

**REPORT NUMBER KAR-20-02**

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

**TOYOTA MOTOR CORPORATION  
2000 TOYOTA TUNDRA  
SR 5 PICKUP  
NHTSA NUMBER: MY5103**

**PREPARED BY:  
KARCO ENGINEERING  
9270 HOLLY ROAD  
ADELANTO, CALIFORNIA 92301**



**NOVEMBER 26, 1999**

**FINAL REPORT**

**PREPARED FOR:  
U.S. DEPARTMENT OF TRANSPORTATION  
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION  
SAFETY PERFORMANCE STANDARDS  
OFFICE OF CRASHWORTHINESS STANDARDS  
MAIL CODE: NPS-10  
400 SEVENTH STREET, SW, ROOM 5313  
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 DTNH22-97-D-02007.

This publication is distributed by the U.S. Department of Transportation, National Highway Traffic Safety Administration, in the interest of information exchange. The opinions, findings and conclusions expressed in this publication are those of the author(s) and not necessarily those of the Department of Transportation or the National Highway Traffic Safety Administration. The United States Government assumes no liability for its contents or use thereof. If trade or manufacturers' names or products are mentioned it is only because they are considered essential to the object of the publication and should not be construed as an endorsement. The United States Government does not endorse products or manufacturers.

Prepared by: \_\_\_\_\_  
Mr. James E. Gorth, Project Engineer  
KARCO Engineering

Date: November 26, 1999

Reviewed by: \_\_\_\_\_  
Mr. Jerry L. Kratzke, Director of Operations  
KARCO Engineering

Date: November 26, 1999

Approved by: \_\_\_\_\_  
Mr. Frank D. Richardson, Program Manager  
KARCO Engineering

Date: November 26, 1999

FINAL REPORT ACCEPTED BY:

\_\_\_\_\_  
Manager, New Car Assessment Program

\_\_\_\_\_  
Date of Acceptance

\_\_\_\_\_  
COTR, NCAP Frontal Impact Program

\_\_\_\_\_  
Date of Acceptance

## Technical Report Documentation Page

| 1. Report No.<br>KAR20001-02  | 2. Government Accession No.                               | 3. Recipients Catalog No.   |            |                         |       |           |            |               |                            |     |      |       |       |                                  |     |    |      |      |                  |         |       |         |         |                   |         |       |         |         |
|---|---|---|------------|-------------------------|-------|-----------|------------|---------------|----------------------------|-----|------|-------|-------|----------------------------------|-----|----|------|------|------------------|---------|-------|---------|---------|-------------------|---------|-------|---------|---------|
| 4. Title and Subtitle<br>Final Report of New Car Assessment Program Testing<br>of a 2000 Toyota Tundra SR5 P/U<br>NHTSA No. MY5103  |   | 5. Report Date<br>November 26, 1999   |            |                         |       |           |            |               |                            |     |      |       |       |                                  |     |    |      |      |                  |         |       |         |         |                   |         |       |         |         |
|   |   | 6. Performing Organization Code<br>KAR  |            |                         |       |           |            |               |                            |     |      |       |       |                                  |     |    |      |      |                  |         |       |         |         |                   |         |       |         |         |
| 7. Author(s)<br>Mr. James E Gorth, Project Engineer<br>Mr. Frank Richardson, Project Manager  |   | 8. Performing Organization Report No.<br>KAR-20001-02   |            |                         |       |           |            |               |                            |     |      |       |       |                                  |     |    |      |      |                  |         |       |         |         |                   |         |       |         |         |
| 9. Performing Organization Name and Address<br>KARCO Engineering<br>9270 Holly Road<br>Adelanto, CA 92301   |   | 10. Work Unit No.   |            |                         |       |           |            |               |                            |     |      |       |       |                                  |     |    |      |      |                  |         |       |         |         |                   |         |       |         |         |
|   |   | 11. Contract or Grant No.<br>DTNH22-97-D-02007  |            |                         |       |           |            |               |                            |     |      |       |       |                                  |     |    |      |      |                  |         |       |         |         |                   |         |       |         |         |
| 12. Sponsoring Agency Name and Address<br>U.S. Department of Transportation<br>National Highway Traffic Safety Administration<br>Safety Performance Standards<br>Office of Crashworthiness Standards<br>Mail Code: NPS-10<br>400 Seventh Street, SW, Room 5313<br>Washington, D.C. 20590  |   | 13. Type of Report and Period Covered<br>Final Test Report<br>Option Year 3   |            |                         |       |           |            |               |                            |     |      |       |       |                                  |     |    |      |      |                  |         |       |         |         |                   |         |       |         |         |
|   |   | 14. Sponsoring Agency Code<br>DOT/NHTSA/NRM/OCS   |            |                         |       |           |            |               |                            |     |      |       |       |                                  |     |    |      |      |                  |         |       |         |         |                   |         |       |         |         |
| 15. Supplementary Notes   |   |   |            |                         |       |           |            |               |                            |     |      |       |       |                                  |     |    |      |      |                  |         |       |         |         |                   |         |       |         |         |
| 16. Abstract<br><p>A 35 mph (56.3 km/h) frontal barrier impact was conducted on a 2000 Toyota Tundra SR5 P/U at KARCO Engineering on November 17, 1999. This test was conducted to obtain data indicant of FMVSS 208, 212, 219 (partial), 301, and footwell intrusion performance. The impact velocity was 56.45 km/h. The ambient temperature at the barrier face at the time of impact is 13.8 degrees Celcius. The vehicle's maximum post test static crush is 542 mm located to the right of the vehicle centerline. The test vehicle is equipped with a 3-point continuous belt system and second generation supplemental airbags in both front outboard seating positions. With respect to FMVSS 208 "Occupant Crash Protection", the occupant injury criteria summary is as follows:</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th style="width: 35%;">Measurement Description</th> <th style="width: 15%;">Units</th> <th style="width: 15%;">Threshold</th> <th style="width: 15%;">Driver ATD</th> <th style="width: 20%;">Passenger ATD</th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC)</td> <td>N/A</td> <td>1000</td> <td>794.7</td> <td>820.8</td> </tr> <tr> <td>Max. Thorax Accel. (3 msec Clip)</td> <td>G's</td> <td>60</td> <td>51.4</td> <td>51.2</td> </tr> <tr> <td>Left Femur force</td> <td>Newtons</td> <td>10009</td> <td>-4632.0</td> <td>-4126.7</td> </tr> <tr> <td>Right Femur Force</td> <td>Newtons</td> <td>10009</td> <td>-4633.9</td> <td>-2852.1</td> </tr> </tbody> </table> |   |   |            | Measurement Description | Units | Threshold | Driver ATD | Passenger ATD | Head Injury Criteria (HIC) | N/A | 1000 | 794.7 | 820.8 | Max. Thorax Accel. (3 msec Clip) | G's | 60 | 51.4 | 51.2 | Left Femur force | Newtons | 10009 | -4632.0 | -4126.7 | Right Femur Force | Newtons | 10009 | -4633.9 | -2852.1 |
| Measurement Description   | Units   | Threshold   | Driver ATD | Passenger ATD           |       |           |            |               |                            |     |      |       |       |                                  |     |    |      |      |                  |         |       |         |         |                   |         |       |         |         |
| Head Injury Criteria (HIC)  | N/A   | 1000  | 794.7      | 820.8                   |       |           |            |               |                            |     |      |       |       |                                  |     |    |      |      |                  |         |       |         |         |                   |         |       |         |         |
| Max. Thorax Accel. (3 msec Clip)  | G's   | 60  | 51.4       | 51.2                    |       |           |            |               |                            |     |      |       |       |                                  |     |    |      |      |                  |         |       |         |         |                   |         |       |         |         |
| Left Femur force  | Newtons   | 10009   | -4632.0    | -4126.7                 |       |           |            |               |                            |     |      |       |       |                                  |     |    |      |      |                  |         |       |         |         |                   |         |       |         |         |
| Right Femur Force   | Newtons   | 10009   | -4633.9    | -2852.1                 |       |           |            |               |                            |     |      |       |       |                                  |     |    |      |      |                  |         |       |         |         |                   |         |       |         |         |
| 17. Key Words<br>56.3 km/h NCAP Frontal Barrier Impact Test<br>New Car Assessment Program (NCAP)<br>2000 Toyota Tundra SR5 P/U<br>NHTSA No. MY5103  |   | 18. Distribution Statement<br>Copies of this report are available from:<br>NHTSA Technical Reference Division<br>National Highway Traffic Safety Admin.<br>400 Seventh St., SW, Room 5108<br>Washington, DC 20590 |            |                         |       |           |            |               |                            |     |      |       |       |                                  |     |    |      |      |                  |         |       |         |         |                   |         |       |         |         |
| 19. Security Classification(of this report)<br>UNCLASSIFIED   | 20. Security Classification(of this page)<br>UNCLASSIFIED | 21. No. of Pages<br>336   | 22. Price  |                         |       |           |            |               |                            |     |      |       |       |                                  |     |    |      |      |                  |         |       |         |         |                   |         |       |         |         |

Form DOT F1700.7 (8-72)

## TABLE OF CONTENTS

| Section            |  | Page |
|--------------------|--|------|
| 1                  | Purpose, Test Procedures and Summary of Test MY5103    | 1    |
| 2                  | Occupant and Vehicle Information Data Sheets           | 3    |
| <br>Appendix       |  |      |
| A                  | Photographs  | A    |
| B                  | Dummy and Vehicle Response Data Traces                 | B    |
| C                  | Load Cell Barrier Data Traces                          | C    |
| D                  | Instrumentation and Data Channel Assignments           | D    |
| E                  | Dummy Calibration Data Traces and Tables               | E    |
| F                  | Vehicle Owner's Manual Occupant Restraint Instructions | F    |
| <br>Data Sheet No. |  |      |
| 1                  | Crash Test Summary                                     | 4    |
| 2                  | General Test and Vehicle Parameter Data                | 5    |
| 3                  | Post Impact Data                                       | 7    |
| 4                  | Test Vehicle Information                               | 8    |
| 5                  | Dummy Positioning in Vehicle                           | 10   |
| 6                  | Seat Belt Positioning Data                             | 12   |
| 7                  | Vehicle Accelerometer Location and Data Summary        | 13   |
| 8                  | Hybrid III ATD Injury Criteria and Sensor Data         | 14   |
| 9                  | Seat Belt Assessment Test Data                         | 17   |
| 10                 | Summary of FMVSS 212 Data                              | 18   |
| 11                 | Windshield Zone Intrusion FMVSS 219 Data (Partial)     | 19   |
| 12                 | FMVSS 301 Fuel System Integrity Post Impact Data       | 20   |
| 13                 | FMVSS 301 Static Rollover Data                         | 21   |
| 14                 | Vehicle Measurements                                   | 22   |
| 15                 | Camera Locations                                       | 24   |
| 16                 | Photographic Reference Target Locations                | 25   |
| 17                 | Vehicle Intrusion Measurements                         | 26   |
| 18                 | Load Cell Locations on Fixed Barrier                   | 30   |
| 19                 | Accident Investigation Division Data                   | 31   |
| 20                 | Dummy/Vehicle Temperature Stabilization Chart          | 32   |

## SECTION 1

### PURPOSE, TEST PROCEDURE AND SUMMARY OF TEST MY5103

#### 1.1 PURPOSE

This 35 mph (56.3 km/h) frontal barrier impact test is part of the FY' 99 New Car Assessment Program (NCAP) frontal barrier crash worthiness evaluation program sponsored by the National Highway Traffic Safety Administration (NHTSA) under Contract Number DTNH22-97-D-02007. The purpose of this test is to obtain vehicle crashworthiness, occupant restraint system performance, and lower leg data for frontal barrier impacts. The impact velocity used in this test is in excess of the current 30 mph (48.3 km/h) FMVSS 208/212/219/301 requirements.

#### 1.2 TEST PROCEDURE

This 56.3 km/h frontal barrier impact test was conducted in accordance with the Office of Crashworthiness Standards (OCS) New Car Assessment Program (NCAP) Laboratory Indicant Test Procedure, dated 01 October, 1996 and the corresponding KARCO Engineering Test Procedure KTP-001, dated October 18, 1996. Data was obtained indicant of FMVSS 208, "Occupant Crash Protection"; FMVSS 212, "Windshield Retention"; FMVSS 219, "Windshield Zone Intrusion (Partial)"; and FMVSS 301 "Fuel System Integrity" performance. Procedures for receiving, inspection testing and reporting of test results are described in the test procedures and are not repeated in this report.

The test was conducted at KARCO Engineering on November 17, 1999 at a speed of 56.45 km/h. The test vehicle was instrumented with eight (8) accelerometers to measure longitudinal axis accelerations. The driver and passenger's restraint systems were instrumented with four (4) seat belt load cells to measure lap and shoulder belt tension. The specified impact velocity range was 55.5 to 57.1 km/h. The frontal barrier impact event was documented by one (1) real-time panning motion picture camera and eighteen (18) high-speed motion picture cameras. The pre- and post-test conditions were recorded by one (1) real-time motion picture camera. Camera locations and pertinent camera information is documented in the data sheets. Pre- and post-test photographs of the vehicle and dummies can be found in Appendix A.

The test vehicle contained two (2) part 572E 50th percentile adult male anthropomorphic test devices (ATDs). Both ATDs were instrumented with head, chest, and pelvic tri-axial accelerometers, left and right femur load cells, upper and lower tibia sensors, and foot accelerometers. In addition, chest displacement and upper neck six-axis force and moment sensors were utilized. The ATDs were positioned in the front outboard seating positions according to the dummy placement procedures specified in the Laboratory Indicant Test Procedure. Ninety-four (94) channels of data were recorded with a PC based (TDAS) on-board data acquisition system. The data was digitally sampled at 10,000 samples per second and processed per section IP11 of the Laboratory Indicant Test Procedure.

The Driver ATD (Serial No. 34) and the right-front passenger ATD (Serial No. 35) were re-calibrated two tests prior to this test. FMVSS 208 "Occupant Crash Protection" injury criteria were not exceeded by either ATD during this frontal barrier impact test.

### **1.3 SUMMARY OF FRONTAL BARRIER IMPACT TEST**

A rigid load cell barrier was impacted by a 2000 TOYOTA TUNDRA SR5 P/U at a velocity of 56.45 km/h. The test vehicle weight is 2255 kilograms with two (2) part 572E 50th percentile adult male ATDs. Twenty-four (24) load cell barrier data channels were obtained in conducting the November 17, 1999 NCAP test. The test vehicle is equipped with a longitudinally mounted 4.7-liter, 8-cylinder engine and an automatic transmission.

The driver Head Injury Criteria (HIC) is 794.7. The maximum resultant chest deceleration over three (3) milliseconds is 51.4 g's. The left and right femur loads are -4632.0 and -4633.9 Newtons, respectively. Chest deflection for the driver ATD peaked at -31.8mm. The driver ATD head contacted the airbag and headrest, its chest and abdomen contacted the airbag, the left knee contacted the knee bolster and steering column, with the right knee contacting the knee bolster.

The right front passenger's HIC is 820.8. The maximum resultant chest deceleration over three (3) milliseconds is 51.2 g's. The left and right femur loads are -4126.7 and -2852.1 Newtons respectively. Chest deflection for the passenger ATD peaked at -32.0 mm. The passenger ATD head contacted the airbag and headrest, the chest and abdomen contacted the airbag and both knees contacted the glove box.

Maximum seat belt spool out as measured by on-board pullout potentiometers is 134.3 mm for the driver ATD and 180.4 mm for the passenger ATD. The shoulder belt stretch measured electronically was 0.533 for the driver and 0.702 for the passenger

There was 100 percent windshield retention (minimum 50 percent required for passive restraint systems). No intrusion occurred into the protected or unprotected zone of the windshield. No Stoddard solvent leakage occurred after impact or during any phase of the rollover.

The test vehicle sustained a maximum static crush of 542 mm located to the right of the vehicle centerline. Both the driver and passenger side doors opened without the aid of tools.

### **1.4 GENERAL COMMENTS**

The 2000 TOYOTA TUNDRA SR5 P/U passed the requirements of FMVSS 208, FMVSS 212, FMVSS 219 and FMVSS 301-75. Data pertaining to these standards are presented in the data sheets.

The vehicle, occupant, camera and measurement data are presented in Section 2. Appendix A contains the still photograph prints. Appendix B contains the dummy and vehicle response data traces. Appendix C contains Load Cell Barrier information. Appendix D contains the instrumentation data channel assignments. Appendix E contains the dummy calibration data and Appendix F contains the owner's manual instructions for the occupant seating and restraint systems.

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

Test Vehicle: 2000 TOYOTA TUNDRA SR5 P/U

NHTSA No.: MY5103

Test Program: 2000 NHTSA 35 MPH NCAP

Test Date: 11/17/99

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

| Quantity           | Typical Application | Old 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 Pressures      | 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: 2000 Toyota Tundra SR5  
 Test Program: 2000 NHTSA 35 MPH NCAP

NHTSA No.: MY5103  
 Test Date: 11/17/99

**PRIMARY IMPACT DATA**

| Measured Parameter   | Units   | Value |
|----------------------|---------|-------|
| Velocity at Impact   | km/h    | 56.45 |
| Test Weight          | kg      | 2255  |
| Impact Angle         | degrees | 0     |
| Average Rebound      | mm      | 603.3 |
| Maximum Static Crush | mm      | 542   |

**DOOR OPENING AND SEAT TRACK INFORMATION**

| Description           | Driver | Passenger |
|-----------------------|--------|-----------|
| Front Door Opening    | Opened | Opened    |
| Rear Door Opening     | Opened | Opened    |
| Seat Track Shift (mm) | 0      | 0         |
| Seat Back Failure     | None   | None      |

**TEST DUMMY INFORMATION**

| Description             | Driver                       | Passenger                    |
|-------------------------|------------------------------|------------------------------|
| Dummy Type / Serial No. | 50% Male Hybrid III / No. 34 | 50% Male Hybrid III / No. 35 |
| Head Contact            | Airbag/Headrest/Seat         | Airbag/Headrest/Seat         |
| Chest Contact           | Airbag                       | Airbag                       |
| Abdomen Contact         | Airbag                       | Airbag                       |
| Left Knee Contact       | Dash/Steering column         | Glove Box                    |
| Right Knee Contact      | Dash                         | Glove Box                    |

**16mm MOVIE COVERAGE**

|            |    |
|------------|----|
| High Speed | 18 |
| Real Time  | 1  |
| Total      | 19 |

|                                  |     |
|----------------------------------|-----|
| Driver ATD Sensors               | 40  |
| Passenger ATD Sensors            | 40  |
| Belt Assessment Sensors          | 8   |
| Vehicle Structure Accelerometers | 8   |
| Rigid Barrier Load Cells         | 24  |
| Total                            | 120 |

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

Test Vehicle: 2000 Toyota Tundra SR5

NHTSA No.: MY5103

Test Program: 2000 NHTSA 35 MPH NCAP

Test Date: 11/17/99

**TEST VEHICLE INFORMATION**

|                         |                          |
|-------------------------|--------------------------|
| Manufacturer            | Toyota Motor Corporation |
| Model                   | Toyota Tundra            |
| Body Style              | SR5 P/U                  |
| NHTSA NO.               | MY5103                   |
| VIN                     | 5TBRT3411Y5032461        |
| Color                   | Black                    |
| Delivery Date           | 11/05/1999               |
| Odometer Reading (mile) | 18                       |
| Dealer                  | Valley - Hi Toyota       |
| Transmission            | Automatic                |
| Final Drive             | Rear                     |
| Number of Cylinders     | 8                        |
| Engine Displacement (L) | 4.7                      |
| Engine Placement        | Longitudinal             |

**TEST VEHICLE OPTIONS**

|                    |     |
|--------------------|-----|
| Driver Airbag      | Yes |
| Passenger Airbag   | Yes |
| Power Windows      | Yes |
| Power Steering     | Yes |
| Power Door Locks   | No  |
| Tilt Wheel         | Yes |
| Air Conditioning   | Yes |
| Power Brakes       | Yes |
| Disc Brakes, Front | Yes |
| Disc Brakes, Rear  | No  |
| Anti-lock Brakes   | No  |
| AM/FM/Cassette     | Yes |
| Anti-Theft System  | No  |
| Cruise Control     | Yes |

**DATA FROM CERTIFICATION LABEL**

|                     |                          |                 |      |
|---------------------|--------------------------|-----------------|------|
| Manufactured By     | Toyota Motor Corporation | GVWR (kg)       | 2812 |
| Date of Manufacture | October-99               | GAWR Front (kg) | 1433 |
|                     |                          | GAWR Rear (kg)  | 1705 |

**DATA FROM TIRE PLACARD**

| Measured Parameter          | Front      | Rear       |
|-----------------------------|------------|------------|
| Maximum Tire Pressure (kPa) | 182        | 245        |
| Cold Pressure (kPa)         | 182        | 245        |
| Recommend Tire Size         | 245/70/R16 | 245/70/R16 |
| Tire Size on Vehicle        | 265/70/R16 | 265/70/R16 |
| Tire Manufacturer           | Dunlap     | Dunlap     |

| Measured Parameter       | Front | Rear  | Third | Total |
|--------------------------|-------|-------|-------|-------|
| Type of Seats            | Bench | Bench | None  |       |
| Number of Occupants      | 3     | 3     | 0     | 6     |
| Capacity Wt. (VCW) (kg)  |       |       |       | 836   |
| Cargo Weight (RCLW) (kg) |       |       |       | 136   |

**DATA SHEET NO. 2...(continued)**  
**GENERAL TEST AND VEHICLE PARAMETER DATA**

Test Vehicle: 2000 Toyota Tundra SR5  
 Test Program: 2000 NHTSA 35 MPH NCAP

NHTSA No.: MY5103  
 Test Date: 11/17/99

**TEST VEHICLE WEIGHTS**

|        | Units | As Delivered (UVW) |           |       | As Tested (ATW) |           |       |
|--------|-------|--------------------|-----------|-------|-----------------|-----------|-------|
|        |       | Front Axle         | Rear Axle | Total | Front Axle      | Rear Axle | Total |
| Left   | kg    | 574                | 436       |       | 613             | 534       |       |
| Right  | kg    | 562                | 404       |       | 604             | 504       |       |
| Ratio  | %     | 57.5               | 42.5      |       | 54.0            | 46.0      |       |
| Totals | kg    | 1136               | 840       | 1976  | 1217            | 1038      | 2255  |

**TARGET TEST WEIGHT CALCULATION**

| Measured Parameter                      | Units | Value |
|---|-------|-------|
| Total Delivered Weight (UVW)            | kg    | 1976  |
| Weight of 2 P572 ATD's                  | kg    | 152   |
| Rated Cargo/Luggage Weight (RCLW)       | kg    | 136   |
| Calculated Vehicle Target Weight (TVTW) | kg    | 2264  |

**TEST VEHICLE ATTITUDE AND CG**

|              | Units | LF  | RF  | LR  | RR  | CG (aft of front axle) |
|--------------|-------|-----|-----|-----|-----|------------------------|
| As Delivered | mm    | 875 | 870 | 938 | 930 | 1387                   |
| As Tested    | mm    | 845 | 837 | 905 | 895 | 1502                   |

Vehicle Wheel base (mm): 3262  
 Weight of Ballast secured in cargo area (kg): 32 \*  
 Vehicle Components Removed: Side mirrors, jack, tools, spare tire and paneling.

\* Ballast weight does not include cameras, instrumentation, and brake abort system.

**FUEL SYSTEM DATA**

Fuel System Capacity From Owner's Manual (L): 99.9  
 Usable Capacity Figure Furnished by COTR (L): 101.8  
 Actual Test Volume with entire fuel System Filled (L): 94.6  
 Test Fluid Type: Stoddard Solvent ; Specific Gravity: 0.764  
 Is Vehicle Fuel Pump Electric or Mechanical?: Electric  
 If electric, does pump operate with ignition switch "ON" & engine "OFF"? No  
 Fuel System Particulars: Pump only runs when engine is running.

**DATA SHEET NO. 3  
POST IMPACT DATA**

Test Vehicle: 2000 Toyota Tundra SR5

NHTSA No.: MY5103

Test Program: 2000 NHTSA 35 MPH NCAP

Test Date: 11/17/99

**SPEED TRAP DATA**

| Measured Parameter              | Units | Requirement    | Value |
|---------------------------------|-------|----------------|-------|
| Trap No. 1 Velocity (Primary)   | km/h  | 55.51 to 57.12 | 56.45 |
| Trap No. 1 Entry Distance       | mm    | < 1524         | 1524  |
| Trap No. 1 Exit Distance        | mm    | < 1524         | 305   |
| Trap No. 2 Velocity (Redundant) | km/h  | 55.51 to 57.12 | 56.74 |
| Trap No. 2 Entry Distance       | mm    | < 1524         | 1524  |
| Trap No. 2 Exit Distance        | mm    | < 1524         | 305   |

**VEHICLE STATIC CRUSH**

| Measured Parameter | Units | Pre-Test | Post-Test | Difference |
|--------------------|-------|----------|-----------|------------|
| Left Side          | mm    | 5259     | 4921      | -338       |
| Center             | mm    | 5525     | 4993      | -532       |
| Right Side         | mm    | 5258     | 4905      | -353       |

**VEHICLE REBOUND FROM BARRIER**

| Measured Parameter | Units | Value |
|--------------------|-------|-------|
| Left Side          | mm    | 640   |
| Center             | mm    | 560   |
| Right Side         | mm    | 610   |
| Average            | mm    | 603   |

**DATA SHEET NO. 4**  
**TEST VEHICLE INFORMATION**

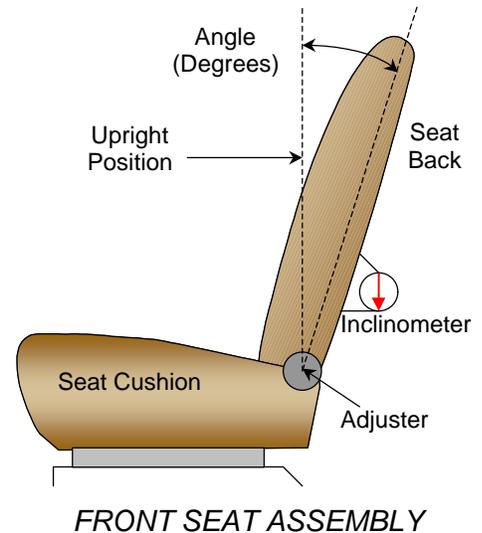
Test Vehicle: 2000 TOYOTA TUNDRA SR5 P/U  
Test Program: 2000 NHTSA 35 MPH NCAP

NHTSA No.: MY5103  
Test Date: 11/17/99

**NOMINAL DESIGN RIDING POSITION**

The driver and passenger seat backs are positioned to the manufacturers designated angle. The procedure is as follows: The seat back angle is adjusted so that the distance from the center of the inner sun visor bracket bolt to the center of the outer headrest mounting hole is per manufacturers specifications. An inclinometer is placed against the flat surface of the tool and the seat back angle is measured directly from the dial face.

Driver seat back angle: 10.0° with a seated dummy  
Passenger seat back angle: 10.0° with a seated dummy



**SEAT FORE/AFT POSITIONS**

Both driver and passenger seats have manually operated seats. The total travel on the driver is 15 seat positions and the passenger is 14 seat positions. The fore/aft position is set at the middle position for both driver and passenger.

Driver seat fore/aft total travel: 15 seat detent positions  
Passenger seat fore/aft total travel: 14 seat detent positions  
Driver seat fore/aft position: Set at 8<sup>th</sup> detent position  
Passenger seat fore/aft position: Set at 8<sup>th</sup> detent position

**SEAT BELT UPPER ANCHORAGE**

The test vehicle is equipped with adjustable anchorages for both driver and passenger seat positions. There are 14 positions or detents. The anchorages were placed in the full up position.

## DATA SHEET NO. 4...(continued)

### TEST VEHICLE INFORMATION

Test Vehicle: 2000 TOYOTA TUNDRA SR5 P/U

NHTSA No.: MY5103

Test Program: 2000 NHTSA 35 MPH NCAP

Test Date: 11/17/99

### FUEL TANK CAPACITY DATA

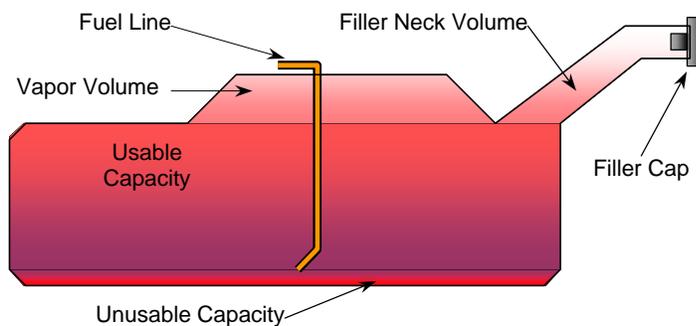
The "Usable Capacity" of the standard equipment fuel tank is: 101.8 liters

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

"Usable Capacity" used for certification tests FMVSS 301 requirements: 93.7 to 95.7 liters

Actual amount of Stoddard solvent added to vehicle for certification test: 94.6 liters

The test vehicle is equipped with an electric fuel pump. The fuel pump operates only when the engine is running. The fuel filler door is located on the left rear fender.



VEHICLE FUEL TANK ASSEMBLY

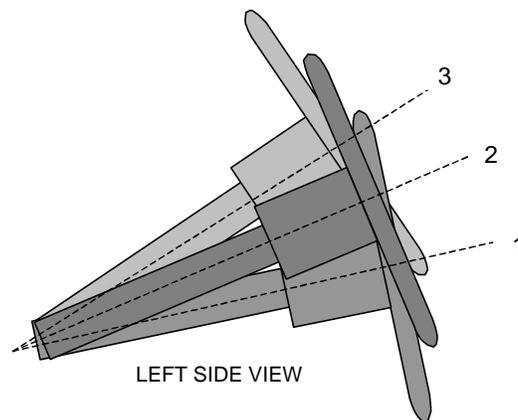
### STEERING COLUMN ADJUSTMENT

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. An aluminum plate is placed across the rim of the steering wheel, an inclinometer is placed onto the plate and the angle is measured.

Lowermost, position 1: 17°

Geometric center, position 2: 25°

Uppermost, position 3: 32°



STEERING COLUMN ASSEMBLY

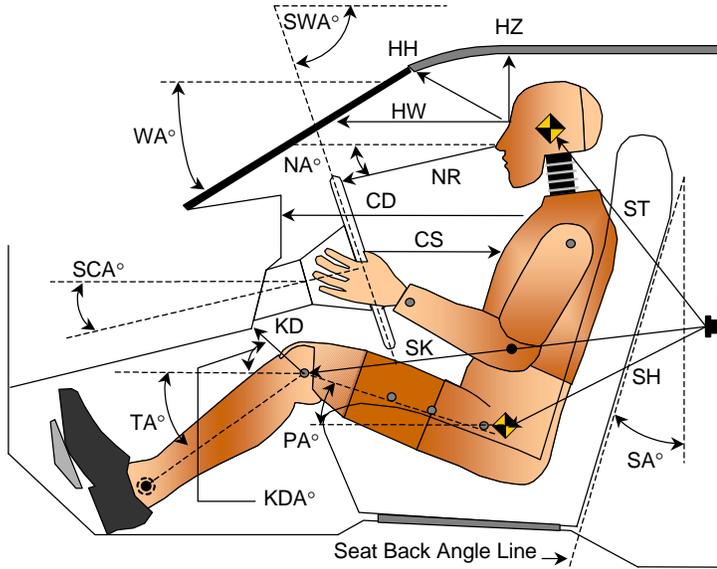
**DATA SHEET NO. 5**  
**DUMMY POSITIONING IN VEHICLE**

Test Vehicle: 2000 TOYOTA TUNDRA SR5 P/U

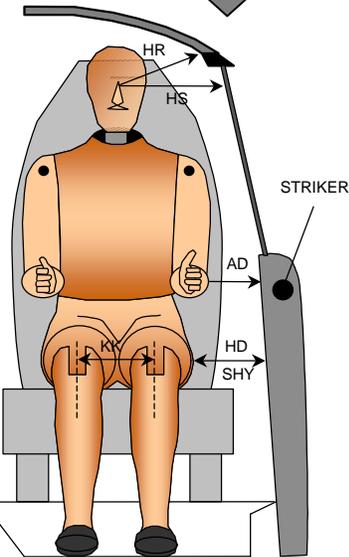
NHTSA No.: MY5103

Test Program: 2000 NHTSA 35 MPH NCAP

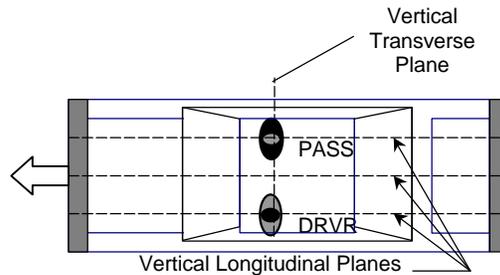
Test Date: 11/17/99



- |     |                             |
|-----|-----------------------------|
| AD  | Arm to Door                 |
| HD  | H-Point to Door             |
| HR  | Head to Side Header         |
| HS  | Head to Side Window         |
| KK  | Knee to Knee                |
| SHY | Striker to H-Point (Y Axis) |



- |     |                             |
|-----|-----------------------------|
| CD  | Chest to Dash               |
| CS  | Chest to Steering Wheel Hub |
| HH  | Head to Header              |
| HW  | Head to Windshield          |
| HZ  | Head to Roof                |
| KDA | Knee to Dash Angle          |
| KDL | Left Knee to Dash           |
| KDR | Right Knee to Dash          |
| NA  | Nose to Rim Angle           |
| NR  | Nose to Rim                 |
| PA  | Pelvic Angle                |
| RA  | Rim to Abdomen              |
| SA  | Seat Back Angle             |
| SCA | Steering Column Angle       |
| SH  | Striker to H-Point          |
| SK  | Striker to Knee             |
| ST  | Striker to Head             |
| SWA | Steering Wheel Angle        |
| TA  | Tibial Angle                |
| WA  | Windshield Angle            |



**DUMMY MEASUREMENTS FOR FRONT SEAT OCCUPANTS**

**DATA SHEET NO. 5...(continued)**  
**DUMMY POSITIONING IN VEHICLE**

Test Vehicle: 2000 Toyota Tundra SR5  
 Test Program: 2000 NHTSA 35 MPH NCAP

NHTSA No.: MY5103  
 Test Date: 11/17/99

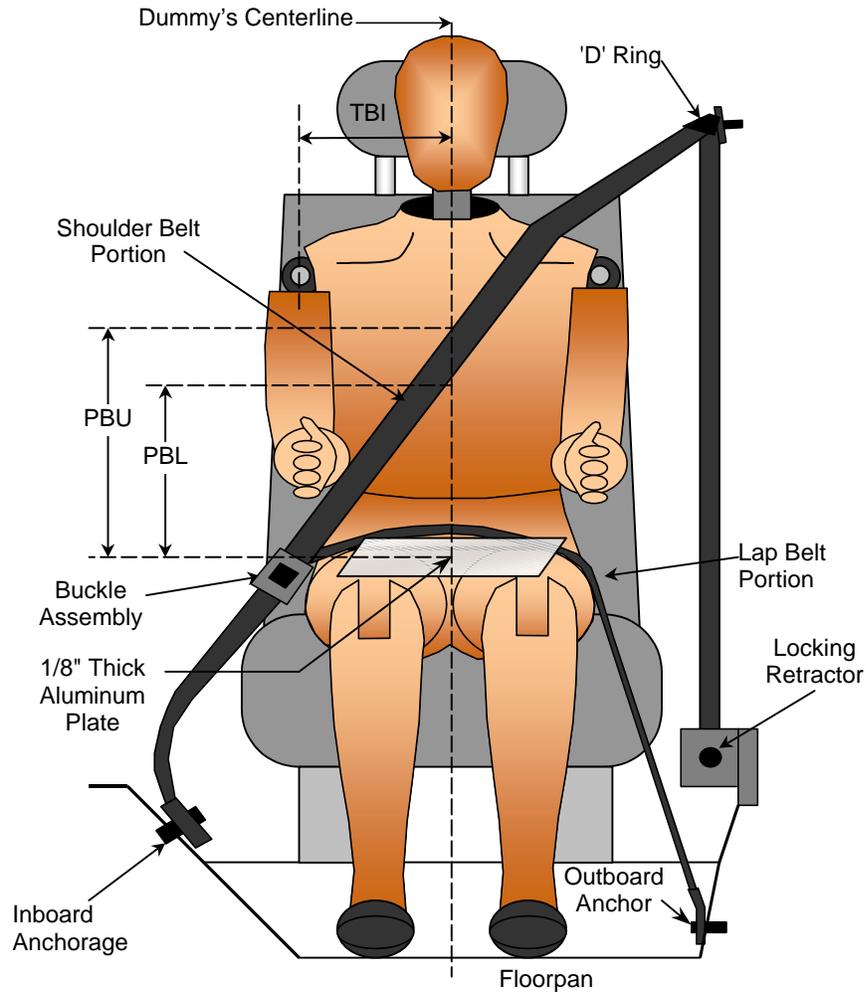
**TEST DUMMY POSITION MEASUREMENTS**

| Code | Measurement Description | Driver      |           | Passenger   |           |
|------|-------------------------|-------------|-----------|-------------|-----------|
|      |                         | Length (mm) | Angle (°) | Length (mm) | Angle (°) |
| WA   | Windshield Angle        |             | 40        |             |           |
| SWA  | Steering Wheel Angle    |             | 65        |             |           |
| SCA  | Steering Column Angle   |             | 21        |             |           |
| SA   | Seat Back Angle         |             | 20        |             | 20        |
| HZ   | Head to Roof (Z)        | 240         | 90        | 240         | 90        |
| HH   | Head to Header          | 417         | 0         | 427         | 0         |
| HW   | Head to Windshield      | 549         | 0         | 565         | 0         |
| HR   | Head to Side Header (Y) | 260         |           | 263         |           |
| NR   | Nose to Rim             | 411         | 12        |             |           |
| CD   | Chest to Dash           | 539         |           | 544         |           |
| CS   | Chest to Steering Hub   | 286         | 0         |             |           |
| RA   | Rim to Abdomen          | 185         | 0         |             |           |
| KDL  | Left Knee to Dash       | 188         | 30        | 163         |           |
| KDR  | Right Knee to Dash      | 191         |           | 165         | 31        |
| PA   | Pelvic Angle            |             | 23        |             | 23        |
| TA   | Tibia Angle             |             | 37        |             | 36        |
| KK   | Knee to Knee (Y)        | 300         |           | 200         |           |
| SK   | Striker to Knee         | 757         | 4         | 760         | 4         |
| ST   | Striker to Head         | 585         | 23        | 560         | 22        |
| SH   | Striker to H-Point      | 367         | 20        | 382         | 21        |
| SHY  | Striker to H-Point (Y)  | 245         |           | 222         |           |
| HS   | Head to Side Window     | 295         |           | 277         |           |
| HD   | H-Point to Door (Y)     | 165         |           | 173         |           |
| AD   | Arm to Door (Y)         | 90          |           | 45          |           |
| AA   | Ankle to Ankle          | n/a         |           | n/a         |           |

**DATA SHEET NO. 6**  
**SEAT BELT POSITIONING DATA**

Test Vehicle: 2000 TOYOTA TUNDRA SR5 PICKUP  
 Test Program: 2000 NHTSA 35 MPH NCAP

NHTSA No.: MY5103  
 Test Date: 11/17/99



**SEAT BELT POSITIONING MEASUREMENTS**

| Measurement Description                           | Units   | Driver    | Passenger |
|---|---------|-----------|-----------|
| TBI - Dummy centerline to shoulder bolt           | mm      | 230       | 235       |
| PBU - Top surface of reference to belt upper edge | mm      | 350       | 350       |
| PBL - Top surface of reference to belt lower edge | mm      | 269       | 269       |
| Lap Belt tension                                  | Newtons | 10        | 10        |
| Shoulder Belt tension                             | N/A     | Retractor | Retractor |

**DATA SHEET NO. 7 - VEHICLE ACCELEROMETER LOCATION AND DATA SUMMARY**

Test Vehicle: 2000 Toyota Tundra SR5 Pickup

NHTSA No.: MY5103

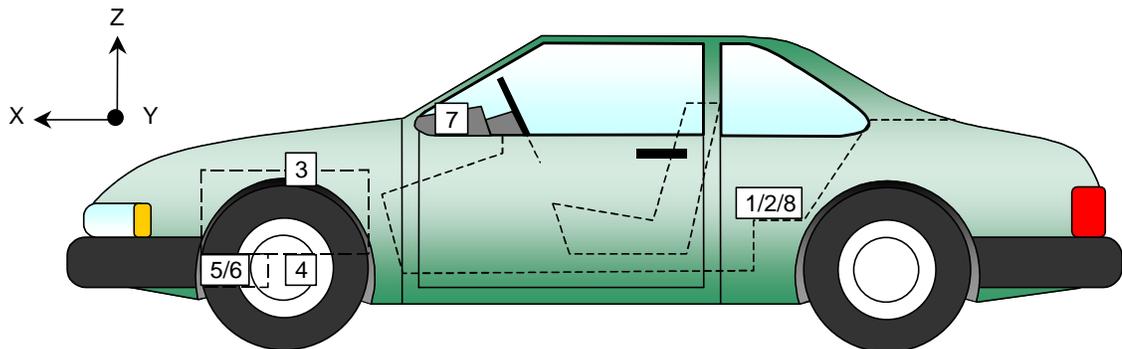
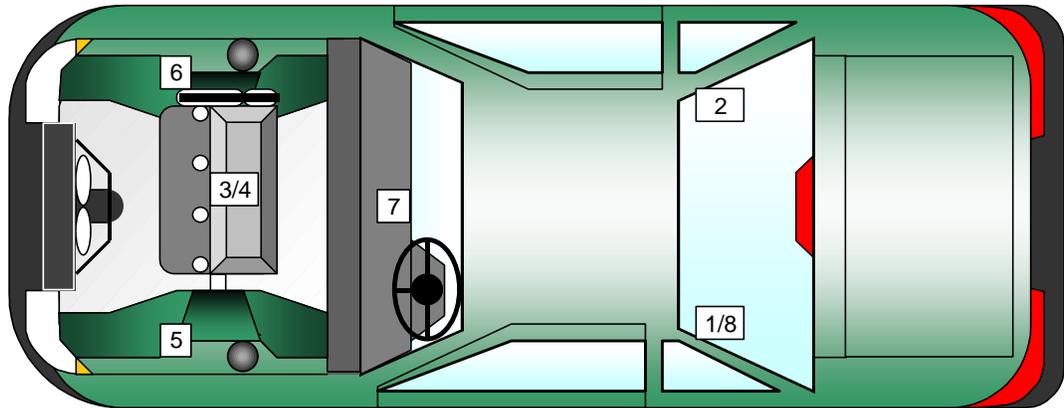
Test Program: 2000 NHTSA 35 mph NCAP

Test Date: 11/17/99

**VEHICLE X-AXIS 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 (Pri.)   | 2950              | -635 | 648  | G's         | 4.6  | 106.3 | -44.6  | 31.4 |
| 2   | Right Rear X-Member (Pri.)  | 2915              | 640  | 648  | G's         | 6.1  | 117.1 | -40.2  | 44.0 |
| 3   | Engine Top                  | 4745              | 0    | 1140 | G's         | 55.9 | 42.6  | -155.5 | 33.7 |
| 4   | Engine Bottom               | 4815              | 33   | 405  | G's         | 34.4 | 41.9  | -134.9 | 34.9 |
| 5   | Left Brake Caliper          | 4840              | -723 | 370  | G's         | 58.7 | 62.1  | -116.6 | 44.5 |
| 6   | Right Brake Caliper         | 4845              | 723  | 370  | G's         | 56.4 | 60.6  | -129.6 | 44.5 |
| 7   | Instrument Panel            | 3805              | 54   | 1170 | G's         | 43.2 | 84.1  | -77.6  | 48.9 |
| 8   | Left Rear X-Member (Rednt.) | 2910              | -635 | 648  | G's         | 4.3  | 121.2 | -45.2  | 31.2 |

Reference Points X - From Rear Surface of Vehicle Y - Vehicle Centerline Z - Ground Plane



**DATA SHEET NO. 8 - HYBRID III ATD INJURY CRITERIA AND SENSOR DATA**

Test Vehicle: 2000 Toyota Tundra SR5 Pickup

NHTSA No.: MY5103

Test Program: 2000 NHTSA 35 mph NCAP

Test Date: 11/17/99

**HEAD PRIMARY PEAK ACCELERATIONS**

| Location          | Axis | Units | Driver |       |       |       | Passenger |       |       |       |
|-------------------|------|-------|--------|-------|-------|-------|-----------|-------|-------|-------|
|                   |      |       | Max    | Time  | Min   | Time  | Max       | Time  | Min   | Time  |
| Head CG           | X    | G's   | 76.3   | 181.8 | -68.1 | 79.1  | 72.8      | 182.8 | -70.3 | 76.7  |
| Head CG           | Y    | G's   | 9.8    | 84.8  | -14.0 | 181.8 | 10.8      | 182.5 | -12.7 | 88.5  |
| Head CG           | Z    | G's   | 37.4   | 49.2  | -8.3  | 87.6  | 24.8      | 55.5  | -5.6  | 126.7 |
| Head CG Resultant | N/A  | G's   | 79.5   | 181.8 |       |       | 76.7      | 182.8 |       |       |

**CHEST PRIMARY PEAK ACCELERATIONS**

| Location           | Axis | Units | Driver |       |       |       | Passenger |       |       |      |
|--------------------|------|-------|--------|-------|-------|-------|-----------|-------|-------|------|
|                    |      |       | Max    | Time  | Min   | Time  | Max       | Time  | Min   | Time |
| Chest CG           | X    | G's   | 8.6    | 172.3 | -51.7 | 56.5  | 8.1       | 179.8 | -52.4 | 61.9 |
| Chest CG           | Y    | G's   | 12.2   | 82.2  | -5.1  | 173.2 | 4.3       | 179.1 | -7.9  | 64.9 |
| Chest CG           | Z    | G's   | 21.8   | 47.5  | -6.7  | 98.4  | 10.9      | 43.7  | -4.7  | 63.1 |
| Chest CG Resultant | N/A  | G's   | 52.3   | 56.0  |       |       | 52.9      | 62.0  |       |      |

**FEMUR PEAK FORCES**

| Location    | Axis | Units   | Driver |      |         |      | Passenger |      |         |      |
|-------------|------|---------|--------|------|---------|------|-----------|------|---------|------|
|             |      |         | Max    | Time | Min     | Time | Max       | Time | Min     | Time |
| Left Femur  | Z    | Newtons | 690.4  | 46.6 | -4632.0 | 51.9 | 1162.1    | 43.5 | -4126.7 | 53.8 |
| Right Femur | Z    | Newtons | 1432.4 | 50.4 | -4633.9 | 59.5 | 821.9     | 46.8 | -2852.1 | 60.2 |

**SEAT BELT SENSOR PEAK VALUES**

| Location              | Axis | Units   | Driver |       |        |       | Passenger |       |        |       |
|-----------------------|------|---------|--------|-------|--------|-------|-----------|-------|--------|-------|
|                       |      |         | Max    | Time  | Min    | Time  | Max       | Time  | Min    | Time  |
| Lap Belt Force        | N/A  | Newtons | 8917.7 | 62.0  | -7.3   | 0.0   | 9070.5    | 57.3  | -12.6  | 141.5 |
| Shoulder Belt Force   | N/A  | Newtons | 5719.8 | 49.1  | -2.7   | 156.9 | 5986.9    | 71.2  | -24.3  | 161.0 |
| Shoulder Belt Pullout | N/A  | MM      | 134.3  | 86.6  | -10.0  | 52.1  | 180.4     | 89.8  | -21.0  | 45.5  |
| Shoulder Belt Stretch | N/A  | MM/CM   | 0.533  | 296.4 | -0.085 | 53.7  | 0.702     | 296.4 | -0.091 | 22.2  |

**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 | 794.7  | 54.7    | 55.5           | 91.4           | 820.8     | 58.3    | 61.7           | 93.3           |

**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 | 51.4   | 55.6           | 58.6           | 51.2      | 59.7           | 62.7           |

**DATA SHEET NO. 8...(continued)**

Test Vehicle: 2000 Toyota Tundra SR5 Pickup

NHTSA No.: MY5103

Test Program: 2000 NHTSA 35 mph NCAP

Test Date: 11/17/99

**PELVIC PEAK ACCELERATIONS**

| Location | Axis | Units | Driver |      |       |      | Passenger |       |       |      |
|----------|------|-------|--------|------|-------|------|-----------|-------|-------|------|
|          |      |       | Max    | Time | Min   | Time | Max       | Time  | Min   | Time |
| Pelvis   | X    | G's   | 8.3    | 86.2 | -69.3 | 58.1 | 6.0       | 126.8 | -67.3 | 56.8 |
| Pelvis   | Y    | G's   | 20.5   | 48.1 | -29.0 | 44.5 | 3.6       | 178.0 | -9.9  | 49.7 |
| Pelvis   | Z    | G's   | 14.5   | 45.4 | -30.1 | 58.6 | 6.3       | 213.2 | -33.4 | 59.9 |

**UPPER NECK PEAK FORCES AND MOMENTS**

| Location    | Axis | Units   | Driver |       |        |       | Passenger |       |        |       |
|-------------|------|---------|--------|-------|--------|-------|-----------|-------|--------|-------|
|             |      |         | Max    | Time  | Min    | Time  | Max       | Time  | Min    | Time  |
| Neck Force  | X    | Newtons | 227.3  | 71.9  | -434.0 | 50.3  | 236.9     | 83.0  | -442.9 | 49.1  |
| Neck Force  | Y    | Newtons | 210.0  | 121.6 | -325.5 | 80.3  | 186.0     | 71.9  | -185.4 | 126.9 |
| Neck Force  | Z    | Newtons | 1746.8 | 52.5  | -349.4 | 202.2 | 1599.6    | 59.6  | -766.9 | 206.6 |
| Neck Moment | X    | N•m     | 20.3   | 73.5  | -7.9   | 242.3 | 12.9      | 228.1 | -20.7  | 63.2  |
| Neck Moment | Y    | N•m     | 22.7   | 125.3 | -39.5  | 81.8  | 15.9      | 186.3 | -30.4  | 210.1 |
| Neck Moment | Z    | N•m     | 7.9    | 149.2 | -13.9  | 103.0 | 25.8      | 101.1 | -11.1  | 152.8 |

**FOOT PEAK ACCELERATIONS**

| Location        | Axis | Units | Driver |      |        |      | Passenger |      |        |      |
|-----------------|------|-------|--------|------|--------|------|-----------|------|--------|------|
|                 |      |       | Max    | Time | Min    | Time | Max       | Time | Min    | Time |
| Left Foot Aft   | X    | G's   | 17.0   | 57.0 | -113.2 | 35.8 | 30.4      | 53.1 | -275.6 | 42.1 |
| Left Foot Aft   | Z    | G's   | 4.7    | 42.5 | -94.4  | 37.9 | 30.6      | 36.0 | -82.6  | 46.0 |
| Left Foot Fore  | Z    | G's   | 97.2   | 36.2 | -126.4 | 40.6 | 56.2      | 27.3 | -229.3 | 40.1 |
| Right Foot Aft  | X    | G's   | 42.1   | 55.5 | -269.9 | 42.7 | 28.3      | 53.0 | -88.6  | 44.5 |
| Right Foot Aft  | Z    | G's   | 56.5   | 55.8 | -266.1 | 42.4 | 9.4       | 24.8 | -69.0  | 50.1 |
| Right Foot Fore | Z    | G's   | 92.2   | 57.6 | -263.2 | 42.2 | 40.3      | 24.6 | -73.5  | 36.3 |

**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     | 49.3   | 37.9  | -75.8    | 68.6 | 44.4      | 70.8  | -22.8   | 47.3  |
| Left Lower Moment  | Y    | N•m     | 23.5   | 90.0  | -38.2    | 39.5 | 49.8      | 72.4  | -144.1  | 42.7  |
| Left Lower Force   | Z    | Newtons | 164.0  | 122.3 | -3212.1  | 37.3 | 878.7     | 33.1  | -2065.4 | 46.8  |
| Left Upper Moment  | X    | N•m     | 18.8   | 79.5  | -58.6    | 38.9 | 16.3      | 73.3  | -53.6   | 53.2  |
| Left Upper Moment  | Y    | N•m     | 17.7   | 120.2 | -111.8   | 38.8 | 24.9      | 145.8 | -266.6  | 42.8  |
| Right Lower Moment | X    | N•m     | 57.3   | 43.2  | -41.8    | 58.7 | 19.2      | 45.5  | -3.5    | 111.6 |
| Right Lower Moment | Y    | N•m     | 108.9  | 61.4  | -147.3   | 42.3 | 18.3      | 51.1  | -37.5   | 37.6  |
| Right Lower Force  | Z    | Newtons | 236.9  | 145.1 | -10760.7 | 44.7 | 200.6     | 167.1 | -1720.6 | 45.0  |
| Right Upper Moment | X    | N•m     | 75.7   | 42.9  | -41.7    | 47.3 | 52.6      | 45.7  | -12.9   | 141.1 |
| Right Upper Moment | Y    | N•m     | 17.3   | 94.8  | -371.6   | 43.6 | 23.6      | 131.2 | -95.3   | 45.2  |

**DATA SHEET NO. 8...(continued)**

Test Vehicle: 2000 Toyota Tundra SR5 Pickup

NHTSA No.: MY5103

Test Program: 2000 NHTSA 35 mph NCAP

Test Date: 11/17/99

**CHEST PEAK DISPLACEMENTS**

| Location | Axis | Units | Driver |      |       |      | Passenger |      |       |      |
|----------|------|-------|--------|------|-------|------|-----------|------|-------|------|
|          |      |       | Max    | Time | Min   | Time | Max       | Time | Min   | Time |
| Chest CG | X    | MM    | 0.2    | 9.9  | -31.8 | 84.2 | 0.3       | 0.3  | -32.0 | 80.7 |

**HEAD REDUNDANT PEAK ACCELERATIONS**

| Location          | Axis | Units | Driver |       |       |       | Passenger |       |       |       |
|-------------------|------|-------|--------|-------|-------|-------|-----------|-------|-------|-------|
|                   |      |       | Max    | Time  | Min   | Time  | Max       | Time  | Min   | Time  |
| Head CG           | X    | G's   | 79.2   | 181.7 | -67.4 | 78.0  | 73.1      | 182.6 | -69.2 | 77.6  |
| Head CG           | Y    | G's   | 13.0   | 86.6  | -14.6 | 181.6 | 10.8      | 182.2 | -13.7 | 86.9  |
| Head CG           | Z    | G's   | 33.8   | 48.7  | -10.2 | 86.2  | 21.7      | 45.3  | -5.5  | 127.1 |
| Head CG Resultant | N/A  | G's   | 80.7   | 181.7 |       |       | 73.9      | 182.6 |       |       |

**CHEST REDUNDANT PEAK ACCELERATIONS**

| Location           | Axis | Units | Driver |       |       |       | Passenger |       |       |       |
|--------------------|------|-------|--------|-------|-------|-------|-----------|-------|-------|-------|
|                    |      |       | Max    | Time  | Min   | Time  | Max       | Time  | Min   | Time  |
| Chest CG           | X    | G's   | 9.5    | 172.1 | -52.0 | 56.6  | 7.9       | 179.6 | -52.0 | 61.8  |
| Chest CG           | Y    | G's   | 13.6   | 82.2  | -4.9  | 171.6 | 4.9       | 178.4 | -9.9  | 64.9  |
| Chest CG           | Z    | G's   | 20.6   | 47.3  | -6.1  | 99.3  | 12.2      | 43.6  | -4.0  | 116.5 |
| Chest CG Resultant | N/A  | G's   | 52.2   | 56.5  |       |       | 52.4      | 61.9  |       |       |

**REDUNDANT 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 Redundant | 785.4  | 54.4    | 55.5           | 91.4           | 795.5     | 57.7    | 61.6           | 92.9           |

**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 Redundant | 51.2   | 55.9           | 58.9           | 50.7      | 59.4           | 62.4           |

**DATA SHEET NO. 9**

**SEAT BELT PERFORMANCE ASSESSMENT TEST DATA**

Test Vehicle: 2000 TOYOTA TUNDRA SR5 PICKUP

NHTSA No.: MY5103

Test Program: 2000 NHTSA 35 MPH NCAP

Test Date: 11/17/99

**SEAT BELT PLACEMENT MEASUREMENTS**

| Measurement Description                           | Units   | Driver    | Passenger |
|---|---------|-----------|-----------|
| TCI - Dummy centerline to shoulder bolt           | mm      | 230       | 235       |
| PBU - Top surface of reference to belt upper edge | mm      | 350       | 350       |
| PBL - Top surface of reference to belt lower edge | mm      | 269       | 269       |
| Lap Belt tension                                  | Newtons | 10        | 10        |
| Shoulder Belt tension                             | N/A     | Retractor | Retractor |

**BELT LENGTH DATA**

| Measurement Description                          | Units | Driver | Passenger |
|--|-------|--------|-----------|
| Retractor reel to 'D' ring                       | mm    | 815    | 815       |
| Shoulder belt length as measured on ATD          | mm    | 850    | 870       |
| Lap belt length as measured on ATD               | mm    | 900    | 895       |
| Remainder of belt on reel                        | mm    | 685    | 690       |
| Total belt length for continuous webbing systems | mm    | 3250   | 3270      |

**SHOULDER BELT SPOOL-OFF DATA**

| Measurement Description      | Units | Driver | Passenger |
|------------------------------|-------|--------|-----------|
| As determined mechanically   | mm    | 130.0  | 148.0     |
| As determined electronically | mm    | 134.3  | 180.4     |

**BELT STRETCH DATA**

| Measurement Description                                  | Units | Driver | Passenger |
|--|-------|--------|-----------|
| Electronically from shoulder belt load cell and "D" ring | mm/cm | 0.53   | 0.70      |
| Mechanically   | mm/cm | 0.00   | 3.00      |

**DATA SHEET NO. 10**  
**SUMMARY OF FMVSS 212 DATA**

Test Vehicle: 2000 TOYOTA TUNDRA SR5 PICKUP  
 Test Program: 2000 NHTSA 35 MPH NCAP

NHTSA No.: MY5103  
 Test Date: 11/17/99

**Windshield Mounting Details:**

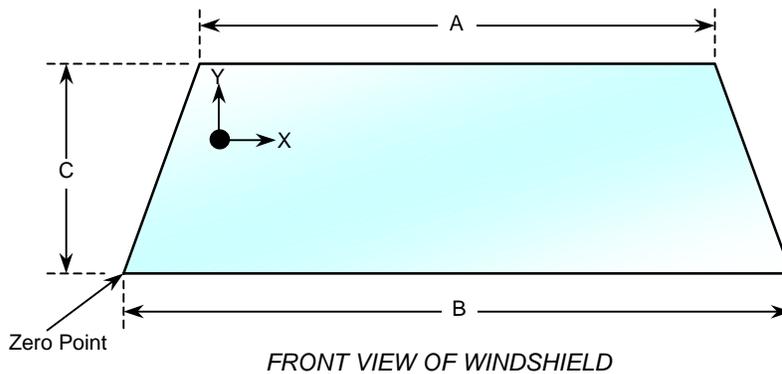
Windshield glass is secured to the vehicle frame with a rubber type adhesive. There is no molding that covers the windshield periphery at any point.

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: 21.1 °C

**WINDSHIELD PERIPHERY MEASUREMENTS**

| Measurement | Pre-Test (mm) | Post-Test (mm) | % of Retention |
|-------------|---------------|----------------|----------------|
| Left Side   | 2023.5        | 2023.5         | 100            |
| Right Side  | 2023.5        | 2023.5         | 100            |
| Total       | 4047.0        | 4047.0         | 100            |



**WINDSHIELD DIMENSIONS**

| Item | Units | Segment Length | Molding Width |
|------|-------|----------------|---------------|
| A    | mm    | 1287           | 20            |
| B    | mm    | 1580           | 18            |
| C    | mm    | 640            | 10            |

**DATA SHEET NO. 11**

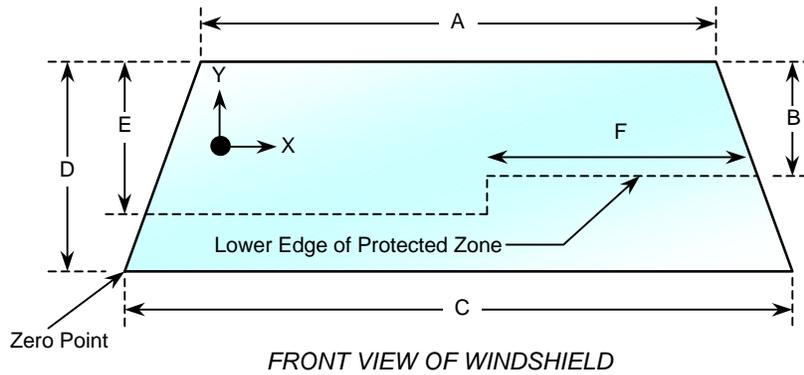
**WINDSHIELD ZONE INTRUSION FMVSS 219 (PARTIAL) DATA**

Test Vehicle: 2000 TOYOTA TUNDRA SR5 PICKUP

NHTSA No.: MY5103

Test Program: 2000 NHTSA 35 MPH NCAP

Test Date: 11/17/99



**WINDSHIELD AND PROTECTED ZONE**

| Item | Units | Value |
|------|-------|-------|
| A    | mm    | 1287  |
| B    | mm    | 349   |
| C    | mm    | 1580  |
| D    | mm    | 640   |
| E    | mm    | 405   |
| F    | mm    | 605   |

**AREA OF PROTECTED ZONE FAILURES**

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

| X   | Y   |
|-----|-----|
| N/A | N/A |

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

| X   | Y   |
|-----|-----|
| N/A | N/A |

**DATA SHEET NO. 12**

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

Test Vehicle: 2000 TOYOTA TUNDRA SR5 PICKUP

NHTSA No.: MY5103

Test Program: 2000 NHTSA 35 MPH NCAP

Test Date: 11/17/99

Test Time: 12:45 PM

Temperature at Time of Impact: 13.8 °C

**STODDARD SOLVENT SPILLAGE MEASUREMENT**

- A. From impact until vehicle motion ceases: 0.0 oz.  
(Maximum Allowable = 1 ounce)
- B. For the 5 minute period after motion ceases: 0.0 oz.  
(Maximum Allowable = 5 ounces)
- C. For the following 25 minutes: 0.0 oz.  
(Maximum Allowable = 1 oz./minute)
- D. Spillage Details: No leakage occurred

**DATA SHEET NO. 13**

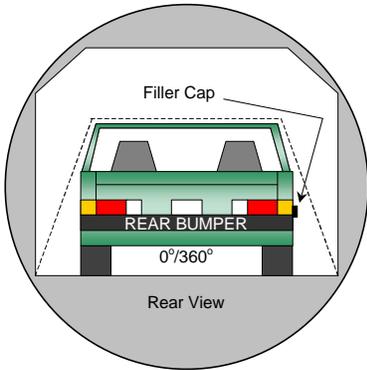
**FMVSS 301 STATIC ROLLOVER DATA SHEET**

Test Vehicle: 2000 TOYOTA TUNDRA SR5 PICKUP

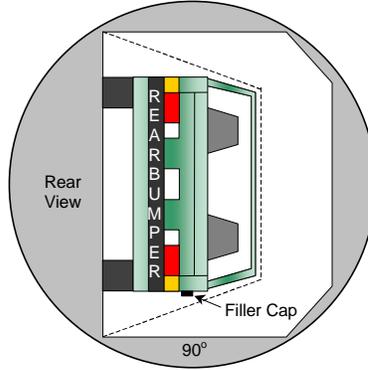
NHTSA No.: MY5103

Test Program: 2000 NHTSA 35 MPH NCAP

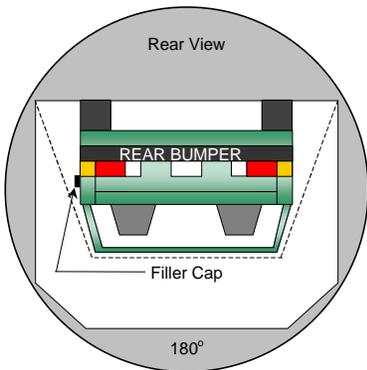
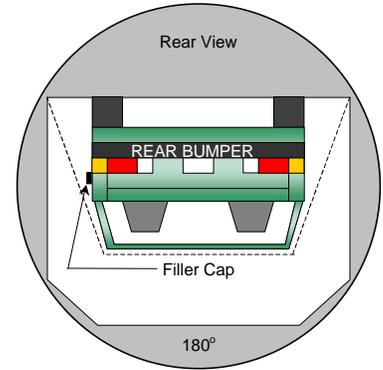
Test Date: 11/17/99



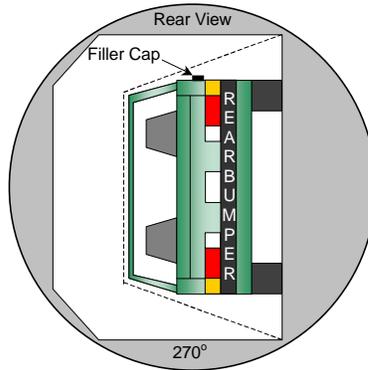
**0° TO 90°**



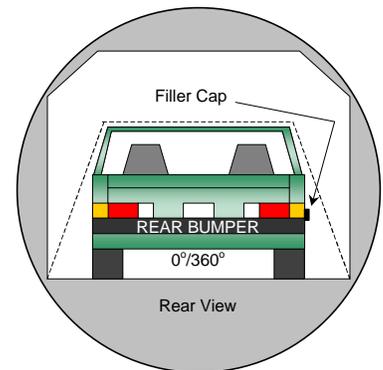
**90° TO 180°**



**180° TO 270°**



**270° TO 360°**



1. The specified fixture rollover rate for each 90° of rotation is 60 to 120 seconds.
2. The position hold time at each position is 300 seconds (minimum).
3. Details of Stoddard Solvent spillage locations:  
No solvent leakage occurred during static rollover testing.

| TEST PHASE   | Rotation Time (sec.) | Hold Time (sec.) | Spillage (oz.) |
|--------------|----------------------|------------------|----------------|
| 0° TO 90°    | 80                   | 300              | 0.0            |
| 90° TO 180°  | 82                   | 300              | 0.0            |
| 180° TO 270° | 79                   | 300              | 0.0            |
| 270° TO 360° | 80                   | 300              | 0.0            |

**DATA SHEET NO. 14**  
**VEHICLE MEASUREMENTS**

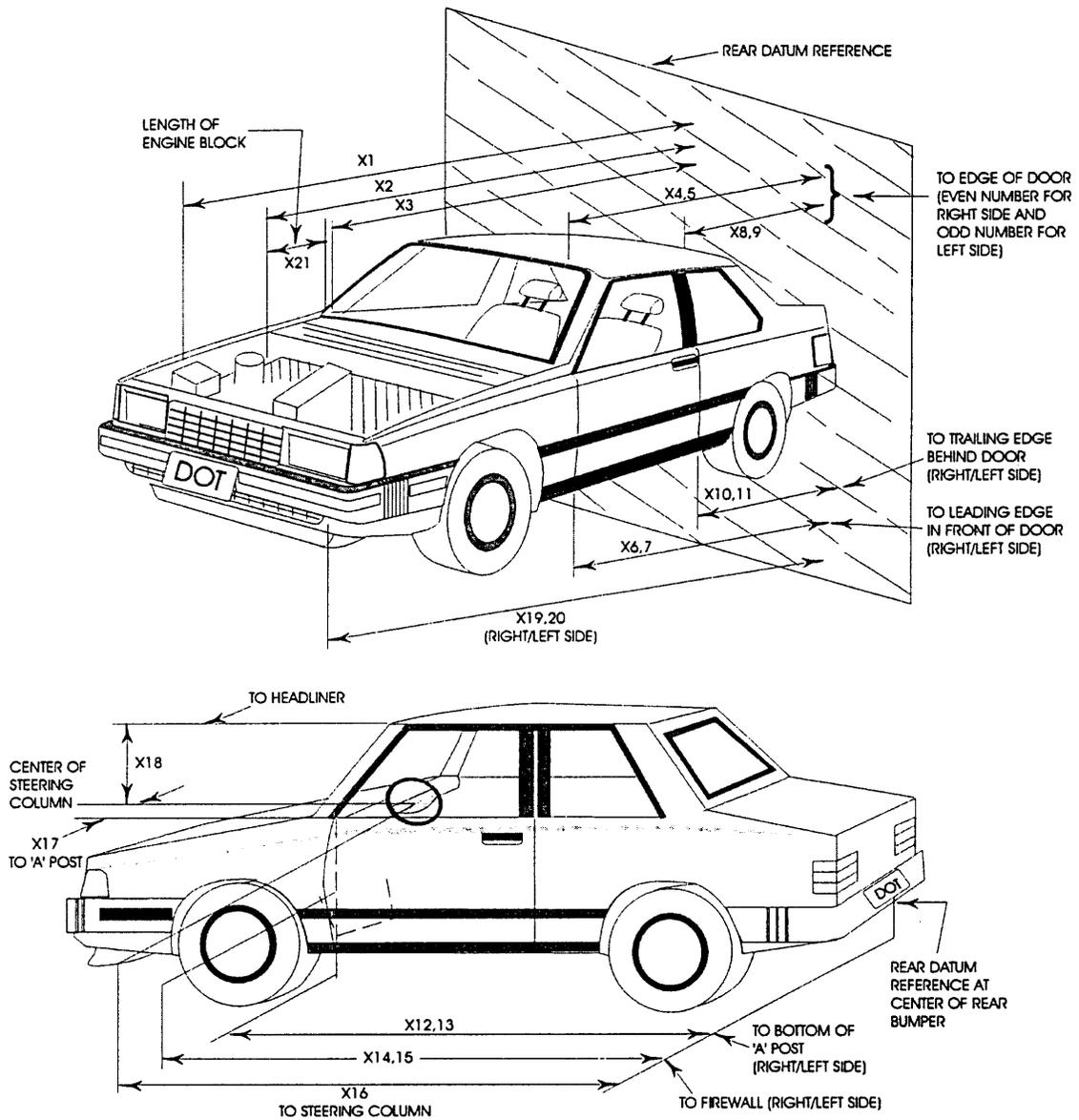
Test Vehicle: 2000 TOYOTA TUNDRA SR5 PICKUP

NHTSA No.: MY5103

Test Program: 2000 NHTSA 35 MPH NCAP

Test Date: 11/17/99

| No. | Measurement Description                      | Units | Pre-Test | Post-Test | Difference |
|-----|--|-------|----------|-----------|------------|
| 1   | Total length of vehicle at centerline        | mm    | 5525     | 4993      | -532       |
| 2   | RSOV to front of engine                      | mm    | 4940     | 4765      | -175       |
| 3   | RSOV to firewall centerline                  | mm    | 4335     | 4320      | -15        |
| 4   | RSOV to leading edge of right door           | mm    | 4070     | 4090      | 20         |
| 5   | RSOV to leading edge of left door            | mm    | 4072     | 4105      | 33         |
| 6   | RSOV to lower leading edge of right door     | mm    | 4029     | 4035      | 6          |
| 7   | RSOV to lower leading edge of left door      | mm    | 4025     | 4044      | 19         |
| 8   | RSOV to upper trailing edge of right door    | mm    | 2915     | 2935      | 20         |
| 9   | RSOV to upper trailing edge of left door     | mm    | 2915     | 2950      | 35         |
| 10  | RSOV to lower trailing edge of right door    | mm    | 2900     | 2905      | 5          |
| 11  | RSOV to lower trailing edge of left door     | mm    | 2900     | 2912      | 12         |
| 12  | RSOV to bottom of right 'A' pillar           | mm    | 4040     | 4040      | 0          |
| 13  | RSOV to bottom of left 'A' pillar            | mm    | 4043     | 4050      | 7          |
| 14  | RSOV to firewall on right side               | mm    | 4330     | 4338      | 8          |
| 15  | RSOV to firewall of left side                | mm    | 4325     | 4335      | 10         |
| 16  | RSOV to steering column                      | mm    | 3585     | 3732      | 147        |
| 17  | Center of steering column to left 'A' pillar | mm    | 395      | 410       | 15         |
| 18  | Center of steering column to headlining      | mm    | 425      | 415       | -10        |
| 19  | RSOV to right side of front bumper           | mm    | 5258     | 4905      | -353       |
| 20  | RSOV to left side of front bumper            | mm    | 5259     | 4921      | -338       |
| 21  | Length of engine block                       | mm    | 510      | 510       | 0          |
| RD  | RSOV to right side of dash panel             | mm    | 3830     | 3824      | -6         |
| CD  | RSOV to center of dash panel                 | mm    | 3867     | 3810      | -57        |
| LD  | RSOV to left side of dash panel              | mm    | 3860     | 3880      | 20         |



**DATA SHEET NO. 15**  
**CAMERA LOCATIONS**

Test Vehicle: 2000 TOYOTA TUNDRA SR5 PICKUP

NHTSA No.: MY5103

Test Program: 2000 NHTSA 35 MPH NCAP

Test Date: 11/17/99

| No. | Camera View           | Location (mm) |       |       | Angle (Deg.) | Film Plane to Head | Lens (mm) | Speed (fps) |
|-----|-----------------------|---------------|-------|-------|--------------|--------------------|-----------|-------------|
|     |                       | X             | Y     | Z     |              |                    |           |             |
| 1   | Right Side, Real Time | 3454          | 10973 | 1245  | 0            | 1651               | Zoom      | 24          |
| 2   | Left Side, No. 1      | 2000          | 8500  | 1310  | 1            | 2960               | 12        | 1030        |
| 3A  | Left Side No. 2       | 1450          | 8600  | 1700  | 1            | 3960               | 35        | 990         |
| 3B  | Left Side No. 3A      | 1380          | 9700  | 1340  | 1            | 9100               | 50        | 820         |
| 4   | Left Side No. 3B      | 8000          | 10800 | 2960  | 10           | 1200               | 80        | 990         |
| 5   | Left Side, No. 4      | 1850          | 8700  | 3250  | 17           | 8230               | 19        | 1020        |
| 6   | Left Side, No. 5      | 1850          | 8600  | 2820  | 13           | 8100               | 19        | 1020        |
| 7   | Right Side, No. 1     | 2100          | 8360  | 1030  | 3            | 7900               | 13        | 1000        |
| 8A  | Right Side, No. 2A    | 1600          | 8600  | 1665  | 1            | 8050               | 35        | 1030        |
| 8B  | Right Side, No. 2B    | 1600          | 10800 | 1455  | 2            | 10350              | 50        | 660         |
| 9   | Right Side, No. 3     | 8000          | 9350  | 3000  | 10           | 11200              | 80        | 920         |
| 10  | Right Side, No. 4     | 2400          | 7960  | 1290  | 3            | 7900               | 24        | 1000        |
| 11  | Overhead Overall      | 300           | 0     | 5486  | 90           | N/A                | 13        | 1000        |
| 12  | Front View, Driver    | -400          | 345   | 2822  | 42           | N/A                | 13        | 1000        |
| 13  | Front View, Passenger | -400          | 335   | 2822  | 42           | N/A                | 13        | 1010        |
| 14  | Pit Camera, Engine    | 550           | 0     | -1430 | 90           | N/A                | 13        | 850         |
| 15  | Pit Camera, Fuel Tank | 4950          | 0     | -1640 | 50           | N/A                | 19        | 900         |
| 16  | Onboard, Driver       | 1280          | 20    | 1651  | 8            | 3555               | 13        | 1030        |
| 17  | Onboard, Passenger    | 1300          | 165   | 1590  | 10           | 3550               | 13        | DNR         |

X - Barrier Face    Y - Monorail Centerline    Z - Ground DNR - Did not run

**DATA SHEET NO. 16**  
**PHOTOGRAPHIC REFERENCE TARGET LOCATIONS**

Test Vehicle: 2000 TOYOTA TUNDRA SR5 PICKUP

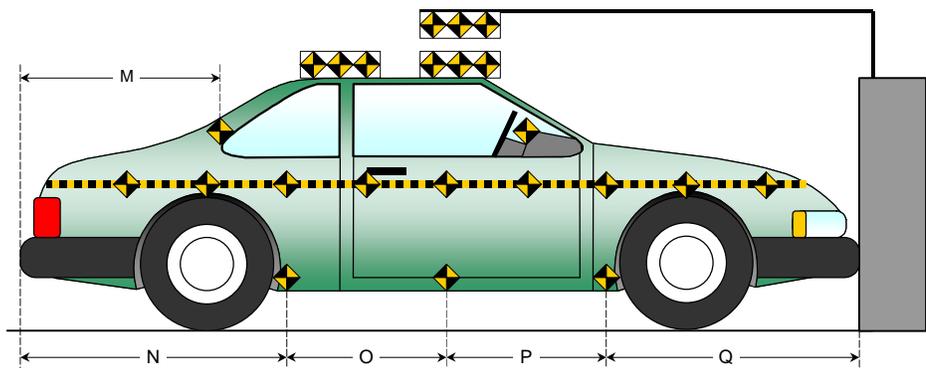
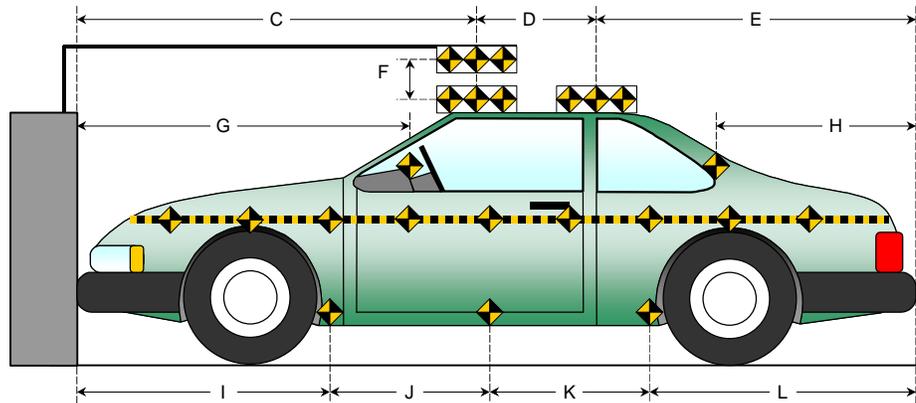
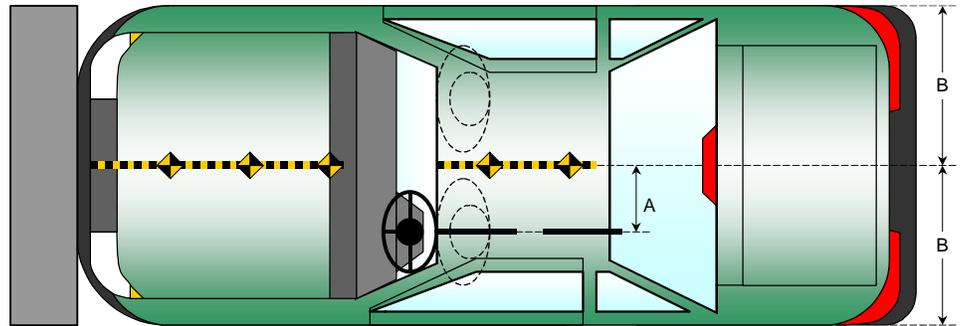
NHTSA No.: MY5103

Test Program: 2000 NHTSA 35 MPH NCAP

Test Date: 11/17/99

All Dimensions  
in mm

| Item | Value |
|------|-------|
| A    | 330   |
| B    | 935   |
| C    | 2774  |
| D    | 605   |
| E    | 1592  |
| F    | 153.6 |
| G    | 1870  |
| H    | 1340  |
| I    | 1400  |
| J    | 1001  |
| K    | 1001  |
| L    | 1581  |
| M    | 1365  |
| N    | 1580  |
| O    | 995   |
| P    | 997   |
| Q    | 1405  |



**DATA SHEET NO. 17**  
**VEHICLE INTRUSION MEASUREMENTS**

Test Vehicle: 2000 TOYOTA TUNDRA SR5 PICKUP

NHTSA No.: MY5103

Test Program: 2000 NHTSA 35 MPH NCAP

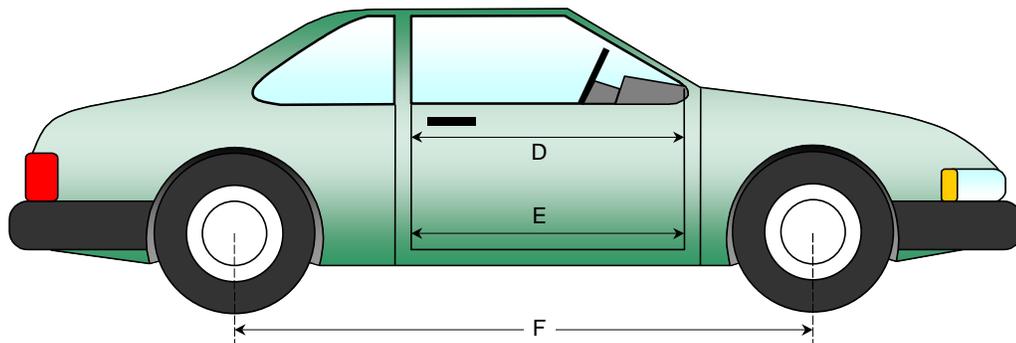
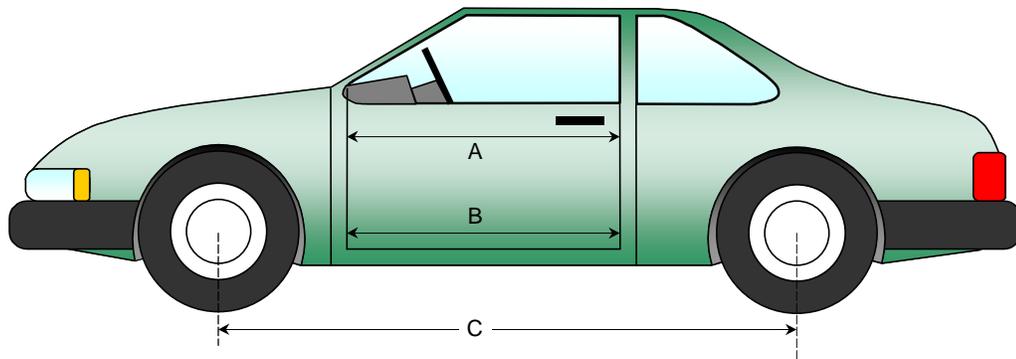
Test Date: 11/17/99

**DOOR OPENING WIDTH**

| Item | Description      | Units | Pre-Test | Post-Test | Difference |
|------|------------------|-------|----------|-----------|------------|
| A    | Left Side Upper  | mm    | 1096     | 1086      | -10        |
| B    | Left Side Lower  | mm    | 1083     | 1076      | -7         |
| D    | Right Side Upper | mm    | 1095     | 1086      | -9         |
| E    | Right Side Lower | mm    | 1080     | 1079      | -1         |

**WHEELBASE MEASUREMENTS**

| Item | Description           | Units | Pre-Test | Post-Test | Difference |
|------|-----------------------|-------|----------|-----------|------------|
| C    | Left Side Wheel base  | mm    | 3262     | 3220      | -42        |
| F    | Right Side Wheel base | mm    | 3262     | 3230      | -32        |



**DATA SHEET NO. 17...(CONTINUED)**  
**VEHICLE INTRUSION MEASUREMENTS**

Test Vehicle: 2000 TOYOTA TUNDRA SR5 PICKUP

NHTSA No.: MY5103

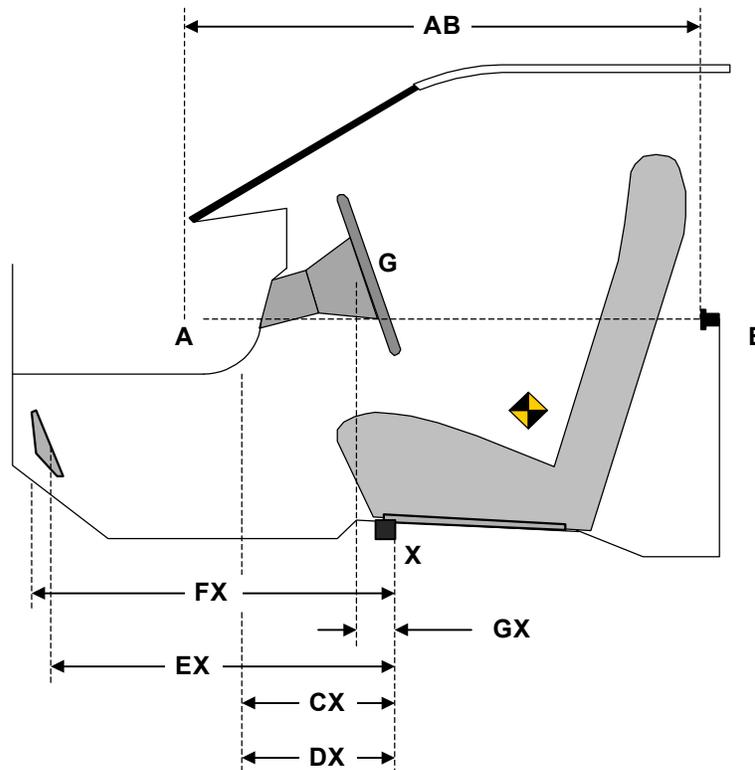
Test Program: 2000 NHTSA 35 MPH NCAP

Test Date: 11/17/99

**DRIVER COMPARTMENT INTRUSION**

| Item | Description                       | Units | Pre-Test | Post-Test | Difference |
|------|-----------------------------------|-------|----------|-----------|------------|
| AB   | Door Opening (Inside window jam)  | mm    | 1096     | 1086      | -10        |
| CX   | Left Knee Bolster to X            | mm    | 280      | 325       | 45         |
| DX   | Right Knee Bolster to X           | mm    | 265      | 290       | 25         |
| EX   | Brake Pedal to X                  | mm    | 548      | 570       | 22         |
| FX   | Foot Rest to X                    | mm    | 603      | 620       | 17         |
| GX   | Center of Steering Wheel Hub to X | mm    | 33       | 60        | 27         |

X = Left Front Seat Outboard Anchor Bolt Head



**DRIVER COMPARTMENT**

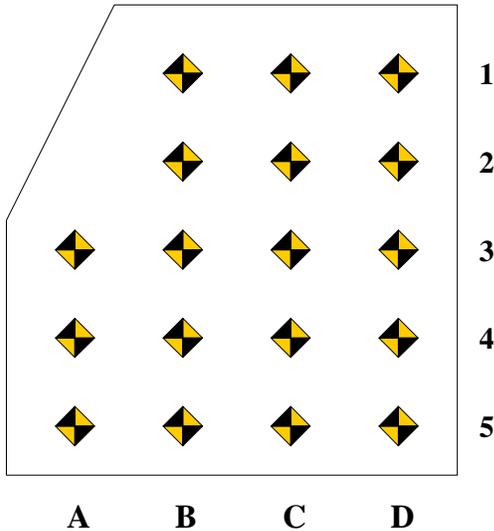
**DATA SHEET NO. 17...(CONTINUED)**  
**VEHICLE INTRUSION MEASUREMENTS**

Test Vehicle: 2000 TOYOTA TUNDRA SR5 PICKUP

NHTSA No.: MY5103

Test Program: 2000 NHTSA 35 MPH NCAP

Test Date: 11/17/99



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 | N/A      | 716 | 713 | 714 | N/A       | 661 | 653 | 633 | N/A        | -55 | -60 | -81 |
| 2 | N/A      | 621 | 616 | 611 | N/A       | 598 | 593 | 560 | N/A        | -23 | -23 | -51 |
| 3 | 509      | 509 | 510 | 510 | 504       | 498 | 503 | 500 | -5         | -11 | -7  | -10 |
| 4 | 409      | 409 | 410 | 410 | 404       | 400 | 403 | 400 | -5         | -9  | -7  | -10 |
| 5 | 310      | 309 | 303 | 313 | 306       | 302 | 305 | 304 | -4         | -7  | 2   | -9  |

**DRIVER FLOOR PAN Z-AXIS**

|   | Pre-Test |     |     |     | Post-Test |     |     |     | Difference |     |     |    |
|---|----------|-----|-----|-----|-----------|-----|-----|-----|------------|-----|-----|----|
|   | A        | B   | C   | D   | A         | B   | C   | D   | A          | B   | C   | D  |
| 1 | N/A      | 68  | 55  | 63  | N/A       | 50  | 52  | 70  | 15         | -18 | -3  | 7  |
| 2 | N/A      | -35 | -40 | -35 | N/A       | -60 | -40 | -35 | -15        | -25 | 0   | 0  |
| 3 | -45      | -45 | -50 | -45 | -65       | -65 | -63 | -50 | -20        | -20 | -13 | -5 |
| 4 | -40      | -45 | -48 | -48 | -60       | -60 | -55 | -47 | -20        | -15 | -7  | 1  |
| 5 | -47      | -55 | -53 | -50 | -60       | -60 | -50 | -40 | -13        | -5  | 3   | 10 |

**DATA SHEET NO. 17...(CONTINUED)**  
**VEHICLE INTRUSION MEASUREMENTS**

Test Vehicle: 2000 TOYOTA TUNDRA SR5 PICKUP

NHTSA No.: MY5103

Test Program: 2000 NHTSA 35 MPH NCAP

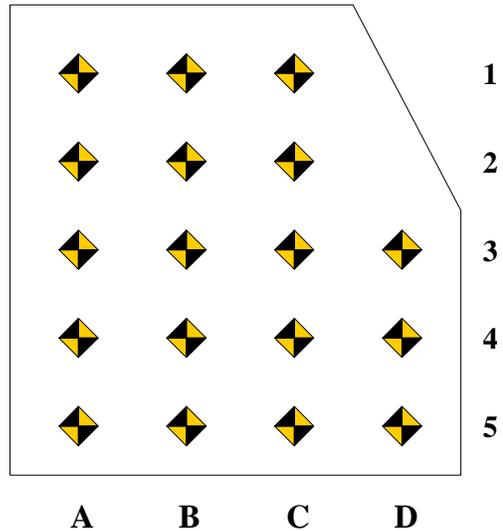
Test Date: 11/17/99

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 | 680      | 681 | 677 | N/A | 634       | 635 | 670 | N/A | -46        | -46 | -7 | N/A |
| 2 | 579      | 579 | 575 | N/A | 574       | 575 | 580 | N/A | -5         | -4  | 5  | N/A |
| 3 | 477      | 478 | 474 | 476 | 474       | 475 | 478 | 490 | -3         | -3  | 4  | 14  |
| 4 | 378      | 380 | 375 | 376 | 375       | 375 | 379 | 390 | -3         | -5  | 4  | 14  |
| 5 | 275      | 278 | 275 | 275 | 275       | 275 | 276 | 275 | 0          | -3  | 1  | 0   |

**PASSENGER FLOOR PAN Z-AXIS**

|   | Pre-Test |     |     |     | Post-Test |     |     |     | Difference |     |     |     |
|---|----------|-----|-----|-----|-----------|-----|-----|-----|------------|-----|-----|-----|
|   | A        | B   | C   | D   | A         | B   | C   | D   | A          | B   | C   | D   |
| 1 | 31       | 28  | 31  | N/A | 75        | 55  | 30  | N/A | 44         | 27  | -1  | N/A |
| 2 | -45      | -45 | -45 | N/A | -40       | -40 | -55 | N/A | 5          | 5   | -10 | N/A |
| 3 | -47      | -50 | -47 | -41 | -54       | -70 | -68 | -65 | -7         | -20 | -21 | -24 |
| 4 | -48      | -50 | -46 | -47 | -57       | -58 | -65 | -61 | -9         | -8  | -19 | -14 |
| 5 | -47      | -47 | -44 | -43 | -64       | -64 | -60 | -58 | -17        | -17 | -16 | -15 |

**DATA SHEET NO. 18**  
**FIXED BARRIER TYPE**

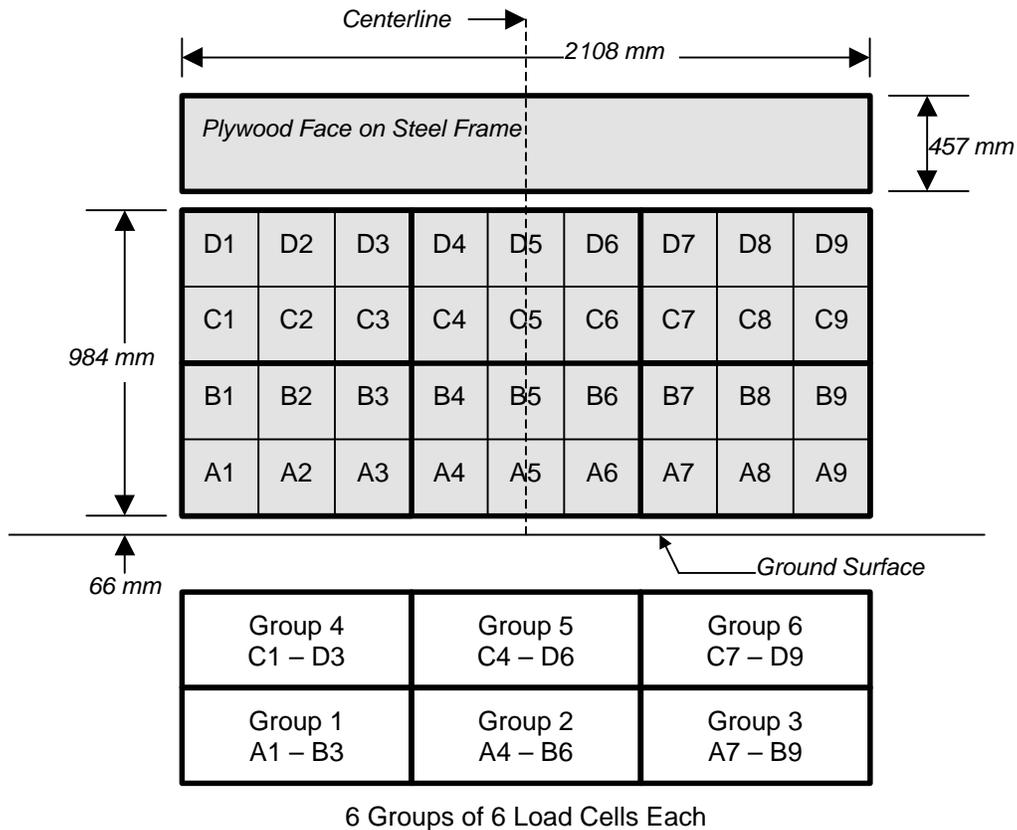
Test Vehicle: 2000 TOYOTA TUNDRA SR5 PICKUP

NHTSA No.: MY5103

Test Program: 2000 NHTSA 35 MPH NCAP

Test Date: 11/17/99

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



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

- 1.) Data from 36 individual load cells
- 2.) Sum data from 6 groupings shown above (6 cells/group)
- 3.) Total or sum of all 36 individual load cells
- 4.) Sum of all 36 individual load cells vs. vehicle dynamic crush

**DATA SHEET NO. 19**  
**ACCIDENT INVESTIGATION DATA**

Test Vehicle: 2000 Toyota Tundra SR5  
Test Program: 2000 NHTSA 35 MPH NCAP

NHTSA No.: MY5103  
Test Date: 11/17/99

**VEHICLE INFORMATION**

VIN: 5TBRT3411Y5032461  
Vehicle Size Category: SR 5 P/U

Wheel base (mm): 3262  
Test Weight (kg): 2255

**ACCELEROMETER DATA**

Accelerometer Location: Left rear floor pan  
Cal. Procedure/Interval: 6 months / drop test  
Integration Algorithm: NHTSA Standard  
Impact Velocity (km/h): 56.45  
Velocity Change (km/h): 66.07

Linearity: Good

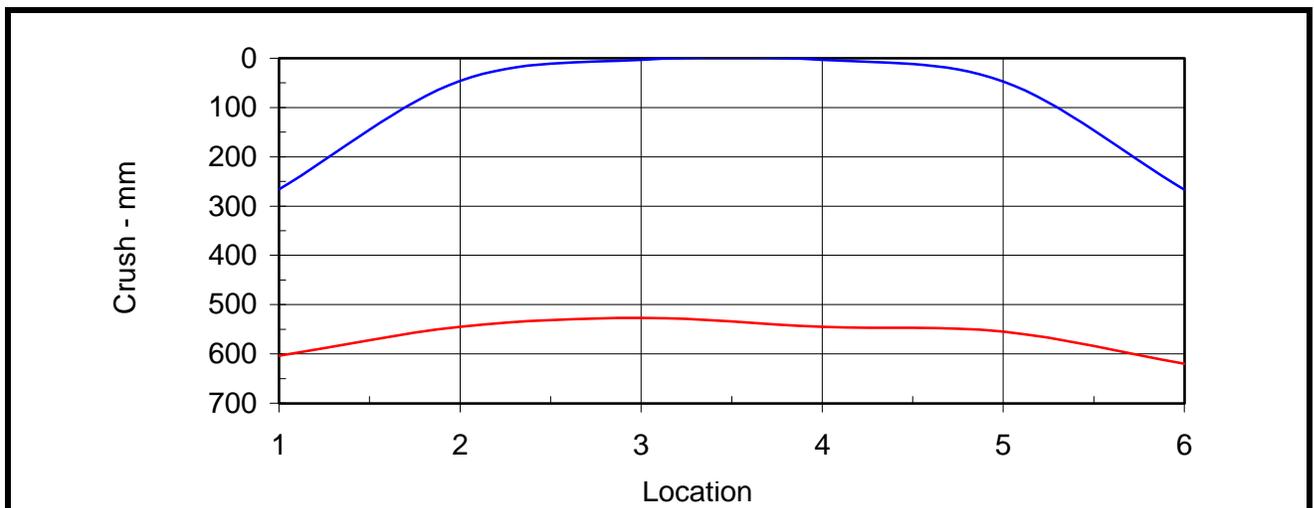
Time of Separation (msec): 65.7

**CRUSH PROFILE**

Collision Deformation Classification: 12FDEW6  
Damage Region Length (mm): 1745

Midpoint of Damage: Vehicle Centerline  
Impact Mode: Full Frontal

| No. | Measurement Description    | Units | Pre-Test | Post-Test | Difference |
|-----|----------------------------|-------|----------|-----------|------------|
| C1  | Crush zone 1 at left side  | mm    | 266      | 604       | -338       |
| C2  | Crush zone 2 on left side  | mm    | 46       | 545       | -499       |
| C3  | Crush zone 3 on left side  | mm    | 3        | 527       | -524       |
| C4  | Crush zone 4 on right side | mm    | 3        | 545       | -542       |
| C5  | Crush zone 5 on right side | mm    | 47       | 555       | -508       |
| C6  | Crush zone 6 at right side | mm    | 267      | 620       | -353       |



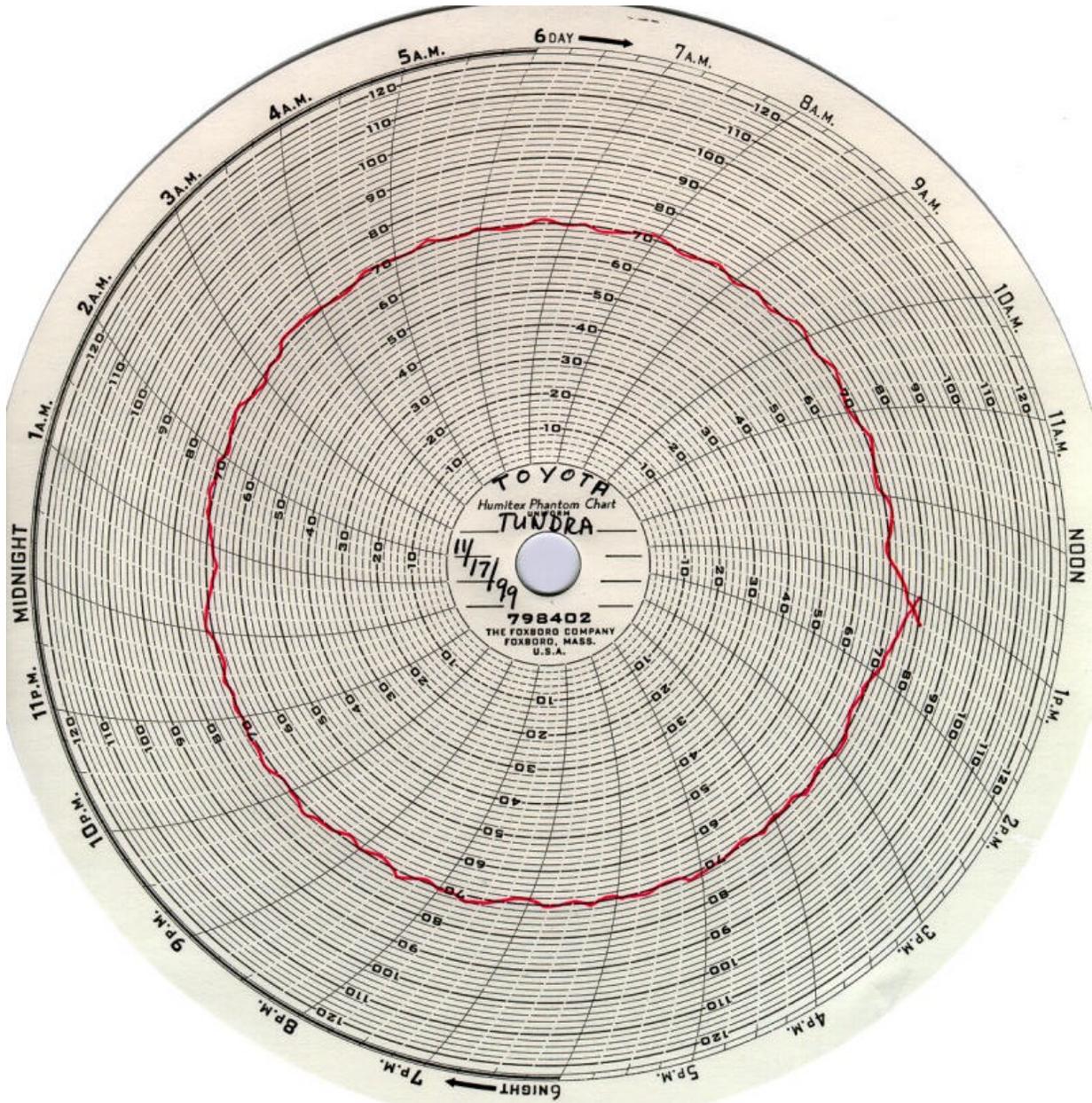
**DATA SHEET NO. 20**  
**DUMMY/ VEHICLE TEMPERATURE STABILIZATION**

Test Vehicle: 2000 TOYOTA TUNDRA SR5 PICKUP

NHTSA No.: MY5103

Test Program: 2000 NHTSA 35 MPH NCAP

Test Date: 11/17/99



**APPENDIX A**  
**PHOTOGRAPHS**

## LIST OF PHOTOGRAPHS

| Figure |   | Page |
|--------|---|------|
| A-1    | Right Front as Received                 | A-1  |
| A-2    | Left Rear as Received                   | A-2  |
| A-3    | Vehicle Certification Label             | A-3  |
| A-4    | Vehicle Tire Placard                    | A-4  |
| A-5    | Pre-test Front View                     | A-5  |
| A-6    | Post-test Front View                    | A-6  |
| A-7    | Pre-test Left Side View                 | A-7  |
| A-8    | Post-test Left Side View                | A-8  |
| A-9    | Pre-test Right Side View                | A-9  |
| A-10   | Post-test Right Side View               | A-10 |
| A-11   | Pre-test Right Front View               | A-11 |
| A-12   | Post-test Right Front View              | A-12 |
| A-13   | Pre-test Left Rear View                 | A-13 |
| A-14   | Post-test Left Rear View                | A-14 |
| A-15   | Pre-test Windshield                     | A-15 |
| A-16   | Post-test Windshield                    | A-16 |
| A-17   | Pre-test Engine Compartment             | A-17 |
| A-18   | Post-test Engine Compartment            | A-18 |
| A-19   | Pre-test Fuel Cap                       | A-19 |
| A-20   | Post-test Fuel Cap                      | A-20 |
| A-21   | Pre-test Front Underside                | A-21 |
| A-22   | Post-test Front Underside               | A-22 |
| A-23   | Pre-test Rear Underside                 | A-23 |
| A-24   | Post-test Rear Underside                | A-24 |
| A-25   | Pre-test Driver Dummy (Front View)      | A-25 |
| A-26   | Post-test Driver Dummy (Front View)     | A-26 |
| A-27   | Pre-test Driver Dummy (Through Window)  | A-27 |
| A-28   | Post-test Driver Dummy (Through Window) | A-28 |
| A-29   | Pre-test Driver Dummy (Door Open)       | A-29 |
| A-30   | Post-test Driver Dummy (Door Open)      | A-30 |
| A-31   | Pre-test Driver Dummy (90° To Vehicle)  | A-31 |
| A-32   | Post-test Driver Dummy (90° to Vehicle) | A-32 |

LIST OF PHOTOGRAPHS...(Continued)

| Figure |   | Page |
|--------|---|------|
| A-33   | Pre-test Driver Dummy Feet                              | A-33 |
| A-34   | Post-test Driver Dummy Feet and Knee Contact            | A-34 |
| A-35   | Pre-test Driver Side Knee Bolster                       | A-35 |
| A-36   | Post-test Driver Side Knee Bolster                      | A-36 |
| A-37   | Pre-test Driver Side Floor pan                          | A-37 |
| A-38   | Post-test Driver Side Floor pan                         | A-38 |
| A-39   | Post-test Driver Head                                   | A-39 |
| A-40   | Post-test Driver Dummy Contact                          | A-40 |
| A-41   | Pre-test Passenger Dummy (Front View)                   | A-41 |
| A-42   | Post-test Passenger Dummy (Front View)                  | A-42 |
| A-43   | Pre-test Passenger Dummy (Through Window)               | A-43 |
| A-44   | Post-test Passenger Dummy (Through Window)              | A-44 |
| A-45   | Pre-test Passenger Dummy (Door Open)                    | A-45 |
| A-46   | Post-test Passenger Dummy (Door Open)                   | A-46 |
| A-47   | Pre-test Passenger Dummy (90° to Vehicle)               | A-47 |
| A-48   | Post-test Passenger Dummy (90° to Vehicle)              | A-48 |
| A-49   | Pre-test Passenger Dummy Feet                           | A-49 |
| A-50   | Post-test Driver Passenger Feet and Contact Point       | A-50 |
| A-51   | Pre-test Passenger Side Floor Pan                       | A-51 |
| A-52   | Post-test Passenger Side Floor Pan                      | A-52 |
| A-53   | Pre-test Passenger Side Knee Bolster                    | A-53 |
| A-54   | Post-test Passenger Side Knee Bolster and Dummy Contact | A-54 |
| A-55   | Post-test Passenger Head                                | A-55 |
| A-56   | Post-test Passenger Dummy Contact                       | A-56 |
| A-57   | Vehicle on Rollover Device                              | A-57 |
| A-58   | Vehicle During Impact                                   | A-58 |



FIGURE A-1. RIGHT FRONT AS RECEIVED

A-1

KAR20001-02



FIGURE A-2. LEFT REAR AS RECEIVED

A-2

KAR20001-02

MFD. BY: TOYOTA MOTOR MANUFACTURING, INDIANA, INC.  
GVWR (LBS): 6200 DATE 10/99  
GAWR (LBS): FRT. 3160 WITH P245/70R16 TIRES.  
16X7JJ RIMS AT 26 PSI COLD.  
RR. 3760 WITH P245/70R16 TIRES.  
16X7JJ RIMS AT 35 PSI COLD.  
THIS VEHICLE CONFORMS TO ALL APPLICABLE FEDERAL MOTOR VEHICLE SAFETY AND THEFT PREVENTION STANDARDS IN EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE. 5TBRT3411YS032461 TRUCK



C/TR 202/FE40,A/TM A01A/A340E UCK30L ARSSKA  
NO.927

FIGURE A-3. VEHICLE CERTIFICATION LABEL

MFD. BY: TOYOTA MOTOR MANUFACTURING. INDIANA, INC.  
GVWR (LBS): 6200 DATE 10/99  
GAWR (LBS): FRT. 3160 WITH P245/70R16 TIRES.  
16X7JJ RIMS AT 26 PSI COLD.  
RR. 3760 WITH P245/70R16 TIRES.  
16X7JJ RIMS AT 35 PSI COLD.

THIS VEHICLE CONFORMS TO ALL APPLICABLE FEDERAL MOTOR VEHICLE SAFETY AND THEFT PREVENTION STANDARDS IN EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE. 5TBRT3411YS032461 TRUCK



C/TR 202/FE40,A/TM A01A/A340E UCK30L ARSSKA  
NO.927

FIGURE A-4. VEHICLE TIRE PLACARD



FIGURE A-5. PRETEST FRONT VIEW

A-5

KAR20001-02

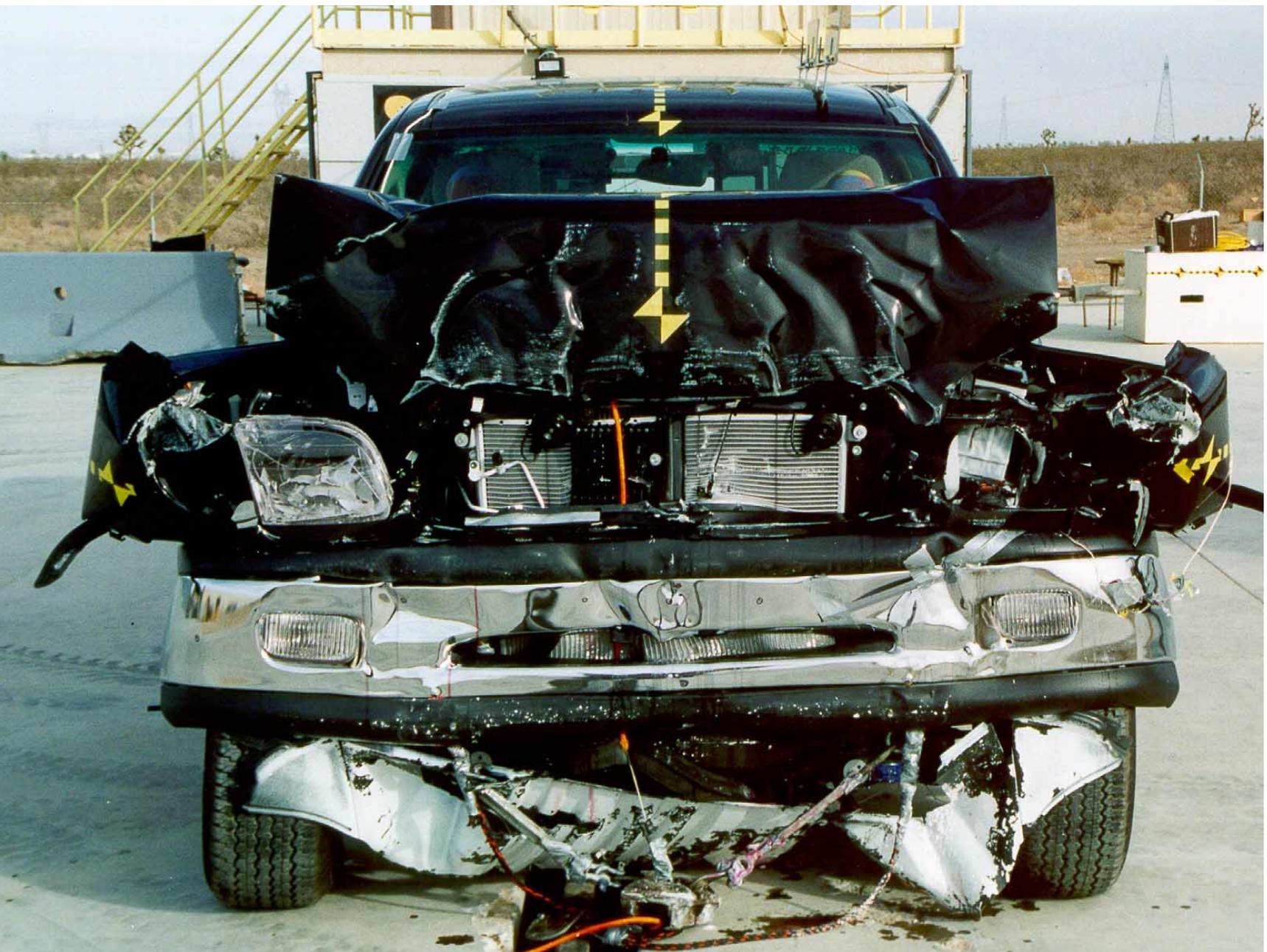


FIGURE A-6. POST TEST FRONT VIEW

A-6

KAR20001-02



FIGURE A-7. PRETEST LEFT SIDE VIEW

A-7

KAR20001-02



FIGURE A-8. POST TEST LEFT SIDE VIEW

A-8

KAR20001-02



FIGURE A-9. PRETEST RIGHT SIDE VIEW

A-9

KAR20001-02



FIGURE A-10. POST TEST RIGHT SIDE VIEW

A-10

KAR20001-02



FIGURE A-11. PRETEST RIGHT FRONT VIEW

A-11

KAR20001-02



FIGURE A-12. POST TEST RIGHT FRONT VIEW

A-12

KAR20001-02



FIGURE A-13. PRETEST LEFT REAR VIEW

A-13

KAR20001-02



FIGURE A-14. POST TEST LEFT REAR VIEW

A-14

KAR20001-02

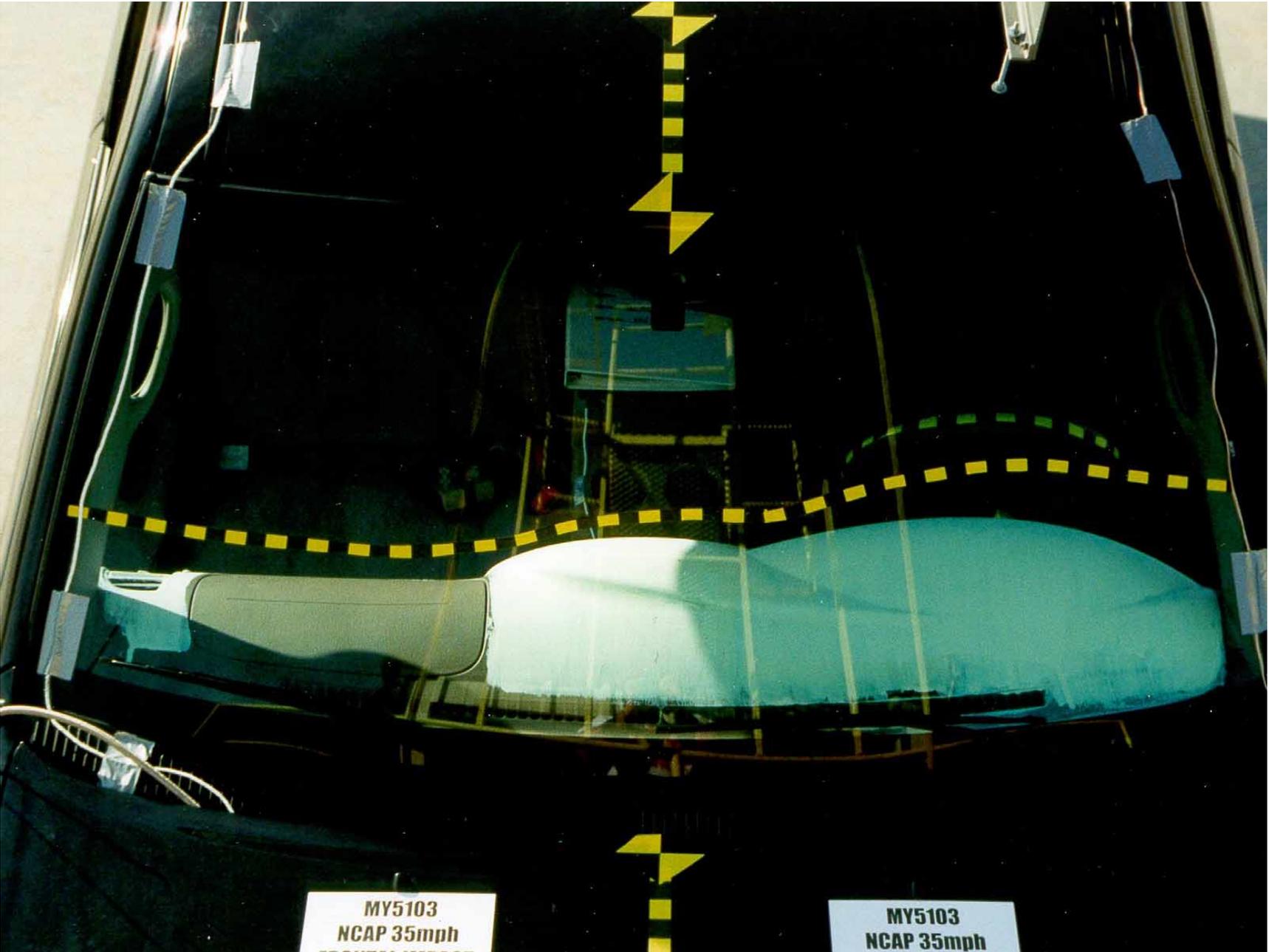


FIGURE A-15. PRETEST WINDSHIELD

A-15

KAR20001-02

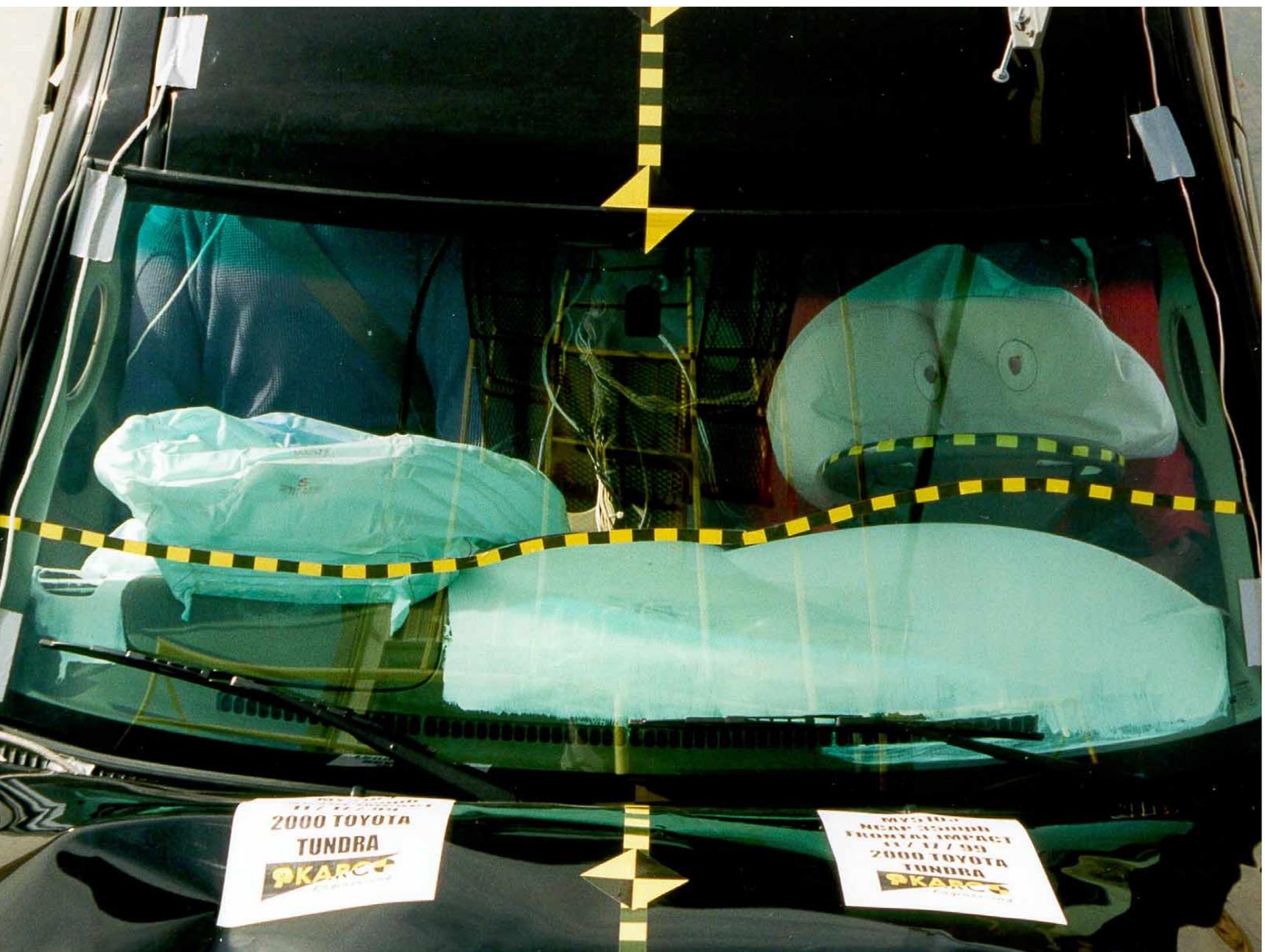


FIGURE A-16. POST TEST WINDSHIELD

A-16

KAR20001-02



FIGURE A-17. PRETEST ENGINE COMPARTMENT

A-17

KAR20001-02

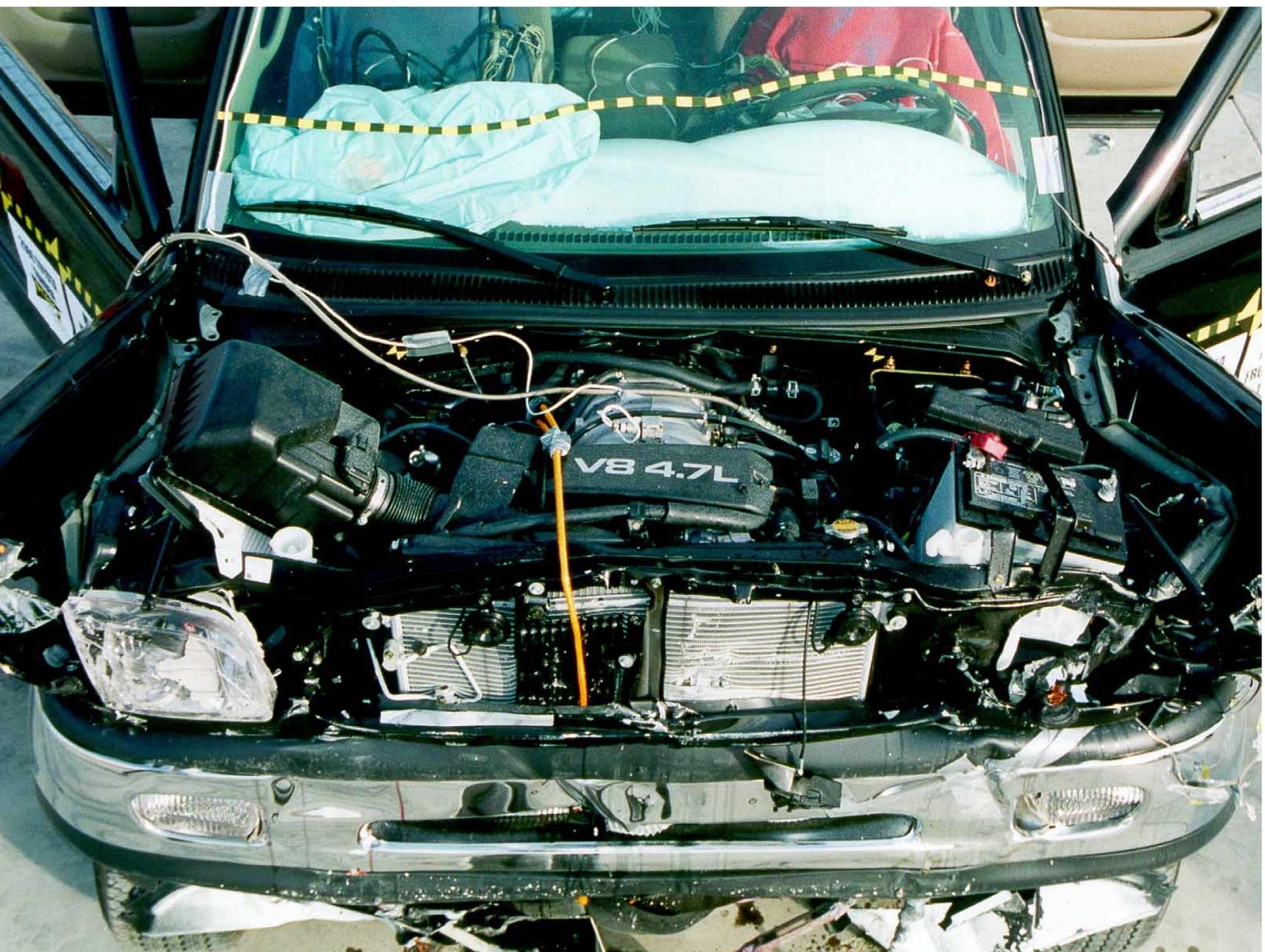


FIGURE A-18. POST TEST ENGINE COMPARTMENT

A-18

KAR20001-02

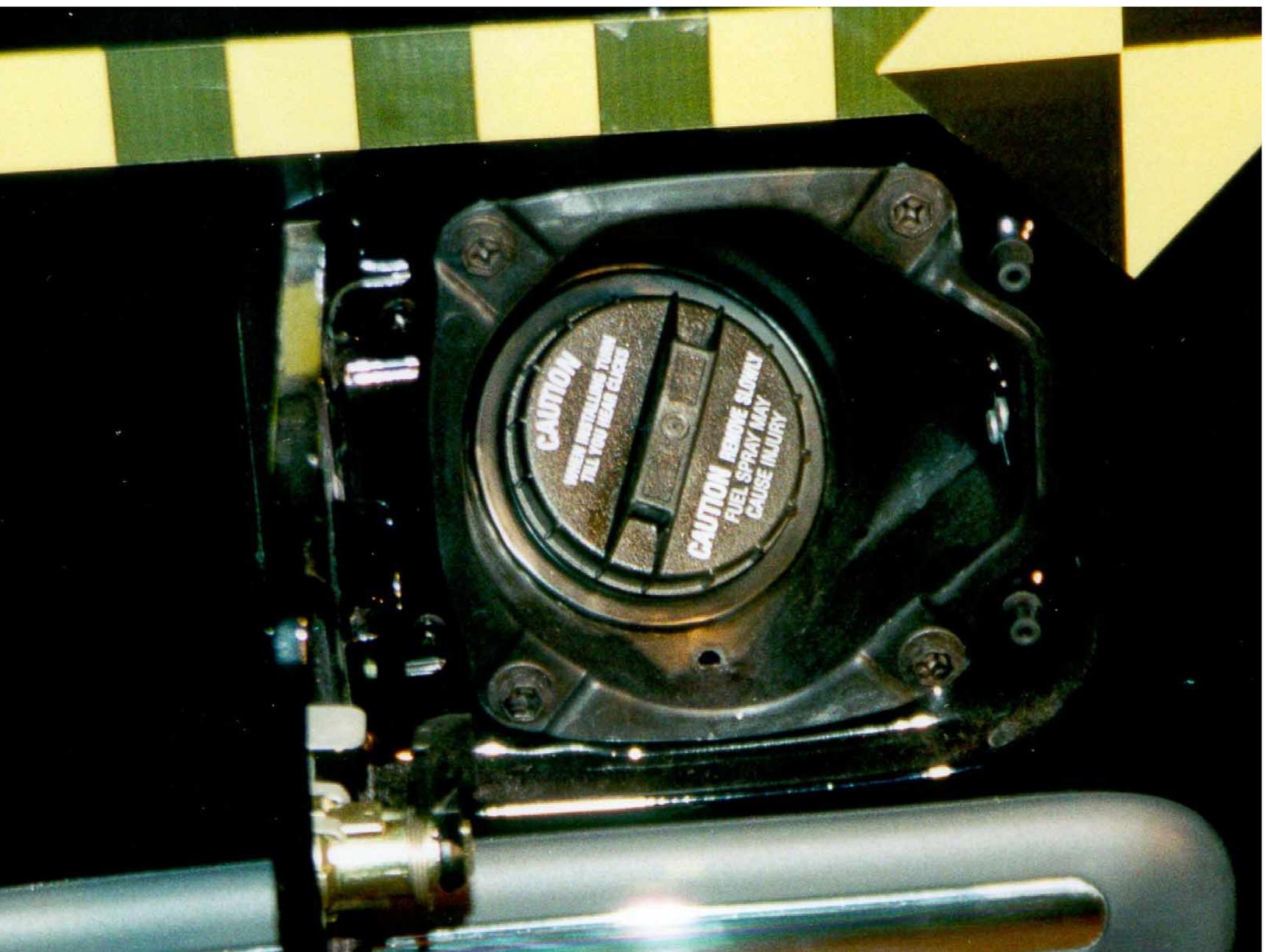


FIGURE A-19. PRETEST FUEL CAP

A-19

KAR20001-02

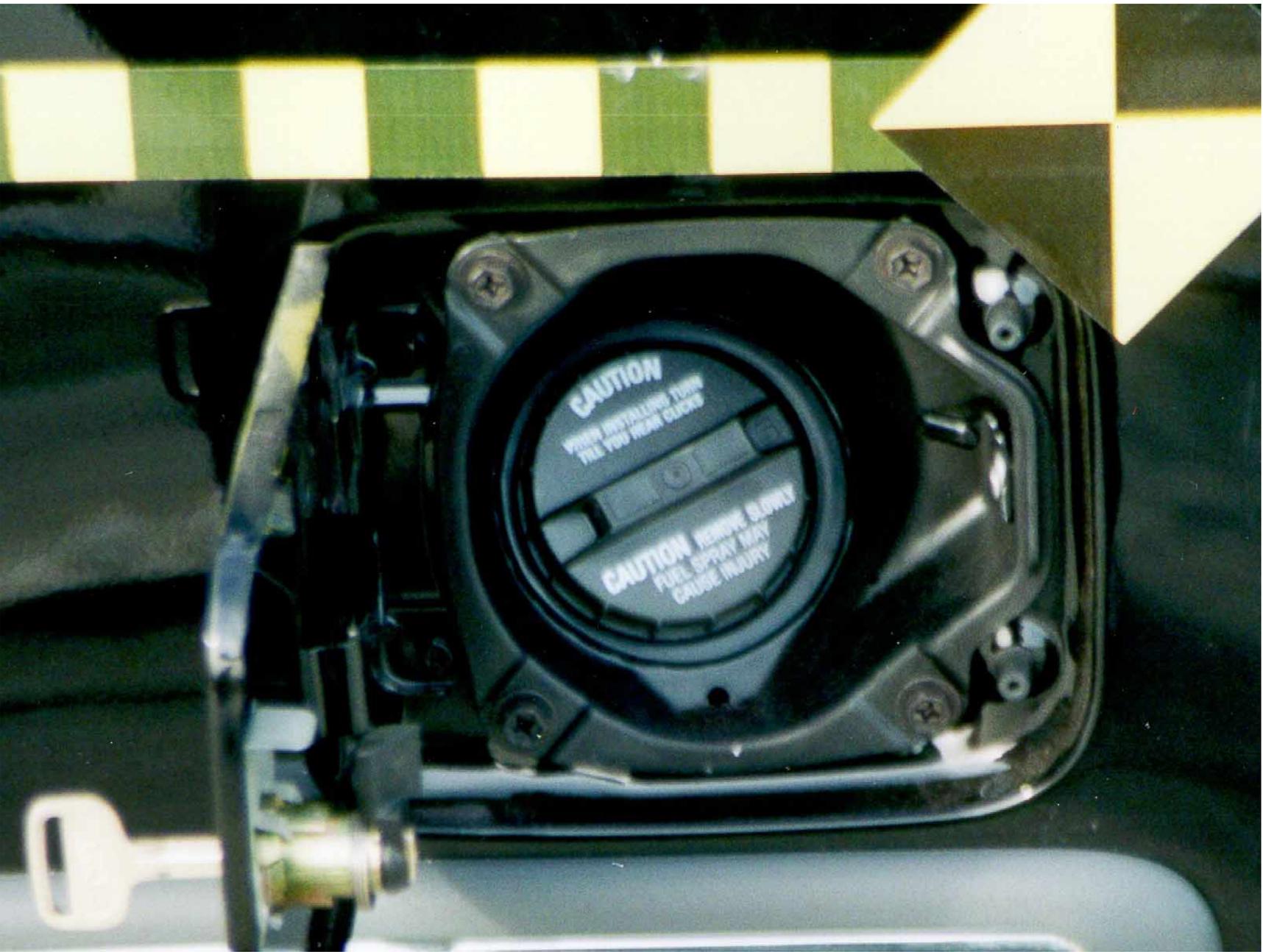


FIGURE A-20. POST TEST FUEL CAP

A-20

KAR20001-02

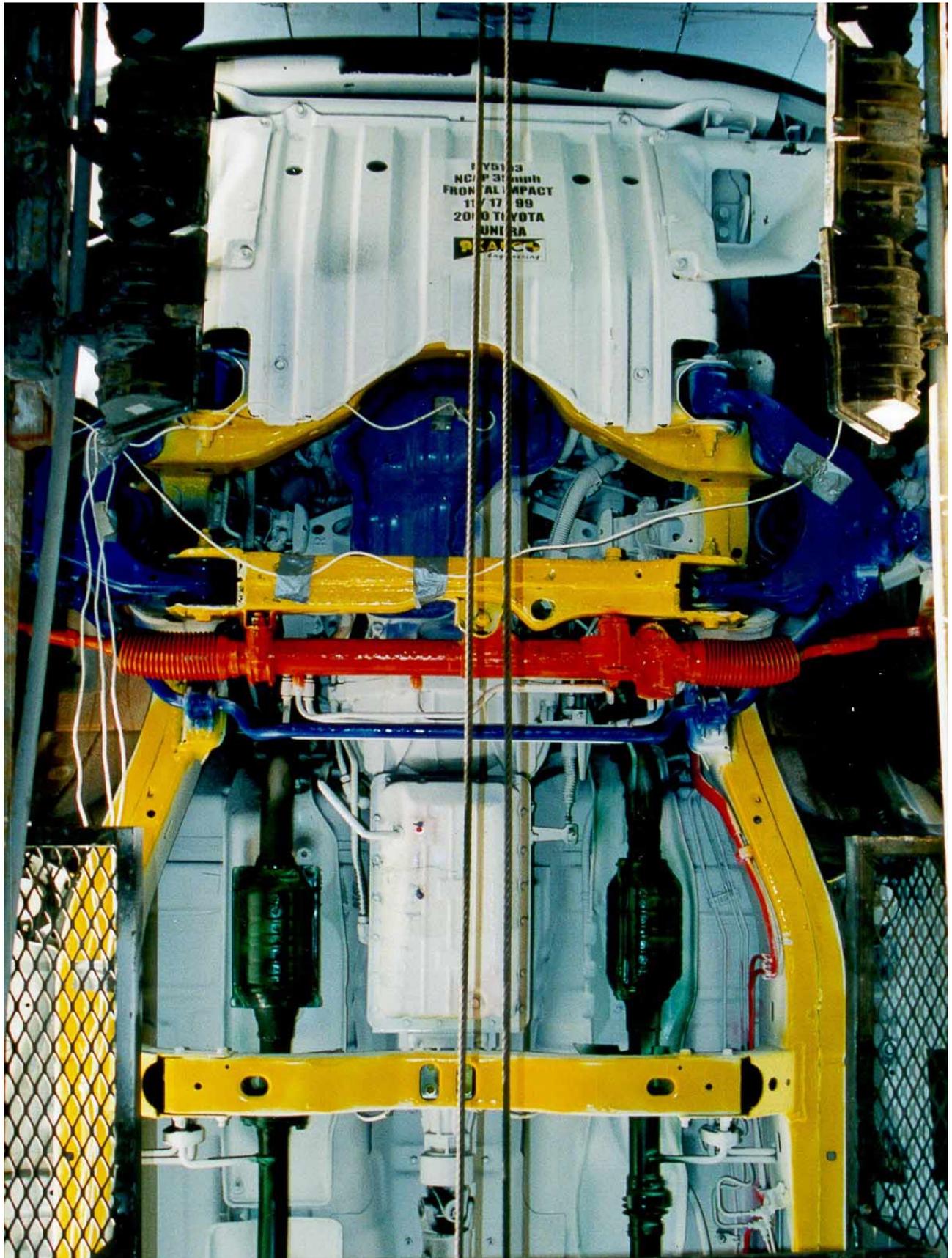


FIGURE A-21. PRETEST FRONT UNDERSIDE

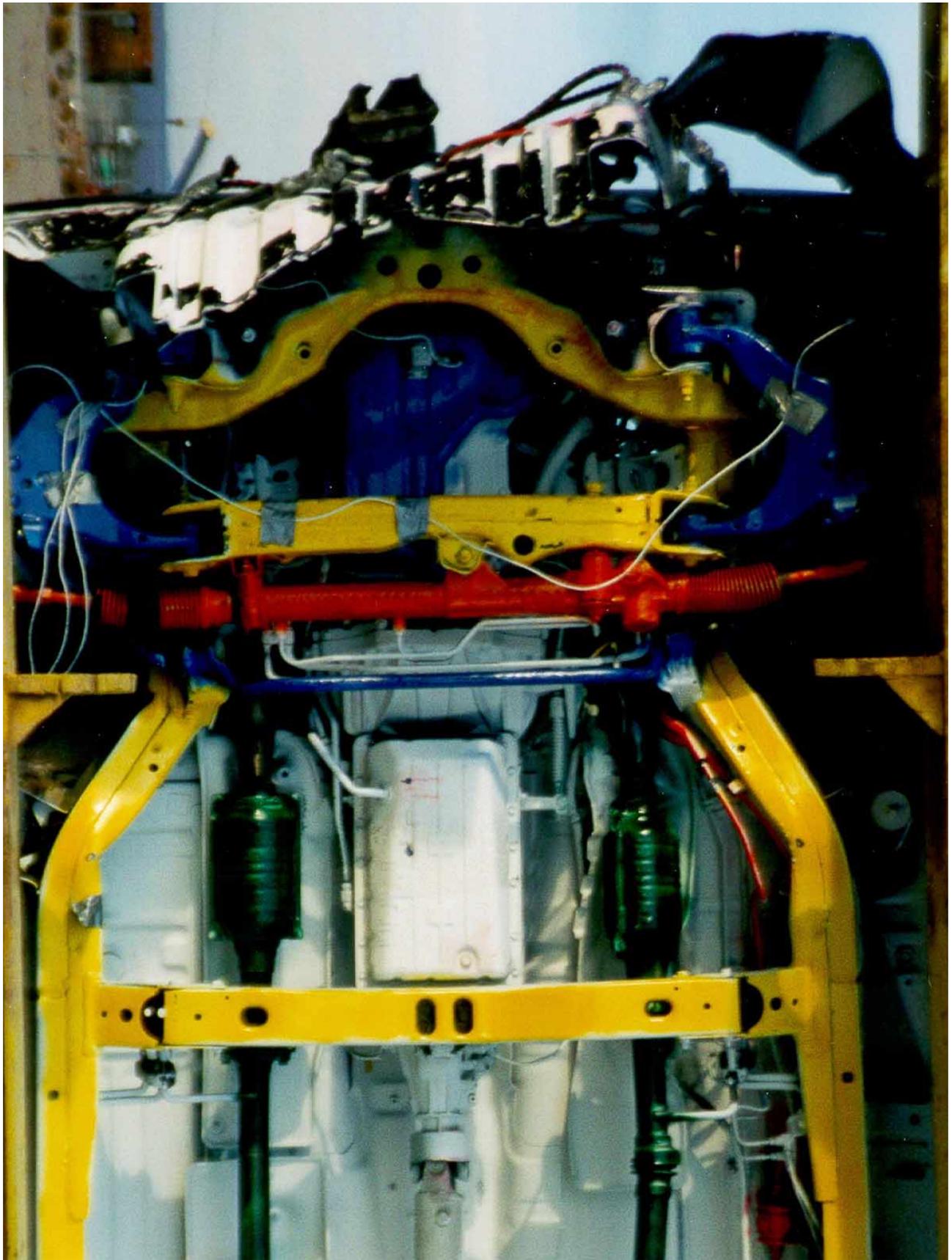


FIGURE A-22. POST TEST FRONT UNDERSIDE

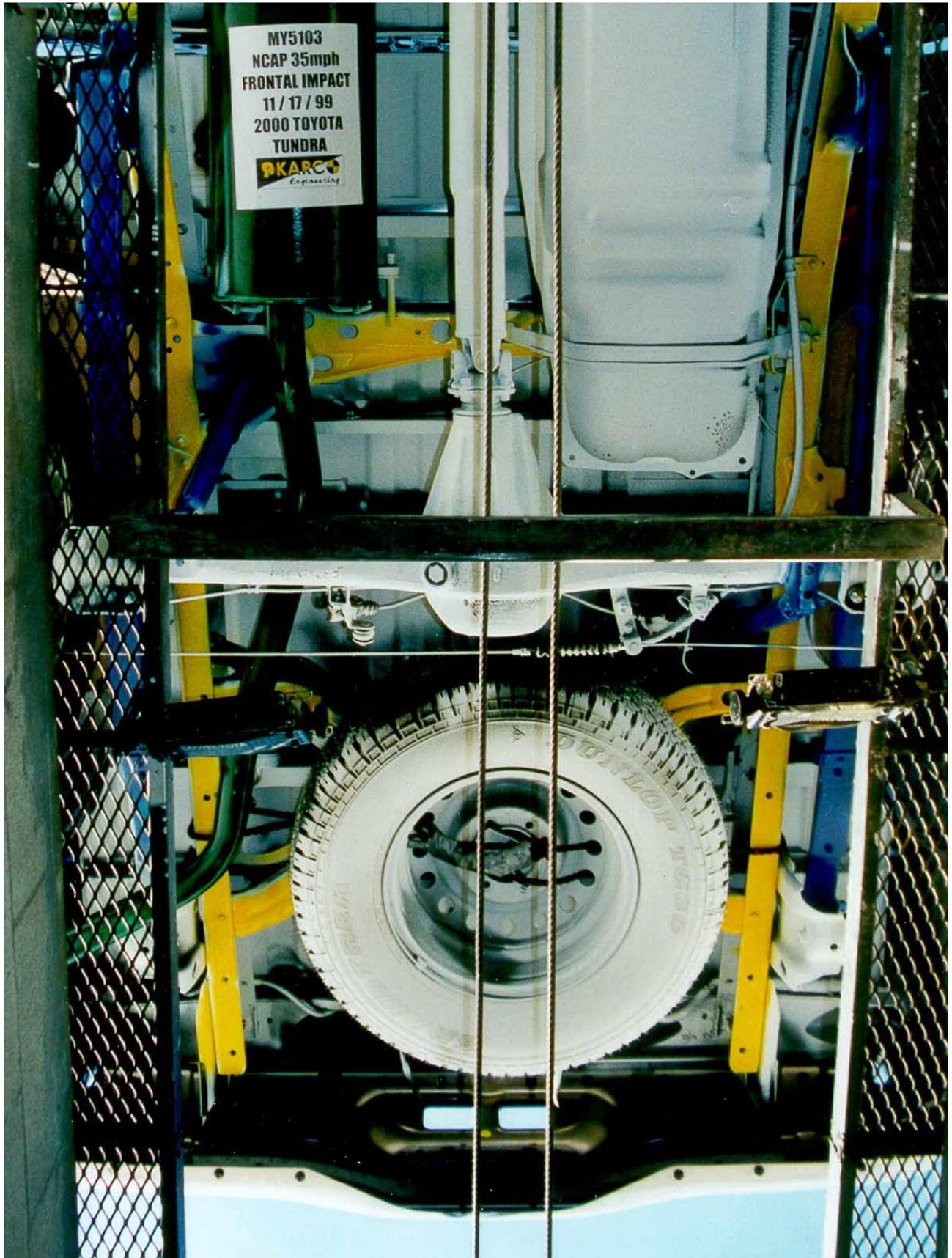


FIGURE A-23. PRETEST REAR UNDERSIDE

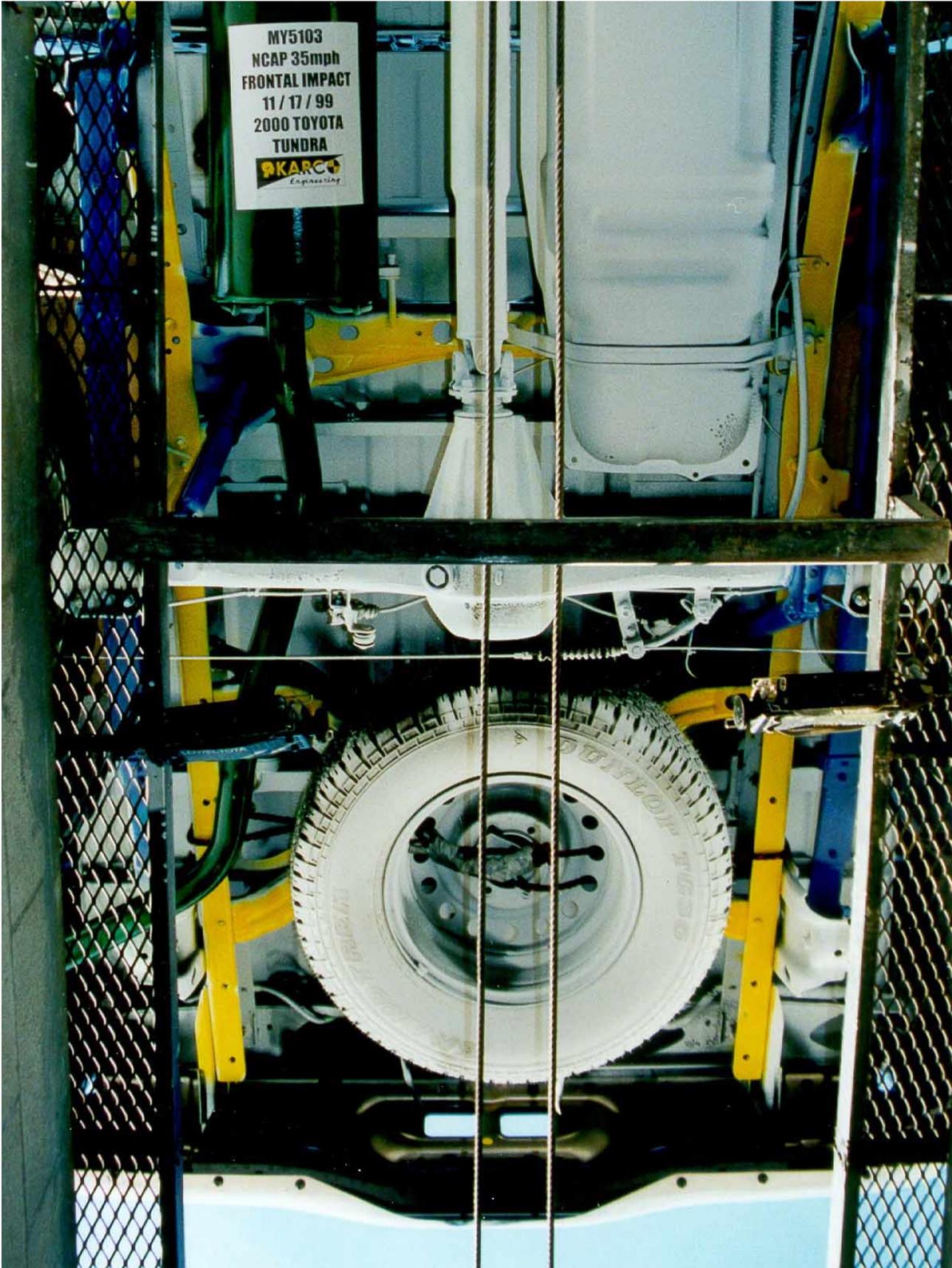


FIGURE A-24. POST TEST REAR UNDERSIDE



FIGURE A-25. PRETEST DRIVER DUMMY (FRONT VIEW)



FIGURE A-26. POST TEST DRIVER DUMMY (FRONT VIEW)



FIGURE A-27. PRETEST DRIVER DUMMY (THRU WINDOW)

A-27

KAR20001-02



FIGURE A-28. POST TEST DRIVER DUMMY (THRU WINDOW)

A-28

KAR20001-02



FIGURE A-29. PRETEST DRIVER DUMMY (DOOR OPEN)



FIGURE A-30. POST TEST DRIVER DUMMY (DOOR OPEN)



FIGURE A-31. PRETEST DRIVER DUMMY (90° TO VEHICLE)



FIGURE A-32. POST TEST DRIVER DUMMY (90° TO VEHICLE)



FIGURE A-33. PRETEST DRIVER DUMMY FEET

A-33

KAR20001-02



FIGURE A-34. POST TEST DRIVER DUMMY FEET AND KNEE CONTACT

A-34

KAR20001-02

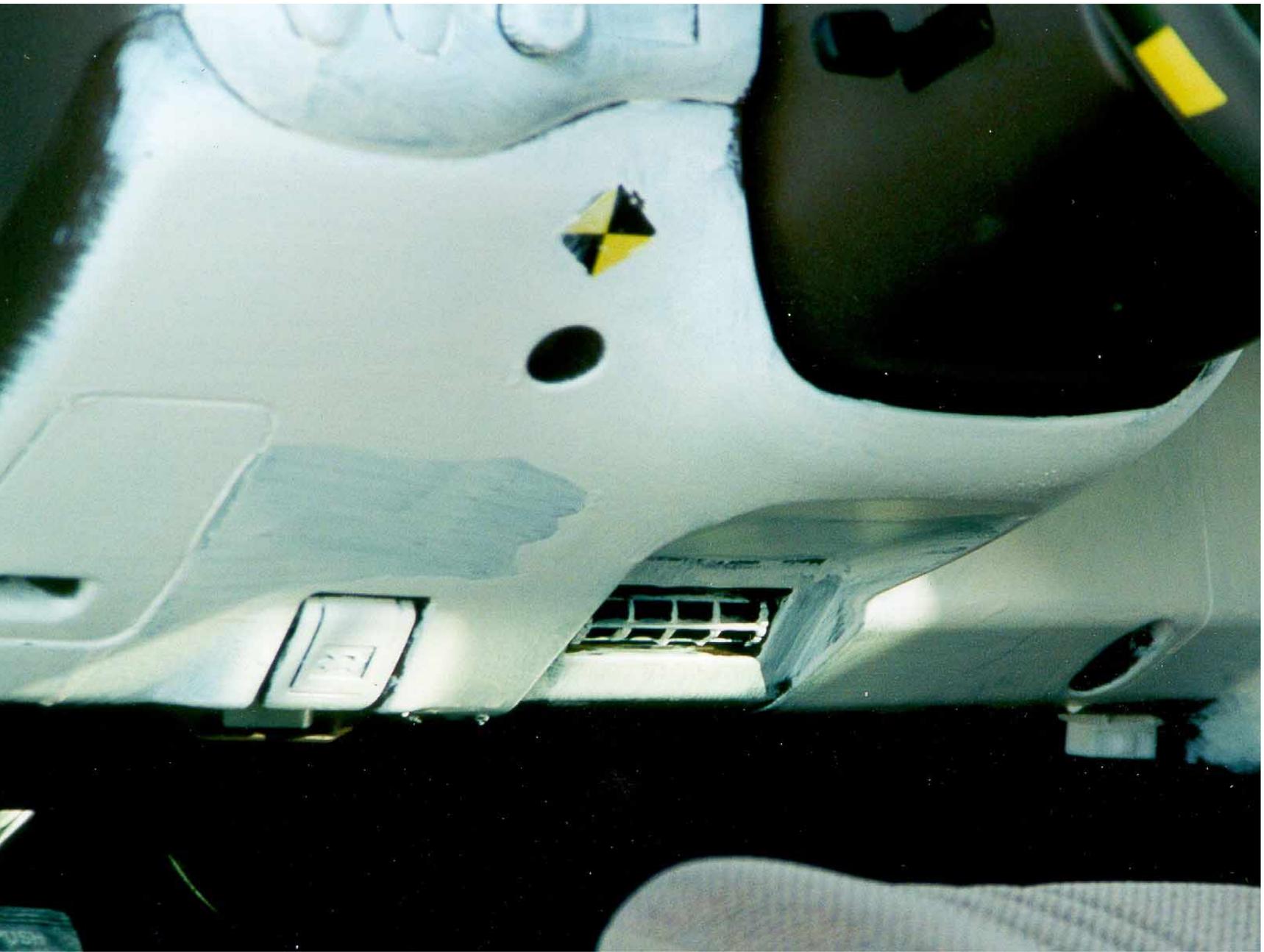


FIGURE A-35. PRE TEST DRIVER KNEE BOLSTER

A-35

KAR20001-02



FIGURE A-36. POST TEST DRIVER KNEE BOLSTER

A-36

KAR20001-02



FIGURE A-37. PRE TEST DRIVER SIDE FLOOR PAN

A-37

KAR20001-02



FIGURE A-38. POST TEST DRIVER SIDE FLOOR PAN

A-38

KAR20001-02

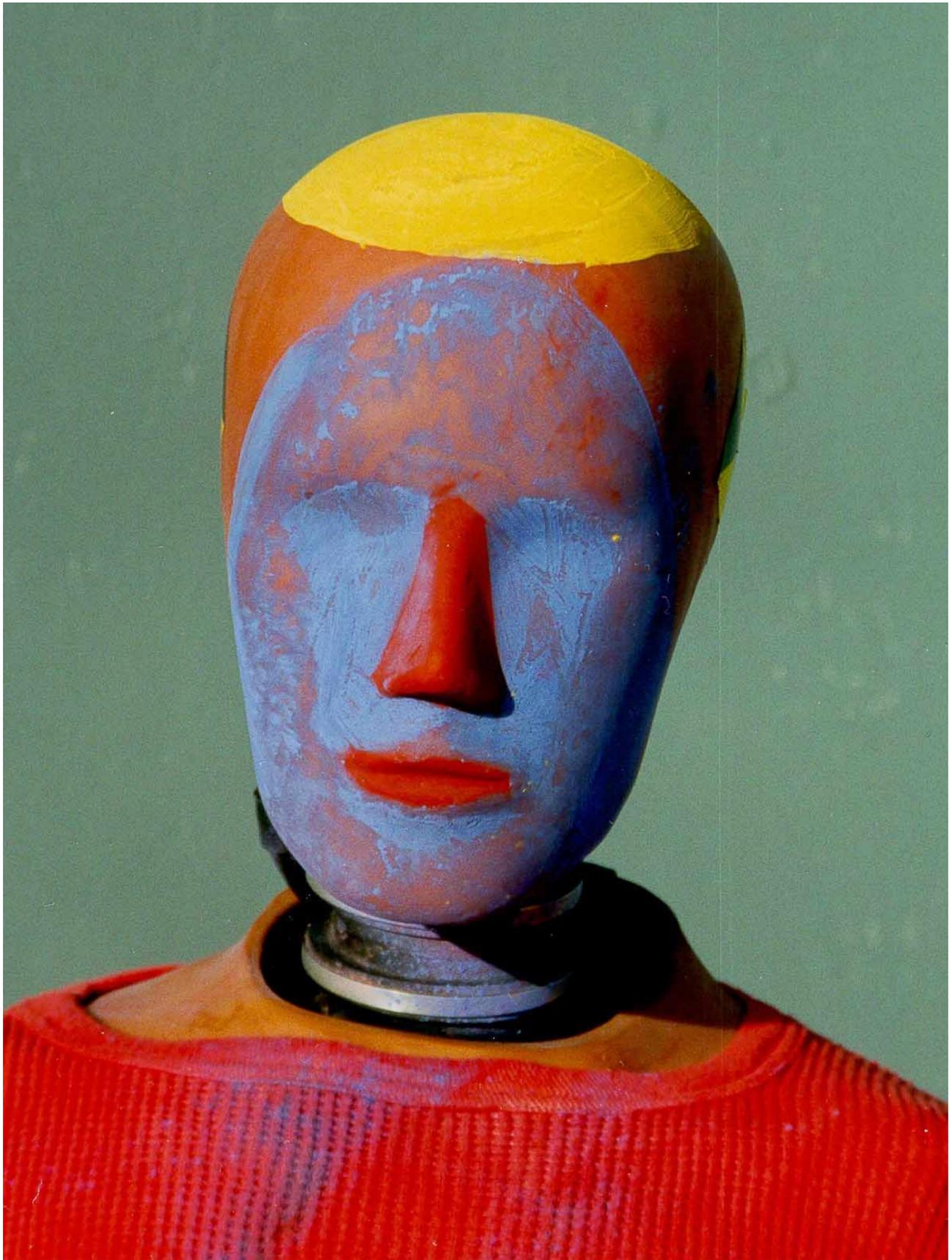


FIGURE A-39. POST TEST DRIVER HEAD



FIGURE A-40. POST TEST DRIVER DUMMY CONTACT

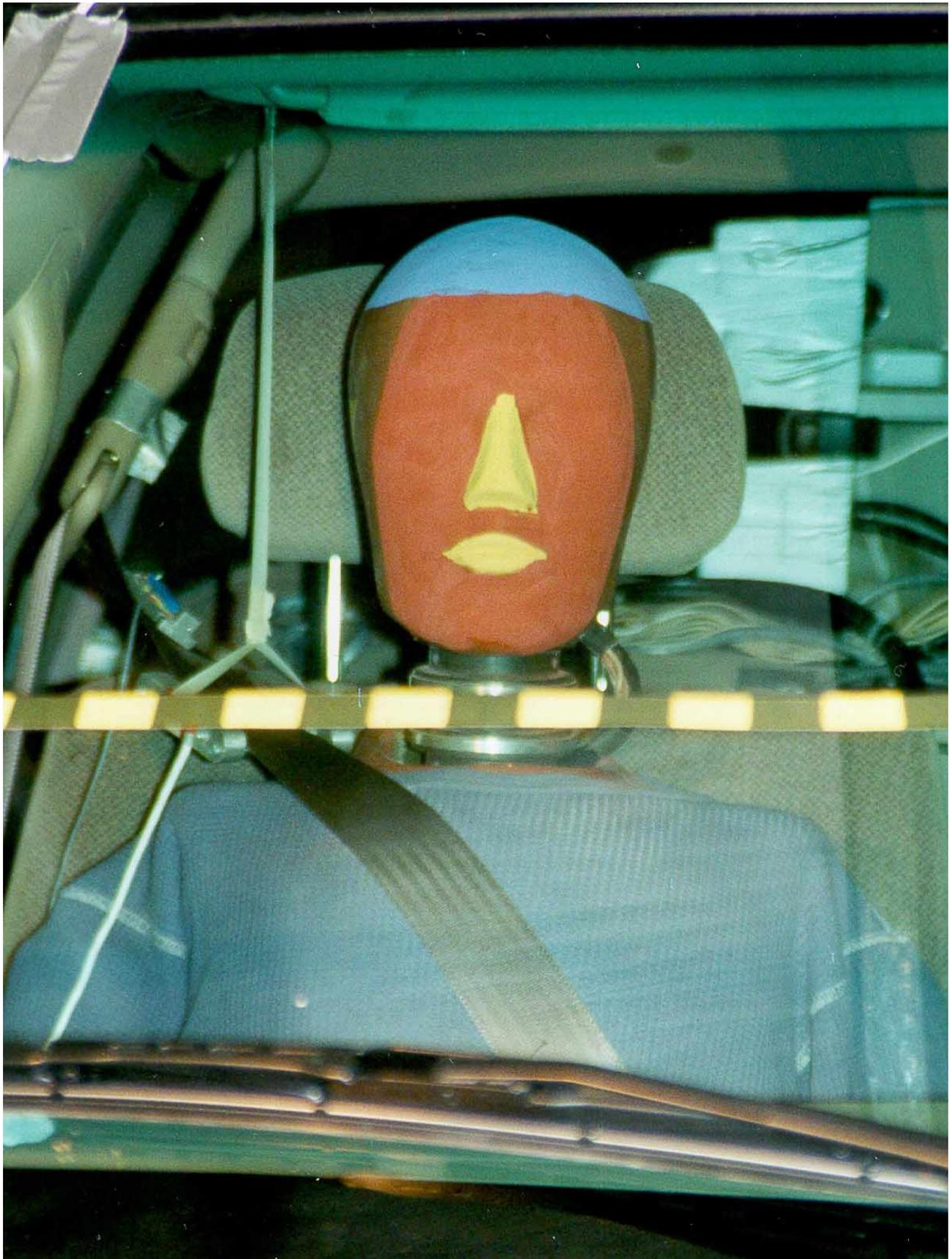


FIGURE A-41. PRE TEST PASSENGER DUMMY (FRONT VIEW)



FIGURE A-42. POST TEST PASSENGER DUMMY (FRONT VIEW)

**Photograph Not  
Available**

FIGURE A-43. PRE TEST PASSENGER DUMMY (THRU WINDOW)



FIGURE A-44. POST TEST PASSENGER DUMMY (THRU WINDOW)

A-44

KAR20001-02

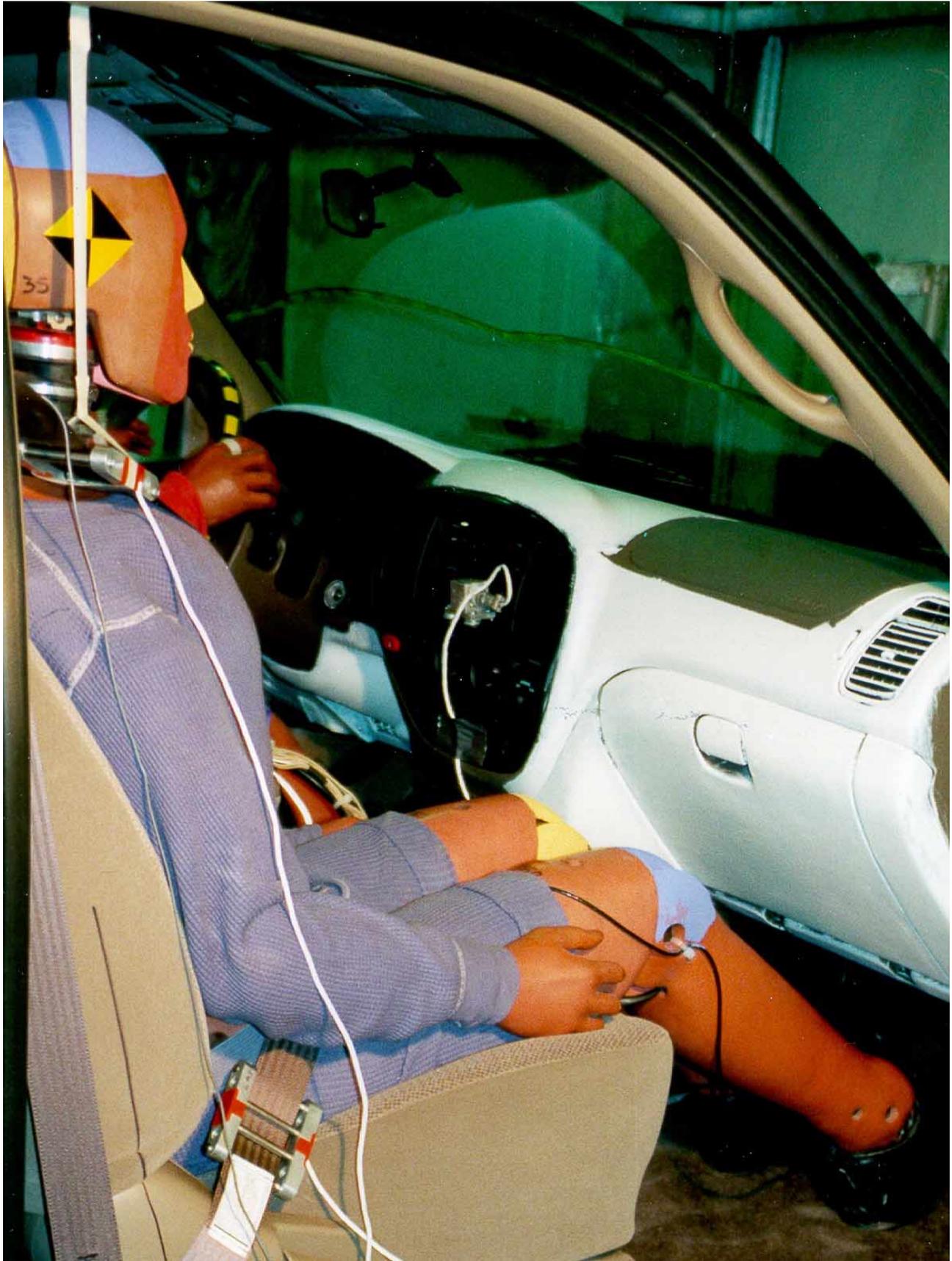


FIGURE A-45. PRE TEST PASSENGER DUMMY (DOOR OPEN)



FIGURE A-46. POST TEST PASSENGER DUMMY (DOOR OPEN)

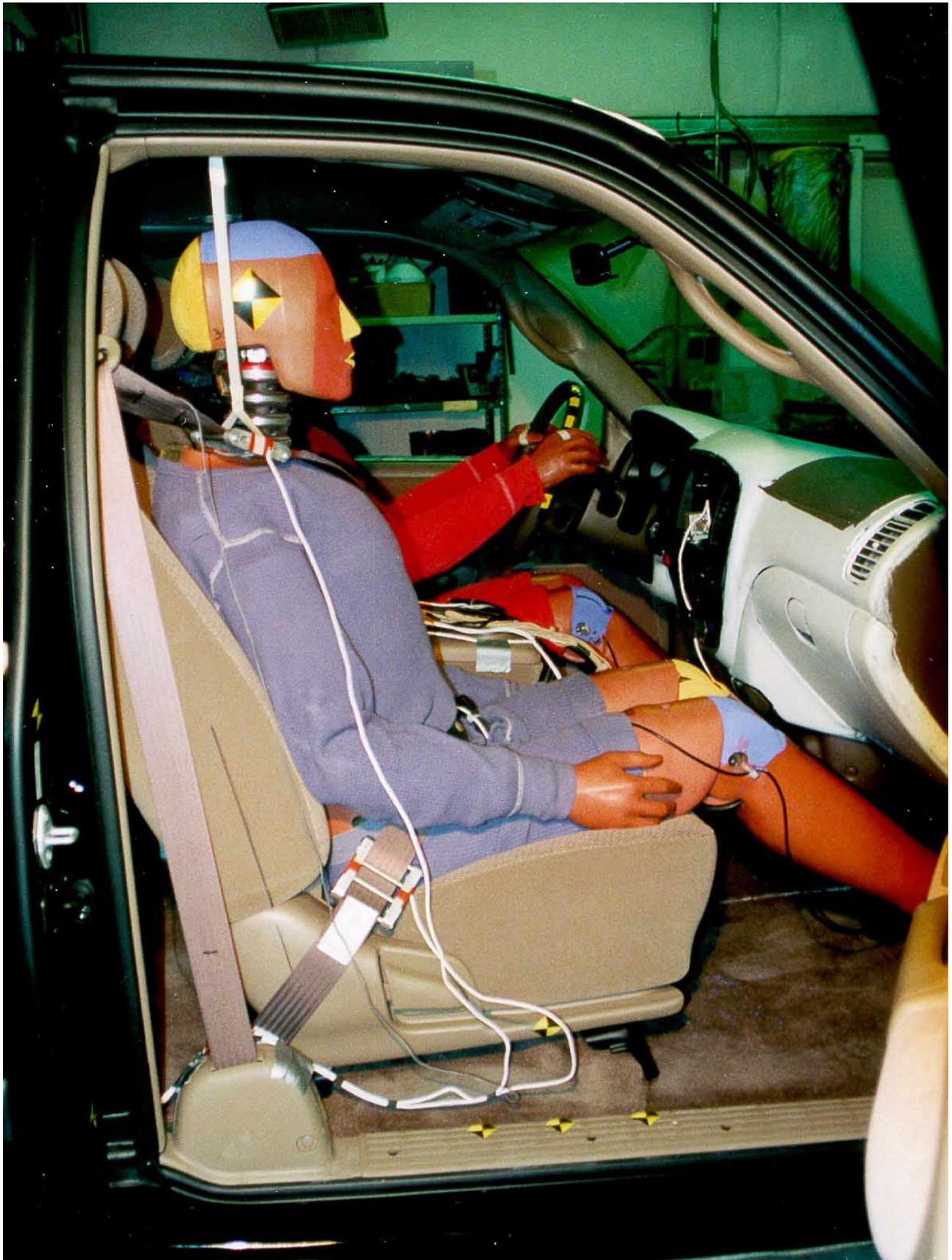


FIGURE A-47. PRE TEST PASSENGER DUMMY (90° TO VEHICLE)



FIGURE A-48. POST TEST PASSENGER DUMMY (90° TO VEHICLE)

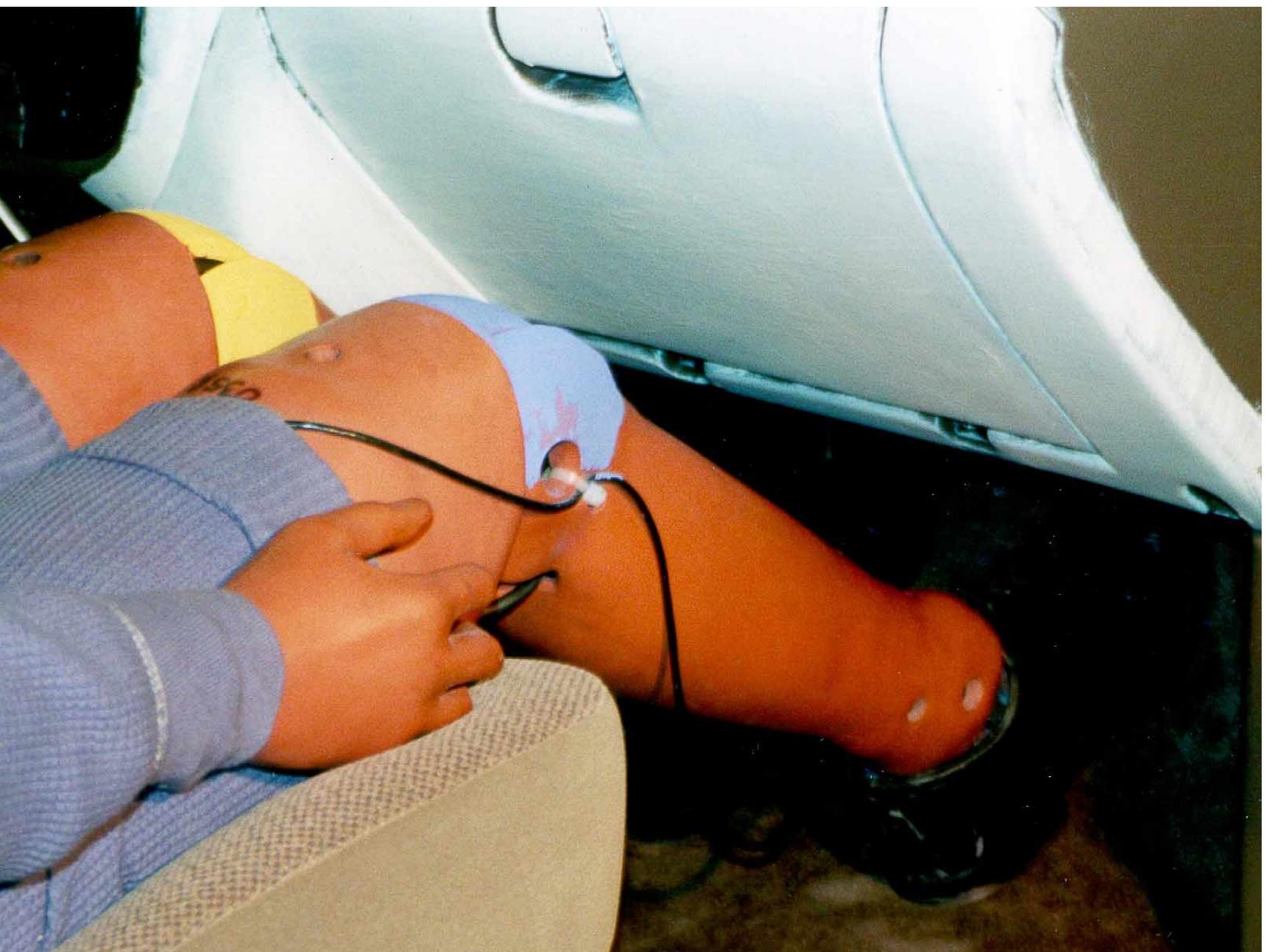


FIGURE A-49. PRE TEST PASSENGER DUMMY FEET

A-49

KAR20001-02

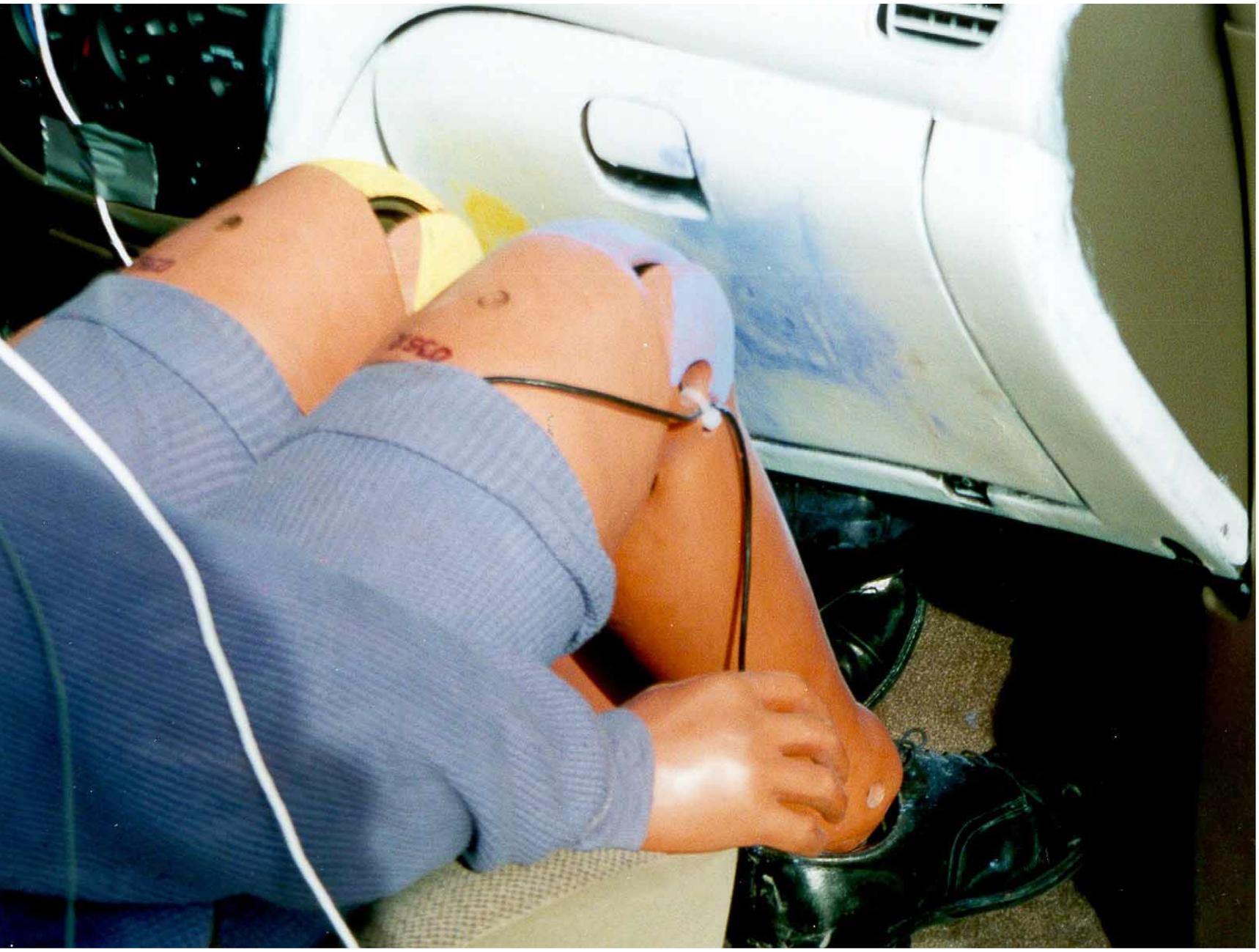


FIGURE A-50. POST TEST PASSENGER DUMMY FEET AND CONTACT POINT

A-50

KAR20001-02



FIGURE A-51. PRETEST PASSENGER SIDE FLOOR PAN

A-51

KAR20001-02



FIGURE A-52. POST TEST PASSENGER SIDE FLOOR PAN

A-52

KAR20001-02

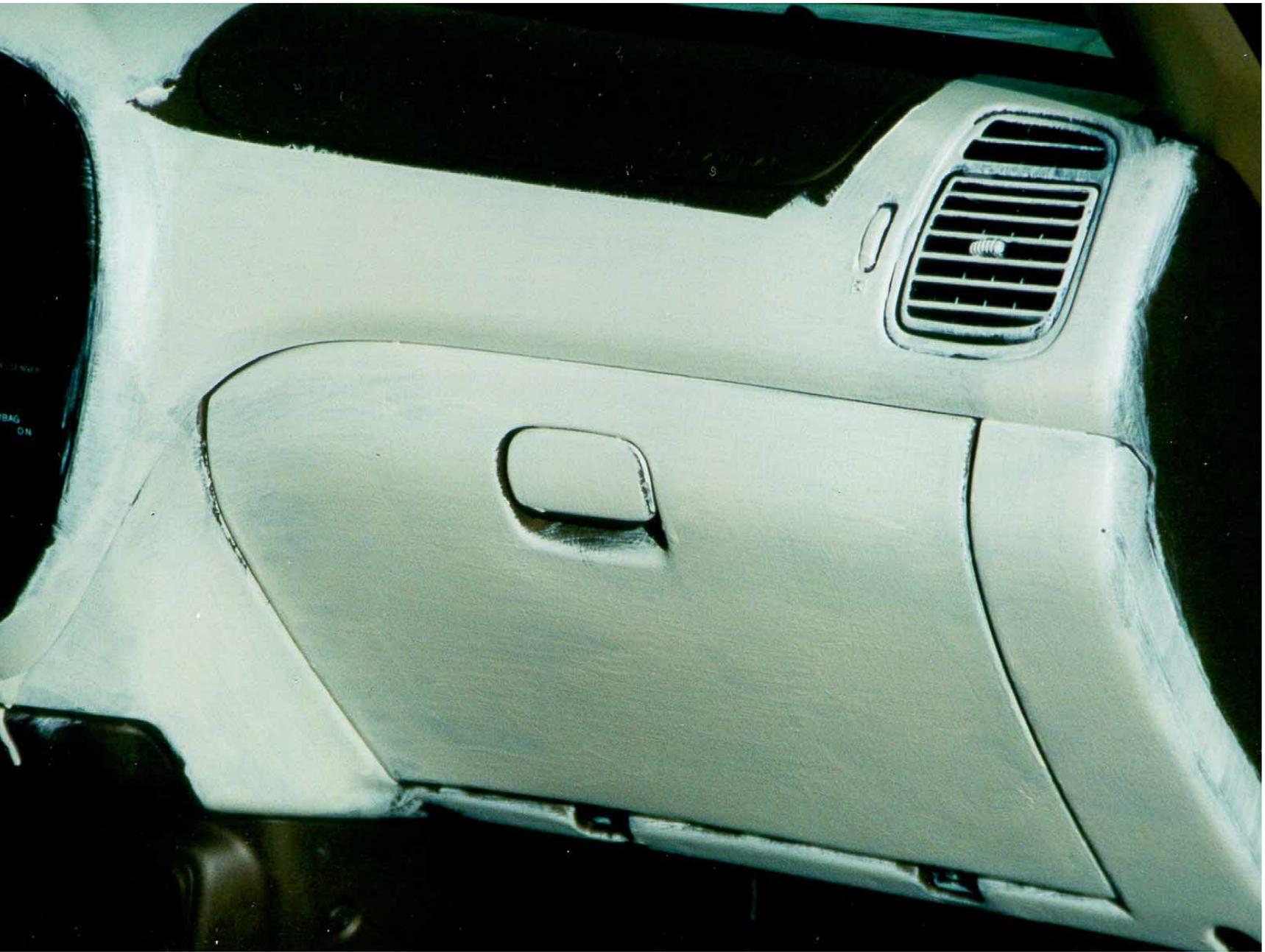


FIGURE A-53. PRE TEST PASSENGER SIDE KNEE BOLSTER

A-53

KAR20001-02

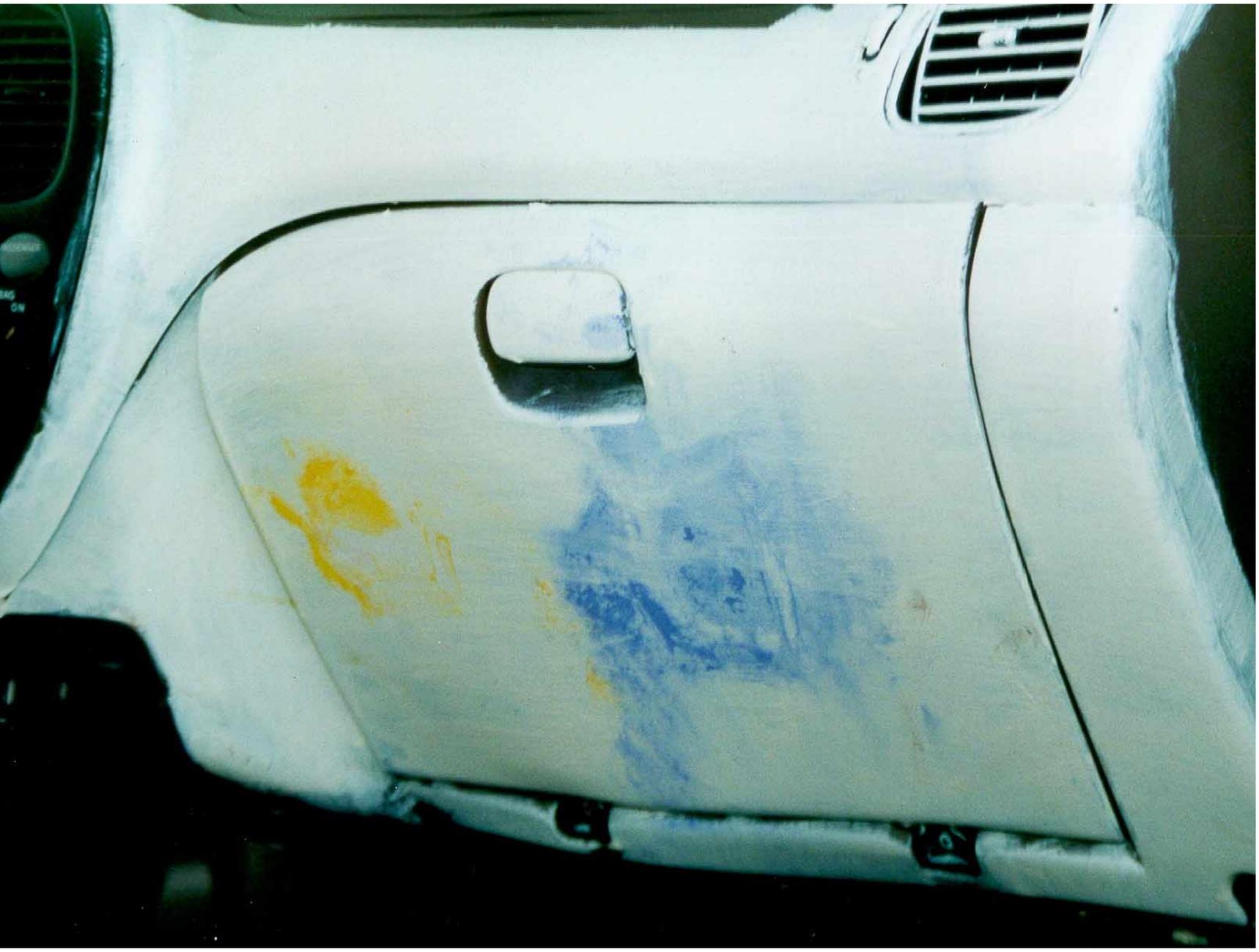


FIGURE A-54. POST TEST PASSENGER SIDE KNEE BOLSTER AND DUMMY CONTACT

A-54

KAR20001-02

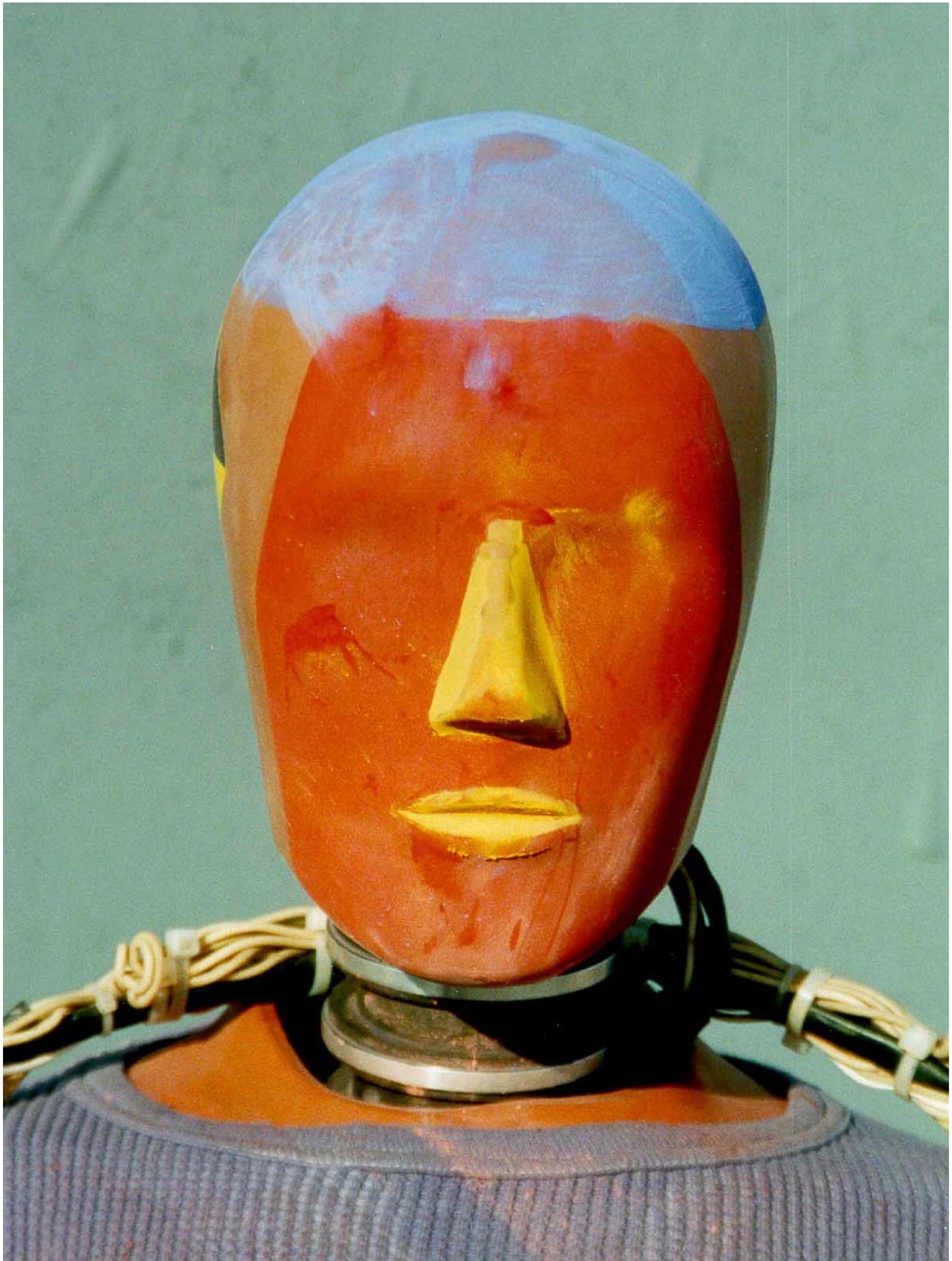


FIGURE A-55. POST TEST PASSENGER HEAD



FIGURE A-56. POST TEST PASSENGER DUMMY CONTACT

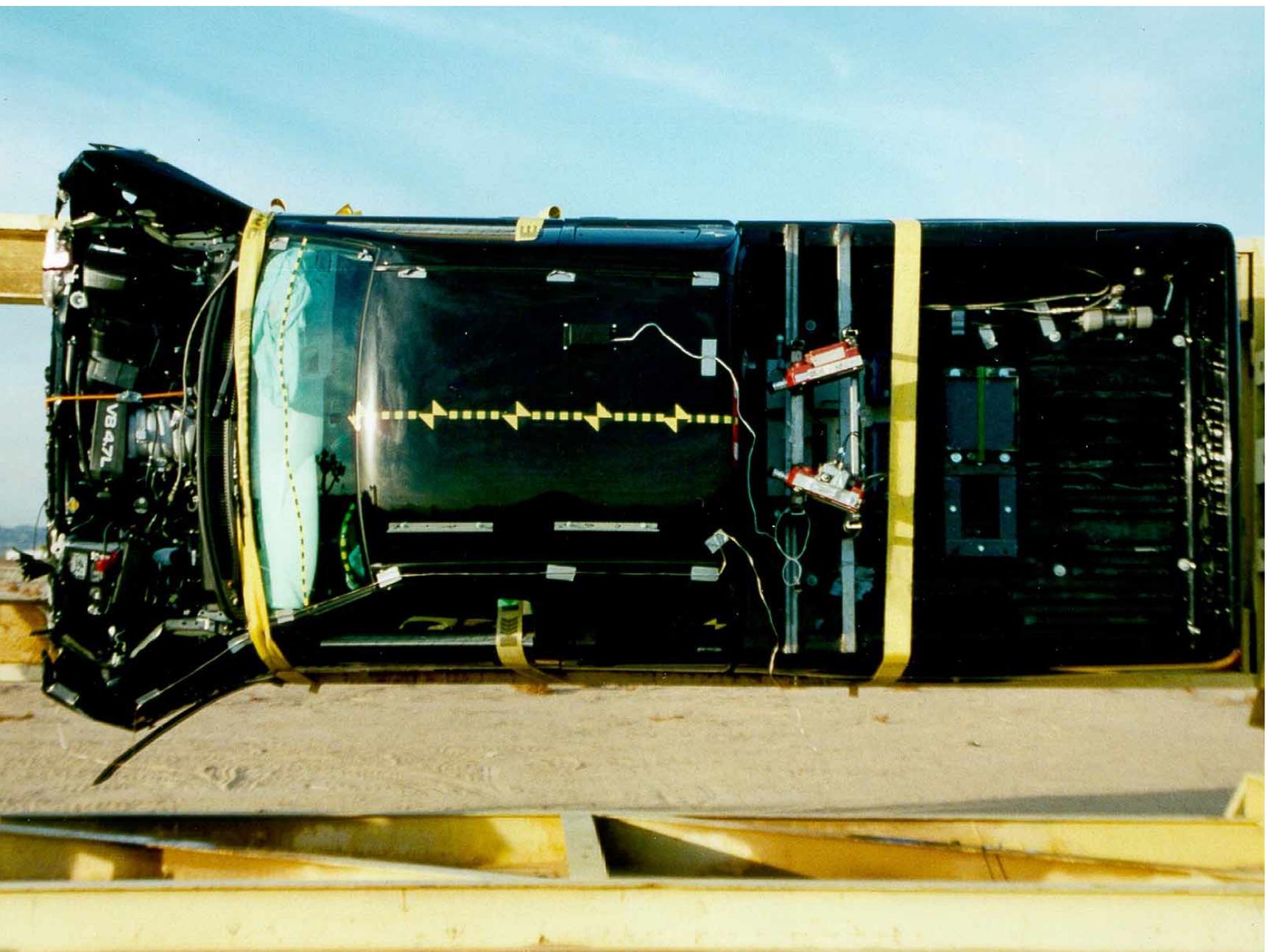


FIGURE A-57. VEHICLE ON ROLLOVER

A-57

KAR20001-02

**Photograph Not  
Available**

FIGURE A-58. VEHICLE DURING IMPACT

**APPENDIX B**  
**DUMMY AND VEHICLE RESPONSE DATA TRACES**

## LIST OF DATA PLOTS

| Data Plot                                  | Page |
|--|------|
| B-1 Driver Head Primary X                  | B-1  |
| B-2 Driver Head Primary X Velocity         | B-2  |
| B-3 Driver Head Primary X Displacement     | B-3  |
| B-4 Driver Head Primary Y                  | B-4  |
| B-5 Driver Head Primary Z                  | B-5  |
| B-6 Driver Head Resultant Primary          | B-6  |
| B-7 Driver Head Redundant X                | B-7  |
| B-8 Driver Head Redundant X Velocity       | B-8  |
| B-9 Driver Head Redundant X Displacement   | B-9  |
| B-10 Driver Head Redundant Y               | B-10 |
| B-11 Driver Head Redundant Z               | B-11 |
| B-12 Driver Head Resultant Redundant       | B-12 |
| B-13 Driver Neck Force X                   | B-13 |
| B-14 Driver Neck Force Y                   | B-14 |
| B-15 Driver Neck Force Z                   | B-15 |
| B-16 Driver Neck Force Resultant           | B-16 |
| B-17 Driver Neck Moment X                  | B-17 |
| B-18 Driver Neck Moment Y                  | B-18 |
| B-19 Driver Neck Moment Z                  | B-19 |
| B-20 Driver Neck Moment Resultant          | B-20 |
| B-21 Driver Chest Primary X                | B-21 |
| B-22 Driver Chest Primary X Velocity       | B-22 |
| B-23 Driver Chest Primary X Displacement   | B-23 |
| B-24 Driver Chest Primary Y                | B-24 |
| B-25 Driver Chest Primary Z                | B-25 |
| B-26 Driver Chest Primary Resultant        | B-26 |
| B-27 Driver Chest Redundant X              | B-27 |
| B-28 Driver Chest Redundant X Velocity     | B-28 |
| B-29 Driver Chest Redundant X Displacement | B-29 |
| B-30 Driver Chest Redundant Y              | B-30 |
| B-31 Driver Chest Redundant Z              | B-31 |
| B-32 Driver Chest Redundant Resultant      | B-32 |
| B-33 Driver Chest Displacement X           | B-33 |

LIST OF DATA PLOTS...(Continued)

| Data Plot |                                   | Page |
|-----------|-----------------------------------|------|
| B-34      | Driver Pelvis X                   | B-34 |
| B-35      | Driver Pelvis X Velocity          | B-35 |
| B-36      | Driver Pelvis X Displacement      | B-36 |
| B-37      | Driver Pelvis Y                   | B-37 |
| B-38      | Driver Pelvis Z                   | B-38 |
| B-39      | Driver Pelvis Resultant           | B-39 |
| B-40      | Driver Left Femur Force           | B-40 |
| B-41      | Driver Right Femur Force          | B-41 |
| B-42      | Driver Left Upper Tibia Moment X  | B-42 |
| B-43      | Driver Left Upper Tibia Moment Y  | B-43 |
| B-44      | Driver Right Upper Tibia Moment X | B-44 |
| B-45      | Driver Right Upper Tibia Moment Y | B-45 |
| B-46      | Driver Left Lower Tibia Moment X  | B-46 |
| B-47      | Driver Left Lower Tibia Moment Y  | B-47 |
| B-48      | Driver Left Lower Tibia Force Z   | B-48 |
| B-49      | Driver Right Lower Tibia Moment X | B-49 |
| B-50      | Driver Right Lower Tibia Moment Y | B-50 |
| B-51      | Driver Right Lower Tibia Force Z  | B-51 |
| B-52      | Driver Left Foot Aft X            | B-52 |
| B-53      | Driver Left Foot Aft Z            | B-53 |
| B-54      | Driver Left Foot Fore Z           | B-54 |
| B-55      | Driver Right Foot Aft X           | B-55 |
| B-56      | Driver Right Foot Aft Z           | B-56 |
| B-57      | Driver Right Foot Fore Z          | B-57 |
| B-58      | Driver Lap Belt Force             | B-58 |
| B-59      | Driver Shoulder Belt Force        | B-59 |
| B-60      | Driver Shoulder Belt Pullout      | B-60 |
| B-61      | Driver Shoulder Belt Elongation   | B-61 |

LIST OF DATA PLOTS...(Continued)

| Data Plot |  | Page |
|-----------|--|------|
| B-62      | Passenger Head Primary X                 | B-62 |
| B-63      | Passenger Head Primary X Velocity        | B-63 |
| B-64      | Passenger Head Primary X Displacement    | B-64 |
| B-65      | Passenger Head Primary Y                 | B-65 |
| B-66      | Passenger Head Primary Z                 | B-66 |
| B-67      | Passenger Head Resultant Primary         | B-67 |
| B-68      | Passenger Head Redundant X               | B-68 |
| B-69      | Passenger Head Redundant X Velocity      | B-69 |
| B-70      | Passenger Head Redundant X Displacement  | B-70 |
| B-71      | Passenger Head Redundant Y               | B-71 |
| B-72      | Passenger Head Redundant Z               | B-72 |
| B-73      | Passenger Head Resultant Redundant       | B-73 |
| B-74      | Passenger Neck Force X                   | B-74 |
| B-75      | Passenger Neck Force Y                   | B-75 |
| B-76      | Passenger Neck Force Z                   | B-76 |
| B-77      | Passenger Neck Force Resultant           | B-77 |
| B-78      | Passenger Neck Moment X                  | B-78 |
| B-79      | Passenger Neck Moment Y                  | B-79 |
| B-80      | Passenger Neck Moment Z                  | B-80 |
| B-81      | Passenger Neck Moment Resultant          | B-81 |
| B-82      | Passenger Chest Primary X                | B-82 |
| B-83      | Passenger Chest Primary X Velocity       | B-83 |
| B-84      | Passenger Chest Primary X Displacement   | B-84 |
| B-85      | Passenger Chest Primary Y                | B-85 |
| B-86      | Passenger Chest Primary Z                | B-86 |
| B-87      | Passenger Chest Primary Resultant        | B-87 |
| B-88      | Passenger Chest Redundant X              | B-88 |
| B-89      | Passenger Chest Redundant X Velocity     | B-89 |
| B-90      | Passenger Chest Redundant X Displacement | B-90 |
| B-91      | Passenger Chest Redundant Y              | B-91 |
| B-92      | Passenger Chest Redundant Z              | B-92 |
| B-93      | Passenger Chest Redundant Resultant      | B-93 |
| B-94      | Passenger Chest Displacement X           | B-94 |

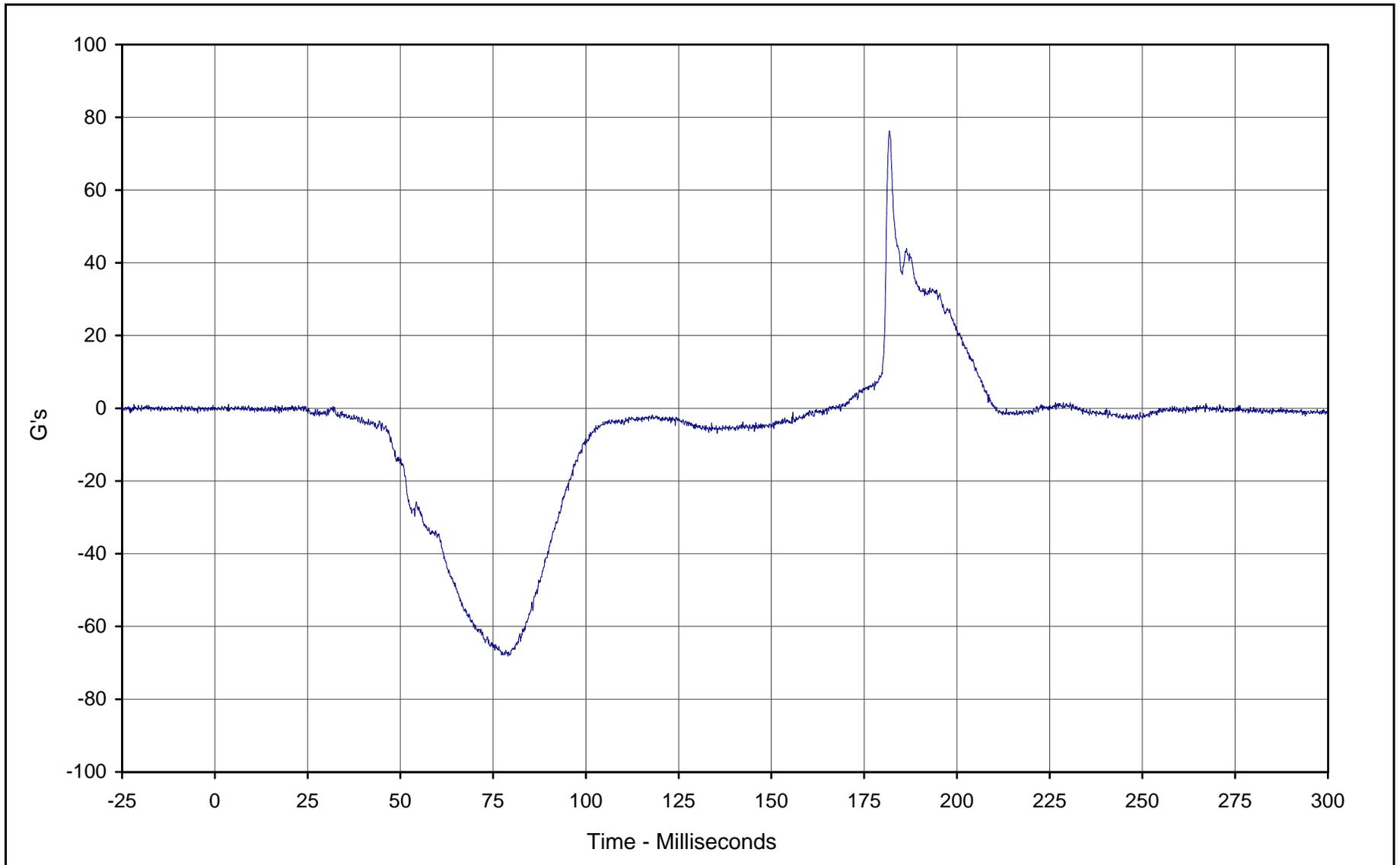
LIST OF DATA PLOTS...(Continued)

| Data Plot |                                      | Page  |
|-----------|--------------------------------------|-------|
| B-95      | Passenger Pelvis X                   | B-95  |
| B-96      | Passenger Pelvis X Velocity          | B-96  |
| B-97      | Passenger Pelvis X Displacement      | B-97  |
| B-98      | Passenger Pelvis Y                   | B-98  |
| B-99      | Passenger Pelvis Z                   | B-99  |
| B-100     | Passenger Pelvis Resultant           | B-100 |
| B-101     | Passenger Left Femur Force           | B-101 |
| B-102     | Passenger Right Femur Force          | B-102 |
| B-103     | Passenger Left Upper Tibia Moment X  | B-103 |
| B-104     | Passenger Left Upper Tibia Moment Y  | B-104 |
| B-105     | Passenger Right Upper Tibia Moment X | B-105 |
| B-106     | Passenger Right Upper Tibia Moment Y | B-106 |
| B-107     | Passenger Left Lower Tibia Moment X  | B-107 |
| B-108     | Passenger Left Lower Tibia Moment Y  | B-108 |
| B-109     | Passenger Left Lower Tibia Force Z   | B-109 |
| B-110     | Passenger Right Lower Tibia Moment X | B-110 |
| B-111     | Passenger Right Lower Tibia Moment Y | B-111 |
| B-112     | Passenger Right Lower Tibia Force Z  | B-112 |
| B-113     | Passenger Left Foot Aft X            | B-113 |
| B-114     | Passenger Left Foot Aft Z            | B-114 |
| B-115     | Passenger Left Foot Fore Z           | B-115 |
| B-116     | Passenger Right Foot Aft X           | B-116 |
| B-117     | Passenger Right Foot Aft Z           | B-117 |
| B-118     | Passenger Right Foot Fore Z          | B-118 |
| B-119     | Passenger Lap Belt Force             | B-119 |
| B-120     | Passenger Shoulder Belt Force        | B-120 |
| B-121     | Passenger Shoulder Belt Pullout      | B-121 |
| B-122     | Passenger Shoulder Belt Elongation   | B-122 |

LIST OF DATA PLOTS...(Continued)

| Data Plot |  | Page  |
|-----------|--|-------|
| B-123     | Vehicle Left Rear Primary                | B-123 |
| B-124     | Vehicle Left Rear Primary Velocity       | B-124 |
| B-125     | Vehicle Left Rear Primary Displacement   | B-125 |
| B-126     | Vehicle Right Rear Primary               | B-126 |
| B-127     | Vehicle Right Rear Primary Velocity      | B-127 |
| B-128     | Vehicle Right Rear Primary Displacement  | B-128 |
| B-129     | Vehicle Engine Top                       | B-129 |
| B-130     | Vehicle Engine Top Velocity              | B-130 |
| B-131     | Vehicle Engine Top Displacement          | B-131 |
| B-132     | Vehicle Engine Bottom                    | B-132 |
| B-133     | Vehicle Engine Bottom Velocity           | B-133 |
| B-134     | Vehicle Engine Bottom Displacement       | B-134 |
| B-135     | Vehicle Left Brake Caliper               | B-135 |
| B-136     | Vehicle Left Brake Caliper Velocity      | B-136 |
| B-137     | Vehicle Left Brake Caliper Displacement  | B-137 |
| B-138     | Vehicle Right Brake Caliper              | B-138 |
| B-139     | Vehicle Right Brake Caliper Velocity     | B-139 |
| B-140     | Vehicle Right Brake Caliper Displacement | B-140 |
| B-141     | Vehicle Instrument Panel                 | B-141 |
| B-142     | Vehicle Instrument Panel Velocity        | B-142 |
| B-143     | Vehicle Instrument Panel Displacement    | B-143 |
| B-144     | Vehicle Left Rear Redundant              | B-144 |
| B-145     | Vehicle Left Rear Redundant Velocity     | B-145 |
| B-146     | Vehicle Left Rear Redundant Displacement | B-146 |

B-1

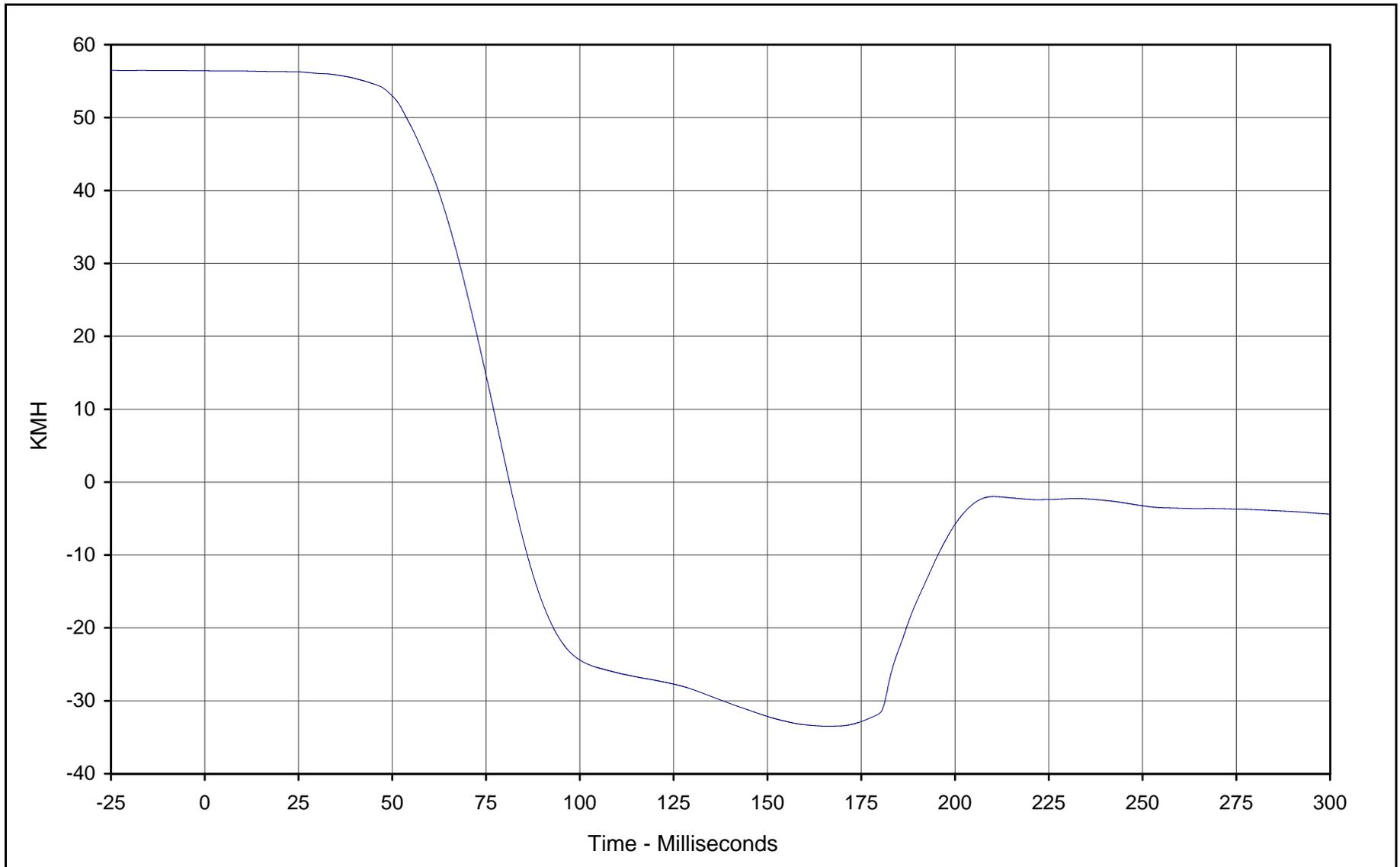


Curve Description: Driver Head Primary X  
Maximum Value: 76.3 at 181.8 Milliseconds  
Minimum Value: -68.1 at 79.1 Milliseconds  
SAE Filter Class: 1000  
Date of Test: 11/17/99  
Curve Number: FIL-001

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

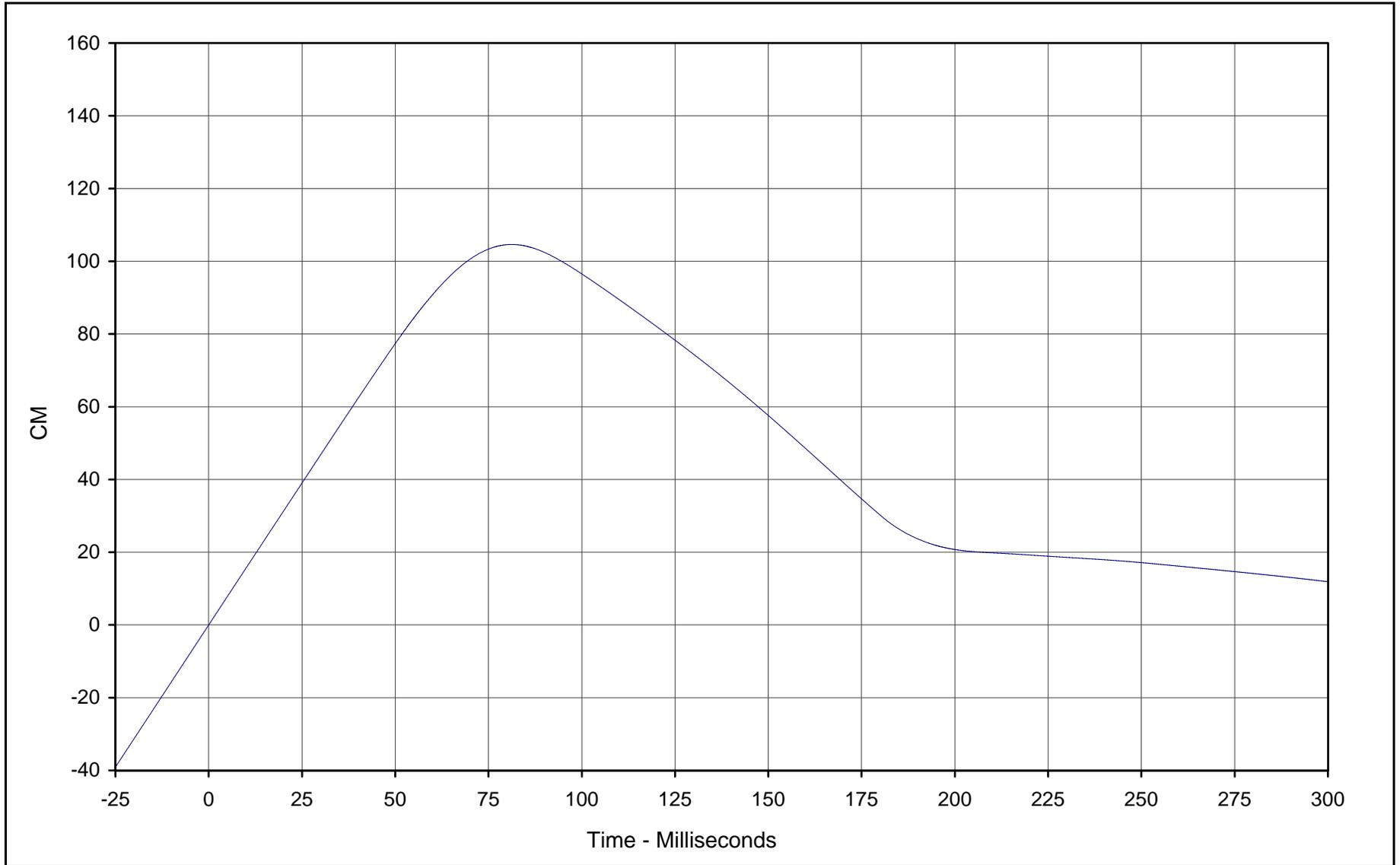


Curve Description: Driver Head Primary X Velocity  
Maximum Value: 56.4 at 0.0 Milliseconds  
Minimum Value: -33.5 at 165.7 Milliseconds  
SAE Filter Class: 180  
Date of Test: 11/17/99  
Curve Number: IN1-001

Testing Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



B-3

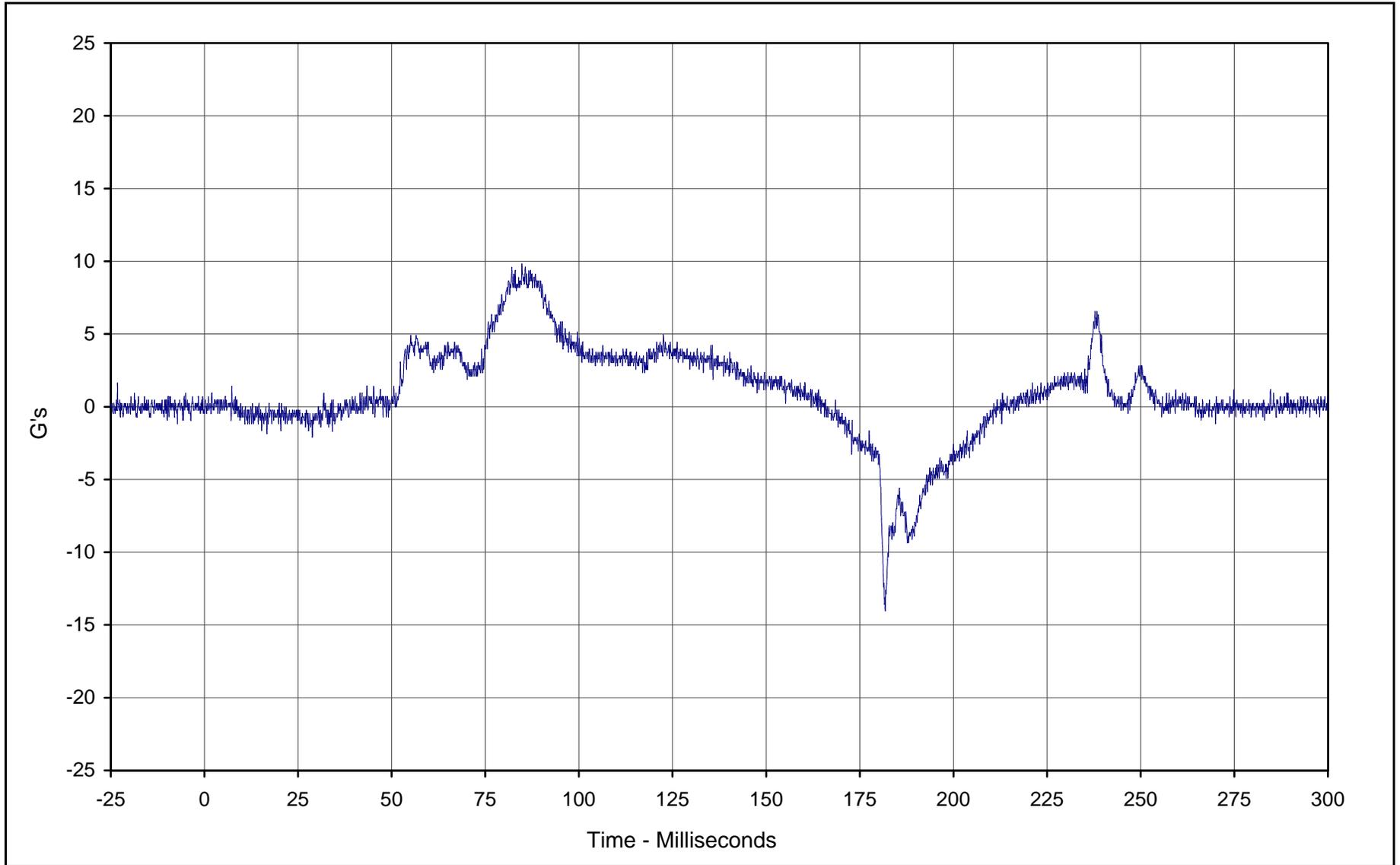


Curve Description: Driver Head Primary X Displ.  
Maximum Value: 104.6 at 81.2 Milliseconds  
Minimum Value: 0.0 at 0.0 Milliseconds  
SAE Filter Class: 180  
Date of Test: 11/17/99  
Curve Number: IN2-001

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



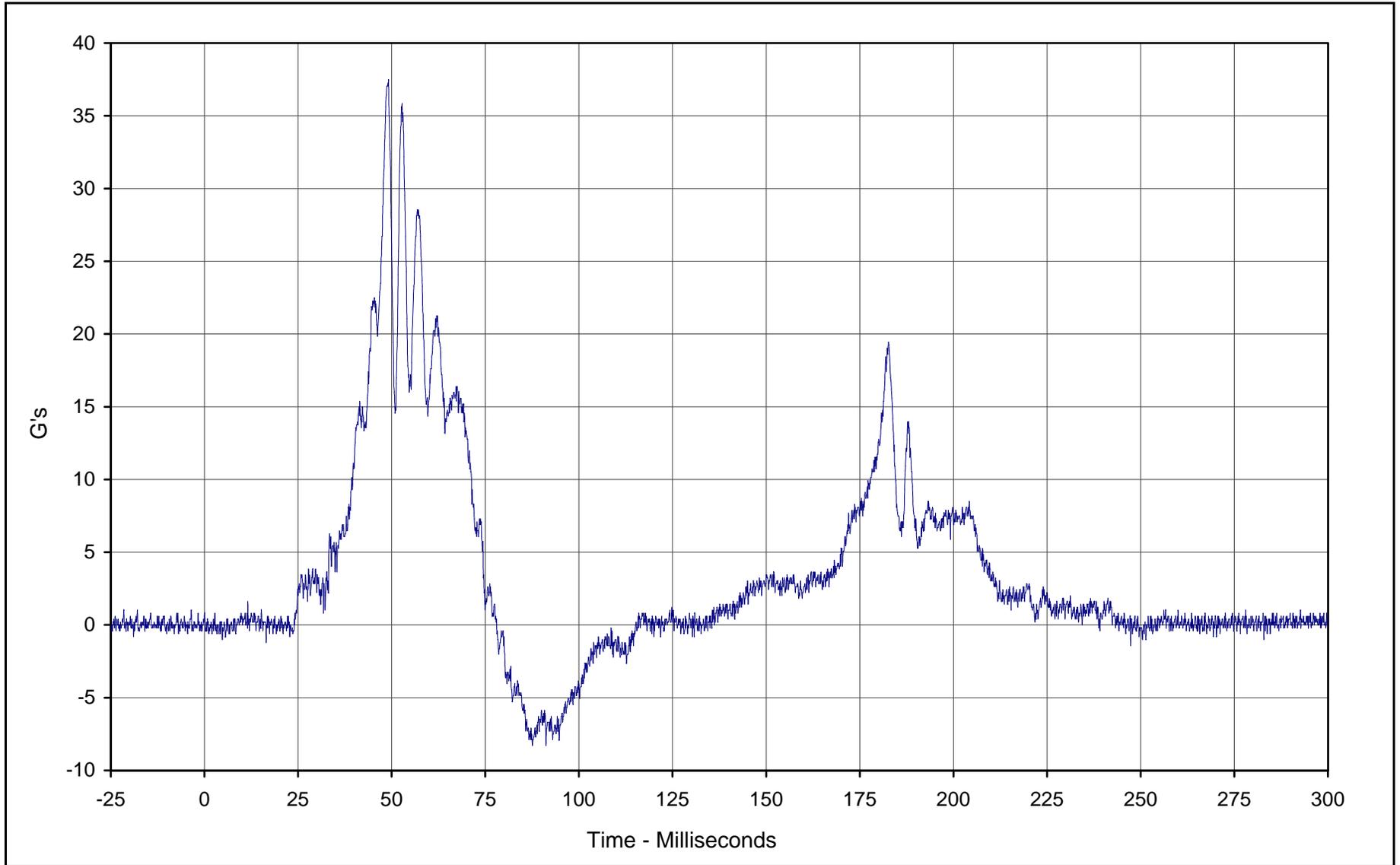
KARR20001-02



Curve Description: Driver Head Primary Y  
 Maximum Value: 9.8 at 84.8 Milliseconds  
 Minimum Value: -14.0 at 181.8 Milliseconds  
 SAE Filter Class: 1000  
 Date of Test: 11/17/99  
 Curve Number: FIL-002

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
 Test Vehicle: 2000 Toyota Tundra SR5 Pickup

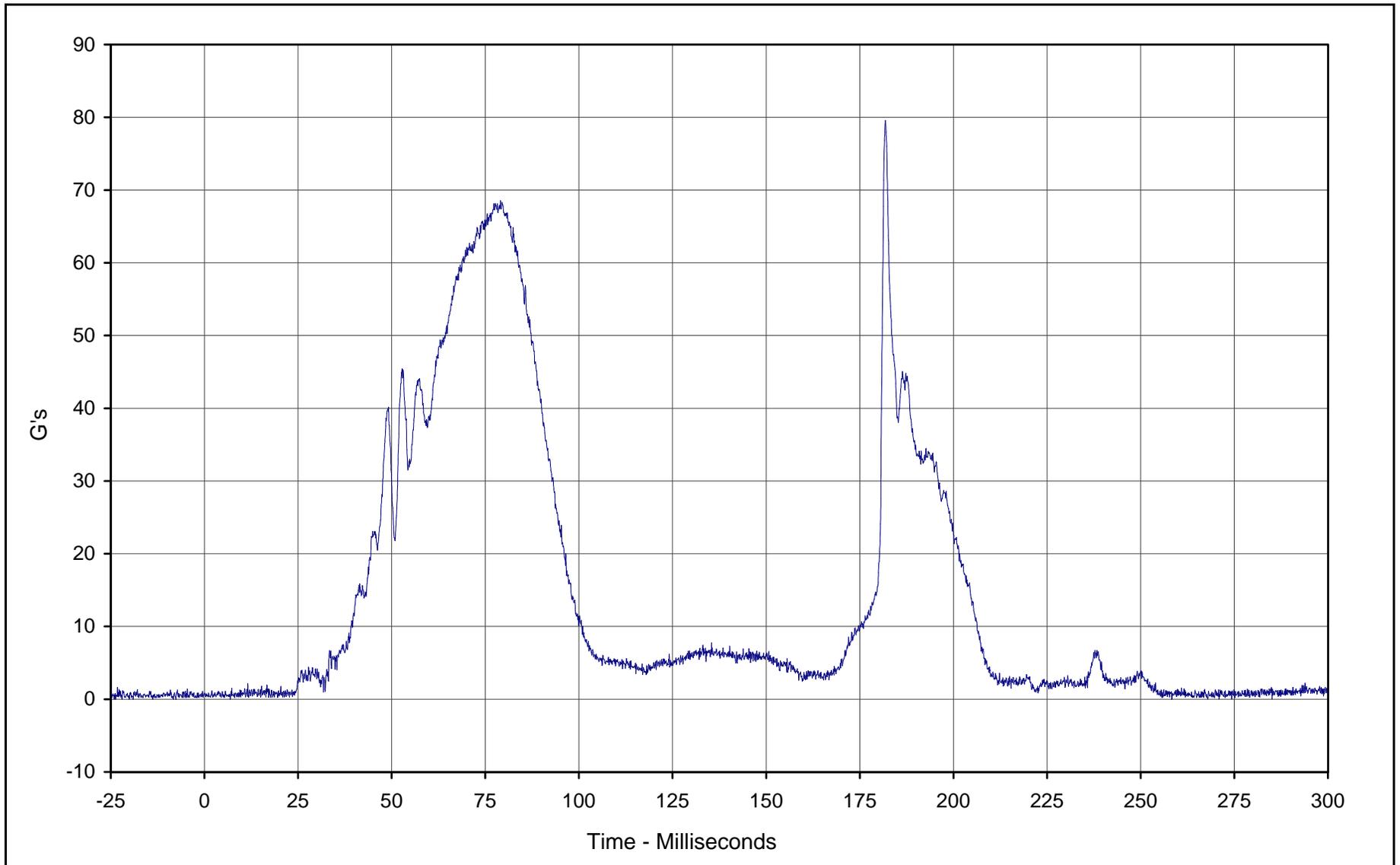




Curve Description: Driver Head Primary Z  
 Maximum Value: 37.4 at 49.2 Milliseconds  
 Minimum Value: -8.3 at 87.6 Milliseconds  
 SAE Filter Class: 1000  
 Date of Test: 11/17/99  
 Curve Number: FIL-003

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
 Test Vehicle: 2000 Toyota Tundra SR5 Pickup



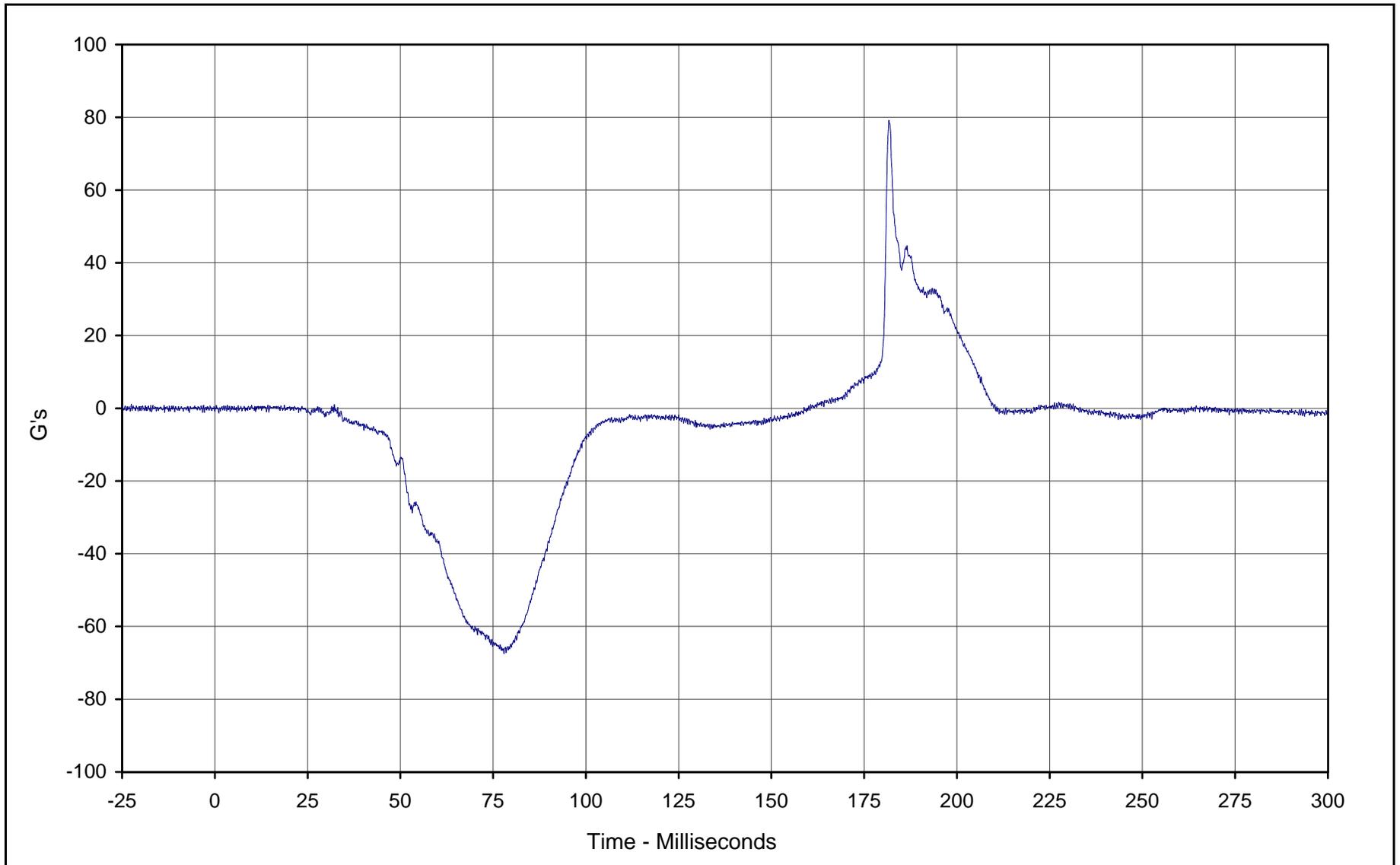


Curve Description: Driver Head Resultant Primary  
Maximum Value: 79.5 at 181.8 Milliseconds  
Minimum Value: 0.0 at 6.9 Milliseconds  
SAE Filter Class: 1000  
Date of Test: 11/17/99  
Curve Number: RES-001

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



B-7

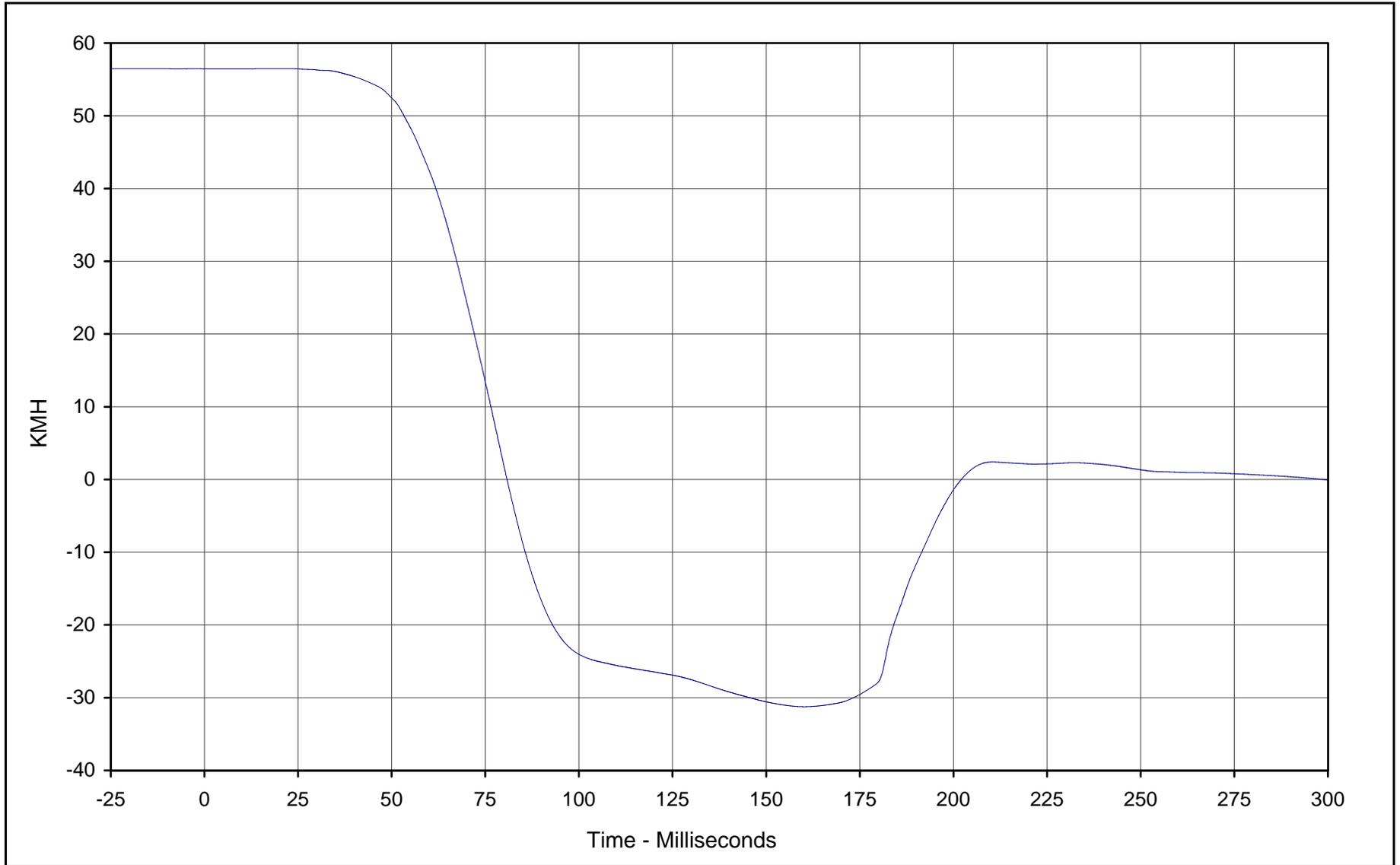


Curve Description: Driver Head Redundant X  
Maximum Value: 79.2 at 181.7 Milliseconds  
Minimum Value: -67.4 at 78.0 Milliseconds  
SAE Filter Class: 1000  
Date of Test: 11/17/99  
Curve Number: FIL-004

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

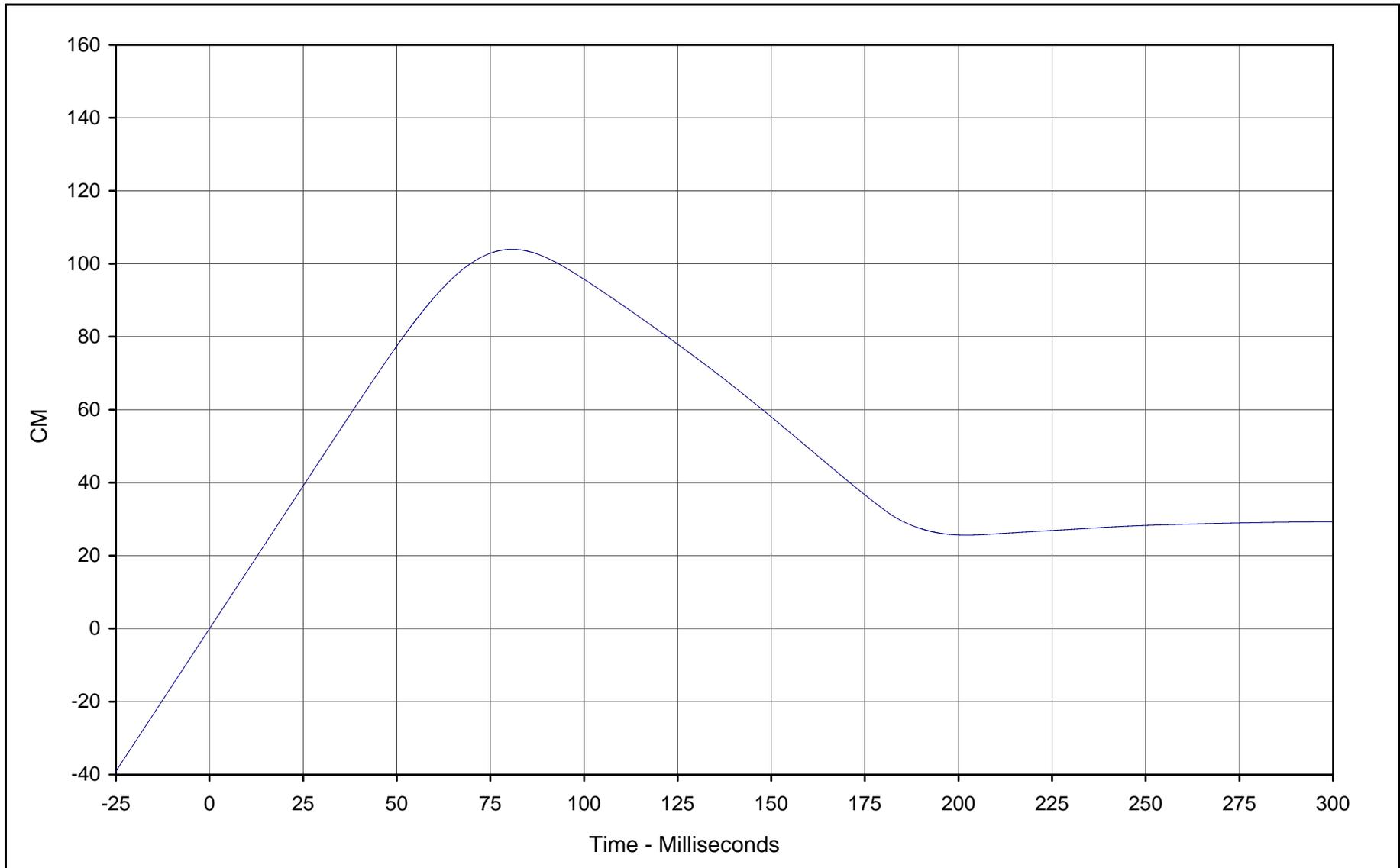


Curve Description: Driver Head Redundant X Velocity  
Maximum Value: 56.5 at 18.0 Milliseconds  
Minimum Value: -31.2 at 160.2 Milliseconds  
SAE Filter Class: 180  
Date of Test: 11/17/99  
Curve Number: IN1-004

Testing Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



B-9



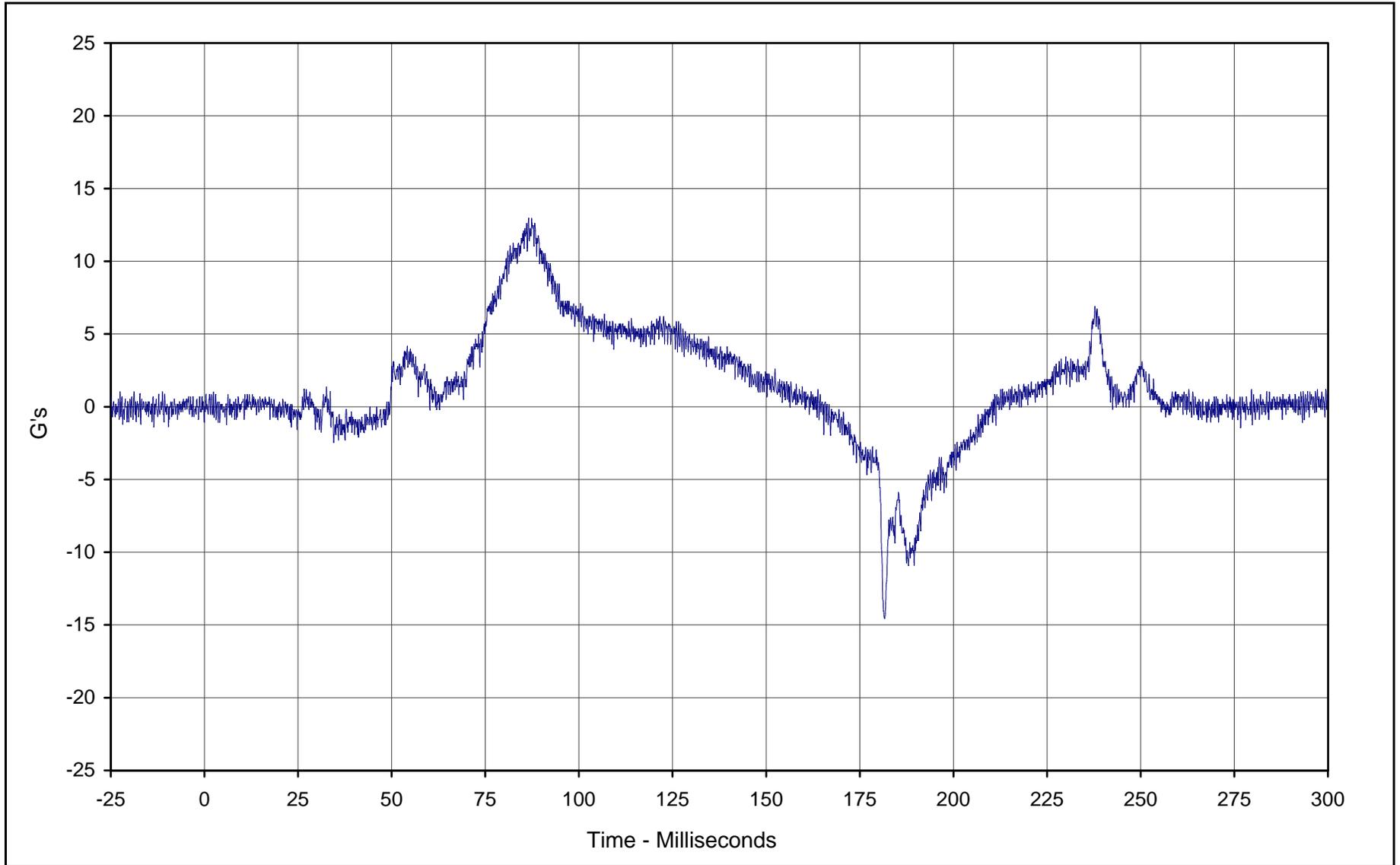
Curve Description: Driver Head Redundant X Displ.  
Maximum Value: 103.9 at 80.8 Milliseconds  
Minimum Value: 0.0 at 0.0 Milliseconds  
SAE Filter Class: 180  
Date of Test: 11/17/99  
Curve Number: IN2-004

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KAR20001-02

B-10



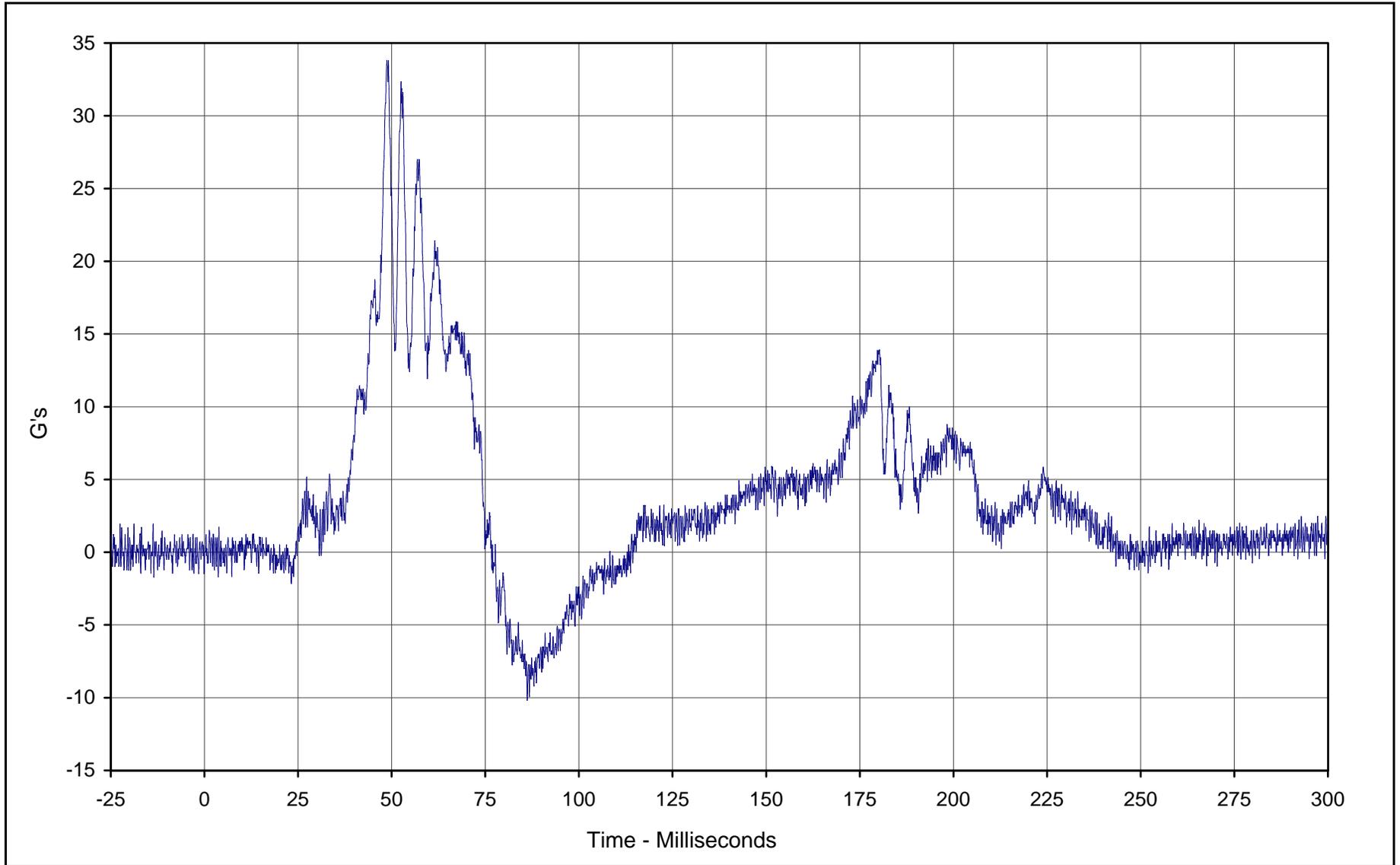
Curve Description: Driver Head Redundant Y  
Maximum Value: 13.0 at 86.6 Milliseconds  
Minimum Value: -14.6 at 181.6 Milliseconds  
SAE Filter Class: 1000  
Date of Test: 11/17/99  
Curve Number: FIL-005

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-11

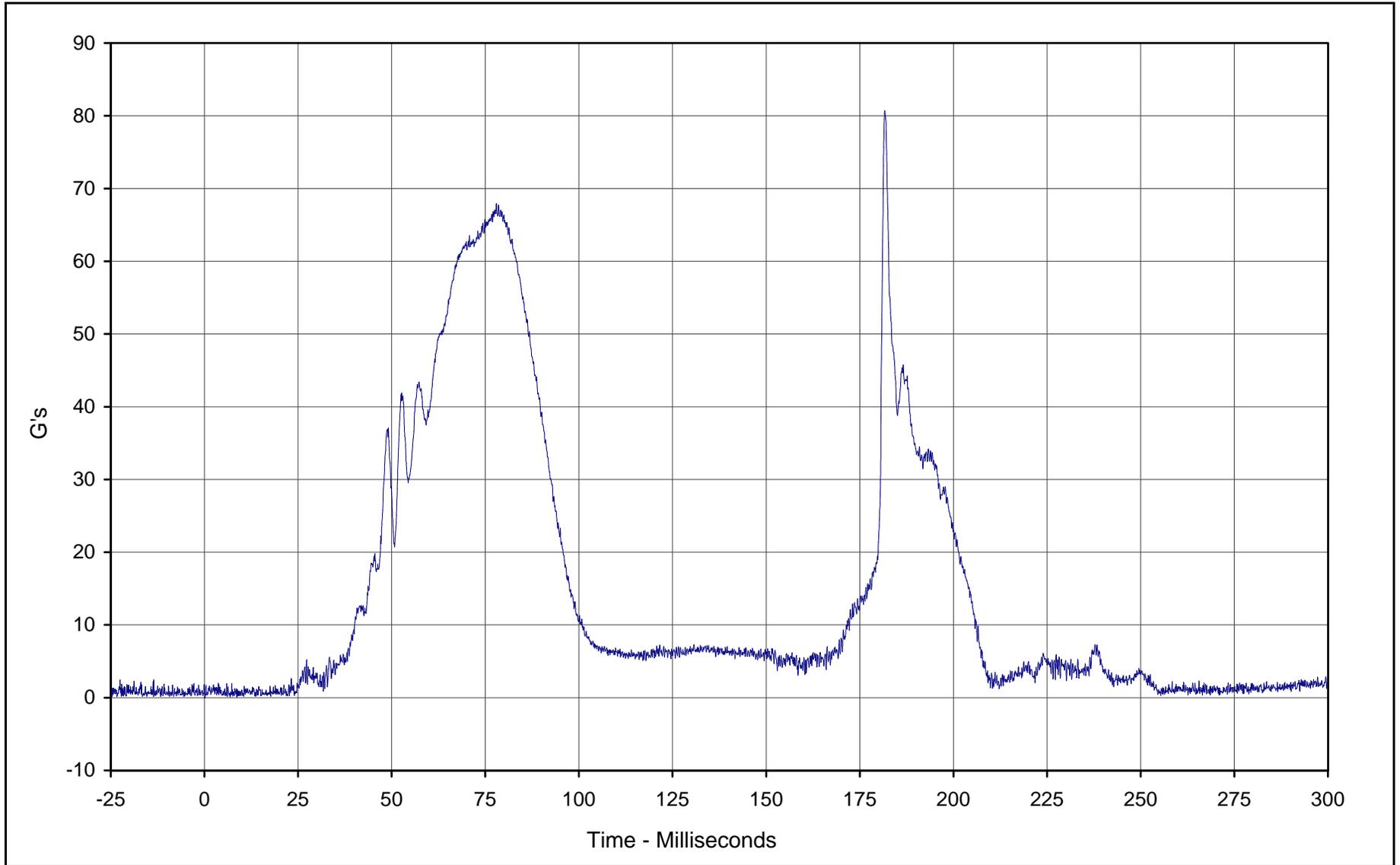


Curve Description: Driver Head Redundant Z  
Maximum Value: 33.8 at 48.7 Milliseconds  
Minimum Value: -10.2 at 86.2 Milliseconds  
SAE Filter Class: 1000  
Date of Test: 11/17/99  
Curve Number: FIL-006

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



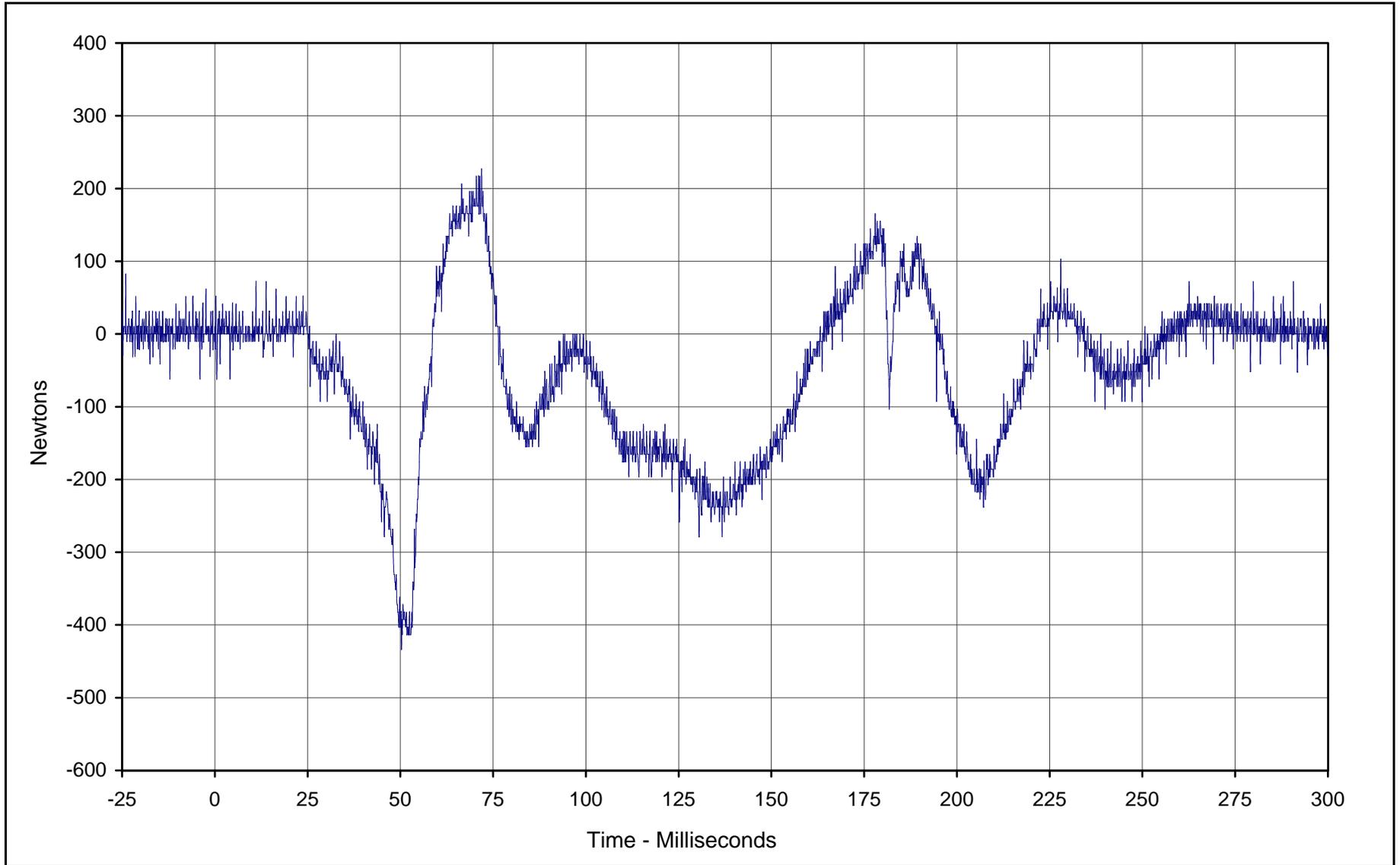
KAR20001-02



Curve Description: Driver Head Resultant Redundant  
Maximum Value: 80.7 at 181.7 Milliseconds  
Minimum Value: 0.0 at 0.1 Milliseconds  
SAE Filter Class: 1000  
Date of Test: 11/17/99  
Curve Number: RES-004

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup

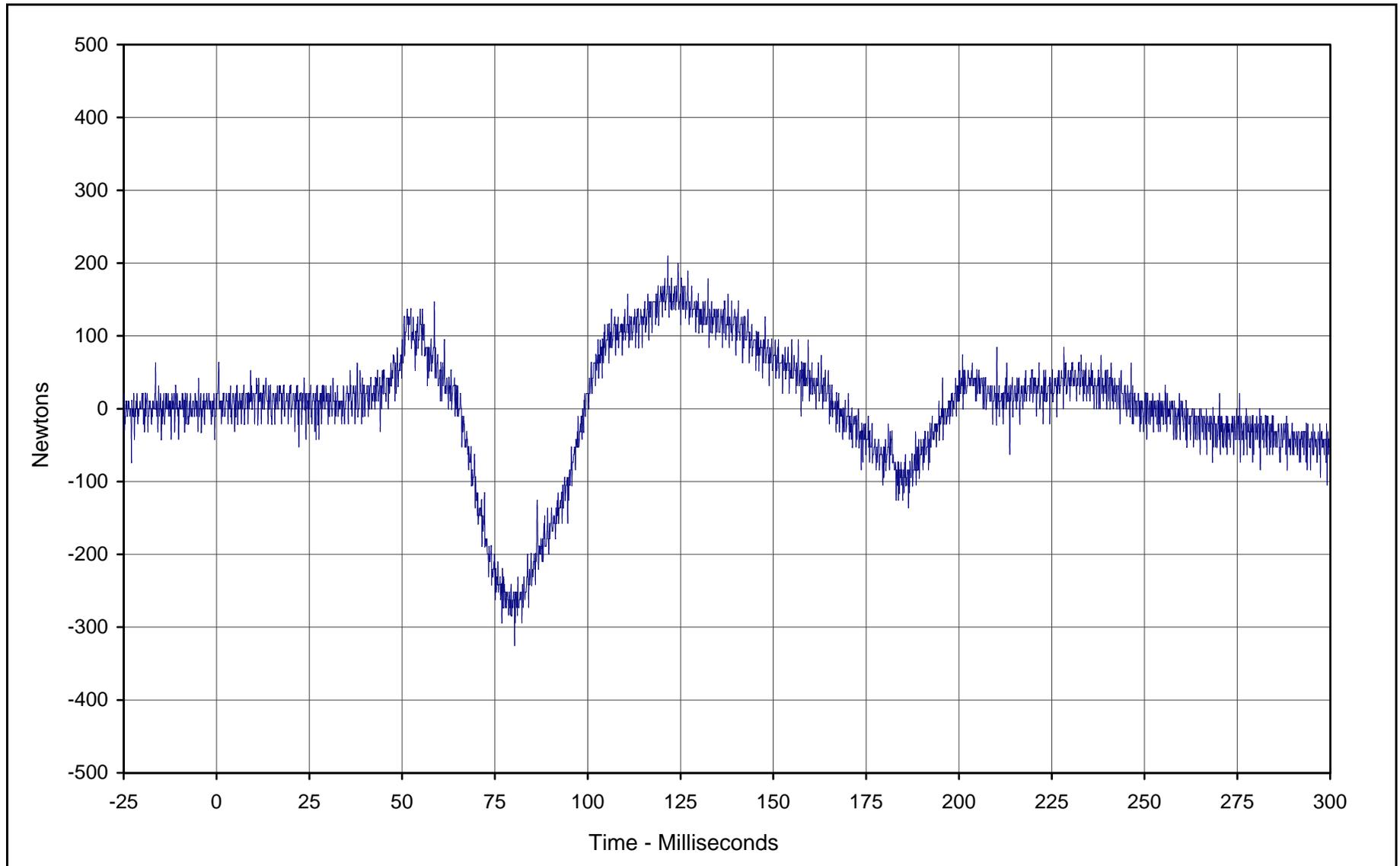




Curve Description: Driver Neck Force X  
 Maximum Value: 227.3 at 71.9 Milliseconds  
 Minimum Value: -434.0 at 50.3 Milliseconds  
 SAE Filter Class: 1000  
 Date of Test: 11/17/99  
 Curve Number: FIL-007

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
 Test Vehicle: 2000 Toyota Tundra SR5 Pickup



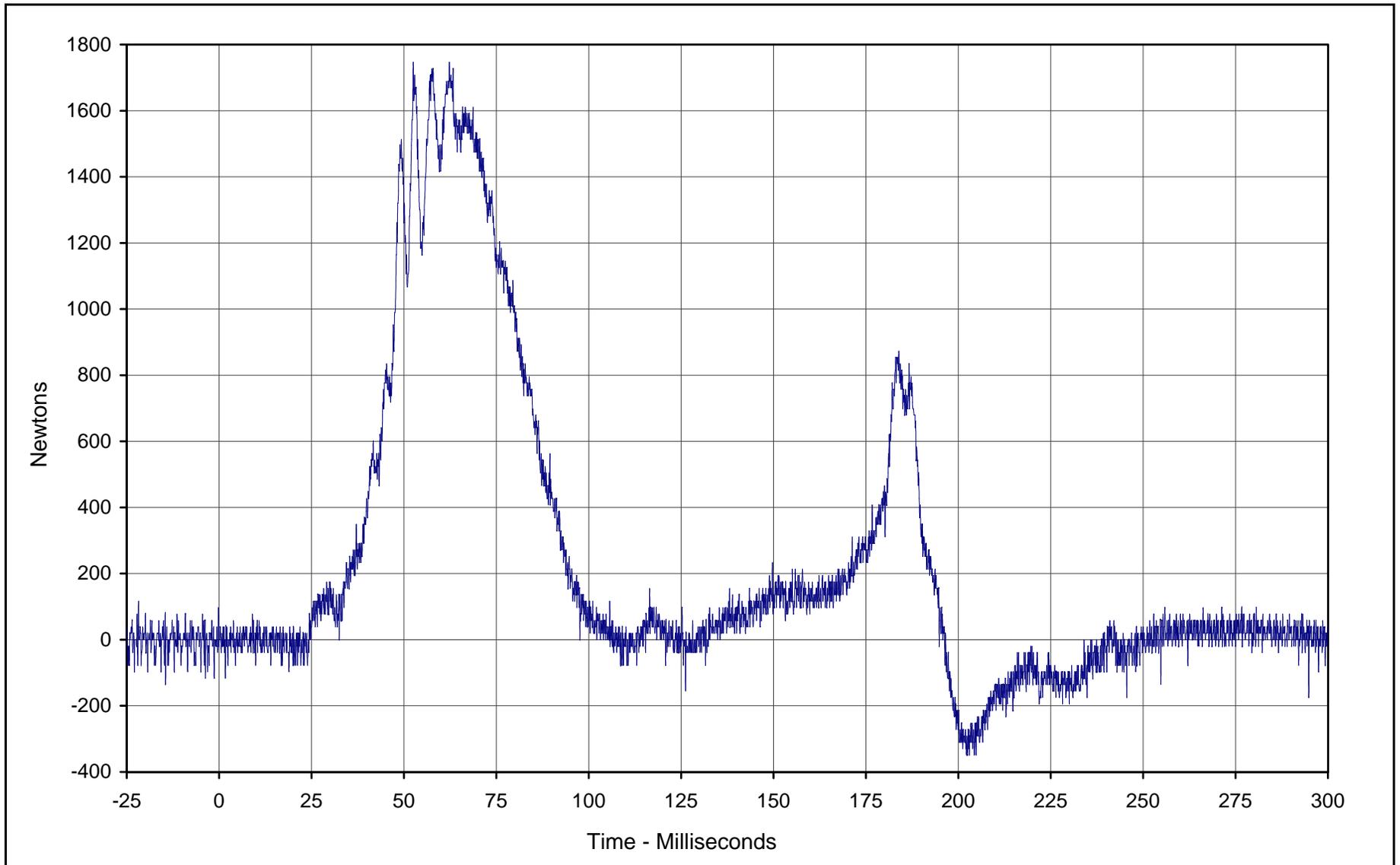


Curve Description: Driver Neck Force Y  
Maximum Value: 210.0 at 121.6 Milliseconds  
Minimum Value: -325.5 at 80.3 Milliseconds  
SAE Filter Class: 1000  
Date of Test: 11/17/99  
Curve Number: FIL-008

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



B-15

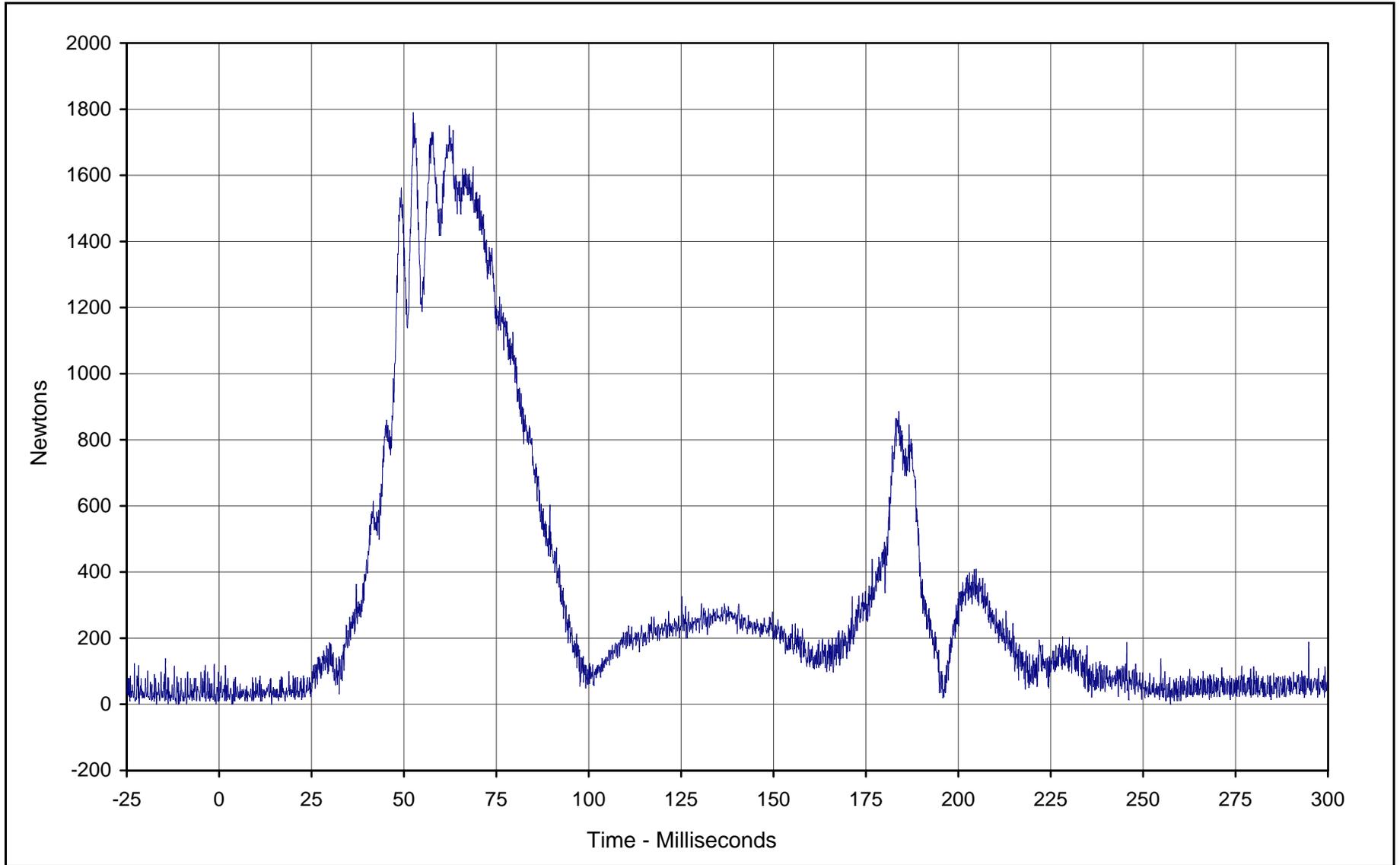


Curve Description: Driver Neck Force Z  
Maximum Value: 1746.8 at 52.5 Milliseconds  
Minimum Value: -349.4 at 202.2 Milliseconds  
SAE Filter Class: 1000  
Date of Test: 11/17/99  
Curve Number: FIL-009

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

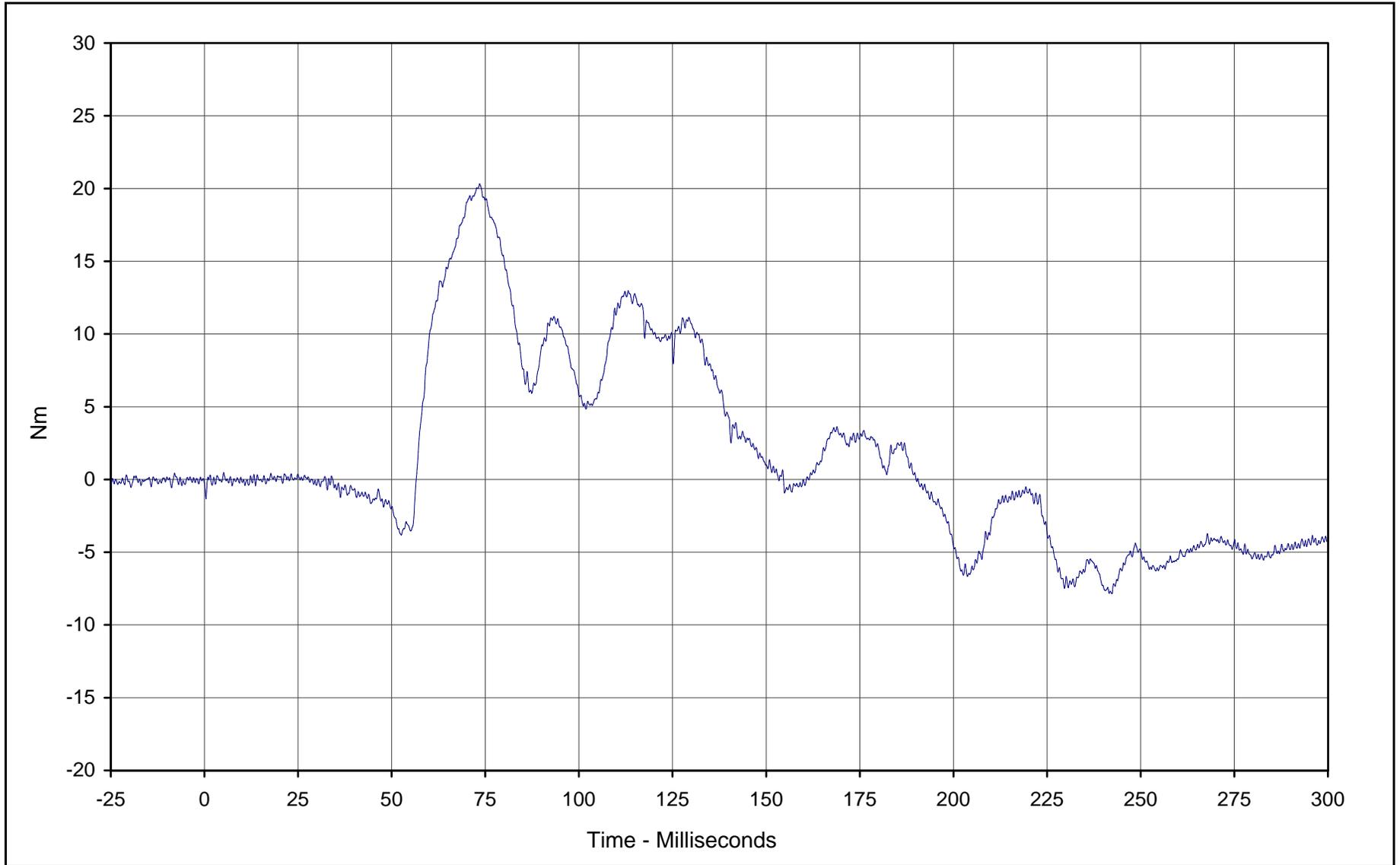


Curve Description: Driver Neck Force Resultant  
Maximum Value: 1790.1 at 52.5 Milliseconds  
Minimum Value: 0.0 at 3.5 Milliseconds  
SAE Filter Class: 1000  
Date of Test: 11/17/99  
Curve Number: RES-007

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



B-17

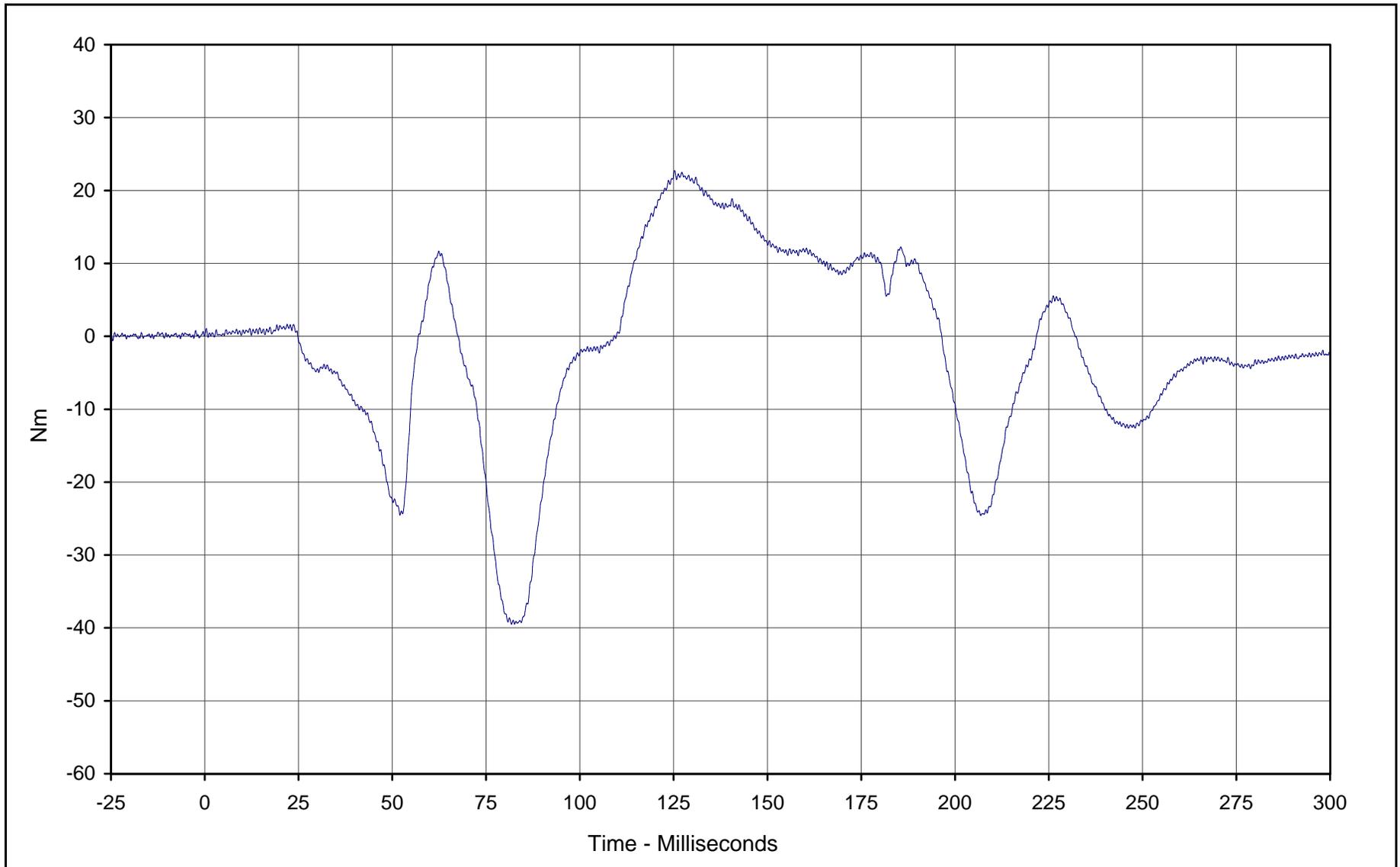


Curve Description: Driver Neck Moment X  
Maximum Value: 20.3 at 73.5 Milliseconds  
Minimum Value: -7.9 at 242.3 Milliseconds  
SAE Filter Class: 600  
Date of Test: 11/17/99  
Curve Number: FIL-010

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



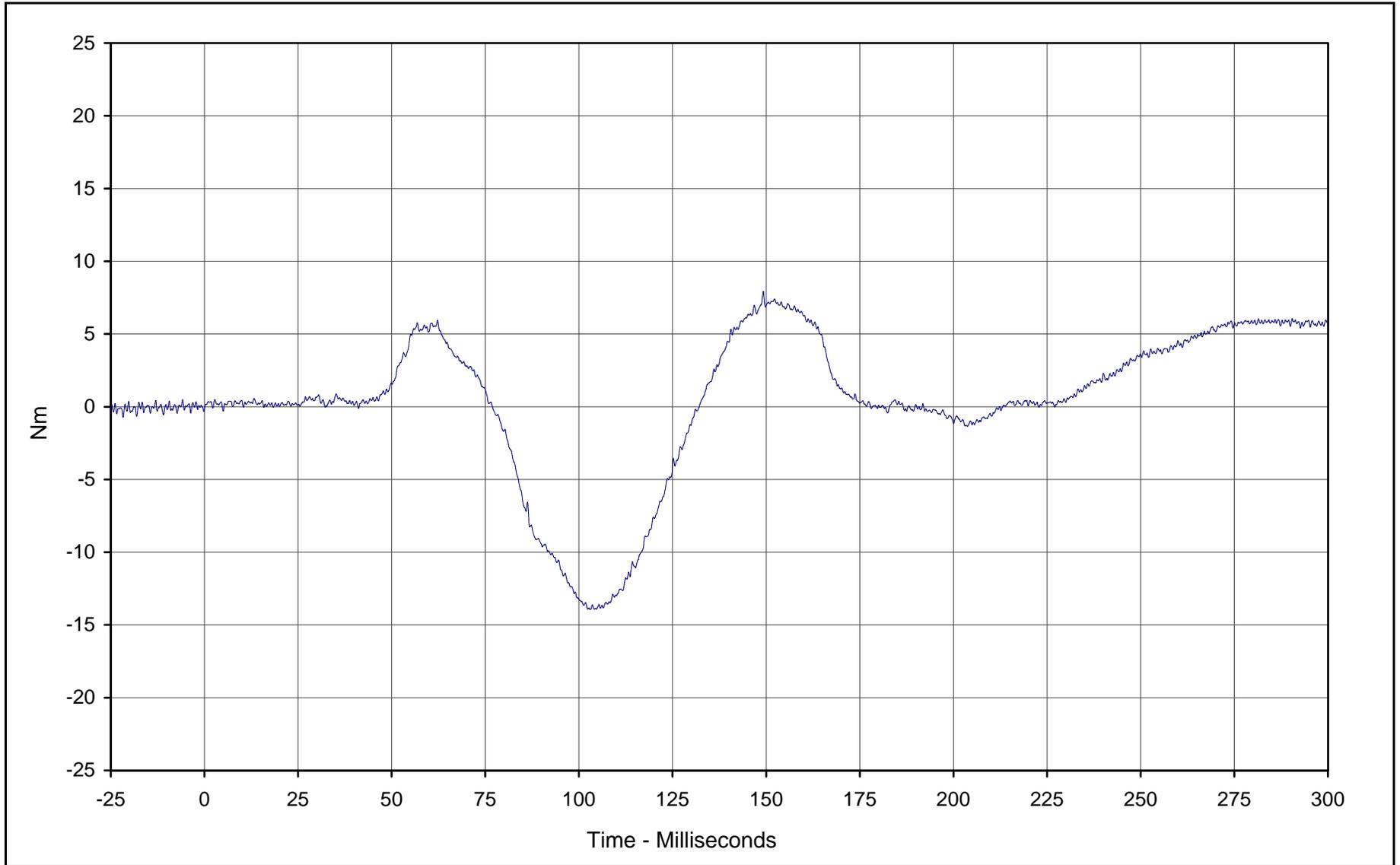
KARR20001-02



Curve Description: Driver Neck Moment Y  
Maximum Value: 22.7 at 125.3 Milliseconds  
Minimum Value: -39.5 at 81.8 Milliseconds  
SAE Filter Class: 600  
Date of Test: 11/17/99  
Curve Number: FIL-011

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup

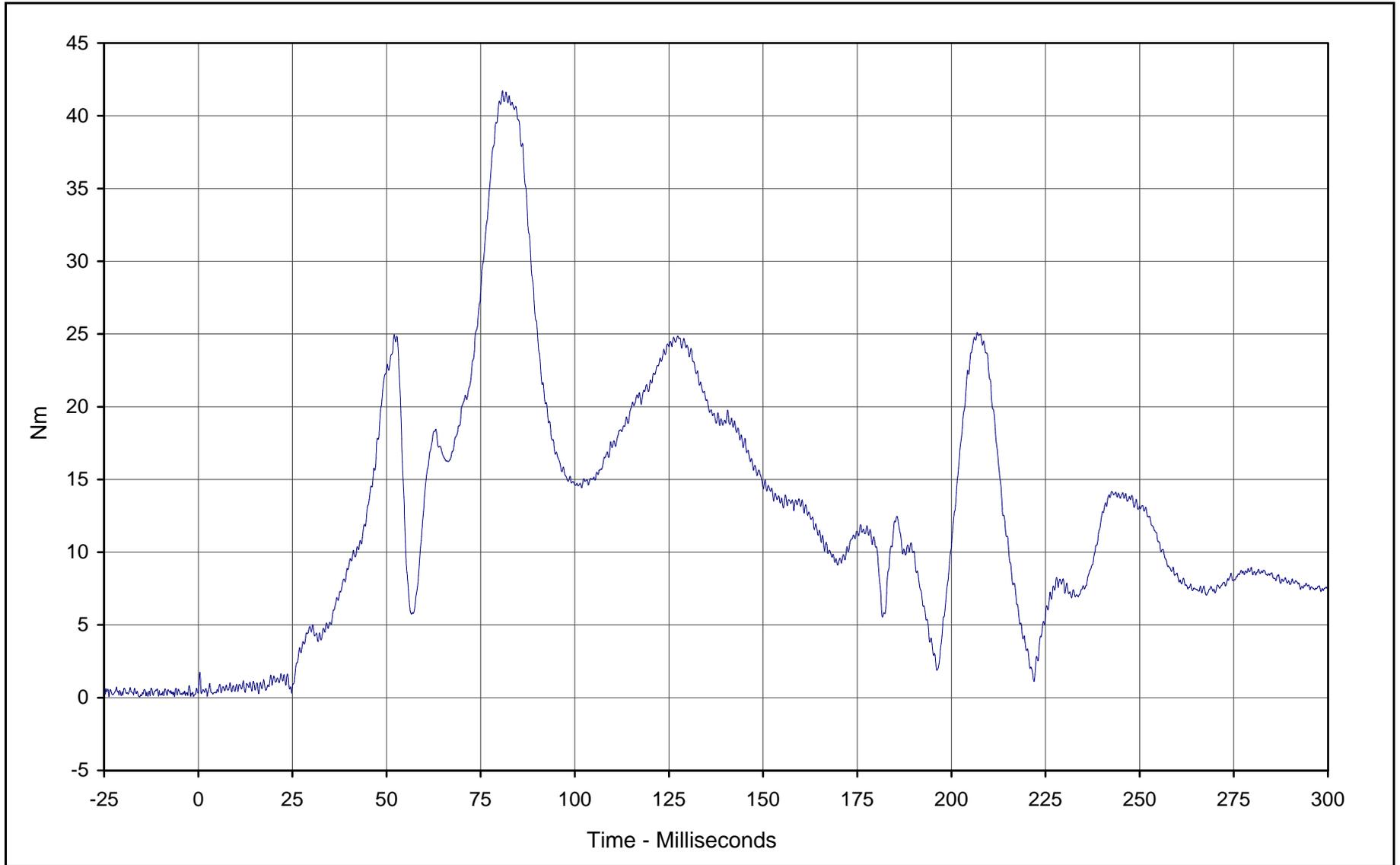




Curve Description: Driver Neck Moment Z  
 Maximum Value: 7.9 at 149.2 Milliseconds  
 Minimum Value: -13.9 at 103.0 Milliseconds  
 SAE Filter Class: 600  
 Date of Test: 11/17/99  
 Curve Number: FIL-012

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
 Test Vehicle: 2000 Toyota Tundra SR5 Pickup



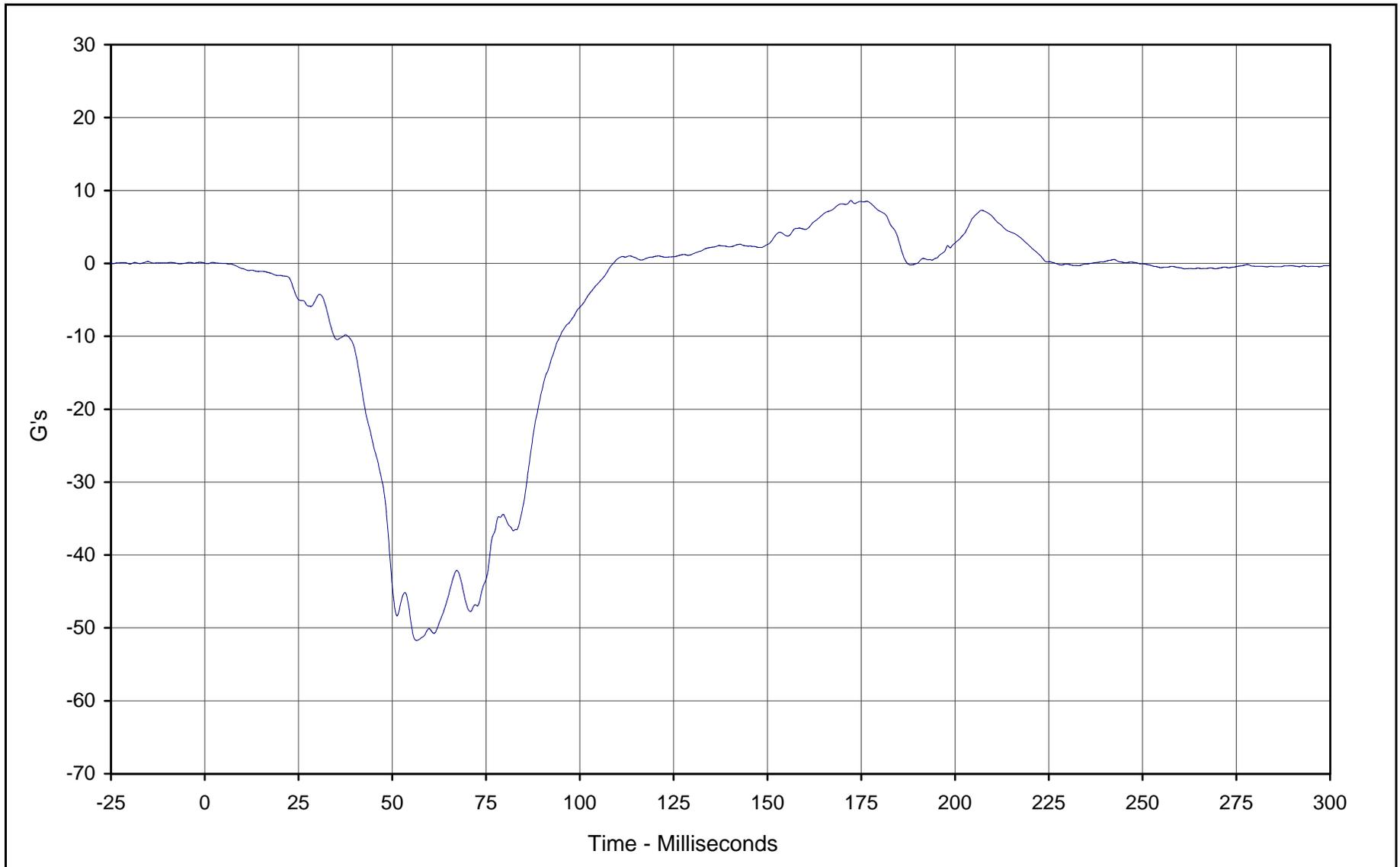


Curve Description: Driver Neck Moment Resultant  
 Maximum Value: 41.7 at 80.8 Milliseconds  
 Minimum Value: 0.1 at 2.4 Milliseconds  
 SAE Filter Class: 600  
 Date of Test: 11/17/99  
 Curve Number: RES-010

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
 Test Vehicle: 2000 Toyota Tundra SR5 Pickup



B-21



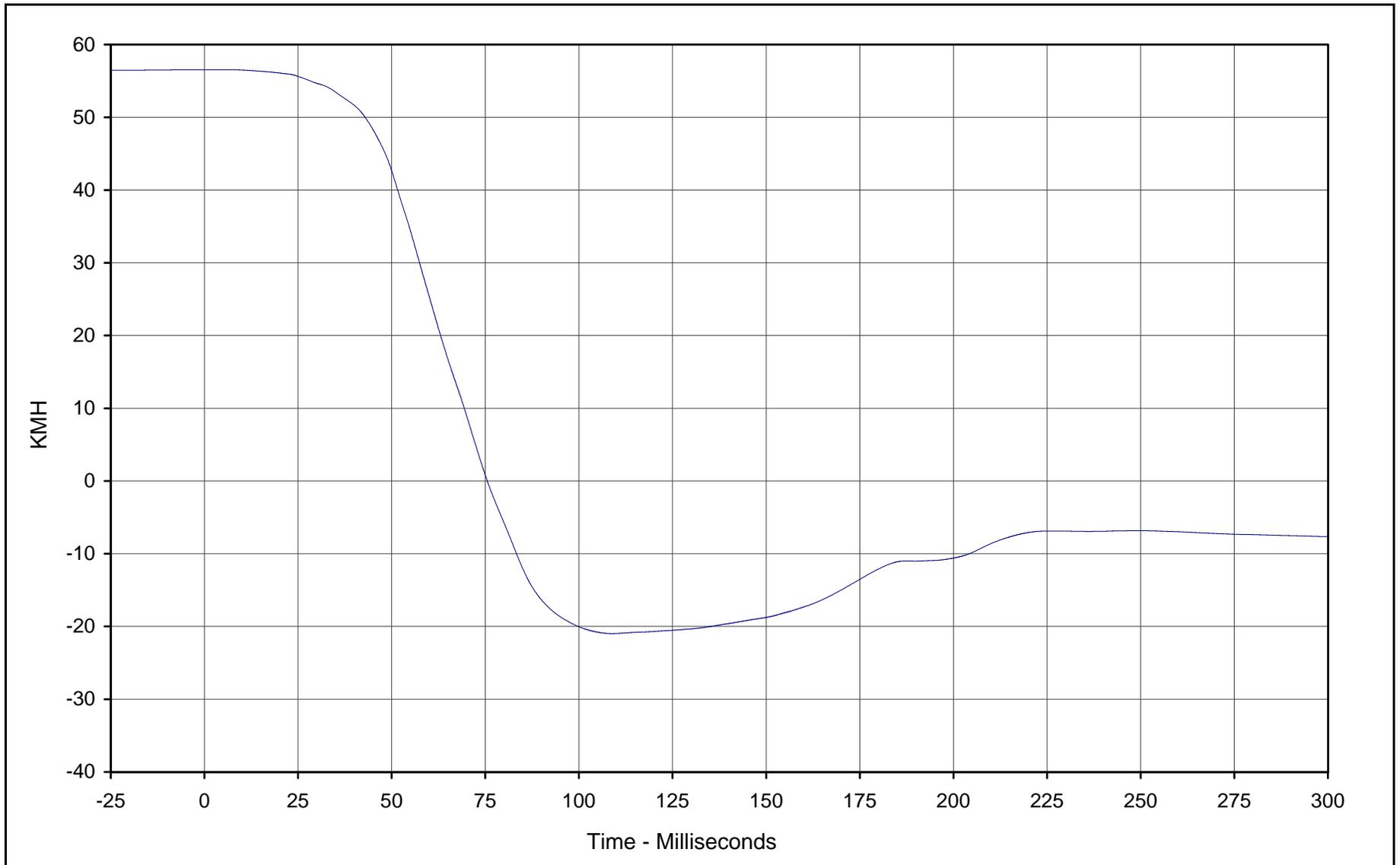
Curve Description: Driver Chest Primary X  
Maximum Value: 8.6 at 172.3 Milliseconds  
Minimum Value: -51.7 at 56.5 Milliseconds  
SAE Filter Class: 180  
Date of Test: 11/17/99  
Curve Number: FIL-013

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-22



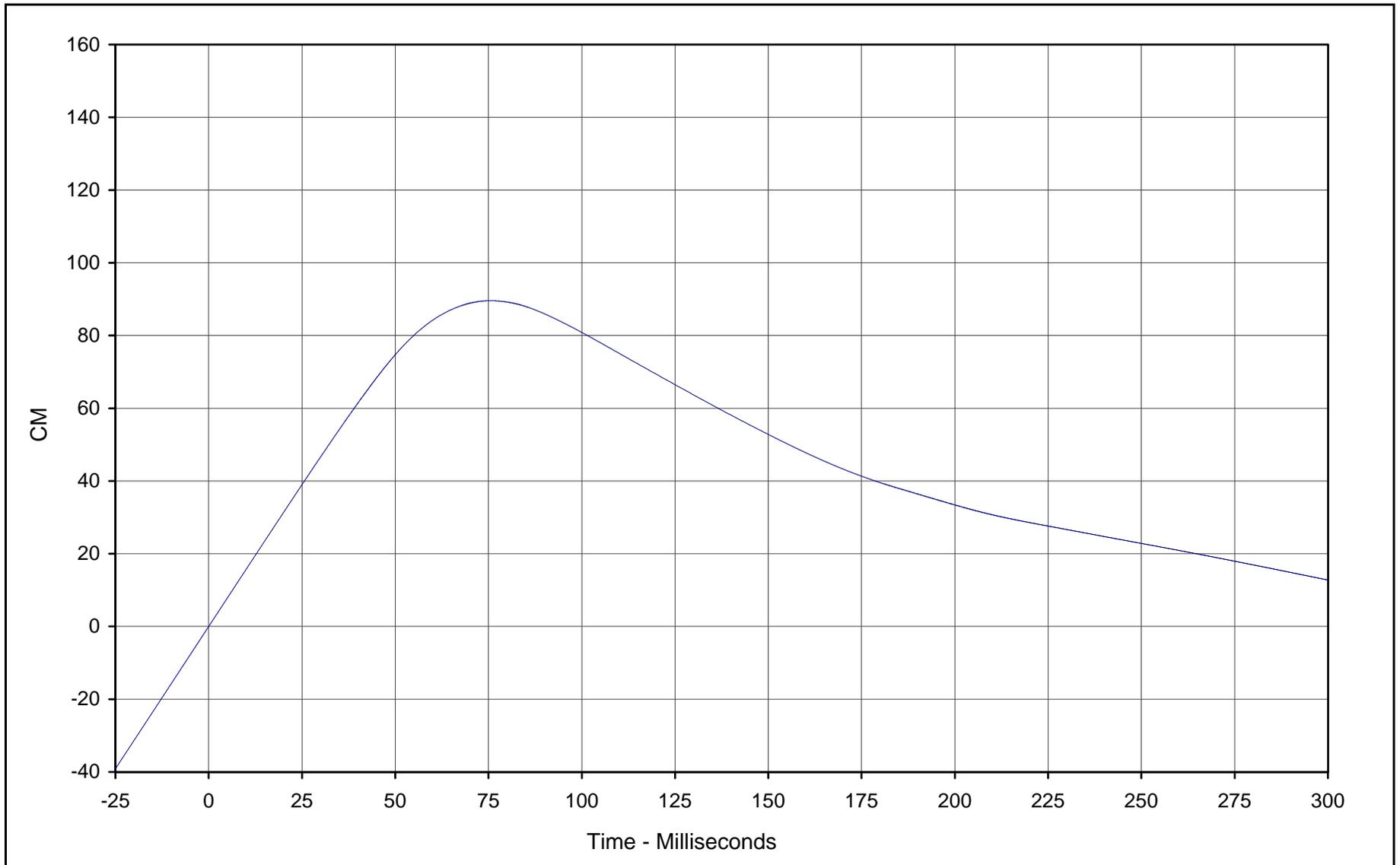
Curve Description: Driver Chest Primary X Velocity  
Maximum Value: 56.5 at 5.4 Milliseconds  
Minimum Value: -21.0 at 108.9 Milliseconds  
SAE Filter Class: 180  
Date of Test: 11/17/99  
Curve Number: IN1-013

Testing Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-23



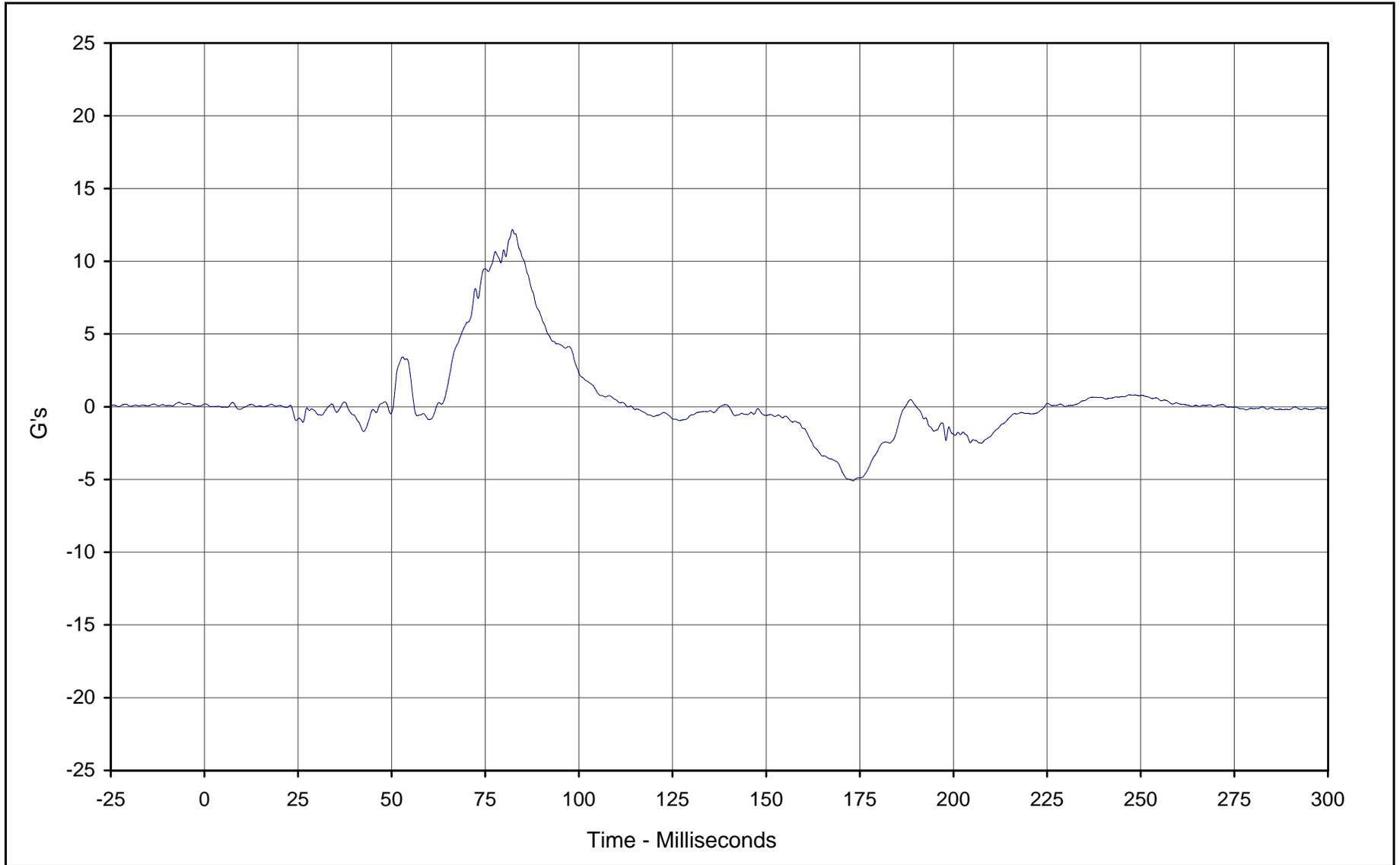
Curve Description: Driver Chest Primary X Displ.  
Maximum Value: 89.6 at 75.5 Milliseconds  
Minimum Value: 0.0 at 0.0 Milliseconds  
SAE Filter Class: 180  
Date of Test: 11/17/99  
Curve Number: IN2-013

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-24



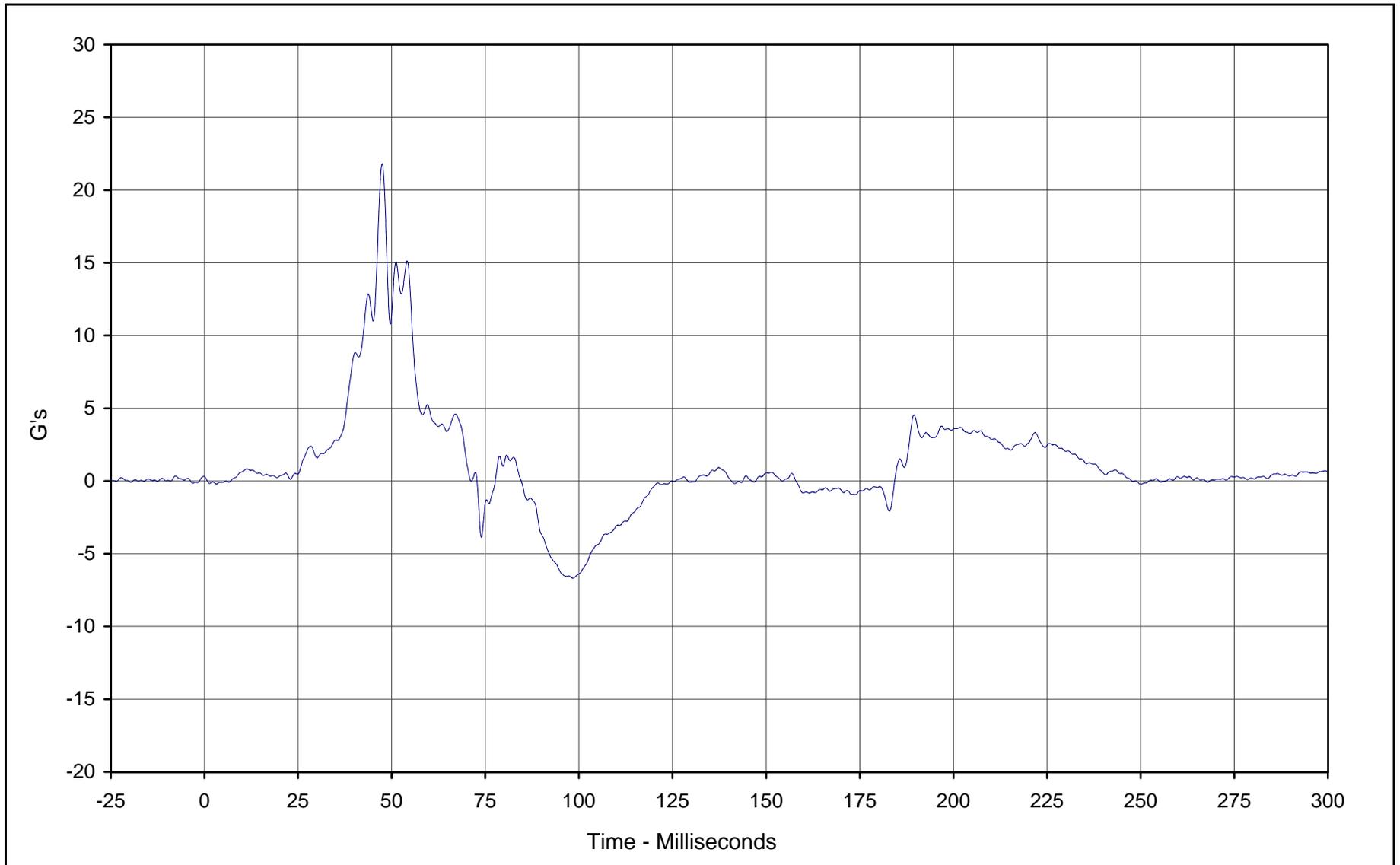
Curve Description: Driver Chest Primary Y  
Maximum Value: 12.2 at 82.2 Milliseconds  
Minimum Value: -5.1 at 173.2 Milliseconds  
SAE Filter Class: 180  
Date of Test: 11/17/99  
Curve Number: FIL-014

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-25

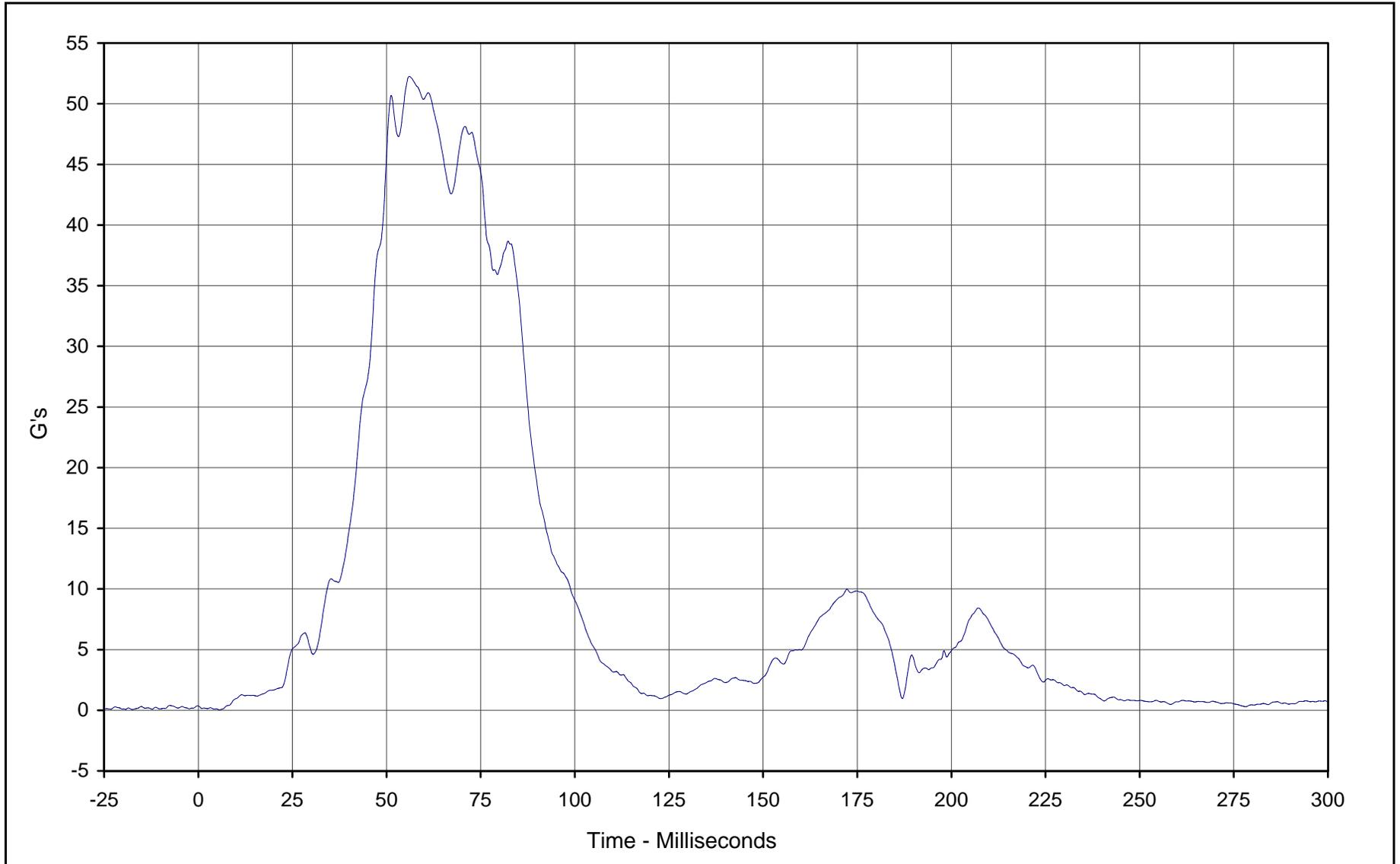


Curve Description: Driver Chest Primary Z  
Maximum Value: 21.8 at 47.5 Milliseconds  
Minimum Value: -6.7 at 98.4 Milliseconds  
SAE Filter Class: 180  
Date of Test: 11/17/99  
Curve Number: FIL-015

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



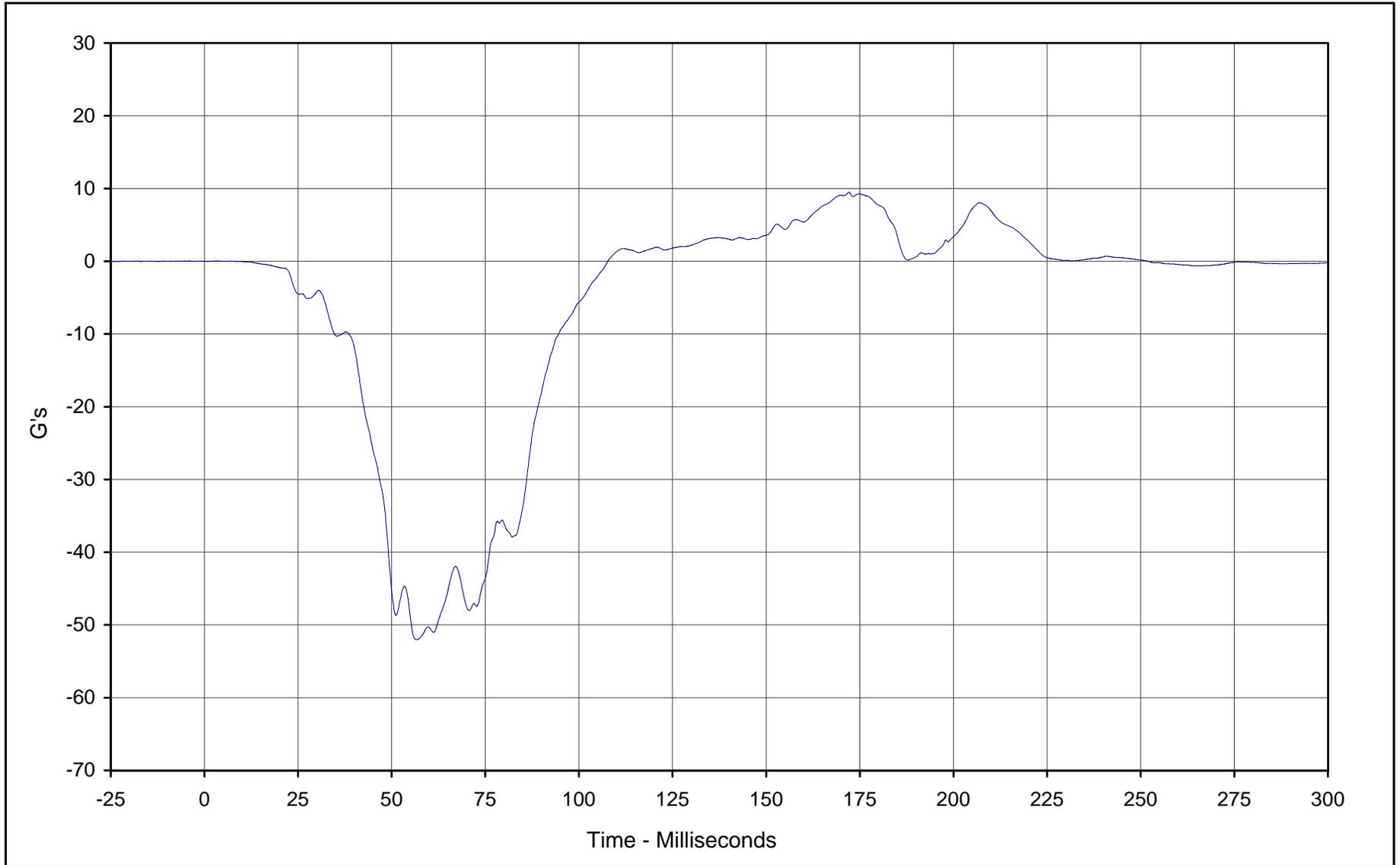
KARR20001-02



Curve Description: Driver Chest Resultant Primary  
 Maximum Value: 52.3 at 56.0 Milliseconds  
 Minimum Value: 0.0 at 5.6 Milliseconds  
 SAE Filter Class: 180  
 Date of Test: 11/17/99  
 Curve Number: RES-013

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
 Test Vehicle: 2000 Toyota Tundra SR5 Pickup



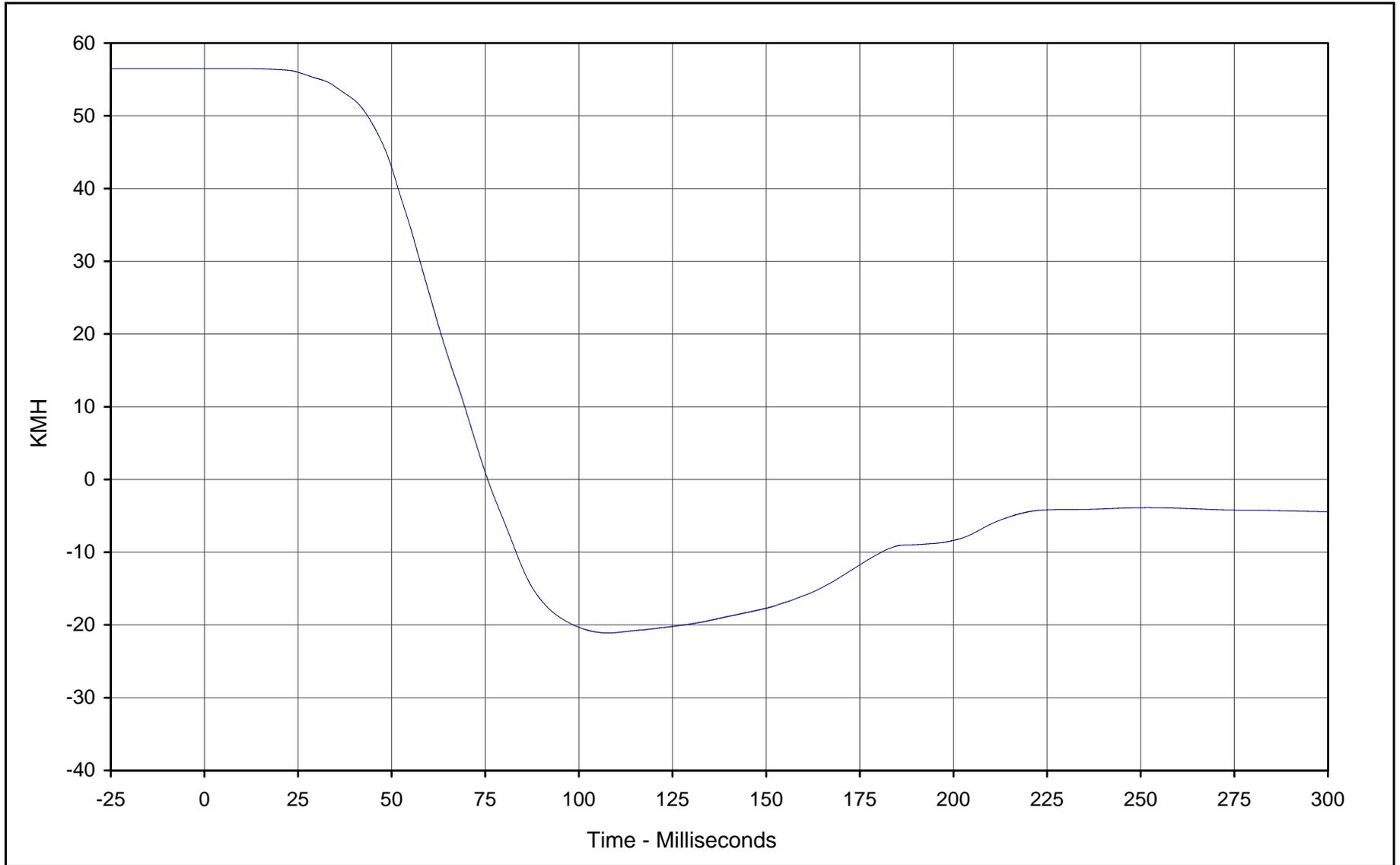


Curve Description: Driver Chest Redundant X  
 Maximum Value: 9.5 at 172.1 Milliseconds  
 Minimum Value: -52.0 at 56.6 Milliseconds  
 SAE Filter Class: 180  
 Date of Test: 11/17/99  
 Curve Number: FIL-016

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
 Test Vehicle: 2000 Toyota Tundra SR5 Pickup



B-28



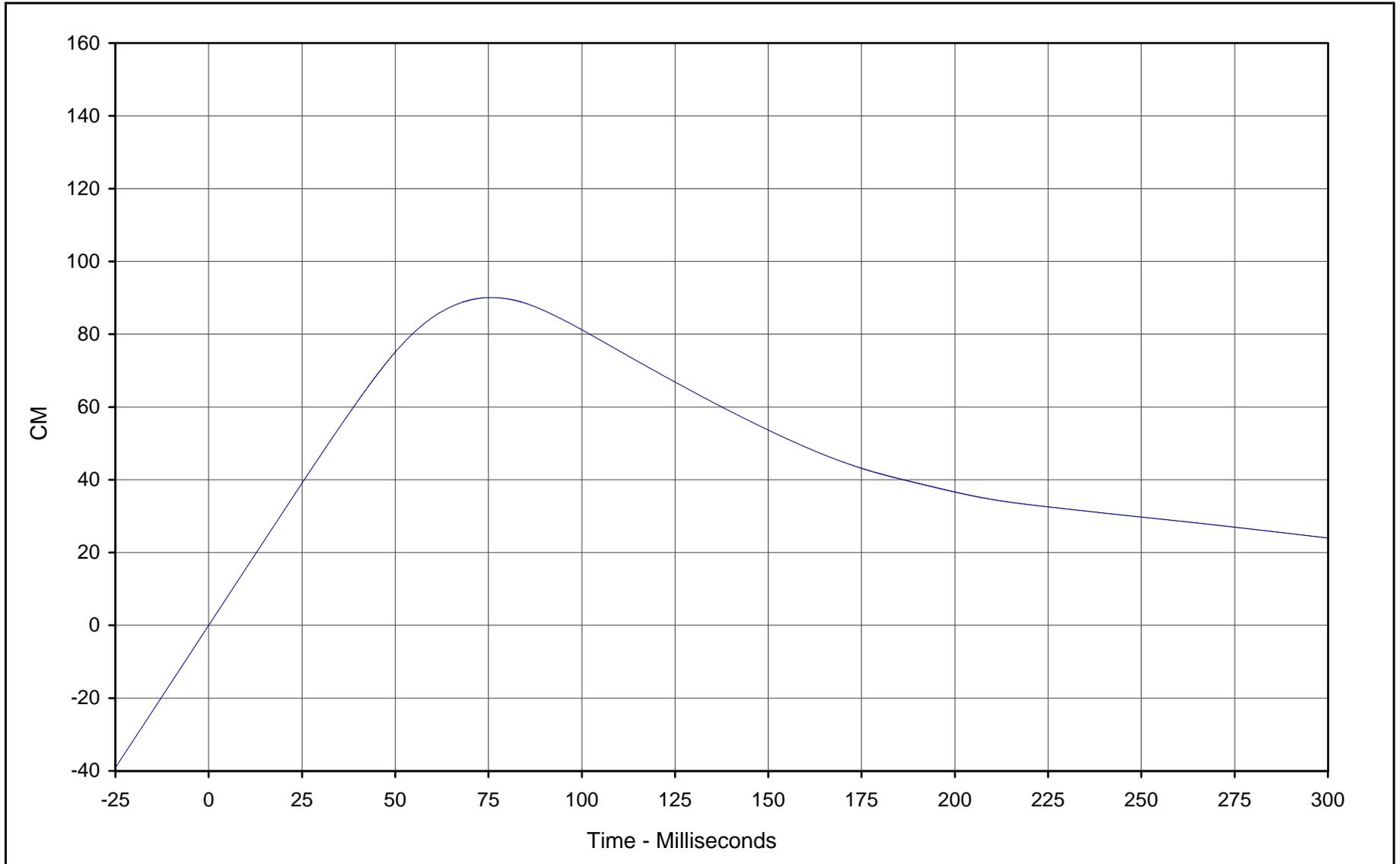
Curve Description: Driver Chest Redundant X Velocity  
Maximum Value: 56.5 at 7.7 Milliseconds  
Minimum Value: -21.1 at 107.7 Milliseconds  
SAE Filter Class: 180  
Date of Test: 11/17/99  
Curve Number: IN1-016

Testing Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KAR20001-02

B-29



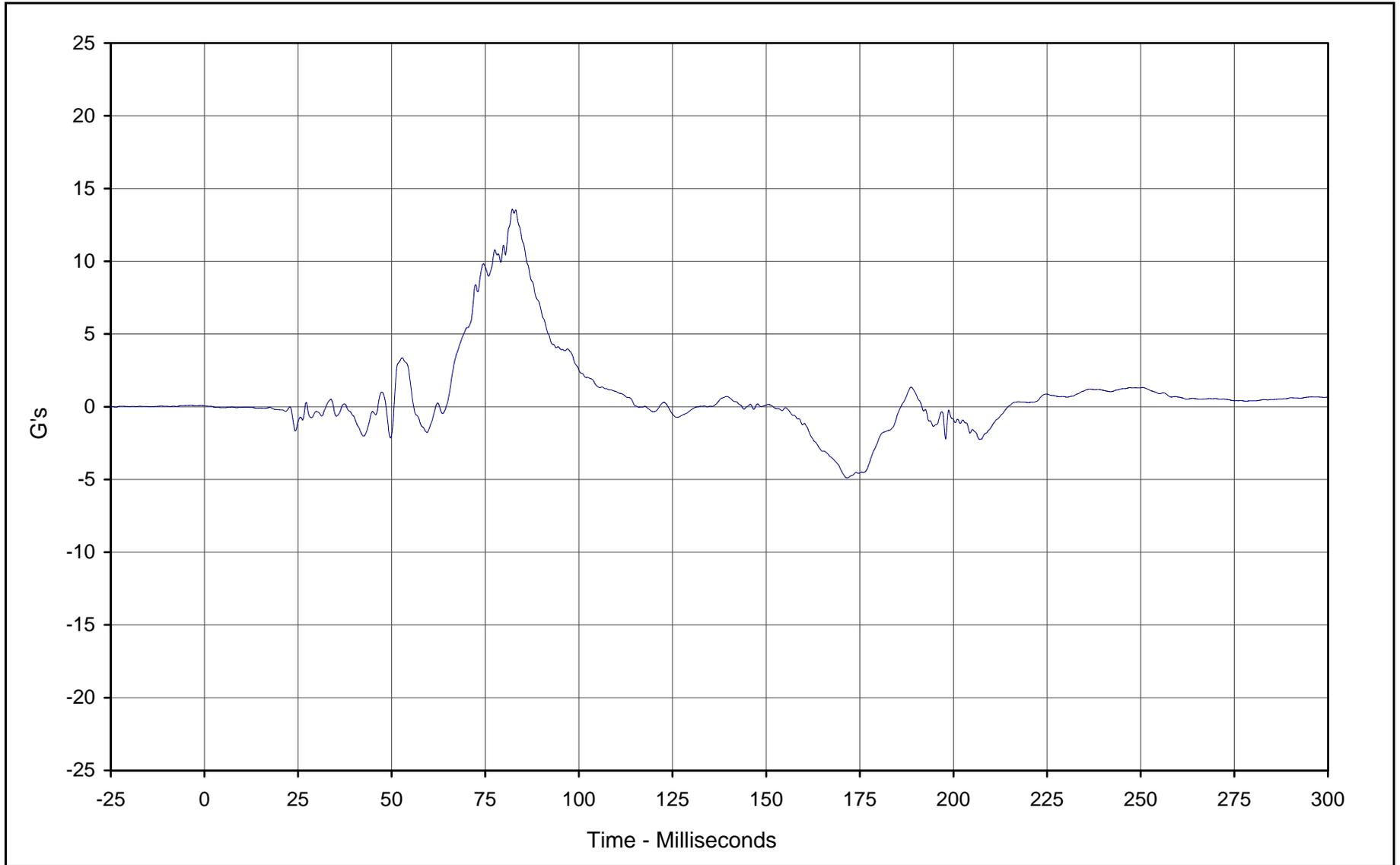
Curve Description: Driver Chest Redundant X Displ.  
Maximum Value: 90.1 at 75.6 Milliseconds  
Minimum Value: 0.0 at 0.0 Milliseconds  
SAE Filter Class: 180  
Date of Test: 11/17/99  
Curve Number: IN2-016

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-30



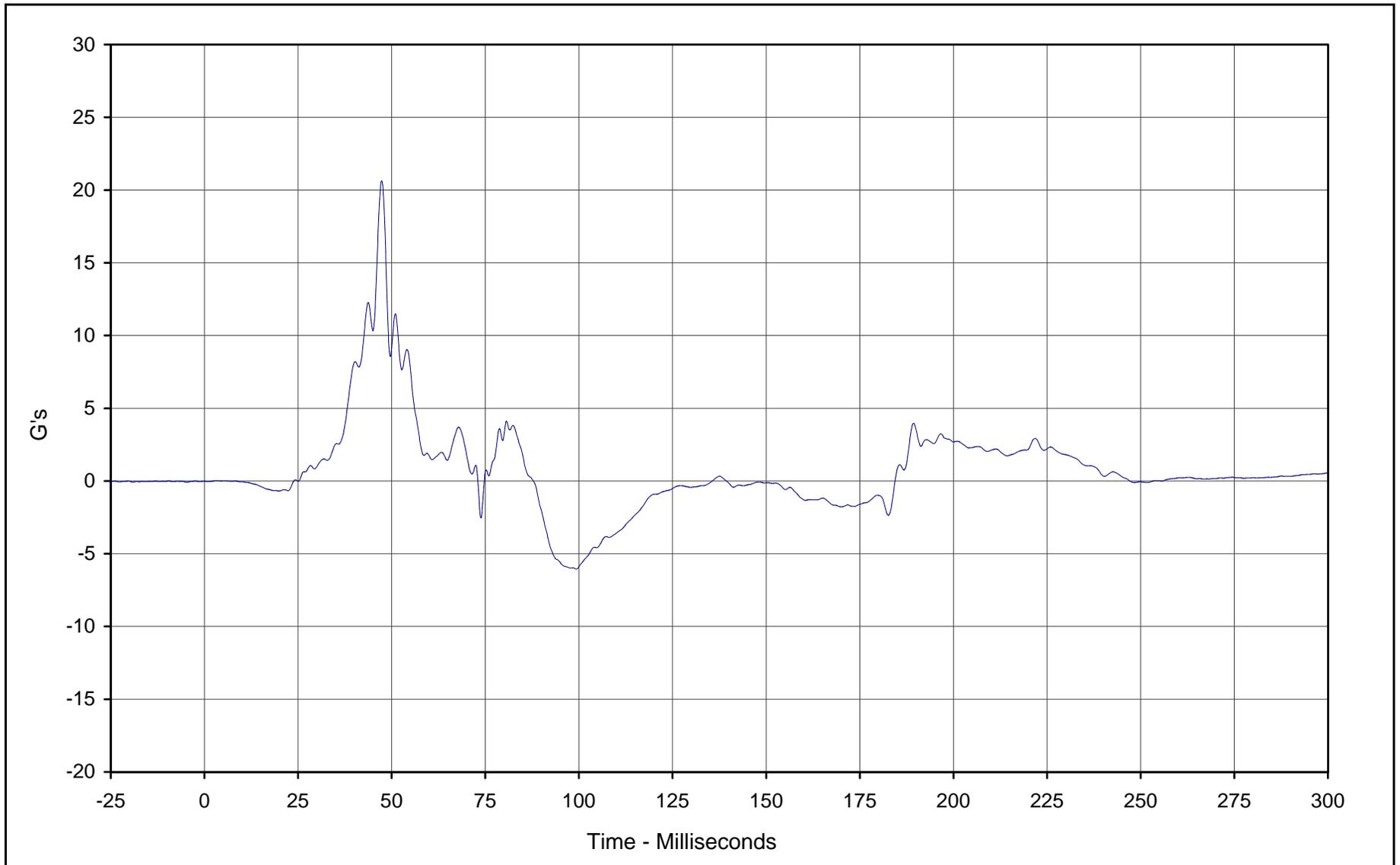
Curve Description: Driver Chest Redundant Y  
Maximum Value: 13.6 at 82.2 Milliseconds  
Minimum Value: -4.9 at 171.6 Milliseconds  
SAE Filter Class: 180  
Date of Test: 11/17/99  
Curve Number: FIL-017

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-31

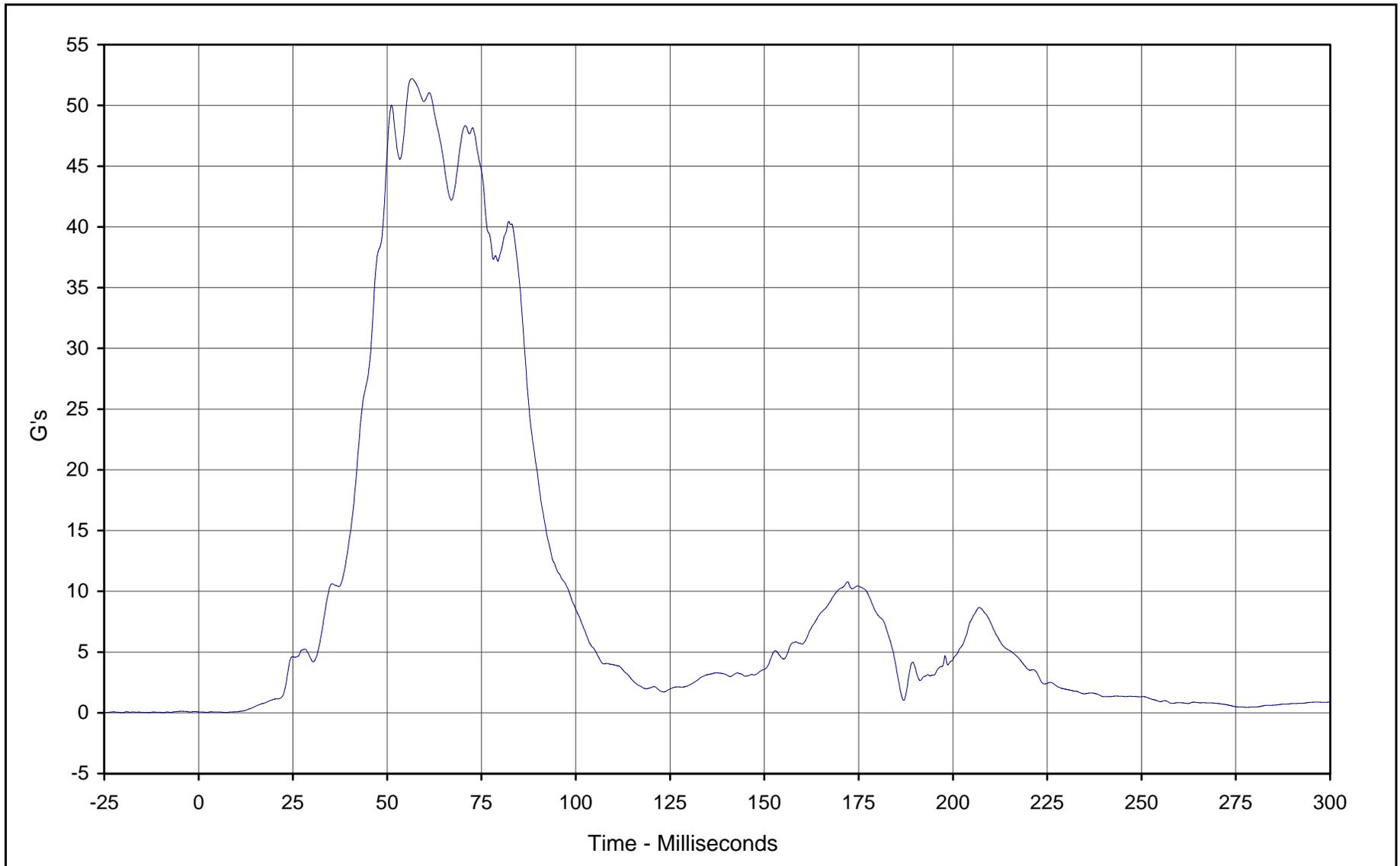


Curve Description: Driver Chest Redundant Z  
Maximum Value: 20.6 at 47.3 Milliseconds  
Minimum Value: -6.1 at 99.3 Milliseconds  
SAE Filter Class: 180  
Date of Test: 11/17/99  
Curve Number: FIL-018

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



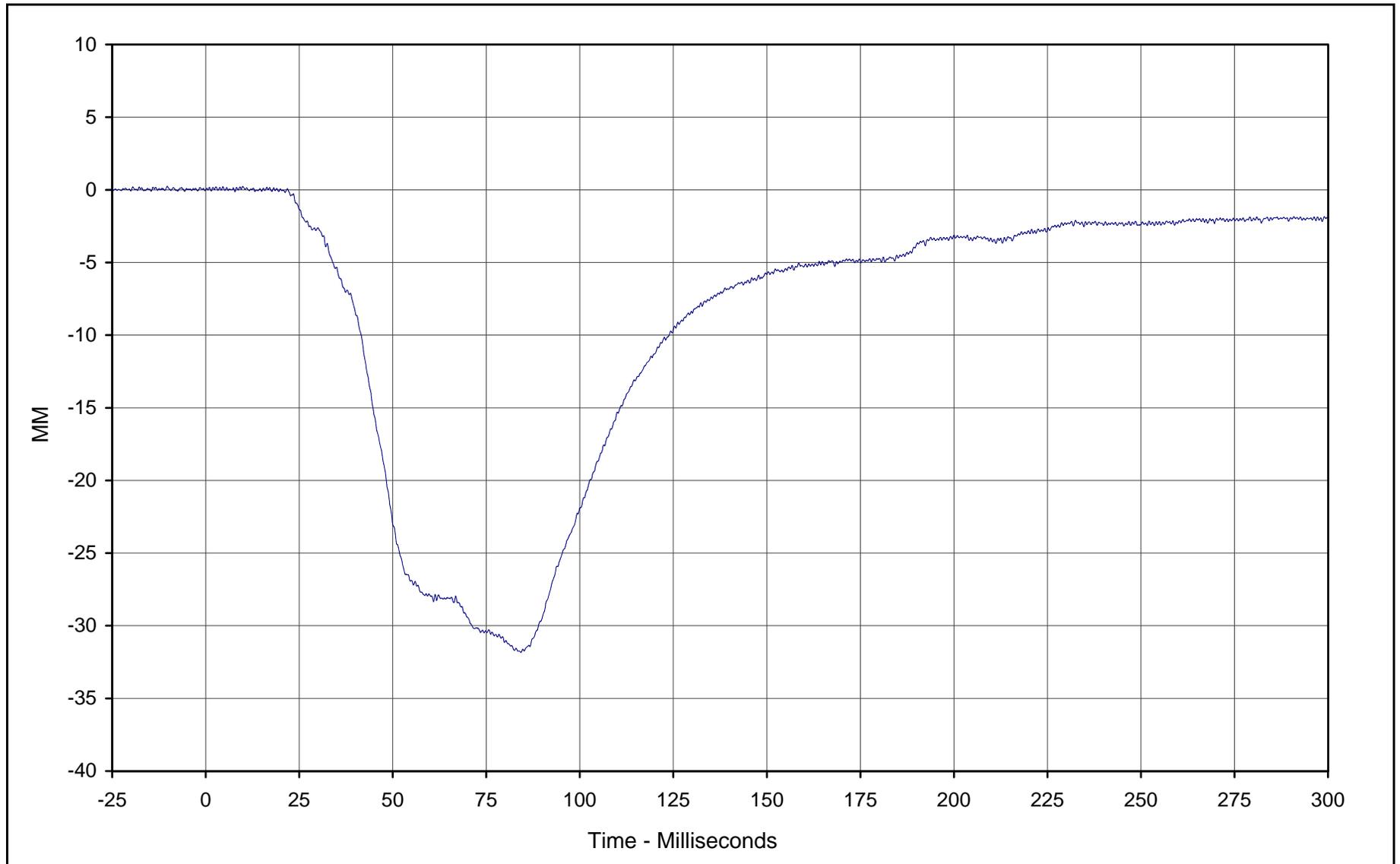
KARR20001-02



Curve Description: Driver Chest Resultant Redundant  
 Maximum Value: 52.2 at 56.5 Milliseconds  
 Minimum Value: 0.0 at 2.3 Milliseconds  
 SAE Filter Class: 180  
 Date of Test: 11/17/99  
 Curve Number: RES-016

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
 Test Vehicle: 2000 Toyota Tundra SR5 Pickup

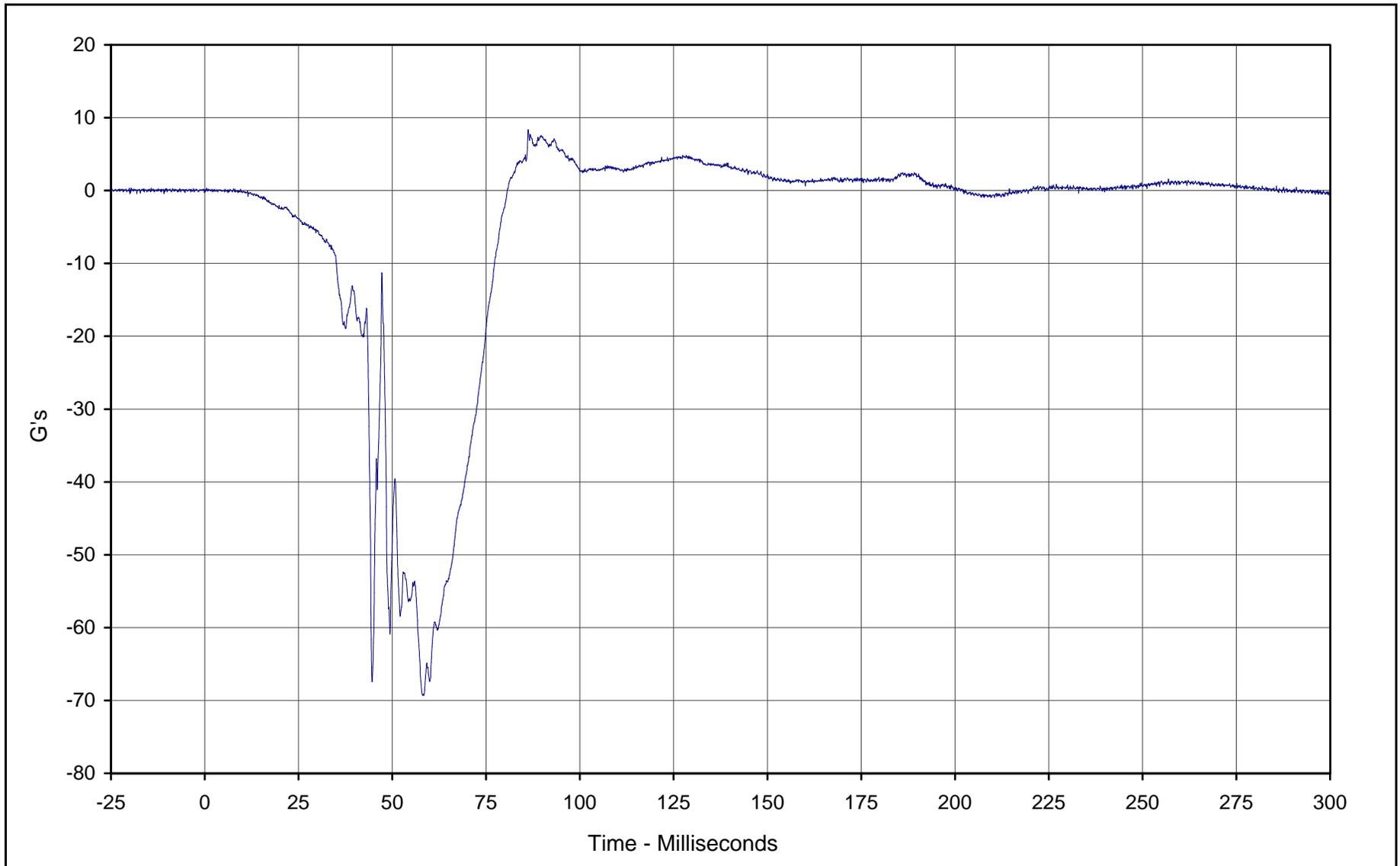




Curve Description: Driver Chest Displacement X  
 Maximum Value: 0.2 at 9.9 Milliseconds  
 Minimum Value: -31.8 at 84.2 Milliseconds  
 SAE Filter Class: 600  
 Date of Test: 11/17/99  
 Curve Number: FIL-019

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
 Test Vehicle: 2000 Toyota Tundra SR5 Pickup



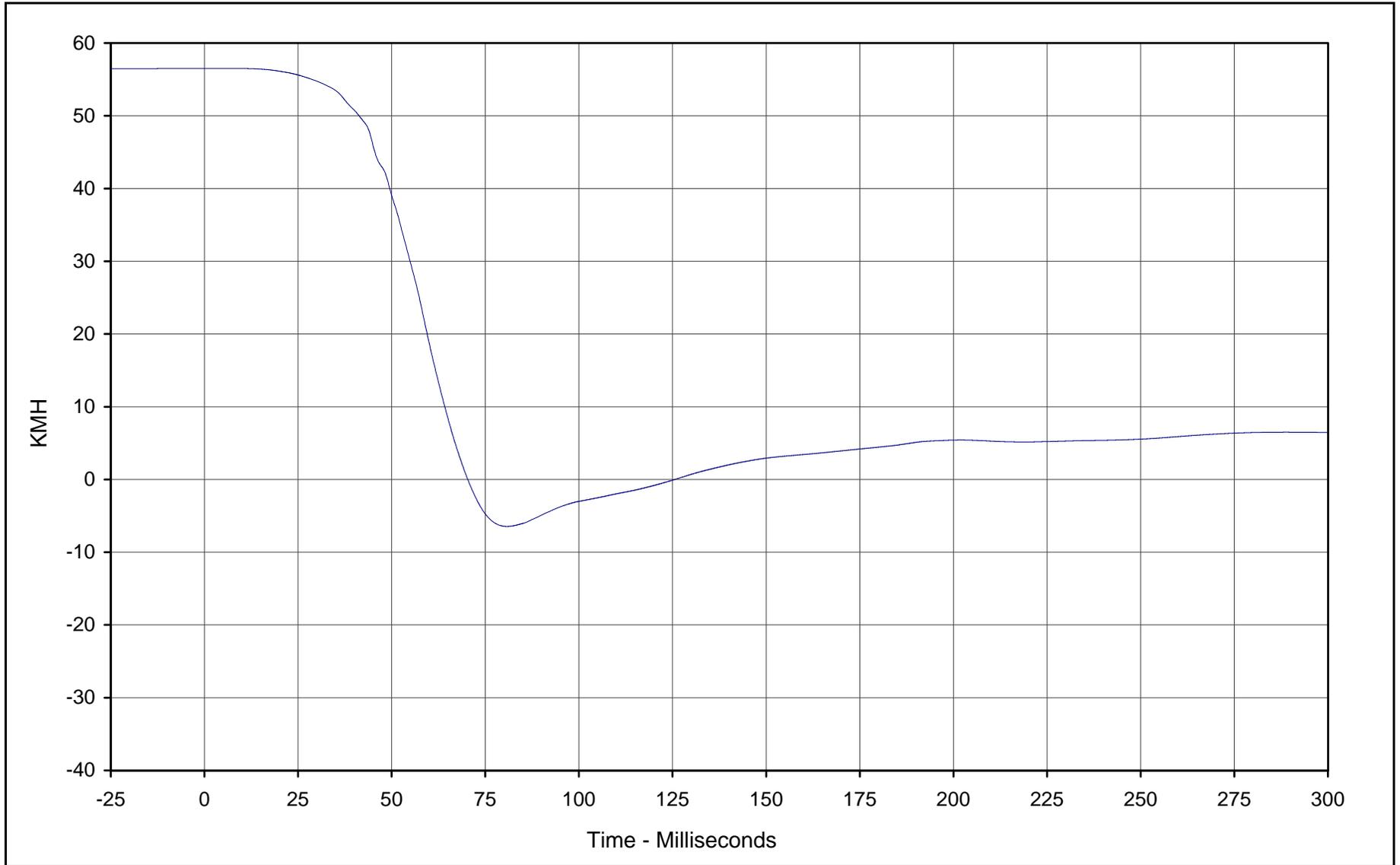


Curve Description: Driver Pelvis X  
 Maximum Value: 8.3 at 86.2 Milliseconds  
 Minimum Value: -69.3 at 58.1 Milliseconds  
 SAE Filter Class: 1000  
 Date of Test: 11/17/99  
 Curve Number: FIL-020

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
 Test Vehicle: 2000 Toyota Tundra SR5 Pickup



B-35

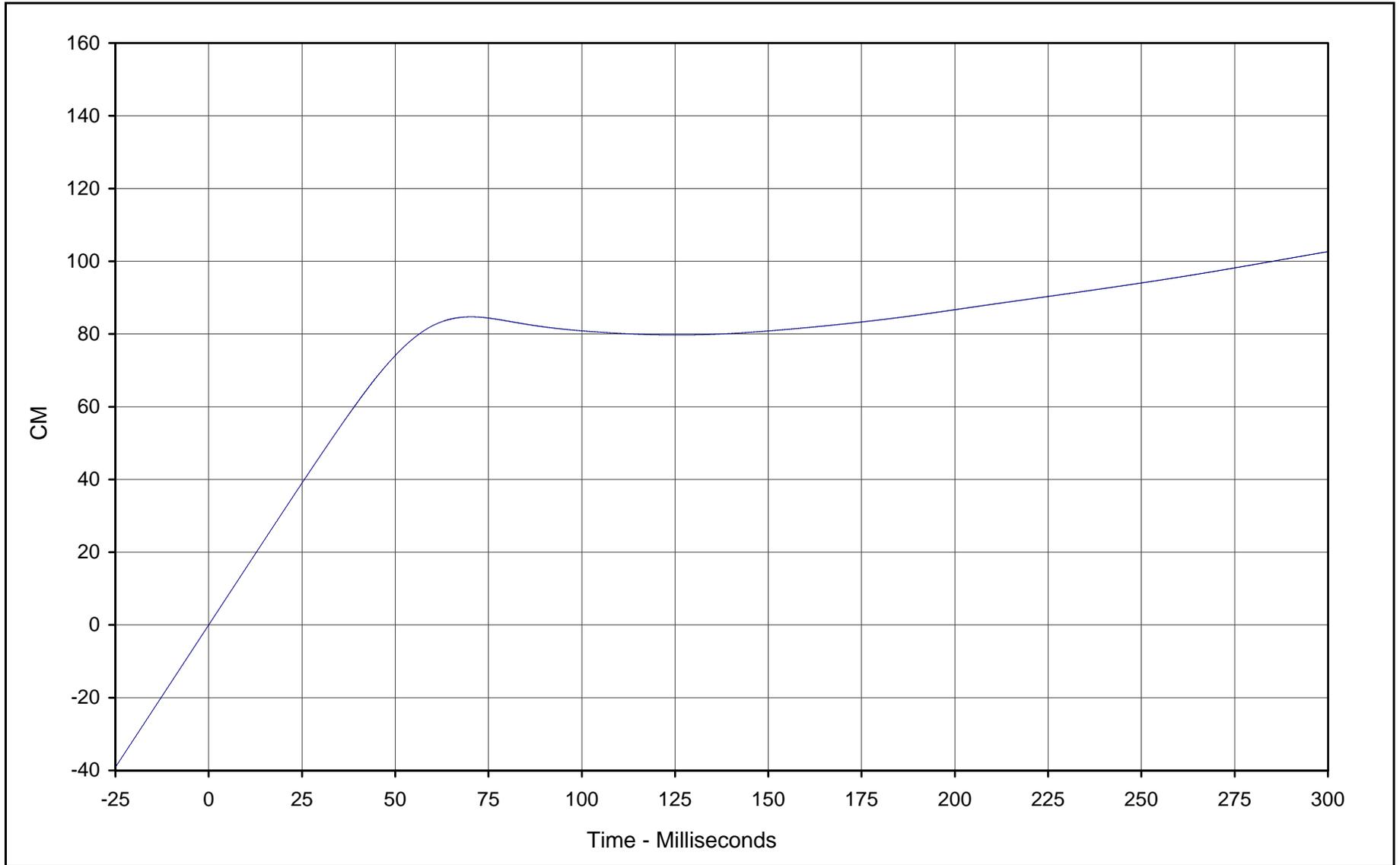


Curve Description: Driver Pelvis X Velocity  
Maximum Value: 56.5 at 4.5 Milliseconds  
Minimum Value: -6.5 at 80.7 Milliseconds  
SAE Filter Class: 180  
Date of Test: 11/17/99  
Curve Number: IN1-020

Testing Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



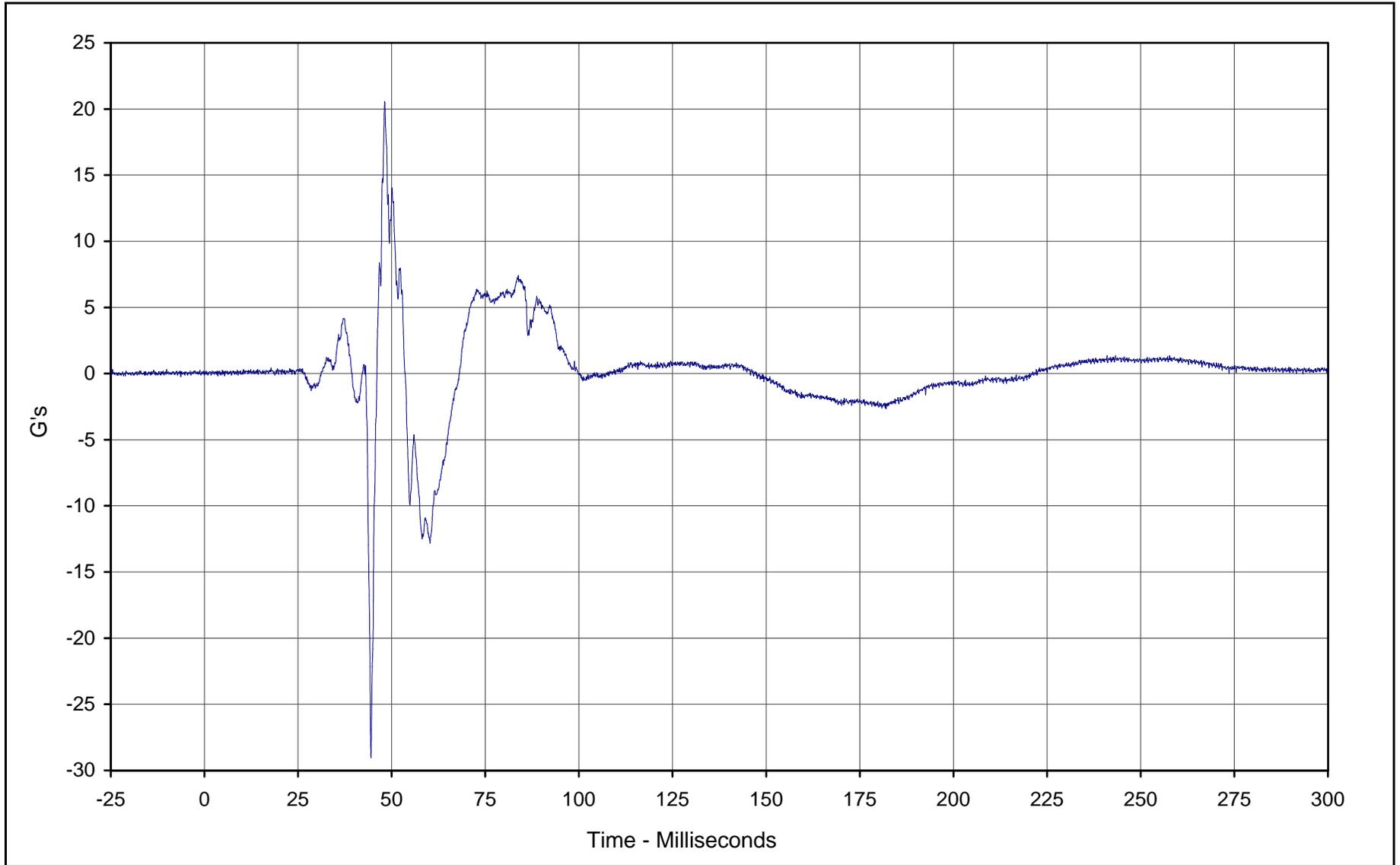
KARR20001-02



Curve Description: Driver Pelvis X Displ.  
 Maximum Value: 102.6 at 299.9 Milliseconds  
 Minimum Value: 0.0 at 0.0 Milliseconds  
 SAE Filter Class: 180  
 Date of Test: 11/17/99  
 Curve Number: IN2-020

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
 Test Vehicle: 2000 Toyota Tundra SR5 Pickup



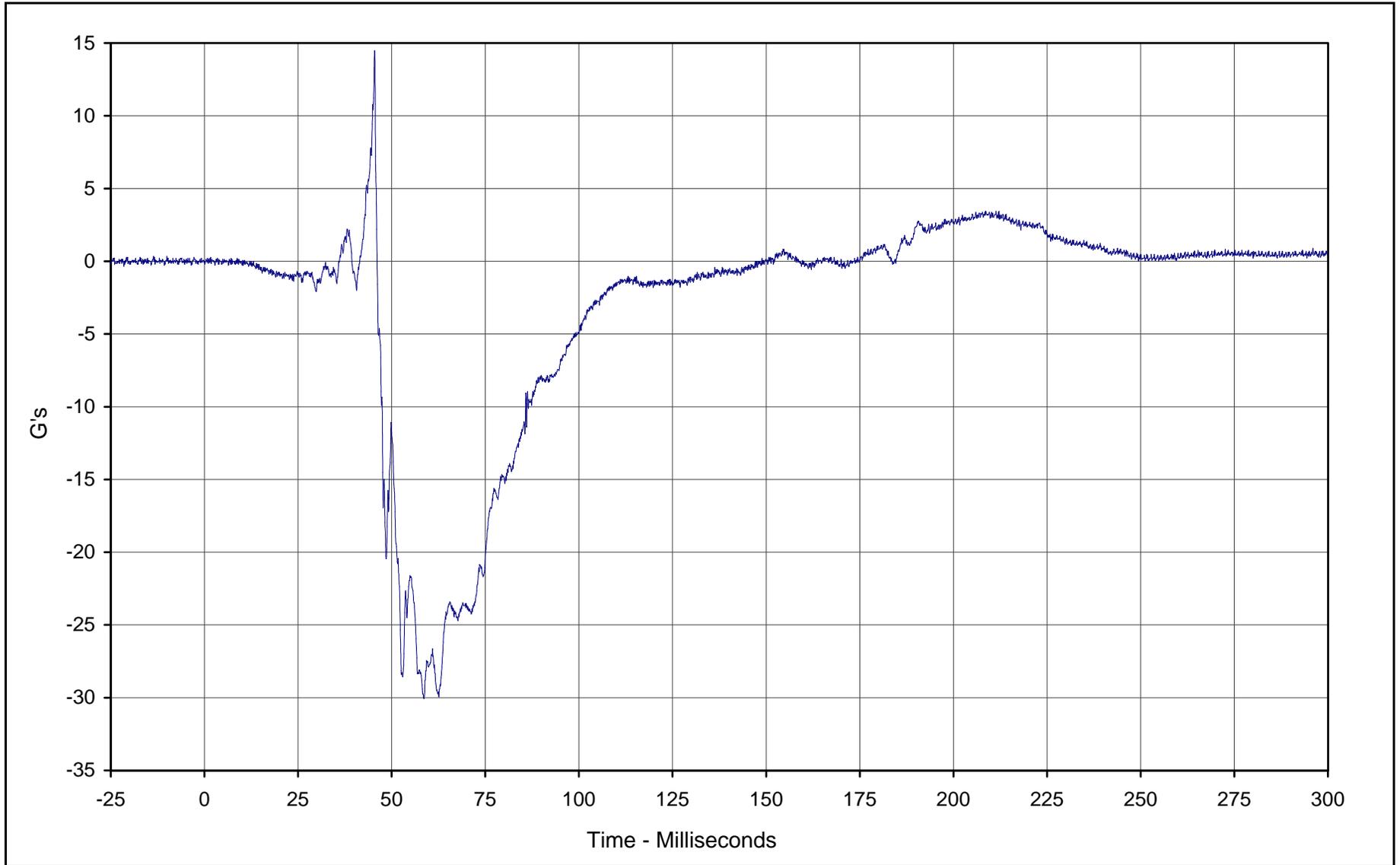


Curve Description: Driver Pelvis Y  
 Maximum Value: 20.5 at 48.1 Milliseconds  
 Minimum Value: -29.0 at 44.5 Milliseconds  
 SAE Filter Class: 1000  
 Date of Test: 11/17/99  
 Curve Number: FIL-021

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
 Test Vehicle: 2000 Toyota Tundra SR5 Pickup



B-38

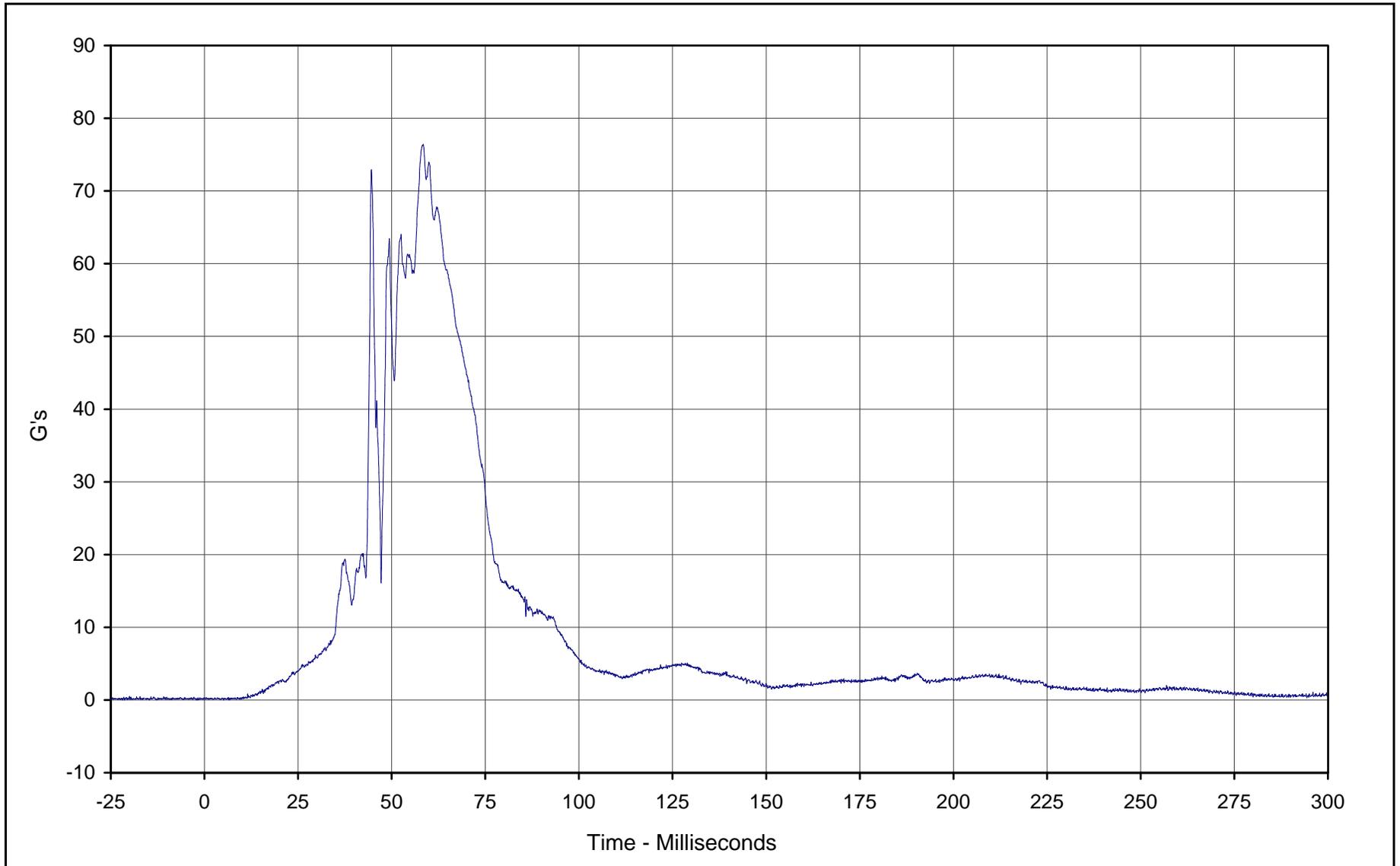


Curve Description: Driver Pelvis Z  
Maximum Value: 14.5 at 45.4 Milliseconds  
Minimum Value: -30.1 at 58.6 Milliseconds  
SAE Filter Class: 1000  
Date of Test: 11/17/99  
Curve Number: FIL-022

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

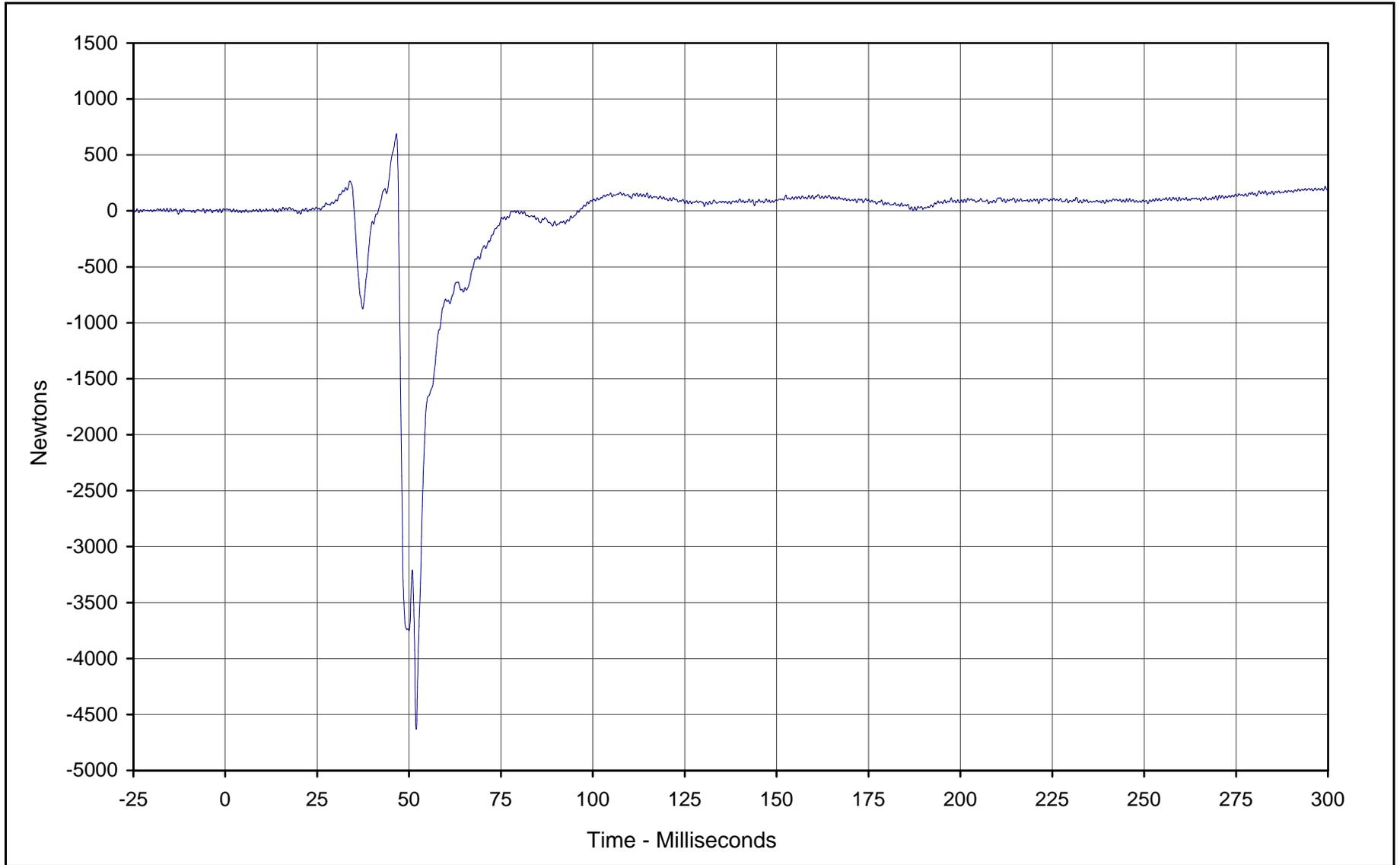


Curve Description: Driver Pelvis Resultant  
 Maximum Value: 76.4 at 58.4 Milliseconds  
 Minimum Value: 0.0 at 5.1 Milliseconds  
 SAE Filter Class: 1000  
 Date of Test: 11/17/99  
 Curve Number: RES-020

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
 Test Vehicle: 2000 Toyota Tundra SR5 Pickup



B-40



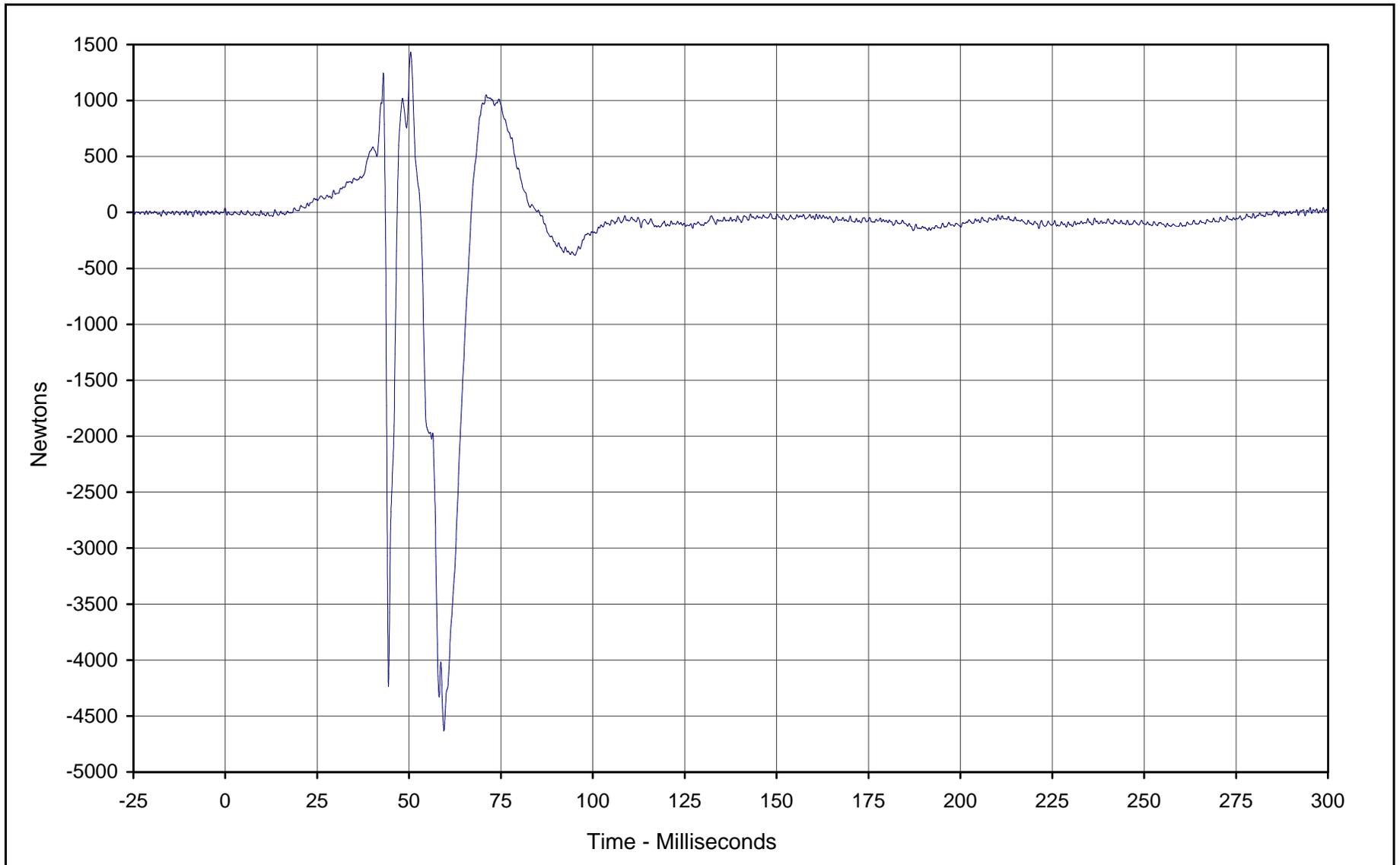
Curve Description: Driver Left Femur Force  
Maximum Value: 690.4 at 46.6 Milliseconds  
Minimum Value: -4632.0 at 51.9 Milliseconds  
SAE Filter Class: 600  
Date of Test: 11/17/99  
Curve Number: FIL-023

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-41



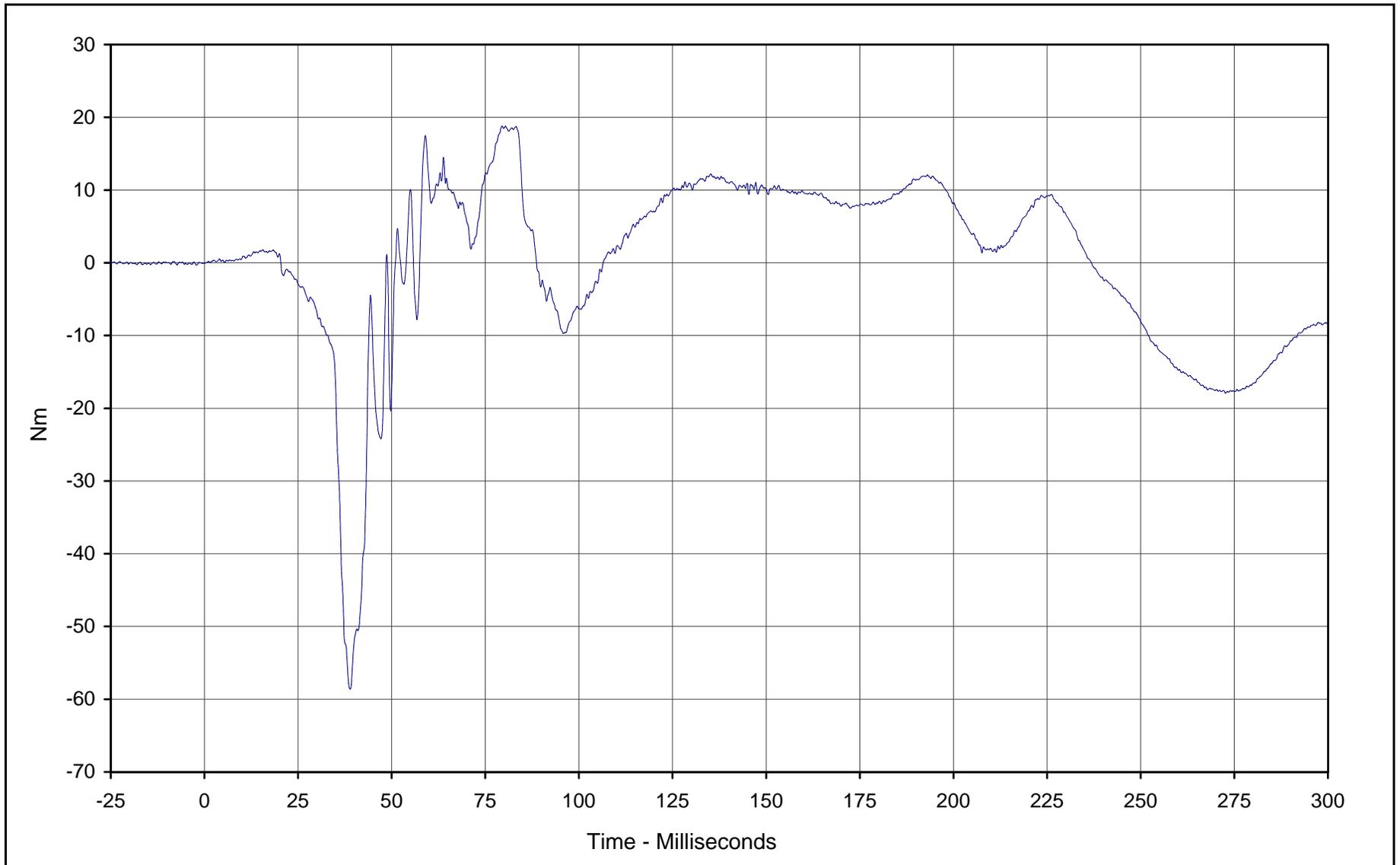
Curve Description: Driver Right Femur Force  
Maximum Value: 1432.4 at 50.4 Milliseconds  
Minimum Value: -4633.9 at 59.5 Milliseconds  
SAE Filter Class: 600  
Date of Test: 11/17/99  
Curve Number: FIL-024

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-42



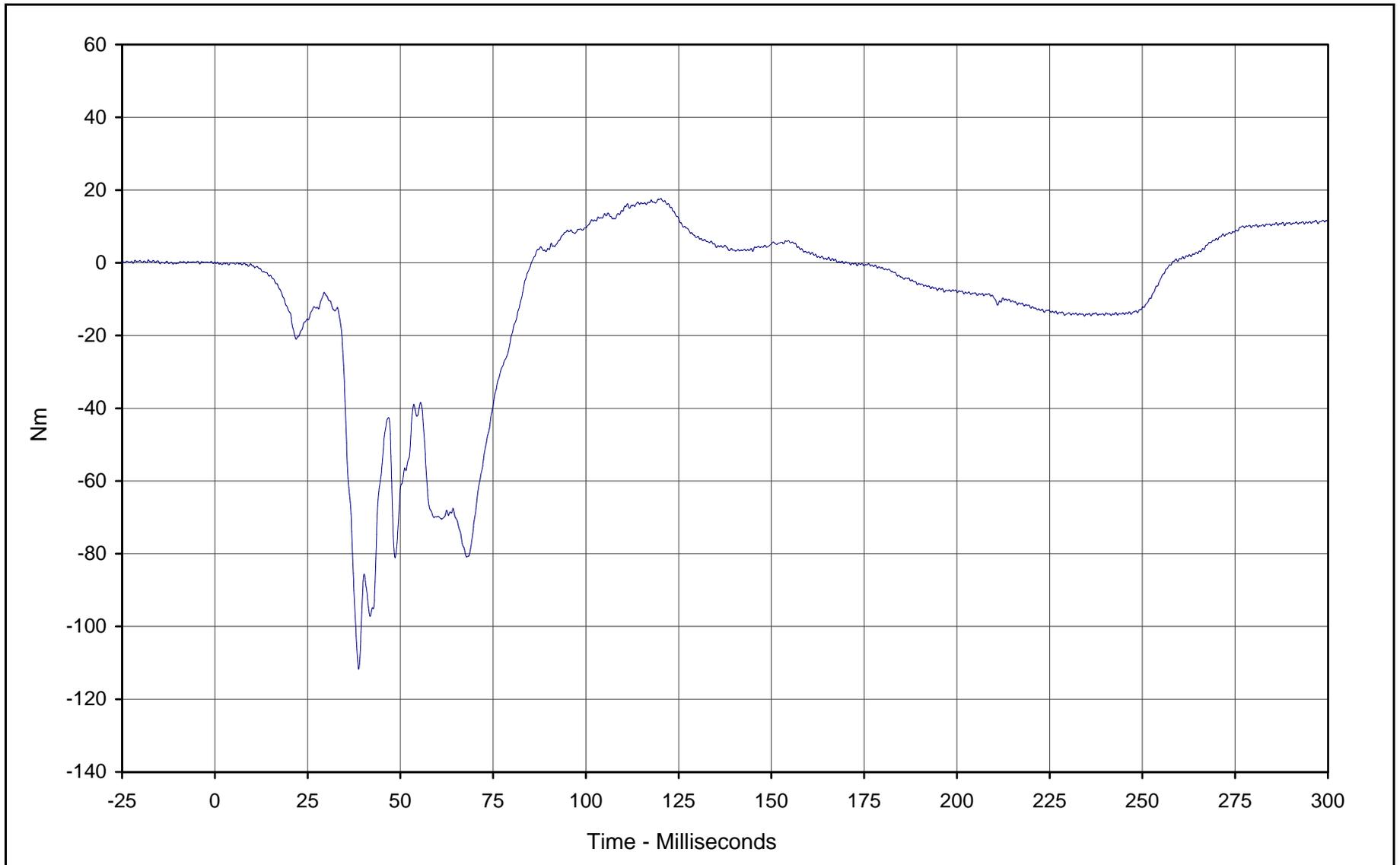
Curve Description: Driver Left Upper Tibia Moment X  
Maximum Value: 18.8 at 79.5 Milliseconds  
Minimum Value: -58.6 at 38.9 Milliseconds  
SAE Filter Class: 600  
Date of Test: 11/17/99  
Curve Number: FIL-025

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KAR20001-02

B-43



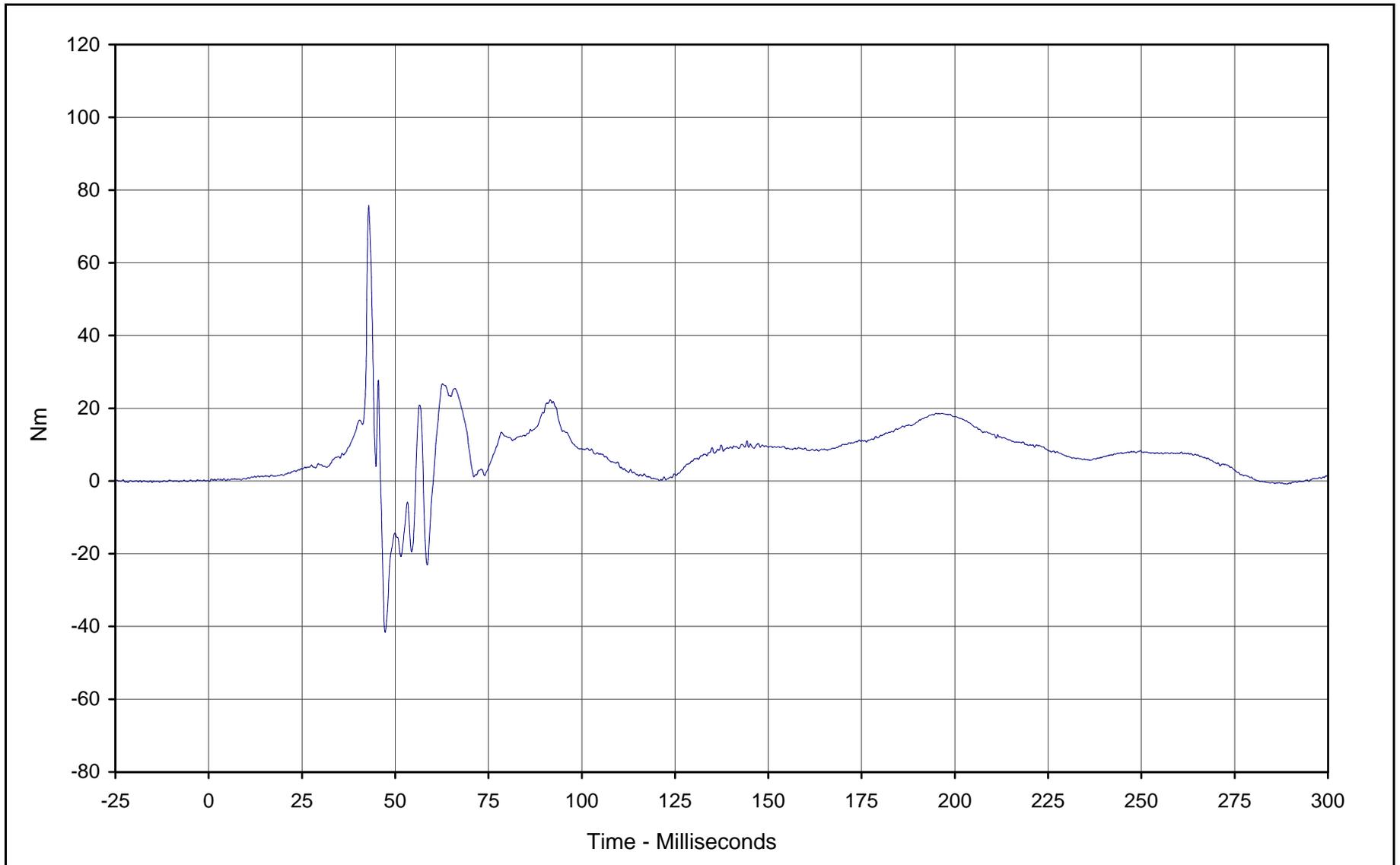
Curve Description: Driver Left Upper Tibia Moment Y  
Maximum Value: 17.7 at 120.2 Milliseconds  
Minimum Value: -111.8 at 38.8 Milliseconds  
SAE Filter Class: 600  
Date of Test: 11/17/99  
Curve Number: FIL-026

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-44



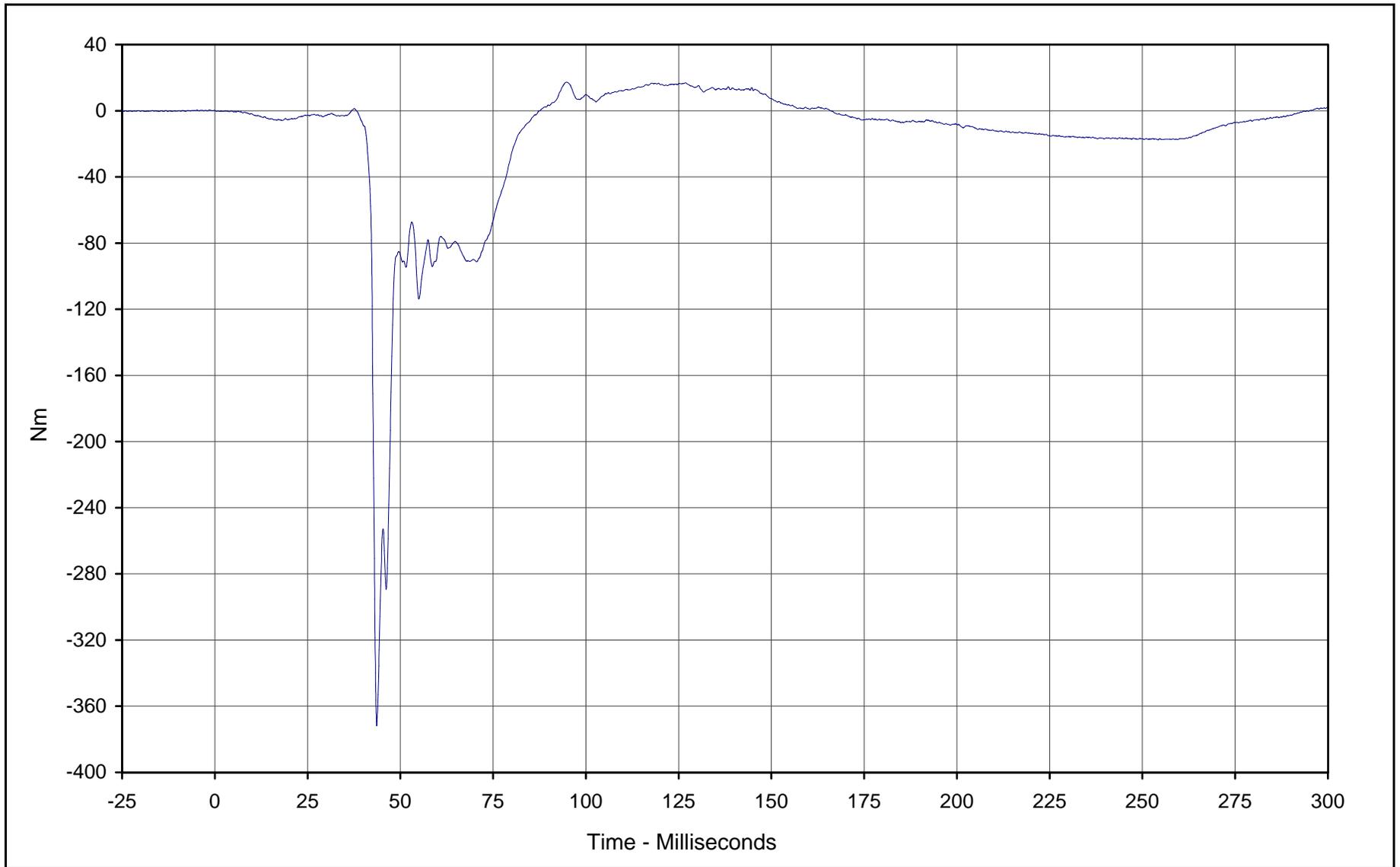
Curve Description: Driver Right Upper Tibia Moment X  
Maximum Value: 75.7 at 42.9 Milliseconds  
Minimum Value: -41.7 at 47.3 Milliseconds  
SAE Filter Class: 600  
Date of Test: 11/17/99  
Curve Number: FIL-027

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-45



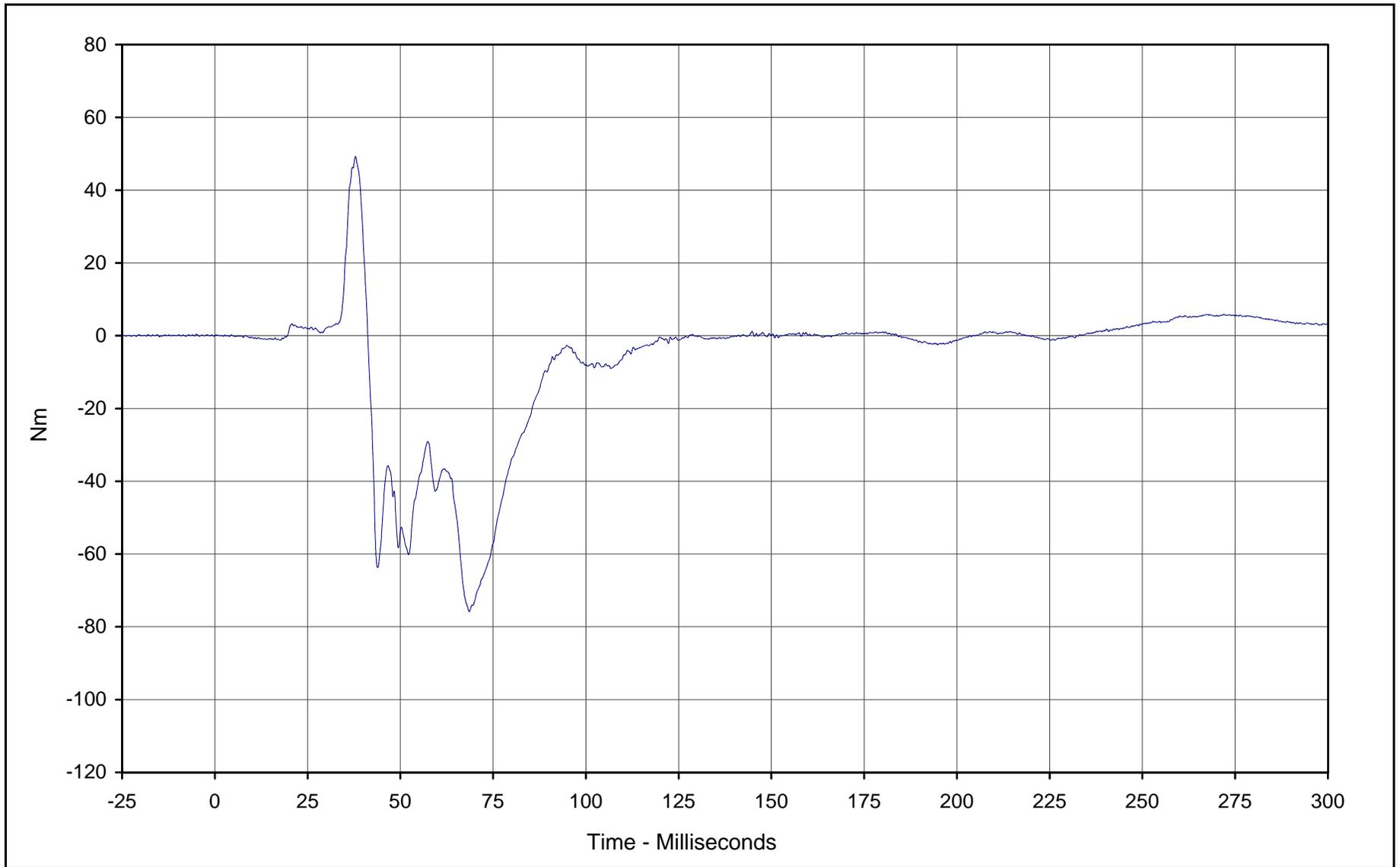
Curve Description: Driver Right Upper Tibia Moment Y  
Maximum Value: 17.3 at 94.8 Milliseconds  
Minimum Value: -371.6 at 43.6 Milliseconds  
SAE Filter Class: 600  
Date of Test: 11/17/99  
Curve Number: FIL-028

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-46



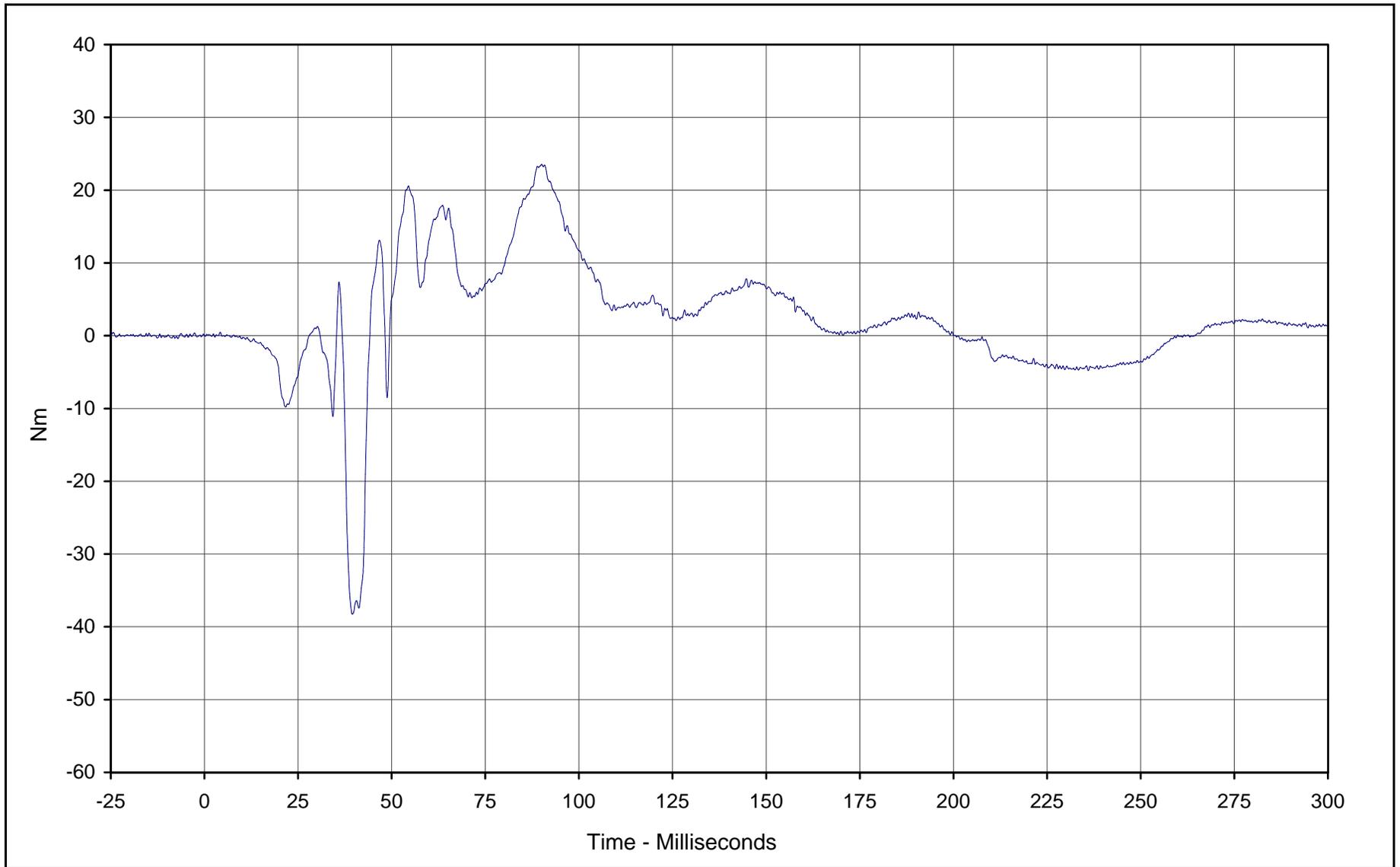
Curve Description: Driver Left Lower Tibia Moment X  
Maximum Value: 49.3 at 37.9 Milliseconds  
Minimum Value: -75.8 at 68.6 Milliseconds  
SAE Filter Class: 600  
Date of Test: 11/17/99  
Curve Number: FIL-029

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-47



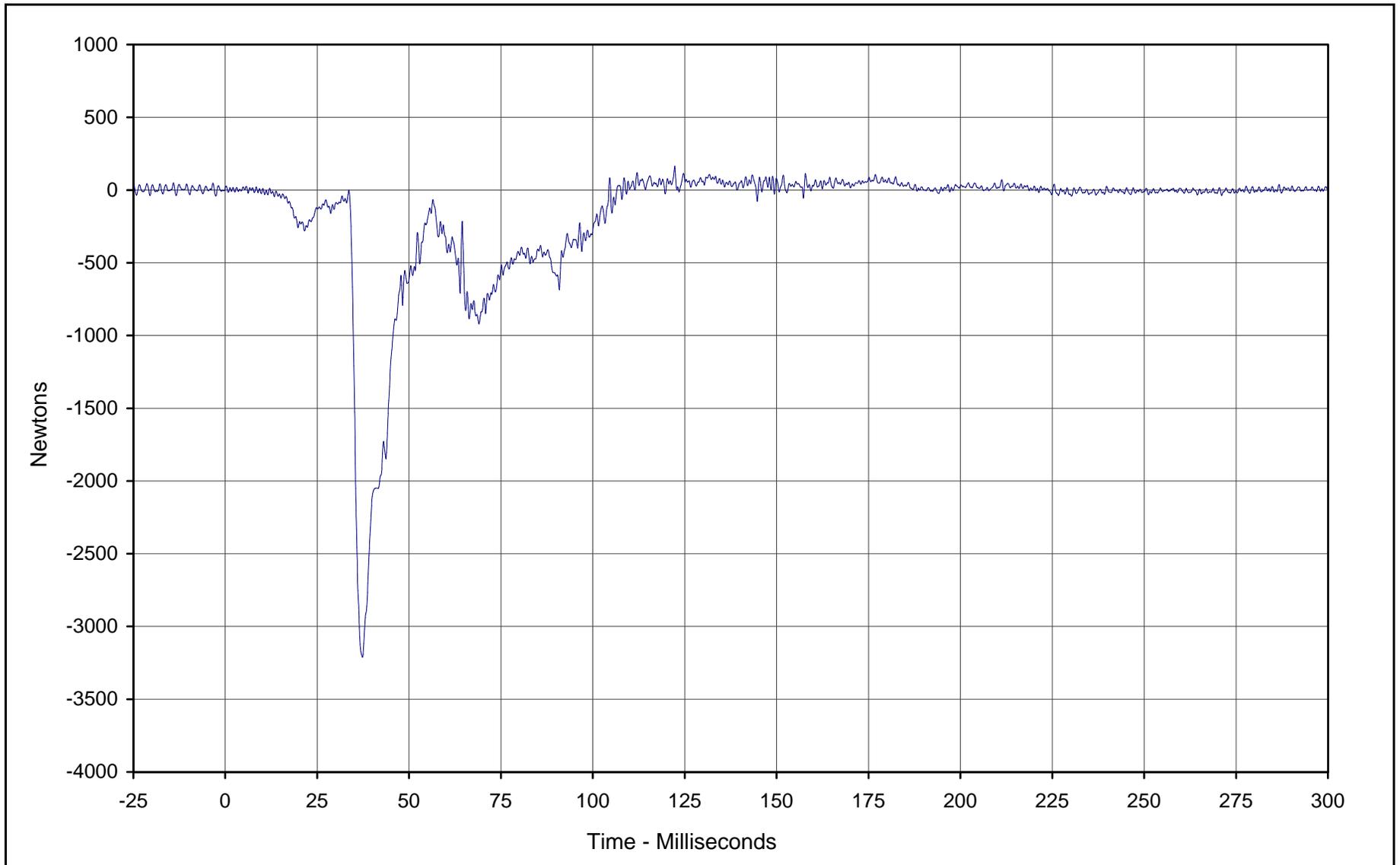
Curve Description: Driver Left Lower Tibia Moment Y  
Maximum Value: 23.5 at 90.0 Milliseconds  
Minimum Value: -38.2 at 39.5 Milliseconds  
SAE Filter Class: 600  
Date of Test: 11/17/99  
Curve Number: FIL-030

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-48



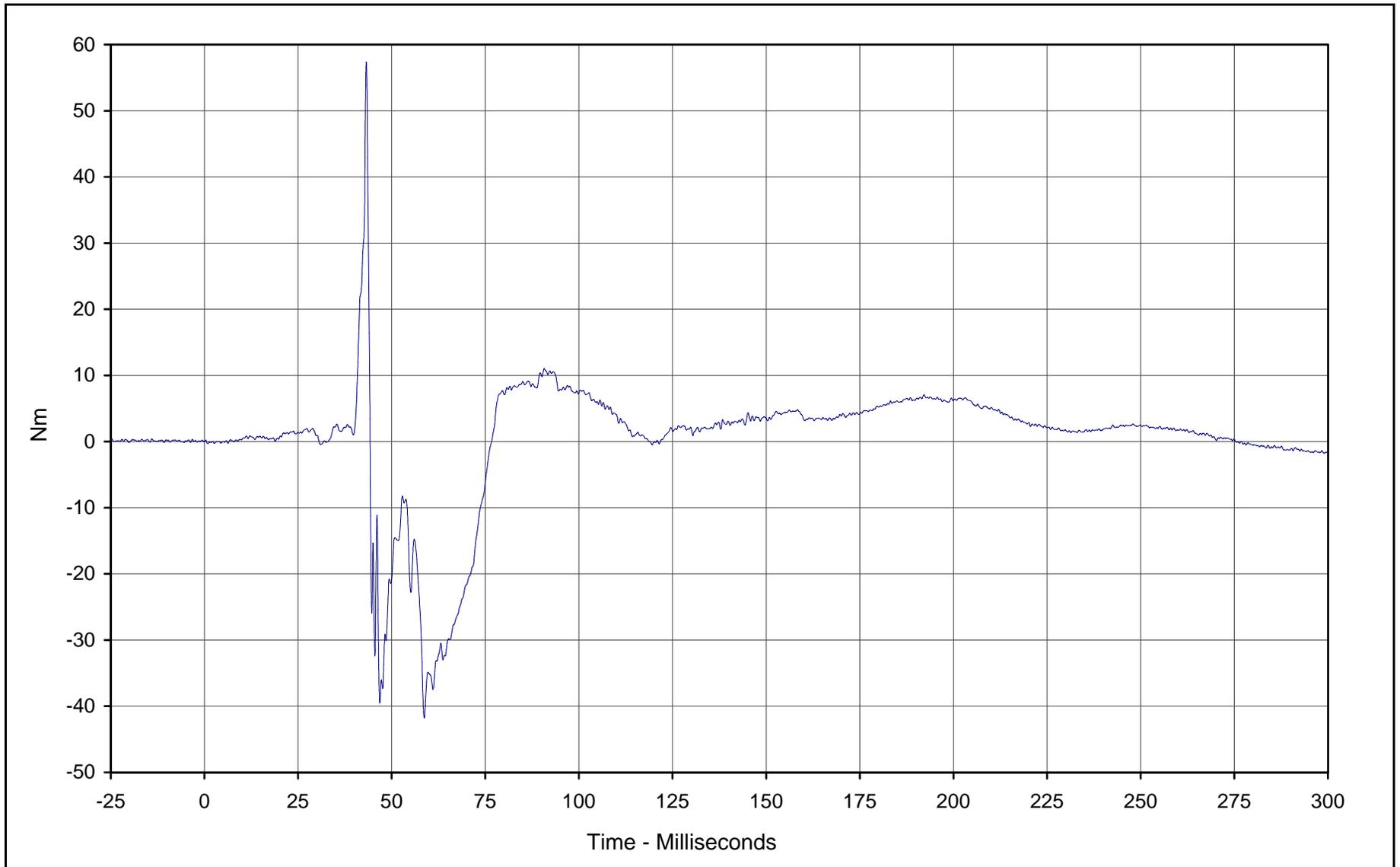
Curve Description: Driver Left Lower Tibia Force Z  
Maximum Value: 164.0 at 122.3 Milliseconds  
Minimum Value: -3212.1 at 37.3 Milliseconds  
SAE Filter Class: 600  
Date of Test: 11/17/99  
Curve Number: FIL-031

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-49



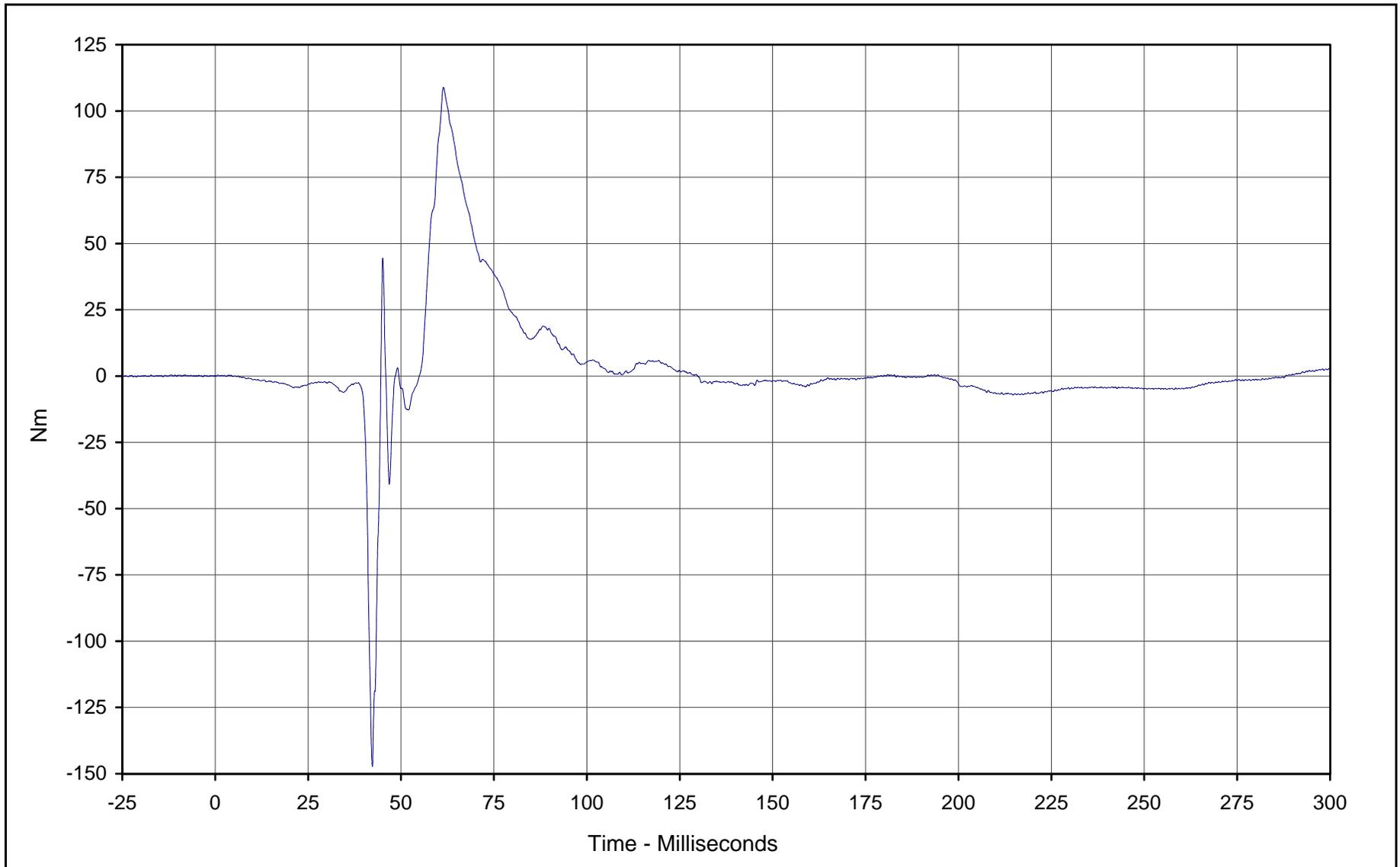
Curve Description: Driver Right Lower Tibia Moment X  
Maximum Value: 57.3 at 43.2 Milliseconds  
Minimum Value: -41.8 at 58.7 Milliseconds  
SAE Filter Class: 600  
Date of Test: 11/17/99  
Curve Number: FIL-032

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-50



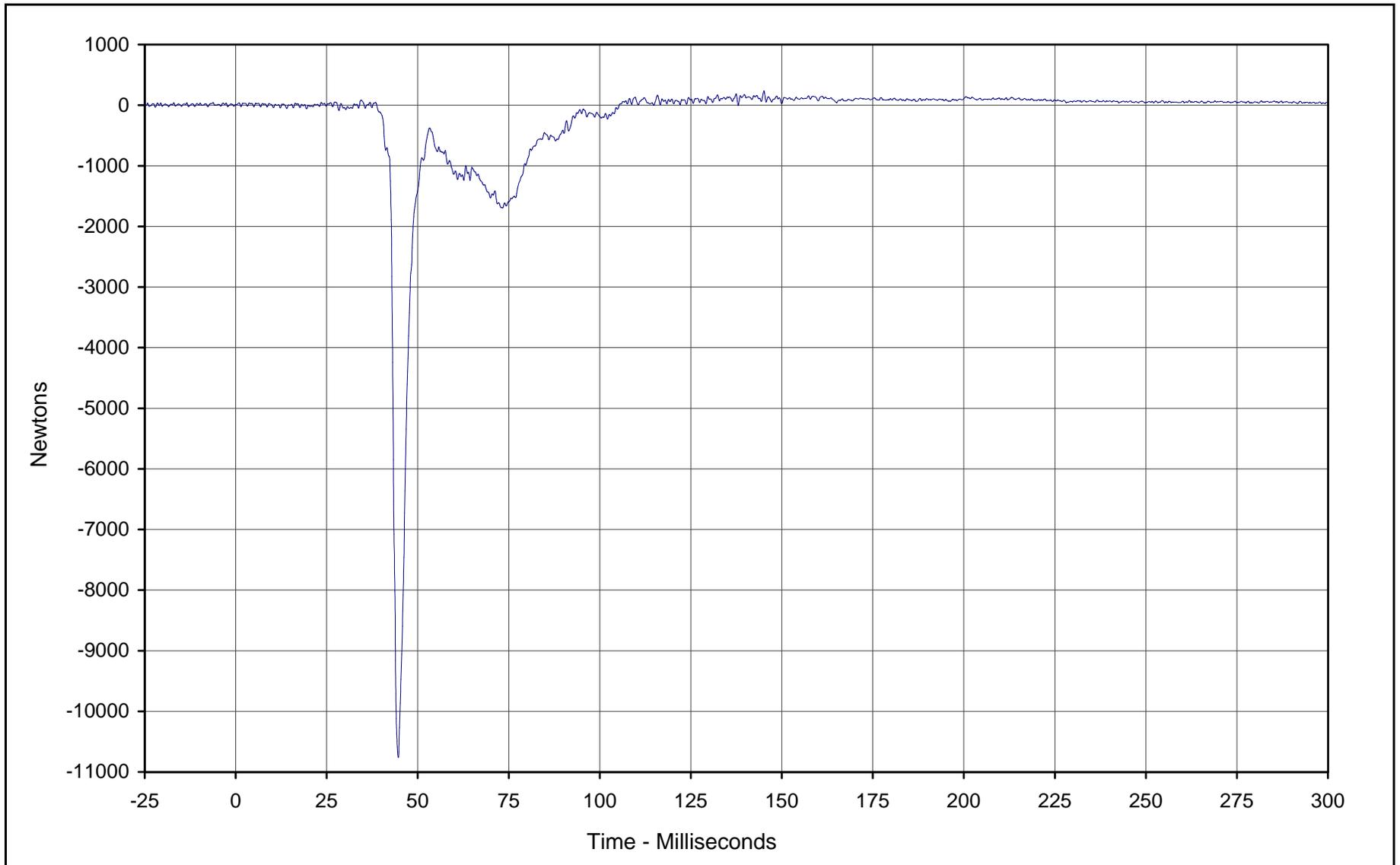
Curve Description: Driver Right Lower Tibia Moment Y  
Maximum Value: 108.9 at 61.4 Milliseconds  
Minimum Value: -147.3 at 42.3 Milliseconds  
SAE Filter Class: 600  
Date of Test: 11/17/99  
Curve Number: FIL-033

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-51



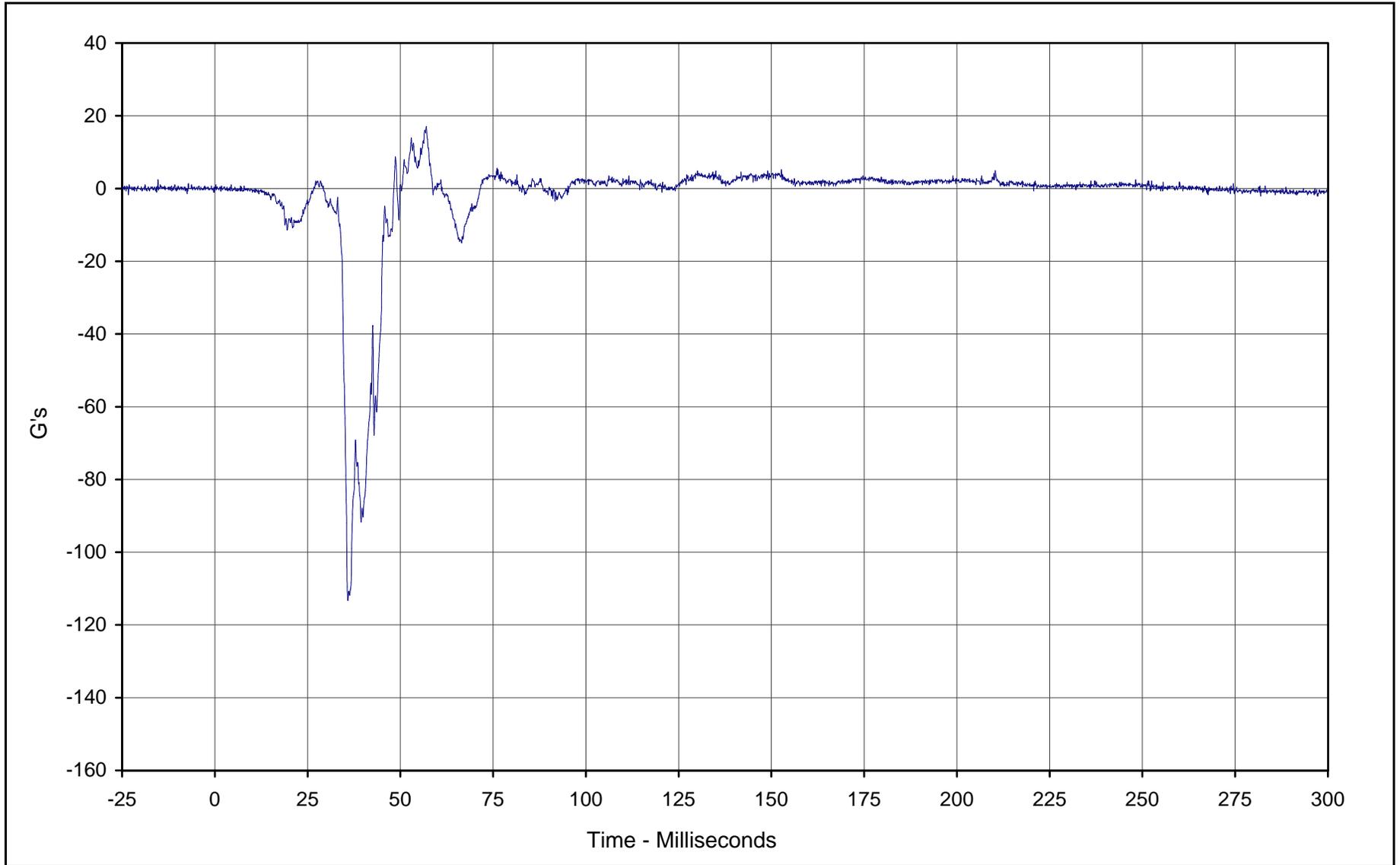
Curve Description: Driver Right Lower Tibia Force Z  
Maximum Value: 236.9 at 145.1 Milliseconds  
Minimum Value: -10760.7 at 44.7 Milliseconds  
SAE Filter Class: 600  
Date of Test: 11/17/99  
Curve Number: FIL-034

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-52



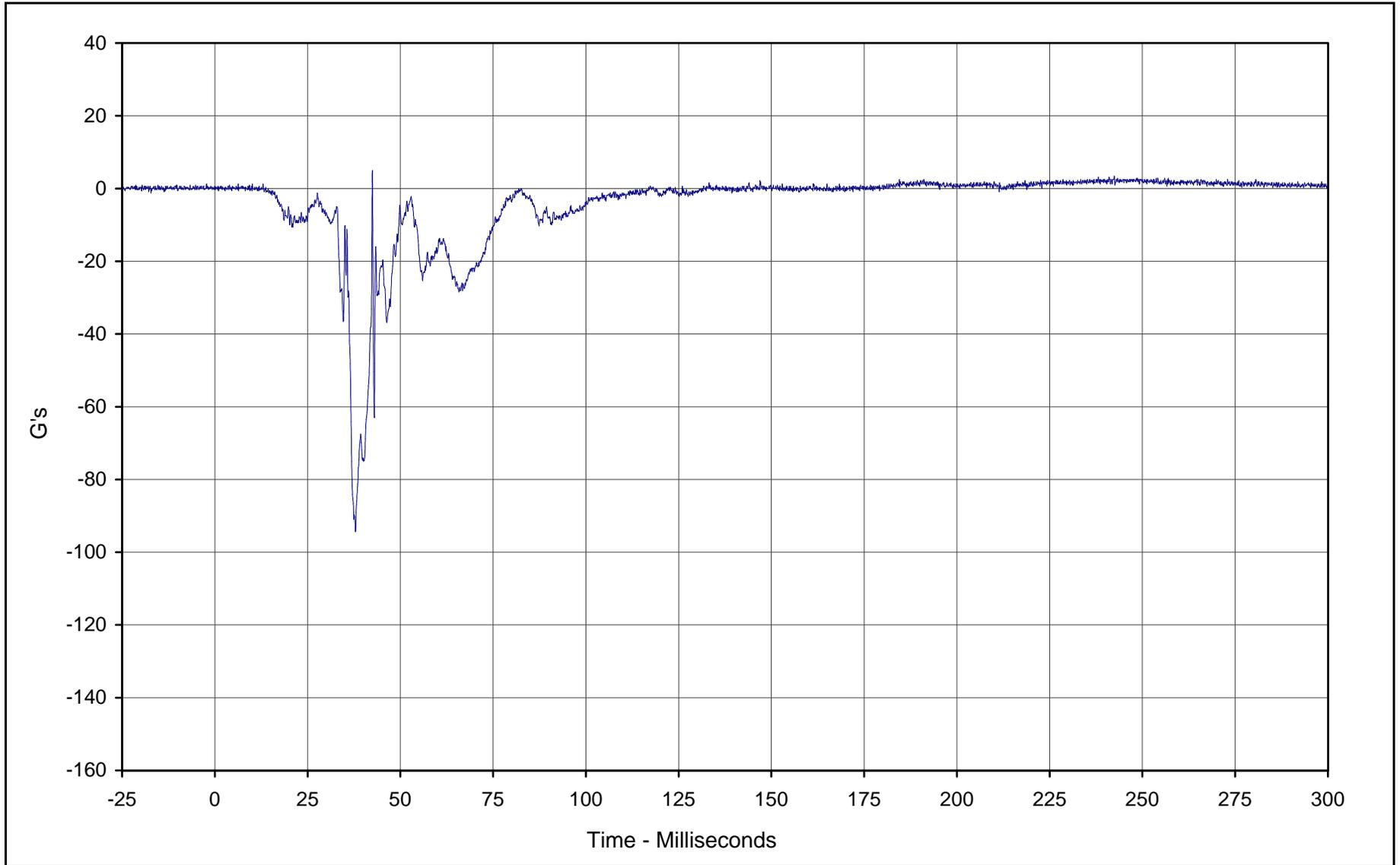
Curve Description: Driver Left Foot Aft X  
Maximum Value: 17.0 at 57.0 Milliseconds  
Minimum Value: -113.2 at 35.8 Milliseconds  
SAE Filter Class: 1000  
Date of Test: 11/17/99  
Curve Number: FIL-035

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-53



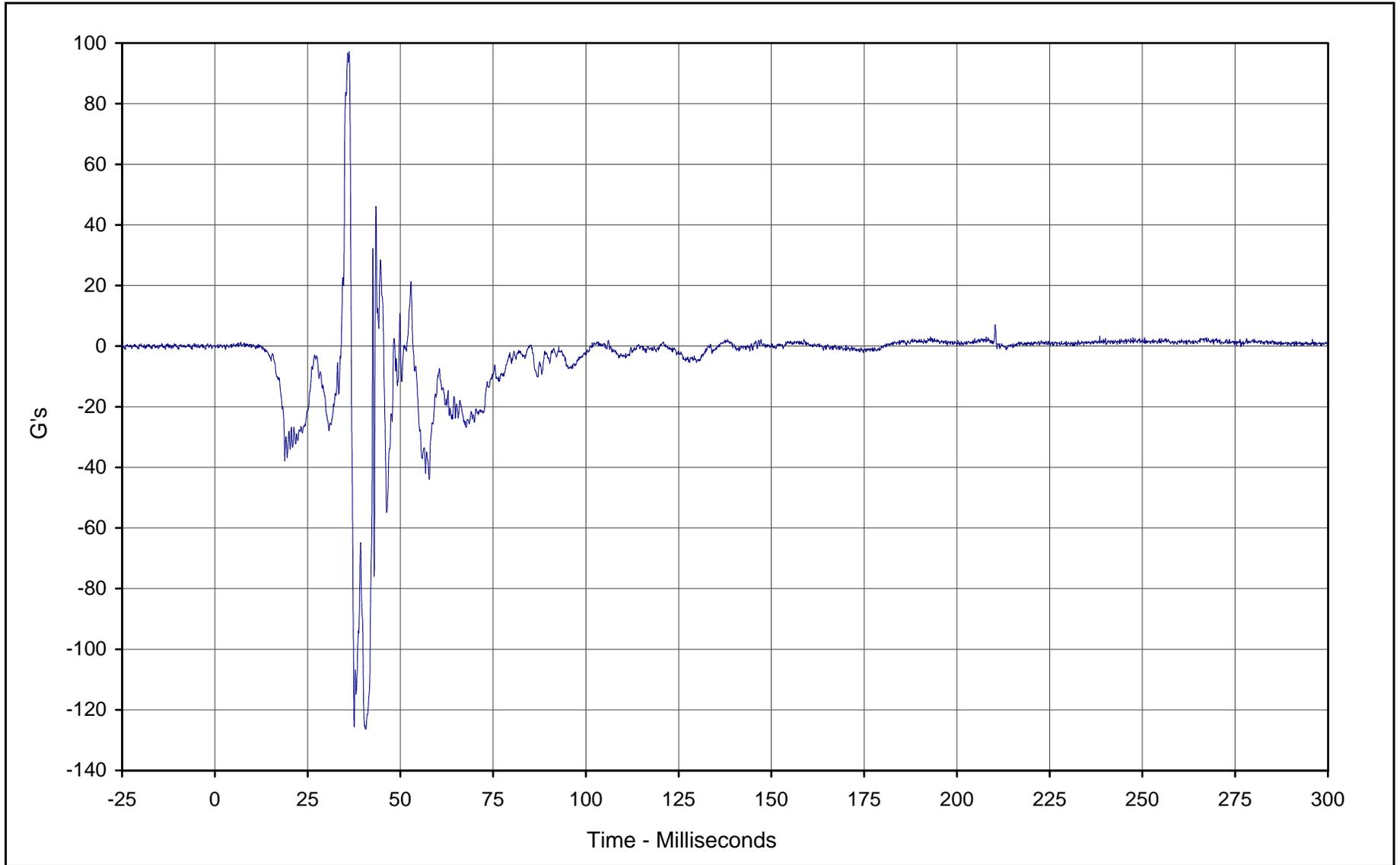
Curve Description: Driver Left Foot Aft Z  
Maximum Value: 4.7 at 42.5 Milliseconds  
Minimum Value: -94.4 at 37.9 Milliseconds  
SAE Filter Class: 1000  
Date of Test: 11/17/99  
Curve Number: FIL-036

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-54



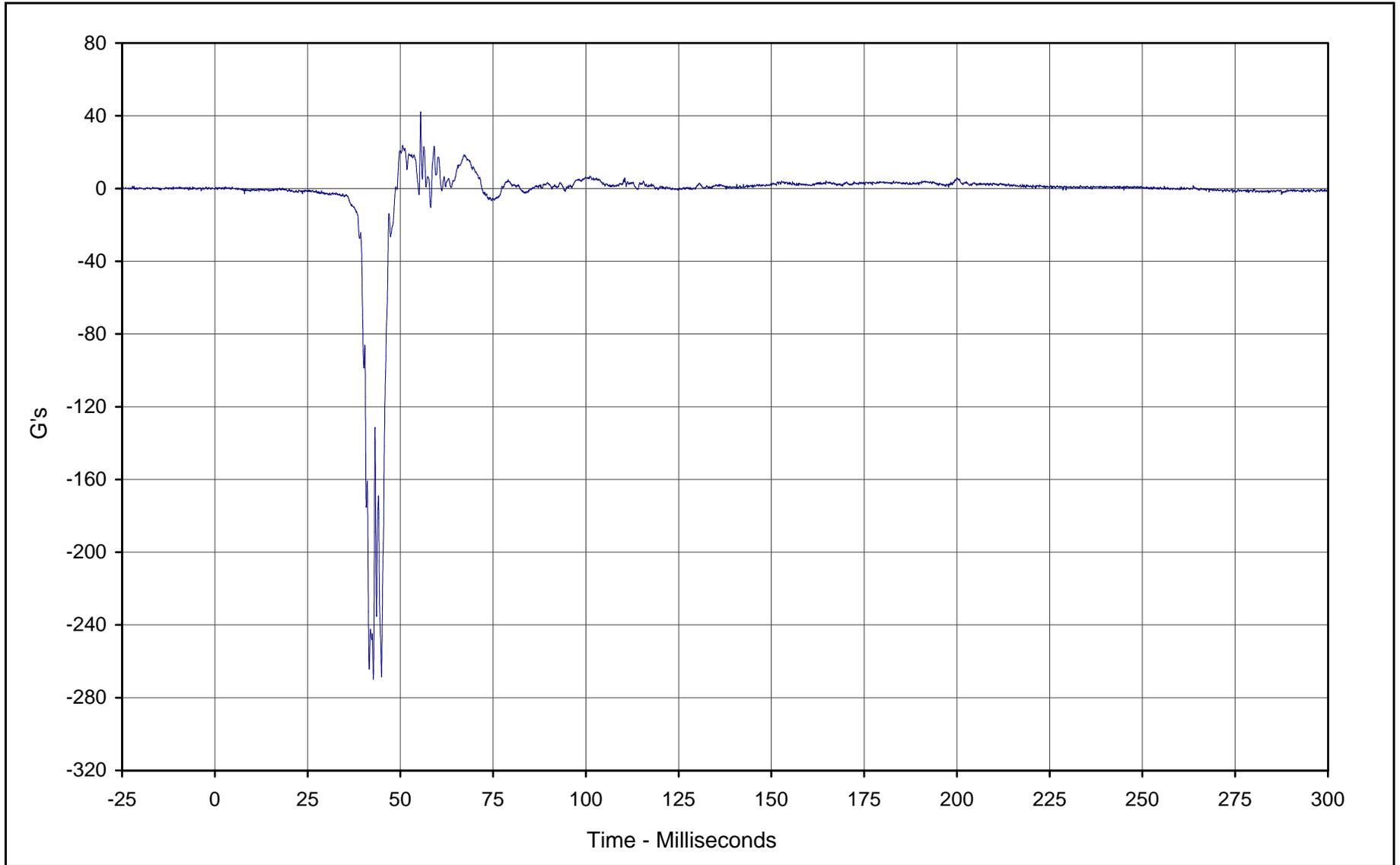
Curve Description: Driver Left Foot Fore Z  
Maximum Value: 97.2 at 36.2 Milliseconds  
Minimum Value: -126.4 at 40.6 Milliseconds  
SAE Filter Class: 1000  
Date of Test: 11/17/99  
Curve Number: FIL-037

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-55



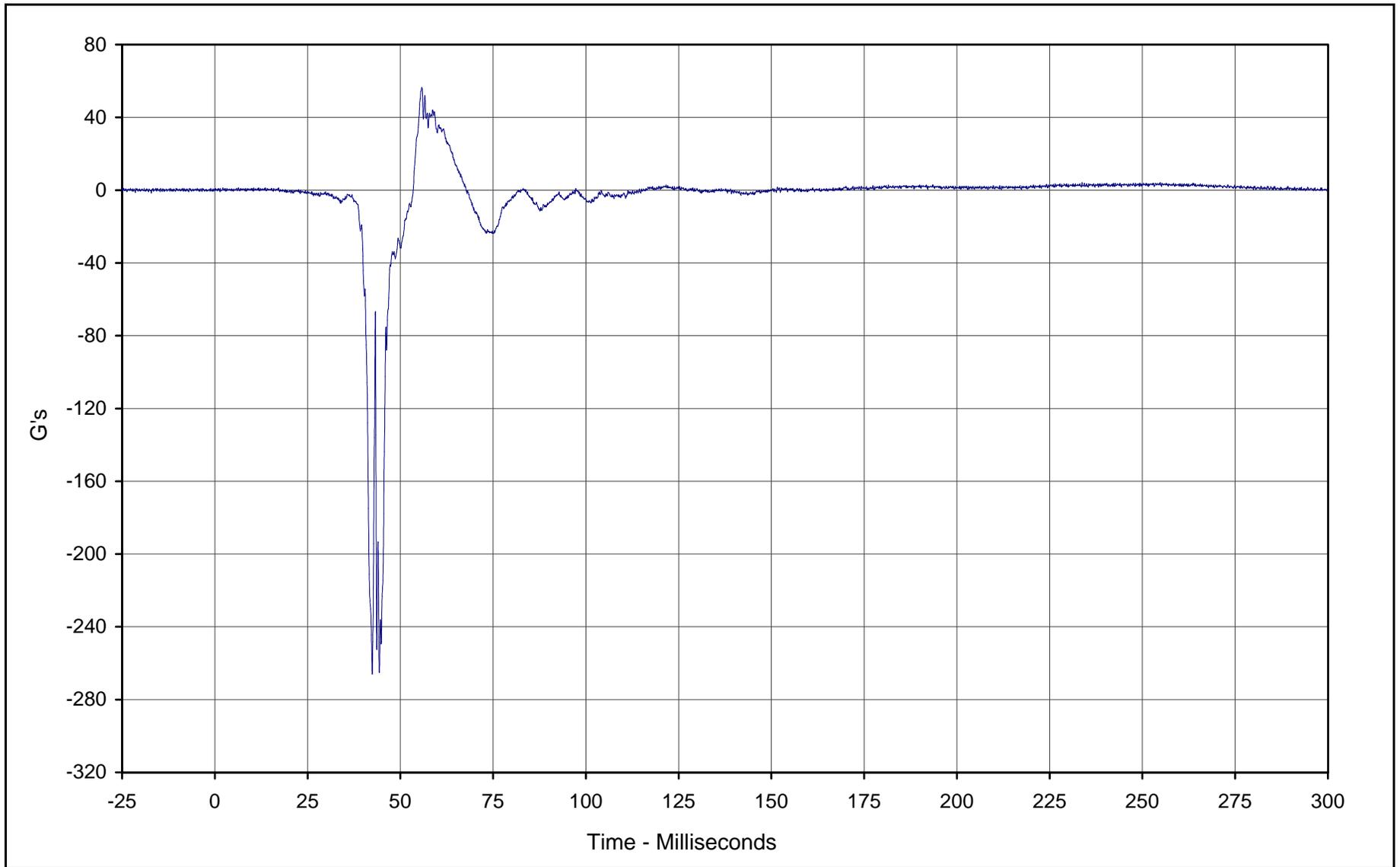
Curve Description: Driver Right Foot Aft X  
Maximum Value: 42.1 at 55.5 Milliseconds  
Minimum Value: -269.9 at 42.7 Milliseconds  
SAE Filter Class: 1000  
Date of Test: 11/17/99  
Curve Number: FIL-038

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-56



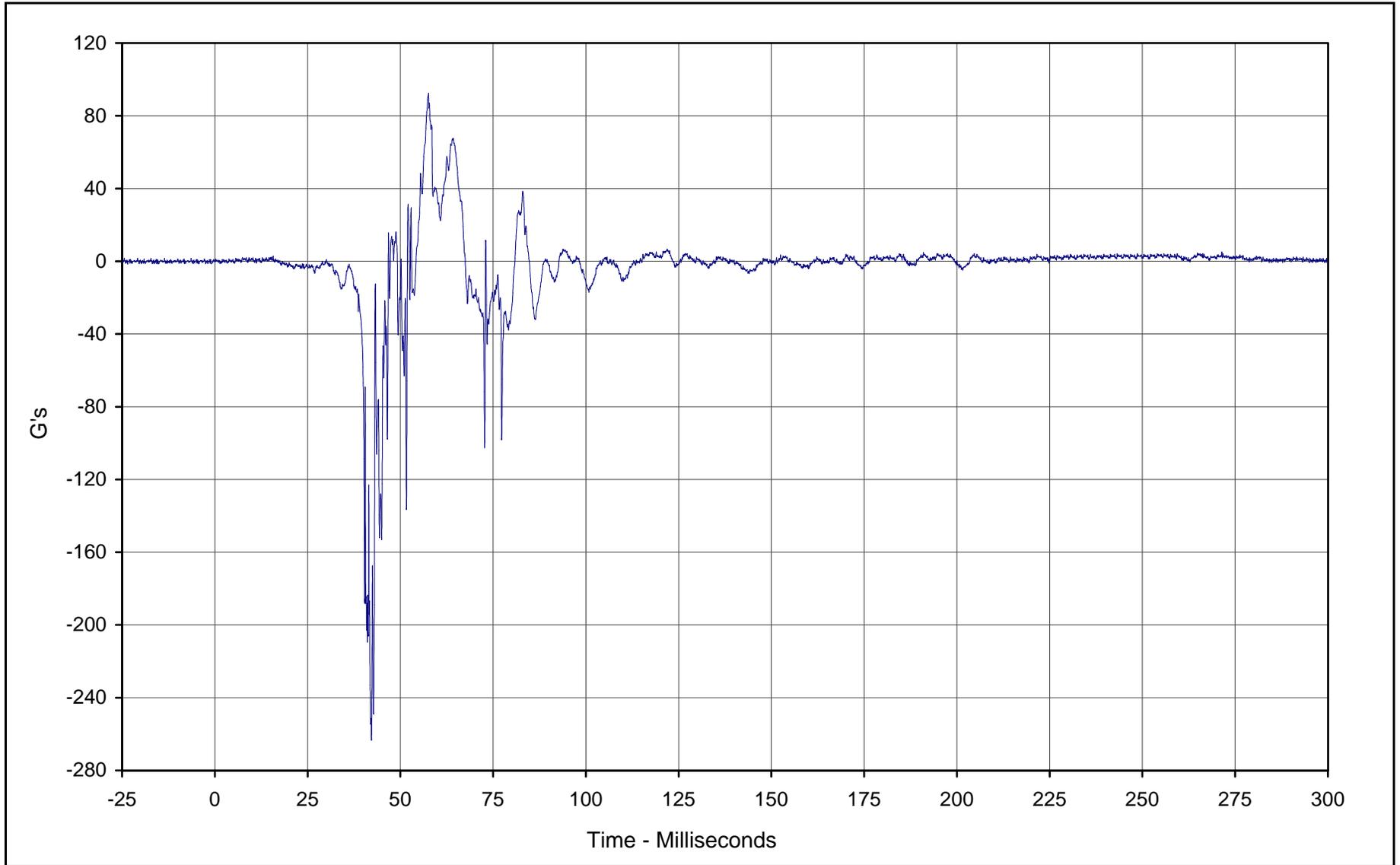
Curve Description: Driver Right Foot Aft Z  
Maximum Value: 56.5 at 55.8 Milliseconds  
Minimum Value: -266.1 at 42.4 Milliseconds  
SAE Filter Class: 1000  
Date of Test: 11/17/99  
Curve Number: FIL-039

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-57



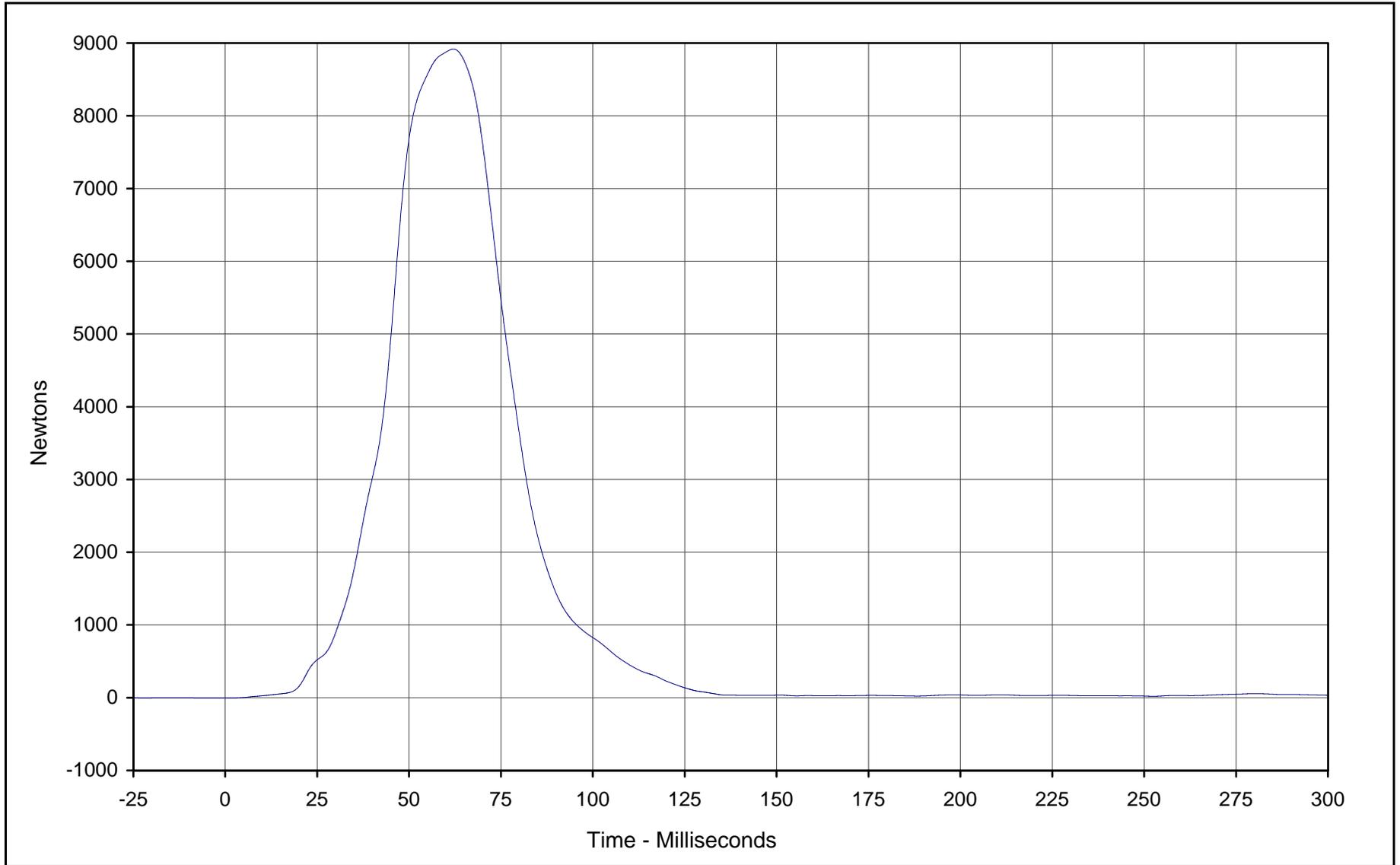
Curve Description: Driver Right Foot Fore Z  
Maximum Value: 92.2 at 57.6 Milliseconds  
Minimum Value: -263.2 at 42.2 Milliseconds  
SAE Filter Class: 1000  
Date of Test: 11/17/99  
Curve Number: FIL-040

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KAR20001-02

B-58



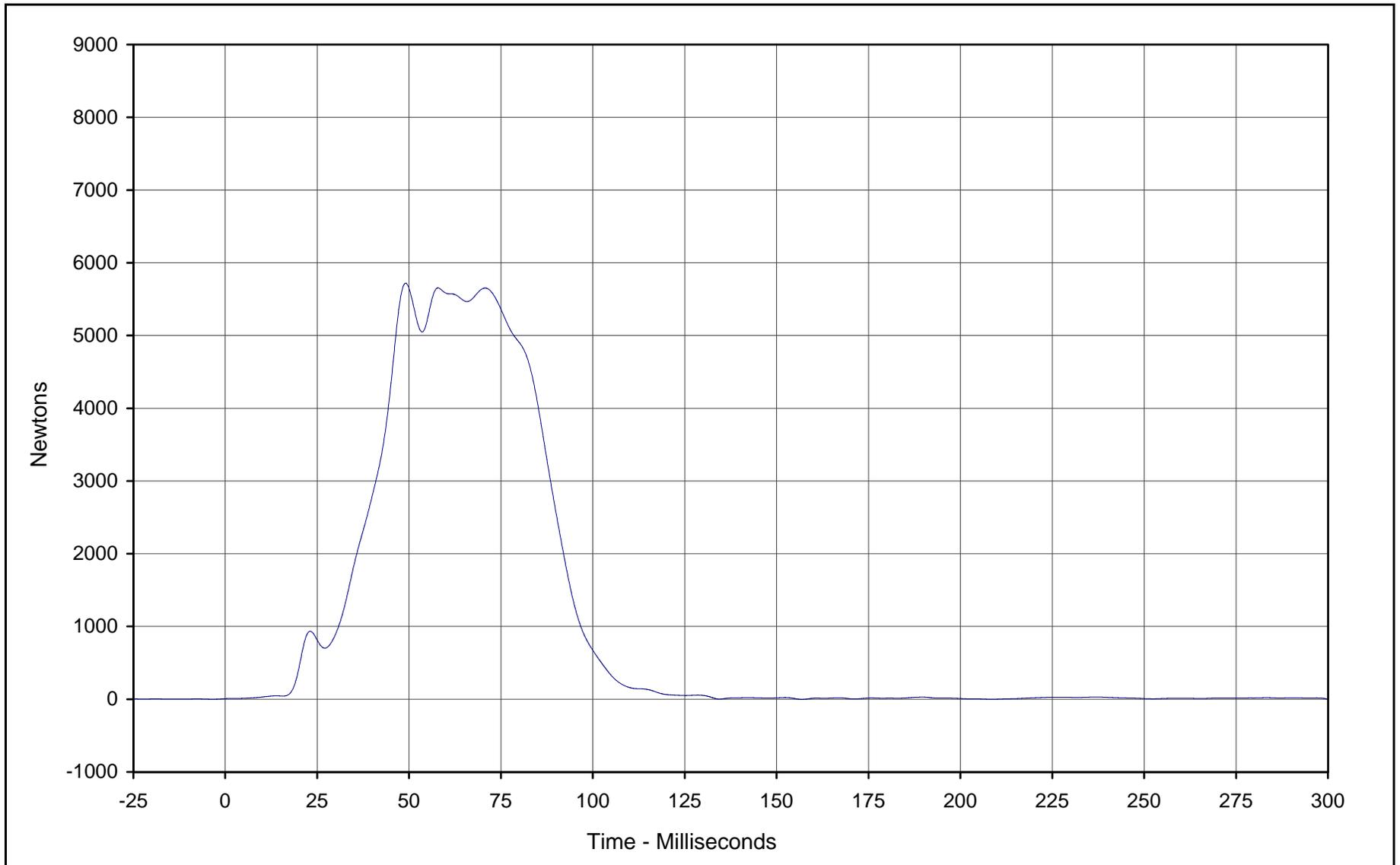
Curve Description: Driver Lap Belt Force  
Maximum Value: 8917.7 at 62.0 Milliseconds  
Minimum Value: -7.3 at 0.0 Milliseconds  
SAE Filter Class: 60  
Date of Test: 11/17/99  
Curve Number: FIL-041

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-59



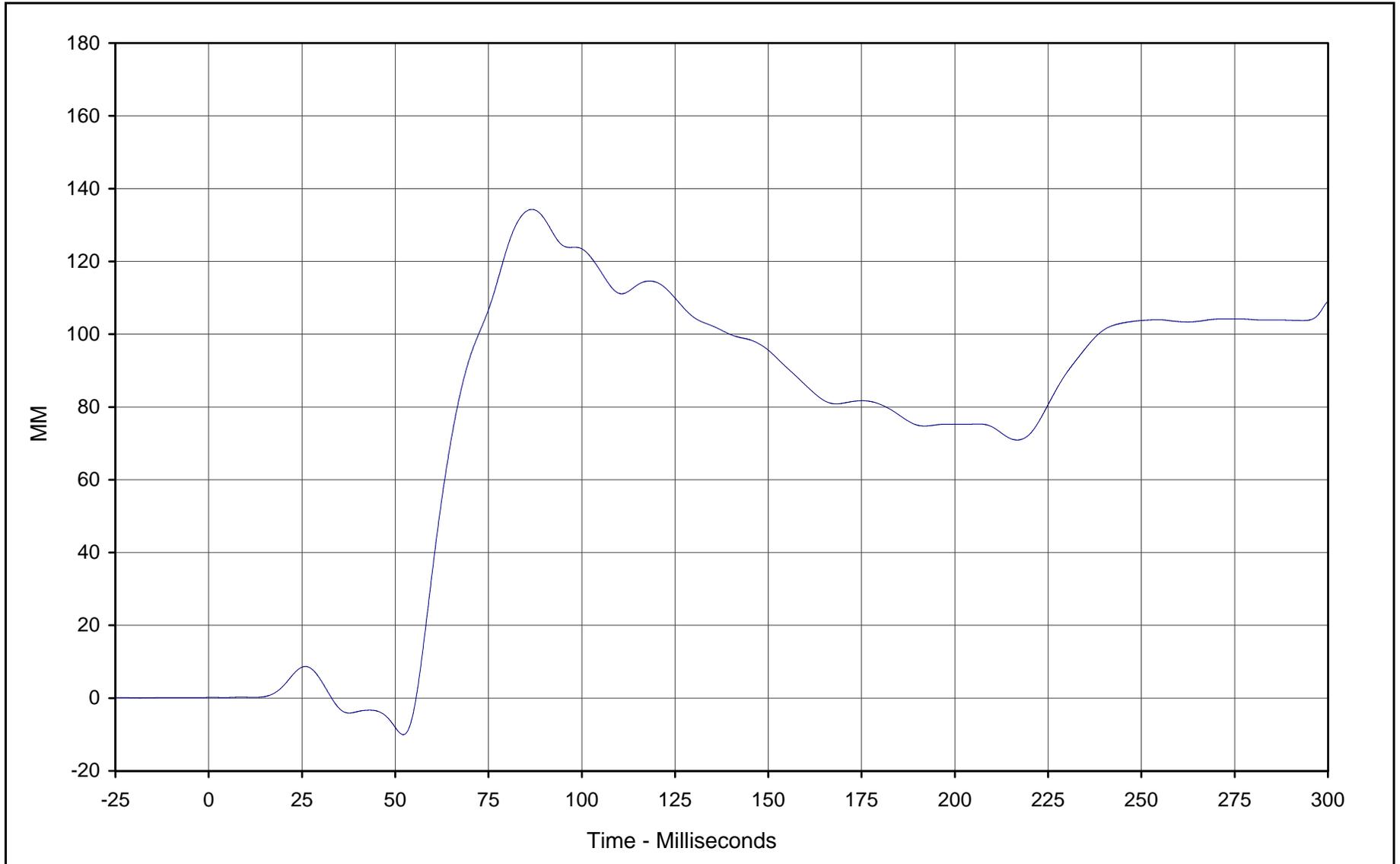
Curve Description: Driver Shoulder Belt Force  
Maximum Value: 5719.8 at 49.1 Milliseconds  
Minimum Value: -2.7 at 156.9 Milliseconds  
SAE Filter Class: 60  
Date of Test: 11/17/99  
Curve Number: FIL-042

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-60



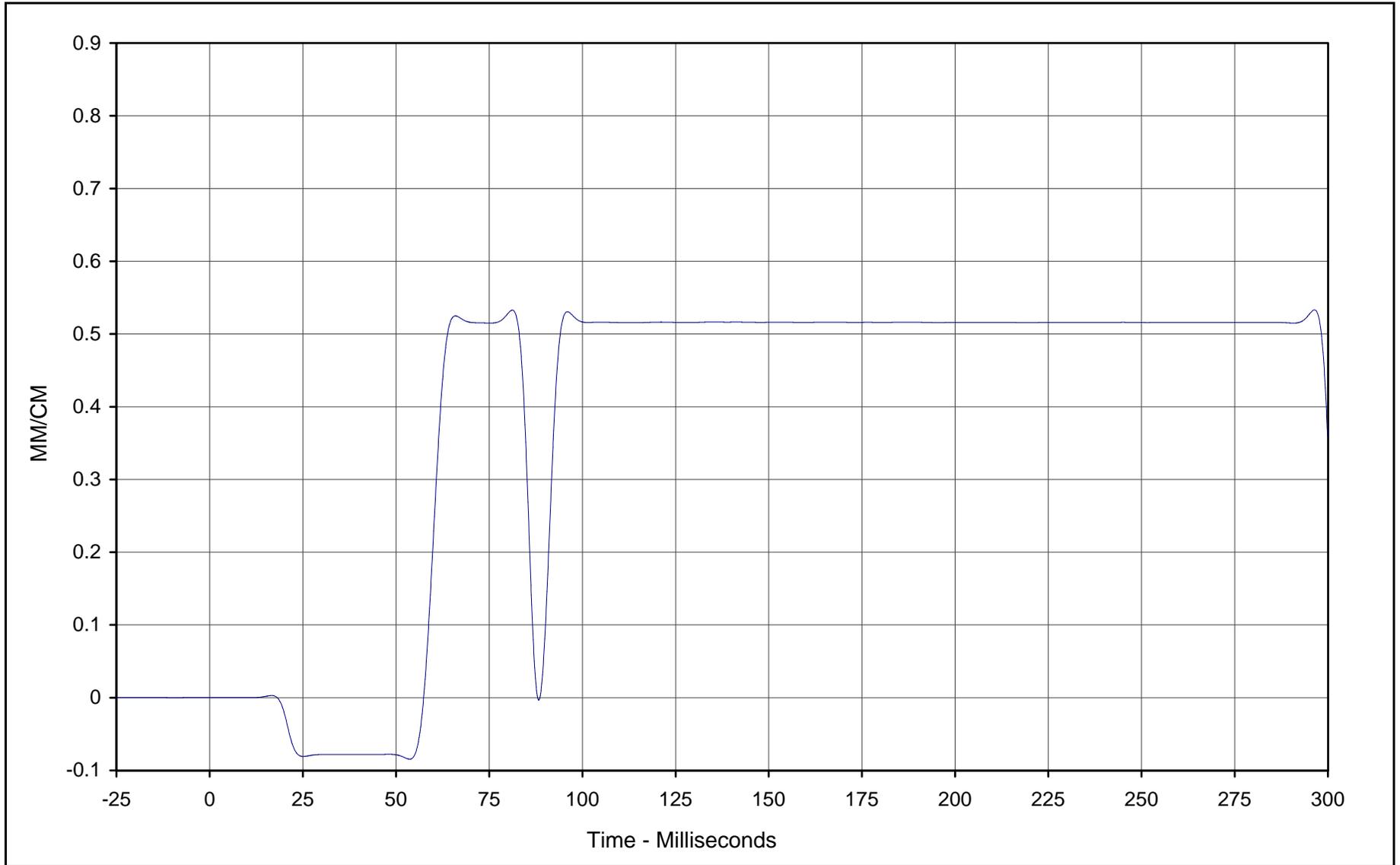
Curve Description: Driver Shoulder Belt Pullout  
Maximum Value: 134.3 at 86.6 Milliseconds  
Minimum Value: -10.0 at 52.1 Milliseconds  
SAE Filter Class: 60  
Date of Test: 11/17/99  
Curve Number: FIL-043

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-61



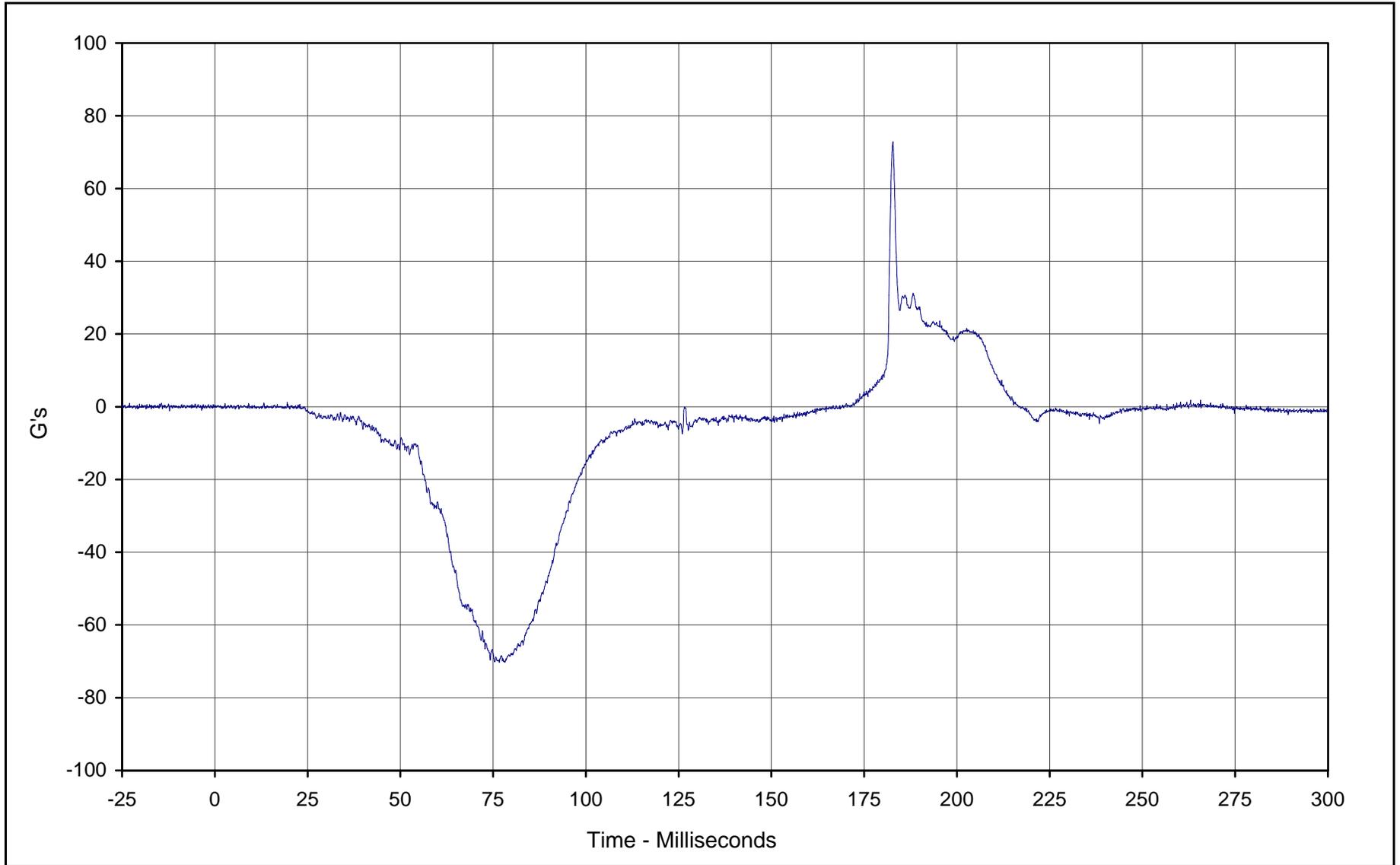
Curve Description: Driver Shoulder Belt Elongation  
Maximum Value: 0.53 at 296.4 Milliseconds  
Minimum Value: -0.08 at 53.7 Milliseconds  
SAE Filter Class: 60  
Date of Test: 11/17/99  
Curve Number: FIL-044

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-62



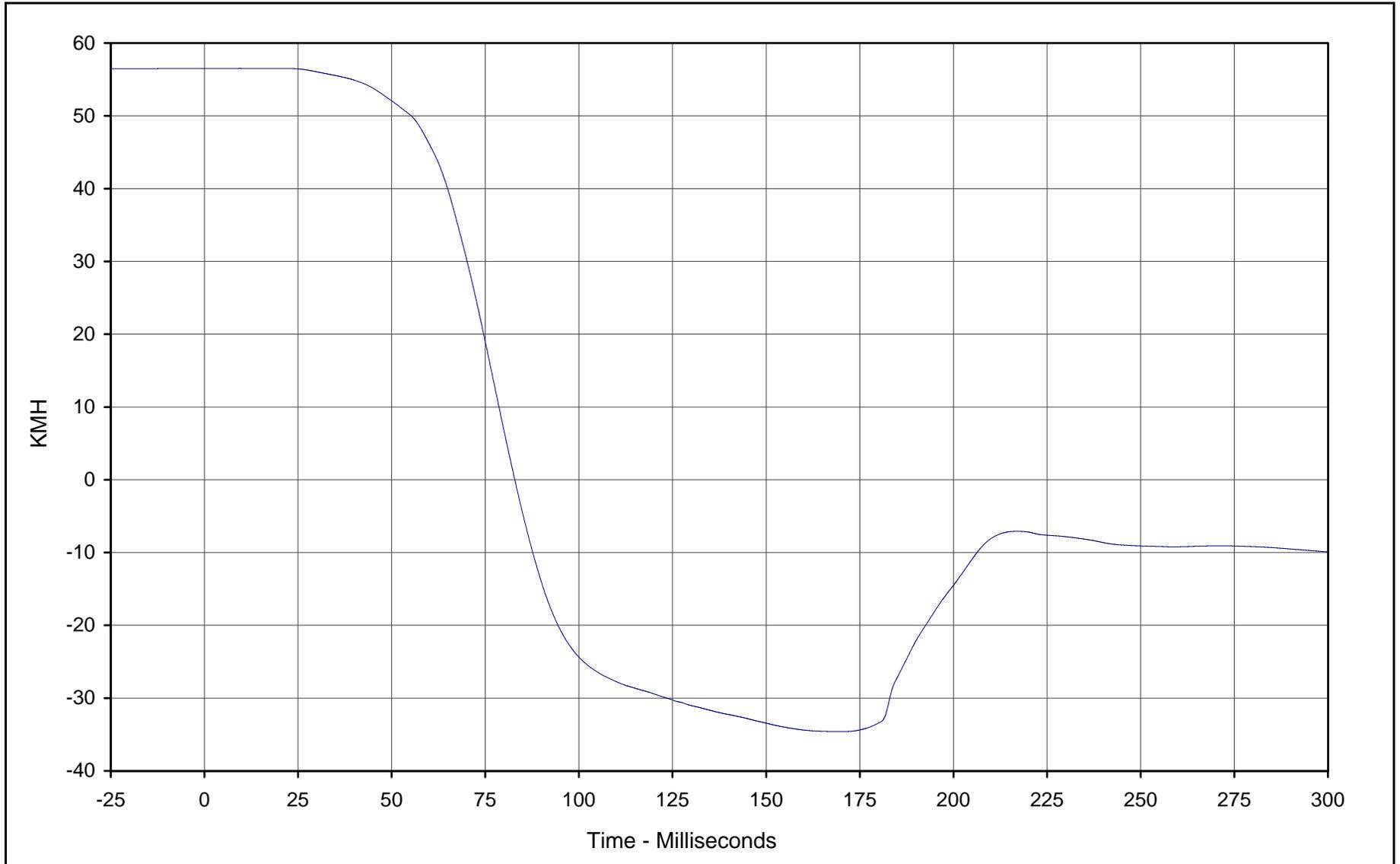
Curve Description: Passenger Head Primary X  
Maximum Value: 72.8 at 182.8 Milliseconds  
Minimum Value: -70.3 at 76.7 Milliseconds  
SAE Filter Class: 1000  
Date of Test: 11/17/99  
Curve Number: FIL-045

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-63



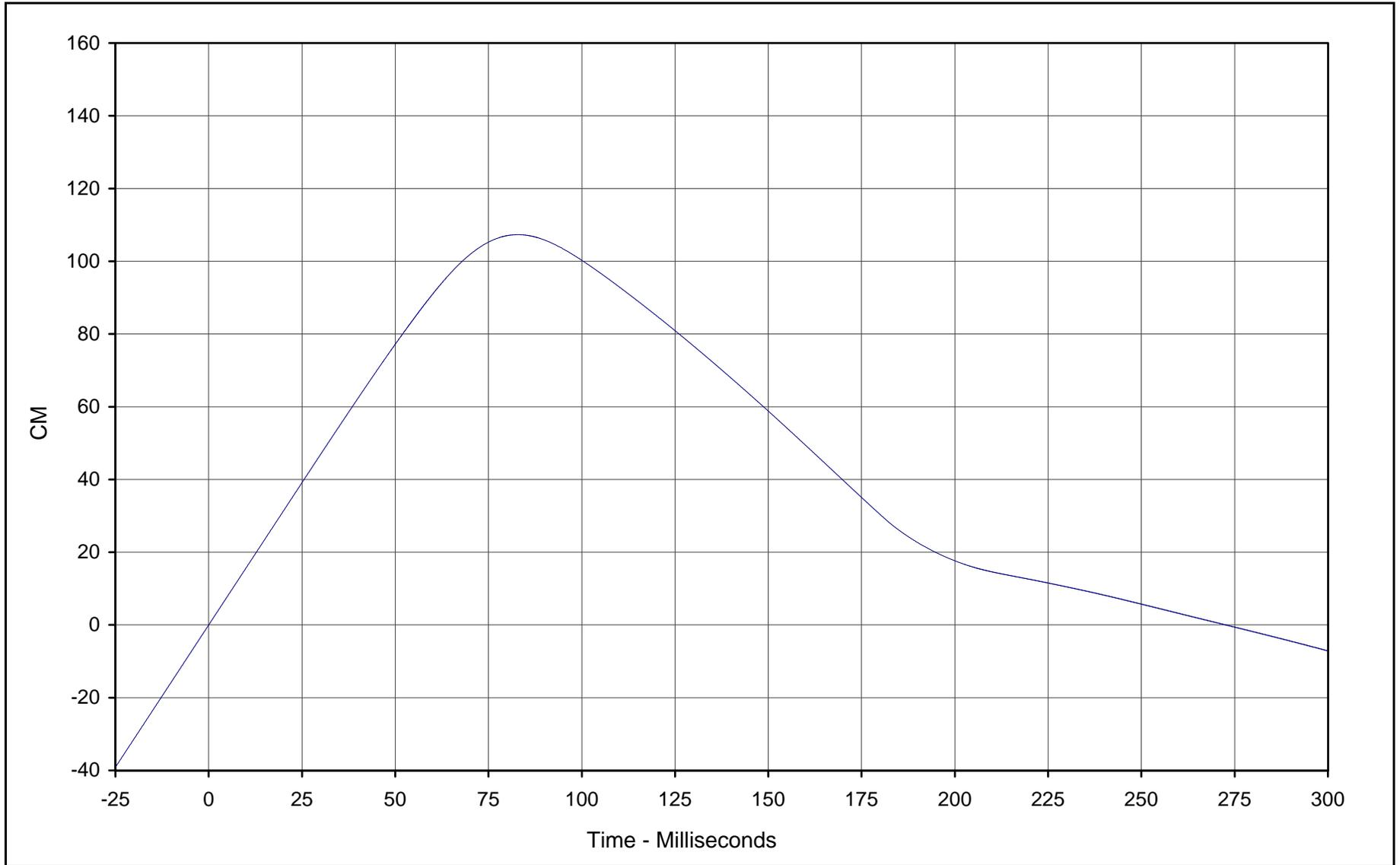
Curve Description: Passenger Head Primary X Velocity  
Maximum Value: 56.5 at 9.5 Milliseconds  
Minimum Value: -34.6 at 169.1 Milliseconds  
SAE Filter Class: 180  
Date of Test: 11/17/99  
Curve Number: IN1-045

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-64



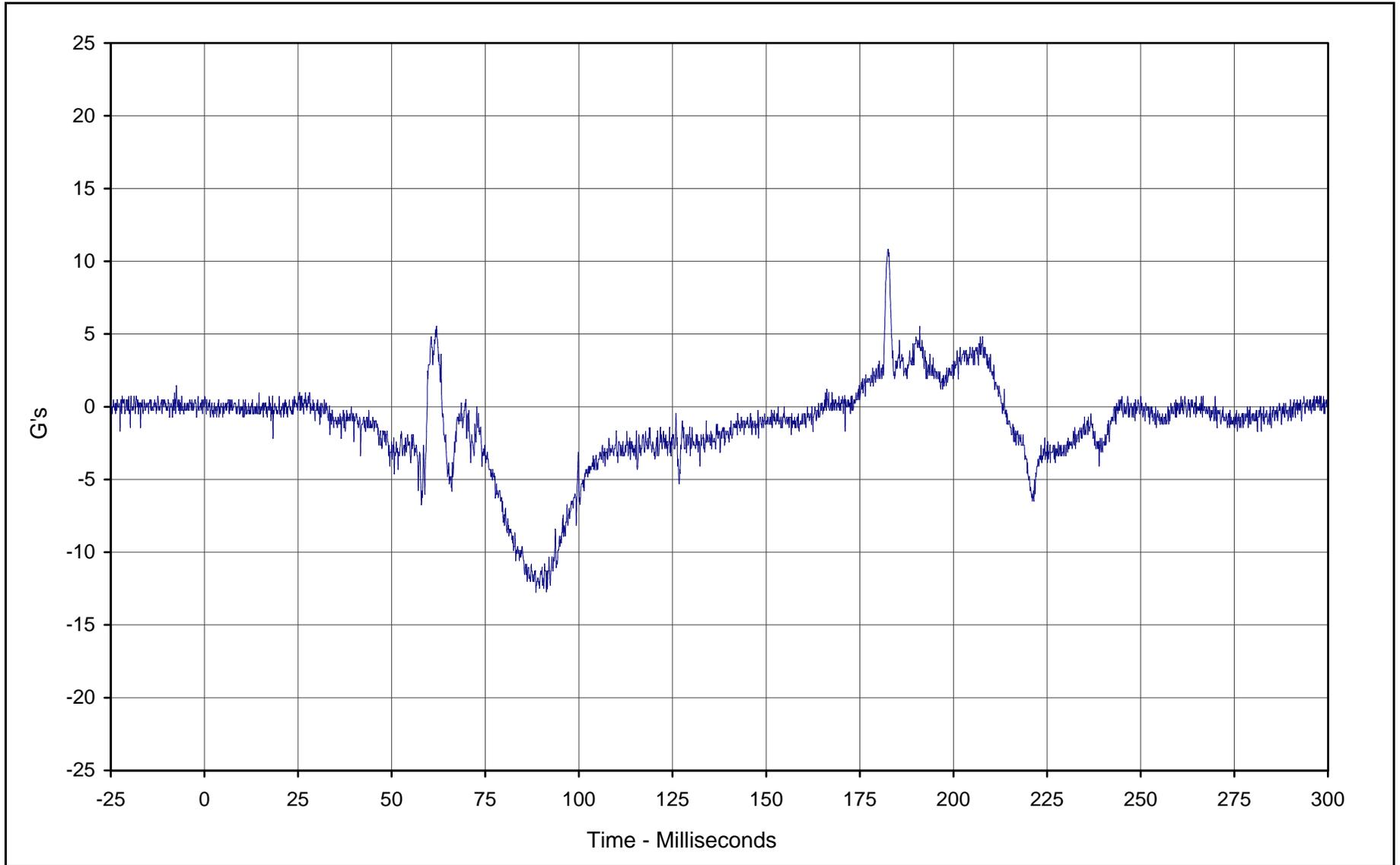
Curve Description: Passenger Head Primary X Displ.  
Maximum Value: 107.3 at 82.9 Milliseconds  
Minimum Value: -7.1 at 299.9 Milliseconds  
SAE Filter Class: 180  
Date of Test: 11/17/99  
Curve Number: IN2-045

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-65



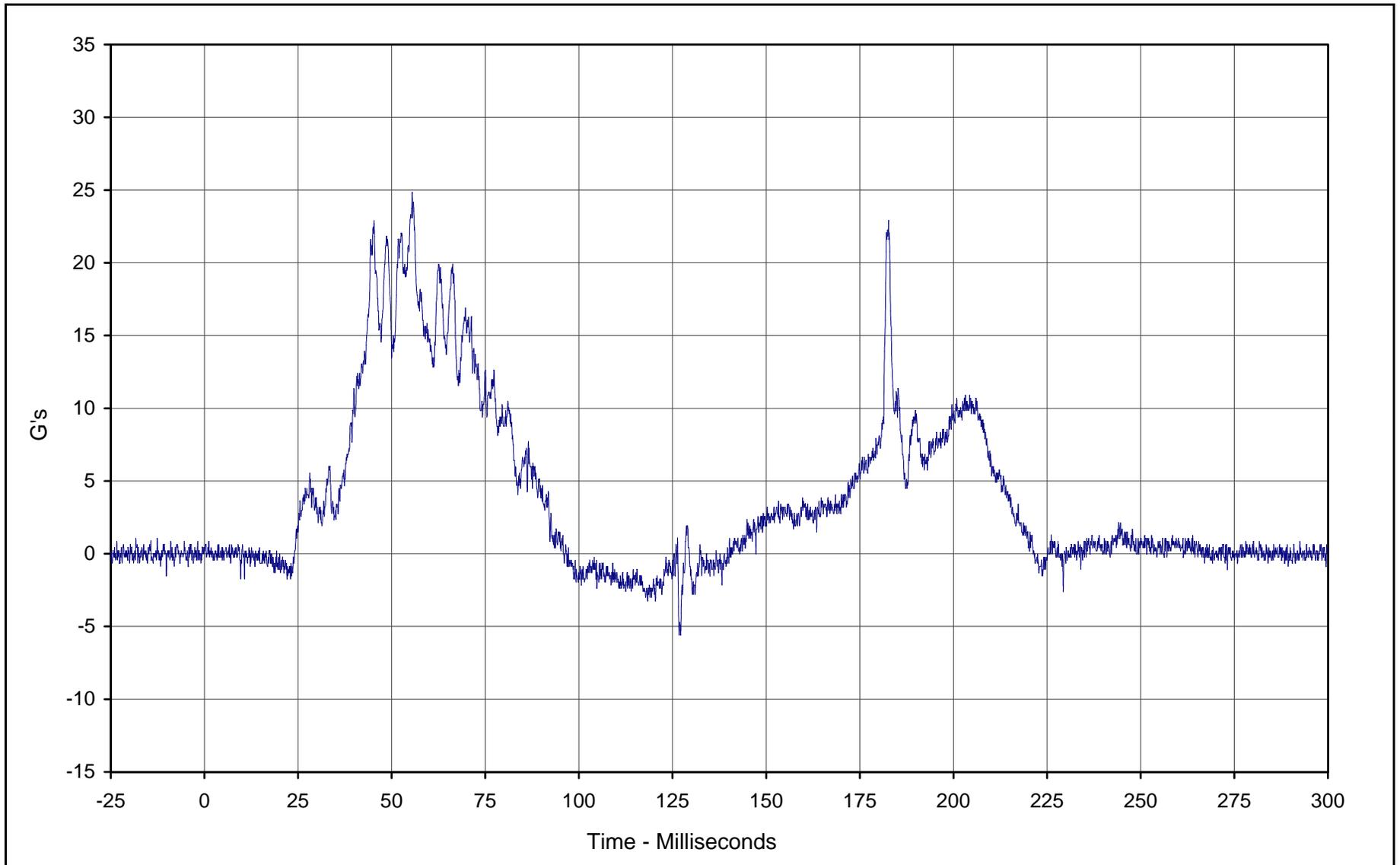
Curve Description: Passenger Head Primary Y  
Maximum Value: 10.8 at 182.5 Milliseconds  
Minimum Value: -12.7 at 88.5 Milliseconds  
SAE Filter Class: 1000  
Date of Test: 11/17/99  
Curve Number: FIL-046

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-66



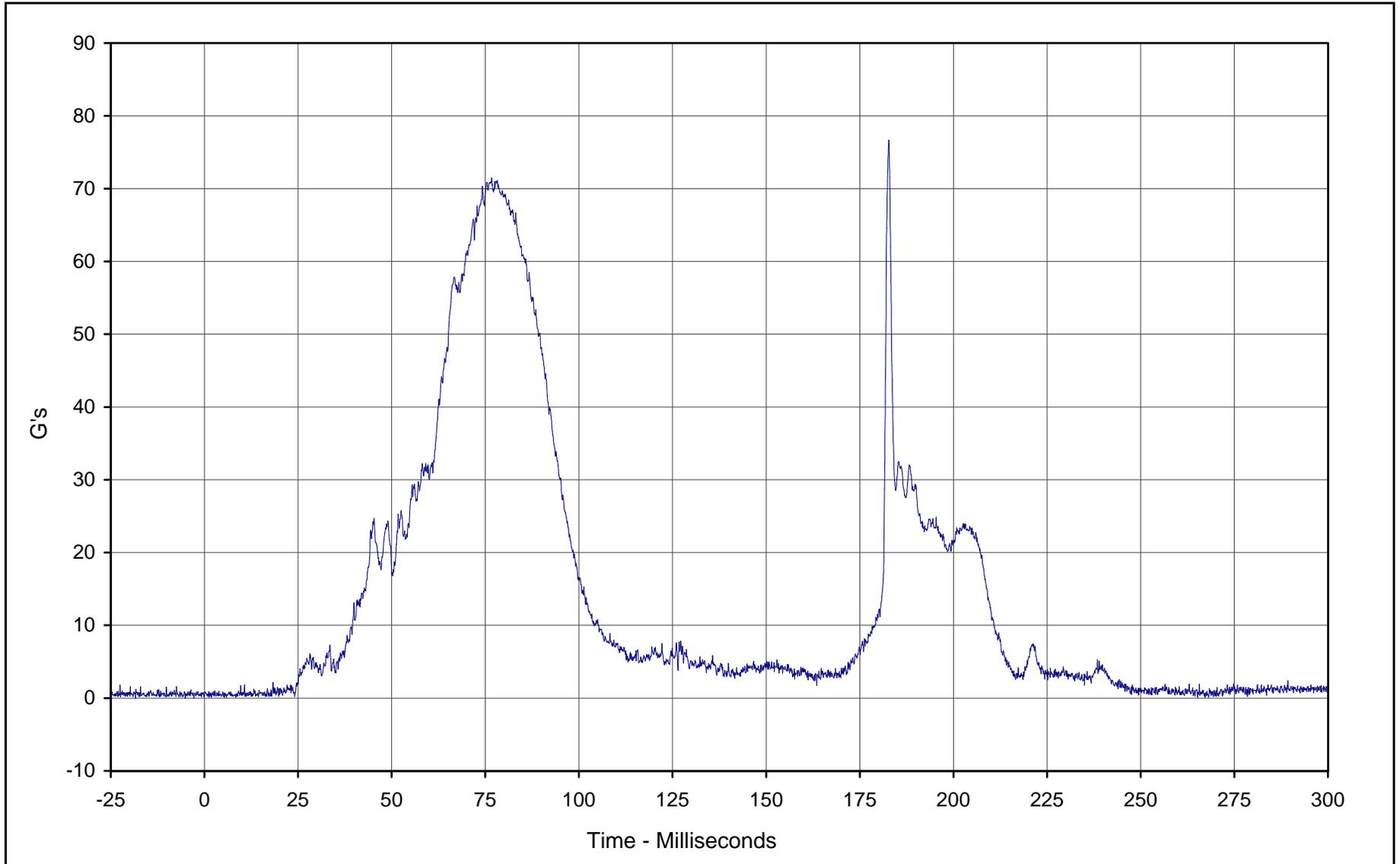
Curve Description: Passenger Head Primary Z  
Maximum Value: 24.8 at 55.5 Milliseconds  
Minimum Value: -5.6 at 126.7 Milliseconds  
SAE Filter Class: 1000  
Date of Test: 11/17/99  
Curve Number: FIL-047

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-67



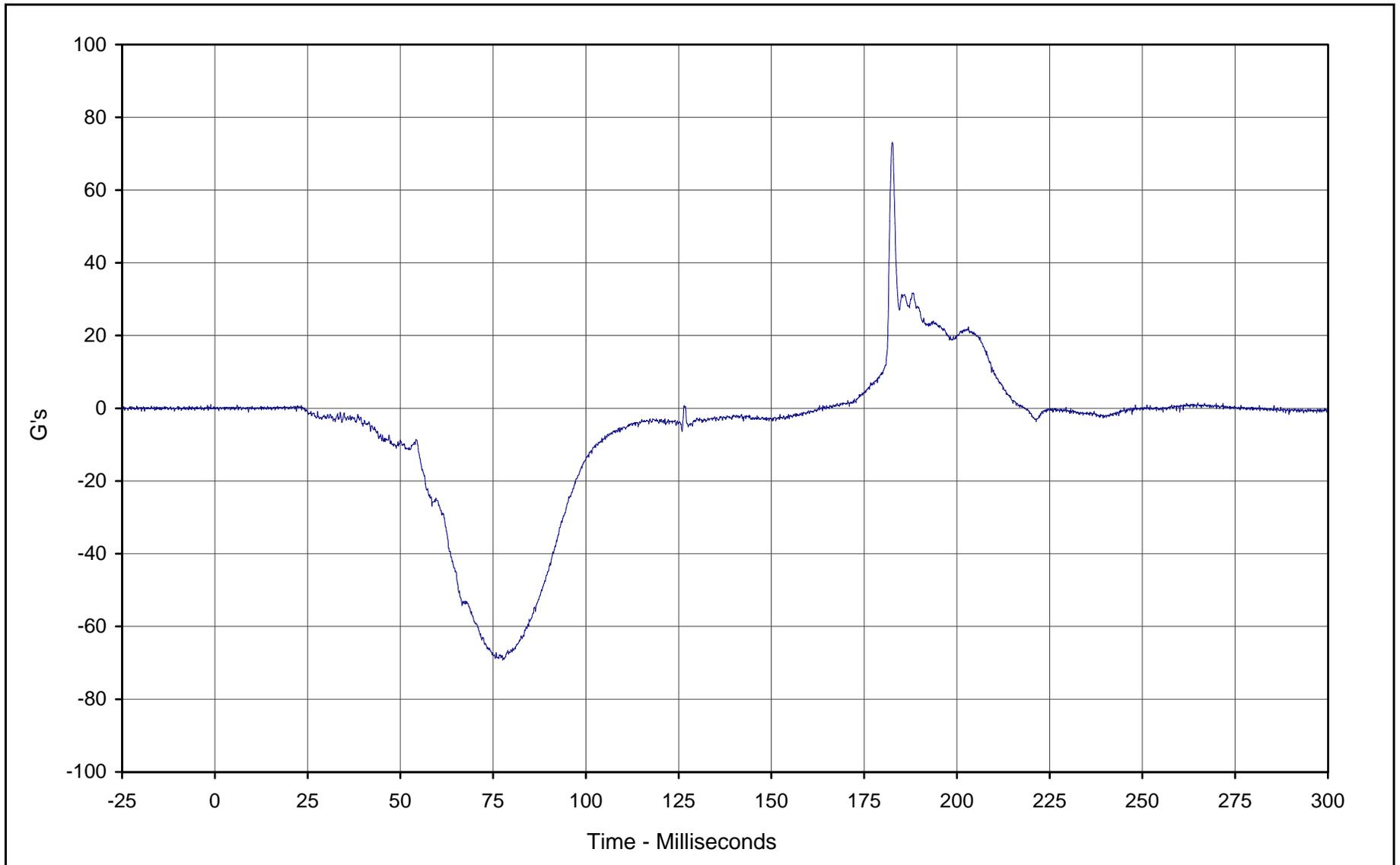
Curve Description: Passenger Head Resultant Primary  
Maximum Value: 76.7 at 182.8 Milliseconds  
Minimum Value: 0.1 at 5.4 Milliseconds  
SAE Filter Class: 1000  
Date of Test: 11/17/99  
Curve Number: RES-045

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-68



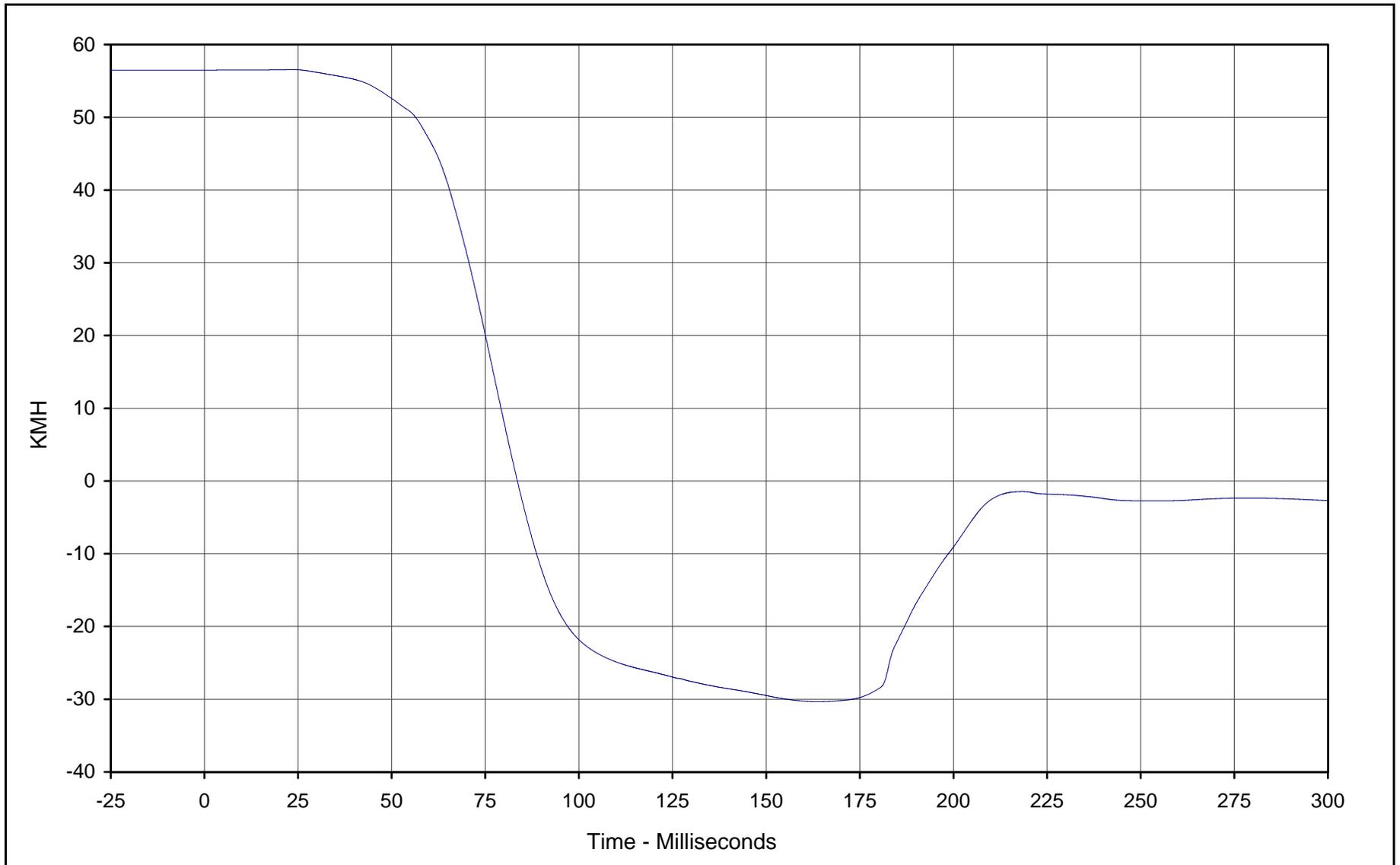
Curve Description: Passenger Head Redundant X  
Maximum Value: 73.1 at 182.6 Milliseconds  
Minimum Value: -69.2 at 77.6 Milliseconds  
SAE Filter Class: 1000  
Date of Test: 11/17/99  
Curve Number: FIL-048

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-69



Curve Description: Passenger Head Redundant X Velocity

Maximum Value: 56.6 at 23.8 Milliseconds

Minimum Value: -30.3 at 163.3 Milliseconds

SAE Filter Class: 180

Date of Test: 11/17/99

Curve Number: IN1-048

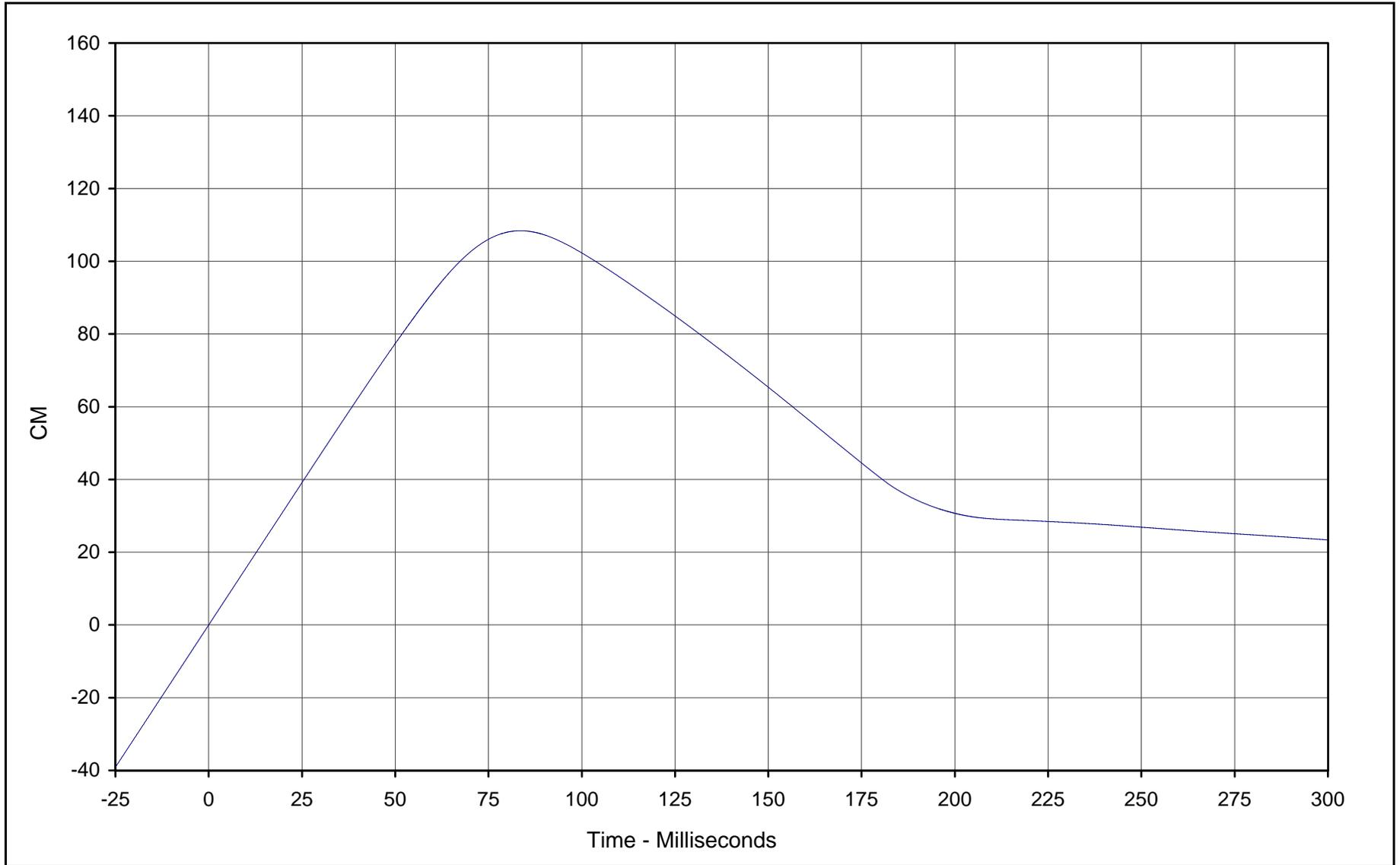
Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103

Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-70



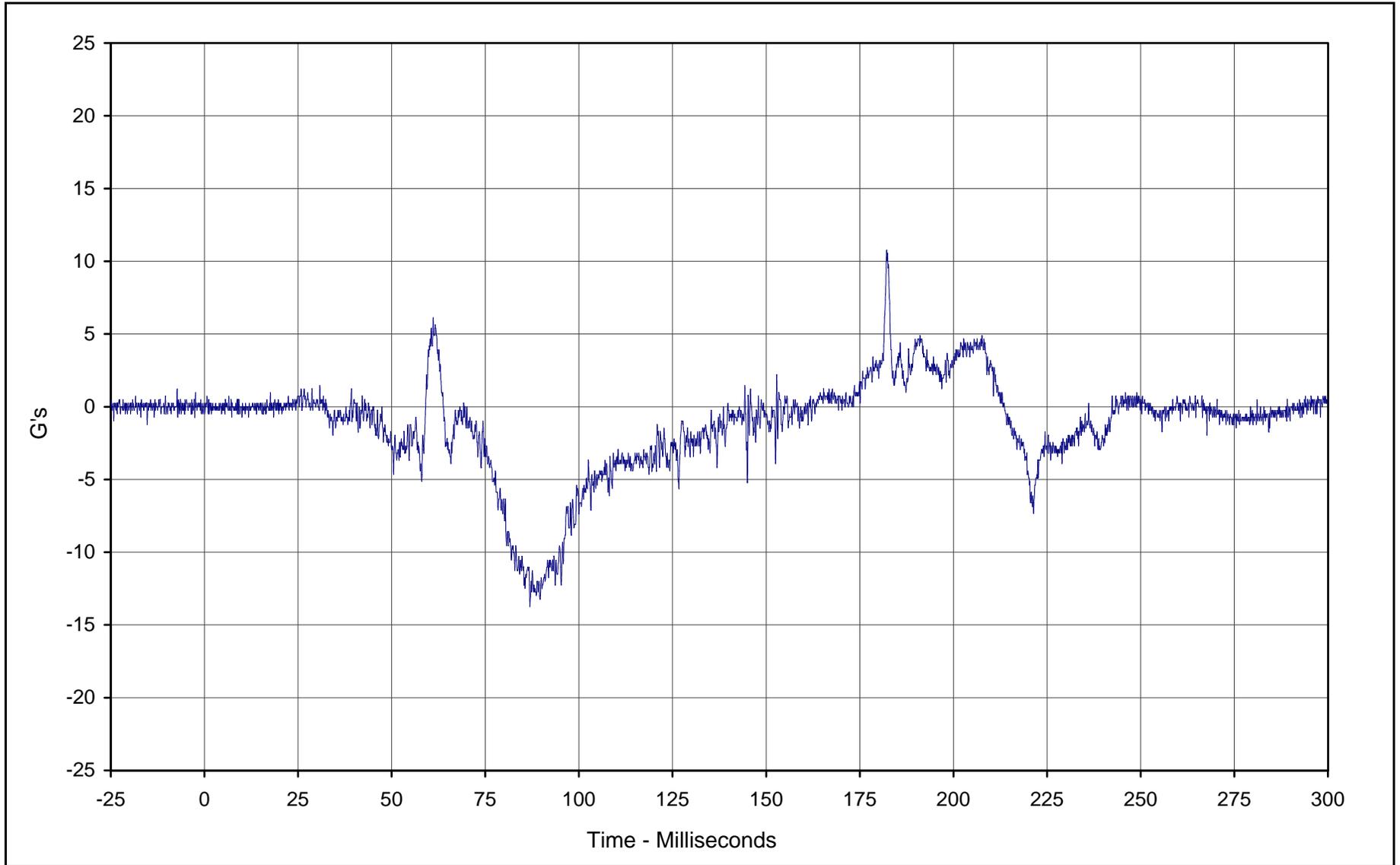
Curve Description: Passenger Head Redundant X Displ.  
Maximum Value: 108.4 at 83.6 Milliseconds  
Minimum Value: 0.0 at 0.0 Milliseconds  
SAE Filter Class: 180  
Date of Test: 11/17/99  
Curve Number: IN2-048

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-71



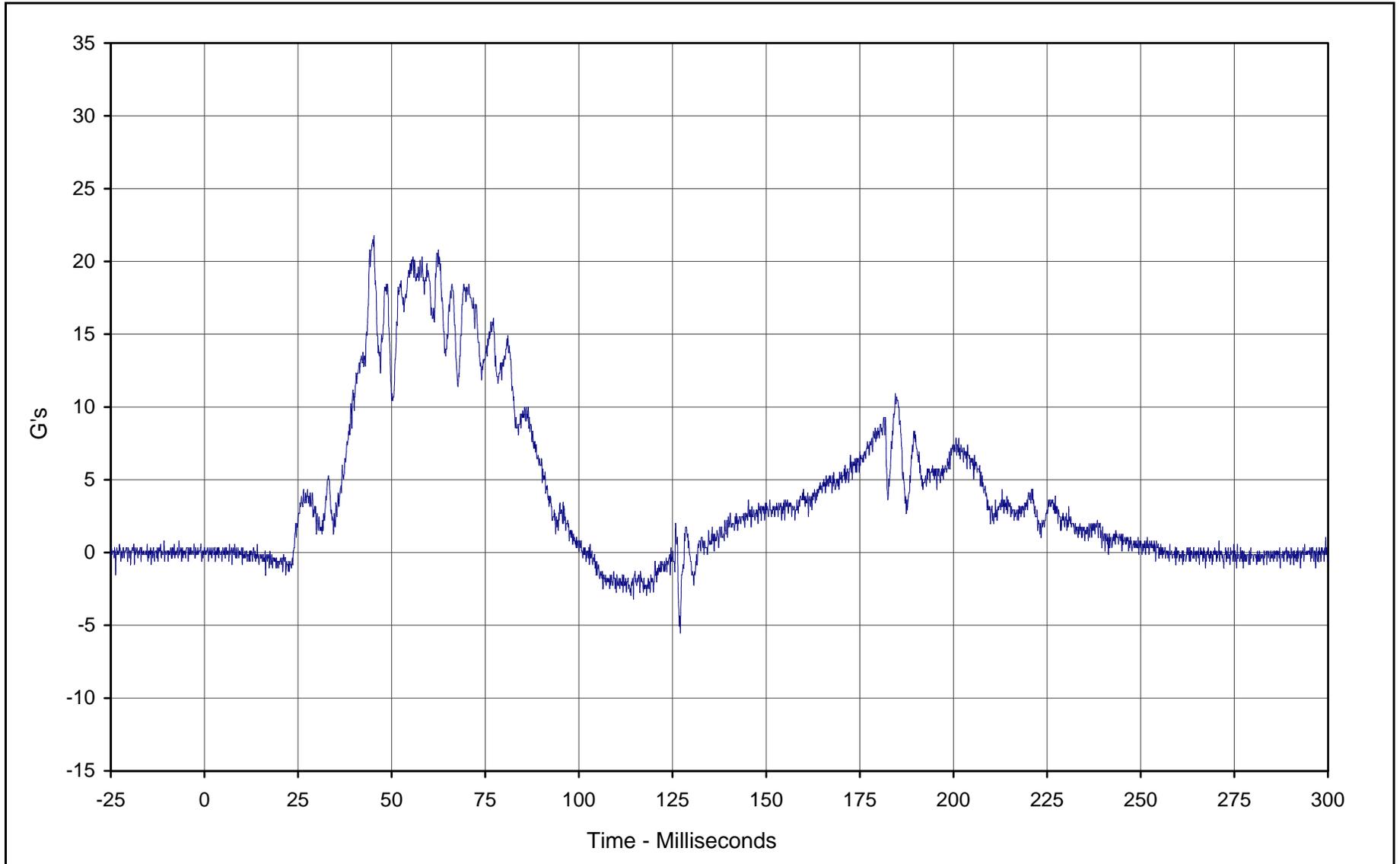
Curve Description: Passenger Head Redundant Y  
Maximum Value: 10.8 at 182.2 Milliseconds  
Minimum Value: -13.7 at 86.9 Milliseconds  
SAE Filter Class: 1000  
Date of Test: 11/17/99  
Curve Number: FIL-049

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-72



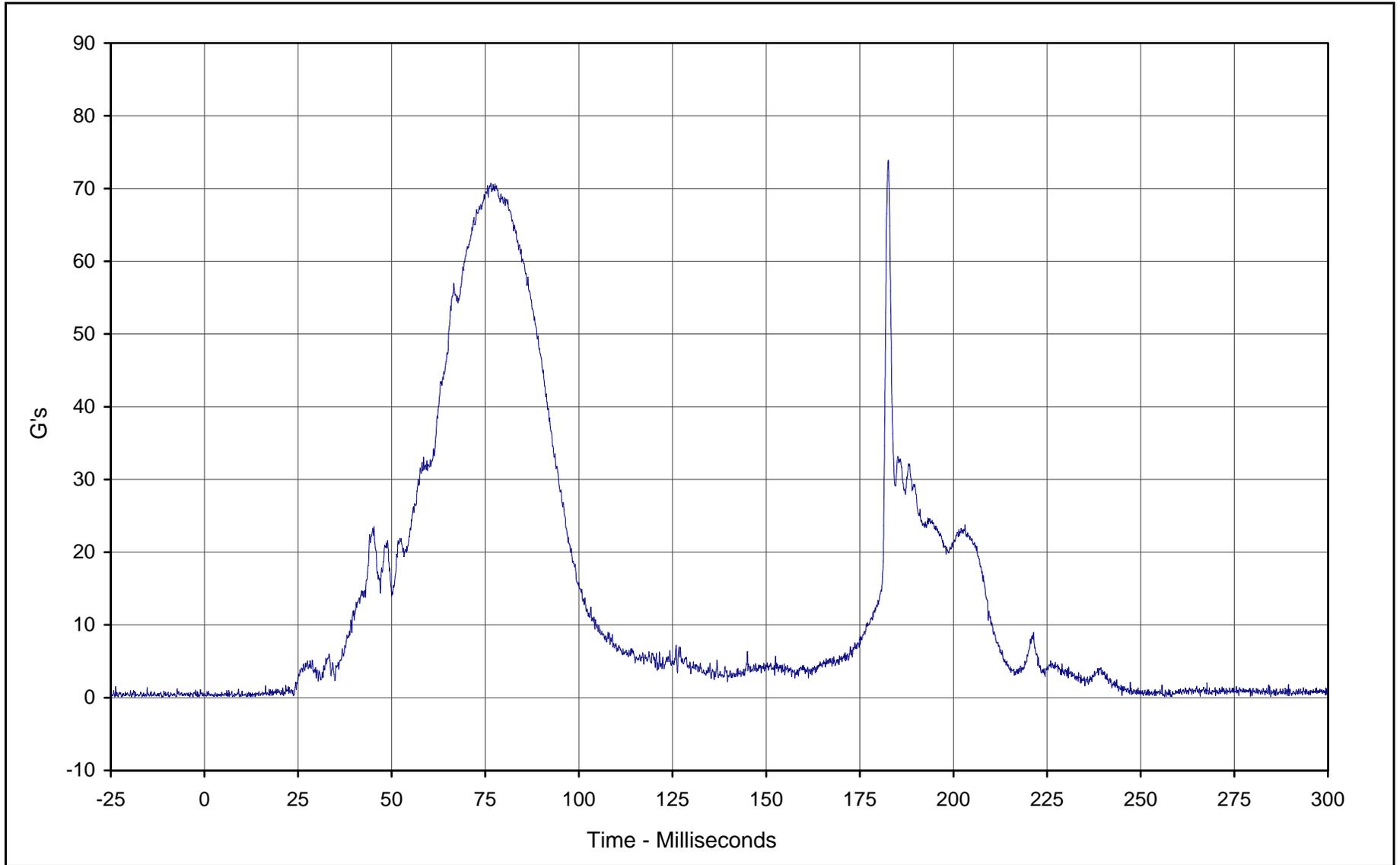
Curve Description: Passenger Head Redundant Z  
Maximum Value: 21.7 at 45.3 Milliseconds  
Minimum Value: -5.5 at 127.1 Milliseconds  
SAE Filter Class: 1000  
Date of Test: 11/17/99  
Curve Number: FIL-050

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-73



Curve Description: Passenger Head Resultant Redundant

Maximum Value: 73.9 at 182.6 Milliseconds

Minimum Value: 0.1 at 7.6 Milliseconds

SAE Filter Class: 1000

Date of Test: 11/17/99

Curve Number: RES-048

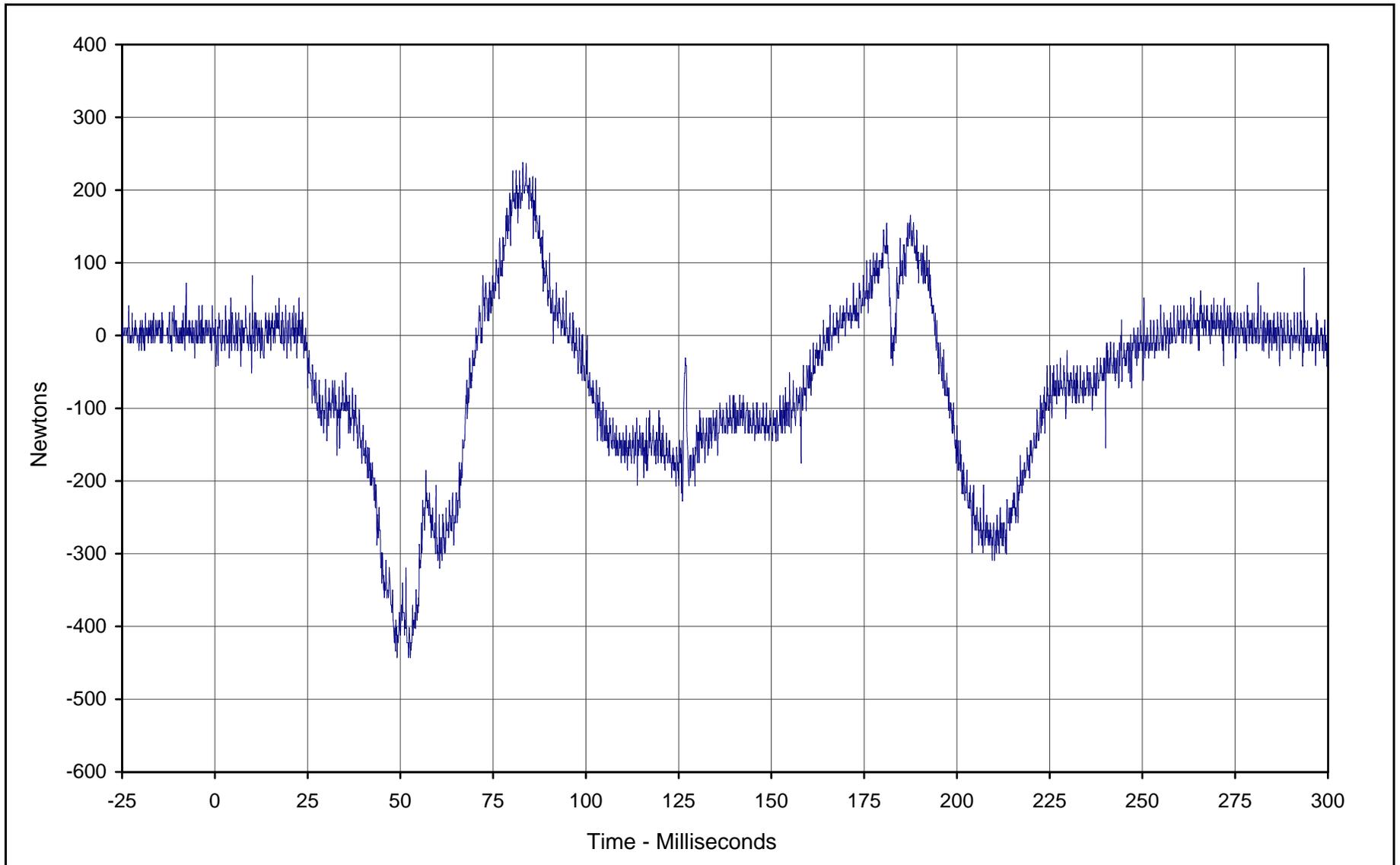
Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103

Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-74



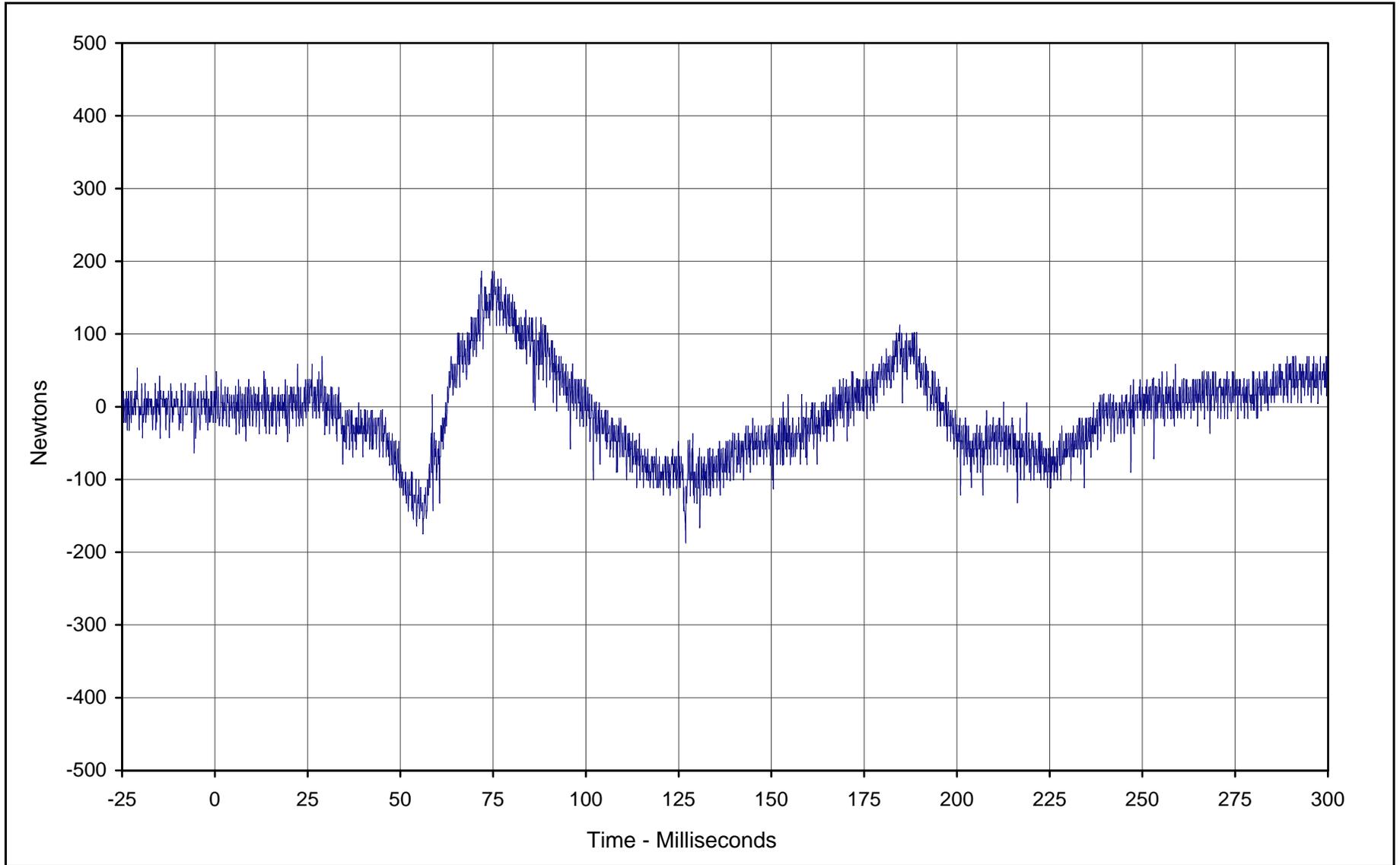
Curve Description: Passenger Neck Force X  
Maximum Value: 236.9 at 83.0 Milliseconds  
Minimum Value: -442.9 at 49.1 Milliseconds  
SAE Filter Class: 1000  
Date of Test: 11/17/99  
Curve Number: FIL-051

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-75

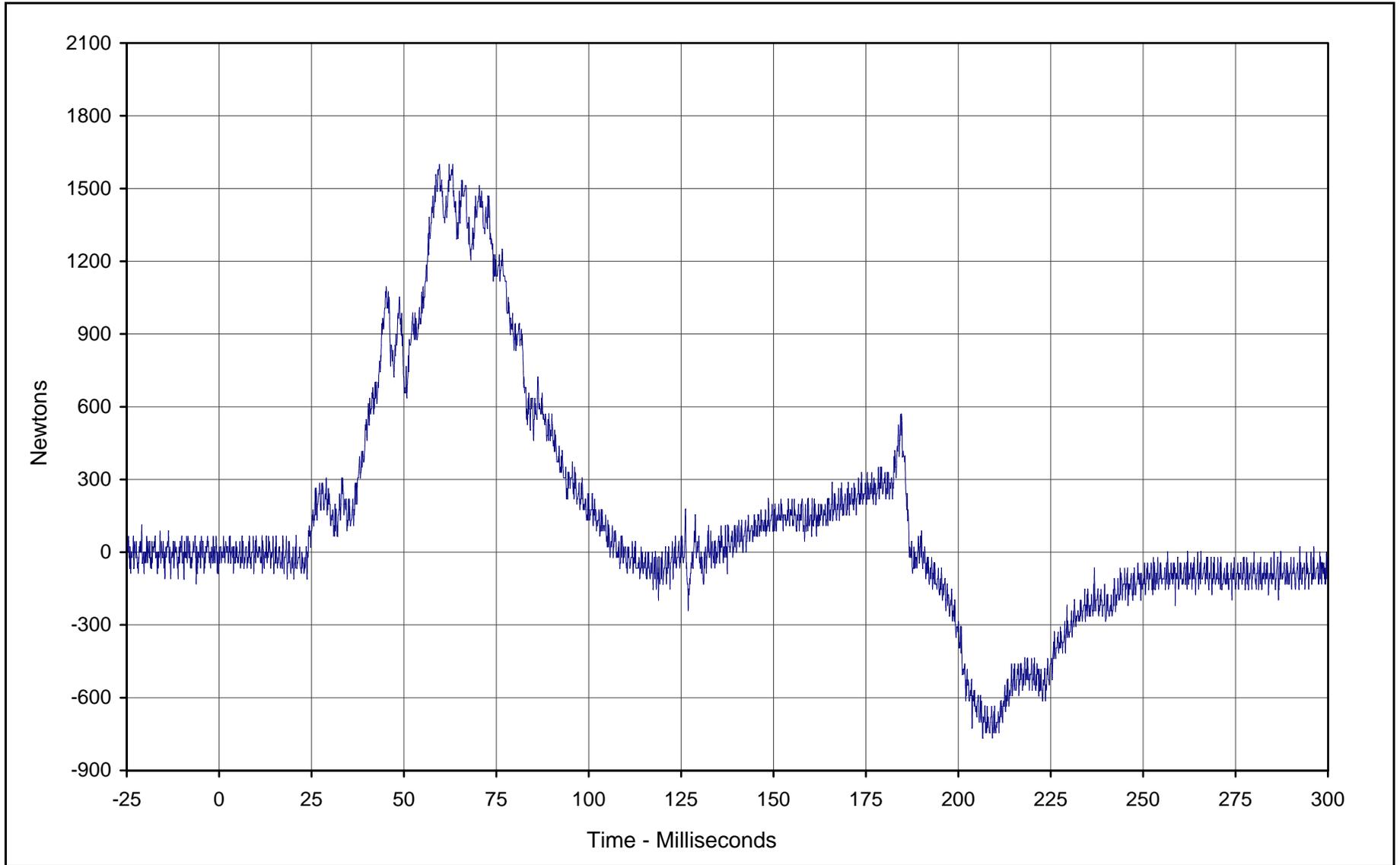


Curve Description: Passenger Neck Force Y  
Maximum Value: 186.0 at 71.9 Milliseconds  
Minimum Value: -185.4 at 126.9 Milliseconds  
SAE Filter Class: 1000  
Date of Test: 11/17/99  
Curve Number: FIL-052

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

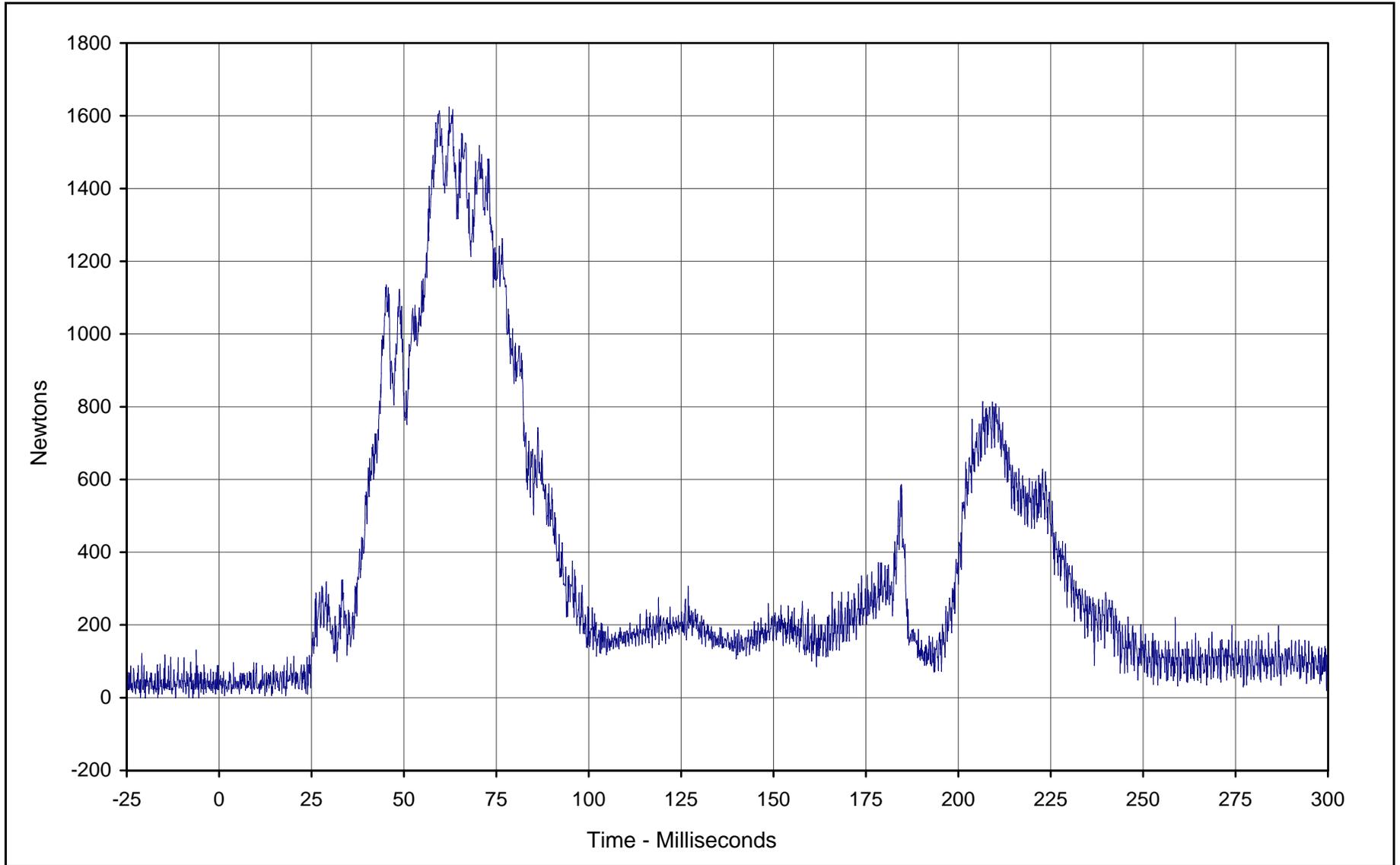


Curve Description: Passenger Neck Force Z  
Maximum Value: 1599.6 at 59.6 Milliseconds  
Minimum Value: -766.9 at 206.6 Milliseconds  
SAE Filter Class: 1000  
Date of Test: 11/17/99  
Curve Number: FIL-053

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



B-77



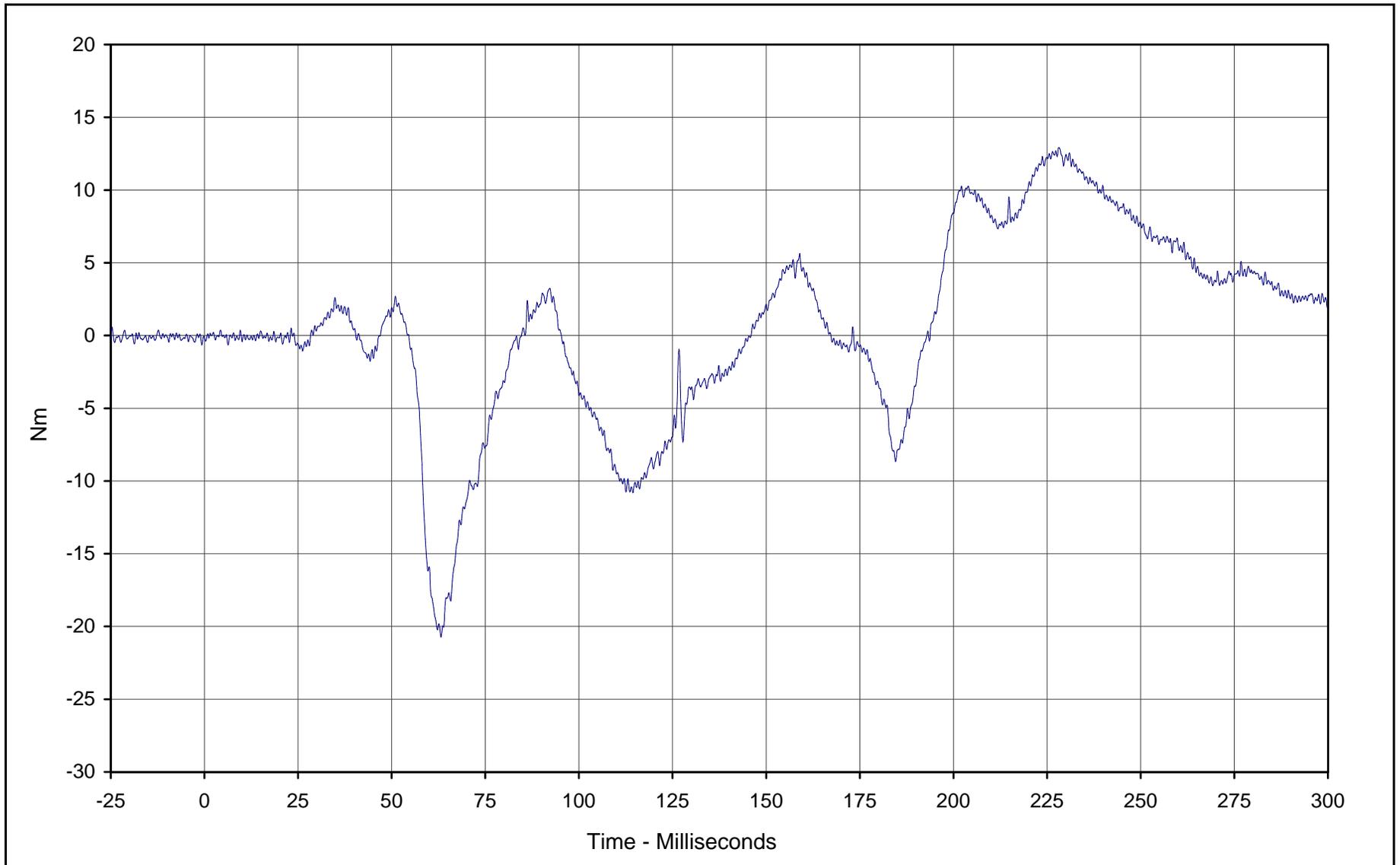
Curve Description: Passenger Neck Force Resultant  
Maximum Value: 1623.6 at 62.2 Milliseconds  
Minimum Value: 5.0 at 1.5 Milliseconds  
SAE Filter Class: 1000  
Date of Test: 11/17/99  
Curve Number: RES-051

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-78



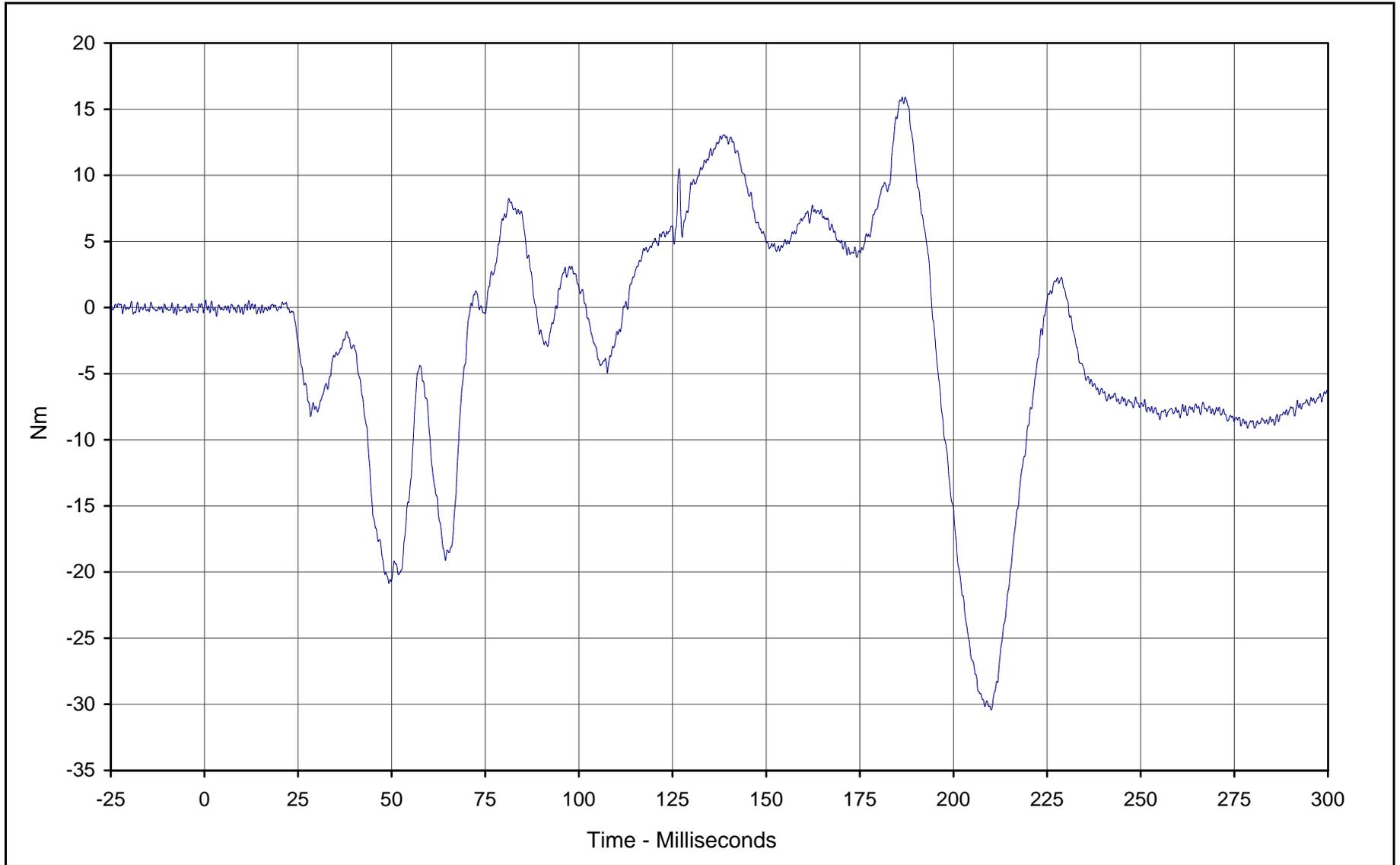
Curve Description: Passenger Neck Moment X  
Maximum Value: 12.9 at 228.1 Milliseconds  
Minimum Value: -20.7 at 63.2 Milliseconds  
SAE Filter Class: 600  
Date of Test: 11/17/99  
Curve Number: FIL-054

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-79



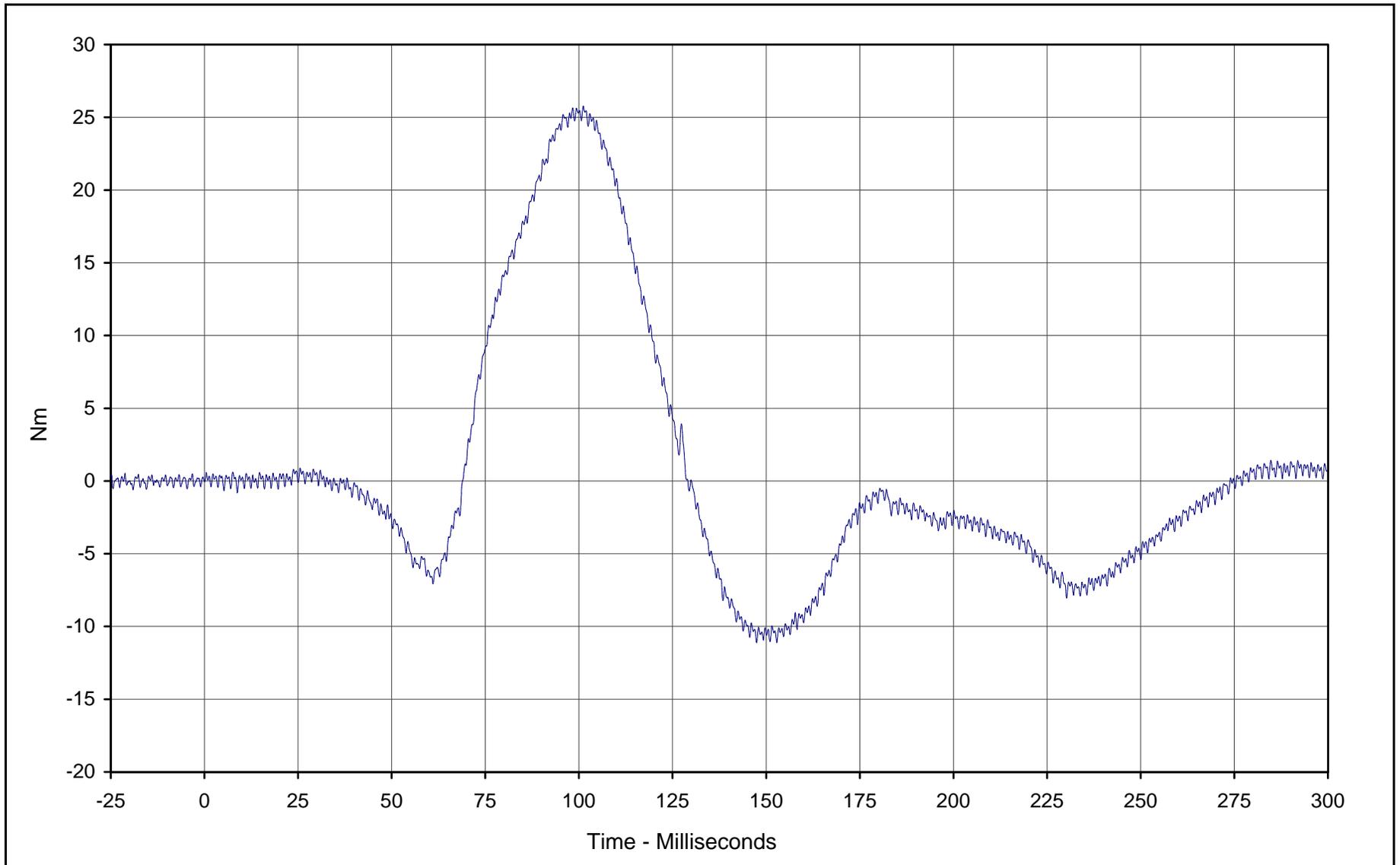
Curve Description: Passenger Neck Moment Y  
Maximum Value: 15.9 at 186.3 Milliseconds  
Minimum Value: -30.4 at 210.1 Milliseconds  
SAE Filter Class: 600  
Date of Test: 11/17/99  
Curve Number: FIL-055

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-80

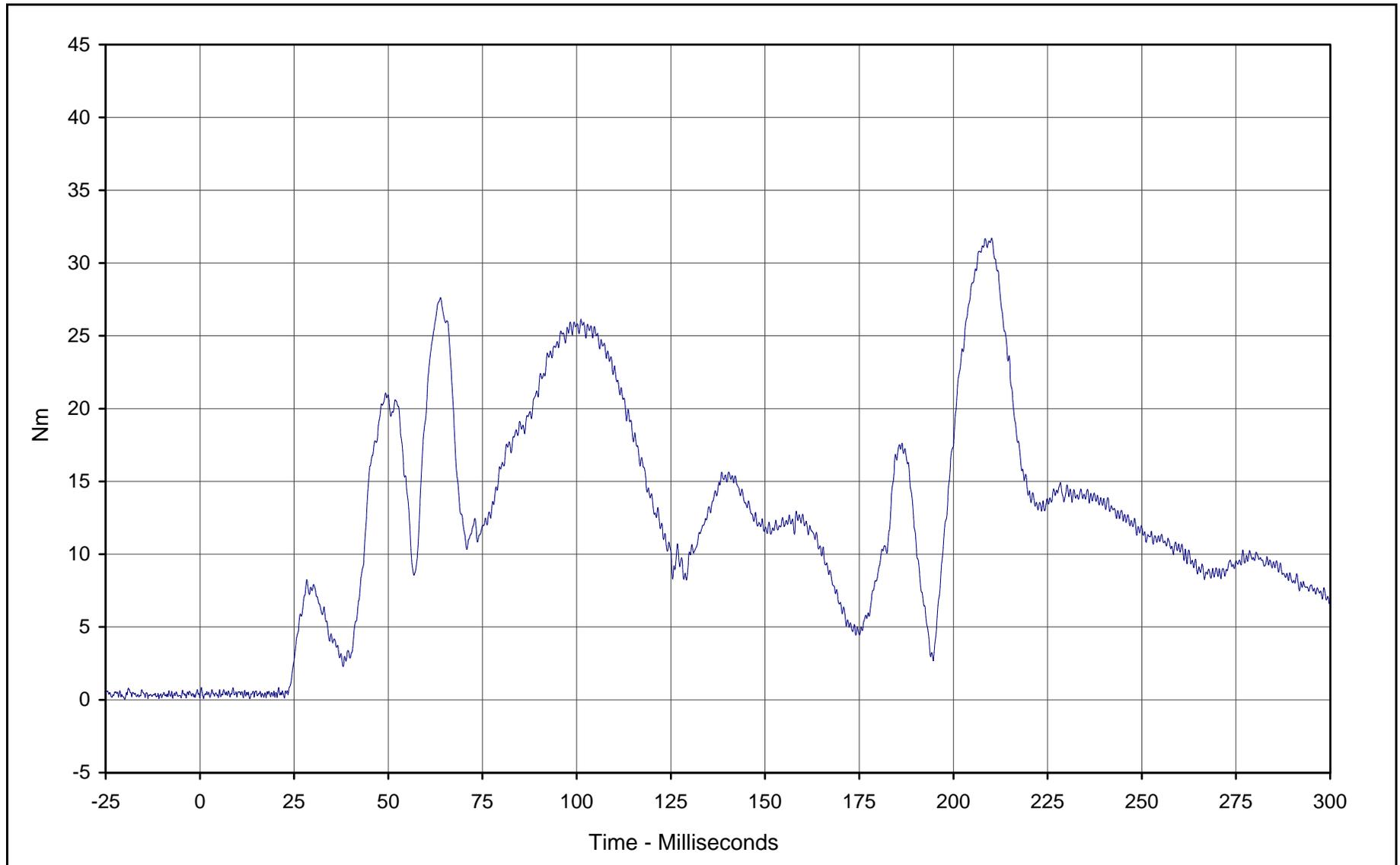


Curve Description: Passenger Neck Moment Z  
Maximum Value: 25.8 at 101.1 Milliseconds  
Minimum Value: -11.1 at 152.8 Milliseconds  
SAE Filter Class: 600  
Date of Test: 11/17/99  
Curve Number: FIL-056

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KAR20001-02



Curve Description: Passenger Neck Moment Resultant

Maximum Value: 31.7 at 210.1 Milliseconds

Minimum Value: 0.1 at 13.3 Milliseconds

SAE Filter Class: 600

Date of Test: 11/17/99

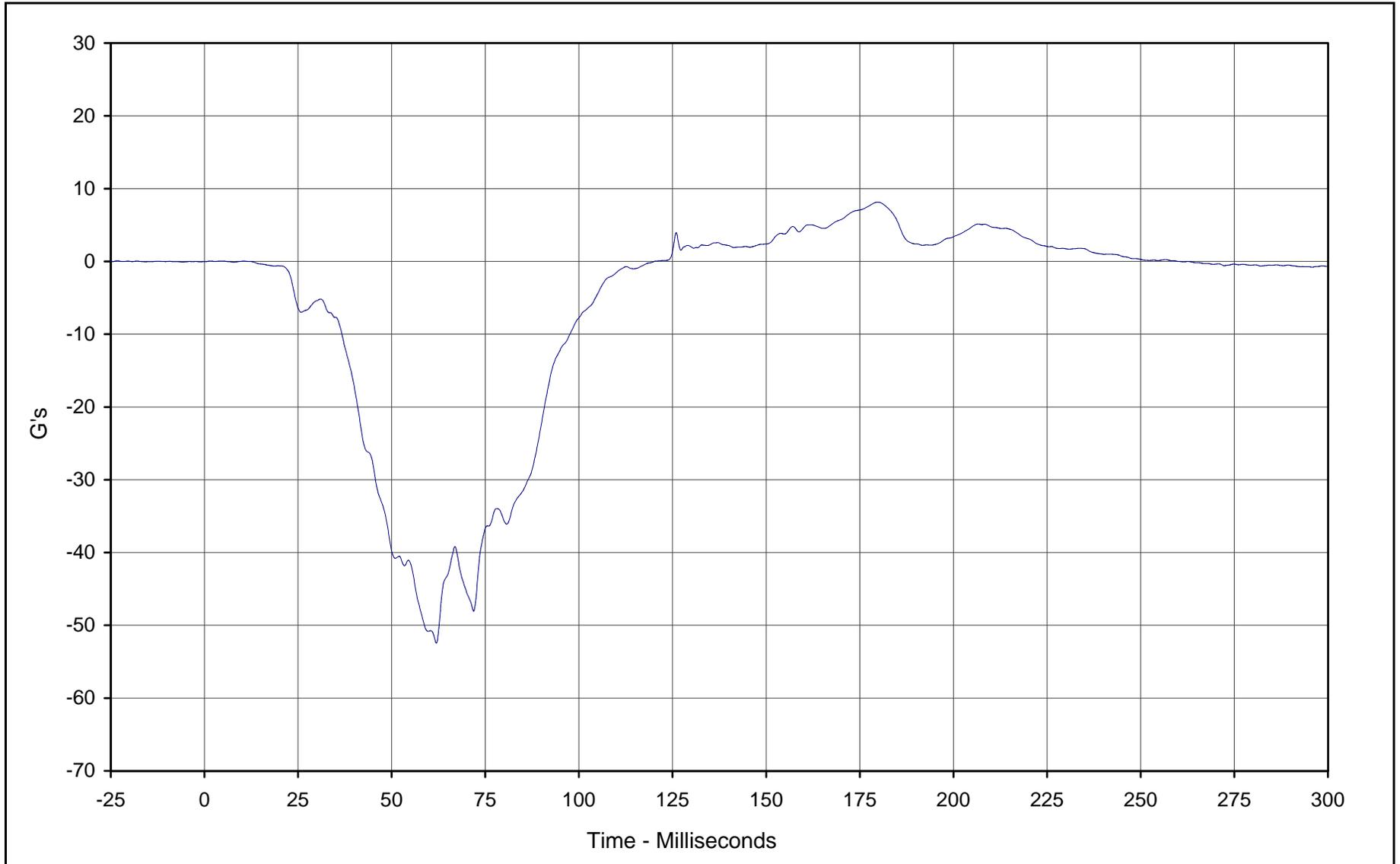
Curve Number: RES-054

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103

Test Vehicle: 2000 Toyota Tundra SR5 Pickup



B-82



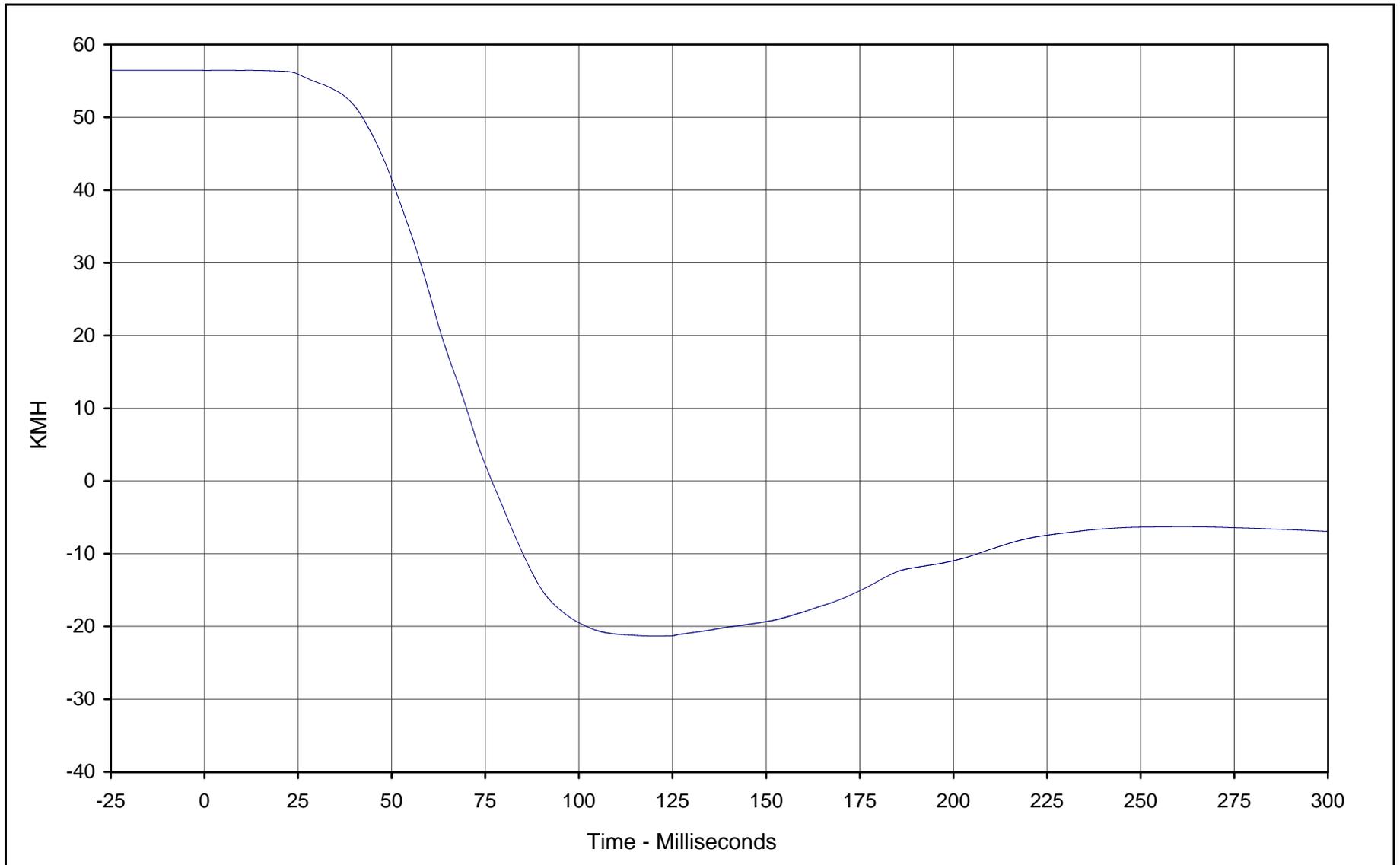
Curve Description: Passenger Chest Primary X  
Maximum Value: 8.1 at 179.8 Milliseconds  
Minimum Value: -52.4 at 61.9 Milliseconds  
SAE Filter Class: 180  
Date of Test: 11/17/99  
Curve Number: FIL-057

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-83



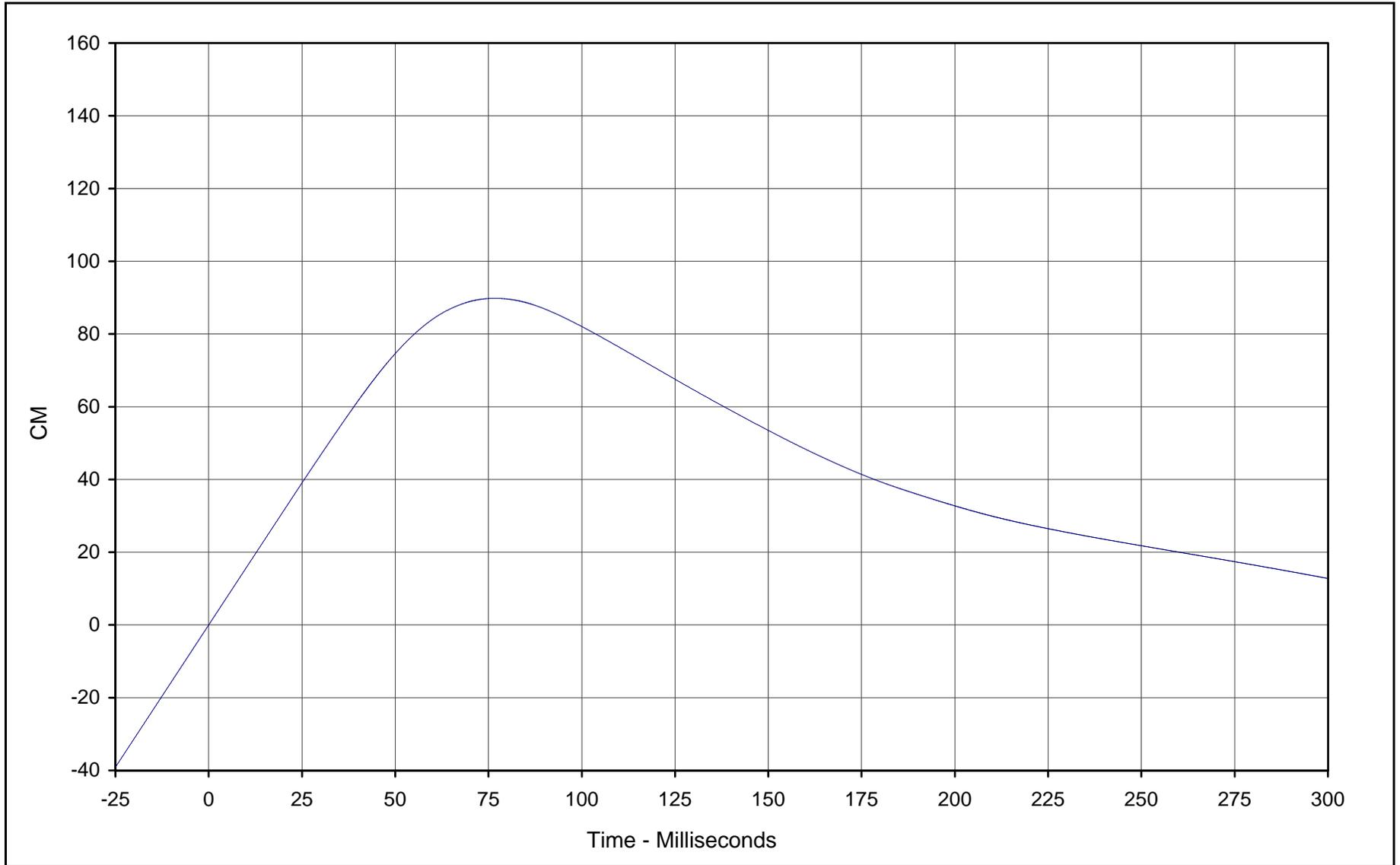
Curve Description: Passenger Chest Primary X Velocity  
Maximum Value: 56.5 at 5.8 Milliseconds  
Minimum Value: -21.3 at 120.1 Milliseconds  
SAE Filter Class: 180  
Date of Test: 11/17/99  
Curve Number: IN1-057

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KAR20001-02

B-84



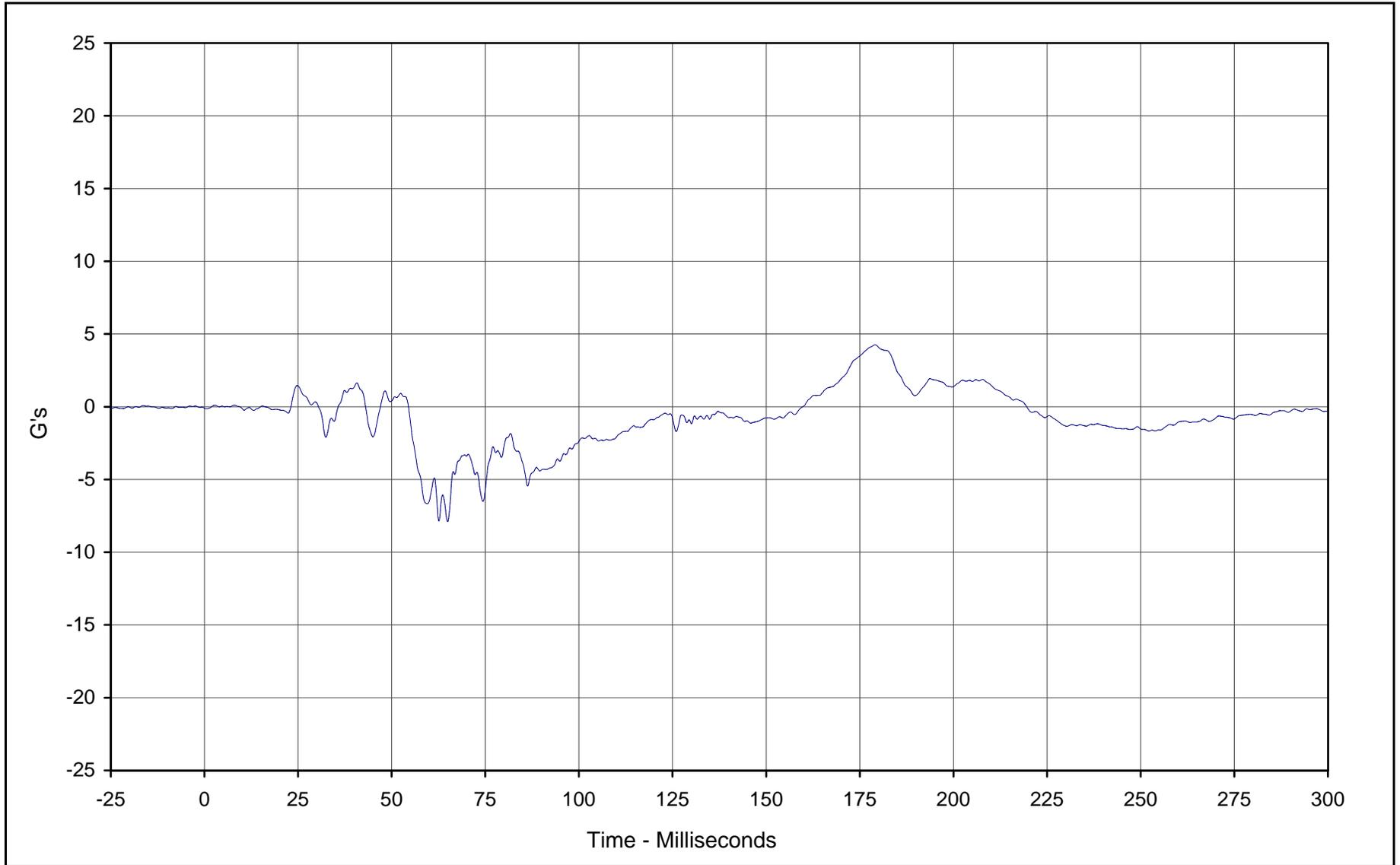
Curve Description: Passenger Chest Primary X Displ.  
Maximum Value: 89.8 at 76.8 Milliseconds  
Minimum Value: 0.0 at 0.0 Milliseconds  
SAE Filter Class: 180  
Date of Test: 11/17/99  
Curve Number: IN2-057

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-85



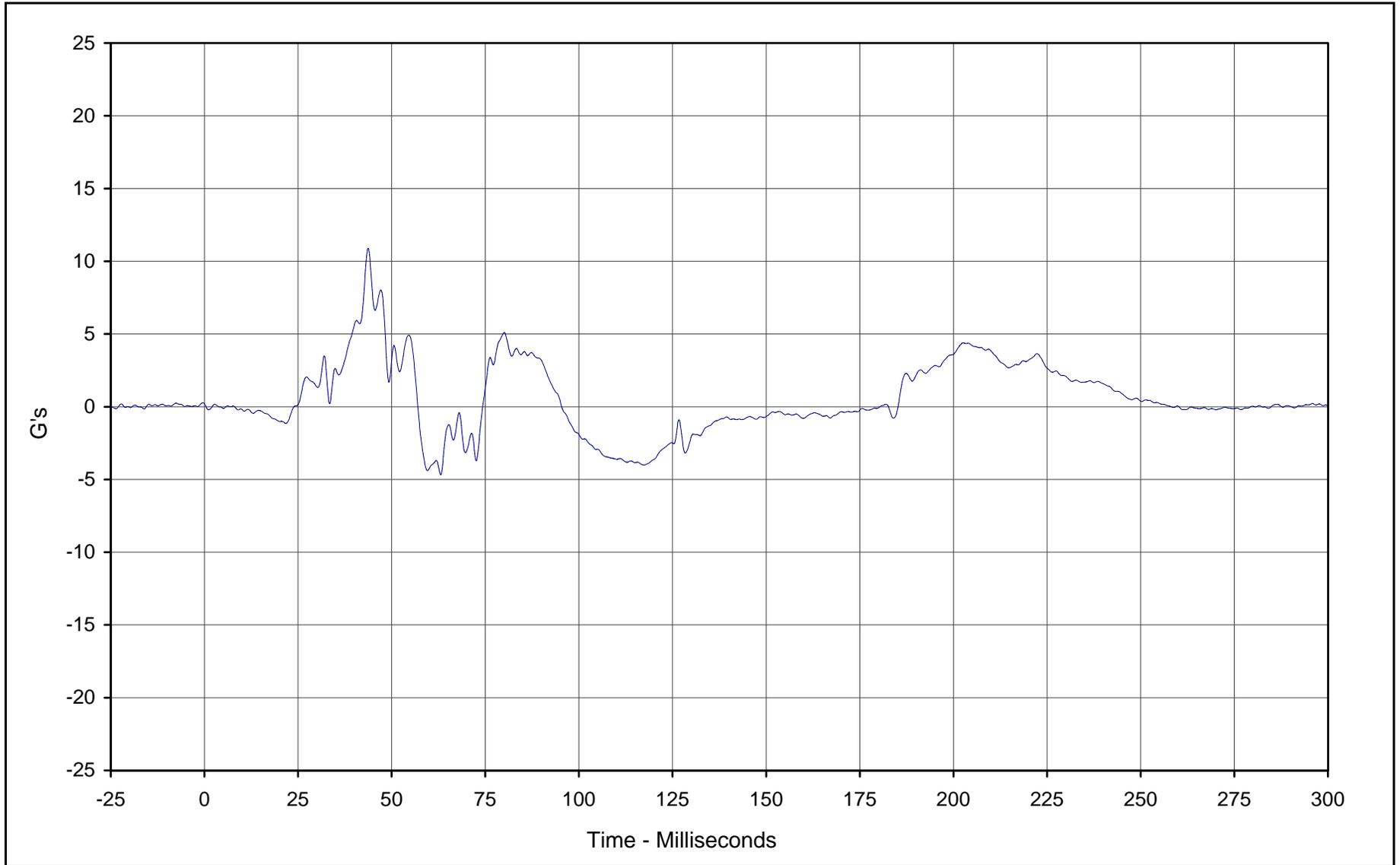
Curve Description: Passenger Chest Primary Y  
Maximum Value: 4.3 at 179.1 Milliseconds  
Minimum Value: -7.9 at 64.9 Milliseconds  
SAE Filter Class: 180  
Date of Test: 11/17/99  
Curve Number: FIL-058

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-86



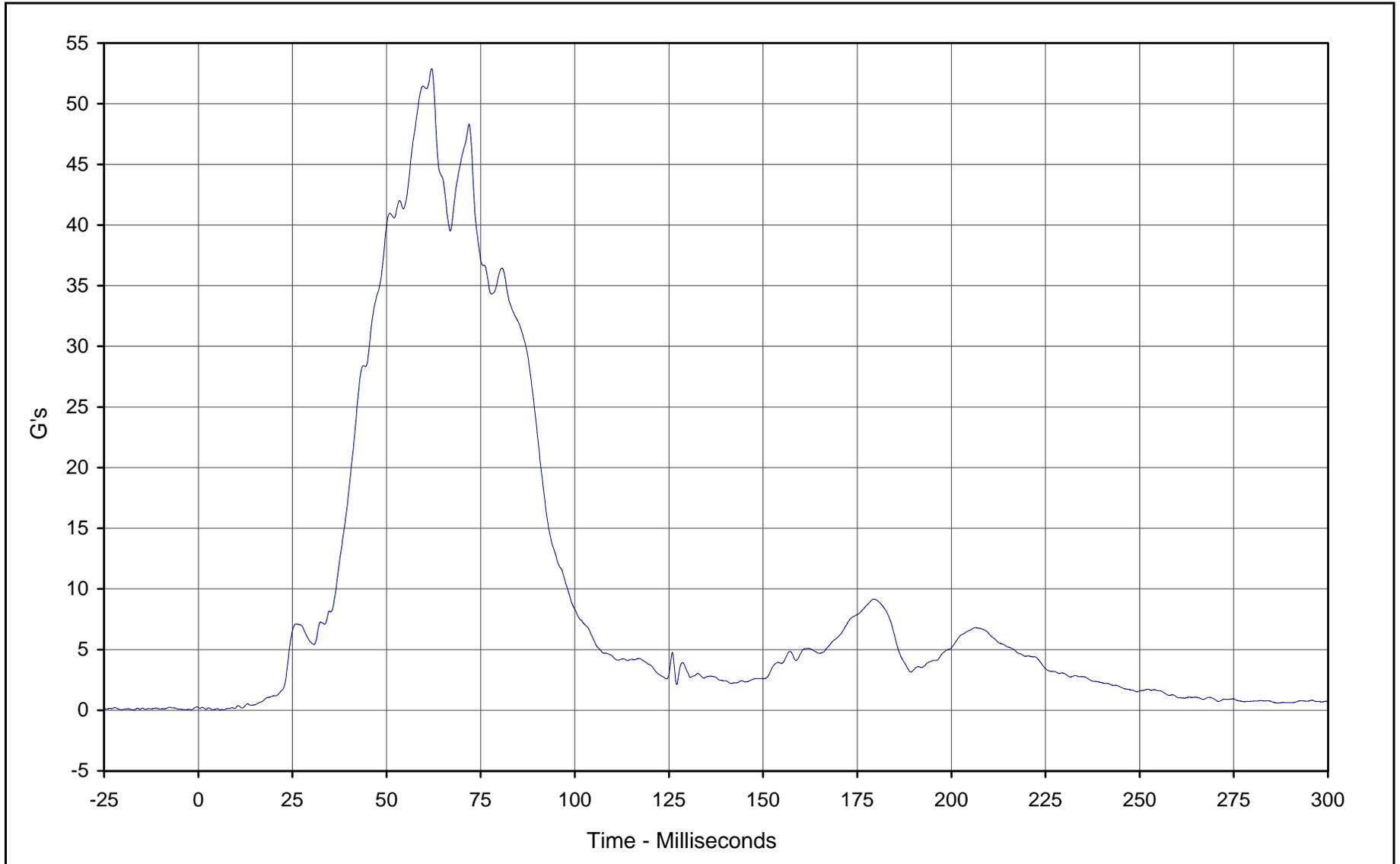
Curve Description: Passenger Chest Primary Z  
Maximum Value: 10.9 at 43.7 Milliseconds  
Minimum Value: -4.7 at 63.1 Milliseconds  
SAE Filter Class: 180  
Date of Test: 11/17/99  
Curve Number: FIL-059

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-87



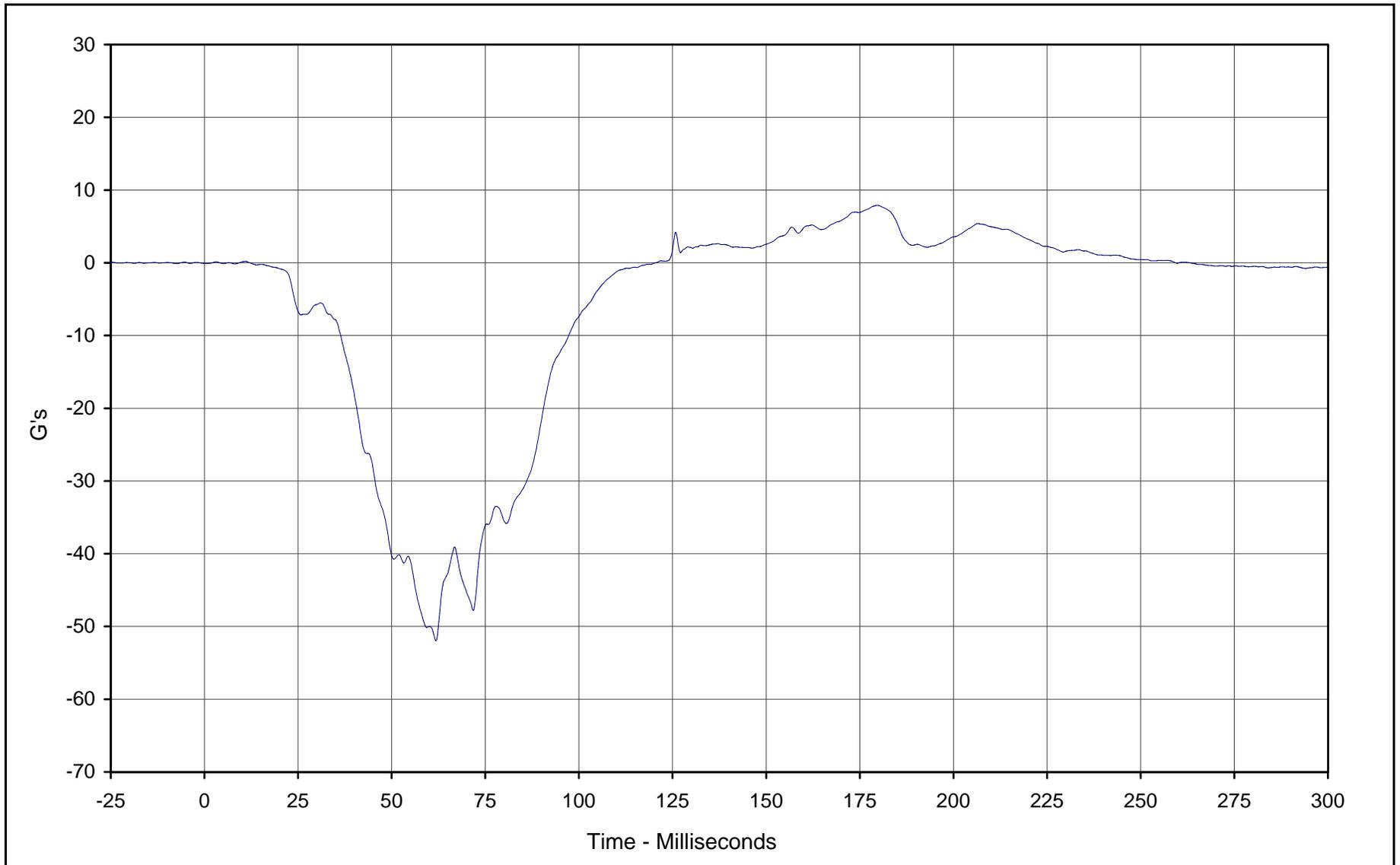
Curve Description: Passenger Chest Resultant Primary  
Maximum Value: 52.9 at 62.0 Milliseconds  
Minimum Value: 0.0 at 5.7 Milliseconds  
SAE Filter Class: 180  
Date of Test: 11/17/99  
Curve Number: RES-057

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-88



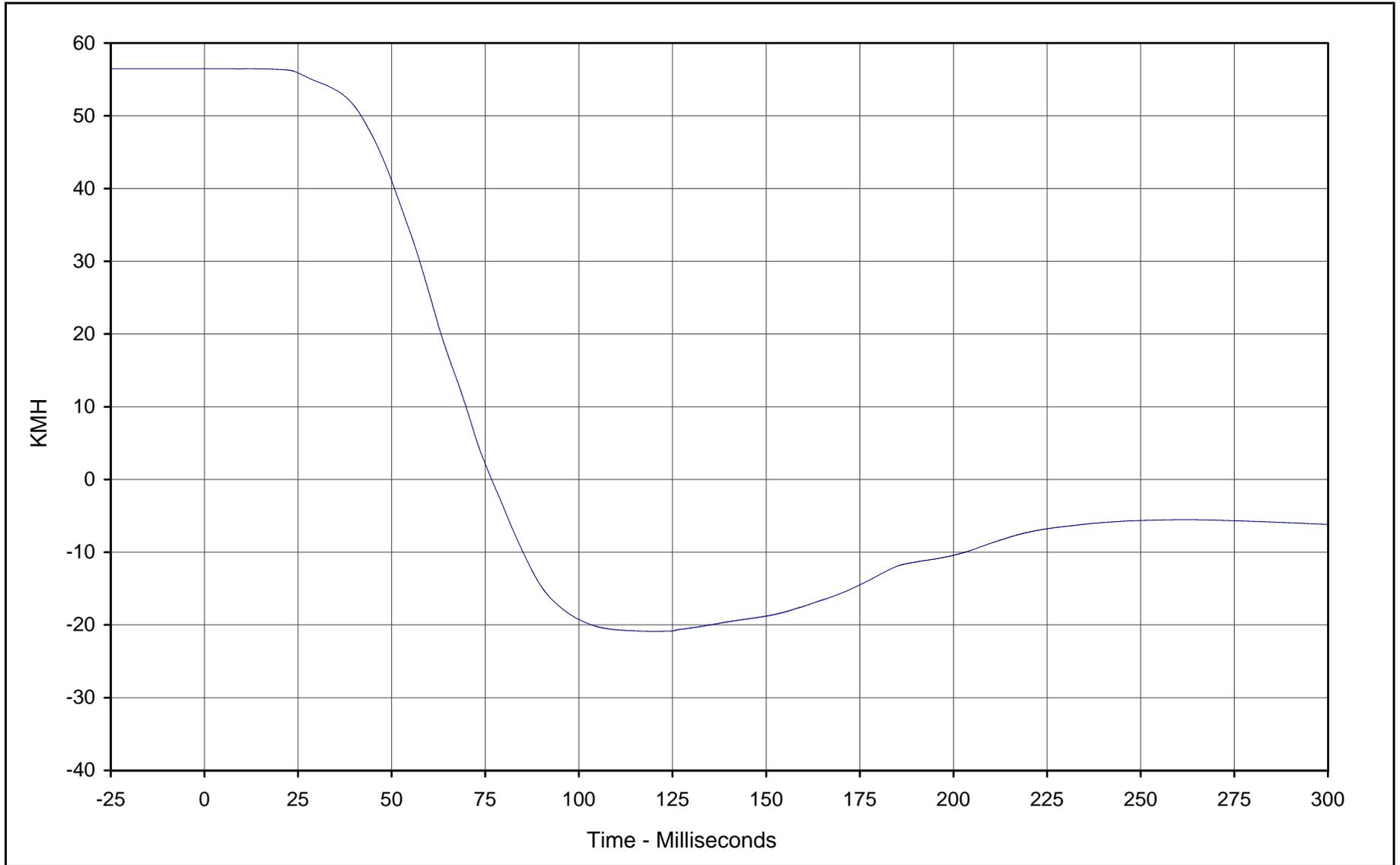
Curve Description: Passenger Chest Redundant X  
Maximum Value: 7.9 at 179.6 Milliseconds  
Minimum Value: -52.0 at 61.8 Milliseconds  
SAE Filter Class: 180  
Date of Test: 11/17/99  
Curve Number: FIL-060

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-89



Curve Description: Passenger Chest Redundant X Velocity

Maximum Value: 56.5 at 12.1 Milliseconds

Minimum Value: -20.9 at 120.5 Milliseconds

SAE Filter Class: 180

Date of Test: 11/17/99

Curve Number: IN1-060

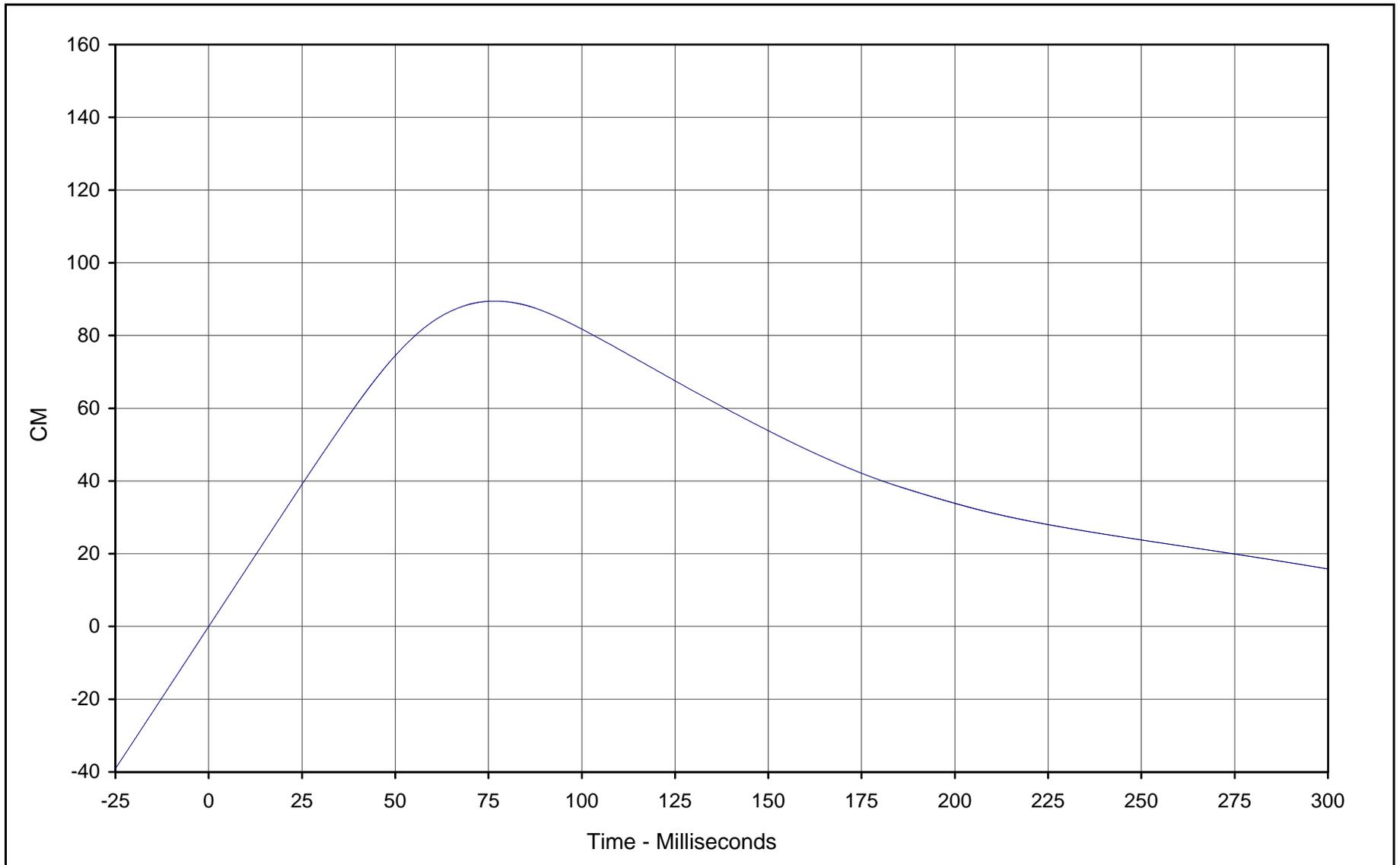
Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103

Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-90



Curve Description: Passenger Chest Redundant X Displ.

Maximum Value: 89.5 at 76.7 Milliseconds

Minimum Value: 0.0 at 0.0 Milliseconds

SAE Filter Class: 180

Date of Test: 11/17/99

Curve Number: IN2-060

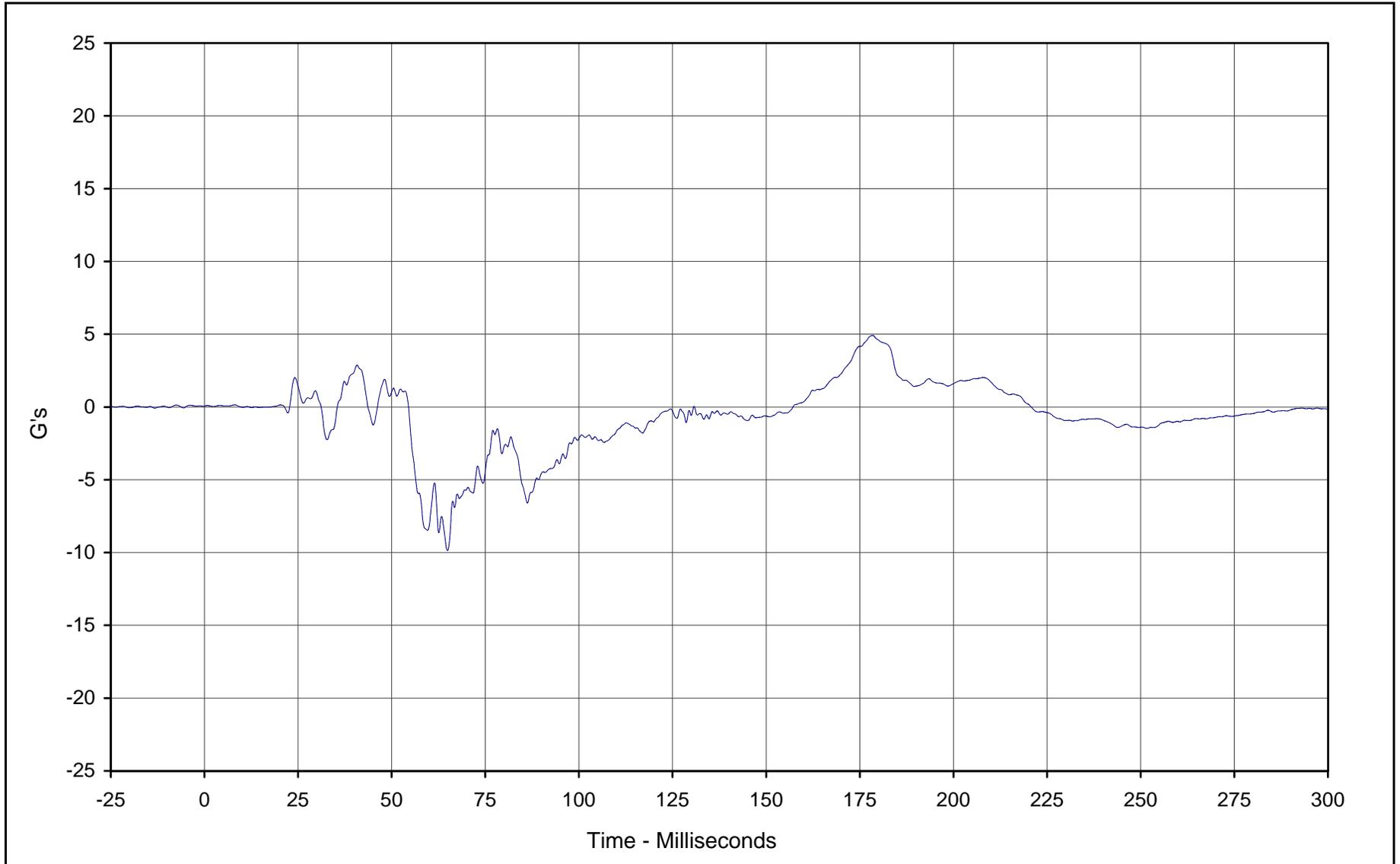
Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103

Test Vehicle: 2000 Toyota Tundra SR5 Pickup

KARR20001-02



B-91



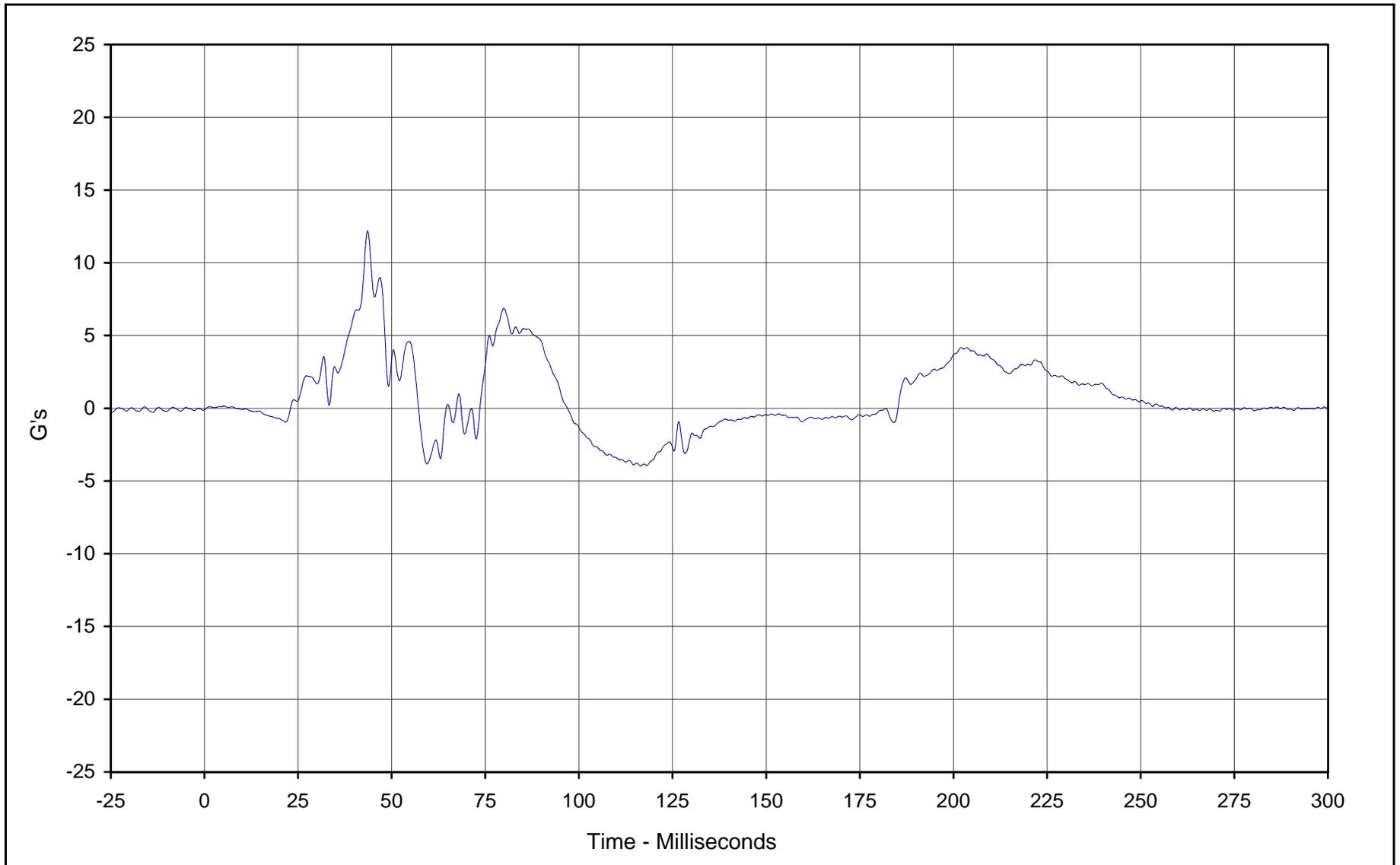
Curve Description: Passenger Chest Redundant Y  
Maximum Value: 4.9 at 178.4 Milliseconds  
Minimum Value: -9.9 at 64.9 Milliseconds  
SAE Filter Class: 180  
Date of Test: 11/17/99  
Curve Number: FIL-061

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-92



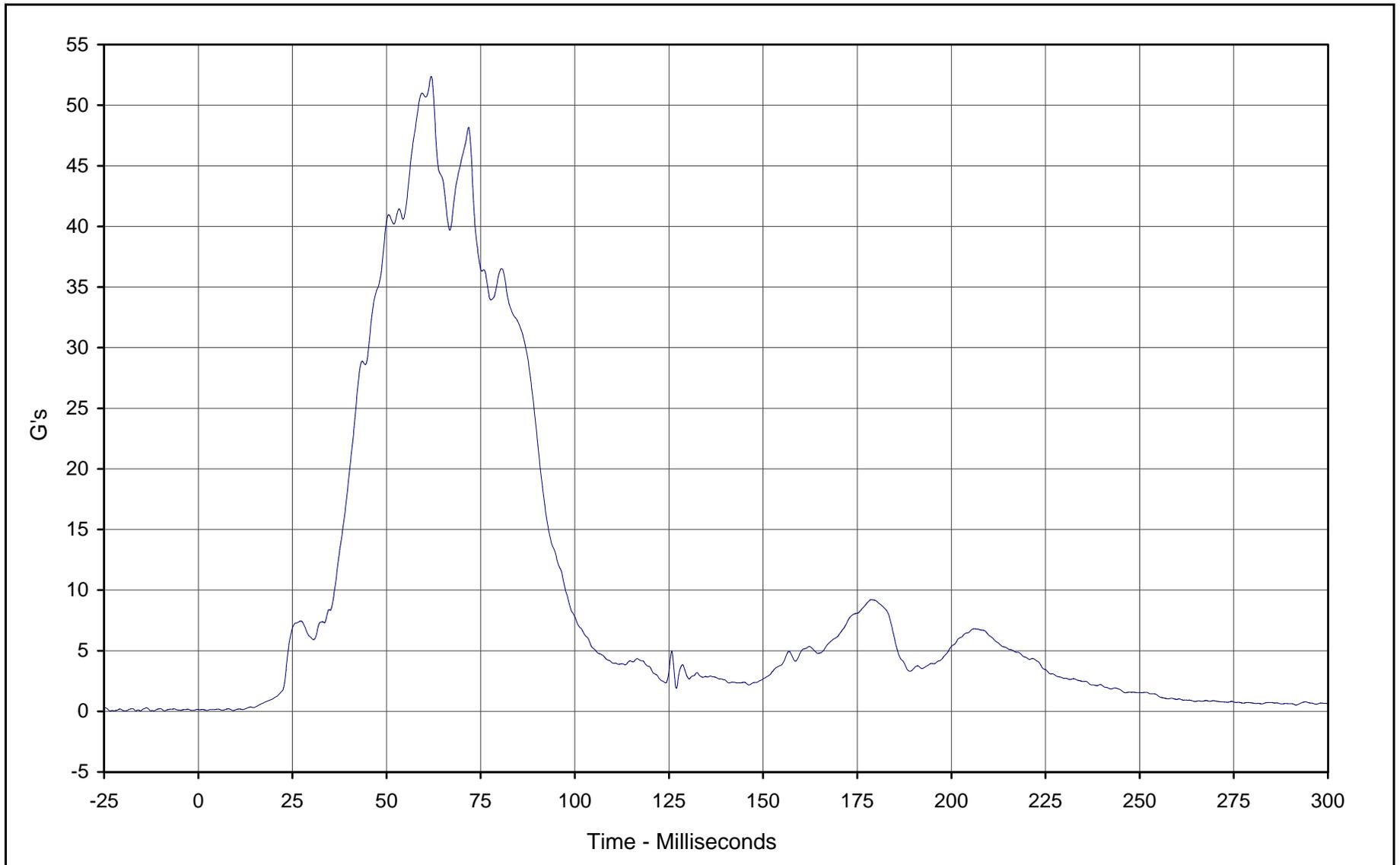
Curve Description: Passenger Chest Redundant Z  
Maximum Value: 12.2 at 43.6 Milliseconds  
Minimum Value: -4.0 at 116.5 Milliseconds  
SAE Filter Class: 180  
Date of Test: 11/17/99  
Curve Number: FIL-062

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-93



Curve Description: Passenger Chest Resultant Redundant

Maximum Value: 52.4 at 61.9 Milliseconds

Minimum Value: 0.1 at 9.3 Milliseconds

SAE Filter Class: 180

Date of Test: 11/17/99

Curve Number: RES-060

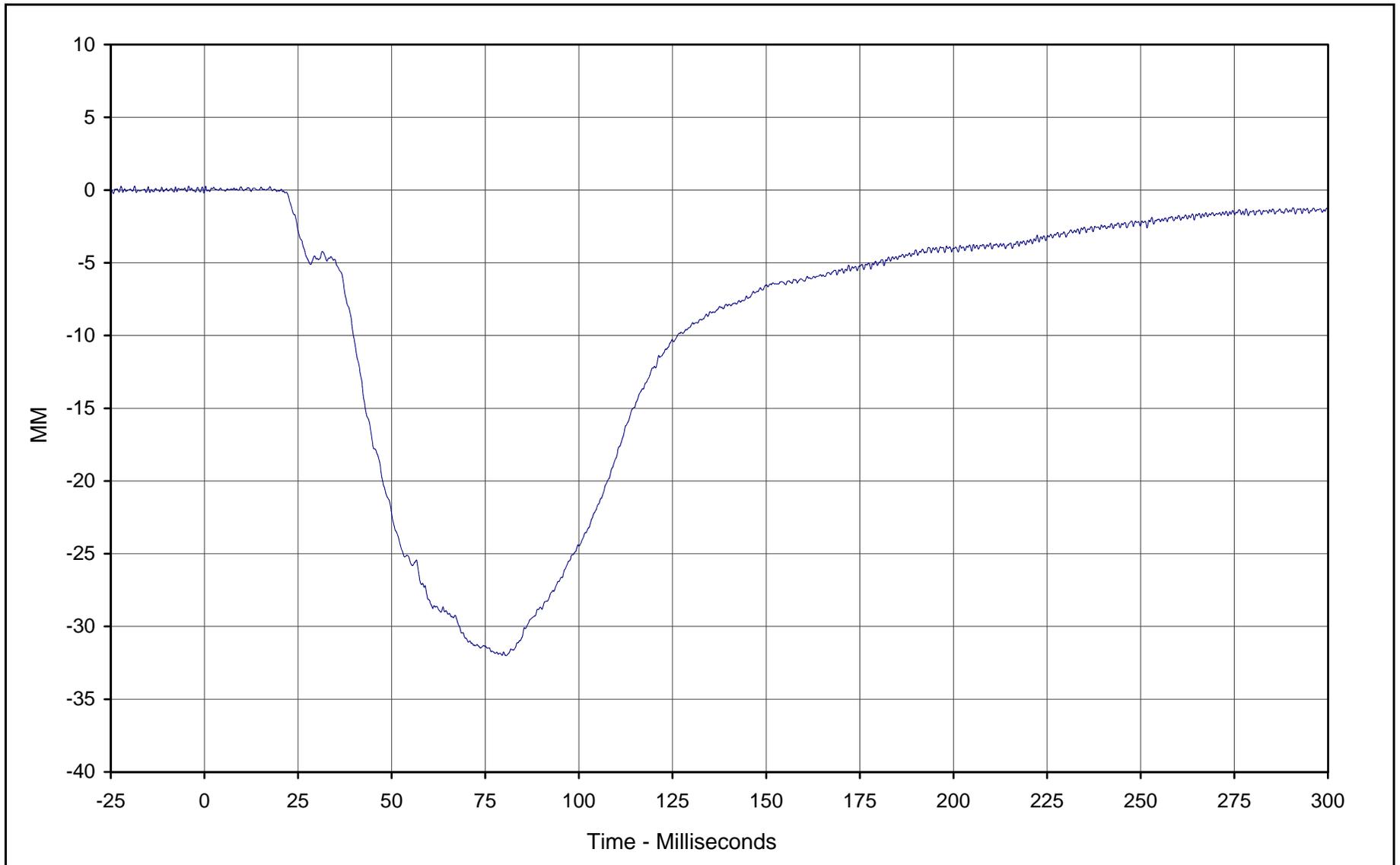
Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103

Test Vehicle: 2000 Toyota Tundra SR5 Pickup

KARR20001-02



B-94



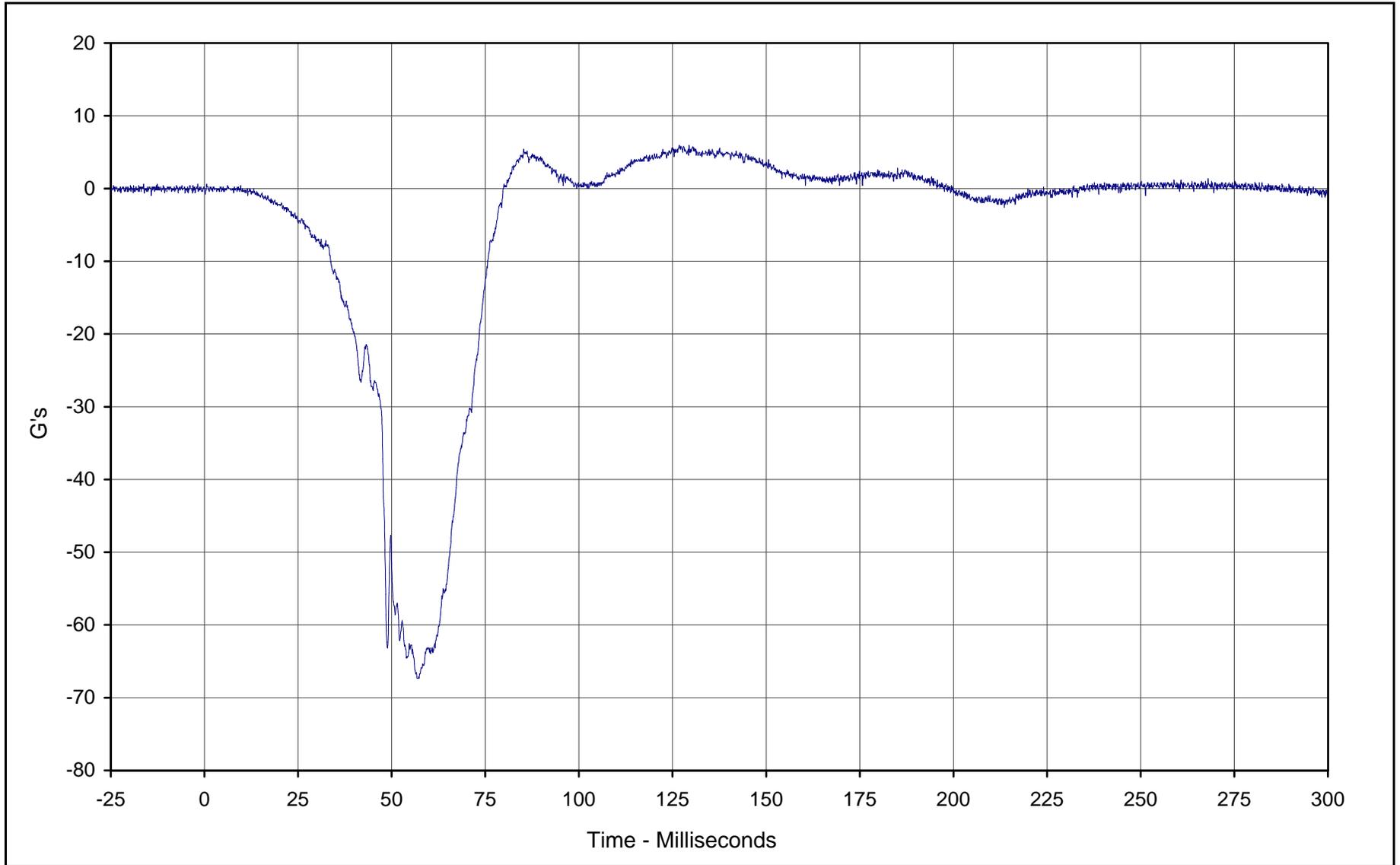
Curve Description: Passenger Chest Displacement X  
Maximum Value: 0.3 at 0.3 Milliseconds  
Minimum Value: -32.0 at 80.7 Milliseconds  
SAE Filter Class: 600  
Date of Test: 11/17/99  
Curve Number: FIL-063

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-95



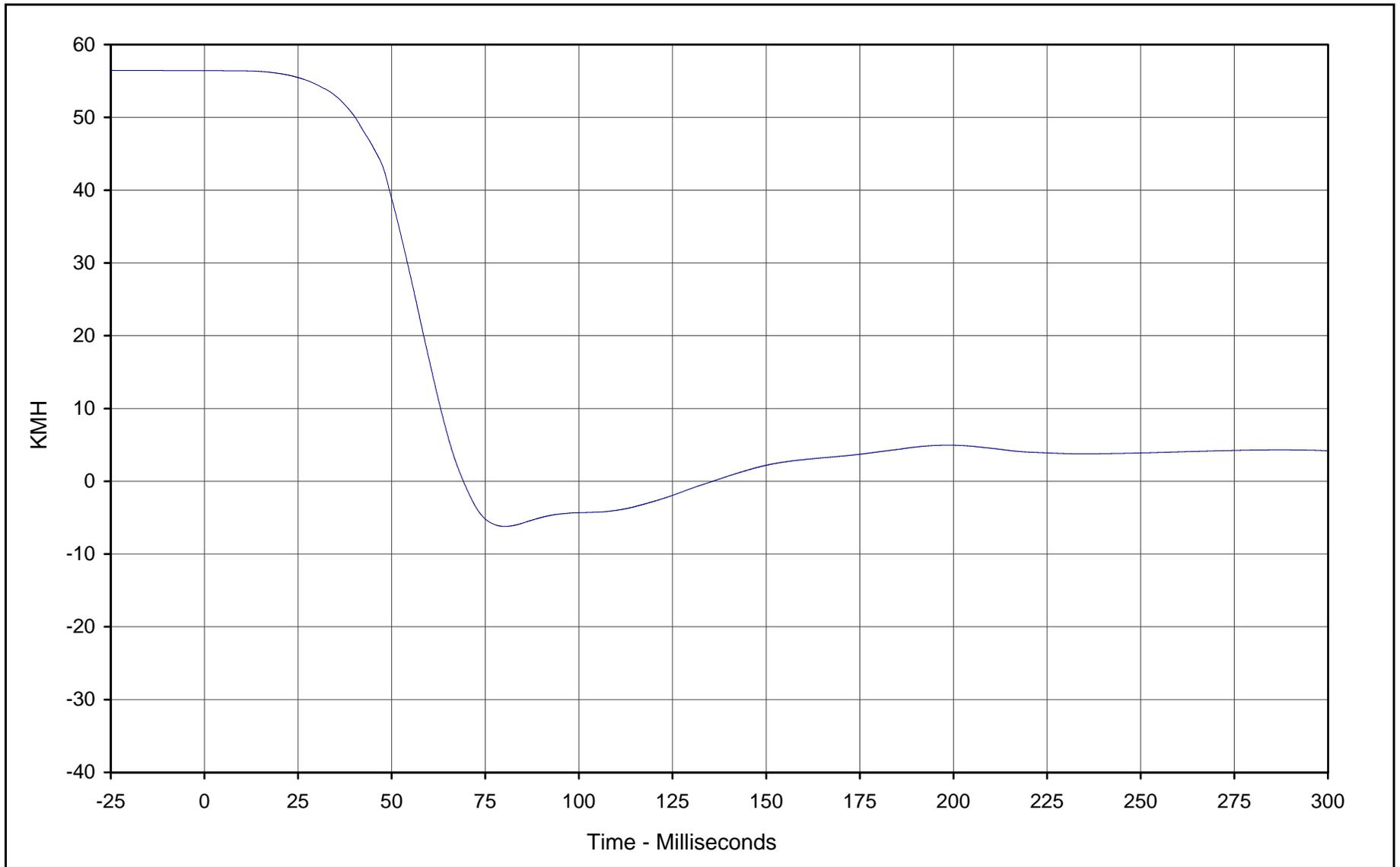
Curve Description: Passenger Pelvis X  
Maximum Value: 6.0 at 126.8 Milliseconds  
Minimum Value: -67.3 at 56.8 Milliseconds  
SAE Filter Class: 1000  
Date of Test: 11/17/99  
Curve Number: FIL-064

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-96



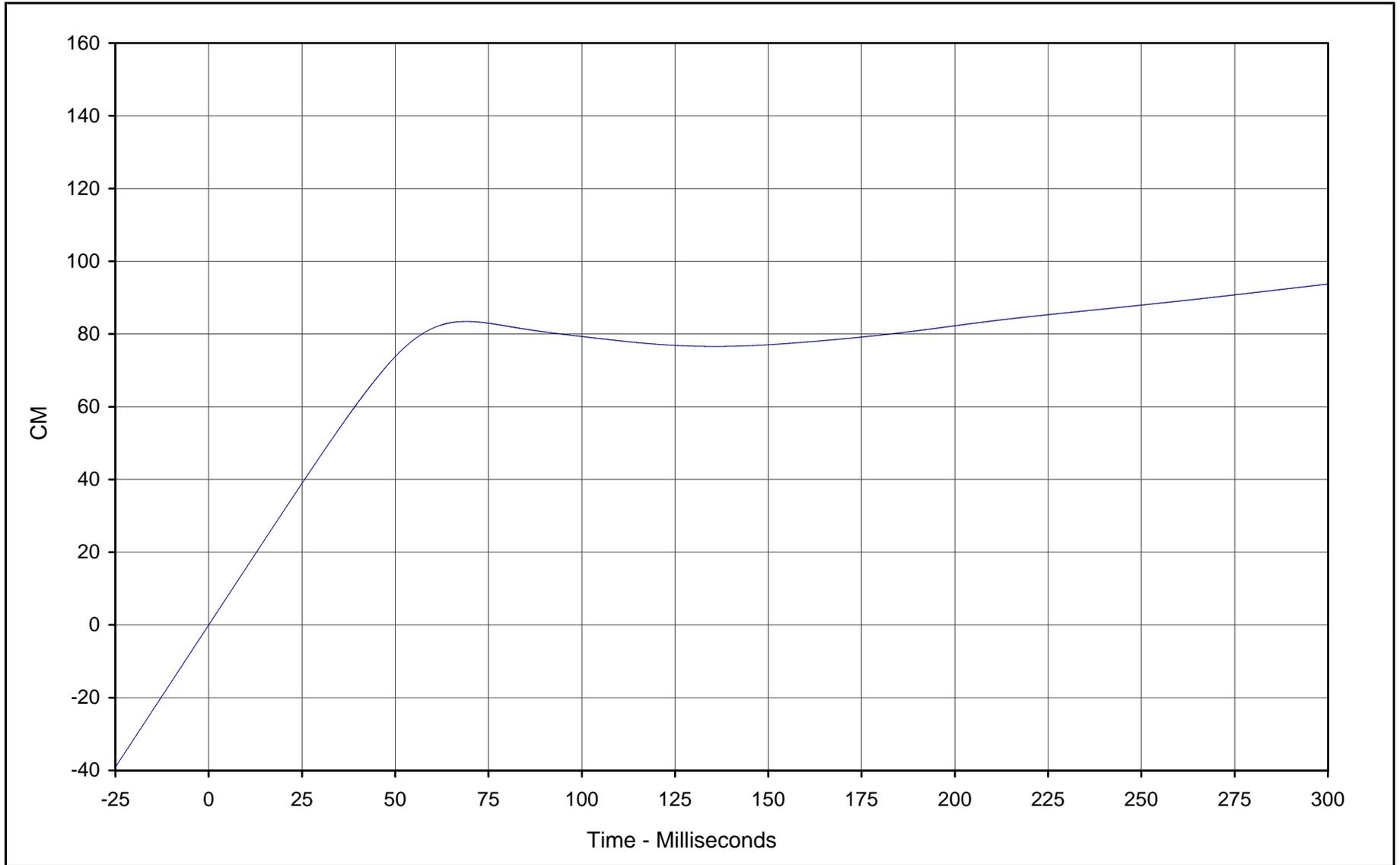
Curve Description: Passenger Pelvis X Velocity  
Maximum Value: 56.4 at 0.0 Milliseconds  
Minimum Value: -6.2 at 80.1 Milliseconds  
SAE Filter Class: 180  
Date of Test: 11/17/99  
Curve Number: IN1-064

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-97



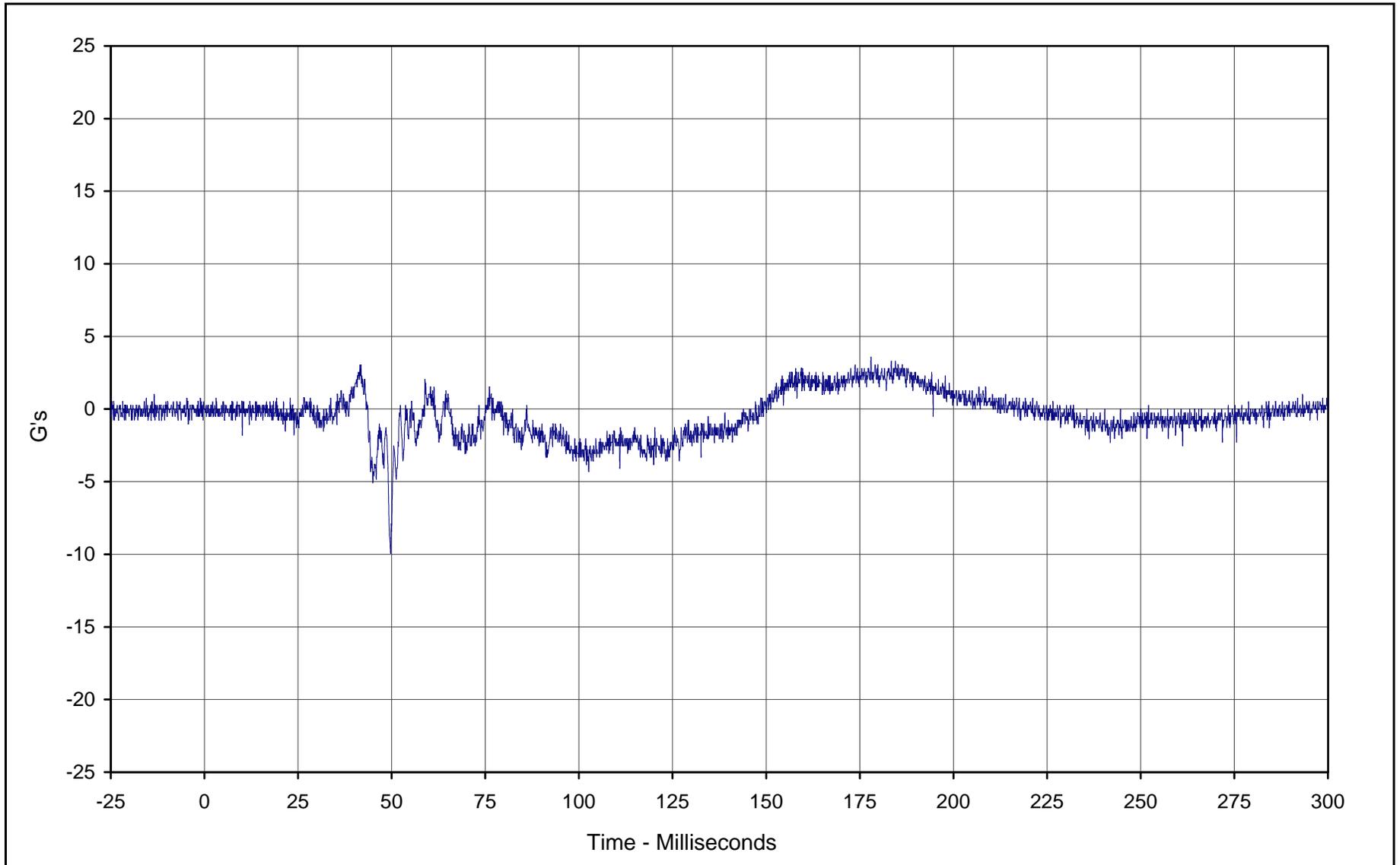
Curve Description: Passenger Pelvis X Displ.  
Maximum Value: 93.7 at 299.9 Milliseconds  
Minimum Value: 0.0 at 0.0 Milliseconds  
SAE Filter Class: 180  
Date of Test: 11/17/99  
Curve Number: IN2-064

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-98



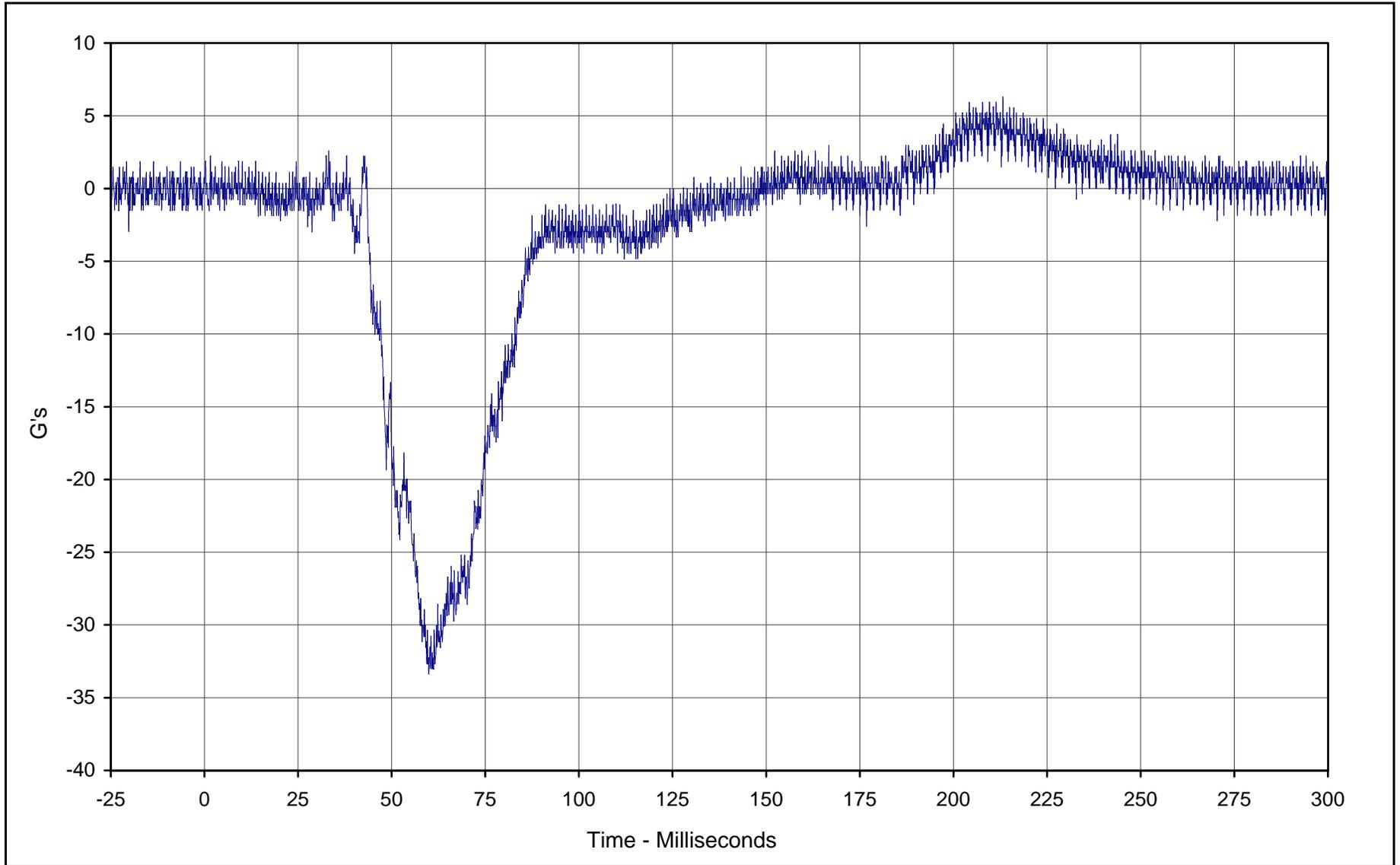
Curve Description: Passenger Pelvis Y  
Maximum Value: 3.6 at 178.0 Milliseconds  
Minimum Value: -9.9 at 49.7 Milliseconds  
SAE Filter Class: 1000  
Date of Test: 11/17/99  
Curve Number: FIL-065

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-99



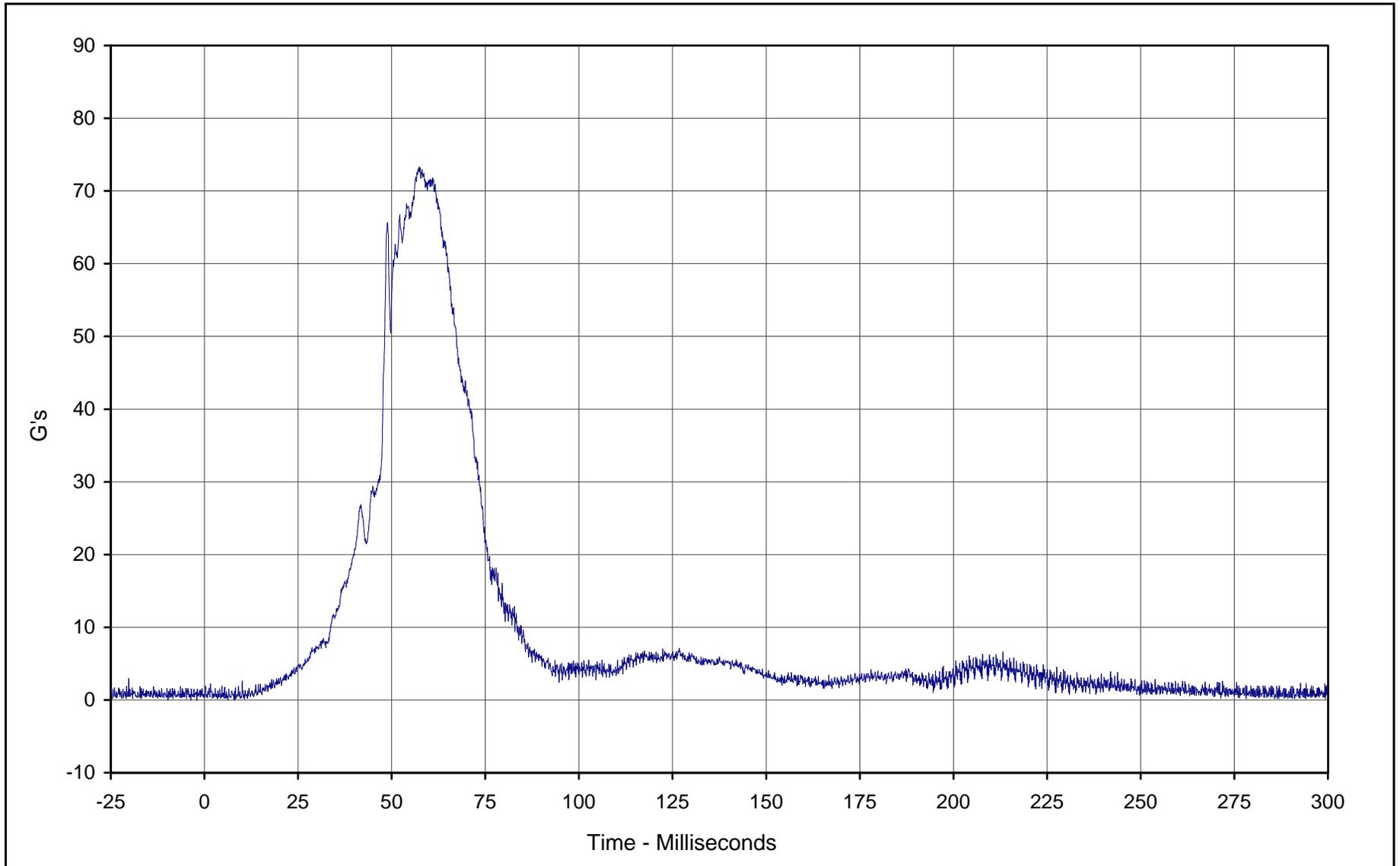
Curve Description: Passenger Pelvis Z  
Maximum Value: 6.3 at 213.2 Milliseconds  
Minimum Value: -33.4 at 59.9 Milliseconds  
SAE Filter Class: 1000  
Date of Test: 11/17/99  
Curve Number: FIL-066

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KAR20001-02

B-100



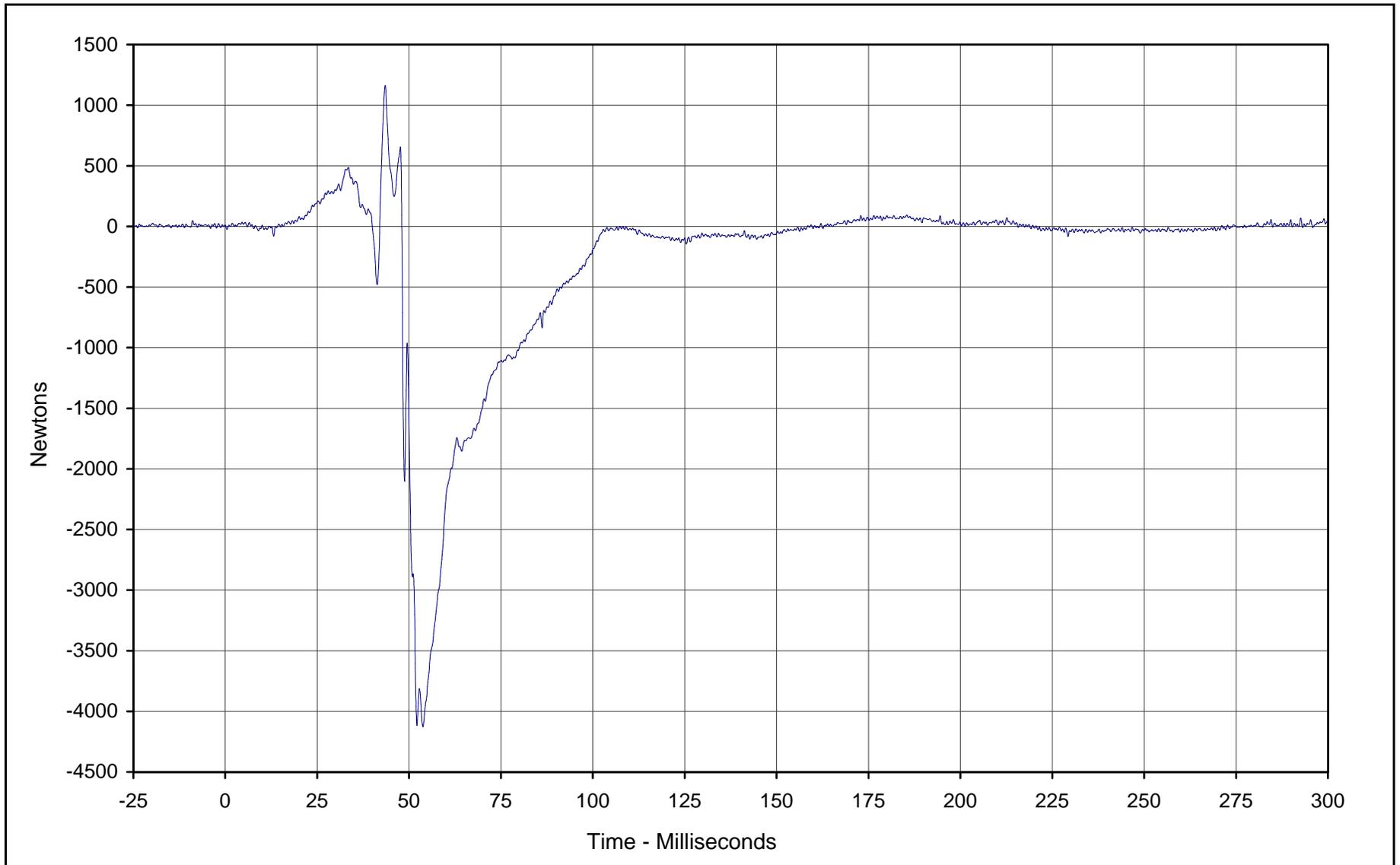
Curve Description: Passenger Pelvis Resultant  
Maximum Value: 73.3 at 57.3 Milliseconds  
Minimum Value: 0.0 at 6.3 Milliseconds  
SAE Filter Class: 1000  
Date of Test: 11/17/99  
Curve Number: RES-064

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KAR20001-02

B-101



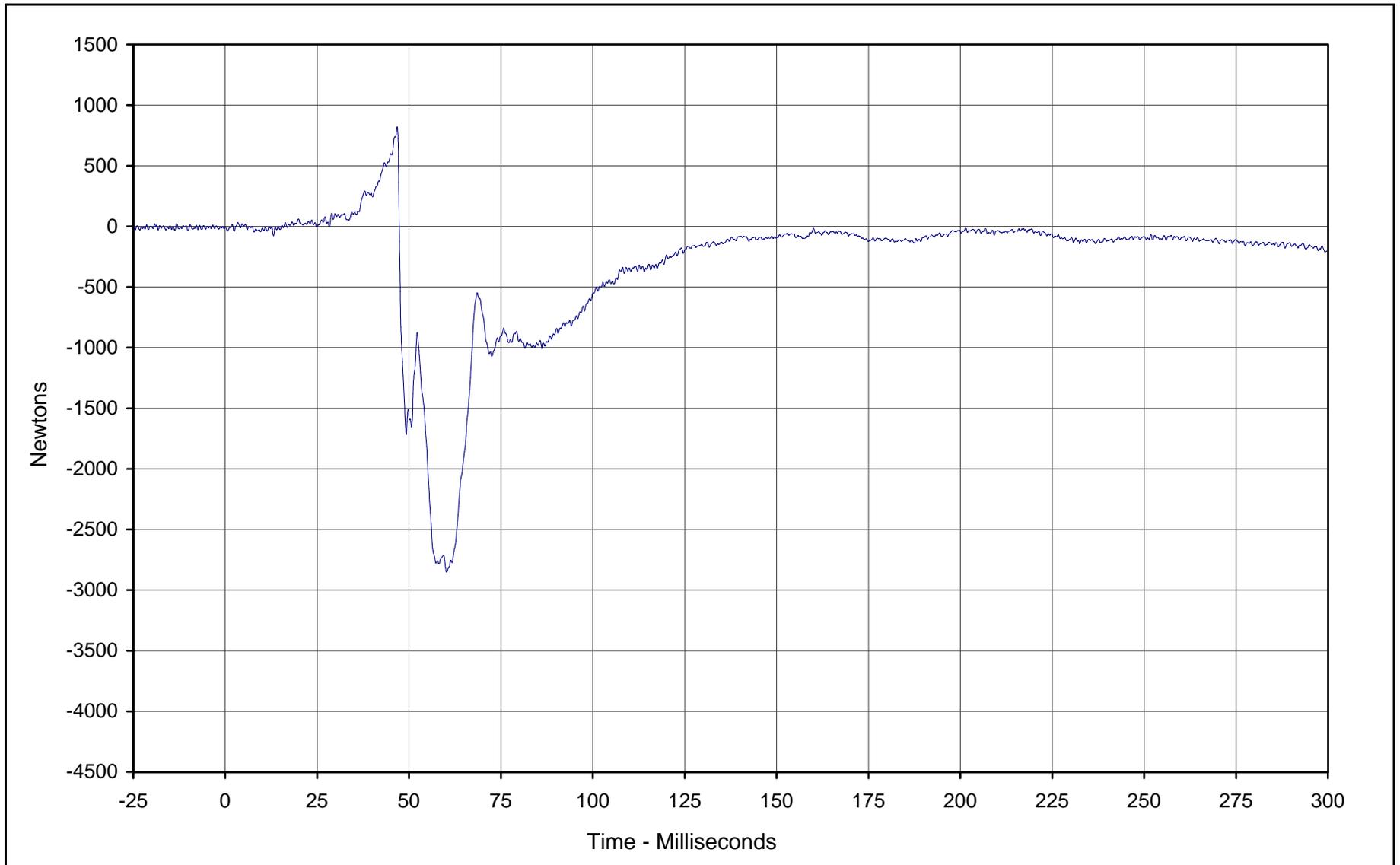
Curve Description: Passenger Left Femur Force  
Maximum Value: 1162.1 at 43.5 Milliseconds  
Minimum Value: -4126.7 at 53.8 Milliseconds  
SAE Filter Class: 600  
Date of Test: 11/17/99  
Curve Number: FIL-067

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-102



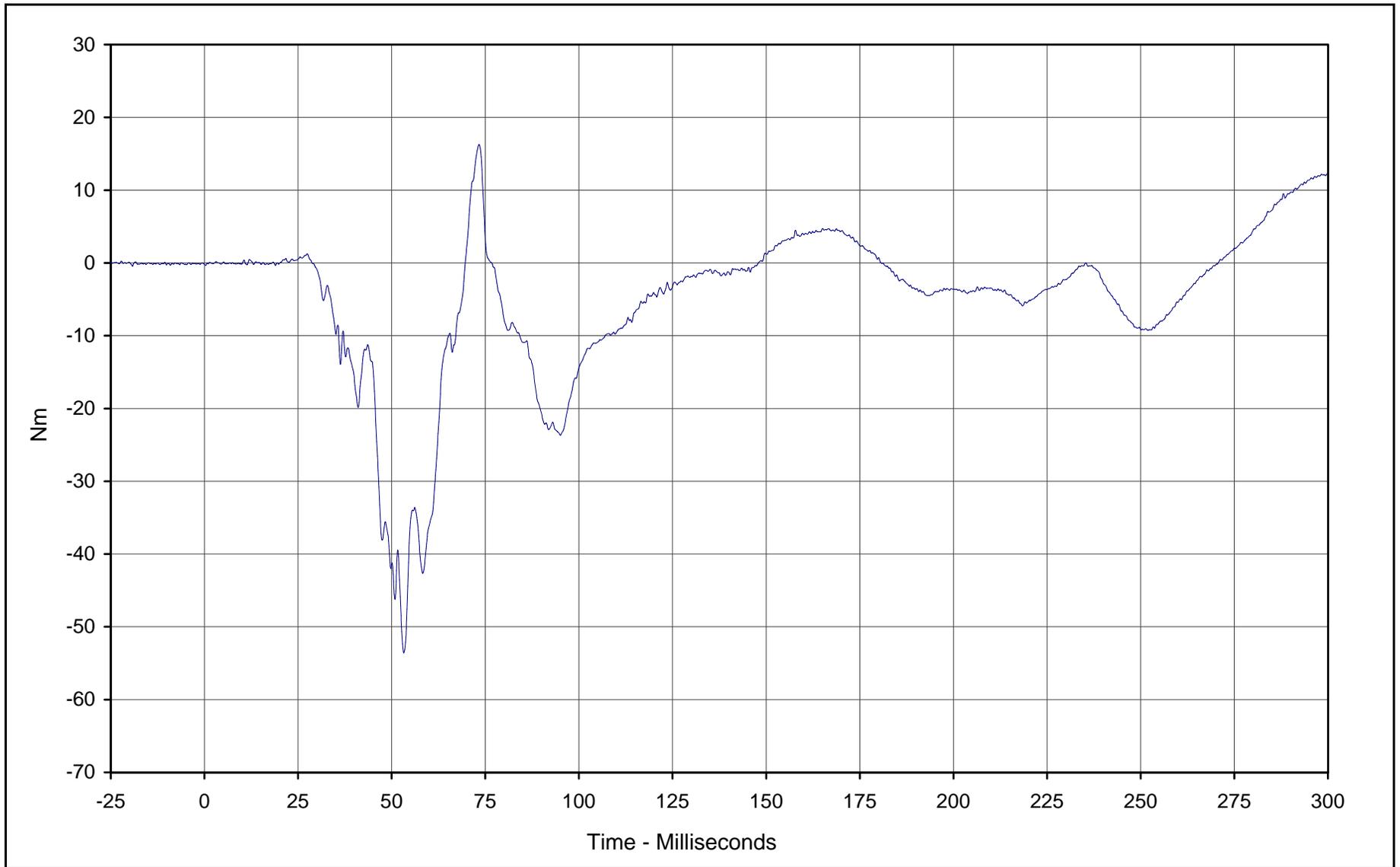
Curve Description: Passenger Right Femur Force  
Maximum Value: 821.9 at 46.8 Milliseconds  
Minimum Value: -2852.1 at 60.2 Milliseconds  
SAE Filter Class: 600  
Date of Test: 11/17/99  
Curve Number: FIL-068

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-103



Curve Description: Passenger Left Upper Tibia Moment X

Maximum Value: 16.3 at 73.3 Milliseconds

Minimum Value: -53.6 at 53.2 Milliseconds

SAE Filter Class: 600

Date of Test: 11/17/99

Curve Number: FIL-069

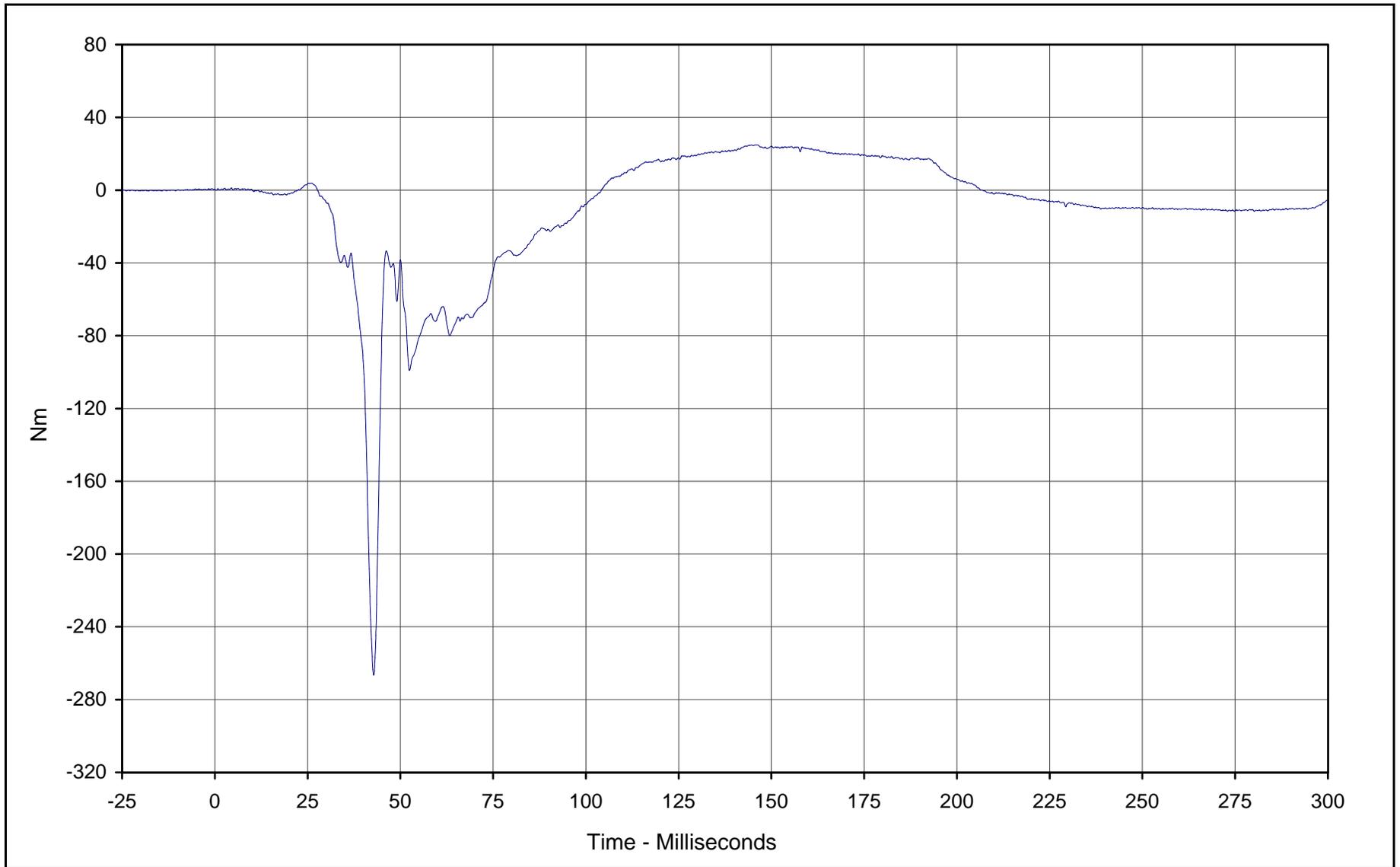
Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103

Test Vehicle: 2000 Toyota Tundra SR5 Pickup

KARR20001-02



B-104



Curve Description: Passenger Left Upper Tibia Moment Y

Maximum Value: 24.9 at 145.8 Milliseconds

Minimum Value: -266.6 at 42.8 Milliseconds

SAE Filter Class: 600

Date of Test: 11/17/99

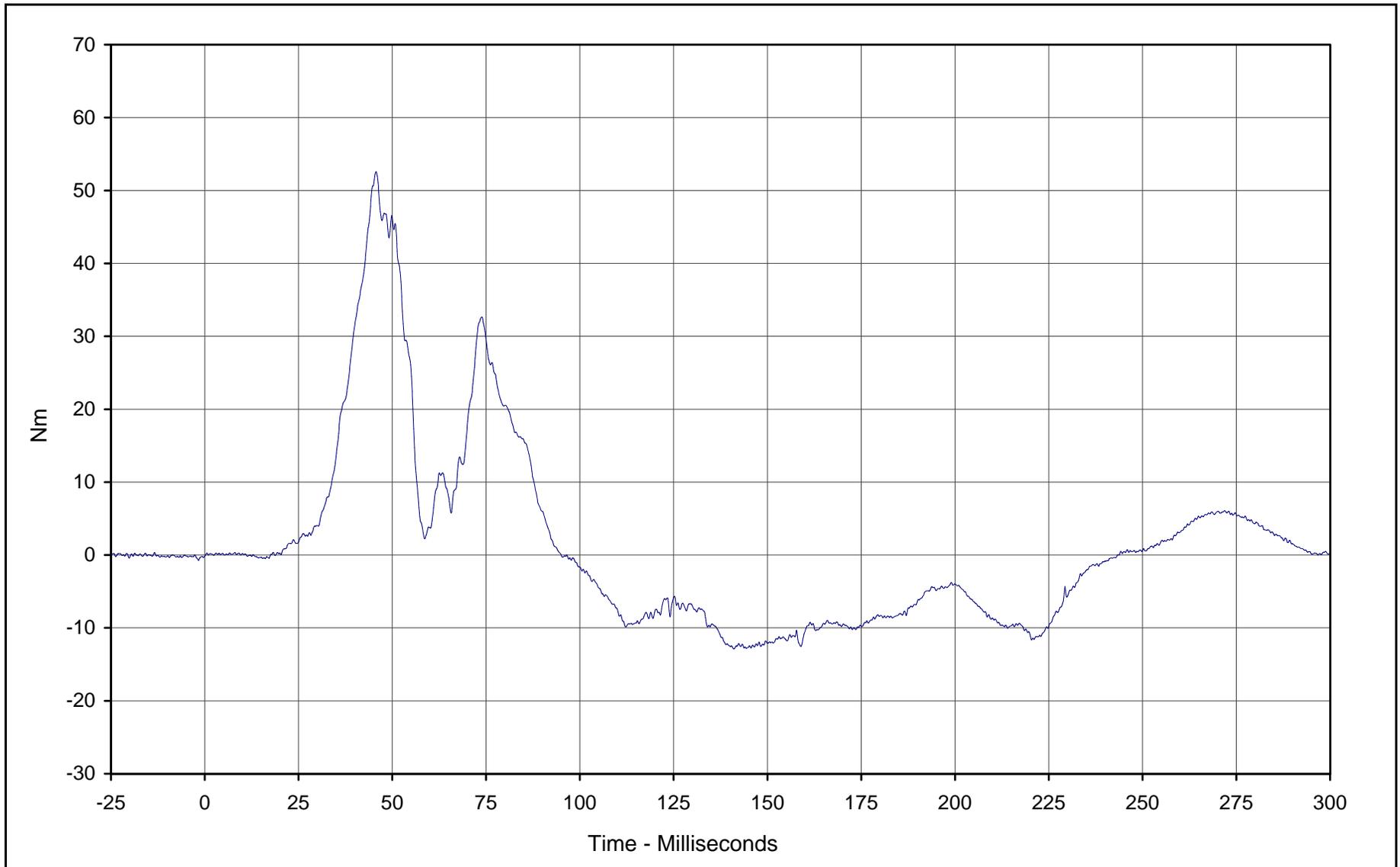
Curve Number: FIL-070

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103

Test Vehicle: 2000 Toyota Tundra SR5 Pickup

KARR20001-02





Curve Description: Passenger Right Upper Tibia Moment X

Maximum Value: 52.6 at 45.7 Milliseconds

Minimum Value: -12.9 at 141.1 Milliseconds

SAE Filter Class: 600

Date of Test: 11/17/99

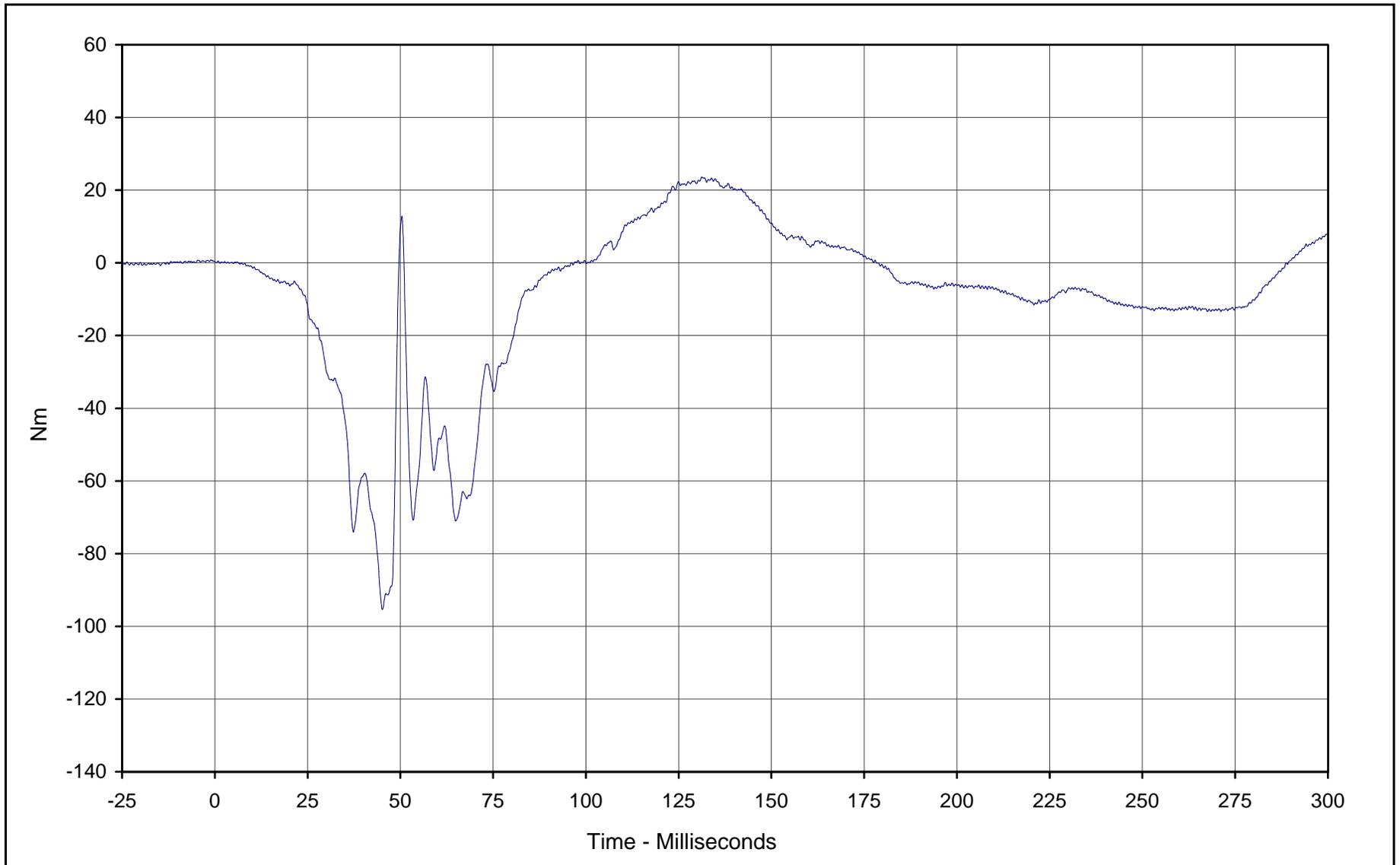
Curve Number: FIL-071

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103

Test Vehicle: 2000 Toyota Tundra SR5 Pickup



B-106



Curve Description: Passenger Right Upper Tibia Moment Y

Maximum Value: 23.6 at 131.2 Milliseconds

Minimum Value: -95.3 at 45.2 Milliseconds

SAE Filter Class: 600

Date of Test: 11/17/99

Curve Number: FIL-072

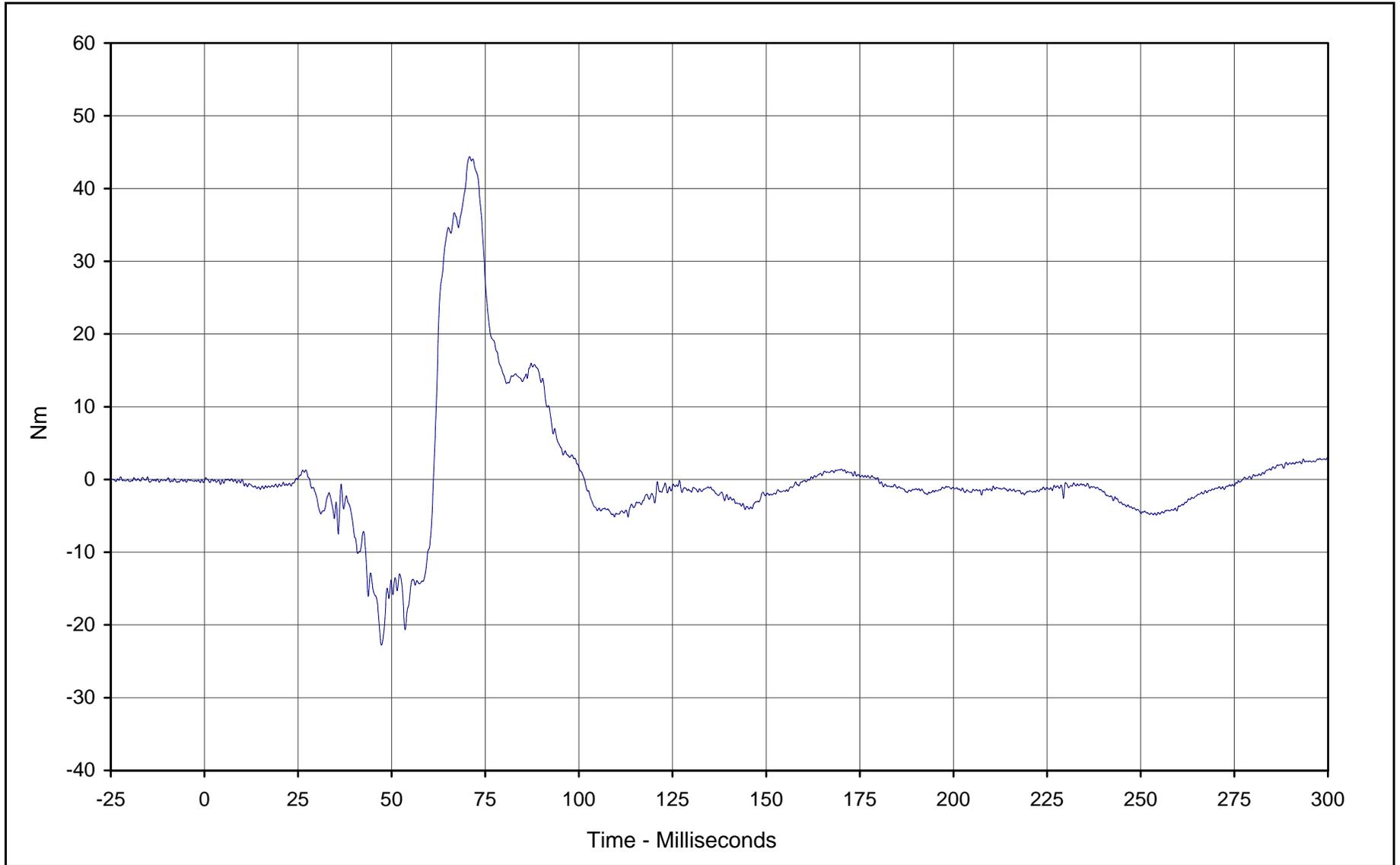
Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103

Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-107



Curve Description: Passenger Left Lower Tibia Moment X

Maximum Value: 44.4 at 70.8 Milliseconds

Minimum Value: -22.8 at 47.3 Milliseconds

SAE Filter Class: 600

Date of Test: 11/17/99

Curve Number: FIL-073

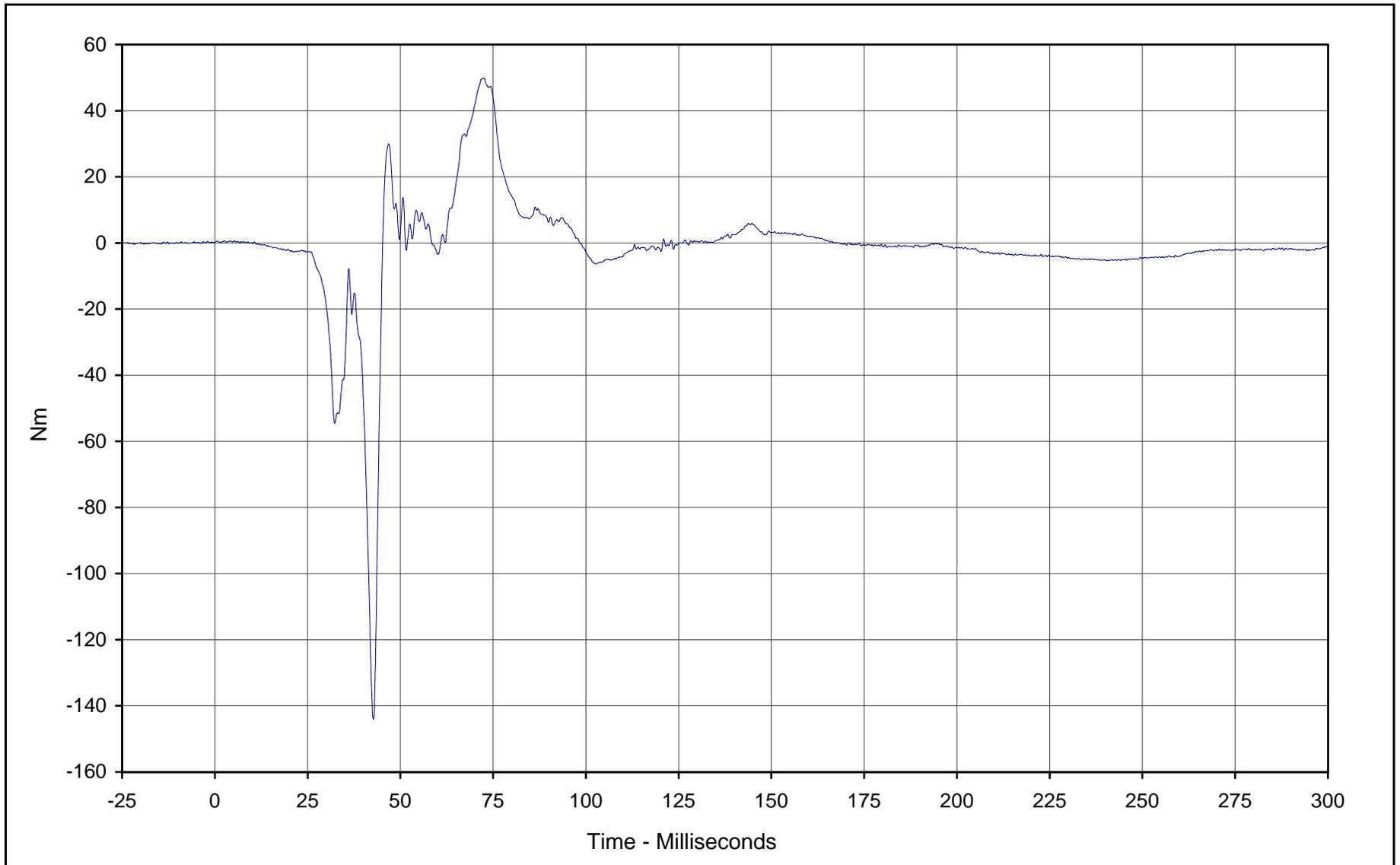
Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103

Test Vehicle: 2000 Toyota Tundra SR5 Pickup

KARR20001-02



B-108



Curve Description: Passenger Left Lower Tibia Moment Y

Maximum Value: 49.8 at 72.4 Milliseconds

Minimum Value: -144.1 at 42.7 Milliseconds

SAE Filter Class: 600

Date of Test: 11/17/99

Curve Number: FIL-074

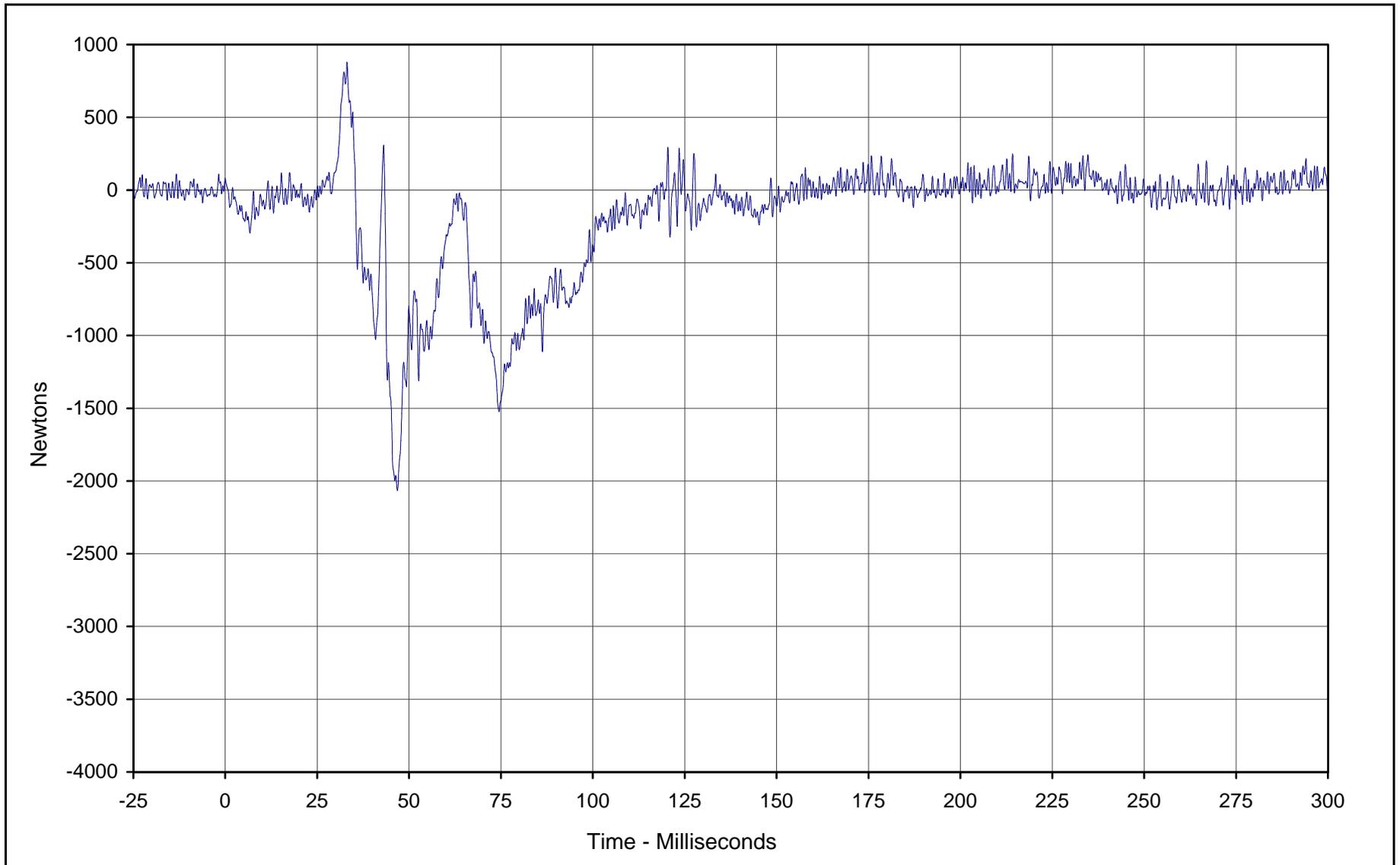
Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103

Test Vehicle: 2000 Toyota Tundra SR5 Pickup

KARR20001-02



B-109



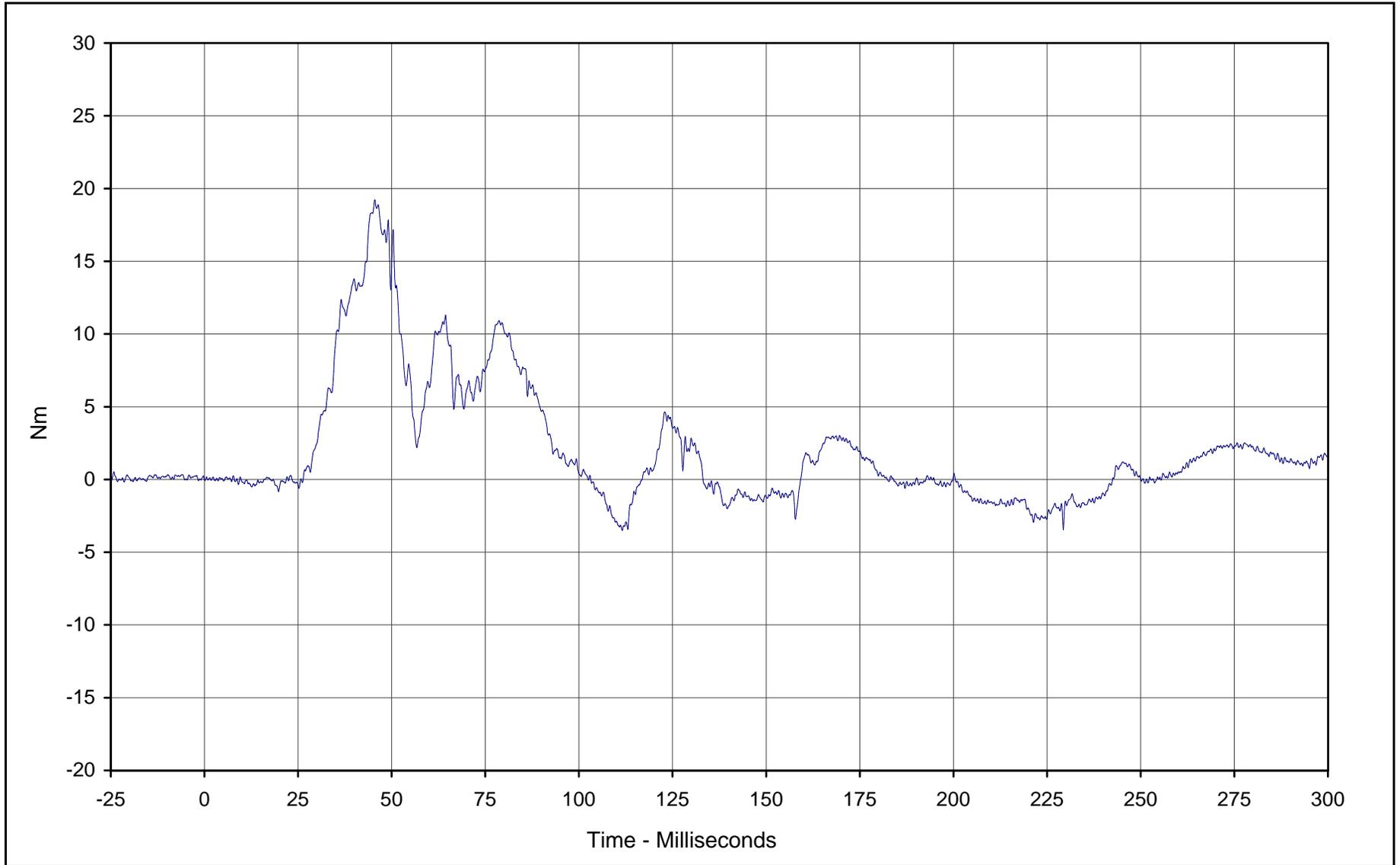
Curve Description: Passenger Left Lower Tibia Force Z  
Maximum Value: 878.7 at 33.1 Milliseconds  
Minimum Value: -2065.4 at 46.8 Milliseconds  
SAE Filter Class: 600  
Date of Test: 11/17/99  
Curve Number: FIL-075

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-110



Curve Description: Passenger Right Lower Tibia Moment X

Maximum Value: 19.2 at 45.5 Milliseconds

Minimum Value: -3.5 at 111.6 Milliseconds

SAE Filter Class: 600

Date of Test: 11/17/99

Curve Number: FIL-076

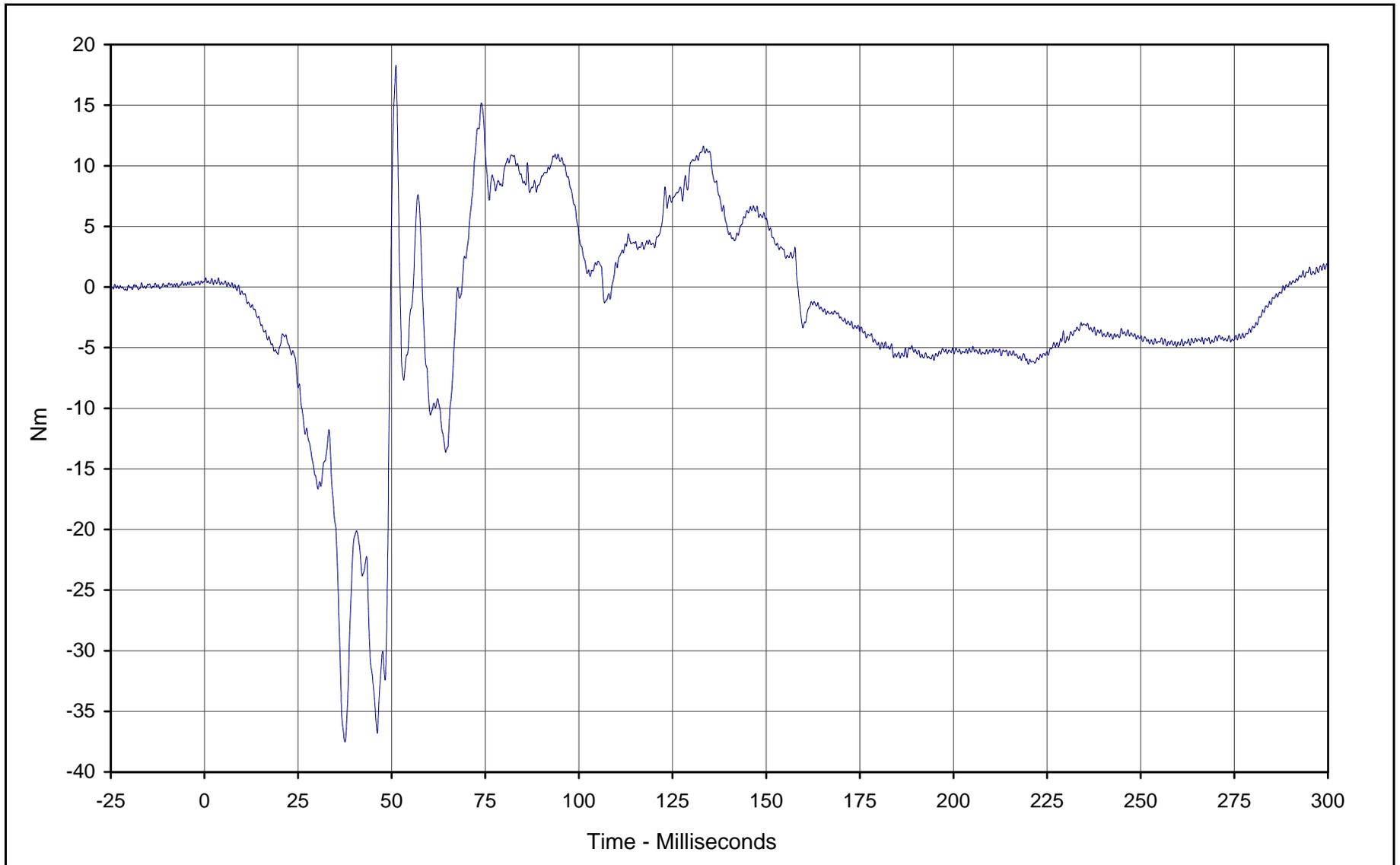
Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103

Test Vehicle: 2000 Toyota Tundra SR5 Pickup

KARR20001-02



B-111



Curve Description: Passenger Right Lower Tibia Moment Y

Maximum Value: 18.3 at 51.1 Milliseconds

Minimum Value: -37.5 at 37.6 Milliseconds

SAE Filter Class: 600

Date of Test: 11/17/99

Curve Number: FIL-077

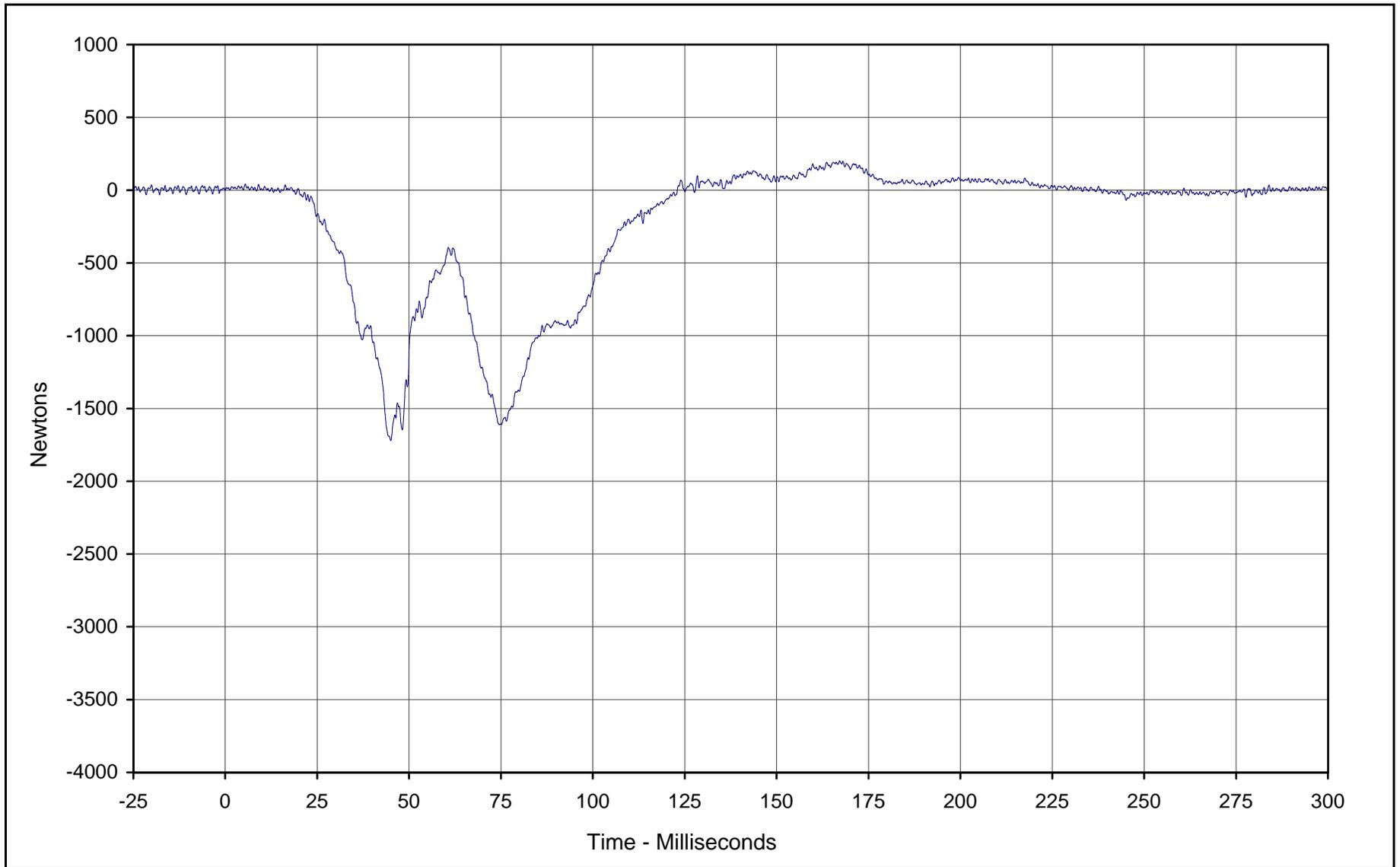
Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103

Test Vehicle: 2000 Toyota Tundra SR5 Pickup

KARR20001-02



B-112



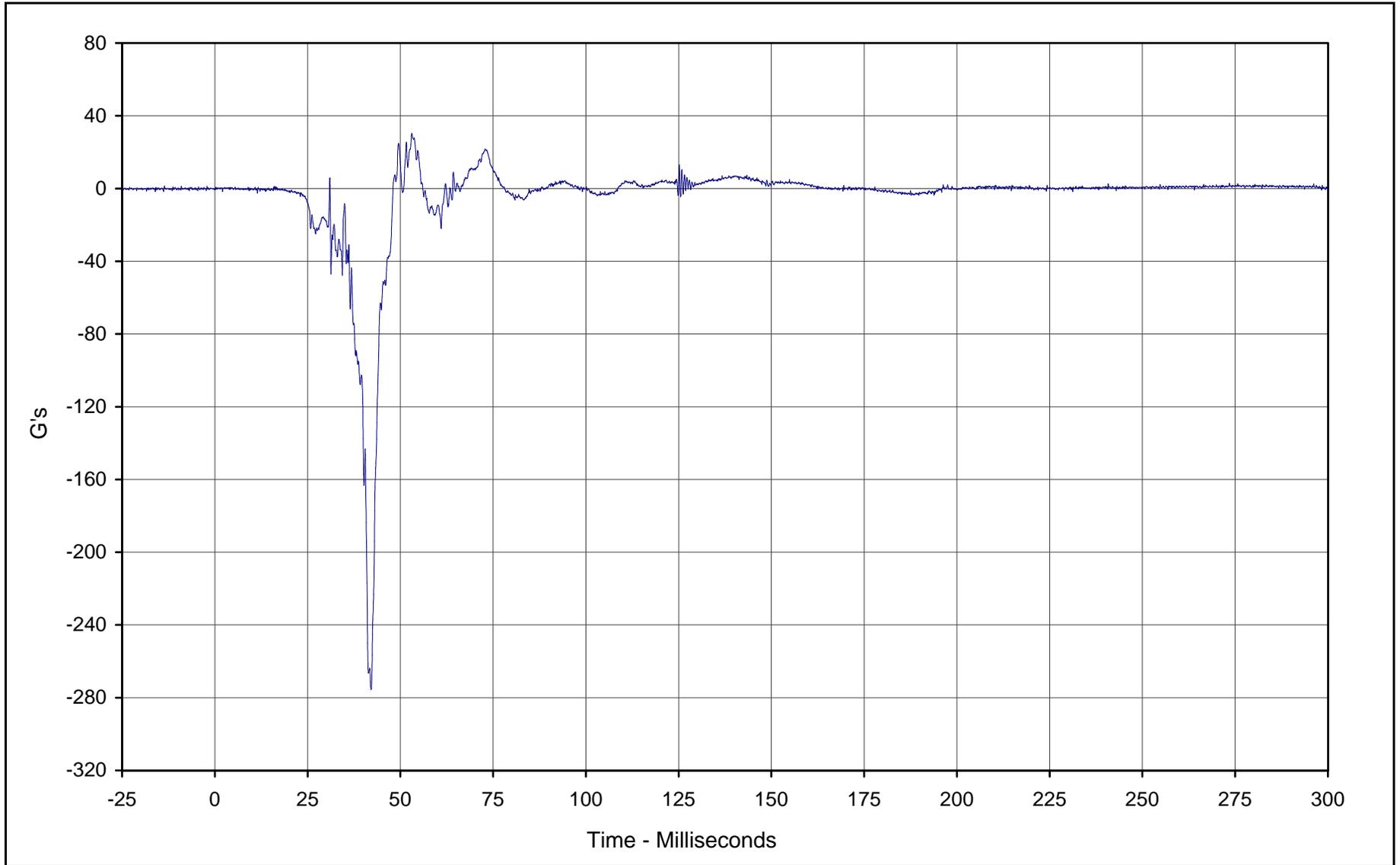
Curve Description: Passenger Right lower Tibia Force Z  
Maximum Value: 200.6 at 167.1 Milliseconds  
Minimum Value: -1720.6 at 45.0 Milliseconds  
SAE Filter Class: 600  
Date of Test: 11/17/99  
Curve Number: FIL-078

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-113



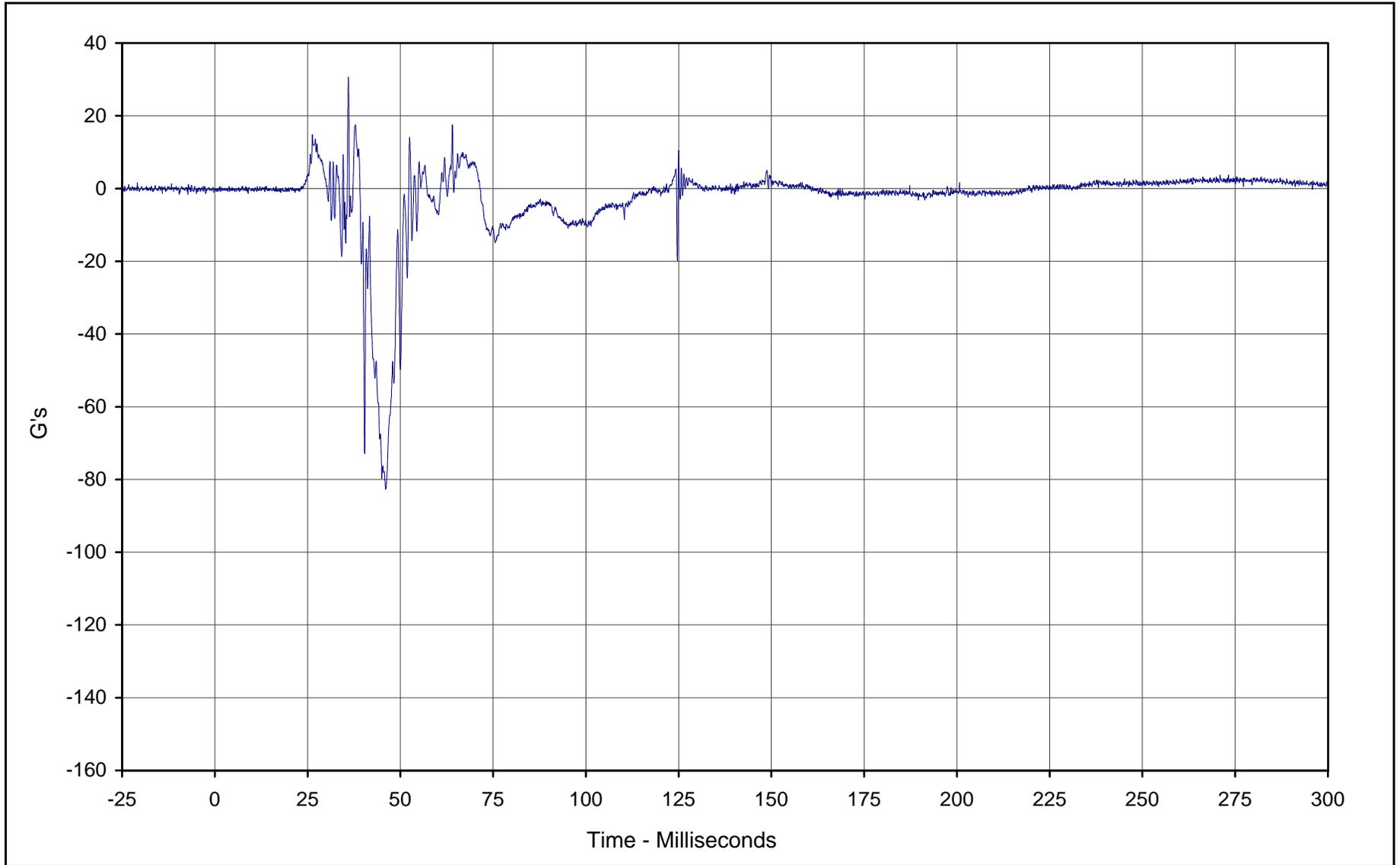
Curve Description: Passenger Left Foot Aft X  
Maximum Value: 30.4 at 53.1 Milliseconds  
Minimum Value: -275.6 at 42.1 Milliseconds  
SAE Filter Class: 1000  
Date of Test: 11/17/99  
Curve Number: FIL-079

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-114



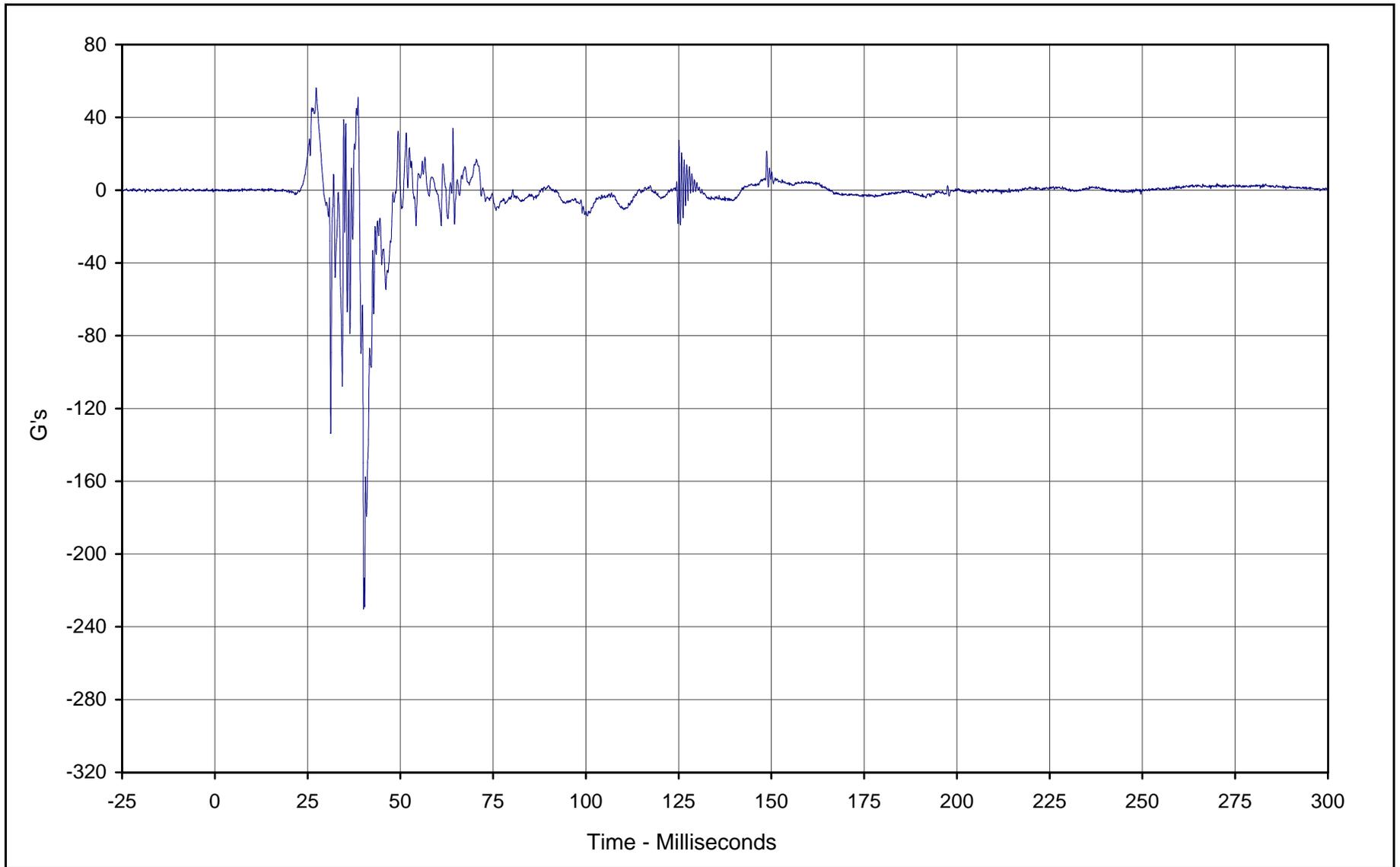
Curve Description: Passenger Left Foot Aft Z  
Maximum Value: 30.6 at 36.0 Milliseconds  
Minimum Value: -82.6 at 46.0 Milliseconds  
SAE Filter Class: 1000  
Date of Test: 11/17/99  
Curve Number: FIL-080

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-115



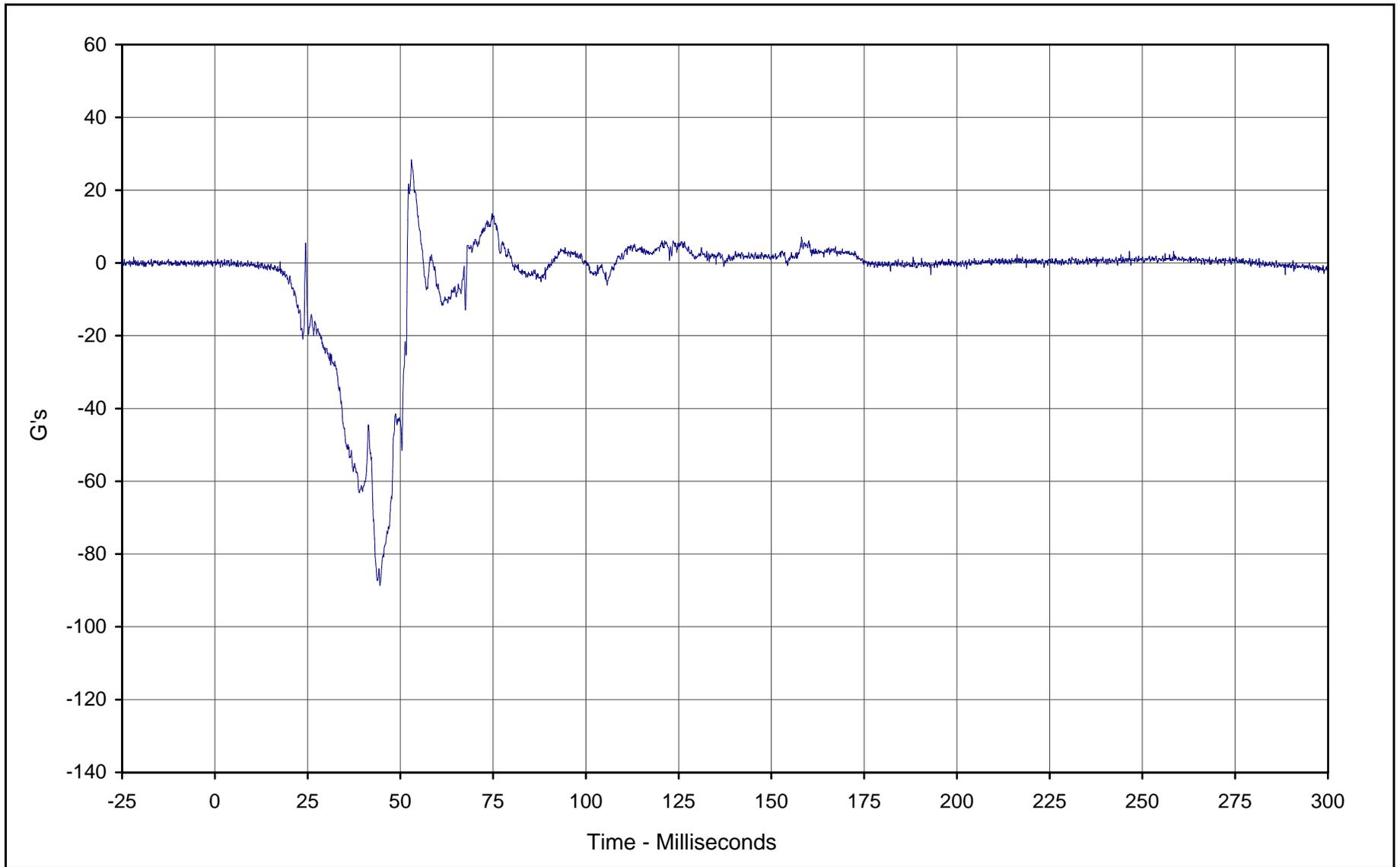
Curve Description: Passenger Left Foot Fore Z  
Maximum Value: 56.2 at 27.3 Milliseconds  
Minimum Value: -229.3 at 40.1 Milliseconds  
SAE Filter Class: 1000  
Date of Test: 11/17/99  
Curve Number: FIL-081

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-116



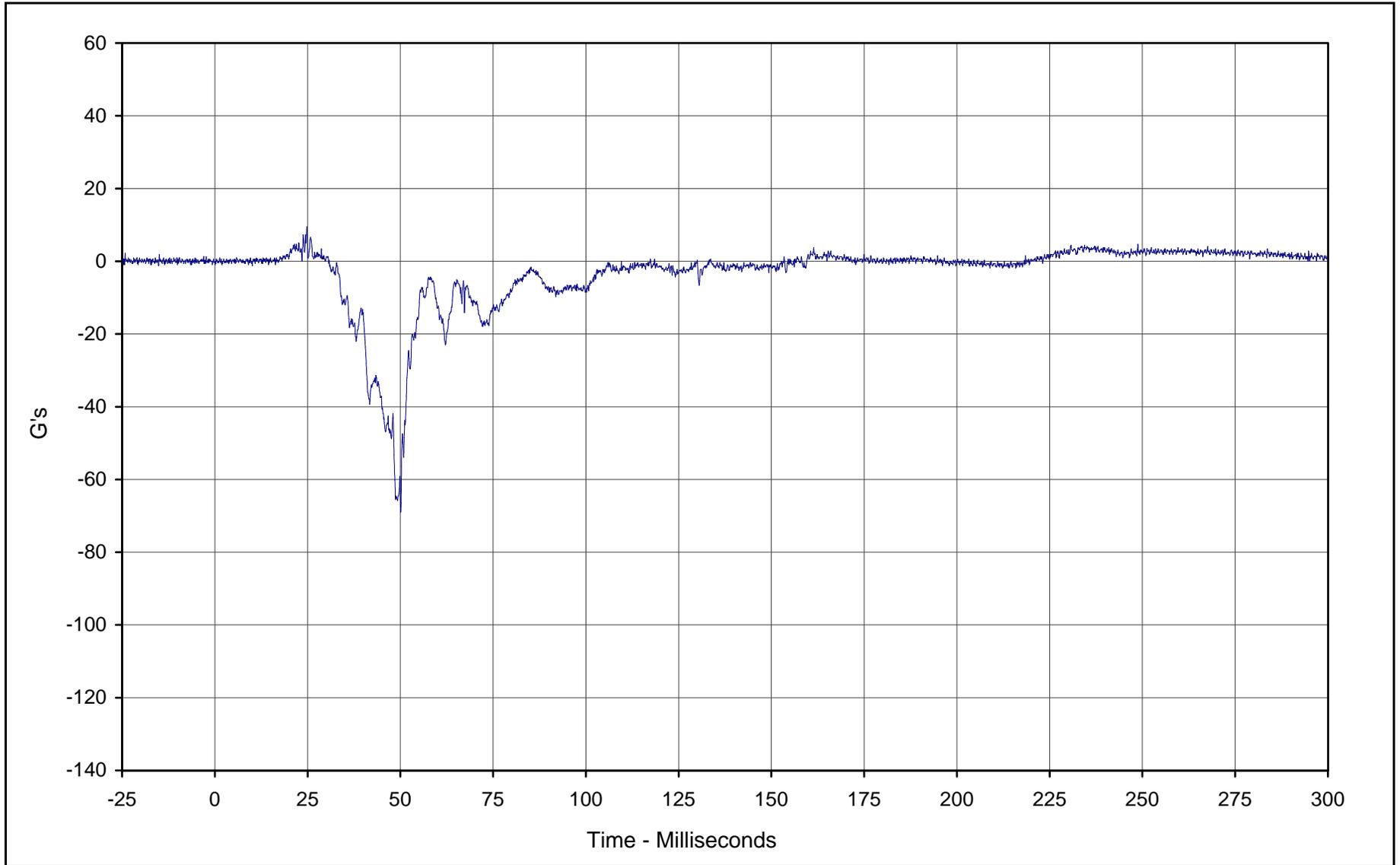
Curve Description: Passenger Right Foot Aft X  
Maximum Value: 28.3 at 53.0 Milliseconds  
Minimum Value: -88.6 at 44.5 Milliseconds  
SAE Filter Class: 1000  
Date of Test: 11/17/99  
Curve Number: FIL-082

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-117



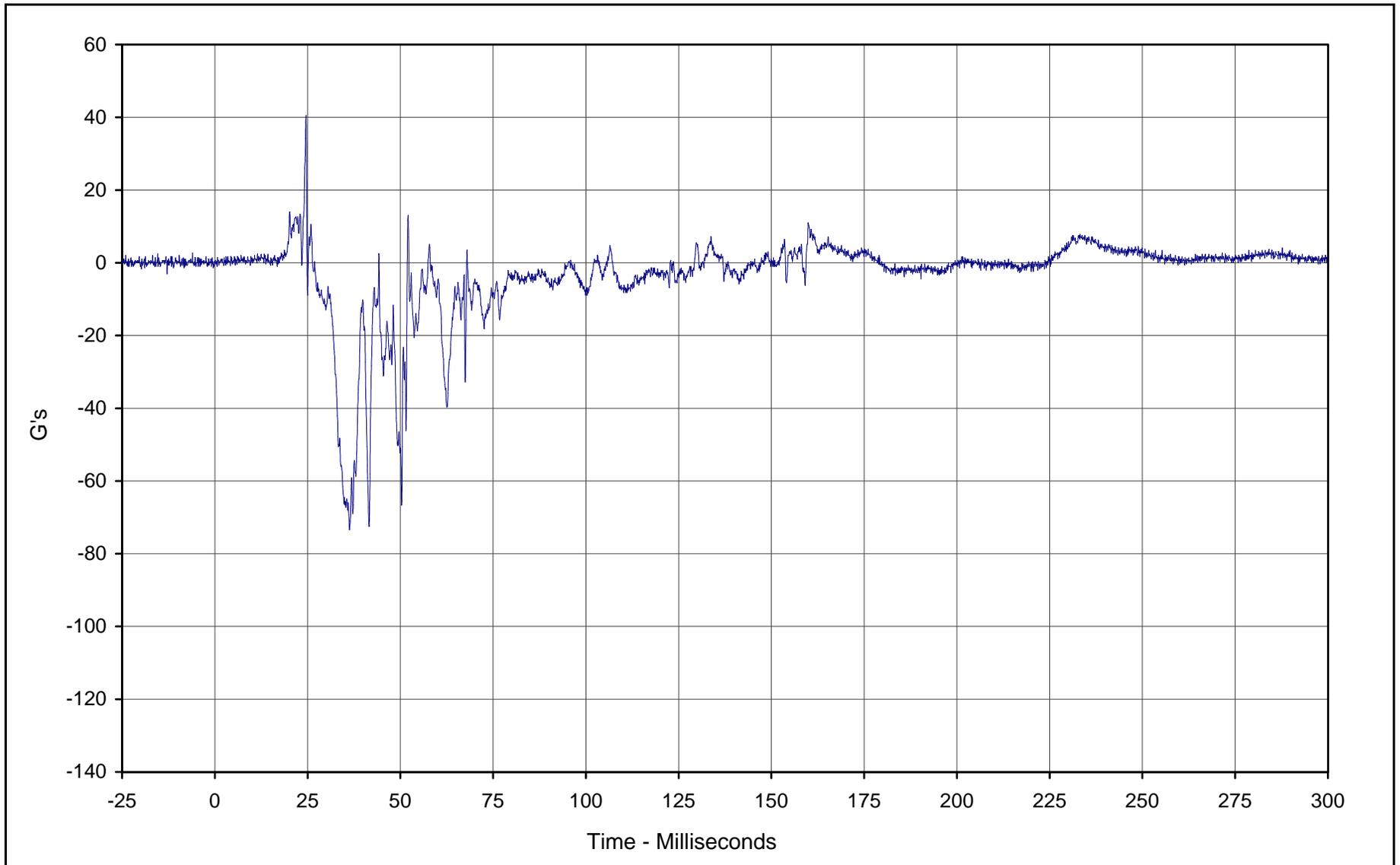
Curve Description: Passenger Right Foot Aft Z  
Maximum Value: 9.4 at 24.8 Milliseconds  
Minimum Value: -69.0 at 50.1 Milliseconds  
SAE Filter Class: 1000  
Date of Test: 11/17/99  
Curve Number: FIL-083

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-118



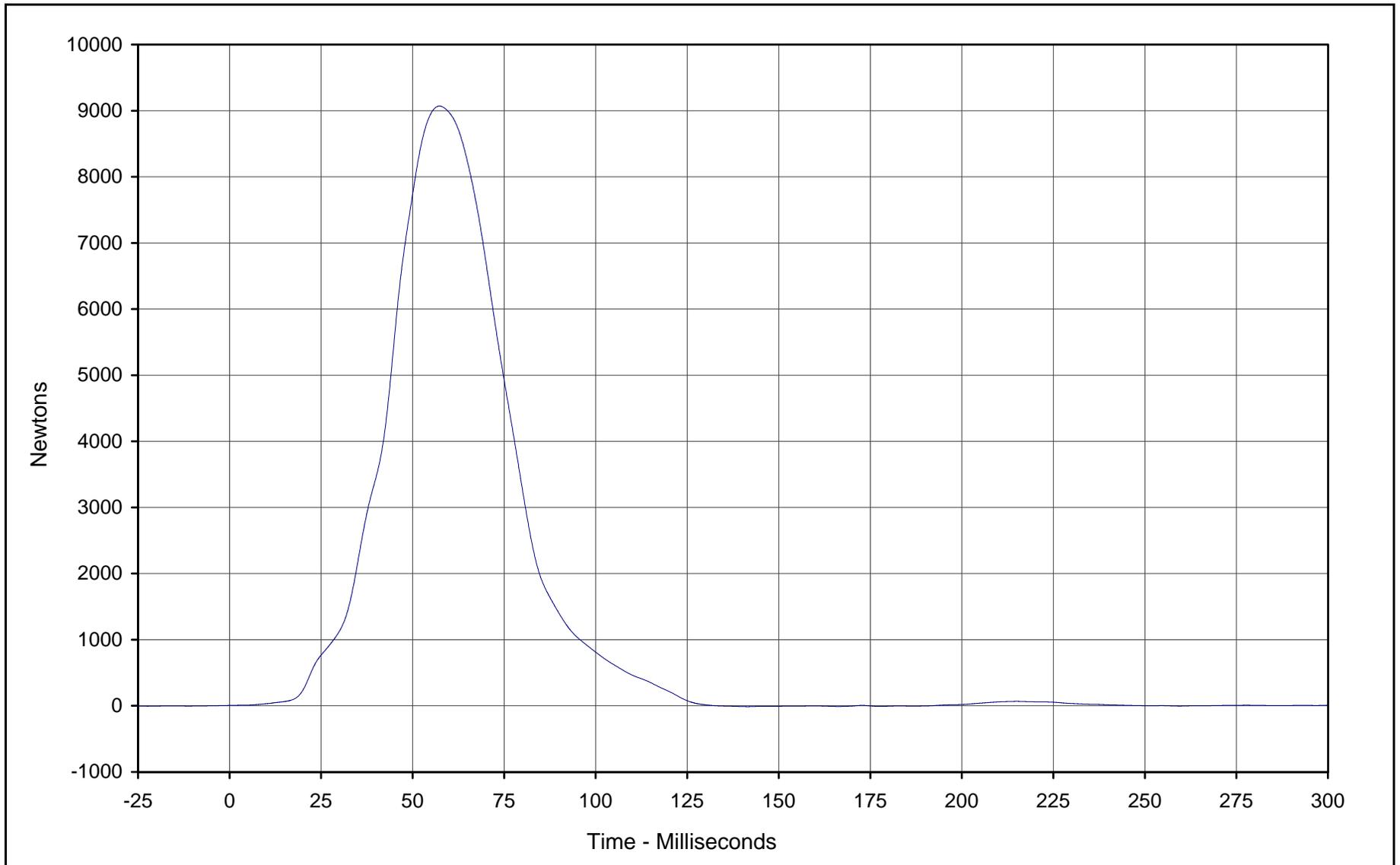
Curve Description: Passenger Right Foot Fore Z  
Maximum Value: 40.3 at 24.6 Milliseconds  
Minimum Value: -73.5 at 36.3 Milliseconds  
SAE Filter Class: 1000  
Date of Test: 11/17/99  
Curve Number: FIL-084

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-119



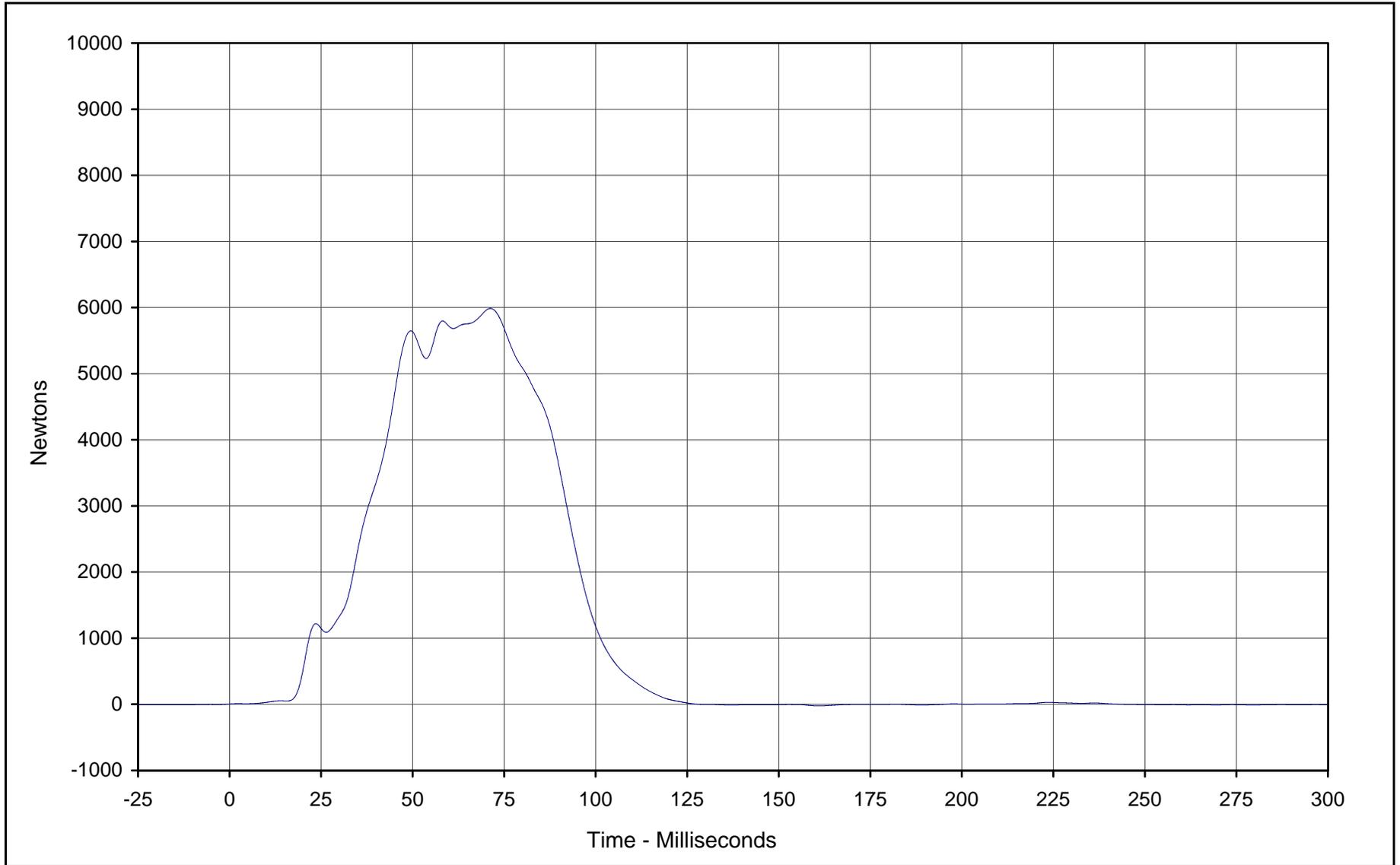
Curve Description: Passenger Lap Belt Force  
Maximum Value: 9070.5 at 57.3 Milliseconds  
Minimum Value: -12.6 at 141.5 Milliseconds  
SAE Filter Class: 60  
Date of Test: 11/17/99  
Curve Number: FIL-085

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-120



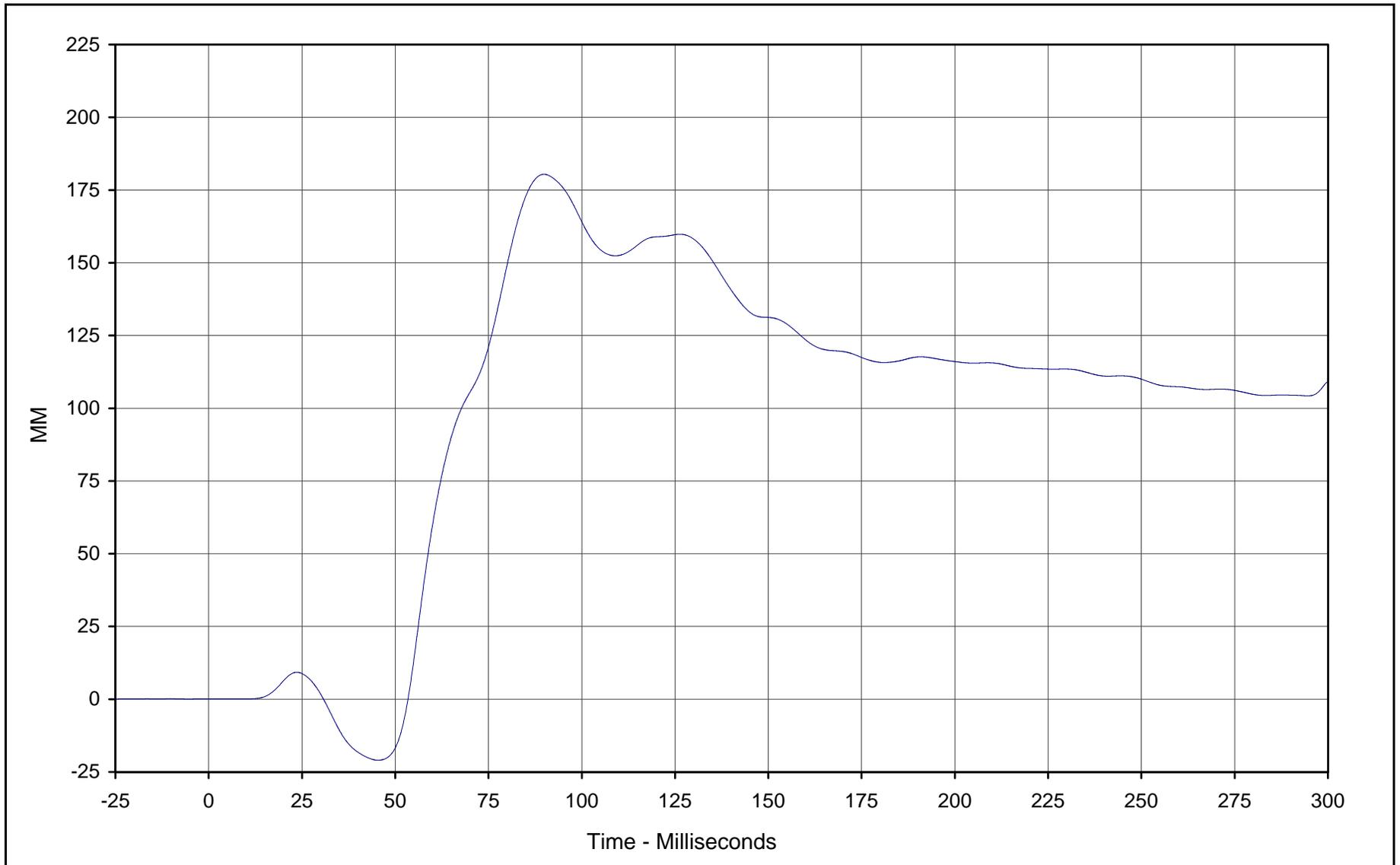
Curve Description: Passenger Shoulder Belt Force  
Maximum Value: 5986.9 at 71.2 Milliseconds  
Minimum Value: -24.3 at 161.0 Milliseconds  
SAE Filter Class: 60  
Date of Test: 11/17/99  
Curve Number: FIL-086

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-121



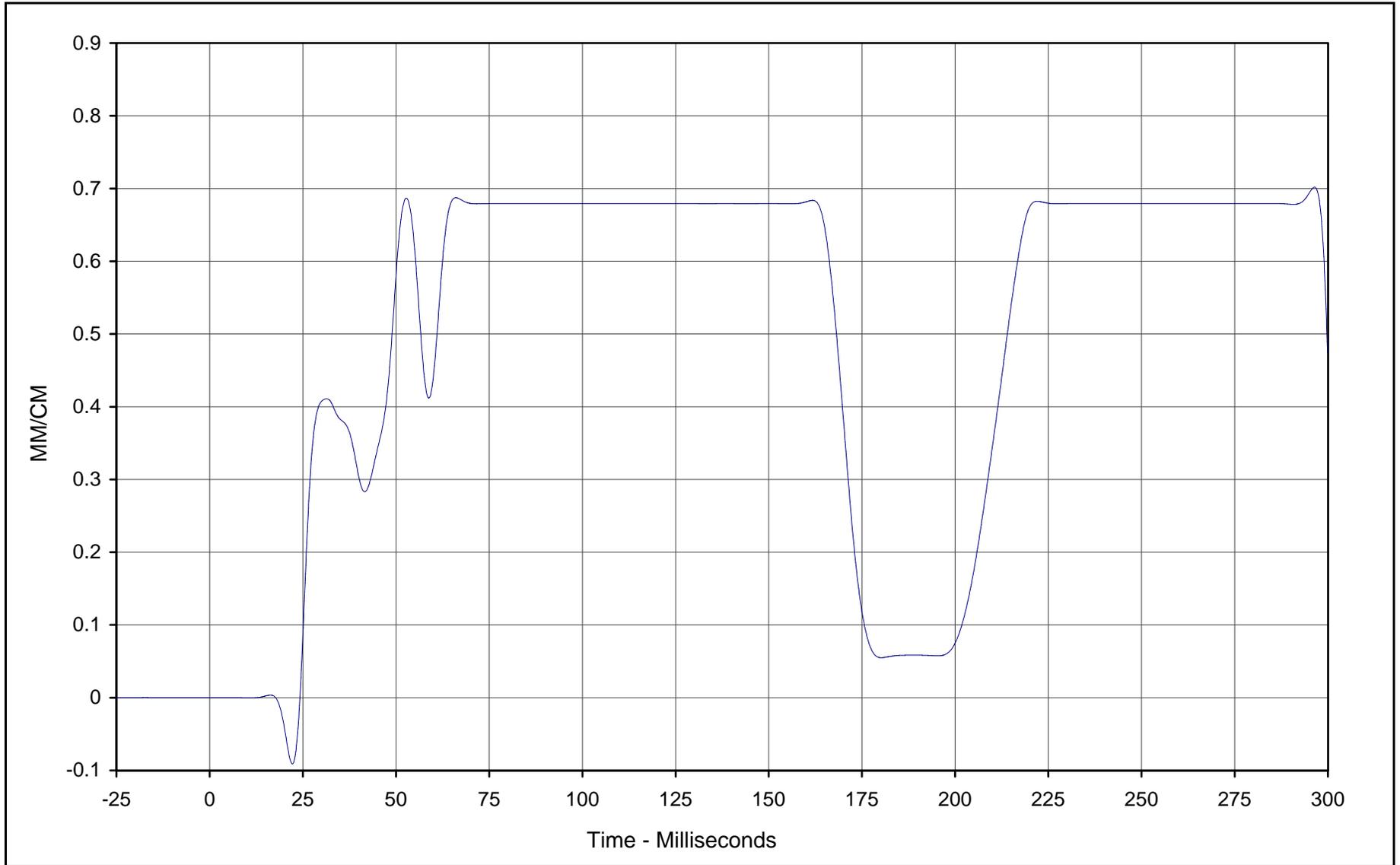
Curve Description: Passenger Shoulder Belt Pullout  
Maximum Value: 180.4 at 89.8 Milliseconds  
Minimum Value: -21.0 at 45.5 Milliseconds  
SAE Filter Class: 60  
Date of Test: 11/17/99  
Curve Number: FIL-087

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-122



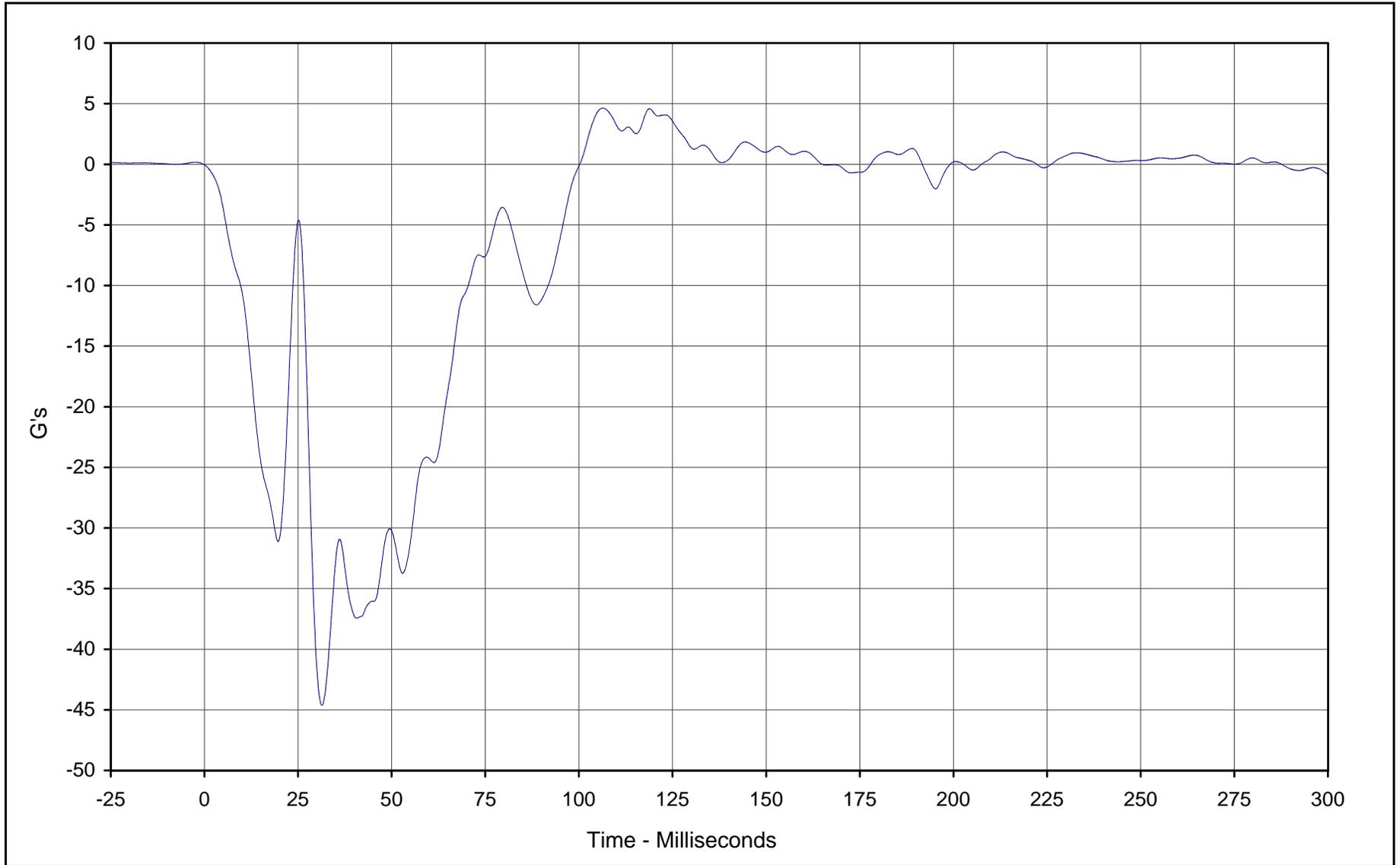
Curve Description: Passenger Shoulder Belt Elongation  
Maximum Value: 0.70 at 296.4 Milliseconds  
Minimum Value: -0.09 at 22.2 Milliseconds  
SAE Filter Class: 60  
Date of Test: 11/17/99  
Curve Number: FIL-088

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-123



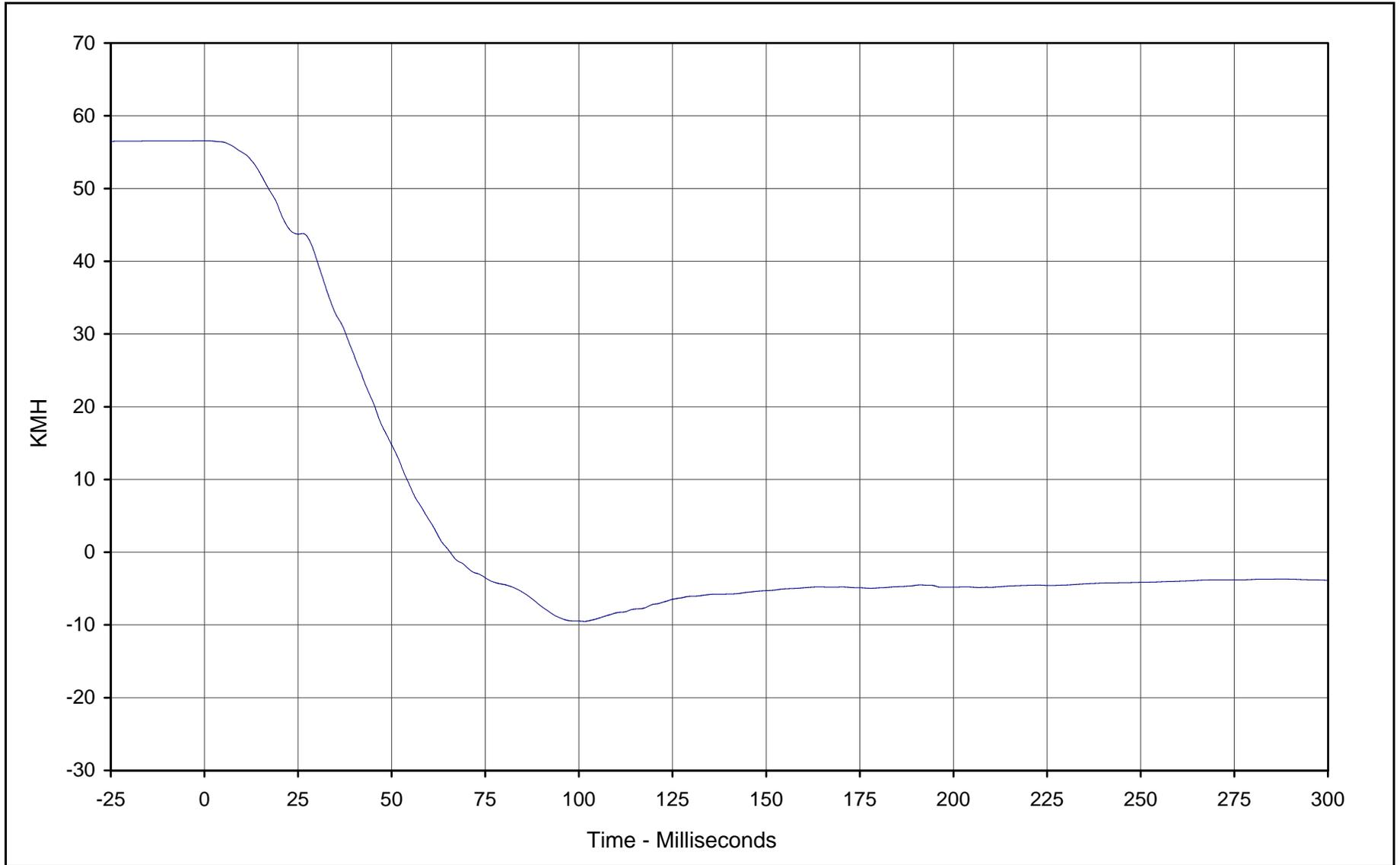
Curve Description: Vehicle Left Rear Primary  
Maximum Value: 4.6 at 106.3 Milliseconds  
Minimum Value: -44.6 at 31.4 Milliseconds  
SAE Filter Class: 60  
Date of Test: 11/17/99  
Curve Number: FIL-089

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-124



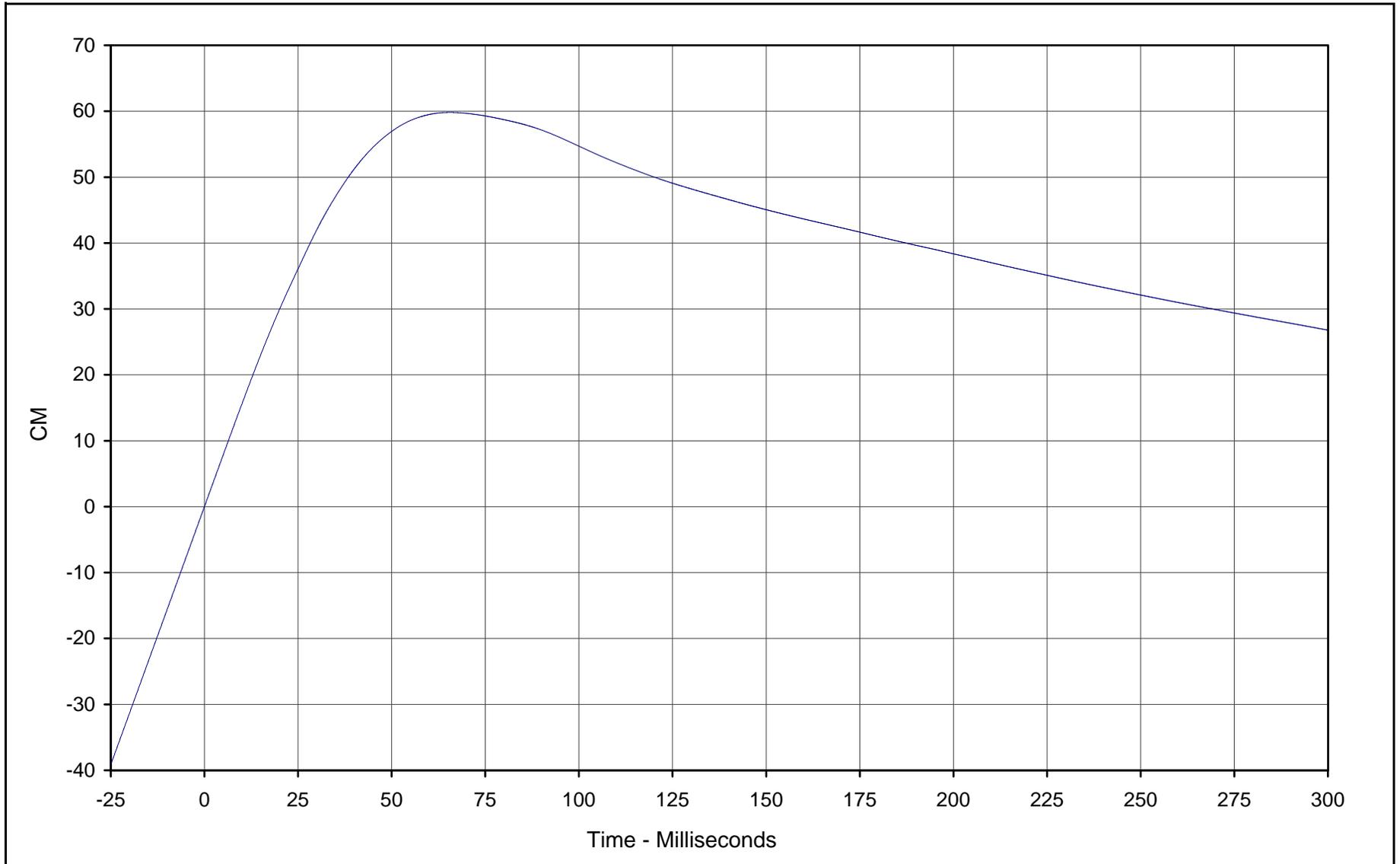
Curve Description: Vehicle Left Rear Primary Velocity  
Maximum Value: 56.6 at 0.6 Milliseconds  
Minimum Value: -9.5 at 101.5 Milliseconds  
SAE Filter Class: 180  
Date of Test: 11/17/99  
Curve Number: IN1-089

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-125

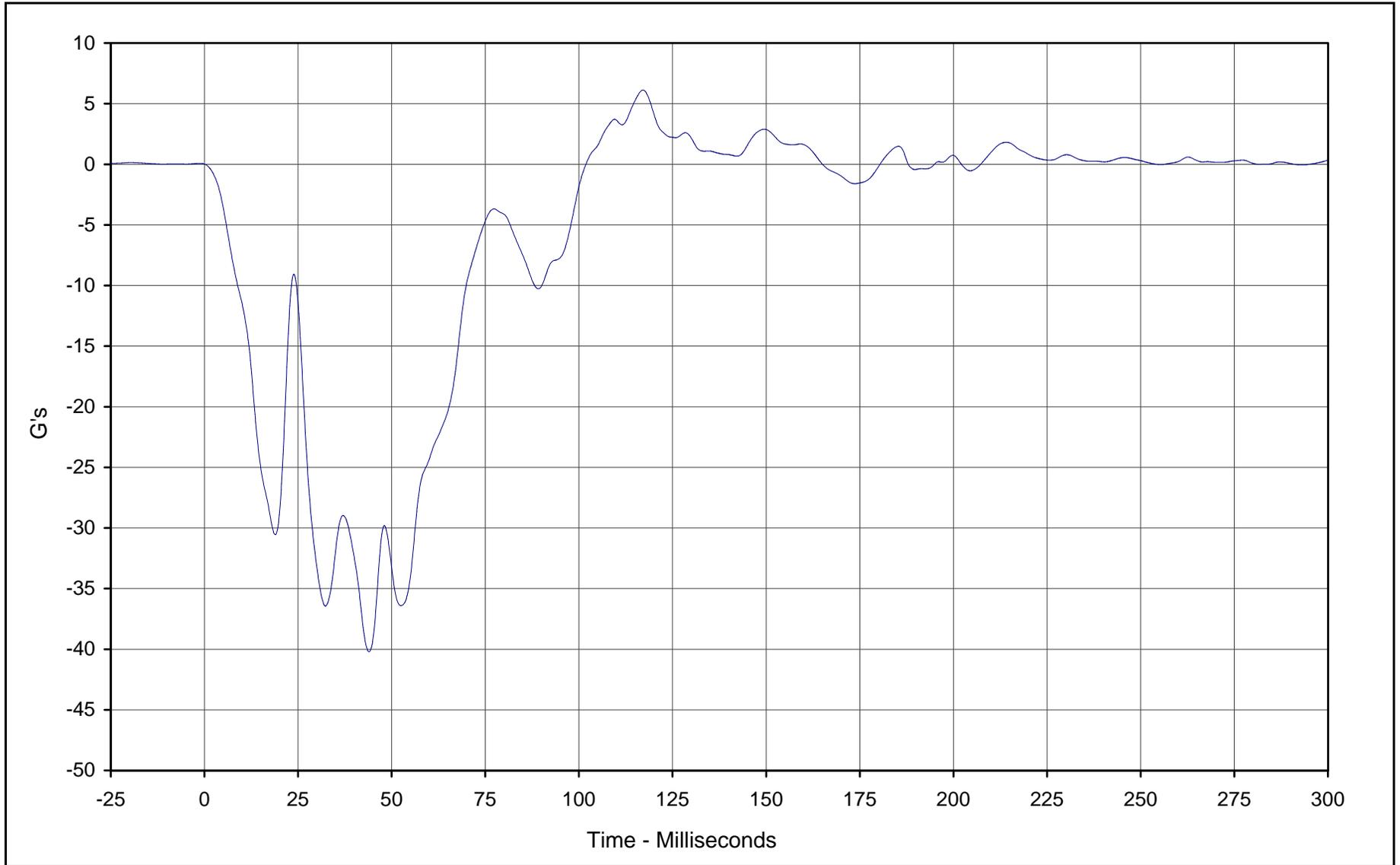


Curve Description: Vehicle Left Rear Primary Displ.  
Maximum Value: 59.8 at 65.6 Milliseconds  
Minimum Value: 0.0 at 0.0 Milliseconds  
SAE Filter Class: 180  
Date of Test: 11/17/99  
Curve Number: IN2-089

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KAR20001-02

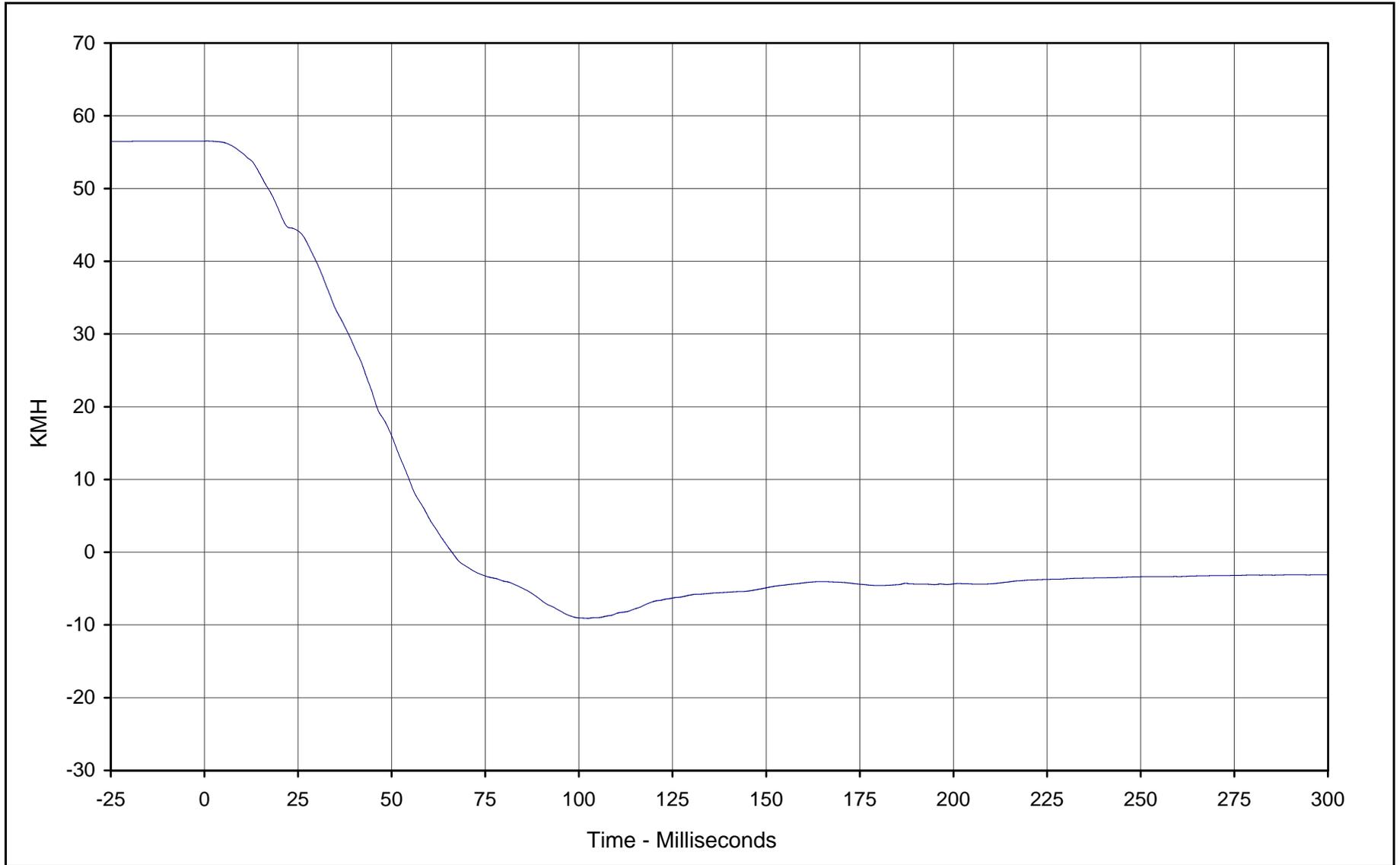


Curve Description: Vehicle Right Rear Primary  
 Maximum Value: 6.1 at 117.1 Milliseconds  
 Minimum Value: -40.2 at 44.0 Milliseconds  
 SAE Filter Class: 60  
 Date of Test: 11/17/99  
 Curve Number: FIL-090

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
 Test Vehicle: 2000 Toyota Tundra SR5 Pickup



B-127



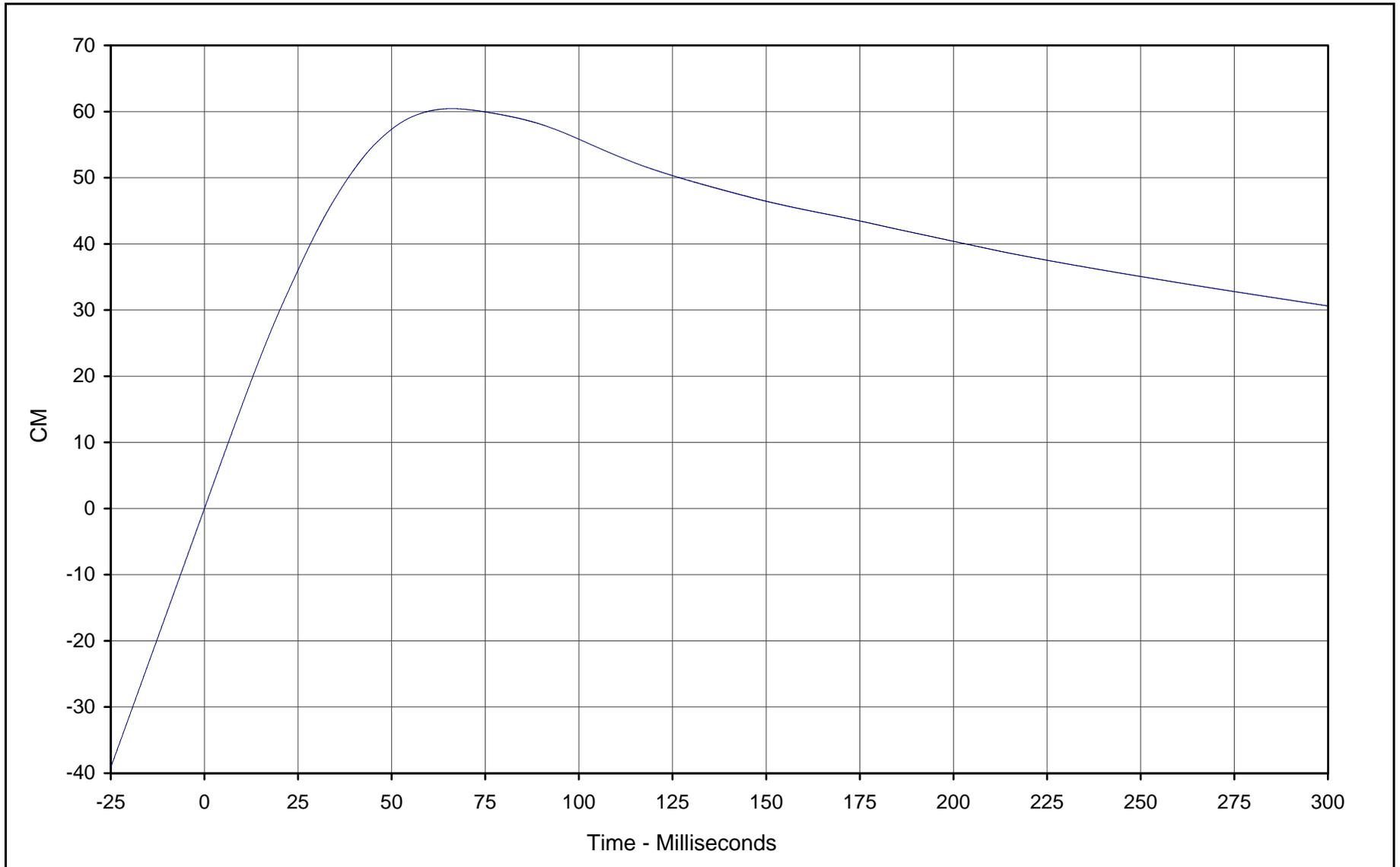
Curve Description: Vehicle Right Rear Primary Velocity  
Maximum Value: 56.5 at 0.8 Milliseconds  
Minimum Value: -9.1 at 102.4 Milliseconds  
SAE Filter Class: 180  
Date of Test: 11/17/99  
Curve Number: IN1-090

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-128



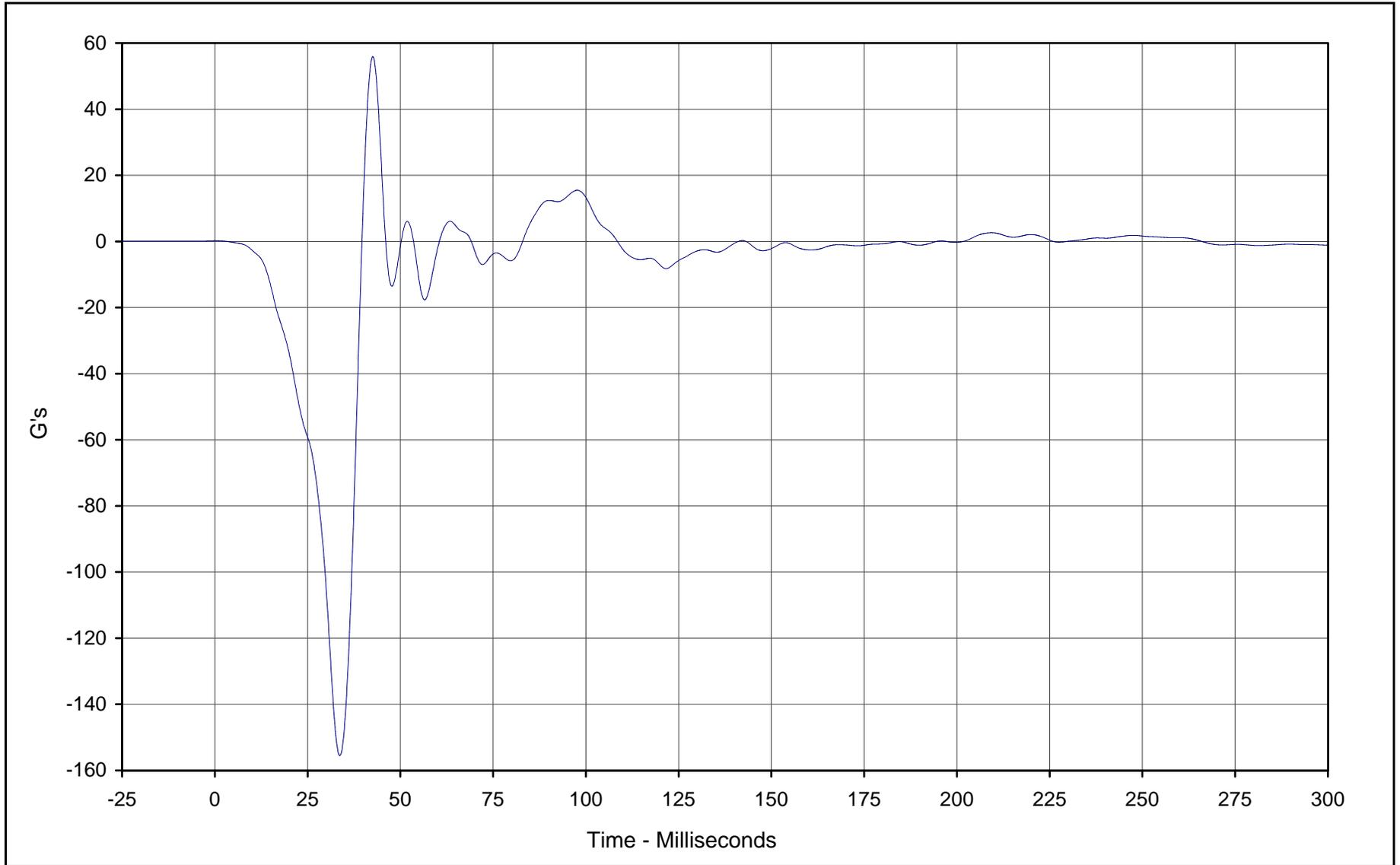
Curve Description: Vehicle Right Rear Primary Displ.  
Maximum Value: 60.4 at 66.1 Milliseconds  
Minimum Value: 0.0 at 0.0 Milliseconds  
SAE Filter Class: 180  
Date of Test: 11/17/99  
Curve Number: IN2-090

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-129



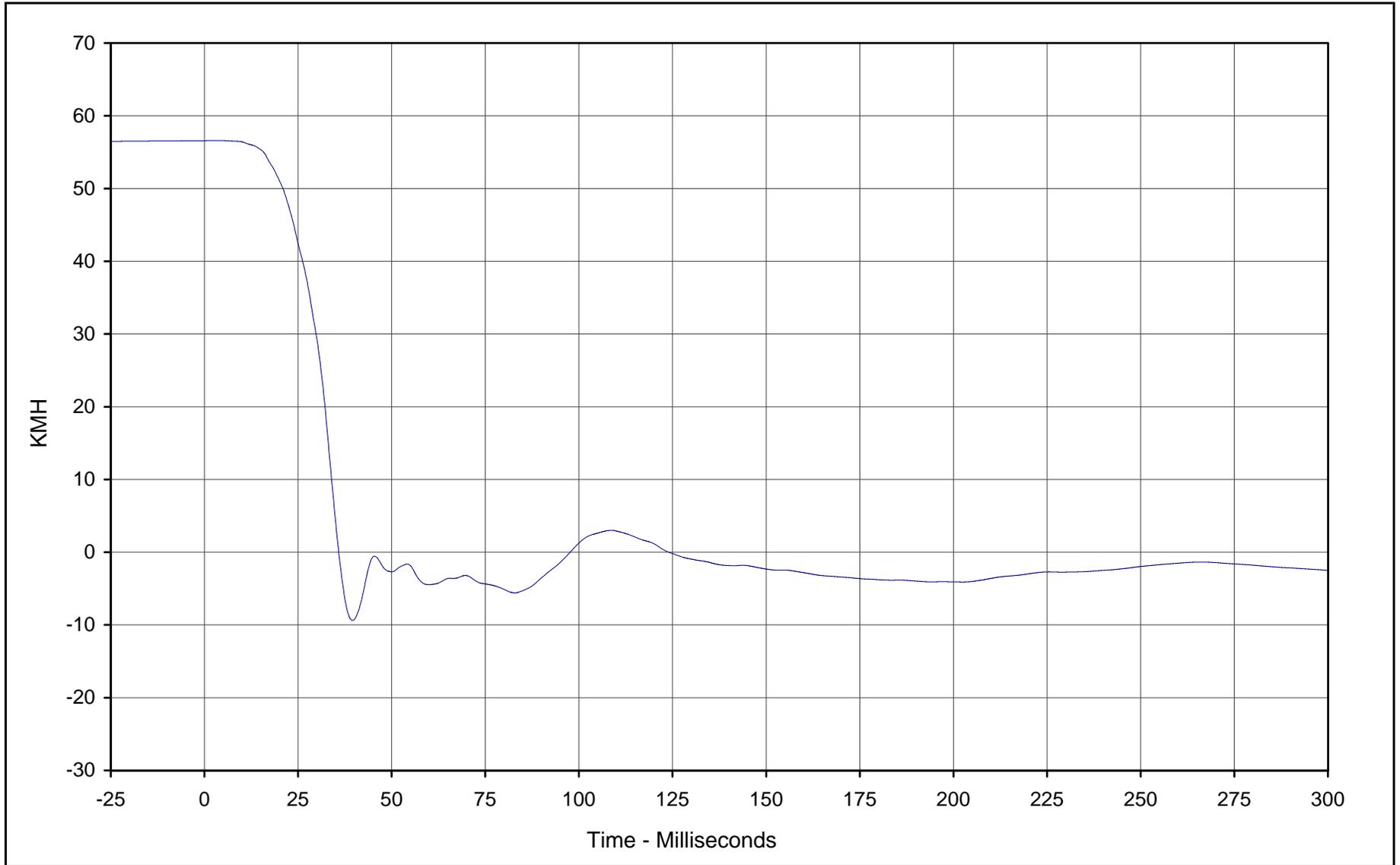
Curve Description: Vehicle Engine Top  
Maximum Value: 55.9 at 42.6 Milliseconds  
Minimum Value: -155.5 at 33.7 Milliseconds  
SAE Filter Class: 60  
Date of Test: 11/17/99  
Curve Number: FIL-091

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-130



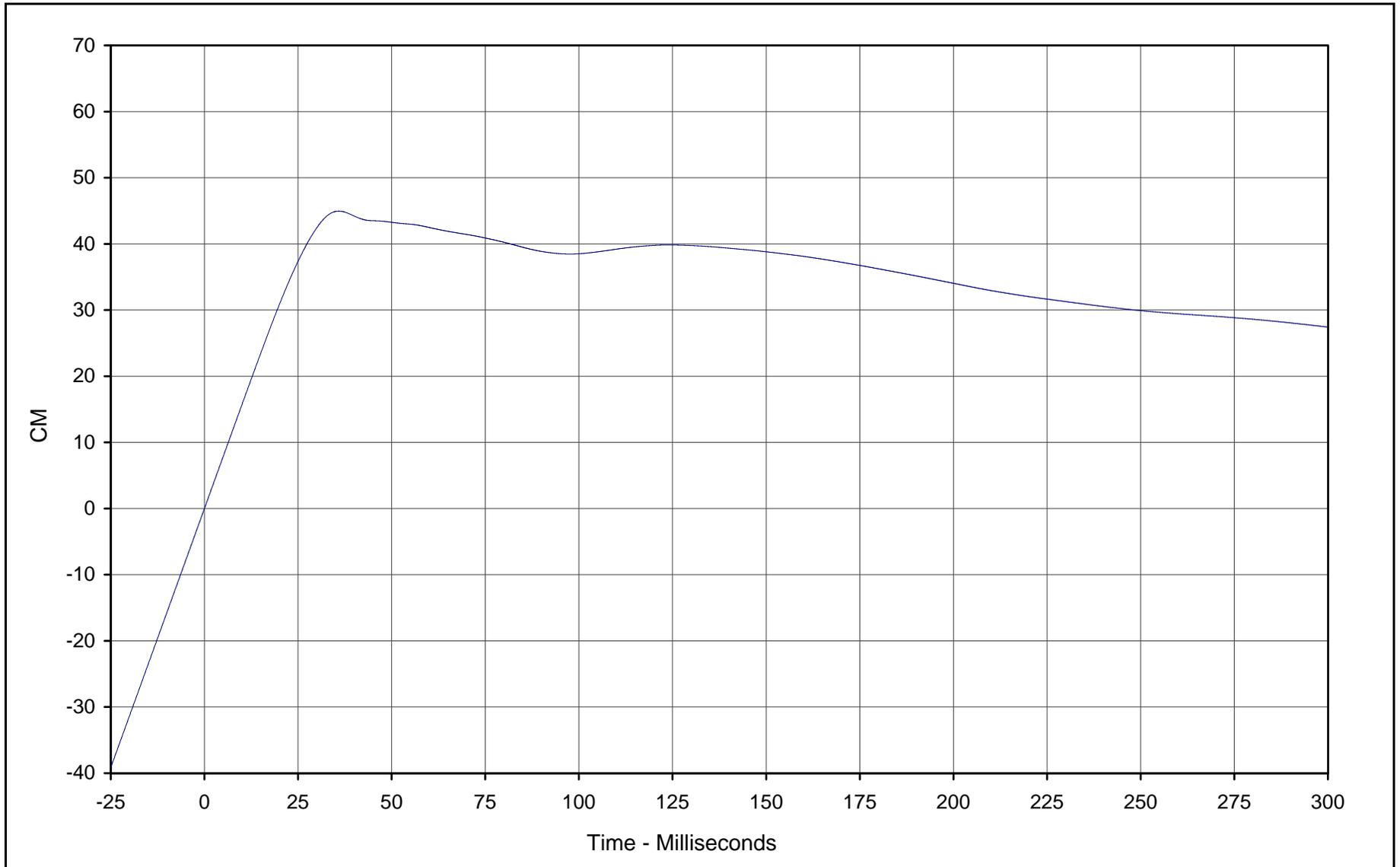
Curve Description: Vehicle Engine Top Velocity  
Maximum Value: 56.6 at 3.1 Milliseconds  
Minimum Value: -9.4 at 39.6 Milliseconds  
SAE Filter Class: 180  
Date of Test: 11/17/99  
Curve Number: IN1-091

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-131



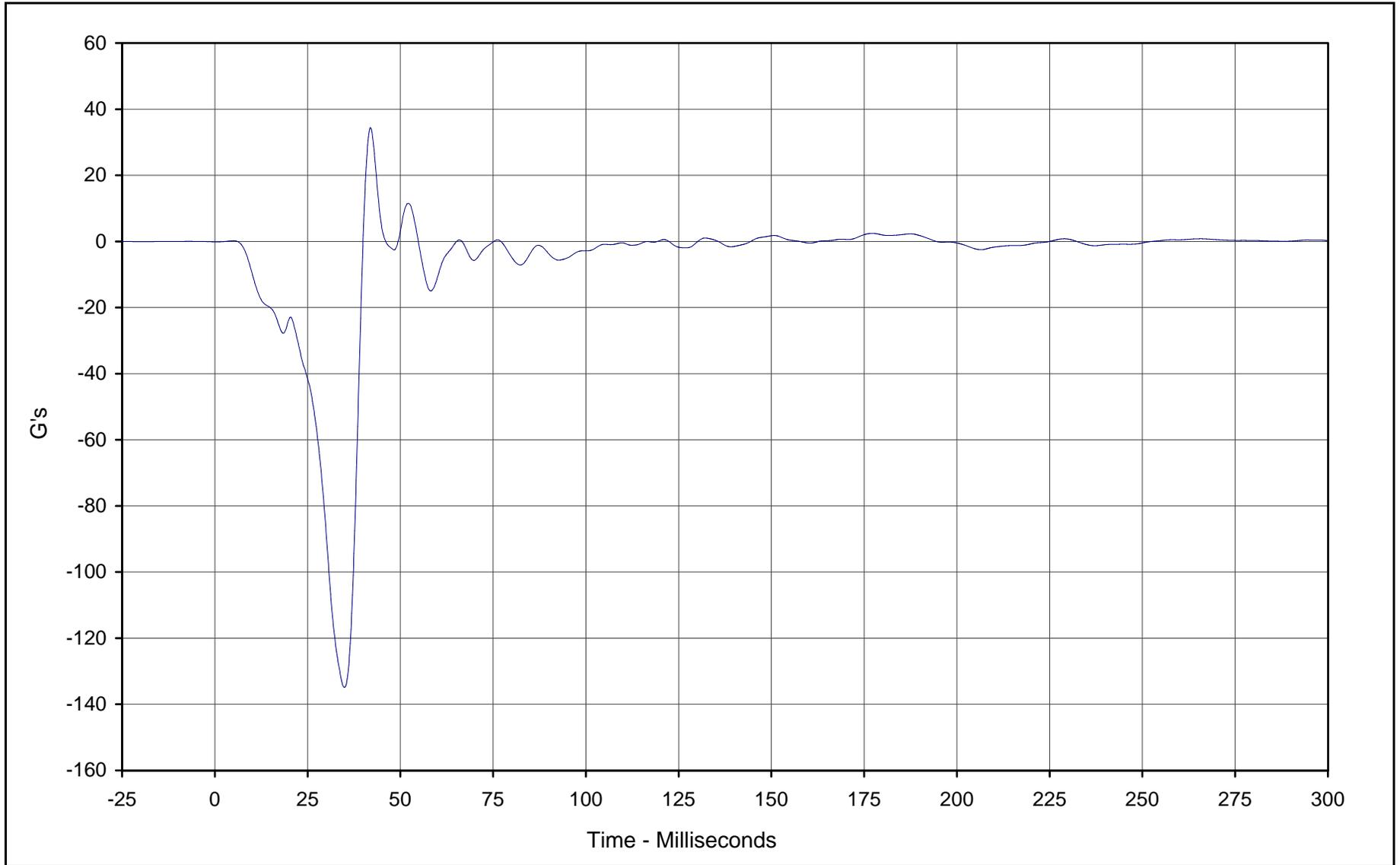
Curve Description: Vehicle Engine Top Displacement  
Maximum Value: 45.0 at 35.9 Milliseconds  
Minimum Value: 0.0 at 0.0 Milliseconds  
SAE Filter Class: 180  
Date of Test: 11/17/99  
Curve Number: IN2-091

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-132



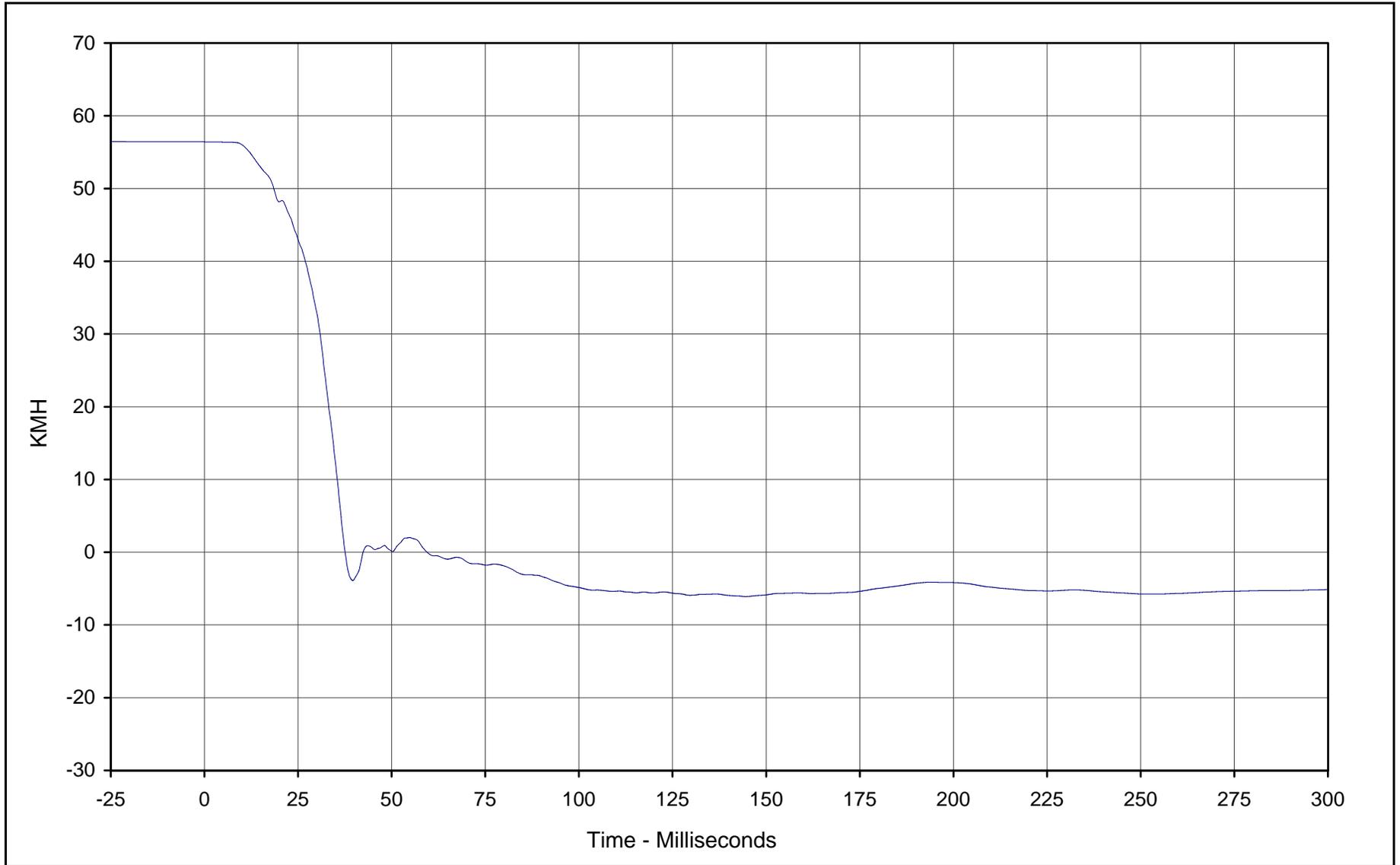
Curve Description: Vehicle Engine Bottom  
Maximum Value: 34.4 at 41.9 Milliseconds  
Minimum Value: -134.9 at 34.9 Milliseconds  
SAE Filter Class: 60  
Date of Test: 11/17/99  
Curve Number: FIL-092

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-133



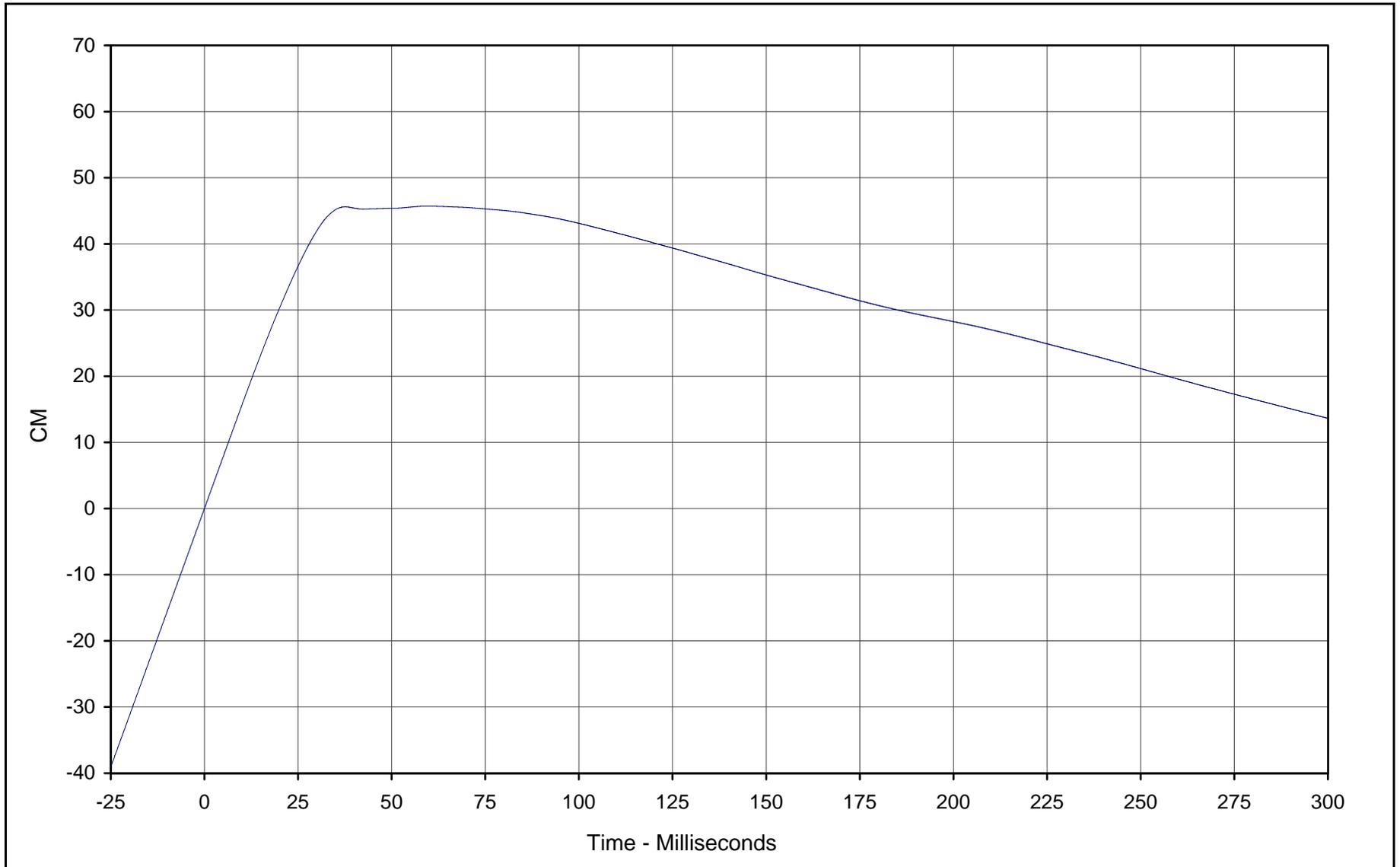
Curve Description: Vehicle Engine Bottom Velocity  
Maximum Value: 56.4 at 0.0 Milliseconds  
Minimum Value: -6.1 at 144.5 Milliseconds  
SAE Filter Class: 180  
Date of Test: 11/17/99  
Curve Number: IN1-092

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-134



Curve Description: Vehicle Engine Bottom Displacement

Maximum Value: 45.7 at 59.4 Milliseconds

Minimum Value: 0.0 at 0.0 Milliseconds

SAE Filter Class: 180

Date of Test: 11/17/99

Curve Number: IN2-092

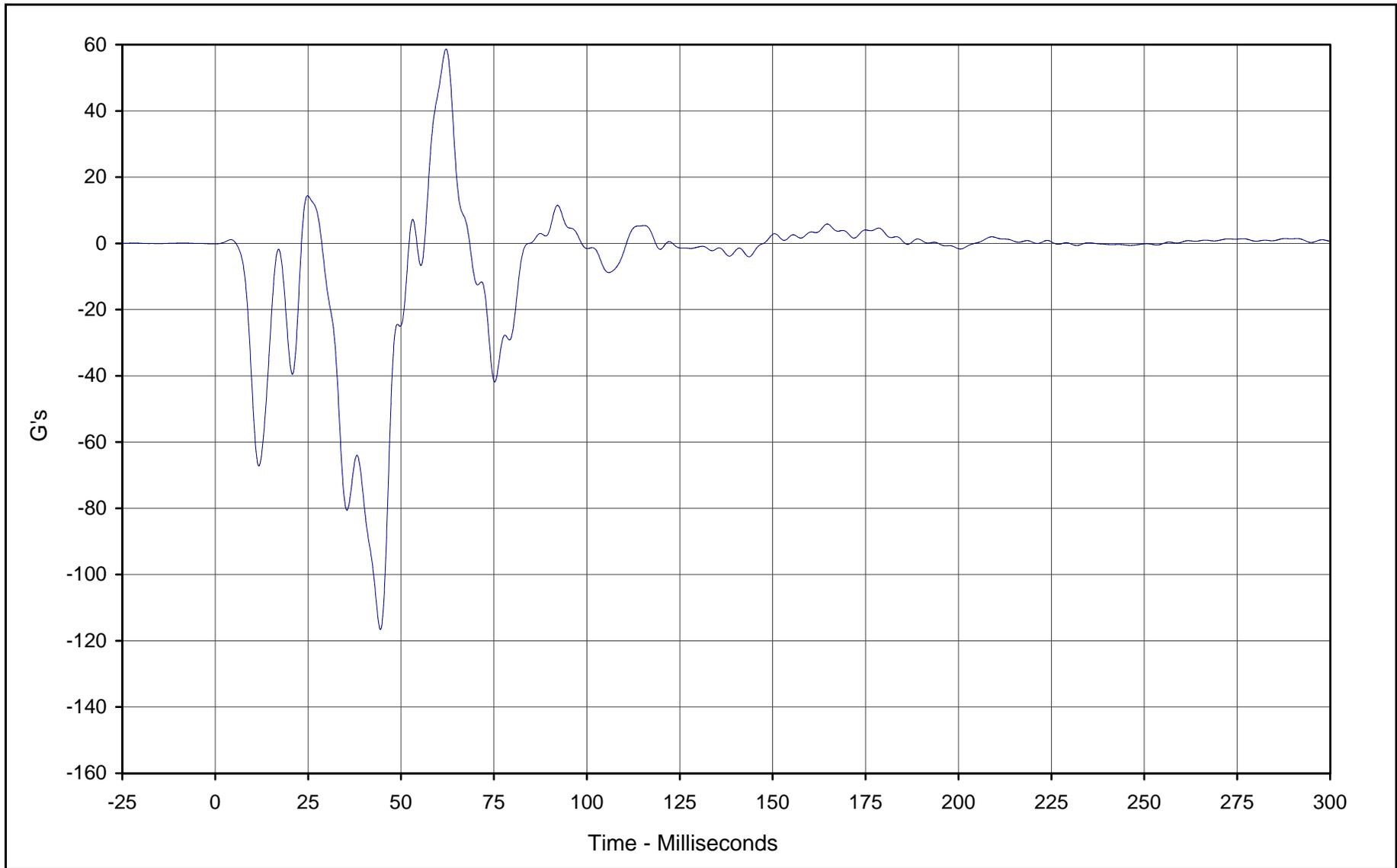
Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103

Test Vehicle: 2000 Toyota Tundra SR5 Pickup

KARR20001-02



B-135



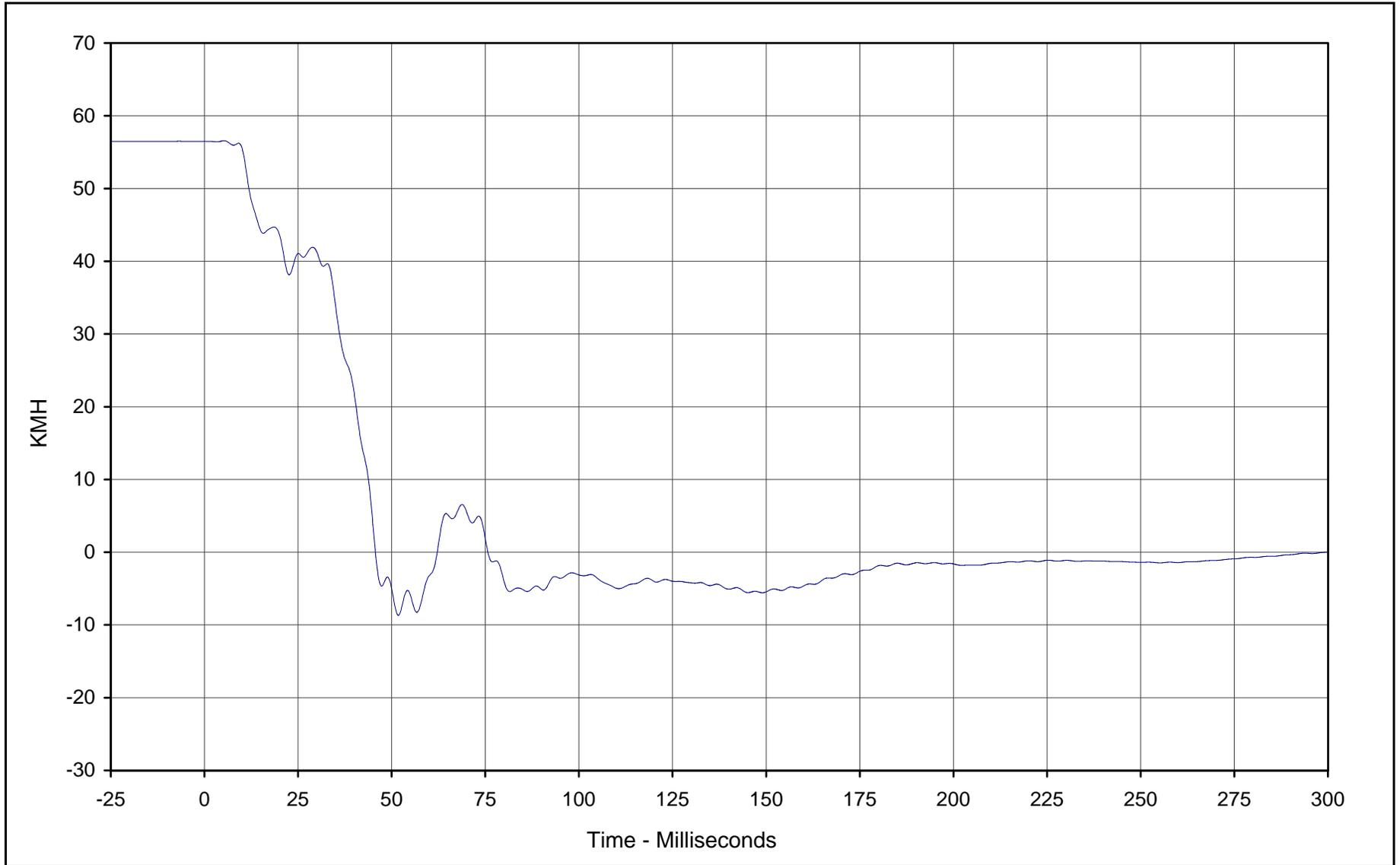
Curve Description: Vehicle Left Brake Caliper  
Maximum Value: 58.7 at 62.1 Milliseconds  
Minimum Value: -116.6 at 44.5 Milliseconds  
SAE Filter Class: 60  
Date of Test: 11/17/99  
Curve Number: FIL-093

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-136



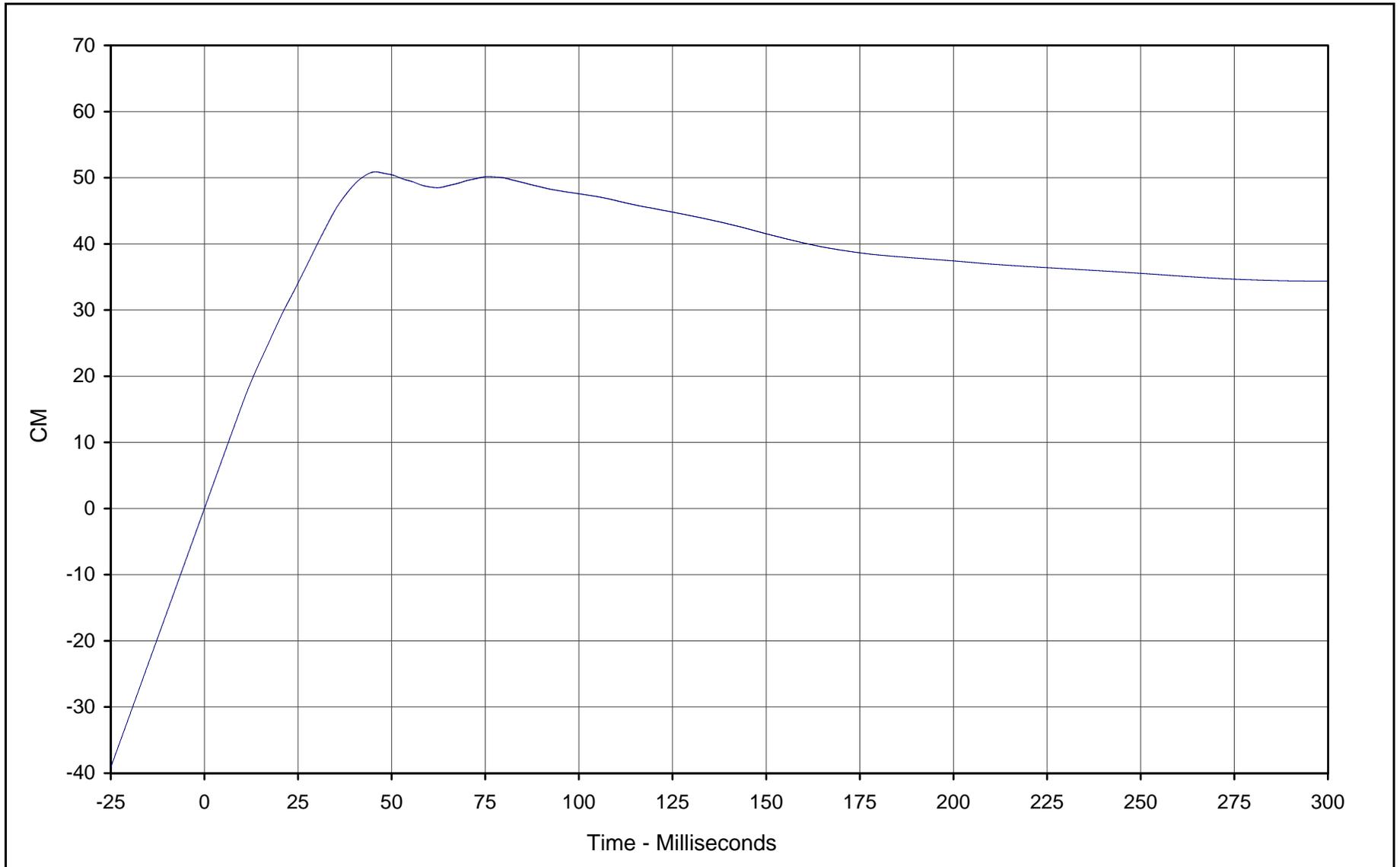
Curve Description: Vehicle Left Brake Caliper Velocity  
Maximum Value: 56.6 at 5.2 Milliseconds  
Minimum Value: -8.7 at 51.8 Milliseconds  
SAE Filter Class: 180  
Date of Test: 11/17/99  
Curve Number: IN1-093

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-137



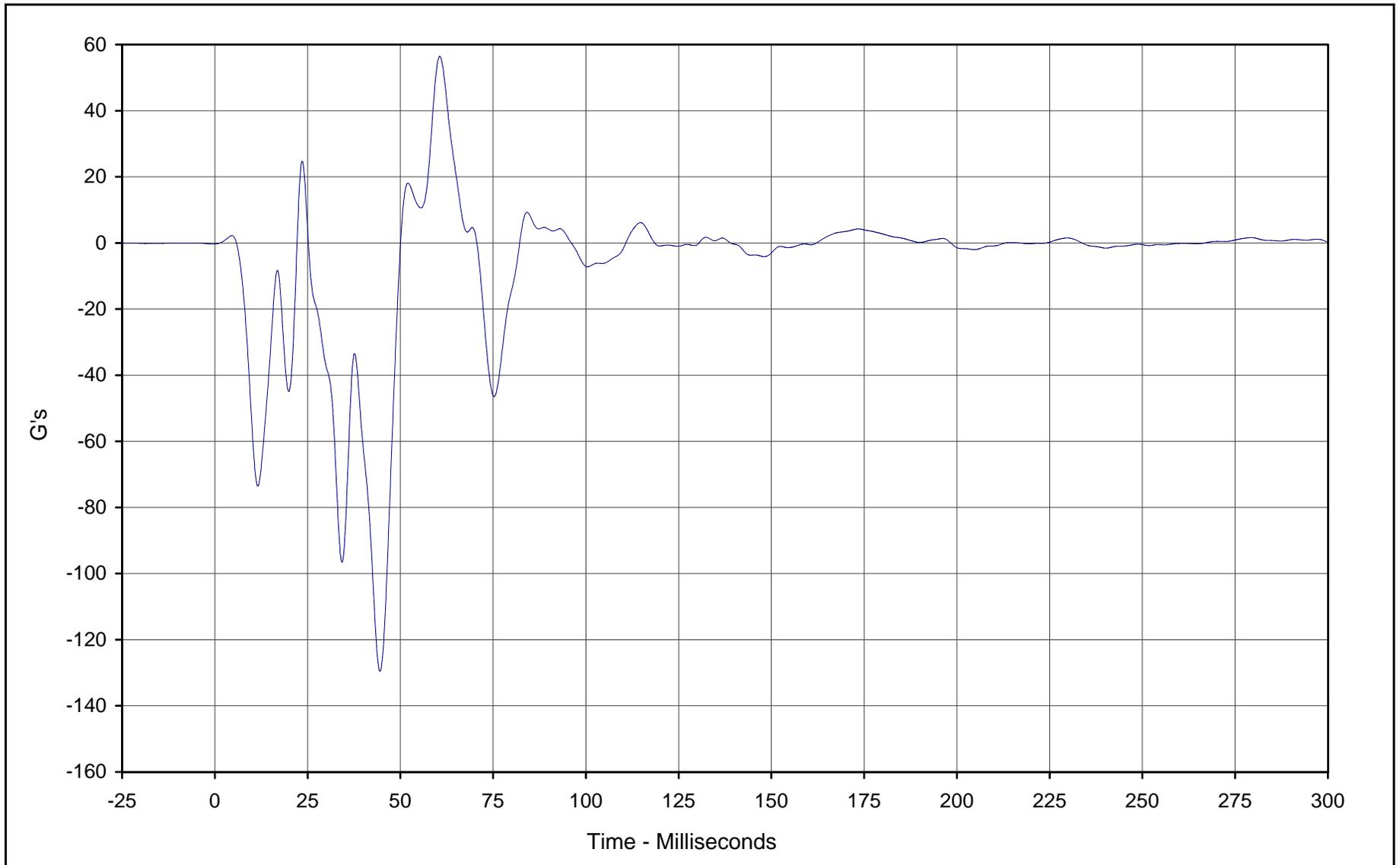
Curve Description: Vehicle Left Brake Caliper Displ.  
Maximum Value: 50.9 at 45.7 Milliseconds  
Minimum Value: 0.0 at 0.0 Milliseconds  
SAE Filter Class: 180  
Date of Test: 11/17/99  
Curve Number: IN2-093

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KAR20001-02

B-138



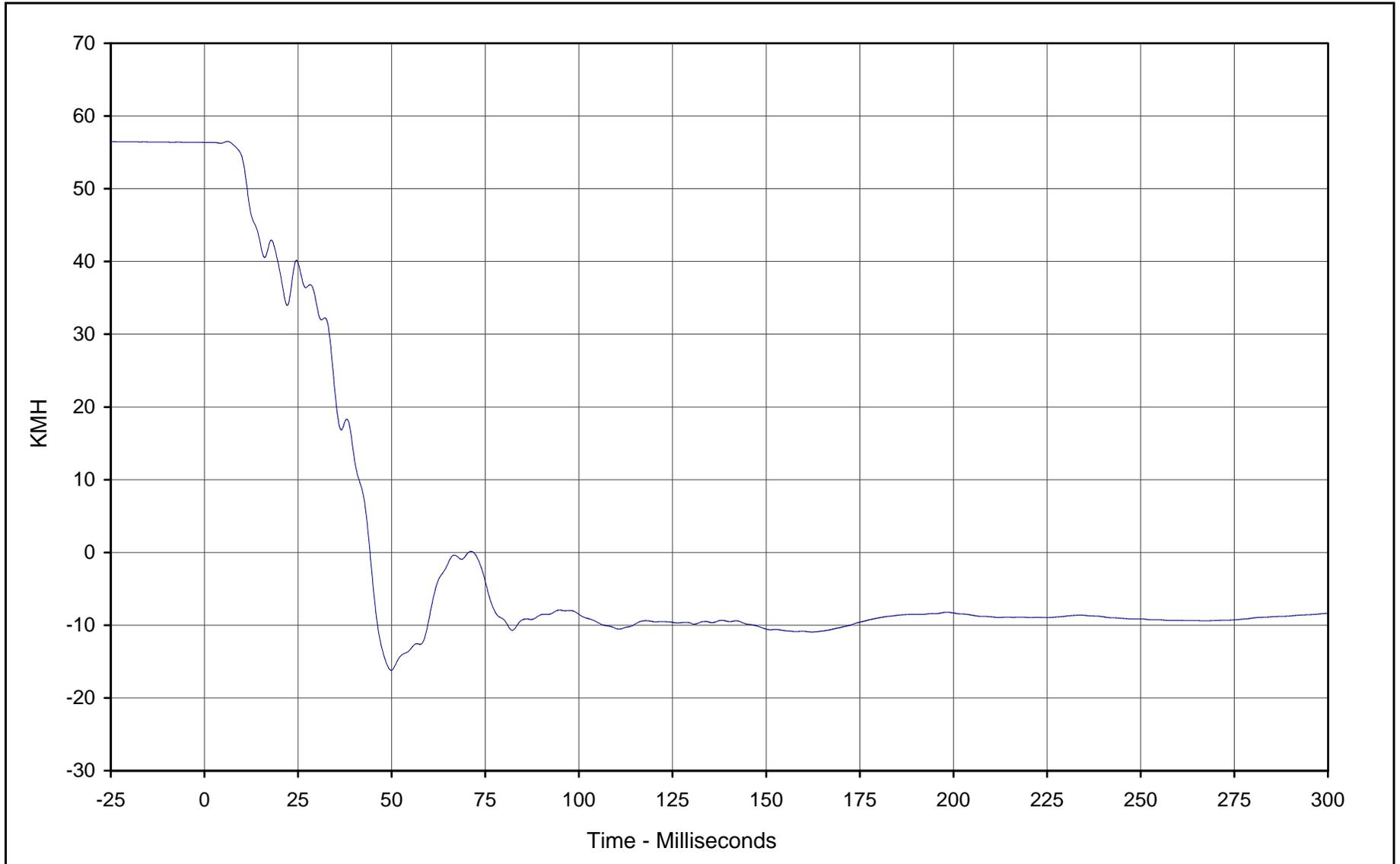
Curve Description: Vehicle Right Brake Caliper  
Maximum Value: 56.4 at 60.6 Milliseconds  
Minimum Value: -129.6 at 44.5 Milliseconds  
SAE Filter Class: 60  
Date of Test: 11/17/99  
Curve Number: FIL-094

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-139



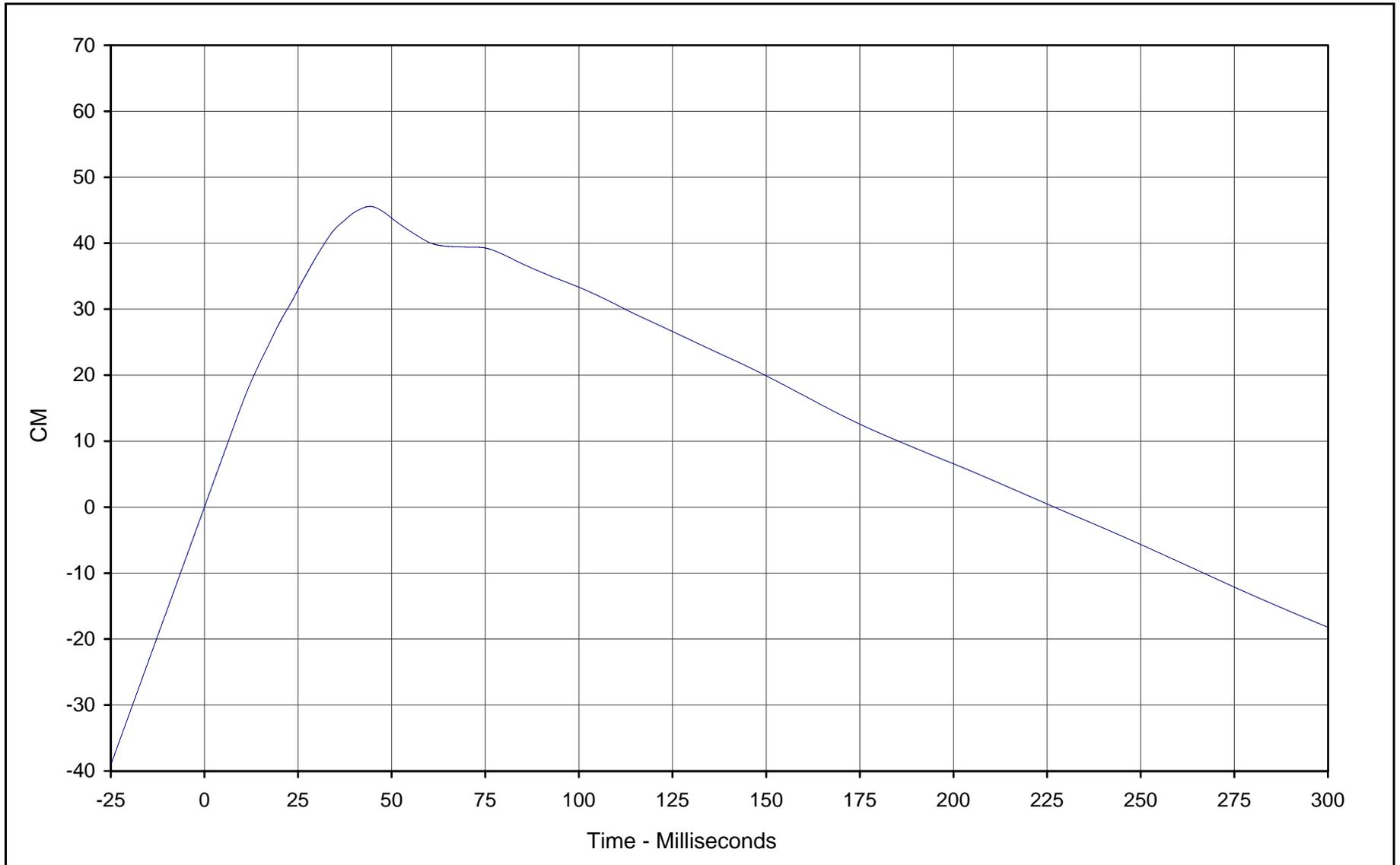
Curve Description: Vehicle Right Brake Caliper Velocity  
Maximum Value: 56.5 at 6.2 Milliseconds  
Minimum Value: -16.2 at 49.9 Milliseconds  
SAE Filter Class: 180  
Date of Test: 11/17/99  
Curve Number: IN1-094

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-140



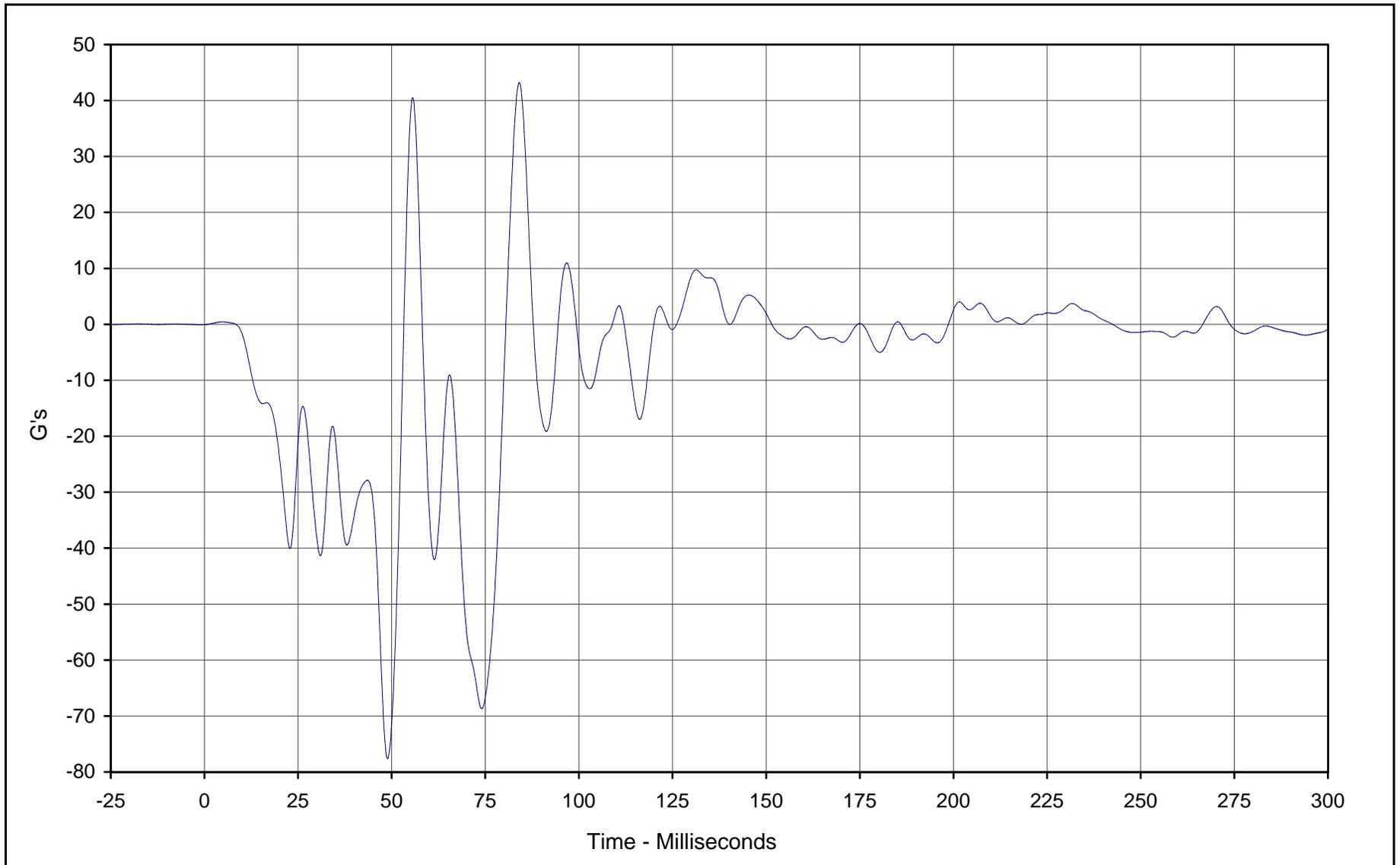
Curve Description: Vehicle Right Brake Caliper Displ.  
Maximum Value: 45.6 at 44.2 Milliseconds  
Minimum Value: -18.2 at 299.9 Milliseconds  
SAE Filter Class: 180  
Date of Test: 11/17/99  
Curve Number: IN2-094

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KAR20001-02

B-141



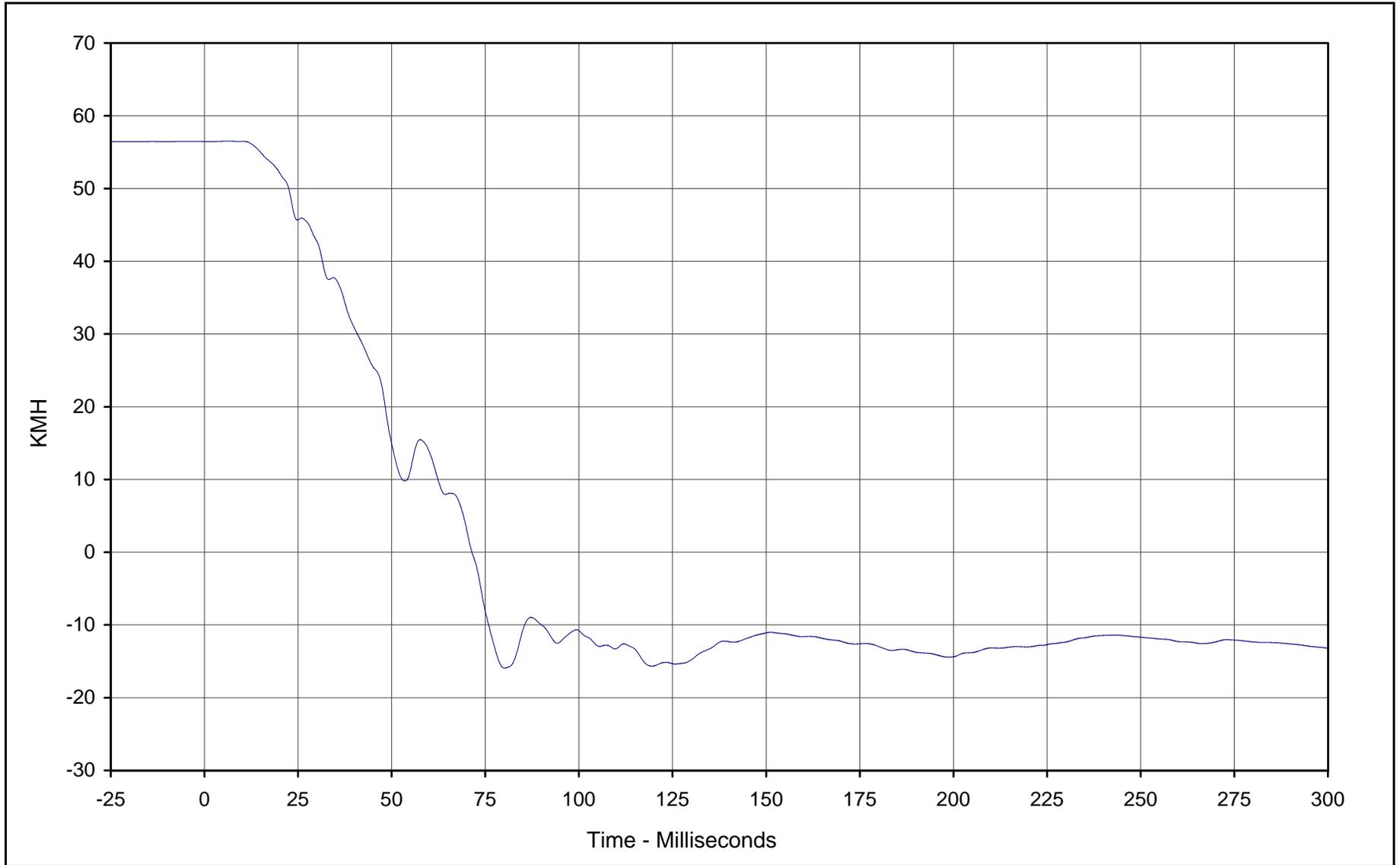
Curve Description: Vehicle Instrument Panel  
Maximum Value: 43.2 at 84.1 Milliseconds  
Minimum Value: -77.6 at 48.9 Milliseconds  
SAE Filter Class: 60  
Date of Test: 11/17/99  
Curve Number: FIL-095

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-142



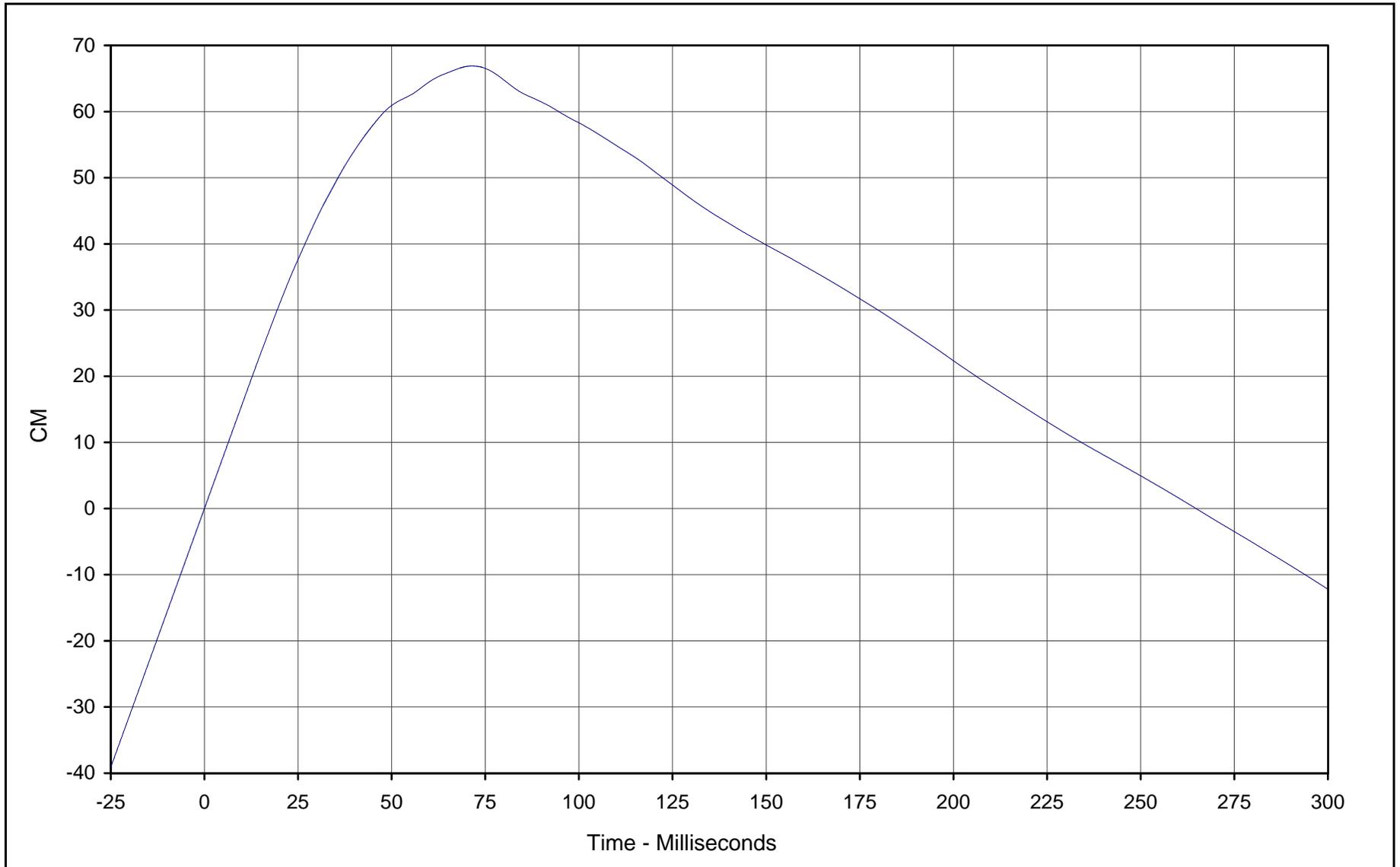
Curve Description: Vehicle Instrument Panel Velocity  
Maximum Value: 56.5 at 6.3 Milliseconds  
Minimum Value: -15.9 at 80.2 Milliseconds  
SAE Filter Class: 180  
Date of Test: 11/17/99  
Curve Number: IN1-095

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-143



Curve Description: Vehicle Instrument Panel Displacement

Maximum Value: 66.9 at 71.4 Milliseconds

Minimum Value: -12.2 at 299.9 Milliseconds

SAE Filter Class: 180

Date of Test: 11/17/99

Curve Number: IN2-095

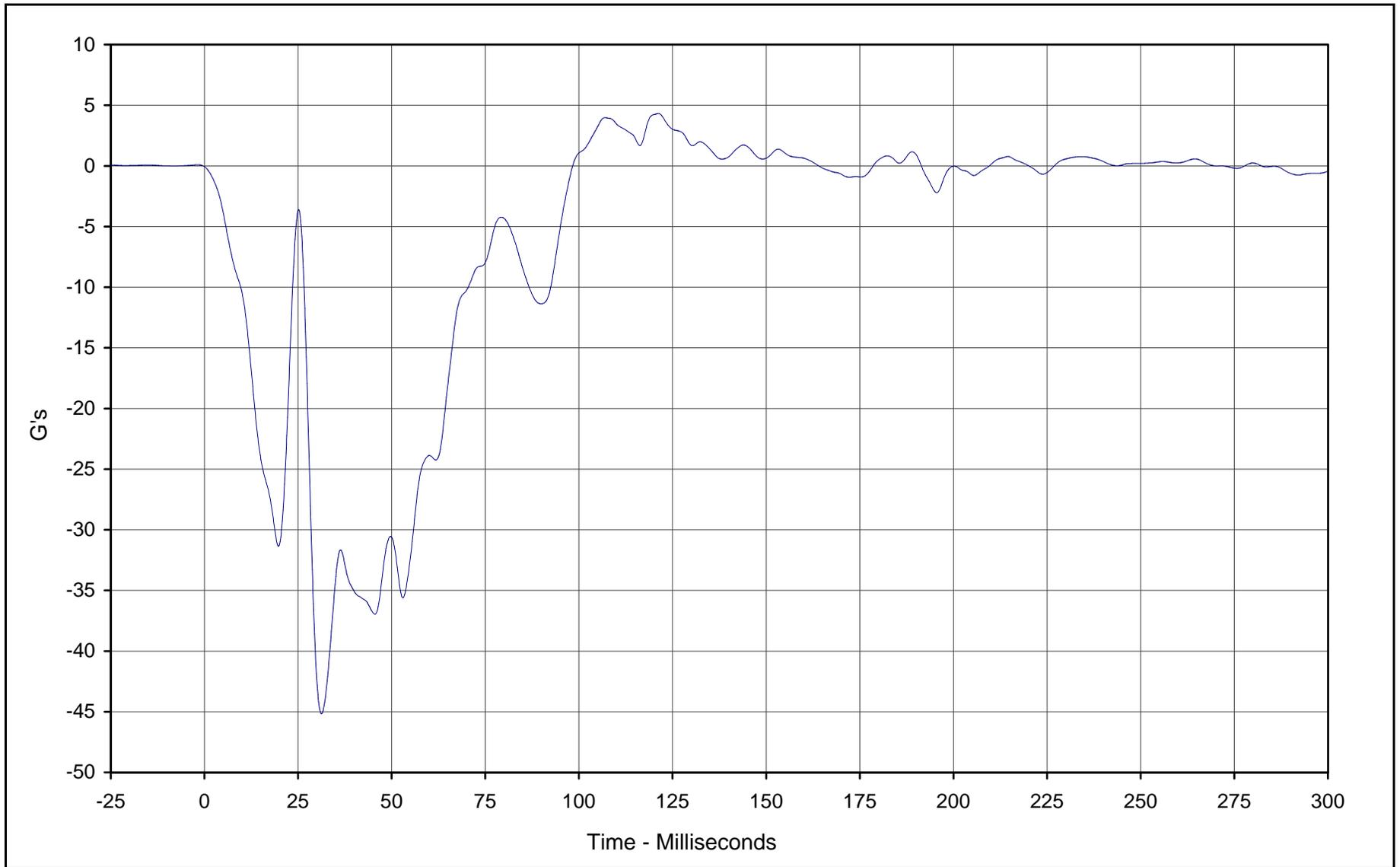
Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103

Test Vehicle: 2000 Toyota Tundra SR5 Pickup

KARR20001-02



B-144



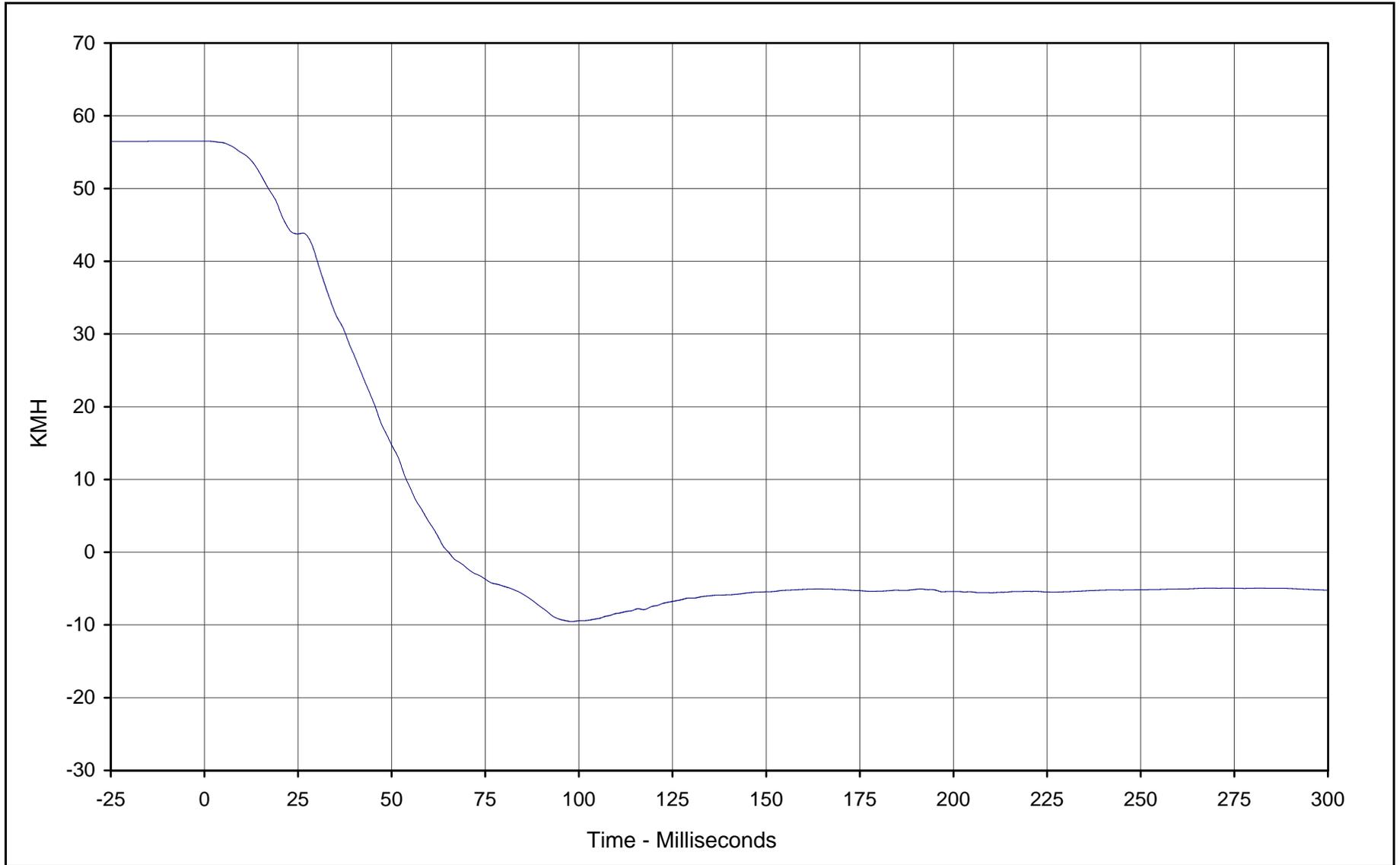
Curve Description: Vehicle Left Rear Redundant  
Maximum Value: 4.3 at 121.2 Milliseconds  
Minimum Value: -45.2 at 31.2 Milliseconds  
SAE Filter Class: 60  
Date of Test: 11/17/99  
Curve Number: FIL-096

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-145



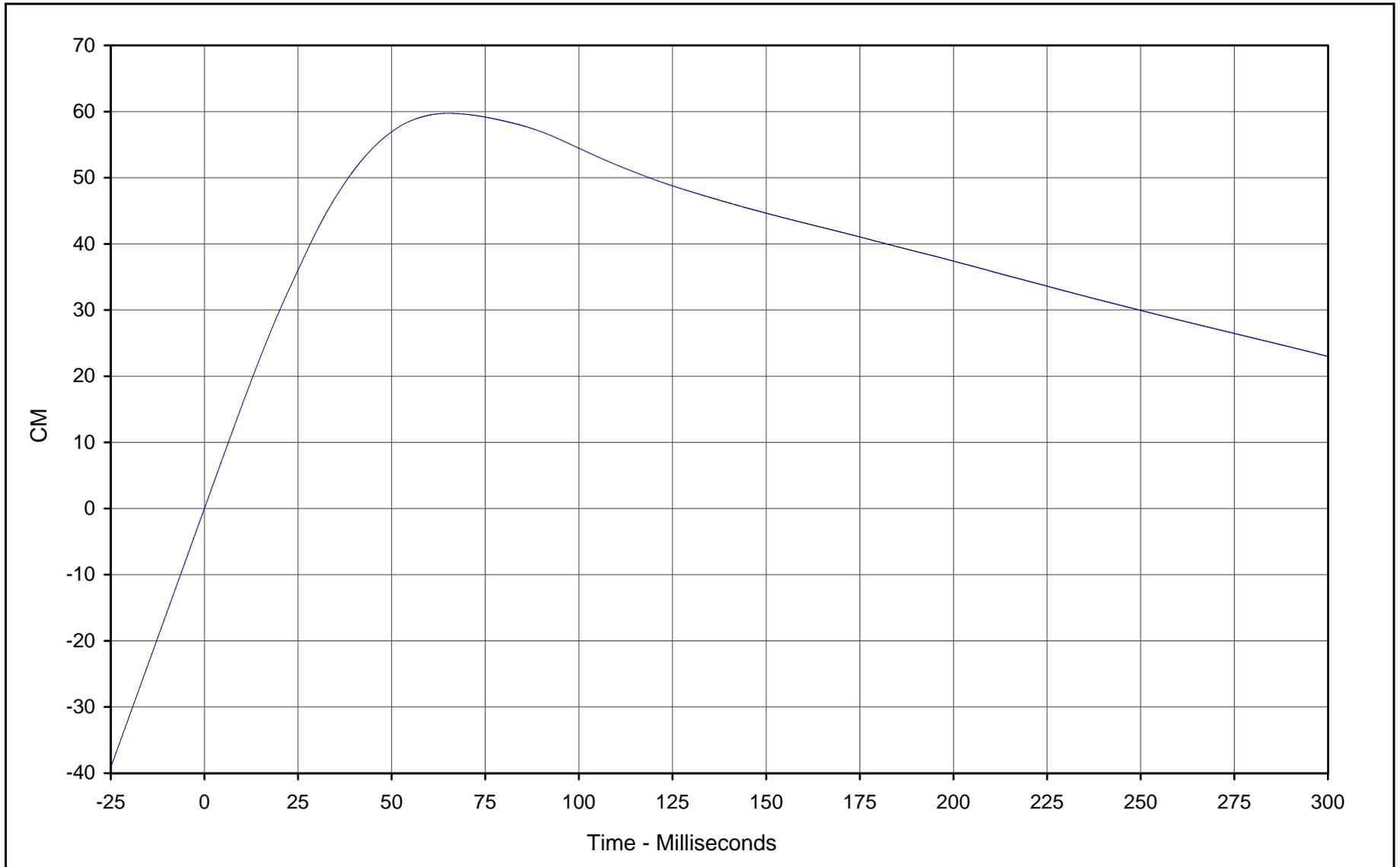
Curve Description: Vehicle Left Rear Redundant Velocity  
Maximum Value: 56.5 at 0.7 Milliseconds  
Minimum Value: -9.5 at 98.0 Milliseconds  
SAE Filter Class: 180  
Date of Test: 11/17/99  
Curve Number: IN1-096

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

B-146



Curve Description: Vehicle Left Rear Redundant Displ.  
Maximum Value: 59.7 at 65.2 Milliseconds  
Minimum Value: 0.0 at 0.0 Milliseconds  
SAE Filter Class: 180  
Date of Test: 11/17/99  
Curve Number: IN2-096

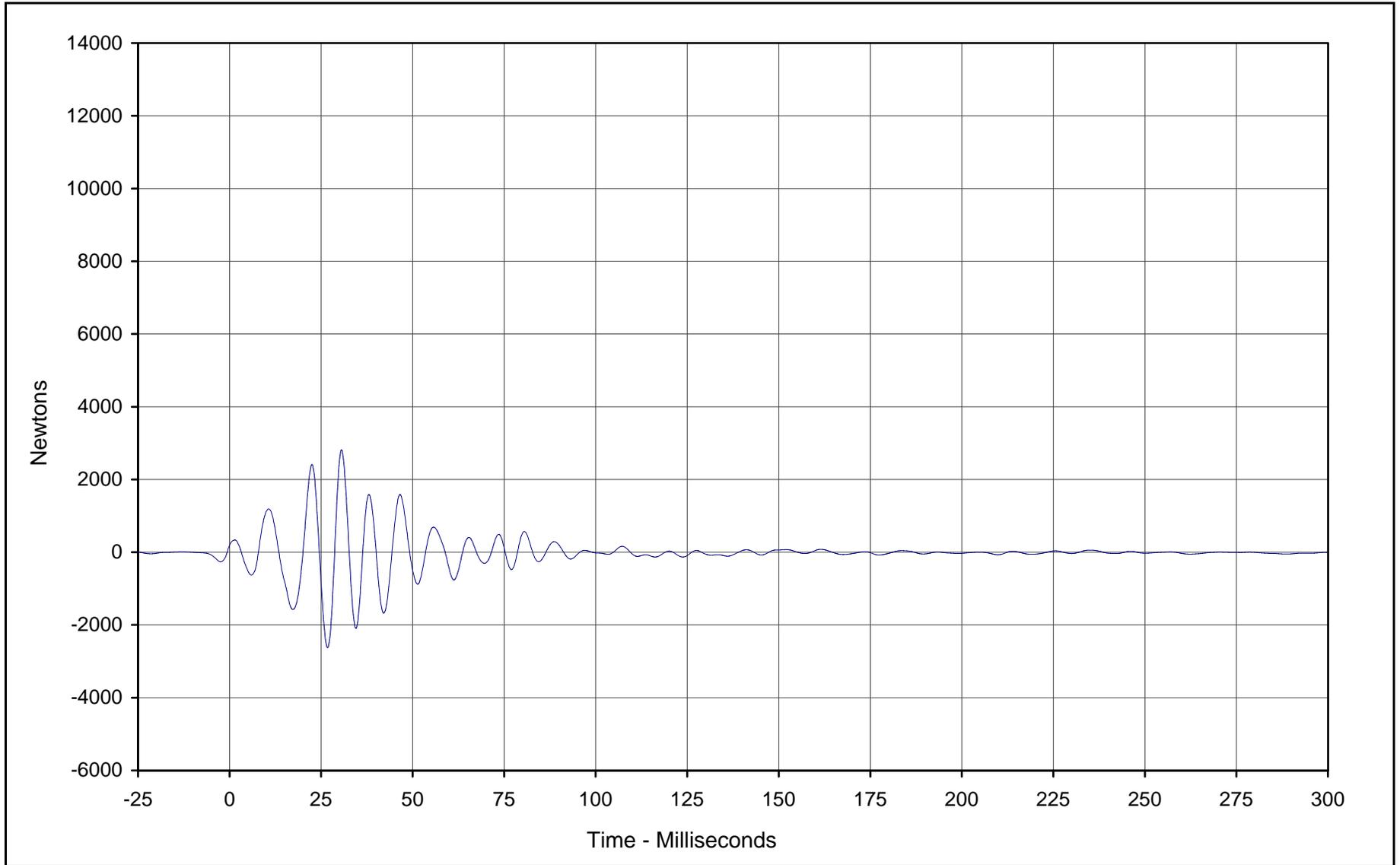
Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

**APPENDIX C**  
**LOAD CELL BARRIER INFORMATION**

C-1



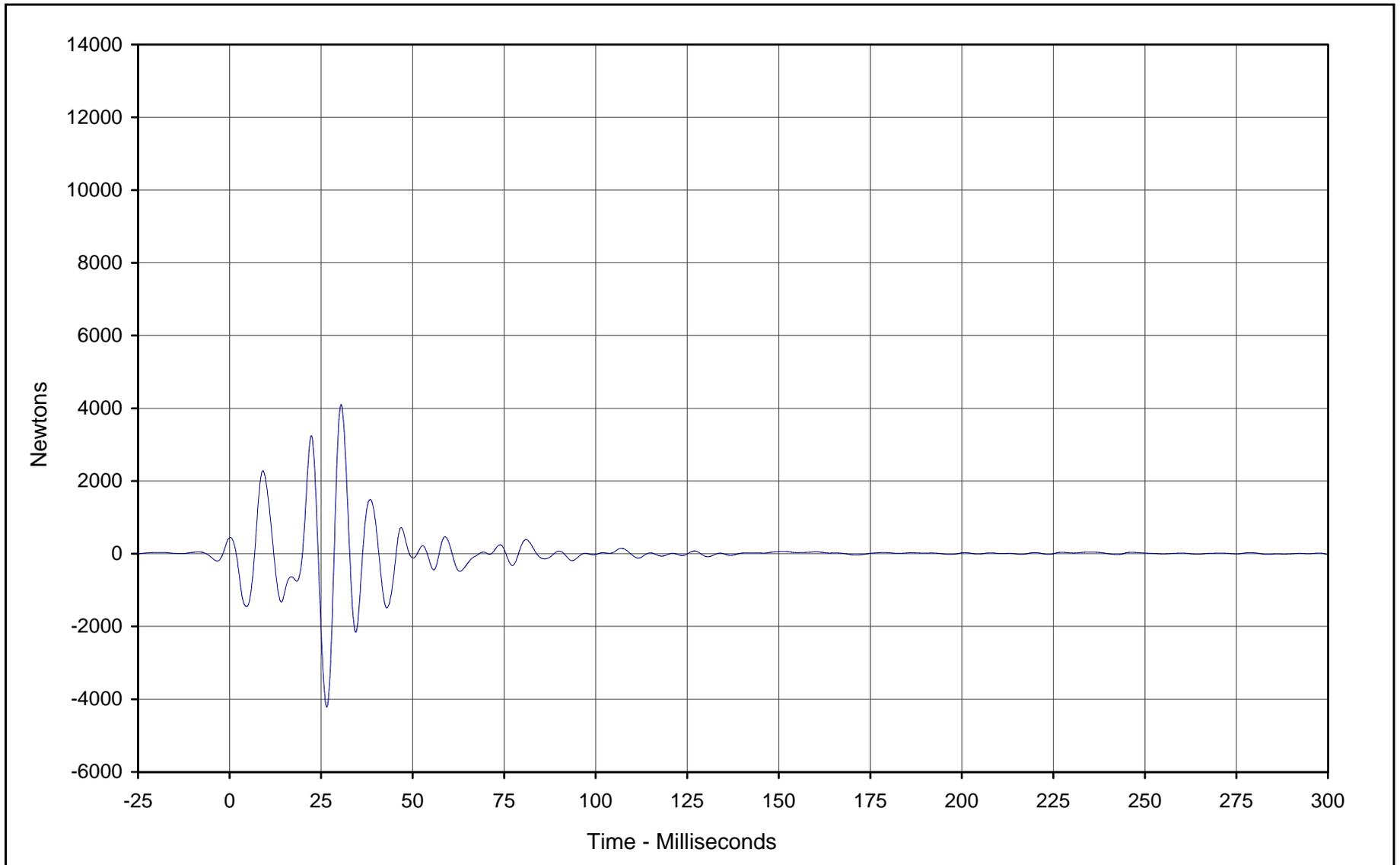
Curve Description: Barrier Force A2  
Maximum Value: 2812.8 at 30.6 Milliseconds  
Minimum Value: -2623.9 at 26.8 Milliseconds  
SAE Filter Class: 60  
Date of Test: 11/17/99  
Curve Number: FIL-099

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

C-2



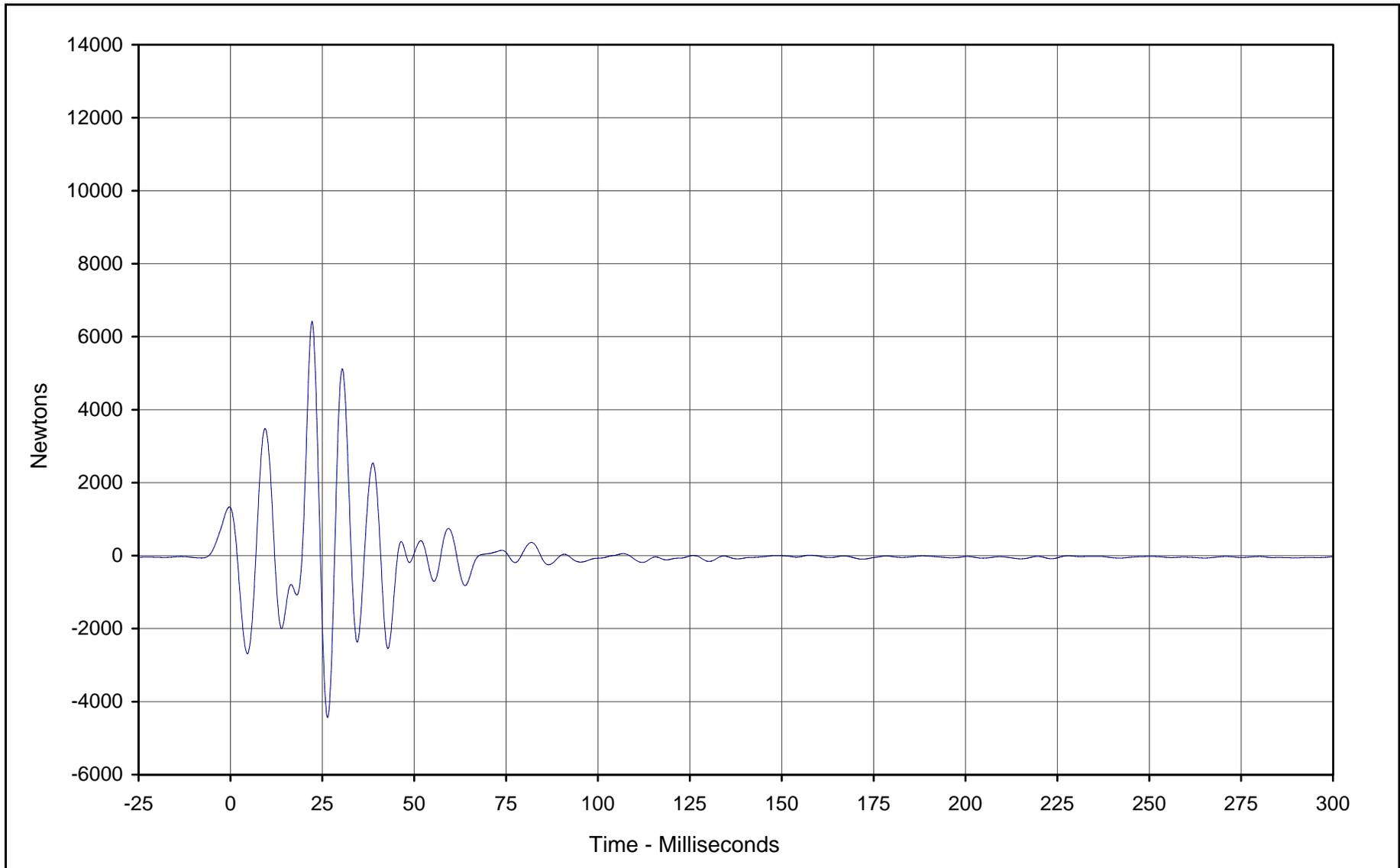
Curve Description: Barrier Force A3  
Maximum Value: 4100.8 at 30.5 Milliseconds  
Minimum Value: -4215.2 at 26.6 Milliseconds  
SAE Filter Class: 60  
Date of Test: 11/17/99  
Curve Number: FIL-100

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

C-3



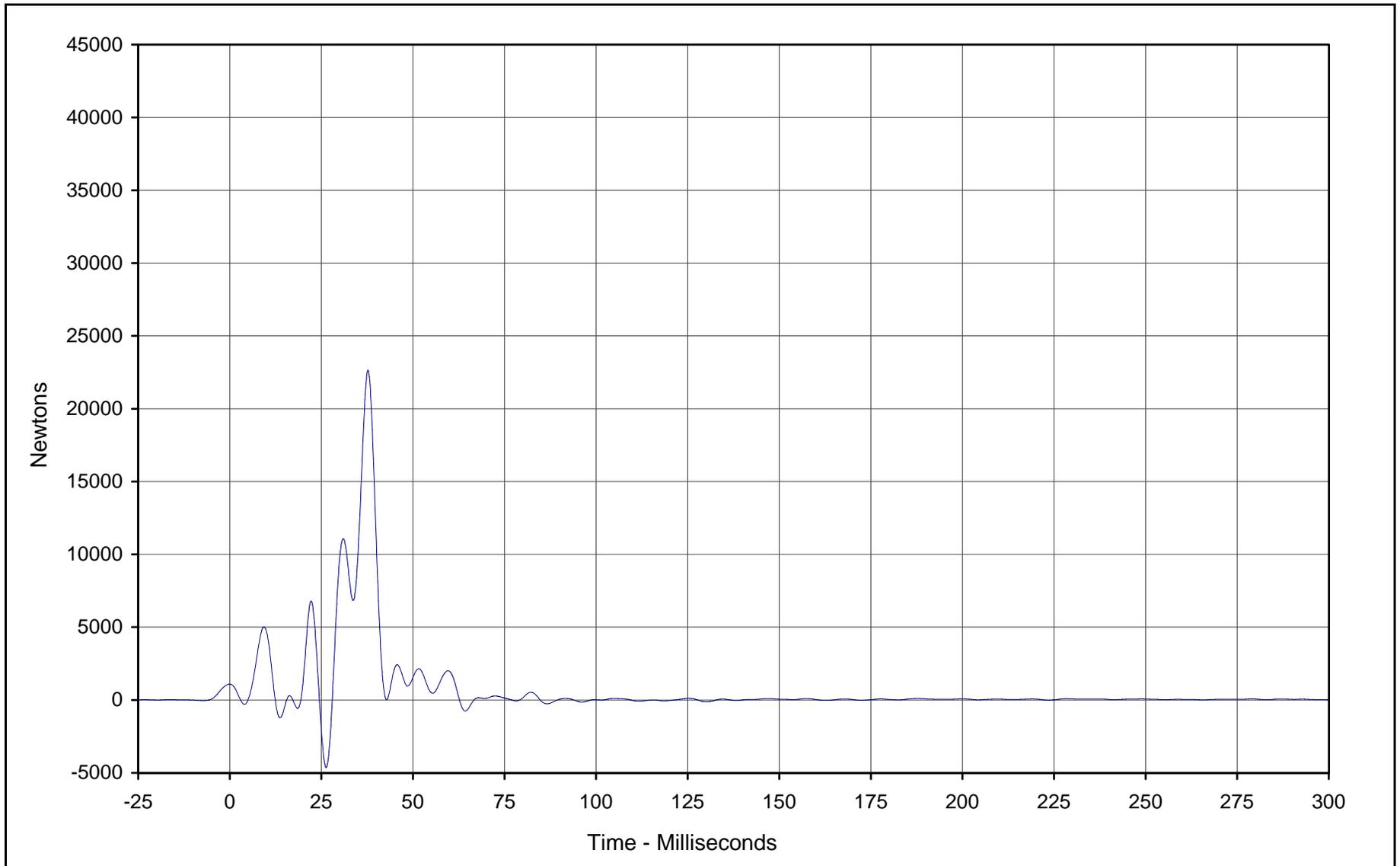
Curve Description: Barrier Force A4  
Maximum Value: 6421.3 at 22.2 Milliseconds  
Minimum Value: -4432.7 at 26.4 Milliseconds  
SAE Filter Class: 60  
Date of Test: 11/17/99  
Curve Number: FIL-101

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

C-4



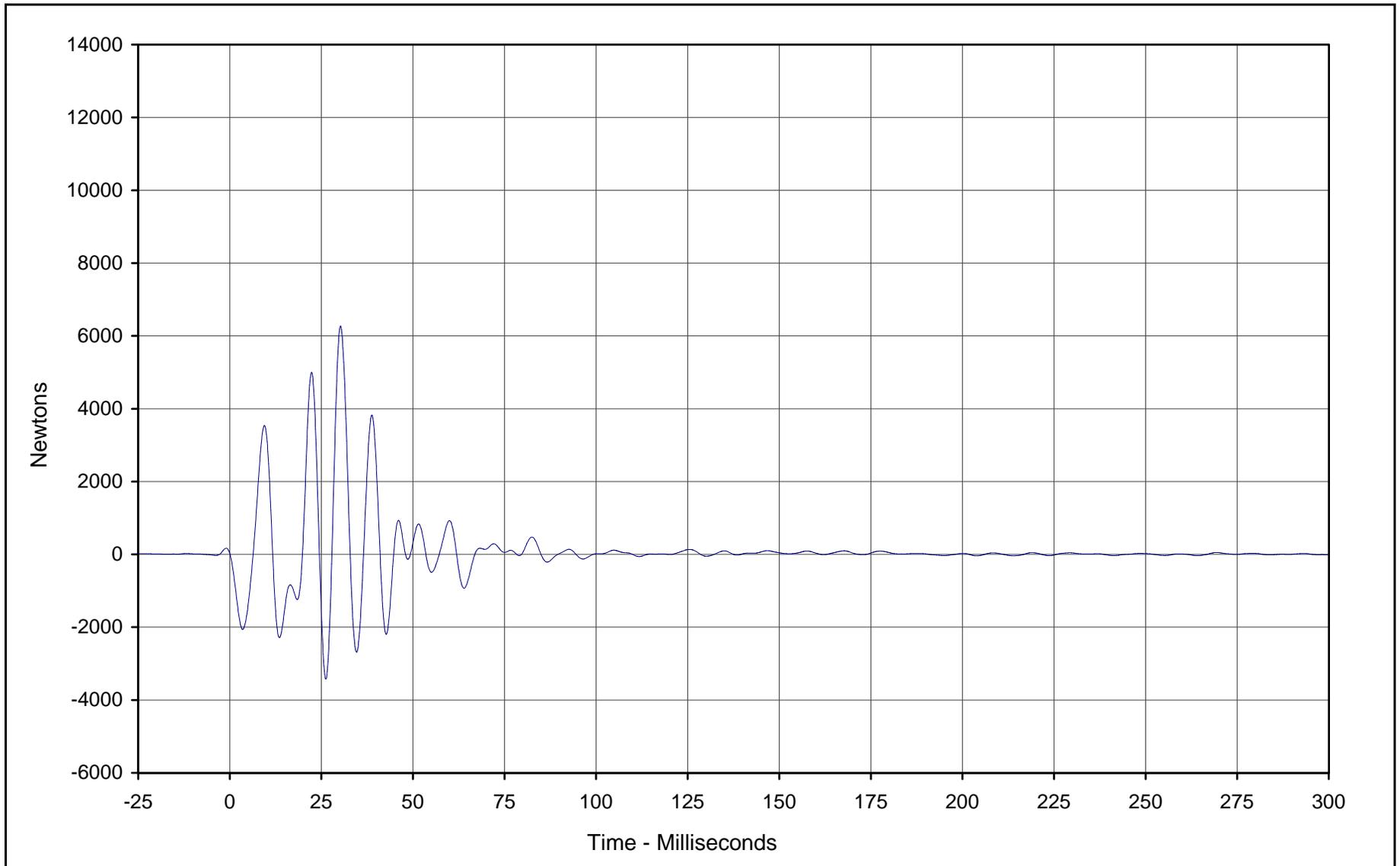
Curve Description: Barrier Force A5  
Maximum Value: 22648.4 at 37.7 Milliseconds  
Minimum Value: -4636.9 at 26.3 Milliseconds  
SAE Filter Class: 60  
Date of Test: 11/17/99  
Curve Number: FIL-102

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

C-5



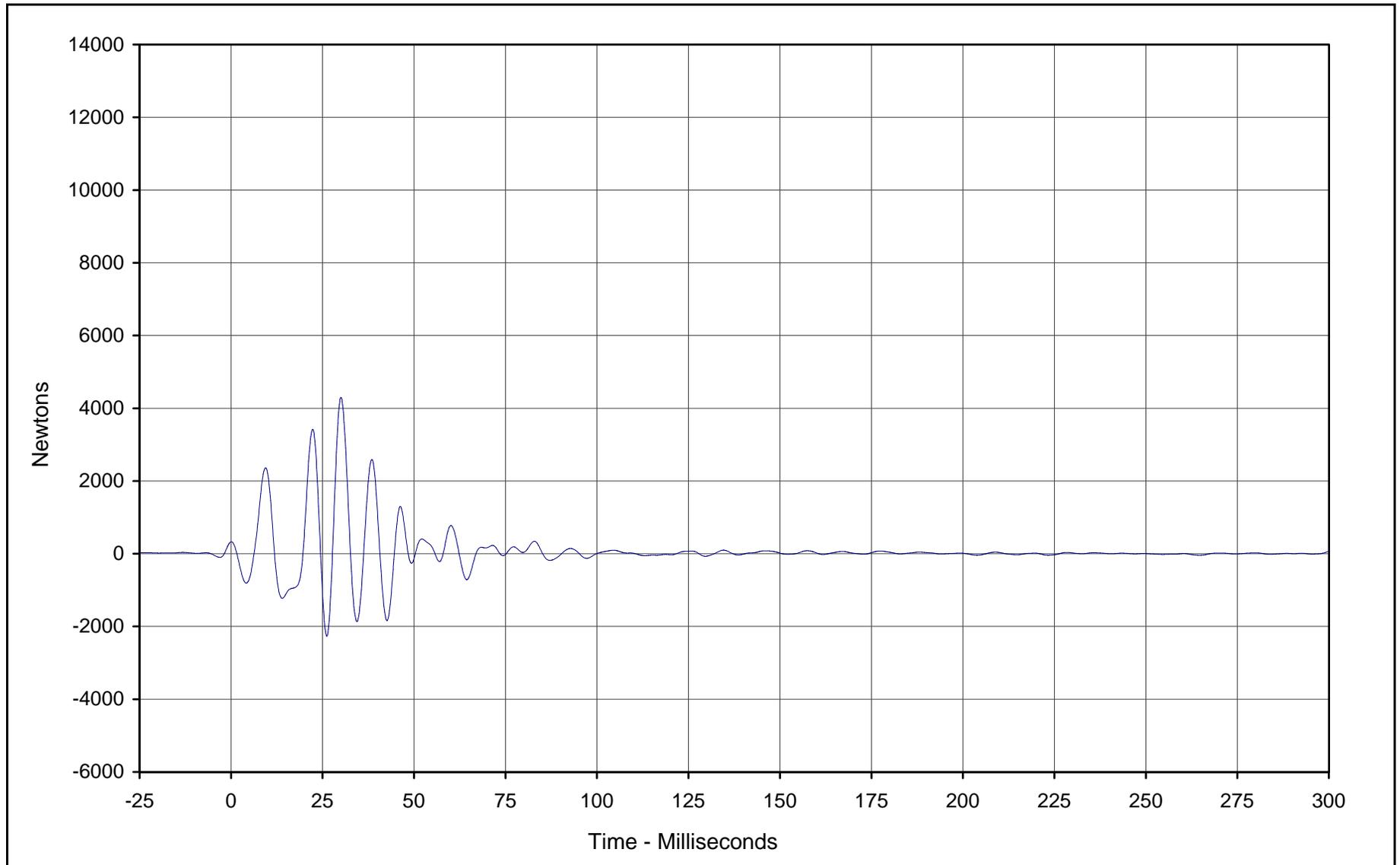
Curve Description: Barrier Force A6  
Maximum Value: 6270.2 at 30.2 Milliseconds  
Minimum Value: -3426.8 at 26.2 Milliseconds  
SAE Filter Class: 60  
Date of Test: 11/17/99  
Curve Number: FIL-103

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

C-6



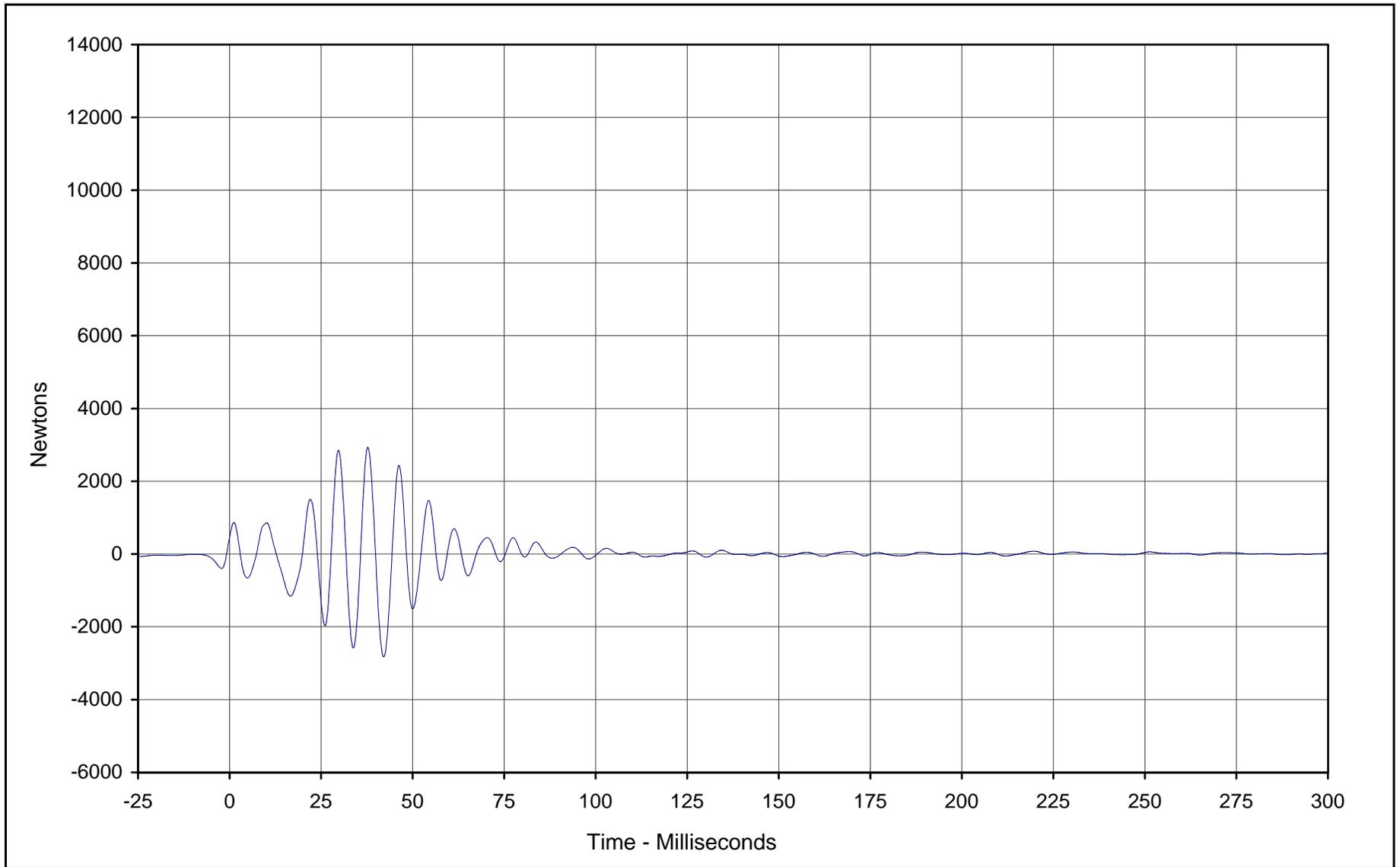
Curve Description: Barrier Force A7  
Maximum Value: 4299.7 at 30.0 Milliseconds  
Minimum Value: -2267.9 at 26.2 Milliseconds  
SAE Filter Class: 60  
Date of Test: 11/17/99  
Curve Number: FIL-104

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

C-7



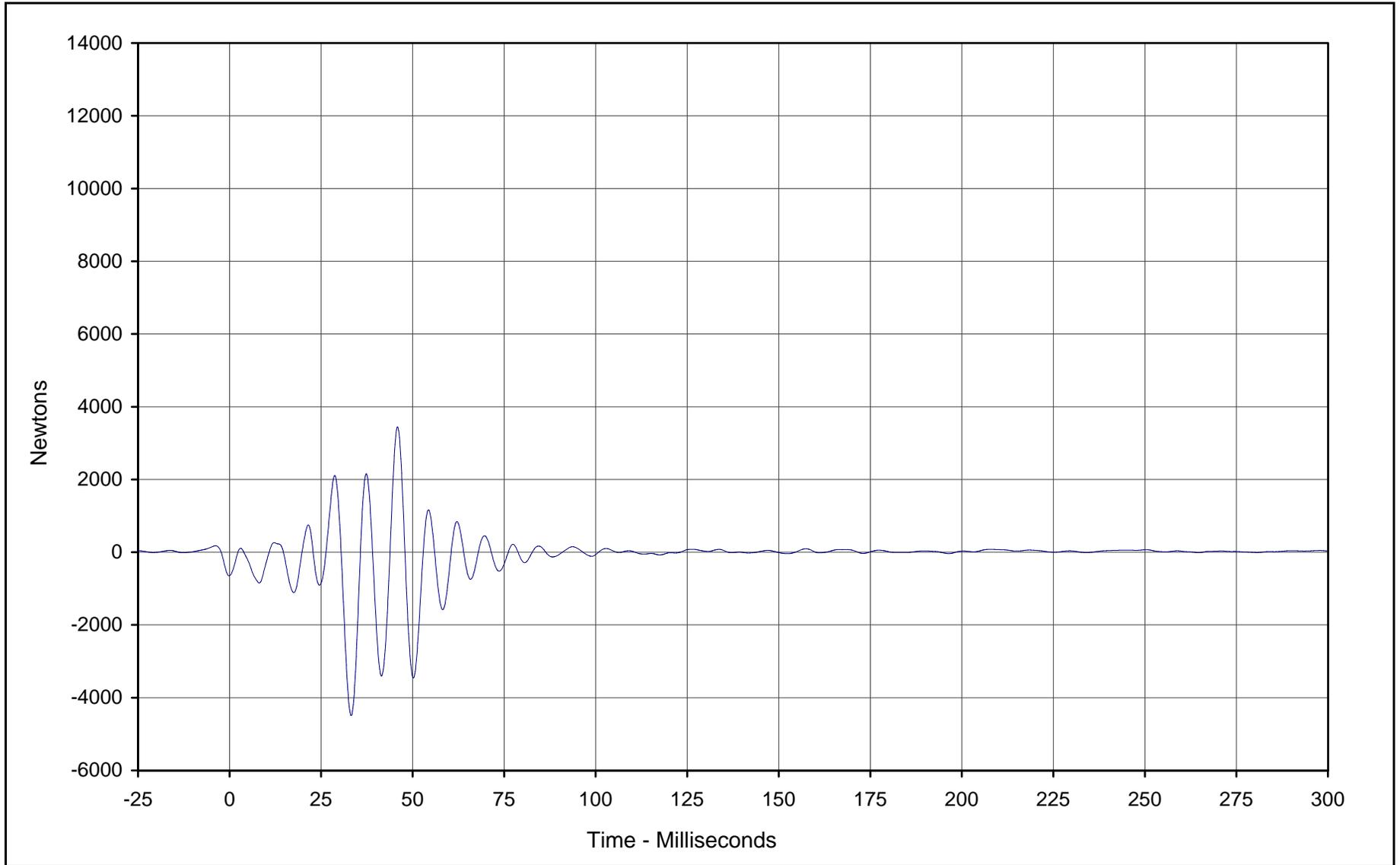
Curve Description: Barrier Force A8  
Maximum Value: 2933.1 at 37.8 Milliseconds  
Minimum Value: -2826.0 at 42.1 Milliseconds  
SAE Filter Class: 60  
Date of Test: 11/17/99  
Curve Number: FIL-105

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

C-8



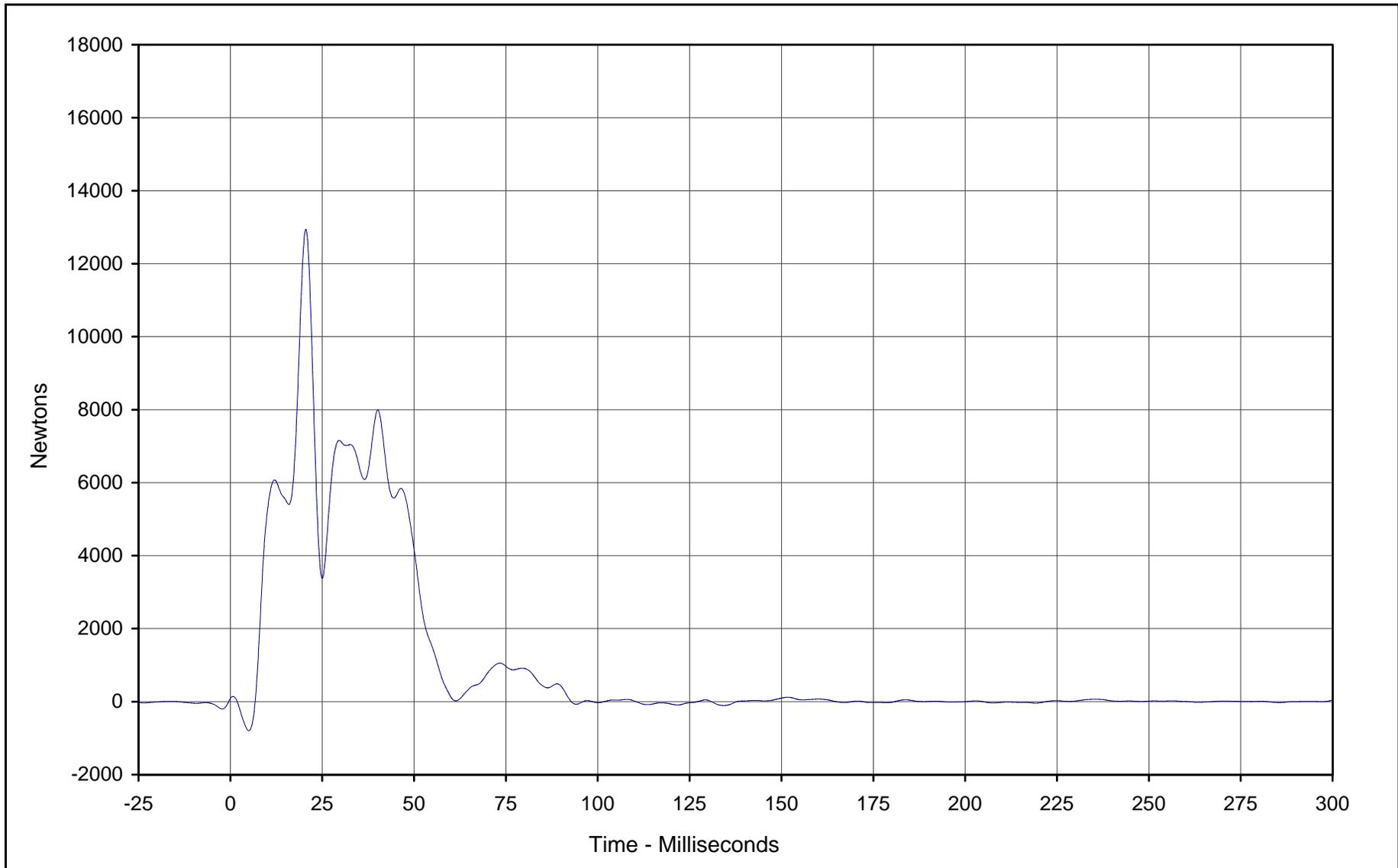
Curve Description: Barrier Force A9  
Maximum Value: 3445.8 at 45.9 Milliseconds  
Minimum Value: -4492.8 at 33.2 Milliseconds  
SAE Filter Class: 60  
Date of Test: 11/17/99  
Curve Number: FIL-106

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

C-9



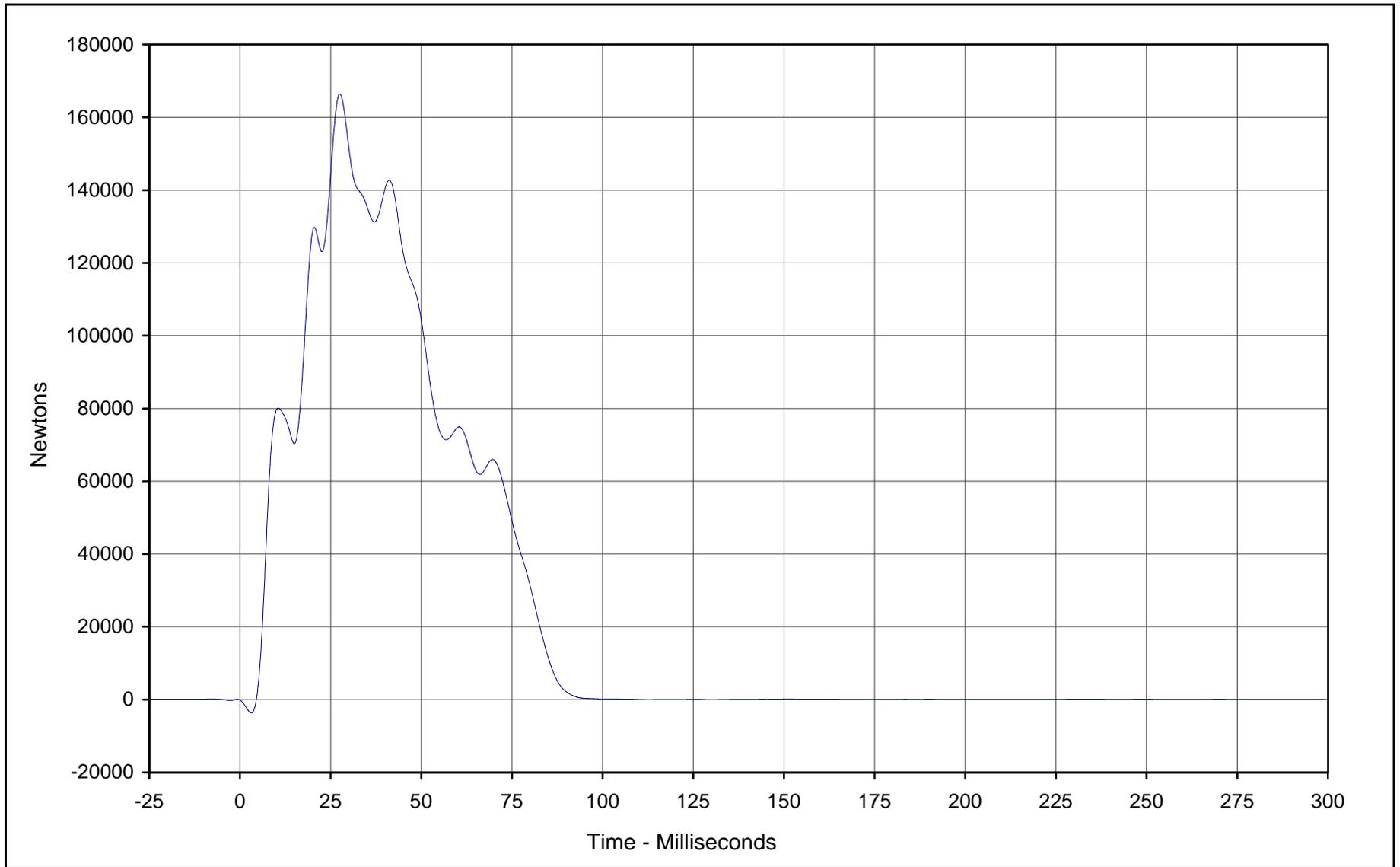
Curve Description: Barrier Force B2  
Maximum Value: 12941.3 at 20.5 Milliseconds  
Minimum Value: -797.2 at 5.0 Milliseconds  
SAE Filter Class: 60  
Date of Test: 11/17/99  
Curve Number: FIL-108

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

C-10



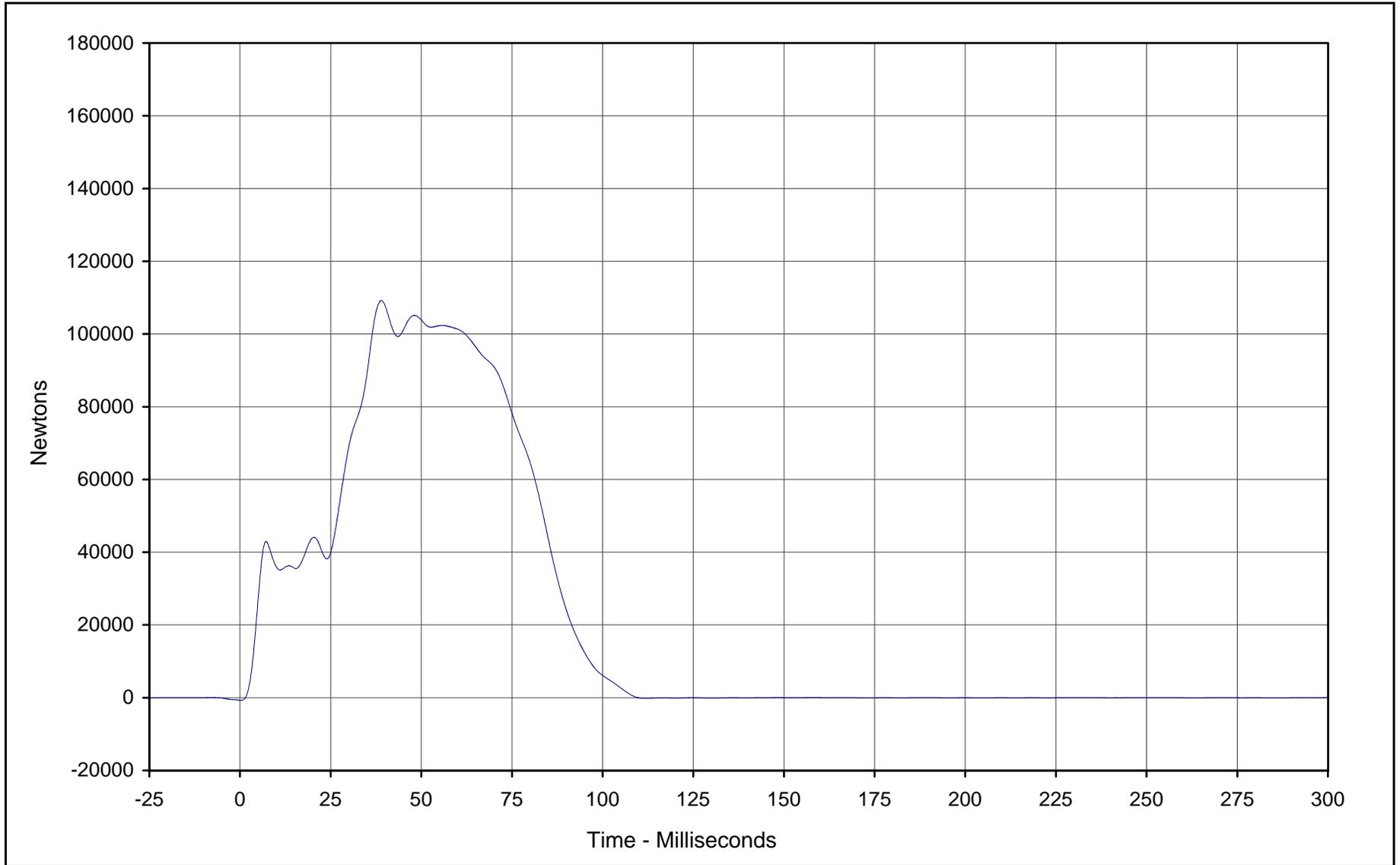
Curve Description: Barrier Force B3  
Maximum Value: 166430.5 at 27.5 Milliseconds  
Minimum Value: -3674.6 at 3.1 Milliseconds  
SAE Filter Class: 60  
Date of Test: 11/17/99  
Curve Number: FIL-109

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

C-11



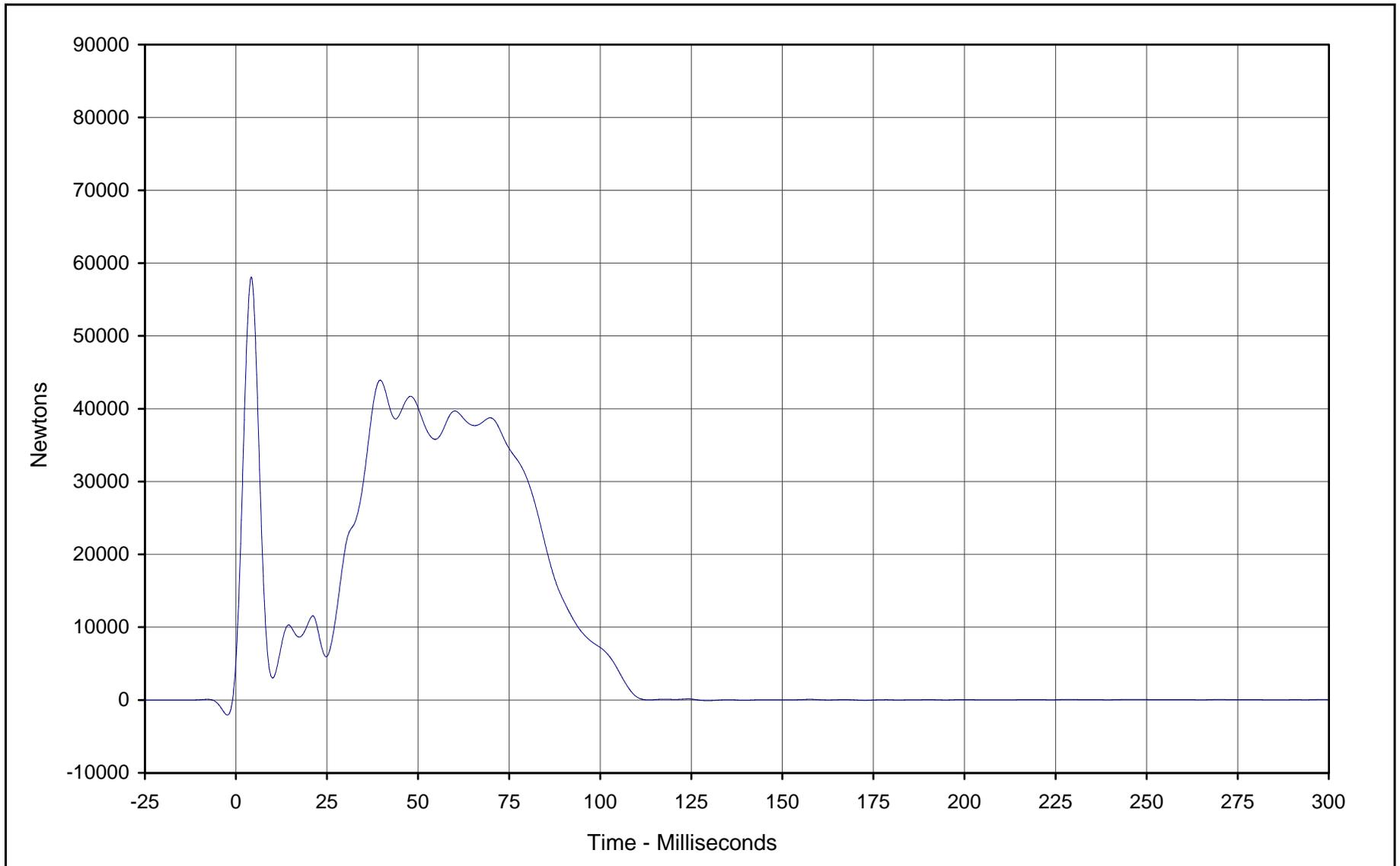
Curve Description: Barrier Force B4  
Maximum Value: 109194.3 at 39.0 Milliseconds  
Minimum Value: -732.3 at 0.2 Milliseconds  
SAE Filter Class: 60  
Date of Test: 11/17/99  
Curve Number: FIL-110

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

C-12



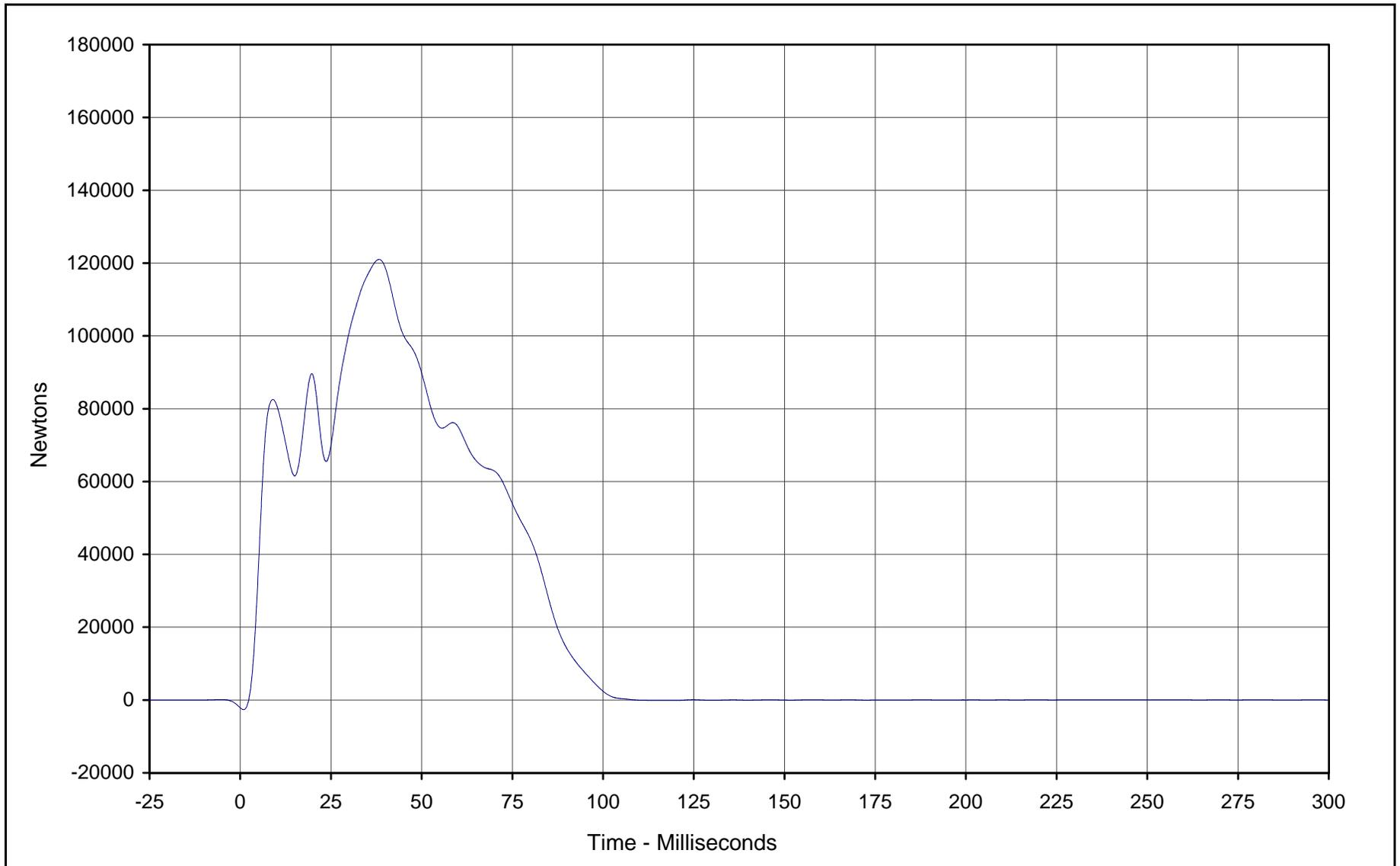
Curve Description: Barrier Force B5  
Maximum Value: 58092.5 at 4.2 Milliseconds  
Minimum Value: -90.0 at 129.5 Milliseconds  
SAE Filter Class: 60  
Date of Test: 11/17/99  
Curve Number: FIL-111

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

C-13



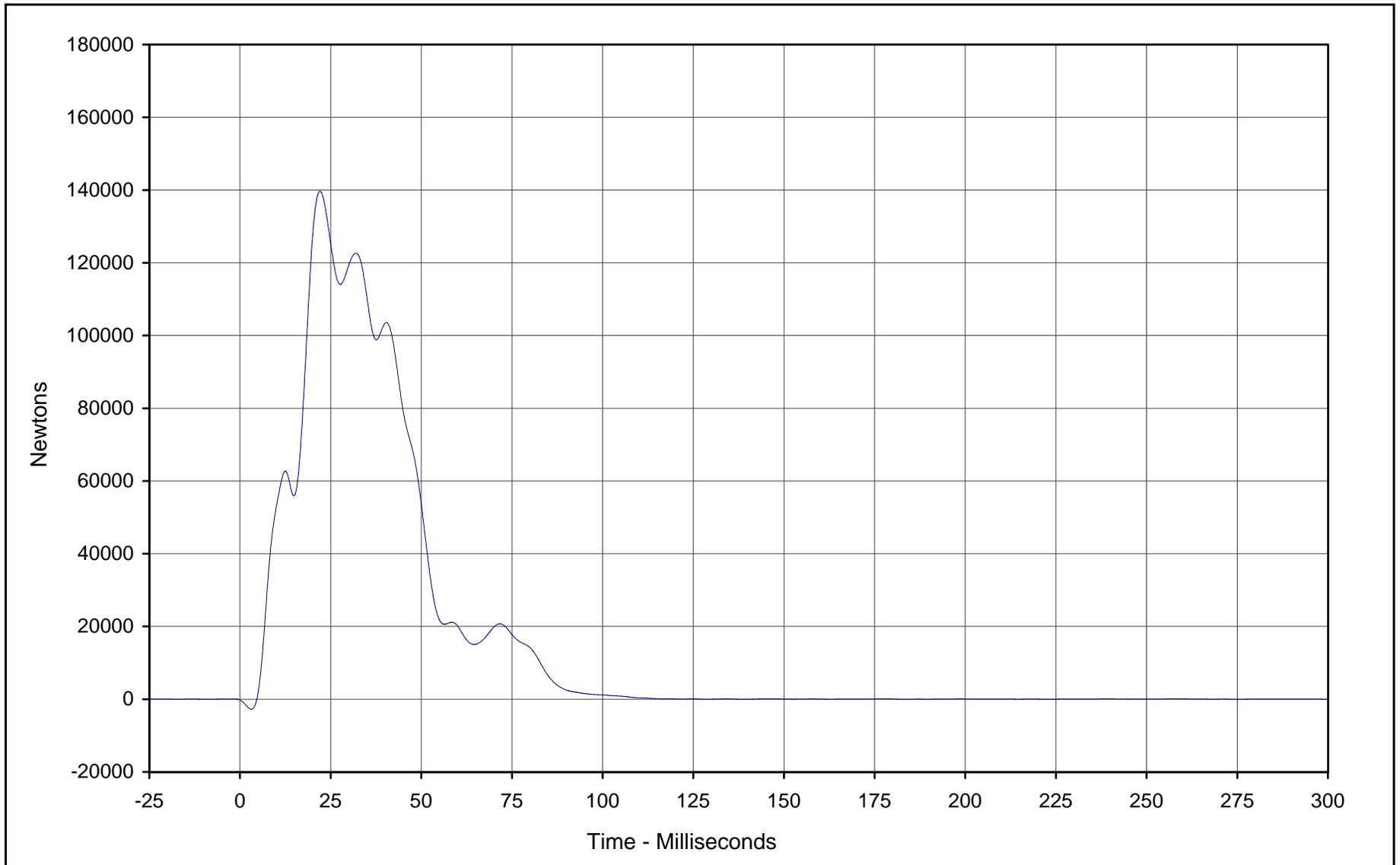
Curve Description: Barrier Force B6  
Maximum Value: 121010.3 at 38.3 Milliseconds  
Minimum Value: -2634.6 at 0.9 Milliseconds  
SAE Filter Class: 60  
Date of Test: 11/17/99  
Curve Number: FIL-112

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

C-14



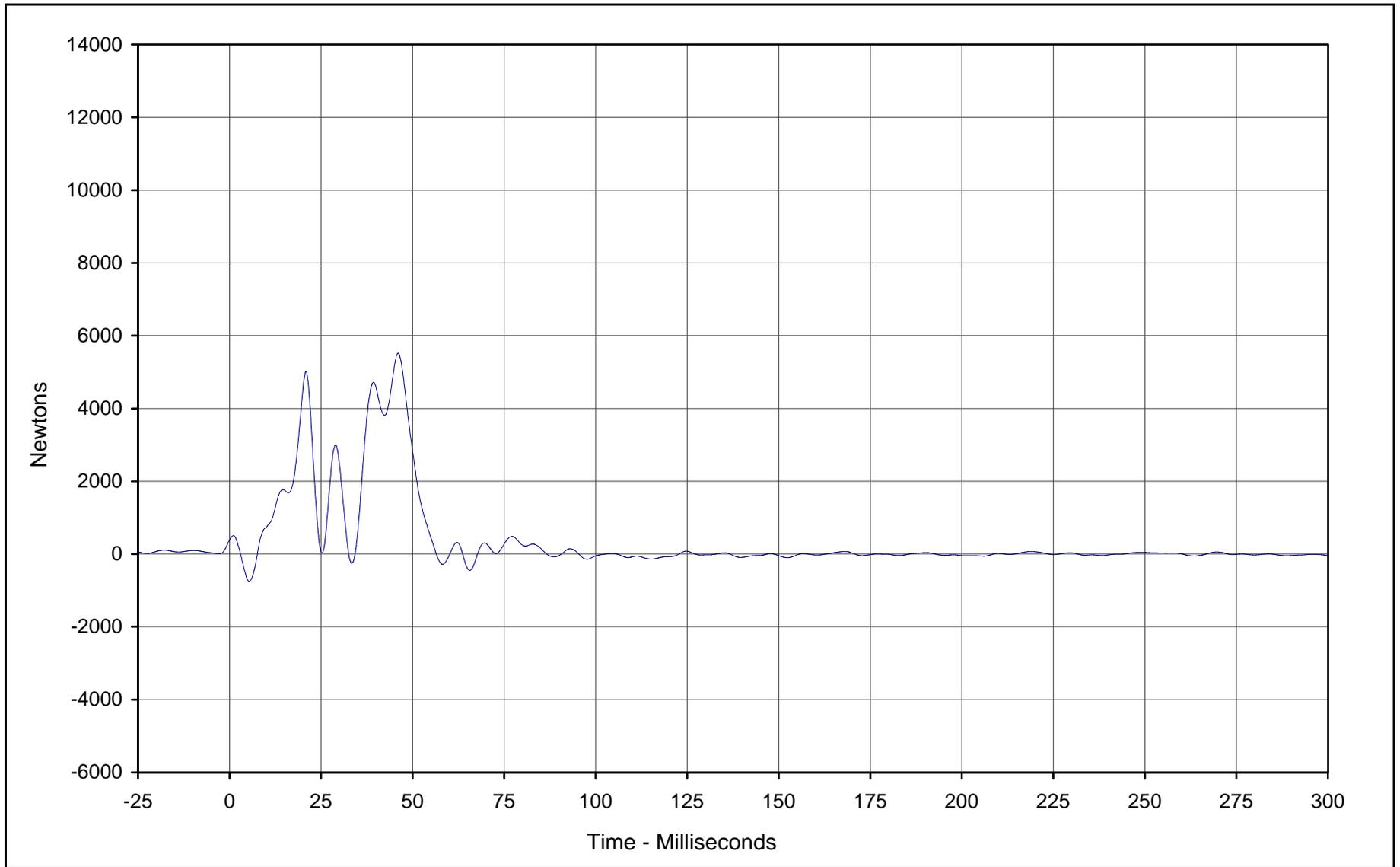
Curve Description: Barrier Force B7  
Maximum Value: 139690.7 at 22.1 Milliseconds  
Minimum Value: -2764.7 at 3.1 Milliseconds  
SAE Filter Class: 60  
Date of Test: 11/17/99  
Curve Number: FIL-113

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

C-15



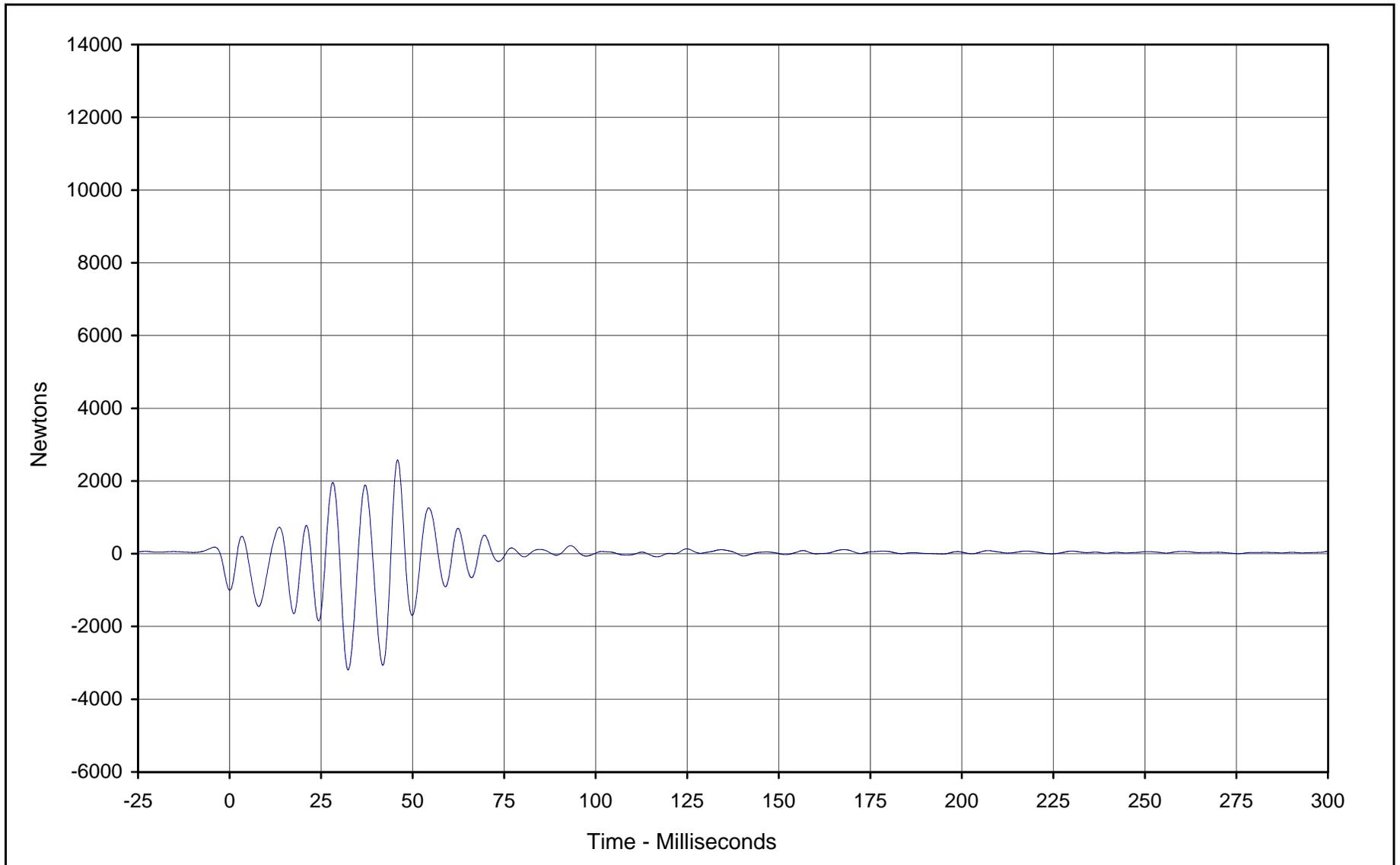
Curve Description: Barrier Force B8  
Maximum Value: 5517.5 at 46.0 Milliseconds  
Minimum Value: -747.0 at 5.4 Milliseconds  
SAE Filter Class: 60  
Date of Test: 11/17/99  
Curve Number: FIL-114

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

C-16



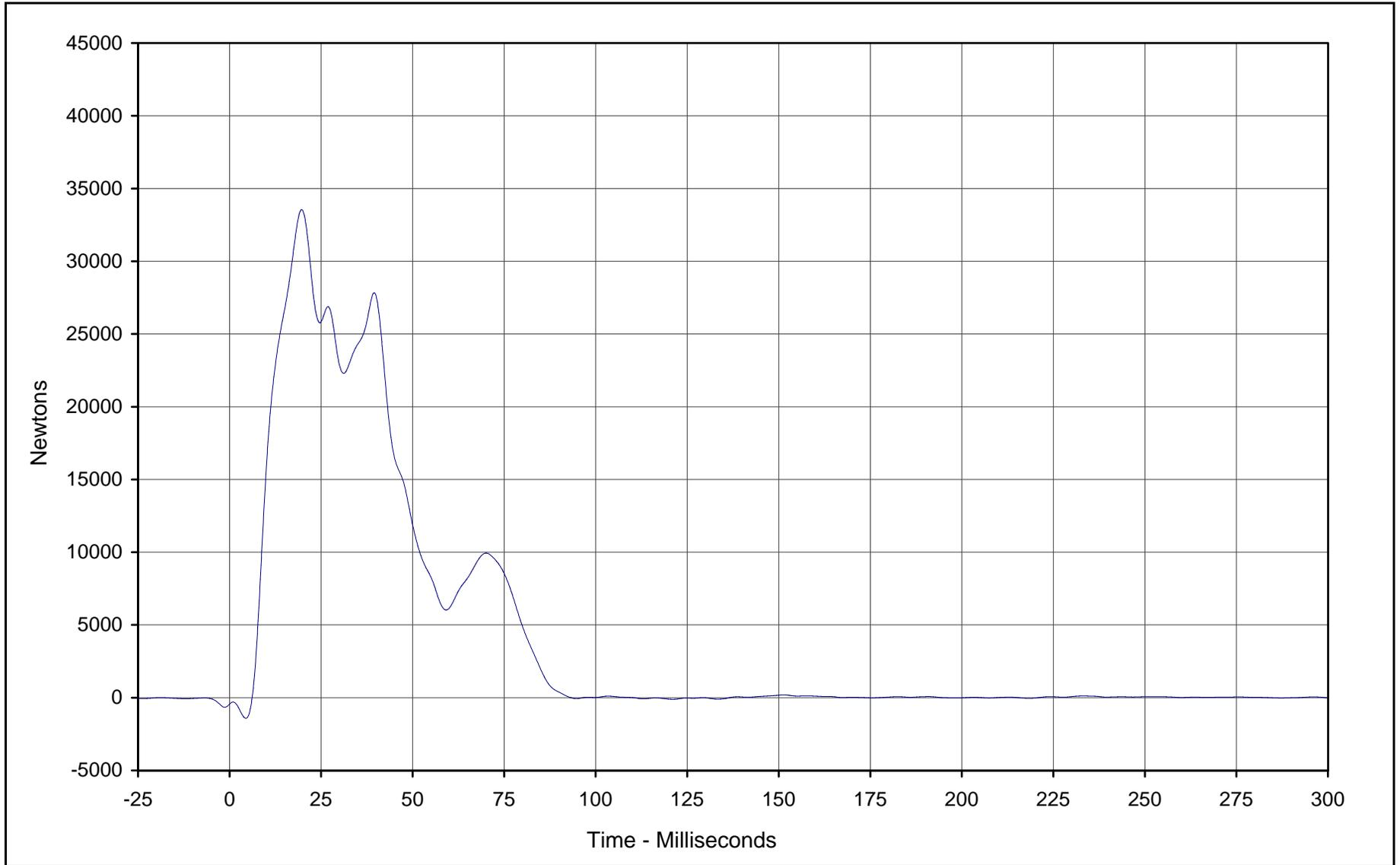
Curve Description: Barrier Force B9  
Maximum Value: 2580.7 at 45.9 Milliseconds  
Minimum Value: -3197.2 at 32.4 Milliseconds  
SAE Filter Class: 60  
Date of Test: 11/17/99  
Curve Number: FIL-115

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

C-17



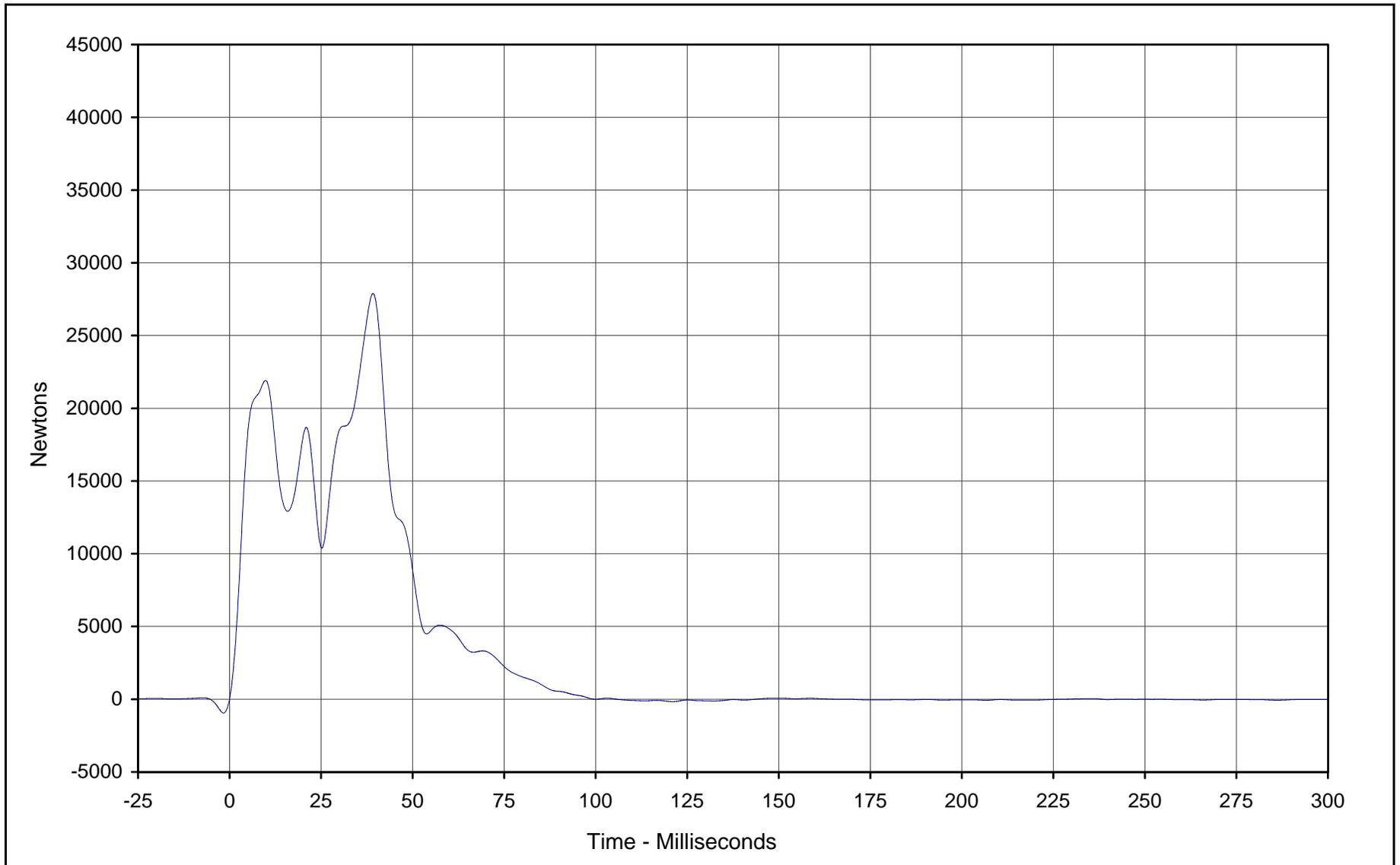
Curve Description: Barrier Force C2  
Maximum Value: 33551.2 at 19.7 Milliseconds  
Minimum Value: -1417.0 at 4.5 Milliseconds  
SAE Filter Class: 60  
Date of Test: 11/17/99  
Curve Number: FIL-117

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

C-18



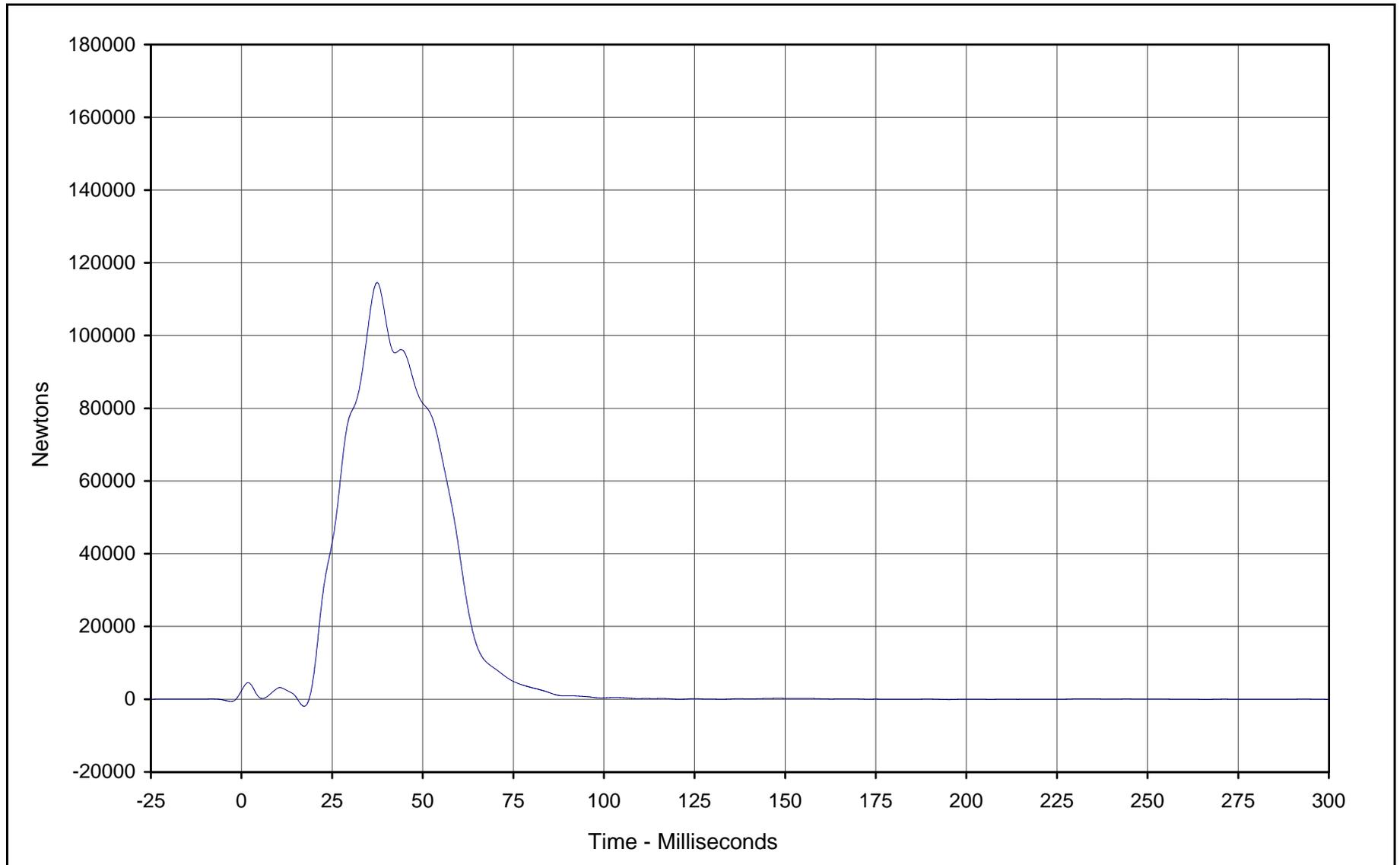
Curve Description: Barrier Force C3  
Maximum Value: 27889.5 at 39.2 Milliseconds  
Minimum Value: -167.5 at 121.0 Milliseconds  
SAE Filter Class: 60  
Date of Test: 11/17/99  
Curve Number: FIL-118

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

C-19



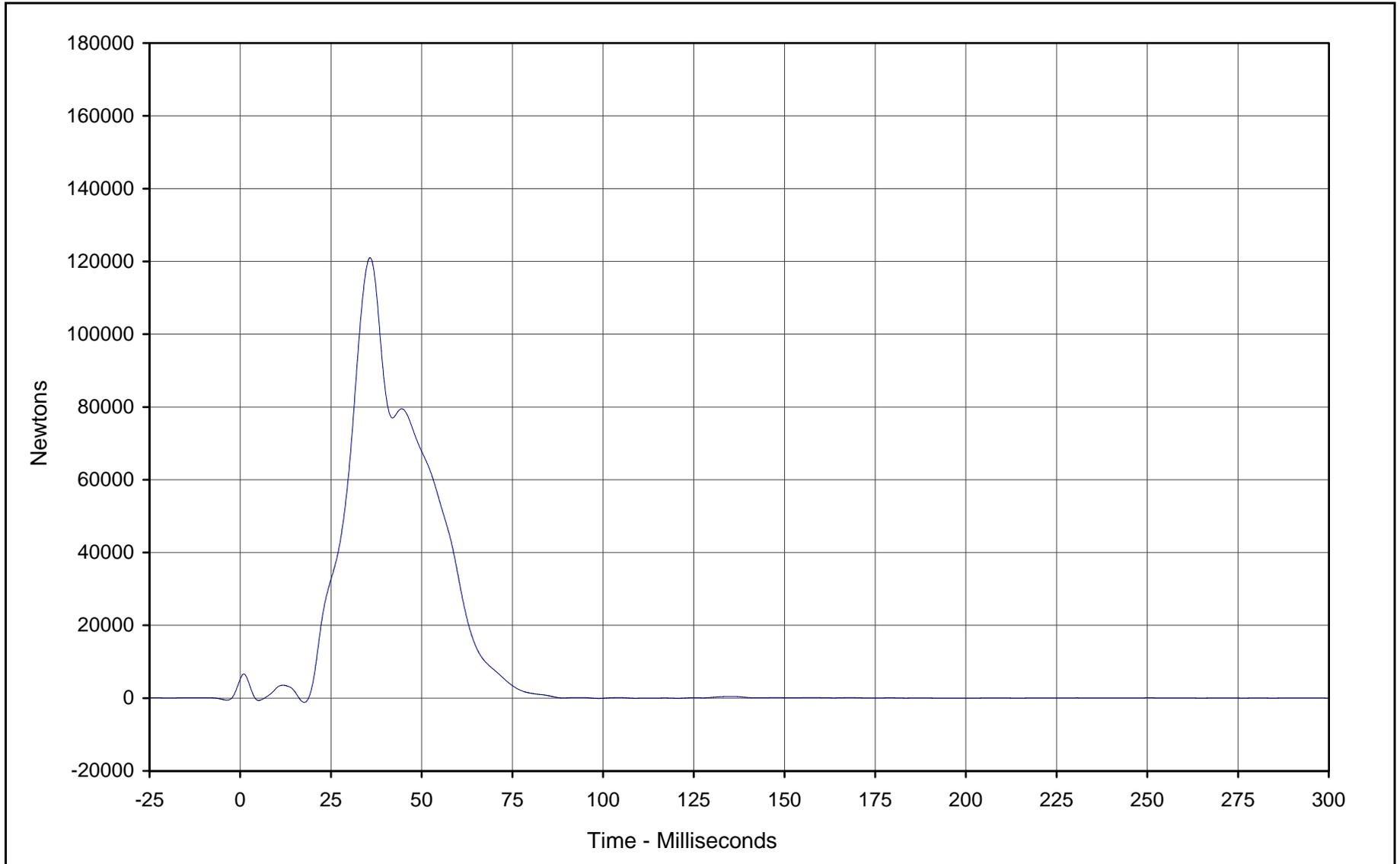
Curve Description: Barrier Force C4  
Maximum Value: 114552.2 at 37.4 Milliseconds  
Minimum Value: -1937.1 at 17.3 Milliseconds  
SAE Filter Class: 60  
Date of Test: 11/17/99  
Curve Number: FIL-119

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

C-20



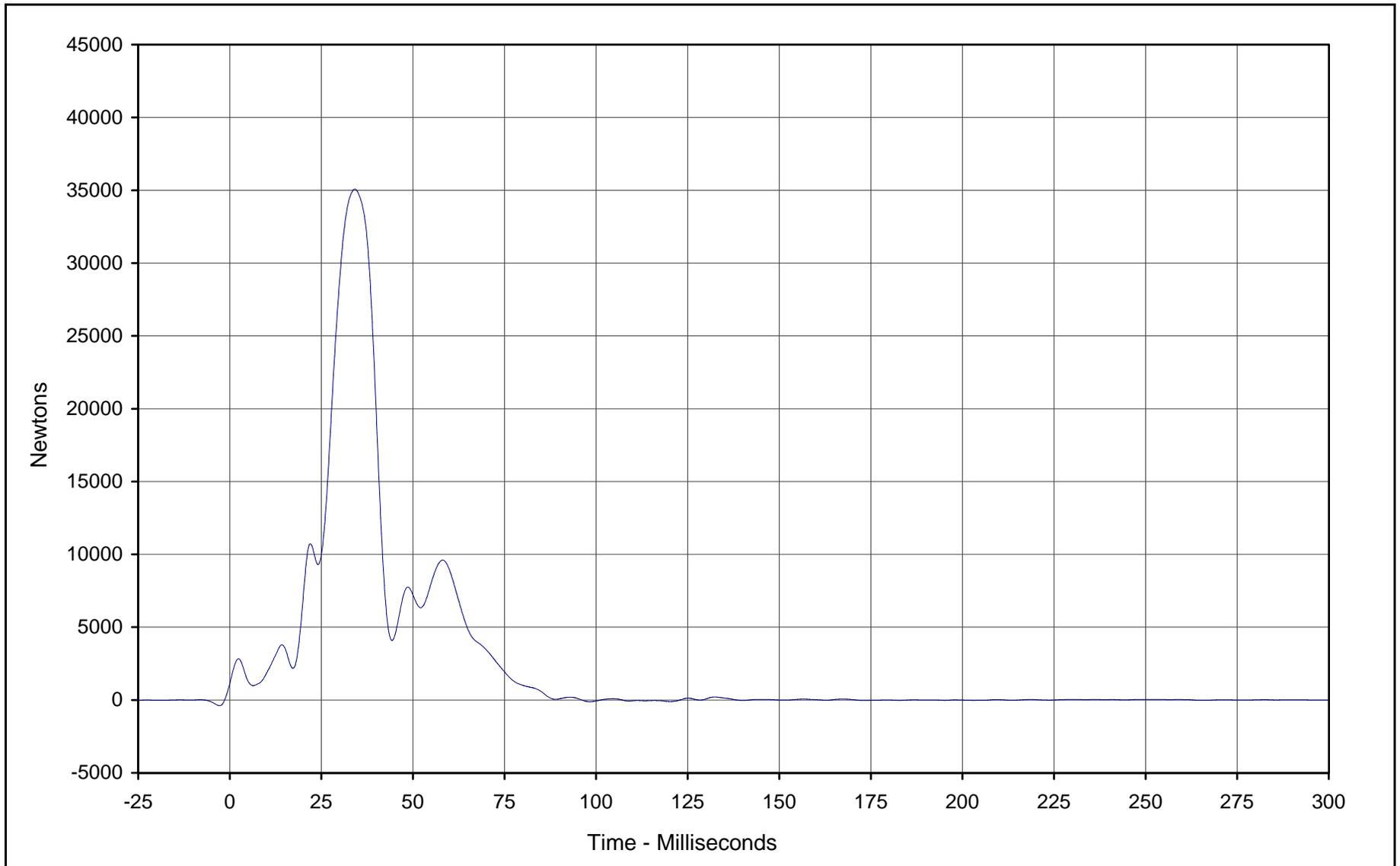
Curve Description: Barrier Force C5  
Maximum Value: 121029.0 at 35.8 Milliseconds  
Minimum Value: -1175.7 at 17.7 Milliseconds  
SAE Filter Class: 60  
Date of Test: 11/17/99  
Curve Number: FIL-120

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

C-21



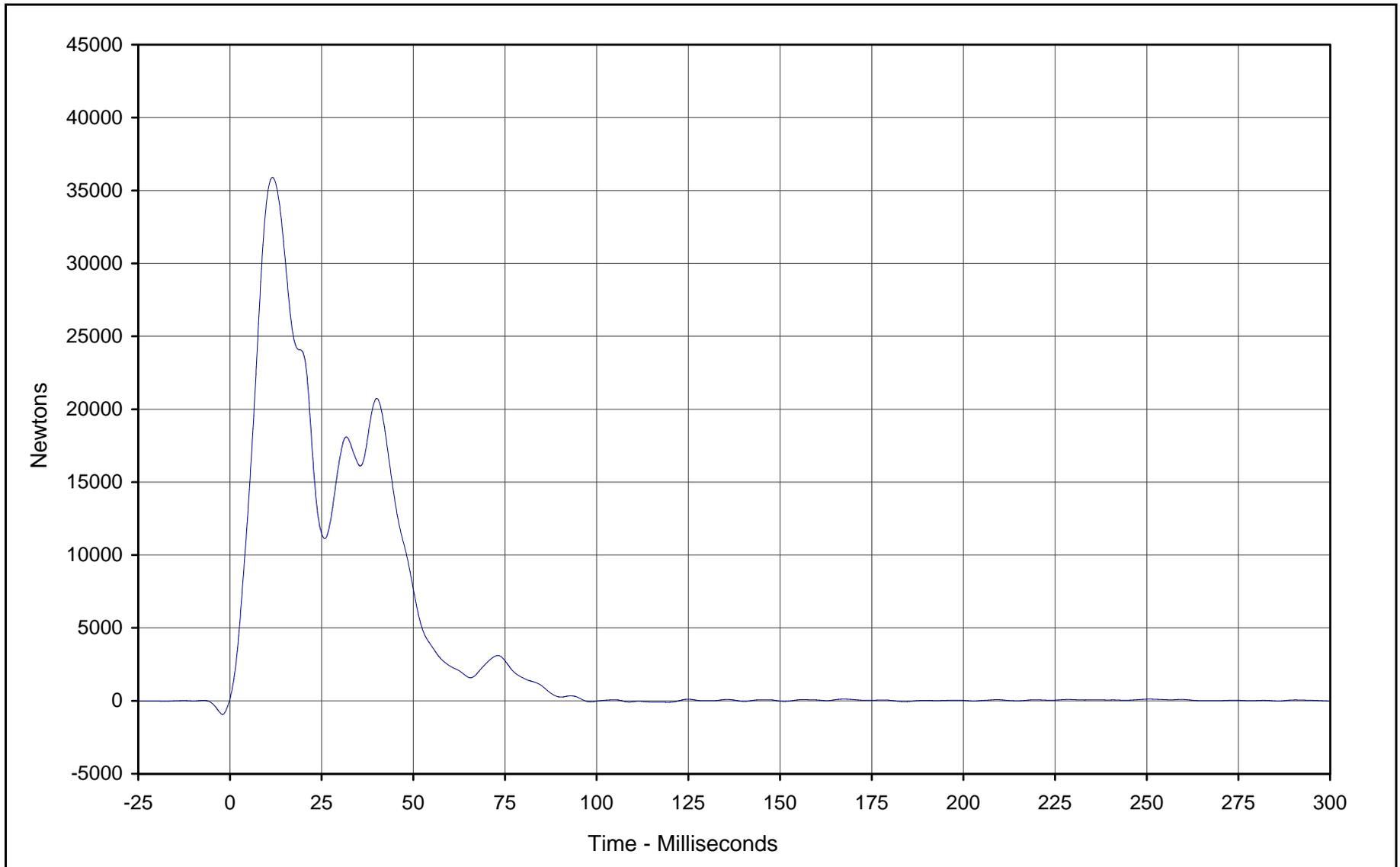
Curve Description: Barrier Force C6  
Maximum Value: 35083.8 at 34.1 Milliseconds  
Minimum Value: -123.5 at 98.3 Milliseconds  
SAE Filter Class: 60  
Date of Test: 11/17/99  
Curve Number: FIL-121

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

C-22



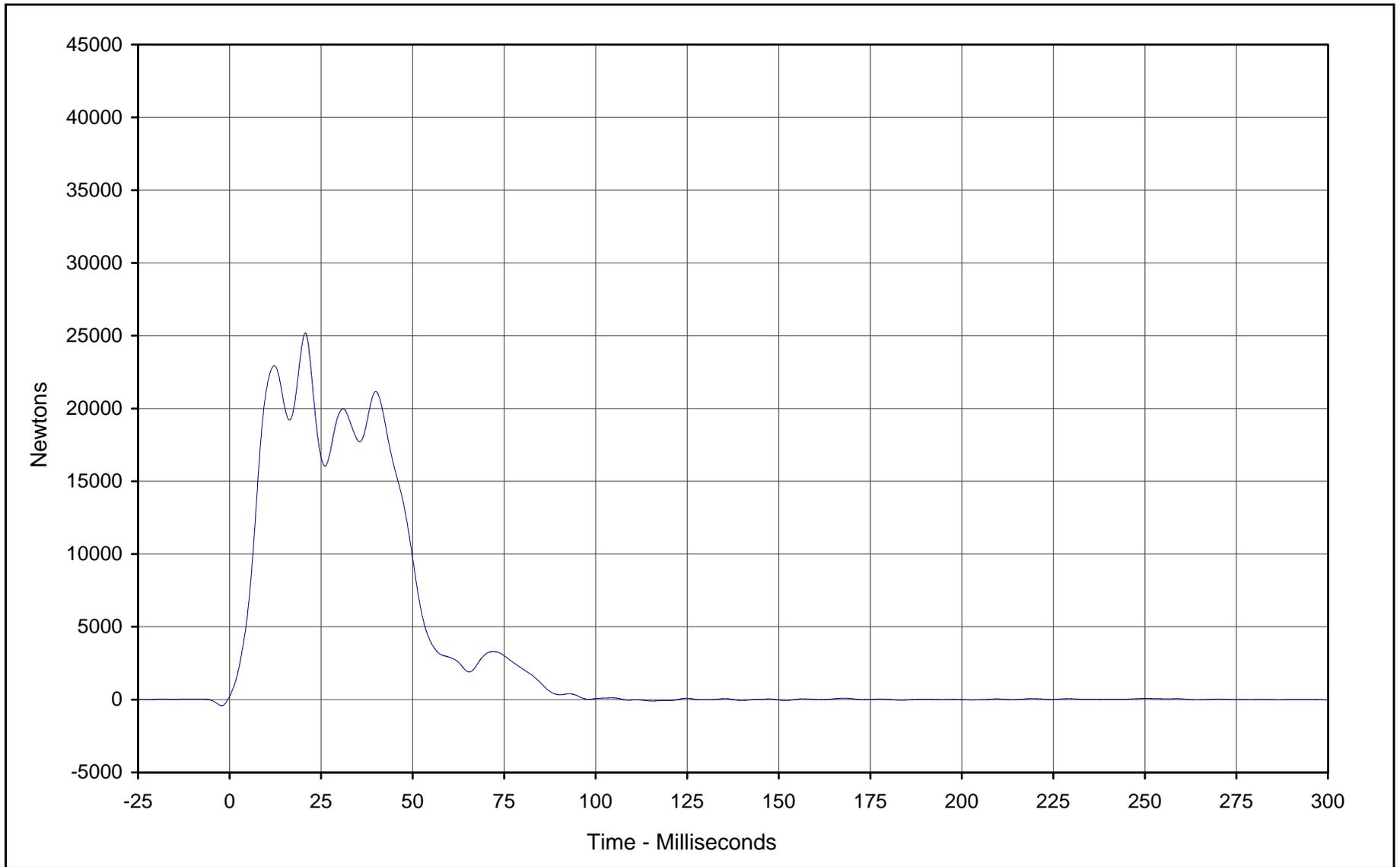
Curve Description: Barrier Force C7  
Maximum Value: 35899.4 at 11.6 Milliseconds  
Minimum Value: -97.8 at 119.5 Milliseconds  
SAE Filter Class: 60  
Date of Test: 11/17/99  
Curve Number: FIL-122

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

C-23



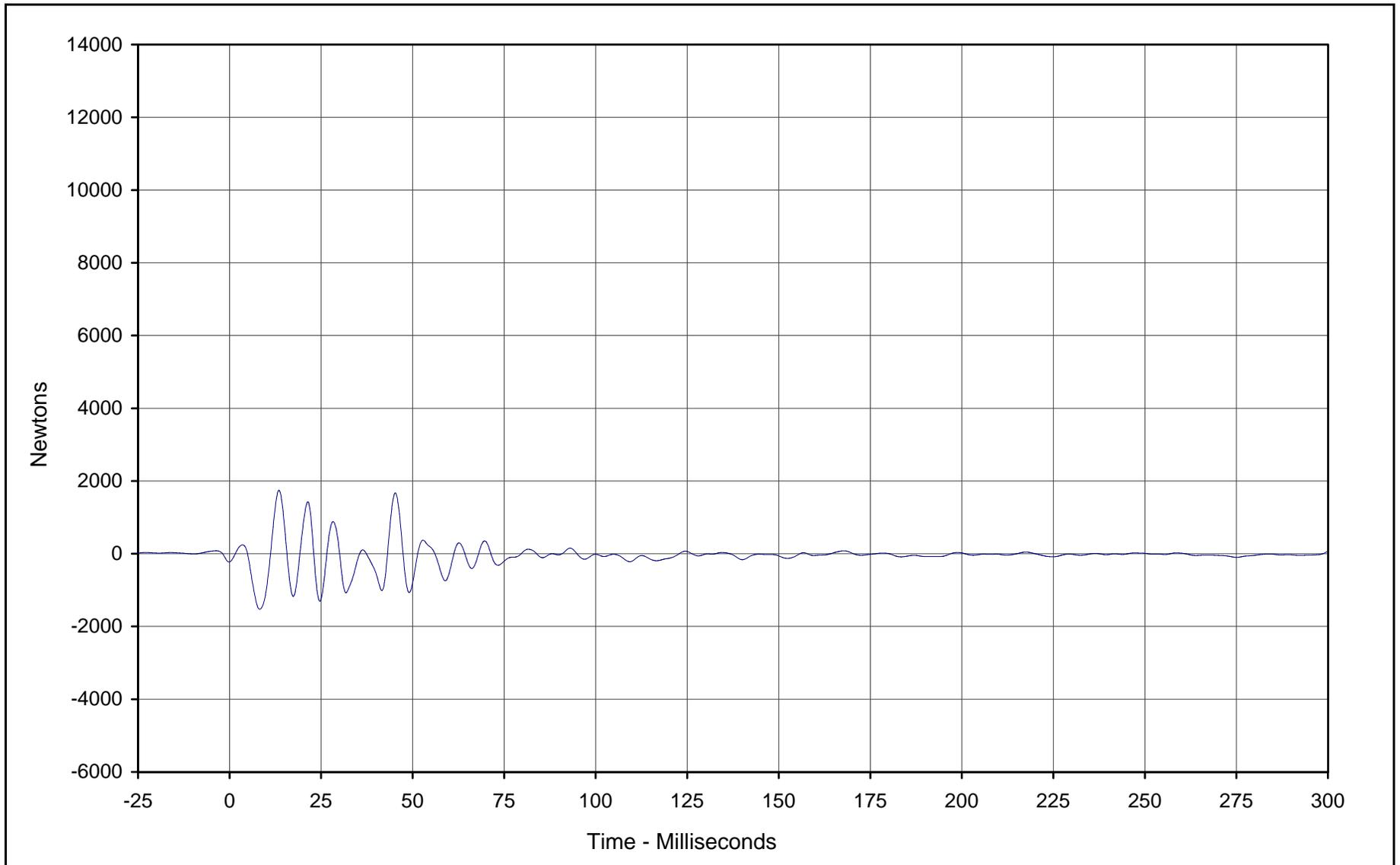
Curve Description: Barrier Force C8  
Maximum Value: 25196.3 at 20.7 Milliseconds  
Minimum Value: -97.4 at 115.7 Milliseconds  
SAE Filter Class: 60  
Date of Test: 11/17/99  
Curve Number: FIL-123

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

C-24



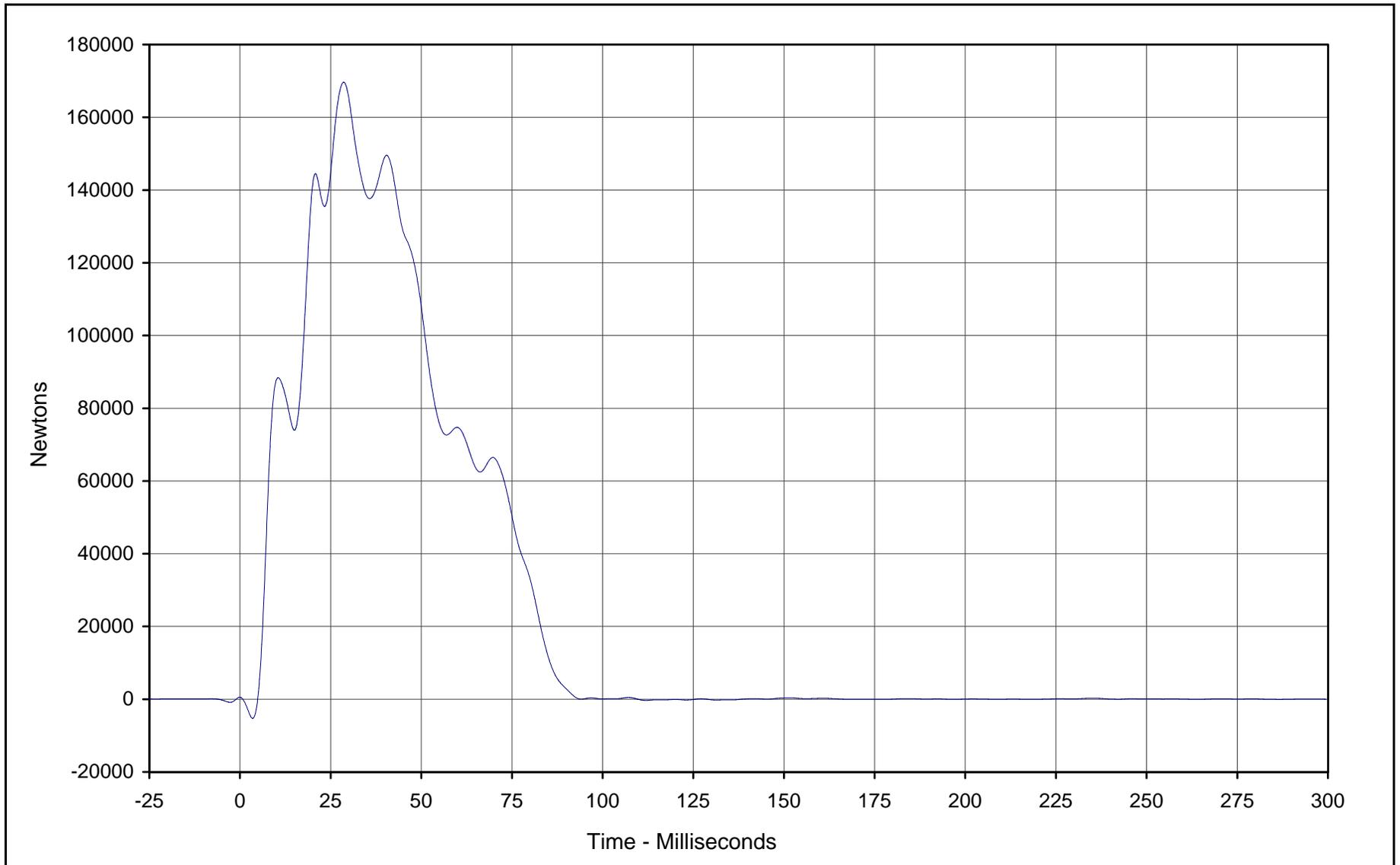
Curve Description: Barrier Force C9  
Maximum Value: 1745.3 at 13.5 Milliseconds  
Minimum Value: -1525.1 at 8.2 Milliseconds  
SAE Filter Class: 60  
Date of Test: 11/17/99  
Curve Number: FIL-124

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

C-25

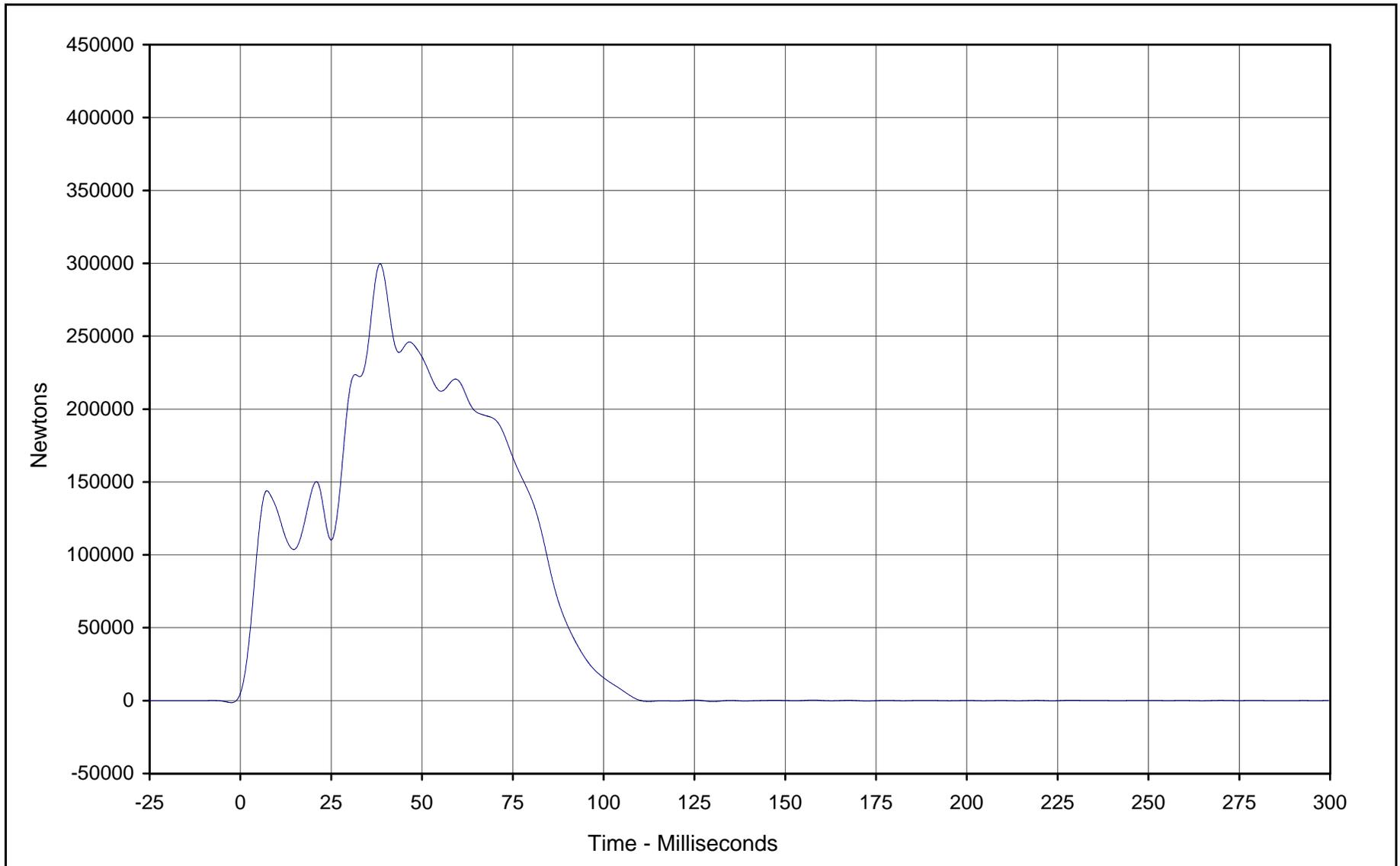


Curve Description: Driver Barrier Force Sum Group 1  
Maximum Value: 169670.0 at 28.6 Milliseconds  
Minimum Value: -5272.7 at 3.5 Milliseconds  
SAE Filter Class: 60  
Date of Test: 11/17/99  
Curve Number: SUM-001

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

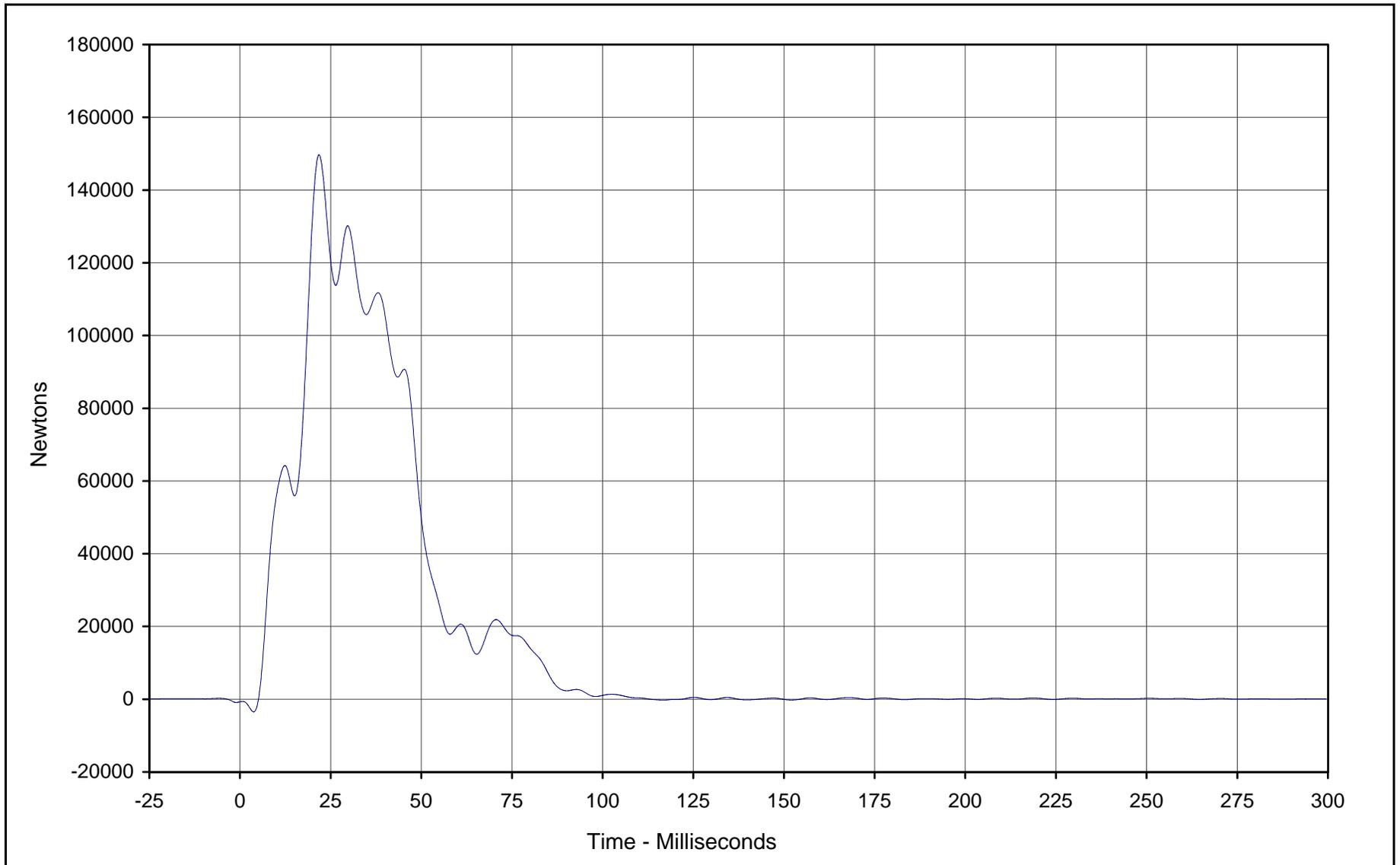


Curve Description: Driver Barrier Force Sum Group 2  
Maximum Value: 299630.4 at 38.5 Milliseconds  
Minimum Value: -614.7 at 130.0 Milliseconds  
SAE Filter Class: 60  
Date of Test: 11/17/99  
Curve Number: SUM-002

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



C-27



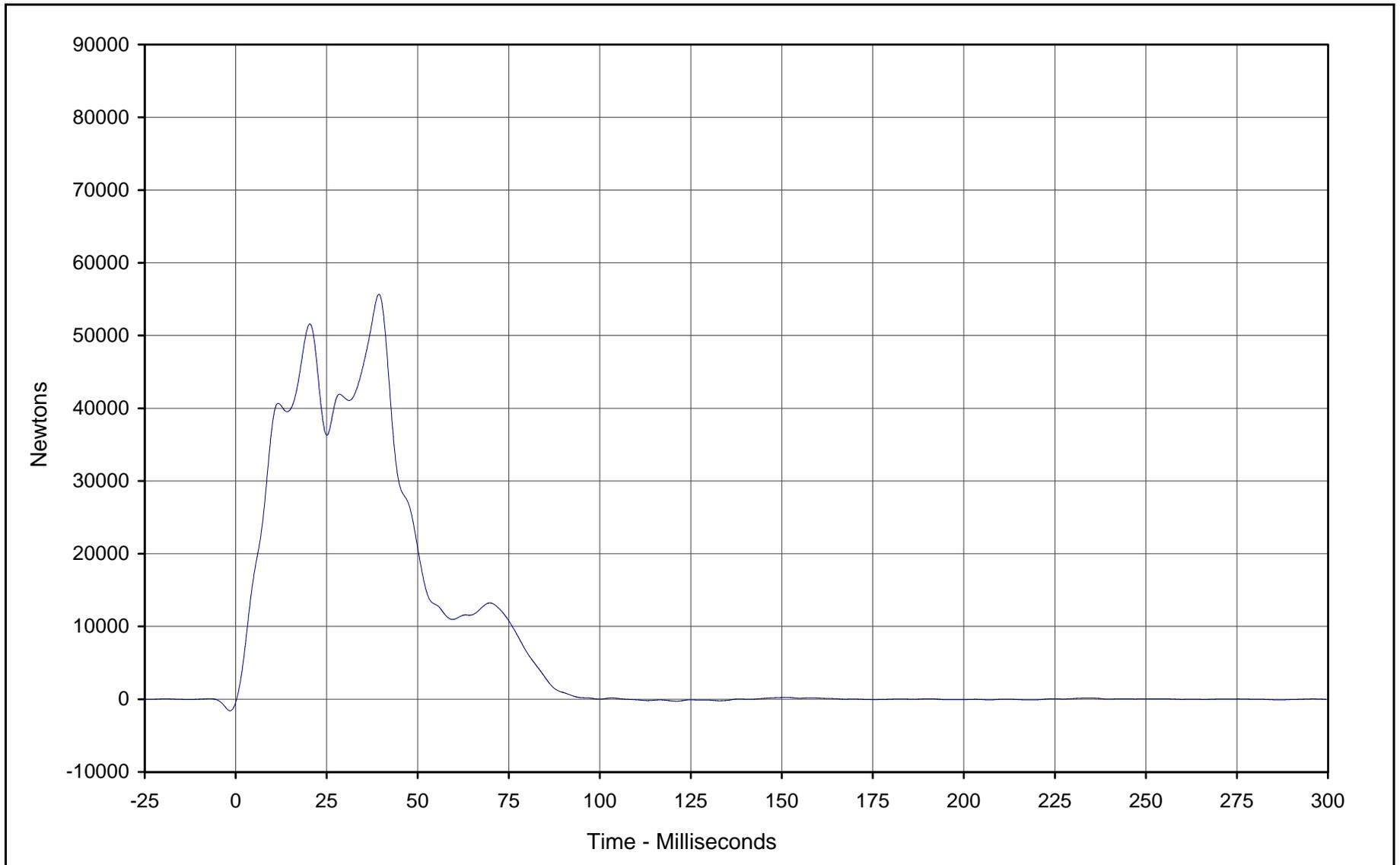
Curve Description: Driver Barrier Force Sum Group 3  
Maximum Value: 149698.8 at 21.8 Milliseconds  
Minimum Value: -3488.1 at 3.8 Milliseconds  
SAE Filter Class: 60  
Date of Test: 11/17/99  
Curve Number: SUM-003

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

C-28



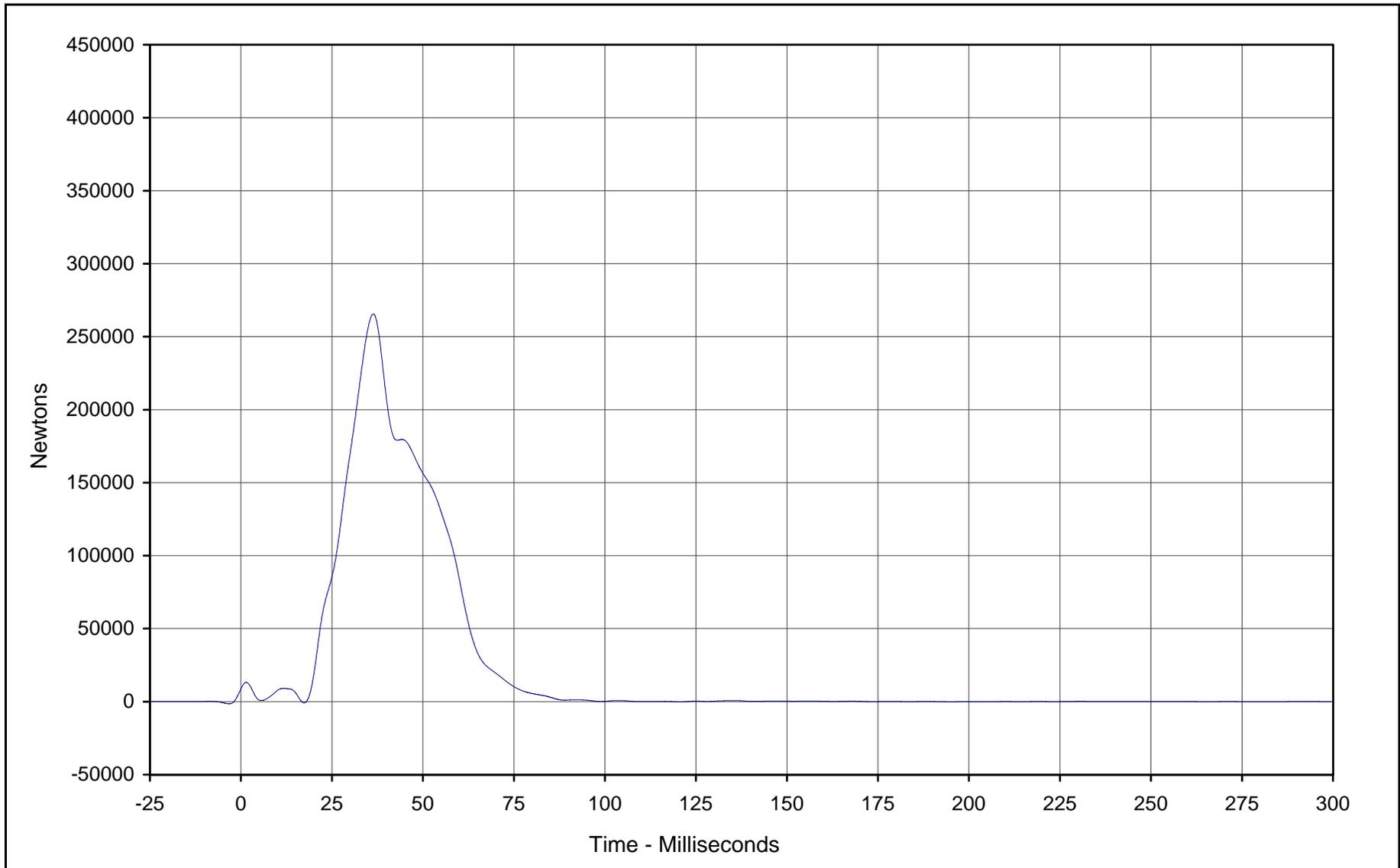
Curve Description: Driver Barrier Force Sum Group 4  
Maximum Value: 55679.0 at 39.3 Milliseconds  
Minimum Value: -430.7 at 0.0 Milliseconds  
SAE Filter Class: 60  
Date of Test: 11/17/99  
Curve Number: SUM-004

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

C-29



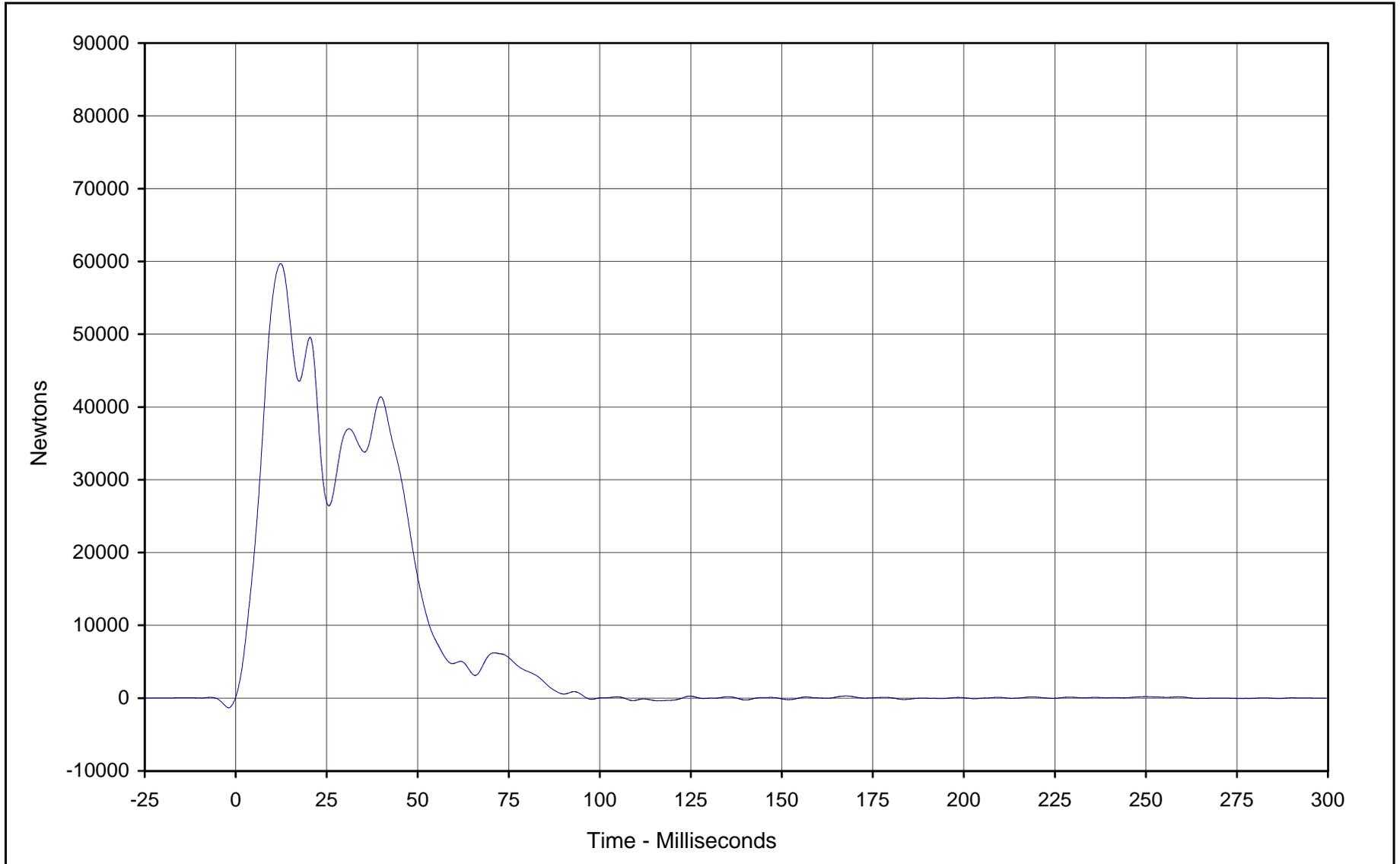
Curve Description: Driver Barrier Force Sum Group 5  
Maximum Value: 265557.0 at 36.4 Milliseconds  
Minimum Value: -869.2 at 17.4 Milliseconds  
SAE Filter Class: 60  
Date of Test: 11/17/99  
Curve Number: SUM-005

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

C-30



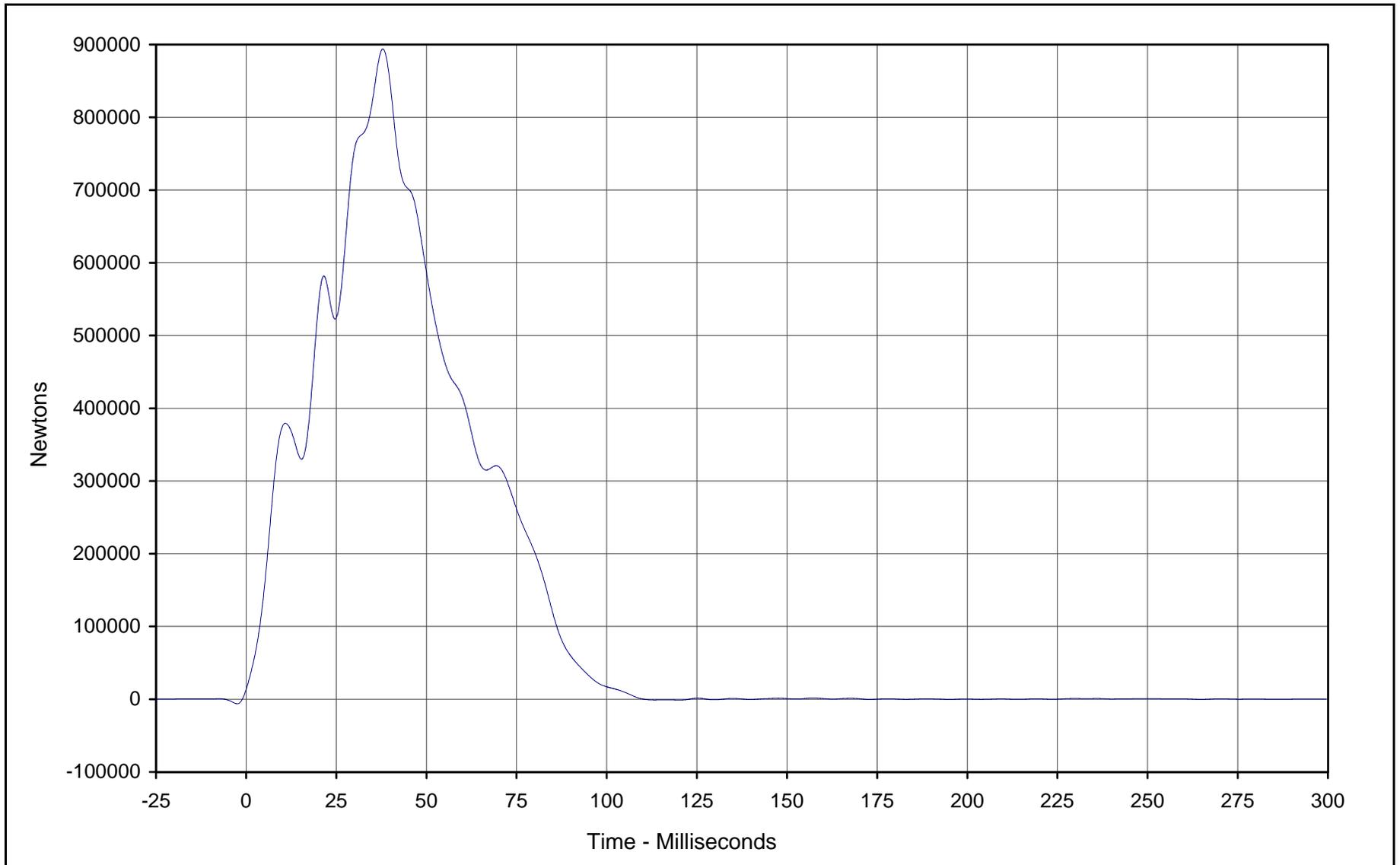
Curve Description: Driver Barrier Force Sum Group 6  
Maximum Value: 59691.7 at 12.3 Milliseconds  
Minimum Value: -377.2 at 116.2 Milliseconds  
SAE Filter Class: 60  
Date of Test: 11/17/99  
Curve Number: SUM-006

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

C-31



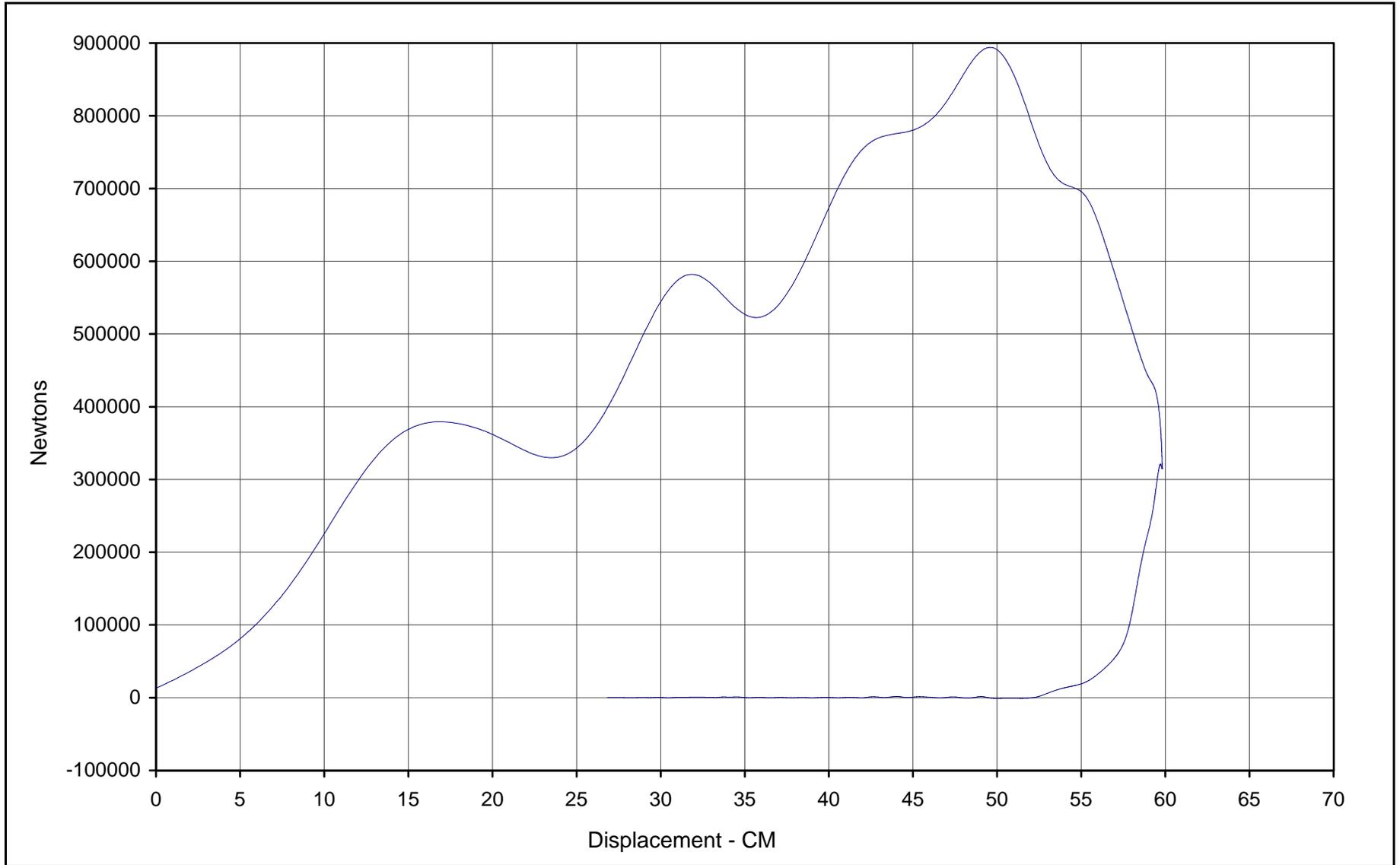
Curve Description: Driver Barrier Force Sum Total  
Maximum Value: 894026.7 at 37.9 Milliseconds  
Minimum Value: -1164.0 at 120.2 Milliseconds  
SAE Filter Class: 60  
Date of Test: 11/17/99  
Curve Number: SUM-007

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103  
Test Vehicle: 2000 Toyota Tundra SR5 Pickup



KARR20001-02

C-32



Curve Description: Sum Force Total vs. Dynamic Crush

Maximum Displ.: 59.8 at 65.6 Milliseconds

Maximum Force: 894026.7 at 37.9 Milliseconds

Measured Energy: 277,880 joules

Date of Test: 11/17/99

Curve Number: XVY-001

Test Program: 2000 NHTSA 35 mph NCAP No.: MY5103

Test Vehicle: 2000 Toyota Tundra SR5 Pickup

KARR20001-02



## BARRIER LOAD CELL SUMMARY DATA

Test Vehicle: 2000 Toyota Tundra SR5 Pickup NHTSA No.: MY5103  
 Test Program: 2000 NHTSA 35 mph NCAP Test Date: 11/17/99

### BARRIER LOAD CELL PEAK FORCES

| Location                  | Units   | Max      | Time | Min     | Time  |
|---------------------------|---------|----------|------|---------|-------|
| Barrier Force A2          | Newtons | 2812.8   | 30.6 | -2623.9 | 26.8  |
| Barrier Force A3          | Newtons | 4100.8   | 30.5 | -4215.2 | 26.6  |
| Barrier Force A4          | Newtons | 6421.3   | 22.2 | -4432.7 | 26.4  |
| Barrier Force A5          | Newtons | 22648.4  | 37.7 | -4636.9 | 26.3  |
| Barrier Force A6          | Newtons | 6270.2   | 30.2 | -3426.8 | 26.2  |
| Barrier Force A7          | Newtons | 4299.7   | 30.0 | -2267.9 | 26.2  |
| Barrier Force A8          | Newtons | 2933.1   | 37.8 | -2826.0 | 42.1  |
| Barrier Force A9          | Newtons | 3445.8   | 45.9 | -4492.8 | 33.2  |
| Barrier Force B2          | Newtons | 12941.3  | 20.5 | -797.2  | 5.0   |
| Barrier Force B3          | Newtons | 166430.5 | 27.5 | -3674.6 | 3.1   |
| Barrier Force B4          | Newtons | 109194.3 | 39.0 | -732.3  | 0.2   |
| Barrier Force B5          | Newtons | 58092.5  | 4.2  | -90.0   | 129.5 |
| Barrier Force B6          | Newtons | 121010.3 | 38.3 | -2634.6 | 0.9   |
| Barrier Force B7          | Newtons | 139690.7 | 22.1 | -2764.7 | 3.1   |
| Barrier Force B8          | Newtons | 5517.5   | 46.0 | -747.0  | 5.4   |
| Barrier Force B9          | Newtons | 2580.7   | 45.9 | -3197.2 | 32.4  |
| Barrier Force C2          | Newtons | 33551.2  | 19.7 | -1417.0 | 4.5   |
| Barrier Force C3          | Newtons | 27889.5  | 39.2 | -167.5  | 121.0 |
| Barrier Force C4          | Newtons | 114552.2 | 37.4 | -1937.1 | 17.3  |
| Barrier Force C5          | Newtons | 121029.0 | 35.8 | -1175.7 | 17.7  |
| Barrier Force C6          | Newtons | 35083.8  | 34.1 | -123.5  | 98.3  |
| Barrier Force C7          | Newtons | 35899.4  | 11.6 | -97.8   | 119.5 |
| Barrier Force C8          | Newtons | 25196.3  | 20.7 | -97.4   | 115.7 |
| Barrier Force C9          | Newtons | 1745.3   | 13.5 | -1525.1 | 8.2   |
| Barrier Force Sum Group 1 | Newtons | 169670.0 | 28.6 | -5272.7 | 3.5   |
| Barrier Force Sum Group 2 | Newtons | 299630.4 | 38.5 | -614.7  | 130.0 |
| Barrier Force Sum Group 3 | Newtons | 149698.8 | 21.8 | -3488.1 | 3.8   |
| Barrier Force Sum Group 4 | Newtons | 55679.0  | 39.3 | -430.7  | 0.0   |
| Barrier Force Sum Group 5 | Newtons | 265557.0 | 36.4 | -869.2  | 17.4  |
| Barrier Force Sum Group 6 | Newtons | 59691.7  | 12.3 | -377.2  | 116.2 |
| Barrier Force Sum Total   | Newtons | 894026.7 | 37.9 | -1164.0 | 120.2 |

Barrier Load cells A1,B1,C1, and D1 through D9 (12 locations) were not recorded.

**APPENDIX D**  
**INSTRUMENTATION DATA CHANNEL ASSIGNMENTS**

**2000 NHTSA 35 mph NCAP  
Instrumentation Data Channel Assignments  
Driver A.T.D Serial Number 34  
11/17/99  
2000 Toyota Tundra SR5 Pickup**

| CH. | LOCATION           | AXIS | IDENT. NO. | DESCRIPTION              | MFR          | MODEL     | UNITS |
|-----|--------------------|------|------------|--------------------------|--------------|-----------|-------|
| 1   | HEAD, PRIMARY      | X    | KEAC039    | Accel., 1/2 bridge       | Endevco      | 7264-2000 | G     |
| 2   | HEAD, PRIMARY      | Y    | KEAC038    | Accel., 1/2 bridge       | Endevco      | 7264-2000 | G     |
| 3   | HEAD, PRIMARY      | Z    | KEAC027    | Accel., 1/2 bridge       | Endevco      | 7264-2000 | G     |
| 4   | HEAD, REDUNDANT    | X    | KEAC031    | Accel., 1/2 bridge       | Endevco      | 7264-2000 | G     |
| 5   | HEAD, REDUNDANT    | Y    | KEAC032    | Accel., 1/2 bridge       | Endevco      | 7264-2000 | G     |
| 6   | HEAD, REDUNDANT    | Z    | KEAC026    | Accel., 1/2 bridge       | Endevco      | 7264-2000 | G     |
| 7   | NECK FORCE         | X    | GPUN02FX   | Load cell, six axis neck | R. A. Denton | 1716A     | N     |
| 8   | NECK FORCE         | Y    | GPUN02FY   | Load cell, six axis neck | R. A. Denton | 1716A     | N     |
| 9   | NECK FORCE         | Z    | GPUN02FZ   | Load cell, six axis neck | R. A. Denton | 1716A     | N     |
| 10  | NECK MOMENT        | X    | GPUN02MX   | Load cell, six axis neck | R. A. Denton | 1716A     | Nm    |
| 11  | NECK MOMENT        | Y    | GPUN02MY   | Load cell, six axis neck | R. A. Denton | 1716A     | Nm    |
| 12  | NECK MOMENT        | Z    | GPUN02MZ   | Load cell, six axis neck | R. A. Denton | 1716A     | Nm    |
| 13  | CHEST , PRIMARY    | X    | GPAC031    | Accel., 1/2 bridge       | Endevco      | 7264-2000 | G     |
| 14  | CHEST , PRIMARY    | Y    | GPAC024    | Accel., 1/2 bridge       | Endevco      | 7264-2000 | G     |
| 15  | CHEST , PRIMARY    | Z    | GPAC029    | Accel., 1/2 bridge       | Endevco      | 7264-2000 | G     |
| 16  | CHEST , REDUNDANT  | X    | KEAC023    | Accel., 1/2 bridge       | Endevco      | 7264-200  | G     |
| 17  | CHEST , REDUNDANT  | Y    | KEAC022    | Accel., 1/2 bridge       | Endevco      | 7264-200  | G     |
| 18  | CHEST , REDUNDANT  | Z    | KEAC024    | Accel., 1/2 bridge       | Endevco      | 7264-200  | G     |
| 19  | CHEST DISPLACEMENT | X    | GPCP001    | Rotary Pot Chest         | Servo        | 14CBI     | MM    |
| 20  | PELVIS, PRIMARY    | X    | KEAC019    | Accel., 1/2 bridge       | Endevco      | 7264-200  | G     |
| 21  | PELVIS, PRIMARY    | Y    | KEAC020    | Accel., 1/2 bridge       | Endevco      | 7264-200  | G     |
| 22  | PELVIS, PRIMARY    | Z    | KEAC021    | Accel., 1/2 bridge       | Endevco      | 7264-200  | G     |
| 23  | LEFT FEMUR FORCE   | Z    | KEFF001    | Load cell, Femur         | R.A. Denton  | 2121      | N     |
| 24  | RIGHT FEMUR FORCE  | Z    | KEFF002    | Load cell, Femur         | R.A. Denton  | 2121      | N     |

D-1

KAR20001-02

**2000 NHTSA 35 mph NCAP  
Instrumentation Data Channel Assignments  
Driver A.T.D Serial Number 34  
11/17/99  
2000 Toyota Tundra SR5 Pickup**

| CH. | LOCATION               | AXIS | IDENT. NO. | DESCRIPTION               | MFR          | MODEL       | UNITS |
|-----|------------------------|------|------------|---------------------------|--------------|-------------|-------|
| 25  | UP. TIBIA LEFT MOM.    | X    | GPUT09MX   | 2 ch., Upper tibia gage   | R. A. Denton | 1583        | Nm    |
| 26  | UP. TIBIA LEFT MOM.    | Y    | GPUT09MY   | 2 ch., Upper tibia gage   | R. A. Denton | 1583        | Nm    |
| 27  | UP. TIBIA RIGHT MOM.   | X    | GPUT09MX   | 2 ch., Upper tibia gage   | R. A. Denton | 1583        | Nm    |
| 28  | UP. TIBIA RIGHT MOM.   | Y    | GPUT09MY   | 2 ch., Upper tibia gage   | R. A. Denton | 1583        | Nm    |
| 29  | LWR. TIBIA LEFT MOM.   | X    | GPLT09MX   | 3 ch., lower tibia gage   | R. A. Denton | 3093        | Nm    |
| 30  | LWR. TIBIA LEFT MOM.   | Y    | GPLT09MY   | 3 ch., lower tibia gage   | R. A. Denton | 3093        | Nm    |
| 31  | LWR. TIBIA LEFT FORCE  | Z    | GPLT09FZ   | 3 ch., lower tibia gage   | R. A. Denton | 3093        | N     |
| 32  | LWR. TIBIA RIGHT MOM.  | X    | GPLT09MX   | 3 ch., lower tibia gage   | R. A. Denton | 3093        | Nm    |
| 33  | LWR. TIBIA RIGHT MOM.  | Y    | GPLT09MY   | 3 ch., lower tibia gage   | R. A. Denton | 3093        | Nm    |
| 34  | LWR. TIBIA RIGHT FORCE | Z    | GPLT09FZ   | 3 ch., lower tibia gage   | R. A. Denton | 3093        | N     |
| 35  | FOOT LEFT              | X    | KEIC003X   | Accel., Foot Triax        | I.C. Sensor  | 3031-500    | G     |
| 36  | FOOT LEFT              | Y    | KEIC003Y   | Accel., Foot Triax        | I.C. Sensor  | 3031-500    | G     |
| 37  | FOOT LEFT              | Z    | KEIC003Z   | Accel., Foot Triax        | I.C. Sensor  | 3031-500    | G     |
| 38  | FOOT RIGHT             | X    | KEIC004X   | Accel., Foot Triax        | I.C. Sensor  | 3031-500    | G     |
| 39  | FOOT RIGHT             | Y    | KEIC004Y   | Accel., Foot Triax        | I.C. Sensor  | 3031-500    | G     |
| 40  | FOOT RIGHT             | Z    | KEIC004Z   | Accel., Foot Triax        | I.C. Sensor  | 3031-500    | G     |
| 41  | LAP BELT FORCE         | X    | KELC001    | Load cell, Seat belt      | Lebow        | 3371        | N     |
| 42  | SHOULDER BELT FORCE    | X    | KELC002    | Load cell, Seat belt      | Lebow        | 3371        | N     |
| 43  | SHOULDER BELT SPOOL    | X    | KEPP001    | Pullout pot               | Celesco      | PTX101-0030 | MM    |
| 44  | SHOULDER BELT ELONG.   | X    | KEEP001    | Linear pot., belt stretch | E.T.I.       | LCP8-10 10K | MM/CM |

D-2

KAR20001-02

**2000 NHTSA 35 mph NCAP  
Instrumentation Data Channel Assignments  
Driver A.T.D Serial Number 35  
11/17/99  
2000 Toyota Tundra SR5 Pickup**

| CH. | LOCATION           | AXIS | IDENT. NO. | DESCRIPTION              | MFR          | MODEL     | UNITS |
|-----|--------------------|------|------------|--------------------------|--------------|-----------|-------|
| 45  | HEAD, PRIMARY      | X    | GPAC027    | Accel., 1/2 bridge       | Endevco      | 7264-2000 | G     |
| 46  | HEAD, PRIMARY      | Y    | GPAC002    | Accel., 1/2 bridge       | Endevco      | 7264-2000 | G     |
| 47  | HEAD, PRIMARY      | Z    | GPAC003    | Accel., 1/2 bridge       | Endevco      | 7264-2000 | G     |
| 48  | HEAD, REDUNDANT    | X    | GPAC032    | Accel., 1/2 bridge       | Endevco      | 7264-2000 | G     |
| 49  | HEAD, REDUNDANT    | Y    | GPAC021    | Accel., 1/2 bridge       | Endevco      | 7264-2000 | G     |
| 50  | HEAD, REDUNDANT    | Z    | GPAC026    | Accel., 1/2 bridge       | Endevco      | 7264-2000 | G     |
| 51  | NECK FORCE         | X    | GPUN01FX   | Load cell, six axis neck | R. A. Denton | 1716A     | N     |
| 52  | NECK FORCE         | Y    | GPUN01FY   | Load cell, six axis neck | R. A. Denton | 1716A     | N     |
| 53  | NECK FORCE         | Z    | GPUN01FZ   | Load cell, six axis neck | R. A. Denton | 1716A     | N     |
| 54  | NECK MOMENT        | X    | GPUN01MX   | Load cell, six axis neck | R. A. Denton | 1716A     | Nm    |
| 55  | NECK MOMENT        | Y    | GPUN01MY   | Load cell, six axis neck | R. A. Denton | 1716A     | Nm    |
| 56  | NECK MOMENT        | Z    | GPUN01MZ   | Load cell, six axis neck | R. A. Denton | 1716A     | Nm    |
| 57  | CHEST , PRIMARY    | X    | GPAC005    | Accel., 1/2 bridge       | Endevco      | 7264-2000 | G     |
| 58  | CHEST , PRIMARY    | Y    | GPAC011    | Accel., 1/2 bridge       | Endevco      | 7264-2000 | G     |
| 59  | CHEST , PRIMARY    | Z    | GPAC010    | Accel., 1/2 bridge       | Endevco      | 7264-2000 | G     |
| 60  | CHEST , REDUNDANT  | X    | GPAC034    | Accel., 1/2 bridge       | Endevco      | 7264-2000 | G     |
| 61  | CHEST , REDUNDANT  | Y    | GPAC023    | Accel., 1/2 bridge       | Endevco      | 7264-2000 | G     |
| 62  | CHEST , REDUNDANT  | Z    | GPAC020    | Accel., 1/2 bridge       | Endevco      | 7264-2000 | G     |
| 63  | CHEST DISPLACEMENT | X    | GPCP002    | Rotary Pot Chest         | Servo        | 14CBI     | MM    |
| 64  | PELVIS, PRIMARY    | X    | GPAC025    | Accel., 1/2 bridge       | Endevco      | 7264-2000 | G     |
| 65  | PELVIS, PRIMARY    | Y    | GPAC022    | Accel., 1/2 bridge       | Endevco      | 7264-2000 | G     |
| 66  | PELVIS, PRIMARY    | Z    | GPAC019    | Accel., 1/2 bridge       | Endevco      | 7264-2000 | G     |
| 67  | LEFT FEMUR FORCE   | Z    | KEFF003    | Load cell, Femur         | R.A. Denton  | 2121      | N     |
| 68  | RIGHT FEMUR FORCE  | Z    | KEFF004    | Load cell, Femur         | R.A. Denton  | 2121      | N     |

D-3

KAR20001-02

**2000 NHTSA 35 mph NCAP  
Instrumentation Data Channel Assignments  
Driver A.T.D Serial Number 35  
11/17/99  
2000 Toyota Tundra SR5 Pickup**

| CH. | LOCATION               | AXIS | IDENT. NO. | DESCRIPTION               | MFR          | MODEL       | UNITS |
|-----|------------------------|------|------------|---------------------------|--------------|-------------|-------|
| 69  | UP. TIBIA LEFT MOM.    | X    | GPUT09MX   | 2 ch., Upper tibia gage   | R. A. Denton | 1583        | Nm    |
| 70  | UP. TIBIA LEFT MOM.    | Y    | GPUT09MY   | 2 ch., Upper tibia gage   | R. A. Denton | 1583        | Nm    |
| 71  | UP. TIBIA RIGHT MOM.   | X    | GPUT09MX   | 2 ch., Upper tibia gage   | R. A. Denton | 1583        | Nm    |
| 72  | UP. TIBIA RIGHT MOM.   | Y    | GPUT09MY   | 2 ch., Upper tibia gage   | R. A. Denton | 1583        | Nm    |
| 73  | LWR. TIBIA LEFT MOM.   | X    | GPLT09MX   | 3 ch., lower tibia gage   | R. A. Denton | 3093        | Nm    |
| 74  | LWR. TIBIA LEFT MOM.   | Y    | GPLT09MY   | 3 ch., lower tibia gage   | R. A. Denton | 3093        | Nm    |
| 75  | LWR. TIBIA LEFT FORCE  | Z    | GPLT09FZ   | 3 ch., lower tibia gage   | R. A. Denton | 3093        | N     |
| 76  | LWR. TIBIA RIGHT MOM.  | X    | GPLT09MX   | 3 ch., lower tibia gage   | R. A. Denton | 3093        | Nm    |
| 77  | LWR. TIBIA RIGHT MOM.  | Y    | GPLT09MY   | 3 ch., lower tibia gage   | R. A. Denton | 3093        | Nm    |
| 78  | LWR. TIBIA RIGHT FORCE | Z    | GPLT09FZ   | 3 ch., lower tibia gage   | R. A. Denton | 3093        | N     |
| 79  | FOOT LEFT              | X    | KEIC002X   | Accel., Foot Triax        | I.C. Sensor  | 3031-500    | G     |
| 80  | FOOT LEFT              | Y    | KEIC002Y   | Accel., Foot Triax        | I.C. Sensor  | 3031-500    | G     |
| 81  | FOOT LEFT              | Z    | KEIC002Z   | Accel., Foot Triax        | I.C. Sensor  | 3031-500    | G     |
| 82  | FOOT RIGHT             | X    | KEIC001X   | Accel., Foot Triax        | I.C. Sensor  | 3031-500    | G     |
| 83  | FOOT RIGHT             | Y    | KEIC001Y   | Accel., Foot Triax        | I.C. Sensor  | 3031-500    | G     |
| 84  | FOOT RIGHT             | Z    | KEIC001Z   | Accel., Foot Triax        | I.C. Sensor  | 3031-500    | G     |
| 85  | LAP BELT FORCE         | X    | KELC003    | Load cell, Seat belt      | Lebow        | 3371        | N     |
| 86  | SHOULDER BELT FORCE    | X    | KELC004    | Load cell, Seat belt      | Lebow        | 3371        | N     |
| 87  | SHOULDER BELT SPOOL    | X    | KEPP001    | Pullout pot               | Celesco      | PTX101-0030 | CM    |
| 88  | SHOULDER BELT ELONG.   | X    | KEEP001    | Linear pot., belt stretch | E.T.I.       | LCP8-10 10K | MM/CM |

D-4

KAR20001-02

**2000 NHTSA 35 mph NCAP  
Instrumentation Data Channel Assignments  
Vehicle Accelerometers and Reference Channel  
11/17/99  
2000 Toyota Tundra SR5 Pickup**

| CH. | LOCATION                    | AXIS | IDENT. NO. | DESCRIPTION           | MFR         | MODEL    | UNITS |
|-----|-----------------------------|------|------------|-----------------------|-------------|----------|-------|
| 89  | Left Rear X-Member (Pri.)   | X    | KEVA002    | Accel., Pre-Amp       | I.C.S/Karco | 3031-500 | G     |
| 90  | Right Rear X-Member (Pri.)  | X    | KEVA006    | Accel., Vehicle block | I.C. Sensor | 3031-200 | G     |
| 91  | Engine Top                  | X    | KEVA001    | Accel., Vehicle block | I.C. Sensor | 3031-500 | G     |
| 92  | Engine Bottom               | X    | KEVA007    | Accel., Vehicle block | I.C. Sensor | 3031-500 | G     |
| 93  | Left Brake Caliper          | X    | KEVA008    | Accel., Vehicle block | I.C. Sensor | 3031-500 | G     |
| 94  | Right Brake Caliper         | X    | KEVA003    | Accel., Vehicle block | I.C. Sensor | 3031-500 | G     |
| 95  | Instrument Panel            | X    | KEVA005    | Accel., Vehicle block | I.C. Sensor | 3031-500 | G     |
| 96  | Left Rear X-Member (Rednt.) | X    | KEVA011    | Accel., Vehicle block | I.C. Sensor | 3031-200 | G     |
| 97  | ZERO REFERENCE              | N/A  | N/A        | N/A                   | N/A         | N/A      | N/A   |

D-5

KAR20001-02

**2000 NHTSA 35 mph NCAP  
Instrumentation Data Channel Assignments  
Rigid Load Cell Barrier  
11/17/99  
2000 Toyota Tundra SR5 Pickup**

| CH. | LOCATION         | AXIS | IDENT. NO. | DESCRIPTION    | MFR   | MODEL   | UNITS |
|-----|------------------|------|------------|----------------|-------|---------|-------|
| 98  | BARRIER FORCE A1 | X    | BARRIER    | Not Used       | N/A   | N/A     | N/A   |
| 99  | BARRIER FORCE A2 | X    | BARRIER    | Load Cell, LCB | Lebow | 1220-FS | N     |
| 100 | BARRIER FORCE A3 | X    | BARRIER    | Load Cell, LCB | Lebow | 1220-FS | N     |
| 101 | BARRIER FORCE A4 | X    | BARRIER    | Load Cell, LCB | Lebow | 1220-FS | N     |
| 102 | BARRIER FORCE A5 | X    | BARRIER    | Load Cell, LCB | Lebow | 1220-FS | N     |
| 103 | BARRIER FORCE A6 | X    | BARRIER    | Load Cell, LCB | Lebow | 1220-FS | N     |
| 104 | BARRIER FORCE A7 | X    | BARRIER    | Load Cell, LCB | Lebow | 1220-FS | N     |
| 105 | BARRIER FORCE A8 | X    | BARRIER    | Load Cell, LCB | Lebow | 1220-FS | N     |
| 106 | BARRIER FORCE A9 | X    | BARRIER    | Load Cell, LCB | Lebow | 1220-FS | N     |
| 107 | BARRIER FORCE B1 | X    | BARRIER    | Not Used       | N/A   | N/A     | N/A   |
| 108 | BARRIER FORCE B2 | X    | BARRIER    | Load Cell, LCB | Lebow | 1220-FS | N     |
| 109 | BARRIER FORCE B3 | X    | BARRIER    | Load Cell, LCB | Lebow | 1220-FS | N     |
| 110 | BARRIER FORCE B4 | X    | BARRIER    | Load Cell, LCB | Lebow | 1220-FS | N     |
| 111 | BARRIER FORCE B5 | X    | BARRIER    | Load Cell, LCB | Lebow | 1220-FS | N     |
| 112 | BARRIER FORCE B6 | X    | BARRIER    | Load Cell, LCB | Lebow | 1220-FS | N     |
| 113 | BARRIER FORCE B7 | X    | BARRIER    | Load Cell, LCB | Lebow | 1220-FS | N     |
| 114 | BARRIER FORCE B8 | X    | BARRIER    | Load Cell, LCB | Lebow | 1220-FS | N     |
| 115 | BARRIER FORCE B9 | X    | BARRIER    | Load Cell, LCB | Lebow | 1220-FS | N     |

D-6

KAR20001-02

**2000 NHTSA 35 mph NCAP  
Instrumentation Data Channel Assignments  
Rigid Load Cell Barrier  
11/17/99  
2000 Toyota Tundra SR5 Pickup**

| CH. | LOCATION         | AXIS | IDENT. NO. | DESCRIPTION    | MFR   | MODEL   | UNITS |
|-----|------------------|------|------------|----------------|-------|---------|-------|
| 116 | BARRIER FORCE C1 | X    | BARRIER    | Not Used       | N/A   | N/A     | N/A   |
| 117 | BARRIER FORCE C2 | X    | BARRIER    | Load Cell, LCB | Lebow | 1220-FS | N     |
| 118 | BARRIER FORCE C3 | X    | BARRIER    | Load Cell, LCB | Lebow | 1220-FS | N     |
| 119 | BARRIER FORCE C4 | X    | BARRIER    | Load Cell, LCB | Lebow | 1220-FS | N     |
| 120 | BARRIER FORCE C5 | X    | BARRIER    | Load Cell, LCB | Lebow | 1220-FS | N     |
| 121 | BARRIER FORCE C6 | X    | BARRIER    | Load Cell, LCB | Lebow | 1220-FS | N     |
| 122 | BARRIER FORCE C7 | X    | BARRIER    | Load Cell, LCB | Lebow | 1220-FS | N     |
| 123 | BARRIER FORCE C8 | X    | BARRIER    | Load Cell, LCB | Lebow | 1220-FS | N     |
| 124 | BARRIER FORCE C9 | X    | BARRIER    | Load Cell, LCB | Lebow | 1220-FS | N     |
| 125 | BARRIER FORCE D1 | X    | BARRIER    | Not Used       | N/A   | N/A     | N/A   |
| 126 | BARRIER FORCE D2 | X    | BARRIER    | Not Used       | N/A   | N/A     | N/A   |
| 127 | BARRIER FORCE D3 | X    | BARRIER    | Not Used       | N/A   | N/A     | N/A   |
| 128 | BARRIER FORCE D4 | X    | BARRIER    | Not Used       | N/A   | N/A     | N/A   |
| 129 | BARRIER FORCE D5 | X    | BARRIER    | Not Used       | N/A   | N/A     | N/A   |
| 130 | BARRIER FORCE D6 | X    | BARRIER    | Not Used       | N/A   | N/A     | N/A   |
| 131 | BARRIER FORCE D7 | X    | BARRIER    | Not Used       | N/A   | N/A     | N/A   |
| 132 | BARRIER FORCE D8 | X    | BARRIER    | Not Used       | N/A   | N/A     | N/A   |
| 133 | BARRIER FORCE D9 | X    | BARRIER    | Not Used       | N/A   | N/A     | N/A   |

D-7

KAR20001-02

**APPENDIX E**  
**DUMMY CALIBRATION DATA**



# Hybrid III Calibration Data Sheet

## 50<sup>TH</sup> Percentile Male

### Left Knee Impact Test

ATD Serial No.: 034

Part Serial No.: n/a

Test I.D.: RK09B

| Tested Parameter             | Units   | Specification  | Result | Pass/Fail |
|------------------------------|---------|----------------|--------|-----------|
| Laboratory Temperature       | °C      | 18.9 to 25.5   | 21.1   | Pass      |
| Laboratory Relative Humidity | %       | 10 to 70       | 30     | Pass      |
| Probe Velocity               | m/s     | 2.073 to 2.134 | 2.092  | Pass      |
| Peak Probe Force             | Newtons | 4715 to 5782   | 5684.1 | Pass      |
| Overall Test Results         |         |                |        | Pass      |

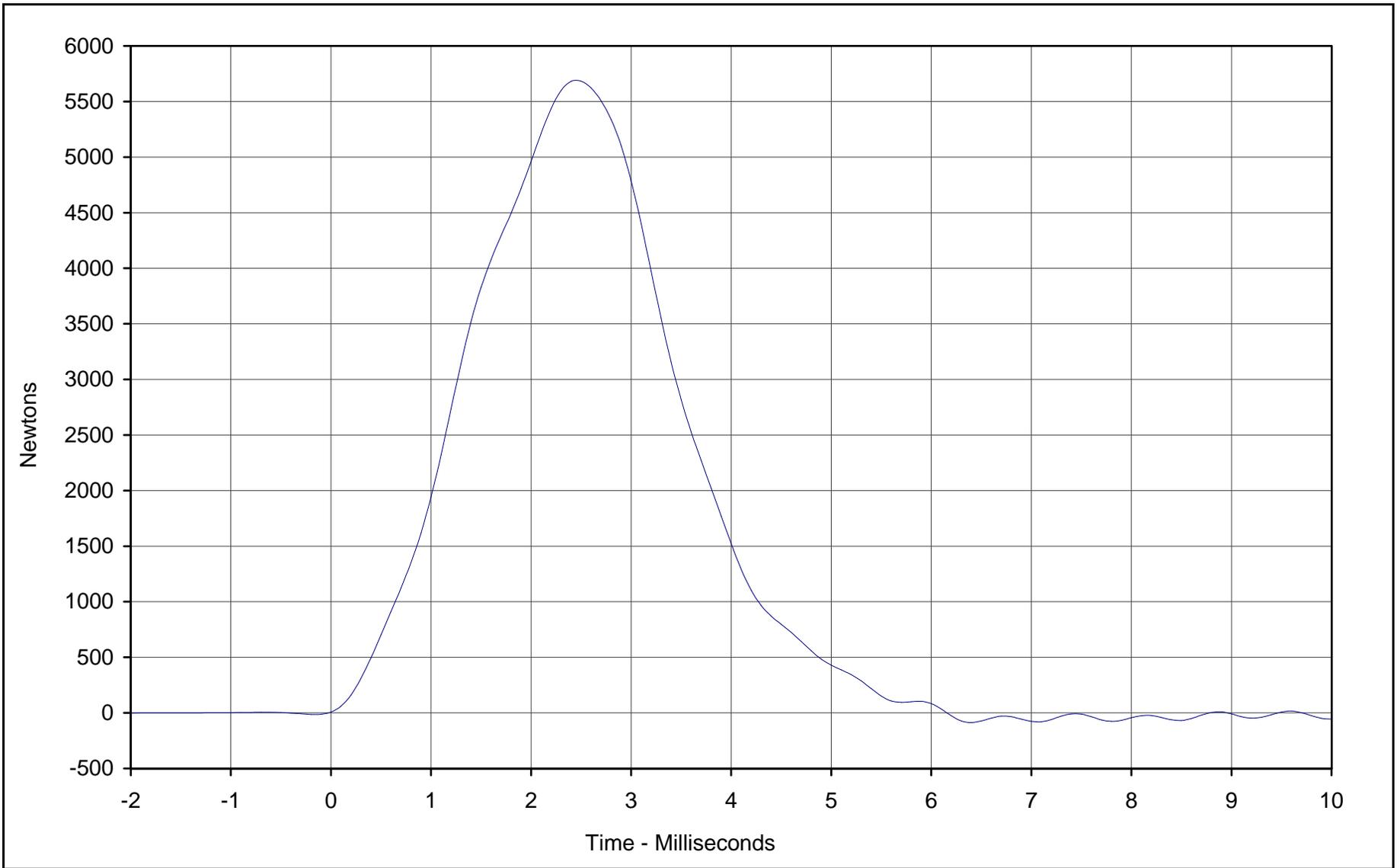
\_\_\_\_\_  
Laboratory Technician

September 28, 1999  
Test Date

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

\_\_\_\_\_  
Date

E-2



Curve Description: Probe Force  
Maximum Value: 5684.1 at 2.5 Milliseconds  
Minimum Value: -87.7 at 6.4 Milliseconds  
SAE Filter Class: 600  
Date of Test: 9/28/99  
ATD Serial No.: 034

Testing Program: Hybrid III Left Knee Impact Test  
Test Information: Part S/N: n/a Test I.D.: RK09B



KAR20001-02



# Hybrid III Calibration Data Sheet

## 50<sup>TH</sup> Percentile Male

### Right Knee Impact Test

ATD Serial No.: 034

Part Serial No.: n/a

Test I.D.: LK09A

| Tested Parameter             | Units   | Specification  | Result | Pass/Fail |
|------------------------------|---------|----------------|--------|-----------|
| Laboratory Temperature       | °C      | 18.9 to 25.5   | 21.1   | Pass      |
| Laboratory Relative Humidity | %       | 10 to 70       | 30     | Pass      |
| Probe Velocity               | m/s     | 2.073 to 2.134 | 2.097  | Pass      |
| Peak Probe Force             | Newtons | 4715 to 5782   | 5611.8 | Pass      |
| Overall Test Results         |         |                |        | Pass      |

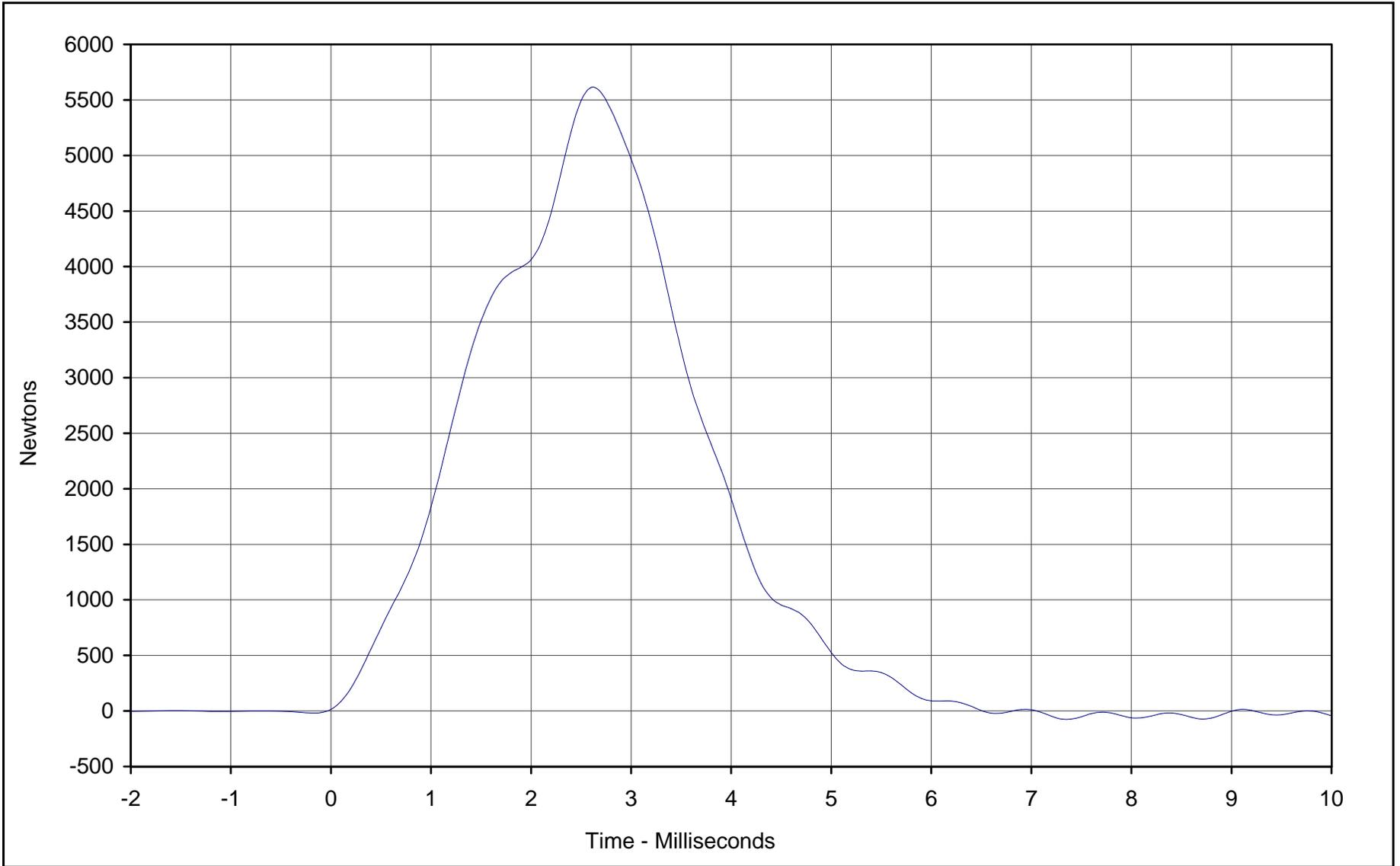
\_\_\_\_\_  
Laboratory Technician

September 28, 1999  
\_\_\_\_\_  
Test Date

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

\_\_\_\_\_  
Date

E-4



Curve Description: Probe Force  
Maximum Value: 5611.8 at 2.6 Milliseconds  
Minimum Value: -72.8 at 7.4 Milliseconds  
SAE Filter Class: 600  
Date of Test: 9/28/99  
ATD Serial No.: 034

Testing Program: Hybrid III Right Knee Impact Test  
Test Information: Part S/N: n/a Test I.D.: LK09A



KARR20001-02



# Hybrid III Calibration Data Sheet

## 50<sup>TH</sup> Percentile Male

### Head Drop Calibration

ATD Serial No.: 034

Part Serial No.: n/a

Test I.D.: HD09A

| Tested Parameter             | Units  | Specification  | Result | Pass/Fail |
|------------------------------|--------|----------------|--------|-----------|
| Laboratory Temperature       | °C     | 18.9 to 25.6   | 21.1   | Pass      |
| Laboratory Relative Humidity | %      | 10 to 70       | 39     | Pass      |
| Peak Resultant Acceleration  | G's    | 225.0 to 275.0 | 259.2  | Pass      |
| Peak Lateral Acceleration    | G's    | ≤15.0          | 8.4    | Pass      |
| Is Acceleration Unimodal?    | Yes/No | Yes            | Yes    | Pass      |
| Overall Test Results         |        |                |        | Pass      |

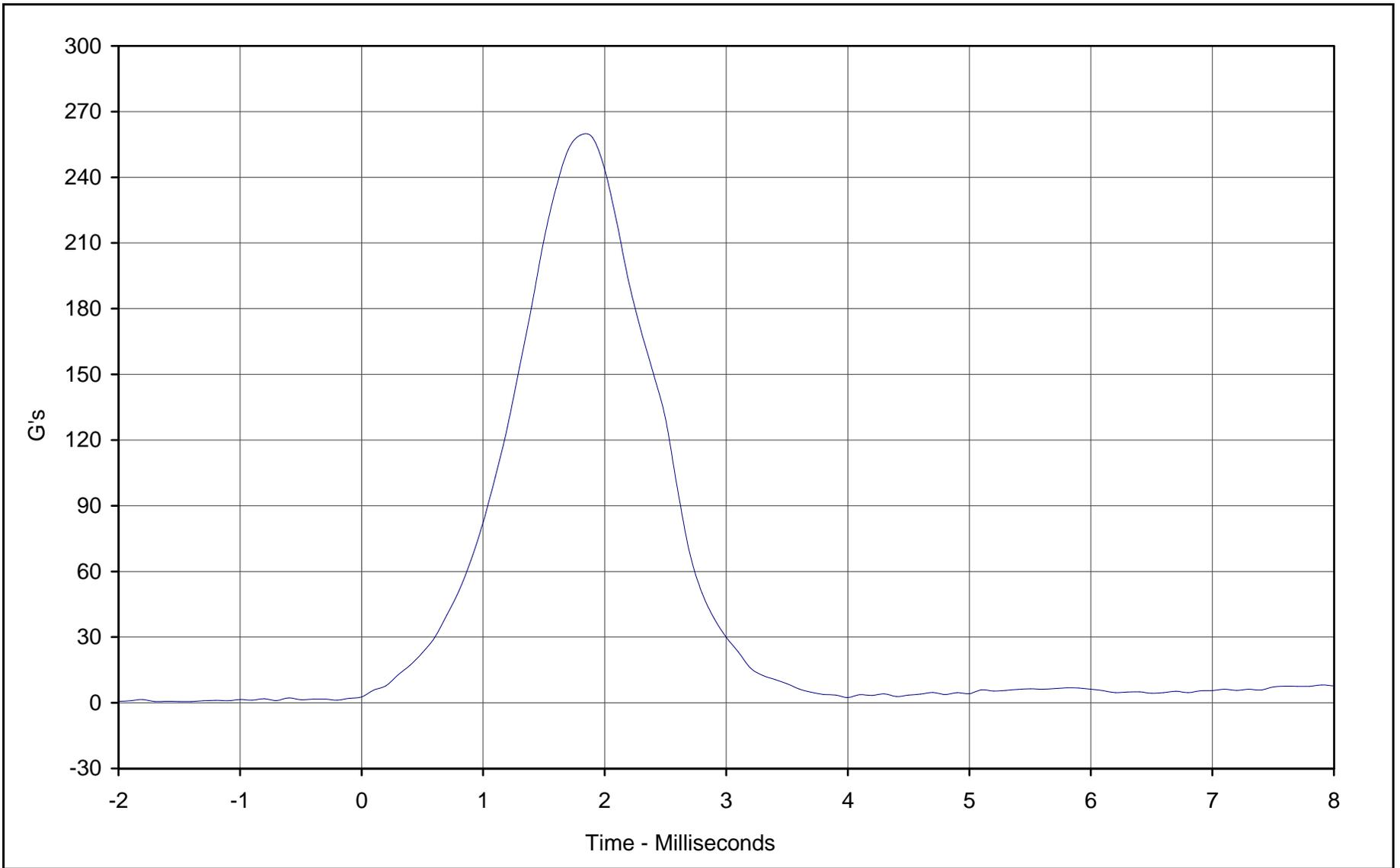
\_\_\_\_\_  
Laboratory Technician

October 1, 1999  
Test Date

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

\_\_\_\_\_  
Date

E-6



Curve Description: Head Resultant Acceleration

Maximum Value: 259.2 at 1.8 Milliseconds

Minimum Value: 0.6 at -1.7 Milliseconds

SAE Filter Class: 1000

Date of Test: 10/1/99

ATD Serial No.: 034

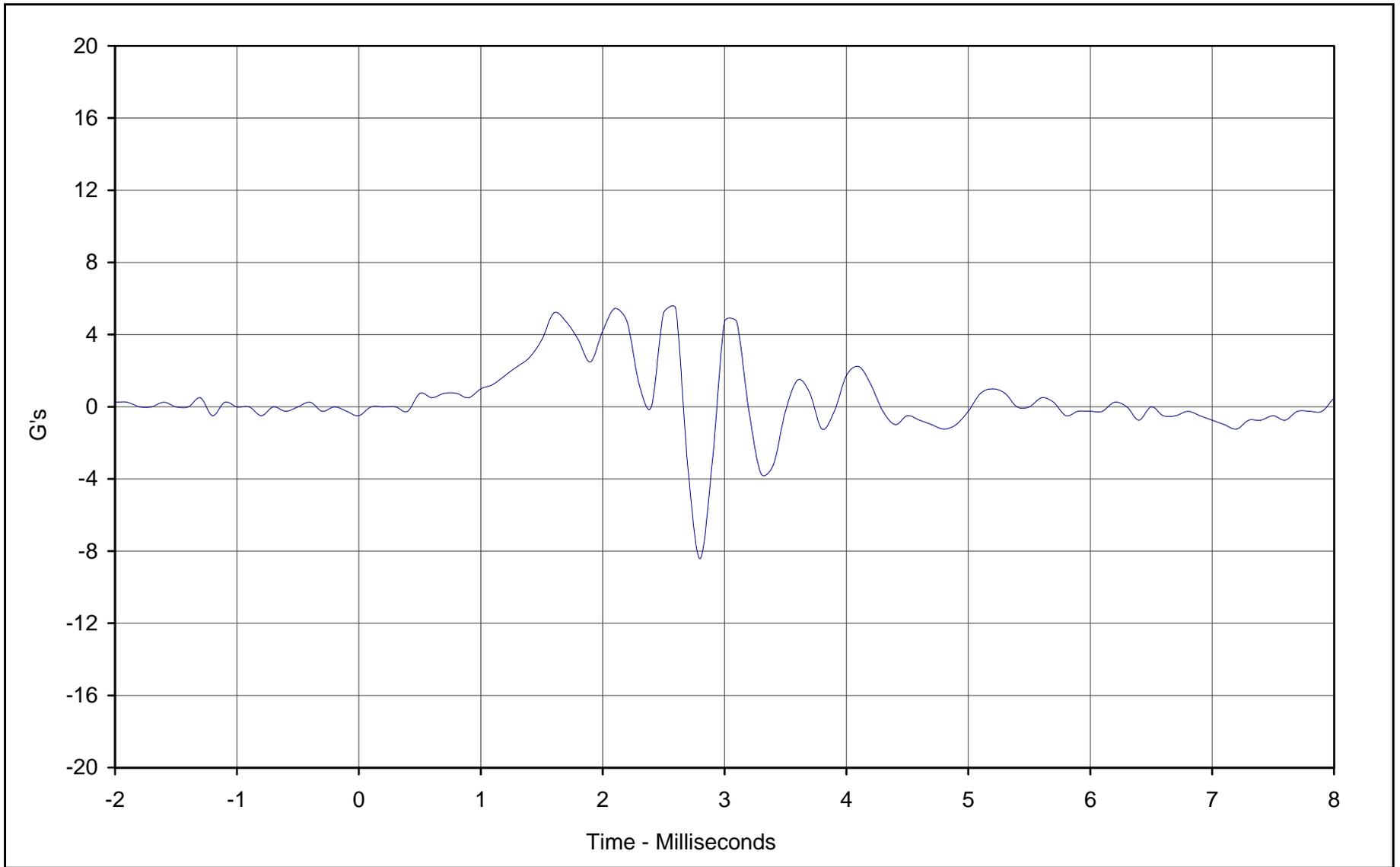
Testing Program: Hybrid III Head Drop Calibration (Male)

Test Information: S/N of Part: n/a Test I.D.: HD09A



KARR20001-02

E-7



Curve Description: Head Acceleration Y Axis

Maximum Value: 5.4 at 2.1 Milliseconds

Minimum Value: -8.4 at 2.8 Milliseconds

SAE Filter Class: 1000

Date of Test: 10/1/99

ATD Serial No.: 034

Testing Program: Hybrid III Head Drop Calibration (Male)

Test Information: S/N of Part: n/a Test I.D.: HD09A



KAR20001-02



# Hybrid III Calibration Data Sheet

## 50<sup>TH</sup> Percentile Male

### Thorax Impact Test

ATD Serial No.: 034

Part Serial No.: N/A

Test I.D.: CH01C

| Tested Parameter             | Units   | Specification | Result | Pass/Fail |
|------------------------------|---------|---------------|--------|-----------|
| Laboratory Temperature       | °C      | 20.6 to 22.2  | 20.9   | Pass      |
| Laboratory Relative Humidity | %       | 10 to 70      | 33     | Pass      |
| Probe Velocity               | m/s     | 6.58 to 6.82  | 6.75   | Pass      |
| Peak Probe Force             | Newtons | 5159 to 5893  | 5275   | Pass      |
| Peak Sternum Displacement    | CM      | 6.35 to 7.26  | 7.10   | Pass      |
| Internal Hysteresis          | %       | 69 to 85      | 75.7   | Pass      |
| Overall Test Results         |         |               |        | Pass      |

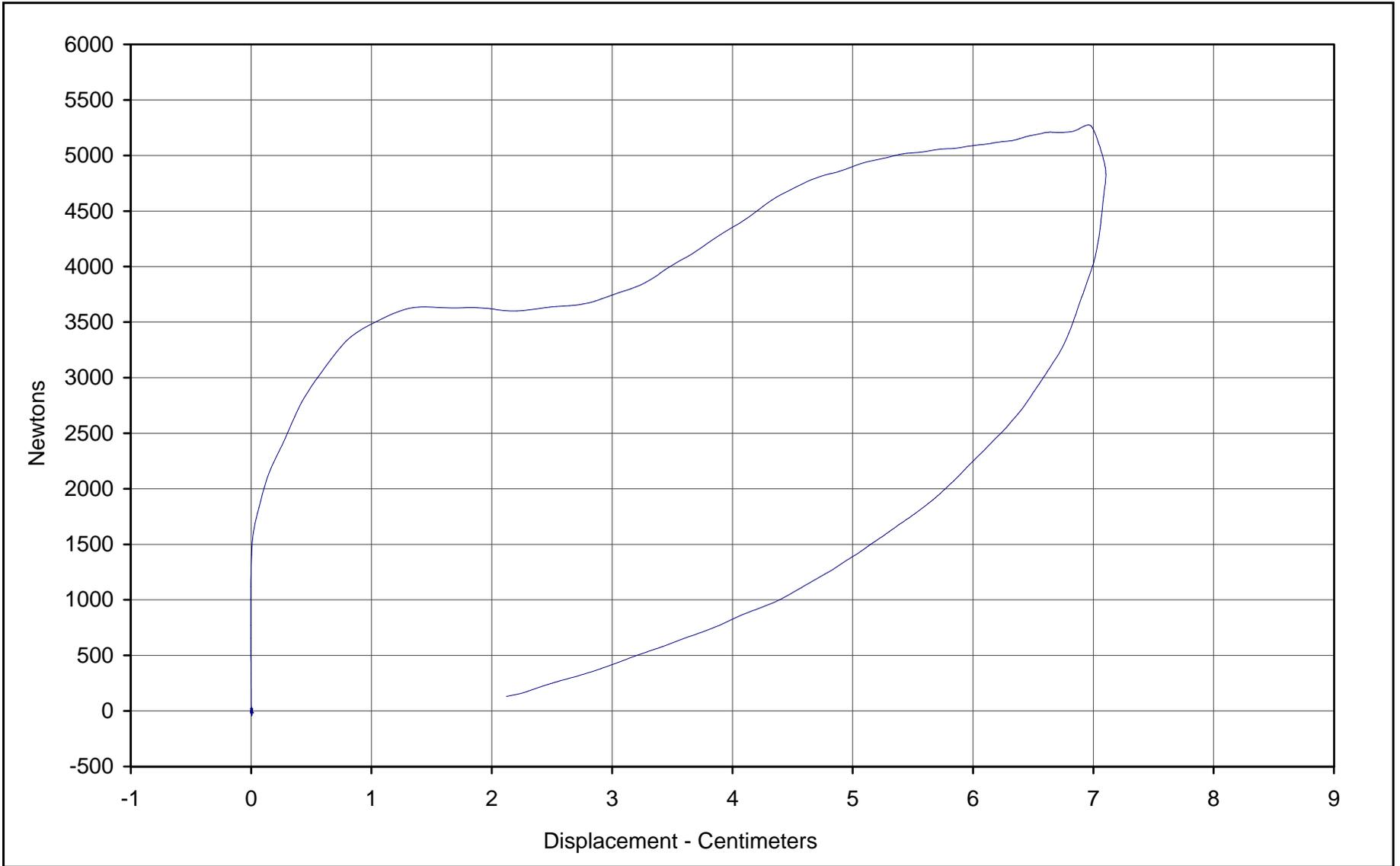
\_\_\_\_\_  
Laboratory Technician

October 6, 1999  
\_\_\_\_\_  
Test Date

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

\_\_\_\_\_  
Date

E-9



Curve Description: Probe Force vs. Chest Displacement

Testing Program: Hybrid III Thorax Impact Test

Probe Force: 5275.1 Newtons

Test Information: S/N of Part: N/A Test I.D.: CH01C

Chest Displ.: 7.10 Centimeters

SAE Filter Class: 180

Date of Test: 10/6/99

ATD Serial No.: 034



KAR20001-02



# Hybrid III Calibration Data Sheet

## 50<sup>TH</sup> Percentile Male

### Neck Flexion Test

ATD Serial No.: 034

Part Serial No.: n/a

Test I.D.: NF09A

| Tested Parameter                                | Units    | Specification  | Result        | Pass/Fail |      |
|---|----------|----------------|---------------|-----------|------|
| Laboratory Temperature                          | °C       | 20.6 to 22.2   | 21.7          | Pass      |      |
| Laboratory Relative Humidity                    | %        | 10 to 70       | 40            | Pass      |      |
| Pendulum Velocity                               | m/s      | 6.89 to 7.13   | 6.94          | Pass      |      |
| Pendulum Deceleration                           | 10 Msec. | G's            | 22.5 to 27.5  | 22.6      | Pass |
|   | 20 Msec. | G's            | 17.6 to 22.6  | 21.0      | Pass |
|   | 30 Msec. | G's            | 12.5 to 18.5  | 17.5      | Pass |
| Peak Pendulum Decel. after 30 Msec.             | G's      | ≤ 29.0         | 17.5          | Pass      |      |
| Deceleration Decay, Time to Cross 5 G's         | Msec.    | 34.0 to 42.0   | 39.6          | Pass      |      |
| Maximum "D" Plane Rotation                      | Maximum  | Degrees        | 64.0 to 78.0  | 74.2      | Pass |
|   | Time     | Msec.          | 57.0 to 64.0  | 61.9      | Pass |
| "D" Plane Rotation Decay, Time To Zero Crossing | Msec.    | 113.0 to 128.0 | 121.9         | Pass      |      |
| Moment About Occipital Condyle                  | Maximum  | N•m            | 84.1 to 108.5 | 86.4      | Pass |
|   | Time     | Msec.          | 47.0 to 58.0  | 57.8      | Pass |
| Positive Moment Decay, Time To Zero Crossing    | Msec.    | 97.0 to 107.0  | 101.8         | Pass      |      |
| Overall Test Results                            |          |                |               | Pass      |      |

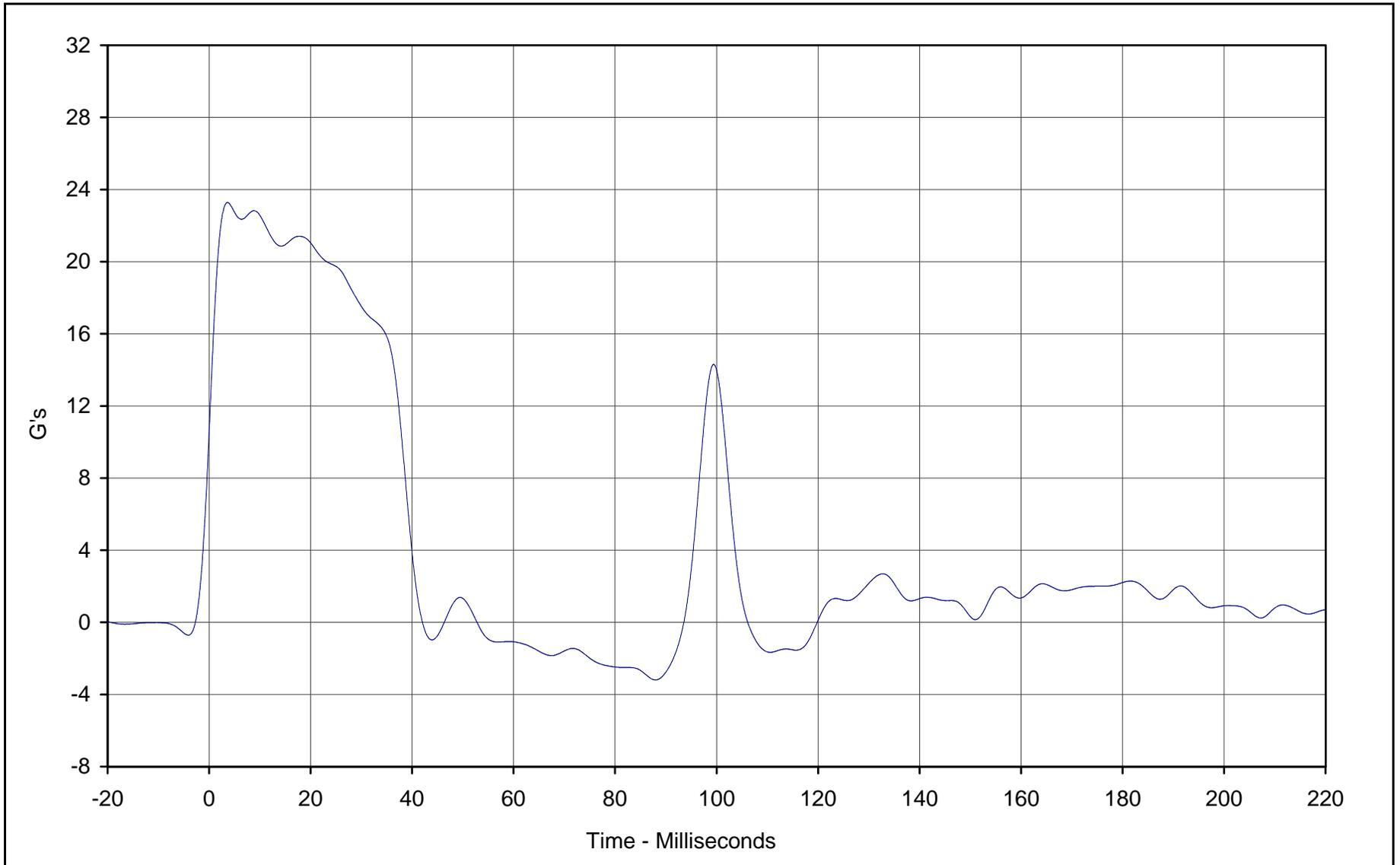
\_\_\_\_\_  
Laboratory Technician

September 29, 1999  
\_\_\_\_\_  
Test Date

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

\_\_\_\_\_  
Date

E-11



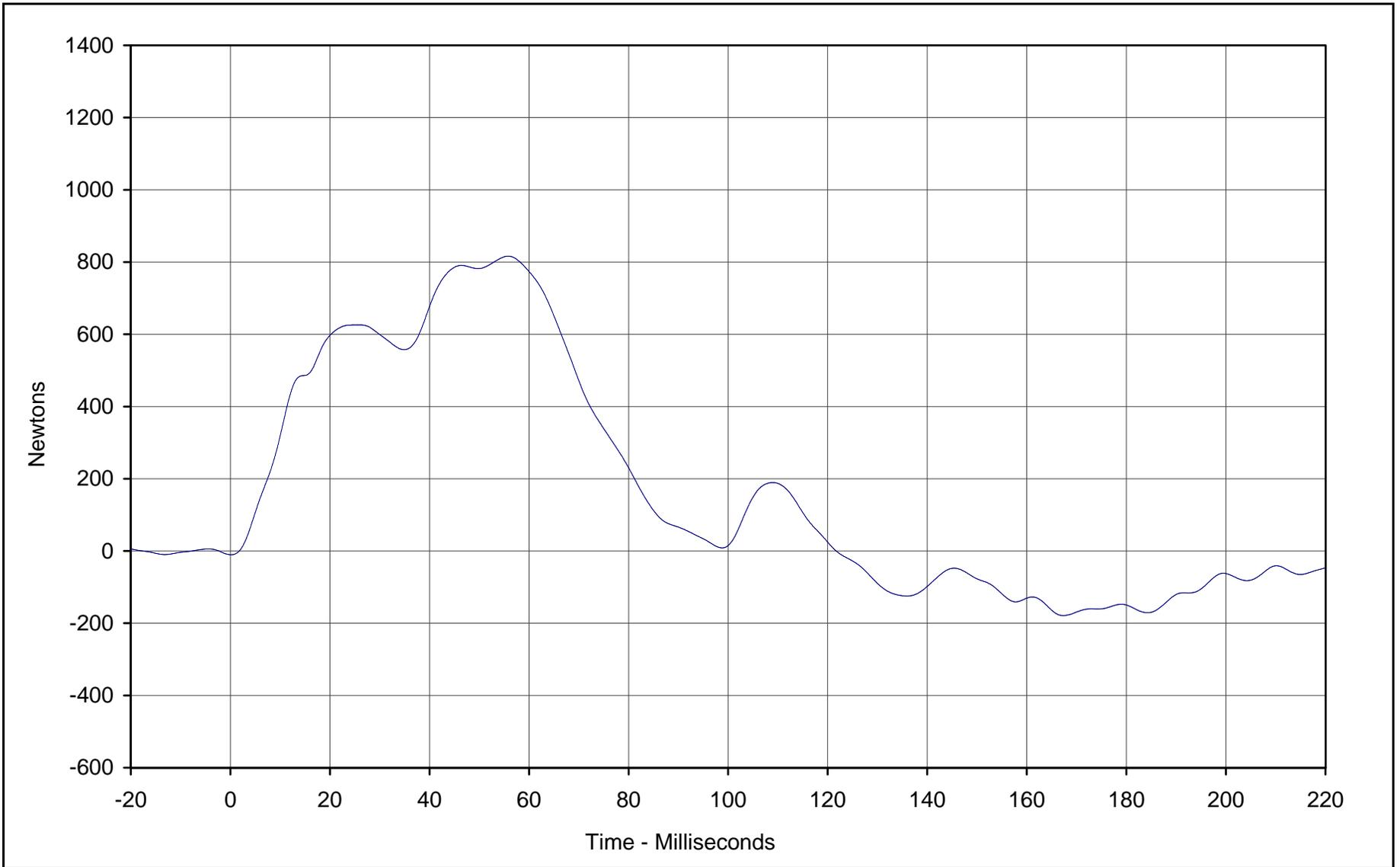
Curve Description: Pendulum Deceleration  
Maximum Value: 23.3 at 3.6 Milliseconds  
Minimum Value: -3.2 at 88.0 Milliseconds  
SAE Filter Class: 60  
Date of Test: 9/29/99  
ATD Serial No.: 034

Testing Program: Hybrid III Neck Flexion Test (Male)  
Test Information: S/N of Part: n/a Test I.D.: NF09A



KAR20001-02

E-12

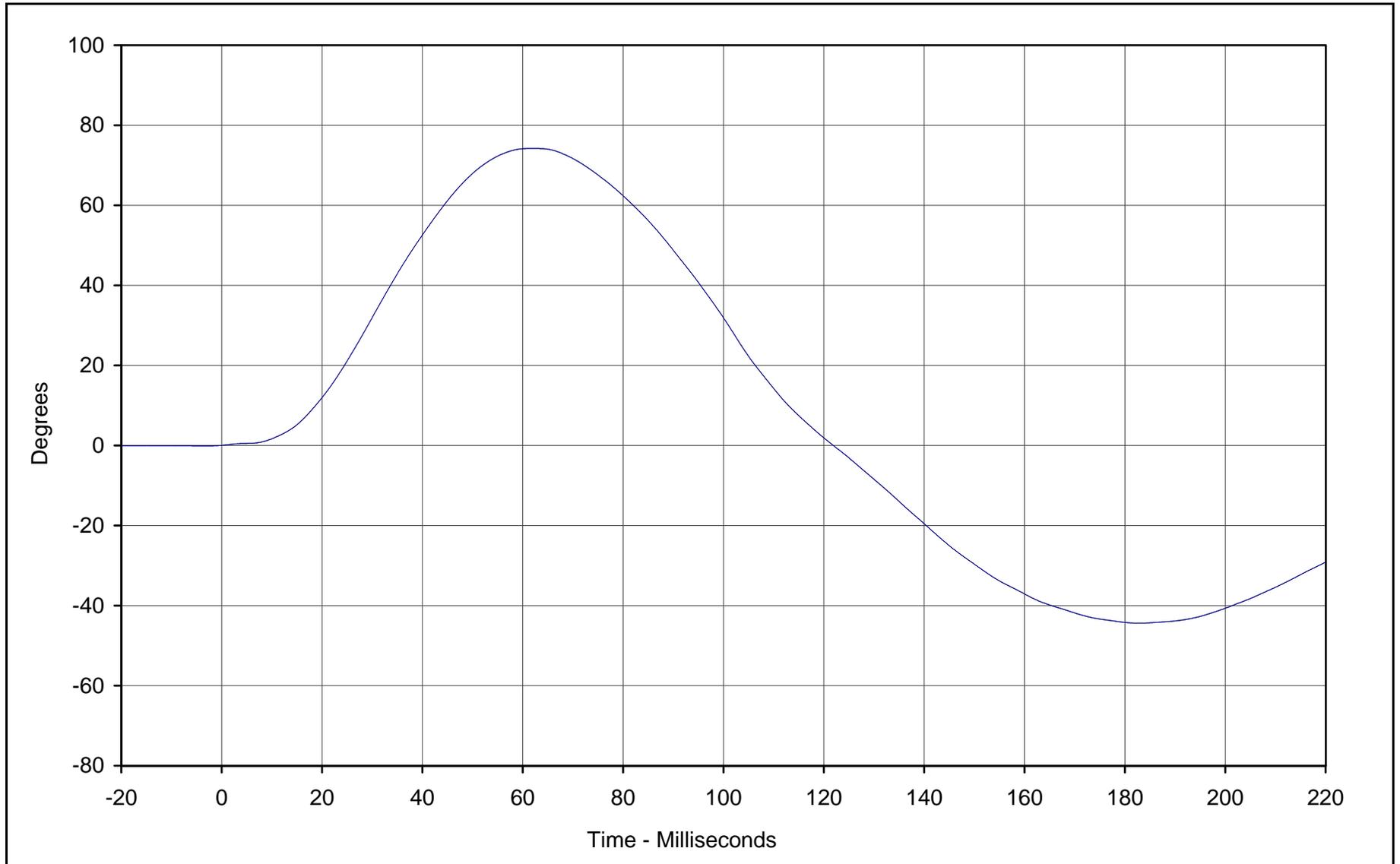


Curve Description: Neck Force X  
Maximum Value: 816.3 at 55.8 Milliseconds  
Minimum Value: -178.8 at 167.3 Milliseconds  
SAE Filter Class: 60  
Date of Test: 9/29/99  
ATD Serial No.: 034

Testing Program: Hybrid III Neck Flexion Test (Male)  
Test Information: S/N of Part: n/a Test I.D.: NF09A



KARR20001-02



Curve Description: "D" Plane Rotation

Maximum Value: 74.2 at 61.9 Milliseconds

Minimum Value: -44.4 at 182.9 Milliseconds

SAE Filter Class: 60

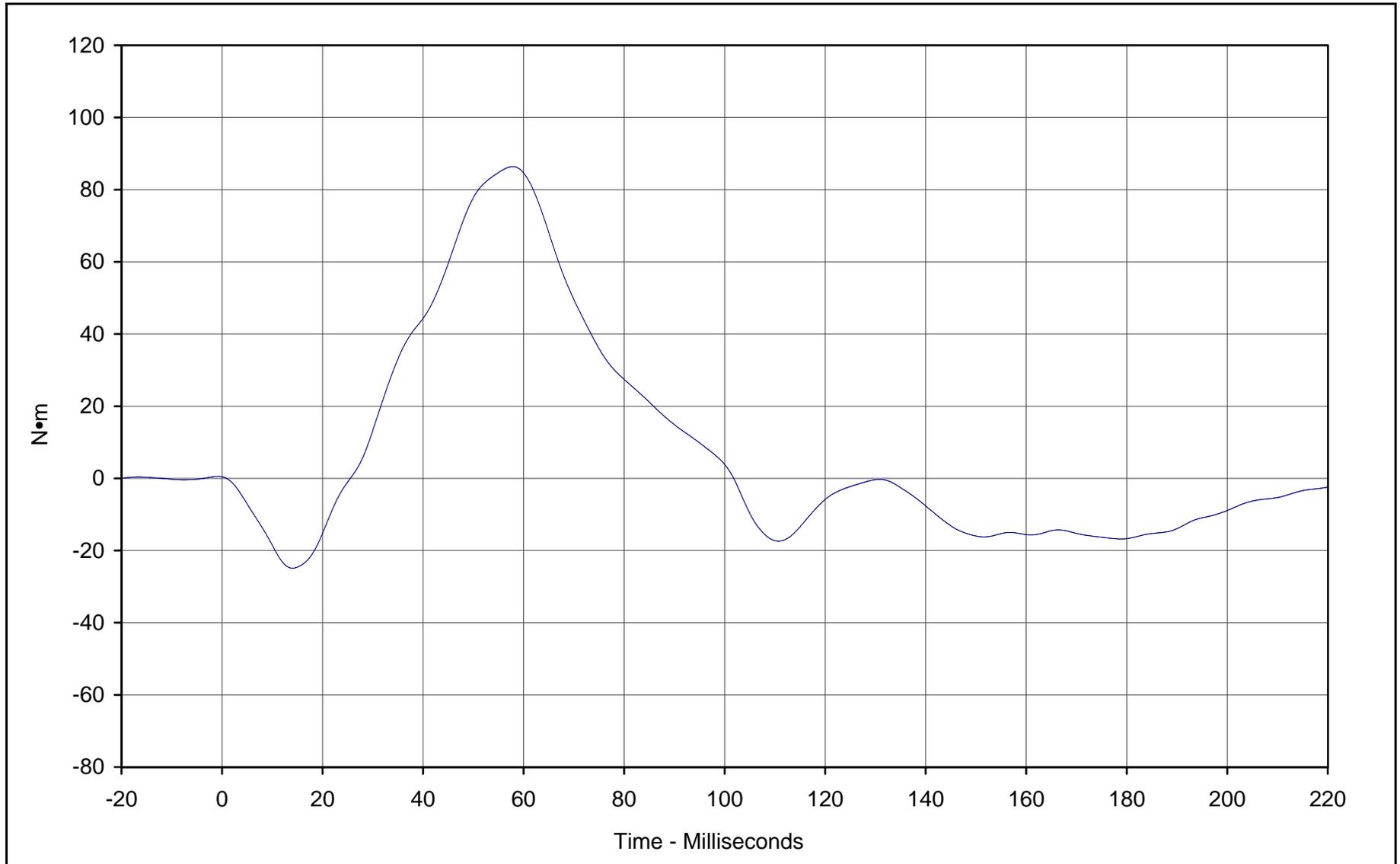
Date of Test: 9/29/99

ATD Serial No.: 034

Testing Program: Hybrid III Neck Flexion Test (Male)

Test Information: S/N of Part: n/a Test I.D.: NF09A





Curve Description: Moment About Occipital Condyles  
 Maximum Value: 86.4 at 57.8 Milliseconds  
 Minimum Value: -24.9 at 14.0 Milliseconds  
 SAE Filter Class: 60  
 Date of Test: 9/29/99  
 ATD Serial No.: 034

Testing Program: Hybrid III Neck Flexion Test (Male)

Test Information: S/N of Part: n/a Test I.D.: NF09A





# Hybrid III Calibration Data Sheet

## 50<sup>TH</sup> Percentile Male

### Neck Extension Test

ATD Serial No.: 034

Part Serial No.: n/a

Test I.D.: NE09A

| Tested Parameter                                | Units    | Specification  | Result         | Pass/Fail |      |
|---|----------|----------------|----------------|-----------|------|
| Laboratory Temperature                          | °C       | 20.6 to 22.2   | 21.7           | Pass      |      |
| Laboratory Relative Humidity                    | %        | 10 to 70       | 36             | Pass      |      |
| Pendulum Velocity                               | m/s      | 5.95 to 6.19   | 6.13           | Pass      |      |
| Pendulum Deceleration                           | 10 Msec. | G's            | 17.2 to 21.2   | 20.1      | Pass |
|   | 20 Msec. | G's            | 14.0 to 19.0   | 18.4      | Pass |
|   | 30 Msec. | G's            | 11.0 to 16.0   | 15.9      | Pass |
| Peak Pendulum Decel. after 30 Msec.             | G's      | ≤ 22.0         | 15.9           | Pass      |      |
| Deceleration Decay, Time to Cross 5 G's         | Msec.    | 38.0 to 46.0   | 45.4           | Pass      |      |
| Maximum "D" Plane Rotation                      | Maximum  | Degrees        | 81.0 to 106.0  | 96.4      | Pass |
|   | Time     | Msec.          | 72.0 to 82.0   | 73.4      | Pass |
| "D" Plane Rotation Decay, Time To Zero Crossing | Msec.    | 147.0 to 174.0 | 155.0          | Pass      |      |
| Moment About Occipital Condyle                  | Maximum  | N•m            | -52.9 to- 79.9 | -70.9     | Pass |
|   | Time     | Msec.          | 65.0 to 79.0   | 67.7      | Pass |
| Negative Moment Decay, Time To Zero Crossing    | Msec.    | 120.0 to 148.0 | 141.3          | Pass      |      |
| Overall Test Results                            |          |                |                | Pass      |      |

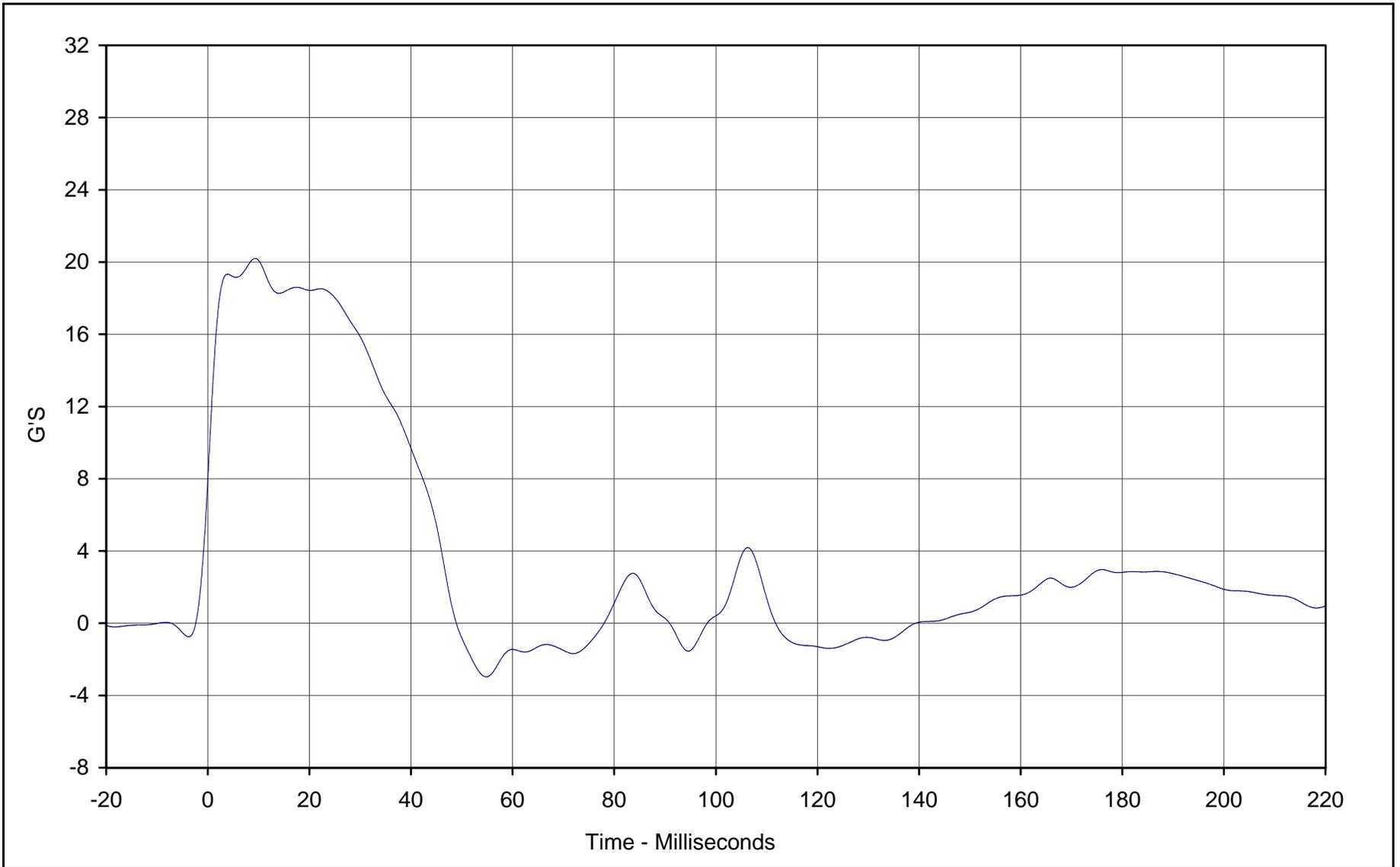
\_\_\_\_\_  
Laboratory Technician

September 28, 1999  
\_\_\_\_\_  
Test Date

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

\_\_\_\_\_  
Date

E-16



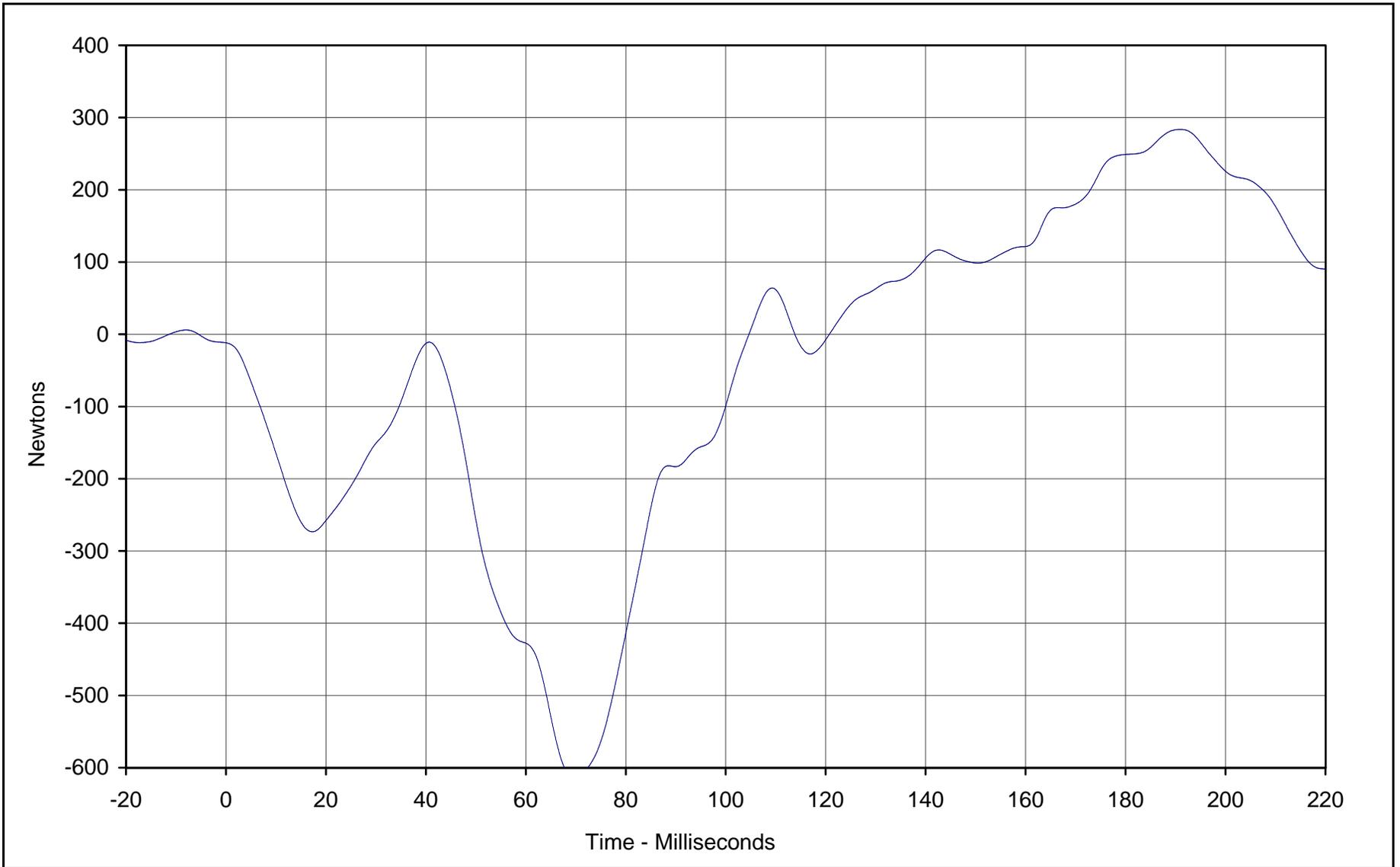
Curve Description: Pendulum Deceleration  
Maximum Value: 20.2 at 9.3 Milliseconds  
Minimum Value: -3.0 at 54.8 Milliseconds  
SAE Filter Class: 60  
Date of Test: 9/28/99  
ATD Serial No.: 034

Testing Program: Hybrid III Neck Extension Test (Male)  
Test Information: S/N of Part: n/a Test I.D.: NE09A



KAR20001-02

E-17

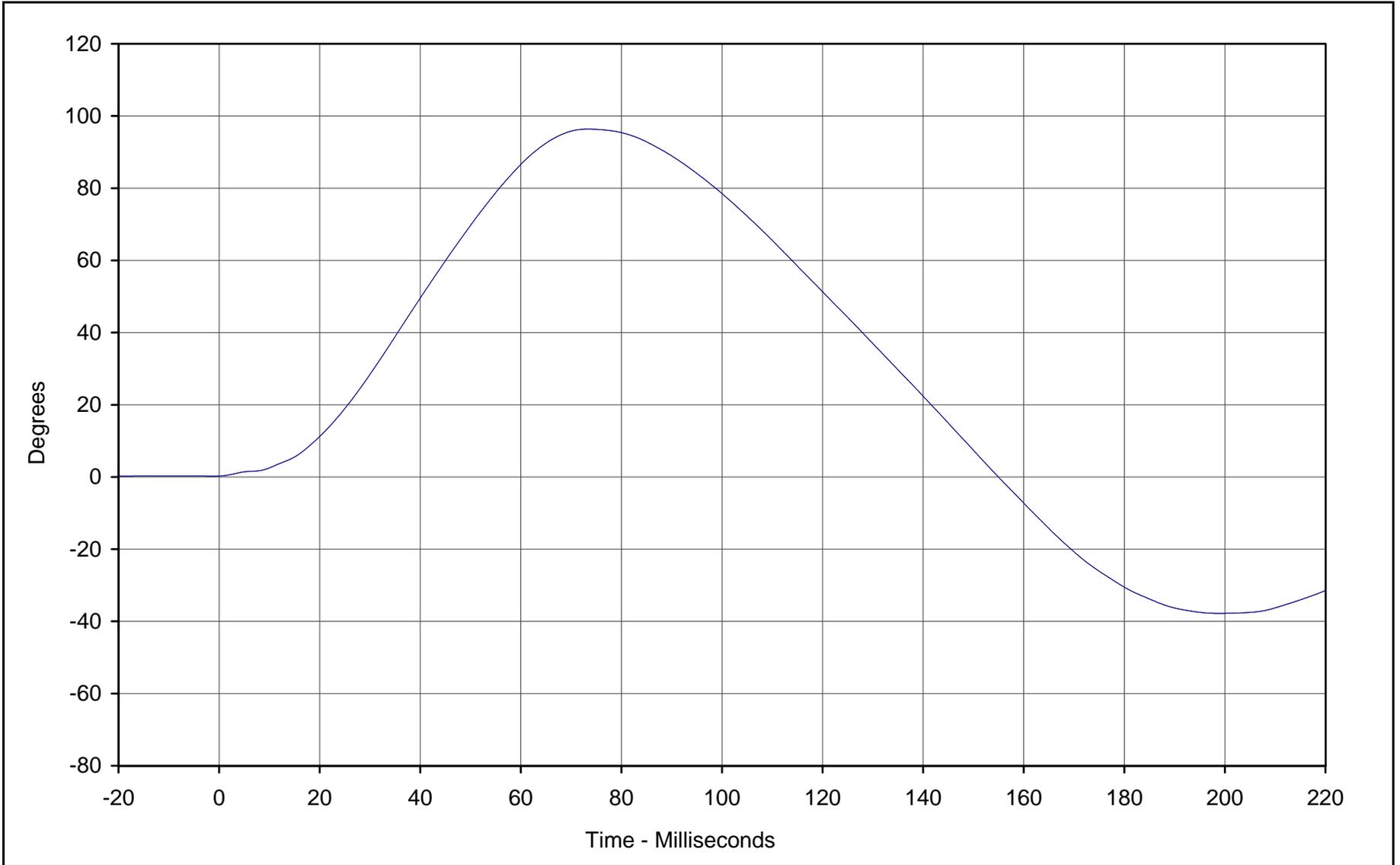


Curve Description: Neck Force X  
Maximum Value: 283.6 at 190.9 Milliseconds  
Minimum Value: -614.7 at 69.8 Milliseconds  
SAE Filter Class: 60  
Date of Test: 9/28/99  
ATD Serial No.: 034

Testing Program: Hybrid III Neck Extension Test (Male)  
Test Information: S/N of Part: n/a Test I.D.: NE09A



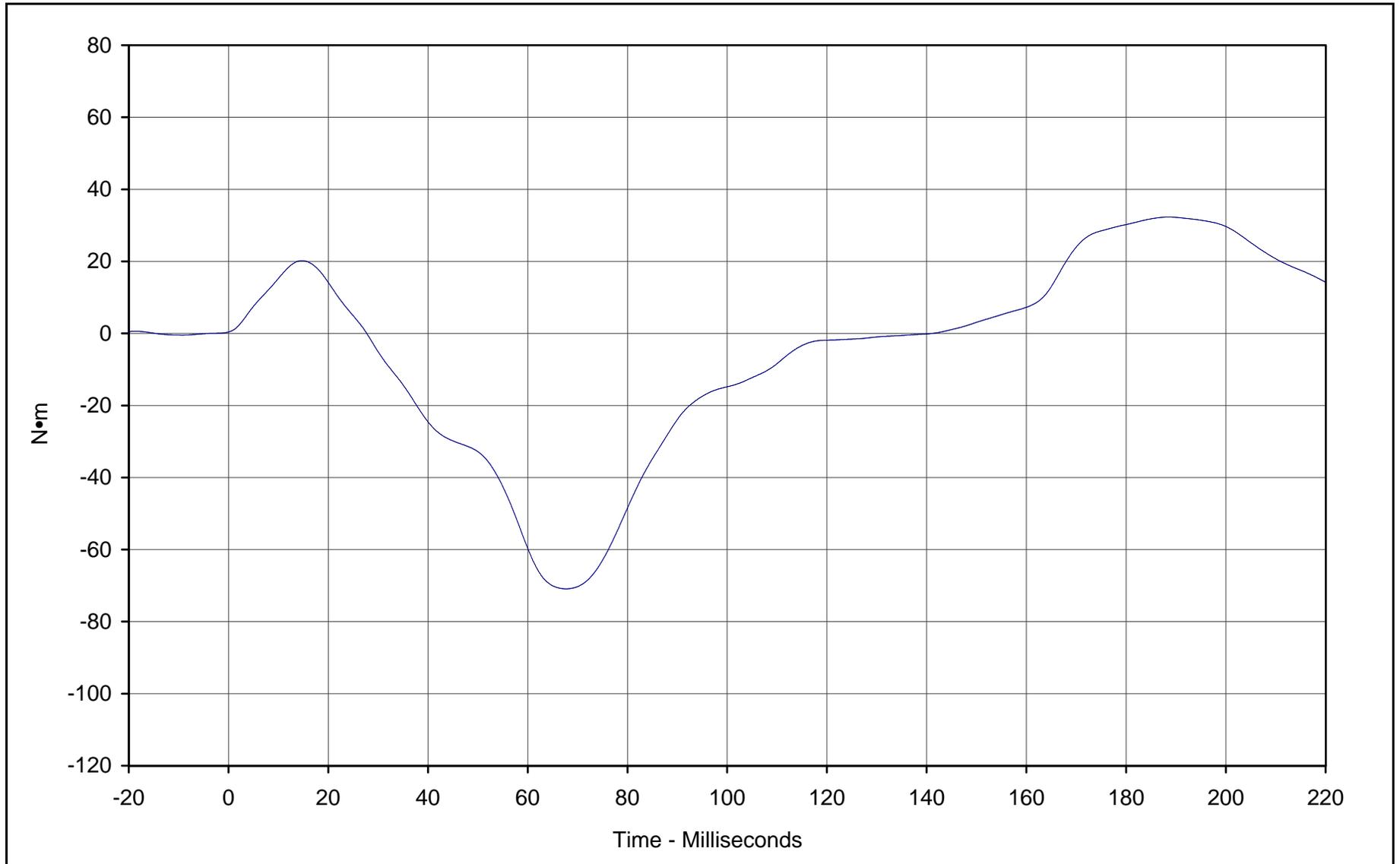
KARR20001-02



Curve Description: "D" Plane Rotation  
Maximum Value: 96.4 at 73.4 Milliseconds  
Minimum Value: -37.8 at 198.9 Milliseconds  
SAE Filter Class: 60  
Date of Test: 9/28/99  
ATD Serial No.: 034

Testing Program: Hybrid III Neck Extension Test (Male)  
Test Information: S/N of Part: n/a Test I.D.: NE09A





Curve Description: Moment About Occipital Condyles  
 Maximum Value: 32.3 at 188.5 Milliseconds  
 Minimum Value: -70.9 at 67.7 Milliseconds  
 SAE Filter Class: 60  
 Date of Test: 9/28/99  
 ATD Serial No.: 034

Testing Program: Hybrid III Neck Extension Test (Male)

Test Information: S/N of Part: n/a Test I.D.: NE09A





# Hybrid III Calibration Data Sheet

## 50<sup>TH</sup> Percentile Male

### External Measurements

ATD Serial No.: 034

Part Serial No.: N/A

Test I.D.: N/A

| External Measurement Data             |       |                 |        |           |
|---------------------------------------|-------|-----------------|--------|-----------|
| Tested Parameter                      | Units | Specification   | Result | Pass/Fail |
| Laboratory temperature                | °C    | 20.4 to 22.1    | 20.9   | Pass      |
| Laboratory relative humidity          | %     | 10 to 70        | 43     | Pass      |
| A - Total sitting height              | mm    | 878.8 to 889.0  | 880.0  | Pass      |
| B - Shoulder pivot height             | mm    | 505.5 to 520.7  | 515.0  | Pass      |
| C - "H" point height                  | mm    | 83.8 to 88.9    | 87.1   | Pass      |
| D - "H" point from seat back          | mm    | 134.6 to 139.7  | 137.0  | Pass      |
| E - Shoulder pivot from back          | mm    | 83.8 to 94.0    | 92.0   | Pass      |
| F - Thigh clearance                   | mm    | 139.7 to 154.9  | 153.0  | Pass      |
| G - Elbow back to wrist pivot         | mm    | 289.6 to 304.8  | 300.5  | Pass      |
| H - Skull cap to back line            | mm    | 40.6 to 45.7    | 44.0   | Pass      |
| I - Shoulder to elbow length          | mm    | 330.2 to 345.4  | 335.0  | Pass      |
| J - Elbow rest height                 | mm    | 190.5 to 210.8  | 208.0  | Pass      |
| K - Buttock to knee length            | mm    | 579.1 to 604.5  | 603.1  | Pass      |
| L - Popliteal length                  | mm    | 429.3 to 454.7  | 451.0  | Pass      |
| M - Knee pivot height                 | mm    | 485.1 to 500.4  | 490.0  | Pass      |
| N - Buttock popliteal length          | mm    | 452.1 to 477.5  | 476.0  | Pass      |
| O - Chest depth                       | mm    | 213.4 to 228.6  | 225.0  | Pass      |
| P - Foot length                       | mm    | 251.5 to 266.7  | 255.0  | Pass      |
| V - Shoulder breadth                  | mm    | 421.6 to 436.9  | 430.0  | Pass      |
| W - Foot breadth                      | mm    | 91.4 to 106.7   | 103.2  | Pass      |
| Y - Chest circumference               | mm    | 970.3 to 1000.8 | 980.3  | Pass      |
| Z - Waist circumference               | mm    | 835.7 to 866.1  | 851.0  | Pass      |
| AA - Location for chest circumference | mm    | 429.3 to 434.3  | 430.0  | Pass      |
| BB - Location for waist circumference | mm    | 226.1 to 231.1  | 229.0  | Pass      |
| Overall Test Results                  |       |                 |        | Pass      |

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

October 9, 1999  
\_\_\_\_\_  
Test Date

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

\_\_\_\_\_  
Date



# Hybrid III Calibration Data Sheet

## 50<sup>TH</sup> Percentile Male

### Left Knee Impact Test

ATD Serial No.: 035

Part Serial No.: n/a

Test I.D.: LK09C

| Tested Parameter             | Units   | Specification  | Result | Pass/Fail |
|------------------------------|---------|----------------|--------|-----------|
| Laboratory Temperature       | °C      | 18.9 to 25.5   | 21.1   | Pass      |
| Laboratory Relative Humidity | %       | 10 to 70       | 30     | Pass      |
| Probe Velocity               | m/s     | 2.073 to 2.134 | 2.094  | Pass      |
| Peak Probe Force             | Newtons | 4715 to 5782   | 5523.6 | Pass      |
| Overall Test Results         |         |                |        | Pass      |

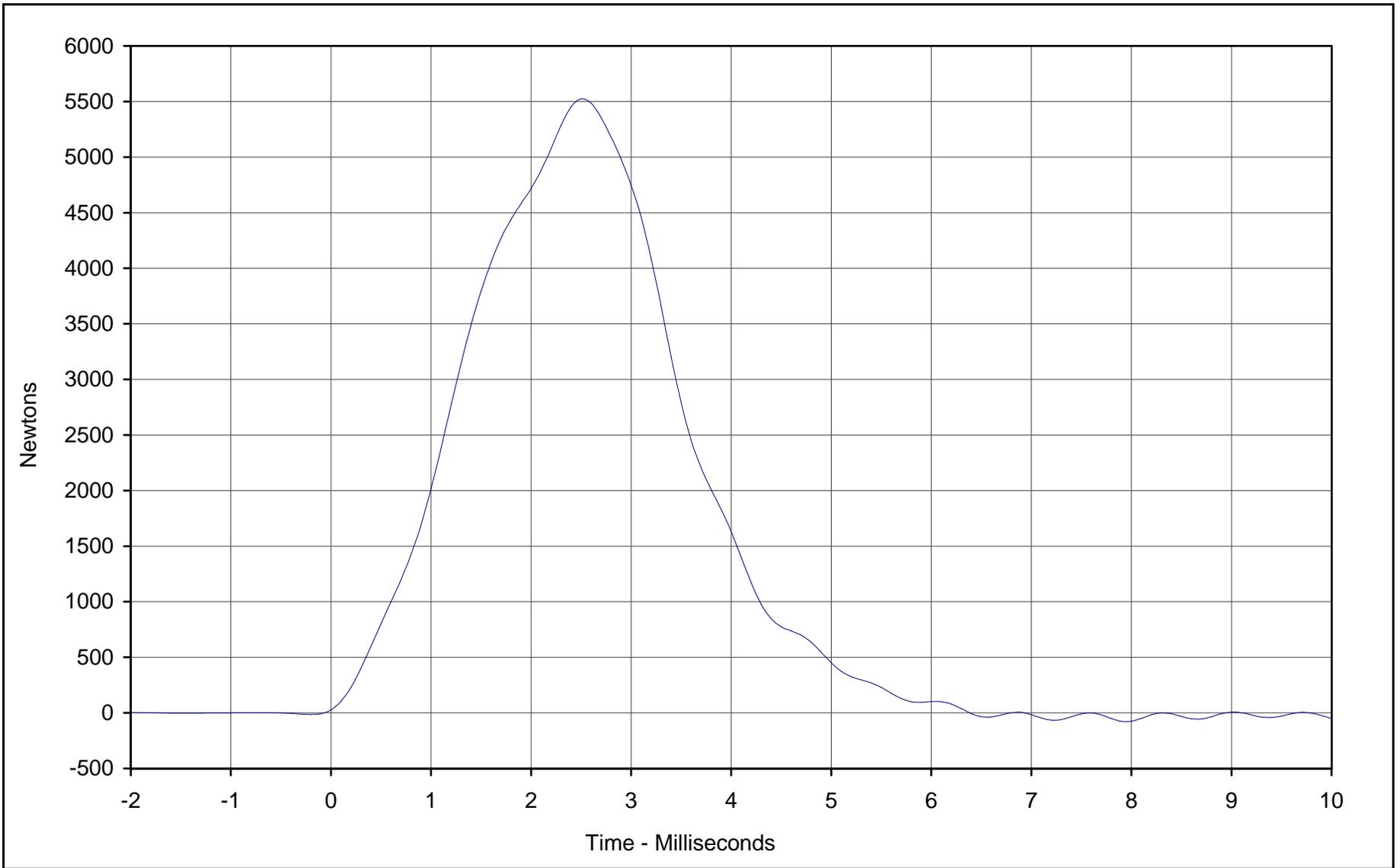
\_\_\_\_\_  
Laboratory Technician

September 28, 1999  
Test Date

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

\_\_\_\_\_  
Date

E-22



Curve Description: Probe Force  
Maximum Value: 5523.6 at 2.5 Milliseconds  
Minimum Value: -75.9 at 7.9 Milliseconds  
SAE Filter Class: 600  
Date of Test: 9/28/99  
ATD Serial No.: 035

Testing Program: Hybrid III Left Knee Impact Test  
Test Information: Part S/N: n/a Test I.D.: LK09C



KARR20001-02



# Hybrid III Calibration Data Sheet

## 50<sup>TH</sup> Percentile Male

### Right Knee Impact Test

ATD Serial No.: 035

Part Serial No.: n/a

Test I.D.: LK09E

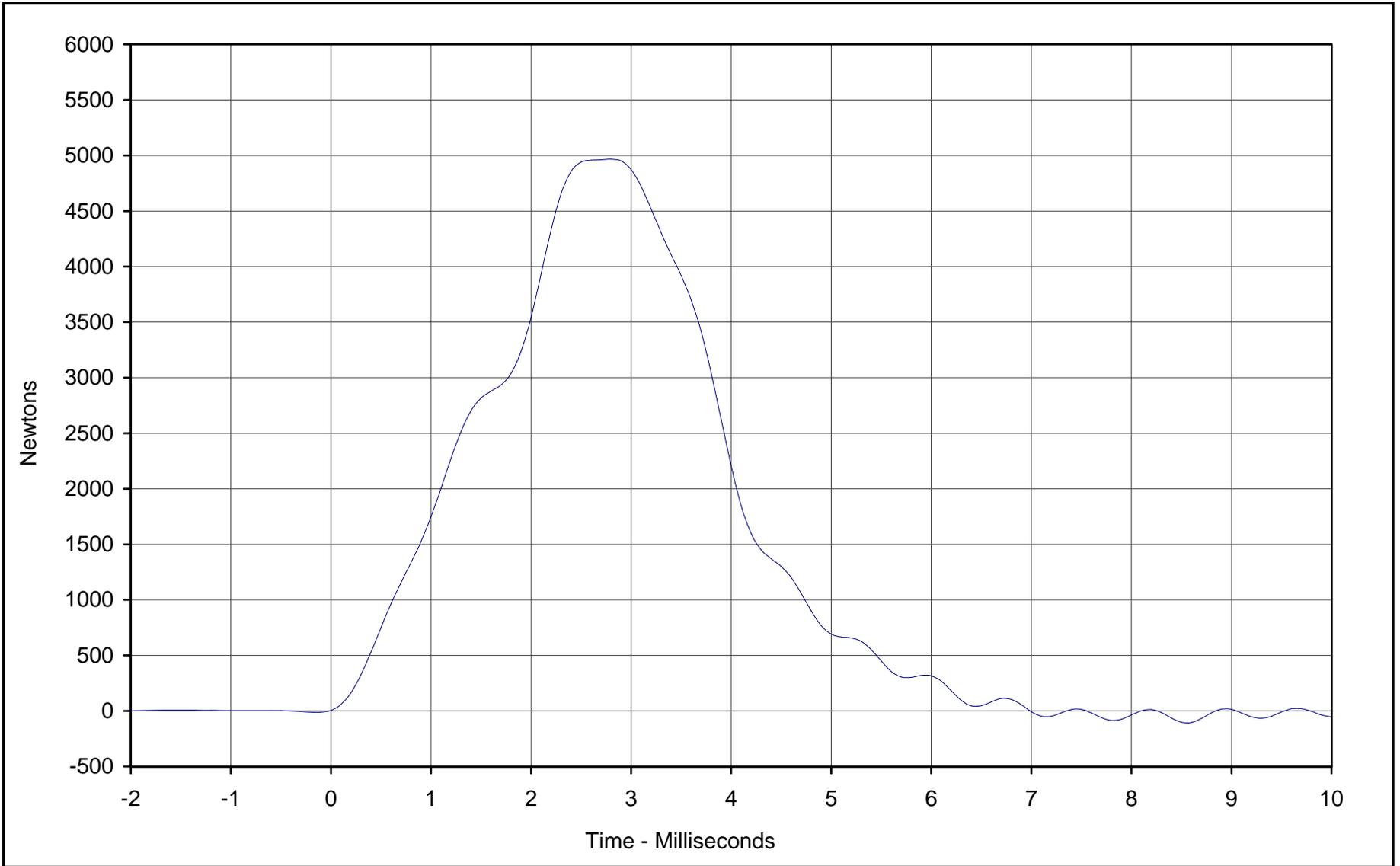
| Tested Parameter             | Units   | Specification  | Result | Pass/Fail |
|------------------------------|---------|----------------|--------|-----------|
| Laboratory Temperature       | °C      | 18.9 to 25.5   | 21.1   | Pass      |
| Laboratory Relative Humidity | %       | 10 to 70       | 30     | Pass      |
| Probe Velocity               | m/s     | 2.073 to 2.134 | 2.091  | Pass      |
| Peak Probe Force             | Newtons | 4715 to 5782   | 4966.7 | Pass      |
| Overall Test Results         |         |                |        | Pass      |

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

September 28, 1999  
\_\_\_\_\_  
Test Date

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

\_\_\_\_\_  
Date



Curve Description: Probe Force  
Maximum Value: 4966.7 at 2.8 Milliseconds  
Minimum Value: -85.5 at 7.8 Milliseconds  
SAE Filter Class: 600  
Date of Test: 9/28/99  
ATD Serial No.: 035

Testing Program: Hybrid III Right Knee Impact Test  
Test Information: Part S/N: n/a Test I.D.: LK09E





# Hybrid III Calibration Data Sheet

## 50<sup>TH</sup> Percentile Male

### Head Drop Calibration

ATD Serial No.: 035

Part Serial No.: n/a

Test I.D.: HD09C

| Tested Parameter             | Units  | Specification  | Result | Pass/Fail |
|------------------------------|--------|----------------|--------|-----------|
| Laboratory Temperature       | °C     | 18.9 to 25.6   | 21.1   | Pass      |
| Laboratory Relative Humidity | %      | 10 to 70       | 39     | Pass      |
| Peak Resultant Acceleration  | G's    | 225.0 to 275.0 | 263.7  | Pass      |
| Peak Lateral Acceleration    | G's    | ≤15.0          | 5.9    | Pass      |
| Is Acceleration Unimodal?    | Yes/No | Yes            | Yes    | Pass      |
| Overall Test Results         |        |                |        | Pass      |

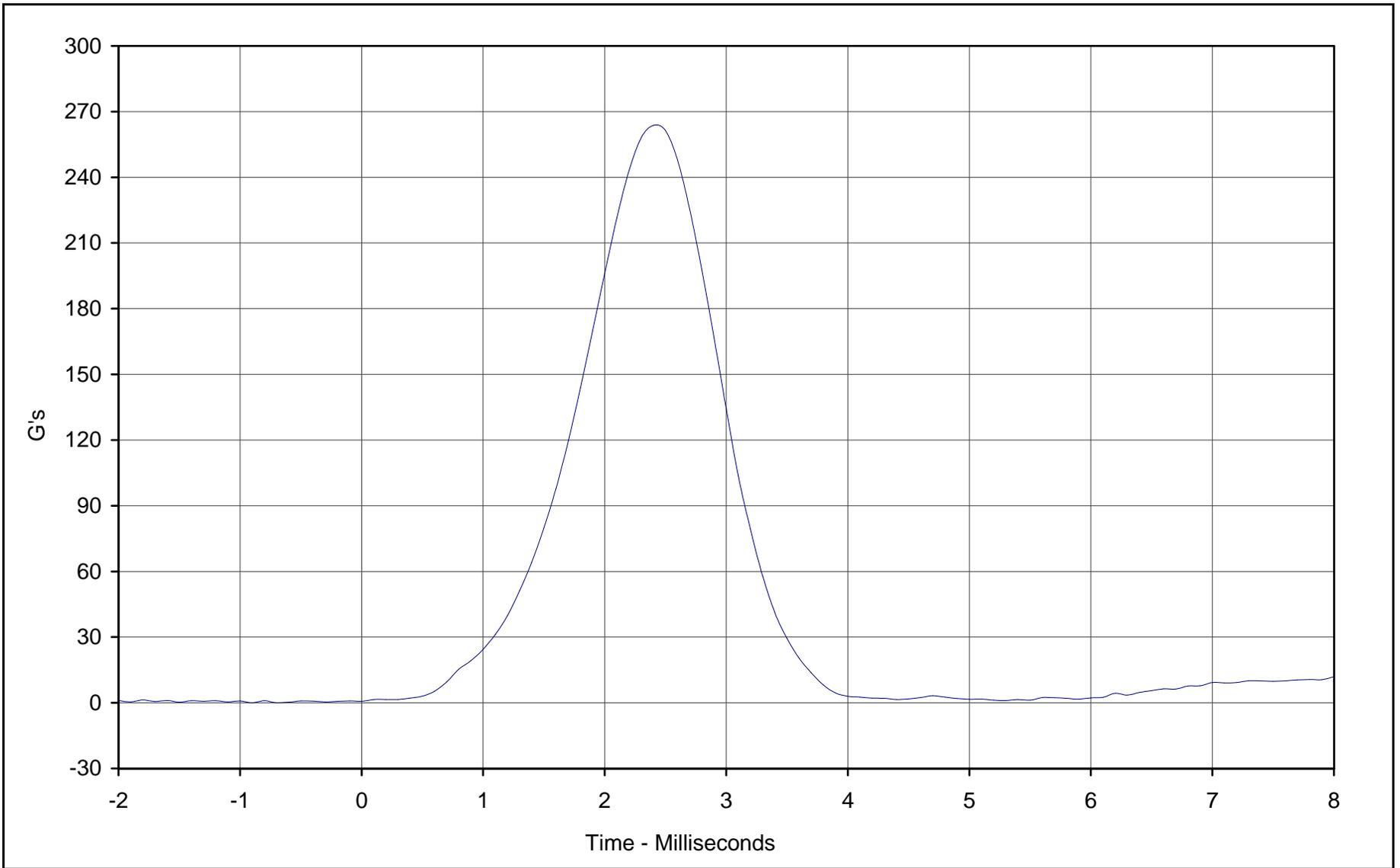
\_\_\_\_\_  
Laboratory Technician

October 1, 1999  
Test Date

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

\_\_\_\_\_  
Date

E-26



Curve Description: Head Resultant Acceleration

Maximum Value: 263.7 at 2.4 Milliseconds

Minimum Value: 0.0 at -0.9 Milliseconds

SAE Filter Class: 1000

Date of Test: 10/1/99

ATD Serial No.: 035

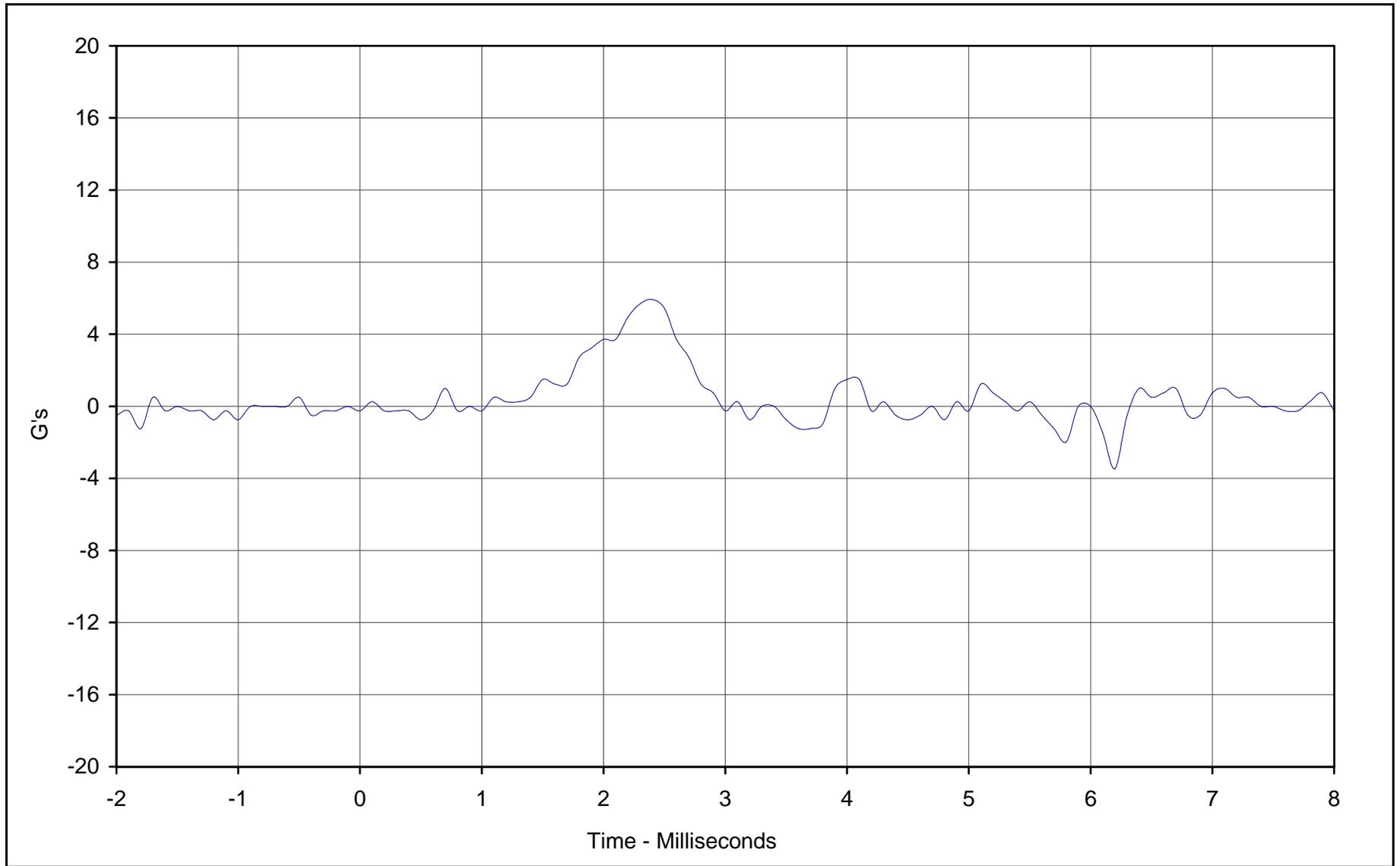
Testing Program: Hybrid III Head Drop Calibration (Male)

Test Information: S/N of Part: n/a Test I.D.: HD09C



KARR20001-02

E-27



Curve Description: Head Acceleration Y Axis

Maximum Value: 5.9 at 2.4 Milliseconds

Minimum Value: -3.5 at 6.2 Milliseconds

SAE Filter Class: 1000

Date of Test: 10/1/99

ATD Serial No.: 035

Testing Program: Hybrid III Head Drop Calibration (Male)

Test Information: S/N of Part: n/a Test I.D.: HD09C



KARR20001-02



# Hybrid III Calibration Data Sheet

## 50<sup>TH</sup> Percentile Male

### Thorax Impact Test

ATD Serial No.: 035

Part Serial No.: N/A

Test I.D.: CH10B

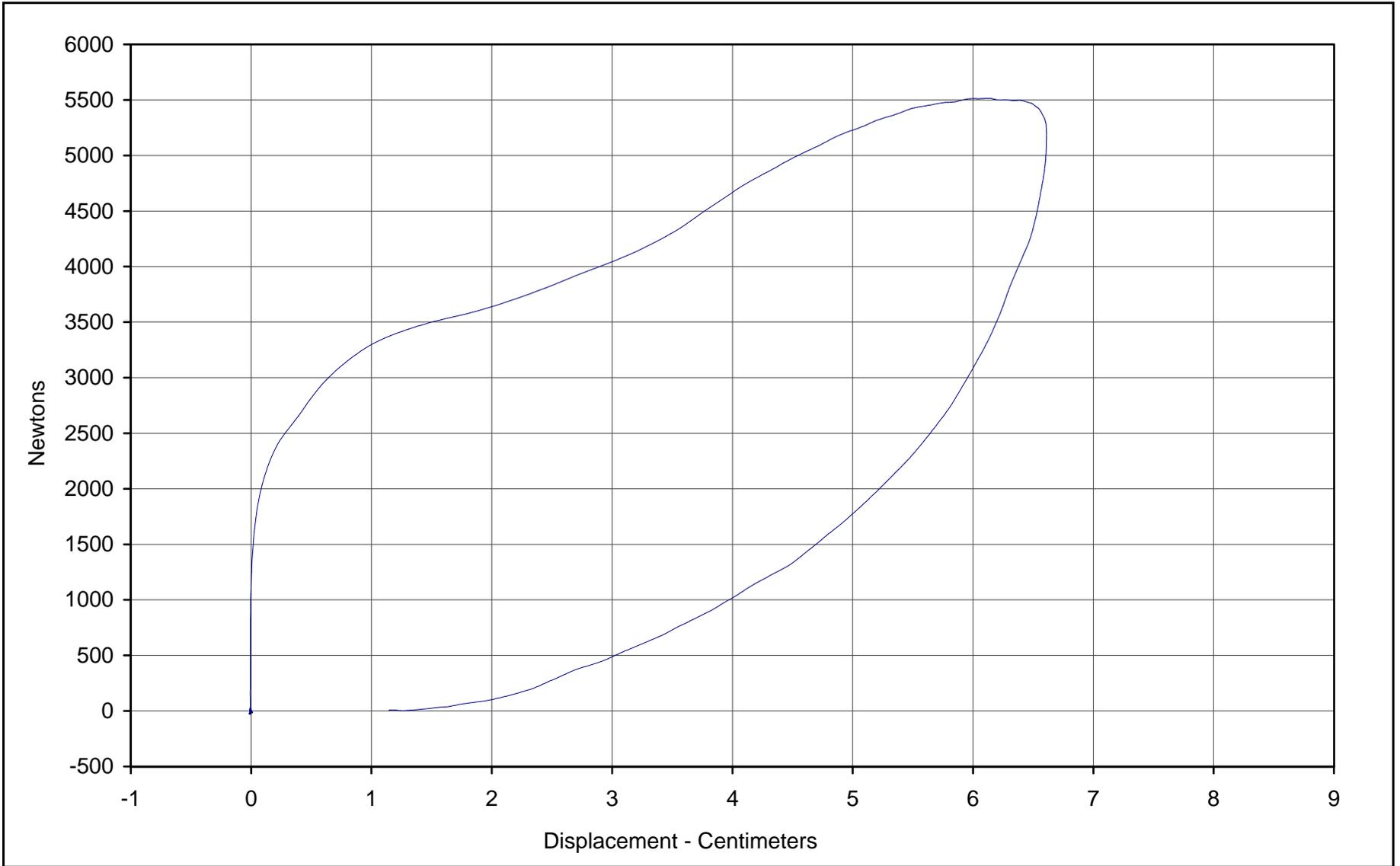
| Tested Parameter             | Units   | Specification | Result | Pass/Fail |
|------------------------------|---------|---------------|--------|-----------|
| Laboratory Temperature       | °C      | 20.6 to 22.2  | 21.2   | Pass      |
| Laboratory Relative Humidity | %       | 10 to 70      | 39     | Pass      |
| Probe Velocity               | m/s     | 6.58 to 6.82  | 6.80   | Pass      |
| Peak Probe Force             | Newtons | 5159 to 5893  | 5515   | Pass      |
| Peak Sternum Displacement    | CM      | 6.35 to 7.26  | 6.61   | Pass      |
| Internal Hysteresis          | %       | 69 to 85      | 74.6   | Pass      |
| Overall Test Results         |         |               |        | Pass      |

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

October 6, 1999  
\_\_\_\_\_  
Test Date

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

\_\_\_\_\_  
Date



Curve Description: Probe Force vs. Chest Displacement

Testing Program: Hybrid III Thorax Impact Test

Probe Force: 5515.2 Newtons

Test Information: S/N of Part: N/A Test I.D.: CH10B

Chest Displ.: 6.61 Centimeters

SAE Filter Class: 180

Date of Test: 10/6/99

ATD Serial No.: 035





# Hybrid III Calibration Data Sheet

## 50<sup>TH</sup> Percentile Male

### Neck Flexion Test

ATD Serial No.: 035

Part Serial No.: n/a

Test I.D.: NF09B

| Tested Parameter                                | Units    | Specification  | Result        | Pass/Fail   |      |
|---|----------|----------------|---------------|-------------|------|
| Laboratory Temperature                          | °C       | 20.6 to 22.2   | 21.7          | Pass        |      |
| Laboratory Relative Humidity                    | %        | 10 to 70       | 40            | Pass        |      |
| Pendulum Velocity                               | m/s      | 6.89 to 7.13   | 6.96          | Pass        |      |
| Pendulum Deceleration                           | 10 Msec. | G's            | 22.5 to 27.5  | 22.7        | Pass |
|   | 20 Msec. | G's            | 17.6 to 22.6  | 21.3        | Pass |
|   | 30 Msec. | G's            | 12.5 to 18.5  | 18.5        | Pass |
| Peak Pendulum Decel. after 30 Msec.             | G's      | ≤ 29.0         | 18.5          | Pass        |      |
| Deceleration Decay, Time to Cross 5 G's         | Msec.    | 34.0 to 42.0   | 40.8          | Pass        |      |
| Maximum "D" Plane Rotation                      | Maximum  | Degrees        | 64.0 to 78.0  | 66.8        | Pass |
|   | Time     | Msec.          | 57.0 to 64.0  | 58.9        | Pass |
| "D" Plane Rotation Decay, Time To Zero Crossing | Msec.    | 113.0 to 128.0 | 114.6         | Pass        |      |
| Moment About Occipital Condyle                  | Maximum  | N•m            | 84.1 to 108.5 | 92.5        | Pass |
|   | Time     | Msec.          | 47.0 to 58.0  | 53.0        | Pass |
| Positive Moment Decay, Time To Zero Crossing    | Msec.    | 97.0 to 107.0  | 98.8          | Pass        |      |
| <b>Overall Test Results</b>                     |          |                |               | <b>Pass</b> |      |

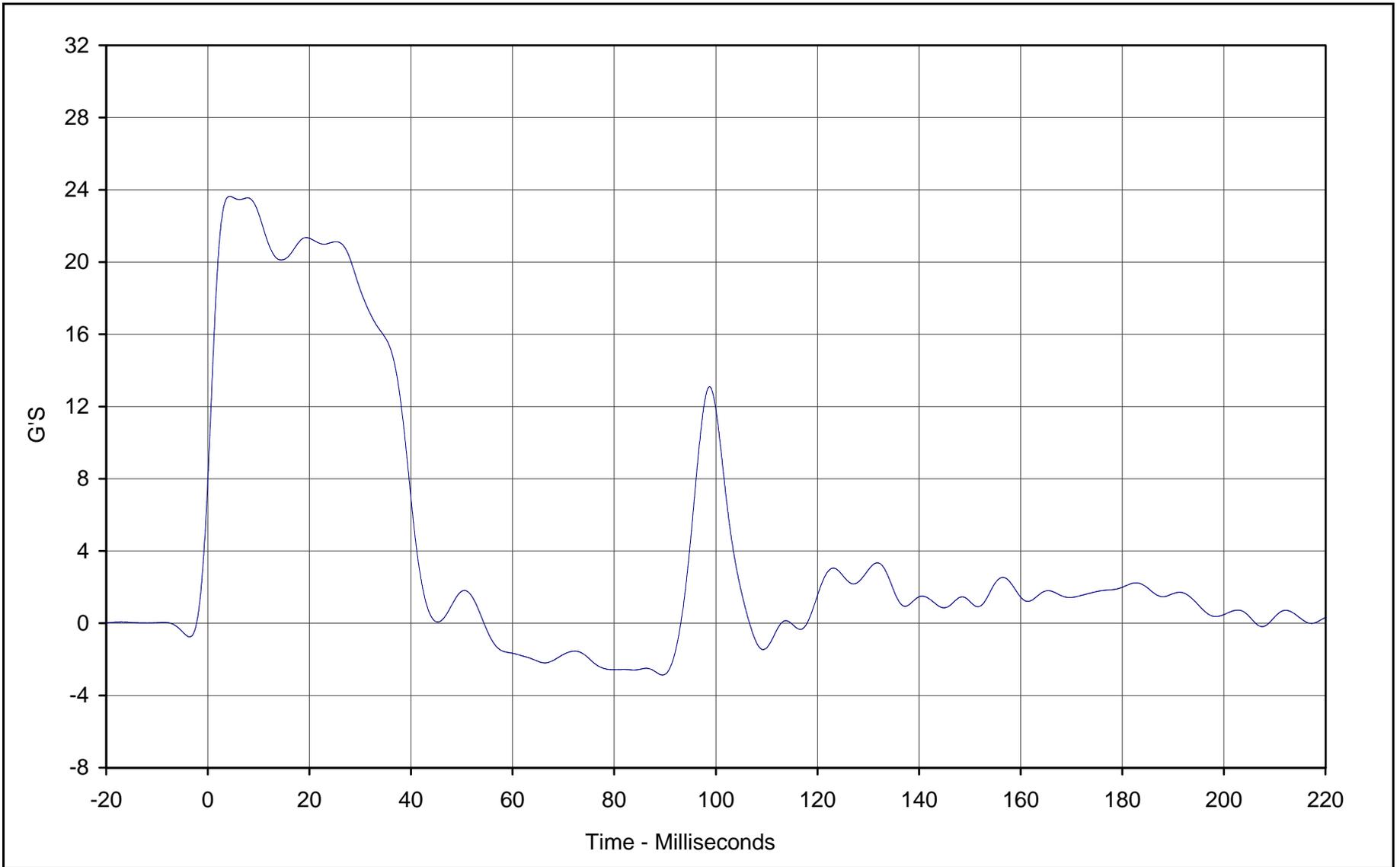
\_\_\_\_\_  
Laboratory Technician

October 1, 1999  
\_\_\_\_\_  
Test Date

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

\_\_\_\_\_  
Date

E-31

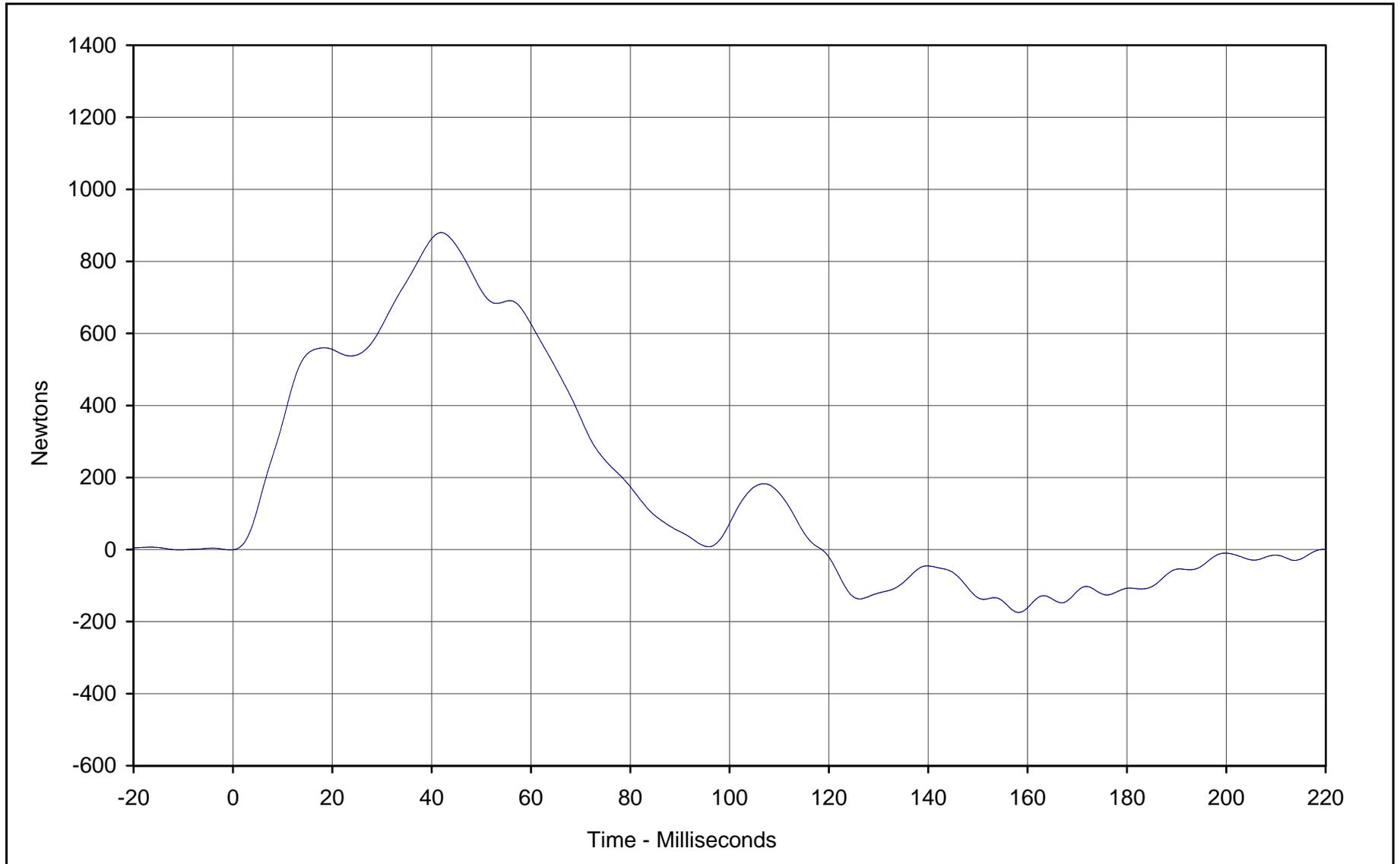


Curve Description: Pendulum Deceleration  
Maximum Value: 23.6 at 4.3 Milliseconds  
Minimum Value: -2.9 at 89.5 Milliseconds  
SAE Filter Class: 60  
Date of Test: 10/1/99  
ATD Serial No.: 035

Testing Program: Hybrid III Neck Flexion Test (Male)  
Test Information: S/N of Part: n/a Test I.D.: NF09B



KAR20001-02

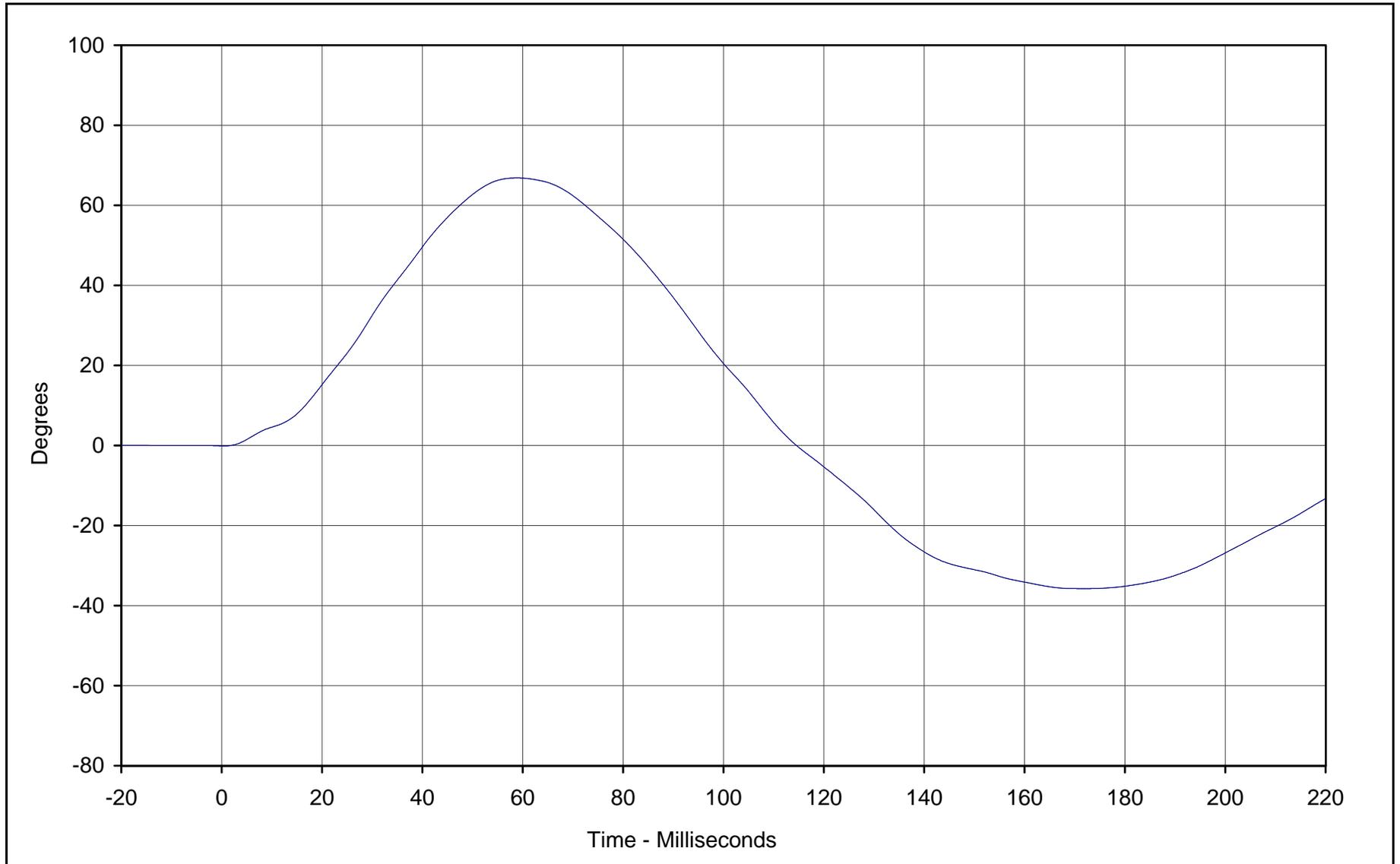


Curve Description: Neck Force X  
 Maximum Value: 879.8 at 41.9 Milliseconds  
 Minimum Value: -174.5 at 158.2 Milliseconds  
 SAE Filter Class: 60  
 Date of Test: 10/1/99  
 ATD Serial No.: 035

Testing Program: Hybrid III Neck Flexion Test (Male)

Test Information: S/N of Part: n/a Test I.D.: NF09B

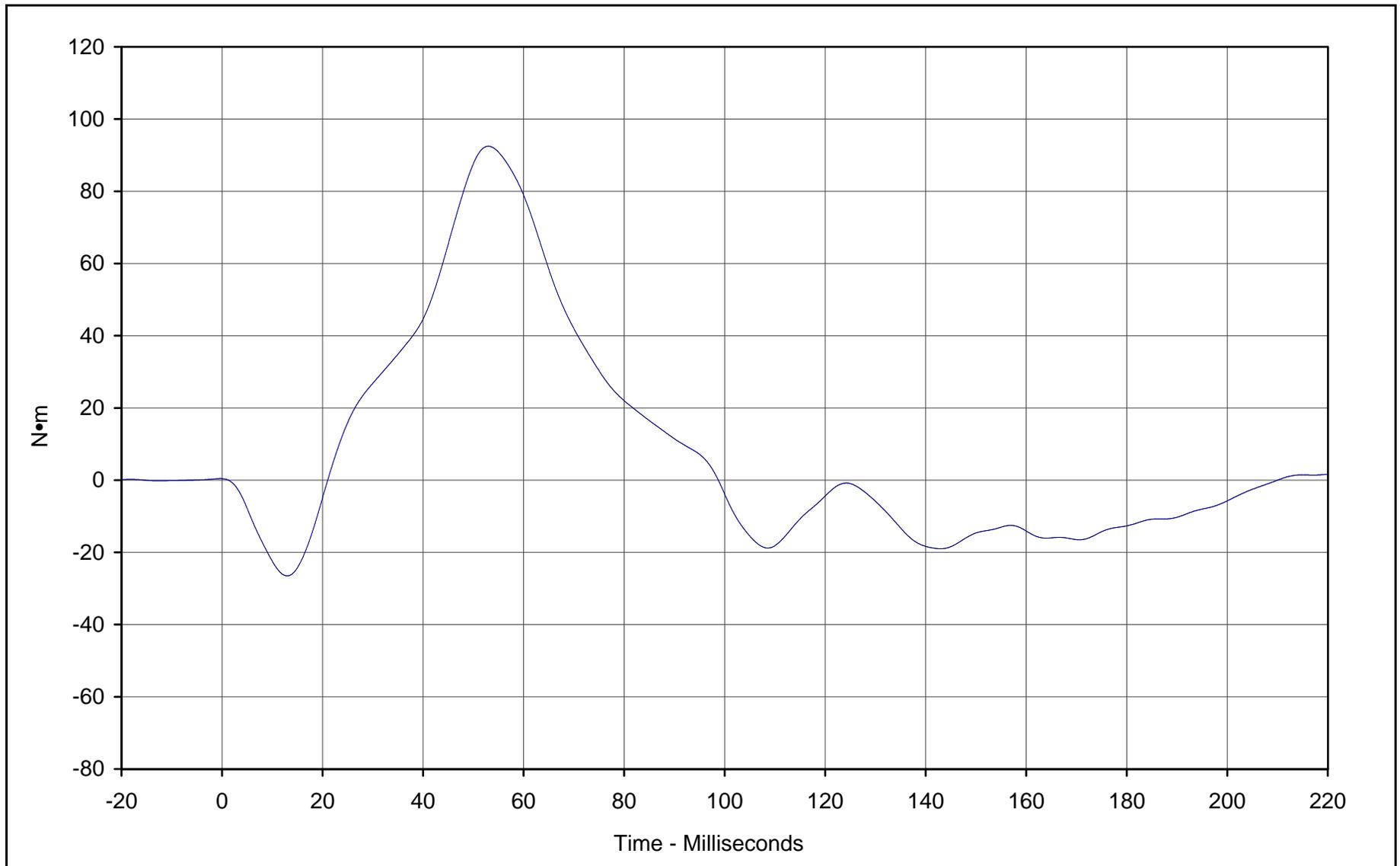




Curve Description: "D" Plane Rotation  
 Maximum Value: 66.8 at 58.9 Milliseconds  
 Minimum Value: -35.7 at 172.4 Milliseconds  
 SAE Filter Class: 60  
 Date of Test: 10/1/99  
 ATD Serial No.: 035

Testing Program: Hybrid III Neck Flexion Test (Male)  
 Test Information: S/N of Part: n/a Test I.D.: NF09B





Curve Description: Moment About Occipital Condyles

Testing Program: Hybrid III Neck Flexion Test (Male)

Maximum Value: 92.5 at 53.0 Milliseconds

Test Information: S/N of Part: n/a Test I.D.: NF09B

Minimum Value: -26.5 at 13.0 Milliseconds

SAE Filter Class: 60

Date of Test: 10/1/99

ATD Serial No.: 035





# Hybrid III Calibration Data Sheet

## 50<sup>TH</sup> Percentile Male

### Neck Extension Test

ATD Serial No.: 035

Part Serial No.: n/a

Test I.D.: NE09B

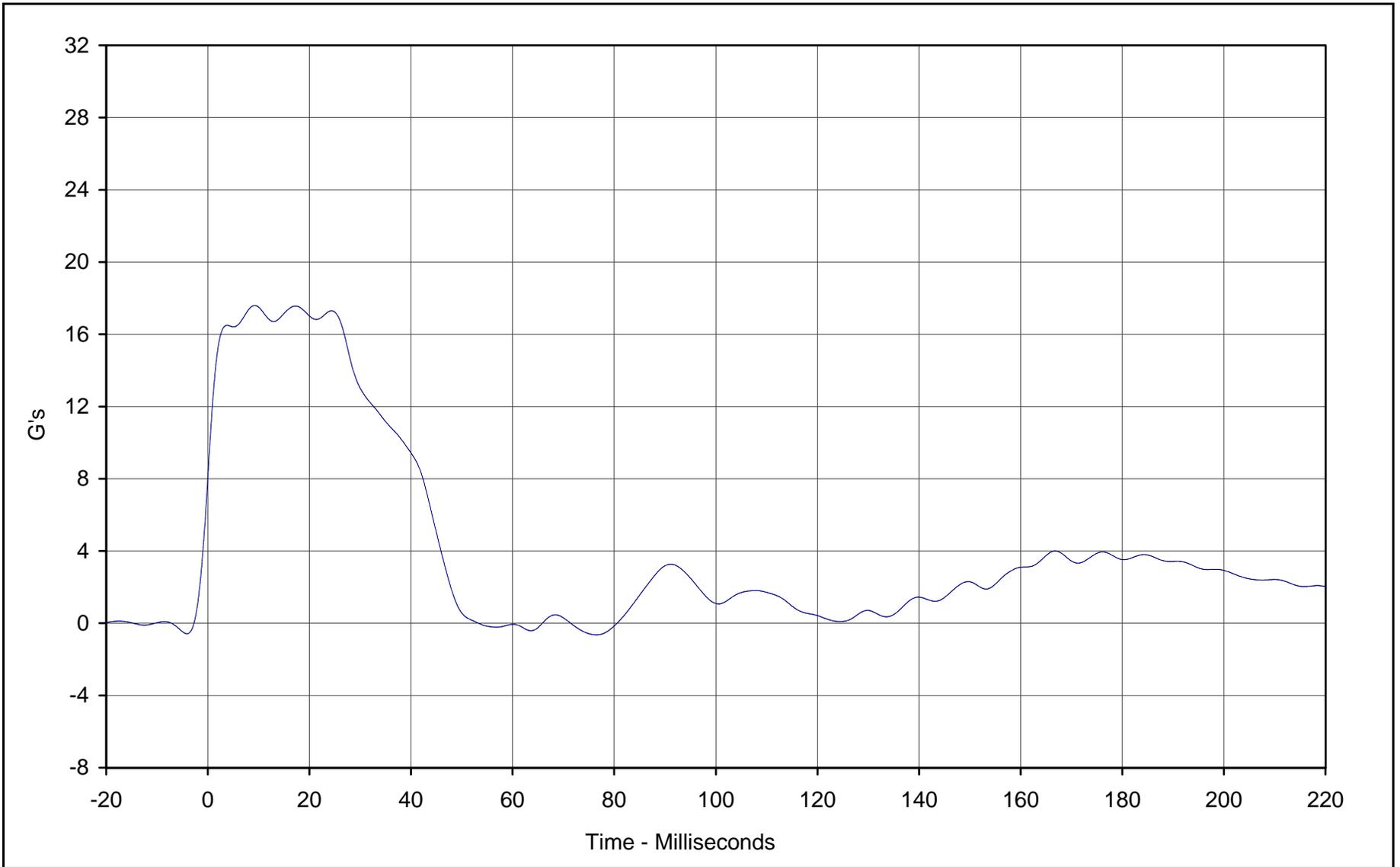
| Tested Parameter                                | Units    | Specification  | Result         | Pass/Fail |      |
|---|----------|----------------|----------------|-----------|------|
| Laboratory Temperature                          | °C       | 20.6 to 22.2   | 21.1           | Pass      |      |
| Laboratory Relative Humidity                    | %        | 10 to 70       | 36             | Pass      |      |
| Pendulum Velocity                               | m/s      | 5.95 to 6.19   | 6.10           | Pass      |      |
| Pendulum Deceleration                           | 10 Msec. | G's            | 17.2 to 21.2   | 17.5      | Pass |
|   | 20 Msec. | G's            | 14.0 to 19.0   | 17.0      | Pass |
|   | 30 Msec. | G's            | 11.0 to 16.0   | 13.0      | Pass |
| Peak Pendulum Decel. after 30 Msec.             | G's      | ≤ 22.0         | 13.0           | Pass      |      |
| Deceleration Decay, Time to Cross 5 G's         | Msec.    | 38.0 to 46.0   | 45.1           | Pass      |      |
| Maximum "D" Plane Rotation                      | Maximum  | Degrees        | 81.0 to 106.0  | 89.8      | Pass |
|   | Time     | Msec.          | 72.0 to 82.0   | 74.8      | Pass |
| "D" Plane Rotation Decay, Time To Zero Crossing | Msec.    | 147.0 to 174.0 | 155.9          | Pass      |      |
| Moment About Occipital Condyle                  | Maximum  | N • m          | -52.9 to- 79.9 | -69.2     | Pass |
|   | Time     | Msec.          | 65.0 to 79.0   | 67.9      | Pass |
| Negative Moment Decay, Time To Zero Crossing    | Msec.    | 120.0 to 148.0 | 136.3          | Pass      |      |
| Overall Test Results                            |          |                |                | Pass      |      |

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

October 1, 1999  
\_\_\_\_\_  
Test Date

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

\_\_\_\_\_  
Date

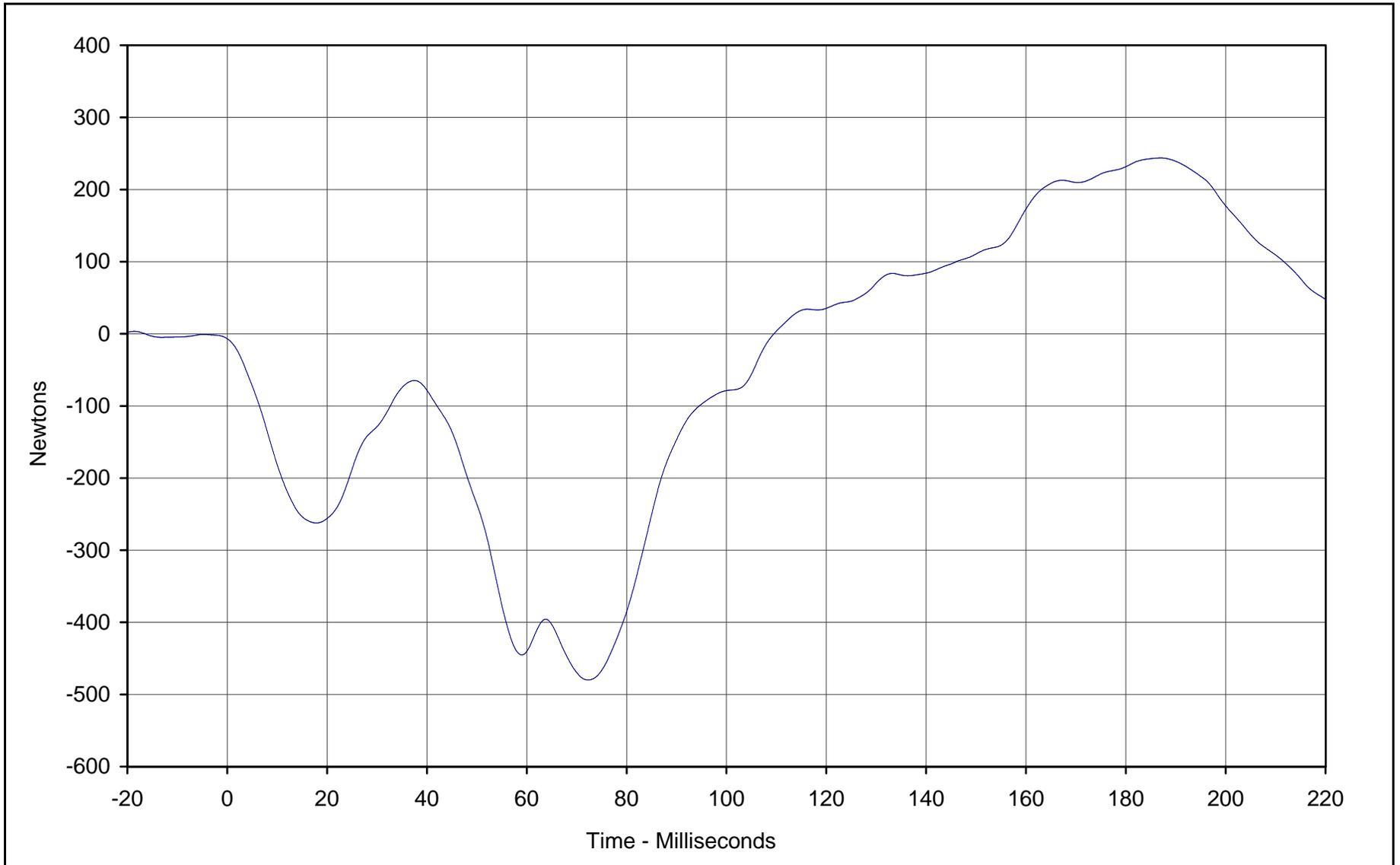


Curve Description: Pendulum Deceleration  
 Maximum Value: 17.6 at 9.3 Milliseconds  
 Minimum Value: -0.6 at 76.5 Milliseconds  
 SAE Filter Class: 60  
 Date of Test: 10/1/99  
 ATD Serial No.: 035

Testing Program: Hybrid III Neck Extension Test (Male)  
 Test Information: S/N of Part: n/a Test I.D.: NE09B



E-37

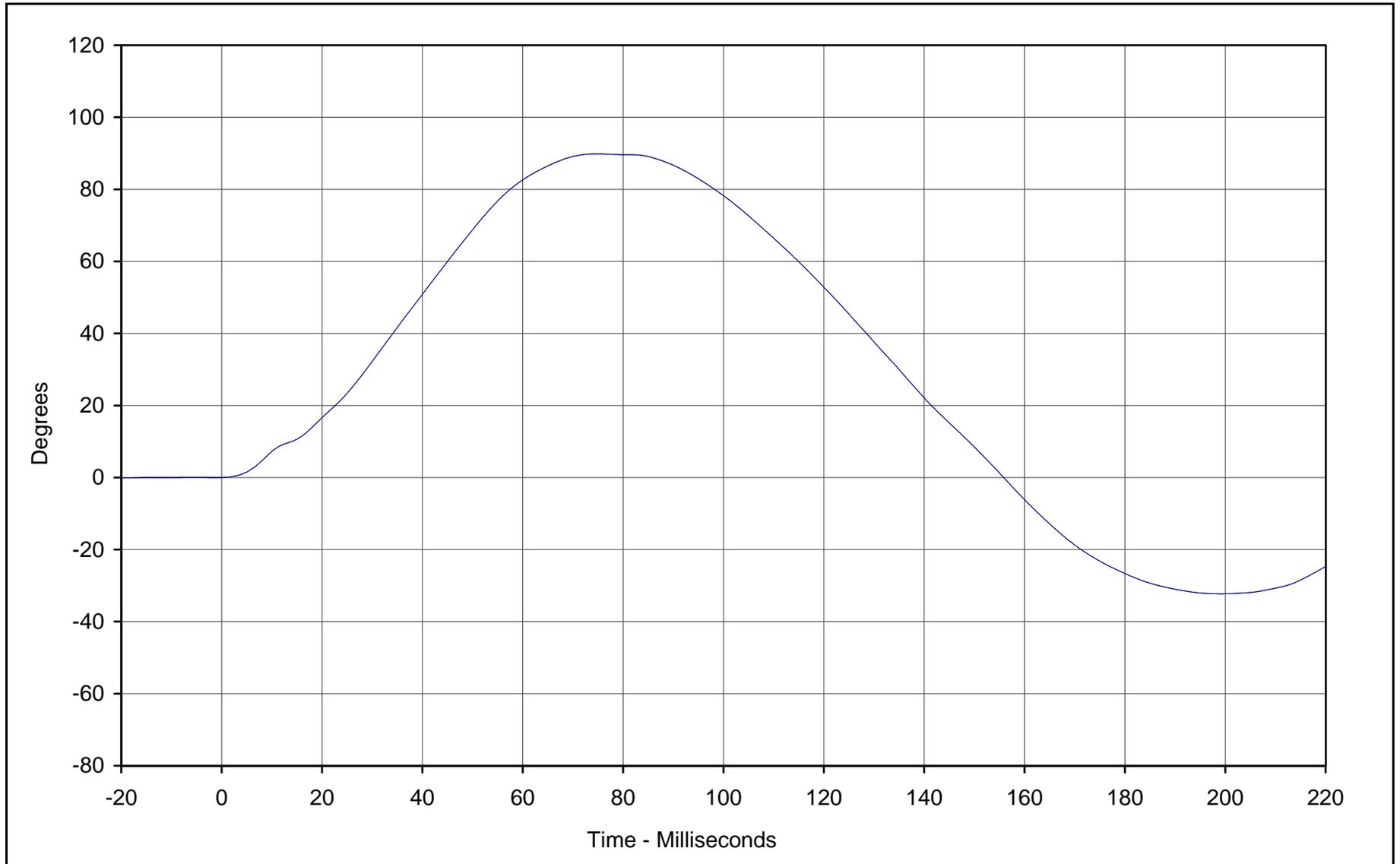


Curve Description: Neck Force X  
Maximum Value: 243.8 at 187.0 Milliseconds  
Minimum Value: -480.0 at 72.3 Milliseconds  
SAE Filter Class: 60  
Date of Test: 10/1/99  
ATD Serial No.: 035

Testing Program: Hybrid III Neck Extension Test (Male)  
Test Information: S/N of Part: n/a Test I.D.: NE09B



KARR20001-02

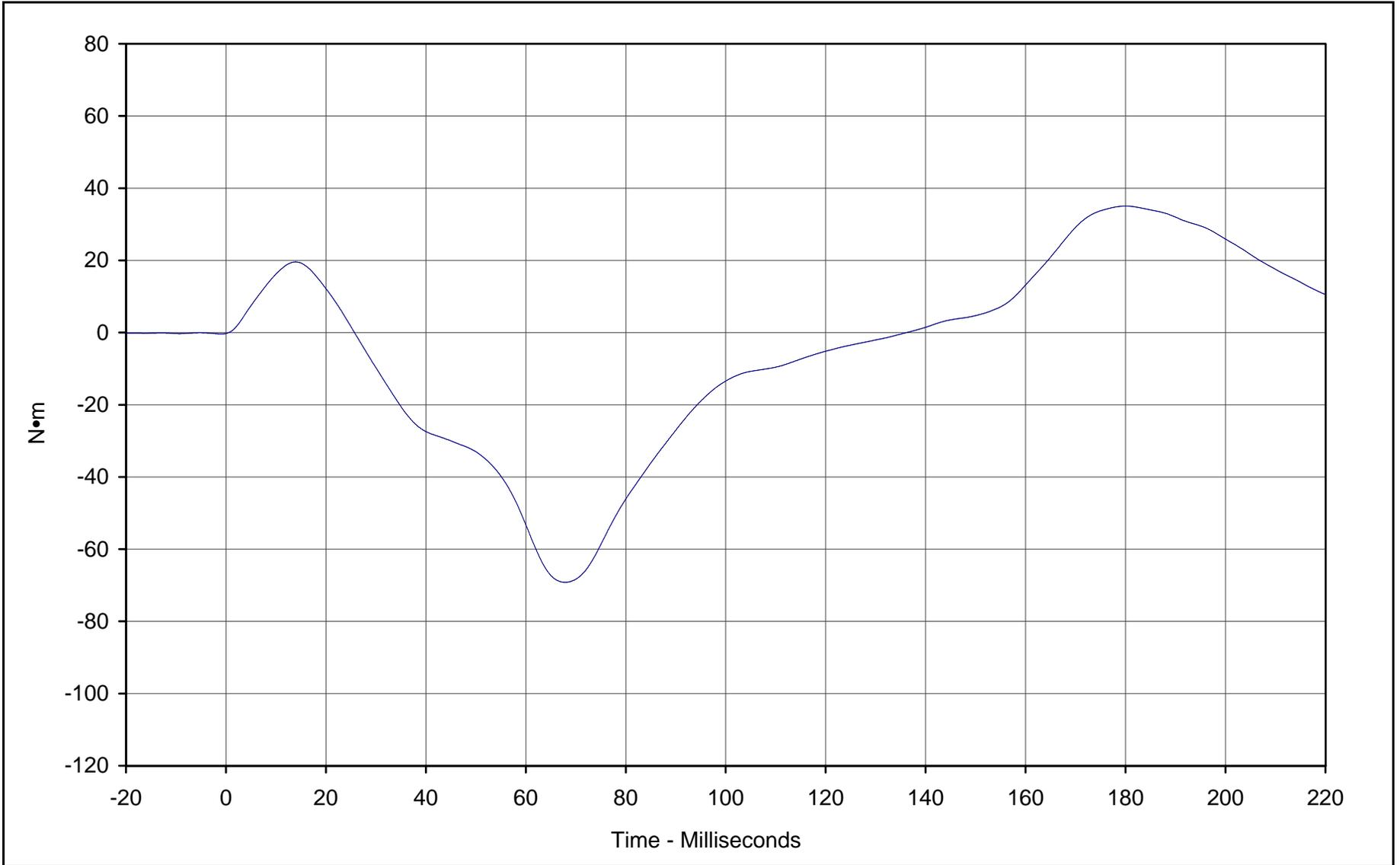


Curve Description: "D" Plane Rotation  
 Maximum Value: 89.8 at 74.8 Milliseconds  
 Minimum Value: -32.3 at 199.0 Milliseconds  
 SAE Filter Class: 60  
 Date of Test: 10/1/99  
 ATD Serial No.: 035

Testing Program: Hybrid III Neck Extension Test (Male)  
 Test Information: S/N of Part: n/a Test I.D.: NE09B



E-39



Curve Description: Moment About Occipital Condyles  
Maximum Value: 35.0 at 180.0 Milliseconds  
Minimum Value: -69.2 at 67.9 Milliseconds  
SAE Filter Class: 60  
Date of Test: 10/1/99  
ATD Serial No.: 035

Testing Program: Hybrid III Neck Extension Test (Male)  
Test Information: S/N of Part: n/a Test I.D.: NE09B

KARR20001-02





# Hybrid III Calibration Data Sheet

## 50<sup>TH</sup> Percentile Male

### External Measurements

ATD Serial No.: 035

Part Serial No.: N/A

Test I.D.: N/A

| External Measurement Data             |       |                 |        |           |
|---------------------------------------|-------|-----------------|--------|-----------|
| Tested Parameter                      | Units | Specification   | Result | Pass/Fail |
| Laboratory temperature                | °C    | 20.4 to 22.1    | 20.9   | Pass      |
| Laboratory relative humidity          | %     | 10 to 70        | 43     | Pass      |
| A - Total sitting height              | mm    | 878.8 to 889.0  | 888.1  | Pass      |
| B - Shoulder pivot height             | mm    | 505.5 to 520.7  | 506.0  | Pass      |
| C - "H" point height                  | mm    | 83.8 to 88.9    | 87.1   | Pass      |
| D - "H" point from seat back          | mm    | 134.6 to 139.7  | 137.0  | Pass      |
| E - Shoulder pivot from back          | mm    | 83.8 to 94.0    | 90.0   | Pass      |
| F - Thigh clearance                   | mm    | 139.7 to 154.9  | 153.0  | Pass      |
| G - Elbow back to wrist pivot         | mm    | 289.6 to 304.8  | 300.4  | Pass      |
| H - Skull cap to back line            | mm    | 40.6 to 45.7    | 44.0   | Pass      |
| I - Shoulder to elbow length          | mm    | 330.2 to 345.4  | 335.0  | Pass      |
| J - Elbow rest height                 | mm    | 190.5 to 210.8  | 207.0  | Pass      |
| K - Buttock to knee length            | mm    | 579.1 to 604.5  | 603.1  | Pass      |
| L - Popliteal length                  | mm    | 429.3 to 454.7  | 451.0  | Pass      |
| M - Knee pivot height                 | mm    | 485.1 to 500.4  | 500.0  | Pass      |
| N - Buttock popliteal length          | mm    | 452.1 to 477.5  | 476.0  | Pass      |
| O - Chest depth                       | mm    | 213.4 to 228.6  | 225.0  | Pass      |
| P - Foot length                       | mm    | 251.5 to 266.7  | 255.0  | Pass      |
| V - Shoulder breadth                  | mm    | 421.6 to 436.9  | 429.0  | Pass      |
| W - Foot breadth                      | mm    | 91.4 to 106.7   | 103.2  | Pass      |
| Y - Chest circumference               | mm    | 970.3 to 1000.8 | 980.3  | Pass      |
| Z - Waist circumference               | mm    | 835.7 to 866.1  | 865.0  | Pass      |
| AA - Location for chest circumference | mm    | 429.3 to 434.3  | 430.0  | Pass      |
| BB - Location for waist circumference | mm    | 226.1 to 231.1  | 229.0  | Pass      |
| Overall Test Results                  |       |                 |        | Pass      |

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

October 9, 1999  
\_\_\_\_\_  
Test Date

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

\_\_\_\_\_  
Date

**APPENDIX F**  
**VEHICLE OWNER'S MANUAL**  
**OCCUPANT RESTRAINT INSTRUCTIONS**

## Front seats—

### —Seat adjustment precautions

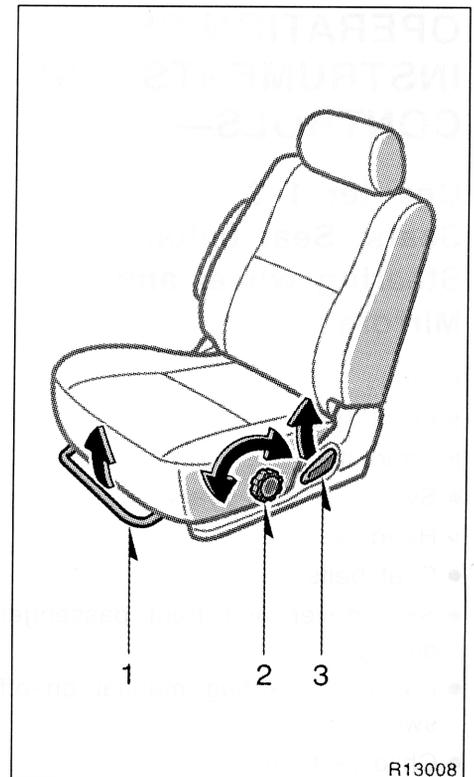
Adjust the driver's seat so that the foot pedals, steering wheel and instrument panel controls are within easy reach of the driver.

#### CAUTION

- Adjustments should not be made while the vehicle is moving, as the seat may unexpectedly move and cause the driver to lose control of the vehicle.
- When adjusting the seat, be careful not to hit the seat against a passenger or luggage.
- After adjusting the seat position, try sliding it forward and backward to make sure it is locked in position.
- After adjusting the seatback, exert body pressure to make sure it is locked in position.
- Do not put objects under the seats. The objects may interfere with the seat-lock mechanism or unexpectedly push up the seat position adjusting lever; the seat may suddenly move, causing the driver to lose control of the vehicle.

- While adjusting the seat, do not put your hands under the seat or near the moving parts. You may catch and injure your hands or fingers.

## —Adjusting front seats (manual seat)

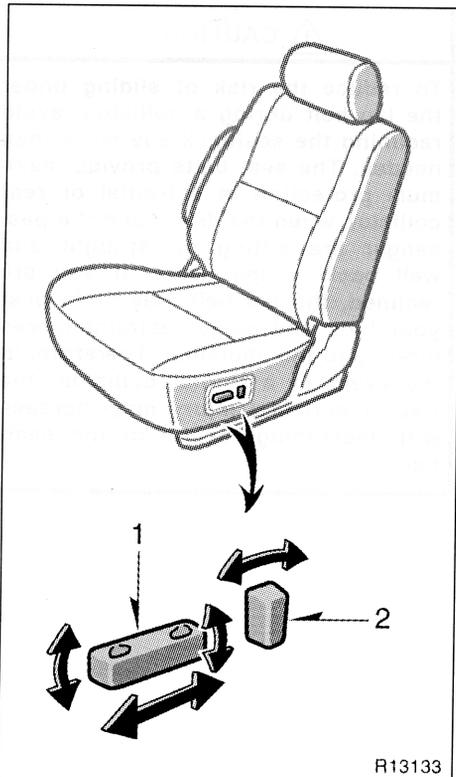


R13008

Separate and split bench seat

20

## —Adjusting front seats (power seats)



R13133

### 1. SEAT POSITION AND SEAT CUSHION HEIGHT ADJUSTING SWITCH

Move the control switch in the desired direction.

Releasing the switch will stop the seat at that position.

Do not place anything under the front seats. It might interfere with the seat movement.

### 2. SEATBACK ANGLE ADJUSTING SWITCH

Move the control switch in the desired direction.

Releasing the switch will stop the seatback at that position.

#### CAUTION

To reduce the risk of sliding under the lap belt during a collision, avoid reclining the seatback any more than needed. The seat belts provide maximum protection in a frontal or rear collision when the driver and the passenger are sitting up straight and well back in the seats. If you are reclined, the lap belt may slide past your hips and apply restraint forces directly to the abdomen. Therefore, in the event of a frontal collision, the risk of personal injury may increase with increasing recline of the seatback.

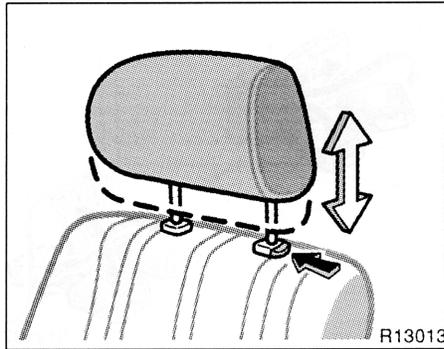
22

**CAUTION**

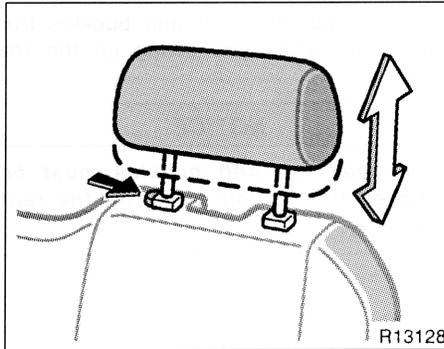
When returning the bottom cushion to its original position:

- Make sure the seat belts are not twisted or caught under the bottom cushion and are arranged in their proper position and are ready to use.
- Make sure the bottom cushion is securely locked by trying to pull up the edge of the bottom cushion. Failure to do so will prevent seat belt from operating properly.

### Head restraints



Front



Rear

**For your safety and comfort, adjust the head restraint before driving.**

To raise: Pull it up.  
To lower: Push it down while pressing the lock release button.

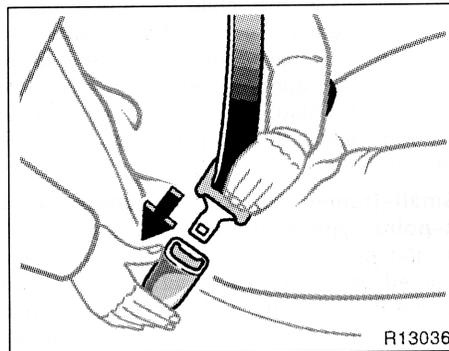
The head restraint is most effective when it is close to your head. Therefore, using a cushion on the seatback is not recommended.

**CAUTION**

- Adjust the center of the head restraint so that it is closest to the top of your ears.
- After adjusting the head restraint, make sure it is locked in position.
- Do not drive with the head restraints removed.

### —Front outside seat belts and rear outside seat belts

- Keep the belts clean and dry. If they need cleaning, use a mild soap solution or lukewarm water. Never use bleach, dye, or abrasive cleaners—they may severely weaken the belts. (See “Cleaning the interior” in Part 5.)
- Replace the belt assembly (including bolts) if it has been used in a severe impact. The entire assembly should be replaced even if damage is not obvious.



Adjust the seat as needed (front seats only) and sit up straight and well back in the seat. To fasten your belt, pull it out of the retractor and insert the tab into the buckle.

You will hear a click when the tab locks into the buckle.

The seat belt length automatically adjusts to your size and the seat position.

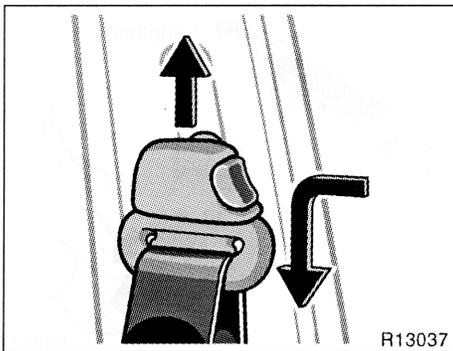
The retractor will lock the belt during a sudden stop or on impact. It also may lock if you lean forward too quickly. A slow, easy motion will allow the belt to extend, and you can move around freely.

If the seat belt cannot be pulled out of the retractor, firmly pull the belt and release it. You will then be able to smoothly pull the belt out of the retractor.

When a passenger's shoulder belt is completely extended and is then retracted even slightly, the belt is locked in that position and cannot be extended. This feature is used to hold the child restraint system securely. (For details, see “Child restraint” in this chapter.) To free the belt again, fully retract the belt and then pull the belt out once more.

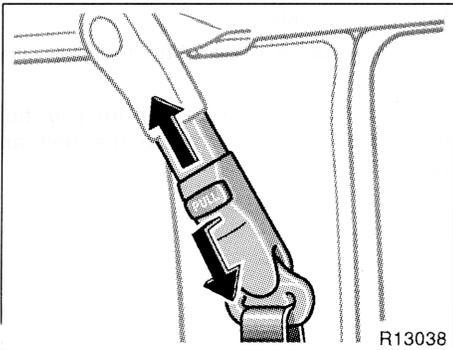
**CAUTION**

- After inserting the tab, make sure the tab and buckle are locked and that the belt is not twisted.
- Do not insert coins, clips, etc. in the buckle as this may prevent you from properly latching the tab and buckle.
- If the seat belt does not function normally, immediately contact your Toyota dealer. Do not use the seat until the seat belt is fixed. It cannot protect an adult occupant or your child from injury.



R13037

Standard cab models



R13038

Access cab models

**Seat belts with an adjustable shoulder anchor—**

**Adjust the shoulder anchor position to your size.**

Standard cab models—

To raise: Slide the anchor up.

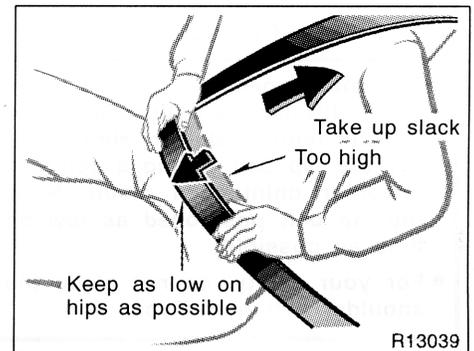
To lower: Push in the lock release button and slide the anchor down.

Access cab models—

To raise: Slide the anchor up.

To lower: Pull the lock release knob and slide the anchor down.

After adjustment, make sure the anchor is locked in position.



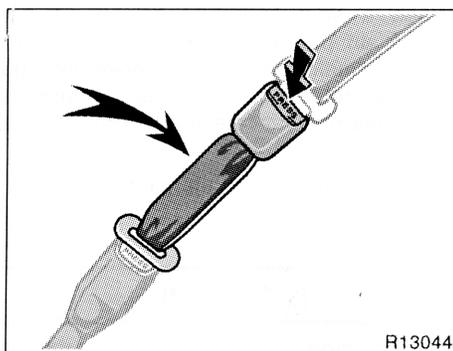
R13039

**Adjust the position of the lap and shoulder belts.**

Position the lap belt as low as possible on your hips—not on your waist, then adjust it to a snug fit by pulling the shoulder portion upward through the latch plate.

**CAUTION**

Always make sure the shoulder belt is positioned across the center of your shoulder. The belt should be kept away from your neck, but not falling off your shoulder. Failure to do so could reduce the amount of protection in an accident and cause severe injuries in a collision.



R13044

To connect the extender to the seat belt, insert the tab into the seat belt buckle so that the “PRESS” signs on the buckle-release buttons of the extender and the seat belt are both facing outward as shown.

You will hear a click when the tab locks into the buckle.

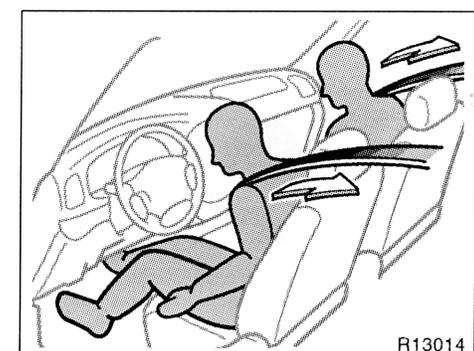
When releasing the seat belt, press on the buckle-release button on the extender, not on the seat belt. This helps prevent damage to the vehicle interior and extender itself.

When not in use, remove the extender and store in the vehicle for future use.

**CAUTION**

- After inserting the tab, make sure the tab and buckle are locked and that the seat belt extender is not twisted.
- Do not insert coins, clips, etc. in the buckle as this may prevent you from properly latching the tab and buckle.
- If the seat belt does not function normally, immediately contact your Toyota dealer. Do not use the seat until the seat belt is fixed. It cannot protect an adult occupant or your child from injury.

**—Front seat belt pretensioners**



R13014

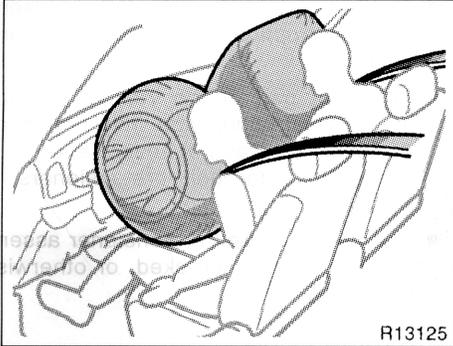
The driver and front passenger’s seat belt pretensioners are designed to be activated in response to a severe frontal impact.

When the airbag sensor detects the shock of a severe frontal impact, the front seat belt is quickly drawn back in by the retractor so that the belt snugly restrains the front seat occupants.

The seat belt pretensioners are activated even with no passenger in the front seat.

Collisions occurring at certain speeds and angles may cause the seat belt pretensioners and SRS airbags not to operate all together.

## SRS driver and front passenger airbags



The SRS (Supplemental Restraint System) airbags are designed to provide further protection for the driver and front passenger in addition to the primary safety protection provided by the seat belts.

- Vehicles with separate front seats—The SRS airbags are designed to protect the driver and front passenger.
- Vehicles with bench type front seats—The SRS airbags are designed to protect the driver and right-front passenger. They are not designed to protect occupant in the center position.

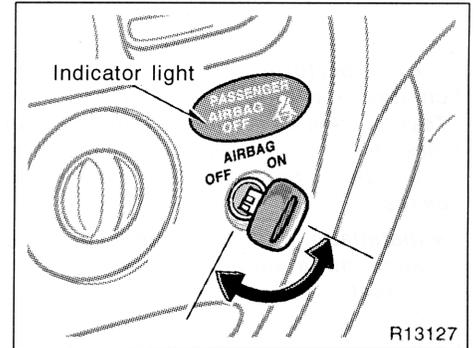
In response to a severe frontal impact, the SRS airbags work together with the seat belts to help reduce injury by inflating. The SRS airbags help to reduce injuries mainly to the driver's or front passenger's head or chest directly hitting the steering wheel or dashboard. The passenger airbag is activated even with no passenger in the front seat.

Be sure to wear your seat belt.

### CAUTION

A driver or front passenger too close to the steering wheel or dashboard during airbag deployment can be killed or seriously injured. Toyota strongly recommends that:

- The driver sit as far back as possible from the steering wheel while still maintaining control of the vehicle.
- The front passenger sit as far back as possible from the dashboard.
- All vehicle occupants be properly restrained using the available seat belts.



The passenger airbag system is equipped with a manual on-off switch and indicator light. Turning the passenger airbag manual on-off switch clockwise to the "ON" position makes the passenger airbag system operational. Turning the passenger airbag manual on-off switch counterclockwise to the "OFF" position disables the passenger airbag system. The indicator light on the passenger airbag manual on-off switch will come on when the passenger airbag system has been disabled.

See "Passenger airbag manual on-off switch" in this chapter for detail.