

**REPORT NUMBER: NCAP-MGA-2001-008**

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

**Ford Motor Company  
2001 Lincoln LS 4 Door  
NHTSA NUMBER: M10209**

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



**January 22, 2001**

**FINAL REPORT**

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

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### Technical Report Documentation Page

| 1. Report No.<br>NCAP-MGA-2001-008                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 2. Government Accession No.                       | 3. Recipient's Catalog No.                                                                                                                                                                                              |                   |                                |              |                  |                   |                  |                            |     |      |     |     |                                 |     |    |    |    |                  |         |       |      |      |                   |         |       |      |      |
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| 4. Title and Subtitle<br>Final Report of New Car Assessment Program Testing<br>of a 2001 Lincoln LS 4 door<br>NHTSA No.: M10209                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                   | 5. Report Date<br>February 7, 2001                                                                                                                                                                                      |                   |                                |              |                  |                   |                  |                            |     |      |     |     |                                 |     |    |    |    |                  |         |       |      |      |                   |         |       |      |      |
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| 9. Performing Organization Name and Address<br>MGA Research Corporation<br>5000 Warren Road<br>Burlington, WI 53105                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                   | 10. Work Unit No.                                                                                                                                                                                                       |                   |                                |              |                  |                   |                  |                            |     |      |     |     |                                 |     |    |    |    |                  |         |       |      |      |                   |         |       |      |      |
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| 15. Supplementary Notes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                   |                                                                                                                                                                                                                         |                   |                                |              |                  |                   |                  |                            |     |      |     |     |                                 |     |    |    |    |                  |         |       |      |      |                   |         |       |      |      |
| 16. Abstract<br>A 35 mph (56.3 km/h) frontal barrier impact was conducted on a 2001 Lincoln LS 4 door at MGA Research Corporation on January 22, 2001. This test was conducted to obtain data indicant of FMVSS 208, 212, 219 (partial), 301, and footwell intrusion performance. The impact velocity was 56.5 km/h. The ambient temperature at the barrier face at the time of impact was 22 degrees Celsius. The vehicle's maximum post test static crush is 373 mm located to the left of the vehicle centerline. The test vehicle is equipped with a 3-point continuous belt system and an airbag in both front outboard seating positions. With respect to FMVSS 208 "Occupant Crash Protection", the occupant injury criteria summary is as follows:<br><br><table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;"><u>Measurement Description</u></th> <th style="text-align: left;"><u>Units</u></th> <th style="text-align: left;"><u>Threshold</u></th> <th style="text-align: left;"><u>Driver ATD</u></th> <th style="text-align: left;"><u>Pass. ATD</u></th> </tr> </thead> <tbody> <tr> <td>Head Injury Criteria (HIC)</td> <td>N/A</td> <td>1000</td> <td>560</td> <td>416</td> </tr> <tr> <td>Max. Thorax Accel. (3msec Clip)</td> <td>G's</td> <td>60</td> <td>36</td> <td>41</td> </tr> <tr> <td>Left Femur force</td> <td>Newtons</td> <td>10009</td> <td>3190</td> <td>3071</td> </tr> <tr> <td>Right Femur force</td> <td>Newtons</td> <td>10009</td> <td>2650</td> <td>3856</td> </tr> </tbody> </table> |                                                   |                                                                                                                                                                                                                         |                   | <u>Measurement Description</u> | <u>Units</u> | <u>Threshold</u> | <u>Driver ATD</u> | <u>Pass. ATD</u> | Head Injury Criteria (HIC) | N/A | 1000 | 560 | 416 | Max. Thorax Accel. (3msec Clip) | G's | 60 | 36 | 41 | Left Femur force | Newtons | 10009 | 3190 | 3071 | Right Femur force | Newtons | 10009 | 2650 | 3856 |
| <u>Measurement Description</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <u>Units</u>                                      | <u>Threshold</u>                                                                                                                                                                                                        | <u>Driver ATD</u> | <u>Pass. ATD</u>               |              |                  |                   |                  |                            |     |      |     |     |                                 |     |    |    |    |                  |         |       |      |      |                   |         |       |      |      |
| Head Injury Criteria (HIC)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | N/A                                               | 1000                                                                                                                                                                                                                    | 560               | 416                            |              |                  |                   |                  |                            |     |      |     |     |                                 |     |    |    |    |                  |         |       |      |      |                   |         |       |      |      |
| Max. Thorax Accel. (3msec Clip)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | G's                                               | 60                                                                                                                                                                                                                      | 36                | 41                             |              |                  |                   |                  |                            |     |      |     |     |                                 |     |    |    |    |                  |         |       |      |      |                   |         |       |      |      |
| Left Femur force                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Newtons                                           | 10009                                                                                                                                                                                                                   | 3190              | 3071                           |              |                  |                   |                  |                            |     |      |     |     |                                 |     |    |    |    |                  |         |       |      |      |                   |         |       |      |      |
| Right Femur force                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Newtons                                           | 10009                                                                                                                                                                                                                   | 2650              | 3856                           |              |                  |                   |                  |                            |     |      |     |     |                                 |     |    |    |    |                  |         |       |      |      |                   |         |       |      |      |
| 17. Key Words<br>56.3 km/h NCAP Frontal Barrier Impact Test<br>New Car Assessment Program (NCAP)<br>2001 Lincoln LS 4 door<br>NHTSA No. M10209                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                   | 18. Distribution Statement<br>Copies of this report are available from:<br>National Highway Traffic Safety Adm.<br>Technical Ref. Division,<br>Room 5108 (NAD-52)<br>400 Seventh Street, S.W.<br>Washington, D.C. 20590 |                   |                                |              |                  |                   |                  |                            |     |      |     |     |                                 |     |    |    |    |                  |         |       |      |      |                   |         |       |      |      |
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## **SECTION 1**

### **PURPOSE AND TEST PROCEDURE**

#### **1.1 PURPOSE**

This 35 mph (56.3 km/h) frontal barrier impact test is part of the FY' 01 New Car Assessment Program (NCAP) frontal barrier crashworthiness evaluation program sponsored by the National Highway Traffic Safety Administration (NHTSA) under Contract Number DTNH22-01-D-12005. 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 Test Procedure, dated December 1999 and the corresponding MGA Research Corporation Test Procedure NHTSA3, dated January 5, 2001. 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, and reporting of test results are described in the test procedures and are not repeated in this report.

The test was conducted at MGA Research Corporation on January 22, 2001 at a speed of 56.5 km/h. The test vehicle was instrumented with nine (9) accelerometers to measure longitudinal axis accelerations. The driver's and passenger's restraint systems were instrumented with two (2) seat belt load cells to measure lap 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 sixteen (16) 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 four anthropomorphic test devices (ATDs). Two (2) part 572E 50th percentile adult male ATDs and two (2) part 572P 3 year old ATDs. Both adult 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 adult ATDs were positioned in the front outboard seating positions according to the dummy placement procedures specified in the Laboratory Indicant Test Procedure. Both child ATDs were instrumented with head, chest, and pelvic tri-axial accelerometers, and upper and lower neck load cells. The child ATDs were positioned according to the child seat manufacturer's instructions. Ninety-five (95) channels of data were recorded with an EME on-board data acquisition system. The data was digitally sampled at 10,000 samples per second and processed per section IP11 of the Laboratory Test Procedure.

The driver (Serial No. 192) and the right-front passenger (Serial No. 143) were calibrated 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 IMPACT TEST**

A rigid load cell barrier was impacted by a 2001 Lincoln LS 4 door at a velocity of 56.5 km/h. The test vehicle weight was 1914.2 kilograms with two (2) part 572E 50th percentile adult male ATDs and two (2) part 572P 3 year old ATDs. Six (6) load cell barrier data channels were obtained in conducting the NCAP Test. The test vehicle is equipped with a longitudinally mounted 3.0-liter, 6-cylinder engine and an automatic transmission.

The driver Head Injury Criteria (HIC) was 560. The maximum resultant chest deceleration over three (3) milliseconds was 36 g's. The left and right femur loads were 3190 and 2650 Newtons, respectively. Chest deflection for the driver ATD peaked at 26 mm. The driver ATD head contacted the airbag and headrest, its chest and abdomen contacted the airbag, and the left and right knees contacted the knee bolster.

The right front passenger's HIC was 416. The maximum resultant chest deceleration over three (3) milliseconds was 41 g's. The left and right femur loads were 3071 and 3856 Newtons, respectively. Chest deflection for the passenger ATD peaked at 33 mm. The passenger ATD head contacted the airbag, the chest and abdomen contacted the airbag, and the left and right knees contacted the glovebox.

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 373 mm located to the left of the vehicle centerline. Both the driver and passenger side doors opened without the aid of tools.

### **1.4 GENERAL COMMENTS**

The 2001 Lincoln LS 4 door 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, vehicle and barrier response data traces. Appendix C contains the dummy calibration data. Appendix D contains the instrumentation calibration data. Appendix E contains the owner's manual instructions for the occupant seating and restraint systems. Appendix F contains the child data and photos.

## SECTION 2

### OCCUPANT AND VEHICLE INFORMATION / DATA SHEETS

Test Vehicle: 2001/Lincoln/LS/4 door

NHTSA No.: M10209

Test Program: NCAP

Test Date: January 22, 2001

#### 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 Pressure       | lbf/in <sup>2</sup> | kPa         | 7.0               |
| Volume             | Liquid              | gal                 | liter       | 3.785             |
| Temperature        | General Use         | °F                  | °C          | $=(t_f - 32)/1.8$ |
| 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: 2001/Lincoln/LS/4 doorNHTSA No.: M10209Test Program: NCAPTest Date: January 22, 2001**PRIMARY IMPACT DATA**

| Measured Parameter   | Units   | Value  |
|----------------------|---------|--------|
| Velocity at Impact   | km/h    | 56.5   |
| Test Weight          | kg      | 1914.2 |
| Impact Angle         | degrees | 90     |
| Average Rebound      | mm      | 594    |
| Maximum Static Crush | mm      | 373    |

**DOOR OPENING AND SEAT TRACK INFORMATION**

| Description           | Driver | Passenger |
|-----------------------|--------|-----------|
| Front Door Opening    | yes    | yes       |
| Rear Door Opening     | yes    | yes       |
| Seat Track Shift (mm) | none   | none      |
| Seat Back Failure     | none   | none      |

**TEST DUMMY INFORMATION**

| Description             | Driver                        | Passenger        |
|-------------------------|-------------------------------|------------------|
| Dummy Type / Serial No. | HIII/192                      | HIII/143         |
| Head Contact            | airbag, headrest              | airbag, headrest |
| Chest Contact           | airbag                        | airbag           |
| Abdomen Contact         | airbag                        | airbag           |
| Left Knee Contact       | knee bolster                  | glovebox         |
| Right Knee Contact      | knee bolster, steering column | glovebox         |

**16mm MOVIE COVERAGE**

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

|                                  |     |
|----------------------------------|-----|
| Driver ATD Sensors               | 42  |
| Passenger ATD Sensors            | 42  |
| Belt Assessment Sensors          | 2   |
| Vehicle Structure Accelerometers | 9   |
| Rigid Barrier Load Cells         | 6   |
| Total                            | 101 |

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

Test Vehicle: 2001/Lincoln/LS/4 door

NHTSA No.: M10209

Test Program: NCAP

Test Date: January 22, 2001

**TEST VEHICLE INFORMATION**

|                         |                   |
|-------------------------|-------------------|
| Manufacturer            | Lincoln           |
| Model                   | LS                |
| Body Style              | 4 door            |
| NHTSA No.               | M10209            |
| VIN                     | 1LNHM86S41Y651239 |
| Color                   | Gold              |
| Delivery Date           | 1/9/01            |
| Odometer Reading (mile) | 43                |
| Dealer                  | Country Ford      |
| Transmission            | 5 speed automatic |
| Final Drive             | Rear wheel        |
| Number of Cylinders     | 6                 |
| Engine Displacement (L) | 3.0               |
| Engine Placement        | Longitudinal      |

**TEST VEHICLE OPTIONS**

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

**DATA FROM CERTIFICATION LABEL**

|                     |                    |                 |      |
|---------------------|--------------------|-----------------|------|
| Manufactured By     | Ford Motor Company | GVWR (kg)       | 2194 |
| Date of Manufacture | 11/00              | GAWR Front (kg) | 1201 |
|                     |                    | GAWR Rear (kg)  | 1194 |

**DATA FROM TIRE PLACARD**

| Measured Parameter          | Front       | Rear        |
|-----------------------------|-------------|-------------|
| Maximum Tire Pressure (kPa) | 308         | 308         |
| Cold Pressure (kPa)         | 210         | 210         |
| Recommended Tire Size       | P215/60R16  | P215/60R16  |
| Tire Size on Vehicle        | P215/60R16  | P215/60R16  |
| Tire Manufacturer           | Continental | Continental |

| Measured Parameter       | Front  | Rear  | Third | Total |
|--------------------------|--------|-------|-------|-------|
| Type of Seats            | bucket | bench |       |       |
| Number of Occupants      | 2      | 3     |       | 5     |
| Capacity Wt. (VCW) (kg)  |        |       |       | 408.2 |
| Cargo Weight (RCLW) (kg) |        |       |       | 68.0  |

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

**GENERAL TEST AND VEHICLE PARAMETER DATA**

Test Vehicle: 2001/Lincoln/LS/4 door

NHTSA No.: M10209

Test Program: NCAP

Test Date: January 22, 2001

**TEST VEHICLE WEIGHTS**

|        | Units | As Delivered (UVW) |           |        | As Tested (ATW) |           |        |
|--------|-------|--------------------|-----------|--------|-----------------|-----------|--------|
|        |       | Front Axle         | Rear Axle | Total  | Front Axle      | Rear Axle | Total  |
| Left   | kg    | 435.0              | 412.3     |        | 484.9           | 472.1     |        |
| Right  | kg    | 444.1              | 402.8     |        | 500.4           | 456.8     |        |
| Ratio  | %     | 51.9               | 48.1      |        | 51.5            | 48.5      |        |
| Totals | kg    | 879.1              | 815.1     | 1694.2 | 985.3           | 928.9     | 1914.2 |

**TARGET TEST WEIGHT CALCULATION**

| Measured Parameter                      | Units | Value  |
|-----------------------------------------|-------|--------|
| Total Delivered Weight (UVW)            | kg    | 1694.2 |
| Weight of 2 P572E ATDs                  | kg    | 156.0  |
| Rated Cargo/Luggage Weight (RCLW)       | kg    | 68.0   |
| Calculated Vehicle Target Weight (TVTW) | kg    | 1918.2 |

**TEST VEHICLE ATTITUDES AND CG**

|              | Units | LF  | RF  | LR  | RR  | CG (aft of front axle) |
|--------------|-------|-----|-----|-----|-----|------------------------|
| As Delivered | mm    | 703 | 706 | 704 | 708 | 1400                   |
| As Tested    | mm    | 689 | 691 | 687 | 693 | 1412                   |
| Post Test    | mm    | 714 | 675 | 699 | 678 |                        |

Vehicle Wheelbase (mm): 2910

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

Vehicle Components Removed: Spare tire, jack, rear bumper and cover, rear door trim, rear door glass, trunk lid, exhaust system, all trunk interior

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



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

**GENERAL TEST AND VEHICLE PARAMETER DATA**

Test Vehicle: 2001/Lincoln/LS/4 door

NHTSA No.: M10209

Test Program: NCAP

Test Date: January 22, 2001

**FUEL SYSTEM DATA**

Fuel System Capacity From Owner's Manual (L): 68.1

Usable Capacity Figure Furnished by COTR (L): 68.1

Actual Test Volume (L): 41.3

Test Fluid Type: Stoddard Solvent; Specific Gravity: 0.77

Is Vehicle Fuel Pump Electric or Mechanical?: electric

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

Fuel System Particulars: The fuel pump operates for 2 seconds to pressurize the fuel system after  
activation of the ignition.

**DATA SHEET NO. 3****POST IMPACT DATA**Test Vehicle: 2001/Lincoln/LS/4 doorNHTSA No.: M10209Test Program: NCAPTest Date: January 22, 2001

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

**VEHICLE STATIC CRUSH**

| Measured Parameter | Units | Pre-Test | Post-Test | Difference |
|--------------------|-------|----------|-----------|------------|
| Left Side          | mm    | 4513     | 4238      | 275        |
| Center             | mm    | 4720     | 4316      | 404        |
| Right Side         | mm    | 4511     | 4290      | 221        |

**VEHICLE REBOUND FROM BARRIER**

| Measured Parameter | Units | Value |
|--------------------|-------|-------|
| Left Side          | mm    | 625   |
| Center             | mm    | 567   |
| Right Side         | mm    | 589   |
| Average            | mm    | 594   |

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

Test Vehicle: 2001/Lincoln/LS/4 door

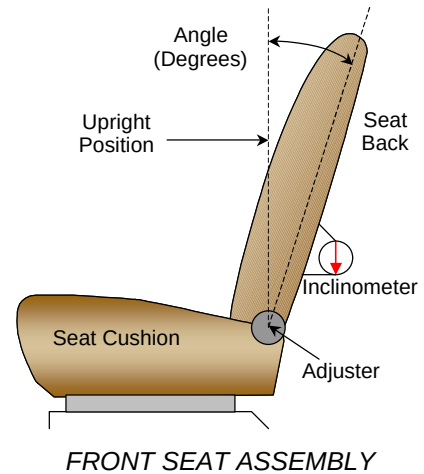
NHTSA No.: M10209

Test Program: NCAP

Test Date: January 22, 2001

**NORMAL DESIGN RIDING POSITION**

The driver and passenger seat back is positioned to the manufacturer's designated angle. The procedure is as follows: Seat back angle is measured relative to the rocker sill. Remove back panel and position inclinometer as shown in the drawing 13 inches above the back pivot point on the rear outboard seat frame. Avoid taking the measurement on the reinforced plate. The desired seat back angle is 22.8 degrees.



Driver seat back angle: 22.8 degrees

Passenger seat back angle: 22.7 degrees

**SEAT FORE/AFT POSITIONS**

Both driver and passenger seats have power operated seats. The total travel for each seat is 240 mm. The fore/aft position is set at the middle position for both driver and passenger.

Driver seat fore/aft total travel: 240 mm

Passenger seat fore/aft total travel: 240 mm

Driver seat fore/aft position: 120 mm

Passenger seat fore/aft position: 120 mm

**SEAT BELT UPPER ANCHORAGE**

The test vehicle is equipped with adjustable anchorages for both the driver and passenger seat positions. There are 3 positions or detents. The anchorages are placed in the mid position.

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

### TEST VEHICLE INFORMATION

Test Vehicle: 2001/Lincoln/LS/4 door

NHTSA No.: M10209

Test Program: NCAP

Test Date: January 22, 2001

### FUEL TANK CAPACITY DATA

The "Usable Capacity" of the standard equipment fuel tank is: 68.1 liters

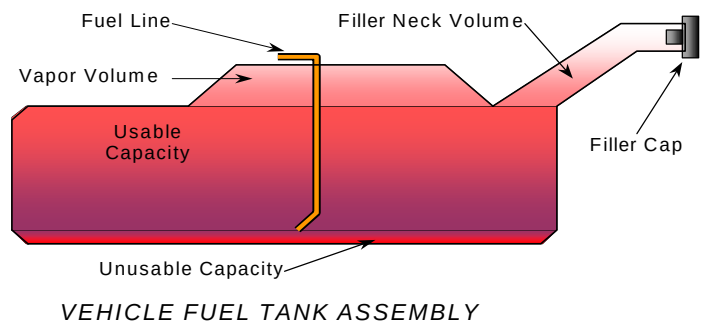
The "Usable Capacity" of any optional equipment fuel tank is: n/a liters

The "Usable Capacity" used for certification to FMVSS 301 requirements: 62.7 - 64.0 liters

Actual amount of Stoddard solvent added to vehicle for certification test: 41.3 liters

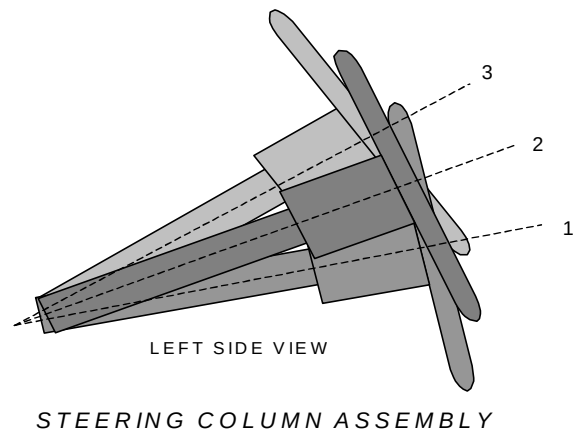
The test vehicle is equipped with an electric fuel pump. The fuel pump operates for 2 seconds to pressurize the fuel system following actuation of the ignition. If no attempt has been made to start the engine within 2 seconds following ignition actuation, the fuel pump will shut off. The fuel pump operates continuously while the engine is running. If the engine stalls, the fuel pump is inactivated.

The fuel filler door is located on the right rear fender.



### 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. A metal plate is placed across the rim of the steering wheel, and inclinometer is placed onto the plate and the angle is measured.



Lowermost, position 1: 0°

Geometric center, position 2: 6.7°

Uppermost, position 3: 13.4°

## DATA SHEET NO. 5

### DUMMY POSITIONING IN VEHICLE

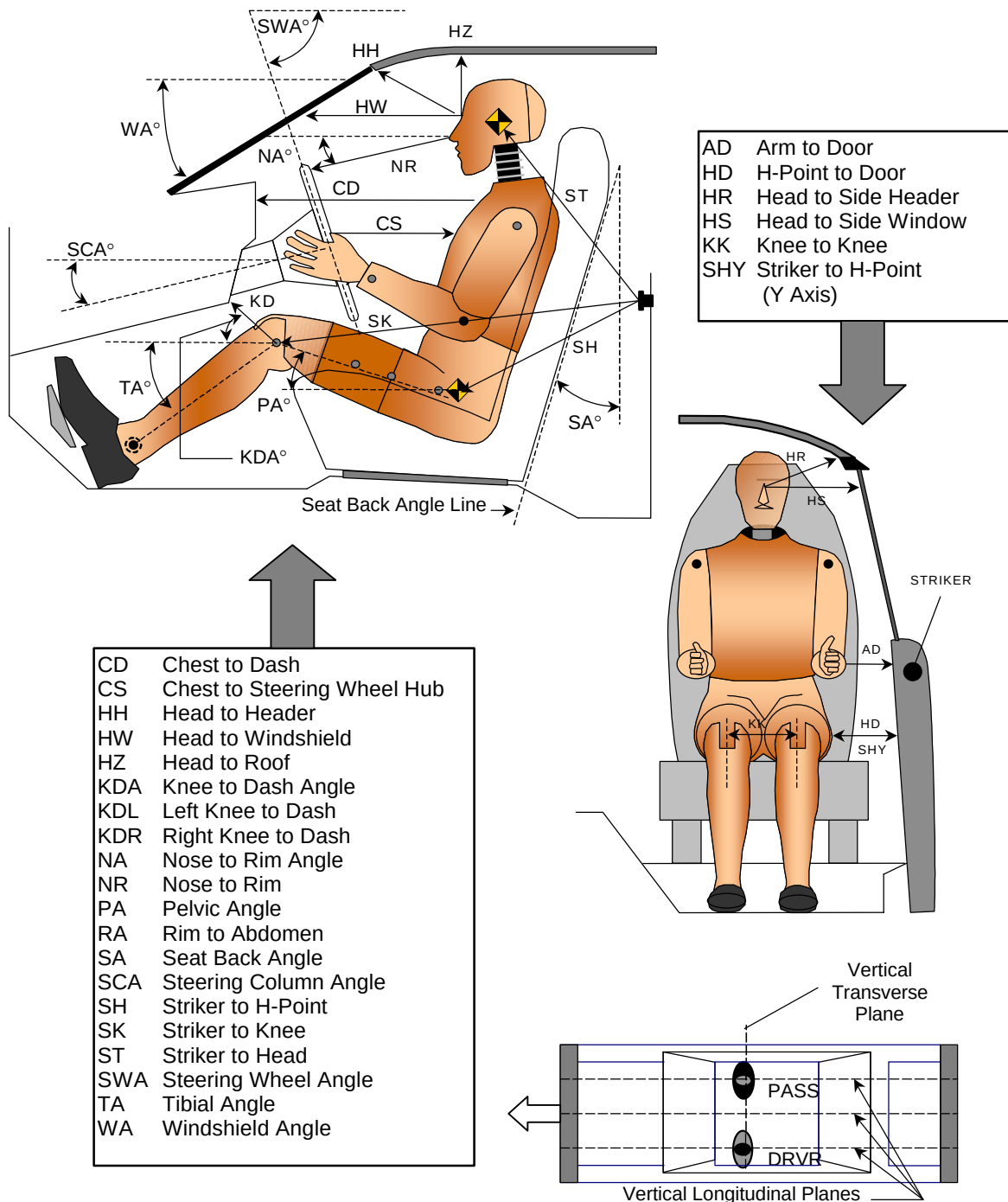
Test Vehicle: 2001/Lincoln/LS/4 door

NHTSA No.: M10209

Test Program: NCAP

Test Date: January 22, 2001

### DUMMY MEASUREMENTS FOR FRONT SEAT OCCUPANTS



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

**DUMMY POSITIONING IN VEHICLE**

Test Vehicle: 2001/Lincoln/LS/4 door

NHTSA No.: M10209

Test Program: NCAP

Test Date: January 22, 2001

**TEST DUMMY POSITION MEASUREMENTS**

| Code | Measurement Description | Driver      |           | Passenger   |           |
|------|-------------------------|-------------|-----------|-------------|-----------|
|      |                         | Length (mm) | Angle (°) | Length (mm) | Angle (°) |
| WA   | Windshield Angle        |             | 26.6      |             |           |
| SWA  | Steering Wheel Angle    |             | 61.6      |             |           |
| SCA  | Steering Column Angle   |             | 30.5      |             |           |
| SA   | Seat Back Angle         |             | 22.8      |             | 22.7      |
| HZ   | Head to Roof (Z)        | 173         | 90.0      | 185         | 90.0      |
| HH   | Head to Header          | 300         | 26.1      | 301         | 33.7      |
| HW   | Head to Windshield      | 621         | 0.0       | 640         | 0.0       |
| HR   | Head to Side Header (Y) | 250         |           | 239         |           |
| NR   | Nose to Rim             | 375         | 11.8      |             |           |
| CD   | Chest to Dash           | 508         |           | 482         |           |
| CS   | Chest to Steering Hub   | 286         | 8.8       |             |           |
| RA   | Rim to Abdomen          | 177         | 0.0       |             |           |
| KDL  | Left Knee to Dash       | 149         | 0.0       | 108         |           |
| KDR  | Right Knee to Dash      | 139         |           | 157         | 0.0       |
| PA   | Pelvic Angle            |             | 23.0      |             | 23.8      |
| TA   | Tibia Angle             |             | 30.7      |             | 36.5      |
| KK   | Knee to Knee (Y)        | 273         |           | 269         |           |
| SK   | Striker to Knee         | 570         | 93.8      | 572         | 94.6      |
| ST   | Striker to Head         | 520         | 11.7      | 507         | 9.2       |
| SH   | Striker to H-Point      | 242         | 123.0     | 244         | 126.7     |
| SHY  | Striker to H-Point (Y)  | 240         |           | 253         |           |
| HS   | Head to Side Window     | 338         |           | 330         |           |
| HD   | H-Point to Door (Y)     | 160         |           | 134         |           |
| AD   | Arm to Door (Y)         | 125         |           | 137         |           |
| AA   | Ankle to Ankle          | 256         |           | 196         |           |

## DATA SHEET NO. 6

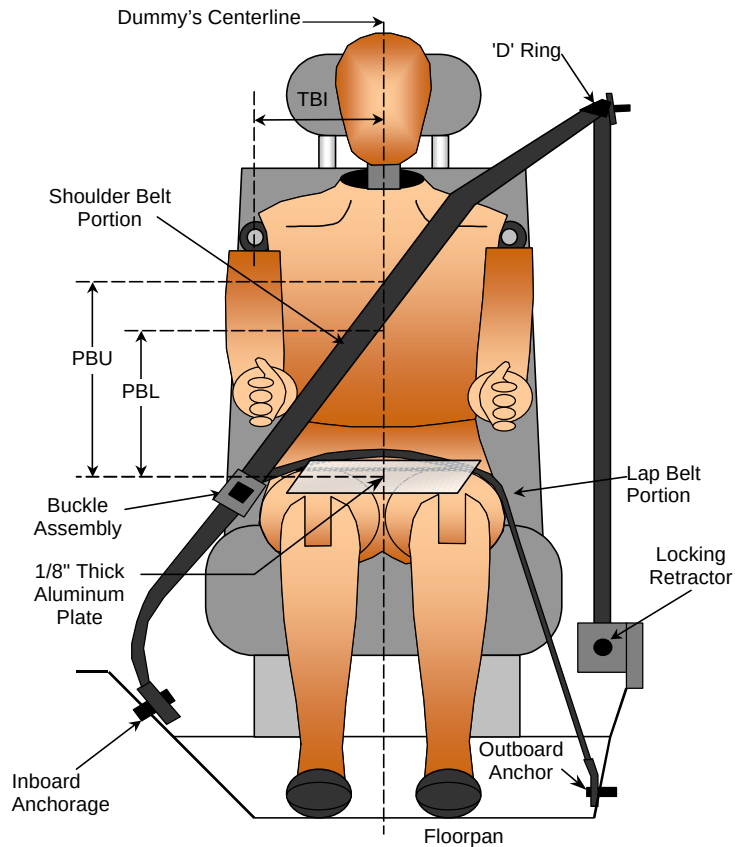
### SEAT BELT POSITIONING DATA

Test Vehicle: 2001/Lincoln/LS/4 door

NHTSA No.: M10209

Test Program: NCAP

Test Date: January 22, 2001



### SEAT BELT POSITIONING MEASUREMENTS

| Measurement Description                           | Units | Driver | Passenger |
|---------------------------------------------------|-------|--------|-----------|
| TBI - Dummy centerline to shoulder bolt           | mm    | 175    | 176       |
| PBU - Top surface of reference to belt upper edge | mm    | 313    | 262       |
| PBL - To surface of reference to belt lower edge  | mm    | 234    | 183       |

## DATA SHEET NO. 7

### VEHICLE ACCELEROMETER LOCATION AND DATA SUMMARY

Test Vehicle: 2001/Lincoln/LS/4 door

NHTSA No.: M10209

Test Program: NCAP

Test Date: January 22, 2001

### 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 (Primary)    | 1832              | -630 | 300  | G's         | 36.6 | 66   | 30.4  | 40   |
| 2   | Right Rear X-Member (Primary)   | 1832              | 630  | 300  | G's         | 25.6 | 56   | 74.1  | 67   |
| 3   | Engine Top                      | 3860              | -60  | 788  | G's         | **   | **   | **    | **   |
| 4   | Engine Bottom                   | 4065              | 12   | 188  | G's         | 72.1 | 34   | 194.8 | 45   |
| 5   | Left Brake Caliper ***          | 3680              | -700 | 280  | G's         | 53.5 | 54   | 87.6  | 48   |
| 6   | Right Brake Caliper             | 3680              | 700  | 280  | G's         | 32.4 | 58   | 73.8  | 48   |
| 7   | Instrument Panel ****           | 2904              | -8   | 1045 | G's         | 20.9 | 27   | 62.5  | 19   |
| 8   | Left Rear X-Member (Redundant)  | 1832              | -630 | 300  | G's         | 16.2 | 67   | 44.6  | 78   |
| 9   | Right Rear X-Member (Redundant) | 1832              | 630  | 300  | G's         | 14.0 | 56   | 80.1  | 66   |

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

Y - Vehicle Centerline (+ to right)

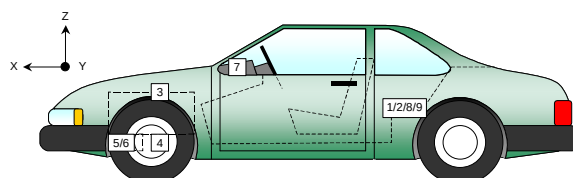
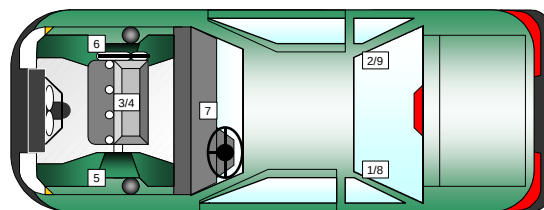
Z - Ground Plane (+ up)

Note both rear seat crossmember accelerometers contain a data anomaly

\*\* No valid data collected

\*\*\* No valid data after 70 msec.

\*\*\*\* No valid data after 45 msec.





# DATA SHEET NO. 8

## HYBRID III ATD INJURY CRITERIA AND SENSOR DATA

Test Vehicle: 2001/Lincoln/LS/4 door

NHTSA No.: M10209

Test Program: NCAP

Test Date: January 22, 2001

### HEAD PRIMARY PEAK ACCELERATIONS

| Location          | Axis | Units | Driver |      |      |      | Passenger |      |      |      |
|-------------------|------|-------|--------|------|------|------|-----------|------|------|------|
|                   |      |       | Max    | Time | Min  | Time | Max       | Time | Min  | Time |
| Head CG           | X    | G's   | 18.6   | 198  | 66.4 | 74   | 0.8       | 187  | 51.3 | 72   |
| Head CG           | Y    | G's   | 4.6    | 65   | 6.1  | 70   | 13.4      | 53   | 8.5  | 64   |
| Head CG           | Z    | G's   | 24.9   | 52   | 9.4  | 81   | 30.6      | 59   | 27.2 | 94   |
| Head CG Resultant | N/A  | G's   | 66.6   | 74   |      |      | 52.7      | 69   |      |      |

### CHEST PRIMARY PEAK ACCELERATIONS

| Location           | Axis | Units | Driver |      |      |      | Passenger |      |      |      |
|--------------------|------|-------|--------|------|------|------|-----------|------|------|------|
|                    |      |       | Max    | Time | Min  | Time | Max       | Time | Min  | Time |
| Chest CG           | X    | G's   | 1.8    | 116  | 36.5 | 76   | 2.1       | 135  | 44.8 | 64   |
| Chest CG           | Y    | G's   | 4.0    | 88   | 3.3  | 42   | 7.3       | 71   | 7.3  | 62   |
| Chest CG           | Z    | G's   | 15.2   | 52   | 11.0 | 100  | 13.7      | 71   | 11.5 | 98   |
| Chest CG Resultant | N/A  | G's   | 37.6   | 75   |      |      | 45.4      | 64   |      |      |

### FEMUR PEAK FORCES

| Location    | Axis | Units   | Driver |      |      |      | Passenger |      |      |      |
|-------------|------|---------|--------|------|------|------|-----------|------|------|------|
|             |      |         | Max    | Time | Min  | Time | Max       | Time | Min  | Time |
| Left Femur  | Z    | Newtons | 572    | 55   | 3190 | 70   | 328       | 30   | 3071 | 52   |
| Right Femur | Z    | Newtons | 258    | 30   | 2650 | 52   | 370       | 30   | 3856 | 53   |

### SEAT BELT SENSOR PEAK VALUES

| Location            | Axis | Units   | Driver |      |     |      | Passenger |      |     |      |
|---------------------|------|---------|--------|------|-----|------|-----------|------|-----|------|
|                     |      |         | Max    | Time | Min | Time | Max       | Time | Min | Time |
| Lap Belt Force      | N/A  | Newtons | 7109   | 52   |     |      | 7367      | 50   |     |      |
| Shoulder Belt Force | N/A  | Newtons | **     | **   |     |      | **        | **   |     |      |

\*\* Not used at vehicle manufacturer's request

### 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 | 560    | 53.7    | 63.2           | 89.7           | 416       | 42.2    | 57.9           | 93.9           |

### CHEST CLIP (3MSEC)

| Location         | Driver |                |                | Passenger |                |                |
|------------------|--------|----------------|----------------|-----------|----------------|----------------|
|                  | CLIP   | T <sup>1</sup> | T <sup>2</sup> | CLIP      | T <sup>1</sup> | T <sup>2</sup> |
| Chest CG Primary | 36.0   | 73.7           | 76.8           | 41.1      | 62.4           | 65.5           |

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

**HYBRID III ATD INJURY CRITERIA AND SENSOR DATA**

Test Vehicle: 2001/Lincoln/LS/4 door

NHTSA No.: M10209

Test Program: NCAP

Test Date: January 22, 2001

**PELVIC PEAK ACCELERATIONS**

| Location | Axis | Units | Driver |      |      |      | Passenger |      |      |      |
|----------|------|-------|--------|------|------|------|-----------|------|------|------|
|          |      |       | Max    | Time | Min  | Time | Max       | Time | Min  | Time |
| Pelvis   | X    | G's   | 4.4    | 93   | 60.0 | 53   | 4.6       | 89   | 68.6 | 51   |
| Pelvis   | Y    | G's   | 9.4    | 58   | 17.1 | 53   | 7.2       | 53   | 6.1  | 78   |
| Pelvis   | Z    | G's   | 1.9    | 194  | 29.3 | 70   | 1.6       | 25   | 29.7 | 53   |

**UPPER NECK PEAK FORCES AND MOMENTS**

| Location    | Axis | Units   | Driver |      |      |      | Passenger |      |      |      |
|-------------|------|---------|--------|------|------|------|-----------|------|------|------|
|             |      |         | Max    | Time | Min  | Time | Max       | Time | Min  | Time |
| Neck Force  | X    | Newtons | 753    | 75   | 362  | 36   | 170       | 50   | 449  | 136  |
| Neck Force  | Y    | Newtons | 90     | 110  | 67   | 63   | 238       | 90   | 140  | 135  |
| Neck Force  | Z    | Newtons | 1869   | 67   | 346  | 104  | 1833      | 58   | 504  | 98   |
| Neck Moment | X    | N•m     | 8.4    | 116  | 10.3 | 55   | 14.3      | 102  | 16.4 | 74   |
| Neck Moment | Y    | N•m     | 34.2   | 128  | 11.4 | 30   | 40.8      | 145  | 41.6 | 69   |
| Neck Moment | Z    | N•m     | 7.2    | 140  | 12.9 | 94   | 13.7      | 101  | 7.7  | 148  |

**FOOT PEAK ACCELERATIONS**

| Location        | Axis | Units | Driver |      |       |      | Passenger |      |       |      |
|-----------------|------|-------|--------|------|-------|------|-----------|------|-------|------|
|                 |      |       | Max    | Time | Min   | Time | Max       | Time | Min   | Time |
| Left Foot Aft   | X    | G's   | 19.0   | 84   | 92.6  | 45   | 18.9      | 60   | 129.4 | 47   |
| Left Foot Aft   | Z    | G's   | 2.5    | 200  | 40.2  | 45   | 10.7      | 62   | 52.3  | 53   |
| Left Foot Fore  | Z    | G's   | 14.6   | 33   | 84.6  | 43   | 59.5      | 48   | 146.7 | 43   |
| Right Foot Aft  | X    | G's   | 15.8   | 61   | 41.1  | 53   | 16.1      | 82   | 105.3 | 41   |
| Right Foot Aft  | Z    | G's   | 17.3   | 57   | 71.2  | 49   | 4.0       | 25   | 53.9  | 49   |
| Right Foot Fore | Z    | G's   | 30.5   | 25   | 102.9 | 46   | 29.6      | 60   | 73.6  | 39   |

**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     | 86.2   | 53   | 37.2  | 46   | 49.8      | 66   | 16.8  | 51   |
| Left Lower Moment  | Y    | N•m     | 48.6   | 81   | 26.2  | 42   | 35.1      | 82   | 45.7  | 41   |
| Left Lower Force   | Z    | Newtons | 3635   | 46   | 165   | 112  | 3390      | 49   | 105   | 186  |
| Left Upper Moment  | X    | N•m     | 8.6    | 77   | 71.7  | 46   | 30.7      | 41   | 25.3  | 51   |
| Left Upper Moment  | Y    | N•m     | 31.4   | 101  | 106.4 | 46   | 19.7      | 115  | 98.8  | 64   |
| Left Upper Force   | Z    | Newtons | 2997   | 46   | 141   | 99   | 3132      | 50   | 120   | 175  |
| Right Lower Moment | X    | N•m     | 44.5   | 51   | 48.4  | 56   | 31.8      | 46   | 48.2  | 82   |
| Right Lower Moment | Y    | N•m     | 54.1   | 59   | 27.2  | 36   | 65.0      | 82   | 59.5  | 45   |
| Right Lower Force  | Z    | Newtons | 3548   | 50   | 126   | 117  | 2976      | 70   | 90    | 125  |
| Right Upper Moment | X    | N•m     | 77.9   | 54   | 15.9  | 165  | 59.0      | 47   | 43.2  | 70   |
| Right Upper Moment | Y    | N•m     | 29.3   | 83   | 59.5  | 33   | 26.0      | 88   | 137.6 | 56   |
| Right Upper Force  | Z    | Newtons | 2812   | 50   | 147   | 114  | 2514      | 46   | 106   | 125  |

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

## HYBRID III ATD INJURY CRITERIA AND SENSOR DATA

Test Vehicle: 2001/Lincoln/LS/4 door

NHTSA No.: M10209

Test Program: NCAP

Test Date: January 22, 2001

### CHEST PEAK DISPLACEMENTS

| Location | Axis | Units | Driver |      |      |      | Passenger |      |      |      |
|----------|------|-------|--------|------|------|------|-----------|------|------|------|
|          |      |       | Max    | Time | Min  | Time | Max       | Time | Min  | Time |
| Chest CG | X    | mm    |        |      | 25.6 | 69   |           |      | 33.1 | 77   |

### HEAD REDUNDANT PEAK ACCELERATIONS

| Location          | Axis | Units | Driver |      |      |      | Passenger |      |      |      |
|-------------------|------|-------|--------|------|------|------|-----------|------|------|------|
|                   |      |       | Max    | Time | Min  | Time | Max       | Time | Min  | Time |
| Head CG           | X    | G's   | 19.6   | 197  | 67.6 | 74   | 1.1       | 187  | 53.4 | 72   |
| Head CG           | Y    | G's   | 4.5    | 65   | 3.7  | 50   | 7.9       | 52   | 6.8  | 63   |
| Head CG           | Z    | G's   | 17.8   | 53   | 9.6  | 81   | 28.7      | 59   | 26.8 | 94   |
| Head CG Resultant | N/A  | G's   | 67.8   | 74   |      |      | 54.1      | 72   |      |      |

### CHEST REDUNDANT PEAK ACCELERATIONS

| Location           | Axis | Units | Driver |      |      |      | Passenger |      |      |      |
|--------------------|------|-------|--------|------|------|------|-----------|------|------|------|
|                    |      |       | Max    | Time | Min  | Time | Max       | Time | Min  | Time |
| Chest CG           | X    | G's   | 1.9    | 117  | 36.8 | 76   | 2.0       | 135  | 45.3 | 64   |
| Chest CG           | Y    | G's   | 4.8    | 88   | 4.4  | 42   | 6.5       | 73   | 6.7  | 62   |
| Chest CG           | Z    | G's   | 13.5   | 43   | 11.7 | 99   | 14.6      | 71   | 12.5 | 97   |
| Chest CG Resultant | N/A  | G's   | 38.2   | 75   |      |      | 45.8      | 64   |      |      |

### 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 | 590    | 54.3    | 62.6           | 89.8           | 443       | 43.3    | 57.9           | 93.9           |

### 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 | 36.6   | 73.7           | 76.8           | 42.1      | 62.3           | 65.4           |

**DATA SHEET NO. 9****SEAT BELT PERFORMANCE ASSESSMENT TEST DATA**Test Vehicle: 2001/Lincoln/LS/4 doorNHTSA No.: M10209Test Program: NCAPTest Date: January 22, 2001**SEAT BELT PLACEMENT MEASUREMENTS**

| Measurement Description                           | Units | Driver | Passenger |
|---------------------------------------------------|-------|--------|-----------|
| TBI - Dummy centerline to shoulder bolt           | mm    | 175    | 176       |
| PBU - Top surface of reference to belt upper edge | mm    | 313    | 262       |
| PBL - Top surface of reference to belt lower edge | mm    | 234    | 183       |

**BELT LENGTH DATA**

| Measurement Description                          | Units | Driver | Passenger |
|--------------------------------------------------|-------|--------|-----------|
| Retractor reel to "D" ring                       | mm    | 0      | 0         |
| Shoulder belt length as measured on ATD          | mm    | 834    | 832       |
| Lap belt length as measured on ATD               | mm    | 550    | 542       |
| Total belt length for continuous webbing systems | mm    | 1384   | 1374      |

**SHOULDER BELT SPOOL-OUT DATA**

| Measurement Description      | Units | Driver | Passenger |
|------------------------------|-------|--------|-----------|
| As determined mechanically   | mm    | **     | **        |
| As determined electronically | mm    | **     | **        |

\*\* Not recorded at vehicle manufacturer's request

# DATA SHEET NO. 10

## SUMMARY OF FMVSS 212 DATA

Test Vehicle: 2001/Lincoln/LS/4 door

NHTSA No.: M10209

Test Program: NCAP

Test Date: January 22, 2001

Windshield Mounting Details:

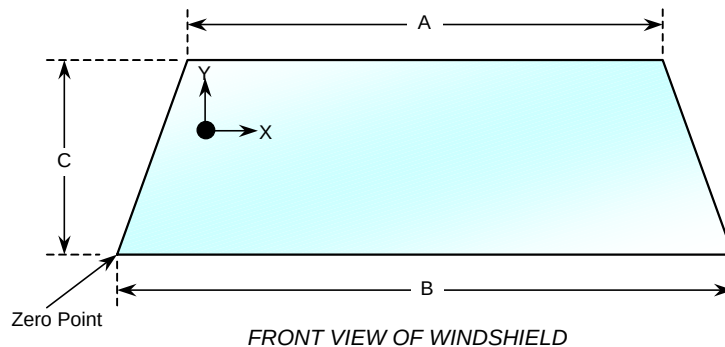
Windshield glass is secured to the vehicle frame with a rubber trim and glue.

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

Temperature of windshield molding during test: 22 °C

### WINDSHIELD PERIPHERY MEASUREMENTS

| Measurement | Pre-Test (mm) | Post-Test (mm) | % of Retention |
|-------------|---------------|----------------|----------------|
| Left Side   | 2226          | 2226           | 100            |
| Right Side  | 2187          | 2187           | 100            |
| Total       | 4413          | 4413           | 100            |



### WINDSHIELD DIMENSIONS

| Item | Units | Segment Length | Molding Width |
|------|-------|----------------|---------------|
| A    | mm    | 1191           | 18            |
| B    | mm    | 1549           | 17            |
| C    | mm    | 855            | 22            |

# DATA SHEET NO. 11

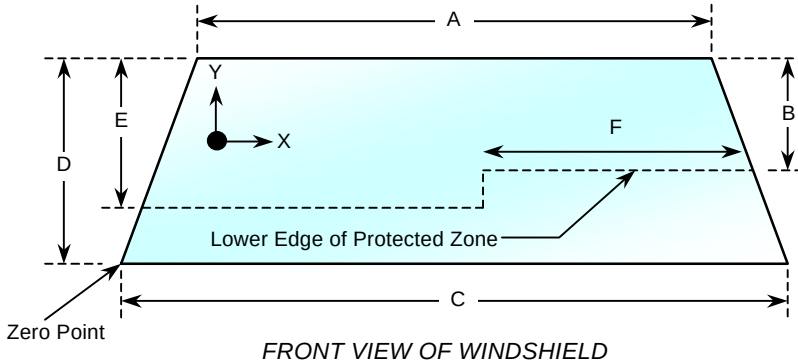
## WINDSHIELD ZONE INTRUSION FMVSS 219 (Partial) DATA

Test Vehicle: 2001/Lincoln/LS/4 door

NHTSA No.: M10209

Test Program: NCAP

Test Date: January 22, 2001



| Item | Units | Value |
|------|-------|-------|
| A    | mm    | 1191  |
| B    | mm    | 507   |
| C    | mm    | 1549  |
| D    | mm    | 855   |
| E    | mm    | 522   |
| F    | mm    | 777   |

### AREA OF PROTECTED ZONE FAILURES - NONE

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

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

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

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

**DATA SHEET NO. 12**

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

Test Vehicle: 2001/Lincoln/LS/4 door

NHTSA No.: M10209

Test Program: NCAP

Test Date: January 22, 2001

Test Time: 3:30 p.m.

Temperature at Time of Impact: 22 °C

**Stoddard Solvent Spillage Measurements**

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

# DATA SHEET NO. 13

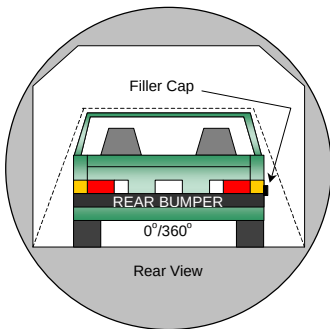
## FMVSS 301 STATIC ROLLOVER DATA

Test Vehicle: 2001/Lincoln/LS/4 door

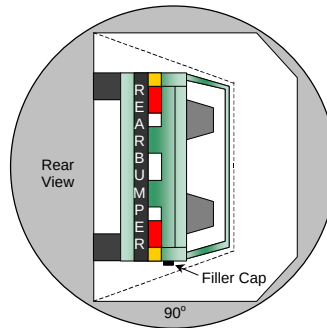
NHTSA No.: M10209

Test Program: NCAP

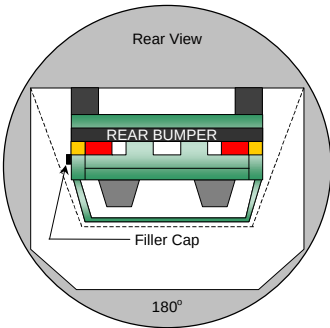
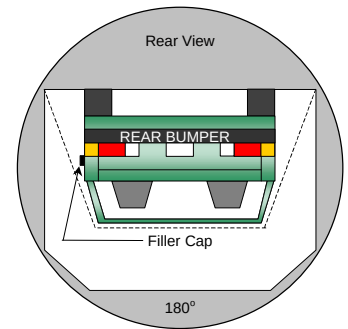
Test Date: January 22, 2001



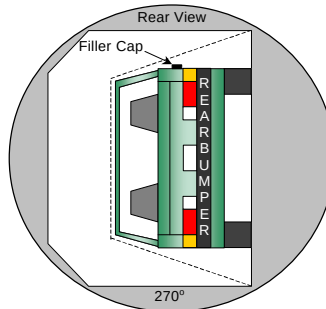
0° TO 90°



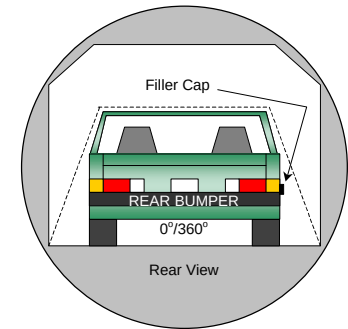
90° TO 180°



180° TO 270°



270° TO 360°



1. The specified fixture rollover rate for each 90° of rotation is 60 to 180 seconds.
2. The position hold time at each position is 300 seconds (minimum).
3. Details of Stoddard Solvent spillage locations:

| Test Phase   | Rotation Time (sec.) | Hold Time (sec.) | Spillage (oz.) |
|--------------|----------------------|------------------|----------------|
| 0° TO 90°    | 170                  | 300              | 0              |
| 90° TO 180°  | 153                  | 300              | 0              |
| 180° TO 270° | 141                  | 300              | 0              |
| 270° TO 360° | 160                  | 300              | 0              |



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

Test Vehicle: 2001/Lincoln/LS/4 door

NHTSA No.: M10209

Test Program: NCAP

Test Date: January 22, 2001

| No. | Measurement Description                      | Units | Pre-Test | Post-Test | Difference |
|-----|----------------------------------------------|-------|----------|-----------|------------|
| 1   | Total length of vehicle at centerline        | mm    | 4720     | 4316      | 404        |
| 2   | RSOV to front of engine                      | mm    | 3880     | 3612      | 268        |
| 3   | RSOV to firewall centerline                  | mm    | 3647     | 3532      | 115        |
| 4   | RSOV to leading edge of right door           | mm    | 3280     | 3277      | 3          |
| 5   | RSOV to leading edge of left door            | mm    | 3283     | 3290      | -7         |
| 6   | RSOV to lower leading edge of right door     | mm    | 3231     | 3214      | 17         |
| 7   | RSOV to lower leading edge of left door      | mm    | 3234     | 3231      | 3          |
| 8   | RSOV to upper leading edge of right door     | mm    | 2064     | 2058      | 6          |
| 9   | RSOV to upper leading edge of left door      | mm    | 2062     | 2077      | -15        |
| 10  | RSOV to lower trailing edge of right door    | mm    | 2096     | 2074      | 22         |
| 11  | RSOV to lower trailing edge of left door     | mm    | 2096     | 2090      | 6          |
| 12  | RSOV to bottom of right 'A' pillar           | mm    | 3253     | 3223      | 30         |
| 13  | RSOV to bottom of left 'A' pillar            | mm    | 3261     | 3252      | 9          |
| 14  | RSOV to firewall on right side               | mm    | 3442     | 3412      | 30         |
| 15  | RSOV to firewall on left side                | mm    | 3500     | 3429      | 71         |
| 16  | RSOV to steering column                      | mm    | 2658     | 2704      | -46        |
| 17  | Center of steering column to left 'A' pillar | mm    | 361      | 358       | 3          |
| 18  | Center of steering column to headlining      | mm    | 438      | 437       | 1          |
| 19  | RSOV to right side of front bumper           | mm    | 4511     | 4290      | 221        |
| 20  | RSOV to left side of front bumper            | mm    | 4513     | 4296      | 275        |
| 21  | Length of engine block                       | mm    | 500      | 500       | 0          |
| RD  | RSOV to right side of dash panel             | mm    | 2855     | 2850      | 5          |
| CD  | RSOV to center of dash panel                 | mm    | 2878     | 2797      | 81         |
| LD  | RSOV to left side of dash panel              | mm    | 2815     | 2829      | -14        |

RSOV = Rear Surface of Vehicle

DATA SHEET NO. 14...(continued)

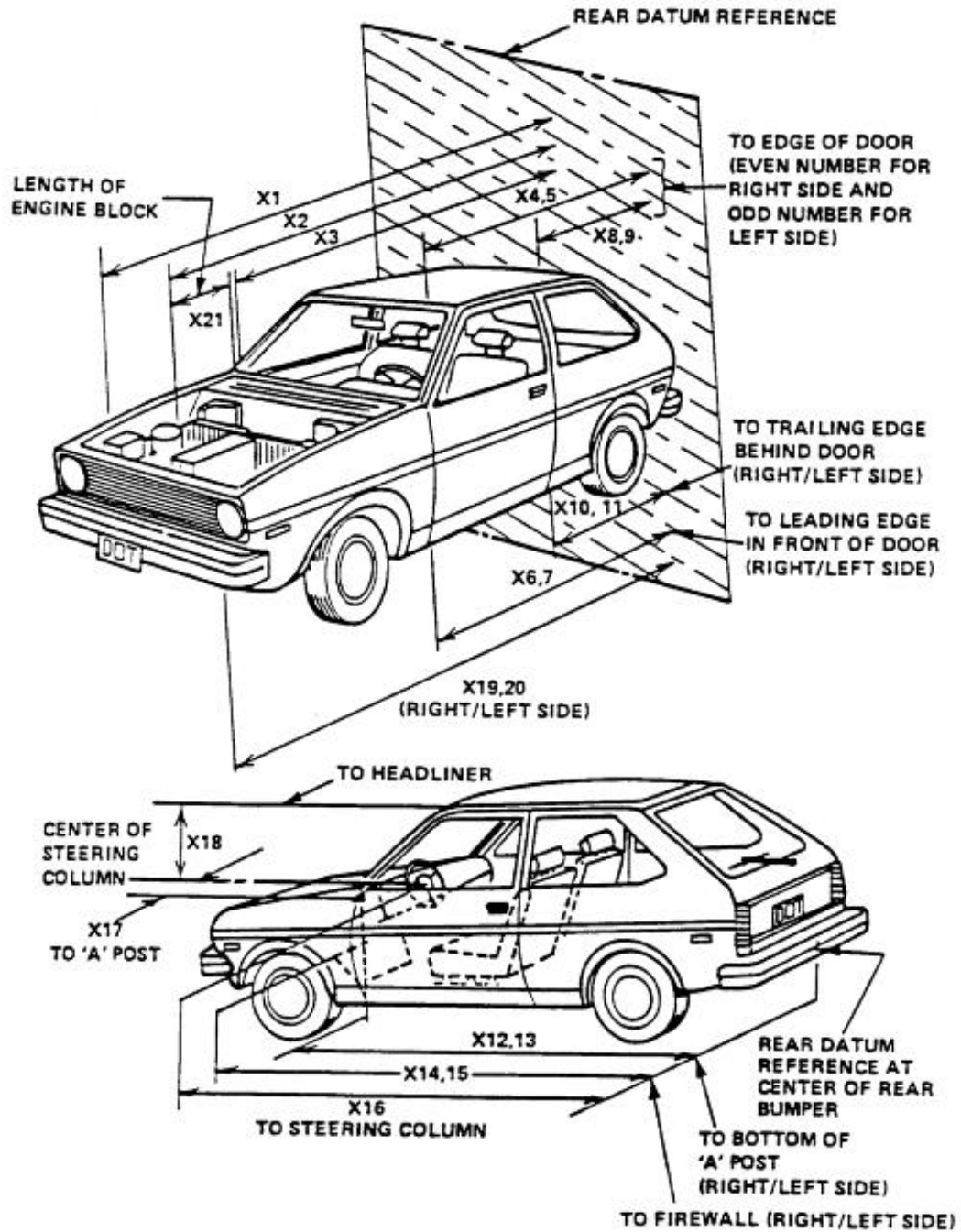
VEHICLE MEASUREMENTS

Test Vehicle: 2001/Lincoln/LS/4 door

NHTSA No.:M10209

Test Program:NCAP

Test Date: January 22, 2001



**DATA SHEET NO. 15****CAMERA LOCATIONS**Test Vehicle: 2001/Lincoln/LS/4 doorNHTSA No.: M10209Test Program: NCAPTest Date: January 22, 2001

| No. | Camera View              | Location (mm) * |        |       | Lens (mm) | Speed (fps) |
|-----|--------------------------|-----------------|--------|-------|-----------|-------------|
|     |                          | X               | Y      | Z     |           |             |
| 1   | Real-Time Left Side View |                 |        |       | 18        | 32          |
| 2   | Left Front View          | 1000            | -8420  | 1440  | 25        | 1015        |
| 3   | Steering Column Top      | 2000            | -7770  | 1550  | 25        | 1020        |
| 4   | Steering Column Bottom   | 2000            | -7770  | 1030  | 15        | 1005        |
| 5   | Driver Close-up          | 1500            | -10000 | 1300  | 75        | 943         |
| 6   | Driver Angle             | 4660            | -5000  | 2030  | 50        | 1000        |
| 7   | Onboard Left Rear        |                 |        |       | 13        | 513         |
| 8   | Onboard Right Rear       |                 |        |       | 13        | 501         |
| 9   | Right Overall            | 2000            | 7250   | 1360  | 13        | 1020        |
| 10  | Right Passenger Half     | 1000            | 8100   | 1400  | 25        | 1031        |
| 11  | Right Close-up           | 1600            | 10360  | 1300  | 75        | 1053        |
| 12  | Right Angle              | 4840            | 5580   | 2130  | 50        | **          |
| 13  | Windshield               | -40             | 0      | 2710  | 13        | 1005        |
| 14  | Top Driver               | 70              | -440   | 1780  | 13        | 1010        |
| 15  | Top Passenger            | 80              | 400    | 1770  | 13        | 1026        |
| 16  | Pit Front                | 1100            | 0      | -3200 | 13        | 1010        |
| 17  | Pit Rear                 | 2800            | 0      | -3200 | 13        | 1015        |

**\*COORDINATES:**

+X = film plane rearward of barrier

+Y = film plane to right of monorail centerline

+Z = film plane to above ground level

ORIGIN: For X and Y it is the Impact Point. For Z it is the Floor.

\*\* No timing marks.

CAMERA LOCATIONS

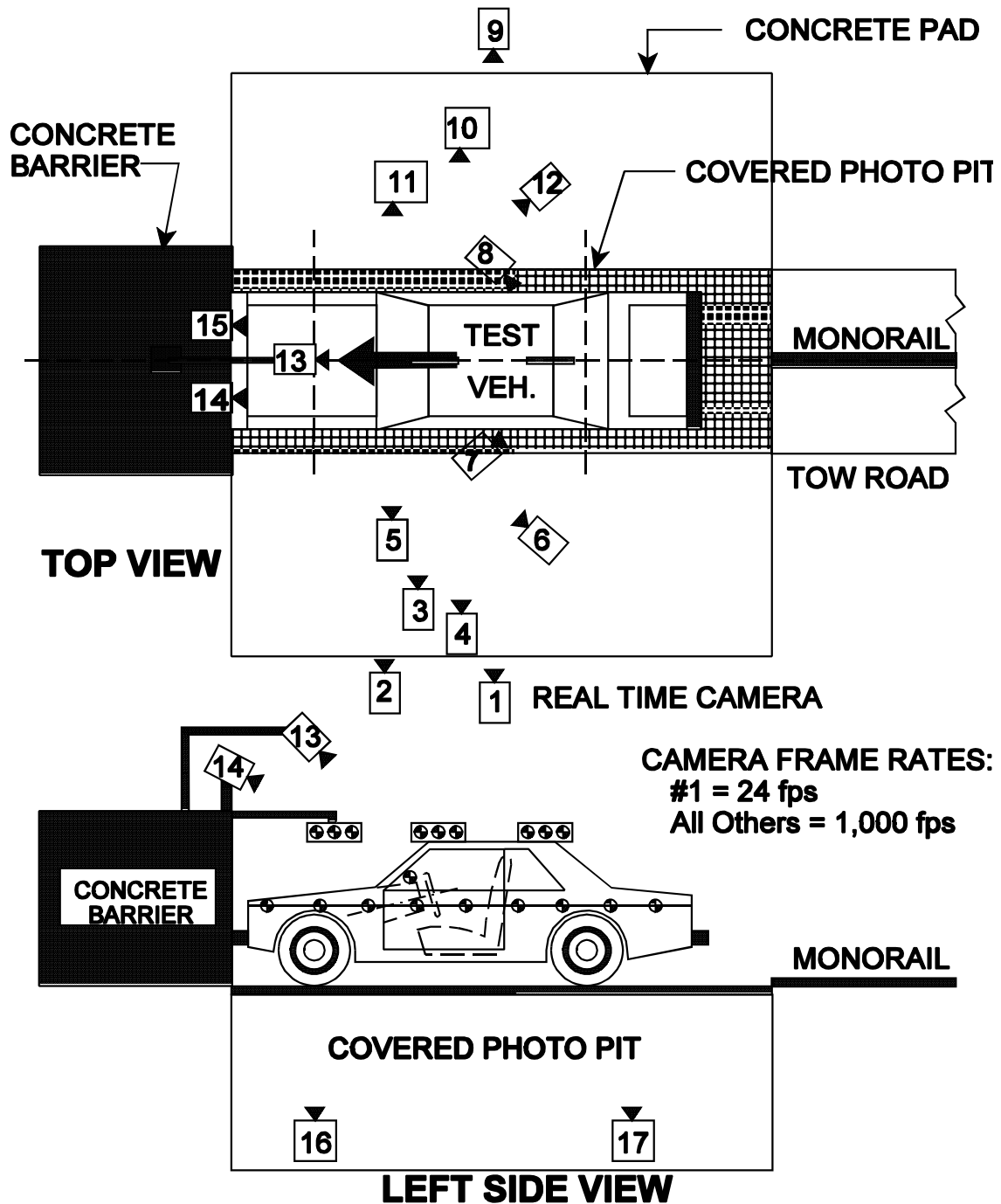
Test Vehicle: 2001/Lincoln/LS/4 door

NHTSA No.:M10209

Test Program:NCAP

Test Date: January 22, 2001

**CAMERA POSITIONS FOR FRONTAL IMPACTS**



# DATA SHEET NO. 16

## PHOTOGRAPHIC REFERENCE TARGET LOCATIONS

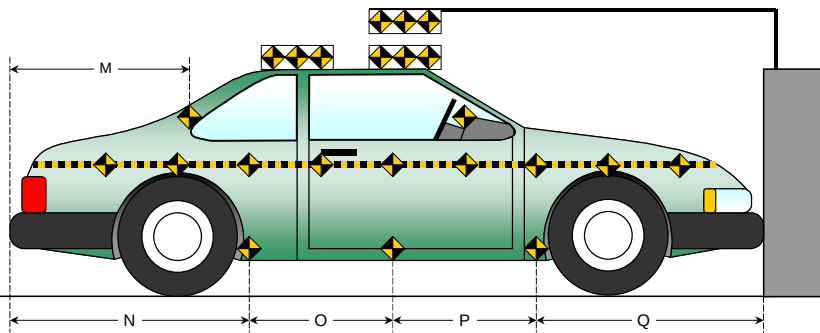
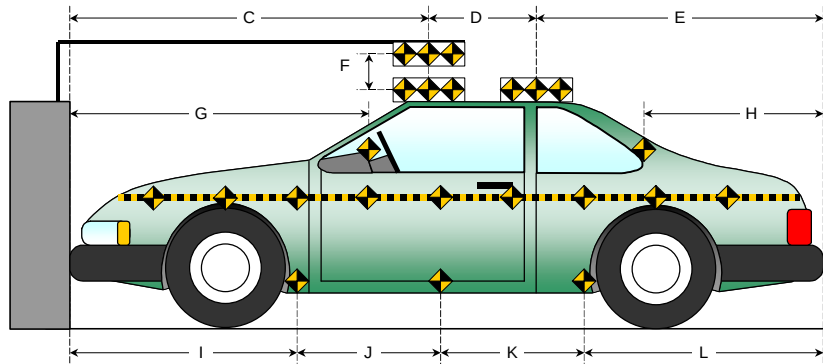
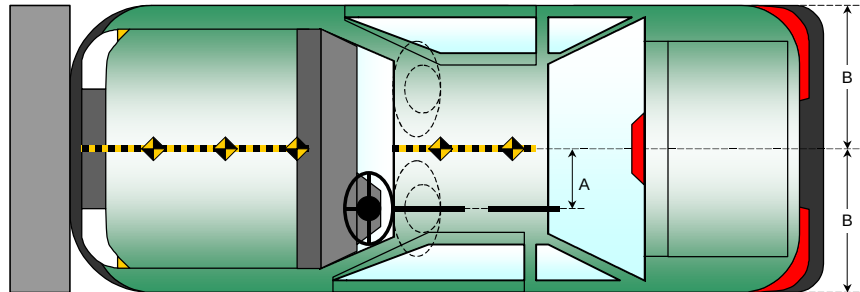
Test Vehicle: 2001/Lincoln/LS/4 door

NHTSA No.:M10209

Test Program:NCAP

Test Date: January 22, 2001

| Item | Value |
|------|-------|
| A    | 366   |
| B    | 911   |
| C    | 2290  |
| D    | 612   |
| E    | 1818  |
| F    | 310   |
| G    | 1872  |
| H    | 884   |
| I    | 1329  |
| J    | 1003  |
| K    | 1003  |
| L    | 1385  |
| M    | 972   |
| N    | 1425  |
| O    | 1005  |
| P    | 1005  |
| Q    | 1285  |



**DATA SHEET NO. 17**

**VEHICLE INTRUSION MEASUREMENTS**

Test Vehicle: 2001/Lincoln/LS/4 door

NHTSA No.:M10209

Test Program:NCAP

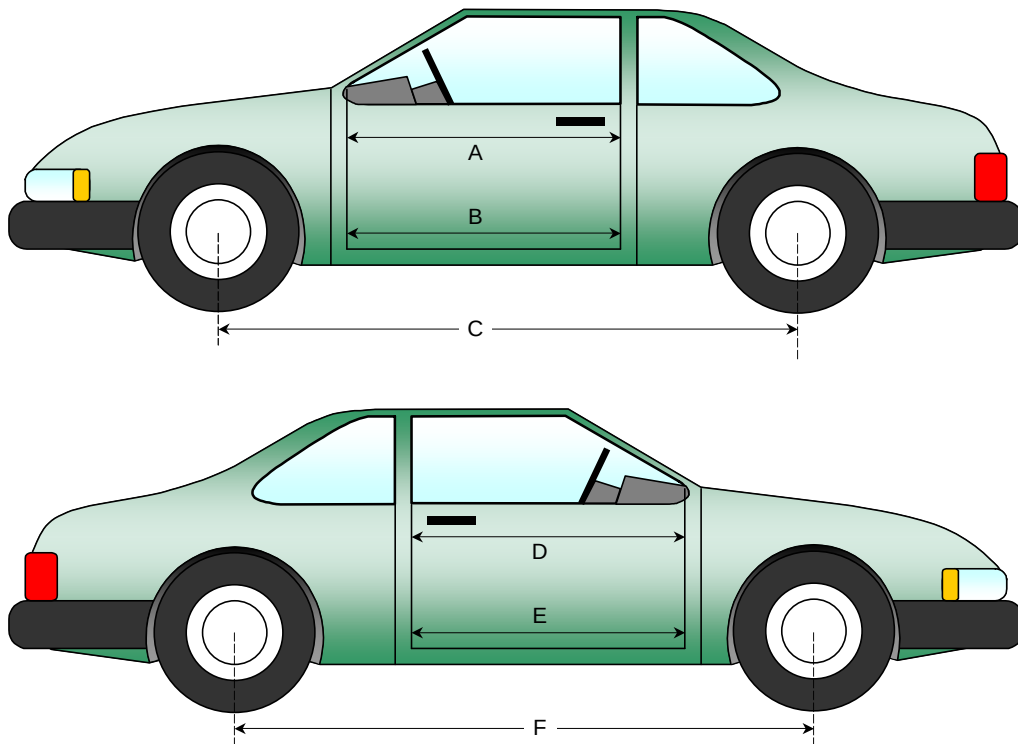
Test Date: January 22, 2001

**DOOR OPENING WIDTH**

| Item | Description      | Units | Pre-Test | Post-Test | Difference |
|------|------------------|-------|----------|-----------|------------|
| A    | Left Side Upper  | mm    | 1090     | 1082      | 8          |
| B    | Left Side Lower  | mm    | 984      | 978       | 6          |
| D    | Right Side Upper | mm    | 1090     | 1081      | 9          |
| E    | Right Side Lower | mm    | 984      | 980       | 4          |

**WHEELBASE MEASUREMENTS**

| Item | Description          | Units | Pre-Test | Post-Test | Difference |
|------|----------------------|-------|----------|-----------|------------|
| C    | Left Side Wheelbase  | mm    | 2910     | 2791      | 119        |
| F    | Right Side Wheelbase | mm    | 2910     | 2795      | 115        |



**DATA SHEET NO. 17...(continued)**

**VEHICLE INTRUSION MEASUREMENTS**

Test Vehicle: 2001/Lincoln/LS/4 door

NHTSA No.:M10209

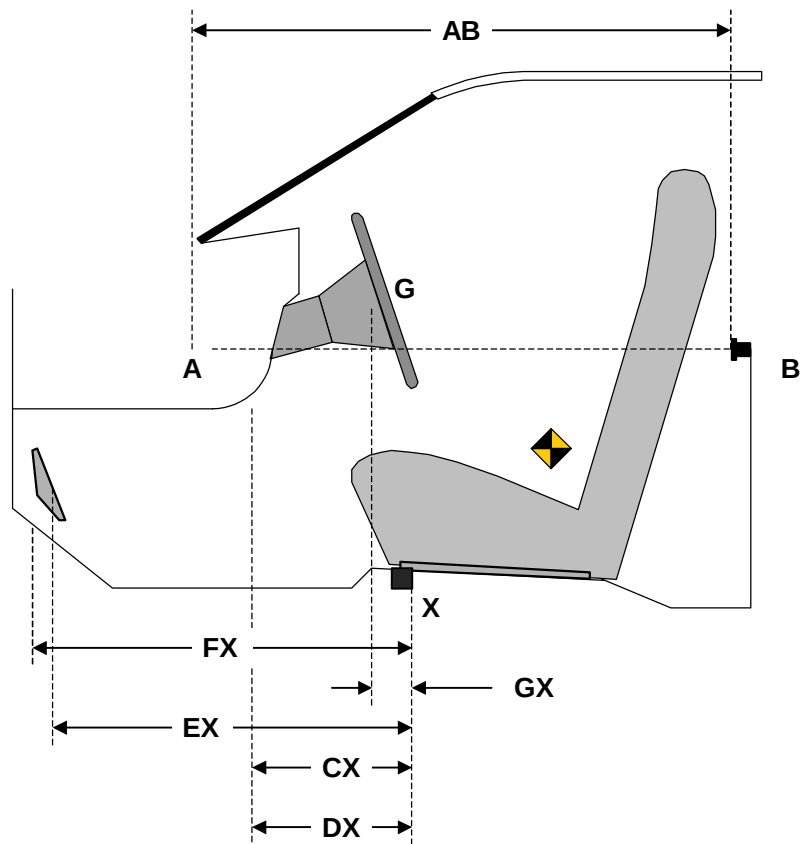
Test Program:NCAP

Test Date: January 22, 2001

**DRIVER COMPARTMENT INTRUSION**

| Item | Description                              | Units | Pre-Test | Post-Test | Difference |
|------|------------------------------------------|-------|----------|-----------|------------|
| AB   | Door Opening (Inside window jam)         | mm    | 1090     | 1082      | 8          |
| CX   | Left Knee Bolster to X                   | mm    | 399      | 374       | 25         |
| DX   | Right Knee Bolster to X                  | mm    | 405      | 397       | 8          |
| EX   | Brake Pedal to X                         | mm    | 647      | 557       | 90         |
| FX   | Foot Rest to X                           | mm    | 658      | 626       | 32         |
| GX   | Center of Steering Column Wheel Hub to X | mm    | 144      | 157       | -13        |

X = Left Front Seat Front Outboard Anchor Bolt Head



**DRIVER COMPARTMENT**

**DATA SHEET NO. 17...(continued)**

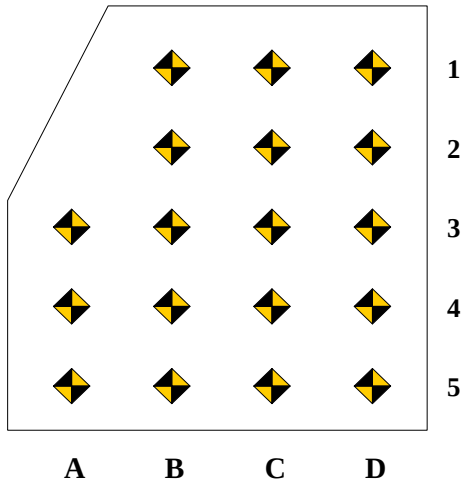
**VEHICLE INTRUSION MEASUREMENTS**

Test Vehicle: 2001/Lincoln/LS/4 door

NHTSA No.:M10209

Test Program:NCAP

Test Date: January 22, 2001



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 |          | 821 | 821 | 821 |           | 758 | 759 | 770 |            | 63 | 62 | 51 |
| 2 |          | 761 | 761 | 761 |           | 726 | 725 | 736 |            | 35 | 36 | 25 |
| 3 |          | 691 | 691 | 691 |           | 687 | 682 | 688 |            | 4  | 9  | 3  |
| 4 | 569      | 569 | 569 | 569 | 561       | 562 | 565 | 569 | 8          | 7  | 4  | 0  |
| 5 | 452      | 452 | 452 |     | 445       | 440 | 440 |     | 7          | 12 | 12 |    |

**DRIVER FLOOR PAN Z-AXIS**

|   | Pre-Test |     |     |     | Post-Test |     |     |     | Difference |     |     |     |
|---|----------|-----|-----|-----|-----------|-----|-----|-----|------------|-----|-----|-----|
|   | A        | B   | C   | D   | A         | B   | C   | D   | A          | B   | C   | D   |
| 1 |          | 50  | 56  | 50  |           | 57  | 78  | 59  |            | 7   | 22  | 9   |
| 2 |          | 20  | 23  | 17  |           | 22  | 35  | 22  |            | 2   | 12  | 5   |
| 3 |          | -21 | -21 | -19 |           | -33 | -30 | -30 |            | -12 | -9  | -11 |
| 4 | -18      | -19 | -22 | -19 | -21       | -29 | -35 | -28 | -3         | -10 | -13 | -9  |
| 5 | -15      | -15 | -19 |     | -18       | -31 | -25 |     | -3         | -16 | -6  |     |



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

Test Vehicle: 2001/Lincoln/LS/4 door

NHTSA No.: M10209

Test Program: NCAP

Test Date: January 22, 2001

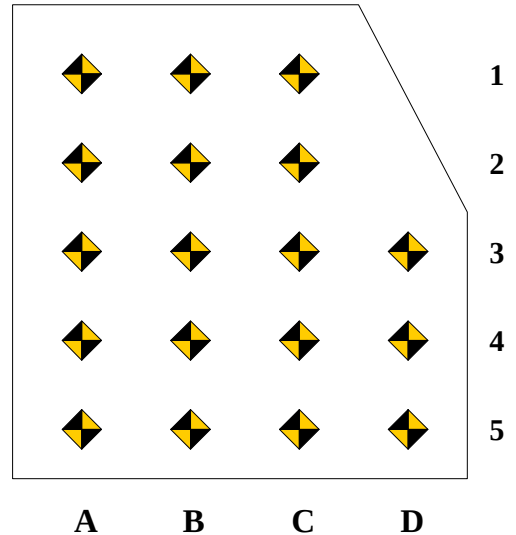
Measurement reference point for X and Z axis is the forward outboard seat mounting bolt.

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 | 800      | 800 | 800 |   | 740       | 750 | 756 |   | 60         | 50 | 44 |   |
| 2 | 715      | 715 | 715 |   | 692       | 692 | 711 |   | 23         | 23 | 4  |   |
| 3 | 660      | 660 | 660 |   | 656       | 653 | 653 |   | 4          | 7  | 7  |   |
| 4 | 560      | 560 | 560 |   | 557       | 553 | 556 |   | 3          | 7  | 4  |   |
| 5 |          | 458 | 458 |   |           | 453 | 456 |   |            | 5  | 2  |   |

**PASSENGER FLOOR PAN Z-AXIS**

|   | Pre-Test |     |     |   | Post-Test |     |     |   | Difference |     |     |   |
|---|----------|-----|-----|---|-----------|-----|-----|---|------------|-----|-----|---|
|   | A        | B   | C   | D | A         | B   | C   | D | A          | B   | C   | D |
| 1 | 55       | 55  | 55  |   | 79        | 59  | 76  |   | 24         | 4   | 21  |   |
| 2 | 2        | 2   | 2   |   | -4        | -28 | -19 |   | -2         | -26 | -17 |   |
| 3 | -19      | -17 | -17 |   | -38       | -57 | -32 |   | -19        | -40 | -15 |   |
| 4 | -19      | -17 | -17 |   | -31       | -49 | -27 |   | -12        | -32 | -10 |   |
| 5 |          | -17 | -17 |   |           | -40 | -23 |   |            | -23 | -6  |   |

**DATA SHEET NO. 17...(continued)**

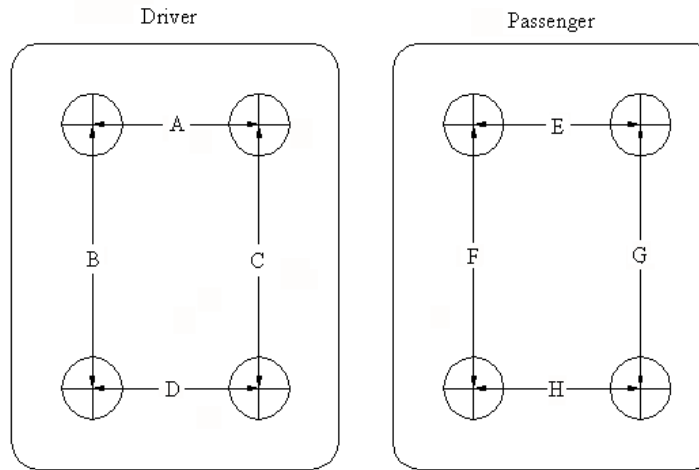
**VEHICLE INTRUSION MEASUREMENTS**

Test Vehicle: 2001/Lincoln/LS/4 door

NHTSA No.:M10209

Test Program:NCAP

Test Date: January 22, 2001



**UNDERBODY FLOORBOARD DEFORMATION**

| MEASUREMENT | PRE TEST | POST TEST | DIFFERENCE |
|-------------|----------|-----------|------------|
| A           | 301      | 325       | 24         |
| B           | 486      | 480       | 6          |
| C           | 514      | 480       | 34         |
| D           | 292      | 295       | 3          |
| E           | 310      | 309       | 1          |
| F           | 514      | 486       | 28         |
| G           | 503      | 503       | 0          |
| H           | 318      | 299       | 19         |

# DATA SHEET NO. 18

## LOAD CELL LOCATIONS ON FIXED BARRIER

Test Vehicle: 2001/Lincoln/LS/4 door

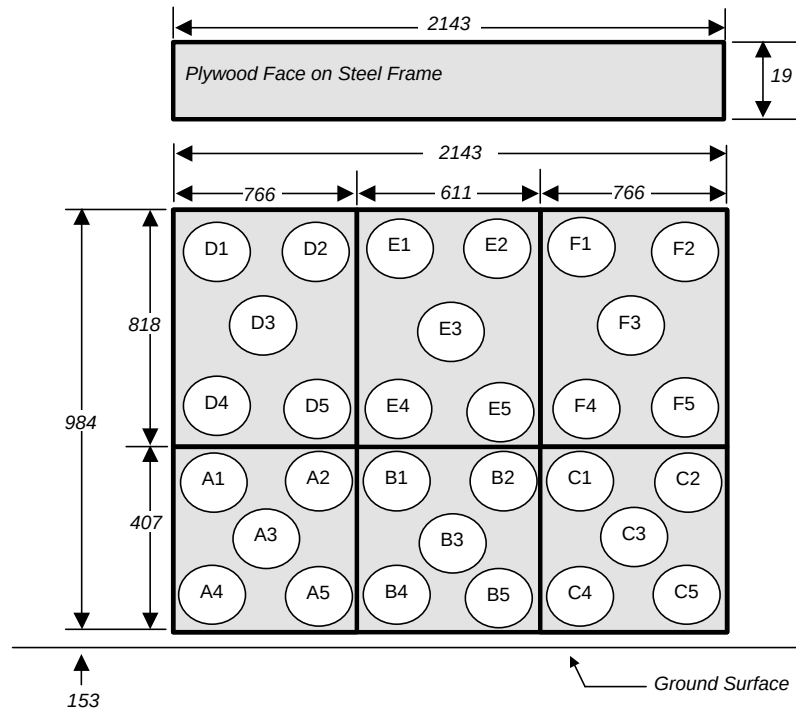
NHTSA No.:M10209

Test Program:NCAP

Test Date: January 22, 2001

### 30 Load Cell Rigid Barrier

#### Load Cell Locations on Fixed Barrier



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

6 Groups of 5 Load Cells Each

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

1. Data from 30 individual load cells
2. Sum data from 6 groupings shown above (5 cells/group)
3. Total or sum of all 30 individual load cells

# DATA SHEET NO. 19

## ACCIDENT INVESTIGATION DIVISION DATA

Test Vehicle: 2001/Lincoln/LS/4 door

NHTSA No.: M10209

Test Program: NCAP

Test Date: January 22, 2001

### VEHICLE INFORMATION

VIN: 1LNHM86S41Y651239

Wheelbase (mm): 2910

Vehicle Size Category: Heavy

Test Weight (kg): 1914.2

### ACCELEROMETER DATA

Accelerometer Locations: As per measurements on page 13

Cal. Procedure/Interval: MGA procedure / 6 month

Integration Algorithm: Trapezoidal

Linearity: >99.9%

Impact Velocity (km/h): 56.5

Velocity Change (km/h): 50.0

Time of Separation (msec): 198

### CRUSH PROFILE

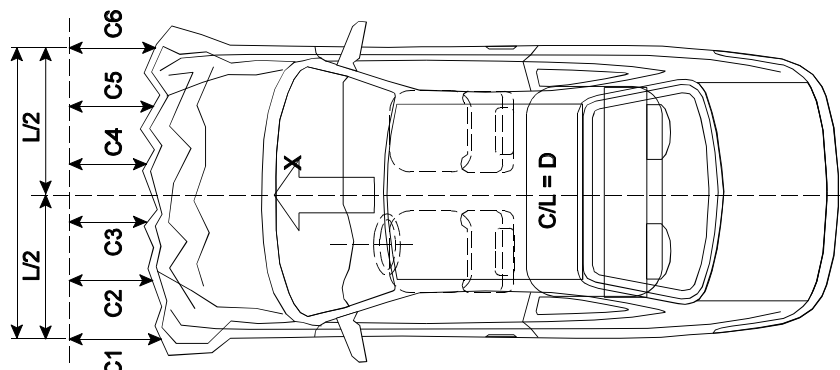
Collision Deformation Classification: Frontal

Midpoint of Damage: Vehicle C/L

Damage Region Length (mm): 1460

Impact Mode: Frontal

| No. | Measurement Description    | Units | Pre-Test | Post-Test | Difference |
|-----|----------------------------|-------|----------|-----------|------------|
| C1  | Crush zone 1 at left side  | mm    | 4513     | 4238      | 275        |
| C2  | Crush zone 2 at left side  | mm    | 4628     | 4276      | 352        |
| C3  | Crush zone 3 at left side  | mm    | 4680     | 4307      | 373        |
| C4  | Crush zone 4 at right side | mm    | 4689     | 4342      | 347        |
| C5  | Crush zone 5 at right side | mm    | 4630     | 4354      | 276        |
| C6  | Crush zone 6 at right side | mm    | 4511     | 4290      | 221        |



DATA SHEET NO. 20

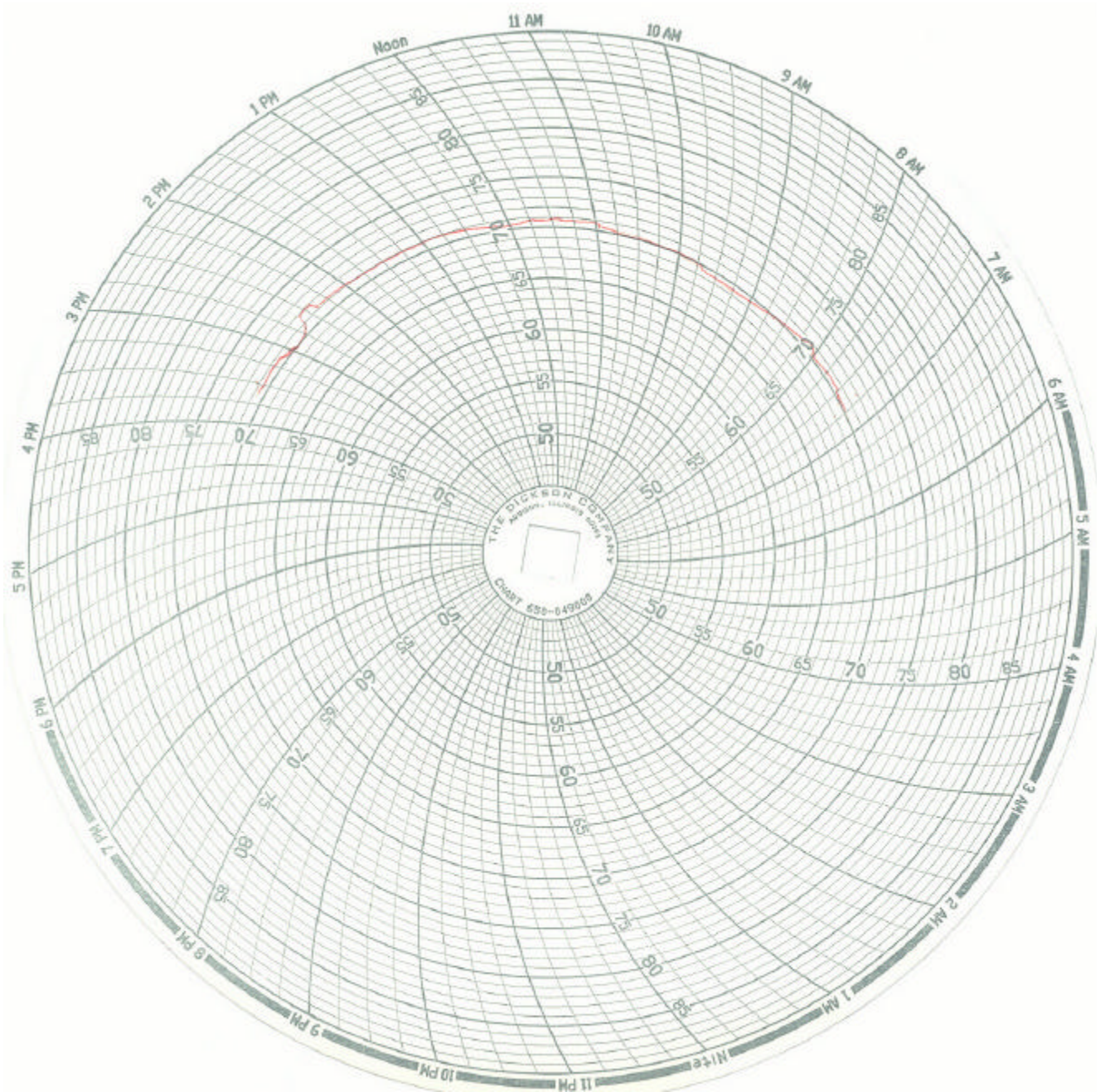
DUMMY / VEHICLE TEMPERATURE STABILIZATION CHART

Test Vehicle: 2001/Lincoln/LS/4 door

NHTSA No.: M10209

Test Program: NCAP

Test Date: January 22, 2001



A = Dummies installed in vehicle at 7:15 a.m.

B = Test conducted at 3:35 p.m.

**APPENDIX A**  
**PHOTOGRAPHS**

## TABLE OF PHOTOGRAPHS

|                                                                             | <u>Page No.</u> |
|-----------------------------------------------------------------------------|-----------------|
| Photo No. A-1 - Pre-Test Front View of Test Vehicle                         | A-1             |
| Photo No. A-2 - Post-Test Front View of Test Vehicle                        | A-2             |
| Photo No. A-3 - Post-Test Rear View of Test Vehicle                         | A-3             |
| Photo No. A-4 - Pre-Test Left Side View of Test Vehicle                     | A-4             |
| Photo No. A-5 - Post-Test Left Side View of Test Vehicle                    | A-5             |
| Photo No. A-6 - Pre-Test Left Rear Three-Quarter View of Test Vehicle       | A-6             |
| Photo No. A-7 - Post-Test Left Rear Three-Quarter View of Test Vehicle      | A-7             |
| Photo No. A-8 - Pre-Test Right Side View of Test Vehicle                    | A-8             |
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A-1

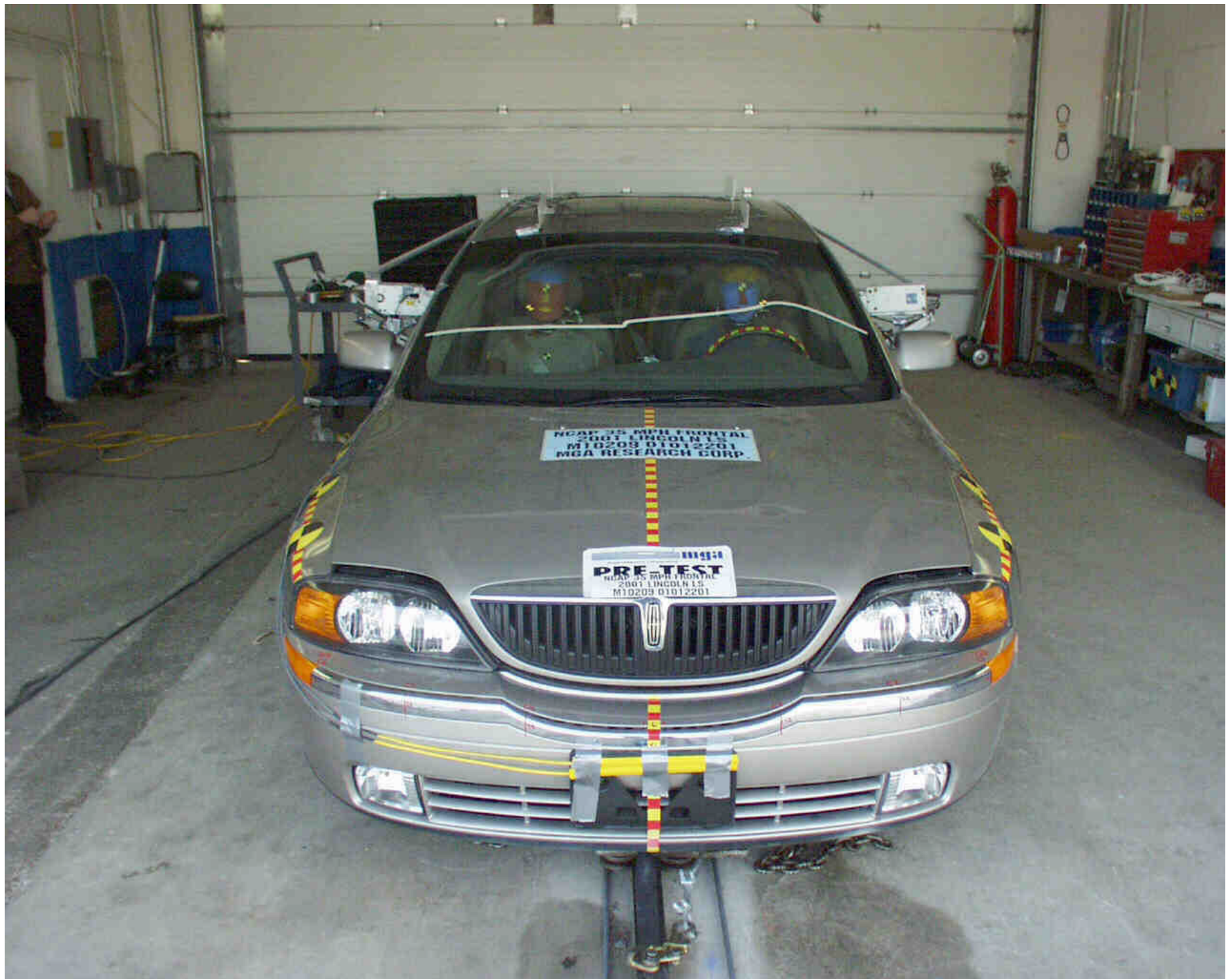


Photo No. A-1 - Pre-Test Front View of Test Vehicle



A-2

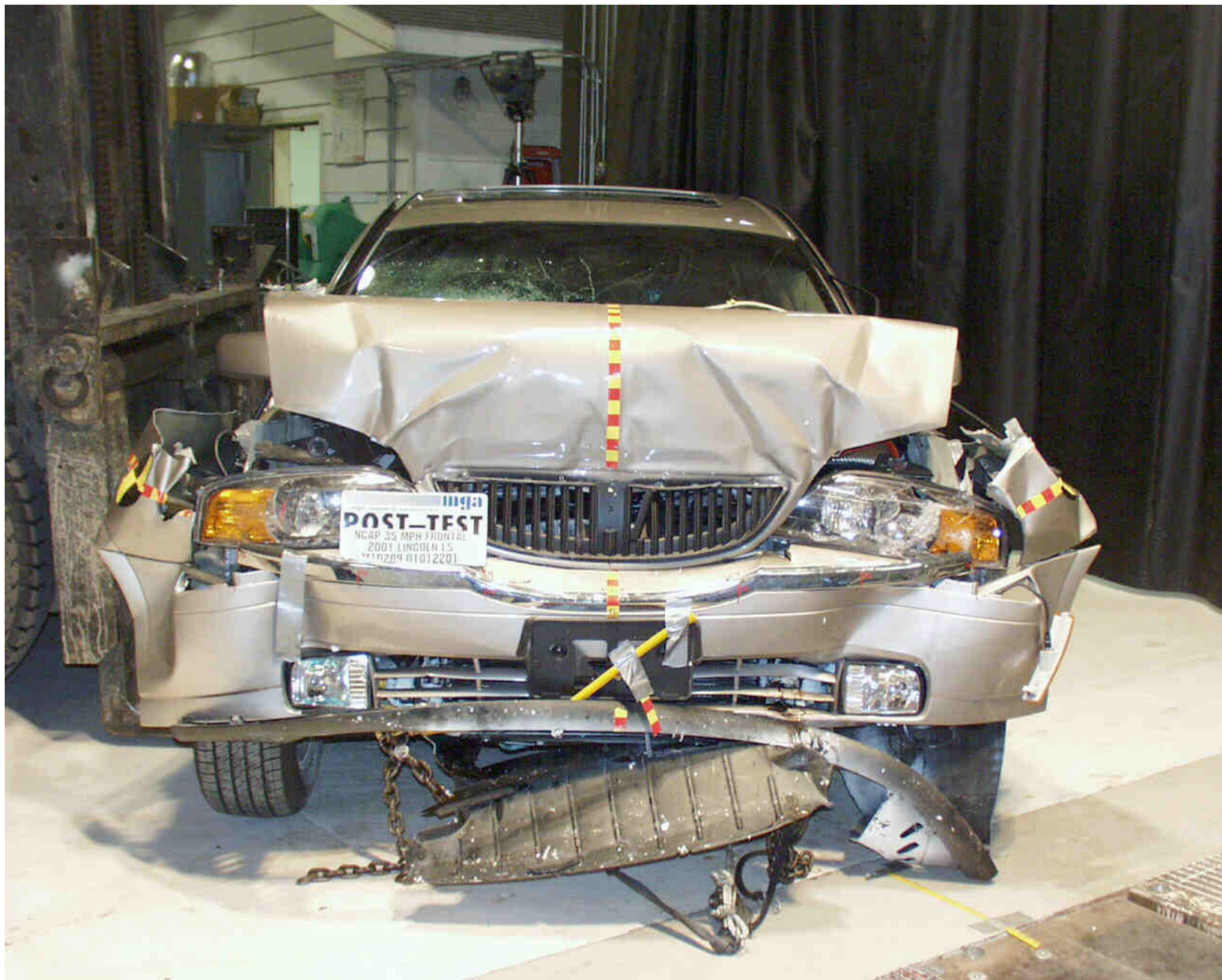


Photo No. A-2 - Post-Test Front View of Test Vehicle



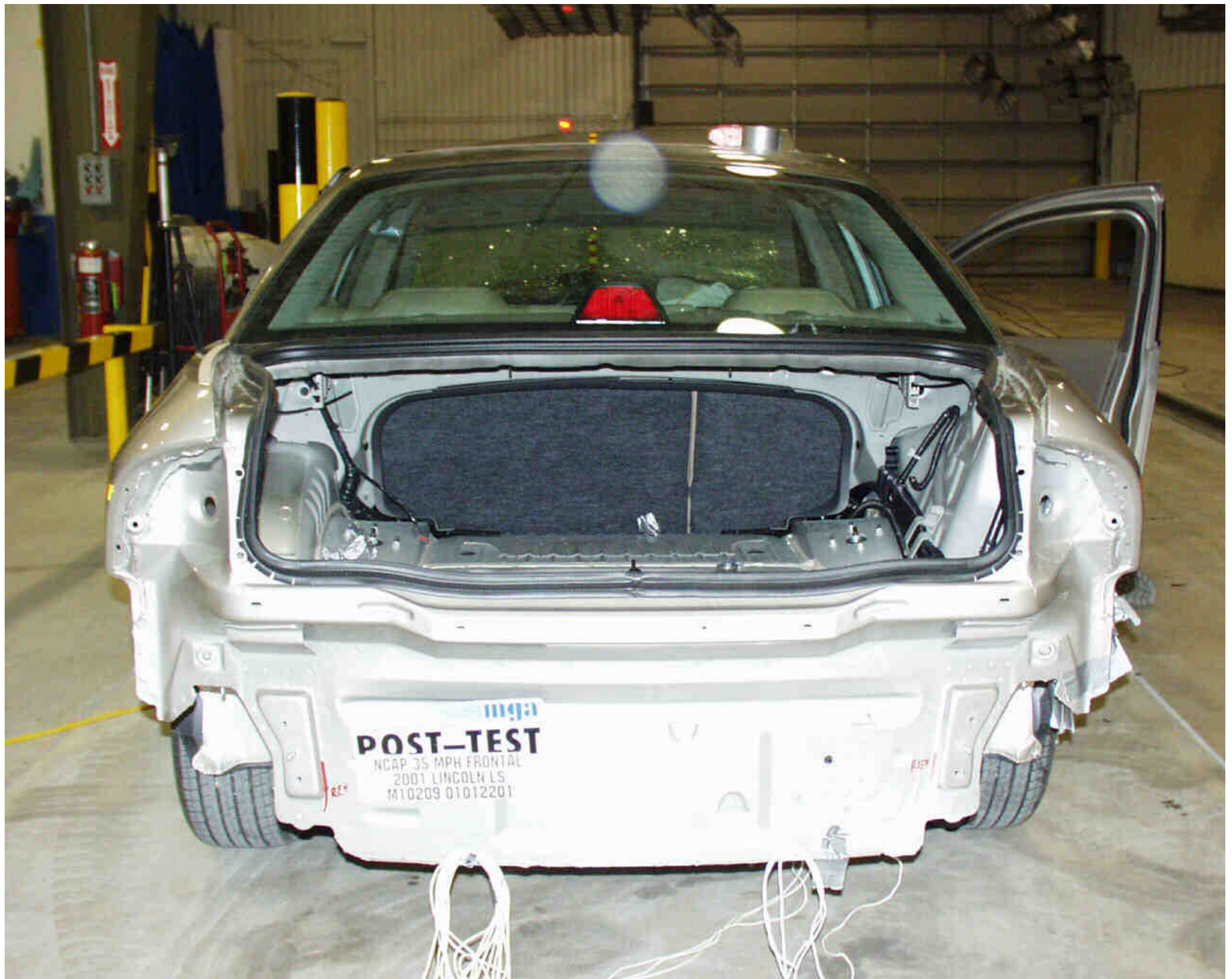


Photo No. A-3 - Post-Test Rear View of Test Vehicle



Photo No. A-4 - Pre-Test Left Side View of Test Vehicle



A-5



Photo No. A-5 - Post-Test Left Side View of Test Vehicle



Photo No. A-6 - Pre-Test Left Rear Three-Quarter View of Test Vehicle





Photo No. A-7 - Post-Test Left Rear Three-Quarter View of Test Vehicle



A-8



Photo No. A-8 - Pre-Test Right Side View of Test Vehicle



A-9



Photo No. A-9 - Post-Test Right Side View of Test Vehicle



Photo No. A-10 - Pre-Test Right Front Three-Quarter View of Test Vehicle





Photo No. A-11 - Post-Test Right Front Three-Quarter View of Test Vehicle





Photo No. A-12 - Pre-Test Fuel Filler Cap View





Photo No. A-13 - Pre-Test Engine Compartment View





Photo No. A-14 - Post-Test Engine Compartment View



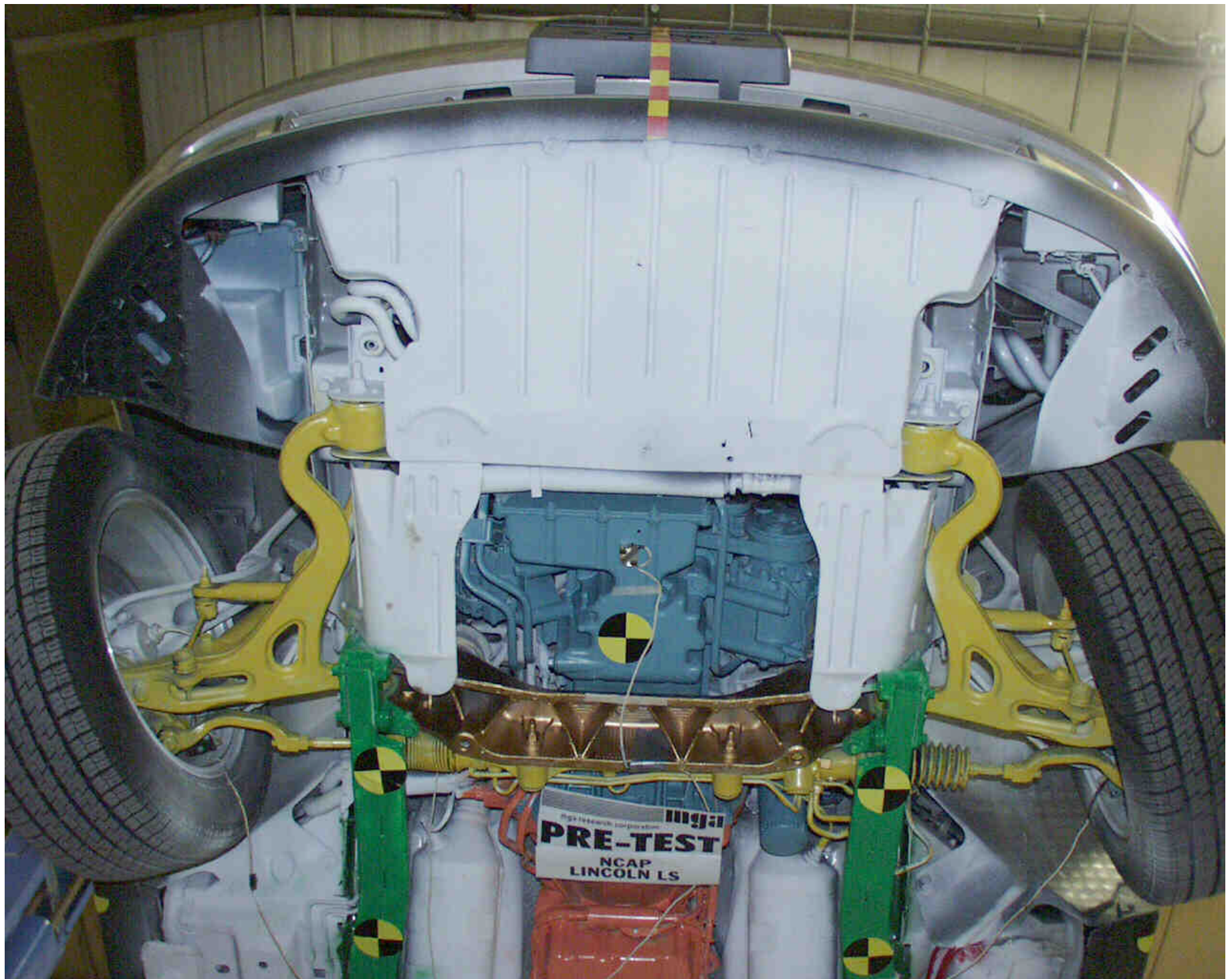


Photo No. A-15 - Pre-Test Front Underbody View



A-16

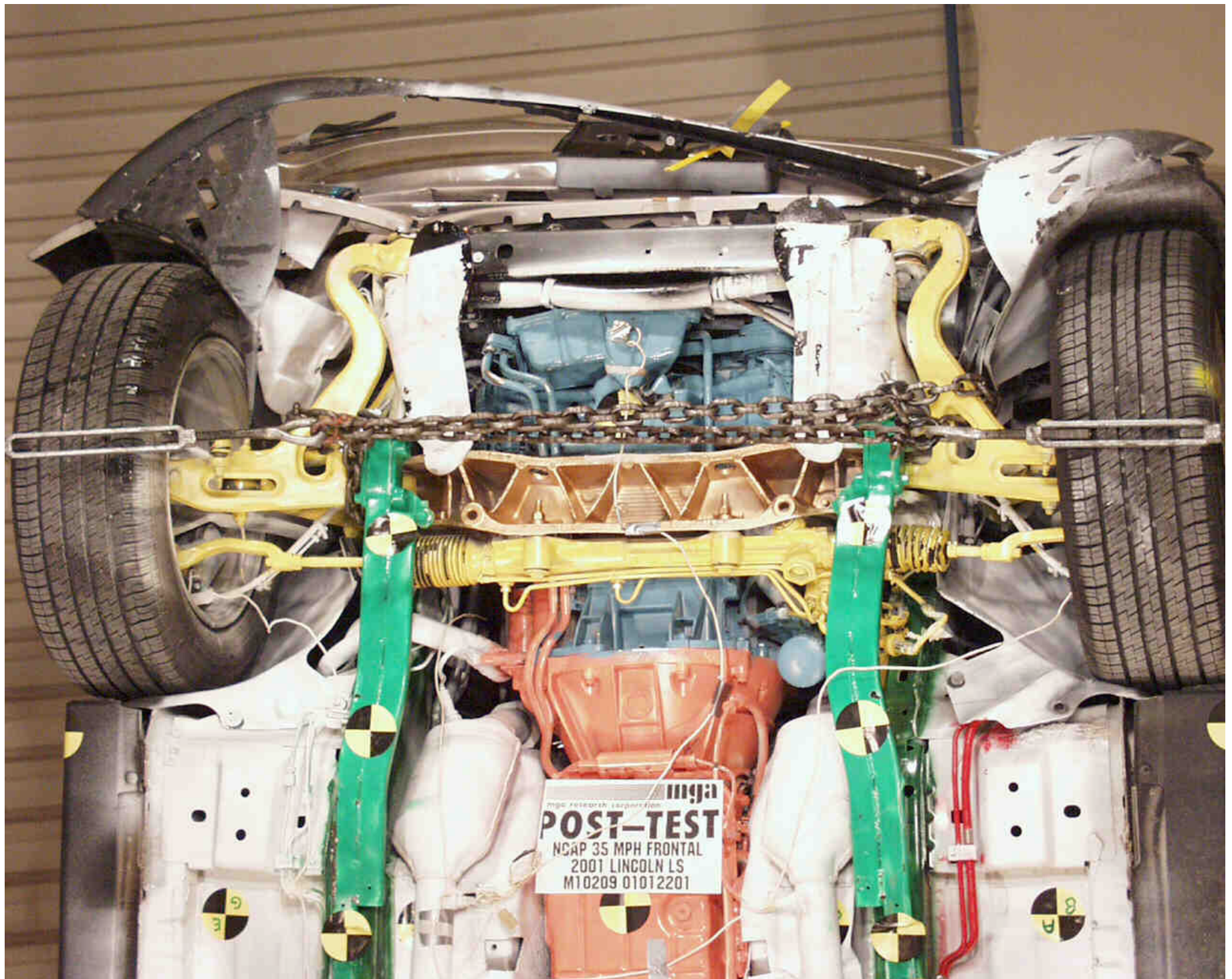


Photo No. A-16 - Post-Test Front Underbody View



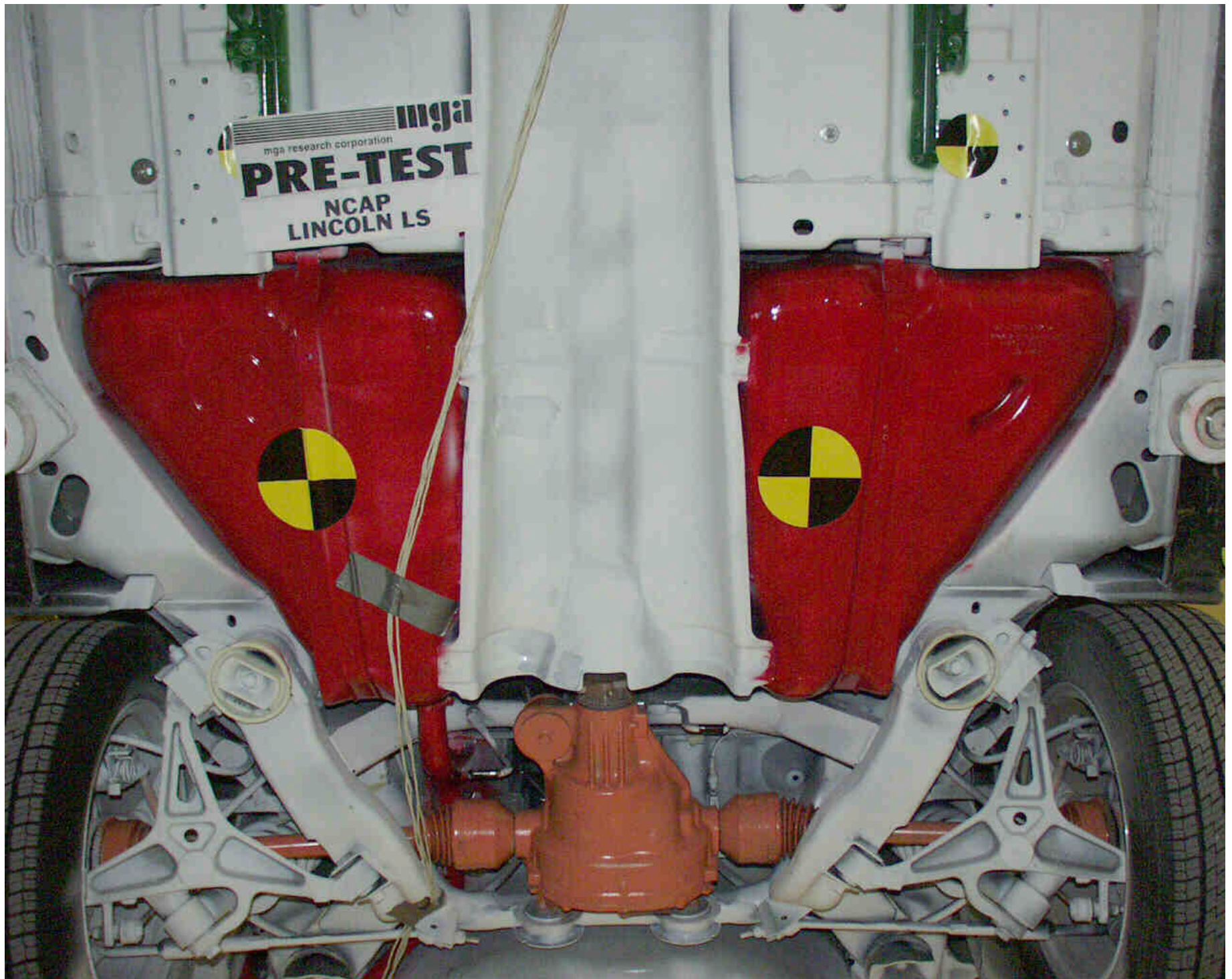


Photo No. A-17 - Pre-Test Rear Underbody View



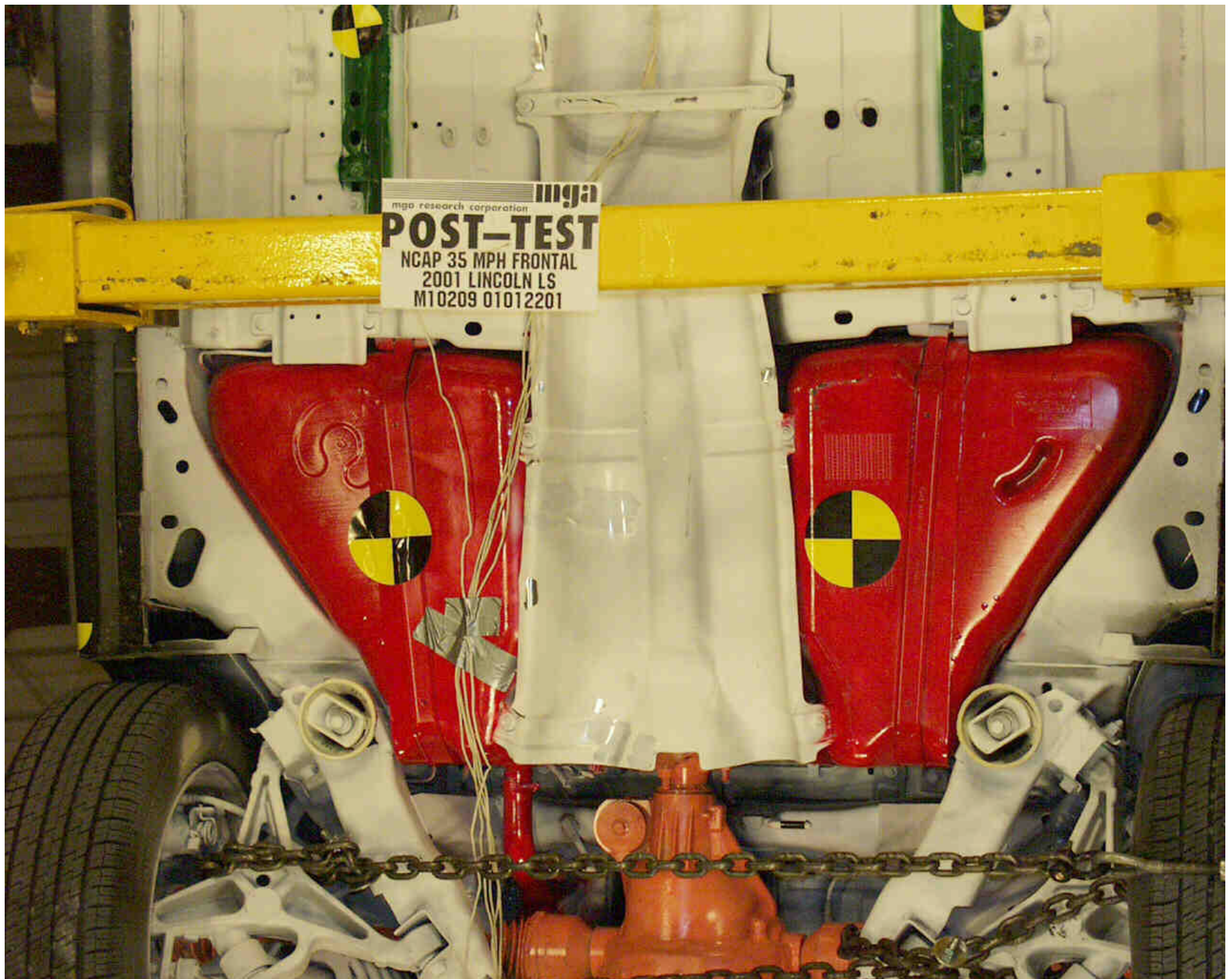


Photo No. A-18 - Post-Test Rear Underbody View



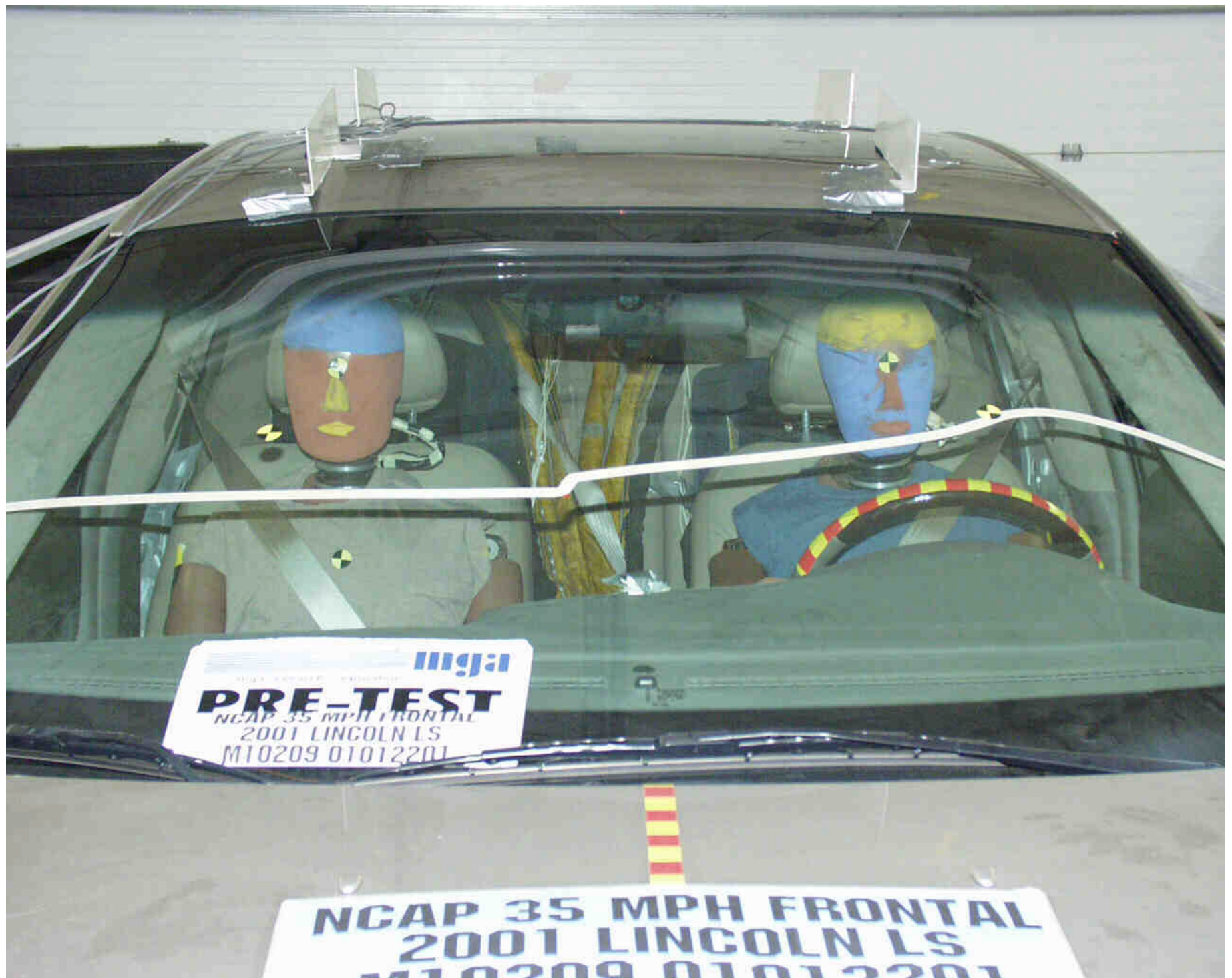


Photo No. A-19 - Pre-Test Windshield View





Photo No. A-20 - Post-Test Windshield View





Photo No. A-21 - Pre-Test Driver Dummy Position Left Side View





Photo No. A-22 - Post-Test Driver Dummy Position Left Side View





Photo No. A-23 - Pre-Test Driver Dummy Position Left Side View (Door Open)





Photo No. A-24 - Post-Test Driver Dummy Position Left Side View (Door Open)





Photo No. A-25 - Pre-Test Driver Seat Position View

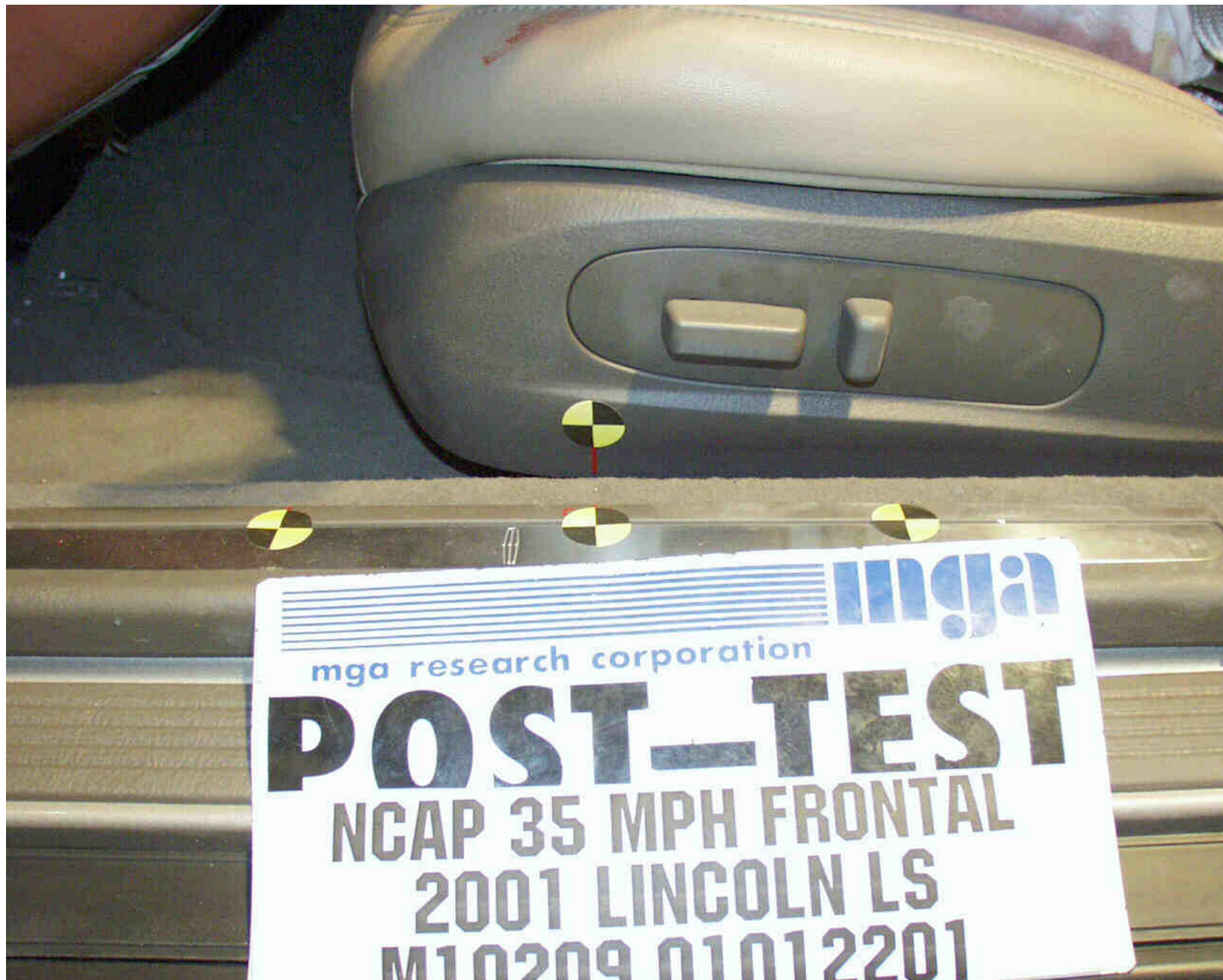


Photo No. A-26 - Post-Test Driver Seat Position View





Photo No. A-27 - Pre-Test Driver Dummy Knee Position





Photo No. A-28 - Post-Test Driver Dummy Knee Position





Photo No. A-29 - Post-Test Driver Airbag Contact





Photo No. A-30 - Post-Test Driver Knee Contact View



A-31



Photo No. A-31 - Pre-Test Driver Windshield View



A-32



Photo No. A-32 - Post-Test Driver Windshield View



A-33



Photo No. A-33 - Pre-Test Passenger Dummy Position Right Side View





Photo No. A-34 - Post-Test Passenger Dummy Position Right Side View





Photo No. A-35 - Pre-Test Pass. Dummy Position Right Side View (Door Open)





Photo No. A-36 - Post-Test Pass. Dummy Position Right Side View (Door Open)





Photo No. A-37 - Pre-Test Passenger Seat Position View





Photo No. A-38 - Post-Test Passenger Seat Position View



Photo No. A-39 - Pre-Test Passenger Dummy Knee Position





Photo No. A-40 - Post-Test Passenger Dummy Knee Position



A-41



Photo No. A-41 - Post-Test Passenger Airbag Contact

A-42



Photo No. A-42 - Post-Test Passenger Knee Contact View



A-43



Photo No. A-43 - Pre-Test Passenger Windshield View





Photo No. A-44 - Post-Test Passenger Windshield View



MFD. BY FORD MOTOR CO. IN U.S.A.

DATE: 11/00

FRONT GAWR: 1201KG/2649LB

GVWR: 2194KG/4839LB

REAR GAWR: 1194KG/2634LB

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

VIN: 1LNHM86S41Y651239 TYPE: PASSENGER

MAXIMUM LOAD = OCCUPANTS + LUGGAGE =  
OCCUPANTS = TOTAL;

OCCUPANTS LUGGAGE

TIRE: P215/60HR16

PRESSURE(FR): 207 kPa/30 PSI COLD

PRESSURE(RR): 207 kPa/30 PSI COLD



1LNHM86S41Y651239

TRAILER TOWING - SEE OWNER GUIDE

EXT PNT: RQ

BRK INT TR

4 4H

TP/PS

R AXLE  
8 53

IRC: 42

TR SPR  
A CC22

DSO: 1LQ16  
B05

F0193  
R0064

UBC ▽ F8DB-5420472-AB



**LS**

**RECOMMENDED TIRE SIZE AND INFLATION PRESSURE (COLD)**  
***DIMENSIONS DES PNEUS et PRESSIONS DE GONFLAGE RECOMMANDÉES (À FROID)***

| TIRE SIZE<br><i>DIMENSIONS DES PNEUS</i>              |                                  | TIRE PRESSURE<br>FRONT/REAR | PRESSION DES PNEUS<br>AVANT/ARRIÈRE |
|-------------------------------------------------------|----------------------------------|-----------------------------|-------------------------------------|
| P215/60R16 94H*<br>P215/60R16 94V*<br>P235/50R17 95V* | 215/60R16 95W*<br>245/45R17 95W* | 210 kPa<br>30 PSI           | 210 kPa<br>30 lb/po <sup>2</sup>    |
| TEMPORAL SPARE<br><i>PNEU PROVISoire</i>              | T145/80R16<br>T185/60R17         | 414 kPa<br>60 PSI           | 414 kPa<br>60 lb/po <sup>2</sup>    |

\*MUST BE REPLACED WITH AN EQUIVALENT TYPE SPEED RATED TIRE.

\*NE REMPLACER QUE PAR UN PNEU DONT L'INDICE DE VITESSE EST LE MÊME.

TOTAL LOAD = OCCUPANTS PLUS LUGGAGE    CHARGE TOTALE = OCCUPANTS PLUS BAGAGES

| MAXIMUM LOAD<br><i>CHARGE MAXIMALE</i> | OCCUPANTS<br><i>OCCUPANTS</i> | DISTRIBUTION    RÉPARTITION |       |      |         | LUGGAGE BAGAGES |
|----------------------------------------|-------------------------------|-----------------------------|-------|------|---------|-----------------|
|                                        |                               | FRONT                       | AVANT | REAR | ARRIÈRE |                 |
| 408 kg / 900 lb                        | 5                             | 2                           |       | 3    |         | 68 kg / 150 lb  |

FOR SUSTAINED HIGH SPEED, TRAILER TOWING, RECREATIONAL ACCESSORIES AND TEMPORAL SPARE USAGE - SEE OWNER GUIDE.  
 HAUTES VITESSES SOUTENUES, REMORQUES, ACCESSOIRES DE LOISIRS ET PNEU DE SECOURS PROVISoire: CONSULTER LE GUIDE  
 DU PROPRIÉTAIRE.

▽ 1W43-1532-AA





Photo No. A-47 - Vehicle Impact

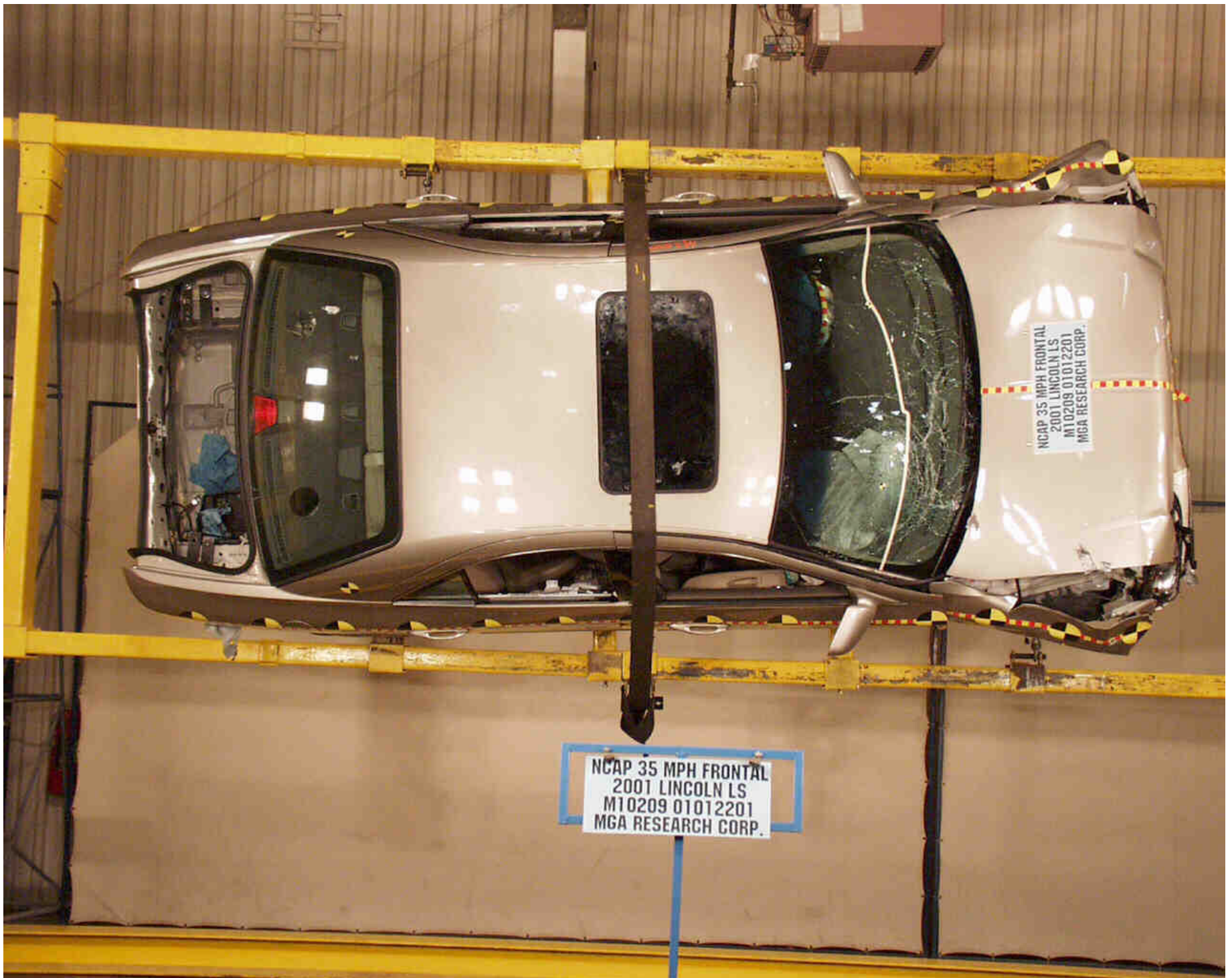


Photo No. A-48 - Rollover 90E





Photo No. A-49 - Rollover 180E



A-50

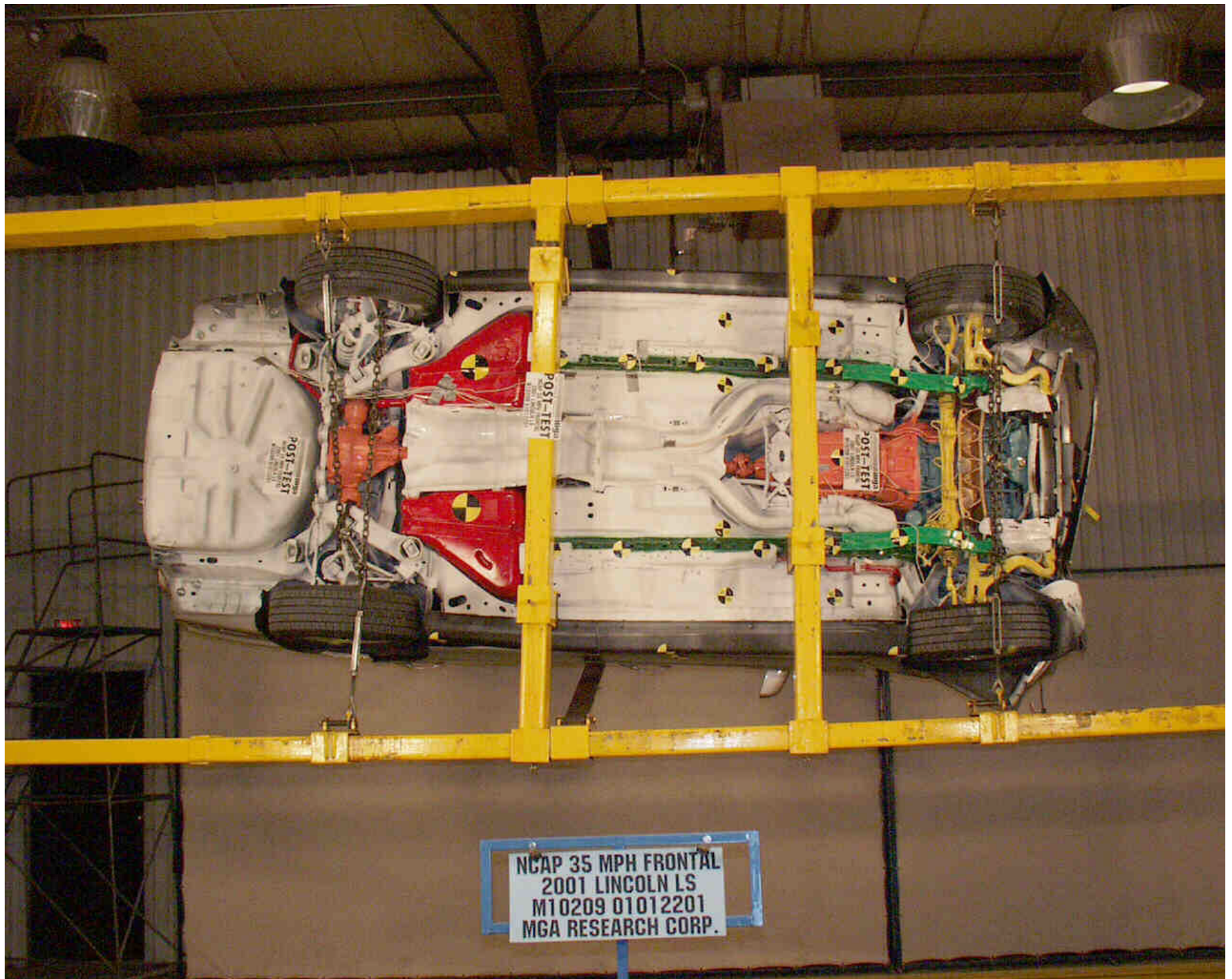


Photo No. A-50 - Rollover 270E



A-51



Photo No. A-51 - Rollover 360E

## **APPENDIX B**

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



## TABLE OF DATA PLOTS

### VEHICLE DATA FILTER CHANNEL CLASS

Head Accelerations 1000 (1650 Hz)

Chest Accelerations 180 (300 Hz)

Vehicle Accelerations 60 (100 Hz)

Barrier Load Cells 60 (100 Hz)

Femur Load Cells 600 (1000 Hz)

Lap and Torso Belts 60 (100 Hz)

Tibia Load Cells 600 (1000Hz)

Foot Accelerations 180 (300Hz)

### Occupant Data

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\* No valid data collected

\*\* No valid data collected after 70 msec.

\*\*\* No valid data collected after 45 msec.





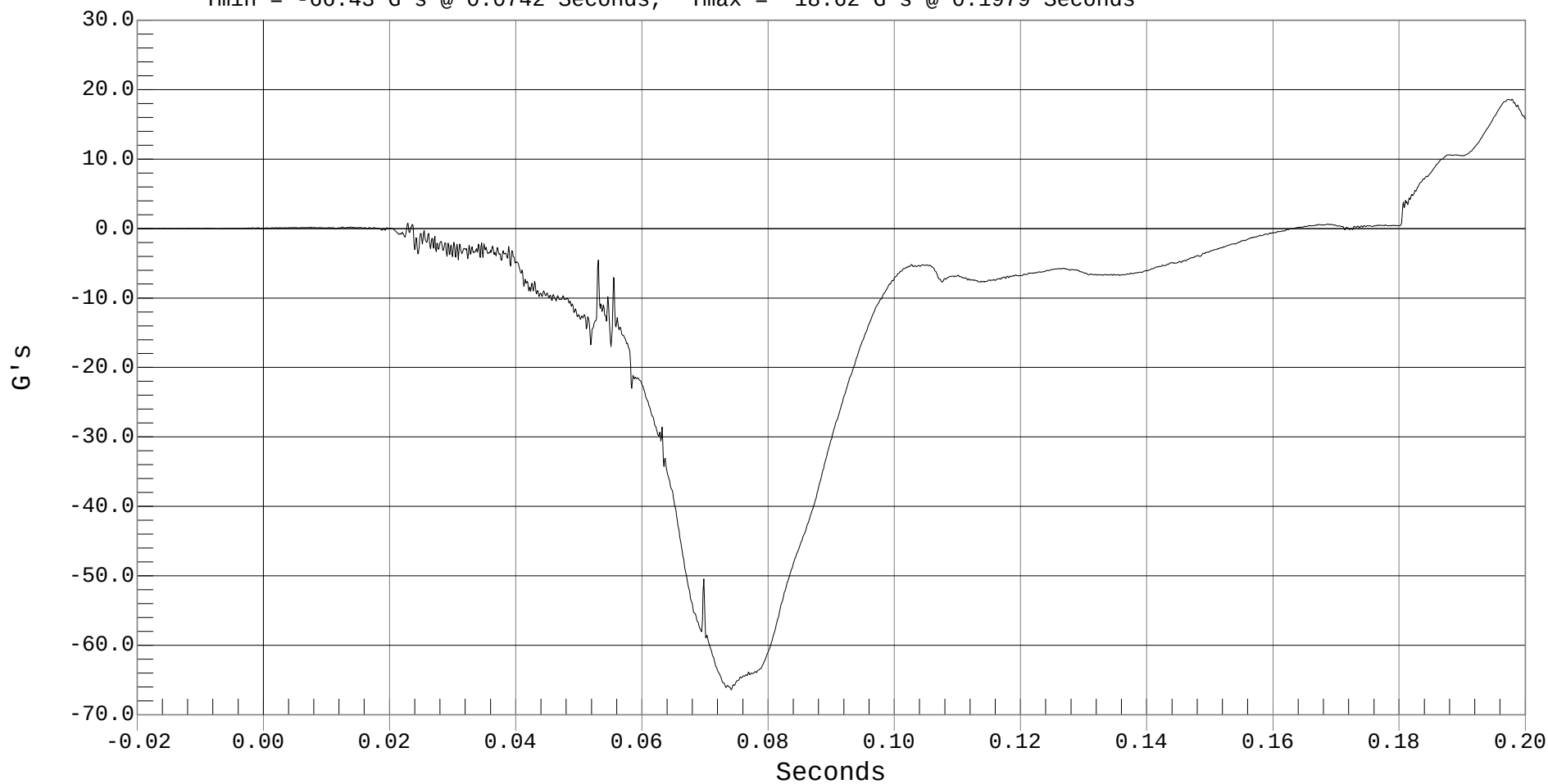
# DRIVER HEAD X ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 1000

— 1 DRIVER HEAD X, B01006AT.A01

Ymin = -66.43 G's @ 0.0742 Seconds, Ymax = 18.62 G's @ 0.1979 Seconds





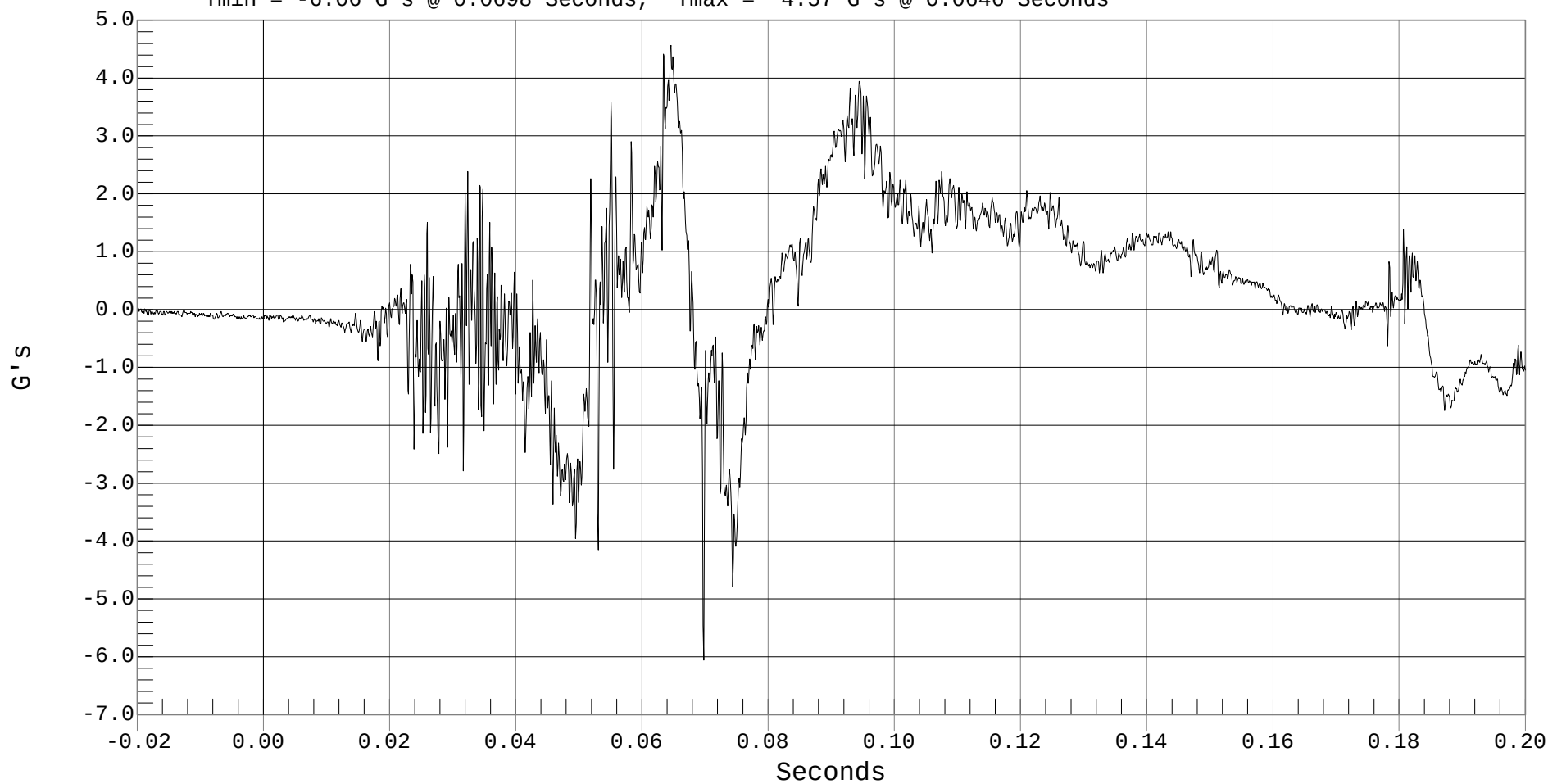
# DRIVER HEAD Y ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 1000

— 1 DRIVER HEAD Y, B01006AT.A02

Ymin = -6.06 G's @ 0.0698 Seconds, Ymax = 4.57 G's @ 0.0646 Seconds





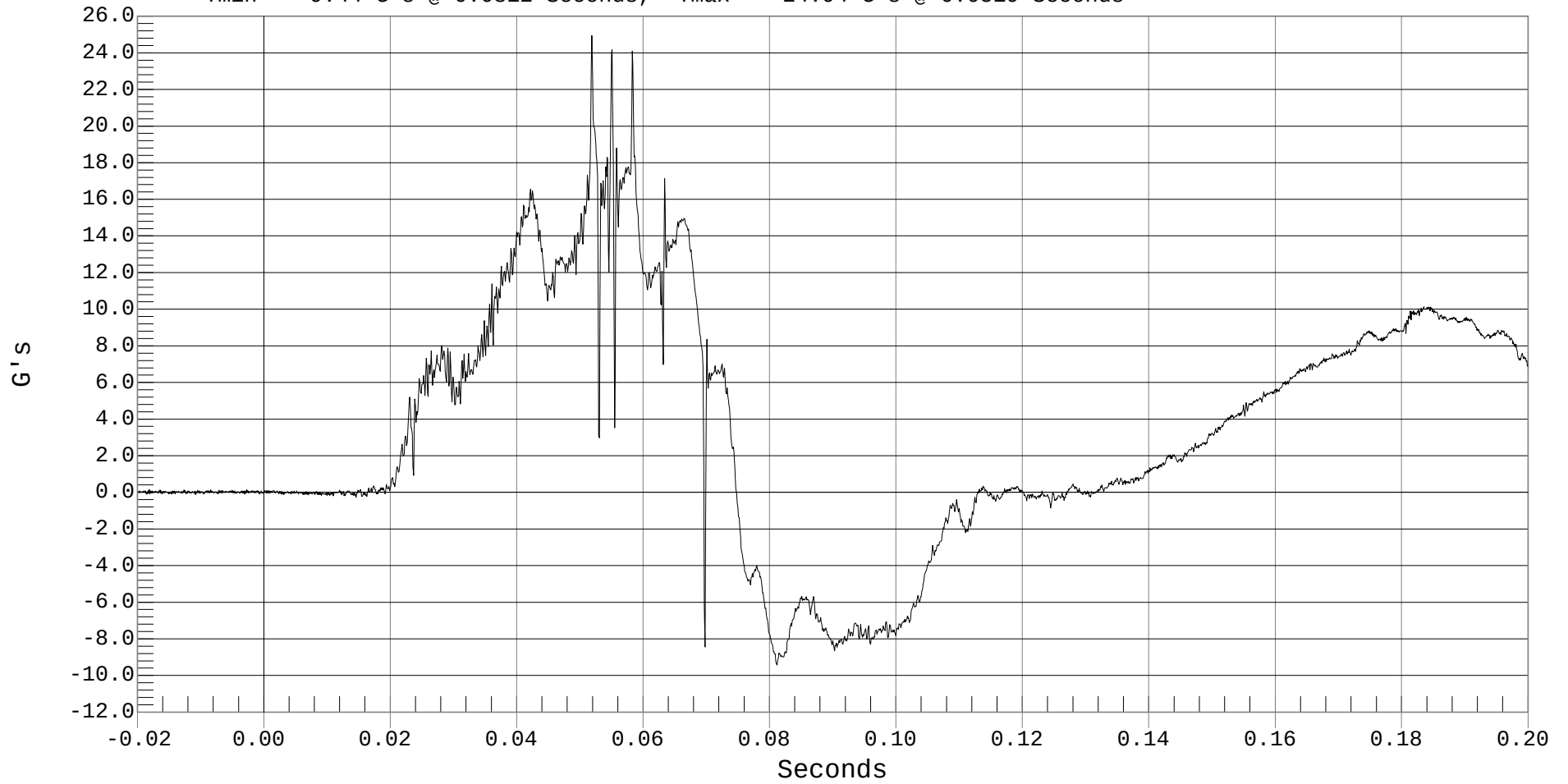
# DRIVER HEAD Z ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 1000

— 1 DRIVER HEAD Z, B01006AT.A03

Ymin = -9.44 G's @ 0.0812 Seconds, Ymax = 24.94 G's @ 0.0519 Seconds







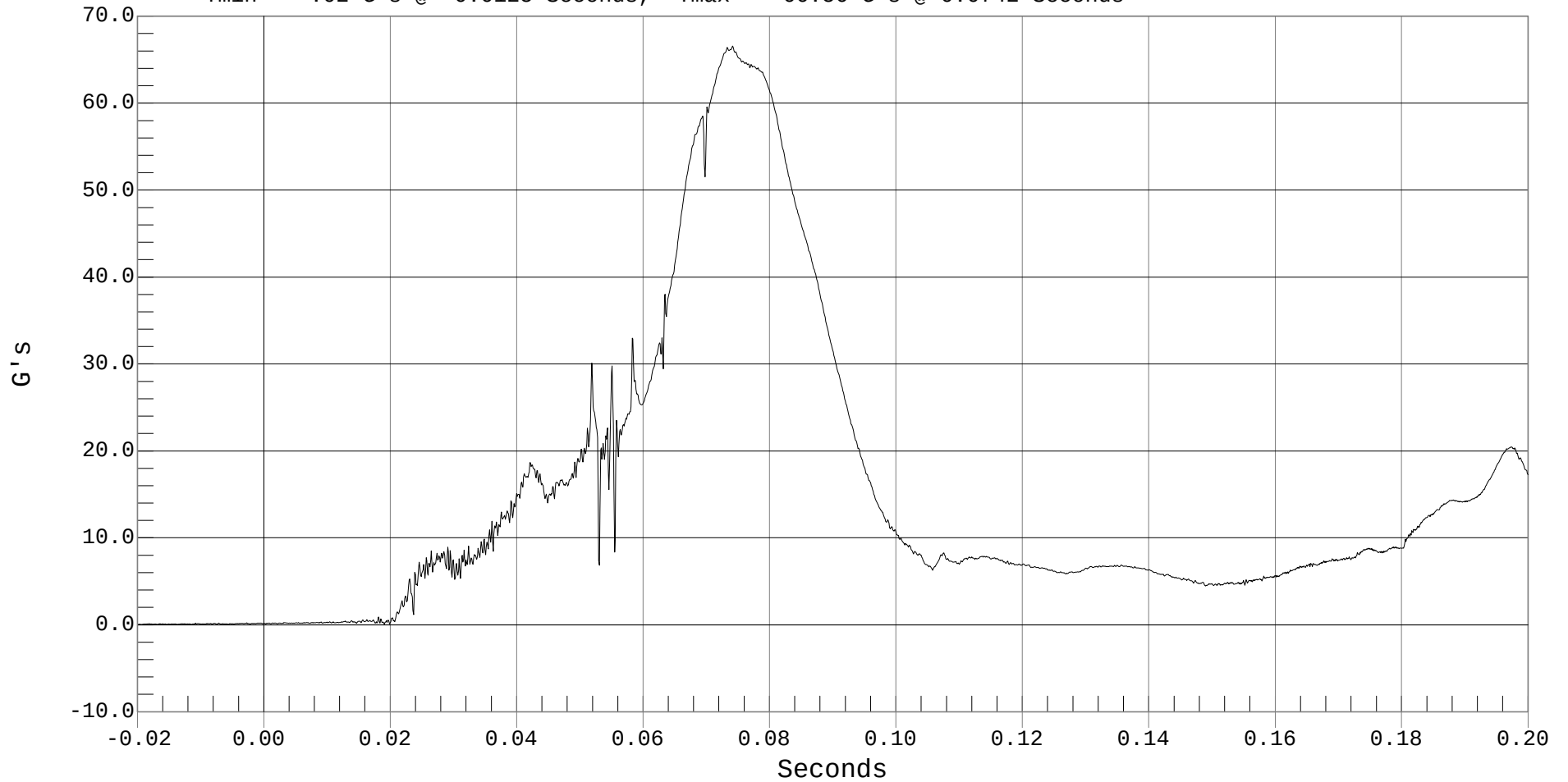
# DRIVER HEAD RESULTANT ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 1000

— 1 DRIVER HEAD RESULTANT ACCELERATION, B01006AV.A01

Ymin = .02 G's @ -0.0125 Seconds, Ymax = 66.56 G's @ 0.0742 Seconds





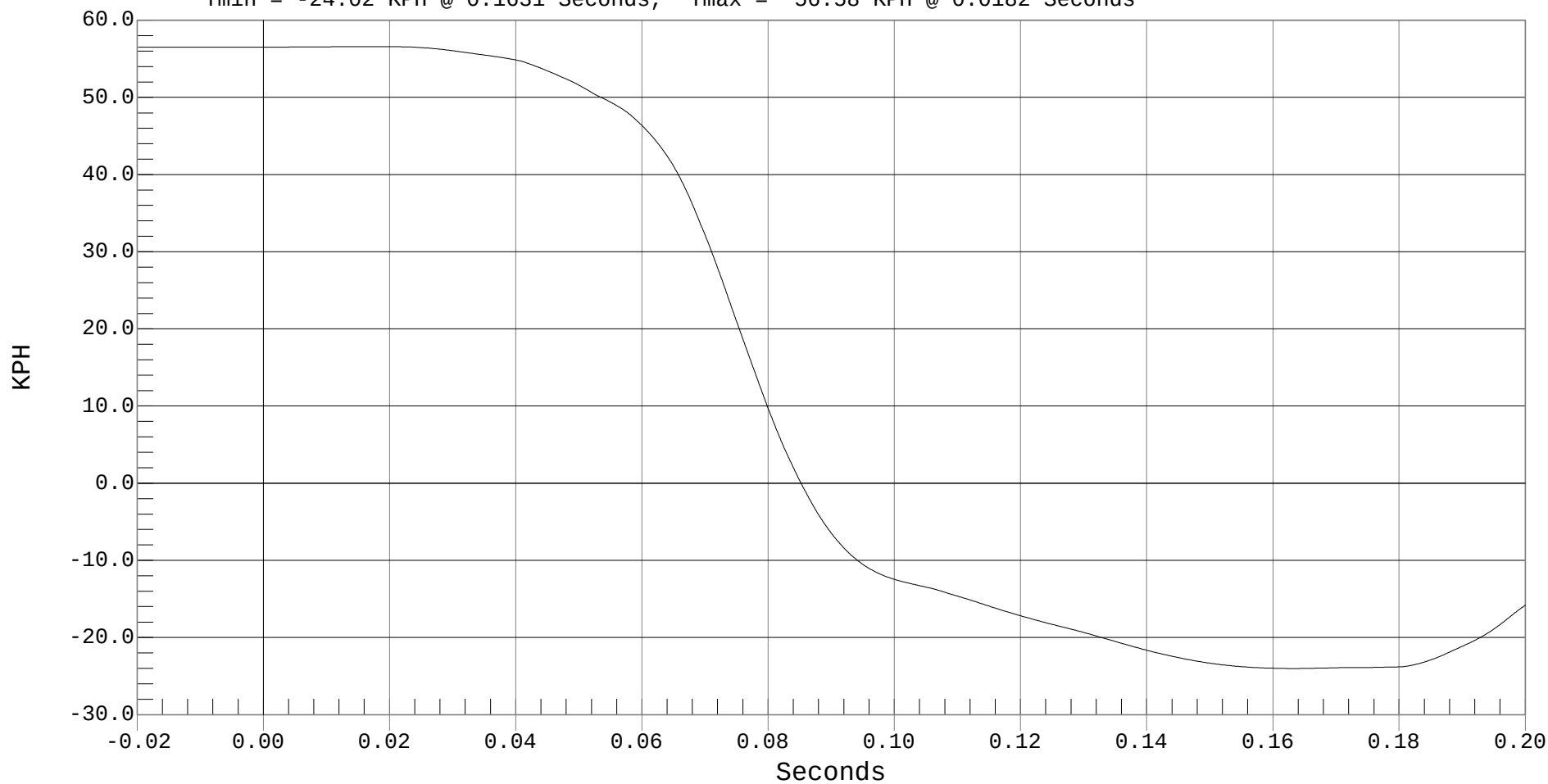
## DRIVER HEAD X VELOCITY

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 180

— 1 DRIVER HEAD X VELOCITY, B01006AI.V01

Ymin = -24.02 KPH @ 0.1631 Seconds, Ymax = 56.58 KPH @ 0.0182 Seconds





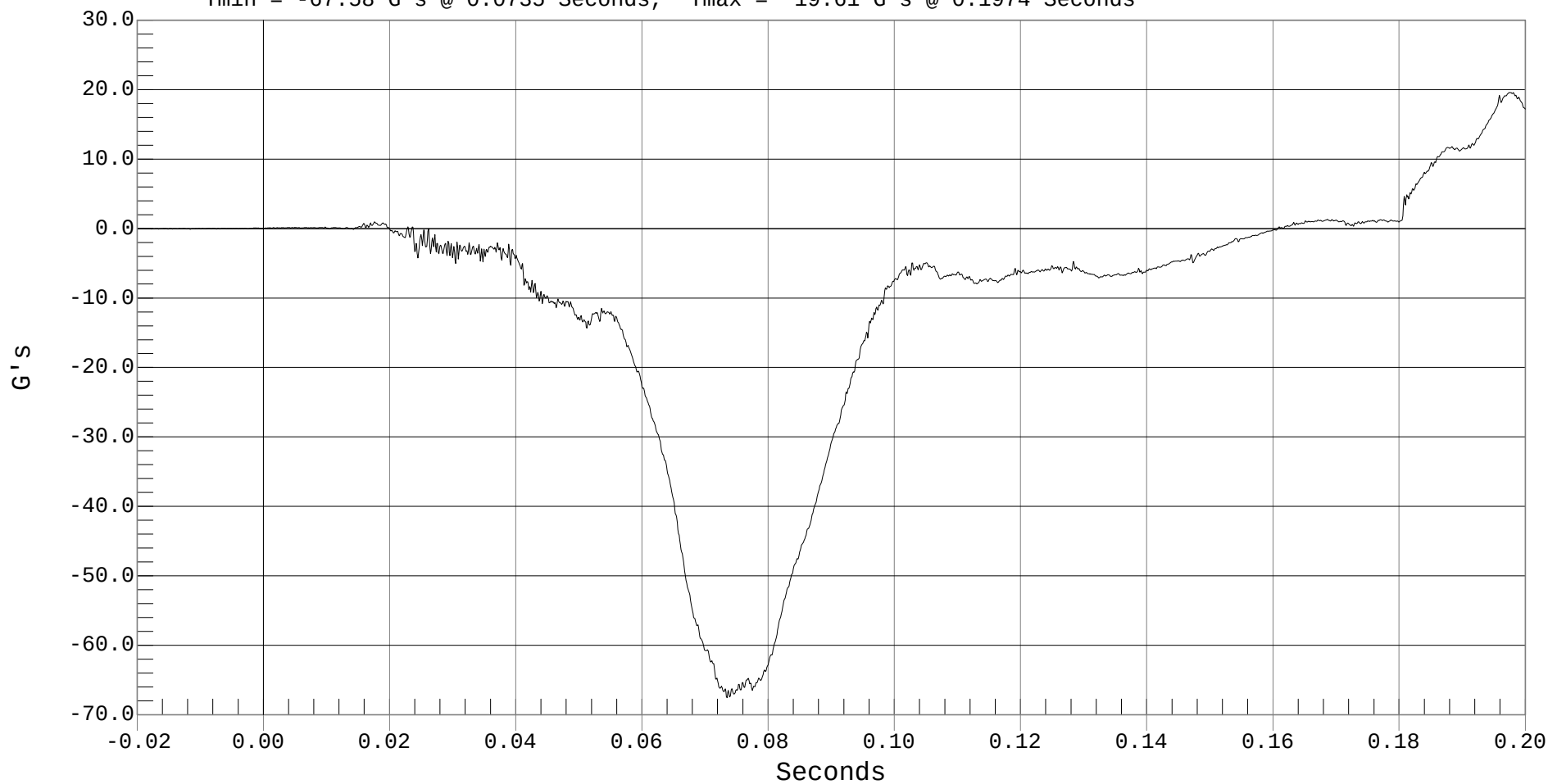
# DRIVER HEAD REDUNDANT X ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 1000

— 1 DRIVER HEAD Xr, B01006AT.A33

Ymin = -67.58 G's @ 0.0735 Seconds, Ymax = 19.61 G's @ 0.1974 Seconds







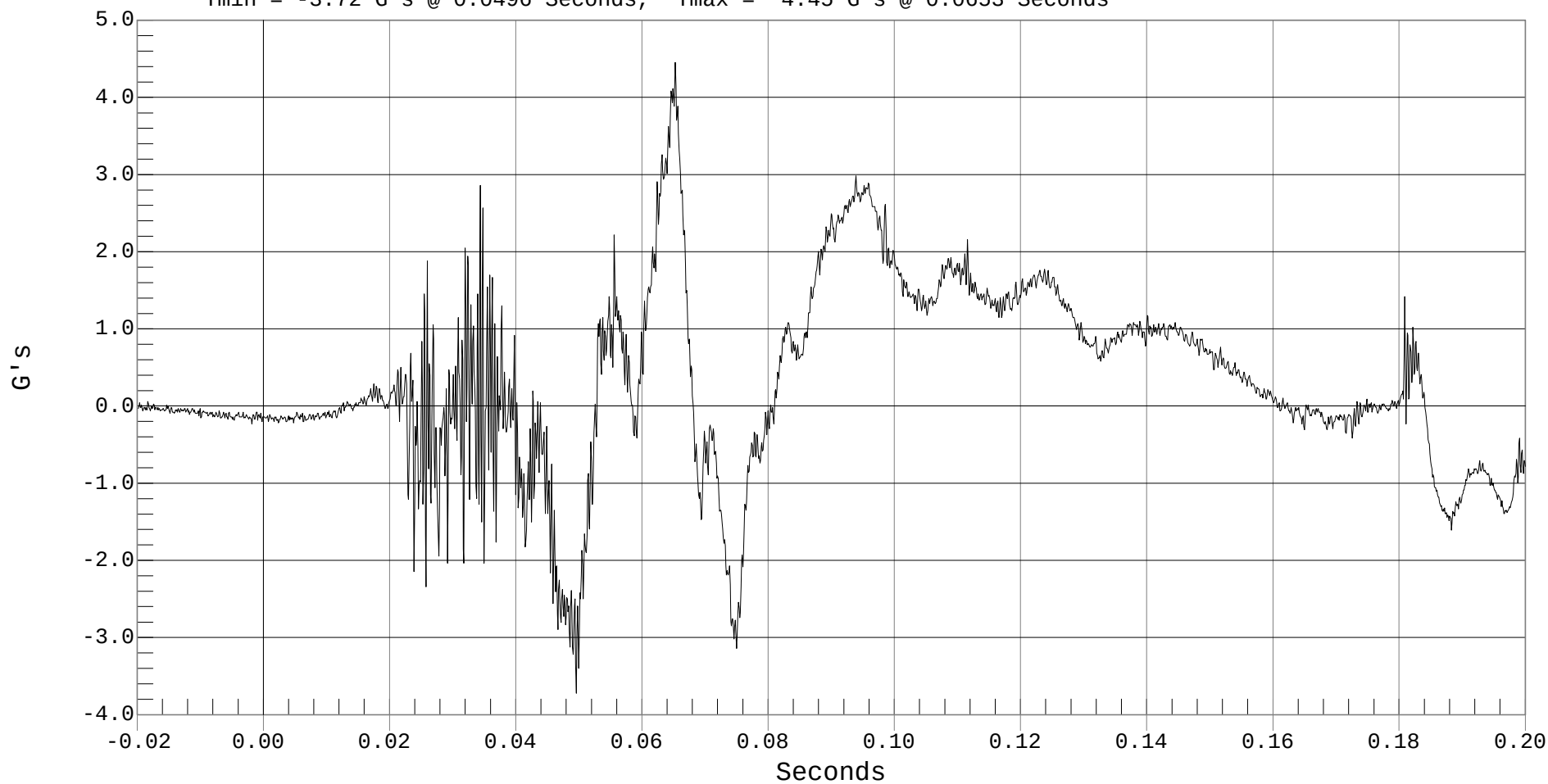
# DRIVER HEAD REDUNDANT Y ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 1000

— 1 DRIVER HEAD Yr, B01006AT.A34

Ymin = -3.72 G's @ 0.0496 Seconds, Ymax = 4.45 G's @ 0.0653 Seconds





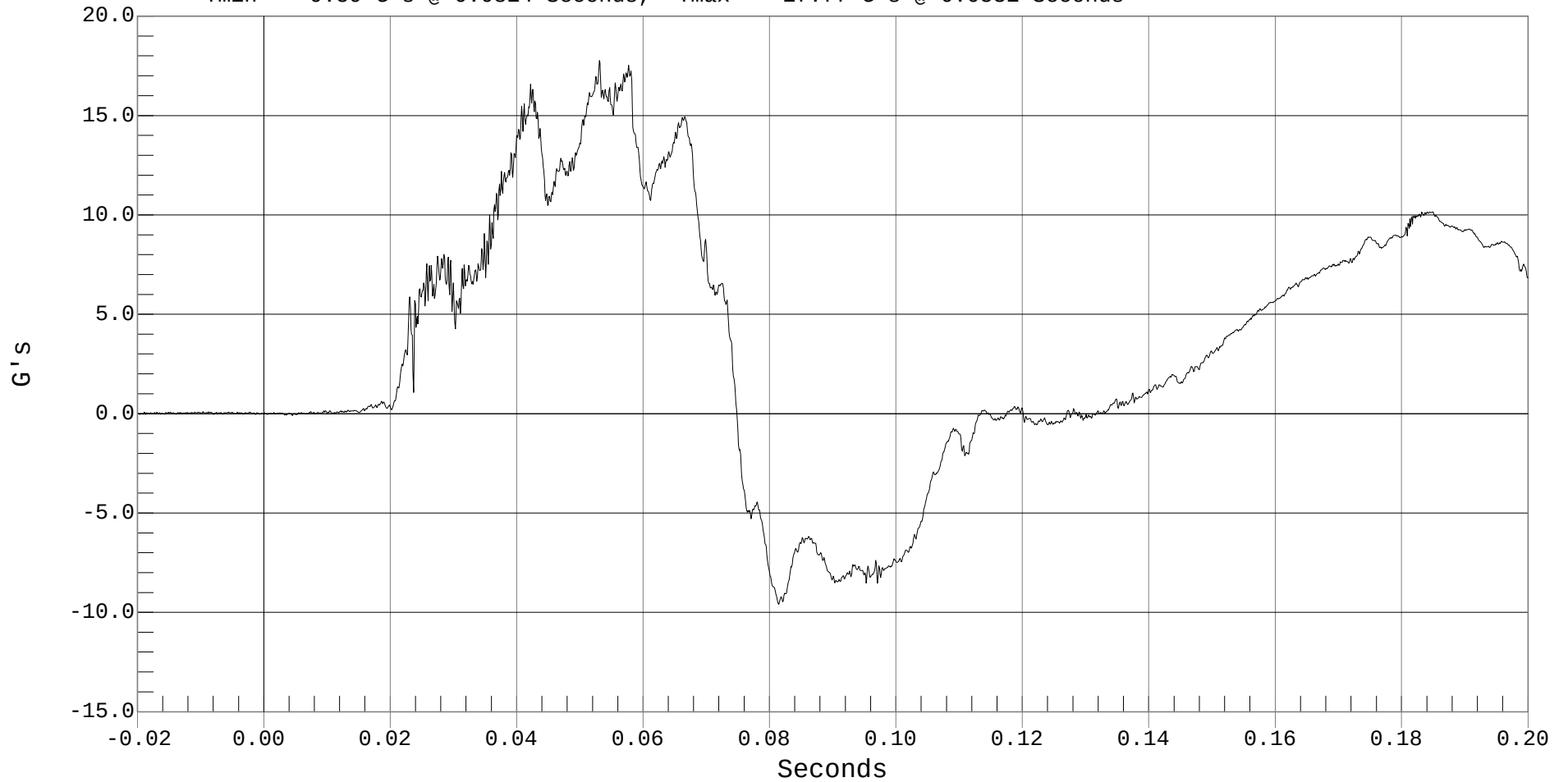
# DRIVER HEAD REDUNDANT Z ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 1000

— 1 DRIVER HEAD Zr, B01006AT.A35

Ymin = -9.59 G's @ 0.0814 Seconds, Ymax = 17.77 G's @ 0.0531 Seconds





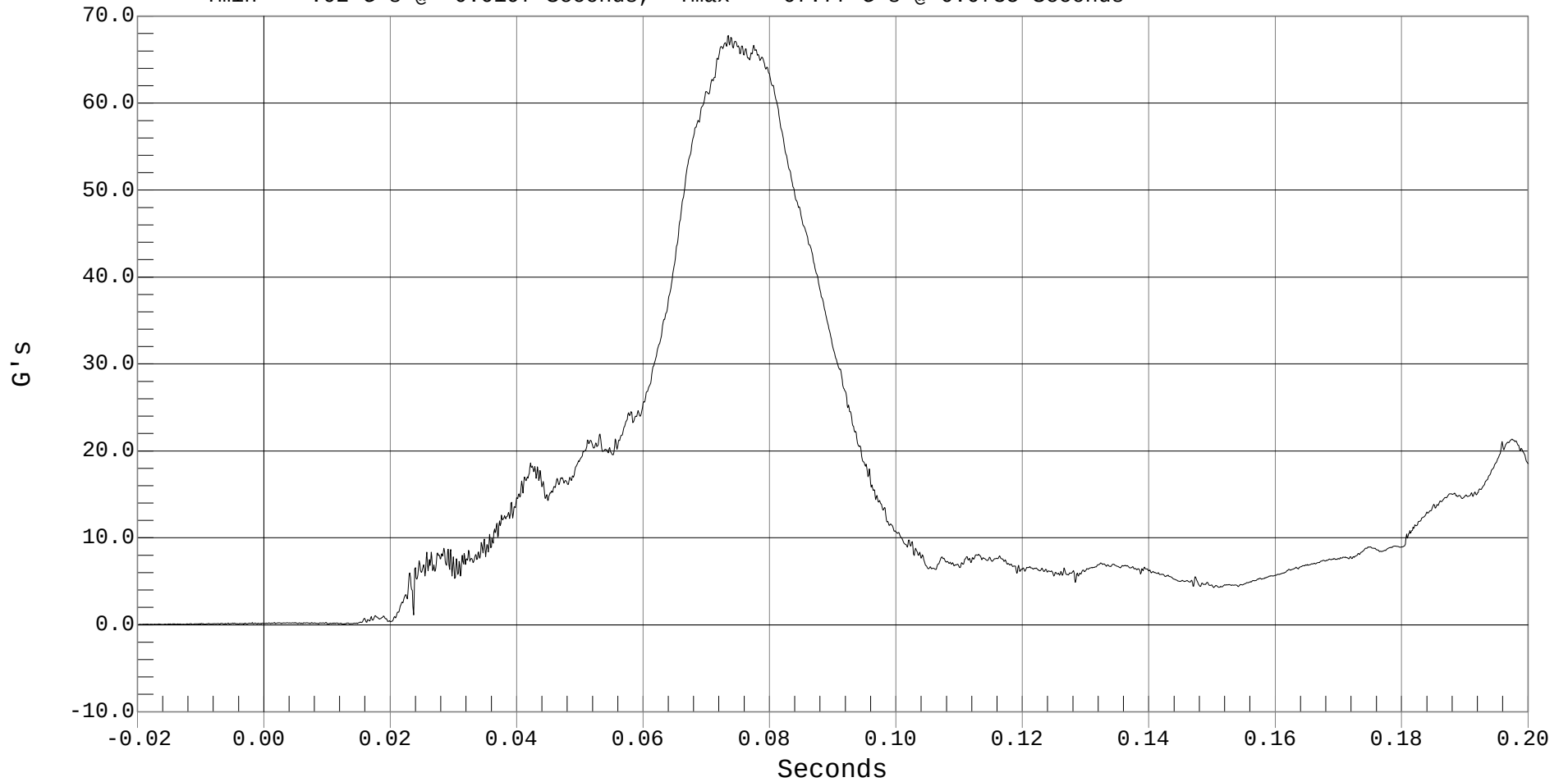
# DRIVER HEAD REDUNDANT RESULTANT ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 1000

— 1 DRIVER HEAD REDUNDANT RESULTANT ACCELERATION, B01006AV.A33

Ymin = .02 G's @ -0.0197 Seconds, Ymax = 67.77 G's @ 0.0735 Seconds







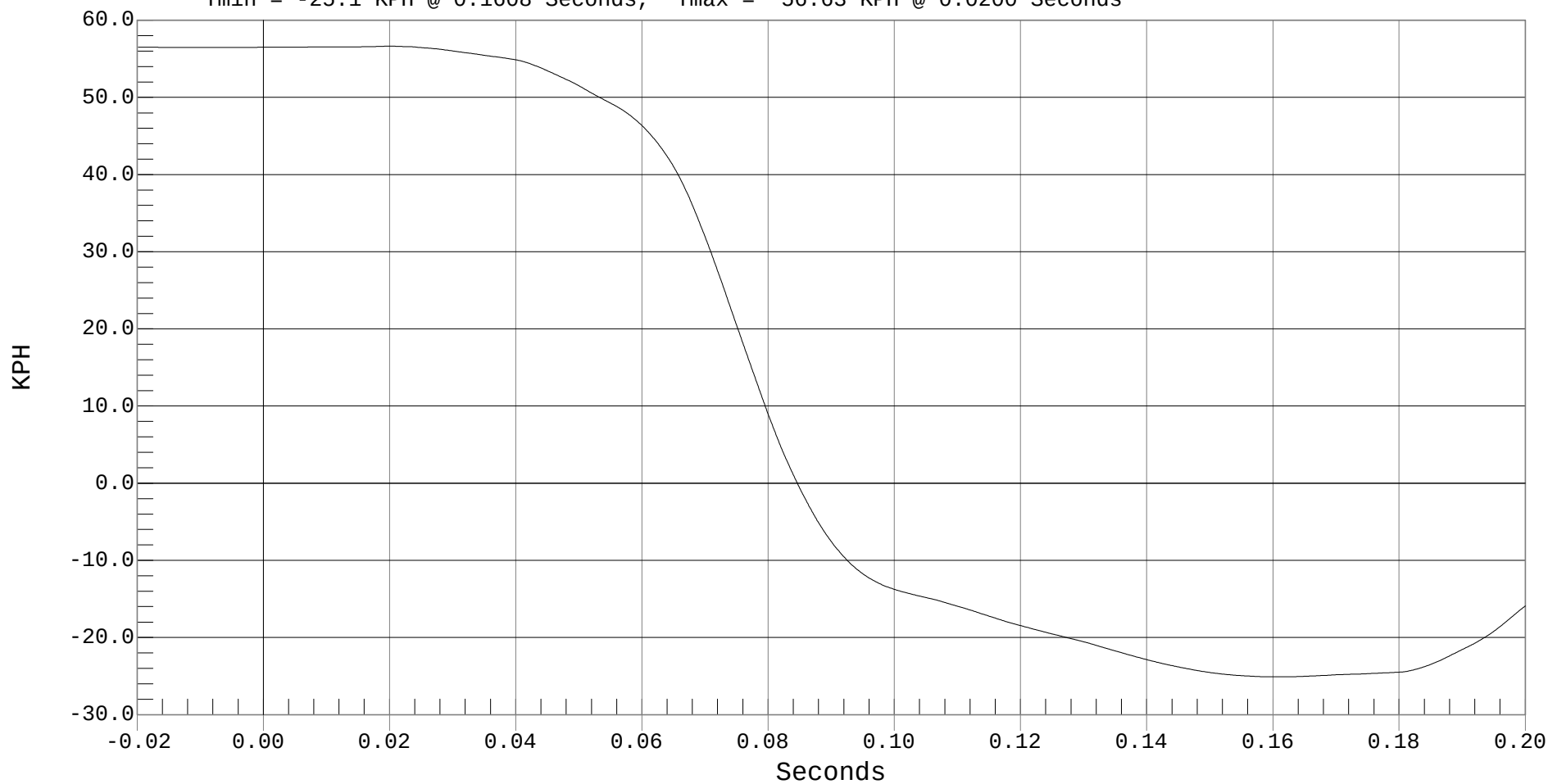
# DRIVER HEAD REDUNDANT X VELOCITY

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 180

— 1 DRIVER HEAD REDUNDANT X VELOCITY, B01006AI.V33

Ymin = -25.1 KPH @ 0.1608 Seconds, Ymax = 56.63 KPH @ 0.0200 Seconds





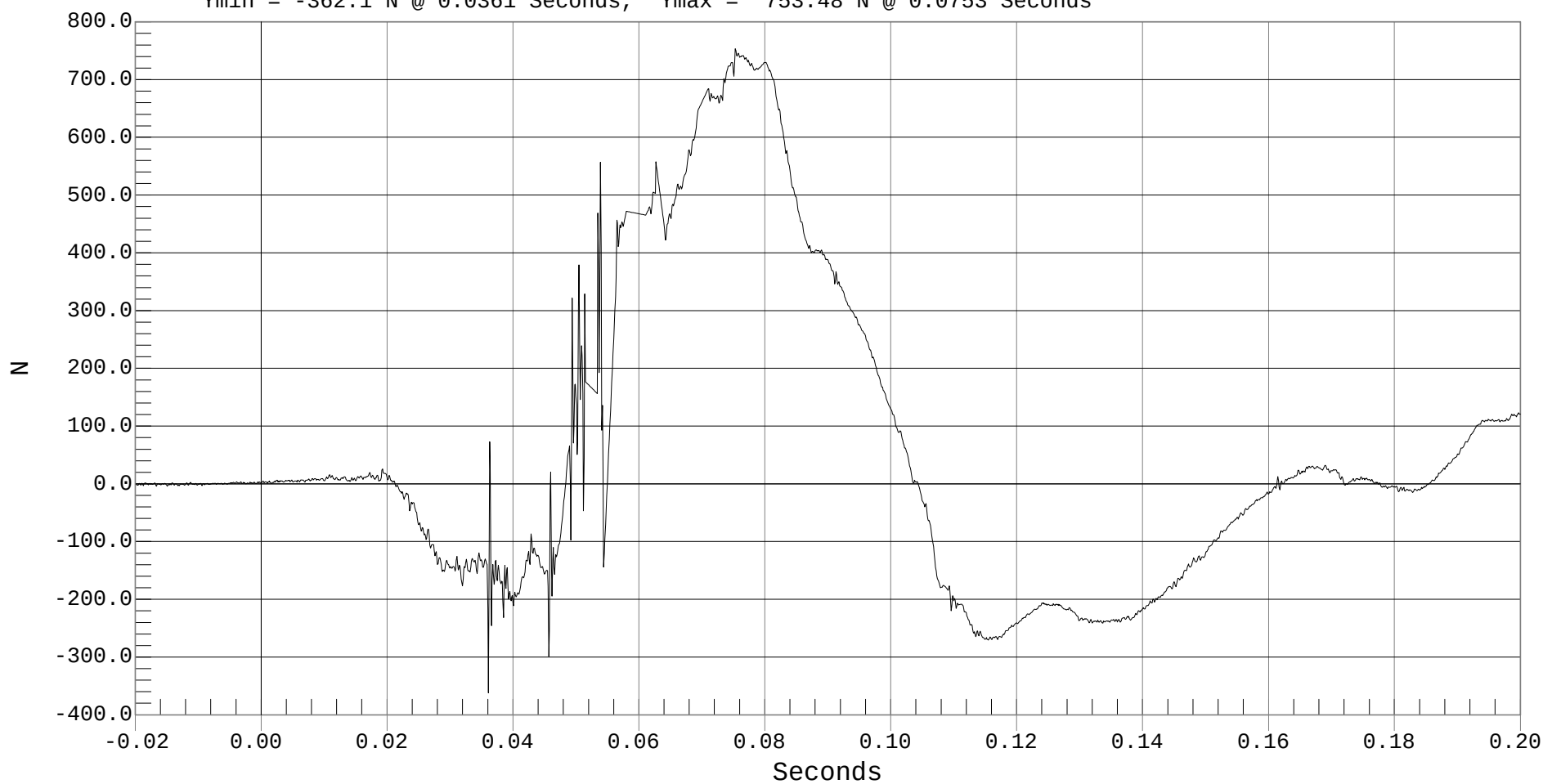
# DRIVER NECK FORCE X

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 1000

— 1 DRIVER NECK FX, B01006FT.F04

Ymin = -362.1 N @ 0.0361 Seconds, Ymax = 753.48 N @ 0.0753 Seconds





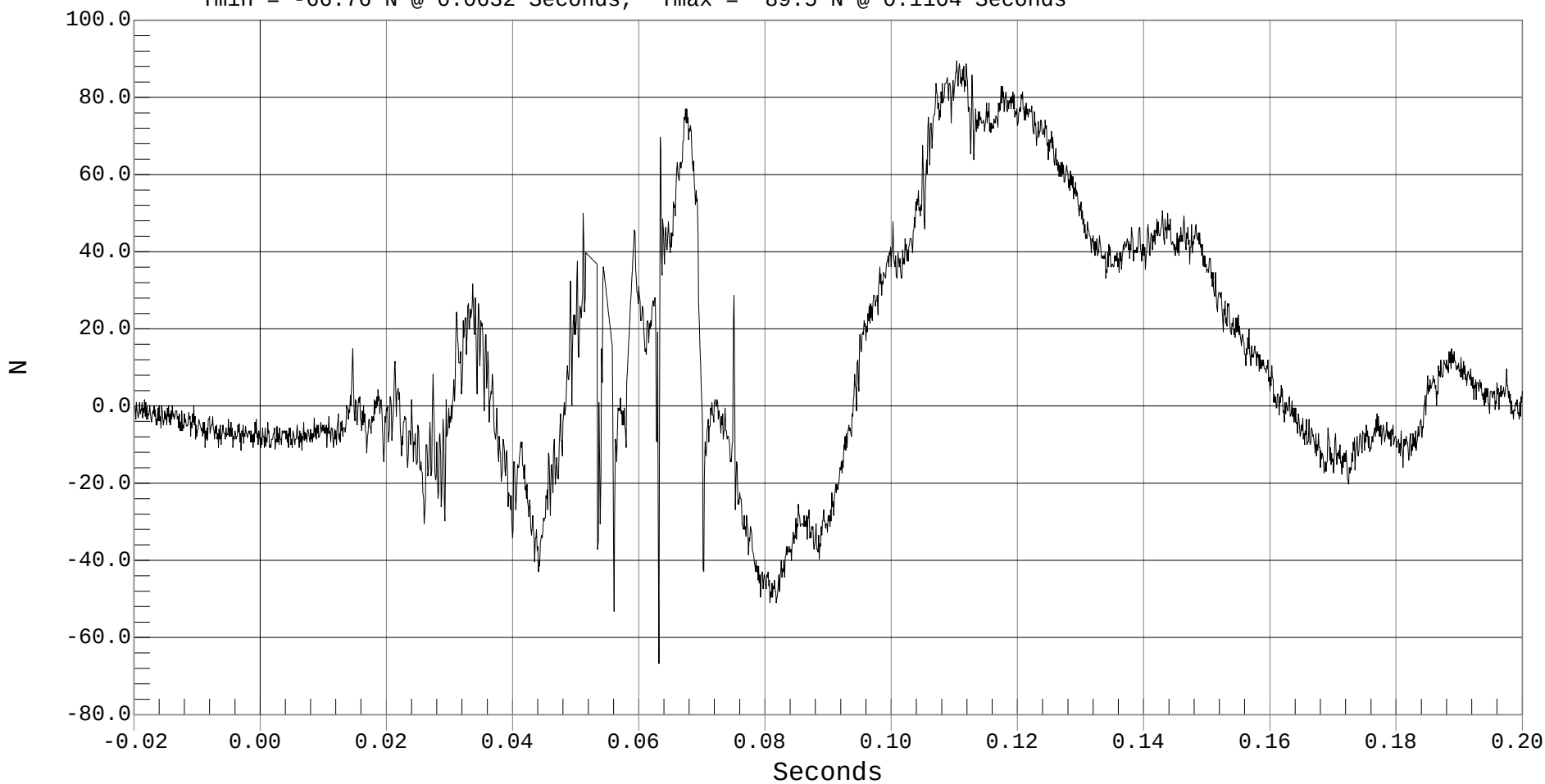
# DRIVER NECK FORCE Y

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 1000

— 1 DRIVER NECK FY, B01006FT.F05

Ymin = -66.76 N @ 0.0632 Seconds, Ymax = 89.5 N @ 0.1104 Seconds







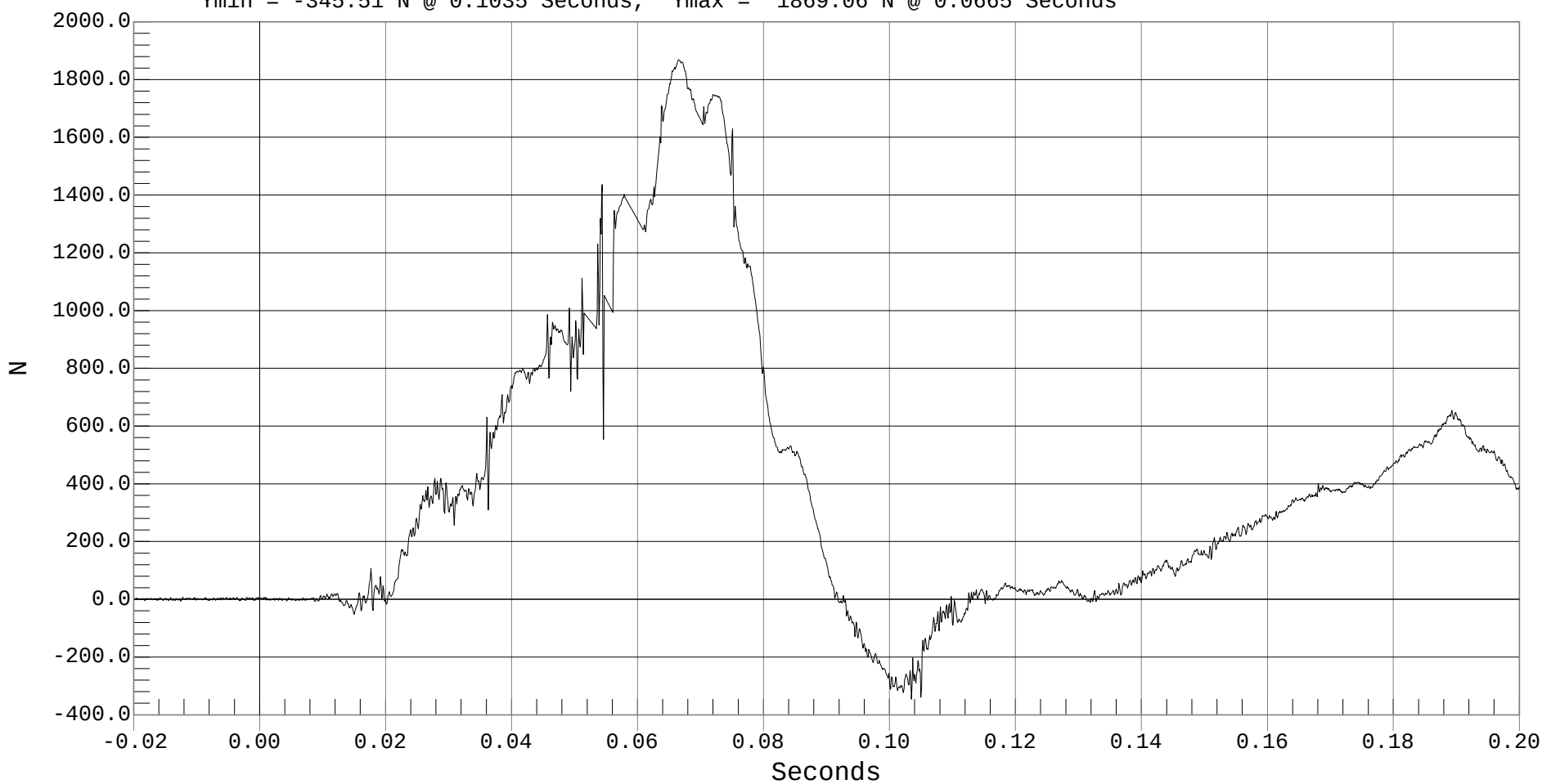
# DRIVER NECK FORCE Z

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 1000

— 1 DRIVER NECK FZ, B01006FT.F06

Ymin = -345.51 N @ 0.1035 Seconds, Ymax = 1869.06 N @ 0.0665 Seconds





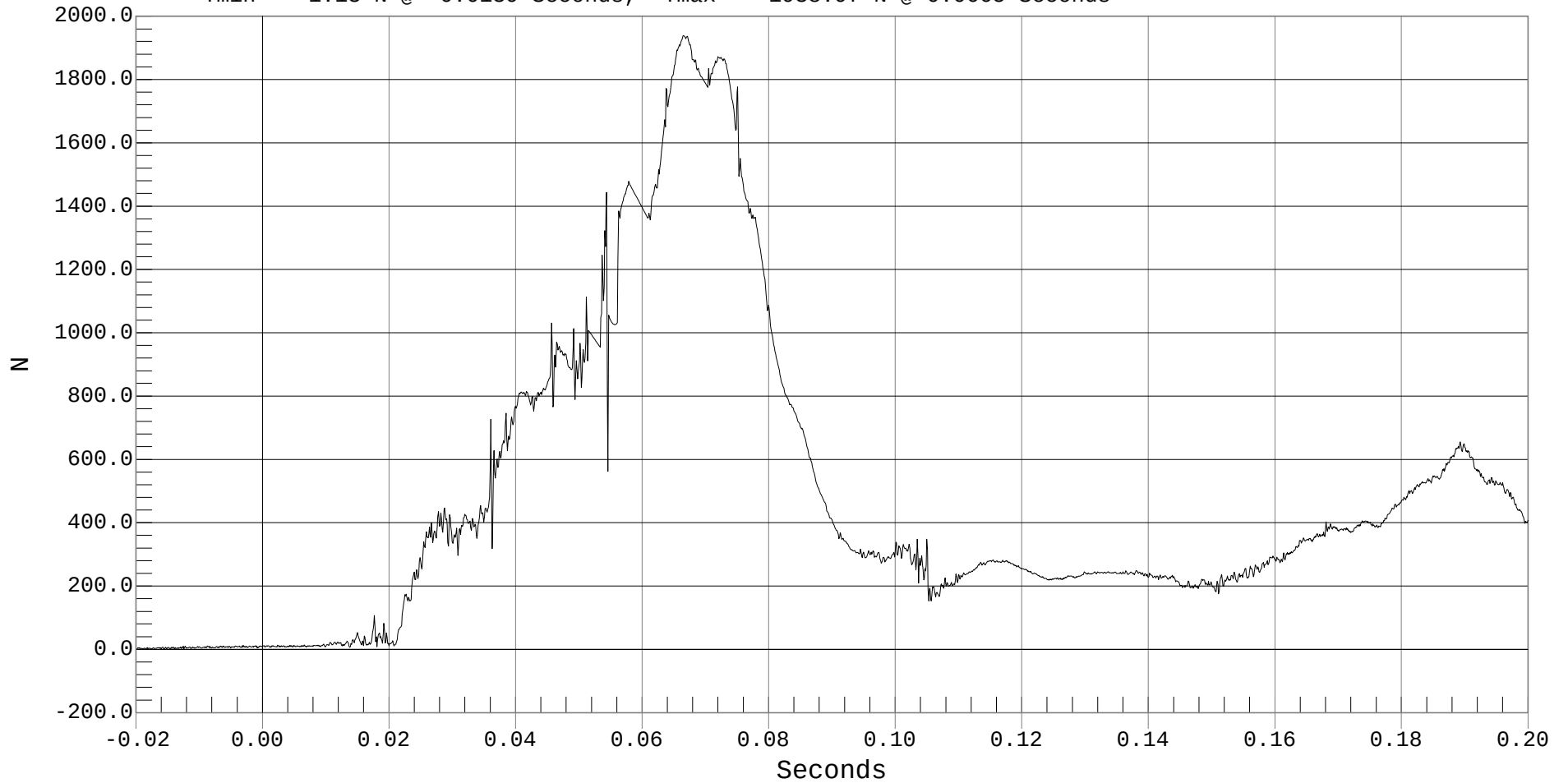
## DRIVER NECK FORCE RESULTANT

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 1000

— 1 DRIVER NECK FORCE RESULTANT, B01006FV.F04

Ymin = 1.13 N @ -0.0139 Seconds, Ymax = 1938.97 N @ 0.0665 Seconds





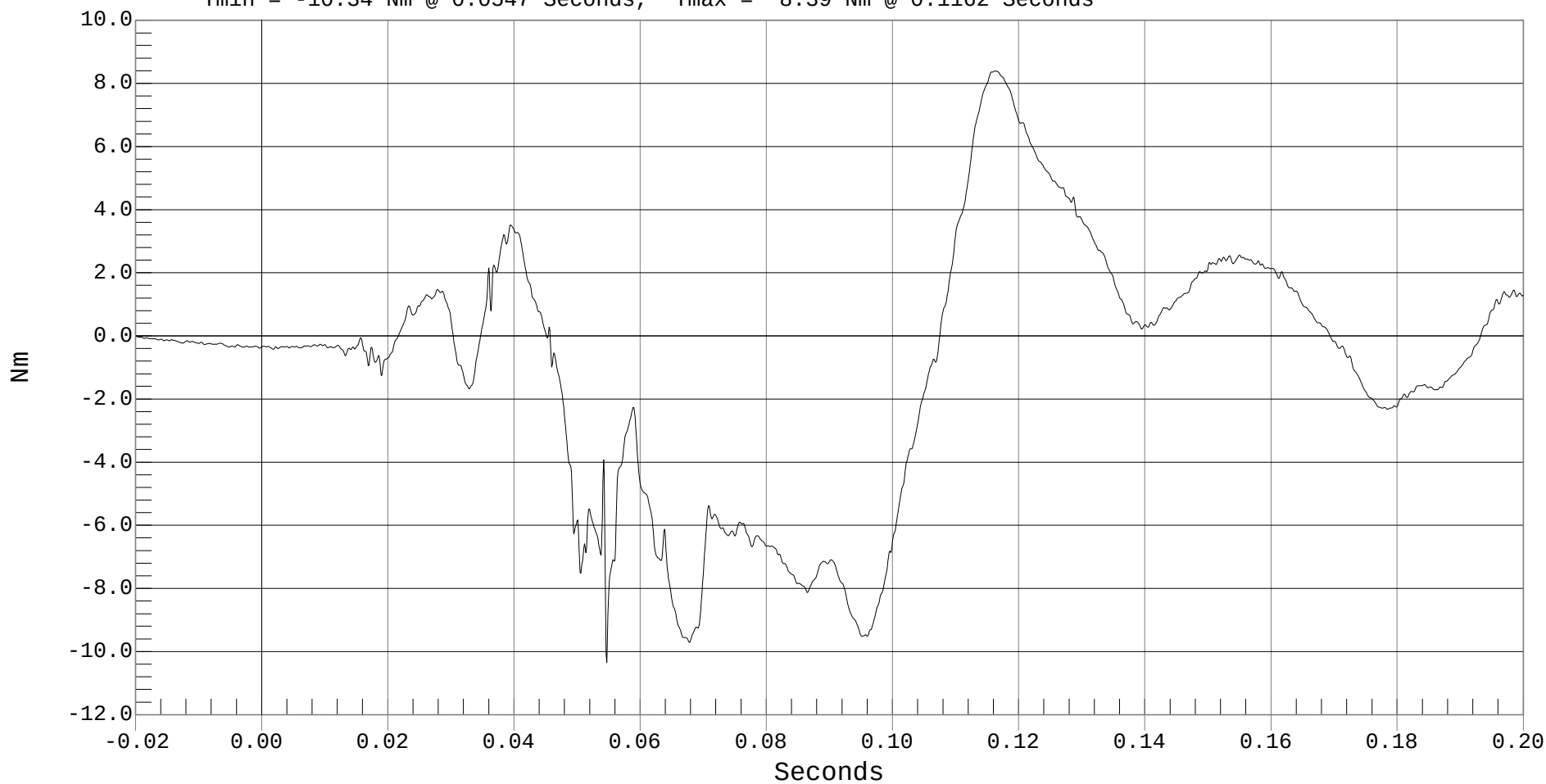
# DRIVER NECK MOMENT X

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 600

— 1 DRIVER NECK MX, B01006MF.M07

Ymin = -10.34 Nm @ 0.0547 Seconds, Ymax = 8.39 Nm @ 0.1162 Seconds







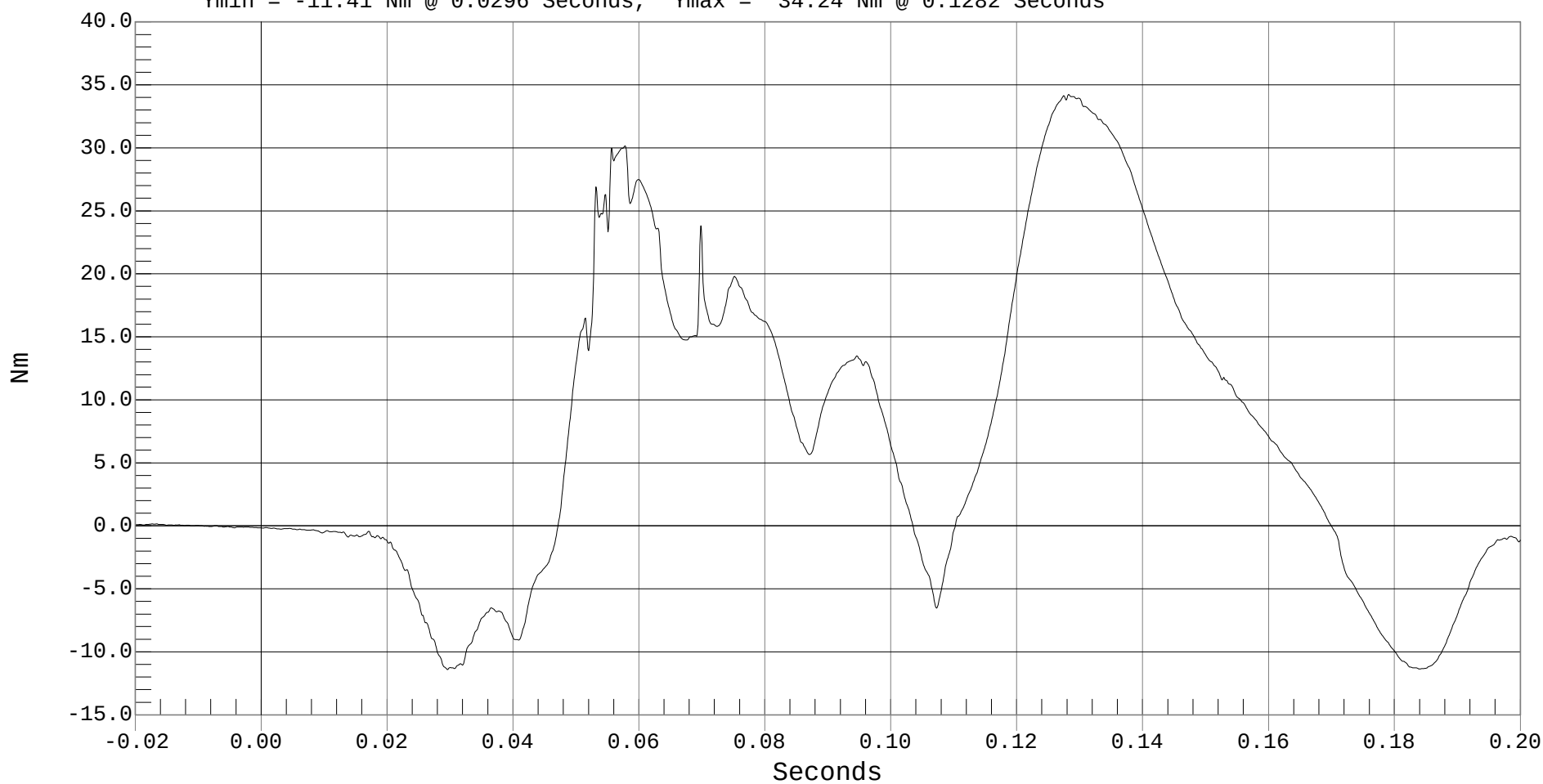
# DRIVER NECK MOMENT Y

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 600

— 1 DRIVER NECK MY, B01006MF.M08

Ymin = -11.41 Nm @ 0.0296 Seconds, Ymax = 34.24 Nm @ 0.1282 Seconds





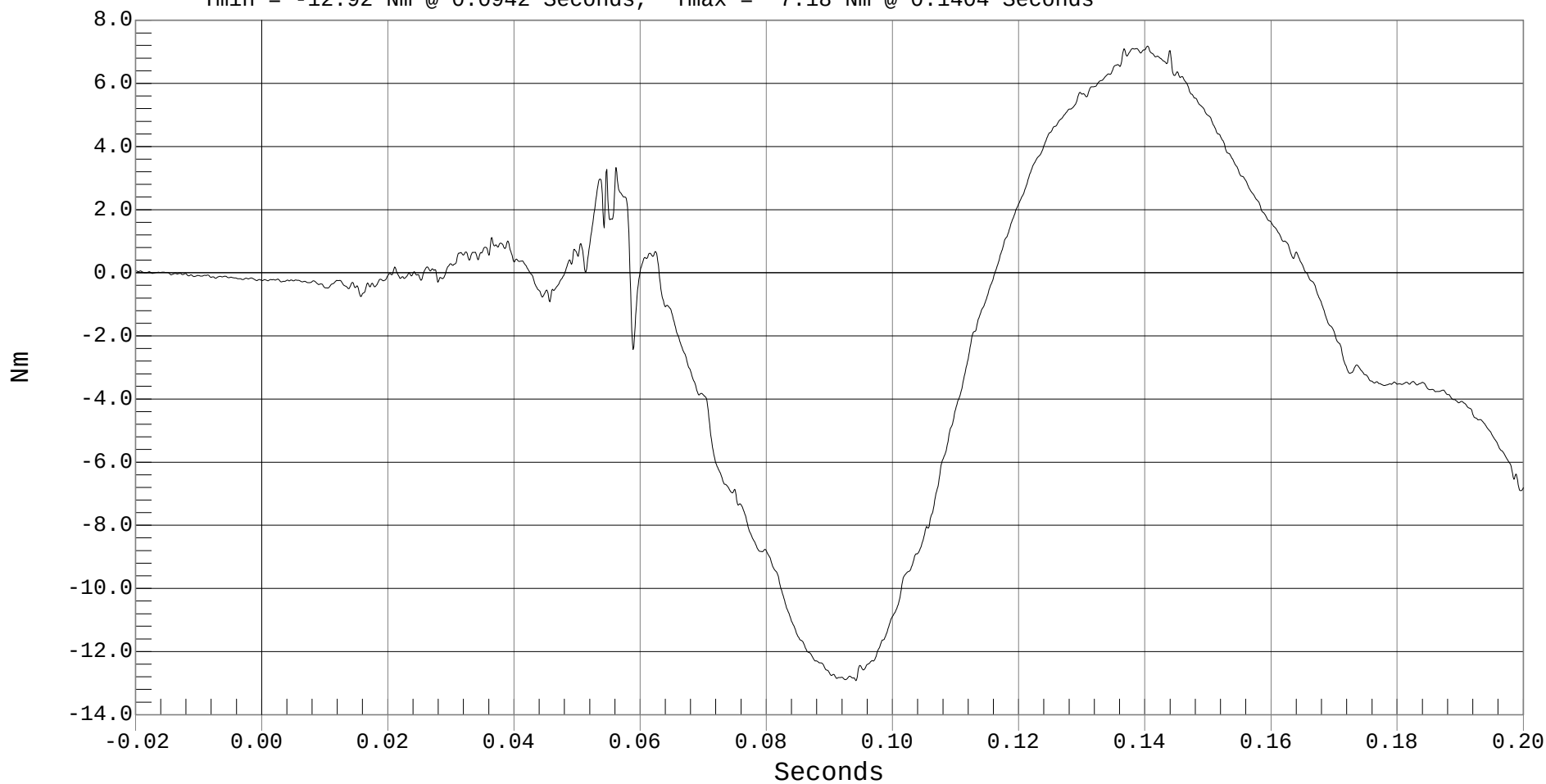
## DRIVER NECK MOMENT Z

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 600

— 1 DRIVER NECK MZ, B01006MF.M09

Ymin = -12.92 Nm @ 0.0942 Seconds, Ymax = 7.18 Nm @ 0.1404 Seconds





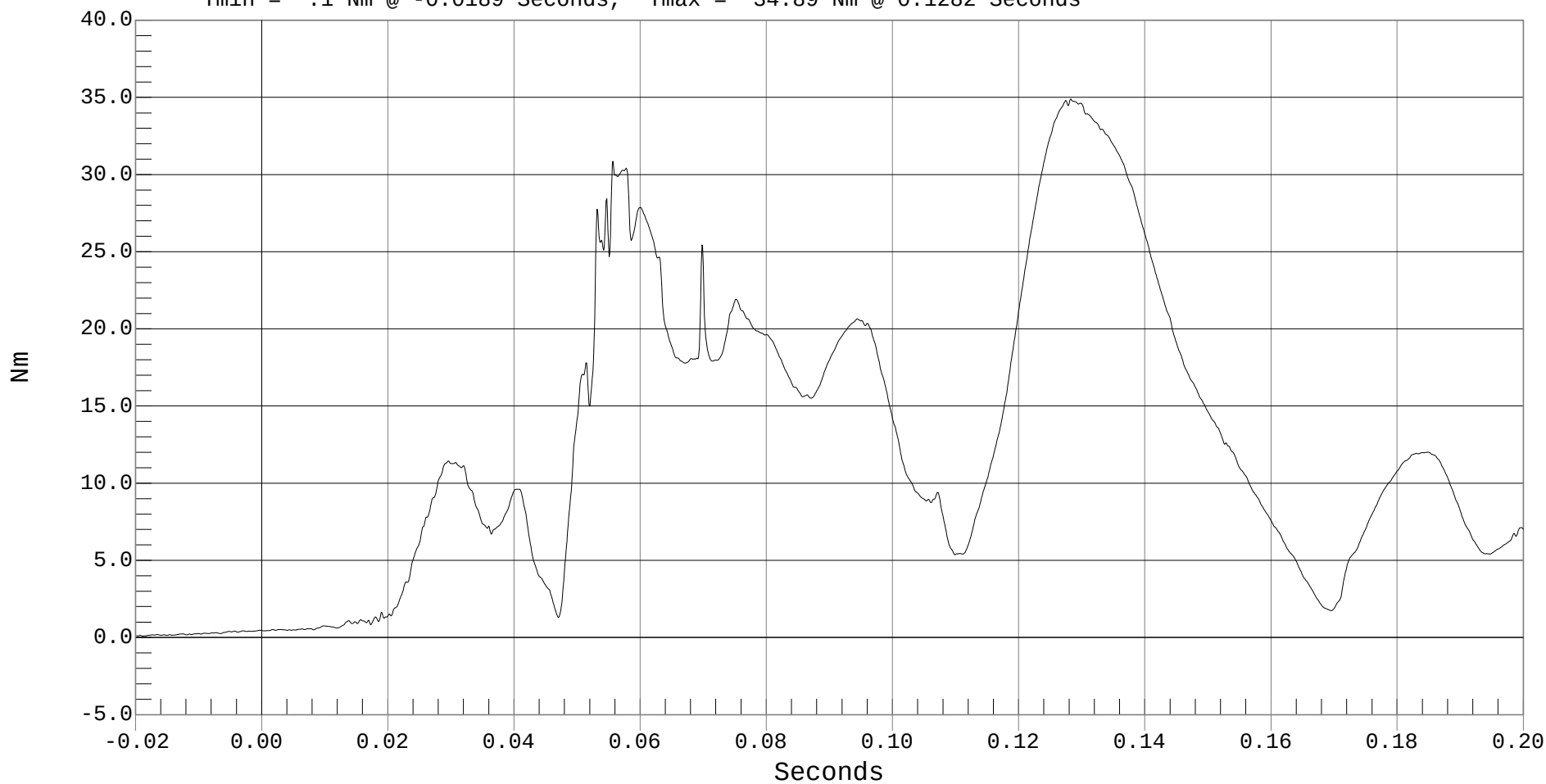
# DRIVER NECK MOMENT RESULTANT

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 600

— 1 DRIVER NECK MOMENT RESULTANT, B01006MV.M07

Ymin = .1 Nm @ -0.0189 Seconds, Ymax = 34.89 Nm @ 0.1282 Seconds







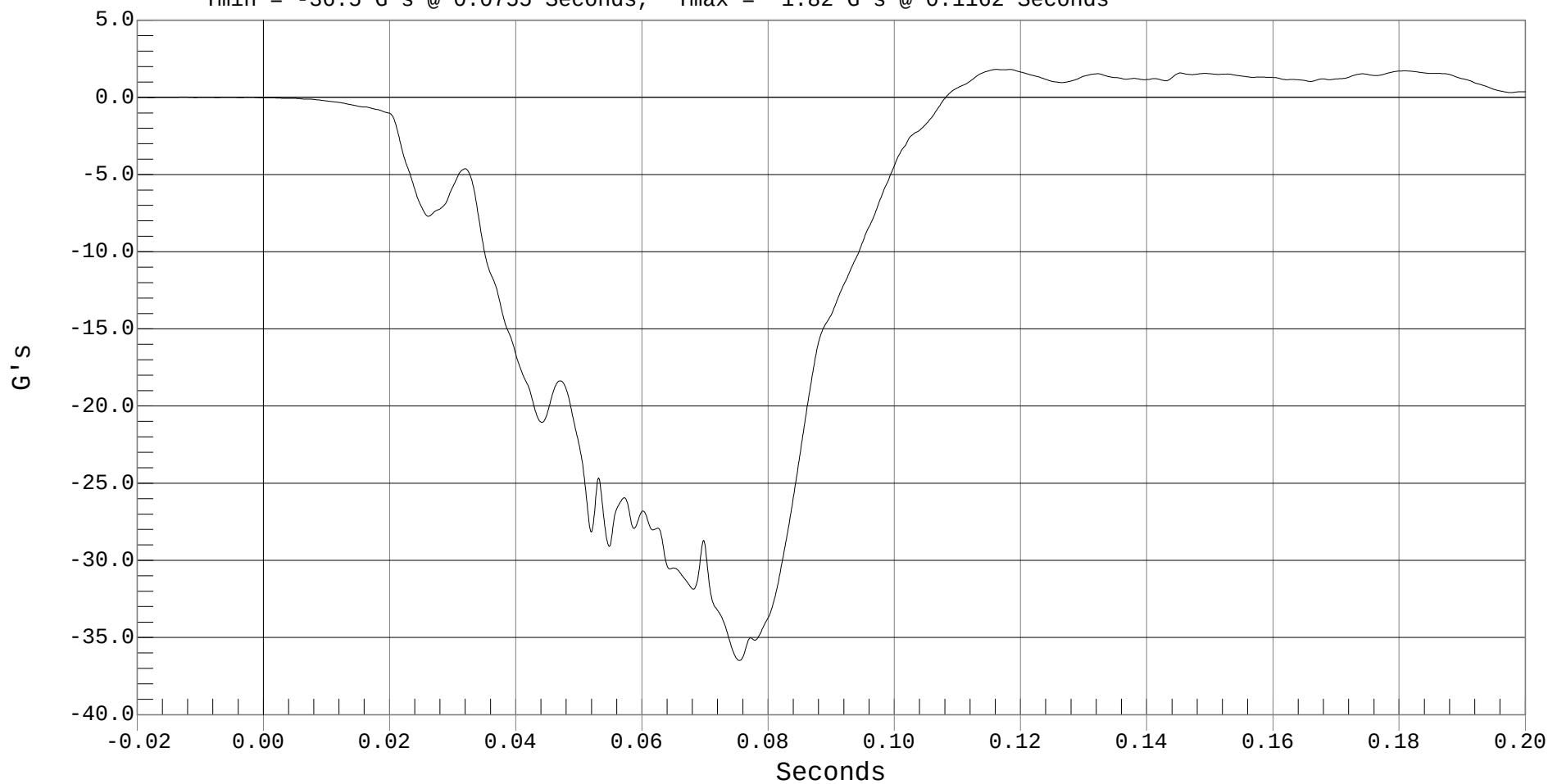
# DRIVER CHEST X ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 180

1 DRIVER CHEST X, B01006AF.A10

Ymin = -36.5 G's @ 0.0755 Seconds, Ymax = 1.82 G's @ 0.1162 Seconds





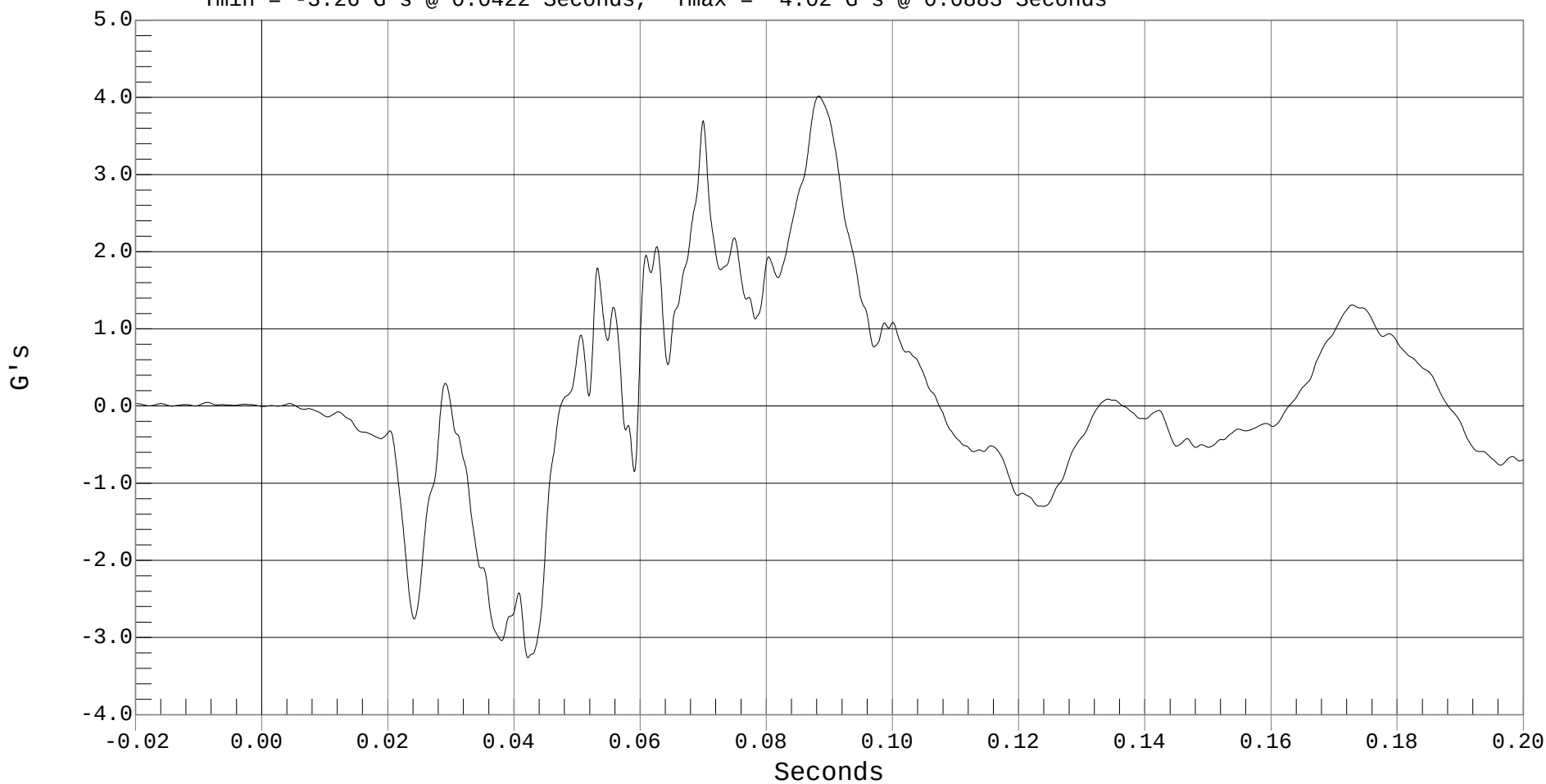
# DRIVER CHEST Y ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 180

— 1 DRIVER CHEST Y, B01006AF.A11

Ymin = -3.26 G's @ 0.0422 Seconds, Ymax = 4.02 G's @ 0.0883 Seconds





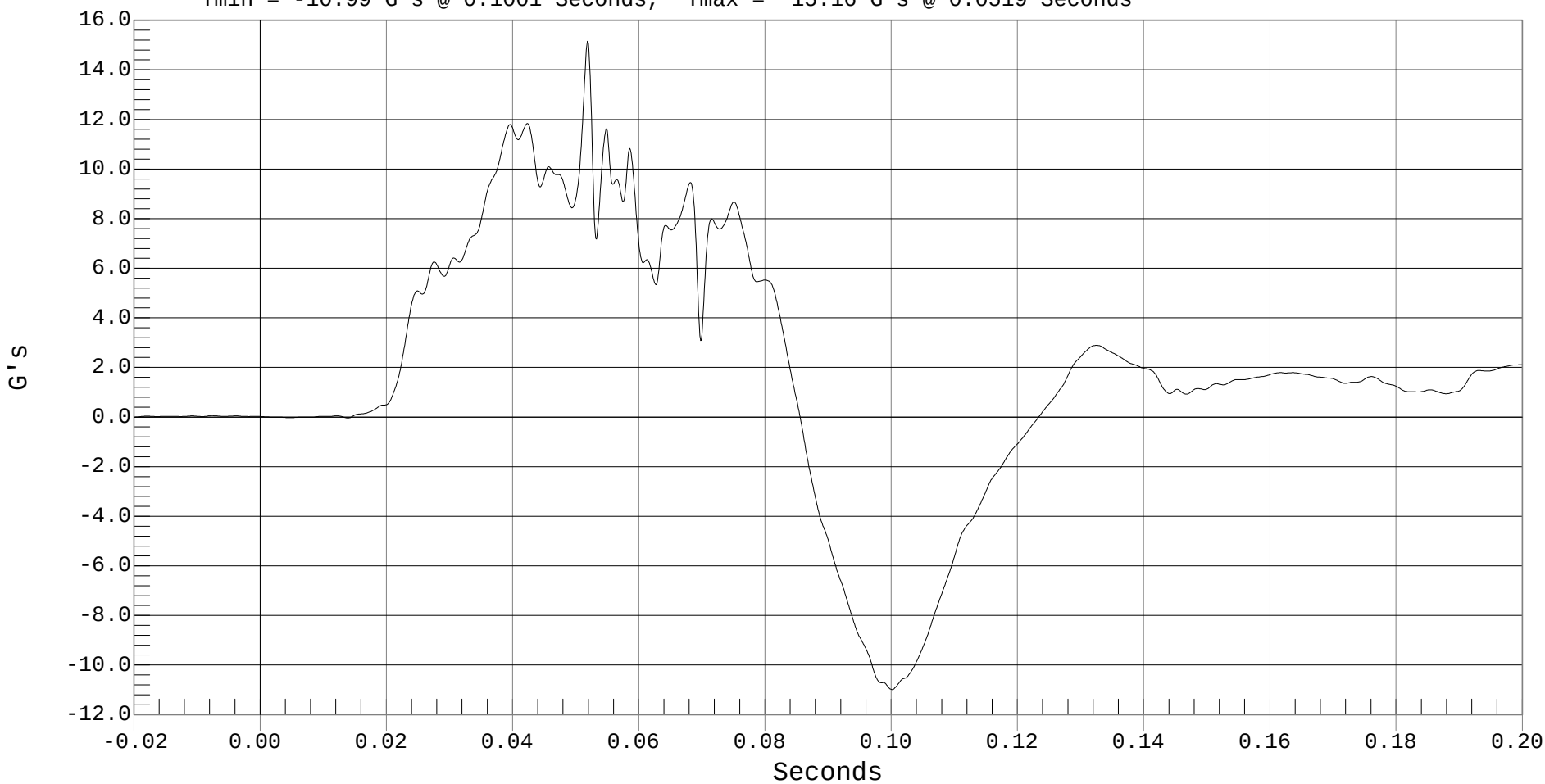
# DRIVER CHEST Z ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 180

— 1 DRIVER CHEST Z, B01006AF.A12

Ymin = -10.99 G's @ 0.1001 Seconds, Ymax = 15.16 G's @ 0.0519 Seconds







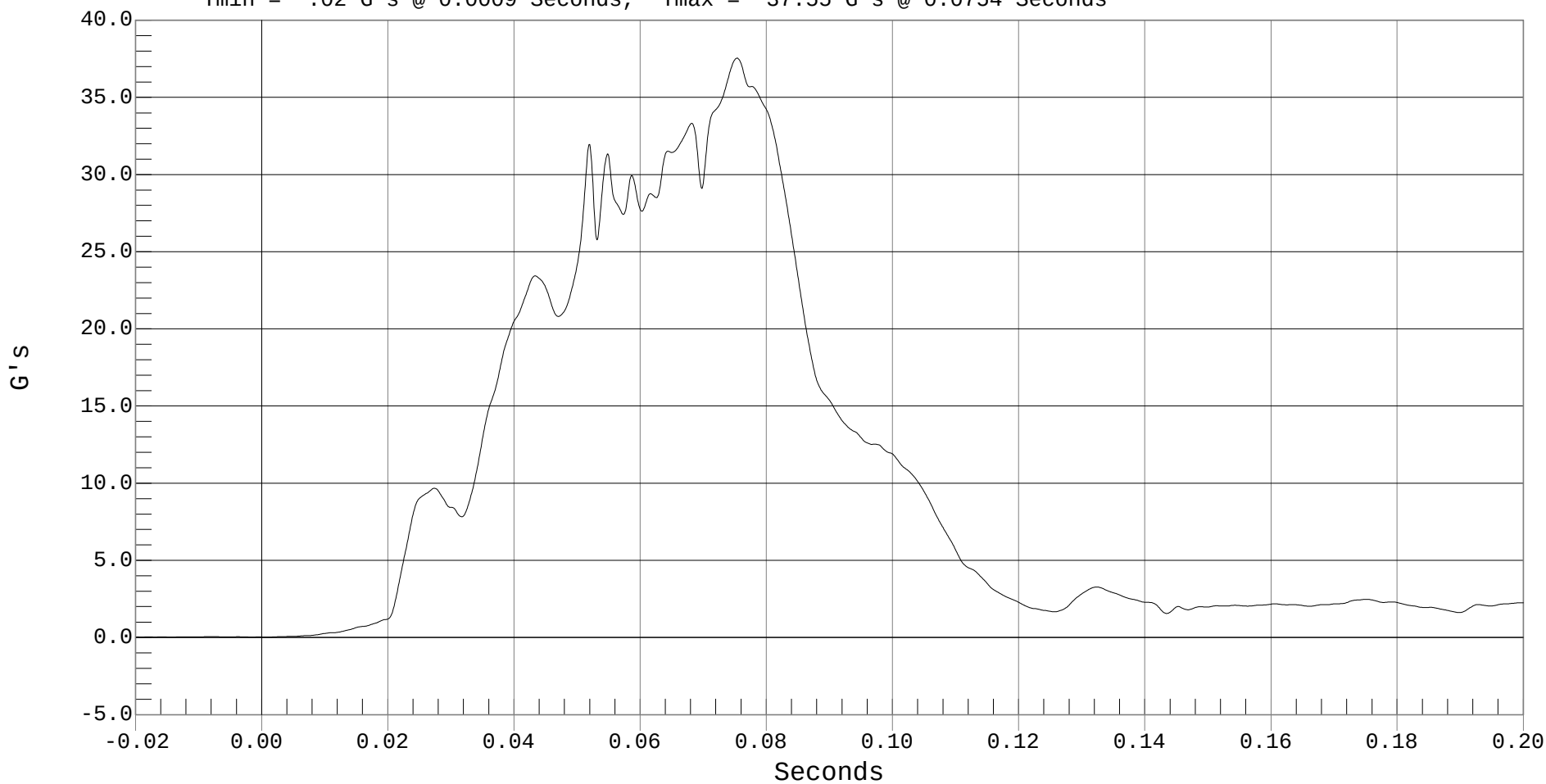
# DRIVER CHEST RESULTANT ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 180

— 1 DRIVER CHEST RESULTANT ACCELERATION, B01006AV.A10

Ymin = .02 G's @ 0.0009 Seconds, Ymax = 37.55 G's @ 0.0754 Seconds





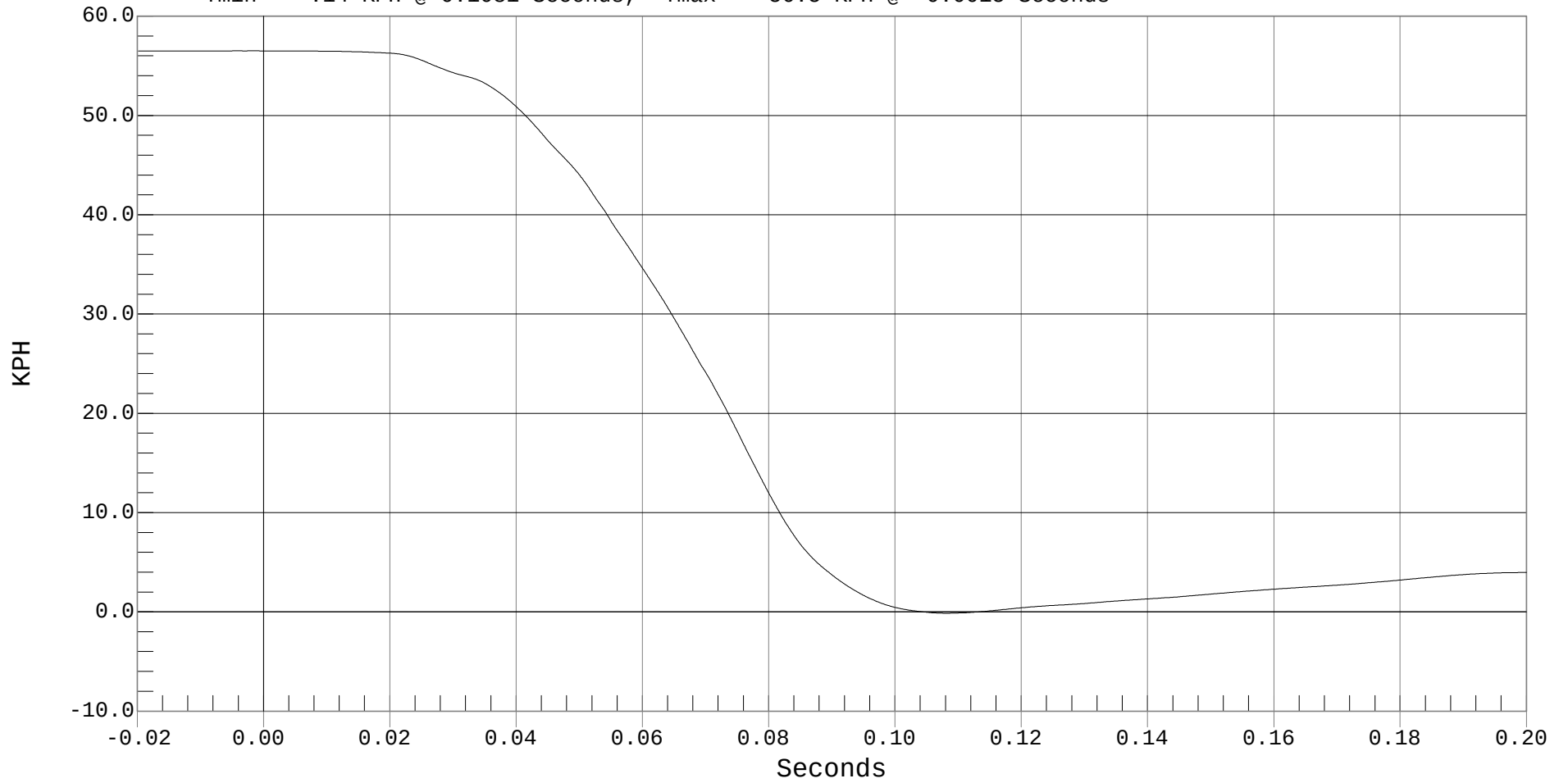
# DRIVER CHEST X VELOCITY

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 180

— 1 DRIVER CHEST X VELOCITY, B01006AI.V10

Ymin = -.14 KPH @ 0.1081 Seconds, Ymax = 56.5 KPH @ -0.0015 Seconds





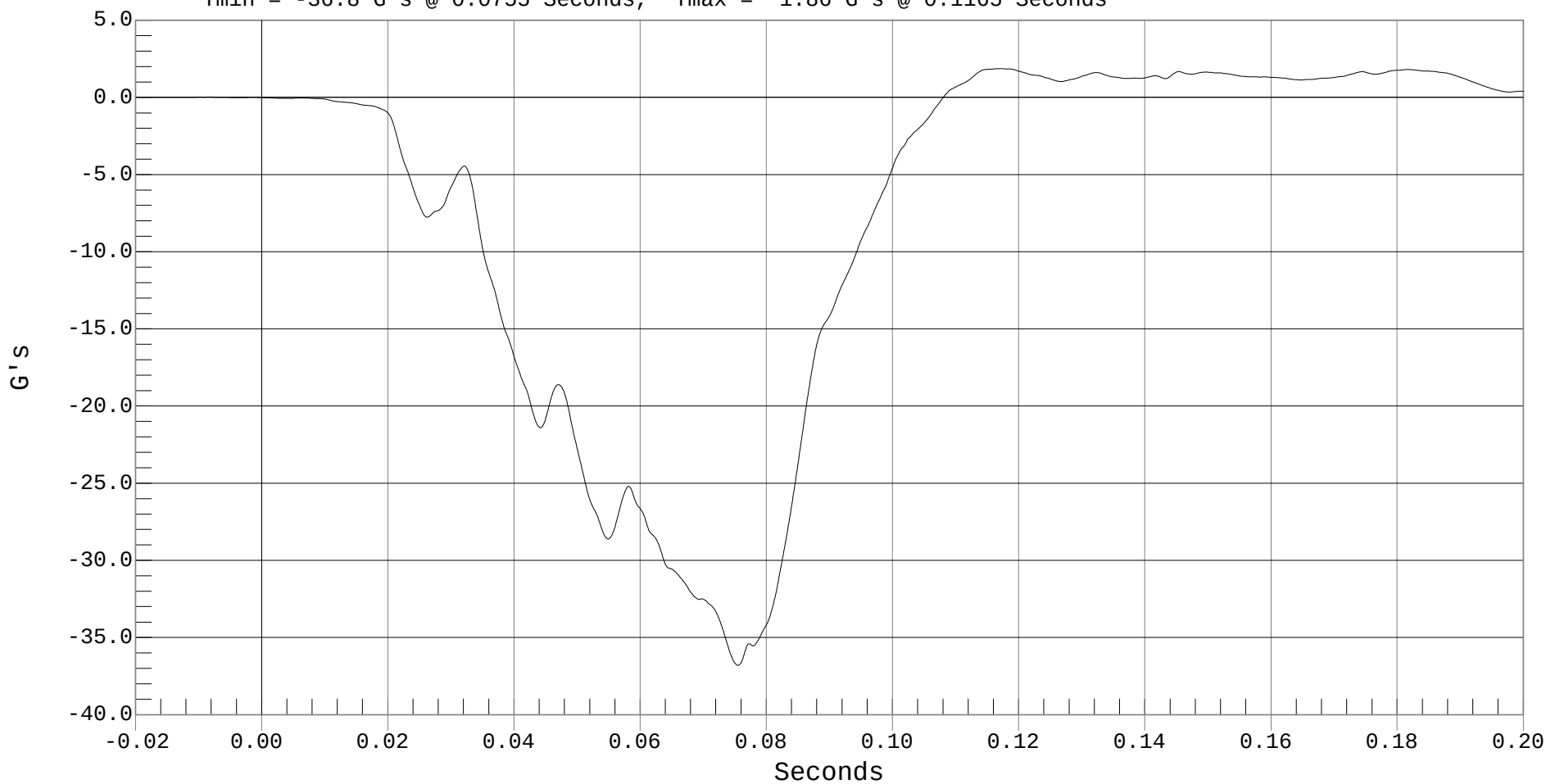
# DRIVER CHEST REDUNDANT X ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 180

— 1 DRIVER CHEST Xr, B01006AF.A36

Ymin = -36.8 G's @ 0.0755 Seconds, Ymax = 1.86 G's @ 0.1165 Seconds







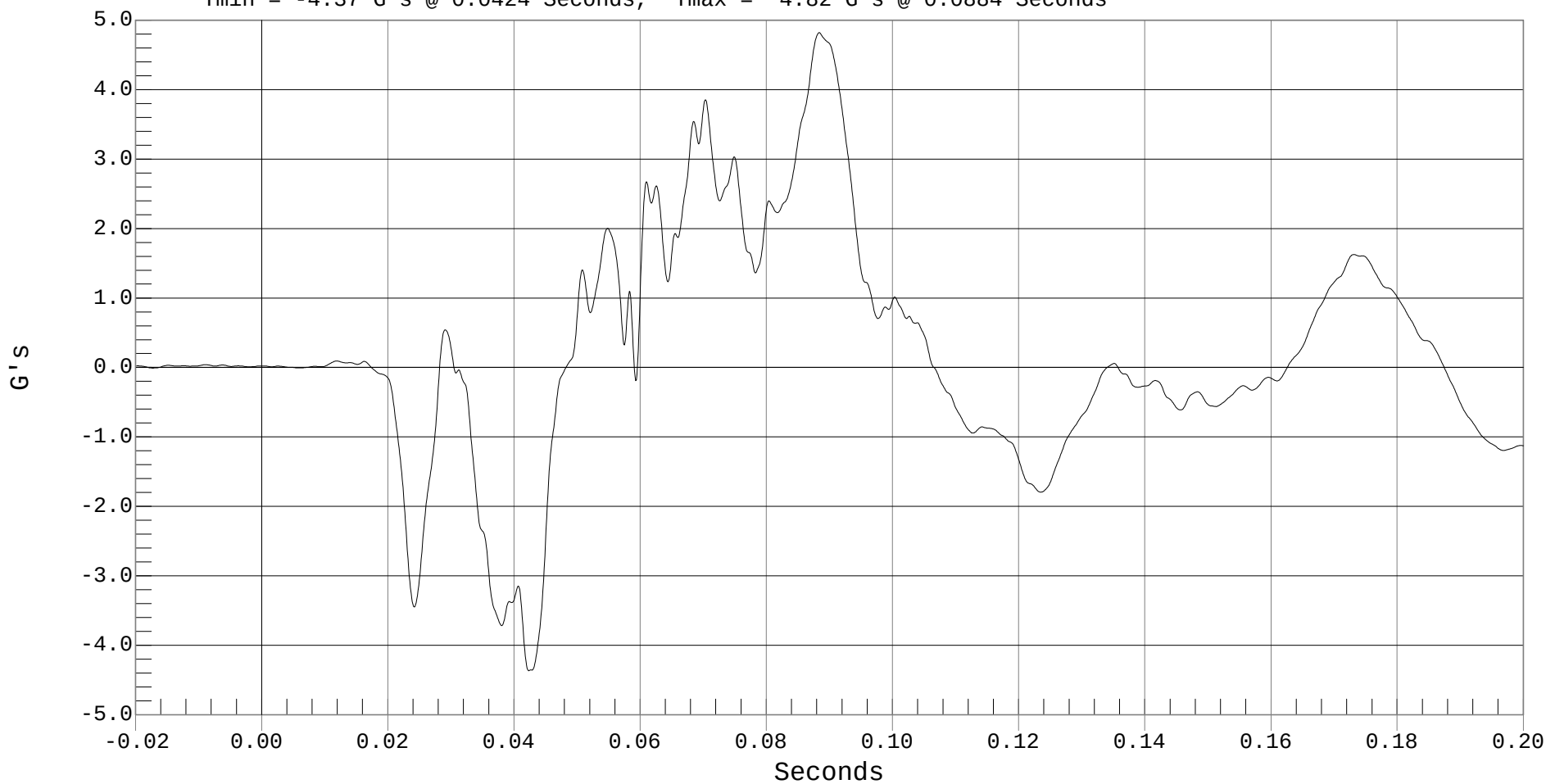
# DRIVER CHEST REDUNDANT Y ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 180

— 1 DRIVER CHEST Yr, B01006AF.A37

Ymin = -4.37 G's @ 0.0424 Seconds, Ymax = 4.82 G's @ 0.0884 Seconds





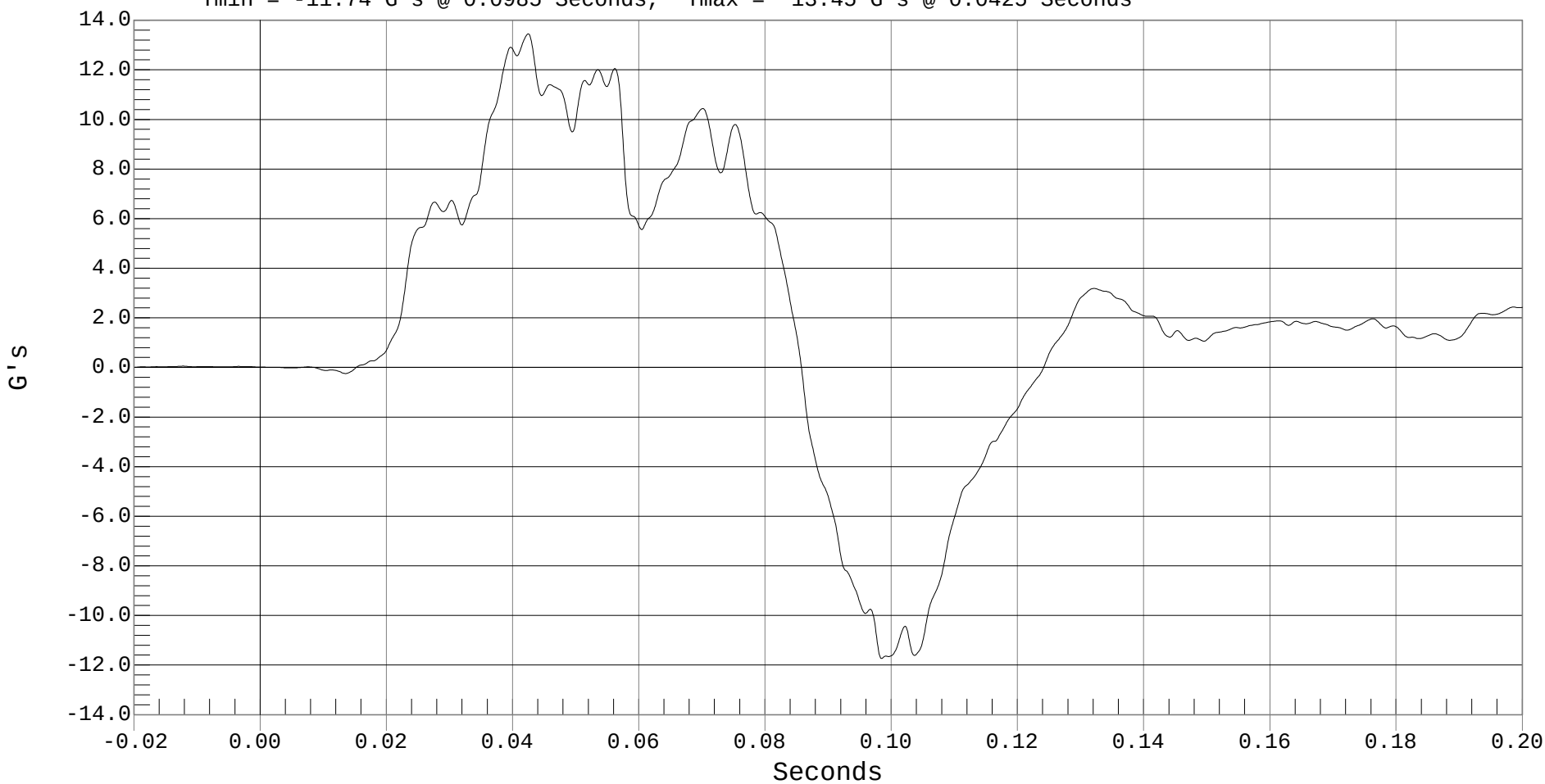
# DRIVER CHEST REDUNDANT Z ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 180

— 1 DRIVER CHEST Zr, B01006AF.A38

Ymin = -11.74 G's @ 0.0985 Seconds, Ymax = 13.45 G's @ 0.0425 Seconds





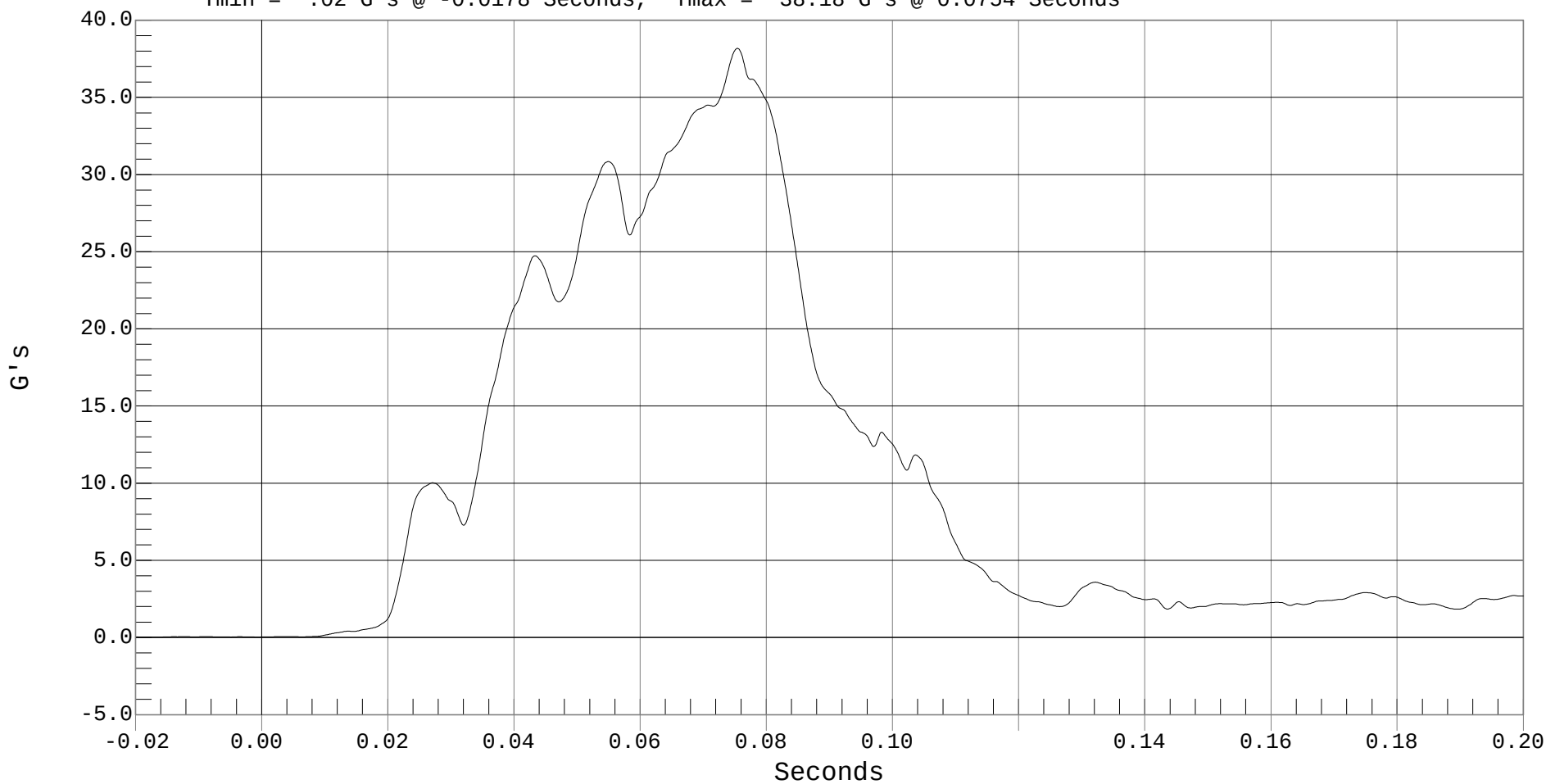
# DRIVER CHEST REDUNDANT RESULTANT ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 180

— 1 DRIVER CHEST REDUNDANT RESULTANT ACCELERATION, B01006AV.A36

Ymin = .02 G's @ -0.0178 Seconds, Ymax = 38.18 G's @ 0.0754 Seconds







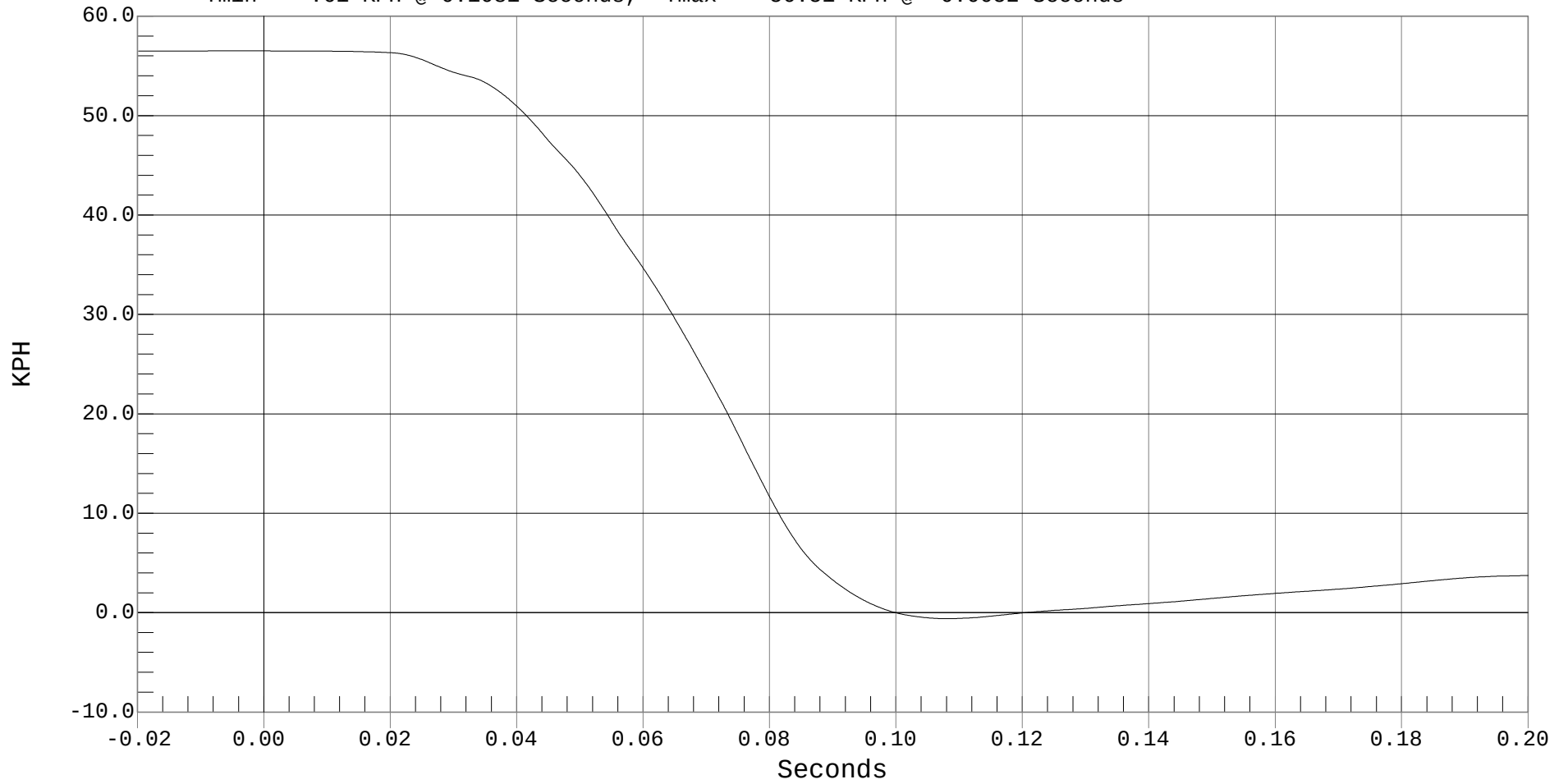
# DRIVER CHEST REDUNDANT X VELOCITY

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 180

— 1 DRIVER CHEST REDUNDANT X VELOCITY, B01006AI.V36

Ymin = -.61 KPH @ 0.1081 Seconds, Ymax = 56.51 KPH @ -0.0052 Seconds





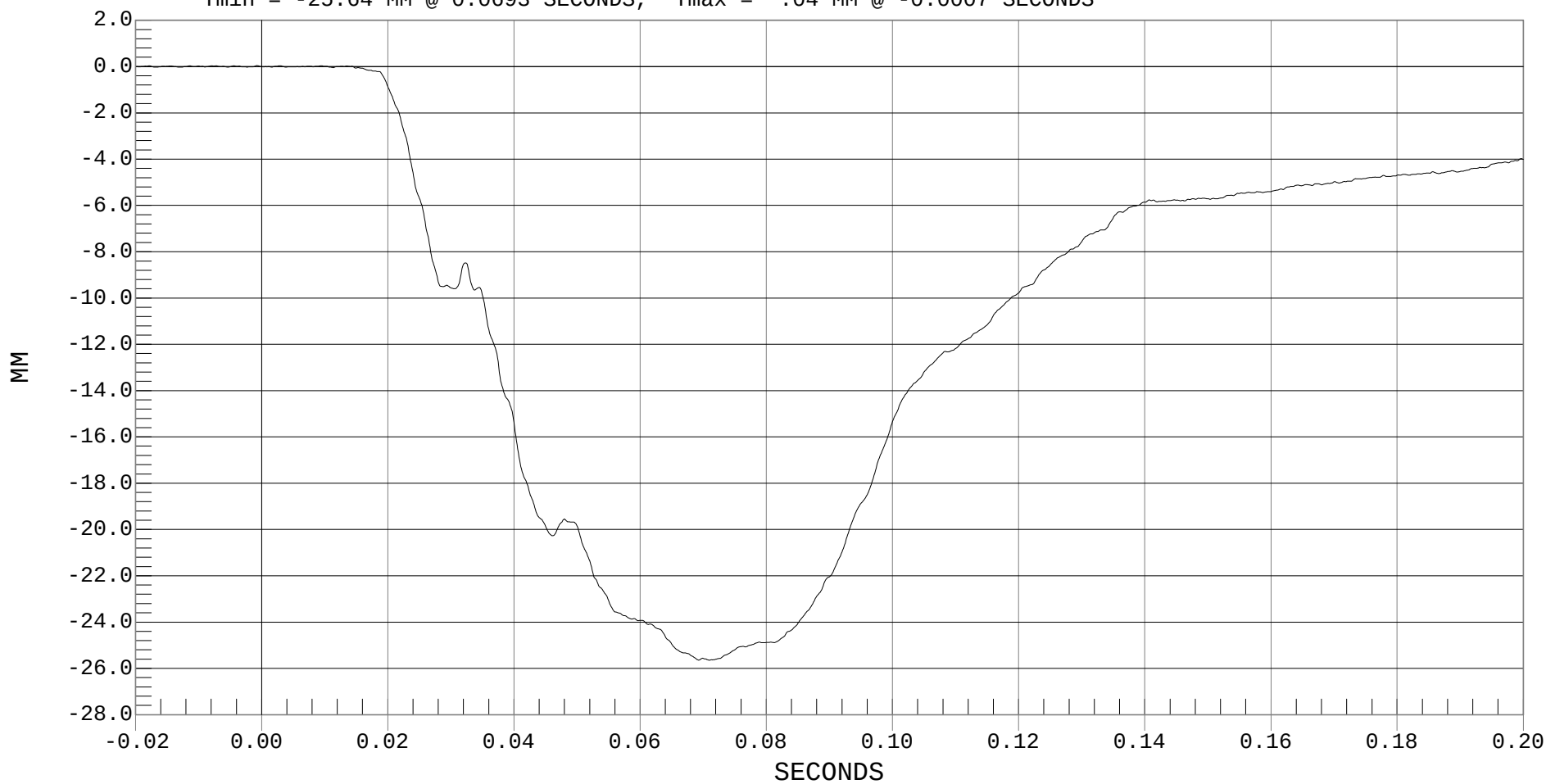
## DRIVER CHEST COMPRESSION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 600

— 1 DRIVER CHEST DISPLACEMENT, B01006DF.D13

Ymin = -25.64 MM @ 0.0693 SECONDS, Ymax = .04 MM @ -0.0007 SECONDS





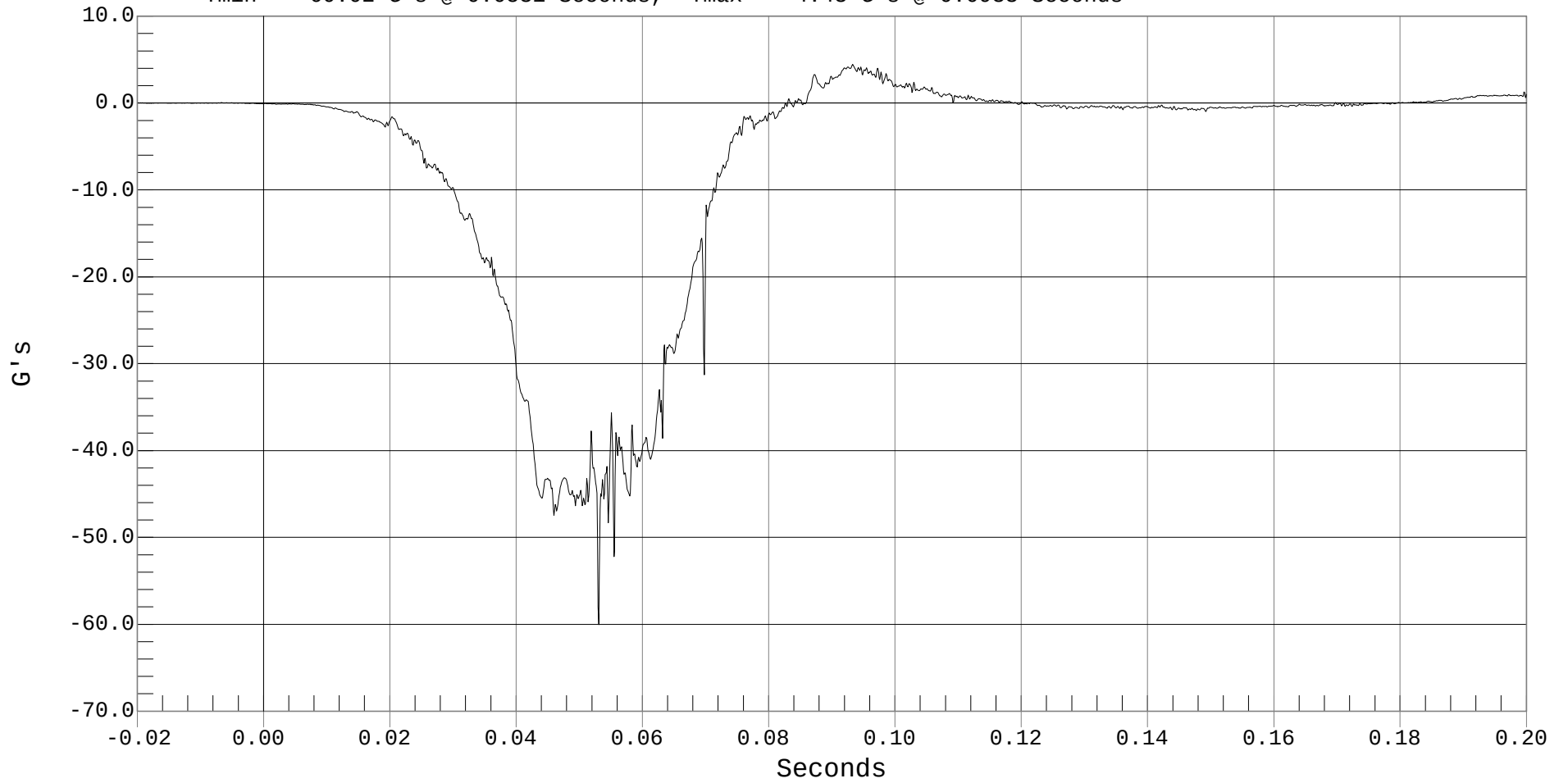
# DRIVER PELVIS X ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 1000

— 1 DRIVER PELVIS X, B01006AT.A14

Ymin = -60.02 G's @ 0.0531 Seconds, Ymax = 4.43 G's @ 0.0933 Seconds







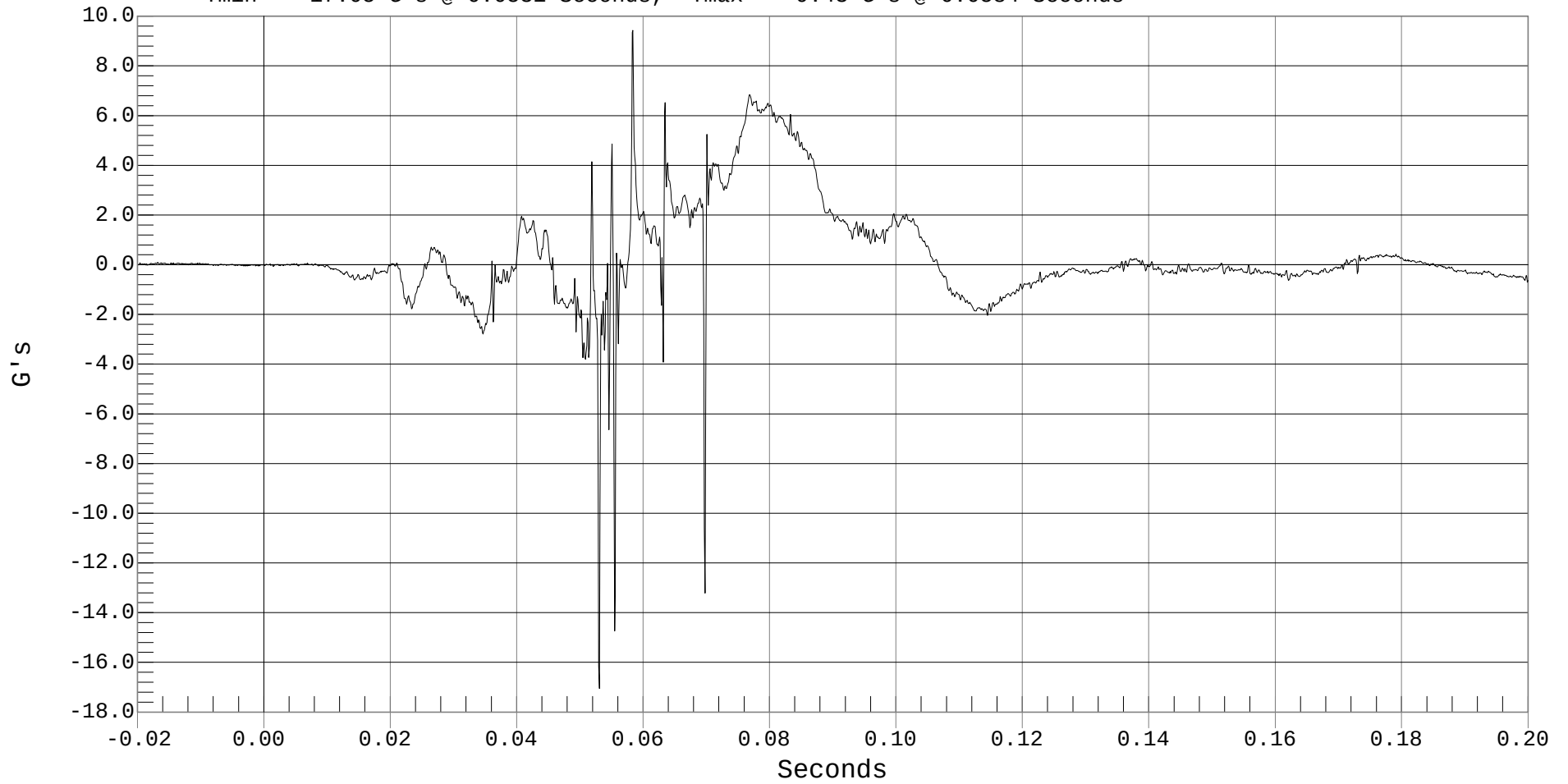
# DRIVER PELVIS Y ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 1000

— 1 DRIVER PELVIS Y, B01006AT.A15

Ymin = -17.05 G's @ 0.0531 Seconds, Ymax = 9.43 G's @ 0.0584 Seconds





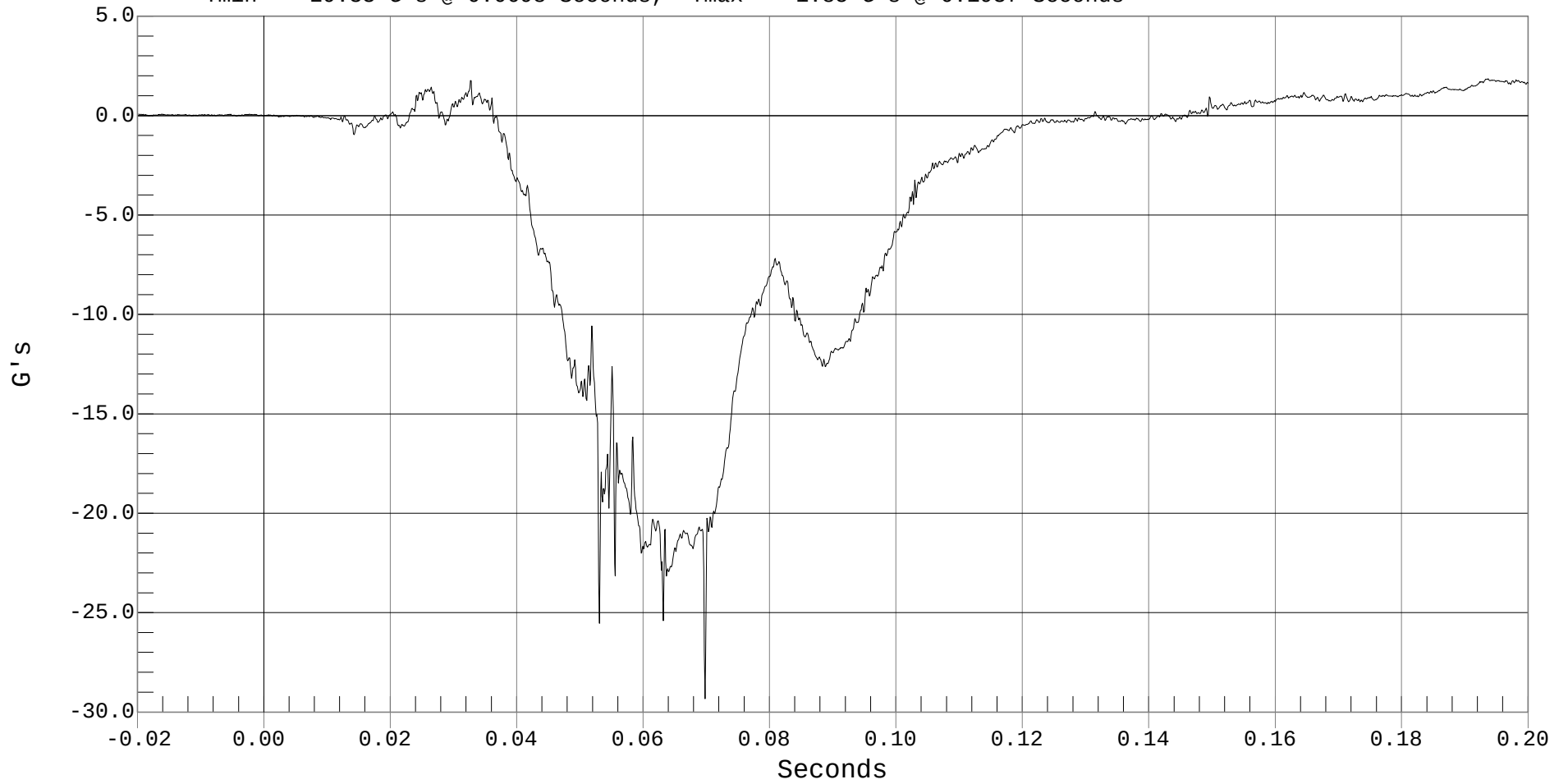
# DRIVER PELVIS Z ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 1000

— 1 DRIVER PELVIS Z, B01006AT.A16

Ymin = -29.33 G's @ 0.0698 Seconds, Ymax = 1.85 G's @ 0.1937 Seconds





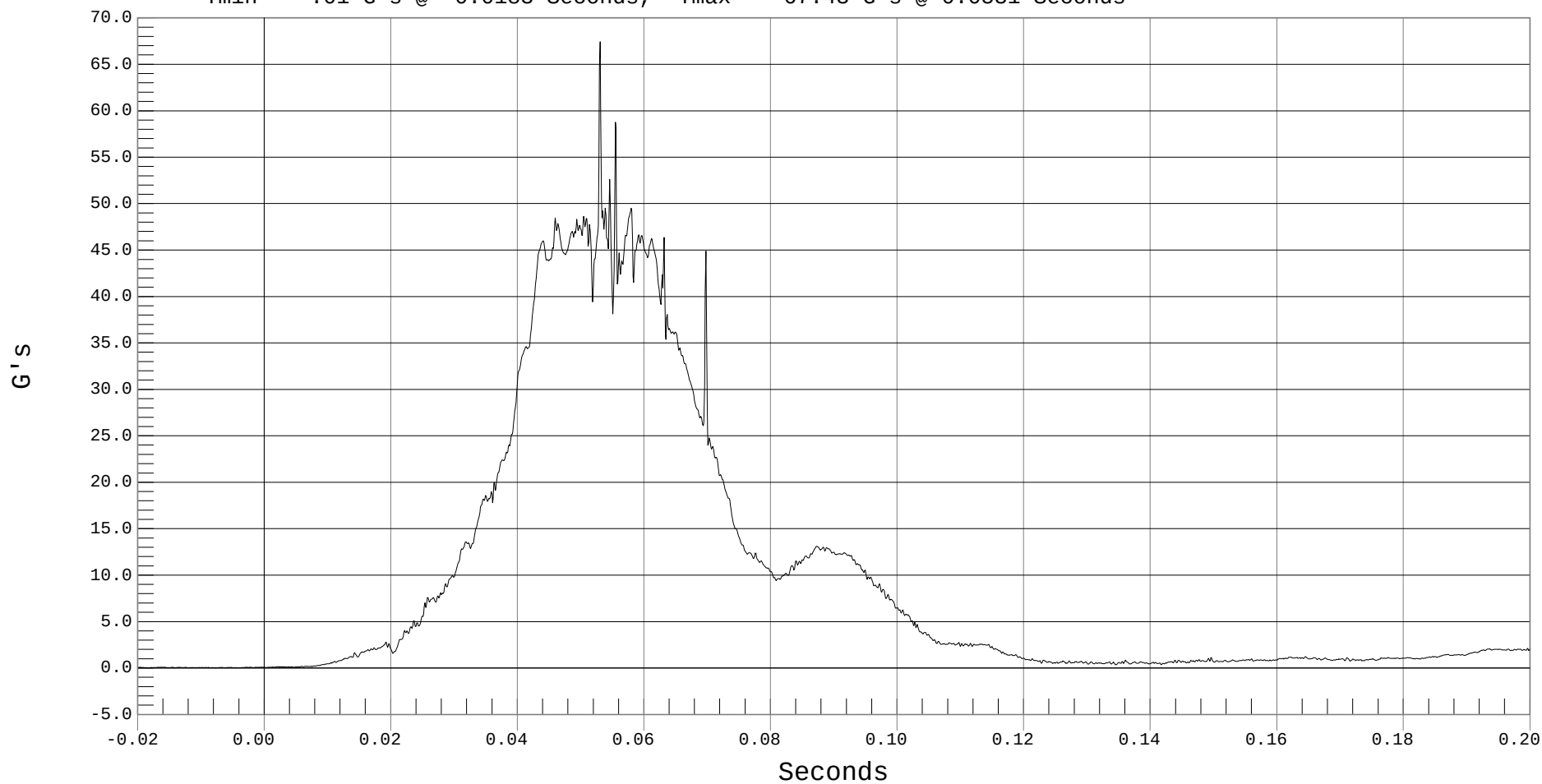
# DRIVER PELVIS RESULTANT ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 1000

— 1 DRIVER PELVIS RESULTANT ACCELERATION, B01006AV.A14

Ymin = .01 G's @ -0.0183 Seconds, Ymax = 67.43 G's @ 0.0531 Seconds







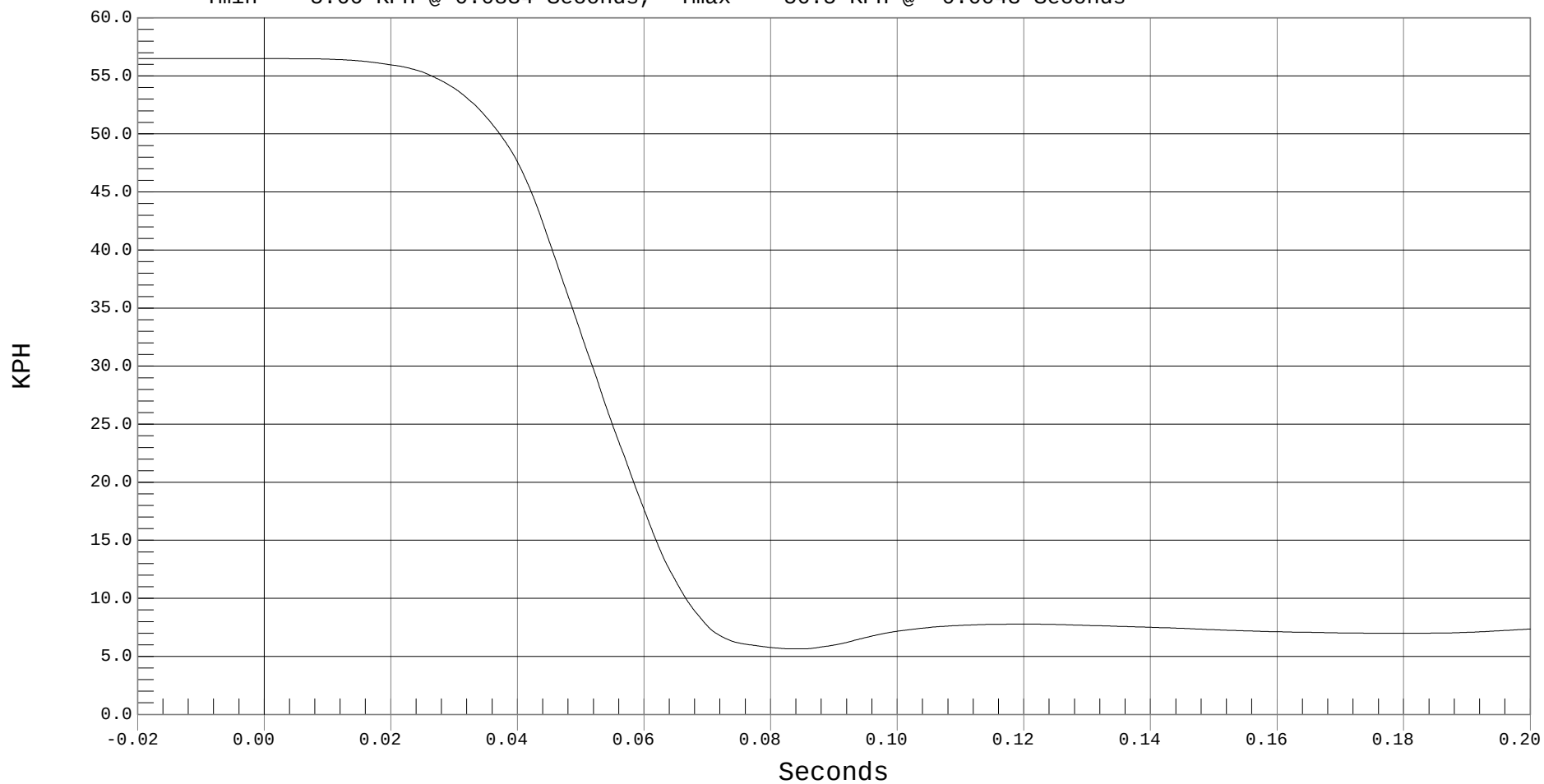
## DRIVER PELVIS X VELOCITY

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 180

— 1 DRIVER PELVIS X VELOCITY, B01006AI.V14

Ymin = 5.66 KPH @ 0.0834 Seconds, Ymax = 56.5 KPH @ -0.0043 Seconds





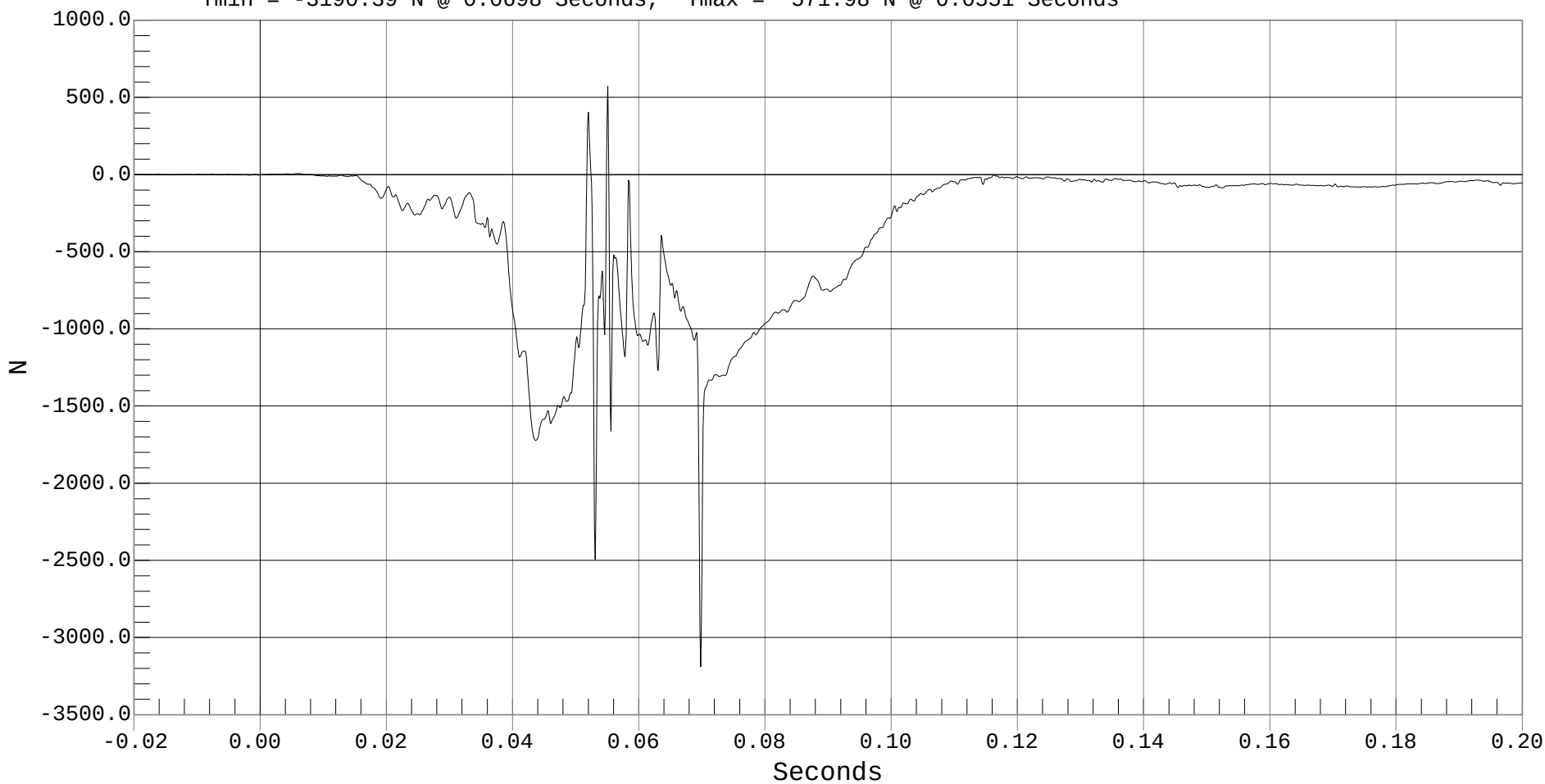
# DRIVER LEFT FEMUR FORCE

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 600

1 DRIVER LEFT FEMUR Z, B01006FF.F18

Ymin = -3190.39 N @ 0.0698 Seconds, Ymax = 571.98 N @ 0.0551 Seconds





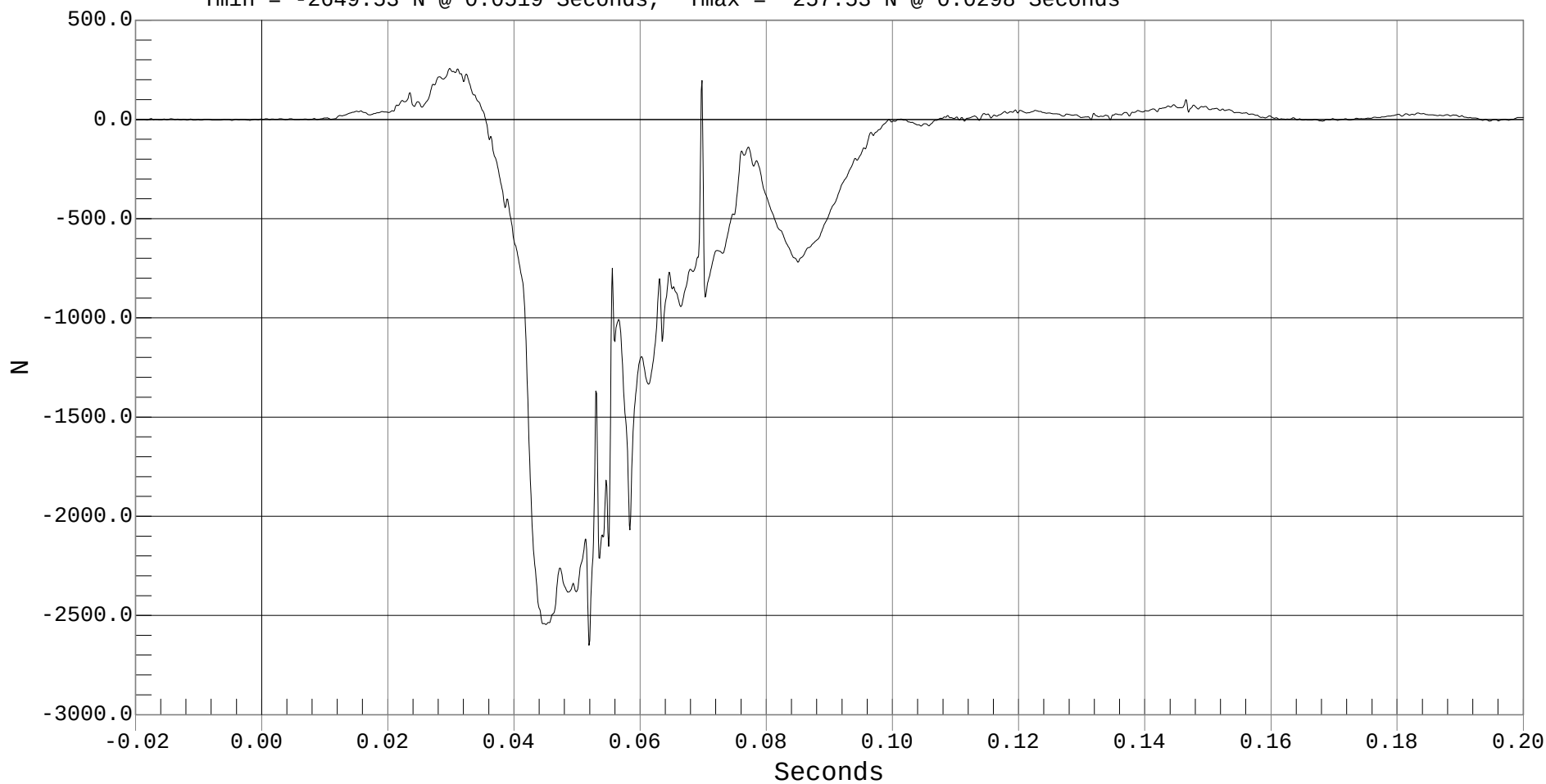
# DRIVER RIGHT FEMUR FORCE

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 600

— 1 DRIVER RIGHT FEMUR Z, B01006FF.F17

Ymin = -2649.53 N @ 0.0519 Seconds, Ymax = 257.53 N @ 0.0298 Seconds







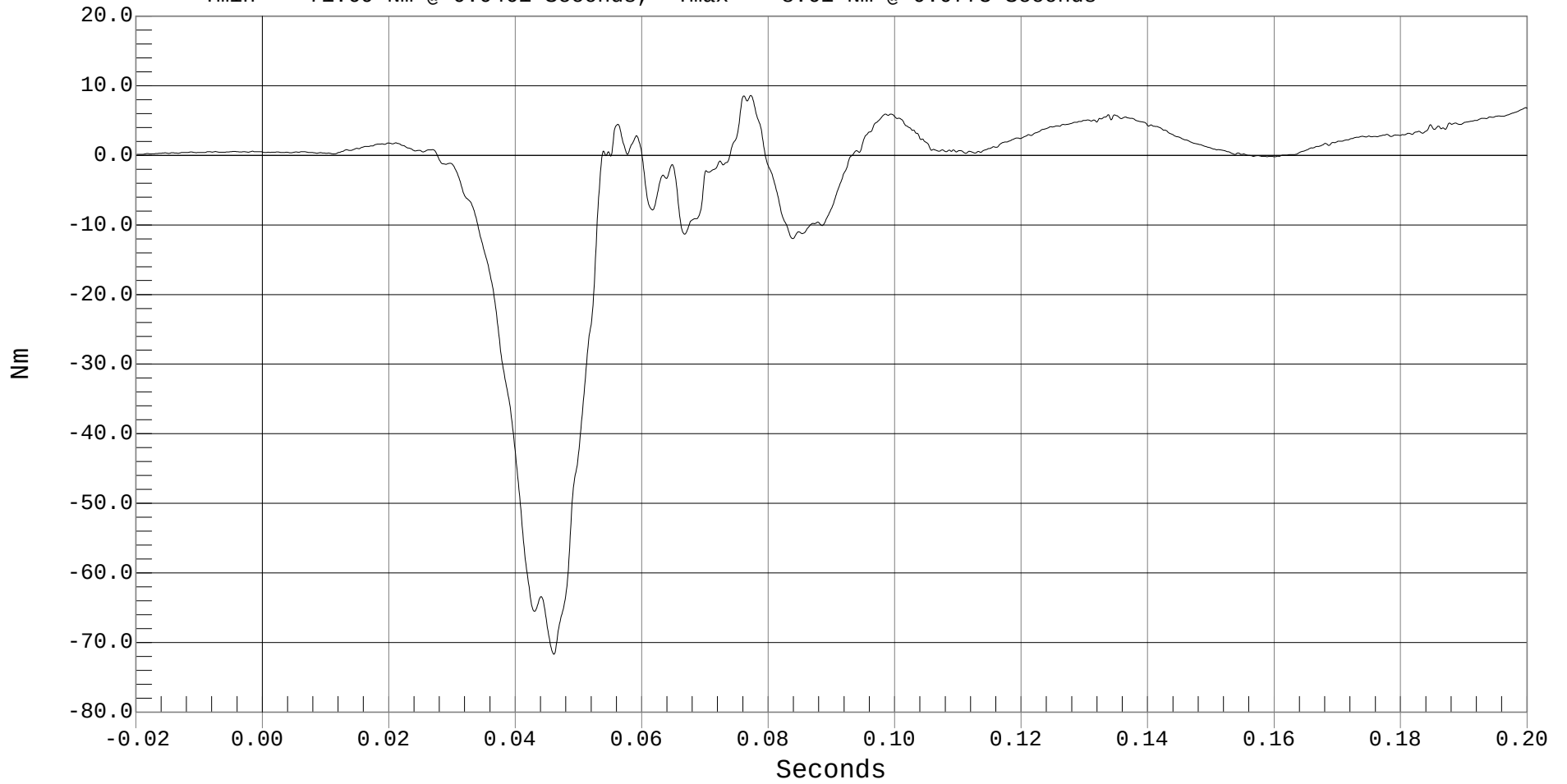
# DRIVER LEFT UPPER TIBIA MOMENT X

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 600

— 1 DRIVER LEFT UPPER TIBIA MX, B01006MF.M75

Ymin = -71.69 Nm @ 0.0461 Seconds, Ymax = 8.61 Nm @ 0.0773 Seconds





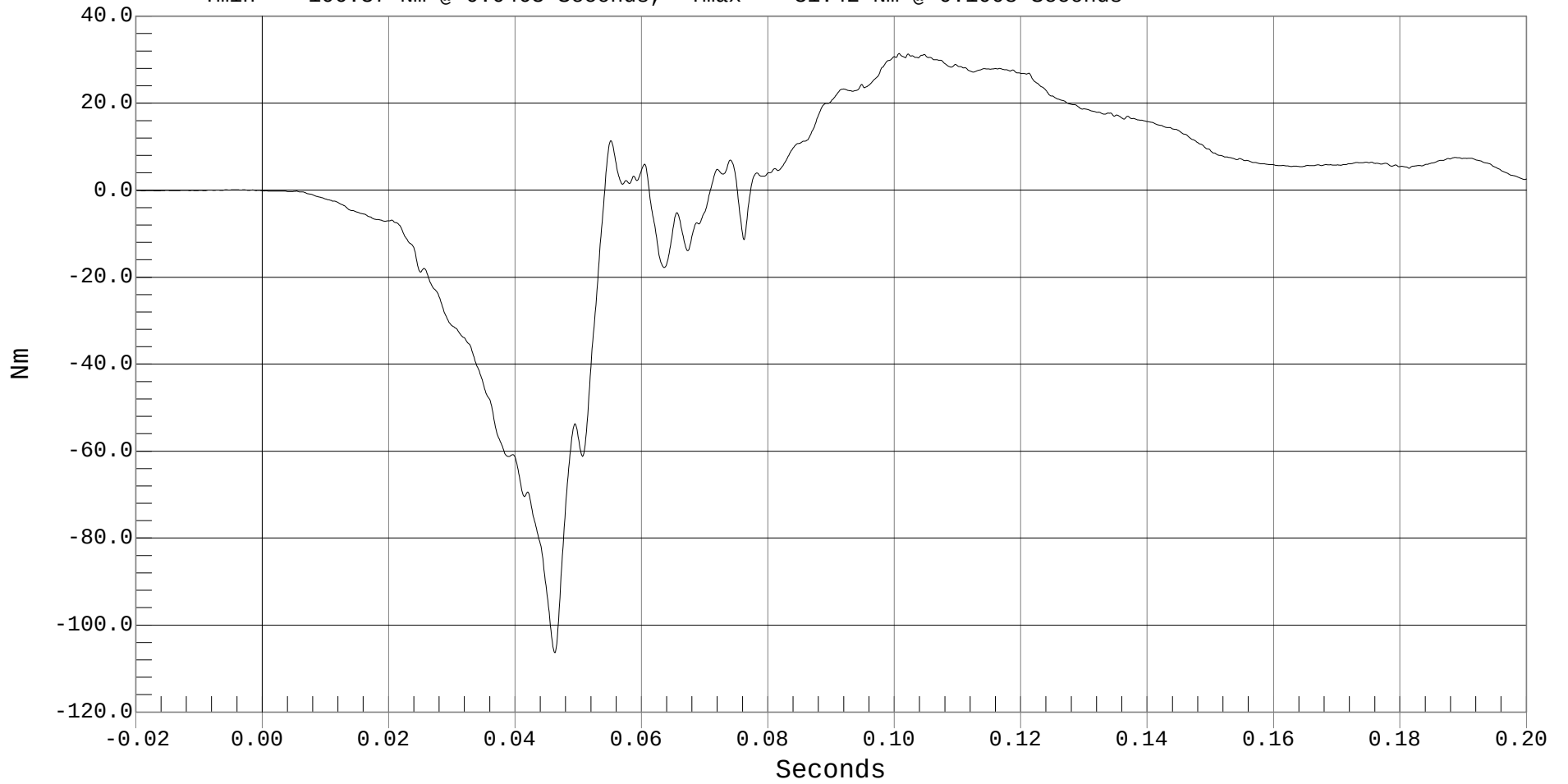
# DRIVER LEFT UPPER TIBIA MOMENT Y

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 600

— 1 DRIVER LEFT UPPER TIBIA MY, B01006MF.M76

Ymin = -106.37 Nm @ 0.0463 Seconds, Ymax = 31.42 Nm @ 0.1008 Seconds





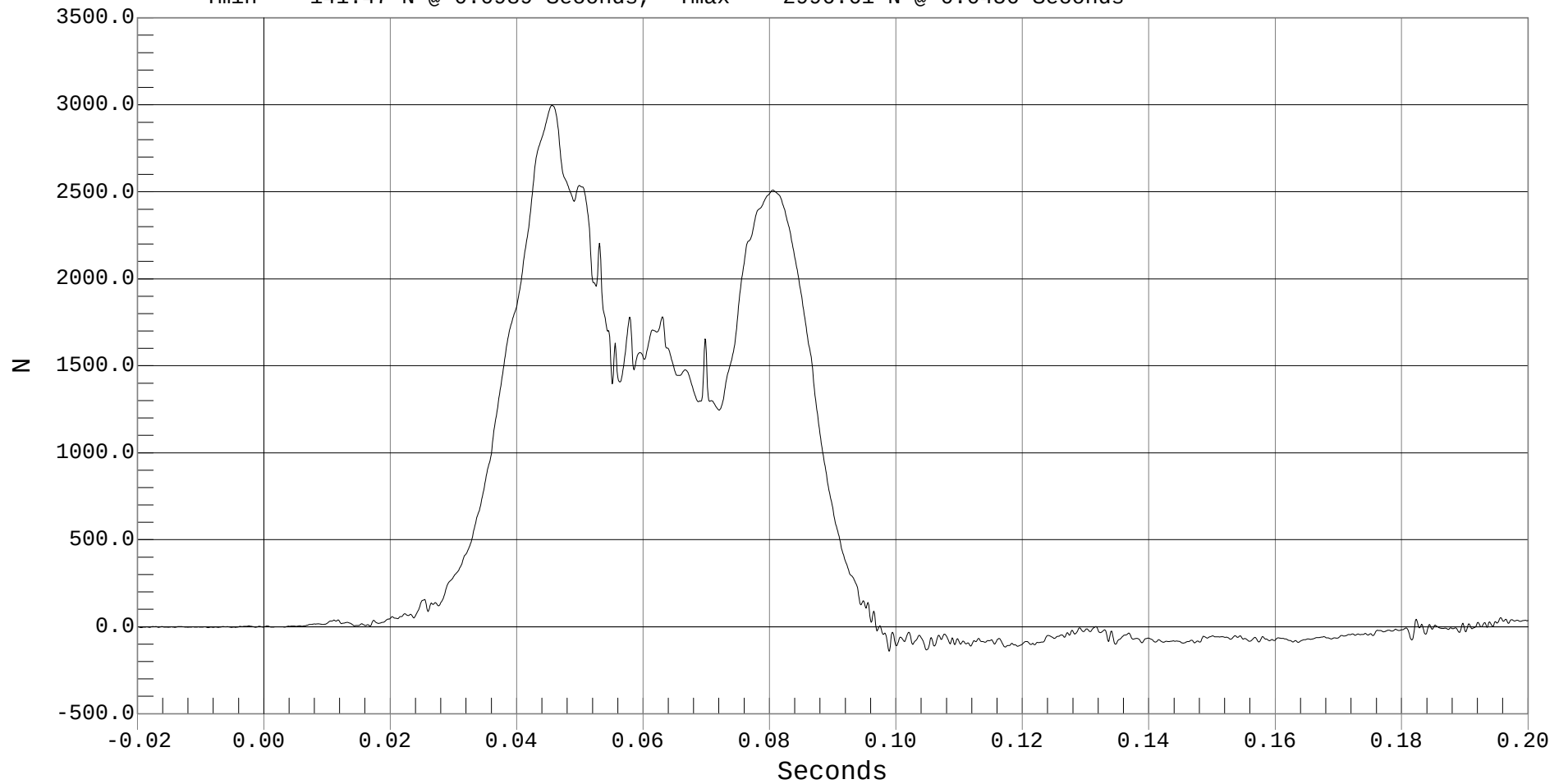
# DRIVER LEFT UPPER TIBIA FORCE Z

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 600

— 1 DRIVER LEFT UPPER TIBIA FZ, B01006FF.F77

Ymin = -141.47 N @ 0.0989 Seconds, Ymax = 2996.61 N @ 0.0456 Seconds





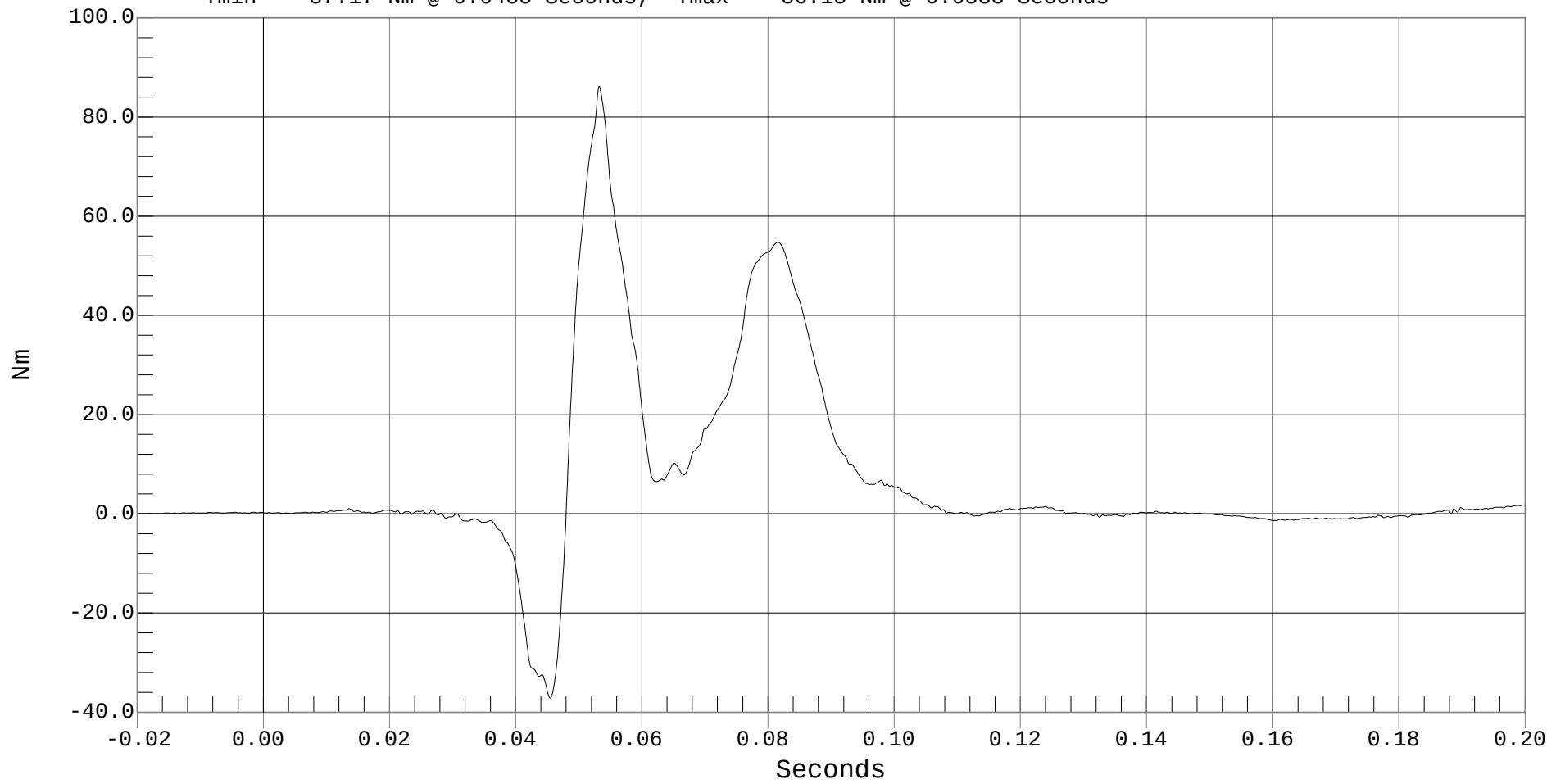
# DRIVER LEFT LOWER TIBIA MOMENT X

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 600

— 1 DRIVER LEFT LOWER TIBIA MX, B01006MF.M78

Ymin = -37.17 Nm @ 0.0455 Seconds, Ymax = 86.18 Nm @ 0.0533 Seconds







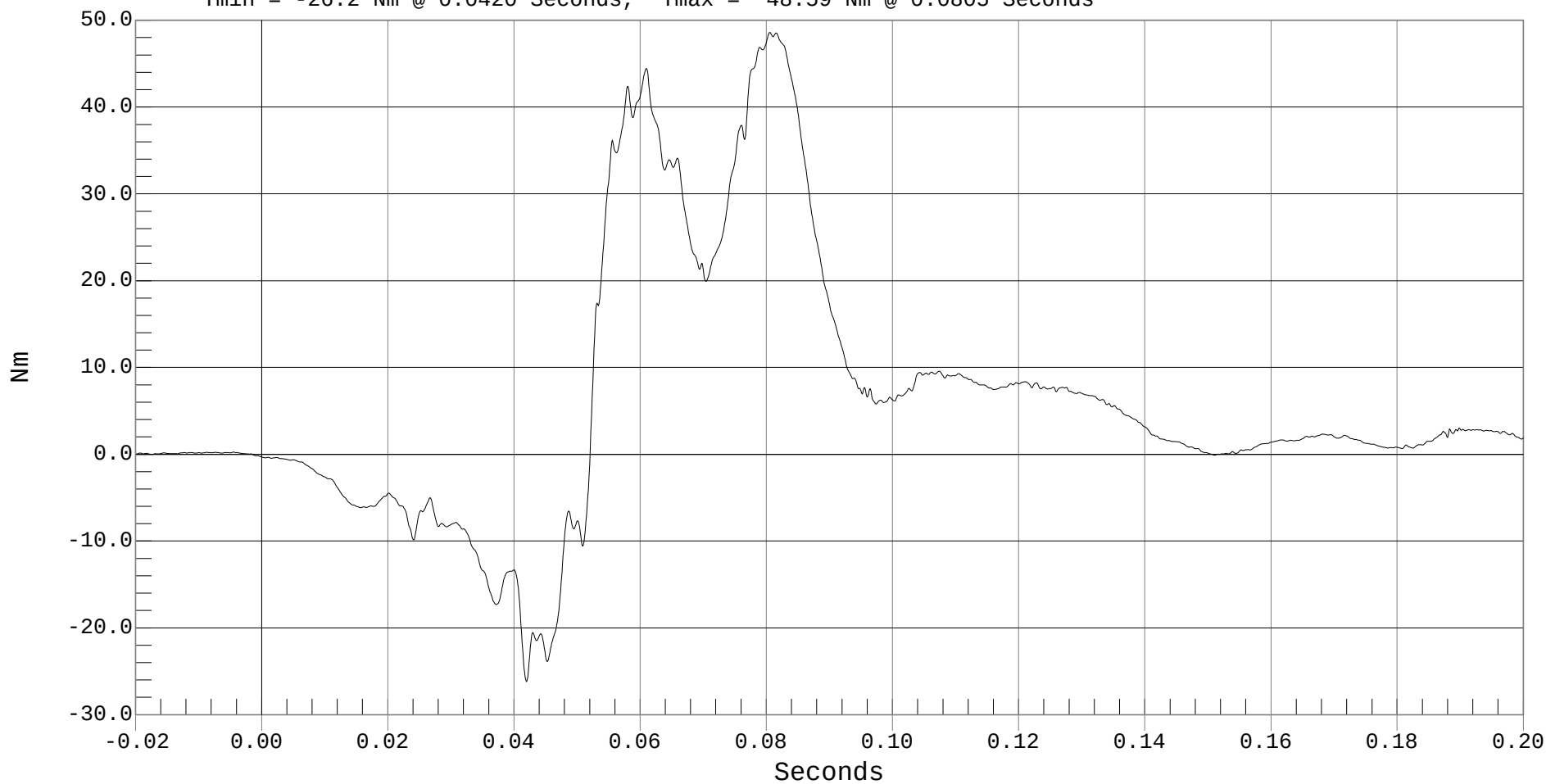
# DRIVER LEFT LOWER TIBIA MOMENT Y

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 600

— 1 DRIVER LEFT LOWER TIBIA MY, B01006MF.M79

Ymin = -26.2 Nm @ 0.0420 Seconds, Ymax = 48.59 Nm @ 0.0805 Seconds





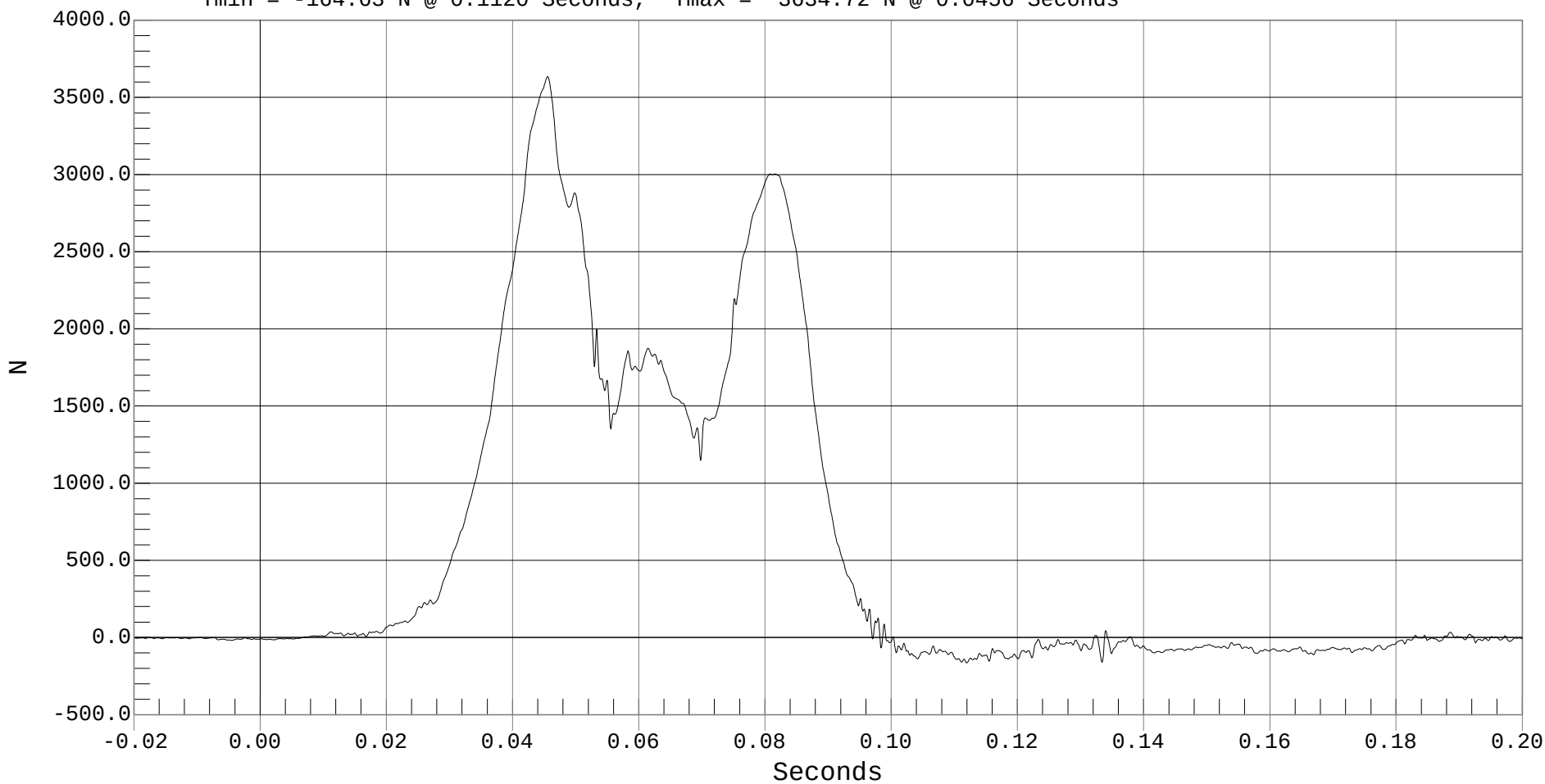
# DRIVER LEFT LOWER TIBIA FORCE Z

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 600

— 1 DRIVER LEFT LOWER TIBIA FZ, B01006FF.F80

Ymin = -164.63 N @ 0.1120 Seconds, Ymax = 3634.72 N @ 0.0456 Seconds





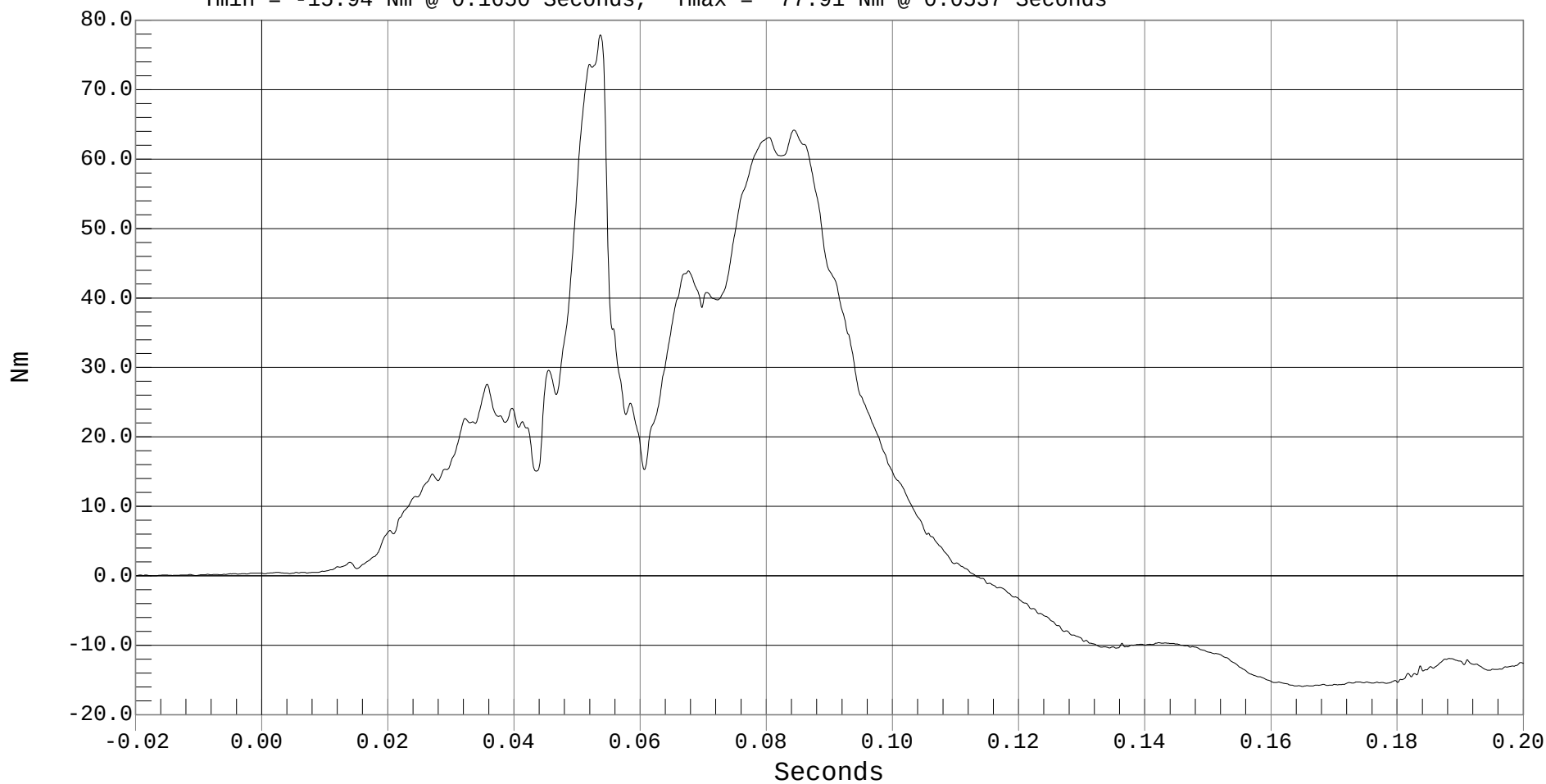
# DRIVER RIGHT UPPER TIBIA MOMENT X

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 600

— 1 DRIVER RIGHT UPPER TIBIA MX, B01006MF.M69

Ymin = -15.94 Nm @ 0.1650 Seconds, Ymax = 77.91 Nm @ 0.0537 Seconds





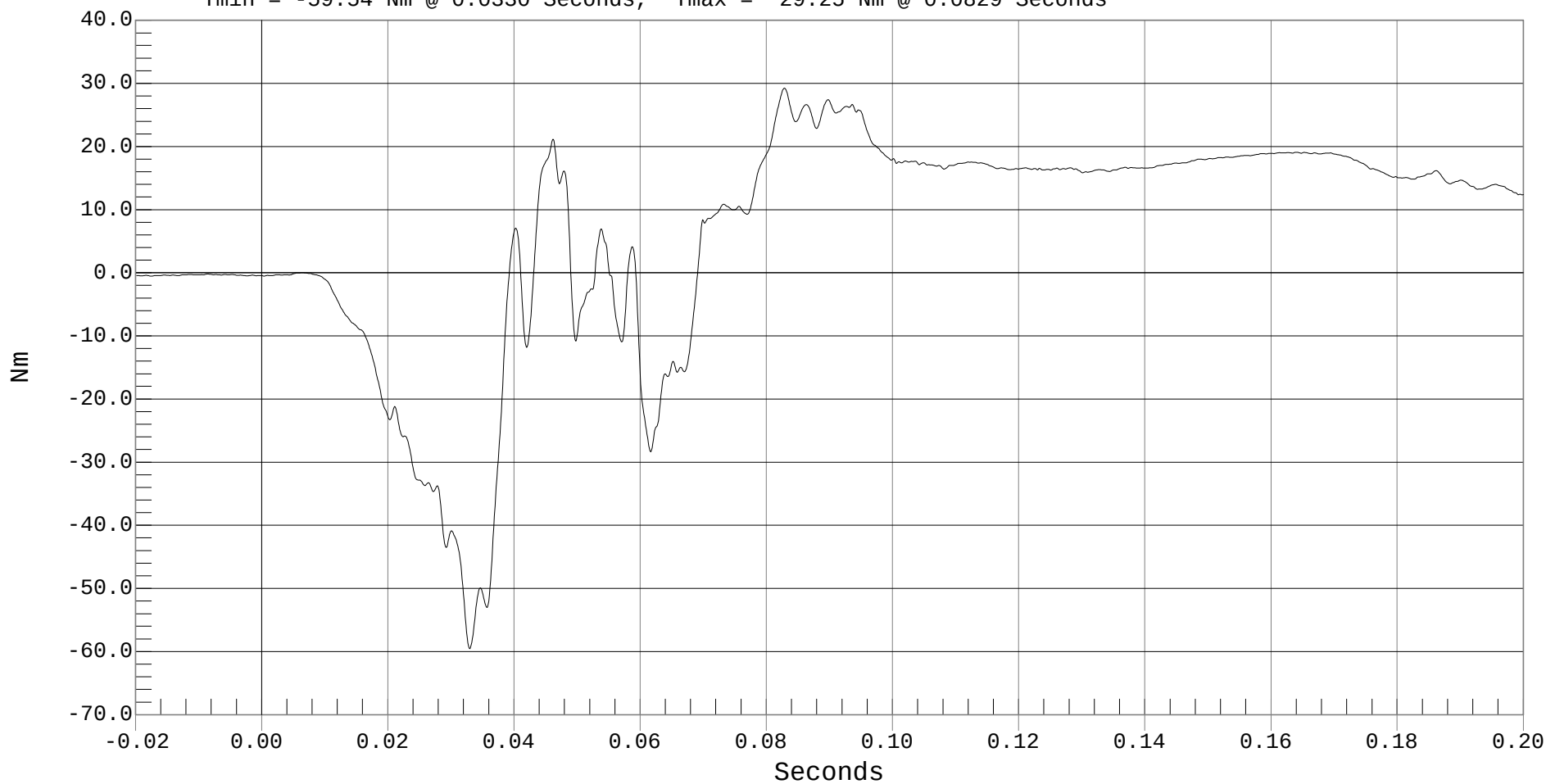
# DRIVER RIGHT UPPER TIBIA MOMENT Y

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 600

— 1 DRIVER RIGHT UPPER TIBIA MY, B01006MF.M70

Ymin = -59.54 Nm @ 0.0330 Seconds, Ymax = 29.25 Nm @ 0.0829 Seconds







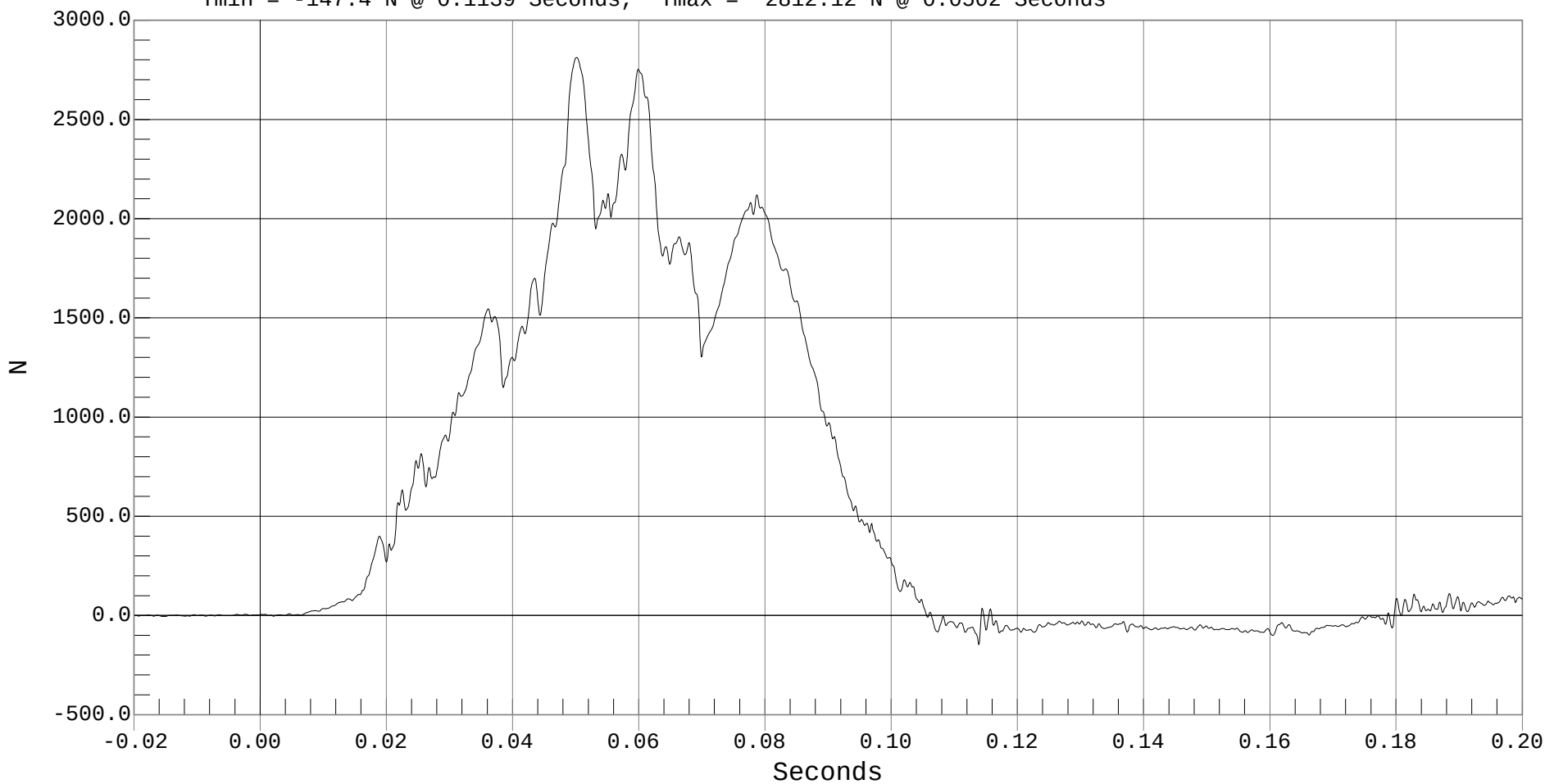
# DRIVER RIGHT UPPER TIBIA FORCE Z

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 600

— 1 DRIVER RIGHT UPPER TIBIA FZ, B01006FF.F71

Ymin = -147.4 N @ 0.1139 Seconds, Ymax = 2812.12 N @ 0.0502 Seconds





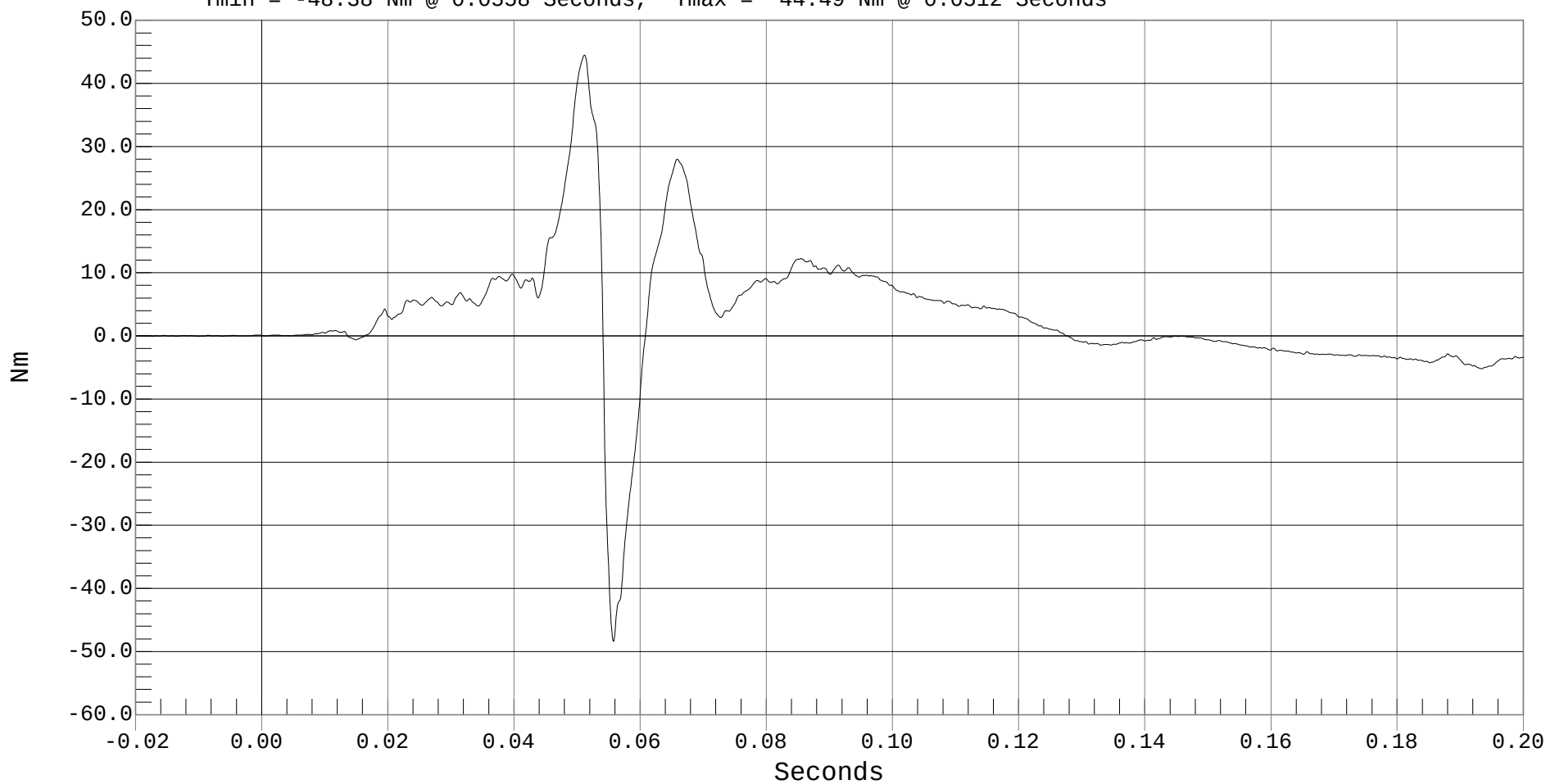
# DRIVER RIGHT LOWER TIBIA MOMENT X

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 600

— 1 DRIVER RIGHT LOWER TIBIA MX, B01006MF.M72

Ymin = -48.38 Nm @ 0.0558 Seconds, Ymax = 44.49 Nm @ 0.0512 Seconds





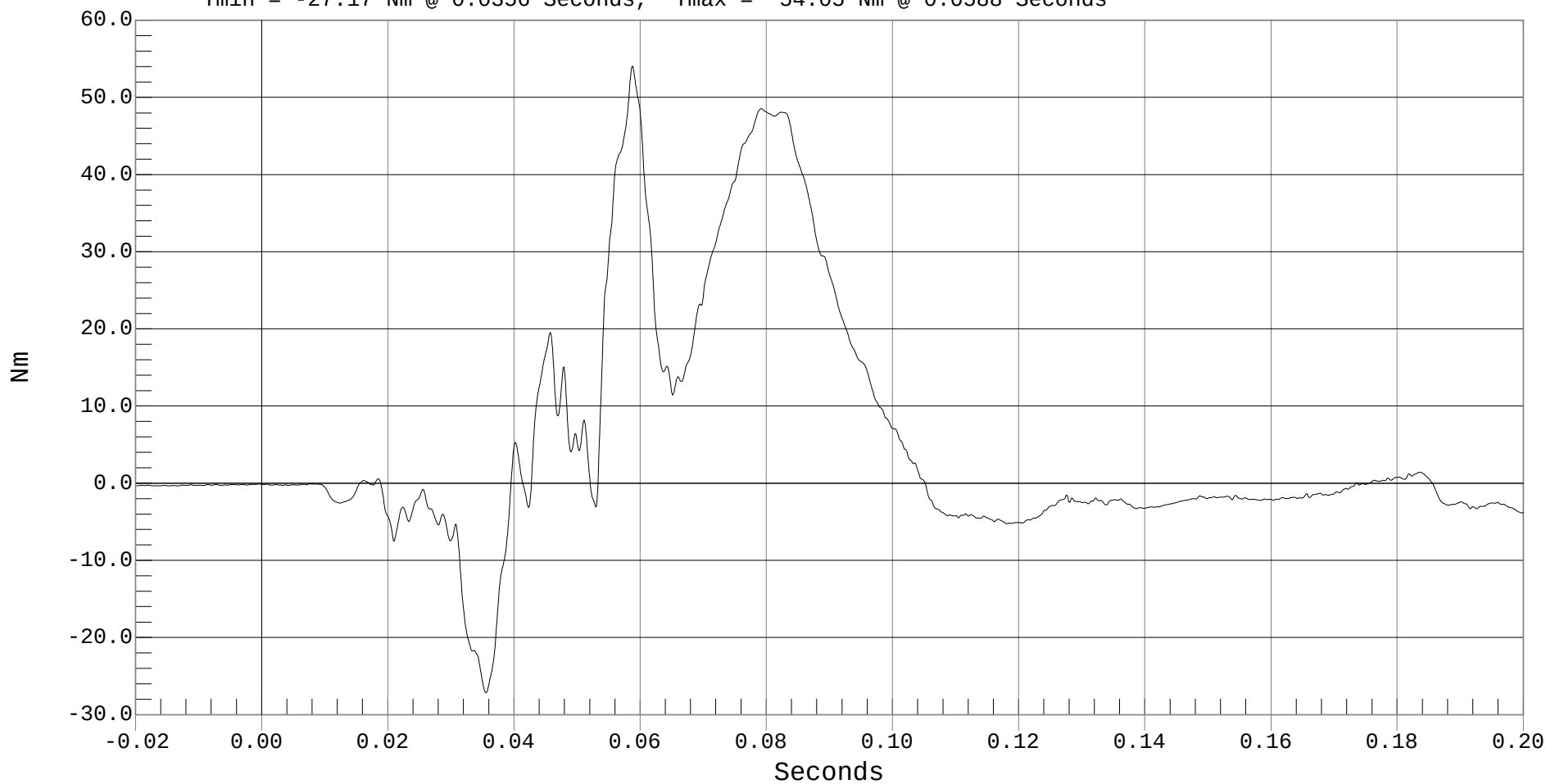
# DRIVER RIGHT LOWER TIBIA MOMENT Y

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 600

— 1 DRIVER RIGHT LOWER TIBIA MY, B01006MF.M73

Ymin = -27.17 Nm @ 0.0356 Seconds, Ymax = 54.05 Nm @ 0.0588 Seconds





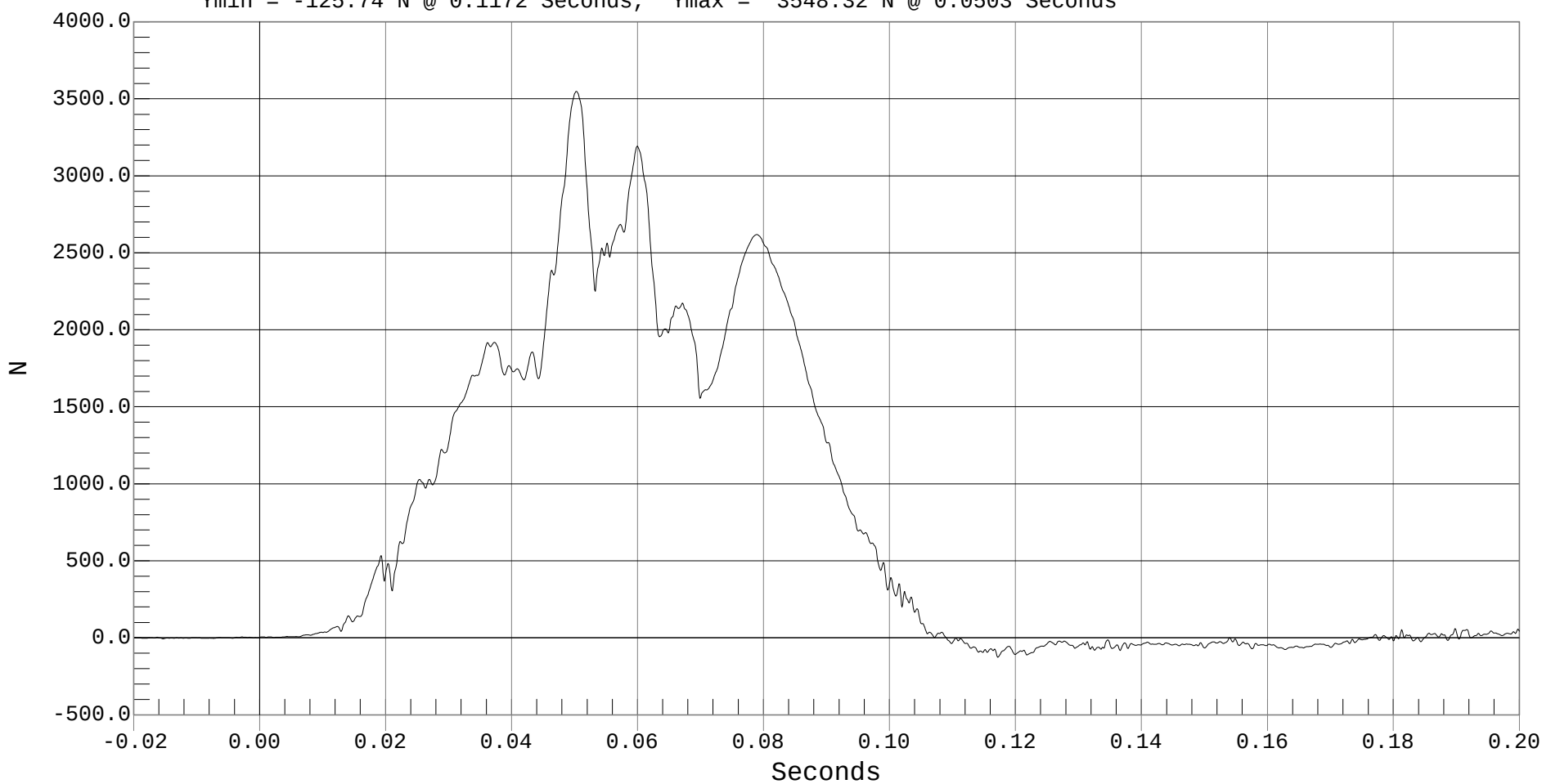
# DRIVER RIGHT LOWER TIBIA FORCE Z

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 600

— 1 DRIVER RIGHT LOWER TIBIA FZ, B01006FF.F74

Ymin = -125.74 N @ 0.1172 Seconds, Ymax = 3548.32 N @ 0.0503 Seconds







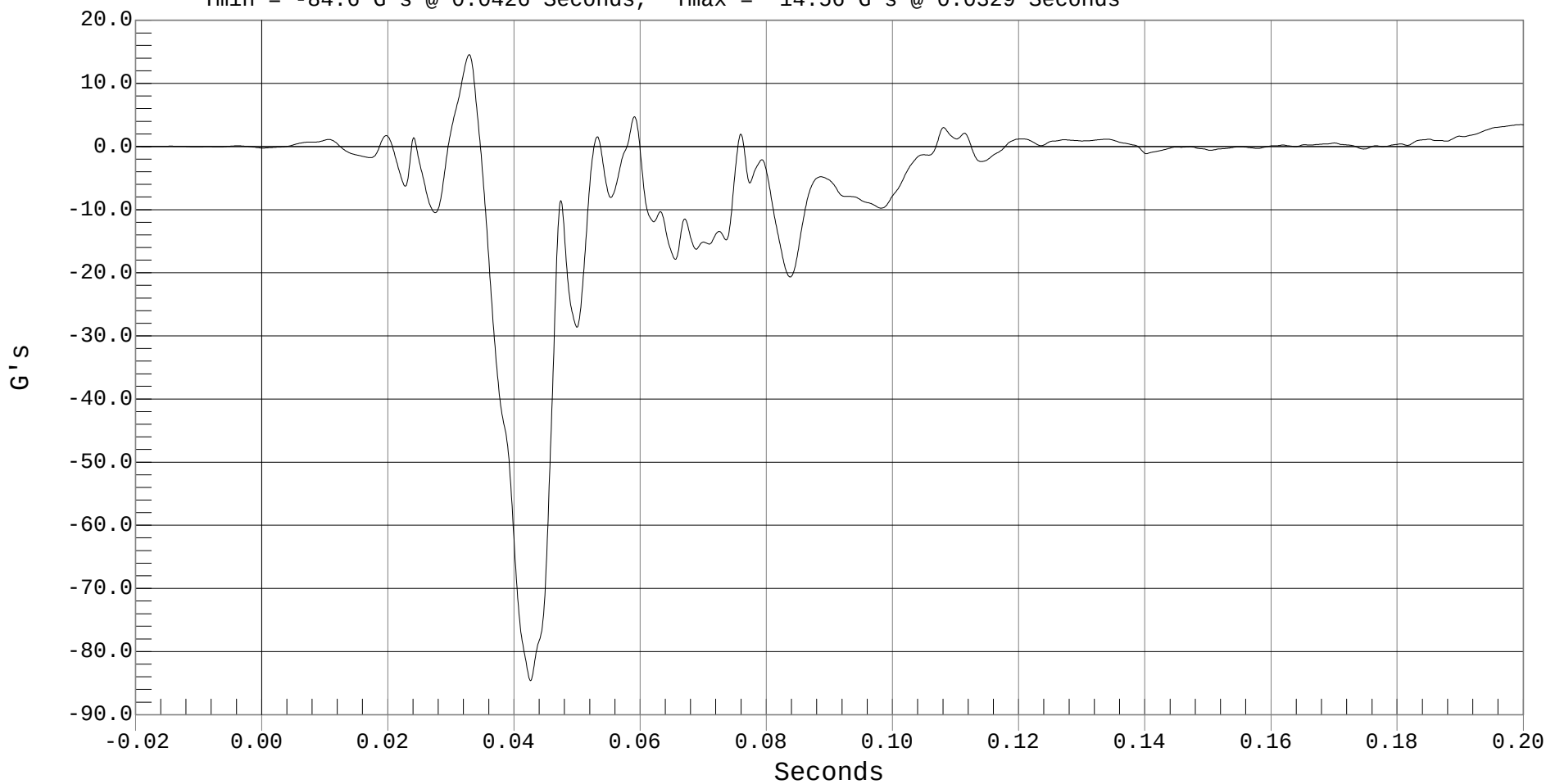
# DRIVER LEFT FOOT @ BALL Z ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 180

— 1 DRIVER LEFT FOOT @ BALL Z, C01006AF.A12

Ymin = -84.6 G's @ 0.0426 Seconds, Ymax = 14.56 G's @ 0.0329 Seconds





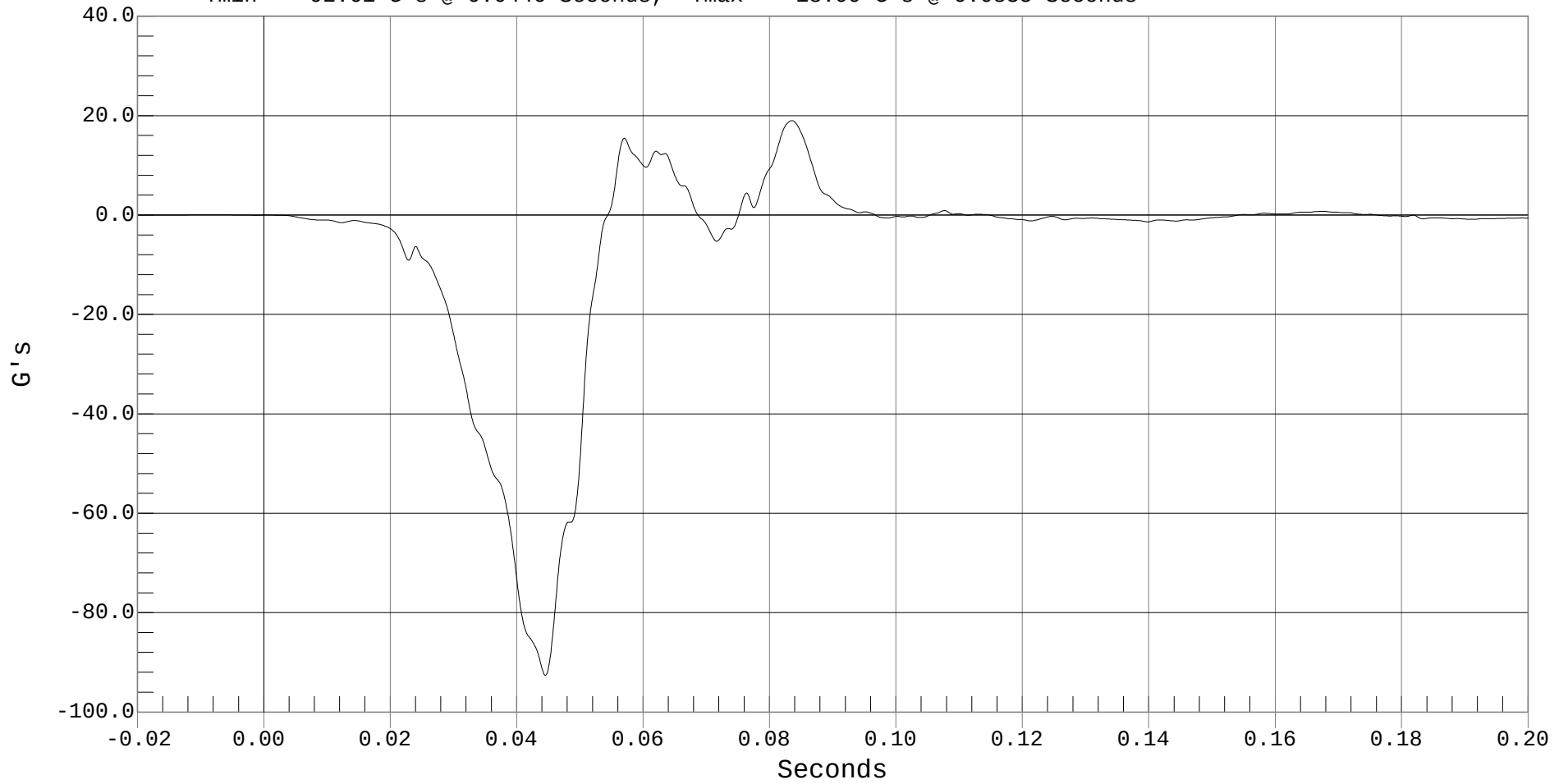
# DRIVER LEFT FOOT @ HEEL X ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 180

1 DRIVER LEFT FOOT @ HEEL X, C01006AF.A10

Ymin = -92.61 G's @ 0.0446 Seconds, Ymax = 18.99 G's @ 0.0835 Seconds





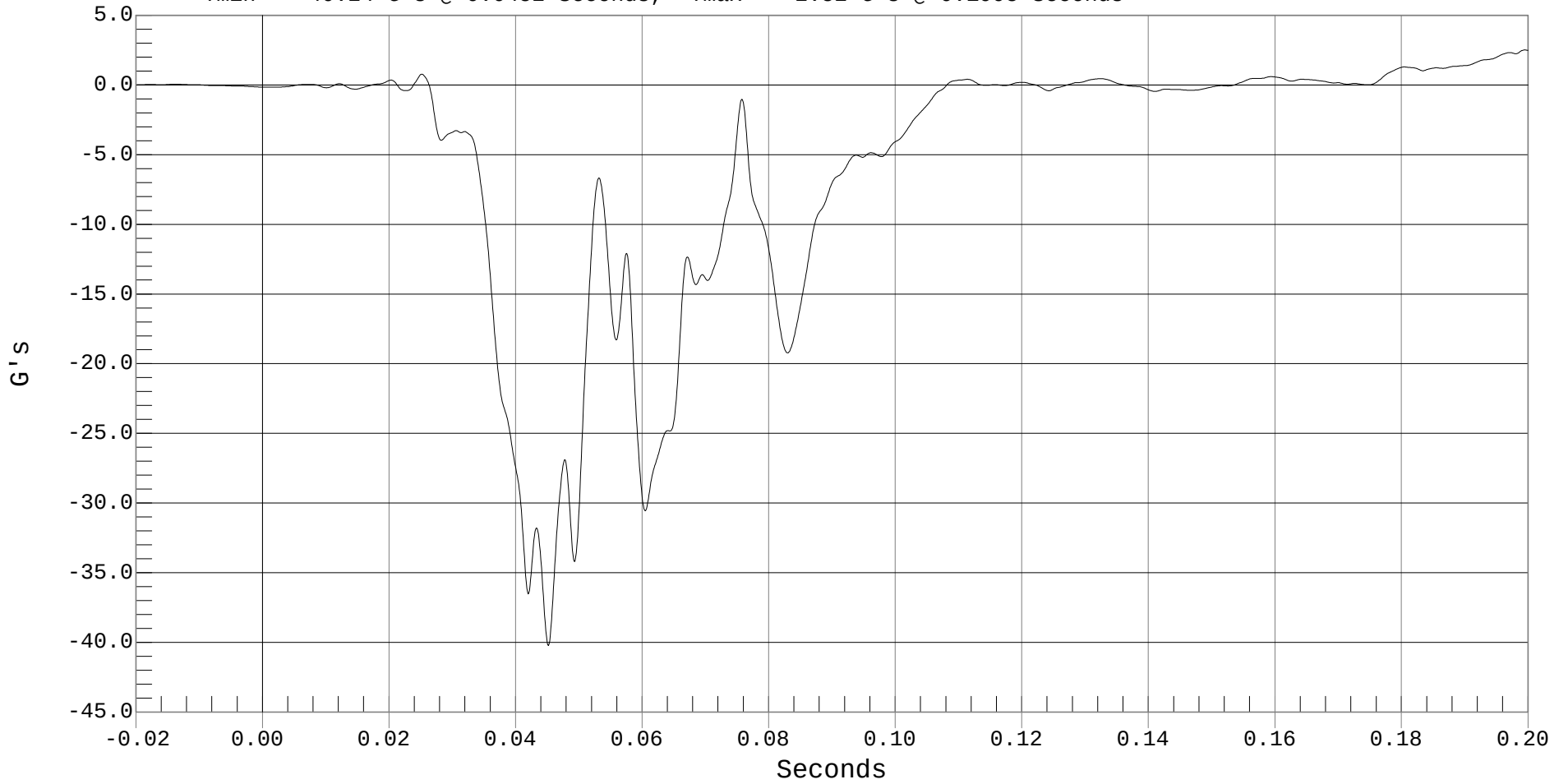
# DRIVER LEFT FOOT @ HEEL Z ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 180

— 1 DRIVER LEFT FOOT @ HEEL Z, C01006AF.A11

Ymin = -40.24 G's @ 0.0452 Seconds, Ymax = 2.52 G's @ 0.1995 Seconds





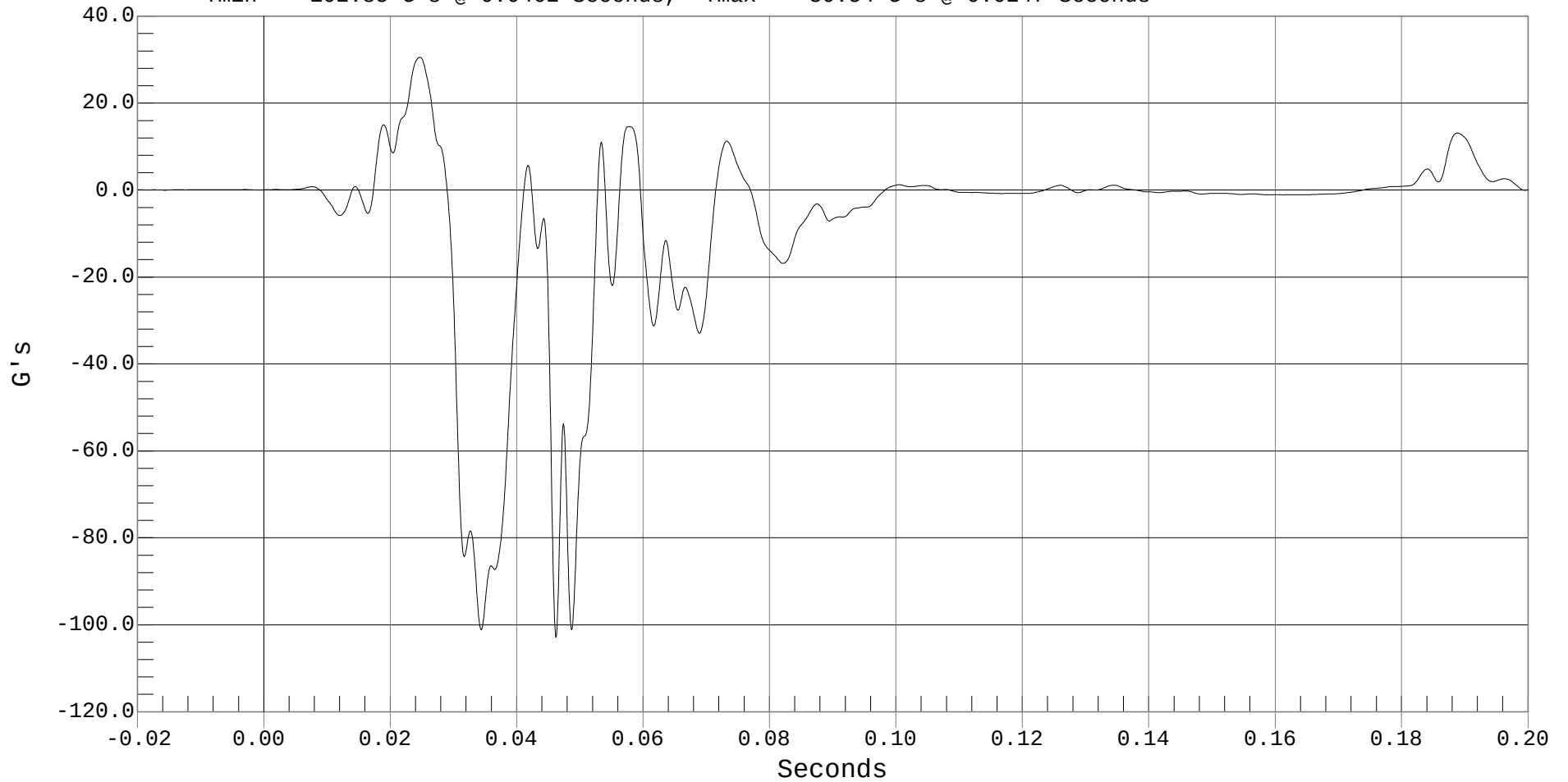
# DRIVER RIGHT FOOT @ BALL Z ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 180

1 DRIVER RIGHT FOOT @ BALL Z, B01006AF.A95

Ymin = -102.85 G's @ 0.0462 Seconds, Ymax = 30.54 G's @ 0.0247 Seconds







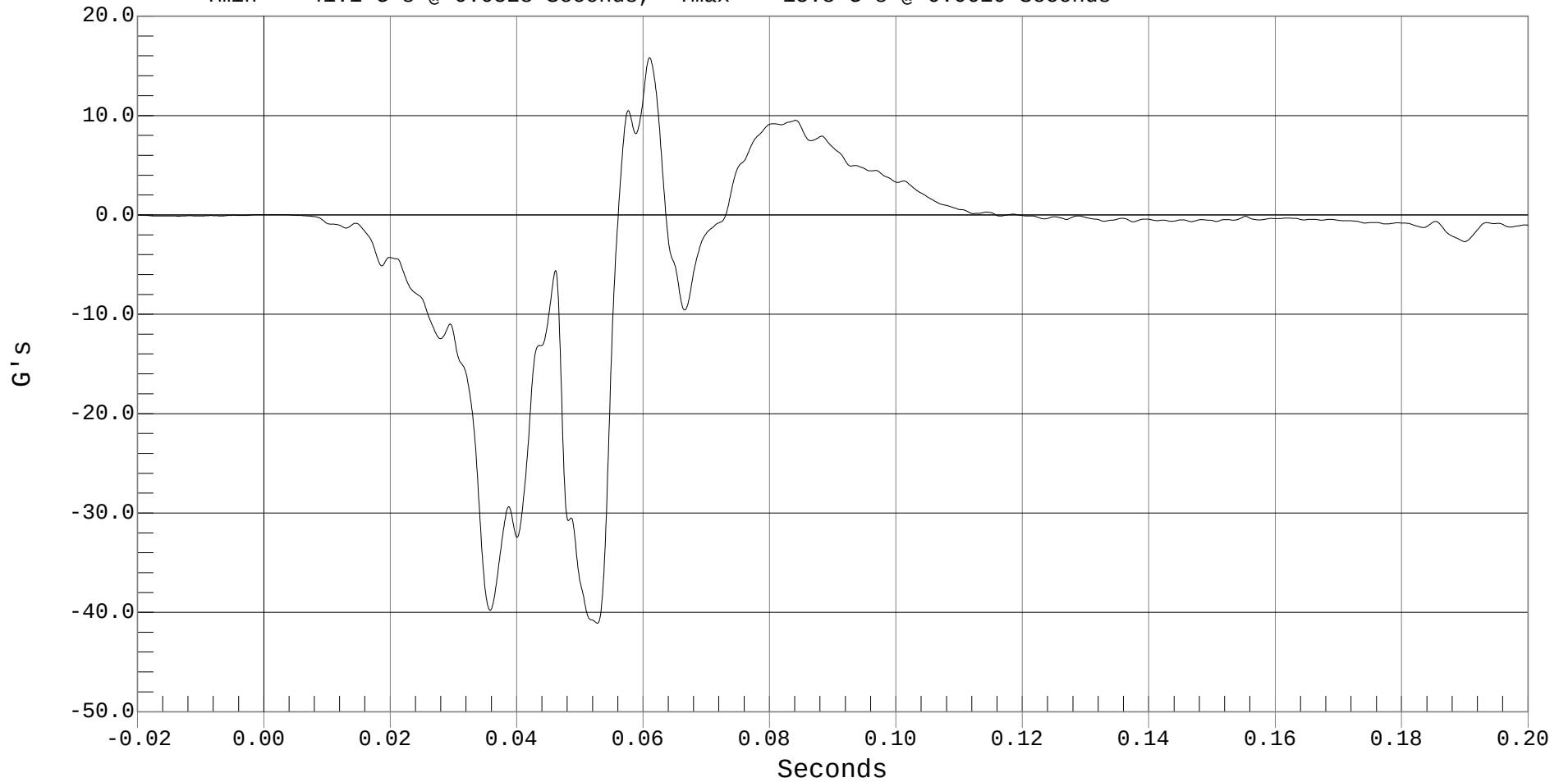
# DRIVER RIGHT FOOT @ HEEL X ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 180

— 1 DRIVER RIGHT FOOT @ HEEL X, B01006AF.A93

Ymin = -41.1 G's @ 0.0528 Seconds, Ymax = 15.8 G's @ 0.0610 Seconds





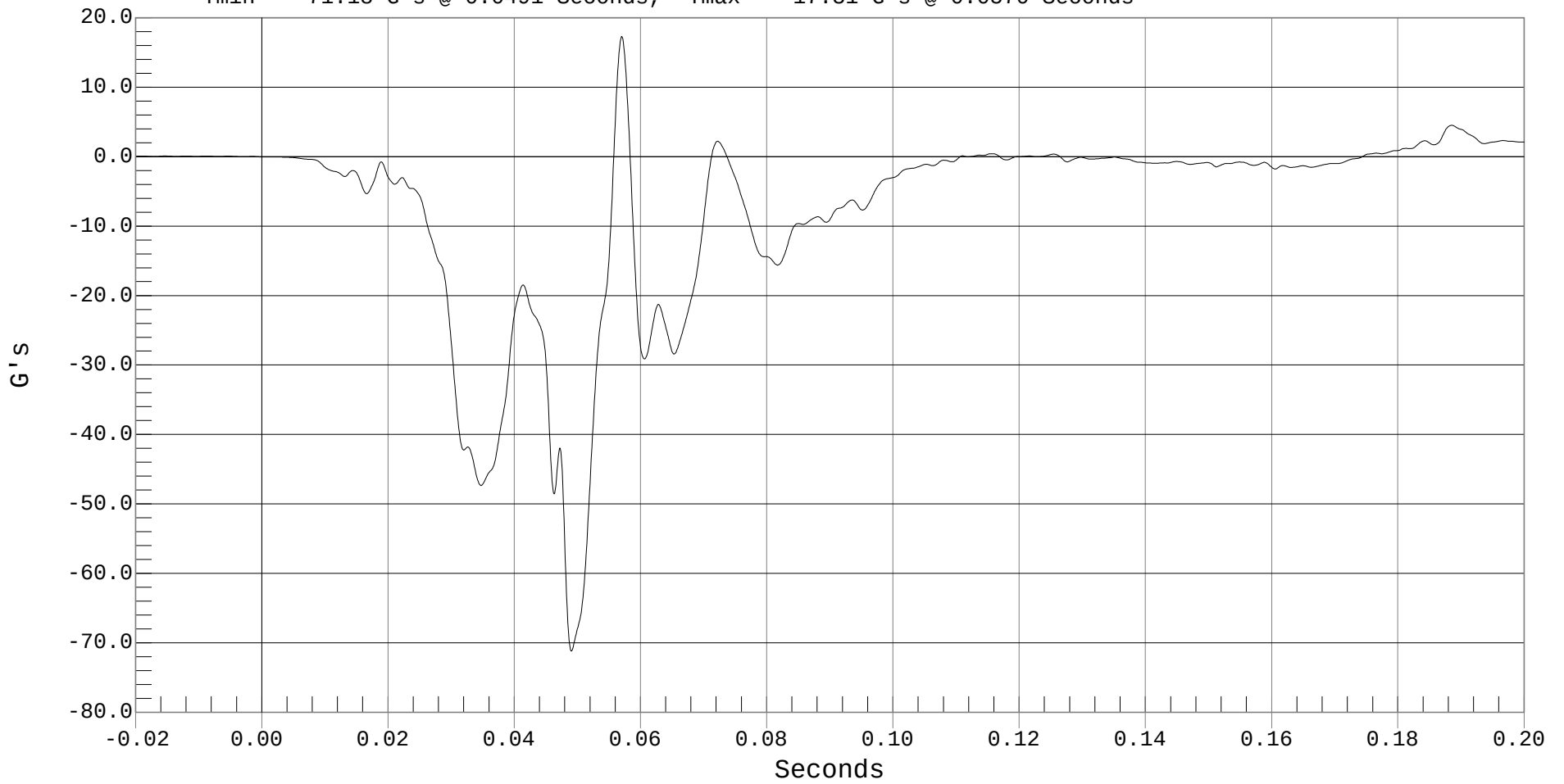
# DRIVER RIGHT FOOT @ HEEL Z ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 180

— 1 DRIVER RIGHT FOOT @ HEEL Z, B01006AF.A94

Ymin = -71.18 G's @ 0.0491 Seconds, Ymax = 17.31 G's @ 0.0570 Seconds





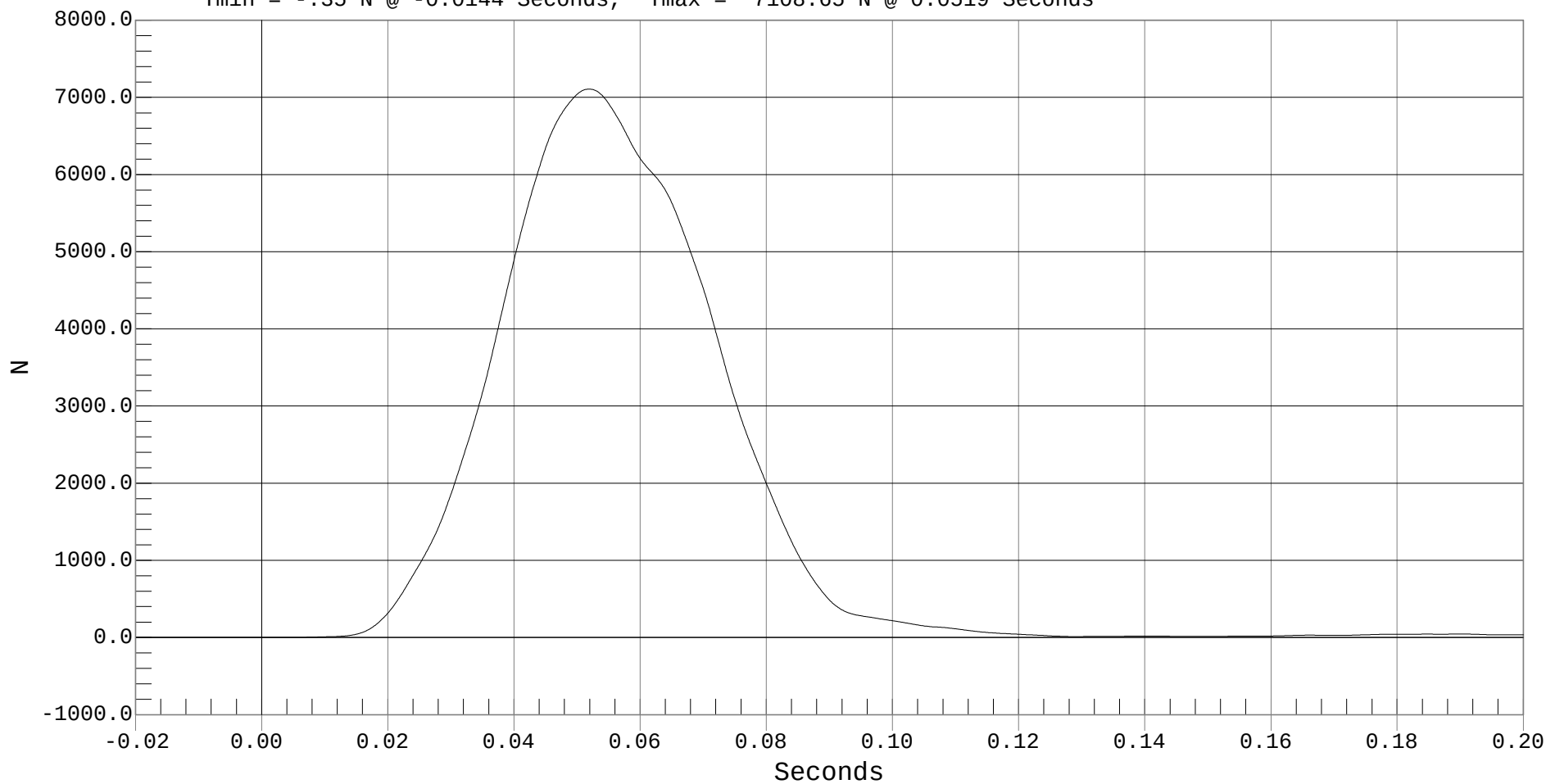
# DRIVER LAP BELT FORCE

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 60

— 1 DRIVER LAP BELT, B01006FF.F66

Ymin = -.35 N @ -0.0144 Seconds, Ymax = 7108.65 N @ 0.0519 Seconds





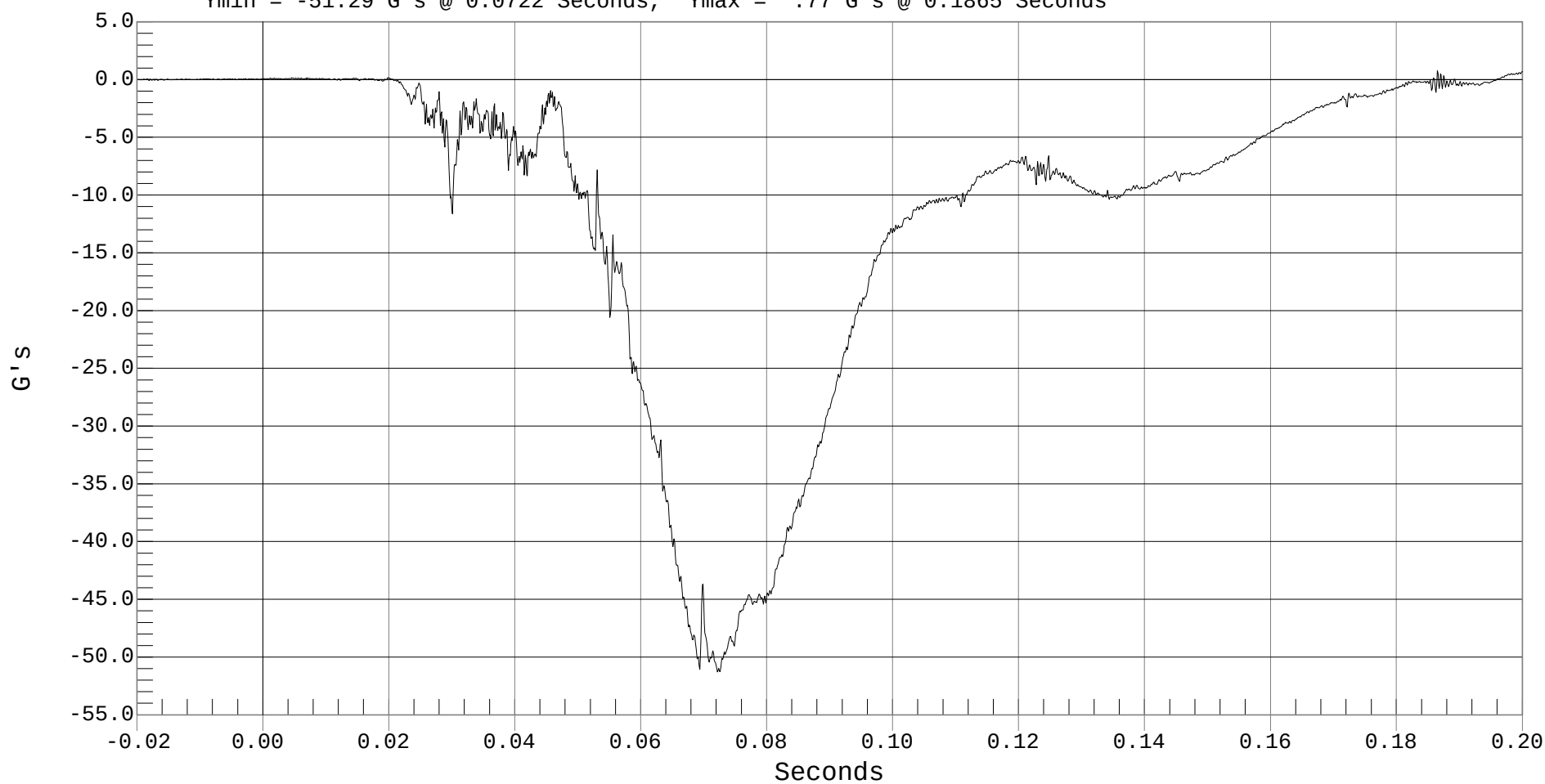
# PASSENGER HEAD X ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 1000

— 1 PASSENGER HEAD X, B01006AT.A19

Ymin = -51.29 G's @ 0.0722 Seconds, Ymax = .77 G's @ 0.1865 Seconds







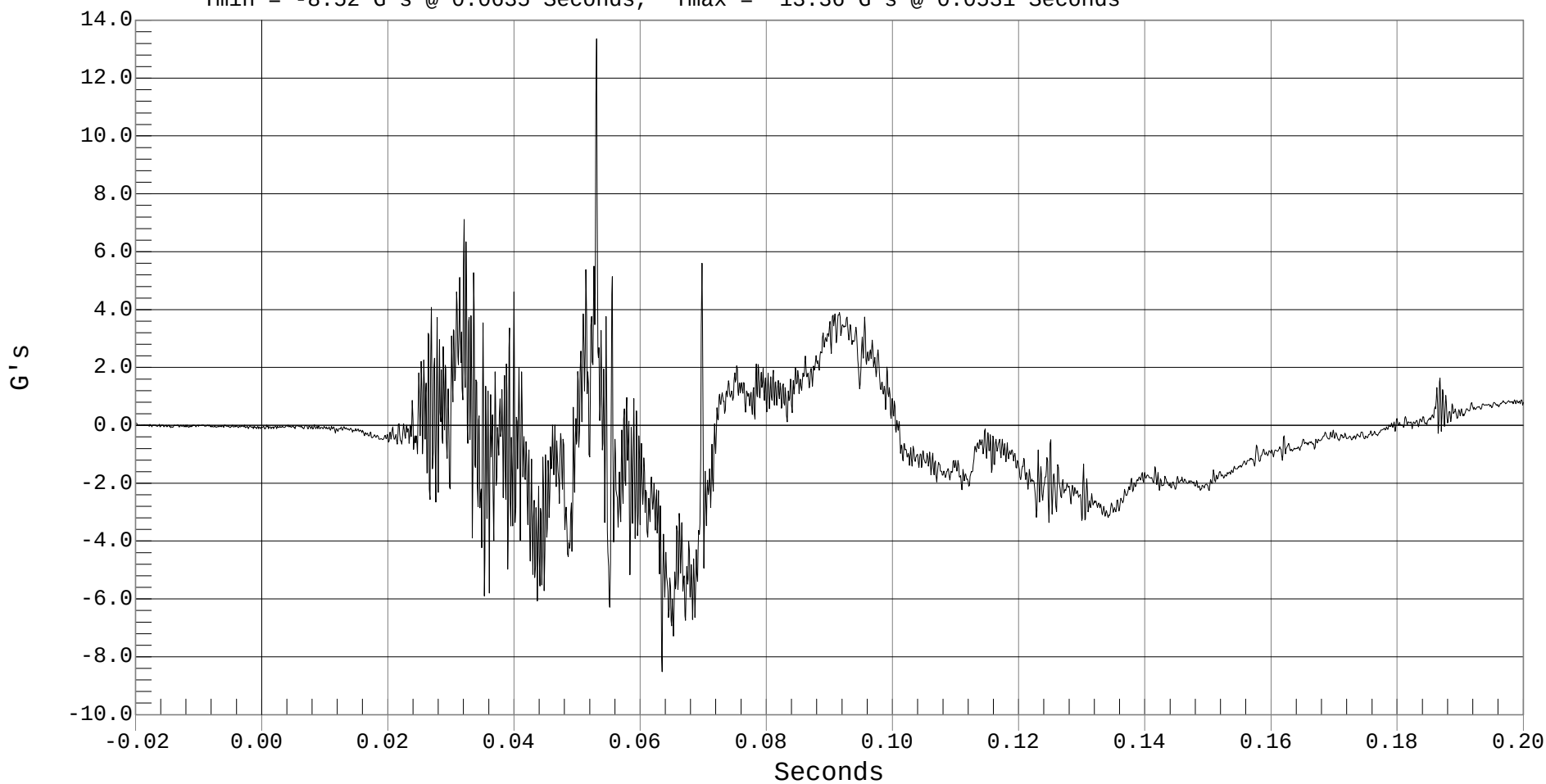
# PASSENGER HEAD Y ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 1000

— 1 PASSENGER HEAD Y, B01006AT.A20

Ymin = -8.52 G's @ 0.0635 Seconds, Ymax = 13.36 G's @ 0.0531 Seconds





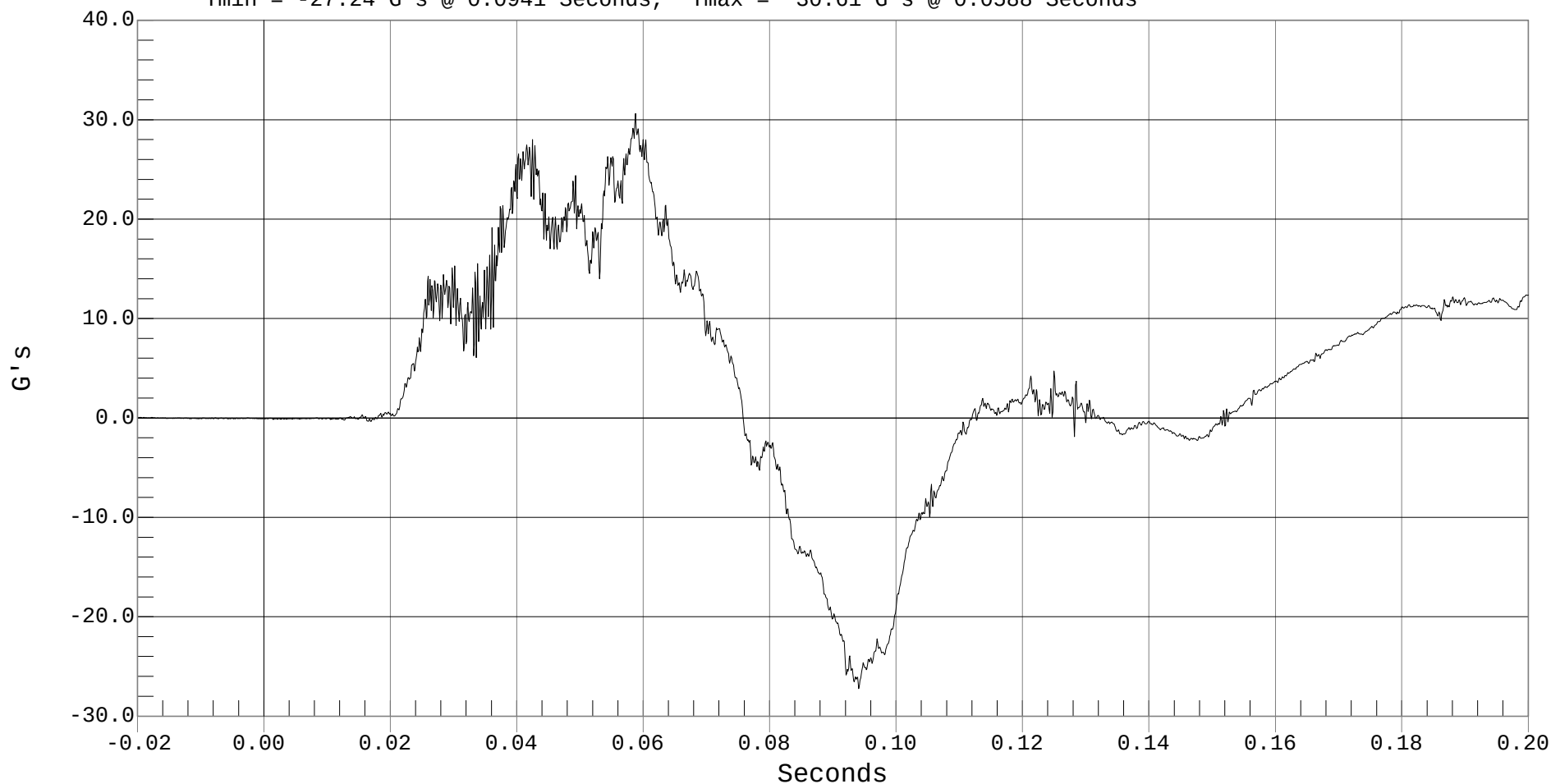
# PASSENGER HEAD Z ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 1000

— 1 PASSENGER HEAD Z, B01006AT.A21

Ymin = -27.24 G's @ 0.0941 Seconds, Ymax = 30.61 G's @ 0.0588 Seconds





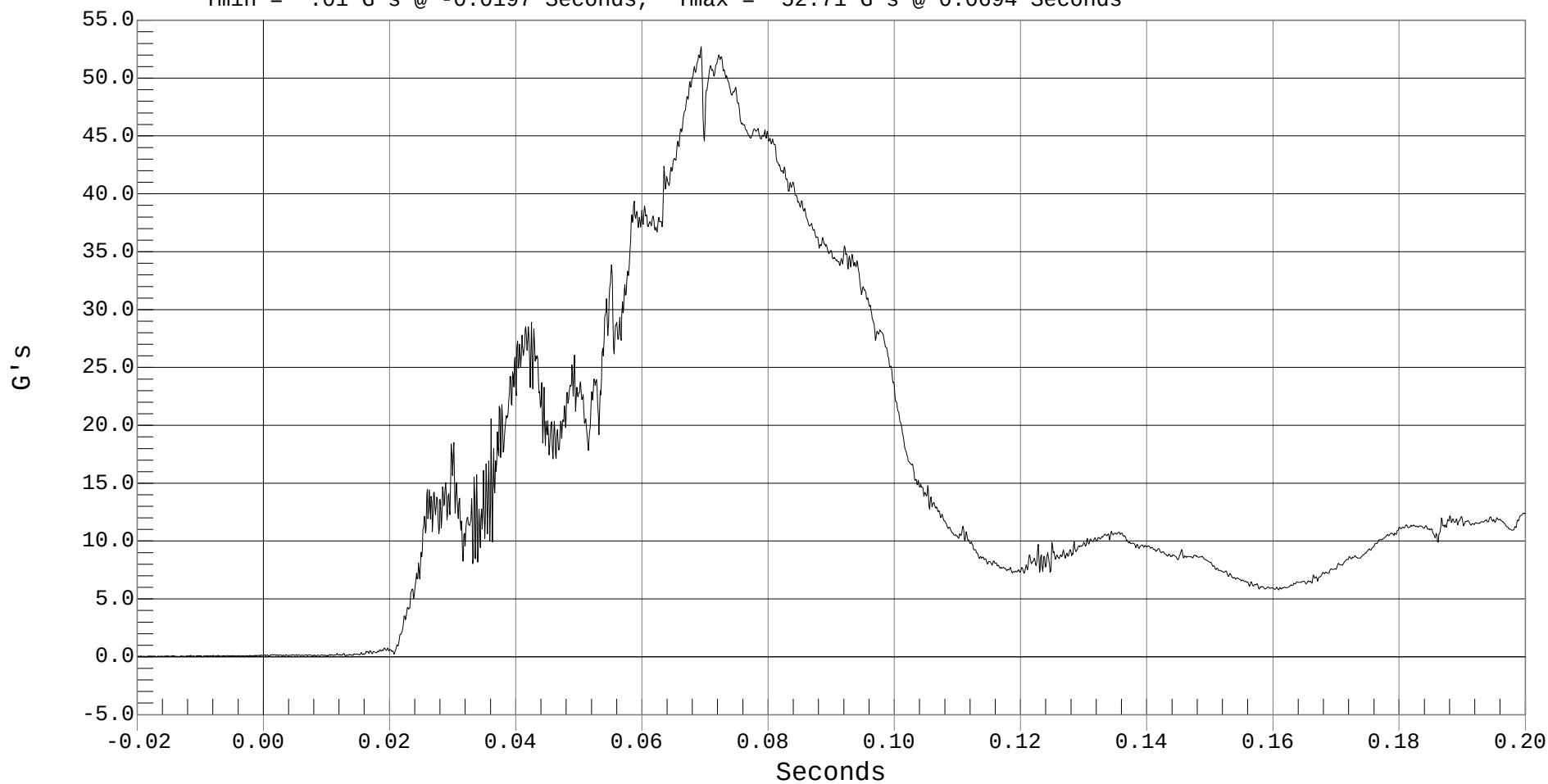
# PASSENGER HEAD RESULTANT ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 1000

— 1 PASSENGER HEAD RESULTANT ACCELERATION, B01006AV.A19

Ymin = .01 G's @ -0.0197 Seconds, Ymax = 52.71 G's @ 0.0694 Seconds





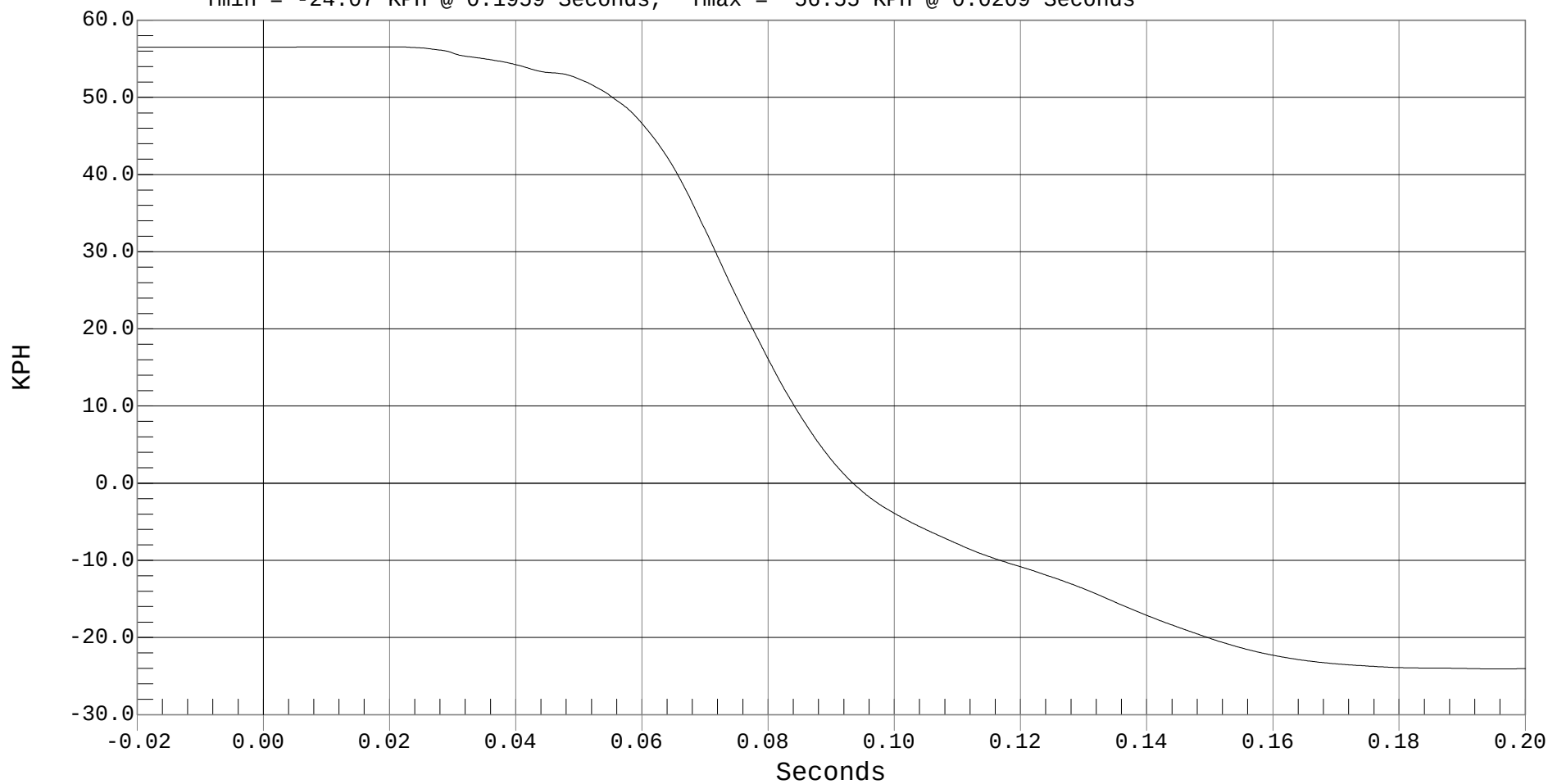
# PASSENGER HEAD X VELOCITY

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 180

— 1 PASSENGER HEAD X VELOCITY, B01006AI.V19

Ymin = -24.07 KPH @ 0.1959 Seconds, Ymax = 56.55 KPH @ 0.0209 Seconds







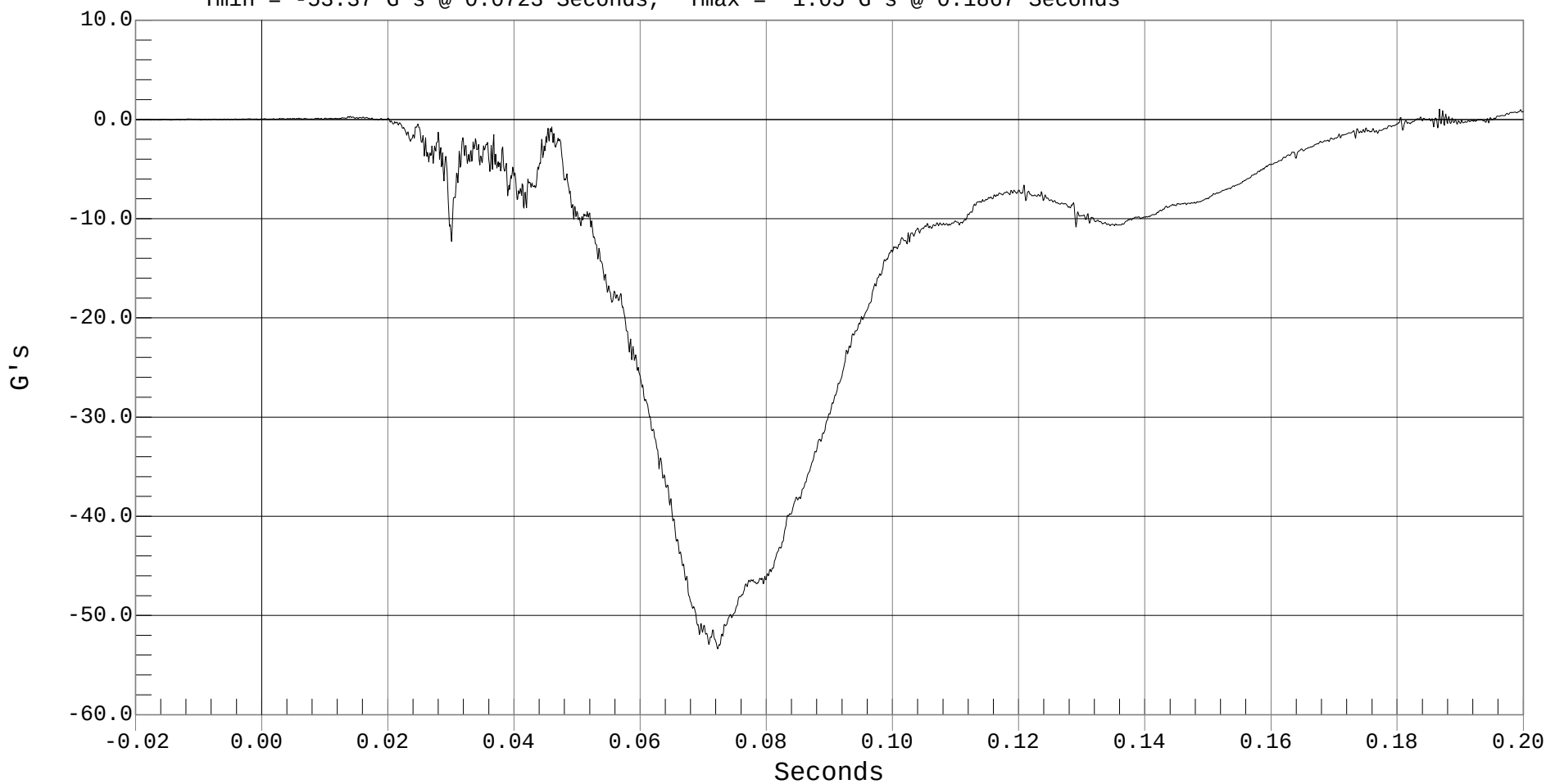
# PASSENGER HEAD REDUNDANT X ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 1000

— 1 PASSENGER HEAD Xr, B01006AT.A41

Ymin = -53.37 G's @ 0.0723 Seconds, Ymax = 1.05 G's @ 0.1867 Seconds





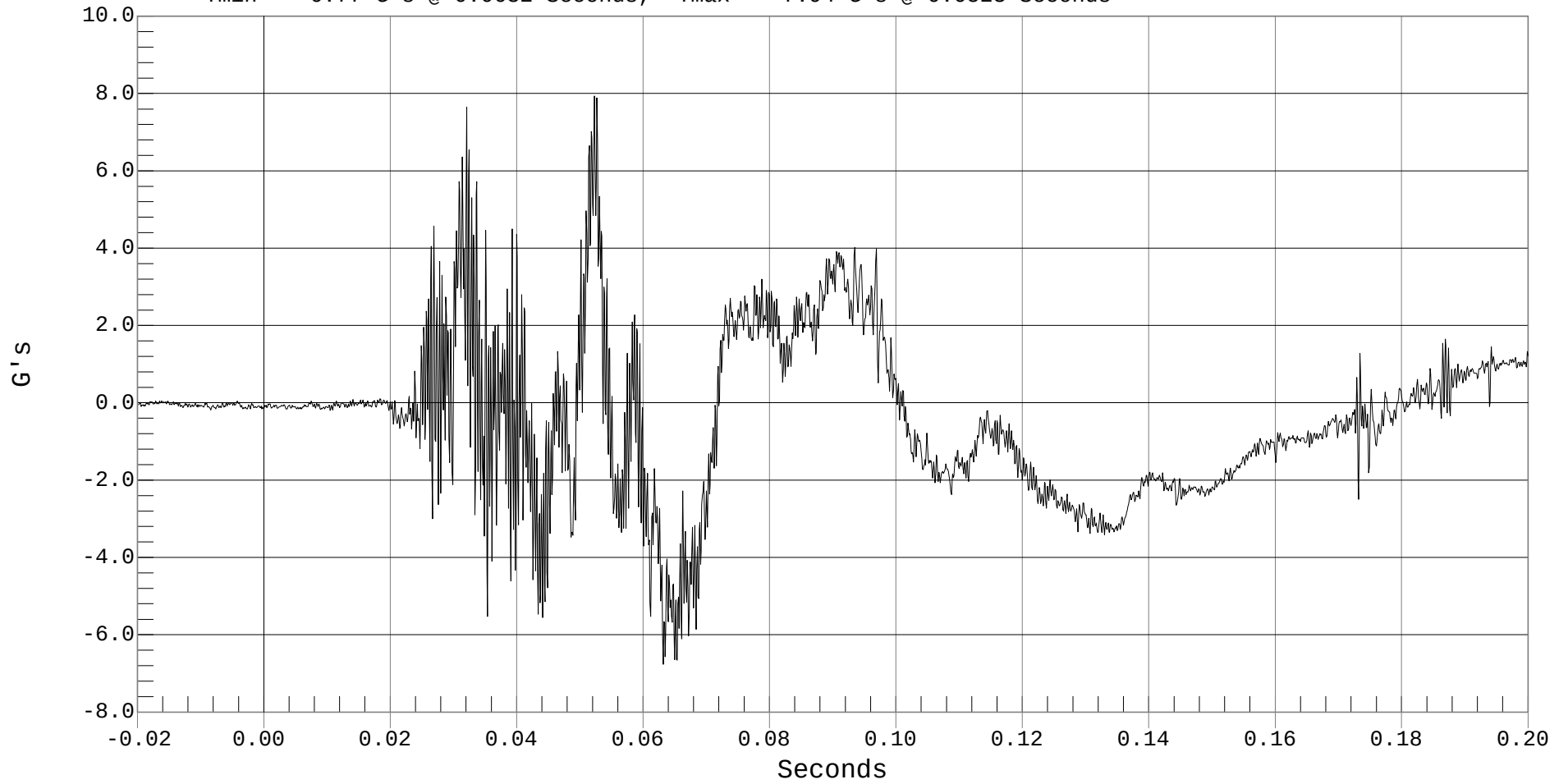
# PASSENGER HEAD REDUNDANT Y ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 1000

— 1 PASSENGER HEAD Yr, B01006AT.A42

Ymin = -6.77 G's @ 0.0632 Seconds, Ymax = 7.94 G's @ 0.0523 Seconds





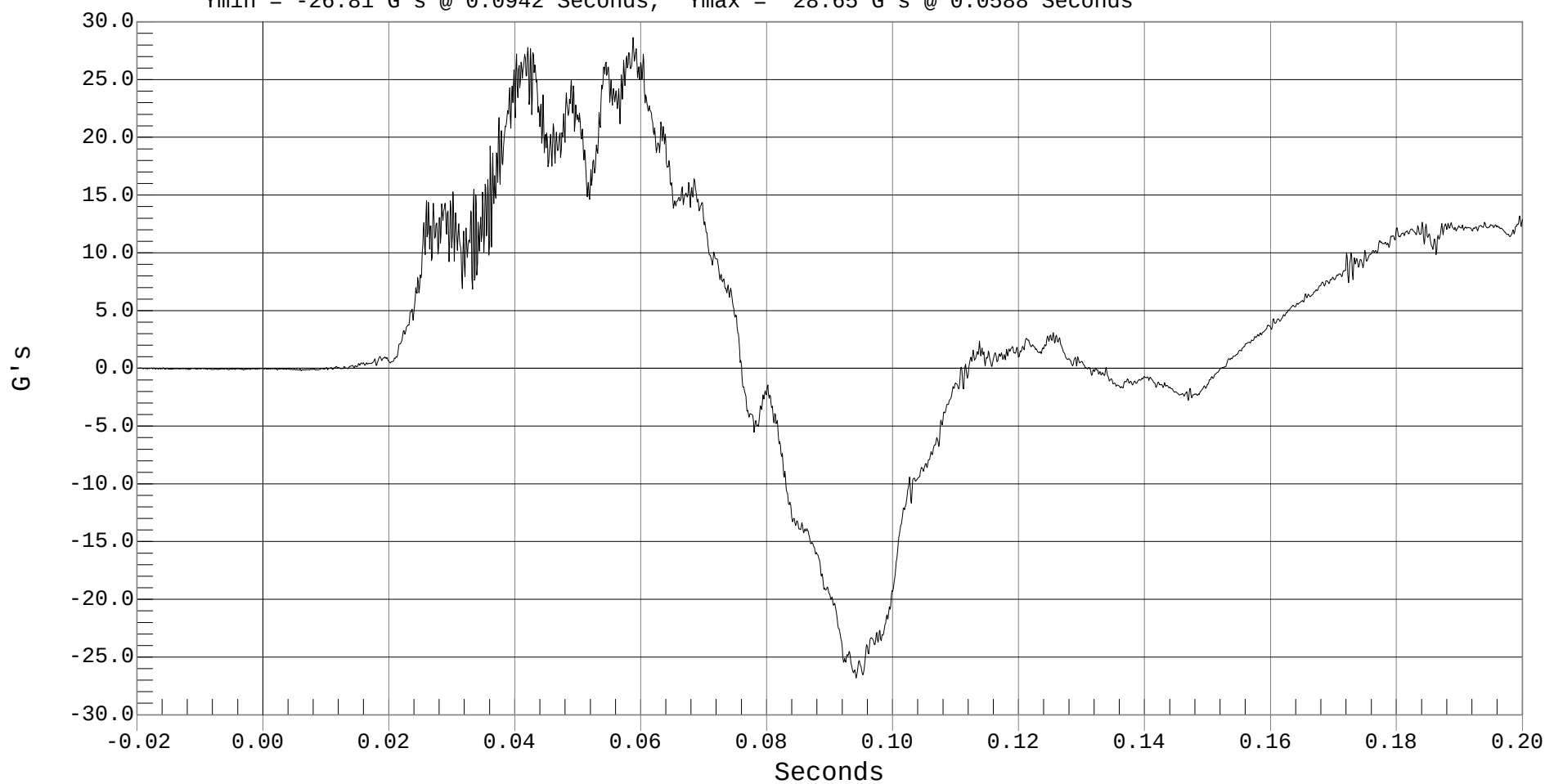
# PASSENGER HEAD REDUNDANT Z ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 1000

— 1 PASSENGER HEAD Zr, B01006AT.A43

Ymin = -26.81 G's @ 0.0942 Seconds, Ymax = 28.65 G's @ 0.0588 Seconds





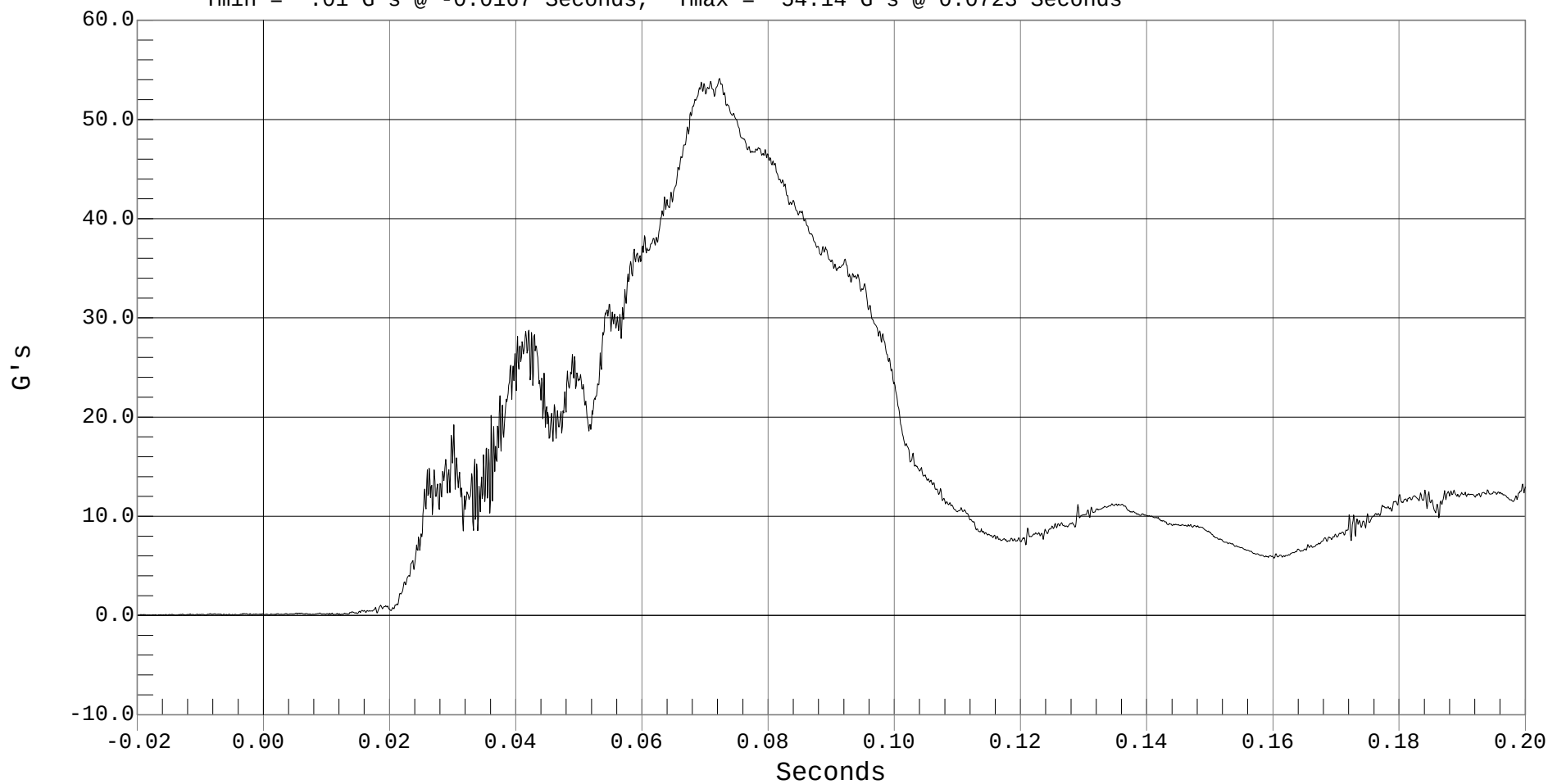
# PASSENGER HEAD REDUNDANT RESULTANT ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 1000

— 1 PASSENGER HEAD REDUNDANT RESULTANT ACCELERATION, B01006AV.A41

Ymin = .01 G's @ -0.0167 Seconds, Ymax = 54.14 G's @ 0.0723 Seconds







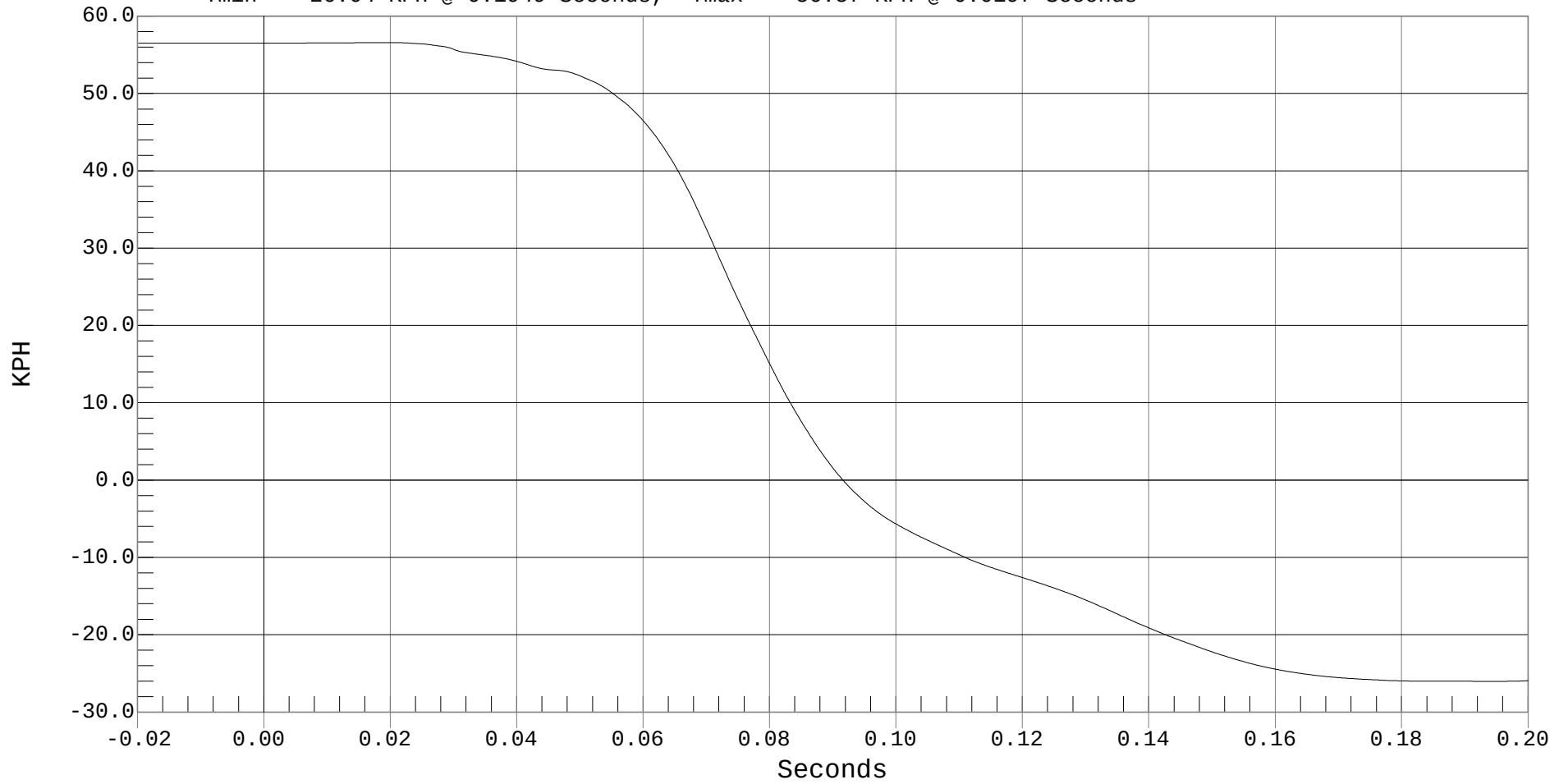
# PASSENGER HEAD REDUNDANT X VELOCITY

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 180

— 1 PASSENGER HEAD REDUNDANT X VELOCITY, B01006AI.V41

Ymin = -26.04 KPH @ 0.1949 Seconds, Ymax = 56.57 KPH @ 0.0197 Seconds





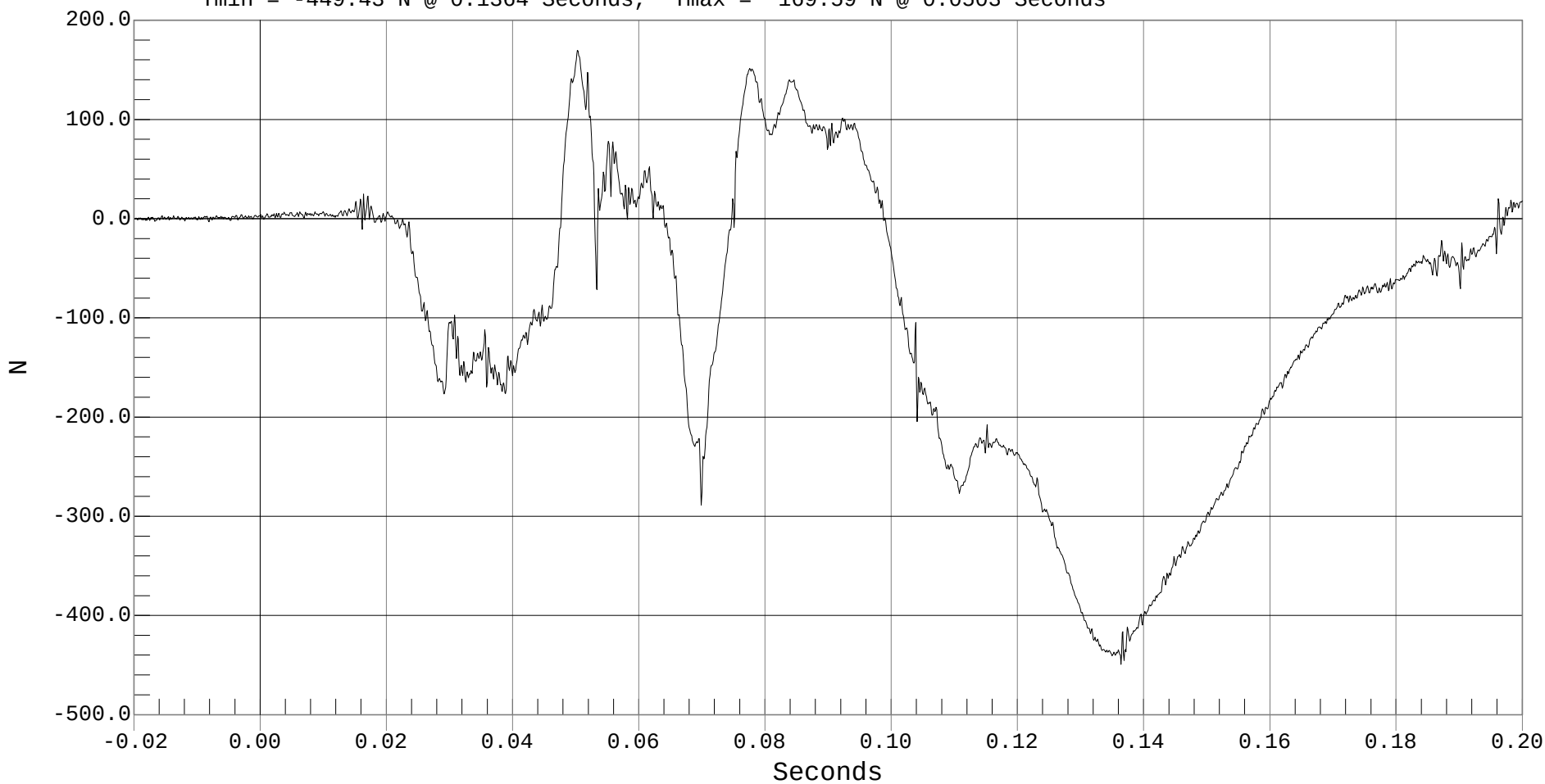
# PASSENGER NECK FORCE X

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 1000

— 1 PASSENGER NECK FX, B01006FT.F44

Ymin = -449.43 N @ 0.1364 Seconds, Ymax = 169.59 N @ 0.0503 Seconds





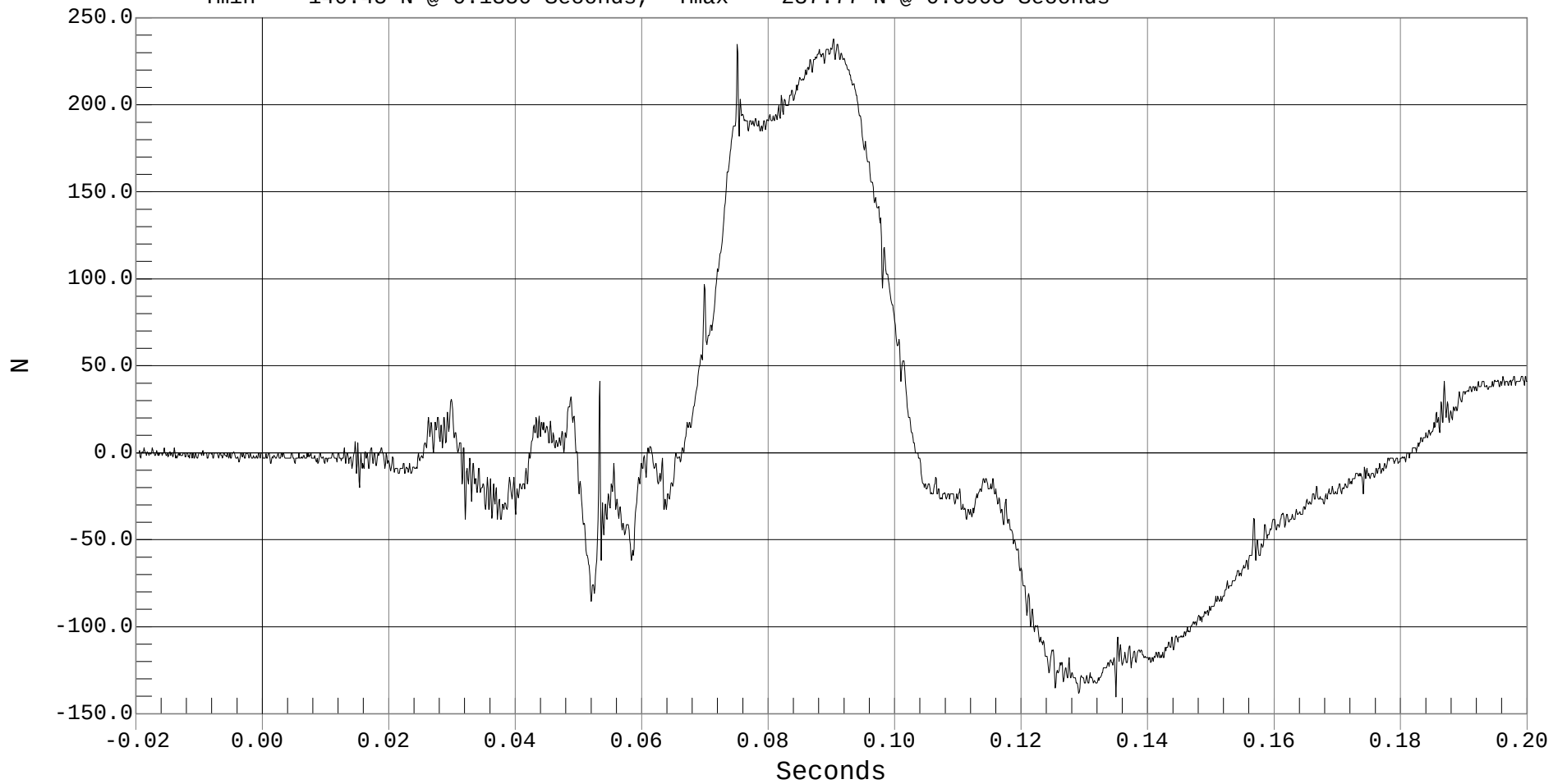
# PASSENGER NECK FORCE Y

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 1000

— 1 PASSENGER NECK FY, B01006FT.F45

Ymin = -140.45 N @ 0.1350 Seconds, Ymax = 237.77 N @ 0.0903 Seconds





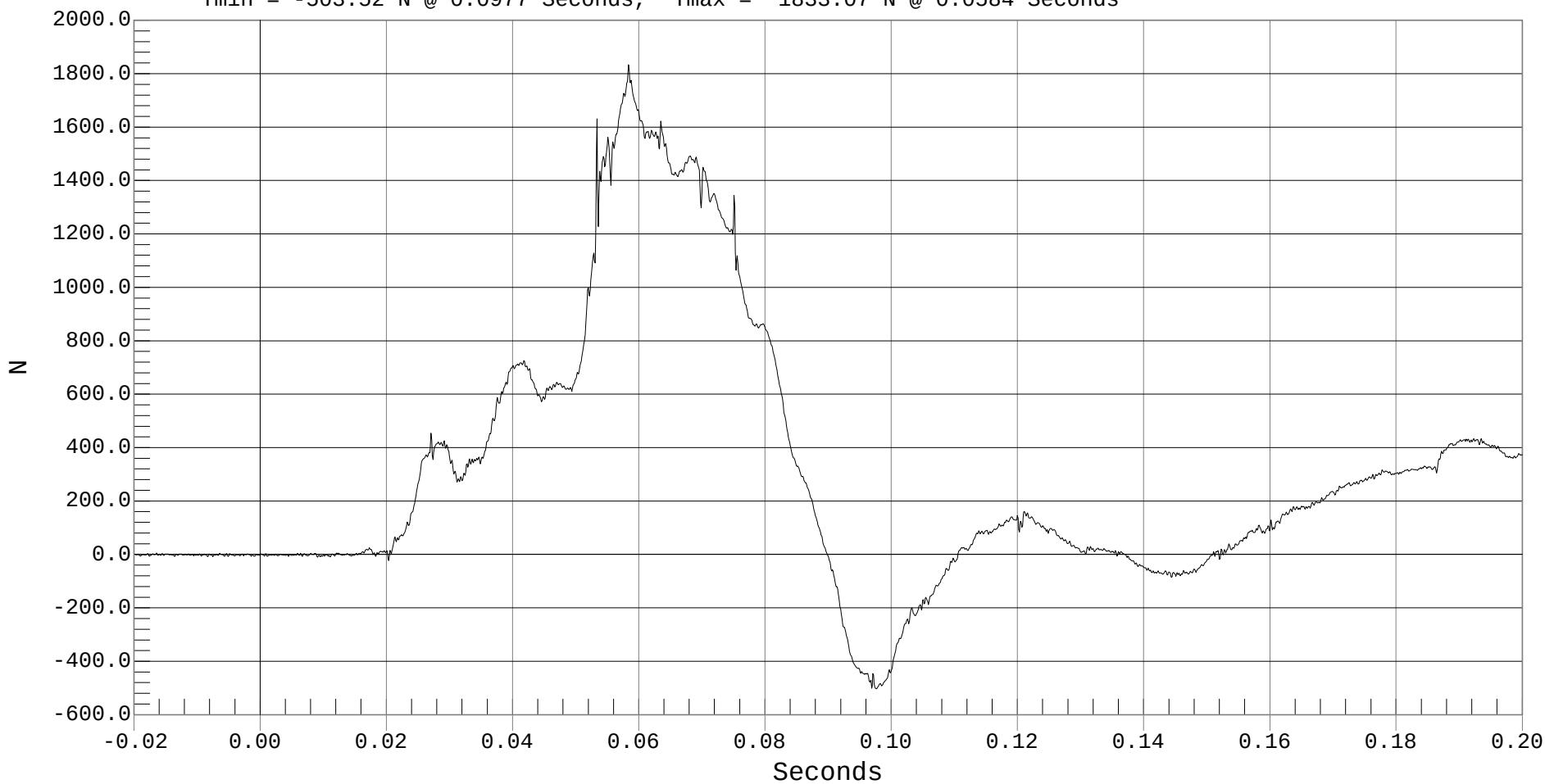
# PASSENGER NECK FORCE Z

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 1000

— 1 PASSENGER NECK FZ, B01006FT.F46

Ymin = -503.52 N @ 0.0977 Seconds, Ymax = 1833.07 N @ 0.0584 Seconds







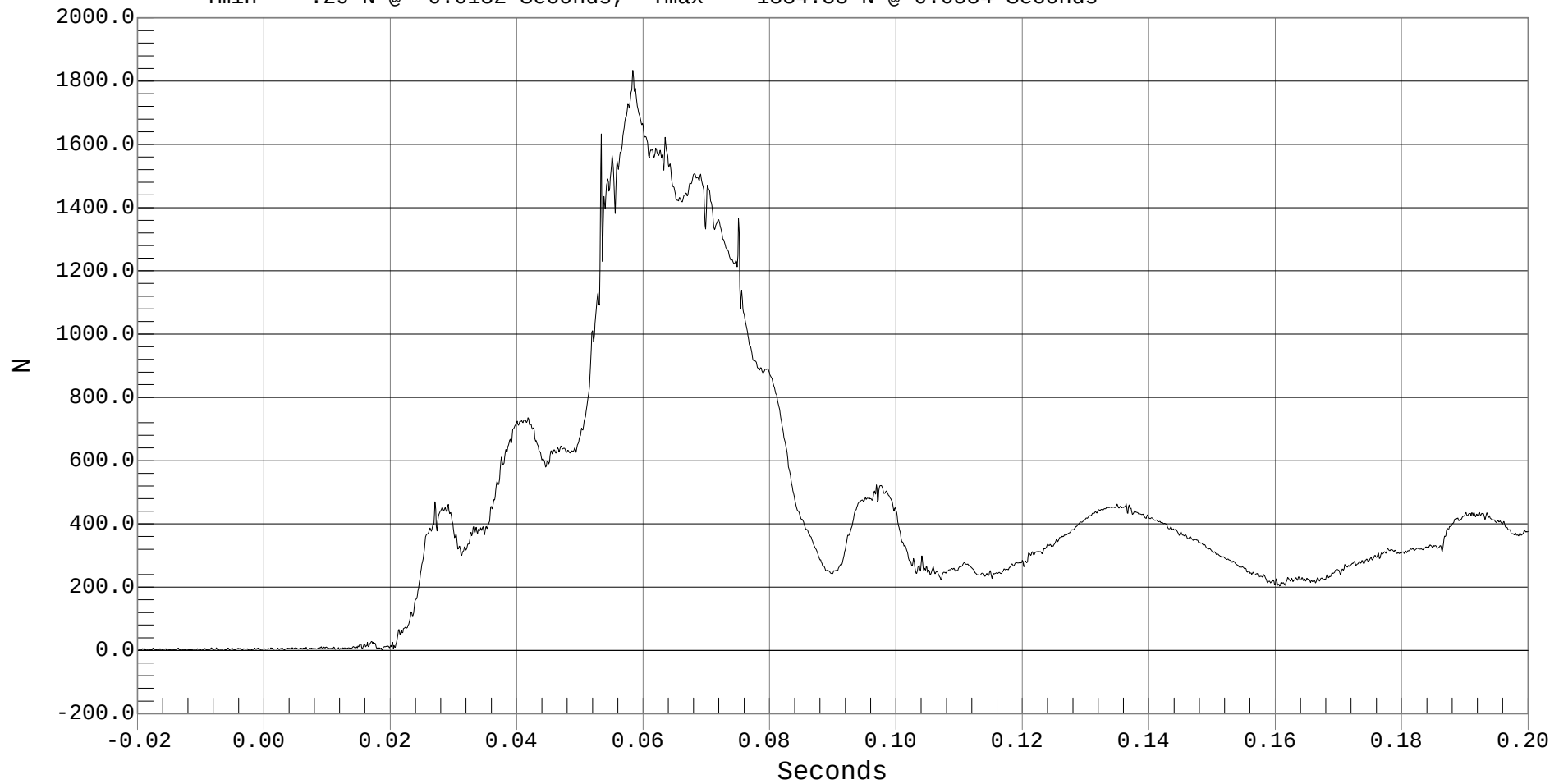
# PASSENGER NECK FORCE RESULTANT

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 1000

— 1 PASSENGER NECK FORCE RESULTANT, B01006FV.F44

Ymin = .29 N @ -0.0132 Seconds, Ymax = 1834.38 N @ 0.0584 Seconds





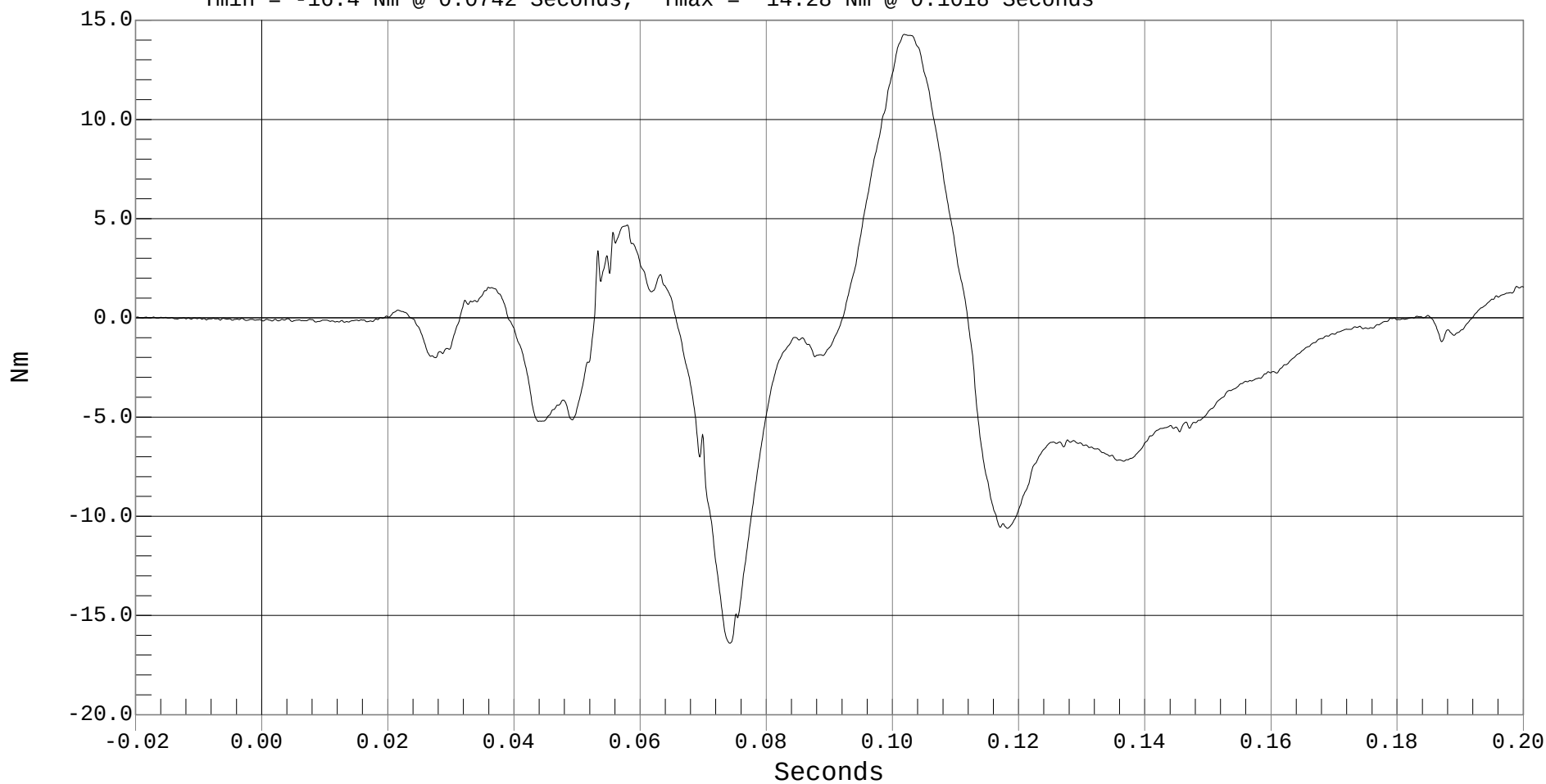
# PASSENGER NECK MOMENT X

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 600

— 1 PASSENGER NECK MX, B01006MF.M47

Ymin = -16.4 Nm @ 0.0742 Seconds, Ymax = 14.28 Nm @ 0.1018 Seconds





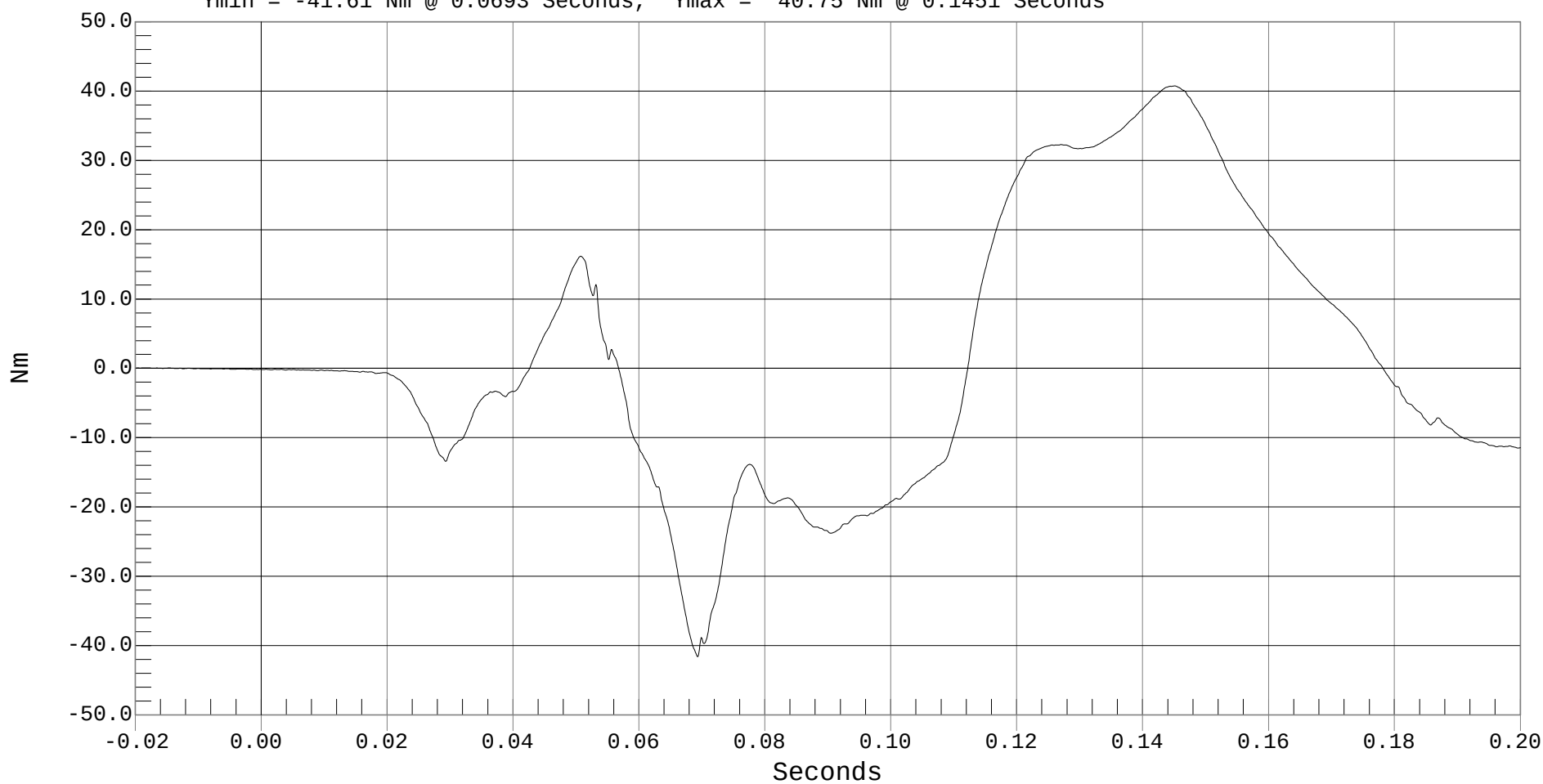
# PASSENGER NECK MOMENT Y

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 600

— 1 PASSENGER NECK MY, B01006MF.M48

Ymin = -41.61 Nm @ 0.0693 Seconds, Ymax = 40.75 Nm @ 0.1451 Seconds





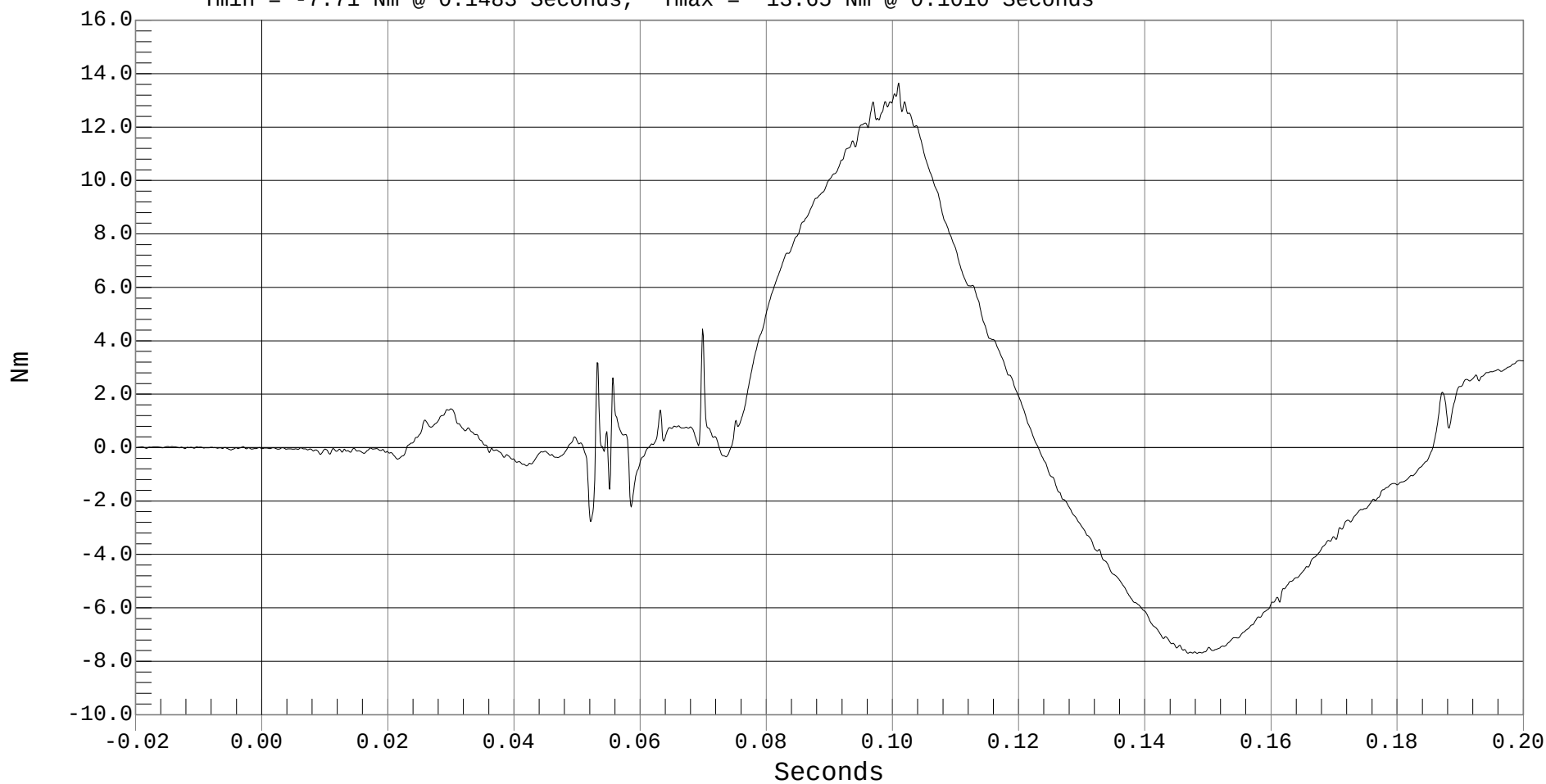
# PASSENGER NECK MOMENT Z

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 600

— 1 PASSENGER NECK MZ, B01006MF.M49

Ymin = -7.71 Nm @ 0.1483 Seconds, Ymax = 13.65 Nm @ 0.1010 Seconds







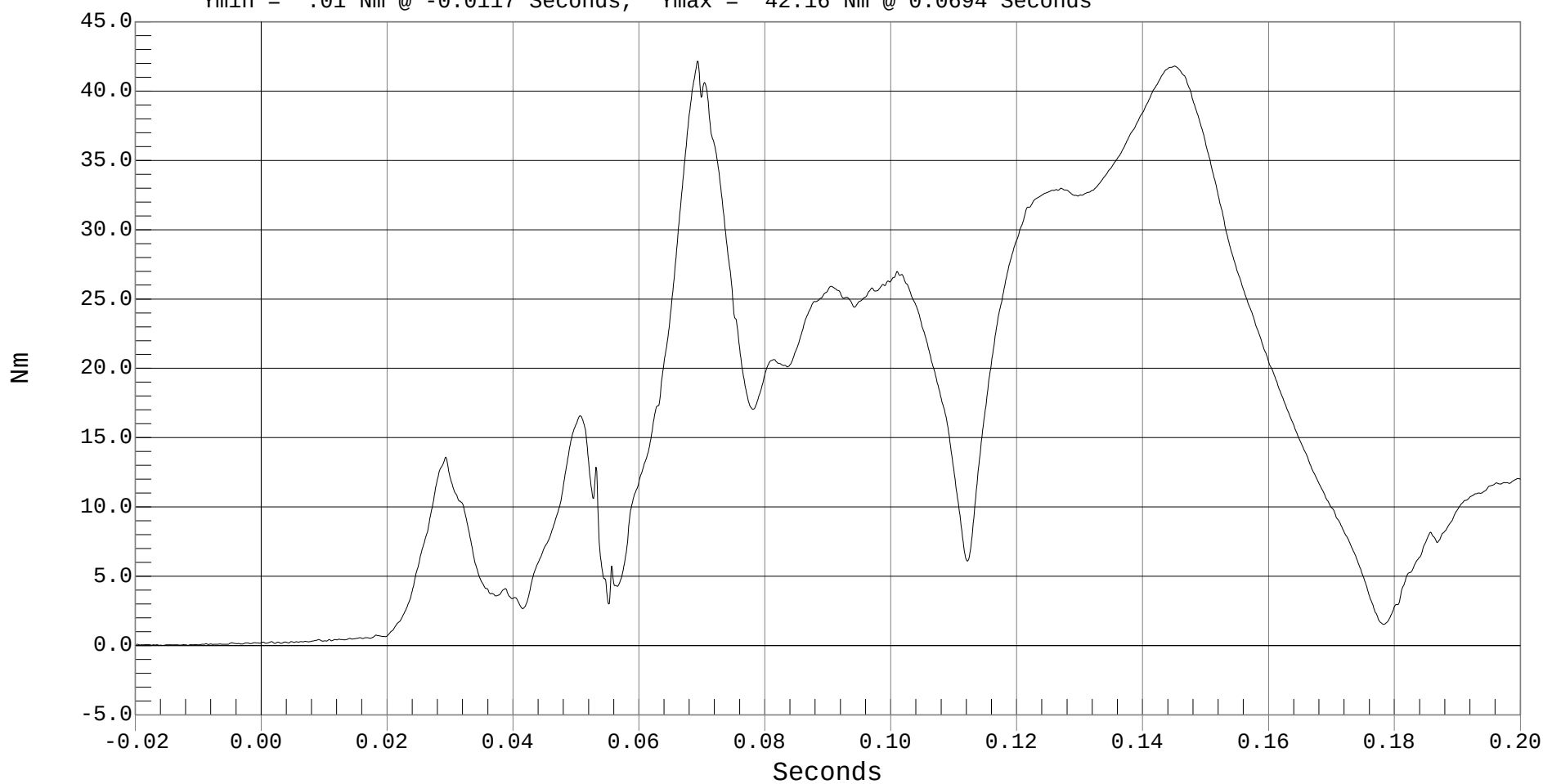
# PASSENGER NECK MOMENT RESULTANT

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 600

— 1 PASSENGER NECK MOMENT RESULTANT, B01006MV.M47

Ymin = .01 Nm @ -0.0117 Seconds, Ymax = 42.16 Nm @ 0.0694 Seconds





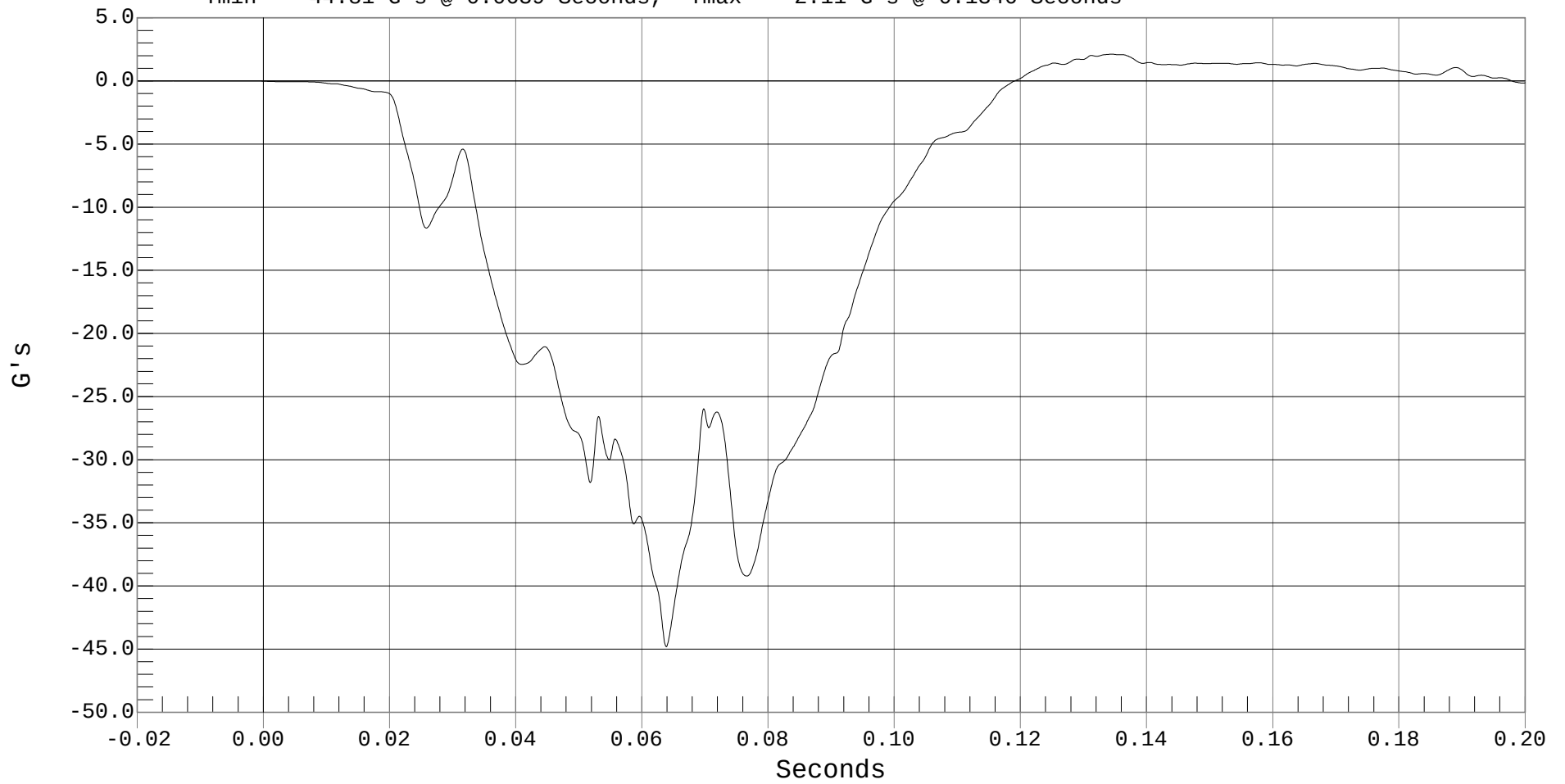
# PASSENGER CHEST X ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 180

— 1 PASSENGER CHEST X, B01006AF.A22

Ymin = -44.81 G's @ 0.0639 Seconds, Ymax = 2.11 G's @ 0.1346 Seconds





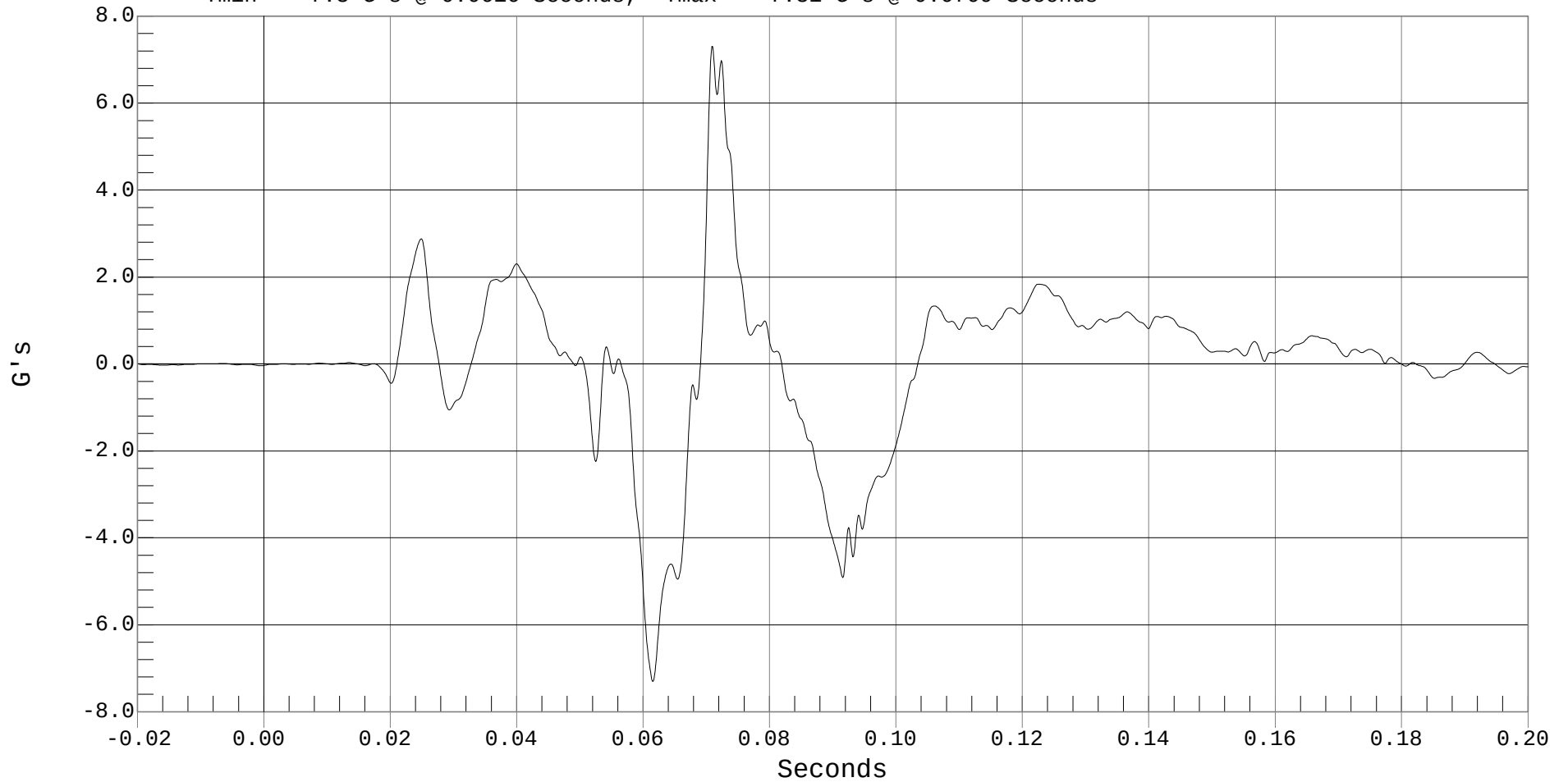
# PASSENGER CHEST Y ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 180

— 1 PASSENGER CHEST Y, B01006AF.A23

Ymin = -7.3 G's @ 0.0616 Seconds, Ymax = 7.31 G's @ 0.0709 Seconds





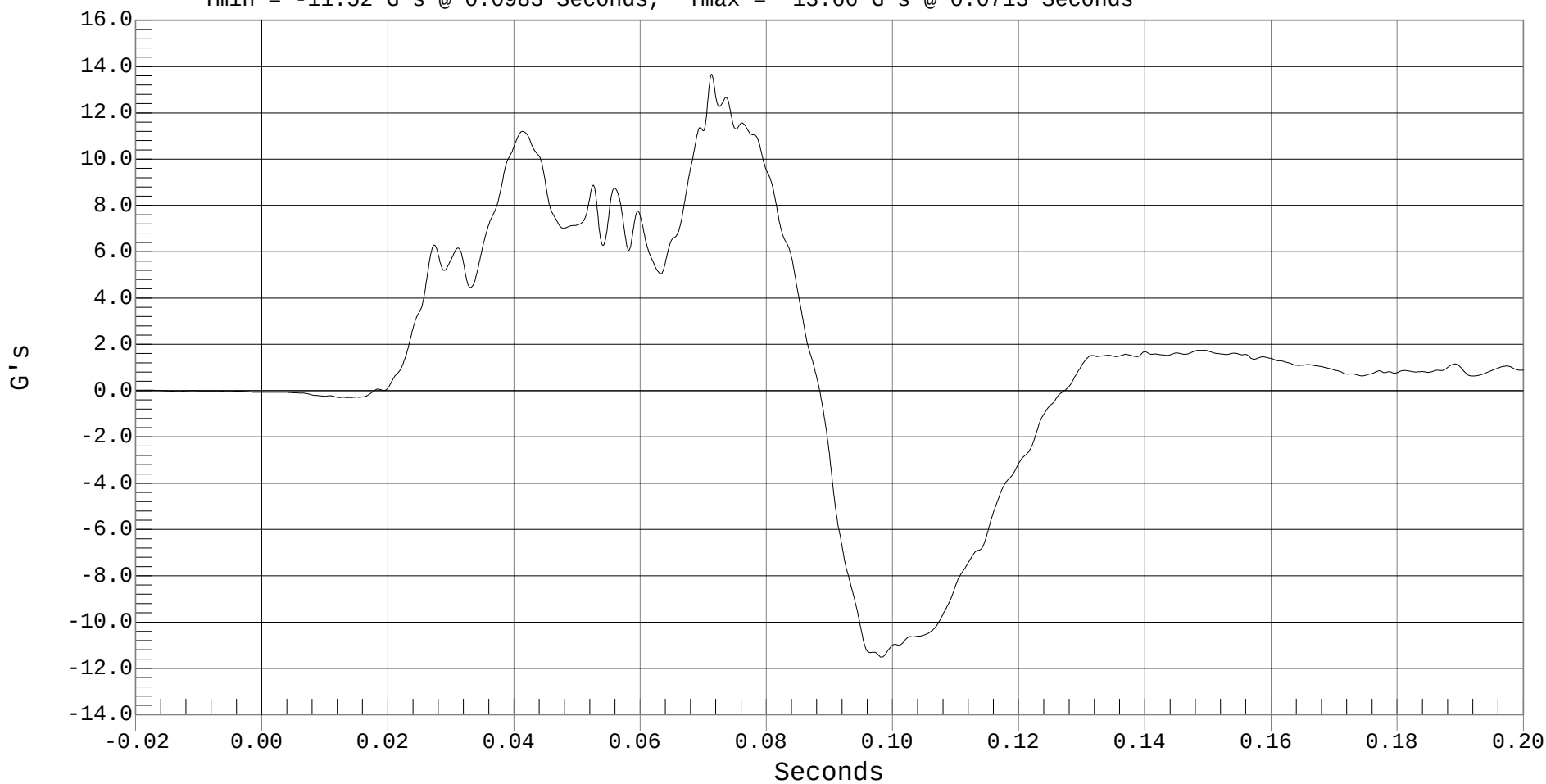
# PASSENGER CHEST Z ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 180

— 1 PASSENGER CHEST Z, B01006AF.A24

Ymin = -11.52 G's @ 0.0983 Seconds, Ymax = 13.66 G's @ 0.0713 Seconds







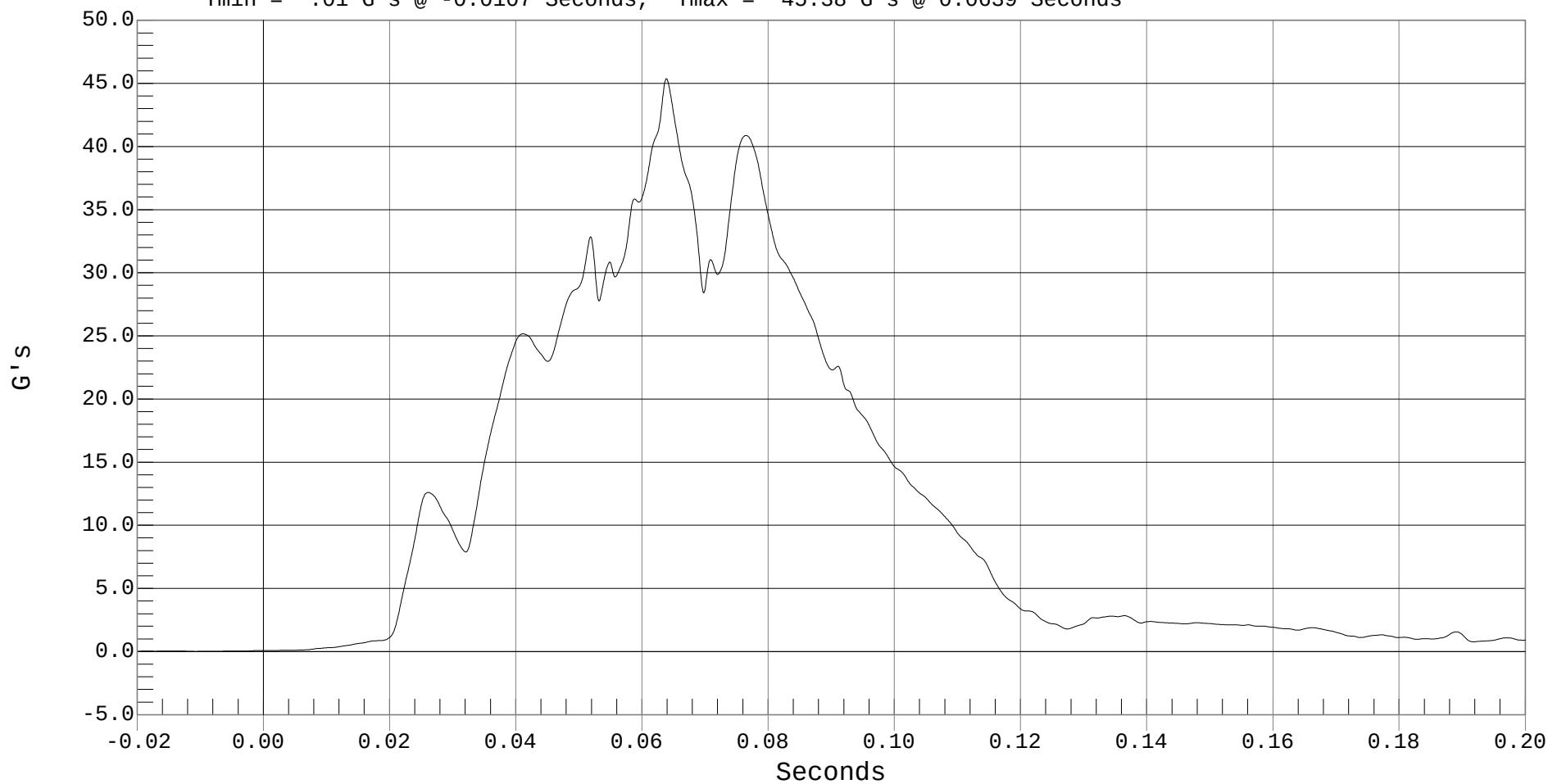
# PASSENGER CHEST RESULTANT ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 180

— 1 PASSENGER CHEST RESULTANT ACCELERATION, B01006AV.A22

Ymin = .01 G's @ -0.0107 Seconds, Ymax = 45.38 G's @ 0.0639 Seconds





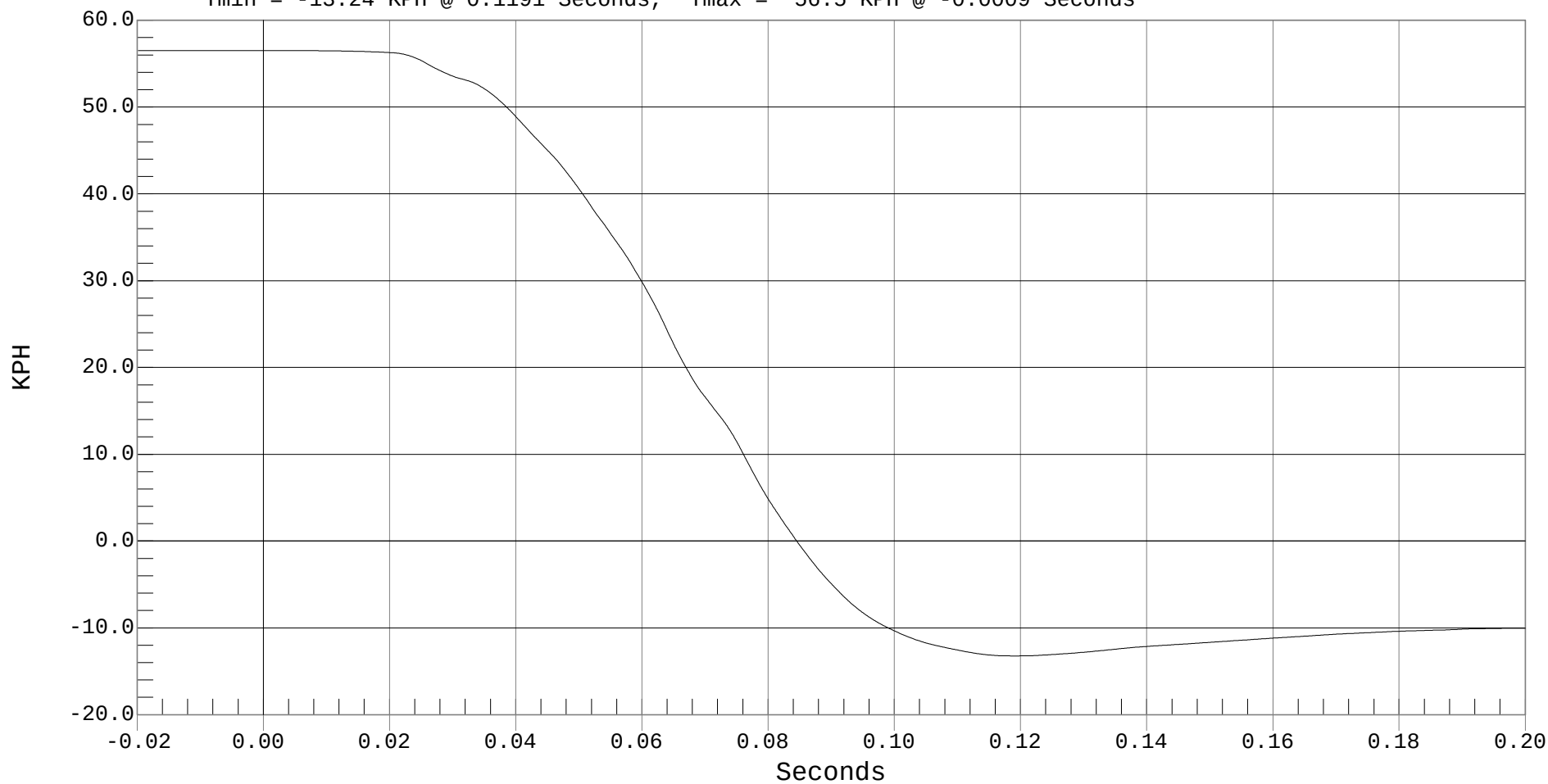
# PASSENGER CHEST X VELOCITY

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 180

— 1 PASSENGER CHEST X VELOCITY, B01006AI.V22

Ymin = -13.24 KPH @ 0.1191 Seconds, Ymax = 56.5 KPH @ -0.0009 Seconds





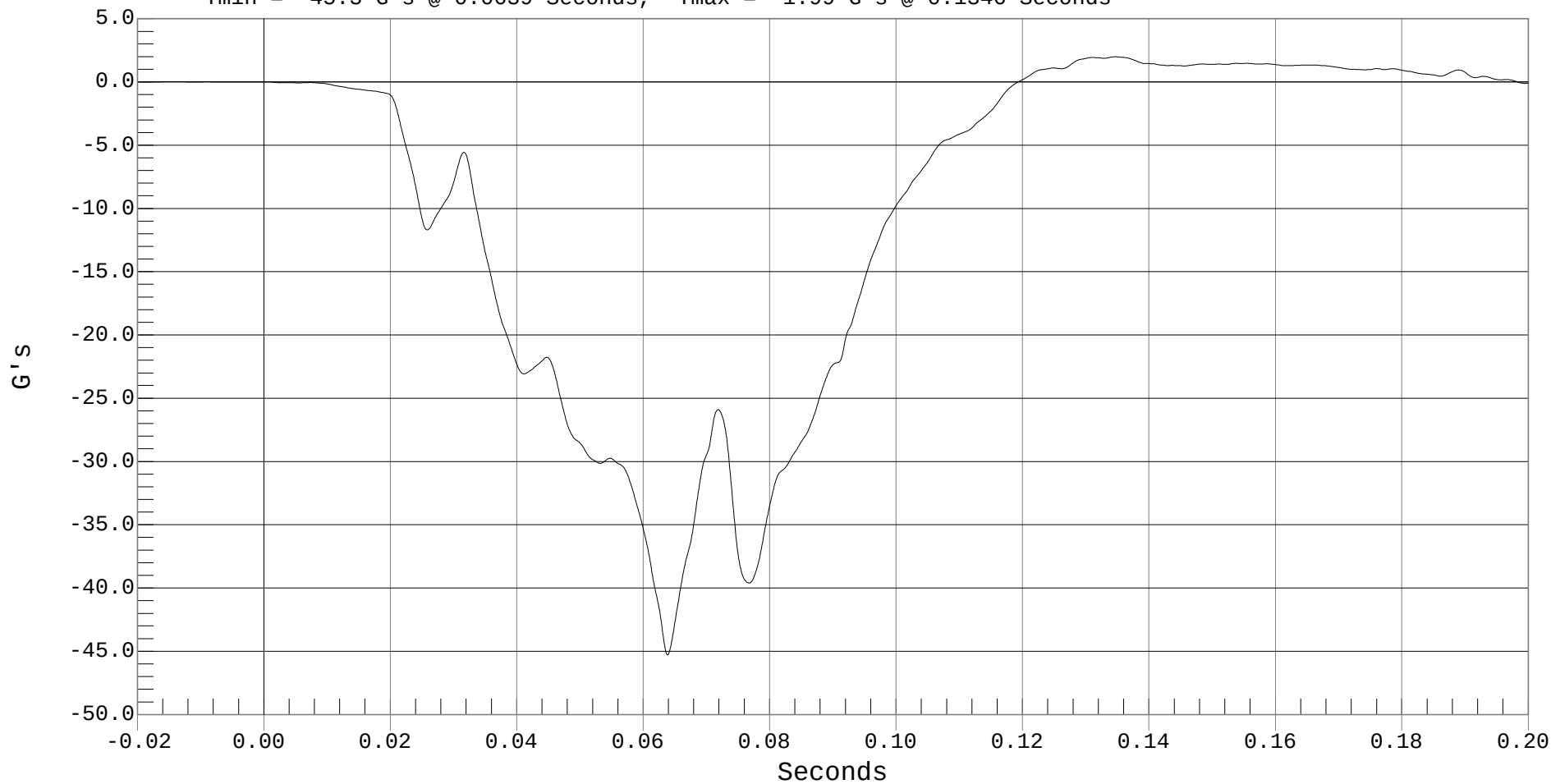
# PASSENGER CHEST REDUNDANT X ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 180

— 1 PASSENGER CHEST Xr, B01006AF.A50

Ymin = -45.3 G's @ 0.0639 Seconds, Ymax = 1.99 G's @ 0.1346 Seconds





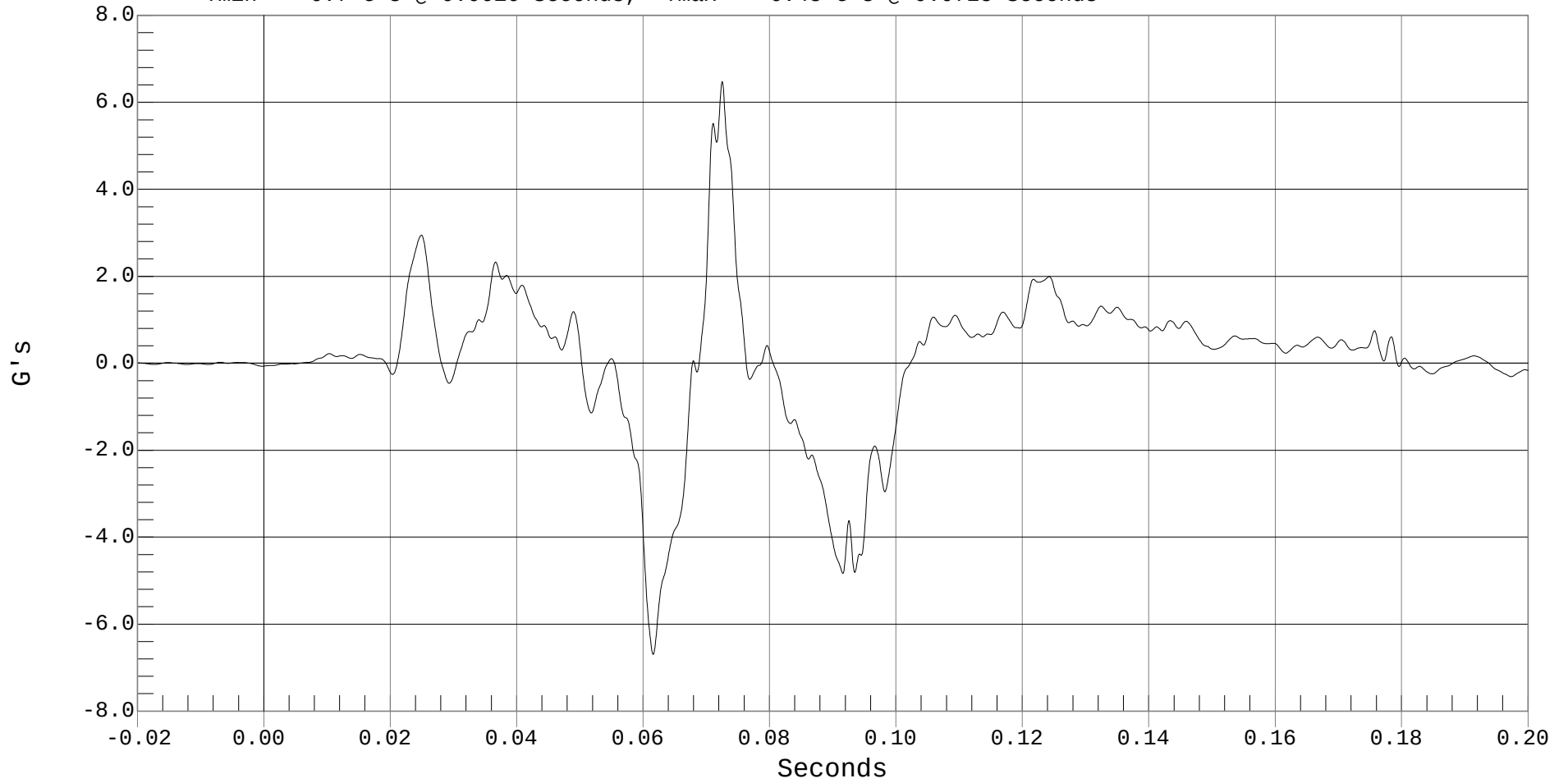
# PASSENGER CHEST REDUNDANT Y ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 180

— 1 PASSENGER CHEST Yr, B01006AF.A51

Ymin = -6.7 G's @ 0.0616 Seconds, Ymax = 6.48 G's @ 0.0725 Seconds







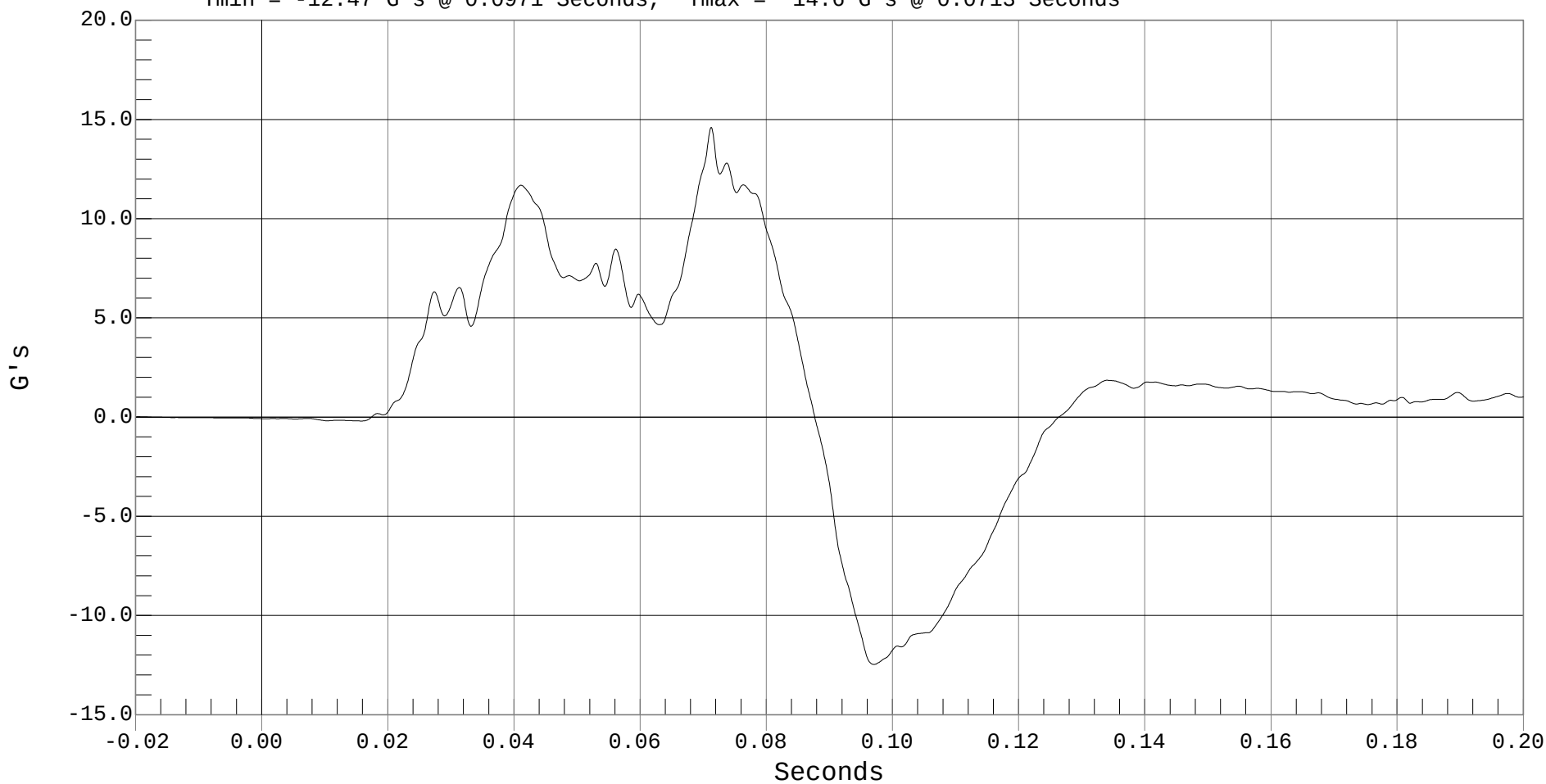
# PASSENGER CHEST REDUNDANT Z ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 180

— 1 PASSENGER CHEST Zr, B01006AF.A52

Ymin = -12.47 G's @ 0.0971 Seconds, Ymax = 14.6 G's @ 0.0713 Seconds





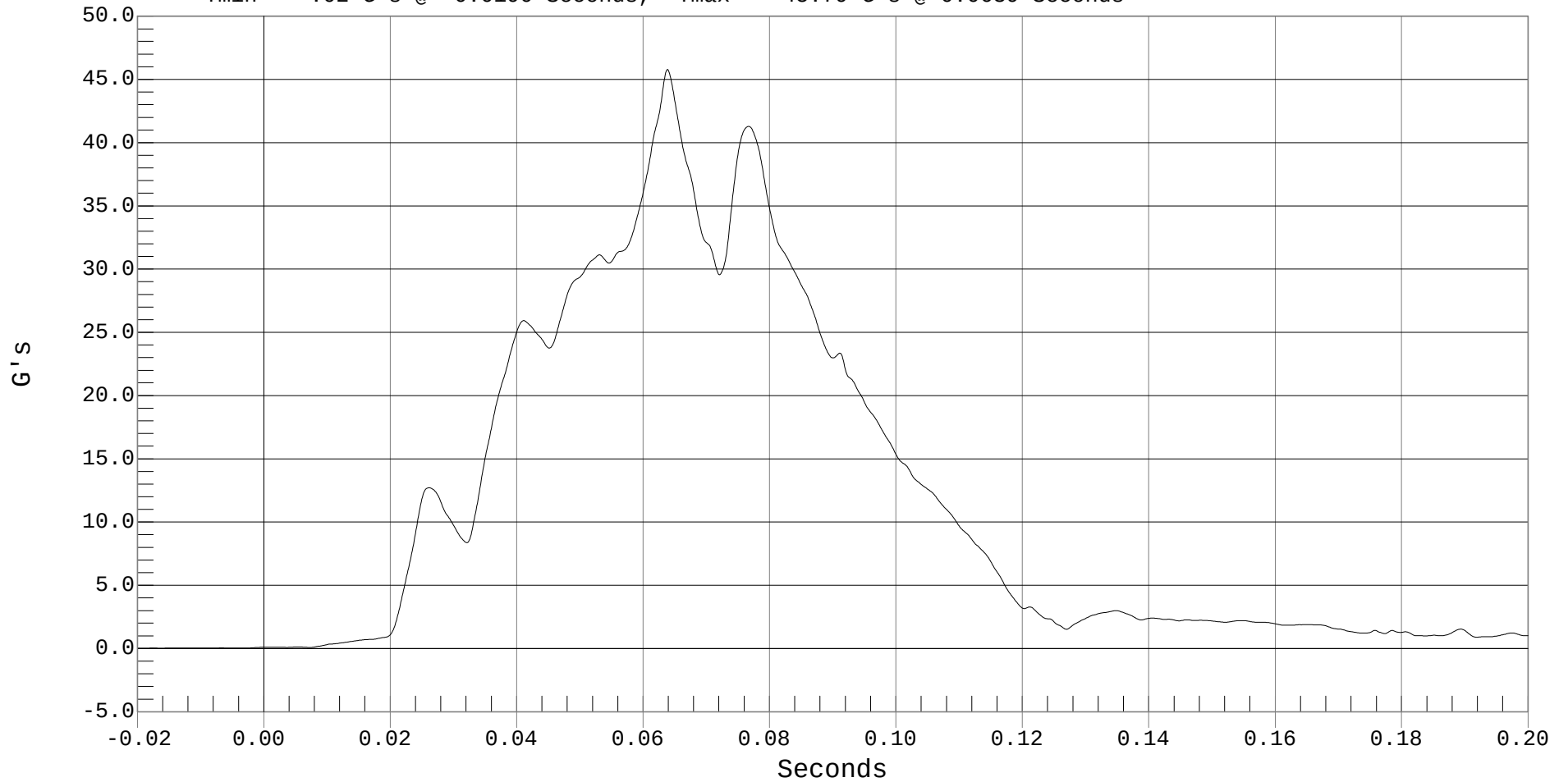
# PASSENGER CHEST REDUNDANT RESULTANT ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 180

— 1 PASSENGER CHEST REDUNDANT RESULTANT ACCELERATION, B01006AV.A50

Ymin = .02 G's @ -0.0190 Seconds, Ymax = 45.79 G's @ 0.0639 Seconds





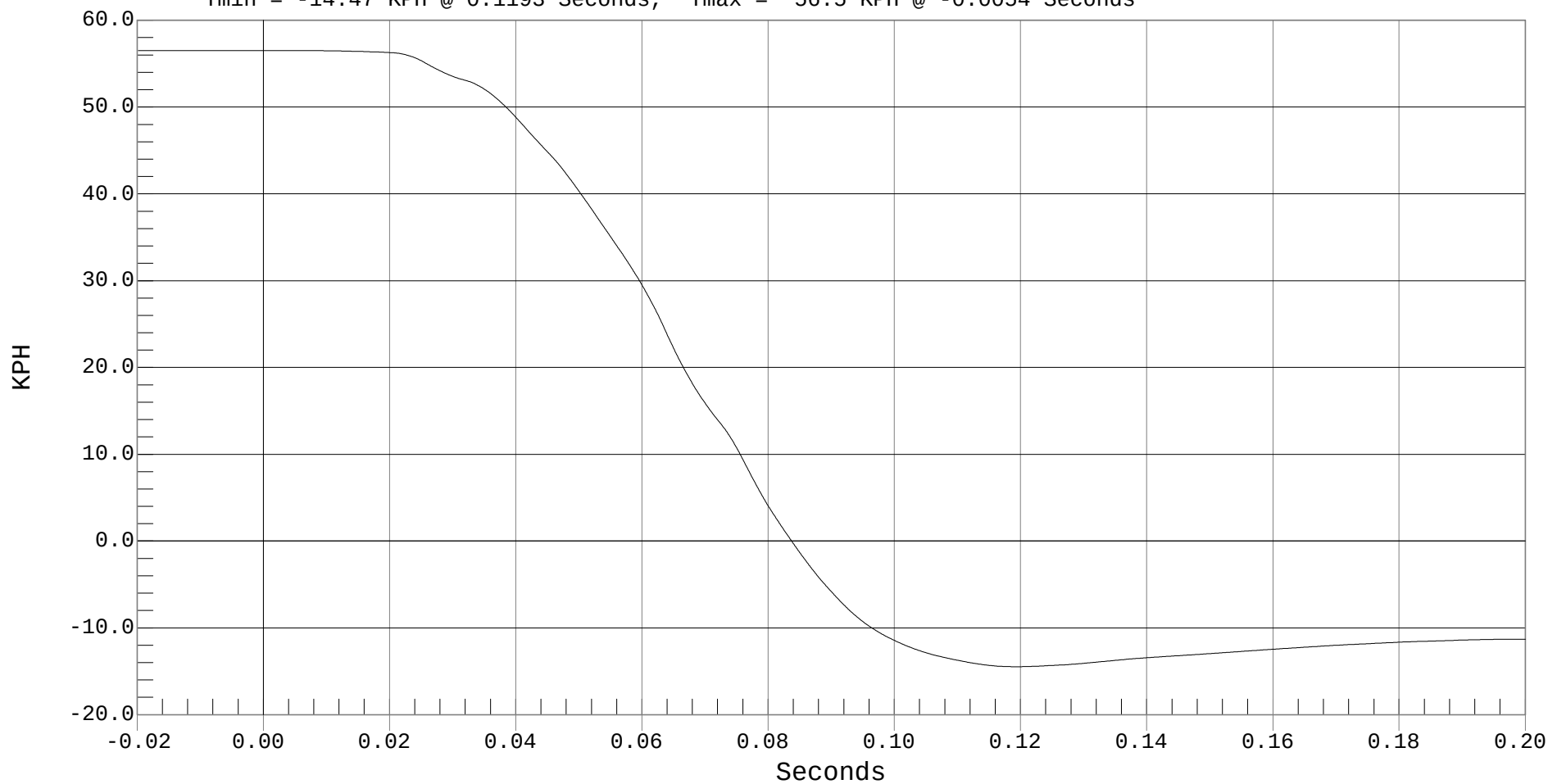
# PASSENGER CHEST REDUNDANT X VELOCITY

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 180

— 1 PASSENGER CHEST REDUNDANT X VELOCITY, B01006AI.V50

Ymin = -14.47 KPH @ 0.1193 Seconds, Ymax = 56.5 KPH @ -0.0054 Seconds





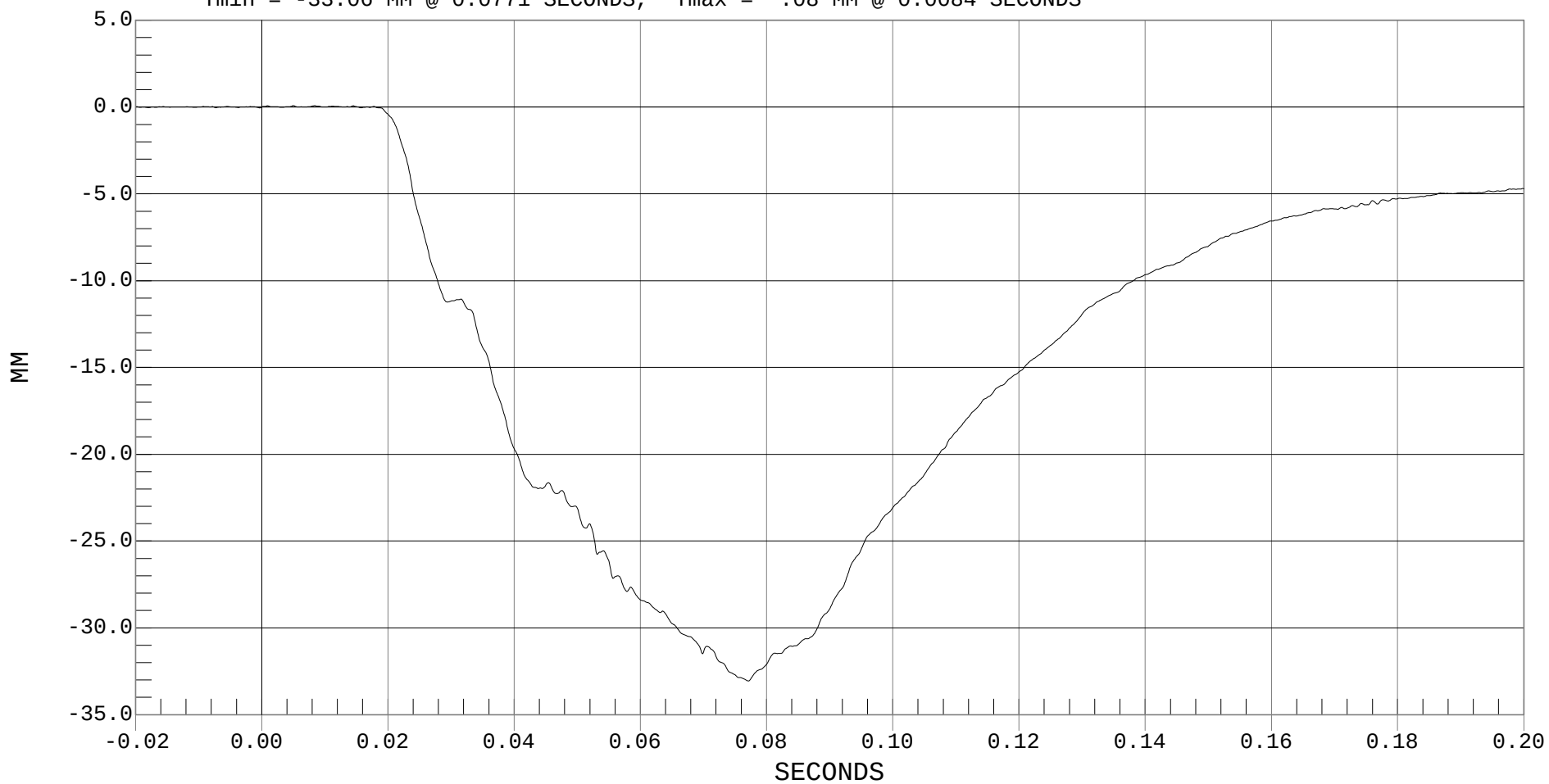
## PASSENGER CHEST COMPRESSION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 600

— 1 PASSENGER CHEST DISP, B01006DF.D25

Ymin = -33.06 MM @ 0.0771 SECONDS, Ymax = .08 MM @ 0.0084 SECONDS





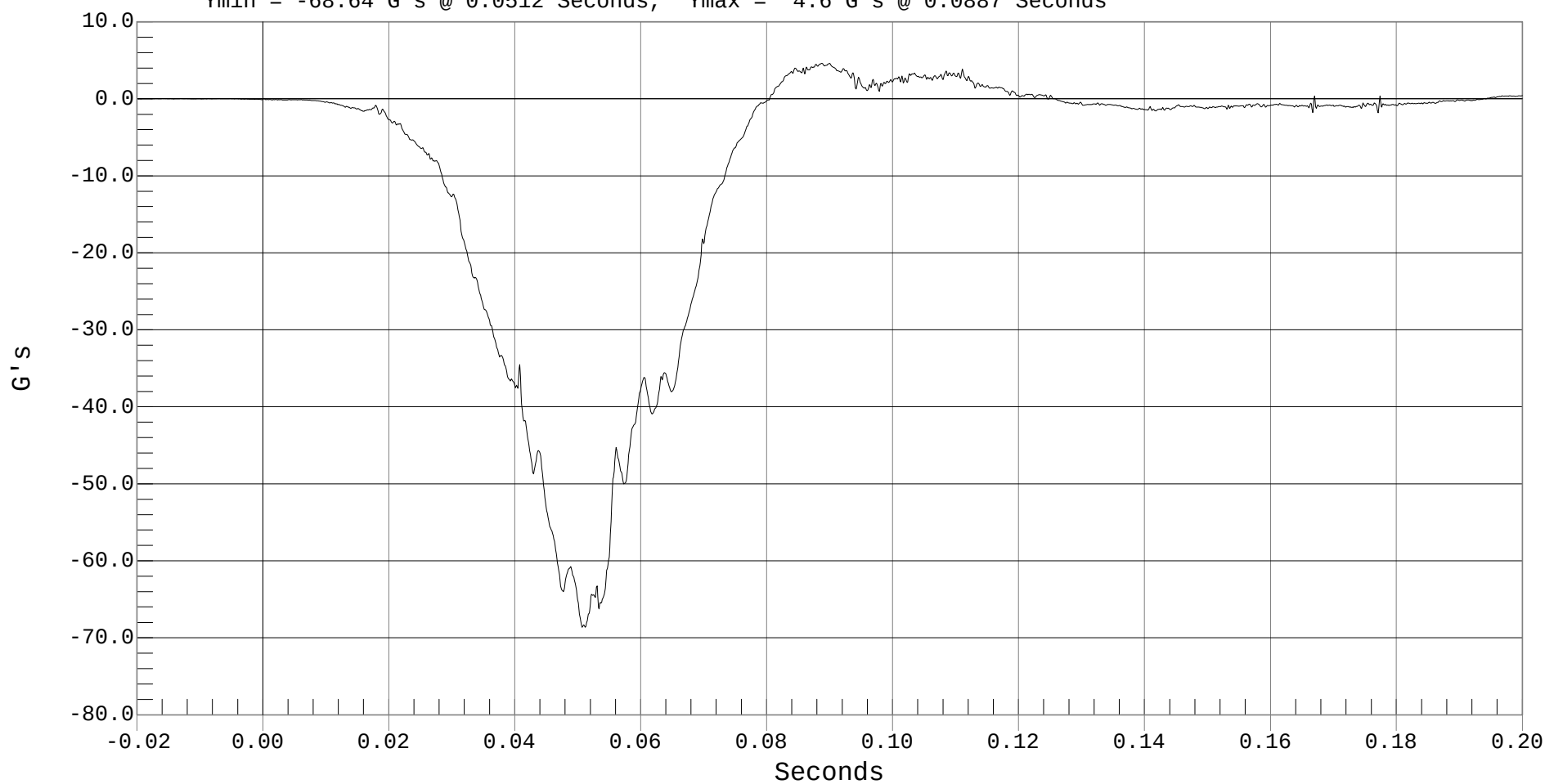
# PASSENGER PELVIS X ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 1000

— 1 PASSENGER PELVIS X, B01006AT.A26

Ymin = -68.64 G's @ 0.0512 Seconds, Ymax = 4.6 G's @ 0.0887 Seconds







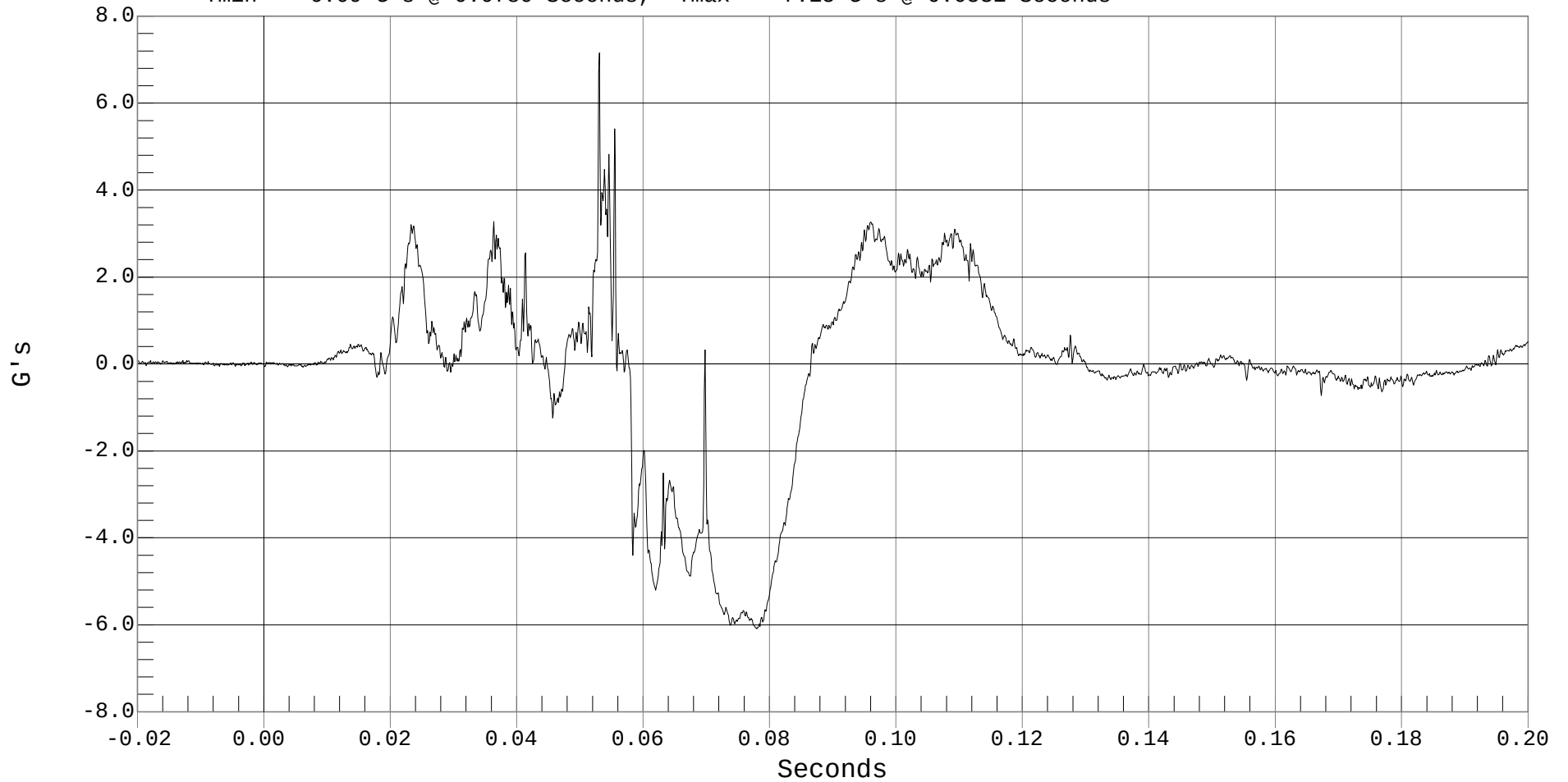
# PASSENGER PELVIS Y ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 1000

— 1 PASSENGER PELVIS Y, B01006AT.A27

Ymin = -6.09 G's @ 0.0780 Seconds, Ymax = 7.15 G's @ 0.0531 Seconds





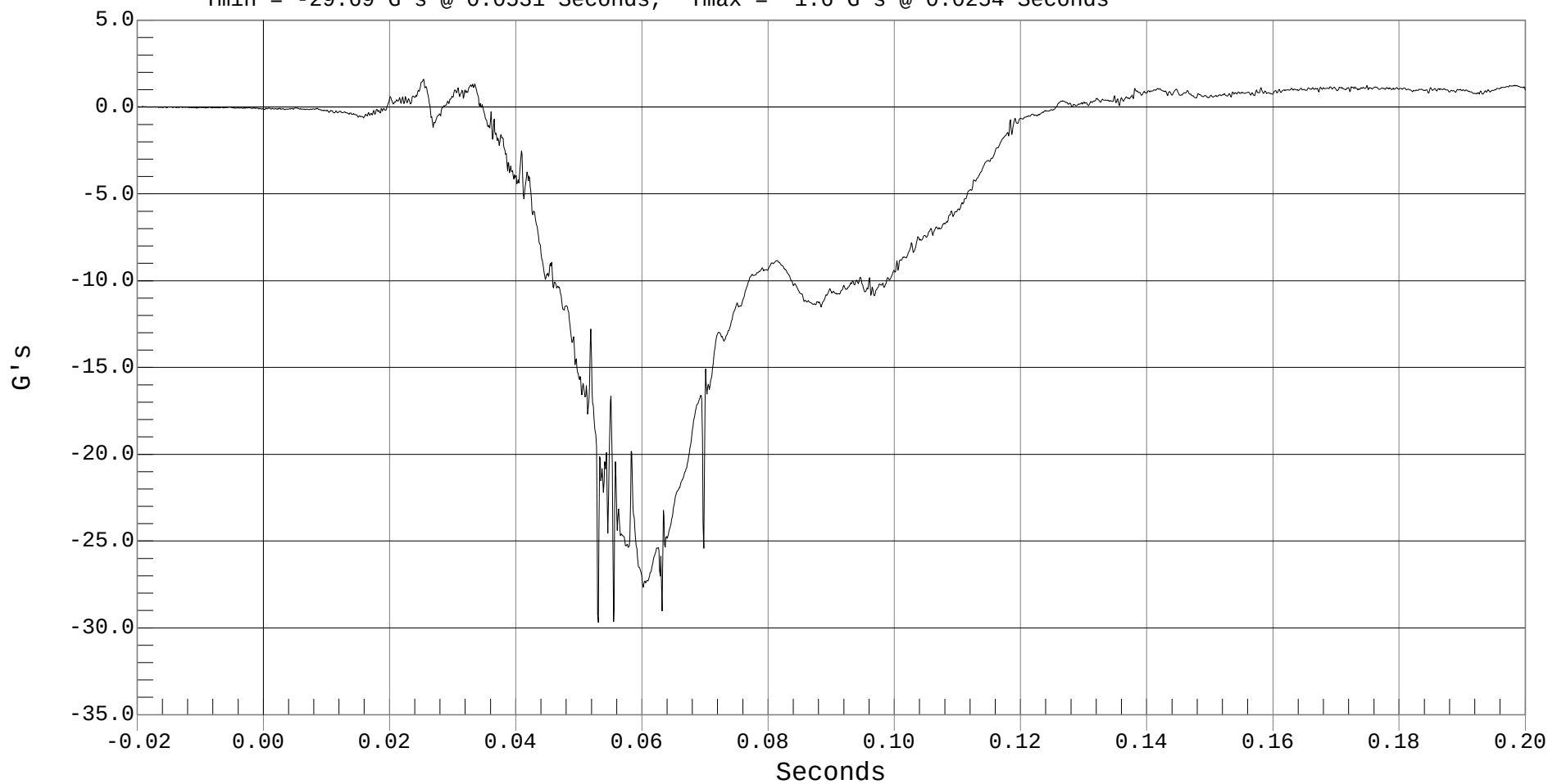
# PASSENGER PELVIS Z ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 1000

— 1 PASSENGER PELVIS Z, B01006AT.A28

Ymin = -29.69 G's @ 0.0531 Seconds, Ymax = 1.6 G's @ 0.0254 Seconds





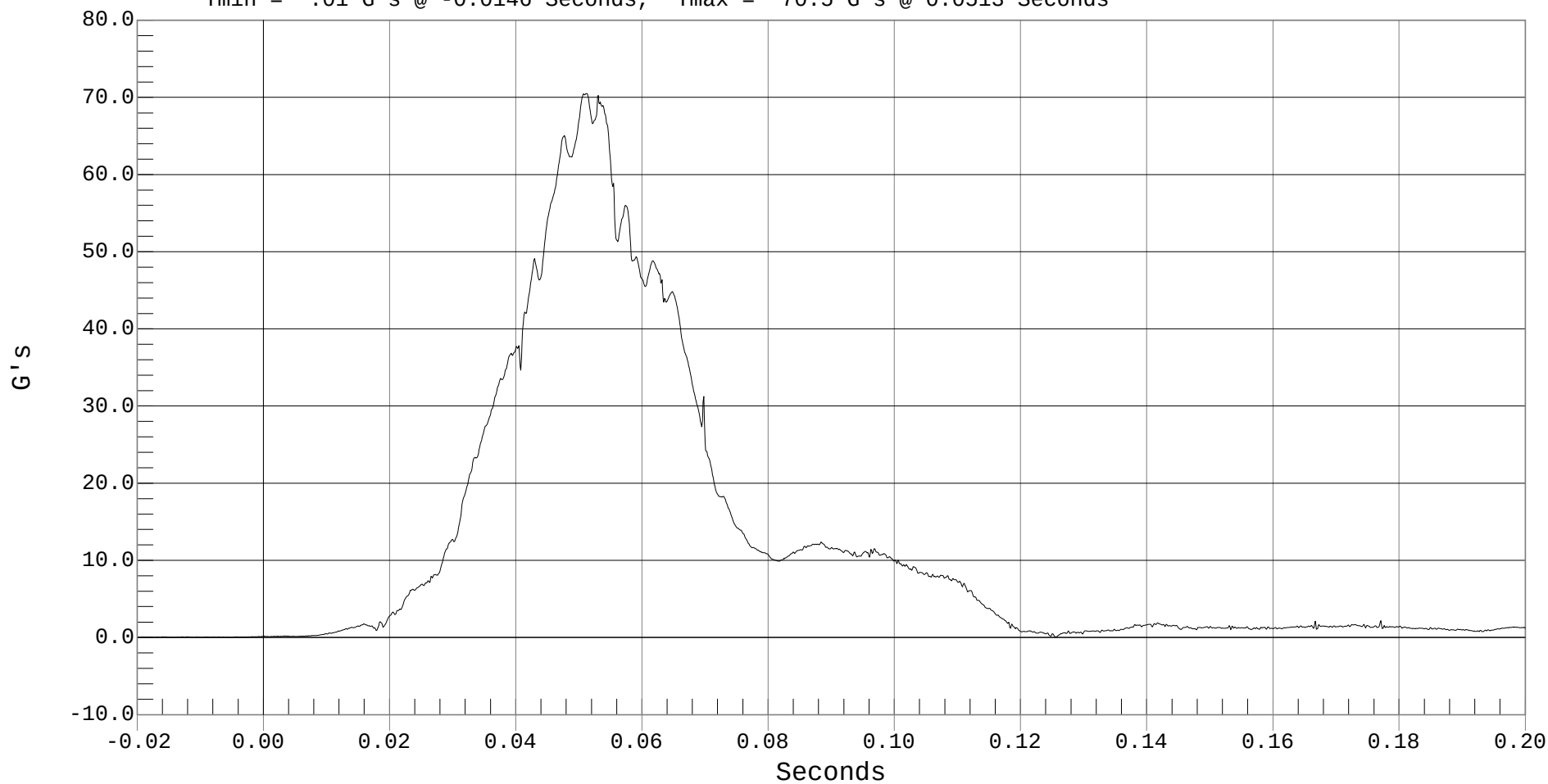
# PASSENGER PELVIS RESULTANT ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 1000

1 PASSENGER PELVIS RESULTANT ACCELERATION, B01006AV.A26

Ymin = .01 G's @ -0.0146 Seconds, Ymax = 70.5 G's @ 0.0513 Seconds





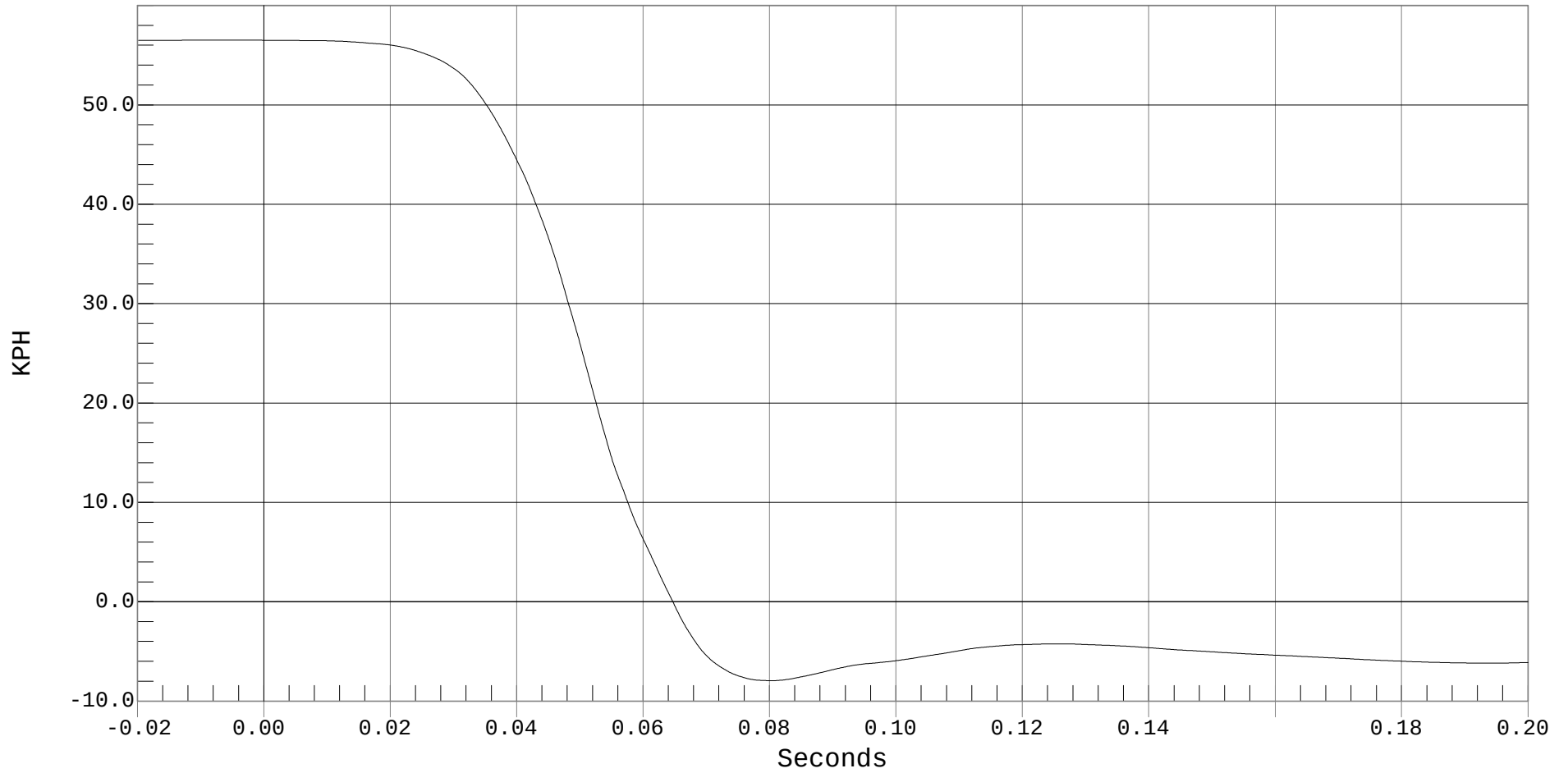
## PASSENGER PELVIS X VELOCITY

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 180

— 1 PASSENGER PELVIS X VELOCITY, B01006AI.V26

Ymin = -7.94 KPH @ 0.0803 Seconds, Ymax = 56.51 KPH @ -0.0038 Seconds





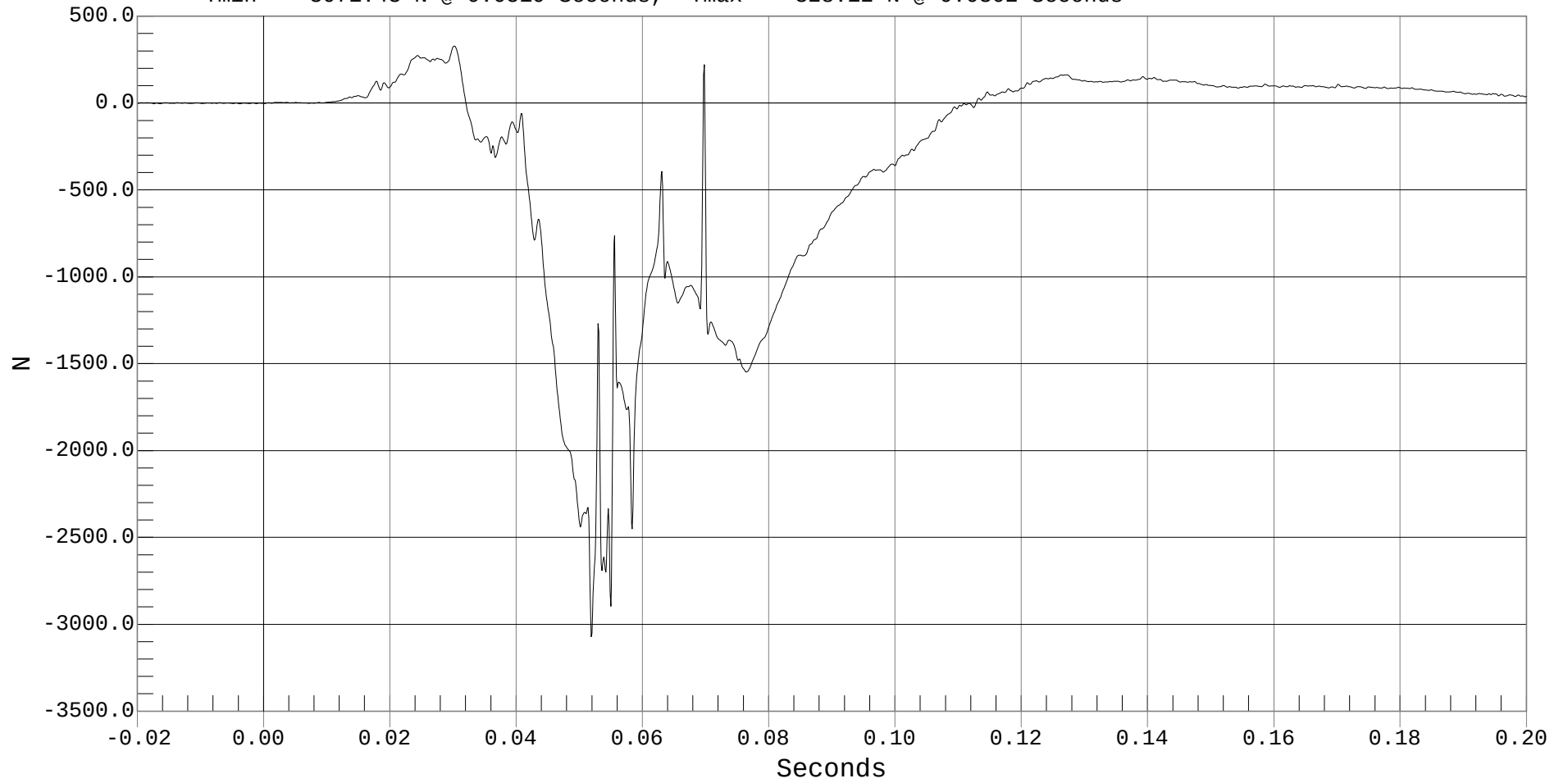
# PASSENGER LEFT FEMUR FORCE

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 600

— 1 PASSENGER LEFT FEMUR Z, B01006FF.F30

Ymin = -3071.43 N @ 0.0519 Seconds, Ymax = 328.12 N @ 0.0302 Seconds







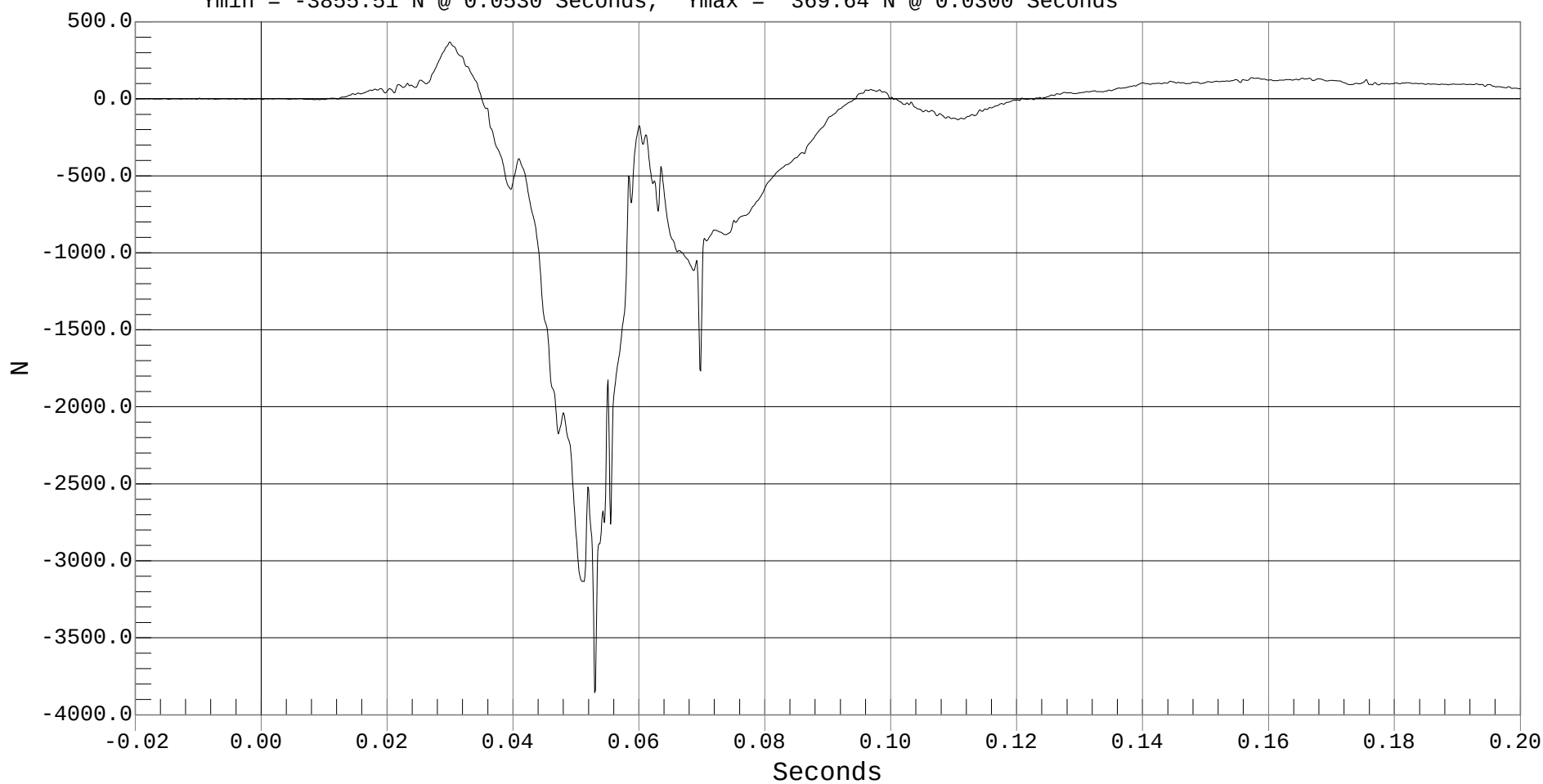
# PASSENGER RIGHT FEMUR FORCE

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 600

— 1 PASSENGER RIGHT FEMUR Z, B01006FF.F29

Ymin = -3855.51 N @ 0.0530 Seconds, Ymax = 369.64 N @ 0.0300 Seconds





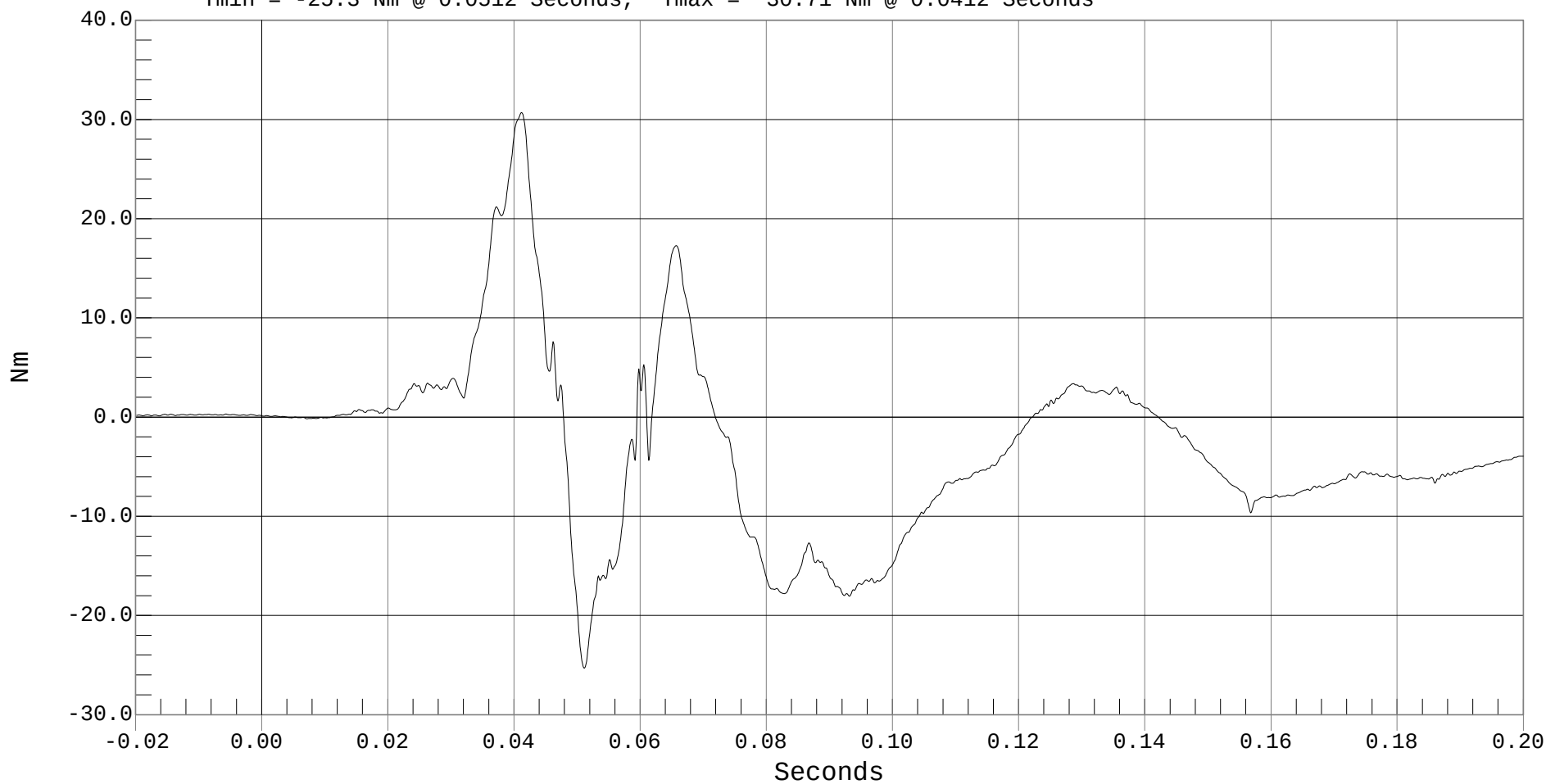
# PASSENGER LEFT UPPER TIBIA MOMENT X

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 600

— 1 PASSENGER LEFT UPPER TIBIA MX, B01006MF.M87

Ymin = -25.3 Nm @ 0.0512 Seconds, Ymax = 30.71 Nm @ 0.0412 Seconds





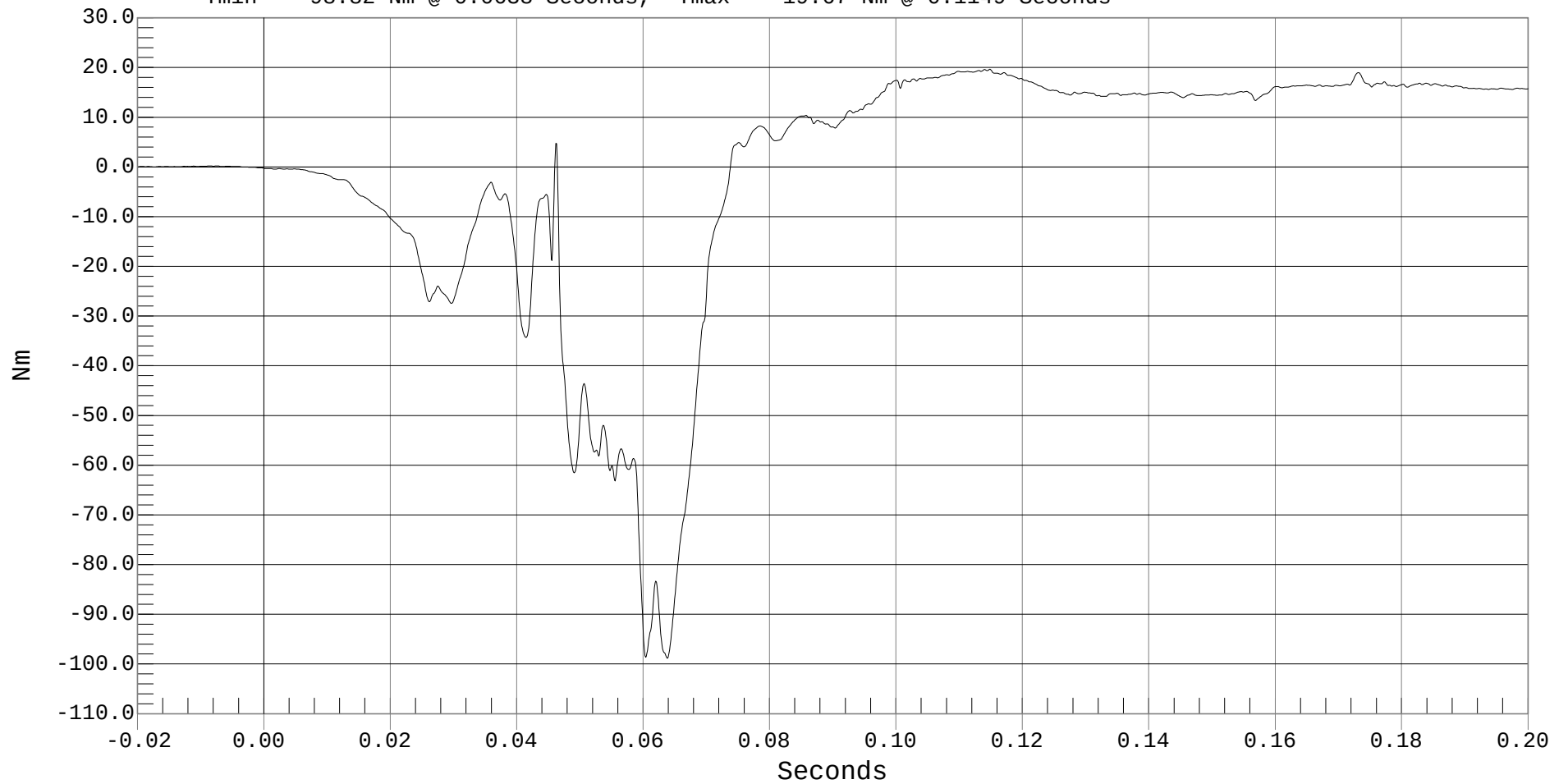
# PASSENGER LEFT UPPER TIBIA MOMENT Y

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 600

— 1 PASSENGER LEFT UPPER TIBIA MY, B01006MF.M88

Ymin = -98.82 Nm @ 0.0638 Seconds, Ymax = 19.67 Nm @ 0.1149 Seconds





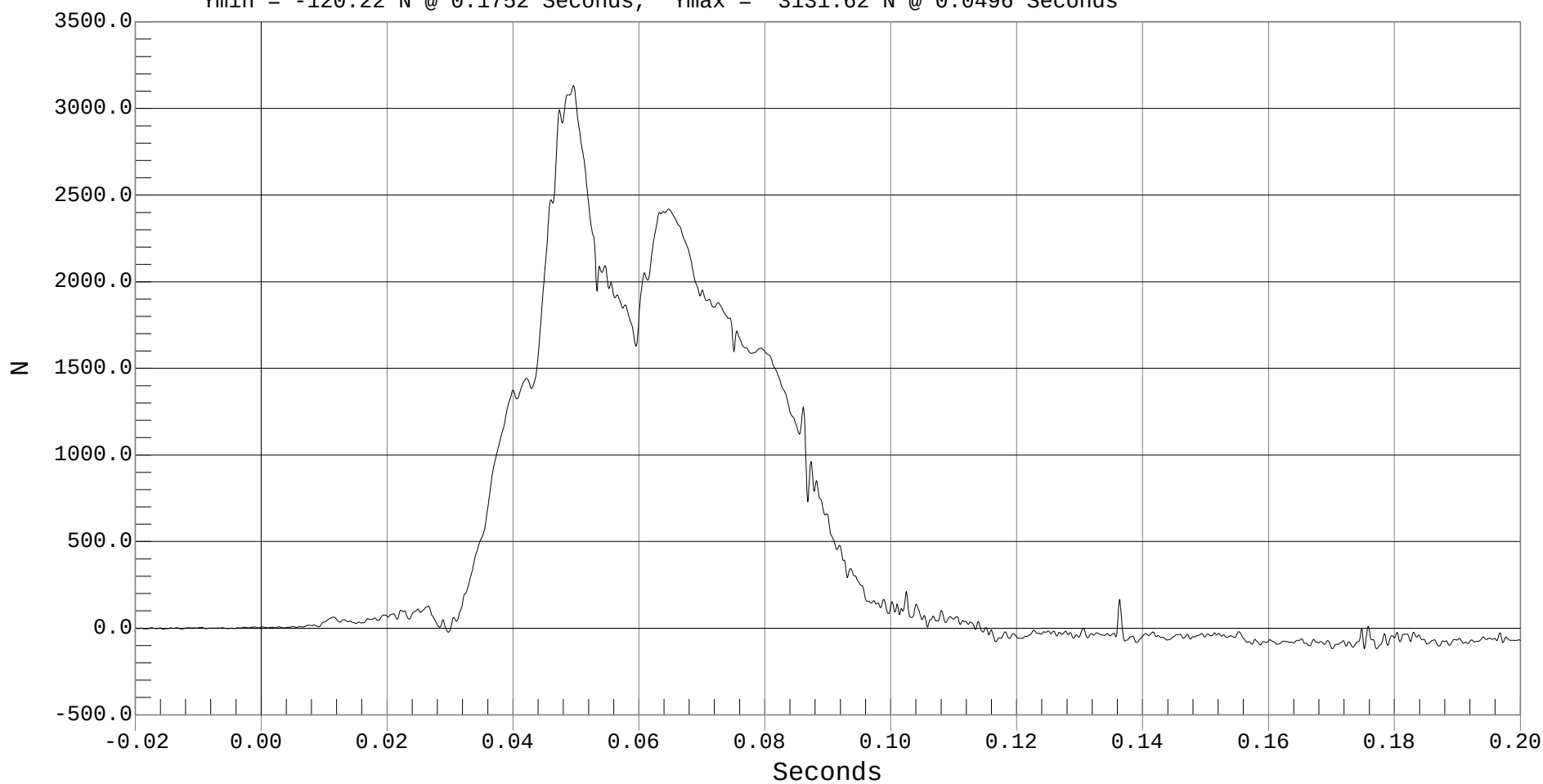
# PASSENGER LEFT UPPER TIBIA FORCE Z

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 600

— 1 PASSENGER LEFT UPPER TIBIA FZ, B01006FF.F89

Ymin = -120.22 N @ 0.1752 Seconds, Ymax = 3131.62 N @ 0.0496 Seconds





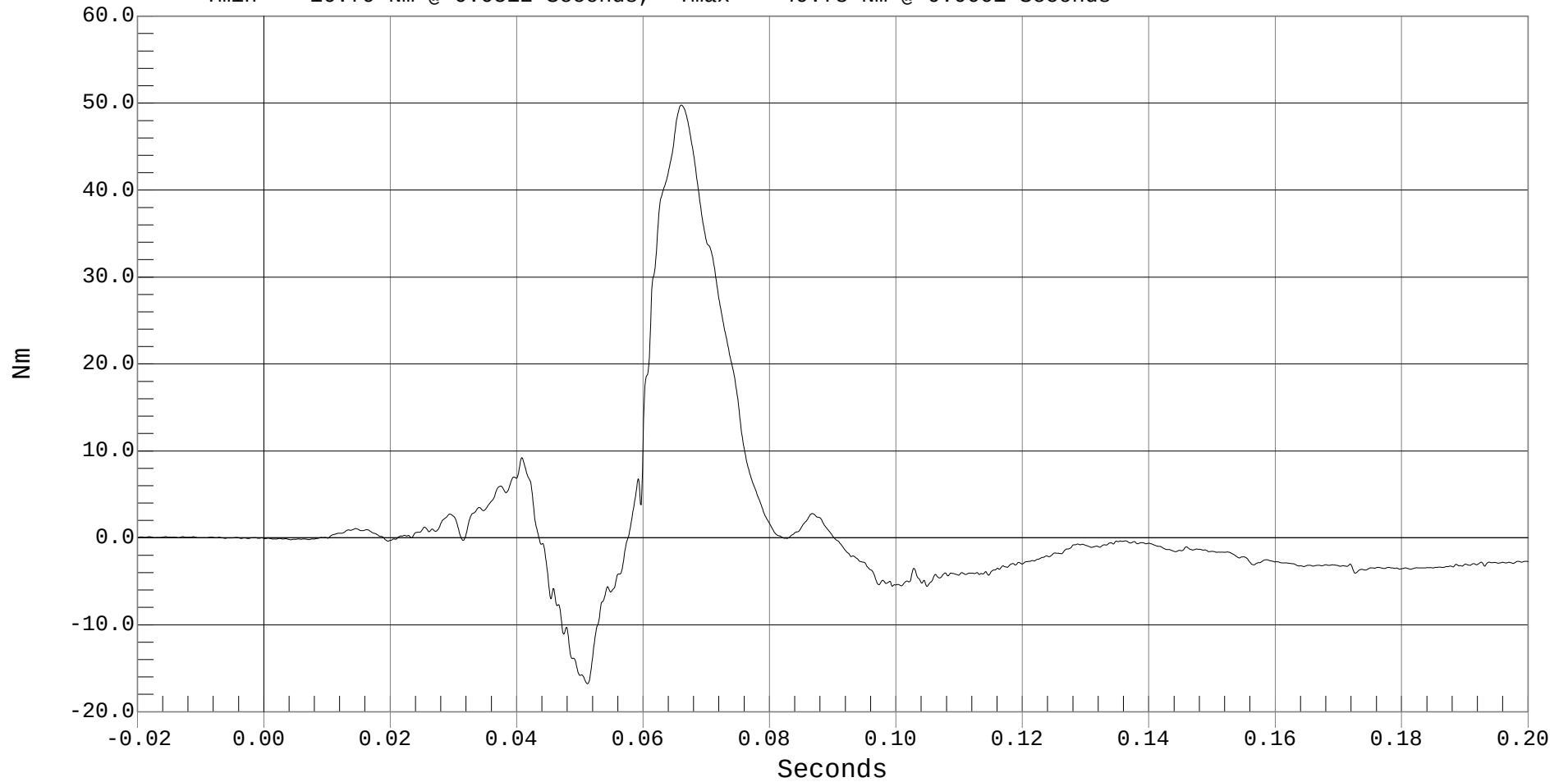
# PASSENGER LEFT LOWER TIBIA MOMENT X

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 600

— 1 PASSENGER LEFT LOWER TIBIA MX, B01006MF.M90

Ymin = -16.79 Nm @ 0.0512 Seconds, Ymax = 49.78 Nm @ 0.0661 Seconds







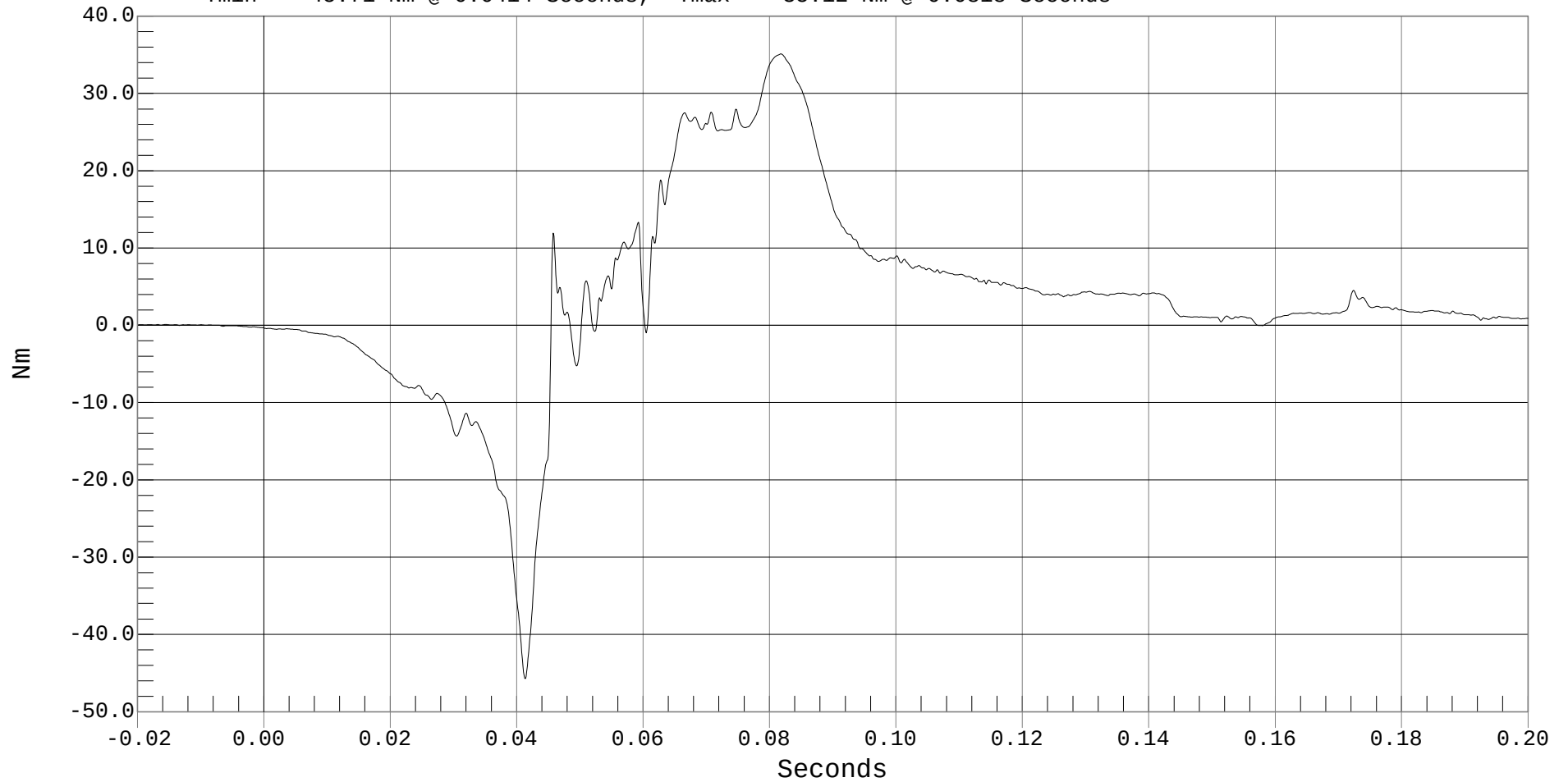
# PASSENGER LEFT LOWER TIBIA MOMENT Y

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 600

— 1 PASSENGER LEFT LOWER TIBIA MY, B01006MF.M91

Ymin = -45.71 Nm @ 0.0414 Seconds, Ymax = 35.12 Nm @ 0.0818 Seconds





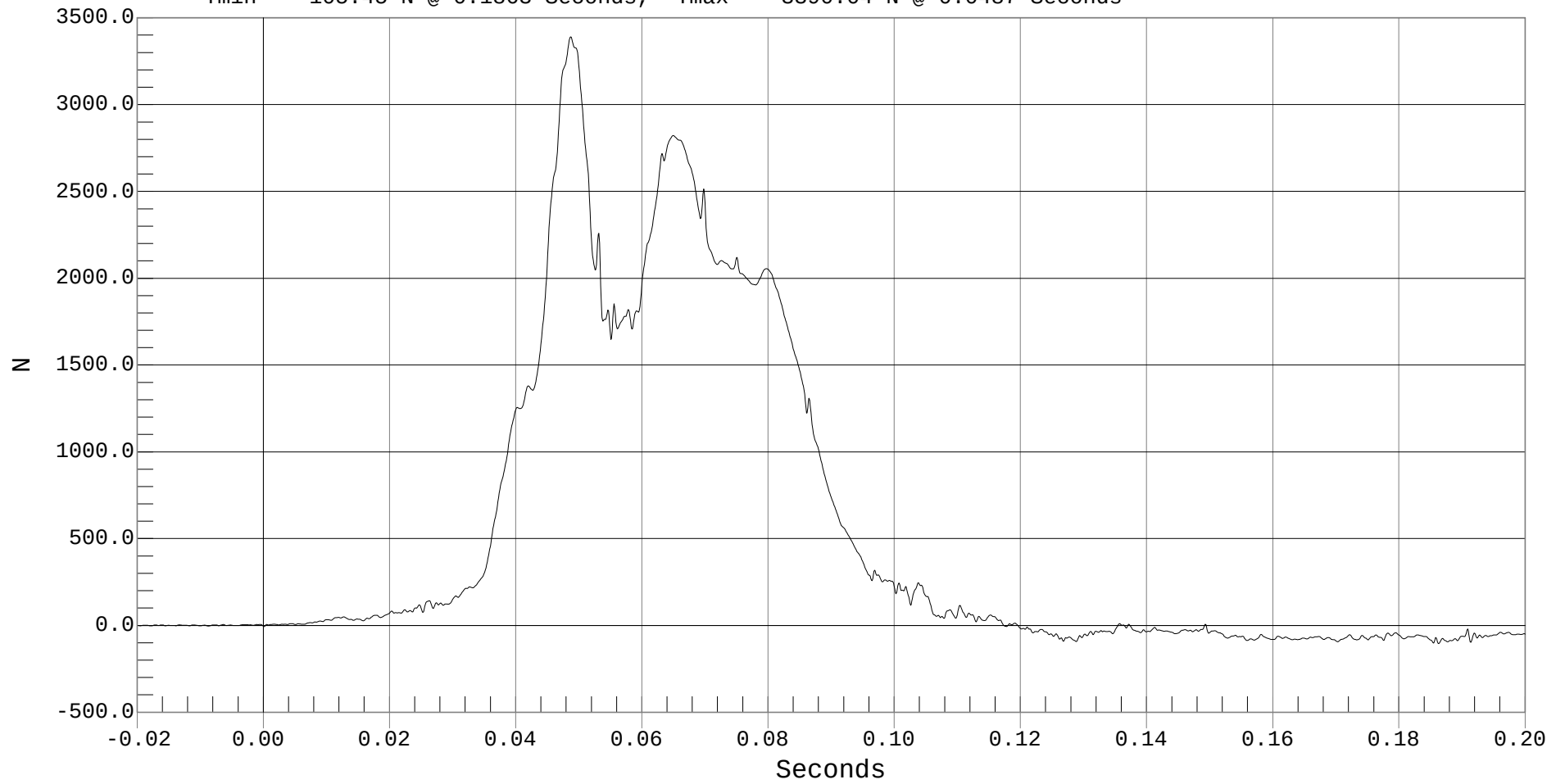
# PASSENGER LEFT LOWER TIBIA FORCE Z

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 600

— 1 PASSENGER LEFT LOWER TIBIA FZ, B01006FF.F92

Ymin = -105.45 N @ 0.1863 Seconds, Ymax = 3390.04 N @ 0.0487 Seconds





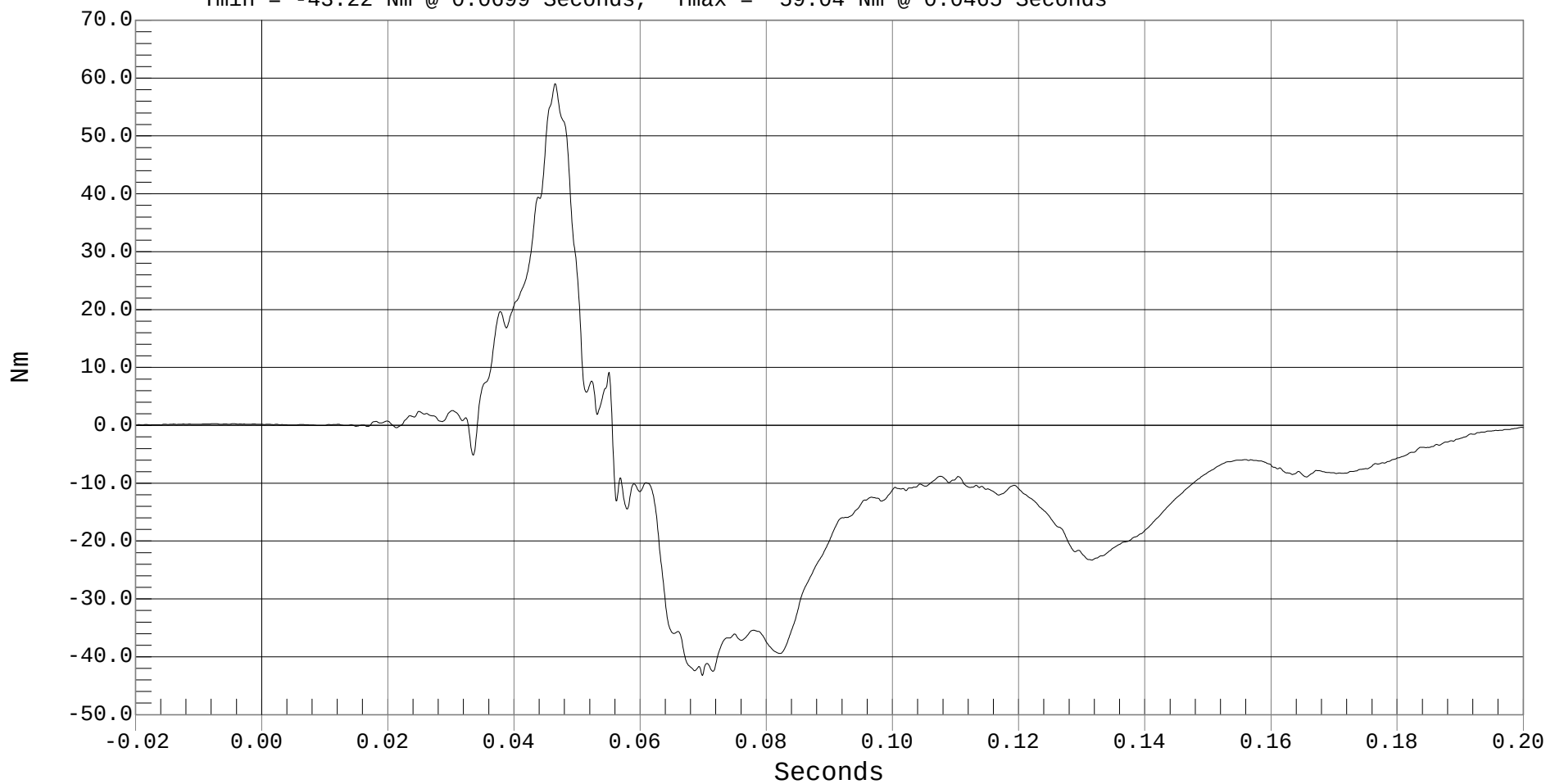
# PASSENGER RIGHT UPPER TIBIA MOMENT X

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 600

— 1 PASSENGER RIGHT UPPER TIBIA MX, B01006MF.M81

Ymin = -43.22 Nm @ 0.0699 Seconds, Ymax = 59.04 Nm @ 0.0465 Seconds





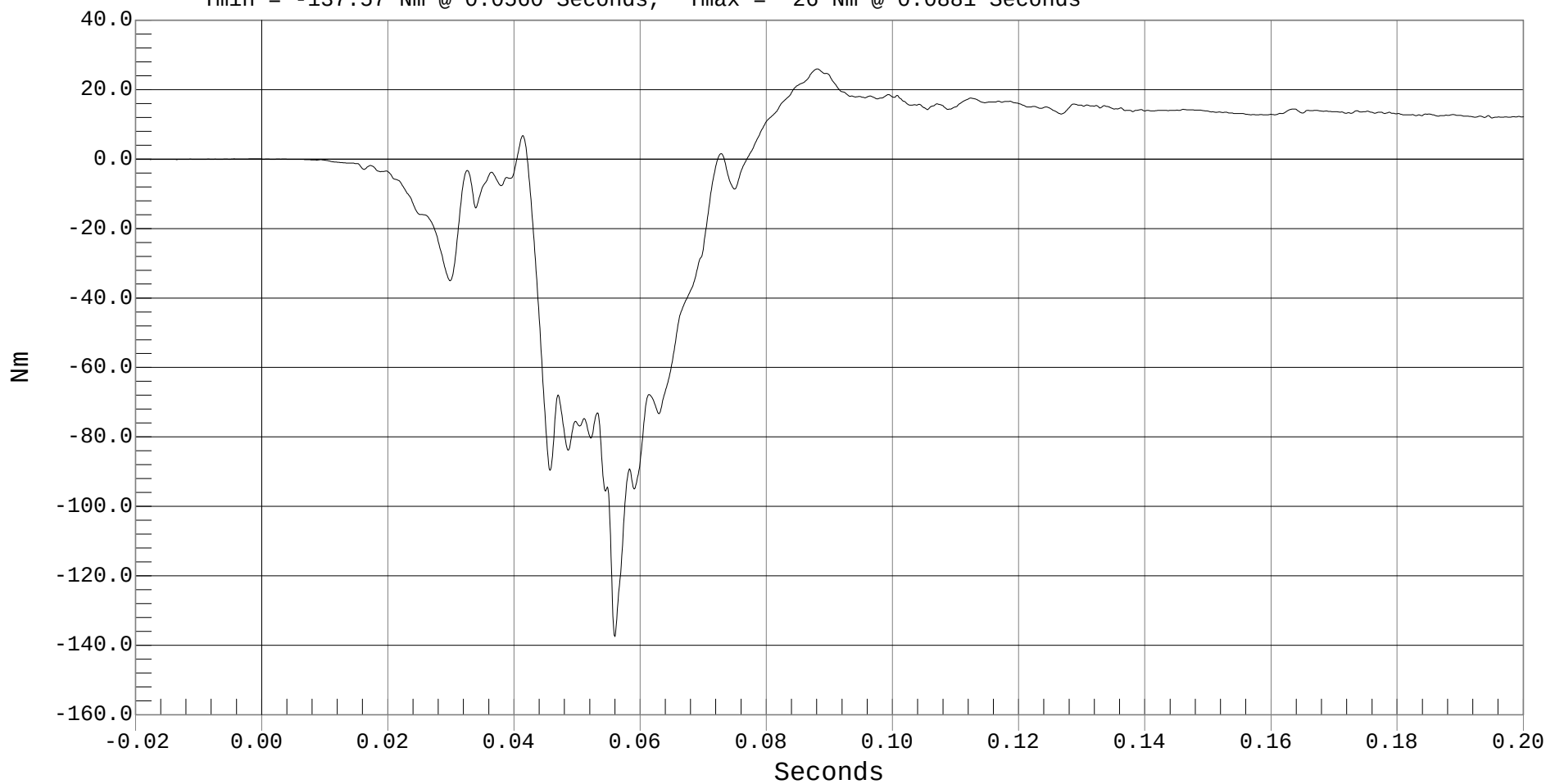
# PASSENGER RIGHT UPPER TIBIA MOMENT Y

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 600

— 1 PASSENGER RIGHT UPPER TIBIA MY, B01006MF.M82

Ymin = -137.57 Nm @ 0.0560 Seconds, Ymax = 26 Nm @ 0.0881 Seconds





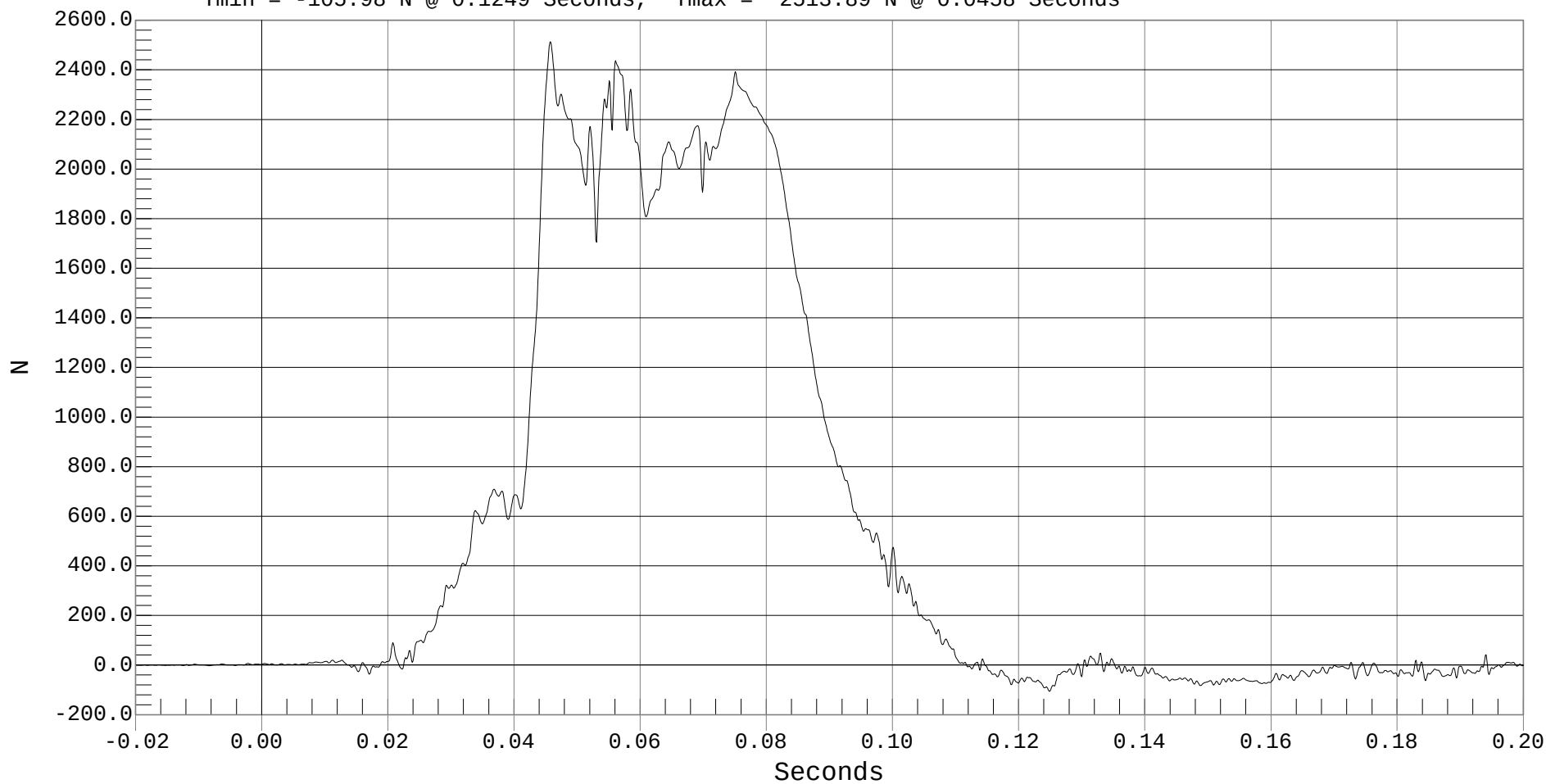
# PASSENGER RIGHT UPPER TIBIA FORCE Z

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 600

— 1 PASSENGER RIGHT UPPER TIBIA FZ, B01006FF.F83

Ymin = -105.98 N @ 0.1249 Seconds, Ymax = 2513.89 N @ 0.0458 Seconds







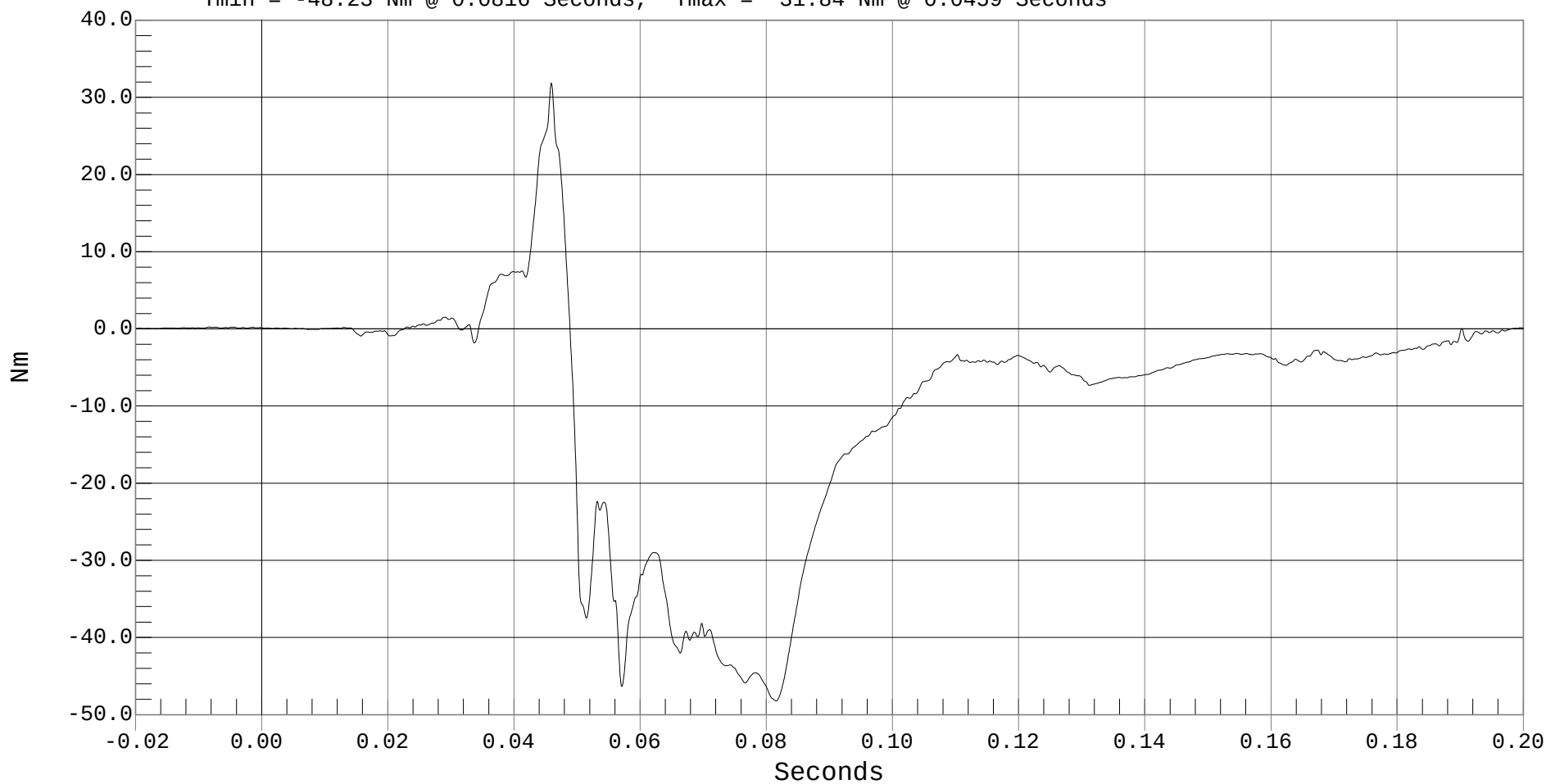
# PASSENGER RIGHT LOWER TIBIA MOMENT X

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 600

— 1 PASSENGER RIGHT LOWER TIBIA MX, B01006MF.M84

Ymin = -48.23 Nm @ 0.0816 Seconds, Ymax = 31.84 Nm @ 0.0459 Seconds





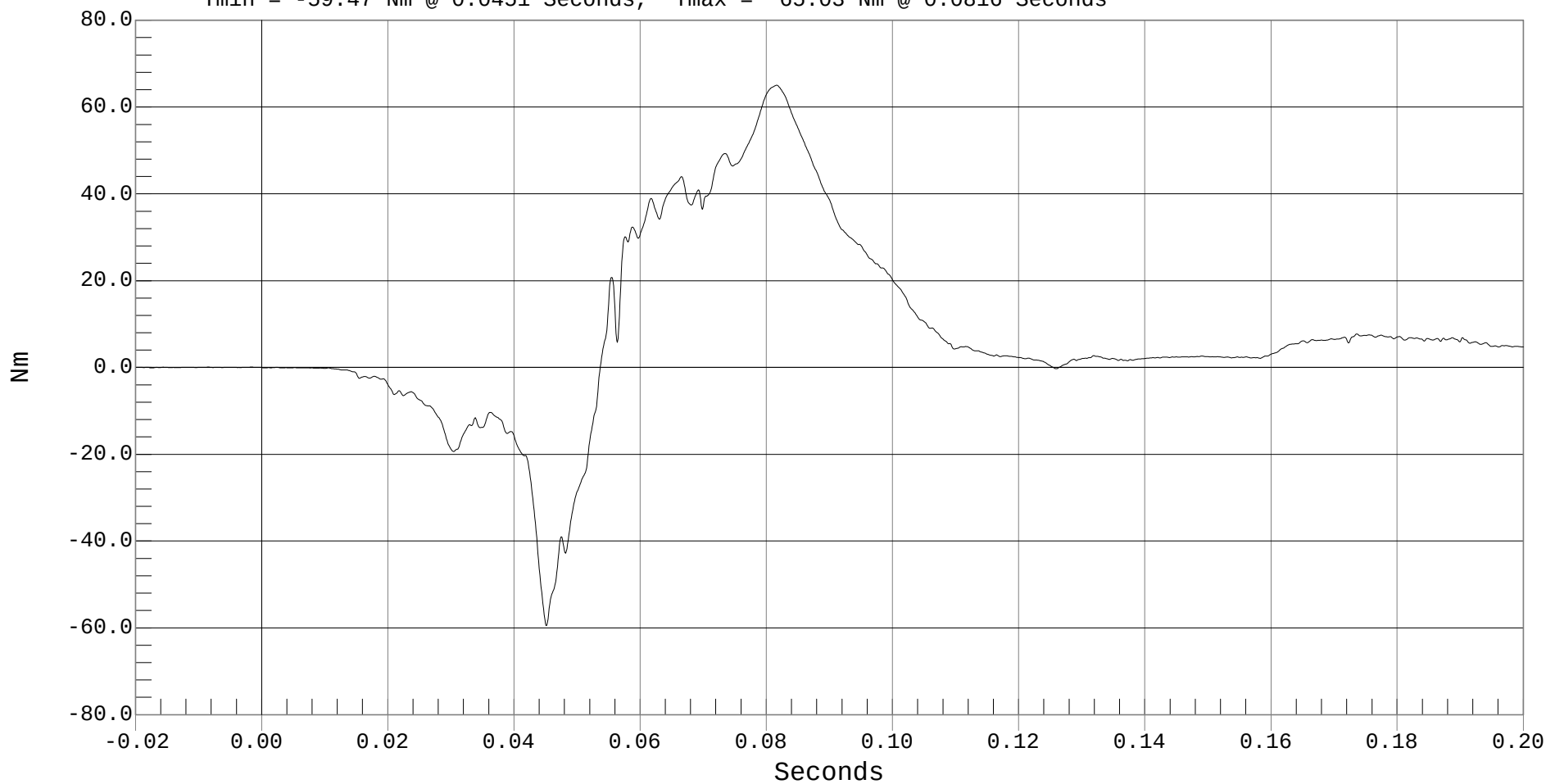
# PASSENGER RIGHT LOWER TIBIA MOMENT Y

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 600

— 1 PASSENGER RIGHT LOWER TIBIA MY, B01006MF.M85

Ymin = -59.47 Nm @ 0.0451 Seconds, Ymax = 65.03 Nm @ 0.0816 Seconds





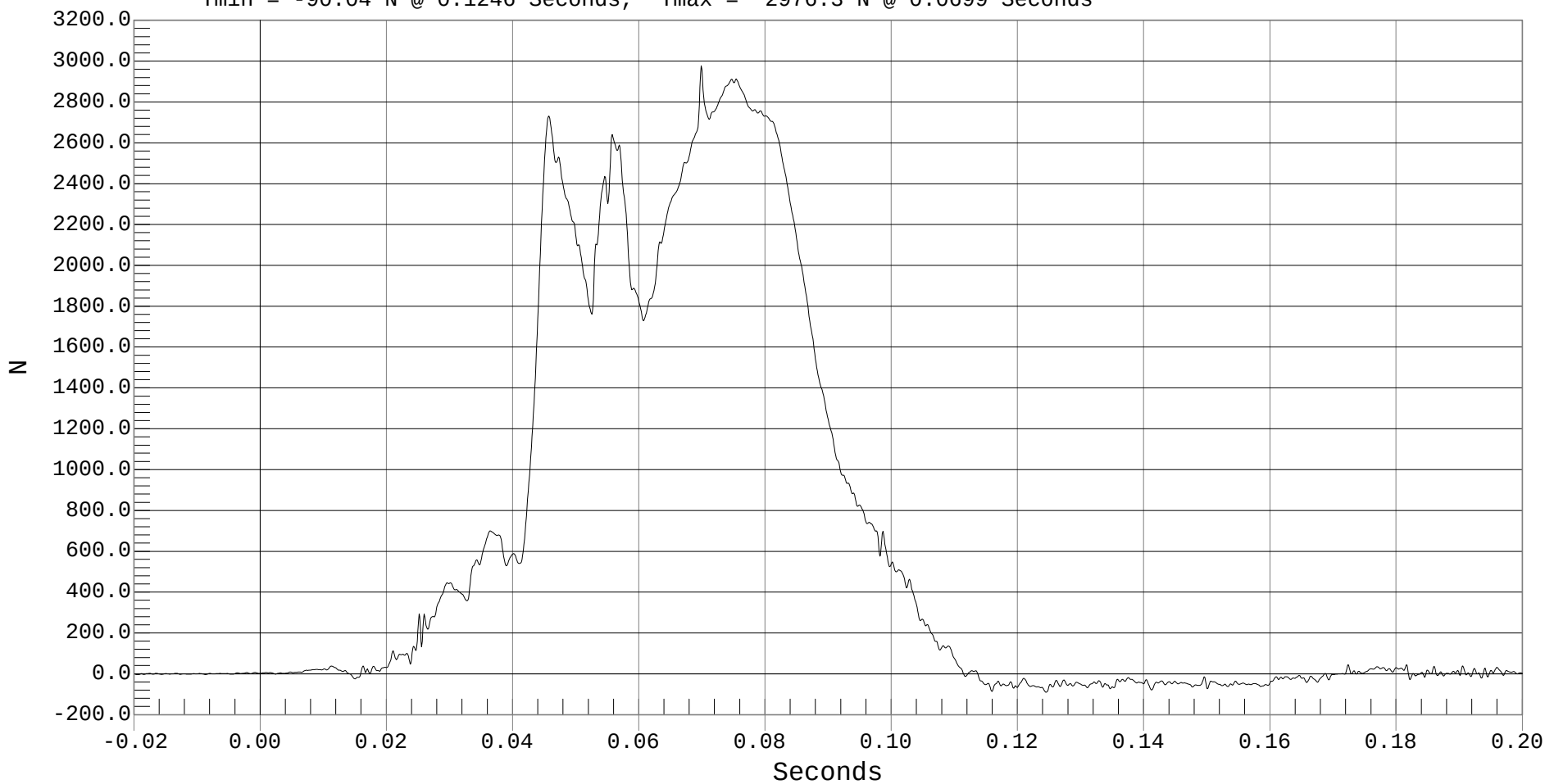
# PASSENGER RIGHT LOWER TIBIA FORCE Z

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 600

— 1 PASSENGER RIGHT LOWER TIBIA FZ, B01006FF.F86

Ymin = -90.04 N @ 0.1246 Seconds, Ymax = 2976.3 N @ 0.0699 Seconds





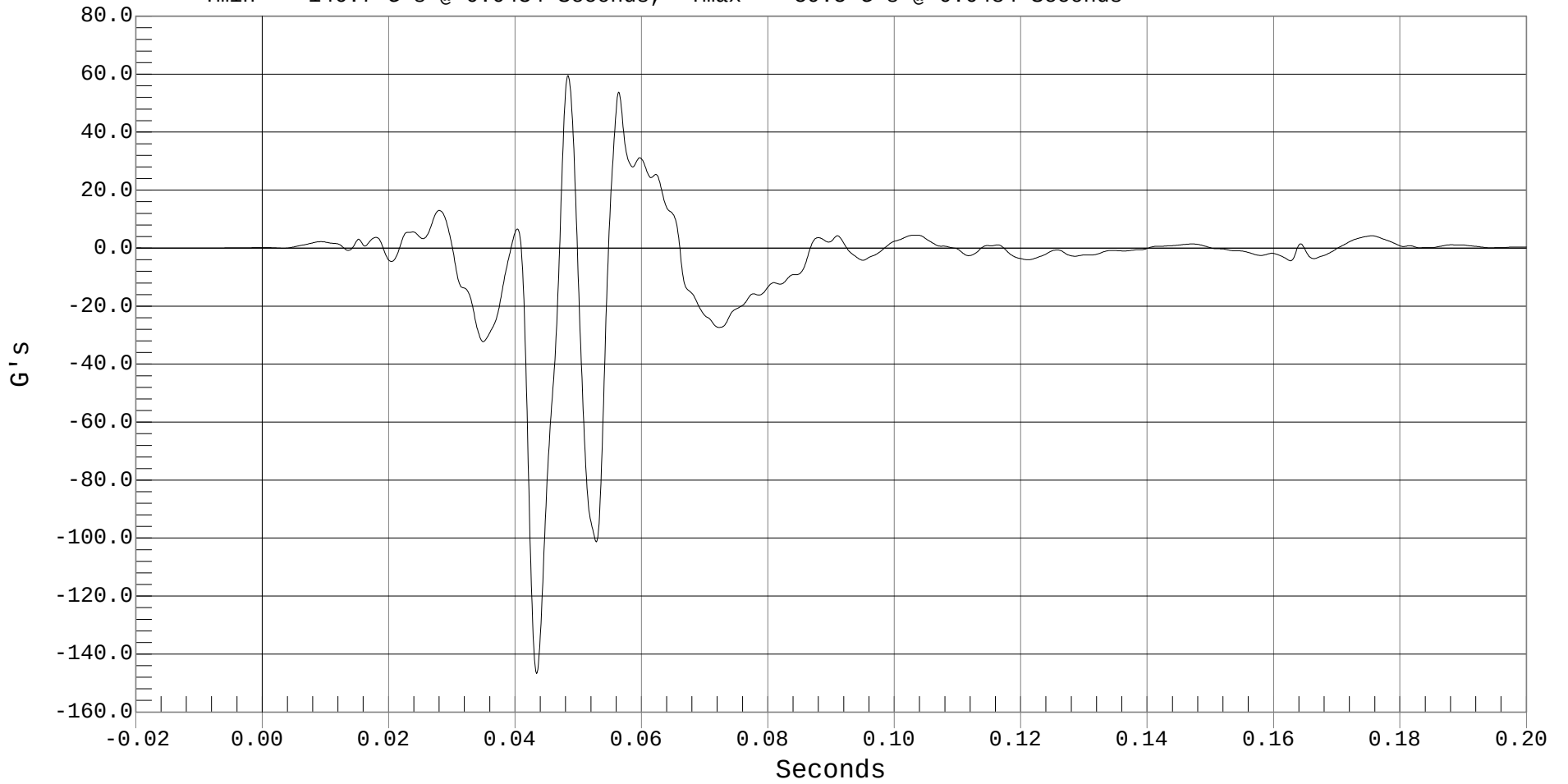
# PASSENGER LEFT FOOT @ BALL Z ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 180

— 1 PASSENGER LEFT FOOT @ BALL Z, C01006AF.A09

Ymin = -146.7 G's @ 0.0434 Seconds, Ymax = 59.5 G's @ 0.0484 Seconds





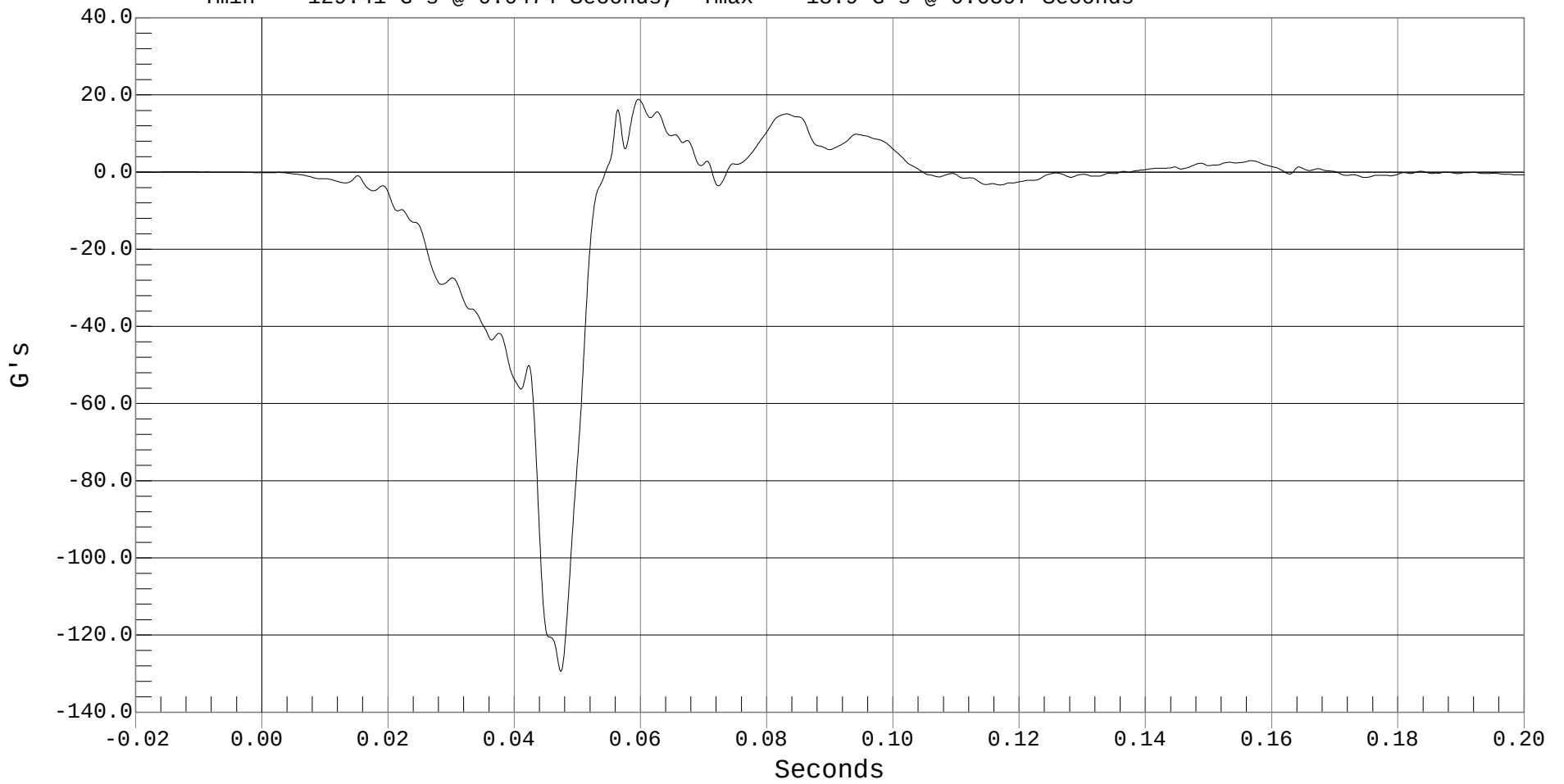
# PASSENGER LEFT FOOT @ HEEL X ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 180

— 1 PASSENGER LEFT FOOT @ HEEL X, C01006AF.A07

Ymin = -129.41 G's @ 0.0474 Seconds, Ymax = 18.9 G's @ 0.0597 Seconds







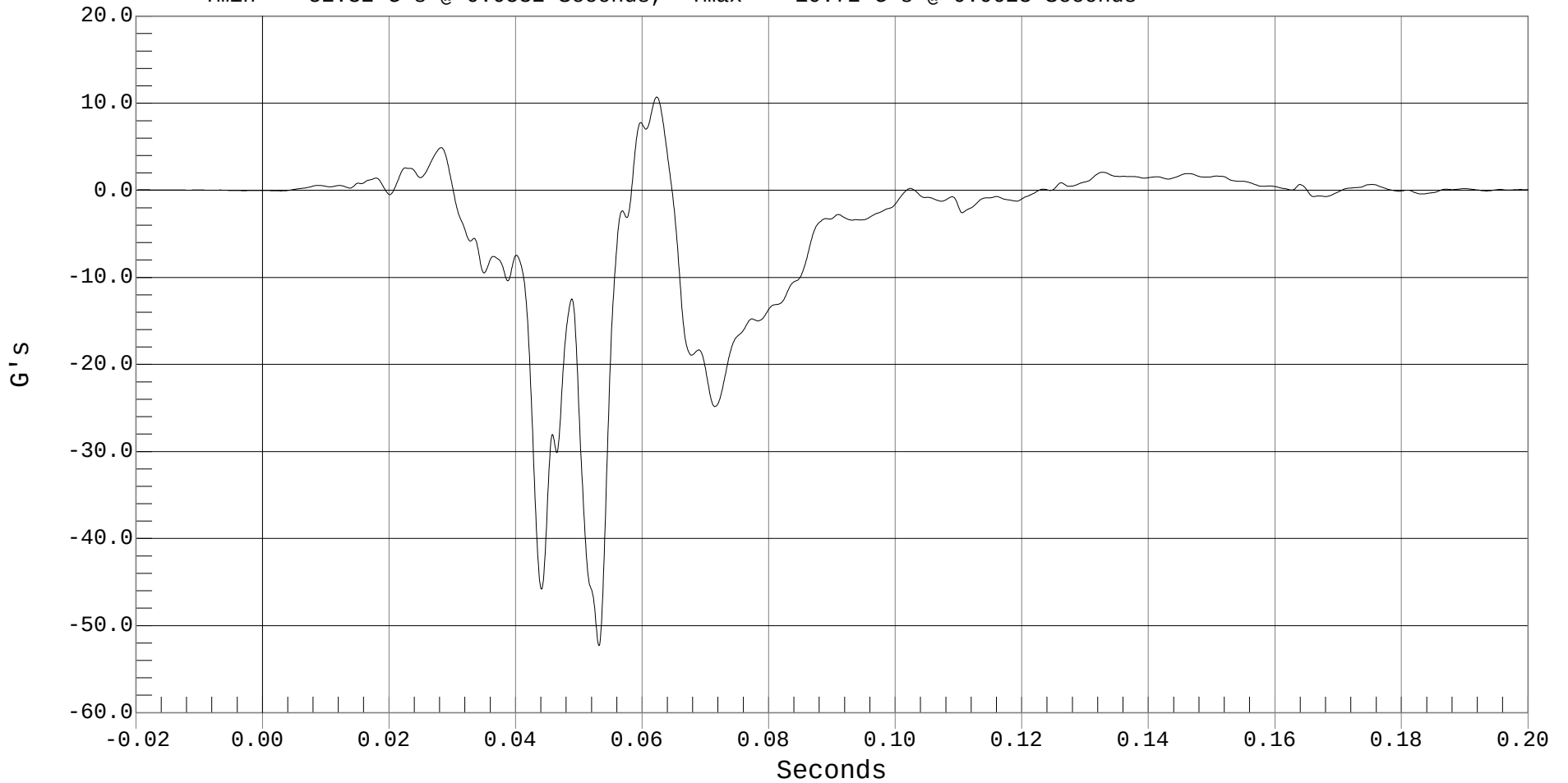
# PASSENGER LEFT FOOT @ HEEL Z ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 180

— 1 PASSENGER LEFT FOOT @ HEEL Z, C01006AF.A08

Ymin = -52.32 G's @ 0.0532 Seconds, Ymax = 10.72 G's @ 0.0623 Seconds





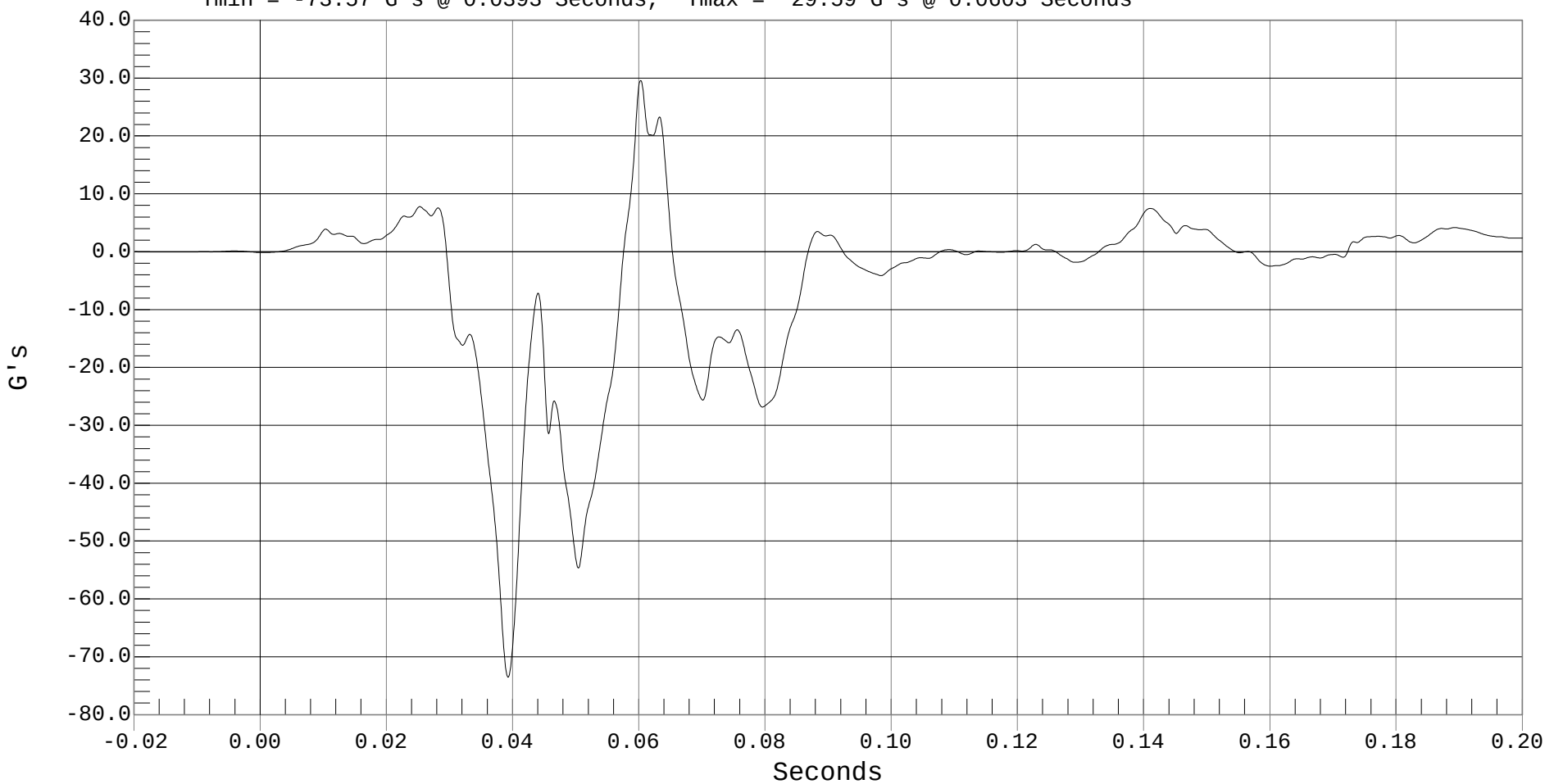
# PASSENGER RIGHT FOOT @ BALL Z ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 180

— 1 PASSENGER RIGHT FOOT @ BALL Z, C01006AF.A06

Ymin = -73.57 G's @ 0.0393 Seconds, Ymax = 29.59 G's @ 0.0603 Seconds





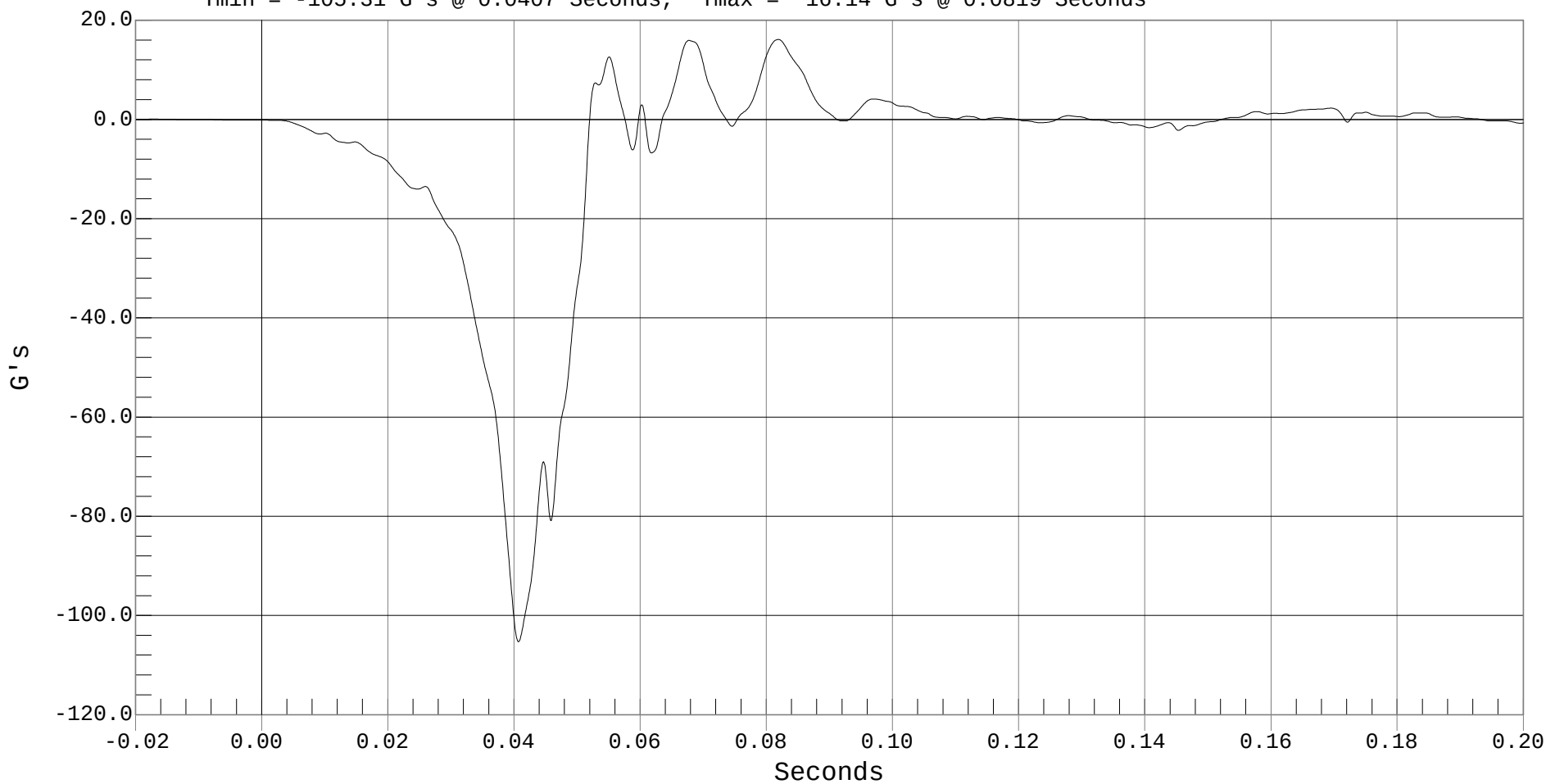
# PASSENGER RIGHT FOOT @ HEEL X ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 180

— 1 PASSENGER RIGHT FOOT @ HEEL X, C01006AF.A04

Ymin = -105.31 G's @ 0.0407 Seconds, Ymax = 16.14 G's @ 0.0819 Seconds





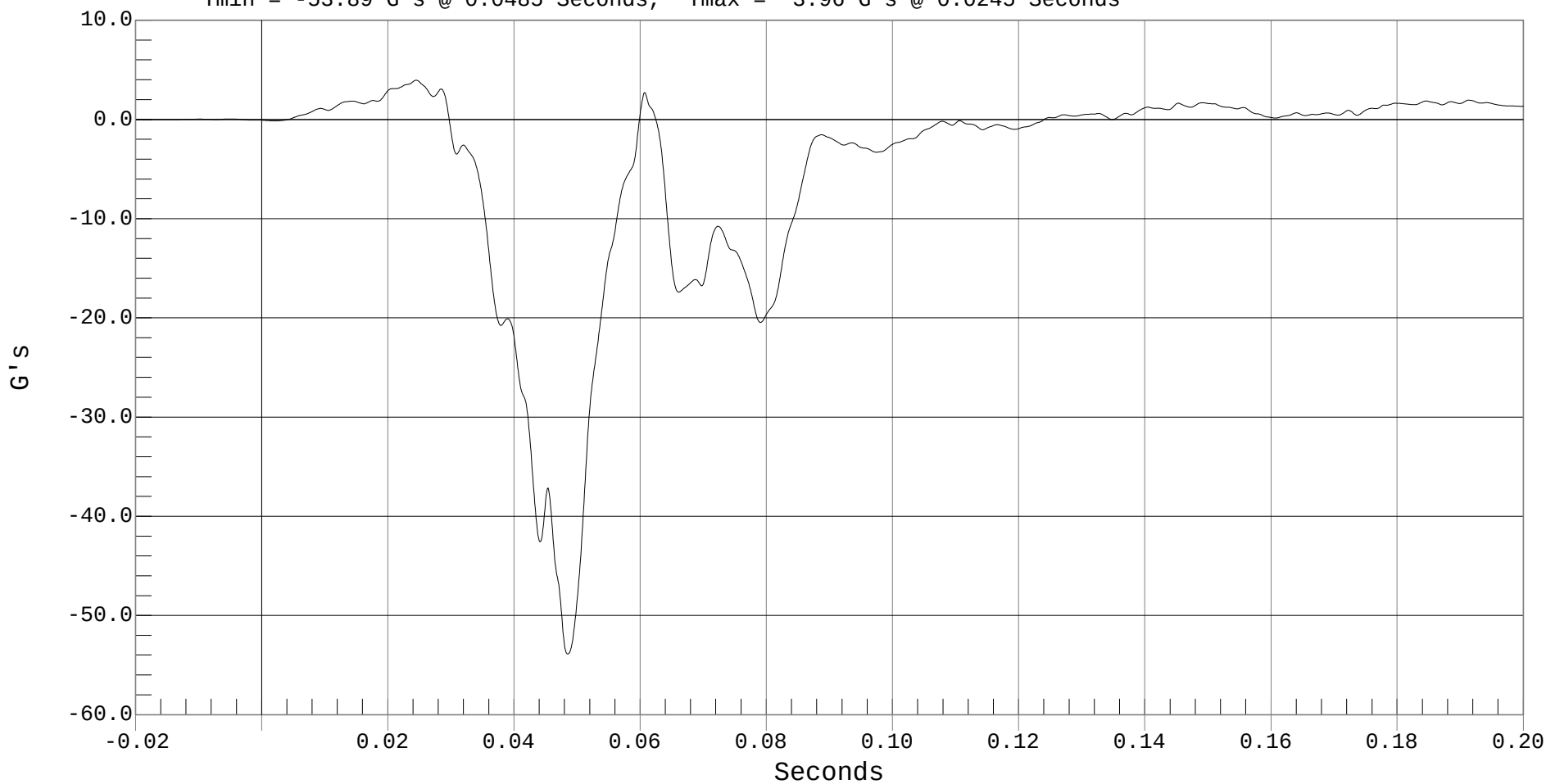
# PASSENGER RIGHT FOOT @ HEEL Z ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 180

— 1 PASSENGER RIGHT FOOT @ HEEL Z, C01006AF.A05

Ymin = -53.89 G's @ 0.0485 Seconds, Ymax = 3.96 G's @ 0.0245 Seconds





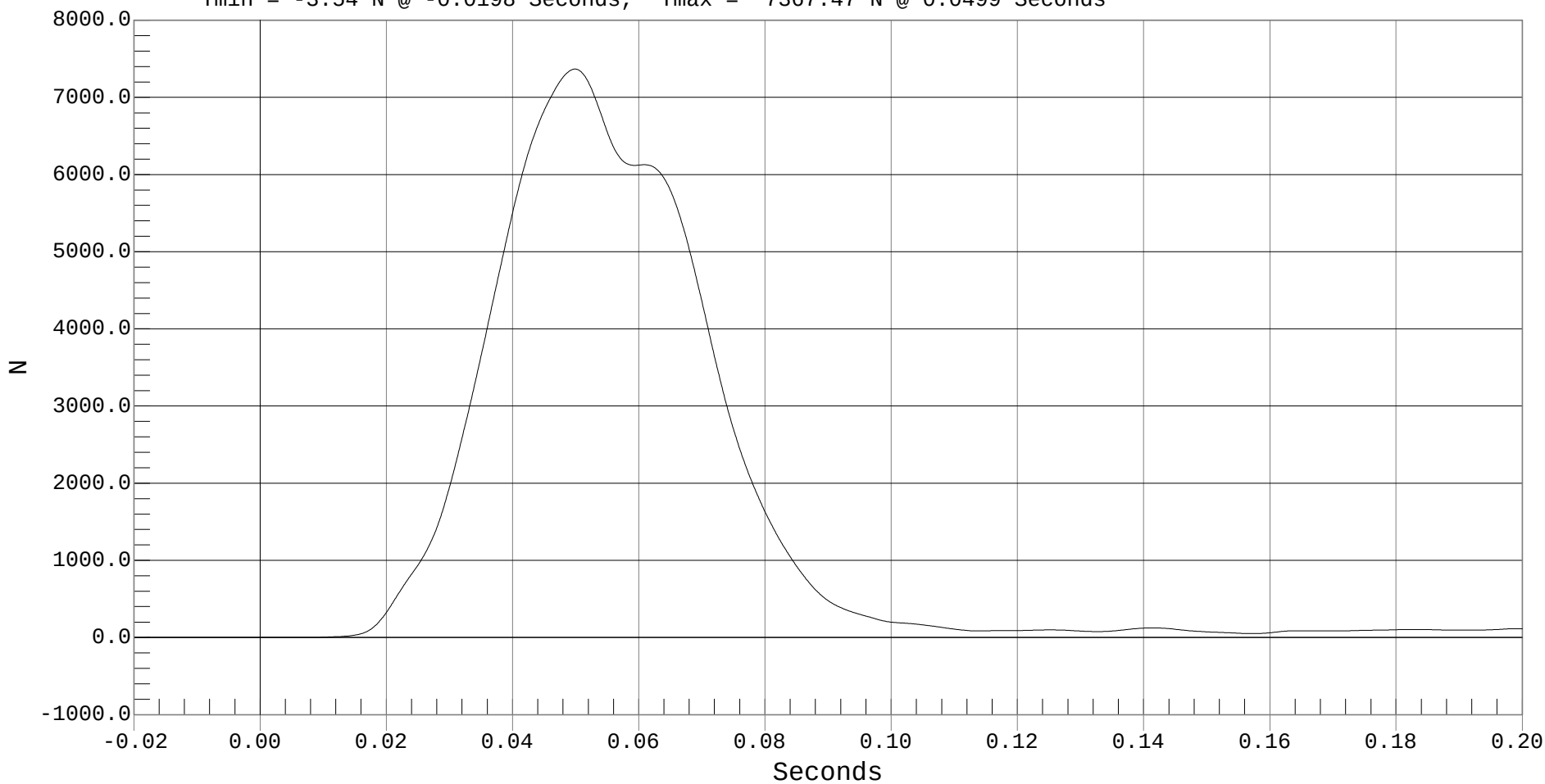
# PASSENGER LAP BELT FORCE

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 60

— 1 PASSENGER LAP BELT, B01006FF.F68

Ymin = -3.54 N @ -0.0198 Seconds, Ymax = 7367.47 N @ 0.0499 Seconds







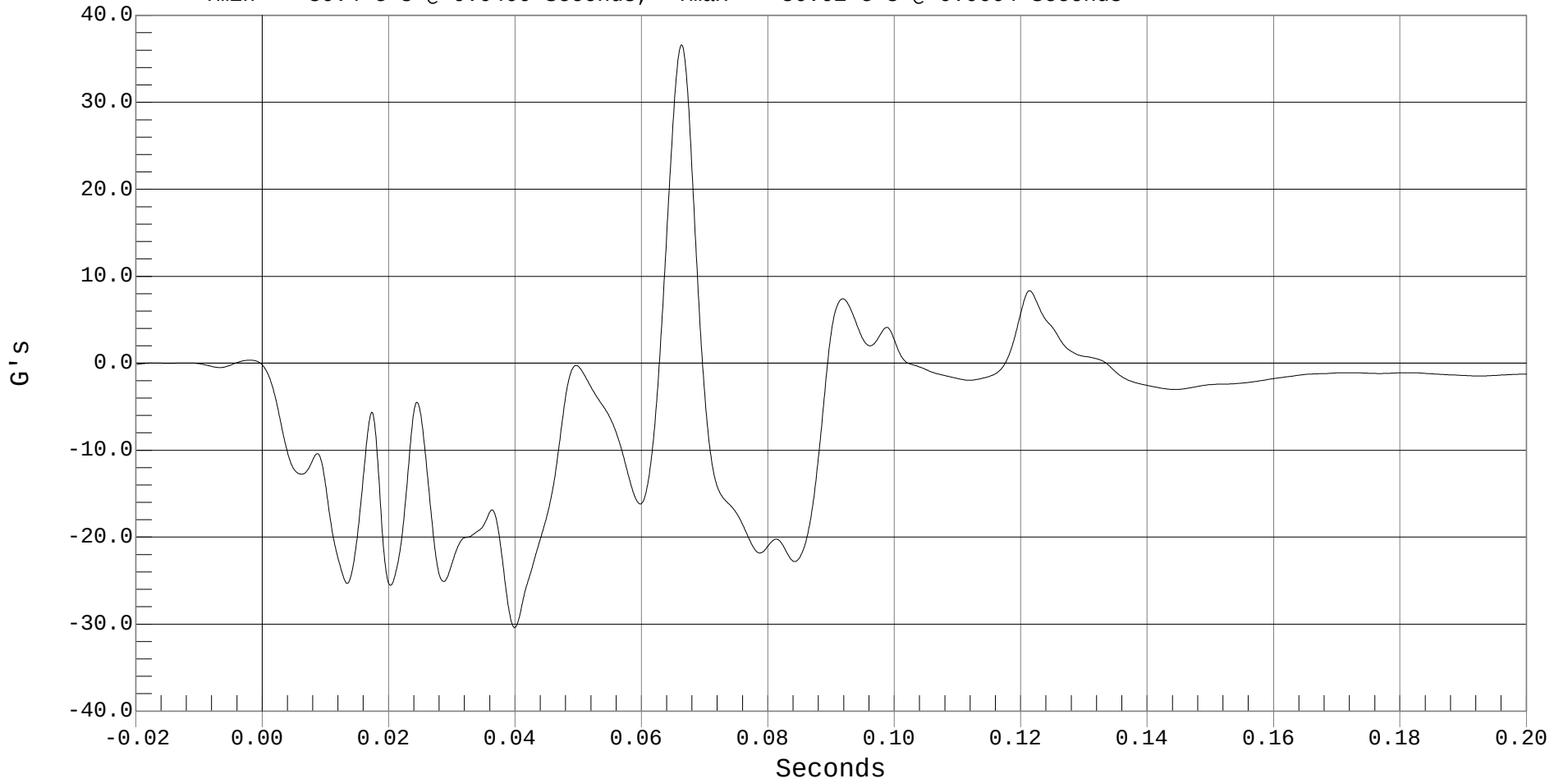
# LEFT REAR SEAT CROSSMEMBER X ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 60

— 1 LEFT REAR SEAT CROSSMEMBER X, B01006AF.A59

Ymin = -30.4 G's @ 0.0400 Seconds, Ymax = 36.61 G's @ 0.0664 Seconds





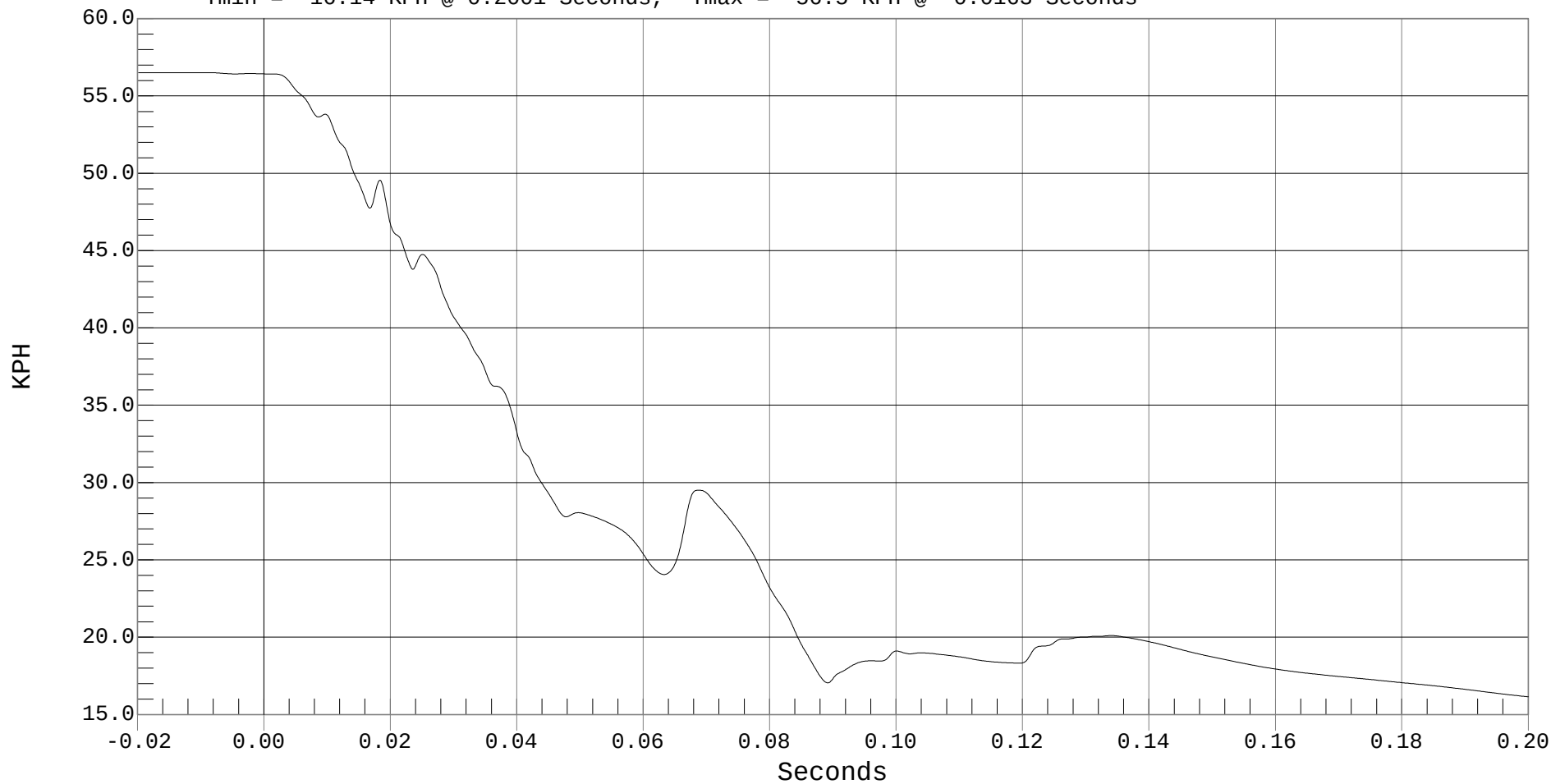
# LEFT REAR SEAT CROSSMEMBER X VELOCITY

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 180

— 1 LEFT REAR SEAT CROSSMEMBER X VELOCITY, B01006AI.V59

Ymin = 16.14 KPH @ 0.2001 Seconds, Ymax = 56.5 KPH @ -0.0163 Seconds





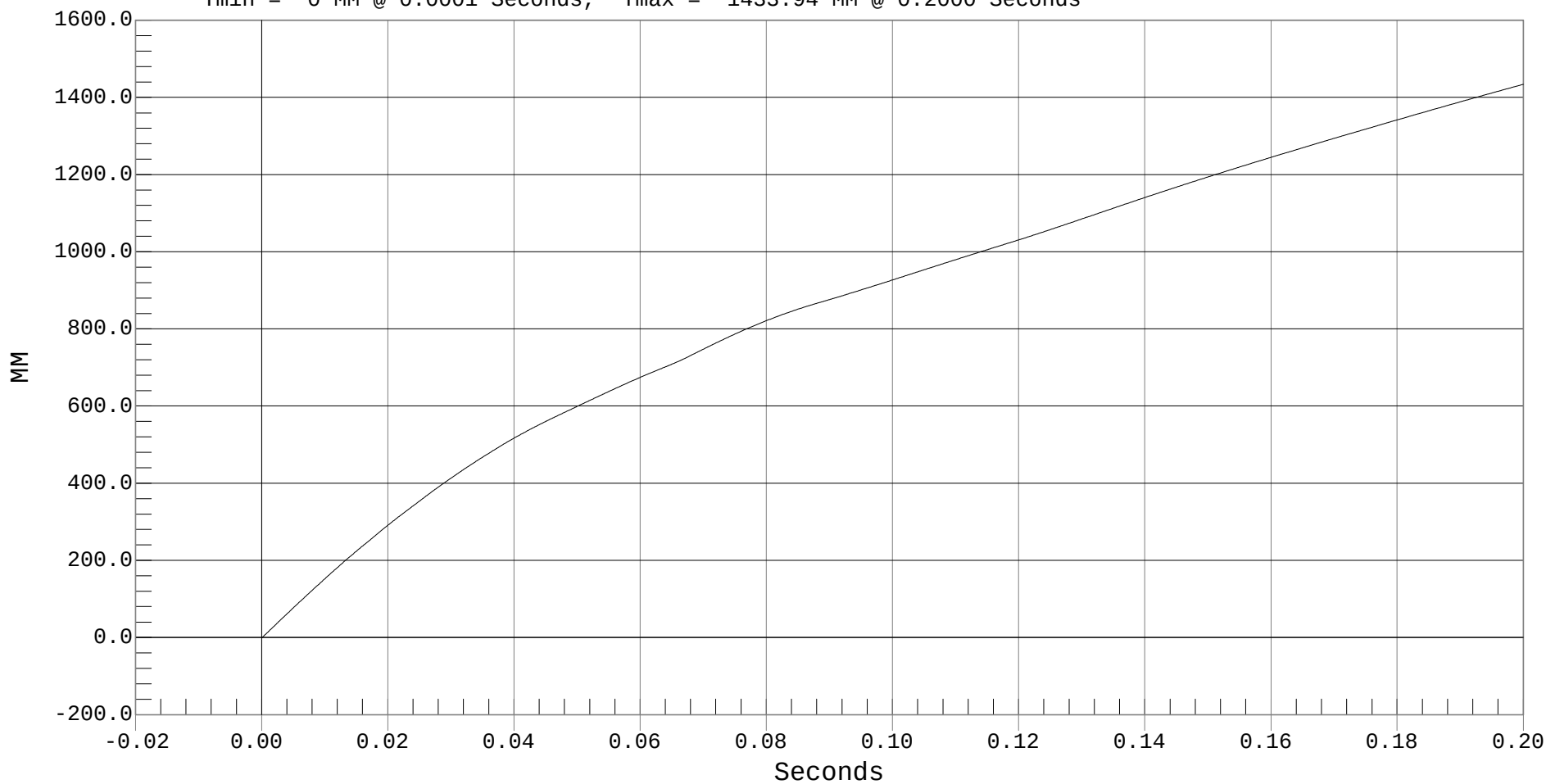
# LEFT REAR SEAT CROSSMEMBER X DISPLACEMENT

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 180

— 1 LEFT REAR SEAT CROSSMEMBER X DISPLACEMENT, B01006AI.D59

Ymin = 0 MM @ 0.0001 Seconds, Ymax = 1433.94 MM @ 0.2000 Seconds





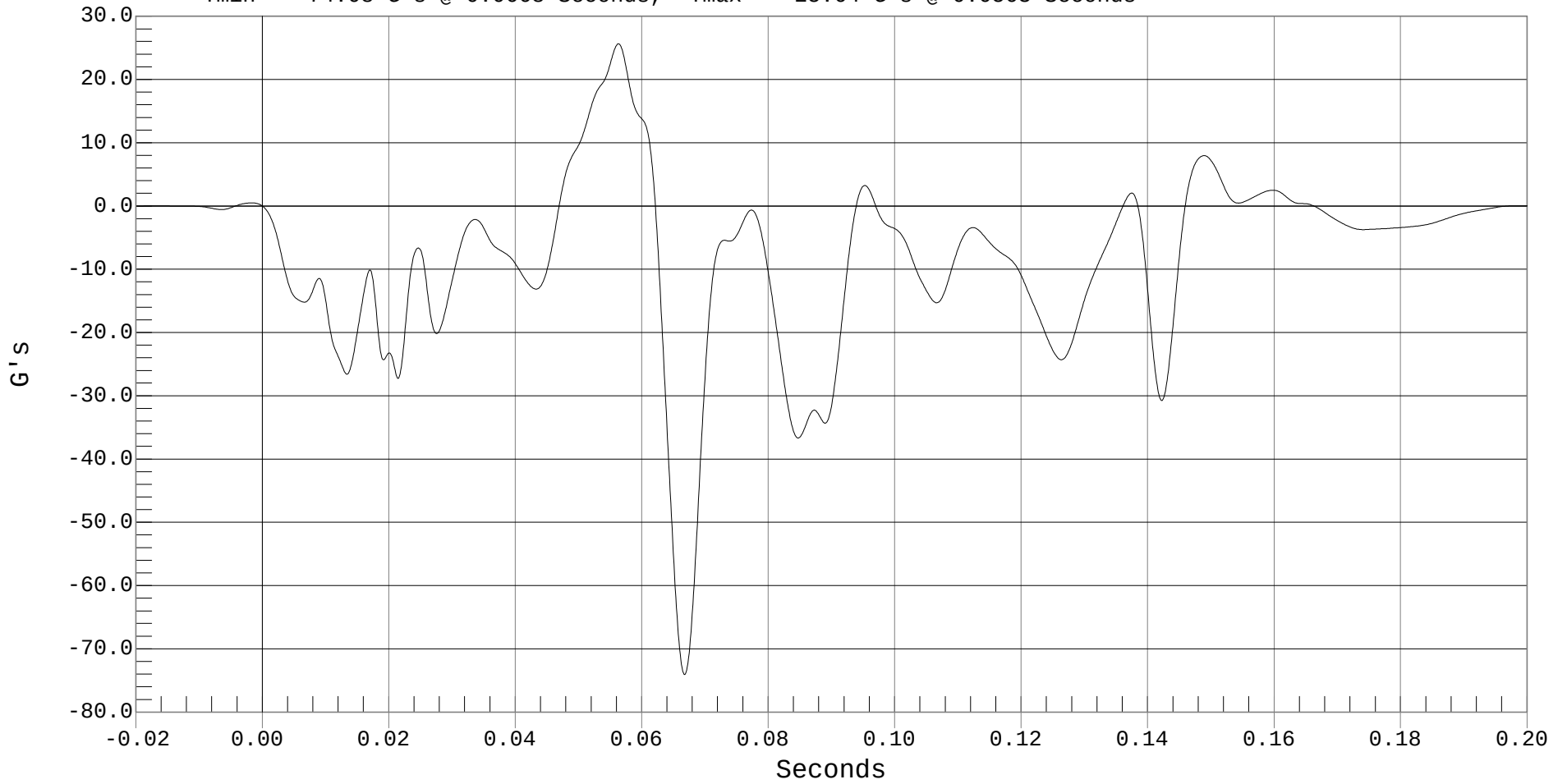
# RIGHT REAR SEAT CROSSMEMBER X ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 60

— 1 RIGHT REAR SEAT CROSSMEMBER X, B01006AF.A58

Ymin = -74.08 G's @ 0.0668 Seconds, Ymax = 25.64 G's @ 0.0563 Seconds





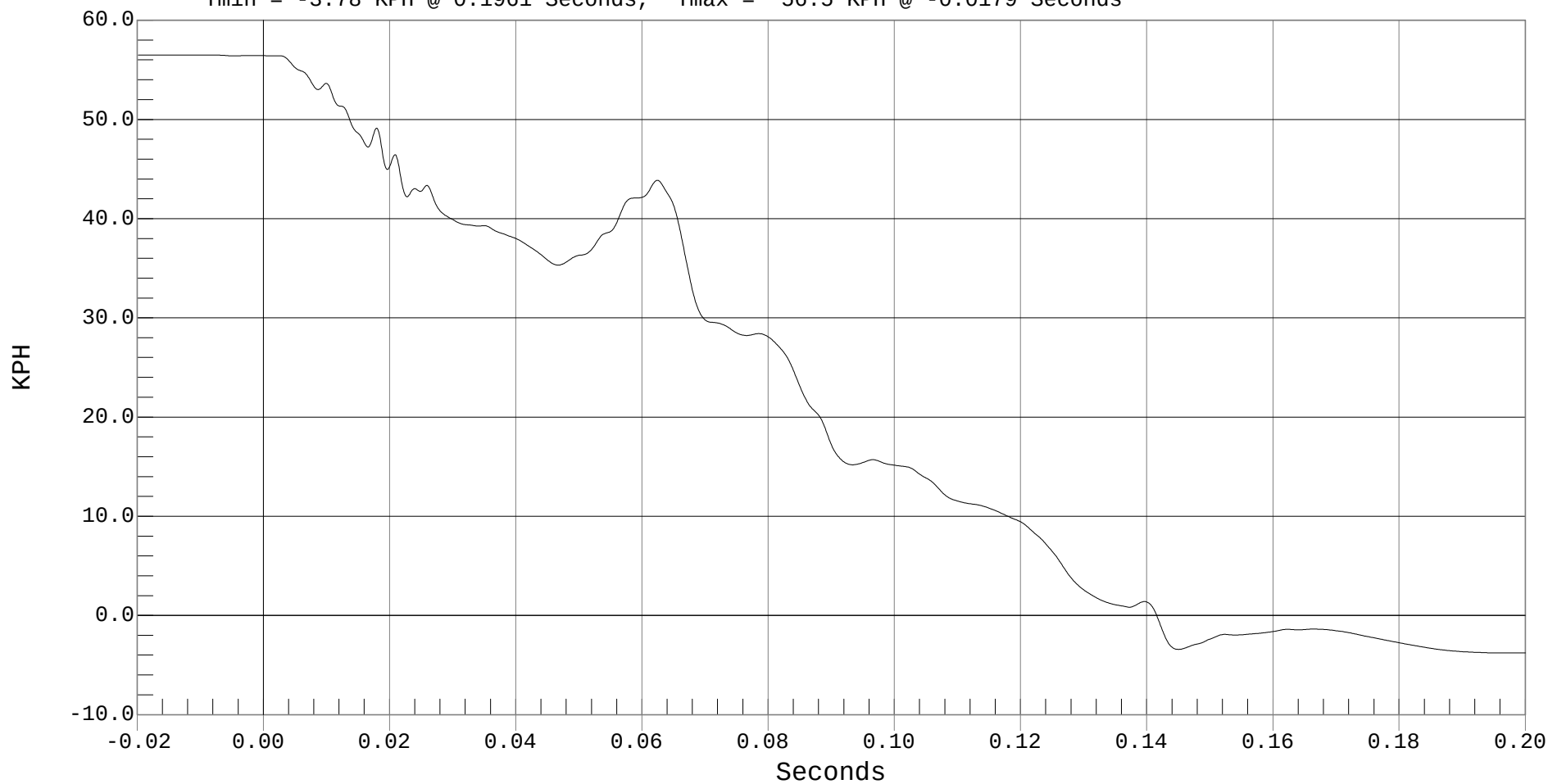
# RIGHT REAR SEAT CROSSMEMBER X VELOCITY

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 180

— 1 RIGHT REAR SEAT CROSSMEMBER X VELOCITY, B01006AI.V58

Ymin = -3.78 KPH @ 0.1961 Seconds, Ymax = 56.5 KPH @ -0.00179 Seconds







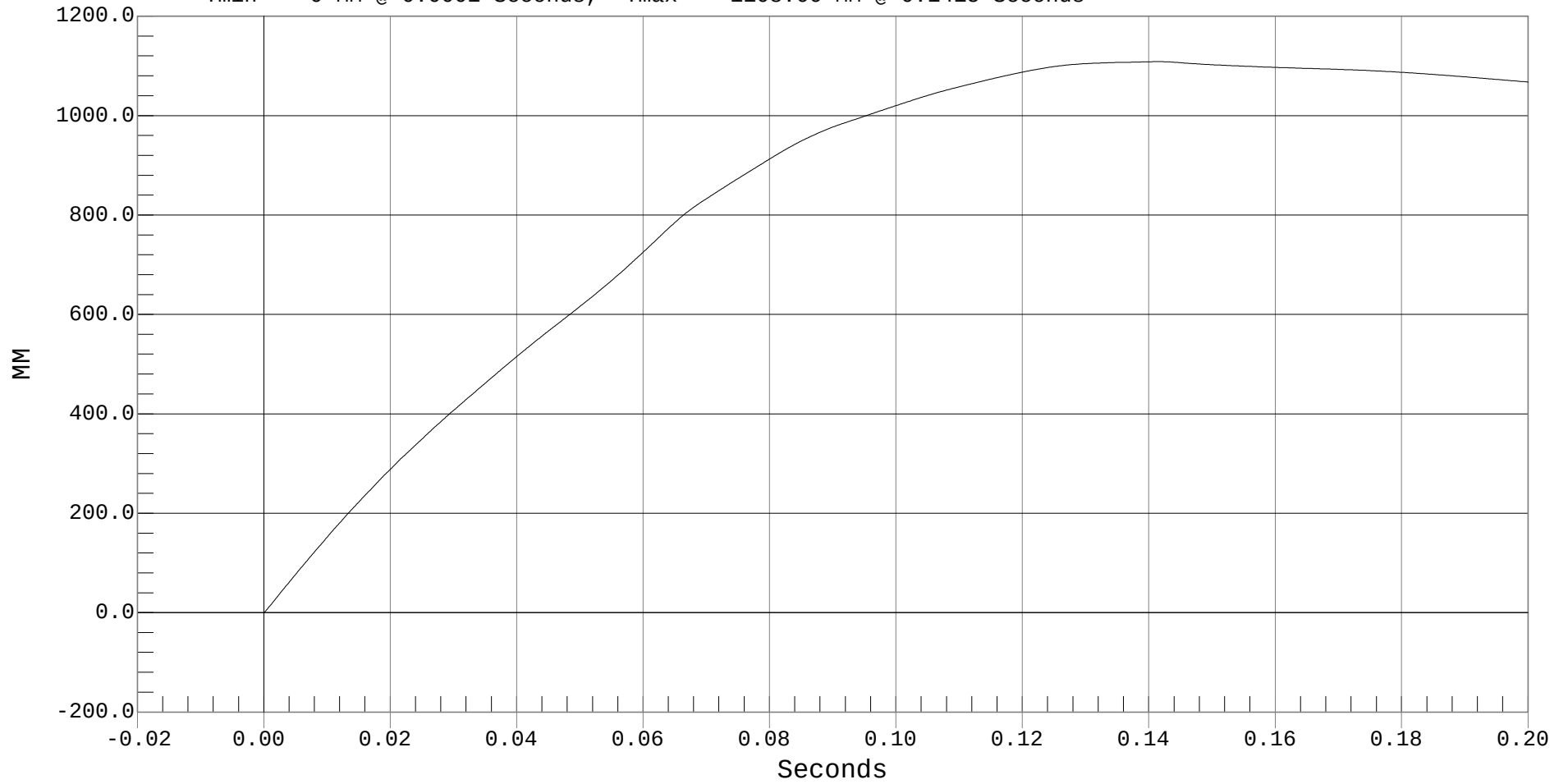
# RIGHT REAR SEAT CROSSMEMBER X DISPLACEMENT

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 180

— 1 RIGHT REAR SEAT CROSSMEMBER X DISPLACEMENT, B01006AI.D58

Ymin = 0 MM @ 0.0001 Seconds, Ymax = 1108.66 MM @ 0.1415 Seconds



TOP OF ENGINE BLOCK X ACCELERATION VS. TIME  
NO VALID DATA COLLECTED



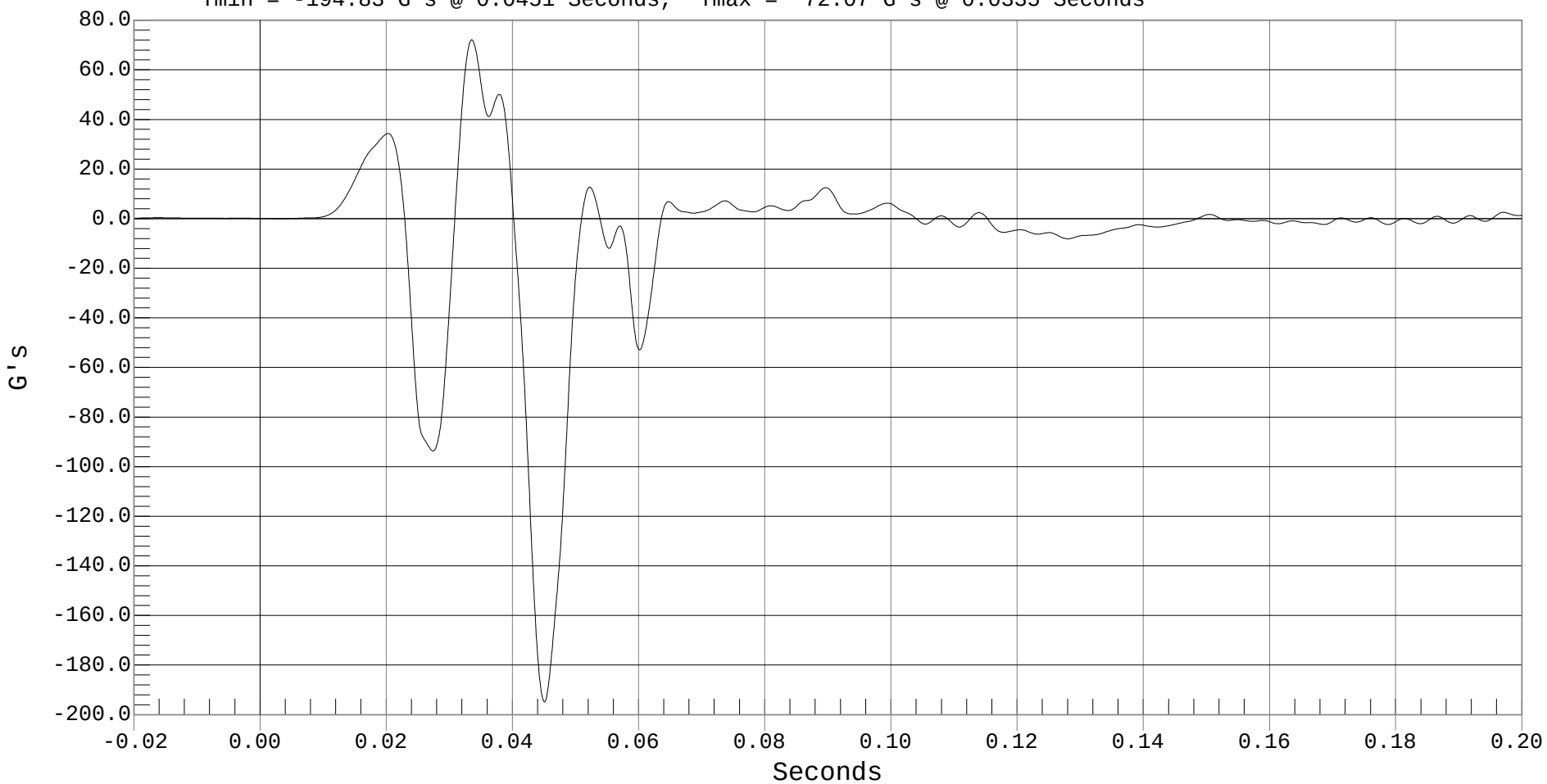
## LOWER ENGINE X ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 60

— 1 ENGINE LOWER X, B01006AF.A56

Ymin = -194.83 G's @ 0.0451 Seconds, Ymax = 72.07 G's @ 0.0335 Seconds





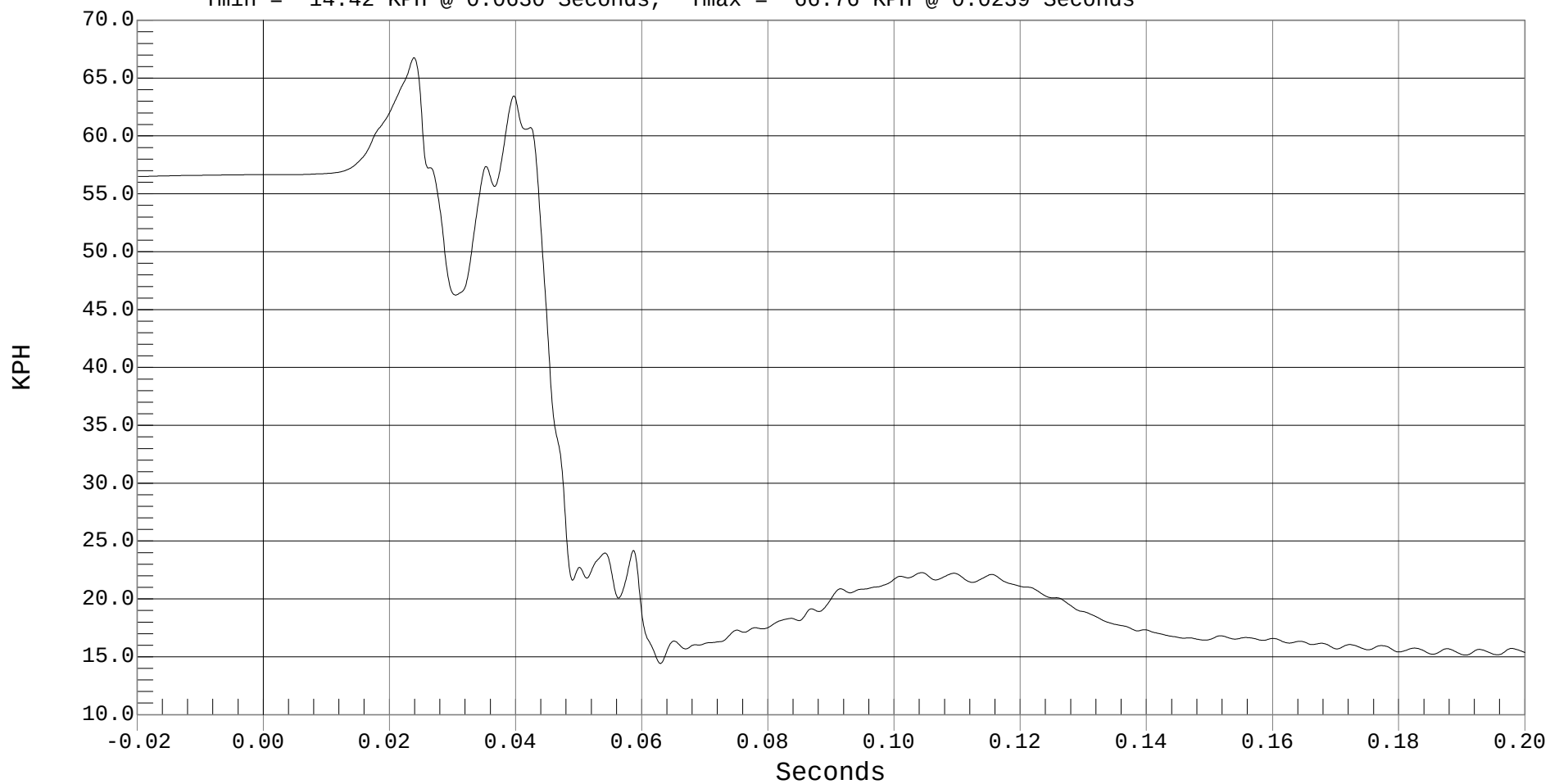
## LOWER ENGINE X VELOCITY

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 180

— 1 BOTTOM OF ENGINE X VELOCITY, B01006AI.V56

Ymin = 14.42 KPH @ 0.0630 Seconds, Ymax = 66.76 KPH @ 0.0239 Seconds





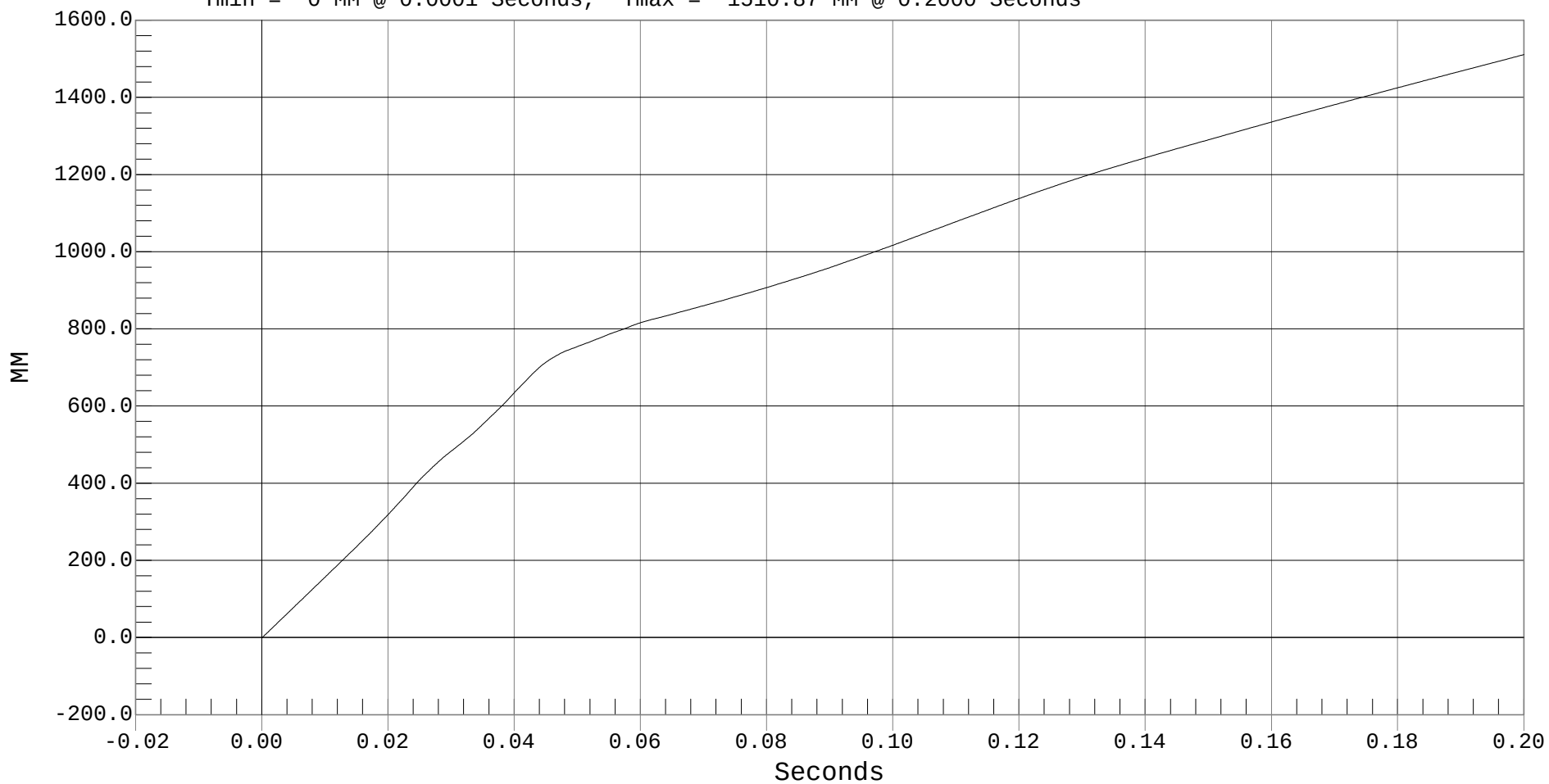
## LOWER ENGINE X DISPLACEMENT

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 180

— 1 BOTTOM OF ENGINE X DISPLACEMENT, B01006AI.D56

Ymin = 0 MM @ 0.0001 Seconds, Ymax = 1510.87 MM @ 0.2000 Seconds







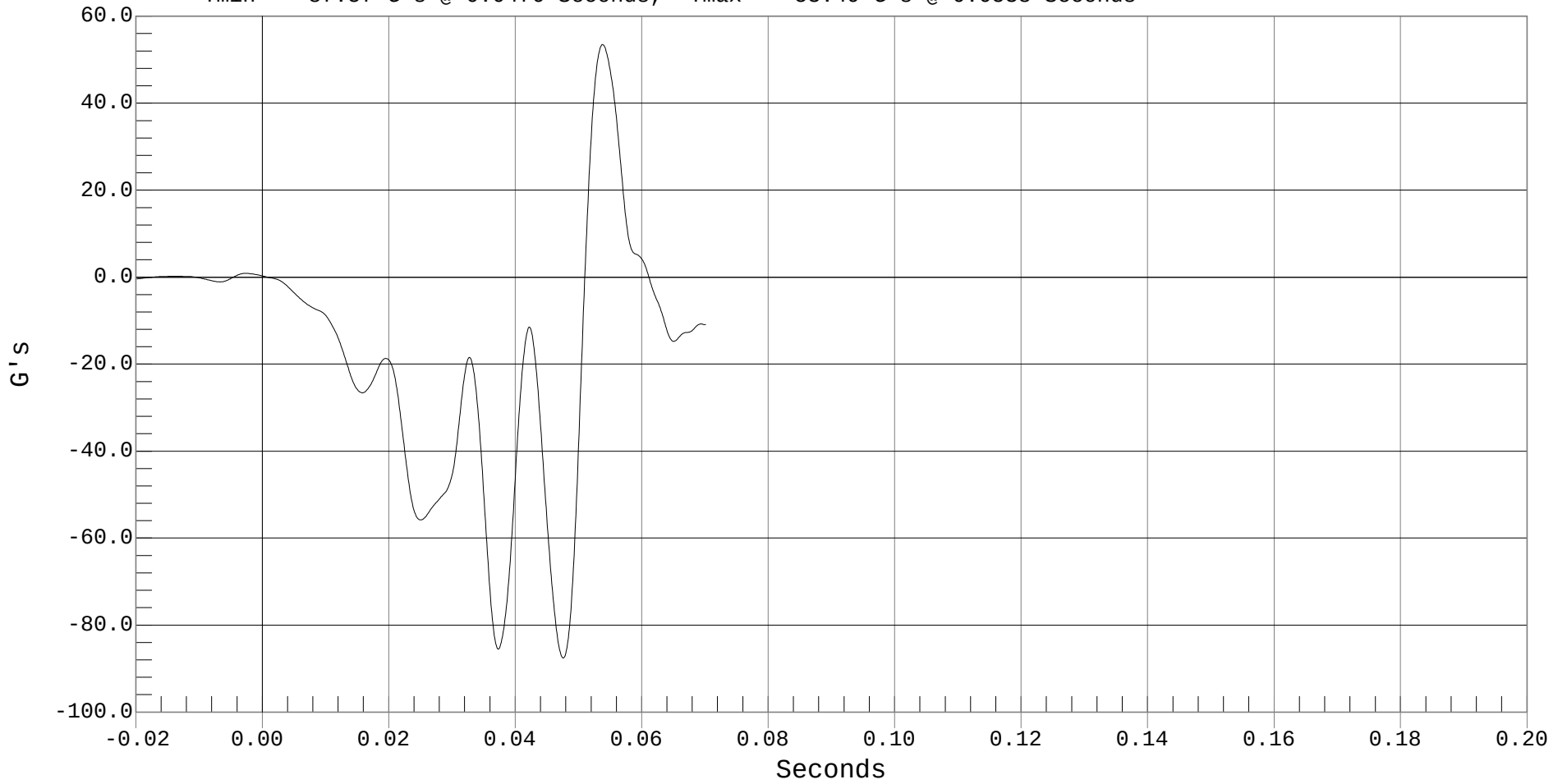
# LEFT BRAKE CALIPER X ACCELERATION (QD AFTER 70 MSEC)

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 60

— 1 LEFT BRAKE CALIPER X, B01006AF.A61

Ymin = -87.57 G's @ 0.0476 Seconds, Ymax = 53.49 G's @ 0.0538 Seconds





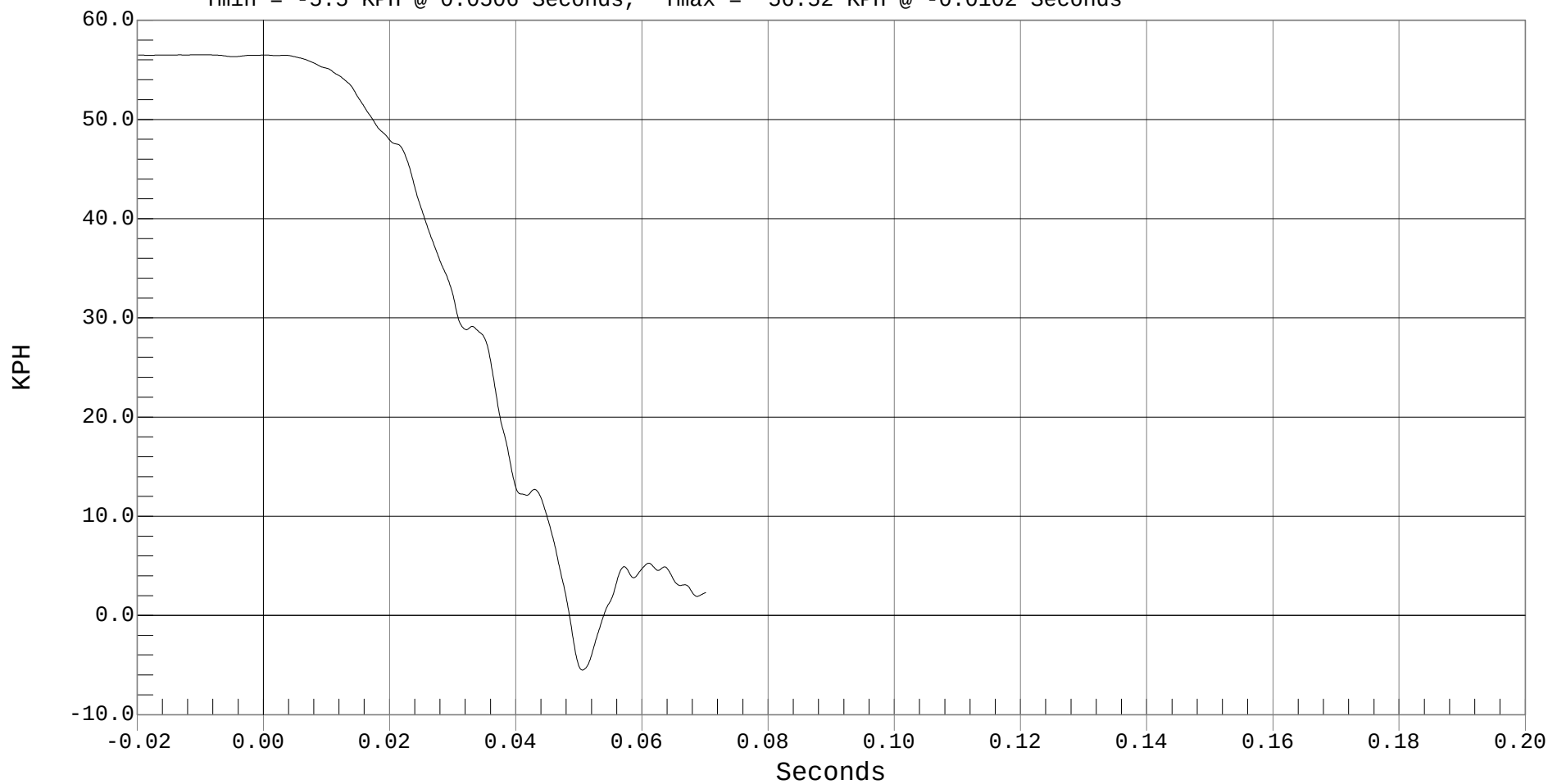
# LEFT BRAKE CALIPER X VELOCITY (QD AFTER 70 MSEC)

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 180

— 1 LEFT BRAKE CALIPER X VELOCITY, B01006AI.V61

Ymin = -5.5 KPH @ 0.0506 Seconds, Ymax = 56.52 KPH @ -0.0102 Seconds





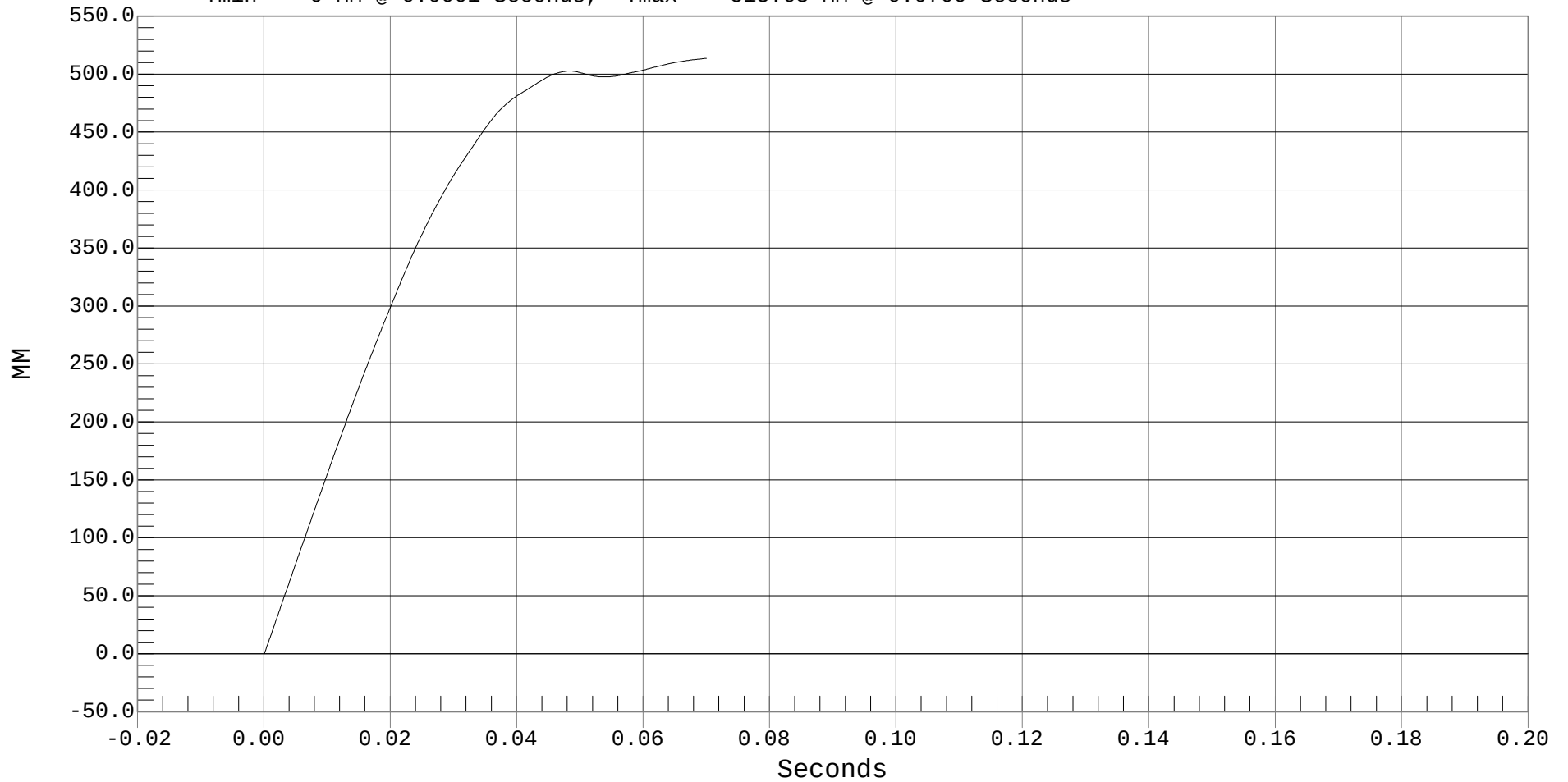
# LEFT BRAKE CALIPER X DISPLACEMENT (QD AFTER 70 MSEC)

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 180

— 1 LEFT BRAKE CALIPER X DISPLACEMENT, B01006AI.D61

Ymin = 0 MM @ 0.0001 Seconds, Ymax = 513.63 MM @ 0.0700 Seconds





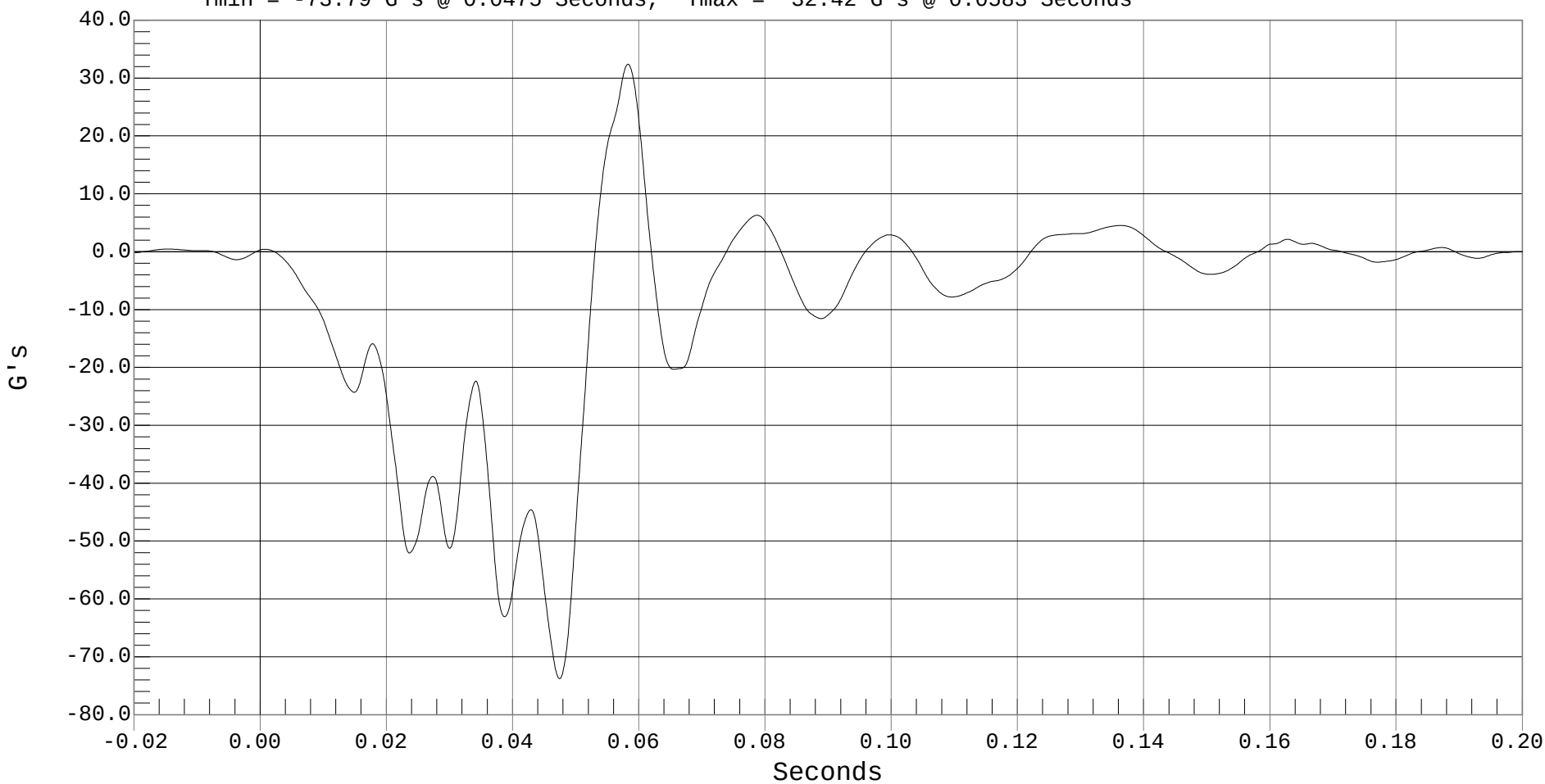
# RIGHT BRAKE CALIPER X ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 60

— 1 RIGHT BRAKE CALIPER X, B01006AF.A60

Ymin = -73.79 G's @ 0.0475 Seconds, Ymax = 32.42 G's @ 0.0583 Seconds





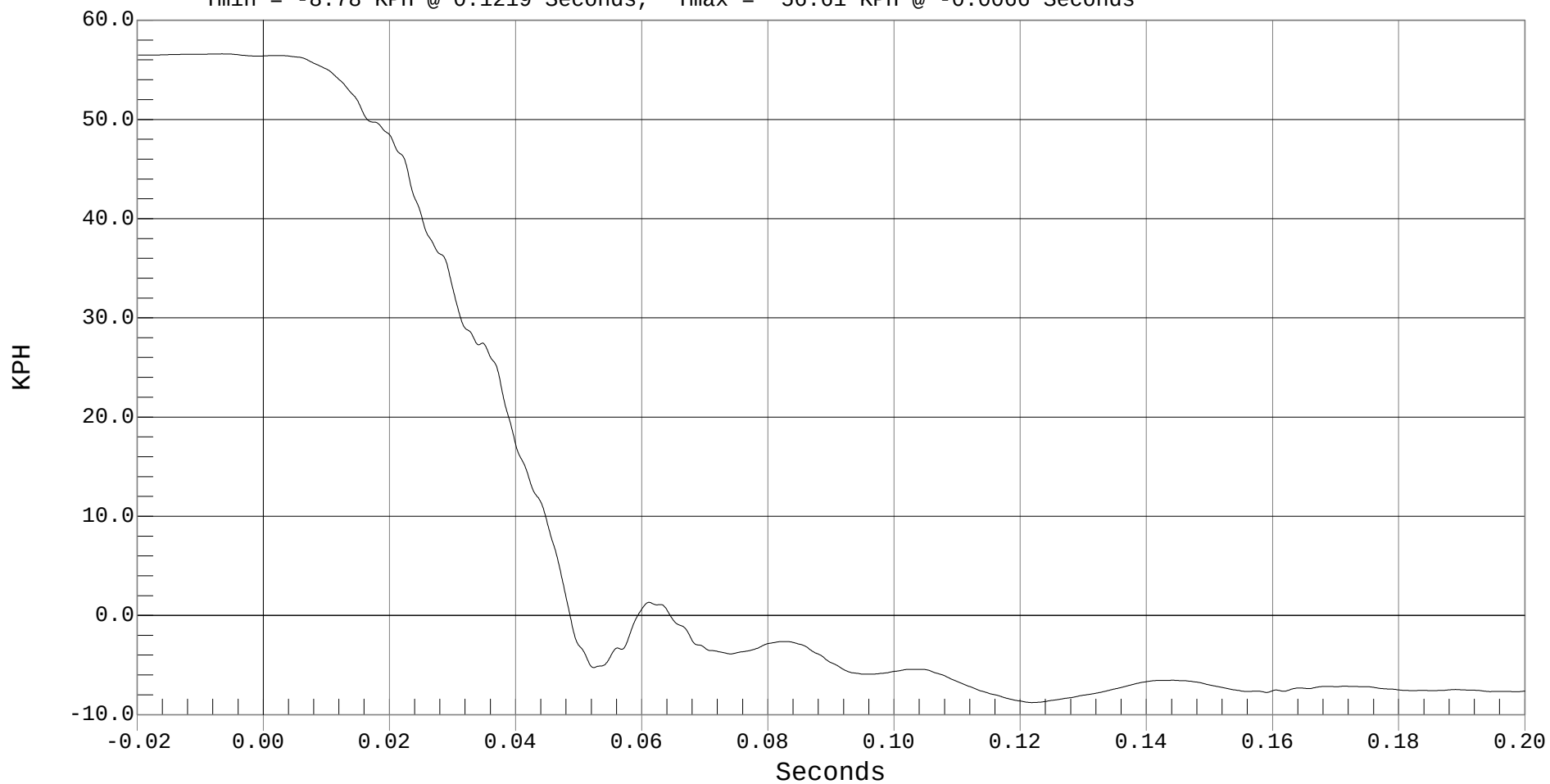
## RIGHT BRAKE CALIPER X VELOCITY

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 180

— 1 RIGHT BRAKE CALIPER X VELOCITY, B01006AI.V60

Ymin = -8.78 KPH @ 0.1219 Seconds, Ymax = 56.61 KPH @ -0.0066 Seconds







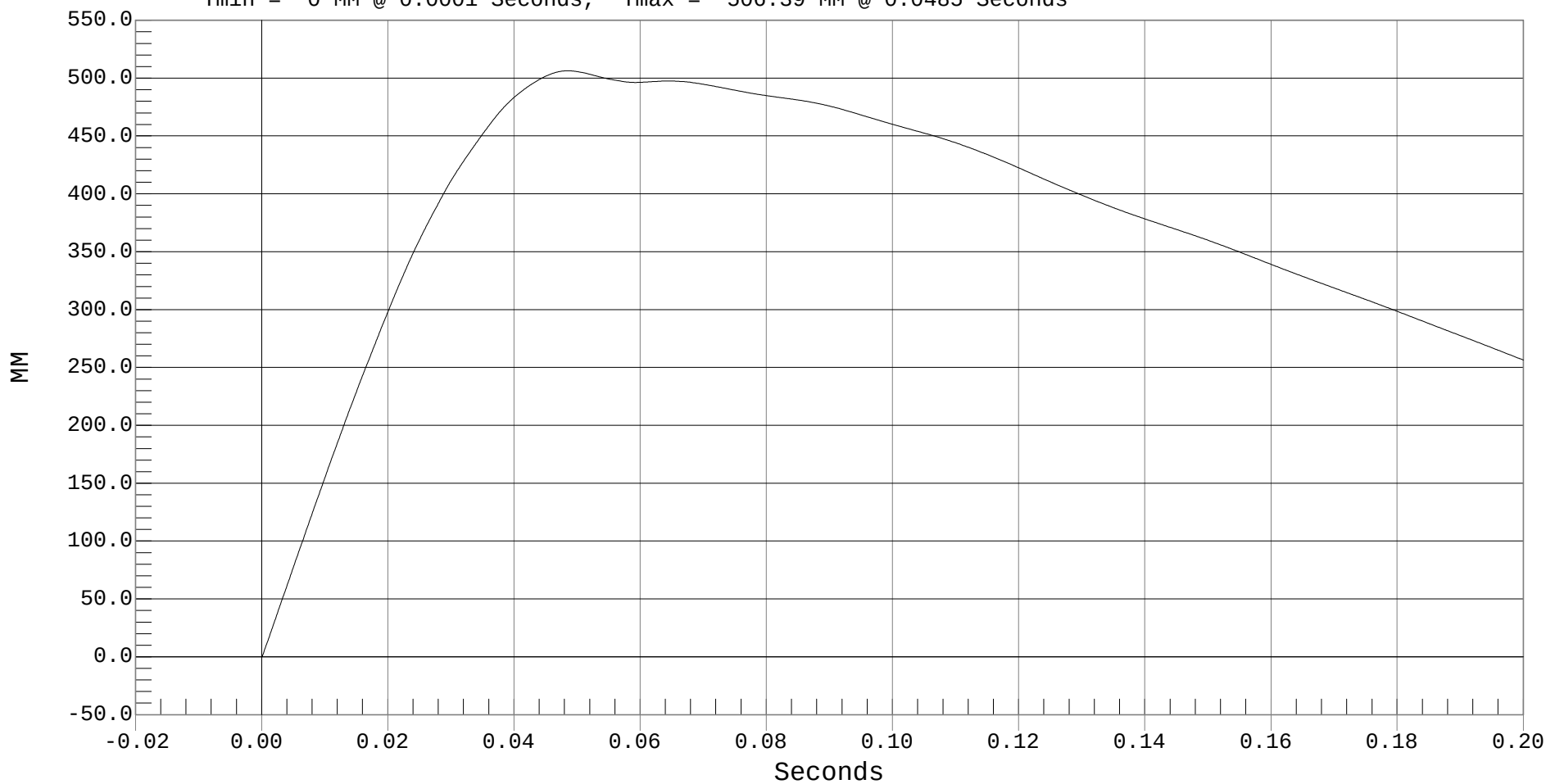
# RIGHT BRAKE CALIPER X DISPLACEMENT

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 180

— 1 RIGHT BRAKE CALIPER X DISPLACEMENT, B01006AI.D60

Ymin = 0 MM @ 0.0001 Seconds, Ymax = 506.39 MM @ 0.0485 Seconds





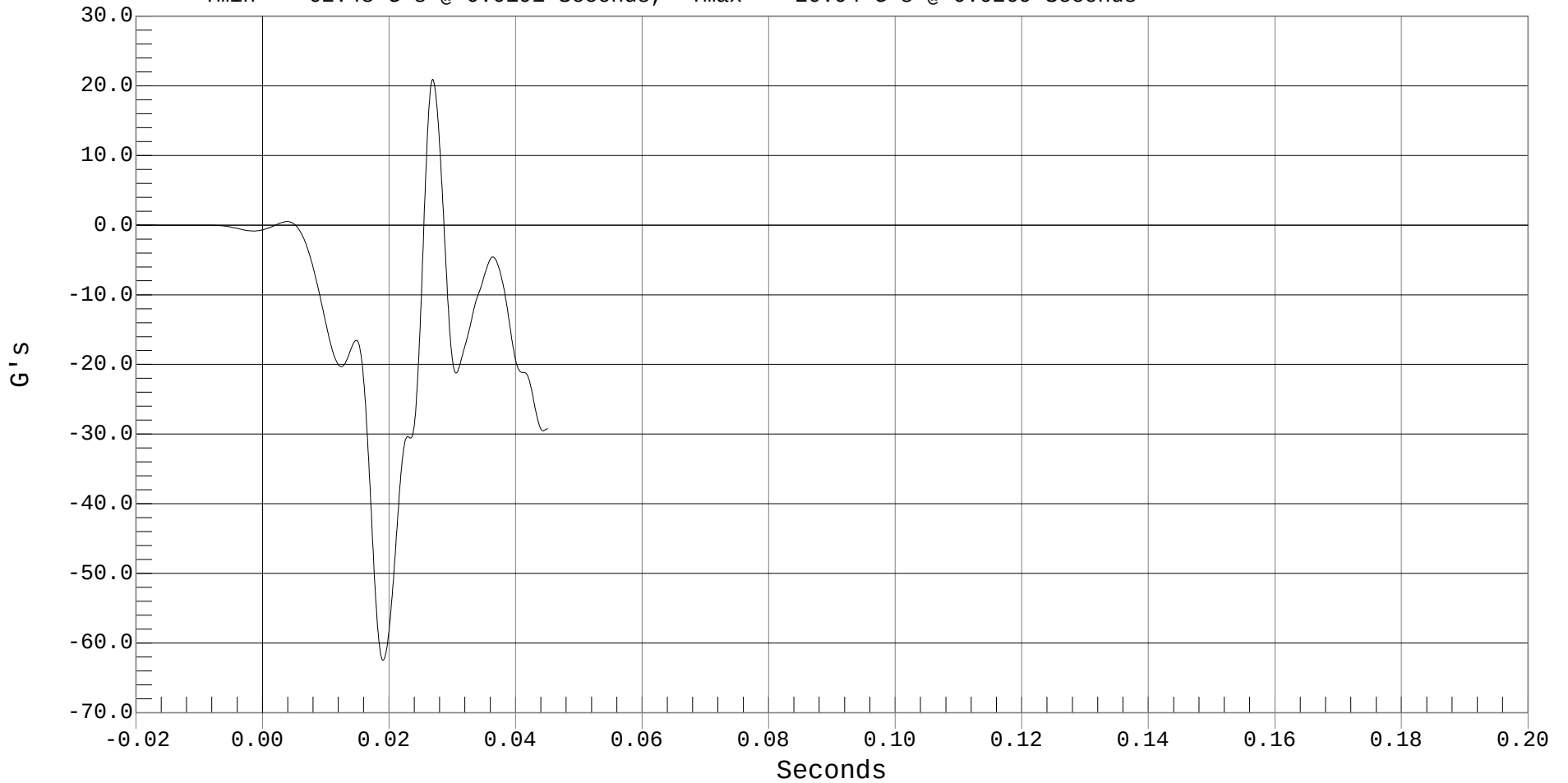
# INSTRUMENT PANEL X ACCELERATION (QD AFTER 45 MSEC)

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 60

— 1 INSTRUMENT PANEL X, B01006AF.A57

Ymin = -62.48 G's @ 0.0191 Seconds, Ymax = 20.94 G's @ 0.0269 Seconds





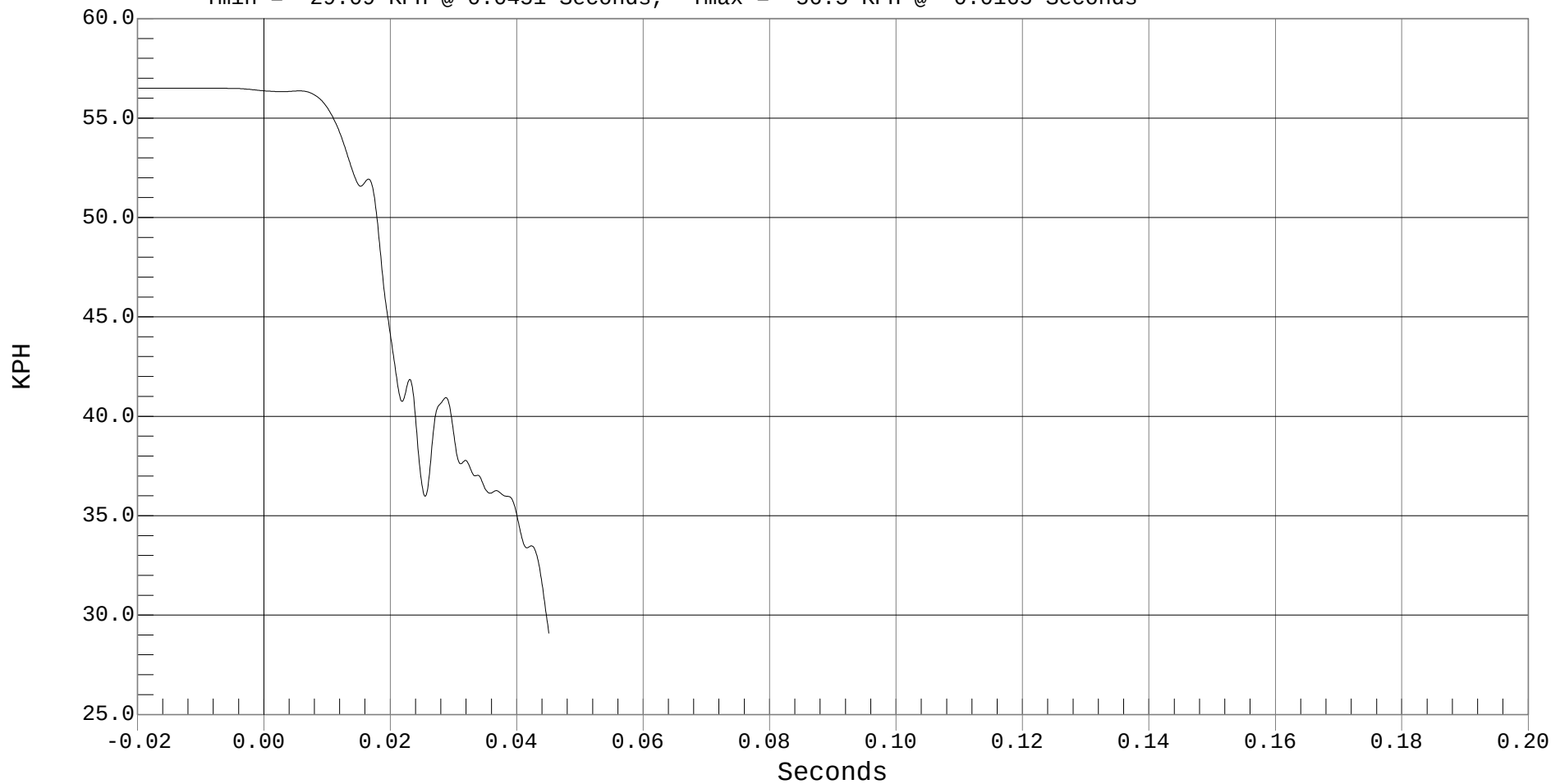
# INSTRUMENT PANEL X VELOCITY (QD AFTER 45 MSEC)

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 180

— 1 INSTRUMENT PANEL X VELOCITY, B01006AI.V57

Ymin = 29.09 KPH @ 0.0451 Seconds, Ymax = 56.5 KPH @ -0.0165 Seconds





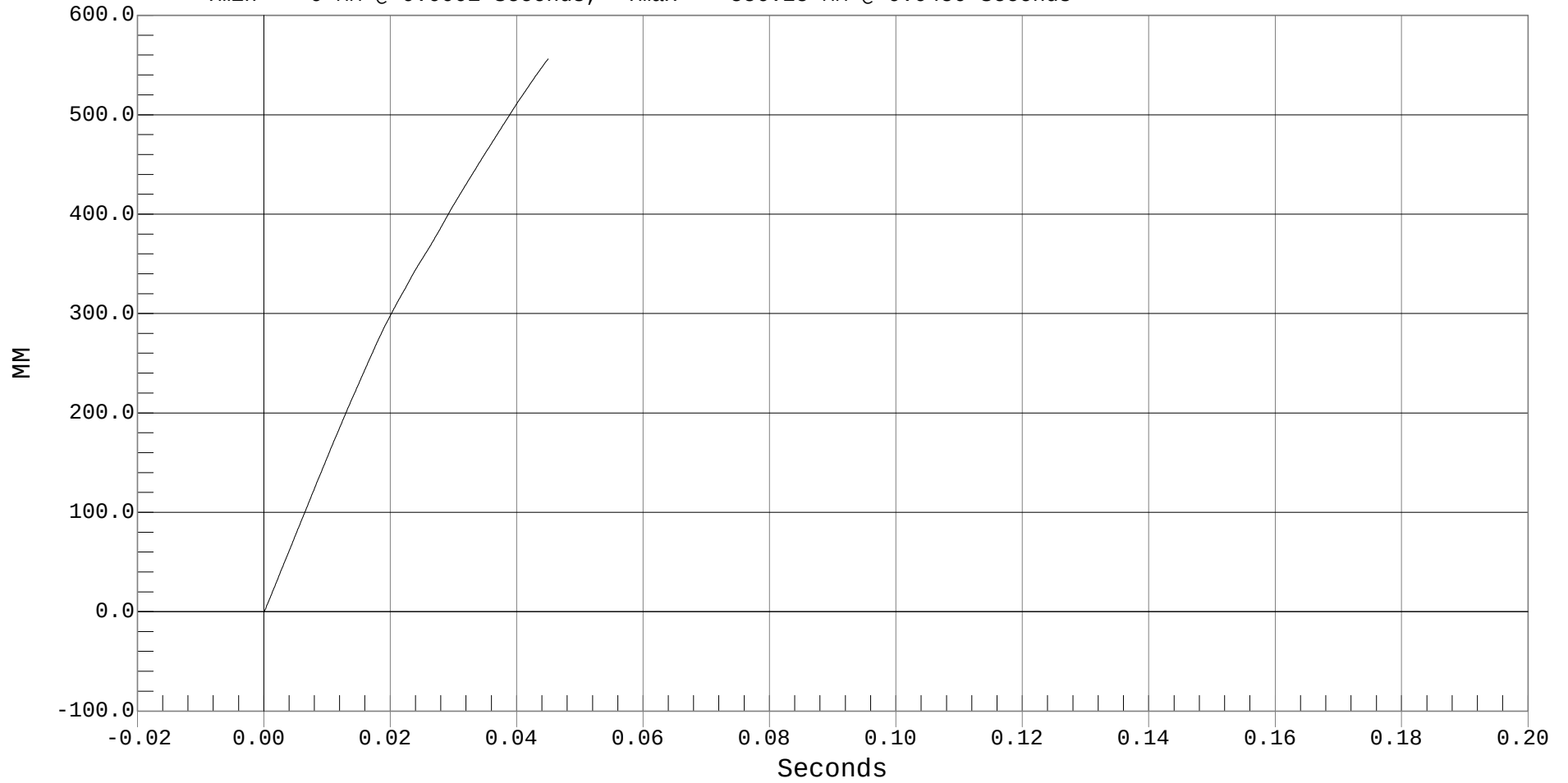
# INSTRUMENT PANEL X DISPLACEMENT (QD AFTER 45 MSEC)

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 180

— 1 INSTRUMENT PANEL X DISPLACEMENT, B01006AI.D57

Ymin = 0 MM @ 0.0001 Seconds, Ymax = 556.25 MM @ 0.0450 Seconds





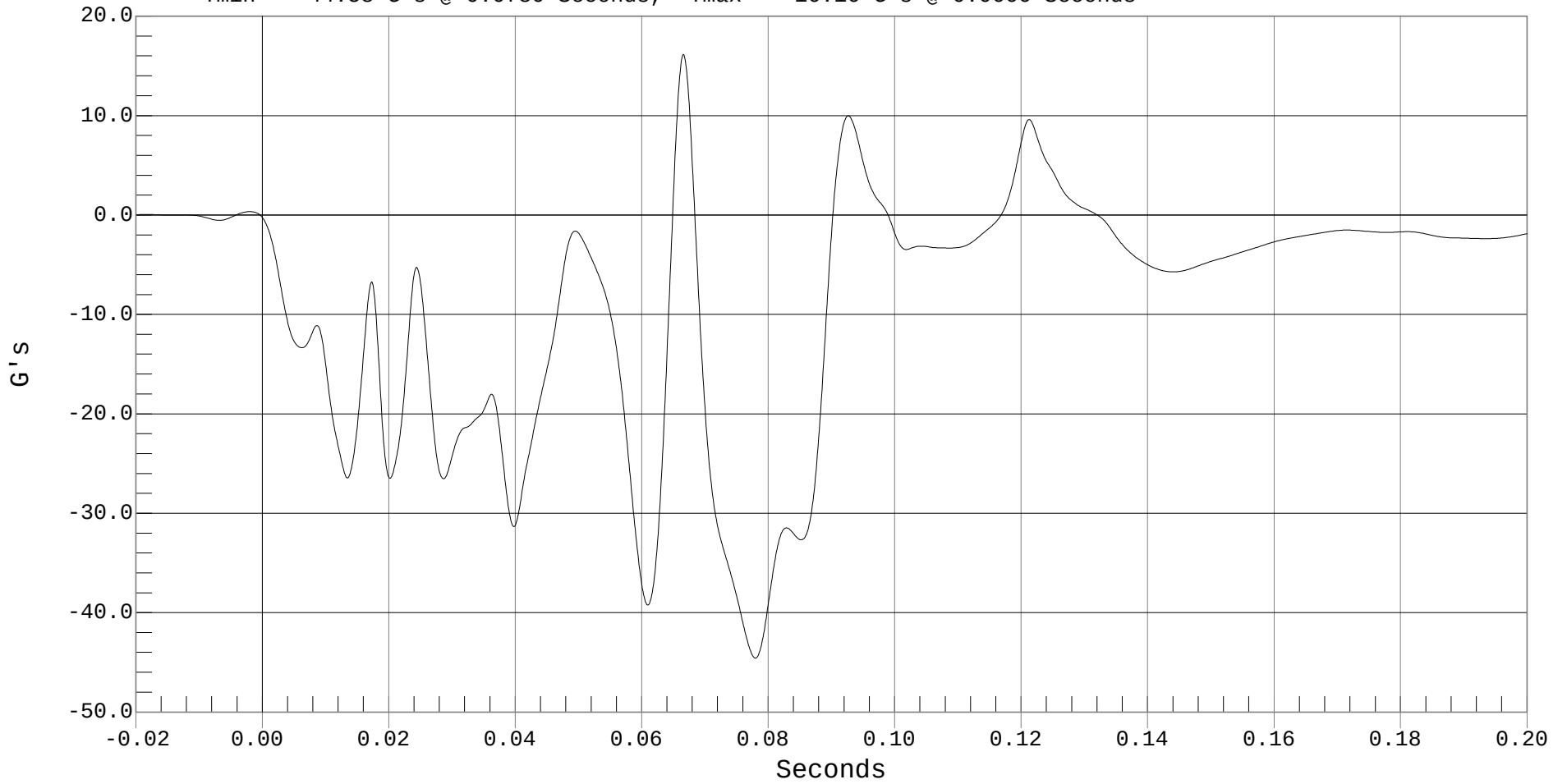
# LEFT REAR SEAT CROSSMEMBER REDUNDANT X ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 60

— 1 LEFT REAR SEAT X-MEMBER Xr, C01006AF.A03

Ymin = -44.58 G's @ 0.0780 Seconds, Ymax = 16.16 G's @ 0.0666 Seconds





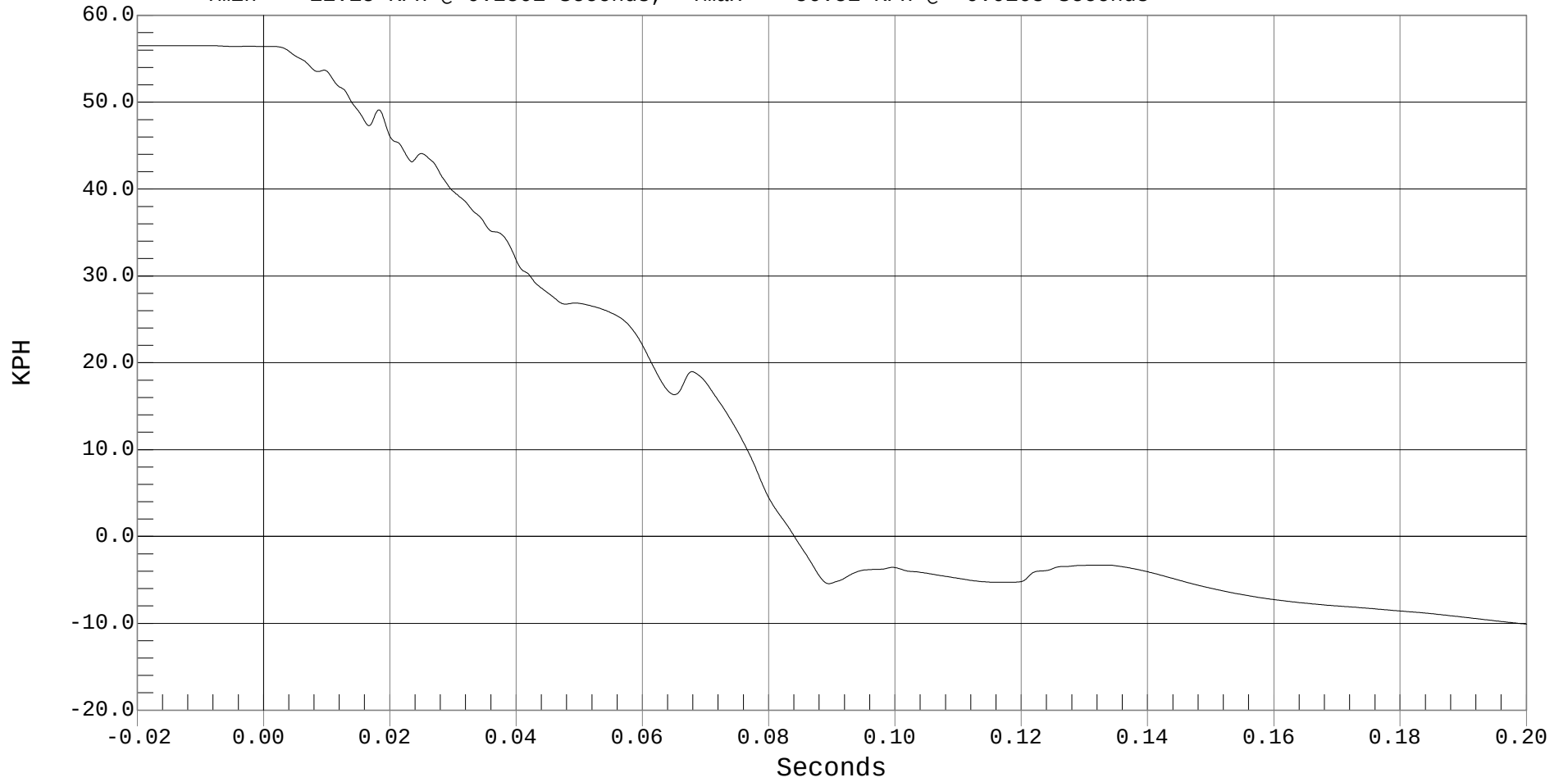
# LEFT REAR SEAT CROSSMEMBER REDUNDANT X VELOCITY

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 180

— 1 LEFT REAR SEAT CROSSMEMBER REDUNDANT X VELOCITY, C01006AI.V03

Ymin = -11.15 KPH @ 0.2501 Seconds, Ymax = 56.51 KPH @ -0.0163 Seconds







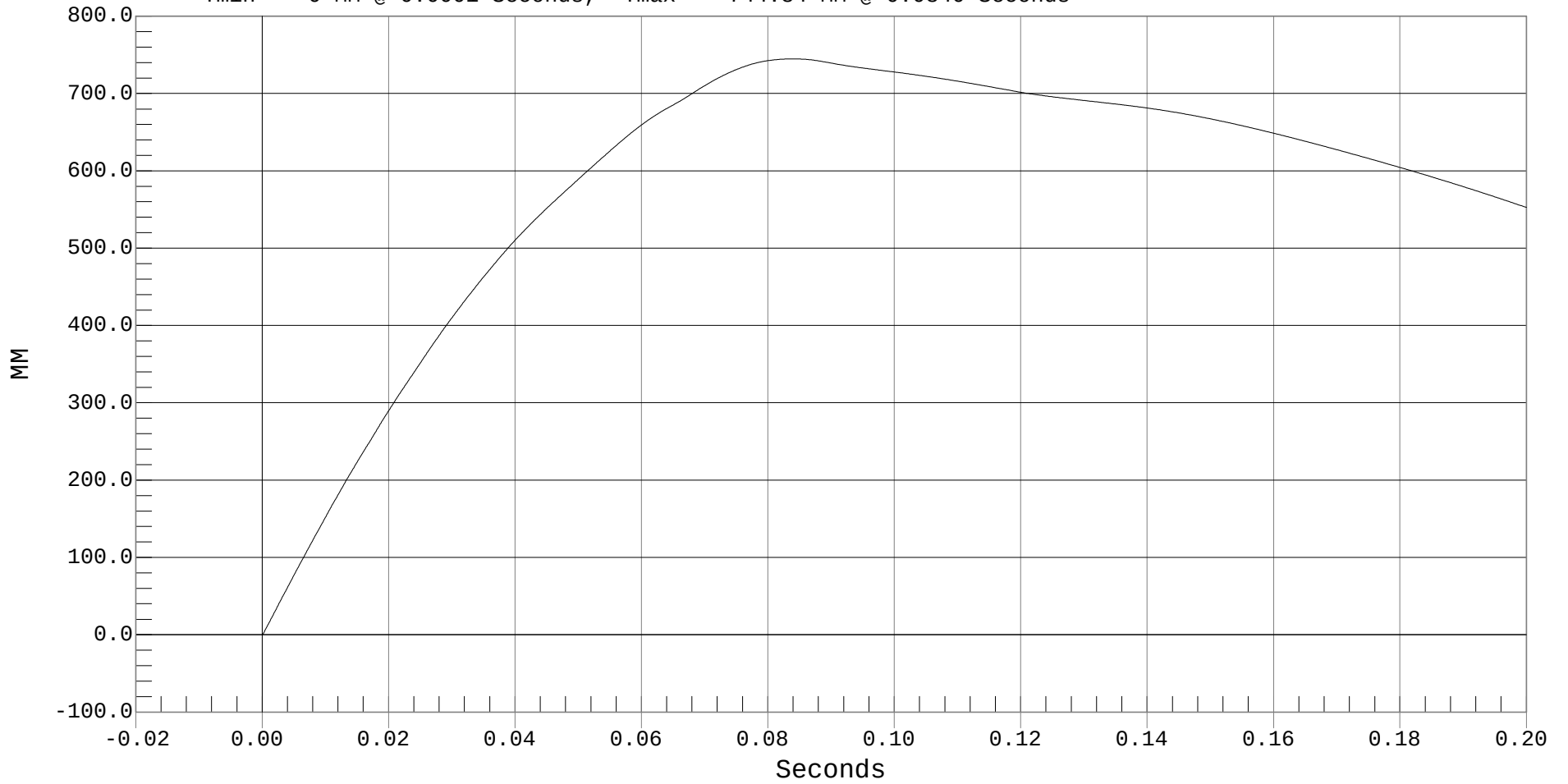
# LEFT REAR SEAT CROSSMEMBER REDUNDANT X DISPLACEMENT

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 180

— 1 LEFT REAR SEAT CROSSMEMBER REDUNDANT X DISPLACEMENT, C01006AI.D03

Ymin = 0 MM @ 0.0001 Seconds, Ymax = 744.84 MM @ 0.0840 Seconds





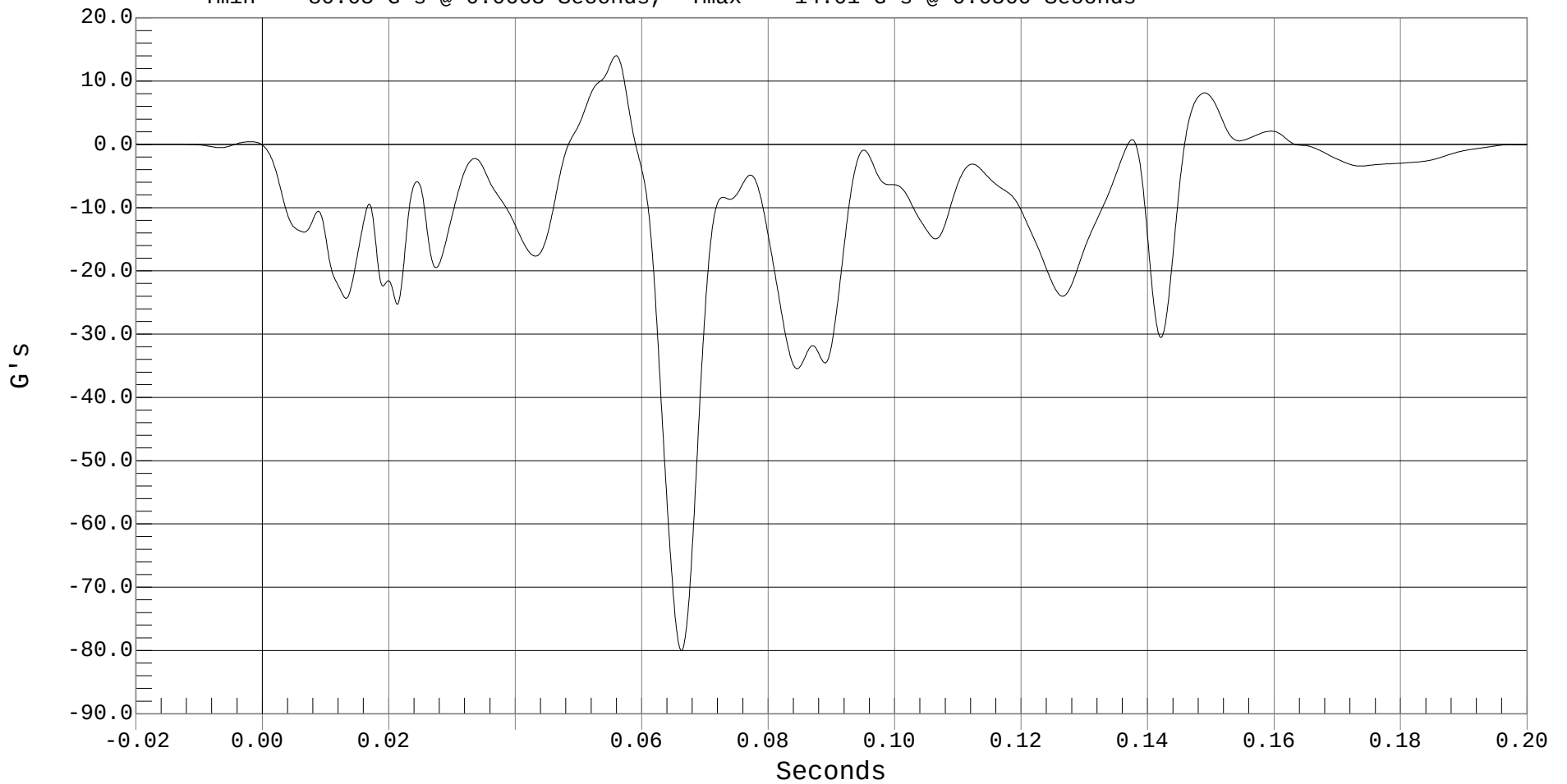
# RIGHT REAR SEAT CROSSMEMBER REDUNDANT X ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 60

— 1 RIGHT REAR SEAT X-MEMBER Xr, C01006AF.A02

Ymin = -80.05 G's @ 0.0663 Seconds, Ymax = 14.01 G's @ 0.0560 Seconds





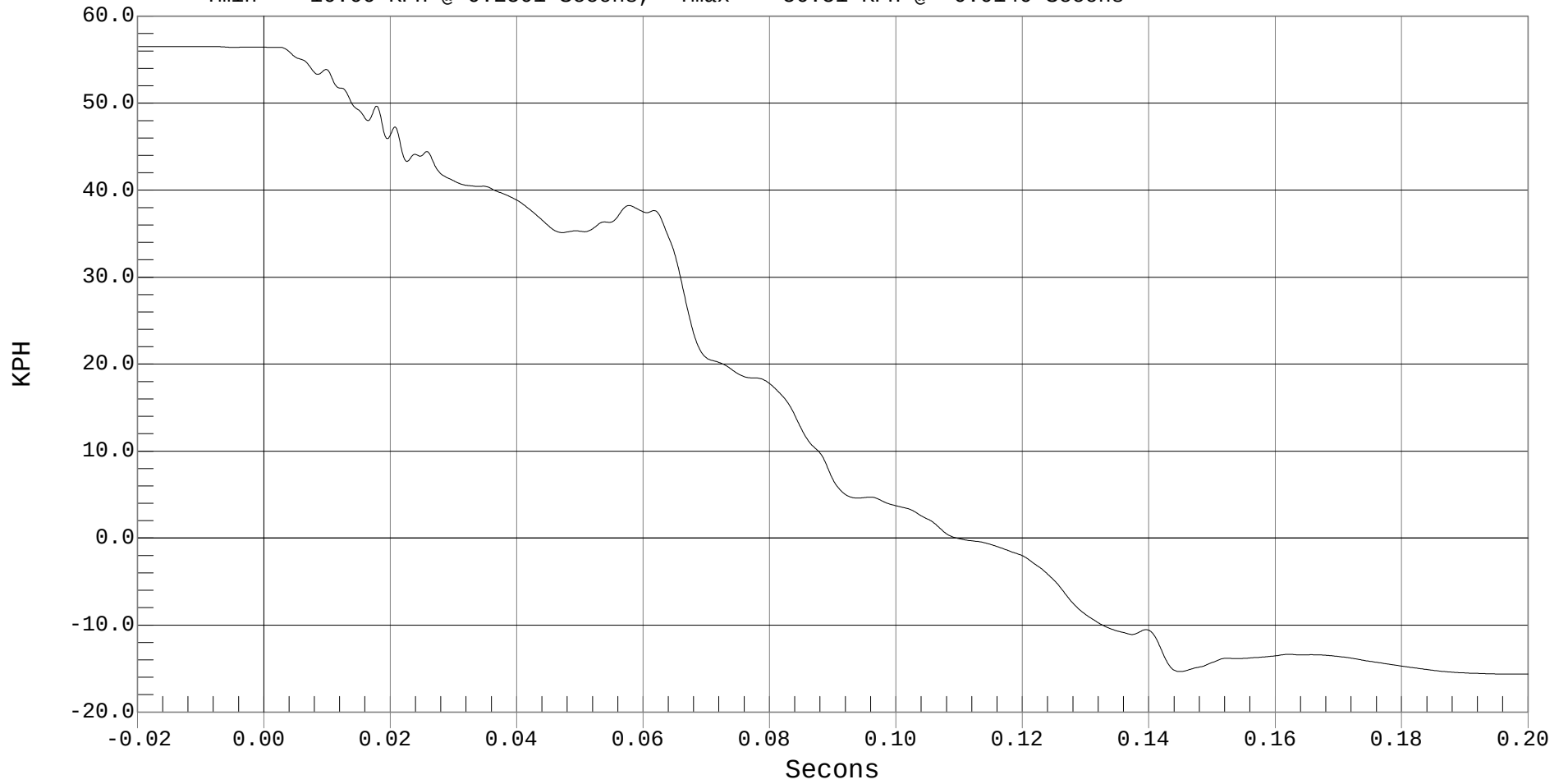
# RIGHT REAR SEAT CROSSMEMBER REDUNDANT X VELOCITY

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 180

— 1 RIGHT REAR SEAT CROSSMEMBER REDUNDANT X VELOCITY, C01006AI.V02

Ymin = -16.66 KPH @ 0.2501 Secons, Ymax = 56.51 KPH @ -0.0140 Secons





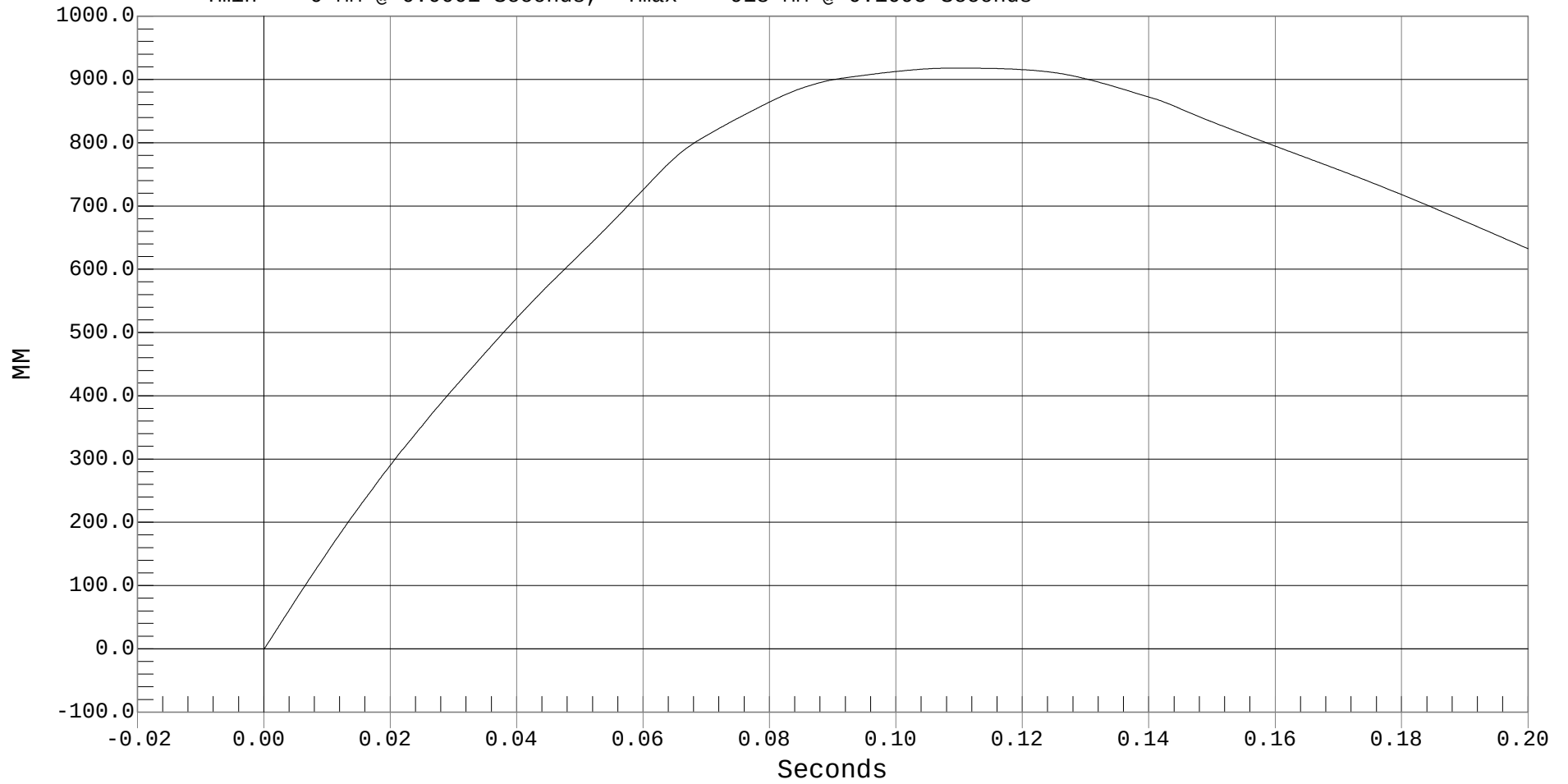
# RIGHT REAR SEAT CROSSMEMBER REDUNDANT X DISPLACEMENT

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 180

— 1 RIGHT REAR SEAT CROSSMEMBER REDUNDANT X DISPLACEMENT, C01006AI.D02

Ymin = 0 MM @ 0.0001 Seconds, Ymax = 918 MM @ 0.1095 Seconds





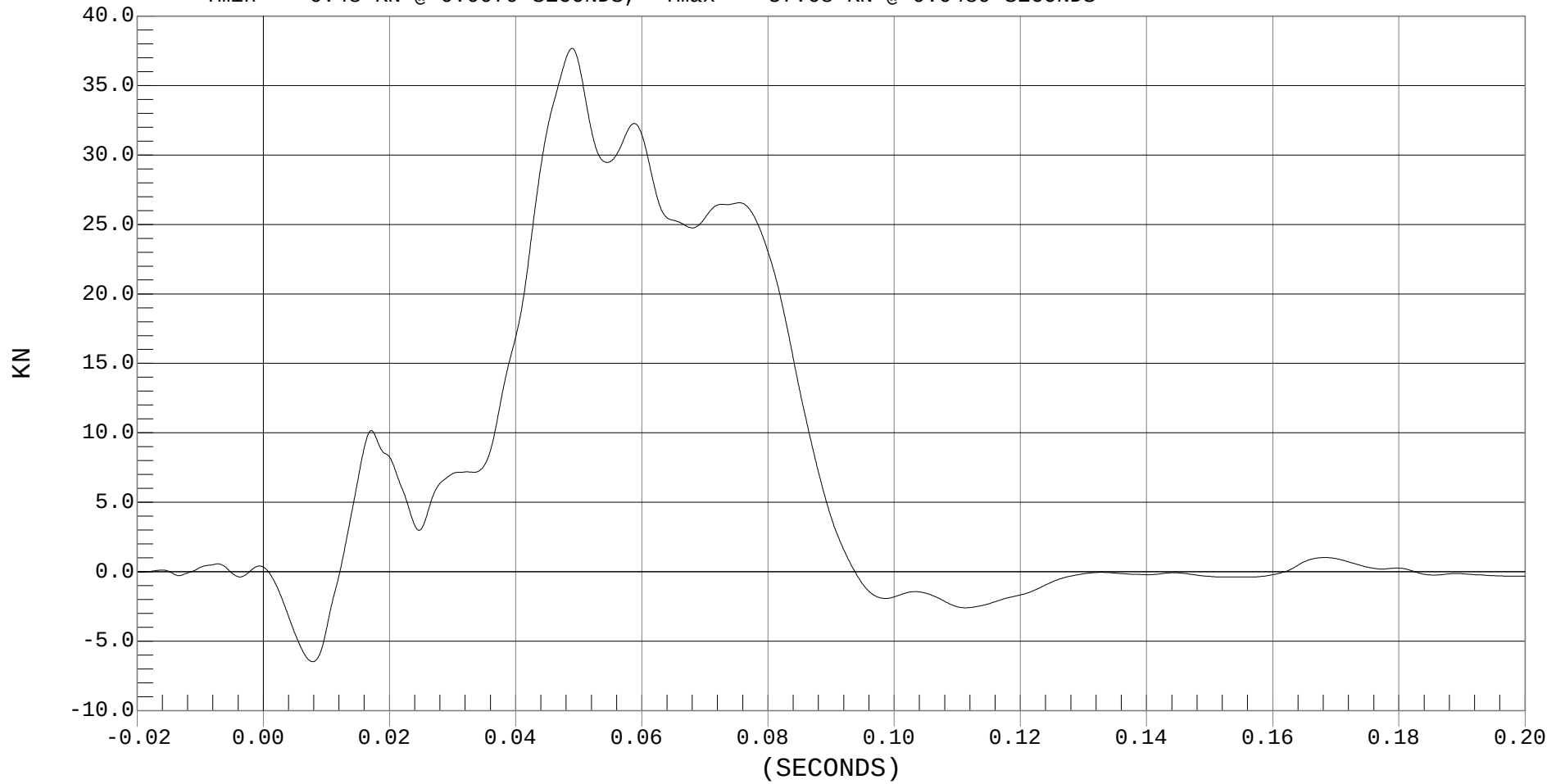
# UPPER LEFT BARRIER FORCE

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 60

— 1 BARRIER UPPER LEFT, C01006FF.F02

Ymin = -6.48 KN @ 0.0079 SECONDS, Ymax = 37.68 KN @ 0.0489 SECONDS





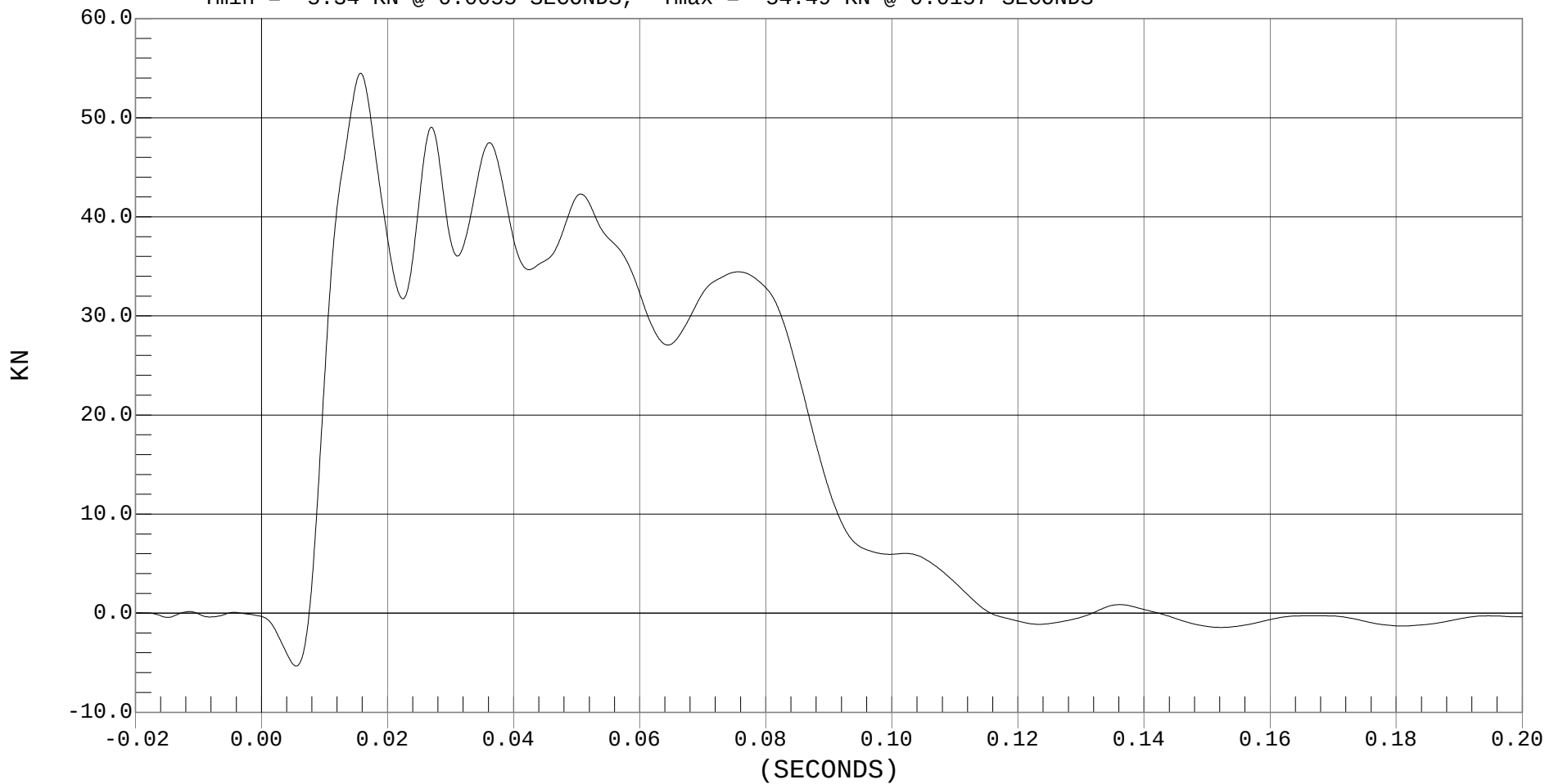
# UPPER CENTER BARRIER FORCE

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 60

— 1 BARRIER UPPER CENTER, C01006FF.F03

Ymin = -5.34 KN @ 0.0055 SECONDS, Ymax = 54.49 KN @ 0.0157 SECONDS







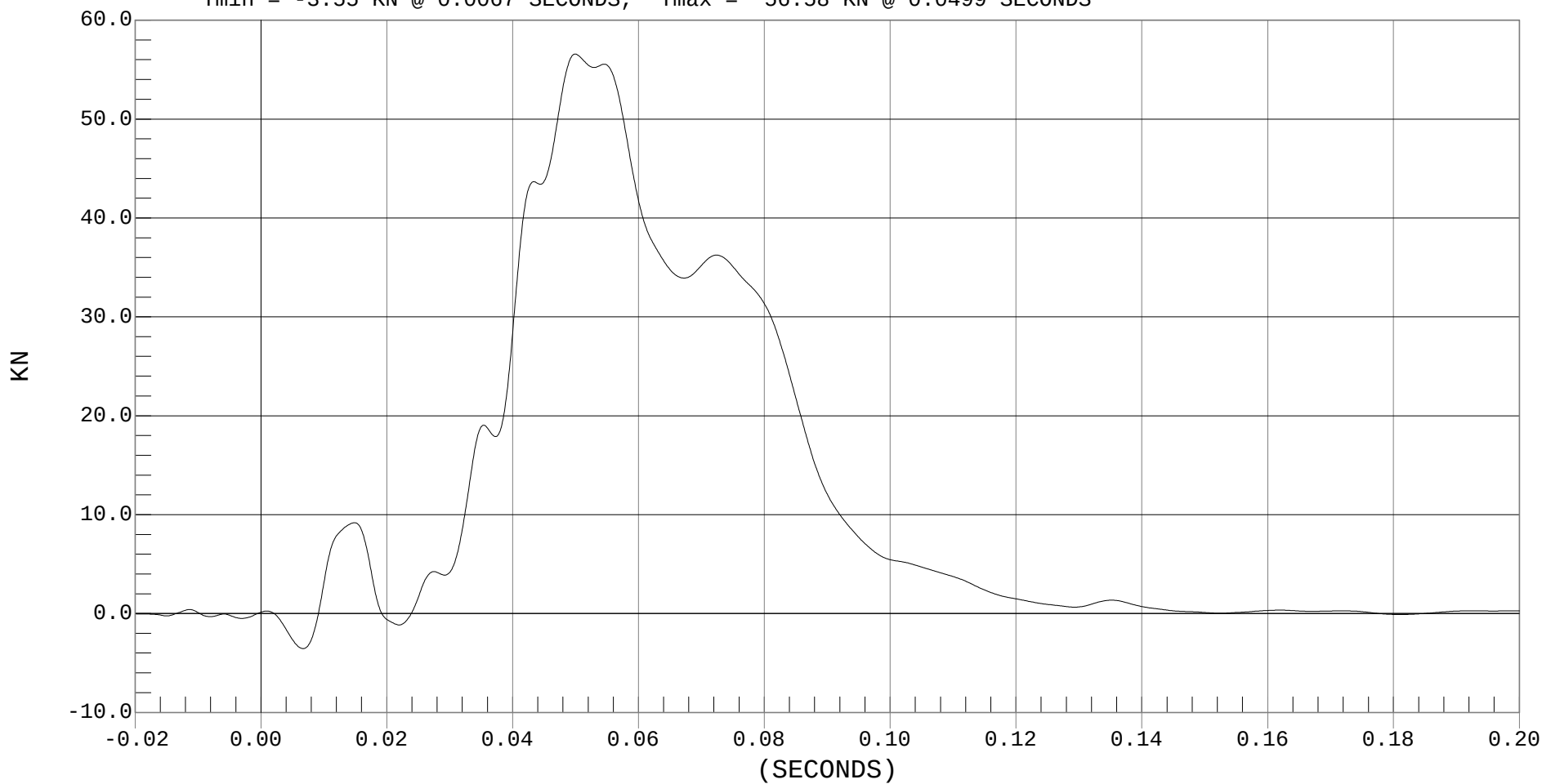
# UPPER RIGHT BARRIER FORCE

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 60

— 1 BARRIER UPPER RIGHT, C01006FF.F04

Ymin = -3.55 KN @ 0.0067 SECONDS, Ymax = 56.58 KN @ 0.0499 SECONDS





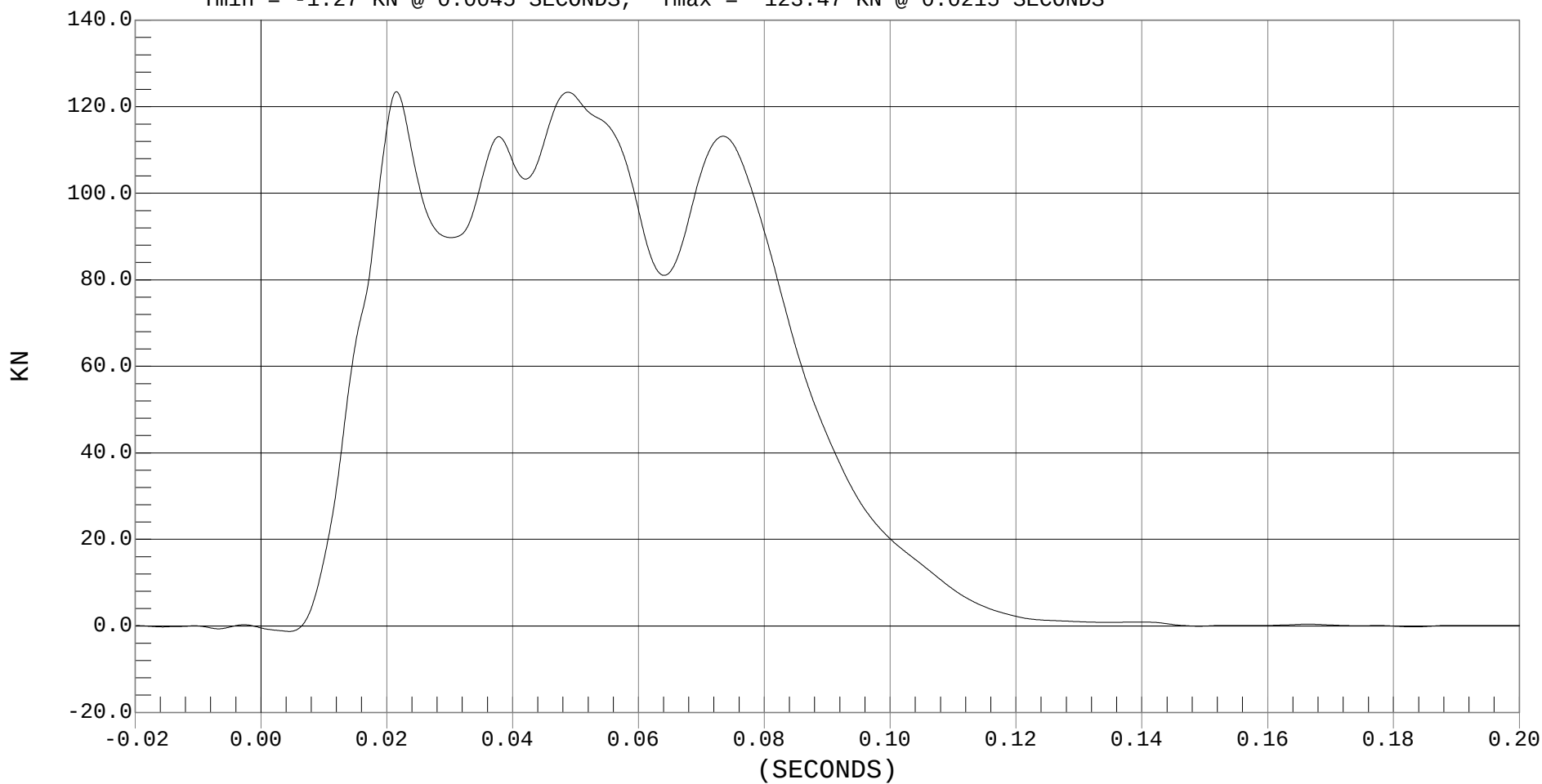
# LOWER LEFT BARRIER FORCE

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 60

— 1 BARRIER LOWER LEFT, C01006FF.F05

Ymin = -1.27 KN @ 0.0045 SECONDS, Ymax = 123.47 KN @ 0.0215 SECONDS





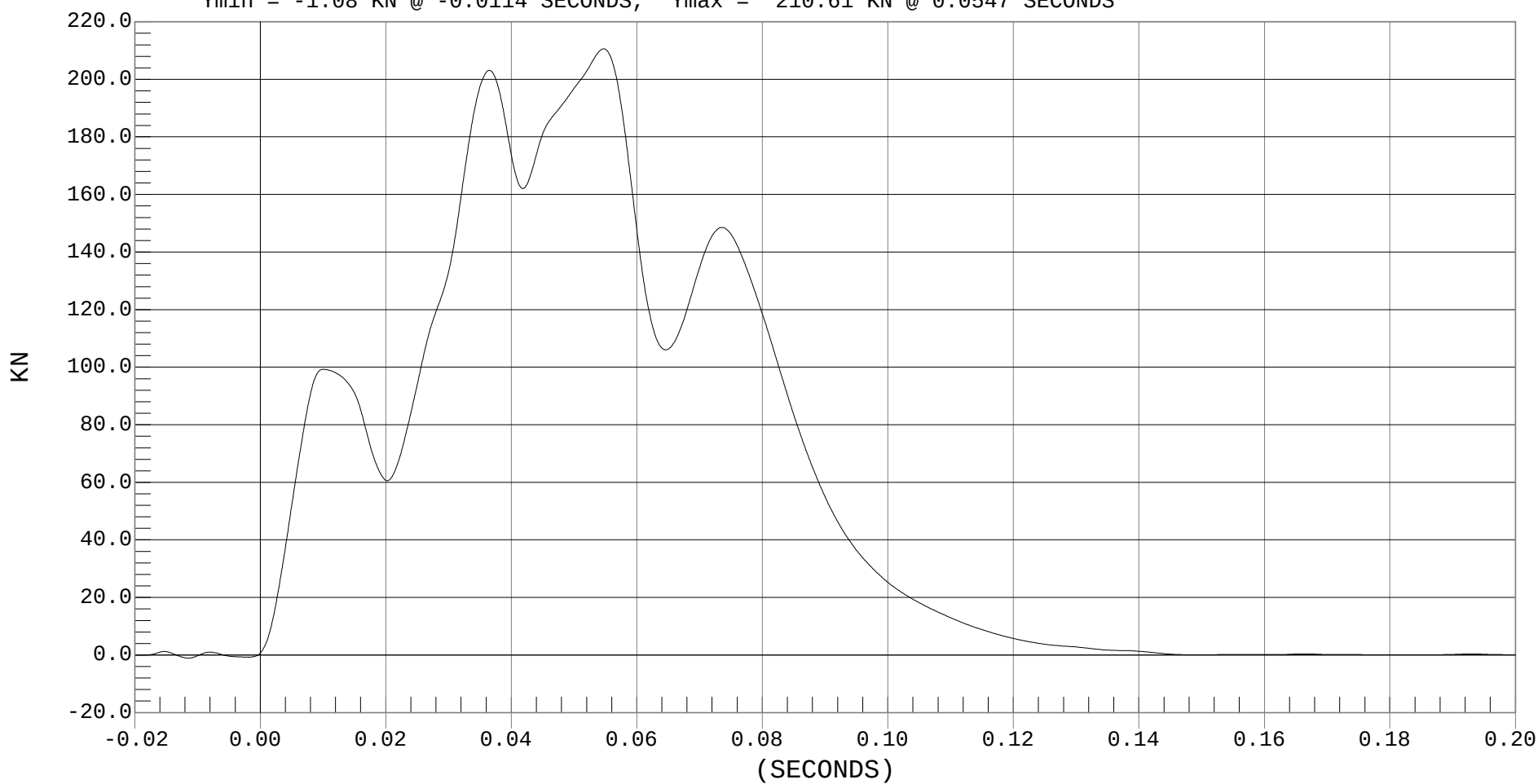
## LOWER CENTER BARRIER FORCE

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 60

— 1 BARRIER LOWER CENTER, C01006FF.F06

Ymin = -1.08 KN @ -0.0114 SECONDS, Ymax = 210.61 KN @ 0.0547 SECONDS





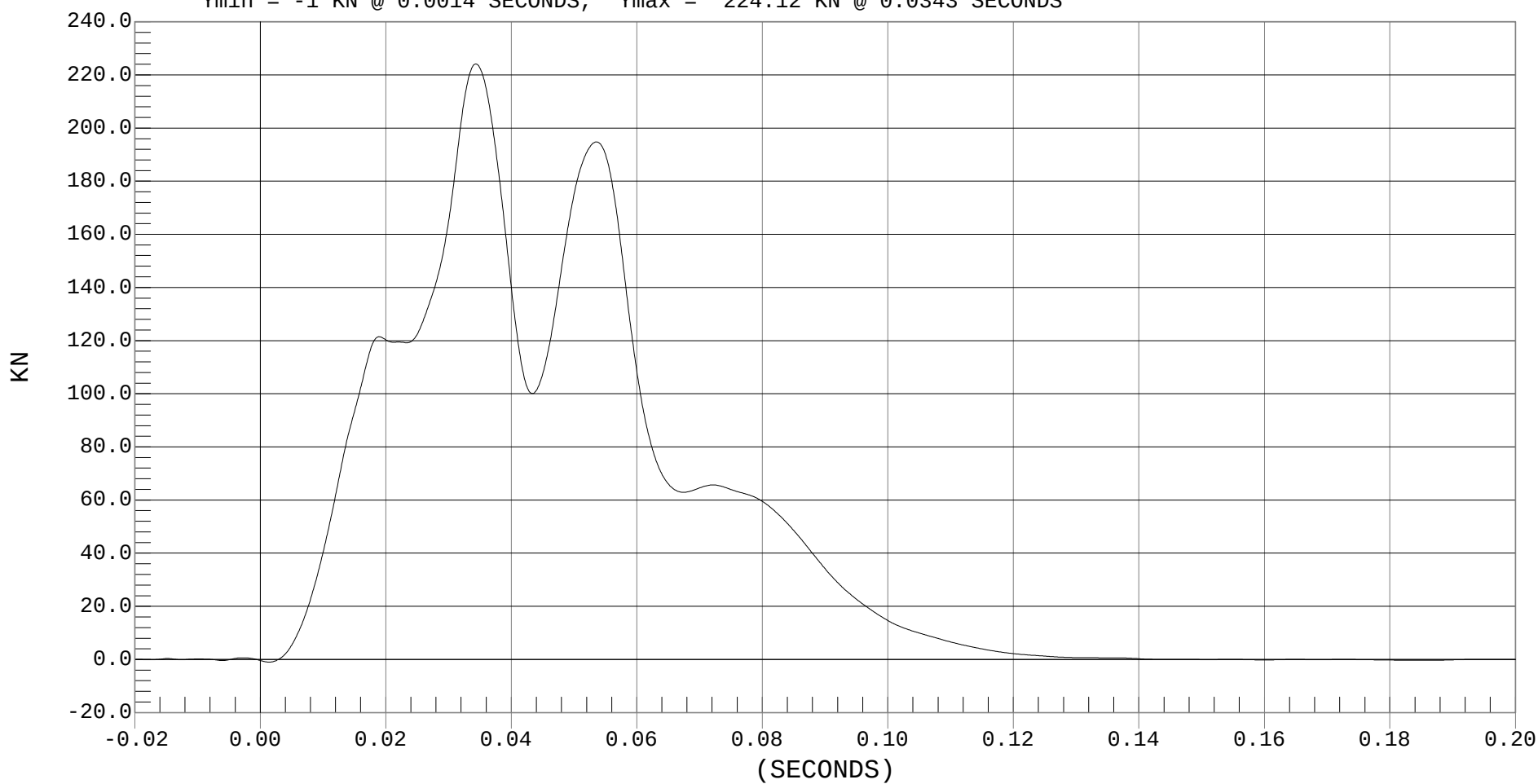
# LOWER RIGHT BARRIER FORCE

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 60

— 1 BARRIER LOWER RIGHT, C01006FF.F07

Ymin = -1 KN @ 0.0014 SECONDS, Ymax = 224.12 KN @ 0.0343 SECONDS





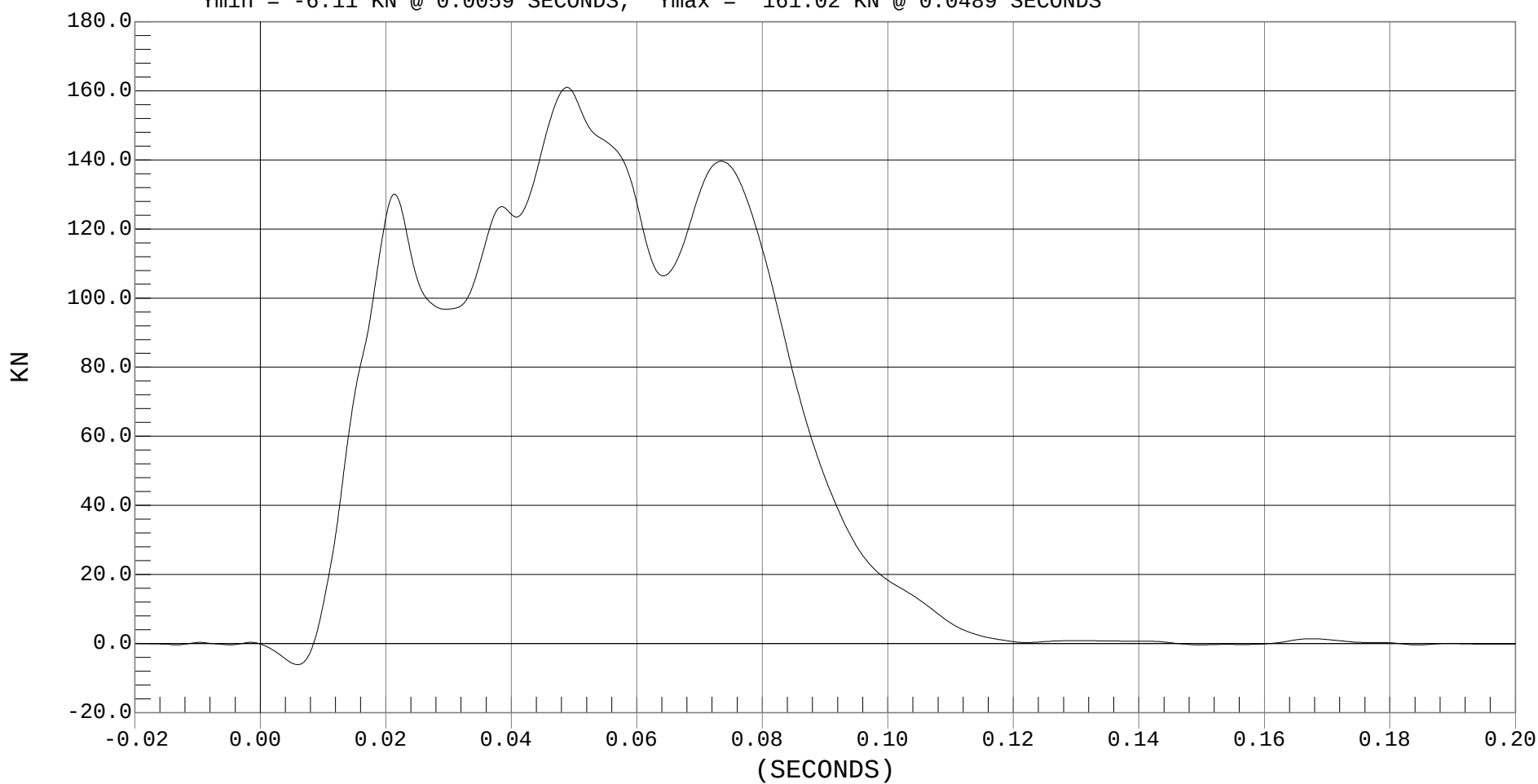
## SUM OF LEFT BARRIER FORCES

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 60

— 1 SUM OF LEFT BARRIER FORCES, C01006FU.F02

Ymin = -6.11 KN @ 0.0059 SECONDS, Ymax = 161.02 KN @ 0.0489 SECONDS





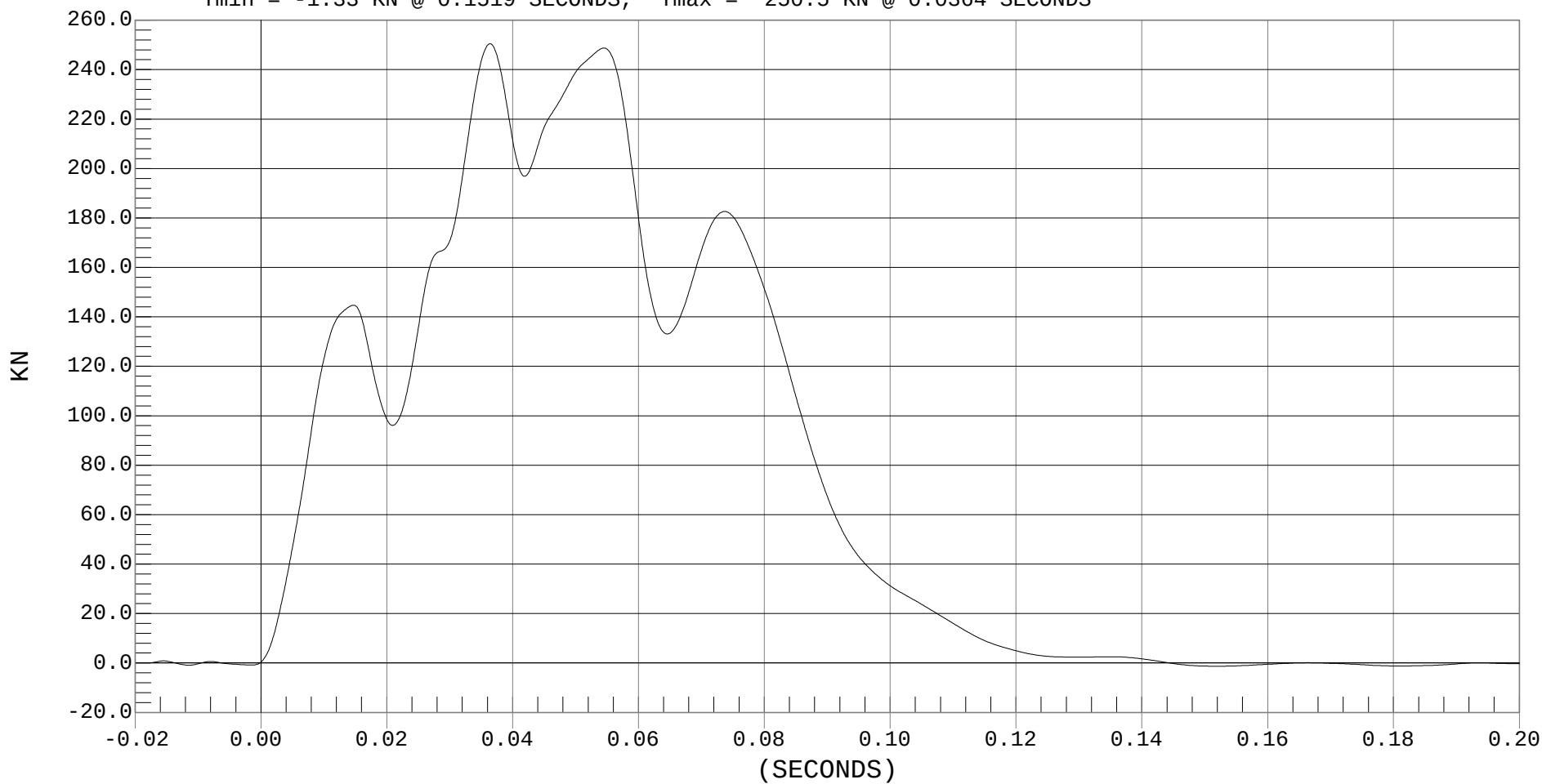
# SUM OF CENTER BARRIER FORCES

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 60

— 1 SUM OF CENTER BARRIER FORCES, C01006FU.F03

Ymin = -1.33 KN @ 0.1519 SECONDS, Ymax = 250.5 KN @ 0.0364 SECONDS







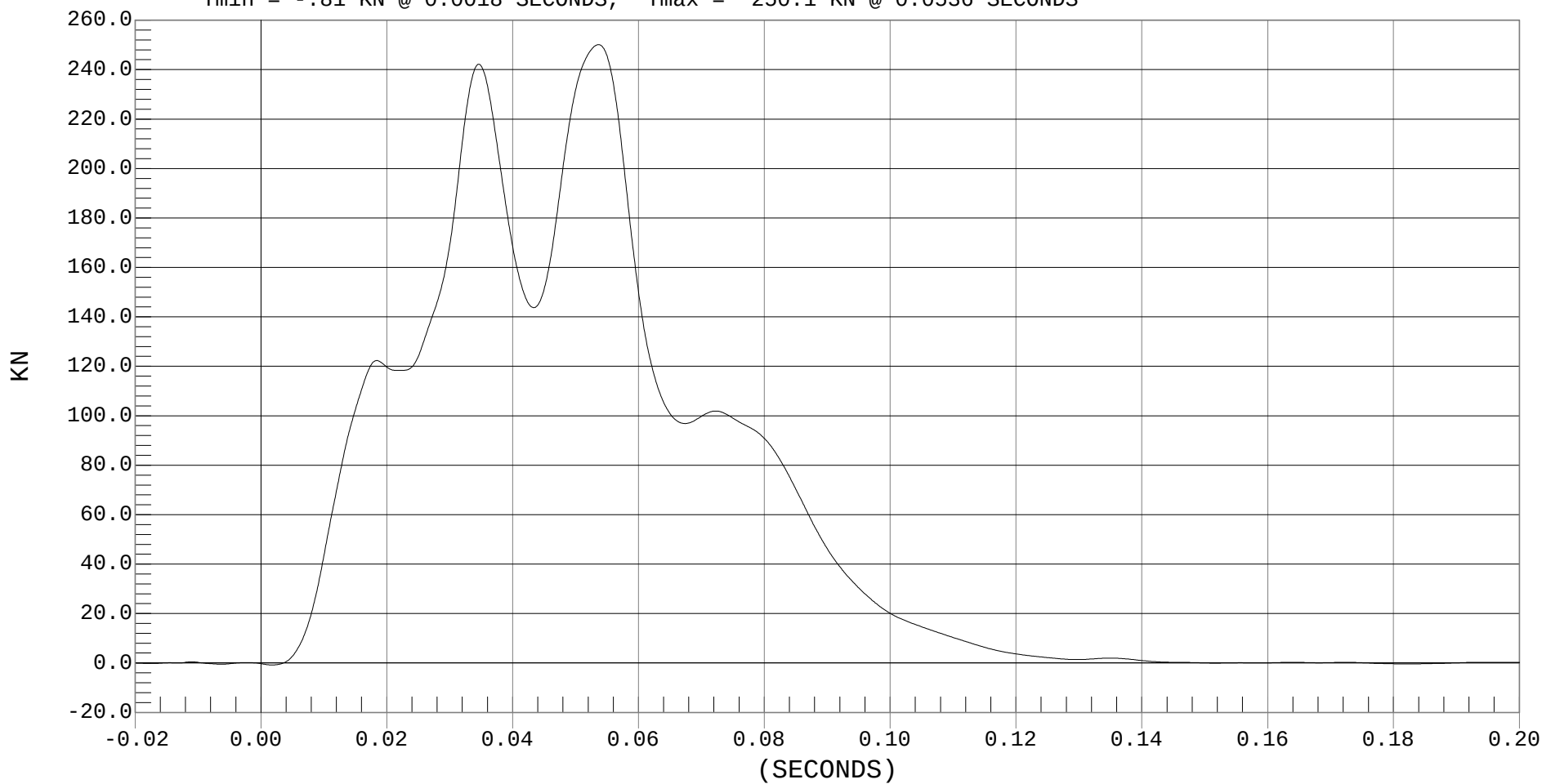
# SUM OF RIGHT BARRIER FORCES

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 60

— 1 SUM OF RIGHT BARRIER FORCES, C01006FU.F04

Ymin = -.81 KN @ 0.0018 SECONDS, Ymax = 250.1 KN @ 0.0536 SECONDS





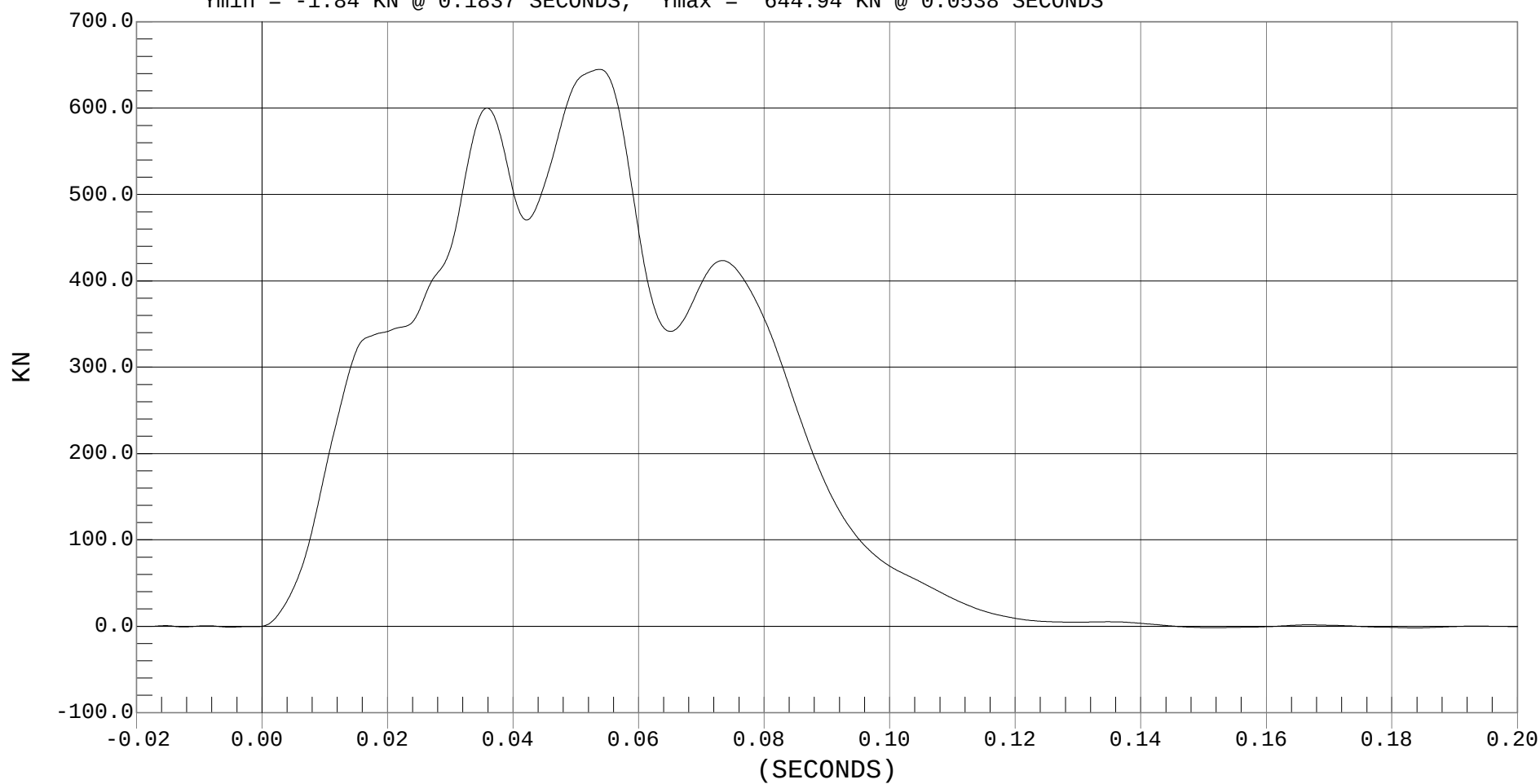
## SUM OF BARRIER FORCES

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 60

— 1 SUM OF BARRIER FORCES, C01006FU.F05

Ymin = -1.84 KN @ 0.1837 SECONDS, Ymax = 644.94 KN @ 0.0538 SECONDS



## **APPENDIX C**

### **DUMMY CALIBRATION DATA TRACES AND TABLES**

**Hybrid III Calibration Data Sheet**  
**50<sup>th</sup> Percentile Male**  
**Left Knee Impact Test**

ATD Serial No.: 192

Test I.D.: D001426

| Tested Parameter             | Units   | Specification | Result | Pass/Fail |
|------------------------------|---------|---------------|--------|-----------|
| Laboratory Temperature       | °C      | 18.9 to 25.5  | 21.1°  | PASS      |
| Laboratory Relative Humidity | %       | 10 to 70      | 45%    | PASS      |
| Probe Velocity               | m/s     | 2.07 to 2.13  | 2.09   | PASS      |
| Peak Probe Force             | Newtons | 4715 to 5782  | 4819   | PASS      |
| Overall Test Results         |         |               |        | PASS      |

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

\_\_\_\_\_  
11/7/00

Test Date

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



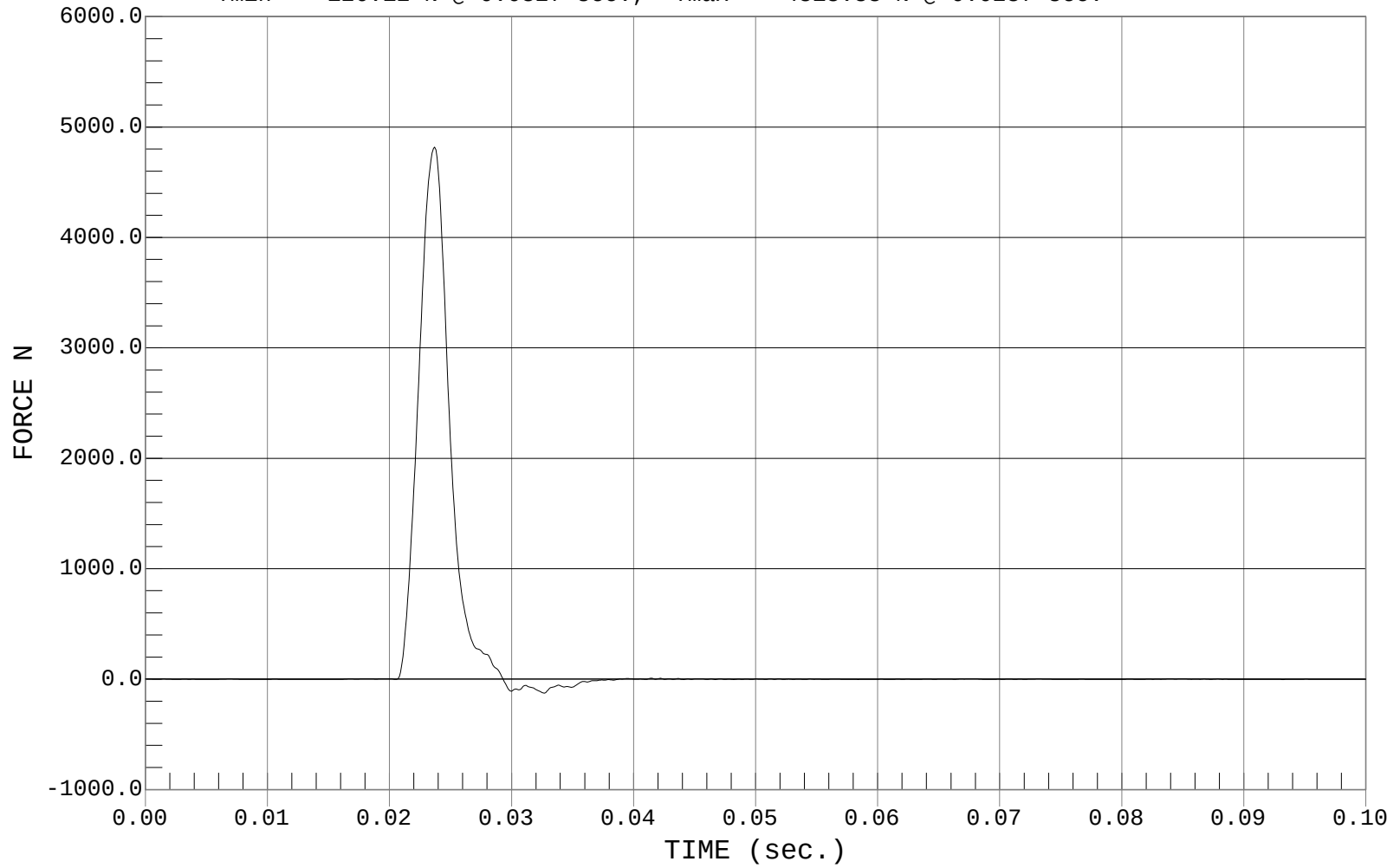
# LEFT KNEE IMPACT

Test Desc.: Dummy Calibration - Left Knee Impact  
Component: Dummy #192

Test Date: 11-07-00  
Speed: 6.84 FT/SEC, 2.09 M/SEC

1 FORCE, D00426FF.F09

Ymin = -126.12 N @ 0.0327 sec., Ymax = 4818.83 N @ 0.0237 sec.



**Hybrid III Calibration Data Sheet**  
**50<sup>th</sup> Percentile Male**  
**Right Knee Impact Test**

ATD Serial No.: 192

Test I.D.: D001425

| Tested Parameter             | Units   | Specification | Result | Pass/Fail |
|------------------------------|---------|---------------|--------|-----------|
| Laboratory Temperature       | °C      | 18.9 to 25.5  | 21.1°  | PASS      |
| Laboratory Relative Humidity | %       | 10 to 70      | 45%    | PASS      |
| Probe Velocity               | m/s     | 2.07 to 2.13  | 2.10   | PASS      |
| Peak Probe Force             | Newtons | 4715 to 5782  | 4730   | PASS      |
| Overall Test Results         |         |               |        | PASS      |

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

\_\_\_\_\_  
11/7/00

Test Date

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





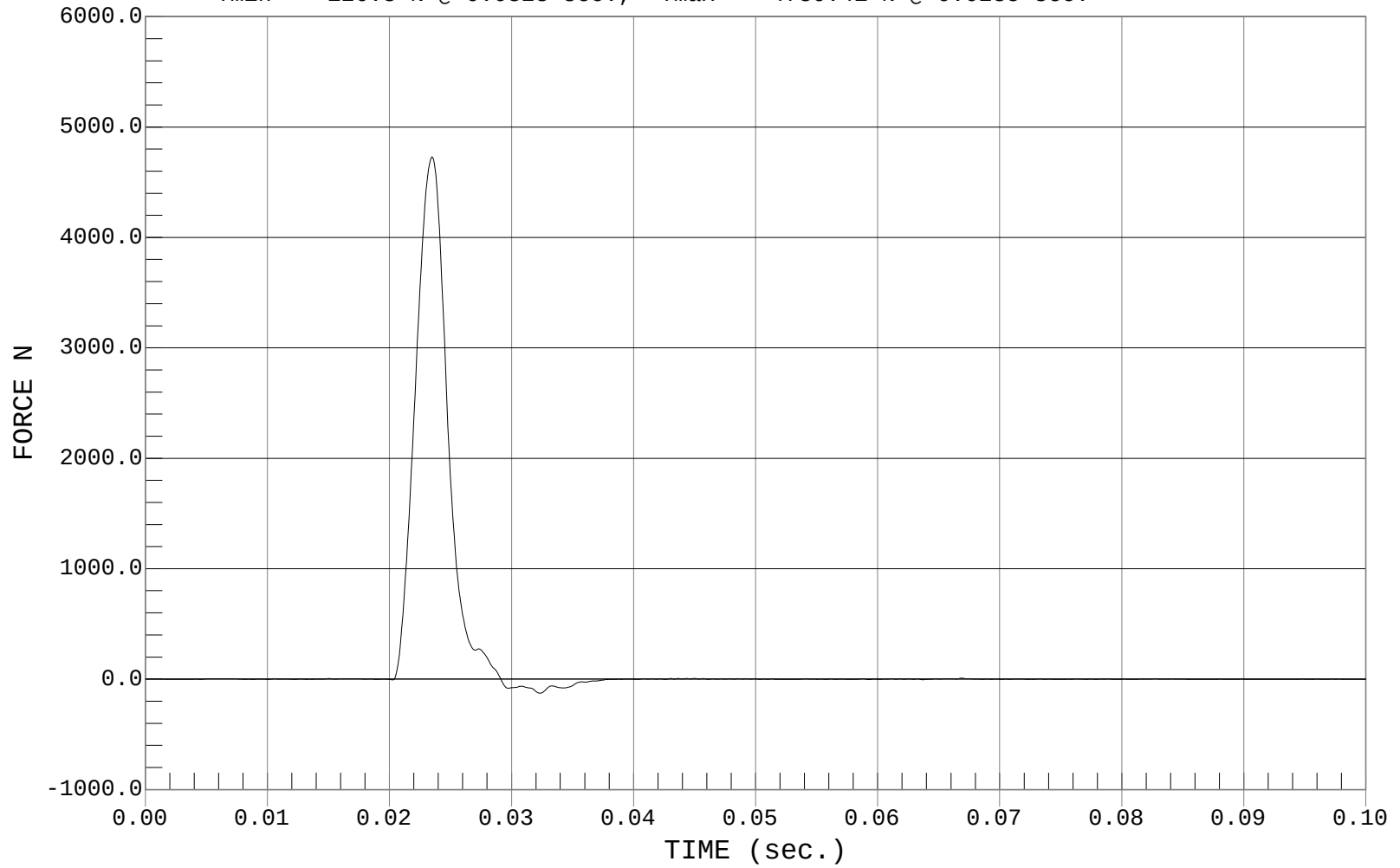
# RIGHT KNEE IMPACT

Test Desc.: Dummy Calibration - Right Knee Impact  
Component: Dummy #192

Test Date: 11-07-00  
Speed: 6.88 FT/SEC, 2.10 M/SEC

1 FORCE, D00425FF.F09

Ymin = -126.8 N @ 0.0323 sec., Ymax = 4730.41 N @ 0.0235 sec.



**Hybrid III Calibration Data Sheet**  
**50<sup>th</sup> Percentile Male**  
**Head Drop Calibration**

ATD Serial No.: 192

Test I.D.: D001421

| Tested Parameter             | Units  | Specification  | Result | Pass/Fail |
|------------------------------|--------|----------------|--------|-----------|
| Laboratory Temperature       | °C     | 18.9 to 25.5   | 21.1°  | PASS      |
| Laboratory Relative Humidity | %      | 10 to 70       | 33%    | PASS      |
| Peak Resultant Acceleration  | G's    | 225.0 to 275.0 | 255.5  | PASS      |
| Peak Probe Force             | G's    | ≤ ±15.0        | -6.1   | PASS      |
| Is Acceleration Unimodal?    | Yes/No | Yes            | Yes    | PASS      |
| Overall Test Results         |        |                |        | PASS      |

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

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11/6/00  
Test Date

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Approved By



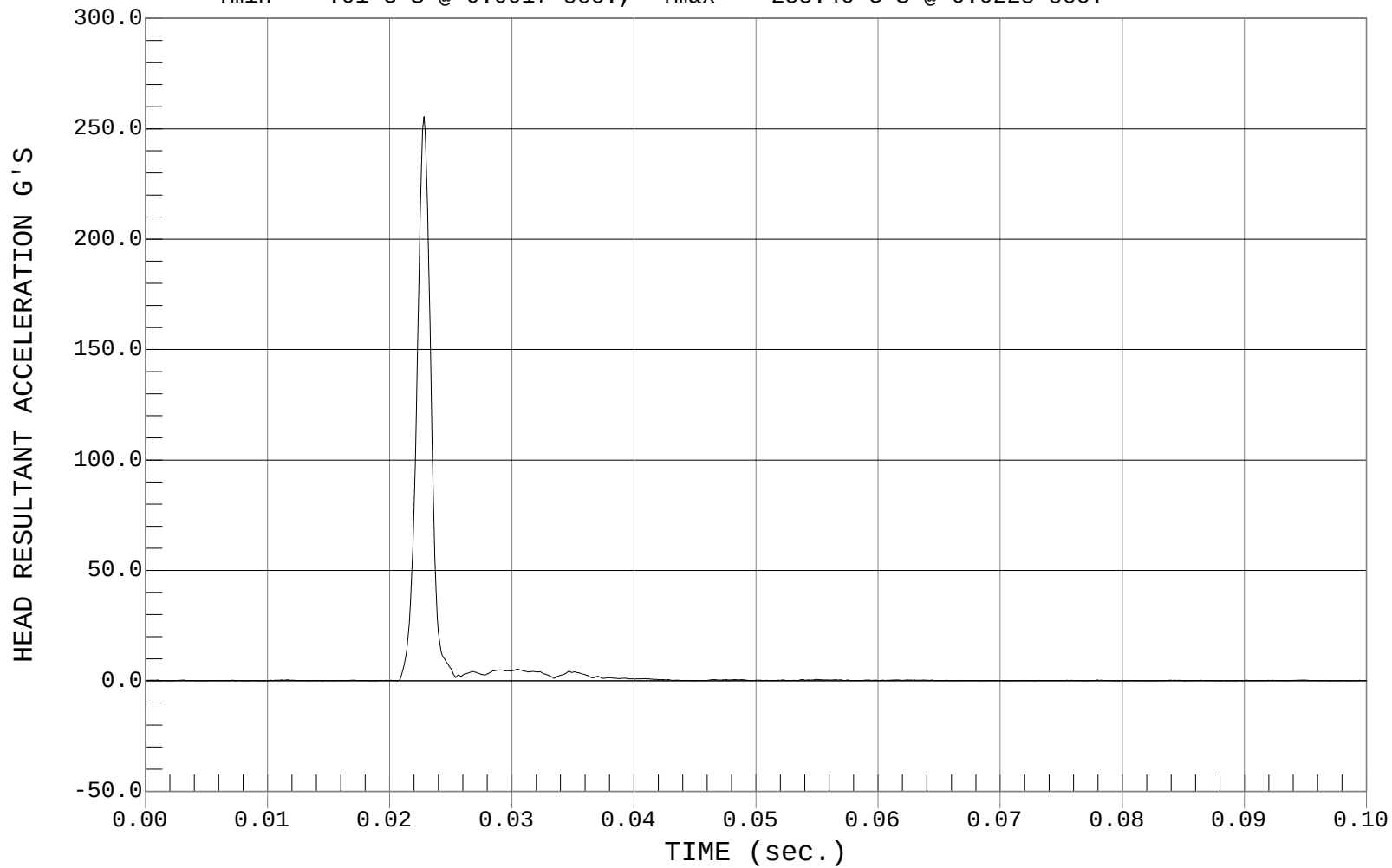
## PEAK RESULTANT ACCELERATION

Test Desc.: Dummy Calibration - Head Drop  
Component: Dummy #192

Test Date: 11-06-00  
Speed: 0.00 FT/SEC, 0.00 M/SEC

— 1 HEAD RESULTANT ACCELERATION, D00421AV.A01

Ymin = .01 G'S @ 0.0017 sec., Ymax = 255.46 G'S @ 0.0228 sec.





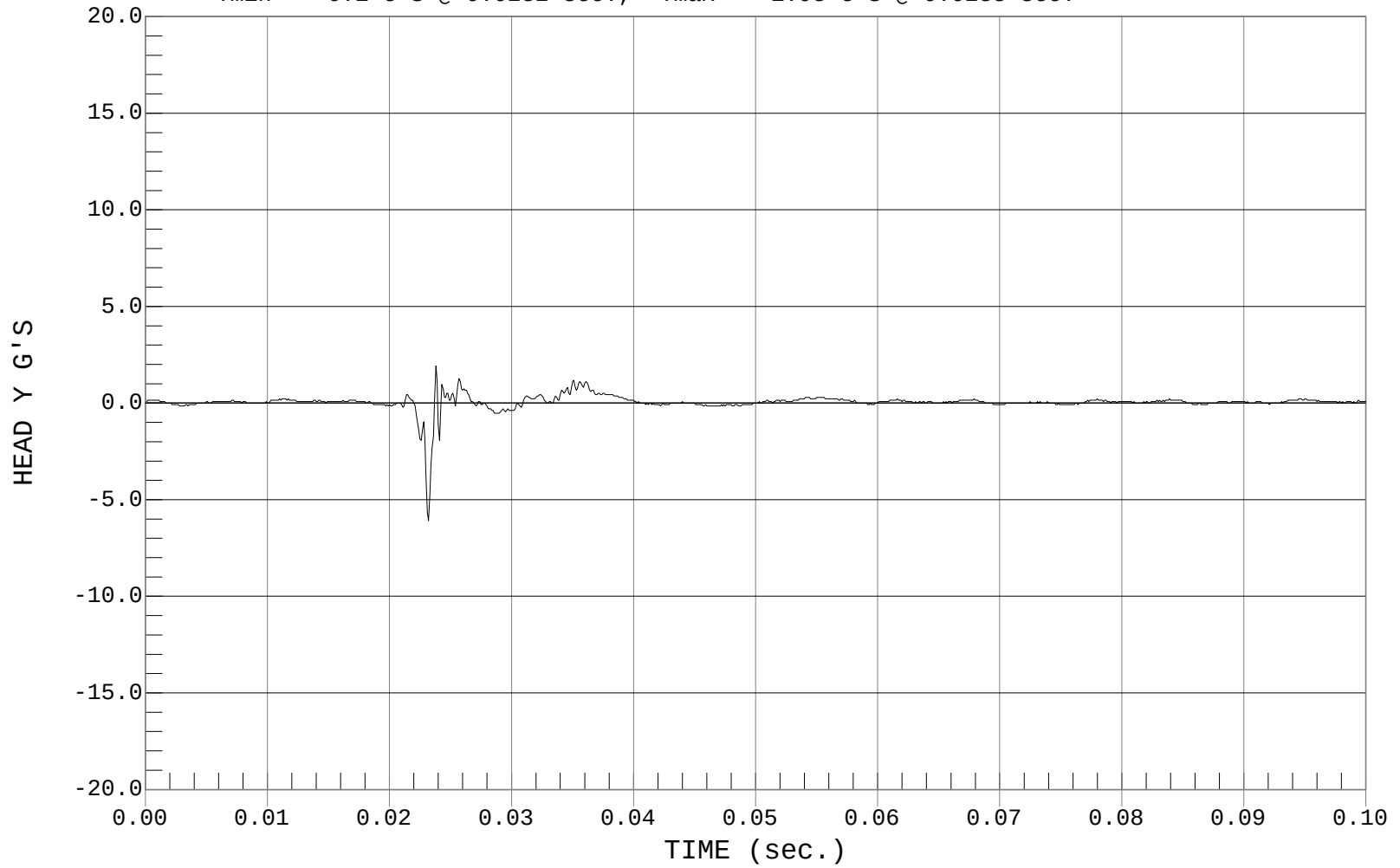
# PEAK LATERAL ACCELARATION

Test Desc.: Dummy Calibration - Head Drop  
Component: Dummy #192

Test Date: 11-06-00  
Speed: 0.00 FT/SEC, 0.00 M/SEC

— 1 HEAD Y, D00421AR.A02

Ymin = -6.1 G'S @ 0.0232 sec., Ymax = 1.93 G'S @ 0.0238 sec.



**Hybrid III Calibration Data Sheet**  
**50<sup>th</sup> Percentile Male**  
**Thorax Impact Test**

ATD Serial No.: 192

Test I.D.: D001424

| Tested Parameter             | Units   | Specification | Result | Pass/Fail |
|------------------------------|---------|---------------|--------|-----------|
| Laboratory Temperature       | °C      | 20.6 to 22.2  | 21.8°  | PASS      |
| Laboratory Relative Humidity | %       | 10 to 70      | 18%    | PASS      |
| Probe Velocity               | m/s     | 6.58 to 6.82  | 6.74   | PASS      |
| Peak Probe Force             | Newtons | 5159 to 5893  | 5852   | PASS      |
| Peak Sternum Displacement    | CM      | 6.35 to 7.26  | 6.47   | PASS      |
| Internal Hysteresis          | %       | 69 to 85      | 75%    | PASS      |
| Overall Test Results         |         |               |        | PASS      |

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Laboratory Technician

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12/27/00

Test Date

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Approved By



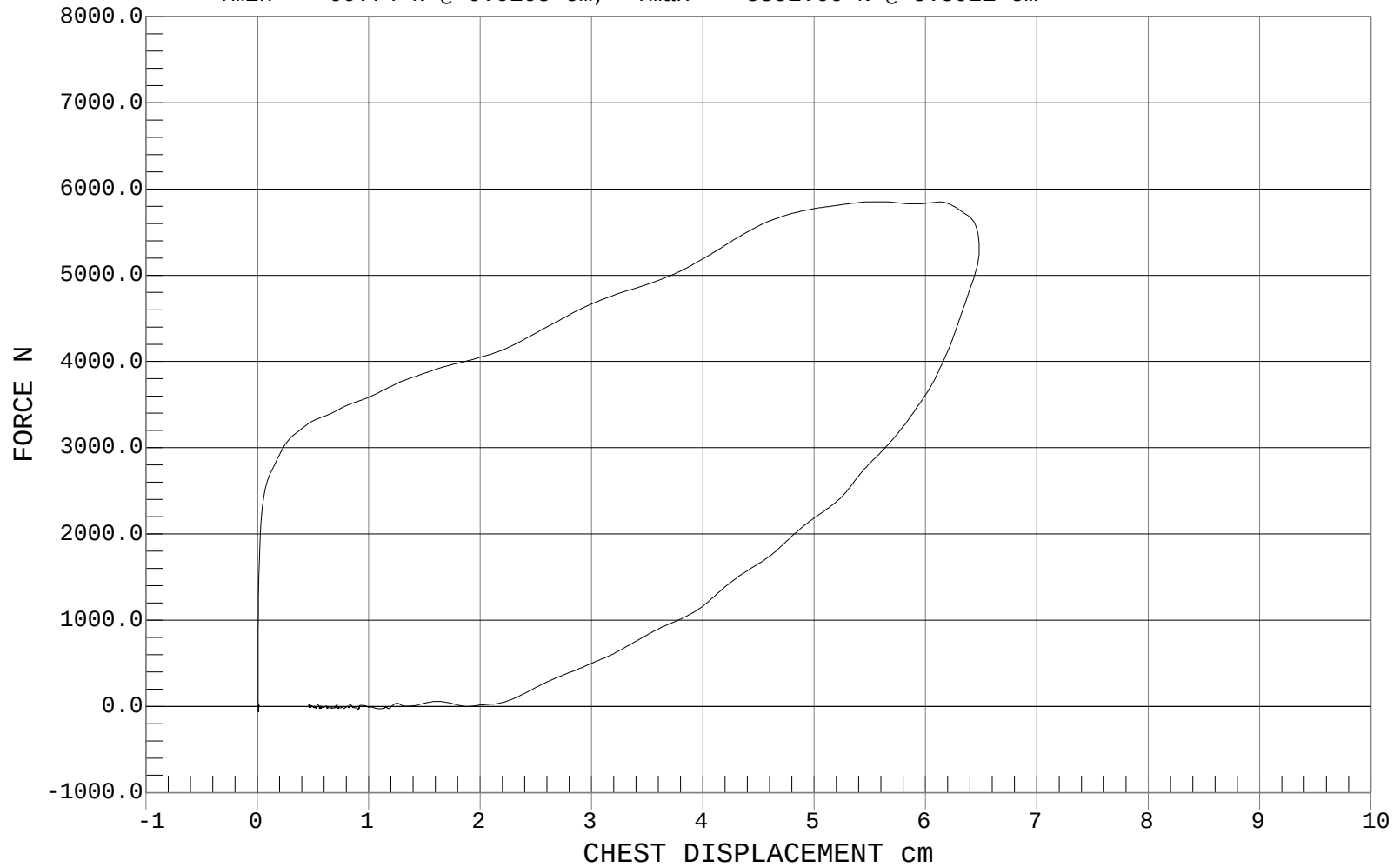
# THORAX IMPACT

Test Desc.: Dummy Calibration - Chest Impact  
Component: Dummy #192

Test Date: 12-27-00  
Speed: 22.12 FT/SEC, 6.74 M/SEC

— 1 FORCE, D00424CH.FVD

Ymin = -60.74 N @ 0.0105 cm, Ymax = 5851.66 N @ 5.5921 cm





**Hybrid III Calibration Data Sheet**  
**50<sup>th</sup> Percentile Male**  
**Neck Flexion Test**

ATD Serial No.: 192

Test I.D.: D001422

| Tested Parameter                                |          | Units   | Specification  | Result | Pass/Fail |
|-------------------------------------------------|----------|---------|----------------|--------|-----------|
| Laboratory Temperature                          |          | °C      | 20.6 to 22.2   | 21.1°  | PASS      |
| Laboratory Relative Humidity                    |          | %       | 10 to 70       | 38%    | PASS      |
| Pendulum Velocity                               |          | m/s     | 6.89 to 7.13   | 7.01   | PASS      |
| Pendulum Deceleration                           | 10 Msec. | G's     | 22.50 to 27.50 | 22.98  | PASS      |
|                                                 | 20 Msec. | G's     | 17.60 to 22.60 | 20.22  | PASS      |
|                                                 | 30 Msec. | G's     | 12.50 to 18.50 | 15.86  | PASS      |
| Peak Pendulum Decel. After 30 Msec.             |          | G's     | ≤29.0          | 15.9   | PASS      |
| Deceleration Decay, Time to Cross 5 G's         |          | Msec.   | 34.0 to 42.0   | 37.6   | PASS      |
| Maximum "D" Plane Rotation                      | Maximum  | Degrees | 64.0 to 78.0   | 71.9   | PASS      |
|                                                 | Time     | Msec.   | 57.0 to 64.0   | 57.2   | PASS      |
| "D" Plane Rotation Decay, Time To Zero Crossing |          | Msec.   | 113.0 to 128.0 | 114.0  | PASS      |
| Moment About Occipital Condyle                  | Maximum  | Nm      | 84.1 to 108.5  | 102.4  | PASS      |
|                                                 | Time     | Msec.   | 47.0 to 58.0   | 51.6   | PASS      |
| Positive Moment Decay, Time To Zero Crossing    |          | Msec.   | 97.0 to 107.0  | 97.5   | PASS      |
| Overall Test Results                            |          |         |                | PASS   |           |

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Laboratory Technician

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11/7/00  
Test Date

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Approved By



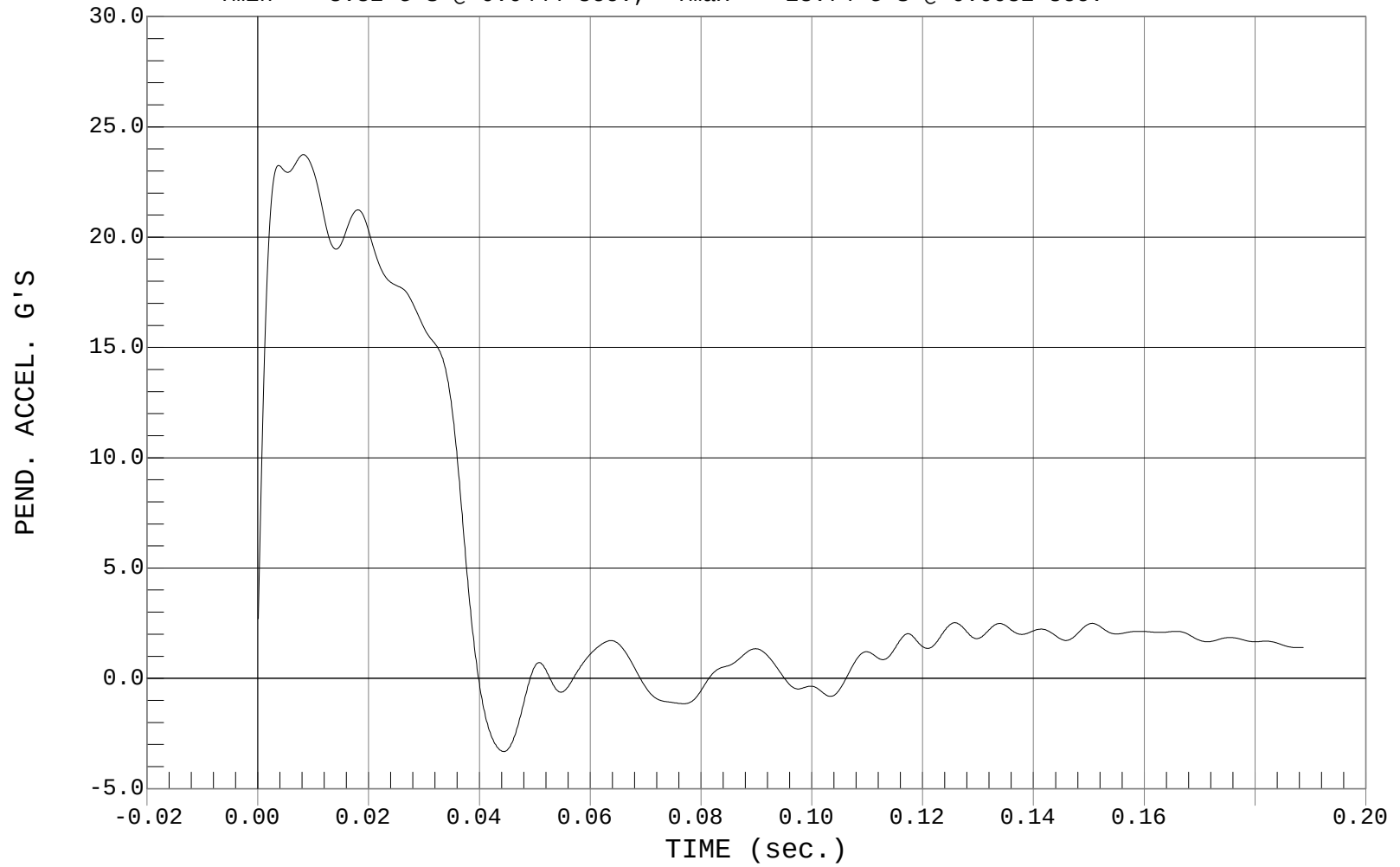
# PENDULUM DECELERATION

Test Desc.: Dummy Calibration - Neck Flexion  
Component: Dummy #192

Test Date: 11-07-00  
Speed: 22.99 FT/SEC, 7.01 M/SEC

— 1 PEND. ACCEL., D00422AF.A04

Ymin = -3.32 G'S @ 0.0444 sec., Ymax = 23.74 G'S @ 0.0082 sec.





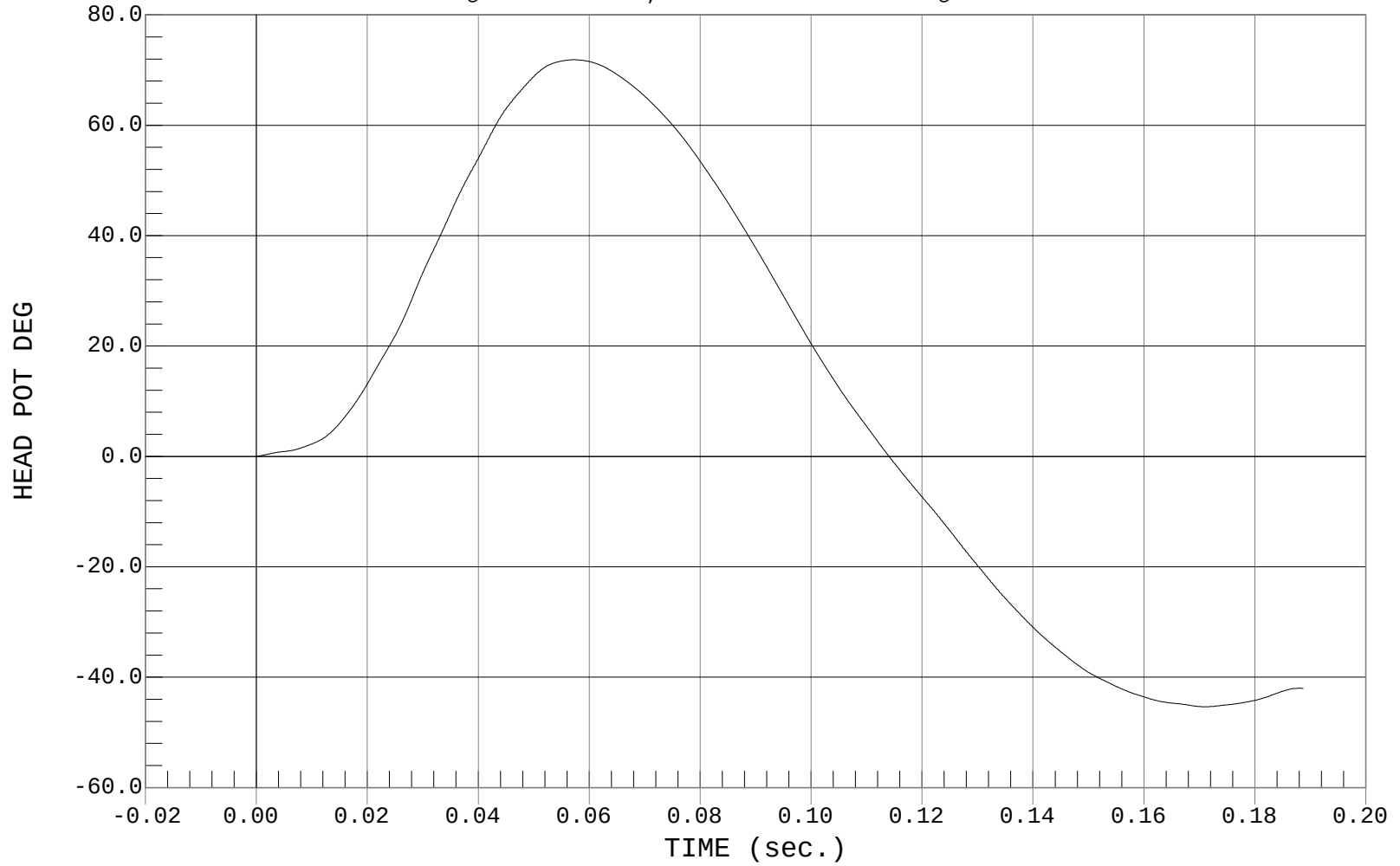
## NECK ROTATION

Test Desc.: Dummy Calibration - Neck Flexion  
Component: Dummy #192

Test Date: 11-07-00  
Speed: 22.99 FT/SEC, 7.01 M/SEC

— 1 HEAD POT, D00422DU.D05

Ymin = -45.37 DEG @ 0.1711 sec., Ymax = 71.87 DEG @ 0.0572 sec.



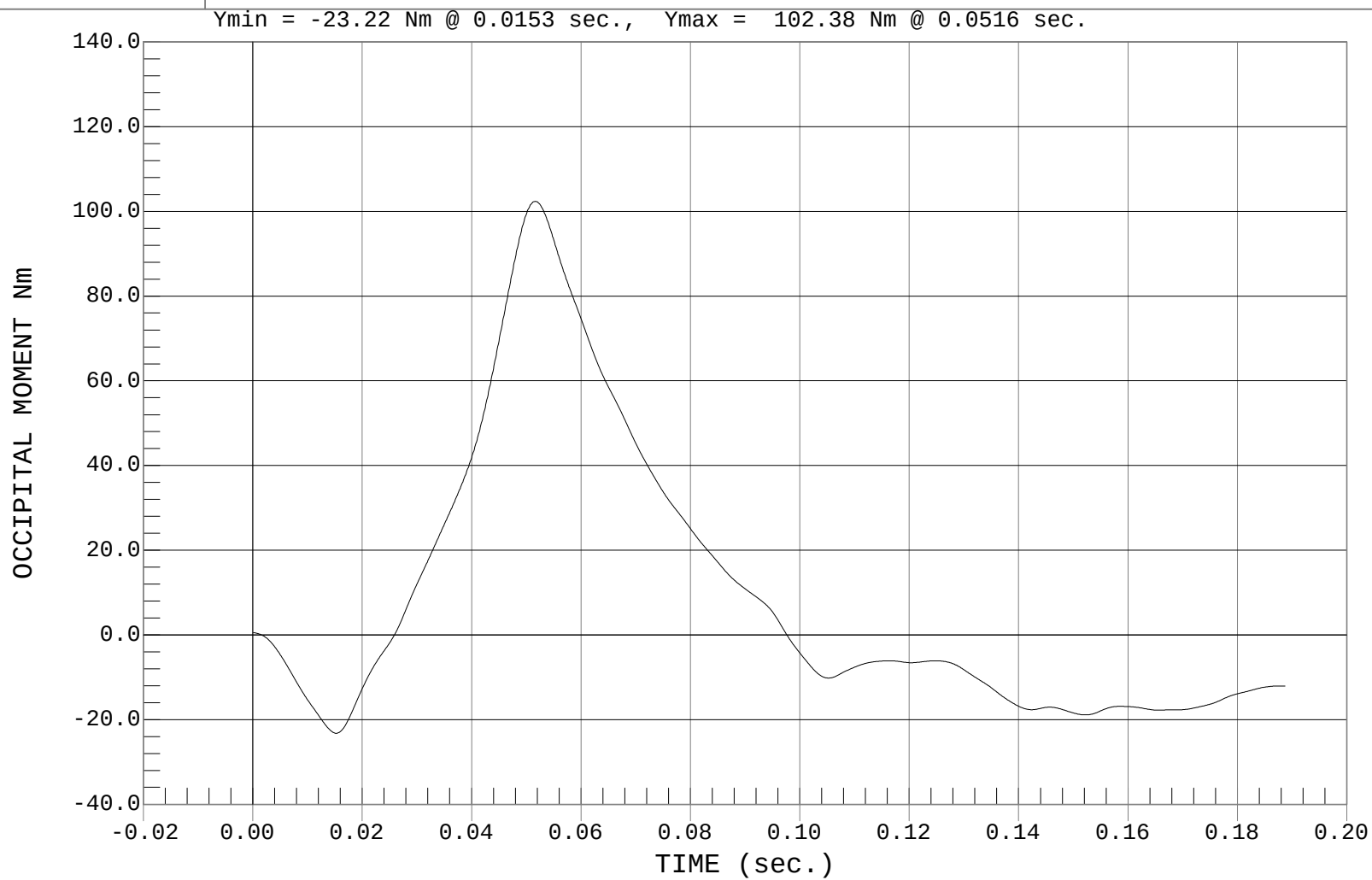


## OCCIPITAL MOMENT

Test Desc.: Dummy Calibration - Neck Flexion  
Component: Dummy #192

Test Date: 11-07-00  
Speed: 22.99 FT/SEC, 7.01 M/SEC

— 1 OCCIPITAL MOMENT, D00422NK.MNT



# Hybrid III Calibration Data Sheet

50<sup>th</sup> Percentile Male

Neck Extension Test

ATD Serial No.: 192

Test I.D.: D001423

| Tested Parameter                                |          | Units   | Specification  | Result | Pass/Fail |
|-------------------------------------------------|----------|---------|----------------|--------|-----------|
| Laboratory Temperature                          |          | °C      | 20.6 to 22.2   | 21.1°  | PASS      |
| Laboratory Relative Humidity                    |          | %       | 10 to 70       | 39%    | PASS      |
| Pendulum Velocity                               |          | m/s     | 5.95 to 6.19   | 6.12   | PASS      |
| Pendulum Deceleration                           | 10 Msec. | G's     | 17.20 to 21.20 | 18.28  | PASS      |
|                                                 | 20 Msec. | G's     | 14.00 to 19.00 | 16.64  | PASS      |
|                                                 | 30 Msec. | G's     | 11.00 to 16.00 | 13.58  | PASS      |
| Peak Pendulum Decel. After 30 Msec.             |          | G's     | ≤22.0          | 13.8   | PASS      |
| Deceleration Decay, Time to Cross 5 G's         |          | Msec.   | 38.0 to 46.0   | 39.3   | PASS      |
| Maximum "D" Plane Rotation                      | Maximum  | Degrees | 81.0 to 106.0  | 94.9   | PASS      |
|                                                 | Time     | Msec.   | 72.0 to 82.0   | 74.9   | PASS      |
| "D" Plane Rotation Decay, Time To Zero Crossing |          | Msec.   | 147.0 to 174.0 | 155.2  | PASS      |
| Moment About Occipital Condyle                  | Maximum  | Nm      | -52.9 to -79.9 | -64.2  | PASS      |
|                                                 | Time     | Msec.   | 65.0 to 79.0   | 71.3   | PASS      |
| Negative Moment Decay, Time To Zero Crossing    |          | Msec.   | 120.0 to 148.0 | 135.3  | PASS      |
| Overall Test Results                            |          |         |                |        | PASS      |

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Laboratory Technician

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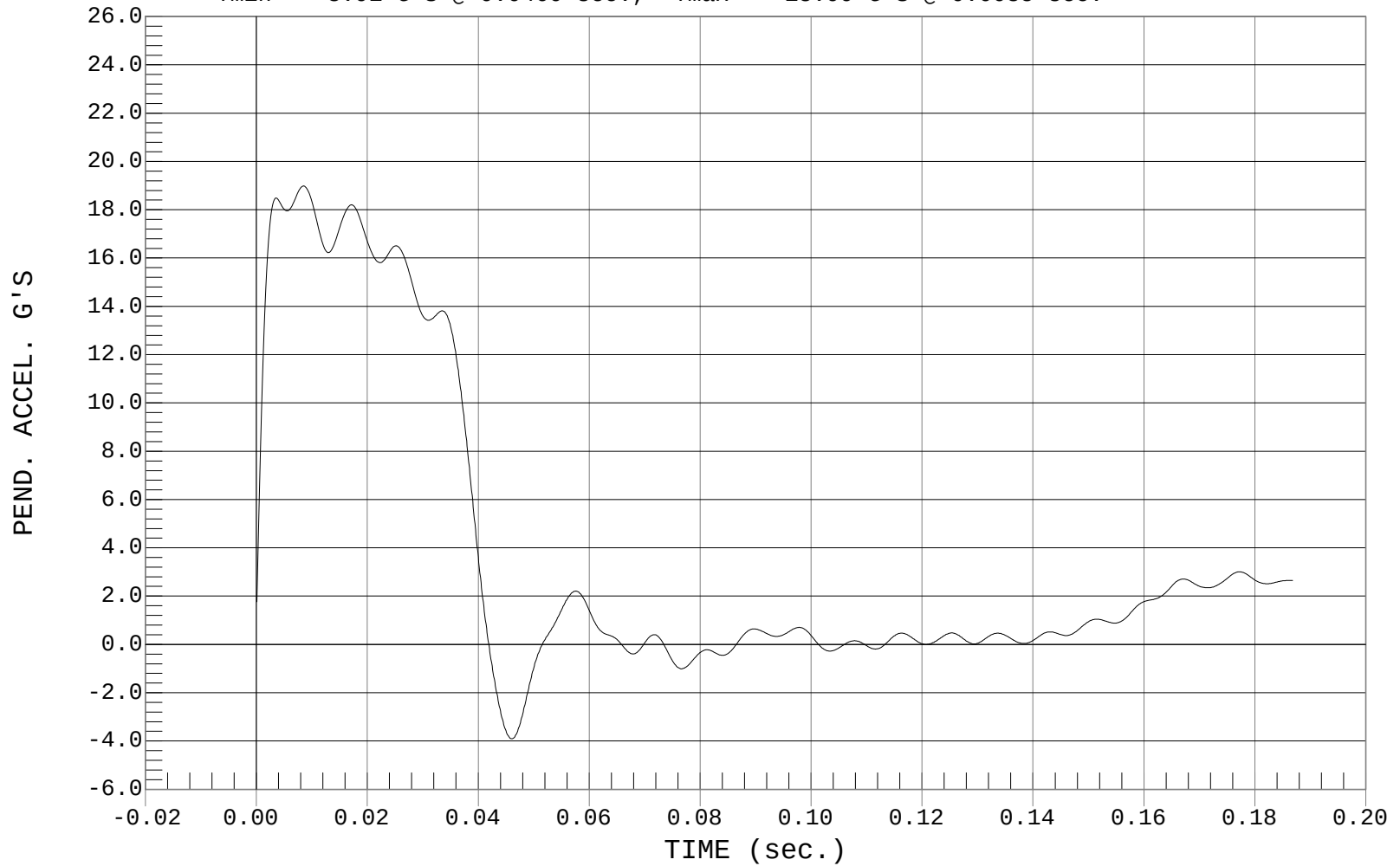
# PENDULUM DECELERATION

Test Desc.: Dummy Calibration - Neck Extension  
Component: Dummy #192

Test Date: 11-07-00  
Speed: 20.09 FT/SEC, 6.12 M/SEC

— 1 PEND. ACCEL., D00423AF.A04

Ymin = -3.91 G'S @ 0.0460 sec., Ymax = 18.99 G'S @ 0.0085 sec.







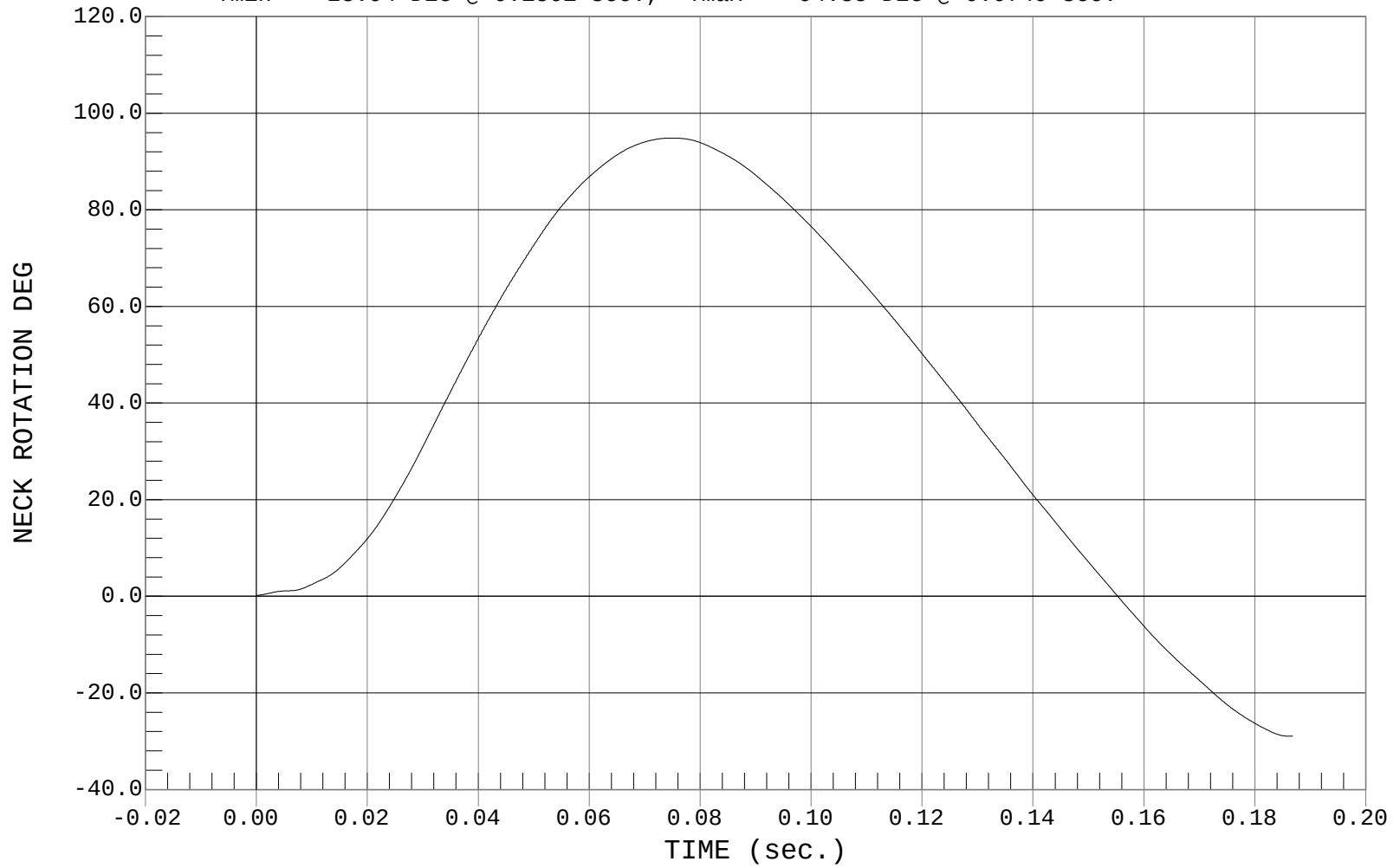
## NECK ROTATION

Test Desc.: Dummy Calibration - Neck Extension  
Component: Dummy #192

Test Date: 11-07-00  
Speed: 20.09 FT/SEC, 6.12 M/SEC

— 1 NECK ROTATION, D00423DU.D05

Ymin = -28.94 DEG @ 0.1861 sec., Ymax = 94.85 DEG @ 0.0749 sec.





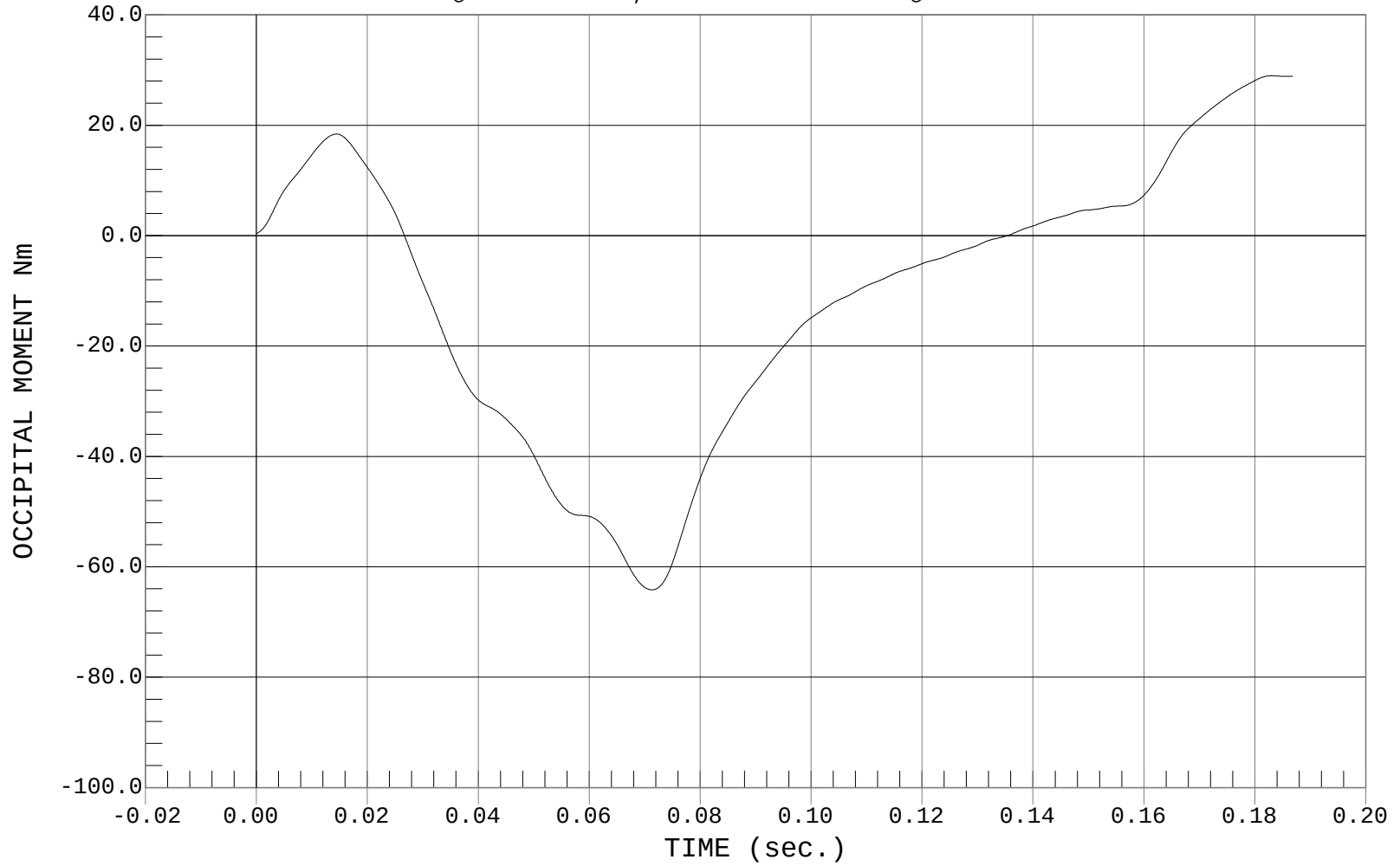
## OCCIPITAL MOMENT

Test Desc.: Dummy Calibration - Neck Extension  
Component: Dummy #192

Test Date: 11-07-00  
Speed: 20.09 FT/SEC, 6.12 M/SEC

— 1 OCCIPITAL MOMENT, D00423NK.MNT

Ymin = -64.18 Nm @ 0.0713 sec., Ymax = 28.95 Nm @ 0.1830 sec.



**Hybrid III Calibration Data Sheet**  
**50<sup>th</sup> Percentile Male**  
**Hip-Femur Flexion Test**

ATD Serial No.: 192

Test I.D.: D001429/0

| Tested Parameter      | Units   | Specification                   | Result |       | Pass/Fail |
|-----------------------|---------|---------------------------------|--------|-------|-----------|
|                       |         |                                 | Right  | Left  |           |
| Temperature           | °C      | 18.9 to 25.6                    | 21.1°  | 21.1° | PASS      |
| Relative Humidity     | %       | 10 to 70                        | 35%    | 35%   | PASS      |
| Rotation Rate         | deg/sec | 5 – 10                          | Yes    | Yes   | PASS      |
| 30 Degrees            | Nm      | 94.9 Nm Max.                    | 67.2   | 62.4  | PASS      |
| 150 ft-lbf / 203.4 Nm | Deg     | 40 – 50 Degree<br>Max. rotation | 46°    | 45°   | PASS      |
| Overall Test Results  |         |                                 |        |       | PASS      |

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11/9/00

Test Date

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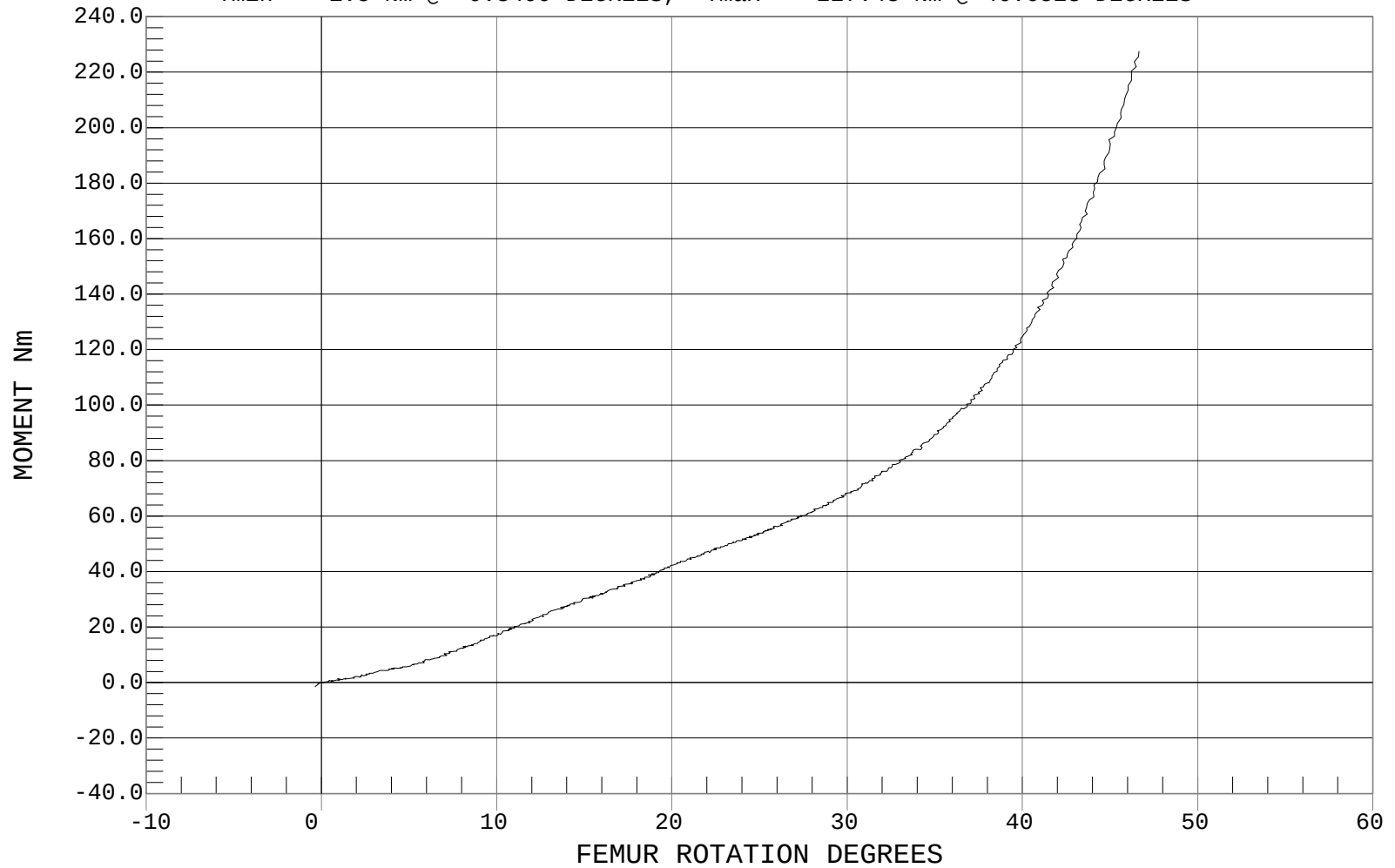
# HIP-FEMUR FLEXION

Test Desc.: DUMMY CALIBRATION - HIP-FEMUR FLEXION  
Component: DUMMY # 192 RIGHT FEMUR

Test Date: 11-09-00  
Speed: 0.00 FT/SEC, 0.00 M/SEC

— 1 MOMENT, D00429FC.F14

Ymin = -1.5 Nm @ -0.3499 DEGREES, Ymax = 227.48 Nm @ 46.6523 DEGREES





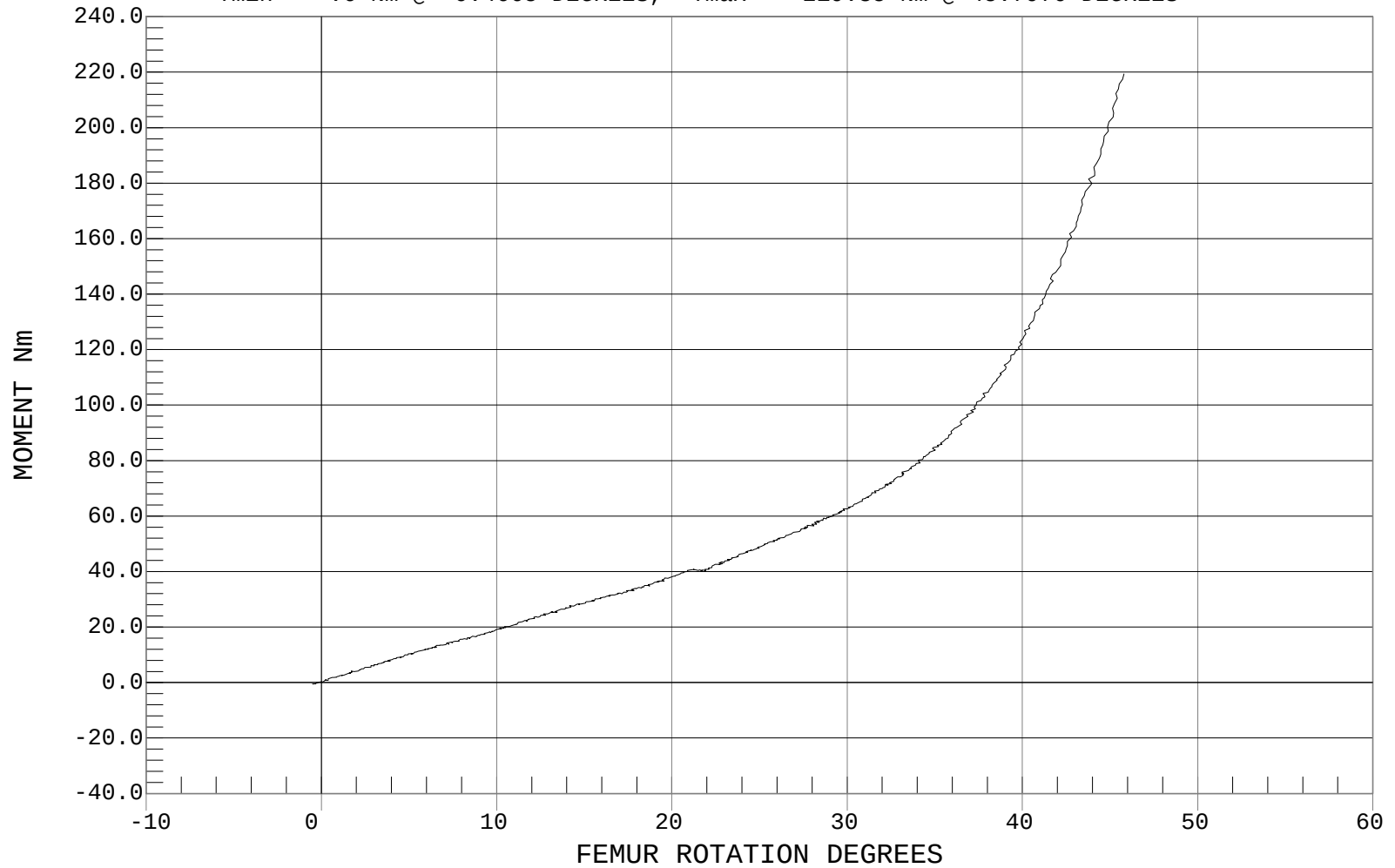
# HIP-FEMUR FLEXION

Test Desc.: DUMMY CALIBRATION - HIP-FEMUR FLEXION  
Component: DUMMY # 192 LEFT FEMUR

Test Date: 11-09-00  
Speed: 0.00 FT/SEC, 0.00 M/SEC

— 1 MOMENT, D00420FC.F14

Ymin = -.6 Nm @ -0.4665 DEGREES, Ymax = 219.35 Nm @ 45.7970 DEGREES



## Hybrid III Calibration Data Sheet

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

#### External Measurements

ATD Serial No.: 192

Test I.D.: D00142

| External Measurement Data             |       |               |        |           |
|---------------------------------------|-------|---------------|--------|-----------|
| Tested Parameter                      | Units | Specification | Result | Pass/Fail |
| Laboratory Temperature                | °C    | 20.4 to 22.1  | 21.1°  | PASS      |
| Laboratory Relative Humidity          | %     | 10 to 70      | 18%    | PASS      |
| A – Total sitting height              | mm    | 879 to 889    | 885    | PASS      |
| B – Shoulder pivot height             | mm    | 506 to 521    | 512    | PASS      |
| C – “H” point height                  | mm    | 84 to 89      | 87     | PASS      |
| D – “H” point from seat back          | mm    | 135 to 140    | 138    | PASS      |
| E – Shoulder pivot from back          | mm    | 84 to 94      | 90     | PASS      |
| F – Thigh clearance                   | mm    | 140 to 156    | 146    | PASS      |
| G – Elbow back to wrist pivot         | mm    | 290 to 305    | 298    | PASS      |
| H – Skull cap to back line            | mm    | 41 to 46      | 44     | PASS      |
| I – Shoulder to elbow length          | mm    | 330 to 345    | 338    | PASS      |
| J – Elbow rest height                 | mm    | 191 to 211    | 201    | PASS      |
| K – Buttock to knee length            | mm    | 579 to 605    | 591    | PASS      |
| L – Popliteal length                  | mm    | 429 to 455    | 439    | PASS      |
| M – Knee pivot height                 | mm    | 485 to 500    | 492    | PASS      |
| N – Buttock popliteal length          | mm    | 452 to 478    | 463    | PASS      |
| O – Chest depth                       | mm    | 213 to 229    | 220    | PASS      |
| P – Foot length                       | mm    | 252 to 267    | 264    | PASS      |
| V – Shoulder breadth                  | mm    | 422 to 437    | 428    | PASS      |
| W – Foot breadth                      | mm    | 91 to 107     | 102    | PASS      |
| Y – Chest circumference               | mm    | 970 to 1001   | 988    | PASS      |
| Z – Waist circumference               | mm    | 836 to 866    | 850    | PASS      |
| AA – Location for chest circumference | mm    | 429 to 434    | 432    | PASS      |
| BB – Location for waist circumference | mm    | 226 to 231    | 229    | PASS      |
| Overall Test Results                  |       |               |        | PASS      |

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Laboratory Technician

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12/27/00

Test Date

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# Hybrid III Calibration Data Sheet

50<sup>th</sup> Percentile Male

Left Knee Impact Test

ATD Serial No.: 142

Test I.D.: D001416

| Tested Parameter             | Units   | Specification | Result | Pass/Fail |
|------------------------------|---------|---------------|--------|-----------|
| Laboratory Temperature       | °C      | 18.9 to 25.5  | 20.6°  | PASS      |
| Laboratory Relative Humidity | %       | 10 to 70      | 45%    | PASS      |
| Probe Velocity               | m/s     | 2.07 to 2.13  | 2.09   | PASS      |
| Peak Probe Force             | Newtons | 4715 to 5782  | 5037   | PASS      |
| Overall Test Results         |         |               |        | PASS      |

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Laboratory Technician

11/7/00  
Test Date

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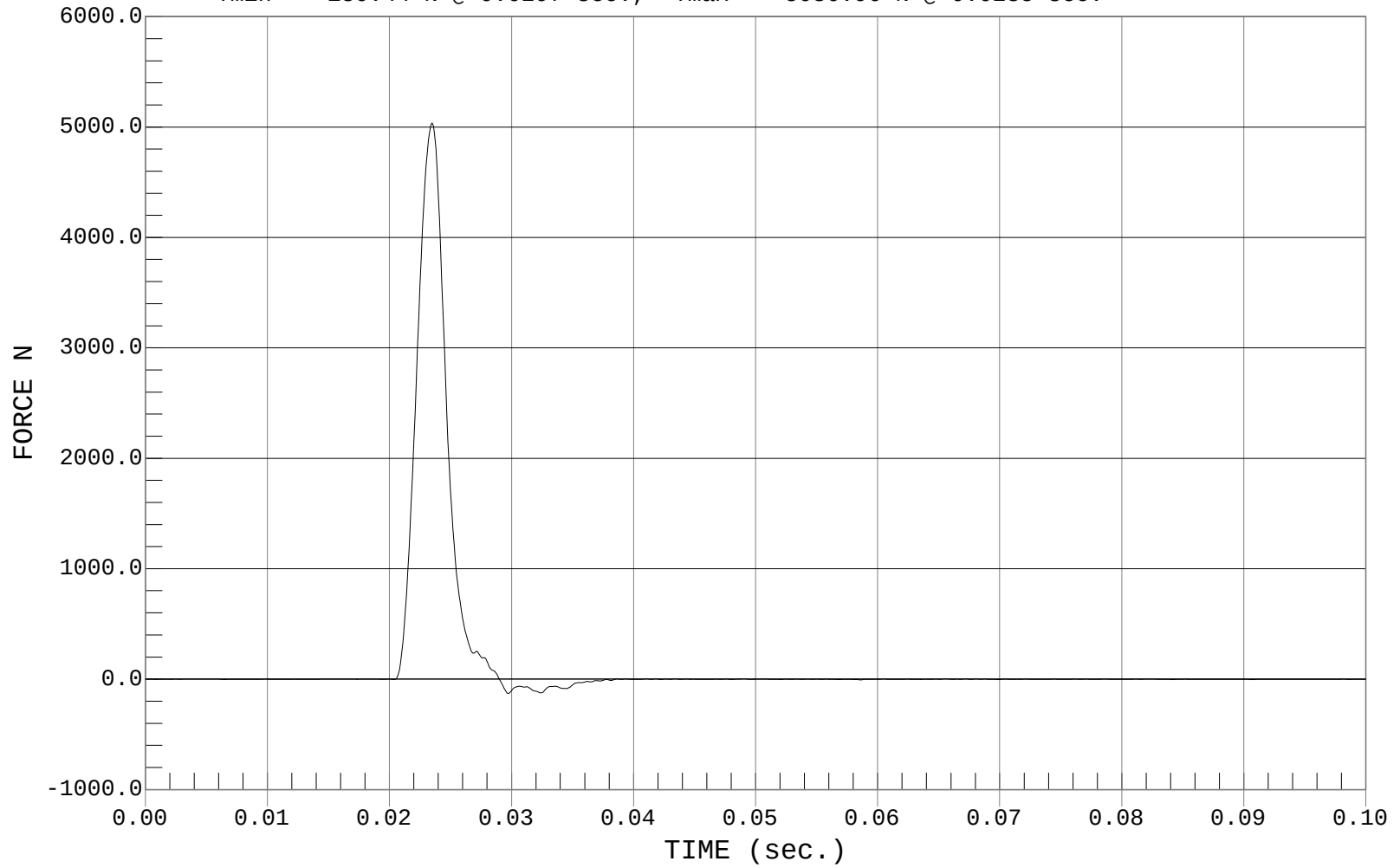
# LEFT KNEE IMPACT

Test Desc.: Dummy Calibration - Left Knee Impact  
Component: Dummy #142

Test Date: 11-07-00  
Speed: 6.87 FT/SEC, 2.09 M/SEC

— 1 FORCE, D00416FF.F09

Ymin = -130.44 N @ 0.0297 sec., Ymax = 5036.96 N @ 0.0235 sec.



**Hybrid III Calibration Data Sheet**  
**50<sup>th</sup> Percentile Male**  
**Right Knee Impact Test**

ATD Serial No.: 142

Test I.D.: D001415

| Tested Parameter             | Units   | Specification | Result | Pass/Fail |
|------------------------------|---------|---------------|--------|-----------|
| Laboratory Temperature       | °C      | 18.9 to 25.5  | 20.6°  | PASS      |
| Laboratory Relative Humidity | %       | 10 to 70      | 45%    | PASS      |
| Probe Velocity               | m/s     | 2.07 to 2.13  | 2.11   | PASS      |
| Peak Probe Force             | Newtons | 4715 to 5782  | 4920   | PASS      |
| Overall Test Results         |         |               |        | PASS      |

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Laboratory Technician

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11/7/00  
Test Date

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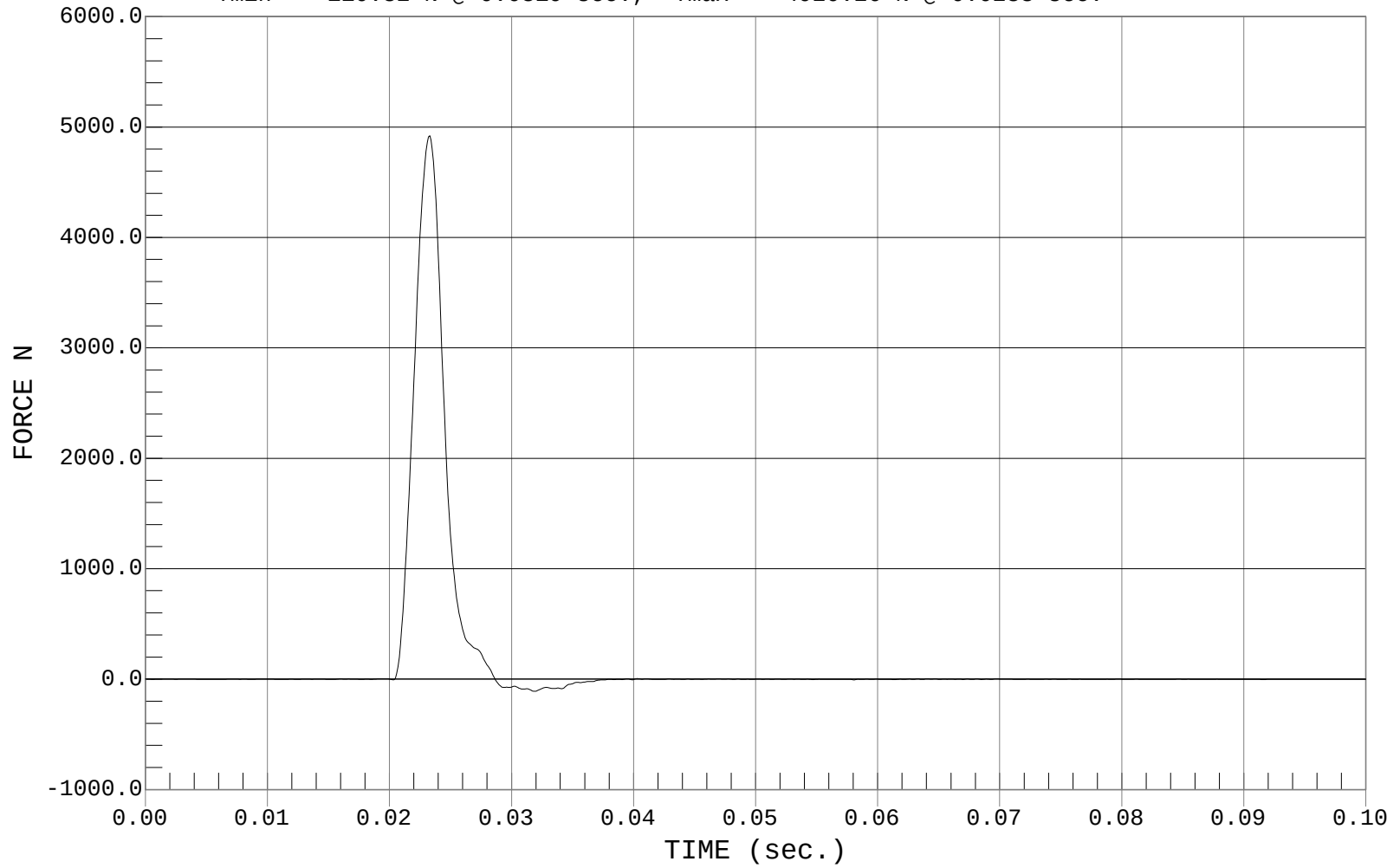
## RIGHT KNEE IMPACT

Test Desc.: Dummy Calibration - Right Knee Impact  
Component: Dummy #142

Test Date: 11-07-00  
Speed: 6.93 FT/SEC, 2.11 M/SEC

— 1 FORCE, D00415FF.F09

Ymin = -110.32 N @ 0.0319 sec., Ymax = 4920.26 N @ 0.0233 sec.



**Hybrid III Calibration Data Sheet**  
**50<sup>th</sup> Percentile Male**  
**Head Drop Calibration**

ATD Serial No.: 142

Test I.D.: D001411

| Tested Parameter             | Units  | Specification  | Result | Pass/Fail |
|------------------------------|--------|----------------|--------|-----------|
| Laboratory Temperature       | °C     | 18.9 to 25.5   | 21.1°  | PASS      |
| Laboratory Relative Humidity | %      | 10 to 70       | 33%    | PASS      |
| Peak Resultant Accel.        | G's    | 225.0 to 275.0 | 246.8  | PASS      |
| Peak Lateral Accel.          | G's    | ≤ ±15.0        | -5.0   | PASS      |
| Is Acceleration Unimodal?    | Yes/No | Yes            | Yes    | PASS      |
| Overall Test Results         |        |                |        | PASS      |

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Laboratory Technician

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11/6/00  
Test Date

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Approved By



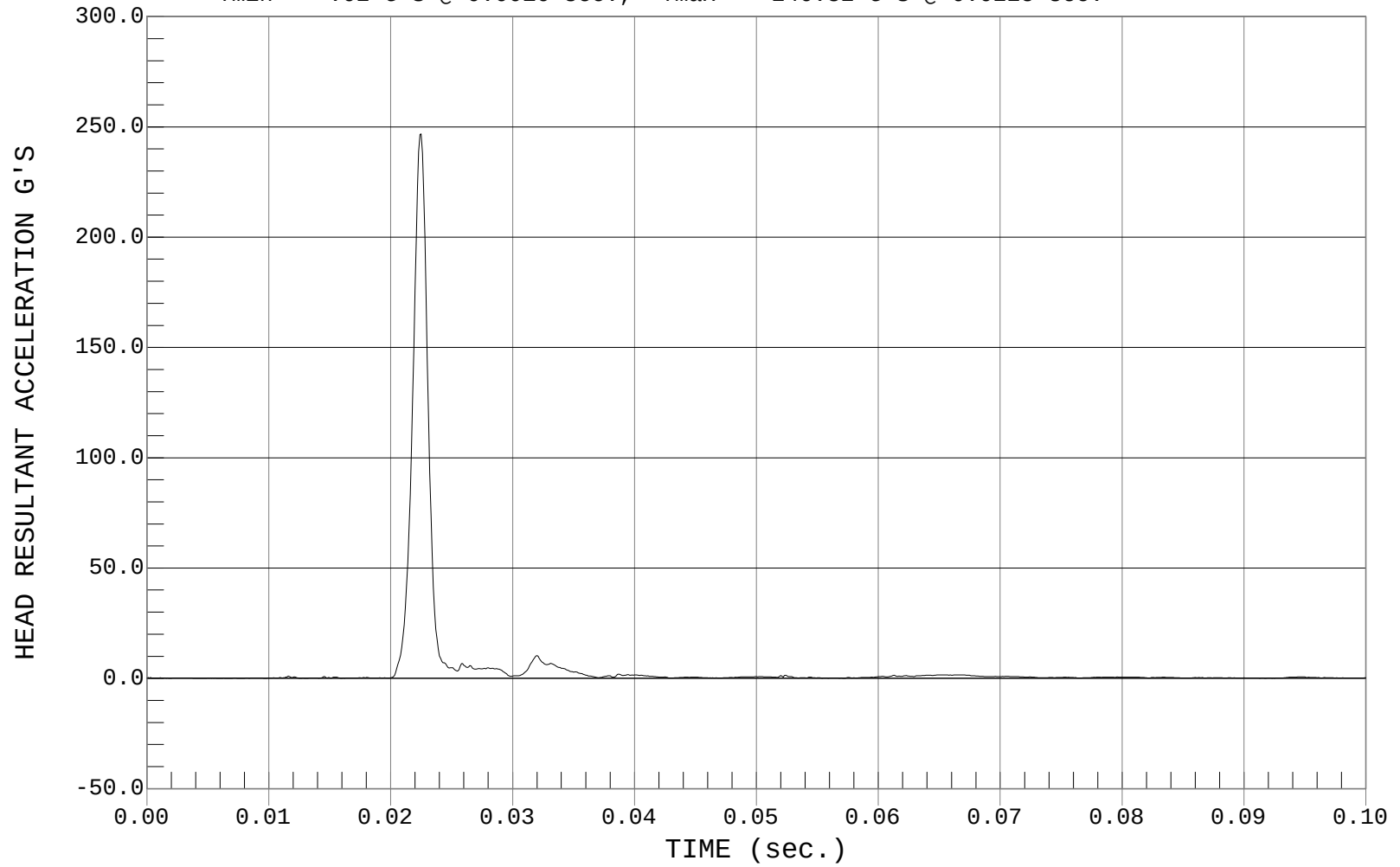
# PEAK RESULTANT ACCELERATION

Test Desc.: Dummy Calibration - Head Drop  
Component: Dummy #142

Test Date: 11-06-00  
Speed: 0.00 FT/SEC, 0.00 M/SEC

— 1 HEAD RESULTANT ACCELERATION, D00411AV.A01

Ymin = .02 G'S @ 0.0016 sec., Ymax = 246.82 G'S @ 0.0225 sec.







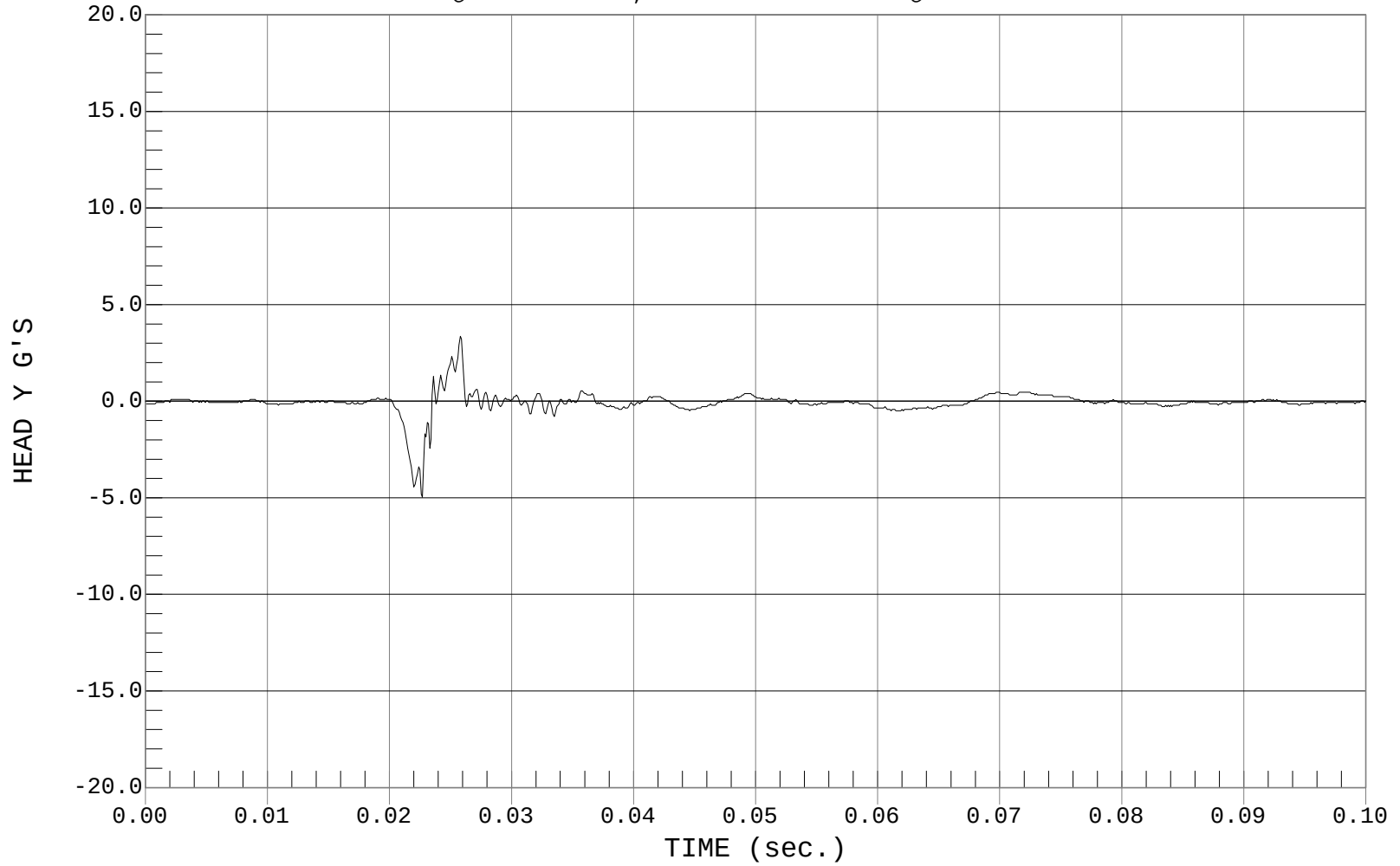
# PEAK LATERAL ACCELARATION

Test Desc.: Dummy Calibration - Head Drop  
Component: Dummy #142

Test Date: 11-06-00  
Speed: 0.00 FT/SEC, 0.00 M/SEC

— 1 HEAD Y, D00411AR.A02

Ymin = -4.96 G'S @ 0.0227 sec., Ymax = 3.36 G'S @ 0.0258 sec.



**Hybrid III Calibration Data Sheet**  
**50<sup>th</sup> Percentile Male**  
**Thorax Impact Test**

ATD Serial No.: 142

Test I.D.: D001414

| Tested Parameter             | Units   | Specification | Result | Pass/Fail |
|------------------------------|---------|---------------|--------|-----------|
| Laboratory Temperature       | °C      | 20.6 to 22.2  | 21.1°  | PASS      |
| Laboratory Relative Humidity | %       | 10 to 70      | 18%    | PASS      |
| Probe Velocity               | M/s     | 6.58 to 6.82  | 6.72   | PASS      |
| Peak Probe Force             | Newtons | 5159 to 5893  | 5786   | PASS      |
| Peak Sternum Displacement    | CM      | 6.35 to 7.26  | 6.68   | PASS      |
| Internal Hysteresis          | %       | 69 to 85      | 76%    | PASS      |
| Overall Test Results         |         |               |        | PASS      |

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Laboratory Technician

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12/27/00

Test Date

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Approved By



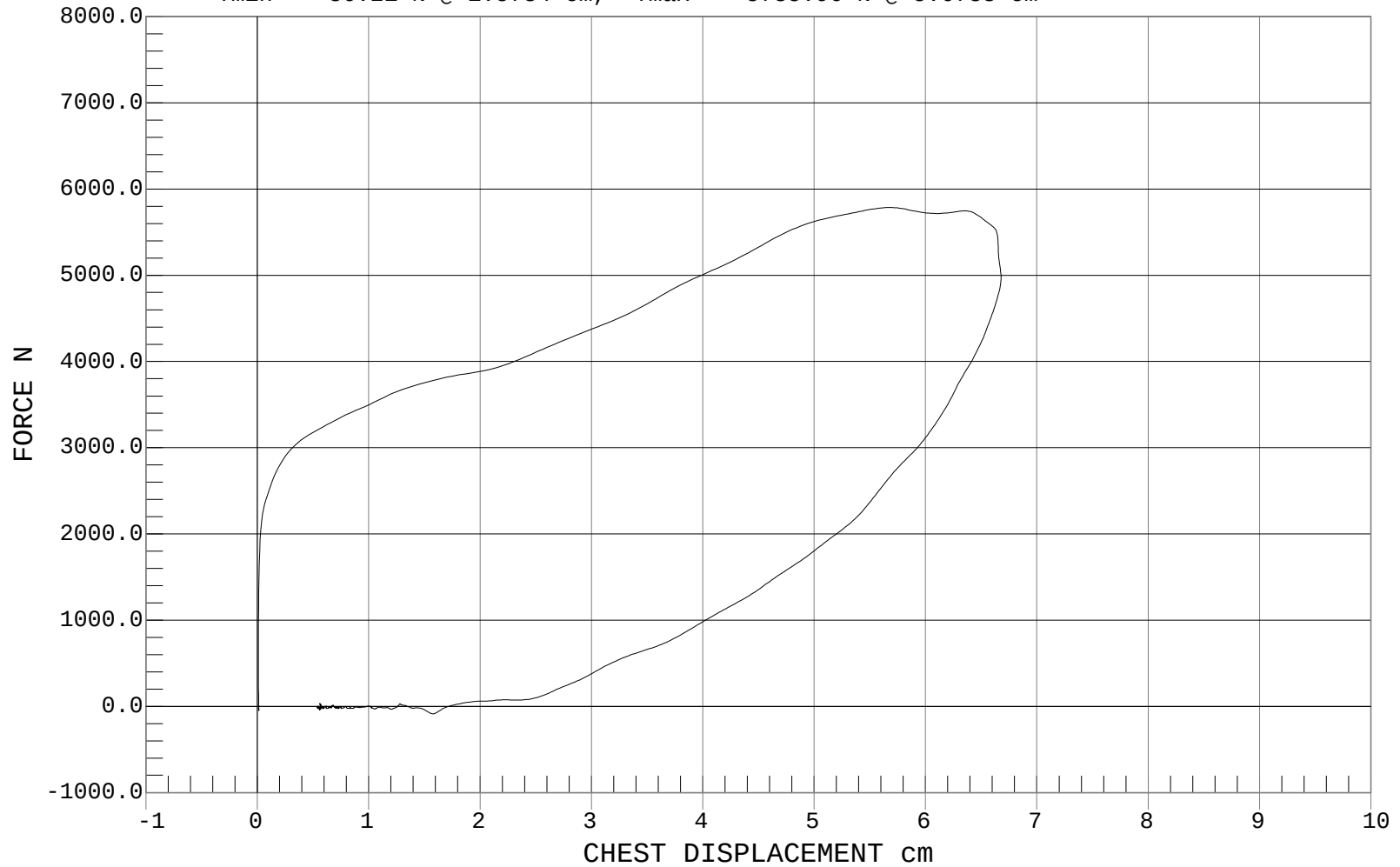
# THORAX IMPACT

Test Desc.: Dummy Calibration - Chest Impact  
Component: Dummy #142

Test Date: 12-27-00  
Speed: 22.06 FT/SEC, 6.72 M/SEC

— 1 FORCE, D00414CH.FVD

Ymin = -86.21 N @ 1.5784 cm, Ymax = 5785.96 N @ 5.6738 cm



**Hybrid III Calibration Data Sheet**  
**50<sup>th</sup> Percentile Male**  
**Neck Flexion Test**

ATD Serial No.: 142

Test I.D.: D001412

| Tested Parameter                                |          | Units   | Specification  | Result | Pass/Fail |
|-------------------------------------------------|----------|---------|----------------|--------|-----------|
| Laboratory Temperature                          |          | °C      | 20.6 to 22.2   | 21.1°  | PASS      |
| Laboratory Relative Humidity                    |          | %       | 10 to 70       | 39%    | PASS      |
| Pendulum Velocity                               |          | m/s     | 6.89 to 7.13   | 7.04   | PASS      |
| Pendulum Deceleration                           | 10 Msec. | G's     | 22.50 to 27.50 | 23.69  | PASS      |
|                                                 | 20 Msec. | G's     | 17.60 to 22.60 | 20.49  | PASS      |
|                                                 | 30 Msec. | G's     | 12.50 to 18.50 | 16.78  | PASS      |
| Peak Pendulum Decel. After 30 Msec.             |          | G's     | ≤29.0          | 16.8   | PASS      |
| Deceleration Decay, Time to Cross 5 G's         |          | Msec.   | 34.0 to 42.0   | 35.4   | PASS      |
| Maximum "D" Plane Rotation                      | Maximum  | Degrees | 64.0 to 78.0   | 72.6   | PASS      |
|                                                 | Time     | Msec.   | 57.0 to 64.0   | 57.9   | PASS      |
| "D" Plane Rotation Decay, Time To Zero Crossing |          | Msec.   | 113.0 to 128.0 | 114.5  | PASS      |
| Moment About Occipital Condyle                  | Maximum  | Nm      | 84.1 to 108.5  | 96.1   | PASS      |
|                                                 | Time     | Msec.   | 47.0 to 58.0   | 50.9   | PASS      |
| Positive Moment Decay, Time To Zero Crossing    |          | Msec.   | 97.0 to 107.0  | 97.3   | PASS      |
| Overall Test Results                            |          |         |                |        | PASS      |

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Laboratory Technician

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11/7/00  
Test Date

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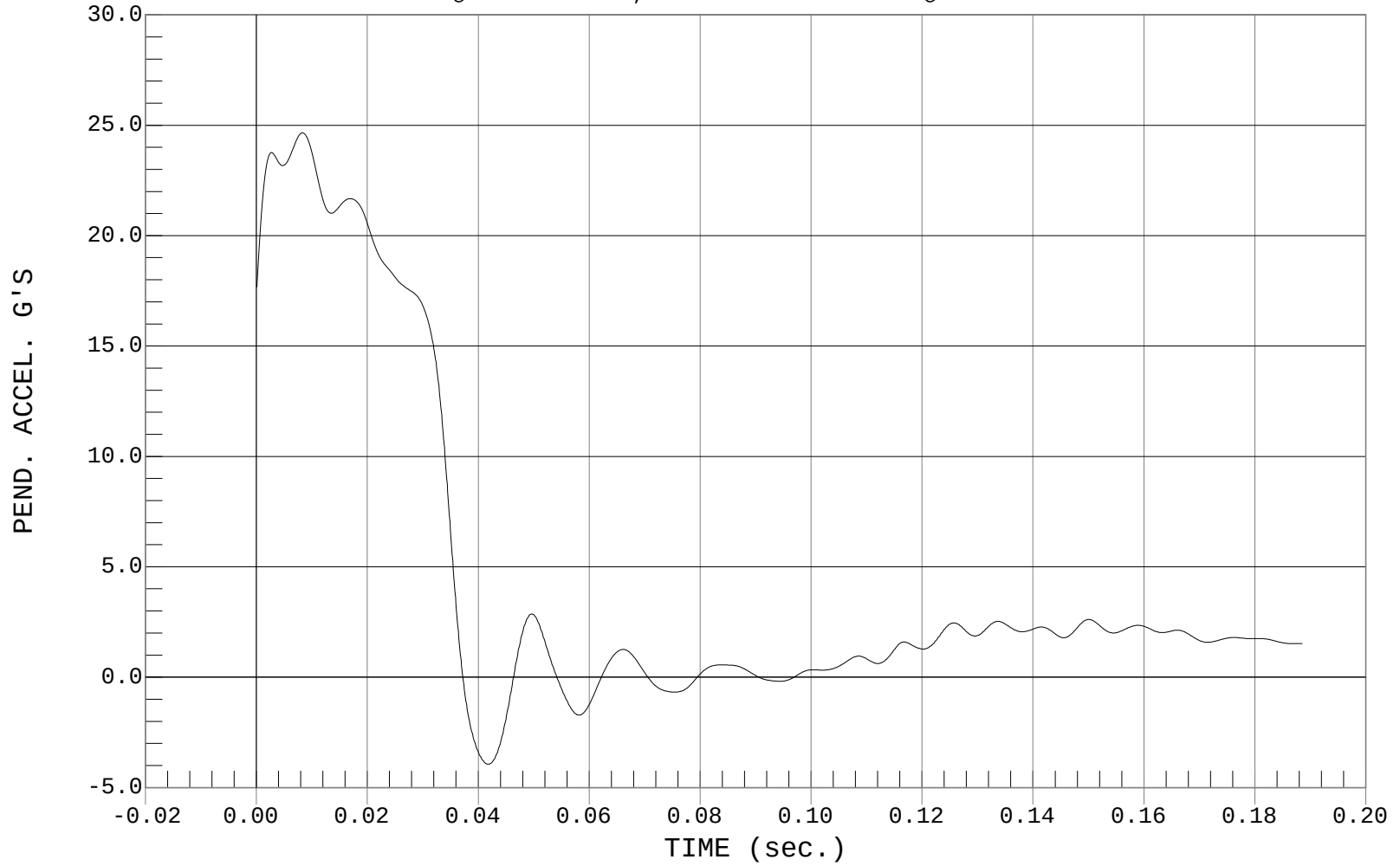
# PENDULUM DECELERATION

Test Desc.: Dummy Calibration - Neck Flexion  
Component: Dummy #142

Test Date: 11-07-00  
Speed: 23.09 FT/SEC, 7.04 M/SEC

— 1 PEND. ACCEL., D00412AF.A04

Ymin = -3.94 G'S @ 0.0418 sec., Ymax = 24.65 G'S @ 0.0083 sec.





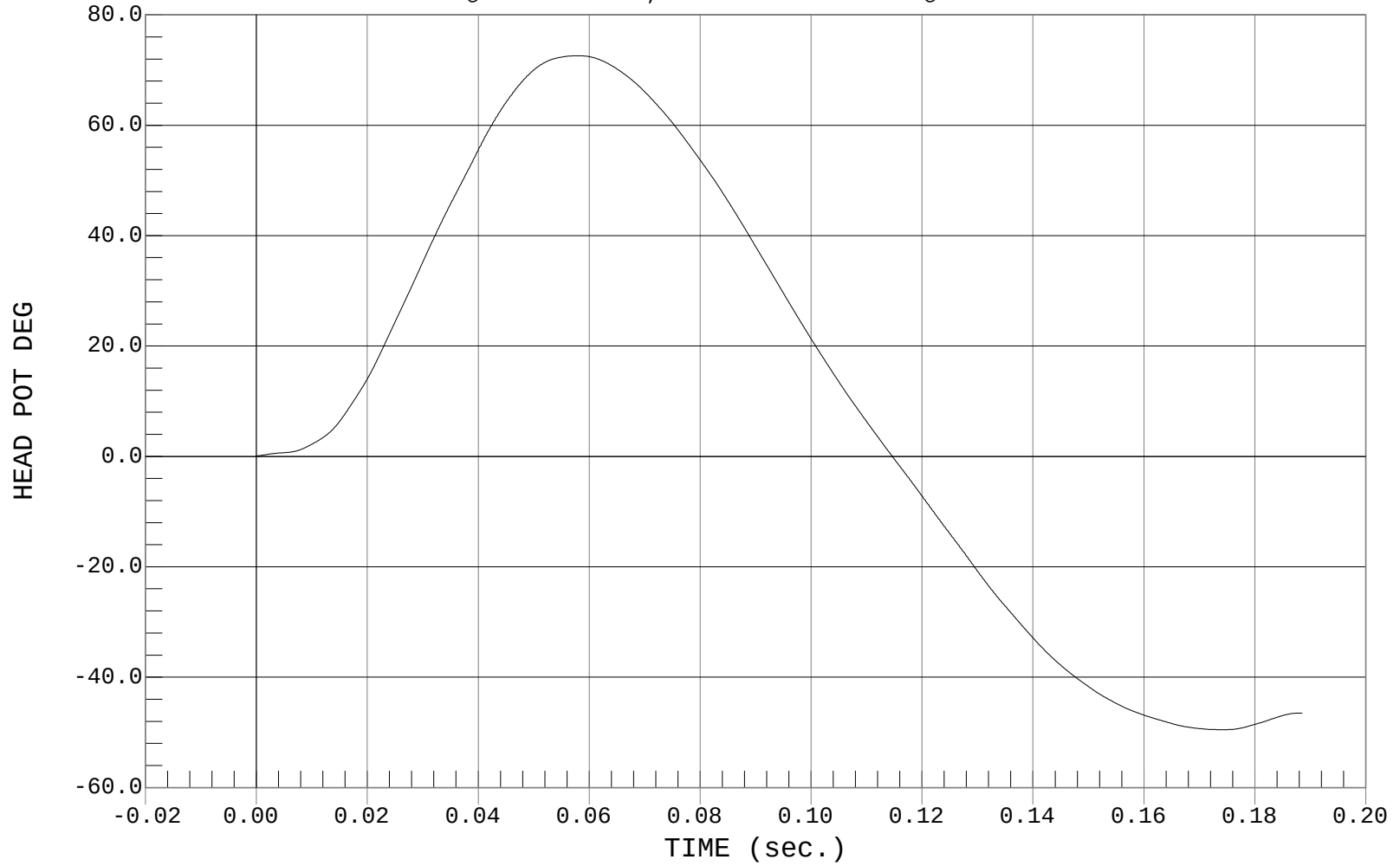
## NECK ROTATION

Test Desc.: Dummy Calibration - Neck Flexion  
Component: Dummy #142

Test Date: 11-07-00  
Speed: 23.09 FT/SEC, 7.04 M/SEC

— 1 HEAD POT, D00412DU.D05

Ymin = -49.52 DEG @ 0.1742 sec., Ymax = 72.6 DEG @ 0.0579 sec.





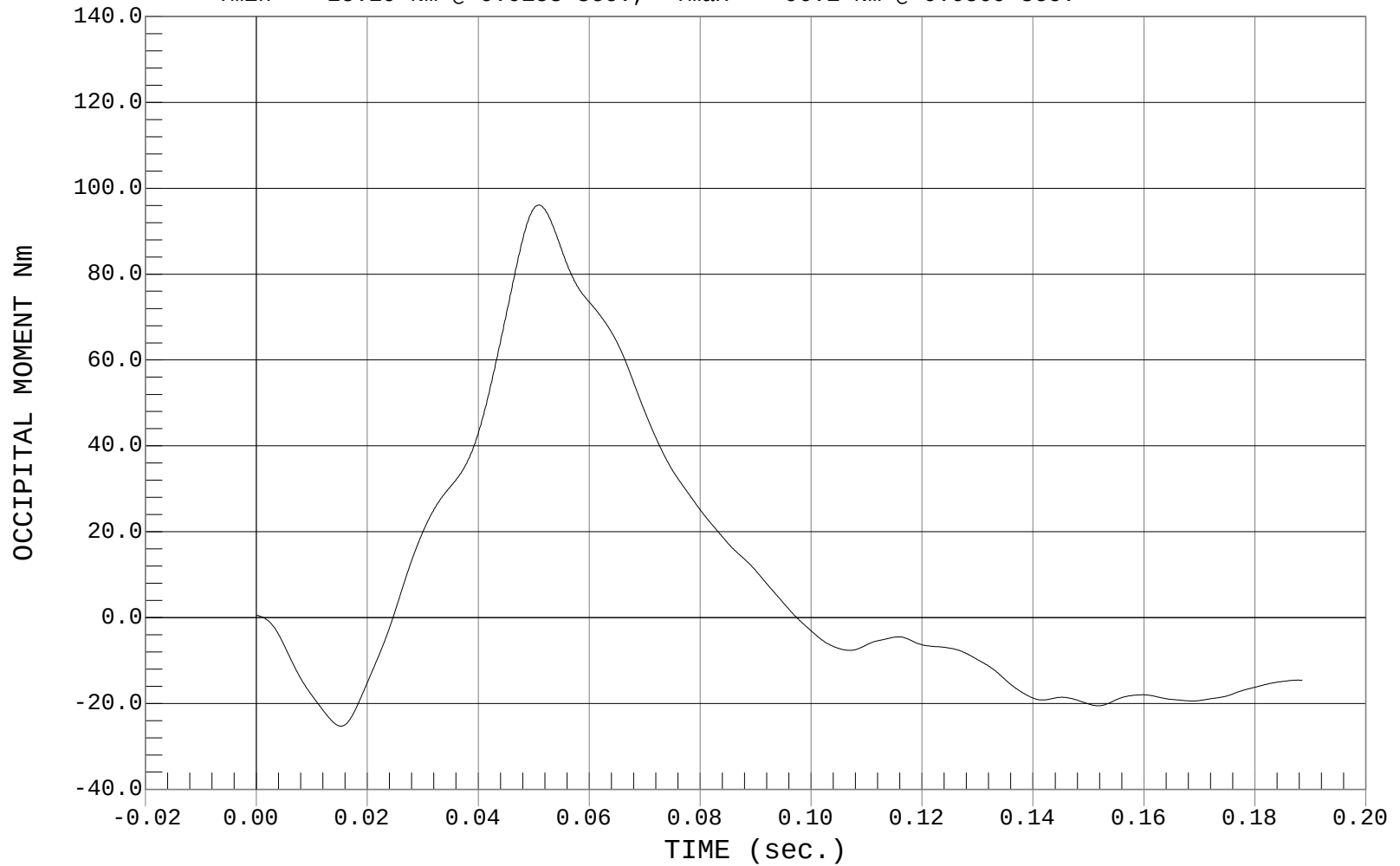
## OCCIPITAL MOMENT

Test Desc.: Dummy Calibration - Neck Flexion  
Component: Dummy #142

Test Date: 11-07-00  
Speed: 23.09 FT/SEC, 7.04 M/SEC

— 1 OCCIPITAL MOMENT, D00412NK.MNT

Ymin = -25.29 Nm @ 0.0153 sec., Ymax = 96.1 Nm @ 0.0509 sec.





# Hybrid III Calibration Data Sheet

50<sup>th</sup> Percentile Male

Neck Extension Test

ATD Serial No.: 142

Test I.D.: D001413

| Tested Parameter                                |          | Units   | Specification  | Result | Pass/Fail |
|-------------------------------------------------|----------|---------|----------------|--------|-----------|
| Laboratory Temperature                          |          | °C      | 20.6 to 22.2   | 21.1°  | PASS      |
| Laboratory Relative Humidity                    |          | %       | 10 to 70       | 39%    | PASS      |
| Pendulum Velocity                               |          | m/s     | 5.95 to 6.19   | 6.11   | PASS      |
| Pendulum Deceleration                           | 10 Msec. | G's     | 17.20 to 21.20 | 19.07  | PASS      |
|                                                 | 20 Msec. | G's     | 14.00 to 19.00 | 17.30  | PASS      |
|                                                 | 30 Msec. | G's     | 11.00 to 16.00 | 15.85  | PASS      |
| Peak Pendulum Decel. After 30 Msec.             |          | G's     | ≤22.0          | 15.9   | PASS      |
| Deceleration Decay, Time to Cross 5 G's         |          | Msec.   | 38.0 to 46.0   | 39.7   | PASS      |
| Maximum "D" Plane Rotation                      | Maximum  | Degrees | 81.0 to 106.0  | 96.3   | PASS      |
|                                                 | Time     | Msec.   | 72.0 to 82.0   | 76.1   | PASS      |
| "D" Plane Rotation Decay, Time To Zero Crossing |          | Msec.   | 147.0 to 174.0 | 152.8  | PASS      |
| Moment About Occipital Condyle                  | Minimum  | Nm      | -52.9 to -79.9 | -70.6  | PASS      |
|                                                 | Time     | Msec.   | 65.0 to 79.0   | 71.5   | PASS      |
| Negative Moment Decay, Time To Zero Crossing    |          | Msec.   | 120.0 to 148.0 | 140.2  | PASS      |
| Overall Test Results                            |          |         |                |        | PASS      |

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

\_\_\_\_\_  
11/7/00  
Test Date

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Approved By



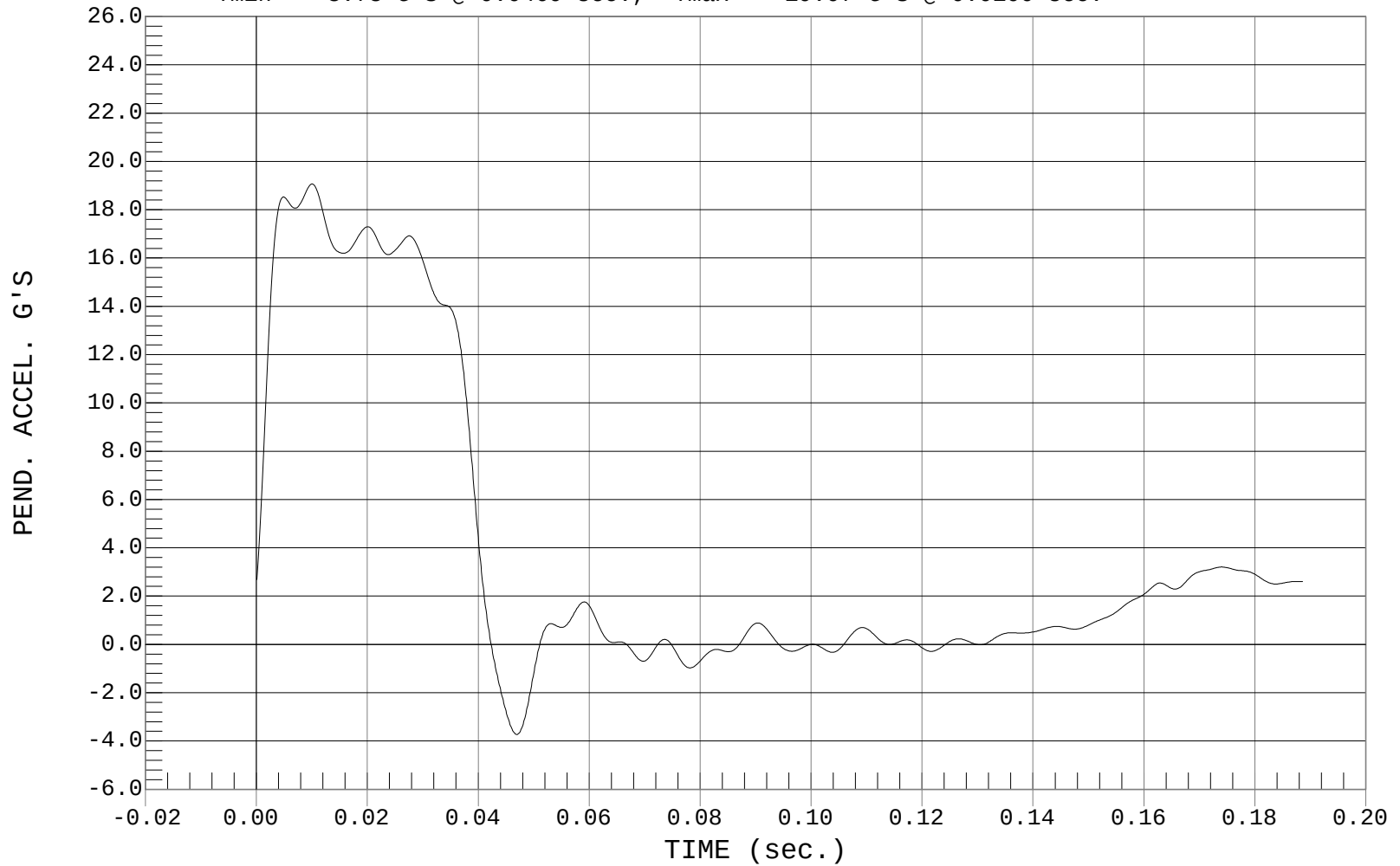
# PENDULUM DECELERATION

Test Desc.: Dummy Calibration - Neck Extension  
Component: Dummy #142

Test Date: 11-07-00  
Speed: 20.06 FT/SEC, 6.11 M/SEC

— 1 PEND. ACCEL., D00413AF.A04

Ymin = -3.73 G'S @ 0.0469 sec., Ymax = 19.07 G'S @ 0.0100 sec.





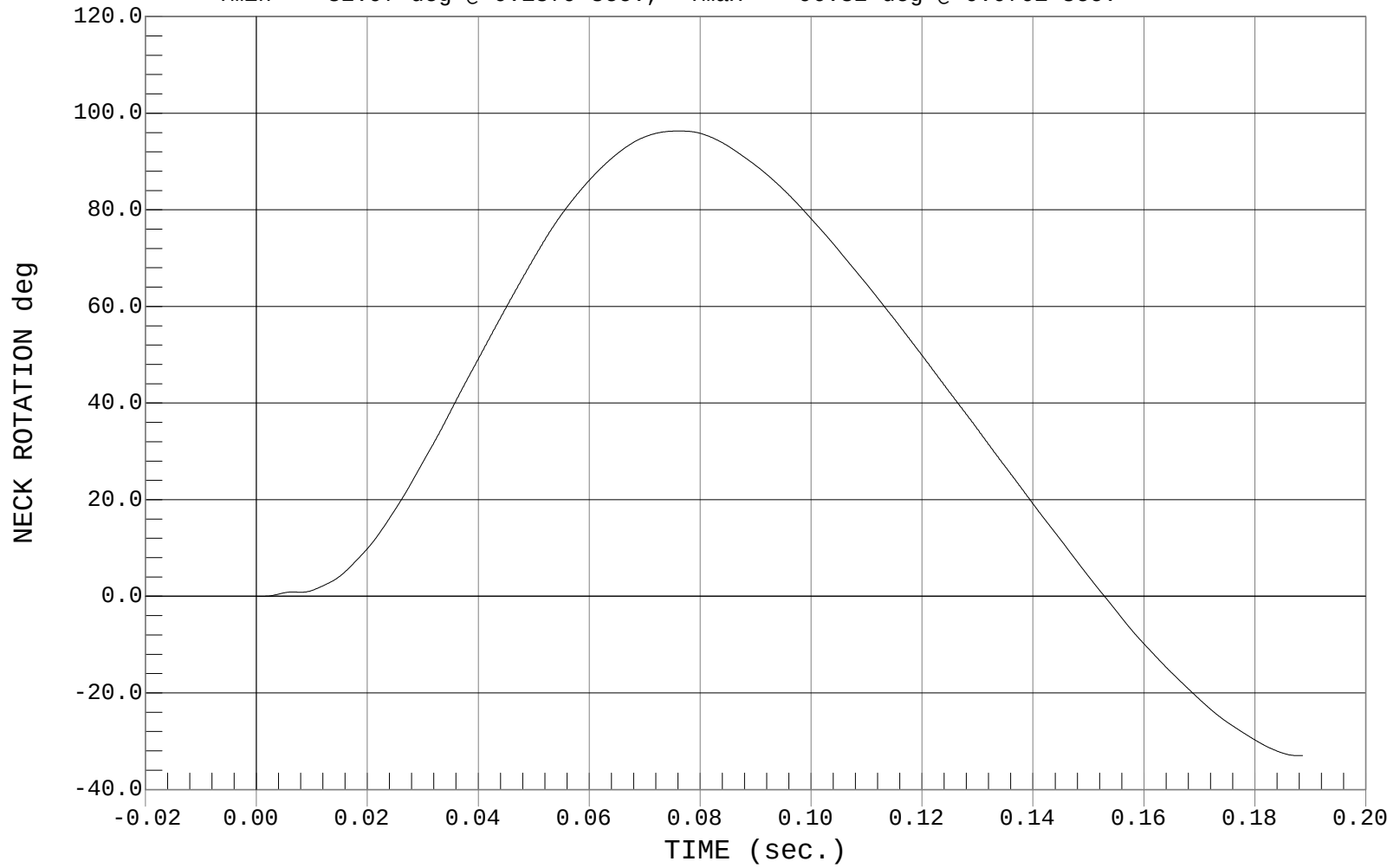
## NECK ROTATION

Test Desc.: Dummy Calibration - Neck Extension  
Component: Dummy #142

Test Date: 11-07-00  
Speed: 20.06 FT/SEC, 6.11 M/SEC

— 1 NECK ROTATION, D00413DU.D05

Ymin = -32.97 deg @ 0.1879 sec., Ymax = 96.32 deg @ 0.0761 sec.



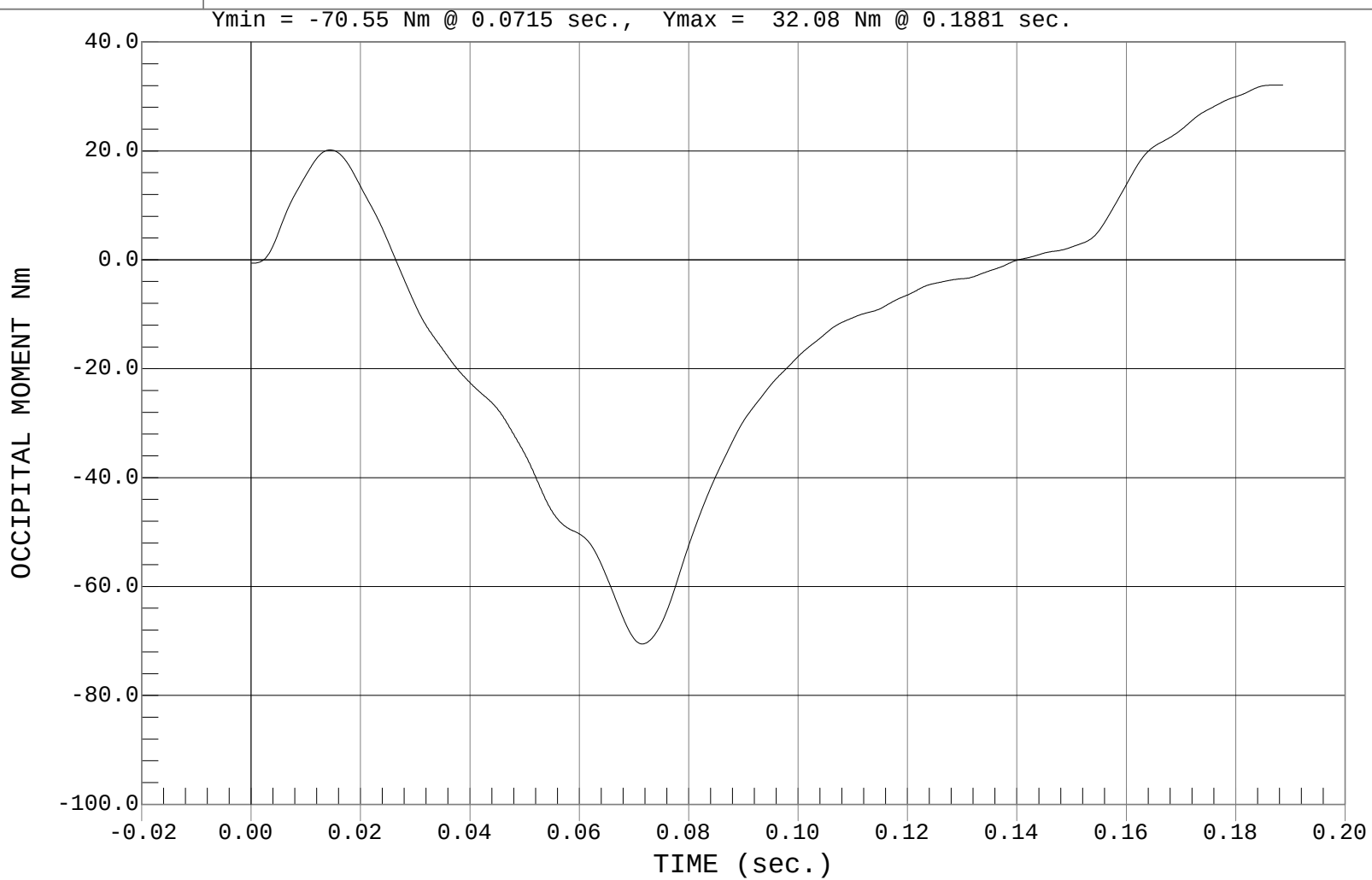


## OCCIPITAL MOMENT

Test Desc.: Dummy Calibration - Neck Extension  
Component: Dummy #142

Test Date: 11-07-00  
Speed: 20.06 FT/SEC, 6.11 M/SEC

— 1 OCCIPITAL MOMENT, D00413NK.MNT



**Hybrid III Calibration Data Sheet**  
**50<sup>th</sup> Percentile Male**  
**Hip-Femur Flexion Test**

ATD Serial No.: 142

Test I.D.: D001419/0

| Tested Parameter      | Units   | Specification                   | Result |       | Pass/Fail |
|-----------------------|---------|---------------------------------|--------|-------|-----------|
|                       |         |                                 | Right  | Left  |           |
| Temperature           | °C      | 18.9 to 25.6                    | 21.1°  | 21.1° | PASS      |
| Relative Humidity     | %       | 10 to 70                        | 36%    | 35%   | PASS      |
| Rotation Rate         | deg/sec | 5 – 10                          | Yes    | Yes   | PASS      |
| 30 Degrees            | Nm      | 94.9 Nm Max.                    | 67.8   | 63.7  | PASS      |
| 150 ft-lbf / 203.4 Nm | Deg     | 40 – 50 Degree<br>Max. rotation | 46°    | 46°   | PASS      |
| Overall Test Results  |         |                                 |        |       | PASS      |

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

\_\_\_\_\_  
11/9/00

Test Date

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



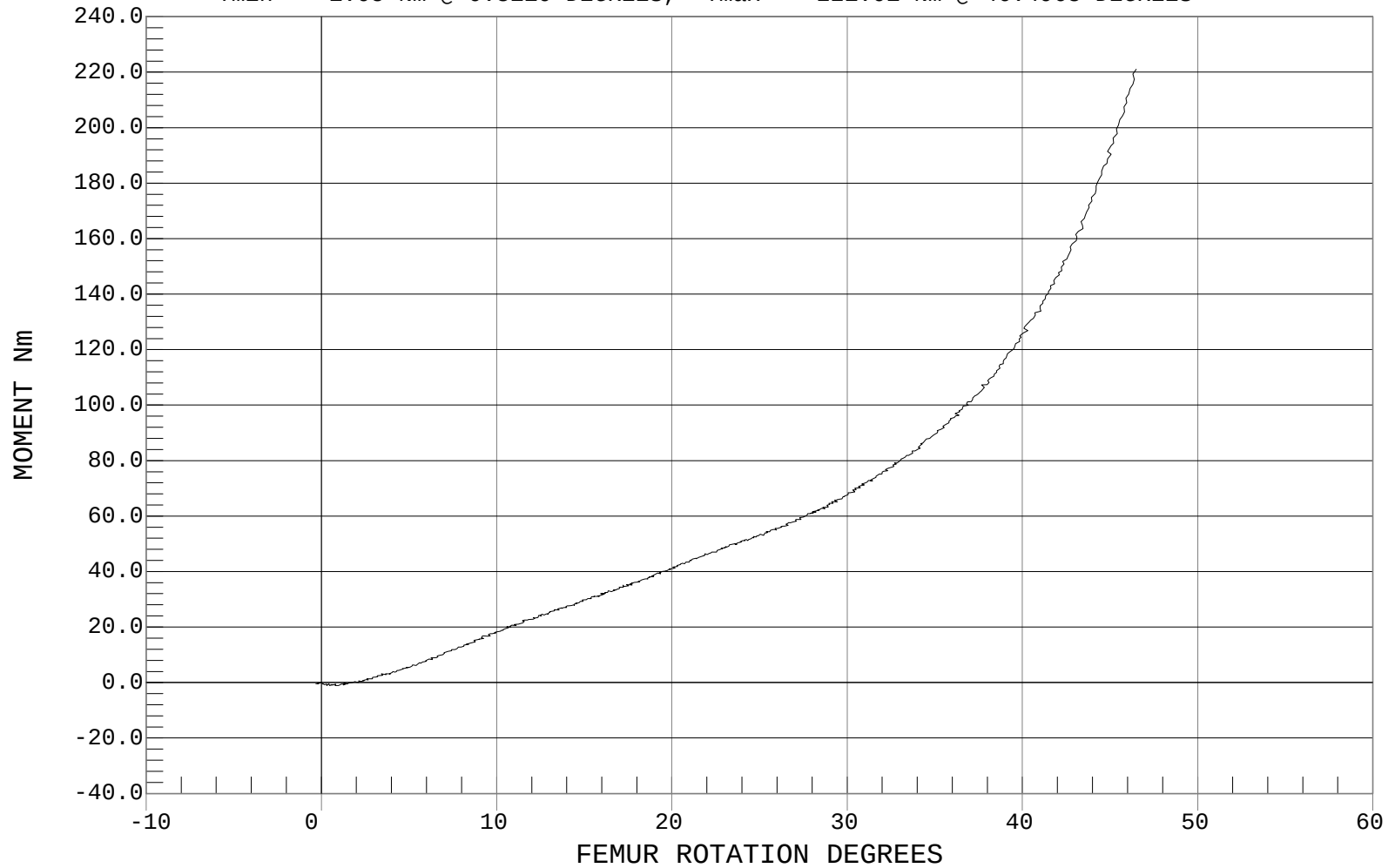
# HIP-FEMUR FLEXION

Test Desc.: DUMMY CALIBRATION - HIP-FEMUR FLEXION  
Component: DUMMY # 142 RIGHT FEMUR

Test Date: 11-09-00  
Speed: 0.00 FT/SEC, 0.00 M/SEC

1 MOMENT, D00419FC.F14

Ymin = -1.05 Nm @ 0.3110 DEGREES, Ymax = 221.01 Nm @ 46.4968 DEGREES





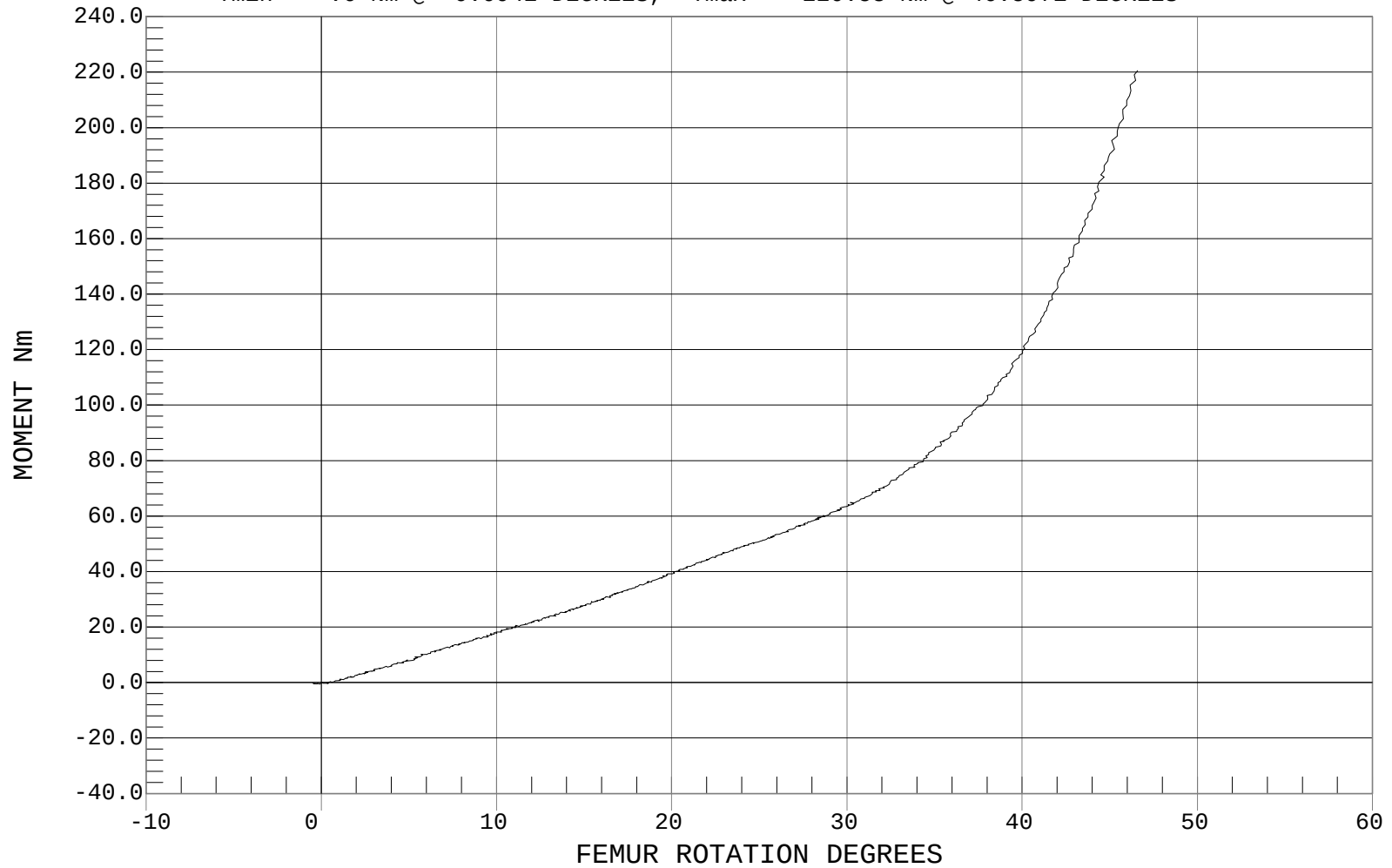
# HIP-FEMUR FLEXION

Test Desc.: DUMMY CALIBRATION - HIP-FEMUR FLEXION  
Component: DUMMY # 142 LEFT FEMUR

Test Date: 11-09-00  
Speed: 0.00 FT/SEC, 0.00 M/SEC

1 MOMENT, D00410FC.F14

Ymin = -.6 Nm @ -0.0942 DEGREES, Ymax = 220.58 Nm @ 46.5971 DEGREES





# Hybrid III Calibration Data Sheet

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

### External Measurements

ATD Serial No.: 142

Test I.D.: D00141

| External Measurement Data             |       |               |        |           |
|---------------------------------------|-------|---------------|--------|-----------|
| Tested Parameter                      | Units | Specification | Result | Pass/Fail |
| Laboratory Temperature                | °C    | 20.4 to 22.1  | 21.1°  | PASS      |
| Laboratory Relative Humidity          | %     | 10 to 70      | 18%    | PASS      |
| A – Total sitting height              | mm    | 879 to 889    | 884    | PASS      |
| B – Shoulder pivot height             | mm    | 506 to 521    | 514    | PASS      |
| C – “H” point height                  | mm    | 84 to 89      | 86     | PASS      |
| D – “H” point from seat back          | mm    | 135 to 140    | 138    | PASS      |
| E – Shoulder pivot from back          | mm    | 84 to 94      | 88     | PASS      |
| F – Thigh clearance                   | mm    | 140 to 155    | 144    | PASS      |
| G – Elbow back to wrist pivot         | mm    | 290 to 305    | 296    | PASS      |
| H – Skull cap to back line            | mm    | 41 to 46      | 44     | PASS      |
| I – Shoulder to elbow length          | mm    | 330 to 345    | 339    | PASS      |
| J – Elbow rest height                 | mm    | 191 to 211    | 198    | PASS      |
| K – Buttock to knee length            | mm    | 579 to 605    | 585    | PASS      |
| L – Popliteal length                  | mm    | 429 to 455    | 444    | PASS      |
| M – Knee pivot height                 | mm    | 485 to 500    | 492    | PASS      |
| N – Buttock popliteal length          | mm    | 452 to 478    | 462    | PASS      |
| O – Chest depth                       | mm    | 213 to 229    | 219    | PASS      |
| P – Foot length                       | mm    | 252 to 267    | 261    | PASS      |
| V – Shoulder breadth                  | mm    | 422 to 437    | 432    | PASS      |
| W – Foot breadth                      | mm    | 91 to 107     | 102    | PASS      |
| Y – Chest circumference               | mm    | 970 to 1001   | 990    | PASS      |
| Z – Waist circumference               | mm    | 836 to 866    | 852    | PASS      |
| AA – Location for chest circumference | mm    | 429 to 434    | 432    | PASS      |
| BB – Location for waist circumference | mm    | 226 to 231    | 229    | PASS      |
| Overall Test Results                  |       |               |        | PASS      |

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

\_\_\_\_\_  
12/27/00

\_\_\_\_\_  
Test Date

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Approved By

## **APPENDIX D**

### **TEST EQUIPMENT AND INSTRUMENTATION CALIBRATION**

DUMMY, VEHICLE, AND LABORATORY INSTRUMENT CALIBRATION  
INSTRUMENTS FOR DUMMY NO. 192

|                        | INSTRUMENTS FOR DRIVER DUMMY NO. 192 |              |                  |
|------------------------|--------------------------------------|--------------|------------------|
|                        | SERIAL NO.                           | MANUFACTURER | CALIBRATION DATE |
| Head X                 | AFW91                                | Endevco      | 11/16/00         |
| Head Y                 | AAKB3                                | Endevco      | 11/16/00         |
| Head Z                 | AGRP4                                | Endevco      | 11/16/00         |
| Head X Redundant       | AGRY2                                | Endevco      | 11/16/00         |
| Head Y Redundant       | ACCP9                                | Endevco      | 11/16/00         |
| Head Z Redundant       | AGMY3                                | Endevco      | 11/16/00         |
| Chest X                | AAKE2                                | Endevco      | 11/16/00         |
| Chest Y                | AGAG0                                | Endevco      | 11/16/00         |
| Chest Z                | AAJY4                                | Endevco      | 11/16/00         |
| Chest X Redundant      | AF9Y3                                | Endevco      | 11/16/00         |
| Chest Y Redundant      | AF973                                | Endevco      | 11/16/00         |
| Chest Z Redundant      | AGN47                                | Endevco      | 11/16/00         |
| Right Femur Load Cell  | 263                                  | Denton       | 9/20/00          |
| Left Femur Load Cell   | 264                                  | Denton       | 9/20/00          |
| Pelvis X               | AALG2                                | Endevco      | 11/15/00         |
| Pelvis Y               | AGN98                                | Endevco      | 11/15/00         |
| Pelvis Z               | AC9P8                                | Endevco      | 11/15/00         |
| Neck Force X           | 260                                  | Denton       | 8/30/00          |
| Neck Force Y           | 260                                  | Denton       | 8/30/00          |
| Neck Force Z           | 260                                  | Denton       | 8/30/00          |
| Neck Moment X          | 260                                  | Denton       | 8/30/00          |
| Neck Moment Y          | 260                                  | Denton       | 8/30/00          |
| Neck Moment Z          | 260                                  | Denton       | 8/30/00          |
| Chest Deflection Gauge | 192                                  | Servo        | 11/10/00         |
| Lap Belt Load Cell     | 192                                  | Denton       | 10/6/00          |

DUMMY, VEHICLE, AND LABORATORY INSTRUMENT CALIBRATION  
INSTRUMENTS FOR DUMMY NO. 192

|                                | INSTRUMENTS FOR DRIVER DUMMY NO. 192 |              |                  |
|--------------------------------|--------------------------------------|--------------|------------------|
|                                | SERIAL NO.                           | MANUFACTURER | CALIBRATION DATE |
| Upper Right Tibia Moment X     | 111                                  | Denton       | 9/20/00          |
| Upper Right Tibia Moment Y     | 111                                  | Denton       | 9/20/00          |
| Upper Right Tibia Force Z      | 111                                  | Denton       | 9/20/00          |
| Lower Right Tibia Moment X     | 142                                  | Denton       | 9/20/00          |
| Lower Right Tibia Moment Y     | 142                                  | Denton       | 9/20/00          |
| Lower Right Tibia Force Z      | 142                                  | Denton       | 9/20/00          |
| Upper Left Tibia Moment X      | 110                                  | Denton       | 9/20/00          |
| Upper Left Tibia Moment Y      | 110                                  | Denton       | 9/20/00          |
| Upper Left Tibia Force Z       | 110                                  | Denton       | 9/20/00          |
| Lower Left Tibia Moment X      | 139                                  | Denton       | 9/21/00          |
| Lower Left Tibia Moment Y      | 139                                  | Denton       | 9/21/00          |
| Lower Left Tibia Force Z       | 139                                  | Denton       | 9/21/00          |
| Left Foot Ball Z Acceleration  | J23772                               | Endevco      | 11/15/00         |
| Left Heel X Acceleration       | J19873                               | Endevco      | 11/15/00         |
| Left Heel Z Acceleration       | J19236                               | Endevco      | 11/15/00         |
| Right Foot Ball Z Acceleration | FJ66J                                | Endevco      | 11/15/00         |
| Right Heel X Acceleration      | J23918                               | Endevco      | 11/15/00         |
| Right Heel Z Acceleration      | EH75J                                | Endevco      | 11/15/00         |

DUMMY, VEHICLE, AND LABORATORY INSTRUMENT CALIBRATION  
INSTRUMENTS FOR DUMMY NO. 142

|                        | INSTRUMENTS FOR PASSENGER DUMMY NO. 142 |              |                  |
|------------------------|-----------------------------------------|--------------|------------------|
|                        | SERIAL NO.                              | MANUFACTURER | CALIBRATION DATE |
| Head X                 | J27523                                  | Endevco      | 11/15/00         |
| Head Y                 | J29023                                  | Endevco      | 11/15/00         |
| Head Z                 | J29006                                  | Endevco      | 11/15/00         |
| Head X Redundant       | J35562                                  | Endevco      | 11/15/00         |
| Head Y Redundant       | J27461                                  | Endevco      | 11/15/00         |
| Head Z Redundant       | J27457                                  | Endevco      | 11/15/00         |
| Chest X                | J27466                                  | Endevco      | 11/15/00         |
| Chest Y                | J27470                                  | Endevco      | 11/15/00         |
| Chest Z                | J27509                                  | Endevco      | 11/15/00         |
| Chest X Redundant      | AAL32                                   | Endevco      | 11/15/00         |
| Chest Y Redundant      | AGT82                                   | Endevco      | 11/15/00         |
| Chest Z Redundant      | AGR67                                   | Endevco      | 11/15/00         |
| Right Femur Load Cell  | 257                                     | Denton       | 9/20/00          |
| Left Femur Load Cell   | 258                                     | Denton       | 9/20/00          |
| Pelvis X               | AAKA1                                   | Endevco      | 11/15/00         |
| Pelvis Y               | AF9Y5                                   | Endevco      | 11/15/00         |
| Pelvis Z               | AAKA2                                   | Endevco      | 11/15/00         |
| Neck Force X           | 261                                     | Denton       | 8/31/00          |
| Neck Force Y           | 261                                     | Denton       | 8/31/00          |
| Neck Force Z           | 261                                     | Denton       | 8/31/00          |
| Neck Moment X          | 261                                     | Denton       | 8/31/00          |
| Neck Moment Y          | 261                                     | Denton       | 8/31/00          |
| Neck Moment Z          | 261                                     | Denton       | 8/31/00          |
| Chest Deflection Gauge | 142                                     | Servo        | 11/10/00         |
| Lap Belt Load Cell     | 193                                     | Denton       | 10/6/00          |

DUMMY, VEHICLE, AND LABORATORY INSTRUMENT CALIBRATION  
INSTRUMENTS FOR DUMMY NO. 142

|                                | INSTRUMENTS FOR PASSENGER DUMMY NO. 142 |              |                  |
|--------------------------------|-----------------------------------------|--------------|------------------|
|                                | SERIAL NO.                              | MANUFACTURER | CALIBRATION DATE |
| Upper Right Tibia Moment X     | 107                                     | Denton       | 9/21/00          |
| Upper Right Tibia Moment Y     | 107                                     | Denton       | 9/21/00          |
| Upper Right Tibia Force Z      | 107                                     | Denton       | 9/21/00          |
| Lower Right Tibia Moment X     | 136                                     | Denton       | 9/21/00          |
| Lower Right Tibia Moment Y     | 136                                     | Denton       | 9/21/00          |
| Lower Right Tibia Force Z      | 136                                     | Denton       | 9/21/00          |
| Upper Left Tibia Moment X      | 108                                     | Denton       | 9/21/00          |
| Upper Left Tibia Moment Y      | 108                                     | Denton       | 9/21/00          |
| Upper Left Tibia Force Z       | 108                                     | Denton       | 9/21/00          |
| Lower Left Tibia Moment X      | 137                                     | Denton       | 9/21/00          |
| Lower Left Tibia Moment Y      | 137                                     | Denton       | 9/21/00          |
| Lower Left Tibia Force Z       | 137                                     | Denton       | 9/21/00          |
| Left Foot Ball Z Acceleration  | J35564                                  | Endevco      | 11/16/00         |
| Left Heel X Acceleration       | AJ507                                   | Endevco      | 11/16/00         |
| Left Heel Z Acceleration       | J19925                                  | Endevco      | 11/16/00         |
| Right Foot Ball Z Acceleration | J17988                                  | Endevco      | 11/16/00         |
| Right Heel X Acceleration      | J14232                                  | Endevco      | 11/16/00         |
| Right Heel Z Acceleration      | AJ4R3                                   | Endevco      | 11/16/00         |

# VEHICLE INSTRUMENT CALIBRATION

|                                         | VEHICLE ACCELEROMETERS |              |                  |
|-----------------------------------------|------------------------|--------------|------------------|
|                                         | SERIAL NO.             | MANUFACTURER | CALIBRATION DATE |
| Left Rear Seat Crossmember X            | I18-E18                | Entran       | 12/13/00         |
| Right Rear Seat Crossmember X           | A09-G07                | Entran       | 12/13/00         |
| Top of Engine Block X                   | E10-F10                | Entran       | 9/12/00          |
| Bottom of Engine X                      | J07-X16                | Entran       | 9/12/00          |
| Left Brake Caliper X                    | F07-A20                | Entran       | 9/14/00          |
| Right Brake Caliper X                   | I25-F14                | Entran       | 11/15/00         |
| Instrument Panel X                      | A09-G02                | Entran       | 9/12/00          |
| Redundant Left Rear Seat Crossmember X  | G01-J15                | Entran       | 10/2/00          |
| Redundant Right Rear Seat Crossmember X | I25-F04                | Entran       | 12/13/00         |

|                                            | LABORATORY INSTRUMENTS |              |                  |
|--------------------------------------------|------------------------|--------------|------------------|
|                                            | SERIAL NO.             | MANUFACTURER | CALIBRATION DATE |
| Neck Bending Pendulum Accelerometer        | C12885                 | Endevco      | 1/17/01          |
| Neck Bending Head Rotary Potentiometer     | 018                    | Spectrol     | 10/2/00          |
| Neck Bending Pendulum Rotary Potentiometer | 019                    | Spectrol     | 10/2/00          |
| Chest Probe Accelerometer                  | J14396                 | Endevco      | 1/11/01          |
| Knee Impact Accelerometer                  | J14398                 | Endevco      | 1/11/01          |



## **APPENDIX E**

### **VEHICLE OWNER'S MANUAL OCCUPANT RESTRAINT INSTRUCTIONS**

## SAFETY RESTRAINTS

### Safety restraints precautions



Always drive and ride with your seatback upright and the lap belt snug and low across the hips.



To reduce the risk of injury, make sure children sit where they can be properly restrained.



Never let a passenger hold a child on his or her lap while the vehicle is moving. The passenger cannot protect the child from injury in a collision.



All occupants of the vehicle, including the driver, should always properly wear their safety belts, even when an air bag SRS is provided.

## Seating and safety restraints



It is extremely dangerous to ride in a cargo area, inside or outside of a vehicle. In a collision, people riding in these areas are more likely to be seriously injured or killed. Do not allow people to ride in any area of your vehicle that is not equipped with seats and safety belts. Be sure everyone in your vehicle is in a seat and using a safety belt properly.



In a rollover crash, an unbelted person is significantly more likely to die than a person wearing a safety belt.



Each seating position in your vehicle has a specific safety belt assembly which is made up of one buckle and one tongue that are designed to be used as a pair. 1) Use the shoulder belt on the outside shoulder only. Never wear the shoulder belt under the arm. 2) Never swing the safety belt around your neck over the inside shoulder. 3) Never use a single belt for more than one person.

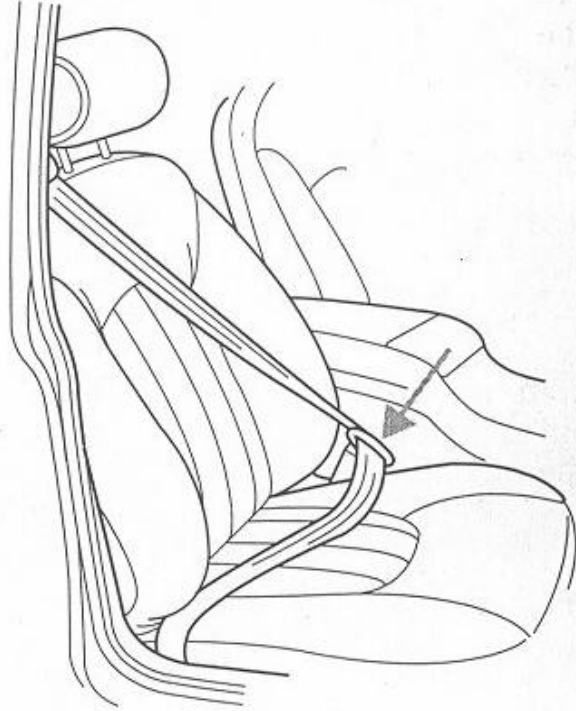


Always transport children 12 years old and under in the back seat and always properly use appropriate child restraints.

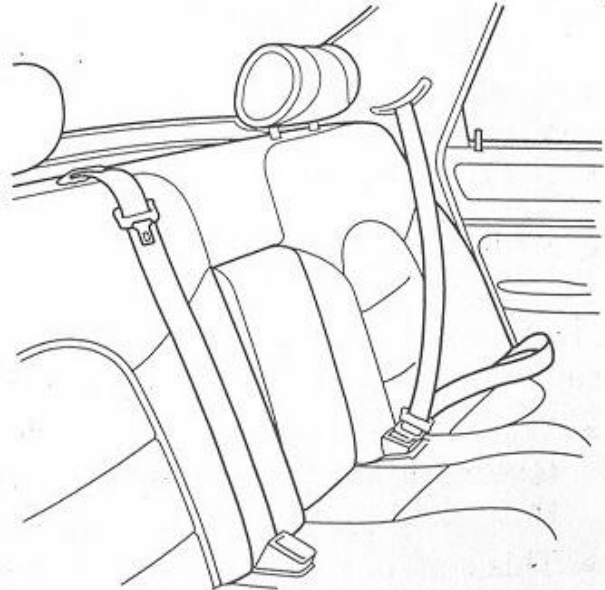
## Seating and safety restraints

### Combination lap and shoulder belts

- Front seat belts

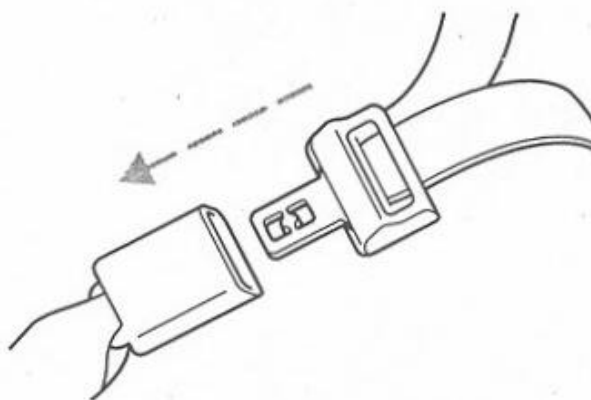


- Rear seat belts

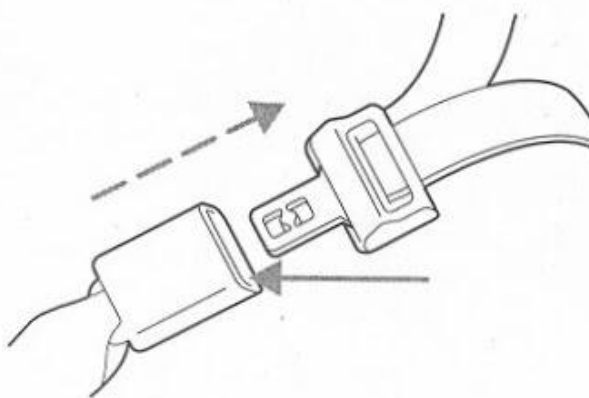


## Seating and safety restraints

1. Insert the belt tongue into the proper buckle (the buckle closest to the direction the tongue is coming from) until you hear a snap and feel it latch. Make sure the tongue is securely fastened in the buckle.



2. To unfasten, push the release button and remove the tongue from the buckle.



The front outboard and rear safety restraints in the vehicle are combination lap and shoulder belts. The front passenger and rear seat safety belts have two types of locking modes described below:

### Energy Management Feature

The front outboard and rear safety restraints in the vehicle are combination lap and shoulder belts. The front passenger and rear seat safety belts have two types of locking modes.

- This vehicle has a seat belt system with an energy management feature at the front outboard seating positions to help further reduce the risk of injury in the event of a head-on collision.
- This seat belt system has a retractor assembly that is designed to pay out webbing in a controlled manner. This feature is designed to help reduce the belt force acting on the occupant's chest.

## Seating and safety restraints



After any vehicle collision, the seat belt system at all passenger seating positions must be checked by a qualified technician to verify that the "automatic locking retractor" feature for child seats is still functioning properly. In addition, all seat belts should be checked for proper function.



**BELT AND RETRACTOR ASSEMBLY MUST BE REPLACED** if the seat belt assembly "automatic locking retractor" feature or any other seat belt function is not operating properly when checked according to the procedures in Workshop Manual.



Failure to replace the Belt and Retractor assembly could increase the risk of injury in collisions.

### Vehicle sensitive mode

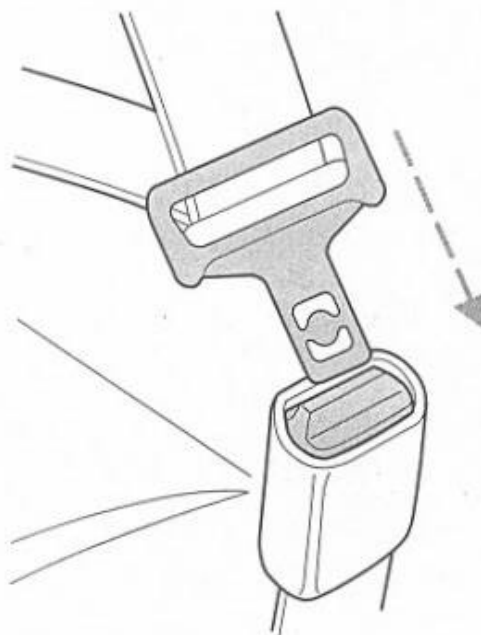
The vehicle sensitive mode is the normal retractor mode, allowing free shoulder belt length adjustment to your movements and locking in response to vehicle movement. For example, if the driver brakes suddenly or turns a corner sharply, or the vehicle receives an impact of approximately 8 km/h (5 mph) or more, the combination safety belts will lock to help reduce forward movement of the driver and passengers.

## Seating and safety restraints

### Automatic locking mode

#### *How to use the automatic locking mode*

- Buckle the combination lap and shoulder belt.



- Grasp the shoulder portion and pull downward until the entire belt is extracted.



- Allow the belt to retract. As the belt retracts, you will hear a clicking sound. This indicates the safety belt is now in the automatic locking mode.

In this mode, the shoulder belt is automatically pre-locked. The belt will still retract to remove any slack in the shoulder belt.

The automatic locking mode is not available on the driver safety belt.



## Seating and safety restraints

### When to use the automatic locking mode

- **Anytime** a child safety seat is installed in the vehicle. Children 12 years old and under should be properly restrained in the rear seat whenever possible. Refer to *Safety Restraints for Children* or *Safety Seats for Children* later in this chapter.

### How to disengage the automatic locking mode

Disconnect the combination lap/shoulder belt and allow it to retract completely to disengage the automatic locking mode and activate the vehicle sensitive (emergency) locking mode.



After any vehicle collision, the seat belt system at all passenger seating positions must be checked by a qualified technician to verify that the "automatic locking retractor" feature for child seats is still functioning properly, in addition to other checks for proper seat belt system function.



BELT AND RETRACTOR ASSEMBLY MUST BE REPLACED if the seat belt assembly "automatic locking retractor" feature or any other seat belt function is not operating properly. In addition, all seat belts should be checked for proper function.



Failure to replace the Belt and Retractor assembly could increase the risk of injury in collisions.

### Safety belt pretensioner

Your vehicle is equipped with safety belt pretensioners at the driver and front passenger seating positions.

The safety belt pretensioner is a device which removes excess webbing from the safety belt system. The safety belt pretensioner uses the same crash sensor system as the front air bag supplemental restraint system (SRS). When the safety belt pretensioner deploys, webbing from the lap and shoulder belt is tightened. The driver and front passenger seat belt system (including retractors, buckles and height adjusters) must be replaced if the vehicle is involved in a collision that results in deployment of front air bags and safety belt pretensioners. Refer to the *Safety belt maintenance* section in this chapter.

## Seating and safety restraints



Failure to replace the safety belt assembly under the above conditions could result in severe personal injuries in the event of a collision.

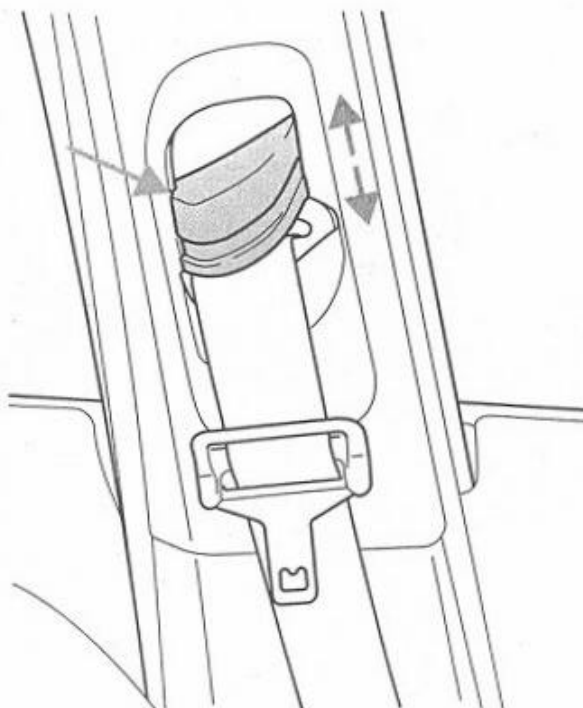
### Front safety belt height adjustment

Your vehicle has safety belt height adjustments for the driver and front passenger. Adjust the height of the shoulder belt so the belt rests across the middle of your shoulder.

To lower the shoulder belt height, push the button and slide the height adjuster down. To raise the height of the shoulder belt, slide the height adjuster up. Pull down on the height adjuster to make sure it is locked in place.



Position the shoulder belt height adjusters so that the belt rests across the middle of your shoulder. Failure to adjust the safety belt properly could reduce the effectiveness of the seat belt and increase the risk of injury in a collision.



### Safety belt warning light and indicator chime

The seat belt warning light illuminates in the instrument cluster and a chime sounds to remind the occupants to fasten their safety belts.

## Seating and safety restraints

### Conditions of operation

| If...                                                                                                             | Then...                                                                                       |
|-------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| The driver's safety belt is not buckled before the ignition switch is turned to the RUN position...               | The safety belt warning light illuminate 1-2 minutes and the warning chime sound 4-8 seconds. |
| The driver's safety belt is buckled while the indicator light is illuminated and the warning chime is sounding... | The safety belt warning light and warning chime turn off.                                     |
| The driver's safety belt is buckled before the ignition switch is turned to the RUN position...                   | The safety belt warning light and indicator chime remain off.                                 |

### Belt minder

The Belt Minder feature is a supplemental warning to the safety belt warning function. This feature provides additional reminders to the driver that the driver's safety belt is unbuckled by intermittently sounding a chime and illuminating the safety belt warning lamp in the instrument cluster.

| If...                                                                                                                                                                          | Then...                                                                                                                                                                                                              |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| The driver's safety belt is not buckled before the vehicle has reached at least 5 km/h (3 mph) and 1-2 minutes have elapsed since the ignition switch has been turned to ON... | The Belt Minder feature is activated - the safety belt warning light illuminates and the warning chime sounds for 6 seconds every 30 seconds, repeating for approximately 5 minutes or until safety belt is buckled. |
| The driver's safety belt is buckled while the safety belt indicator light is illuminated and the safety belt warning chime is sounding...                                      | The Belt Minder feature will not activate.                                                                                                                                                                           |

## Seating and safety restraints

| If...                                                                                          | Then...                                    |
|------------------------------------------------------------------------------------------------|--------------------------------------------|
| The driver's safety belt is buckled before the ignition switch is turned to the ON position... | The Belt Minder feature will not activate. |

The purpose of the Belt Minder is to remind occasional wearers to wear safety belts all of the time.

The following are reasons most often given for not wearing safety belts: (All statistics based on U.S. data)

| Reasons given...          | Consider...                                                                                                                                                                                                             |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| "Crashes are rare events" | <b>36 700 crashes occur every day.</b><br>The more we drive, the more we are exposed to "rare" events, even for good drivers. <i>1 in 4 of us will be seriously injured in a crash during our lifetime.</i>             |
| "I'm not going far"       | <b>3 of 4</b> fatal crashes occur within <b>25</b> miles of home.                                                                                                                                                       |
| "Belts are uncomfortable" | Ford designs its safety belts to enhance comfort. If you are uncomfortable - try different positions for the safety belt upper anchorage and seatback which should be as upright as possible; this can improve comfort. |
| "I was in a hurry"        | <b>Prime time for an accident.</b> Belt Minder reminds us to take a few seconds to buckle up.                                                                                                                           |
| "Seat belts don't work"   | <b>Safety belts</b> , when used properly, <b>reduce risk of death</b> to front seat occupants by <b>45% in cars</b> , and by <b>60% in light trucks</b> .                                                               |
| "Traffic is light"        | <b>Nearly 1 of 2 deaths occur in single-vehicle crashes</b> , many when no other vehicles are around.                                                                                                                   |



## Seating and safety restraints

| Reasons given...                       | Consider...                                                                                                                                                 |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| "Belts wrinkle my clothes"             | Possibly, but a serious crash can do much more than wrinkle your clothes, particularly if you are unbelted.                                                 |
| "The people I'm with don't wear belts" | Set the example, teen deaths occur 4 times more often in vehicles with TWO or MORE people. Children and younger brothers/sisters imitate behavior they see. |
| "I have an air bag"                    | Air bags offer greater protection when used with safety belts. Frontal airbags are not designed to inflate in rear and side crashes or rollovers.           |
| "I'd rather be thrown clear"           | Not a good idea. <b>People</b> who are <b>ejected are 40 times more likely to DIE</b> . Safety belts help prevent ejection, WE CAN'T "PICK OUR CRASH".      |

 Do not sit on top of a buckled safety belt to avoid the Belt Minder chime. Sitting on the safety belt will increase the risk of injury in an accident. To disable (one-time) or deactivate the Belt Minder feature please follow the directions stated below.

### **One time disable**

Anytime the safety belt is buckled and then unbuckled during an ignition ON cycle, Belt Minder will be disabled for that ignition cycle only.

### **Deactivating/activating the belt minder feature**

*Read steps 1 - 9 thoroughly before proceeding with the deactivation/activation programming procedure.*

The Belt Minder feature can be deactivated/activated by performing the following procedure:

Before following the procedure, make sure that:

- the parking brake is set
- the gearshift is in P (Park) (automatic transmission) or the neutral position (manual transmission).

## Seating and safety restraints

- the ignition switch is in the OFF position
- all vehicle doors are closed
- the driver's safety belt is unbuckled
- the parklamps/headlamps are in OFF position (If vehicle is equipped with Autolamps, this will not affect the procedure.)



To reduce the risk of injury, do not deactivate/activate the Belt Minder feature while driving the vehicle.

1. Turn the ignition switch to the RUN (or ON) position. (DO NOT START THE ENGINE)
2. Wait until the safety belt warning light turns off. (Approximately 1–2 minutes)
  - Steps 3–5 must be completed within 60 seconds or the procedure will have to be repeated.
3. Buckle then unbuckle the safety belt three times, ending with the safety belt unbuckled. This can be done before or during Belt Minder warning activation.
4. Turn on the parklamps/headlamps, turn off the parklamps/headlamps.
5. Buckle then unbuckle the safety belt three times, ending with the safety belt unbuckled.
  - After step 5 the safety belt warning light will be turned on for three seconds.
6. Within seven seconds of the safety belt warning light turning off, buckle then unbuckle the safety belt.
  - This will disable Belt Minder if it is currently enabled, or enable Belt Minder if it is currently disabled.
7. Confirmation of disabling Belt Minder is provided by flashing the safety belt warning light four times per second for three seconds.
8. Confirmation of enabling Belt Minder is provided by flashing the safety belt warning light four times per second for three seconds, followed by three seconds with the safety belt warning light off, then followed by flashing the safety belt warning light four times per second for three seconds again.
9. After receiving confirmation, the deactivation/activation procedure is complete.

## Seating and safety restraints

### Safety belt extension assembly

If the safety belt assembly is too short for you, even when fully extended, 20 cm (8 inches) can be added to the safety belt assembly by adding a safety belt extension assembly (part number 611C22). Safety belt extension assemblies can be obtained from your dealer at no cost.

Use only extensions manufactured by the same supplier as the safety belt. Manufacturer identification is located at the end of the webbing on the label. Also, use the safety belt extension only if the safety belt is too short for you when fully extended. Do not use extensions to change the fit of the shoulder belt across the torso.

### Safety belt maintenance

Inspect the safety belt systems periodically to make sure they work properly and are not damaged. Inspect the safety belts to make sure there are no nicks, wears or cuts, replacing if necessary. All safety belt assemblies, including retractors, buckles, front seat belt buckle assemblies, buckle support assemblies (slide bar-if equipped), shoulder belt height adjusters (if equipped), shoulder belt guide on seatback (if equipped), child safety seat tether bracket assemblies (if equipped), and attaching hardware, should be inspected after a collision. Ford recommends that all safety belt assemblies used in vehicles involved in a collision be replaced. However, if the collision was minor and a qualified technician finds that the belts do not show damage and continue to operate properly, they do not need to be replaced. Safety belt assemblies not in use during a collision should also be inspected and replaced if either damage or improper operation is noted.



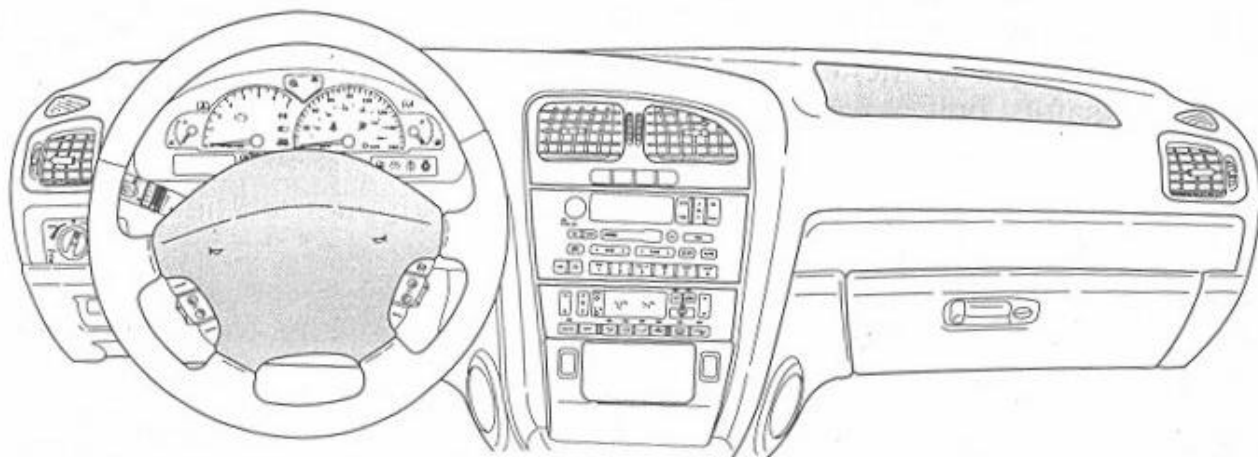
Failure to inspect and if necessary replace the safety belt assembly under the above conditions could result in severe personal injuries in the event of a collision.

Refer to *Cleaning and maintaining the safety belts* in the *Maintenance and care* section.



## Seating and safety restraints

### AIR BAG SUPPLEMENTAL RESTRAINT SYSTEM (SRS)

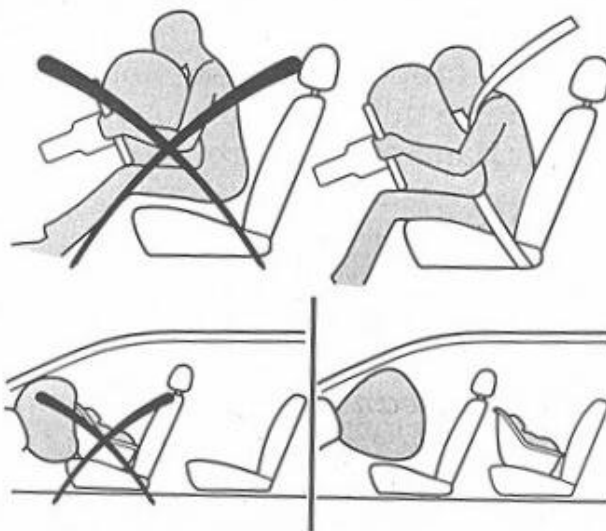


Your vehicle is equipped with a crash sensing and diagnostic module which records information about the air bag and sensor systems. In the event of a collision this module may save information related to the collision including information about the air bag system and impact severity. This information will assist Ford in the servicing of your vehicle and may help Ford better understand real world collisions and further improve the safety of future vehicles.

#### Important supplemental restraint system (SRS) precautions

The supplemental restraint system is designed to work with the safety belt to help protect the driver and right front passenger from certain upper body injuries.

Air bags DO NOT inflate slowly or gently and the risk of injury from a deploying air bag is greatest close to the trim covering the air bag module.



All occupants of the vehicle, including the driver, should always properly wear their safety belts, even when an air bag SRS is provided.

## Seating and safety restraints



Always transport children 12 years old and under in the back seat and always properly use appropriate child restraints.



National Highway Traffic Safety Administration (NHTSA) recommends a minimum distance of at least 25 cm (10 inches) between an occupant's chest and the driver air bag module.



Never place your arm over the air bag module as a deploying air bag can result in serious arm fractures or other injuries.

Steps you can take to properly position yourself away from the air bag:

- Move your seat to the rear as far as you can while still reaching the pedals comfortably.
- Recline the seat slightly (one or two degrees) from the upright position.



Do not put anything on or over the air bag module. Placing objects on or over the air bag inflation area may cause those objects to be propelled by the air bag into your face and torso causing serious injury.



Do not attempt to service, repair, or modify the Air Bag Supplemental Restraint System or its fuses. See your Ford or Lincoln Mercury dealer.



Modifications to the front end of the vehicle, including frame, bumper, front end body structure and tow hooks may effect the performance of the air bag sensors increasing the risk of injury. Do not modify the front end of the vehicle.

## Seating and safety restraints

### Children and air bags

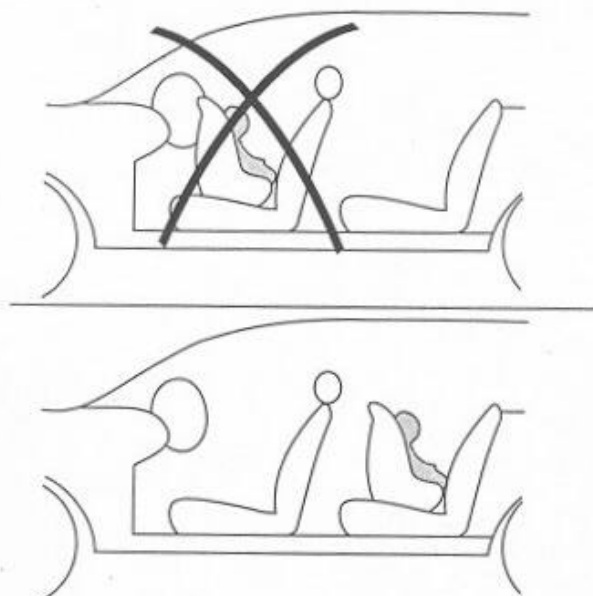
For additional important safety information, read all information on safety restraints in this guide.

Children must always be properly restrained. Accident statistics suggest that children are safer when properly restrained in the rear seating positions than in the front seating position. Failure to follow these instructions may increase the risk of injury in a collision.



Air bags can kill or injure a child in a child seat.

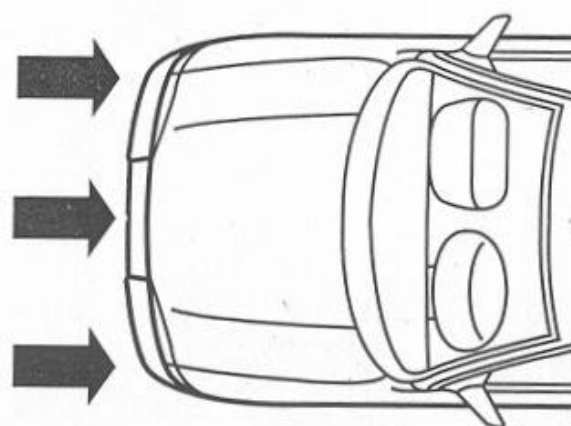
**NEVER** place a rear-facing child seat in front of an active air bag. If you must use a forward-facing child seat in the front seat, move the seat all the way back.



### How does the safety belt pretensioner and air bag supplemental restraint system work?

The safety belt pretensioner and air bag SRS are designed to activate when the vehicle sustains longitudinal deceleration sufficient to cause the sensors to close an electrical circuit that initiates pretensioner activation and air bag inflation.

The fact that the pretensioners and air bags did not activate in a collision does not mean that something is wrong with the system. Rather, it means the forces were not of the type sufficient to cause activation. Front air bags and pretensioners are designed to activate in frontal and near-frontal collisions, not rollover, side-impact, or rear-impacts unless the collision causes sufficient longitudinal deceleration.



## Seating and safety restraints

The air bags inflate and deflate rapidly upon activation. After air bag deployment, it is normal to notice a, smoke-like, powdery residue or smell the burnt propellant. This may consist of cornstarch, talcum powder (to lubricate the bag) or sodium compounds (e.g., baking soda) that result from the combustion process that inflates the air bag. Small amounts of sodium hydroxide may be present which may irritate the skin and eyes, but none of the residue is toxic.



While the system is designed to help reduce serious injuries, contact with a deploying air bag may also cause abrasions, swelling or temporary hearing loss. Because air bags must inflate rapidly and with considerable force, there is the risk of death or serious injuries such as fractures, facial and eye injuries or internal injuries, particularly to occupants who are not properly restrained or are otherwise out of position at the time of air bag deployment. Thus, it is extremely important that occupants be properly restrained as far away from the air bag module as possible while maintaining vehicle control.



Several air bag system components get hot after inflation. Do not touch them after inflation.



If the air bag has deployed, **the air bag will not function again and must be replaced immediately.** If the air bag is not replaced, the unrepaired area will increase the risk of injury in a collision.

The SRS consists of:

- driver and passenger air bag modules (which include the inflators and air bags).
- side air bags (if equipped). Refer to *Side air bag system* later in this chapter.
- safety belt pretensioners.



## Seating and safety restraints

- one or more impact and safing sensors.
- a readiness light and tone.
- and the electrical wiring which connects the components.

The diagnostic module monitors its own internal circuits and the supplemental air bag electrical system warning (including the impact sensors), the system wiring, the air bag system readiness light, the air bag back up power, the air bag ignitors and safety belt pretensioners.

### Determining if the system is operational

The SRS uses a readiness light in the instrument cluster or a tone to indicate the condition of the system. Refer to the *Air bag readiness* section in the *Instrumentation* chapter. Routine maintenance of the air bag is not required.

A difficulty with the system is indicated by one or more of the following:

- The readiness light will either flash or stay lit.
- The readiness light will not illuminate immediately after ignition is turned to the RUN position.
- A series of five beeps will be heard. The tone pattern will repeat periodically until the problem and/or light are repaired.



If any of these things happen, even intermittently, have the SRS serviced at your dealership or by a qualified technician immediately. Unless serviced, the system may not function properly in the event of a collision.

### Side air bag system



Do not place objects or mount equipment on or near the air bag cover on the side of the seatbacks of the front seats or in front seat areas that may come into contact with a deploying air bag. Failure to follow these instructions may increase the risk of personal injury in the event of a collision.

## Seating and safety restraints



Do not use accessory seat covers. The use of accessory seat covers may prevent the deployment of the side air bags and increase the risk of injury in an accident.



Do not lean your head on the door. The side air bag could injure you as it deploys from the side of the seatback.



Do not attempt to service, repair, or modify the air bag Supplemental Restraint System, its fuses or the seat cover on a seat containing an air bag. See your Ford or Lincoln Mercury dealer.

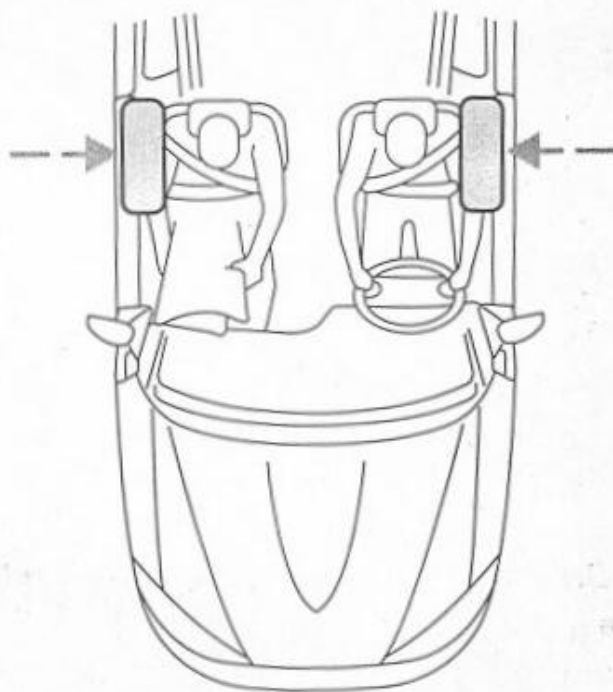


All occupants of the vehicle including the driver should always wear their safety belts even when an air bag SRS is provided.

### ***How does the side air bag system work?***

The side air bag system consists of the following:

- An inflatable nylon bag (air bag) with a gas generator concealed behind the outboard bolster of the driver and front passenger seatbacks.
- A special seat cover designed to allow airbag deployment.
- The same warning light, electronic control and diagnostic unit as used for the front air bags.
- Two crash sensors located under the outboard side of the front seats, attached near the floor.



Side air bags, in combination with seat belts, can help reduce the risk of severe injuries in the event of a significant side impact collision.

The side air bags are fitted on the outboard side of the seatbacks of the front seats. In certain lateral collisions, the air bag on the side affected by the collision will be inflated, even if the respective seat is not

## Seating and safety restraints

occupied. The air bag was designed to inflate between the door panel and occupant to further enhance the protection provided occupants in side impact collisions.

The air bag SRS is designed to activate when the vehicle sustains lateral deceleration sufficient to cause the sensors to close an electrical circuit that initiates air bag inflation.

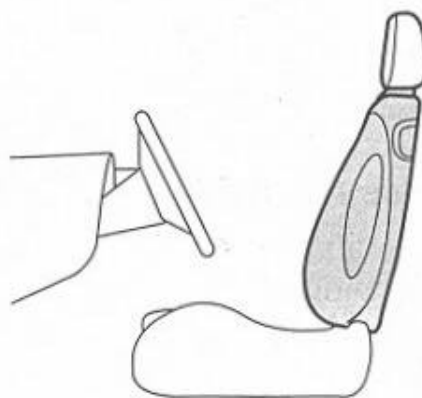
The fact that the air bags did not inflate in a collision does not mean that something is wrong with the system. Rather, it means the forces were not of the type sufficient to cause activation. Side air bags are designed to inflate in side-impact collisions, not roll-over, rear-impact, frontal or near-frontal collisions, unless the collision causes sufficient lateral deceleration.



Several air bag system components get hot after inflation. Do not touch them after inflation.



If the side air bag has deployed, **the air bag will not function again. The side air bag system (including the seat) must be inspected and serviced by a qualified technician in accordance with the vehicle service manual.** If the air bag is not replaced, the unrepaired area will increase the risk of injury in a collision.



### ***Determining if the system is operational***

The SRS uses a readiness light in the instrument cluster or a tone to indicate the condition of the system. Refer to the *Air bag readiness* section in the *Instrumentation* chapter. Routine maintenance of the air bag is not required.

A difficulty with the system is indicated by one or more of the following:

- The readiness light (same light as used for front air bag system) will either flash or stay lit.



## Seating and safety restraints

- The readiness light will not illuminate immediately after ignition is turned to the RUN position.
- A series of five beeps will be heard. The tone pattern will repeat periodically until the problem and light are repaired.

If any of these things happen, even intermittently, have the SRS serviced at your dealership or by a qualified technician immediately. Unless serviced, the system may not function properly in the event of a collision.

### **Disposal of air bags and air bag equipped vehicles (including pretensioners)**

For disposal of air bags or air bag equipped vehicles, see your local dealership or qualified technician. Air bags **MUST BE** disposed of by qualified personnel.

## Seating and safety restraints

### SAFETY RESTRAINTS FOR CHILDREN

See the following sections for directions on how to properly use safety restraints for children. Also see *Air Bag Supplemental Restraint System (SRS)* in this chapter for special instructions about using air bags.

#### Important child restraint precautions

You are required by law to use safety restraints for children in the U.S. and Canada. If small children ride in your vehicle (generally children who are four years old or younger and who weigh 18 kg [40 lbs] or less), you must put them in safety seats made especially for children. Check your local and state or provincial laws for specific requirements regarding the safety of children in your vehicle.



Never let a passenger hold a child on his or her lap while the vehicle is moving. The passenger cannot protect the child from injury in a collision.

Always follow the instructions and warnings that come with any infant or child restraint you might use.

When possible, always place children under age 12 in the rear seat of your vehicle. Accident statistics suggest that children are safer when properly restrained in the rear seating positions than in the front seating position.



## Seating and safety restraints

### Children and safety belts

If the child is the proper size, restrain the child in a safety seat.

Children who are too large for child safety seats (as specified by your child safety seat manufacturer) should always wear safety belts.

Follow all the important safety restraint and air bag precautions that apply to adult passengers in your vehicle.

If the shoulder belt portion of a combination lap and shoulder belt can be positioned so it does not cross or rest in front of the child's face or neck, the child should wear the lap and shoulder belt. Moving the child closer to the center of the vehicle may help provide a good shoulder belt fit.



Do not leave children, unreliable adults, or pets unattended in your vehicle.

To improve the fit of lap and shoulder belts on children who have outgrown child safety seats, Ford recommends use of a belt-positioning booster seat that is labelled as conforming to all applicable Federal motor vehicle safety standards. Belt-positioning booster seats raise the child and provide a shorter, firmer seating cushion that encourages safer seating posture and better fit of lap and shoulder belts on the child.

A belt-positioning booster should be used if the shoulder belt rests in front of the child's face or neck, or if the lap belt does not fit snugly on both thighs, or if the thighs are too short to let the child sit all the way back on the seat cushion when the lower legs hang over the edge of the seat cushion. You may wish to discuss the special needs of your child with your pediatrician.

### SAFETY SEATS FOR CHILDREN





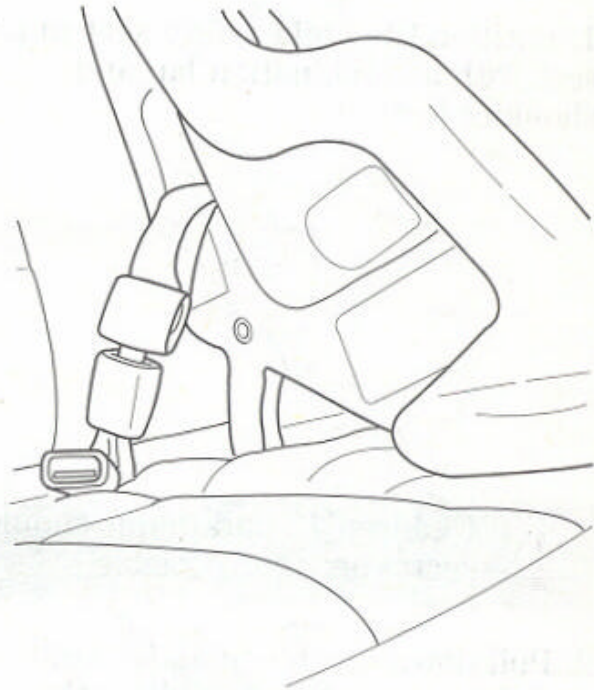
## Seating and safety restraints

### Child and infant or child safety seats

Use a safety seat that is recommended for the size and weight of the child. Carefully follow all of the manufacturer's instructions with the safety seat you put in your vehicle. If you do not install and use the safety seat properly, the child may be injured in a sudden stop or collision.

When installing a child safety seat:

- Review and follow the information presented in the *Air Bag Supplemental Restraint System* section in this chapter.
- Use the correct safety belt buckle for that seating position.
- Insert the belt tongue into the proper buckle until you hear a snap and feel it latch. Make sure the tongue is securely fastened in the buckle.
- Keep the buckle release button pointing up and away from the safety seat, with the tongue between the child seat and the release button, to prevent accidental unbuckling.
- Place seat back in upright position.
- Put the safety belt in the automatic locking mode. Refer to *Automatic locking mode*.



Ford recommends the use of a child safety seat having a top tether strap. Install the child safety seat in a seating position which is capable of providing a tether anchorage. For more information on top tether straps, refer to *Attaching safety seats with tether straps*.



Carefully follow all of the manufacturer's instructions included with the safety seat you put in your vehicle. If you do not install and use the safety seat properly, the child may be injured in a sudden stop or collision.

## Seating and safety restraints

### Installing child safety seats in combination lap and shoulder belt seating positions



Air bags can kill or injure a child in a child seat. **NEVER** place a rear-facing child seat in front of an active air bag. If you must use a forward-facing child seat in the front seat, move the seat all the way back.

1. Position the child safety seat in a seat with a combination lap and shoulder belt.



Children 12 and under should be properly restrained in the rear seat whenever possible.

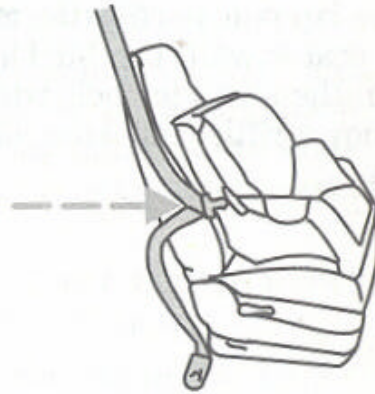
2. Pull down on the shoulder belt and then grasp the shoulder belt and lap belt together.





## Seating and safety restraints

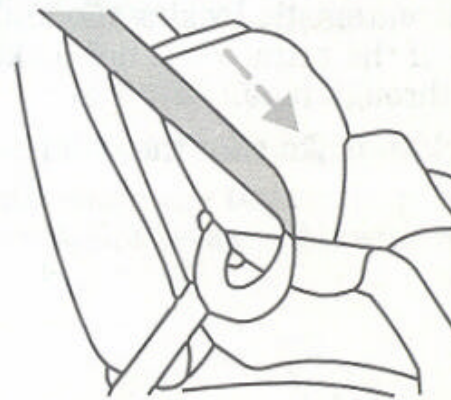
3. While holding the shoulder and lap belt portions together, route the tongue through the child seat according to the child seat manufacturer's instructions. Be sure the belt webbing is not twisted.



4. Insert the belt tongue into the proper buckle (the buckle closest to the direction the tongue is coming from) for that seating position until you hear a snap and feel the latch engage. Make sure the tongue is latched securely by pulling on it.



5. To put the retractor in the automatic locking mode, grasp the shoulder portion of the belt and pull downward until all of the belt is extracted and a click is heard.



6. Allow the belt to retract. The belt will click as it retracts to indicate it is in the automatic locking mode.

## Seating and safety restraints

7. Pull the lap belt portion across the child seat toward the buckle and pull up on the shoulder belt while pushing down with your knee on the child seat.



8. Allow the safety belt to retract to remove any slack in the belt.

9. Before placing the child in the seat, forcibly tilt the seat forward and back to make sure the seat is securely held in place.



10. Try to pull the belt out of the retractor to make sure the retractor is in the automatic locking mode (you should not be able to pull more belt out). If the retractor is not locked, unbuckle the belt and repeat steps two through nine.

Check to make sure the child seat is properly secured before each use.



## Seating and safety restraints

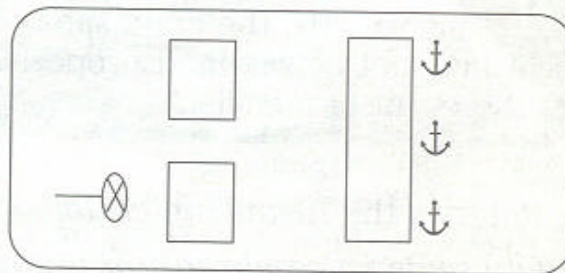
### Attaching child safety seats with tether straps

Most new forward-facing child safety seats include a tether strap which goes over the back of the seat and hooks to an anchoring point. Tether straps are available as an accessory for many older safety seats. Contact the manufacturer of your child seat for information about ordering a tether strap.

The rear seats of your vehicle are equipped with built-in tether strap anchors located behind the seats as described below.

The tether anchors in your vehicle are either located under a cover marked with the tether anchor symbol (shown with title) or are recessed bars on the back side of the seatback.

The tether strap anchors in your vehicle are in the following positions (shown from top view):



Attach the tether strap only to the appropriate tether anchor as shown. The tether strap may not work properly if attached somewhere other than the correct tether anchor.

1. Position the child safety seat on the passenger seat cushion.
2. Route the child safety seat tether strap over the back of the seat.

For vehicles with adjustable head restraints, route the tether strap under the head restraint and between the head restraint posts, otherwise route the tether strap over the top of the seatback.

3. Locate the correct anchor for the selected seating position.



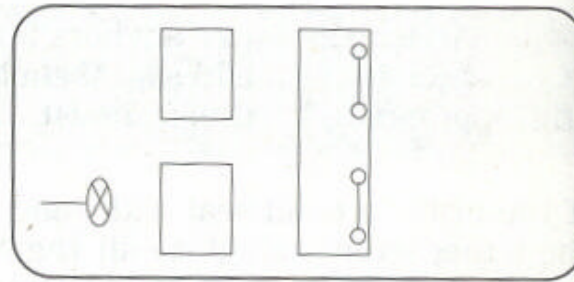


## Seating and safety restraints

LATCH anchors for child seat installation have been provided in your vehicle at the following locations:

The anchors at the center of the rear seat are much further apart than the sets of lower anchors for child seat installation at other

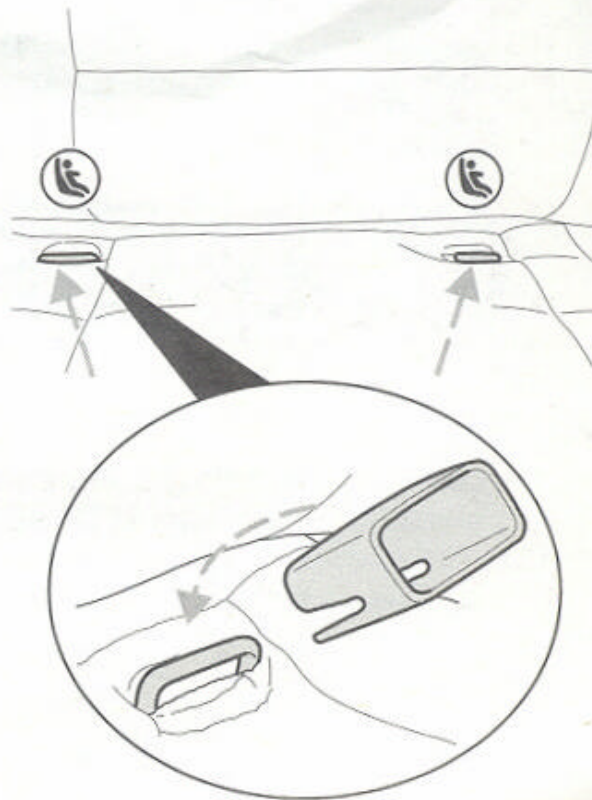
seating positions. A child seat with rigid LATCH attachments cannot be installed at this seating position. LATCH compatible child seat (with attachments on belt webbing) can be used at this seating position only if the child seat instructions state that the child seat can be installed to anchors that are 500 mm apart. Do not attach a child seat to any lower anchor if an adjacent child seat is attached to that anchor.



Do not attach a child seat to any lower anchors used for child seat installation if an adjacent child seat is attached to that anchor. In a crash, one anchor may not be strong enough to hold two child seat attachments and may break, causing serious injury or death.

The lower anchors for child seat installation are located at the rear section of the rear seat between the cushion and seat back. Each lower anchor for child seat installation is located 2–3 inches below the locator symbols.

Follow the child seat manufacturer's instructions to properly install safety seats with LATCH lower anchors and LATCH-compatible attachments. Two plastic LATCH guides may be obtained at no charge from any Ford or Lincoln Mercury dealer. They snap onto the latch lower anchor in the vehicle to help attach child seat with rigid latch attachments. It will hold the seat trim away and expose the anchor making attachment of the child seat easier.





## Seating and safety restraints



Attach the lower anchors for child seat installation or lower anchors for child seat installation-compatible child seat only to the appropriate locations shown.

If you install a child seat with rigid LATCH attachments, do not tighten the tether strap enough to lift the child seat off the seat when the child is seated in it. Keep the tether strap just snug without raising the front of the child seat. Keeping the child seat just touching the front of the vehicle seat gives the best protection in a severe crash. Once you have installed the lower anchors for child seat installation safety seat, assure that the seat is properly attached to the lower anchors for child seat installation and tether anchors. Also, test the safety seat before you place the child in it. Tilt the seat from side to side. Also try to tug the seat forward. Check to see if the anchors hold the seat in place.



If the safety seat is not anchored properly, the risk of a child being injured in a collision greatly increases.

## **APPENDIX F**

### **CHILD SEAT**

## POST-TEST OBSERVATIONS

Test Vehicle: 2001/Lincoln/LS/4 door

NHTSA No.: M10209

Test Program: NCAP

Test Date: January 22, 2001

|                      | Left Rear Passenger     | Right Rear Passenger                  |
|----------------------|-------------------------|---------------------------------------|
| Child Seat           | Cosco Triad No Latch    | Cosco Triad Latch                     |
| Child Seat Mass (kg) | 4.5                     | 4.5                                   |
| Belt Fraying         | Yes                     | Yes                                   |
| Stress Marks         | Yes                     | At top tether anchor<br>point on seat |
| Cracks               | Yes                     | Yes                                   |
| Buckle Stress        | Yes                     | Yes                                   |
| Latch Hooks          | Yes                     | Yes                                   |
| Contact              | Feet to front seat back | Feet to front seat back               |

# HYBRID III 3 YEAR OLD ATD INJURY CRITERIA AND SENSOR DATA

Test Vehicle: 2001/Lincoln/LS/4 door

NHTSA No.: M10209

Test Program: NCAP

Test Date: January 22, 2001

## HEAD PRIMARY PEAK ACCELERATIONS

| Location          | Axis | Units | Left Rear Passenger |      |      |      | Right Rear Passenger |      |      |      |
|-------------------|------|-------|---------------------|------|------|------|----------------------|------|------|------|
|                   |      |       | Max                 | Time | Min  | Time | Max                  | Time | Min  | Time |
| Head CG           | X    | G's   | 29.3                | 204  | 57.1 | 95   | 49.1                 | 190  | 29.2 | 106  |
| Head CG           | Y    | G's   | 14.2                | 112  | 46.2 | 95   | 4.3                  | 105  | 7.7  | 70   |
| Head CG           | Z    | G's   | 83.9                | 90   | 11.1 | 55   | 58.8                 | 82   | 10.0 | 36   |
| Head CG Resultant | N/A  | G's   | 104.4               | 95   |      |      | 61.6                 | 82   |      |      |

## CHEST PRIMARY PEAK ACCELERATIONS

| Location           | Axis | Units | Left Rear Passenger |      |      |      | Right Rear Passenger |      |      |      |
|--------------------|------|-------|---------------------|------|------|------|----------------------|------|------|------|
|                    |      |       | Max                 | Time | Min  | Time | Max                  | Time | Min  | Time |
| Chest CG           | X    | G's   | 11.2                | 221  | 47.9 | 75   | 17.5                 | 165  | 42.9 | 70   |
| Chest CG           | Y    | G's   | 8.0                 | 98   | 6.6  | 101  | 3.3                  | 209  | 3.3  | 190  |
| Chest CG           | Z    | G's   | 20.8                | 101  | 31.1 | 61   | 12.6                 | 83   | 33.1 | 60   |
| Chest CG Resultant | N/A  | G's   | 53.8                | 71   |      |      | 50.9                 | 70   |      |      |

## HEAD INJURY CRITERIA (HIC)

| Location                  | Left Rear Passenger |         |                |                | Right Rear 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 (36 msec) | 1387                | 73.5    | 71.8           | 101.7          | 663                  | 50.8    | 58.1           | 94.1           |
| Head CG Primary (15 msec) | 1029                | 86.0    | 80.7           | 95.7           | 394                  | 58.6    | 71.1           | 86.1           |

## CHEST CLIP (3 MSEC)

| Location         | Left Rear Passenger |                |                | Right Rear Passenger |                |                |
|------------------|---------------------|----------------|----------------|----------------------|----------------|----------------|
|                  | Clip                | T <sup>1</sup> | T <sup>2</sup> | Clip                 | T <sup>1</sup> | T <sup>2</sup> |
| Chest CG Primary | 52.9                | 68.8           | 71.9           | 47.3                 | 57.8           | 60.9           |



# **HYBRID III 3 YEAR OLD ATD INJURY CRITERIA AND SENSOR DATA...(continued)**

Test Vehicle: 2001/Lincoln/LS/4 door

NHTSA No.: M10209

Test Program: NCAP

Test Date: January 22, 2001

## **PELVIC PEAK ACCELERATIONS**

| Location | Axis | Units | Left Rear Passenger |      |      |      | Right Rear Passenger |      |      |      |
|----------|------|-------|---------------------|------|------|------|----------------------|------|------|------|
|          |      |       | Max                 | Time | Min  | Time | Max                  | Time | Min  | Time |
| Pelvis   | X    | G's   | 35.3                | 115  | 70.4 | 69   | 25.5                 | 112  | 62.4 | 70   |
| Pelvis   | Y    | G's   | 6.8                 | 101  | 8.7  | 78   | 3.4                  | 157  | 8.6  | 51   |
| Pelvis   | Z    | G's   | 16.8                | 96   | 43.7 | 70   | 15.9                 | 194  | 43.3 | 68   |

## **UPPER NECK PEAK FORCES AND MOMENTS**

| Location    | Axis | Units   | Left Rear Passenger |      |      |      | Right Rear Passenger |      |      |      |
|-------------|------|---------|---------------------|------|------|------|----------------------|------|------|------|
|             |      |         | Max                 | Time | Min  | Time | Max                  | Time | Min  | Time |
| Neck Force  | X    | Newtons | 52                  | 250  | 845  | 106  | 264                  | 169  | 775  | 71   |
| Neck Force  | Y    | Newtons | 90                  | 53   | 121  | 132  | 93                   | 54   | 106  | 39   |
| Neck Force  | Z    | Newtons | 2228                | 90   | 397  | 53   | 1833                 | 79   | 265  | 40   |
| Neck Moment | X    | N"m     | 5.6                 | 70   | 5.5  | 173  | 5.3                  | 54   | 3.5  | 56   |
| Neck Moment | Y    | N"m     | 13.8                | 100  | 23.3 | 221  | 16.3                 | 168  | 17.3 | 201  |
| Neck Moment | Z    | N"m     | 2.8                 | 249  | 3.8  | 89   | **                   | **   | **   | **   |

## **LOWER NECK PEAK FORCES AND MOMENTS**

| Location    | Axis | Units   | Left Rear Passenger |      |      |      | Right Rear Passenger |      |      |      |
|-------------|------|---------|---------------------|------|------|------|----------------------|------|------|------|
|             |      |         | Max                 | Time | Min  | Time | Max                  | Time | Min  | Time |
| Neck Force  | X    | Newtons | 206                 | 205  | 1585 | 93   | 319                  | 187  | 1287 | 82   |
| Neck Force  | Y    | Newtons | 69                  | 61   | 246  | 93   | 113                  | 56   | 68   | 71   |
| Neck Force  | Z    | Newtons | 1959                | 88   | 573  | 61   | 963                  | 186  | 656  | 54   |
| Neck Moment | X    | N"m     | 14.0                | 70   | 16.8 | 131  | 3.1                  | 185  | 7.8  | 55   |
| Neck Moment | Y    | N"m     | 128.9               | 104  | 15.0 | 205  | 125.4                | 77   | 20.1 | 187  |
| Neck Moment | Z    | N"m     | 3.5                 | 67   | 8.4  | 132  | 4.2                  | 204  | 4.1  | 63   |

## **CHEST PEAK DISPLACEMENTS**

| Location | Axis | Units | Left Rear Passenger |      |      |      | Right Rear Passenger |      |      |      |
|----------|------|-------|---------------------|------|------|------|----------------------|------|------|------|
|          |      |       | Max                 | Time | Min  | Time | Max                  | Time | Min  | Time |
| Chest CG | X    | mm    |                     |      | 14.1 | 109  |                      |      | 12.9 | 90   |

\*\* No valid data collected.

## DUMMY DIMENSIONS

Test Vehicle: 2001/Lincoln/LS/4 door

NHTSA No.: M10209

Test Program: NCAP

Test Date: January 22, 2001

| Measurement Description | Left Rear Passenger | Right Rear Passenger |
|-------------------------|---------------------|----------------------|
|                         | Length (mm)         | Length (mm)          |
| Head to Roof (Z)        | 317                 | 309                  |
| Head to Seatback (X)    | 578                 | 574                  |
| Chest to Door (Y)       | 392                 | 391                  |
| Left Foot to Seatback   | 83                  | 155                  |
| Right Foot to Seatback  | 73                  | 146                  |

**CHILD SEAT PHOTOGRAPHS**

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Photo 1 - Pre-Test LRS 3 Year Old Left Side View





Photo 2 - Post-Test LRS 3 Year Old Left Side View





Photo 3 - Pre-Test LRS 3 Year Old Left Side View (Door Open)





Photo 4 - Post-Test LRS 3 Year Old Left Side View (Door Open)





Photo 5 - Pre-Test RRS 3 Year Old Right Side View





Photo 6 - Post-Test RRS 3 Year Old Right Side View





Photo 7 - Pre-Test RRS 3 Year Old Right Side View (Door Open)





Photo 8 - Post-Test RRS 3 Year Old Right Side View (Door Open)





Photo 9 - Pre-Test LRS Left Side View





Photo 10 - Post-Test LRS Left Side View





Photo 11 - Pre-Test RRS Right Side View





Photo 12 - Post-Test RRS Right Side View





Photo 13 - Post-Test Right Rear Child Seat



nrga research corporation

**POST-TEST**

NCAP 35 MPH FRONTAL

2001 LINCOLN LS

M10209 01012201

F-20

Photo 14 - Post-Test Right Rear Child Seat





Photo 15 - Post-Test Right Rear Child Seat

## **CHILD DATA PLOTS**

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\* No valid data collected



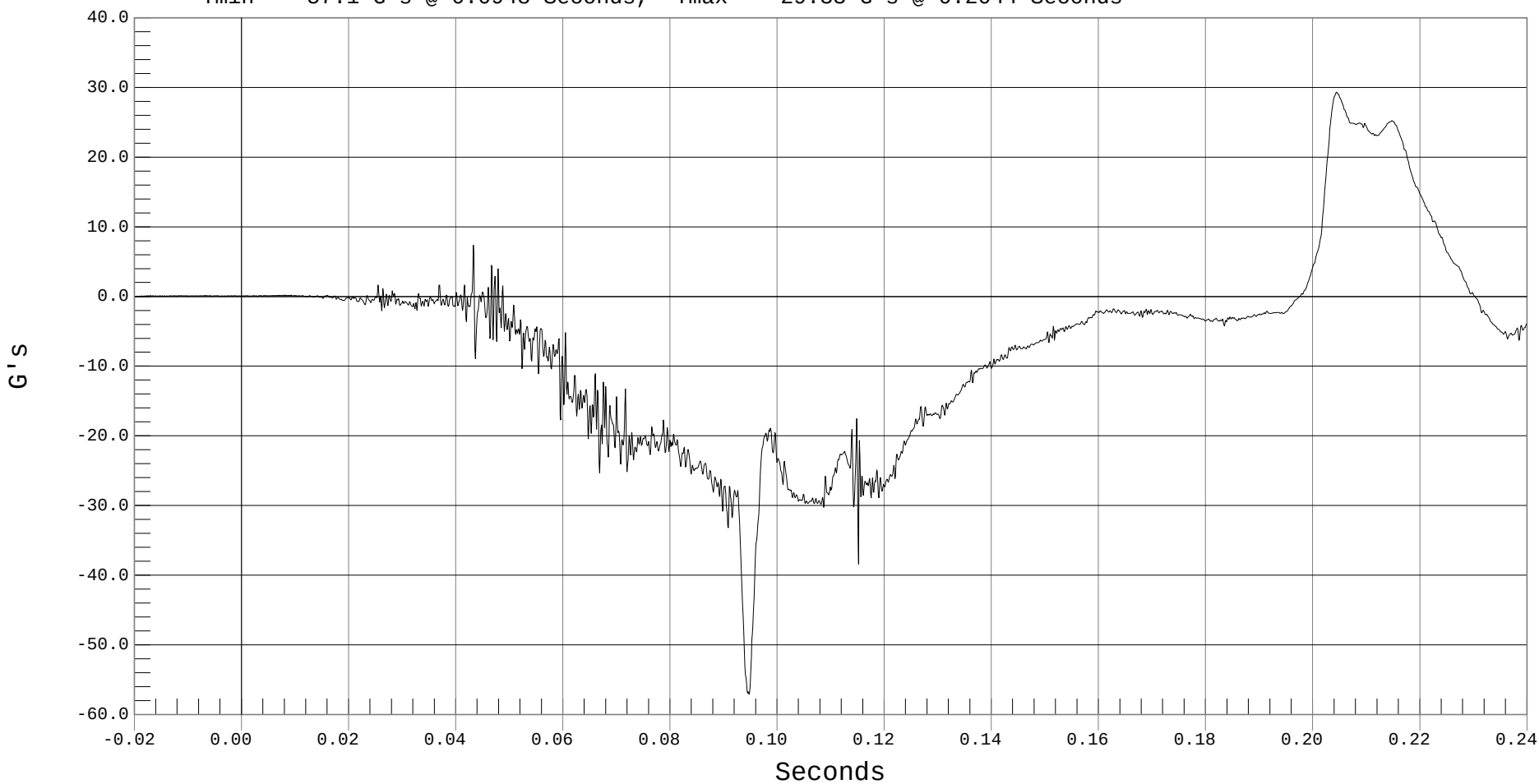
# LRS 3 YR OLD HEAD X ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 1000

— 1 LRS CHILD HEAD X, B01006AT.A13

Ymin = -57.1 G's @ 0.0948 Seconds, Ymax = 29.33 G's @ 0.2044 Seconds





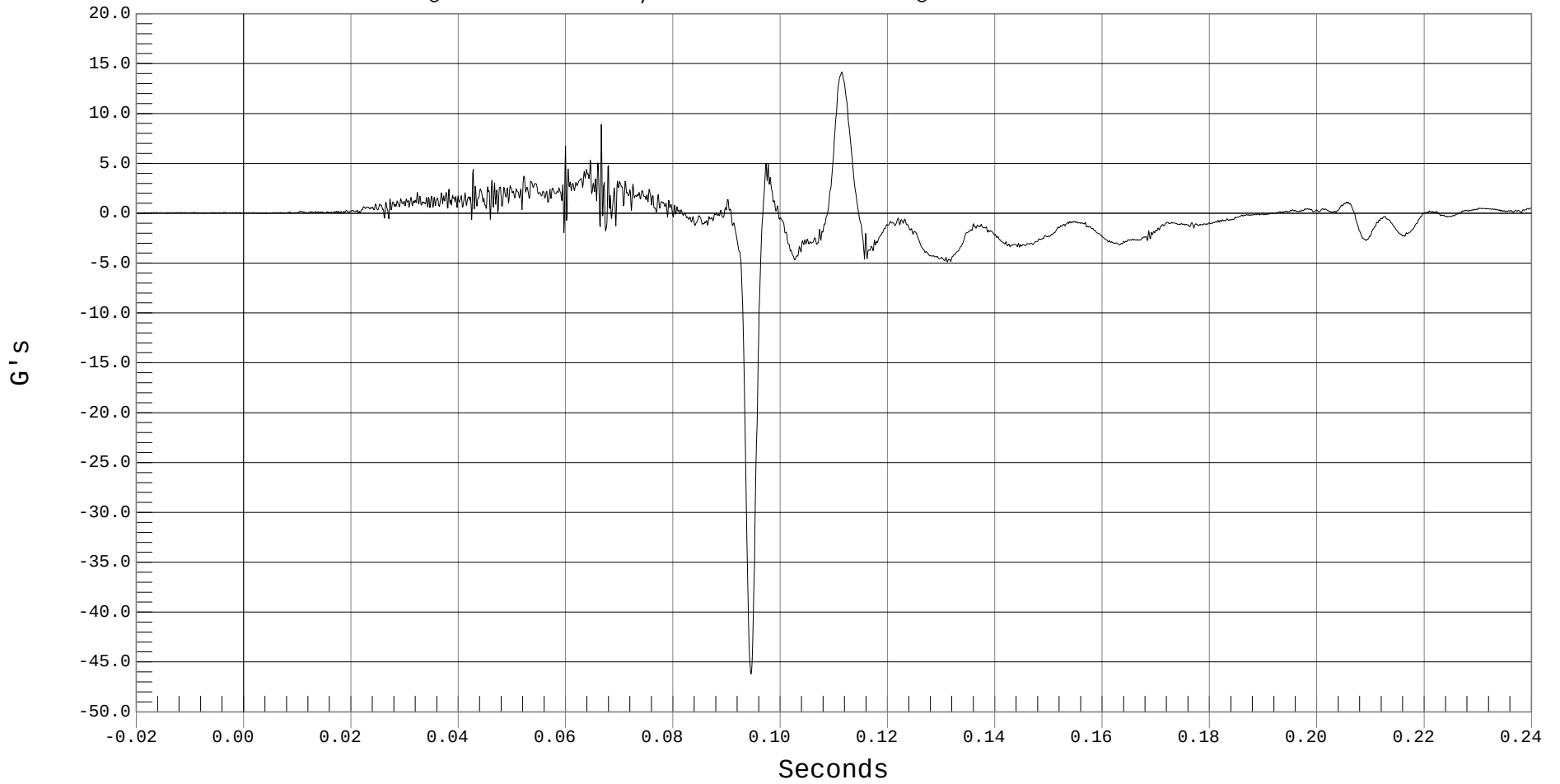
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Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 1000

— 1 LRS CHILD HEAD Y, B01006AT.A14

Ymin = -46.2 G's @ 0.0946 Seconds, Ymax = 14.16 G's @ 0.1115 Seconds







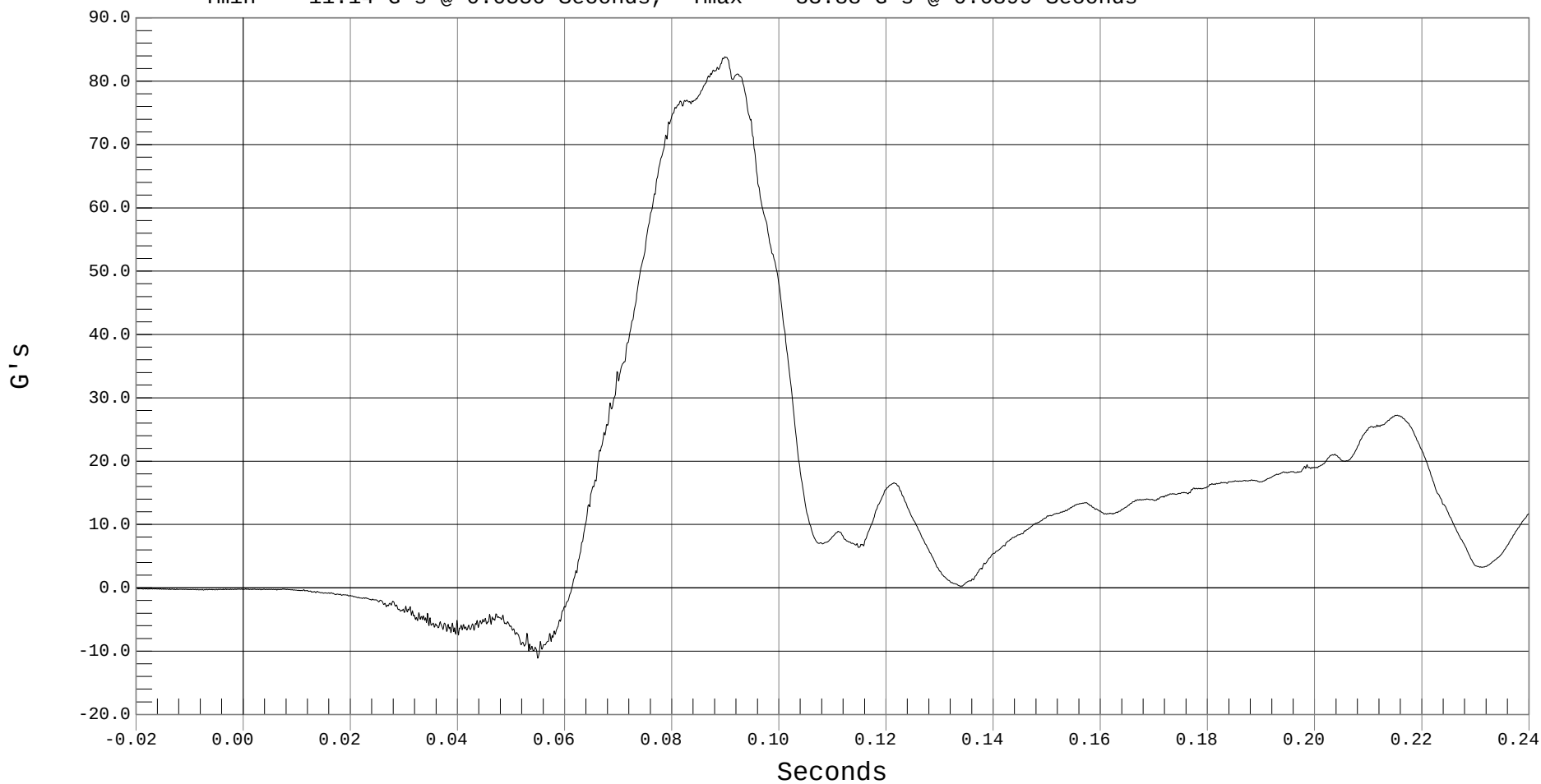
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Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 1000

— 1 LRS CHILD HEAD Z, B01006AT.A15

Ymin = -11.14 G's @ 0.0550 Seconds, Ymax = 83.88 G's @ 0.0899 Seconds





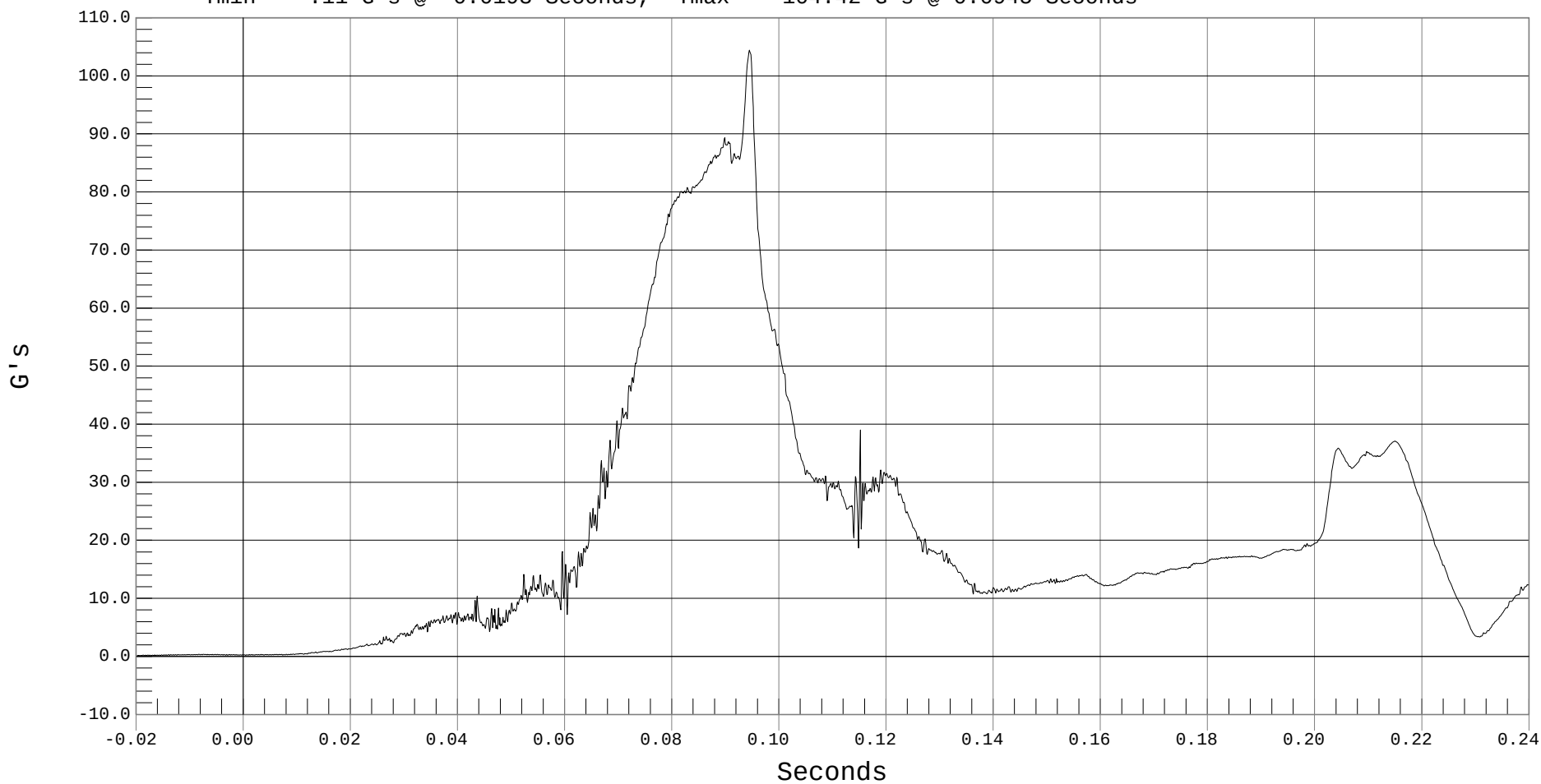
# LRS 3 YR OLD HEAD RESULTANT ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 1000

— 1 LRS 3 YR OLD HEAD RESULTANT ACCELERATION, B01006AV.A13

Ymin = .11 G's @ -0.0193 Seconds, Ymax = 104.42 G's @ 0.0945 Seconds





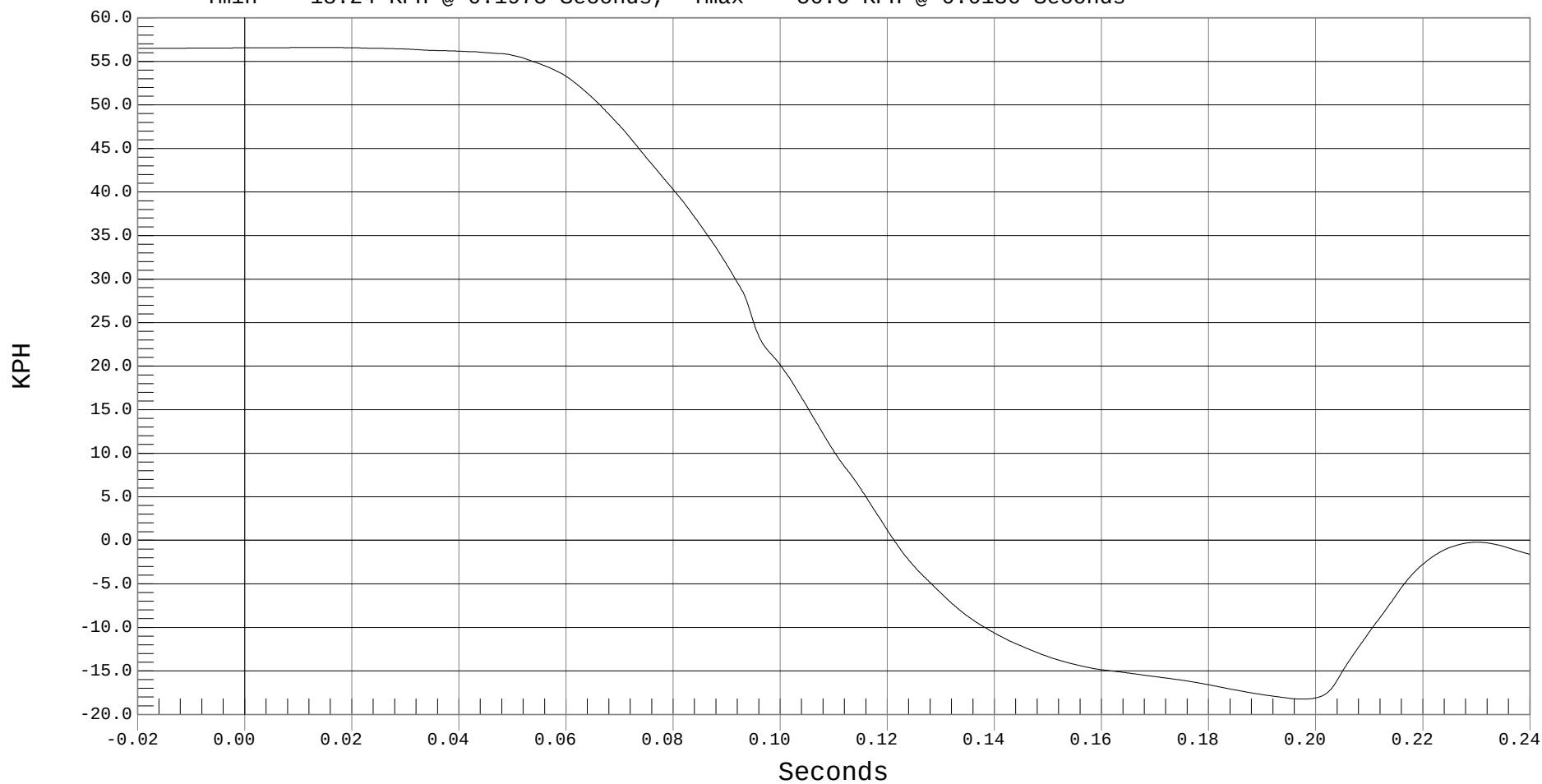
# LRS 3 YR OLD HEAD X VELOCITY

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 180

1 LRS 3 YR OLD HEAD X VELOCITY, B01006AI.V13

Ymin = -18.24 KPH @ 0.1975 Seconds, Ymax = 56.6 KPH @ 0.0136 Seconds





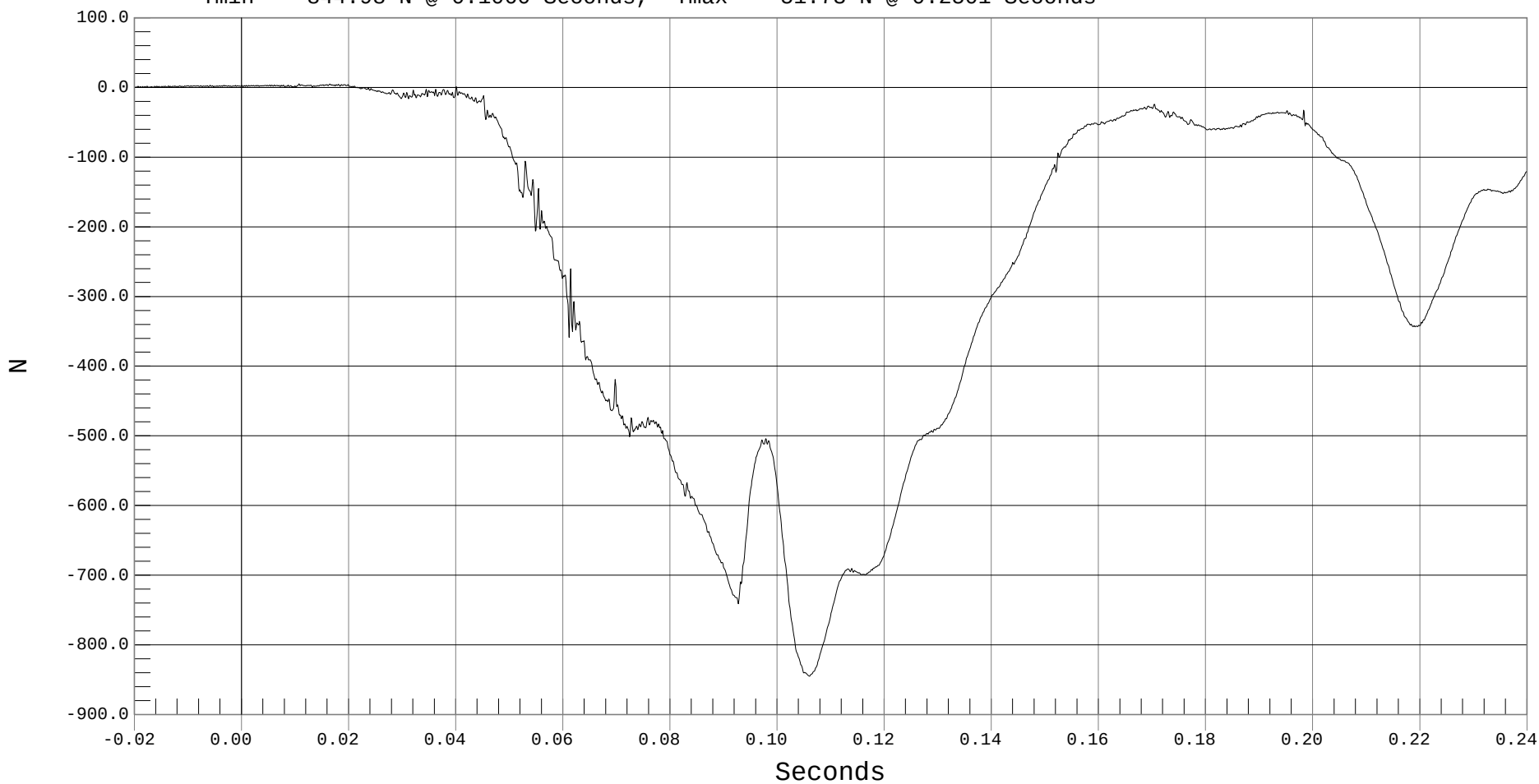
# LRS 3 YR OLD UPPER NECK FORCE X

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 1000

— 1 LRS CHILD UPPER NECK FORCE X, B01006FT.F16

Ymin = -844.98 N @ 0.1060 Seconds, Ymax = 51.73 N @ 0.2501 Seconds





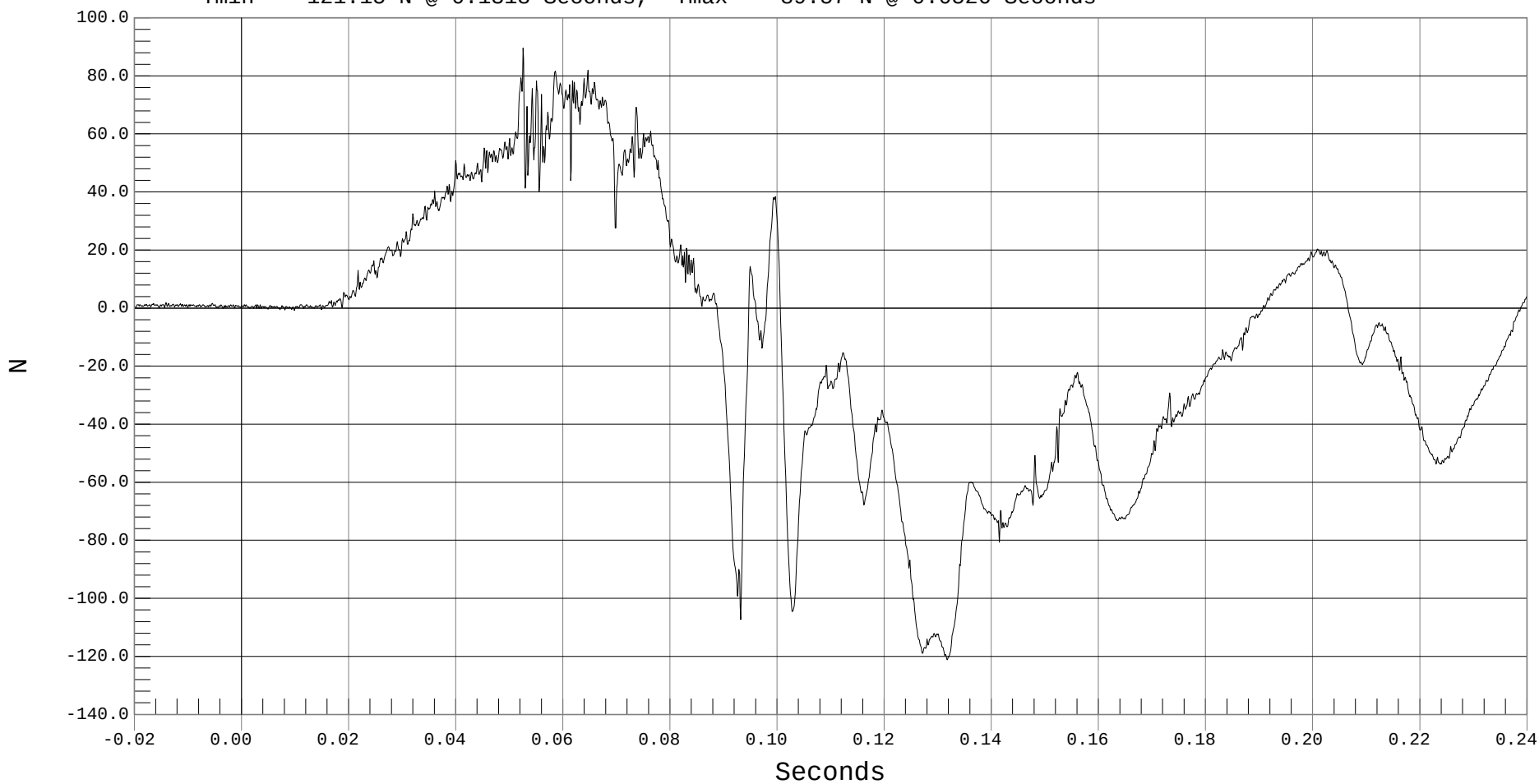
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Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 1000

— 1 LRS CHILD UPPER NECK FORCE Y, B01006FT.F17

Ymin = -121.15 N @ 0.1318 Seconds, Ymax = 89.57 N @ 0.0526 Seconds





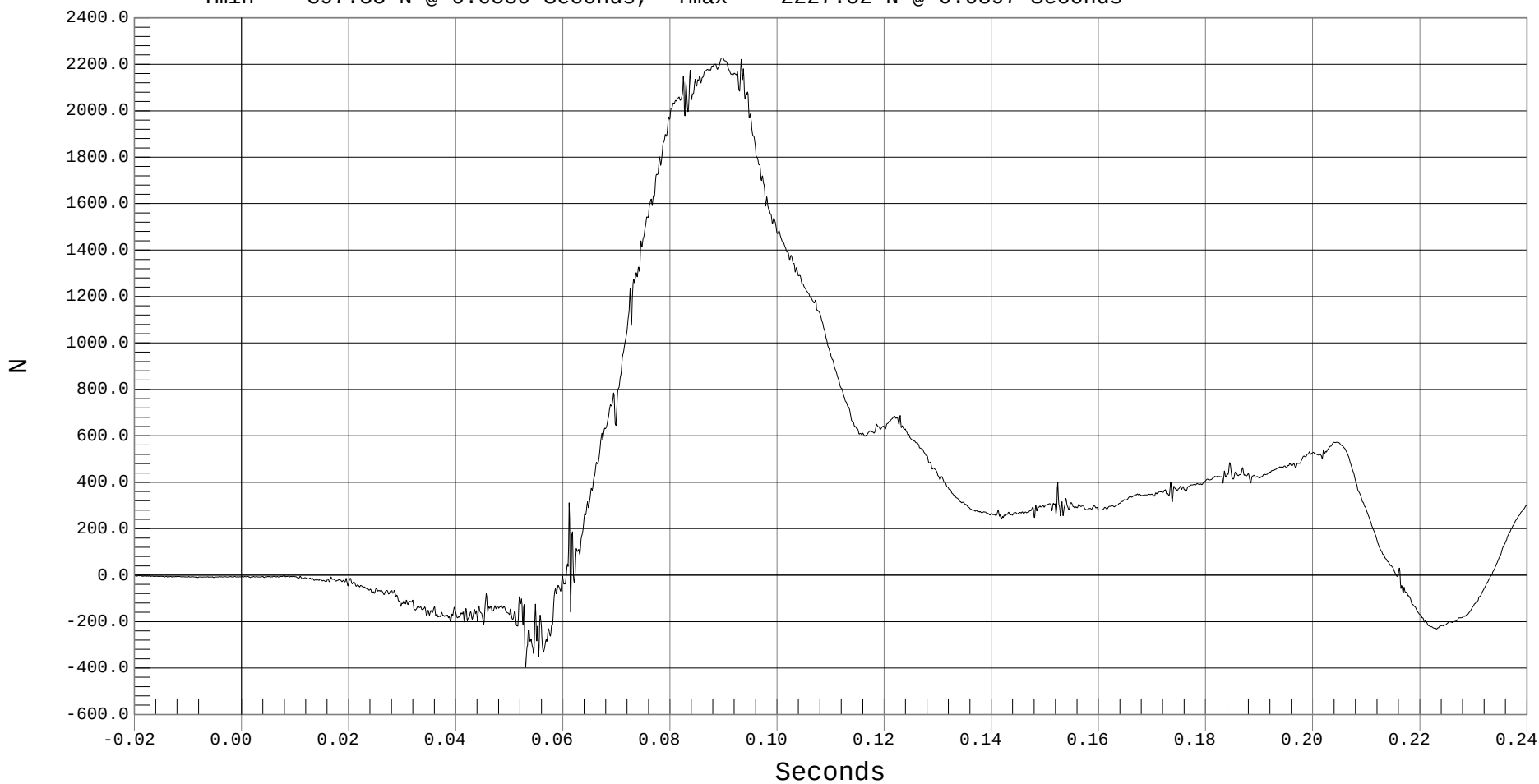
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Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 1000

— 1 LRS CHILD UPPER NECK FORCE Z, B01006FT.F18

Ymin = -397.33 N @ 0.0530 Seconds, Ymax = 2227.52 N @ 0.0897 Seconds







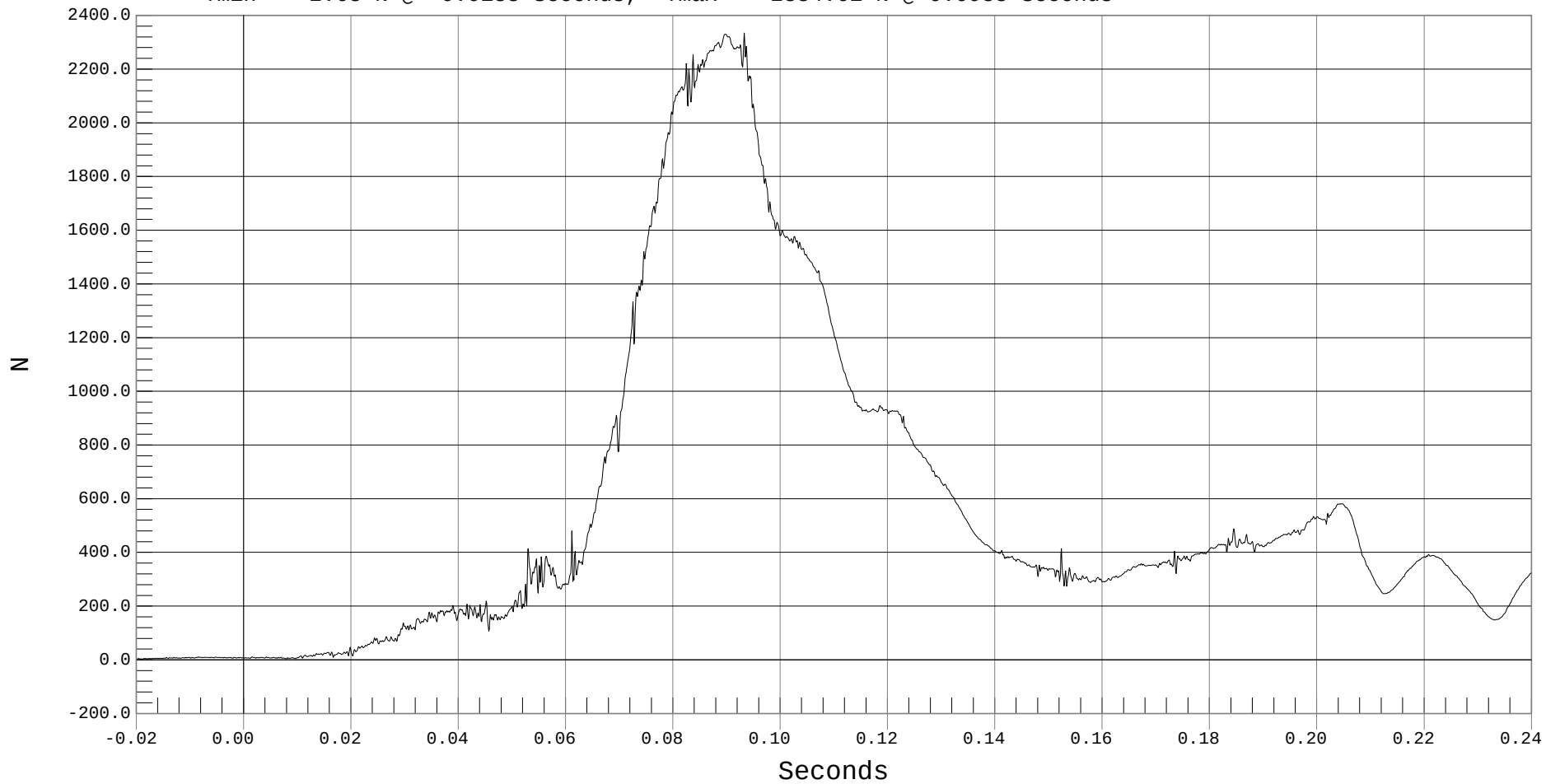
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Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 1000

— 1 LRS 3 YR OLD UPPER NECK FORCE RESULTANT, B01006FV.F16

Ymin = 2.68 N @ -0.0188 Seconds, Ymax = 2334.61 N @ 0.0933 Seconds





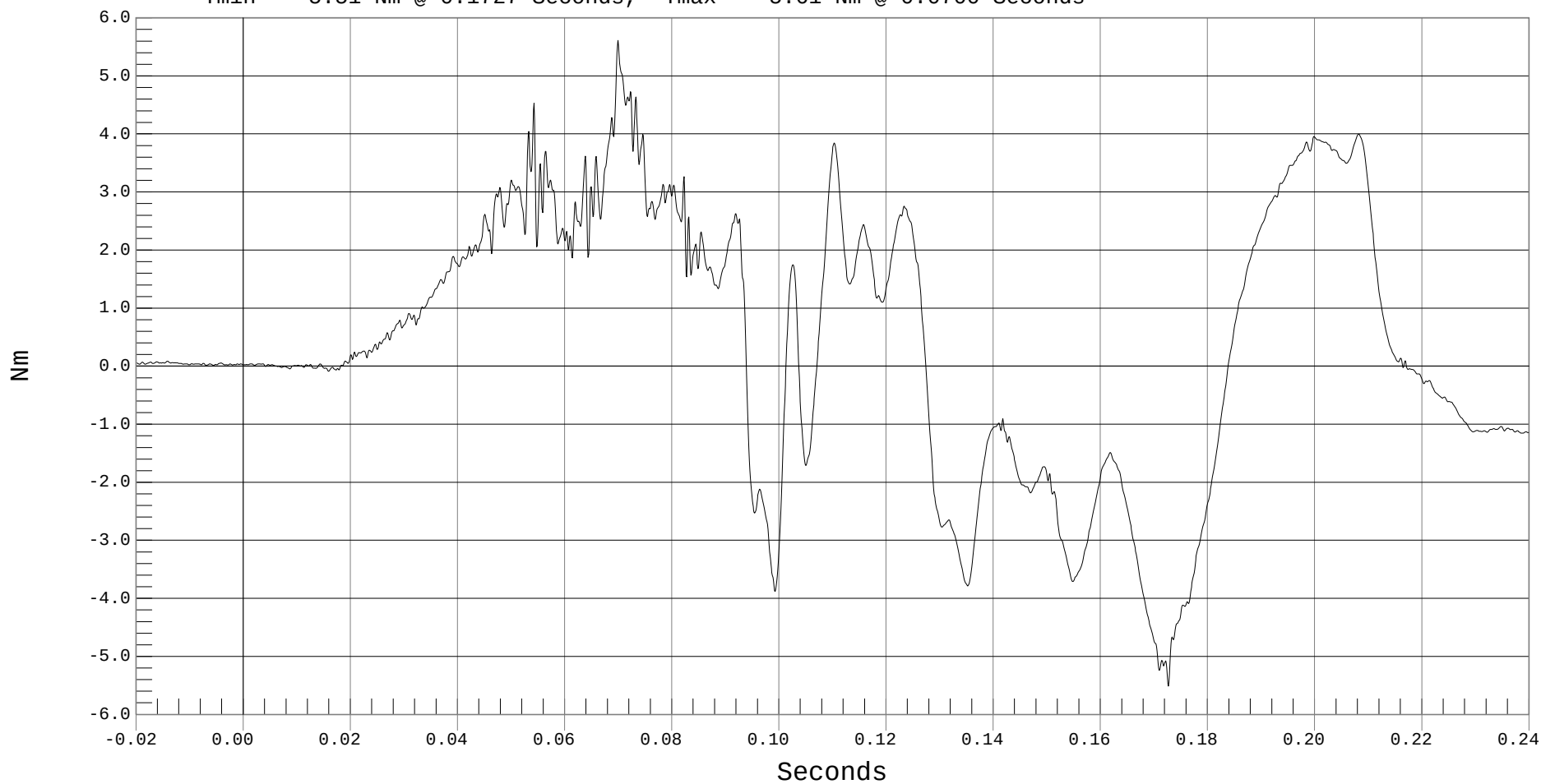
# LRS 3 YR OLD UPPER NECK MOMENT X

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 600

— 1 LRS CHILD UPPER NECK MOMENT X, B01006MF.M19

Ymin = -5.51 Nm @ 0.1727 Seconds, Ymax = 5.61 Nm @ 0.0700 Seconds





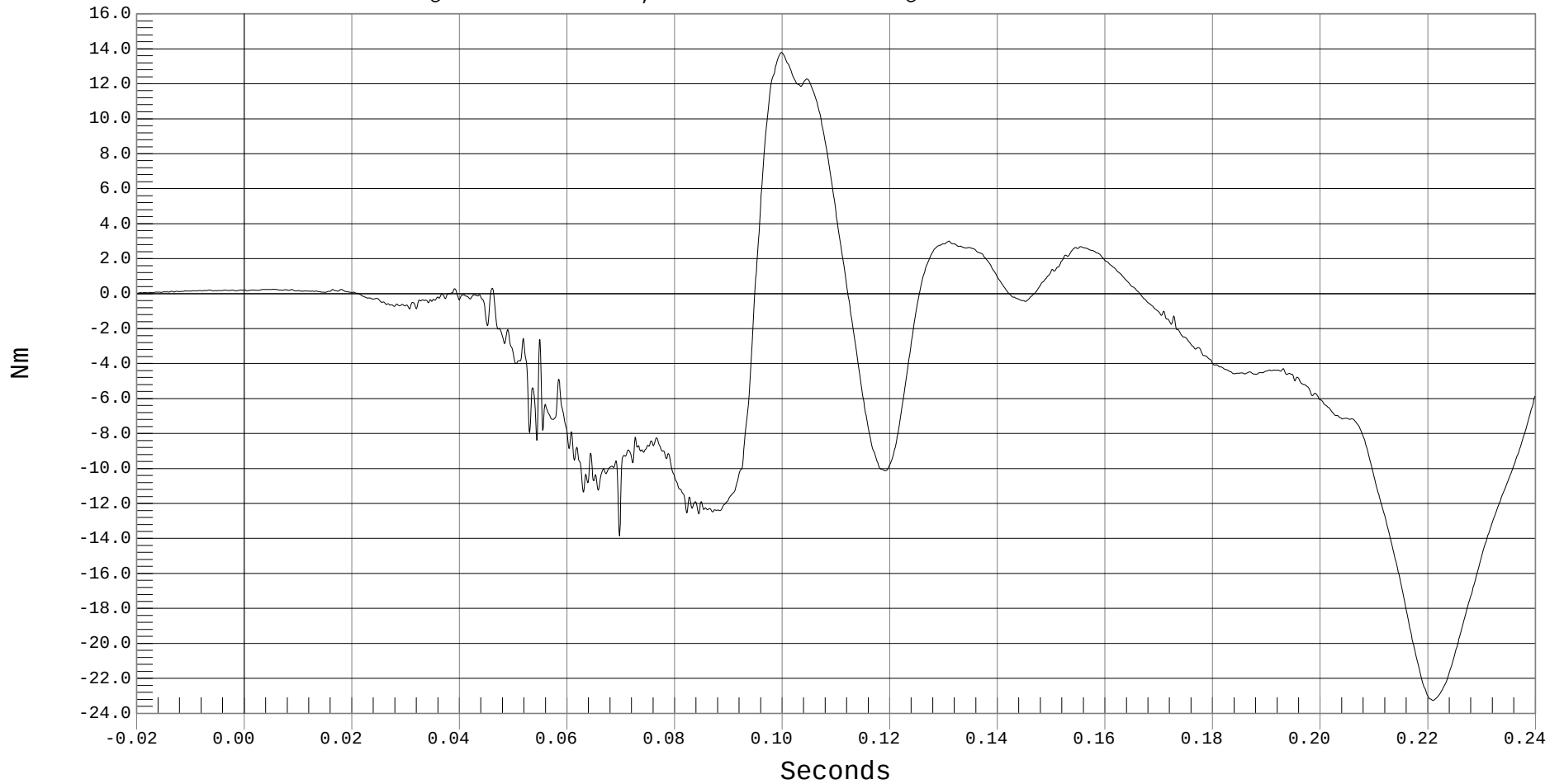
# LRS 3 YR OLD UPPER NECK MOMENT Y

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 600

— 1 LRS CHILD UPPER NECK MOMENT Y, B01006MF.M20

Ymin = -23.26 Nm @ 0.2210 Seconds, Ymax = 13.78 Nm @ 0.0999 Seconds





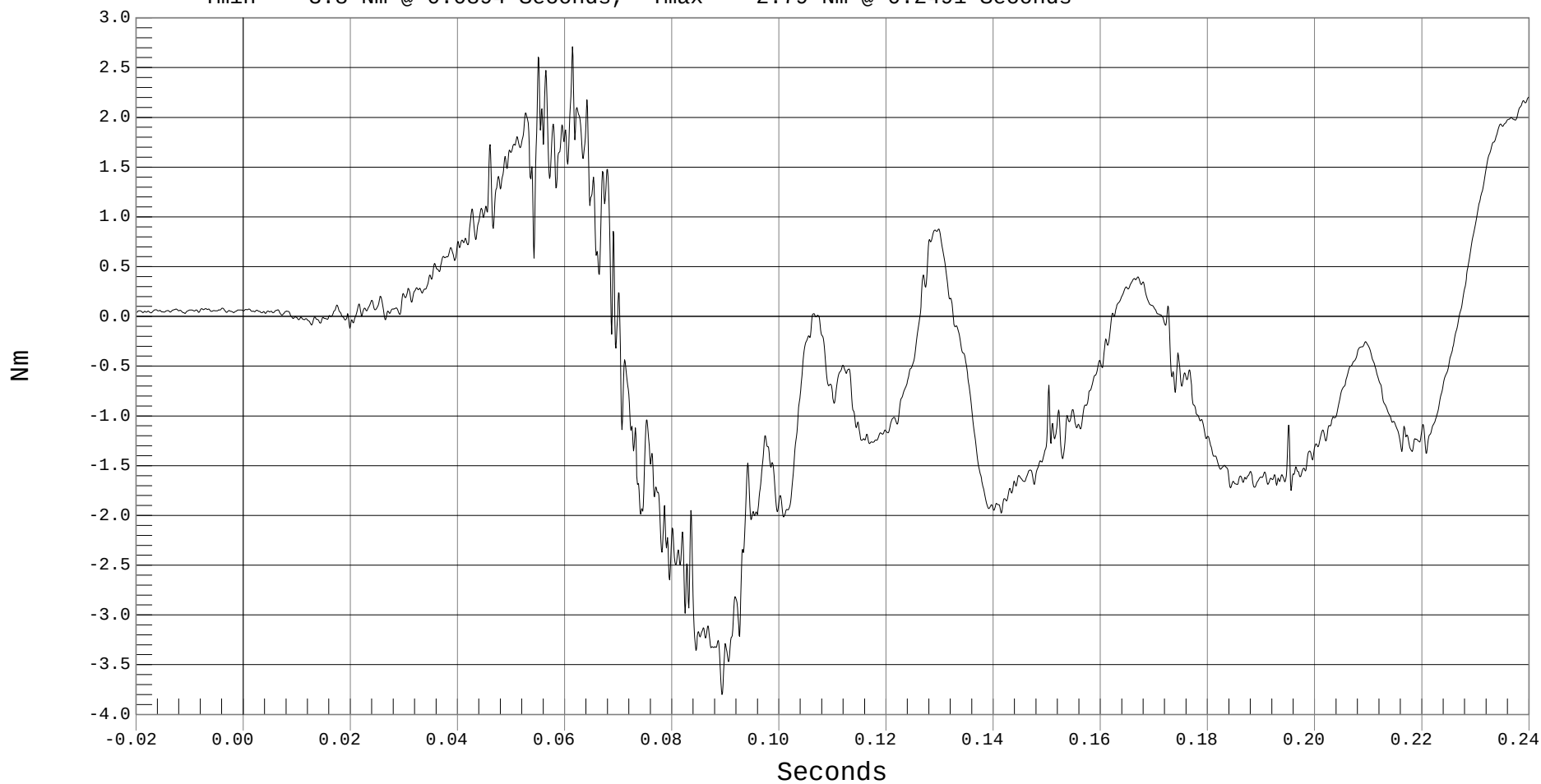
# LRS 3 YR OLD UPPER NECK MOMENT Z

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 600

— 1 LRS CHILD UPPER NECK MOMENT Z, B01006MF.M21

Ymin = -3.8 Nm @ 0.0894 Seconds, Ymax = 2.79 Nm @ 0.2491 Seconds





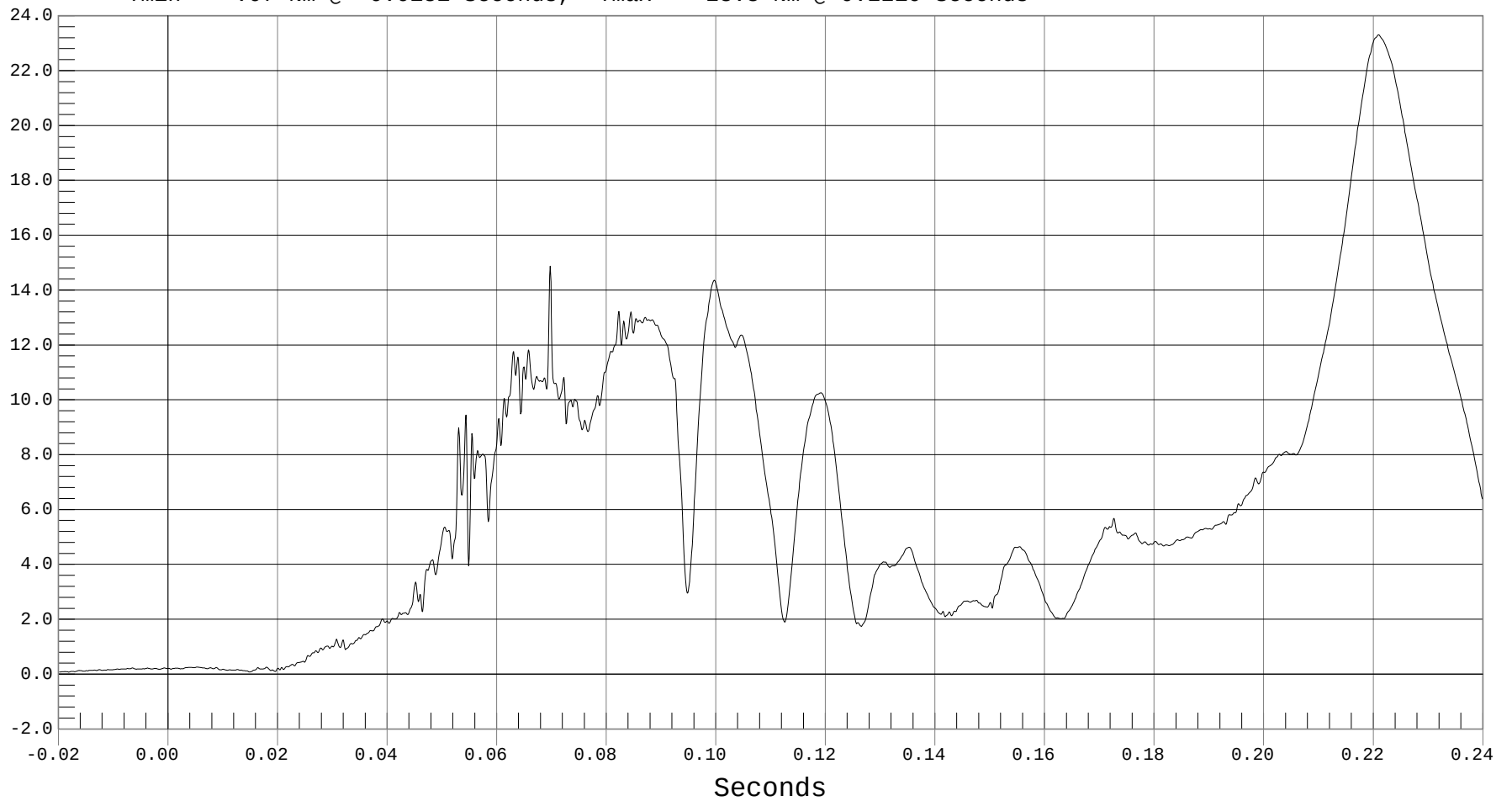
# LRS 3 YR OLD UPPER NECK MOMENT RESULTANT

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 600

— 1 LRS 3 YR OLD UPPER NECK MOMENT RESULTANT, B01006MV.M19

Ymin = .07 Nm @ -0.0181 Seconds, Ymax = 23.3 Nm @ 0.2210 Seconds





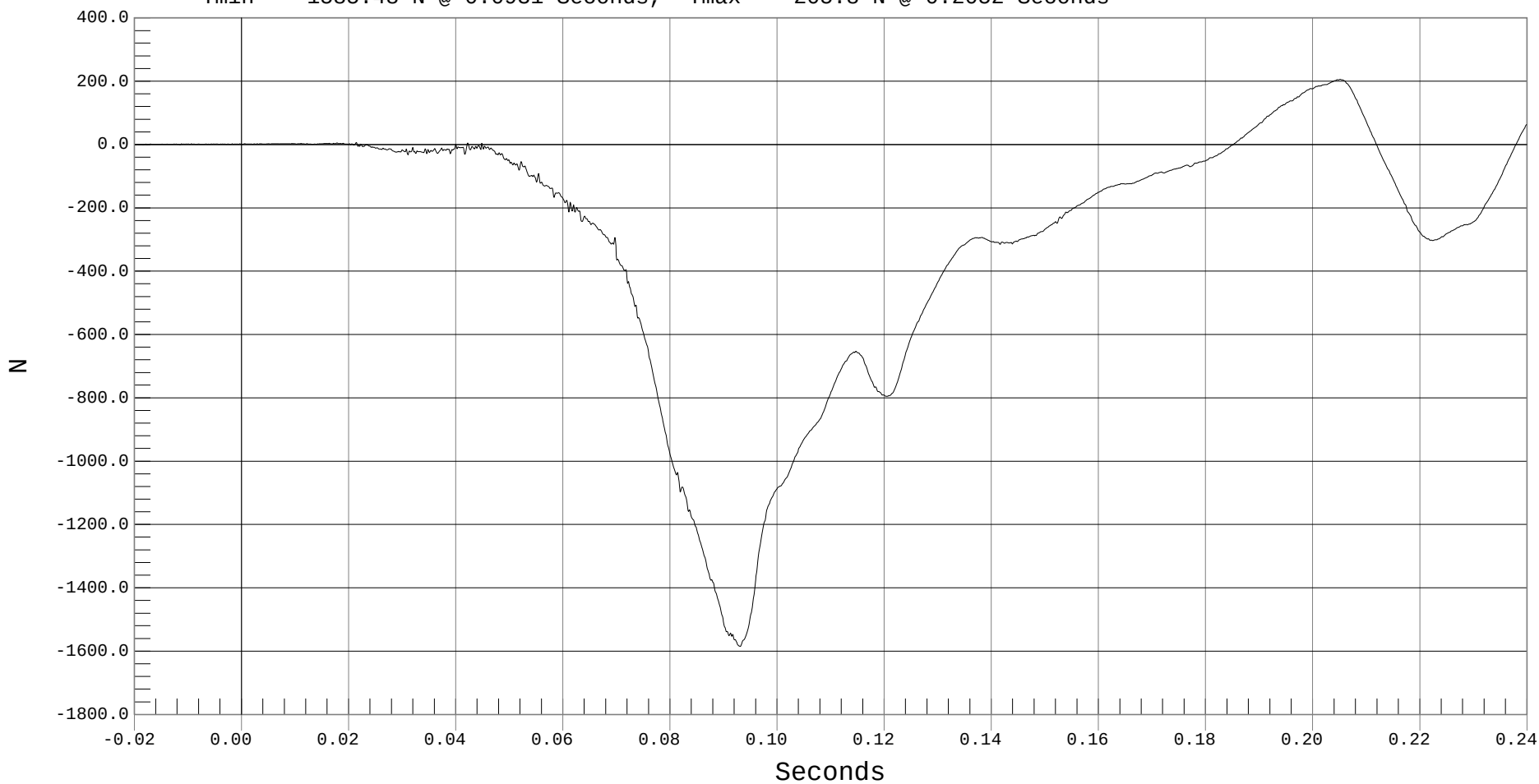
# LRS 3 YR OLD LOWER NECK FORCE X

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 1000

— 1 LRS CHILD LOWER NECK FORCE X, B01006FT.F22

Ymin = -1585.48 N @ 0.0931 Seconds, Ymax = 205.8 N @ 0.2052 Seconds







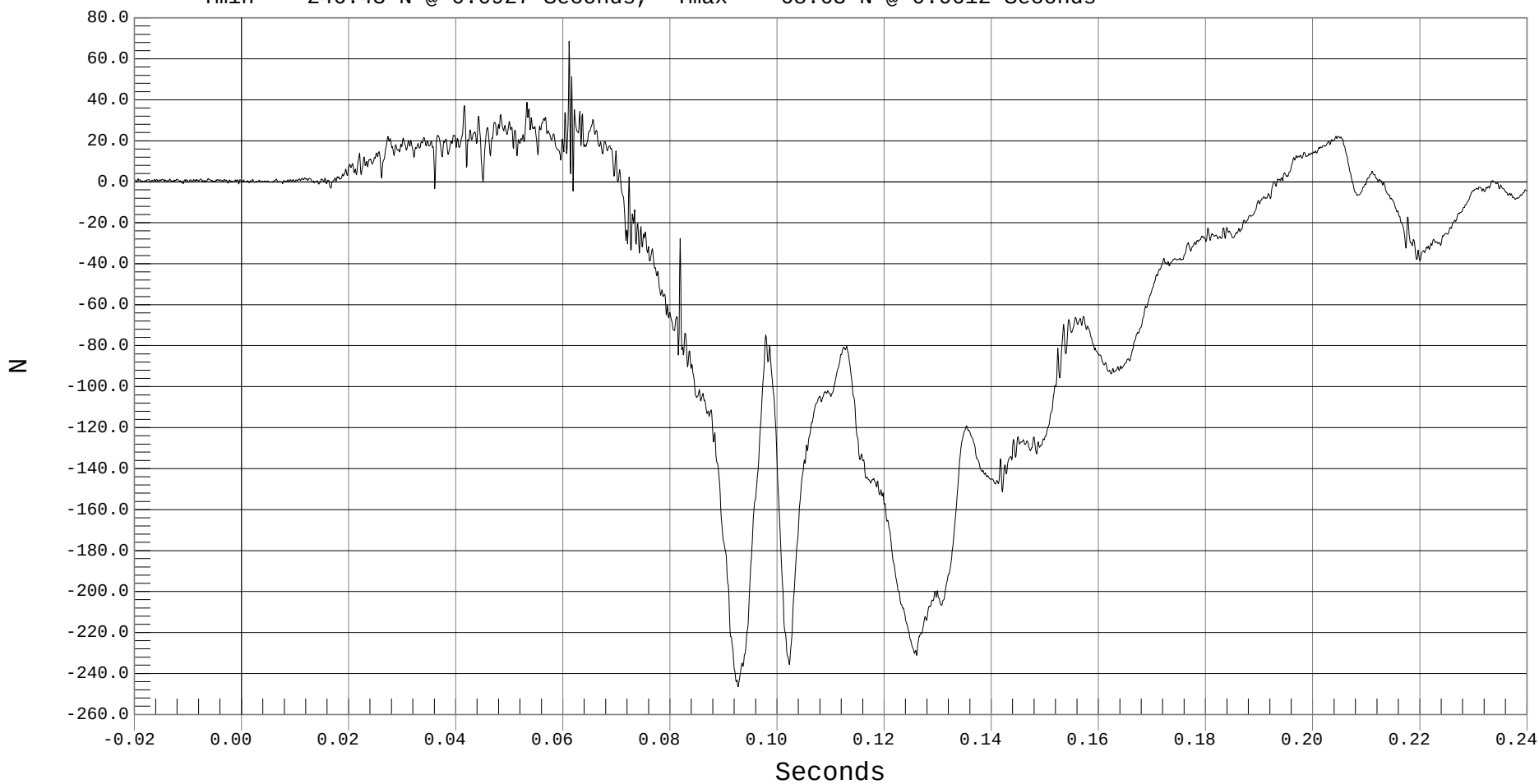
# LRS 3 YR OLD LOWER NECK FORCE Y

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 1000

— 1 LRS CHILD LOWER NECK FORCE Y, B01006FT.F23

Ymin = -246.43 N @ 0.0927 Seconds, Ymax = 68.63 N @ 0.0612 Seconds





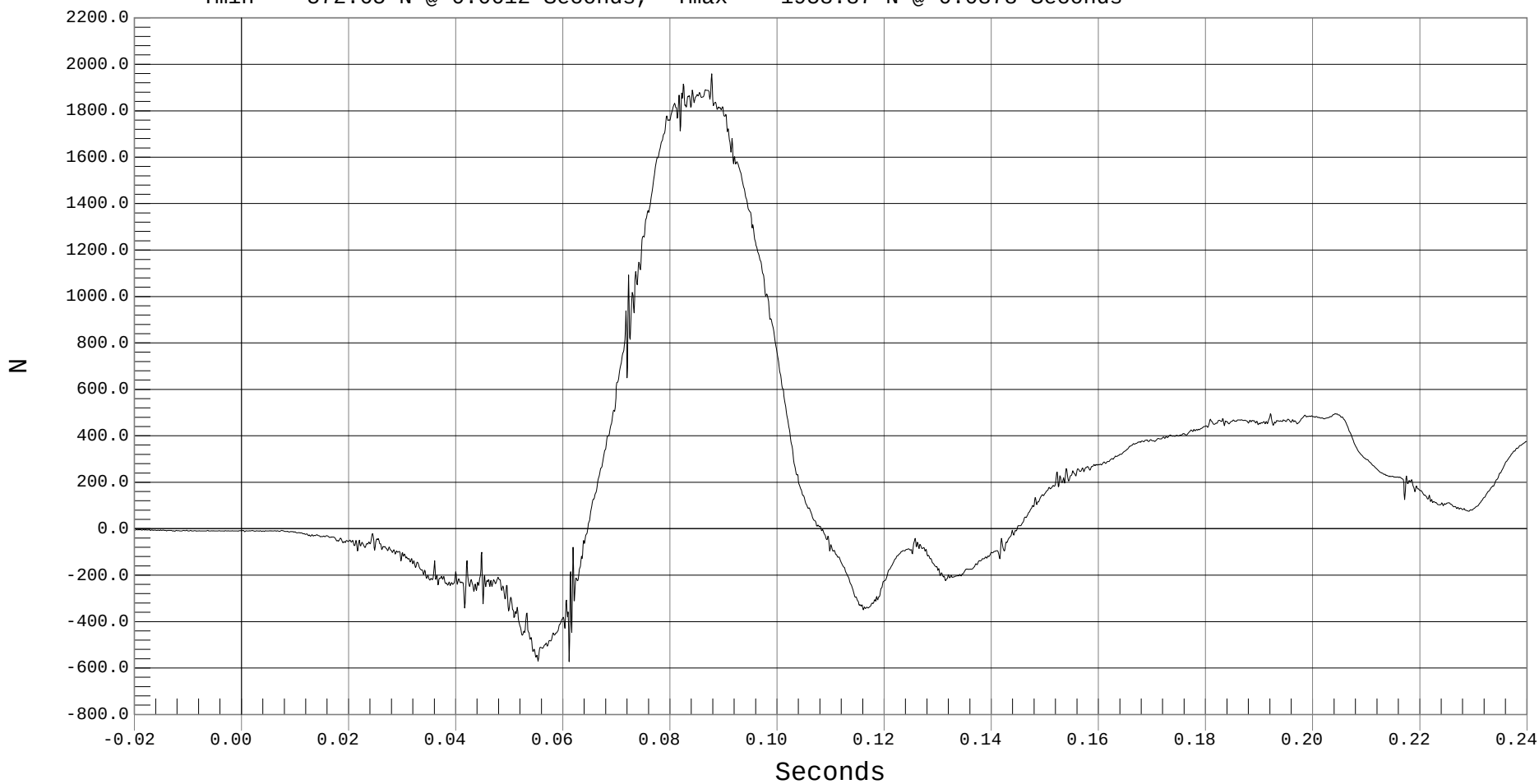
# LRS 3 YR OLD LOWER NECK FORCE Z

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 1000

— 1 LRS CHILD LOWER NECK FORCE Z, B01006FT.F24

Ymin = -572.65 N @ 0.0612 Seconds, Ymax = 1958.87 N @ 0.0878 Seconds





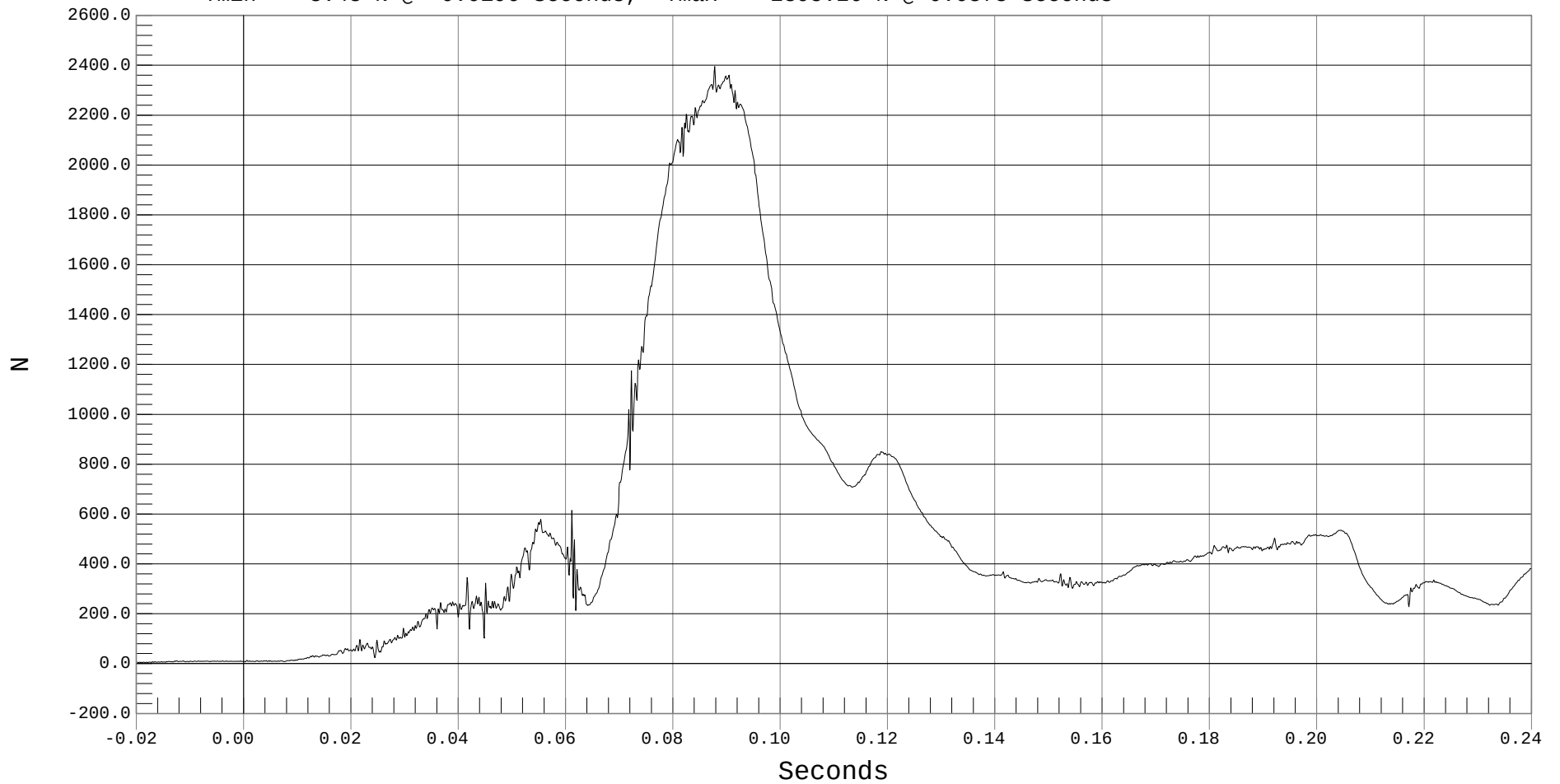
# LRS 3 YR OLD LOWER NECK FORCE RESULTANT

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 1000

— 1 LRS 3 YR OLD LOWER NECK FORCE RESULTANT, B01006FV.F22

Ymin = 3.43 N @ -0.0196 Seconds, Ymax = 2395.26 N @ 0.0878 Seconds





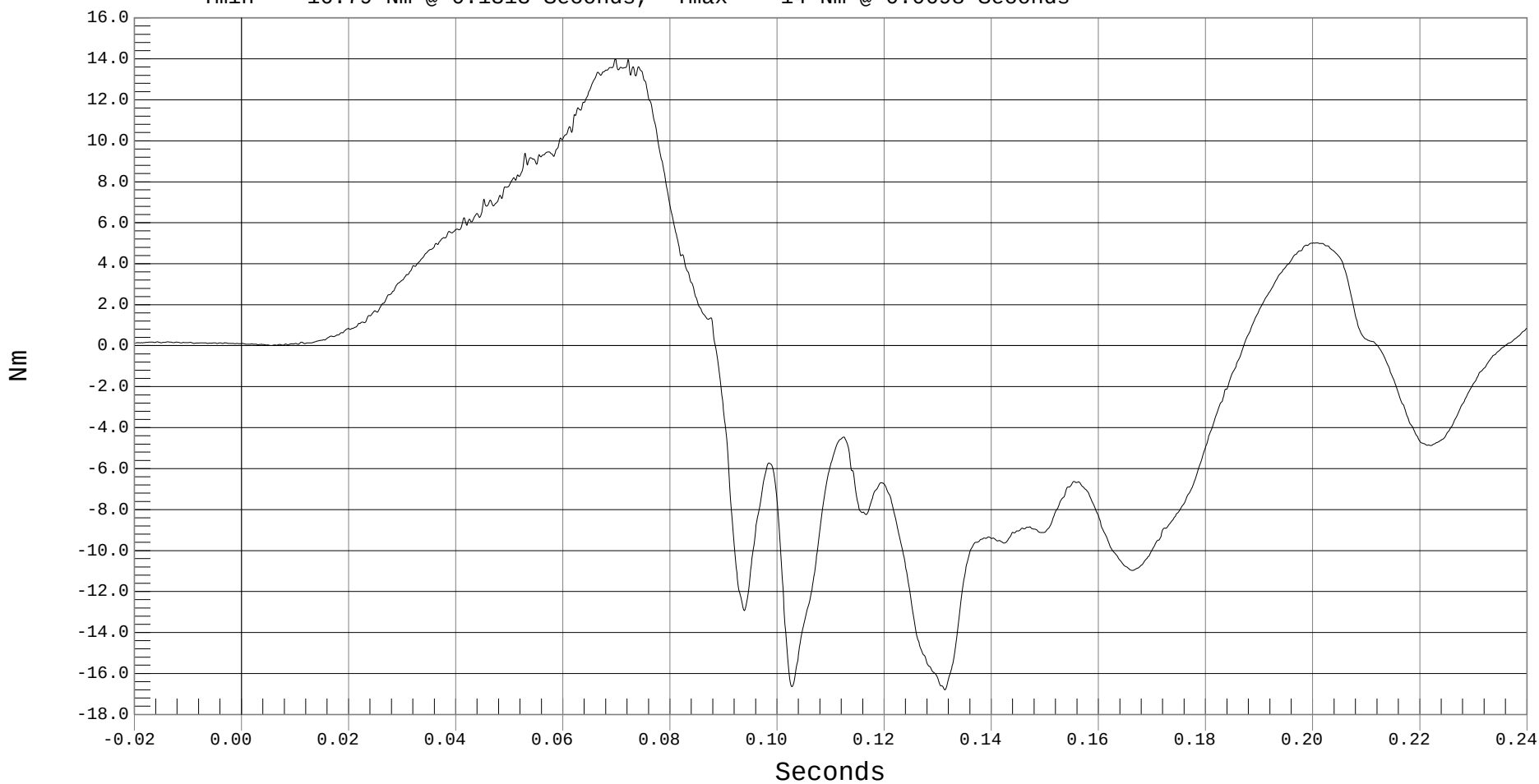
# LRS 3 YR OLD LOWER NECK MOMENT X

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 600

— 1 LRS CHILD LOWER NECK MOMENT X, B01006MF.M25

Ymin = -16.79 Nm @ 0.1313 Seconds, Ymax = 14 Nm @ 0.0698 Seconds





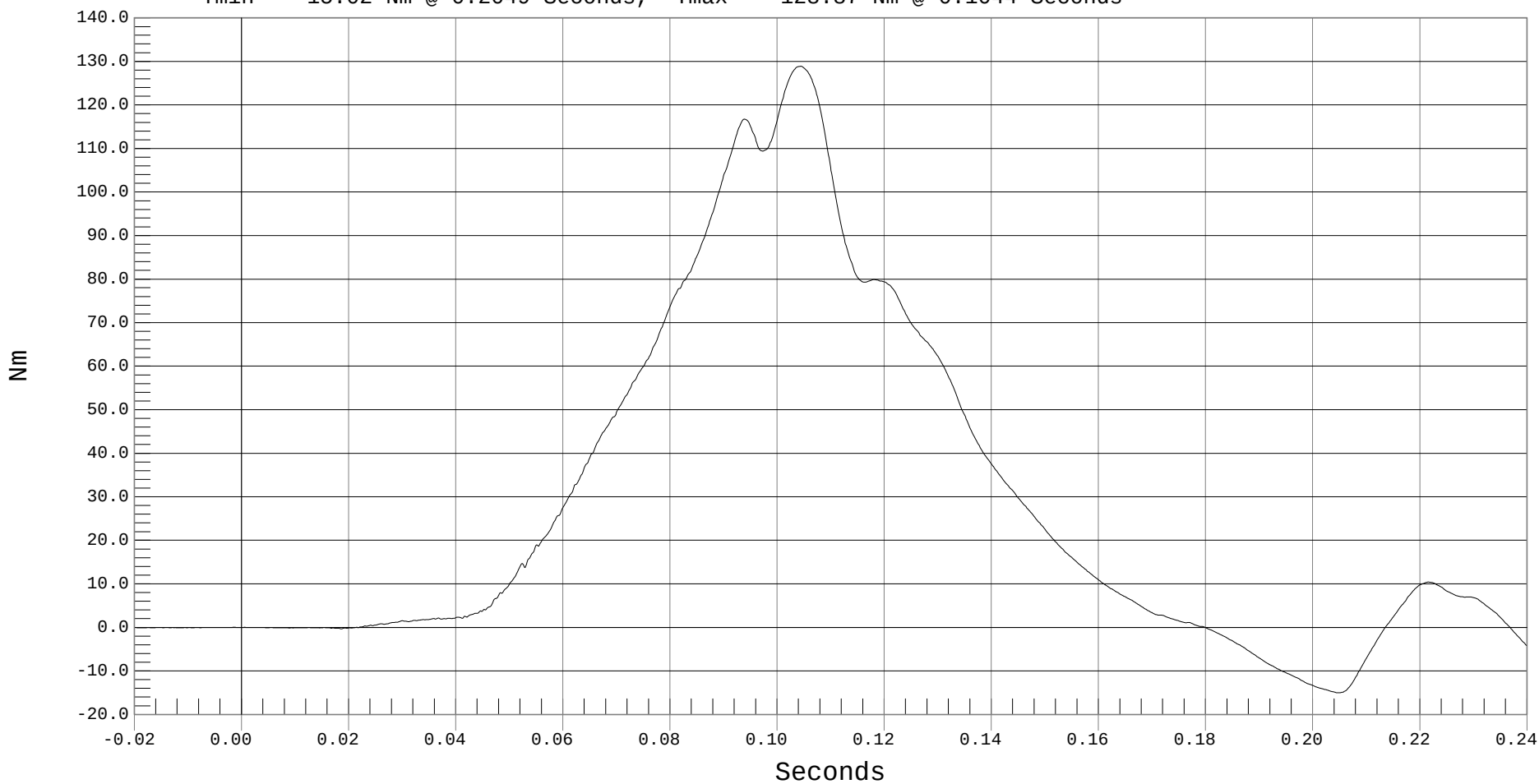
# LRS 3 YR OLD LOWER NECK MOMENT Y

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 600

— 1 LRS CHILD LOWER NECK MOMENT Y, B01006MF.M26

Ymin = -15.02 Nm @ 0.2049 Seconds, Ymax = 128.87 Nm @ 0.1044 Seconds





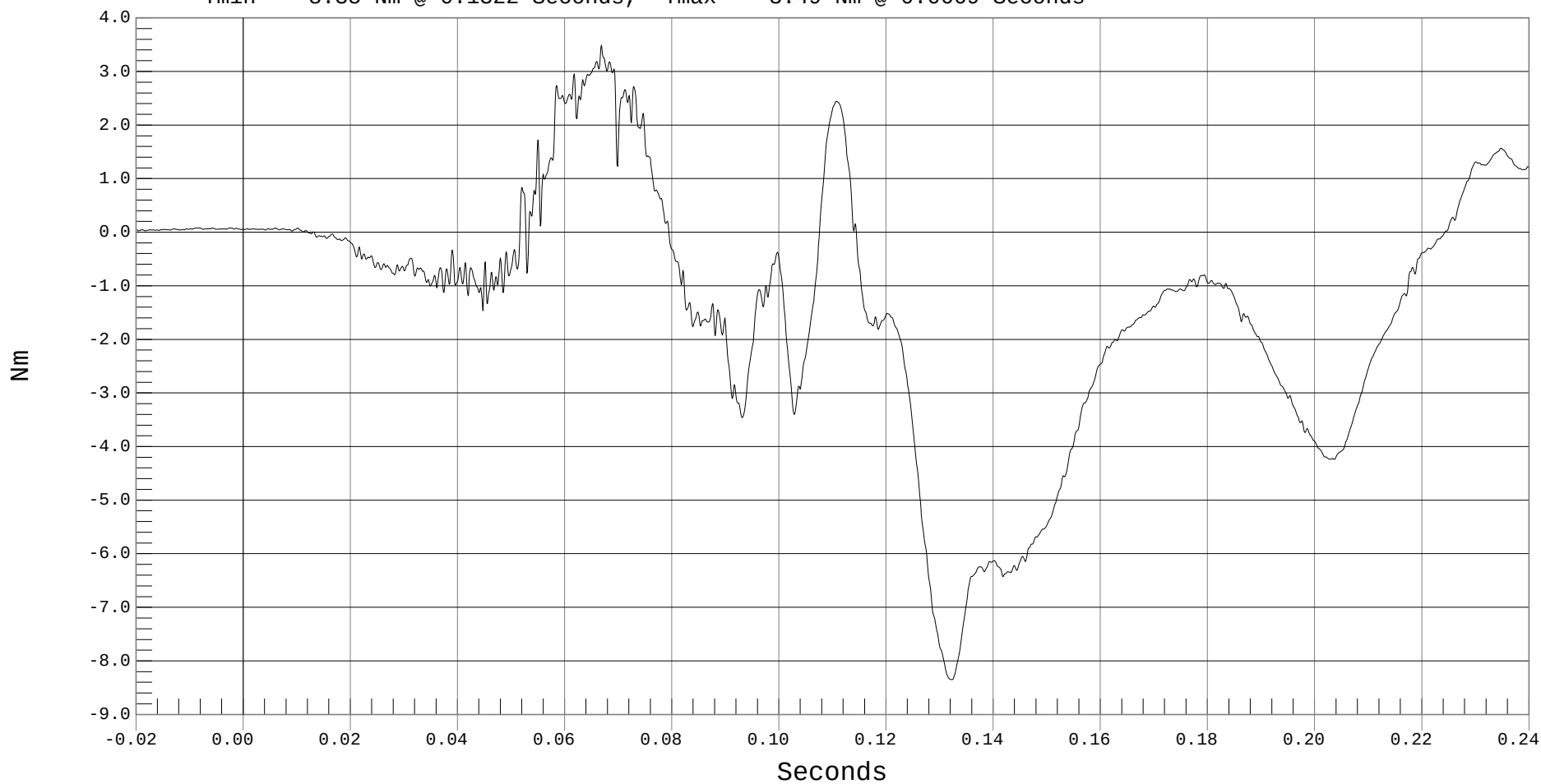
# LRS 3 YR OLD LOWER NECK MOMENT Z

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 600

— 1 LRS CHILD LOWER NECK MOMENT Z, B01006MF.M27

Ymin = -8.35 Nm @ 0.1322 Seconds, Ymax = 3.49 Nm @ 0.0669 Seconds







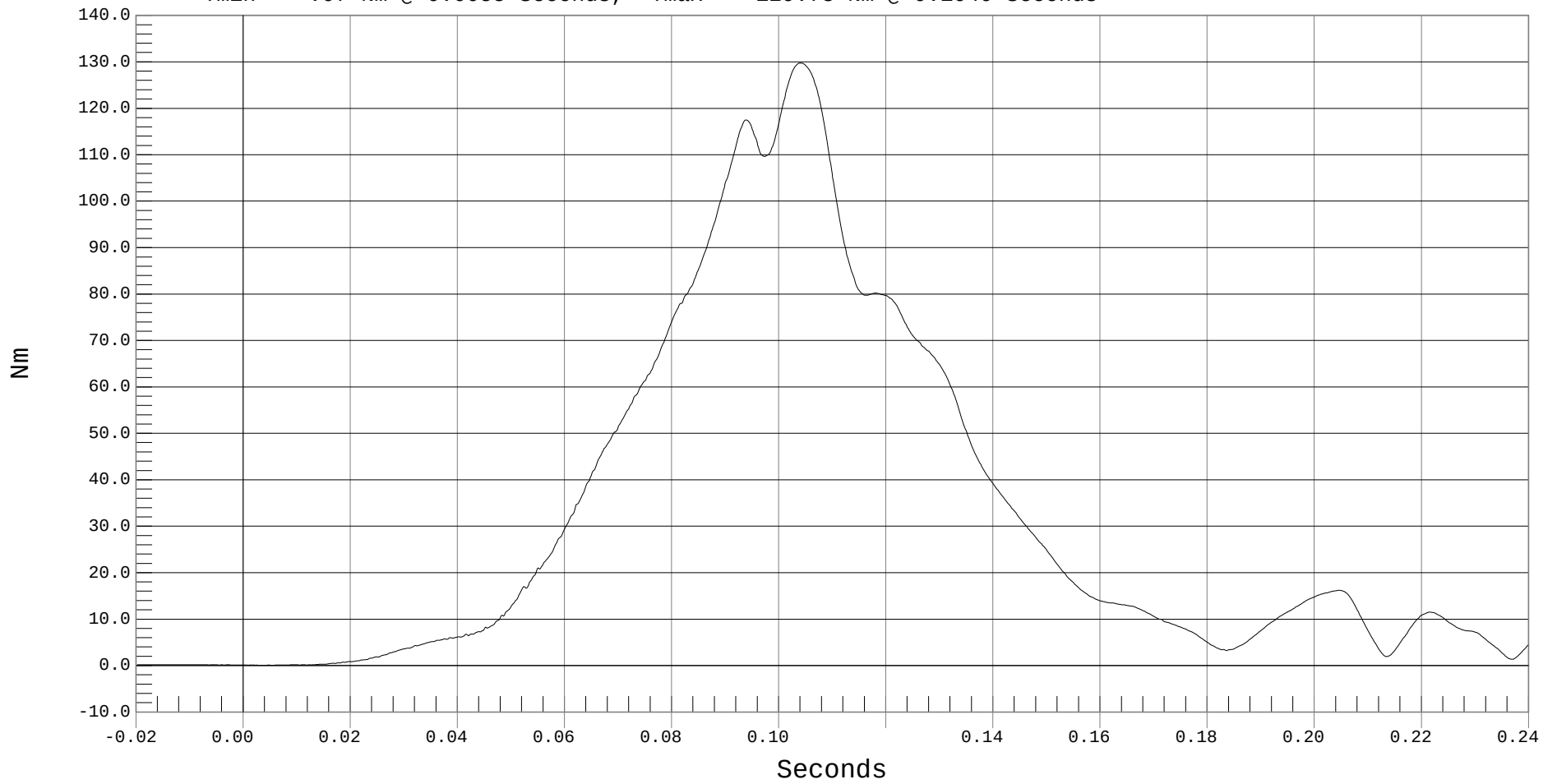
# LRS 3 YR OLD LOWER NECK MOMENT RESULTANT

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 600

— 1 LRS 3 YR OLD LOWER NECK MOMENT RESULTANT, B01006MV.M25

Ymin = .07 Nm @ 0.0055 Seconds, Ymax = 129.73 Nm @ 0.1040 Seconds





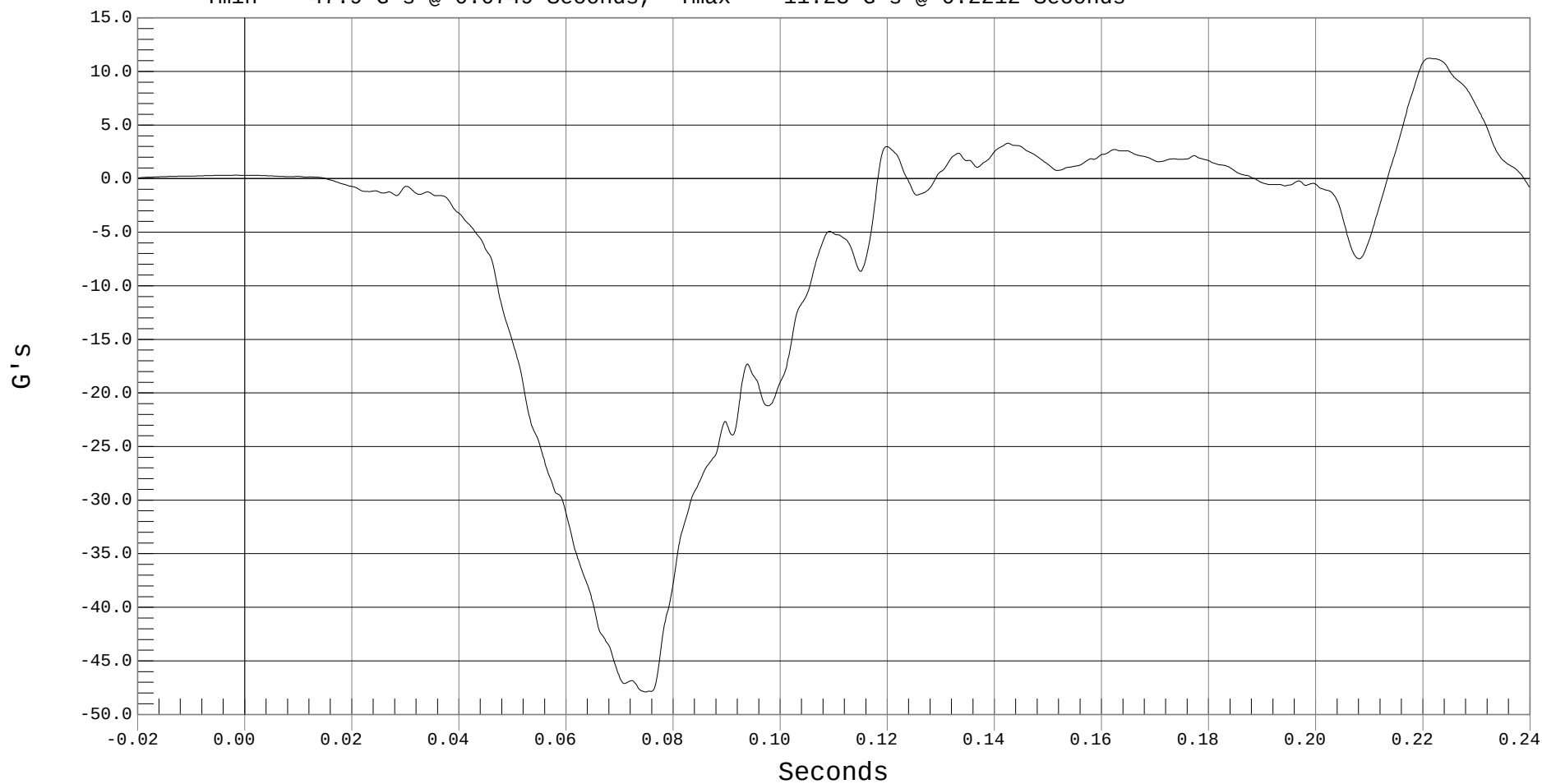
# LRS 3 YR OLD CHEST X ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 180

— 1 LRS CHILD CHEST X, B01006AF.A28

Ymin = -47.9 G's @ 0.0749 Seconds, Ymax = 11.23 G's @ 0.2212 Seconds





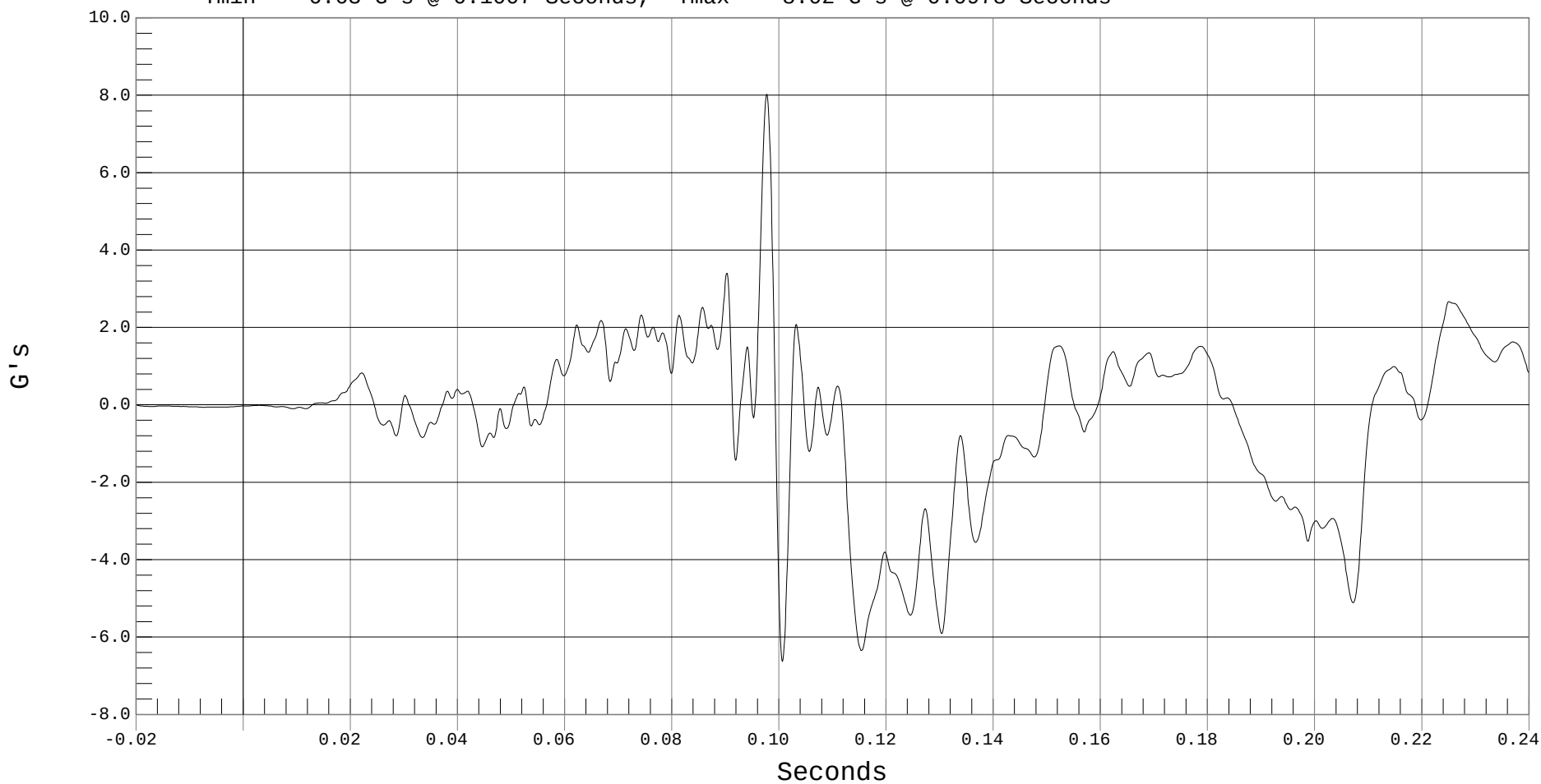
# LRS 3 YR OLD CHEST Y ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 180

— 1 LRS CHILD CHEST Y, B01006AF.A29

Ymin = -6.63 G's @ 0.1007 Seconds, Ymax = 8.02 G's @ 0.0978 Seconds





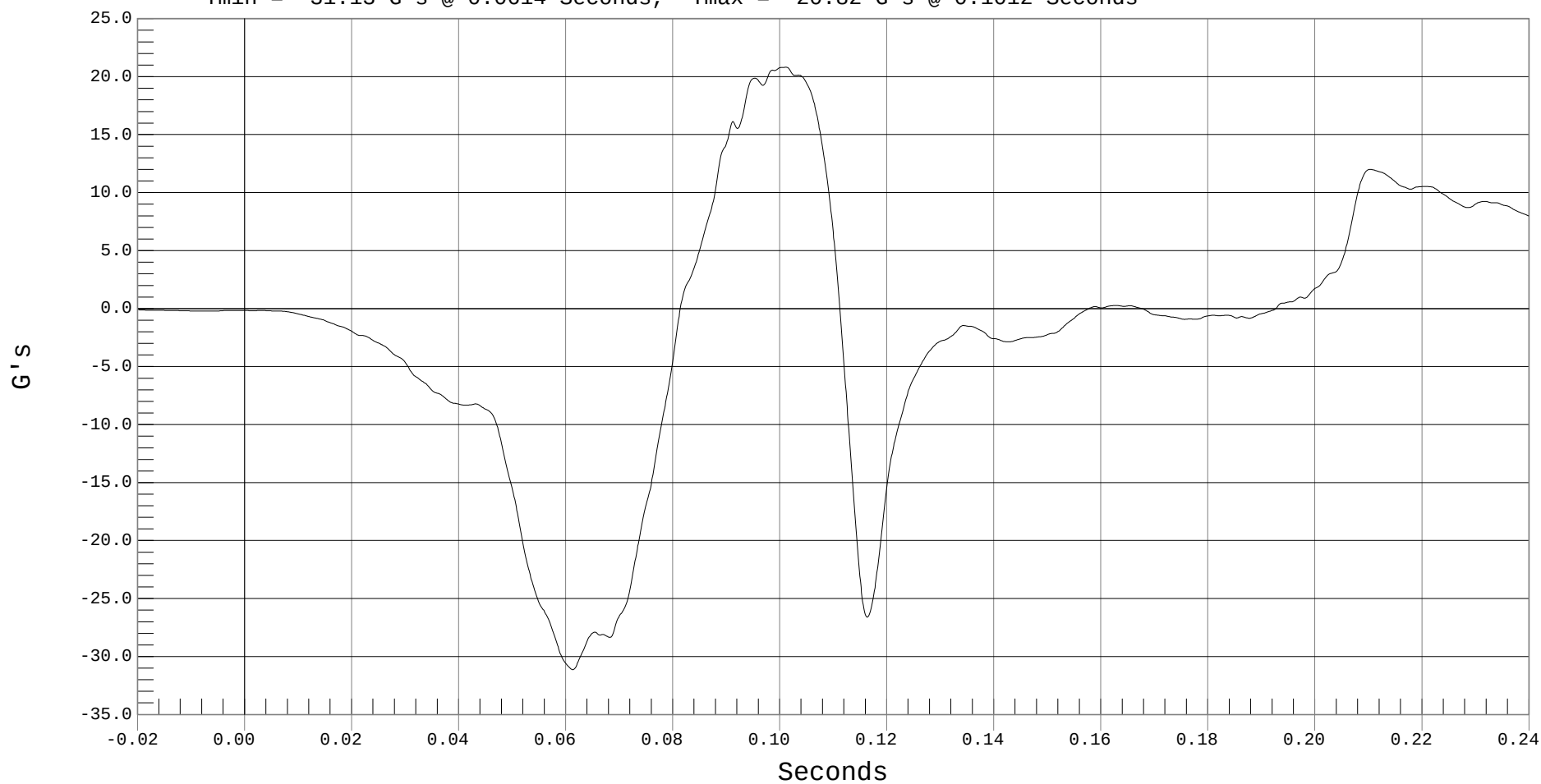
# LRS 3 YR OLD CHEST Z ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 180

— 1 LRS CHILD CHEST Z, B01006AF.A30

Ymin = -31.13 G's @ 0.0614 Seconds, Ymax = 20.82 G's @ 0.1012 Seconds





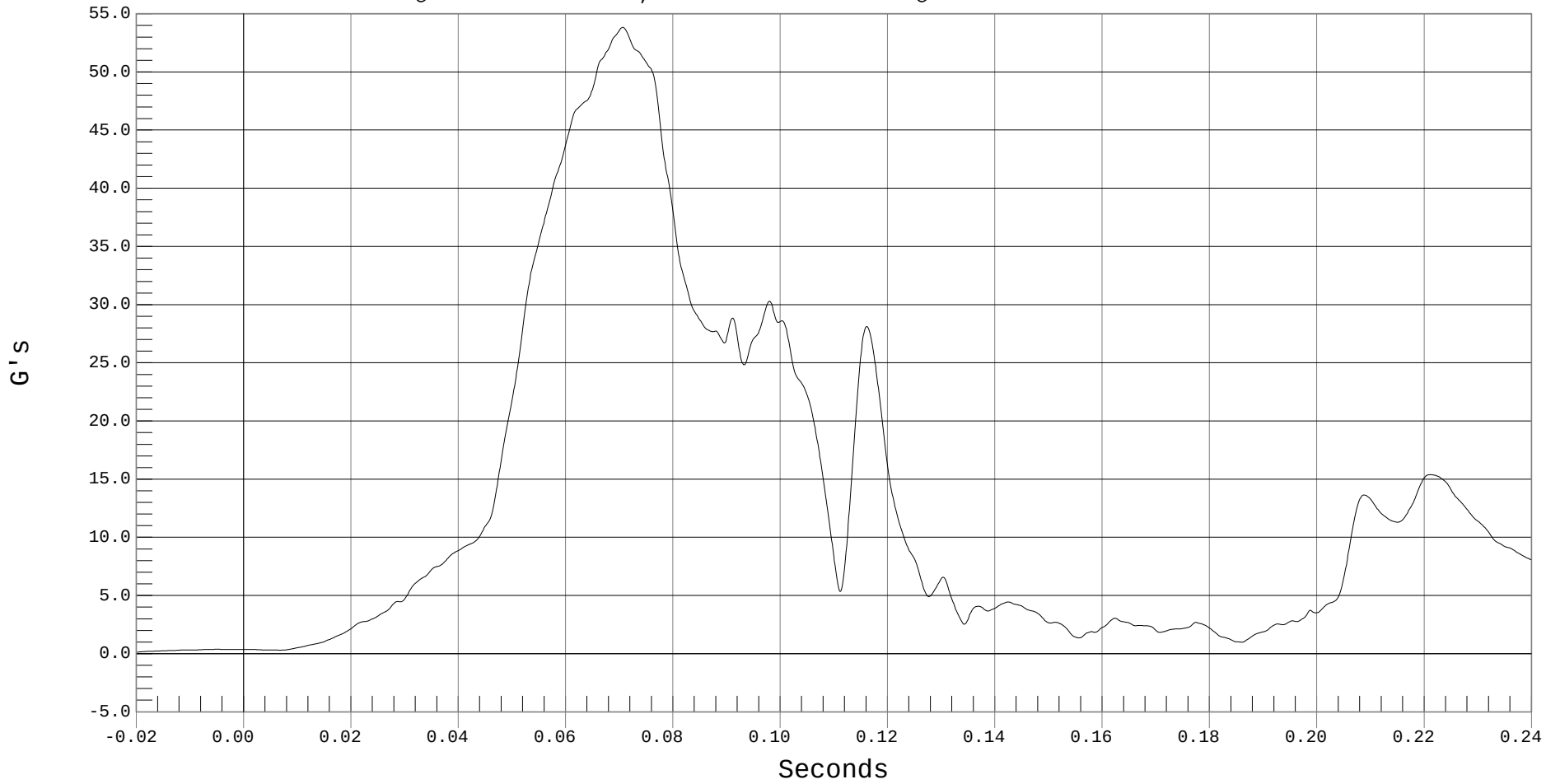
# LRS 3 YR OLD CHEST RESULTANT ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 180

— 1 LRS 3 YR OLD CHEST RESULTANT ACCELERATION, B01006AV.A28

Ymin = .13 G's @ -0.0198 Seconds, Ymax = 53.83 G's @ 0.0707 Seconds





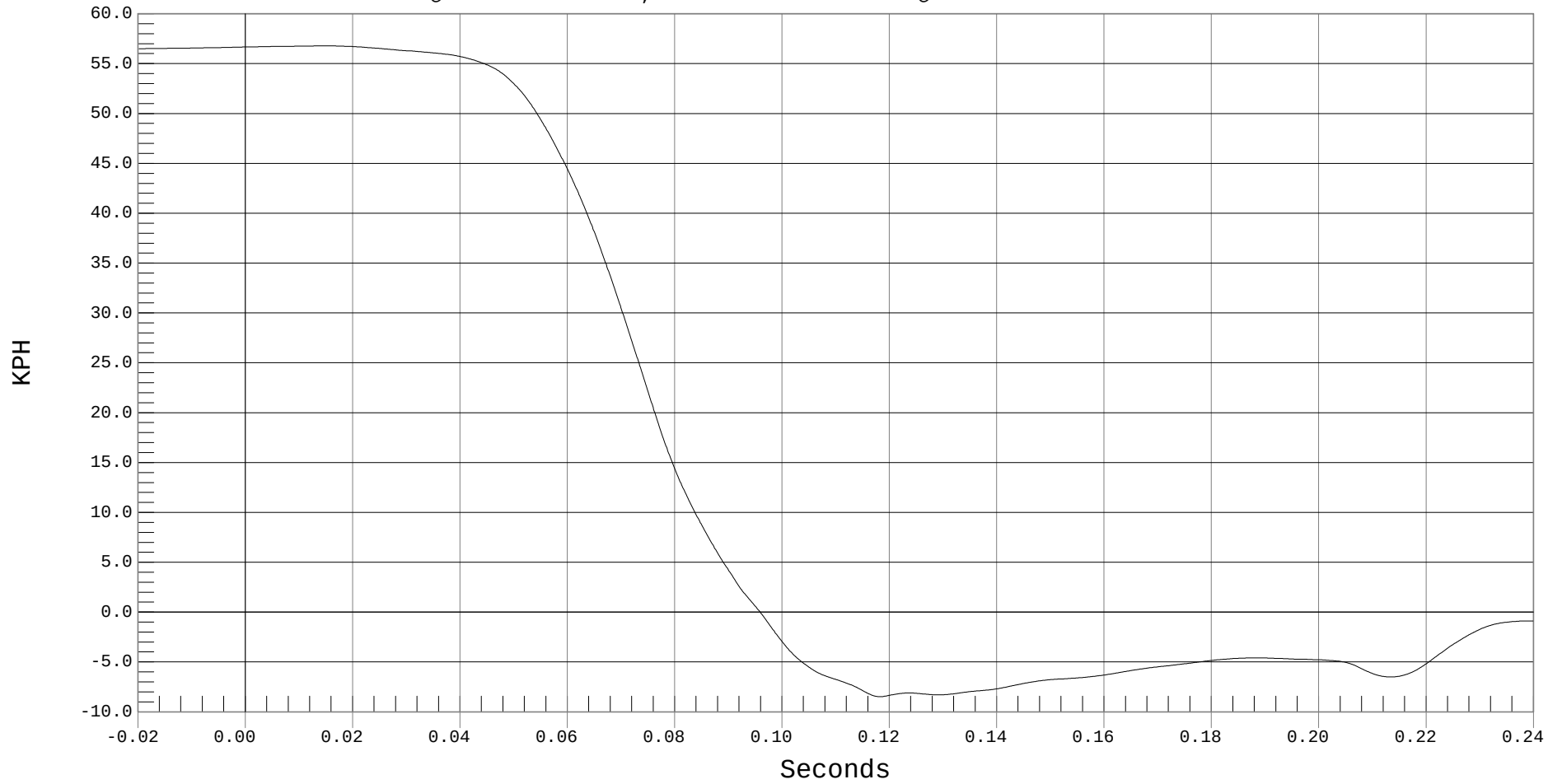
## LRS 3 YR OLD CHEST X VELOCITY

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 180

— 1 LRS 3 YR OLD CHEST X VELOCITY, B01006AI.V28

Ymin = -8.48 KPH @ 0.1182 Seconds, Ymax = 56.78 KPH @ 0.0151 Seconds







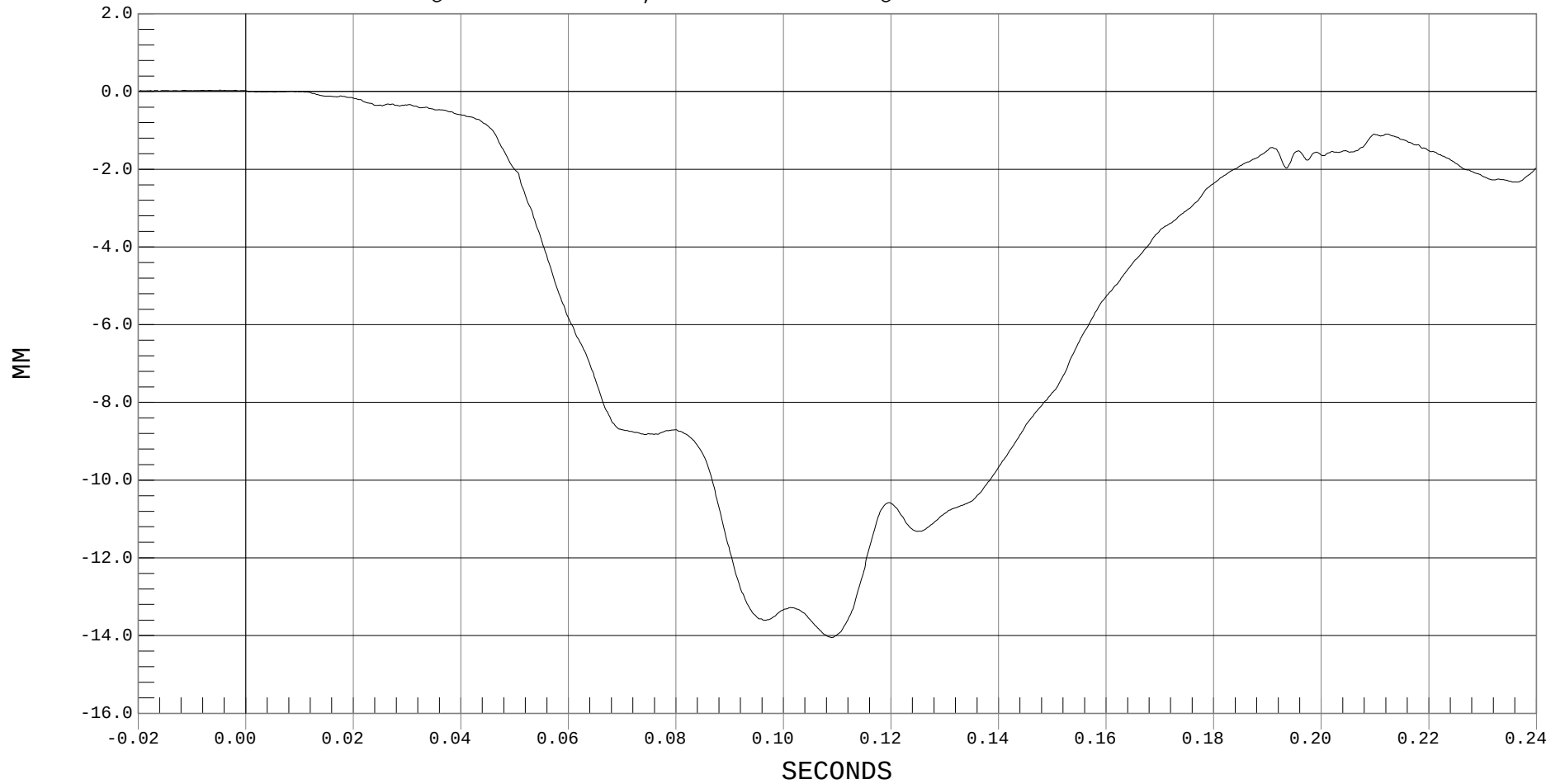
# LRS 3 YR OLD CHEST COMPRESSION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 600

— 1 DISPLACEMENT, B01006DF.D31

Ymin = -14.05 MM @ 0.1090 SECONDS, Ymax = .03 MM @ -0.0048 SECONDS





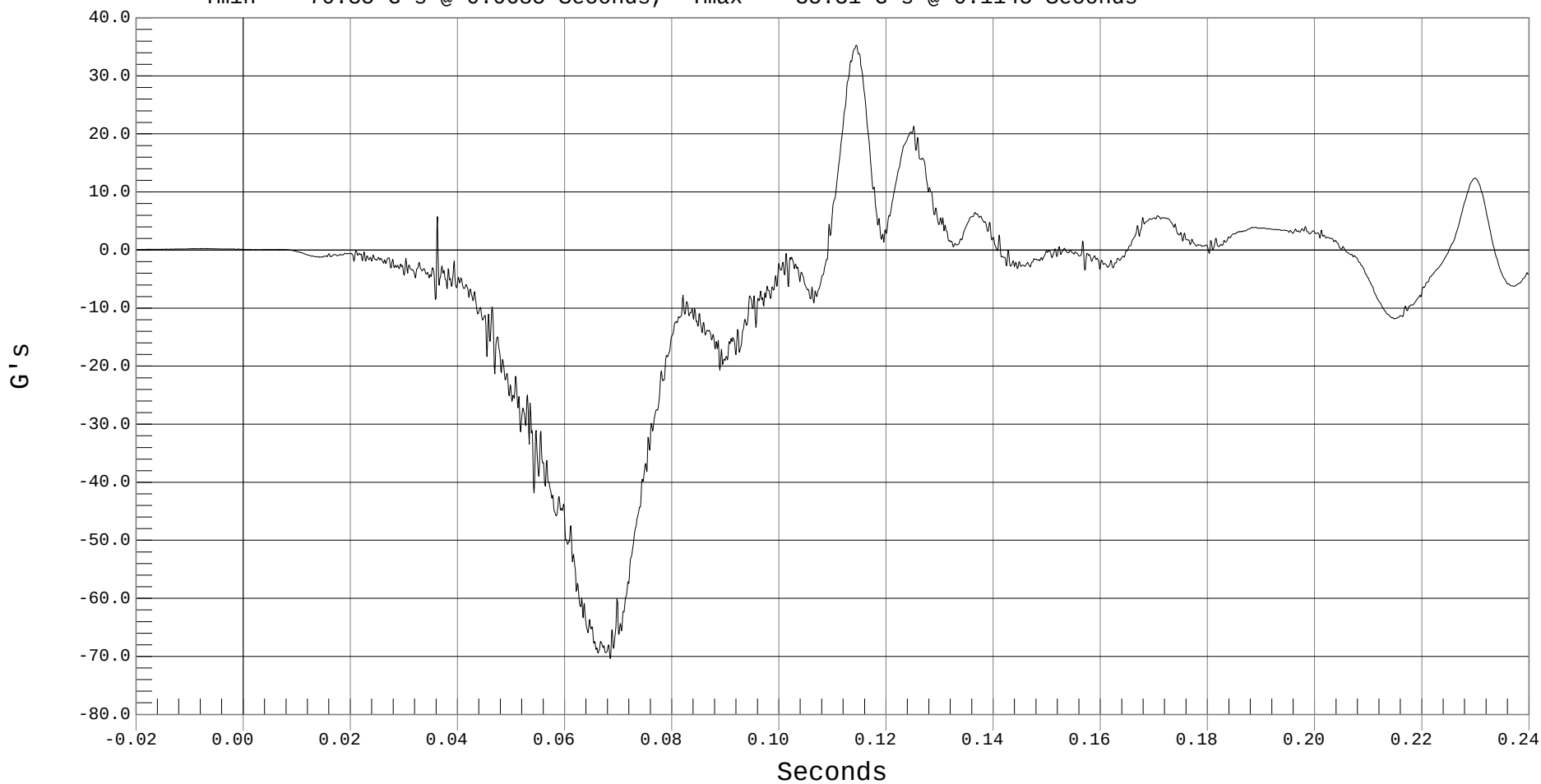
# LRS 3 YR OLD PELVIS X ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 1000

— 1 LRS CHILD PELVIS X, B01006AT.A34

Ymin = -70.35 G's @ 0.0685 Seconds, Ymax = 35.31 G's @ 0.1145 Seconds





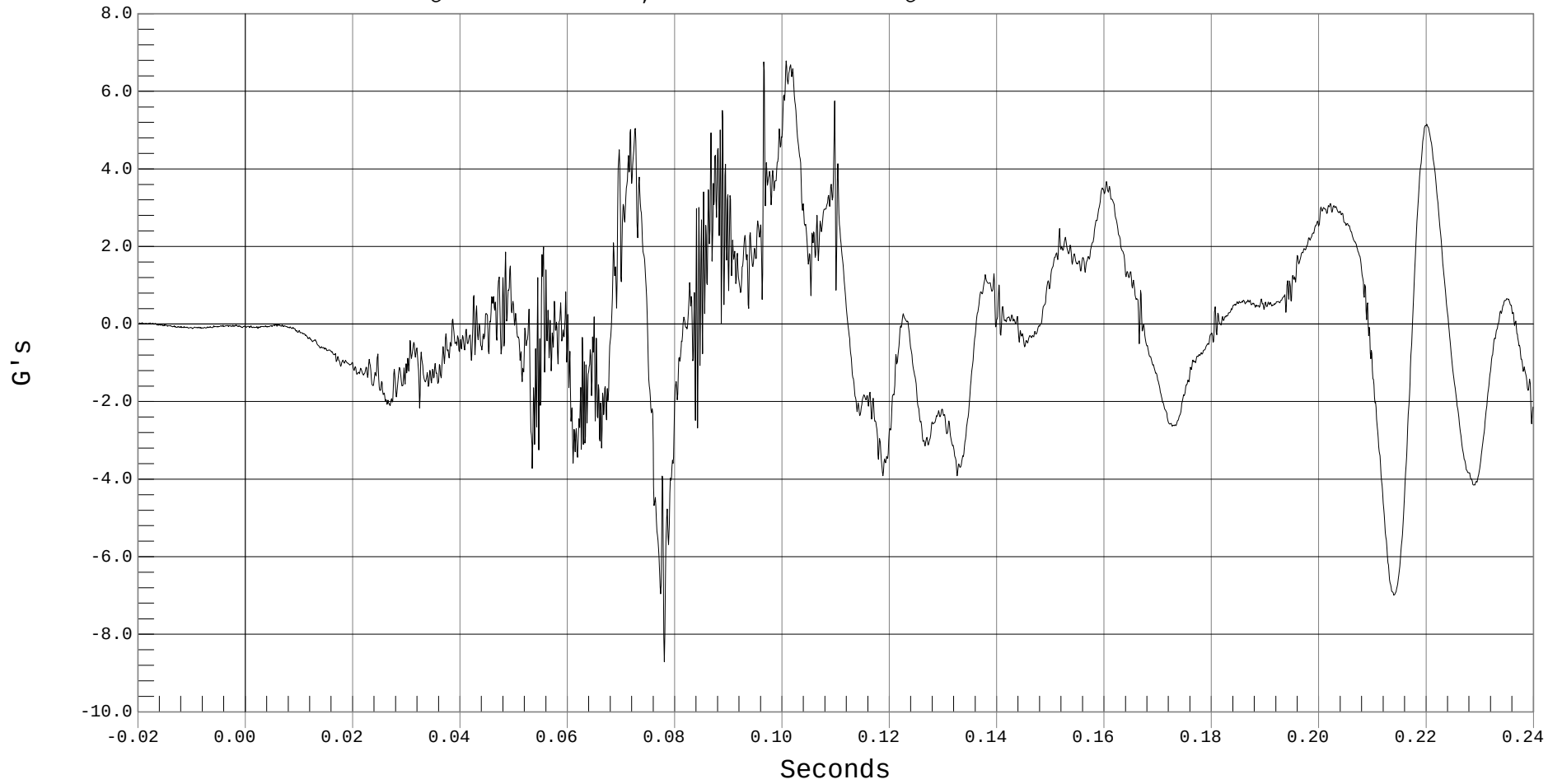
# LRS 3 YR OLD PELVIS Y ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 1000

— 1 LRS CHILD PELVIS Y, B01006AT.A35

Ymin = -8.71 G's @ 0.0781 Seconds, Ymax = 6.78 G's @ 0.1008 Seconds





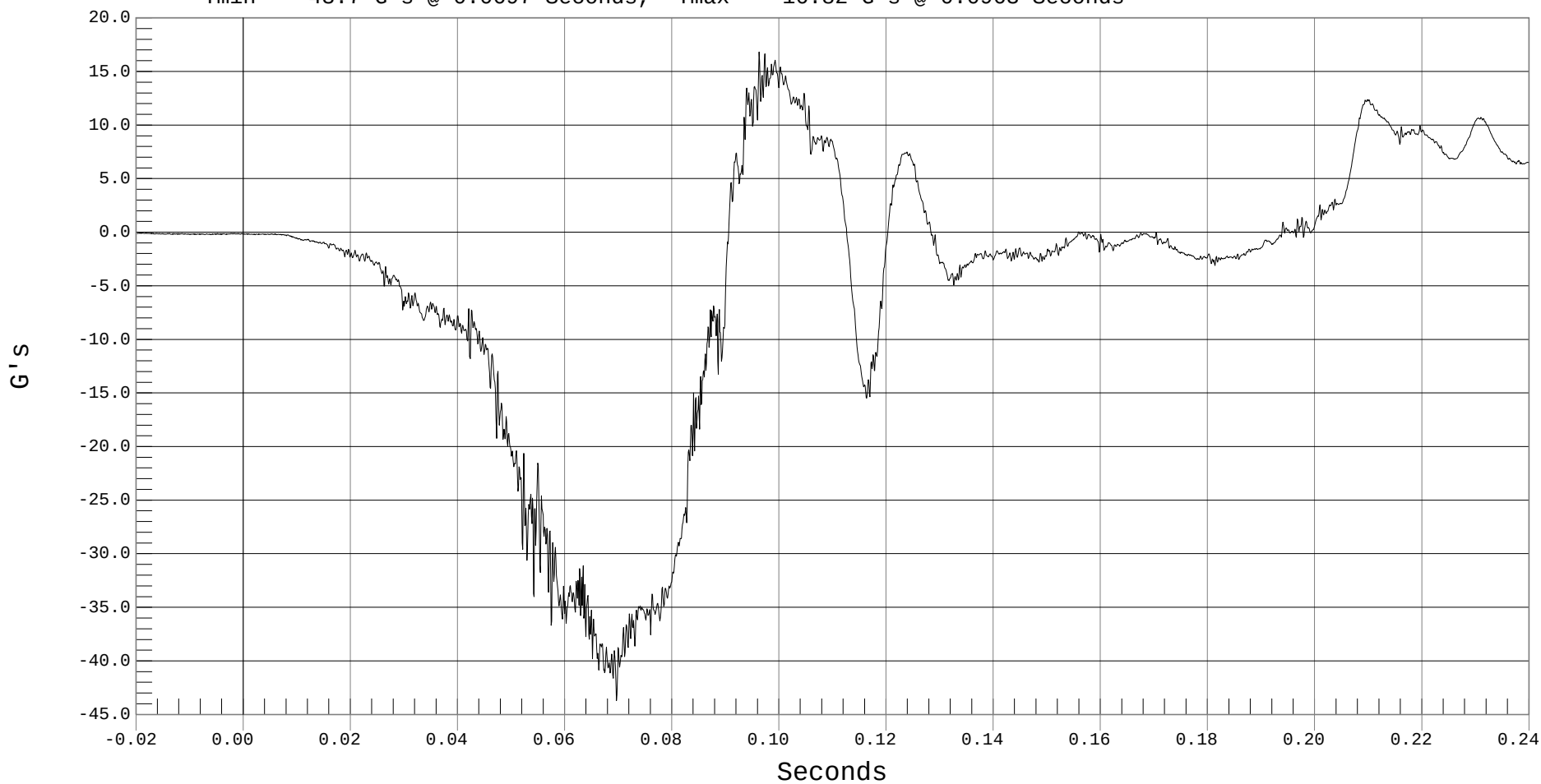
# LRS 3 YR OLD PELVIS Z ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 1000

— 1 LRS CHILD PELVIS Z, B01006AT.A36

Ymin = -43.7 G's @ 0.0697 Seconds, Ymax = 16.82 G's @ 0.0963 Seconds





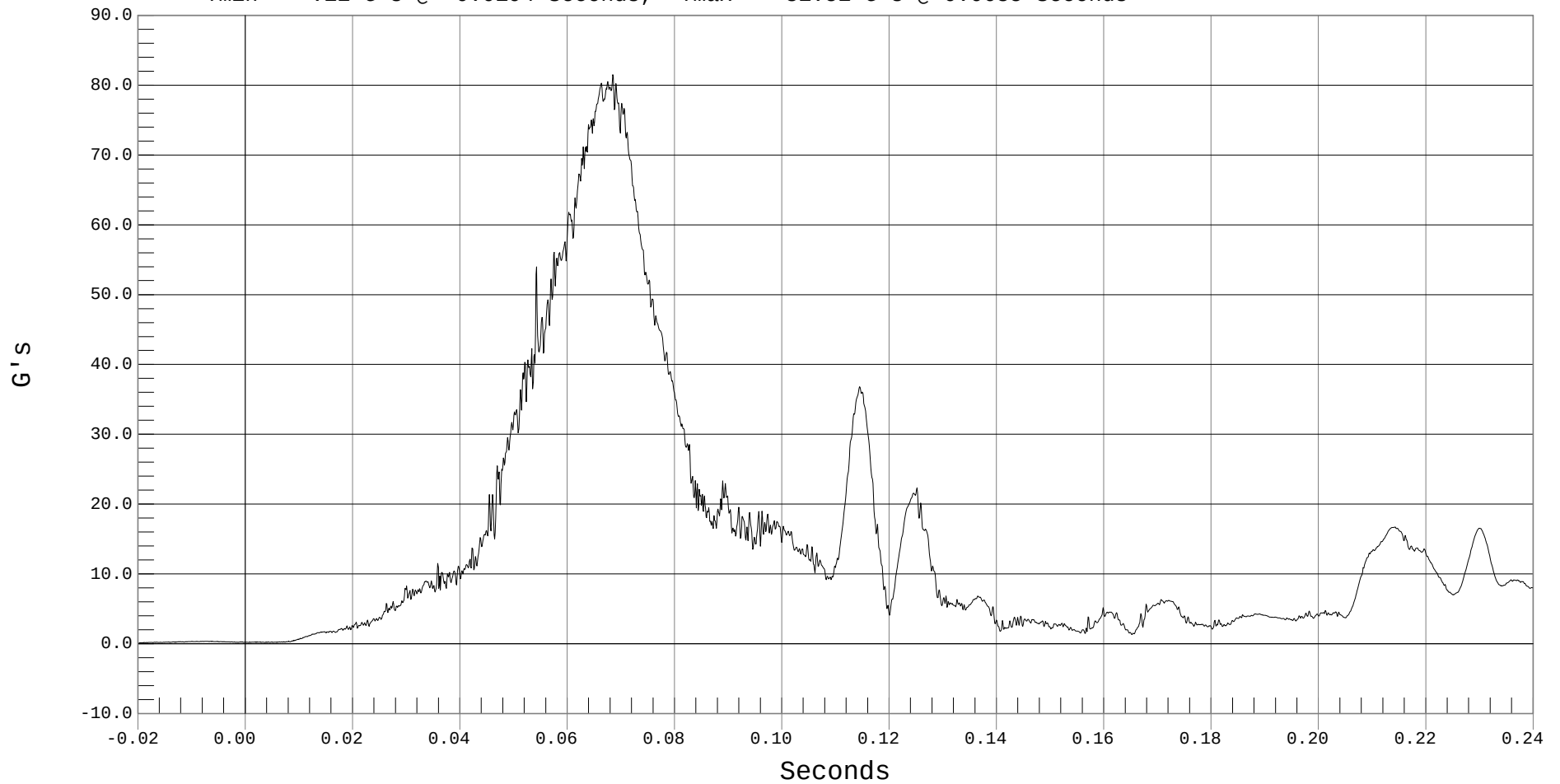
# LRS 3 YR OLD PELVIS RESULTANT ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 1000

— 1 LRS 3 YR OLD PELVIS RESULTANT ACCELERATION, B01006AV.A34

Ymin = .11 G's @ -0.0194 Seconds, Ymax = 81.51 G's @ 0.0685 Seconds





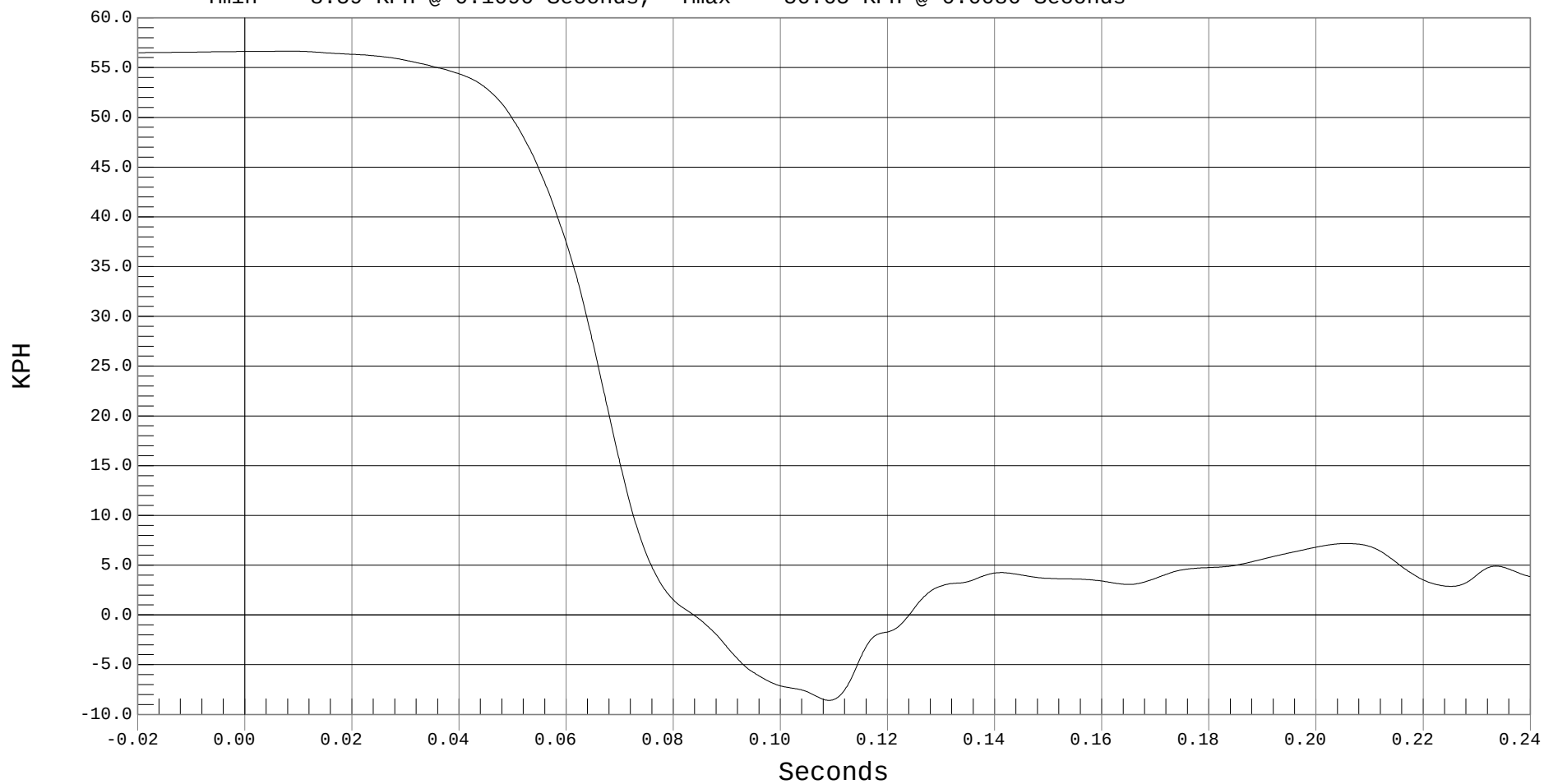
## LRS 3 YR OLD PELVIS X VELOCITY

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 180

— 1 3 YR OLD PELVIS X VELOCITY, B01006AI.V34

Ymin = -8.59 KPH @ 0.1090 Seconds, Ymax = 56.65 KPH @ 0.0086 Seconds







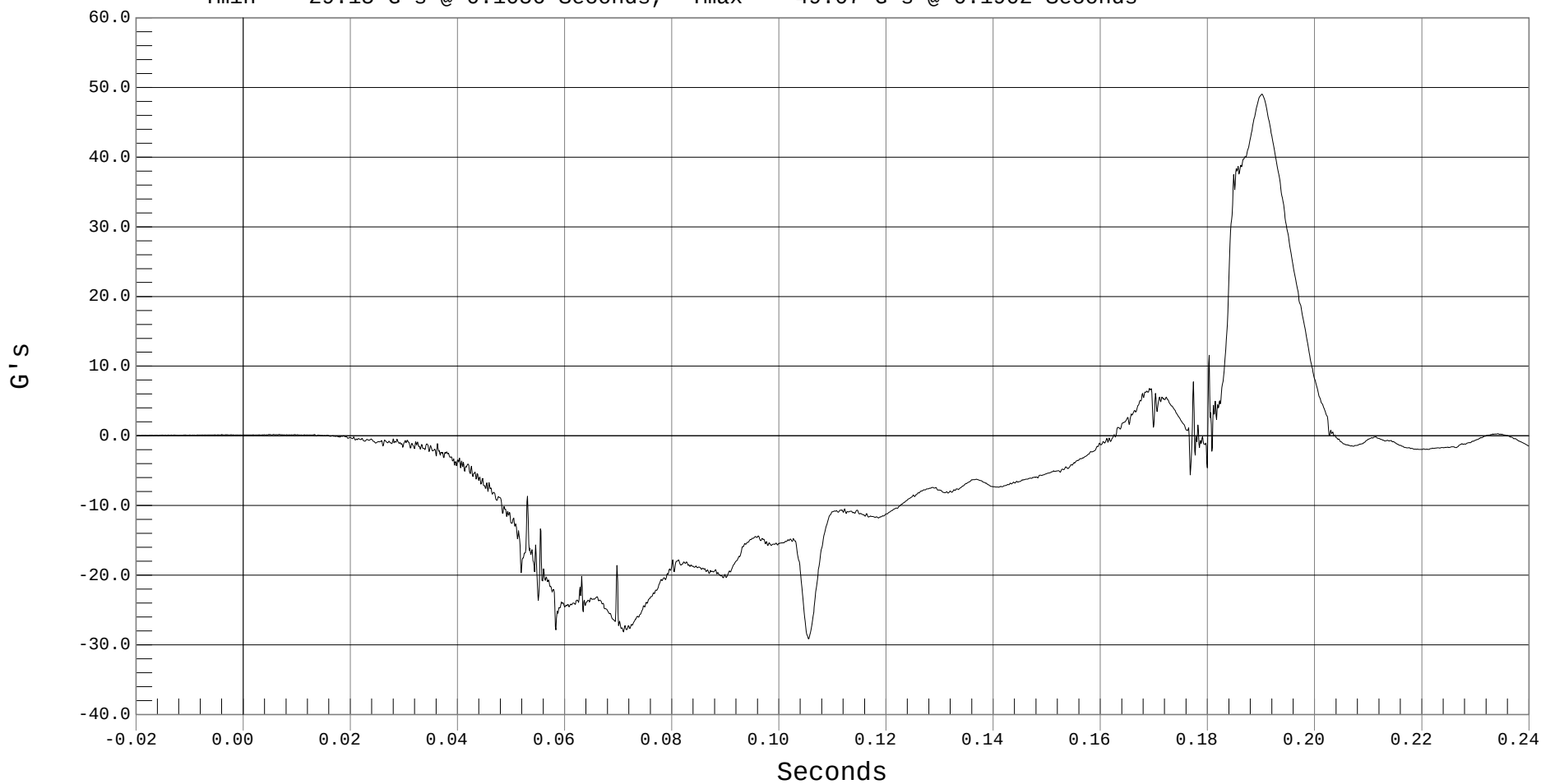
# RRS 3 YR OLD HEAD X ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 1000

— 1 RRS CHILD HEAD X, B01006AT.A37

Ymin = -29.15 G's @ 0.1056 Seconds, Ymax = 49.07 G's @ 0.1902 Seconds





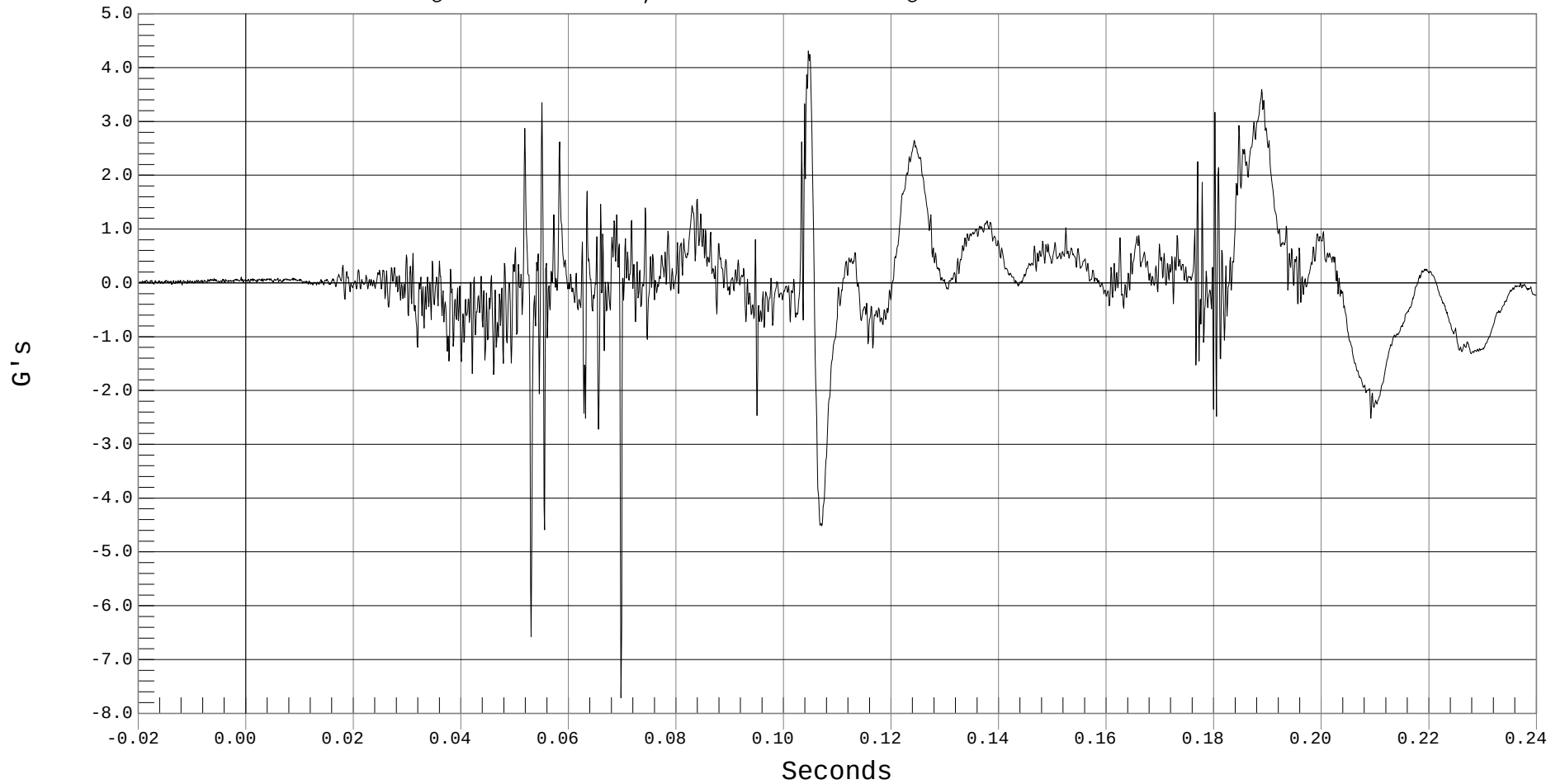
# RRS 3 YR OLD HEAD Y ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 1000

— 1 RRS CHILD HEAD Y, B01006AT.A38

Ymin = -7.71 G's @ 0.0698 Seconds, Ymax = 4.31 G's @ 0.1046 Seconds





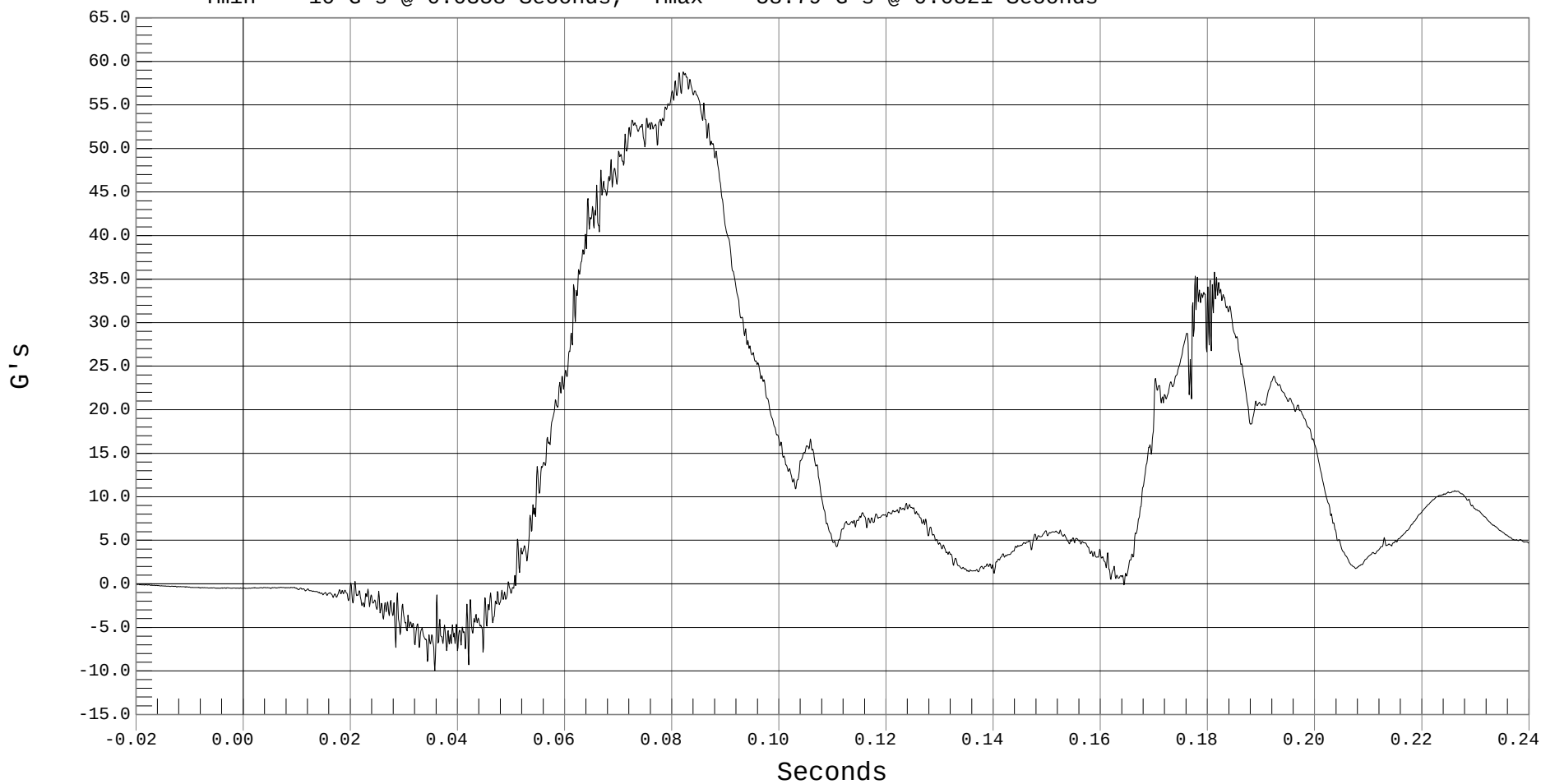
# RRS 3 YR OLD HEAD Z ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 1000

— 1 RRS CHILD HEAD Z, B01006AT.A39

Ymin = -10 G's @ 0.0358 Seconds, Ymax = 58.79 G's @ 0.0821 Seconds





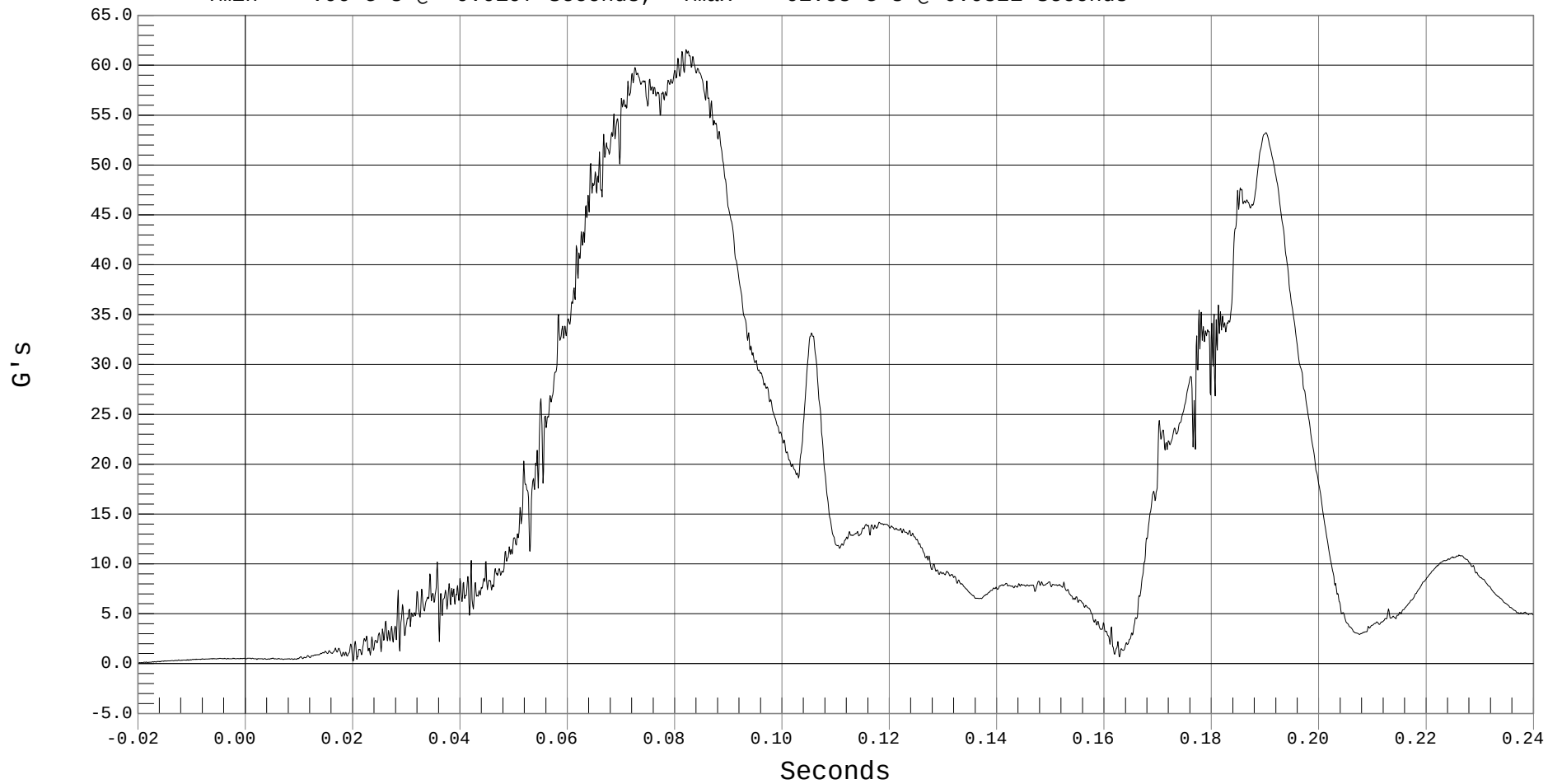
# RRS 3 YR OLD HEAD RESULTANT ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 1000

— 1 RRS 3 YR OLD HEAD RESULTANT ACCELERATION, B01006AV.A37

Ymin = .06 G's @ -0.0197 Seconds, Ymax = 61.58 G's @ 0.0821 Seconds





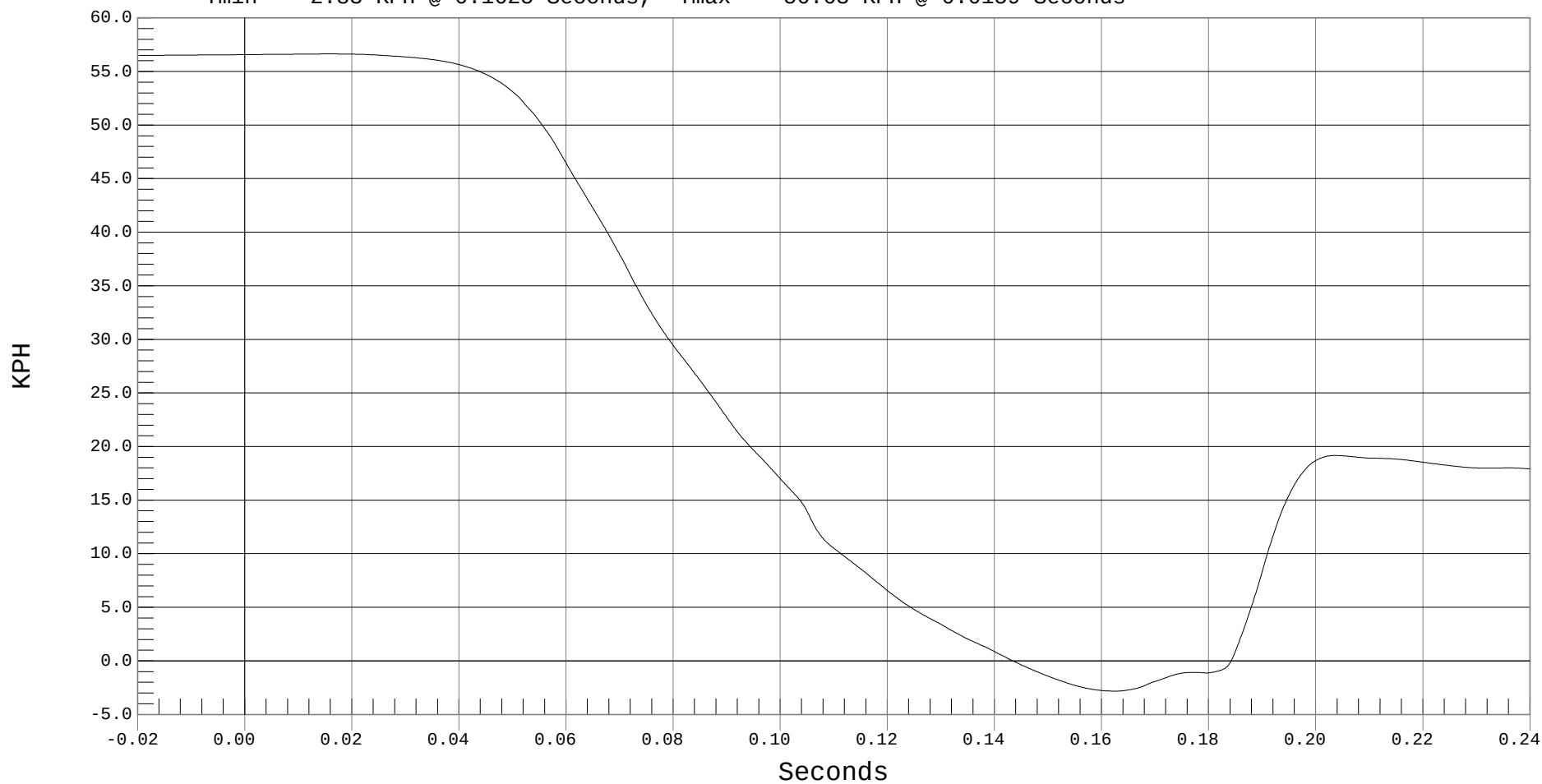
# RRS 3 YR OLD HEAD X VELOCITY

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 180

— 1 RRS 3 YR OLD HEAD X VELOCITY, B01006AI.V37

Ymin = -2.83 KPH @ 0.1625 Seconds, Ymax = 56.63 KPH @ 0.0159 Seconds





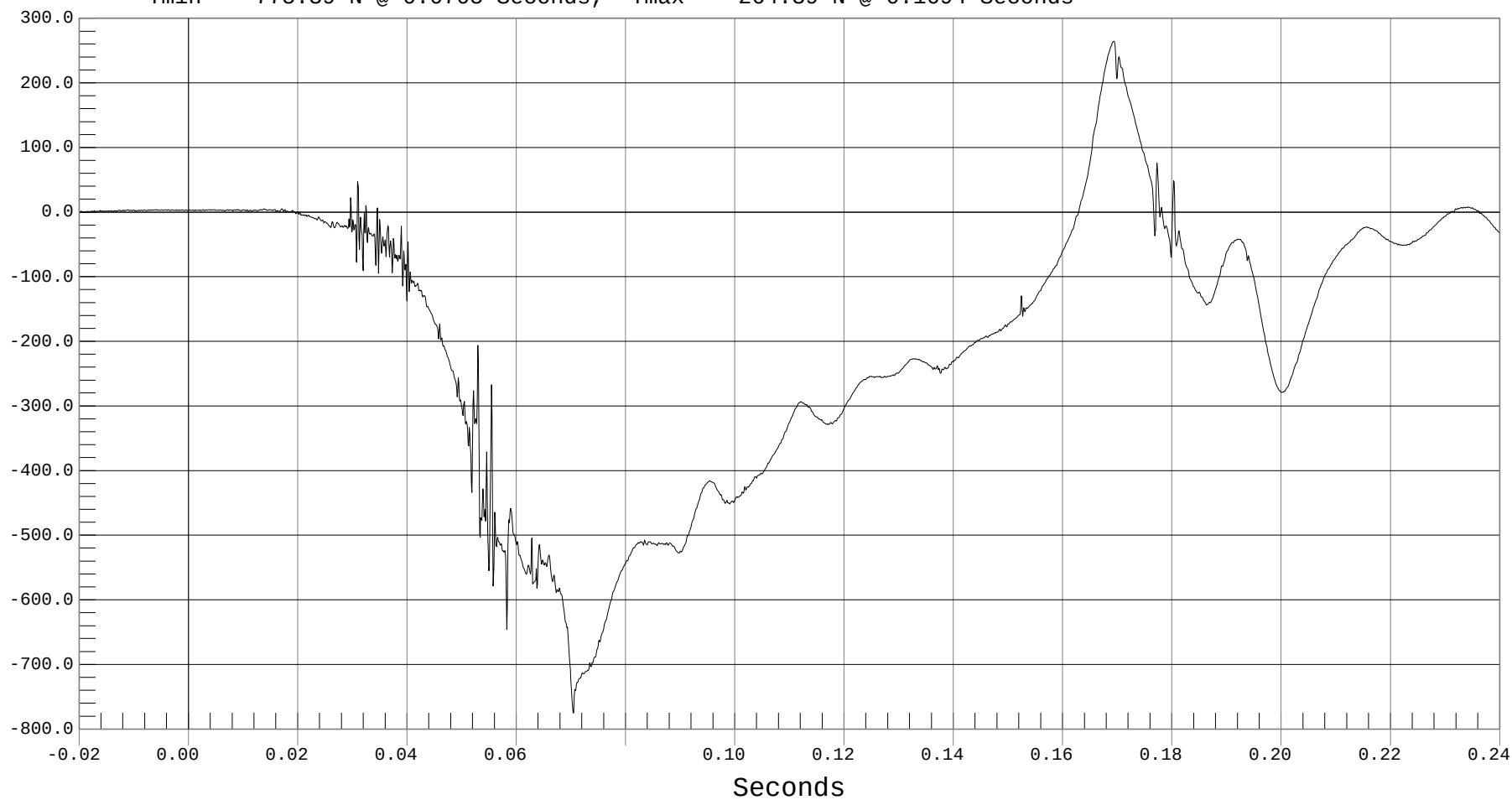
# RRS 3 YR OLD UPPER NECK FORCE X

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 1000

— 1 RRS CHILD UPPER NECK FORCE X, B01006FT.F40

Ymin = -775.39 N @ 0.0705 Seconds, Ymax = 264.39 N @ 0.1694 Seconds







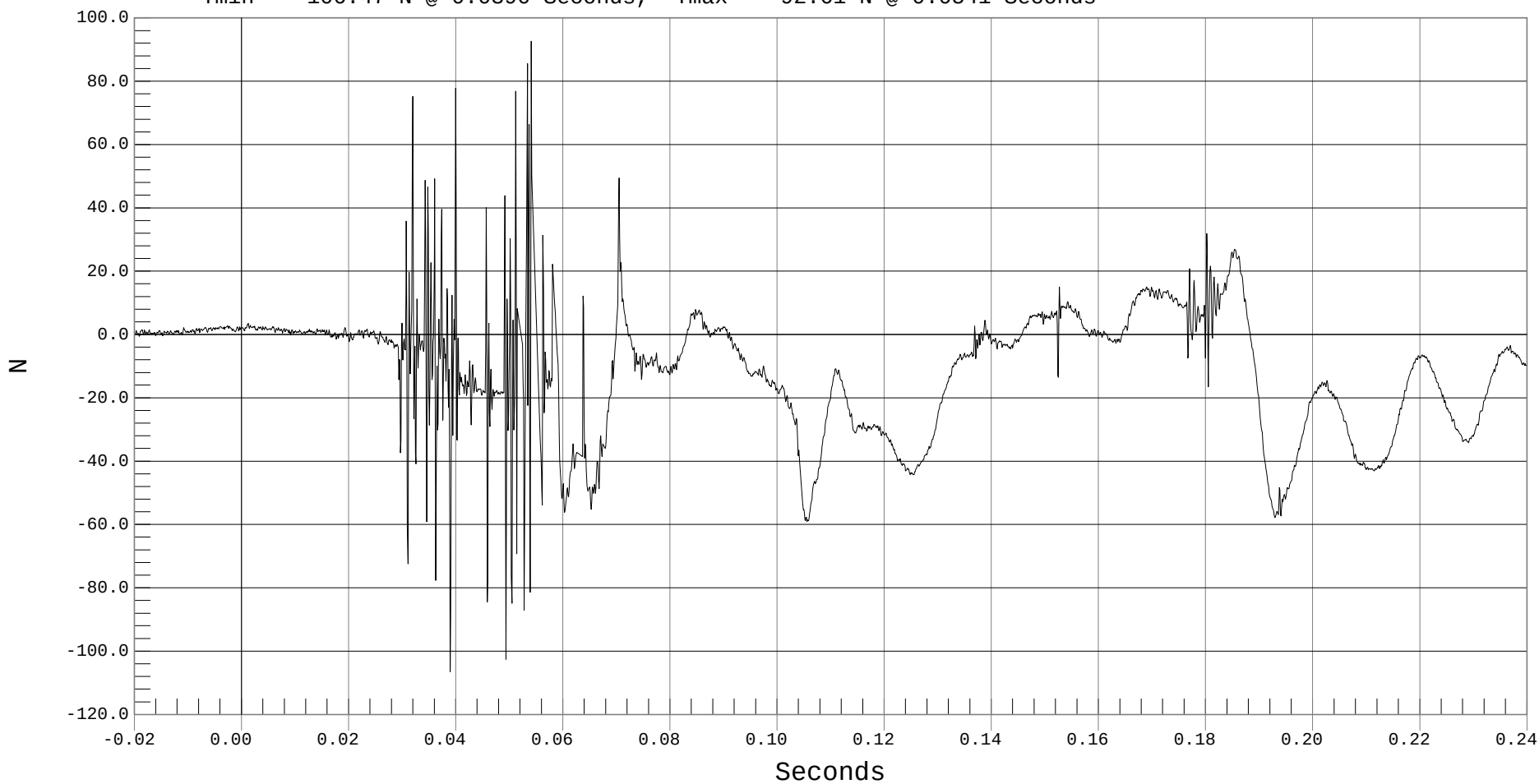
# RRS 3 YR OLD UPPER NECK FORCE Y

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 1000

— 1 RRS CHILD UPPER NECK FORCE Y, B01006FT.F41

Ymin = -106.47 N @ 0.0390 Seconds, Ymax = 92.61 N @ 0.0541 Seconds





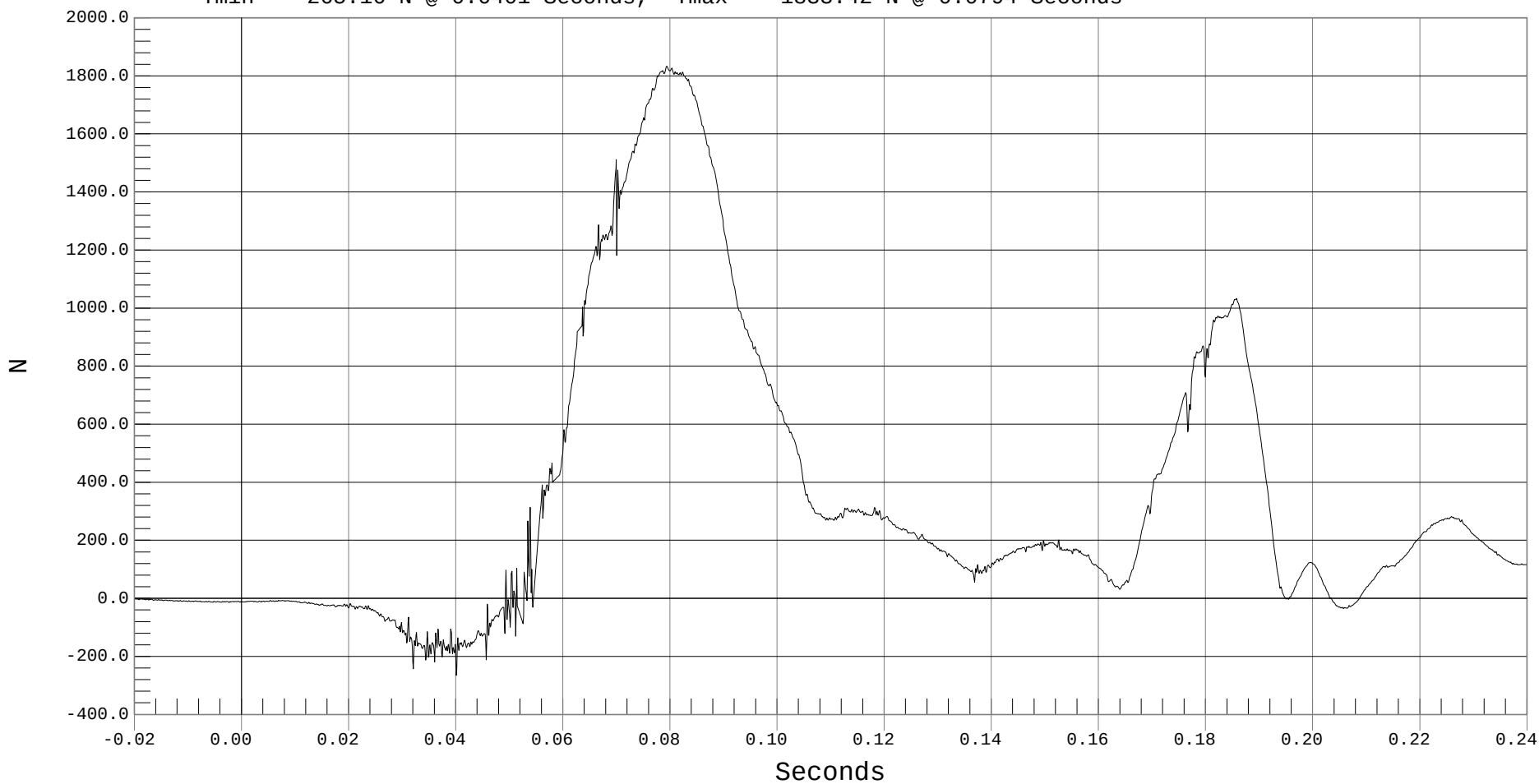
# RRS 3 YR OLD UPPER NECK FORCE Z

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 1000

— 1 RRS CHILD UPPER NECK FORCE Z, B01006FT.F42

Ymin = -265.16 N @ 0.0401 Seconds, Ymax = 1833.42 N @ 0.0794 Seconds





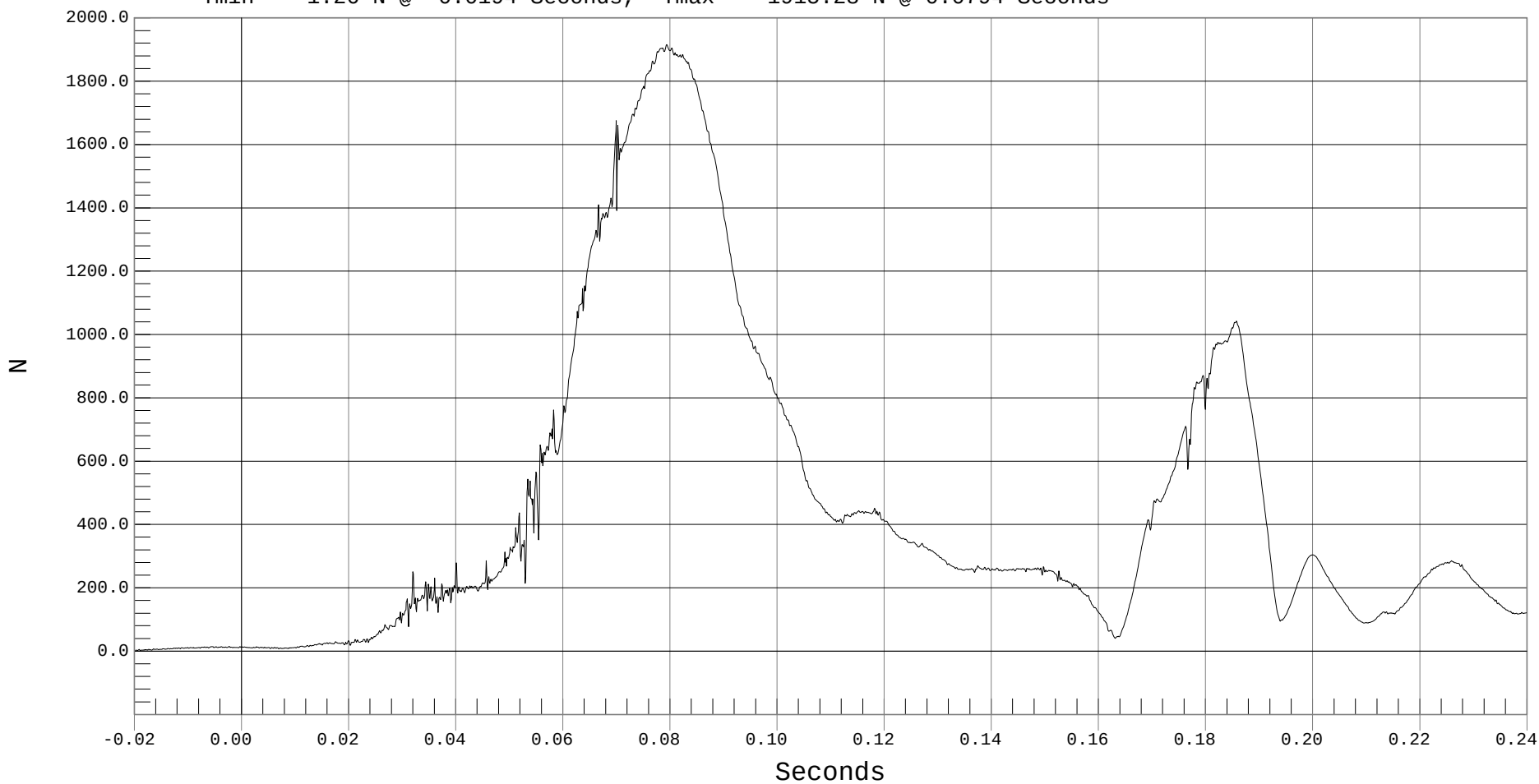
# RRS 3 YR OLD UPPER NECK FORCE RESULTANT

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 1000

— 1 RRS 3 YR OLD UPPER NECK FORCE RESULTANT, B01006FV.F40

Ymin = 1.26 N @ -0.0194 Seconds, Ymax = 1915.28 N @ 0.0794 Seconds





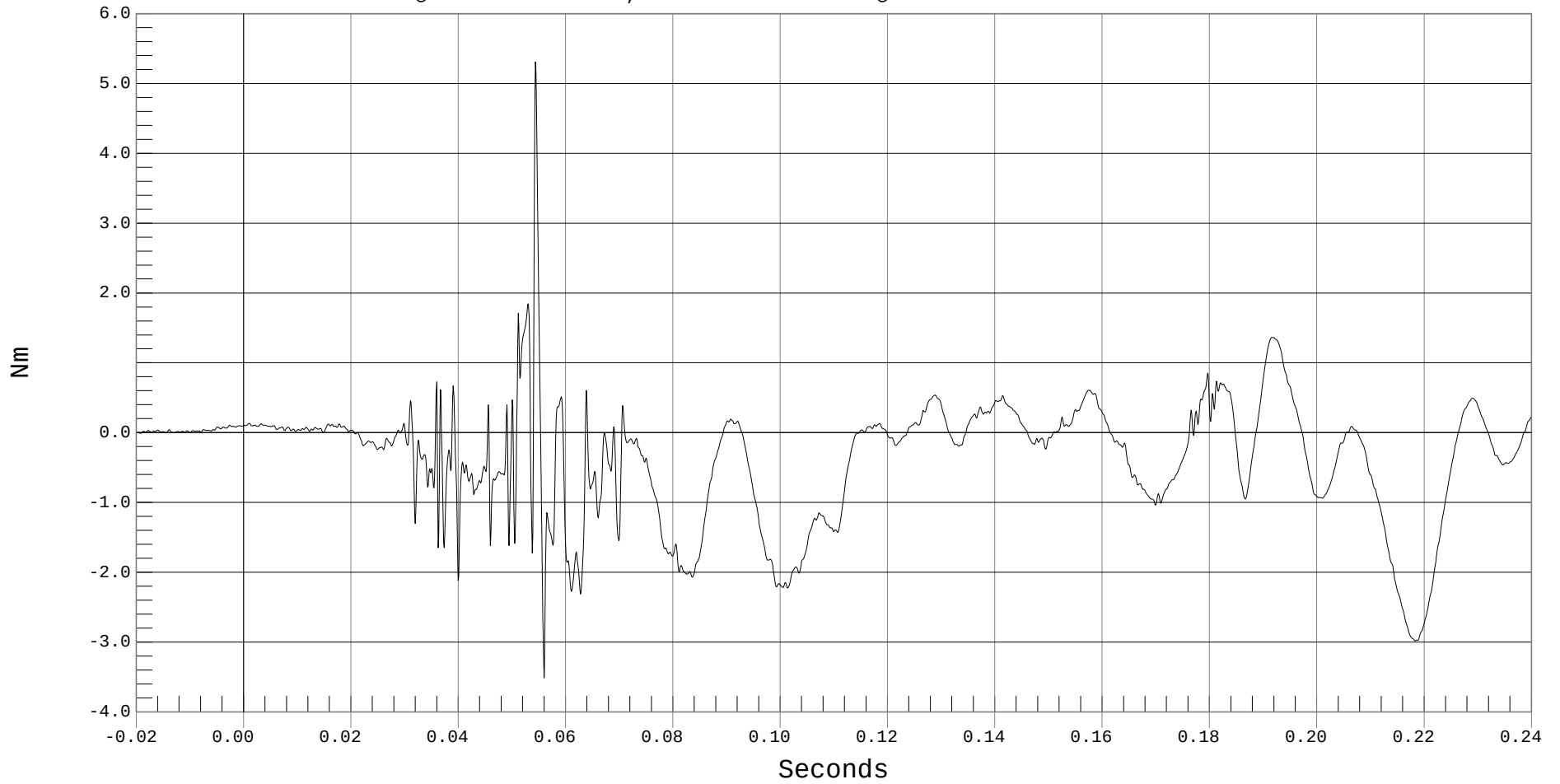
# RRS 3 YR OLD UPPER NECK MOMENT X

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 600

— 1 RRS CHILD UPPER NECK MOMENT X, B01006MF.M43

Ymin = -3.51 Nm @ 0.0560 Seconds, Ymax = 5.31 Nm @ 0.0544 Seconds





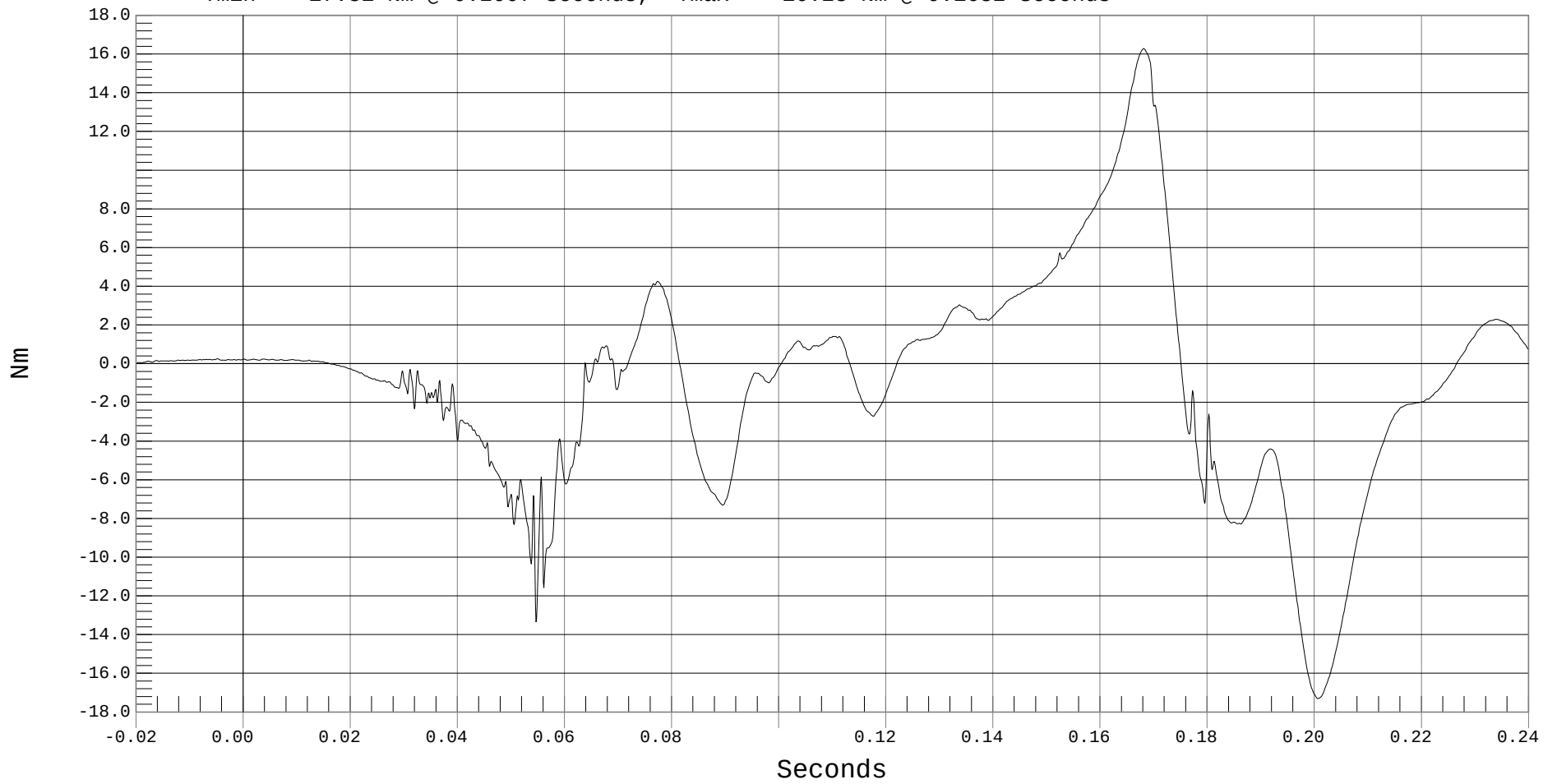
# RRS 3 YR OLD UPPER NECK MOMENT Y

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 600

— 1 RRS CHILD UPPER NECK MOMENT Y, B01006MF.M44

Ymin = -17.31 Nm @ 0.2007 Seconds, Ymax = 16.28 Nm @ 0.1682 Seconds



RRS 3 YEAR OLD UPPER NECK MOMENT Z VS. TIME  
NO VALID DATA COLLECTED





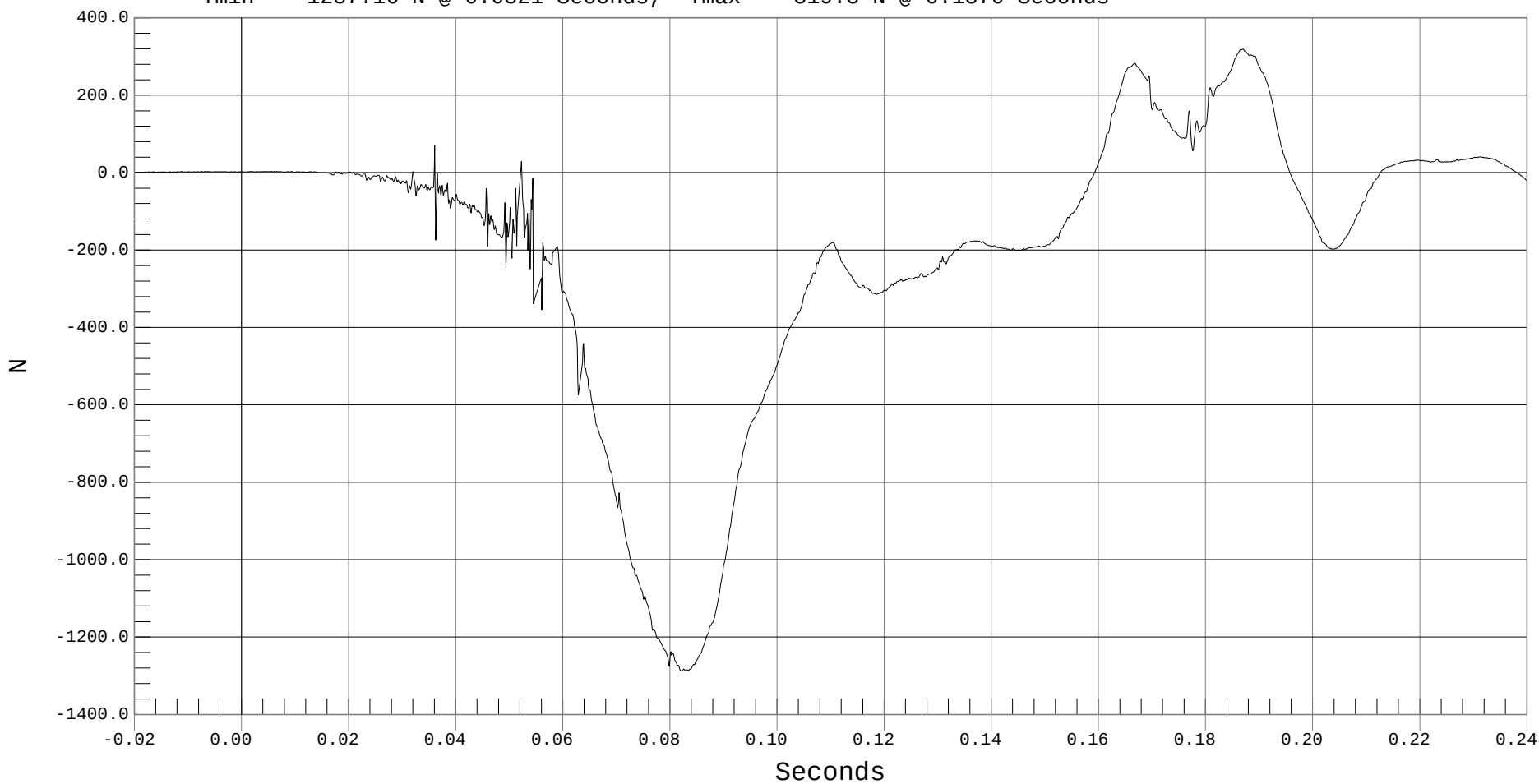
# RRS 3 YR OLD LOWER NECK FORCE X

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 1000

— 1 RRS CHILD LOWER NECK FORCE X, B01006FT.F46

Ymin = -1287.16 N @ 0.0821 Seconds, Ymax = 319.3 N @ 0.1870 Seconds





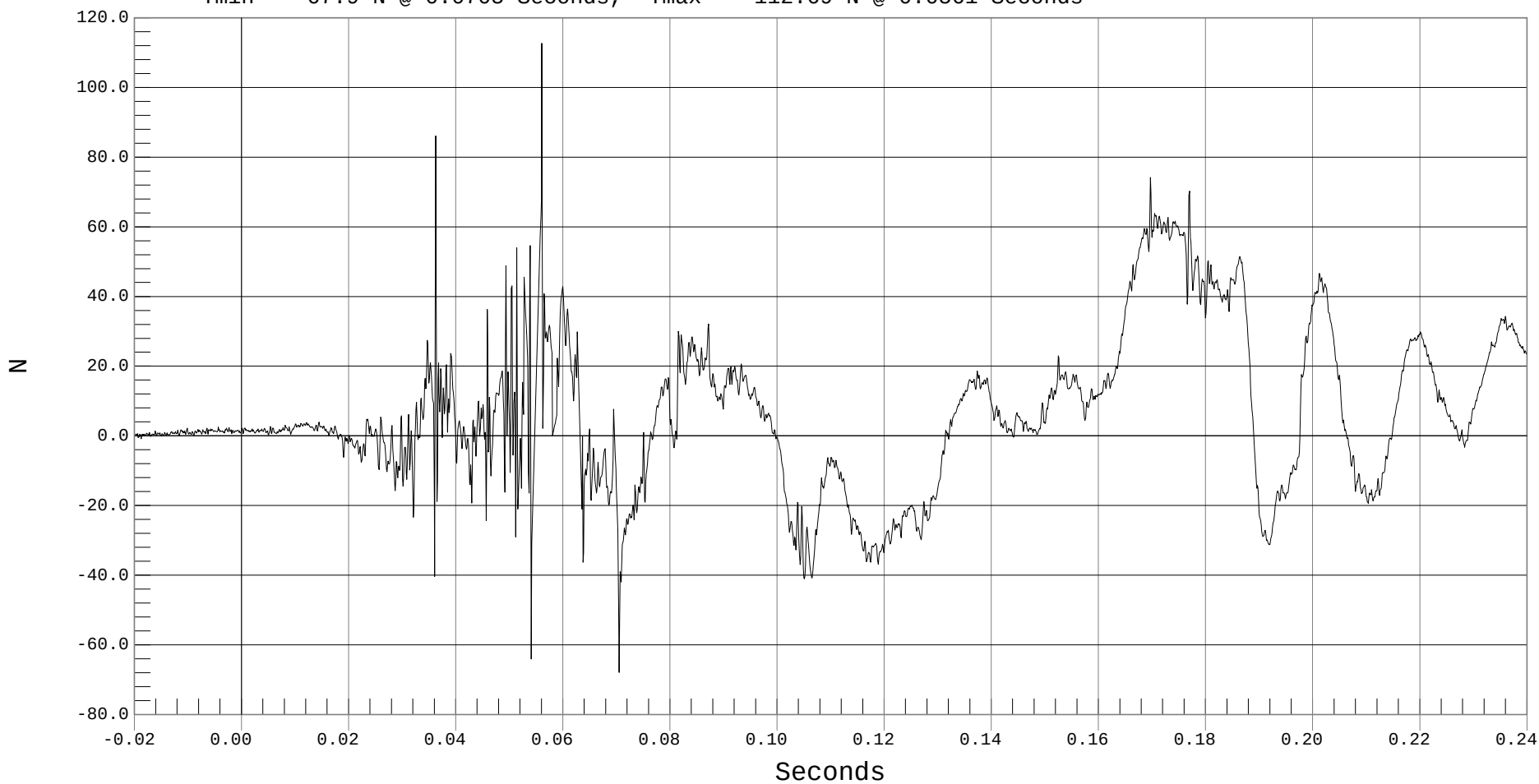
# RRS 3 YR OLD LOWER NECK FORCE Y

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 1000

— 1 RRS CHILD LOWER NECK FORCE Y, B01006FT.F47

Ymin = -67.9 N @ 0.0705 Seconds, Ymax = 112.69 N @ 0.0561 Seconds



F-70



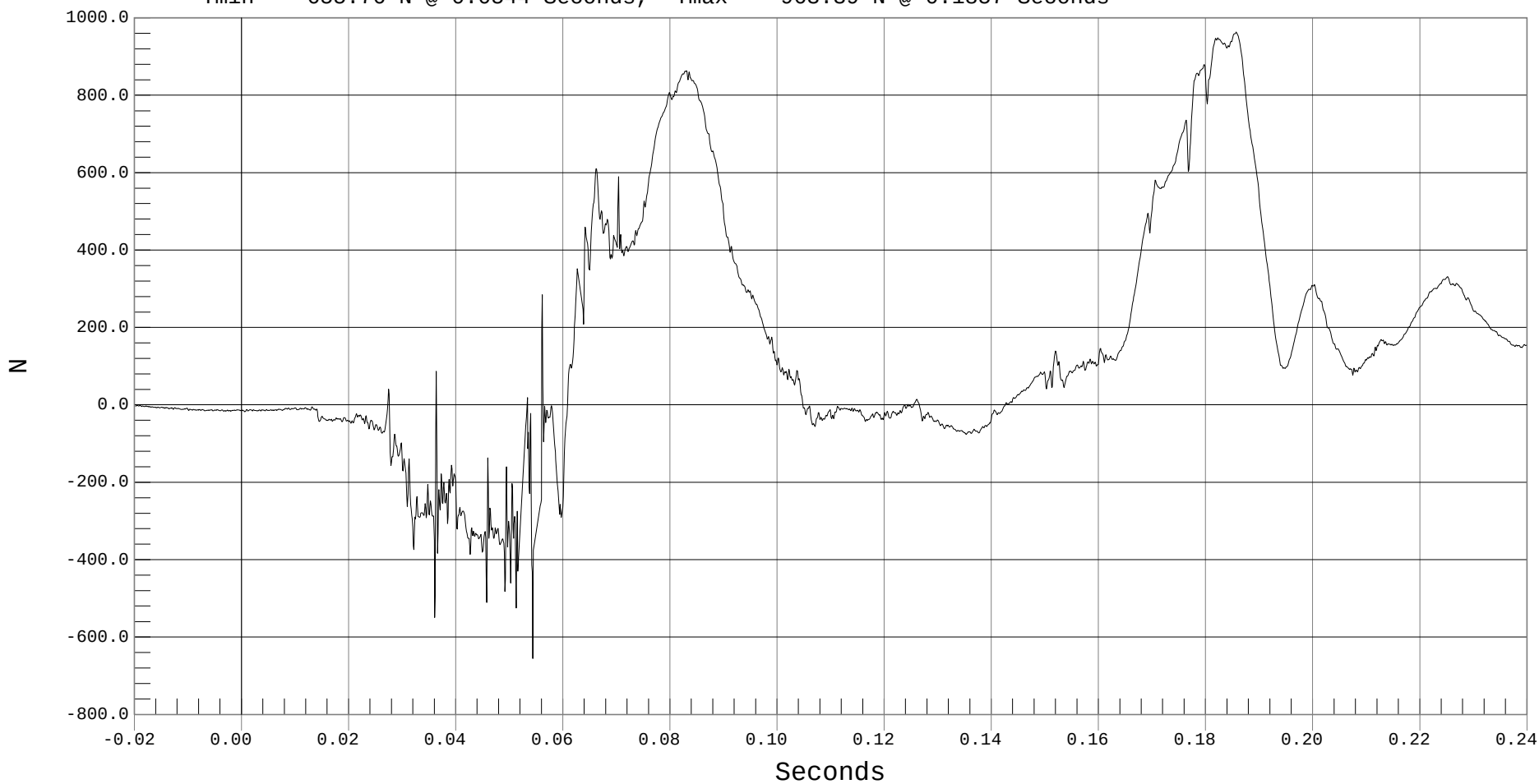
# RRS 3 YR OLD LOWER NECK FORCE Z

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 1000

— 1 RRS CHILD LOWER NECK FORCE Z, B01006FT.F48

Ymin = -655.76 N @ 0.0544 Seconds, Ymax = 963.39 N @ 0.1857 Seconds





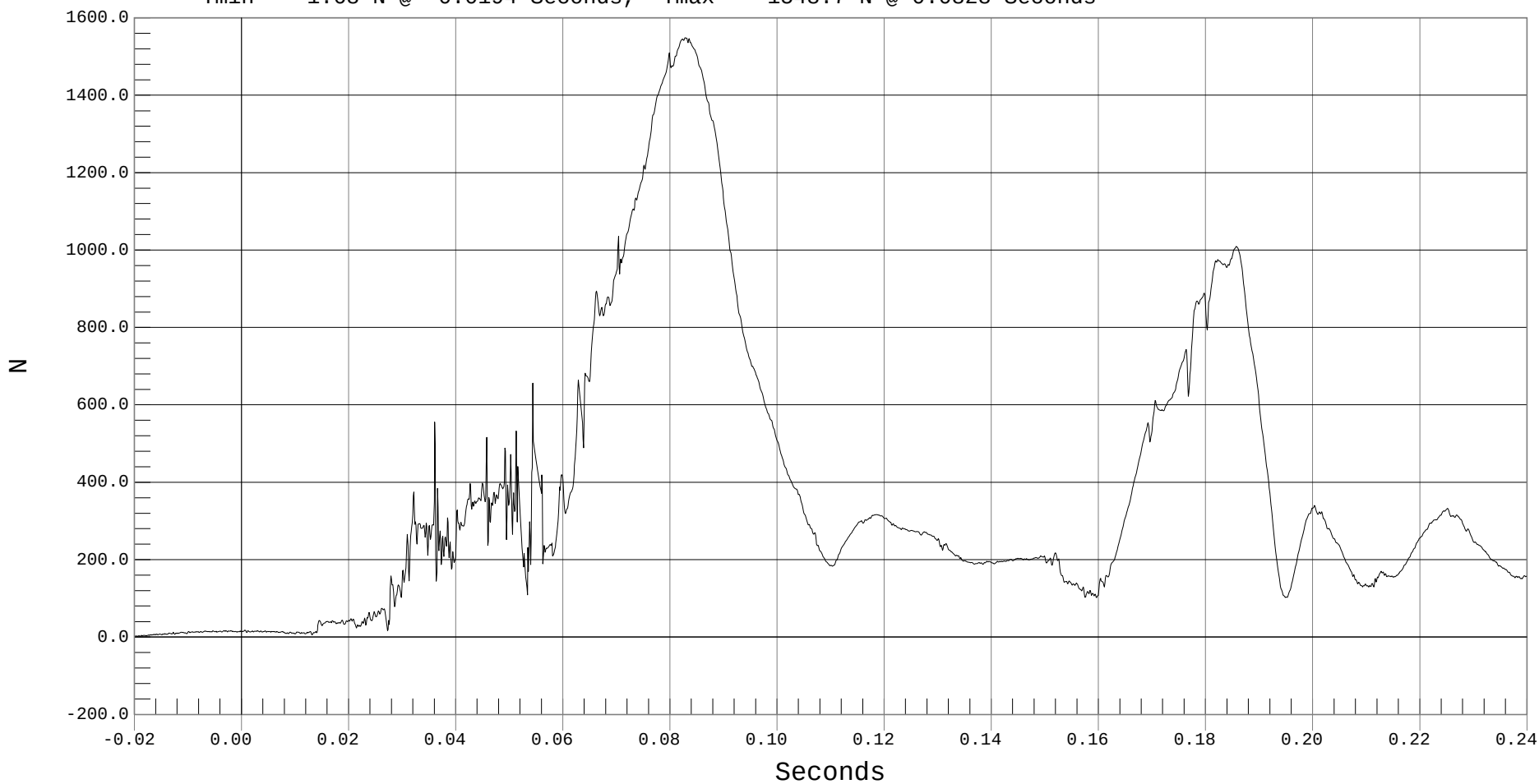
# RRS 3 YR OLD LOWER NECK FORCE RESULTANT

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 1000

— 1 RRS 3 YR OLD LOWER NECK FORCE RESULTANT, B01006FV.F46

Ymin = 1.68 N @ -0.0194 Seconds, Ymax = 1548.7 N @ 0.0828 Seconds





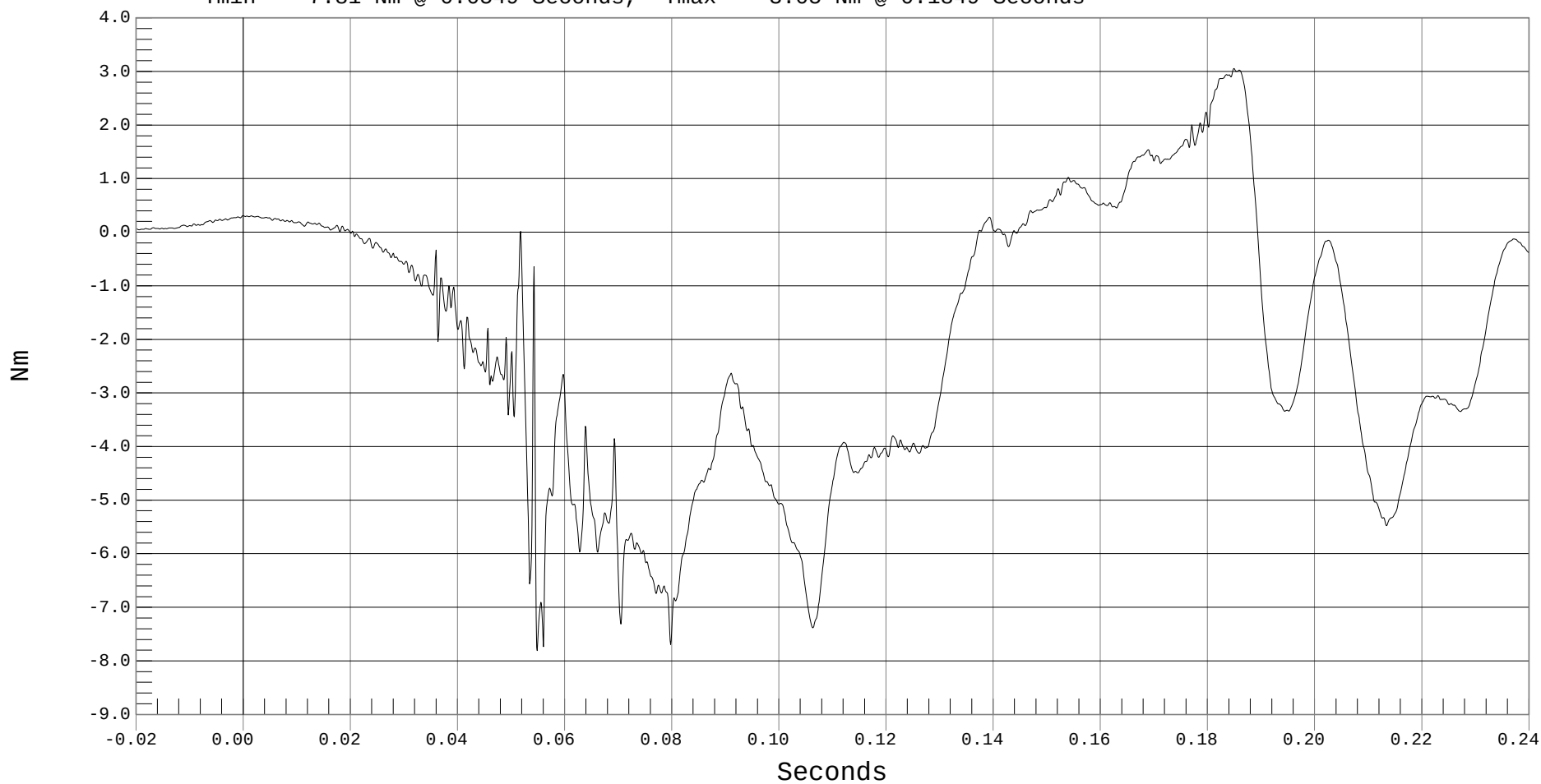
# RRS 3 YR OLD LOWER NECK MOMENT X

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 600

— 1 RRS CHILD LOWER NECK MOMENT X, B01006MF.M49

Ymin = -7.81 Nm @ 0.0549 Seconds, Ymax = 3.05 Nm @ 0.1849 Seconds





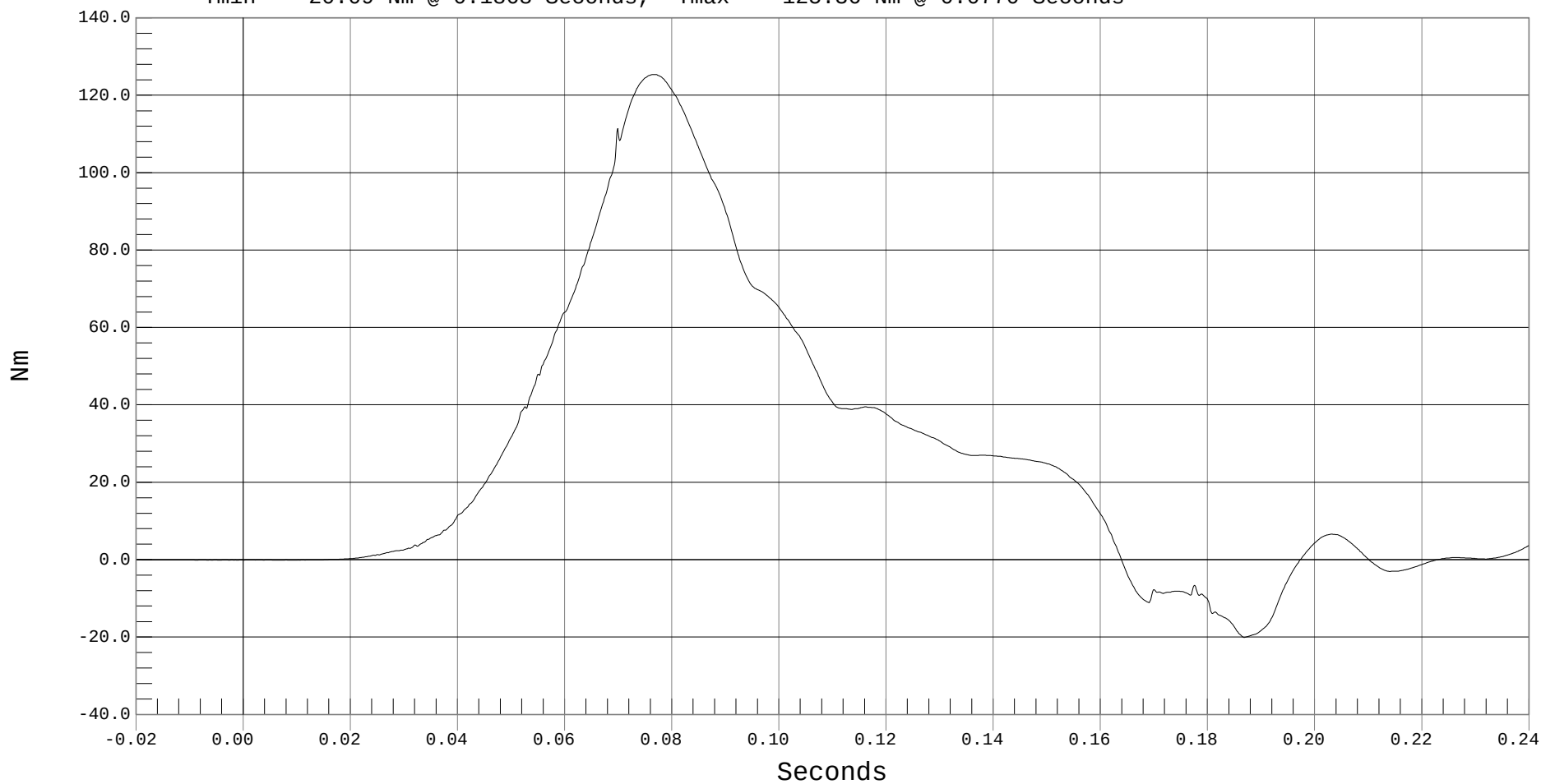
# RRS 3 YR OLD LOWER NECK MOMENT Y

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 600

— 1 RRS CHILD LOWER NECK MOMENT Y, B01006MF.M50

Ymin = -20.09 Nm @ 0.1868 Seconds, Ymax = 125.36 Nm @ 0.0770 Seconds







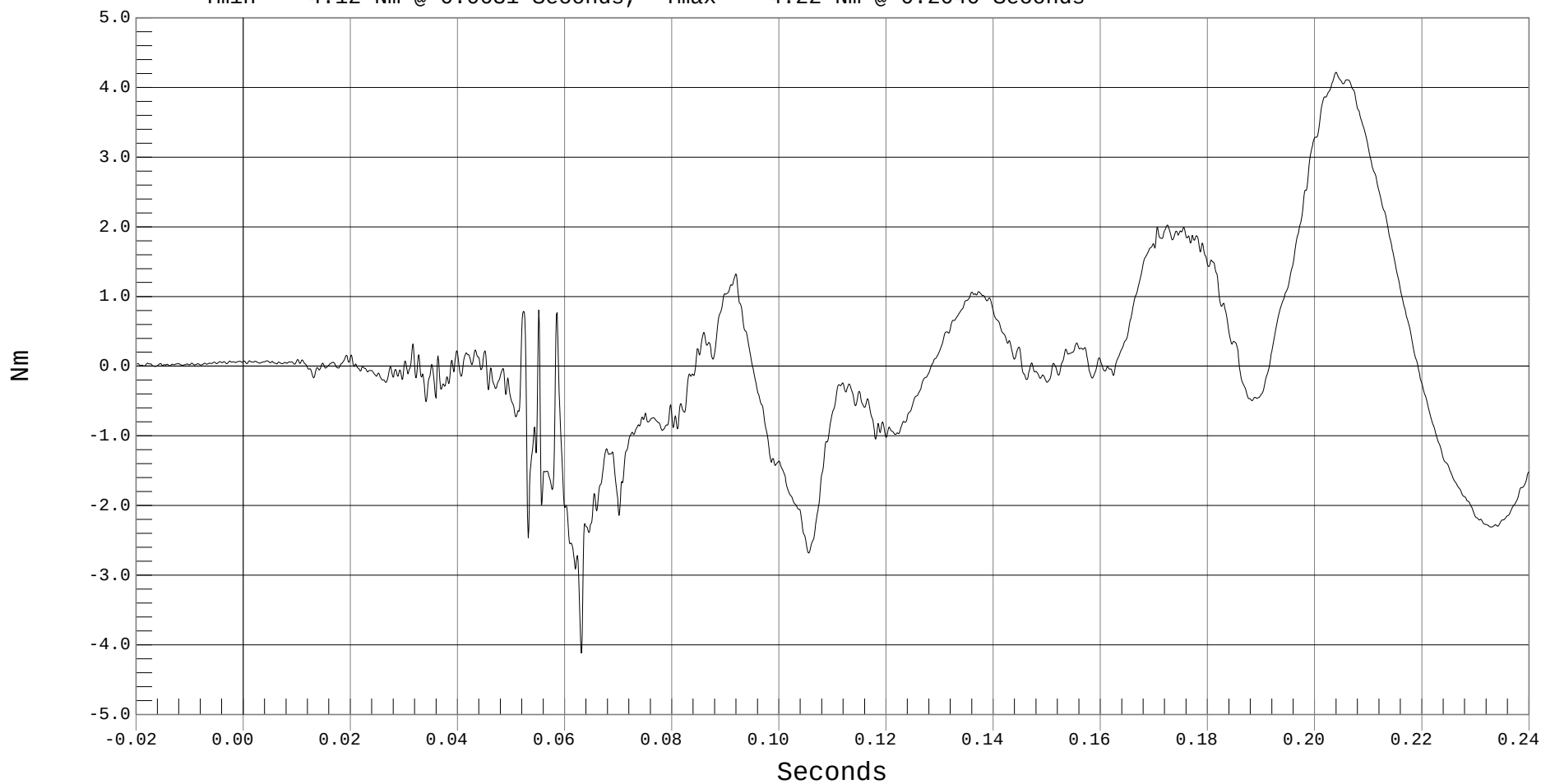
# RRS 3 YR OLD LOWER NECK MOMENT Z

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 600

— 1 RRS CHILD LOWER NECK MOMENT Z, B01006MF.M51

Ymin = -4.12 Nm @ 0.0631 Seconds, Ymax = 4.22 Nm @ 0.2040 Seconds





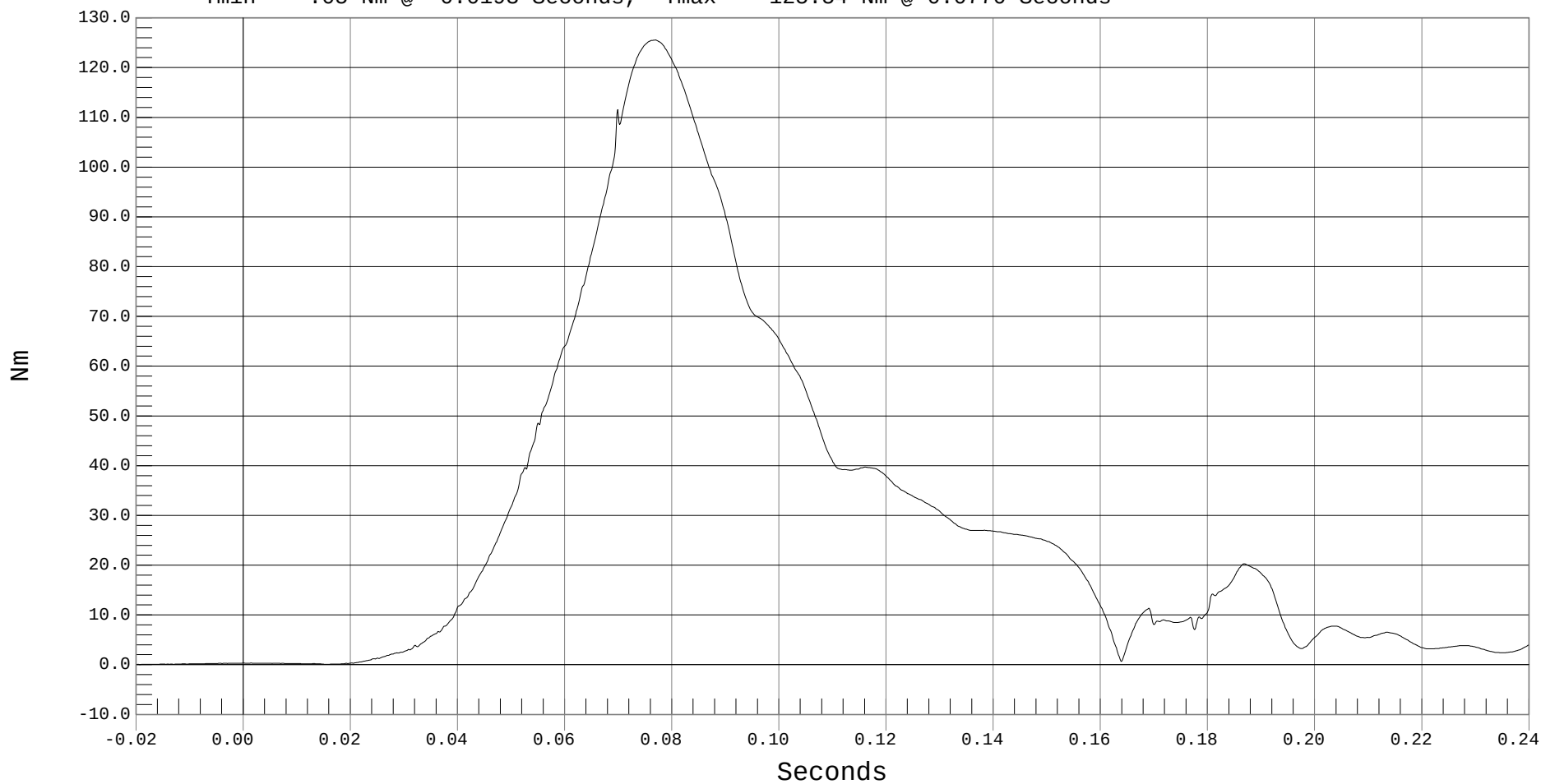
# RRS 3 YR OLD LOWER NECK MOMENT RESULTANT

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 600

— 1 RRS 3 YR OLD LOWER NECK MOMENT RESULTANT, B01006MV.M49

Ymin = .05 Nm @ -0.0193 Seconds, Ymax = 125.54 Nm @ 0.0770 Seconds





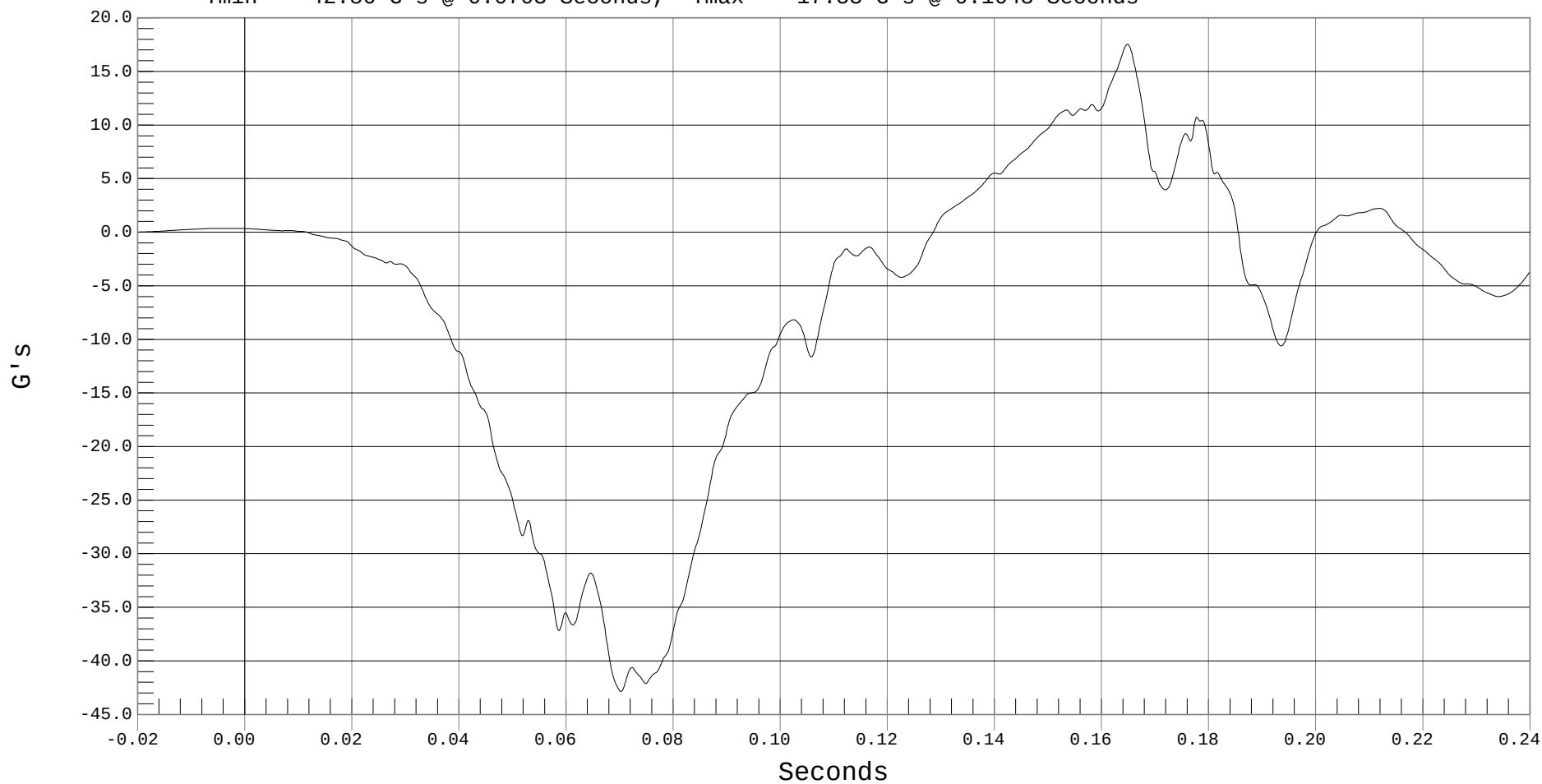
# RRS 3 YR OLD CHEST X ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 180

— 1 RRS CHILD CHEST X, B01006AF.A52

Ymin = -42.86 G's @ 0.0703 Seconds, Ymax = 17.53 G's @ 0.1648 Seconds





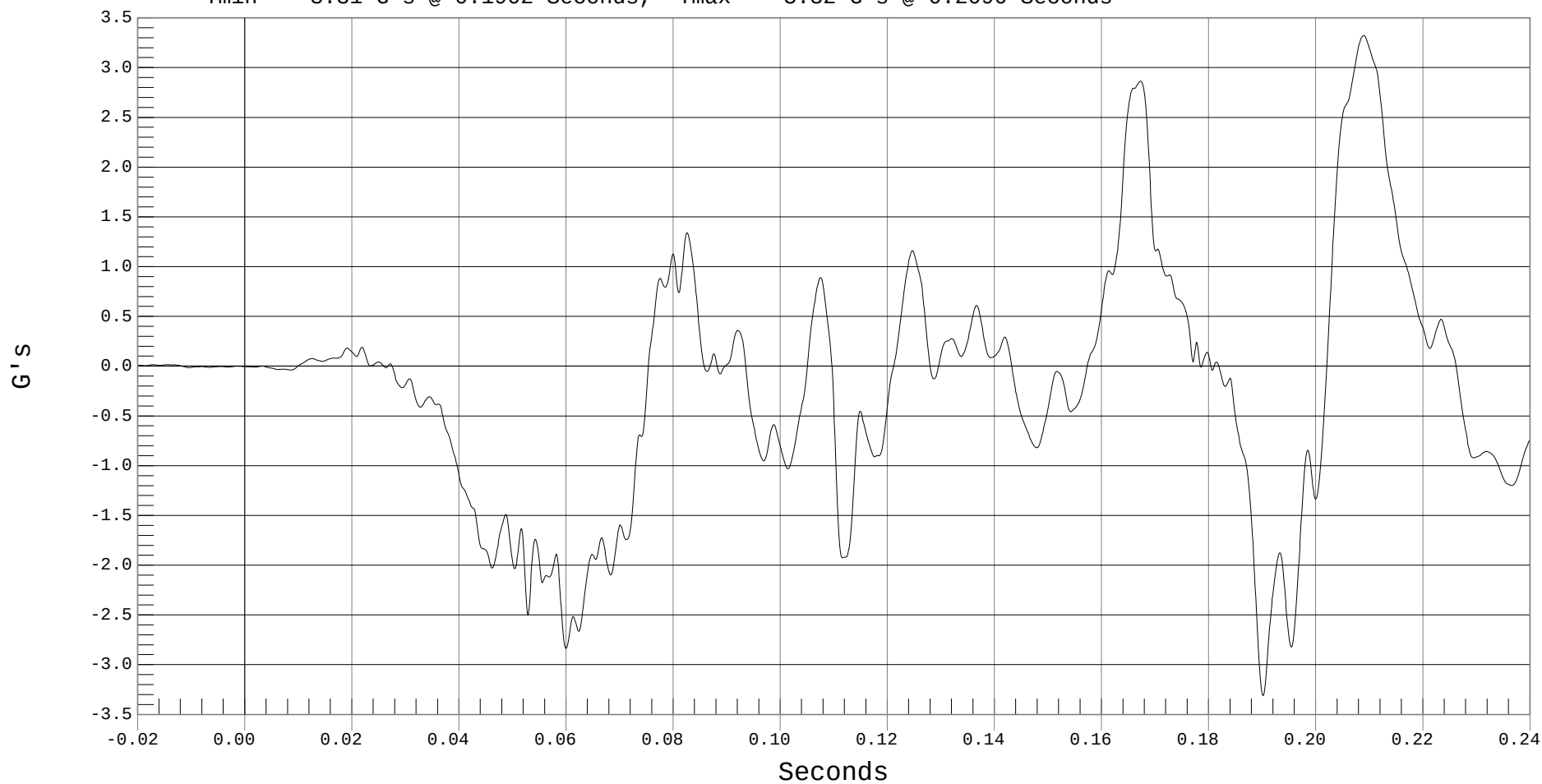
# RRS 3 YR OLD CHEST Y ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 180

— 1 RRS CHILD CHEST Y, B01006AF.A53

Ymin = -3.31 G's @ 0.1902 Seconds, Ymax = 3.32 G's @ 0.2090 Seconds





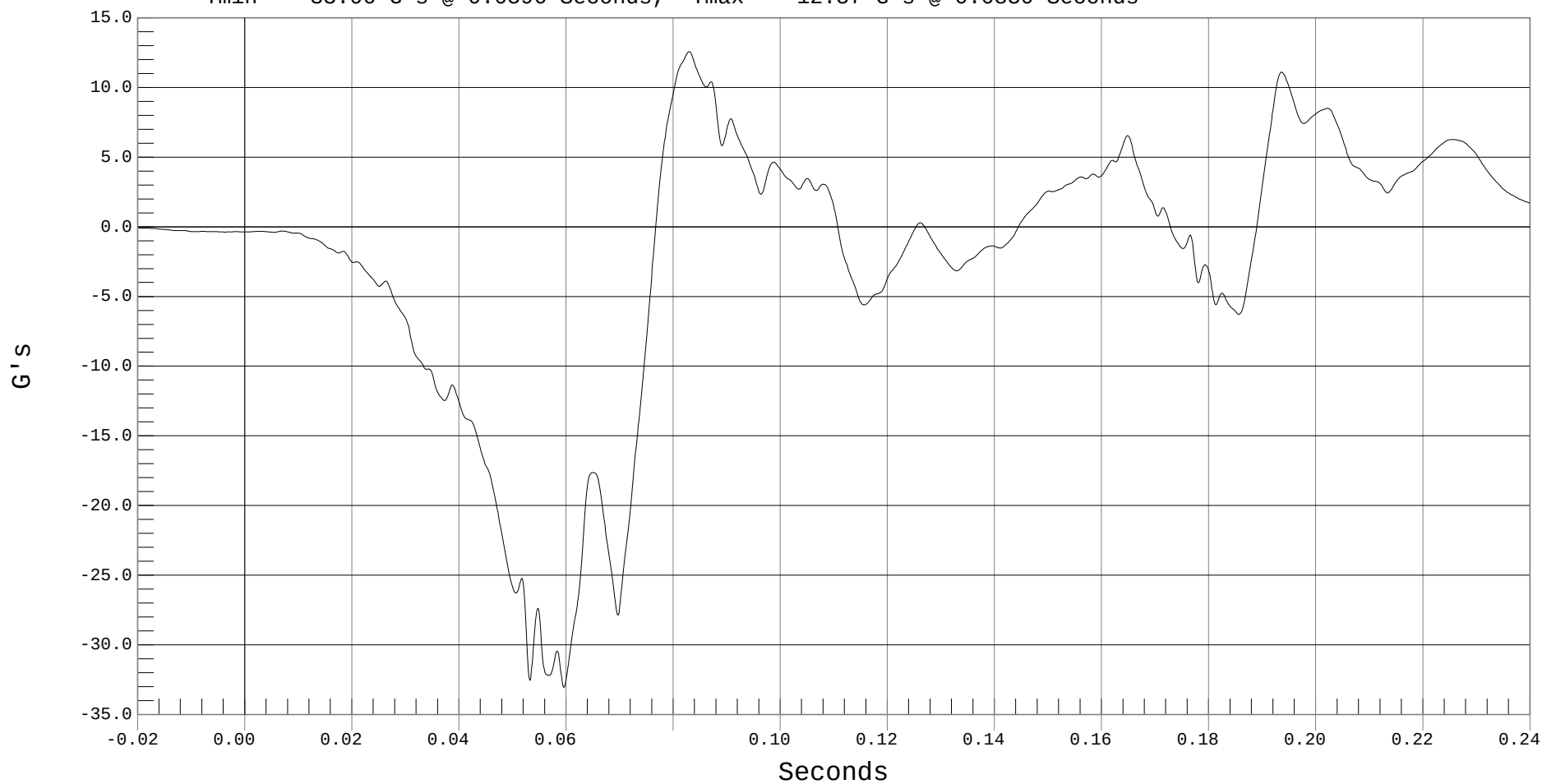
# RRS 3 YR OLD CHEST Z ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 180

— 1 RRS CHILD CHEST Z, B01006AF.A54

Ymin = -33.06 G's @ 0.0596 Seconds, Ymax = 12.57 G's @ 0.0830 Seconds





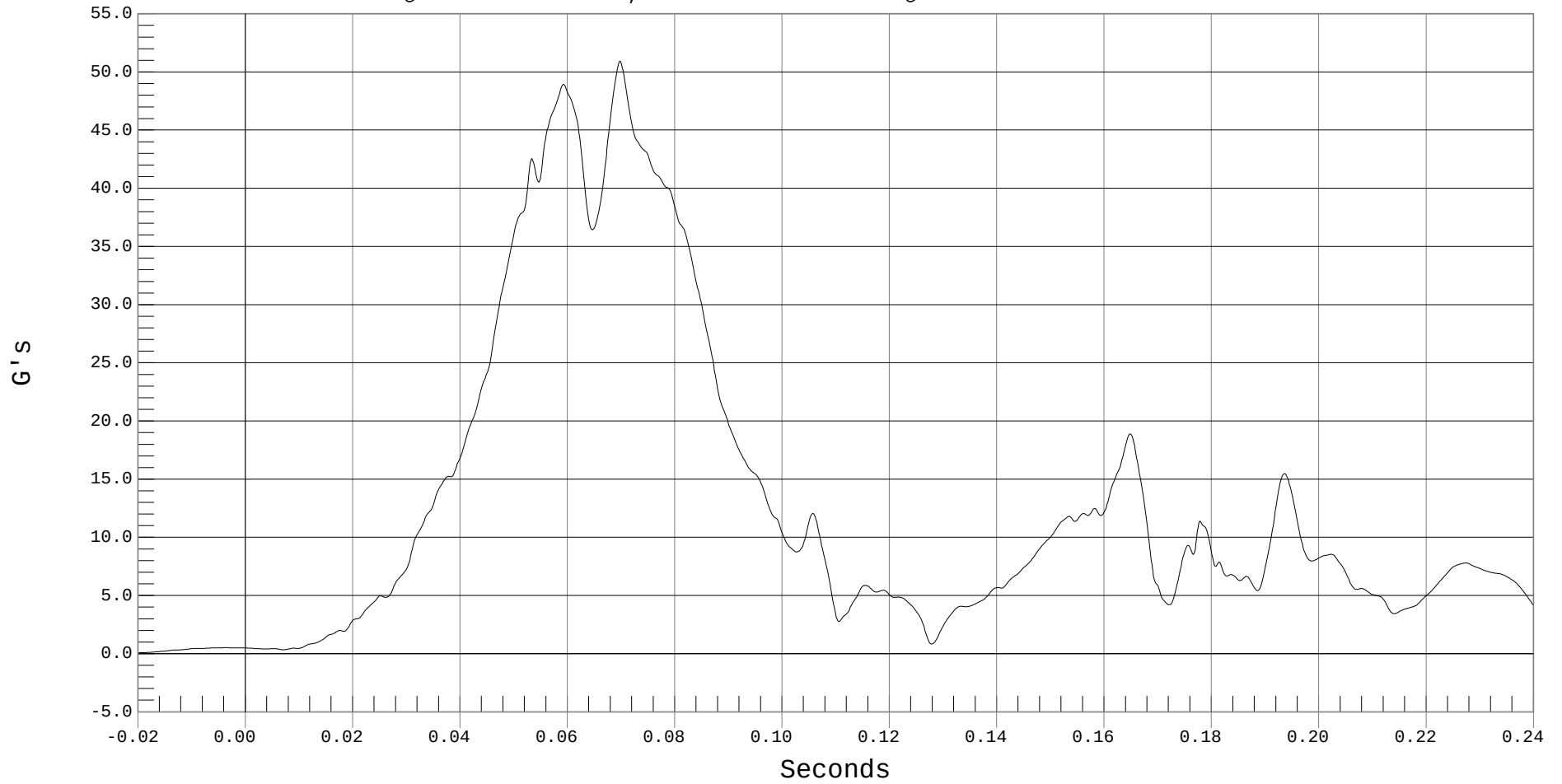
# RRS 3 YR OLD CHEST RESULTANT ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 180

— 1 RRS 3 YR OLD CHEST RESULTANT ACCELERATION, B01006AV.A52

Ymin = .1 G's @ -0.0190 Seconds, Ymax = 50.93 G's @ 0.0698 Seconds







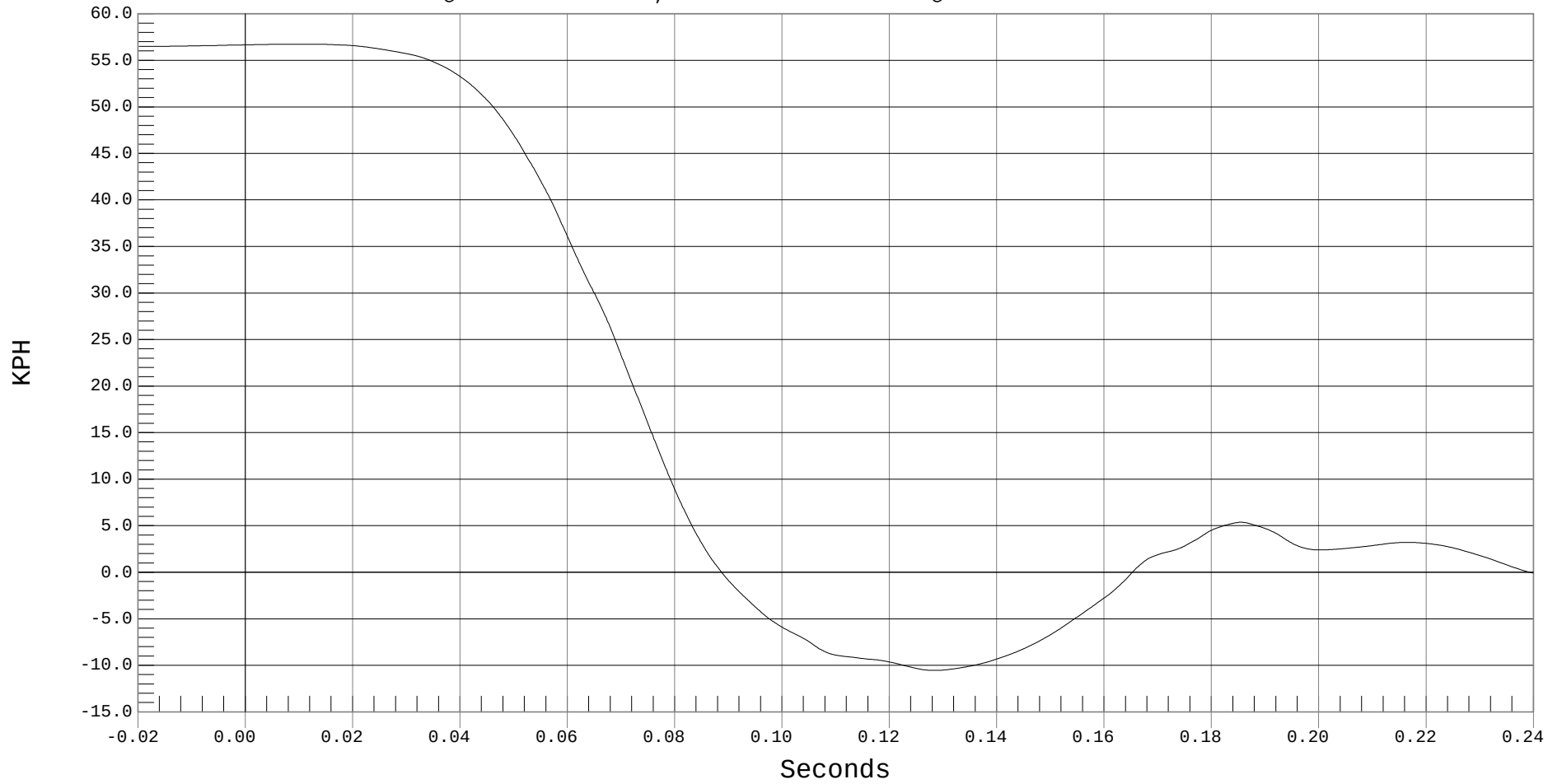
## RRS 3 YR OLD CHEST X VELOCITY

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 180

— 1 RRS 3 YR OLD CHEST X VELOCITY, B01006AI.V52

Ymin = -10.55 KPH @ 0.1286 Seconds, Ymax = 56.74 KPH @ 0.0116 Seconds





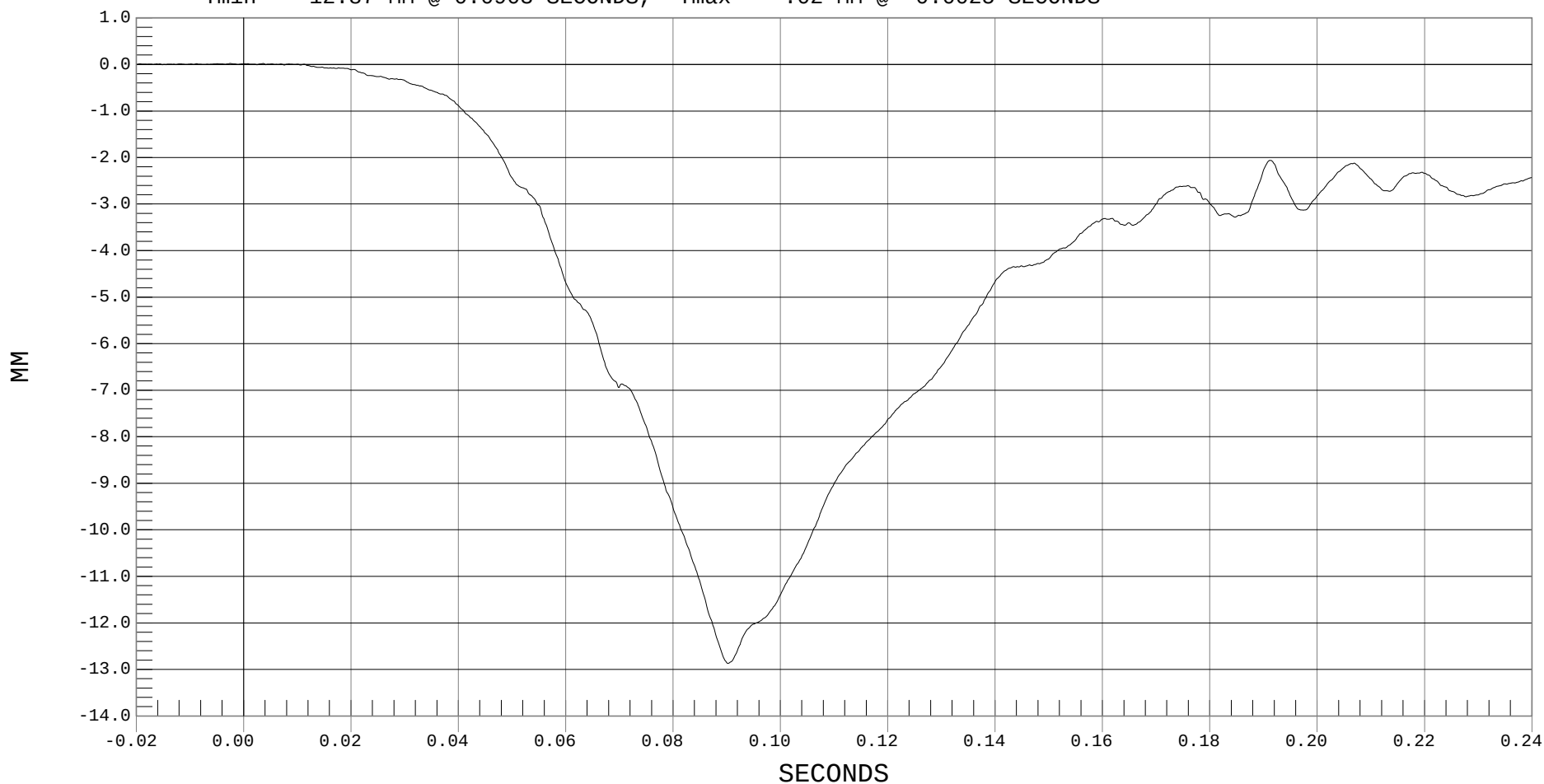
# RRS 3 YR OLD CHEST COMPRESSION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 600

— 1 DISPLACEMENT, B01006DF.D55

Ymin = -12.87 MM @ 0.0903 SECONDS, Ymax = .02 MM @ -0.0025 SECONDS





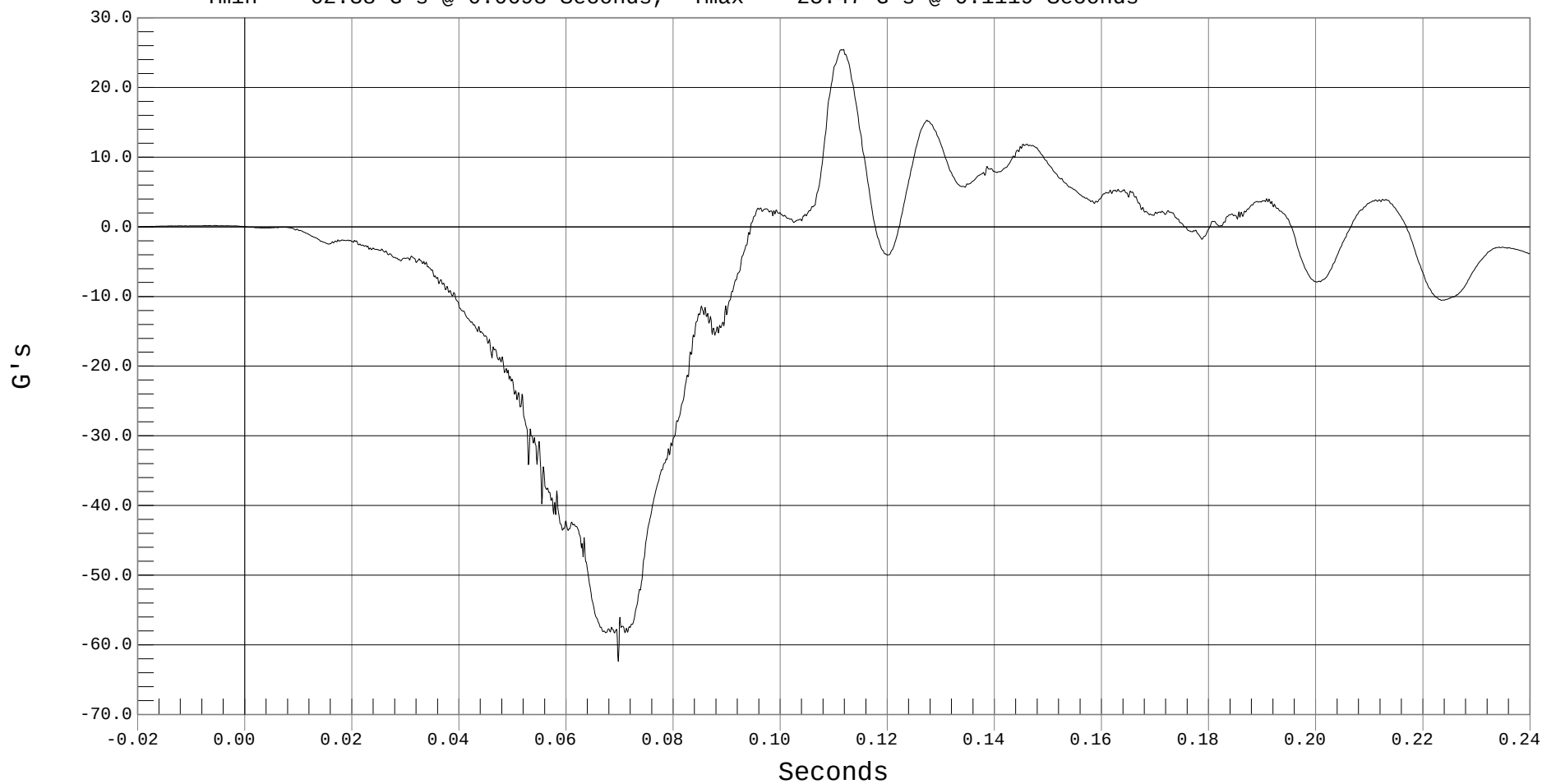
# RRS 3 YR OLD PELVIS X ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 1000

— 1 RRS CHILD PELVIS X, B01006AT.A56

Ymin = -62.38 G's @ 0.0698 Seconds, Ymax = 25.47 G's @ 0.1119 Seconds





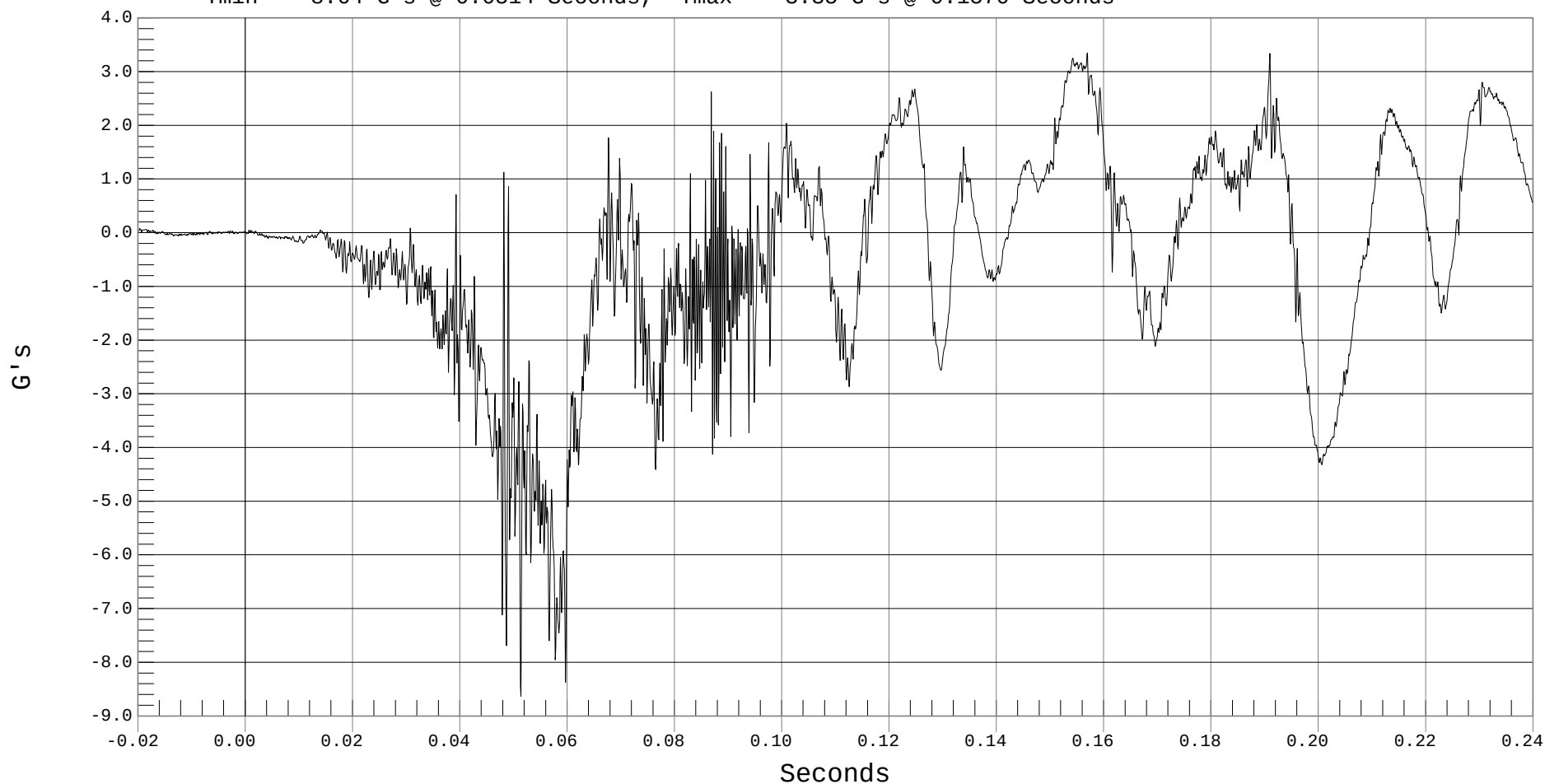
# RRS 3 YR OLD PELVIS Y ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 1000

— 1 RRS CHILD PELVIS Y, B01006AT.A57

Ymin = -8.64 G's @ 0.0514 Seconds, Ymax = 3.35 G's @ 0.1570 Seconds





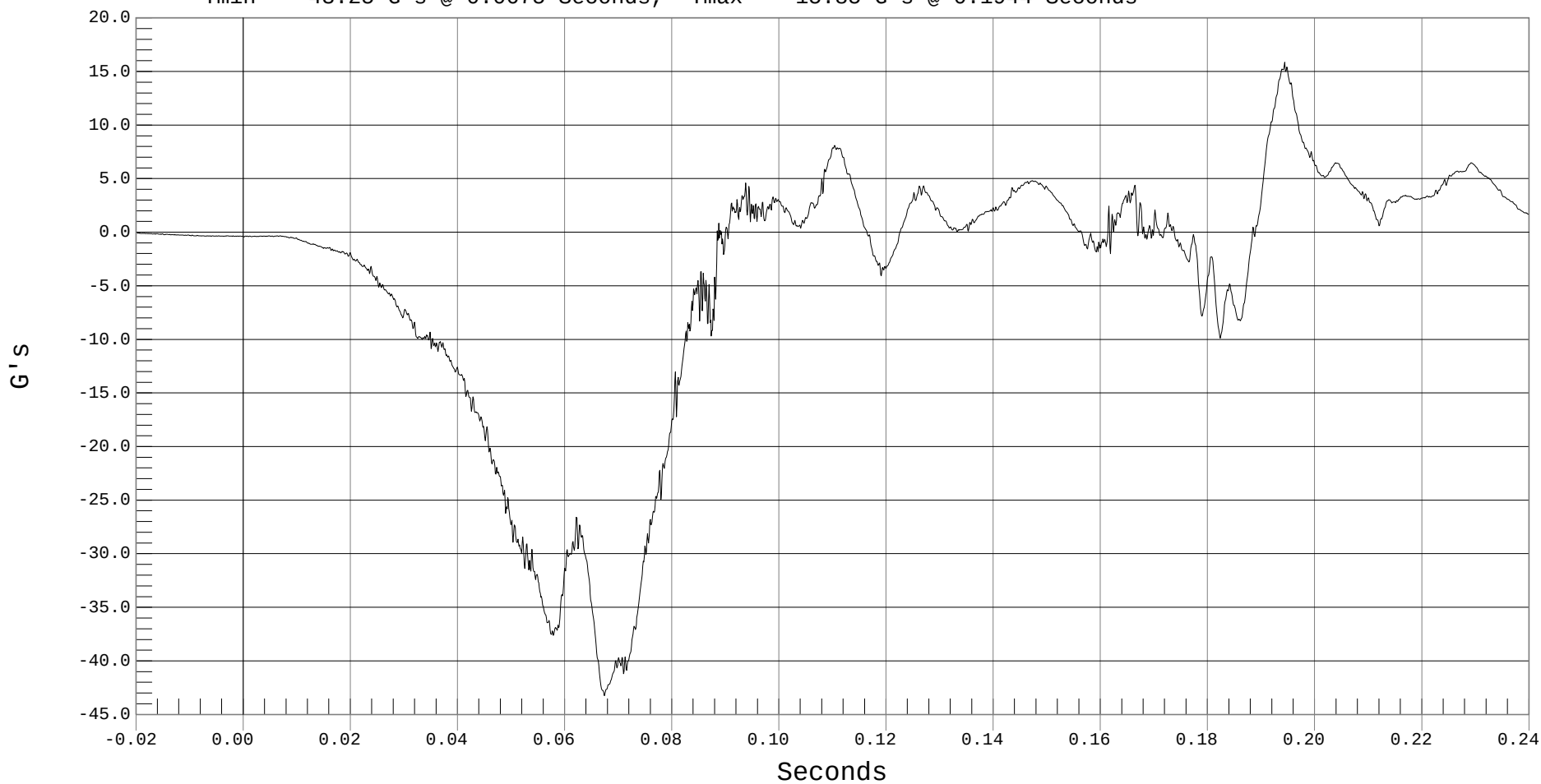
# RRS 3 YR OLD PELVIS Z ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 1000

— 1 RRS CHILD PELVIS Z, B01006AT.A58

Ymin = -43.25 G's @ 0.0675 Seconds, Ymax = 15.85 G's @ 0.1944 Seconds





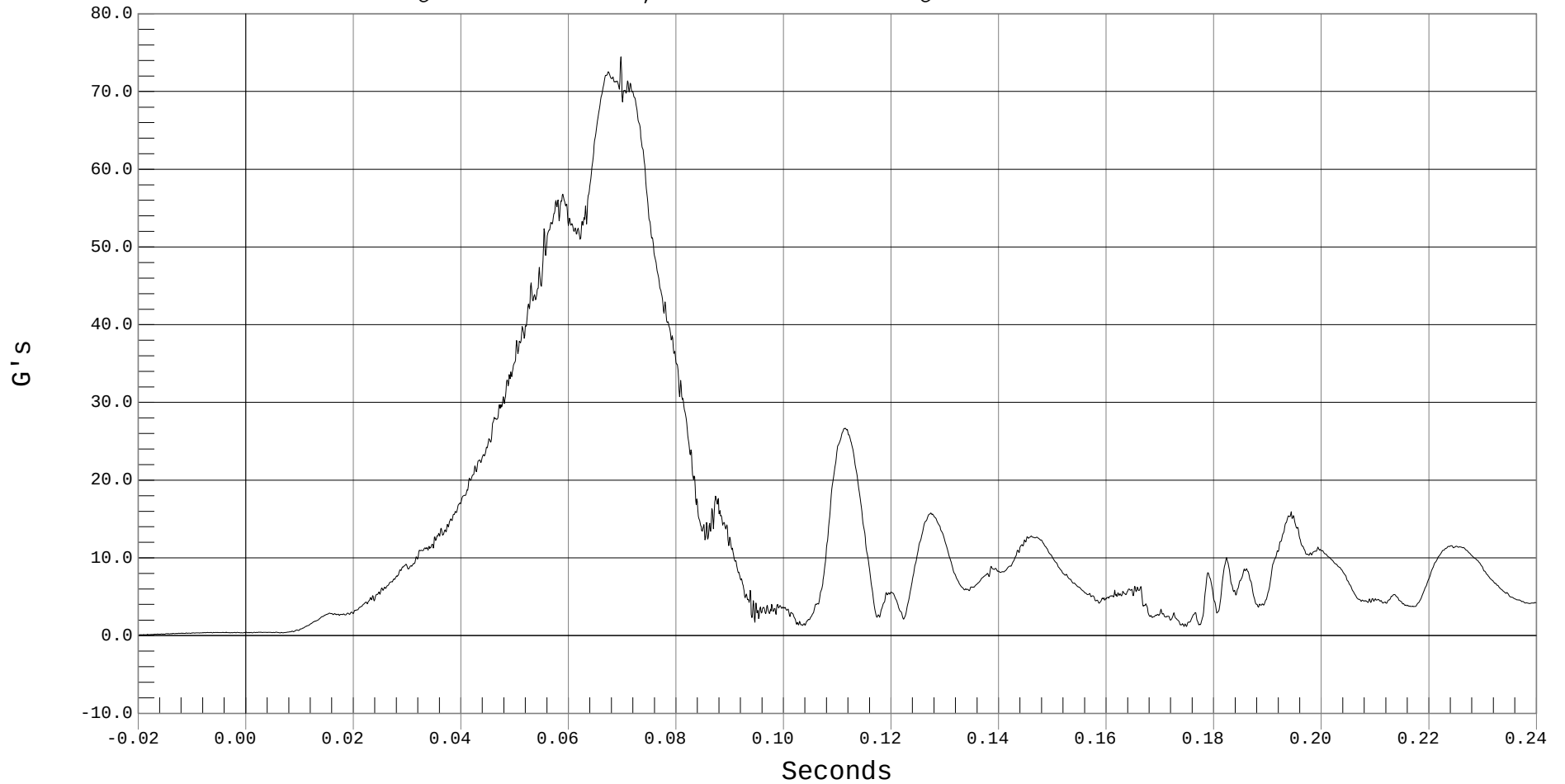
# RRS 3 YR OLD PELVIS RESULTANT ACCELERATION

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 1000

— 1 RRS 3 YR OLD PELVIS RESULTANT ACCELERATION, B01006AV.A56

Ymin = .09 G's @ -0.0192 Seconds, Ymax = 74.48 G's @ 0.0698 Seconds







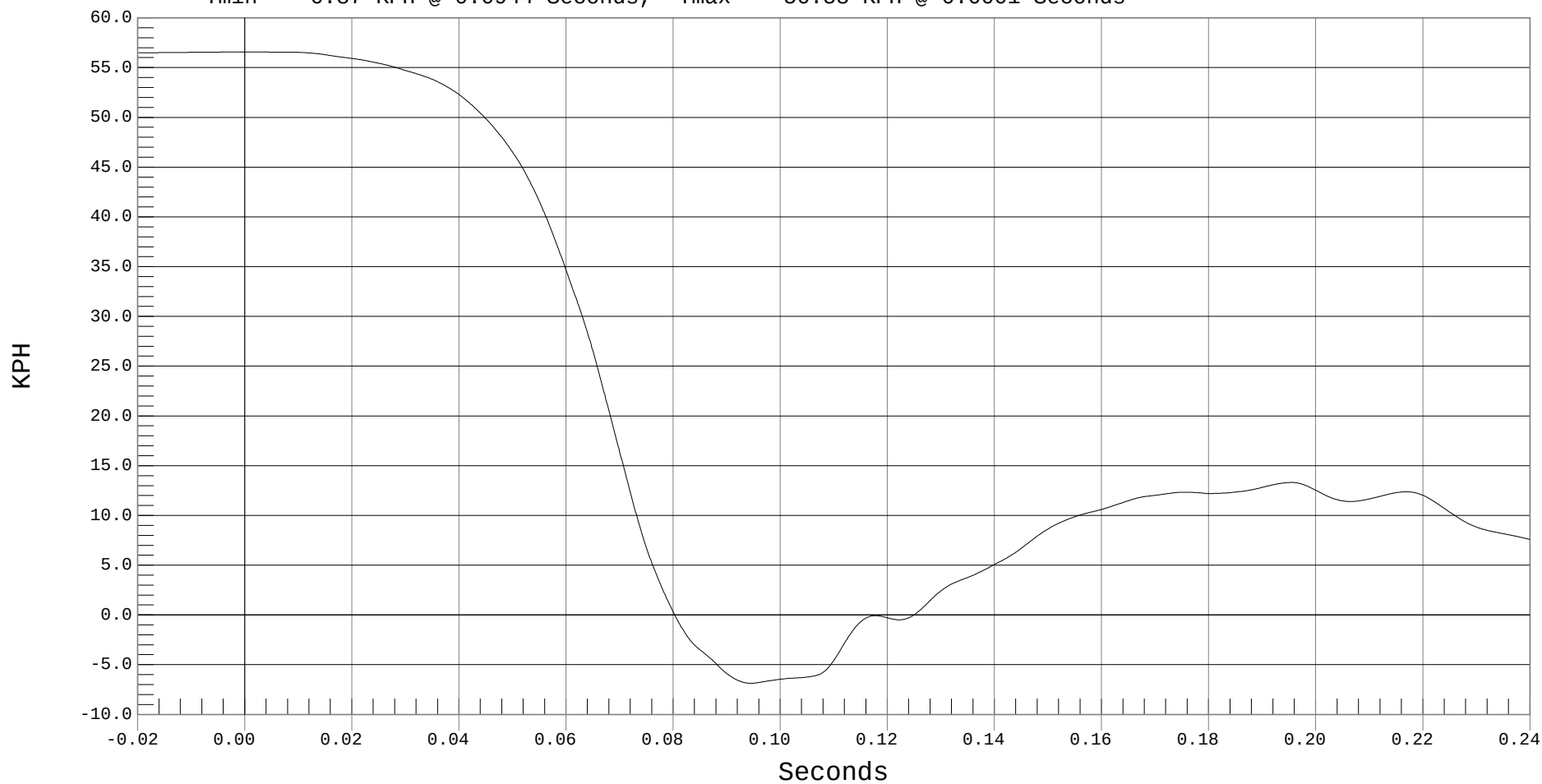
# RRS 3 YR OLD PELVIS X VELOCITY

Test Desc.: NCAP FRONTAL IMPACT  
Component: 2001 LINCOLN LS (M10209)  
Other Info:

Test Date: 01-22-01  
Speed: 35.1 MPH, 56.5 KPH  
Filter Class: 180

— 1 RRS 3 YR OLD PELVIS X VELOCITY, B01006AI.V56

Ymin = -6.87 KPH @ 0.0944 Seconds, Ymax = 56.58 KPH @ 0.0001 Seconds



## **CHILD DUMMY CALIBRATION DATA TRACES AND TABLES**

**Hybrid III Calibration Data Sheet**  
**3 Year Old**  
**Head Drop Calibration**

ATD Serial No.: 139

Test I.D.: D01061

| Tested Parameter             | Units  | Specification   | Result | Pass/Fail |
|------------------------------|--------|-----------------|--------|-----------|
| Laboratory Temperature       | °C     | 18.9 to 25.5    | 21.7°  | PASS      |
| Laboratory Relative Humidity | %      | 10 to 70        | 23%    | PASS      |
| Peak Resultant Acceleration  | G's    | 250.0 to 280.0  | 261.7  | PASS      |
| Peak Lateral Acceleration    | G's    | $\leq \pm 15.0$ | 1.7    | PASS      |
| Is Acceleration Unimodal?    | Yes/No | < 10% Peak      | Yes    | PASS      |
| Overall Test Results         |        |                 |        | PASS      |

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Laboratory Technician

1/11/00  
Test Date

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



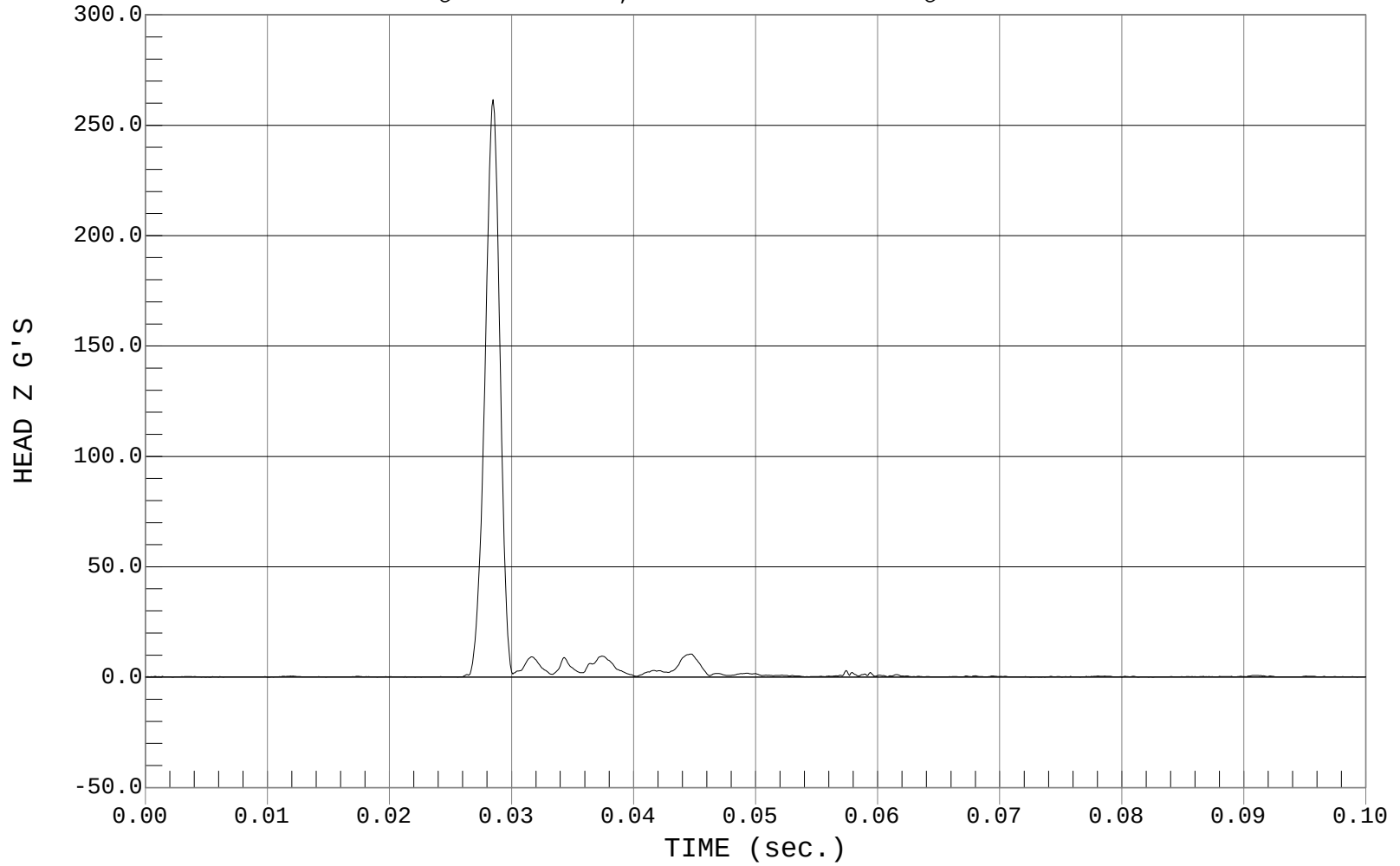
# PEAK RESULTANT ACCELERATION

Test Desc.: Dummy Calibration - Head Drop  
Component: Dummy #139

Test Date: 01-11-01  
Speed: 0.00 FT/SEC, 0.00 M/SEC

— 1 HEAD Z, D01061AV.A01

Ymin = .07 G'S @ 0.0022 sec., Ymax = 261.67 G'S @ 0.0285 sec.





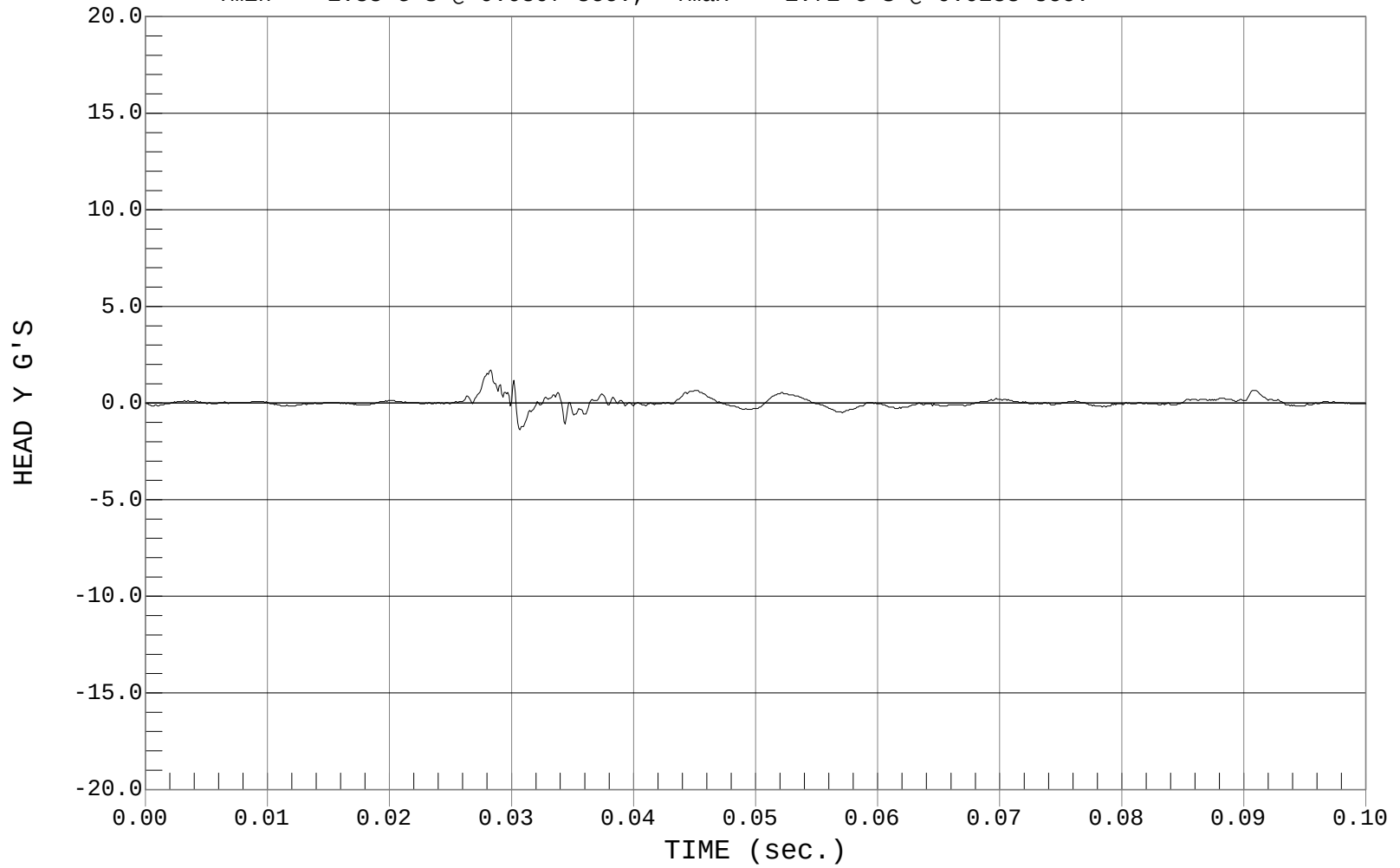
# PEAK LATERAL ACCELARATION

Test Desc.: Dummy Calibration - Head Drop  
Component: Dummy #139

Test Date: 01-11-01  
Speed: 0.00 FT/SEC, 0.00 M/SEC

— 1 HEAD Y, D01061AR.A02

Ymin = -1.38 G'S @ 0.0307 sec., Ymax = 1.71 G'S @ 0.0283 sec.



**Hybrid III Calibration Data Sheet**  
**3 Year Old**  
**Thorax Impact Test**

ATD Serial No.: 139

Test I.D.: D01064

| Tested Parameter                                | Units | Specification | Result | Pass/Fail |
|-------------------------------------------------|-------|---------------|--------|-----------|
| Laboratory Temperature                          | °C    | 20.6 to 22.2  | 21.7°  | PASS      |
| Laboratory Relative Humidity                    | %     | 10 to 70      | 29%    | PASS      |
| Probe Velocity                                  | m/s   | 5.9 to 6.1    | 6.0    | PASS      |
| Peak Deflection                                 | mm    | 32 to 38      | 33     | PASS      |
| Peak Resistive Force Within Deflection Corridor | kN    | .68 to .81    | .78    | PASS      |
| Internal Hysteresis                             | %     | 65 to 85      | 71%    | PASS      |
| Max Force 12.5 mm – 32 mm Deflection            | kN    | Max .86       | .83    | PASS      |
| Overall Test Results                            |       |               |        | PASS      |

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Laboratory Technician

1/14/01  
Test Date

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Approved By





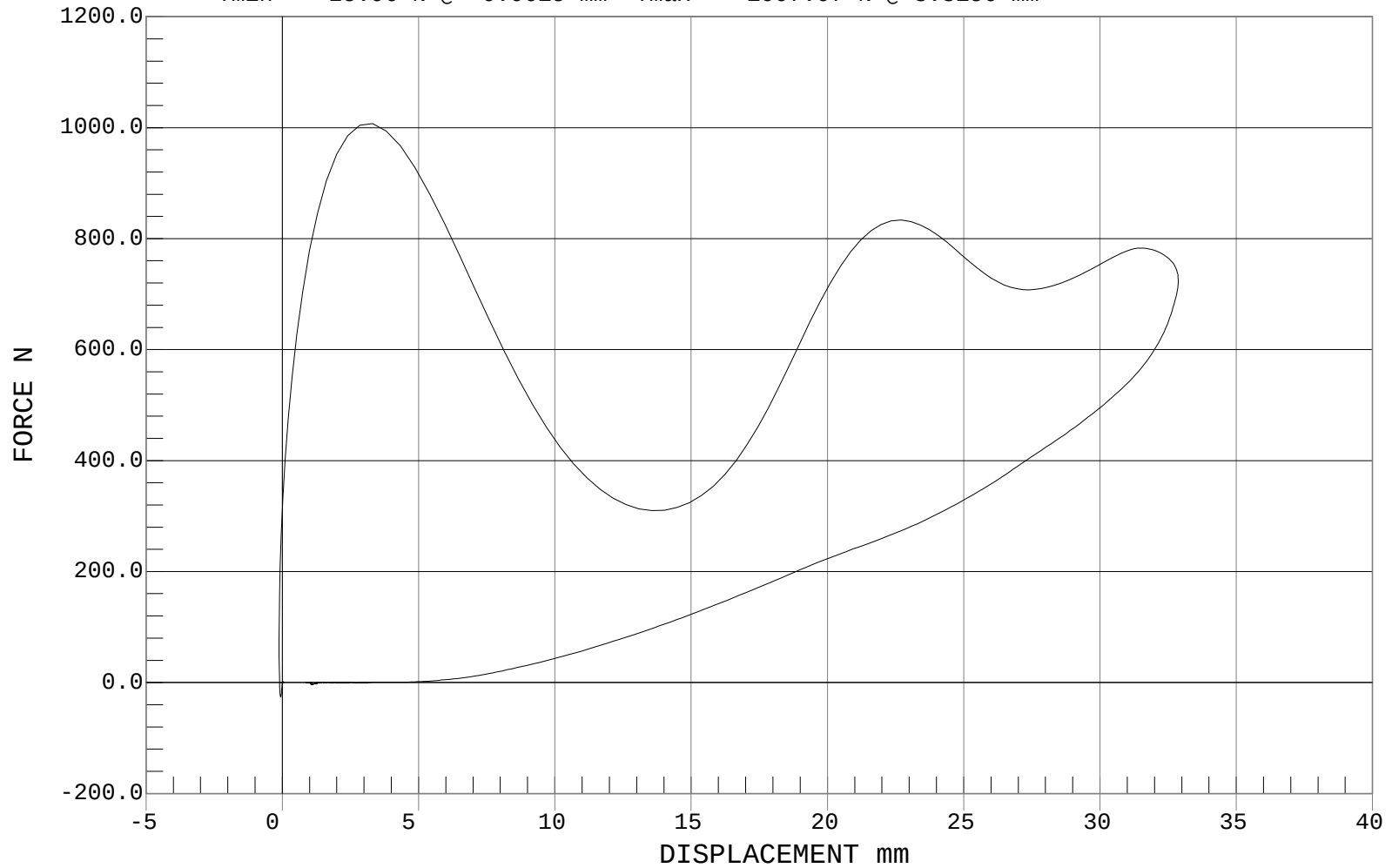
# THORAX IMPACT

Test Desc.: Dummy Calibration - Chest Impact  
Component: Dummy #139

Test Date: 01-14-01  
Speed: 19.62 FT/SEC, 5.98 M/SEC

1 FORCE, D01064CH.FVD

Ymin = -25.96 N @ -0.0615 mm Ymax = 1007.07 N @ 3.3156 mm



**Hybrid III Calibration Data Sheet**  
**3 Year Old**  
**Neck Flexion Test**

ATD Serial No.: 139

Test I.D.: D01062

| Tested Parameter                    |          | Units | Specification | Result | Pass/Fail |
|-------------------------------------|----------|-------|---------------|--------|-----------|
| Laboratory Temperature              |          | °C    | 20.6 to 22.2  | 21.7°  | PASS      |
| Laboratory Relative Humidity        |          | %     | 10 to 70      | 23%    | PASS      |
| Pendulum Velocity                   |          | m/s   | 5.4 to 5.6    | 5.5    | PASS      |
| Pendulum Deceleration               | 10 Msec. | m/s   | 2.0 to 2.7    | 2.4    | PASS      |
|                                     | 15 Msec. | m/s   | 3.0 to 4.0    | 3.5    | PASS      |
|                                     | 20 Msec. | m/s   | 4.0 to 5.1    | 4.7    | PASS      |
| "D" Plane Rotation                  | Maximum  | Deg.  | 70.0 to 82.0  | 73.1   | PASS      |
| Moment About Occipital Condyle      | Maximum  | Nm    | 42.0 to 53.0  | 43.4   | PASS      |
| Positive Moment Decay Time To 10 Nm |          | Msec. | 60.0 to 80.0  | 71.3   | PASS      |
| Overall Test Results                |          |       |               |        | PASS      |

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Laboratory Technician

1/12/01

Test Date

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Approved By



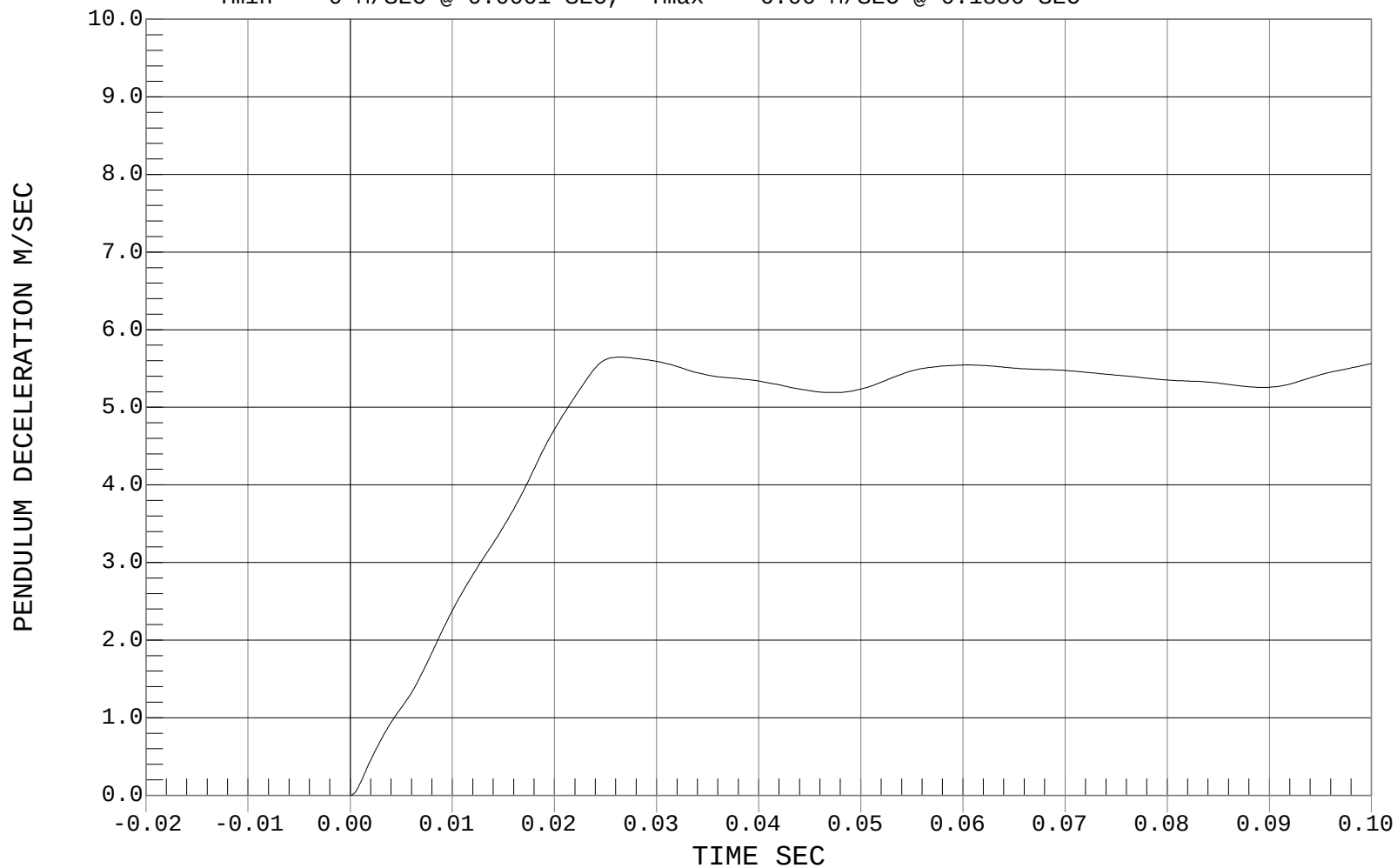
## PENDULUM DECELERATION

Test Desc.: Dummy Calibration - Neck Flexion  
Component: Dummy #139

Test Date: 01-11-01  
Speed: 18.00 FT/SEC, 5.49 M/SEC

— 1 PENDULUM DECELERATION, D01062AI.A04

Ymin = 0 M/SEC @ 0.0001 SEC, Ymax = 6.06 M/SEC @ 0.1886 SEC





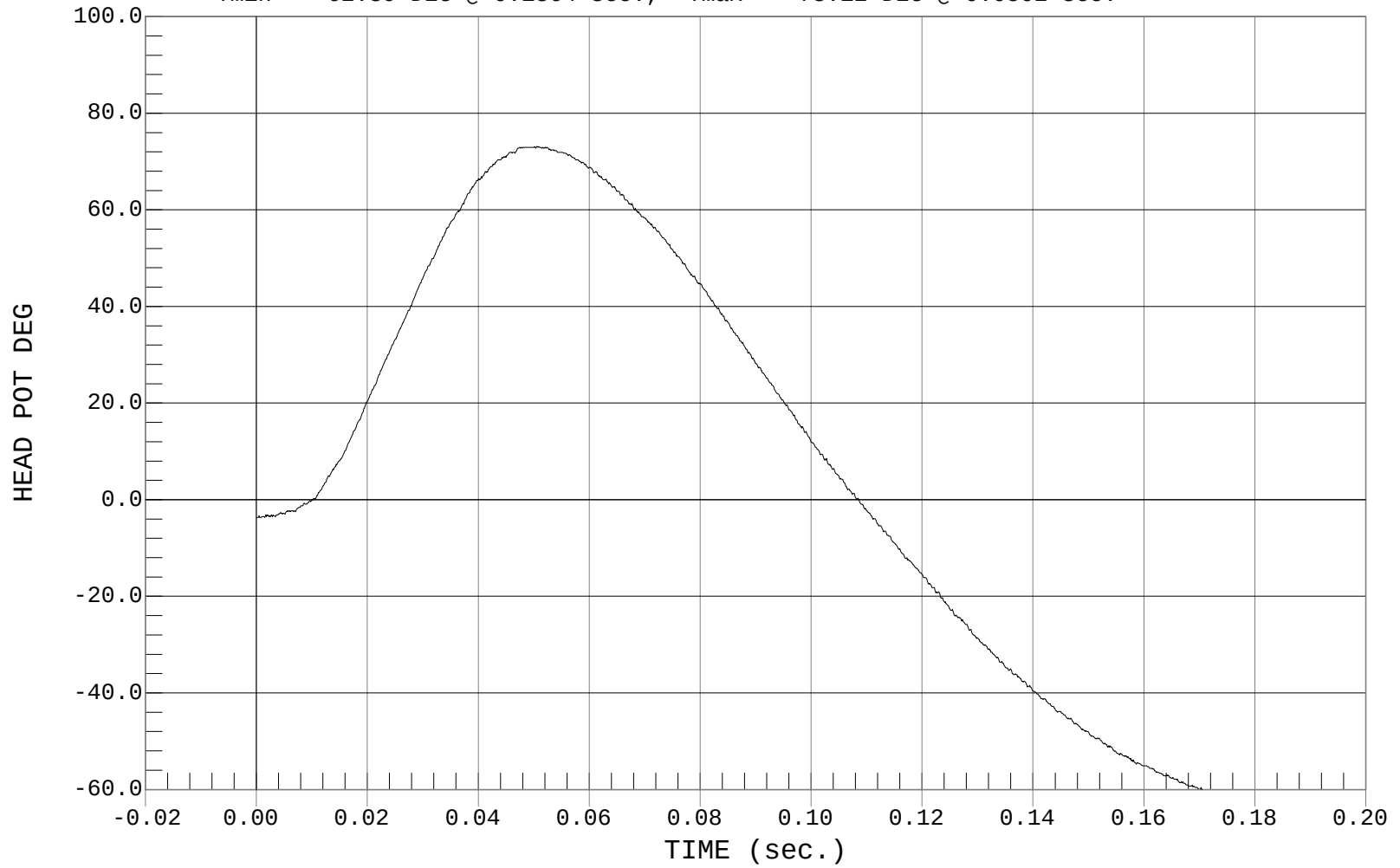
## NECK ROTATION

Test Desc.: Dummy Calibration - Neck Flexion  
Component: Dummy #139

Test Date: 01-11-01  
Speed: 18.00 FT/SEC, 5.49 M/SEC

— 1 HEAD POT, D01062DU.D05

Ymin = -62.89 DEG @ 0.1864 sec., Ymax = 73.12 DEG @ 0.0502 sec.





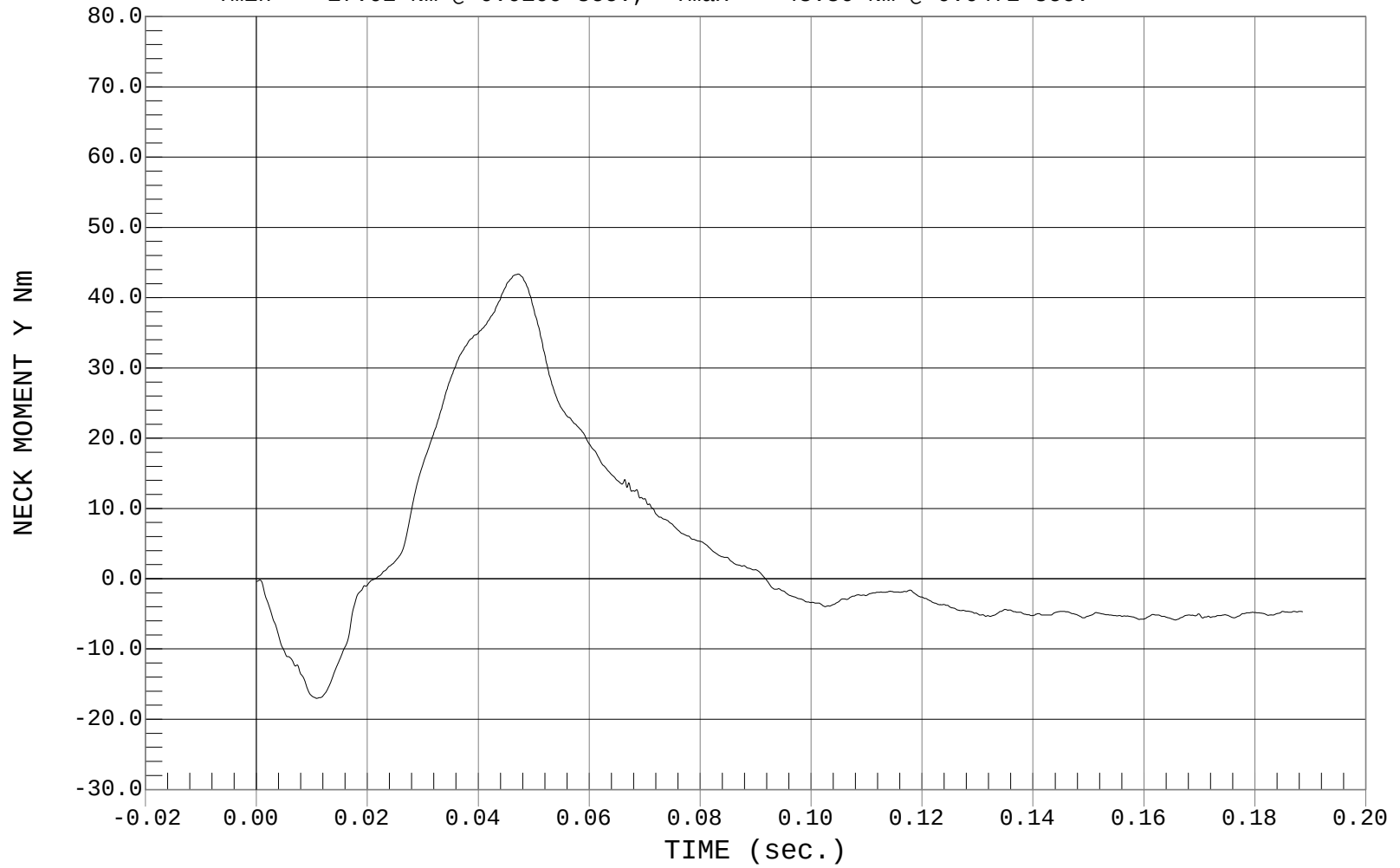
# OCCIPITAL MOMENT

Test Desc.: Dummy Calibration - Neck Flexion  
Component: Dummy #139

Test Date: 01-11-01  
Speed: 18.00 FT/SEC, 5.49 M/SEC

— 1 NECK MOMENT Y, D01062MF.M01

Ymin = -17.02 Nm @ 0.0109 sec., Ymax = 43.36 Nm @ 0.0472 sec.



## Hybrid III Calibration Data Sheet

3 Year Old

### Neck Extension Test

ATD Serial No.: 139

Test I.D.: D01063

| Tested Parameter                    |          | Units | Specification  | Result | Pass/Fail |
|-------------------------------------|----------|-------|----------------|--------|-----------|
| Laboratory Temperature              |          | °C    | 20.6 to 22.2   | 21.5°  | PASS      |
| Laboratory Relative Humidity        |          | %     | 10 to 70       | 24%    | PASS      |
| Pendulum Velocity                   |          | m/s   | 3.55 to 3.75   | 3.66   | PASS      |
| Pendulum Deceleration               | 6 Msec.  | m/s   | 1.0 to 1.4     | 1.2    | PASS      |
|                                     | 10 Msec. | m/s   | 1.9 to 2.5     | 2.1    | PASS      |
|                                     | 14 Msec. | m/s   | 2.8 to 3.5     | 2.9    | PASS      |
| "D" Plane Rotation                  | Maximum  | Deg.  | 83.0 to 93.0   | 88.5°  | PASS      |
| Moment About Occipital Condyle      | Minimum  | Nm    | -53.3 to -43.7 | -46.4  | PASS      |
| Negative Moment Decay Time To -10Nm |          | Msec. | 60.0 to 80.0   | 68.9   | PASS      |
| Overall Test Results                |          |       |                |        | PASS      |

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Laboratory Technician

1/11/01

Test Date

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Approved By





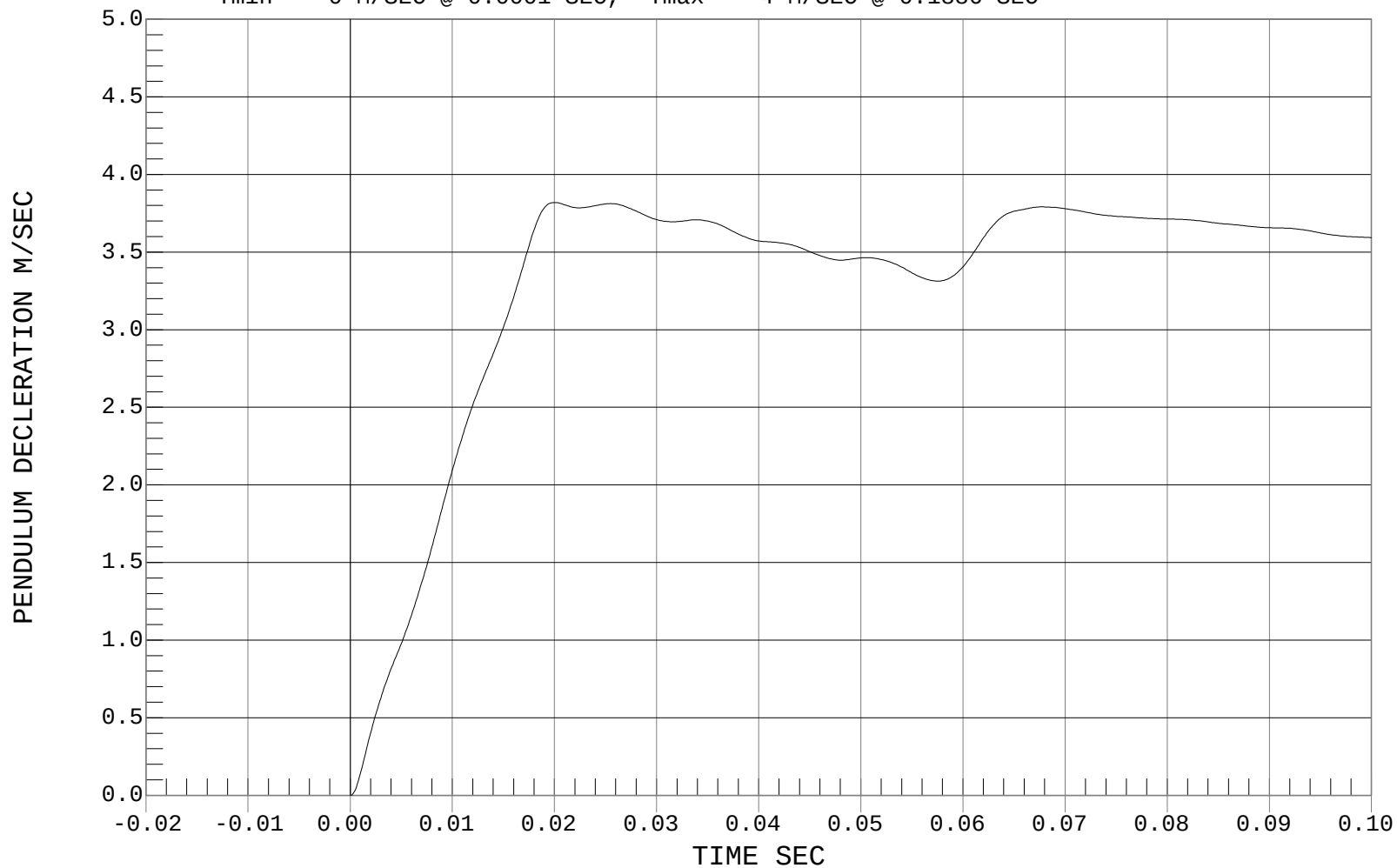
## PENDULUM DECELERATION

Test Desc.: Dummy Calibration - Neck Extension  
Component: Dummy #139

Test Date: 01-11-01  
Speed: 12.00 FT/SEC, 3.66 M/SEC

— 1 PENDULUM DECLERATION, D01063AI.A04

Ymin = 0 M/SEC @ 0.0001 SEC, Ymax = 4 M/SEC @ 0.1886 SEC





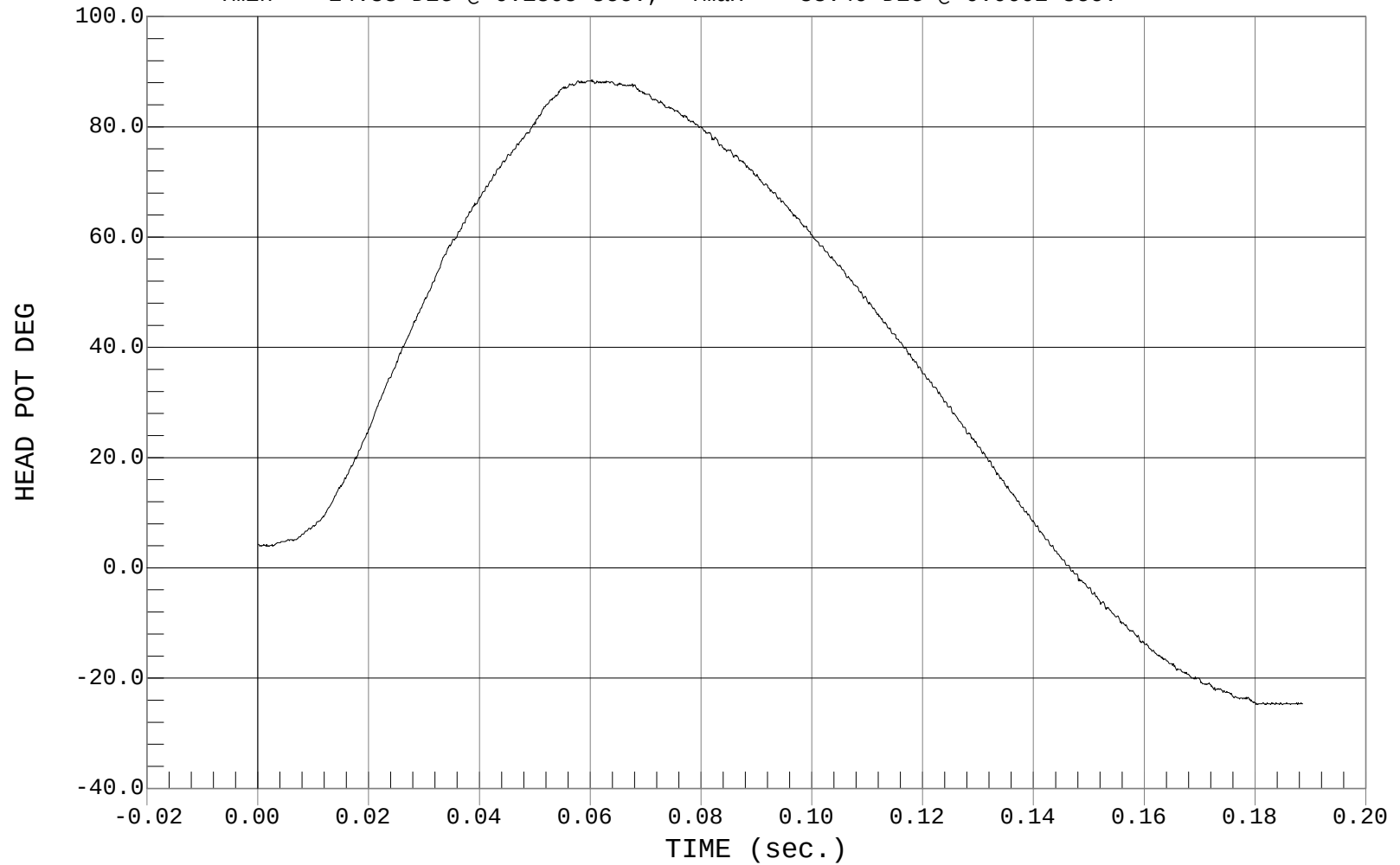
## NECK ROTATION

Test Desc.: Dummy Calibration - Neck Extension  
Component: Dummy #139

Test Date: 01-11-01  
Speed: 12.00 FT/SEC, 3.66 M/SEC

— 1 HEAD POT, D01063DU.D05

Ymin = -24.83 DEG @ 0.1805 sec., Ymax = 88.49 DEG @ 0.0602 sec.





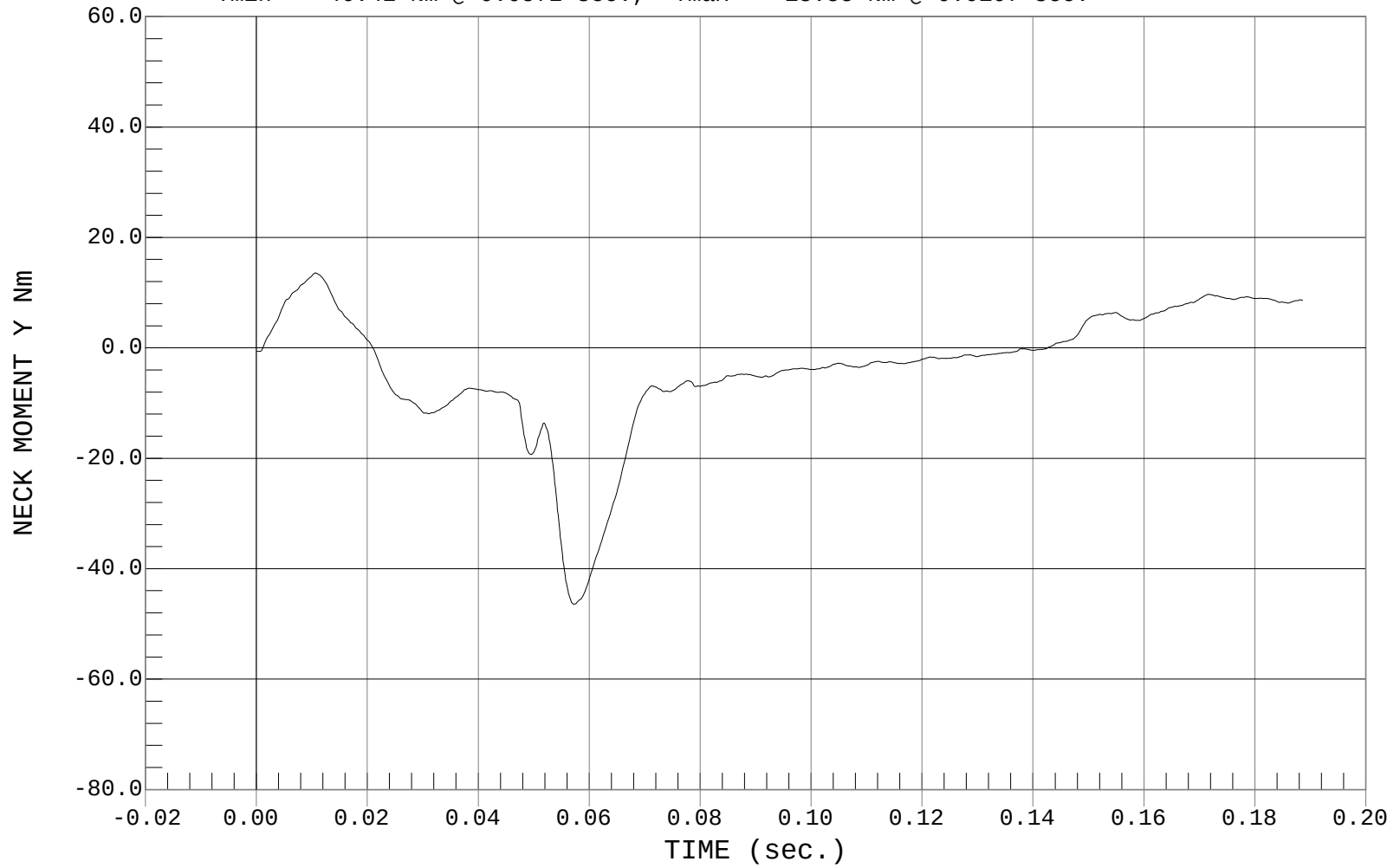
## OCCIPITAL MOMENT

Test Desc.: Dummy Calibration - Neck Extension  
Component: Dummy #139

Test Date: 01-11-01  
Speed: 12.00 FT/SEC, 3.66 M/SEC

— 1 NECK MOMENT Y, D01063MF.M01

Ymin = -46.42 Nm @ 0.0572 sec., Ymax = 13.55 Nm @ 0.0107 sec.



**Hybrid III Calibration Data Sheet**  
**3 Year Old**  
**Torso Flexion Test**

ATD Serial No.: 139

Test I.D.: D01065

| Tested Parameter     | Units | Specification | Result | Pass/Fail |
|----------------------|-------|---------------|--------|-----------|
| Temperature          | °C    | 18.9 to 25.6  | 21.4°  | PASS      |
| Relative Humidity    | %     | 10 to 70      | 24%    | PASS      |
| Force @ 45°          | N     | 130 to 180    | 161    | PASS      |
| Initial Angle        | Deg   | 0-15          | 10°    | PASS      |
| Return Angle         | Deg   | 0-10          | 2°     | PASS      |
| Overall Test Results |       |               |        | PASS      |

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

1/12/01

Test Date

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Approved By

**Hybrid III Calibration Data Sheet**  
**3 Year Old**  
**Head Drop Calibration**

ATD Serial No.: 142C

Test I.D.: D01071

| Tested Parameter             | Units  | Specification  | Result | Pass/Fail |
|------------------------------|--------|----------------|--------|-----------|
| Laboratory Temperature       | °C     | 18.9 to 25.5   | 22.1°  | PASS      |
| Laboratory Relative Humidity | %      | 10 to 70       | 23%    | PASS      |
| Peak Resultant Acceleration  | G's    | 250.0 to 280.0 | 267.9  | PASS      |
| Peak Lateral Acceleration    | G's    | ≤±15.0         | -4.0   | PASS      |
| Is Acceleration Unimodal?    | Yes/No | <10% Peak      | Yes    | PASS      |
| Overall Test Results         |        |                |        | PASS      |

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Laboratory Technician

1/11/01  
Test Date

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



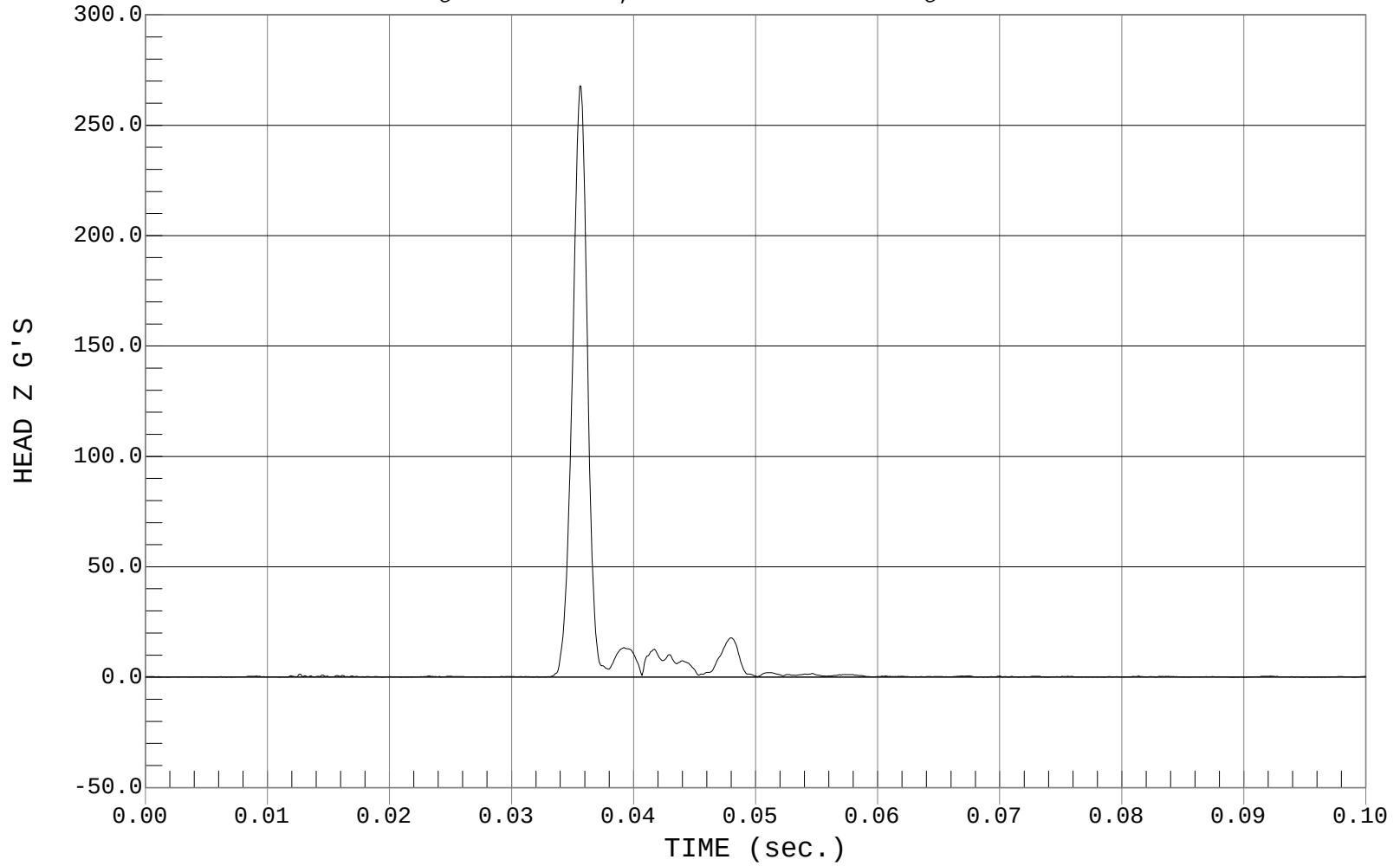
# PEAK RESULTANT ACCELERATION

Test Desc.: Dummy Calibration - Head Drop  
Component: Dummy #142

Test Date: 01-11-01  
Speed: 0.00 FT/SEC, 0.00 M/SEC

— 1 HEAD Z, D01071AV.A01

Ymin = .07 G'S @ 0.0015 sec., Ymax = 267.89 G'S @ 0.0356 sec.







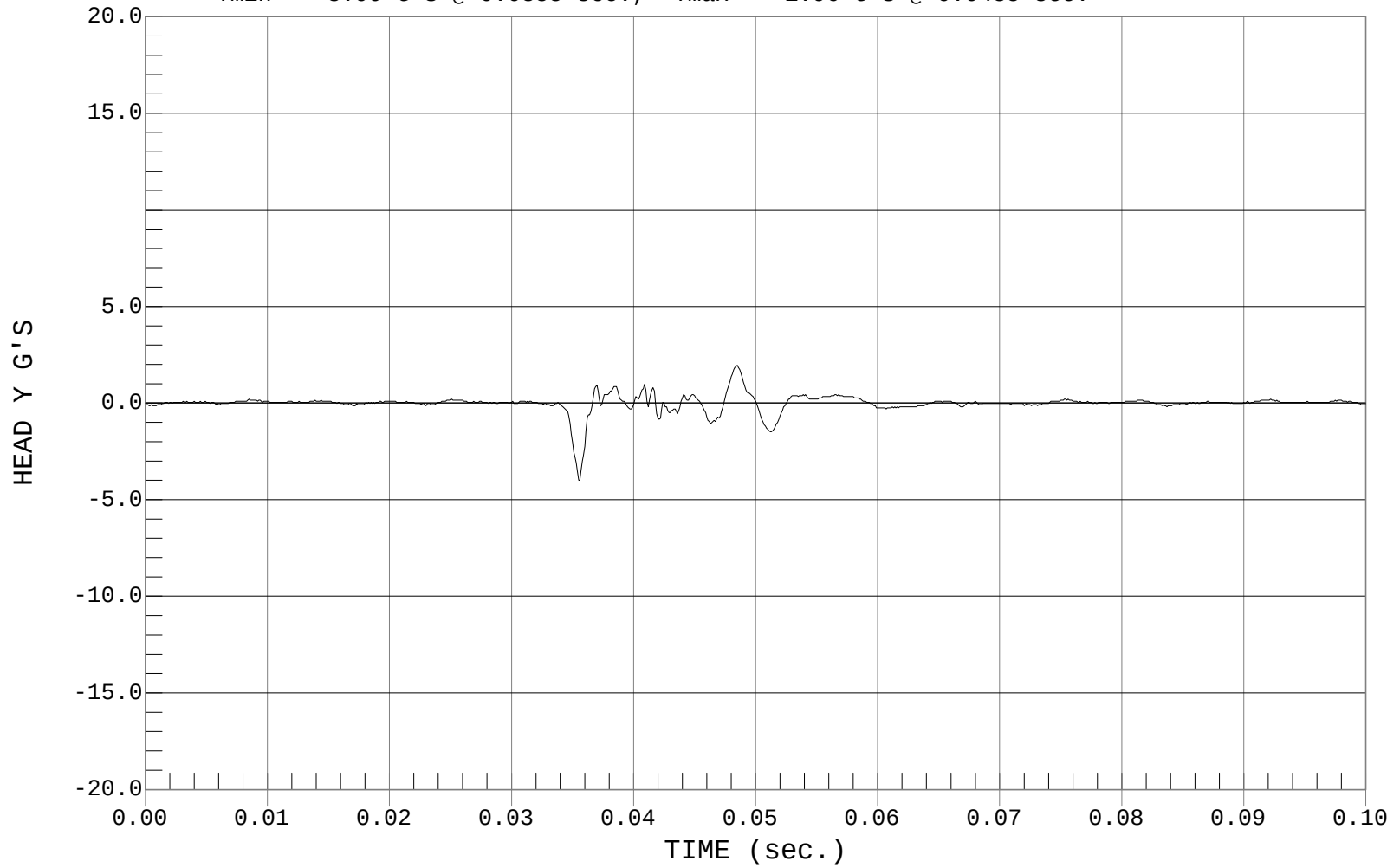
# PEAK LATERAL ACCELARATION

Test Desc.: Dummy Calibration - Head Drop  
Component: Dummy #142

Test Date: 01-11-01  
Speed: 0.00 FT/SEC, 0.00 M/SEC

— 1 HEAD Y, D01071AR.A02

Ymin = -3.99 G'S @ 0.0355 sec., Ymax = 1.96 G'S @ 0.0485 sec.



**Hybrid III Calibration Data Sheet**  
**3 Year Old**  
**Thorax Impact Test**

ATD Serial No.: 142C

Test I.D.: D01074

| Tested Parameter                                | Units | Specification | Result | Pass/Fail |
|-------------------------------------------------|-------|---------------|--------|-----------|
| Laboratory Temperature                          | °C    | 20.6 to 22.2  | 21.7°  | PASS      |
| Laboratory Relative Humidity                    | %     | 10 to 70      | 29%    | PASS      |
| Probe Velocity                                  | M/s   | 6.58 to 6.82  | 6.0    | PASS      |
| Peak Resistive Force Within Deflection Corridor | kN    | .68 to .81    | .80    | PASS      |
| Internal Hysteresis                             | %     | 65 to 85%     | 73%    | PASS      |
| Max Force 12.5 mm to 32 mm Deflection           | kN    | Max .86       | .88*   | FAIL      |
| Overall Test Results                            |       |               |        | FAIL      |

\* TEST DOES NOT MEET SPECIFICATION

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

1/14/01  
Test Date

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



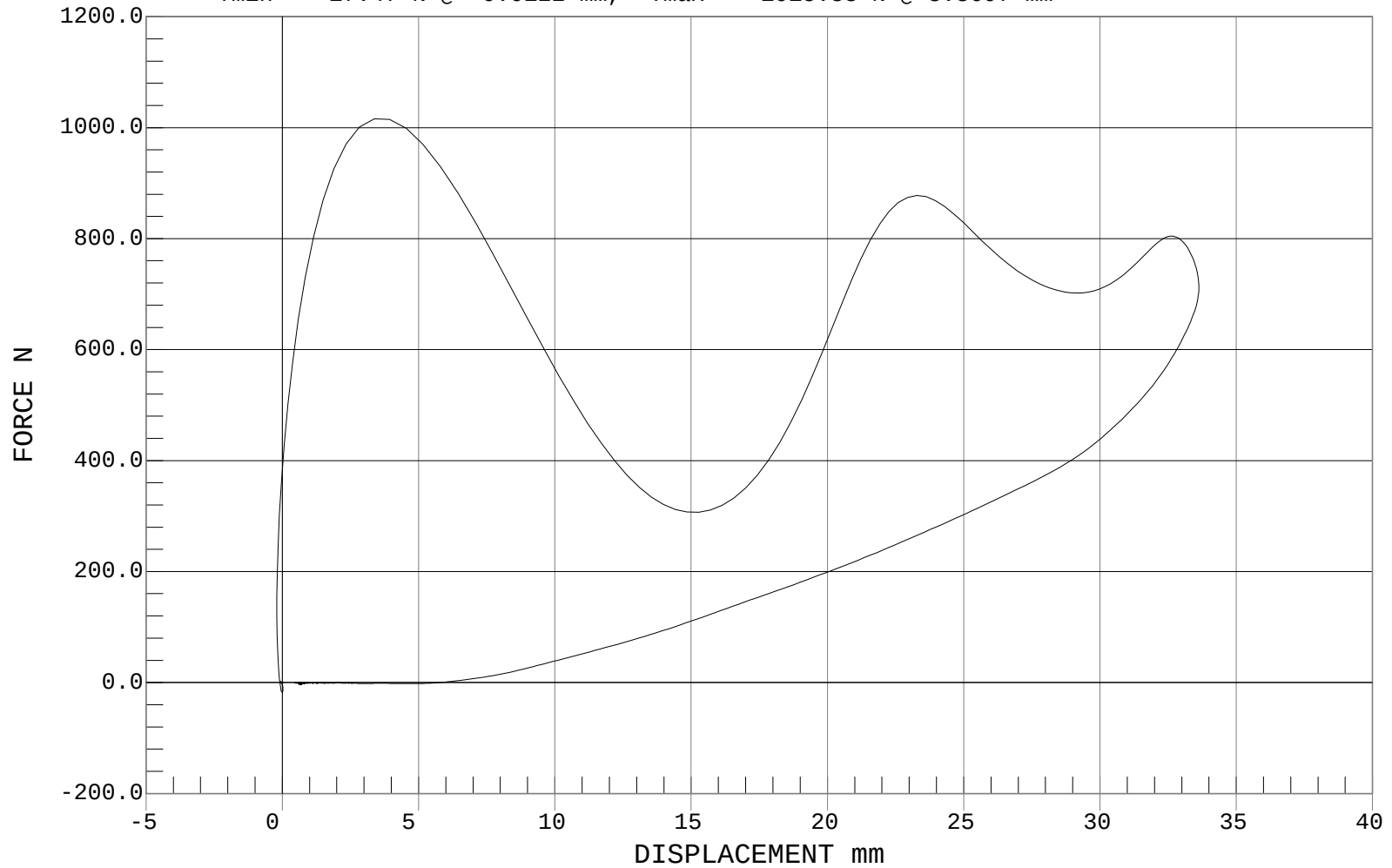
# THORAX IMPACT

Test Desc.: Dummy Calibration - Chest Impact  
Component: Dummy #142c

Test Date: 01-14-01  
Speed: 19.72 FT/SEC, 6.01 M/SEC

— 1 FORCE, D01074CH.FVD

Ymin = -17.47 N @ -0.0122 mm, Ymax = 1015.88 N @ 3.3697 mm



**Hybrid III Calibration Data Sheet**  
**3 Year Old**  
**Neck Flexion Test**

ATD Serial No.: 142C

Test I.D.: D01072

| Tested Parameter                   |          | Units | Specification | Result | Pass/Fail |
|------------------------------------|----------|-------|---------------|--------|-----------|
| Laboratory Temperature             |          | °C    | 20.6 to 22.2  | 21.3°  | PASS      |
| Laboratory Relative Humidity       |          | %     | 10 to 70      | 22%    | PASS      |
| Pendulum Velocity                  |          | m/s   | 5.4 to 5.6    | 5.5    | PASS      |
| Pendulum Deceleration              | 10 Msec. | m/s   | 2.0 to 2.7    | 2.4    | PASS      |
|                                    | 15 Msec. | m/s   | 3.0 to 4.0    | 3.4    | PASS      |
|                                    | 20 Msec. | m/s   | 4.0 to 5.1    | 4.6    | PASS      |
| "D" Plane Rotation                 | Maximum  | Deg.  | 70.0 to 82.0  | 73.8°  | PASS      |
| Moment About Occipital Condyle     | Maximum  | Nm    | 42.0 to 53.0  | 44.4   | PASS      |
| Positive Moment Decay Time to 10Nm |          | Msec. | 60.0 to 80.0  | 73.4   | PASS      |
| Overall Test Results               |          |       |               |        | PASS      |

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

1/12/01

Test Date

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Approved By



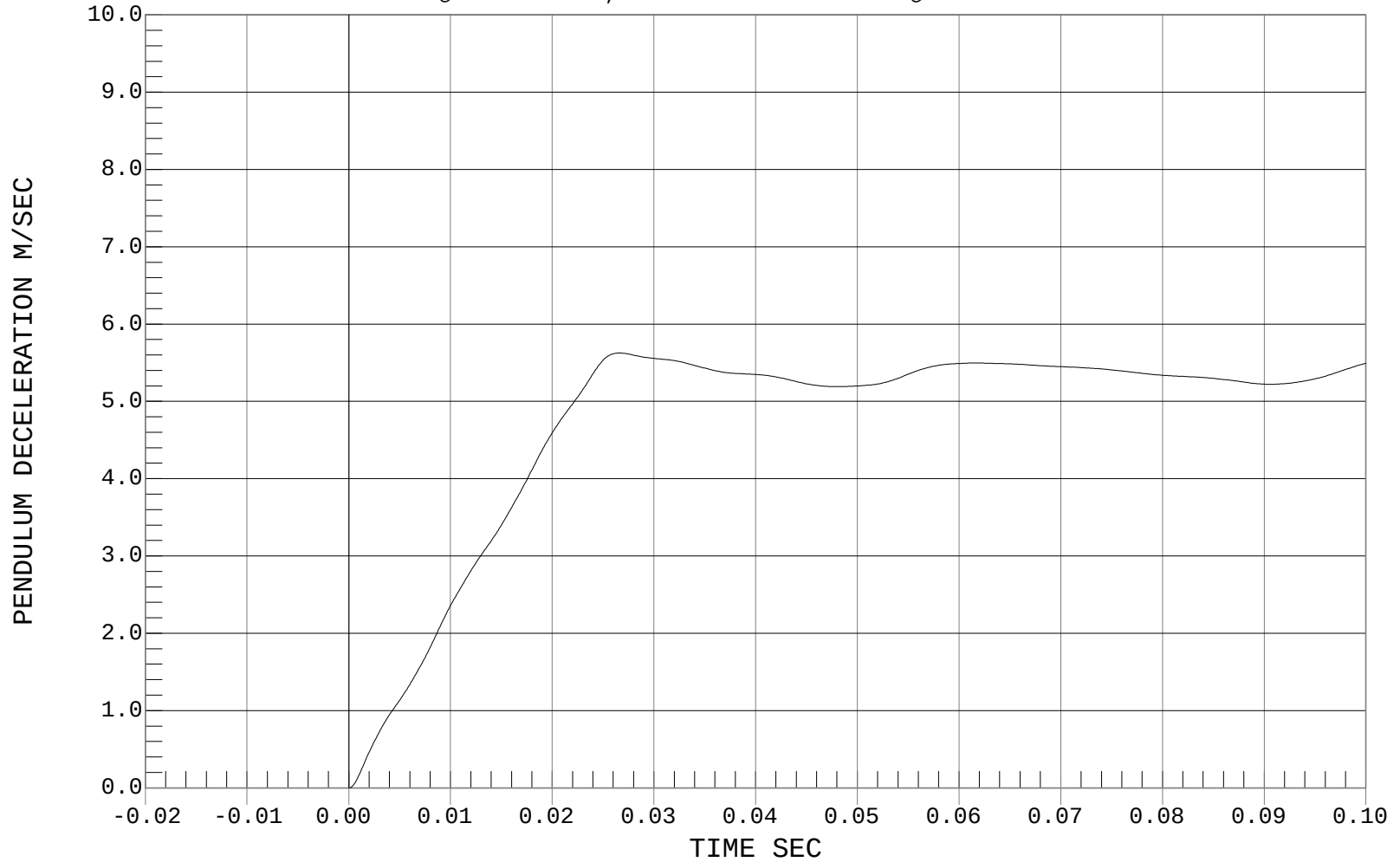
## PENDULUM DECELERATION

Test Desc.: Dummy Calibration - Neck Flexion  
Component: Dummy #142c

Test Date: 01-12-01  
Speed: 18.00 FT/SEC, 5.49 M/SEC

— 1 PENDULUM DECELERATION, D01072AI.A04

Ymin = 0 M/SEC @ 0.0001 SEC, Ymax = 5.97 M/SEC @ 0.1885 SEC





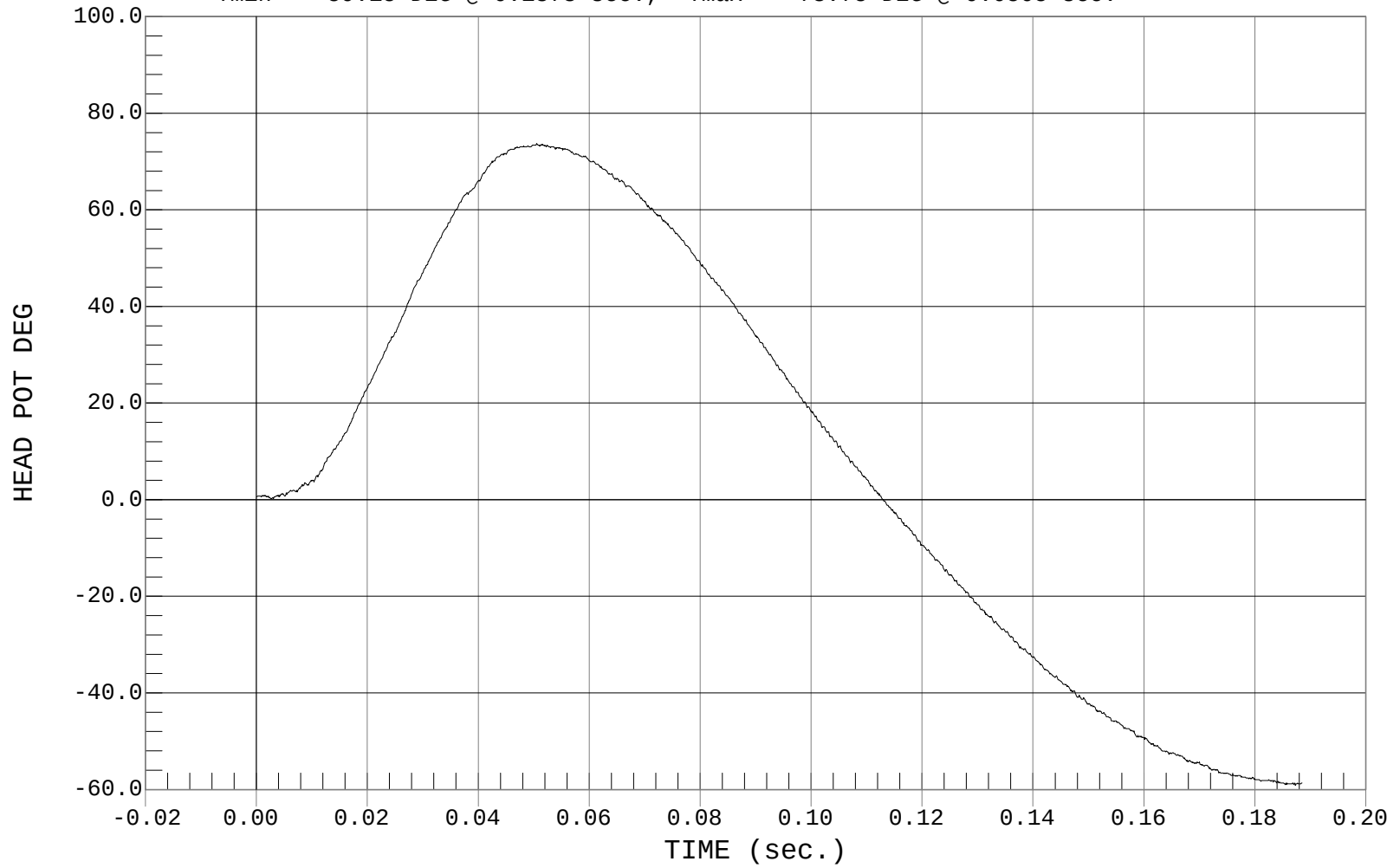
## NECK ROTATION

Test Desc.: Dummy Calibration - Neck Flexion  
Component: Dummy #142c

Test Date: 01-12-01  
Speed: 18.00 FT/SEC, 5.49 M/SEC

— 1 HEAD POT, D01072DU.D05

Ymin = -59.15 DEG @ 0.1873 sec., Ymax = 73.75 DEG @ 0.0505 sec.





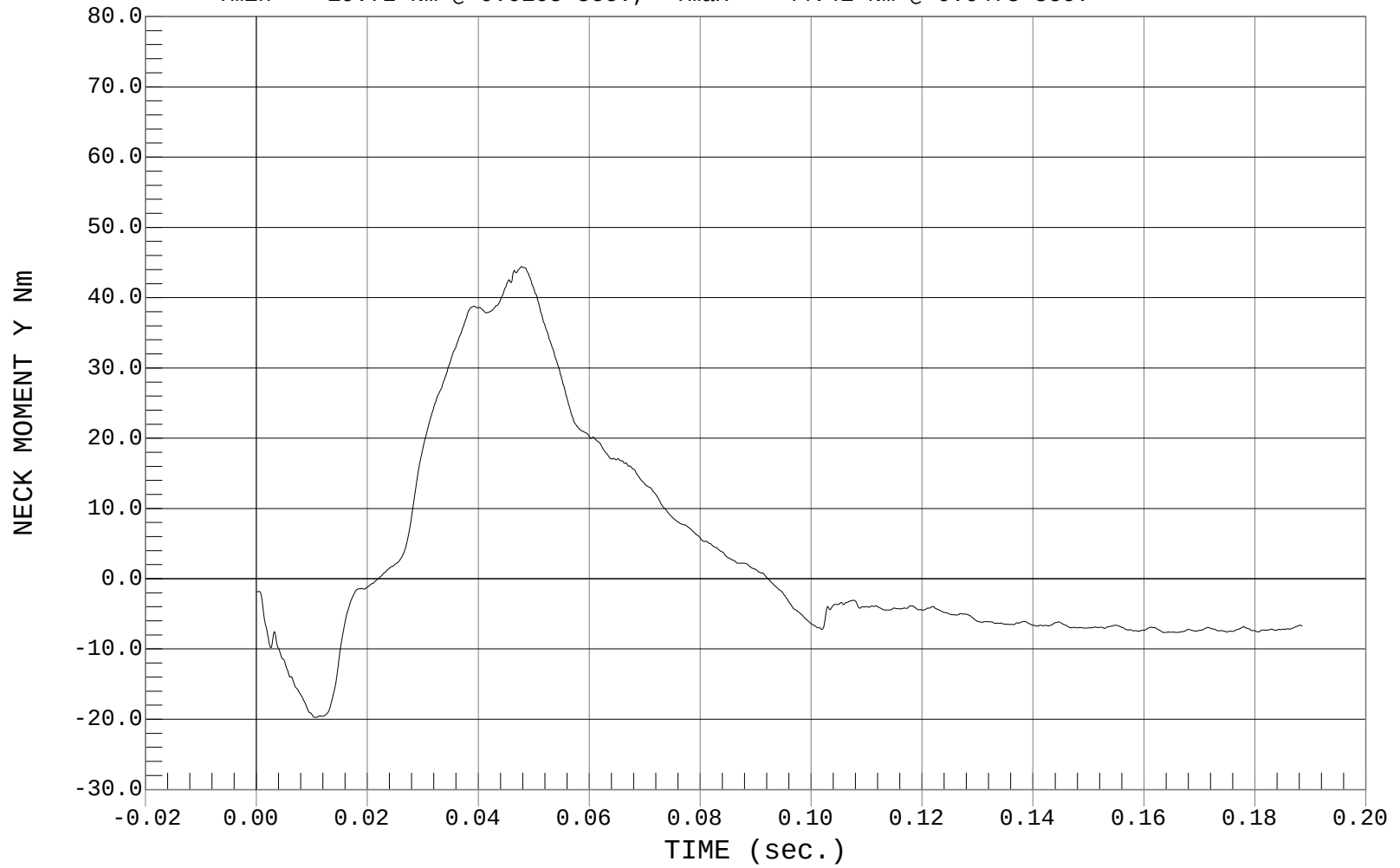
# OCCIPITAL MOMENT

Test Desc.: Dummy Calibration - Neck Flexion  
Component: Dummy #142c

Test Date: 01-12-01  
Speed: 18.00 FT/SEC, 5.49 M/SEC

— 1 NECK MOMENT Y, D01072MF.M01

Ymin = -19.72 Nm @ 0.0105 sec., Ymax = 44.41 Nm @ 0.0478 sec.





**Hybrid III Calibration Data Sheet**  
**3 Year Old**  
**Neck Extension Test**

ATD Serial No.: 142C

Test I.D.: D01073

| Tested Parameter                     |          | Units | Specification  | Result | Pass/Fail |
|--------------------------------------|----------|-------|----------------|--------|-----------|
| Laboratory Temperature               |          | °C    | 20.6 to 22.2   | 21.3°  | PASS      |
| Laboratory Relative Humidity         |          | %     | 10 to 70       | 22%    | PASS      |
| Pendulum Velocity                    |          | m/s   | 3.55 to 3.75   | 3.66   | PASS      |
| Pendulum Deceleration                | 6 Msec.  | m/s   | 1.0 to 1.4     | 1.2    | PASS      |
|                                      | 10 Msec. | m/s   | 1.9 to 2.5     | 2.1    | PASS      |
|                                      | 14 Msec. | m/s   | 2.8 to 3.5     | 2.9    | PASS      |
| "D" Plane Rotation                   | Maximum  | Deg.  | 83.0 to 93.0   | 88.8°  | PASS      |
| Moment About Occipital Condyle       | Minimum  | Nm    | -53.3 to -43.7 | -46.3  | PASS      |
| Negative Moment Decay Time to -10 Nm |          | Msec. | 60.0 to 80.0   | 68.8   | PASS      |
| Overall Test Results                 |          |       |                |        | PASS      |

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

1/12/01

Test Date

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



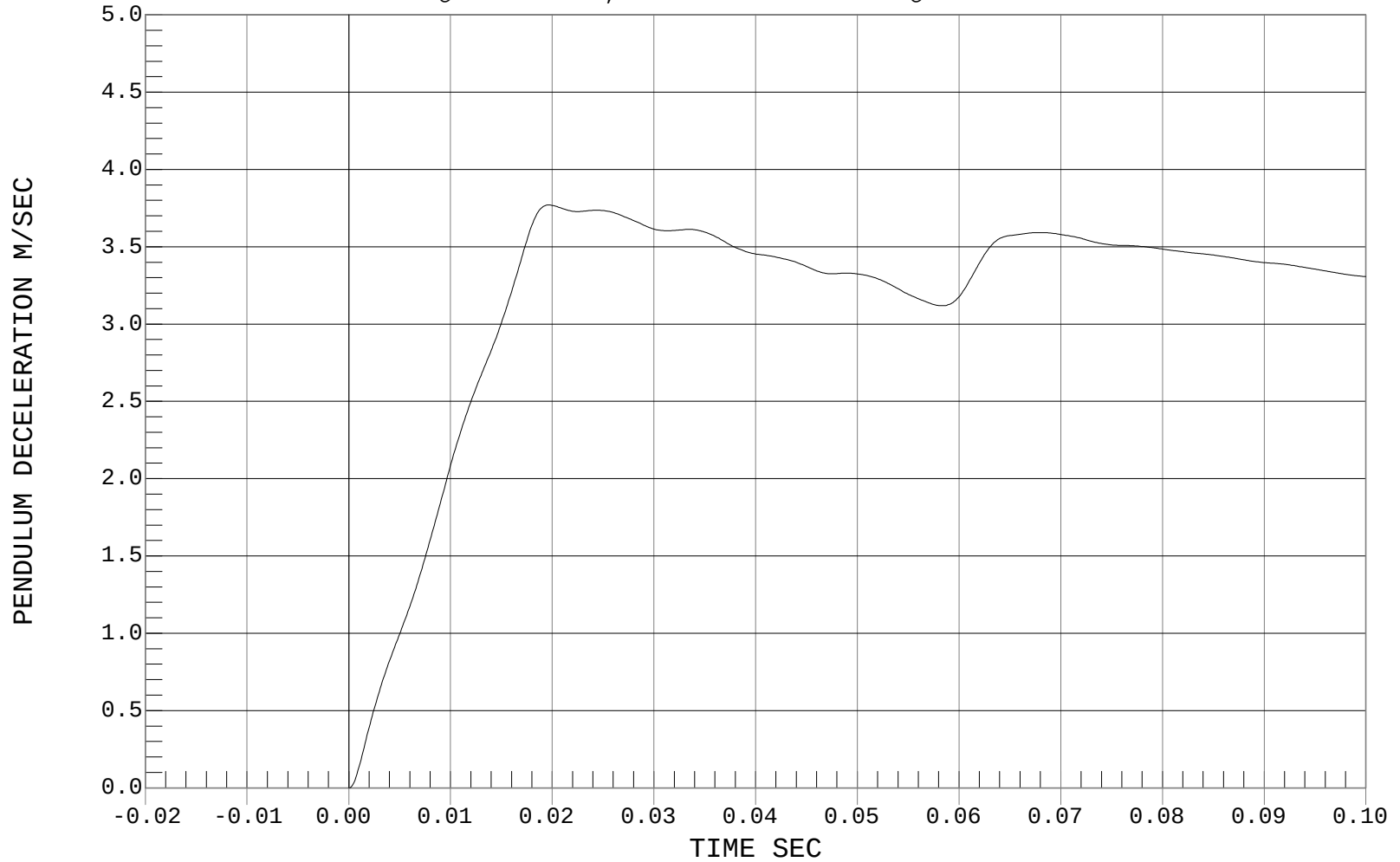
## PENDULUM DECELERATION

Test Desc.: Dummy Calibration - Neck Extension  
Component: Dummy #142c

Test Date: 01-12-01  
Speed: 12.00 FT/SEC, 3.66 M/SEC

— 1 PENDULUM DECELERATION, D01073AI.A04

Ymin = 0 M/SEC @ 0.0001 SEC, Ymax = 3.77 M/SEC @ 0.0197 SEC





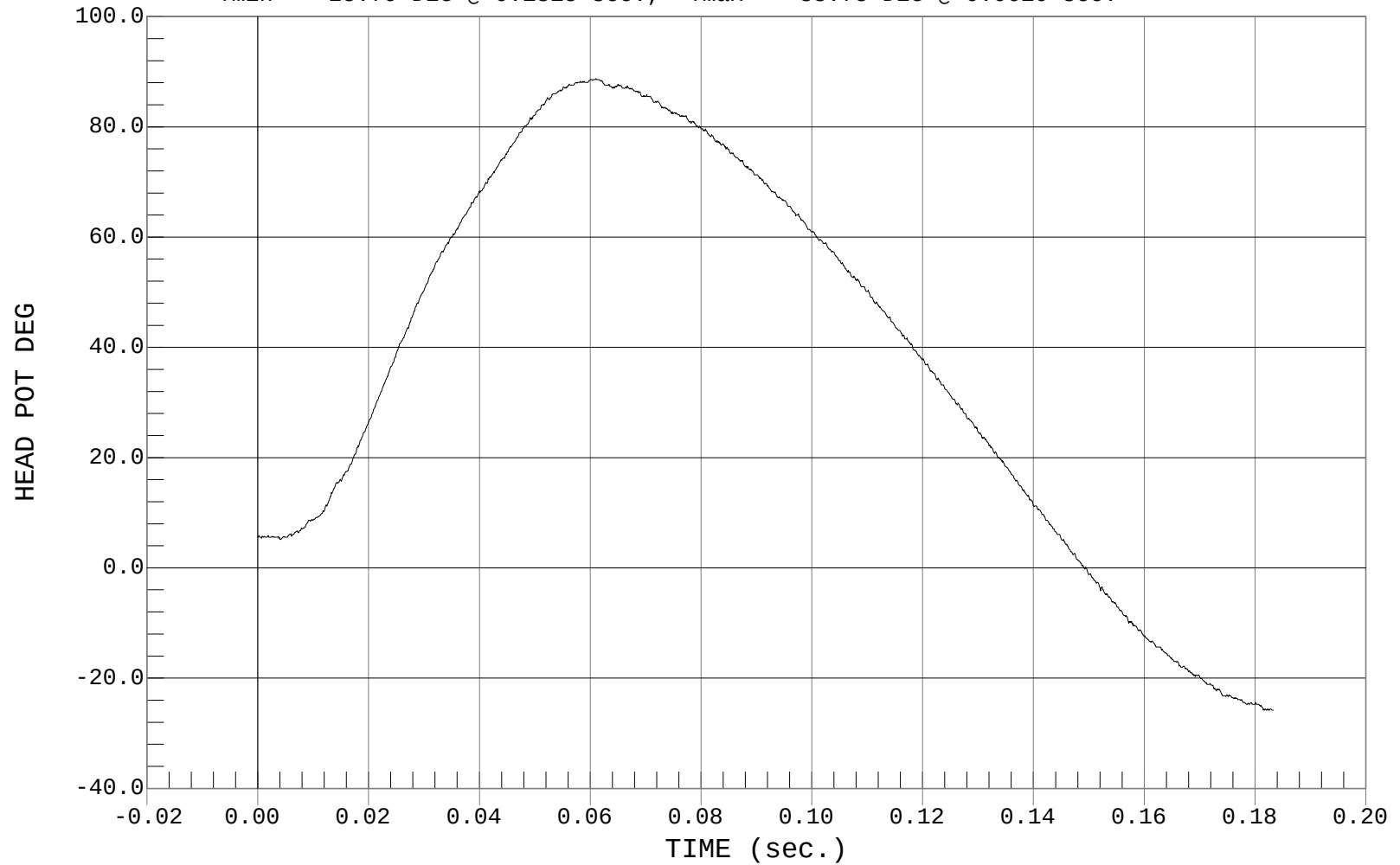
## NECK ROTATION

Test Desc.: Dummy Calibration - Neck Extension  
Component: Dummy #142c

Test Date: 01-12-01  
Speed: 12.00 FT/SEC, 3.66 M/SEC

— 1 HEAD POT, D01073DU.D05

Ymin = -25.79 DEG @ 0.1815 sec., Ymax = 88.75 DEG @ 0.0610 sec.





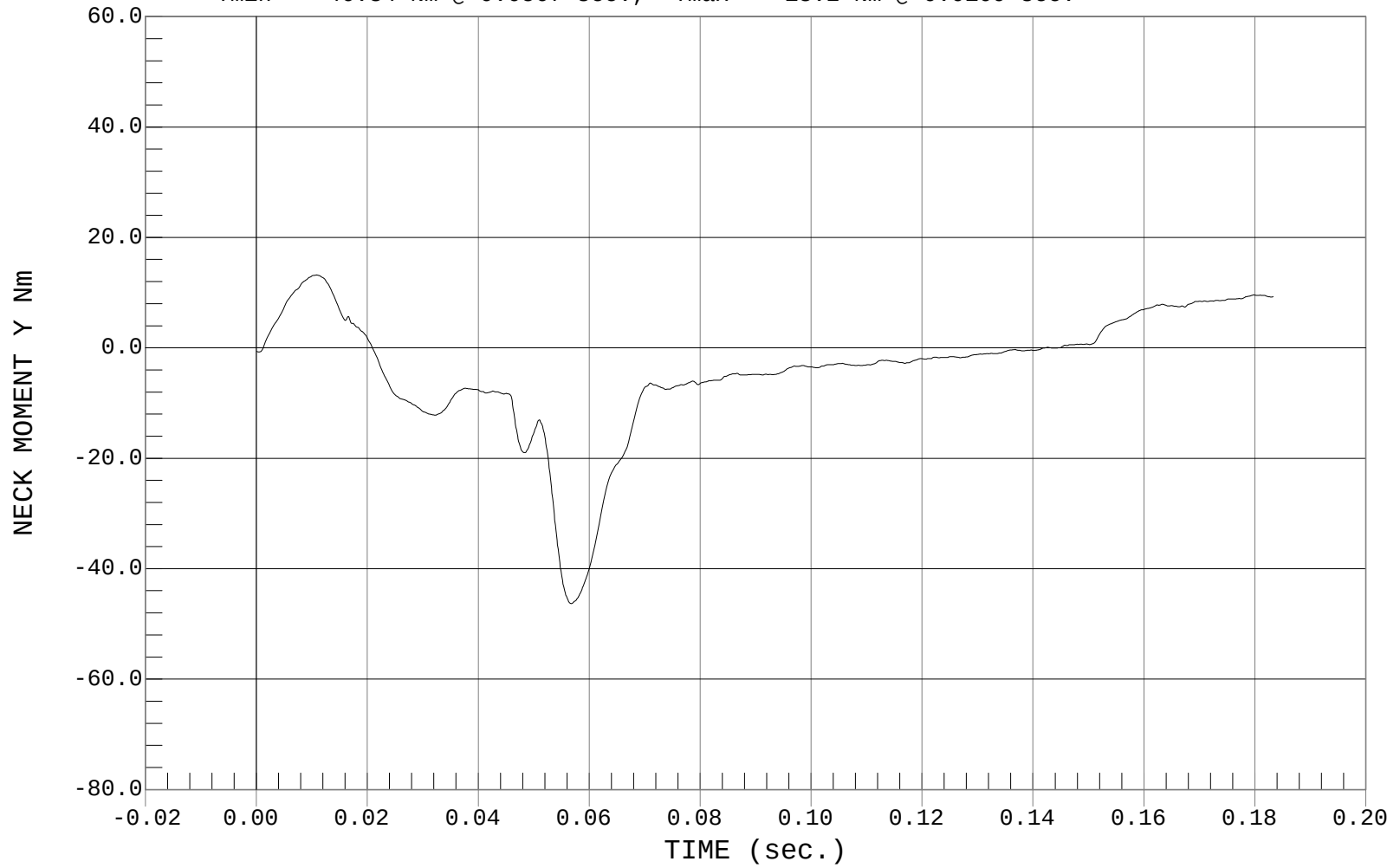
# OCCIPITAL MOMENT

Test Desc.: Dummy Calibration - Neck Extension  
Component: Dummy #142c

Test Date: 01-12-01  
Speed: 12.00 FT/SEC, 3.66 M/SEC

— 1 NECK MOMENT Y, D01073MF.M01

Ymin = -46.34 Nm @ 0.0567 sec., Ymax = 13.2 Nm @ 0.0109 sec.



**Hybrid III Calibration Data Sheet**  
**3 Year Old**  
**Torso Flexion Test**

ATD Serial No.: 142C

Test I.D.: D01075

| Tested Parameter     | Units | Specification | Result | Pass/Fail |
|----------------------|-------|---------------|--------|-----------|
| Temperature          | °C    | 18.9 to 25.6  | 21.4°  | PASS      |
| Relative Humidity    | %     | 10 to 70      | 25%    | PASS      |
| Force @ 45°          | N     | 130 to 180    | 158    | PASS      |
| Initial Angle        | Deg   | 0 to 15       | 6°     | PASS      |
| Return Angle         | Deg   | 0 to 10       | 2°     | PASS      |
| Overall Test Results |       |               |        | PASS      |

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

1/12/01  
Test Date

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

## **TEST EQUIPMENT AND INSTRUMENTATION CALIBRATION**

DUMMY AND LABORATORY INSTRUMENT CALIBRATION  
INSTRUMENTS FOR CHILD DUMMY NO. 139

|                        | INSTRUMENTS FOR DUMMY NO. <u>139</u> |              |                  |
|------------------------|--------------------------------------|--------------|------------------|
|                        | SERIAL NO.                           | MANUFACTURER | CALIBRATION DATE |
| Head X                 | AJ7F6                                | Endevco      | 1/4/01           |
| Head Y                 | J19843                               | Endevco      | 1/4/01           |
| Head Z                 | J19244                               | Endevco      | 1/4/01           |
| Chest X                | AJ7F7                                | Endevco      | 1/4/01           |
| Chest Y                | AJ454                                | Endevco      | 1/4/01           |
| Chest Z                | J23757                               | Endevco      | 1/4/01           |
| Pelvis X               | AJ8C0                                | Endevco      | 1/4/01           |
| Pelvis Y               | J14189                               | Endevco      | 1/4/01           |
| Pelvis Z               | J23943                               | Endevco      | 1/4/01           |
| Upper Neck Force X     | 114                                  | FTSS         | 11/7/00          |
| Upper Neck Force Y     | 114                                  | FTSS         | 11/7/00          |
| Upper Neck Force Z     | 114                                  | FTSS         | 11/7/00          |
| Upper Neck Moment X    | 114                                  | FTSS         | 11/7/00          |
| Upper Neck Moment Y    | 114                                  | FTSS         | 11/7/00          |
| Upper Neck Moment Z    | 114                                  | FTSS         | 11/7/00          |
| Lower Neck Force X     | 119                                  | FTSS         | 11/8/00          |
| Lower Neck Force Y     | 119                                  | FTSS         | 11/8/00          |
| Lower Neck Force Z     | 119                                  | FTSS         | 11/8/00          |
| Lower Neck Moment X    | 119                                  | FTSS         | 11/8/00          |
| Lower Neck Moment Y    | 119                                  | FTSS         | 11/8/00          |
| Lower Neck Moment Z    | 119                                  | FTSS         | 11/8/00          |
| Chest Deflection Gauge | 139                                  | Servo        | 1/8/01           |



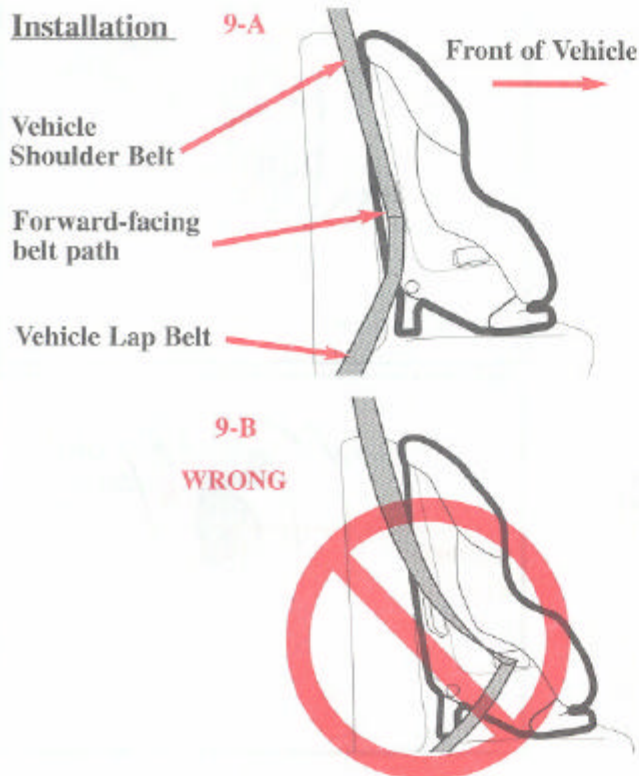
DUMMY AND LABORATORY INSTRUMENT CALIBRATION  
INSTRUMENTS FOR CHILD DUMMY NO. 142C

|                        | INSTRUMENTS FOR DUMMY NO. <u>142C</u> |              |                  |
|------------------------|---------------------------------------|--------------|------------------|
|                        | SERIAL NO.                            | MANUFACTURER | CALIBRATION DATE |
| Head X                 | J19927                                | Endevco      | 1/4/01           |
| Head Y                 | J18736                                | Endevco      | 1/4/01           |
| Head Z                 | J14674                                | Endevco      | 1/4/01           |
| Chest X                | J14235                                | Endevco      | 1/4/01           |
| Chest Y                | J18724                                | Endevco      | 1/4/01           |
| Chest Z                | AJ5R0                                 | Endevco      | 1/4/01           |
| Pelvis X               | J19440                                | Endevco      | 1/4/01           |
| Pelvis Y               | AJ4W2                                 | Endevco      | 1/4/01           |
| Pelvis Z               | J20093                                | Endevco      | 1/4/01           |
| Upper Neck Force X     | 120                                   | FTSS         | 11/6/00          |
| Upper Neck Force Y     | 120                                   | FTSS         | 11/6/00          |
| Upper Neck Force Z     | 120                                   | FTSS         | 11/6/00          |
| Upper Neck Moment X    | 120                                   | FTSS         | 11/6/00          |
| Upper Neck Moment Y    | 120                                   | FTSS         | 11/6/00          |
| Upper Neck Moment Z    | 120                                   | FTSS         | 11/6/00          |
| Lower Neck Force X     | 121                                   | FTSS         | 11/8/00          |
| Lower Neck Force Y     | 121                                   | FTSS         | 11/8/00          |
| Lower Neck Force Z     | 121                                   | FTSS         | 11/8/00          |
| Lower Neck Moment X    | 121                                   | FTSS         | 11/8/00          |
| Lower Neck Moment Y    | 121                                   | FTSS         | 11/8/00          |
| Lower Neck Moment Z    | 121                                   | FTSS         | 11/8/00          |
| Chest Deflection Gauge | 142C                                  | Servo        | 1/12/01          |

**CHILD SEAT OWNER'S MANUAL RESTRAINT INSTRUCTIONS**

**Toddler Installation:** over 22 and up to 40 lbs (over 10 and up to 18 kg) and 40" (102 cm) or less

**In the forward-facing toddler position, the shoulder harness must be just at or above the child's shoulders. You must change the harness height before installing the seat in the vehicle. See "To Change Harness Height" on Page 3. Read general warnings on page 2 and seat belt compatibility information on pages 6 and 7 before installing this child restraint.**



**! To Install:**

1. Toddlers over 22 up to 35 pounds (over 10 up to 15.9 kg) who are over 1 year old may ride facing the front of the vehicle. Toddlers 35-40 pounds (15.9-18 kg) and under 40 inches (102 cm) tall must ride facing the front of the vehicle (Fig 9-A.). Either the upright or a reclined position may be used forward-facing. To change positions, see Page 3.
2. Thread the vehicle lap belt through the forward-facing belt path as shown in Fig. 9-A. If the lap and shoulder belts are attached, pass both through the belt path.
3. Buckle the vehicle belt and adjust as tightly as possible. Put one knee in the seat and push down firmly on the car seat while pulling up on the shoulder belt until the lap belt is tight. It is not necessary to make the seat completely immobile. Some "play" from front to back is acceptable. The car seat should not move more than an inch or two from side to side. If it does, you may need to use a locking clip or move the seat; use of the tether will also help stabilize the car seat. See information on pages 6, 7 and 10.
4. Place your toddler in the car seat. Secure and adjust the harness system as described in "Putting Your Child in the Restraint" on page 4.

**! Do not use the child restraint in any vehicle seat where the lap belt cannot be tightened securely and properly or where it can be loosened by pulling on it. (See Pages 2, and 6-7).**

## Tether strap installation and removal

Vehicles manufactured after 1989 have pre-drilled holes but need to have the anchor hardware installed. Some dealers may offer free installation. Vehicles made after 9/1/99 have the anchor hardware already installed. Refer to your owner's manual or call your dealer.

**! You must follow the threading diagram exactly. Failure to follow these steps could cause the strap to loosen in a crash, which could result in injury to your child.**

**#1** Thread end down in between the pad and the shell, out through the top center slot of shell, around reinforcement and through lower slot, then back up between shell and pad.

**#2** Thread end back up through both adjuster slides and then down through both adjusters.

**#3** Loop tether end up and over the adjuster slides. Thread down between adjuster slides. Tighten.

### To adjust tether:

Loosen slides. Pull on the end of the strap (A) to tighten. Pull on the anchor attachment (B) to loosen. Tighten strap completely so there is no slack or play.

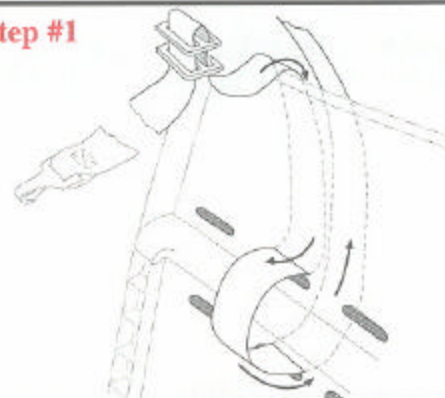
### Use and storage:

The tether is used for the forward-facing position, 22-40 lbs (10-18 kg) **only**. When not in use, it is preferable for the tether to be removed. To do so, reverse steps 1-3 above.

If the tether is attached and the car seat is used in the rear-facing infant position, the tether should be placed over the back of the car seat with the anchor hook secured under the base or recline stand of the car seat.

**NOTE:** If you need a longer tether (for example, to tether a car seat in a van), call Cosco's Consumer Relations Department, 1-800-544-1108.

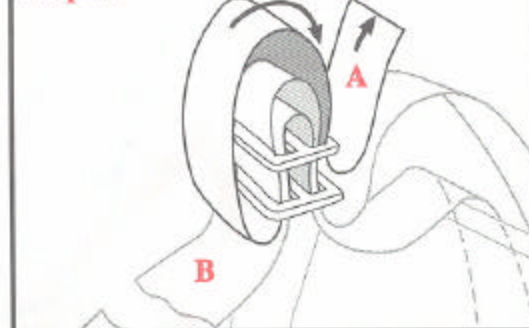
**Step #1**



**Step #2**



**Step #3**





## LATCH (Lower Anchors and Tether for Children) Attachment System

This car seat is also equipped with the LATCH attachment system. These are the two extra sets of belts already threaded through the belt paths. The LATCH attachment system can **only** be used in vehicles that already have the anchor bars installed in the vehicle seat bight. These anchor bars **cannot** be retrofit onto the vehicle.

The LATCH system allows a car seat to be secured in the vehicle without using the vehicle belt system, which may not be compatible with car seats. No extra parts, such as a locking clip, are required.

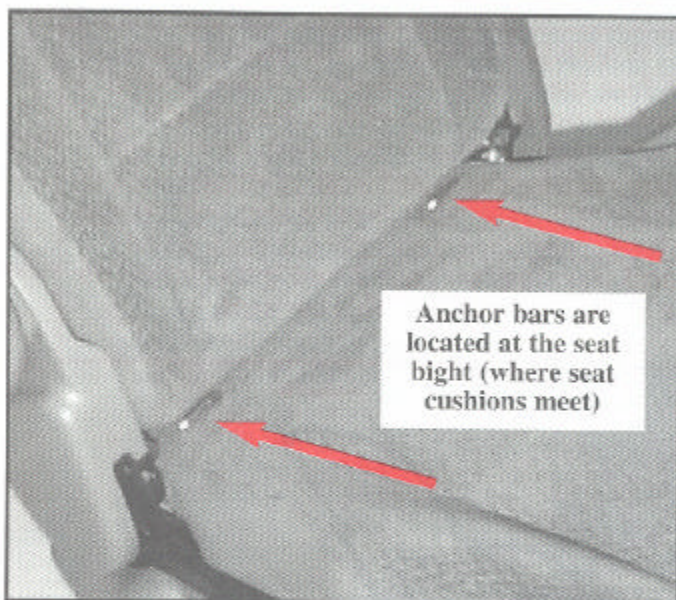
If your vehicle is equipped with this system, the bars should either be visible or clearly marked. Refer to your vehicle owner's manual to see which seating positions may be equipped with the LATCH system. The owner's manual may refer to it as a universal attachment system.

The car seat is used with the LATCH system the same way as it is for the vehicle belt system. The LATCH system does not, for example, allow an infant to be placed rear-facing in the front passenger seat with an active air bag. See warnings on page 2.

Refer to pages 12-14 for specific installation instructions.



**WARNING! Make sure that LATCH hooks that are NOT in use are securely hooked together or they could seriously injure someone in a crash or sudden stop.**



The back belt hooks should be hooked together behind the seat when using the seat rear-facing.



The front belt hooks should be hooked together under the seat when using the seat forward-facing.

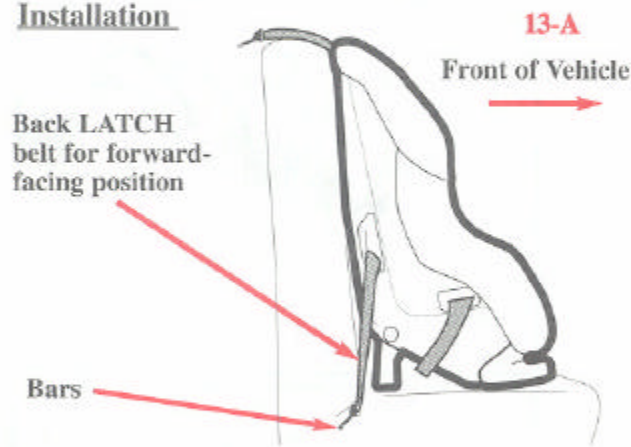




**Toddler Installation-LATCH system ONLY**  
over 22 and up to 40 lbs  
(over 10 and up to 18 kg) and 40" (102 cm) or less

**In the forward-facing toddler position, the shoulder harness must be just at or above the child's shoulders. You must change the harness height before installing the seat in the vehicle. See "To Change Harness Height" on Page 3. Read general warnings on page 2 and information on page 11 before installing this car seat.**

**Installation**



**WARNING!** Make sure LATCH hooks are securely fastened or car seat will come out and child will be injured or killed. If you cannot get the seat to remain tight, do not use the car seat in this seating location with this LATCH attachment system.  
Do not use the LATCH system along with the adult lap or lap/shoulder belt.

**To Install:**

1. Toddlers over 22 up to 35 pounds (10-15.9 kg) who are over 1 year old may ride facing the front of the vehicle. Toddlers 35-40 pounds (15.9-18 kg) and under 40 inches (102 cm) tall must ride facing the front of the vehicle (Fig 9-A.). Either the upright or a reclined position may be used forward-facing. To change positions, see Page 3.
2. The shoulder harness must be threaded properly at or just below the child's shoulders. (See "To Change Harness Height", page 3).
3. Lengthen the back belt by pushing in on button and pulling on harness. Always pull slowly to make sure belt remains flat so it doesn't twist and get stuck.
4. Fasten both LATCH hooks onto the bars (Fig. 13-B); see your vehicle owner's manual and page 11 for location and information.
5. Push down firmly on the car seat while pulling up on the loop to tighten belt securely (Fig. 13-C). Putting one knee in the seat and pushing down firmly while pulling up on the belt may provide a tighter fit, but it is not necessary to make the seat completely immobile. All vehicles with these attachment bars also have a built-in tether anchor for use with a forward-facing car seat. You should secure and tighten the tether as shown on page 14.
6. Place your toddler in the car seat. Secure and adjust the harness system as described in "Putting Your Child in the Restraint" on page 4.
7. To remove car seat, push down on release button and pull away from car seat (Fig. 13-D). Remove the LATCH hooks from bars.

