

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

FORD MOTOR COMPANY  
1994 FORD F150 PICKUP  
NHTSA No. MR0203

MOBILITY SYSTEMS AND EQUIPMENT COMPANY  
9920 LaCienega Boulevard, Suite 708  
Inglewood, California 90301



18 March, 1994

FINAL REPORT

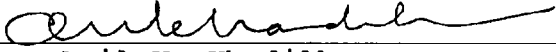
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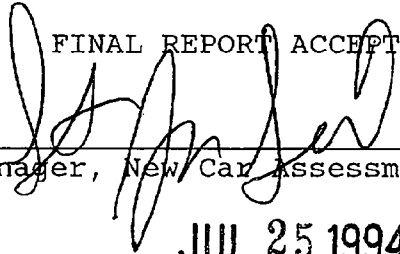
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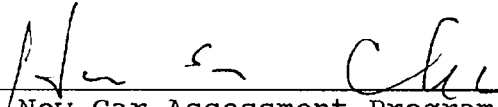
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Manager, New Car Assessment Program

JUL 25 1994

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# Technical Report Documentation Page

| 1. Report No.<br><br>MSE-94-N04                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 2. Government Accession No.                             | 3. Recipient's Catalog No.                                                                                                                                                                                              |           |                                    |              |                 |                                     |       |       |                                              |      |      |                                                   |                  |                  |
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| 4. Title and Subtitle<br><br>New Car Assessment Program<br>Frontal Barrier Impact Test<br>1994 Ford/F150/Pickup<br>NHTSA No. MRO203                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                         | 5. Report Date<br><br>March 18, 1994                                                                                                                                                                                    |           |                                    |              |                 |                                     |       |       |                                              |      |      |                                                   |                  |                  |
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| 15. Supplementary Notes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                         |                                                                                                                                                                                                                         |           |                                    |              |                 |                                     |       |       |                                              |      |      |                                                   |                  |                  |
| 16. Abstract<br><br>A 56 kph Frontal barrier impact test using a load cell barrier was conducted on a 1994 Ford F150 Pickup at the Mobility Systems and Equipment Company (MSE) crash test facility in San Bernardino, CA, on February 19, 1994.<br><br>The impact velocity was 55.9 km/h, and the ambient temperature at the barrier face at the time of impact was 19 degrees C. The vehicle's maximum post-test static crush was 670 mm.<br><br>The test vehicle satisfied the requirements of FMVSS No.'s 212, 219 and 301-75.<br><br>Occupant injury response data summary is as follows:<br><table border="1" data-bbox="321 1247 1338 1528"> <thead> <tr> <th>Injury Criteria<br/>Threshold Value</th><th>Driver Dummy</th><th>Passenger Dummy</th></tr> </thead> <tbody> <tr> <td>Head Injury Criterion<br/>HIC = 1000</td><td>446.3</td><td>334.8</td></tr> <tr> <td>Chest Resultant Peak<br/>60 G's (3 msec clip)</td><td>40.6</td><td>34.7</td></tr> <tr> <td>Femur Force      Left<br/>10009 N            Right</td><td>2810.0<br/>4085.4</td><td>2759.8<br/>1474.2</td></tr> </tbody> </table><br>Type of occupant restraint system: A 3 point continuous webbing belt system at both seating positions, an airbag at the driver seating position. |                                                         |                                                                                                                                                                                                                         |           | Injury Criteria<br>Threshold Value | Driver Dummy | Passenger Dummy | Head Injury Criterion<br>HIC = 1000 | 446.3 | 334.8 | Chest Resultant Peak<br>60 G's (3 msec clip) | 40.6 | 34.7 | Femur Force      Left<br>10009 N            Right | 2810.0<br>4085.4 | 2759.8<br>1474.2 |
| Injury Criteria<br>Threshold Value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Driver Dummy                                            | Passenger Dummy                                                                                                                                                                                                         |           |                                    |              |                 |                                     |       |       |                                              |      |      |                                                   |                  |                  |
| Head Injury Criterion<br>HIC = 1000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 446.3                                                   | 334.8                                                                                                                                                                                                                   |           |                                    |              |                 |                                     |       |       |                                              |      |      |                                                   |                  |                  |
| Chest Resultant Peak<br>60 G's (3 msec clip)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 40.6                                                    | 34.7                                                                                                                                                                                                                    |           |                                    |              |                 |                                     |       |       |                                              |      |      |                                                   |                  |                  |
| Femur Force      Left<br>10009 N            Right                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 2810.0<br>4085.4                                        | 2759.8<br>1474.2                                                                                                                                                                                                        |           |                                    |              |                 |                                     |       |       |                                              |      |      |                                                   |                  |                  |
| 17. Key Words<br><br>35 MPH Frontal Barrier Impact Test<br>New Car Assessment Program (NCAP)<br>1994 Ford F150 Pickup                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                         | 18. Distribution Statement<br>Copies of this report are available from:<br><br>Technical Reference Division<br>Nat'l Highway Traffic Safety Admin.<br>Room 5108, Nassif Building<br>400 7th St., S.W., Wash. D.C. 20590 |           |                                    |              |                 |                                     |       |       |                                              |      |      |                                                   |                  |                  |
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## SECTION 1

### PURPOSE AND TEST PROCEDURE

This 56.32 km/h (35 mph) frontal barrier impact test is a part of the FY'94 Vehicle Barrier Impact and Testing Program sponsored by the National Highway Traffic Safety Administration (NHTSA) under Contract No. DTNH22-90-D-32121. The purpose of this test was to obtain vehicle crashworthiness and occupant restraint system performance data for an impact speed in excess of the current 48.27 km/h (30 mph) FMVSS 208/212/219/301-75 requirements.

This 56.32 km/h (35 mph) frontal barrier impact test was conducted in accordance with the Office of Marketing Incentives (OMI) Laboratory Indicant Test Procedure, dated 01 January 1990.

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## SECTION 2

### SUMMARY OF FRONTAL BARRIER IMPACT TEST

A load cell barrier was impacted by a 1994 Ford F150 Pickup, NHTSA No. MR0203, at a velocity of 55.9 km/h. The frontal impact test was conducted by Mobility Systems and Equipment Company (MSE) on 19 February 1994. The general test and vehicle description information are presented in Tables 1 and 2. Pretest and posttest photographs of the test vehicle and dummies are shown in Appendix A.

One (1) Hybrid III, Part 572, Subpart E, and one (1) Hybrid II, Part 572, Subpart B, 50th percentile adult male Anthropomorphic Test Devices (ATD's) were placed in the driver and front outboard passenger designated seating positions (DSP's), respectively, according to the NHTSA test requirements. The Hybrid III ATD, serial No. 34, was calibrated just prior to this test (sequence no. 2) after undergoing the first three NCAP tests. The Hybrid II, serial No. 830, had not been previously used for NCAP testing.

The driver ATD (#34) was instrumented with head, neck and chest triaxial accelerometers, chest displacement gauge, upper neck load/moment sensor and right and left femur loads. The passenger ATD (#830) was instrumented with head and chest triaxial accelerometers and right and left femur load cells. In addition, load cells were placed on both lap and shoulder seat belts to measure ATD upper torso and pelvic section belt loading. Displacement transducers were attached to the shoulder belts to measure seat belt elongation and belt spoolout. A summary of ATD data is presented in Table 3. A summary of ATD configuration and performance verification test data is presented in Appendix C.

The frontal impact event was documented by one (1) real time camera and sixteen (16) high-speed cameras. Camera location data and film speeds are presented in Table 7.

Eighty-three (83) channels of crash parameters were recorded using three (3) FM tape recorders and three (3) data acquisition computers with direct analog to digital acquisition units. Time history plots of all recorded data channels are presented in Appendix B. Channels not used were 19, 26, 27, 28, 29, 30, 31, 34 and 38. These channels were not used due to the difference in instrumentation for the Hybrid II ATD. The only channel failure was No. 15.

## 2.1 GENERAL COMMENTS

The 1994 Ford F150 Pickup was equipped with a 4950 cc, 8 cylinder engine and a 3 speed automatic transmission. The test weight of the 1994 Ford F150 Pickup with two (2) 50th percentile male ATD's, instrumentation and cameras was 2296 kg.

The 1994 Ford F150 Pickup was involved in a frontal barrier crash at a velocity of 55.9 km/h.

The maximum static crush for the vehicle of 662 mm occurred 185 mm to the right of the centerline of the bumper. The windshield was cracked, but otherwise the vehicle glazing remained intact. All doors were opened without the aid of tools.

The driver ATD's face hit the airbag. The driver's left and right knees hit the dash panel. The driver ATD had a Head Injury Criteria (HIC) value of 446.3, the maximum chest acceleration (resultant clipped) was 40.6g's and the maximum femur loads were -2810.0 newtons (left) and -4085.4 newtons (right).

The passenger ATD's head grazed the dash panel. Both of his knees hit the glove box door. The passenger ATD had a HIC value of 334.8, the maximum chest acceleration (resultant clipped) was 34.7g's and the maximum femur loads were -2759.8 newtons (left) and -1474.2 newtons (right).

Shoulder seat belt spoolout, measured by mechanical analysis, was 40 mm for the driver and 40 mm for the passenger. Seat belt spoolout and strain data are presented in Table 6.

The 1994 Ford F150 Pickup passed the requirements of FMVSS 212, FMVSS 219 and FMVSS 301-75. Data pertaining to these standards are presented in Section 4, in Tables 13, 14 and 15, respectively.

Appendix D contains the manufacturer's occupant restraint system instructions as presented in the owner's manual. Appendix E contains the instrumentation calibration data.

DATA TABLE No. 1  
TEST VEHICLE DATA

VEHICLE YEAR/MAKE/MODEL/BODY STYLE: 1994/Ford/F150/Pickup  
VEHICLE NHTSA No.: M R 0 2 0 3; VIN: 1 F T E T 1 5 N O R L A 0 3 0 5 4  
VEHICLE BODY COLOR: White; MONTH AND YEAR OF MANUFACTURE: 09/93  
ENGINE: 8 Cylinders; 302.0 cu in; 5.0 Liters; 4930 cc  
X Gas;     Diesel;     Turbocharged  
PLACEMENT: X Longitudinal;     Transverse (Lateral)  
TRANSMISSION: 3 Speed;     Manual; X Automatic; X Overdrive  
FINAL DRIVE:     Front Wheel Drive; X Rear Wheel Drive;     Four Wheel Drive  
DATE VEHICLE AVAILABLE FOR 35 MPH CRASH TESTING: 01/04/94  
ODOMETER READING: 277.0km; OPTIONS : X A/C; X P/S; X P/Window;  
X Tilt Whl.;     Cruise Control

DATA RECORD FROM VEHICLE'S TIRE PLACARD:

Tire Pressure (at capacity): 240 kPa Front; 283 kPa Rear  
Recommended Tire Size: P235/75R15  
Tires on Vehicle: P235/75R15; Manufacturer: General  
Number of Occupants: 3 Front;     Rear;     Third Seat; 3 TOTAL  
Type of Front Seats:     Bucket; X Bench;     Split Bench  
Type of Front Seat Back: X Fixed;     Adj. Lever;     Adj. Rotating Knob  
Vehicle Maximum Capacity Loading:     kg  
No. of Occupants x 68 kg:     kg  
Cargo Capacity (Max - Occupants): 136 kg

TEST VEHICLE DELIVERED WEIGHT WITH MAXIMUM FLUIDS:

|              |               |               |                               |
|--------------|---------------|---------------|-------------------------------|
| Right Front: | <u>550</u> kg |               |                               |
| Left Front:  | <u>580</u> kg | Total Front:  | <u>1130</u> kg (56% of Total) |
| Right Rear:  | <u>460</u> kg |               |                               |
| Left Rear:   | <u>426</u> kg | Total Rear:   | <u>886</u> kg (44% of Total)  |
|              |               | Total Weight: | <u>2016</u> kg                |

CALCULATION OF TEST VEHICLE TARGET WEIGHT:

|                                                          |                 |
|----------------------------------------------------------|-----------------|
| Total Test Vehicle Delivered Weight With Maximum Fluids: | <u>2016</u> kg  |
| Maximum Cargo Carrying Capacity of Test Vehicle:         | <u>139</u> kg * |
| Weight of Two Part 572 ATD's (2 * 74.5 kg):              | <u>149</u> kg   |
| TEST VEHICLE TARGET WEIGHT:                              | <u>2301</u> kg  |

\* 139 kg for light trucks and MPV's

DATA TABLE No. 1 (Cont.)  
TEST VEHICLE DATA

ACTUAL WEIGHT OF TEST VEHICLE WITH 2 ATD's AND CARGO:

|                                                                                                       |               |              |                               |
|-------------------------------------------------------------------------------------------------------|---------------|--------------|-------------------------------|
| Right Front:                                                                                          | <u>596</u> kg |              |                               |
| Left Front:                                                                                           | <u>631</u> kg | Total Front: | <u>1227</u> kg (53% of Total) |
| Right Rear:                                                                                           | <u>546</u> kg |              |                               |
| Left Rear:                                                                                            | <u>523</u> kg | Total Rear:  | <u>1069</u> kg (47% of Total) |
| Total Weight: <u>2296</u> kg (includes <u>45.4</u> kg of ballast secured in the cargo / luggage area) |               |              |                               |

VEHICLE COMPONENTS REMOVED TO MEET TARGET WEIGHT:

1. Jack

TEST VEHICLE ATTITUDE:

|                             |               |                               |               |
|-----------------------------|---------------|-------------------------------|---------------|
| As Delivered - Right Front: | <u>790 mm</u> | Ready for Test - Right Front: | <u>785 mm</u> |
| Left Front:                 | <u>800 mm</u> | Left Front:                   | <u>780 mm</u> |
| Right Rear:                 | <u>885 mm</u> | Right Rear:                   | <u>868 mm</u> |
| Left Rear:                  | <u>885 mm</u> | Left Rear:                    | <u>853 mm</u> |

TEST VEHICLE DIMENSIONS:

|                       |             |                |
|-----------------------|-------------|----------------|
| Total Vehicle Length: | Right Side: | <u>5340 mm</u> |
|                       | Left Side:  | <u>5350 mm</u> |
|                       | Centerline: | <u>5540 mm</u> |

Wheelbase: 3384 mm

C. G. is 1573 mm rearward of front axle centerline.

DATA TABLE No. 2  
POST CRASH TEST DATA

DATE OF 35 MPH FRONTAL BARRIER IMPACT RATING TEST: 02/19/94

TIME OF TEST: 1515 Hrs; AMBIENT TEMPERATURE AT BARRIER FACE: 19.0° C

VEHICLE OCCUPANT COMPARTMENT TEMPERATURE: 19.0° C (Req. Range 19° C to 26° C)

VEHICLE WINDSHIELD MOLDING TEMPERATURE: 19.0° C

VEHICLE IMPACT VELOCITY: (Req. Range 55.52 to 57.13 km/h)

Primary Speed Trap: 55.9 km/h

Secondary Speed Trap: 56.10 km/h

Distance from vehicle leading edge to barrier face when:

Entering Speed Trap: 1524 mm

Exiting Speed Trap: 305 mm

| VEHICLE STATIC CRUSH: | Pretest     | Posttest    | Static Crush |
|-----------------------|-------------|-------------|--------------|
| Right Side (mm)       | <u>5340</u> | <u>4790</u> | <u>550</u>   |
| Centerline (mm)       | <u>5540</u> | <u>4870</u> | <u>670</u>   |
| Left Side (mm)        | <u>5350</u> | <u>4700</u> | <u>650</u>   |

VEHICLE REBOUND FROM BARRIER:

|             |               |
|-------------|---------------|
| Right Side: | <u>310</u> mm |
| Centerline: | <u>250</u> mm |
| Left Side:  | <u>240</u> mm |

ATD CONTACT POINTS:

|            | Driver ATD (ID# 34) | Pass. ATD (ID# 830) |
|------------|---------------------|---------------------|
| Head       | Airbag              | Instrument Panel    |
| Chest      | No Contact          | No Contact          |
| Abdomen    | No Contact          | No Contact          |
| Right Knee | Instrument Panel    | Glove Box Door      |
| Left Knee  | Instrument Panel    | Glove Box Door      |

VEHICLE DOOR OPENING INFORMATION:

| Door        | Opened | Jammed |
|-------------|--------|--------|
| Right Front | Yes    | No     |
| Left Front  | Yes    | No     |
| Right Rear  | N/A    | N/A    |
| Left Rear   | N/A    | N/A    |

VEHICLE FRONT SEAT MOVEMENT DURING IMPACT EVENT:

Seat Cushion Shift - Driver = 0 mm

Passenger = -10 mm

Seat Adjustor Failure - Driver: No

Passenger: No

Details of Any Failure: None

OTHER NOTABLE IMPACT EFFECTS: None

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SECTION 3

OCCUPANT AND VEHICLE INFORMATION

I. OMI DATA

Dummy Injury Criteria Data Summary  
Dummy Positioning Data  
Seat Belt Positioning Data  
Seat Belt Performance Assessment Data  
Camera Locations

II. OVR DATA

Load Cell Barrier Data  
Vehicle Accelerometer Data

TABLE No. 3  
FMVSS No. 208 OCCUPANT CRASH PROTECTION DATA SHEET

VEH. YEAR/MAKE/MODEL/BODY STYLE: 1994/Ford/F150/ Pickup

VEH. NHTSA NO.: MR0203

TEST DATE: 02/19/94

MAXIMUM ACCELERATION VALUES:

|                              | DRIVER ATD No. 34 | PASSENGER ATD No. 830 |
|------------------------------|-------------------|-----------------------|
| Head X                       | -56.9             | -23.8                 |
| Head Y                       | -12.1             | -25.2                 |
| Head Z                       | 26.1              | 41.6                  |
| HEAD RESULTANT               | 59.7              | 44.7                  |
| Chest X                      | -39.6             | -33.9                 |
| Chest Y                      | -6.2              | -22.2                 |
| Chest Z                      | 13.8              | -11.8                 |
| CHEST RESULTANT (3msec clip) | 40.6              | 34.7                  |
| TIME INTERVAL (msec)         | 75.7 to 78.7      | 74.2 to 77.2          |

HEAD INJURY CRITERIA (HIC) VALUES:

|                                                    |       |       |
|----------------------------------------------------|-------|-------|
| HIC                                                | 446.3 | 334.8 |
| t <sup>1</sup> (msec)                              | 63.2  | 69.4  |
| t <sup>2</sup> (msec)                              | 99.2  | 105.4 |
| Avg. Acceleration t <sup>1</sup> to t <sup>2</sup> | 43.3  | 38.7  |

MAXIMUM FEMUR FORCES:

|                 |         |         |
|-----------------|---------|---------|
| Left Femur (N)  | -2810.0 | -2759.8 |
| Right Femur (N) | -4085.4 | -1474.2 |

MAXIMUM SEAT BELT FORCES:

|                   |        |        |
|-------------------|--------|--------|
| Lap Belt (N)      | 5127.2 | 5867.6 |
| Shoulder Belt (N) | 7417.5 | 7040.5 |

MAXIMUM SEAT BELT WEBBING SPOOLOUT:

|                               |    |    |
|-------------------------------|----|----|
| Lap/Shoulder Belt Combination | 40 | 40 |
|-------------------------------|----|----|

TABLE No. 3 (Continued)  
FMVSS No. 208 OCCUPANT CRASH PROTECTION DATA SHEET

V.H. YEAR/MAKE/MODEL/BODY STYLE: 1994/Ford/F150/Pickup

V.H. NHTSA NO.: MR0203

TEST DATE: 02/19/94

| MAXIMUM ACCELERATION VALUES:   | DRIVER ATD No. 34 | PASSENGER ATD No. 830 |
|--------------------------------|-------------------|-----------------------|
| Neck Force X (N)               | 346.2             | N/A                   |
| Neck Force Y (N)               | 197.0             | N/A                   |
| Neck Force Z (N)               | 1925.9            | N/A                   |
| Neck Moment X (JOULES)         | 19.9              | N/A                   |
| Neck Moment Y (JOULES)         | 26.7              | N/A                   |
| Neck Moment Z (JOULES)         | 16.7              | N/A                   |
| Neck Moment Resultant (JOULES) | 27.6              | N/A                   |
| Chest Displacement (mm)        | N/D               | N/A                   |
| Time of Max. Occurrence (msec) | 0                 | N/A                   |

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DATA TABLE No. 4  
TEST ATD POSITIONING DATA

PRE - IMPACT DATA:

Make / Model: Ford/F150  
Body Style: Pickup  
Model Year: 1994  
Color: White  
NHTSA No.: MR0203

DATA FROM CERTIFICATION LABEL:

Vehicle Manufacturer: Ford Motor Company  
Date of Manufacture: 09/93  
VIN: 1 F T E F 1 5 N 0 R L A 0 3 0 5 4  
GVWR: 2837 kg  
GAWR Front: 1271 kg  
GAWR Rear: 1725 kg

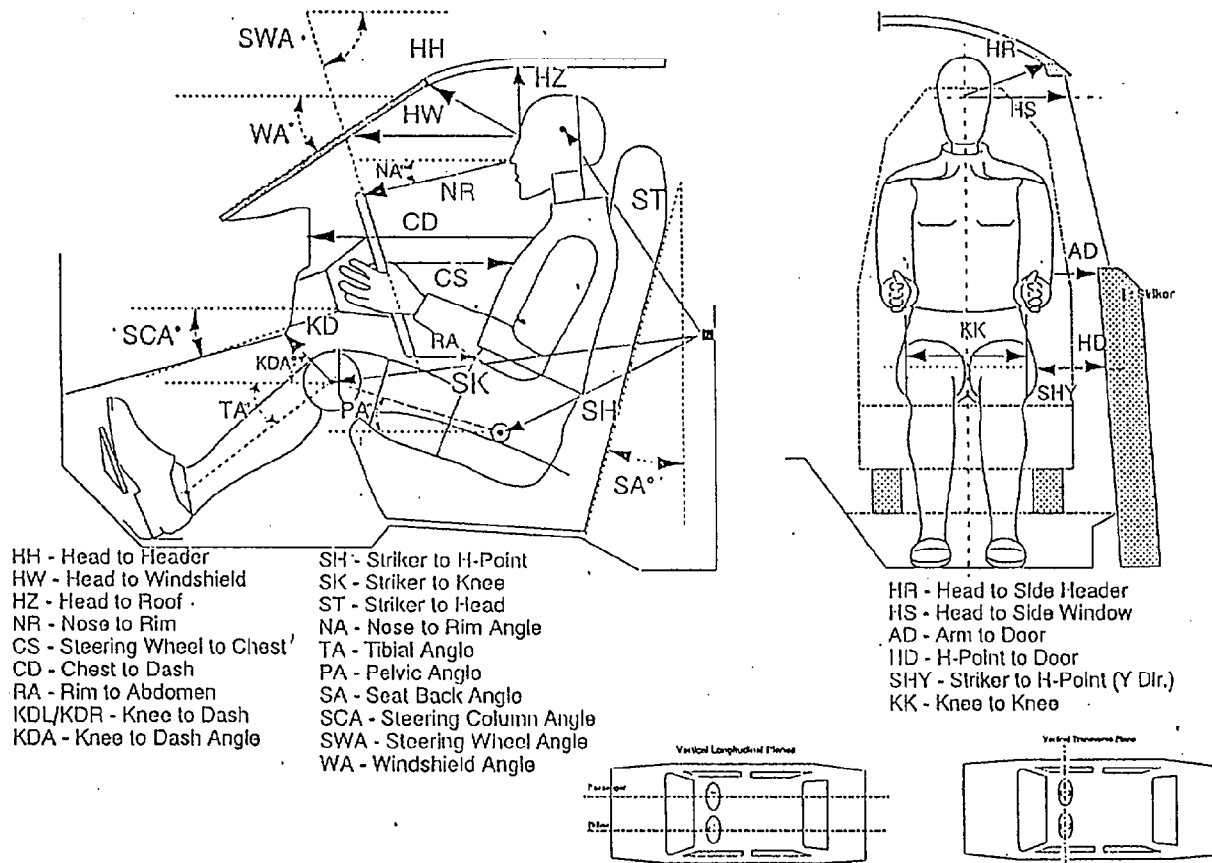
POST IMPACT DATA:

Date of Test: 02/19/94  
Time: 1515 Hrs.  
Temperature: 18° C  
Required Impact Velocity Range: 55.52 to 57.13 km/h  
Impact Velocity - Primary: 55.9 km/h  
Secondary: 56.1 km/h  
Seat Type: Bench  
Adjustor Type: None  
Bucket Seat Back Type: N/A

ATD POSITIONING TECHNICIANS: Frank Richardson

DATA TABLE No. 4 (Cont.)  
TEST ATD POSTIONING DATA

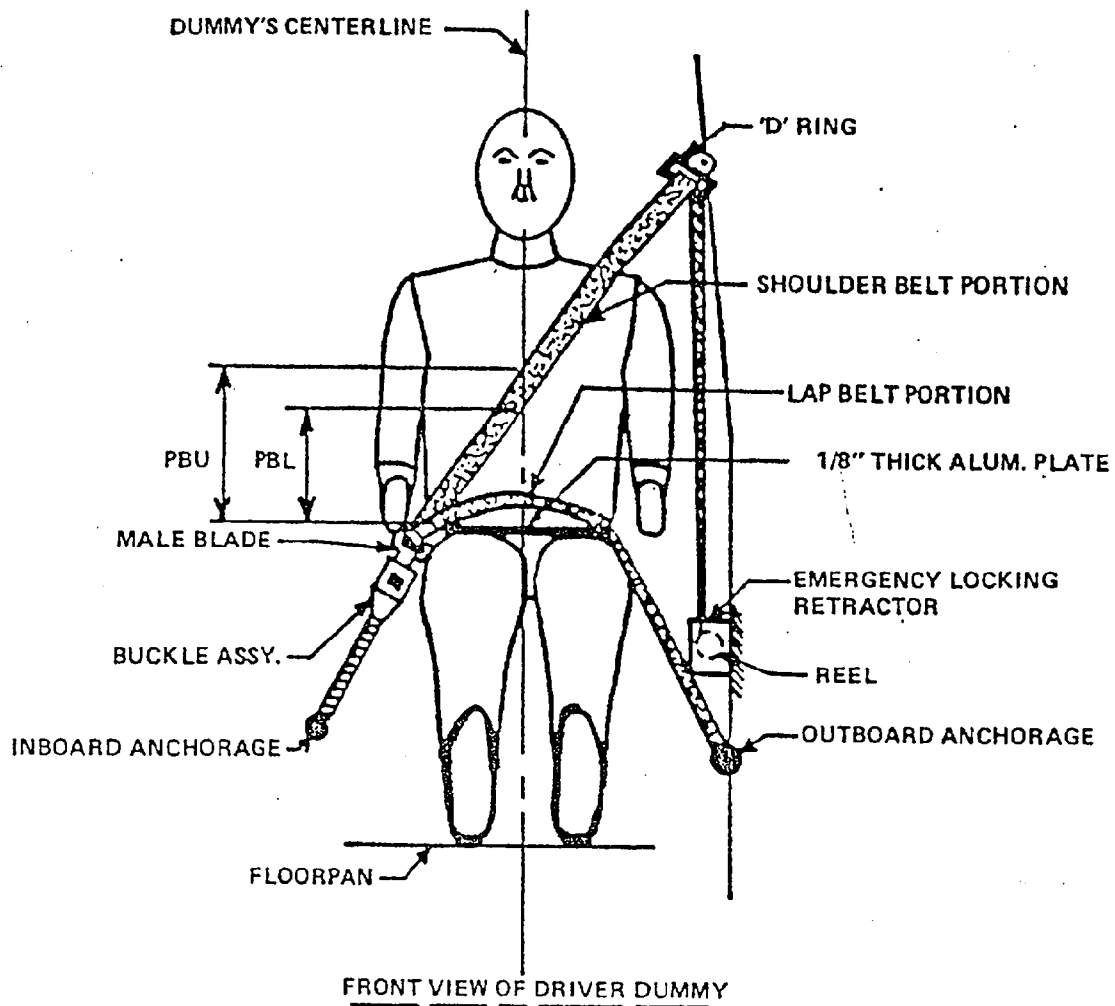
DUMMY MEASUREMENTS FOR FRONT SEAT PASSENGERS



DATA TABLE No. 4 (Cont.)  
TEST ATD POSITIONING DATA

| Measurement | Driver (Serial No. 34) |                 | Passenger (Serial No. 830) |                 |
|-------------|------------------------|-----------------|----------------------------|-----------------|
|             | Length (mm)            | Angle (Degrees) | Length (mm)                | Angle (Degrees) |
| WA          | ---                    | 46              | ---                        | ---             |
| SWA         | ---                    | 63              | ---                        | ---             |
| SCA         | ---                    | 26              | ---                        | ---             |
| HZ          | 175                    | 90              | 165                        | 90              |
| HH          | 490                    | ---             | 520                        | ---             |
| HW          | 570                    | ---             | 605                        | 0               |
| HR          | 255                    | ---             | 250                        | ---             |
| NR          | 385                    | 12              | ---                        | ---             |
| CD          | 545                    | ---             | 590                        | ---             |
| CS          | 280                    | 0               | ---                        | ---             |
| RA          | 160                    | 0               | ---                        | ---             |
| KDL         | 155                    | 18              | 175                        | ---             |
| KDR         | 165                    | ---             | 185                        | 36              |
| PA          | ---                    | 24              | ---                        | 10              |
| TA          | ---                    | 46              | ---                        | 49              |
| KK          | 270                    | ---             | 320                        | ---             |
| ST          | 675                    | 74              | 665                        | 80              |
| SK          | 710                    | 5               | 690                        | 5               |
| SH          | 320                    | 4               | 295                        | 1               |
| SHY         | 265                    | 0               | 240                        | 0               |
| HS          | 350                    | 0               | 330                        | 0               |
| HD          | 195                    | 0               | 175                        | 0               |
| AD          | 100                    | 0               | 75                         | 0               |

DATA TABLE No. 5  
SEAT BELT POSITIONING DATA



| Measurement                                              | Driver ATD | Passenger ATD |
|----------------------------------------------------------|------------|---------------|
| PBU - Top Surface of alum. plate to belt upper edge (mm) | 345        | 355           |
| PBL - Top Surface of alum. plate to belt lower edge (mm) | 265        | 275           |
| Lap Belt Tension (N)                                     | N/D        | N/D           |
| Shoulder Belt Tension (N)                                | N/D        | N/D           |

DATA TABLE 6  
SEAT BELT PERFORMANCE ASSESSMENT TEST DATA

BELT LENGTH DATA:

Total belt length from retractor reel to bolt hole anchor point for continuous webbing systems (mm) \_\_\_\_\_

Retractor reel to 'D' ring as measured on Part 572 ATD (mm) \_\_\_\_\_

Shoulder belt length as measured on Part 572 ATD (mm) \_\_\_\_\_

Lap belt length as measured on Part 572 ATD (mm) \_\_\_\_\_

Remainder of belt webbing left on the retractor reel (mm) \_\_\_\_\_

| DRIVER SIDE |          | PASSENGER SIDE |          |
|-------------|----------|----------------|----------|
| PRETEST     | POSTTEST | PRETEST        | POSTTEST |
| 2200        | 1910     | 2120           | 2215     |
| 620         | 620      | 610            | 610      |
| 870         | 920      | 830            | 900      |
| 710         | 670      | 680            | 705      |
| 340         | 630      | 610            | 515      |

BELT SPOOL-OFF DATA:

As determined by film analysis (mm) \_\_\_\_\_

As determined electronically (mm) \_\_\_\_\_

As determined mechanically (mm) \_\_\_\_\_

|     |     |
|-----|-----|
| N/D | N/D |
| N/D | N/D |
| 40  | 40  |

BELT STRAIN DATA: Measured on the shoulder belt

As determined electronically (%) \_\_\_\_\_

As determined mechanically (%) \_\_\_\_\_

|     |     |
|-----|-----|
| N/D | N/D |
| 0   | 2   |

DATA TABLE No. 7  
FMVSS No. 208 CAMERA LOCATION DATA

VEH. YEAR/MAKE/MODEL/BODY STYLE: 1994/Ford/F150/Pickup

VEH. NHTSA NO.: MR0203

TEST DATE: 02/19/94

TIME: 1315 Hrs.

| CAMERA NO. | VIEW                 | CAMERA POS. (mm) |       |       | ANGLE (deg) | FILM PLANE TO HEAD TARGET | LENS (mm)  | SPEED (fps) |
|------------|----------------------|------------------|-------|-------|-------------|---------------------------|------------|-------------|
|            |                      | X                | Y     | Z     |             |                           |            |             |
| 1          | Left Side View       | 5900             | 14350 | 3400  | -20         | 14576                     | 15-70 Zoom | 24          |
| 2          | Right Side View      | 3460             | 18400 | 3700  | -12         | 18212                     | 28         | N/D         |
| 3          | Left Side View       | 3770             | 13120 | 3700  | -11         | 13044                     | 28         | 500         |
| 4          | Overhead             | -410             | 0     | 5190  | -11         | 4751                      | 13         | 615         |
| 5          | Pit - Engine         | 840              | 20    | -1675 | 79          | 3377                      | 13         | 760         |
| 6          | Pit - Fuel Tank      | 4305             | -65   | -1570 | 90          | 3600                      | 13         | 720         |
| 7          | Front - Passenger    | -530             | 370   | 2510  | 90          | 3070                      | 13         | 660         |
| 8          | Front - Driver       | -530             | 330   | 2510  | 90          | 3070                      | 13         | 670         |
| 9          | Left Side - Driver   | 3370             | 2440  | 1600  | -11         | 2285                      | 13         | 515         |
| 10         | Right Side - Pass.   | 5370             | 2440  | 1820  | -10         | 2377                      | 13         | 820         |
| 11         | Right Side - A-Post  | 1530             | 5760  | 1100  | 2           | 5432                      | 19         | 870         |
| 12         | Left Side - A-Post   | 1825             | 9510  | 2160  | -5          | 9178                      | 13         | 600         |
| 13         | Onboard - Left Side  | 3295             | 400   | 1305  | 11          | 959                       | 35         | N/D         |
| 14         | Onboard - Right Side | 3295             | 120   | 1305  | 14          | 689                       | 13         | N/D         |
| 15         | Left Side - St. Col. | 2205             | 9960  | 3140  | -10         | 9751                      | 28         | 770         |
| 16         | Left Side - St. Col. | 2265             | 9960  | 2390  | -17         | 9637                      | 28         | 820         |
| 17         | Right Side - Pass.   | 1960             | 5900  | 1160  | 0           | 5529                      | 19         | 820         |

REFERENCE: X - Film plane to barrier face  
Y - Film plane to monorail centerline  
Z - Film plane to ground

NOTES: \* Film is good but film speed could not be determined.

\*\* Film was destroyed during test \*\*\* Film was destroyed during processing



DATA TABLE No. 8  
VEHICLE ACCELEROMETER LOCATION AND DATA SUMMARY

| No. | Description                         | Location |      |      | Maximum Value (g's) |      |      |       |
|-----|-------------------------------------|----------|------|------|---------------------|------|------|-------|
|     |                                     | X        | Y    | Z    | -X                  | msec | +X   | msec  |
| 1   | Left rear seat cross member         | 4165     | -775 | 1020 | 41.2                | 12.3 | 4.7  | 159.4 |
| 2   | Right rear seat cross member        | 4165     | 775  | 1020 | 30.5                | 13.3 | 2.2  | 250.0 |
| 3   | Top of engine block                 | 1020     | -140 | 900  | 66.3                | 31.9 | 19.6 | 60.0  |
| 4   | Bottom of engine                    | 1070     | -100 | 420  | 73.4                | 45.5 | 33.5 | 59.7  |
| 5   | Right brake caliper                 | 960      | 670  | 315  | 82.8                | 62.5 | 42.6 | 79.1  |
| 6   | Instrument panel                    | 1620     | 0    | 1240 | 40.3                | 10.9 | 5.2  | 114.2 |
| 7   | Left brake caliper                  | 960      | -670 | 315  | 81.6                | 26.9 | 28.6 | 74.5  |
| 8   | Left rear seat cross member Redun.  | 4165     | -775 | 1020 | 39.9                | 12.3 | 4.4  | 159.5 |
| 9   | Right rear seat cross member Redun. | 4165     | 775  | 1020 | 31.1                | 13.1 | 2.1  | 249.7 |

REFERENCE: X - Front bumper leading edge  
Y - Vehicle centerline (Right Pos., Left Neg.)  
Z - Ground level

All dimensions in mm

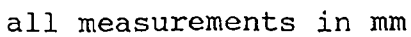
DATA TABLE No. 9  
TEST VEHICLE MEASUREMENTS

| No. | Measurement Description                      | Pretest | Posttest | Change |
|-----|----------------------------------------------|---------|----------|--------|
| 1   | Length of test vehicle at centerline         | 5540    | 4870     | 670    |
| 2   | Rear surface of vehicle to front of engine   | 4910    | 4500     | 410    |
| 3   | Rear of vehicle to firewall centerline       | 4070    | 4060     | 10     |
| 4   | Rear to upper leading edge of right door     | 3525    | 3500     | 25     |
| 5   | Rear to upper leading edge of left door      | 3540    | 3430     | 110    |
| 6   | Rear to lower leading edge of right door     | 3890    | 3920     | -30    |
| 7   | Rear to lower leading edge of left door      | 3900    | 3850     | 50     |
| 8   | Rear to upper trailing edge of right door    | 2850    | 2850     | 0      |
| 9   | Rear to upper trailing edge of left door     | 2870    | 2800     | 70     |
| 10  | Rear to lower trailing edge of right door    | 2870    | 2870     | 0      |
| 11  | Rear to lower trailing edge of left door     | 2840    | 2810     | 30     |
| 12  | Rear to bottom of right 'A' pillar           | 4000    | 3960     | 40     |
| 13  | Rear to bottom of left 'A' pillar            | 4020    | 3830     | 190    |
| 14  | Rear surface to firewall on right side       | 4220    | 3860     | 360    |
| 15  | Rear surface to firewall on left side        | 4200    | 3950     | 250    |
| 16  | Rear surface to steering column              | 3550    | 3550     | 0      |
| 17  | Center of steering column to left 'A' pillar | 430     | 430      | 0      |
| 18  | Center of steering column to headlining      | 520     | 520      | 0      |
| 19  | Rear surface to right side of front bumper   | 5340    | 4790     | 550    |
| 20  | Rear surface to left side of front bumper    | 5350    | 4700     | 650    |
| 21  | Length of engine block                       | 650     | 650      | 0      |

All measurements in mm

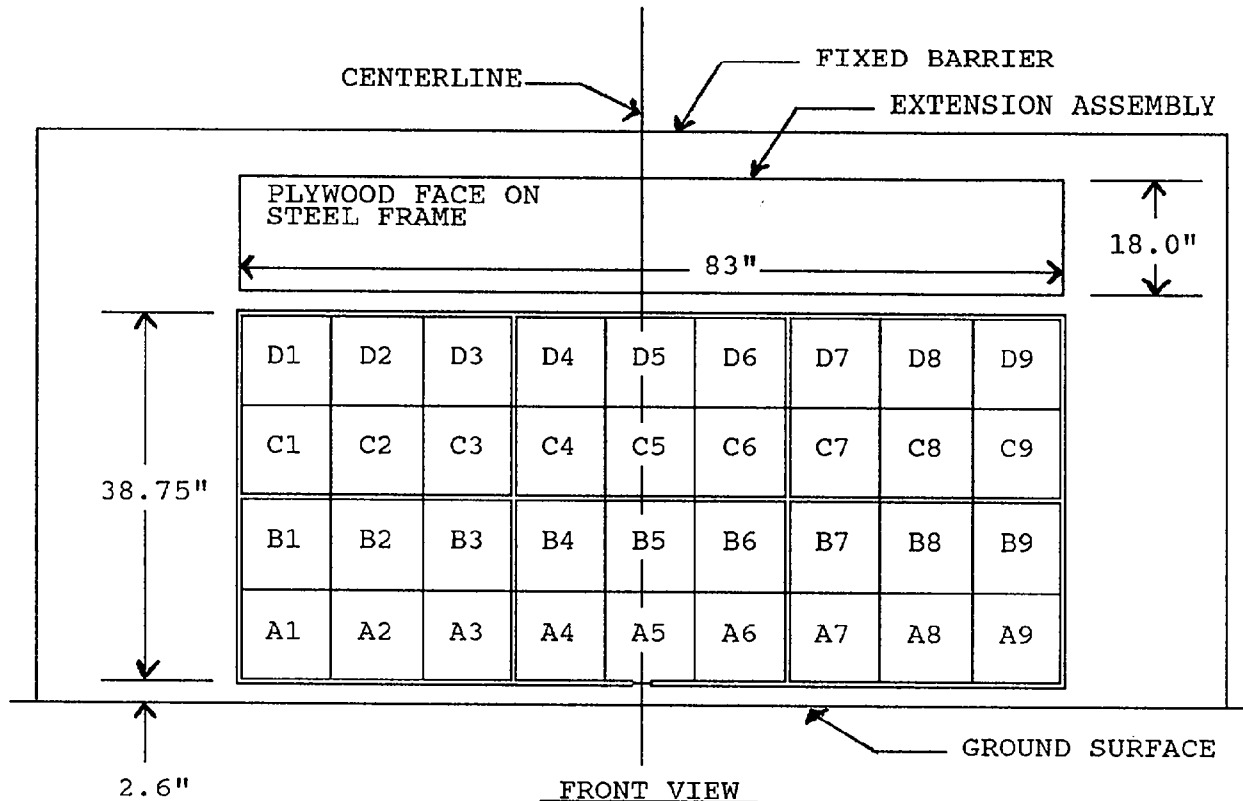


1. *Chlorophyll a* (Chl *a*)  
2. *Chlorophyll b* (Chl *b*)  
3. *Chlorophyll c* (Chl *c*)  
4. *Chlorophyll d* (Chl *d*)  
5. *Chlorophyll e* (Chl *e*)  
6. *Chlorophyll f* (Chl *f*)  
7. *Chlorophyll g* (Chl *g*)  
8. *Chlorophyll h* (Chl *h*)  
9. *Chlorophyll i* (Chl *i*)  
10. *Chlorophyll j* (Chl *j*)  
11. *Chlorophyll k* (Chl *k*)  
12. *Chlorophyll l* (Chl *l*)  
13. *Chlorophyll m* (Chl *m*)  
14. *Chlorophyll n* (Chl *n*)  
15. *Chlorophyll o* (Chl *o*)  
16. *Chlorophyll p* (Chl *p*)  
17. *Chlorophyll q* (Chl *q*)  
18. *Chlorophyll r* (Chl *r*)  
19. *Chlorophyll s* (Chl *s*)  
20. *Chlorophyll t* (Chl *t*)  
21. *Chlorophyll u* (Chl *u*)  
22. *Chlorophyll v* (Chl *v*)  
23. *Chlorophyll w* (Chl *w*)  
24. *Chlorophyll x* (Chl *x*)  
25. *Chlorophyll y* (Chl *y*)  
26. *Chlorophyll z* (Chl *z*)  
27. *Chlorophyll aa* (Chl *aa*)  
28. *Chlorophyll ab* (Chl *ab*)  
29. *Chlorophyll ac* (Chl *ac*)  
30. *Chlorophyll ad* (Chl *ad*)  
31. *Chlorophyll ae* (Chl *ae*)  
32. *Chlorophyll af* (Chl *af*)  
33. *Chlorophyll ag* (Chl *ag*)  
34. *Chlorophyll ah* (Chl *ah*)  
35. *Chlorophyll ai* (Chl *ai*)  
36. *Chlorophyll aj* (Chl *aj*)  
37. *Chlorophyll ak* (Chl *ak*)  
38. *Chlorophyll al* (Chl *al*)  
39. *Chlorophyll am* (Chl *am*)  
40. *Chlorophyll an* (Chl *an*)  
41. *Chlorophyll ao* (Chl *ao*)  
42. *Chlorophyll ap* (Chl *ap*)  
43. *Chlorophyll aq* (Chl *aq*)  
44. *Chlorophyll ar* (Chl *ar*)  
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46. *Chlorophyll at* (Chl *at*)  
47. *Chlorophyll au* (Chl *au*)  
48. *Chlorophyll av* (Chl *av*)  
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50. *Chlorophyll ax* (Chl *ax*)  
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52. *Chlorophyll az* (Chl *az*)  
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61. *Chlorophyll acg* (Chl *acg*)  
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63. *Chlorophyll aci* (Chl *aci*)  
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68. *Chlorophyll acn* (Chl *acn*)  
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70. *Chlorophyll acp* (Chl *acp*)  
71. *Chlorophyll aqa* (Chl *aqa*)  
72. *Chlorophyll aqb* (Chl *aqb*)  
73. *Chlorophyll aqc* (Chl *aqc*)  
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75. *Chlorophyll aqe* (Chl *aqe*)  
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80. *Chlorophyll aqj* (Chl *aqj*)  
81. *Chlorophyll aqk* (Chl *aqk*)  
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92. *Chlorophyll aqf* (Chl *aqf*)  
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96. *Chlorophyll aqj* (Chl *aqj*)  
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100. *Chlorophyll aqn* (Chl *aqn*)  
101. *Chlorophyll aqo* (Chl *aqo*)  
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104. *Chlorophyll aqb* (Chl *aqb*)  
105. *Chlorophyll aqc* (Chl *aqc*)  
106. *Chlorophyll aqd* (Chl *aqd*)  
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116. *Chlorophyll aqn* (Chl *aqn*)  
117. *Chlorophyll aqo* (Chl *aqo*)  
118. *Chlorophyll aqp* (Chl *aqp*)  
119. *Chlorophyll aqa* (Chl *aqa*)  
120. *Chlorophyll aqb* (Chl *aqb*)  
121. *Chlorophyll aqc* (Chl *aqc*)  
122. *Chlorophyll aqd* (Chl *aqd*)  
123. *Chlorophyll aqe* (Chl *aqe*)  
124. *Chlorophyll aqf* (Chl *aqf*)  
125. *Chlorophyll aqg* (Chl *aqg*)  
126. *Chlorophyll aqh* (Chl *aqh*)  
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128. *Chlorophyll aqj* (Chl *aqj*)  
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133. *Chlorophyll aqo* (Chl *aqo*)  
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144. *Chlorophyll aqj* (Chl *aqj*)  
145. *Chlorophyll aqk* (



**DATA TABLE No. 11**  
**LOAD CELL LOCATIONS ON FIXED BARRIER**

36 Load cells  
 4 Rows  
 9 Columns  
 6 Groupings (6 cells/group)



6 GROUPS OF LOAD CELLS EACH

|                       |                       |                       |
|-----------------------|-----------------------|-----------------------|
| Group 4<br>C1 thru D3 | Group 5<br>C4 thru D6 | Group 6<br>C7 thru D9 |
| Group 1<br>A1 thru B3 | Group 2<br>A4 thru B6 | Group 3<br>A7 thru B9 |

**DATA REQUIREMENTS:**

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

DATA TABLE No. 12  
ACCIDENT INVESTIGATION DIVISION DATA FOR 35 MPH FRONTAL BARRIER IMPACT

Vehicle Make/Model/Body Style: Ford/F150/Pickup

Veh. NHTSA No.: MR0203 ; VIN: 1FTEF15N0RLA03054

Model Year: 1994 ; Build Date: 09/93 ; Test Date: 02/19/94

Veh. Size Category: N/A ; Test Weight: 2296 kg

Veh. Wheelbase: 3380 mm ; Front Overhang: 850 mm ; Overall Width: 2010 mm

ACCELEROMETER DATA:

Location: Left and right side passenger compartment

Calibration Procedure: 6 months / Drop test

Linearity: Good ; Integration Algorithm: NHTSA Standard

Veh. Impact Speed: 55.90 km/h ; Time of separation: 103.5 msec

Velocity Change: 65.0 km/h (Left); 66.3 km/h (Right)

Collision Deformation Classification (CDC) Code: F (Frontal)

Crush Depth Dimensions:

C1 = 556 mm

C2 = 627 mm

C3 = 657 mm

C4 = 662 mm

C5 = 615 mm

C6 = 512 mm

Midpoint of Damage: Vehicle Centerline

Length of Damaged Region: L = 1850 mm

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SECTION 4

SUMMARY OF RESULTS FOR:

FMVSS 212, "Windshield Mounting"  
FMVSS 219, "Windshield Zone Intrusion"  
FMVSS 301-75, "Fuel System Integrity"

DATA TABLE No. 13  
FMVSS No. 212, WINDSHIELD MOUNTING

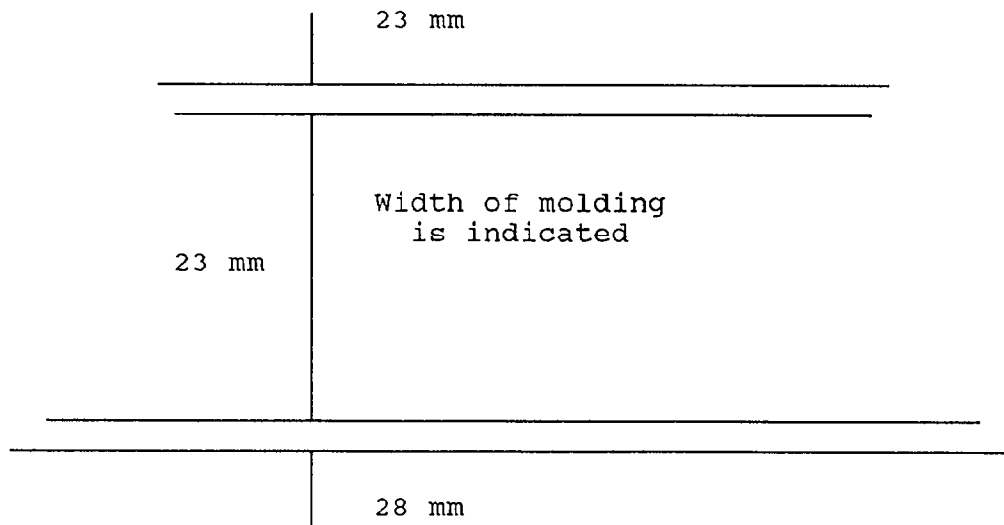
Details of windshield mounting: Glass is secured to the vehicle frame with a rubber type adhesive with rubber molding along the top and sides and rubber and plastic molding along the bottom.

FMVSS 212 Requirements: The post-test periphery retention amount must be at least 75% of the pretest periphery measurement for vehicles not equipped with automatic restraints and 50% for each side of the windshield for vehicles equipped with automatic restraint systems for front occupants.

FMVSS 212 Test Data:

|            | Windshield Periphery Retention |               |                   |
|------------|--------------------------------|---------------|-------------------|
|            | Pretest (mm)                   | Posttest (mm) | Percent Retention |
| Right Side | 2440                           | 2440          | 100               |
| Left Side  | 2440                           | 2440          | 100               |
| Total      | 4880                           | 4880          | 100               |

AREA OF RETENTION FAILURE:



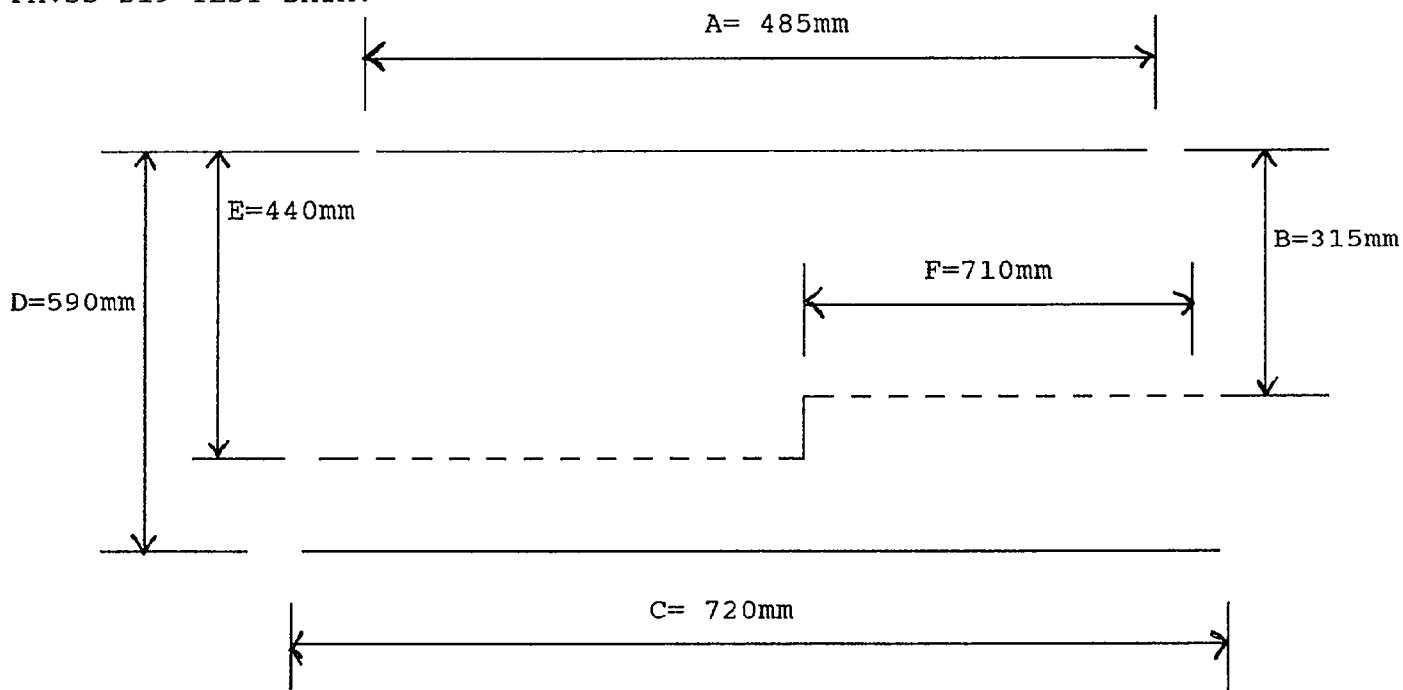
FAILURE DETAILS: None

DATA TABLE No. 14  
FMVSS No. 219 WINDSHIELD ZONE INTRUSION

PROTECTED ZONE LOWER EDGE REQUIREMENT

The lower edge of the protected zone is determined by placing a 6.5 inch diameter rigid sphere weighing 15 pounds in a position such that it simultaneously contacts the inner surface of the windshield and the top surface of the instrument panel including padding. Draw the locus of points on the inner surface of the windshield contactable by the sphere across the width of the instrument panel. From the outermost contactable points, extend the locus line horizontally to the edges of the windshield and then draw a line on the inner surface of the windshield below and 1/2 inch distant from the locus line. The lower edge of the protected zone is the longitudinal projection onto the outer surface of the windshield of this line.

FMVSS 219 TEST DATA:



DETAILS OF WINDSHIELD GLASS PENETRATION GREATER THAN 1/4": None  
(Location shown on above sketch)

Data Table No. 15  
FMVSS No. 301-75, Fuel System Integrity

EH. YEAR/MAKE/MODEL/BODY STYLE: 19 94/Ford/F150/Pickup

EH. NHTSA NO.: MR0203 TEST DATE: 02/19/94

USABLE CAPACITY OF VEHICLE'S FUEL TANK: 72.0 Liters (furnished by Mfr.)

TEST REQUIREMENTS:

Vehicle's engine operated to "run dry" condition and a small amount of Stoddard solvent, dyed red, was added to the vehicle's fuel tank. Fuel pump was operated to fill the fuel system ahead of the fuel tank, then added 92% to 94% of the stated usable capacity to the fuel tank.

AMOUNT OF STODDARD SOLVENT ADDED TO THE VEHICLE'S FUEL TANK:

67.3 Liters, which is 93.5% of the stated usable capacity

SOLVENT SPILLAGE MEASUREMENT AFTER 35 MPH FRONTAL BARRIER IMPACT TEST:

|                                               | Actual       | Max. Allowed |
|-----------------------------------------------|--------------|--------------|
| From impact until vehicle motion ceases       | <u>0 oz.</u> | 1 oz.        |
| For 5 min. period after vehicle motion ceases | <u>0 oz.</u> | 5 oz.        |
| For next 25 min. at barrier face              | <u>0 oz.</u> | 1 oz./min.   |

SOLVENT SPILLAGE DETAILS: None

STATIC ROLLOVER MACHINE ROTATION TIME INFORMATION: (Spec. range = 1 to 3 min)

|                                      |                                     |
|--------------------------------------|-------------------------------------|
| Time reqd. for machine to rotate 90° | <u>1</u> minutes, <u>20</u> seconds |
| FMVSS 301-75 position hold time      | <u>5</u> minutes, <u>00</u> seconds |
| Total                                | <u>6</u> minutes, <u>20</u> seconds |
| Next whole minute interval           | <u>7</u> minutes                    |

VEHICLE STATIC ROLLOVER DATA:

|                                | 1st 5 Min. | 6th min. | 7th min. | 8th min. |
|--------------------------------|------------|----------|----------|----------|
| Max allowable solvent spillage | 5 oz.      | 1 oz.    | 1 oz.    | 1 oz.    |
| 0° to 90° (filler cap down)    | 0 oz.      | 0 oz.    | 0 oz.    | N/A      |
| 90° to 180°                    | 0 oz.      | 0 oz.    | 0 oz.    | N/A      |
| 180° to 270°                   | 0 oz.      | 0 oz.    | 0 oz.    | N/A      |
| 270° to 360°                   | 0 oz.      | 0 oz.    | 0 oz.    | N/A      |

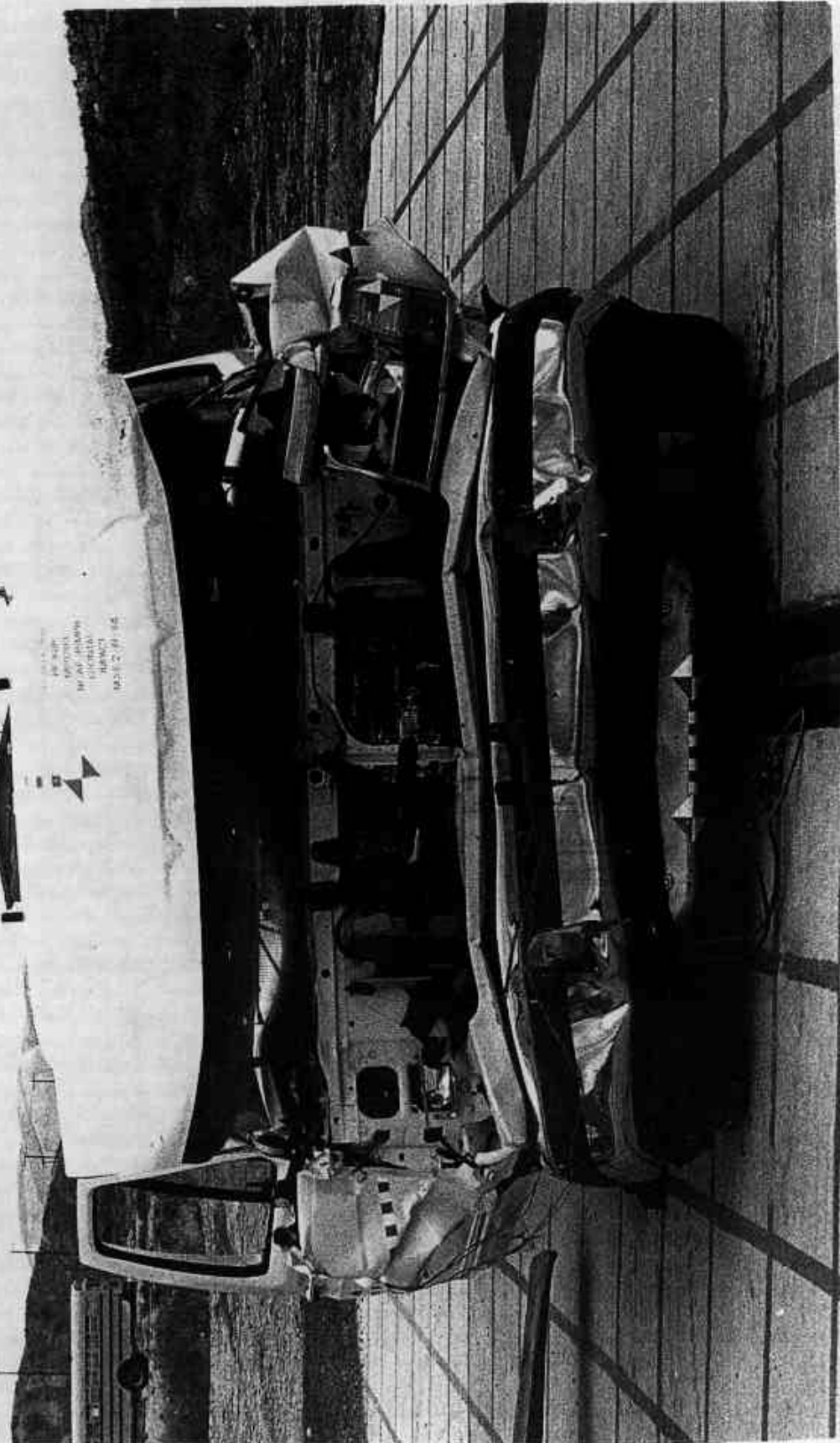
SOLVENT SPILLAGE LOCATIONS: None

APPENDIX A  
PHOTOGRAPHS

Pretest Front View  
Posttest Front View  
Pretest Left Side View  
Posttest Left Side View  
Pretest Right Side View  
Posttest Right Side View  
Pretest Right Front 3/4 View  
Posttest Right Front 3/4 View  
Pretest Left Rear 3/4 View  
Posttest Left Rear 3/4 View  
Pretest Windshield View  
Posttest Windshield View  
Pretest Engine Compartment View  
Posttest Engine Compartment View  
Pretest Front Underbody View  
Posttest Front Underbody View  
Pretest Rear Underbody View  
Posttest Rear Underbody View  
Pretest Driver Dummy Position View  
Posttest Driver Dummy Position View  
Pretest Passenger Dummy Position View  
Posttest Passenger Dummy Position View  
Pretest Driver Dummy and Vehicle Interior View (Door Open)  
Posttest Driver Dummy and Vehicle Interior View (Door Open)  
Pretest Passenger Dummy and Vehicle Interior View (Door Open)  
Posttest Passenger Dummy and Vehicle Interior View (Door Open)  
Posttest Driver Dummy Knee Contact Area  
Posttest Passenger Dummy Contact Area



PRETEST FRONT VIEW



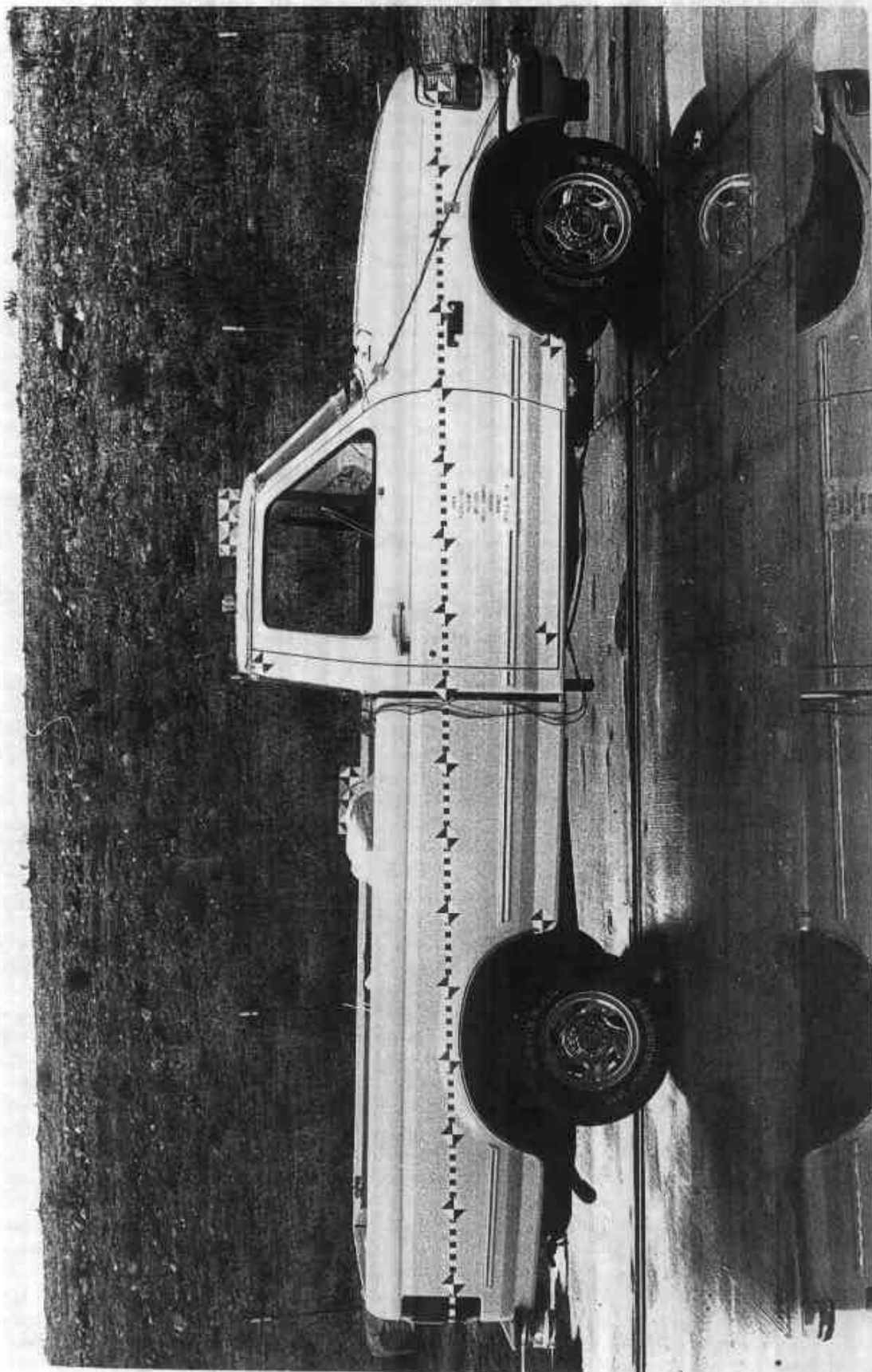
POSTTEST FRONT VIEW



PRETEST LEFT SIDE VIEW



POSTTEST LEFT SIDE VIEW



PRETEST RIGHT SIDE VIEW

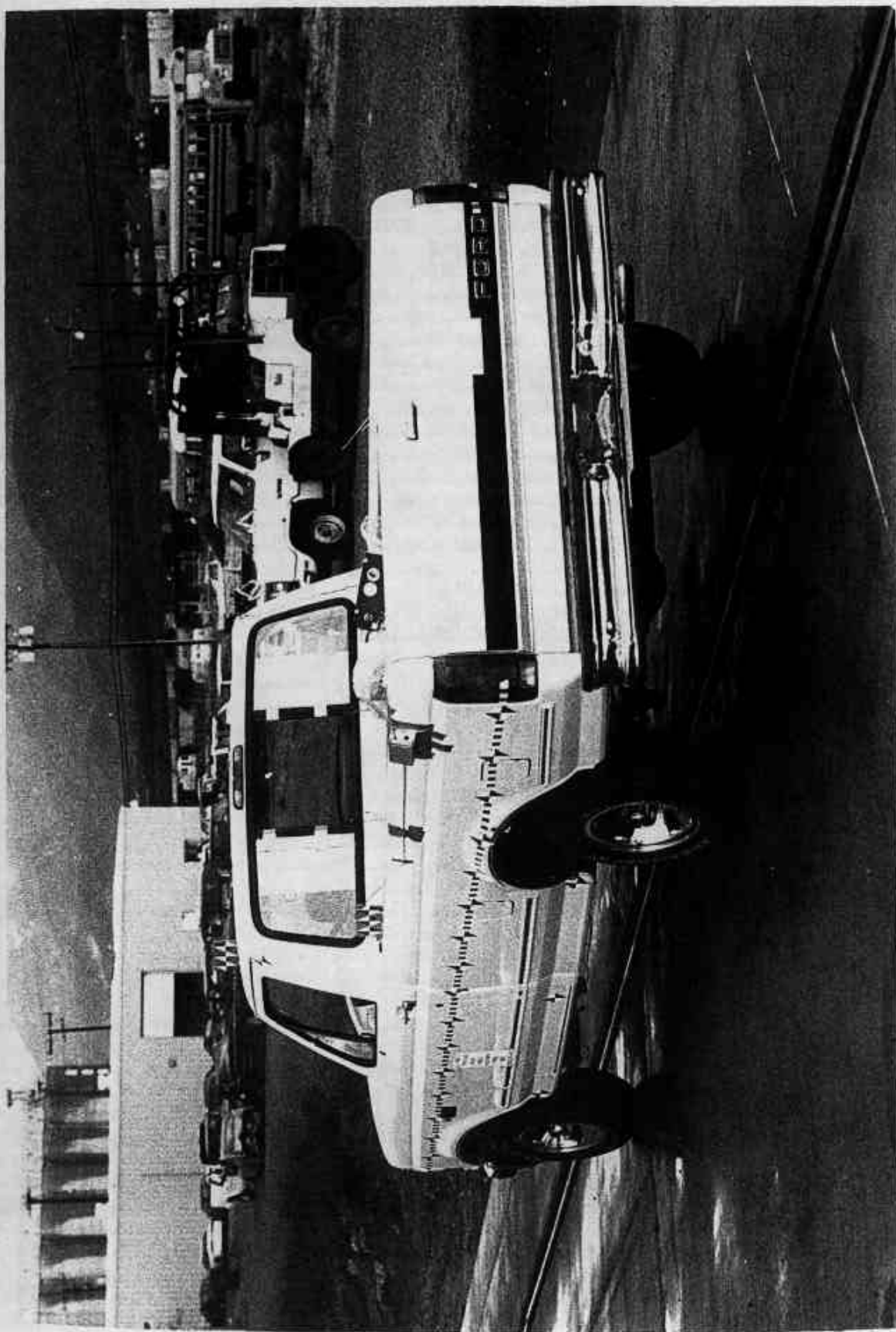


POSTTEST RIGHT SIDE VIEW

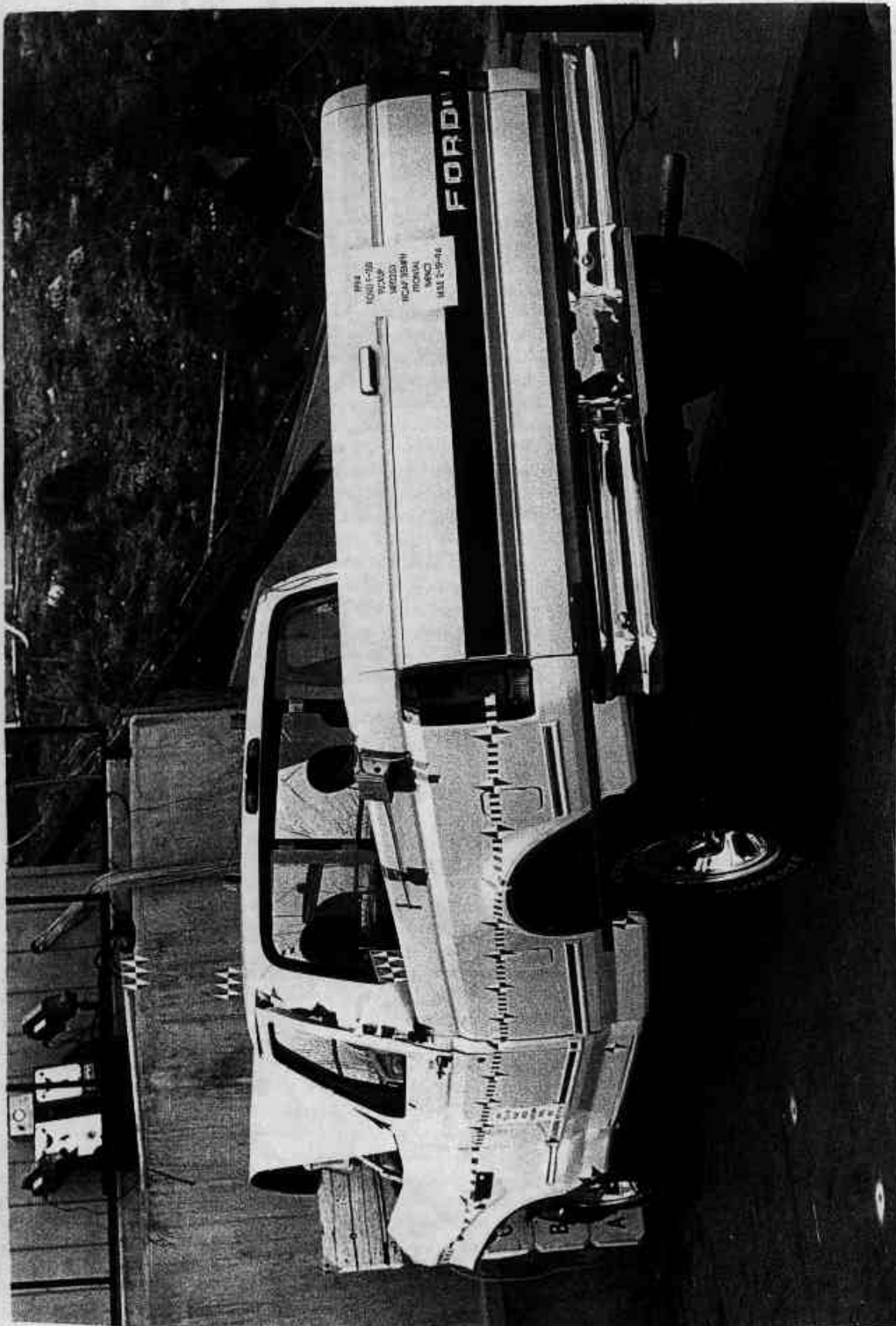


PRETEST RIGHT FRONT 3/4 VIEW

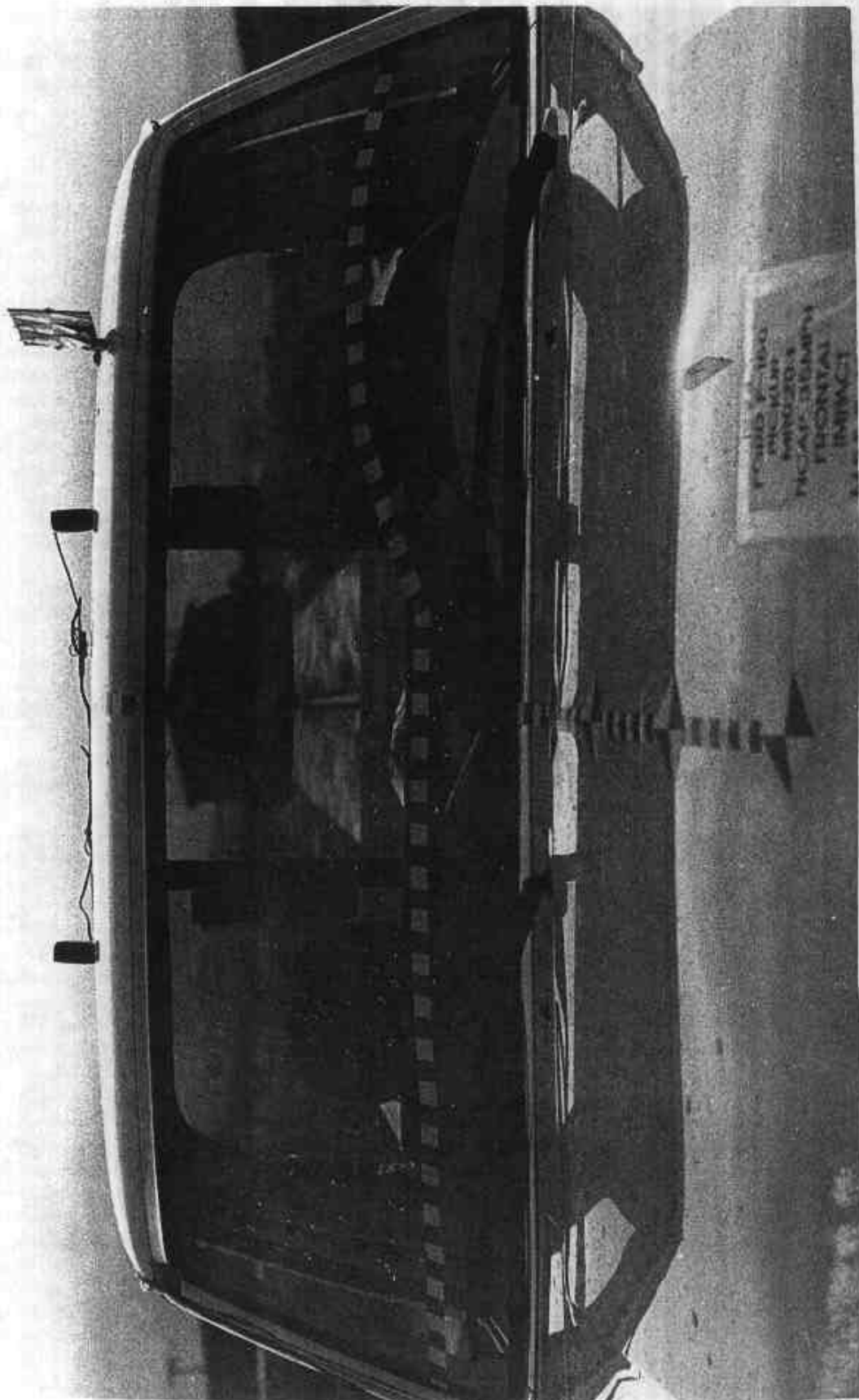
FIGURE A8  
POSTTEST RIGHT FRONT 3/4 VIEW  
PHOTOGRAPH NOT AVAILABLE



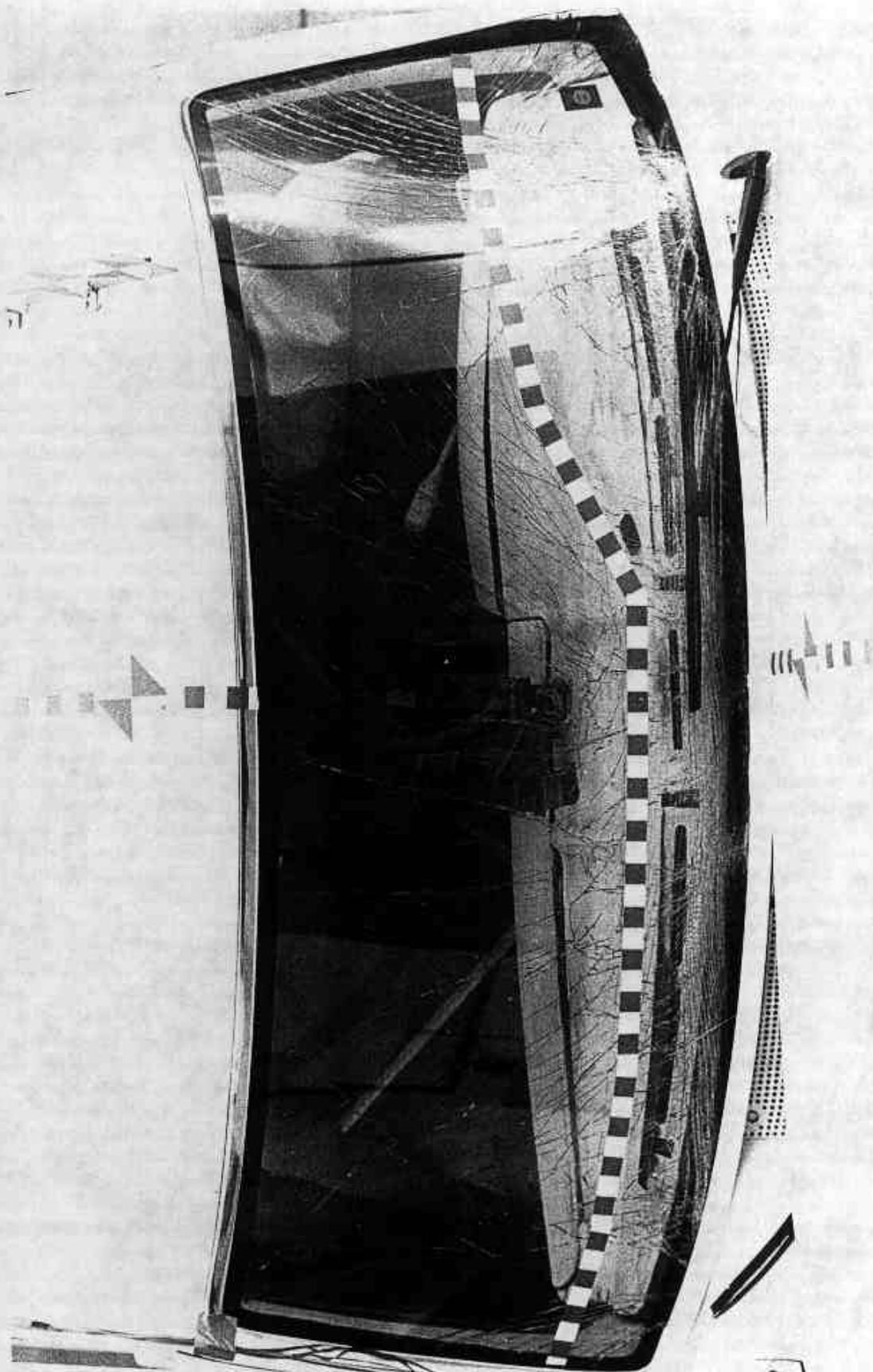
PRETEST LEFT REAR 3/4 VIEW



POSTTEST LEFT REAR 3/4 VIEW



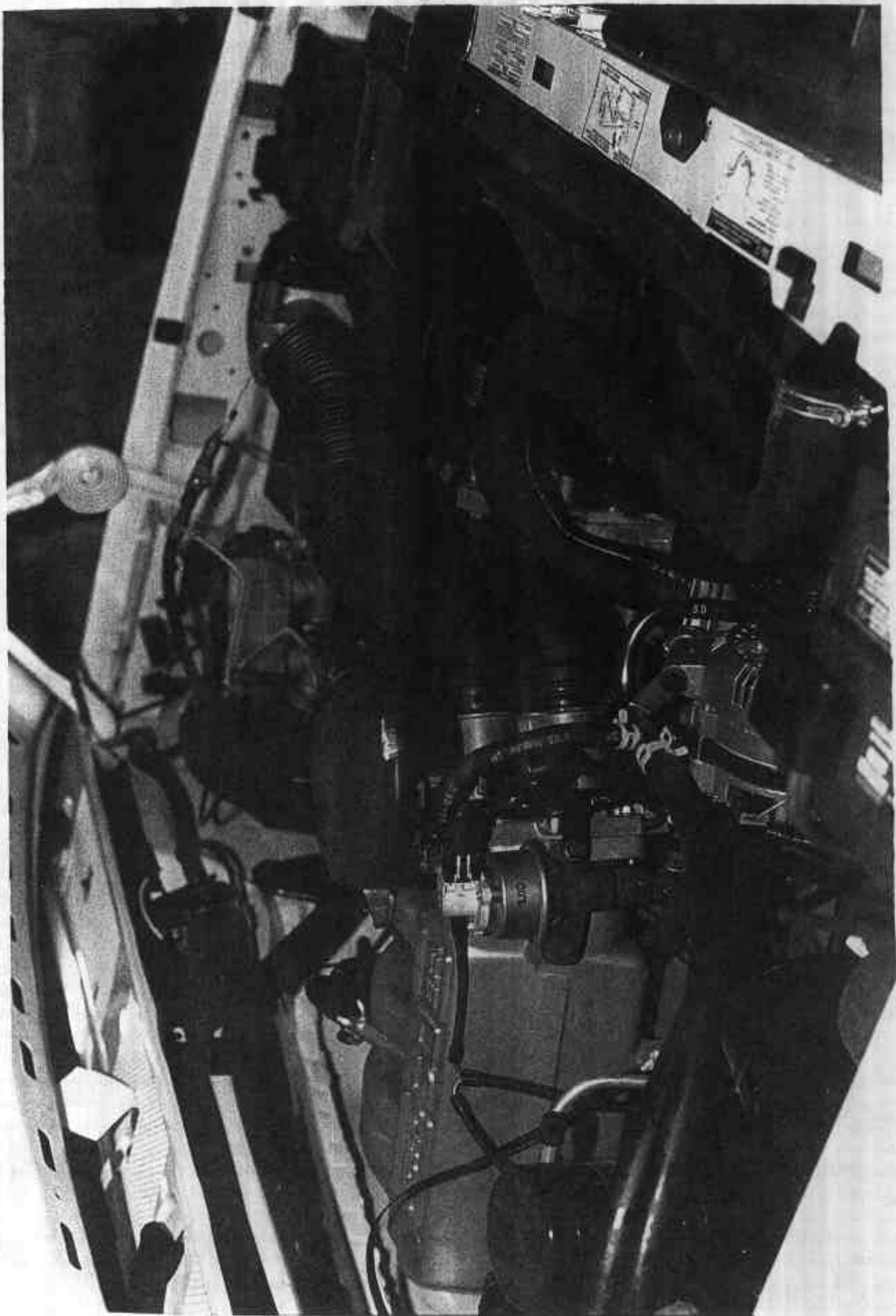
PRETEST WINDSHIELD VIEW



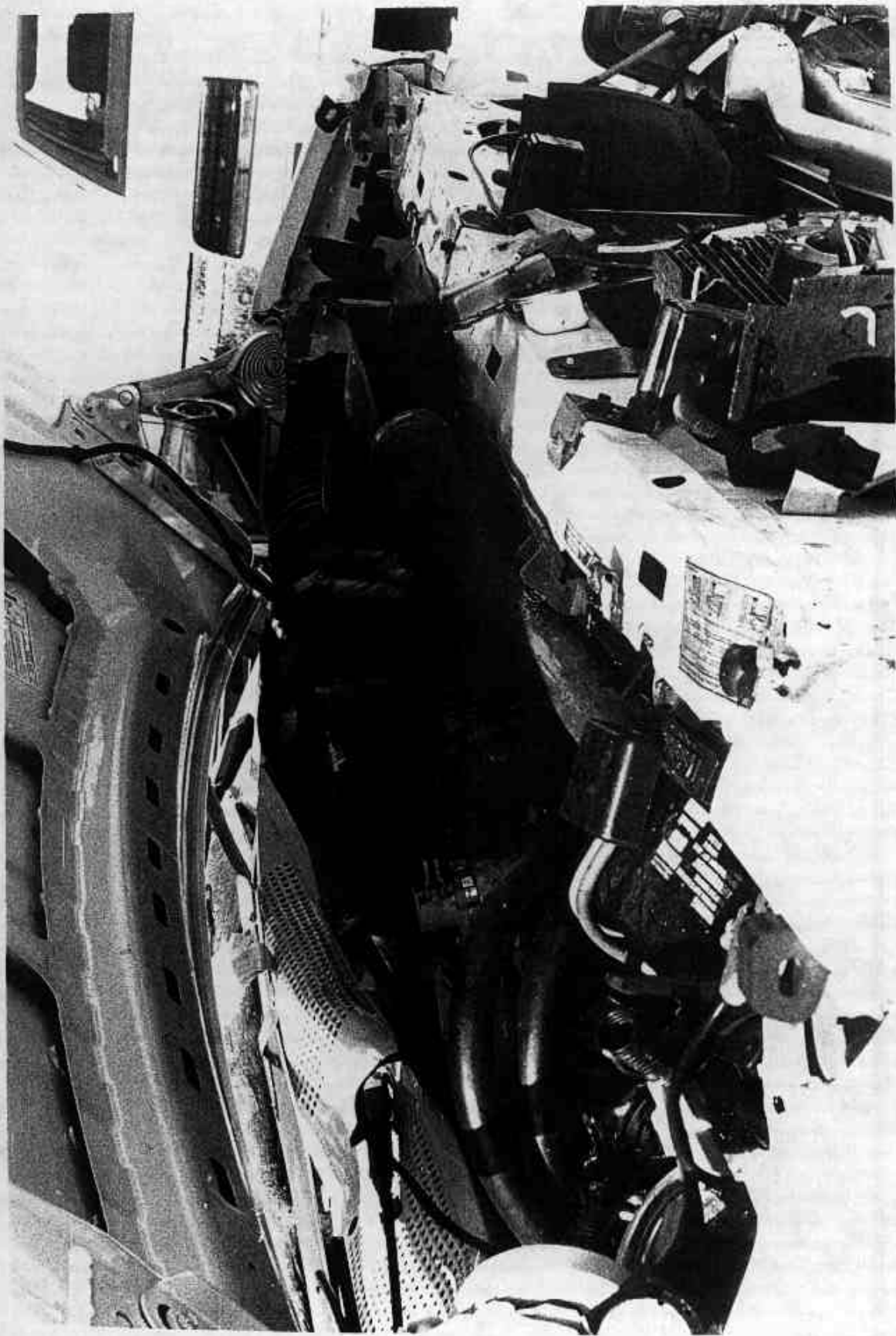
POSTTEST WINDSHIELD VIEW

A12

MSE-R93030-04

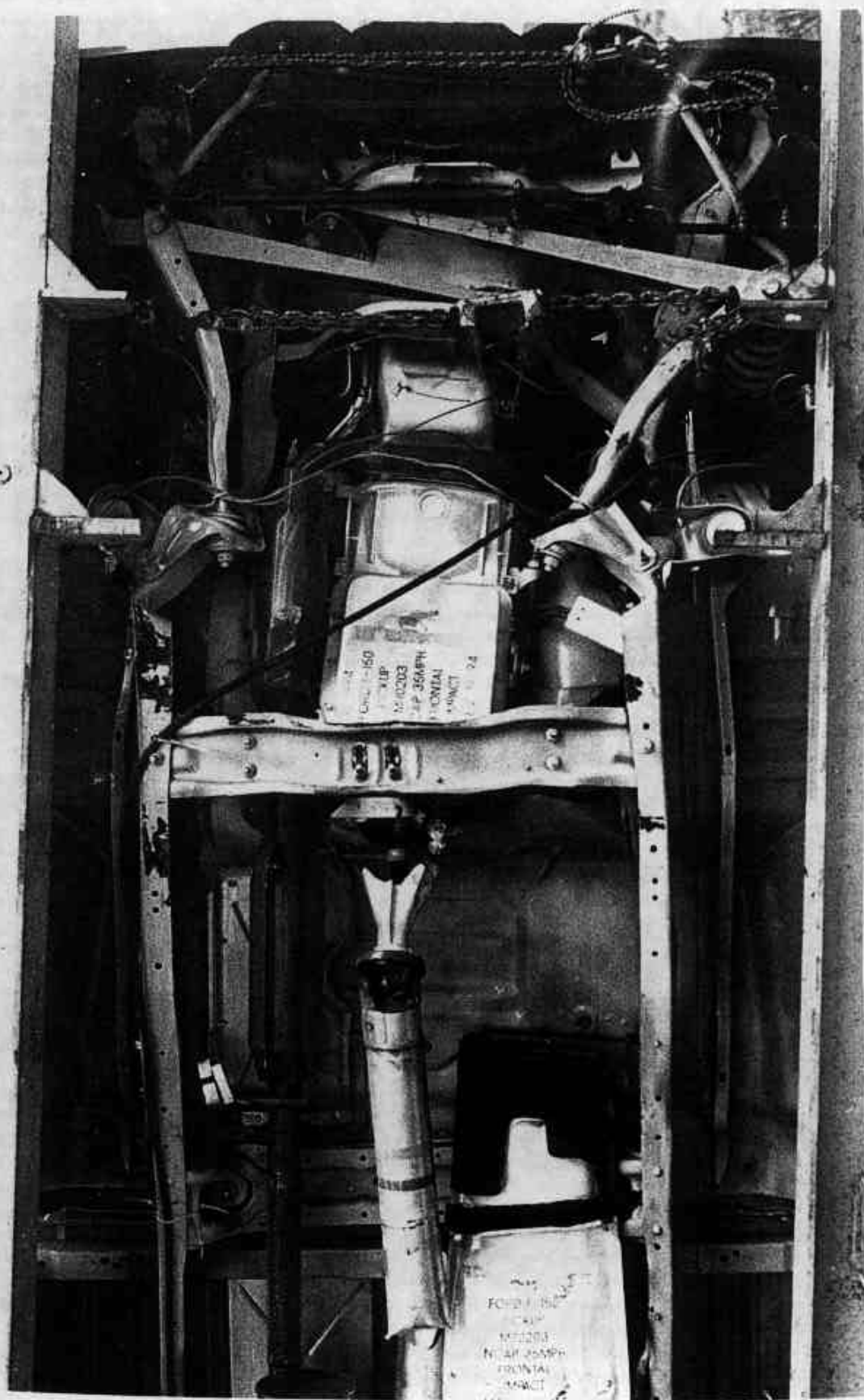


PRETEST ENGINE COMPARTMENT VIEW



POSTTEST ENGINE COMPARTMENT VIEW

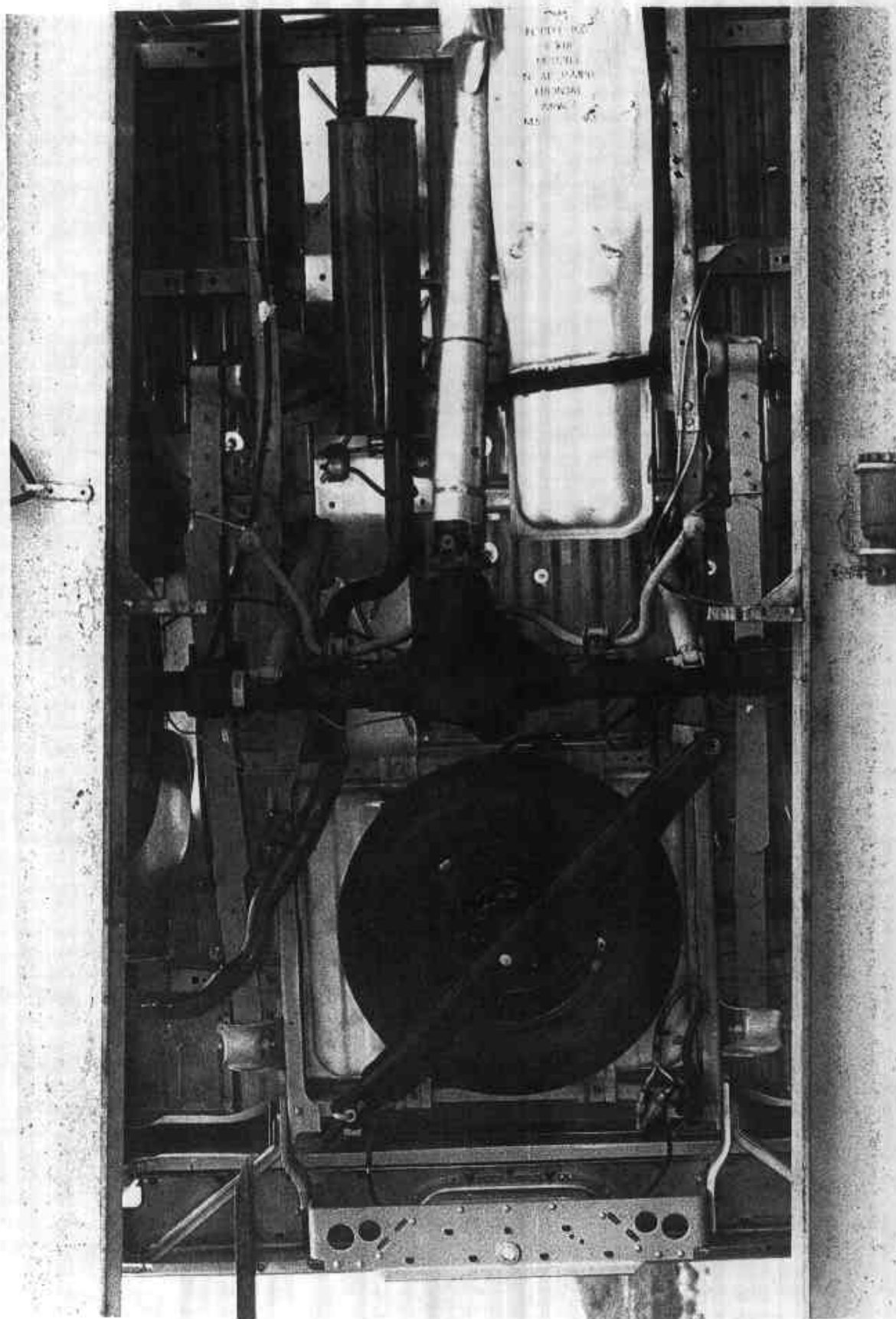
FIGURE A15  
PRETEST FRONT UNDERBODY VIEW  
PHOTOGRAPH NOT AVAILABLE



POSTTEST FRONT UNDERBODY VIEW

A16

MSE-R93030-04



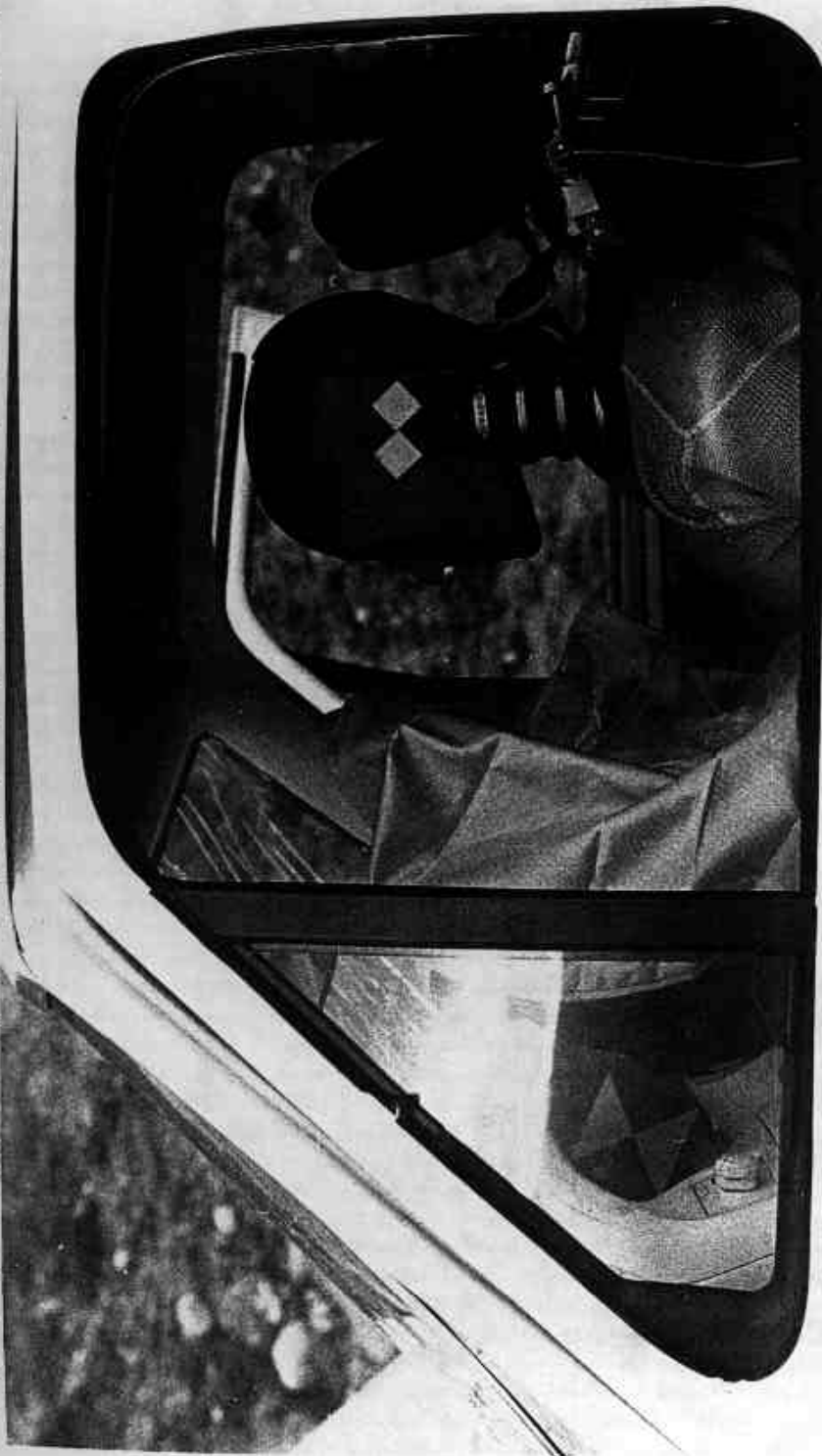
PRETEST REAR UNDERBODY VIEW

FIGURE A17  
POSTTEST REAR UNDERBODY VIEW  
PHOTOGRAPH NOT AVAILABLE

MSE-R93030-04



PRETEST DRIVER DUMMY POSITION VIEW



POSTTEST DRIVER DUMMY POSITION VIEW

A20

MSE-R93030-04



PRETEST PASSENGER DUMMY POSITION VIEW



POSTTEST PASSENGER DUMMY POSITION VIEW



PRETEST DRIVER DUMMY AND VEHICLE  
INTERIOR VIEW (DOOR OPEN)



POSTTEST DRIVER DUMMY AND VEHICLE

INTERIOR VIEW (DOOR OPEN)



PRETEST DRIVER DUMMY AND VEHICLE

INTERIOR VIEW (DOOR OPEN)



POSTTEST PASSENGER DUMMY AND  
VEHICLE INTERIOR VIEW (DOOR OPEN)



POSTTEST DRIVER DUMMY KNEE CONTACT AREA



POSTTEST PASSENGER DUMMY KNEE CONTACT AREA

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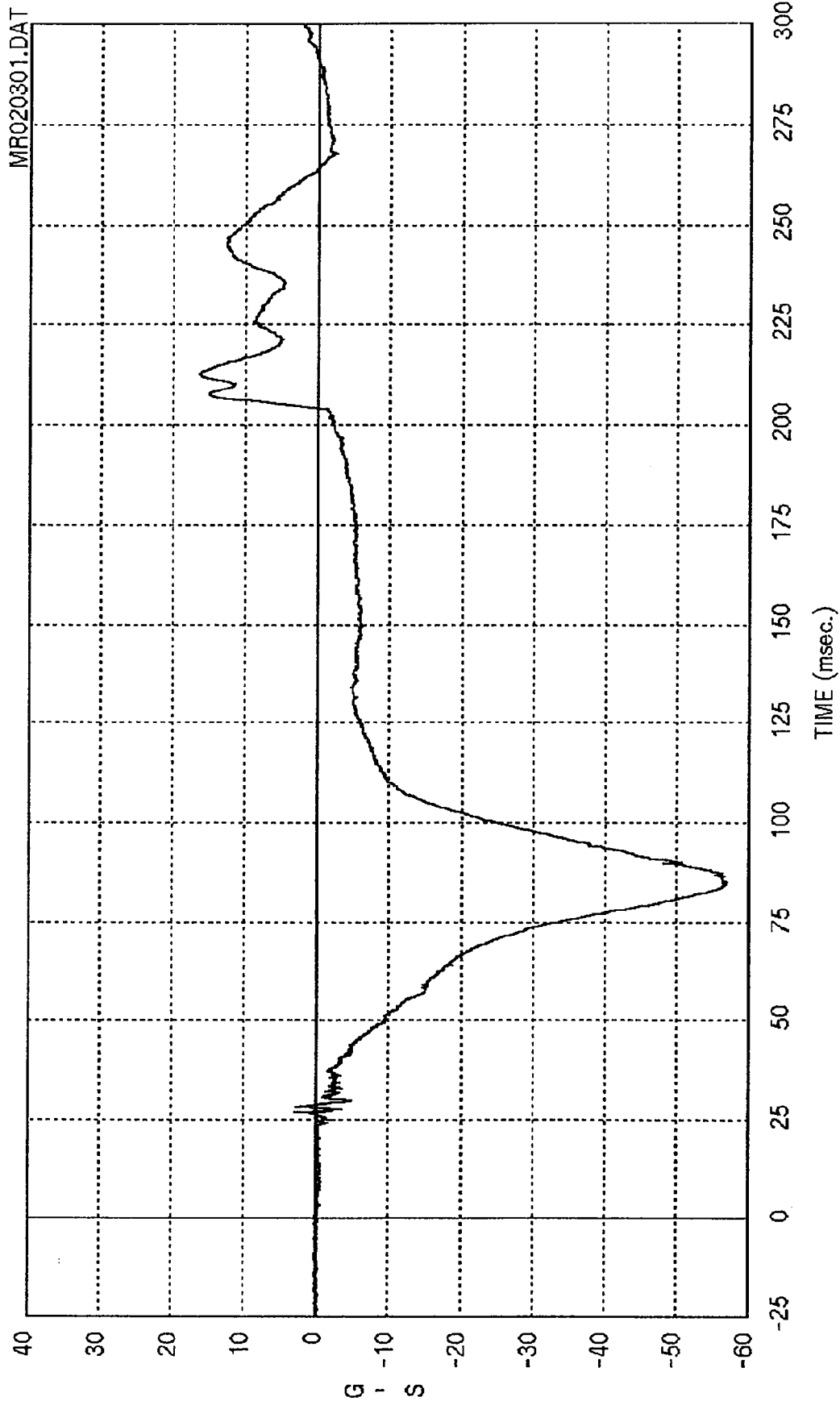
APPENDIX B - 1

VEHICLE AND DUMMY (ATD) RESPONSE DATA

DATA FILTERING:

|                    |             |
|--------------------|-------------|
| ATD Head Channels  | -Class 1000 |
| ATD Chest Channels | -Class 180  |
| ATD Femur Channels | -Class 600  |
| Vehicle Channels   | -Class 60   |

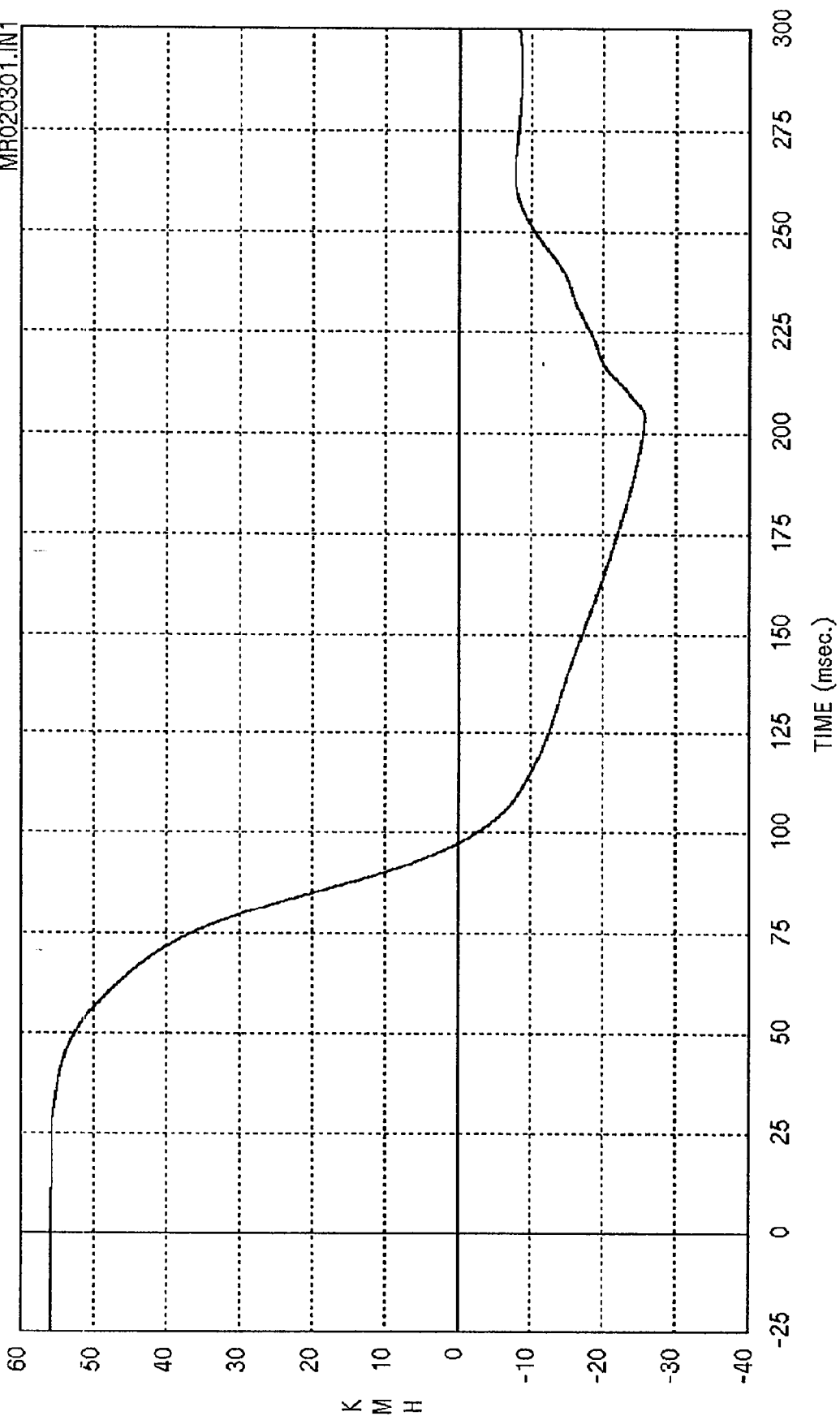
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Curve: Driver head acceleration -- X axis Filter: SAE CLASS 1000 Max = 16.371 Min = -56.938

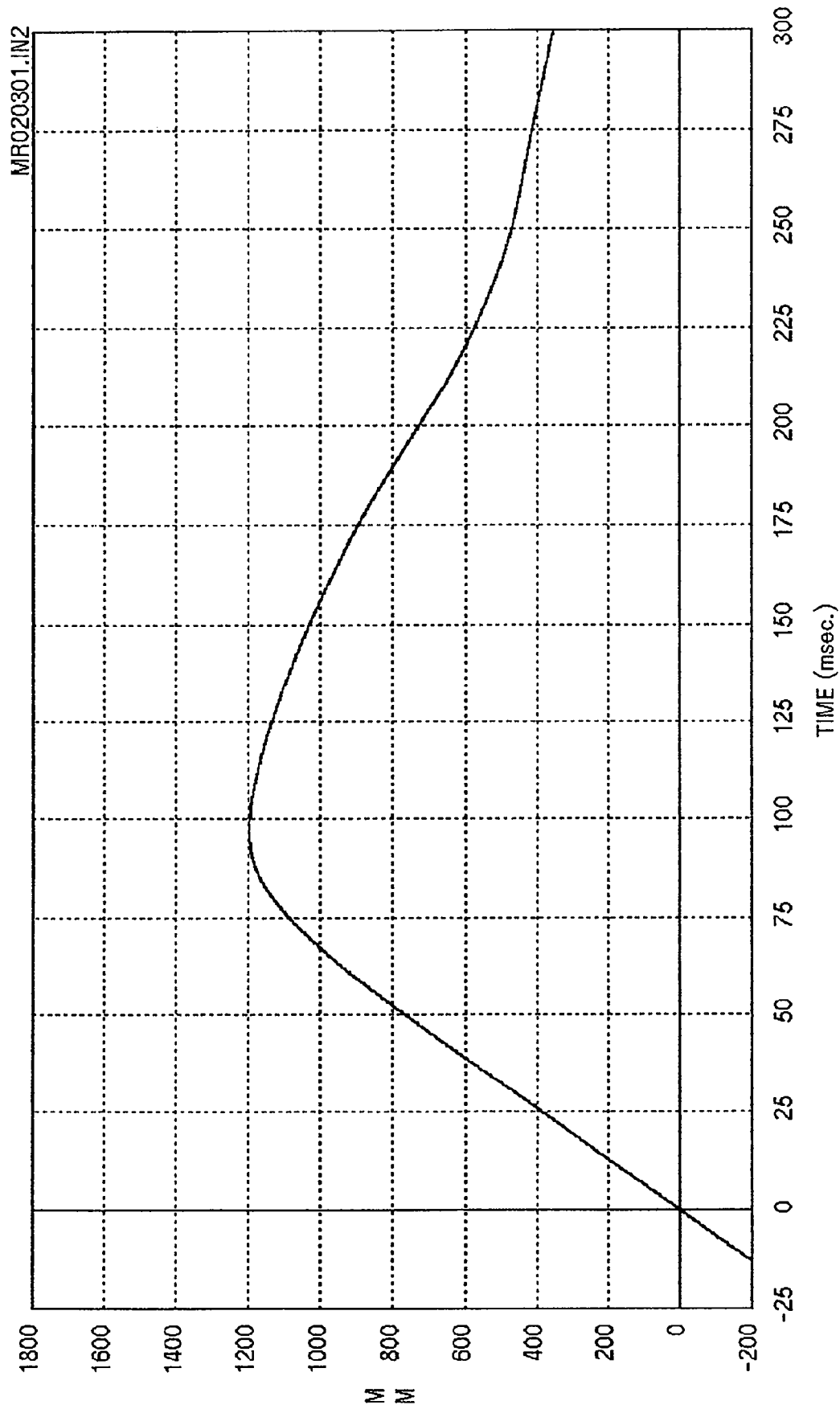
MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup

MR020301.IN1



Curve: Driver head delta V -- X axis Filter: SAE CLASS 180 Max = 55.935 Min = -25.713

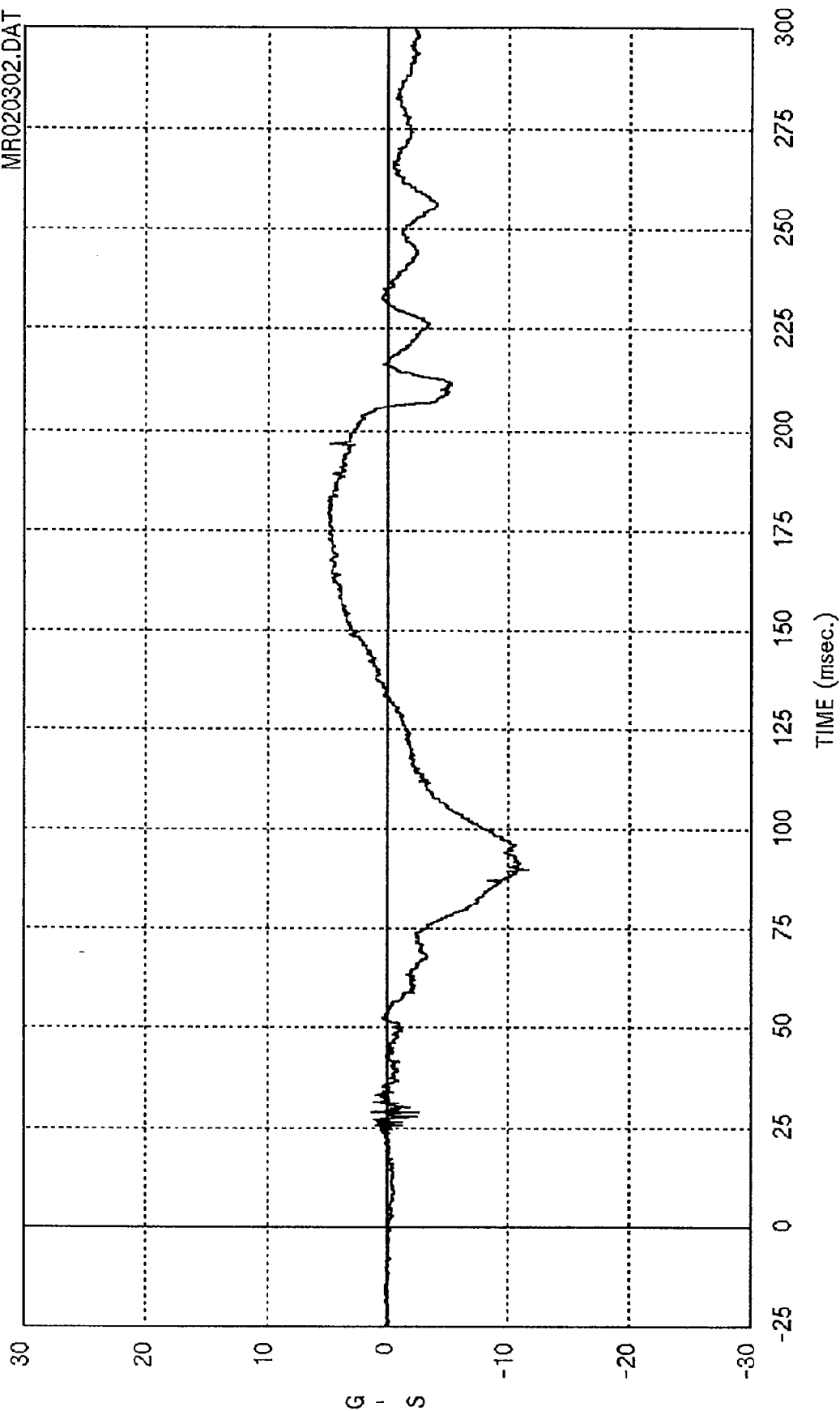
MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup



Curve: Driver head displacement -- X axis Filter: SAE CLASS 180 Max = 1198.1 Min = 354.82

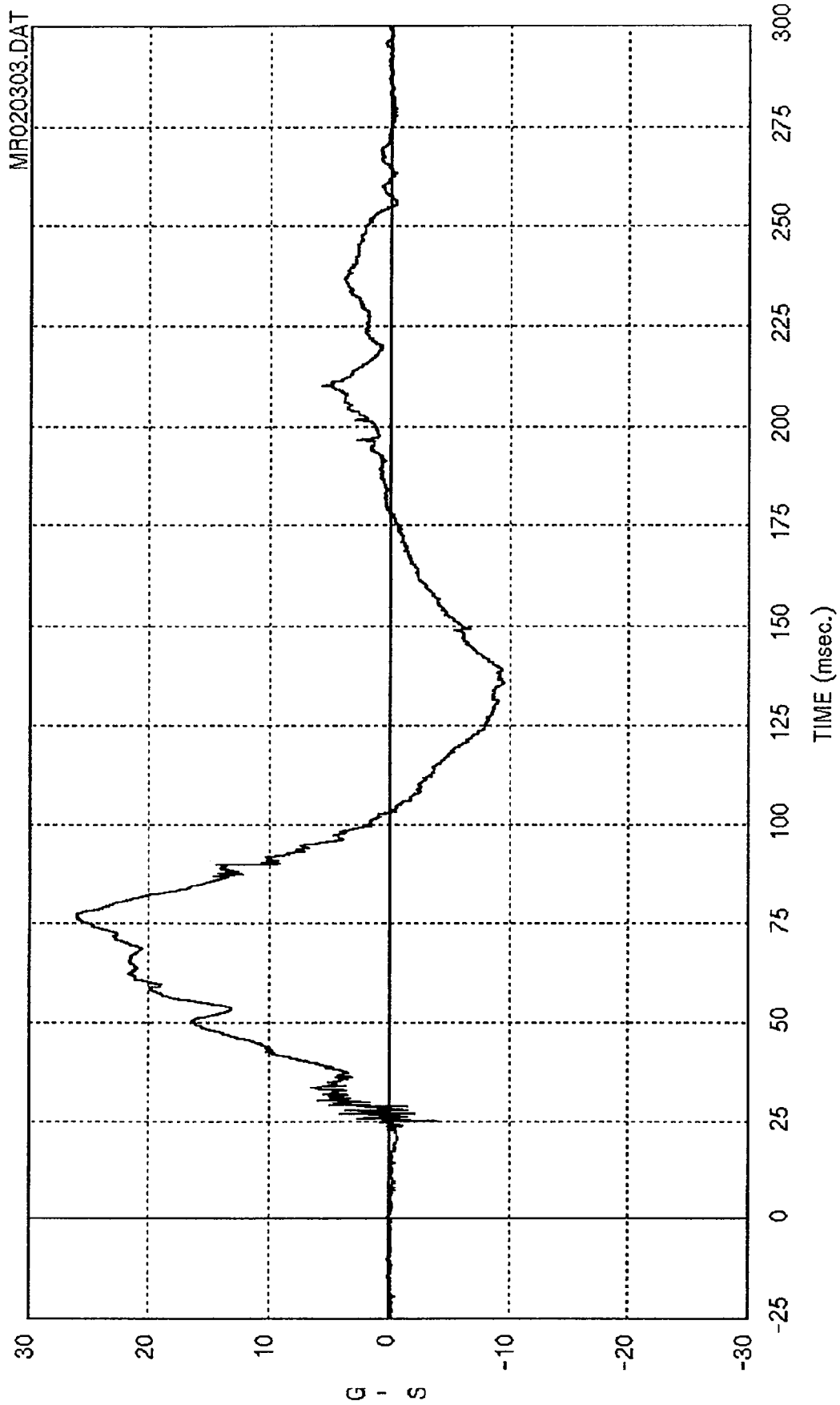
MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup

MR020302.DAT



Curve: Driver head acceleration -- Y axis Filter: SAE CLASS 1000 Max = 5.0629 Min = -12.103

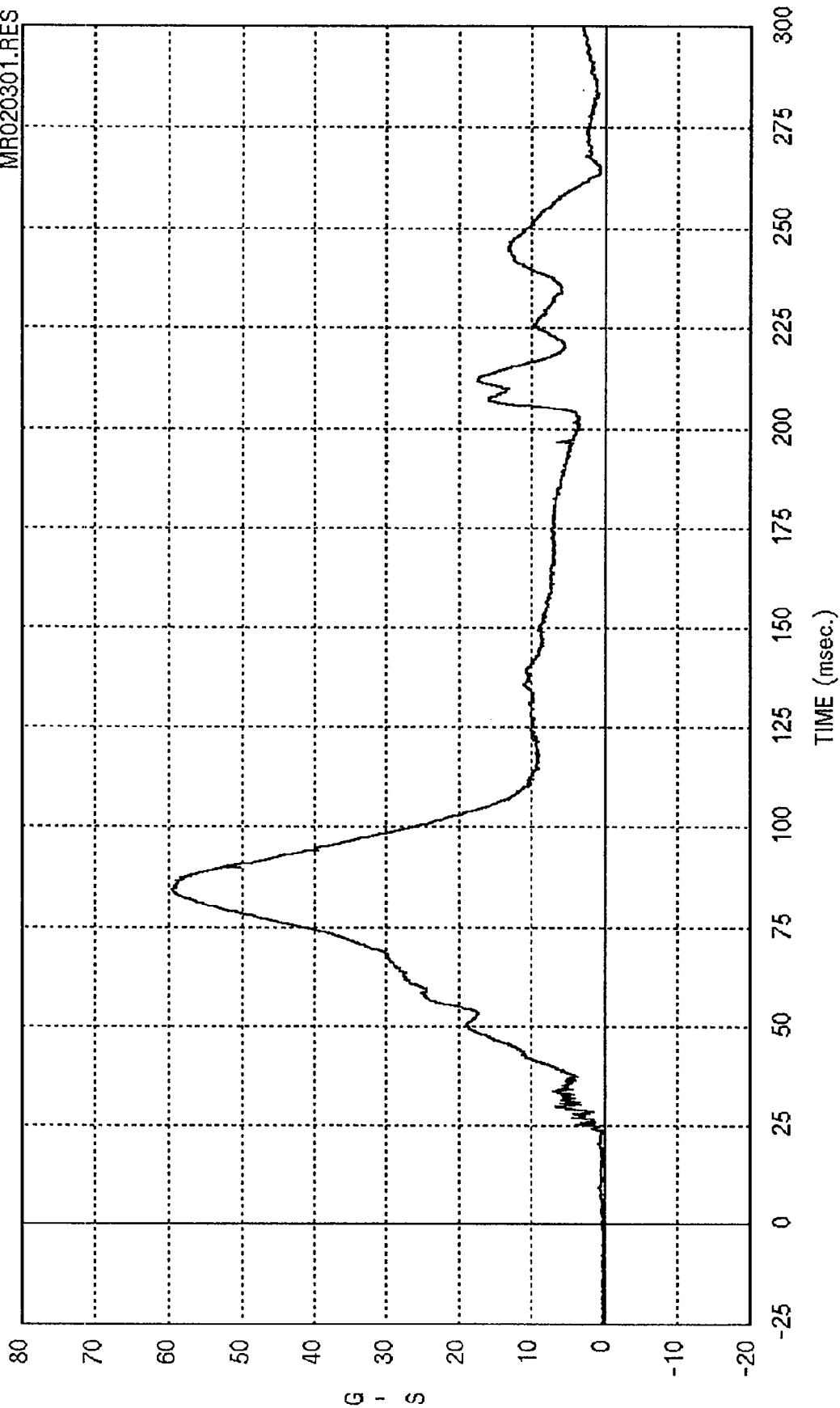
MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup



Curve: Driver head acceleration -- Z axis Filter: SAE CLASS 1000 Max = 26.123 Min = -9.5267

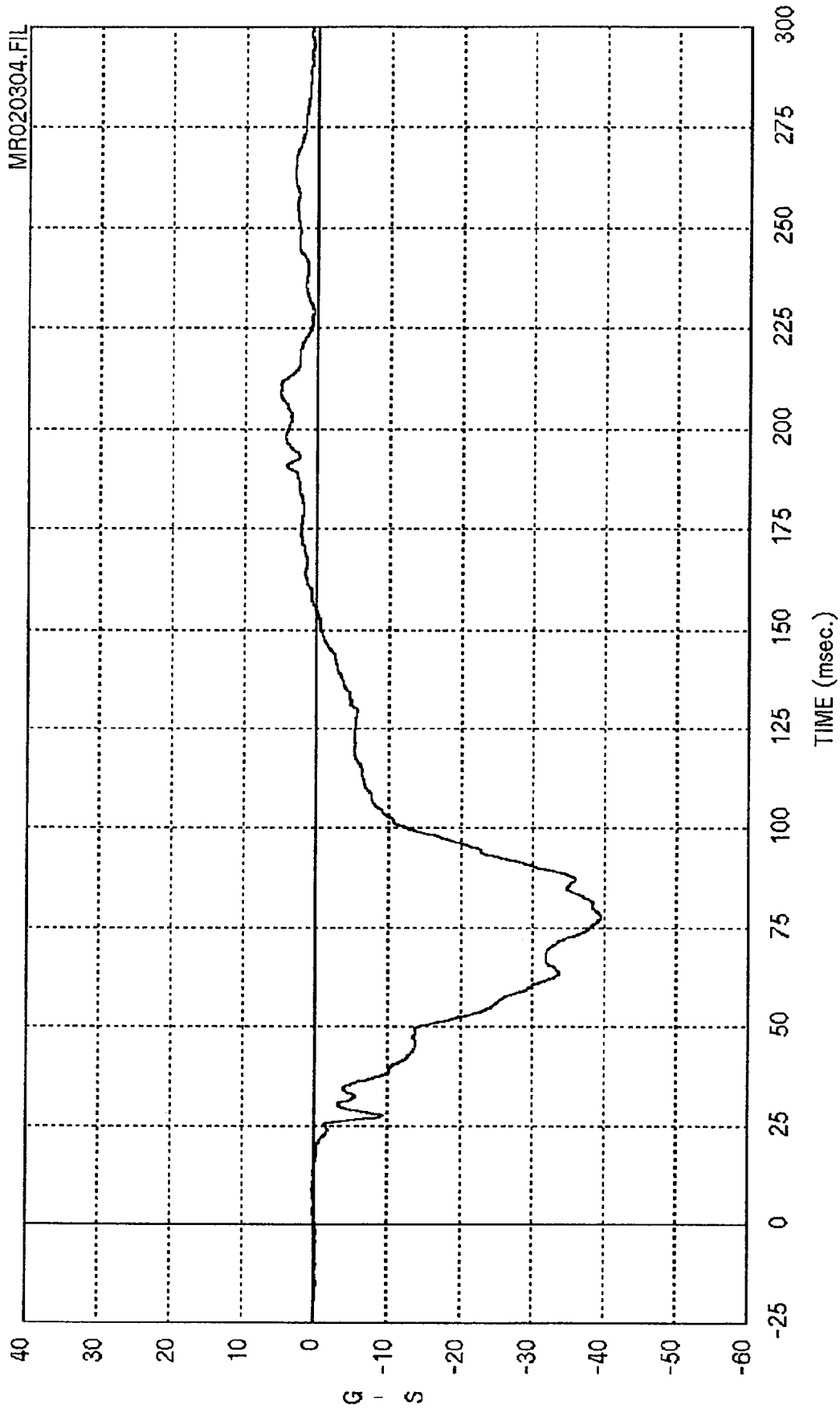
MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup

MR020301.RES



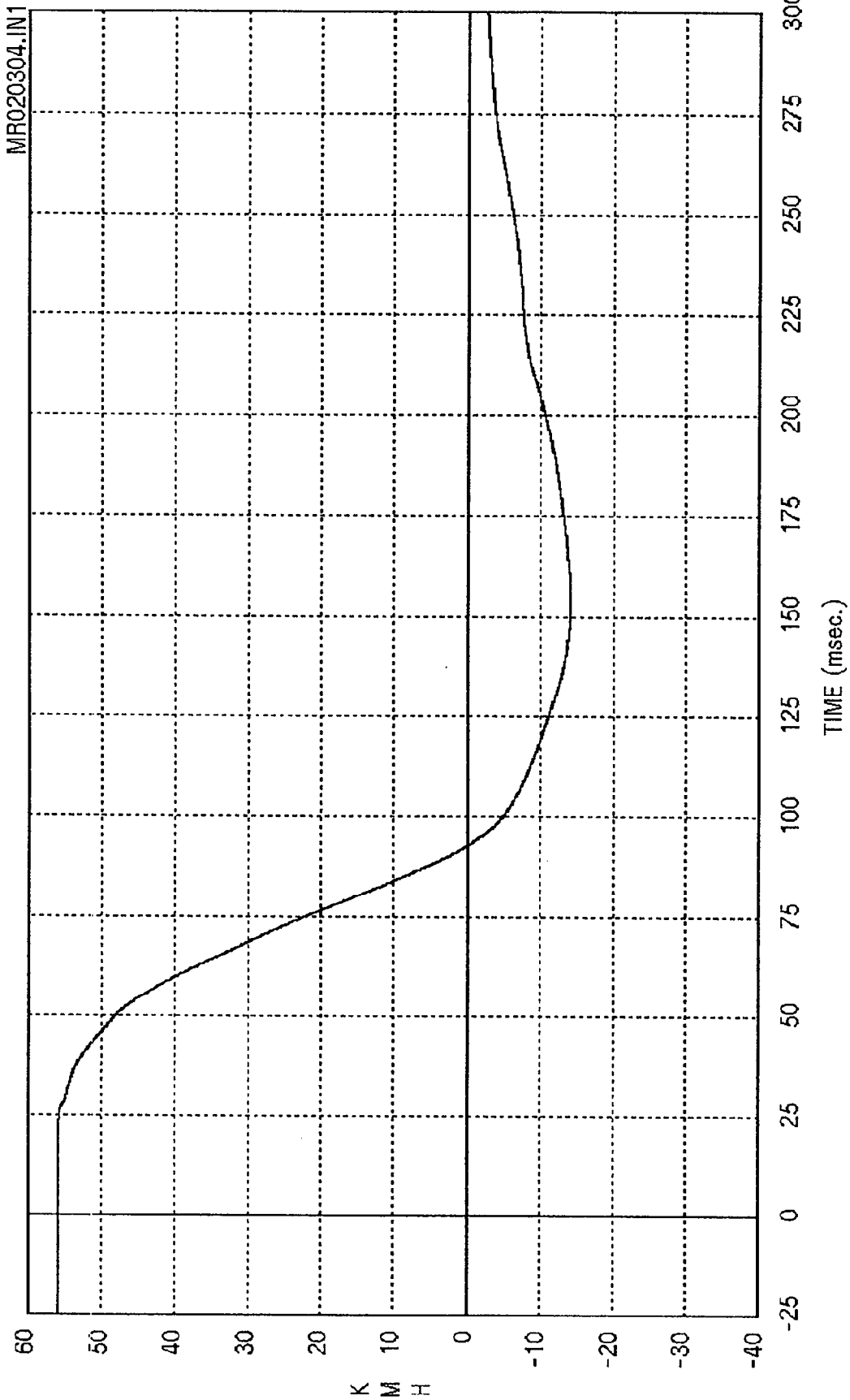
Curve: Driver head acceleration -- Resultant Filter: SAE CLASS 1000 Max = 59.717 Min = .23748E-03

MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup



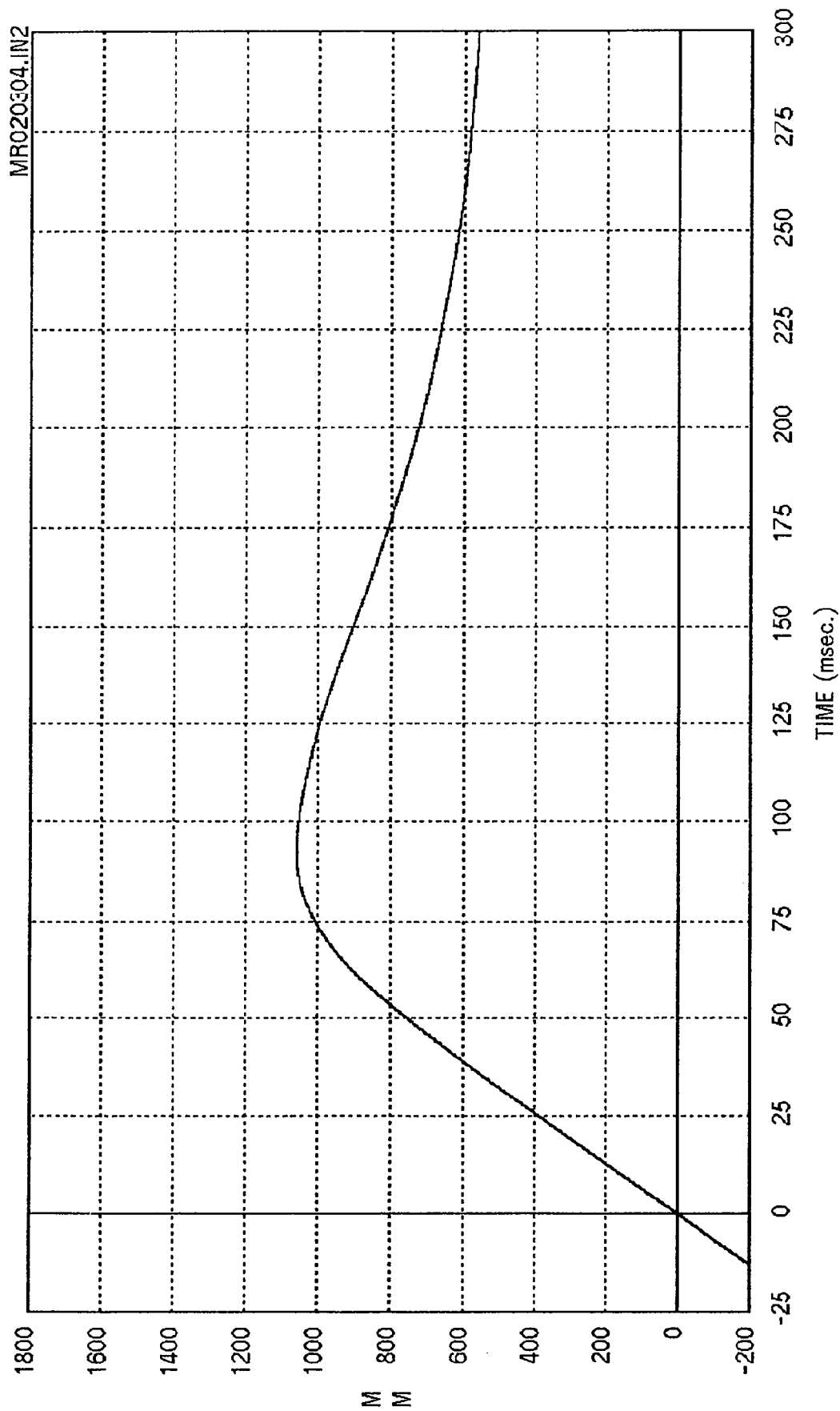
Curve: Driver chest acceleration -- X axis Filter: SAE CLASS:180 Max = 5.1256 Min = -39.553

MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup



Curve: Driver chest delta V -- X axis Filter: SAE CLASS 180 Max = 56.019 Min = -14.157

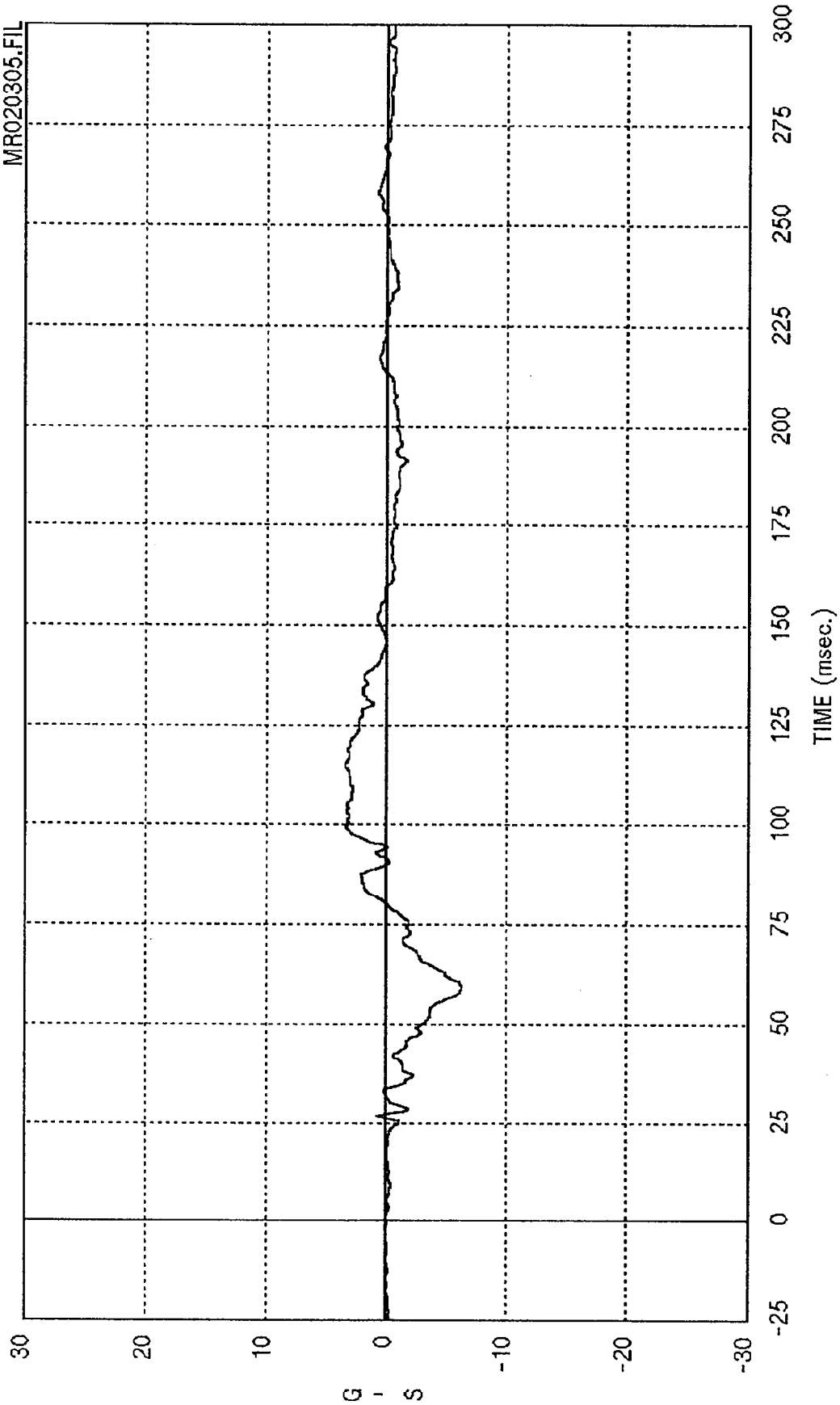
MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup



Curve: Driver chest displacement -- X axis Filter: SAE CLASS 180 Max = 1060.0 Min = 559.94

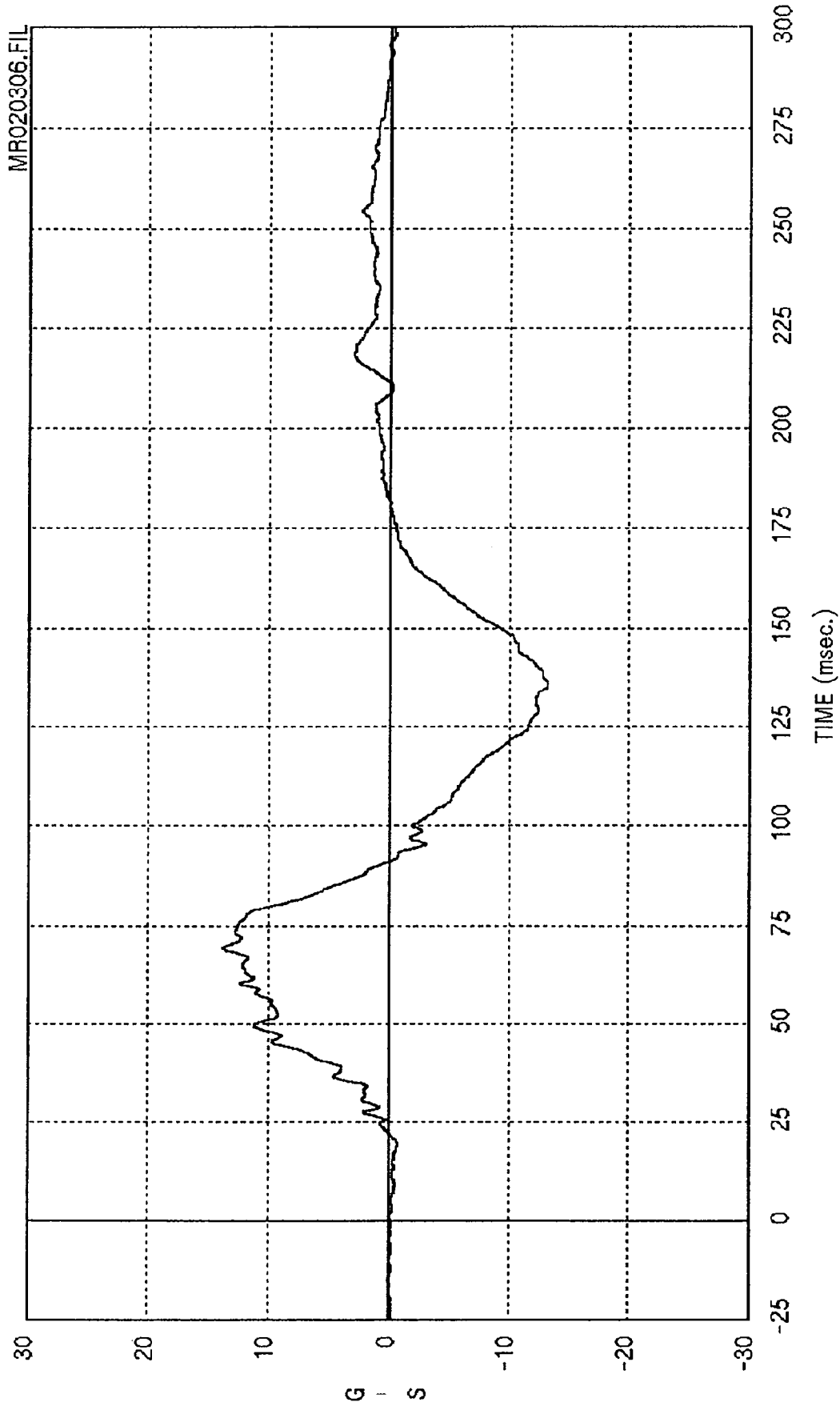
MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup

MR020305.FIL



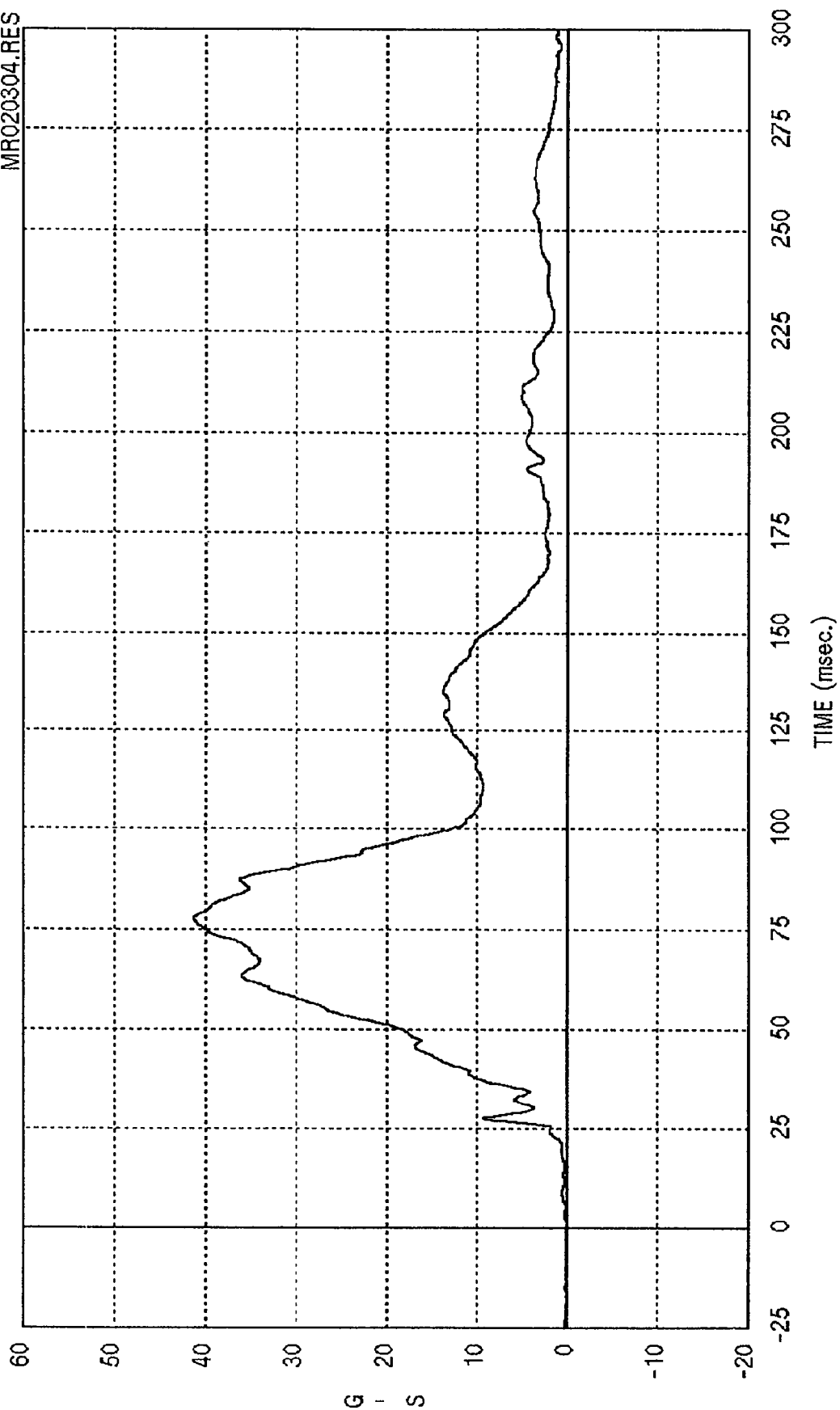
Curve: Driver chest acceleration -- Y axis Filter: SAE CLASS 180 Max = 3.4440 Min = -6.2277

MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup



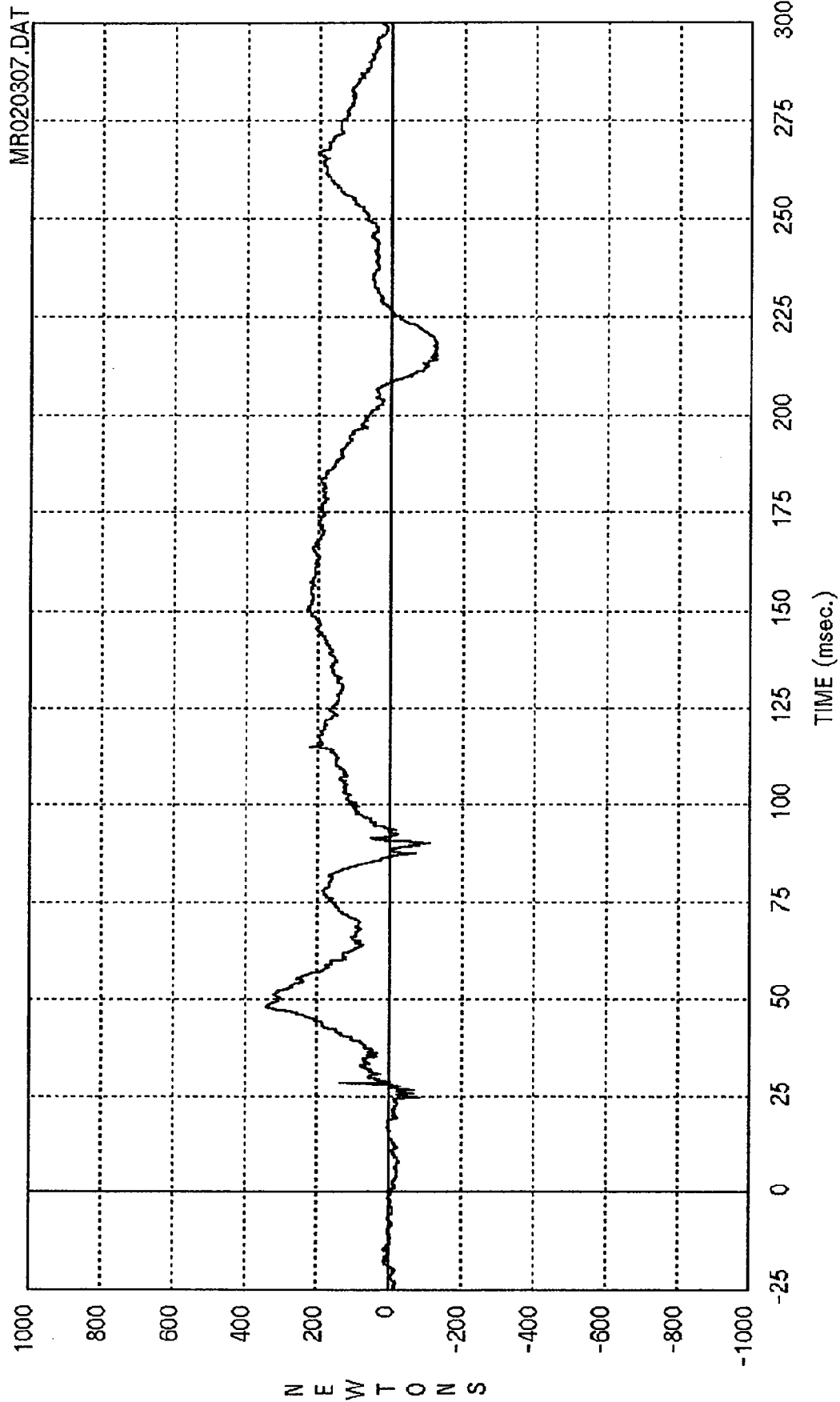
MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup

MR020304.RES



Curve: Driver chest acceleration -- Resultant Filter: SAE CLASS 180 Max = 41.305 Min = .67751E-01

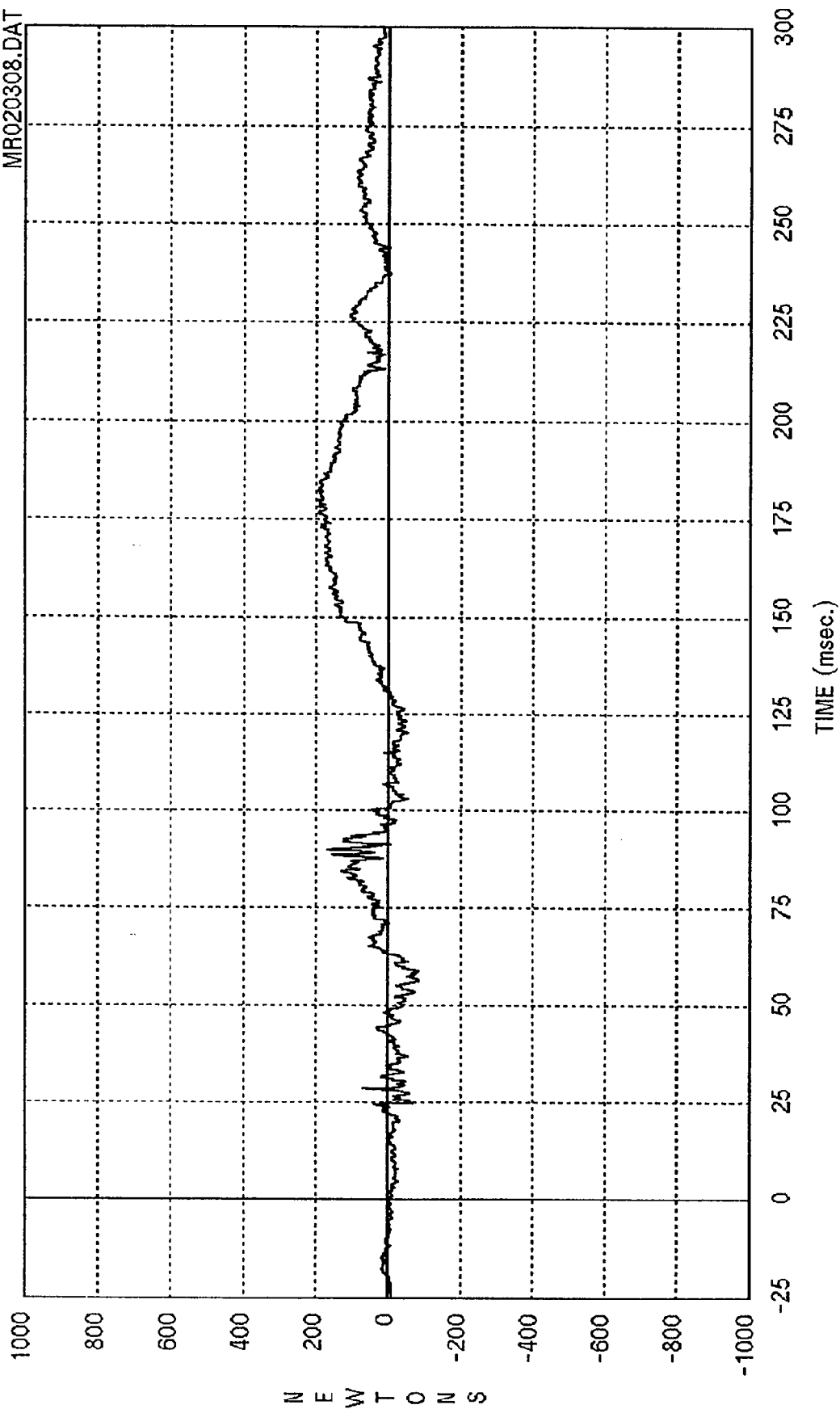
MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup



Curve: Driver neck force -- X axis Filter: SAE CLASS 1000 Max = 346.21 Min = -128.10

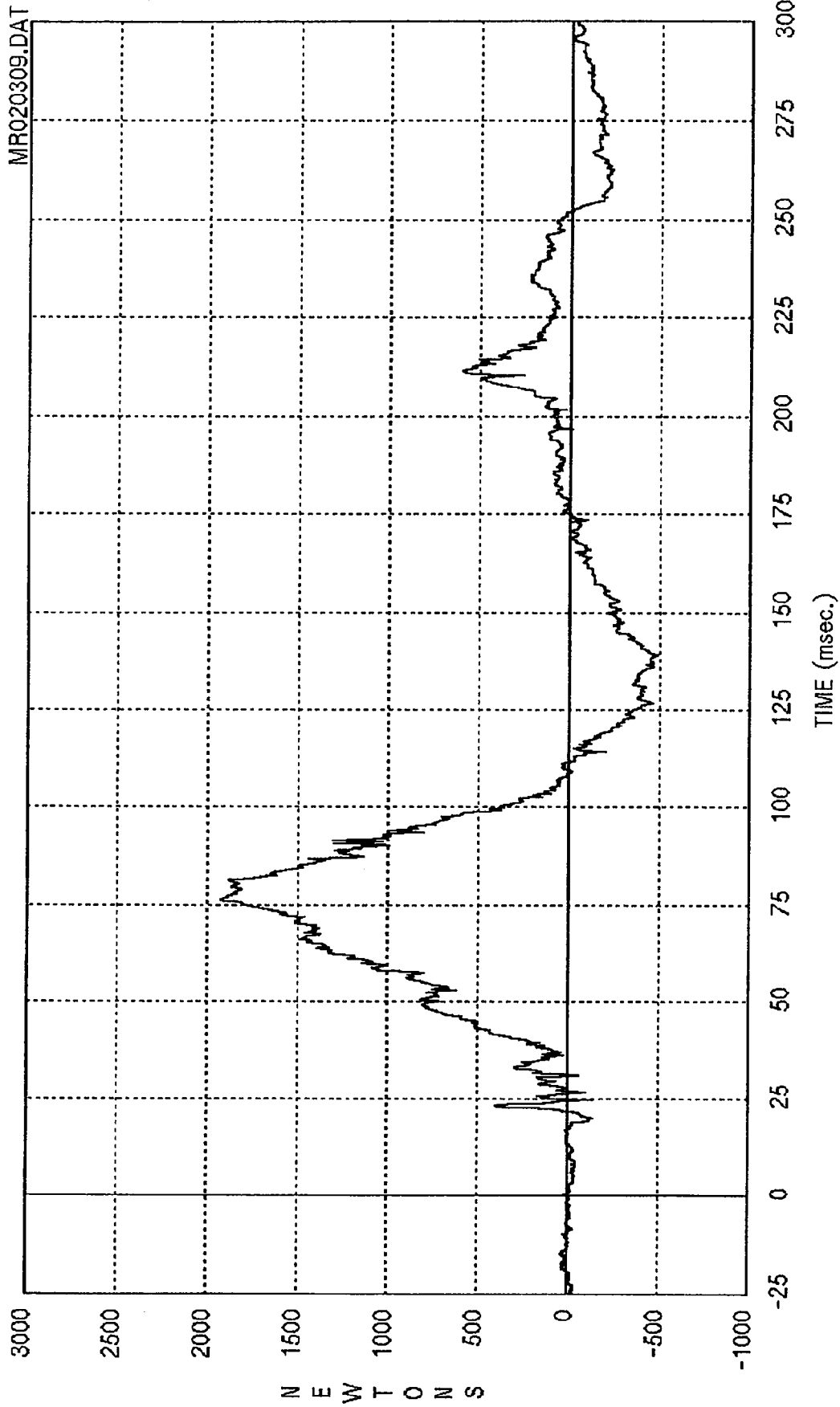
MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup

MR020308.DAT



Curve: Driver neck force -- Y axis Filter: SAE CLASS 1000 Max = 197.02 Min = -83.839

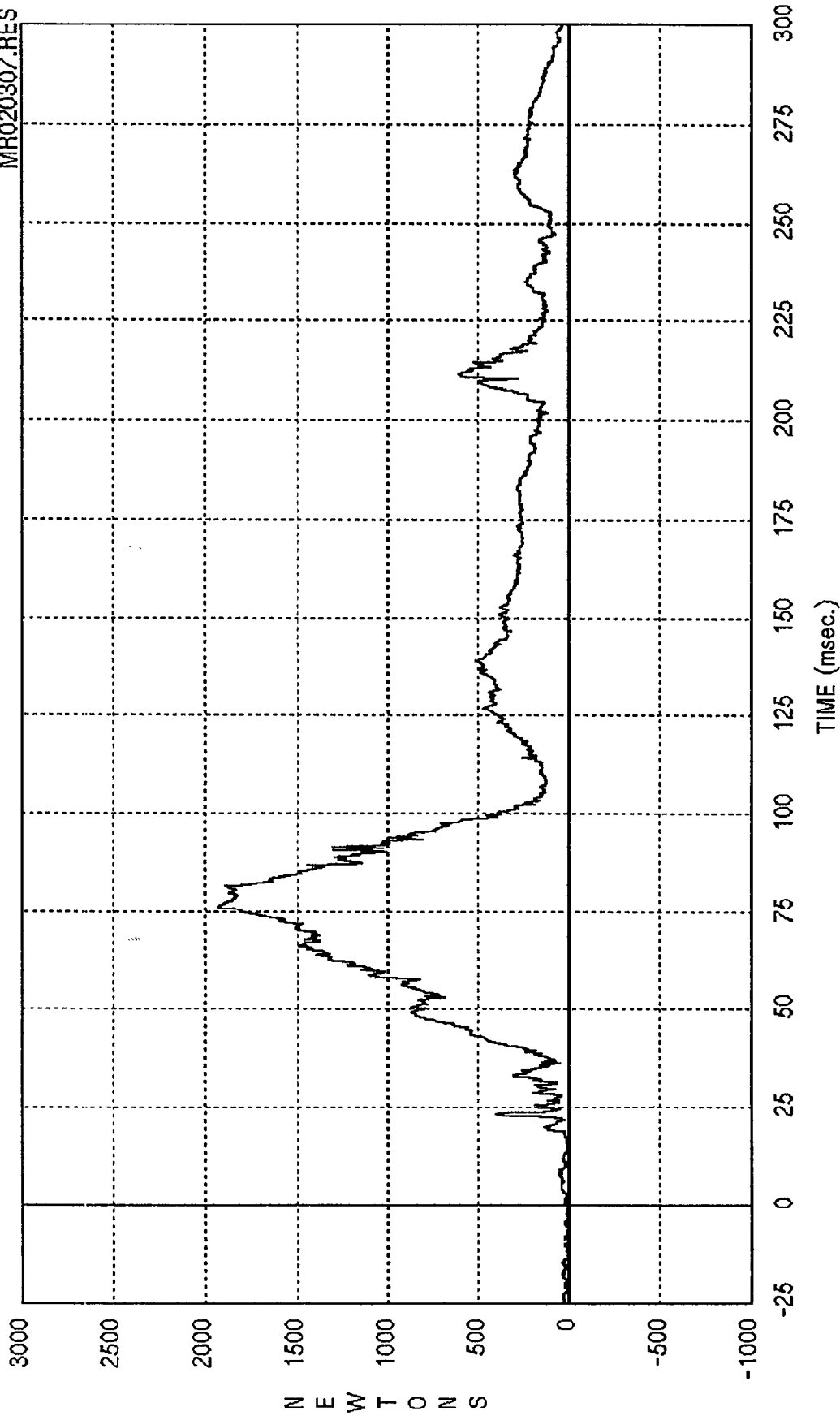
MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup



Curve: Driver neck force -- Z axis Filter: SAE CLASS 1000 Max = 1925.9 Min = -486.55

MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup

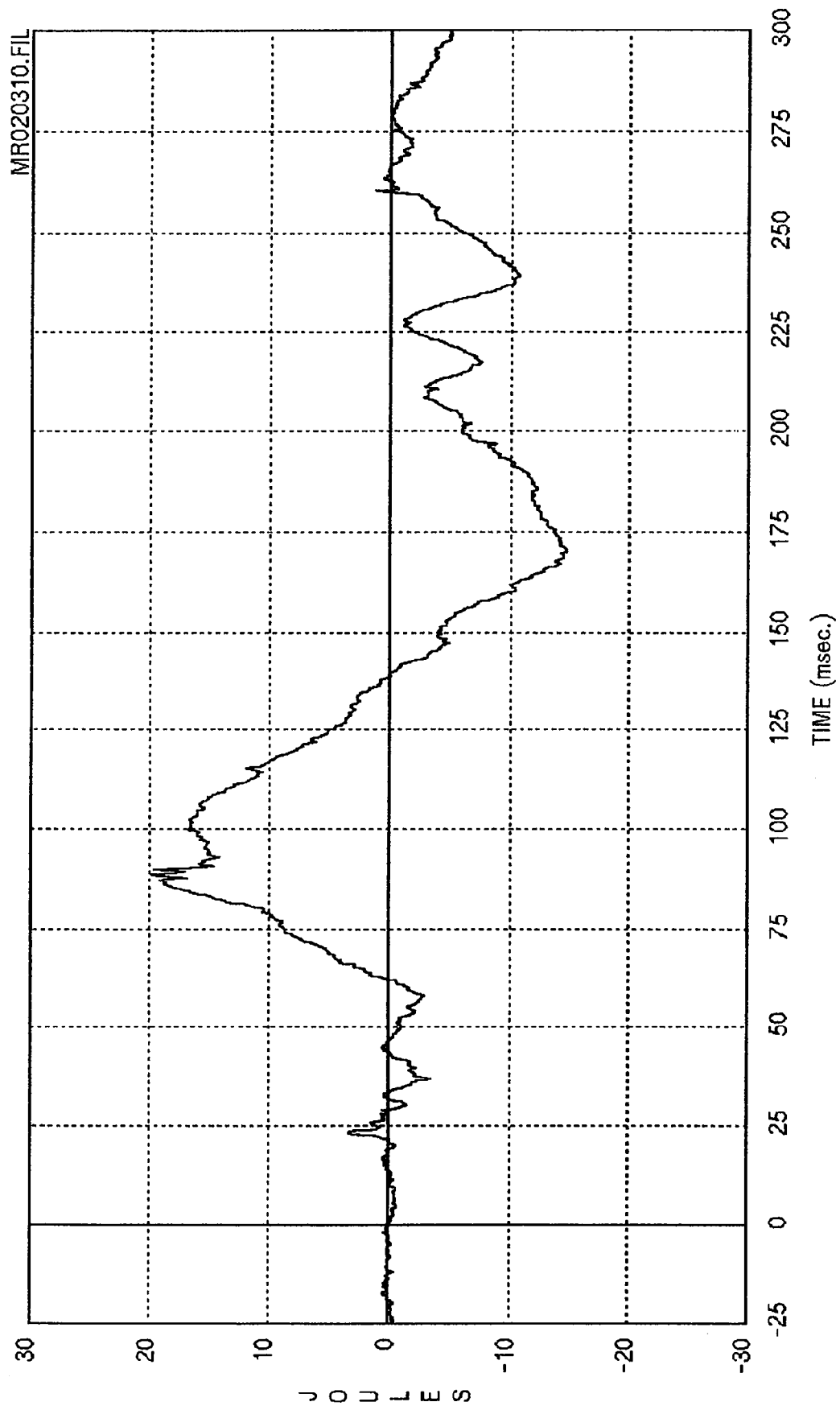
MR020307.RES



Curve: Driver neck force -- Resultant

Filter: SAE CLASS 1000 Max = 1933.8 Min = 4.5653

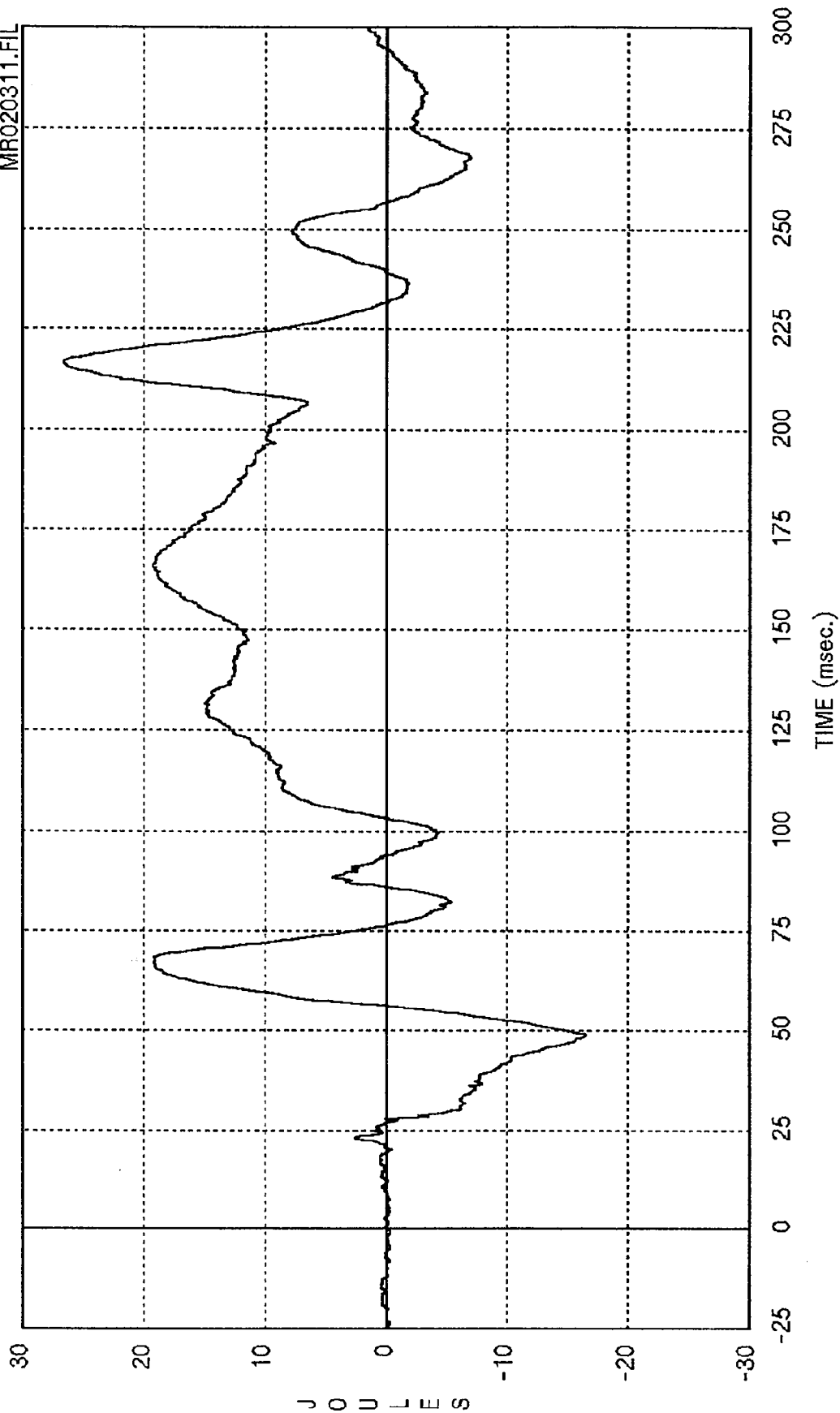
MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup



Curve: Driver neck moment -- X axis Filter: SAE CLASS 600 Max = 19.928 Min = -14.791

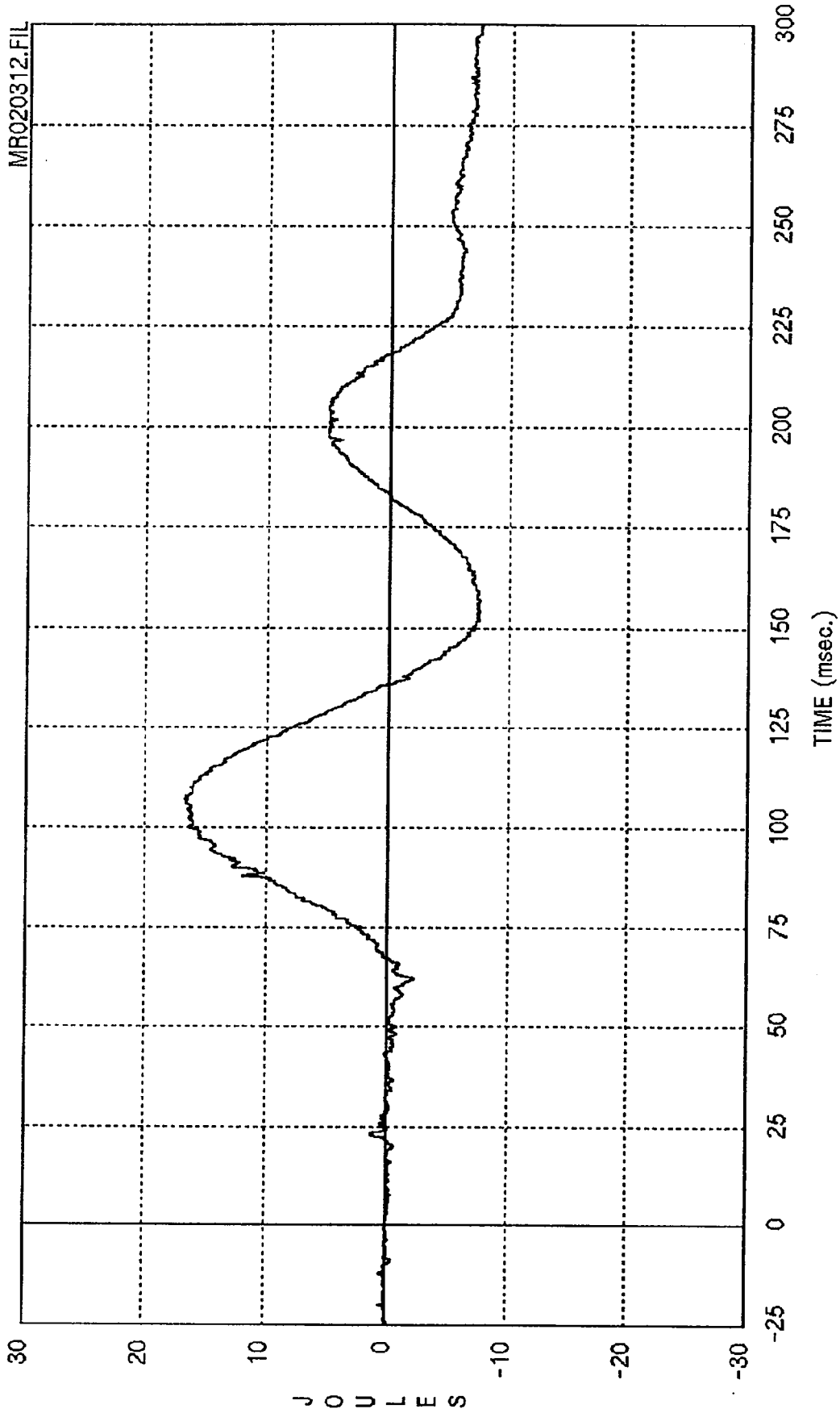
MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup

MR020311.FIL



Curve: Driver neck moment -- Y axis Filter: SAE CLASS 600 Max = 26.690 Min = -16.440

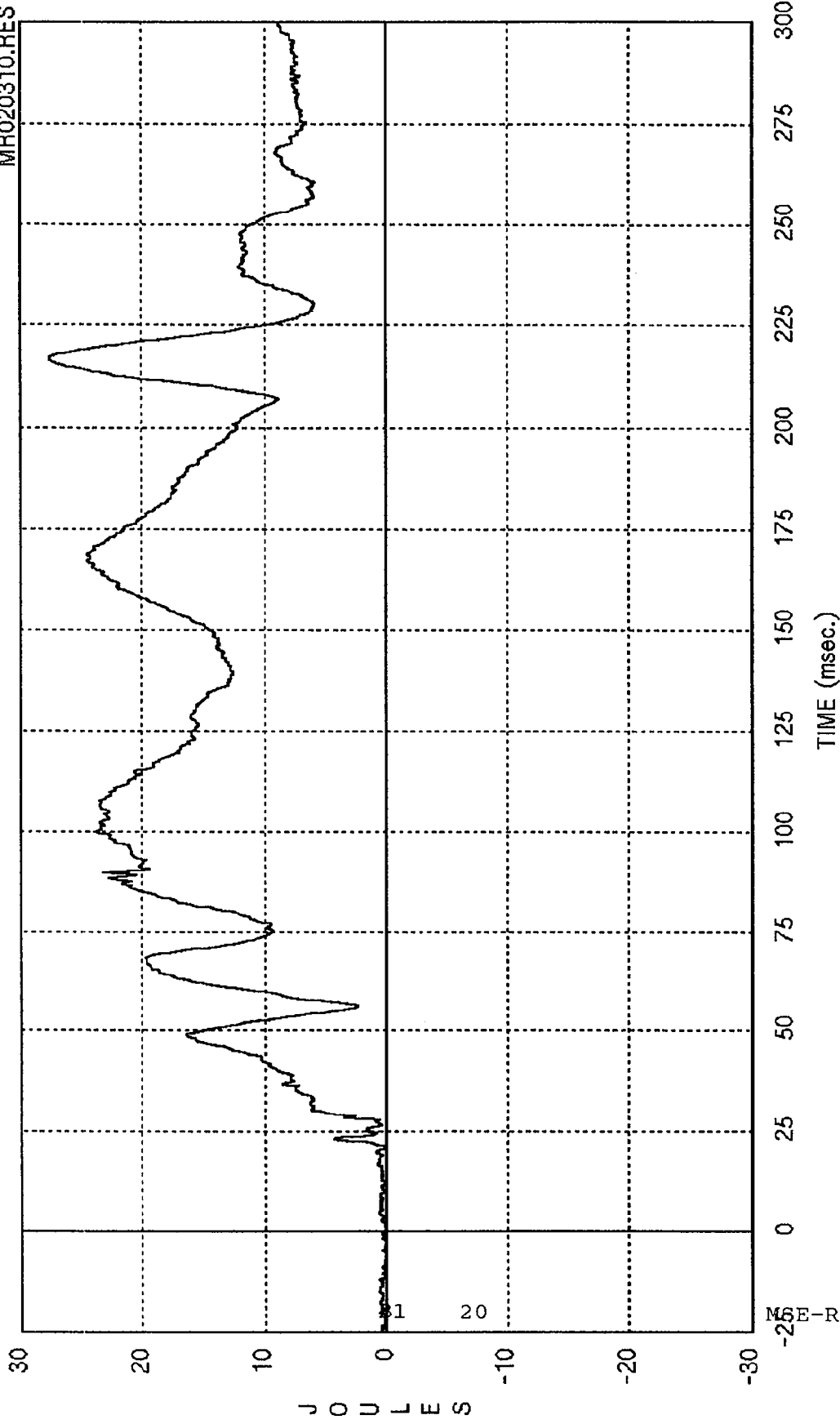
MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup



Curve: Driver neck moment -- Z axis (No data) Filter: -SAE CLASS 600 Max = 16.712 Min = -7.5320

MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup

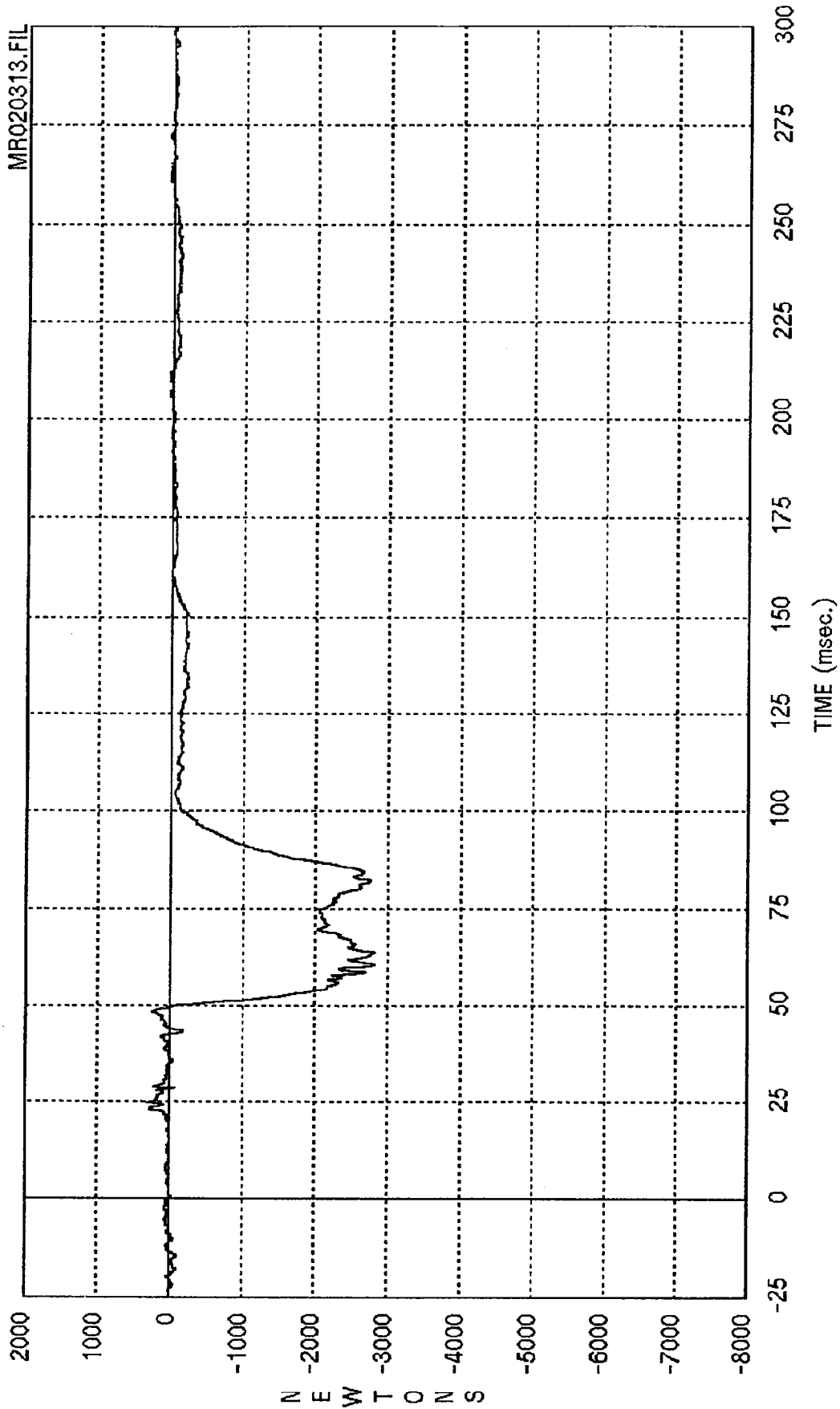
MR020310.RES



Curve: Driver neck moment -- Resultant Filter: SAE CLASS 600 Max = 27.574 Min = -3.30652E-01

MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup

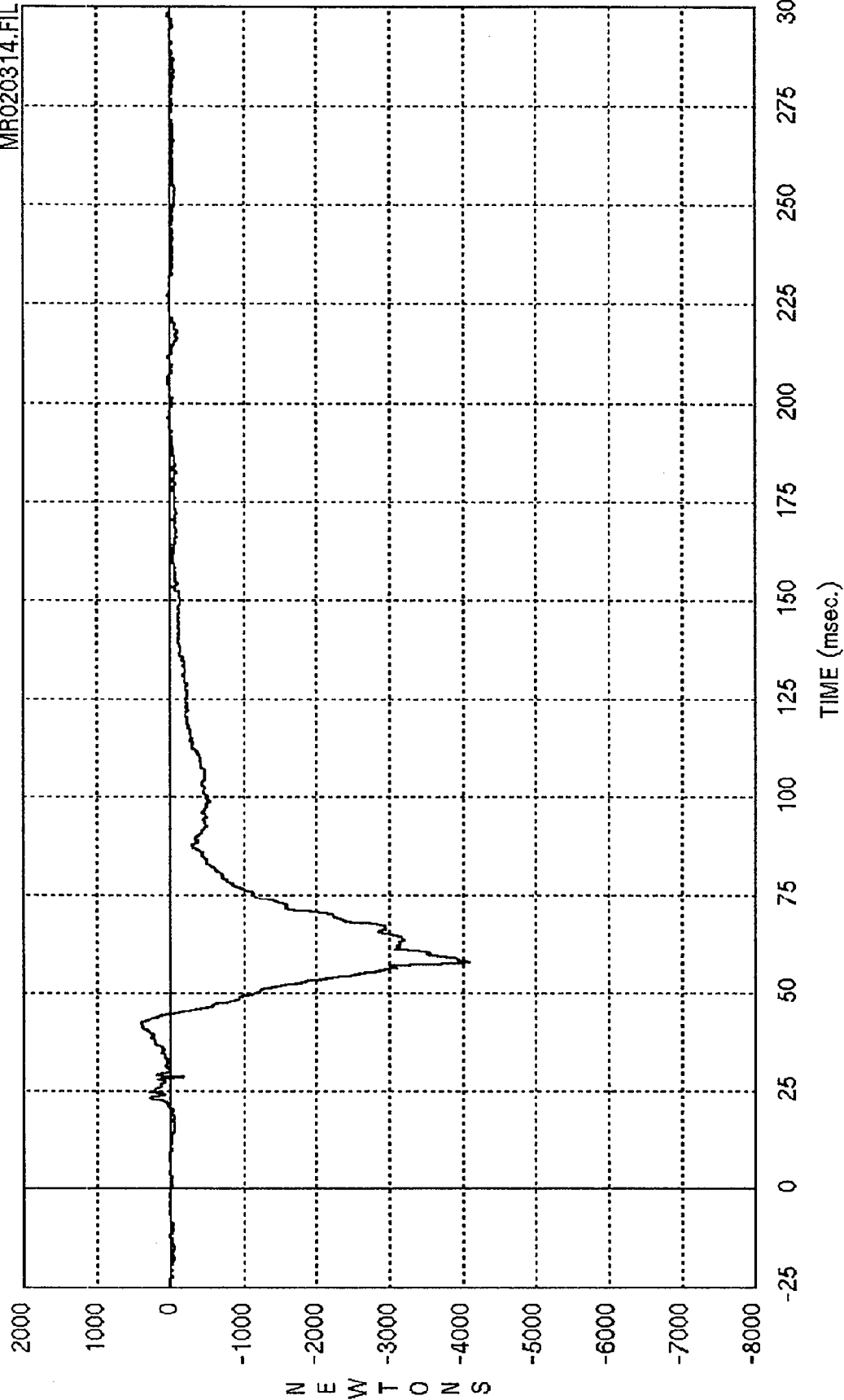
MS-R93030-04



Curve: Driver left femur Filter: SAE CLASS 600 Max = 315.80 Min = -2810.0

MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup

MR020314.FIL



Curve: Driver right femur

Filter: SAE CLASS 600

Max = 415.58

Min = -4085.4

MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup

MR020315.FIL

180

160

140

120

100

80

M

60

40

20

0

-20

M

-25

0

25

50

75

100

125

150

175

200

225

250

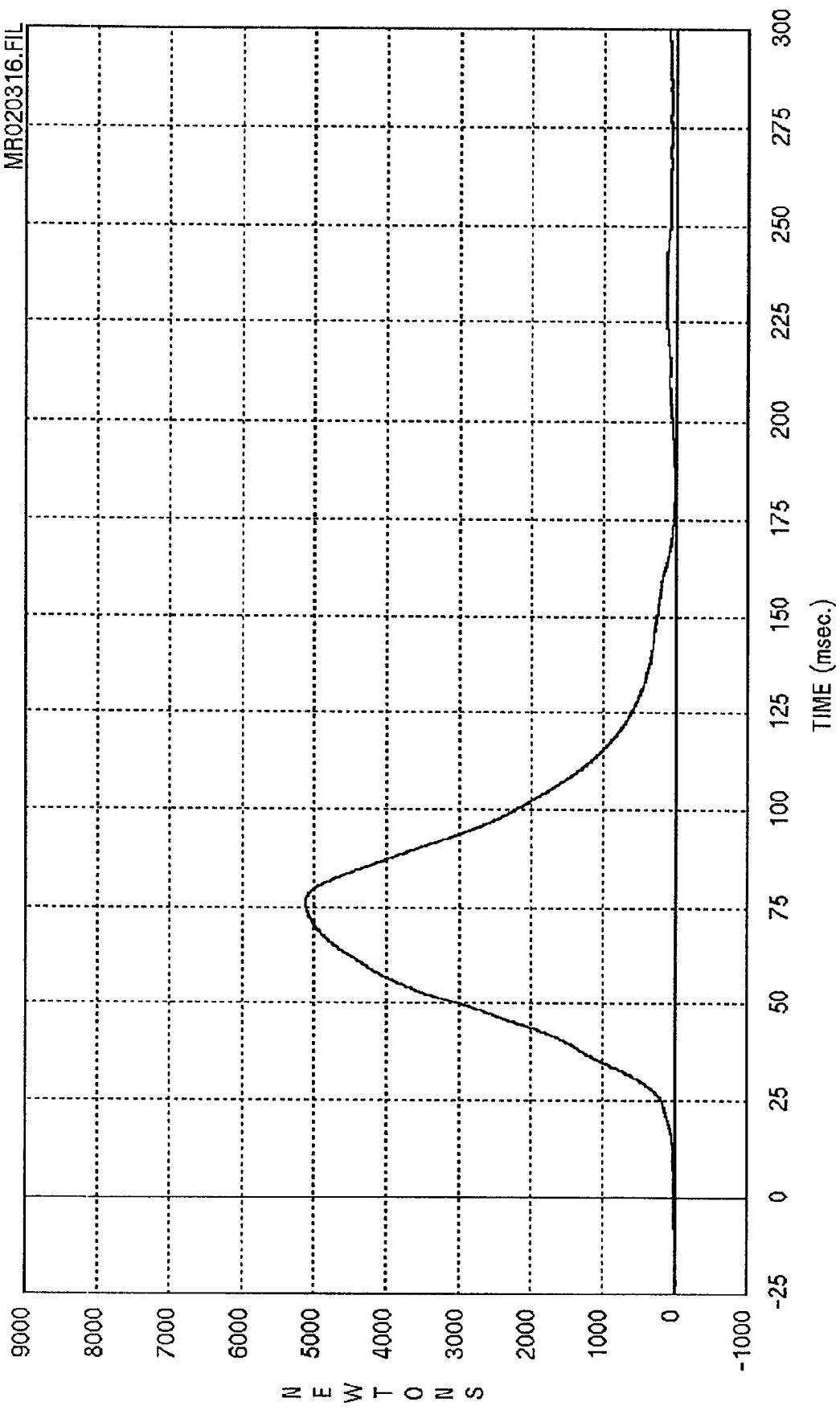
275

300

TIME (msec.)

Curve: Driver chest displacement (No data) Filter: SAE CLASS 180 Max = .00000 Min = .00000

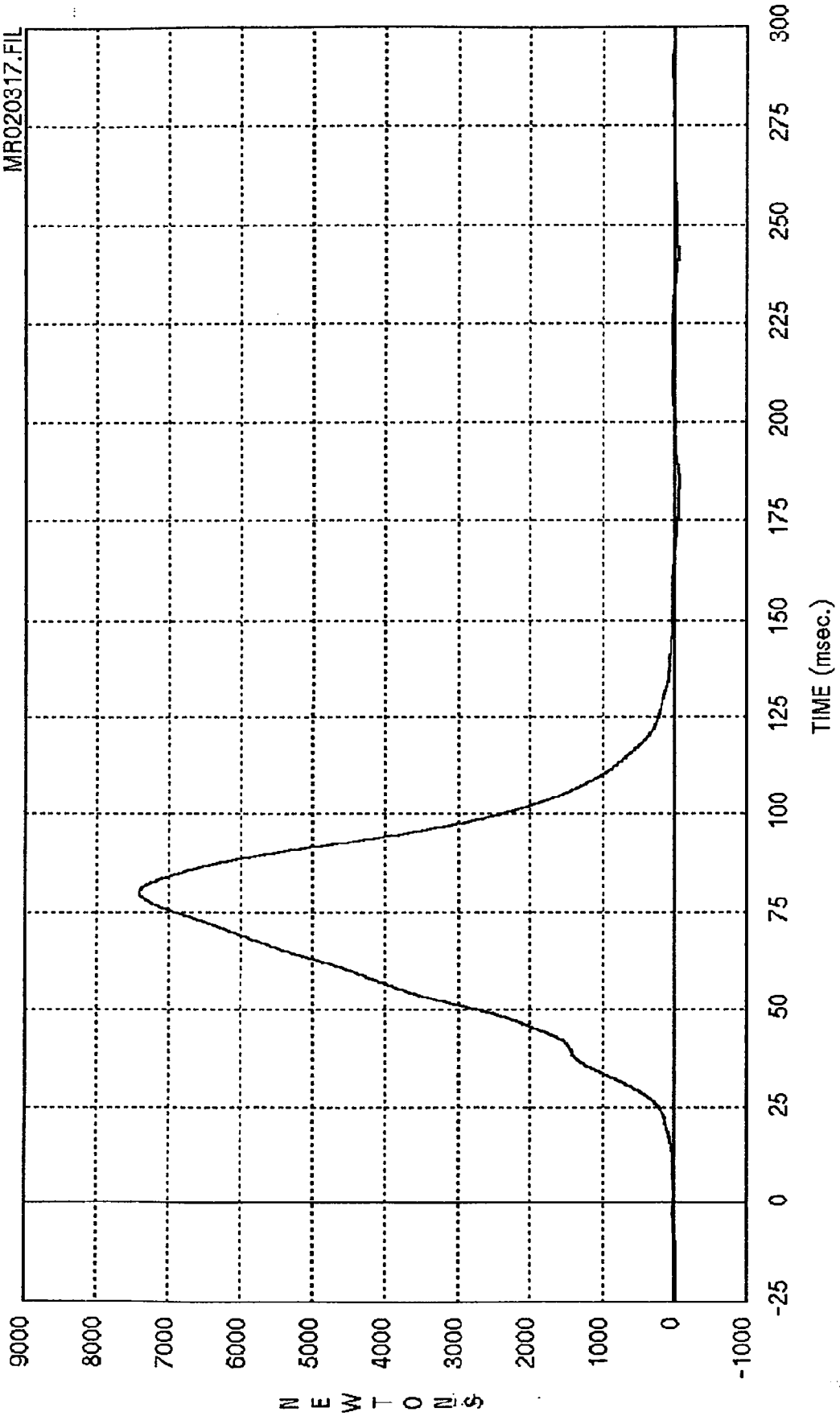
MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup



Curve: Driver lap belt load Filter: SAE CLASS 60 Max = 5127.2 Min = 17.506

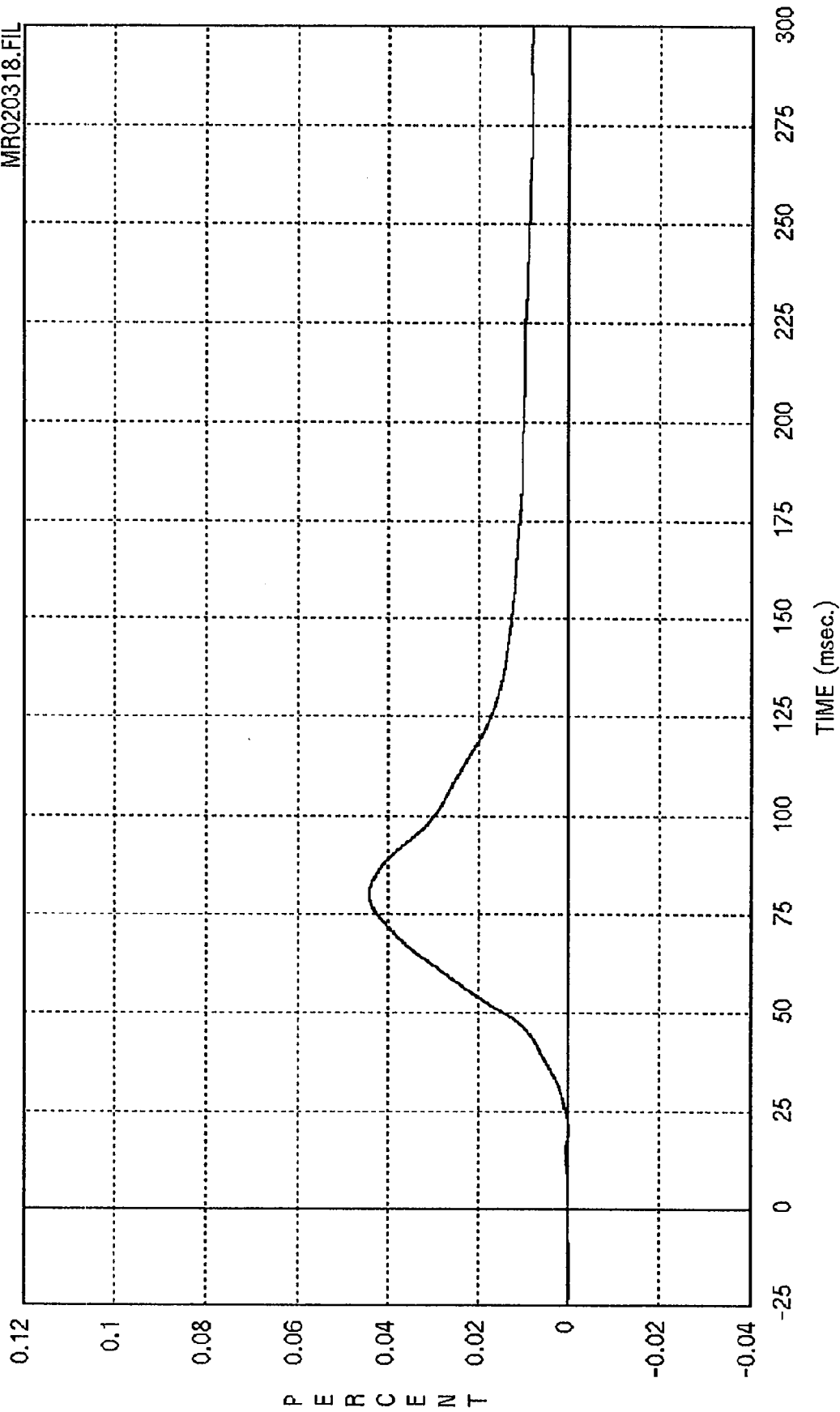
MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup

MR020317.FIL



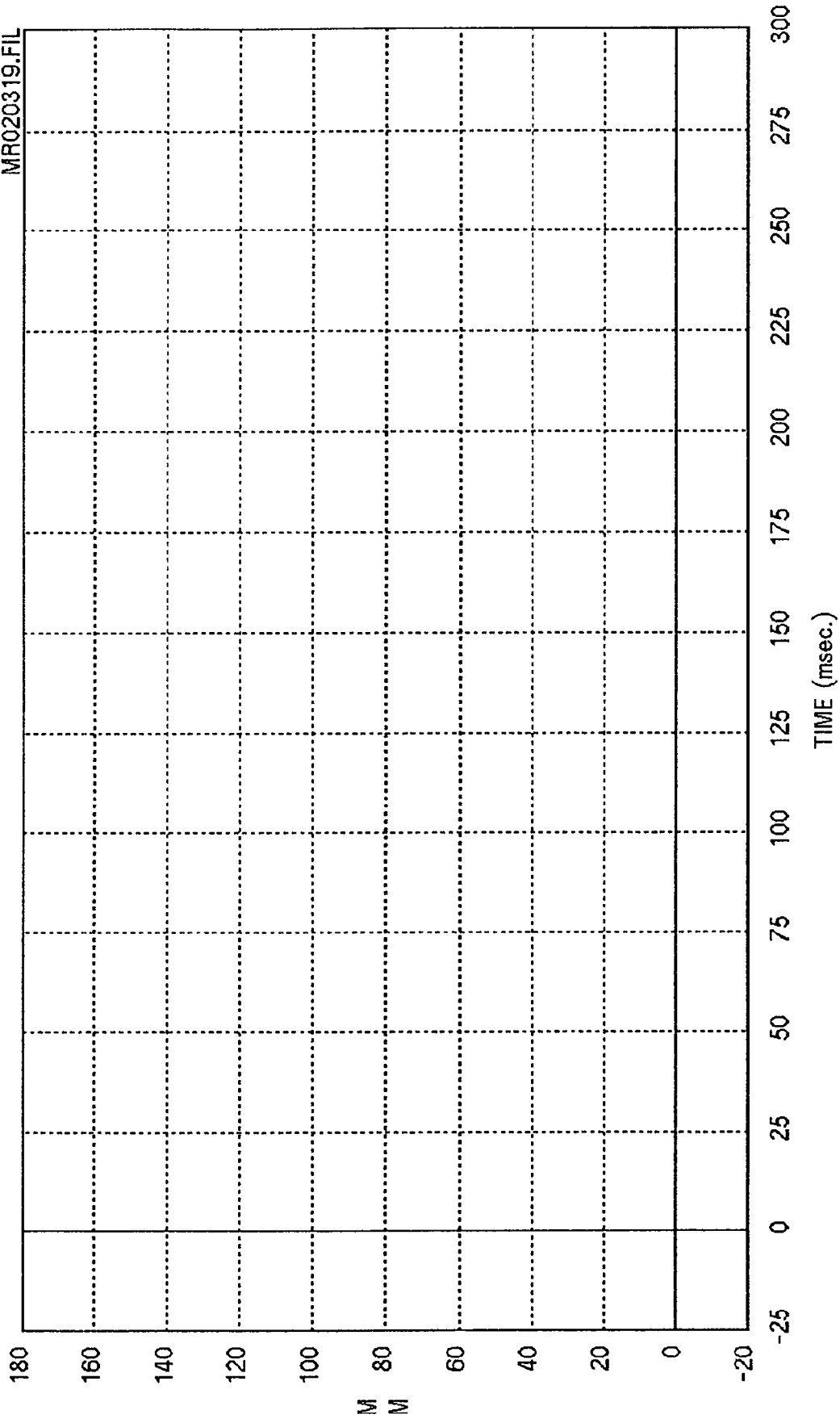
Curve: Driver shoulder belt load Filter: SAE CLASS:60 Max = 7417.5 Min = -59.576

MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup



Curve: Driver shoulder belt elongation Filter: SAE CLASS 60 Max = .44316E-01 Min = -.93407E-04  
MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup

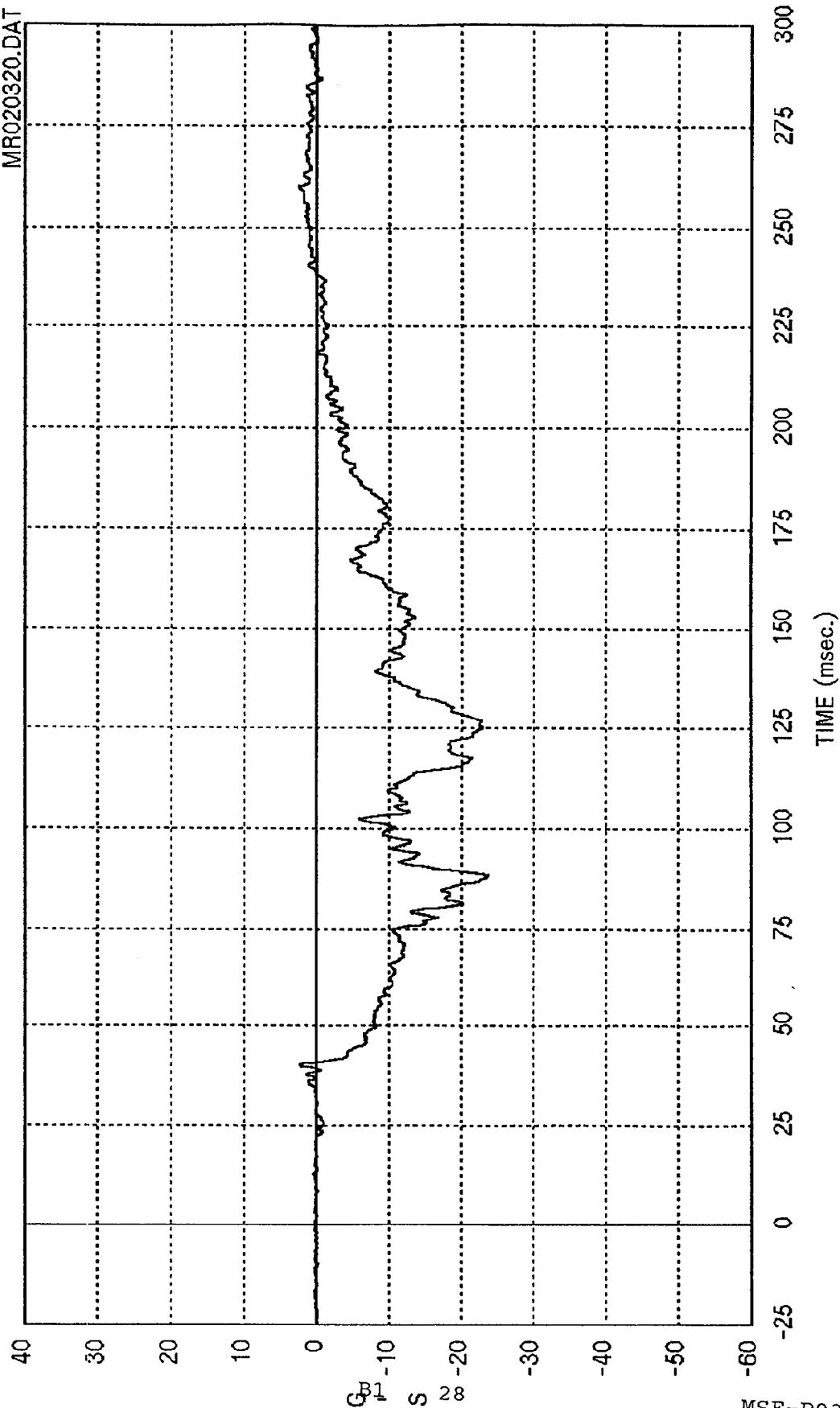
MR020319.FIL



Curve: Driver seat belt pullout (Not used) Filter: SAE-CLASS 60 Max = .00000 Min = .00000

MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup

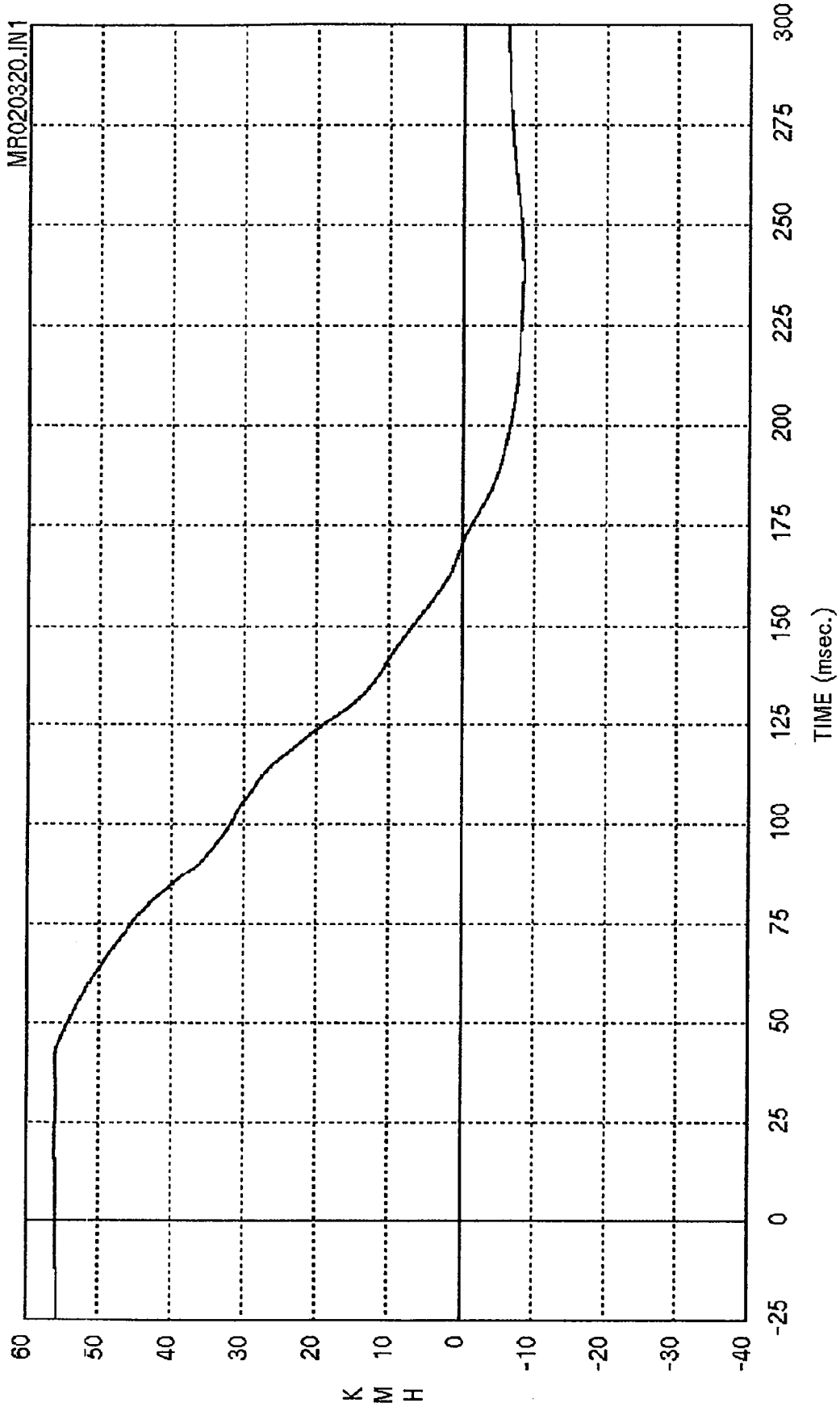
MR020320.DAT



Curve: Passenger head acceleration -- X axis. Filter: SAE CLASS 1000 Max = 2.6453 Min = -23.840

MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup

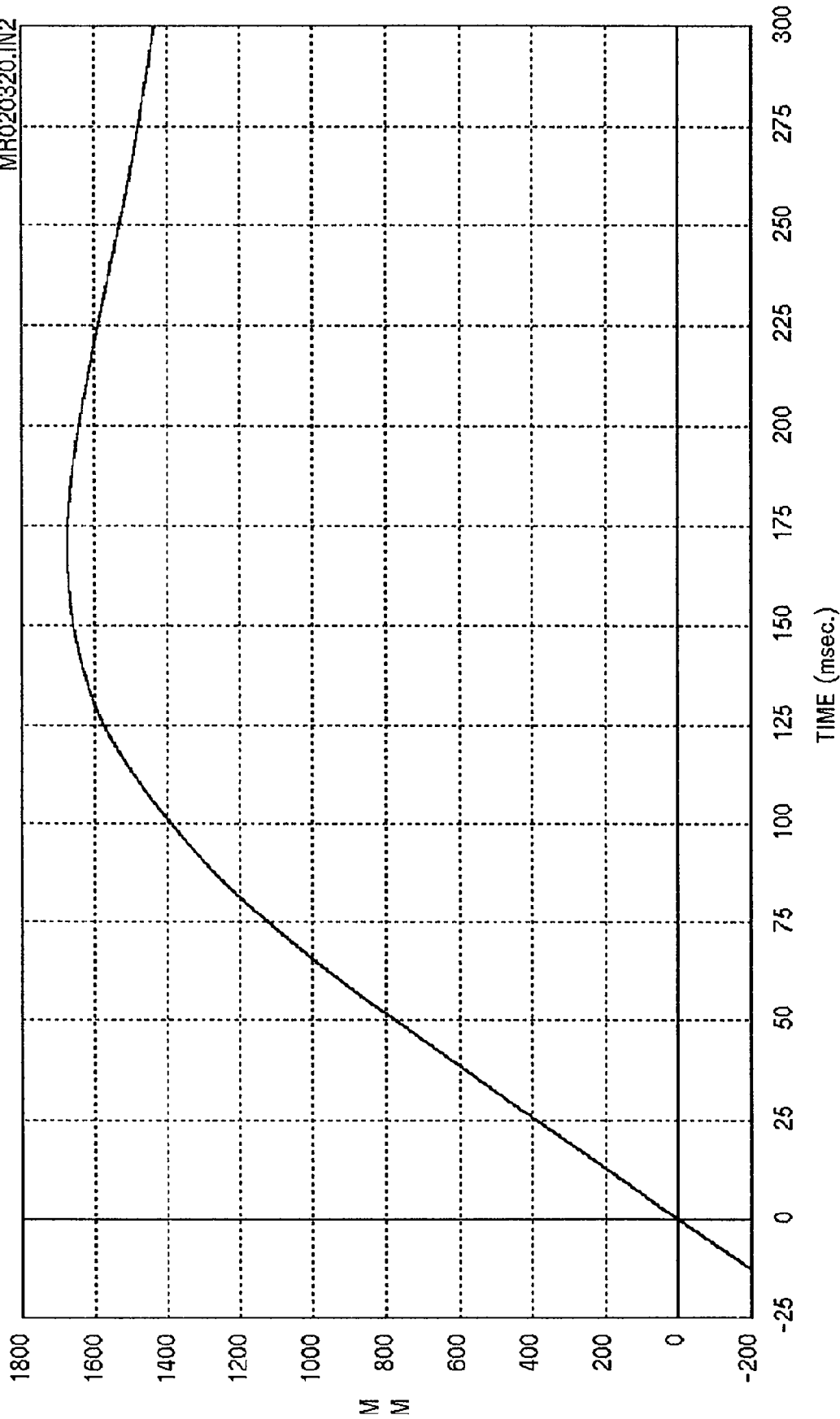
MSE-R93030-04



Curve: Passenger head delta V -- X axis Filter: SAE CLASS 180 Max = 56.183 Min = -8.4850

MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup

MR020320.IN2



Curve: Passenger head displacement -- X axis

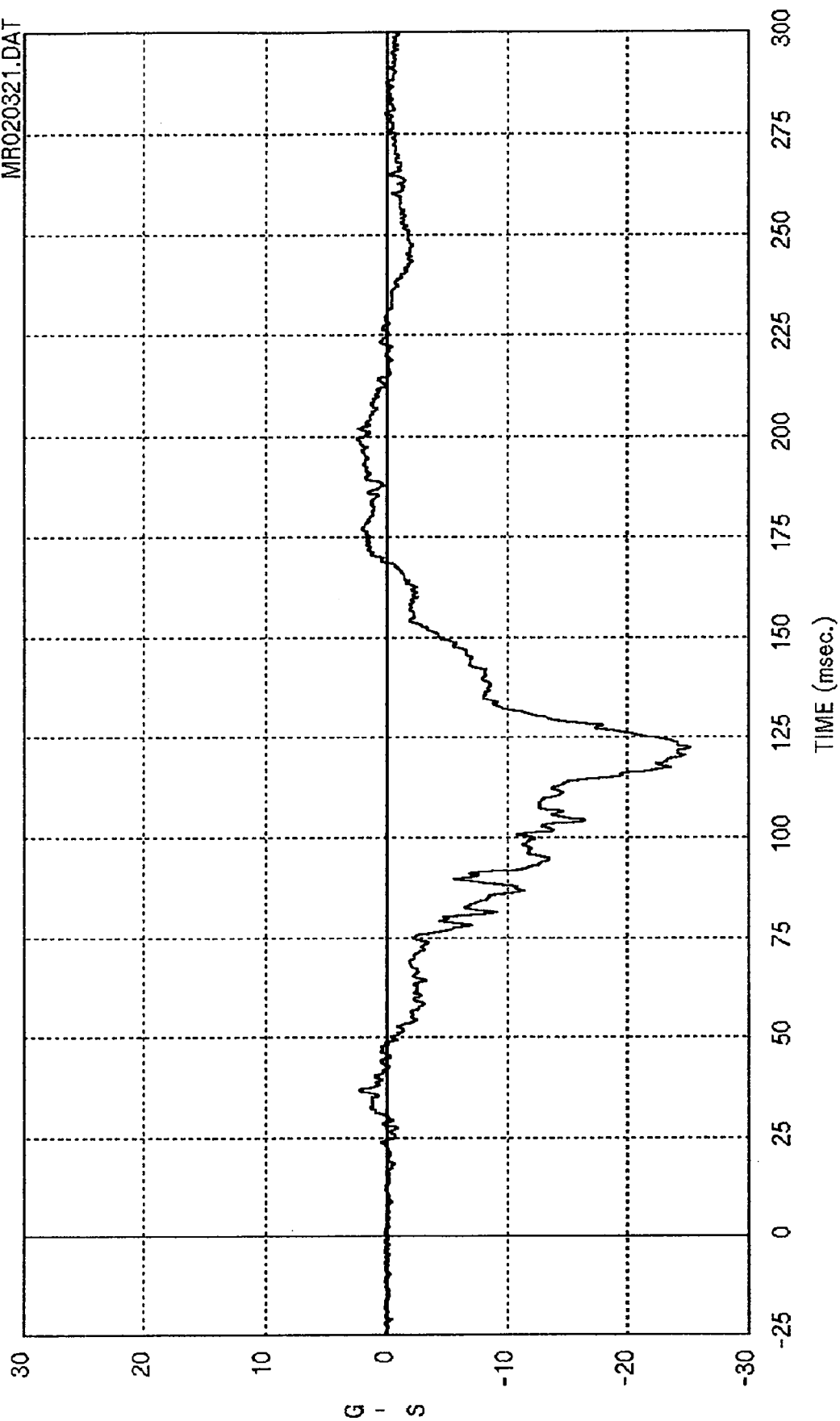
Filter: SAE CLASS 180

Max = 1675.0

Min = 1435.7

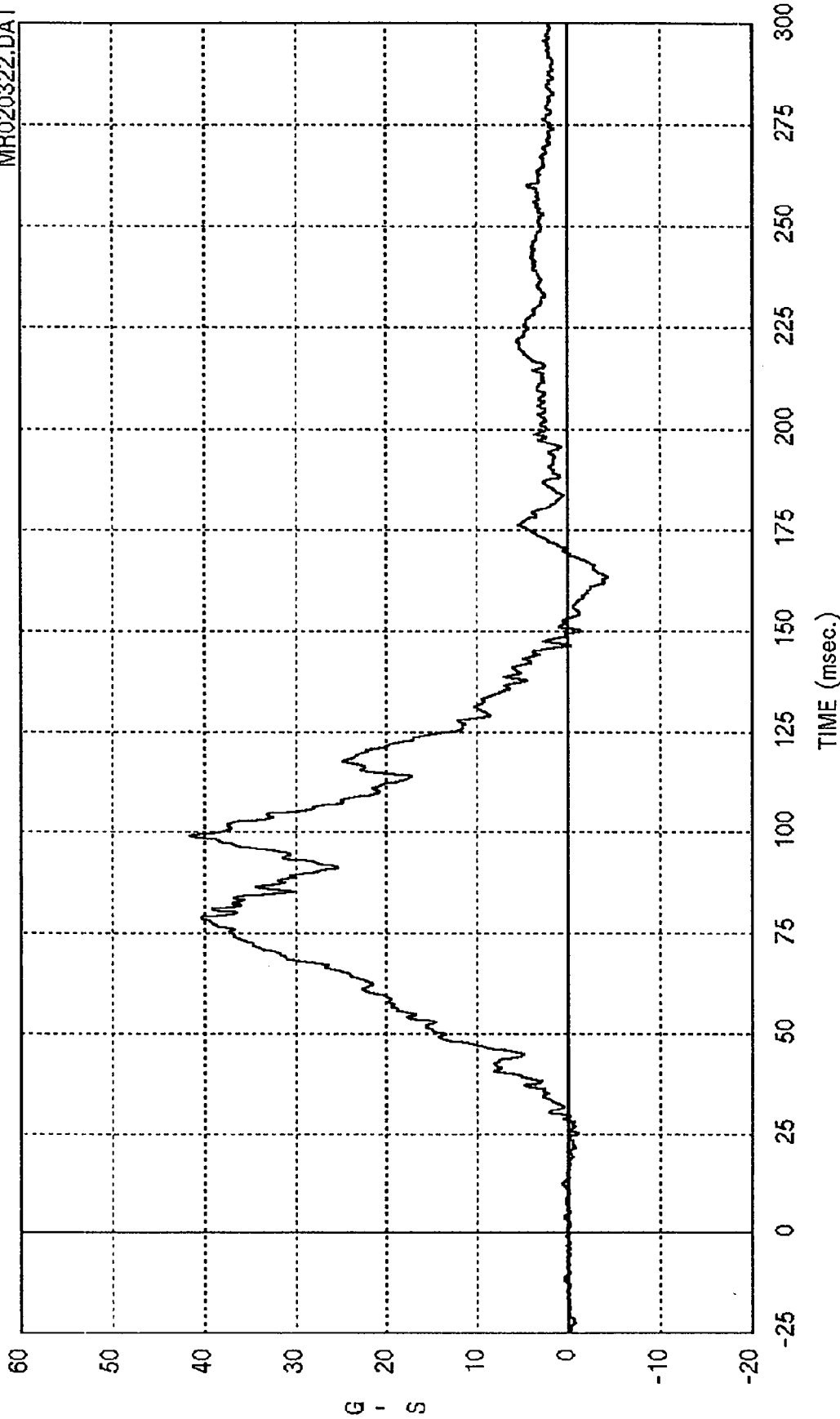
MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup

MR020321.DAT

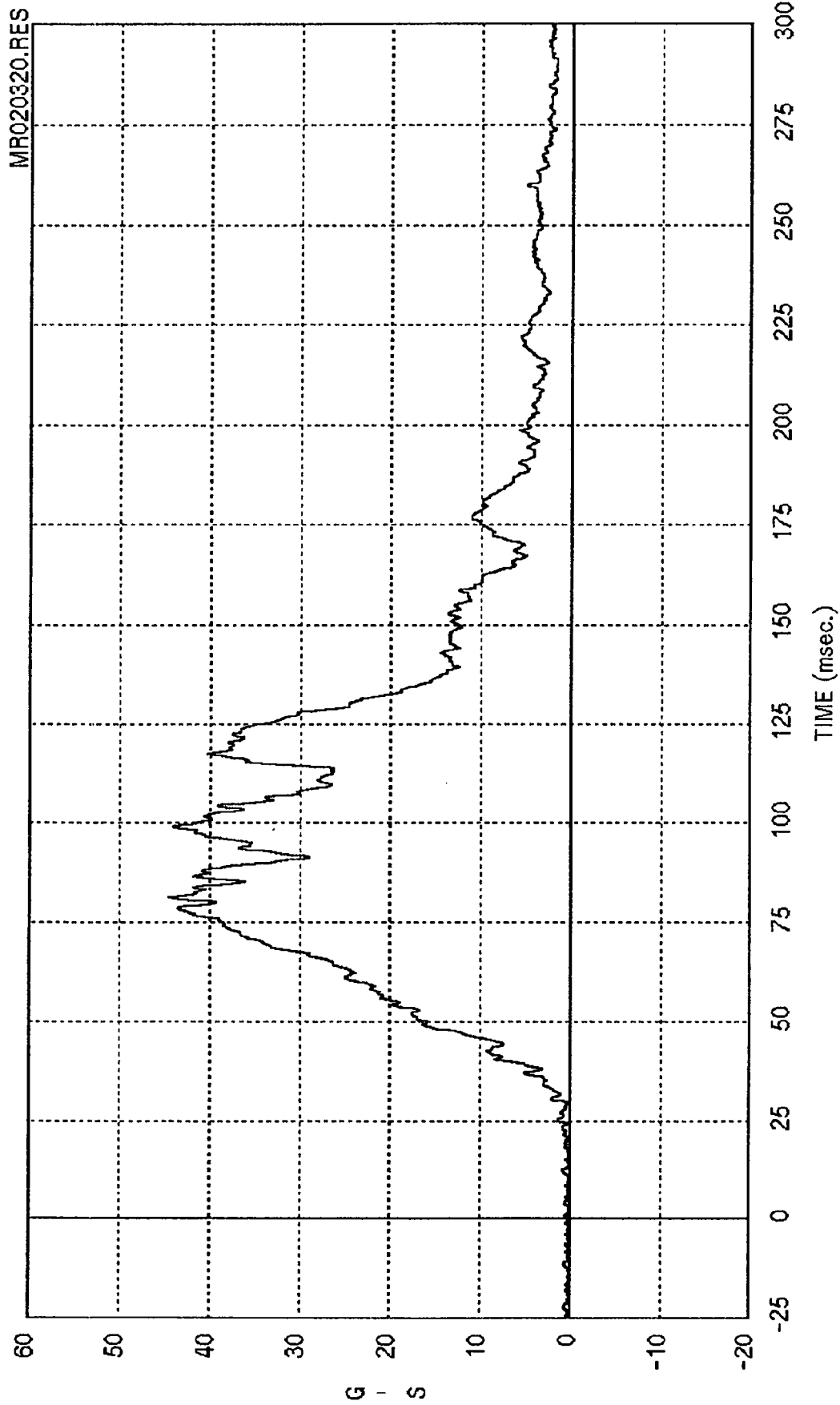


Curve: Passenger head acceleration -- Y axis Filter: SAE CLASS 1000 Max = 2.5147 Min = -25.170

MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup

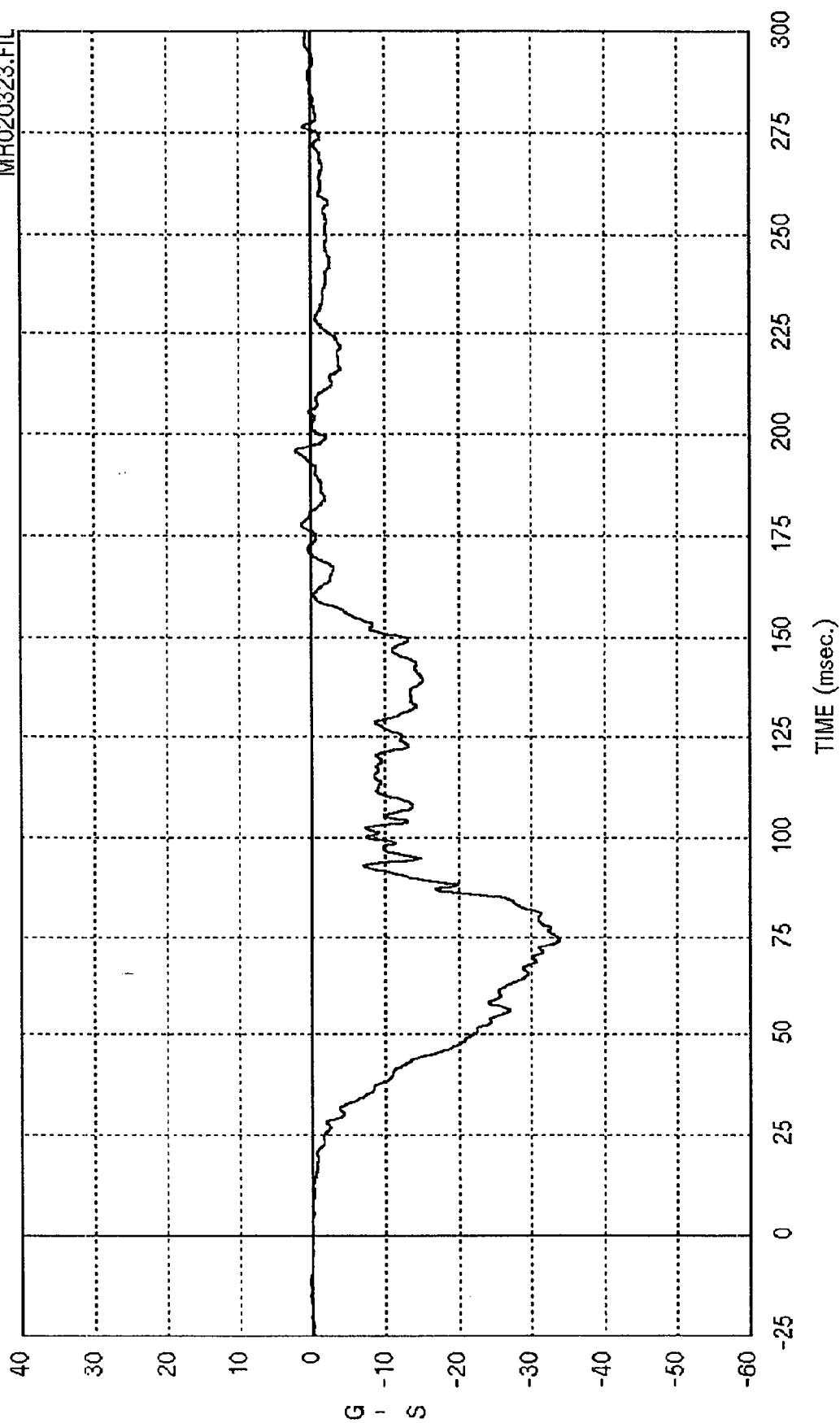


Curve: Passenger head acceleration -- Z axis Filter: SAE CLASS 1000 Max = 41.609 Min = -4.2232  
 MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup



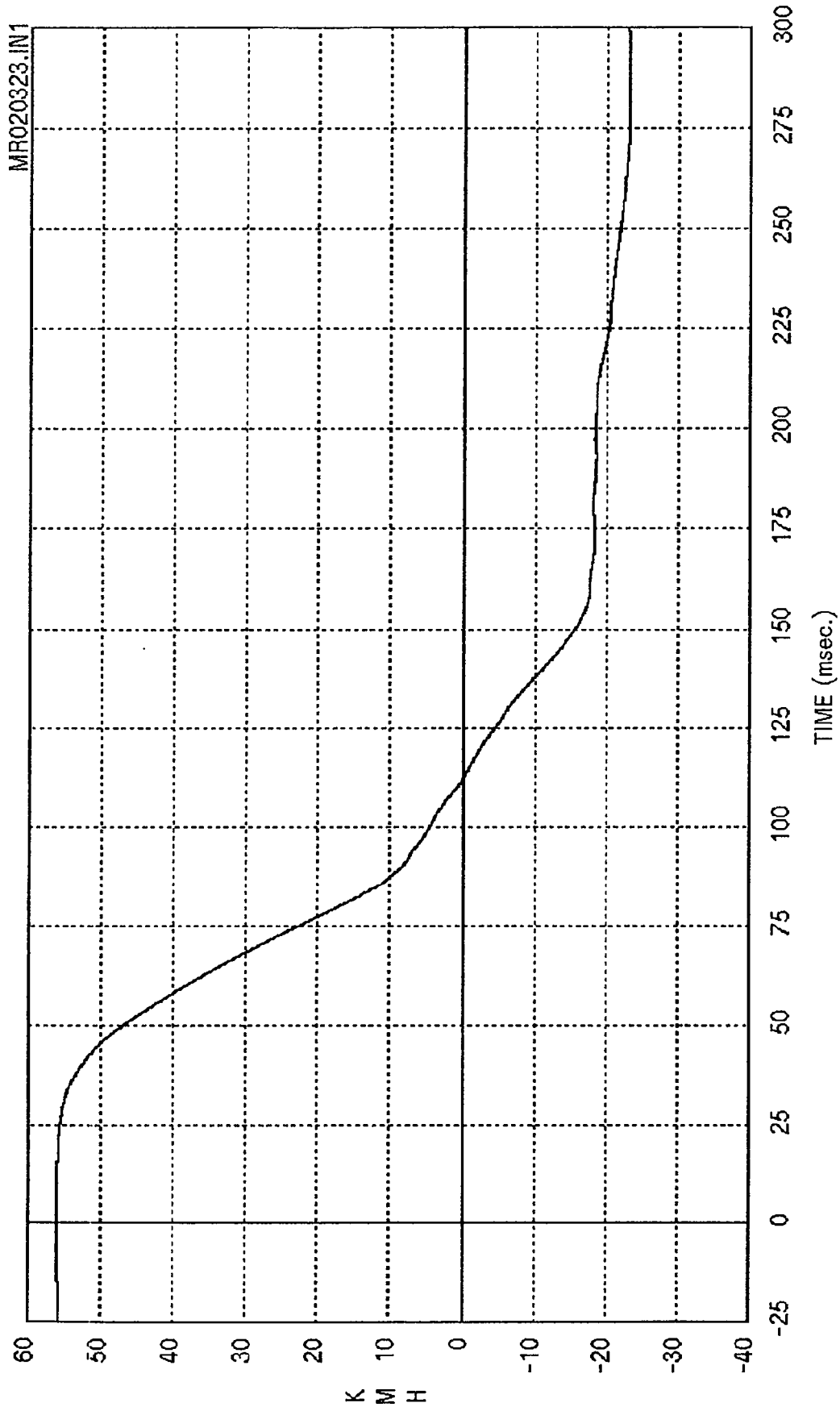
Curve: Passenger head acceleration -- Resultant Filter: SAE CLASS 1000 Max = 44.691 Min = .76495E-01  
MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup

MR020323.FIL



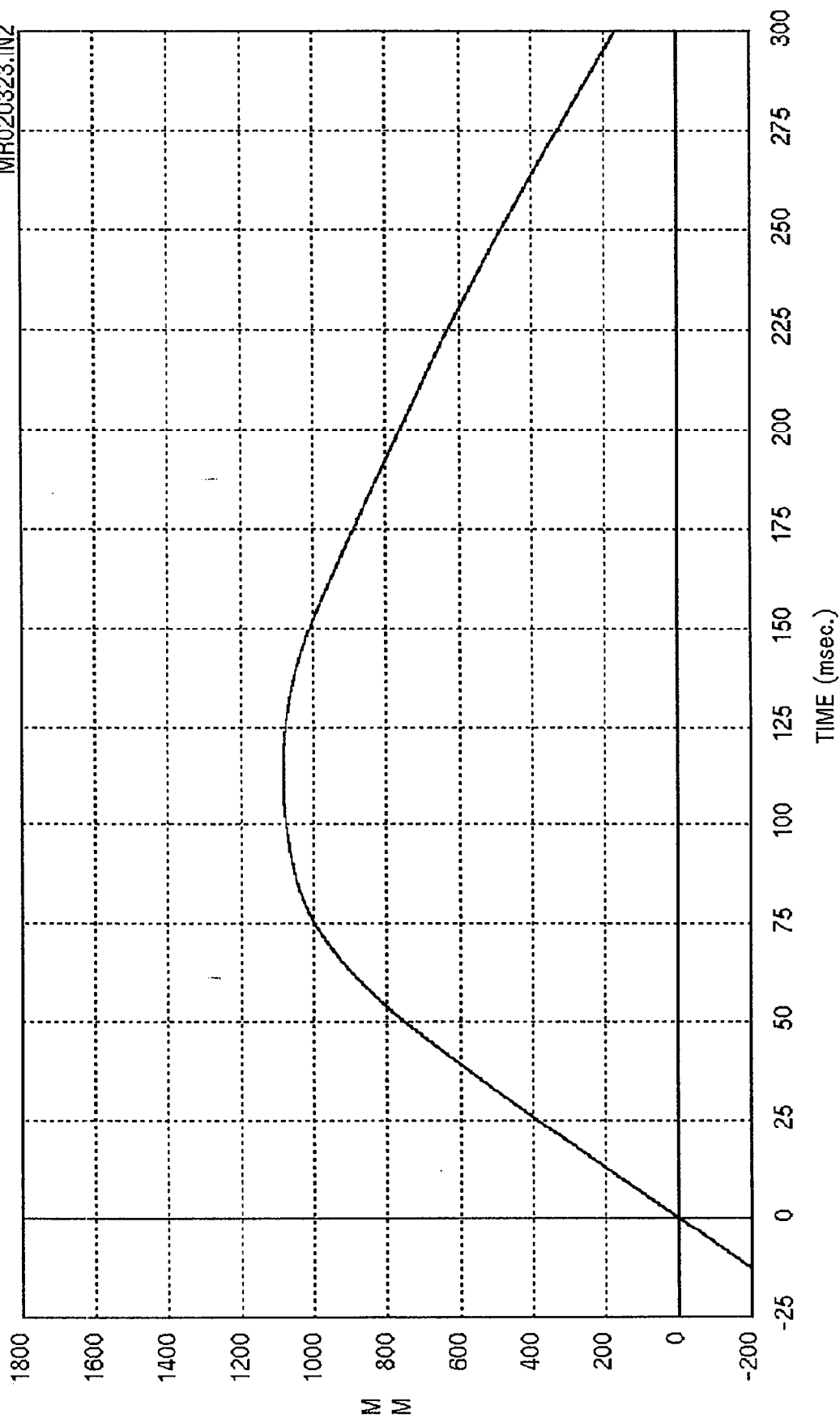
Curve: Passenger chest acceleration -- X axis Filter: SAE:CLASS 180 Max = 2.2097 Min = -33.882

MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup

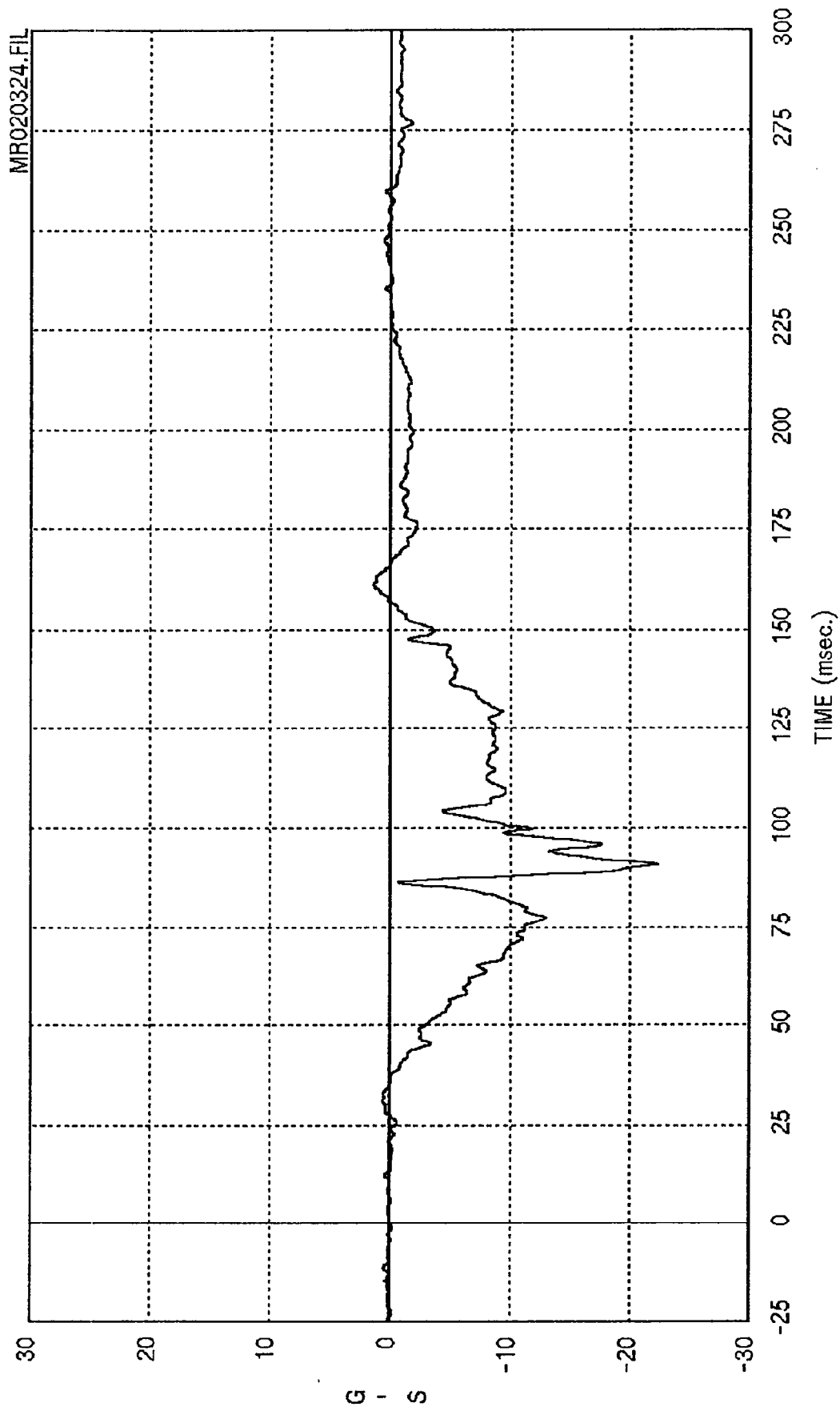


Curve: Passenger chest delta V -- X axis Filter: SAE CLASS 180 Max = 55.935 Min = -23.121

MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup

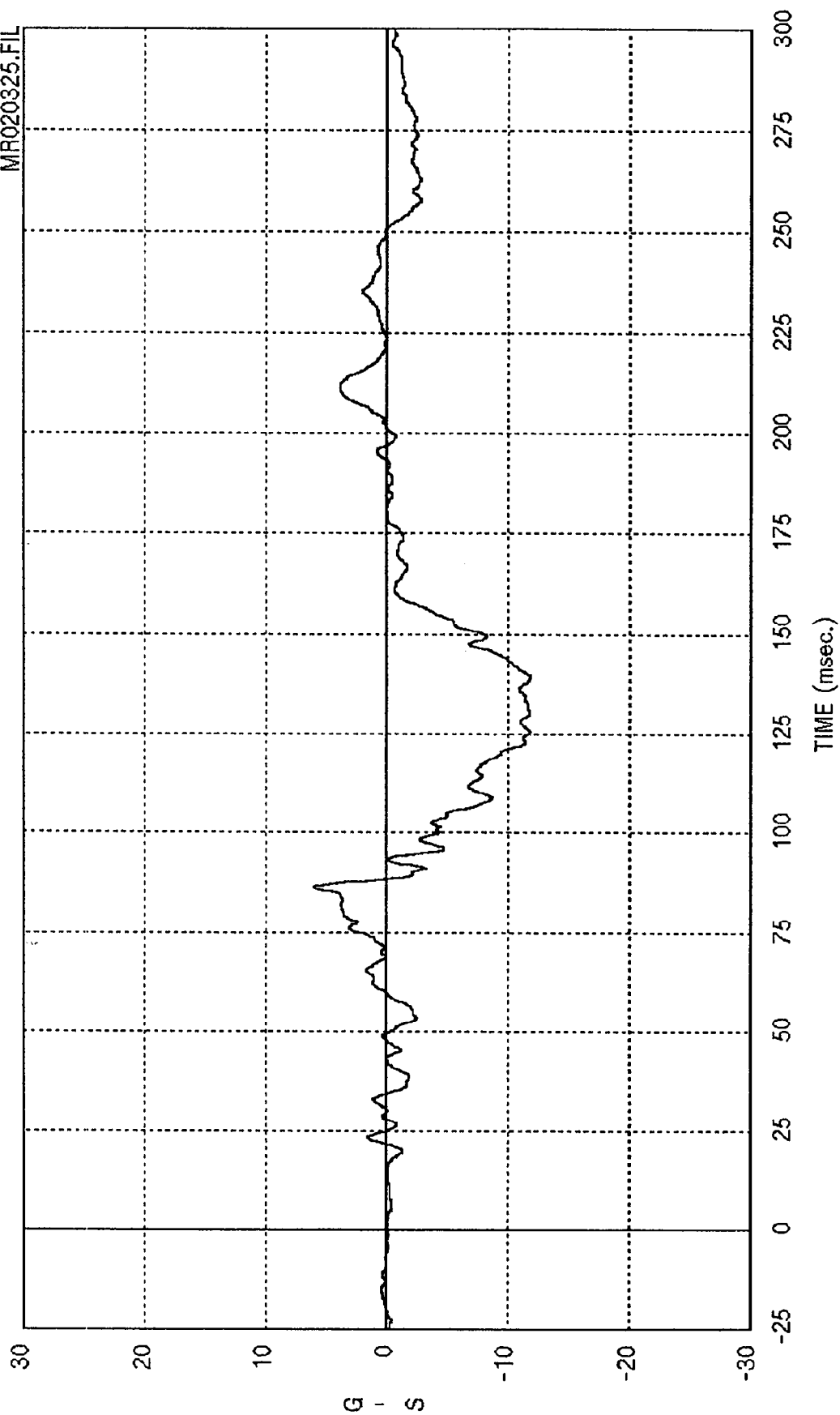


Curve: Passenger chest displacement -- X axis Filter: SAE:CLASS-180 Max = 1087.2 Min = 167.27  
MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup



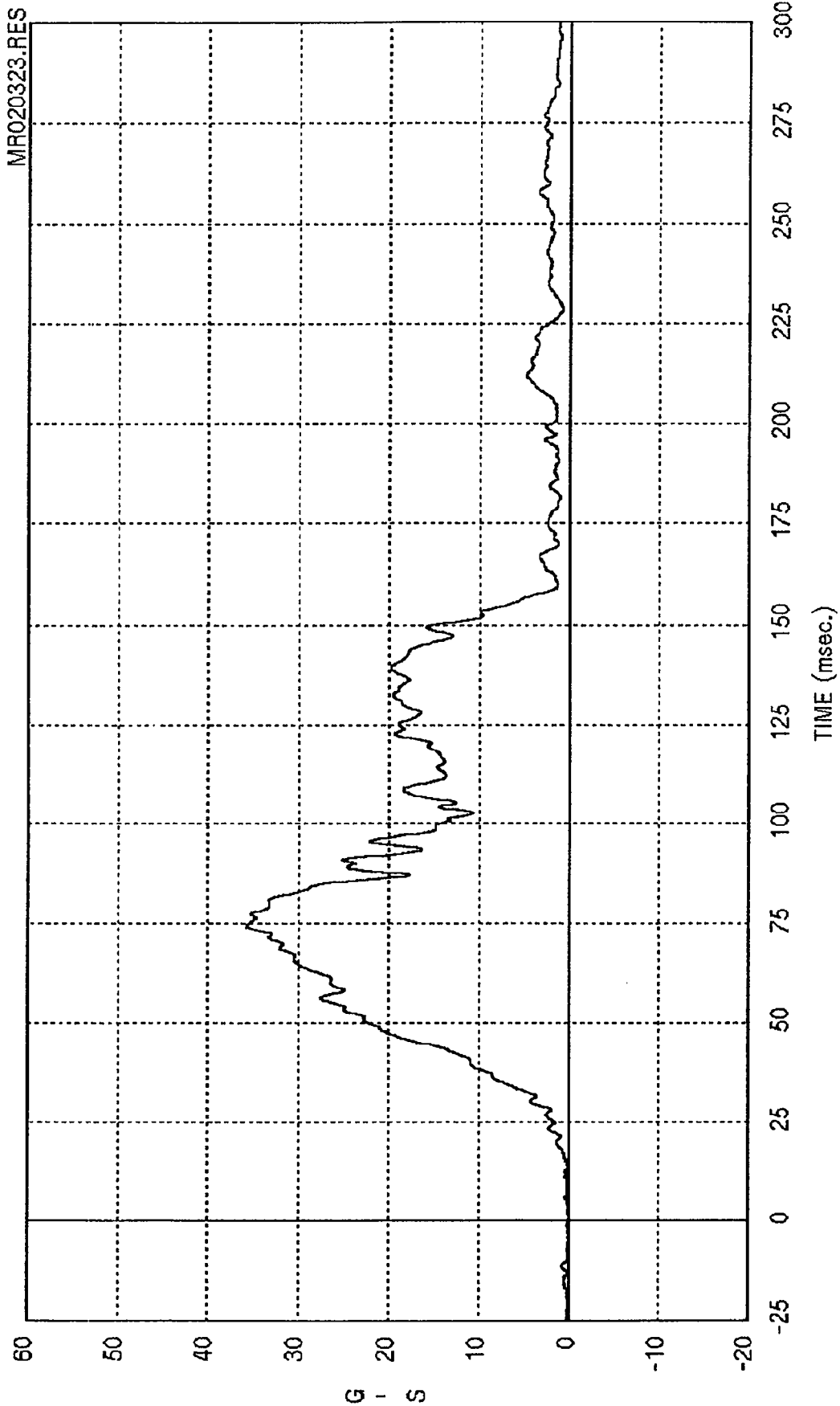
Curve: Passenger chest acceleration -- Y axis Filter: SAE CLASS 180 Max = 1.4449 Min = -22.260  
MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup

MR020325.FIL



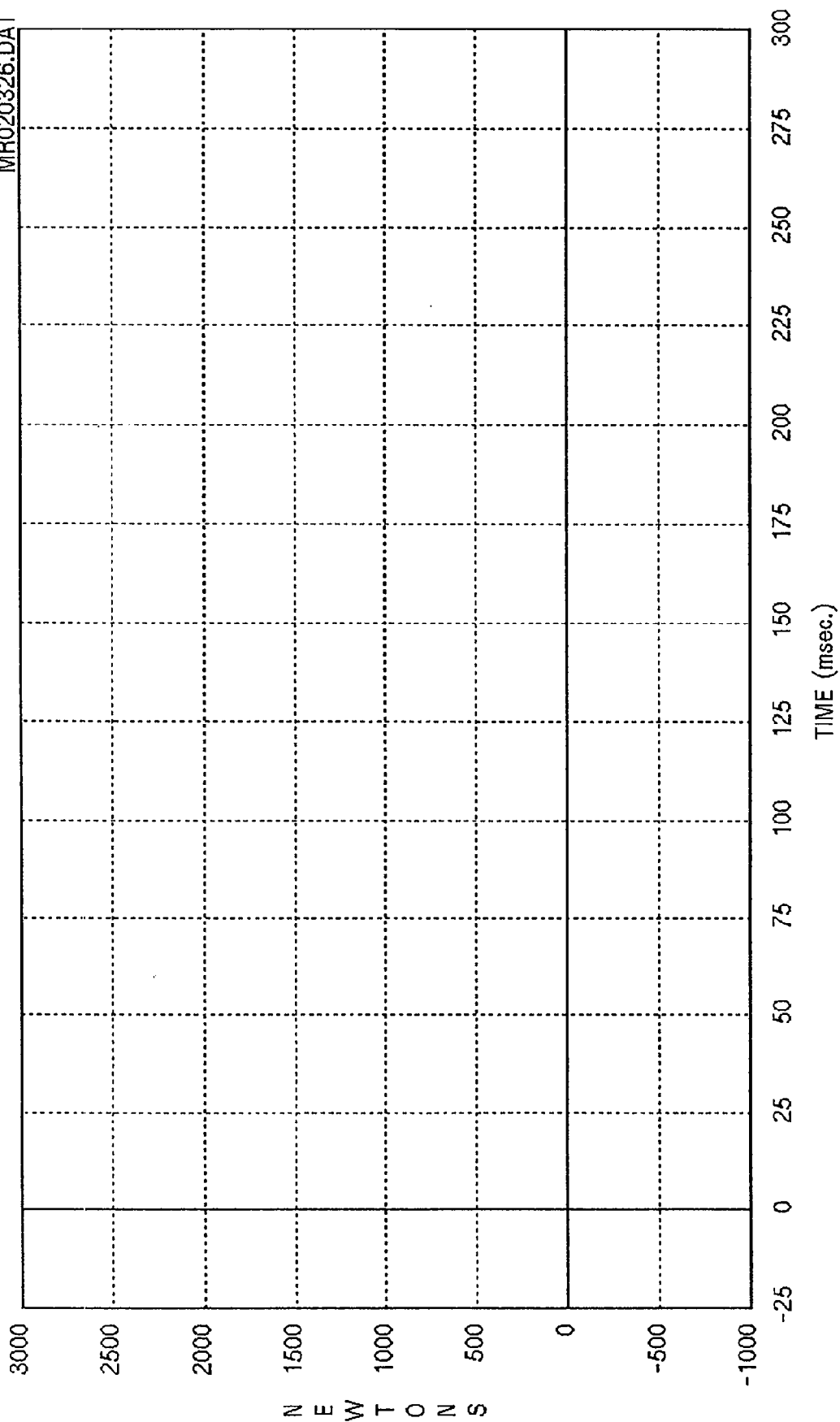
Curve: Passenger chest acceleration -- Z axis Filter: SAE CLASS 180 Max: 6.0886 Min: -11.780

MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup



Curve: Passenger chest acceleration -- Resultant Filter: SAE CLASS 180 Max = 35.649 Min = .59936E-01

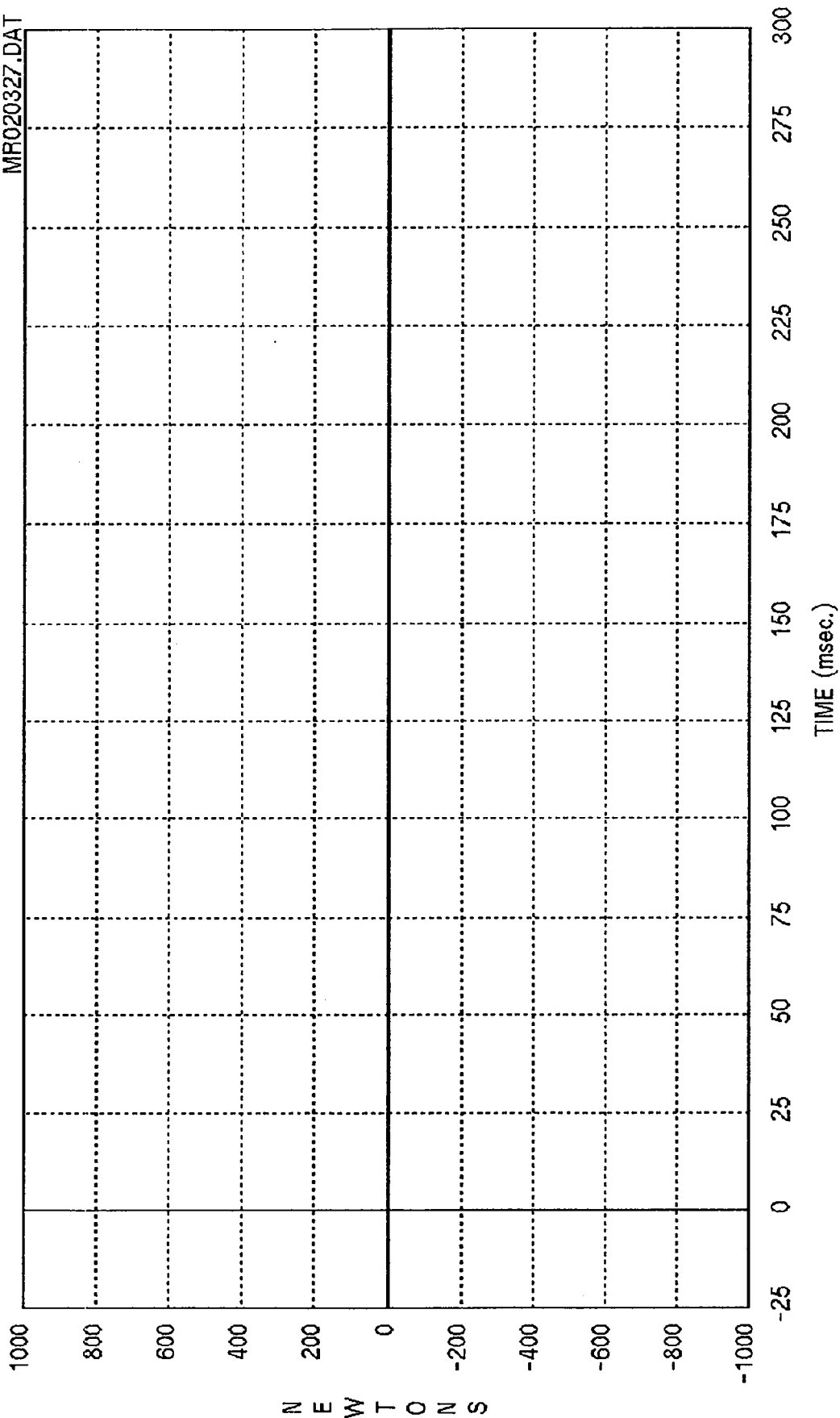
MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup



Curve: Passenger neck force -- X axis (Not used) Filter: SAE CLASS 1000 Max = .00000 Min = .00000

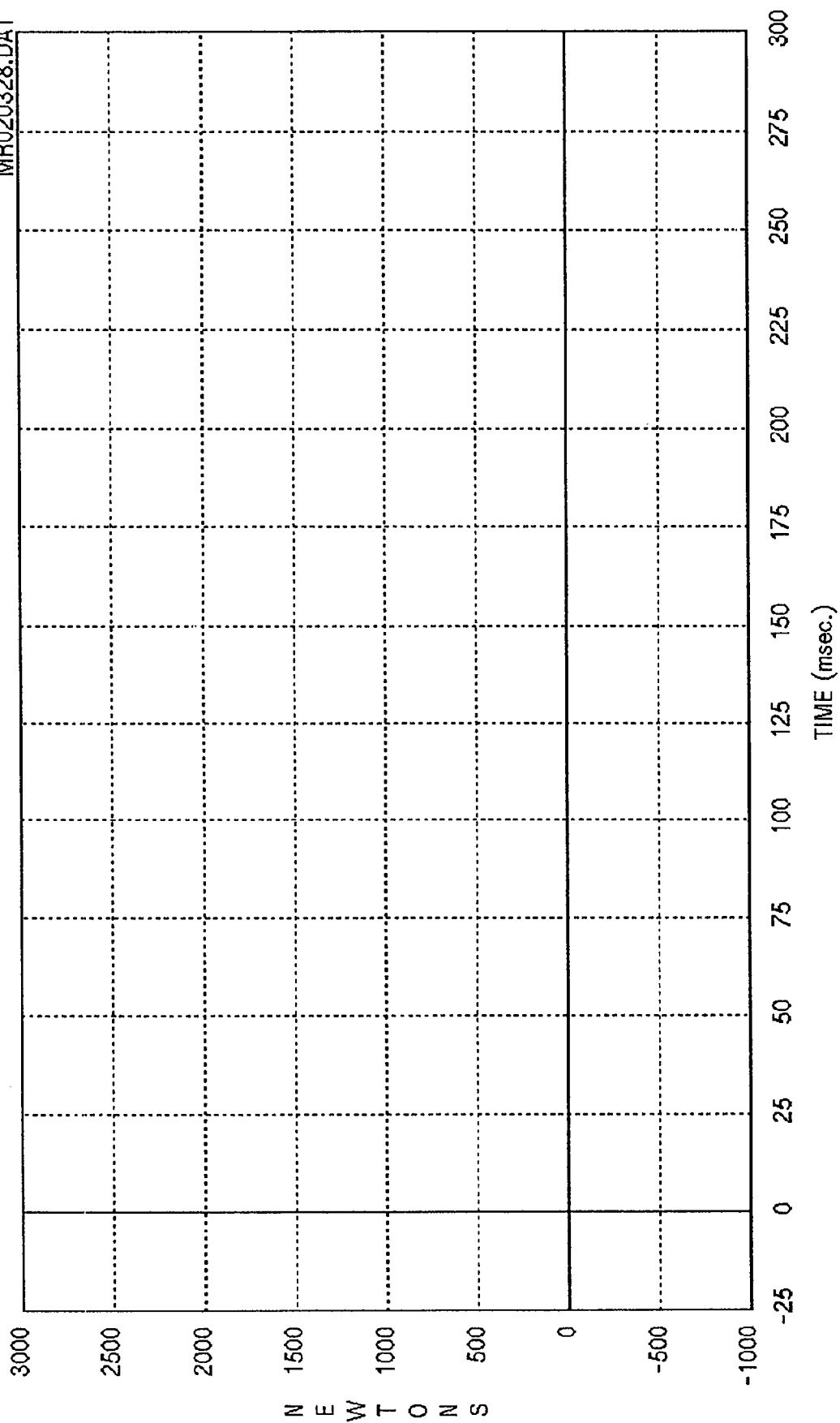
MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup

MR020327.DAT



Curve: Passenger neck force -- Y axis (Not used) Filter: SAE CLASS 1000 Max = .00000 Min = .00000

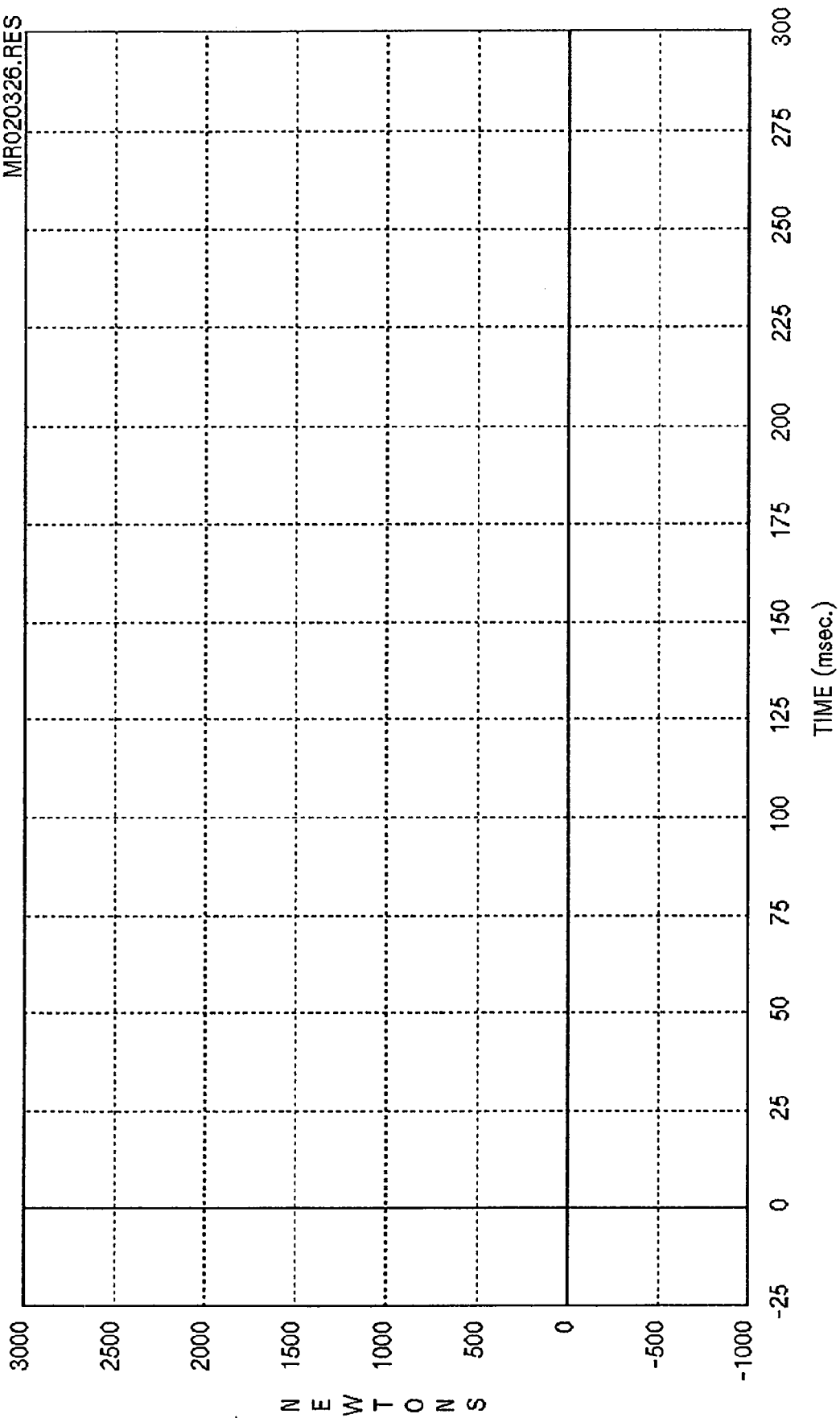
MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup



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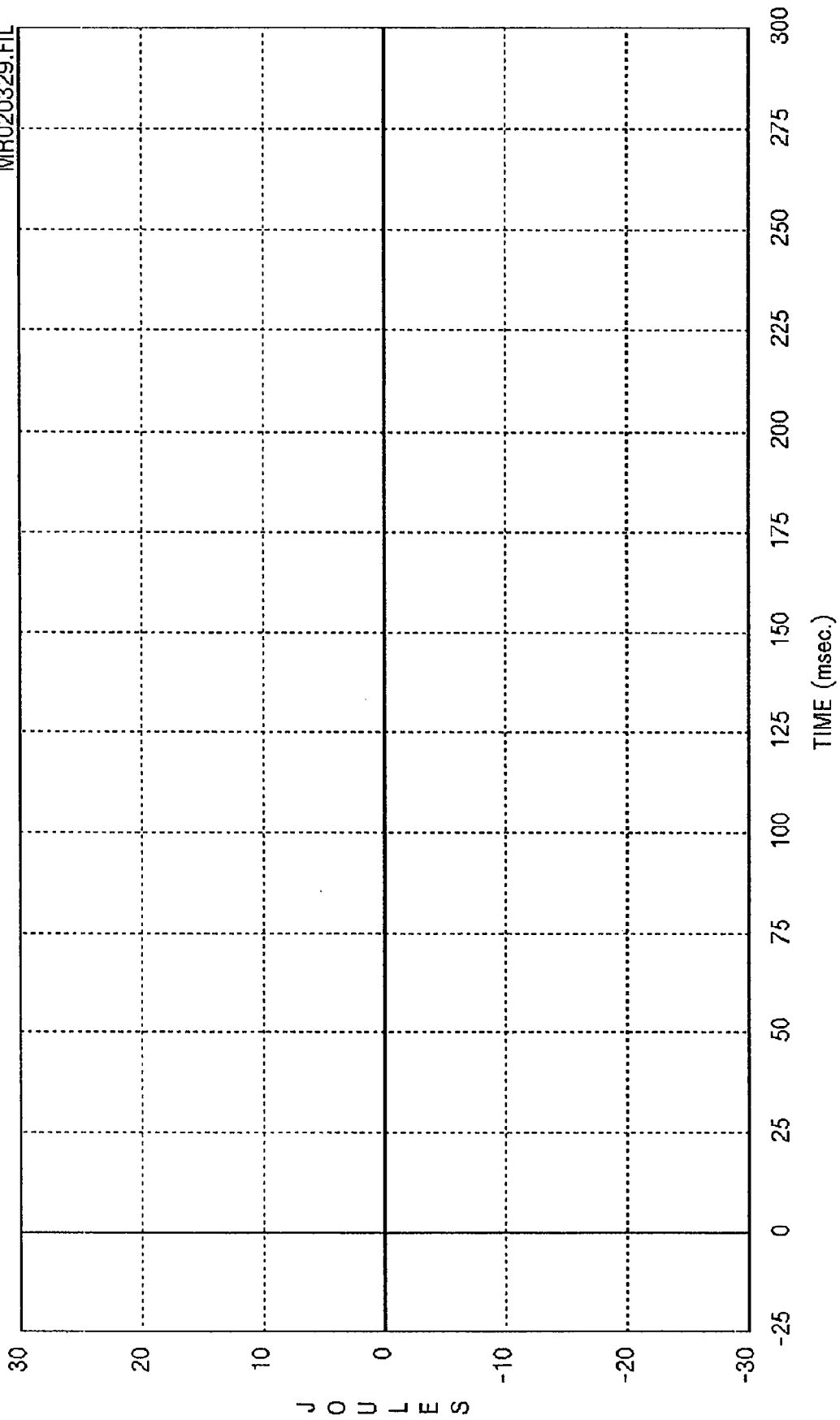
Curve: Passenger neck force -- Z axis (Not used) Filter: SAE CLASS 1000 Max = 0.000000 Min = .000000  
MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup

MR020326.RES



Curve: Passenger neck force -- Resultant (Not used) Filter: SAE CLASS-1000 Max = .00000 Min = .00000

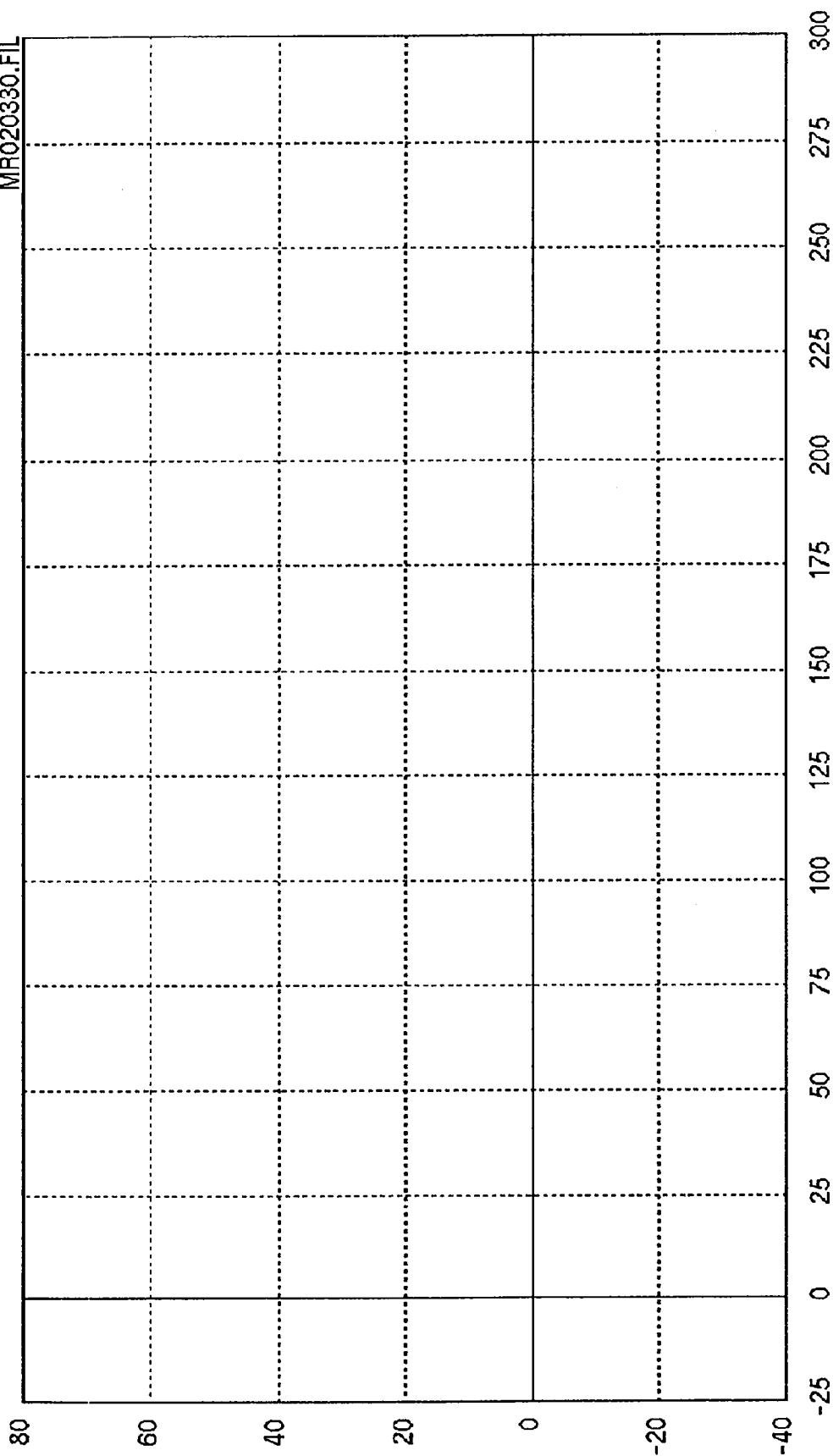
MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup



Curve: Passenger neck moment -- X axis (Not-used) Filter: SAE CLASS 600 Max = .00000 Min = .00000

MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup

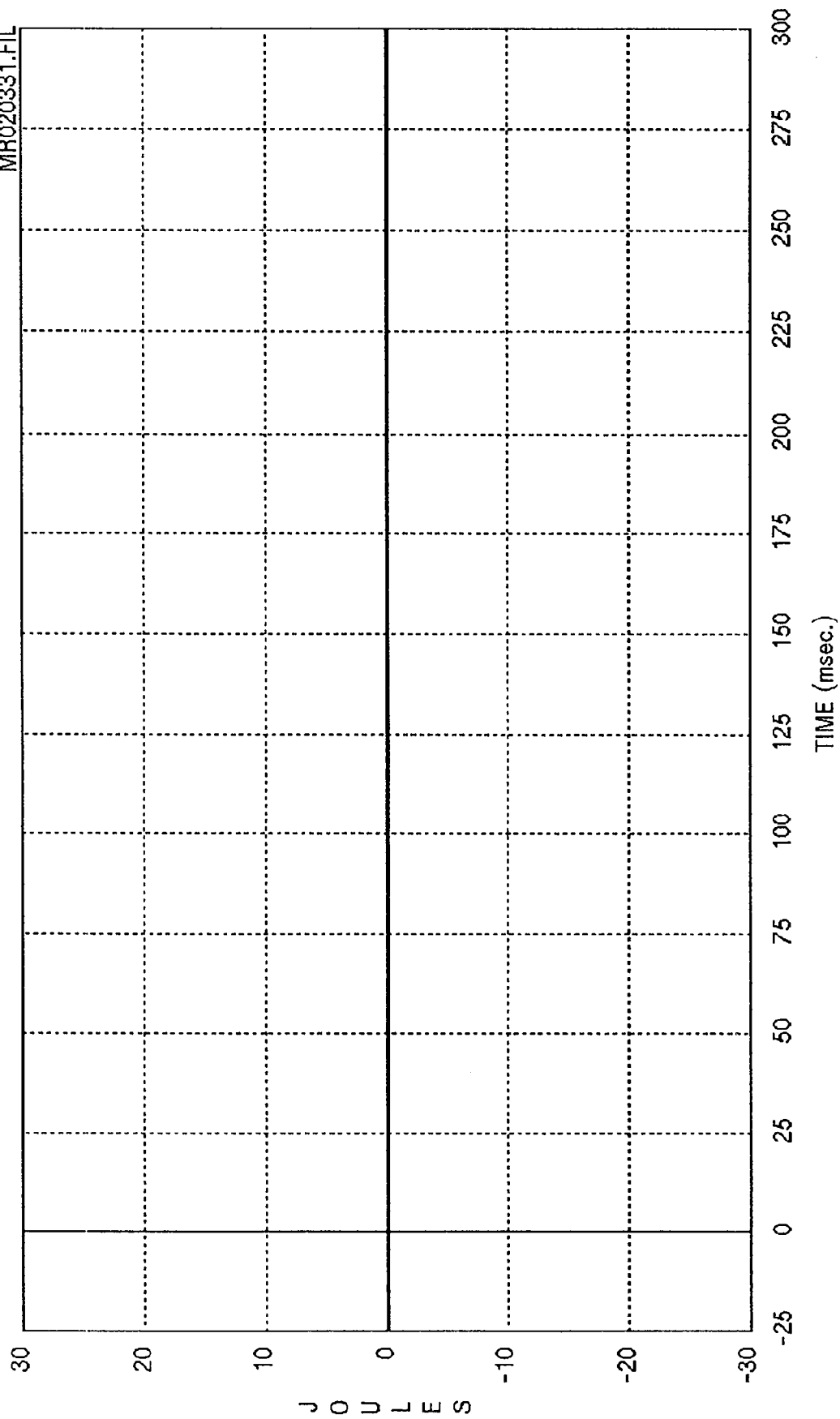
MR020330.FIL



Curve: Passenger neck moment -- Y axis (Not used) Filter: SAE CLASS 600 Max = .00000 Min = .00000

MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup

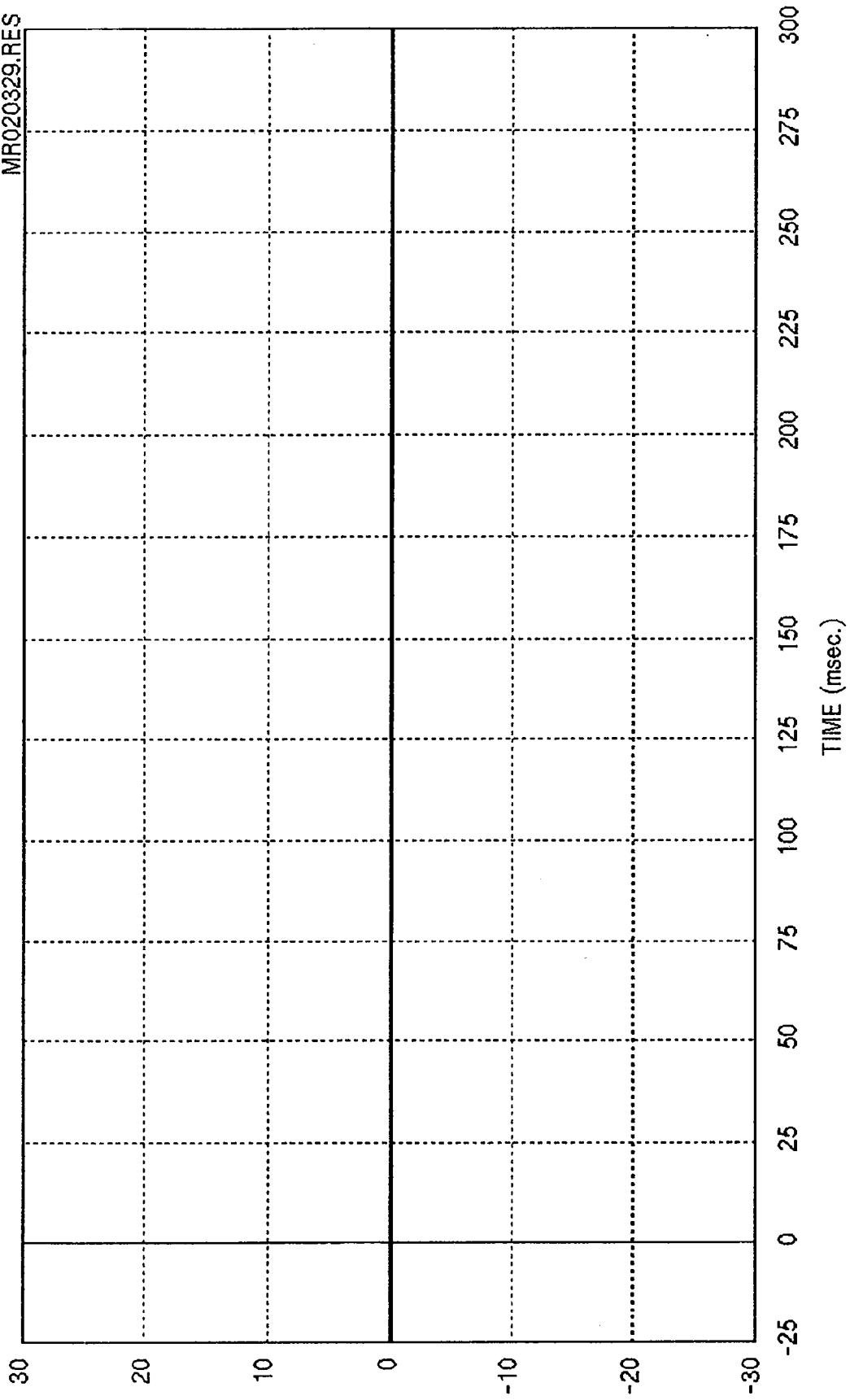
MR020331.FIL



Curve: Passenger neck moment -- Z axis (Not used) Filter: SAE CLASS 600 Max = .00000 Min = .00000

MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup

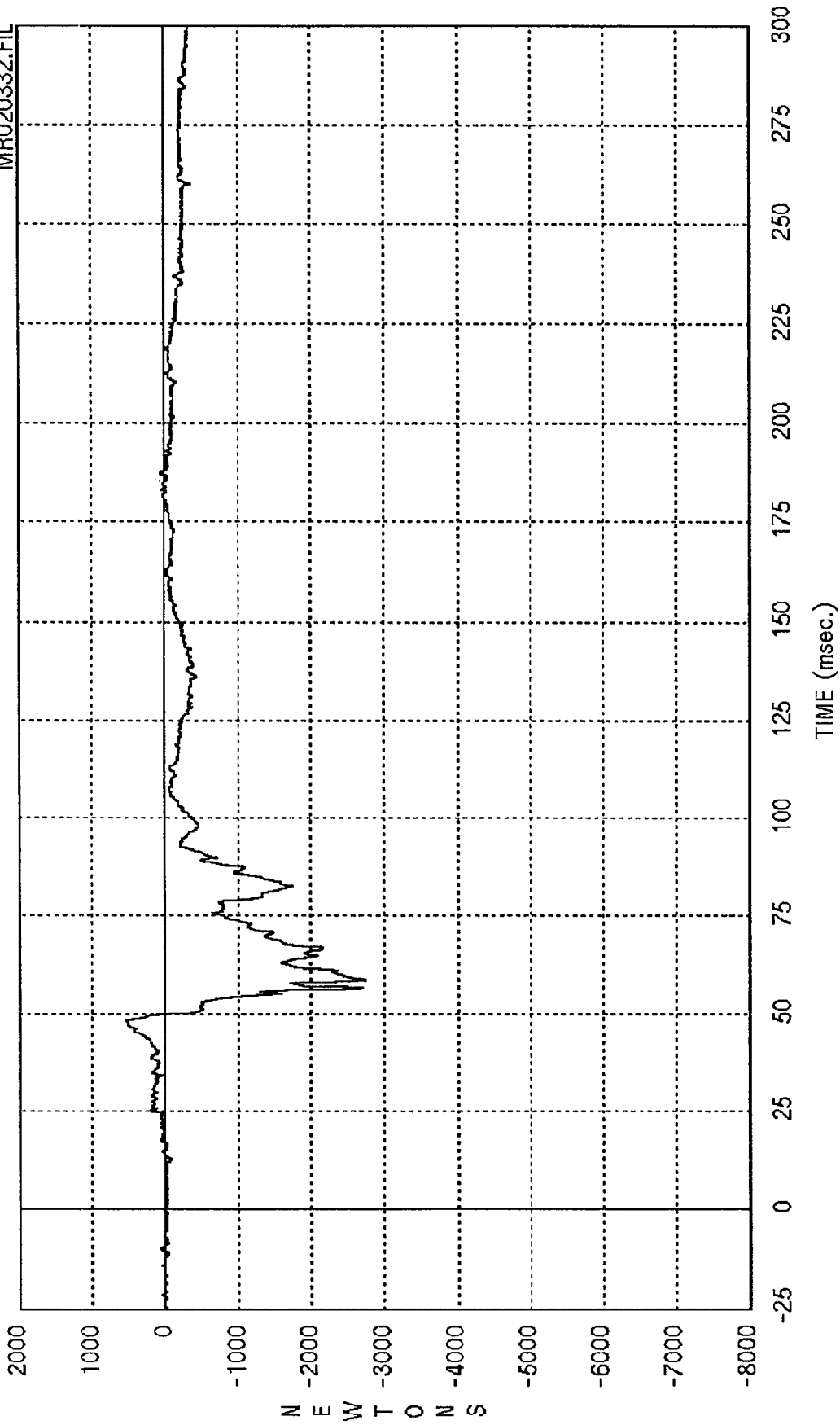
MR020329.RES



Curve: Passenger neck moment: -- Resultant (Not used) Filter: SAE CLASS 600 Max = .00000 Min = .00000

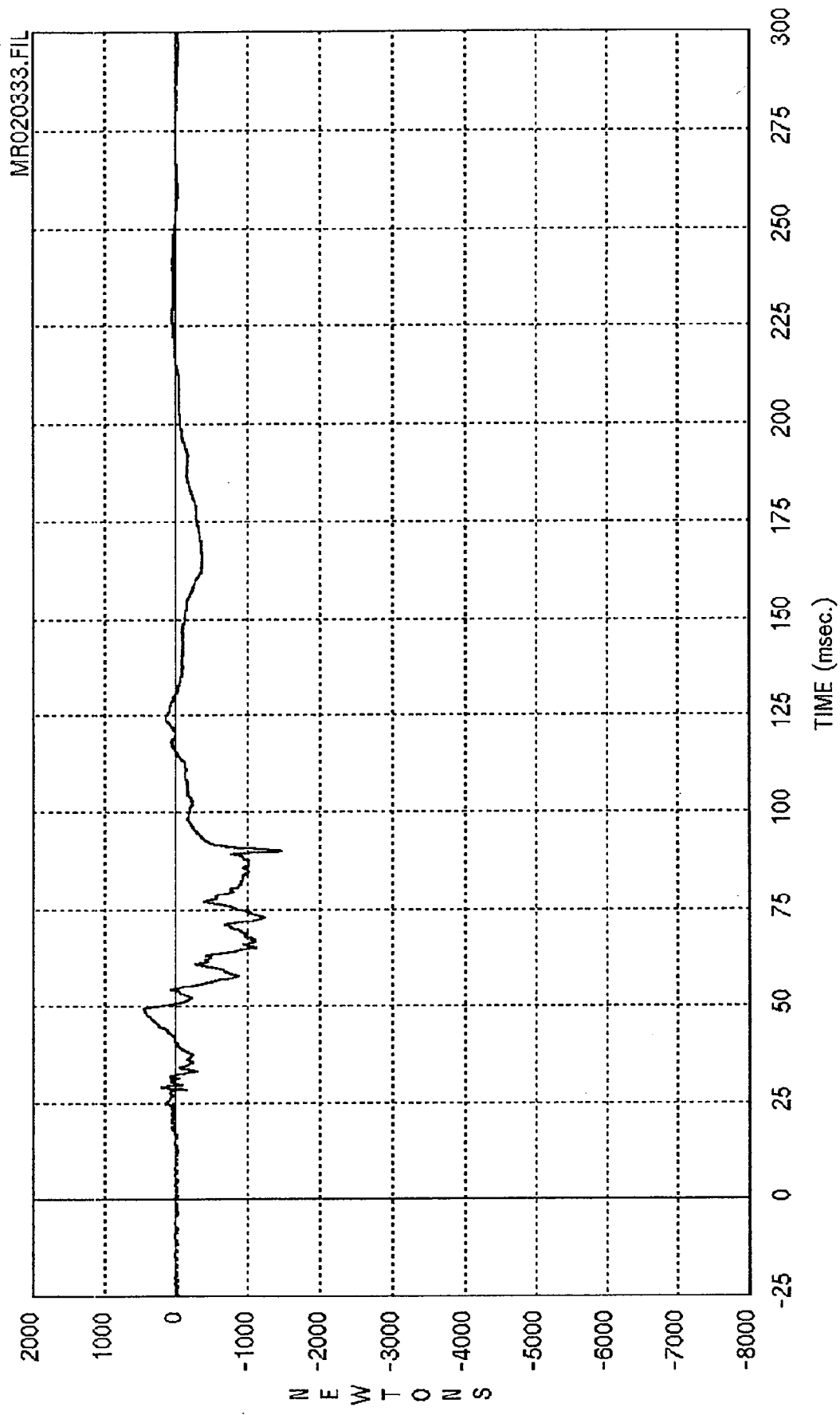
MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup

MR020332.FIL



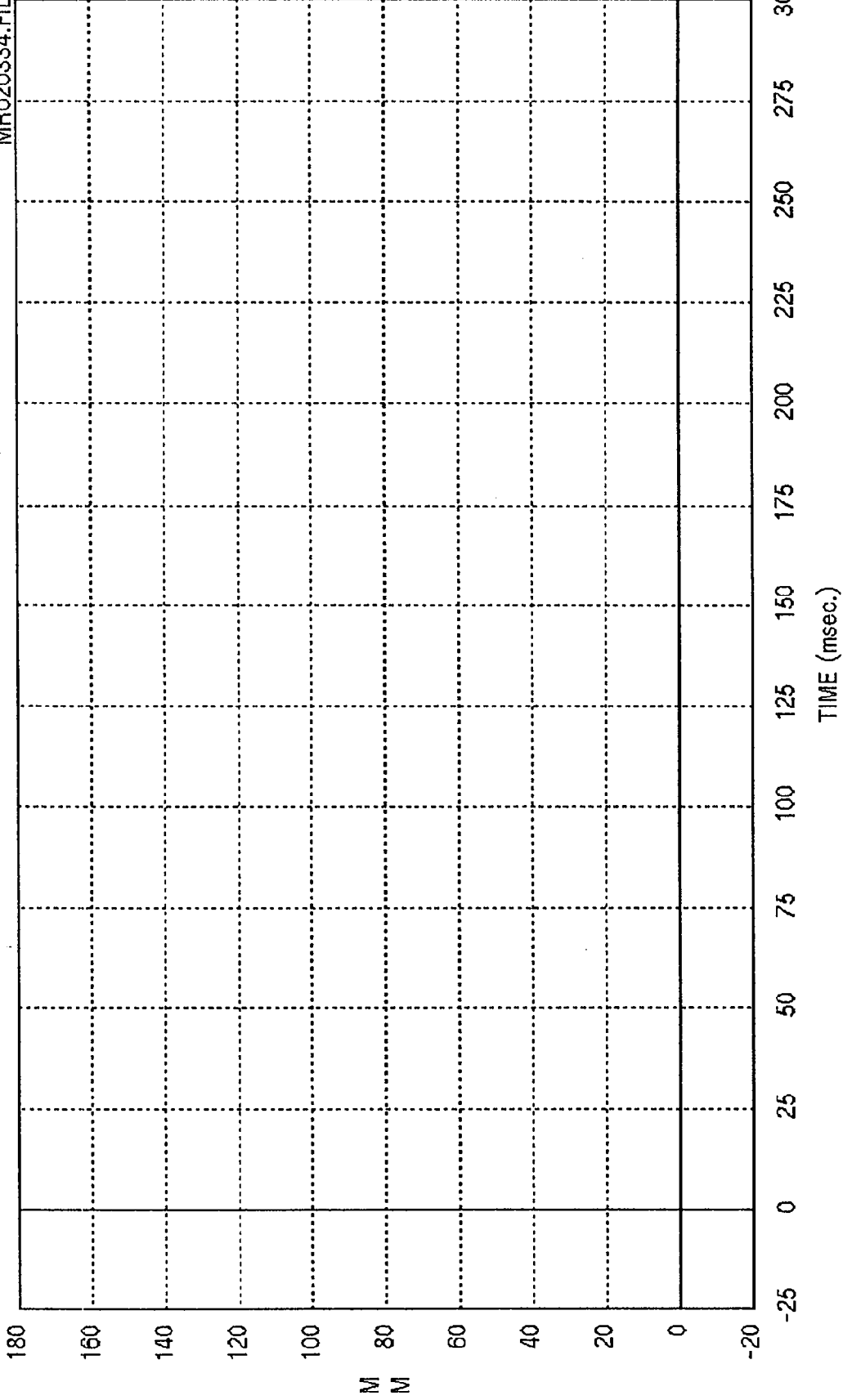
Curve: Passenger left femur Filter: SAE CLASS 600 Max = 543.78 Min = -2759.8

MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup



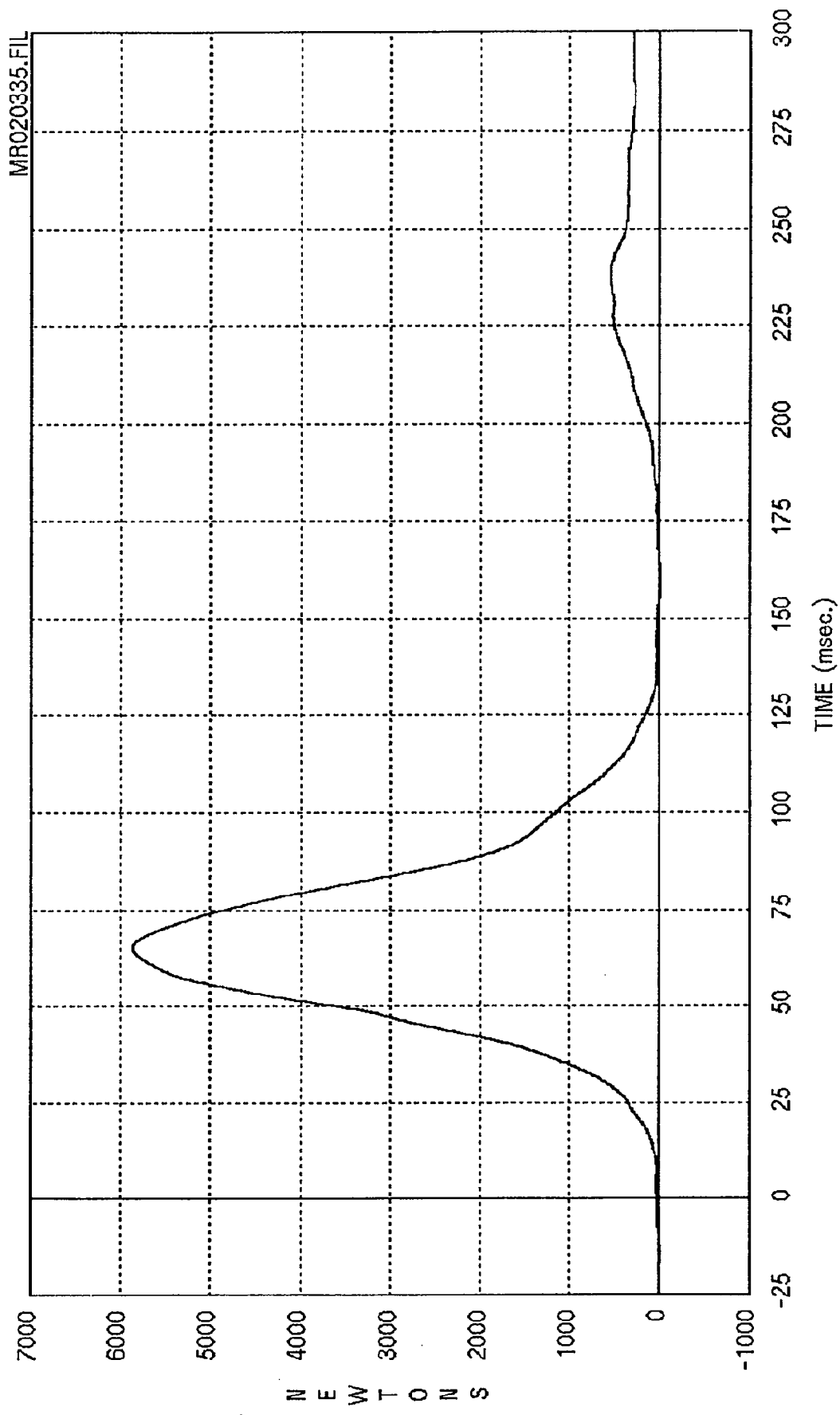
Curve: Passenger right femur Filter: SAE CLASS 600 Max = 470.20 Min = -1474.2

MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup



Curve: Passenger chest displacement (Not used) Filter: SAE CLASS 180 Max = .00000 Min = .00000

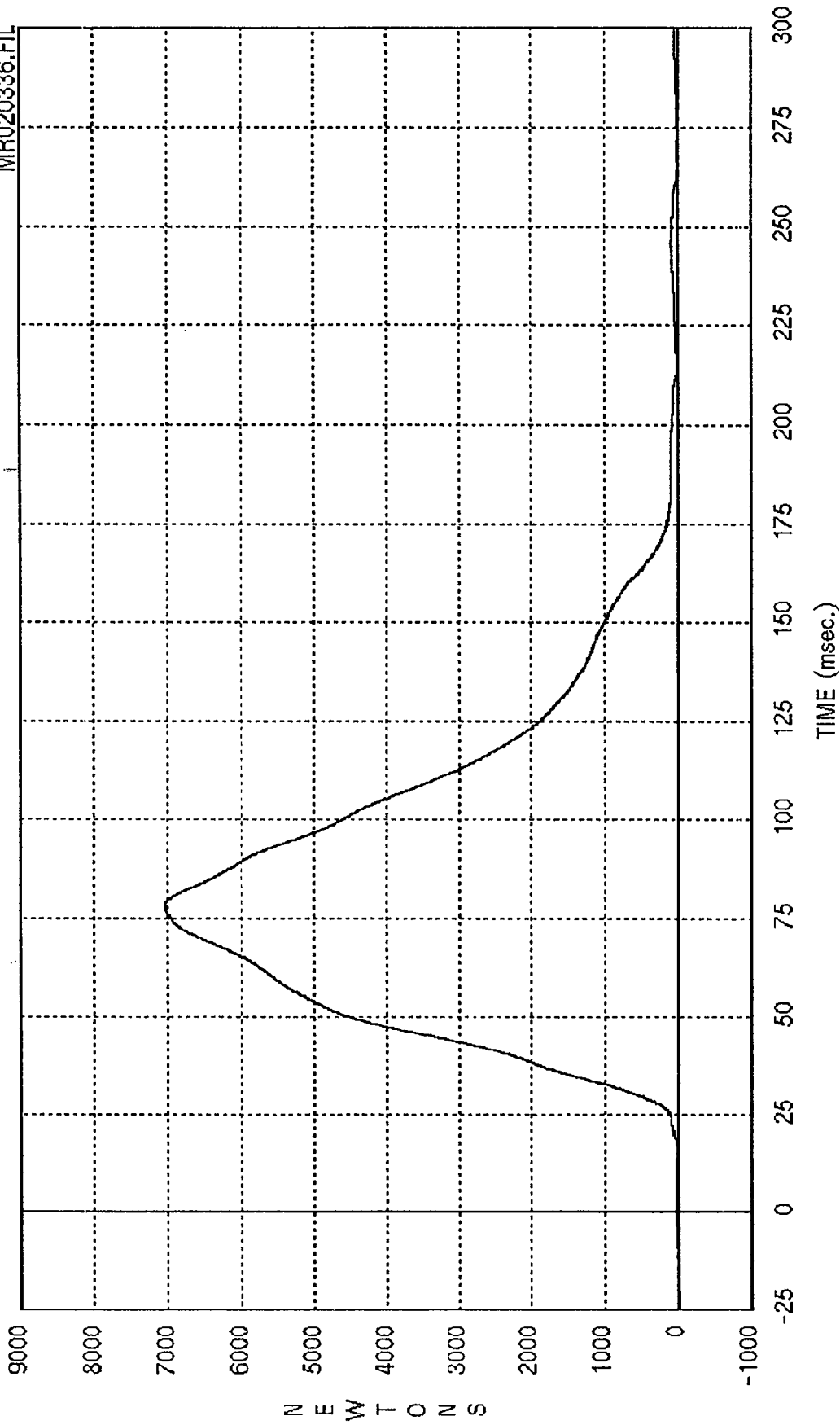
MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup



Curve: Passenger lap belt load      Filter: SAE CLASS 60      Max = 5867.6      Min = -9.5520

MSE      Date: 02/19/94      Program: New Car Assessment Program      Vehicle: 1994 Ford F-150 Pickup

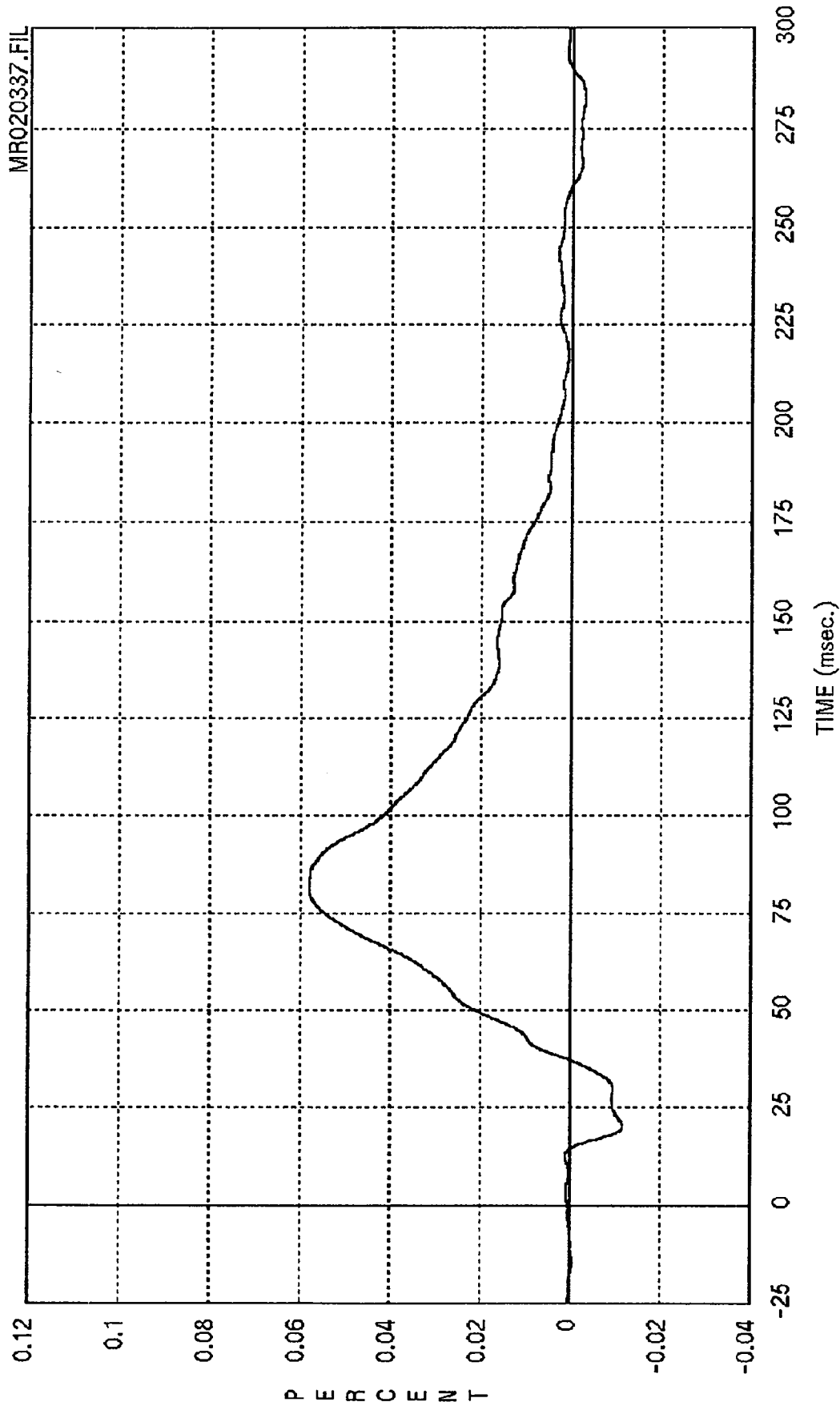
MR020336.FIL



Curve: Passenger shoulder belt load

Filter: SAE CLASS 60 Max = 7040.5 Min = 4.6881

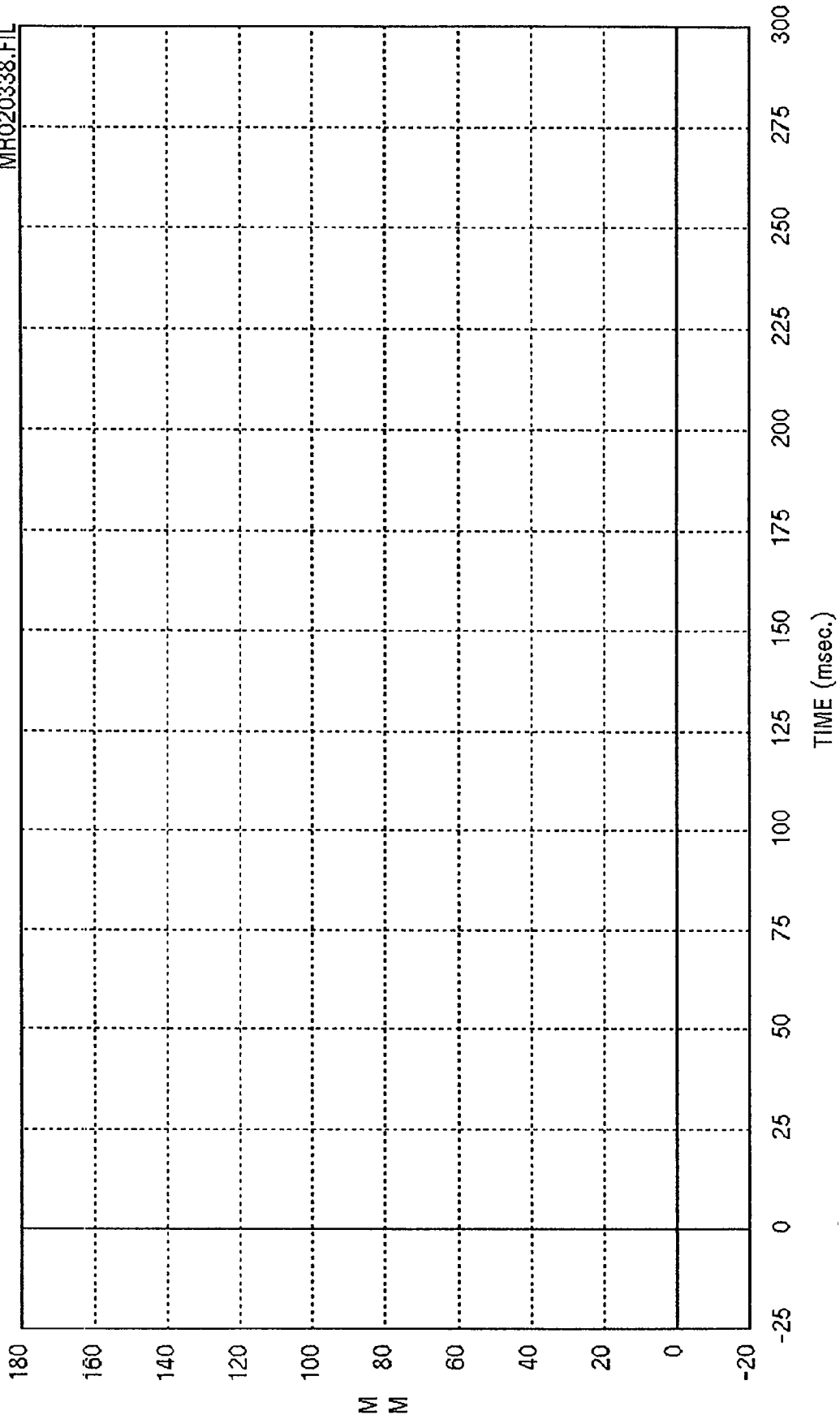
MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup



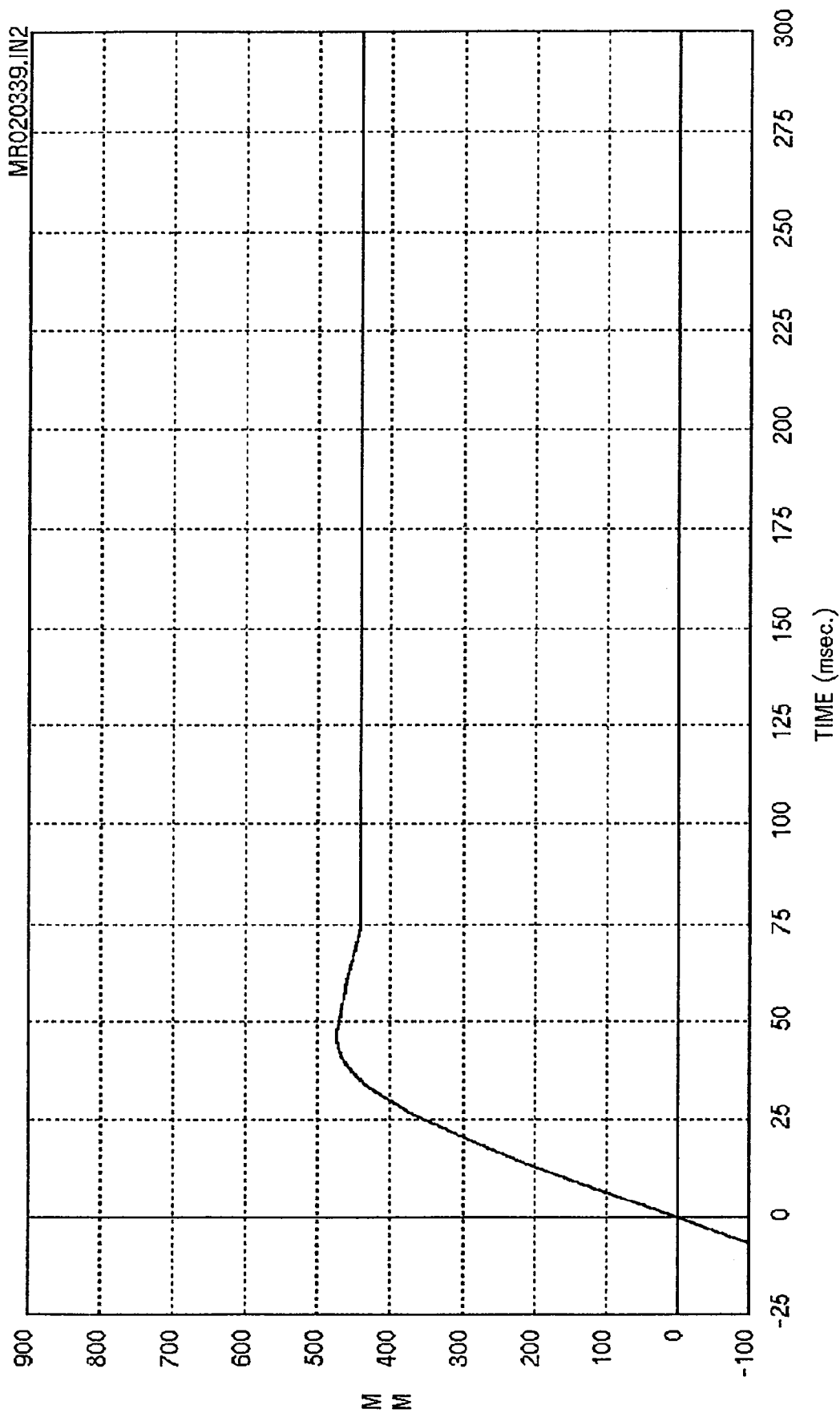
Curve: Passenger shoulder belt elongation Filter: SAE CLASS 60 Max = .58070E-01 Min = -.11545E-01

MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup

MR020338.FIL

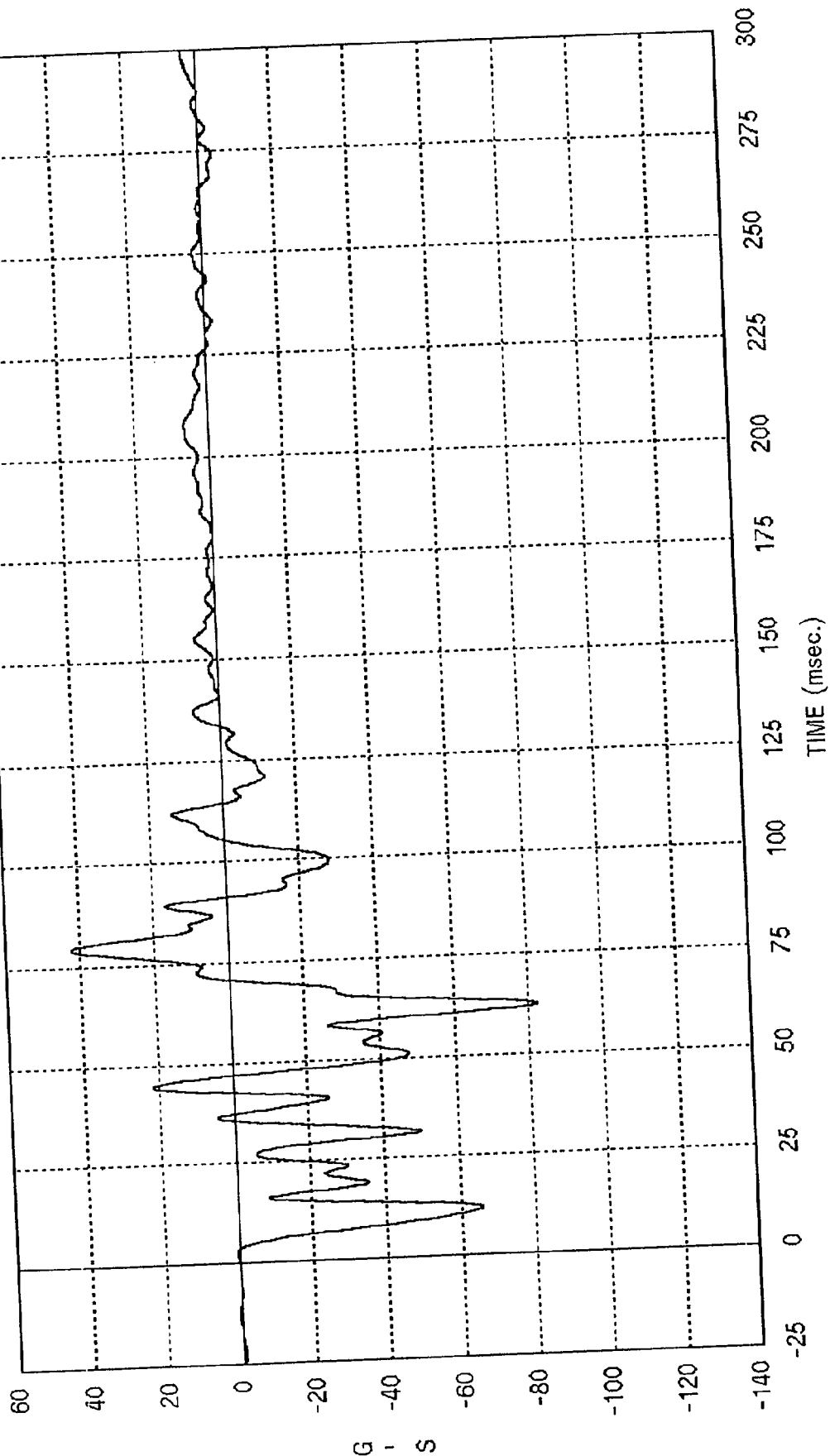


Curve: Passenger seat belt pullout (Not used) Filter: SAE CLASS 60 Max = .00000 Min = .00000  
MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup



Curve: Vehicle left front caliper displacement - X axis Filter: SAE CLASS 180 Max = 474.14 Min = 441.23

MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup



Filter: SAE CLASS 60 Max = 42.607 Min = -82.836

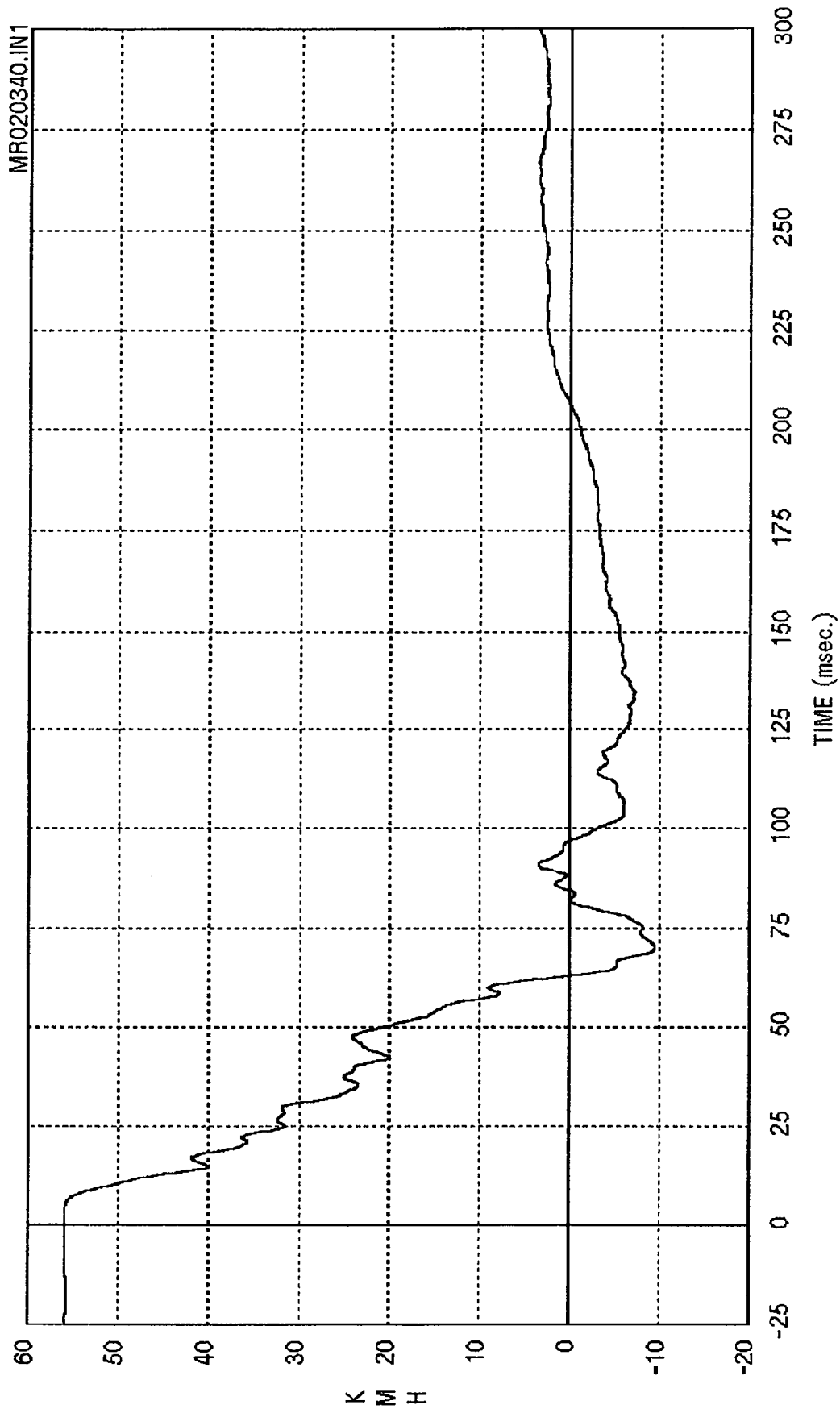
Curve: Vehicle right front caliper acceleration

Vehicle: 1994 Ford F-150 Pickup

Program: New Car Assessment Program

Date: 02/19/94

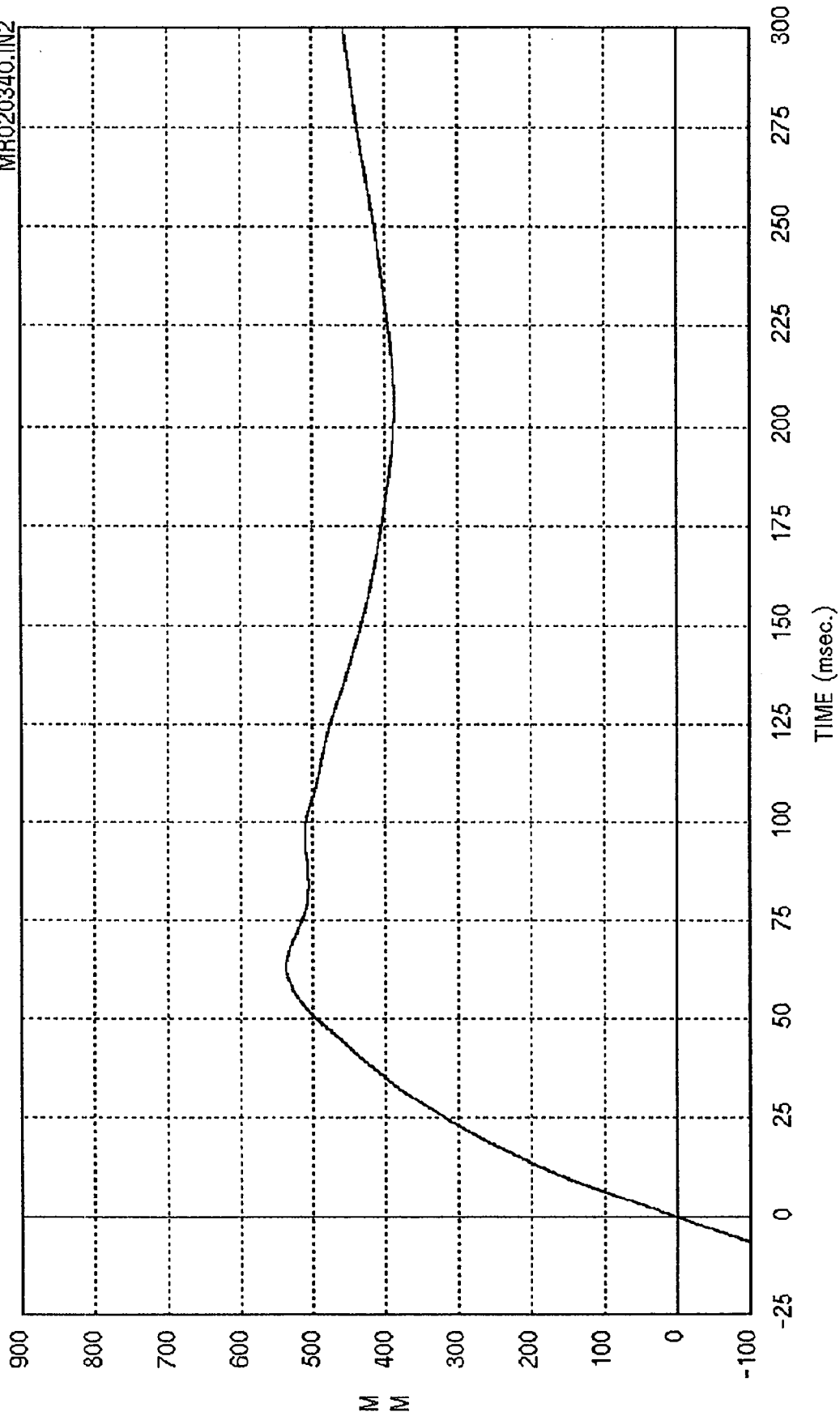
MSE



Curve: Vehicle right front caliper -- delta V Filter: SAE CLASS 180 Max = 55.930 Min = -9.4874

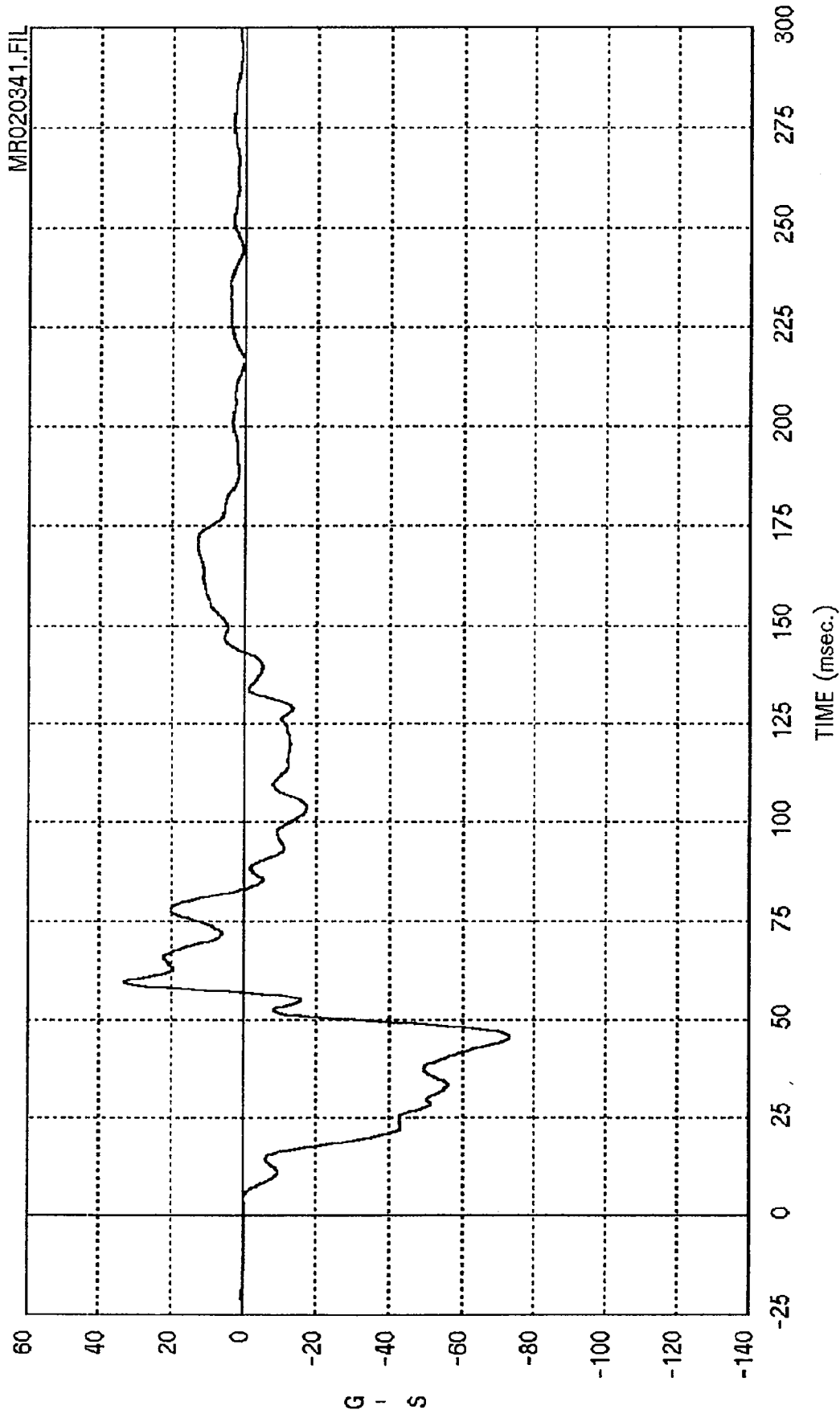
MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup

MR020340.IN2



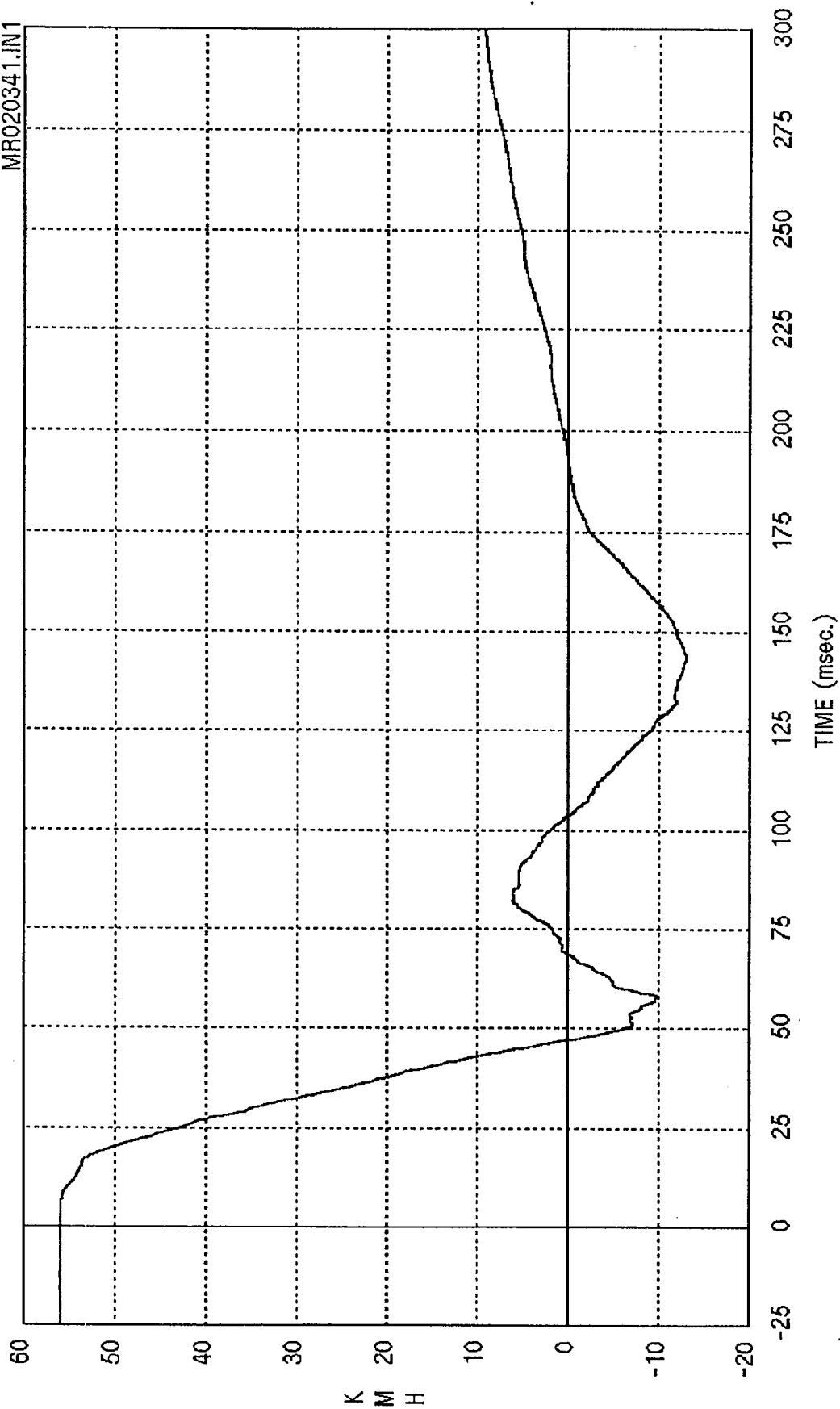
Curve: Vehicle right front caliper displacement - X-axls Filter: SAE CLASS 180 Max = 538.76 Min = 387.69

MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup



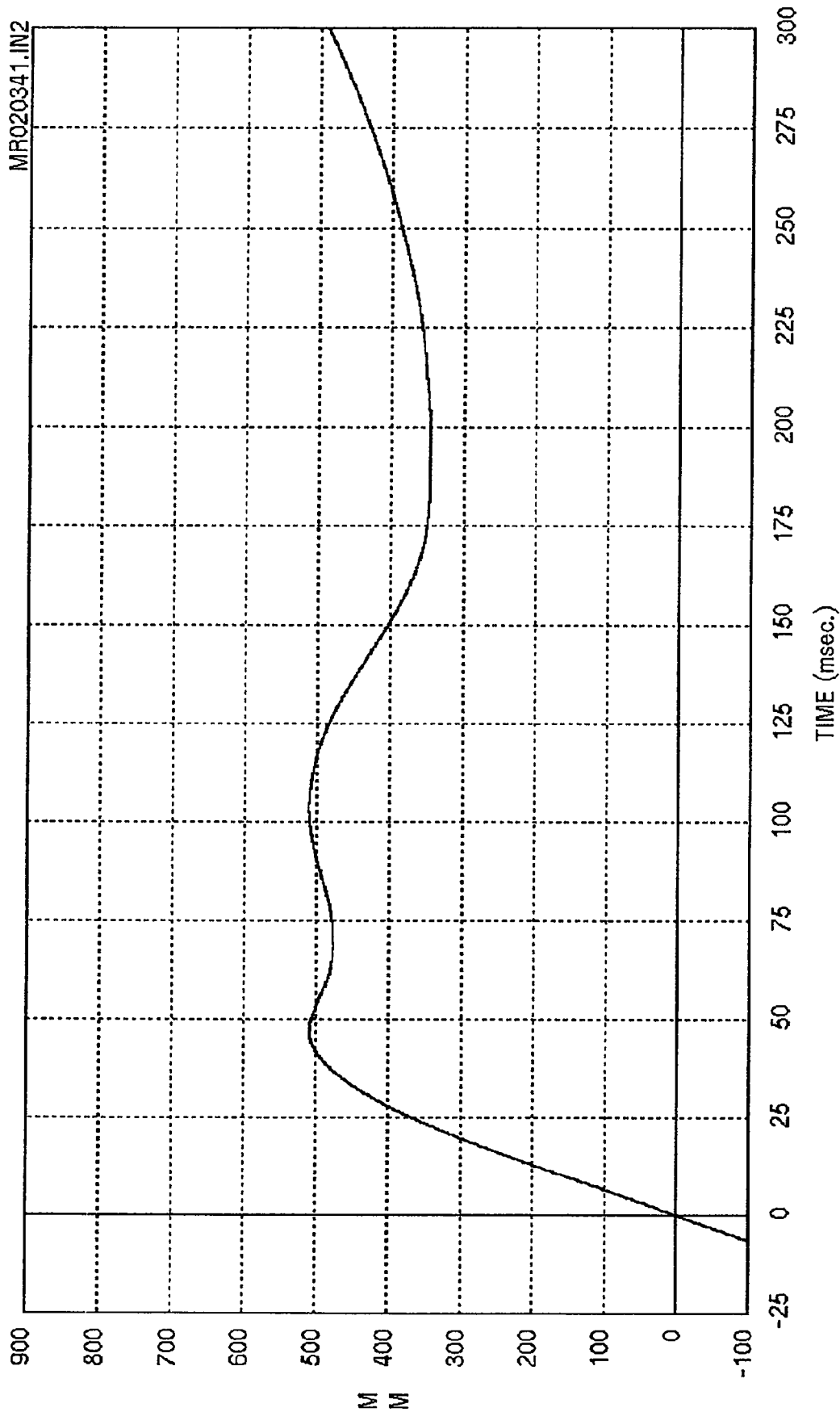
Curve: Vehicle engine bottom acceleration Filter: SAE CLASS 60 Max = 33.469 Min = -73.379  
MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup

MR020341.IN1



Curve: Vehicle engine bottom -- delta V Filter: SAE CLASS-180 Max = 55.931 Min = -13.003

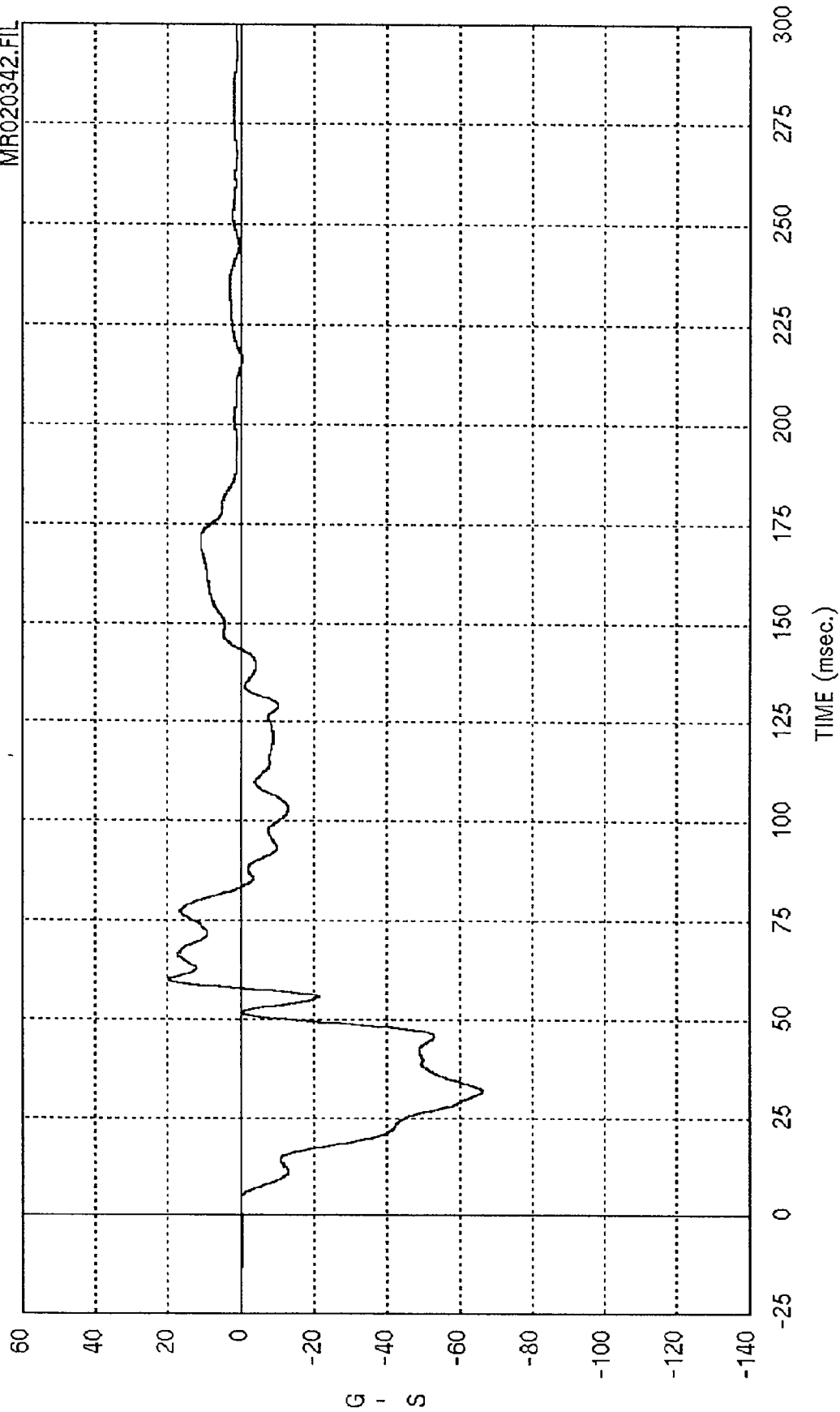
MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup



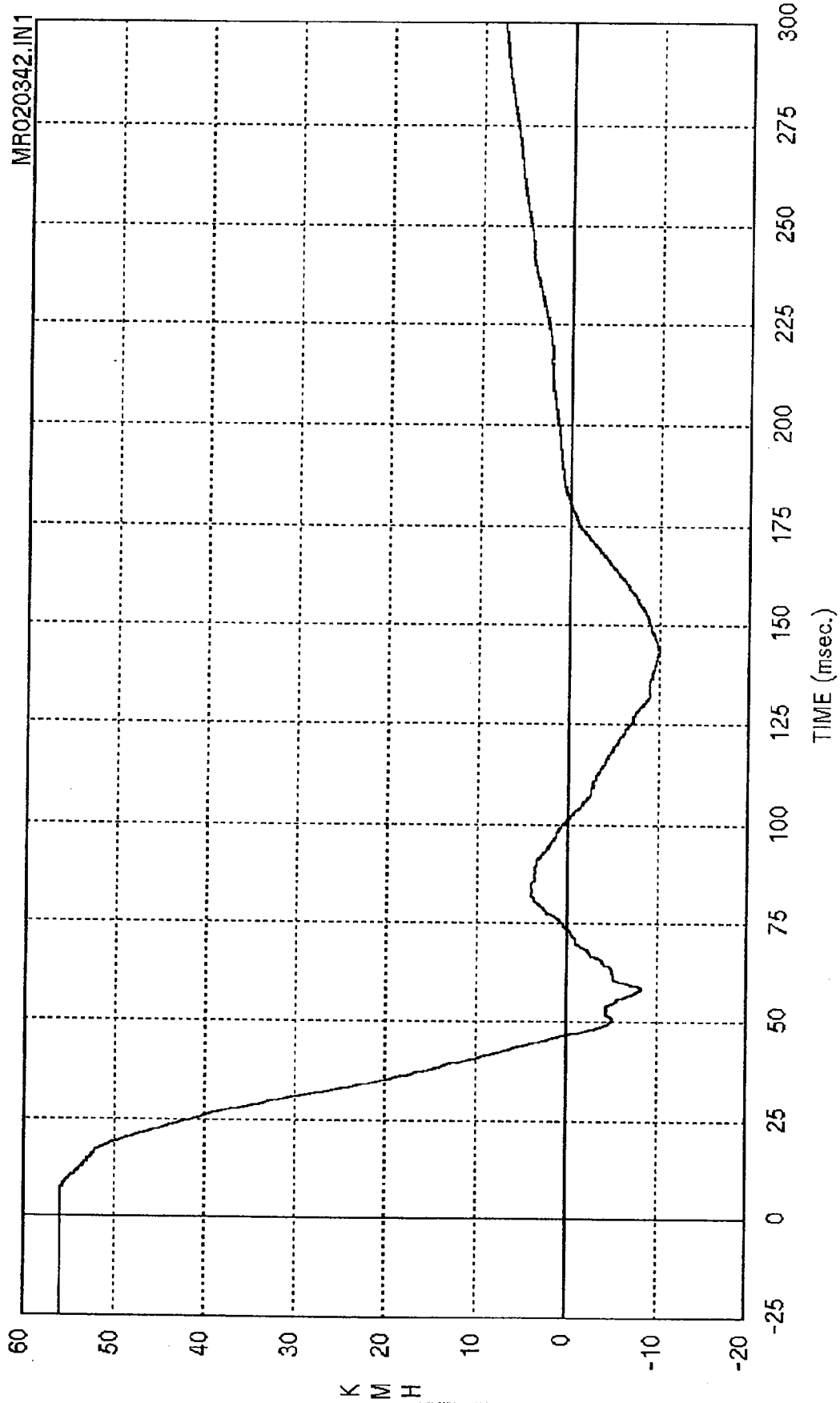
Curve: Vehicle engine bottom displacement X axis Filter: SAE CLASS 180 Max = 511.96 Min = 346.20

MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup

MR020342.FIL

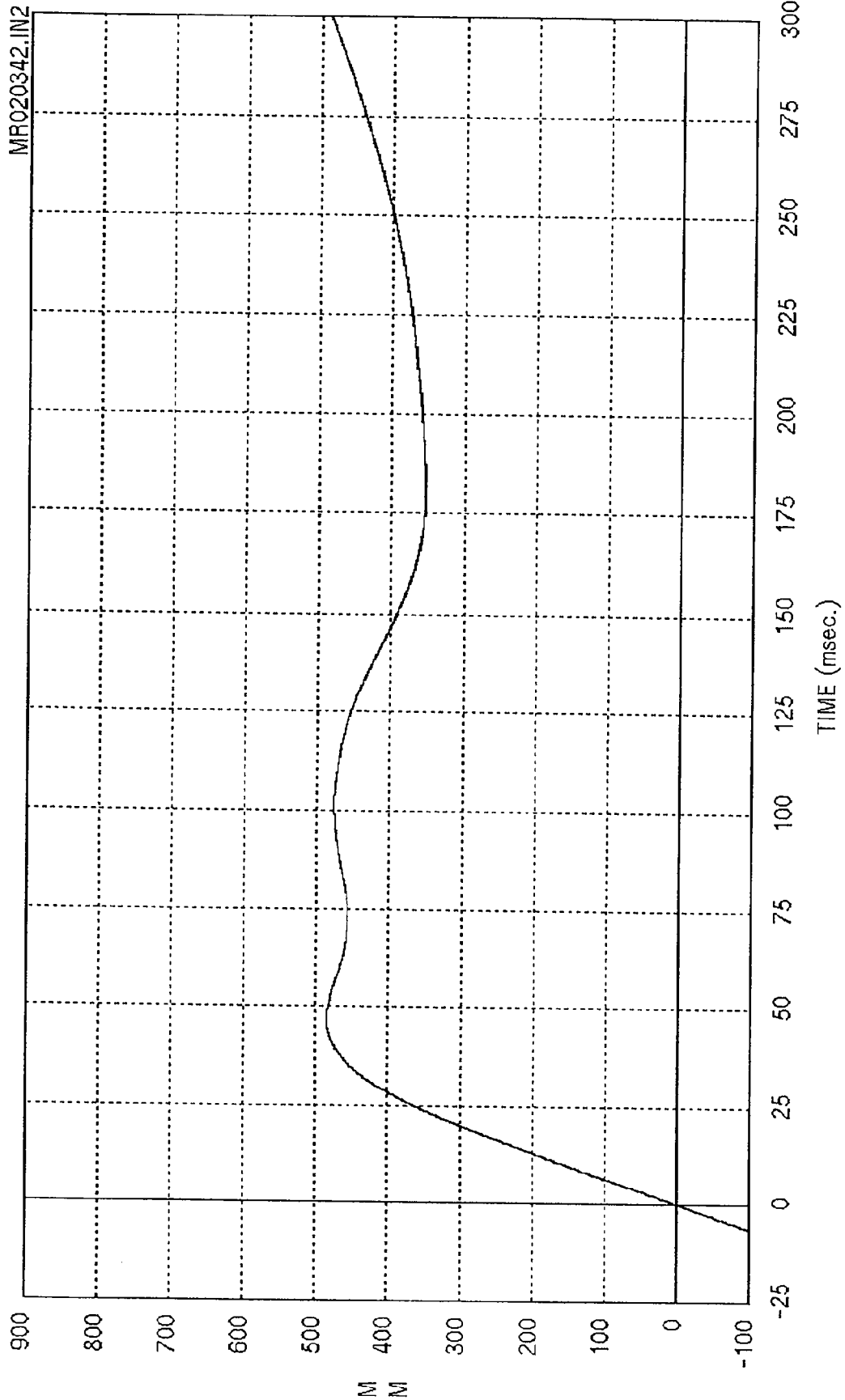


Curve: Vehicle engine top acceleration      Filter: SAE CLASS 60      Max = 19.609      Min = -66.288  
MSE      Date: 02/19/94      Program: New Car Assessment Program      Vehicle: 1994 Ford F-150 Pickup



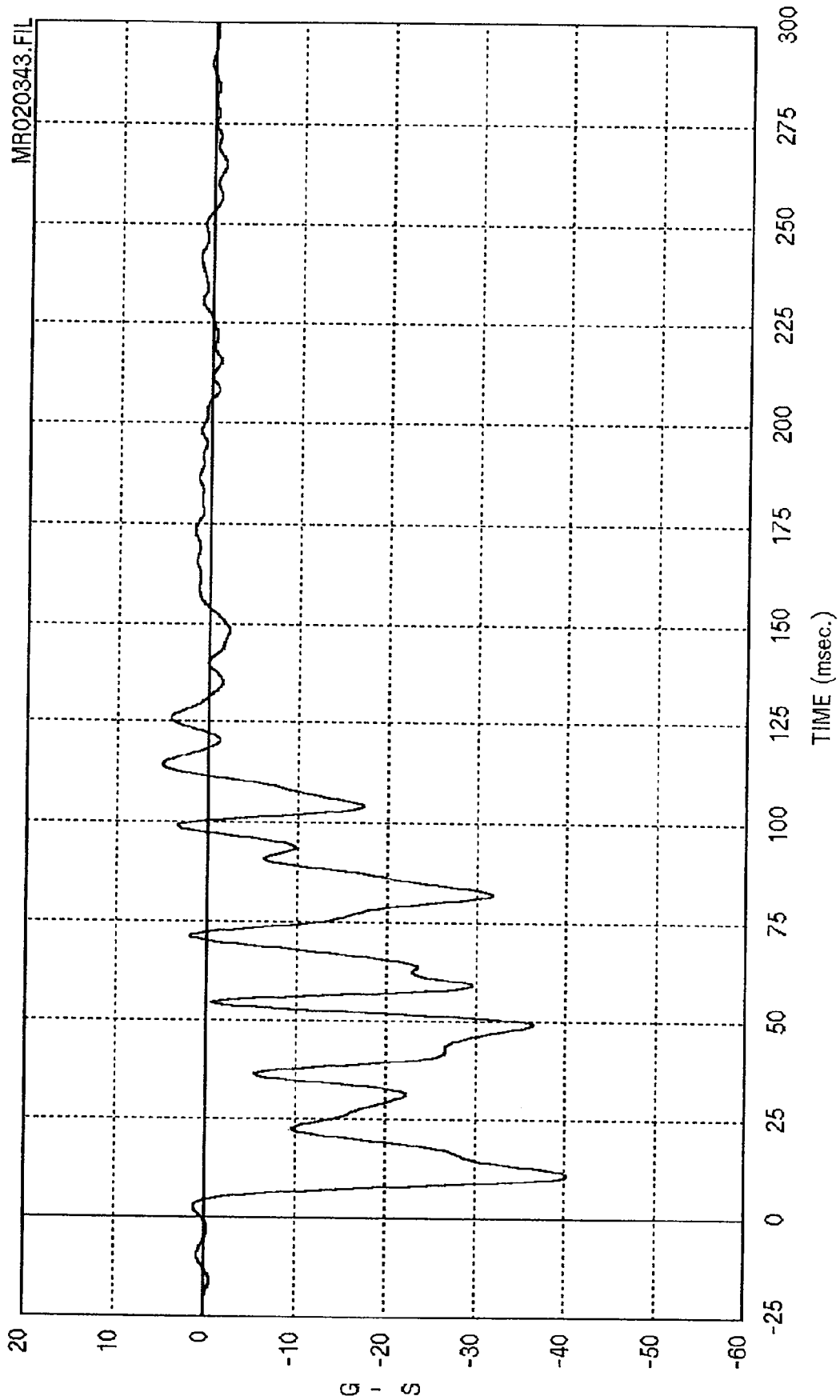
Curve: Vehicle engine top -- delta V Filter: SAE CLASS 180 Max = 55.935 Min = -9.9338

MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup



Curve: Vehicle engine top displacement -- X axis Filter: SAE CLASS 180 Max = 487.76 Min = 353.58

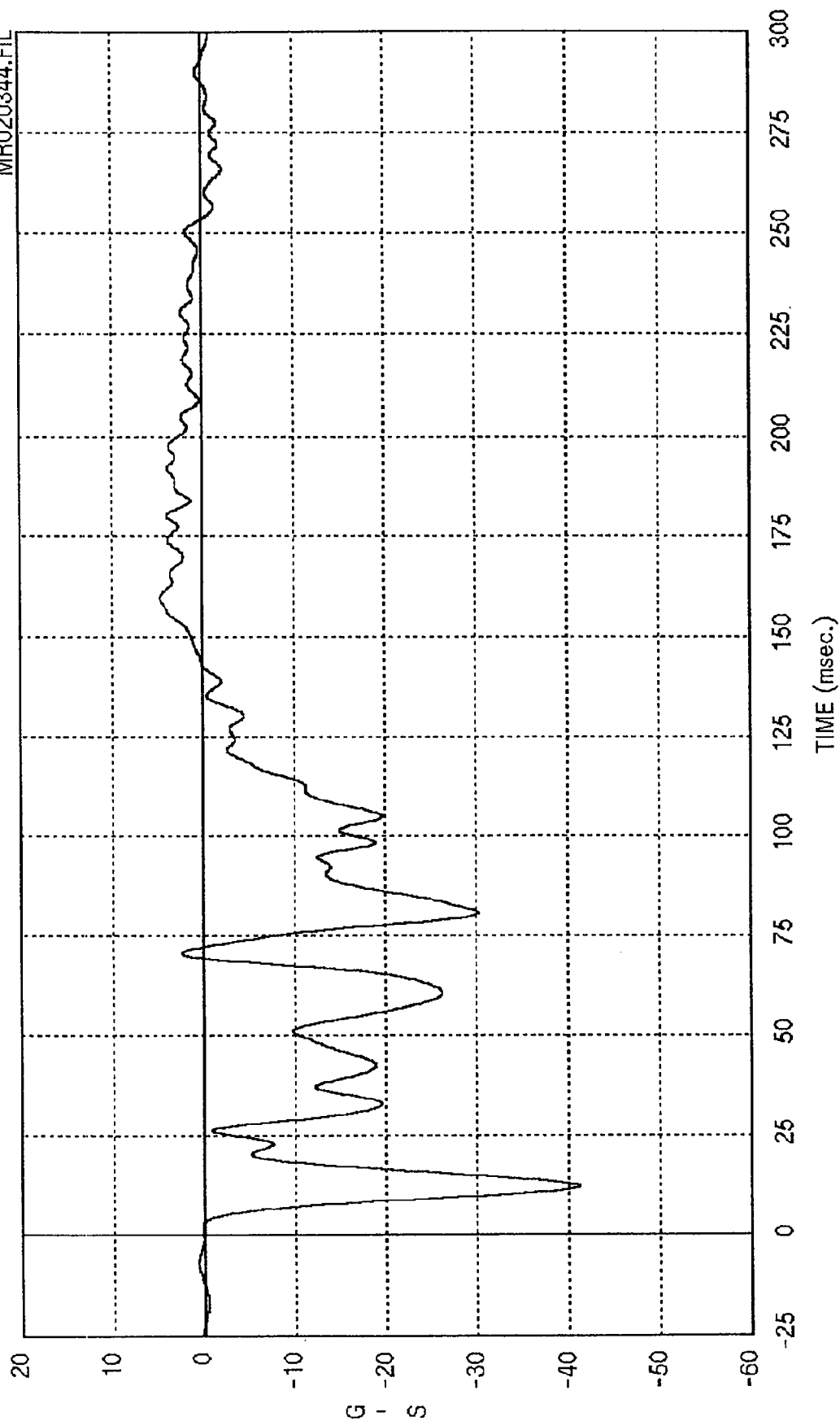
MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup



Curve: Vehicle instrument panel acceleration Filter: SAE CLASS 60 Max = 5.1546 Min = -40.283

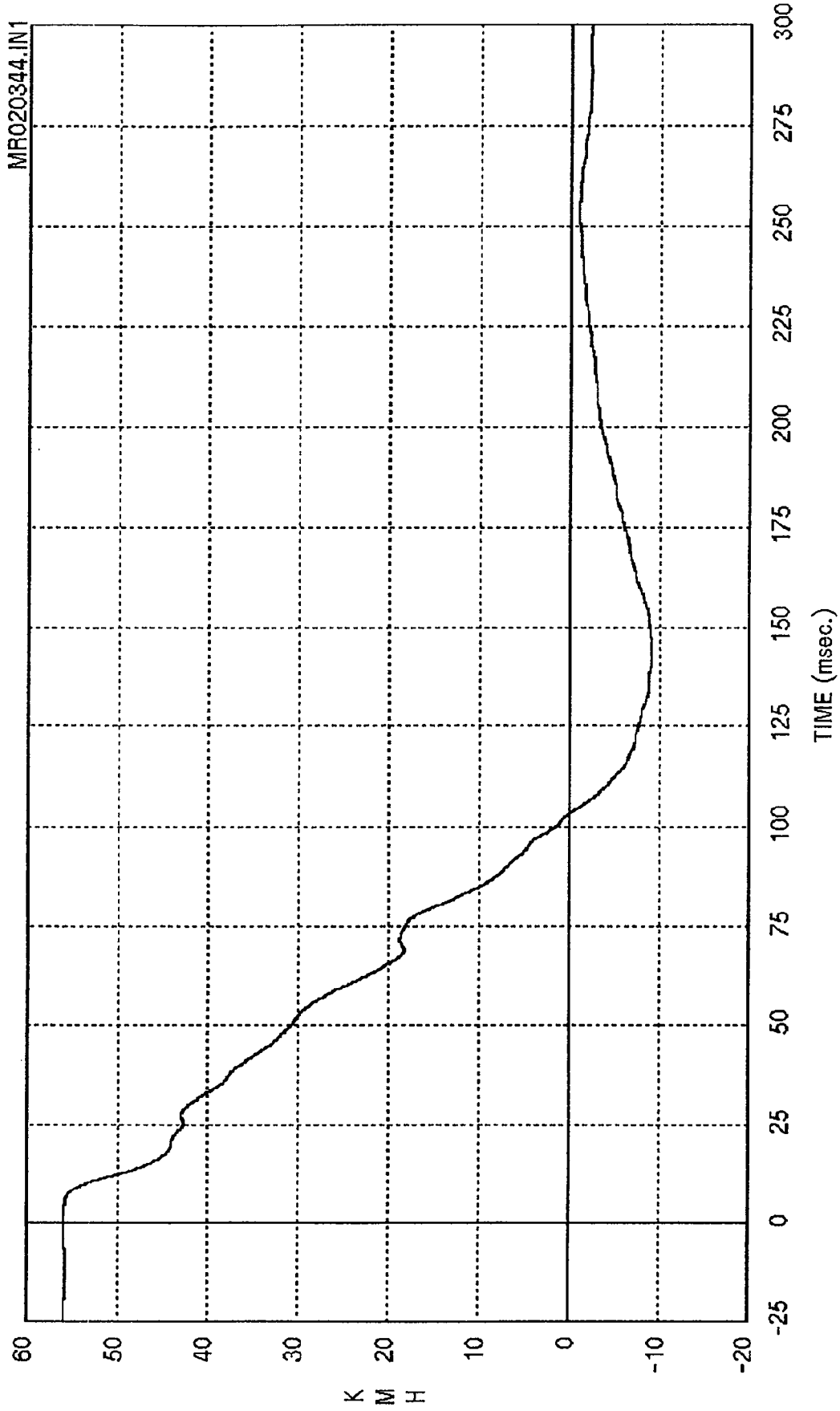
MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup

MR020344.FIL



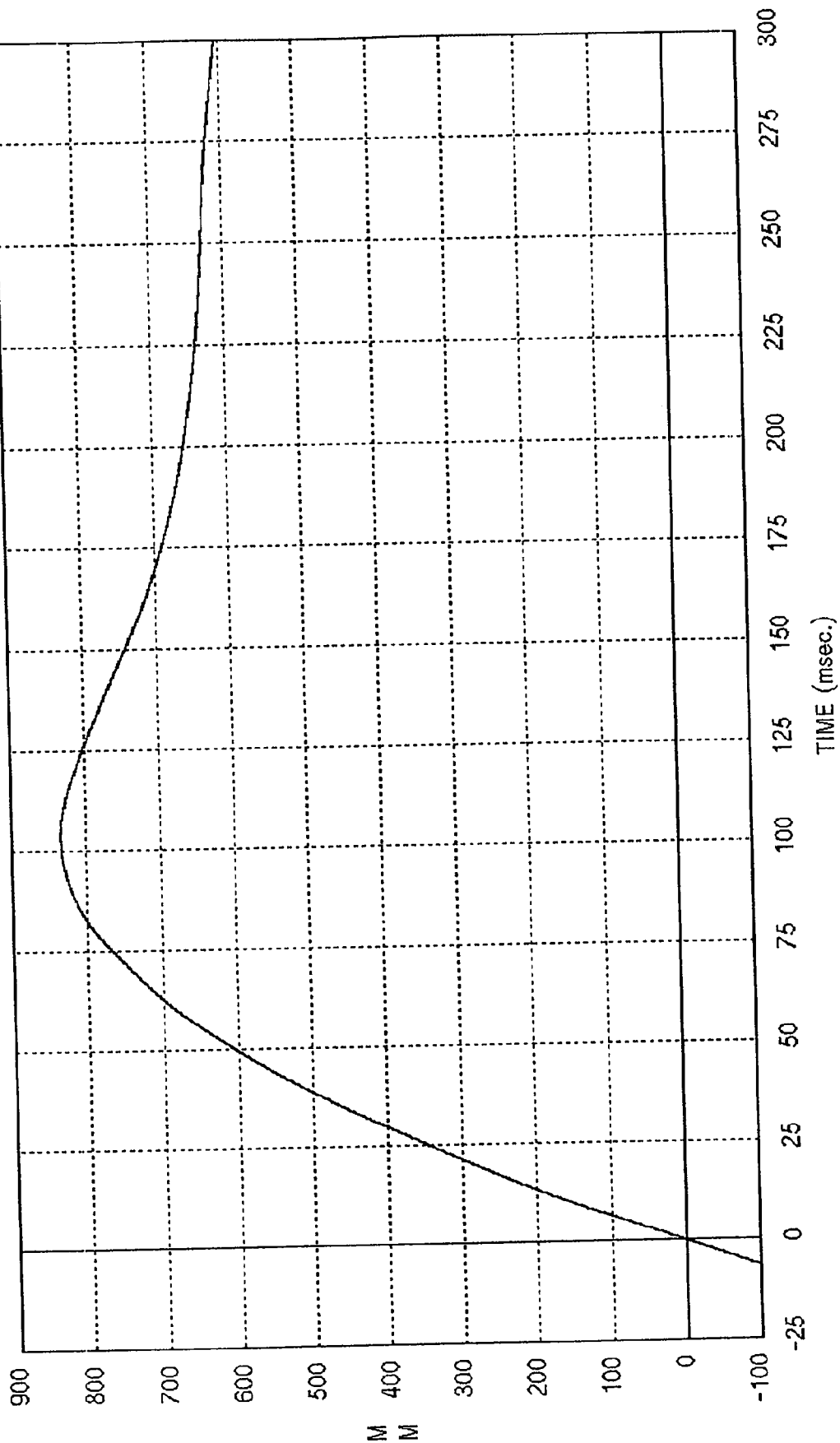
Curve: Vehicle left rear X-member acceleration (Pri.) Filter: SAE CLASS 60 Max = 4.6999 Min = -41.216

MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup



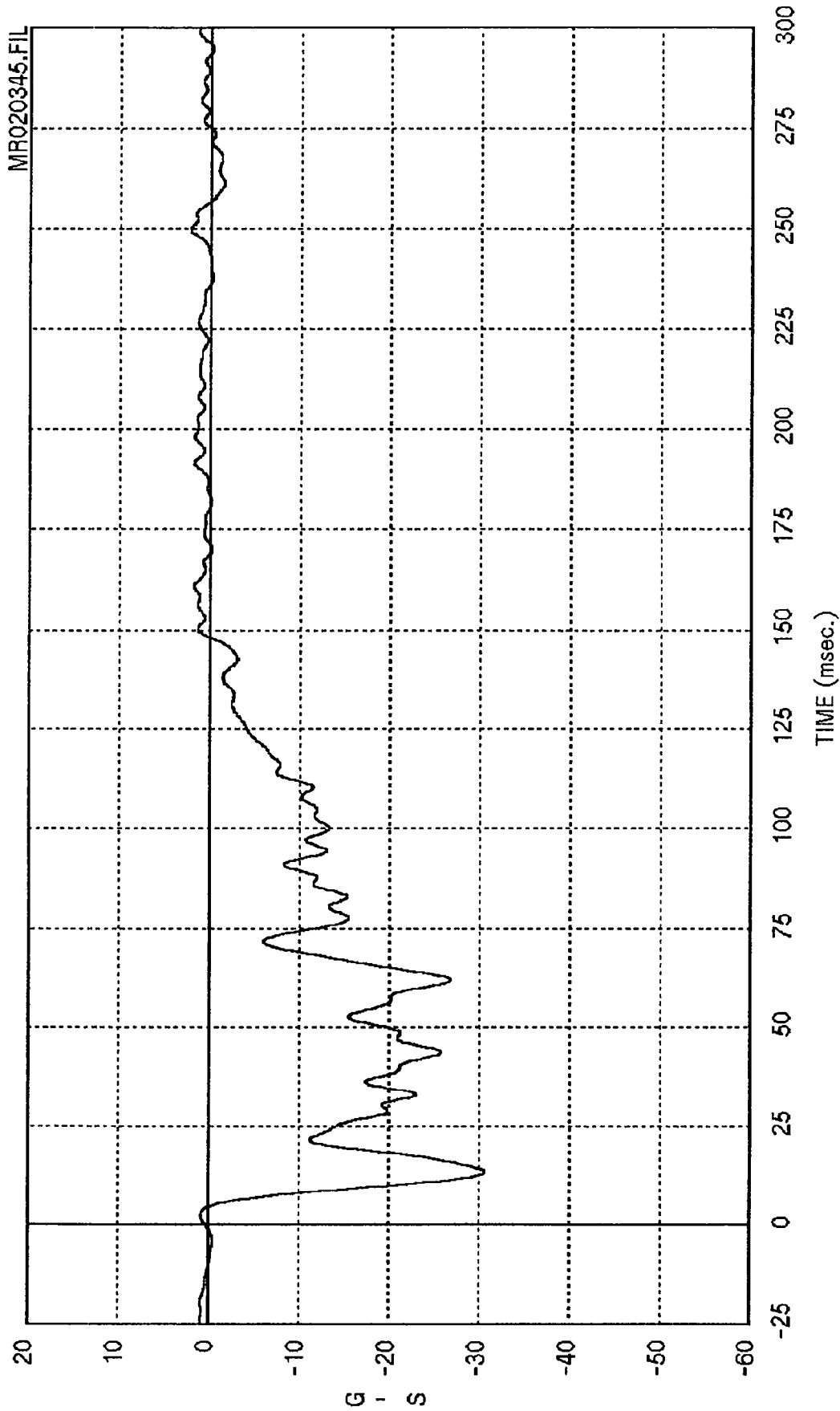
Curve: Vehicle left rear X-member -- delta V (Prl.) Filter: SAE CLASS 180 Max = 55.936 Min = -9.0211

MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup



Curve: Vehicle left rear X-member - displacement (Pri.) Filter: SAE CLASS 180 Max = 833.42 Min = 605.95

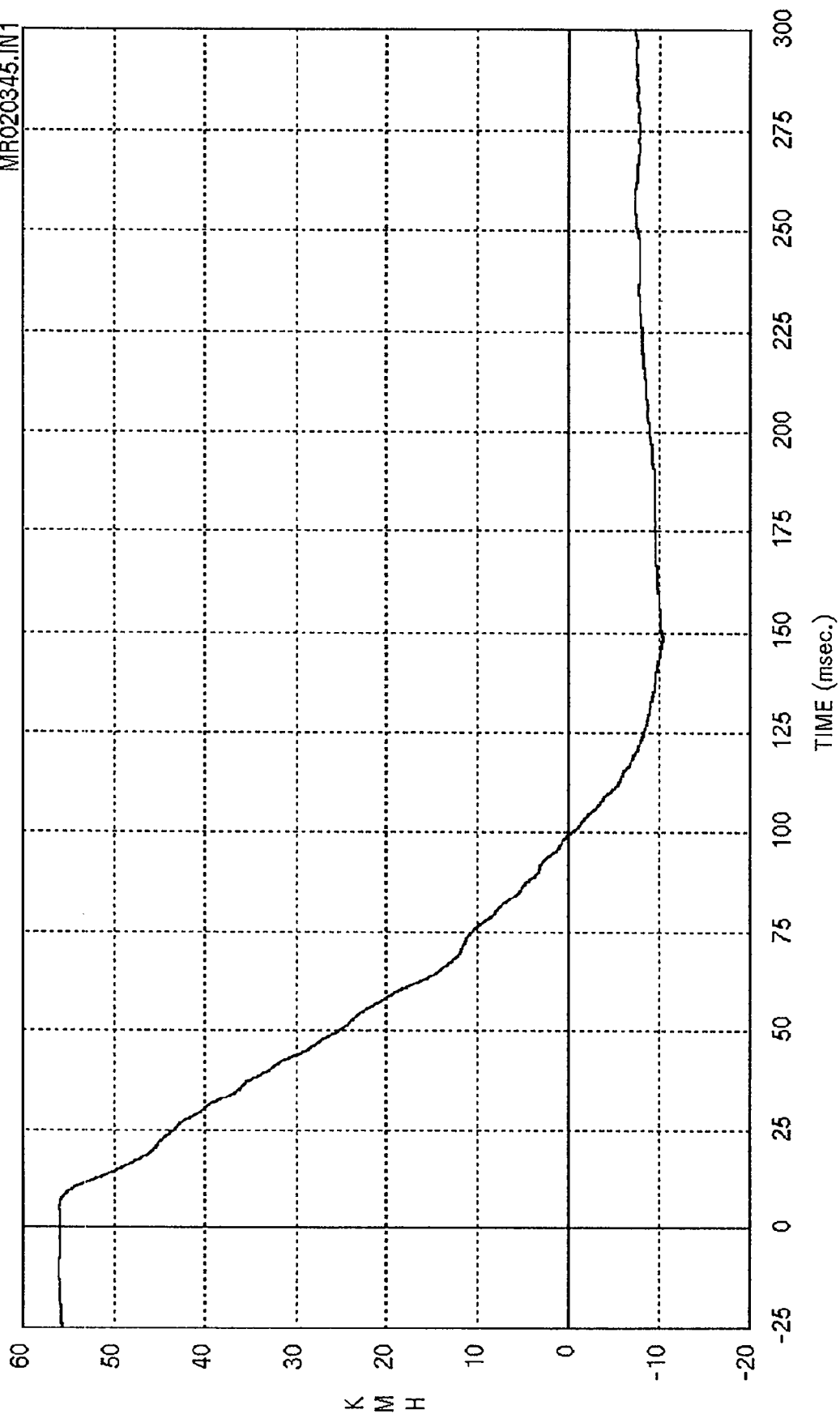
MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup



Curve: Vehicle right rear X-member acceleration (Pri.) Filter: SAE CLASS 60 Max = 2.2071 Min = -30.531

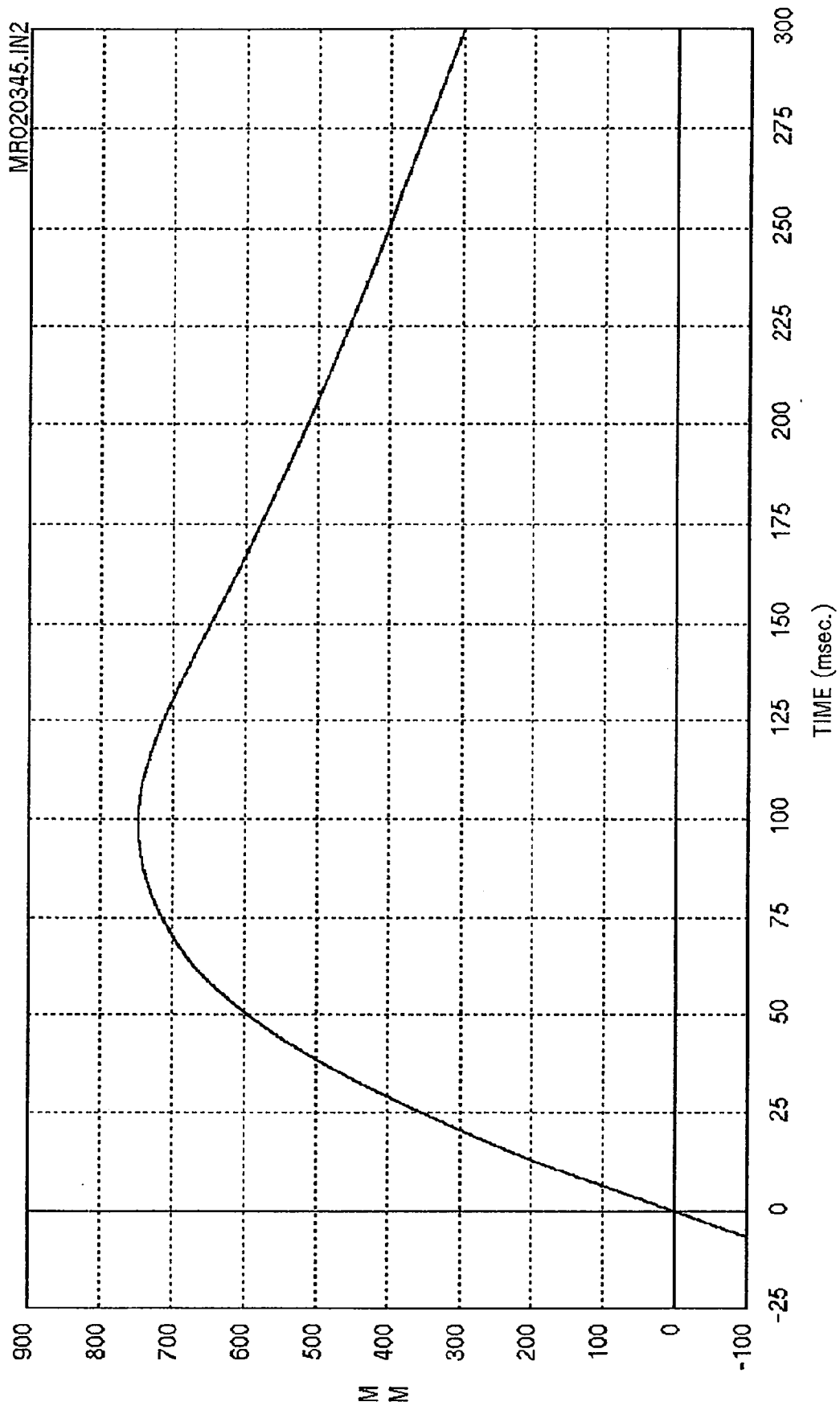
MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup

MR020345.IN1



Curve: Vehicle right rear X-member -- delta V (Pri.) -- Filter: SAE CLASS 180 Max = 56.018 Min = -10.326

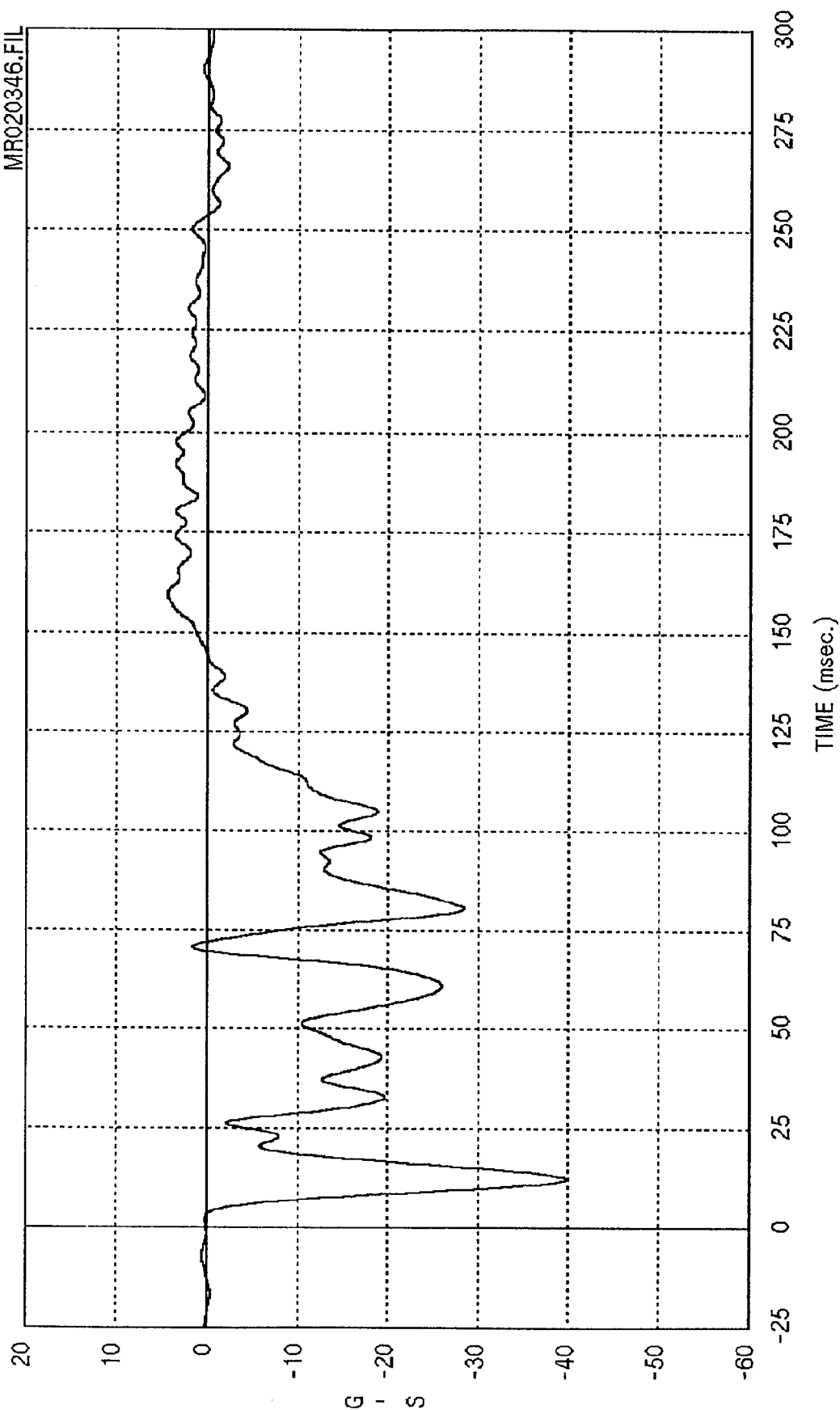
MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup



Curve: Vehicle right rear X-member - displacement (Pri.) Filter: SAE-CLASS 180 Max = 748.29 Min = 298.67

MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup

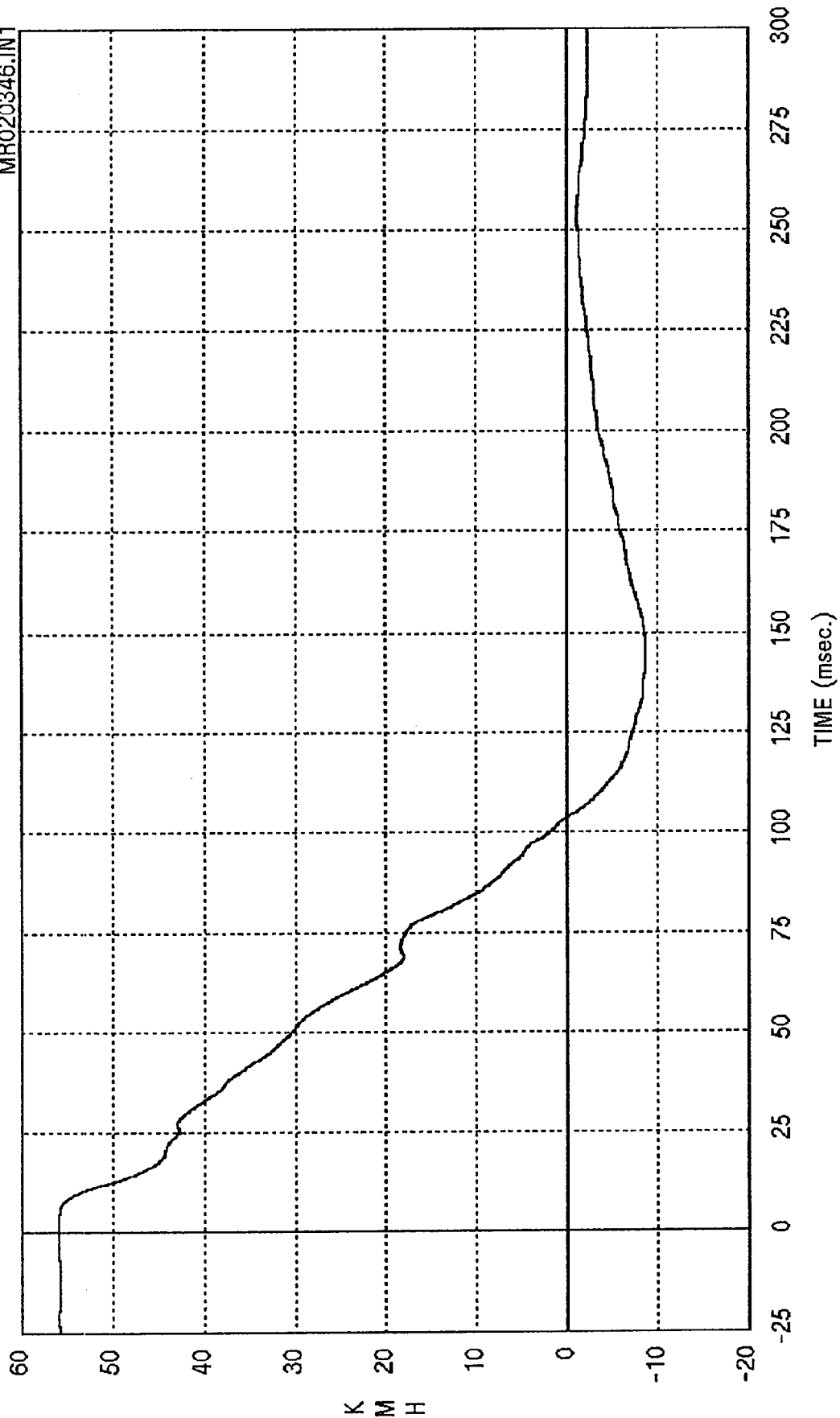
MR020346.FIL



Curve: Vehicle left rear X-member acceleration (Sec.) Filter: SAE CLASS 60 Max = 4.3689 Min = -39.874

MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup

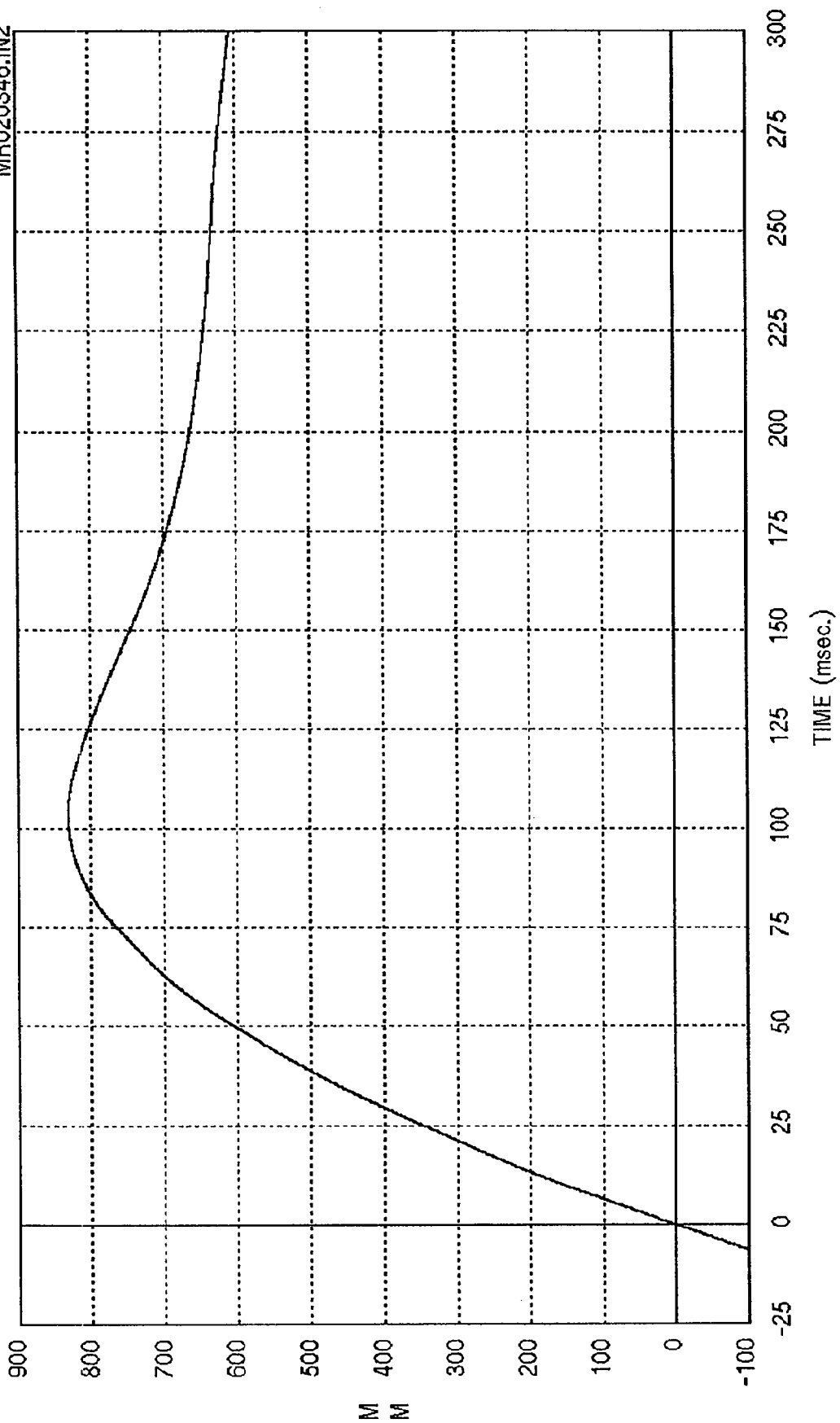
MR020346.IN1



Curve: Vehicle left rear X-member -- delta V<sub>z</sub>(Sec.) Filter: SAE CLASS 180 Max = 55.936 Min = -8.6256

MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup

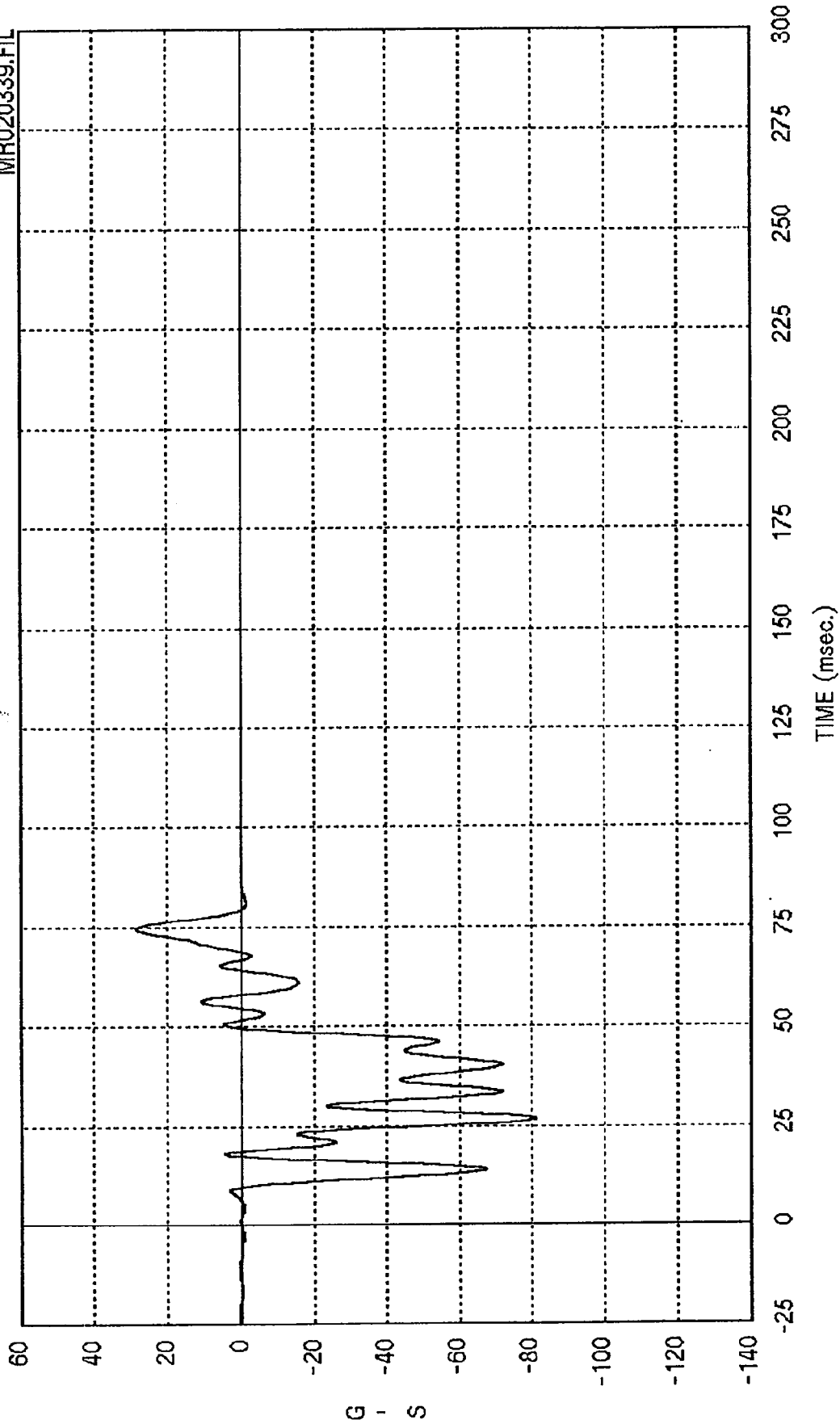
MR020346.IN2



Curve: Vehicle left rear X-member - displacement (Sec.) Filter: SAE CLASS 180 Max = 834.24 Min = 607.59

MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup

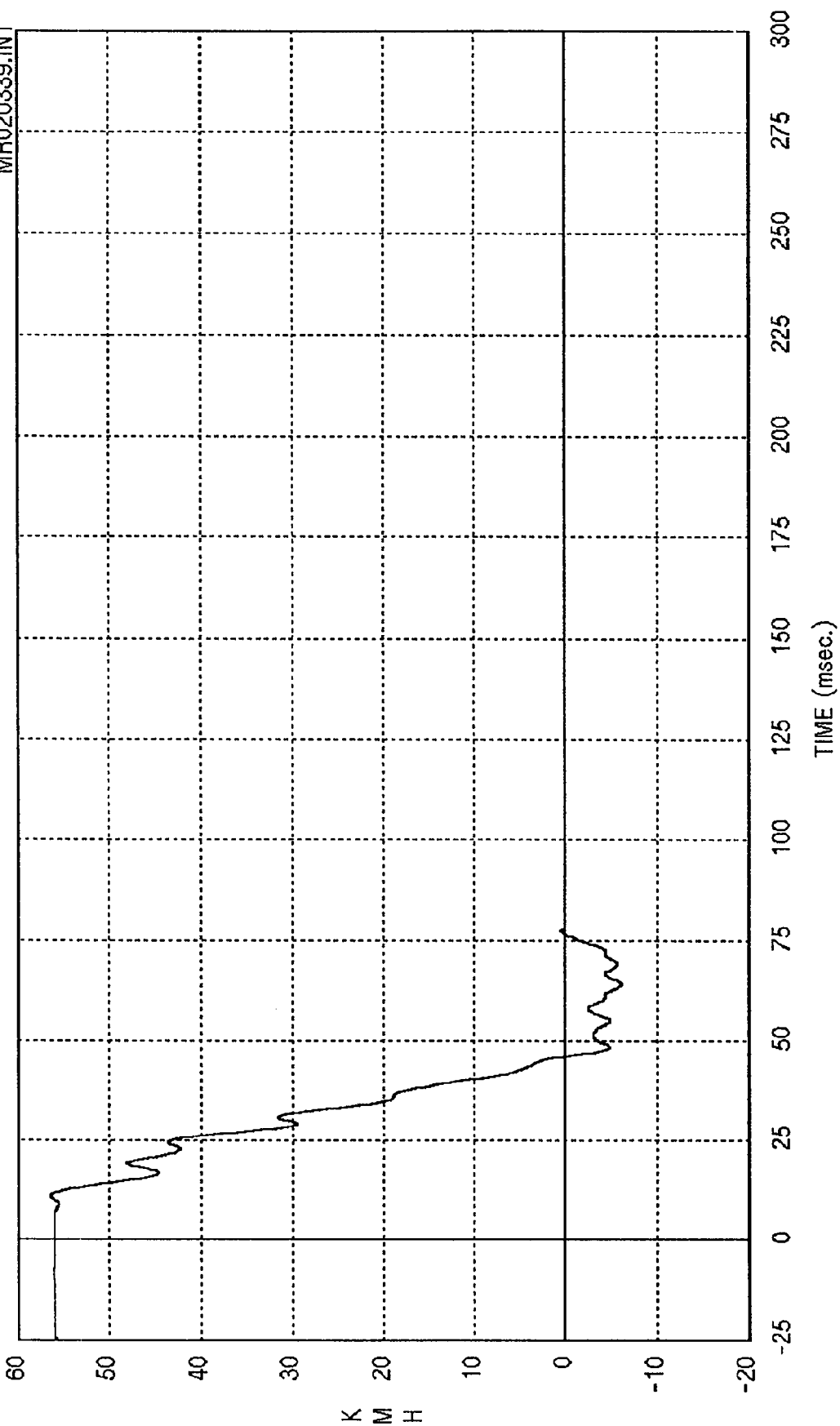
MR020339.FIL



Curve: Vehicle left front caliper acceleration (CF) Filter: SAE CLASS 60 Max = 28.457 Min = -81.583

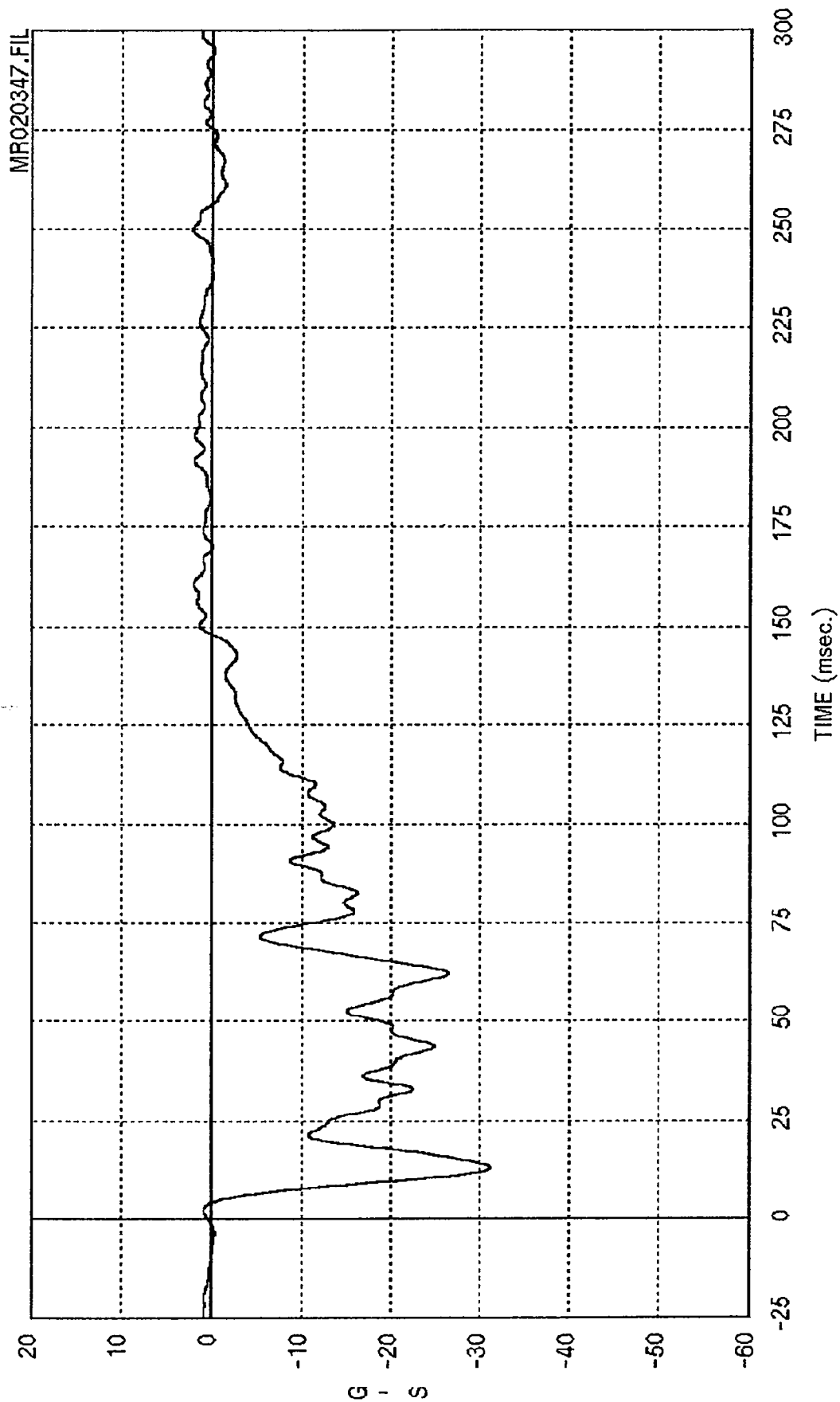
MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup

MR020339.IN1



Curve: Vehicle left front caliper -- delta V Filter: SAE CLASS 180 Max = 56.495 Min = -6.1198

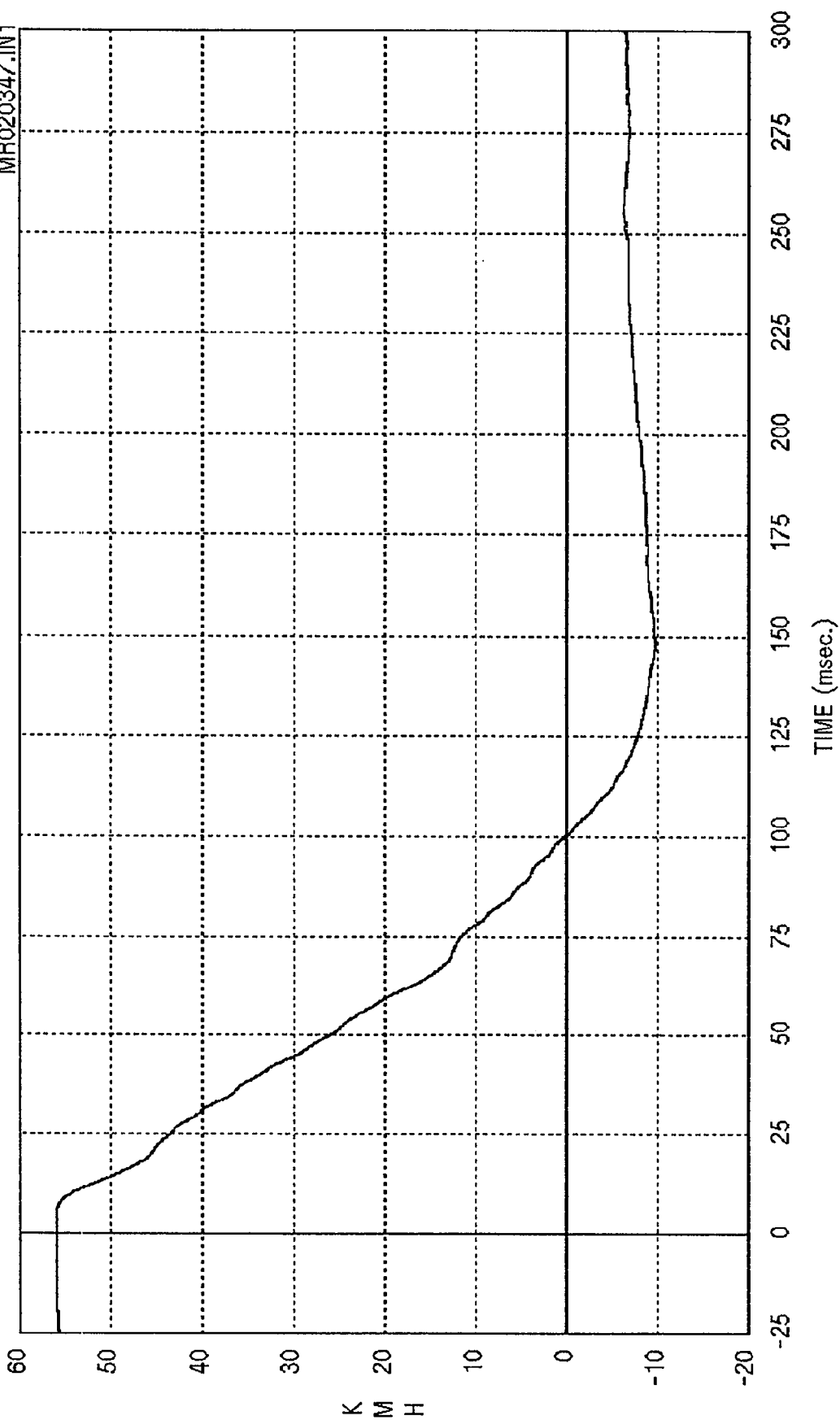
MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup



Curve: Vehicle right rear X-member acceleration (Sec.) Filter: SAE CLASS 60 Max = 2.1431 Min = -31.137

MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup

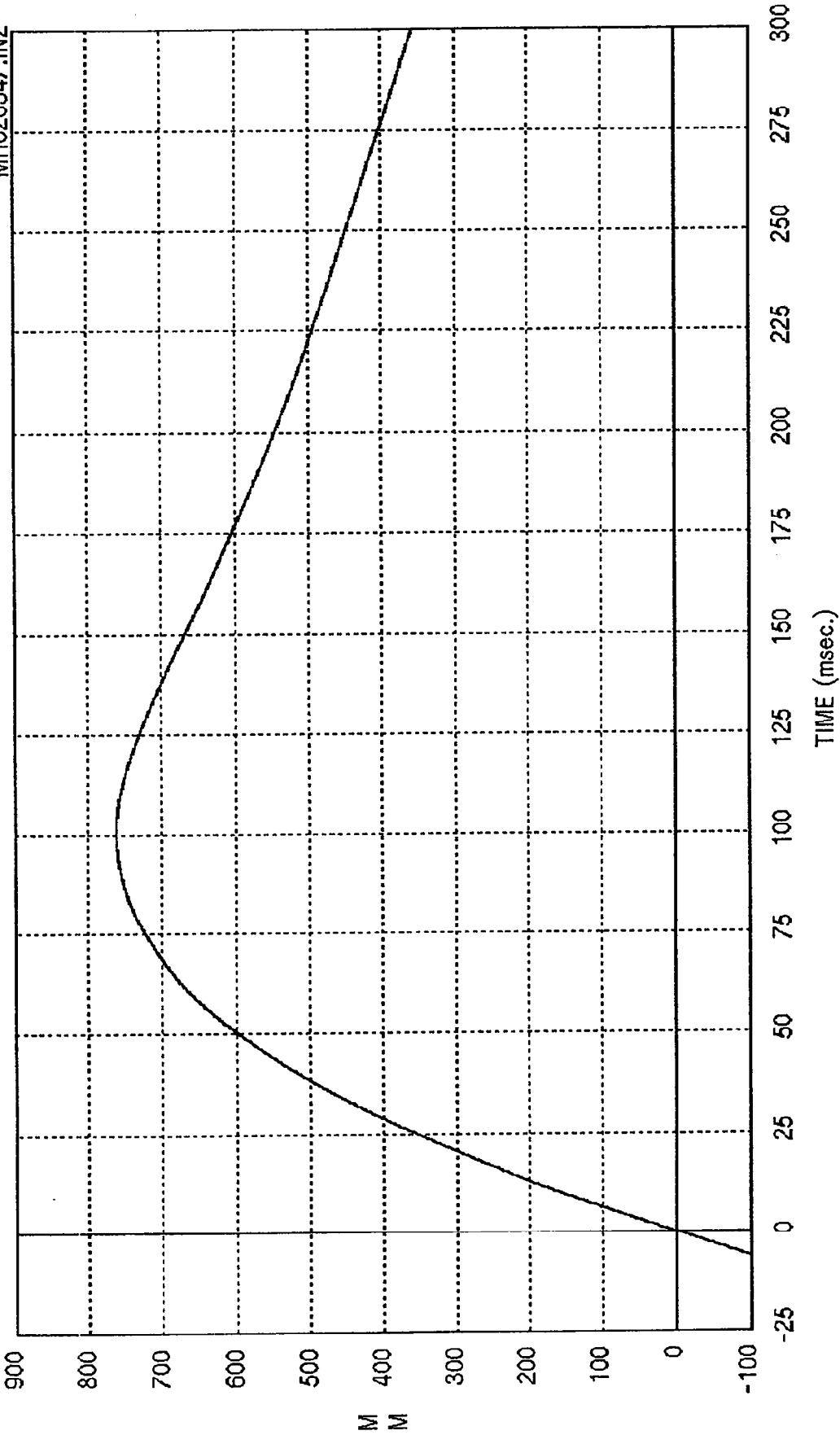
MR020347.IN1



Curve: Vehicle right rear X-member -- delta V (Sec.) Filter: SAE CLASS-180 Max = 56.004 Min = -9.7163

MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup

MR020347.IN2



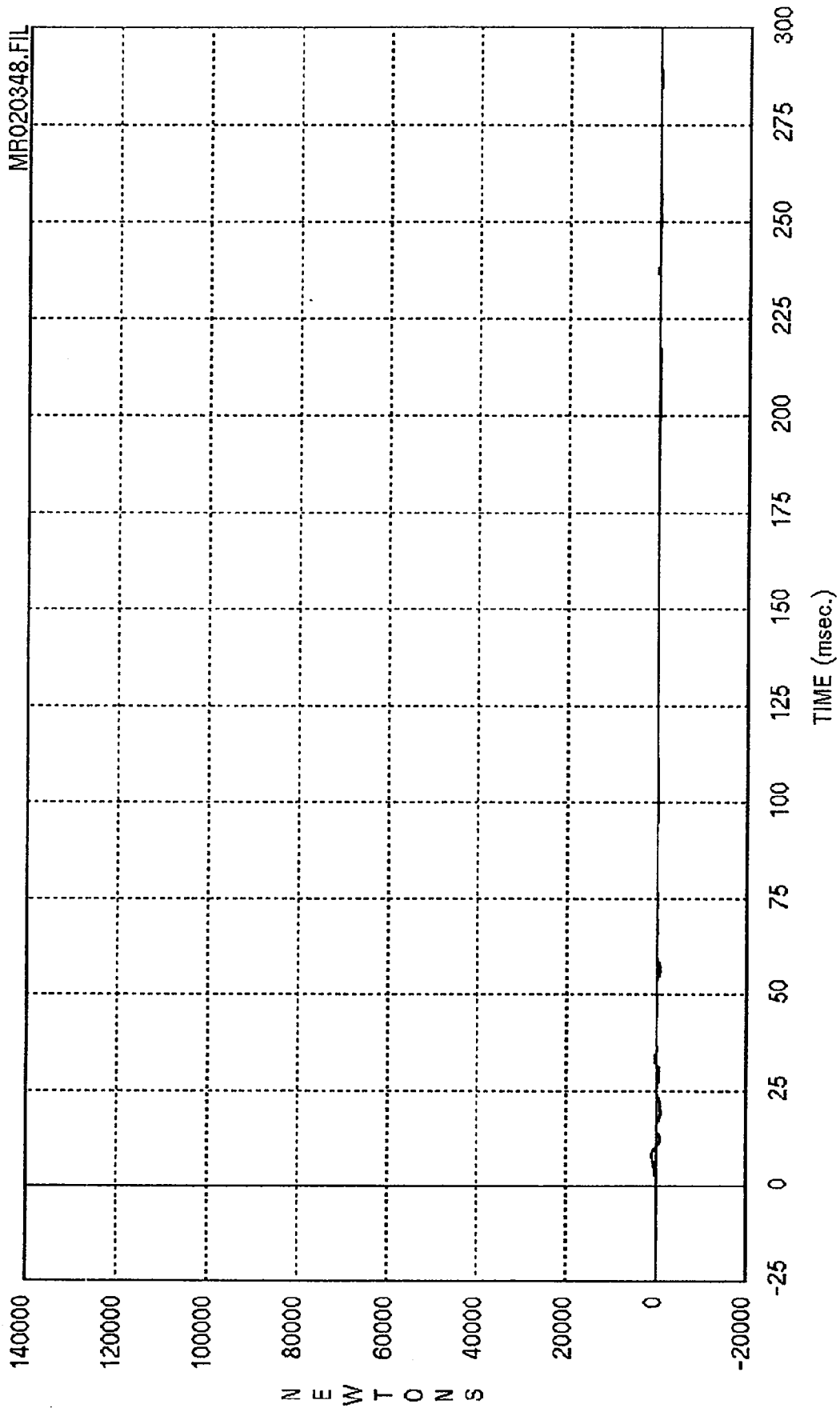
Curve: Vehicle right rear X-member - displacement(Sec.) Filter: SAE CLASS 180 Max = 761.70 Min = 358.00

MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup

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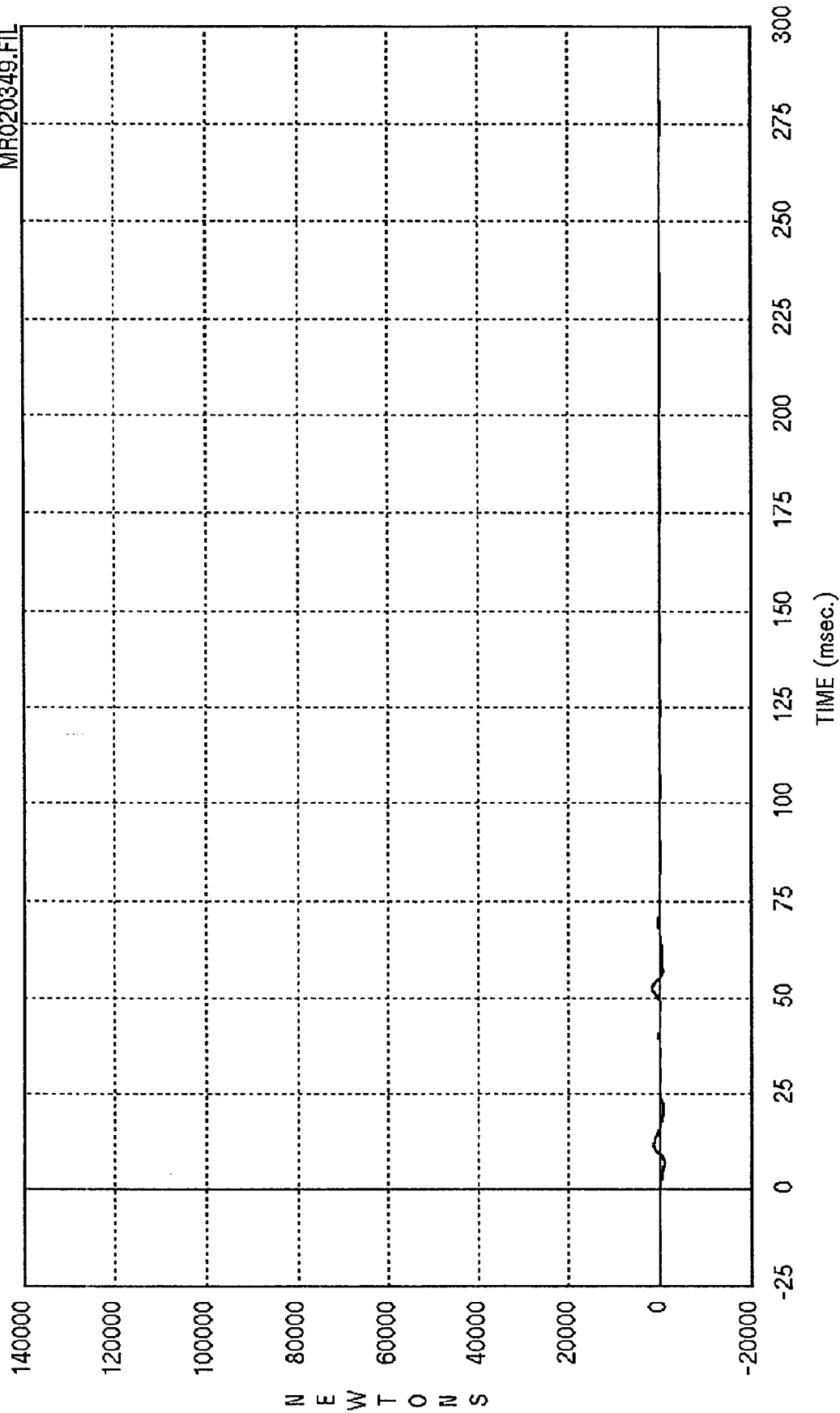
APPENDIX B - 2  
LOAD CELL BARRIER DATA

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Curve: Force on barrier location A1 Filter: SAE CLASS 60 Max = 1069.1 Min = -891.23

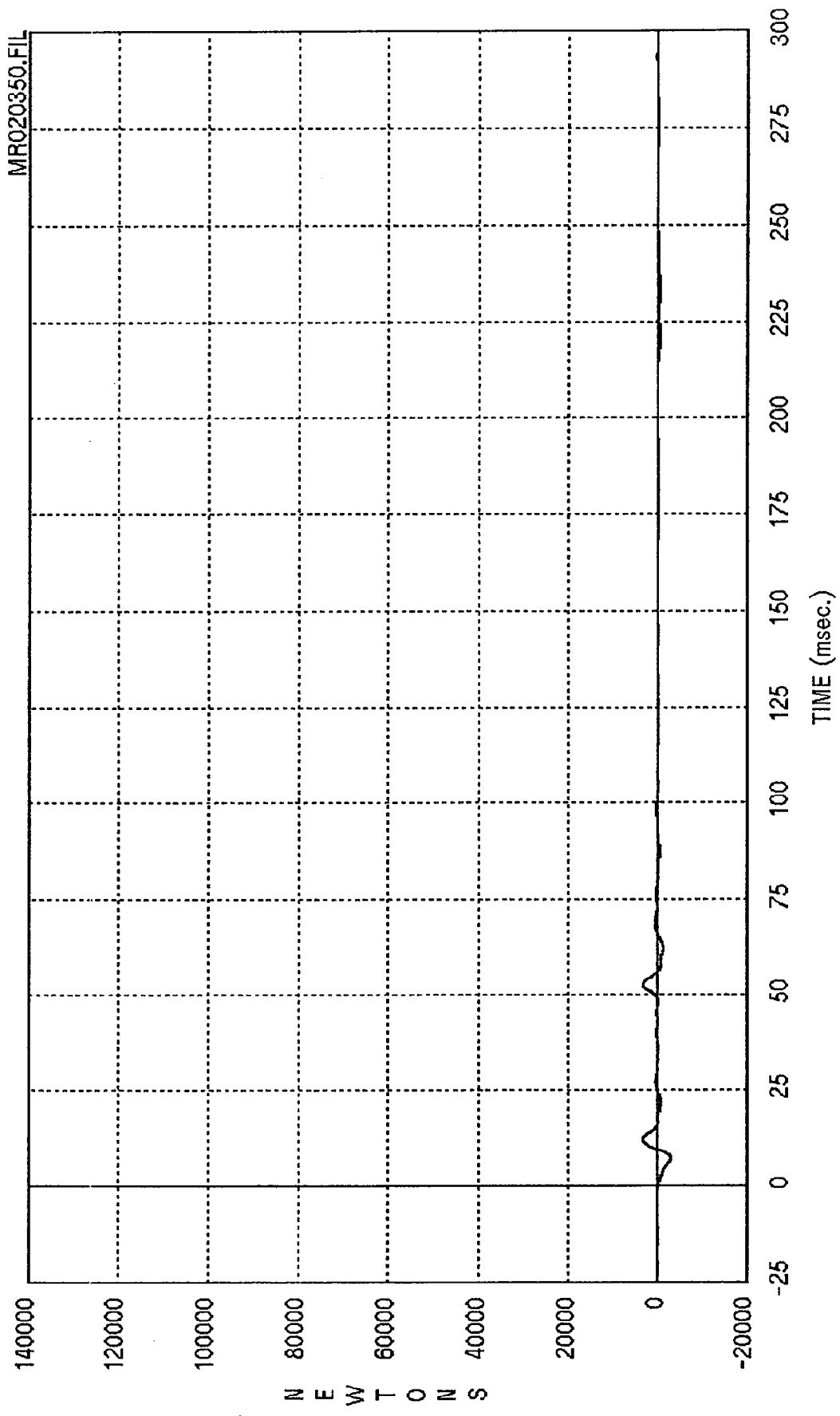
MSE Date: 02/19/94 Program: 1994 New Car Assessment Vehicle: 1994 Ford F-150 Pickup



Curve: Force on barrier location A2

Filter: SAE CLASS 60 Max = 1815.5 Min = -1034.4

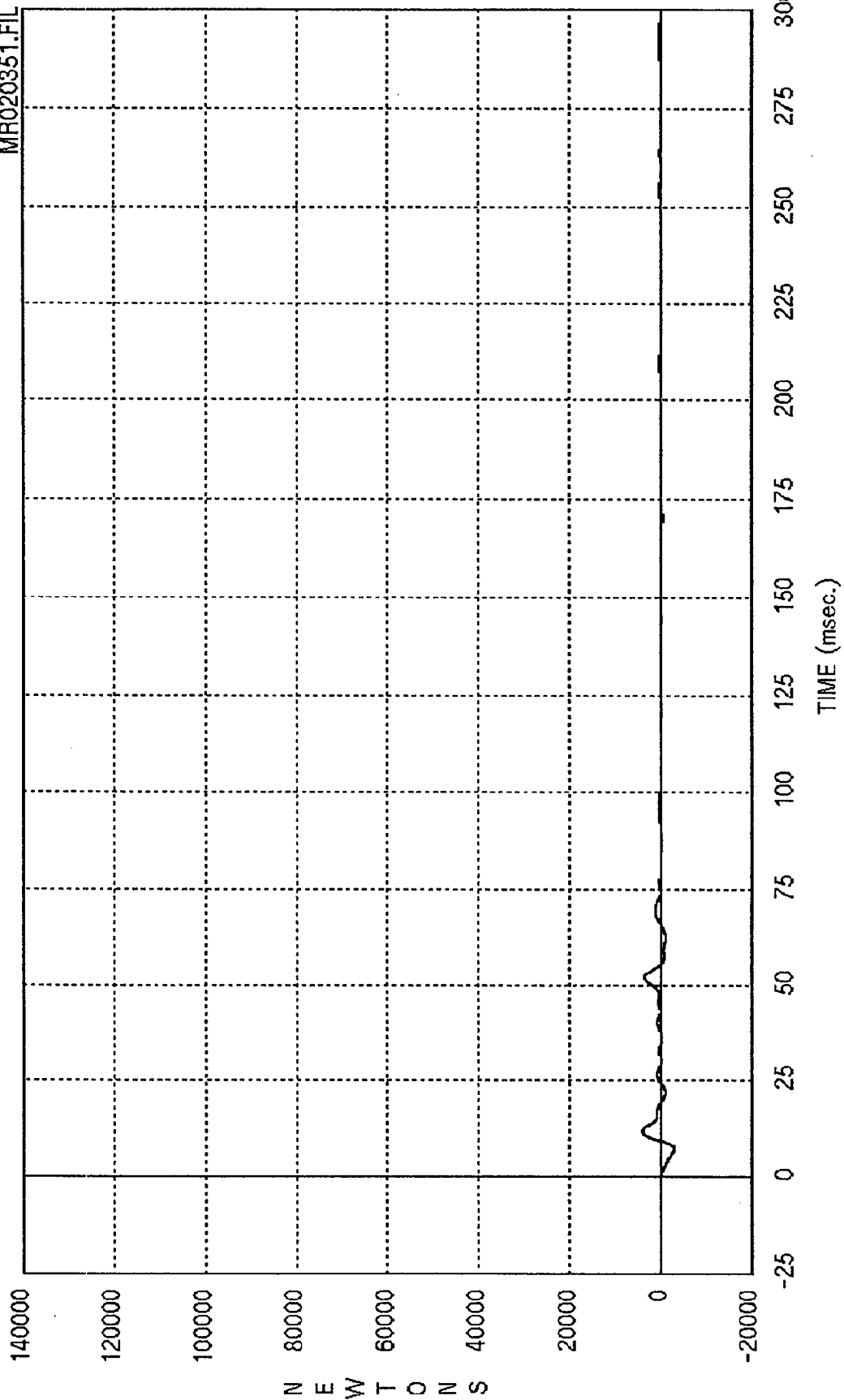
MSE Date: 02/19/94 Program: 1994 New Car Assessment Vehicle: 1994 Ford F-150 Pickup



Curve: Force on barrier location A3      Filter: SAE-CLASS 60      Max = 3436.2      Min = -2969.0

MSE      Date: 02/19/94      Program: 1994 New Car Assessment      Vehicle: 1994 Ford F-150 Pickup

MR020351.FIL



Curve: Force on barrier location A4      Filter: SAE CLASS 60      Max = 4051.4      Min = -3035.8

MSE      Date: 02/19/94      Program: 1994 New Car Assessment      Vehicle: 1994 Ford F-150 Pickup

MR020352.FIL

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175

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TIME (msec.)

Curve: Force on barrier location A5

Filter: SAE CLASS 60

Max = 4652.2 Min = -3344.0

MSE

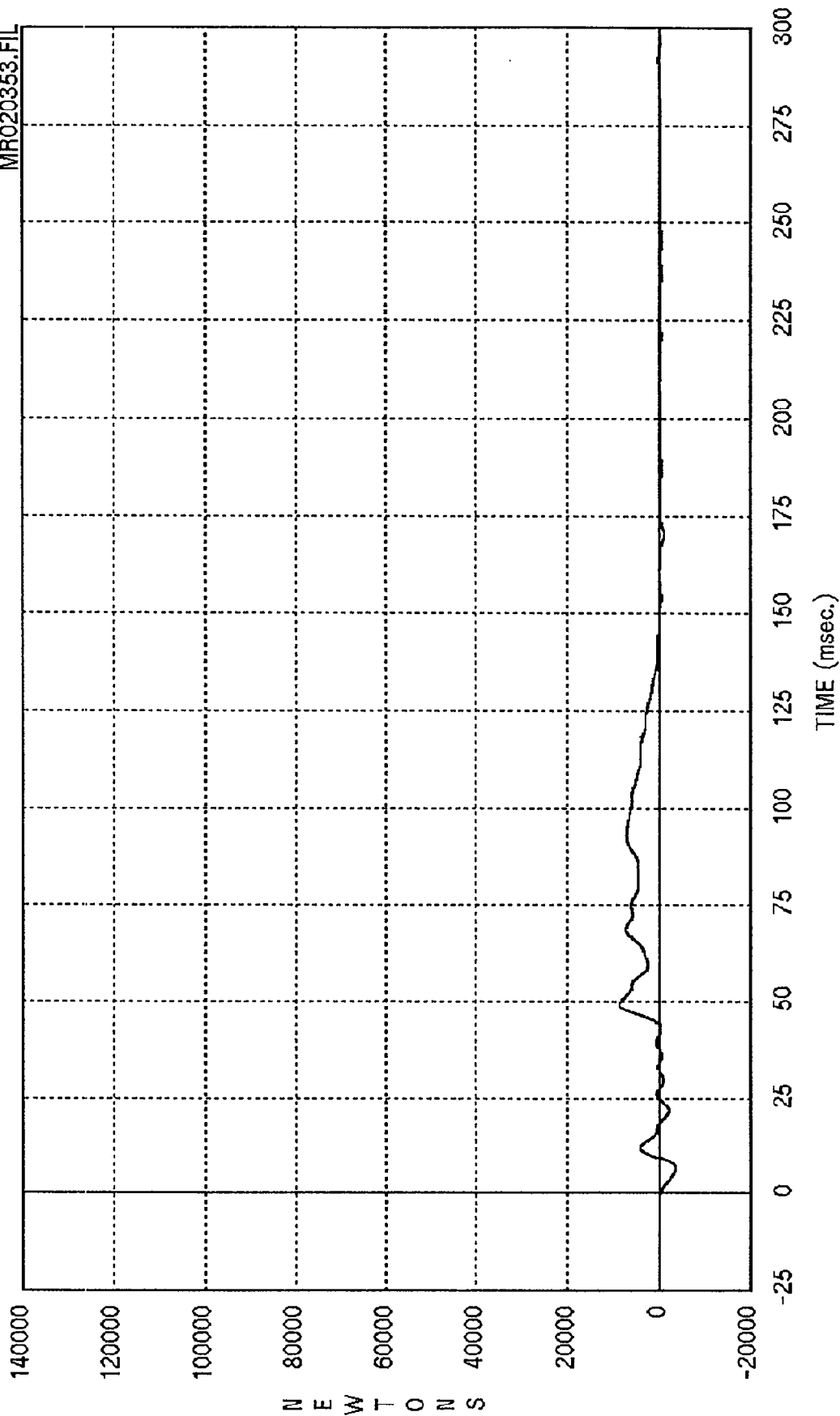
Date: 02/19/94

Program:

1994 New Car Assessment

Vehicle: 1994 Ford F-150 Pickup

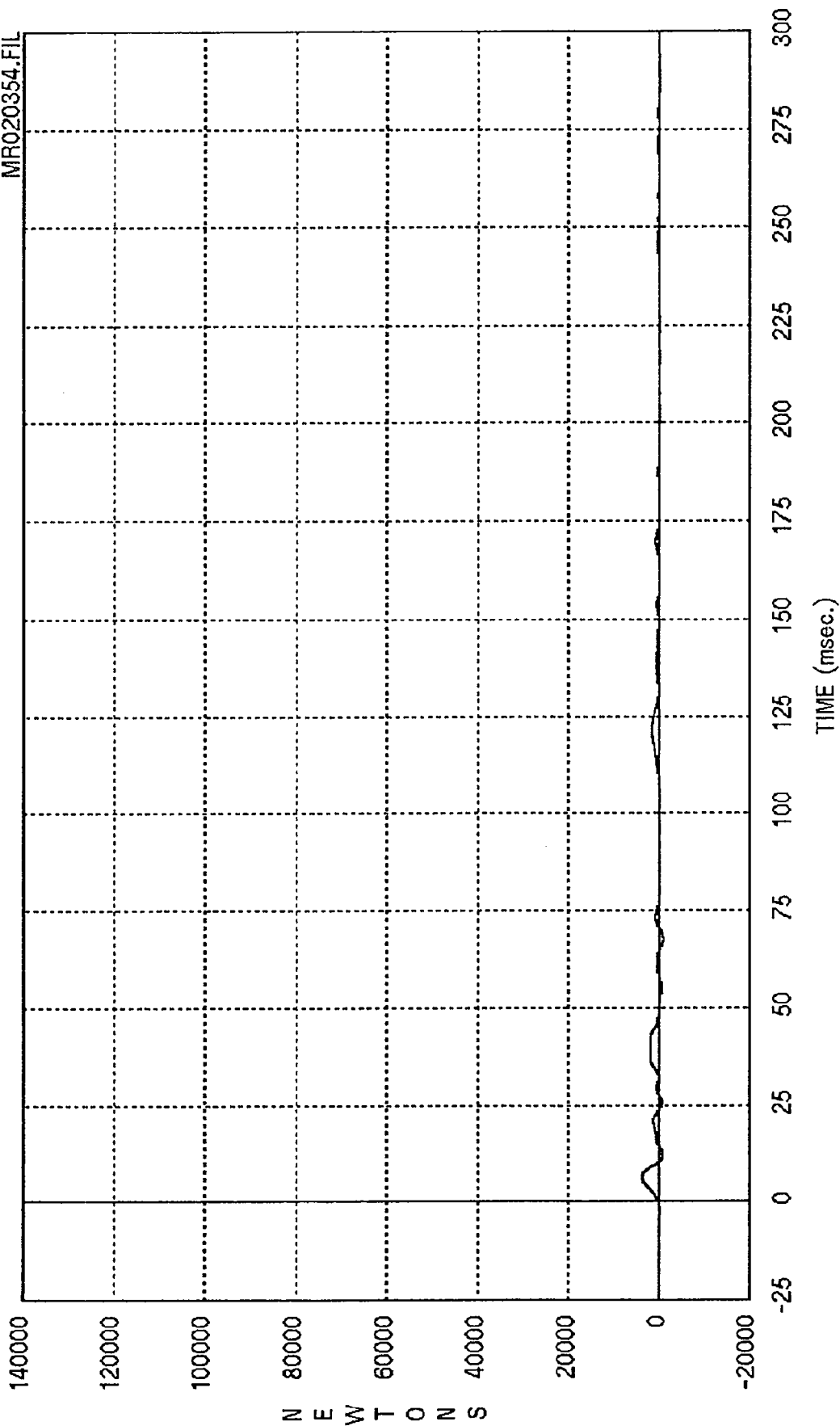
MR020353.FIL



Curve: Force on barrier location A6 Filter: SAE CLASS 60 Max = 8824.9 Min = -3511.4

MSE Date: 02/19/94 Program: 1994 New Car Assessment Vehicle: 1994 Ford F-150 Pickup

MR020354.FIL



Curve: Force on barrier location A7

Filter: SAE CLASS:60

Max = 3806.3

Min = -917.28

MSE

Date: 02/19/94

Program: 1994 New Car Assessment

Vehicle: 1994 Ford F-150 Pickup

MR020355.FIL

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-25 0 25 50 75 100 125 150 175 200 225 250 275 300

TIME (msec.)

Curve: Force on barrier location A8

Filter: SAE CLASS 60

Max = 5433.3

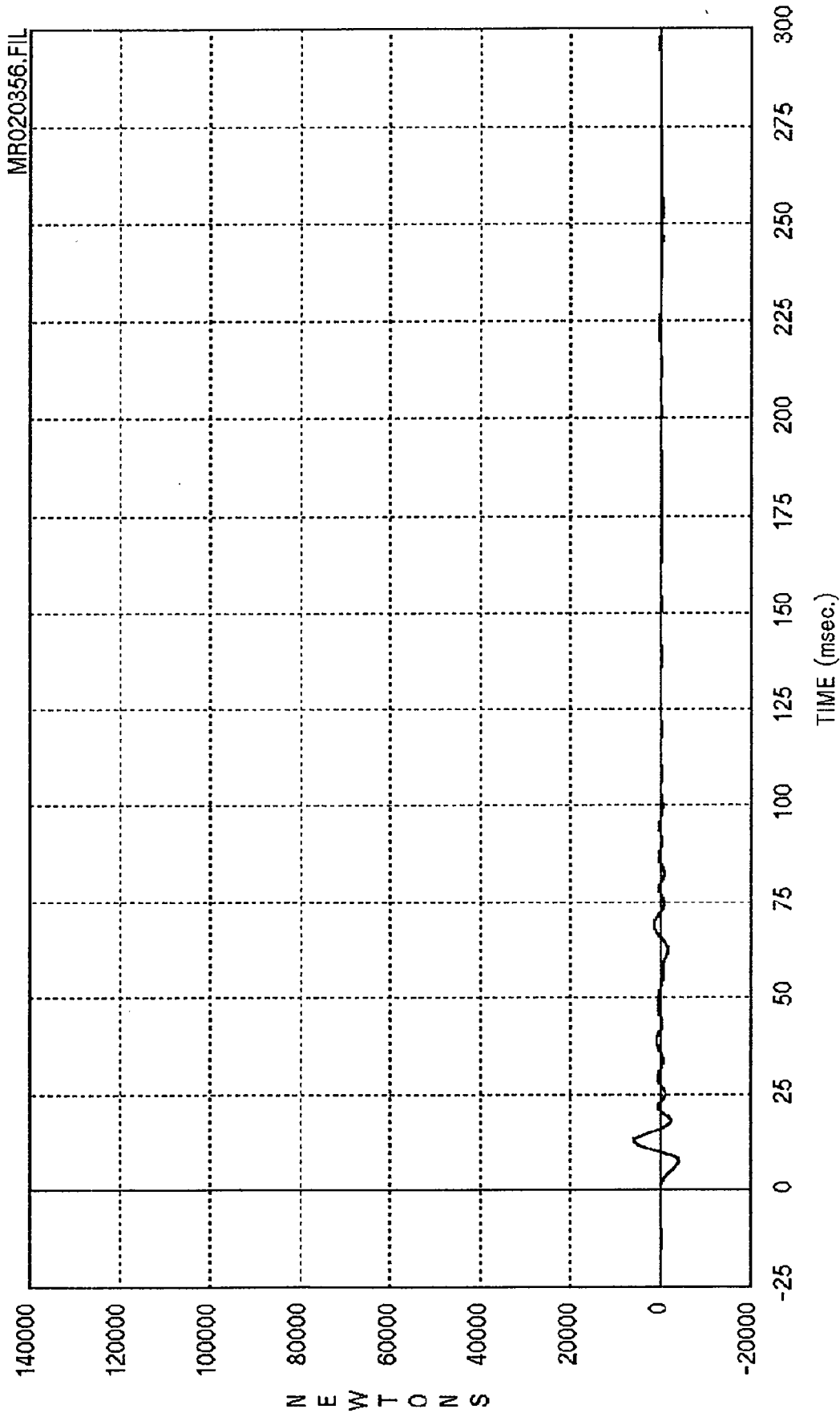
Min = -3688.5

MSE

Date: 02/19/94

Program: 1994 New Car Assessment

Vehicle: 1994 Ford F-150 Pickup



Curve: Force on barrier location A9 Filter: SAE CLASS 60 Max = 6155.0 Min = -3940.3

MSE Date: 02/19/94 Program: 1994 New Car Assessment Vehicle: 1994 Ford F-150 Pickup

MR020357.FIL

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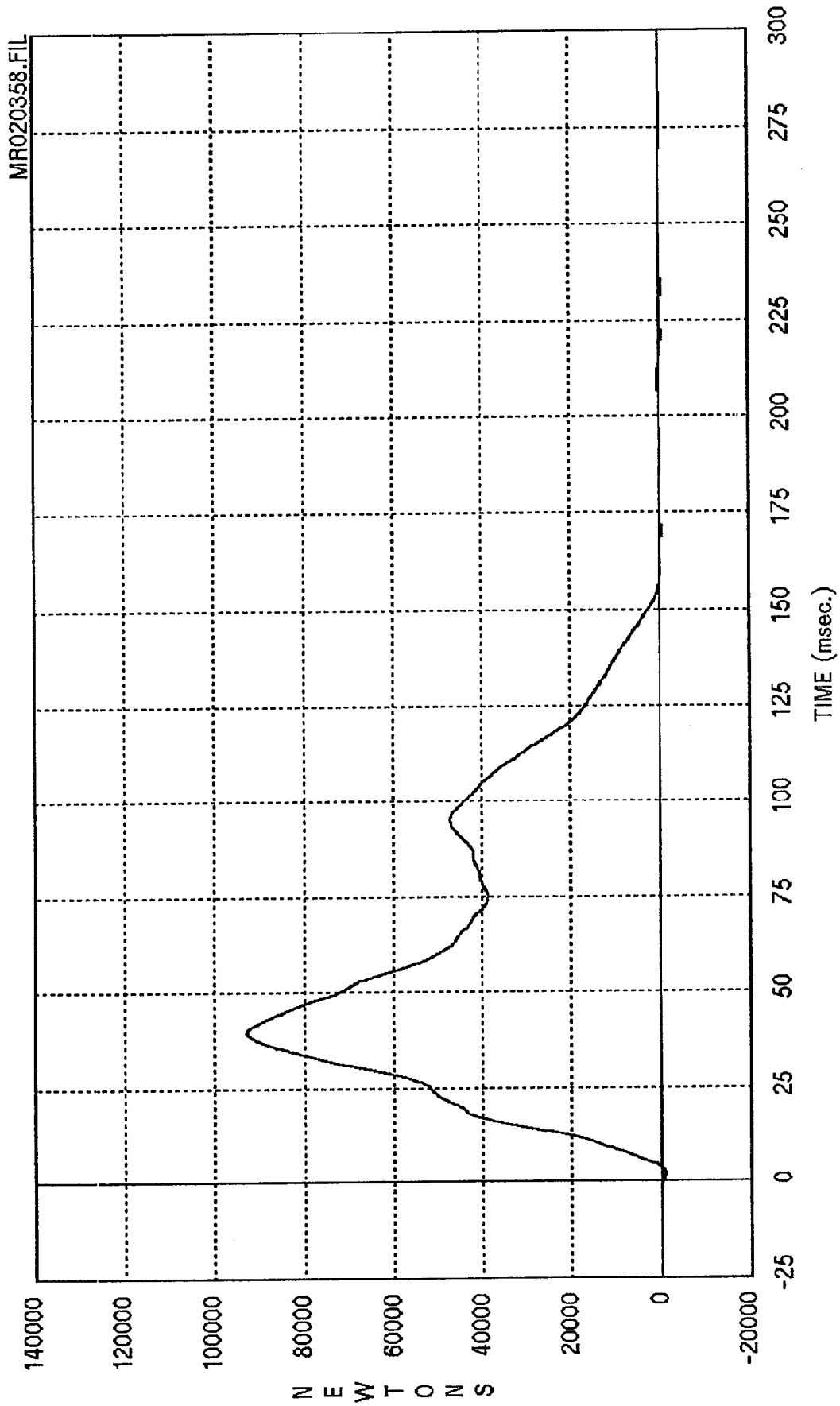
-20000

-25 0 25 50 75 100 125 150 175 200 225 250 275 300

TIME (msec.)

Curve: Force on barrier location B1 Filter: SAE CLASS 60 Max = 8452.7 Min = -2066.3

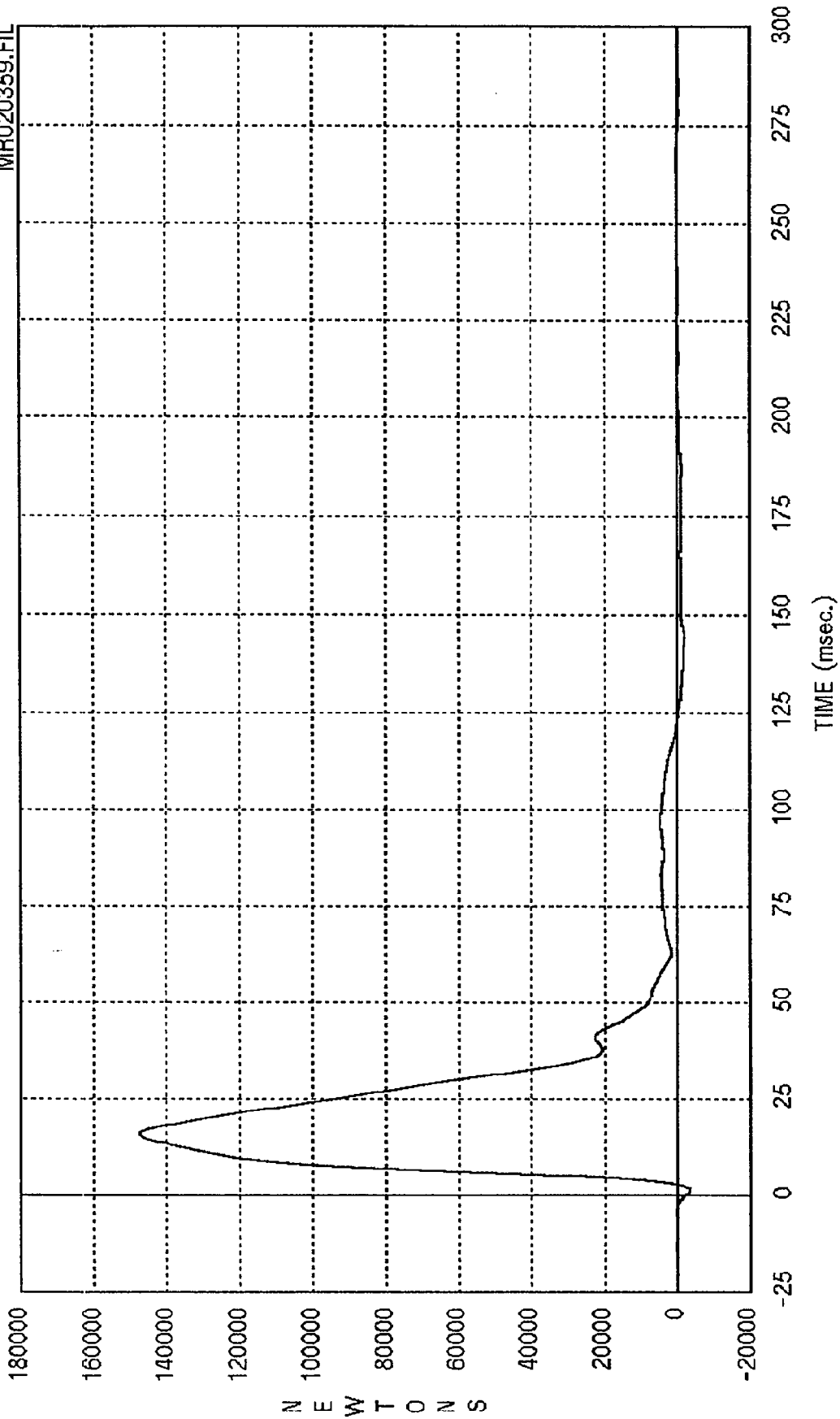
MSE Date: 02/19/94 Program: 1994 New Car Assessment Vehicle: 1994 Ford F-150 Pickup



Curve: Force on barrier location B2 Filter: SAE CLASS:60 Max = 92853. Min = -6395.3

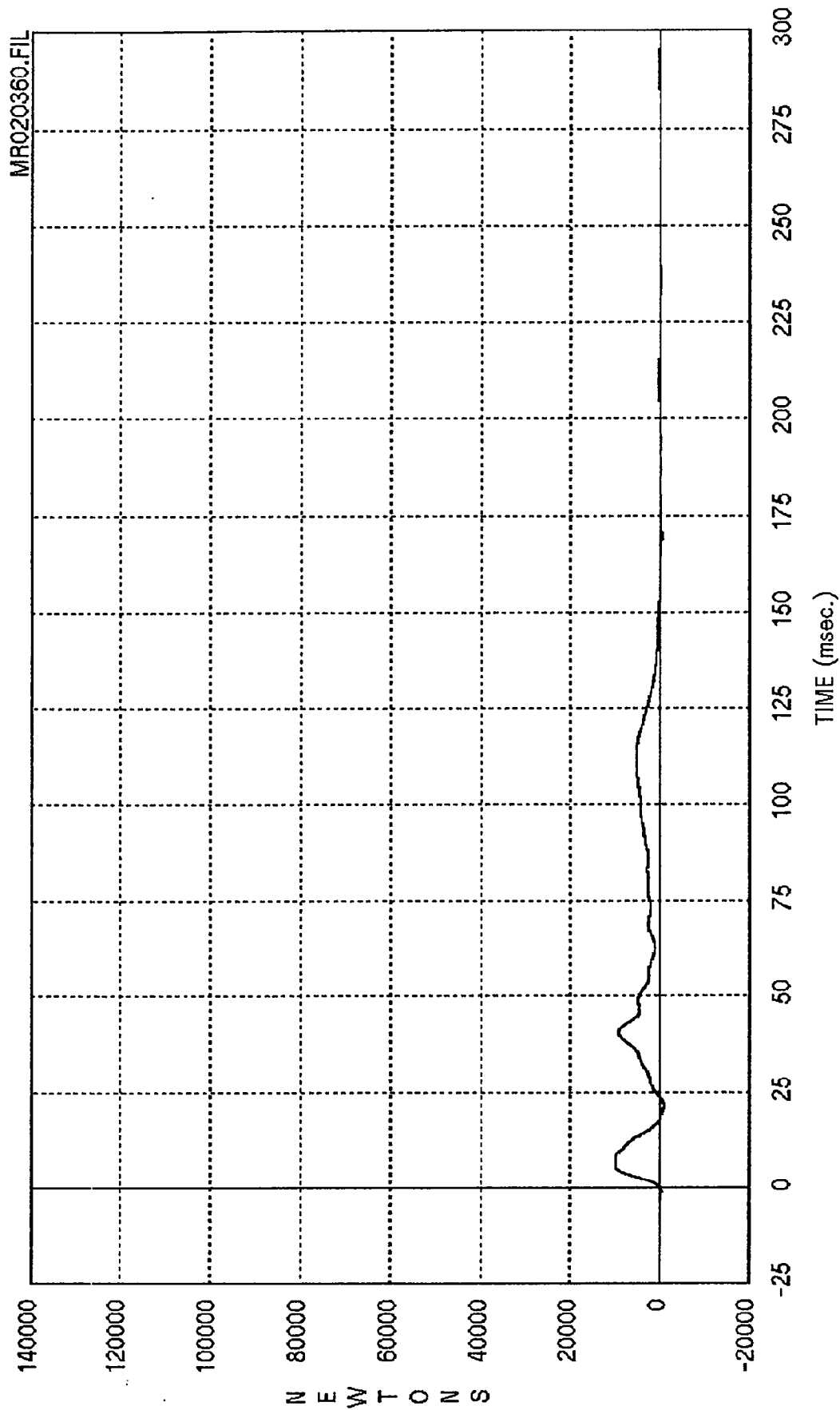
MSE Date: 02/19/94 Program: 1994 New Car Assessment Vehicle: 1994 Ford F-150 Pickup

MR020359.FIL



Curve: Force on barrier location B3 Filter: SAE CLASS 60 Max = .14766E+06 Min = -3472.7

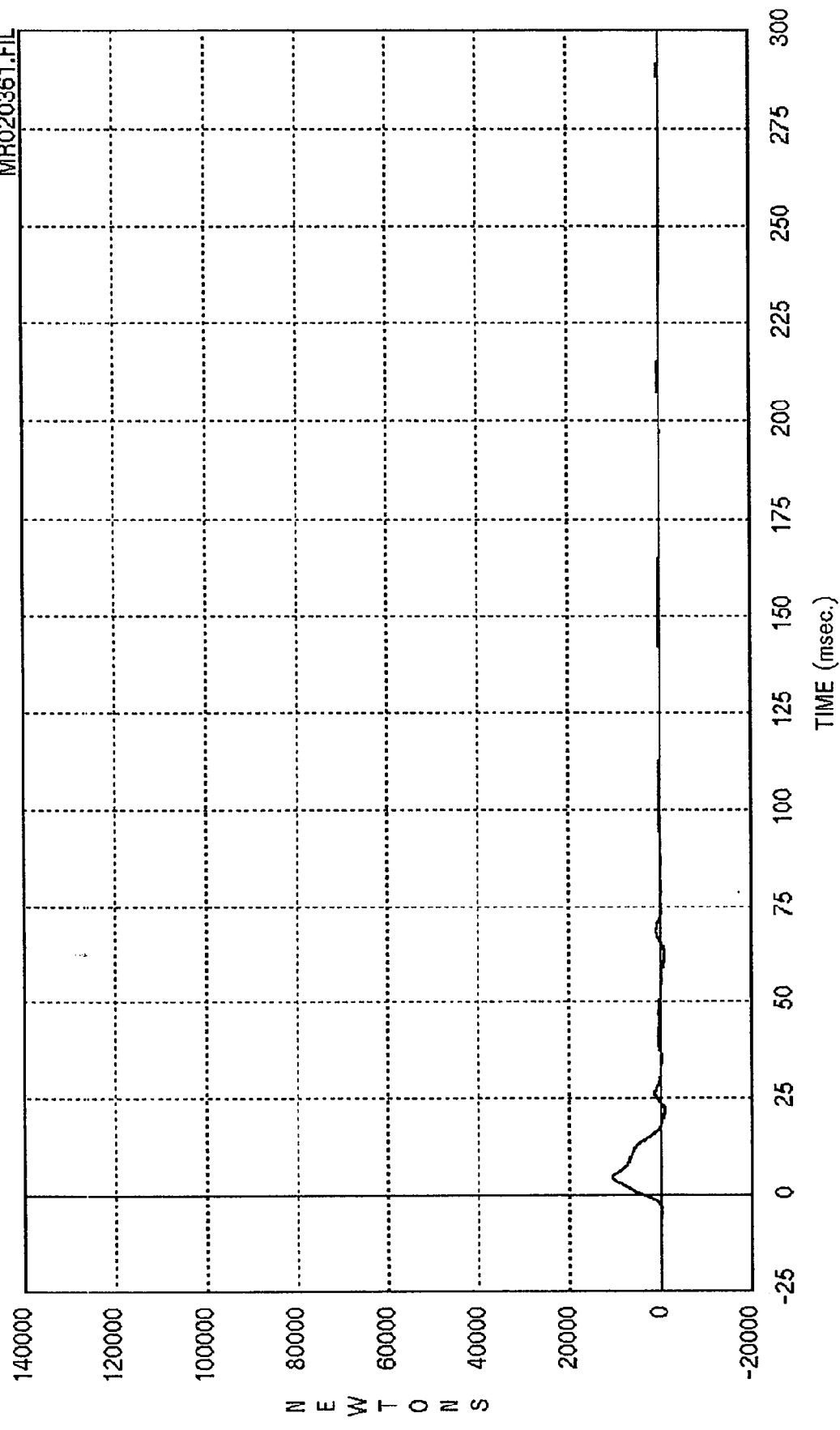
MSE Date: 02/19/94 Program: 1994 New Car Assessment Vehicle: 1994 Ford F-150 Pickup



Curve: Force on barrier location B4 Filter: SAE CLASS 60 Max = 9932.4 Min = -960.01

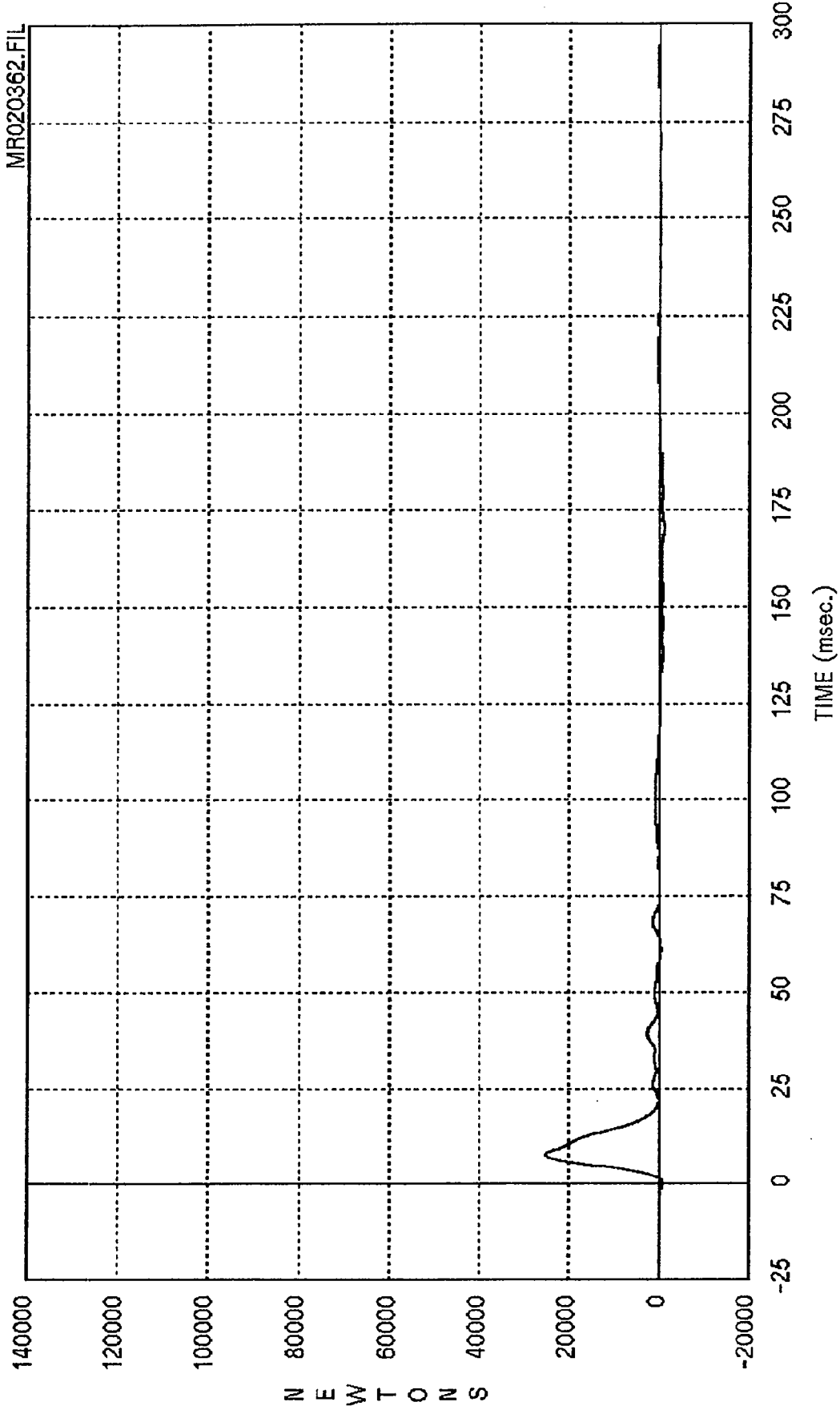
MSE Date: 02/19/94 Program: 1994 New Car Assessment Vehicle: 1994 Ford F-150 Pickup

MR020361.FIL



Curve: Force on barrier location B5 Filter: SAE CLASS 60 Max = 10965. Min = -817.00

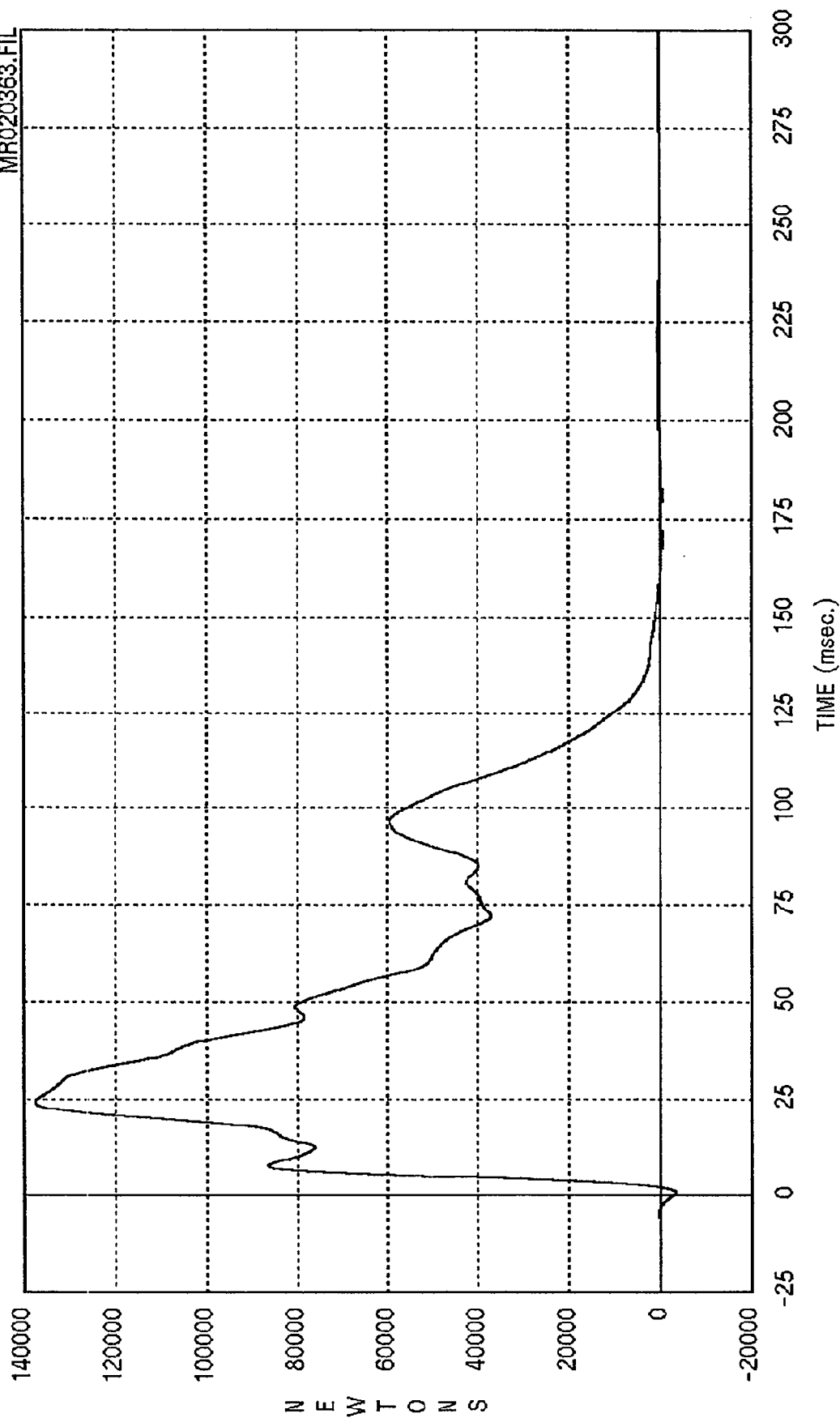
MSE Date: 02/19/94 Program: 1994 New Car Assessment Vehicle: 1994 Ford F-150 Pickup



Curve: Force on barrier location B6 Filter: SAE CLASS 60 Max = 25135. Min = -1040.3

MSE Date: 02/19/94 Program: 1994 New Car Assessment Vehicle: 1994 Ford F-150 Pickup

MR020363.FIL



Curve: Force on barrier location B7

Filter: SAE CLASS 60

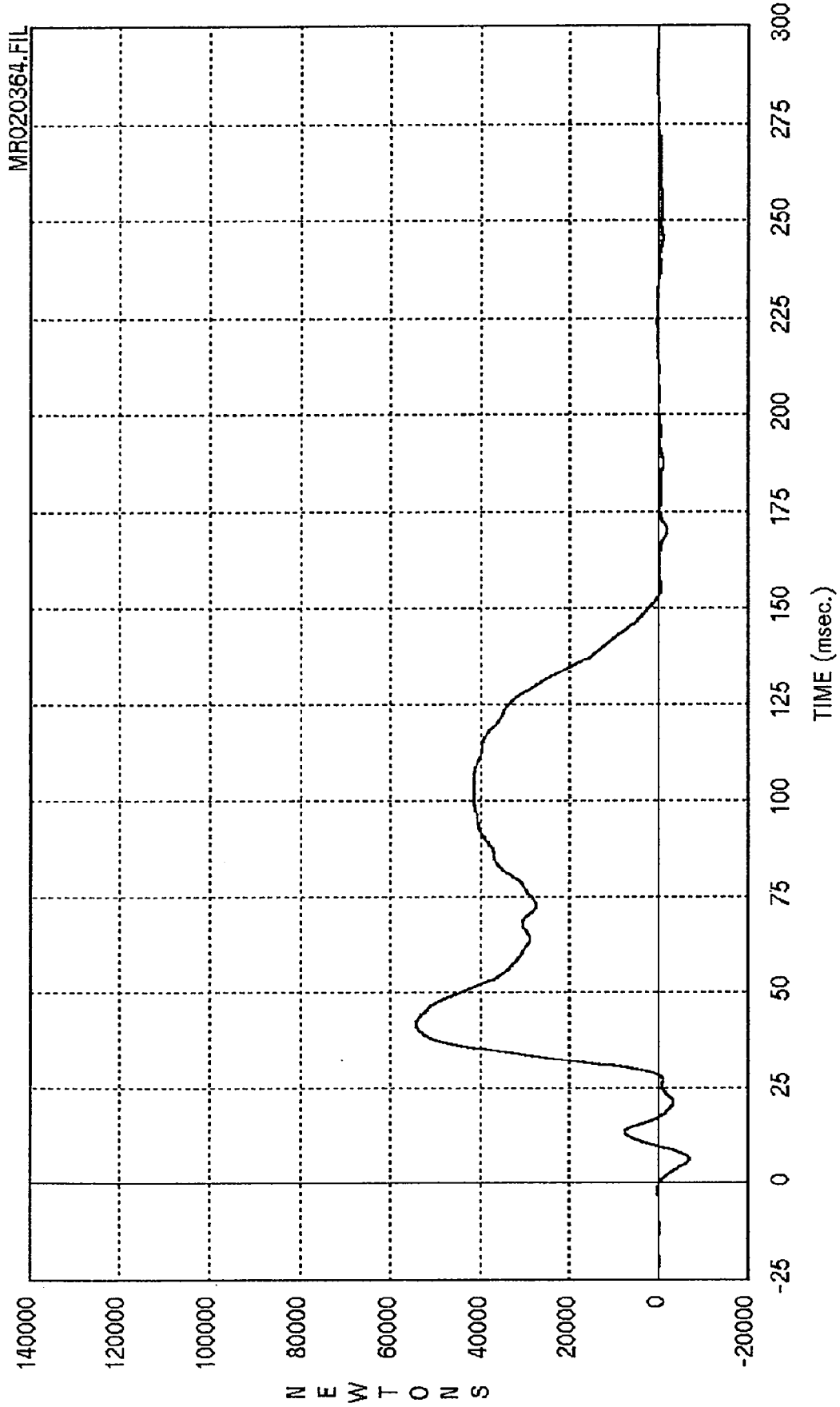
Max = .13762E+06 Min = -.3418E+05

Vehicle: 1994 Ford F-150 Pickup

Program: 1994 New Car Assessment

Date: 02/19/94

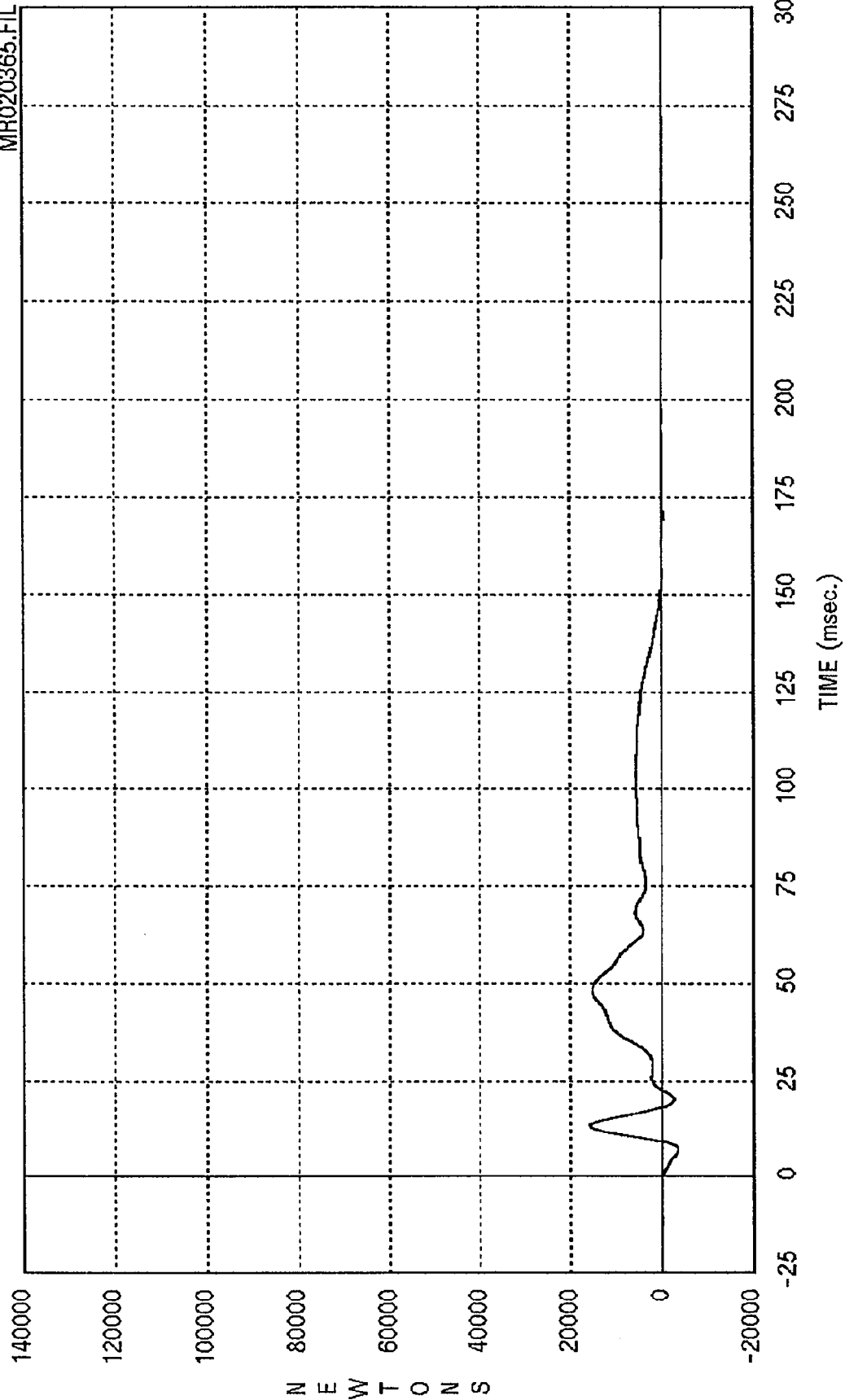
MSE



Curve: Force on barrier location B8 Filter: SAE CLASS 60 Max = 54484. Min = -6888.8

MSE Date: 02/19/94 Program: 1994 New Car Assessment Vehicle: 1994 Ford F-150 Pickup

MR020365.FIL



Curve: Force on barrier location B9

Filter: SAE CLASS 60

Max = 15923.

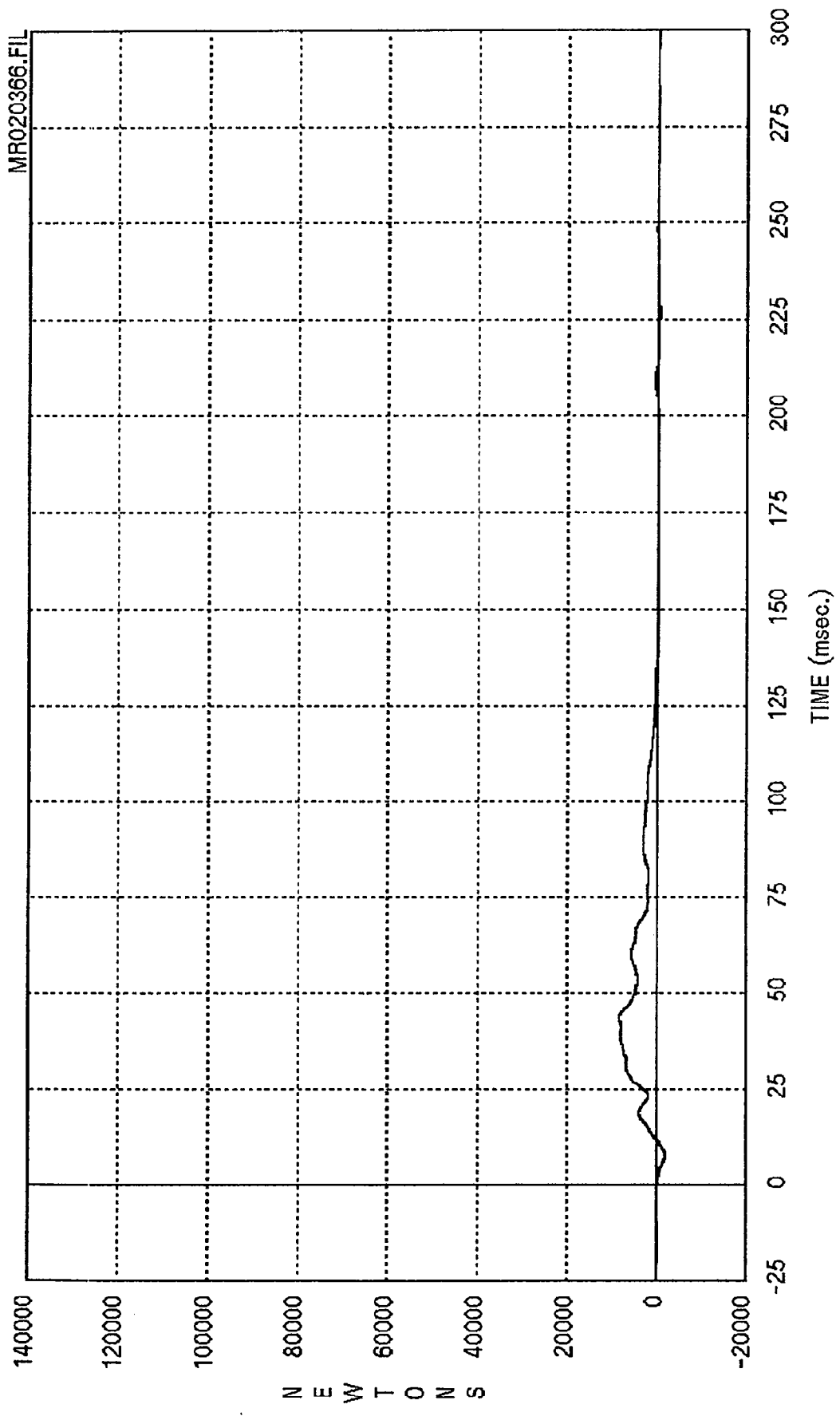
Min = -3534.8

MSE

Date: 02/19/94

Program: 1994 New Car Assessment

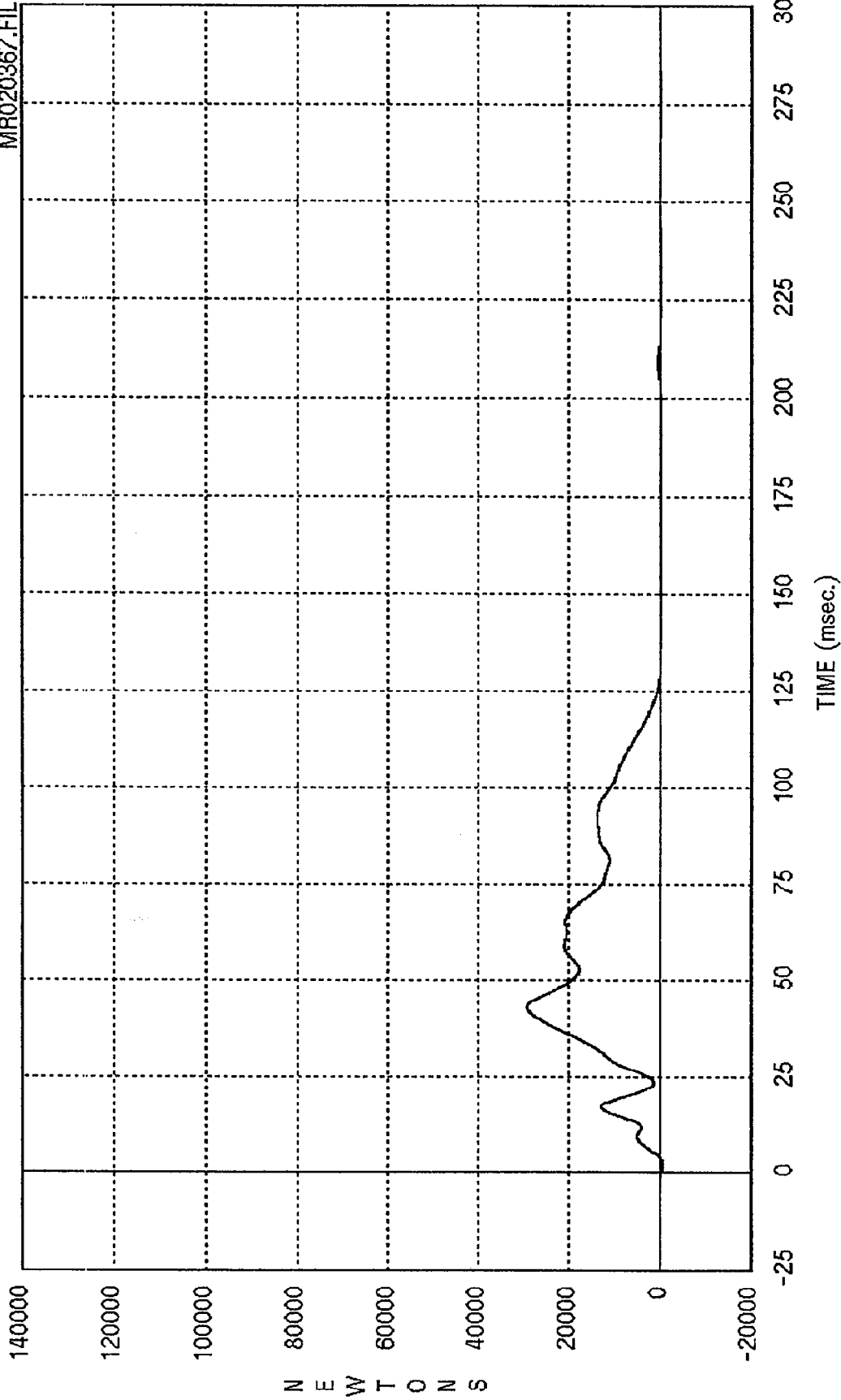
Vehicle: 1994 Ford F-150 Pickup



Curve: Force on barrier location C1      Filter: SAE CLASS 60      Max = 8454.6      Min = -1834.8

MSE      Date: 02/19/94      Program: 1994 New Car Assessment      Vehicle: 1994 Ford F-150 Pickup

MR020367.FIL



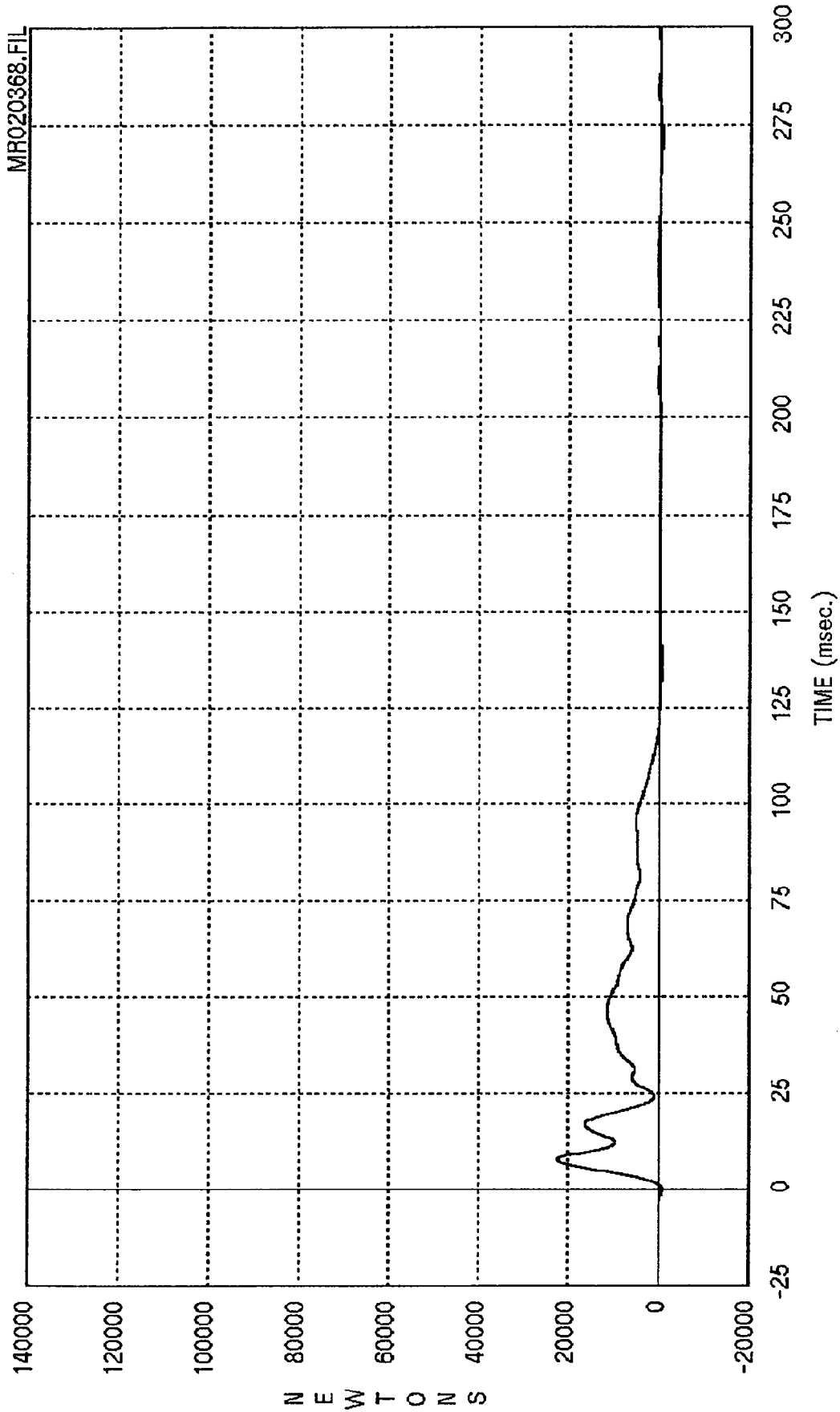
Curve: Force on barrier location C2

Filter: SAE CLASS:60

Max = 29181.

Min = -529.67

MSE Date: 02/19/94 Program: 1994 New Car Assessment Vehicle: 1994 Ford F-150 Pickup



Curve: Force on barrier location C3 Filter: SAE CLASS 60 Max = 22564. Min = -474.30

MSE Date: 02/19/94 Program: 1994 New Car Assessment Vehicle: 1994 Ford F-150 Pickup

MR020369.FIL

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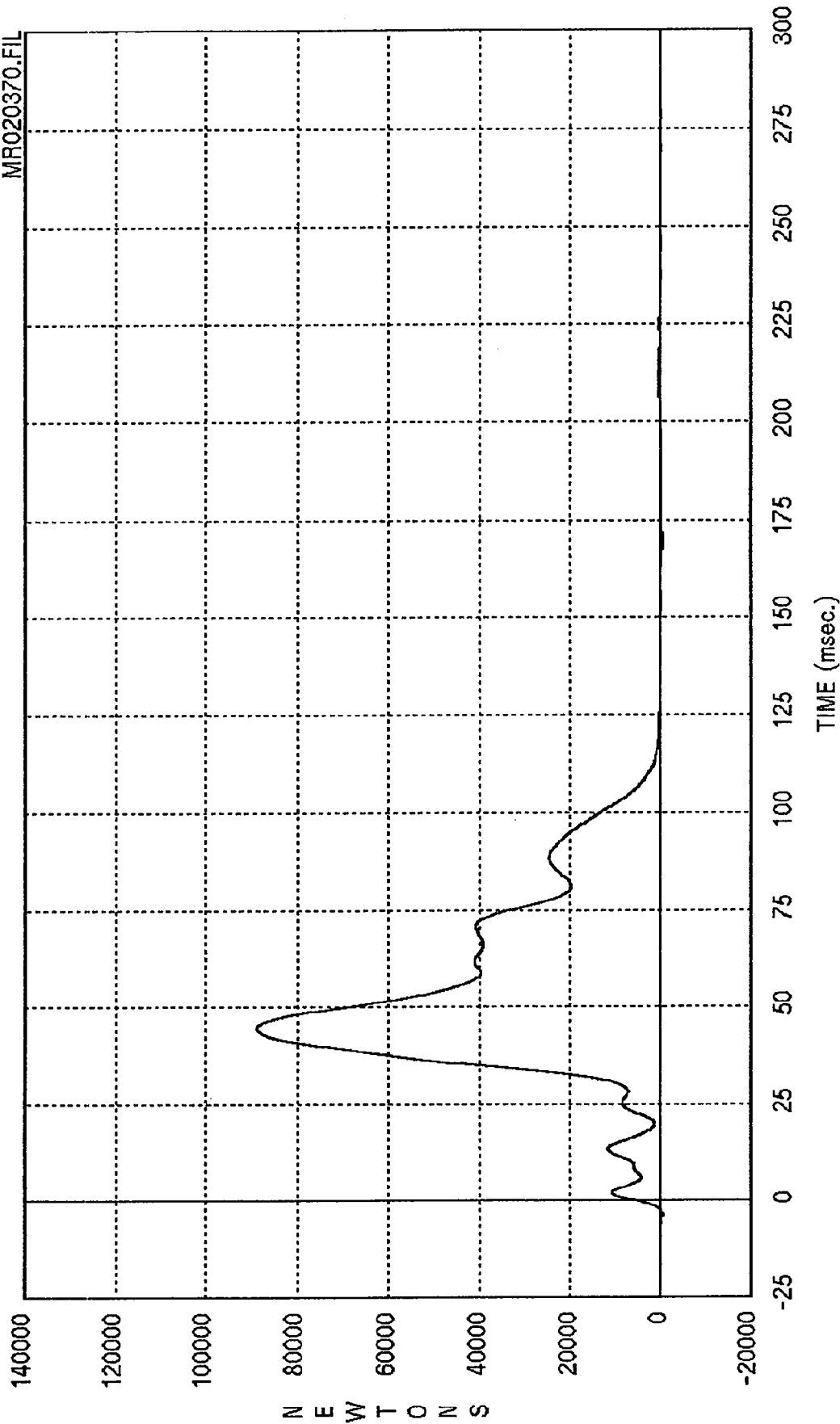
TIME (msec.)

Curve: Force on barrier location C4

Filter: SAE CLASS 60 Max = 43023. Min = -432.63

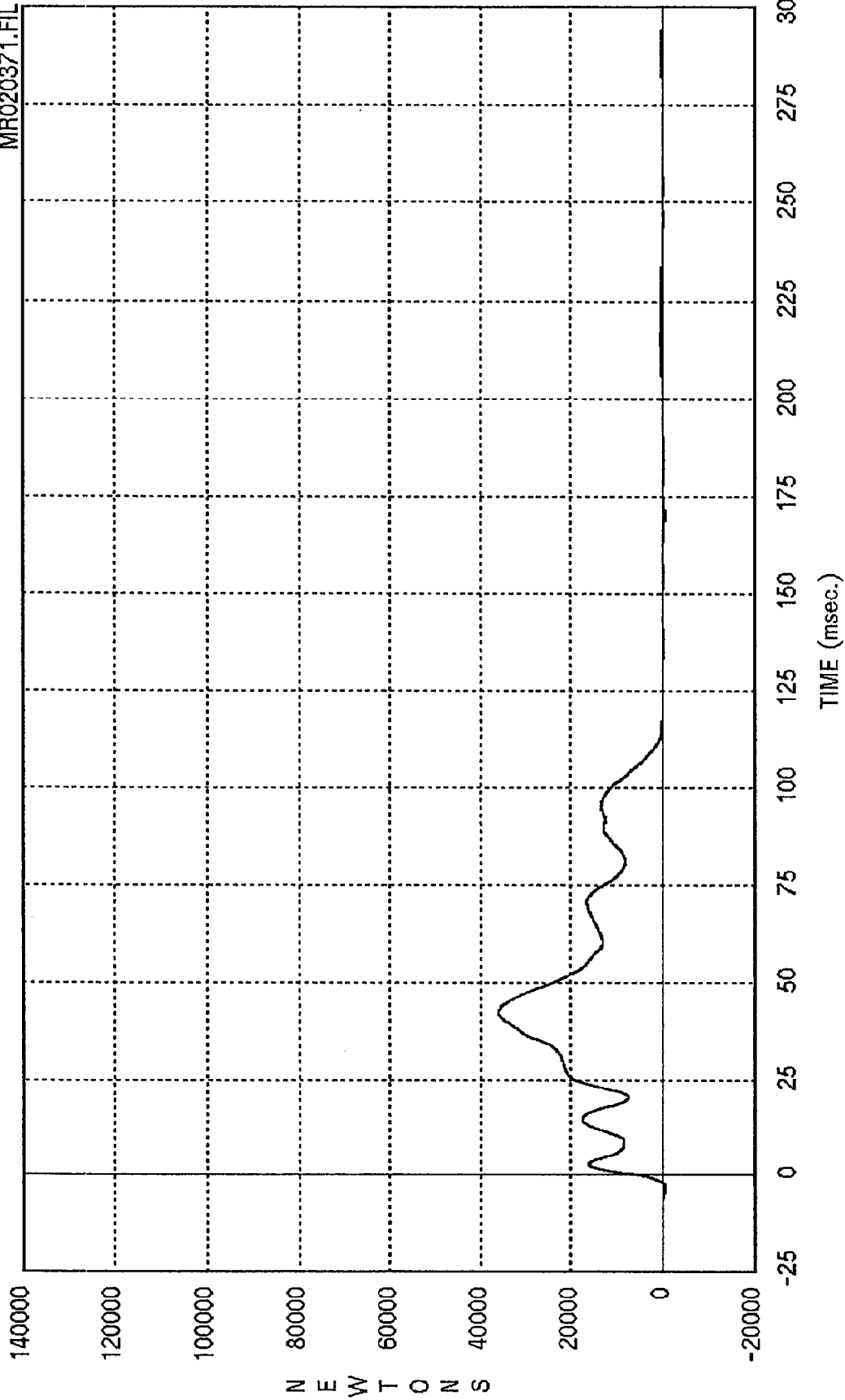
MSE Date: 02/19/94 Program: 1994 New Car Assessment Vehicle: 1994 Ford F-150 Pickup

MR020370.FIL



Curve: Force on barrier location C5 Filter: SAE CLASS 60 Max = 88739. Min = -491.36

MSE Date: 02/19/94 Program: 1994 New Car Assessment Vehicle: 1994 Ford F-150 Pickup

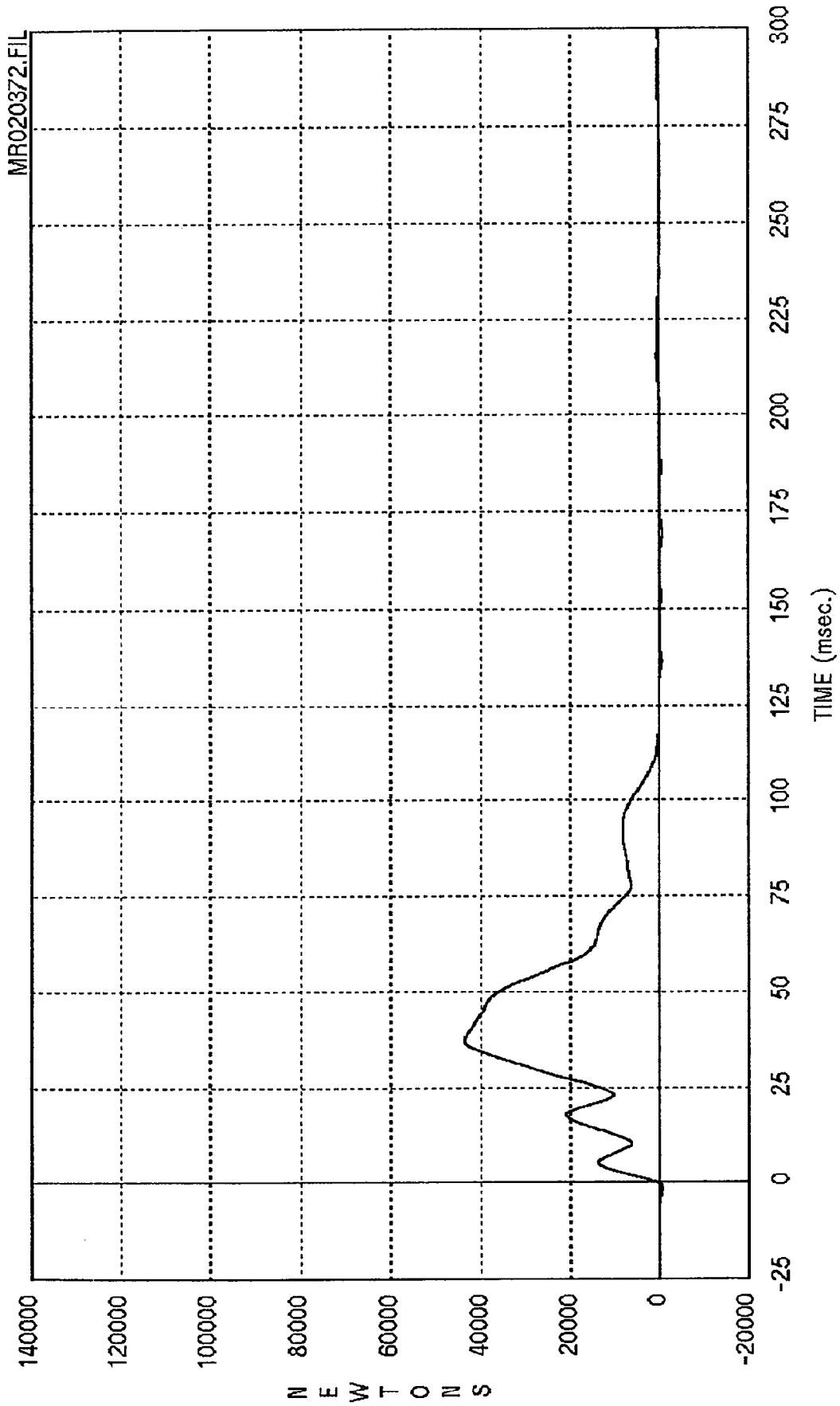


Curve: Force on barrier location C6

Filter: SAE CLASS.60 Max = 36079.

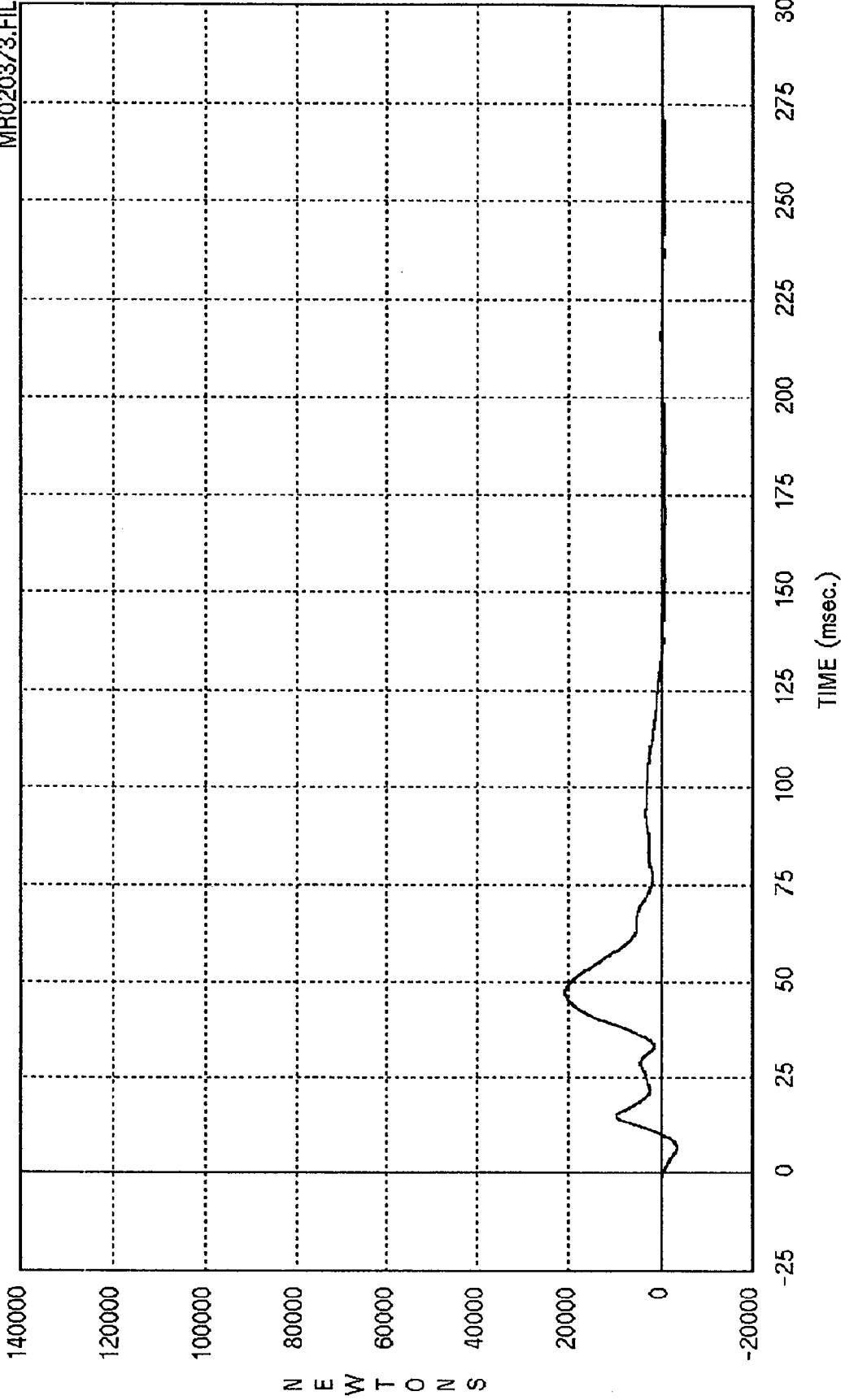
Min = -428.68

MSE Date: 02/19/94 Program: 1994 New Car Assessment Vehicle: 1994 Ford F-150 Pickup



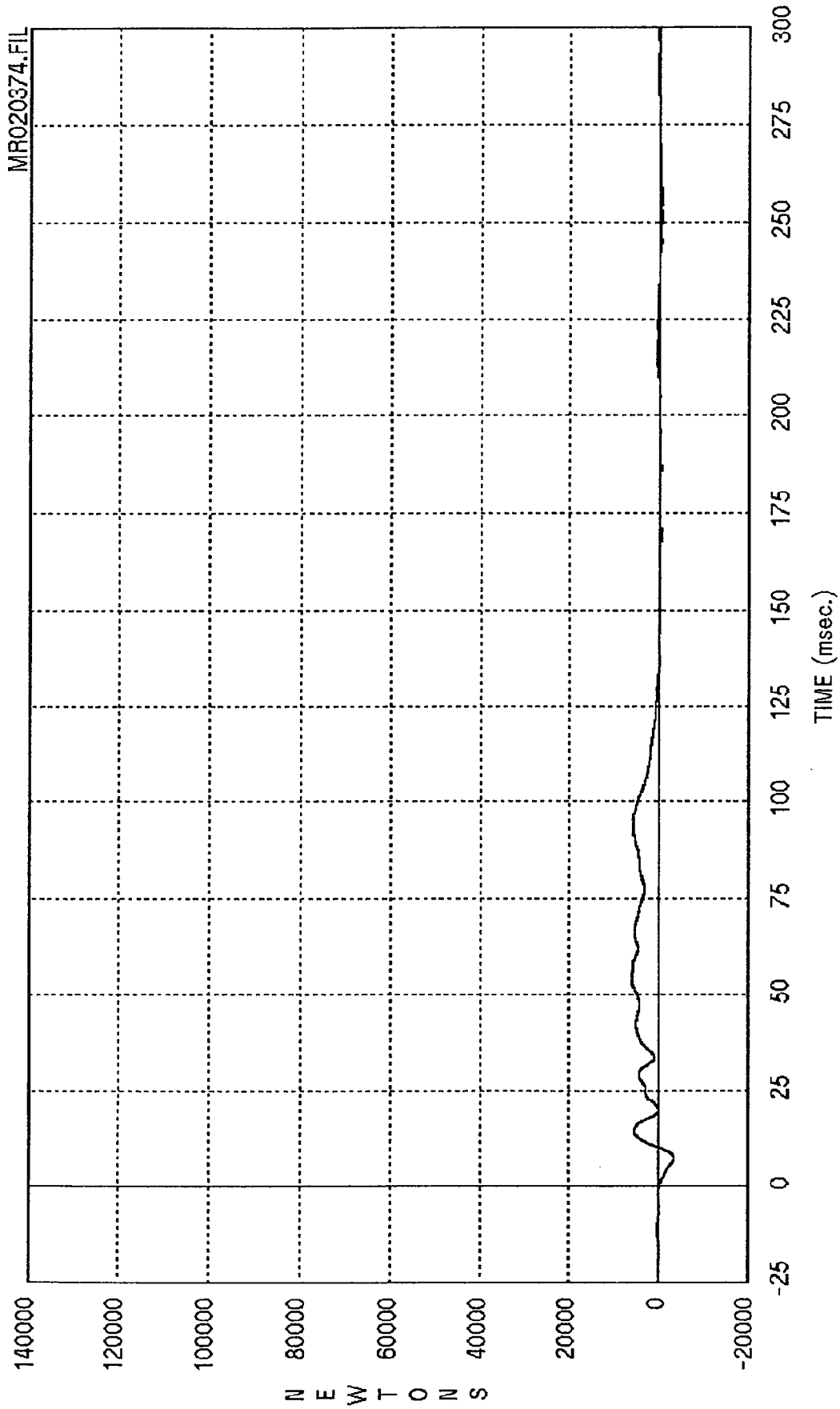
Curve: Force on barrier location C7 Filter: SAE CLASS 60 Max = 43881. Min = -691.93

MSE Date: 02/19/94 Program: 1994 New Car Assessment Vehicle: 1994 Ford F-150 Pickup



Curve: Force on barrier location C8 Filter: SAE CLASS 60 Max = 20871 Min = -3371.1

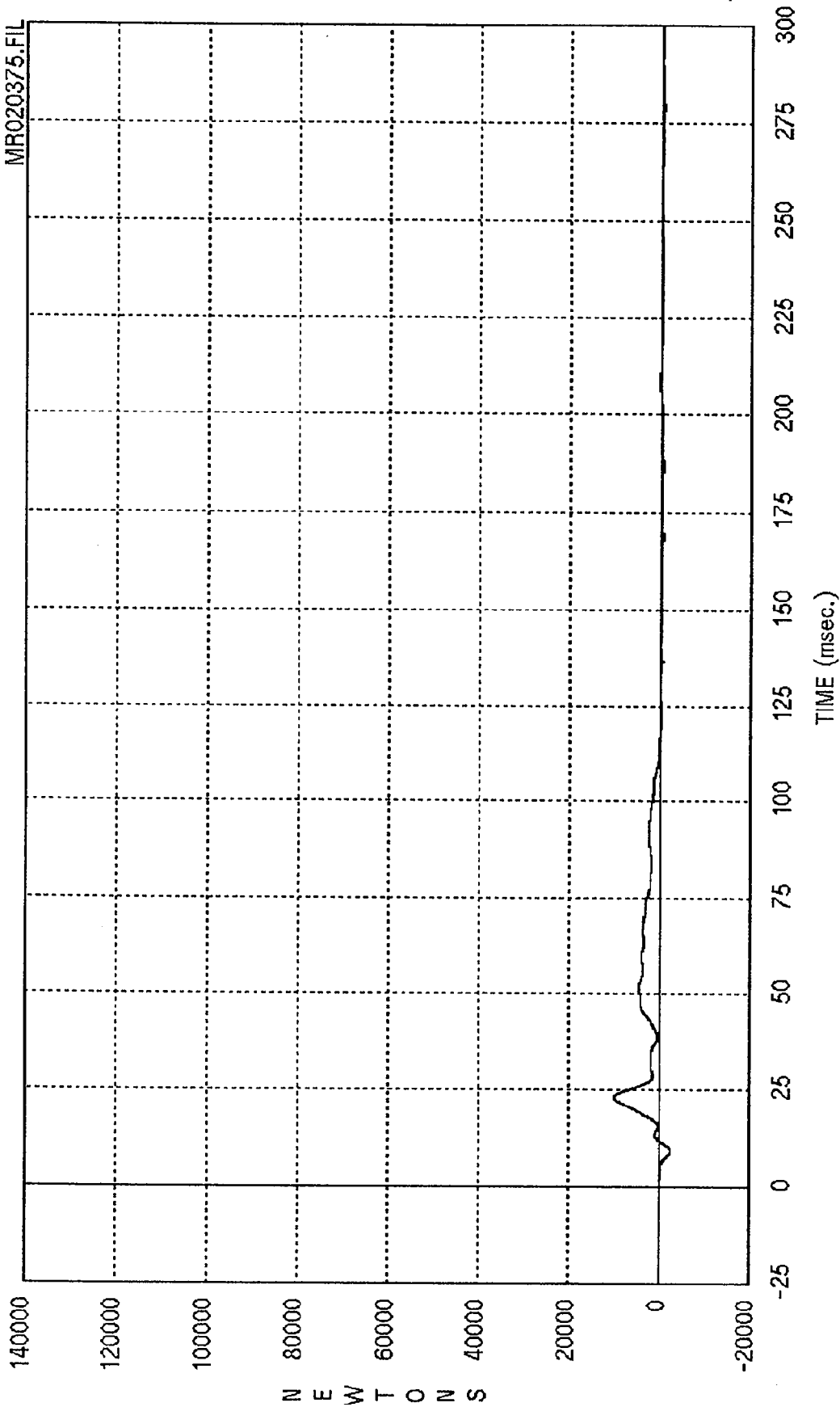
MSE Date: 02/19/94 Program: 1994 New Car Assessment Vehicle: 1994 Ford F-150 Pickup



Curve: Force on barrier location C9 Filter: SAE CLASS 60 Max = 6113.3 Min = -3477.5

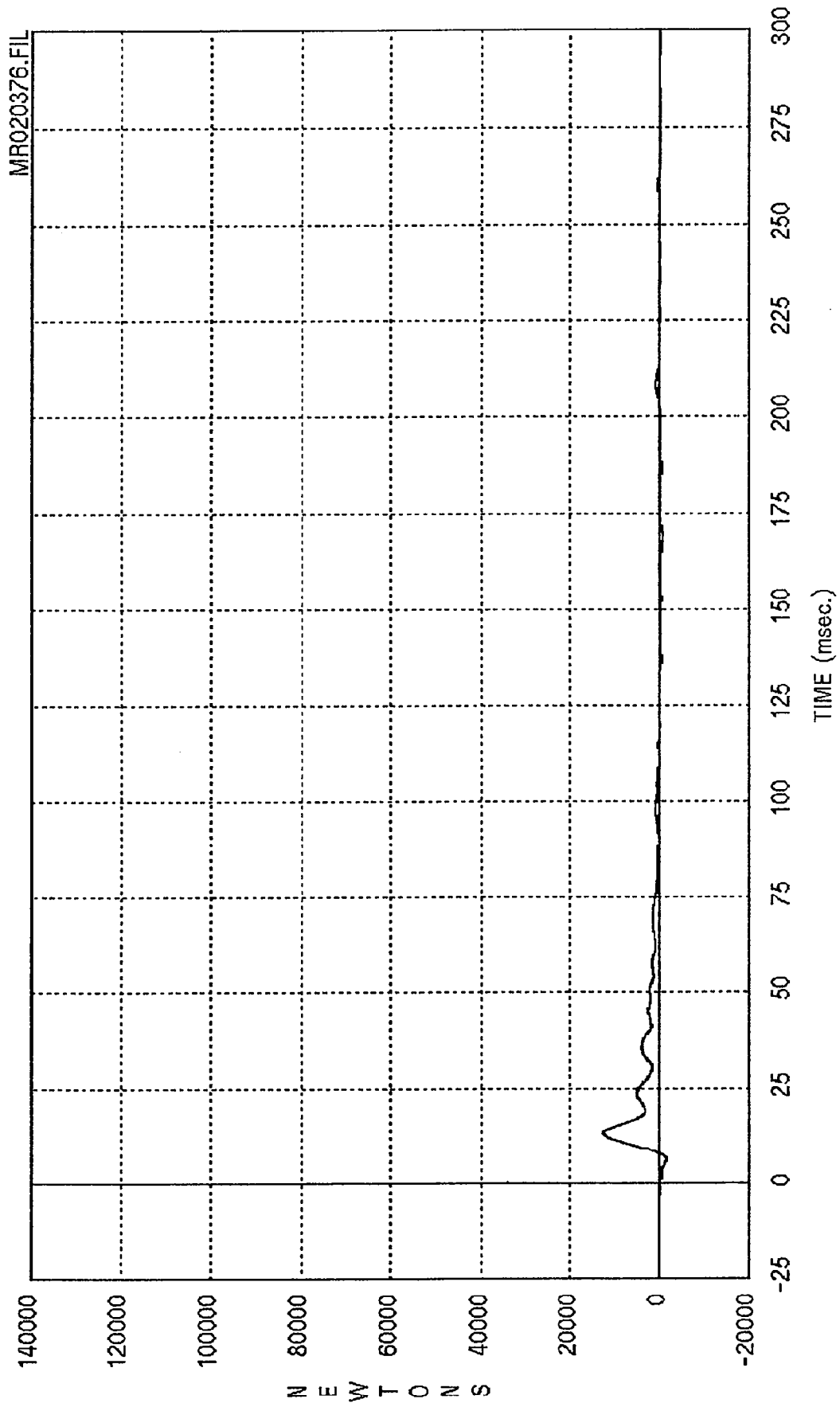
MSE Date: 02/19/94 Program: 1994 New Car Assessment Vehicle: 1994 Ford F-150 Pickup

MR020375.FIL



Curve: Force on barrier location D1 Filter: SAE CLASS 60 Max = 10227. Min = -2486.0

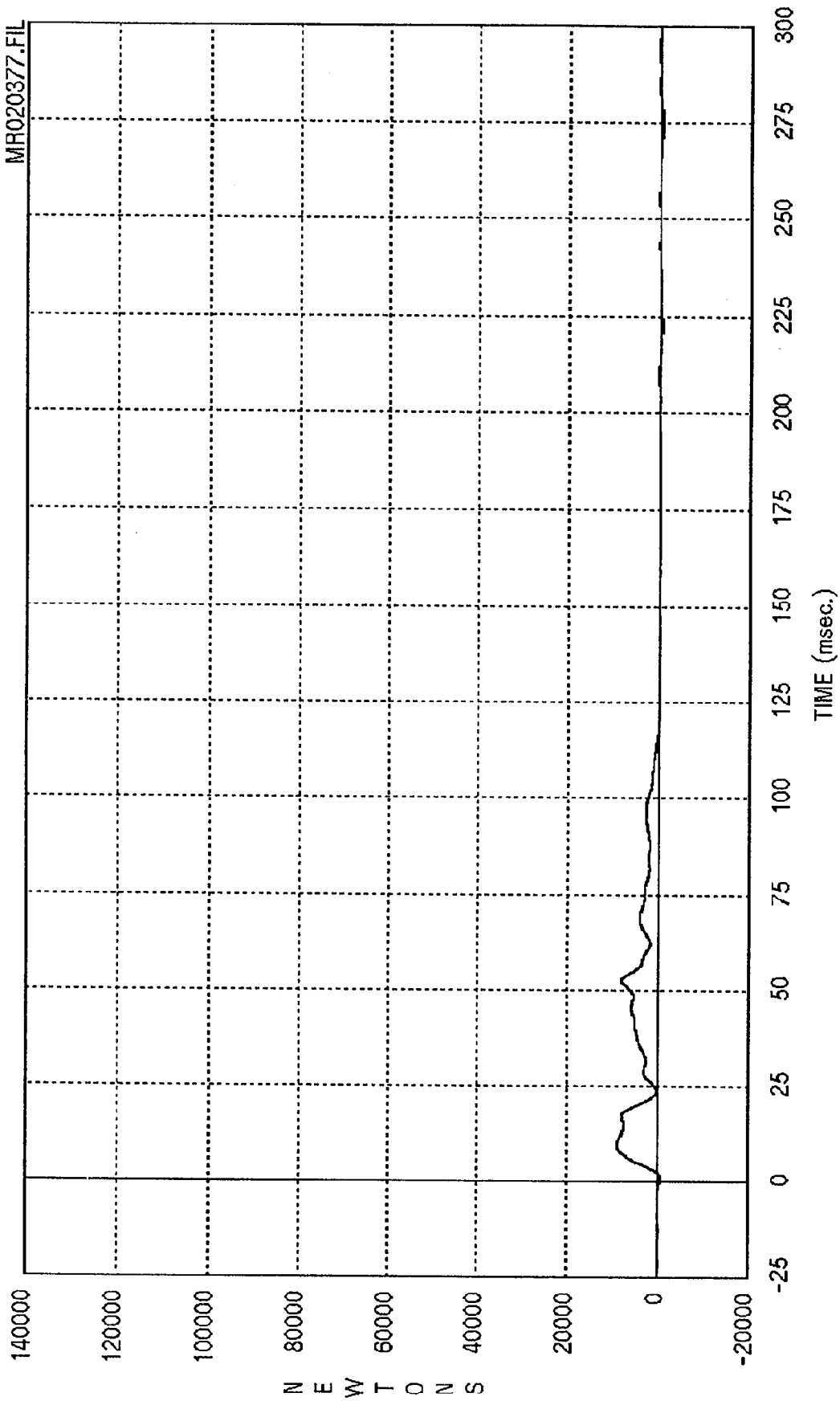
MSE Date: 02/19/94 Program: 1994 New Car Assessment Vehicle: 1994 Ford F-150 Pickup



Curve: Force on barrier location D2 Filter: SAE CLASS 60 Max = 12804. Min = -1548.0

MSE Date: 02/19/94 Program: 1994 New Car Assessment Vehicle: 1994 Ford F-150 Pickup

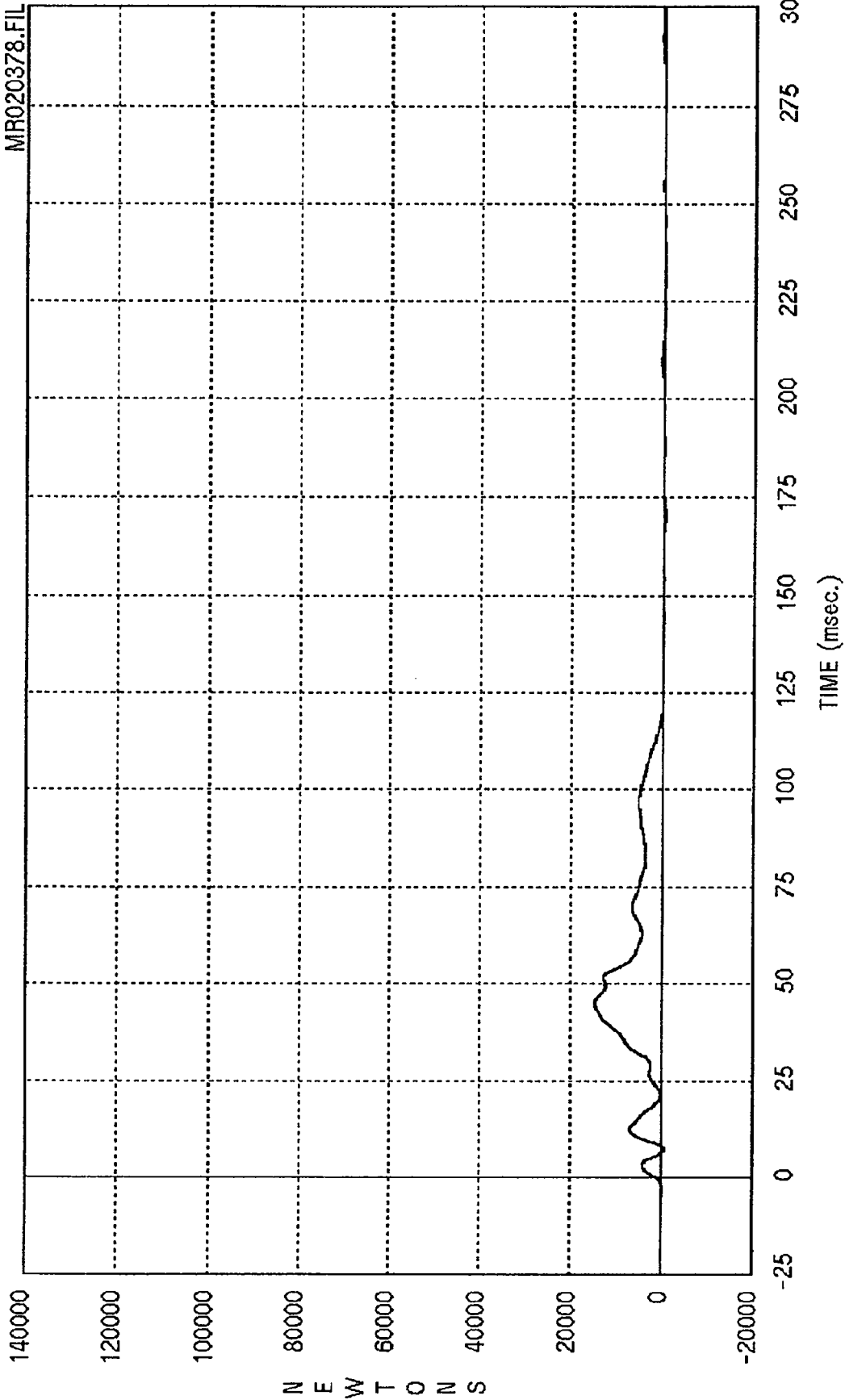
MR020377.FIL



Curve: Force on barrier location D3 Filter: SAE CLASS 60 Max = 9073.9 Min = -529.55

MSE Date: 02/19/94 Program: 1994 New Car Assessment Vehicle: 1994 Ford F-150 Pickup

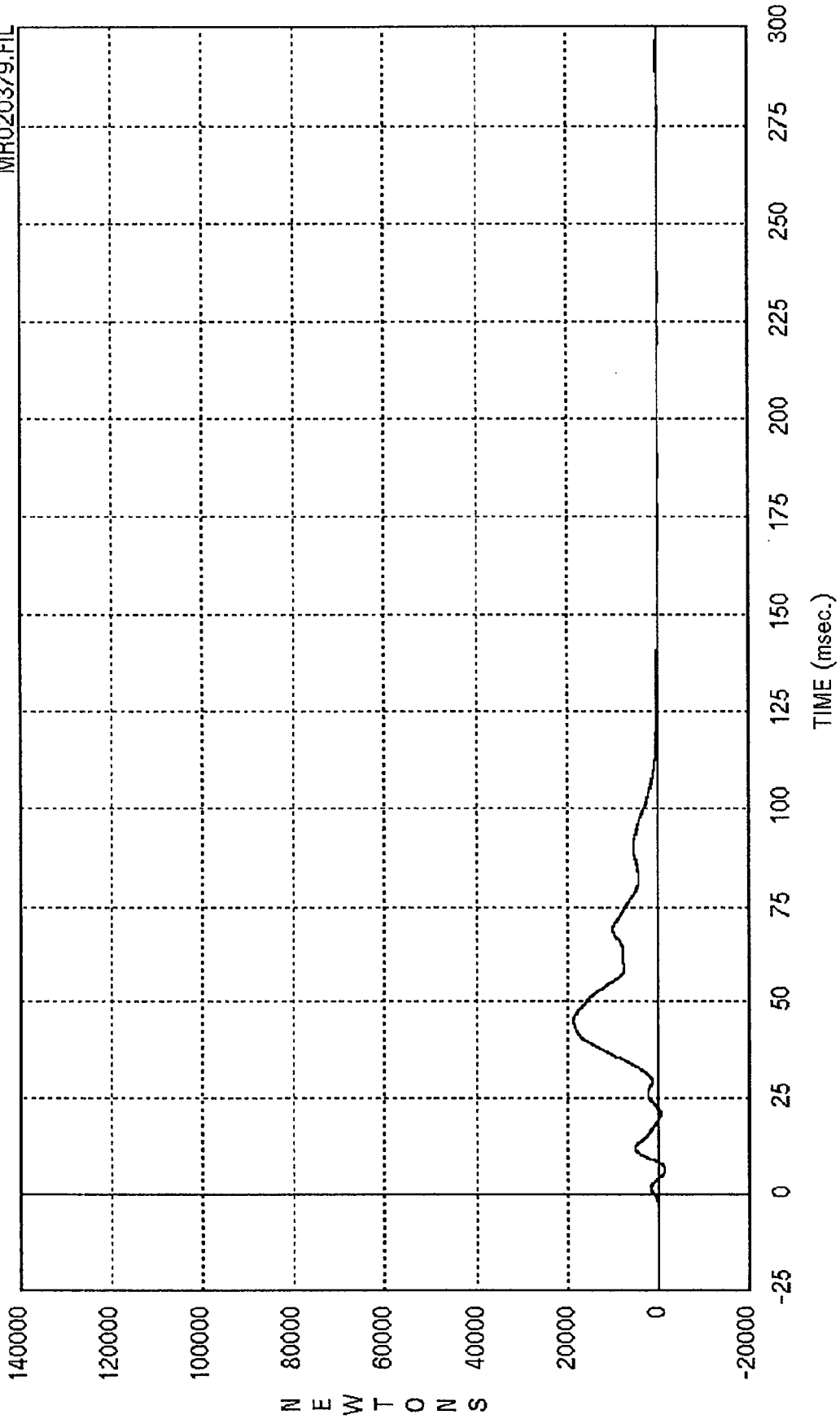
MR020378.FIL



Curve: Force on barrier location D4 Filter: SAE CLASS 60 Max = 14786. Min = -560.22

MSE Date: 02/19/94 Program: 1994 New Car Assessment Vehicle: 1994 Ford F-150 Pickup

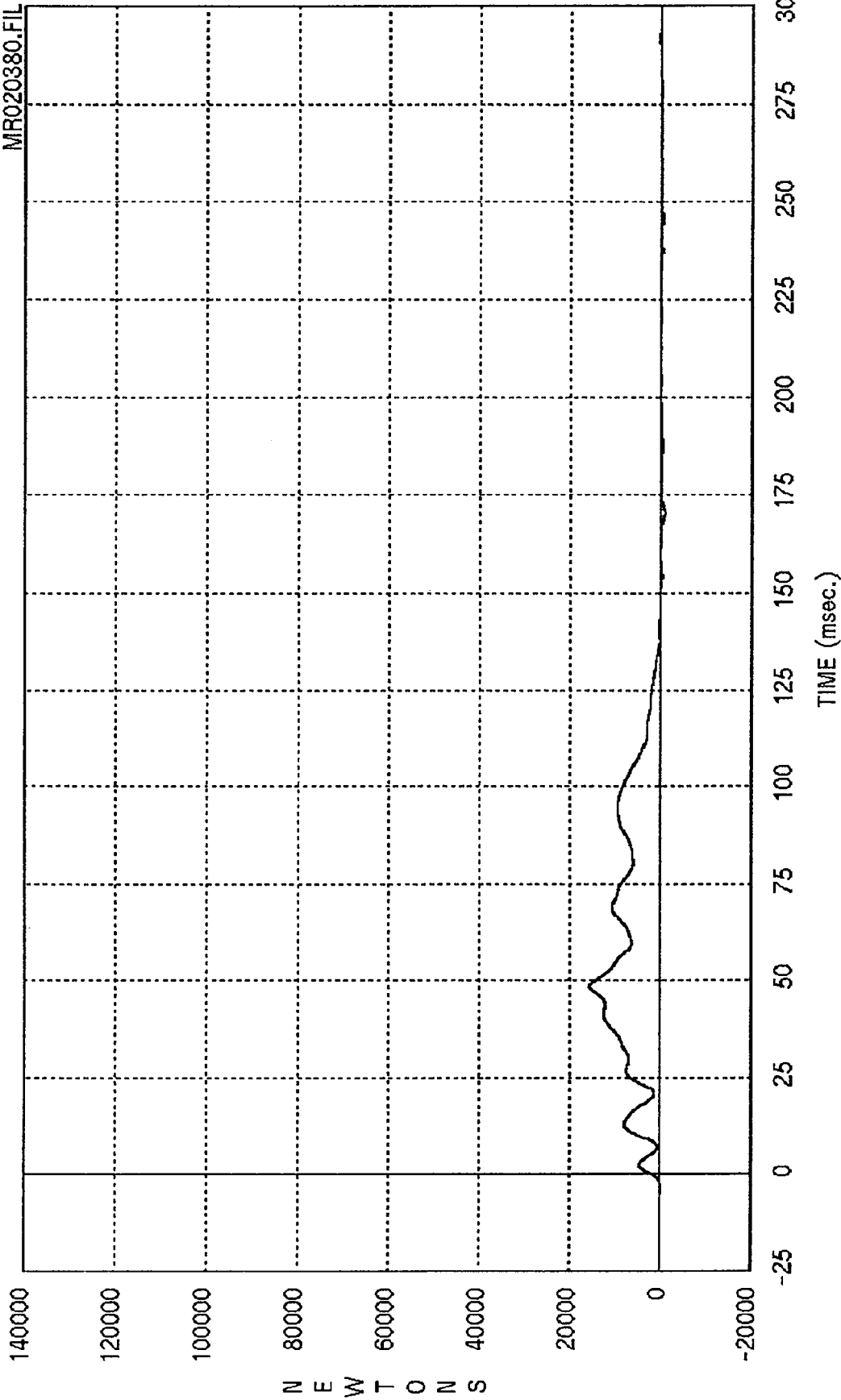
MR020379.FIL



Curve: Force on barrier location D5 Filter: SAE CLASS 60 Max = 18750. Min = -1346.9

MSE Date: 02/19/94 Program: 1994 New Car Assessment Vehicle: 1994 Ford F-150 Pickup

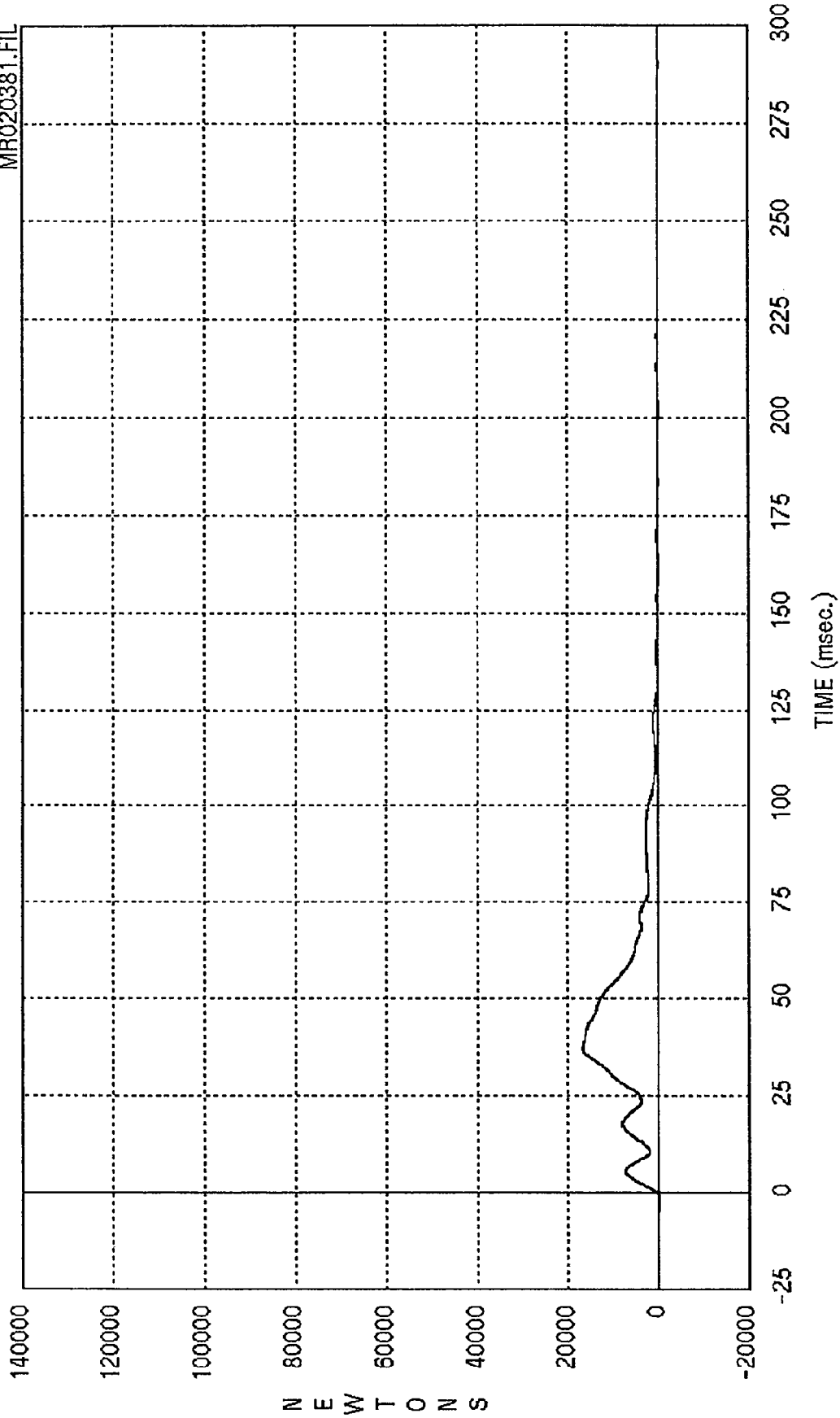
MR020380.FIL



Curve: Force on barrier location D6 Filter: SAE CLASS 60 Max = 15789. Min = -930.16

MSE Date: 02/19/94 Program: 1994 New Car Assessment Vehicle: 1994 Ford F-150 Pickup

MR020381.FIL



Curve: Force on barrier location D7

Filter: SAE CLASS 60 Max = 16758. Min = -124.89

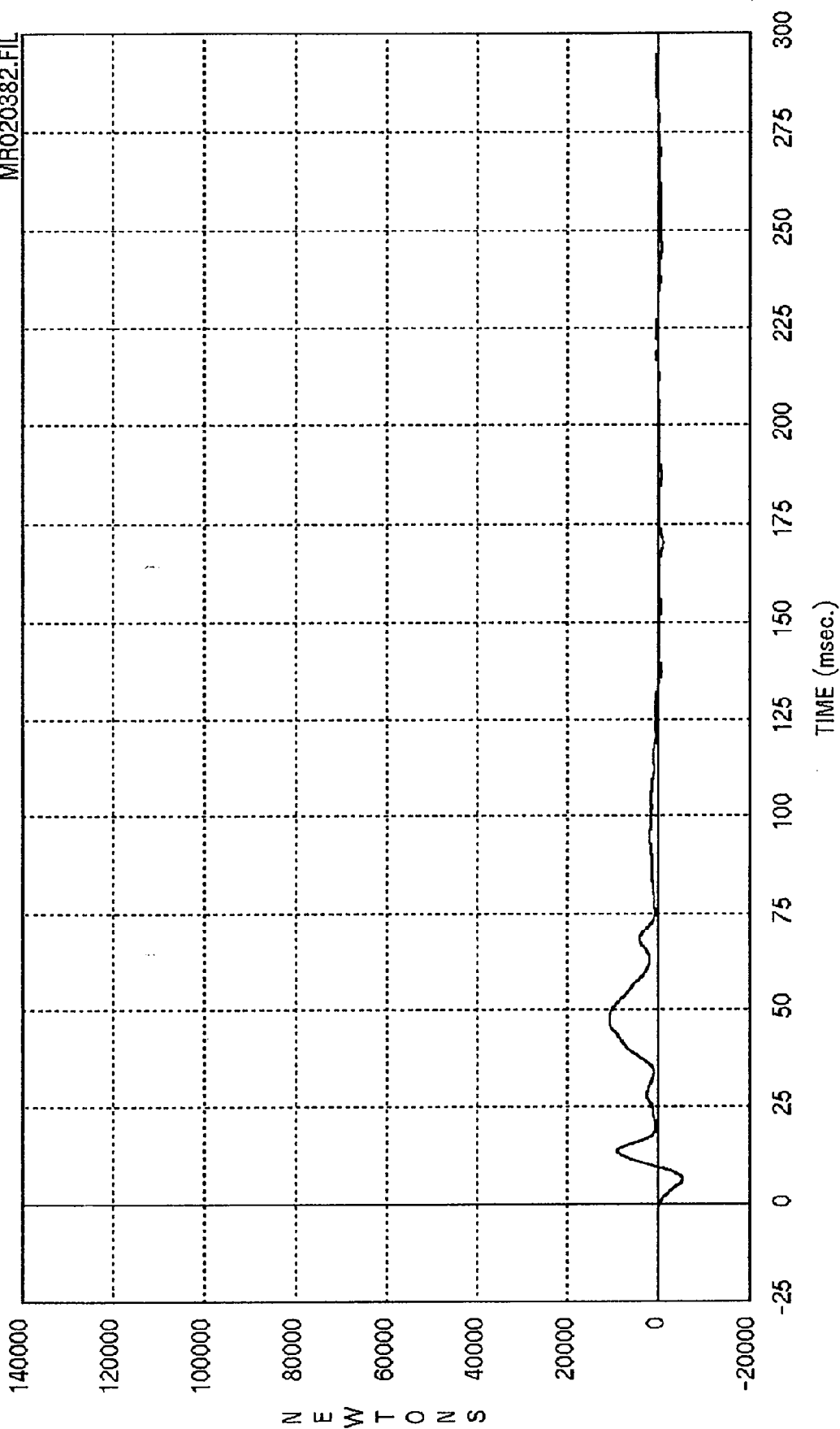
MSE

Date: 02/19/94

Program: 1994 New Car Assessment

Vehicle: 1994 Ford F-150 Pickup

MR020382.FIL



Curve: Force on barrier location D8

Filter: SAE GLASS-60

Max = 10989.

Min = -5374.0

Vehicle: 1994 Ford F-150 Pickup

Program: 1994 New Car Assessment

Date: 02/19/94

MSE

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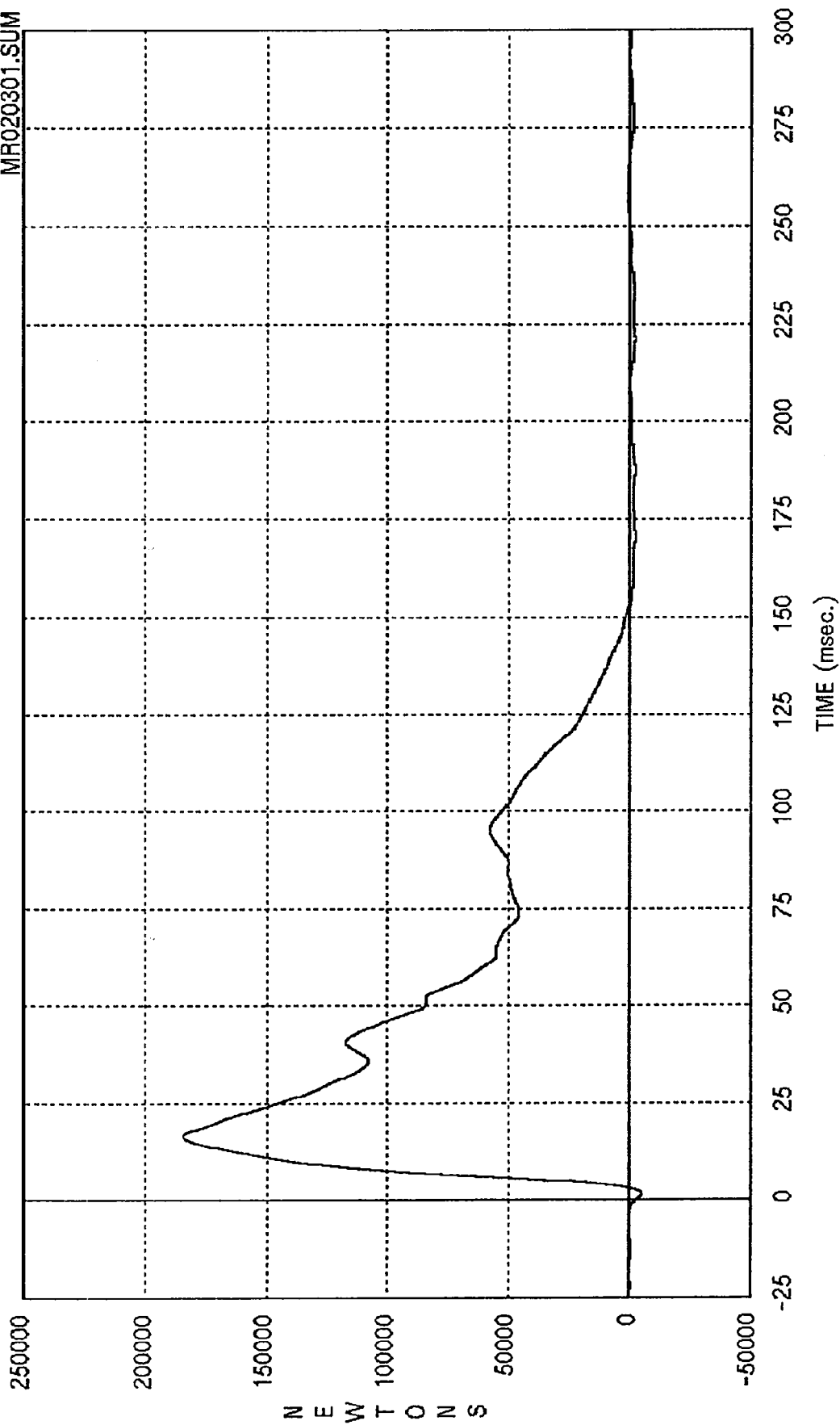
25 0 25 50 75 100 125 150 175 200 225 250 275 300

TIME (msec.)

Curve: Force on barrier location D9 Filter: SAE CLASS 60 Max = 4321.4 Min = -2834.5

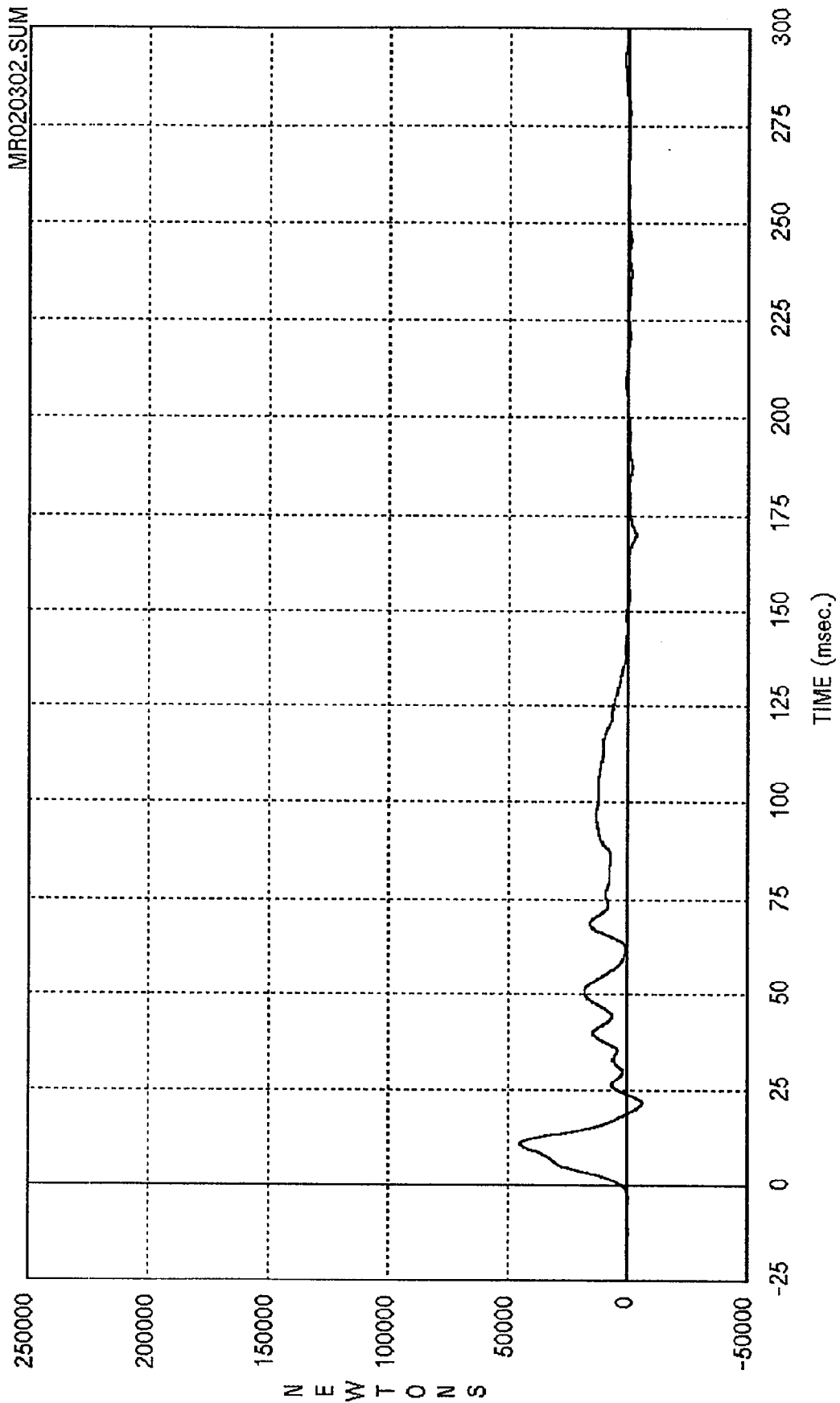
MSE Date: 02/19/94 Program: 1994 New Car Assessment Vehicle: 1994 Ford F-150 Pickup

MR020301.SUM



Curve: Barrier sum force A1,A2,A3,B1,B2,B3 -- Group 1 Filter: SAE CLASS 60 Max = .18463E+06 Min = -4810.6

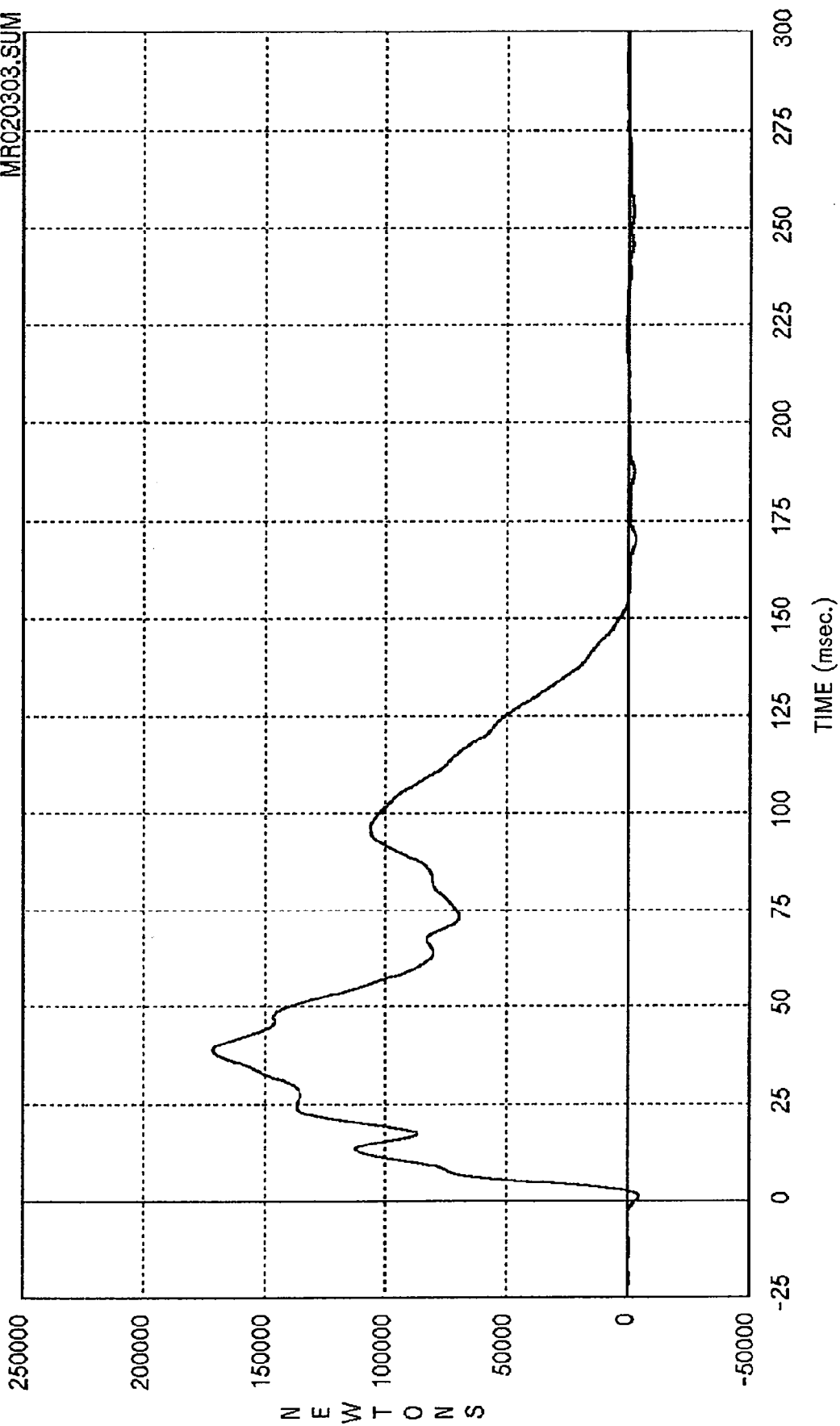
MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup



Curve: Barrier sum force A4,A5,A6,B4,B5,B6 -- Group 2 -- Filter: SAE CLASS 60 Max = 45304 Min = -6046.6

MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup

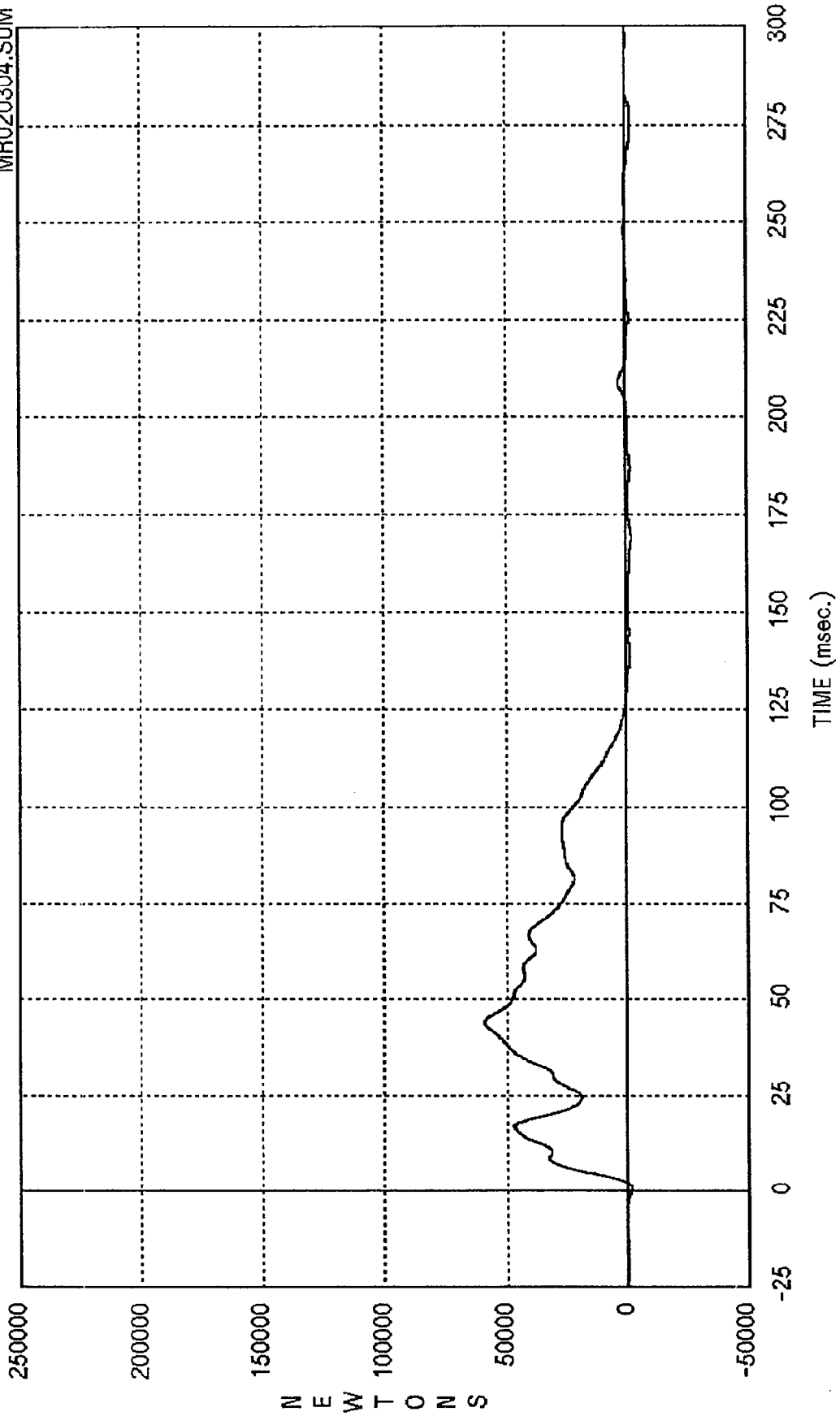
MR020303.SUM



Curve: Barrier sum force A7,A8,A9,B7,B8,B9 --- Group 3 Filter: SAE CLASS 60 Max = 17168E+06 Min = -4179.3

MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup

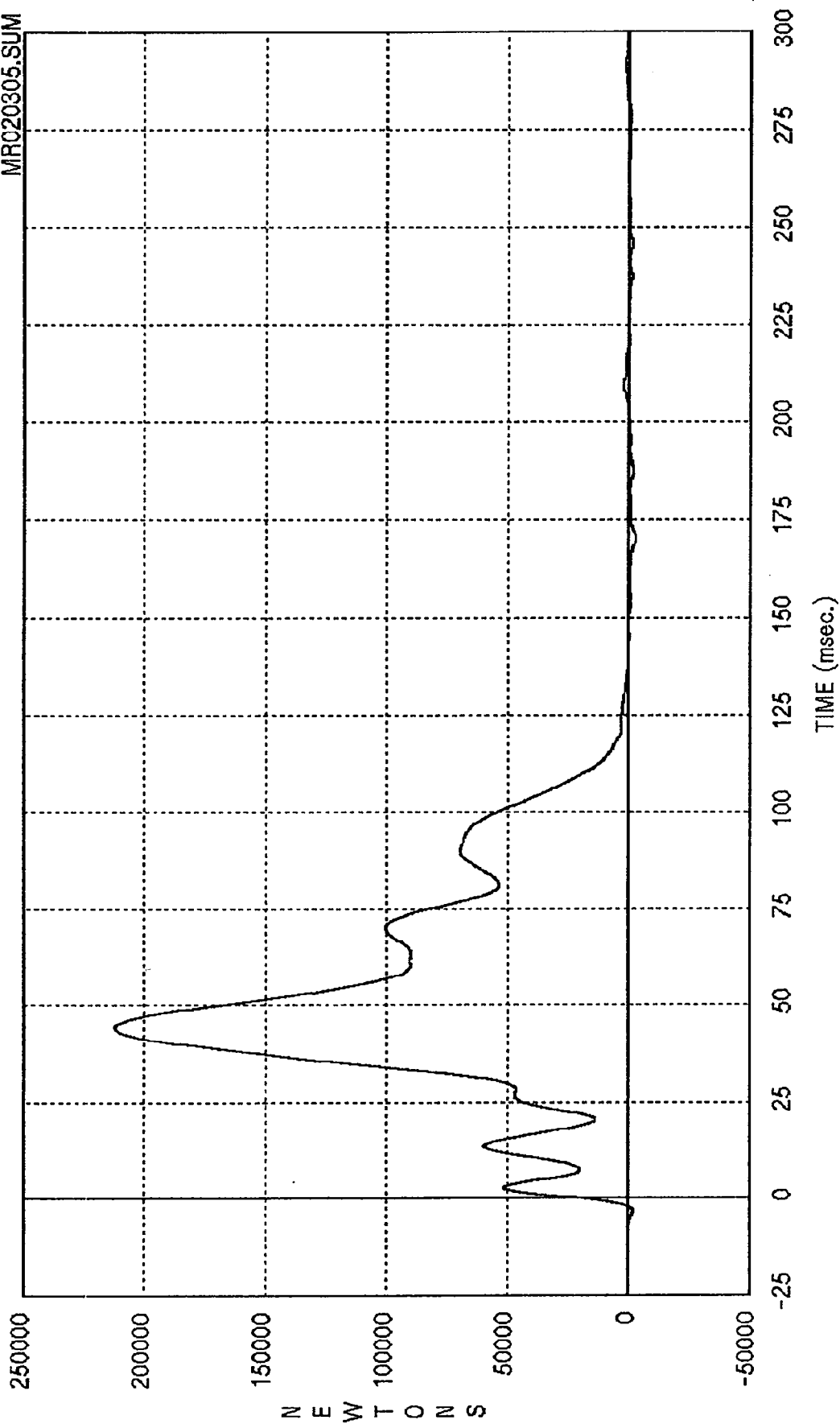
MR020304.SUM



Curve: Barrier sum force C1,C2,C3,D1,D2,D3 --- Group 4 Filter: SAE CLASS 60 Max = 59374. Min = -2066.4

MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup

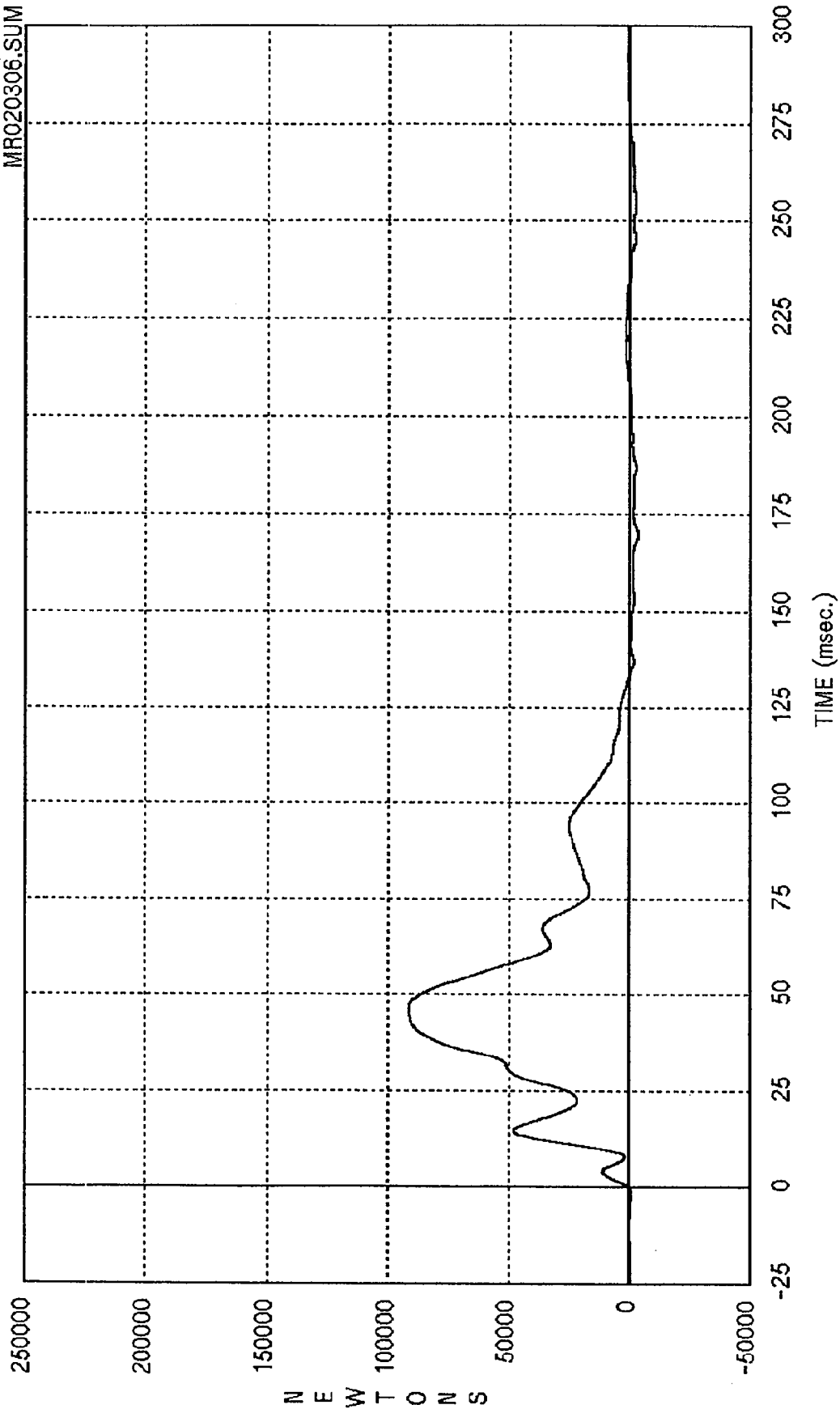
MR020305.SUM



Curve: Barrier sum force C4,C5,C6,D4,D5,D6 -- Group 5 Filter: SAE\_CLASS\_60 Max = .21232E+06 Min = -.2865E+06

MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup

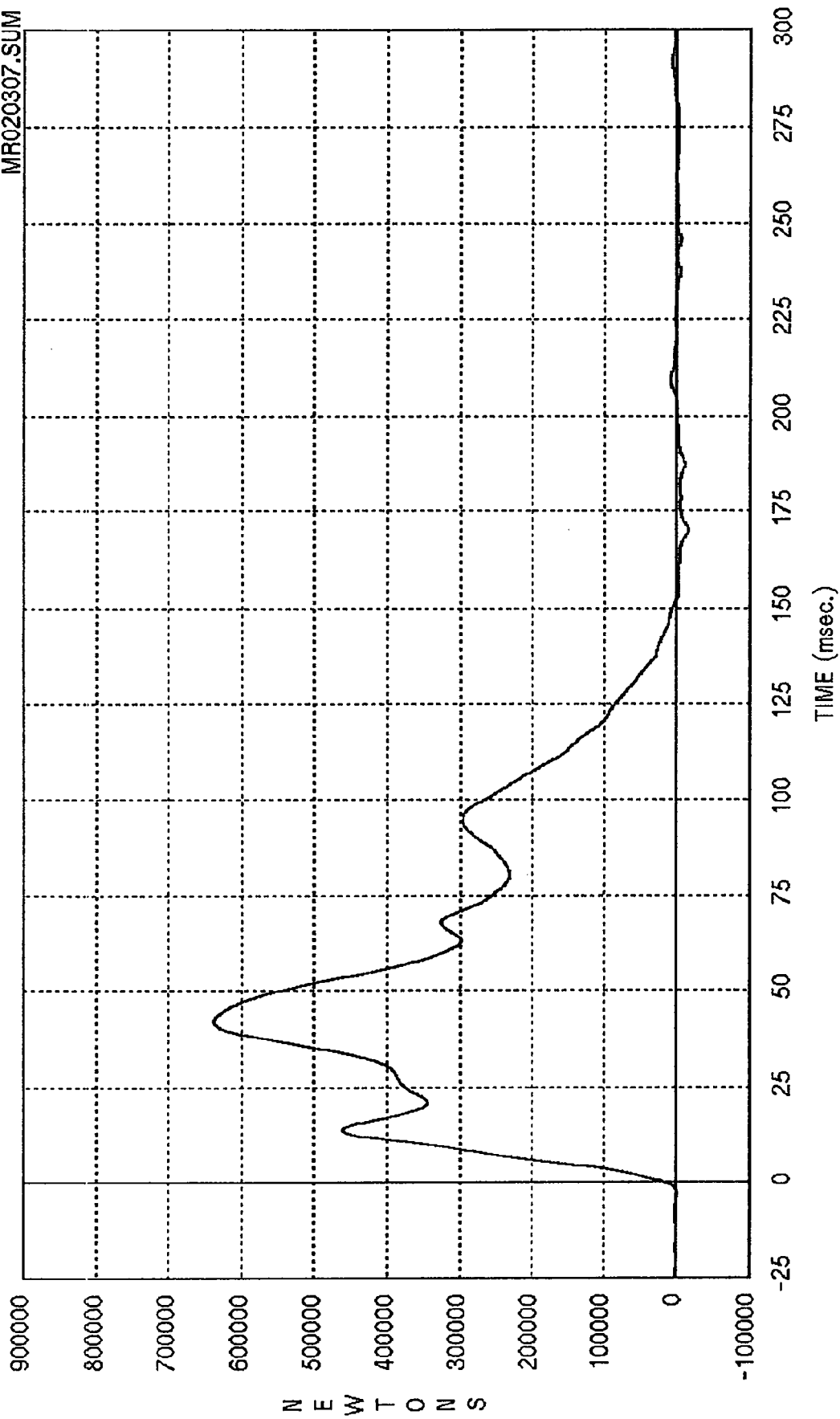
MR020306.SUM



Curve: Barrier sum force C7,C8,C9,D7,D8,D9 -- Group 6 -- Filter: SAE CLASS 60 Max = 91835. Min = -3328.2

MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup

MR020307.SUM



Curve: Barrier sum force -- Total Filter: SAE CLASS 60 Max = .63884E+06 Min = -16321.

MSE Date: 02/19/94 Program: New Car Assessment Program Vehicle: 1994 Ford F-150 Pickup

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APPENDIX C

PART 572 DUMMY CONFIGURATION AND  
PERFORMANCE VERIFICATION TABLES

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## HYBRID III ATD CONFIGURATION AND PERFORMANCE VERIFICATION DATA

NHTSA ATD I.D. NUMBER: 34

LAB TECHNICIAN: Patrick Puzzuto

CALIBRATION SEQUENCE: 02

CALIBRATION DATE: 02/17/94 to 02/18/94

## I. CONFIGURATION VERIFICATION DATA, PRETEST

| TESTED PARAMETER              | UNIT | SPECIFICATION   | TEST RESULTS |
|-------------------------------|------|-----------------|--------------|
| AA - Location for Chest Circ. | MM   | 429.3 to 434.3  | 430.2        |
| BB - Location for Waist Circ. | MM   | 226.1 to 231.1  | 228.6        |
| Y - Chest Circumference       | MM   | 970.3 to 1000.8 | 985.5        |
| Z - Waist Circumference       | MM   | 815.3 to 866.1  | 863.6        |
| O - Chest Depth               | MM   | 213.4 to 228.6  | 215.9        |
| C - "H" Point Height          | MM   | 83.8 to 88.9    | 88.2         |
| D - "H" Point from Seat Back  | MM   | 134.6 to 139.7  | 137.2        |
| H - Skull Cap to Back Line    | MM   | 40.6 to 45.7    | 43.2         |
| A - Total Sitting Height      | MM   | 878.8 to 889.0  | 883.5        |
| F - Thigh Clearance           | MM   | 139.7 to 154.9  | 147.3        |
| K - Buttock to Knee Length    | MM   | 579.1 to 604.5  | 594.4        |
| N - Buttock Popliteal Length  | MM   | 452.1 to 477.5  | 475.0        |
| L - Popliteal Length          | MM   | 429.3 to 454.7  | 431.8        |
| M - Knee Pivot Height         | MM   | 485.1 to 500.4  | 495.3        |
| P - Foot Length               | MM   | 251.5 to 266.7  | 260.5        |
| W - Foot Breadth              | MM   | 91.4 to 106.7   | 106.7        |
| E - Shoulder Pivot from Back  | MM   | 84.0 to 94.0    | 88.9         |
| V - Shoulder Breadth          | MM   | 421.6 to 436.9  | 421.6        |
| B - Shoulder Pivot Height     | MM   | 505.5 to 520.7  | 516.4        |
| J - Elbow Rest Height         | MM   | 190.5 to 210.8  | 198.1        |
| I - Shoulder to Elbow Length  | MM   | 330.2 to 345.4  | 332.7        |
| G - Elbow Back to Wrist Pivot | MM   | 289.6 to 304.8  | 294.2        |

PART 572E ATD PERFORMANCE AND CALIBRATION DATA

NHTSA ATD I.D. NUMBER: 34

CALIBRATION SEQUENCE: 02

CALIBRATION DATE: 02/17/94 to  
02/18/94

| HEAD DROP TEST                      |       |               |              |
|-------------------------------------|-------|---------------|--------------|
| TESTED PARAMETER                    | UNITS | SPECIFICATION | TEST RESULTS |
| Temperature in laboratory           | Deg C | 20.6 - 22.2   | 21.4         |
| Humidity in laboratory              | %     | 10 - 70       | 50           |
| Peak resultant acceleration         | G's   | 225 - 275     | 245.0        |
| Peak lateral acceleration           | G's   | 15 max        | 8.9          |
| Is acceleration curve<br>unimodal ? |       | YES           | YES          |

LAB TECHNICIAN: Patrick J. Puzzuto

PART 572 ATD CONFIGURATION AND PERFORMANCE VERIFICATION DATA (Cont.)

NHTSA ATD I.D. NUMBER: 34

CALIBRATION SEQUENCE: 02

CALIBRATION DATE: 02/17/94 to  
02/18/94

| THORAX IMPACT TEST        |       |               |              |
|---------------------------|-------|---------------|--------------|
| TESTED PARAMETER          | UNITS | SPECIFICATION | TEST RESULTS |
| Temperature in laboratory | Deg C | 20.6 - 22.2   | 21.0         |
| Humidity in laboratory    | %     | 10 - 70       | 50           |
| Probe speed               | MPS   | 6.58 - 6.83   | 6.75         |
| Peak deflection           | MM    | 63.5 - 72.6   | 67.2         |
| Peak resistive force      | Kgs   | 526.6 - 601.6 | 557.66       |
| Internal hysteresis       | %     | 69 - 89       | 74.0         |

LAB TECHNICIAN: P. Puzzuto

## PART 572E ATD PERFORMANCE AND CALIBRATION DATA

## NECK FLEXION TEST

NHTSA ATD I.D. NUMBER: 34

CALIBRATION SEQUENCE: 02

CALIBRATION DATE: 02/17/94 to  
02/18/94

| TESTED PARAMETER                             |         | UNITS  | SPECIFICATION | TEST RESULTS |
|----------------------------------------------|---------|--------|---------------|--------------|
| Lab temperature                              |         | Deg C  | 20.6 - 22.2   | 21.1         |
| Lab relative humidity                        |         | %      | 10 - 70       | 50           |
| Pendulum speed                               |         | MPS    | 6.89 - 7.13   | 6.95         |
| Pendulum deceleration                        | 10 msec | G's    | 22.50 - 27.50 | 24.72        |
|                                              | 20 msec | G's    | 17.60 - 22.60 | 20.20        |
|                                              | 30 msec | G's    | 12.50 - 18.50 | 15.40        |
| Max decel. above 30 msec                     |         | G's    | 29.00 max     | 15.00        |
| Deceleration decay time to first cross 5 G's |         | msec   | 34.0 - 42.0   | 38.90        |
| "D" Plane Rotation                           | Maximum | Deg.   | 64.0 - 78.0   | 64.20        |
|                                              | Time    | msec   | 57.0 - 64.0   | 62.20        |
| Moment About Occipital Condyle               | Maximum | Mt.Kgs | 9.0 - 11.1    | 9.20         |
|                                              | Time    | msec   | 47.0 - 58.0   | 57.20        |
| Rotation angle decay time to cross zero      |         | msec   | 113.0 - 128.0 | 121.50       |
| Positive moment decay time to cross zero     |         | msec   | 97.0 - 107.0  | 105.70       |

LAB TECHNICIAN: P. Puzzuto

# PART 572E ATD PERFORMANCE AND CALIBRATION DATA

## NECK EXTENSION TEST

NHTSA ATD I.D. NUMBER: 34

CALIBRATION SEQUENCE: 02

CALIBRATION DATE: 02/17/94 to  
02/18/94

| TESTED PARAMETER                             |          | UNITS  | SPECIFICATION | TEST RESULTS |
|----------------------------------------------|----------|--------|---------------|--------------|
| Lab temperature                              |          | Deg C  | 20.6 - 22.2   | 21.0         |
| Lab relative humidity                        |          | %      | 10 - 70       | 52           |
| Pendulum speed                               |          | MPS    | 5.94 - 6.19   | 6.11         |
| Pendulum deceleration                        | 10 msec  | G's    | 17.20 - 21.20 | 19.65        |
|                                              | 20 msec  | G's    | 14.00 - 19.00 | 17.40        |
|                                              | 30 msec  | G's    | 11.00 - 16.00 | 14.58        |
| Max decel. above 30 msec                     |          | G's    | 22.00 max     | 14.50        |
| Deceleration decay time to first cross 5 G's |          | msec   | 38.0 - 46.0   | 45.20        |
| "D" Plane                                    | Rotation | Deg.   | 81.0 - 106.0  | 94.00        |
|                                              | Time     | msec   | 72.0 - 82.0   | 74.60        |
| Occipital Condyle                            | Moment   | Mt.Kgs | -8.2 to -5.4  | 8.00         |
|                                              | Time     | msec   | 65.0 - 79.0   | 68.70        |
| Rotation angle decay time to cross zero      |          | msec   | 147.0 - 174.0 | 158.40       |
| Negative moment decay time to cross zero     |          | msec   | 120.0 - 148.0 | 132.80       |

LAB TECHNICIAN: P. Puzzuto

PART 572E ATD PERFORMANCE AND CALIBRATION DATA

NHTSA ATD I.D. NUMBER: 34

CALIBRATION SEQUENCE: 02

CALIBRATION DATE: 02/17/94 to  
02/18/94

| LEFT KNEE IMPACT TEST                            |       |               |              |
|--------------------------------------------------|-------|---------------|--------------|
| TESTED PARAMETER                                 | UNITS | SPECIFICATION | TEST RESULTS |
| Lab temperature                                  | Deg C | 18.9 - 25.6   | 21.2         |
| Lab relative humidity                            | %     | 10 - 70       | 52           |
| Probe velocity                                   | MPS   | 2.07 - 2.13   | 2.11         |
| Peak impact force<br>(Probe mass x deceleration) | Kgs   | 481.2- 590.2  | 560.4        |

LAB TECHNICIAN: P. Puzzuto

| RIGHT KNEE IMPACT TEST                           |       |               |              |
|--------------------------------------------------|-------|---------------|--------------|
| TESTED PARAMETER                                 | UNITS | SPECIFICATION | TEST RESULTS |
| Lab temperature                                  | Deg C | 18.9 - 25.6   | 21.2         |
| Lab relative humidity                            | %     | 10 - 70       | 52           |
| Probe velocity                                   | MPS   | 2.07 - 2.13   | 2.12         |
| Peak impact force<br>(Probe mass x deceleration) | Kgs   | 481.2 - 590.2 | 520.4        |

LAB TECHNICIAN: P. Puzzuto

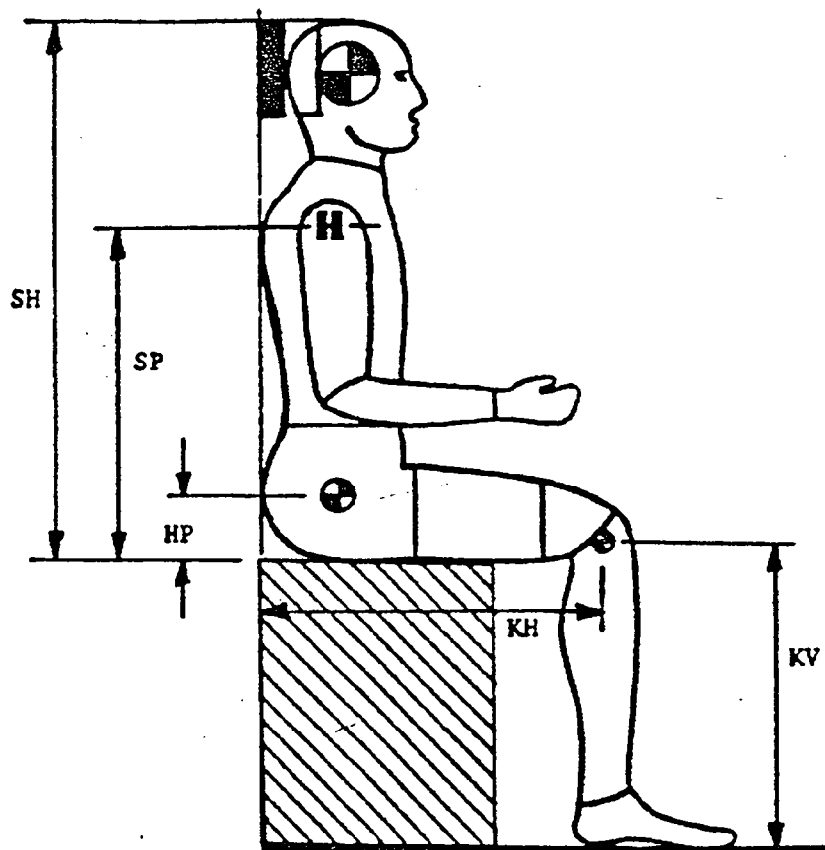
PART 572 ATD CONFIGURATION AND PERFORMANCE VERIFICATION DATA

NHTSA ATD I.D. NUMBER: 830

LAB TECHNICIAN: P. Puzzuto

CALIBRATION SEQUENCE: 01

CALIBRATION DATE: 12/01/93 to 12/03/93



I. CONFIGURATION VERIFICATION DATA, PRETEST

| TESTED PARAMETER           | UNITS | SPECIFICATION | TEST RESULTS |
|----------------------------|-------|---------------|--------------|
| SH - Seated height         | mm    | 904 - 909     | 908          |
| SP - Shoulder pivot height | mm    | 554 - 569     | 567          |
| HP - Hip pivot height      | mm    | 99 reference  | 99           |
| KH - Knee pivot from back  | mm    | 511 - 526     | 520          |
| KV - Knee pivot from floor | mm    | 490 - 505     | 500          |
| SW - Shoulder width        | mm    | 452 - 467     | 461          |
| HW - Hip width             | mm    | 356 - 391     | 370          |

## PART 572 ATD CONFIGURATION AND PERFORMANCE VERIFICATION DATA (Cont.)

NHTSA ATD I.D. NUMBER: 830 LAB TECHNICIAN: P. PUZZUTO

CALIBRATION SEQUENCE: 01 CALIBRATION DATE: 12/01/93 to 12/03/93

| II. PERFORMANCE VERIFICATION DATA, PRETEST |       |               |              |
|--------------------------------------------|-------|---------------|--------------|
| TESTED PARAMETER                           | UNITS | SPECIFICATION | TEST RESULTS |
| Temperature in laboratory                  | Deg C | 18.9 - 25.6   | 21.5         |
| Humidity in laboratory                     | %     | 10 - 70       | 48           |
| HEAD DROP TEST                             |       |               |              |
| Peak resultant acceleration                | G's   | 210 - 260     | 245.5        |
| Peak lateral acceleration                  | G's   | less than 10  | 3.6          |
| Time above 100 G's                         | msec  | 0.9 to 1.5    | 1.1          |
| ABDOMINAL COMPRESSION TEST                 |       |               |              |
| Force at 12mm displacement                 | kg    | 10.5 - 16.4   | 12.8         |
| Force at 19mm displacement                 | kg    | 16.4 - 22.7   | 18.4         |
| Force at 25mm displacement                 | kg    | 22.7 - 28.6   | 25.6         |
| Force at 33mm displacement                 | kg    | 33.2 - 40.0   | 36.8         |
| CHEST IMPACT TEST, HIGH ENERGY             |       |               |              |
| Probe speed                                | mps   | 6.64 - 6.77   | 6.70         |
| Peak deflection                            | mm    | 43.2 maximum  | 43.0         |
| Peak resistive force                       | kg    | 1023 maximum  | 985          |
| Internal hysteresis                        | %     | 50 - 70       | 52           |
| CHEST IMPACT TEST, LOW ENERGY              |       |               |              |
| Probe speed                                | mps   | 4.22 - 4.31   | 4.27         |
| Peak deflection                            | mm    | 27.9 maximum  | 27.0         |
| Peak resistive force                       | kg    | 659 maximum   | 610          |
| Internal hysteresis                        | %     | 50 - 70       | 60           |

## PART 572 ATD CONFIGURATION AND PERFORMANCE VERIFICATION DATA (CONT.)

NHTSA ATD I.D. NUMBER: 830 LAB TECHNICIAN: P. Puzzuto/L. Rawlings

CALIBRATION SEQUENCE: 01 CALIBRATION DATE: 12/01/93 to 12/03/93

| II. PERFORMANCE VERIFICATION DATA, PRETEST |        |       |               |              |
|--------------------------------------------|--------|-------|---------------|--------------|
| TESTED PARAMETER                           |        | UNITS | SPECIFICATION | TEST RESULTS |
| NECK BEND TEST                             |        |       |               |              |
| Pendulum speed                             |        | mps   | 6.55 - 7.77   | 6.69         |
| Pendulum avg. decel. (T1-T2)               |        | G's   | 20 - 24       | 22.5         |
| Pendulum decel. (T2-T1)                    |        | msec  | less than 3   | 2.2          |
| Pendulum decel. (T3-T2)                    |        | msec  | 25 - 30       | 28.5         |
| Pendulum decel. (T4-T3)                    |        | msec  | less than 10  | 4.5          |
| Resultant head acceleration                |        | G's   | less than 26  | 25.5         |
| Maximum head rotation                      |        | deg.  | 63 - 73       | 64.3         |
| CHORDAL DISPLACEMENT / HEAD ROTATION ANGLE |        |       |               |              |
| 0 deg.                                     | Time   | msec  | -2.0 - 2.0    | 0.0          |
|                                            | Displ. | mm    | -13 - 13      | 0            |
| 30 deg.                                    | Time   | msec  | 25.6 - 34.4   | 29.7         |
|                                            | Displ. | mm    | 53 - 79       | 60           |
| 60 deg.                                    | Time   | msec  | 40.3 - 51.7   | 46.8         |
|                                            | Displ. | mm    | 109 - 135     | 115          |
| Maximum                                    | Time   | msec  | 53.2 - 66.8   | 61.5         |
|                                            | Displ. | mm    | 127 - 152     | 133          |
| 60 deg.                                    | Time   | msec  | 67.0 - 83.0   | 68.5         |
|                                            | Displ. | mm    | 109 - 135     | 118          |
| 30 deg.                                    | Time   | msec  | 85.4 - 104.6  | 94.0         |
|                                            | Displ. | mm    | 53 - 79       | 57           |
| 0 deg.                                     | Time   | msec  | 101.0 - 123.0 | 105.4        |
|                                            | Displ. | mm    | -13 - 13      | 5            |

## PART 572 ATD CONFIGURATION AND PERFORMANCE VERIFICATION DATA (CONT.)

NHTSA ATD I.D. NUMBER: 830 LAB TECHNICIAN: P. Puzzuto/L. Rawlings

CALIBRATION SEQUENCE: 01 CALIBRATION DATE: 12/01/93 to 12/03/93

| II. PERFORMANCE VERIFICATION DATA, PRETEST |       |               |              |
|--------------------------------------------|-------|---------------|--------------|
| TESTED PARAMETER                           | UNITS | SPECIFICATION | TEST RESULTS |
| KNEE IMPACT TEST, LEFT                     |       |               |              |
| Probe speed                                | mps   | 2.06 to 2.15  | 2.10         |
| Maximum force                              | kg    | 841 to 1136   | 1085         |
| Time above 455 kg                          | msec  | 1.7 minimum   | 1.8          |
| KNEE IMPACT TEST, RIGHT                    |       |               |              |
| Probe speed                                | mps   | 2.06 to 2.15  | 2.09         |
| Maximum force                              | kg    | 841 to 1136   | 1035         |
| Time above 455 kg                          | msec  | 1.7 minimum   | 1.7          |
| LUMBAR FLEXION TEST                        |       |               |              |
| Force at 20 degrees                        | kg    | 10.0 to 15.5  | 13.9         |
| Force at 30 degrees                        | kg    | 15.5 to 20.9  | 18.0         |
| Force at 40 degrees                        | kg    | 20.9 to 26.4  | 25.1         |
| Lumbar return angle                        | deg   | 12 maximum    | 9            |

APPENDIX D

VEHICLE OWNER'S MANUAL OCCUPANT RESTRAINT SYSTEM INSTRUCTION

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## Safety Restraints

### Using Safety Restraints Properly

#### Safety Belts

The use of safety belts help to restrain you and your passengers in case of a collision. In most states, the law requires their use. We strongly recommend that you use them every time you travel in your vehicle.

Safety belts provide best restraint when:

- ☐ the seatback is upright
- ☐ the occupant is sitting upright (not slouched)
- ☐ the lap belt is snug and low on the hips
- ☐ the shoulder belt is snug against the chest
- ☐ the knees are straight forward

For your safety, your vehicle has different types of safety belts:

- ☐ Combination lap and shoulder belts - for people who sit next to the side windows in either front or rear seats
- ☐ Lap belts without retractors

See the following sections for directions on how to properly use these safety belts. Also see *Safety Restraints for Children* in this chapter for special instructions about using safety belts for children.

#### Warning:

Make sure that you and your passengers, including pregnant women, wear safety belts. Be sure that the lap belt portion of your safety belt fits snugly and as low as possible around the hips. If safety belts are not used properly, the risk of you or your passengers being injured in a collision greatly increases.

#### Warning:

Always drive and ride with your seatback upright and the lap belt portion of your safety belt snug and low across the hips. This will reduce the risk of serious injury to the abdomen or neck that could be caused by sliding under the safety belts in a collision.

Do not allow any people to ride in the cargo area of your vehicle. People who are not riding in seats with their safety belts fastened are much more likely to be injured in a collision.

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.

Children should always ride with the seatback in the fully upright position. When the seatback is not fully upright, there is a greater risk that the child will slide under the safety belt and be seriously injured in a collision.

Never use a single belt for more than one person or across more than one seating position. This greatly increases the risk that one or both of the people will be injured in a collision. 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.

**Warning:** Use the shoulder belt on the outside shoulder only. Never wear the shoulder belt under the arm. Never swing it around the neck over the inside shoulder. Never use a single belt for more than one person. Failure to follow these precautions could increase the risk and/or severity of injury in a collision.

**Warning:** Lock the doors of your vehicle before driving to lessen the risk of the door coming open in a collision.

### Combination Lap and Shoulder Belts

While your vehicle is in motion, the combination lap and shoulder belt adjusts to your movement. However, if you brake hard, corner hard or if your truck receives an impact of 5 mph (8 km/h) or more, the lap and shoulder belt locks and helps reduce your forward movement. The front seat belt systems can also be made to lock by jerking on the belt (except Crew Cab).

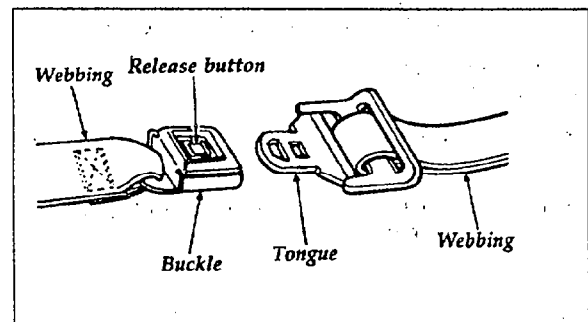
**NOTE:** The Crew Cab belts cannot be made to lock up when the belts (front and rear) are jerked on.

After you get into your vehicle, close the door and lock it. Then adjust the seat to the position that suits you best.

To fasten the belt, pull the lap/shoulder belt from the retractor so that the shoulder portion of the belt crosses your shoulder and chest. Be sure the belt is not twisted. If it is, remove the twist. Insert the belt tongue into the proper buckle until you hear a snap and feel it latch. Make sure the tongue is securely fastened to the buckle.

**Warning:** Use the shoulder belt only on the shoulder that is closest to the side of the vehicle. Never wear the belt under your arm. Never swing it around your neck over the inside shoulder. If you do not use the shoulder belt properly, the chances of your being injured in a collision greatly increase.

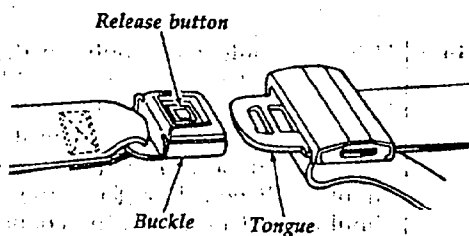
To tighten the lap portion of the belt, pull up on the shoulder belt until it fits you snugly. The belt should rest as low on your hips as possible.



Unfastening the outboard lap/shoulder belts

### Lap Belts Without Retractors

The center lap belts and center (facing seat) lap belts do not have retractors and therefore should be shortened and fastened when you are not using them. To lengthen your belt, tip the belt tongue at a right angle to the belt and pull the belt over your lap until the tongue reaches the buckle.



### Fastening and unfastening rear occupant safety belts

To fasten the belt, pull the belt across your hips and insert the tongue into the correct buckle on your seat until you hear a snap and feel it lock. Make sure the buckle is securely fastened.

Adjust the belt so that it fits snugly and as low as possible around the hips:

- ☒ If you need to lengthen the belt, unfasten it and repeat the procedure above.
- ☐ If you need to shorten the belt, pull on the loose end of the webbing.

### To Unfasten the Safety Belts with Retractors:

1. Push the release button on the buckle. This allows the tongue to unlatch from the buckle.
2. While the belt retracts, guide the tongue to its original position. If you do not guide the tongue, it may strike you or part of the vehicle.

### How to Untwist or Unjam a Safety Belt Retractor

If you should jam the lap belt retractor by allowing the belt to retract when it is twisted, you can free the webbing with this procedure:

1. Pull on the belt with both hands to tighten it on the retractor spool.
2. Feed the belt back into the retractor until it is completely retracted. Repeat previous step if necessary.
3. Pull the belt out of its holder as far as it will go and untwist the belt or remove the object that is jamming the belt. Let the belt retract.
4. Then, pull the belt out and let it retract several times to make sure that the belt works properly.

## Procedure to Correct a Twisted Safety Belt at the "D" Ring (if so equipped) Front and/or Rear Outboard Seating Positions

NOTE: The restraint system shown in the following figures may be different than your vehicle. However, use these figures and this procedure to correct a twisted safety belt at any outboard seating position that has a "D" ring.

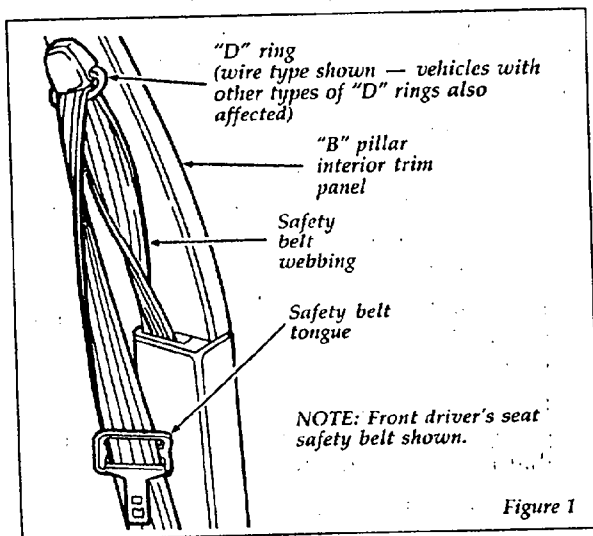


Figure 1

1. Grasp the belt webbing at the "D" ring. See Figure 2.

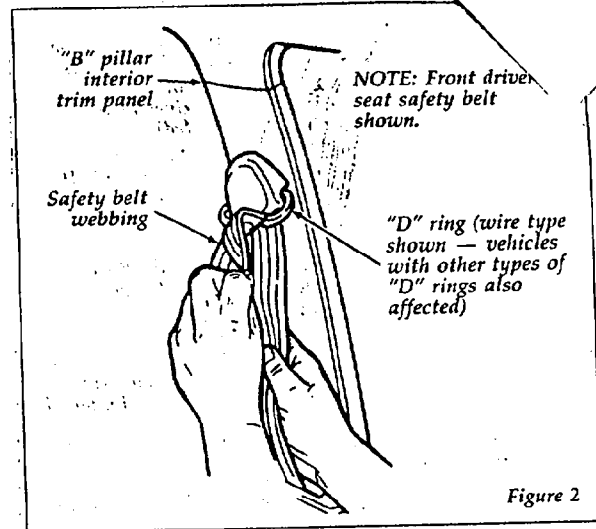
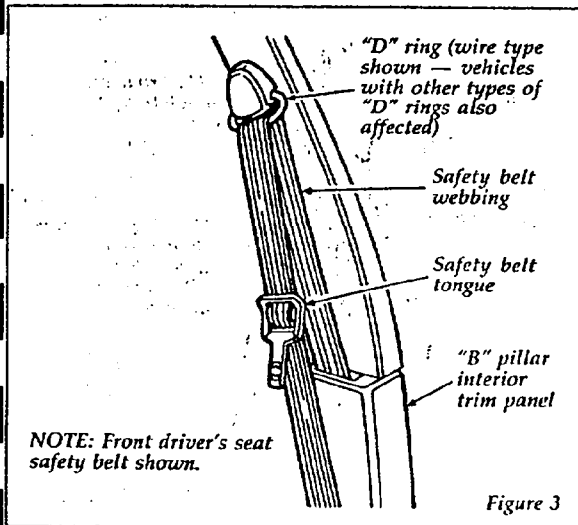


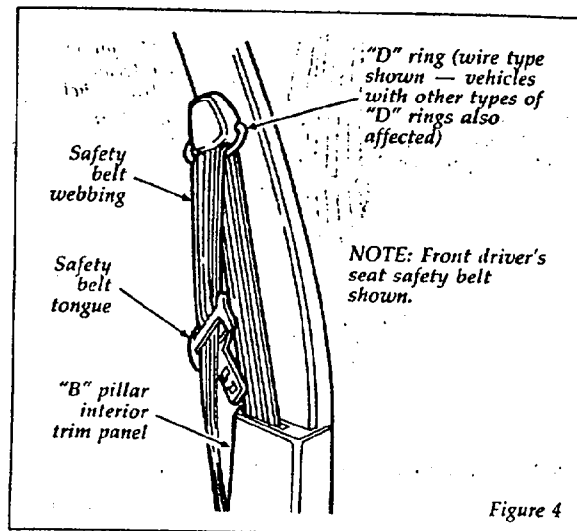
Figure 2

2. Rotate and fold the belt webbing over itself as required to remove the twist.
3. Feed the folded portion of the belt through the "D" ring.
4. When completed, safety belt should look like Figure 3.

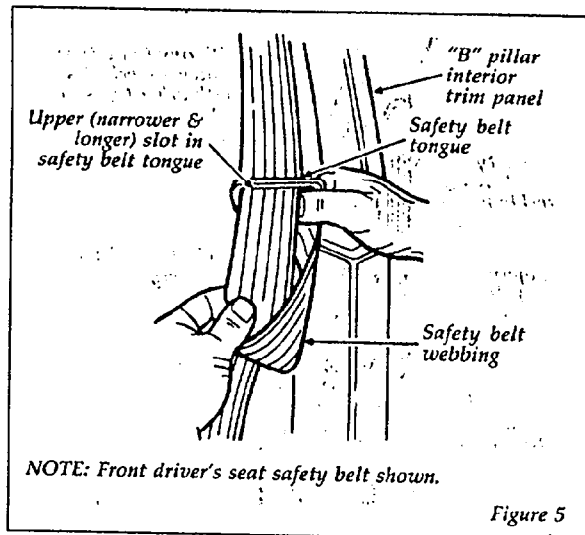


#### Procedure to Correct a Rotated Tongue on the Safety Belt (Front and/or Rear Outboard Seating Positions)

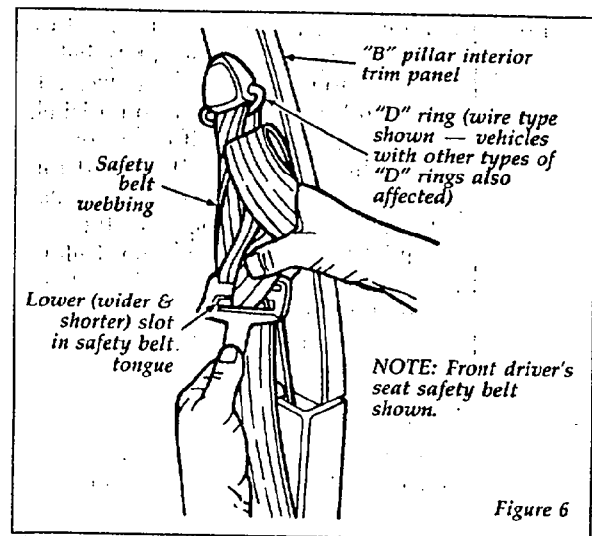
**NOTE:** The restraint system shown in the following figures may be different than your vehicle. However, use these figures and this procedure to correct a rotated tongue on the safety belt at any outboard seating position that has a "D" ring.



1. Grasp the belt tongue and pull down on the belt webbing closest to you to form a loop through the upper (narrow and longer) slot in the tongue. See Figure 5.



2. Working within the upper slot, rotate and fold the belt webbing over itself as required to remove the twist.
3. Pull the excess belt webbing back through the upper slot in the tongue.
4. Repeat the above steps to complete the removal of the twist at the lower (wider and larger) slot in the tongue. See Figure 6.



5. When completed, the safety belt should look like Figure 3.

#### Safety Belt Extension Assembly

For some people, the safety belt may be too short even when it is fully extended. You can add about eight inches (20 cm) to the belt length with a safety belt extension assembly (611C22). Safety belt extensions are available at no cost from your dealer.

**Warning:** Use only extensions manufactured by the same supplier as the safety belt. Manufacturer identification is located at the end of the webbing on a label. Also, use the safety belt extension only if the safety belt is too short for you when fully extended. Do not use extension to change the fit of the shoulder belt across the torso. Failure to follow these instructions will affect the performance of the safety belts and increase the risk of personal injury.

### Safety Belt Maintenance

Check your safety belt system periodically to make sure that it works properly and isn't damaged. If the webbing shows any wear, nicks or cuts, have it examined by a qualified technician to determine if replacement is necessary. Always have your safety belt system checked after a collision.

For information on cleaning the webbing of seat belt assemblies, see "Cleaning the Safety Belts" in the Index.

**Warning:** All safety belt assemblies, including retractors, buckles, front seat belt buckle support assemblies (slide bar) if so equipped and attaching hardware, should be inspected after any 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.

### Air Bag Supplemental Restraint System (SRS)

*Driver air bag (F-150 — F-250 under 8500 lbs. only)*

This vehicle has a driver side supplemental air bag and can be identified by the letters "SRS" located in the center of the steering wheel.

The driver air bag is a Supplemental Restraint System (SRS) designed to add to the protection provided to a properly belted driver in moderate to severe frontal collisions. The supplemental air bag system does not provide restraint to the lower body.

**Warning:** ALWAYS WEAR THE SAFETY BELT!

### The Importance of Wearing Safety Belts

There are four very important reasons to use safety belts even with an air bag system. Use your safety belts to:

- ☐ help keep you in the proper position (away from the air bag) when it inflates.
- ☐ reduce the risk of harm in rollover, side or rear impact collisions, because an air bag is not designed to inflate in such situations
- ☐ reduce the risk of harm in frontal collisions that are not severe enough to activate the air bag
- ☐ reduce the risk of being thrown from your vehicle

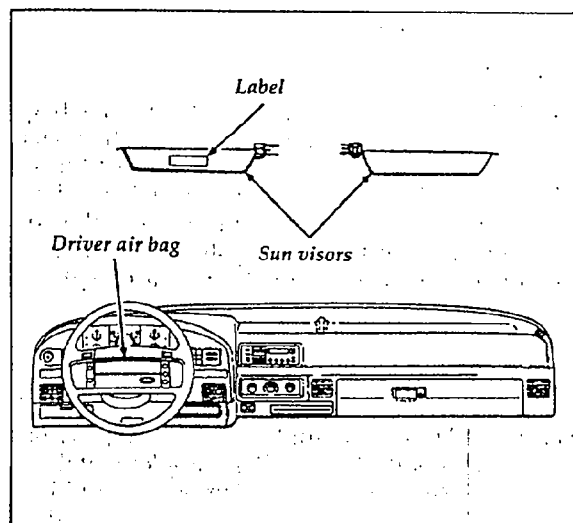
### The Importance of Being Properly Seated

In a collision, the air bag must inflate extremely fast to help provide additional protection for you. In order to do this, the air bag must inflate with considerable force. If you are not seated in a normal riding position with your back against the seatback, the air bag may not protect you properly and could possibly hurt you as it inflates.

**Warning:** Do not place objects or mount equipment in front of the air bag module cover or in front seat areas that may come in contact with a deploying air bag. Failure to follow this instruction could result in personal injury.

### How the Air Bag Supplemental Restraint System Operates

The air bag supplemental restraint system has two main parts. One part is the air bag system with the driver air bag and inflator located in the center of the steering wheel. The second part is the electrical system, which has impact sensors, a diagnostic module, and backup power supply. The diagnostic module monitors its own internal circuits and the supplemental air bag electrical system readiness, including the crash sensors, the system wiring, the air bag system readiness light, air bag power, and the supplemental air bag ignitor.



The location of the air bag and warning label

The air bag system uses a readiness light and a tone to indicate the condition of the system. The readiness light is in the instrument cluster. When you turn the ignition key to ON, this light will illuminate for approximately six (6) seconds and then turn off. This indicates that

the system is operating normally. **NOTE:** Maintenance of the air bag system is not required.

**Warning:** A problem with the system is indicated by one or more of the following:

- ☐ the readiness light will either flash or stay lit,
- ☐ or it will not light when the key is turned on,
- ☐ or a group of five beeps will be heard.

If any of these things happens, have the air bag system serviced at your Ford or Lincoln-Mercury Dealer immediately.

#### *Tone generator*

The air bag readiness light indicates the air bag system condition. However, a series of five sets of five beeps will be heard only if the readiness light doesn't work and there is a problem with the air bag system. This also means that the Air Bag Supplemental Restraint System (SRS) is in need of service. The tone pattern will repeat (five sets of five beeps) periodically until the problem and light are repaired. Unless serviced, the Air Bag Supplemental Restraint System may not function properly in the event of a collision.

**Warning:** Do not attempt to service, repair, or modify the Air Bag Supplemental Restraint System; tampering could cause activation of the system and increase the risk of personal injury. For servicing of the Air Bag Supplemental Restraint System, see your dealer.

The air bag system is designed to stay out of sight until it is activated. The air bag system is designed to deploy in frontal and front-angled

collisions more severe than hitting a parked vehicle of similar size and weight head-on at about 28 mph (45 km/h). Because the system senses the crash severity rather than vehicle speed, some frontal collisions at speeds above 28 mph (45 km/h) will not inflate the air bag.

The following four steps show how the air bag system works:

1. Sensors in the vehicle will detect the degree of severity of a frontal impact. When two sensors (one primary and one safing) close at the same time, electric current flows to the inflator and the system ignites the gas generant.
2. The propellant then rapidly burns in the metal container. The rapid burning produces nitrogen gas and small amounts of dust. The nitrogen gas and dust are cooled and filtered during inflation of the air bag.
3. The inflating air bag splits open the trim cover. The air bag then rapidly unfolds and inflates in front of the occupant.

**NOTE:** STEPS 1-3 TAKE PLACE IN A FRACTION OF A SECOND.

4. After inflation, the gas empties through holes in the air bag. The air bag deflates at once.

The surface of the air bags and the vehicle interior may be dusted with a powdery residue. The powder is corn starch or talcum powder, which is used to lubricate the air bag as it inflates, and sodium compounds such as sodium carbonates (e.g., baking soda), and possibly a very small amount of sodium hydroxide that may be irritating to the skin and eyes, but is not toxic.

Right after air bag inflation, you may notice smoke (from the powder and dust) and smell the burnt propellant. This is normal.

**Warning:** Several air bag system components get hot after inflation. Do not try to touch them after inflation.

Air bags may not inflate in certain frontal collisions, even though the vehicle may be badly damaged. The fact that your air bag did not inflate in such a collision does not mean that something is wrong with the air bag system. Rather, it means the crash forces were not severe enough to need an air bag to prevent serious injury.



Inflated driver side air bag

**Warning:** The air bag will inflate only once. The system is designed to function on a one-time-only basis. If the air bag is inflated, **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.

#### *Disposal of air bag equipped vehicles*

For disposal of air bags or air bag equipped vehicles, see your local Ford or Lincoln-Mercury dealer, or refer to the procedures in the 1994 Ford Service Manual. Information on how to order a service manual is available at an authorized Ford or Lincoln-Mercury Dealer. You can also order a service manual using the order form in the *Accessories* chapter of your Owner Guide.

#### *Service and information labels*

Service and information labels are attached to the sun visor (USA vehicles), on the headliner above the driver's seat (Canadian vehicles), and the radiator support in the engine compartment.

This vehicle has an AIR BAG for the driver.

**! WARNING** YOU NEED YOUR SAFETY BELT, EVEN WITH AN AIR BAG, AND HERE'S WHY

- Air bags are not designed to inflate in rollovers or in rear, side, or low speed frontal crashes.

- Air bags inflate with great force, faster than the blink of an eye. If you're too close to an inflating air bag, it could seriously injure you. Safety belts help keep you in position for air bag inflation in a crash.

REGULAR MAINTENANCE OF THE AIR BAG SYSTEM IS NOT REQUIRED. If the air bag readiness light comes on while you're driving, or doesn't come on when you first start your vehicle, see your dealer for service.

See your Owner Guide for more information.

The label located on the back of the driver's sun visor

**! WARNING**

DO NOT TAMPER WITH OR DISCONNECT THE AIR BAG SYSTEM WIRING. You could inflate the bag(s) or make it inoperative which may result in injury. See Shop Manual.

**! AVERTISSEMENT**

NE PAS MANIPULER NI DÉBRANCHER LE CÂBLAGE ÉLECTRIQUE DU DISPOSITIF D'UN COUSSIN DE SÉCURITÉ. Cela pourrait gonfler le coussin de sécurité ou le mettre hors service et entraîner des blessures. Voir le manuel de réparation.

F02B 540014-AA

Label on radiator support in the engine compartment

## Safety Restraints for Children

In most states, you are required by law to use safety restraints for children. If small children ride in your vehicle — this generally includes children who are four years old or younger and who weigh 40 pounds (18 kg) or less — you must put them in safety seats that are made specially for children. Safety belts alone do not provide maximum protection for these children. Check your local and state laws for specific requirements.

**Warning:** 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.

**Warning:** Never let children or adults ride in the cargo area of your vehicle. Make sure that they sit where they can be properly restrained. If they are not restrained, the risk of their being injured in a collision greatly increases.

**Warning:** When using any infant or child restraint system, it is important that you follow the instructions and warnings provided by the manufacturer concerning its installation and use. Failure to follow each of the restraint manufacturer's instructions could increase the risk or severity of an injury in the event of a collision or sudden stop.

When possible, put children 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 positions.

Do not install a child seat in a center facing jump seat. Safety seats for children are not intended for use in center facing seats.

Safety belts and seats can become hot in a vehicle that has been closed up in sunny weather; they could burn a small child. Check seat covers and buckles before you place a child anywhere near them.

**Warning:** Never leave a child unattended in your vehicle. Always remove the key from the ignition and take it with you.

### Safety Belts for Children

Children who are too large for child safety seats should always wear safety belts. (See instructions with your child seat, or contact its manufacturer, to determine maximum size of child that will safely fit in the seat.)

**Warning:** If safety belts are not properly worn and adjusted as described, the risk of serious injury to the child in a collision will be much greater.

If the shoulder belt portion of one of the lap and shoulder belts can be positioned so that 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.

If the shoulder belt cannot be properly positioned, move the child to one of the seats with a lap belt only (preferably in a rear seat) and use the lap belt.

Lap belts and the lap belt portion of lap and shoulder belts should always be worn snugly and below the hips, touching the child's thighs.

Children should always ride with the seatback in the fully upright position. When the seatback is not fully upright, there is a greater risk that the child will slide under the safety belt and be seriously injured in a collision.

### Safety Seats for Children

Use a safety seat that is recommended for the size and weight of the child. Always follow the safety seat manufacturer's instructions when installing and using the safety seat.

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 see *Attaching Safety Seats with Tether Straps* in this chapter.

When installing a child safety seat, be sure to use the correct safety belt buckle for that seating position, and make sure the tongue is securely fastened in the buckle.

**Warning:** All safety seats for children are designed to be secured to the seat of your vehicle by lap belts or by the lap portion of a lap and shoulder belt. If you do not properly secure the safety seat to the vehicle, the risk is greater that a child, occupying the seat during a collision or sudden stop, will be injured. An unsecured safety seat could also injure other passengers in the vehicle.

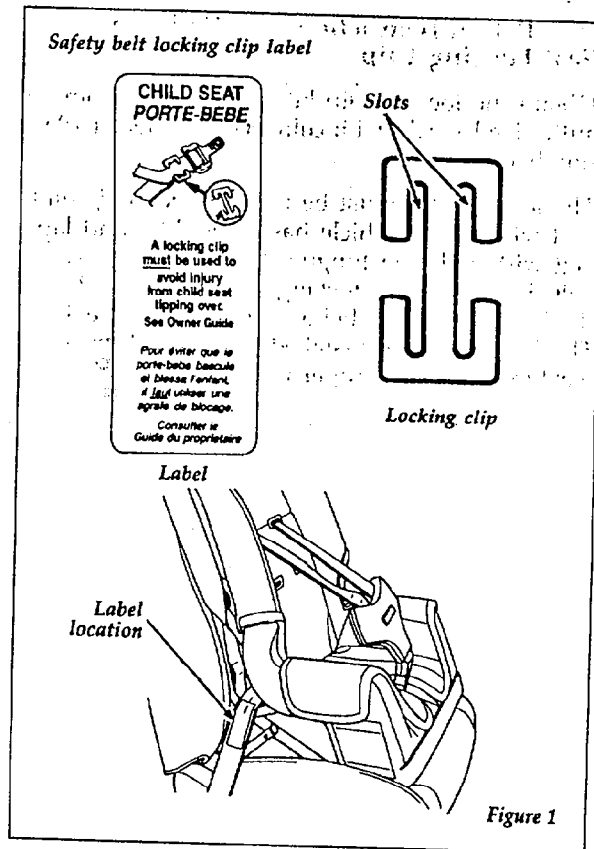
**Warning:** Carefully follow all of the manufacturer's instructions that come with the safety seat that you put in your vehicle. Make sure that the shoulder belt (if provided at the seating position where the safety seat is being used) does not cross or rest in front of the child's face or neck. If you do not install and use the safety seat properly, the child may be injured in a sudden stop or collision.

Seat backs should be upright for use with child safety seats.

### Installation Instructions for Child Safety Seat Locking Clip

Obtain the locking clip kit at no charge from an authorized Ford or Lincoln-Mercury dealer (Basic number 61248).

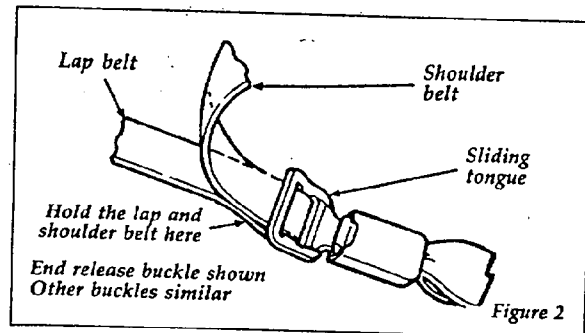
The locking clip must be used to secure a child seat when your vehicle has a shoulder and lap belt with a sliding tongue. Every Ford safety belt that requires a locking clip is identified on the belt, with the label as shown in Figure 1. The locking clip is installed on a sample piece of webbing to show proper installation.



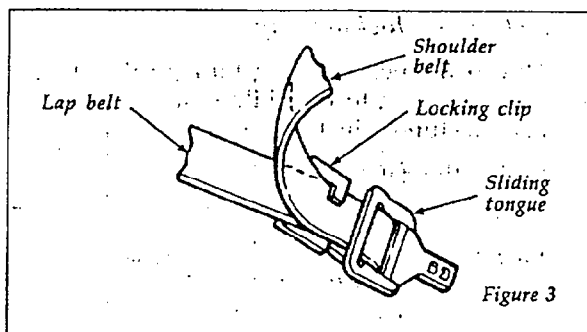
**Warning:** If you do not use a locking clip, injuries could result from the child seat tipping over during normal vehicle braking or cornering.

### To install the locking clip

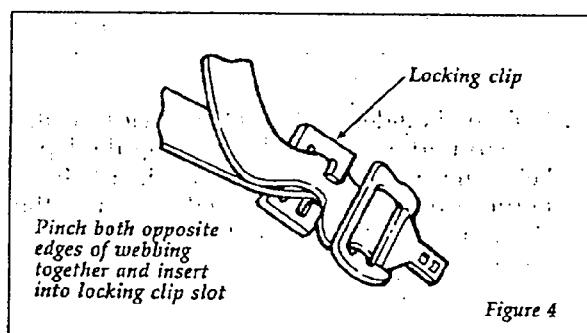
1. Thread the belt webbing through the child seat according to the child seat manufacturer's instructions.
2. Buckle the safety belt.



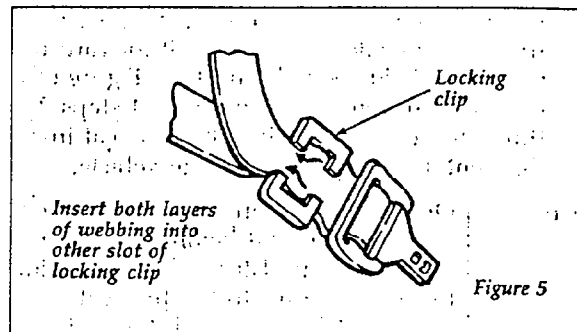
3. Pull on shoulder portion of the belt to make the lap portion fit snugly. Keeping the lap belt snug, hold the lap and shoulder belt portions of the webbing together next to the slip tongue and unbuckle the seat belt, Figure 2.



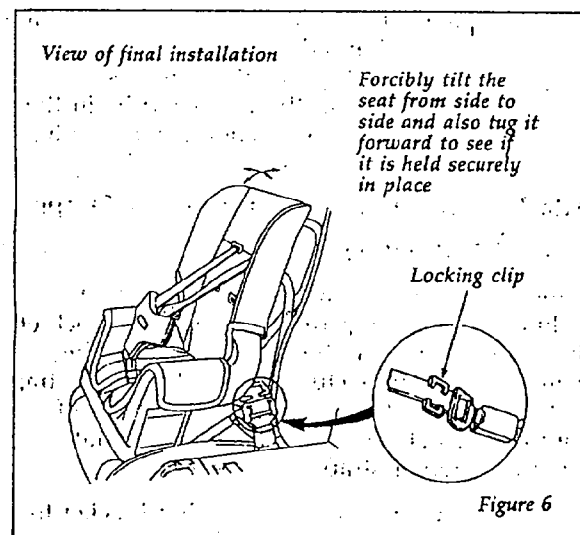
4. Slide either corner of the locking clip slot closest to the tongue over both layers of webbing as shown in Figure 3.



5. Pinch both opposite edges of webbing together and insert them into the locking clip slot as shown in Figure 4.



6. Pinch both layers of webbing together and insert into other slot of locking clip, Figure 5.



7. Re-buckle belt. Forcibly tilt the child seat from side to side and also tug it forward to see if it is held securely in place, Figure 6. If excessive movement occurs, repeat steps 2 through 7 or properly install child seat in a different seating position in the vehicle.

**Warning:** Once you have attached the safety seat, test the 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 belt holds the seat in place. If the lap belt is too loose, tighten it by moving the locking clip, or put the safety seat in another seat and test it again. If the safety seat is not anchored properly, the risk of a child being injured in a collision or sudden stop greatly increases. Reclining seatbacks should be in the most upright position for use with child safety seats.

### Attaching Safety Seats With Tether Straps

#### General Instructions

Some manufacturers make safety seats that include a tether strap that goes over the back of the vehicle seat and attaches to an anchoring point. Other manufacturers offer the tether strap as an accessory. Contact the manufacturer of your child safety seat for information about ordering a tether strap.

You can attach a tether strap anchor bracket to the cab inner back panel by using a tether anchor kit (613D74) available at no charge from any Ford dealer.

Read and follow the instructions provided with the kit carefully for installation of the child tether strap anchor.

Follow the child seat manufacturer's instructions to attach the tether strap to the tether bracket.

Ford recommends placement of tethered safety seats in a rear seating position (Crew Cab and Super Cab with forward facing rear seat only) with the tether strap attached to the tether anchoring point as shown in the instructions provided with the child tether strap anchor kit.

**Warning:** Use only the tether attachment hole locations shown in the instructions. The tether anchorage may not perform properly if the wrong mounting location is used.

If a tethered seat is installed in the front seat, Ford recommends placement of the tethered safety seat in the center front seating position, with the tether strap secured to the center rear lap belt tongue or to the webbing of the buckled center rear lap belt behind the child safety seat.

**Warning:** Failure to follow these precautions could increase the chance and/or severity of injury in an accident.

**Warning:** In Super Cabs equipped with Center Facing Jump Seats, the tether strap anchor bracket should be installed only at the center of the cab's back panel with the child seat in the front center seating position. Installing an anchor bracket at the right rear of the cab may increase risk of injury to an occupant of the right rear center facing jump seat in the event of a collision or sudden stop. If a tethered child seat is installed in the right front seating position, secure the tether strap to the webbing of the buckled right rear lap belt. Do not install a child seat in a center facing jump seat. Safety seats for children are not intended for use in center facing seats.

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APPENDIX E  
INSTRUMENTATION AND CALIBRATION DATA

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# INSTRUMENTATION AND CALIBRATION DATA

DRIVER ATD SN 34

| CH# | TYP | LOCATION/AXIS    | MAKE        | MODEL/SERIAL No | CAL DATE |
|-----|-----|------------------|-------------|-----------------|----------|
| 01  | AC  | HEAD C.G. X      | ENDEVCO     | 7264-2000/ACC59 | 11/01/93 |
| 02  | AC  | HEAD C.G. Y      | ENDEVCO     | 7264-2000/ACCD1 | 11/01/93 |
| 03  | AC  | HEAD C.G. Z      | ENDEVCO     | 7264-2000/ACC62 | 11/01/93 |
| 04  | AC  | CHEST X          | ENDEVCO     | 7264-2000/ACC65 | 11/01/93 |
| 05  | AC  | CHEST Y          | ENDEVCO     | 7264-2000/ACC66 | 11/01/93 |
| 06  | AC  | CHEST Z          | ENDEVCO     | 7264-2000/ACC67 | 11/01/93 |
| 07  | LC  | NECK FORCE X     | R.A. DENTON | 1716A/0400FX    | 11/02/92 |
| 08  | LC  | NECK FORCE Y     | R.A. DENTON | 1716A/0440FY    | 11/02/92 |
| 09  | LC  | NECK FORCE Z     | R.A. DENTON | 1716A/0440FZ    | 11/02/92 |
| 10  | LC  | NECK MOMENT X    | R.A. DENTON | 1716A/0440MX    | 11/02/92 |
| 11  | LC  | NECK MOMENT Y    | R.A. DENTON | 1716A/0440MY    | 11/02/92 |
| 12  | LC  | NECK MOMENT Z    | R.A. DENTON | 1716A/0440MZ    | 11/02/92 |
| 13  | LC  | LEFT FEMUR X     | R.A. DENTON | 2121A/0255      | 11/09/93 |
| 14  | LC  | RIGHT FEMUR X    | R.A. DENTON | 2121A/0256      | 11/09/93 |
| 15  | DS  | CHEST DISP. X    |             |                 | 12/02/93 |
| 16  | LC  | LAP BELT OT      | LEBOW       | 3371/330        | 11/09/93 |
| 17  | LC  | SHOULDER BELT OT | LEBOW       | 3371/308        | 11/09/93 |
| 18  | DS  | BELT ELONG. OT   | ETI         | LPC 12A-12/001  | 02/19/94 |
| 19  | DS  | BELT PULLOUT OT  | MSE         | 701-36/113      | NOT USED |

## INSTRUMENTATION AND CALIBRATION DATA

## PASSENGER ATD SN 830/HYBRID II

| CH# | TYP | LOCATION/AXIS |    | MAKE        | MODEL/SERIAL No | CAL DATE |
|-----|-----|---------------|----|-------------|-----------------|----------|
| 20  | AC  | HEAD C.G.     | X  | ENDEVCO     | 7264-2000/ACB35 | 11/01/93 |
| 21  | AC  | HEAD C.G.     | Y  | ENDEVCO     | 7264-2000/ACC13 | 11/01/93 |
| 22  | AC  | HEAD C.G.     | Z  | ENDEVCO     | 7264-2000/ACC71 | 11/01/93 |
| 23  | AC  | CHEST         | X  | ENDEVCO     | 7264-2000/AAL54 | 11/01/93 |
| 24  | AC  | CHEST         | Y  | ENDEVCO     | 7264-2000/ACC82 | 11/01/93 |
| 25  | AC  | CHEST         | Z  | ENDEVCO     | 7264-2000/AAMN8 | 11/01/93 |
| 26  | LC  | NECK FORCE    | X  | NOT USED    | N/A             | N/A      |
| 27  | LC  | NECK FORCE    | Y  | NOT USED    | N/A             | N/A      |
| 28  | LC  | NECK FORCE    | Z  | NOT USED    | N/A             | N/A      |
| 29  | LC  | NECK MOMENT   | X  | NOT USED    | N/A             | N/A      |
| 30  | LC  | NECK MOMENT   | Y  | NOT USED    | N/A             | N/A      |
| 31  | LC  | NECK MOMENT   | Z  | NOT USED    | N/A             | N/A      |
| 32  | LC  | LEFT FEMUR    | X  | R.A. DENTON | 2121A/0263      | 11/09/93 |
| 33  | LC  | RIGHT FEMUR   | X  | R.A. DENTON | 2121A/0264      | 11/09/93 |
| 34  | DS  | CHEST DISP.   | X  | NOT USED    | N/A             | N/A      |
| 35  | LC  | LAP BELT      | OT | LEBOW       | 3371/333        | 11/09/93 |
| 36  | LC  | SHOULDER BELT | OT | LEBOW       | 3371/327        | 11/09/93 |
| 37  | DS  | BELT ELONG.   | OT | ETI         | LCP-12A-12/002  | 02/19/94 |
| 38  | DS  | BELT PULLOUT  | OT | CELESCO     | PT0620          | NOT USED |

## INSTRUMENTATION AND CALIBRATION DATA

## VEHICLE

| CH# | TYP | LOCATION/AXIS     | MAKE         | MODEL/SERIAL No | CAL DATE |
|-----|-----|-------------------|--------------|-----------------|----------|
| 39  | AC  | Lt. Fr. Caliper X | I. C. Sensor | 3031-200/23-200 | 11/02/93 |
| 40  | AC  | Rt. Fr. Caliper X | I. C. Sensor | 3031-200/34-200 | 11/02/93 |
| 41  | AC  | Engine Bottom X   | I. C. Sensor | 3031-200/21-200 | 11/02/93 |
| 42  | AC  | Engine Top X      | I. C. Sensor | 3031-200/29-200 | 11/02/93 |
| 43  | AC  | Instr. Panel X    | I. C. Sensor | 3031-200/27-200 | 11/02/93 |
| 44  | AC  | LfRr X-mbr Pri X  | I. C. Sensor | 3031-200/25-200 | 11/02/93 |
| 45  | AC  | RtRr X-mbr Pri X  | I. C. Sensor | 3031-200/26-200 | 11/02/93 |
| 46  | AC  | LfRr X-mbr Sec X  | I. C. Sensor | 3031-200/28-200 | 11/02/93 |
| 47  | AC  | RtRr X-mbr Sec X  | I. C. Sensor | 3031-200/26-200 | 11/02/93 |

# INSTRUMENTATION AND CALIBRATION DATA

## LOAD CELL BARRIER

| CH# | TYP | LOCATION/AXIS | MAKE      | MODEL/SERIAL No | CAL DATE |
|-----|-----|---------------|-----------|-----------------|----------|
| 48  | LC  | A1 XG         | Interface | 1220-F3/19349   | 05/14/85 |
| 49  | LC  | A2 XG         | Interface | 1220-F3/19349   | 05/14/85 |
| 50  | LC  | A3 XG         | Interface | 1220-F3/19349   | 05/14/85 |
| 51  | LC  | A4 XG         | Interface | 1220-F3/19349   | 05/14/85 |
| 52  | LC  | A5 XG         | Interface | 1220-F3/19349   | 05/14/85 |
| 53  | LC  | A6 XG         | Interface | 1220-F3/19349   | 05/14/85 |
| 54  | LC  | A7 XG         | Interface | 1220-F3/19349   | 05/14/85 |
| 55  | LC  | A8 XG         | Interface | 1220-F3/19349   | 05/14/85 |
| 56  | LC  | A9 XG         | Interface | 1220-F3/19349   | 05/14/85 |
| 57  | LC  | B1 XG         | Interface | 1220-F3/19349   | 05/14/85 |
| 58  | LC  | B2 XG         | Interface | 1220-F3/19349   | 05/14/85 |
| 59  | LC  | B3 XG         | Interface | 1220-F3/19349   | 05/14/85 |
| 60  | LC  | B4 XG         | Interface | 1220-F3/19349   | 05/14/85 |
| 61  | LC  | B5 XG         | Interface | 1220-F3/19349   | 05/14/85 |
| 62  | LC  | B6 XG         | Interface | 1220-F3/19349   | 05/14/85 |
| 63  | LC  | B7 XG         | Interface | 1220-F3/19349   | 05/14/85 |
| 64  | LC  | B8 XG         | Interface | 1220-F3/19349   | 05/14/85 |
| 65  | LC  | B9 XG         | Interface | 1220-F3/19349   | 05/14/85 |

# INSTRUMENTATION AND CALIBRATION DATA

## LOAD CELL BARRIER

| CH# | TYP | LOCATION/AXIS | MAKE      | MODEL/SERIAL No | CAL DATE |
|-----|-----|---------------|-----------|-----------------|----------|
| 66  | LC  | C1 XG         | Interface | 1220-F3/19349   | 05/14/85 |
| 67  | LC  | C2 XG         | Interface | 1220-F3/19349   | 05/14/85 |
| 68  | LC  | C3 XG         | Interface | 1220-F3/19349   | 05/14/85 |
| 69  | LC  | C4 XG         | Interface | 1220-F3/19349   | 05/14/85 |
| 70  | LC  | C5 XG         | Interface | 1220-F3/19349   | 05/14/85 |
| 71  | LC  | C6 XG         | Interface | 1220-F3/19349   | 05/14/85 |
| 72  | LC  | C7 XG         | Interface | 1220-F3/19349   | 05/14/85 |
| 73  | LC  | C8 XG         | Interface | 1220-F3/19349   | 05/14/85 |
| 74  | LC  | C9 XG         | Interface | 1220-F3/19349   | 05/14/85 |
| 75  | LC  | D1 XG         | Interface | 1220-F3/19349   | 05/14/85 |
| 76  | LC  | D2 XG         | Interface | 1220-F3/19349   | 05/14/85 |
| 77  | LC  | D3 XG         | Interface | 1220-F3/19349   | 05/14/85 |
| 78  | LC  | D4 XG         | Interface | 1220-F3/19349   | 05/14/85 |
| 79  | LC  | D5 XG         | Interface | 1220-F3/19349   | 05/14/85 |
| 80  | LC  | D6 XG         | Interface | 1220-F3/19349   | 05/14/85 |
| 81  | LC  | D7 XG         | Interface | 1220-F3/19349   | 05/14/85 |
| 82  | LC  | D8 XG         | Interface | 1220-F3/19349   | 05/14/85 |
| 83  | LC  | D9 XG         | Interface | 1220-F3/19349   | 05/14/85 |

CALIBRATION DATA FOR INSTRUMENTATION  
USED IN ATD CALIBRATION

| ATD INSTRUMENTS              | MANUFACTURER | MODEL/SERIAL No                | CAL DATE | DUE      |
|------------------------------|--------------|--------------------------------|----------|----------|
| Chest Deflection Pot         | BECKMAN      | 5311 / N/A                     | EACH USE | EACH USE |
| Chest Impactor Accelerometer | ENTRAN       | EGV-1/14N3N-V13-1              | 09/14/93 | 03/14/94 |
| Neck Pendulum Accelerometer  | ENTRAN       | EGV-1/14N3N-V13-1              | 09/14/93 | 03/14/94 |
| Neck Rotation No. 2          | BECKMAN      | 5311 / N/A                     | EACH USE | EACH USE |
| Neck Rotation No. 1          | BECKMAN      | 5311 / N/A                     | EACH USE | EACH USE |
| Neck Extension Pot           | BOURNS       | 80294-20518<br>184020/1684-067 | EACH USE | EACH USE |
| Abdominal Compression Load   | LEBOW/EATON  | 3167 /1573                     | 09/14/93 | 03/14/94 |
| Lumbar Flexion Load          | LEBOW/EATON  | 3167 / 1573                    | 09/14/93 | 03/14/94 |
| Lumbar Rotation              | BOURNS       | 3590S-2-102/ N/A               | EACH USE | EACH USE |
| Abdominal Displacement       | CELESCO      | PT-101-158/0786551             | EACH USE | EACH USE |
| Timer                        | MSE          | MSE TIM/1                      | 02/11/94 | 08/11/94 |
| Time Trap                    | MSE          | 1 IN./1                        | 02/11/94 | 08/11/94 |