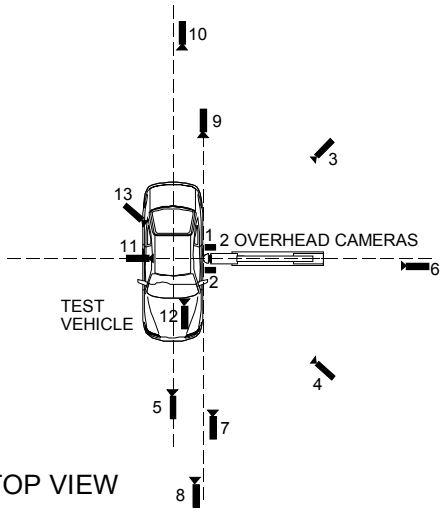
| Loc. No. | Accelerometer Location | Measurements (mm) | | | |
|---|---|---|---|---|---|
| | | Axis | Pre-Test | Post-Test | Difference |
| A | Vehicle CG | X | 2515 | 2446 | -69 |
| | | Y | -65 | -63 | 2 |
| | | Z | 275 | 271 | 4 |
| B | Left Floor Sill | X | 2694 | 2606 | -88 |
| | | Y | 744 | 701 | 43 |
| | | Z | 198 | 199 | -1 |
| C | A Pillar Sill | X | 3153 | 3086 | -67 |
| | | Y | 745 | 739 | 6 |
| | | Z | 188 | 184 | 4 |
| D | A Pillar Low | X | 3080 | 3042 | -38 |
| | | Y | 732 | 728 | 4 |
| | | Z | 420 | 415 | 5 |
| E | A Pillar Mid | X | 3085 | 3027 | -58 |
| | | Y | 825 | 822 | 3 |
| | | Z | 678 | 669 | 9 |
| G | B Pillar Sill | X | 2013 | 2005 | -8 |
| | | Y | 744 | 605 | 139 |
| | | Z | 205 | 224 | -19 |
| H | B Pillar Low | X | 2027 | 2009 | -18 |
| | | Y | 700 | 583 | 117 |
| | | Z | 553 | 582 | -29 |
| I | B Pillar Mid | X | 1985 | 1941 | -44 |
| | | Y | 693 | 573 | 120 |
| | | Z | 775 | 776 | -1 |
| L | Driver Seat | X | 2076 | 2058 | 18 |
| | | Y | 583 | 571 | 12 |
| | | Z | 344 | 351 | -7 |
| M1 | Driver Door Upper | X | 2801 | 2783 | -18 |
| | | Y | 735 | 675 | 60 |
| | | Z | 862 | 859 | 3 |
| M2 | Driver Door Mid | X | 2760 | 2741 | -19 |
| | | Y | 775 | 697 | 78 |
| | | Z | 582 | 574 | 8 |
| M3 | Driver Door Lower | X | 2813 | 2789 | -24 |
| | | Y | 790 | 722 | 68 |
| | | Z | 432 | 428 | 4 |
| N | Engine | X | 3728 | 3697 | -31 |
| | | Y | 100 | 100 | 0 |
| | | Z | 814 | 812 | 2 |
| O | Firewall | X | 3630 | 3581 | -49 |
| | | Y | 75 | 77 | -2 |
| | | Z | 846 | 822 | 24 |
| Q | Right Floor Sill | X | 2405 | 2394 | -11 |
| | | Y | -744 | -744 | 0 |
| | | Z | 204 | 201 | 3 |
| R | Rear Deck | X | 814 | 762 | -52 |
| | | Y | -60 | -60 | 0 |
| | | Z | 383 | 384 | -1 |

Ref. Points: X-Rear of Vehicle (+ forward); Y-Vehicle Centerline (+ to right); Z-Ground Plane (+ down)

**DATA SHEET NO. 13**

**HIGH SPEED CAMERA LOCATIONS AND DATA**

Test Vehicle: 2006 Honda Civic 4-Dr. DX NHTSA No. C65305
Test Program: FMVSS 201P Test Date: September 5, 2006



TOP VIEW

| No. | Camera View | Location (mm) | | | Lens (mm) | Film Speed (fps) |
|---|---|---|---|---|---|---|
| | | X | Y | Z | | |
| 1 | Overhead Overall | 205 | 0 | 5050 | 14 | 1000 |
| 2 | Overhead Close-Up | 15 | 105 | 5050 | 19 | 1000 |
| 3 | Left Side 45° Rearward Pole View | -2070 | -3285 | 1165 | 24 | 1000 |
| 4 | Right Side 45° Forward Pole View | -1885 | 2380 | 110 | 24 | 1000 |
| 5 | Real Time | | | | 13 | 24 |
| 6* | Left Side Rear Pole View | | | | | |
| 7 | Front Ground Level Vehicle/Pole Impact | -110 | 6880 | 1270 | 35 | 1000 |
| 8 | Front Ground Level Vehicle Roof Targets and Vehicle/Pole Impact | 545 | 6400 | 1250 | 24 | 1000 |
| 9 | Rear Ground Level Vehicle/Pole Impact | 190 | -6555 | 1230 | 35 | 1000 |
| 10 | Rear Ground Level | 585 | -6505 | 1235 | 24 | 1000 |
| 11 | Test Vehicle Onboard Driver Side View | | | | 8 | 1000 |
| 12 | Test Vehicle Onboard Driver Front View | | | | 12.5 | 1000 |
| 13 | Test Vehicle Onboard Driver ¾ Rear View | | | | 8 | 1000 |

Reference Points X - + Forward of Impact
Y - + Right of Impact
Z - + Ground Plane Down

* Camera 6 was not used for this test.

**DATA SHEET NO. 14**

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

| | | | |
|---|---|---|---|
| Test Vehicle: | 2006 Honda Civic 4-Dr. DX | NHTSA No. | C65305 |
| Test Program: | FMVSS 201P | Test Date: | September 5, 2006 |

Test Time: 11:20 AM Temperature at Time of Impact: 21°C

**Stoddard Solvent Spillage Measurements**

A. From impact until vehicle motion ceases: 0
(Maximum Allowable = 1 ounce)

B. For the 5 minute period after motion ceases: 0
(Maximum allowable = 5 ounces)

C. For the following 25 minutes: 0
(Maximum allowable = 1 oz./minute)

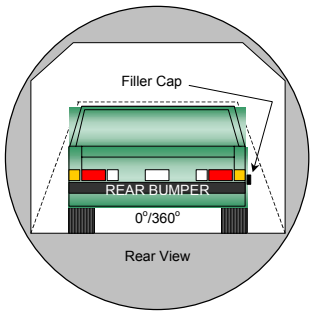
D. Spillage Details: None

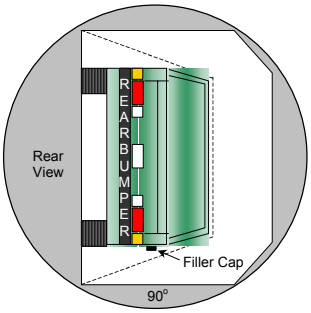
**DATA SHEET NO. 15**

**FMVSS 301 STATIC ROLLOVER DATA SHEET**

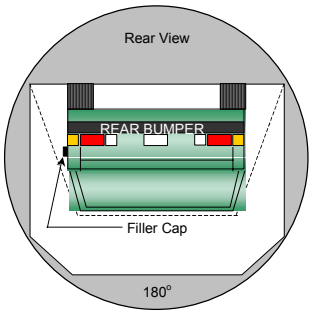
| | | | |
|---|---|---|---|
| Test Vehicle: | 2006 Honda Civic 4-Dr. DX | NHTSA No. | C65305 |
| Test Program: | FMVSS 201P | Test Date: | September 5, 2006 |

**FMVSS 301 STATIC ROLLOVER WAS NOT PERFORMED PER COTR.**

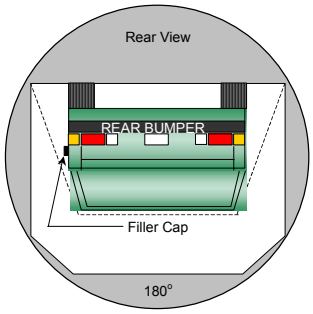


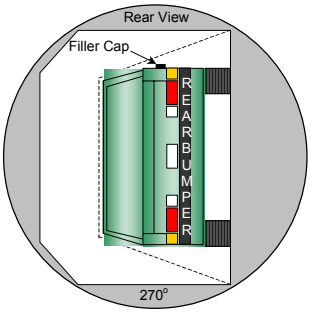

0° to 90°



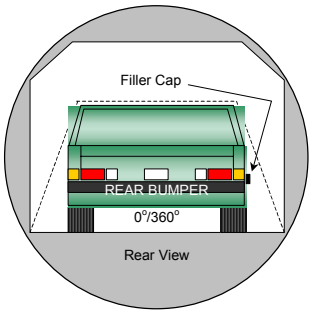

90° to 180°




180° to 270°




270° to 360°




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:

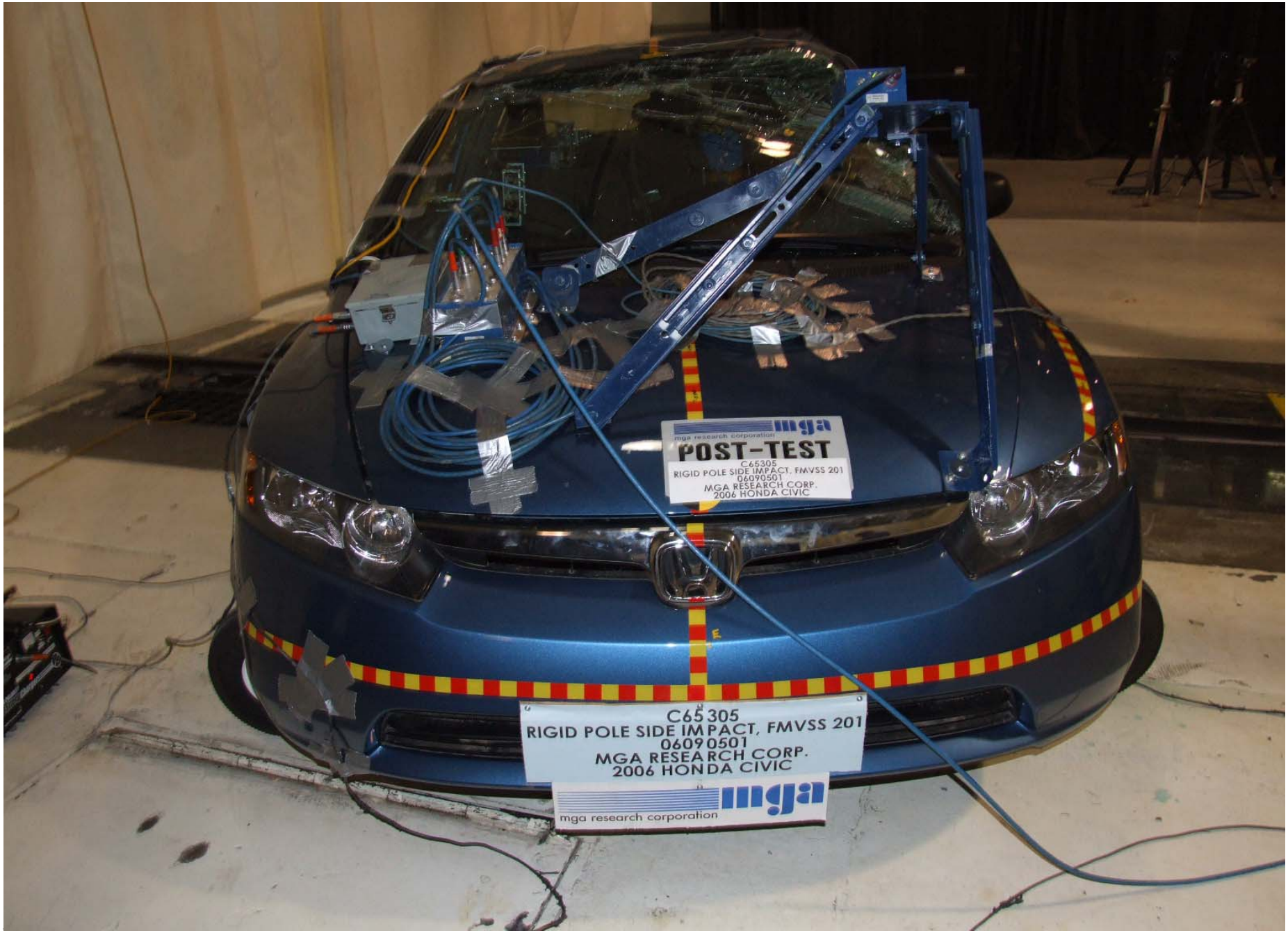
| Rollover Test Phase | Rotation Time (sec.) | Hold Time (sec.) | Spillage (oz.) |
|---|---|---|---|
| 0° to 90° | | | |
| 90° to 180° | | | |
| 180° to 270° | | | |
| 270° to 360° | | | |

# APPENDIX A

# PHOTOGRAPHS

TABLE OF PHOTOGRAPHS


Pre-Test Front View of Test Vehicle




Post-Test Front View of Test Vehicle


Pre-Test Rear View of Test Vehicle


Post-Test Rear View of Test Vehicle


Pre-Test Left Side View of Test Vehicle


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


Post-Test Left Rear Three-Quarter View


Pre-Test Left Front Three-Quarter View


Post-Test Left Front Three-Quarter View

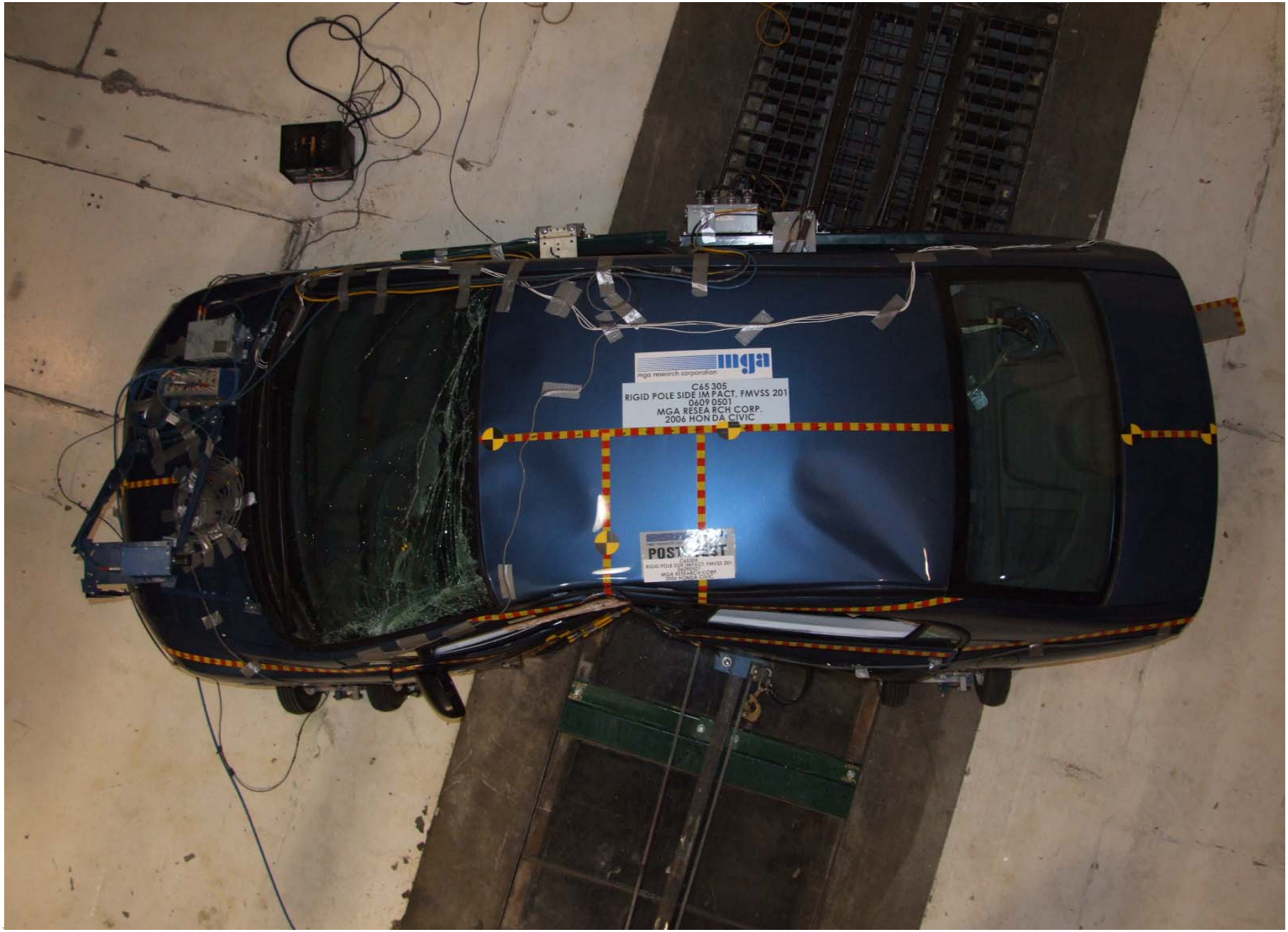

Pre-Test Right Rear Three-Quarter View


Post-Test Right Rear Three-Quarter View


Pre-Test Right Front Three-Quarter View


Post-Test Right Front Three-Quarter View


Pre-Test Overhead View of Test Vehicle




Post-Test Overhead View of Test Vehicle


Pre-Test Driver Dummy Right Side View


Post-Test Driver Dummy Right Side View


Pre-Test Driver Dummy Left Side View


Post-Test Driver Dummy Left Side View


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


Pre-Test Driver Dummy Shoulder and Door Top View

Post-Test Driver Dummy Head Contact (headrest)

Post-Test Driver Dummy Head Contact

Post-Test Driver Dummy Thorax Contact

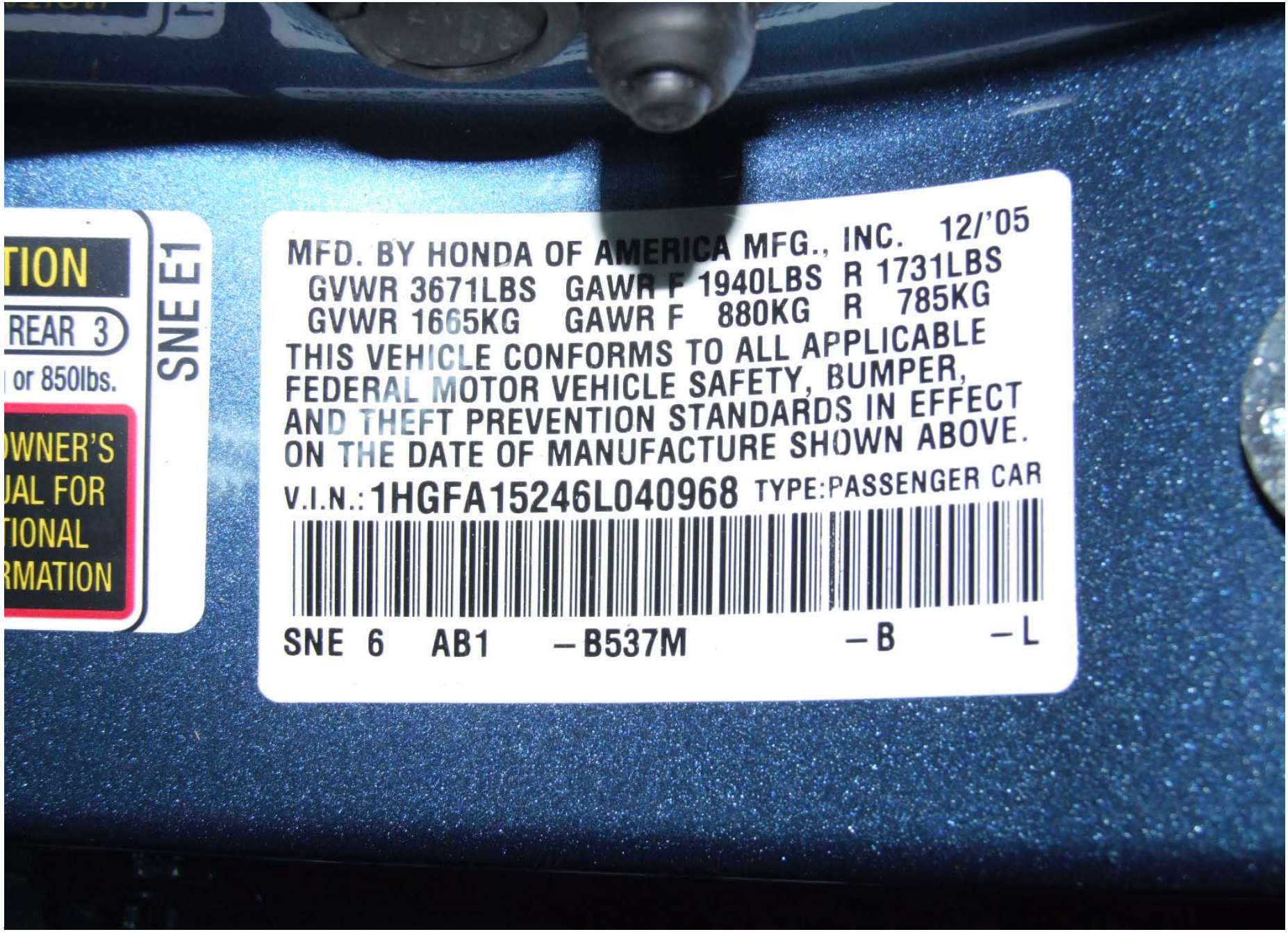

Post-Test Driver Dummy Contact


Post-Test Impact Point on Vehicle


Pre-Test Impact Zone Close-up View


Post-Test Impact Zone Close-up View


Vehicle Impact






Vehicle Certification Label


Tire Placard


Pre-Test Fuel Filler Cap


Post-Test Fuel Filler Cap


Pre-Test Left Front Wheel Dolly


Pre-Test Right Front Wheel Dolly


Pre-Test Left Rear Wheel Dolly


Pre-Test Right Rear Wheel Dolly

# APPENDIX B

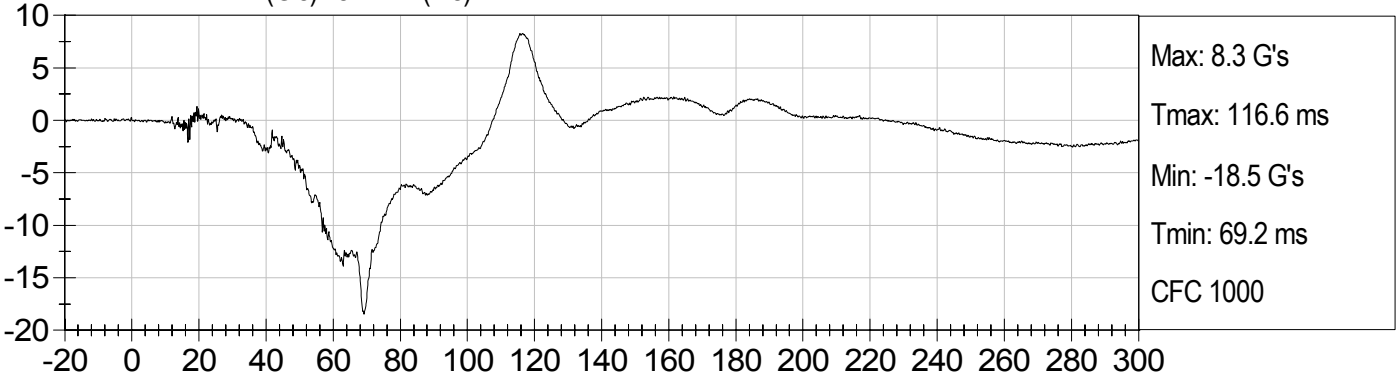
# SID/HIII AND VEHICLE RESPONSE DATA

## TABLE OF DATA PLOTS

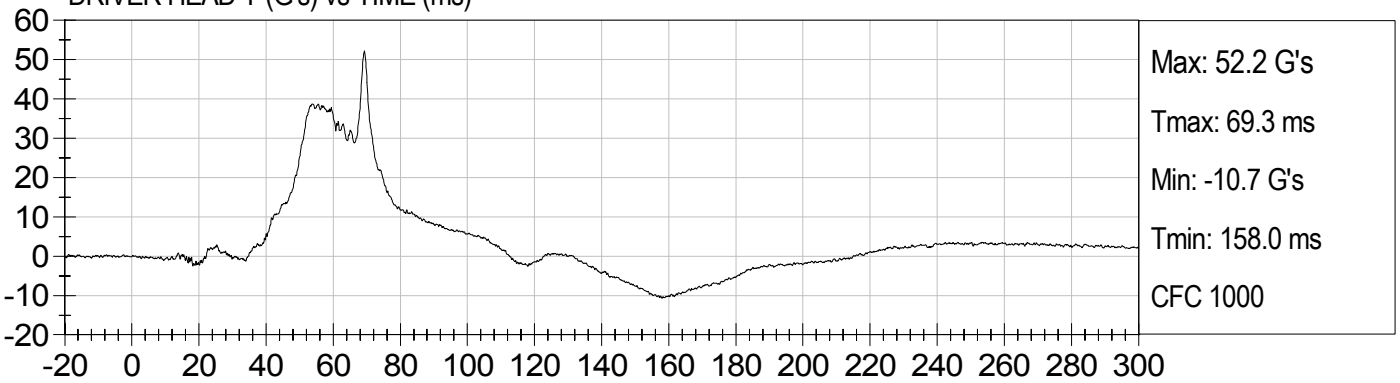
FMVSS 201P RIGID POLE SIDE IMPACT
2006 HONDA CIVIC

Test Date: 09/05/2006
Speed: 17.6 mph (28.3 km/h)

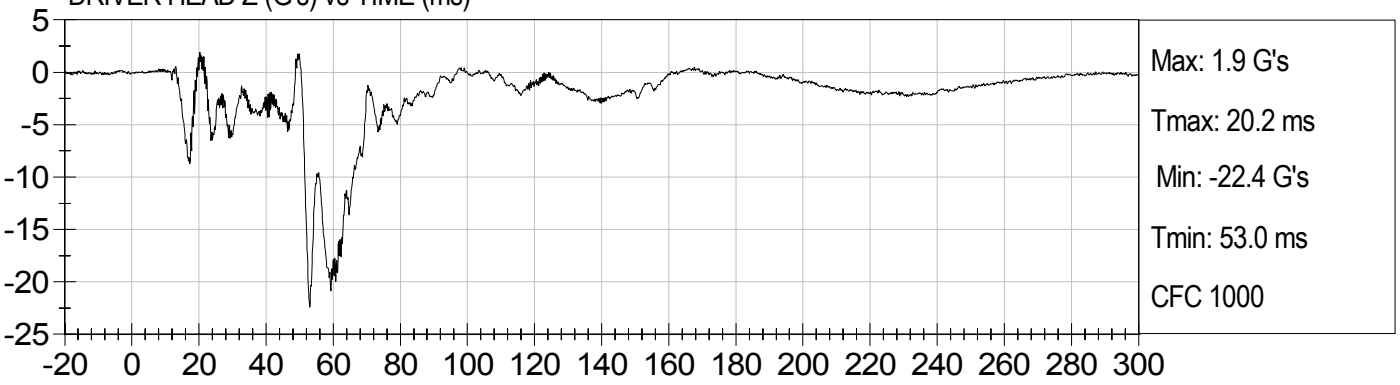
DRIVER HEAD X (G's) vs TIME (ms)



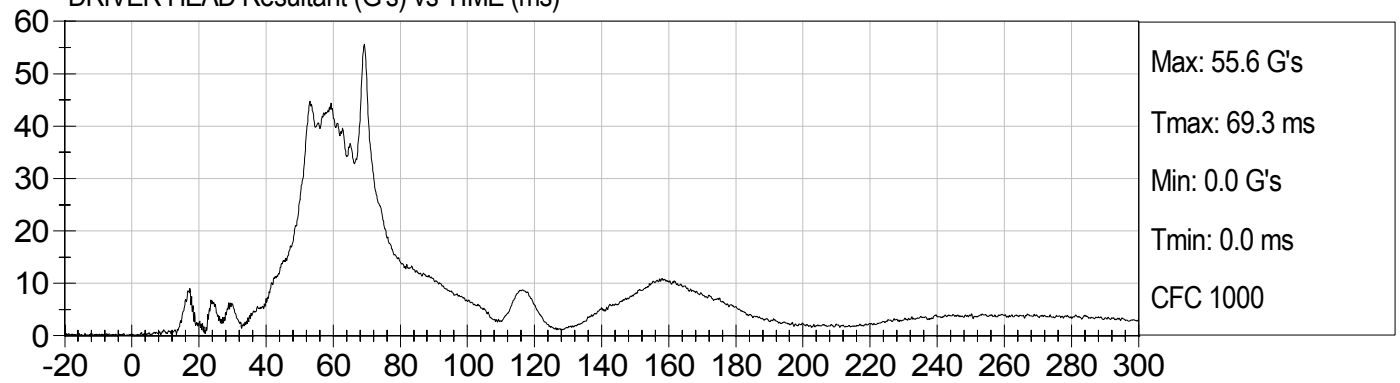

DRIVER HEAD Y (G's) vs TIME (ms)




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

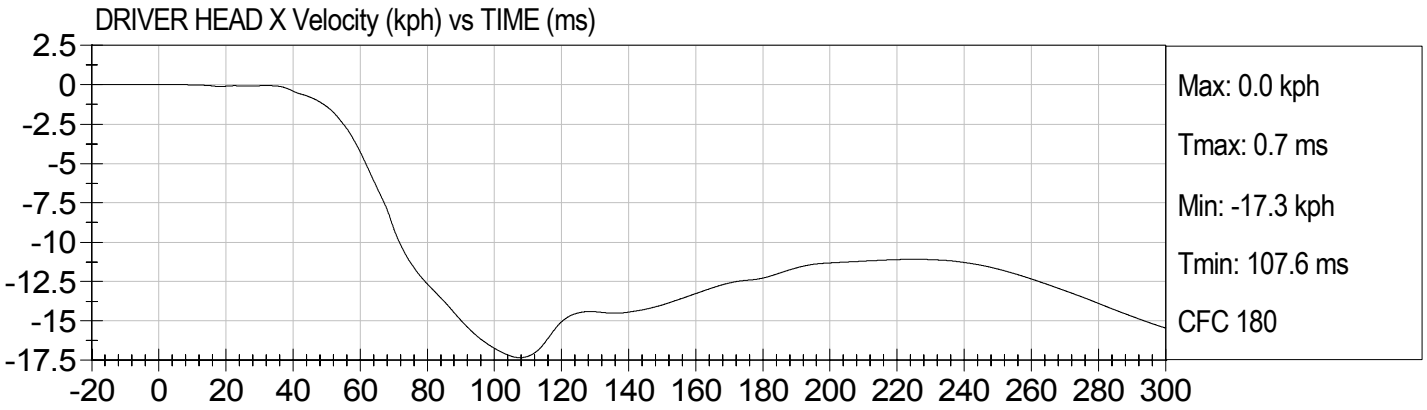


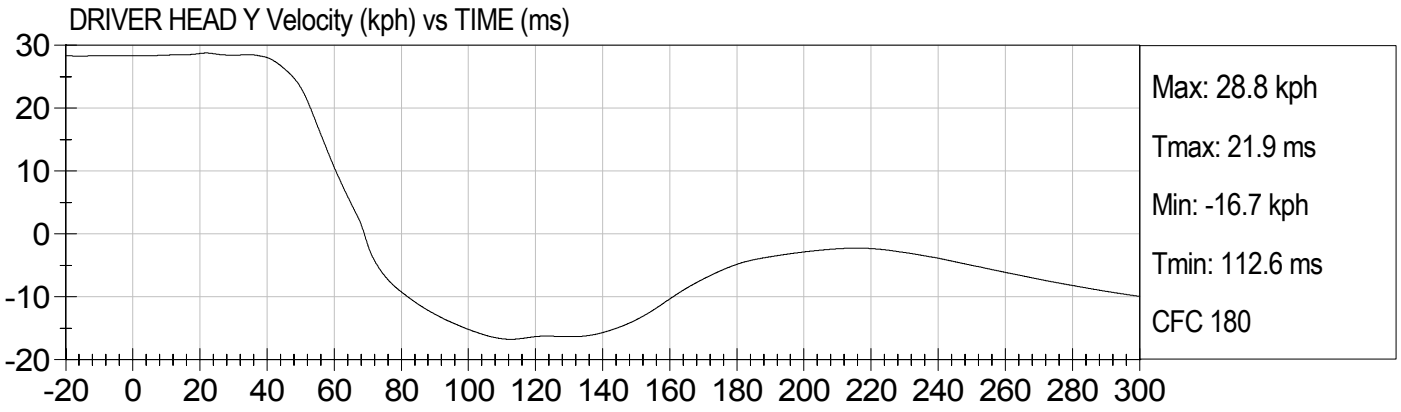

DRIVER HEAD Resultant (G's) vs TIME (ms)

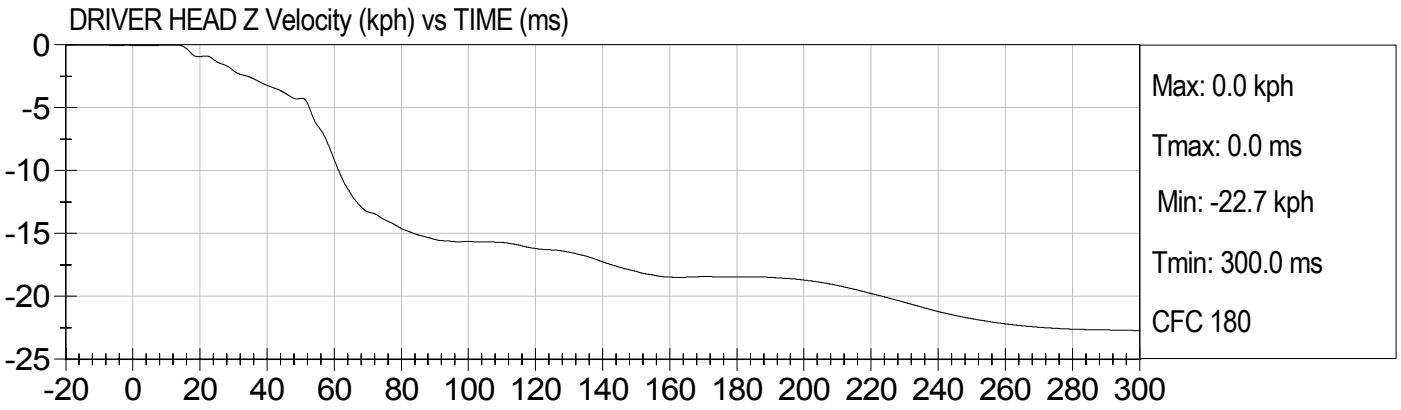


FMVSS 201P RIGID POLE SIDE IMPACT
2006 HONDA CIVIC

Test Date: 09/05/2006
Speed: 17.6 mph (28.3 km/h)



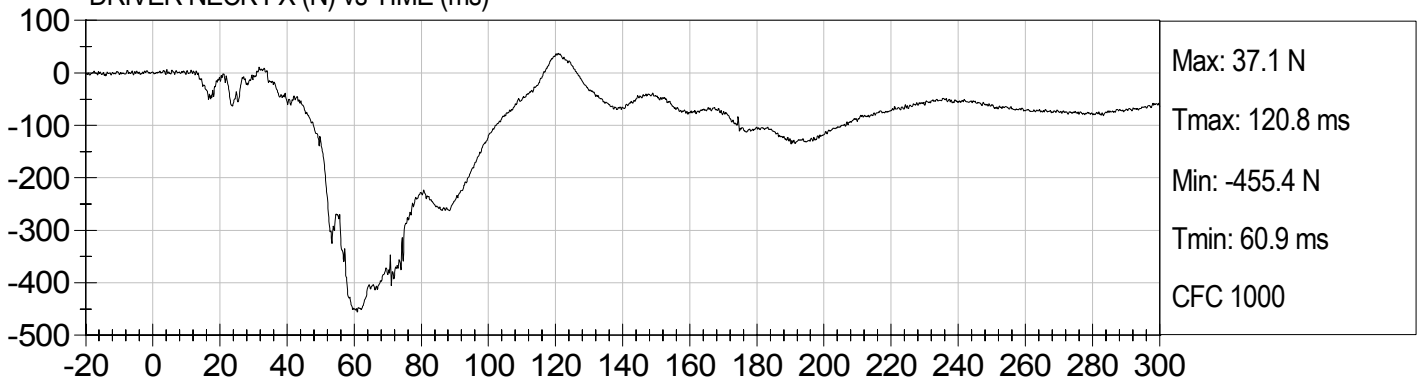



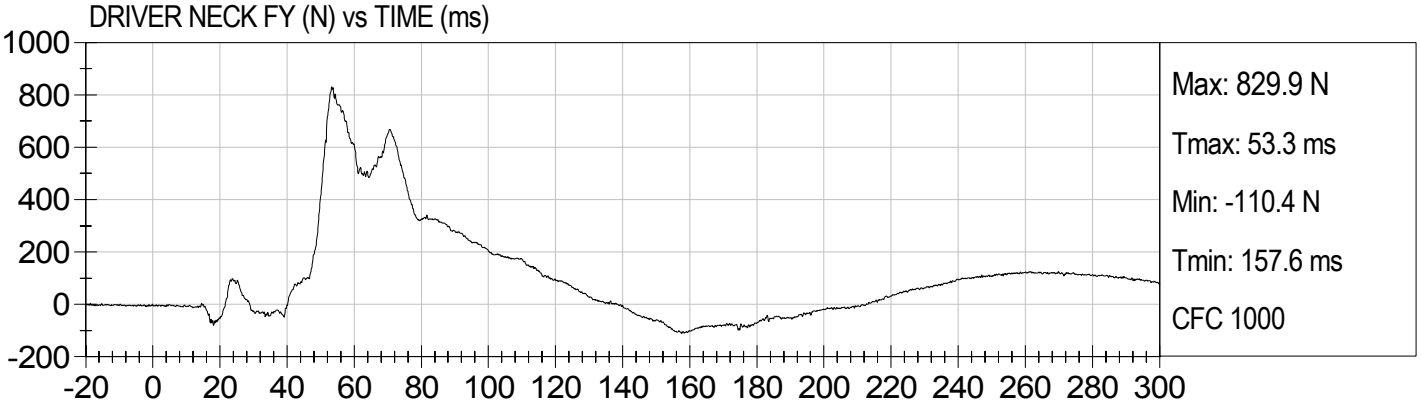
FMVSS 201P RIGID POLE SIDE IMPACT
2006 HONDA CIVIC

Test Date: 09/05/2006
Speed: 17.6 mph (28.3 km/h)

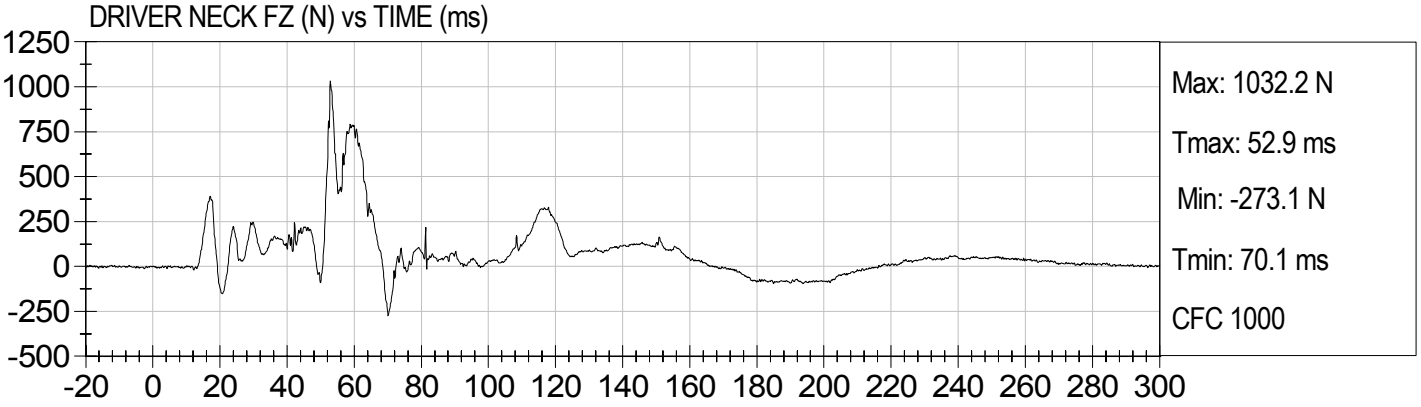
DRIVER NECK FX (N) vs TIME (ms)



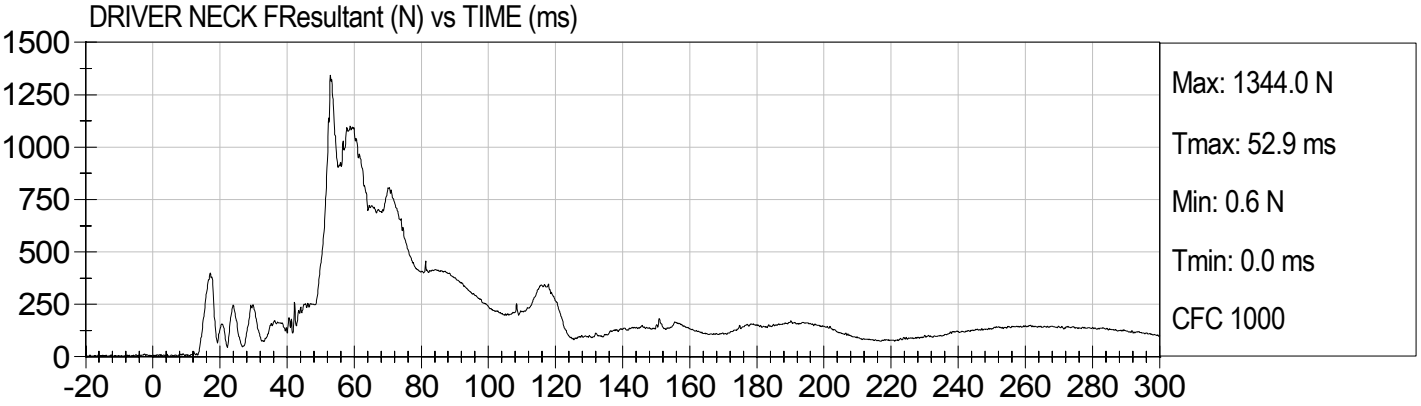

DRIVER NECK FY (N) vs TIME (ms)




DRIVER NECK FZ (N) vs TIME (ms)



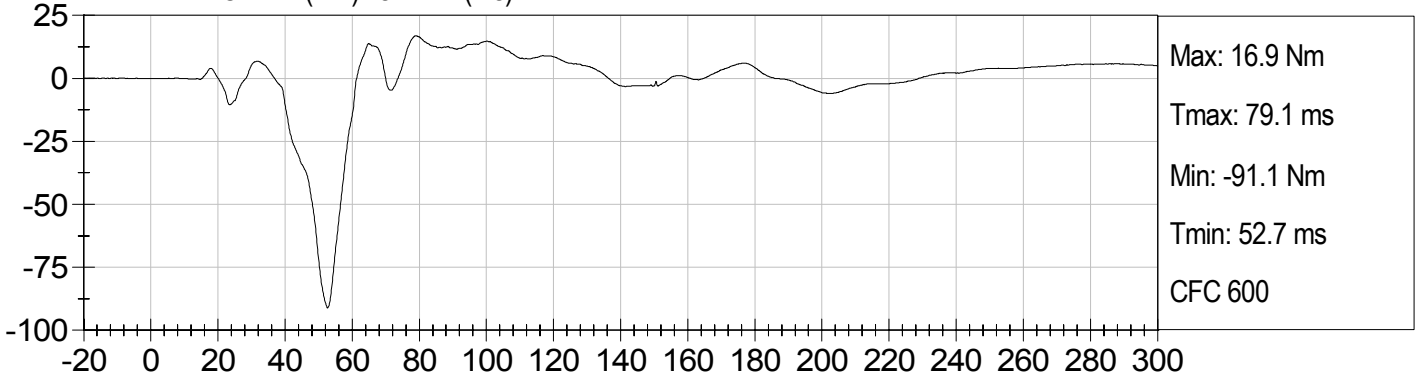

DRIVER NECK FResultant (N) vs TIME (ms)



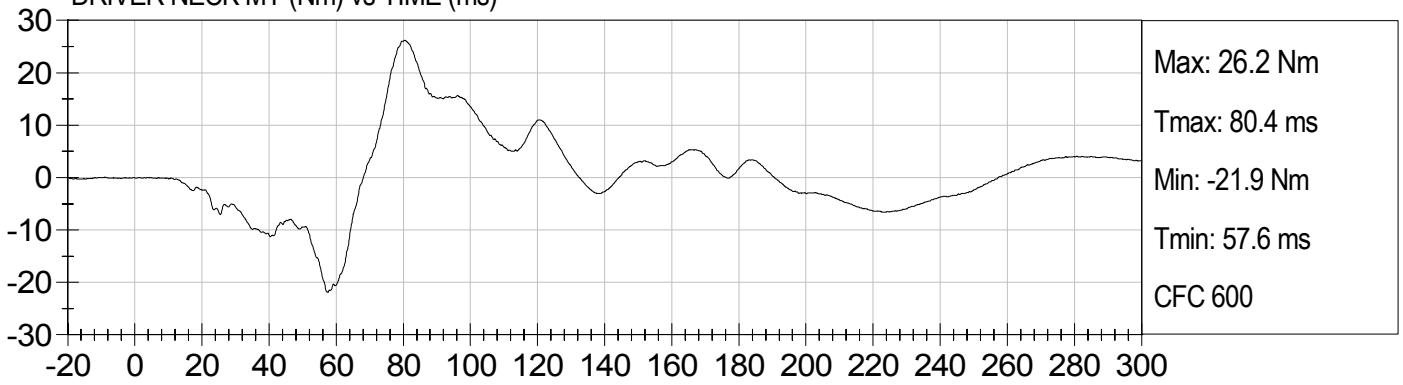
FMVSS 201P RIGID POLE SIDE IMPACT
2006 HONDA CIVIC

Test Date: 09/05/2006
Speed: 17.6 mph (28.3 km/h)

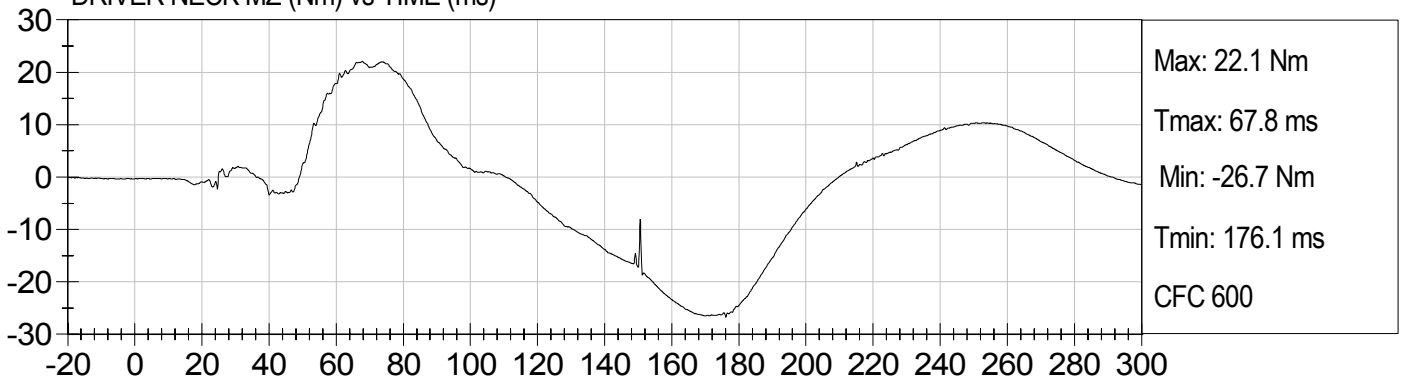
DRIVER NECK MX (Nm) vs TIME (ms)



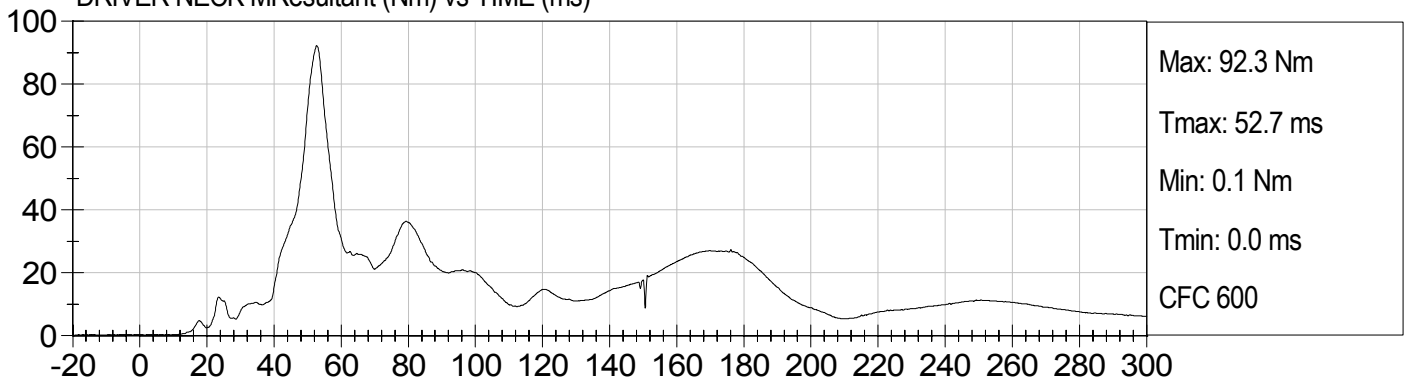

DRIVER NECK MY (Nm) vs TIME (ms)




DRIVER NECK MZ (Nm) vs TIME (ms)



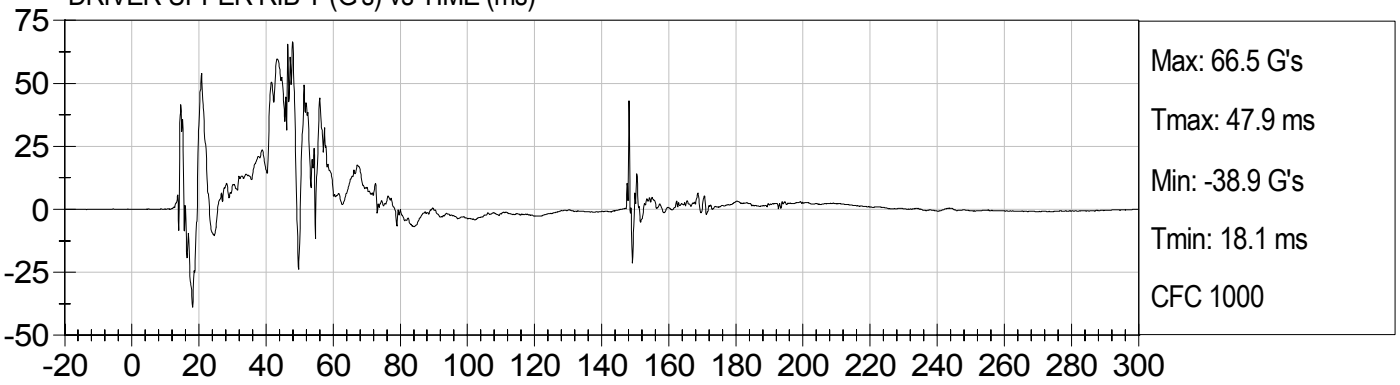

DRIVER NECK MResultant (Nm) vs TIME (ms)



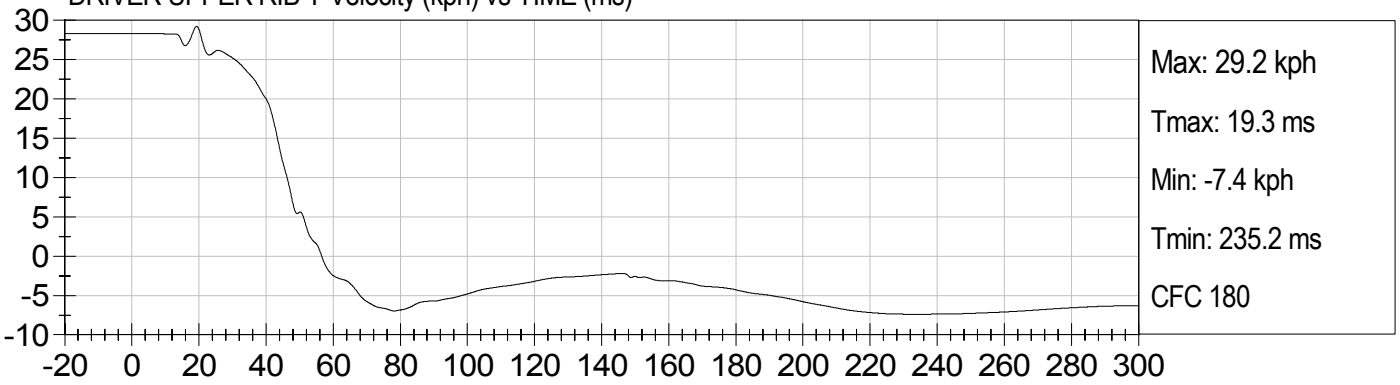
FMVSS 201P RIGID POLE SIDE IMPACT
2006 HONDA CIVIC

Test Date: 09/05/2006
Speed: 17.6 mph (28.3 km/h)

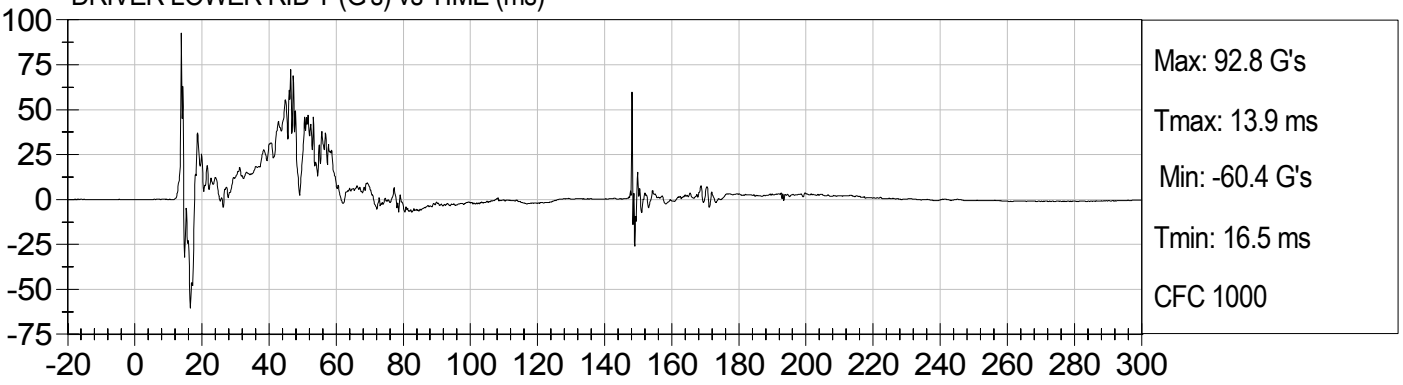
DRIVER UPPER RIB Y (G's) vs TIME (ms)



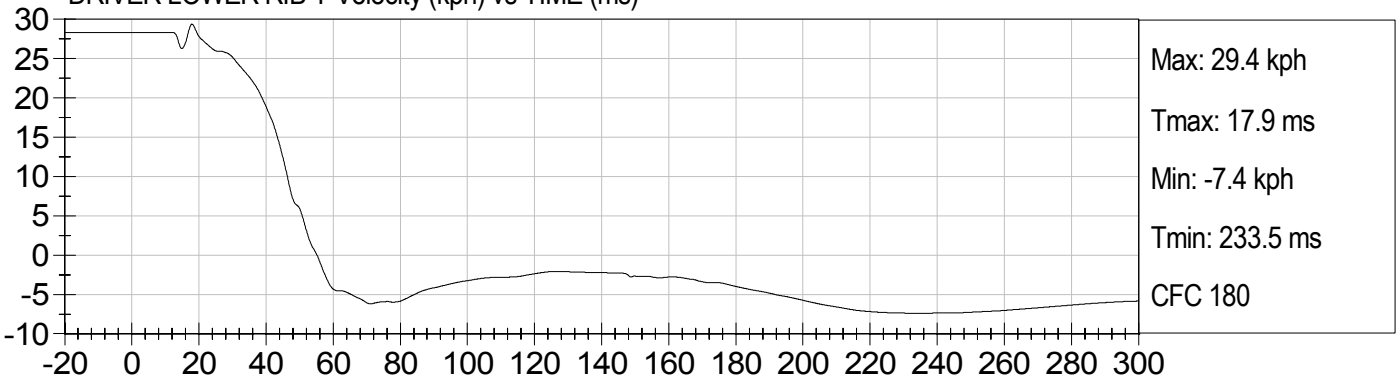

DRIVER UPPER RIB Y Velocity (kph) vs TIME (ms)




DRIVER LOWER RIB Y (G's) vs TIME (ms)



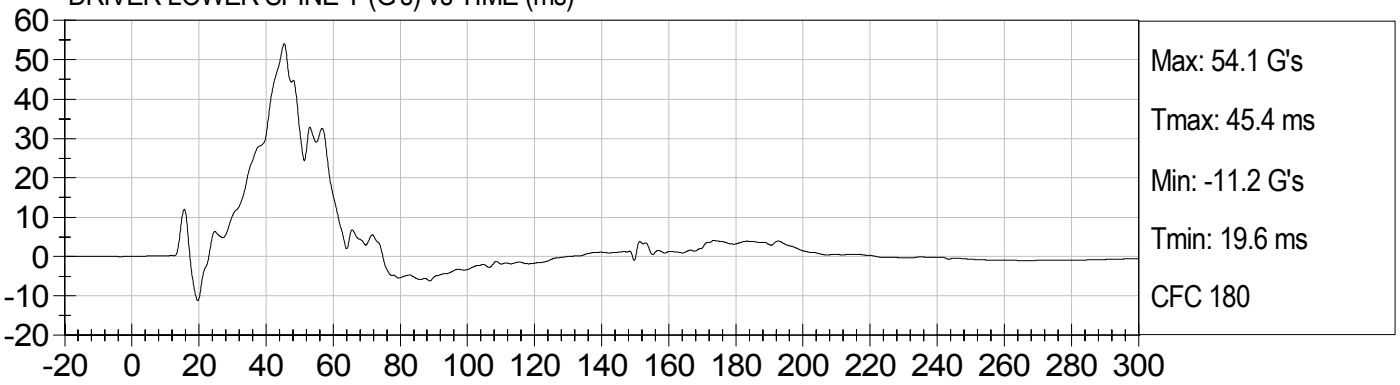

DRIVER LOWER RIB Y Velocity (kph) vs TIME (ms)



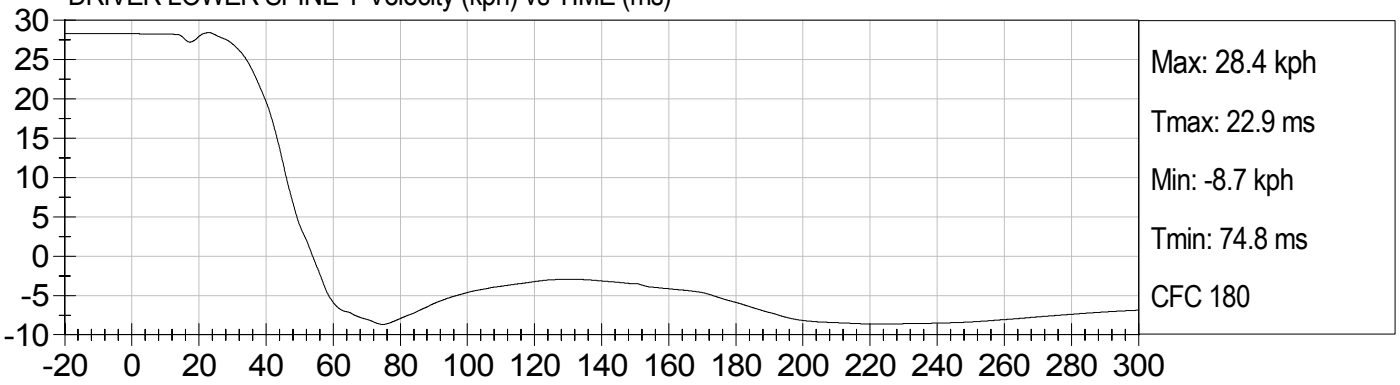
FMVSS 201P RIGID POLE SIDE IMPACT
2006 HONDA CIVIC

Test Date: 09/05/2006
Speed: 17.6 mph (28.3 km/h)

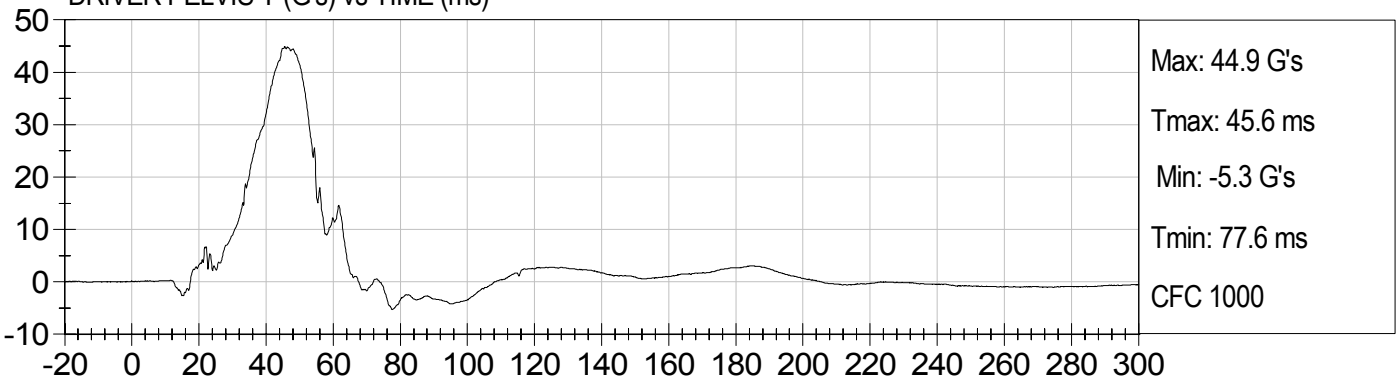
DRIVER LOWER SPINE Y (G's) vs TIME (ms)



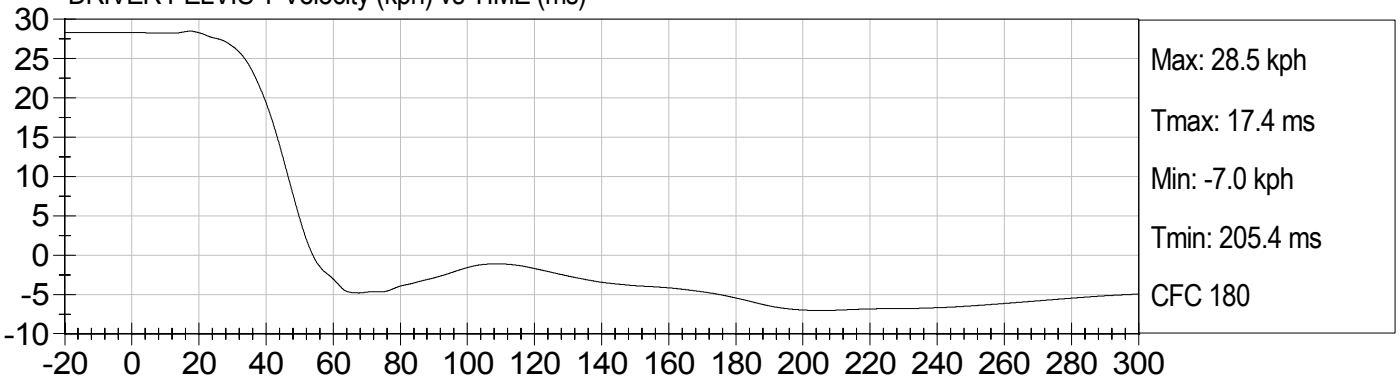

DRIVER LOWER SPINE Y Velocity (kph) vs TIME (ms)




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



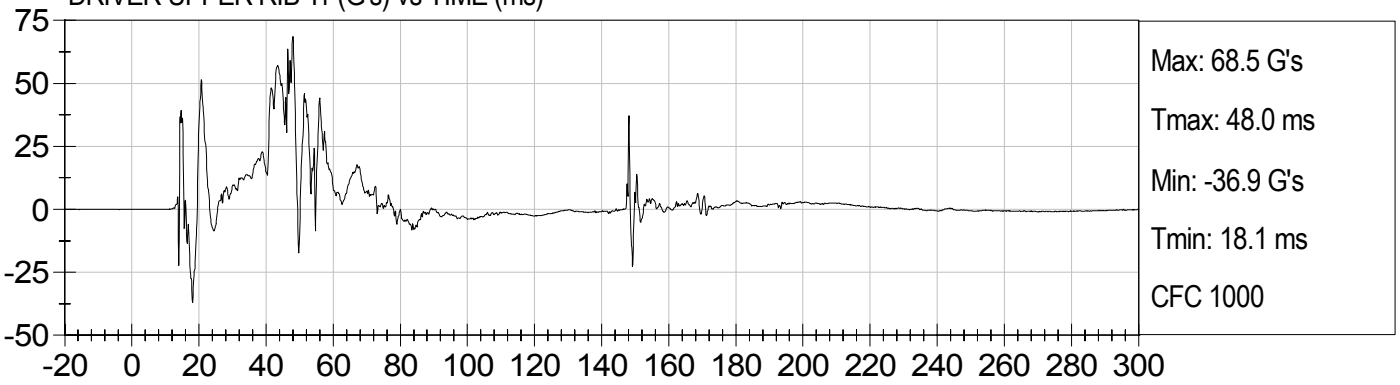

DRIVER PELVIS Y Velocity (kph) vs TIME (ms)



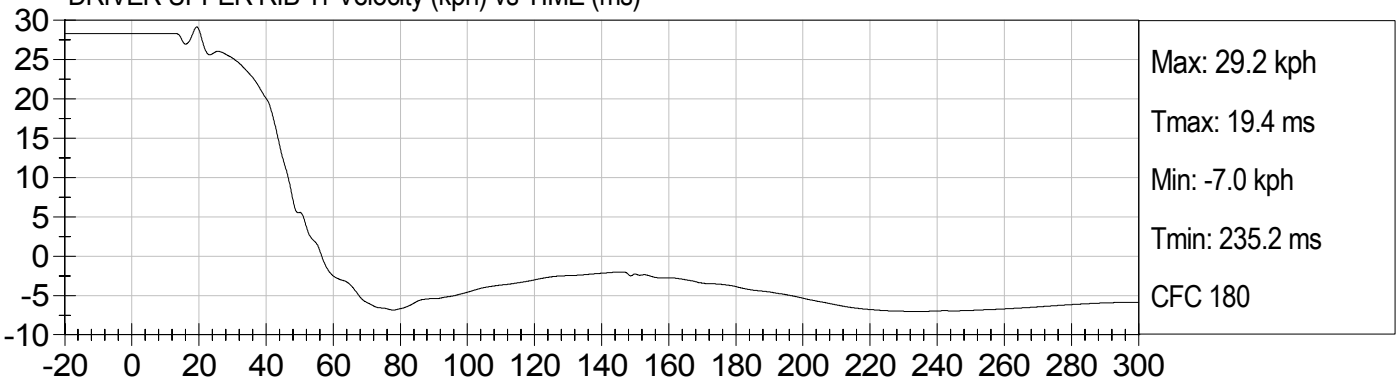
FMVSS 201P RIGID POLE SIDE IMPACT
2006 HONDA CIVIC

Test Date: 09/05/2006
Speed: 17.6 mph (28.3 km/h)

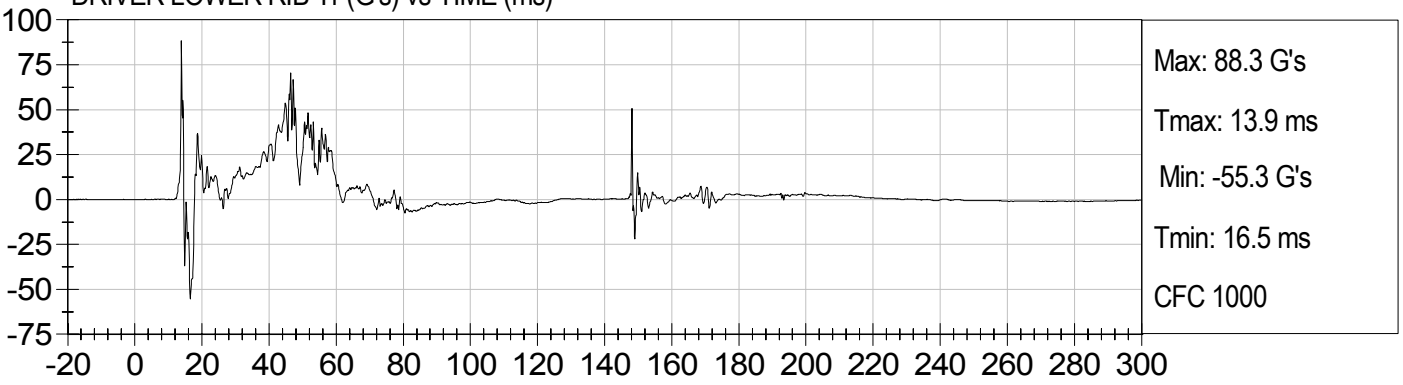
DRIVER UPPER RIB Yr (G's) vs TIME (ms)



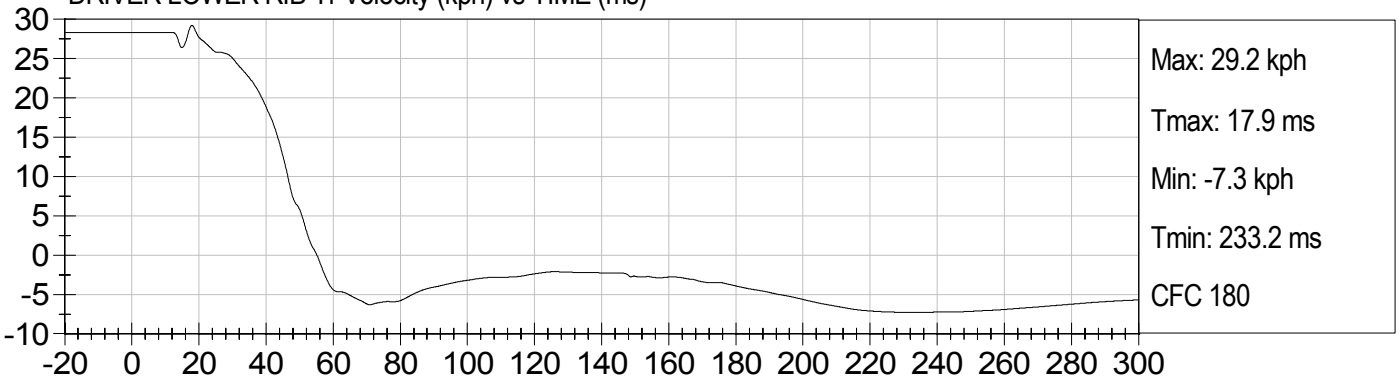

DRIVER UPPER RIB Yr Velocity (kph) vs TIME (ms)




DRIVER LOWER RIB Yr (G's) vs TIME (ms)



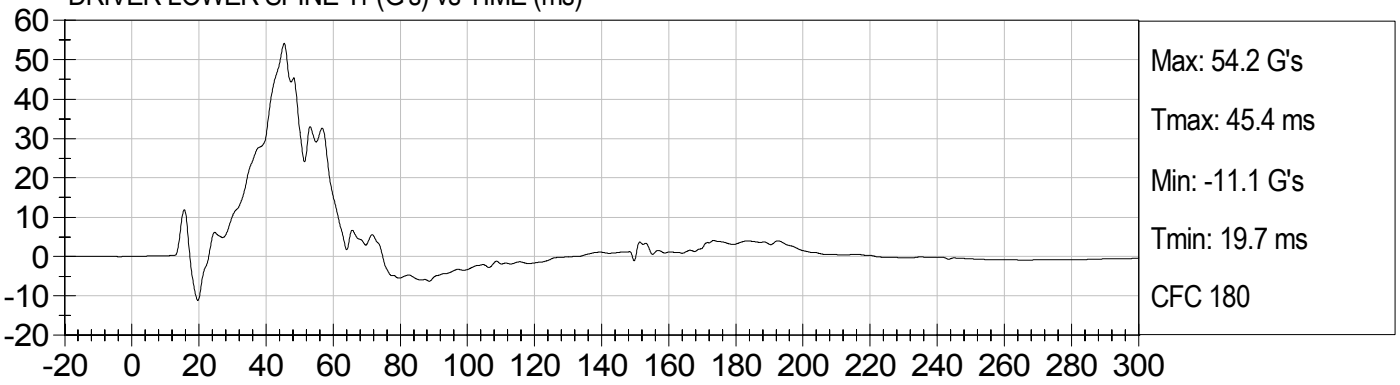

DRIVER LOWER RIB Yr Velocity (kph) vs TIME (ms)



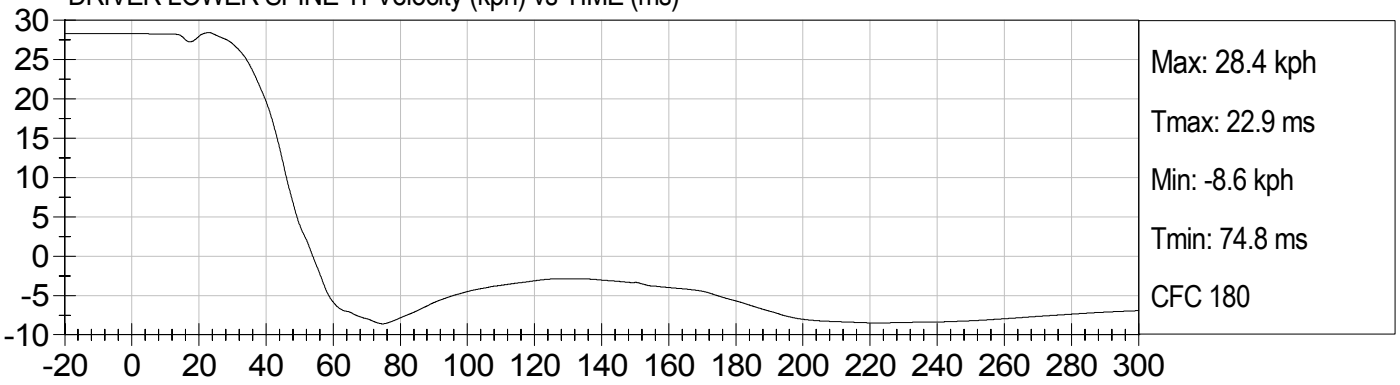
FMVSS 201P RIGID POLE SIDE IMPACT
2006 HONDA CIVIC

Test Date: 09/05/2006
Speed: 17.6 mph (28.3 km/h)

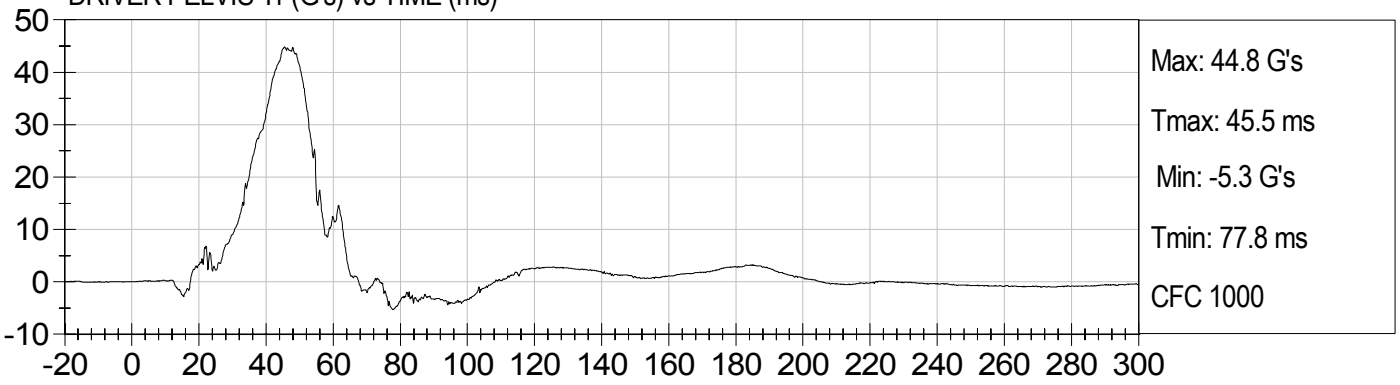
DRIVER LOWER SPINE Yr (G's) vs TIME (ms)



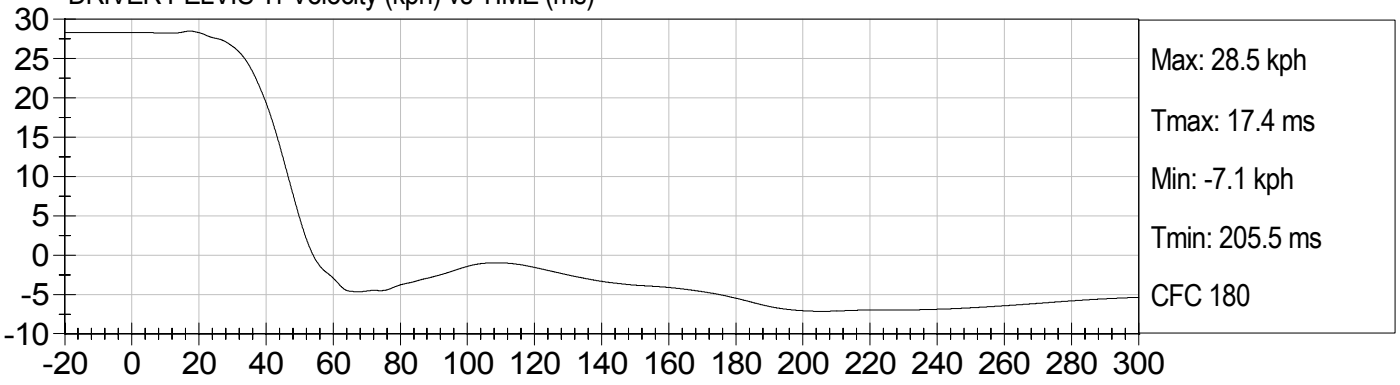

DRIVER LOWER SPINE Yr Velocity (kph) vs TIME (ms)



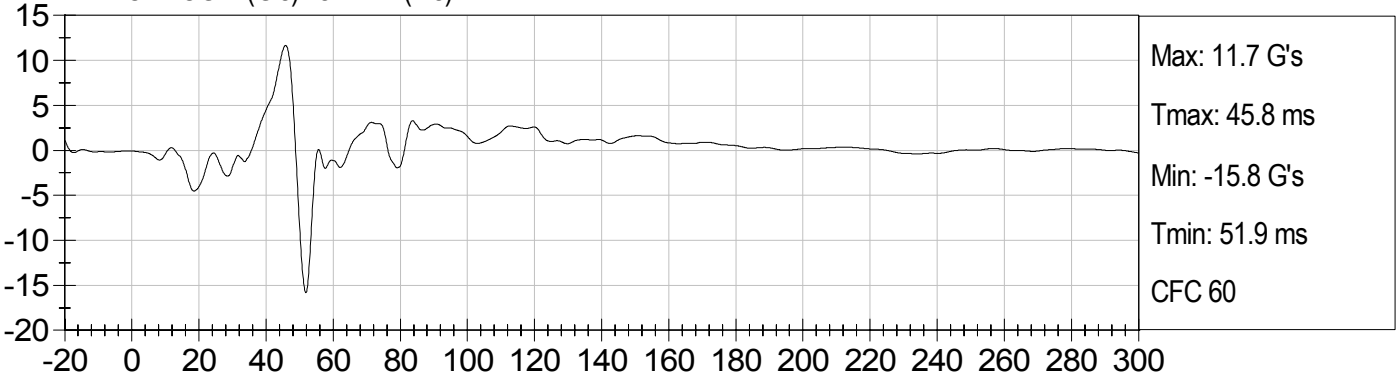

DRIVER PELVIS Yr (G's) vs TIME (ms)



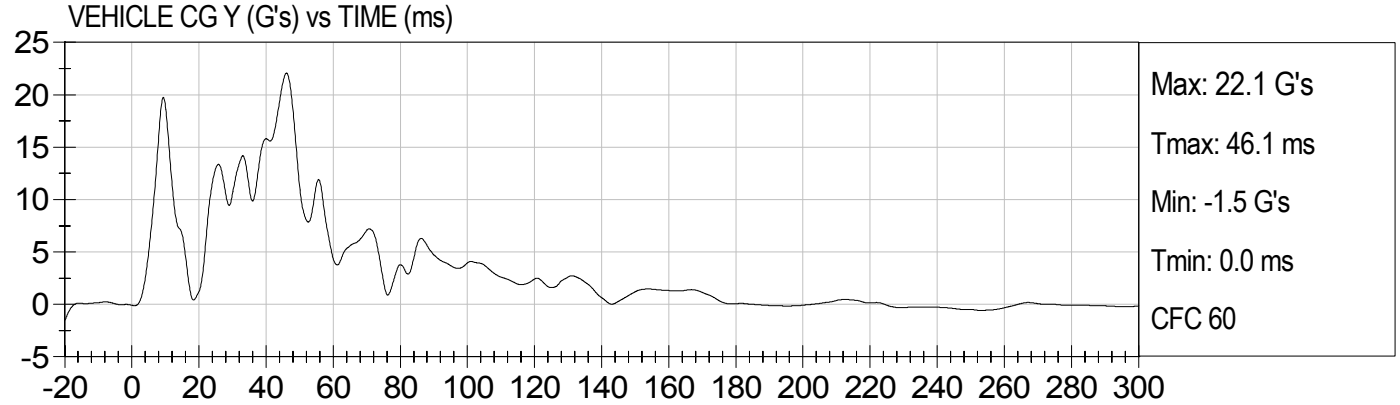

DRIVER PELVIS Yr Velocity (kph) vs TIME (ms)



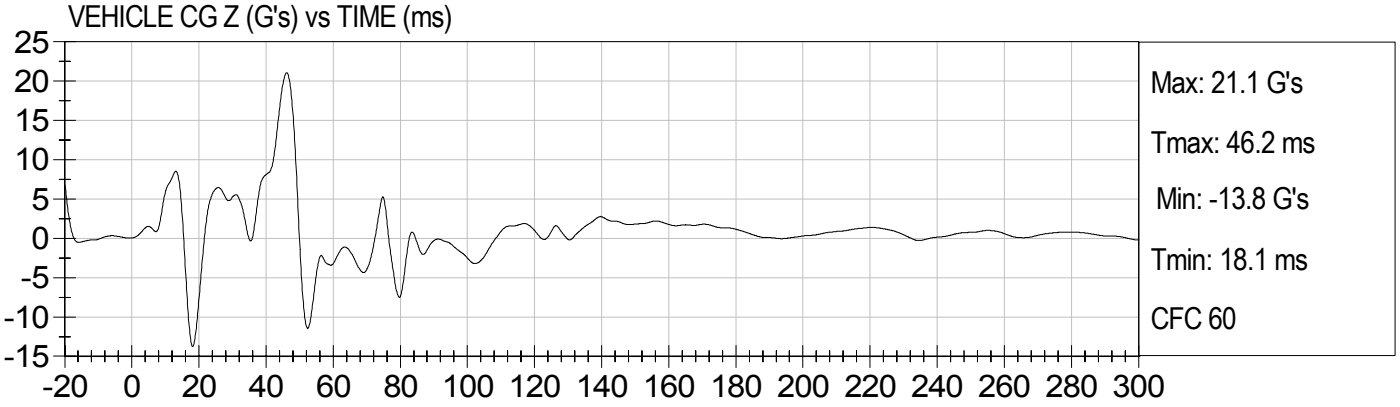
VEHICLE CG X (G's) vs TIME (ms)



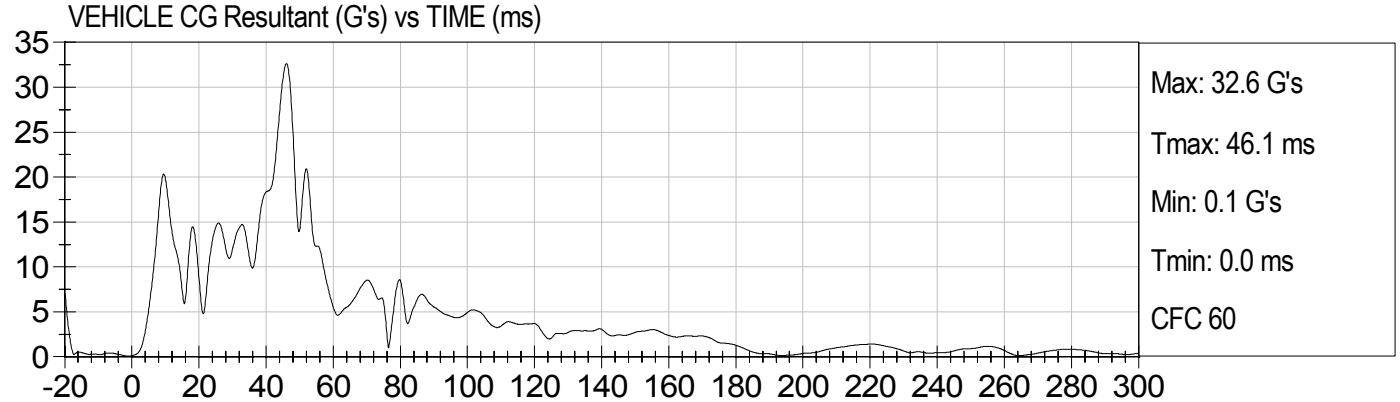

VEHICLE CG Y (G's) vs TIME (ms)

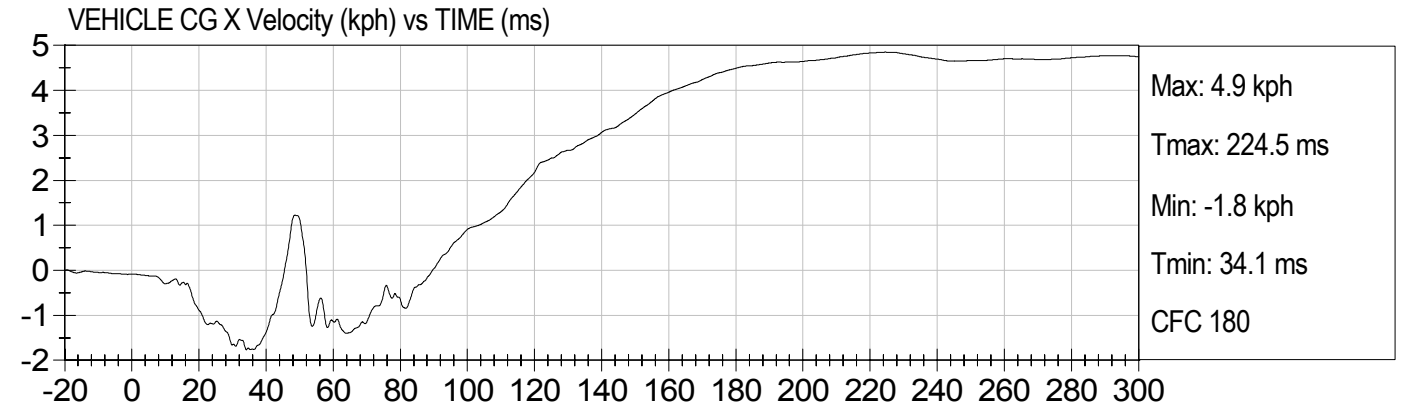


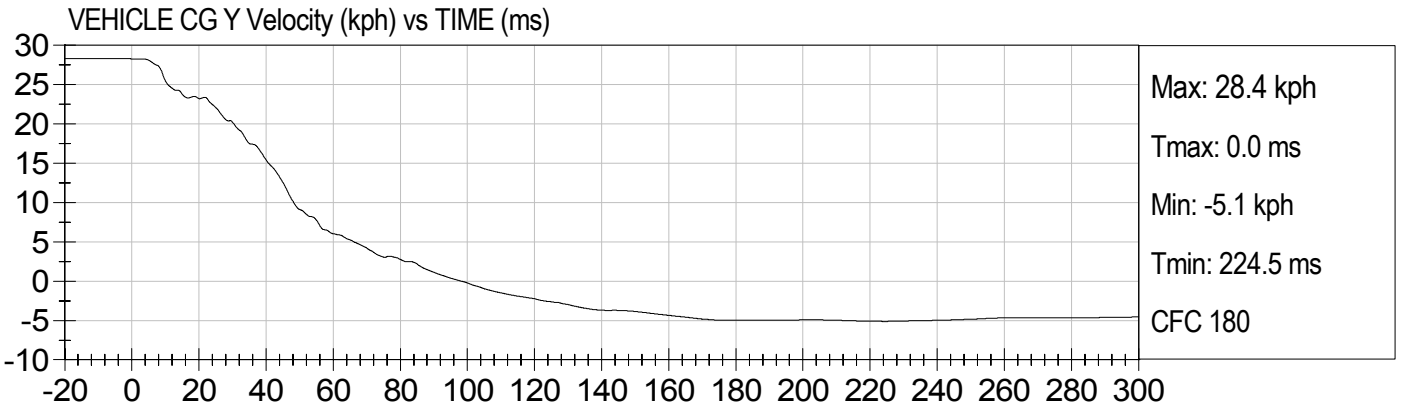

VEHICLE CG Z (G's) vs TIME (ms)

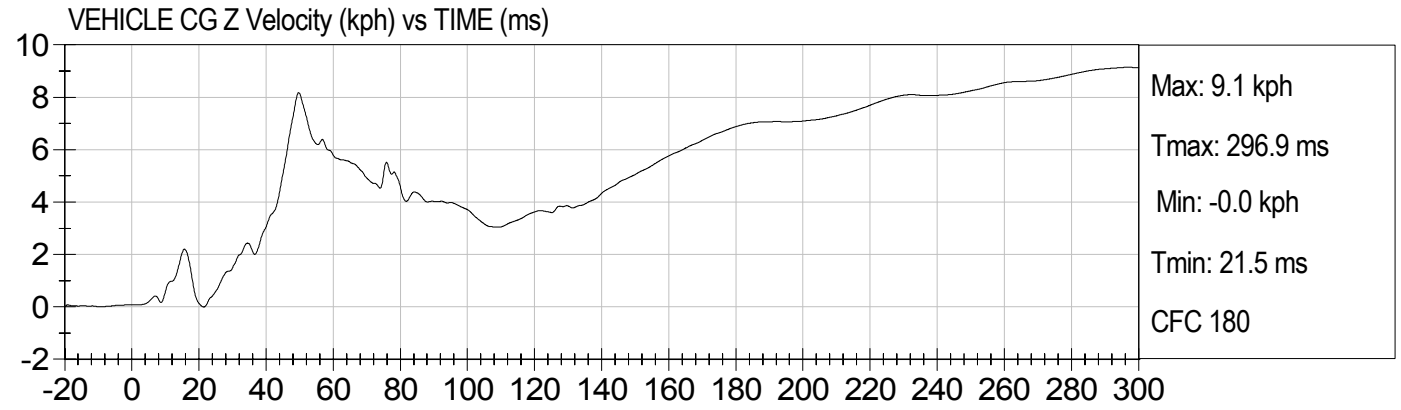



VEHICLE CG Resultant (G's) vs TIME (ms)




VEHICLE CG X Velocity (kph) vs TIME (ms)
5
4
3
2
1
0
-1
-2
-20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300
Max: 4.9 kph
Tmax: 224.5 ms
Min: -1.8 kph
Tmin: 34.1 ms
CFC 180

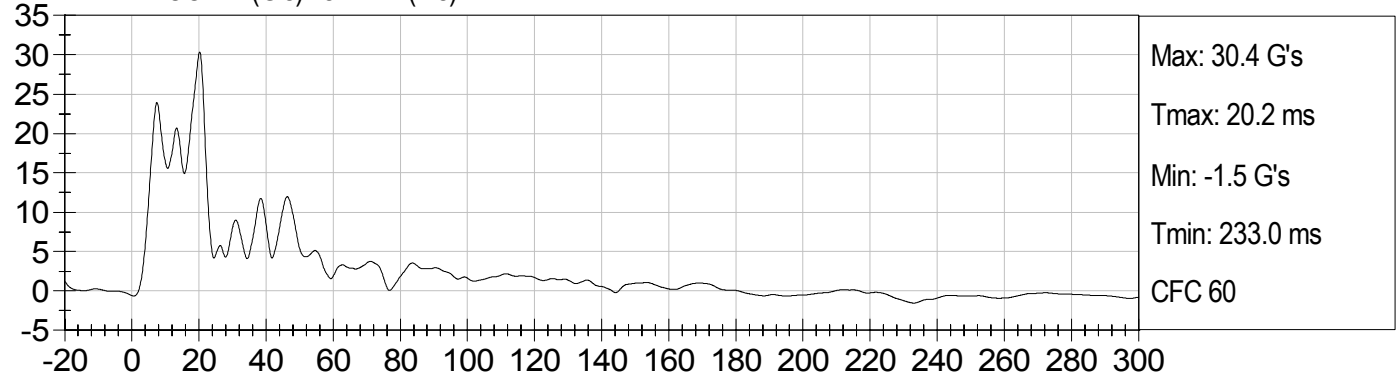

VEHICLE CG Y Velocity (kph) vs TIME (ms)
30
25
20
15
10
5
0
-5
-10
-20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300
Max: 28.4 kph
Tmax: 0.0 ms
Min: -5.1 kph
Tmin: 224.5 ms
CFC 180


VEHICLE CG Z Velocity (kph) vs TIME (ms)
10
8
6
4
2
0
-2
-20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300
Max: 9.1 kph
Tmax: 296.9 ms
Min: -0.0 kph
Tmin: 21.5 ms
CFC 180

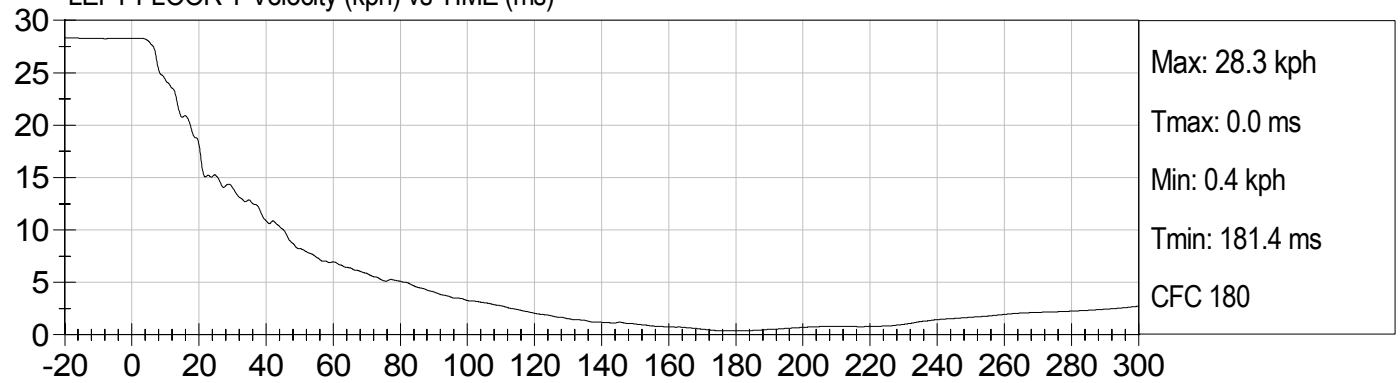
FMVSS 201P RIGID POLE SIDE IMPACT
2006 HONDA CIVIC

Test Date: 09/05/2006
Speed: 17.6 mph (28.3 km/h)

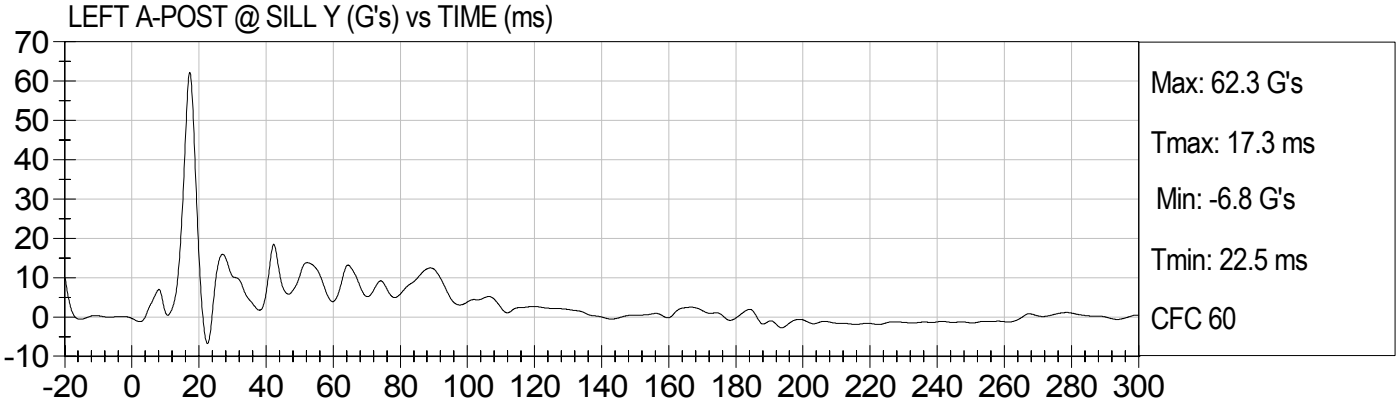
LEFT FLOOR Y (G's) vs TIME (ms)



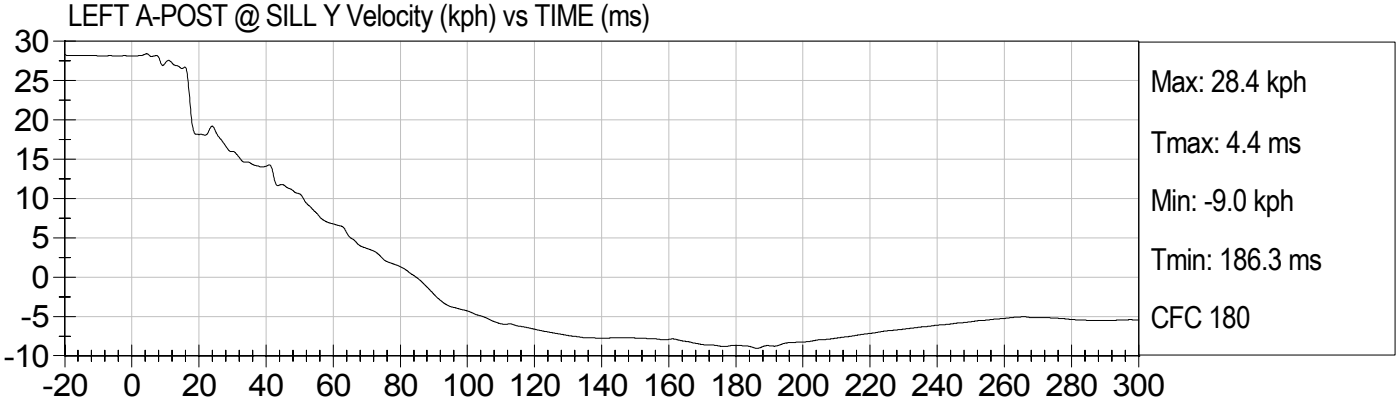

LEFT FLOOR Y Velocity (kph) vs TIME (ms)




LEFT A-POST @ SILL Y (G's) vs TIME (ms)



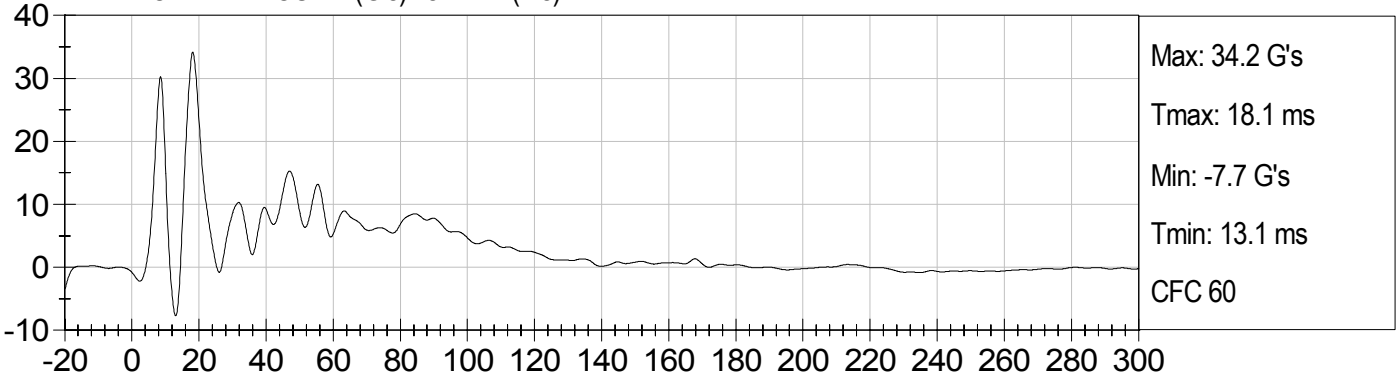

LEFT A-POST @ SILL Y Velocity (kph) vs TIME (ms)



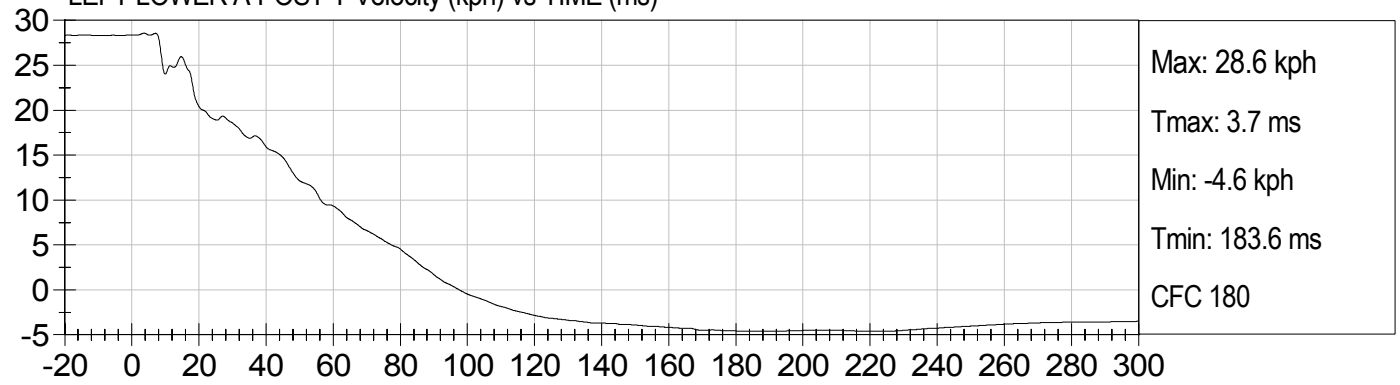
FMVSS 201P RIGID POLE SIDE IMPACT
2006 HONDA CIVIC

Test Date: 09/05/2006
Speed: 17.6 mph (28.3 km/h)

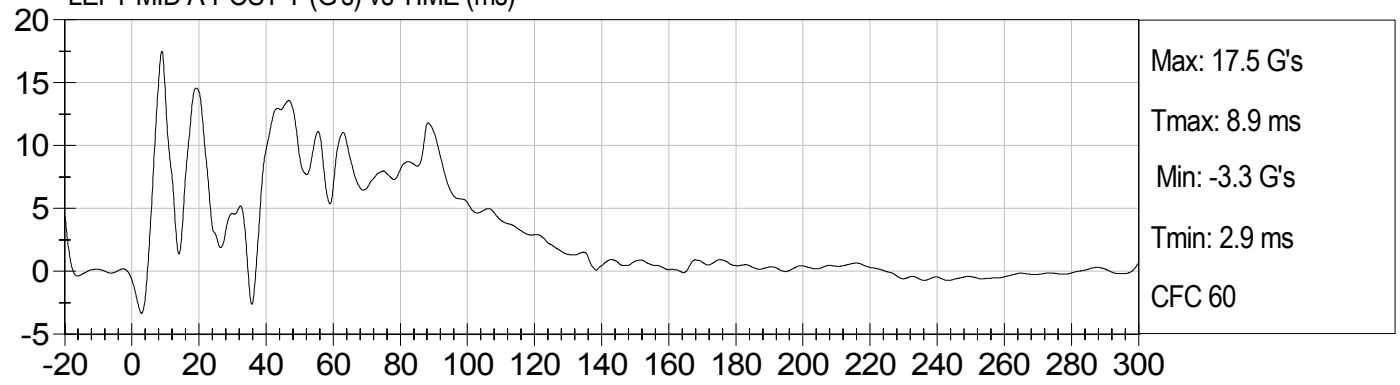
LEFT LOWER A-POST Y (G's) vs TIME (ms)



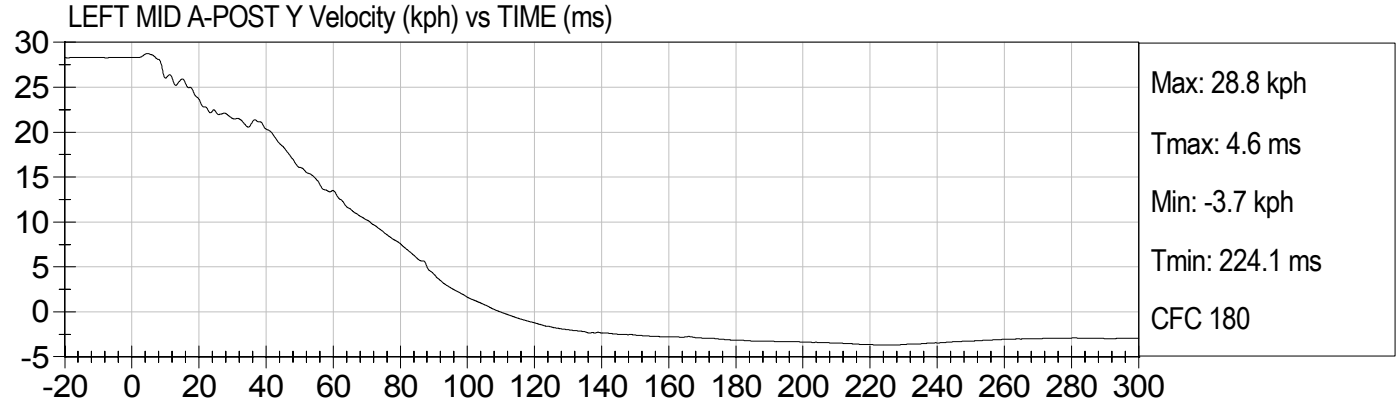

LEFT LOWER A-POST Y Velocity (kph) vs TIME (ms)



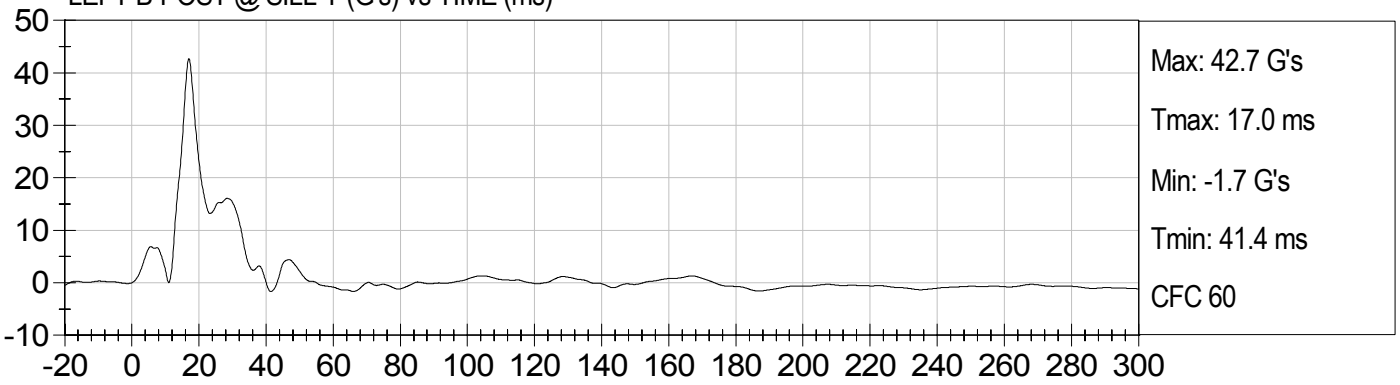

LEFT MID A-POST Y (G's) vs TIME (ms)



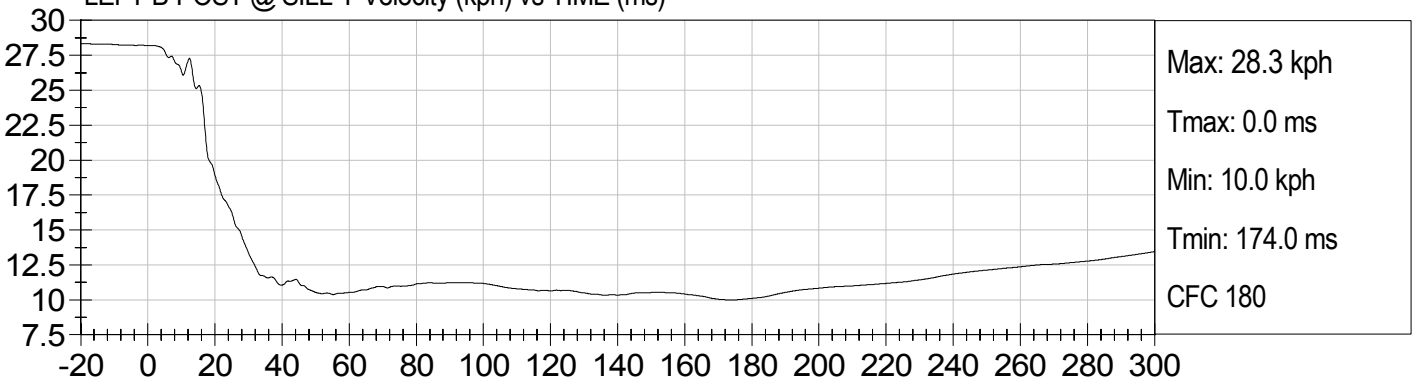

LEFT MID A-POST Y Velocity (kph) vs TIME (ms)



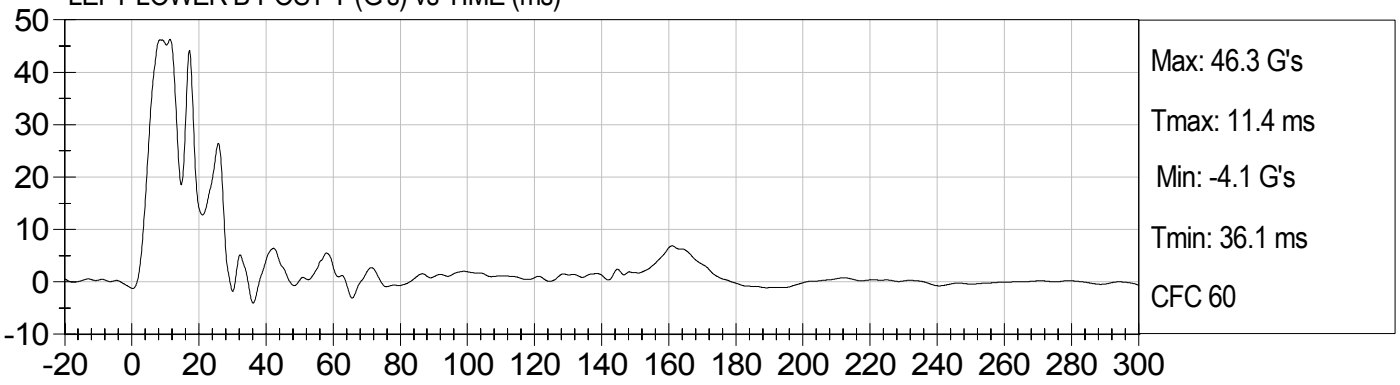
LEFT B-POST @ SILL Y (G's) vs TIME (ms)



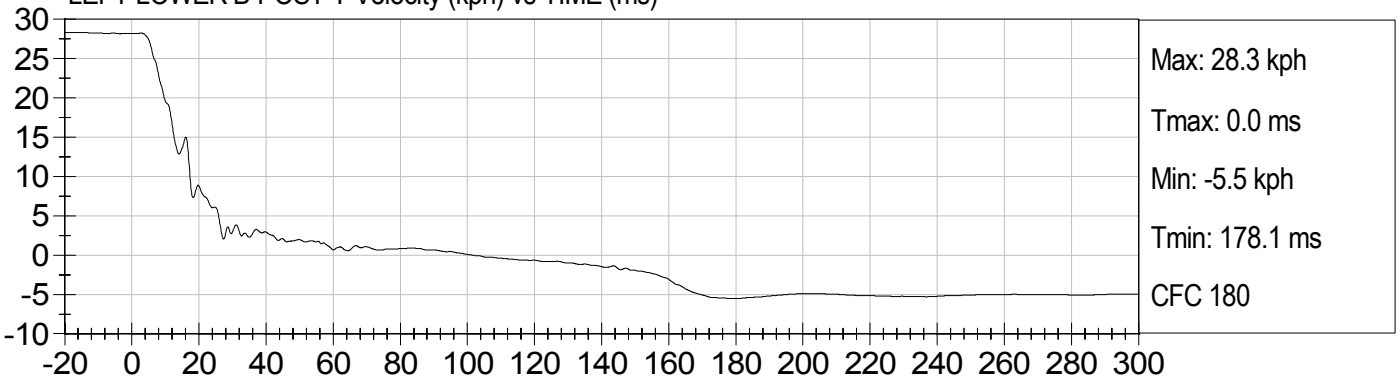

LEFT B-POST @ SILL Y Velocity (kph) vs TIME (ms)



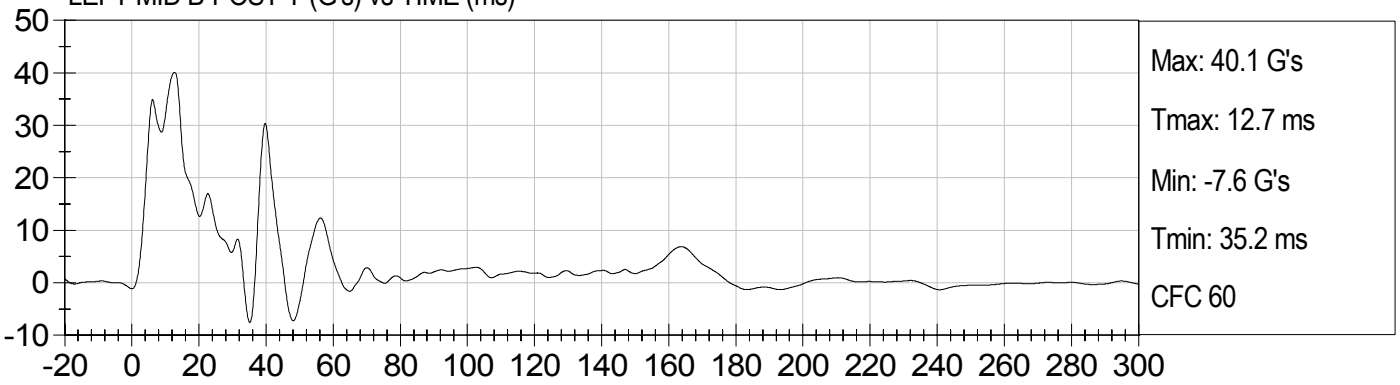

LEFT LOWER B-POST Y (G's) vs TIME (ms)



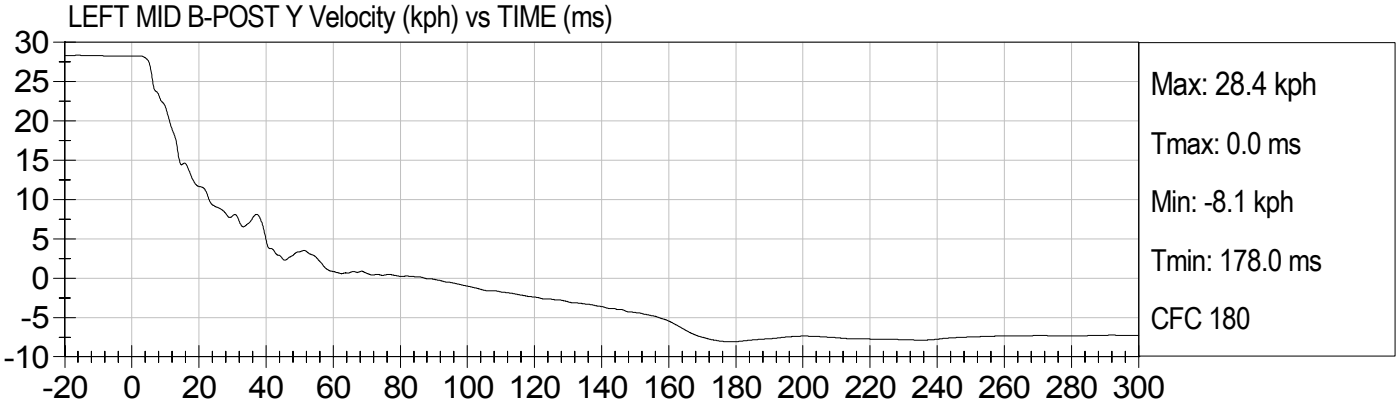

LEFT LOWER B-POST Y Velocity (kph) vs TIME (ms)



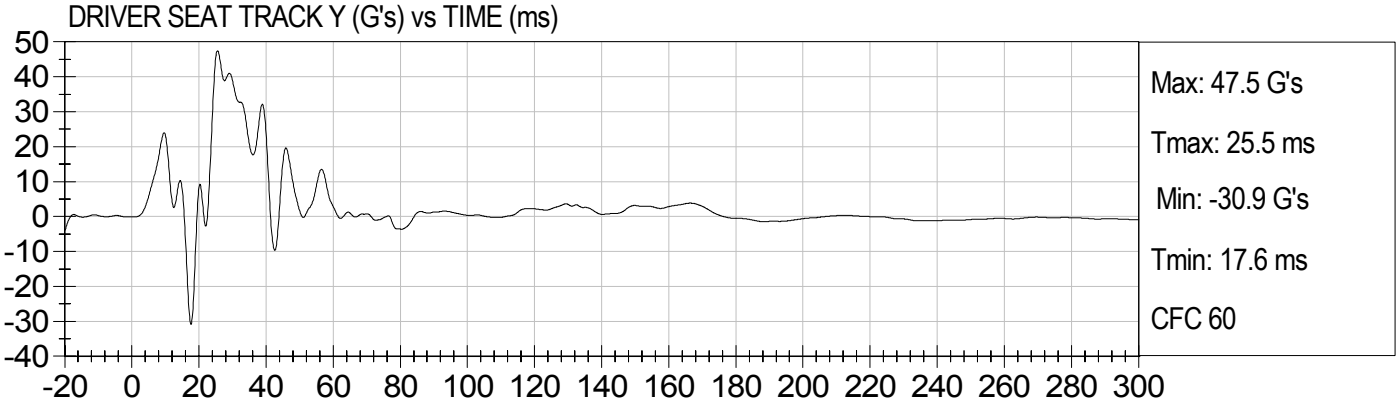
LEFT MID B-POST Y (G's) vs TIME (ms)



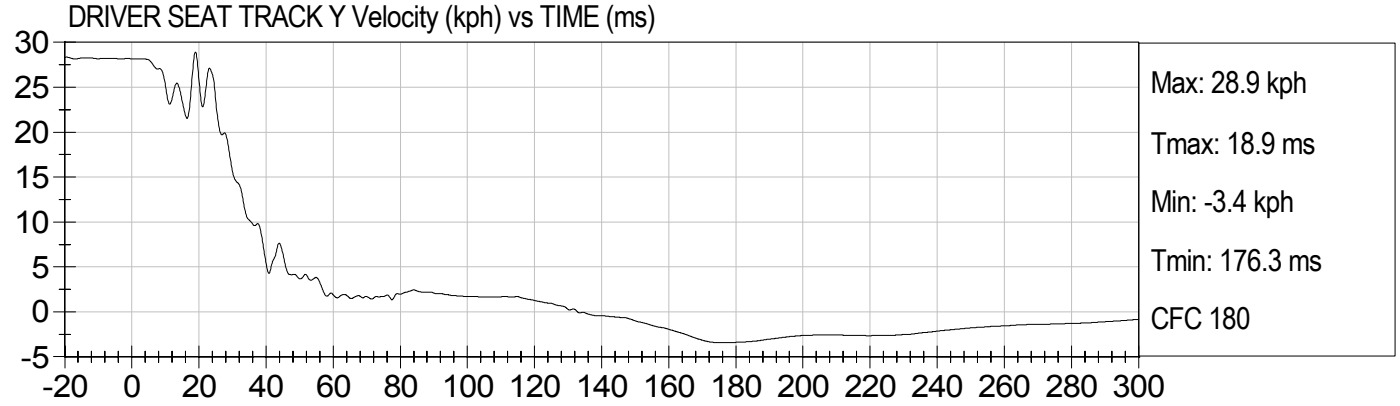

LEFT MID B-POST Y Velocity (kph) vs TIME (ms)

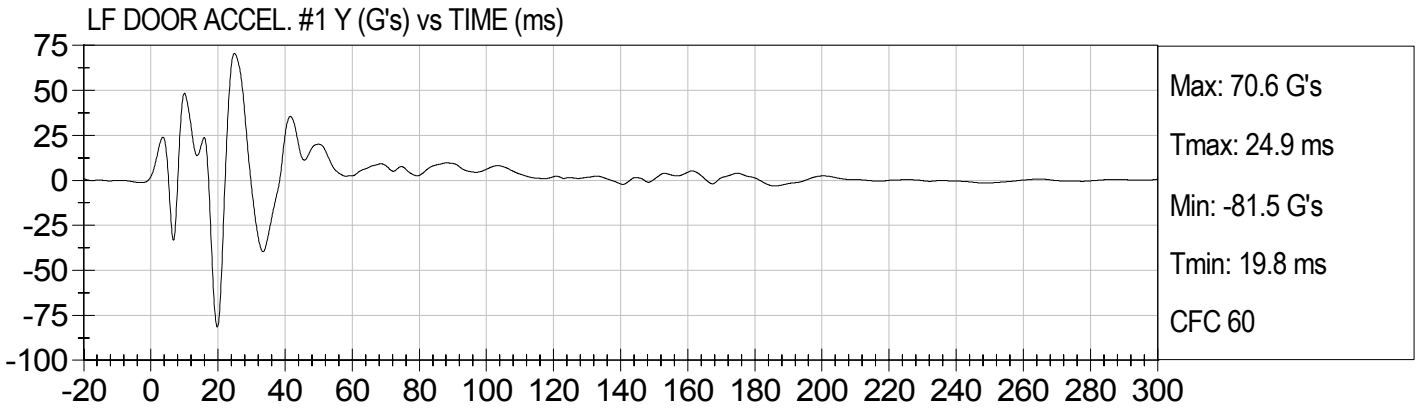


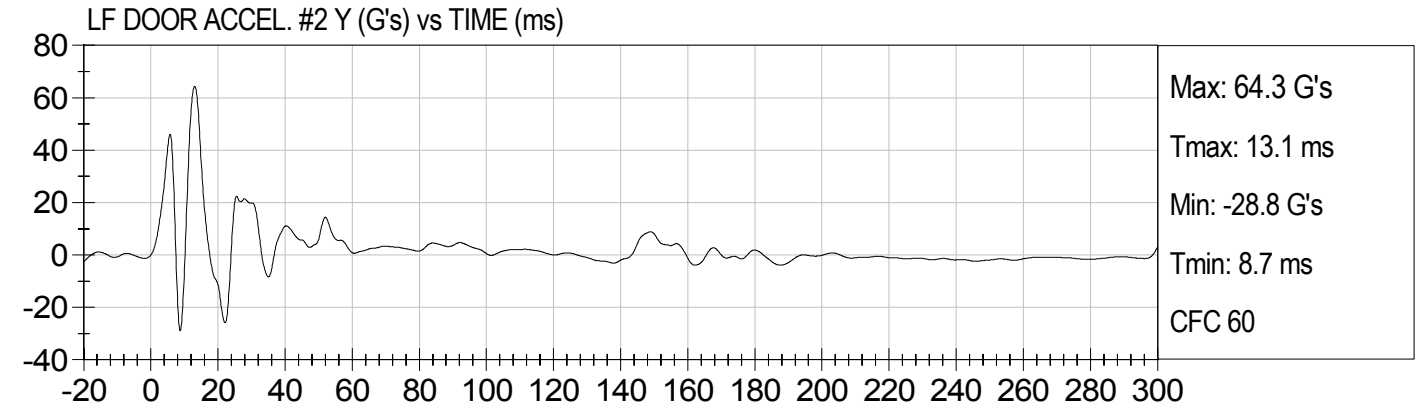

DRIVER SEAT TRACK Y (G's) vs TIME (ms)

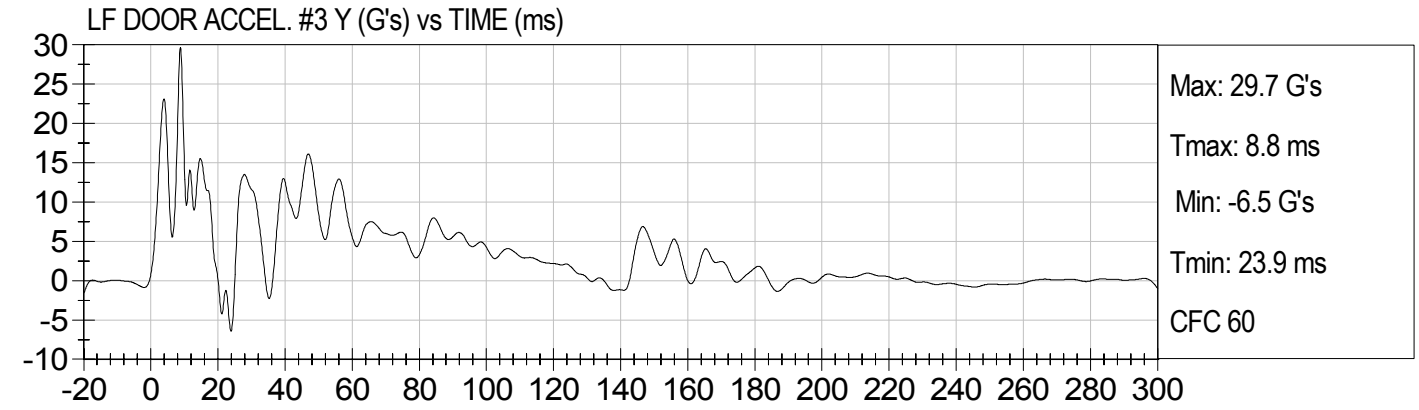



DRIVER SEAT TRACK Y Velocity (kph) vs TIME (ms)

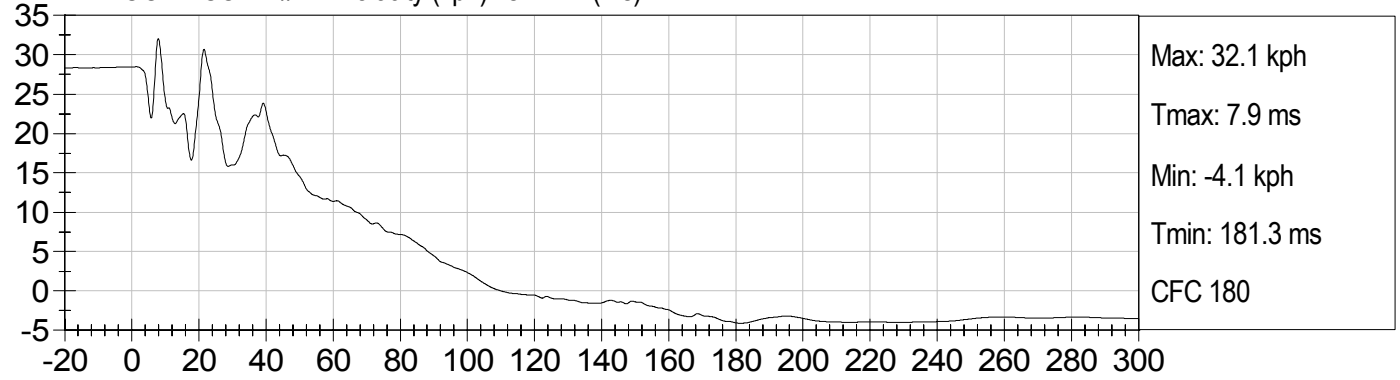



LF DOOR ACCEL. #1 Y (G's) vs TIME (ms)
75
50
25
0
-25
-50
-75
-100
-20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300
Max: 70.6 G's
Tmax: 24.9 ms
Min: -81.5 G's
Tmin: 19.8 ms
CFC 60

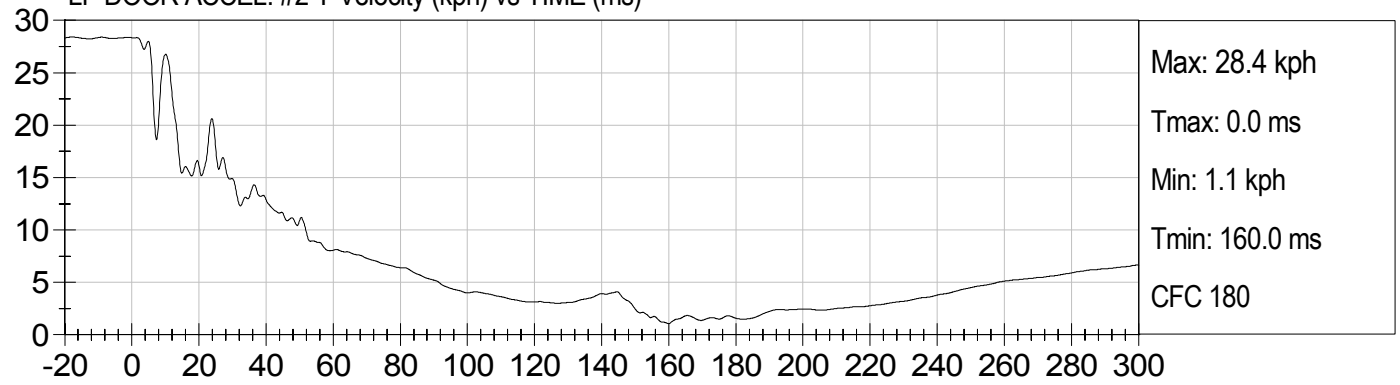

LF DOOR ACCEL. #2 Y (G's) vs TIME (ms)
80
60
40
20
0
-20
-40
-20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300
Max: 64.3 G's
Tmax: 13.1 ms
Min: -28.8 G's
Tmin: 8.7 ms
CFC 60


LF DOOR ACCEL. #3 Y (G's) vs TIME (ms)
30
25
20
15
10
5
0
-5
-10
-20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300
Max: 29.7 G's
Tmax: 8.8 ms
Min: -6.5 G's
Tmin: 23.9 ms
CFC 60

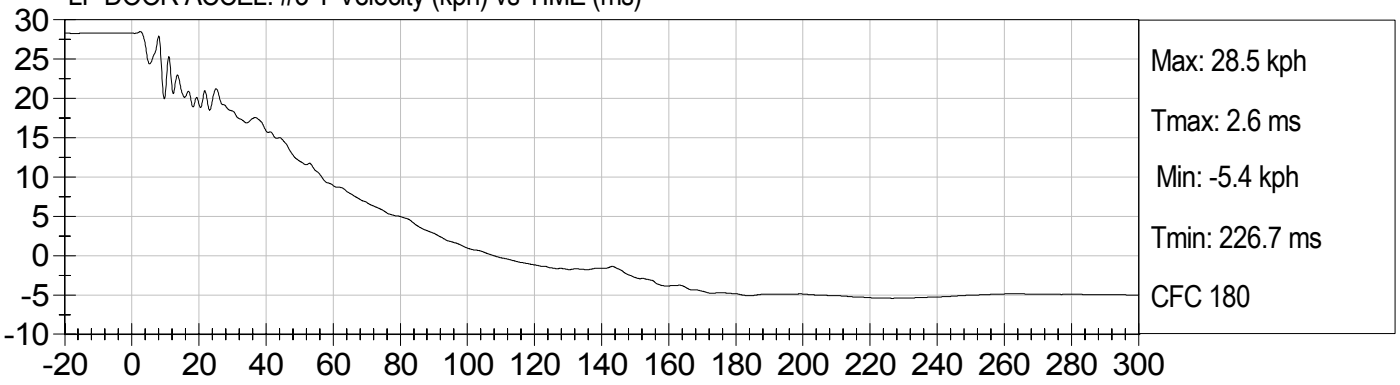
LF DOOR ACCEL. #1 Y Velocity (kph) vs TIME (ms)




LF DOOR ACCEL. #2 Y Velocity (kph) vs TIME (ms)



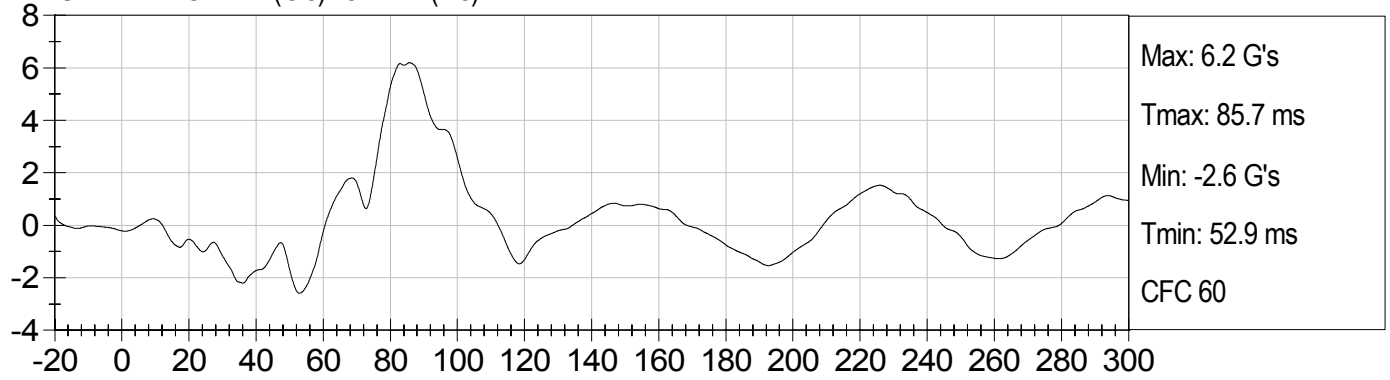

LF DOOR ACCEL. #3 Y Velocity (kph) vs TIME (ms)



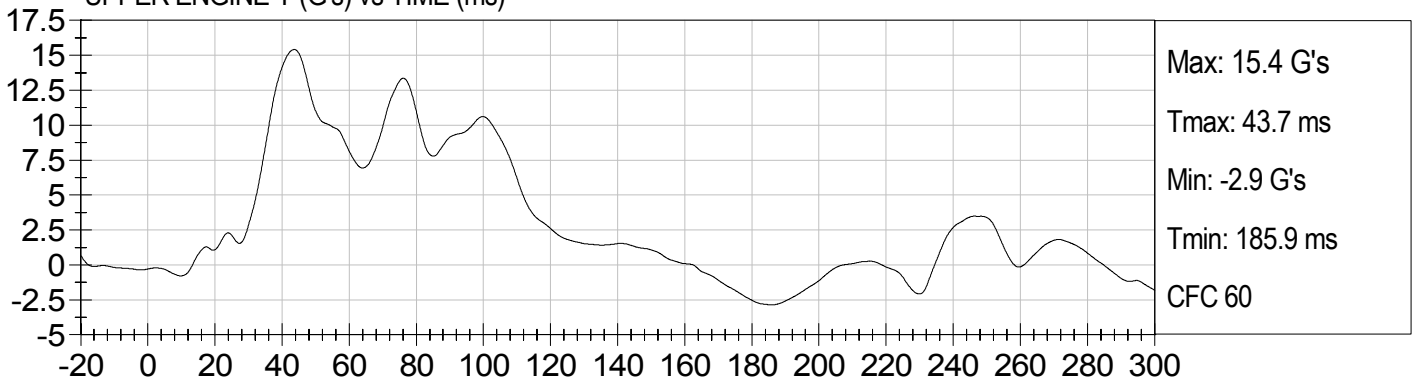
FMVSS 201P RIGID POLE SIDE IMPACT
2006 HONDA CIVIC

Test Date: 09/05/2006
Speed: 17.6 mph (28.3 km/h)

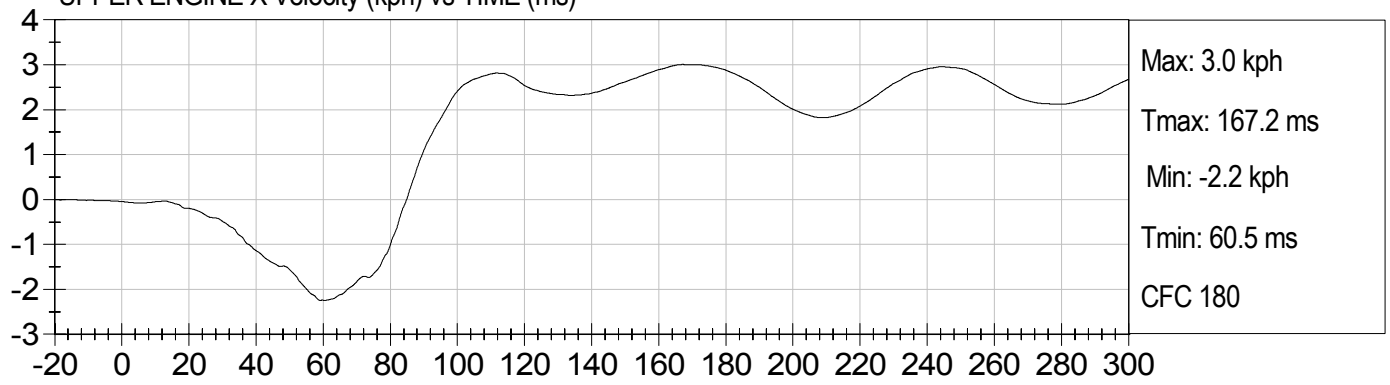
UPPER ENGINE X (G's) vs TIME (ms)



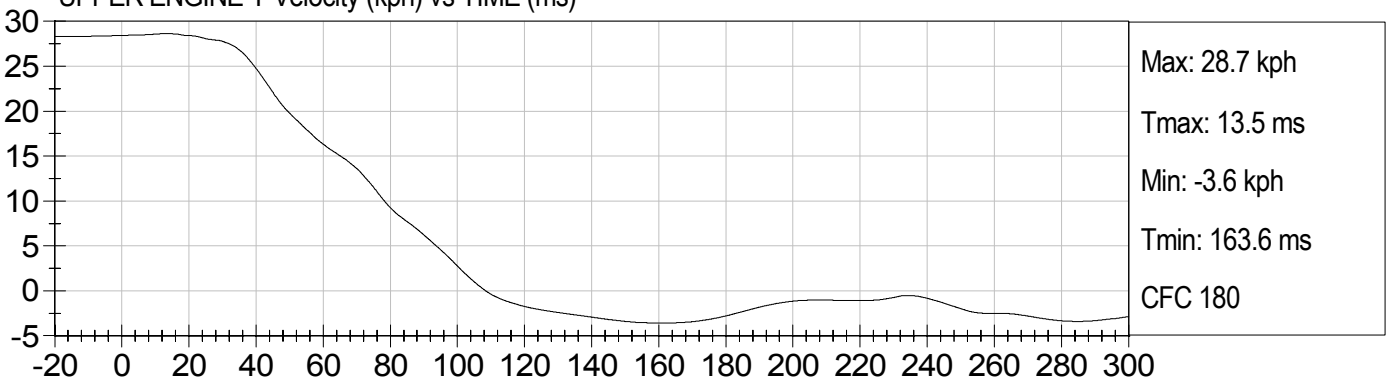

UPPER ENGINE Y (G's) vs TIME (ms)




UPPER ENGINE X Velocity (kph) vs TIME (ms)



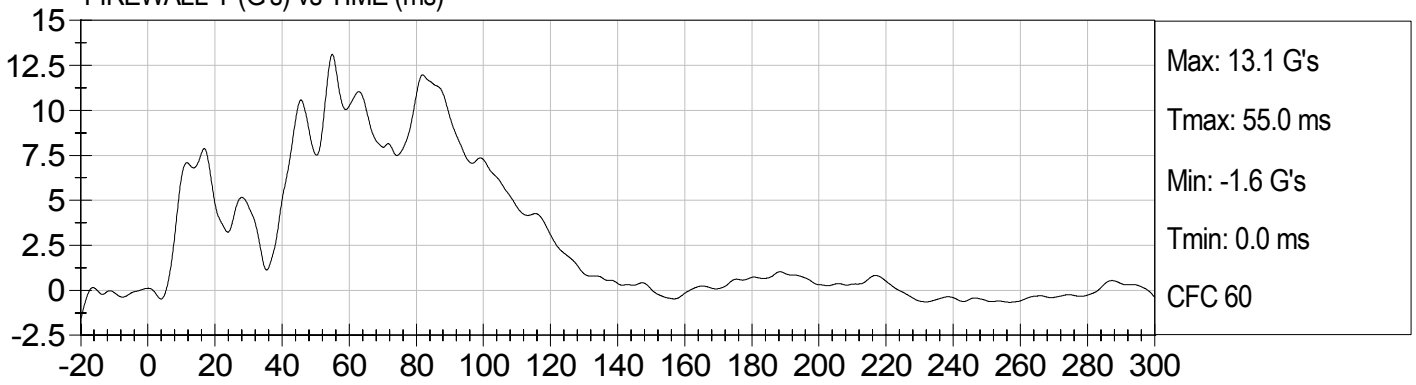

UPPER ENGINE Y Velocity (kph) vs TIME (ms)



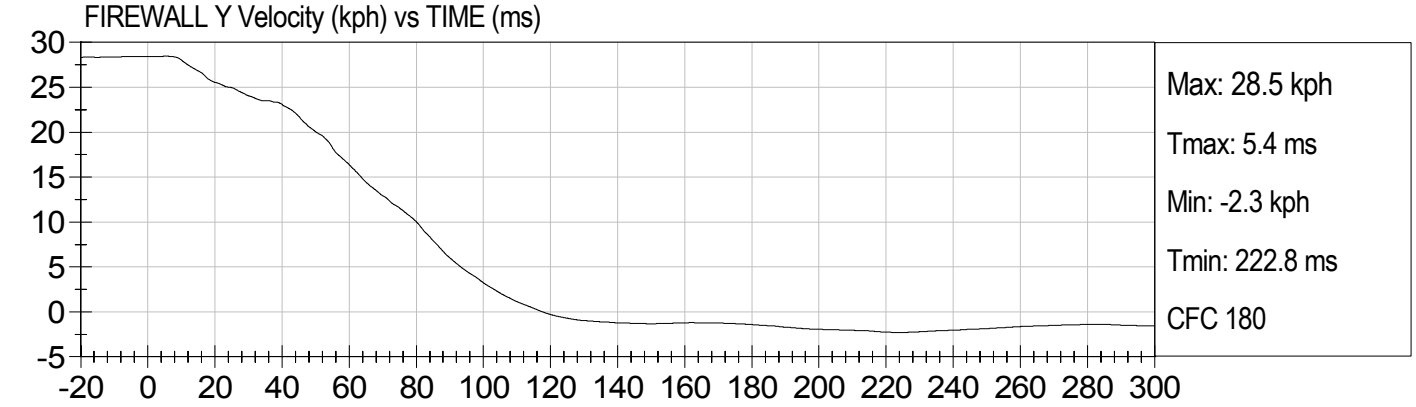
FMVSS 201P RIGID POLE SIDE IMPACT
2006 HONDA CIVIC

Test Date: 09/05/2006
Speed: 17.6 mph (28.3 km/h)

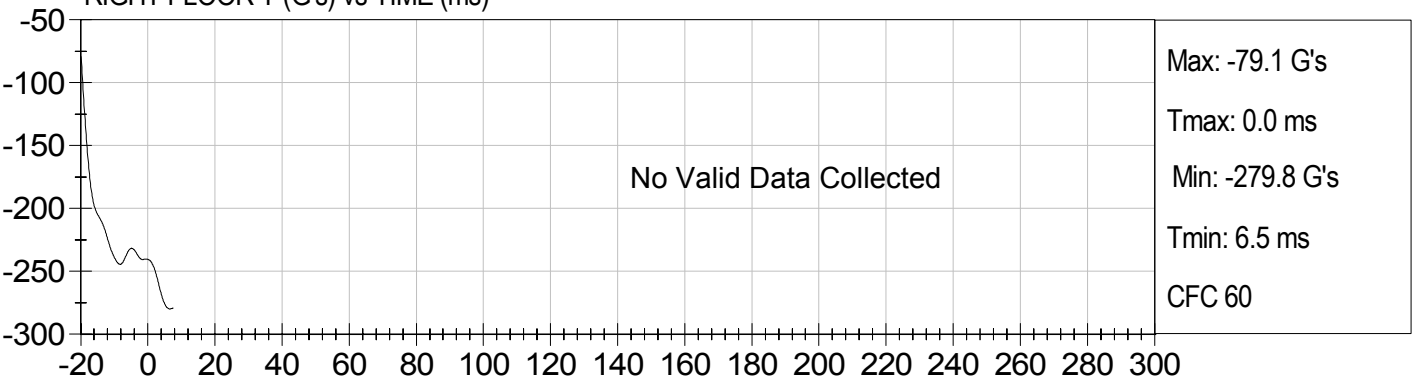
FIREWALL Y (G's) vs TIME (ms)



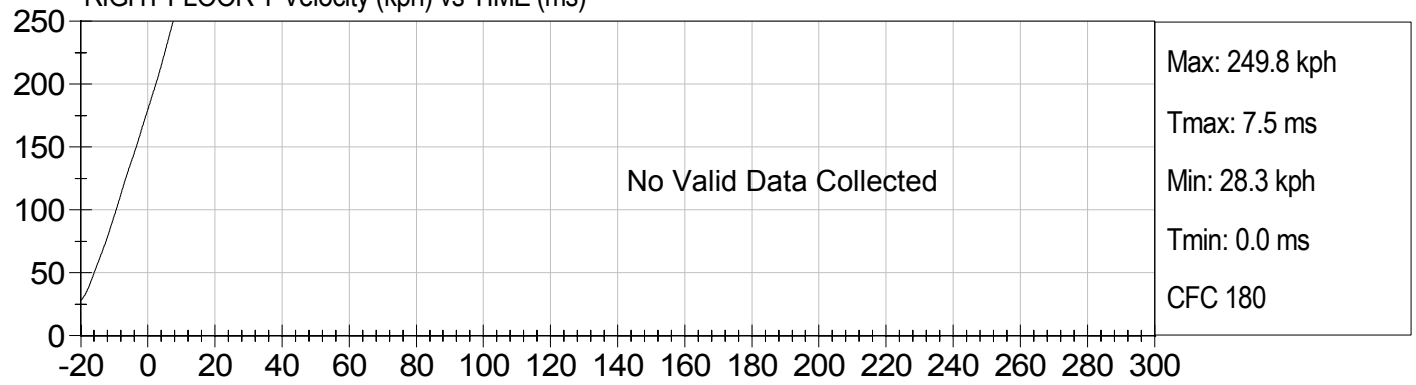

FIREWALL Y Velocity (kph) vs TIME (ms)




RIGHT FLOOR Y (G's) vs TIME (ms)



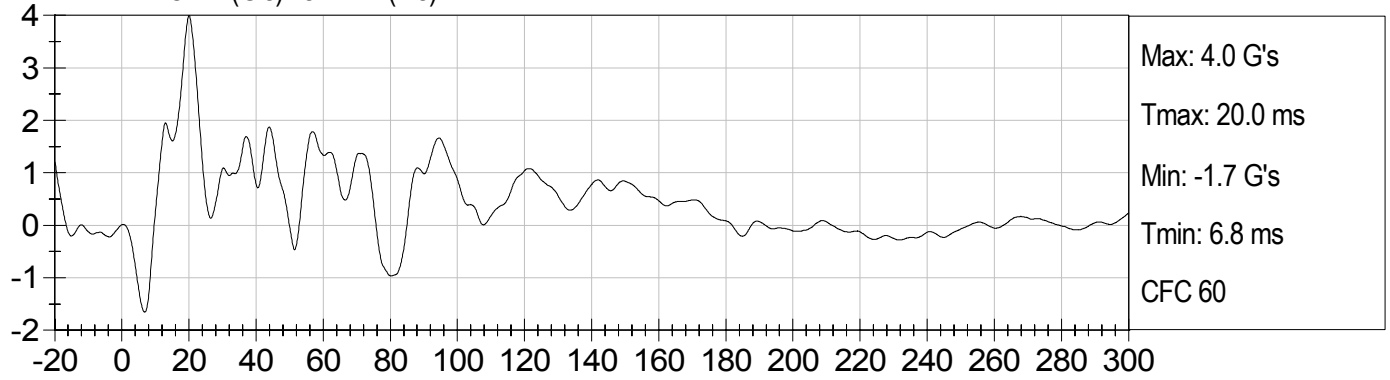

RIGHT FLOOR Y Velocity (kph) vs TIME (ms)



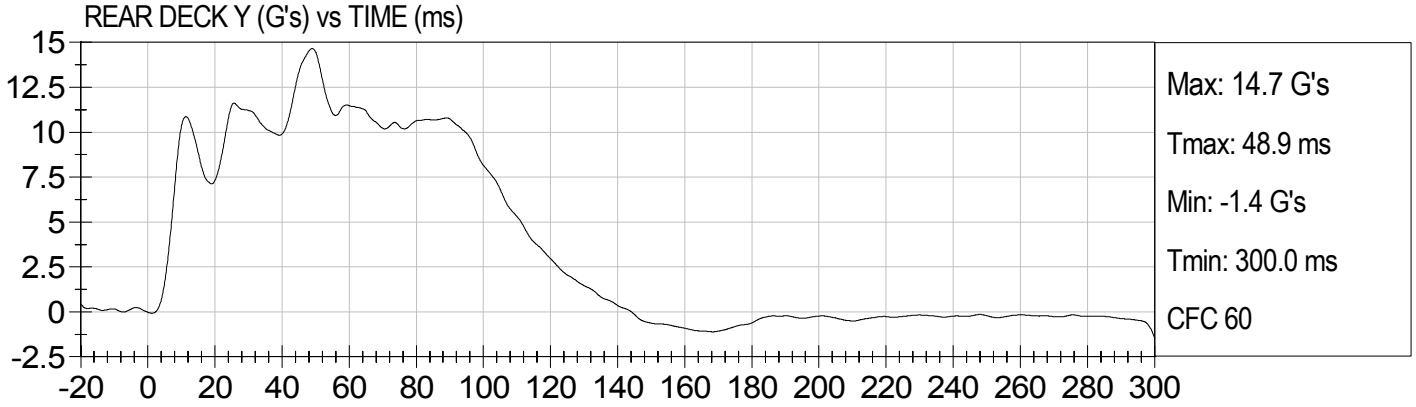
FMVSS 201P RIGID POLE SIDE IMPACT
2006 HONDA CIVIC

Test Date: 09/05/2006
Speed: 17.6 mph (28.3 km/h)

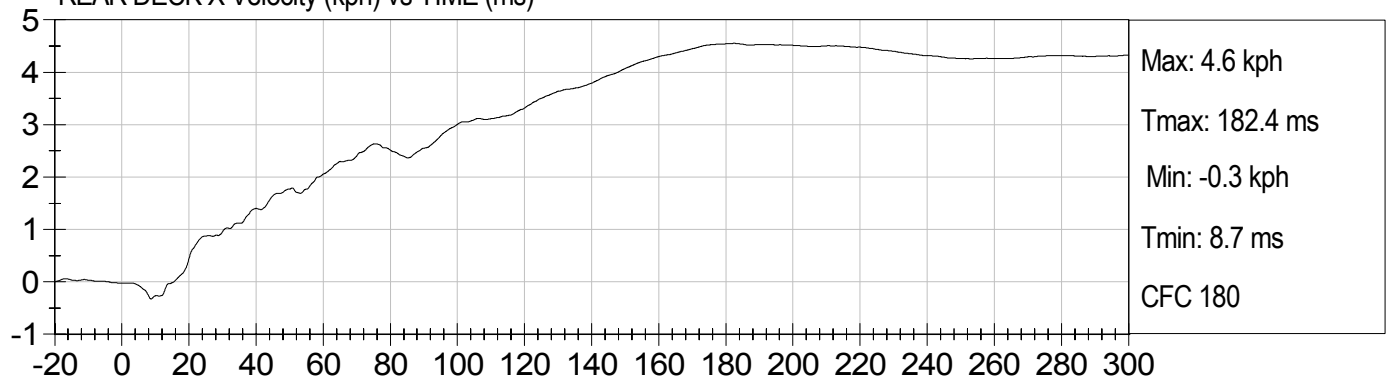
REAR DECK X (G's) vs TIME (ms)



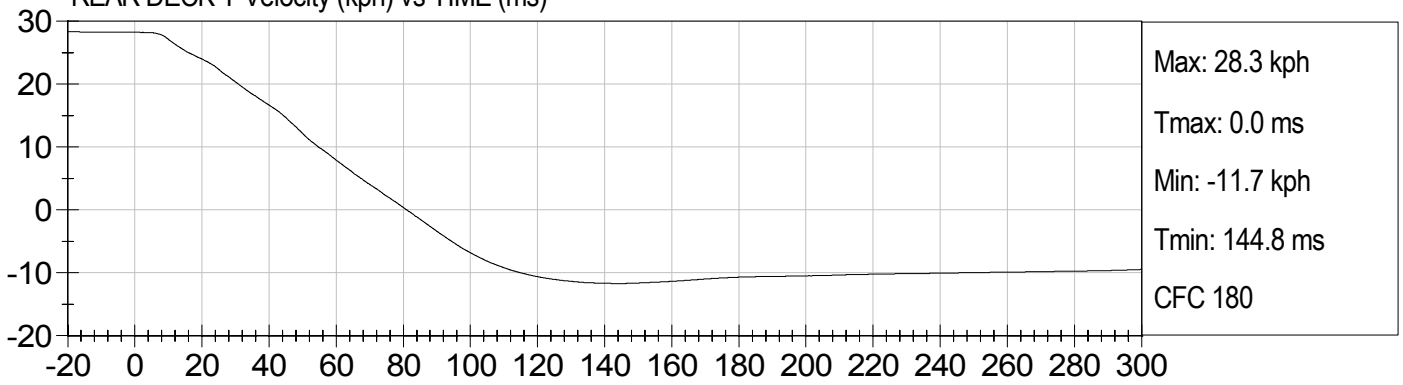

REAR DECK Y (G's) vs TIME (ms)




REAR DECK X Velocity (kph) vs TIME (ms)



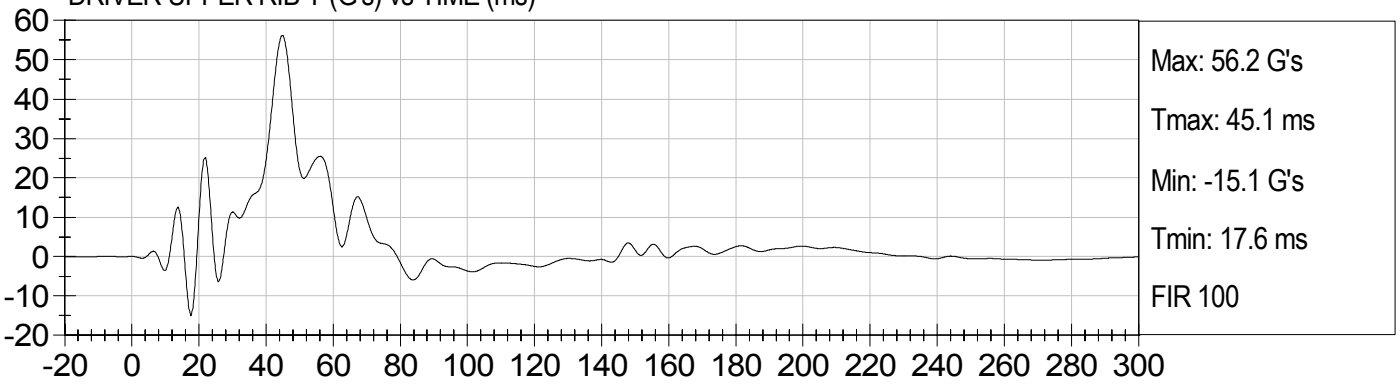

REAR DECK Y Velocity (kph) vs TIME (ms)



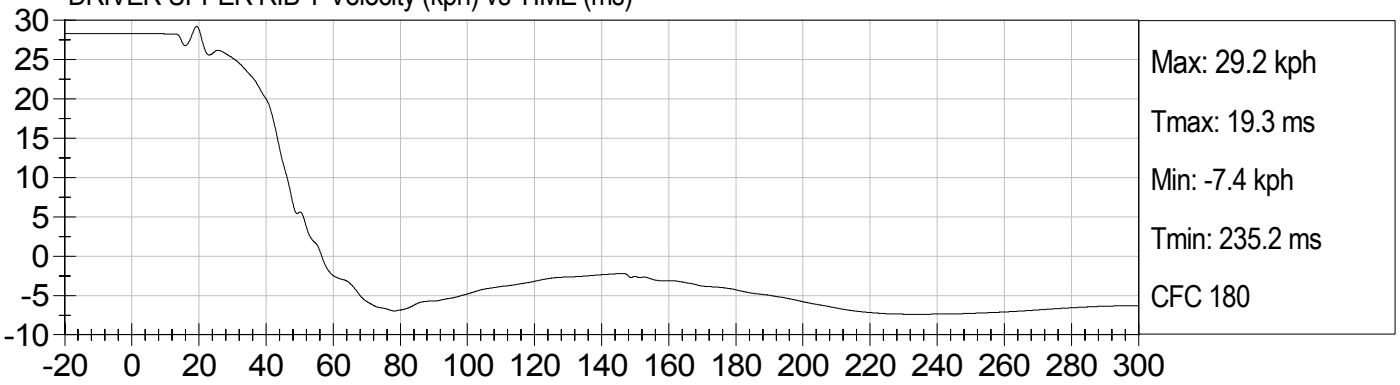
FMVSS 201P RIGID POLE SIDE IMPACT
2006 HONDA CIVIC

Test Date: 09/05/2006
Speed: 17.6 mph (28.3 km/h)

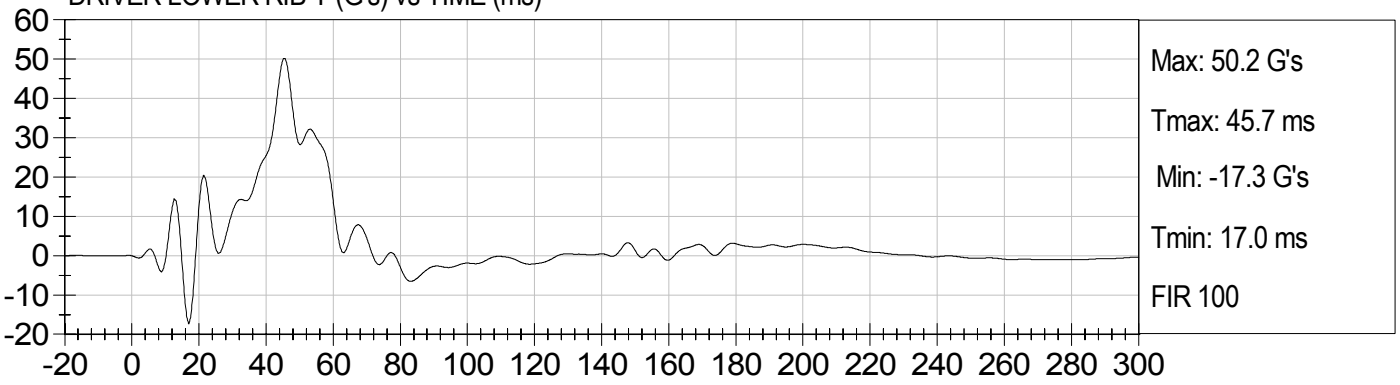
DRIVER UPPER RIB Y (G's) vs TIME (ms)



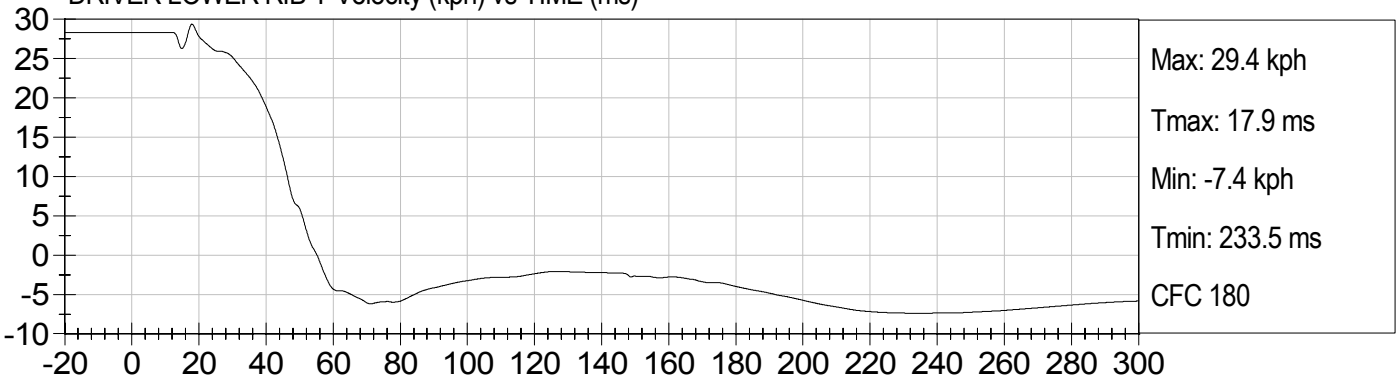

DRIVER UPPER RIB Y Velocity (kph) vs TIME (ms)




DRIVER LOWER RIB Y (G's) vs TIME (ms)



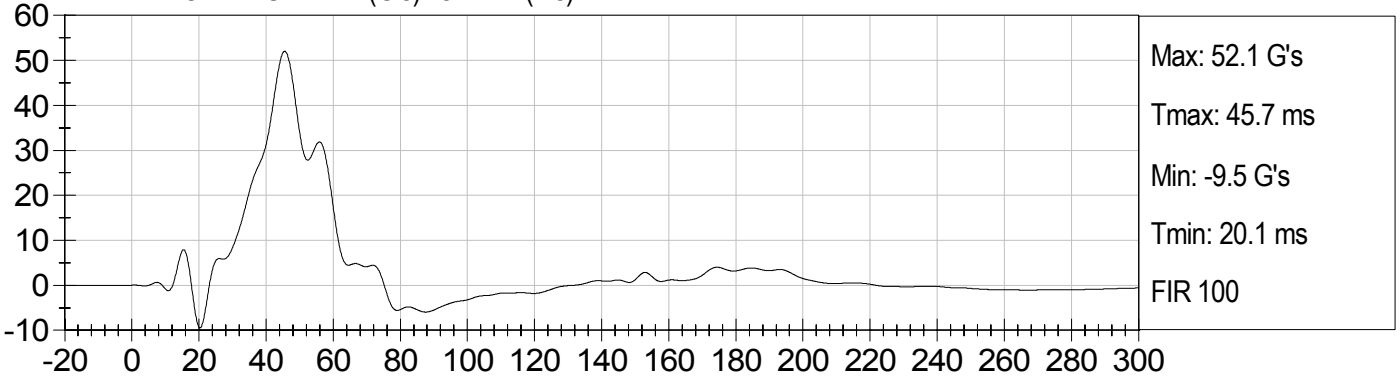

DRIVER LOWER RIB Y Velocity (kph) vs TIME (ms)



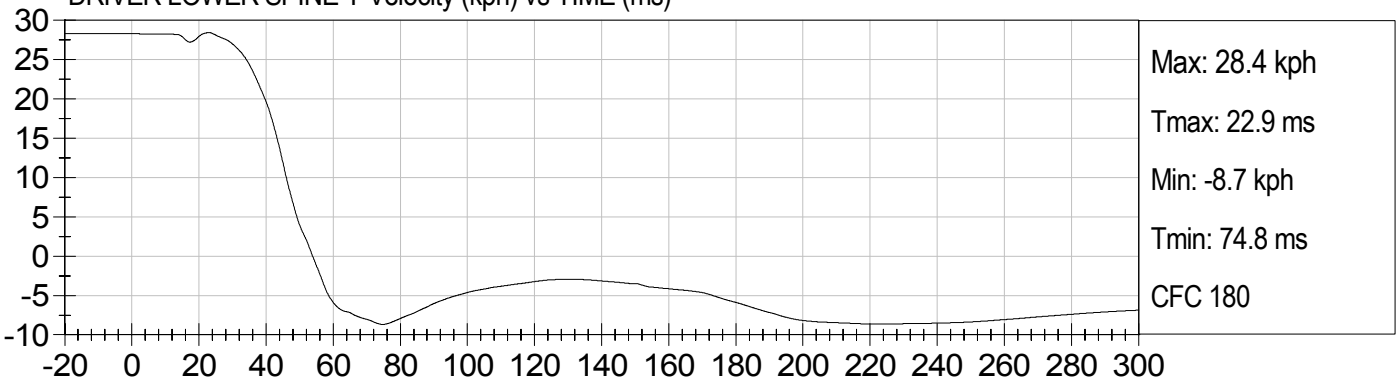
FMVSS 201P RIGID POLE SIDE IMPACT
2006 HONDA CIVIC

Test Date: 09/05/2006
Speed: 17.6 mph (28.3 km/h)

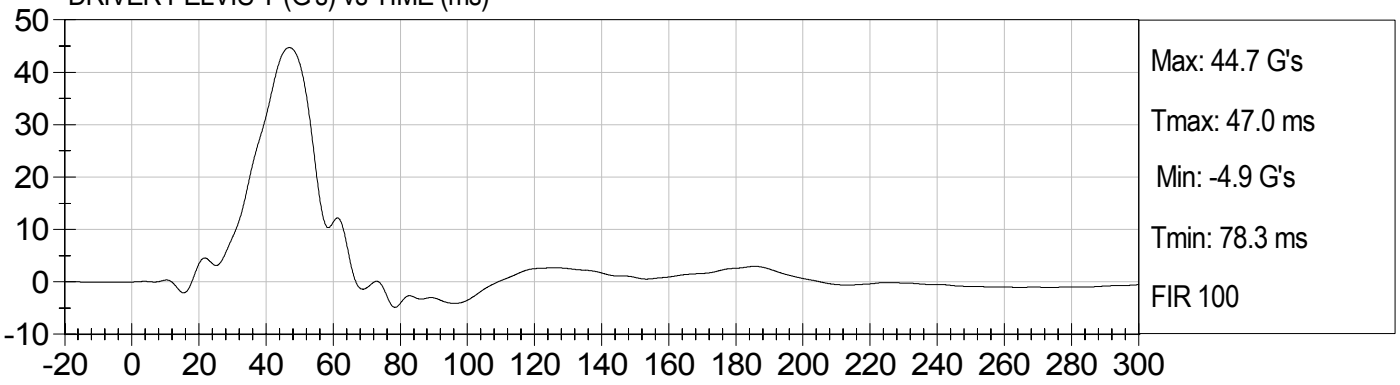
DRIVER LOWER SPINE Y (G's) vs TIME (ms)



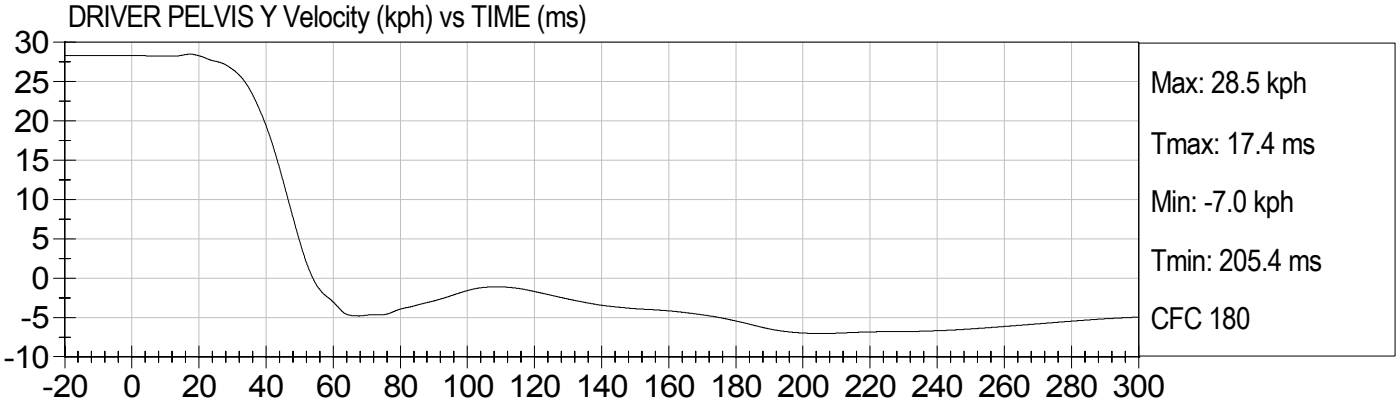

DRIVER LOWER SPINE Y Velocity (kph) vs TIME (ms)




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



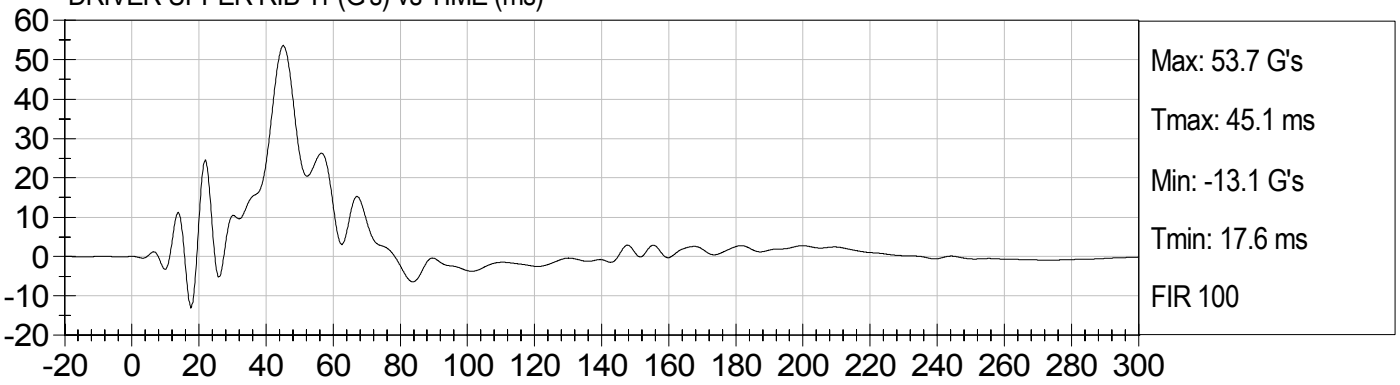

DRIVER PELVIS Y Velocity (kph) vs TIME (ms)



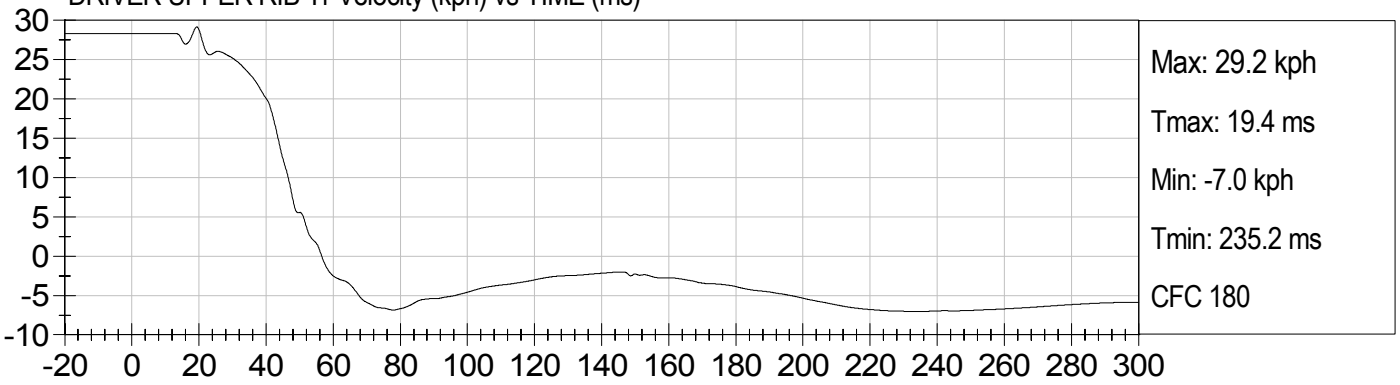
FMVSS 201P RIGID POLE SIDE IMPACT
2006 HONDA CIVIC

Test Date: 09/05/2006
Speed: 17.6 mph (28.3 km/h)

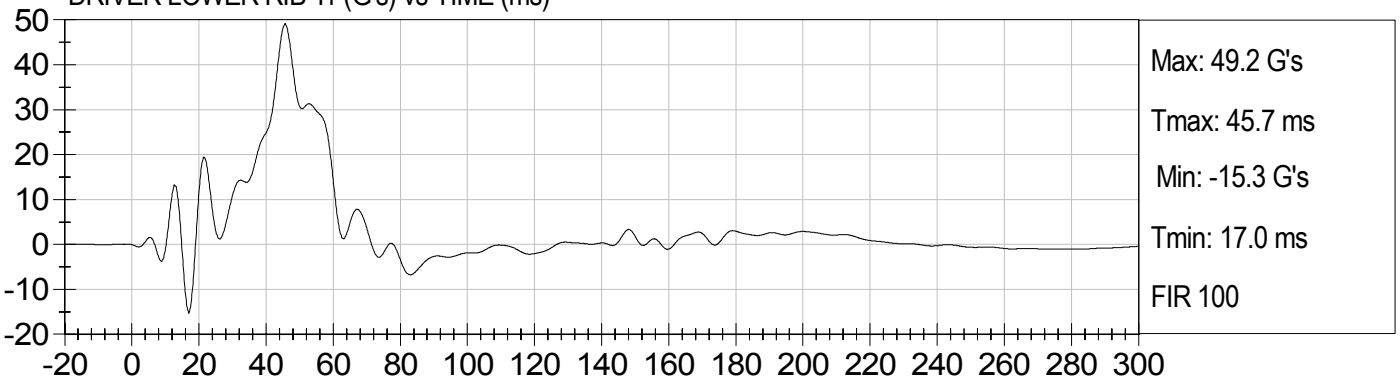
DRIVER UPPER RIB Yr (G's) vs TIME (ms)



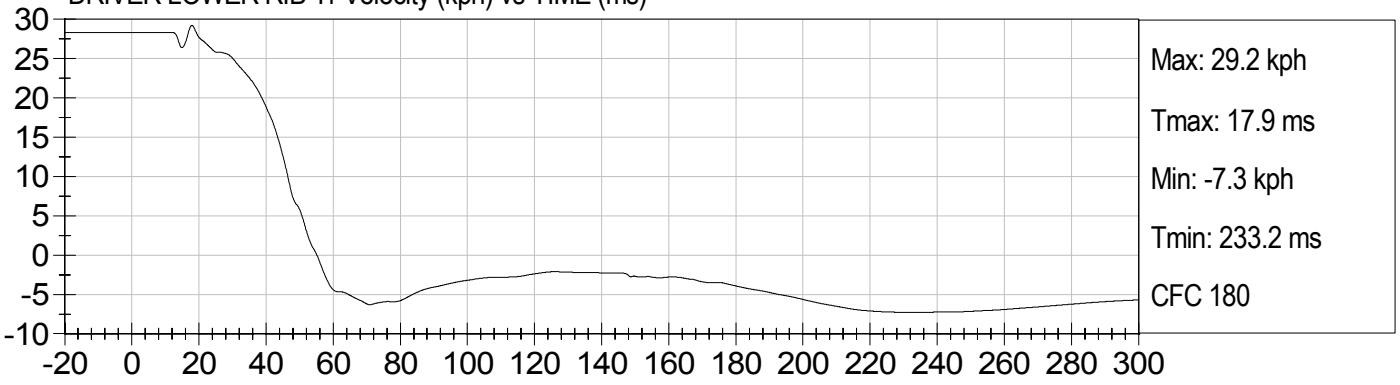

DRIVER UPPER RIB Yr Velocity (kph) vs TIME (ms)



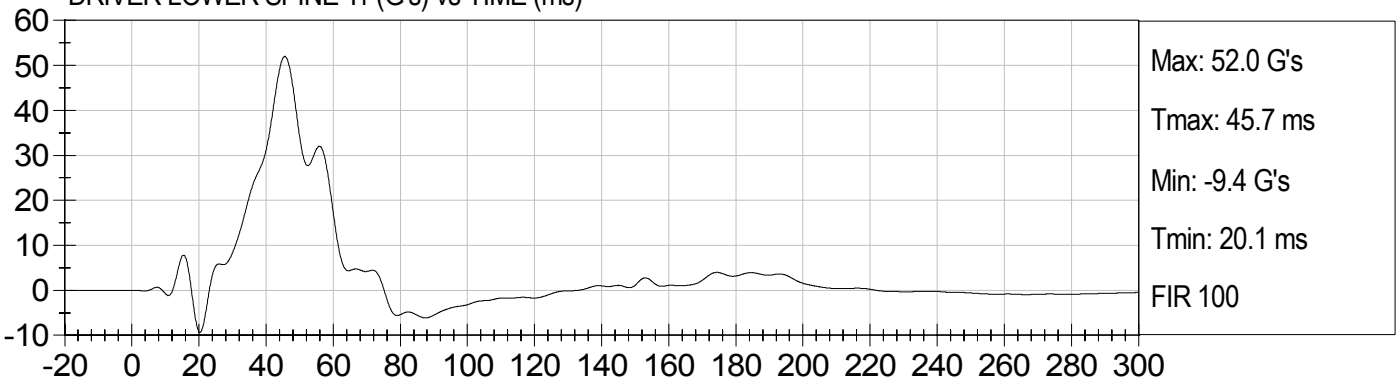

DRIVER LOWER RIB Yr (G's) vs TIME (ms)



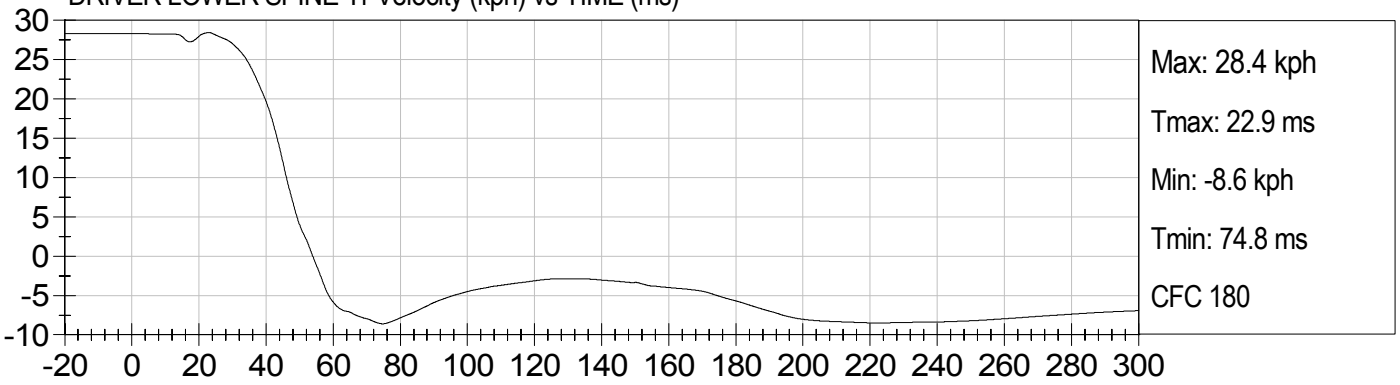

DRIVER LOWER RIB Yr Velocity (kph) vs TIME (ms)



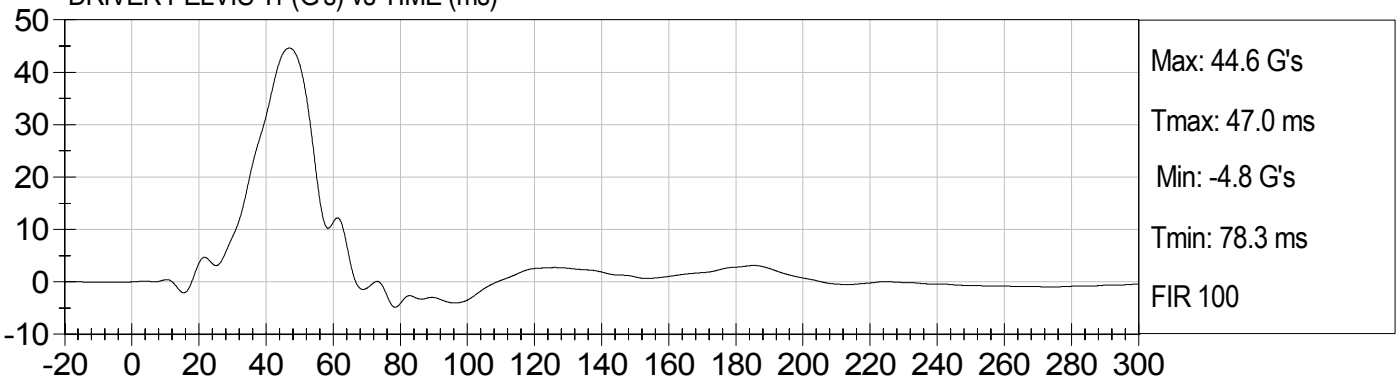
DRIVER LOWER SPINE Yr (G's) vs TIME (ms)



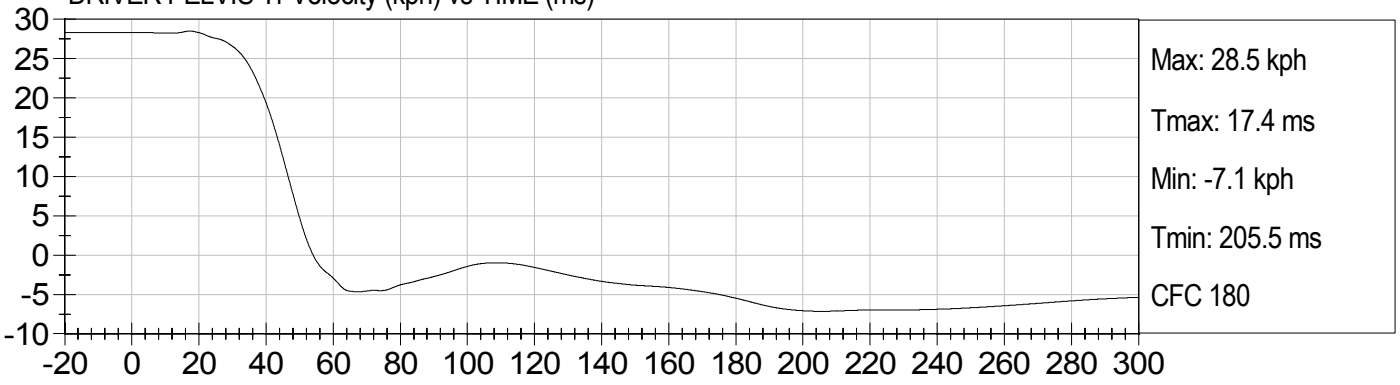

DRIVER LOWER SPINE Yr Velocity (kph) vs TIME (ms)




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




DRIVER PELVIS Yr Velocity (kph) vs TIME (ms)

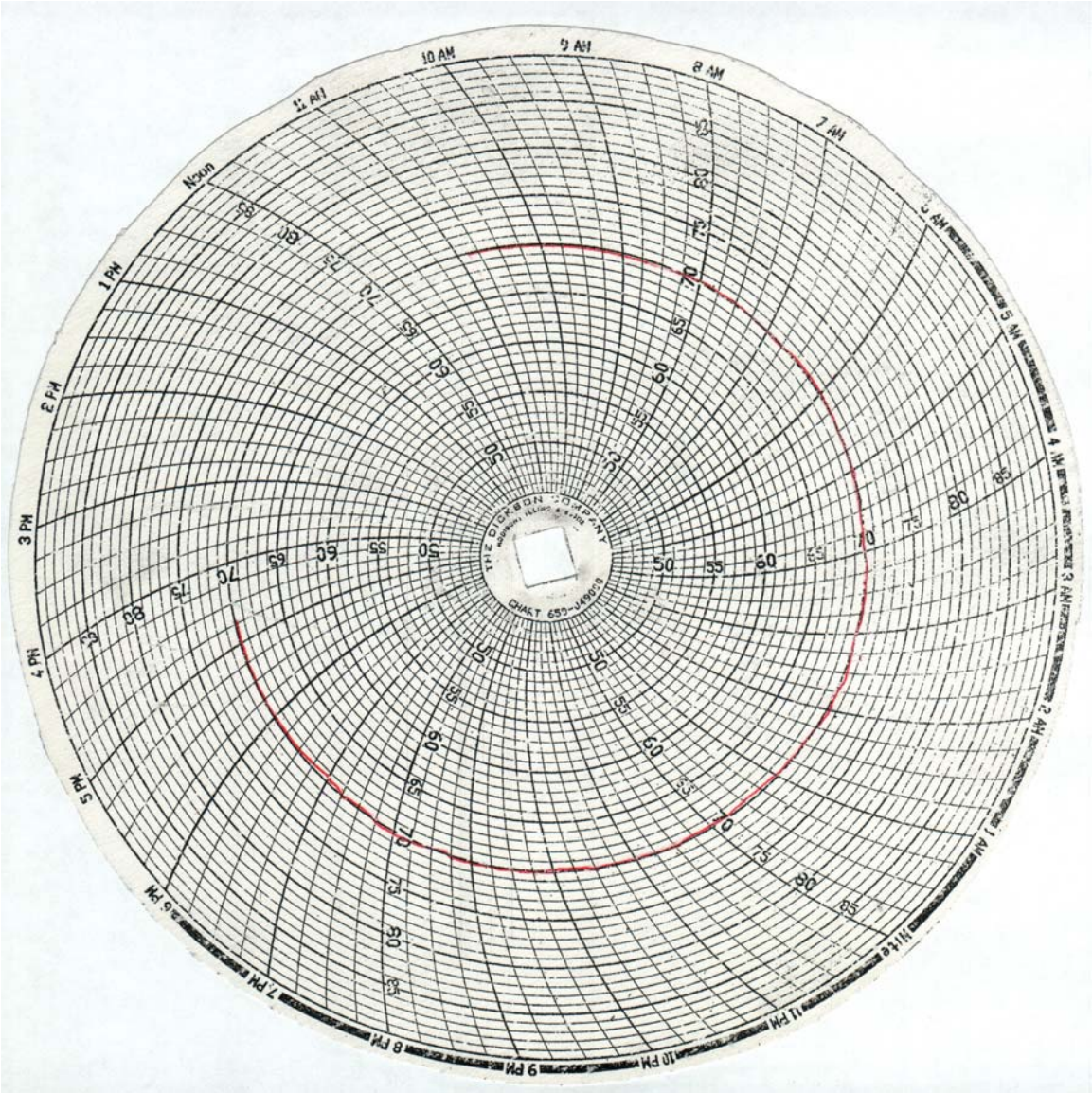


# APPENDIX C

# SID/HIII CONFIGURATION AND PERFORMANCE VERIFICATION DATA

**Vehicle and Dummy Temperature**

| | | | |
|---|---|---|---|
| Test Vehicle: | 2006 Honda Civic 4-Dr. DX | NHTSA No. | C65305 |
| Test Program: | FMVSS 201P | Test Date: | September 5, 2006 |



**SID/HIII Calibration Data Sheet**

**Side Impact Dummy**

**Head Drop Calibration (Lateral)**

**ATD Serial No:** 036 **Test I.D:** D061711

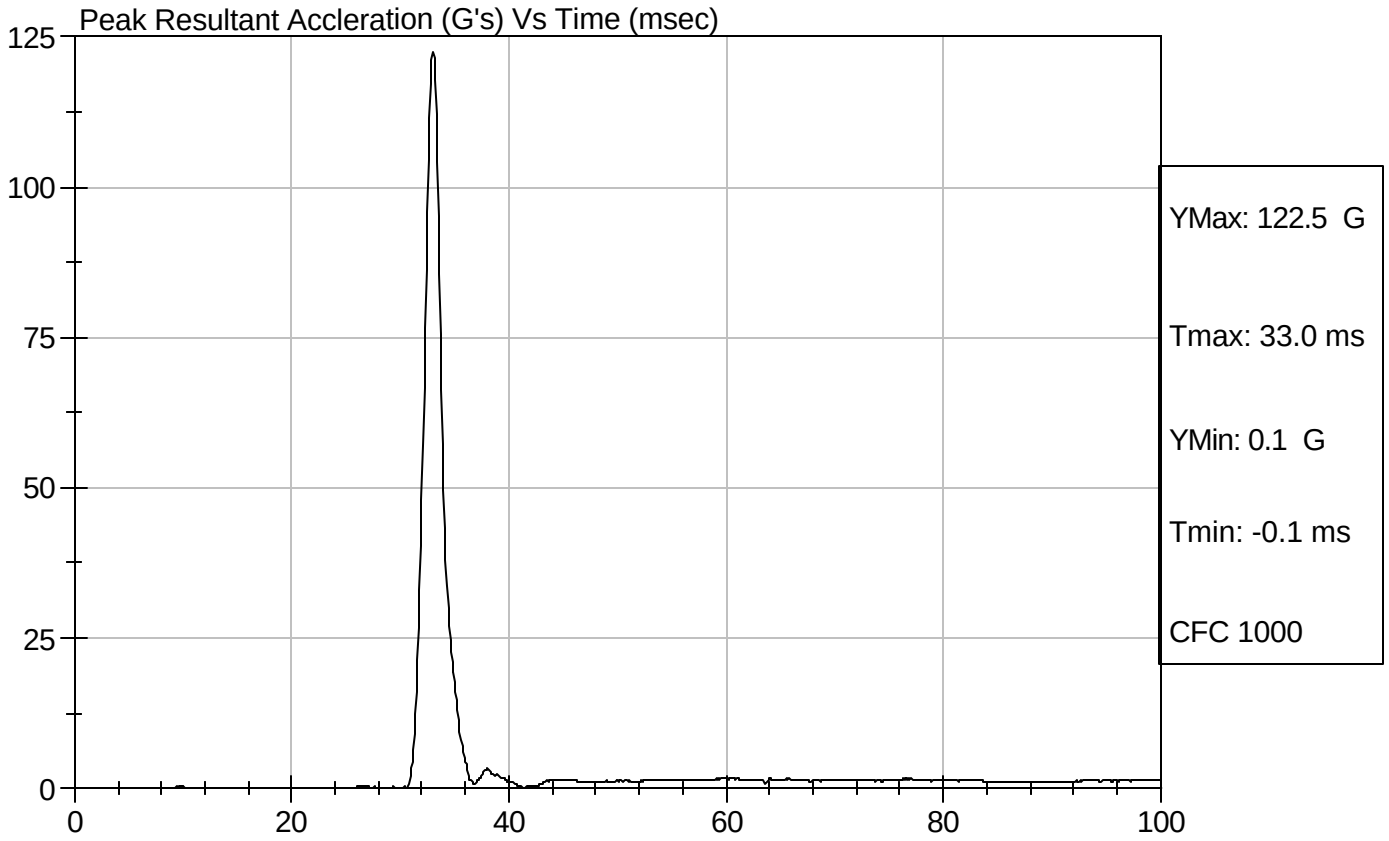
| Tested Parameter | Units | Specification | Result | Pass/Fail |
|---|---|---|---|---|
| Laboratory Temperature | deg C | 18.9 to 25.5 | 21.5 | Pass |
| Laboratory Relative Humidity | % | 10 to 70 | 40 | Pass |
| Peak Resultant Acceleration | G's | 120 to 150 | 123 | Pass |
| Is Resultant Curve Unimodal? | Yes/No | 15% of peak | Yes | Pass |
| Peak Longitudnal Acceleration | G's | +/- 15 | -7.1 | Pass |
| | | Overall Test Results | | Pass |

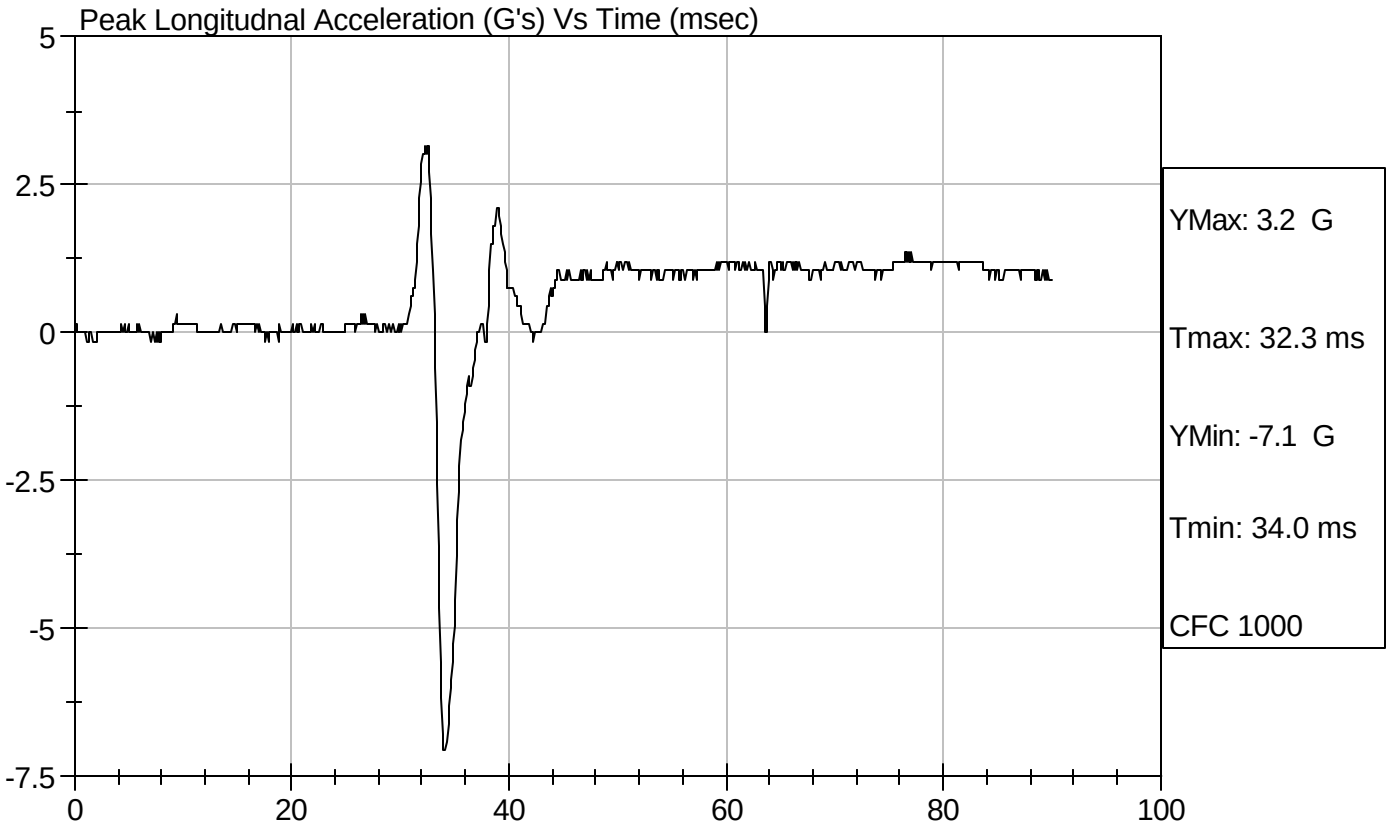
Jessica Hall
Laboratory Technician

06/13/2006
Test Date

David Winkelbauer
Approved By

| | | |
|---|---|---|
| | Test Description: Head Drop | Test Date: 06/13/2006 |
| | Component: D061711 | Speed: 0 ft/s, 0.00 m/s |



**SID/HIII Calibration Data Sheet**

**Side Impact Dummy**

**Thorax Impact Test**

**ATD Serial No:** 036 **Test I.D:** D061712

| Tested Parameter | Units | Specification | Result | Pass/Fail |
|---|---|---|---|---|
| Laboratory Temperature | deg C | 18.9 - 25.5 | 21.3 | Pass |
| Laboratory Relative Humidity | % | 10 to 70 | 44 | Pass |
| Probe Velocity | m/s | 4.27 - 4.33 | 4.29 | Pass |
| Upper Rib | G's | 37 - 46 | 44 | Pass |
| Lower Rib | G's | 37 - 46 | 46 | Pass |
| Lower Spine | G's | 15 - 22 | 19 | Pass |
| | | Overall Test Results | | Pass |

Jessica Hall
Laboratory Technician

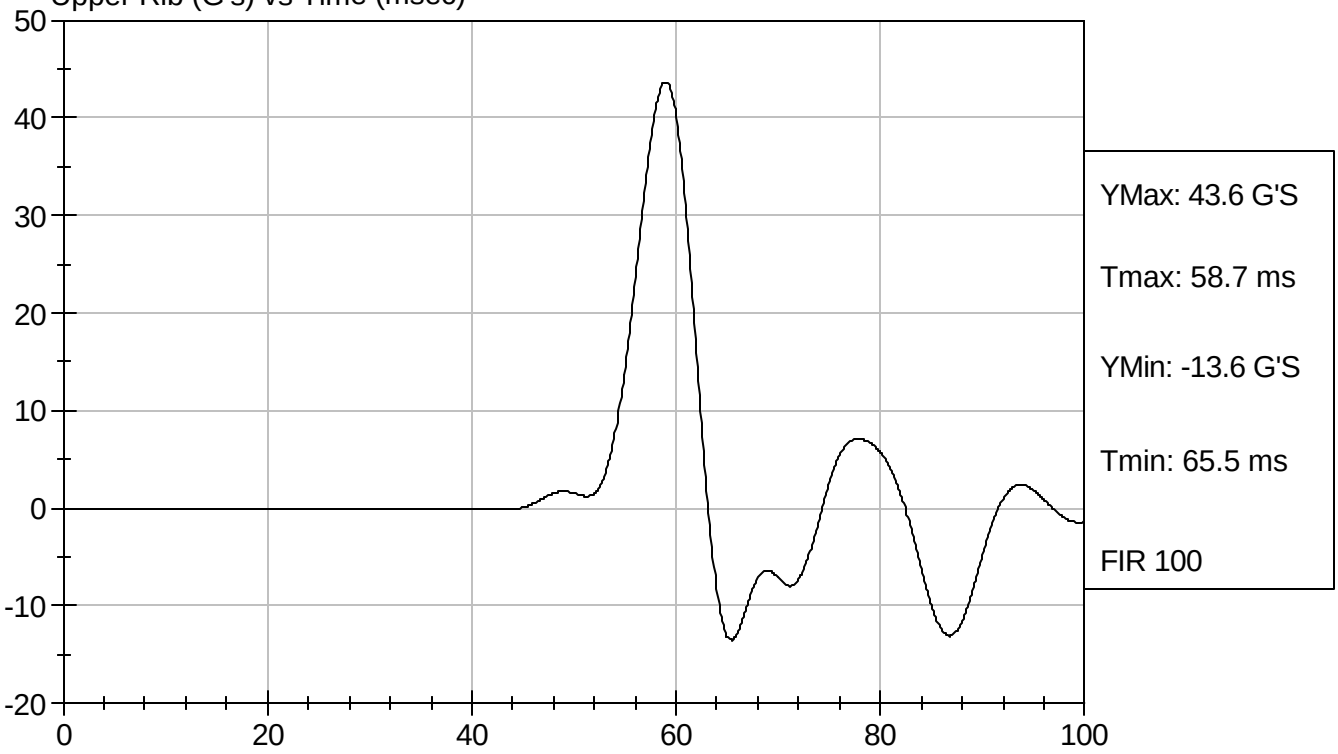
06/14/2006
Test Date

David Winkelbauer
Approved By

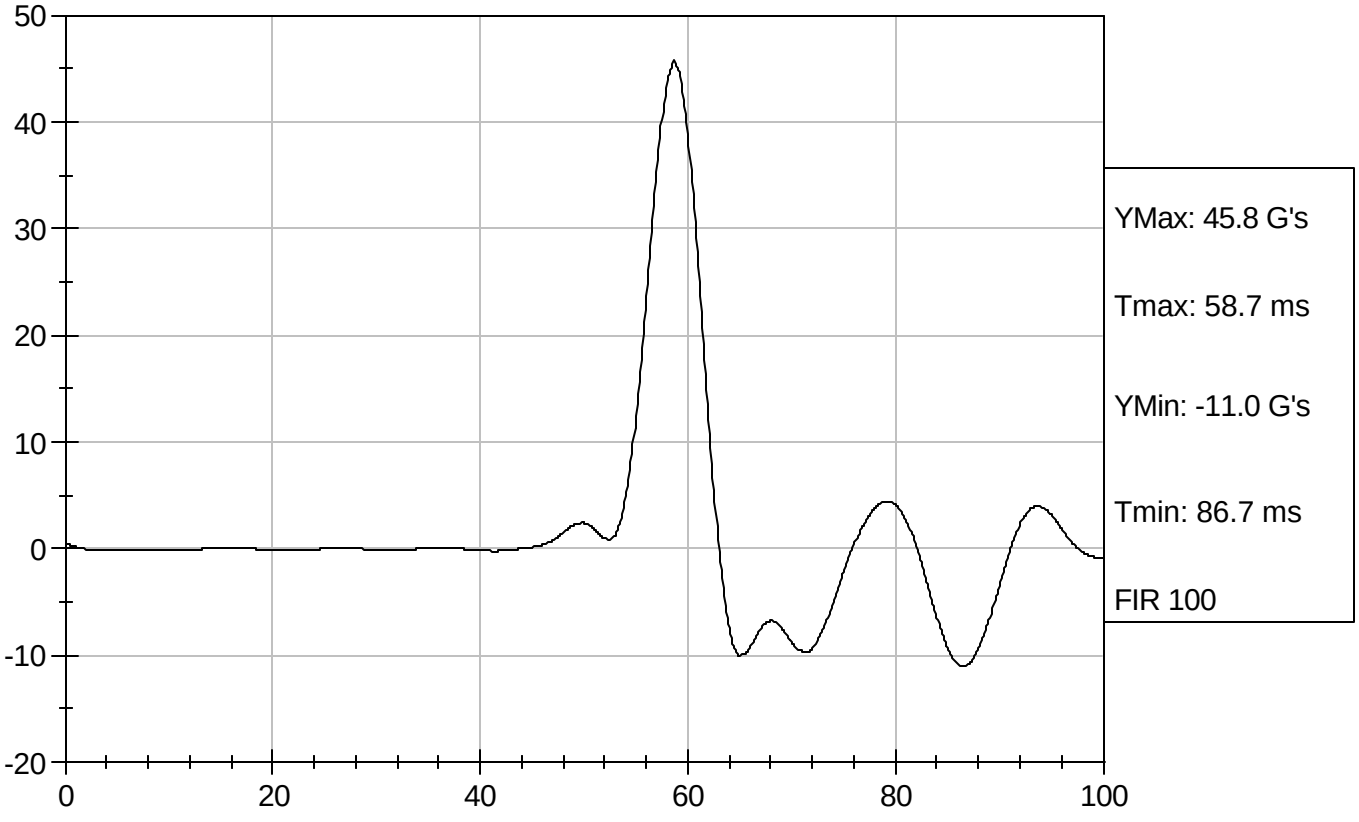
Test Desc: Thorax Impact
Component ID: D061712

Test Date: 06/14/2006
Speed: 14.07 ft/sec, 4.29 m/sec

Upper Rib (G's) vs Time (msec)

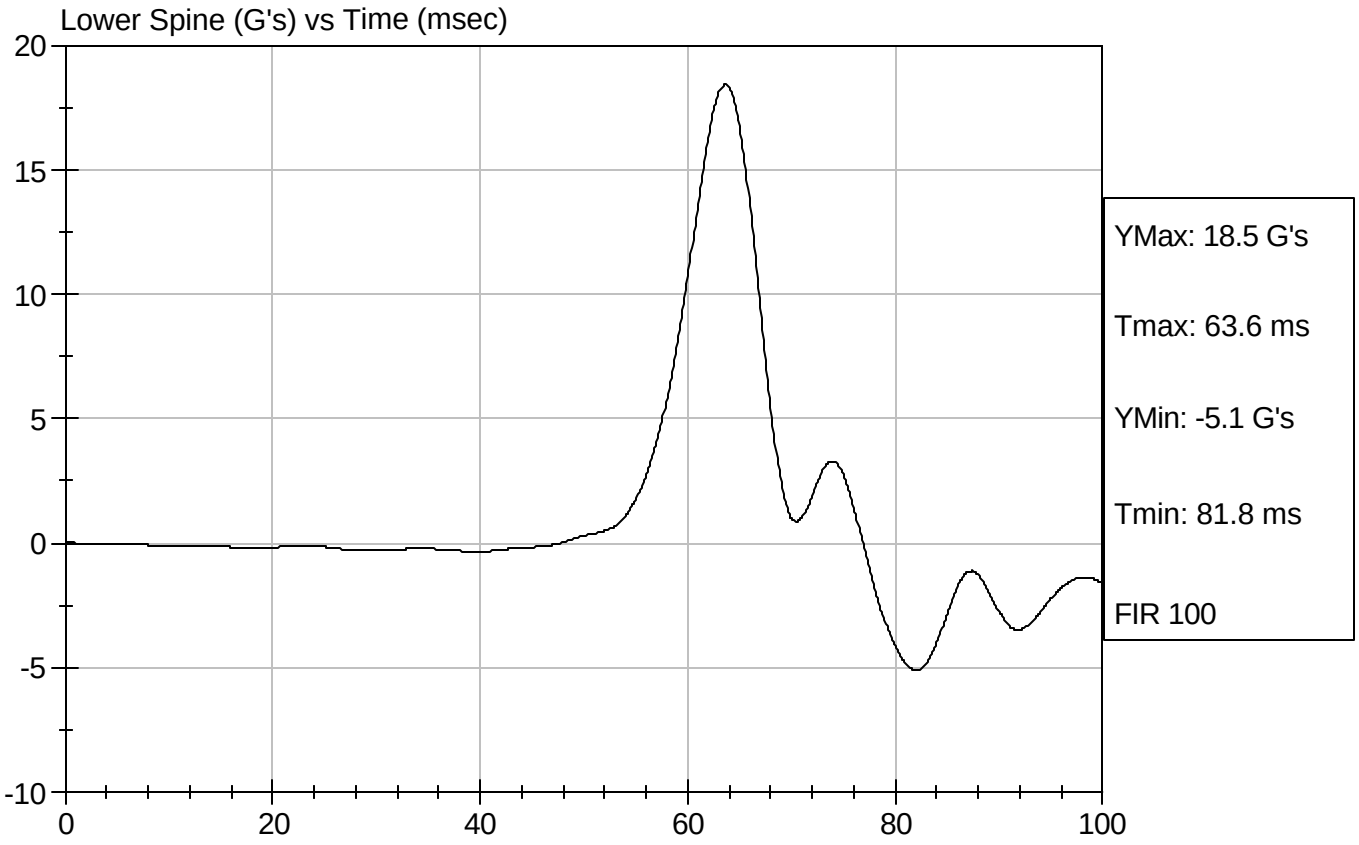



Lower Rib (G's) vs Time (msec)



Test Desc: Thorax Impact
Component ID: D061712

Test Date: 06/14/2006
Speed: 14.07 ft/sec, 4.29 m/sec



**SID/HIII Calibration Data Sheet**

**Side Impact Dummy**

**Pelvis Impact Test**

**ATD Serial No:** 036 **Test I.D:** D061713

| Tested Parameter | Units | Specification | Result | Pass/Fail |
|---|---|---|---|---|
| Laboratory Temperature | deg C | 18.9 to 25.5 | 21.5 | Pass |
| Laboratory Relative Humidity | % | 10 to 70 | 44 | Pass |
| Probe Velocity | m/s | 4.27 - 4.33 | 4.29 | Pass |
| Pelvis Acceleration | G's | 40 - 60 | 45 | Pass |
| | | Overall Test Results | | Pass |

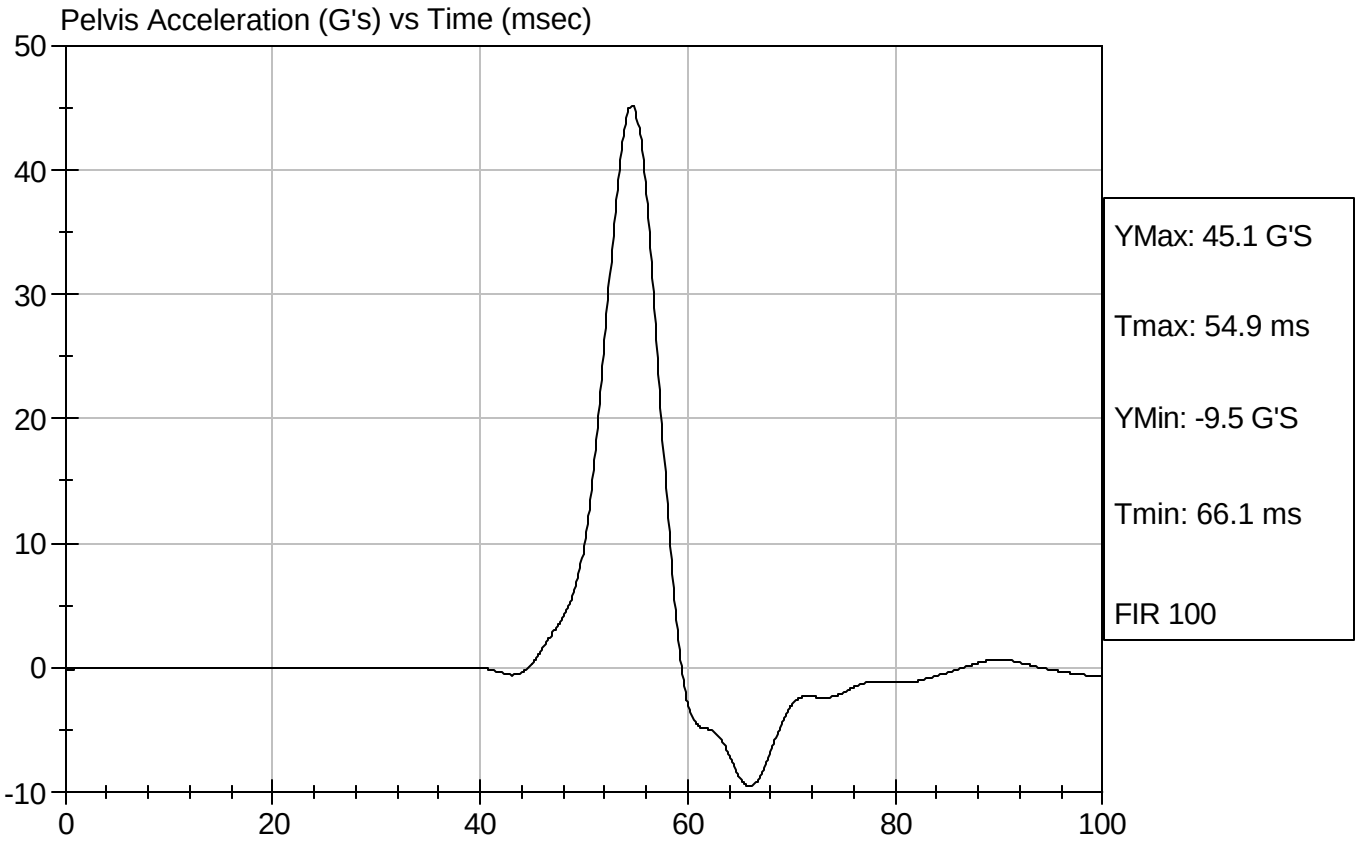
Jessica Hall
Laboratory Technician

06/14/2006
Test Date

David Winkelbauer
Approved By

Test Desc: Pelvis Impact
Component ID: D061713

Test Date: 06/14/2006
Speed: 14.08 ft/sec, 4.29 m/sec



**SID/HIII Calibration Data Sheet**

**Side Impact Dummy**

**Abdominal Compression Calibration (Pre-Load = 10 lbs)**

**ATD Serial No:** 036 **Test I.D:** D061714

| Tested Parameter | Units | Specification | Result | Pass/Fail |
|---|---|---|---|---|
| Laboratory Temperature | deg C | 18.9 - 25.5 | 21.2 | Pass |
| Laboratory Relative Humidity | % | 10 to 70 | 41 | Pass |
| Force At 12.7 mm | N | 104 -162 | 144 | Pass |
| Force At 19 mm | N | 163 - 222 | 201 | Pass |
| Force At 25.4 mm | N | 222 - 280 | 267 | Pass |
| Force At 33 mm | N | 325 - 391 | 367 | Pass |
| | | Overall Test Results | | Pass |

Jessica Hall
Laboratory Technician

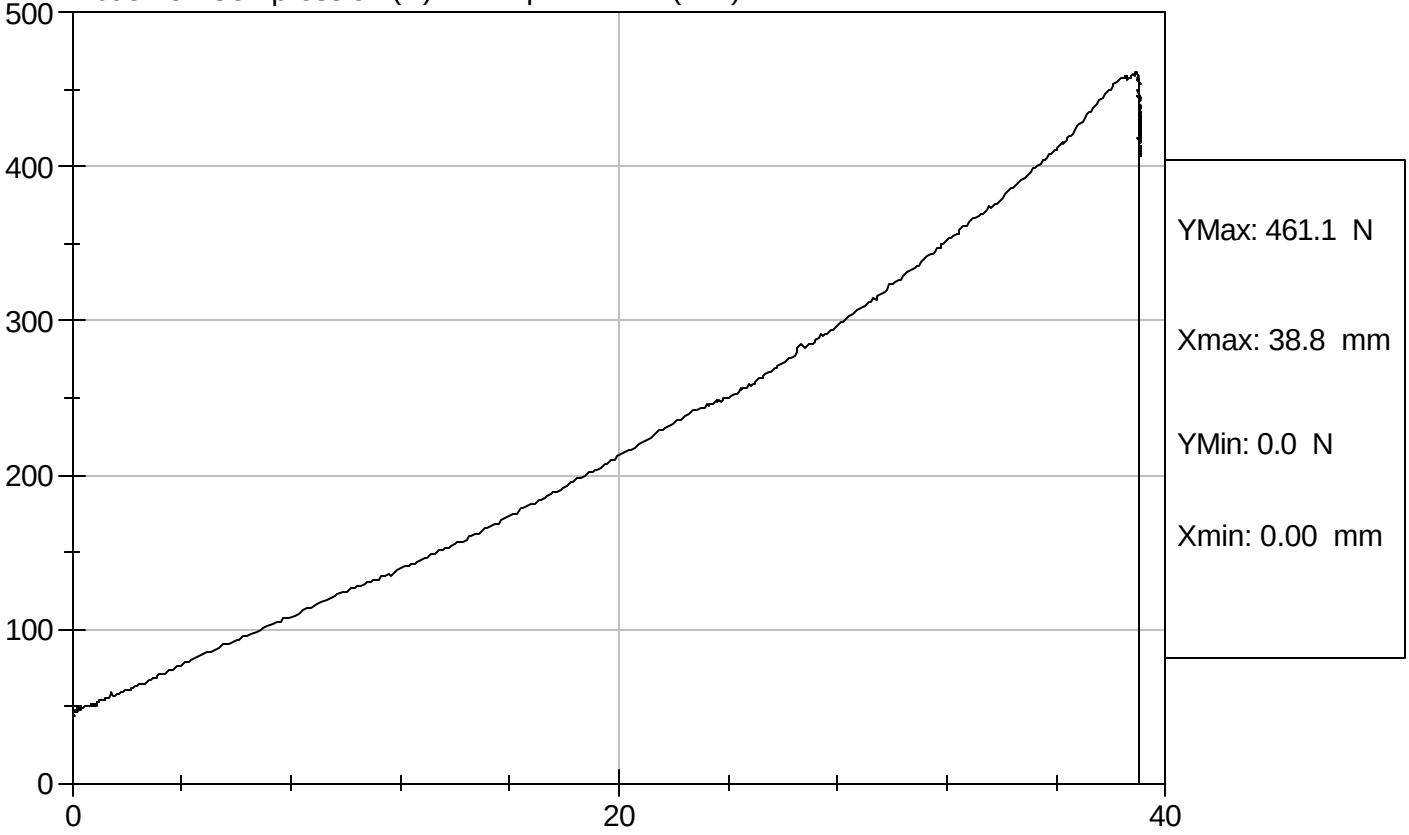
06/13/2006
Test Date

David Winkelbauer
Approved By

Test Description: Abdomen Compression  Test Date: 06/13/2006

Component: D061714  Speed: 0 ft/sec, 0 m/sec

Abdomen Compression (N) Vs Displacement (mm)



**SID/HIII Calibration Data Sheet**

**Side Impact Dummy**

**Lumbar Flexion Calibration**

**ATD Serial No:** 036 **Test I.D:** D061715

| Tested Parameter | Units | Specification | Result | Pass/Fail |
|---|---|---|---|---|
| Laboratory Temperature | deg C | 18.9 - 25.5 | 21.2 | Pass |
| Laboratory Relative Humidity | % | 10 to 70 | 41 | Pass |
| Force At 0 deg | N | 0 - 26.7 | 0.0 | Pass |
| Force At 20 deg | N | 97.9 - 151.2 | 99.4 | Pass |
| Force At 30 deg | N | 151.2 - 204.6 | 182.2 | Pass |
| Force At 40 deg | N | 204.6 - 258.0 | 240.1 | Pass |
| Return Angle | Deg | 12 Maximum | 5 | Pass |
| | | Overall Test Results | | Pass |

Jessica Hall
Laboratory Technician

06/13/2006
Test Date

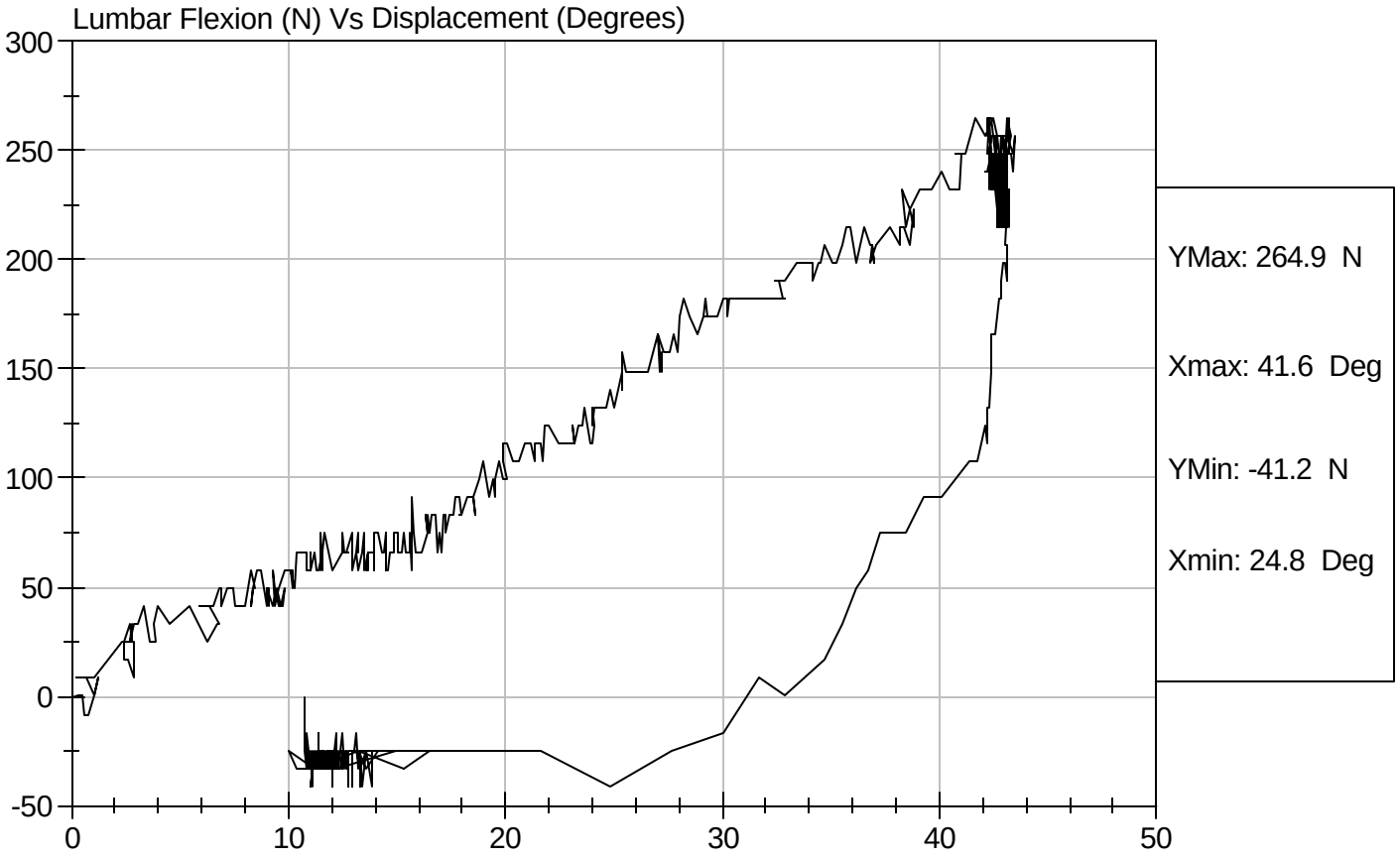
David Winkelbauer
Approved By

Test Description: Lumbar Flexion

Test Date: 06/13/2006

Component: D061715

Speed: 0 ft/sec, 0 m/sec



**SID/HIII Calibration Data Sheet**

**Side Impact Dummy (SID)**

**Neck Pendulum Test**

**ATD Serial No:** 036 **Test I.D:** D061719

| Tested Parameter | | Units | Specification | Result | Pass/Fail |
|---|---|---|---|---|---|
| Laboratory Temperature | | deg C | 20.6 to 22.2 | 21.1 | Pass |
| Laboratory Relative Humidity | | % | 10 to 70 | 41 | Pass |
| Impact Velocity | | m/s | 6.89 to 7.13 | 7.05 | Pass |
| Pendulum Deceleration | 10 msec | m/s | 1.96 to 2.55 | 2.18 | Pass |
| | 20 msec | m/s | 4.12 to 5.10 | 4.23 | Pass |
| | 30 msec | m/s | 5.73 to 7.01 | 5.86 | Pass |
| | 40 to 70 msec | m/s | 6.27 to 7.64 | 7.17 | Pass |
| Midsaggital Plane Max Rotation | | deg | 66 to 82 | 68 | Pass |
| Head Rotation Peak to Zero - Decay Time | | msec | 58 to 67 | 59 | Pass |
| Max. Mx at Occipital Condyles | | Nm | 73 to 88 | 73 | Pass |
| Mx Peak To Zero - Decay Time | | msec | 49 to 64 | 52 | Pass |
| Mx Peak to Max. Head Rotation | | msec | 2 to 16 | 6 | Pass |

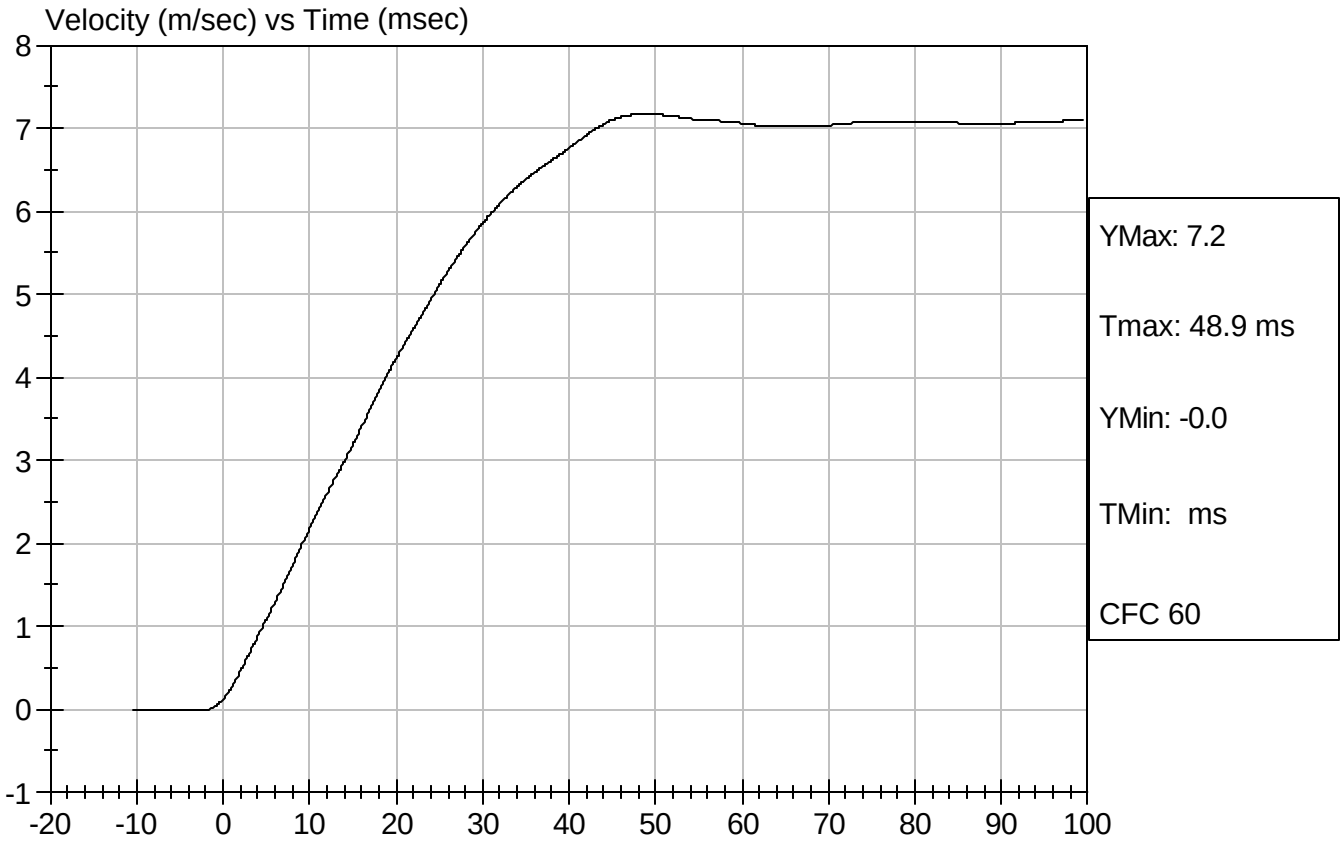
Jessica Hall
Laboratory Technician

06/13/2006
Test Date

David Winkelbauer
Approved By

Test Desc: Neck Bending
Component ID: D061719

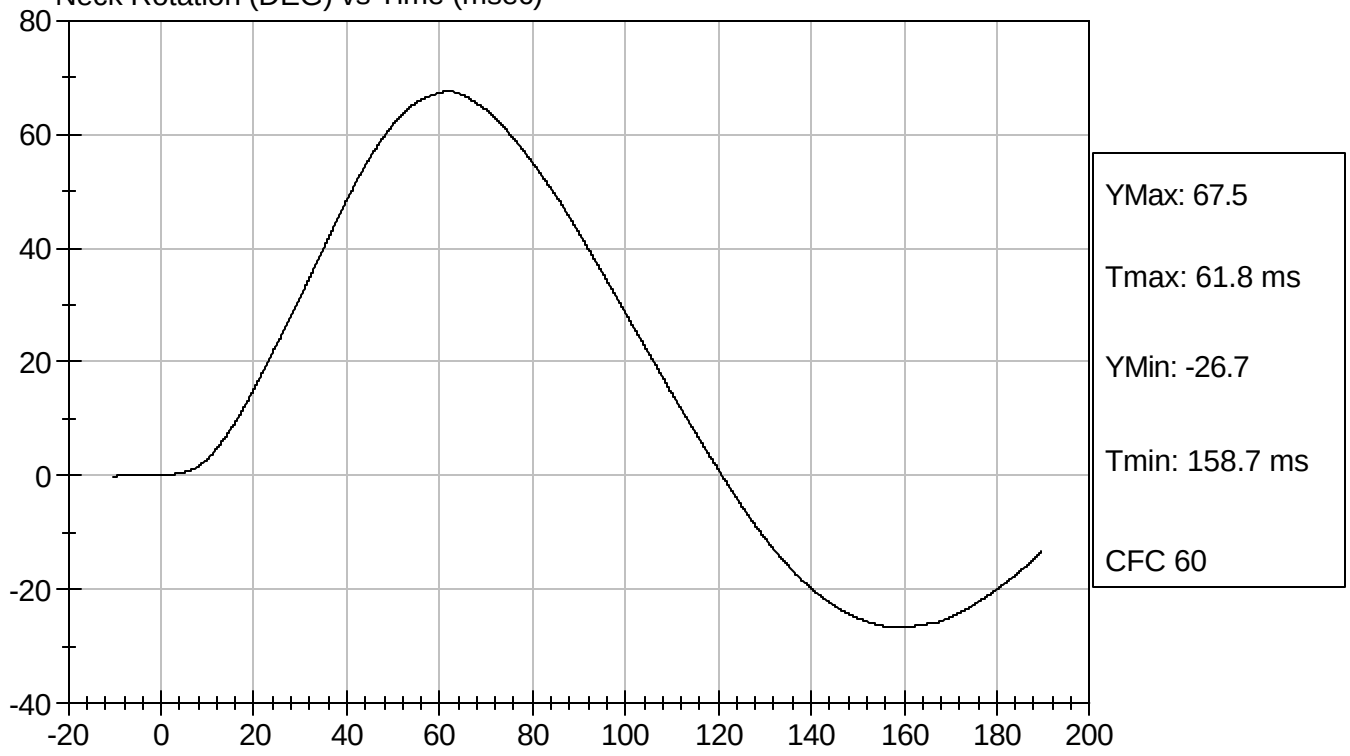
Test Date: 06/13/2006
Speed: 23.12 ft/sec, 7.05 m/sec



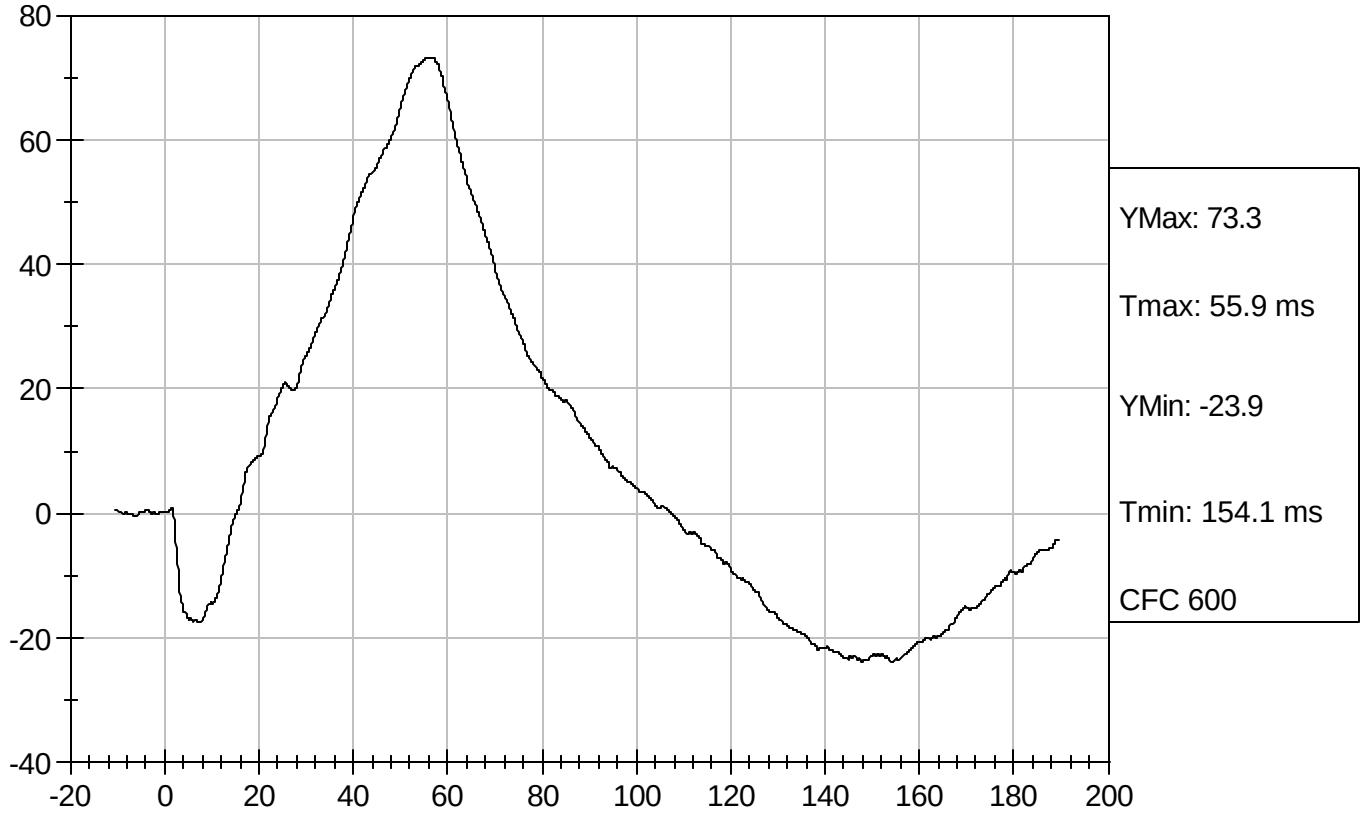
Test Desc: Neck Bending
Component ID: D061719

Test Date: 06/13/2006
Speed: 23.12 ft/sec, 7.05 m/sec

Neck Rotation (DEG) vs Time (msec)




Occipital Moment (Nm) vs Time (msec)



**SID/HIII Calibration Data Sheet**

**Side Impact Dummy**

**Head Drop Calibration (Lateral)**

**ATD Serial No:** 036 **Test I.D:** D062671

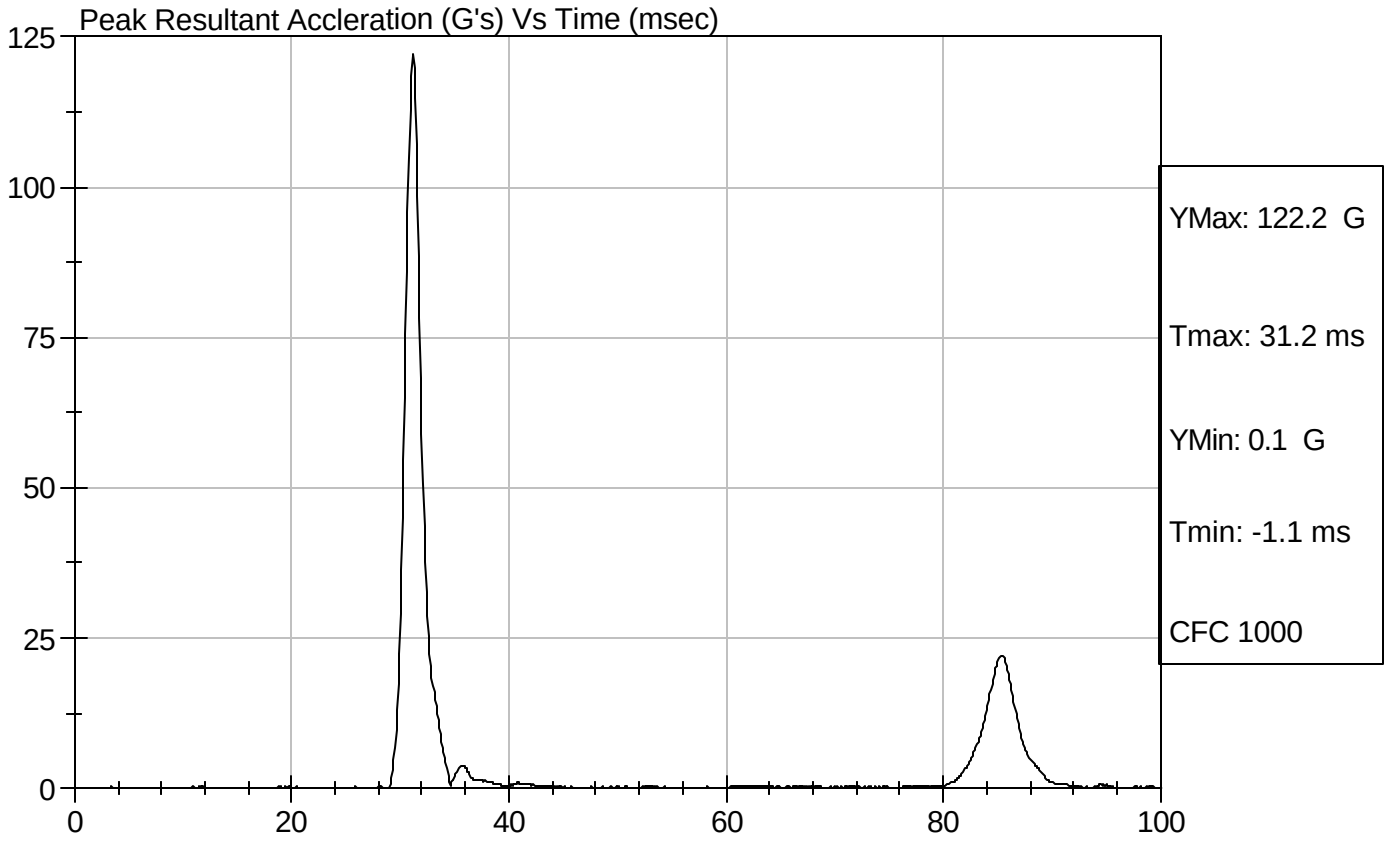
| Tested Parameter | Units | Specification | Result | Pass/Fail |
|---|---|---|---|---|
| Laboratory Temperature | deg C | 18.9 to 25.5 | 21.9 | Pass |
| Laboratory Relative Humidity | % | 10 to 70 | 45 | Pass |
| Peak Resultant Acceleration | G's | 120 to 150 | 122 | Pass |
| Is Resultant Curve Unimodal? | Yes/No | 15% of peak | Yes | Pass |
| Peak Longitudnal Acceleration | G's | +/- 15 | -9.9 | Pass |
| | | Overall Test Results | | Pass |

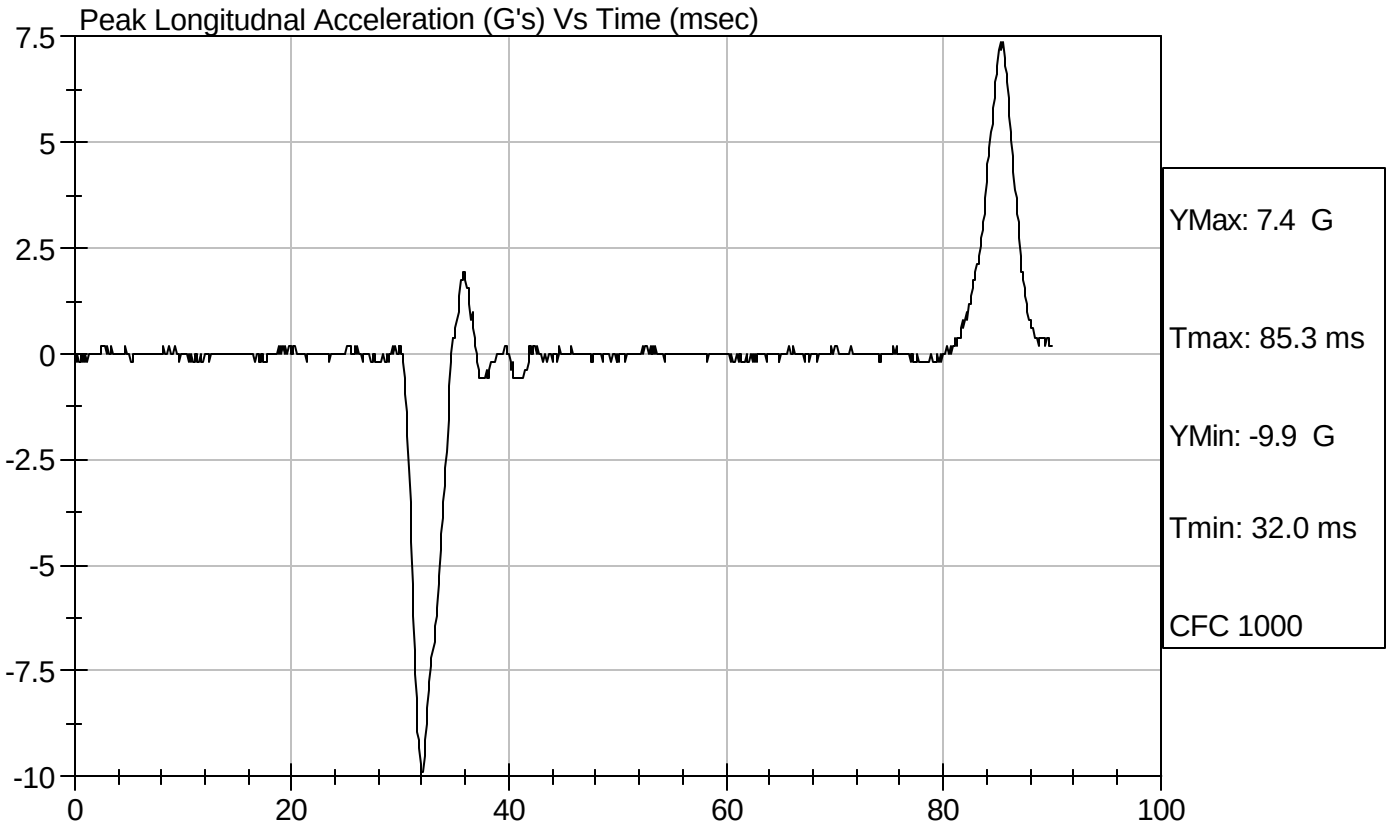
Jessica Hall
Laboratory Technician

09/06/2006
Test Date

David Winkelbauer
Approved By

| | | |
|---|---|---|
| | Test Description: Head Drop | Test Date: 09/06/2006 |
| | Component: D062671 | Speed: 0 ft/s, 0.00 m/s |



**SID/HIII Calibration Data Sheet**

**Side Impact Dummy**

**Thorax Impact Test**

**ATD Serial No:** 036 **Test I.D:** D062672

| Tested Parameter | Units | Specification | Result | Pass/Fail |
|---|---|---|---|---|
| Laboratory Temperature | deg C | 18.9 - 25.5 | 21.9 | Pass |
| Laboratory Relative Humidity | % | 10 to 70 | 45 | Pass |
| Probe Velocity | m/s | 4.27 - 4.33 | 4.28 | Pass |
| Upper Rib | G's | 37 - 46 | 43 | Pass |
| Lower Rib | G's | 37 - 46 | 45 | Pass |
| Lower Spine | G's | 15 - 22 | 17 | Pass |
| | | Overall Test Results | | Pass |

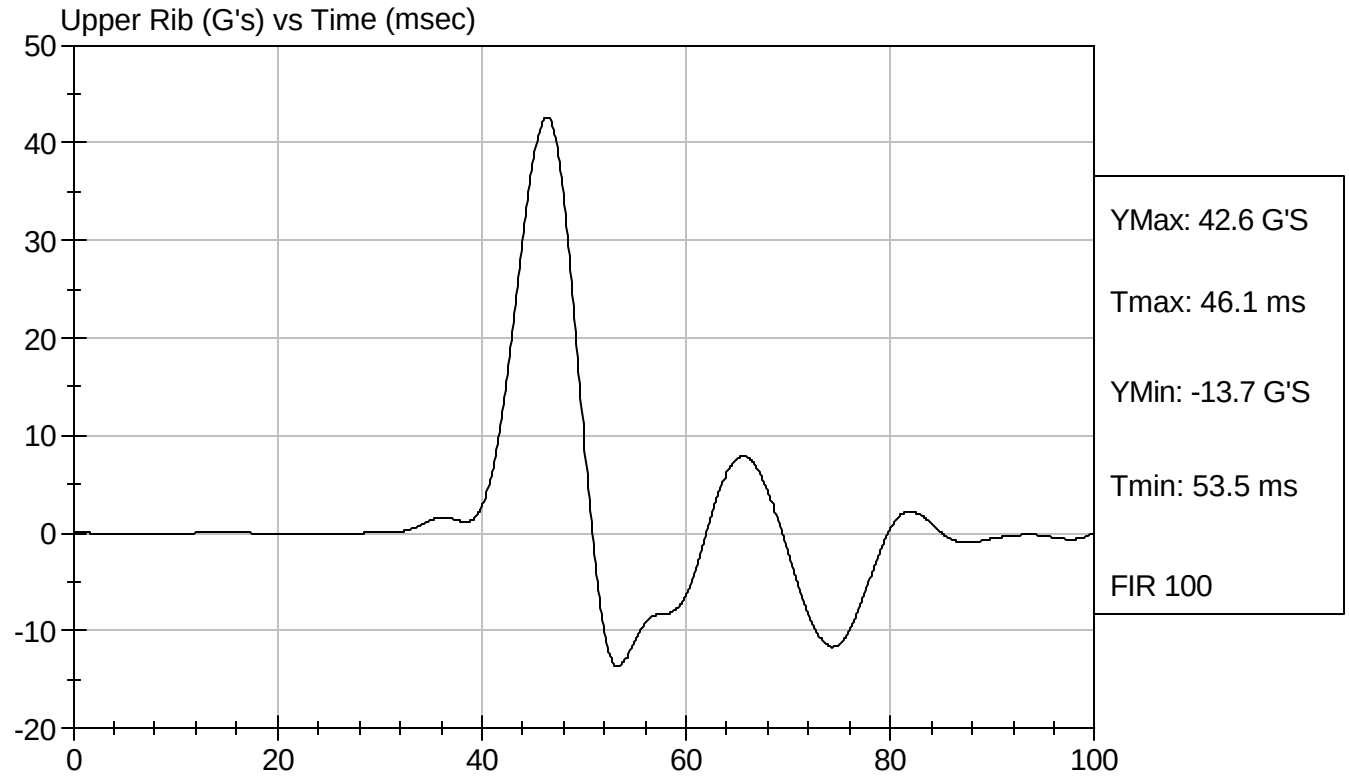
Jessica Hall
Laboratory Technician

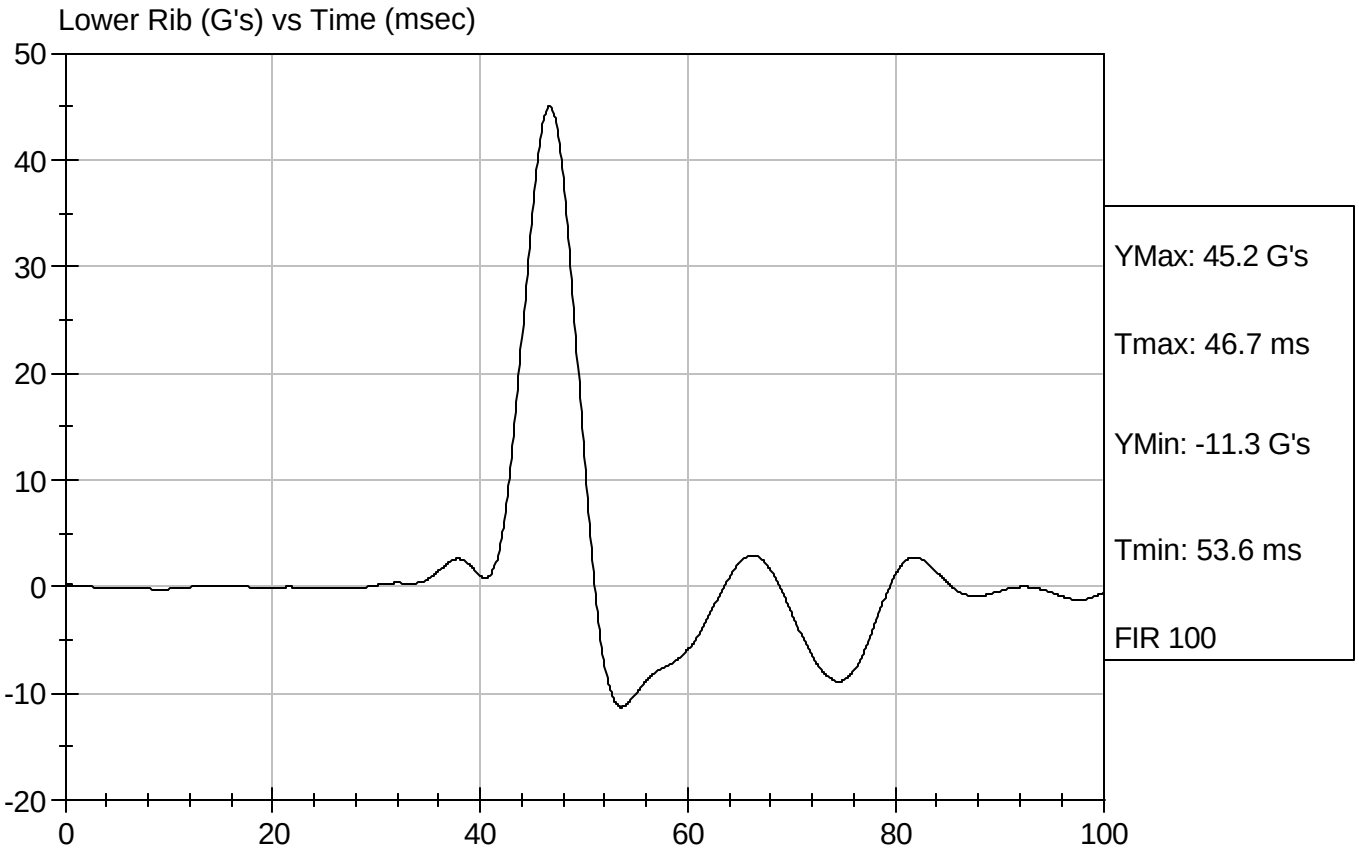
09/06/2006
Test Date

David Winkelbauer
Approved By

Test Desc: Thorax Impact
Component ID: D062672

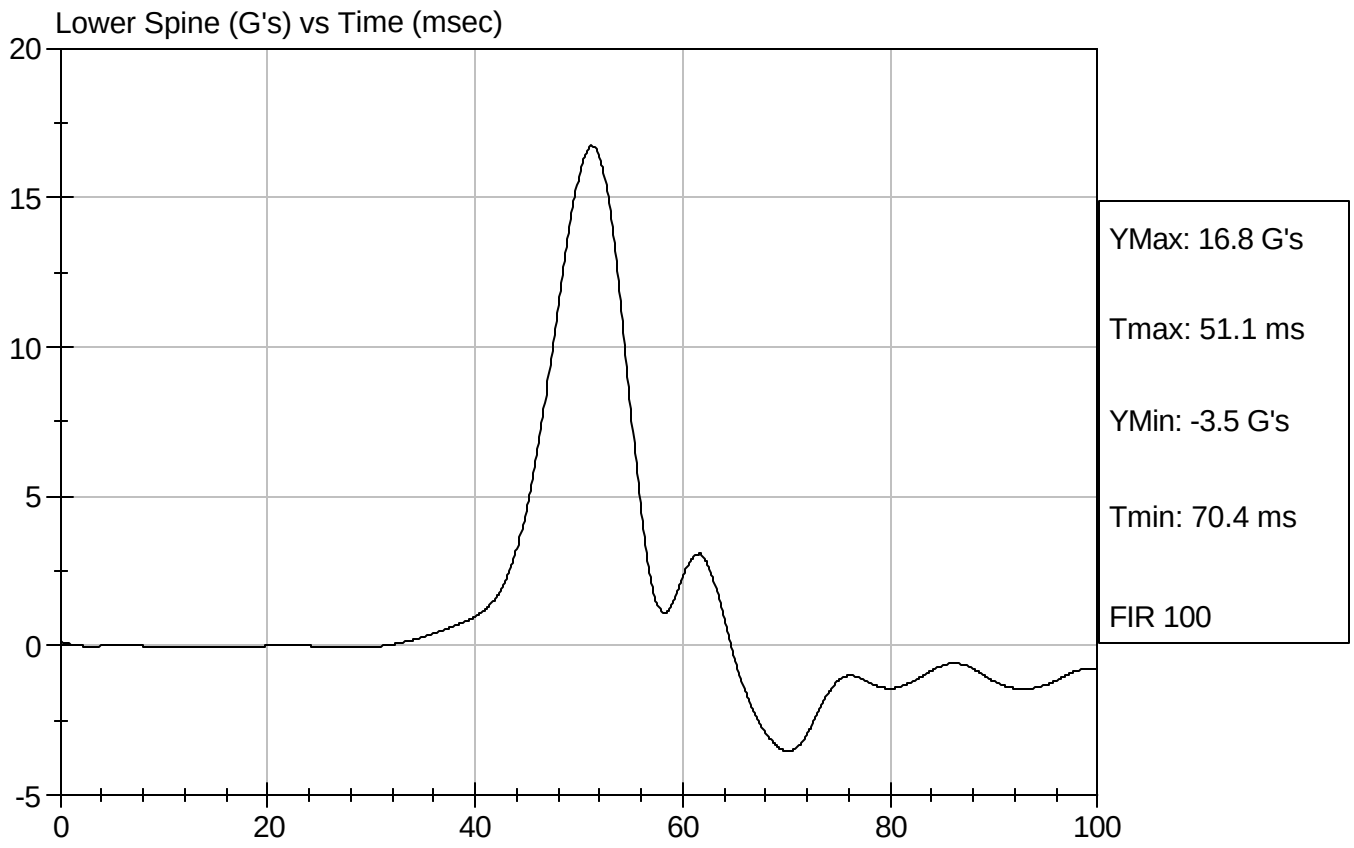
Test Date: 09/06/2006
Speed: 14.05 ft/sec, 4.28 m/sec



Test Desc: Thorax Impact
Component ID: D062672

Test Date: 09/06/2006
Speed: 14.05 ft/sec, 4.28 m/sec



**SID/HIII Calibration Data Sheet**

**Side Impact Dummy**

**Pelvis Impact Test**

**ATD Serial No:** 036 **Test I.D:** D062673

| Tested Parameter | Units | Specification | Result | Pass/Fail |
|---|---|---|---|---|
| Laboratory Temperature | deg C | 18.9 to 25.5 | 21.6 | Pass |
| Laboratory Relative Humidity | % | 10 to 70 | 45 | Pass |
| Probe Velocity | m/s | 4.27 - 4.33 | 4.30 | Pass |
| Pelvis Acceleration | G's | 40 - 60 | 46 | Pass |
| | | Overall Test Results | | Pass |

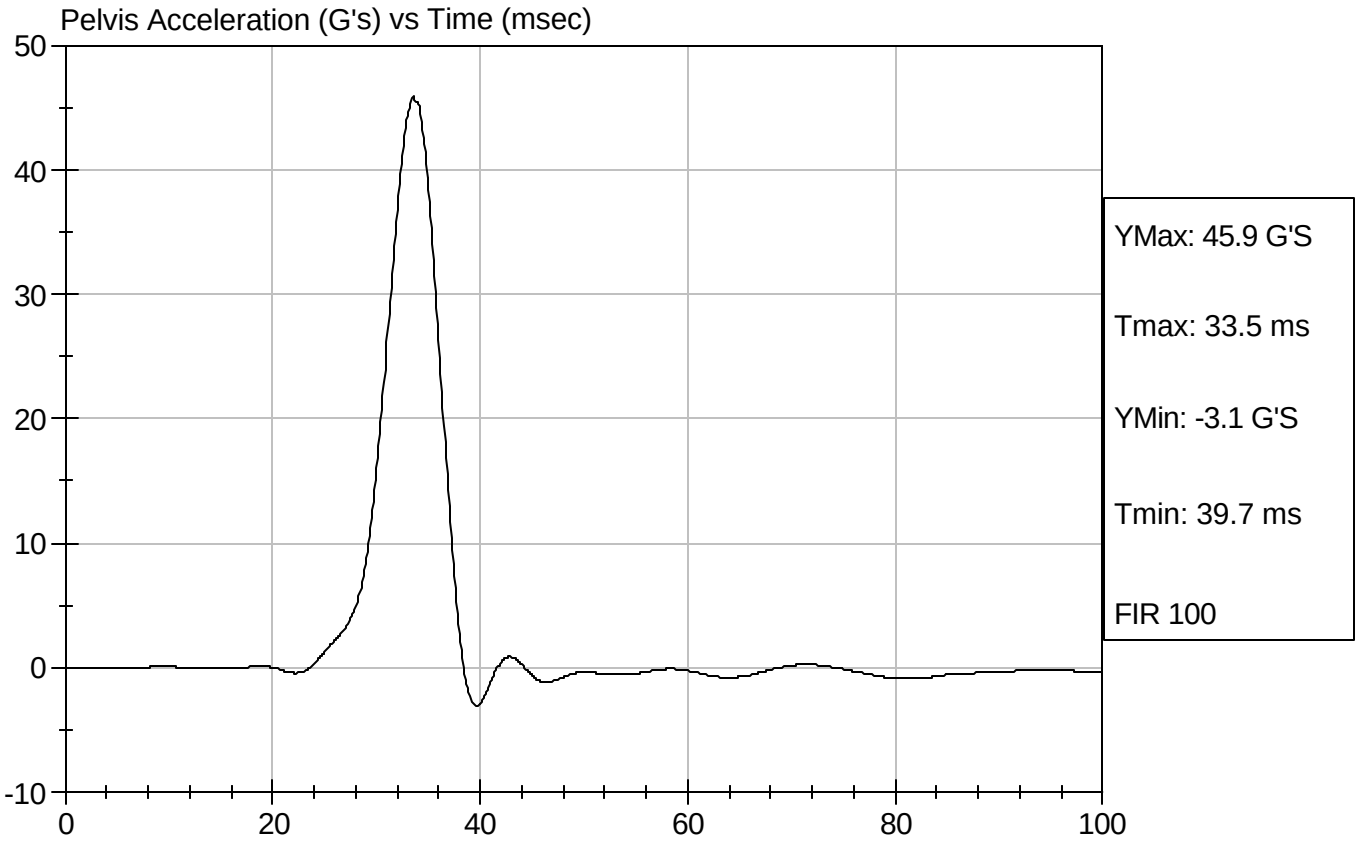
Jessica Hall
Laboratory Technician

09/06/2006
Test Date

David Winkelbauer
Approved By

Test Desc: Pelvis Impact
Component ID: D062673

Test Date: 09/06/2006
Speed: 14.11 ft/sec, 4.30 m/sec



**SID/HIII Calibration Data Sheet**

**Side Impact Dummy**

**Abdominal Compression Calibration (Pre-Load = 10 lbs)**

**ATD Serial No:** 036 **Test I.D:** D062674

| Tested Parameter | Units | Specification | Result | Pass/Fail |
|---|---|---|---|---|
| Laboratory Temperature | deg C | 18.9 - 25.5 | 21.7 | Pass |
| Laboratory Relative Humidity | % | 10 to 70 | 44 | Pass |
| Force At 12.7 mm | N | 104 -162 | 154 | Pass |
| Force At 19 mm | N | 163 - 222 | 207 | Pass |
| Force At 25.4 mm | N | 222 - 280 | 279 | Pass |
| Force At 33 mm | N | 325 - 391 | 380 | Pass |
| | | Overall Test Results | | Pass |

Jessica Hall
Laboratory Technician

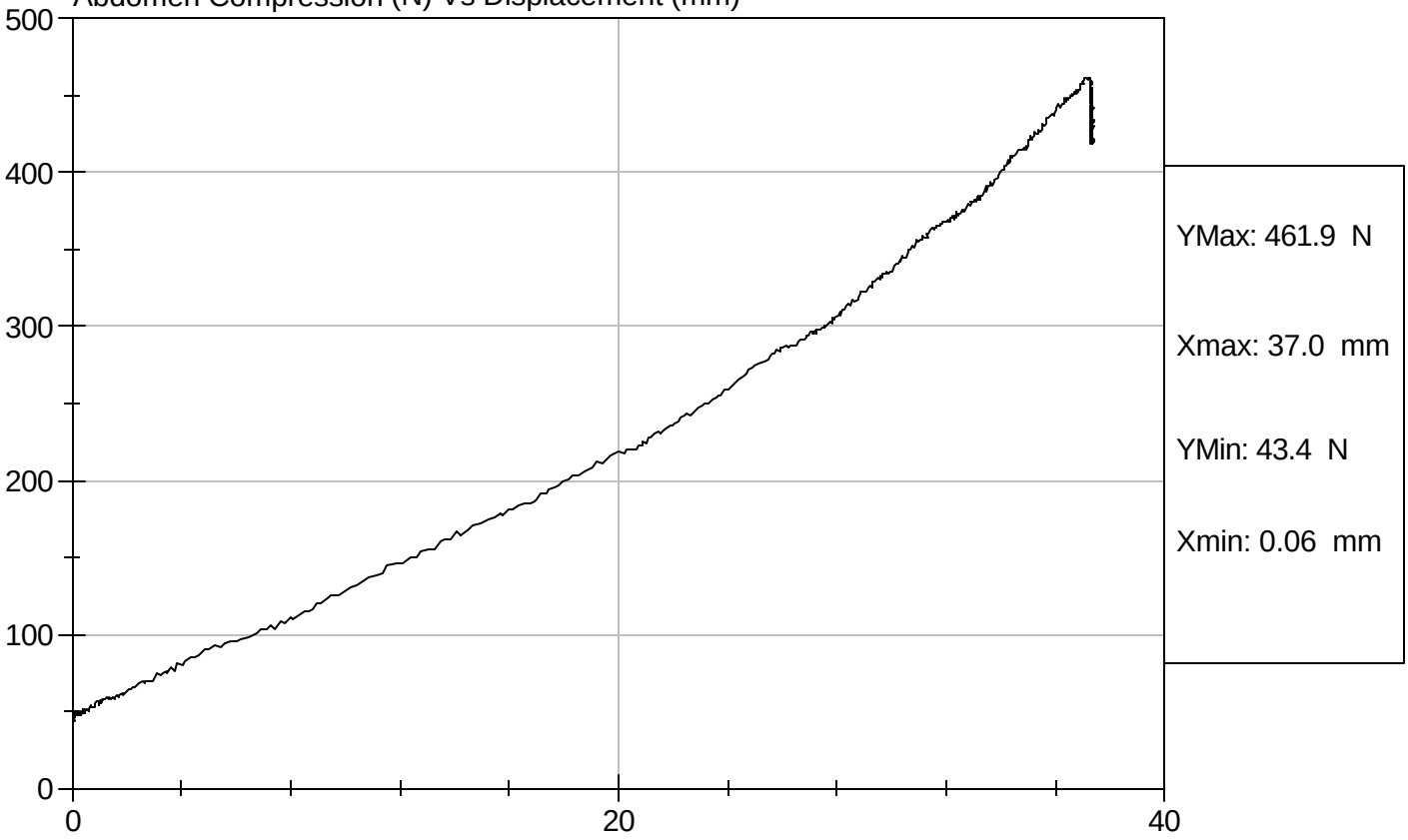
09/06/2006
Test Date

David Winkelbauer
Approved By

Test Description: Abdomen Compression  Test Date: 09/06/2006

Component: D062674  Speed: 0 ft/sec, 0 m/sec

Abdomen Compression (N) Vs Displacement (mm)



**SID/HIII Calibration Data Sheet**

**Side Impact Dummy**

**Lumbar Flexion Calibration**

**ATD Serial No:** 036 **Test I.D:** D062675

| Tested Parameter | Units | Specification | Result | Pass/Fail |
|---|---|---|---|---|
| Laboratory Temperature | deg C | 18.9 - 25.5 | 21.6 | Pass |
| Laboratory Relative Humidity | % | 10 to 70 | 44 | Pass |
| Force At 0 deg | N | 0 - 26.7 | 0.0 | Pass |
| Force At 20 deg | N | 97.9 - 151.2 | 116.3 | Pass |
| Force At 30 deg | N | 151.2 - 204.6 | 196.4 | Pass |
| Force At 40 deg | N | 204.6 - 258.0 | 212.4 | Pass |
| Return Angle | Deg | 12 Maximum | 4 | Pass |
| | | Overall Test Results | | Pass |

Jessica Hall
Laboratory Technician

09/06/2006
Test Date

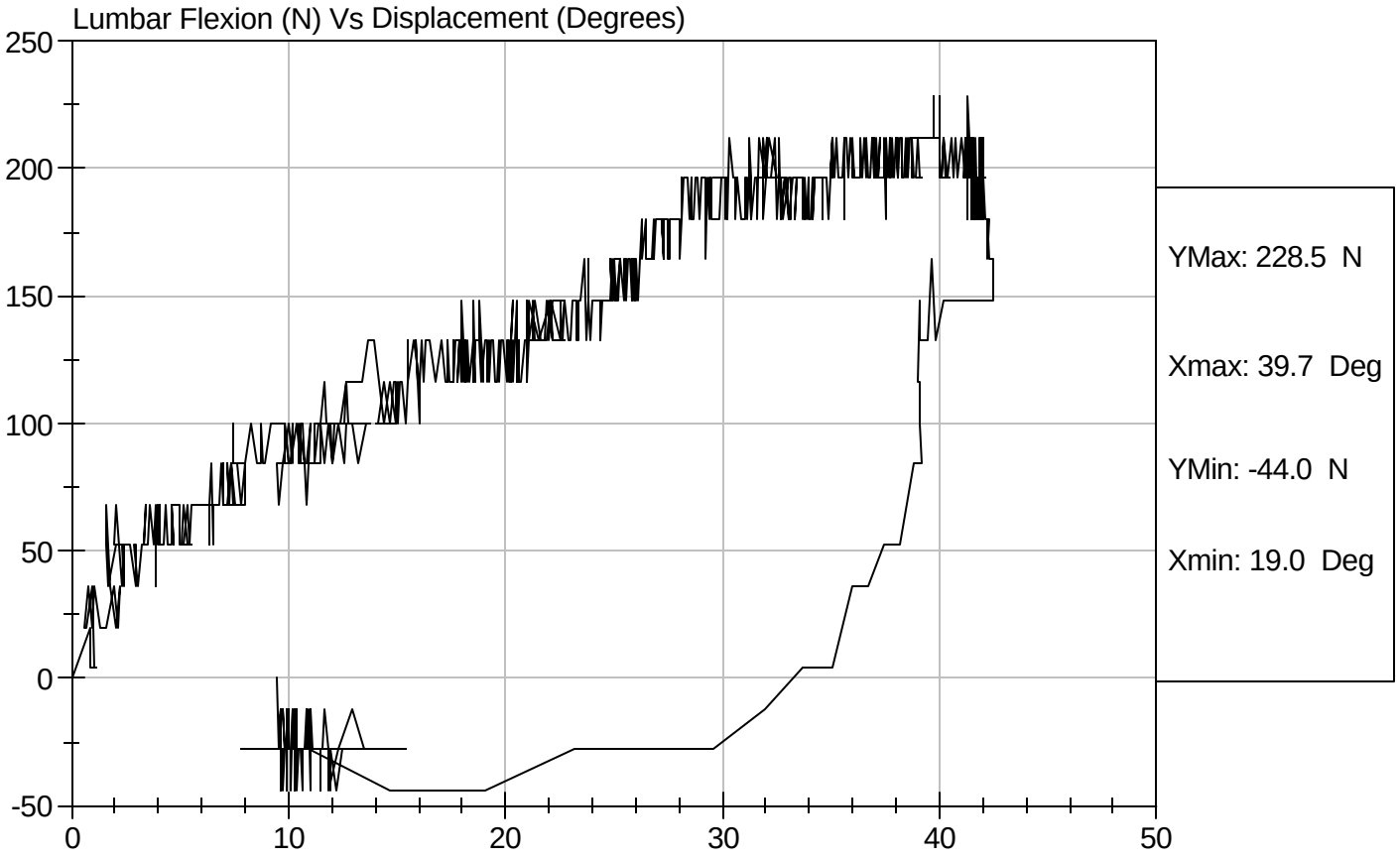
David Winkelbauer
Approved By

Test Description: Lumbar Flexion

Test Date: 09/06/2006

Component: D062675

Speed: 0 ft/sec, 0 m/sec



**SID/HIII Calibration Data Sheet**

**Side Impact Dummy (SID)**

**Neck Pendulum Test**

**ATD Serial No:** 036 **Test I.D:** D062678

| 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 | 45 | Pass |
| Impact Velocity | | m/s | 6.89 to 7.13 | 7.01 | Pass |
| Pendulum Deceleration | 10 msec | m/s | 1.96 to 2.55 | 2.25 | Pass |
| | 20 msec | m/s | 4.12 to 5.10 | 4.41 | Pass |
| | 30 msec | m/s | 5.73 to 7.01 | 6.12 | Pass |
| | 40 to 70 msec | m/s | 6.27 to 7.64 | 7.16 | Pass |
| Midsaggital Plane Max Rotation | | deg | 66 to 82 | 69 | Pass |
| Head Rotation Peak to Zero - Decay Time | | msec | 58 to 67 | 58 | Pass |
| Max. Mx at Occipital Condyles | | Nm | 73 to 88 | 76 | Pass |
| Mx Peak To Zero - Decay Time | | msec | 49 to 64 | 56 | Pass |
| Mx Peak to Max. Head Rotation | | msec | 2 to 16 | 11 | Pass |

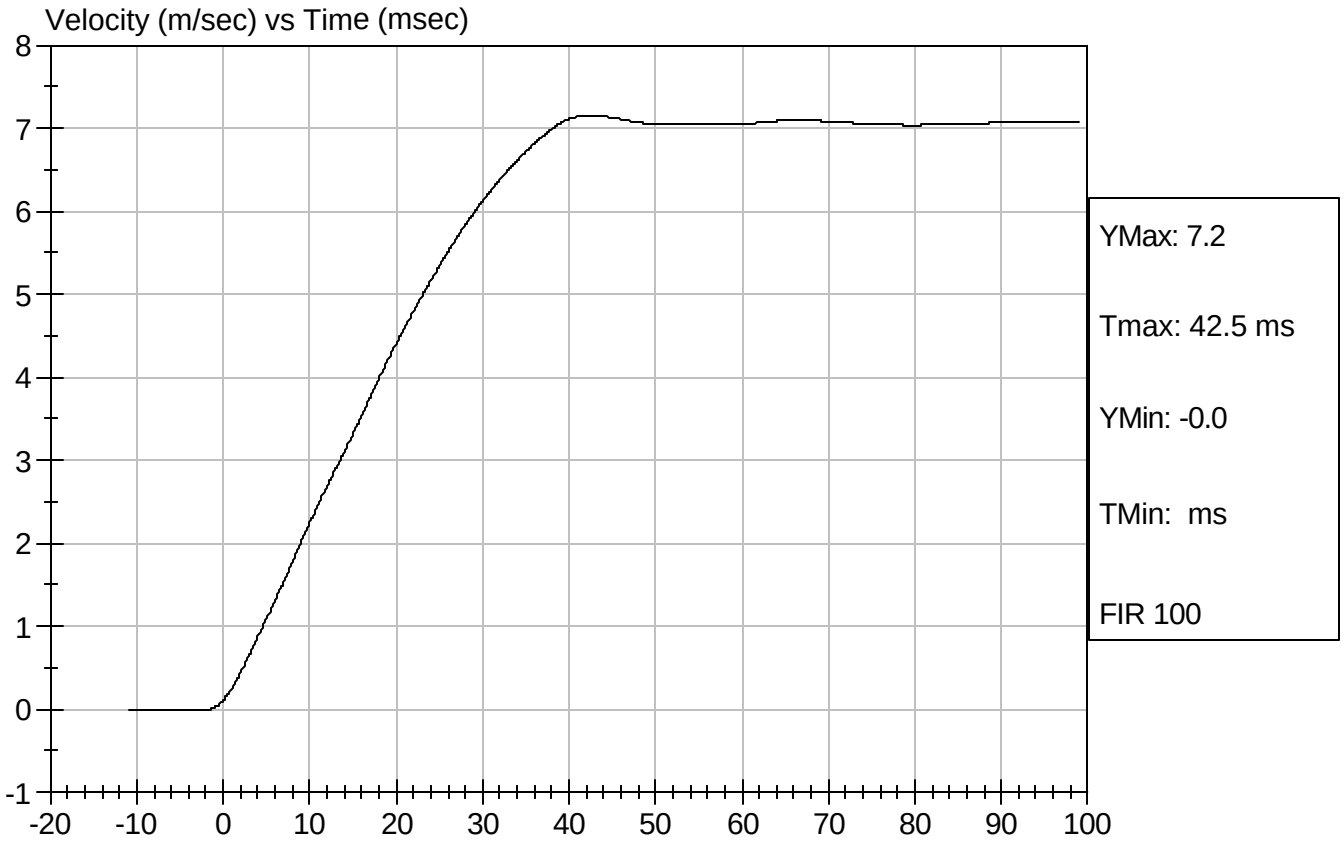
Jessica Hall
Laboratory Technician

09/06/2006
Test Date

David Winkelbauer
Approved By

Test Desc: Neck Bending
Component ID: D062678

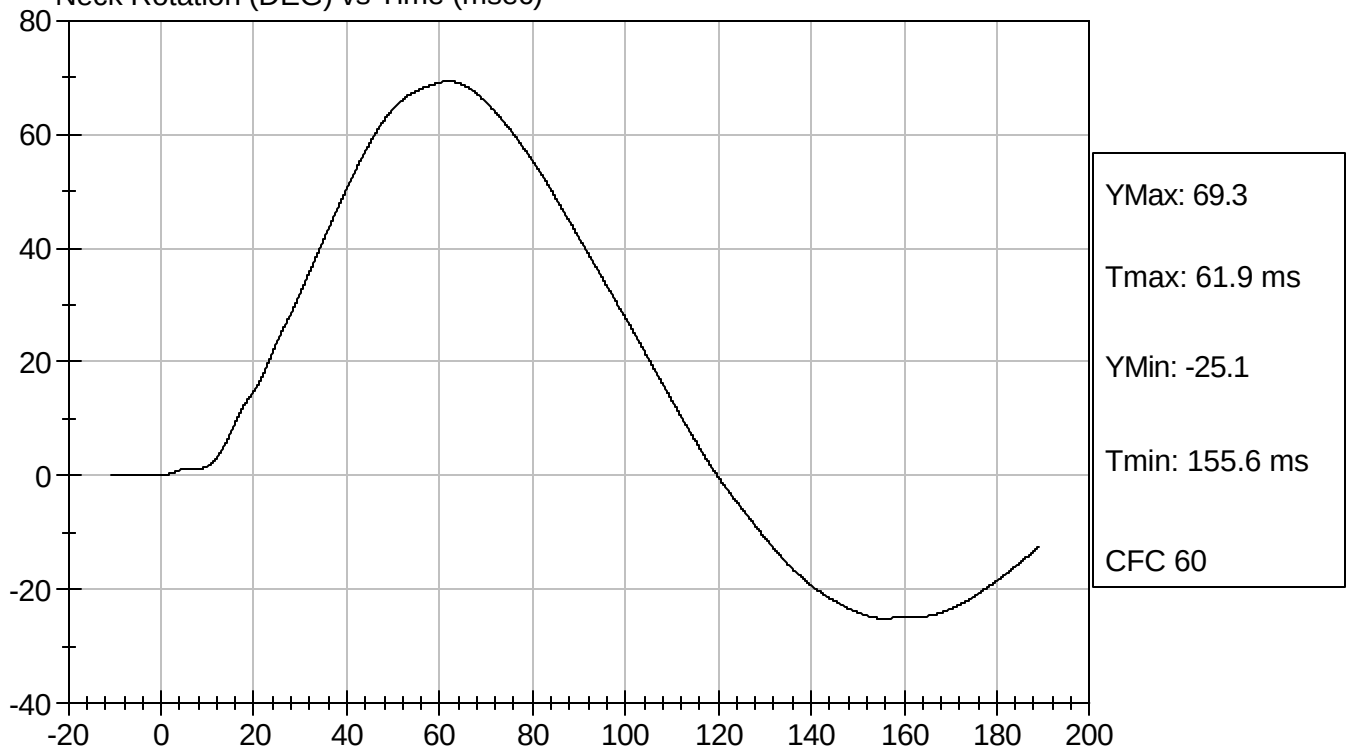
Test Date: 09/06/2006
Speed: 23.0 ft/sec, 7.01 m/sec



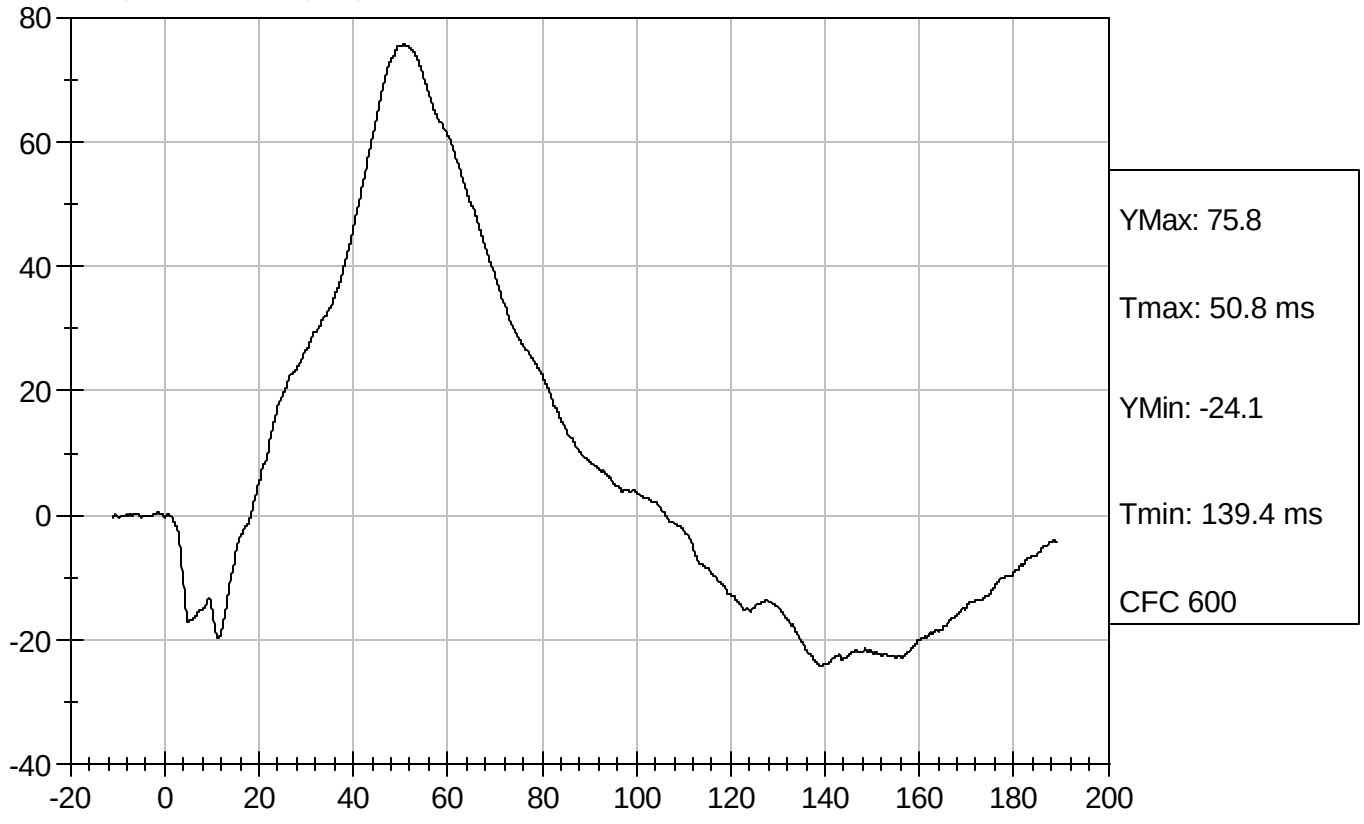
Test Desc: Neck Bending
Component ID: D062678

Test Date: 09/06/2006
Speed: 23.0 ft/sec, 7.01 m/sec

Neck Rotation (DEG) vs Time (msec)




Occipital Moment (Nm) vs Time (msec)



# APPENDIX D

# CALIBRATION INFORMATION DATA

DUMMY AND VEHICLE CALIBRATION DATA

| | INSTRUMENTS FOR DRIVER S/N 036 | | |
|---|---|---|---|
| | SERIAL NO. | MANUFACTURER | CALIBRATION DATE |
| Head CG X | C12811 | Endevco | 04/11/06 |
| Head CG Y | AH5N9 | Endevco | 04/11/06 |
| Head CG Z | AH5L1 | Endevco | 04/12/06 |
| Neck Load Cell | 174 | FTSS | 04/28/06 |
| Upper Rib Y | P49454 | Endevco | 06/07/06 |
| Lower Rib Y | P49499 | Endevco | 06/07/06 |
| Lower Spine Y | A27-R09 | Entran | 06/07/06 |
| Pelvis Y | A07-R09 | Entran | 06/07/06 |
| Upper Rib Redundant Y | P49453 | Endevco | 06/07/06 |
| Lower Rib Redundant Y | C23-Y08 | Entran | 05/31/06 |
| Lower Spine Redundant Y | A27-Z23 | Entran | 08/23/06 |
| Pelvis Redundant Y | P22694 | Endevco | 05/31/06 |

VEHICLE INSTRUMENT CALIBRATION

| | VEHICLE ACCELEROMETERS | | |
|---|---|---|---|
| | SERIAL NO. | MANUFACTURER | CALIBRATION DATE |
| Vehicle CG X | E05-Z27 | Entran | 07/18/06 |
| Vehicle CG Y | D03-Z17 | Entran | 04/10/06 |
| Vehicle CG Z | C20-Z17 | Entran | 04/10/06 |
| Left Floor Y | AJ9D6 | Endevco | 06/07/06 |
| Left A-Post @ Sill Y | P24154 | Endevco | 08/03/06 |
| Left Lower A-Post Y | AJ820 | Endevco | 07/18/06 |
| Left Mid A-Post Y | J13530 | Endevco | 06/27/06 |
| Left B-Post @ Sill Y | AH0B0 | Endevco | 08/03/06 |
| Left Lower B-Post Y | ANAP1 | Endevco | 08/03/06 |
| Left Mid B-Post Y | J12462 | Endevco | 05/15/06 |
| Driver Seat Track Y | J18925 | Endevco | 07/18/06 |
| LF Door Accel. #1 Y | J13630 | Endevco | 04/11/06 |
| LF Door Accel. #2 Y | J23808 | Endevco | 07/18/06 |
| LF Door Accel. #3 Y | J33415 | Endevco | 04/11/06 |
| Upper Engine X | L02-Z38 | Entran | 08/03/06 |
| Upper Engine Y | H06-L06 | Entran | 06/21/06 |
| Firewall Y | C06-L04 | Entran | 03/07/06 |
| Right Floor Sill Y | AMTG3 | Endevco | 07/18/06 |
| Rear Deck X | F29-X13 | Entran | 08/03/06 |
| Rear Deck Y | F29-X04 | Entran | 08/03/06 |