

REPORT NO.: MSE-92-08-TR1086-08

V1764

V1754
R1086-08

**SIDE IMPACT PROTECTION STUDY
IN PRODUCTION VEHICLES
MDB-TO-VEHICLE SIDE IMPACT TEST OF
A 27⁰ CRABBED MOVING DEFORMABLE BARRIER
TO A 1989 MAZDA MPV
AT 33.0 MPH**

NHTSA NO.: RK5400

**MOBILITY SYSTEMS AND EQUIPMENT COMPANY
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INGLEWOOD, CALIFORNIA 90301**



13 OCTOBER 1992

FINAL REPORT

Prepared Under Contract No. DTNH22-87-C-07168, D.O. #3

For

**U.S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
Office of Crashworthiness Research
400 Seventh Street, S.W.
Washington, DC 20590**

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Approved by: 
Dr. Anil V. Khadilkar

Date: 13 October 1992

Report Accepted by OCR:

Accepted by: _____

Acceptance Date: _____

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9. Performing Organization Name and Address MOBILITY SYSTEMS AND EQUIPMENT COMPANY 9920 LA CIENEGA BOULEVARD, SUITE 708 INGLEWOOD, CALIFORNIA 90301				10. Work Unit No. :TRAI51																									
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				14. Sponsoring Agency Code NRD-11																									
15. Supplementary Notes																													
16. Abstract																													
<p style="text-align: center;">o</p> <p>A 30/15 mph 90° Impact (Moving Deformable Barrier) Test was conducted on the subject 1989 Mazda MPV in accordance with the specifications of the Office of Market Incentives "Side Impact Protection Study" Test Procedure. The test was conducted at the MSE facility in San Bernardino, on September 18, 1992.</p> <p>The impact velocity of the Moving Deformable Barrier (MDB) was 32.94 mph, and the ambient temperature at the struck side (driver's) of the target vehicle at the time of impact was 96 °F. The target vehicle post test maximum crush was 18.9 inches at levels 2. The test vehicle's performance follows:</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;"></th> <th style="width: 20%; text-align: center;">DRIVER</th> <th style="width: 20%; text-align: center;">PASS</th> </tr> </thead> <tbody> <tr> <td>Left Upper Rib (LUR) Accel., g</td> <td style="text-align: center;">81.6</td> <td style="text-align: center;">90.6</td> </tr> <tr> <td>Left Lower Rib (LLR) Accel., g</td> <td style="text-align: center;">69.2</td> <td style="text-align: center;">85.1</td> </tr> <tr> <td>Lower Spine (T) Accel., g</td> <td style="text-align: center;">62.8</td> <td style="text-align: center;">80.6</td> </tr> <tr> <td colspan="3" style="text-align: center;">12</td> </tr> <tr> <td>Thoracic Trauma Index (TTI)</td> <td style="text-align: center;">72.2</td> <td style="text-align: center;">85.6</td> </tr> <tr> <td colspan="3" style="text-align: center;">d</td> </tr> <tr> <td>Pelvis (PEV) Accel., g</td> <td style="text-align: center;">79.7</td> <td style="text-align: center;">110.6</td> </tr> </tbody> </table> <p>The door on the struck side of the vehicle separated from the body at the hinges. The opposite doors did not open during side impact event.</p>							DRIVER	PASS	Left Upper Rib (LUR) Accel., g	81.6	90.6	Left Lower Rib (LLR) Accel., g	69.2	85.1	Lower Spine (T) Accel., g	62.8	80.6	12			Thoracic Trauma Index (TTI)	72.2	85.6	d			Pelvis (PEV) Accel., g	79.7	110.6
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17. Key Words OCCUPANT RESPONSE, MDB, SIDE IMPACT, TTI, SIDE IMPACT DUMMY (SID) MOVING BARRIER CRASH TESTING 1989 MAZDA MPV			18. Distribution Statement COPIES OF THIS REPORT ARE AVAILABLE FROM: DEPARTMENT OF TRANSPORTATION National Highway Traffic Safety Administration Technical Reference Division, Room 5108 400 Seventh Street, SW Washington, DC 20590																										
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METRIC CONVERSION FACTORS

APPROXIMATE CONVERSIONS FROM METRIC MEASURES

SYMBOL WHEN YOU KNOW MULTIPLY BY TO FIND SYMBOL

LENGTH	
mm	millimeters
cm	centimeters
m	meters
km	kilometers
in	inches
ft	feet
yd	yards
mi	miles

AREA	
sq m	square centimeters
sq m	square meters
sq km	square kilometers
ha	hectares (10,000 sq m)
sq in	square inches
sq ft	square feet
sq yd	square yards
sq mi	square miles

MASS (weight)	
g	grams
kg	kilograms
t	tonnes (1000 kg)
oz	ounces
lb	pounds
ton	tons

VOLUME	
ml	milliliters
l	liters
cl	centiliters
dl	deciliters
m ³	cubic meters
cc	cubic centimeters
cu in	cubic inches
qt	quarts
gal	gallons
cu ft	cubic feet
cu yd	cubic yards

TEMPERATURE (exact)	
°C	Celsius
°F	Fahrenheit



APPROXIMATE CONVERSIONS FROM METRIC MEASURES

SYMBOL WHEN YOU KNOW MULTIPLY BY TO FIND SYMBOL

LENGTH	
in	inches
ft	feet
yd	yards
mi	miles
cm	centimeters
m	meters
km	kilometers

AREA	
sq in	square inches
sq ft	square feet
sq yd	square yards
sq mi	square miles
ac	acres
ha	hectares

MASS (weight)	
oz	ounces
lb	pounds
ton	tons (2000 lb)
g	grams
kg	kilograms
t	tonnes

VOLUME	
cup	cup
qt	quarts
gal	gallons
cu ft	cubic feet
cu yd	cubic yards
ml	milliliters
l	liters
cl	centiliters
dl	deciliters
m ³	cubic meters
cc	cubic centimeters

TEMPERATURE (exact)	
°F	Fahrenheit
°C	Celsius

* 1 in = 2.54 (exactly). For other exact conversions and more detailed tables, see NBS Misc. Publ. 286, Units of Weights and Measures, Price \$2.25, SD Catalog No. C13.10:286

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SECTION 1

PURPOSE AND INTRODUCTION

This testing program is a part of an investigation and evaluation of side impact protection in production light trucks and vans. The test is specifically intended to simulate a 90 deg. intersection collision with the striking vehicle moving at 30 mph. This is accomplished by towing a Moving Deformable Barrier (MDB) crabbed at a 27° angle into the struck test vehicle which is placed in a stationary position. The velocity of the MDB is to be 33.0 ±0.5 mph.

The subject vehicle for this test was a 1989 Mazda MPV. The test was performed on 18 September 1992 at an actual impact speed of 32.94 mph. The leading left-hand edge of the MDB contacted the test vehicle 38.1 inches ~~rearward of the front axle centerline.~~

FORWARD OF WHEELBASE MIDPOINT

Section 2 contains a general test summary and vehicle information data sheets. Section 3 contains the test results. Section 4 contains the test equipment list and calibration information. Section 5 contains pretest and posttest vehicle and dummy photographs. Section 6 contains SID, vehicle and MDB response data plots. Section 7 contains the pretest SID configuration and performance verification data.

SECTION 2

TEST SUMMARY AND VEHICLE INFORMATION

The 1989 Mazda MPV, was tested on 18 September 1992. General test vehicle information and pretest conditions are given in Data Sheet No. 1. A crash test summary is shown in Data Sheet No. 1. The vehicle was instrumented with 10 accelerometer channels and two onboard high-speed movie cameras. Accelerometer locations and peak values are shown in Data Sheet No. 8. All pretest measurements were made detailing the left side vehicle profile. The impact point was marked on the vehicle 37 inches rearward of the front axle.

FORWARD OF WHEELBASE MIDPOINT

One side impact anthropomorphic dummies (SID) were placed in the vehicle and positioned using the side impact dummy seating procedure specified in the OMI side impact protection study laboratory test procedure, dated December, 1991. SID position measurements are shown in Data Sheet No. 3 and 4. The SID were instrumented with 12 accelerometers. A summary of the SID accelerometer data is given in Data Sheet No. 1. Lap and shoulder seat belts were equipped with load cells for both SIDs. Colored chalk was applied to the SID's head, left shoulder, left hip and his knees to help determine dummy contact points during the test.

o

The MDB was crabbed at 27° and instrumented with five (5) accelerometers and two (2) high-speed movie cameras. Accelerometer locations with peak values for the MDB are shown in Data Sheet No. 9.

Additional film coverage of the test was also provided by two (2) overhead and two (2) ground high-speed movie cameras and one real-time camera. Camera locations are given in Data Sheet No. 10. A total of 50 channels of information was recorded on two (2) FM data tape recorders and two (2) direct analog to digital acquisition units and data acquisition computers.

DATA SHEET NO. 1

SUMMARY OF RESULTS

VEH. MOD.YR/MAKE/MODEL: 1989 MAZDA MPV

VEH. BODY STYLE: MINIVAN VIN: JM3LV5223K0127409

VEH. NHTSA NO.: RK5400 VEH. BUILD DATE: 03/89

TEST DATE: 09/18/92 TEST LAB.: MOBILITY SYSTEMS AND EQUIPMENT COMPANY

TEST RESULTS:

Vehicle Overall Length = 175.6 inches; Vehicle Overall Width 72.0 inches

Vehicle Test Weight: 1181.0 lbs. Left Front 1057.0 lbs. Left Rear

1112.0 lbs. Right Front 1070.0 lbs. Right Rear

2293.0 lbs. TOTAL FRONT 2127.0 lbs. TOTAL REAR

Wheelbase = 110.6 inches

Longitudinal C.G. from center of front axle = 53.2 inches

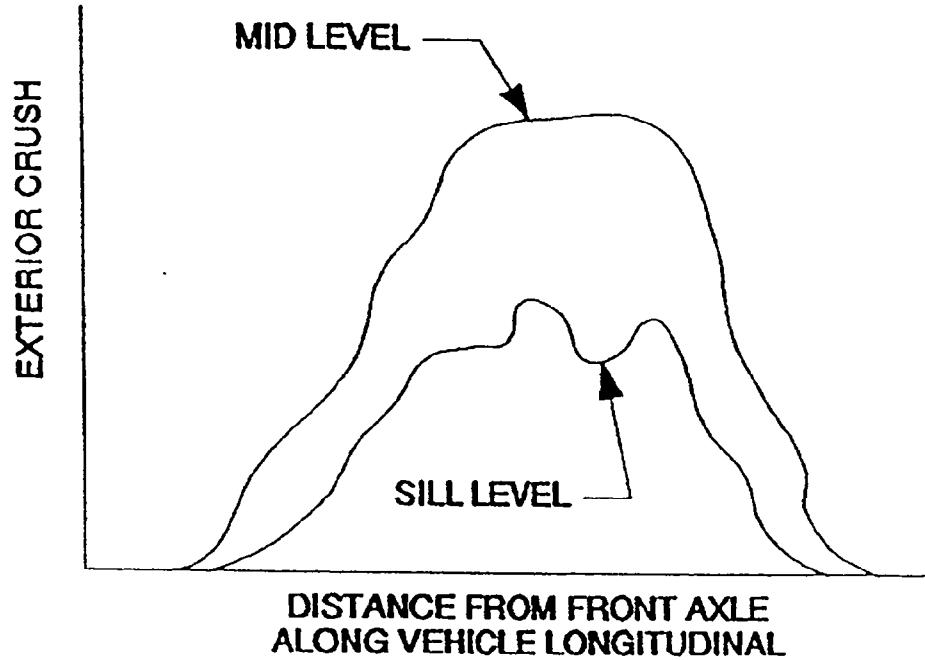
Impact Angle with respect to impactor = 90 degrees

Maximum Exterior Static Crush (provide External Damage Profile on next page):

1. LEVEL 1 (12.1 inches above ground) = 6.8 inches
2. LEVEL 2 (29.3 inches above ground) = 18.9 inches
3. LEVEL 3 (29.8 inches above ground) = 18.7 inches
4. LEVEL 4 (44.0 inches above ground) = 13.7 inches
5. LEVEL 5 (61.6 inches above ground) = 3.9 inches

Maximum Post Test Intrusion = 18.9 inches

External Lateral Damage Profile (sample shown below)



Occupants:	<u>DRIVER</u>	<u>PASS. (LEFT REAR)</u>
Dummy Identification	SID # <u>136</u>	SID # <u>137</u>
Restraint Used	3 point continuous webbing active belt system	3 point continuous webbing active belt system
Instrumentation:		
Number of Data Channels =	<u>50</u>	
Number of Cameras:	Onboard = <u>3</u> High Speed	
	Offboard = <u>6</u> High Speed (2 on MDB), 1 Real Time	
Door Opening:	<u>LEFT SIDE</u>	<u>RIGHT SIDE</u>
FRONT --	NO (Hinges did separate)	NO
REAR --	N/A	N/A
Arm Rest Location:	Front -- <u>On right side of bucket seat</u>	
	Rear -- <u>On right side of bench seat</u>	

Front Seat Cushion Movement: To the right

Front Seat Back Movement: To the right

Glazing Breakage: All impact side windows shattered, windshield cracked but remained intact.

Pillar Failure: B-pillar cracked at bottom about 3 inches aft of the front edge and the outboard edge separated from the sill along 4 inches at that point

Sill Separation: None

Other Notable Impact Effect: Broken right leg above the knee on the passenger SID.

MOVING DEFORMABLE BARRIER (MDB) RESULTS:

Overall Width of Framework Carriage = 52.5 inches

Overall Length of MDB = 162.0 inches (including honey comb impact face)

Wheelbase of Frame work Carriage (front and Rear) = 102.0 inches

C.G. Location of Rearward of Front Axle = 44.5 inches

MDB Weight:	<u>835</u> lbs. Left Front	<u>645</u> Left Rear
	<u>835</u> lbs. Right Front	<u>645</u> Right Rear
	<u>1670</u> lbs. TOTAL FRONT	<u>1290</u> TOTAL REAR

TOTAL WEIGHT OF MDB = 2960 lbs.

Impact Angle (MDB Centerline to Target Vehicle Centerline) = 27 degrees

Impact Speed = 32.94 mph

Maximum Static Crush of Honeycomb Impact Face:

1. ROW A at bumper level = 4.7 inches
2. ROW B at midstack level = 1.5 inches
3. ROW C at top of stack level = 4.3 inches

Instrumentation:

Number of MDB Data Channels = 5

SIDE IMPACT DUMMY (SID) RESULTS

Location of B-Post Upper Anchorage Bolt or Side Rail (Auto. Belts) for Head Contact Analysis:
Upper anchorage bolt is on the B-pillar, 27.7 inches above the B-post striker.

Visible Dummy Contact Points--	<u>FRONT SID</u>	<u>REAR SID</u>
HEAD	Seat belt	Shoulder, window sill
SHOULDER	Door	Sidewall
HIP	Door	Sidewall
LEFT KNEE	Door, right knee	Sidewall, right knee
RIGHT KNEE	Left knee, right seat	Left knee

	<u>FRONT SID # 136</u>		<u>REAR SID # 137</u>					
	<u>+DIRECT</u>	<u>-DIRECT</u>	<u>+DIRECT</u>	<u>-DIRECT</u>				
	<u>MaxG</u>	<u>ms</u>	<u>MaxG</u>	<u>ms</u>				
RIB ACCELERATIONS:								
Upper Rib Lateral Y	<u>81.6</u>	<u>40.6</u>	<u>24.4</u>	<u>35.0</u>	<u>90.6</u>	<u>33.1</u>	<u>18.2</u>	<u>38.8</u>
Lower Rib Lateral Y	<u>69.2</u>	<u>39.4</u>	<u>17.5</u>	<u>54.4</u>	<u>85.1</u>	<u>43.1</u>	<u>36.4</u>	<u>38.1</u>
SPINE ACCELERATIONS:								
Lower Lateral Y	<u>63.8</u>	<u>45.6</u>	<u>19.0</u>	<u>60.0</u>	<u>80.6</u>	<u>38.8</u>	<u>34.6</u>	<u>66.3</u>
PELVIS ACCELERATIONS:								
Lateral Y	<u>79.7</u>	<u>35.0</u>	<u>19.0</u>	<u>70.0</u>	<u>110.6</u>	<u>36.9</u>	<u>21.2</u>	<u>77.5</u>

REFERENCE: (+) DIRECTION Lateral Y = to the right
 (-) DIRECTION Lateral Y = to the left

REMARKS:

RECORDED BY: Mr. Brian O'Keefe

DATE: 09/22/92

APPROVED BY: *[Signature]*

DATE: 10/13/92

SIDE IMPACT DUMMY (SID) TEST DATA SUMMARY
1989 Mazda MPV, NHTSA No. RK5400

TEST DATE: 09/18/92

	FRONT SID - ID No. 136				REAR SID - ID No. 137			
	POS. DIRECT		NEG. DIRECT		POS. DIRECT		NEG. DIRECT	
	MAX (g)	TIME (ms)	MAX (g)	TIME (ms)	MAX (g)	TIME (ms)	MAX (g)	TIME (ms)
HEAD ACCELERATIONS:								
Longitudinal ---- X	6.4	61.5	15.9	49.8	6.8	38.7	13.4	93.5
Lateral ----- Y	59.3	50.1	10.3	166.8	22.6	88.6	7.4	37.2
Vertical ----- Z	30.9	56.7	8.4	46.7	4.6	33.0	20.9	42.4
Resultant ----- R	61.4	50.1	--	--	25.5	88.6	--	--
RIB ACCELERATIONS:								
Upper Primary ---- Y	81.6	40.6	24.4	35.0	90.6	33.1	18.2	38.8
Upper Redundant -- Y	80.1	40.6	19.4	35.0	88.0	33.1	16.9	77.5
Lower Primary ---- Y	69.2	39.4	17.5	54.4	85.1	43.1	36.4	38.1
Lower Redundant -- Y	68.4	39.4	18.4	81.3	85.0	43.1	34.9	38.1
SPINE ACCELERATIONS:								
Upper Primary ---- Y	86.5	44.4	22.8	76.3	64.5	47.5	36.9	66.3
Upper Redundant -- Y	83.2	44.4	22.6	75.6	--	--	--	--
Lower Primary ---- Y	62.8	45.6	19.0	60.0	80.6	38.8	34.6	66.3
Lower Redundant -- Y	59.2	45.6	17.9	60.0	78.4	38.8	31.5	66.3
PELVIS ACCELERATIONS:								
Latrerall ----- Y	79.7	35.0	19.2	70.0	110.6	36.9	21.2	77.5
HEAD INJURY CRITERIA (HIC)								
Time Interval (sec)	300.0				46.9			
	0.0435 TO 0.0600				0.0783 TO 0.1135			
THORACIC TRAUMA INDEX (TTI) (g)								
	72.2				85.6			

REFERENCE: Positive Direction -- Longitudinal (X) = Forward
Lateral (Y) = To Right
Vertical (Z) = Down

Negative Direction -- Longitudinal (X) = Rearward
Lateral (Y) = To Left
Vertical (Z) = Up

SECTION 3

TEST RESULTS

The 1989 Mazda MPV was impacted at 32.94 mph by the 27 crabbled MDB on 18 September 1992. The MDB's left edge contacted the test vehicle 1.1 inches forward of the impact line. The test vehicle spun around counterclockwise and pushed back due to impact with barrier. The vehicle driver side door was crushed inwards a maximum of 17.6 inches. Pretest and posttest vehicle dimensions are shown in Data Sheets 5 and 6.

The MDB impacted the 1989 Mazda MPV at a height that was above the sill. The MDB face was positioned such that the bottom of the face was 18 inches above the ground. As a result, the MDB created extensive deformation to the left side door and "B" pillar. Both hinges on the driver side door failed. The door and sidewall contacted the SIDs at the lower and mid torso before the SID began to move. The contact to the lower and mid torso, started the SIDS heads to rotate in the counterclockwise direction. The front SIDS head impacted the seat belt. The passenger SID's head impacted its own shoulder and grazed the window sill. Its right foot appeared to get wedged under the front seat, causing the leg to break between the femur and knee. Both SIDs then rebounded in a rotating clock wise motion. The seat belts halted any further motion. Both SIDs ended up sitting in an upright position and facing forward.

The MDB impacted the test vehicle and was stopped by the remote brake system to prevent a second impact. The aluminum deformable barrier received minor damage with a maximum crush of 4.7 inches on the left side of the bumper. The crush details for the MDB are given in Data Sheet No. 7.

DATA SHEETS NO. 2

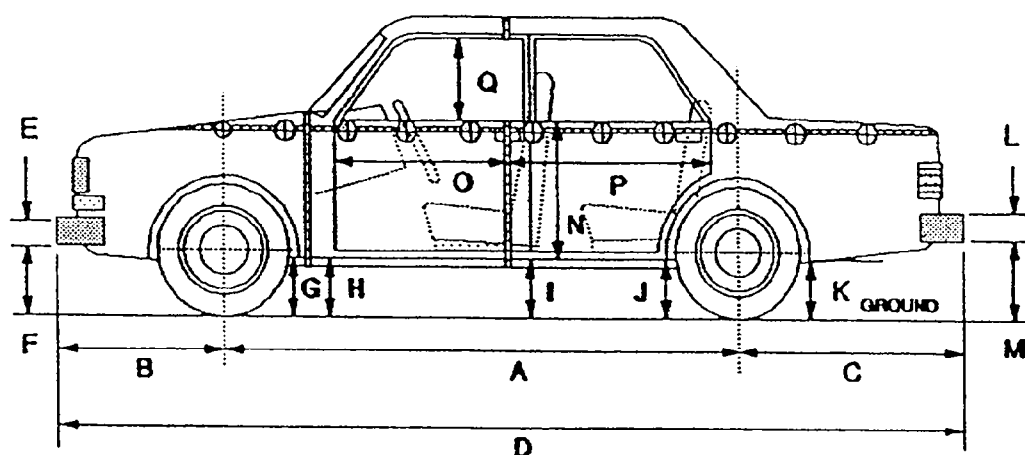
PRETEST AND POST TEST MEASUREMENTS

VEH. MOD.YR/MAKE/MODEL: 1989 MAZDA MPV

VEH. BODY STYLE: MINIVAN VIN: JM3LV5223K0127409

VEH. NHTSA NO.: RK5400 VEH. BUILD DATE: 03/89

TEST DATE: 09/18/92 TEST LAB.: MOBILITY SYSTEMS AND EQUIPMENT COMPANY



LEFT SIDE VIEW

	<u>Pretest</u> <u>(inches)</u>	<u>Post Test</u> <u>(inches)</u>	<u>Change</u>		<u>Pretest</u> <u>(inches)</u>	<u>Post Test</u> <u>(inches)</u>	<u>Change</u>
A	<u>110.6</u>	<u>110.5</u>	<u>0.1</u>	J	<u>10.1</u>	<u>14.7</u>	<u>4.6</u>
B	<u>30.0</u>	<u>29.9</u>	<u>0.1</u>	K	<u>12.6</u>	<u>12.8</u>	<u>0.2</u>
C	<u>35.0</u>	<u>35.0</u>	<u>0.0</u>	L	<u>8.7</u>	<u>8.7</u>	<u>0.0</u>
D	<u>175.6</u>	<u>175.4</u>	<u>0.2</u>	M	<u>16.7</u>	<u>17.2</u>	<u>0.5</u>
E	<u>15.1</u>	<u>15.1</u>	<u>0.0</u>	N	<u>29.7</u>	<u>25.7</u>	<u>4.0</u>
F	<u>11.0</u>	<u>11.9</u>	<u>0.9</u>	O	<u>33.0</u>	<u>32.5</u>	<u>0.5</u>
G	<u>9.7</u>	<u>12.1</u>	<u>2.4</u>	P	<u>49.9</u>	<u>48.4</u>	<u>1.5</u>
H	<u>9.8</u>	<u>11.6</u>	<u>1.8</u>	Q	<u>18.5</u>	<u>17.5</u>	<u>1.1</u>
I	<u>10.0</u>	<u>14.0</u>	<u>4.0</u>				

DATA SHEET NO. 3

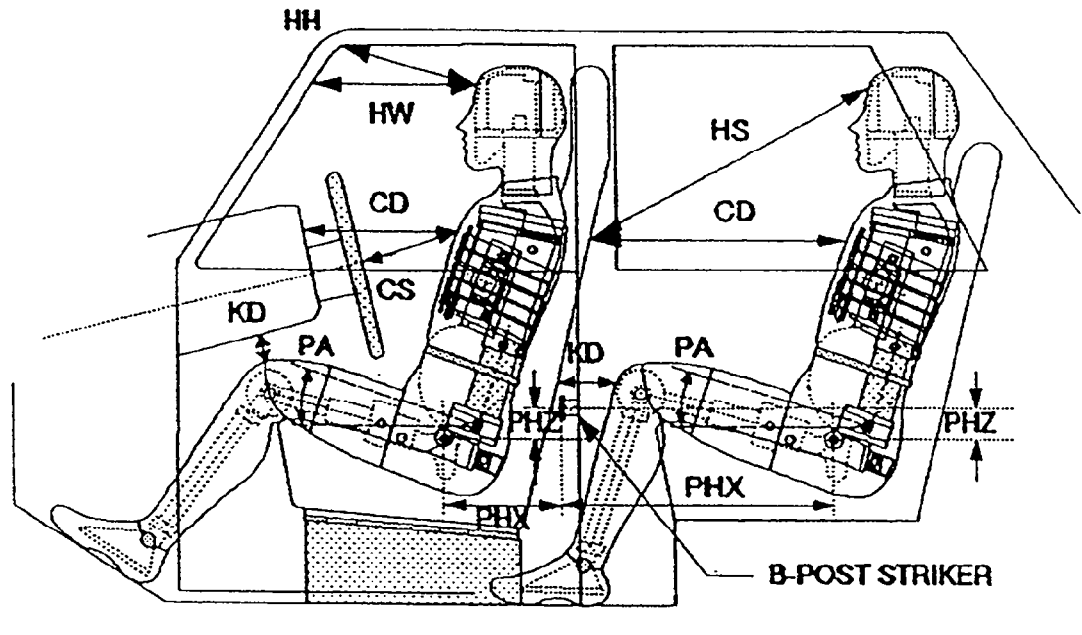
SID LONGITUDINAL CLEARANCE DIMENSIONS

VEH. MOD.YR/MAKE/MODEL: 1989 MAZDA MPV

VEH. BODY STYLE: MINIVAN VIN: JM3LV5223K0127409

VEH. NHTSA NO.: RK5400 VEH. BUILD DATE: 03/89

TEST DATE: 09/18/92 TEST LAB.: MOBILITY SYSTEMS AND EQUIPMENT COMPANY



NOTE: 2-DOOR VEHICLE SHOWN.
REAR DUMMY PHX & PHZ
MEASUREMENTS FOR A 4-DOOR
VEHICLE WOULD USE THE C-POST
STRIKER AS A REFERENCE POINT

LEFT SIDE VIEW

DRIVER SID ID# 136

HH	<u>19.0</u>	inches
HW	<u>29.1</u>	inches
HS	<u>24.0</u>	inches
CD	<u>25.0</u>	inches
CS	<u>16.5</u>	inches
KDL	<u>3.2</u>	inches
KDR	<u>2.0</u>	inches
PA	<u>25.0</u>	degrees
PHX	<u>8.2</u>	inches
PHY	<u>0.9</u>	inches

REAR SID ID# 137

	<u>N/A</u>	inches
	<u>N/A</u>	inches
	<u>22.8</u>	inches
	<u>16.0</u>	inches
	<u>N/A</u>	inches
	<u>2.4</u>	inches
	<u>2.5</u>	inches
	<u>23.0</u>	degrees
	<u>24.6</u>	inches
	<u>0.7</u>	inches

DATA SHEET NO. 4

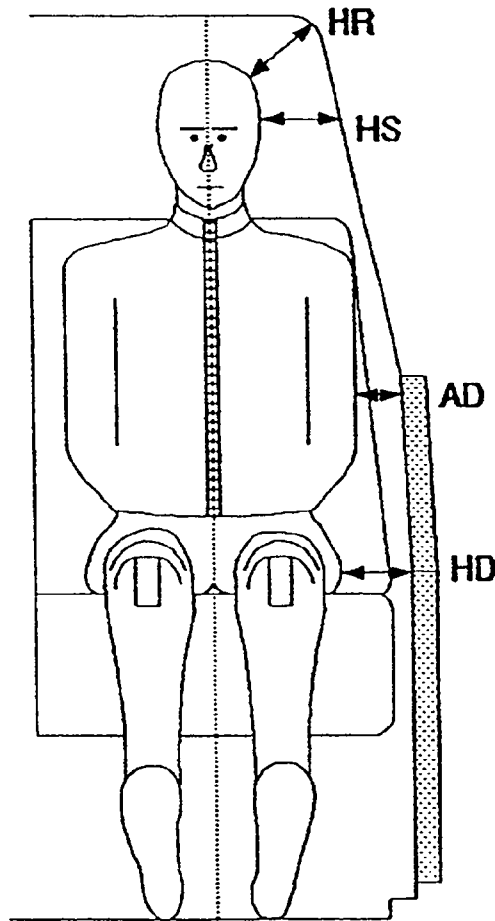
SID LATERAL CLEARANCE DIMENSIONS

VEH. MOD.YR/MAKE/MODEL: 1989 MAZDA MPV

VEH. BODY STYLE: MINIVAN VIN: JM3LV5223K0127409

VEH. NHTSA NO.: RK5400 VEH. BUILD DATE: 03/89

TEST DATE: 09/18/92 TEST LAB.: MOBILITY SYSTEMS AND EQUIPMENT COMPANY



DRIVER SID ID# 136

REAR SID ID# 137

HR	<u>7.0</u>	inches
HS	<u>7.5</u>	inches
AD	<u>3.0</u>	inches
HD	<u>4.5</u>	inches

	<u>6.3</u>	inches
	<u>10.5</u>	inches
	<u>3.1</u>	inches
	<u>5.6</u>	inches

DATA SHEET NO. 5

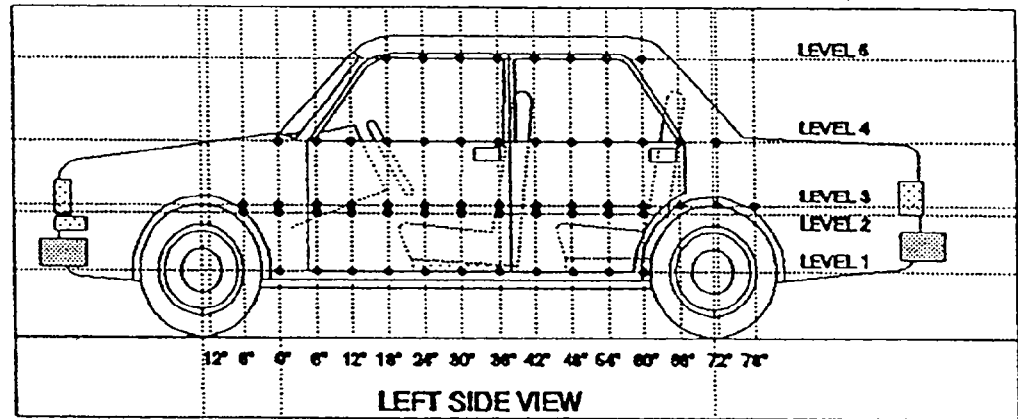
VEHICLE SIDE MEASUREMENT

VEH. MOD.YR/MAKE/MODEL: 1989 MAZDA MPV

VEH. BODY STYLE: MINIVAN VIN: JM3LV5223K0127409

VEH. NHTSA NO.: RK5400 VEH. BUILD DATE: 03/89

TEST DATE: 09/18/92 TEST LAB.: MOBILITY SYSTEMS AND EQUIPMENT COMPANY



- LEVEL 5 - WINDOW TOP
- LEVEL 4 - WINDOW SILL
- LEVEL 3 - MID-DOOR
- LEVEL 2 - OCCUPANT H-POINT
- LEVEL 1 - AXLE CENTERLINE HEIGHT or SILL TOP HEIGHT

MEASUREMENTS ALONG THE VERTICAL 30" LINE SHOWN ABOVE:

LEVEL 5 @ Window Top = 61.6 inches

LEVEL 4 @ Window Sill = 44.0 inches

LEVEL 3 @ Mid Door = 29.8 inches

LEVEL 2 @ Occupant H-Point = 29.3 inches

LEVEL 1 @ Axle Centerline Height = 12.1 inches
(or Sill Top Height)

DATA SHEET NO. 6A

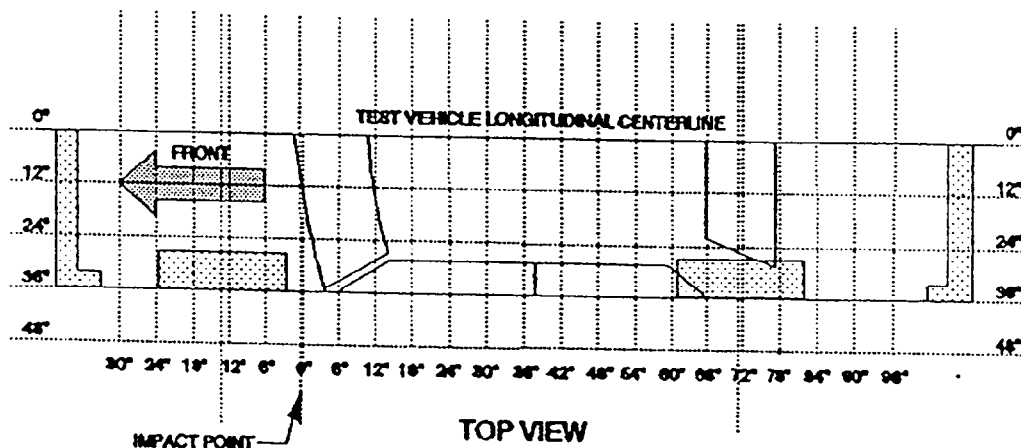
PRETEST AND POST TEST VEHICLE EXTERIOR PROFILES

VEH. MOD.YR/MAKE/MODEL: 1989 MAZDA MPV

VEH. BODY STYLE: MINIVAN VIN: JM3LV5223K0127409

VEH. NHTSA NO.: RK5400 VEH. BUILD DATE: 03/89

TEST DATE: 09/18/92 TEST LAB.: MOBILITY SYSTEMS AND EQUIPMENT COMPANY



Profile information follows on the following 10 pages for each of the 5 levels from data sheet no. 5.

NOTE: ALL TEST VEHICLE EXTERIOR PROFILES TAKEN FROM REFERENCE PLANE WHICH IS PARALLEL TO AND 48 INCHES FROM TEST VEHICLE LONGITUDINAL CENTERLINE

LEVEL 1 AT AXLE CENTERLINE

INCHES FROM IMPACT POINT	POSTTEST (Inches)	PRETEST (Inches)	STATIC CRUSH (Inches)
-6 Inches	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
0 (Impact Point)	<u>14.5</u>	<u>14.9</u>	<u>-0.4</u>
6 Inches	<u>16.9</u>	<u>15.2</u>	<u>1.7</u>
12 Inches	<u>18.7</u>	<u>15.5</u>	<u>3.2</u>
18 Inches	<u>21.4</u>	<u>15.4</u>	<u>6.0</u>
24 Inches	<u>22.2</u>	<u>15.4</u>	<u>6.8</u>
30 Inches	<u>22.0</u>	<u>15.5</u>	<u>6.5</u>
36 Inches	<u>21.7</u>	<u>15.7</u>	<u>6.0</u>
42 Inches	<u>21.9</u>	<u>15.8</u>	<u>6.1</u>
48 Inches	<u>21.3</u>	<u>15.8</u>	<u>5.5</u>
54 Inches	<u>20.7</u>	<u>15.8</u>	<u>4.9</u>
60 Inches	<u>20.0</u>	<u>15.9</u>	<u>4.1</u>
66 Inches	<u>19.0</u>	<u>15.4</u>	<u>3.6</u>
72 Inches	<u>17.8</u>	<u>14.9</u>	<u>2.9</u>

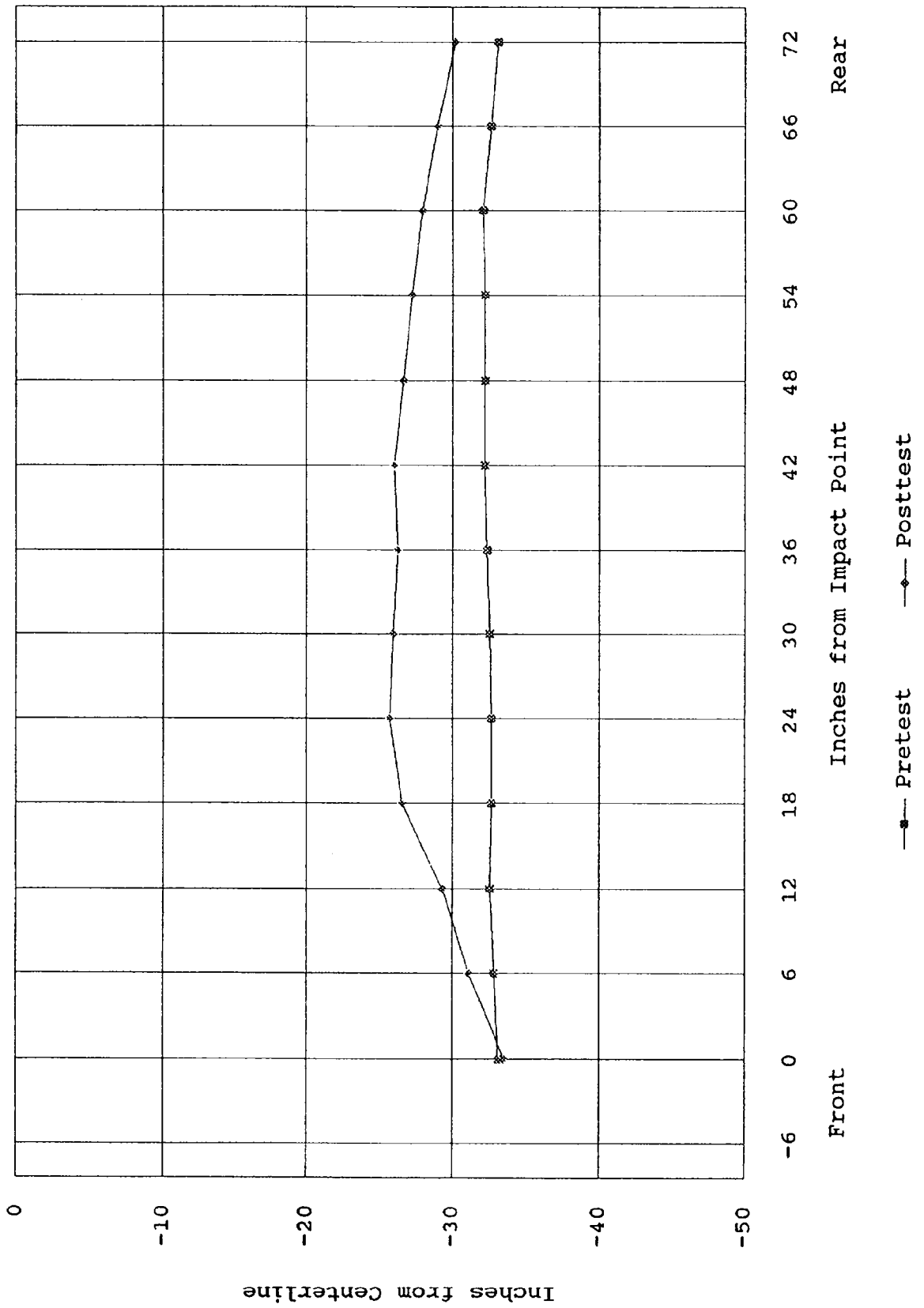
REMARKS:

RECORDED BY: Brian O'Keefe DATE: 09/21/92

APPROVED BY: *Carla* 10/13/92

Pretest and Posttest Exterior Profile

Level 1 - Axle Centerline Height - 12.1" Above Ground Level



LEVEL 2 AT OCCUPANT H-POINT

INCHES FROM IMPACT POINT	POSTTEST (Inches)	PRETEST (Inches)	STATIC CRUSH (Inches)
-6 Inches	<u>13.4</u>	<u>12.5</u>	<u>0.9</u>
0 (Impact Point)	<u>22.8</u>	<u>12.4</u>	<u>10.4</u>
6 Inches	<u>27.2</u>	<u>12.4</u>	<u>14.8</u>
12 Inches	<u>28.2</u>	<u>12.4</u>	<u>15.8</u>
18 Inches	<u>28.6</u>	<u>12.4</u>	<u>16.2</u>
24 Inches	<u>29.0</u>	<u>12.4</u>	<u>16.6</u>
30 Inches	<u>29.5</u>	<u>12.4</u>	<u>17.1</u>
36 Inches	<u>30.0</u>	<u>12.4</u>	<u>17.6</u>
42 Inches	<u>29.9</u>	<u>12.5</u>	<u>17.4</u>
48 Inches	<u>31.3</u>	<u>12.6</u>	<u>18.7</u>
54 Inches	<u>31.6</u>	<u>12.7</u>	<u>18.9</u>
60 Inches	<u>31.7</u>	<u>12.8</u>	<u>18.9</u>
66 Inches	<u>31.6</u>	<u>12.8</u>	<u>18.8</u>
72 Inches	<u>28.7</u>	<u>12.7</u>	<u>16.0</u>

REMARKS:

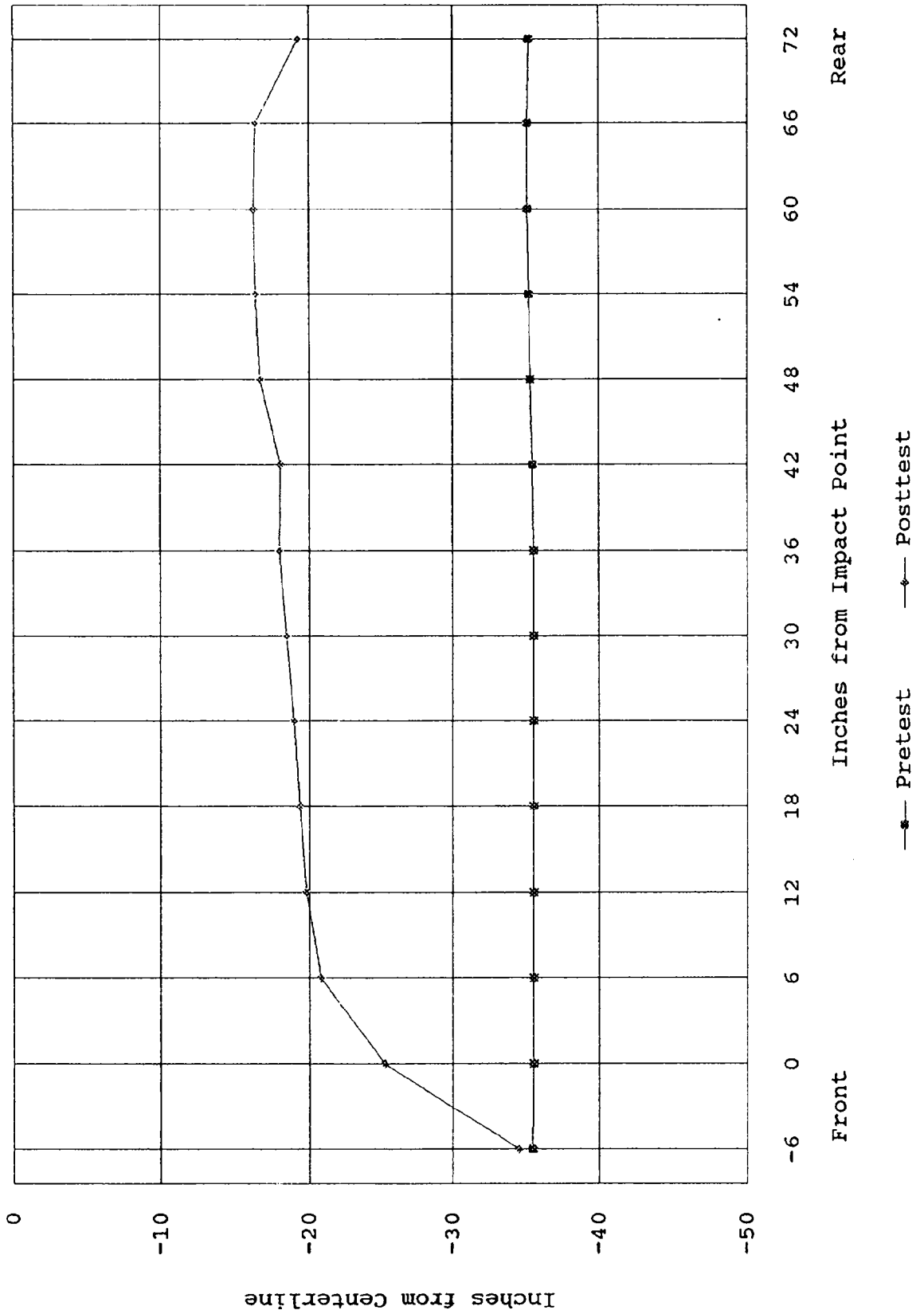
RECORDED BY: Brian O'Keefe

DATE: 09/21/92

APPROVED BY: am 10/13/92

Pretest and Posttest Exterior Profile

Level 2 - Occupant H-point - 29.3" Above Ground Level



LEVEL 3 AT MID-DOOR

INCHES FROM IMPACT POINT	POSTTEST (Inches)	PRETEST (Inches)	STATIC CRUSH (Inches)
-6 Inches	<u>13.4</u>	<u>12.5</u>	<u>0.9</u>
0 (Impact Point)	<u>22.6</u>	<u>12.4</u>	<u>10.2</u>
6 Inches	<u>26.9</u>	<u>12.4</u>	<u>14.5</u>
12 Inches	<u>27.9</u>	<u>12.4</u>	<u>15.5</u>
18 Inches	<u>28.2</u>	<u>12.4</u>	<u>15.8</u>
24 Inches	<u>28.6</u>	<u>12.4</u>	<u>16.2</u>
30 Inches	<u>29.0</u>	<u>12.4</u>	<u>16.6</u>
36 Inches	<u>29.5</u>	<u>12.4</u>	<u>17.1</u>
42 Inches	<u>29.7</u>	<u>12.5</u>	<u>17.2</u>
48 Inches	<u>30.9</u>	<u>12.6</u>	<u>18.3</u>
54 Inches	<u>31.4</u>	<u>12.7</u>	<u>18.7</u>
60 Inches	<u>31.4</u>	<u>12.8</u>	<u>18.6</u>
66 Inches	<u>31.5</u>	<u>12.8</u>	<u>18.7</u>
72 Inches	<u>28.7</u>	<u>12.7</u>	<u>16.0</u>

REMARKS:

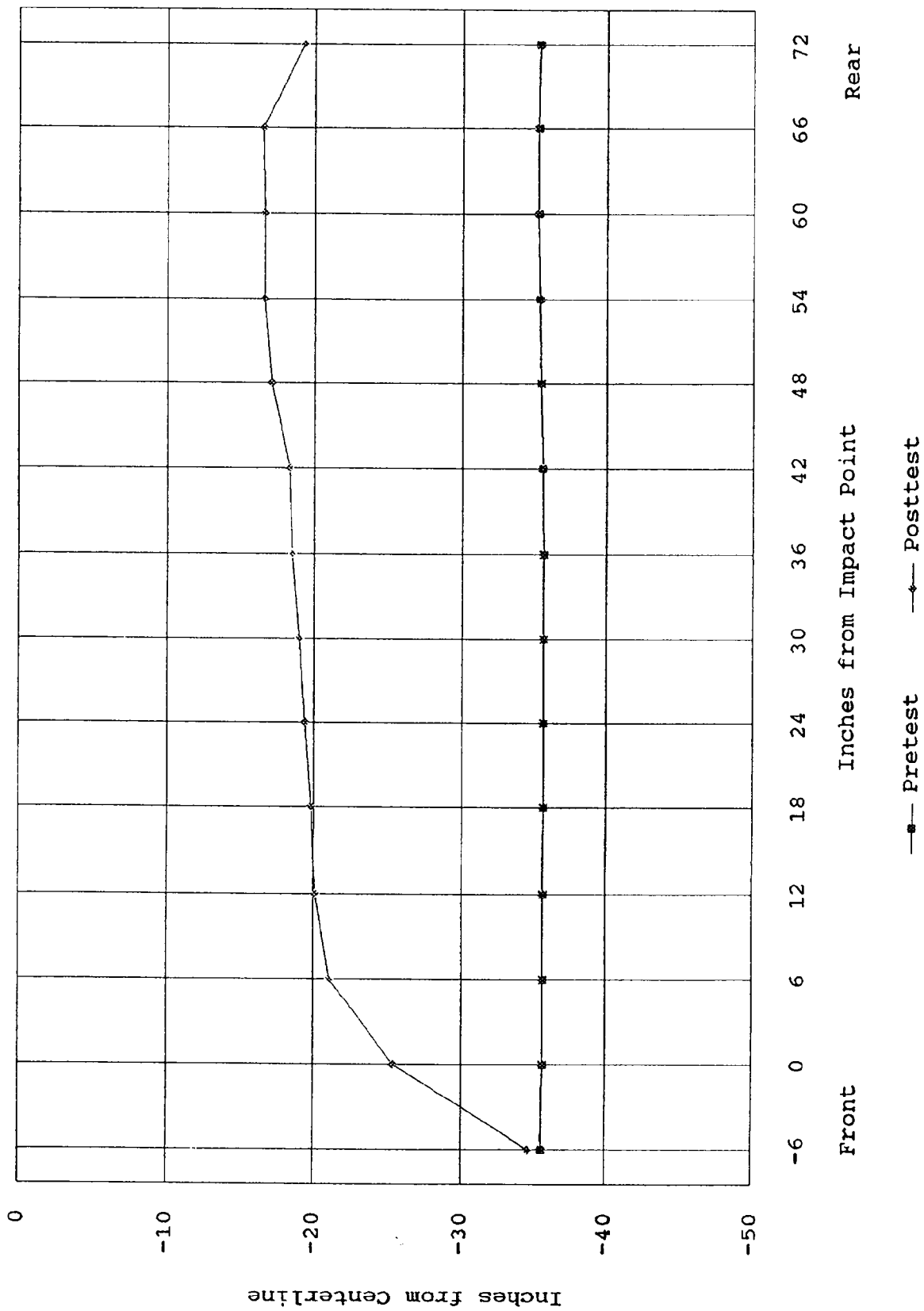
RECORDED BY: Brian O'Keefe

DATE: 09/21/92

APPROVED BY: *Amh* 10/13/92

Pretest and Posttest Exterior Profile

Level 3 - Mid-door - 29.8" Above Ground Level



LEVEL 4 AT WINDOW SILL

INCHES FROM IMPACT POINT	POSTTEST (Inches)	PRETEST (Inches)	STATIC CRUSH (Inches)
-6 Inches	<u>17.7</u>	<u>17.4</u>	<u>0.3</u>
0 (Impact Point)	<u>16.7</u>	<u>16.3</u>	<u>0.4</u>
6 Inches	<u>19.5</u>	<u>16.1</u>	<u>3.4</u>
12 Inches	<u>22.1</u>	<u>16.1</u>	<u>6.0</u>
18 Inches	<u>23.5</u>	<u>16.1</u>	<u>7.4</u>
24 Inches	<u>24.7</u>	<u>16.0</u>	<u>8.7</u>
30 Inches	<u>26.0</u>	<u>16.0</u>	<u>10.0</u>
36 Inches	<u>27.5</u>	<u>16.0</u>	<u>11.5</u>
42 Inches	<u>28.5</u>	<u>16.0</u>	<u>12.5</u>
48 Inches	<u>29.0</u>	<u>15.9</u>	<u>13.1</u>
54 Inches	<u>29.6</u>	<u>15.9</u>	<u>13.7</u>
60 Inches	<u>29.4</u>	<u>15.8</u>	<u>13.6</u>
66 Inches	<u>27.9</u>	<u>15.6</u>	<u>12.3</u>
72 Inches	<u>25.9</u>	<u>15.4</u>	<u>10.5</u>

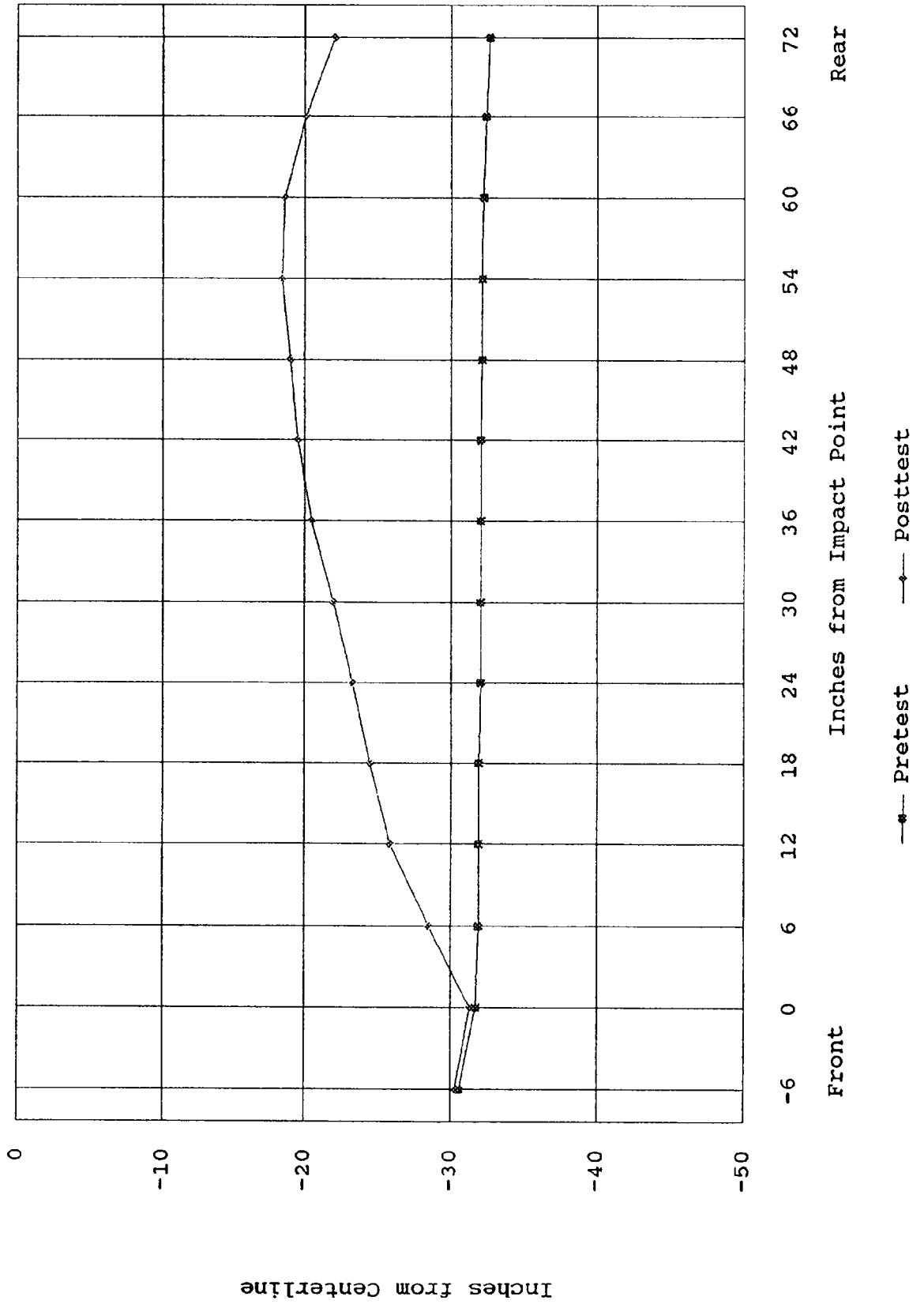
REMARKS:

RECORDED BY: Brian O'Keefe DATE: 09/21/92

APPROVED BY: *[Signature]* 10/13/92

Pretest and Posttest Exterior Profile

Level 4 - Window Sill - 44.0" Above Ground Level



LEVEL 5 AT TOP OF WINDOW

INCHES FROM IMPACT POINT	POSTTEST (Inches)	PRETEST (Inches)	STATIC CRUSH (Inches)
-6 Inches	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
0 (Impact Point)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
6 Inches	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
12 Inches	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
18 Inches	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
24 Inches	<u>20.3</u>	<u>22.3</u>	<u>-2.0</u>
30 Inches	<u>21.0</u>	<u>22.3</u>	<u>-1.3</u>
36 Inches	<u>21.5</u>	<u>22.3</u>	<u>-0.8</u>
42 Inches	<u>22.0</u>	<u>21.9</u>	<u>0.1</u>
48 Inches	<u>24.3</u>	<u>21.4</u>	<u>2.9</u>
54 Inches	<u>25.3</u>	<u>21.4</u>	<u>3.9</u>
60 Inches	<u>23.9</u>	<u>21.4</u>	<u>2.5</u>
66 Inches	<u>23.8</u>	<u>21.4</u>	<u>2.4</u>
72 Inches	<u>23.6</u>	<u>21.4</u>	<u>2.2</u>

REMARKS:

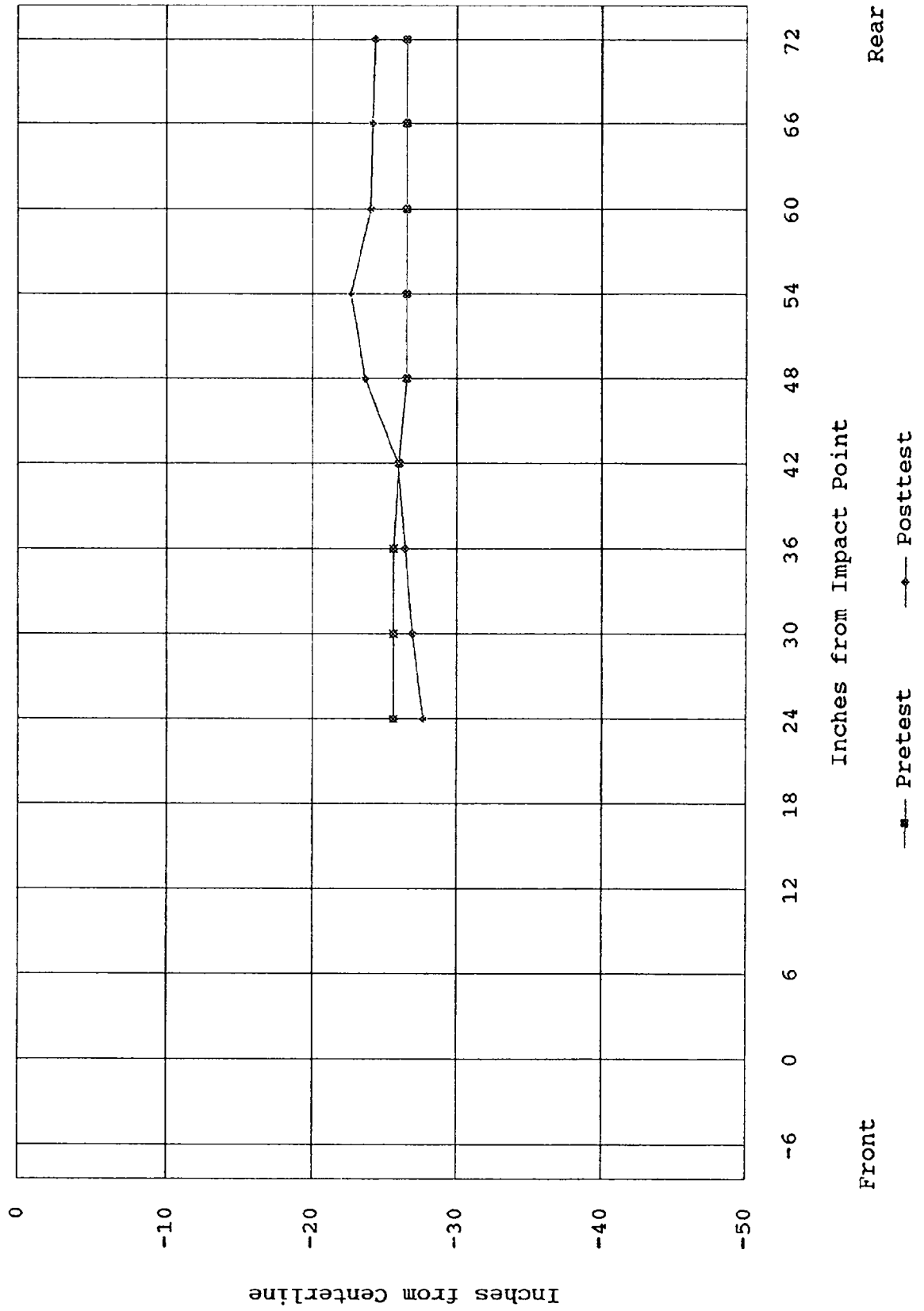
RECORDED BY: Brian O'Keefe

DATE: 09/21/92

APPROVED BY: Amc 10/13/92

Pretest and Posttest Exterior Profile

Level 5 - Window Top - 61.6" Above Ground Level



DATA SHEET NO. 6F

SUMMARY OF VEHICLE EXTERIOR PROFILE STATIC CRUSH

VEH. MOD YR/MAKE/MODEL/BODY: 1989 Mazda MPV

VEH. NHTSA NO.: RK5400 VIN: JM3LV5223K0127409

TEST DATE: 09/18/92 TEST LAB: Mobility Systems and Equipment Co.

POSITION	LEVEL 1 (Inches)	LEVEL 2 (Inches)	LEVEL 3 (Inches)	LEVEL 4 (Inches)	LEVEL 5 (Inches)
-6 Inches	<u>0.0</u>	<u>0.9</u>	<u>0.9</u>	<u>0.3</u>	<u>0.0</u>
0 (Impact Pt.)	<u>-0.4</u>	<u>10.4</u>	<u>10.2</u>	<u>0.4</u>	<u>0.0</u>
6 Inches	<u>1.7</u>	<u>14.8</u>	<u>14.5</u>	<u>3.4</u>	<u>0.0</u>
12 Inches	<u>3.2</u>	<u>15.8</u>	<u>15.5</u>	<u>6.0</u>	<u>0.0</u>
18 Inches	<u>6.0</u>	<u>16.2</u>	<u>15.8</u>	<u>7.4</u>	<u>0.0</u>
24 Inches	<u>6.8</u>	<u>16.6</u>	<u>16.2</u>	<u>8.7</u>	<u>-2.0</u>
30 Inches	<u>6.5</u>	<u>17.1</u>	<u>16.6</u>	<u>10.0</u>	<u>-1.3</u>
36 Inches	<u>6.0</u>	<u>17.6</u>	<u>17.1</u>	<u>11.5</u>	<u>-0.8</u>
42 Inches	<u>6.1</u>	<u>17.4</u>	<u>17.2</u>	<u>12.5</u>	<u>0.1</u>
48 Inches	<u>5.5</u>	<u>18.7</u>	<u>18.3</u>	<u>13.1</u>	<u>2.9</u>
54 Inches	<u>4.9</u>	<u>18.9</u>	<u>18.7</u>	<u>13.7</u>	<u>3.9</u>
60 Inches	<u>4.1</u>	<u>18.9</u>	<u>18.6</u>	<u>13.6</u>	<u>2.5</u>
66 Inches	<u>3.6</u>	<u>18.8</u>	<u>18.7</u>	<u>12.3</u>	<u>2.4</u>
72 Inches	<u>2.9</u>	<u>16.0</u>	<u>16.0</u>	<u>10.5</u>	<u>2.2</u>

RECORDED BY: Brian O'Keefe

DATE: 09/21/92

APPROVED BY: *[Signature]* 10/13/92

DATA SHEET NO. 7

EXTERIOR STATIC CRUSH FOR SIDE IMPACTOR

VEH. MOD.YR/MAKE/MODEL: 1989 MAZDA MPV

VEH. BODY STYLE: MINIVAN VIN: JM3LV5223K0127409

VEH. NHTSA NO.: RK5400 VEH. BUILD DATE: 03/89

TEST DATE: 09/18/92 TEST LAB.: MOBILITY SYSTEMS AND EQUIPMENT COMPANY

LOCATION	TOP OF STACK LEVEL	MID- STACK LEVEL	BUMPER LEVEL
HEIGHT AT CENTERLINE*	inches	inches	inches
DISTANCES RIGHT OF CENTER**	39 (inches)	29 (inches)	24 (inches)
32 inches	<u>2.9</u>	<u>1.5</u>	<u>4.7</u>
28 inches	<u>1.8</u>	<u>0.9</u>	<u>4.2</u>
24 inches	<u>-0.5</u>	<u>0.4</u>	<u>3.5</u>
20 inches	<u>-0.6</u>	<u>0.0</u>	<u>3.0</u>
16 inches	<u>-0.6</u>	<u>0.0</u>	<u>2.4</u>
12 inches	<u>-0.5</u>	<u>-0.1</u>	<u>2.0</u>
8 inches	<u>-0.4</u>	<u>-0.1</u>	<u>1.7</u>
4 inches	<u>-0.4</u>	<u>-0.2</u>	<u>1.5</u>
0 inches	<u>-0.3</u>	<u>-0.2</u>	<u>1.4</u>

DATA SHEET NO. 7 (Cont.)

LOCATION	TOP OF STACK LEVEL	MID- STACK LEVEL	BUMPER LEVEL
HEIGHT AT CENTERLINE*	39 inches	29 inches	24 inches
DISTANCES LEFT OF CENTER**	(inches)	(inches)	(inches)
4 inches	<u>-0.3</u>	<u>-0.2</u>	<u>1.3</u>
8 inches	<u>-0.3</u>	<u>-0.2</u>	<u>1.0</u>
12 inches	<u>-0.2</u>	<u>-0.2</u>	<u>0.9</u>
16 inches	<u>-0.1</u>	<u>-0.2</u>	<u>0.8</u>
20 inches	<u>0.0</u>	<u>-0.2</u>	<u>0.7</u>
24 inches	<u>0.5</u>	<u>-0.2</u>	<u>0.5</u>
28 inches	<u>1.8</u>	<u>-0.1</u>	<u>0.6</u>
32 inches	<u>4.3</u>	<u>0.1</u>	<u>0.8</u>

* Heights, in inches, measured above ground level

** Impact side

REMARKS: ** Right of center is towards front of test vehicle.

RECORDED BY: Mr. Brian O'Keefe

DATE: 09/21/92

APPROVED BY: *[Signature]*

DATE: 10/13/92

DATA SHEET NO. 8

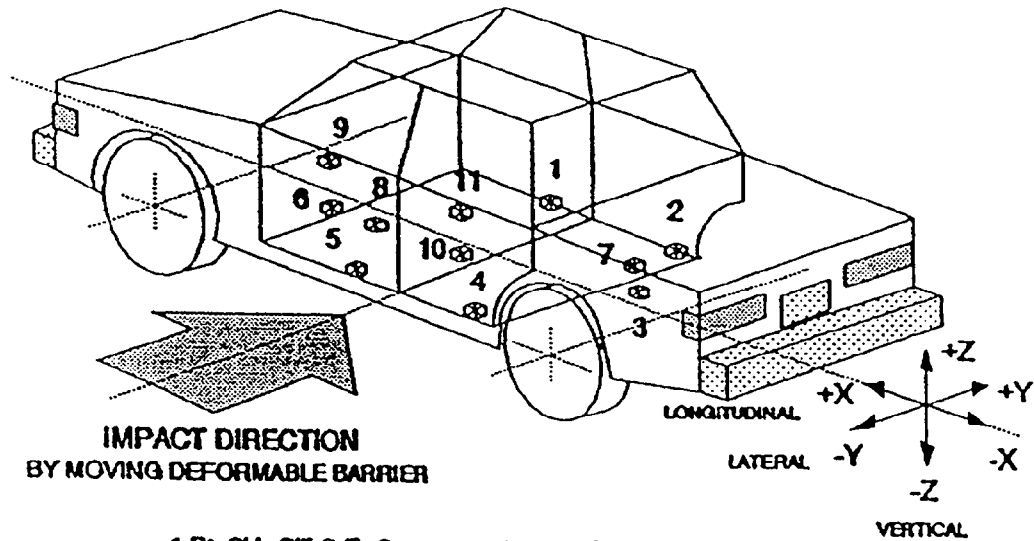
TEST VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

VEH. MOD. YR/MAKE/MODEL: 1989 MAZDA MPV

VEH. BODY STYLE: MINIVAN VIN: JM3LV5223K0127409

VEH. NHTSA NO.: RK5400 VEH. BUILD DATE: 03/89

TEST DATE: 09/18/92 TEST LAB.: MOBILITY SYSTEMS AND EQUIPMENT COMPANY



- 1-Rt. Side Sill @ Frt. Seat
- 2-Rt. Side Sill @ Rr. Seat
- 3-Frt. Floorpan Above Aisle
- 4-Left Side Sill @ Rr. Seat
- 5-Left Side Sill @ Frt. Seat
- 6-Left Frt. Door On Centerline

- 7-Rt. Rr. Occ. Compartment
- 8-Midrear of Left Frt. Door
- 9-Left Frt. Door Upper Centerline
- 10-Midrear of Left Rear Door
- 11-Left Rear Door Upper Centerline

DATA SHEET NO. 8 (Cont.)

NO.	COORDINATES			LONG. X(+/-)		LAT. Y(+/-)		VERT. Z(+/-)		RES. R(+/-)	
	X in.	Y in.	Z in.	MaxG	ms	MaxG	ms	MaxG	ms	MaxG	ms
1	115	18	14	-5.3	63.1	9.8	21.0	-6.6	13.1	10.7	22.1
2	64	24	16	4.1	68.6	12.8	69.8	-7.0	38.3	13.6	69.4
3	23	0	25	-3.8	43.3	19.3	66.8	8.9	70.0	19.4	65.9
4	75	-29	16			58.0	16.5				
5	111	-25	14			16.4	18.1				
6	110	-29	27			210.4	10.9				
7	77	20	16	4.9	61.1						
8	91	-29	35			-152.3	25.9				
9	108	-29	38			123.1	14.3				
10	53	-35	30			140.4	2.2				
11	66	-35	37			147.6	3.0				

REFERENCE: X - Rear Bumper (+ = Forward)
 Y - Vehicle Centerline (+ = To the Right)
 Z - Ground Level (+ = Upward)

REMARKS:

RECORDED BY: Brian O'Keefe DATE: 09/22/92

APPROVED BY: *am* 10/13/92

DATA SHEET NO. 9

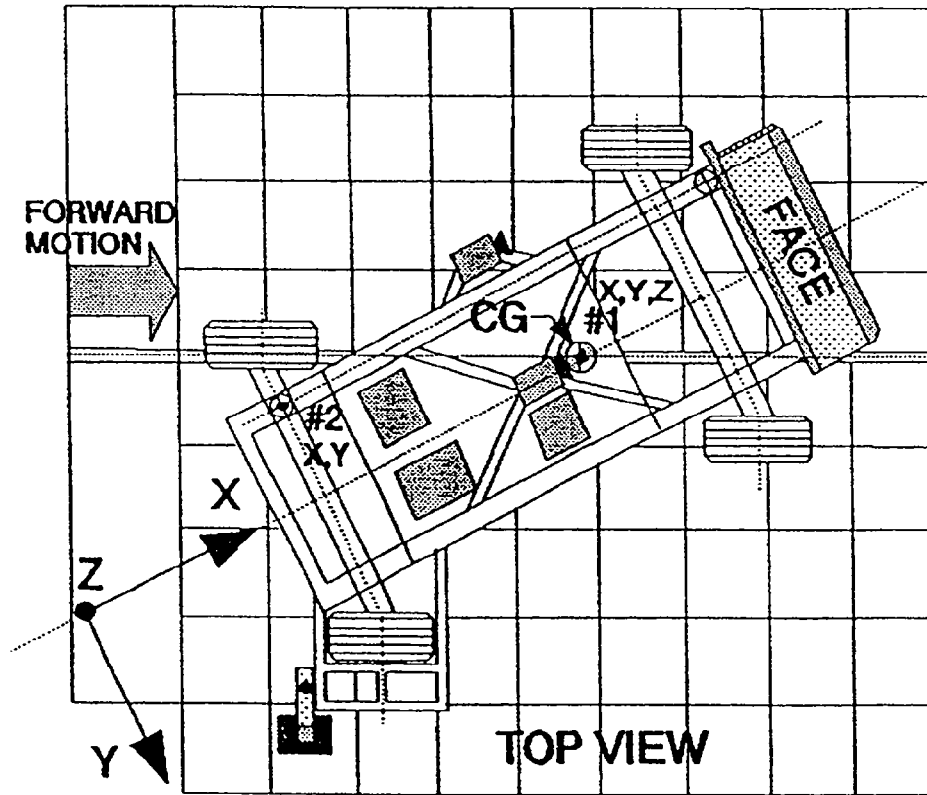
MOVING DEFORMABLE BARRIER (MDB) ACCELEROMETER LOCATIONS
AND SAMPLE DATA SUMMARY

VEH. MOD.YR/MAKE/MODEL: 1989 MAZDA MPV

VEH. BODY STYLE: MINIVAN VIN: JM3LV5223K0127409

VEH. NHTSA NO.: RK5400 VEH. BUILD DATE: 03/89

TEST DATE: 09/18/92 TEST LAB.: MOBILITY SYSTEMS AND EQUIPMENT COMPANY



ACCELEROMETER LOCATIONS:

1 - MDB Center of Gravity (CG)

2 - Rear Frame Member

DATA SHEET NO. 9 (Cont.)

NO.	COORDINATES			POS. DIRECTION		NEG. DIRECTION	
	X (in.)	Y (in.)	Z (in.)	MaxG	ms	MaxG	ms
1 Longitudinal X	73	0	12	3.8	139.6	16.5	49.7
1 Lateral Y	73	0	12	9.5	45.3	5.8	80.4
1 Vertical Z	73	0	12	24.9	133.7	35.9	60.4
1 Resultant R	73	0	12	39.1	60.4	N/A	N/A
2 Longitudinal X	12	-19	17	2.5	139.2	15.3	28.2
2 Lateral Y	12	-19	17	4.2	79.6	4.0	29.1

REFERENCE: X - Rear Bumper (+ = Forward)
 Y - Vehicle Centerline (+ = To the Right)
 Z - Ground Level (+ = Upward)

REMARKS:

RECORDED BY: Brian O'Keefe DATE: 09/22/92

APPROVED BY: *Cen* 10/13/92

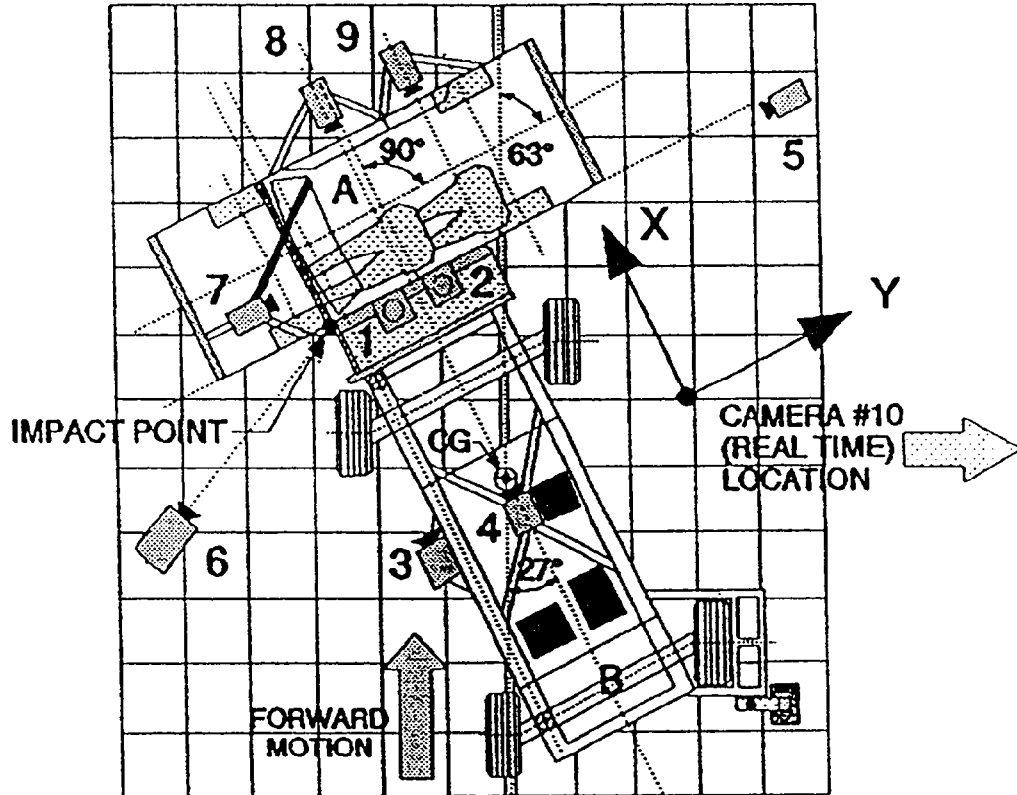
DATA SHEET NO. 10

HIGH SPEED CAMERA LOCATIONS AND DATA

VEH. MOD.YR/MAKE/MODEL: 1989 MAZDA MPV

VEH. NHTSA NO.: RK5400 VEH. BUILD DATE: 03/89

TEST DATE: 09/18/92 TEST LAB.: MOBILITY SYSTEMS AND EQUIPMENT COMPANY



CAMERA LOCATIONS:

- No. 1 Overhead view of test vehicle
- No. 2 Overhead closeup view of impact plane
- No. 3 MDB onboard closeup view of impact point
- No. 4 MDB onboard view of driver dummy kinematics
- No. 5 Right side ground level -- overall view
- No. 6 Left side ground level -- overall view
- No. 7 Test vehicle onboard driver dummy front view kinematics
- No. 8 Test vehicle onboard driver dummy side view kinematics
- No. 9 Test vehicle onboard passenger side view kinematics
- No. 10 Real time (24 fps) film coverage of pretest, test and post test events

DATA SHEET NO. 10 (Cont.)

NO.	TYPE	LENS SIZE (mm)	FILM SPEED (fps)	* COORDINATES		
				X	Y	Z
1	Fastax II	16		12	12	236
2	Fastax II	28		-12	12	236
3	Himac	28		-121	-37	50
4	Himac	16		-151	0	72
5	Photosonic	13		-156	612	48
6	Fastax II	28		-96	-576	48
7	Fastax II	16		24	-50	54
8	Fastax II	16		76	27	47
9	Fastax II	16		74	65	48
10	Arriflex	15-70 Zoom	24	-	-	-

* REFERENCE (from point of impact)

+X = Forward

+Y = To the right

+Z = Upward

REMARKS:

RECORDED BY: Brian O'Keefe DATE: 09/ /92

APPROVED BY: *am* 10/13/92

DATA SHEET NO. 10 (Cont.)

NO.	TYPE	LENS SIZE (mm)	FILM SPEED (fps)	* COORDINATES		
				X	Y	Z
1	Fastax II	16	610	12	12	236
2	Fastax II	28	600	-12	12	236
3	Himac	28	700	-121	-37	50
4	Himac	16	700	-151	0	72
5	Photosonic	13	600	-156	612	48
6	Fastax II	28	600	-96	-336	48
7	Fastax II	16	600	24	-50	54
8	Fastax II	16	500	76	27	47
9	Fastax II	16	600	74	65	48
10	Arriflex	15-70 Zoom	24	-	-	-

* REFERENCE (from point of impact)

+X = Forward

+Y = To the right

+Z = Upward

REMARKS:

RECORDED BY: Brian O'Keefe DATE: 09/30/92

APPROVED BY: *ARK* 10/13/92

DATA SHEET NO. 11

TEST VEHICLE DATA

VEH. MOD.YR/MAKE/MODEL: 1989 MAZDA MPV

VEH. BODY STYLE: MINIVAN VIN: JM3LV5223K0127409

VEH. NHTSA NO.: RK5400 VEH. BUILD DATE: 03/89

TEST DATE: 09/18/92 TEST LAB.: MOBILITY SYSTEMS AND EQUIPMENT COMPANY

OBSERVERS: NONE

Upon receipt, the vehicle will be examined visually for completeness, function, and damage. The roof and supporting structures such as the doors and windows should be checked for proper operation and any discrepancies which may influence the testing. The vehicle will be weighed.

DATA RECORDED FROM VEHICLE'S TIRE PLACARD:

Tire Pressure (at capacity): 32 psi Front; 32 psi Rear

Recommended Tire Size: P215/65 R15

Size of Tires Installed on Test Vehicle: P215/65 R15

Tire Manufacturer: Concorde

Number of Occupants: 2 Front; 5 Rear; 7 TOTAL

Type of Front Seat(s): X Buckets; Bench; Split Bench

Type of Front Seat Back: Fixed; X Adjustable with X Lever or Knob

Vehicle Maximum Capacity Loading = - lbs. (A)

Number of Occupants x 150 lbs. = - lbs. (B)

Vehicle Cargo Capacity = 300 lbs. (A - B)

DATA SHEET NO. 11 (Cont.)

TEST VEHICLE DELIVERED WEIGHT WITH MAXIMUM FLUIDS:

Front: Right = 1027 lbs.; Left = 1025 lbs.; Front Total = 2052 lbs.

(54 % of TOTAL shown below)

Rear: Right = 921 lbs.; Left = 838 lbs.; Rear Total = 1739 lbs.

(46 % of TOTAL shown below)

Front Total + Rear Total = TOTAL DELV. = 3811 lbs.

CALCULATION OF TEST VEHICLE TARGET WEIGHT:

Total Test Vehicle Delivered Weight With Maximum Fluids = 3811 lbs. (A)

Maximum Cargo Carry Capacity of Test Vehicle = 3300 lbs. (B)

Weight of Two Side Impact Dummies (2 X 164 lbs.) = 328 lbs. (C)

Test Vehicle Target Weight = 4439 (A + B + C)

ACTUAL WEIGHT OF TEST VEHICLE WITH TWO SIDs AND CARGO:

Front: Right = 1112 lbs.; Left = 1181 lbs.; Front Total = 2293 lbs.

(52 % of TOTAL shown below)

Rear: Right = 1070 lbs.; Left = 1057 lbs.; Rear Total = 2127 lbs.

(48 % of TOTAL shown below)

Front Total + Rear Total = TOTAL ACTUAL = 4420 lbs. (which includes 200
lbs. of cargo ballast weight)

TEST VEHICLE ATTITUDE:

As Delivered	Ready For Test
<u>27.8</u> inches Right Front	<u>27.0</u> inches Right Front
<u>28.1</u> inches Left Front	<u>27.1</u> inches Left Front
<u>28.5</u> inches Right Rear	<u>27.4</u> inches Right Rear
<u>29.0</u> inches Left Rear	<u>27.3</u> inches Left Rear

DATA SHEET NO. 11 (Cont.)

Test Vehicle Wheelbase = 110.6 inches

C.G. = 532 inches Rearward of Front Wheel Centerline

Total Vehicle Length: 168.6 inches Right Side

168.6 inches Left Side

175.6 inches Centerline

Arm Rest Location: Arm rests attached to right side of driver seat,
left side of right passenger seat and right side of mid-rear
passenger seat.

Seat Belt Upper Anchorage Location: On B-pillar, 27.7 inches above the
B-pillar striker.

FRONT SEAT CUSHION PLACEMENT: mid-point of fore/aft travel

Total Length of Seat Adjustment Travel = 6.5 inches

Total Number of Seat Adjustment Positions or Detents = 19

Front Seat Back Adjustment Position: 25

Front Seat Back Torso Angle = 25 degrees

Front Seat Cushion Vertical Position: full down

DATA SHEET NO. 11 (Cont.)

ADJUSTABLE STEERING COLUMN POSITION: Center of travel
(using data supplied by the vehicle manufacturer)

WINDOW POSITIONS: Closed Left Front Closed Left Rear
Open Right Front Open Right Rear

Windows shall be in CLOSED position on the STRUCK side of the vehicle and in the OPEN position on the OPPOSITE side of the vehicle.

AMOUNT OF STODDARD SOLVENT IN FUEL TANK: 18.3 gallons (92-94% of UC)
(Usable Capacity (UC) supplied by the vehicle manufacturer)

LOCATION OF IMPACT POINT ON TEST VEHICLE SIDE TO BE IMPACTED:

Wheelbase = 110.6 inches

Impact Point 18.3 is inches rearward of front axle centerline (which is 37" forward of the wheelbase midpoint)

REMARKS: Actual impact point 17.2 inches rearward of front axle.

RECORDED BY: Mr. Brian O'Keefe

DATE: 09/18/92

APPROVED BY: *[Signature]*

DATE: 10/13/92

SECTION 4

TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

This section shows full list of Test Equipment and the calibration dates.

Instrumentation Information

Inst. Group ID: 5 VEHNO: 2 CURNO: 1
SENTYP: AC SENLOC: 01 SENATT: HDCG
AXIS: XL UNITS: G'S PREFIL: 1650
INSMAN: MFG: ENDEVCO, MODEL: 7264-200, S/N: BJ27H
CALDAT: 26/MAR/92 INSRAT: 200 CHLMAX: 8 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM: NO COMMENT

Instrumentation Information

Inst. Group ID: 5 VEHNO: 2 CURNO: 2
SENTYP: AC SENLOC: 01 SENATT: HDCG
AXIS: YL UNITS: G'S PREFIL: 1650
INSMAN: MFG: ENDEVCO, MODEL: 7264-200, S/N: BG78H
CALDAT: 26/MAR/92 INSRAT: 200 CHLMAX: 29 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM: NO COMMENT

Instrumentation Information

Inst. Group ID: 5 VEHNO: 2 CURNO: 3
SENTYP: AC SENLOC: 01 SENATT: HDCG
AXIS: ZL UNITS: G'S PREFIL: 1650
INSMAN: MFG: ENDEVCO, MODEL: 7264-200, S/N: AR39
CALDAT: 26/MAR/92 INSRAT: 200 CHLMAX: 15 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM: NO COMMENT

Instrumentation Information

Inst. Group ID: 5 VEHNO: 2 CURNO: 4
SENTYP: AC SENLOC: 01 SENATT: SPNU
AXIS: YL UNITS: G'S PREFIL: 1650
INSMAN: MFG: ENDEVCO, MODEL: 7264-2000, S/N: BF59J
CALDAT: 02/JAN/92 INSRAT: 2000 CHLMAX: 5 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM: NO COMMENT

Instrumentation Information

Inst. Group ID: 5 VEHNO: 2 CURNO: 5
SENTYP: AC SENLOC: 01 SENATT: SPNU
AXIS: YL UNITS: G'S PREFIL: 1650
INSMAN: MFG: ENDEVCO, MODEL: 7264-2000, S/N: AN93
CALDAT: 02/JAN/92 INSRAT: 2000 CHLMAX: 5 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM: NO COMMENT

Instrumentation Information

Inst. Group ID: 5	VEHNO: 2	CURNO: 6	
SENTYP: AC	SENLOC: 01	SENATT: RBLU	
AXIS: YL	UNITS: G'S	PREFIL: 1650	
INSMAN: MFG: ENDEVCO, MODEL: 7264-2000, S/N: AB97			
CALDAT: 02/JAN/92	INSRAT: 2000	CHLMAX: 5	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 2	CURNO: 7	
SENTYP: AC	SENLOC: 01	SENATT: RBLU	
AXIS: YL	UNITS: G'S	PREFIL: 1650	
INSMAN: MFG: ENDEVCO, MODEL: 7264-2000, S/N: BE33J			
CALDAT: 02/JAN/92	INSRAT: 2000	CHLMAX: 5	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 2	CURNO: 8	
SENTYP: AC	SENLOC: 01	SENATT: RBLL	
AXIS: YL	UNITS: G'S	PREFIL: 1650	
INSMAN: MFG: ENDEVCO, MODEL: 7264-2000, S/N: BY89H			
CALDAT: 02/JAN/92	INSRAT: 2000	CHLMAX: 7	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 2	CURNO: 9	
SENTYP: AC	SENLOC: 01	SENATT: RBLL	
AXIS: YL	UNITS: G'S	PREFIL: 1650	
INSMAN: MFG: ENDEVCO, MODEL: 7264-2000, S/N: BL93H			
CALDAT: 02/JAN/92	INSRAT: 2000	CHLMAX: 7	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 2	CURNO: 10	
SENTYP: AC	SENLOC: 01	SENATT: SPNL	
AXIS: YL	UNITS: G'S	PREFIL: 1650	
INSMAN: MFG: ENDEVCO, MODEL: 7264-2000, S/N: BF50J			
CALDAT: 02/JAN/92	INSRAT: 2000	CHLMAX: 3	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5 VEHNO: 2 CURNO: 11
SENTYP: AC SENLOC: 01 SENATT: SPNL
AXIS: YL UNITS: G'S PREFIL: 1650
INSMAN: MFG: ENDEVCO, MODEL: 7264-2000, S/N: BH69J
CALDAT: 02/JAN/92 INSRAT: 2000 CHLMAX: 3 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM: NO COMMENT

Instrumentation Information

Inst. Group ID: 5 VEHNO: 2 CURNO: 12
SENTYP: AC SENLOC: 01 SENATT: PVCN
AXIS: YL UNITS: G'S PREFIL: 1650
INSMAN: MFG: ENDEVCO, MODEL: 7264-2000, S/N: BM73J
CALDAT: 02/JAN/92 INSRAT: 2000 CHLMAX: 4 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM: NO COMMENT

Instrumentation Information

Inst. Group ID: 5 VEHNO: 2 CURNO: 13
SENTYP: LC SENLOC: 01 SENATT: LPBO
AXIS: NA UNITS: LBS PREFIL: 1650
INSMAN: MFG: LEBOW, MODEL: 3371, S/N: 333
CALDAT: 09/APR/92 INSRAT: 3500 CHLMAX: 42 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM: NO COMMENT

Instrumentation Information

Inst. Group ID: 5 VEHNO: 2 CURNO: 14
SENTYP: LC SENLOC: 01 SENATT: SHBT
AXIS: NA UNITS: LBS PREFIL: 1650
INSMAN: MFG: LEBOW, MODEL: 3371, S/N: 327
CALDAT: 09/APR/92 INSRAT: 3500 CHLMAX: 55 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM: NO COMMENT

Instrumentation Information

Inst. Group ID: 5 VEHNO: 2 CURNO: 15
SENTYP: AC SENLOC: 04 SENATT: HDCG
AXIS: XL UNITS: G'S PREFIL: 1650
INSMAN: MFG: ENDEVCO, MODEL: 7264-200, S/N: BJ28H
CALDAT: 26/MAR/92 INSRAT: 200 CHLMAX: 6 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM: NO COMMENT

Instrumentation Information

Inst. Group ID: 5	VEHNO: 2	CURNO: 16	
SENTYP: AC	SENLOC: 04	SENATT: HDCG	
AXIS: YL	UNITS: G'S	PREFIL: 1650	
INSMAN: MFG: ENDEVCO, MODEL: 7264-200, S/N: BT28H			
CALDAT: 26/MAR/92	INSRAT: 200	CHLMAX: 11	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 2	CURNO: 17	
SENTYP: AC	SENLOC: 04	SENATT: HDCG	
AXIS: ZL	UNITS: G'S	PREFIL: 1650	
INSMAN: MFG: ENDEVCO, MODEL: 7264-200, S/N: AE29			
CALDAT: 26/MAR/92	INSRAT: 200	CHLMAX: 10	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 100	DASTAT: CF
INSCOM: FAILED AT 50.0 MSEC. REFLECTS ON HIC.			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 2	CURNO: 18	
SENTYP: AC	SENLOC: 04	SENATT: SPNU	
AXIS: YL	UNITS: G'S	PREFIL: 1650	
INSMAN: MFG: ENDEVCO, MODEL: 7264-2000, S/N: BY98H			
CALDAT: 02/JAN/92	INSRAT: 2000	CHLMAX: 3	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 2	CURNO: 19	
SENTYP: AC	SENLOC: 04	SENATT: SPNU	
AXIS: YL	UNITS: G'S	PREFIL: 1650	
INSMAN: MFG: ENDEVCO, MODEL: 7264-2000, S/N: BH27J			
CALDAT: 02/JAN/92	INSRAT: 2000	CHLMAX: 0	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 100	DASTAT: MN
INSCOM: NO DATA COLLECTED ON THIS REDUNDANT CHANNEL			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 2	CURNO: 20	
SENTYP: AC	SENLOC: 04	SENATT: RBLU	
AXIS: YL	UNITS: G'S	PREFIL: 1650	
INSMAN: MFG: ENDEVCO, MODEL: 7264-2000, S/N: AN03			
CALDAT: 02/JAN/92	INSRAT: 2000	CHLMAX: 5	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5 VEHNO: 2 CURNO: 21
 SENTYP: AC SENLOC: 04 SENATT: RBLU
 AXIS: YL UNITS: G'S PREFIL: 1650
 INSMAN: MFG: ENDEVCO, MODEL: 7264-2000, S/N: AR17
 CALDAT: 02/JAN/92 INSRAT: 2000 CHLMAX: 6 INIVEL: 0.0
 NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
 INSCOM: NO COMMENT

Instrumentation Information

Inst. Group ID: 5 VEHNO: 2 CURNO: 22
 SENTYP: AC SENLOC: 04 SENATT: RBLL
 AXIS: YL UNITS: G'S PREFIL: 1650
 INSMAN: MFG: ENDEVCO, MODEL: 7264-2000, S/N: AK29
 CALDAT: 02/JAN/92 INSRAT: 2000 CHLMAX: 7 INIVEL: 0.0
 NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
 INSCOM: NO COMMENT

Instrumentation Information

Inst. Group ID: 5 VEHNO: 2 CURNO: 23
 SENTYP: AC SENLOC: 04 SENATT: RBLL
 AXIS: YL UNITS: G'S PREFIL: 1650
 INSMAN: MFG: ENDEVCO, MODEL: 7264-2000, S/N: BA93
 CALDAT: 02/JAN/92 INSRAT: 2000 CHLMAX: 6 INIVEL: 0.0
 NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
 INSCOM: NO COMMENT

Instrumentation Information

Inst. Group ID: 5 VEHNO: 2 CURNO: 24
 SENTYP: AC SENLOC: 04 SENATT: SPNL
 AXIS: YL UNITS: G'S PREFIL: 1650
 INSMAN: MFG: ENDEVCO, MODEL: 7264-2000, S/N: BD12J
 CALDAT: 02/JAN/92 INSRAT: 2000 CHLMAX: 5 INIVEL: 0.0
 NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
 INSCOM: NO COMMENT

Instrumentation Information

Inst. Group ID: 5 VEHNO: 2 CURNO: 25
 SENTYP: AC SENLOC: 04 SENATT: SPNL
 AXIS: YL UNITS: G'S PREFIL: 1650
 INSMAN: MFG: ENDEVCO, MODEL: 7264-2000, S/N: BE91J
 CALDAT: 02/JAN/92 INSRAT: 2000 CHLMAX: 5 INIVEL: 0.0
 NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
 INSCOM: NO COMMENT

Instrumentation Information

Inst. Group ID: 5	VEHNO: 2	CURNO: 26	
SENTYP: AC	SENLOC: 04	SENATT: PVCN	
AXIS: YL	UNITS: G'S	PREFIL: 1650	
INSMAN: MFG: ENDEVCO, MODEL: 7264-2000, S/N: BC98J			
CALDAT: 02/JAN/92	INSRAT: 2000	CHLMAX: 6	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 2	CURNO: 27	
SENTYP: LC	SENLOC: 04	SENATT: LPBO	
AXIS: NA	UNITS: LBS	PREFIL: 1650	
INSMAN: MFG: LEBOW, MODEL: 3371, S/N: 330			
CALDAT: 09/APR/92	INSRAT: 3500	CHLMAX: 21	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 2	CURNO: 28	
SENTYP: LC	SENLOC: 04	SENATT: SHBT	
AXIS: NA	UNITS: LBS	PREFIL: 1650	
INSMAN: MFG: LEBOW, MODEL: 3371, S/N: 308			
CALDAT: 09/APR/92	INSRAT: 3500	CHLMAX: 13	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 2	CURNO: 29	
SENTYP: AC	SENLOC: NA	SENATT: DSRF	
AXIS: XG	UNITS: G'S	PREFIL: 1650	
INSMAN: MFG: BELL & HOWELL, MODEL: 4-202-0001, S/N: 21051			
CALDAT: 10/APR/92	INSRAT: 250	CHLMAX: 6	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 2	CURNO: 30	
SENTYP: AC	SENLOC: NA	SENATT: DSRF	
AXIS: YG	UNITS: G'S	PREFIL: 1650	
INSMAN: MFG: BELL & HOWELL, MODEL: 4-202-0001, S/N: 20839			
CALDAT: 10/APR/92	INSRAT: 250	CHLMAX: 10	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5 VEHNO: 2 CURNO: 31
SENTYP: AC SENLOC: NA SENATT: DSRF
AXIS: ZG UNITS: G'S PREFIL: 1650
INSMAN: MFG: BELL & HOWELL, MODEL: 4-202-0001, S/N: 19428
CALDAT: 10/APR/92 INSRAT: 250 CHLMAX: 9 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM: NO COMMENT

Instrumentation Information

Inst. Group ID: 5 VEHNO: 2 CURNO: 32
SENTYP: AC SENLOC: NA SENATT: DSRR
AXIS: XG UNITS: G'S PREFIL: 1650
INSMAN: MFG: I.C. SENSORS, MODEL: 3031-200, S/N: 1X-200
CALDAT: 10/APR/92 INSRAT: 200 CHLMAX: 11 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM: NO COMMENT

Instrumentation Information

Inst. Group ID: 5 VEHNO: 2 CURNO: 33
SENTYP: AC SENLOC: NA SENATT: DSRR
AXIS: YG UNITS: G'S PREFIL: 1650
INSMAN: MFG: I.C. SENSORS, MODEL: 3031-200, S/N: 1Y-200
CALDAT: 10/APR/92 INSRAT: 200 CHLMAX: 15 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM: NO COMMENT

Instrumentation Information

Inst. Group ID: 5 VEHNO: 2 CURNO: 34
SENTYP: AC SENLOC: NA SENATT: DSRR
AXIS: ZG UNITS: G'S PREFIL: 1650
INSMAN: MFG: I.C. SENSORS, MODEL: 3031-200, S/N: 1Z-200
CALDAT: 10/APR/92 INSRAT: 200 CHLMAX: 13 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM: NO COMMENT

Instrumentation Information

Inst. Group ID: 5 VEHNO: 2 CURNO: 35
SENTYP: AC SENLOC: NA SENATT: FLRR
AXIS: XG UNITS: G'S PREFIL: 1650
INSMAN: MFG: I.C. SENSORS, MODEL: 3031-200, S/N: 2X-200
CALDAT: 10/APR/92 INSRAT: 200 CHLMAX: 11 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM: NO COMMENT

Instrumentation Information

Inst. Group ID: 5 VEHNO: 2 CURNO: 36
SENTYP: AC SENLOC: NA SENATT: FLRR
AXIS: YG UNITS: G'S PREFIL: 1650
INSMAN: MFG: I.C. SENSORS, MODEL: 3031-200, S/N: 2Y-200
CALDAT: 10/APR/92 INSRAT: 200 CHLMAX: 20 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM: NO COMMENT

Instrumentation Information

Inst. Group ID: 5 VEHNO: 2 CURNO: 37
SENTYP: AC SENLOC: NA SENATT: FLRR
AXIS: ZG UNITS: G'S PREFIL: 1650
INSMAN: MFG: I.C. SENSORS, MODEL: 3031-200, S/N: 2Z-200
CALDAT: 10/APR/92 INSRAT: 200 CHLMAX: 17 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM: NO COMMENT

Instrumentation Information

Inst. Group ID: 5 VEHNO: 2 CURNO: 38
SENTYP: AC SENLOC: NA SENATT: DSLR
AXIS: YG UNITS: G'S PREFIL: 1650
INSMAN: MFG: I.C. SENSORS, MODEL: 3031-200, S/N: 20-200
CALDAT: 10/APR/92 INSRAT: 200 CHLMAX: 148 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM: NO COMMENT

Instrumentation Information

Inst. Group ID: 5 VEHNO: 2 CURNO: 39
SENTYP: AC SENLOC: NA SENATT: DSLF
AXIS: YG UNITS: G'S PREFIL: 1650
INSMAN: MFG: I.C. SENSOR, MODEL: 3031-200, S/N: 24-200
CALDAT: 10/APR/92 INSRAT: 200 CHLMAX: 33 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM: NO COMMENT

Instrumentation Information

Inst. Group ID: 5 VEHNO: 2 CURNO: 40
SENTYP: AC SENLOC: NA SENATT: DRLF
AXIS: YG UNITS: G'S PREFIL: 1650
INSMAN: MFG: I.C. SENSORS, MODEL: 3031-200, S/N: 27-200
CALDAT: 10/APR/92 INSRAT: 200 CHLMAX: 185 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM: NO COMMENT

Instrumentation Information

Inst. Group ID: 5 VEHNO: 2 CURNO: 41
SENTYP: AC SENLOC: NA SENATT: FLRR
AXIS: XG UNITS: G'S PREFIL: 1650
INSMAN: MFG: I.C. SENSORS, MODEL: 3031-200, S/N: 22-200
CALDAT: 10/APR/92 INSRAT: 250 CHLMAX: 11 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM: NO COMMENT

Instrumentation Information

Inst. Group ID: 5 VEHNO: 2 CURNO: 42
SENTYP: AC SENLOC: NA SENATT: DRLF
AXIS: YG UNITS: G'S PREFIL: 1650
INSMAN: MFG: I.C. SENSORS, MODEL: 3031-200, S/N: 30-200
CALDAT: 10/APR/92 INSRAT: 200 CHLMAX: 231 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM: NO COMMENT

Instrumentation Information

Inst. Group ID: 5 VEHNO: 2 CURNO: 43
SENTYP: AC SENLOC: NA SENATT: DRLF
AXIS: YG UNITS: G'S PREFIL: 1650
INSMAN: MFG: I.C. SENSORS, MODEL: 3031-200, S/N: 26-200
CALDAT: 10/APR/92 INSRAT: 200 CHLMAX: 175 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: CF
INSCOM: CHANNEL FAILED AT 19.0 MSEC

Instrumentation Information

Inst. Group ID: 5 VEHNO: 2 CURNO: 44
SENTYP: AC SENLOC: NA SENATT: DRLR
AXIS: YG UNITS: G'S PREFIL: 1650
INSMAN: MFG: I.C. SENSORS, MODEL: 3031-200, S/N: 29-200
CALDAT: 10/APR/92 INSRAT: 200 CHLMAX: 187 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: CF
INSCOM: CHANNEL FAILED AT 23.0 MSEC.

Instrumentation Information

Inst. Group ID: 5 VEHNO: 2 CURNO: 45
SENTYP: AC SENLOC: NA SENATT: DRLR
AXIS: YG UNITS: G'S PREFIL: 1650
INSMAN: MFG: I.C. SENSORS, MODEL: 3031-200, S/N: 23-200
CALDAT: 10/APR/92 INSRAT: 200 CHLMAX: 154 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM: NO COMMENT

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 46
SENTYP: AC SENLOC: NA SENATT: IMCG
AXIS: XG UNITS: G'S PREFIL: 1650
INSMAN: MFG: I.C. SENSORS, MODEL: 3031-200, S/N: 28-200
CALDAT: 10/APR/92 INSRAT: 200 CHLMAX: 60 INIVEL: 29.4
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM: NO COMMENT

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 47
SENTYP: AC SENLOC: NA SENATT: IMCG
AXIS: YG UNITS: G'S PREFIL: 1650
INSMAN: MFG: I.C. SENSORS, MODEL: 3031-200, S/N: 31-200
CALDAT: 10/APR/92 INSRAT: 200 CHLMAX: 18 INIVEL: 15.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM: NO COMMENT

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 48
SENTYP: AC SENLOC: NA SENATT: IMCG
AXIS: ZG UNITS: G'S PREFIL: 1650
INSMAN: MFG: I.C. SENSORS, MODEL: 3031-200, S/N: 32-200
CALDAT: 10/APR/92 INSRAT: 200 CHLMAX: 37 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM: NO COMMENT

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 49
SENTYP: AC SENLOC: NA SENATT: IMCR
AXIS: XG UNITS: G'S PREFIL: 1650
INSMAN: MFG: I.C. SENSORS, MODEL: 3031-100, S/N: 7Z-100
CALDAT: 10/APR/92 INSRAT: 100 CHLMAX: 36 INIVEL: 29.4
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM: NO COMMENT

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 50
SENTYP: AC SENLOC: NA SENATT: IMCR
AXIS: YG UNITS: G'S PREFIL: 1650
INSMAN: MFG: I.C. SENSORS, MODEL: 3031-100, S/N: 7X-100
CALDAT: 10/APR/92 INSRAT: 100 CHLMAX: 34 INIVEL: 15.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM: NO COMMENT

SECTION 5
PHOTOGRAPHS

The photographs listed on this page are included in this section.

1. Pretest Frontal View of Test Vehicle (Target Vehicle)
2. Posttest Frontal View of Test Vehicle
3. Pretest Rear View of Test Vehicle
4. Posttest Rear View of Test Vehicle
5. Pretest Struck Side View of Test Vehicle
6. Posttest Struck Side View of Test Vehicle
7. Pretest Frontal View of MDB Impact Face
8. Posttest Frontal View of MDB Impact Face
9. Pretest Left Side view of MDB Impact Face
10. Posttest Left Side View of MDB Impact Face
11. Pretest Right Side View of MDB Impact Face
12. Posttest Right Side View of MDB Impact Face
13. Pretest Top View of MDB Impact Face
14. Posttest Top View of MDB Impact Face
15. Pretest Overhead View of MDB Positioned Against Struck Side of Test Vehicle at Impact Locations
16. Posttest Overhead View of MDB Positioned Against Struck Side of Test Vehicle at Impact Locations
17. Pretest Occupant Compartment Left Side Showing Driver SID
18. Pretest Occupant Compartment Right Side Showing Driver SID
19. Posttest Occupant Compartment Showing Driver SID
20. Pretest Occupant Compartment Right Side Showing Passenger SID
21. Posttest Occupant Compartment Showing Passenger SID
22. Pretest Right Side View of MDB with Impact Face in Position
23. Pretest Left Side View of MDB with Impact Face in Position
24. Test Vehicle Tire Placard and Manufacturer's Certification Label
25. Driver Door Accelerometer Locations
26. Pretest Driver Door Interior View
27. Posttest Driver Door Interior View
28. Pretest Passenger Sidewall Interior Showing Accelerometer Locations
29. Pretest Passenger Sidewall Interior View
30. Posttest Passenger Door Interior View

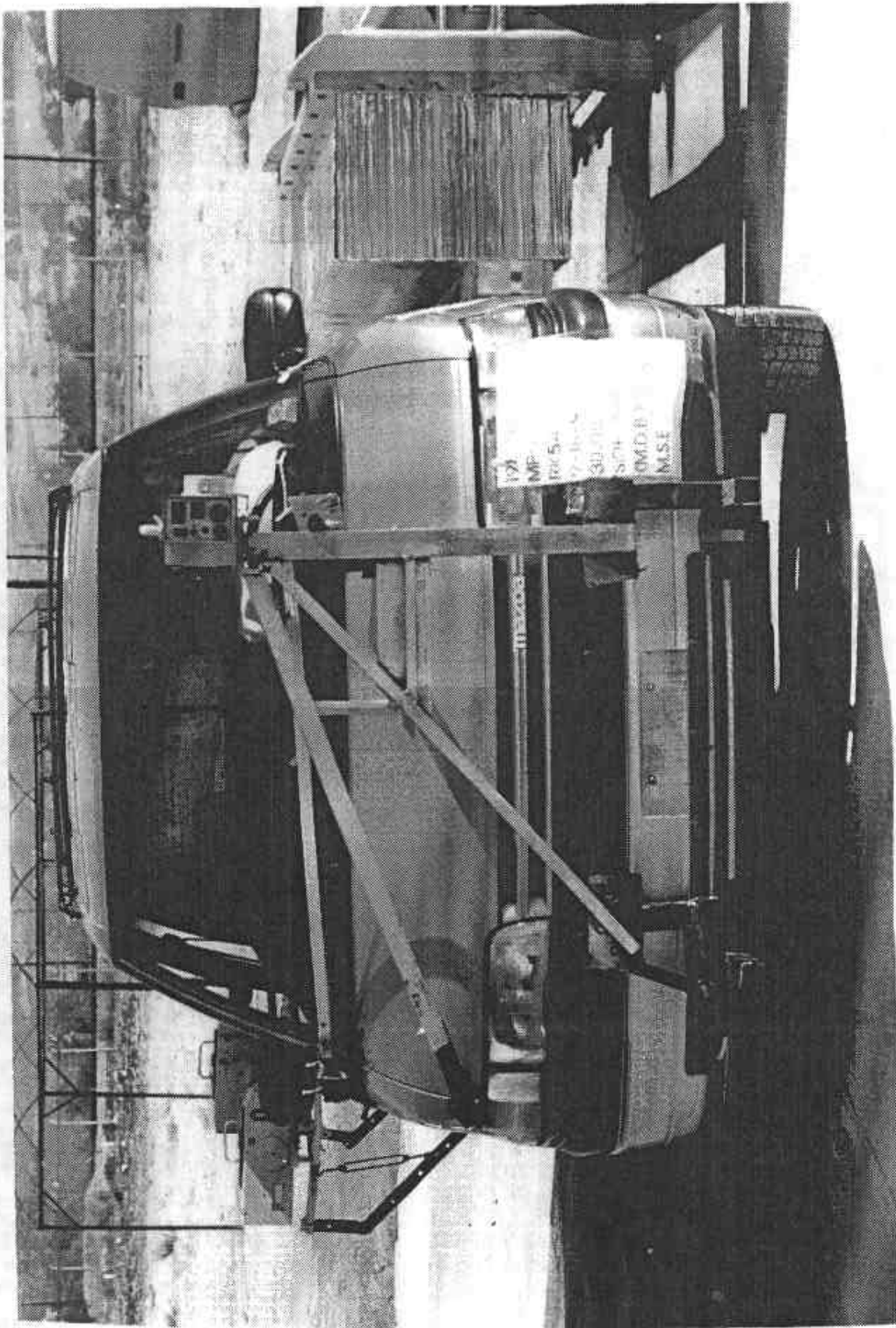


FIGURE 5-1 PRETEST FRONTAL VIEW OF TEST VEHICLE (TARGET VEHICLE)

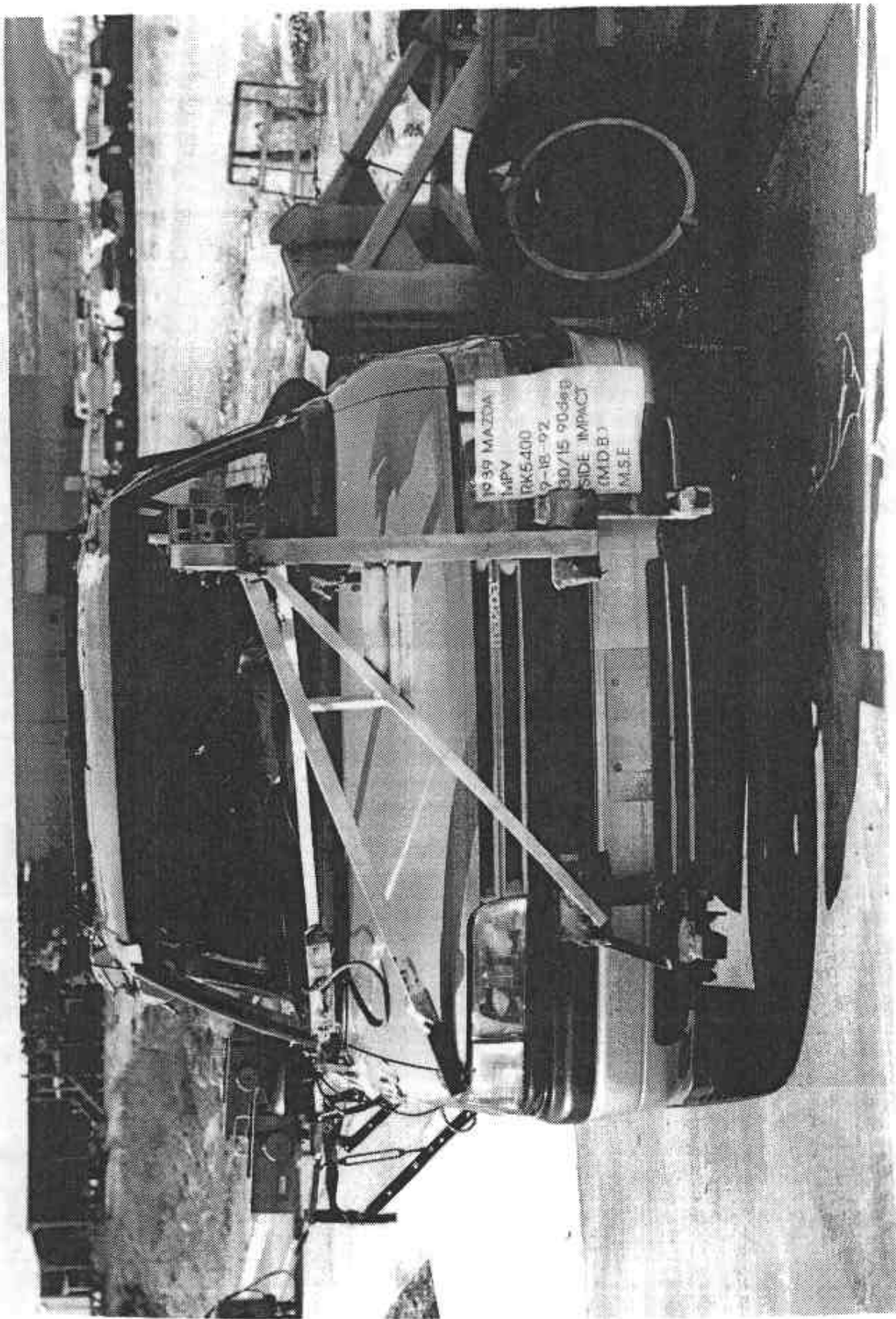


FIGURE 5-2 POSTTEST FRONTAL VIEW OF TEST VEHICLE

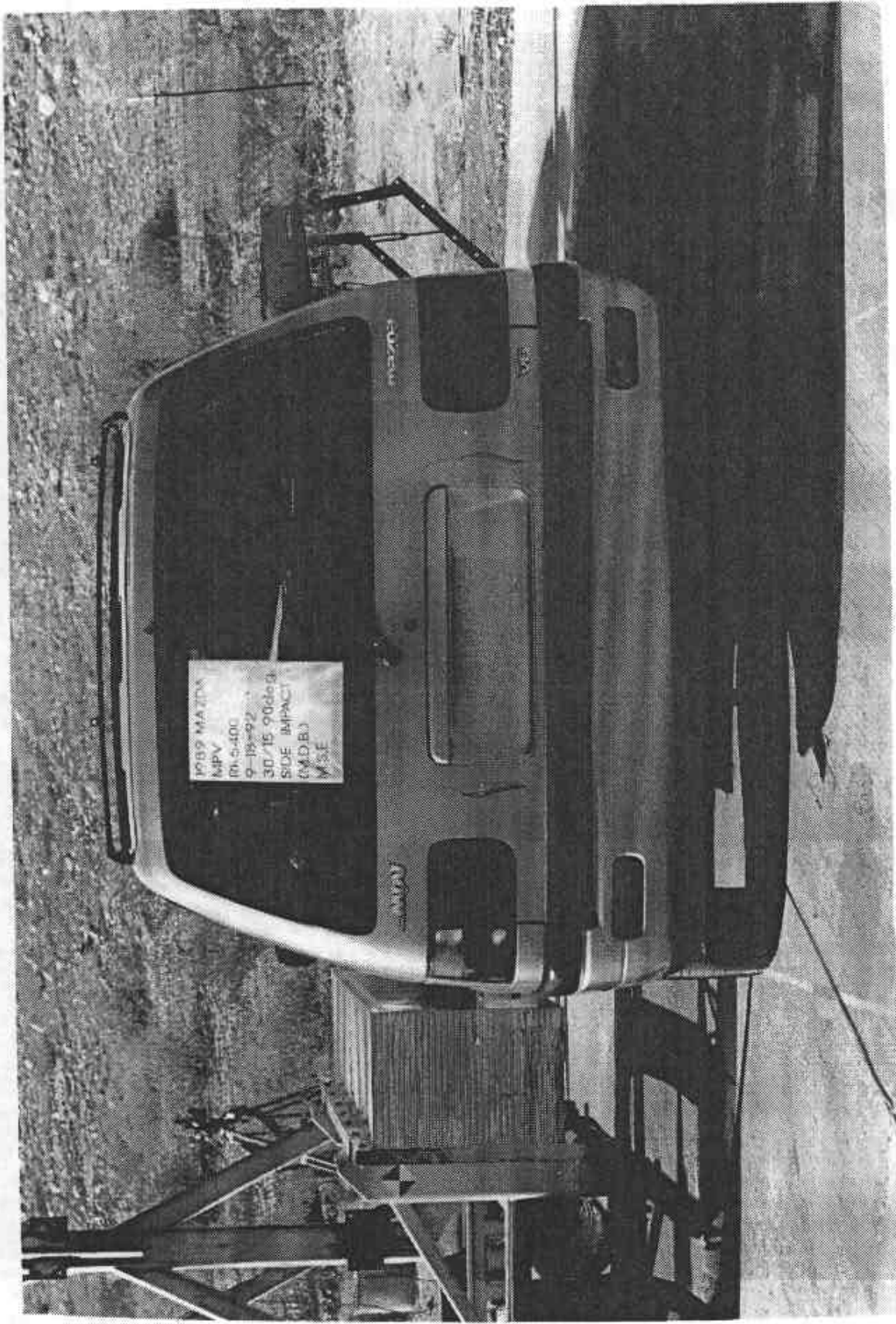


FIGURE 5-3 PRETEST REAR VIEW OF TEST VEHICLE



FIGURE 5-4 POSTTEST REAR VIEW OF TEST VEHICLE

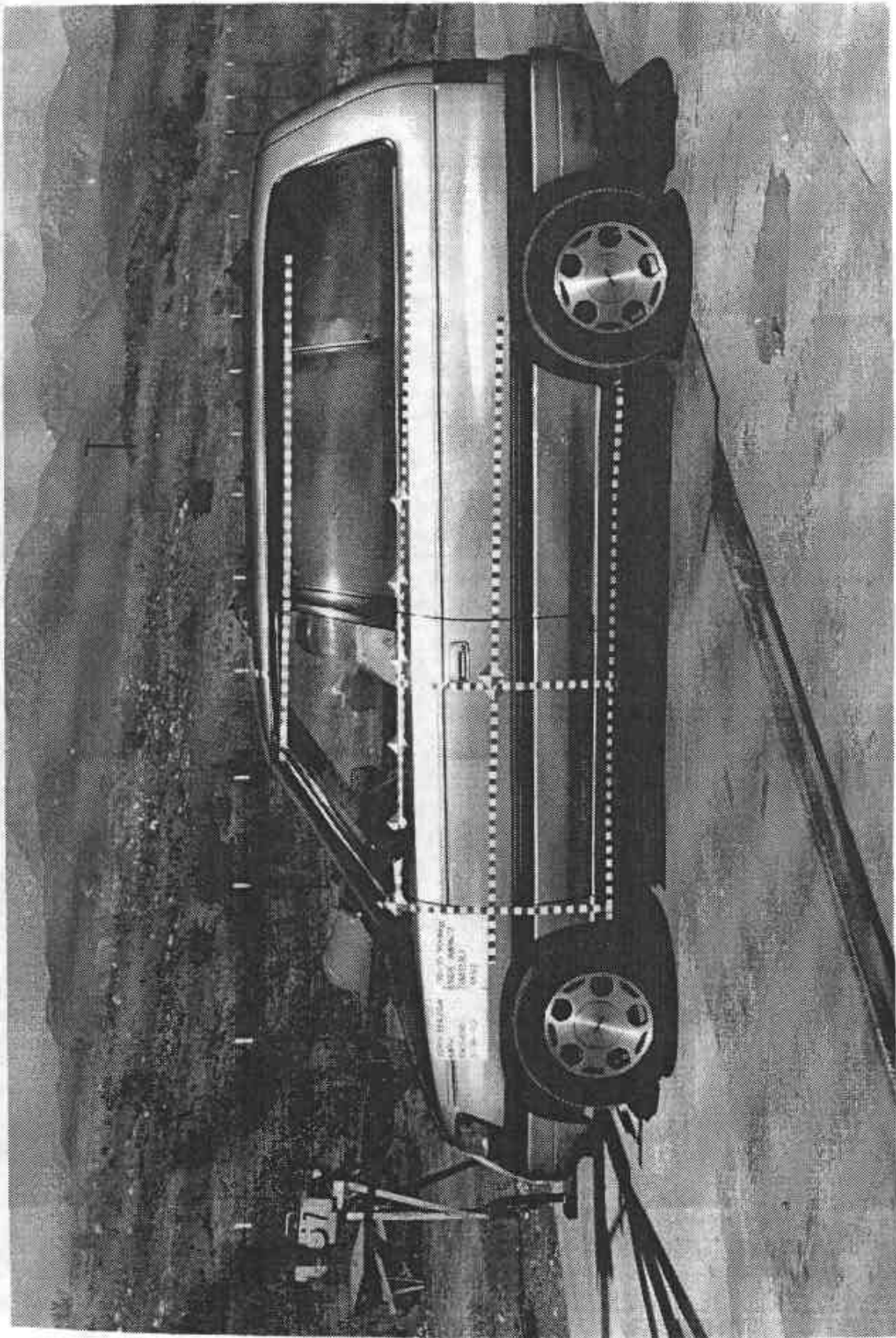


FIGURE 5-5 PRETEST STRUCK SIDE VIEW OF TEST VEHICLE

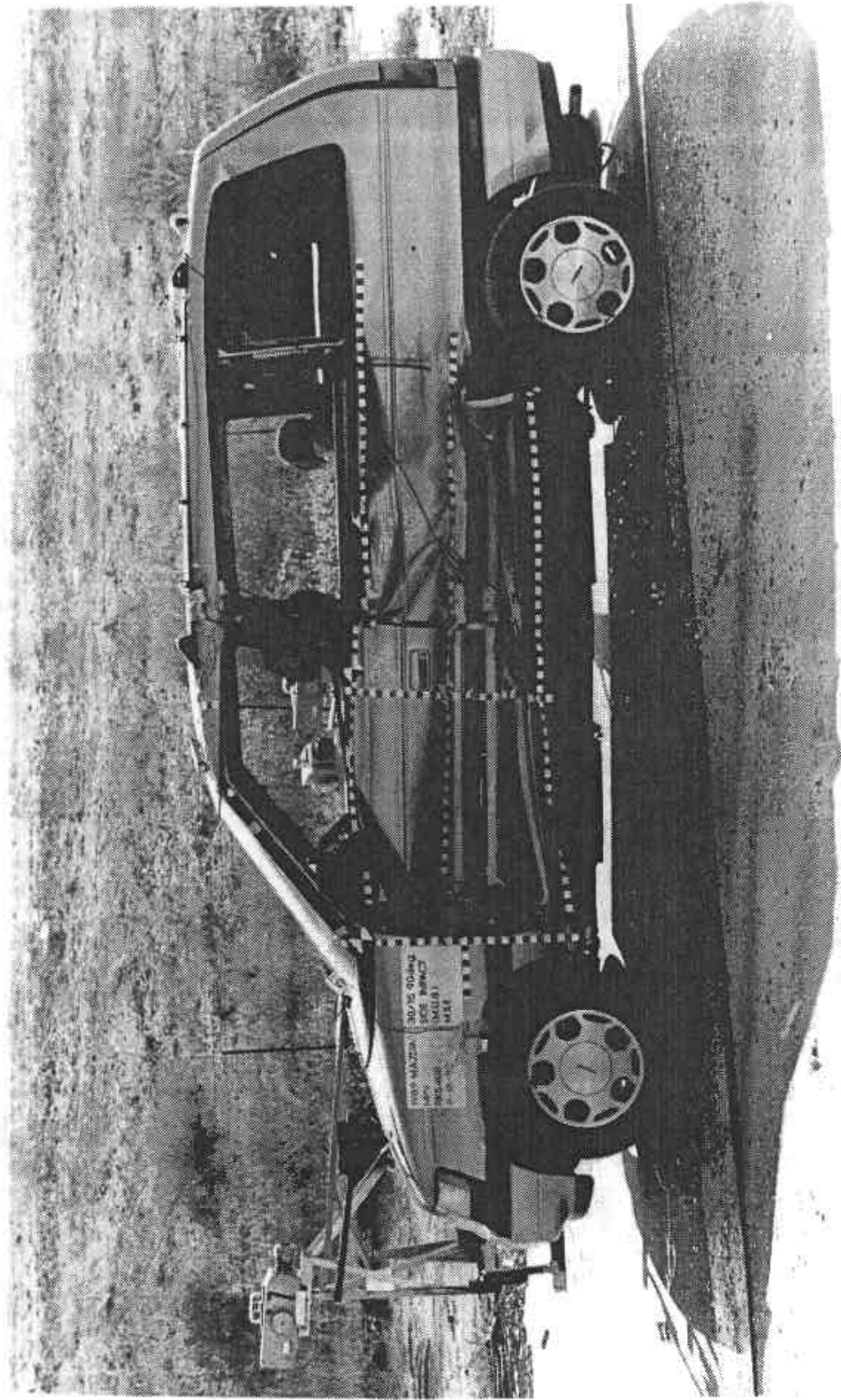


FIGURE 5-6 POSTTEST STRUCK SIDE VIEW OF TEST VEHICLE

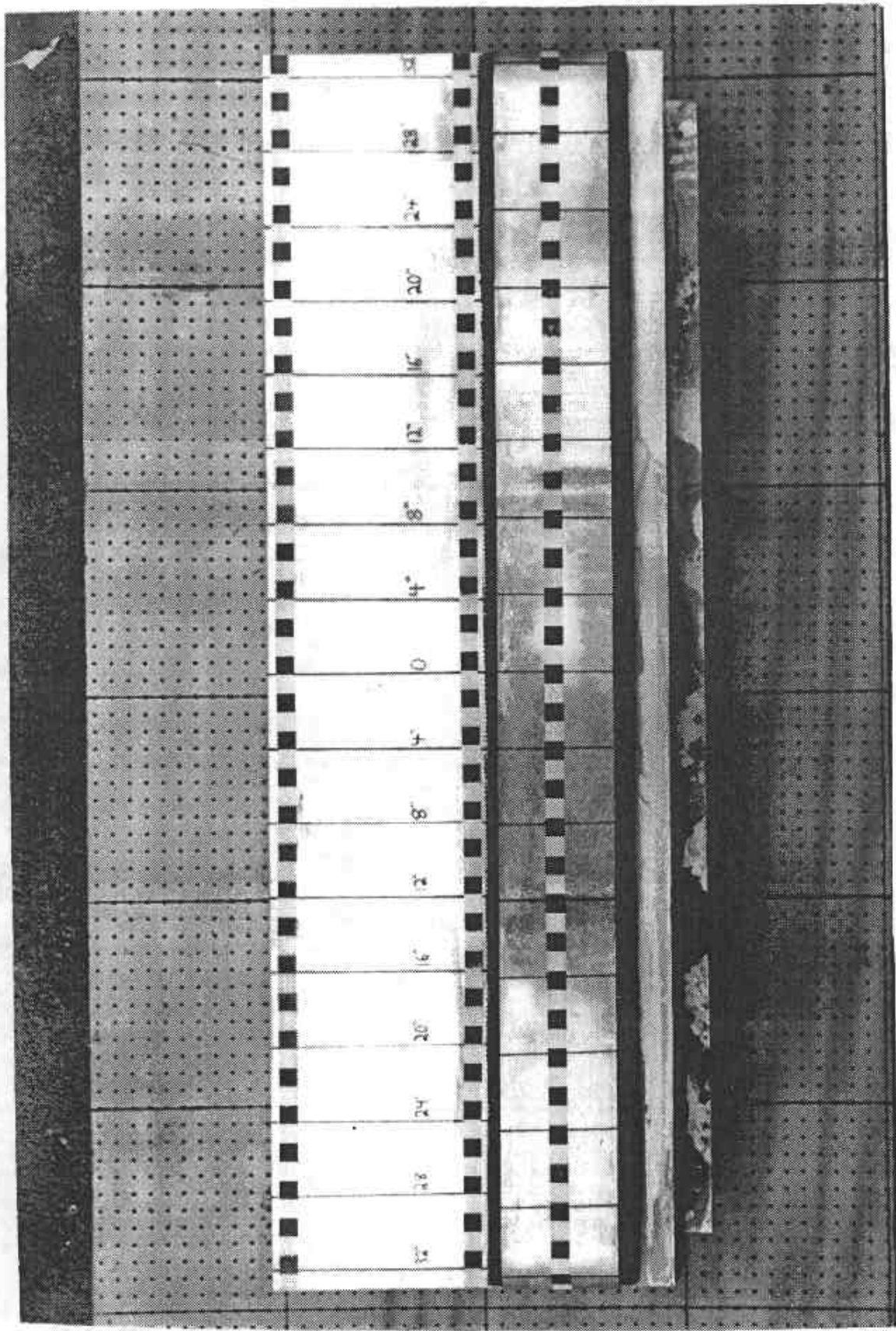


FIGURE 5-7 PRETEST FRONTAL VIEW OF MDB IMPACT FACE

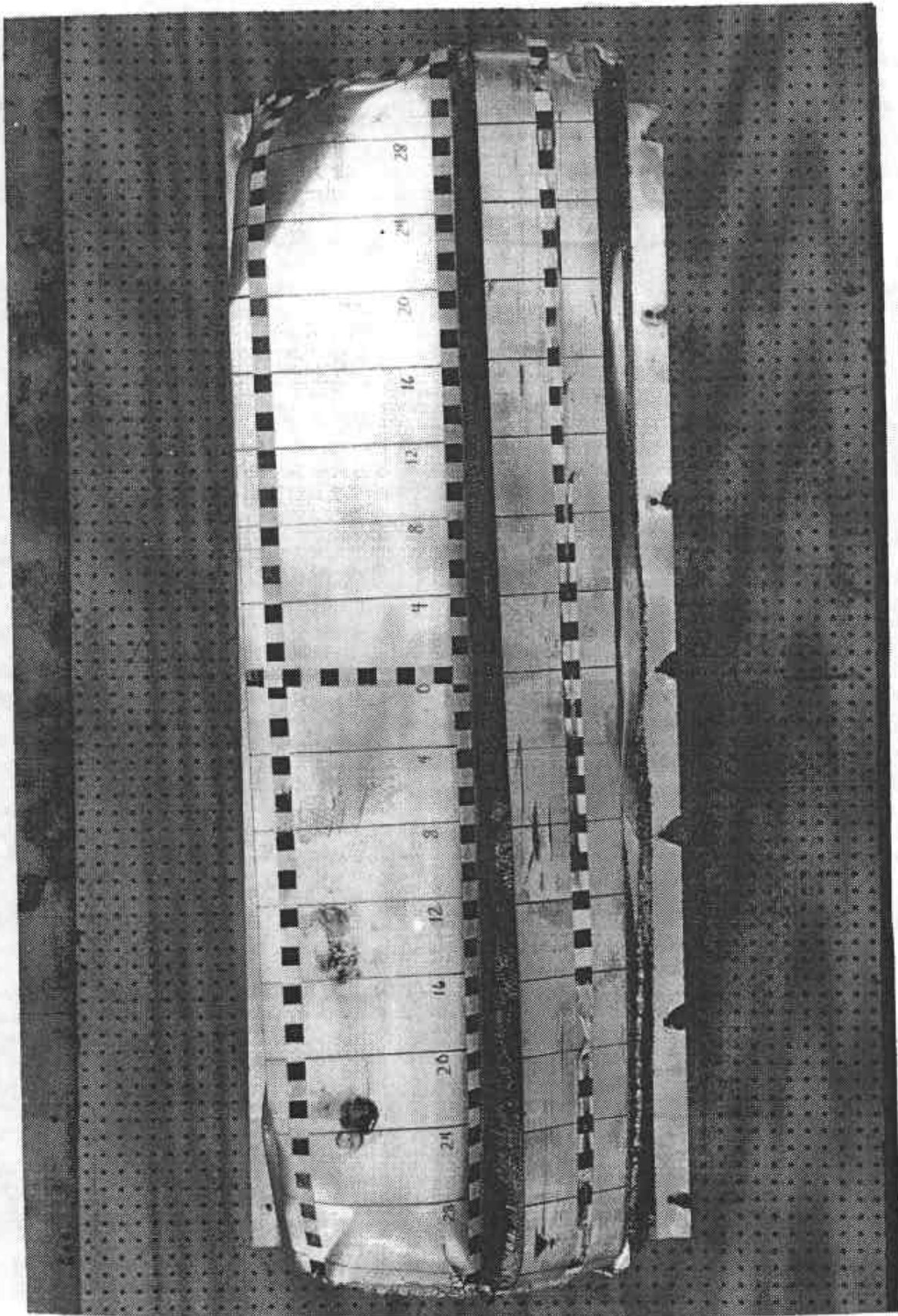


FIGURE 5-8 POSTTEST FRONTAL VIEW OF MDB IMPACT FACE

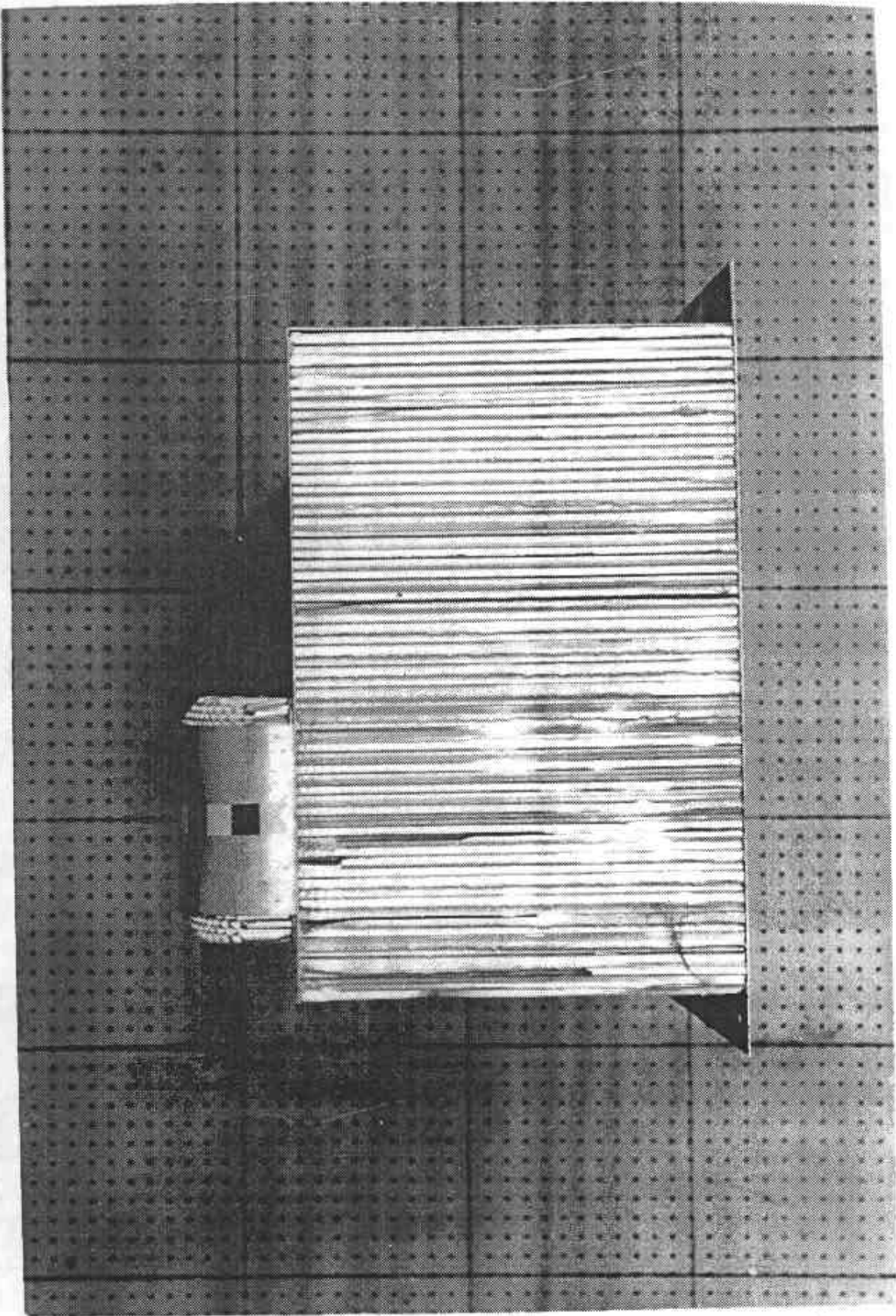


FIGURE 5-9 PRETEST LEFT SIDE VIEW OF MDB IMPACT FACE

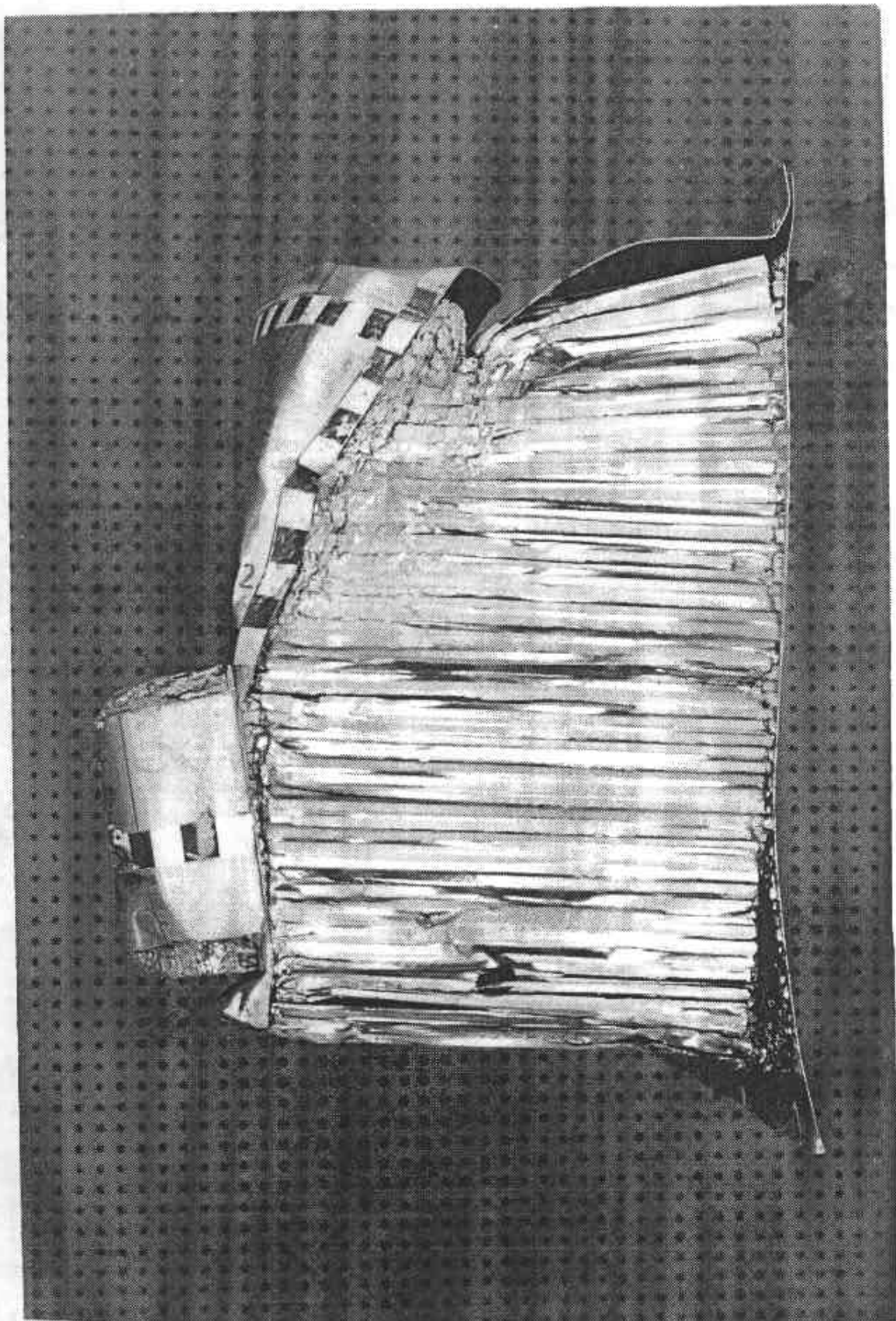


FIGURE 5-10 POSTTEST LEFT SIDE VIEW OF MDB IMPACT FACE

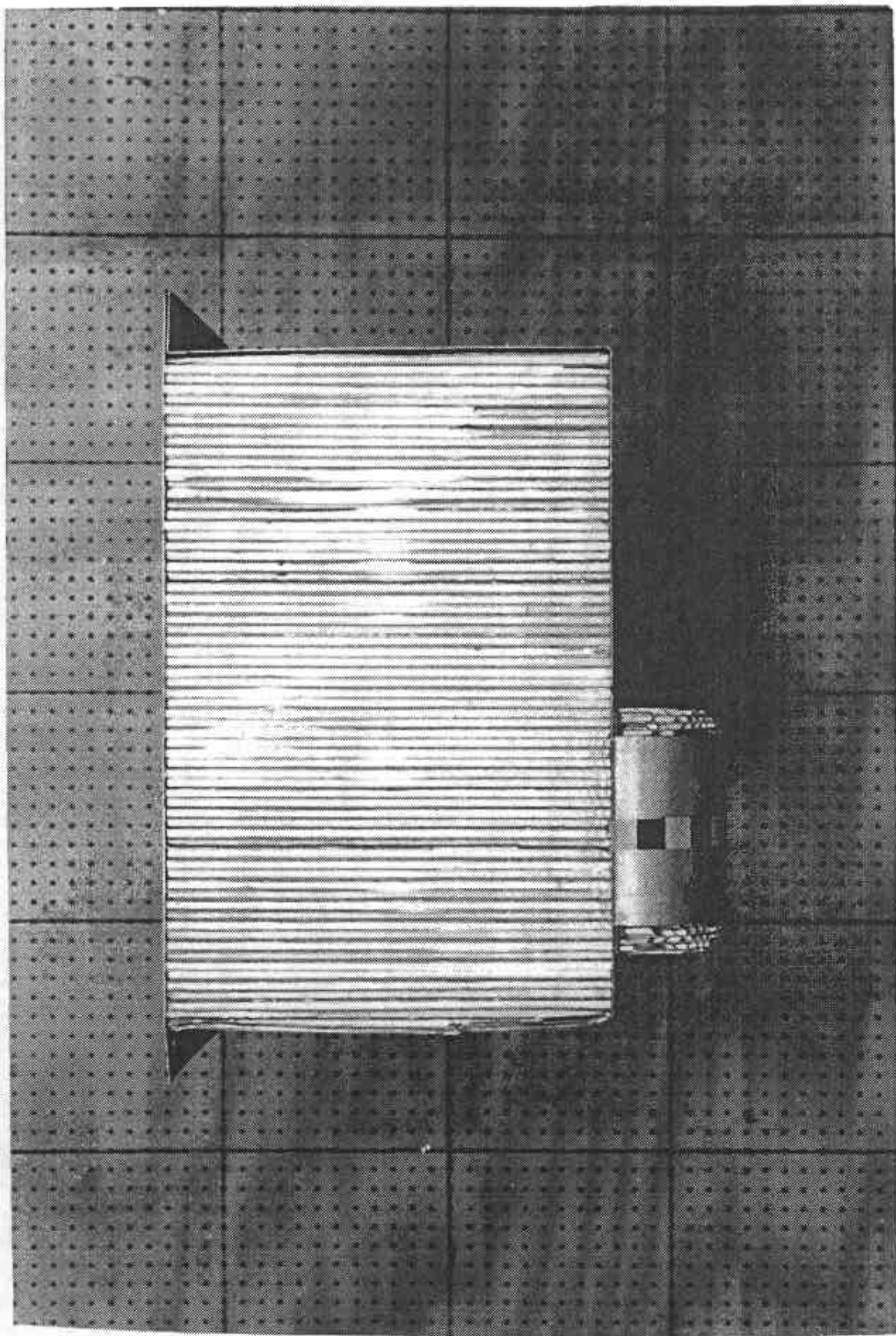


FIGURE 5-11 PRETEST RIGHT SIDE VIEW OF MDB IMPACT FACE

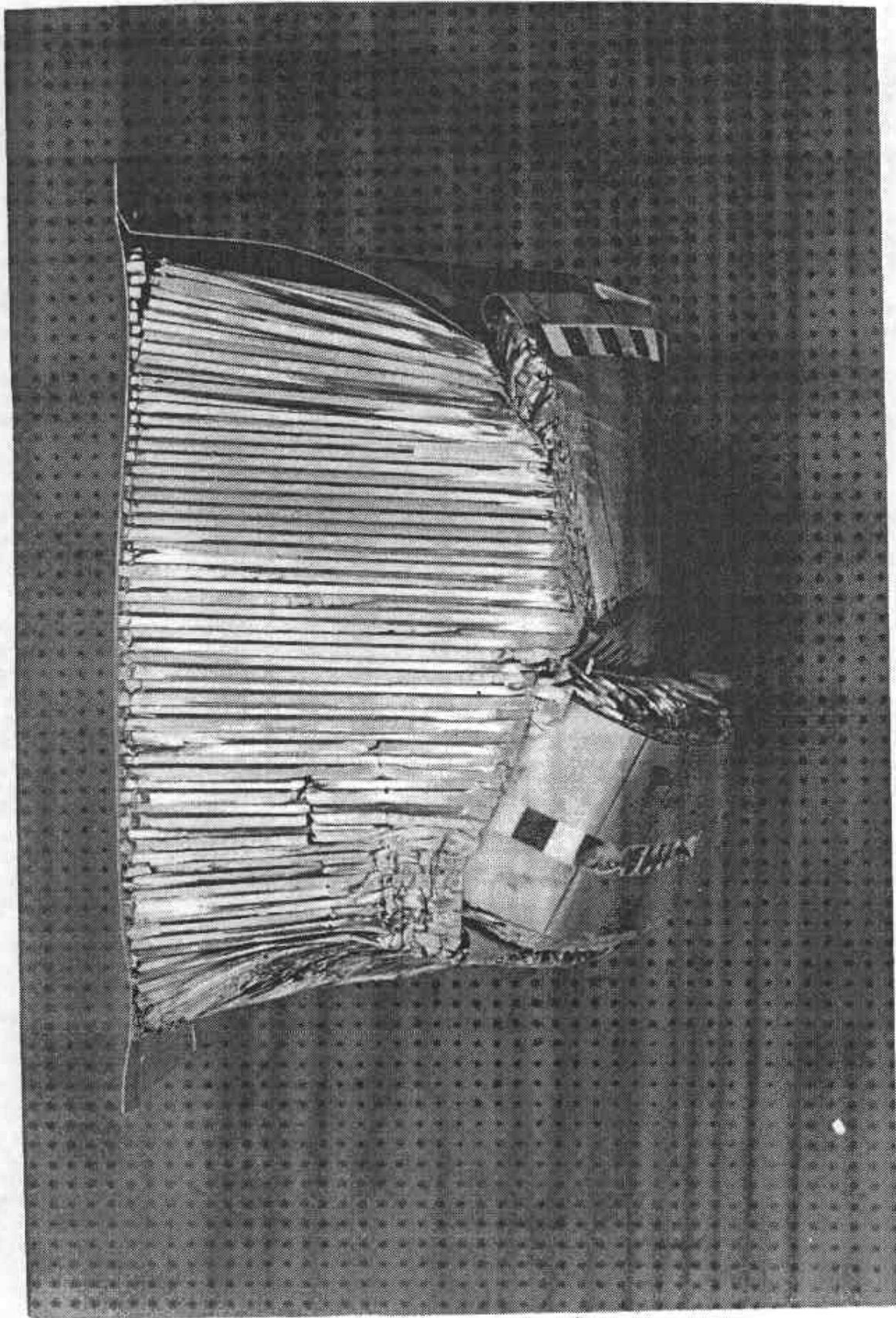


FIGURE 5-12 POSTTEST RIGHT SIDE VIEW OF MDB IMPACT FACE

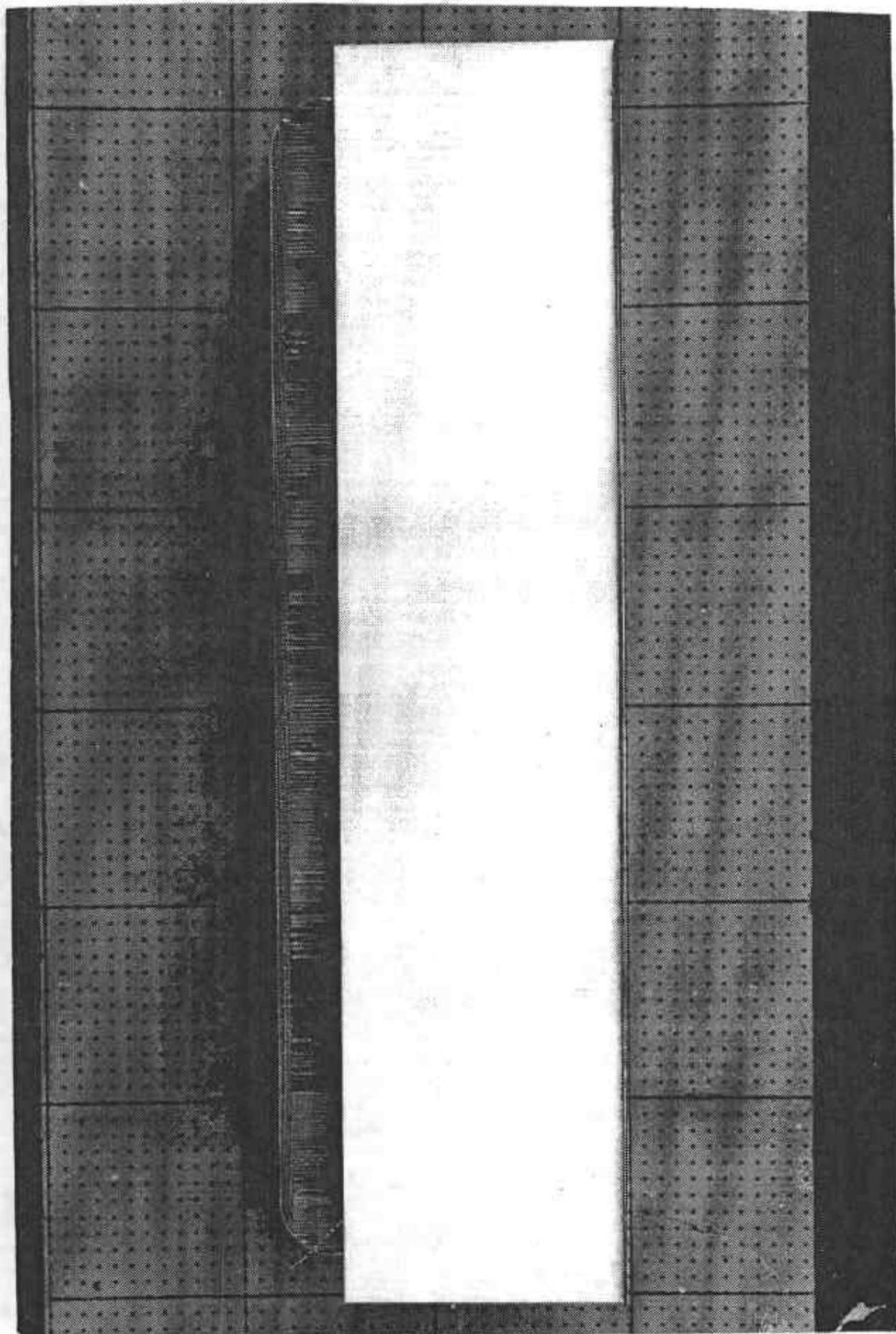


FIGURE 5-13 PRETEST TOP VIEW OF MDB IMPACT FACE

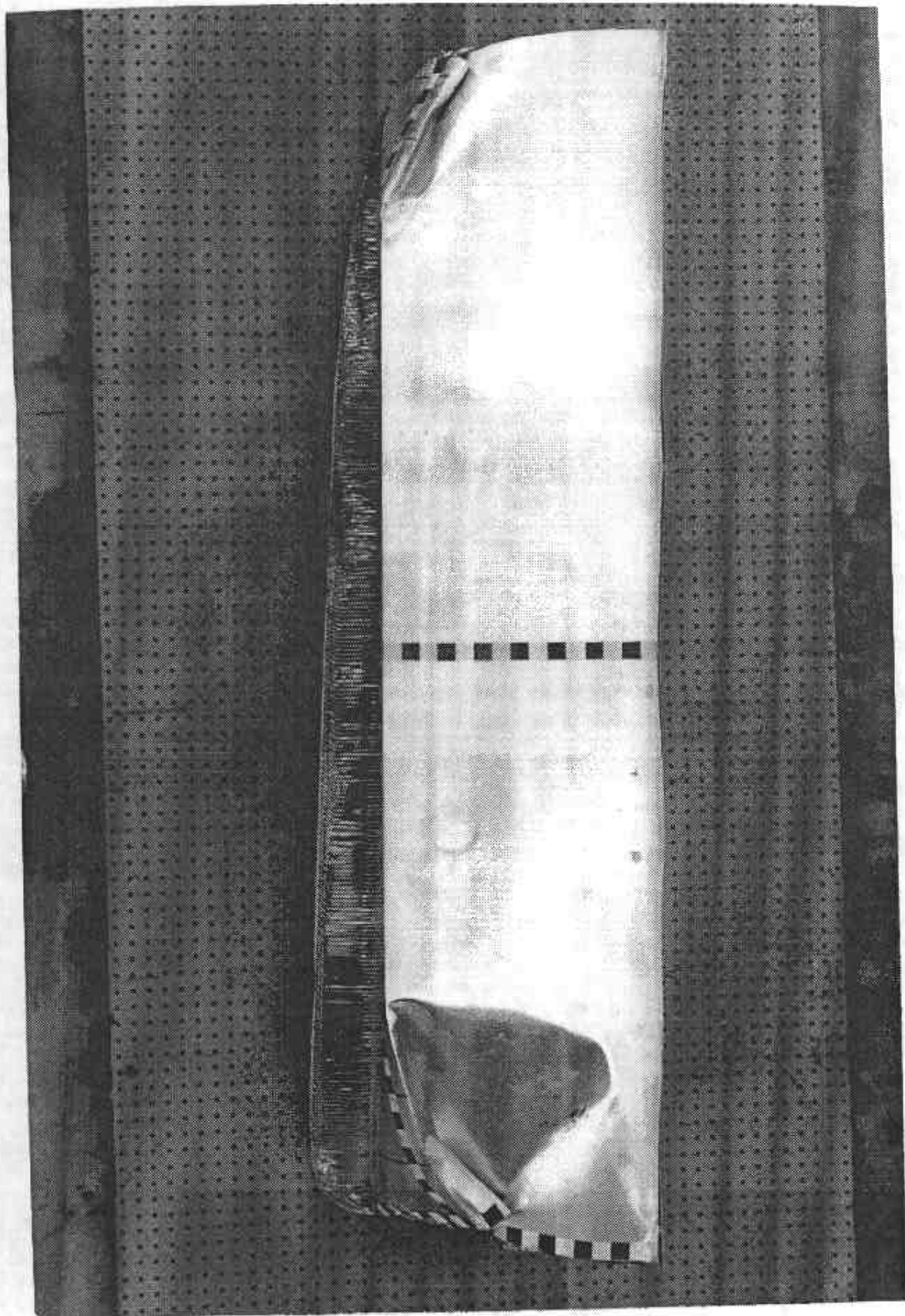


FIGURE 5-14 POSTTEST TOP VIEW OF MDB IMPACT FACE

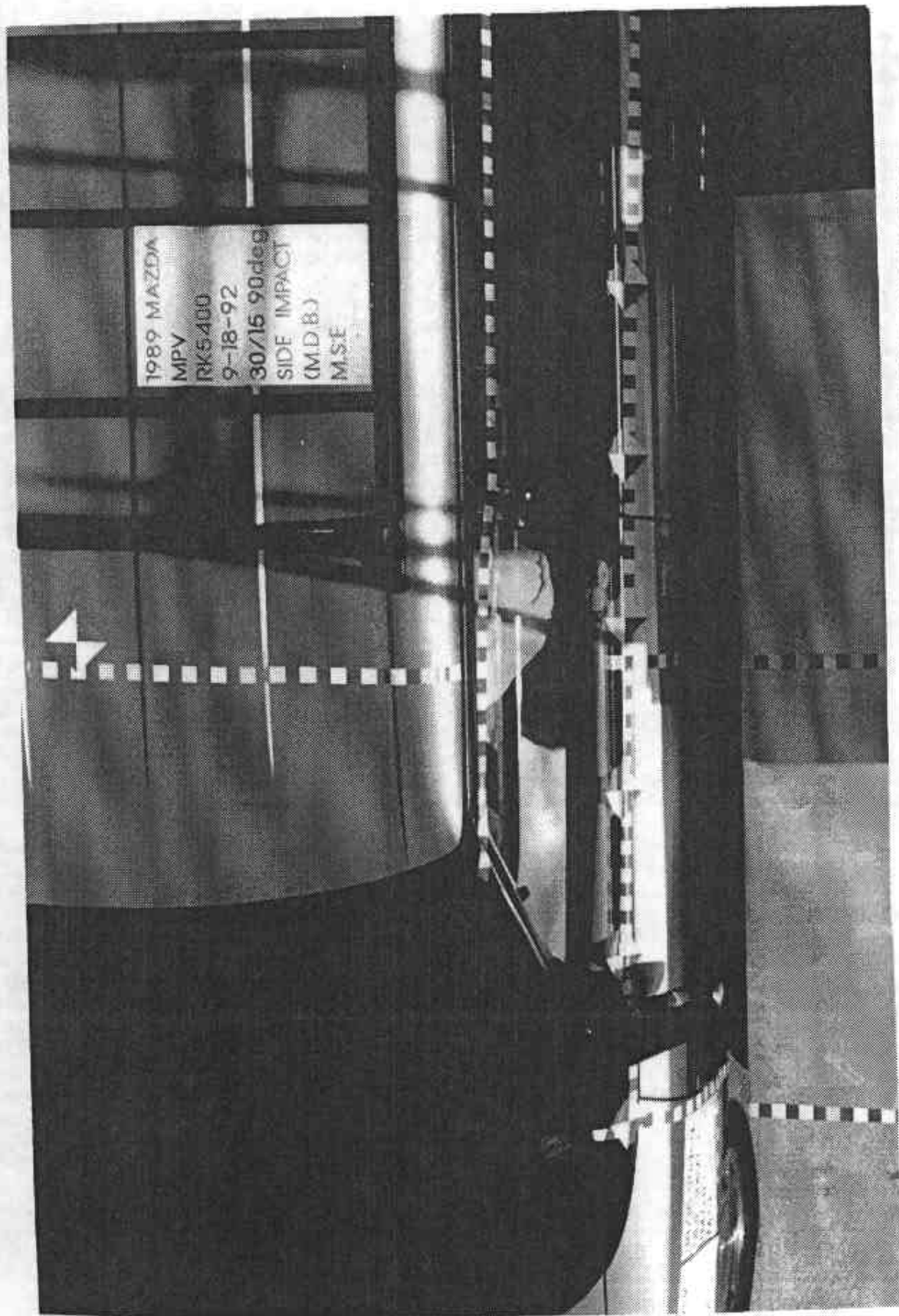


FIGURE 5-15 PRETEST OVERHEAD VIEW OF MDR POSITIONED AGAINST STRUCK SIDE OF TEST VEHICLE AT IMPACT LOCATION



FIGURE 5-16 POSTTEST OVERHEAD VIEW OF MDB POSITIONED AGAINST STRUCK SIDE
FOOF TEST VEHICLE AT IMPACT LOCATION

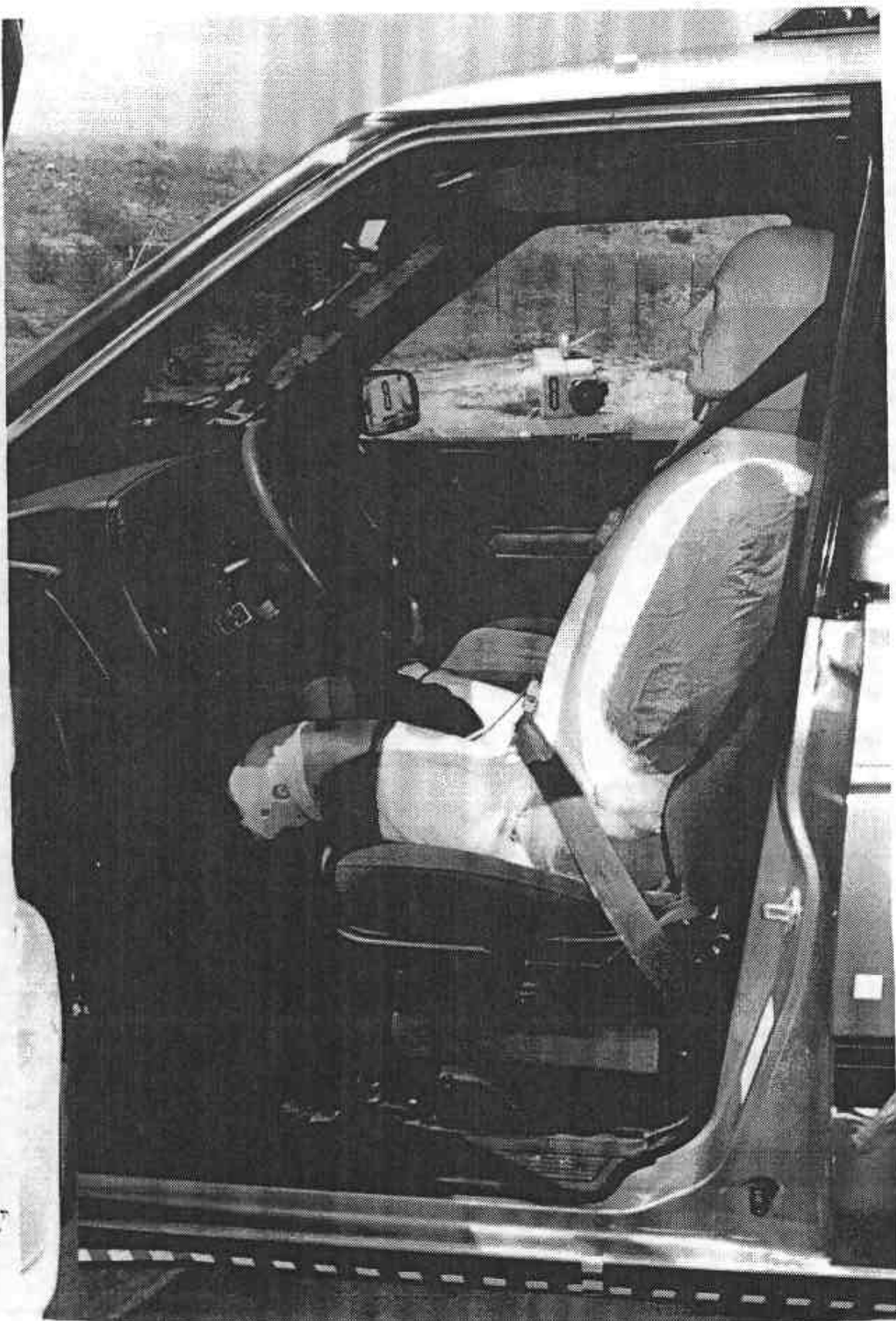


FIGURE 5-17 PRETEST OCCUPANT COMPARTMENT LEFT SIDE SHOWING DRIVER SID
66

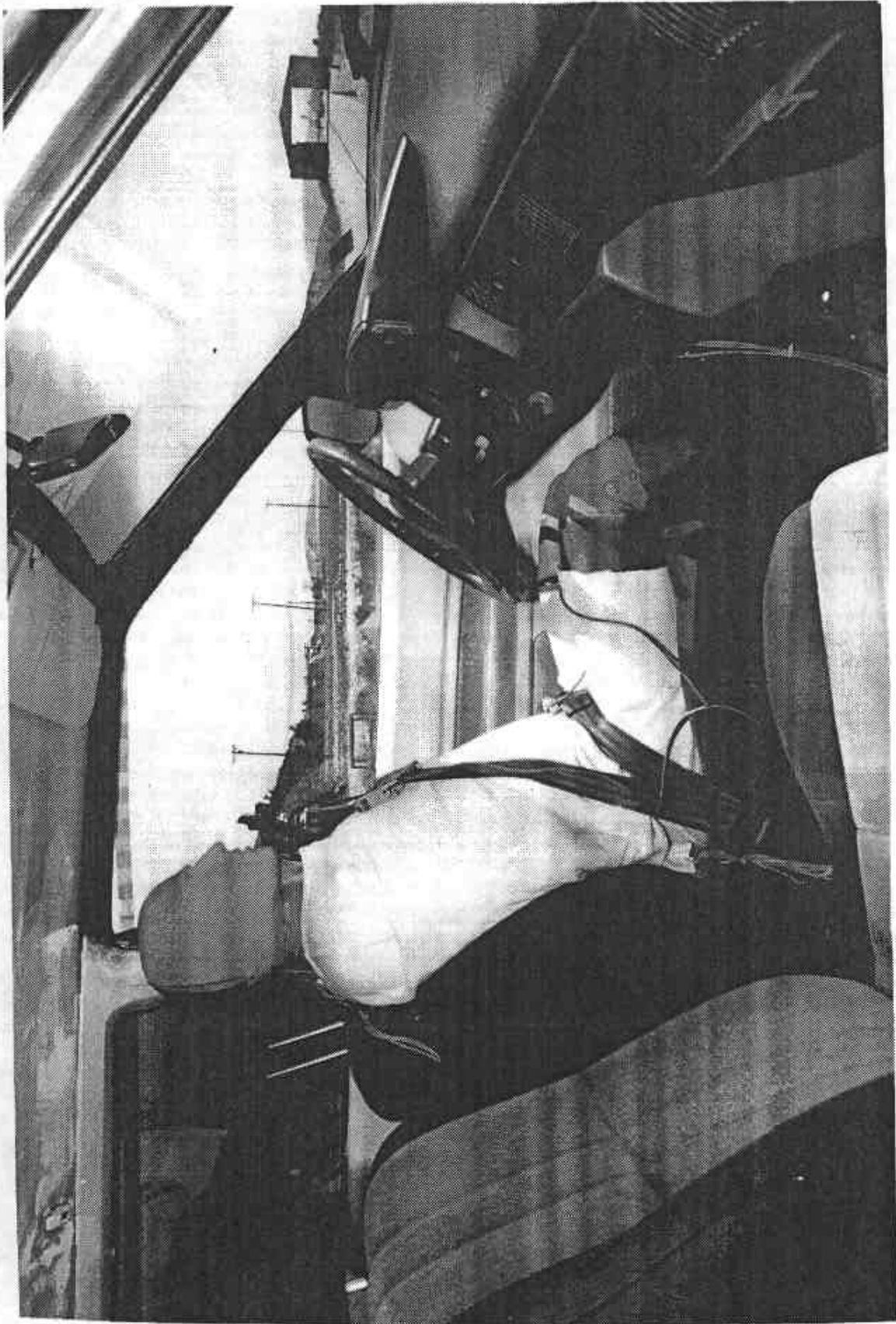


FIGURE 5-18 PRETEST OCCUPANT COMPARTMENT RIGHT SIDE SHOWING DRIVER SID

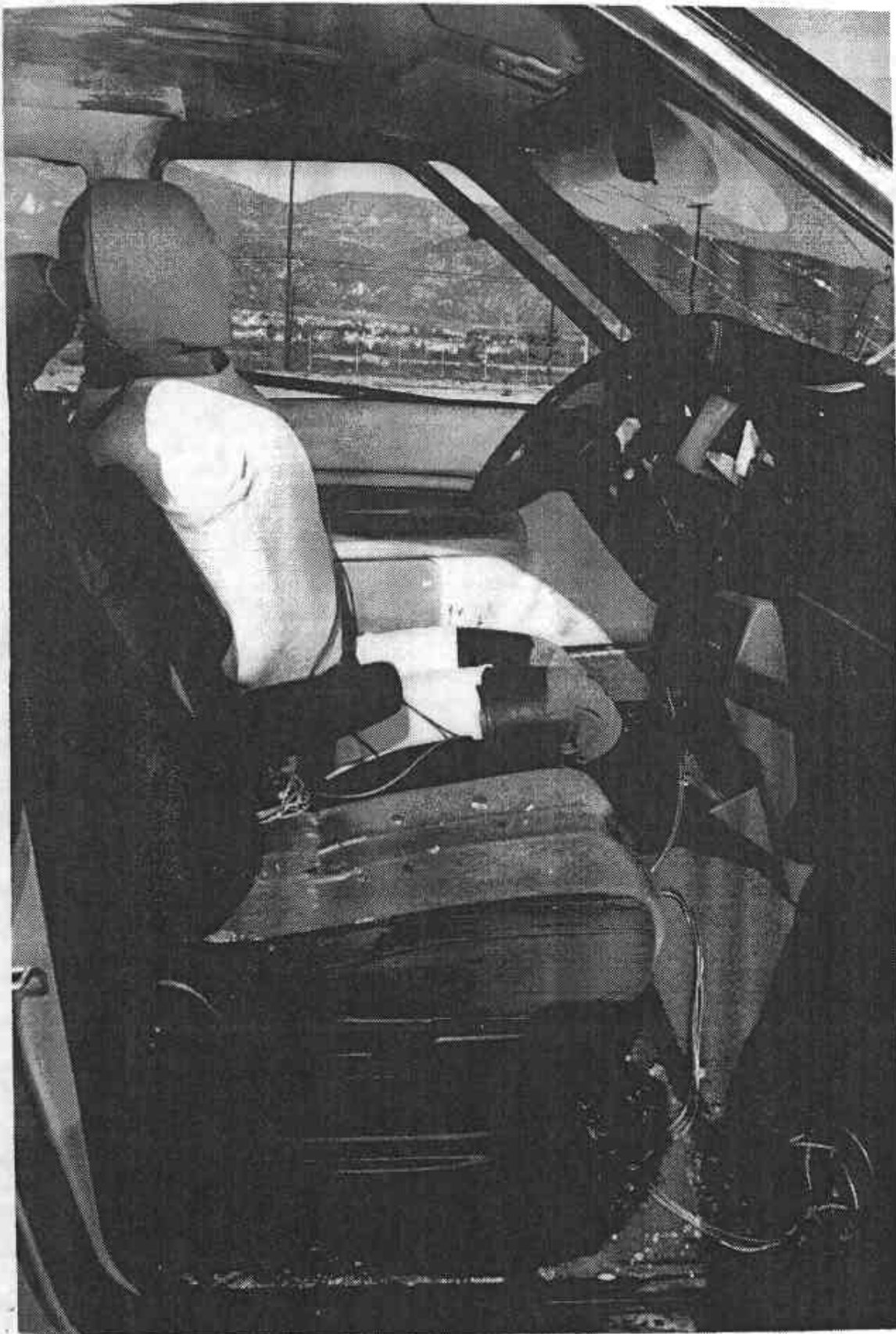


FIGURE 5-19 POSTTEST OCCUPANT COMPARTMENT SHOWING DRIVER SID
68

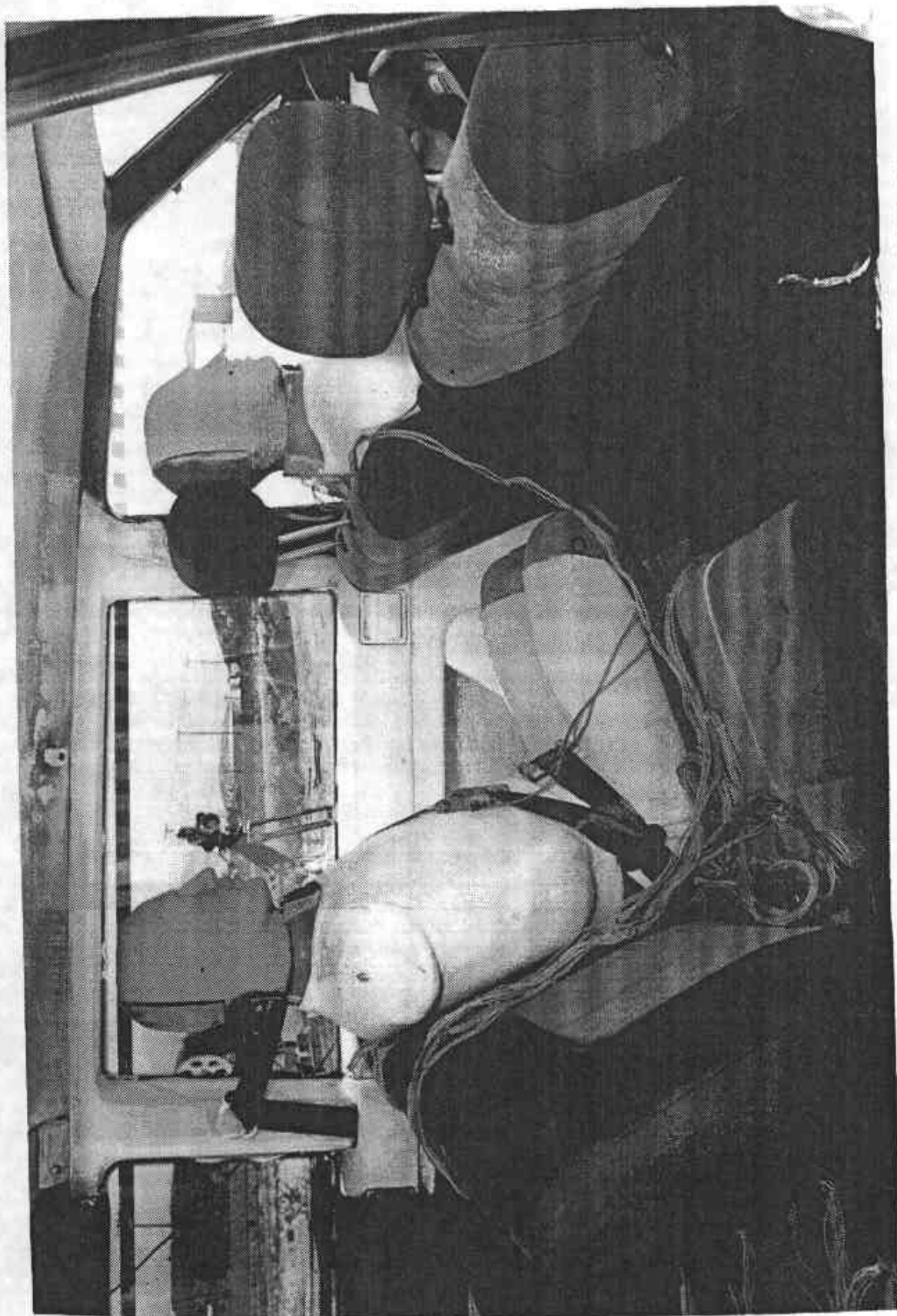


FIGURE 5-20 PRETEST OCCUPANT COMPARTMENT RIGHT SIDE SHOWING PASSENGER SID

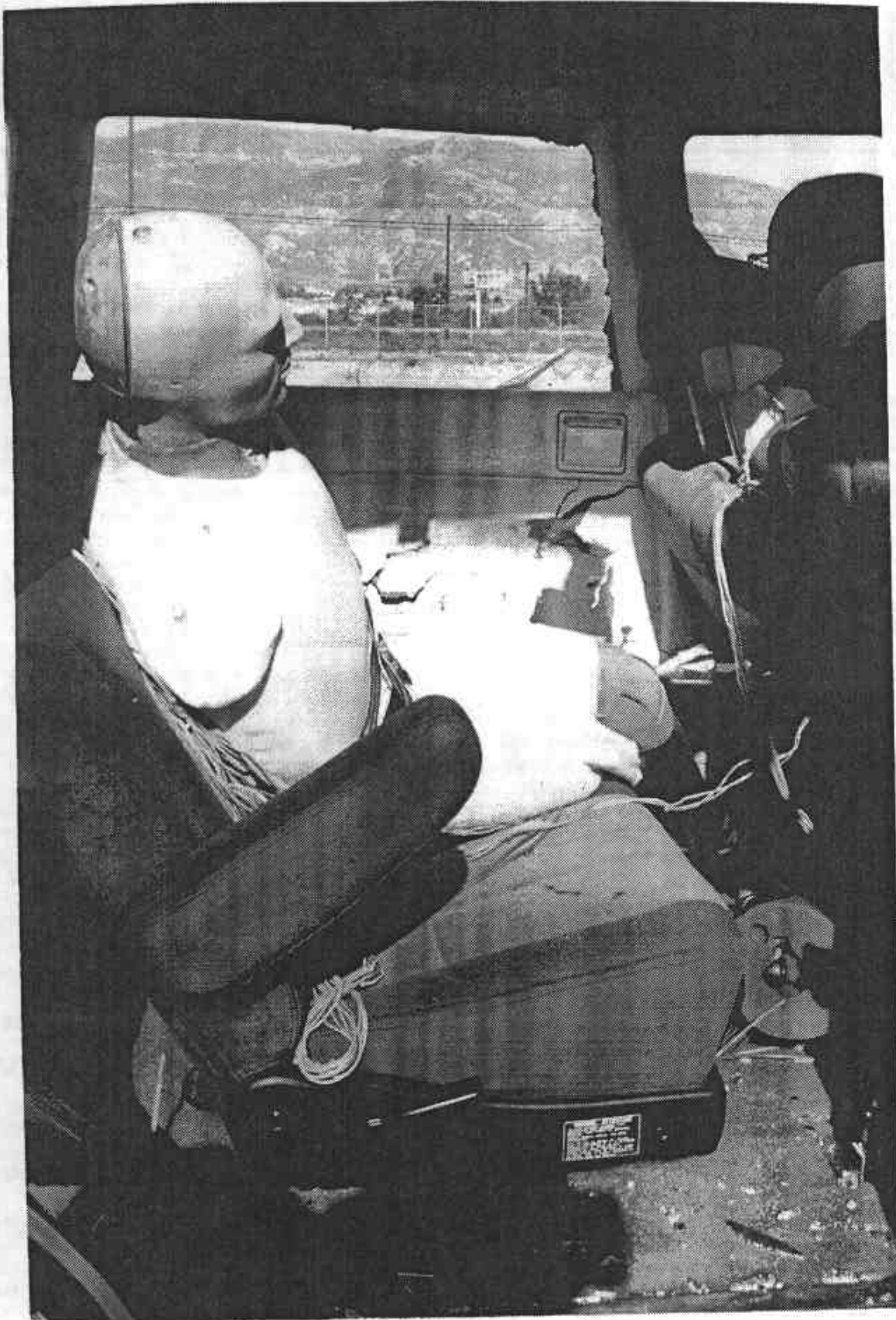


FIGURE 5-21 POSTTEST OCCUPANT COMPARTMENT SHOWING PASSENGER SID
70

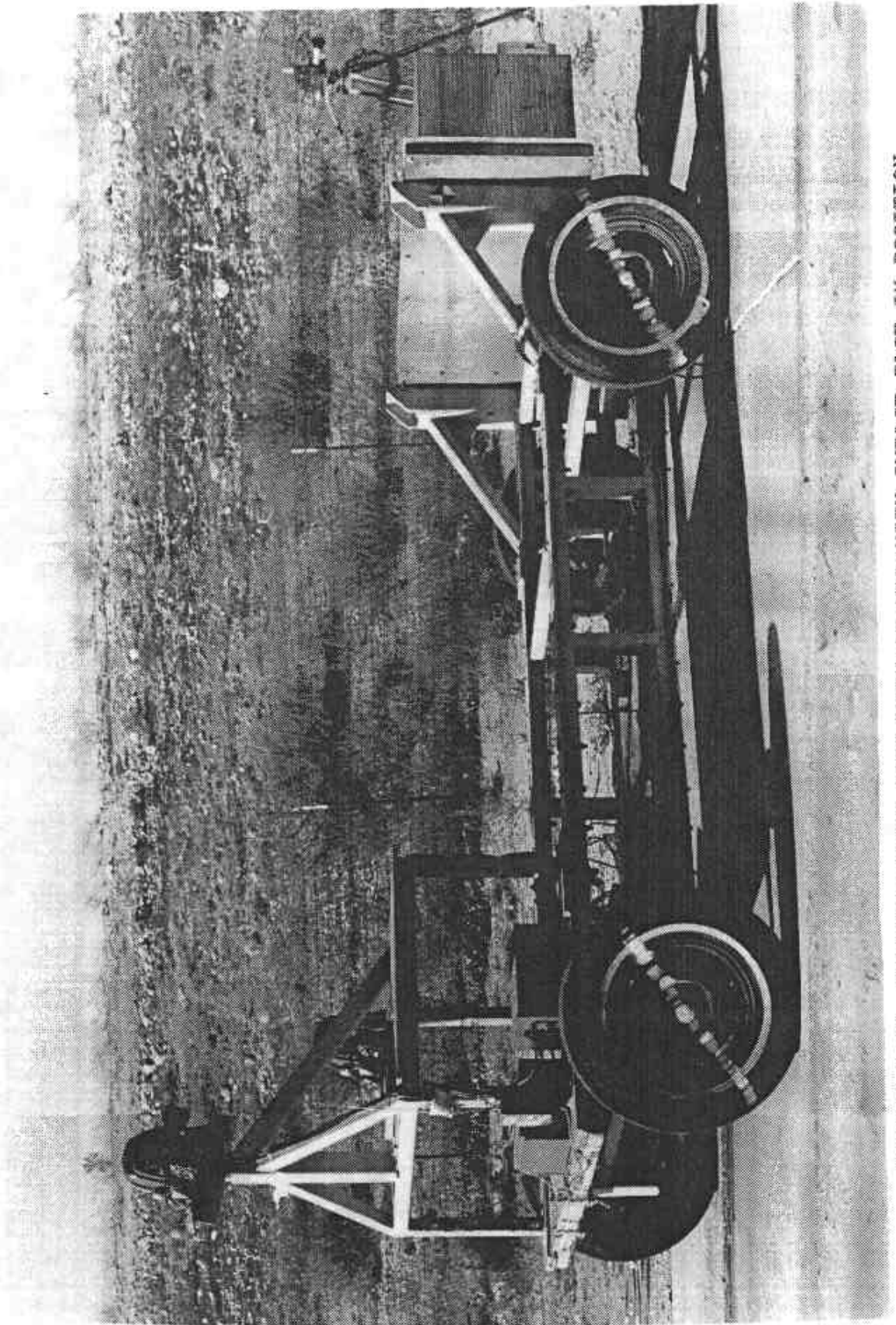


FIGURE 5-22 PRETEST RIGHT SIDE VIEW OF MDB WITH IMPACT FACE IN POSITION

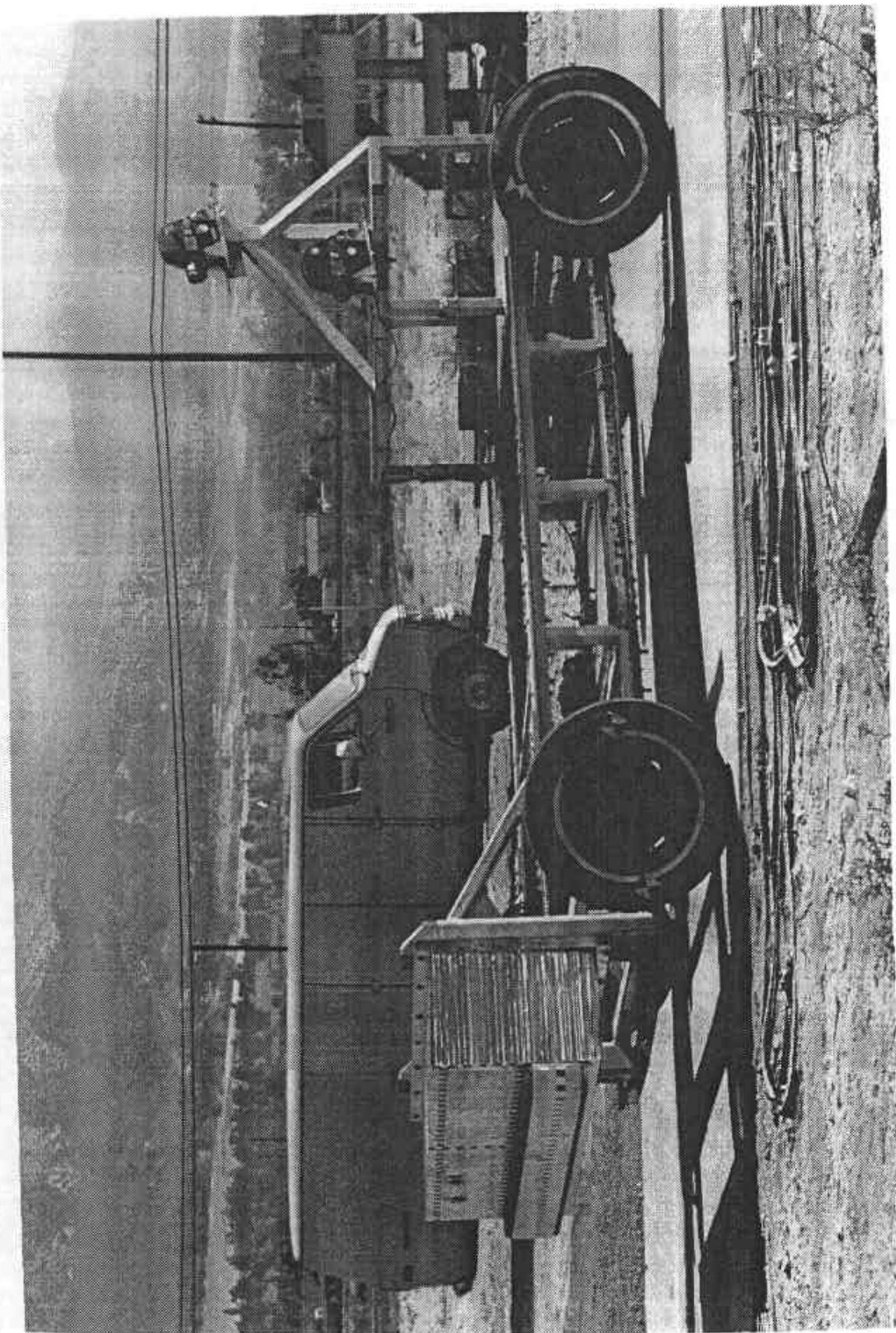


FIGURE 5-23 PRETEST LEFT SIDE VIEW OF MDB WITH IMPACT FACE IN POSITION

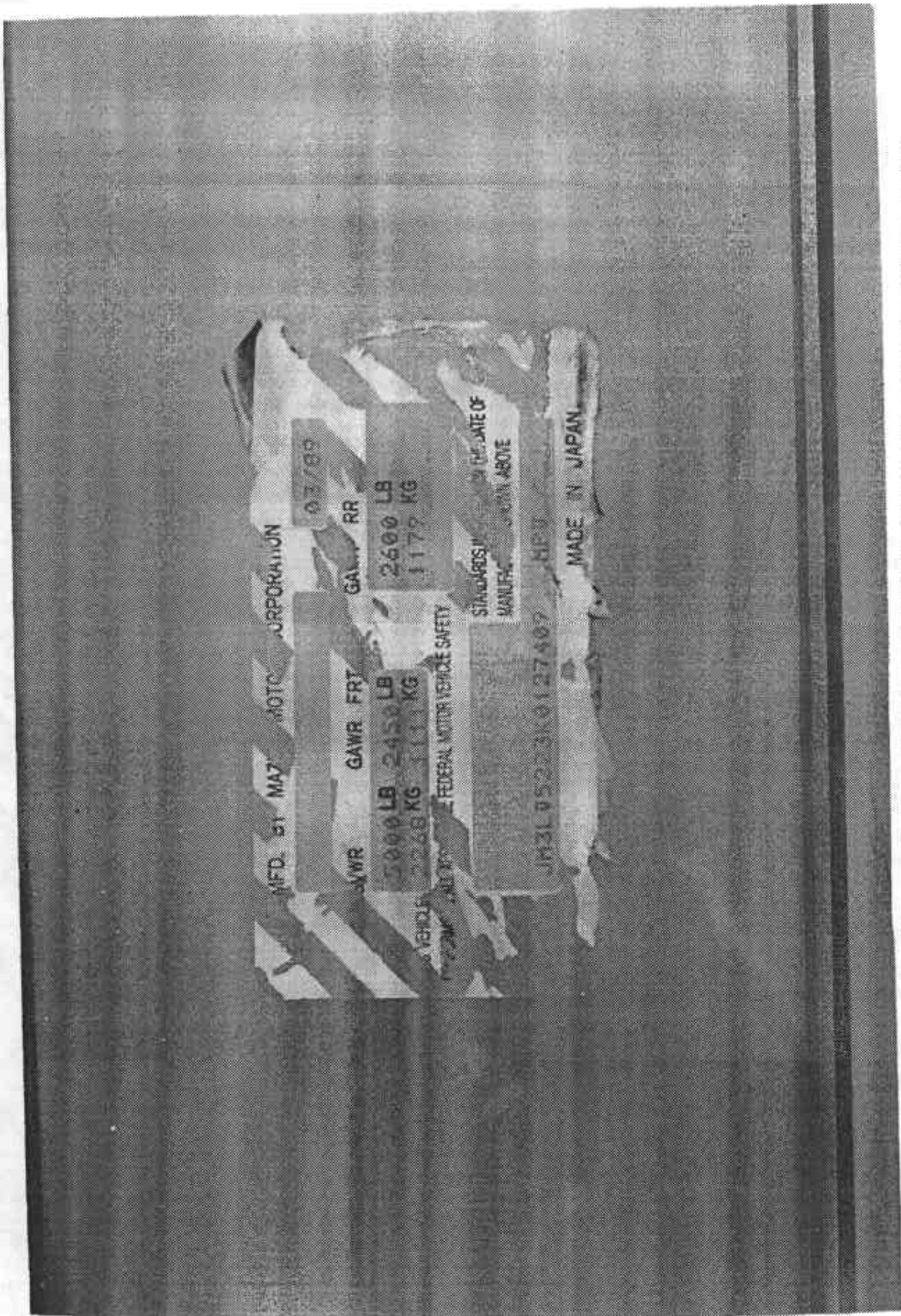


FIGURE 5-24 TEST VEHICLE TIRE PLACARD AND MANUFACTURER'S CERTIFICATION LABEL

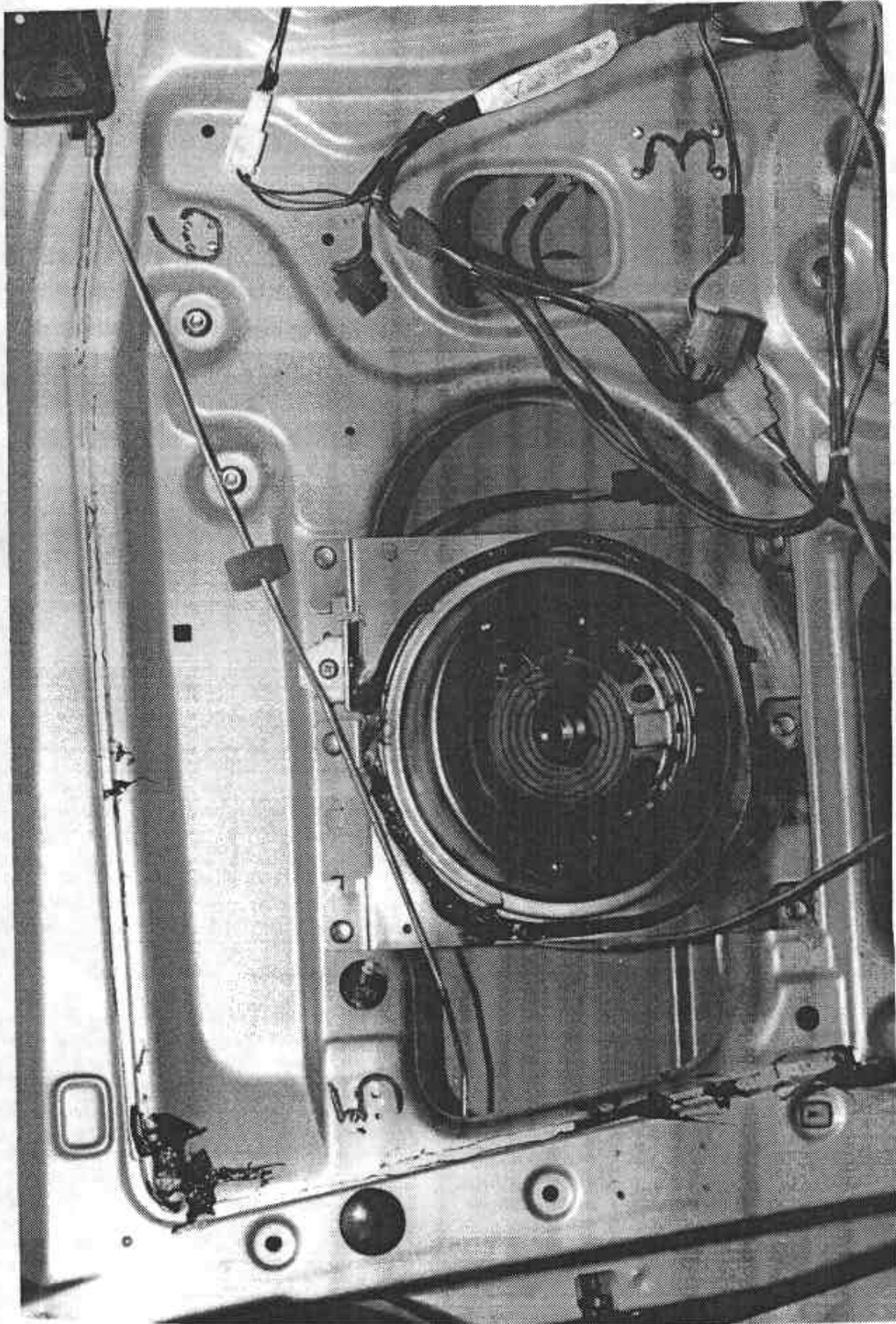


FIGURE 5-25 DRIVER DOOR ACCELEROMETER LOCATIONS



FIGURE 5-26 PRETEST DRIVER DOOR INTERIOR VIEW

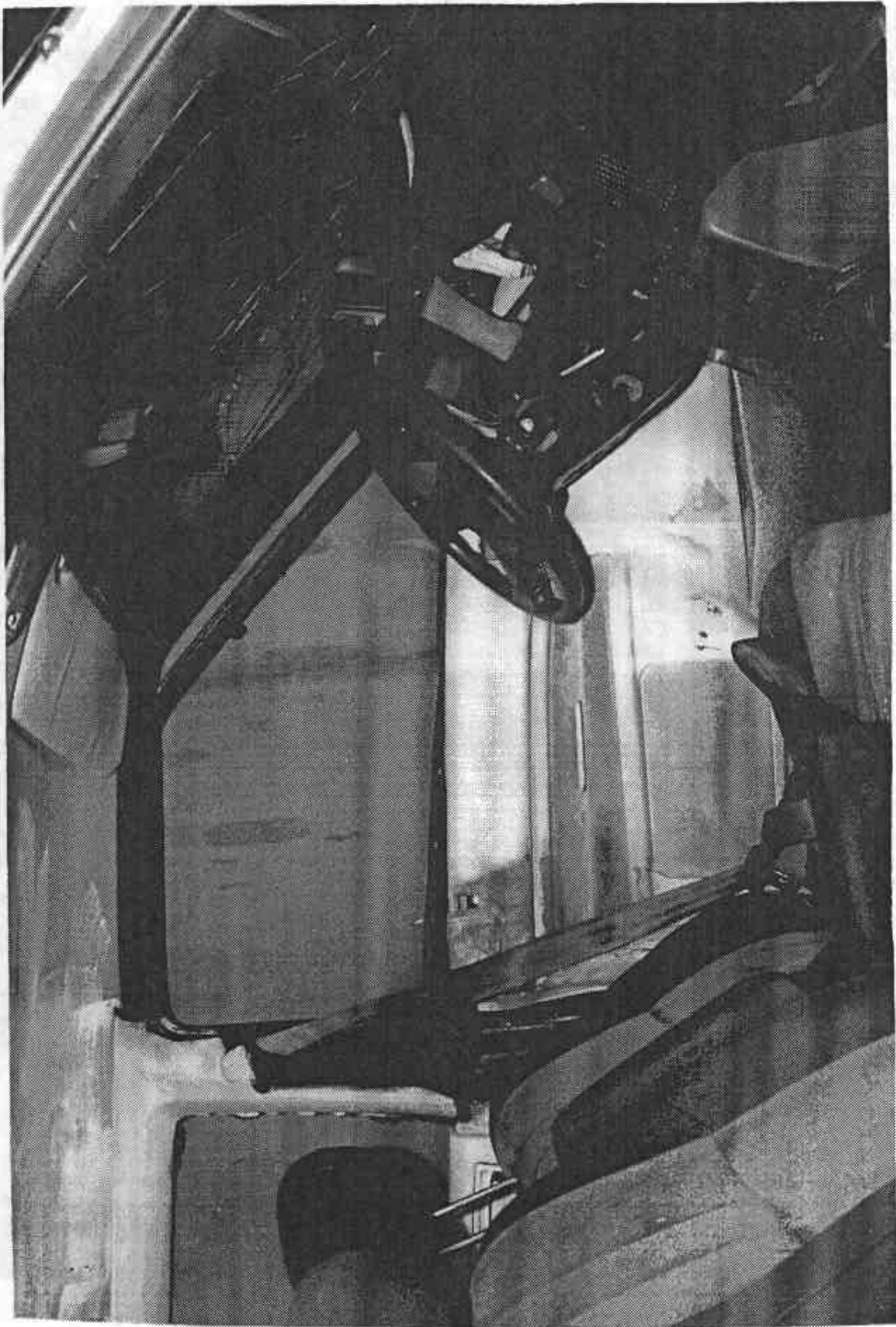


FIGURE 5-27 POSTTEST DRIVER DOOR INTERIOR VIEW

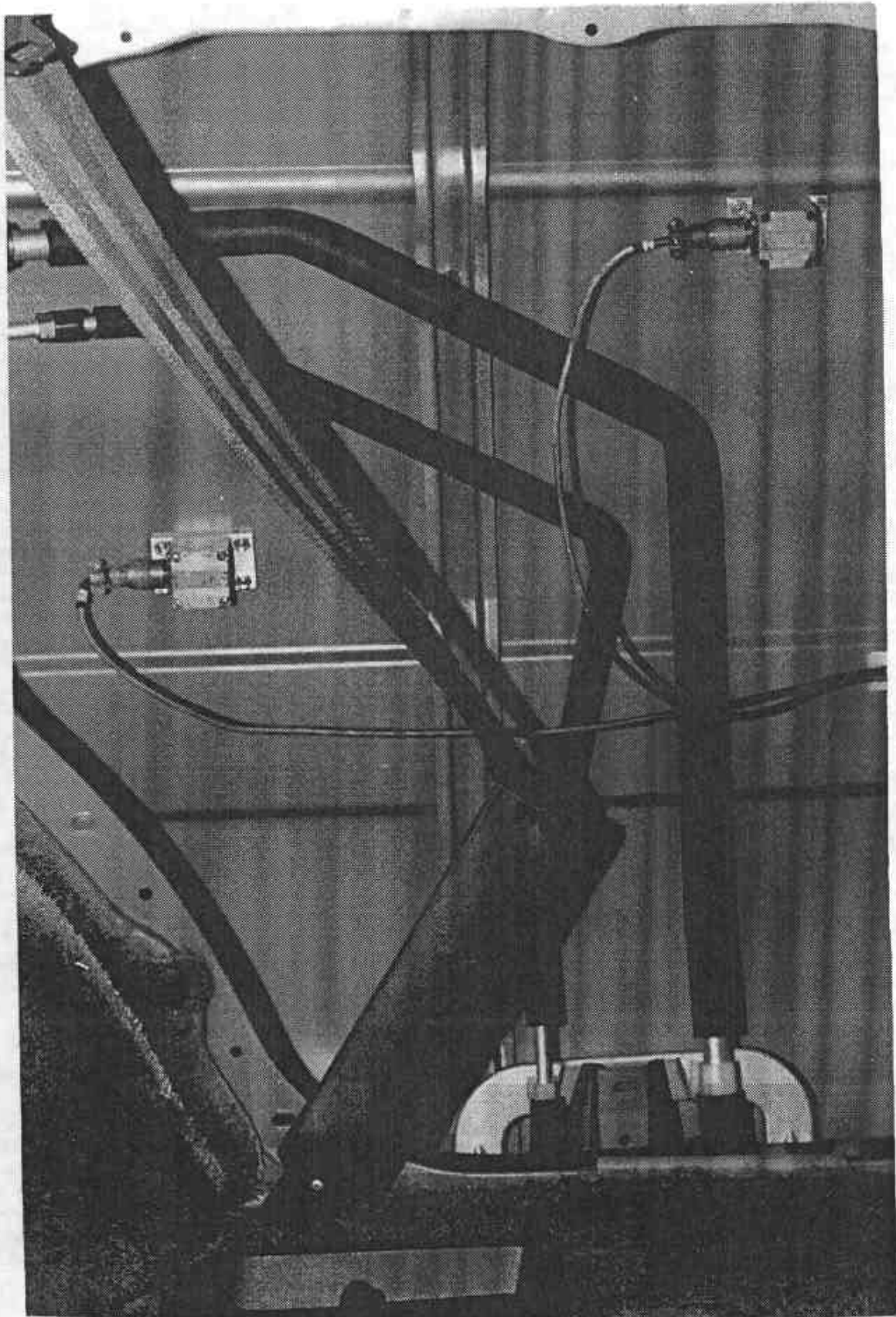


FIGURE 5-28 PRETEST PASSENGER SIDEWALL INTERIOR SHOWING ACCELEROMETER LOCATIONS



FIGURE 5-29 PRETEST PASSENGER SIDEWALL INTERIOR VIEW

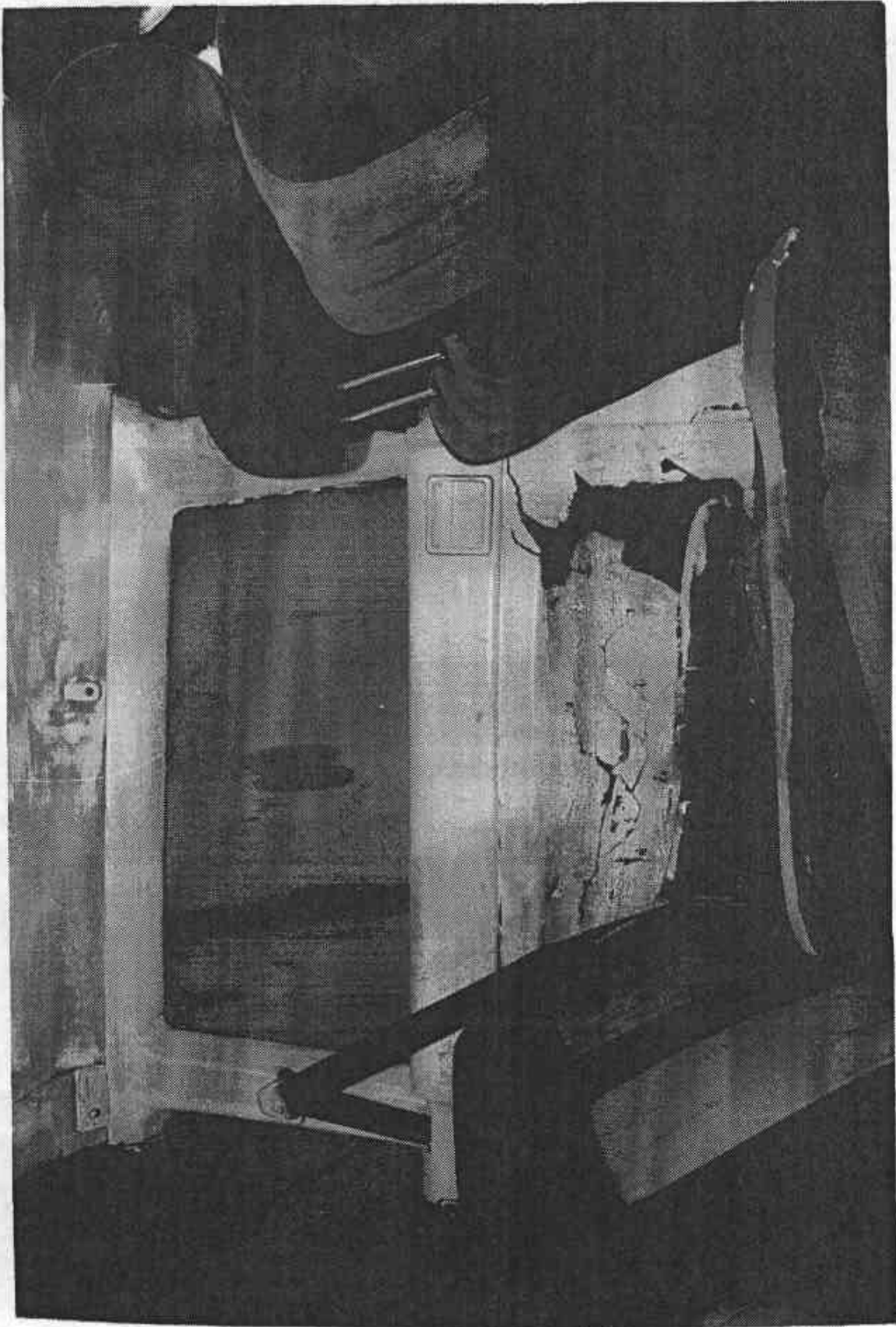


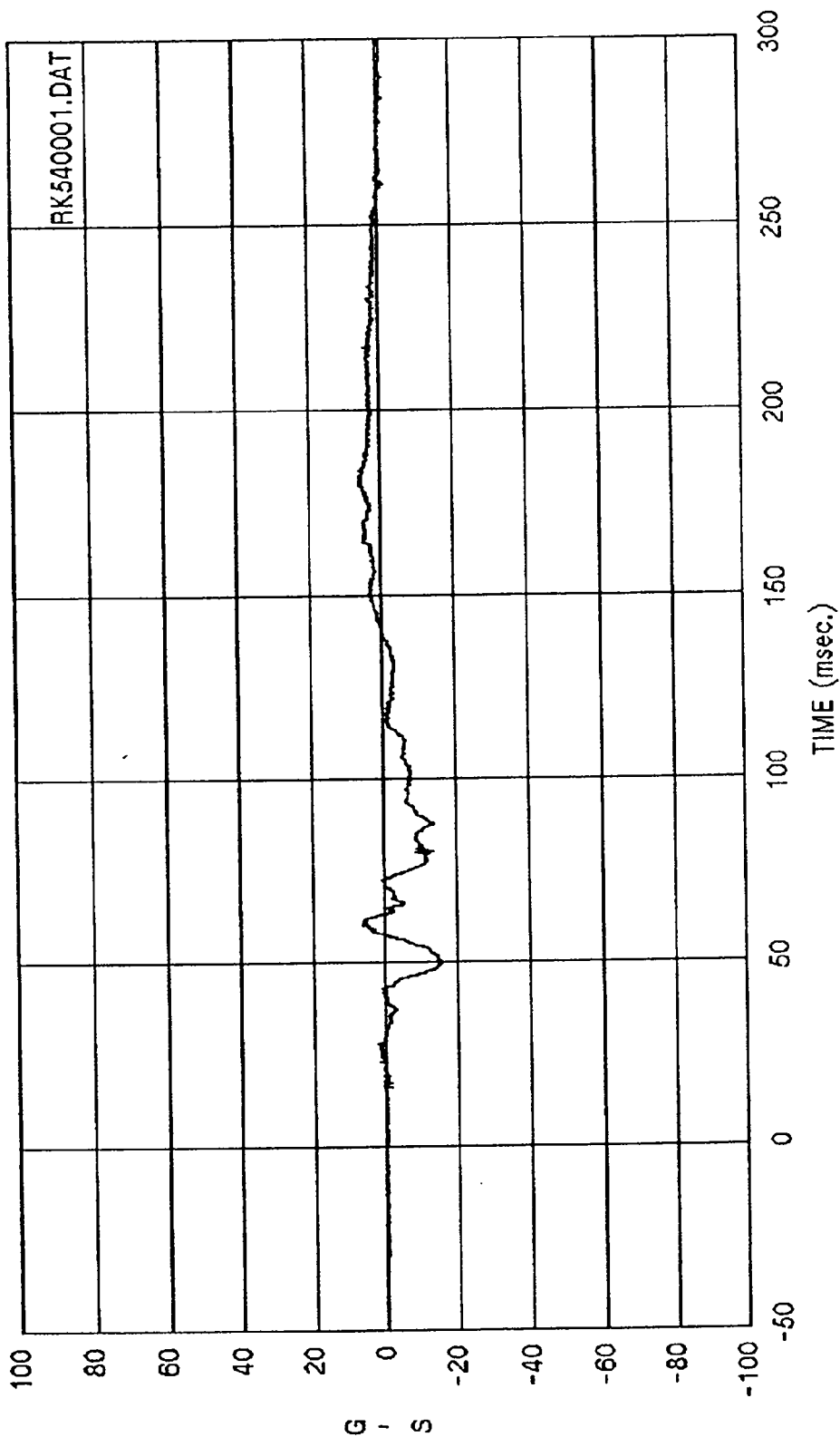
FIGURE 5-30 POSTTEST PASSENGER DOOR INTERIOR VIEW

SECTION 6

VEHICLE AND SID RESPONSE DATA

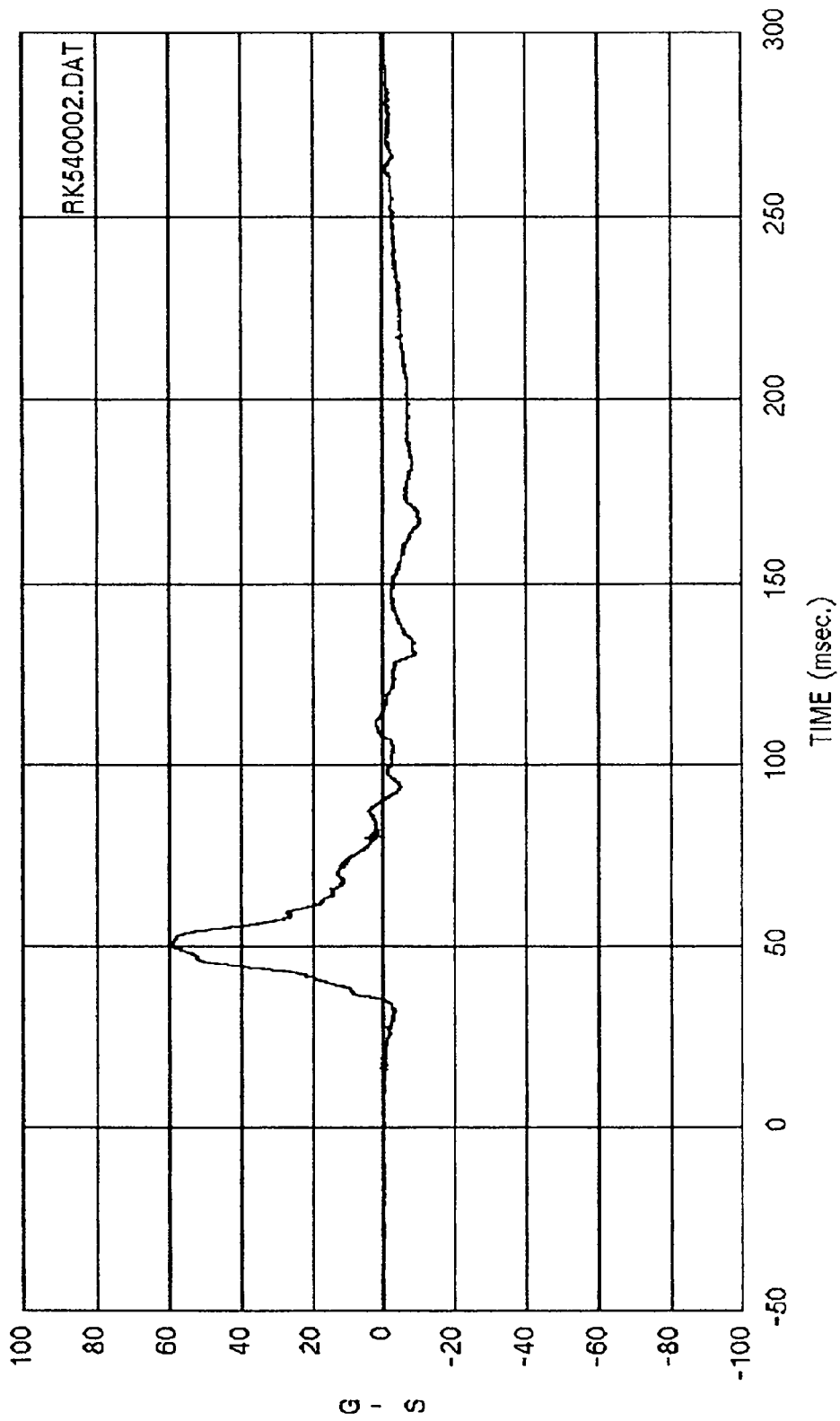
The dataplots from the side impact test are presented in this section.

SID DATA



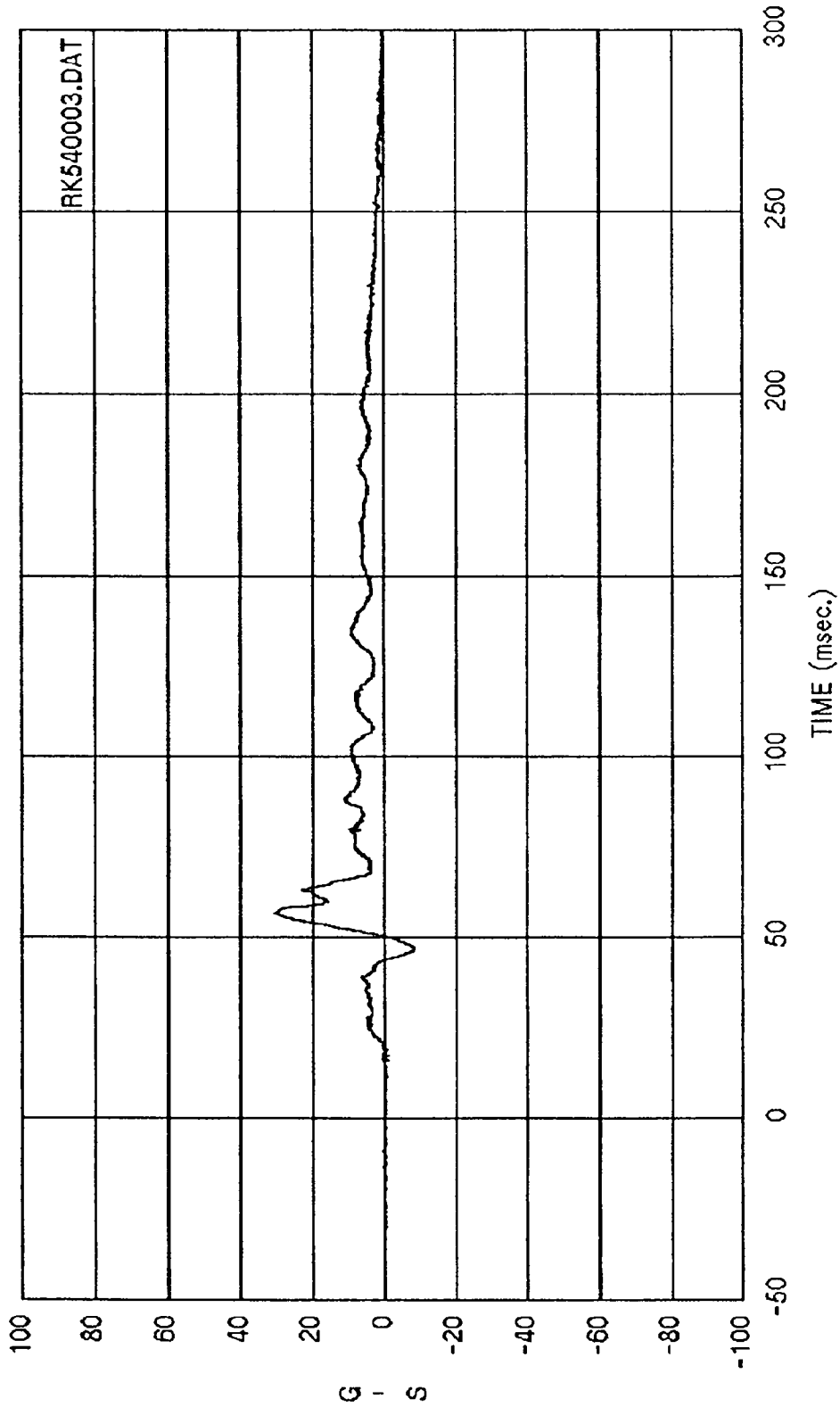
Curve: Driver Head acceleration -- X axis Filter: SAE CLASS 1000 Max = 6.4046 Min = -15.943

MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV



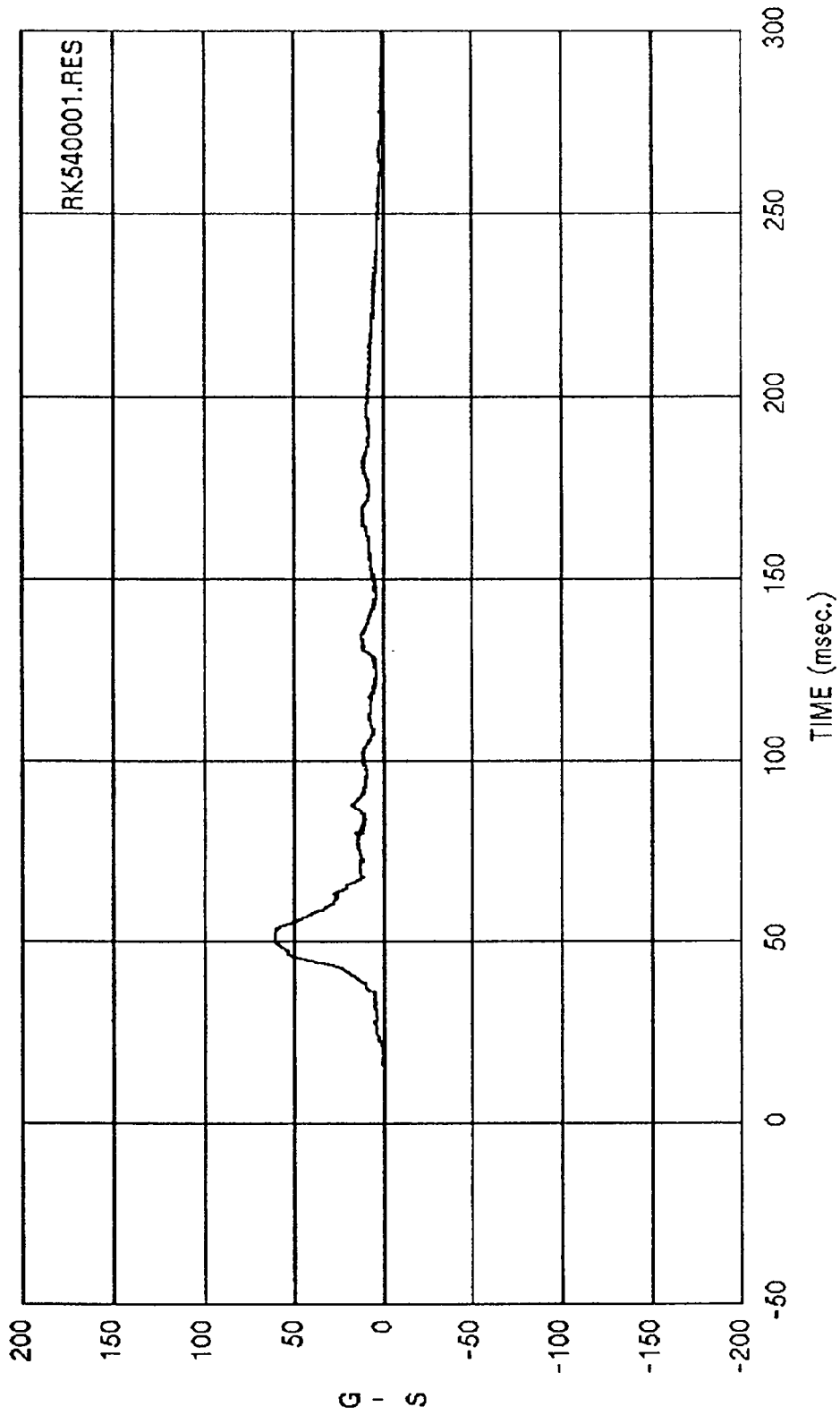
Curve: Driver Head acceleration -- Y axis Filter: SAE CLASS 1000 Max = 59.341 Min = -10.339

MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV



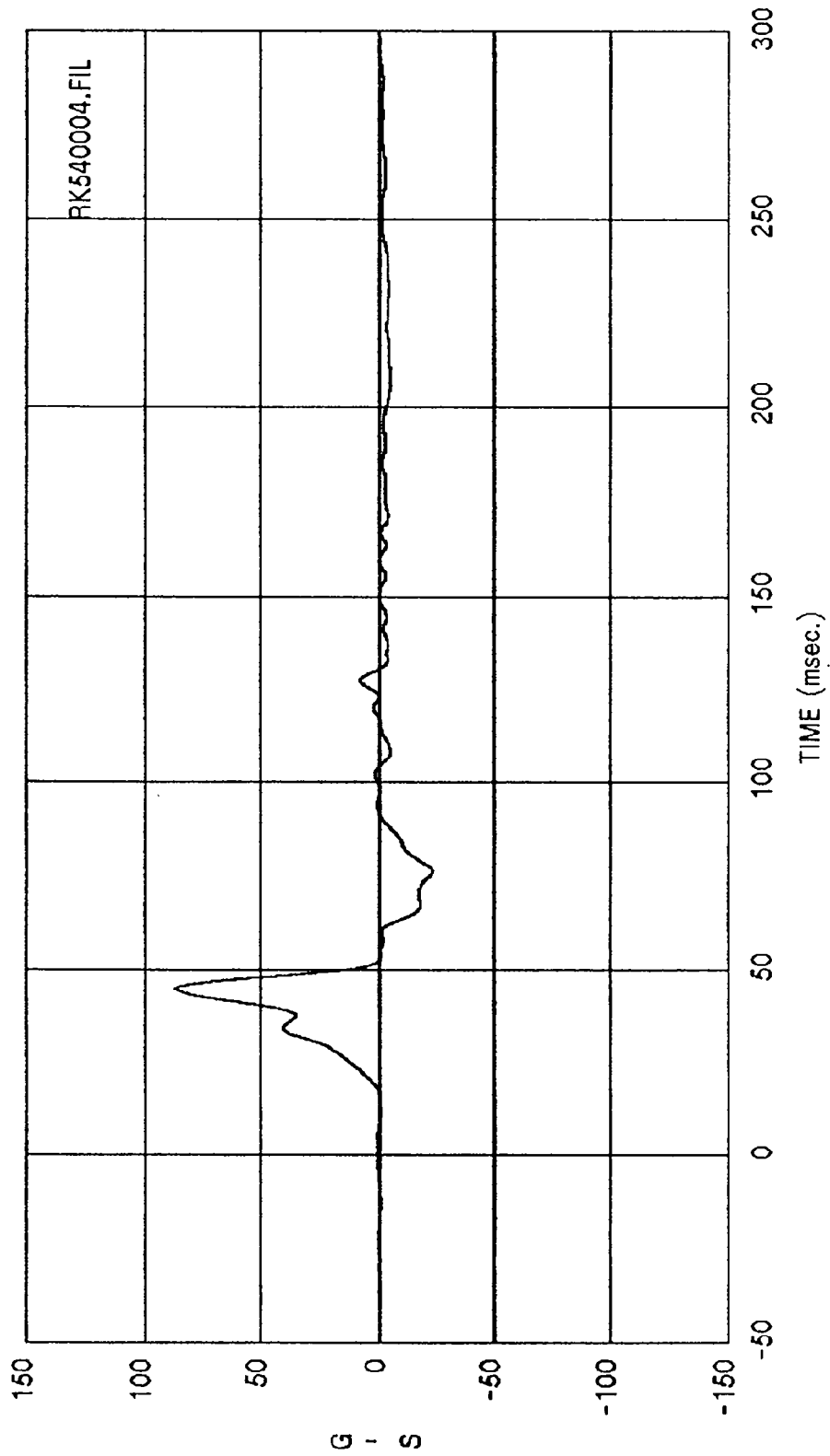
Curve: Driver Head acceleration -- Z axis Filter: SAE CLASS 1000 Max = 30.906 Min = -8.3871

MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV



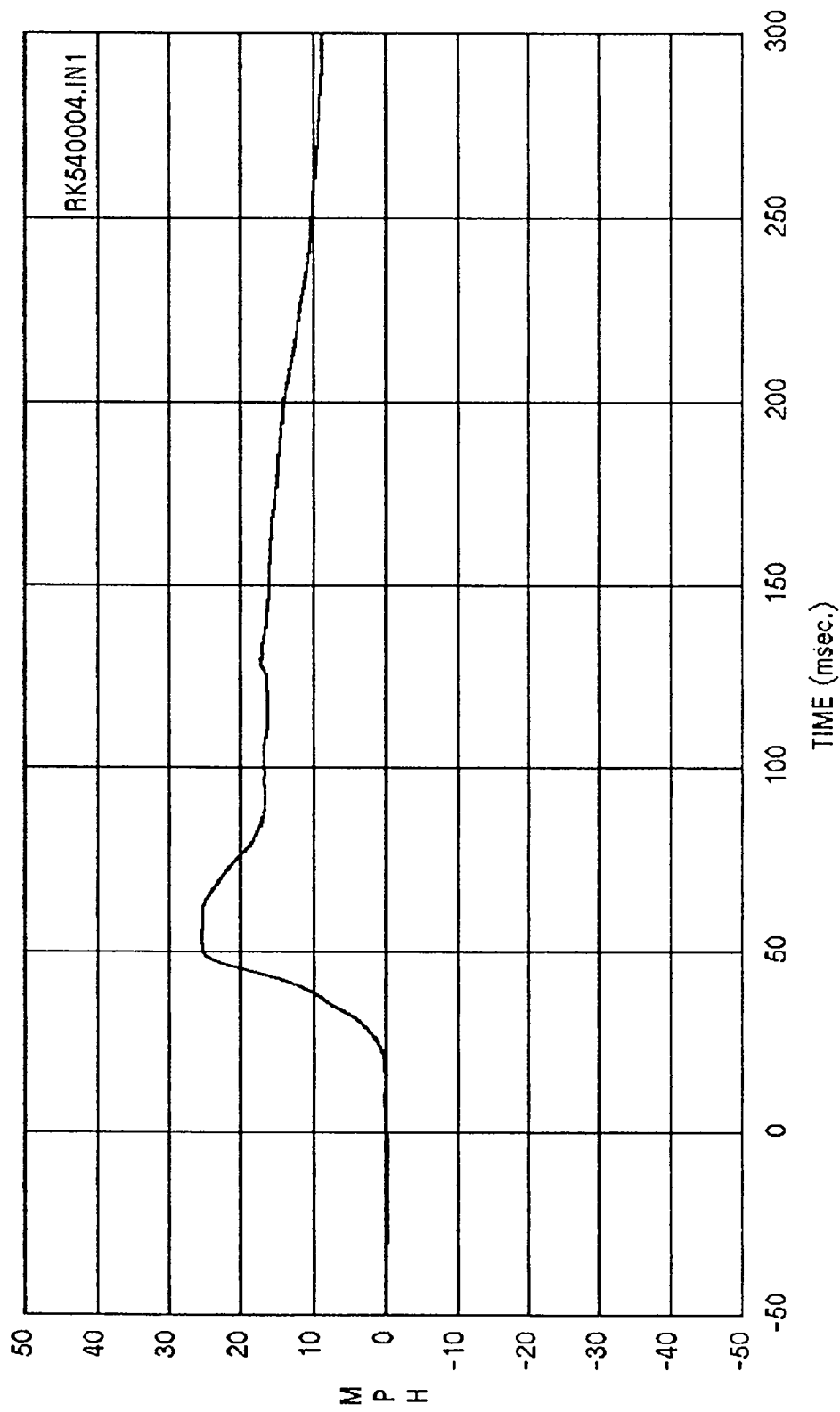
Curve: Driver head resultant acceleration Filter: SAE CLASS 1000 Max = 61.417 Min = .00000

MSE Date: 09/18/92 Program: Side Impact 30/15 90 Deg. Vehicle: 1989 Mazda MPV



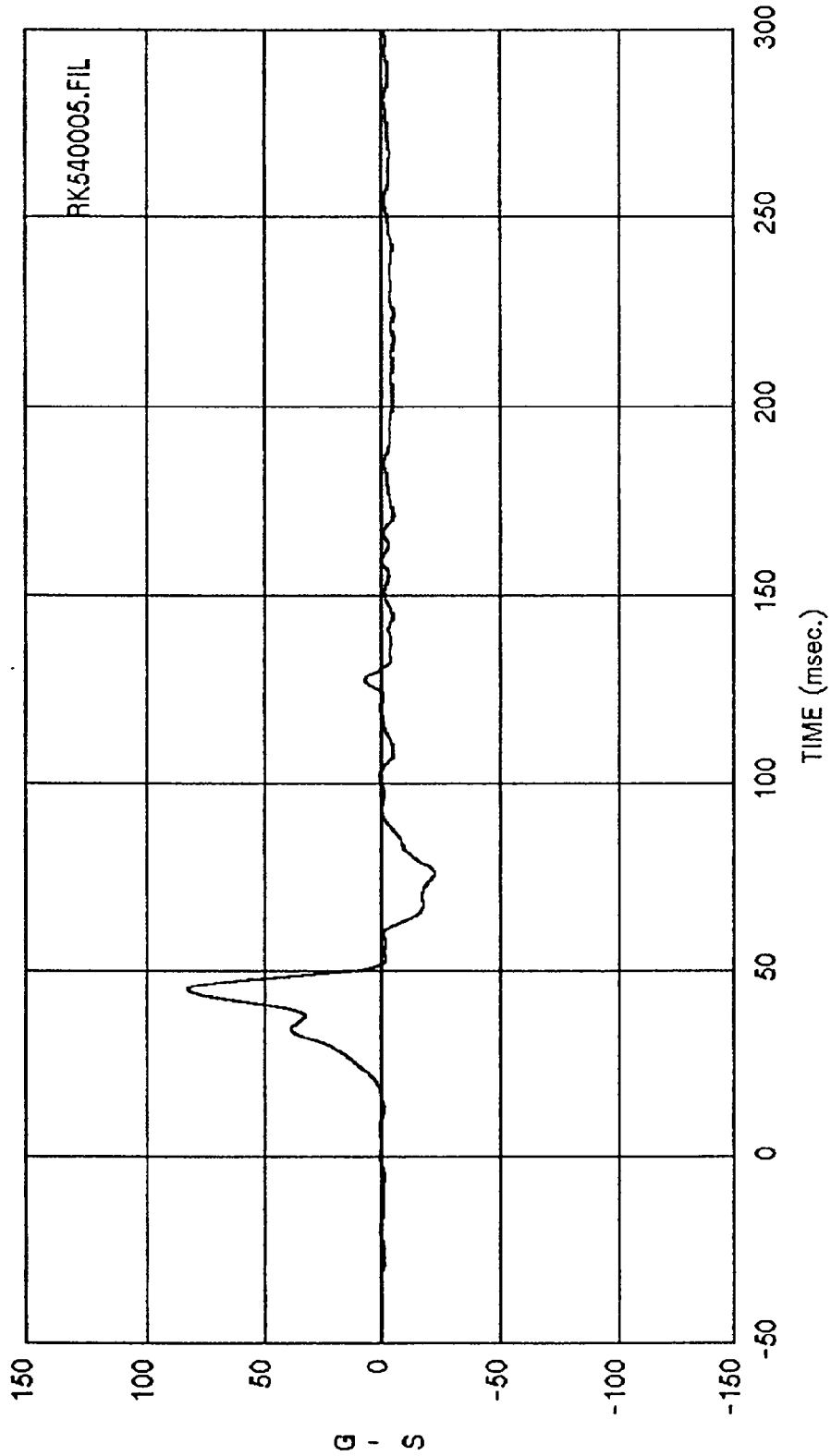
Curve: Driver upper spine acceleration -- Primary Filter: FIR 100 Max = 86.504 Min = -22.810

MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV



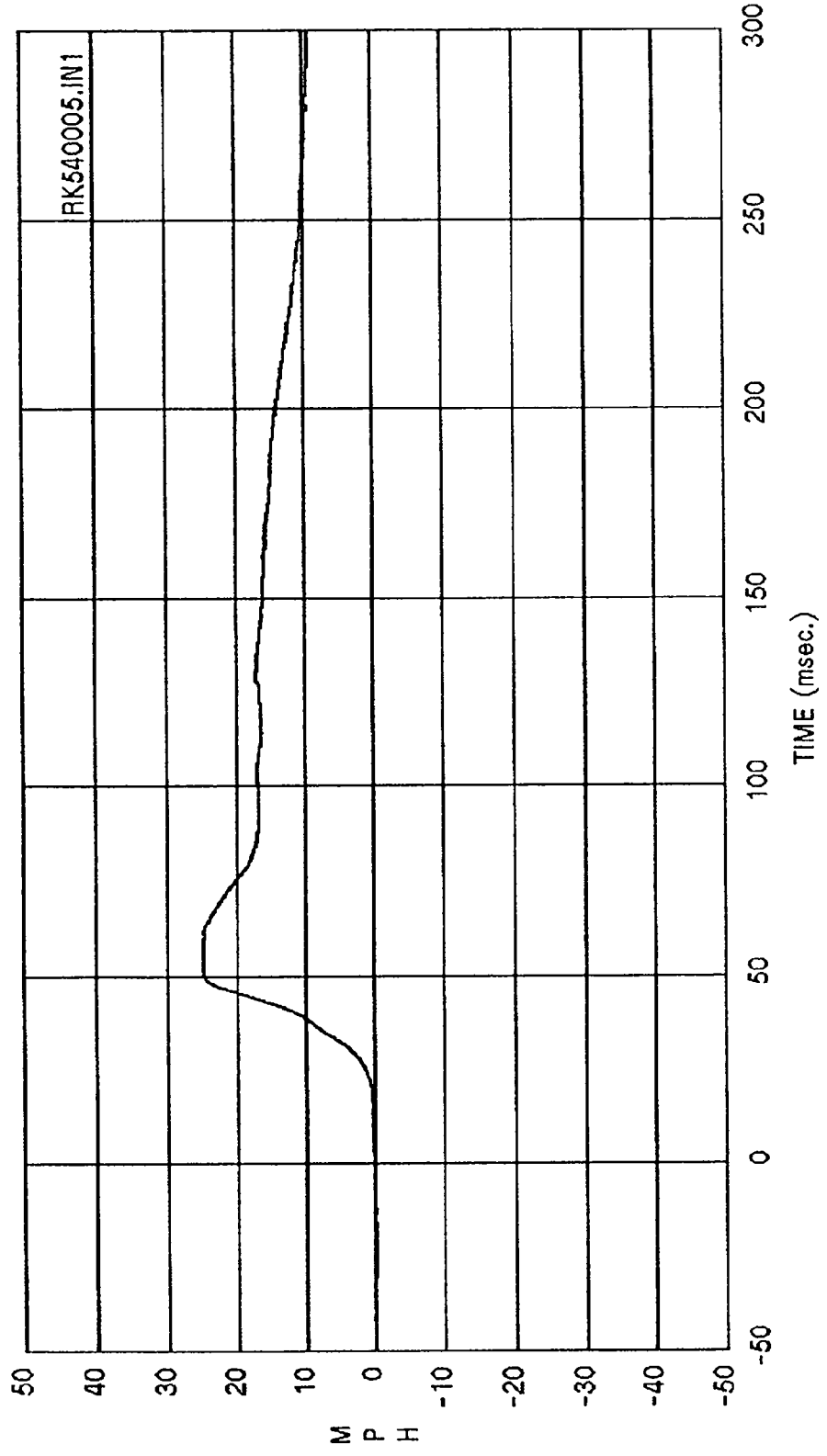
Curve: Driver upper spine delta V -- Primary Filter: SAE CLASS 180 Max = 25.585 Min = .14398

MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV



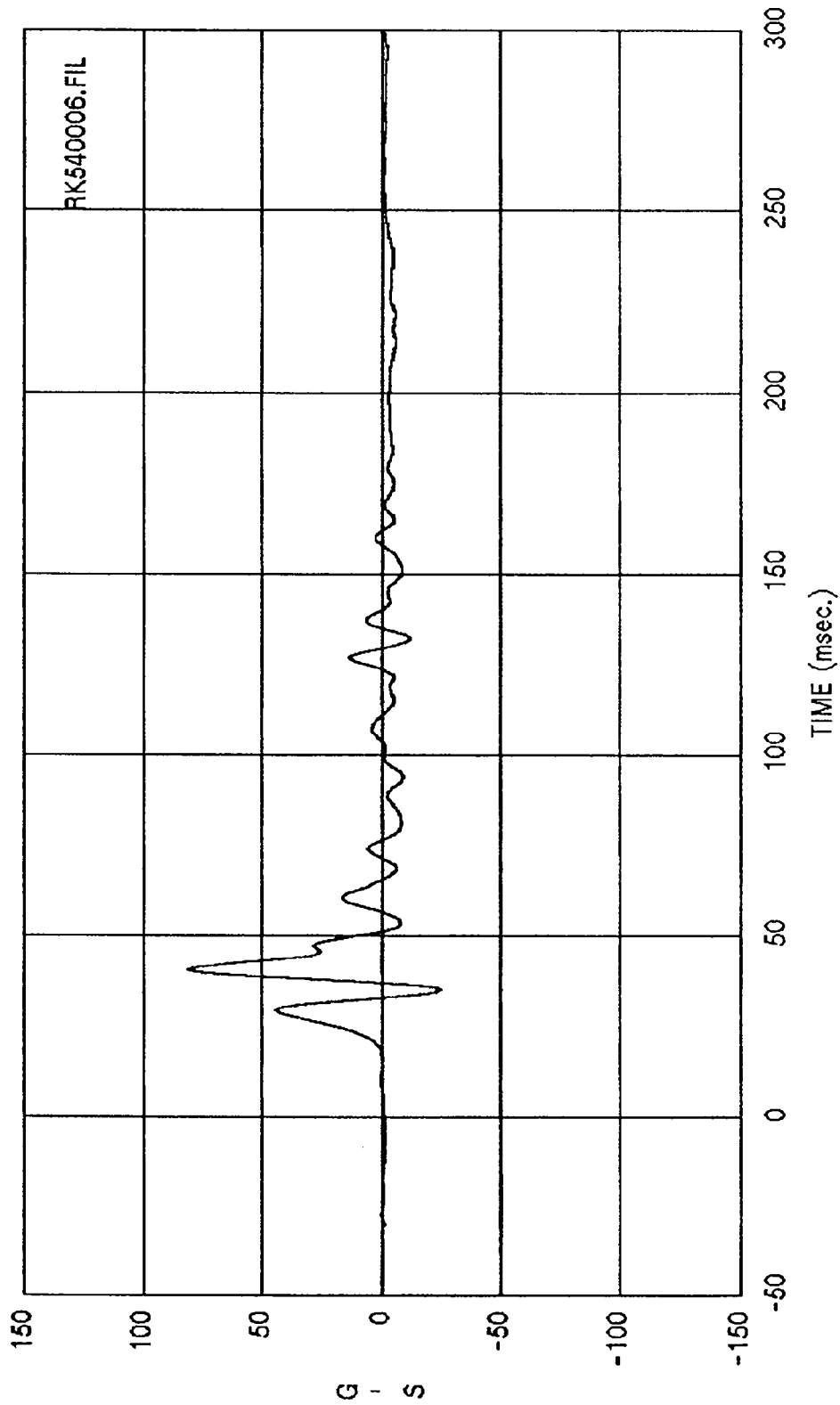
Curve: Driver upper spine acceleration -- Redundant Filter: FIR 100 Max = 83.169 Min = -22.645

MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV



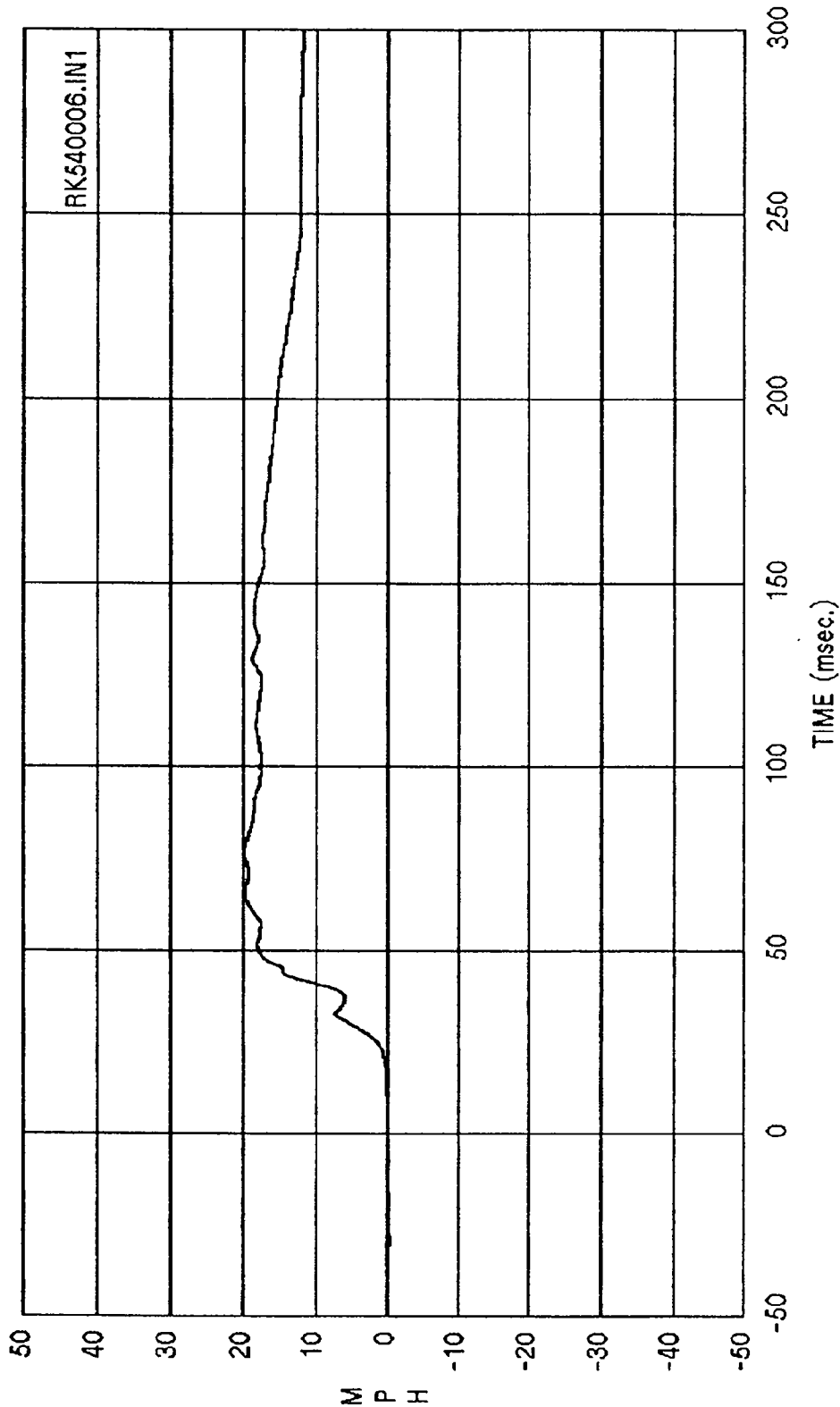
Curve: Driver upper spine delta V -- Redundant Filter: SAE CLASS 180 Max = 24.965 Min = .23630

MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV



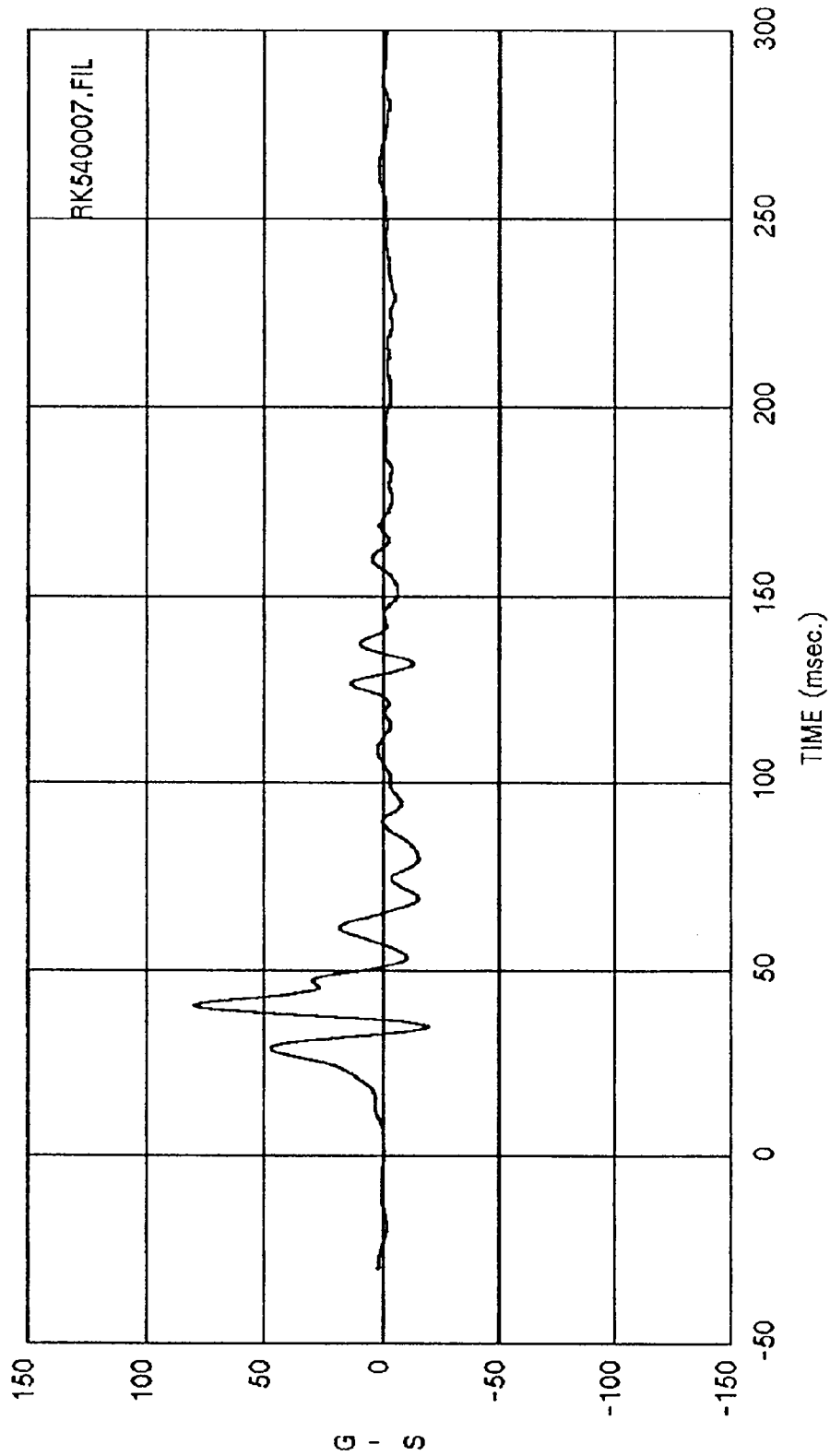
Curve: Driver upper rib acceleration -- Primary Filter: FIR 100 Max = 81.602 Min = -24.395

MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV

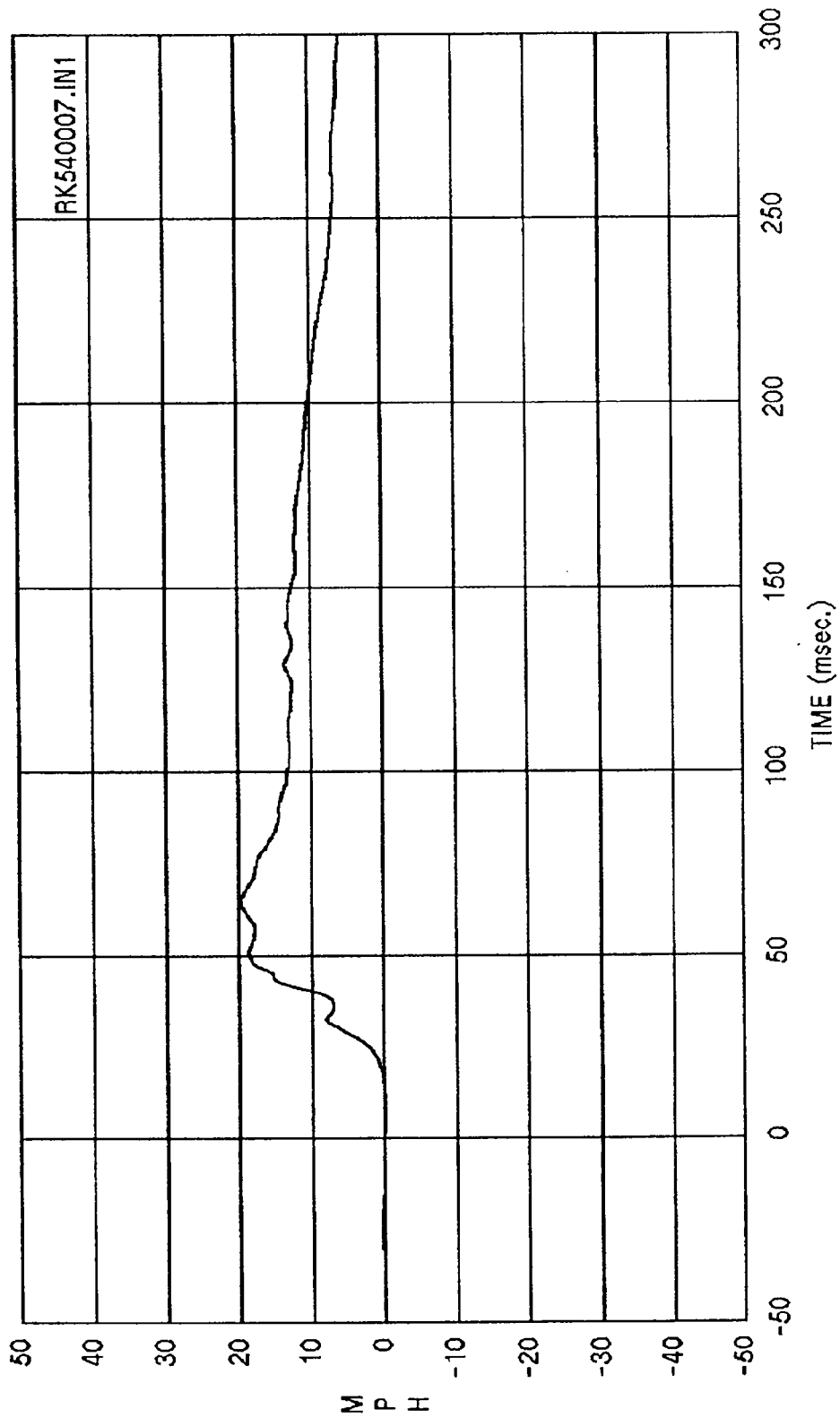


Curve: Driver upper rib delta V -- Primary Filter: SAE CLASS 180 Max = 19.914 Min = .34481

MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV

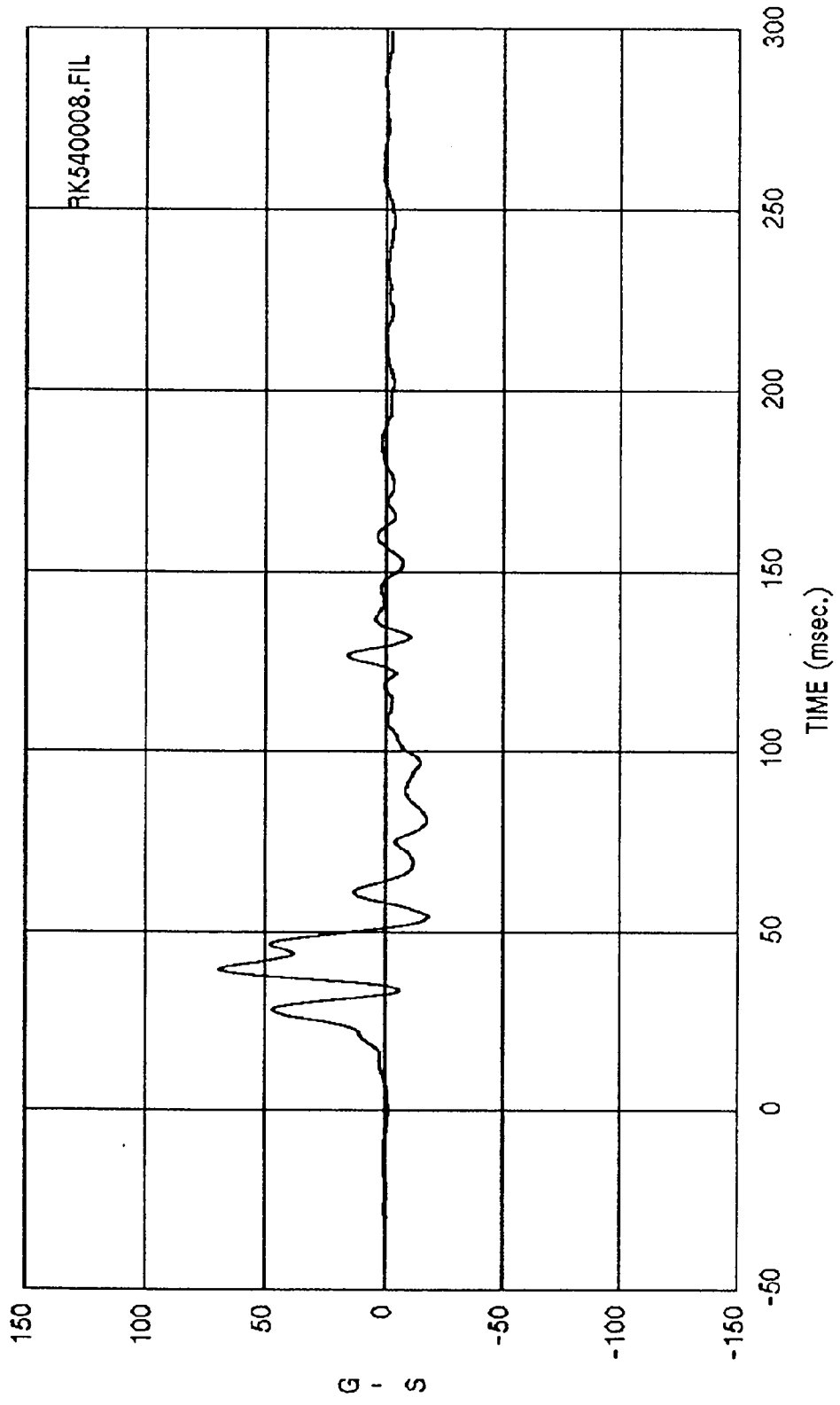


Curve: Driver upper rib acceleration -- Redundant Filter: FIR 100 Max = 80.141 Min = -19.442
 MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV



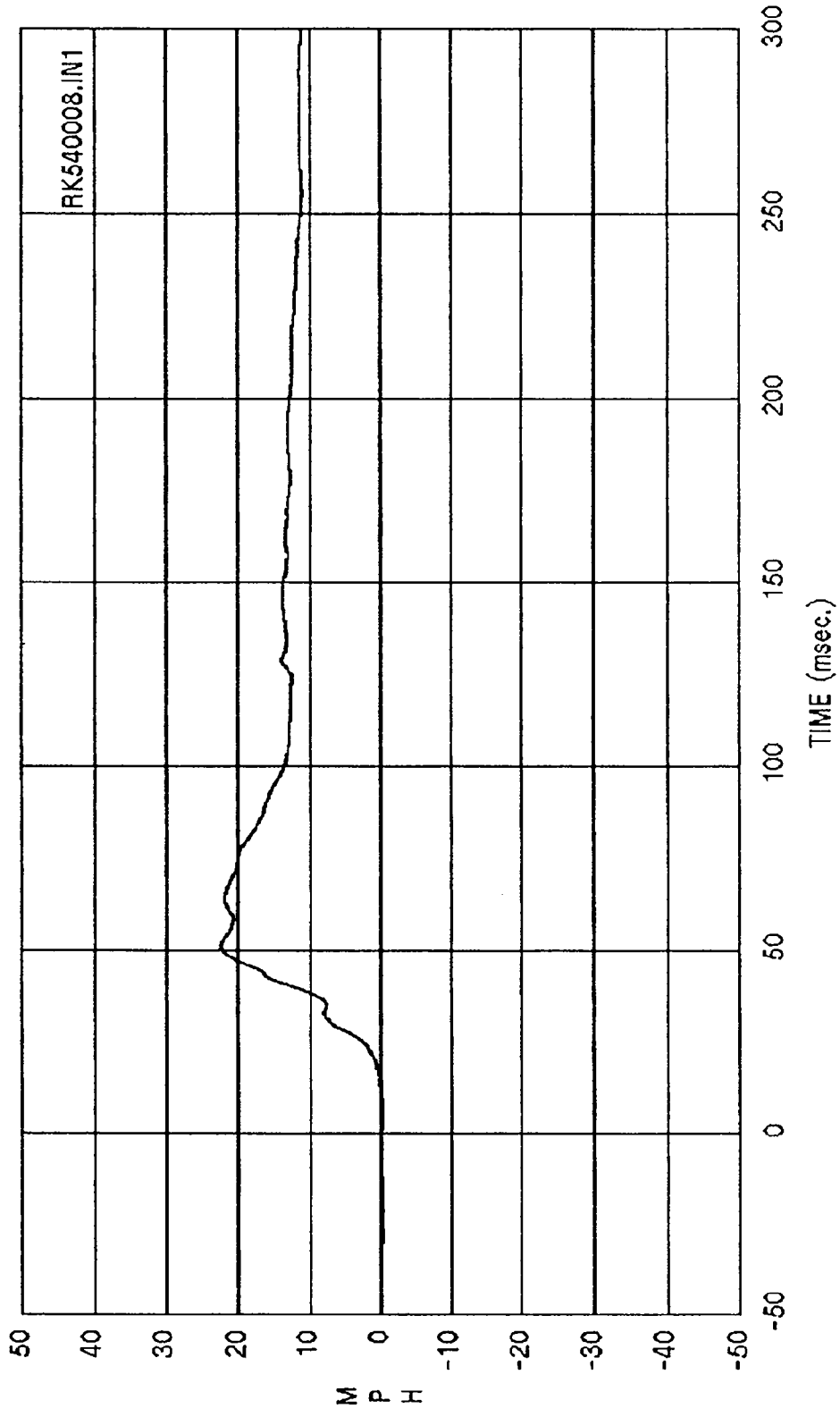
Curve: Driver upper rib delta V -- Redundant Filter: SAE CLASS 180 Max = 19.801 Min = -.13528

MSE Date: 09/18/92 Program: Side Impact; 30/15, 90 deg. Vehicle: 1989 Mazda MPV

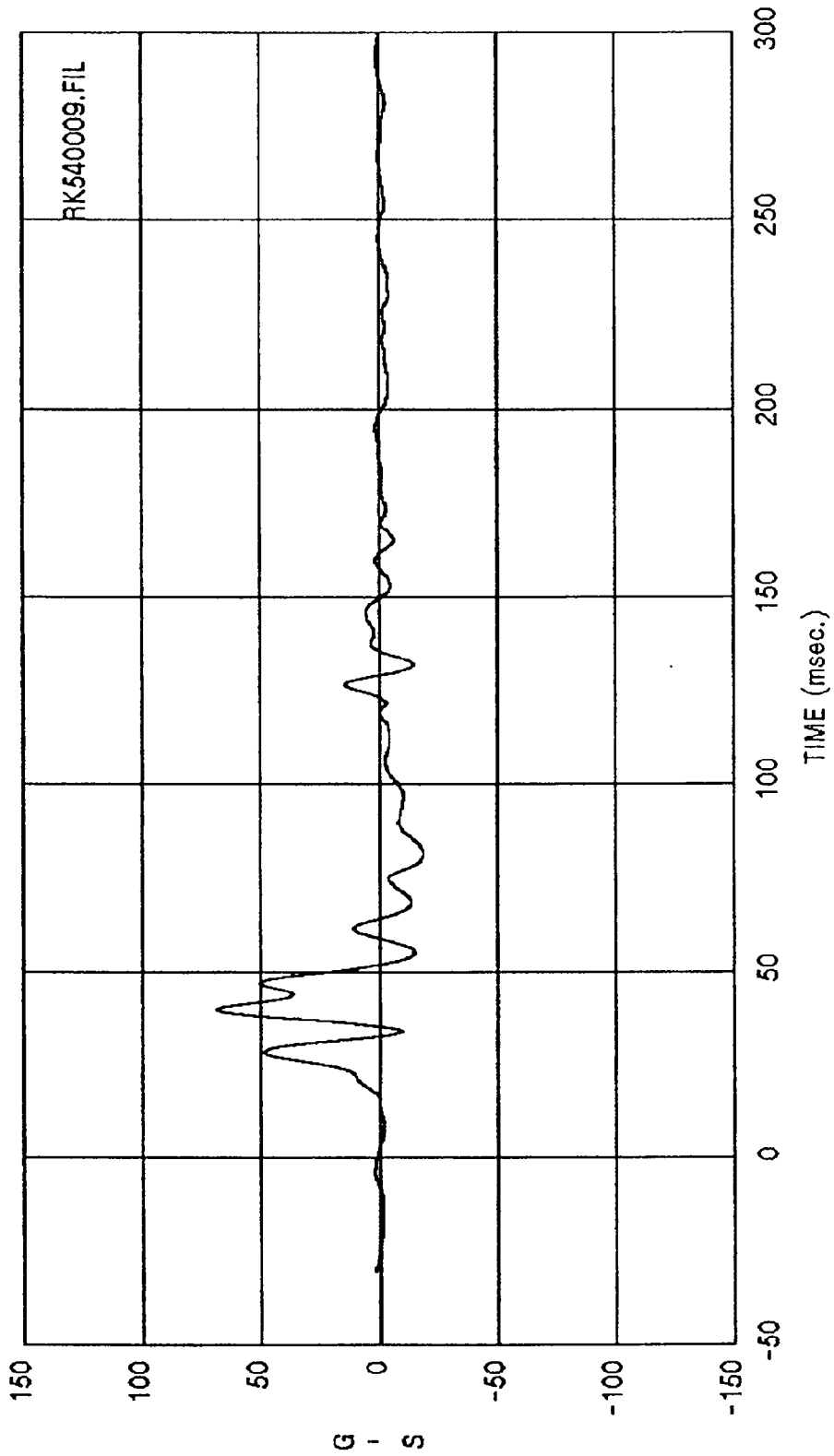


Curve: Driver lower rib acceleration -- Primary Filter: FIR 100 Max = 69.193 Min = -17.532

MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV

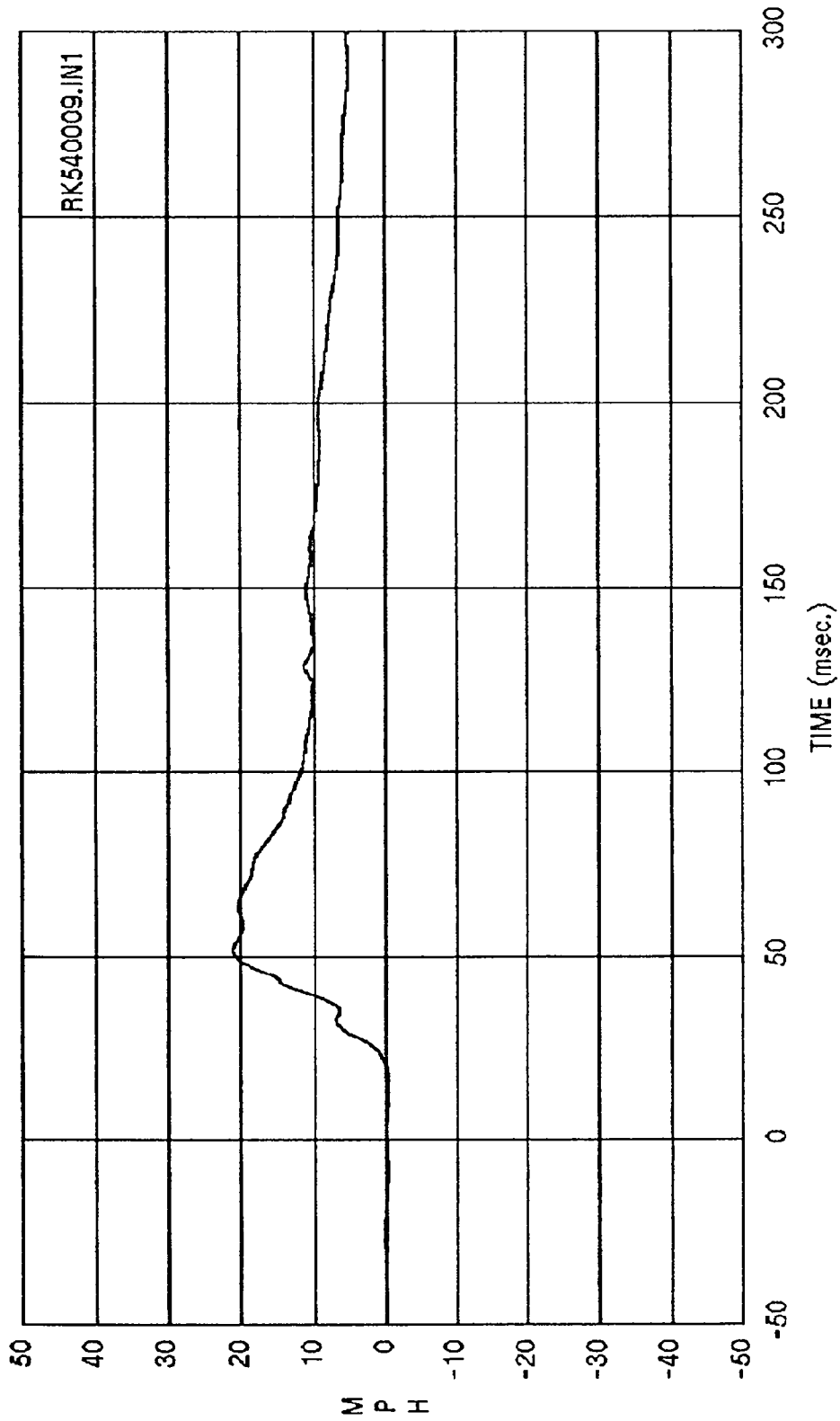


Curve: Driver lower rib delta V -- Primary Filter: SAE CLASS 180 Max = 22.470 Min = -.84317E-
MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV



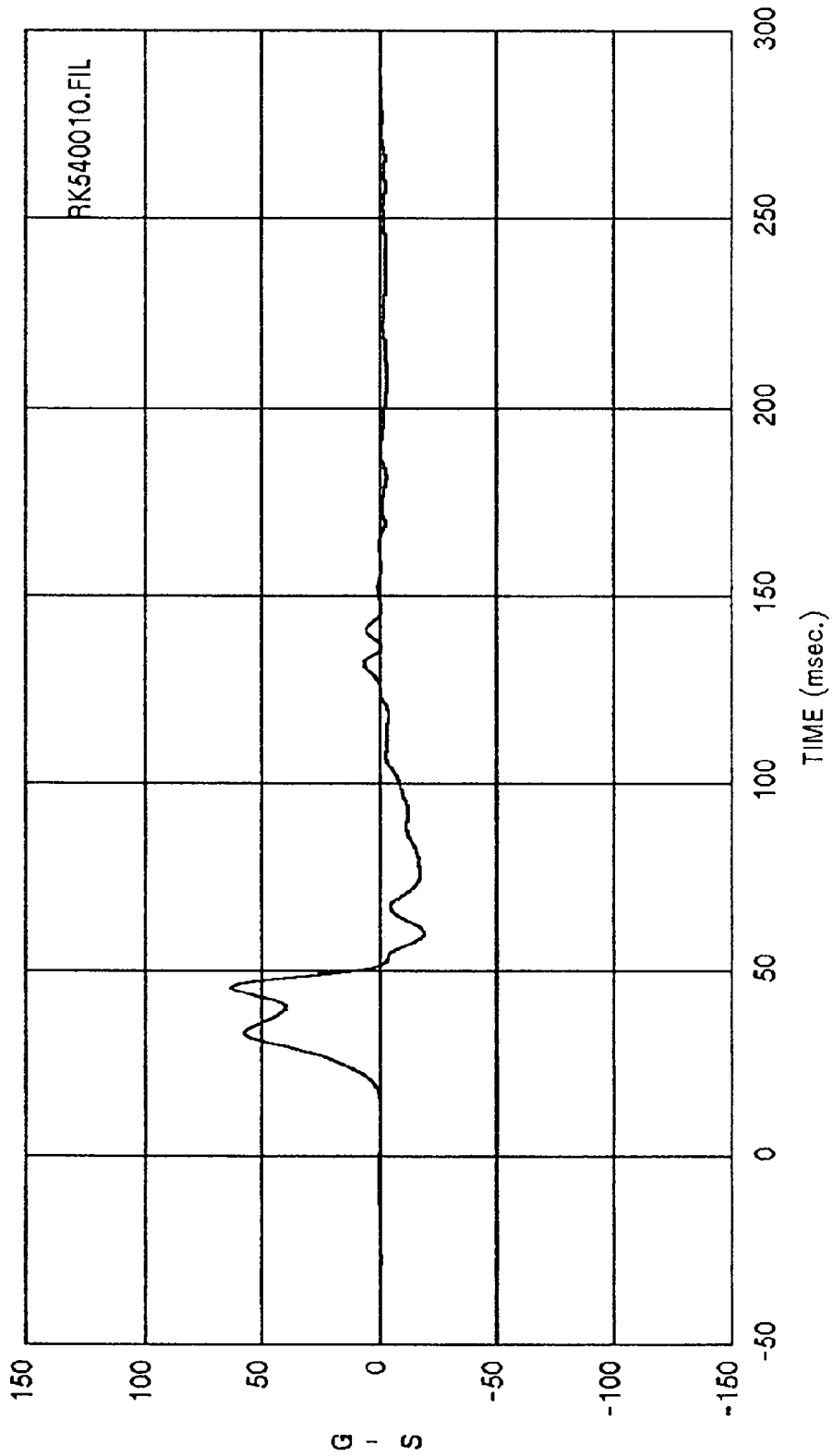
Curve: Driver lower rib acceleration -- Redundant Filter: FIR 100 Max = 68.411 Min = -18.364

MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV



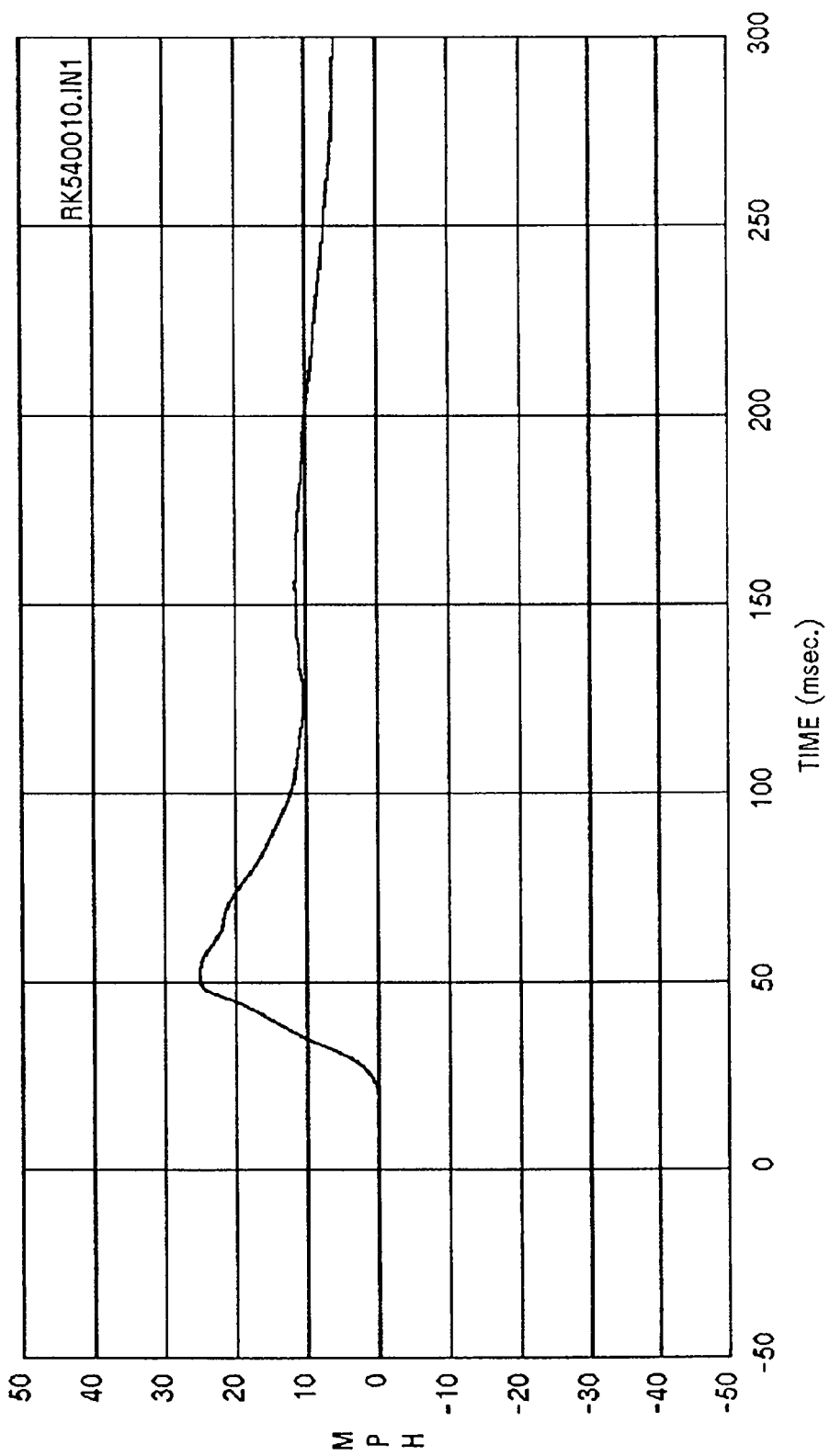
Curve: Driver lower rib delta V -- Redundant Filter: SAE CLASS 180 Max = 21.149 Min = -.33876

MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV



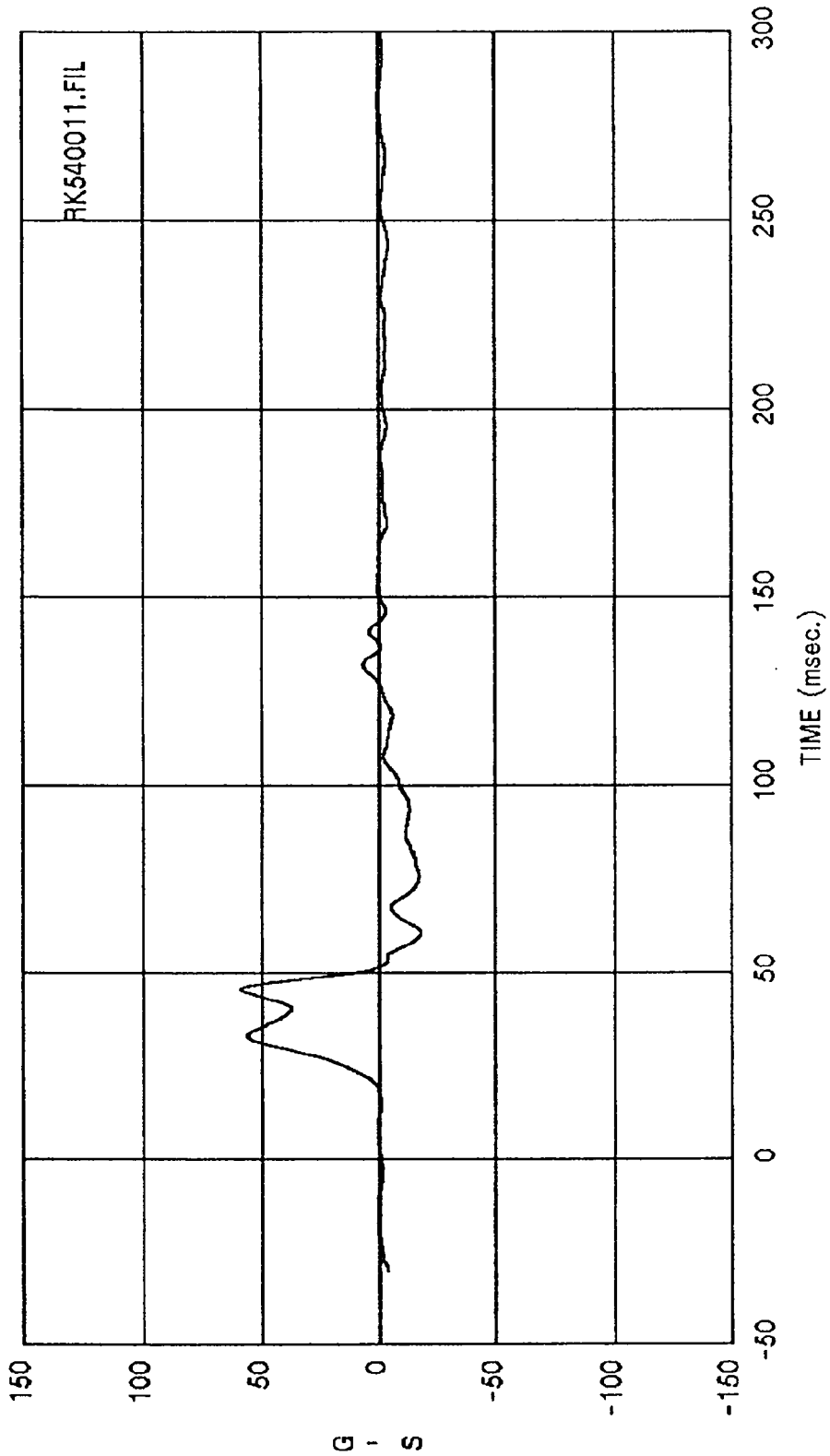
Curve: Driver lower spine acceleration -- Primary Filter: FIR 100 Max = 62.846 Min = -18.954

MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV



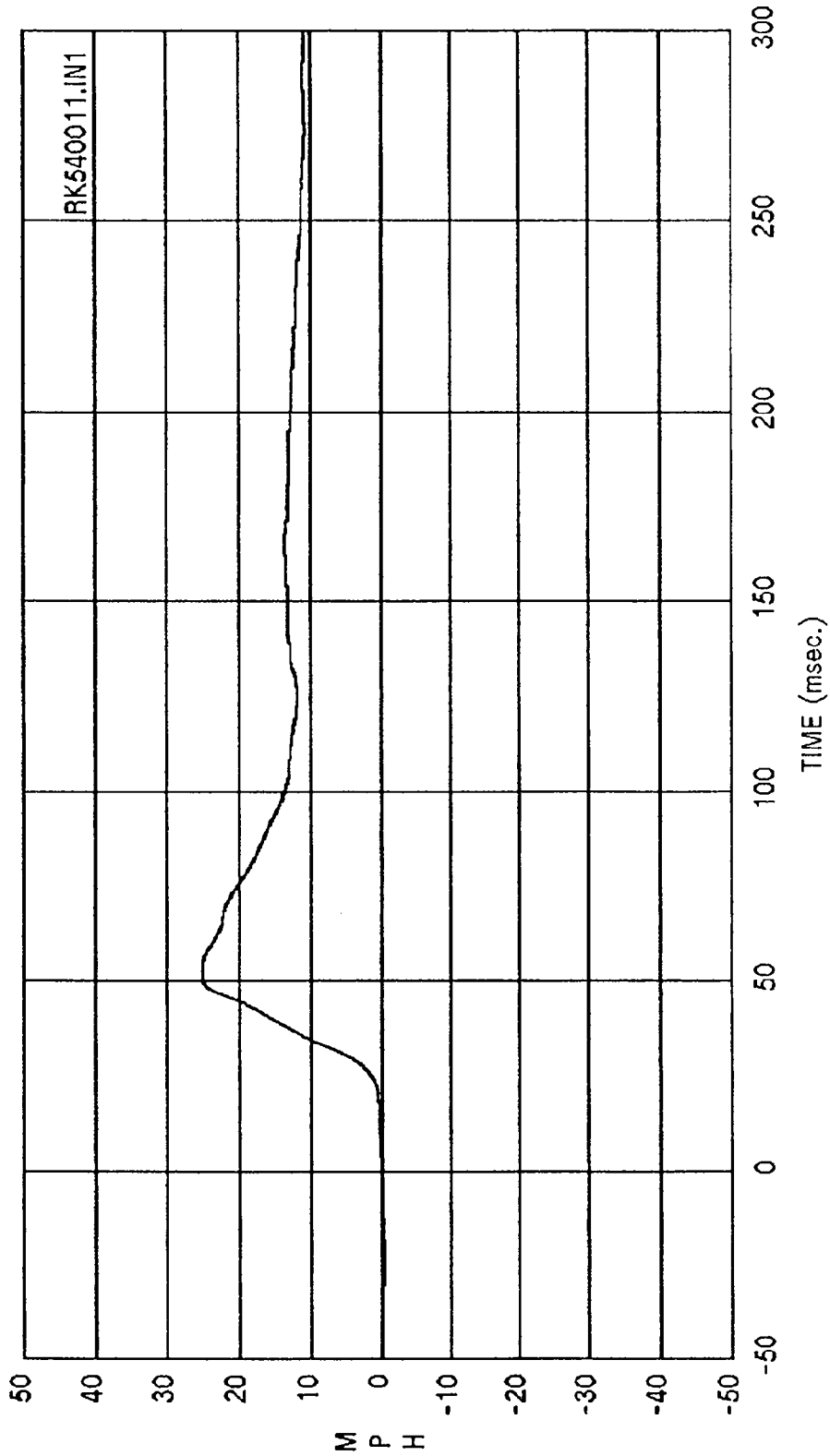
Curve: Driver lower spine delta V -- Primary Filter: SAE CLASS 180 Max = 25.094 Min = -.83782E
01

MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV



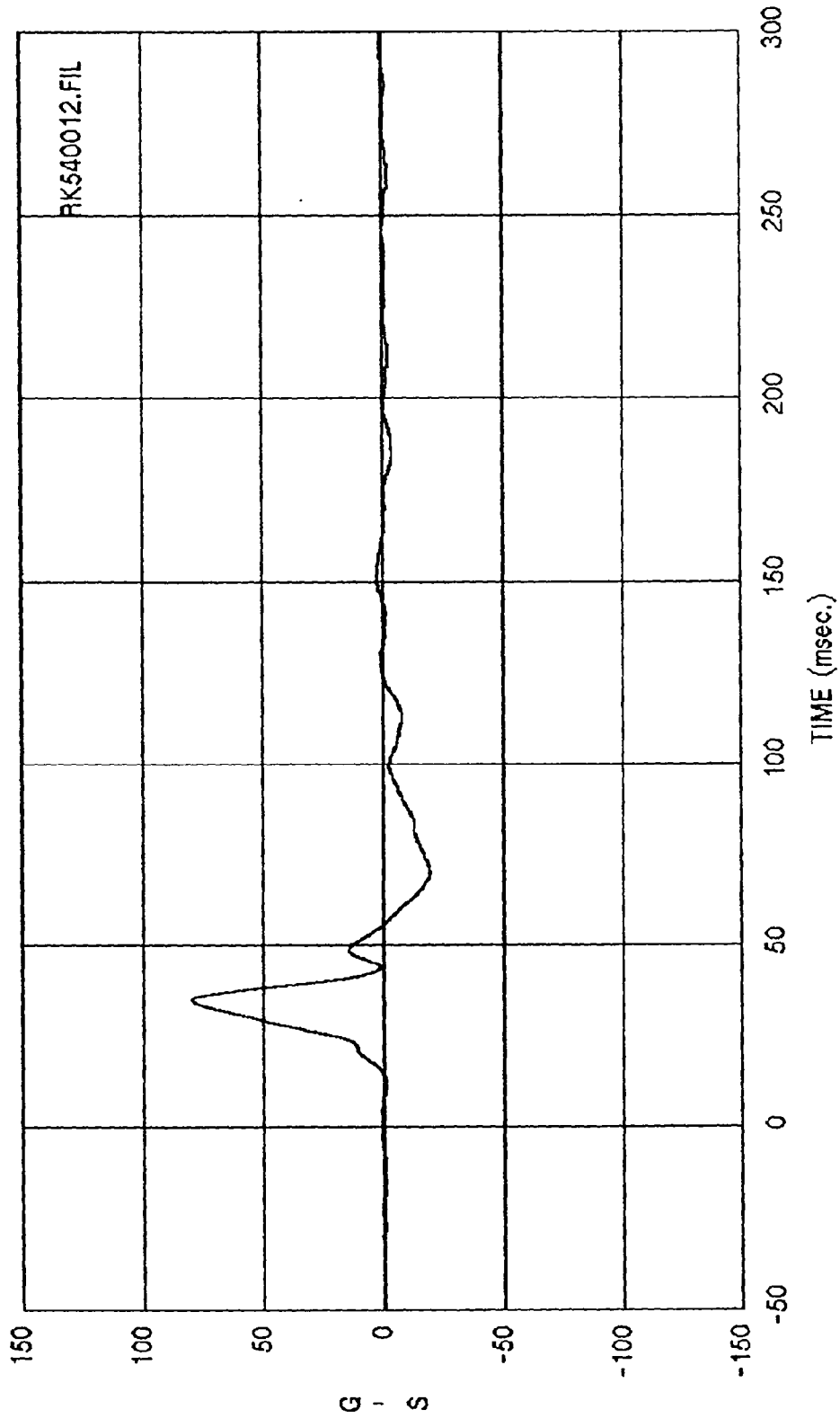
Curve: Driver lower spine acceleration -- Redundant Filter: FIR 100 Max = 59.171 Min = -17.930

MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV

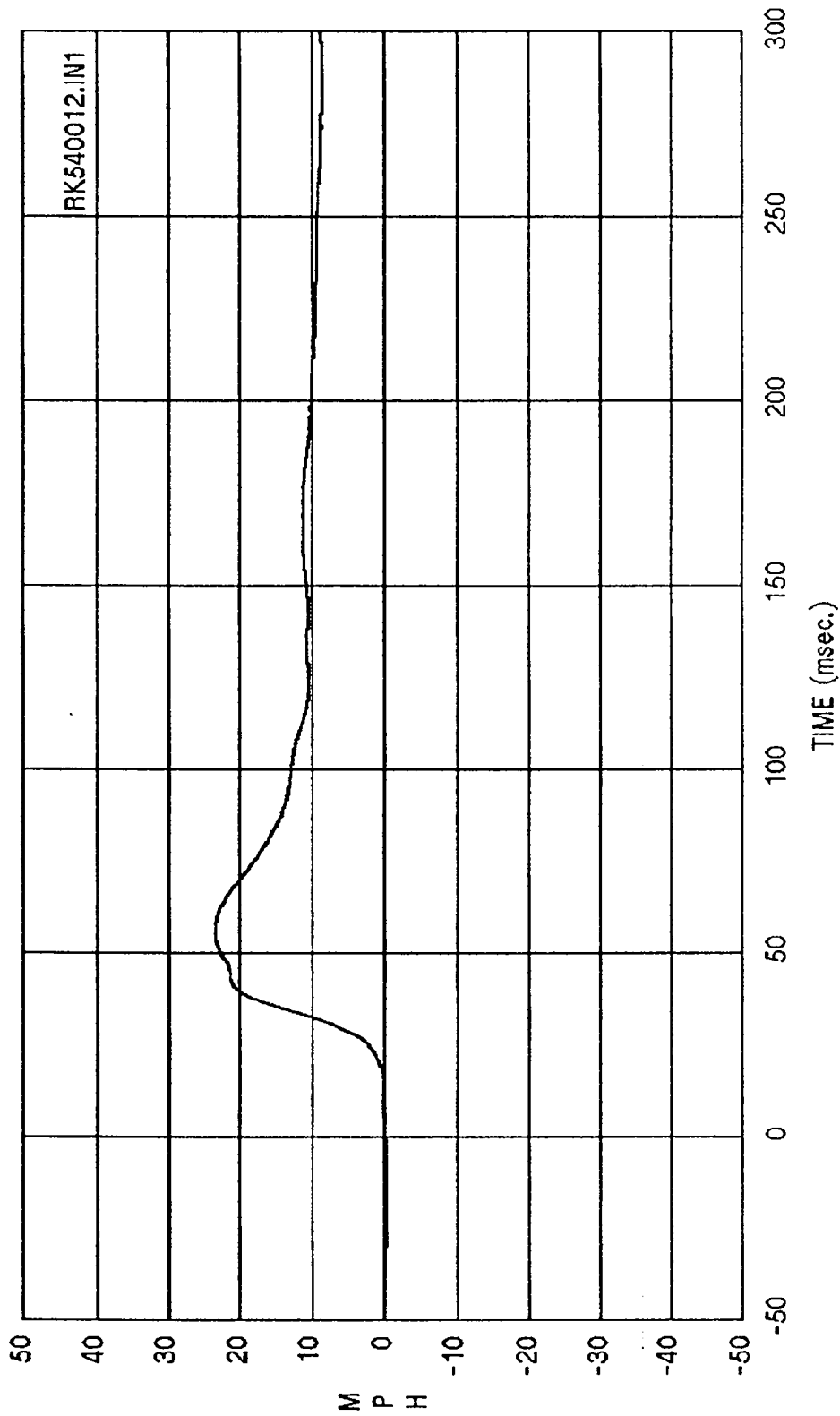


Curve: Driver lower spline delta V -- Redundant Filter: SAE CLASS 180 Max = 25.131 Min = .38233

MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV

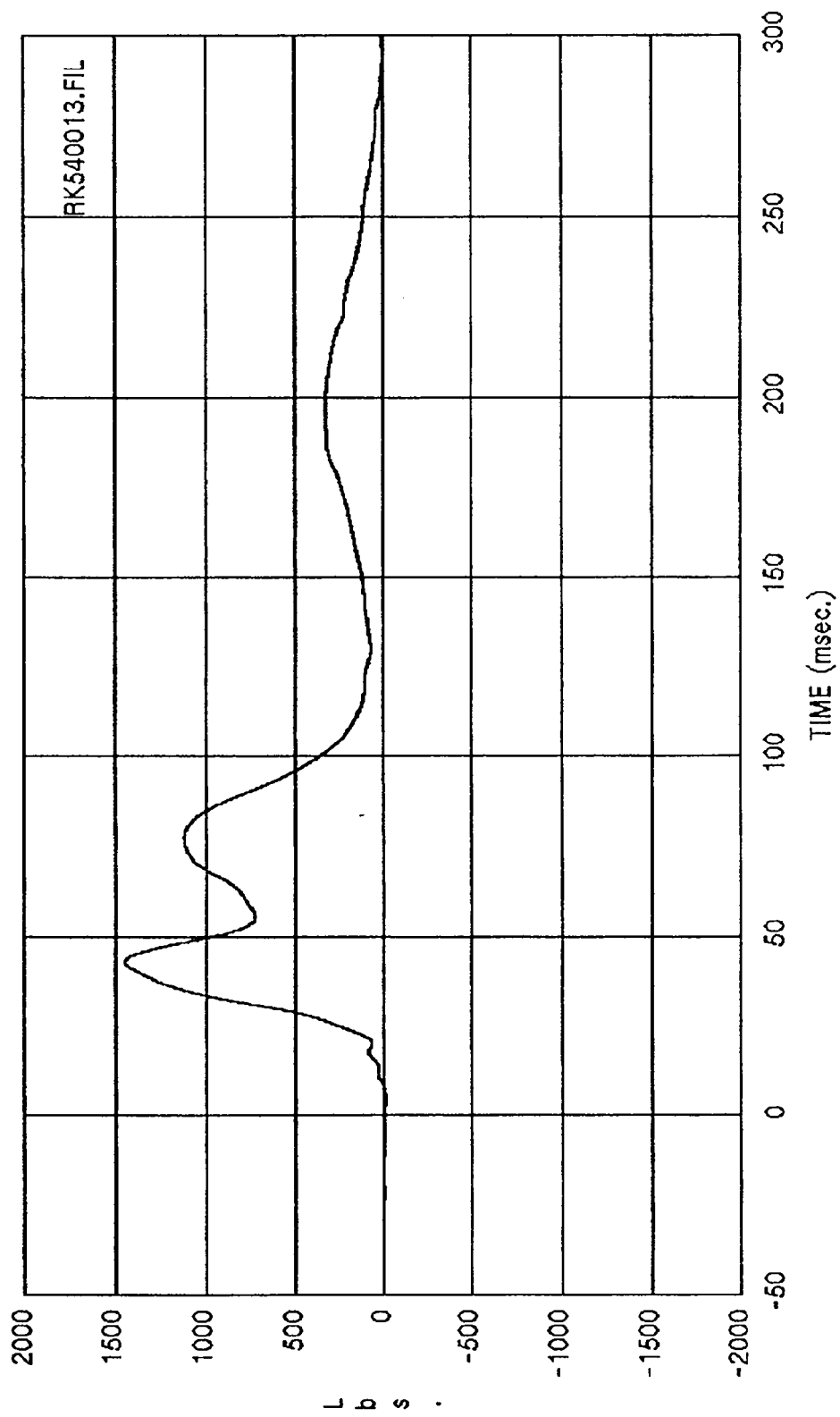


Curve: Driver pelvis acceleration Filter: FIR 100 Max = 79.726 Min = -19.215
 MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV



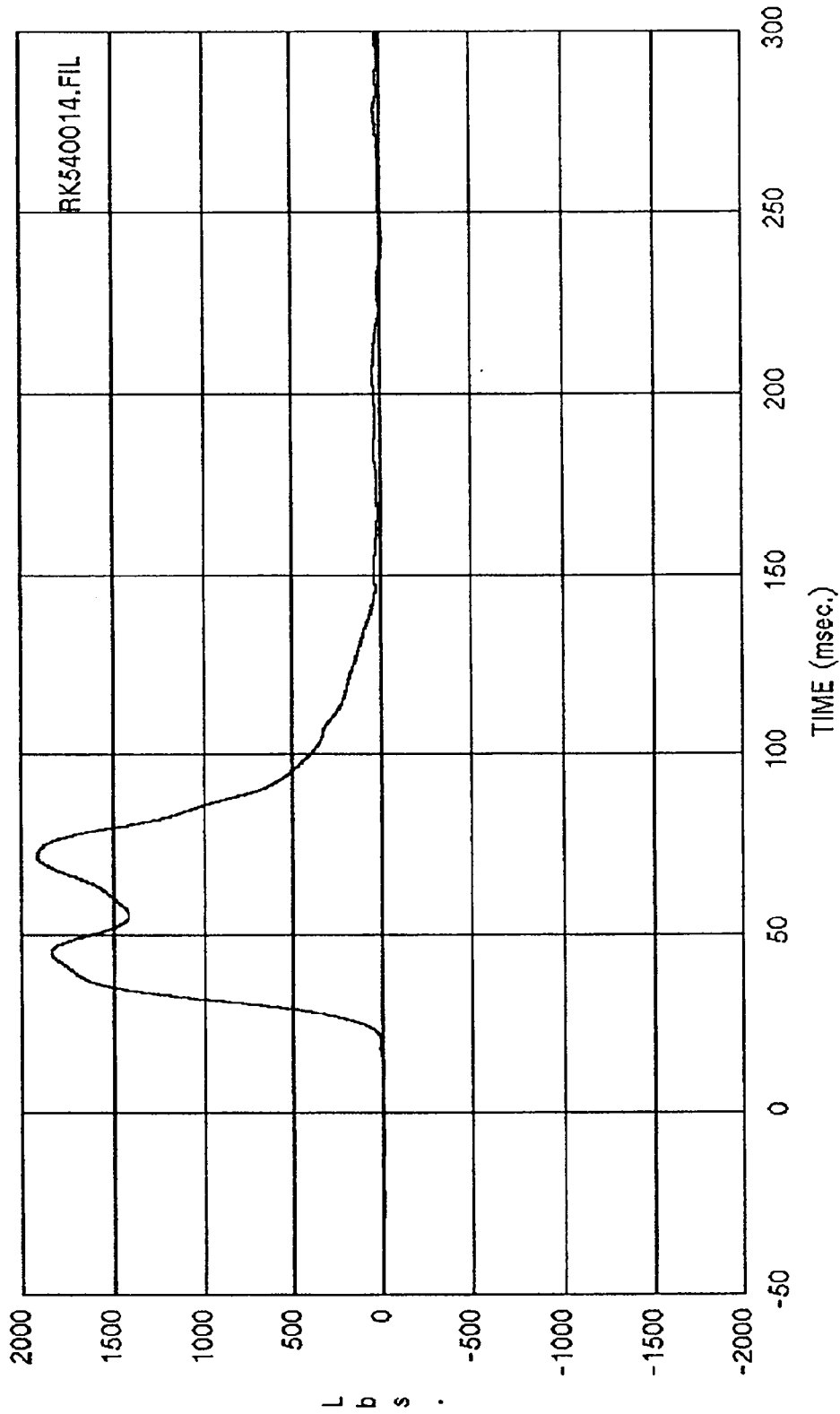
Curve: Driver pelvis delta V Filter: SAE CLASS 180 Max = 23.530 Min = .17352

MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV

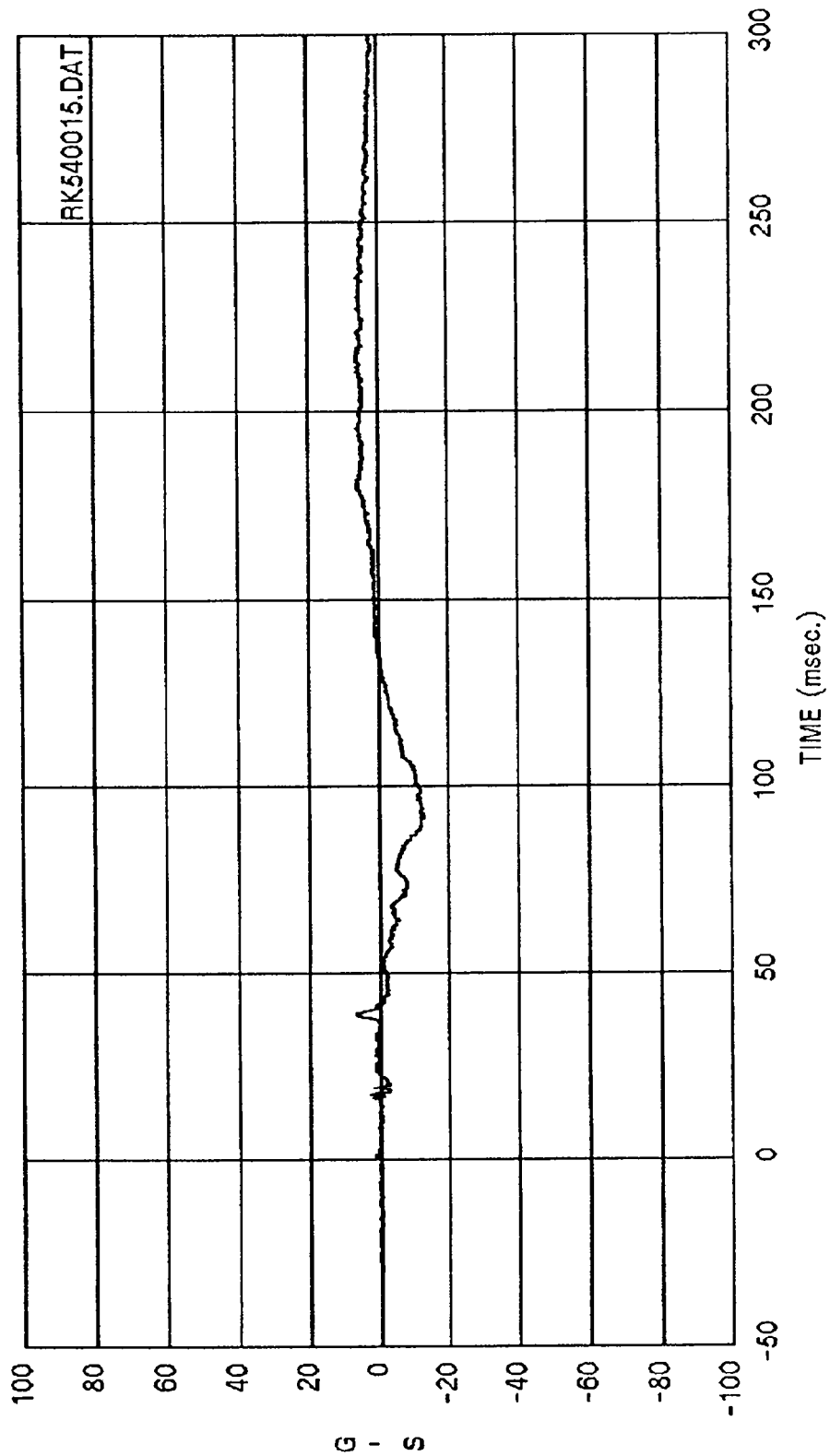


Curve: Driver lap belt load Filter: SAE CLASS 60 Max = 1449.4 Min = -9.8575

MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV

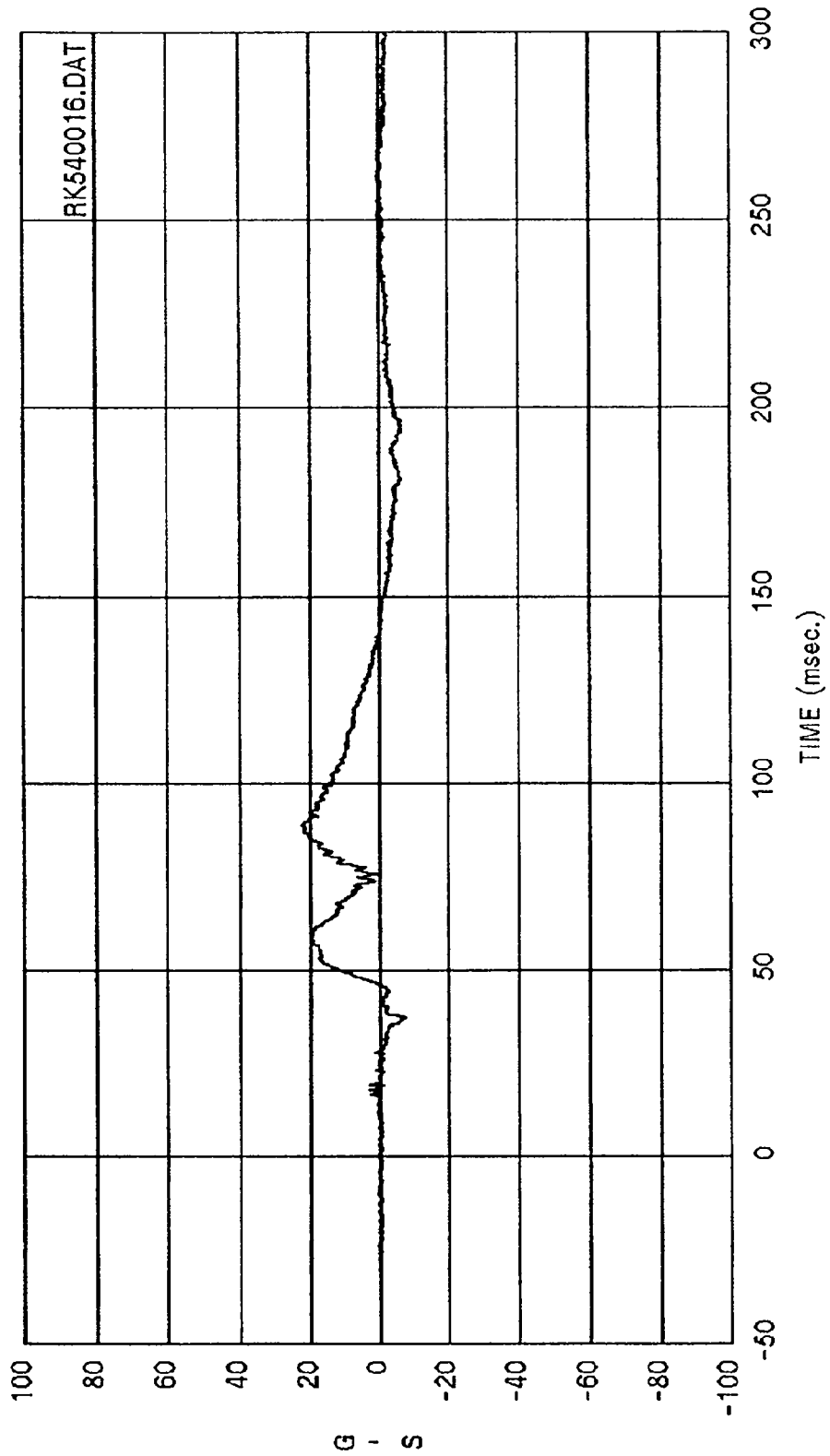


Curve: Driver shoulder belt load Filter: SAE CLASS 60 Max = 1913.8 Min = -8.4575
MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV



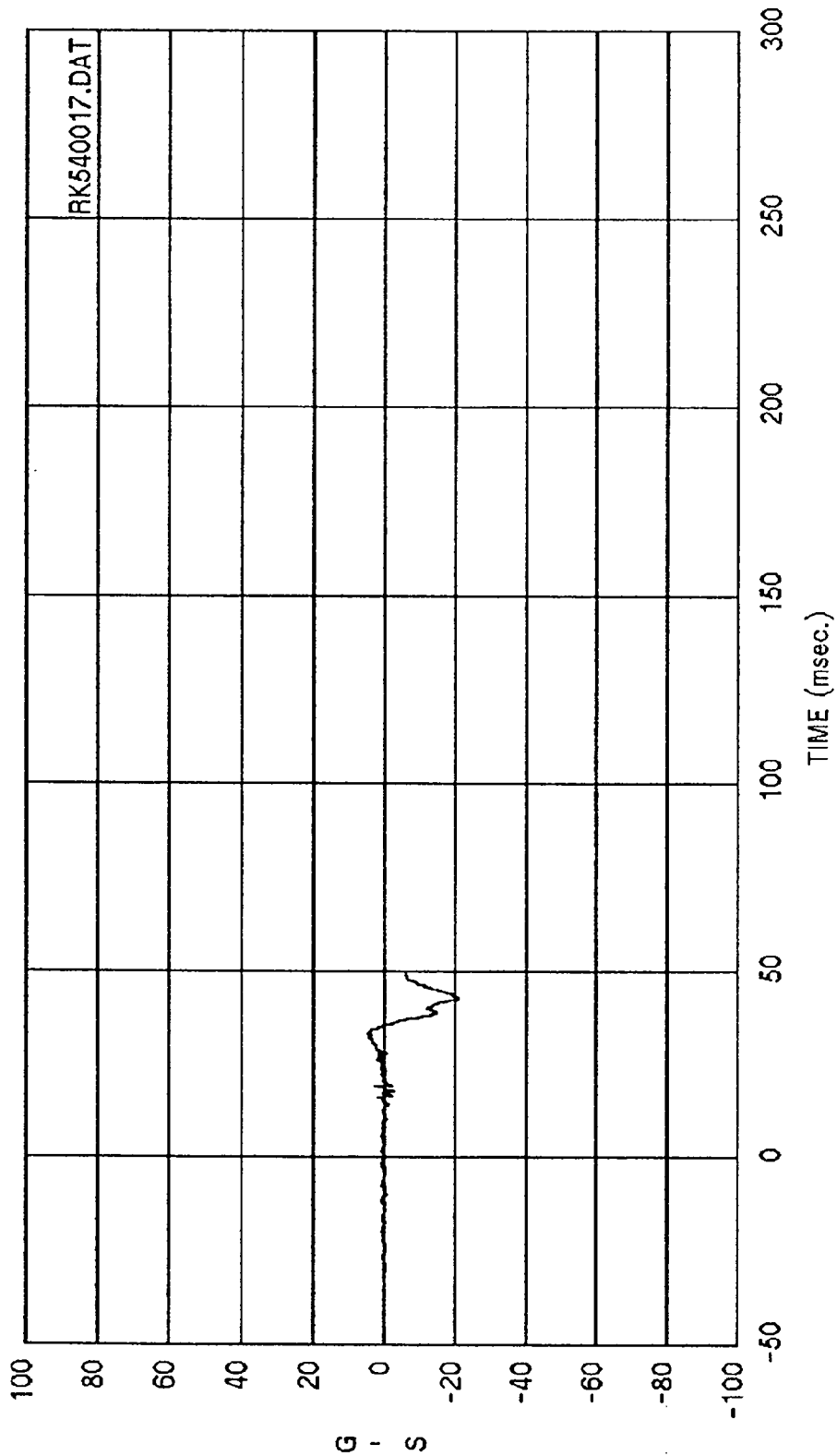
Curve: Passenger Head acceleration -- X axis Filter: SAE CLASS 1000 Max = 6.7642 Min = -13.417

MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV



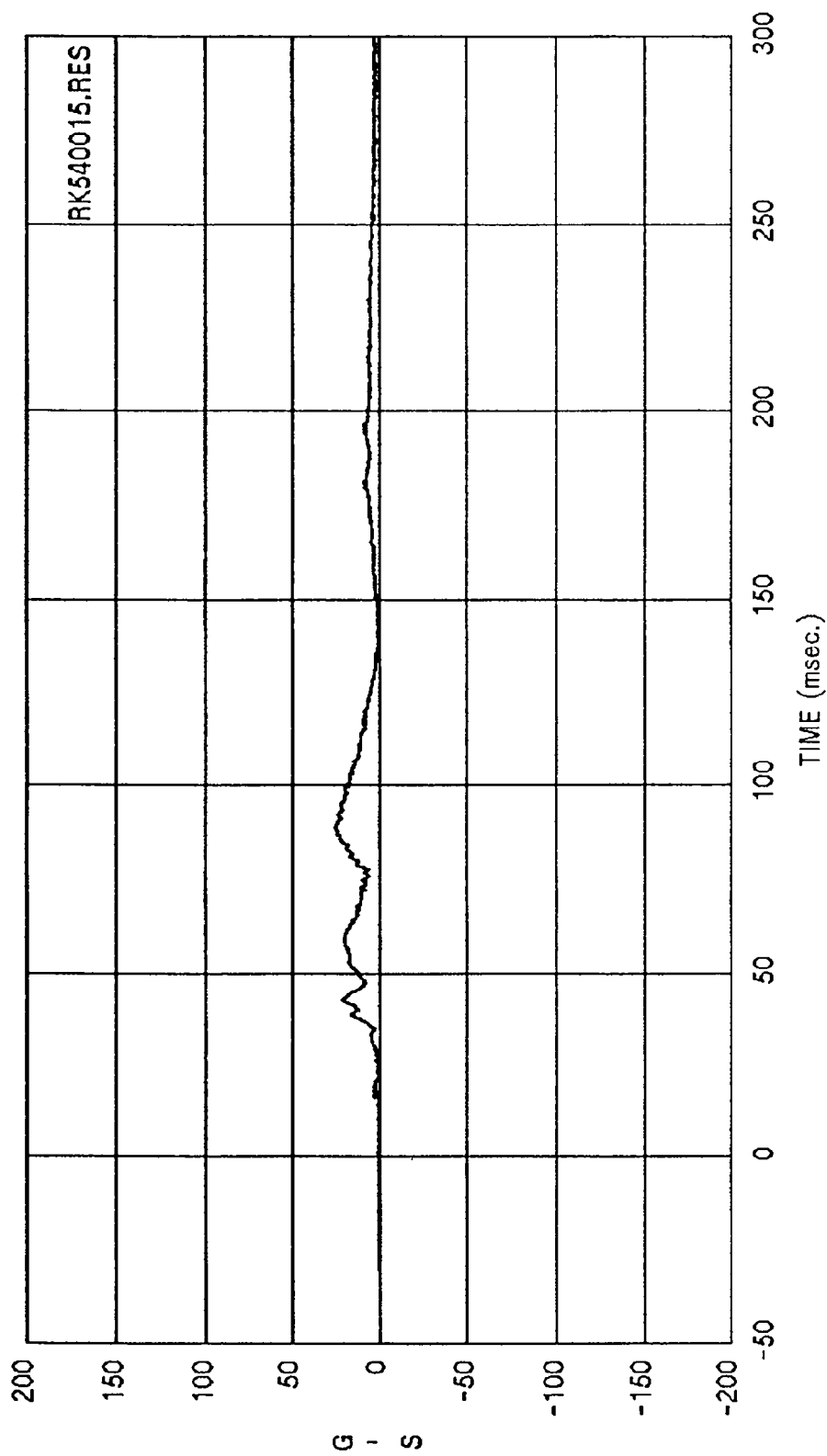
Curve: Passenger Head acceleration -- Y axis Filter: SAE CLASS 1000 Max = 22.640 Min = -7.398;

MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV



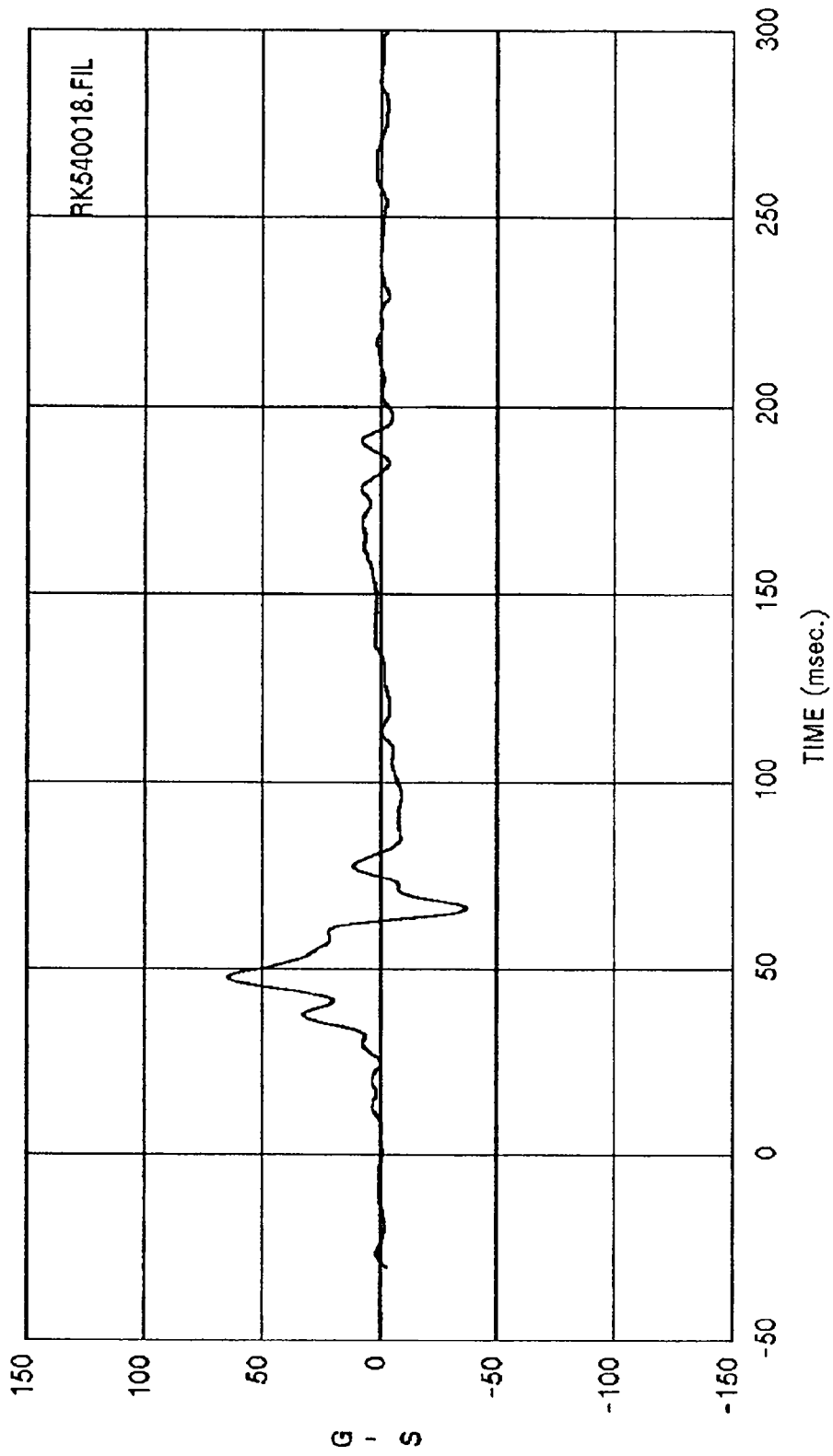
Curve: Passenger Head acceleration -- Z axis Filter: SAE CLASS 1000 Max = 4.5727 Min = -20.858

MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV



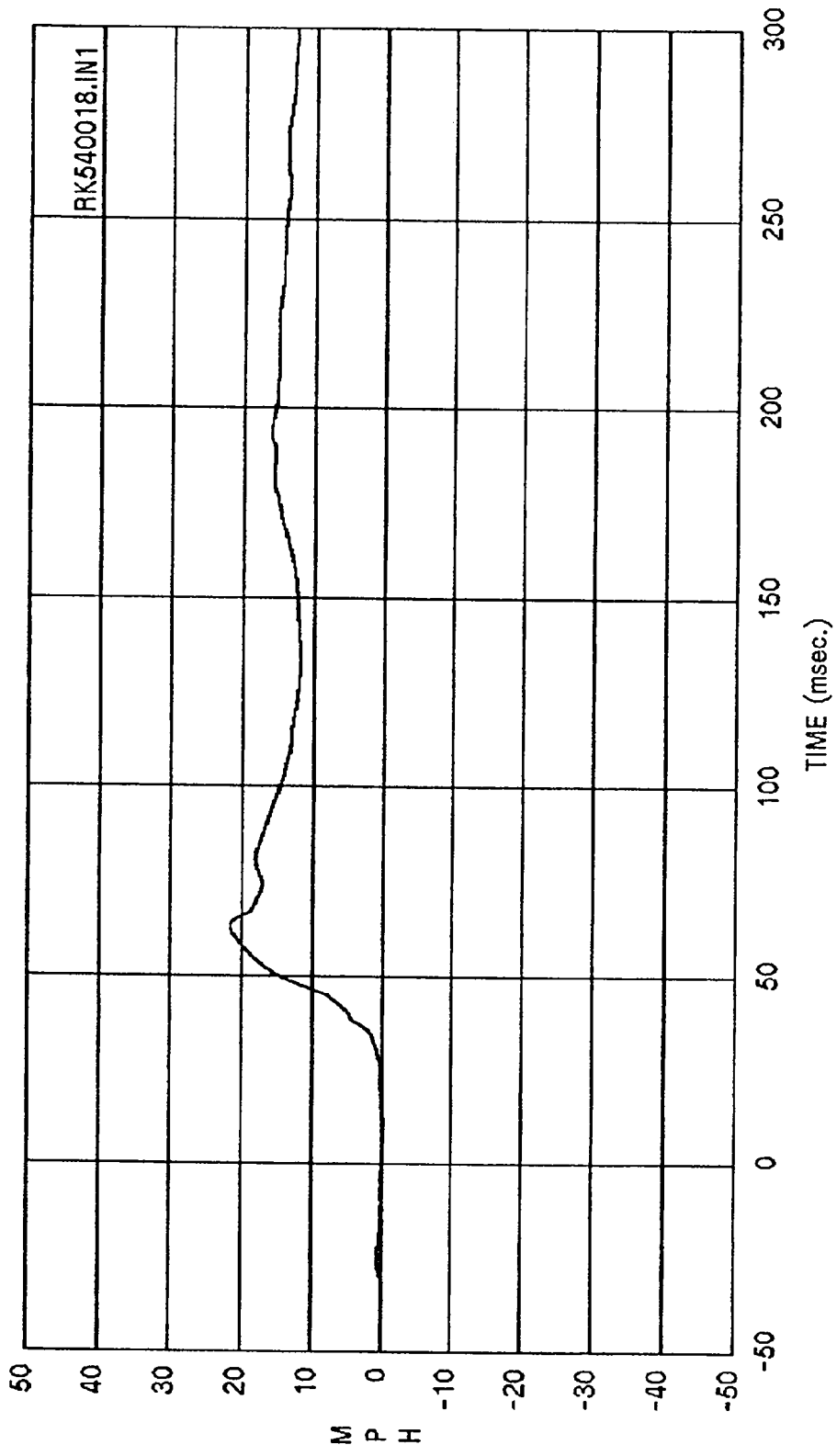
Curve: Passenger head resultant acceleration Filter: SAE CLASS 1000 Max = 25.535 Min = .80223
 01

MSE Date: 09/18/92 Program: Side Impact 30/15 90 Deg. Vehicle: 1989 Mazda MPV



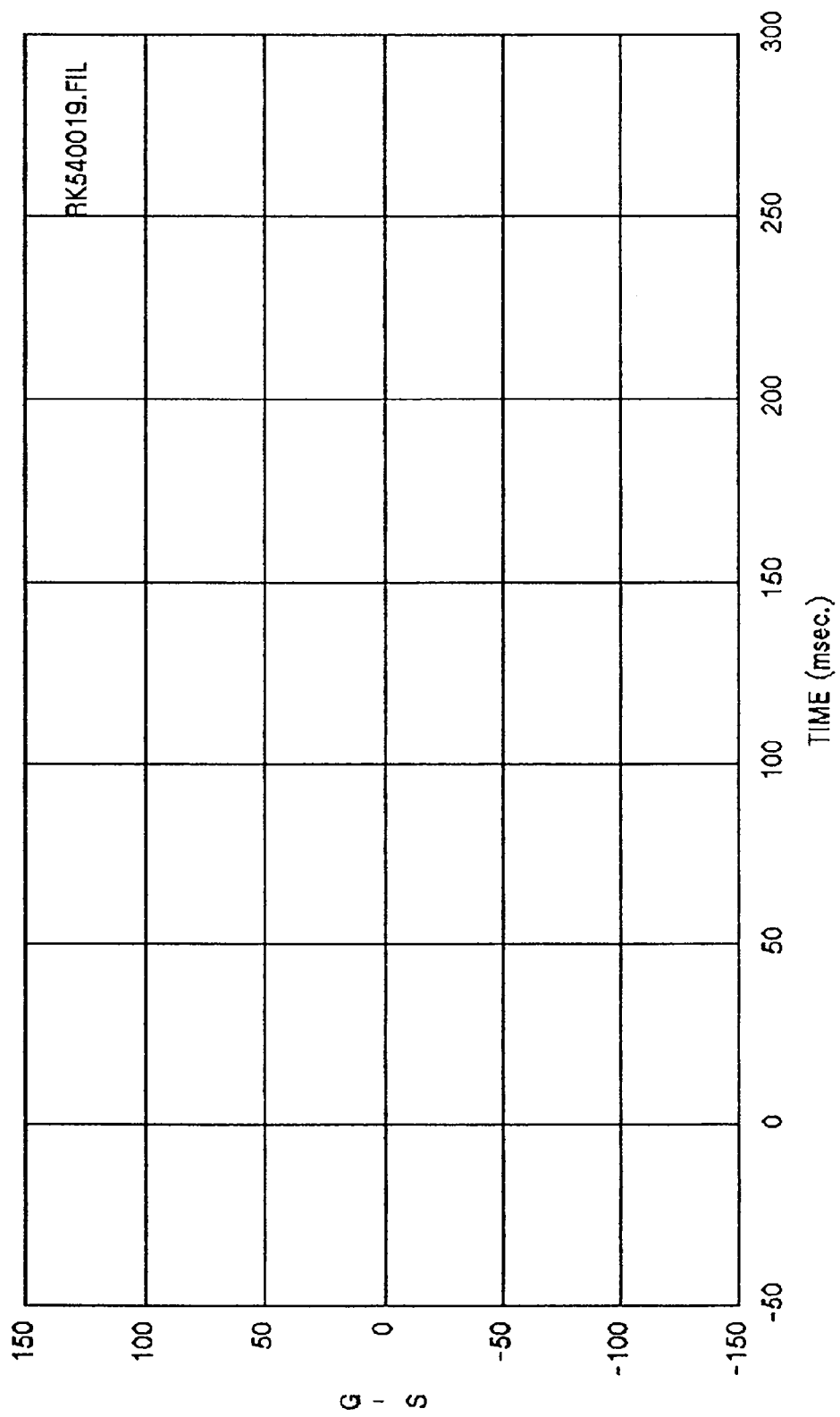
Curve: Passenger upper spine acceleration -- Primary Filter: FIR 100 Max = 64.459 Min = -36.867

MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV



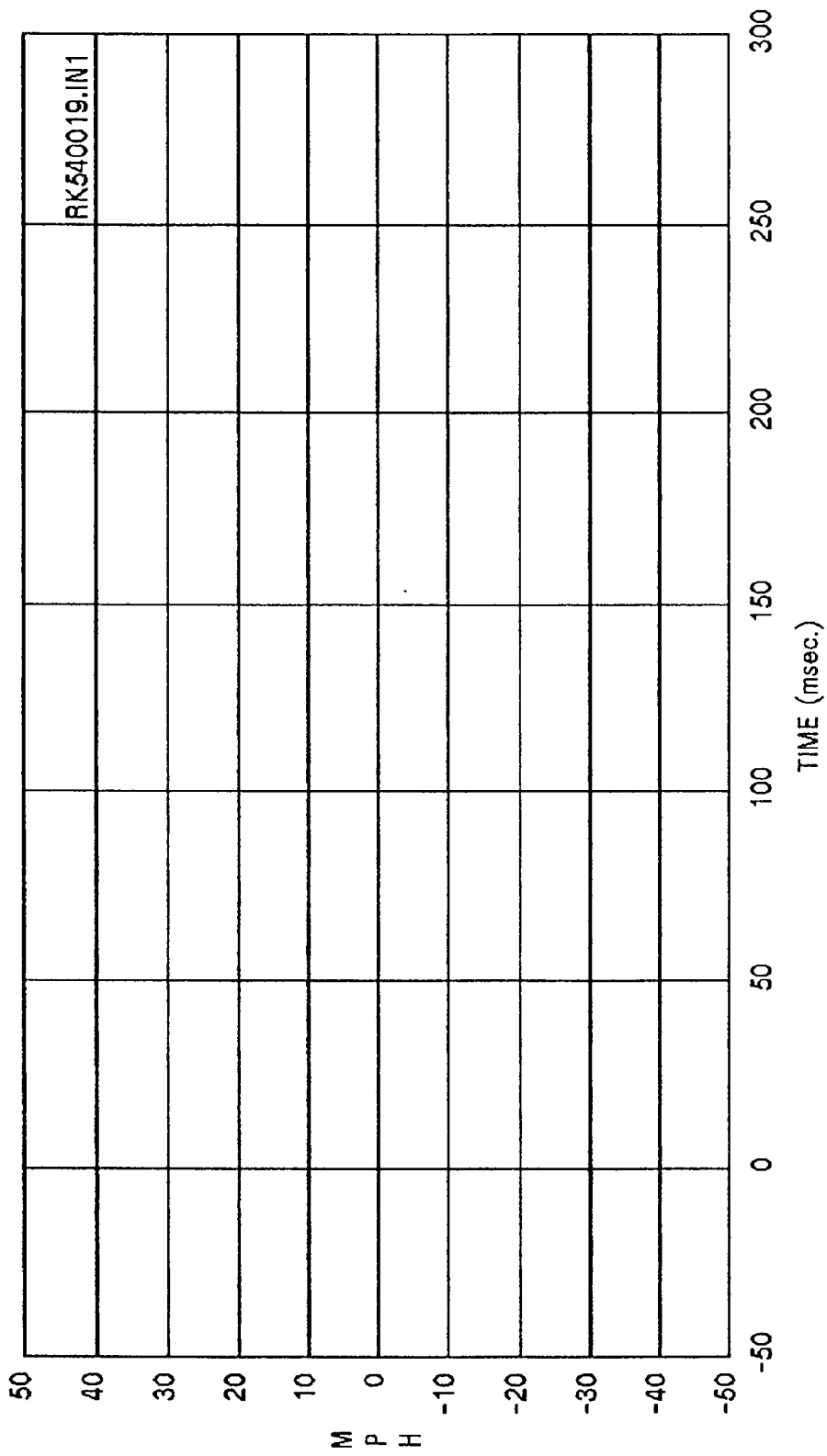
Curve: Passenger upper spine delta V -- Primary Filter: SAE CLASS 180 Max = 21.611 Min = -.19940

MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV



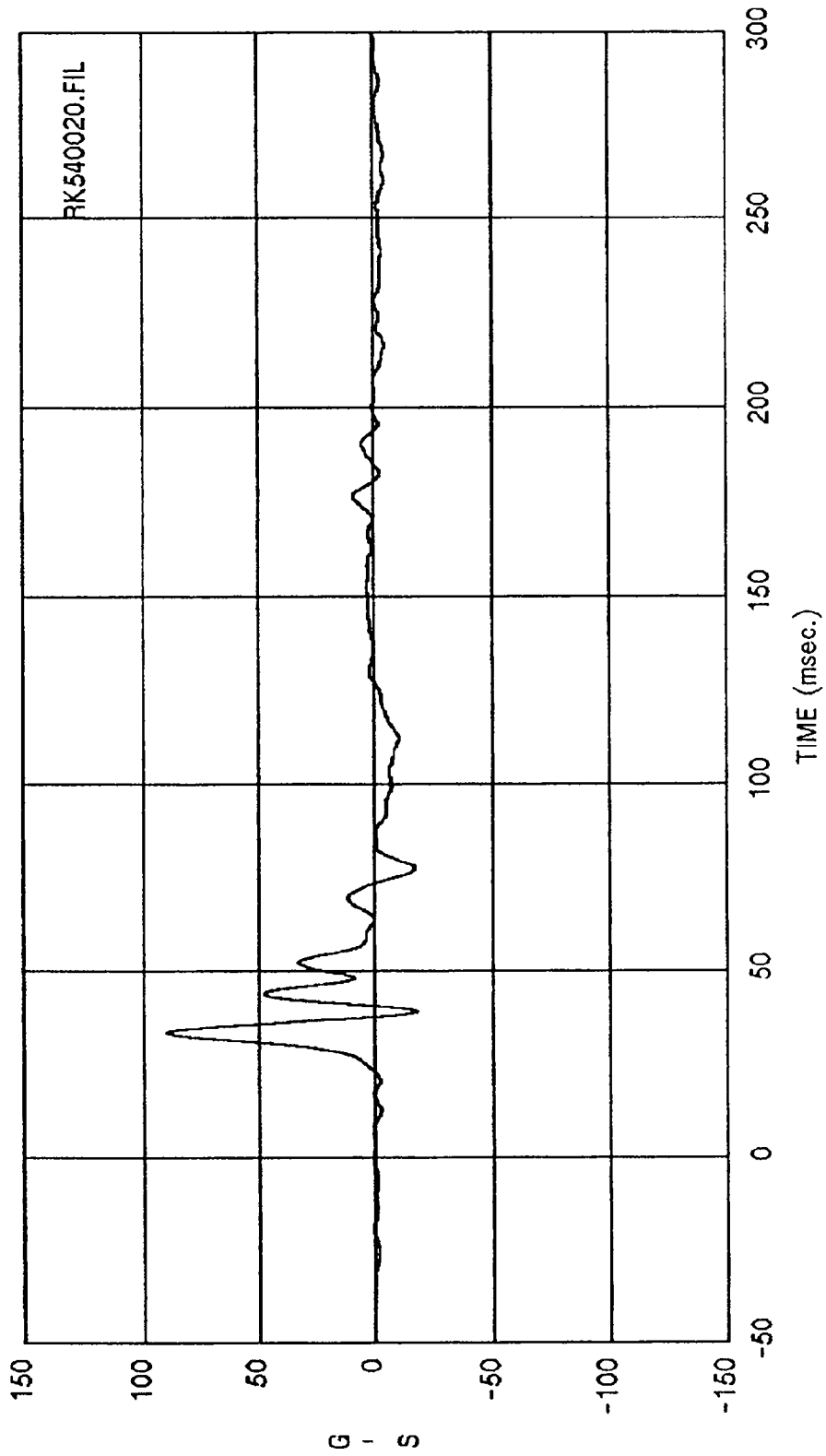
Curve: Passenger upper spine acceleration -- Redundant Filter: FIR 100 Max = .00000 Min = .00000

MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV



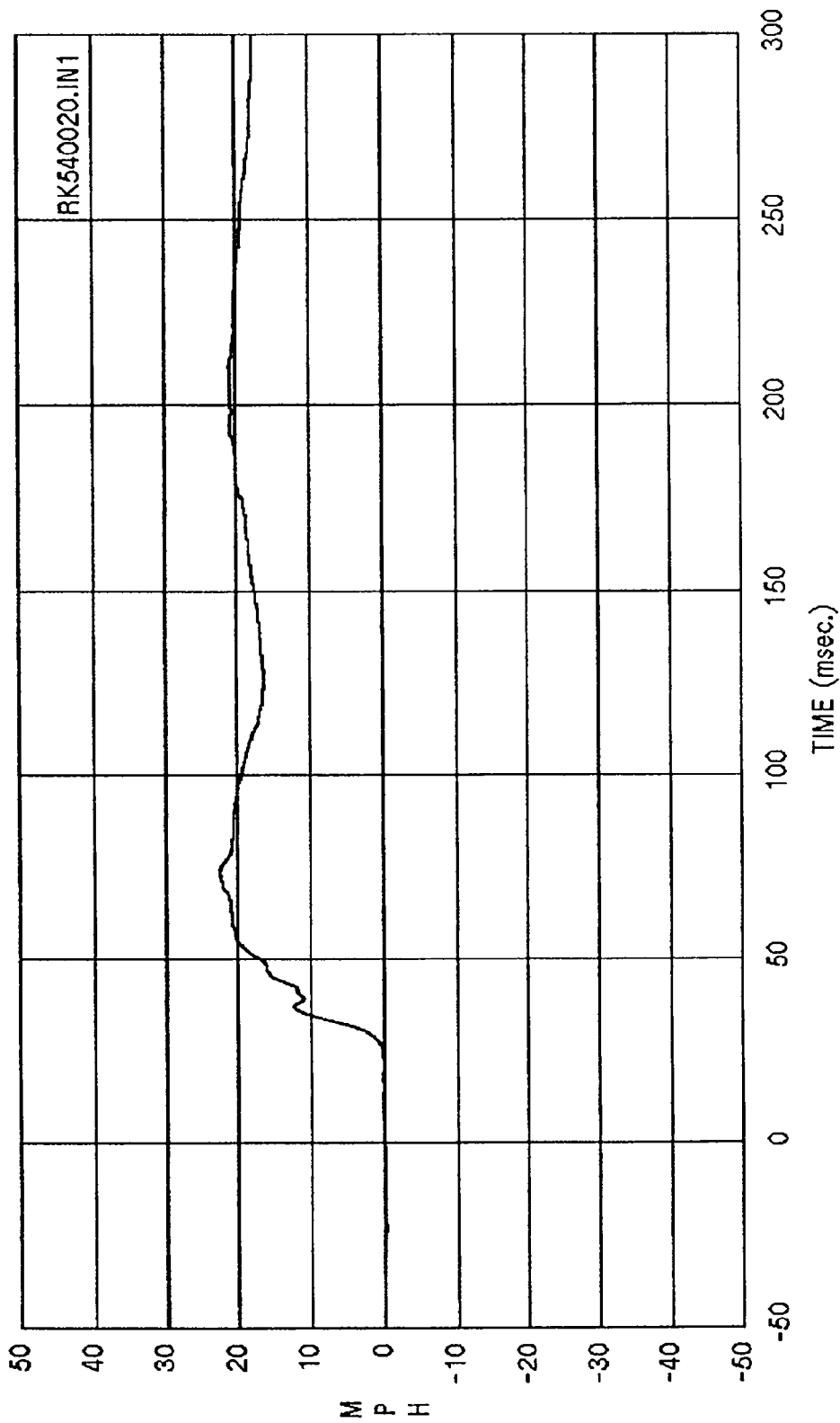
Curve: Passenger upper spine delta V -- Redundant Filter: SAE CLASS 180 Max = .00000 Min = .00000

MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV



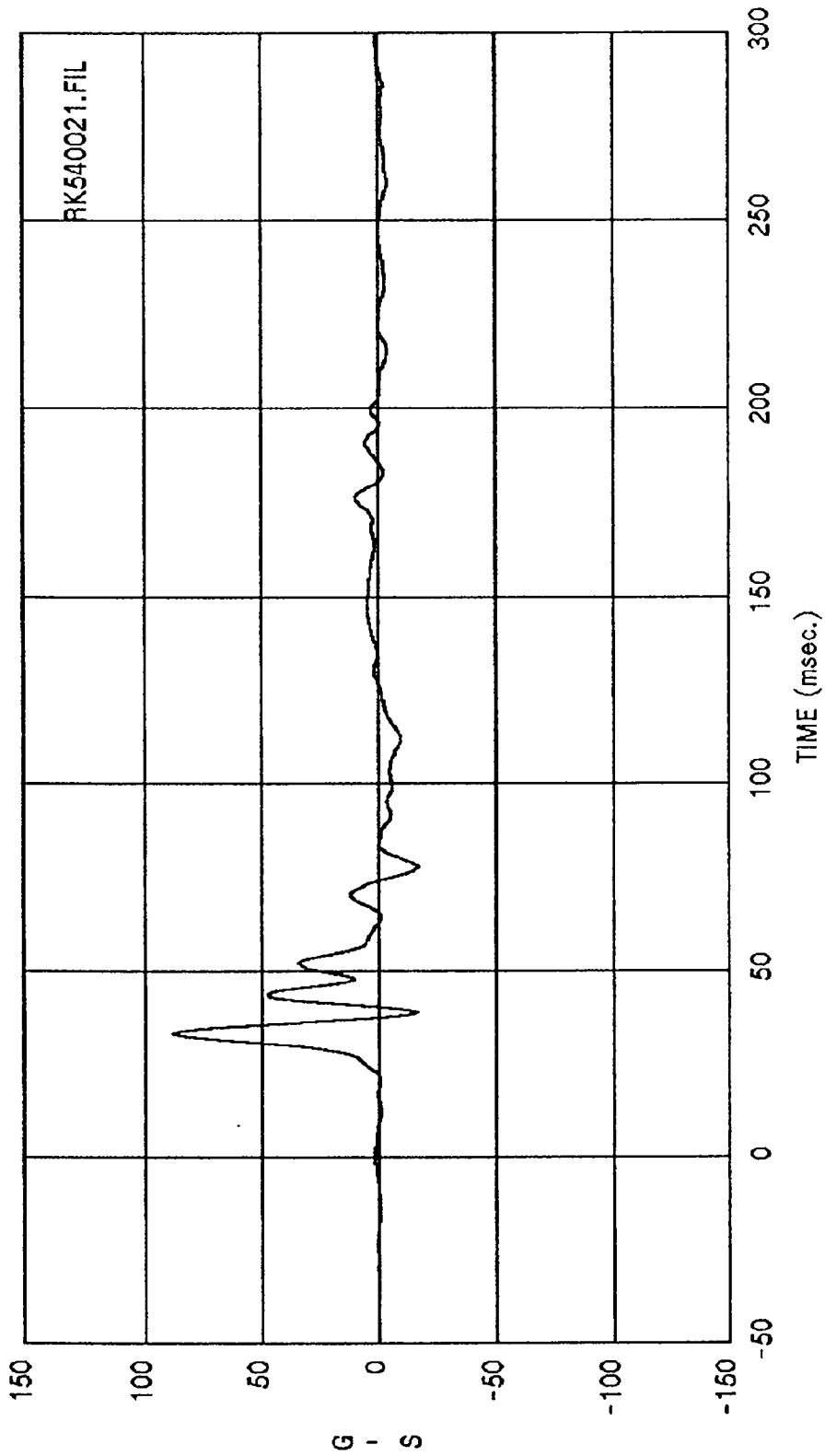
Curve: Passenger upper rib acceleration -- Primary Filter: FIR 100 Max = 90.581 Min = -18.216

MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV

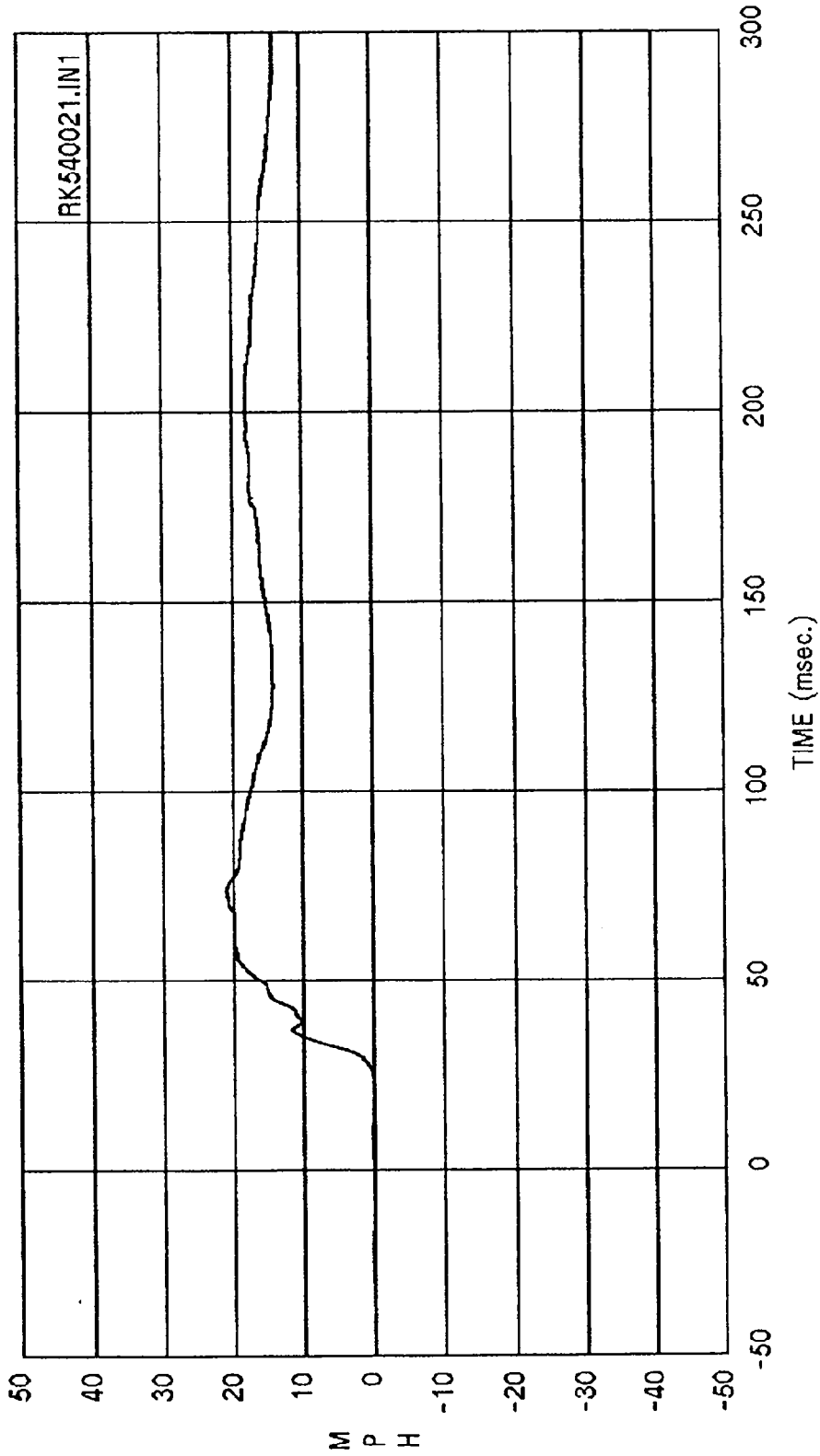


Curve: Passenger upper rib delta V -- Primary Filter: SAE CLASS 180 Max = 22.510 Min = .36896E
01

MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV

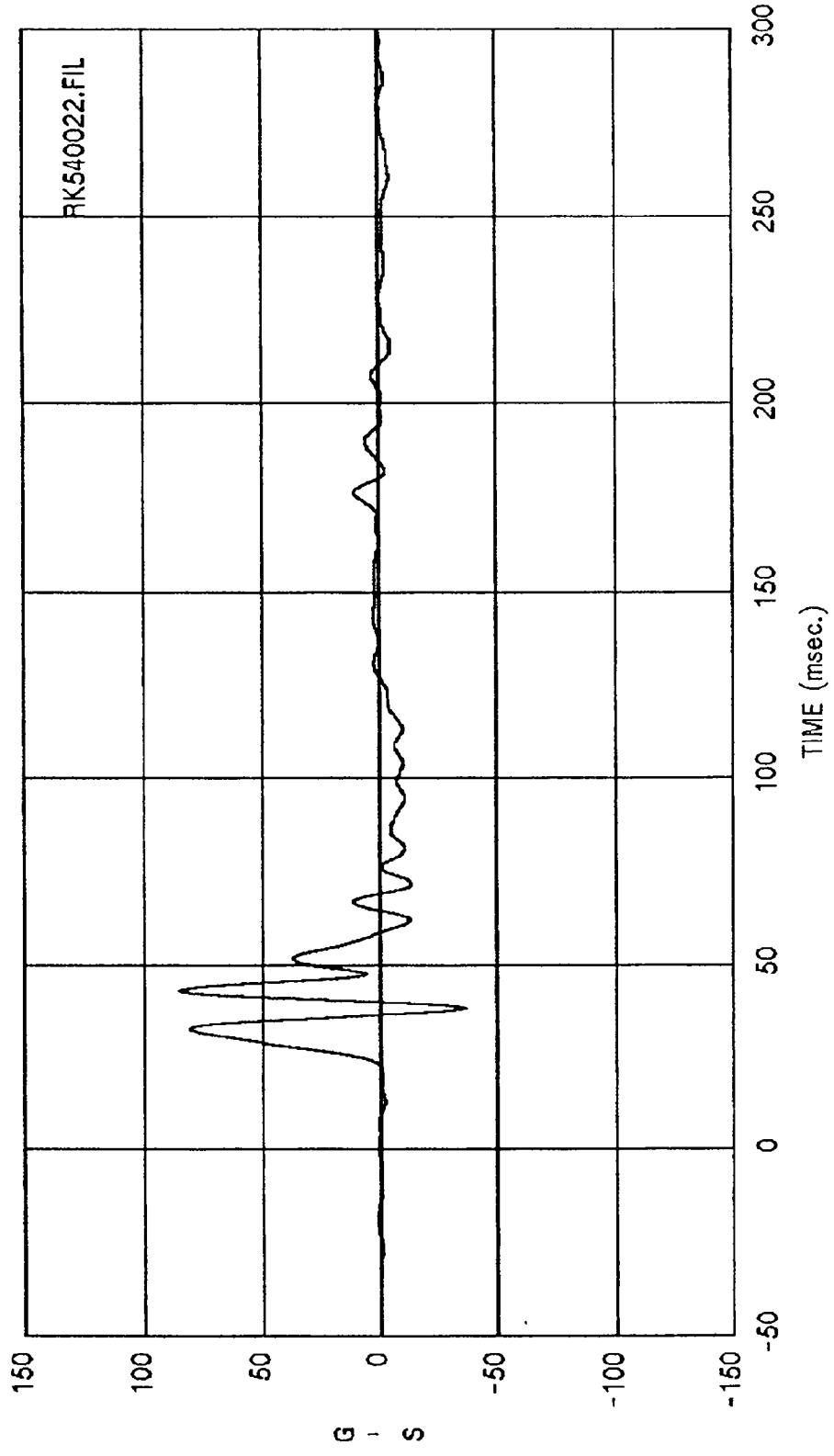


Curve: Passenger upper rib acceleration -- Redundant Filter: FIR 100 Max = 88.027 Min = -16.908
 MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV



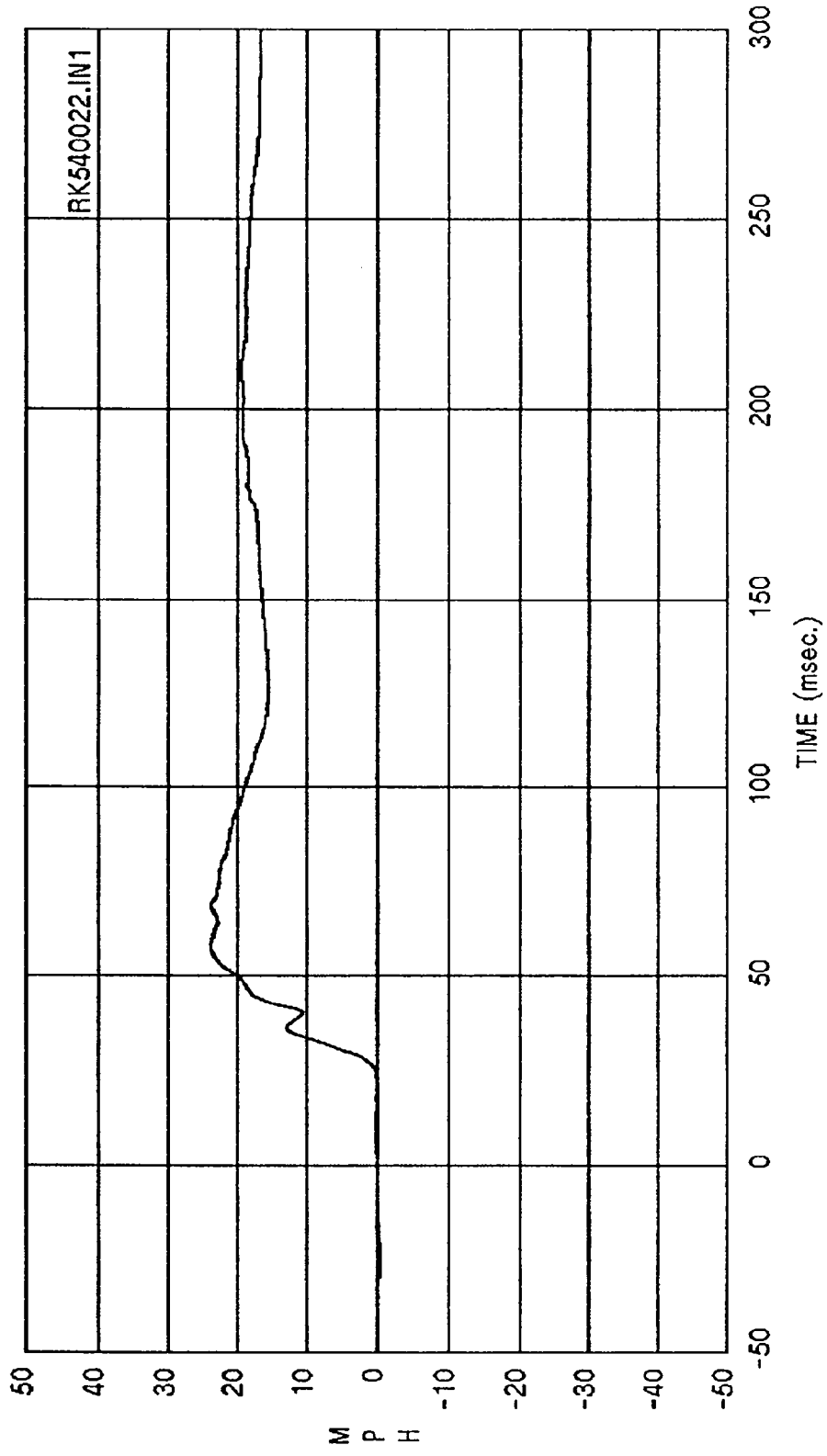
Curve: Passenger upper rib delta V -- Redundant Filter: SAE CLASS 180 Max = 20.996 Min = -.77018
 01

MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV



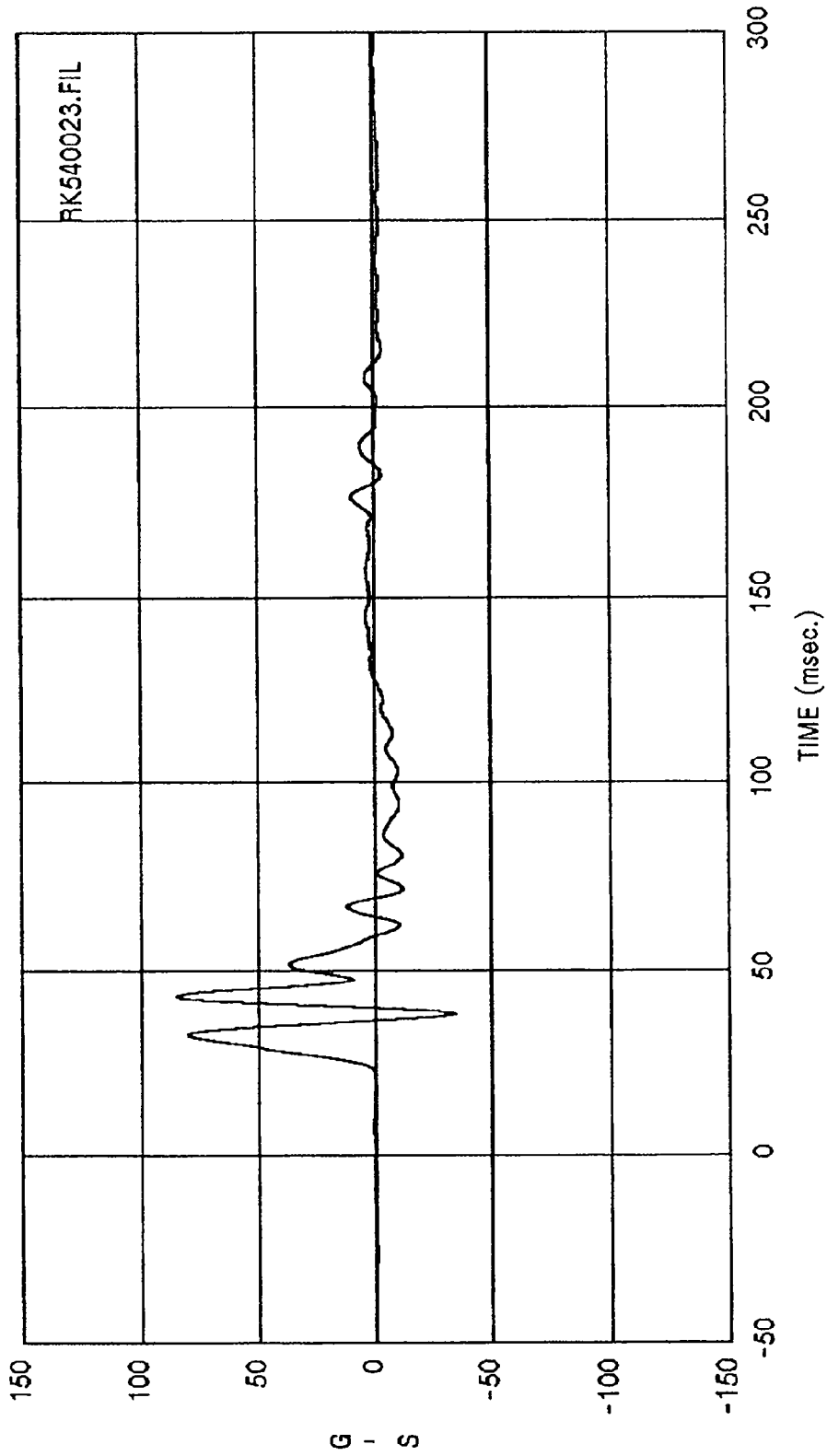
Curve: Passenger lower rib acceleration -- Primary Filter: FIR 100 Max = 85.130 Min = -36.438

MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV



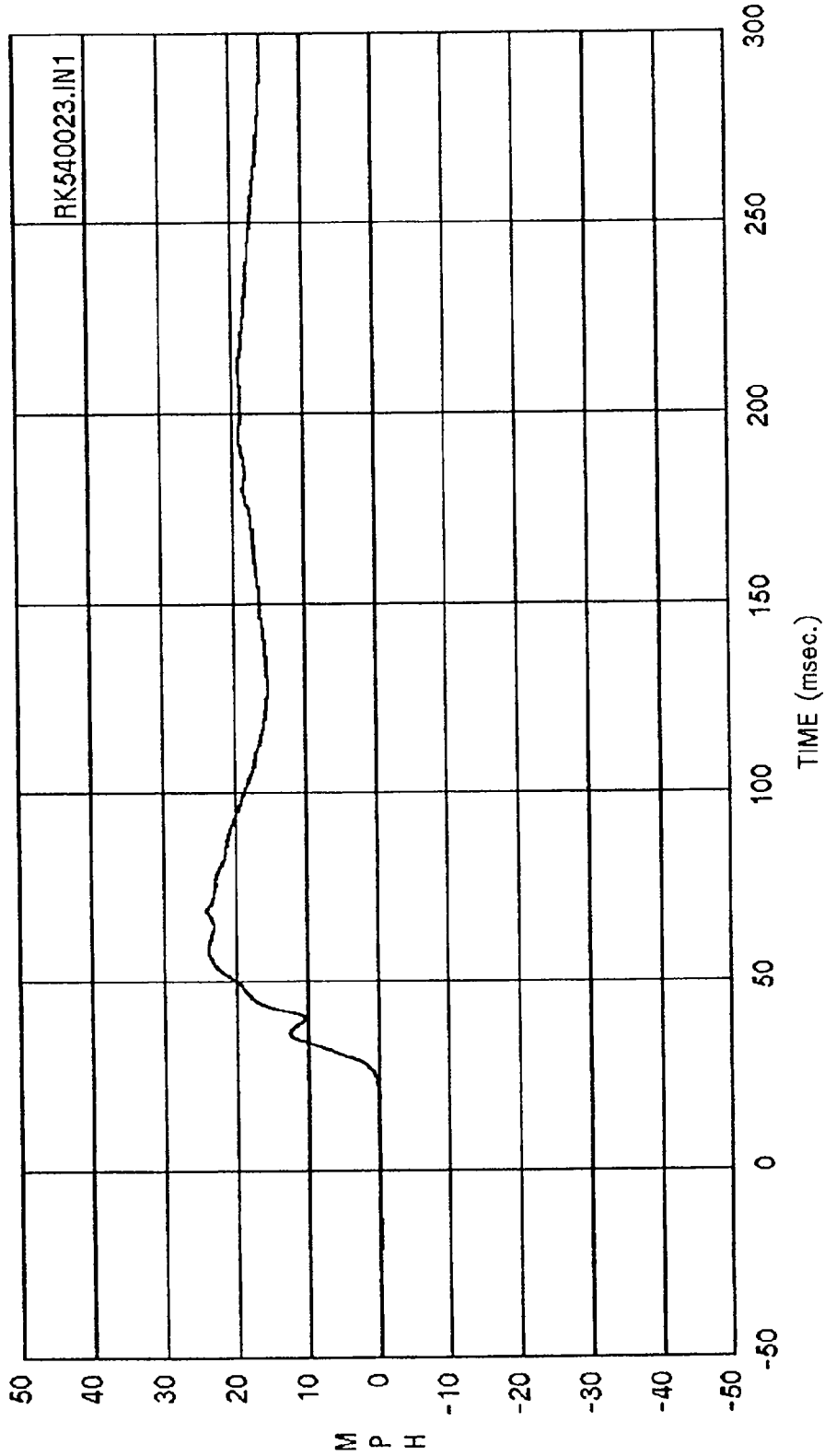
Curve: Passenger lower rib delta V -- Primary Filter: SAE CLASS 180 Max = 23.895 Min = -.15431
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MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV



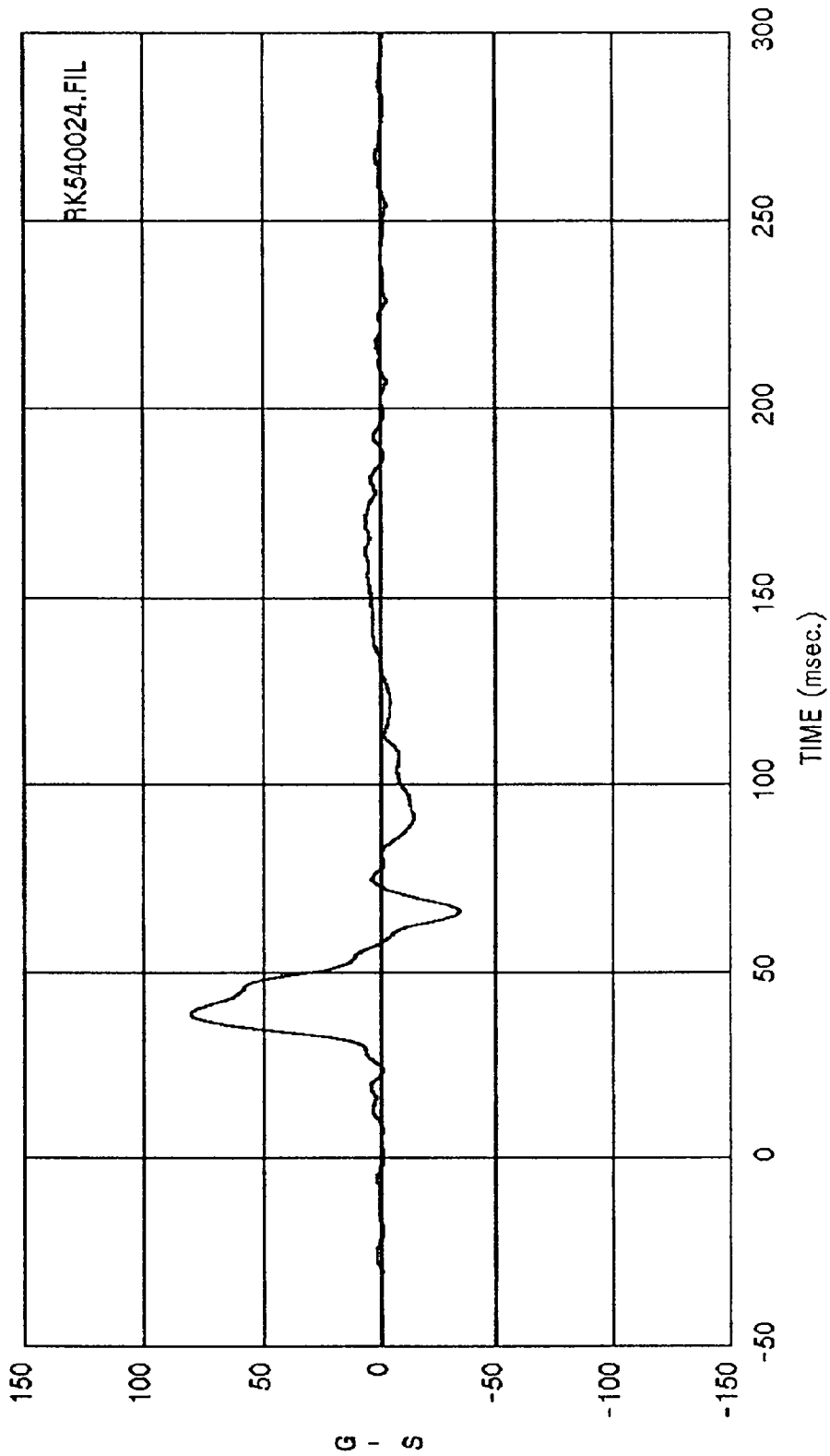
Curve: Passenger lower rib acceleration -- Redundant Filter: FIR 100 Max = 84.982 Min = -34.890

MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV



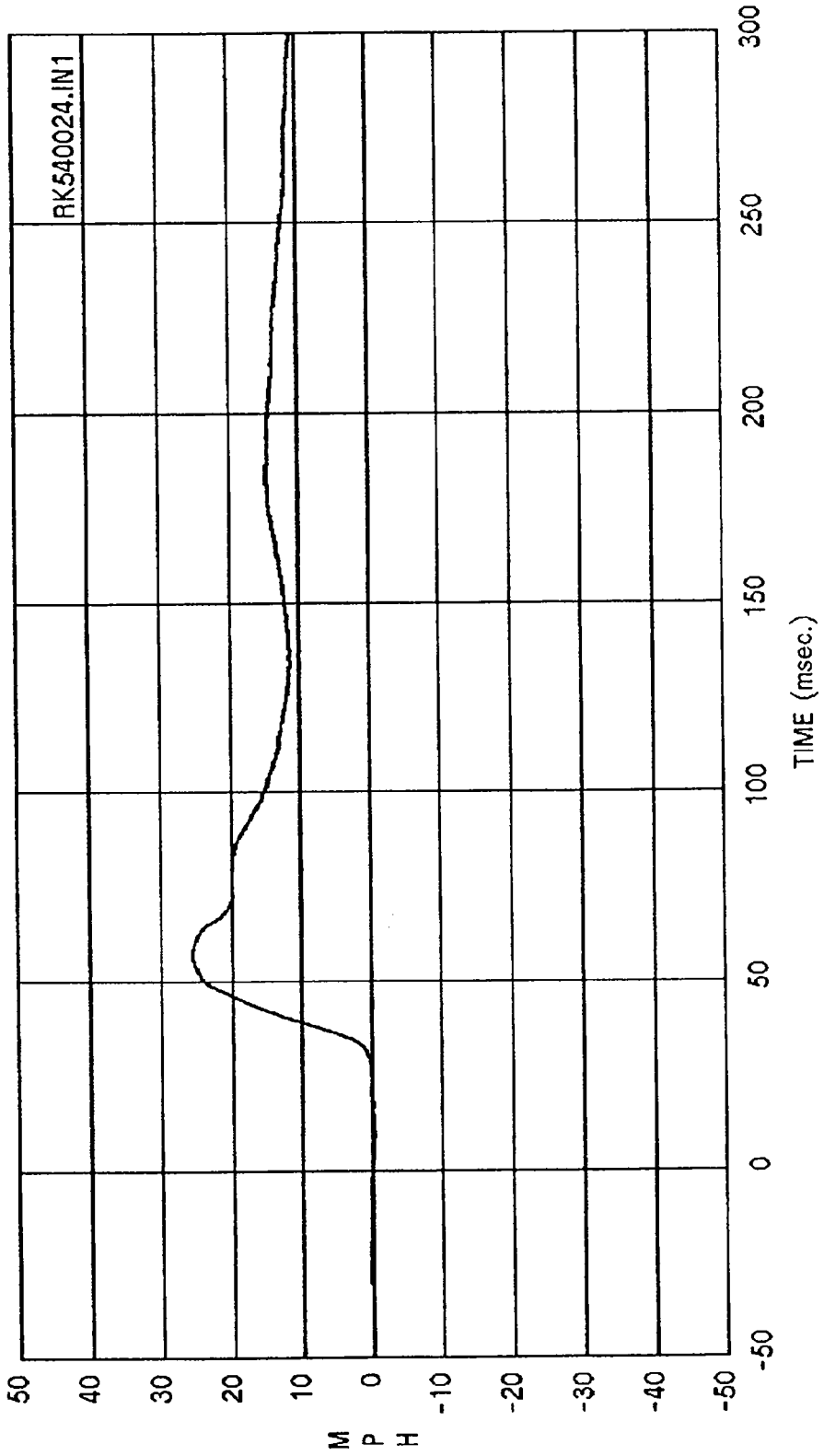
Curve: Passenger lower rib delta V -- Redundant Filter: SAE CLASS 180 Max = 24.091 Min = .25268
01

MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV



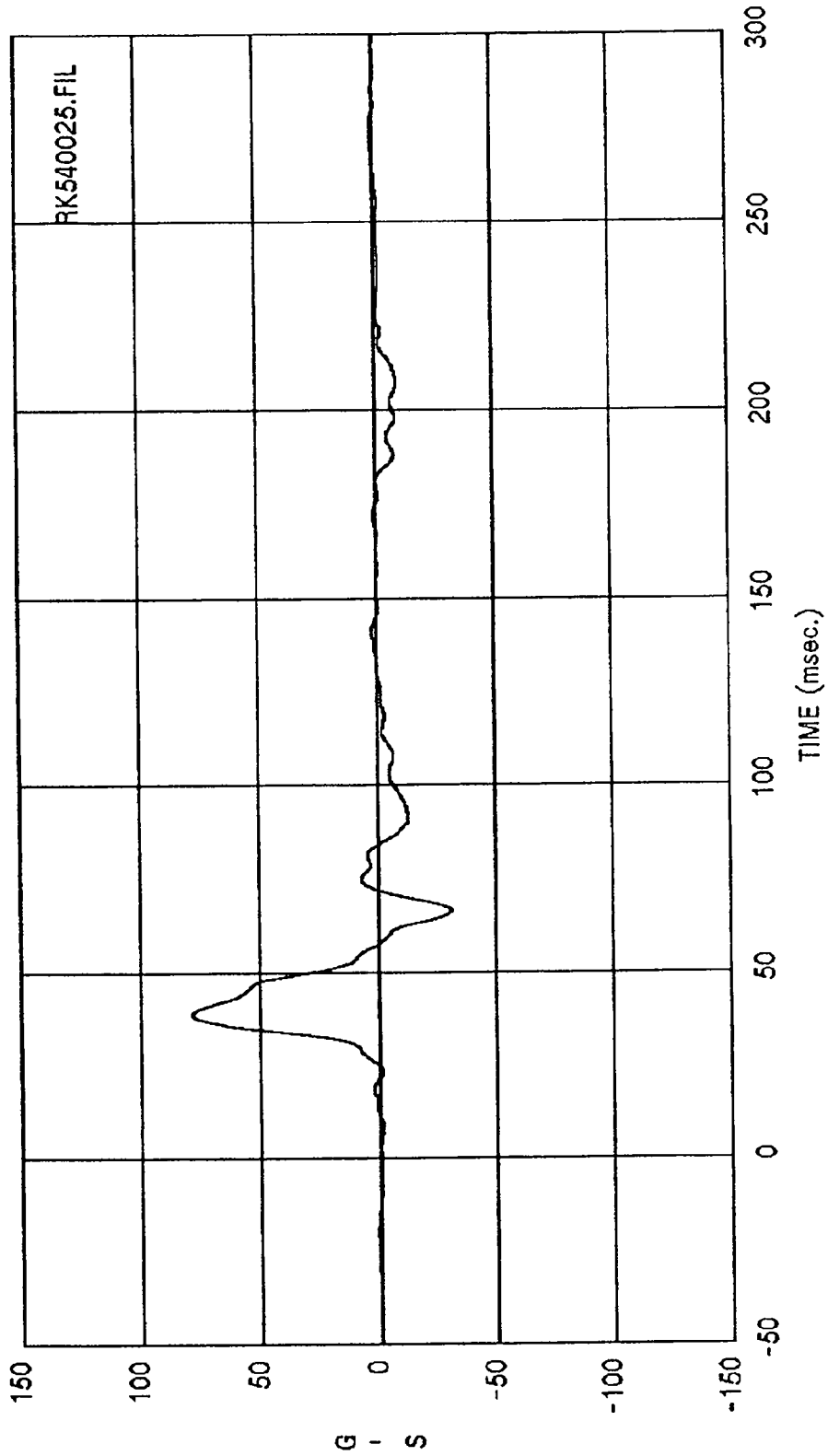
Curve: Passenger lower spine acceleration -- Primary Filter: FIR 100 Max = 80.642 Min = -34.554

MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV

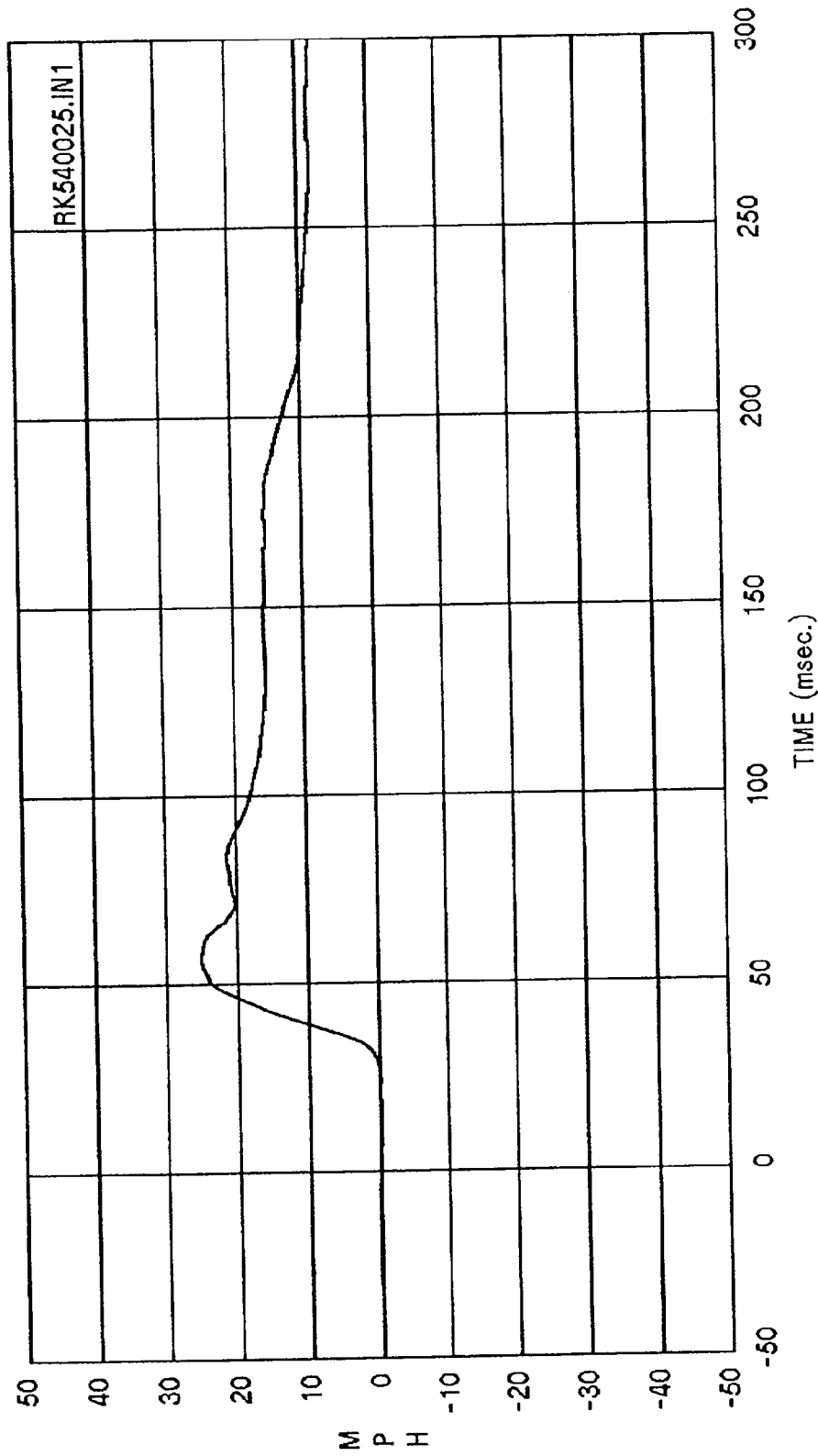


Curve: Passenger lower spine delta V -- Primary Filter: SAE CLASS 180 Max = 25.673 Min = -.34271

MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV

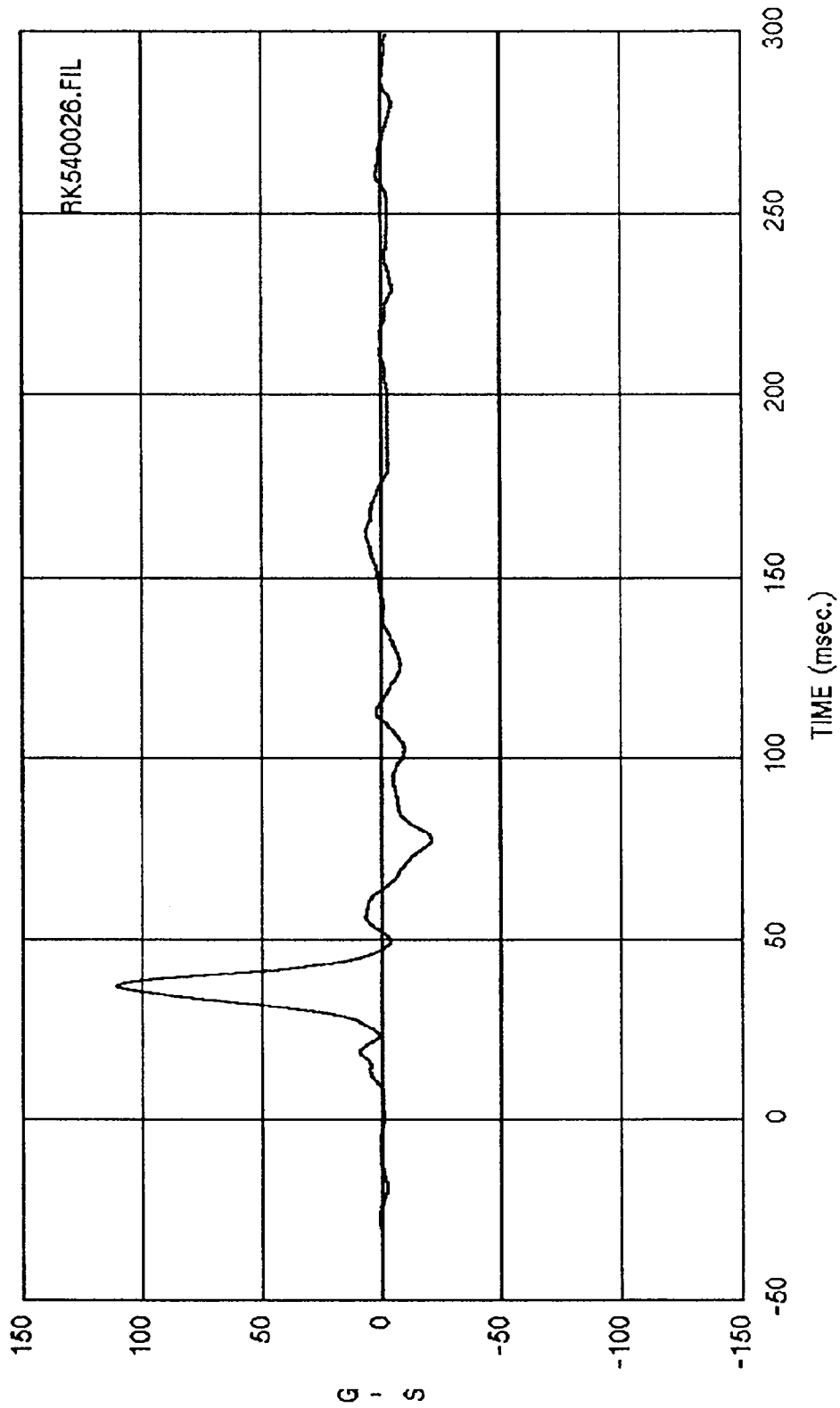


Curve: Passenger lower spine acceleration -- Redundant Filter: FIR 100 Max = 78.375 Min = -31.483
 MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV



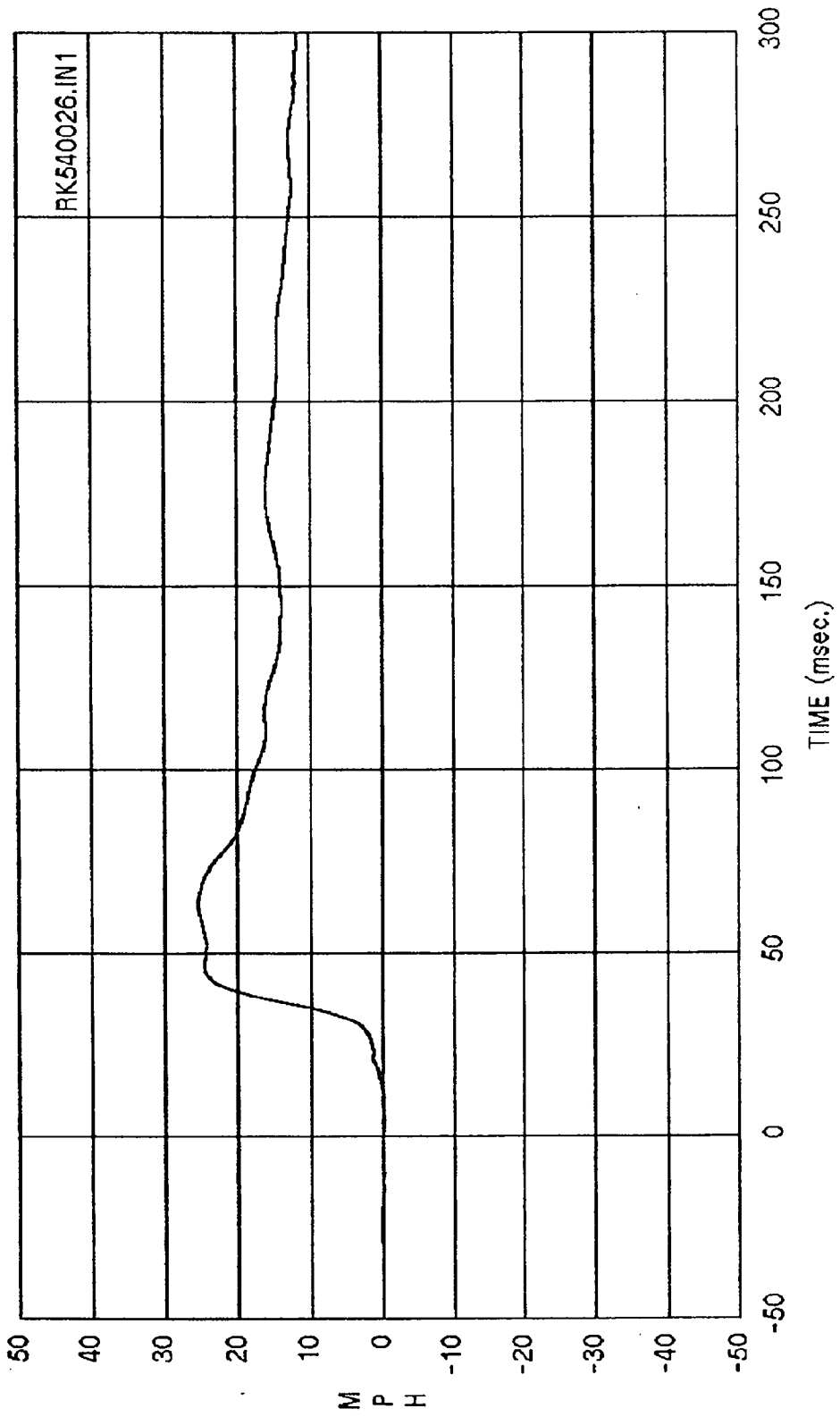
Curve: Passenger lower spine delta V -- Redundant Filter: SAE CLASS 180 Max = 25.109 Min = -.250:

MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV

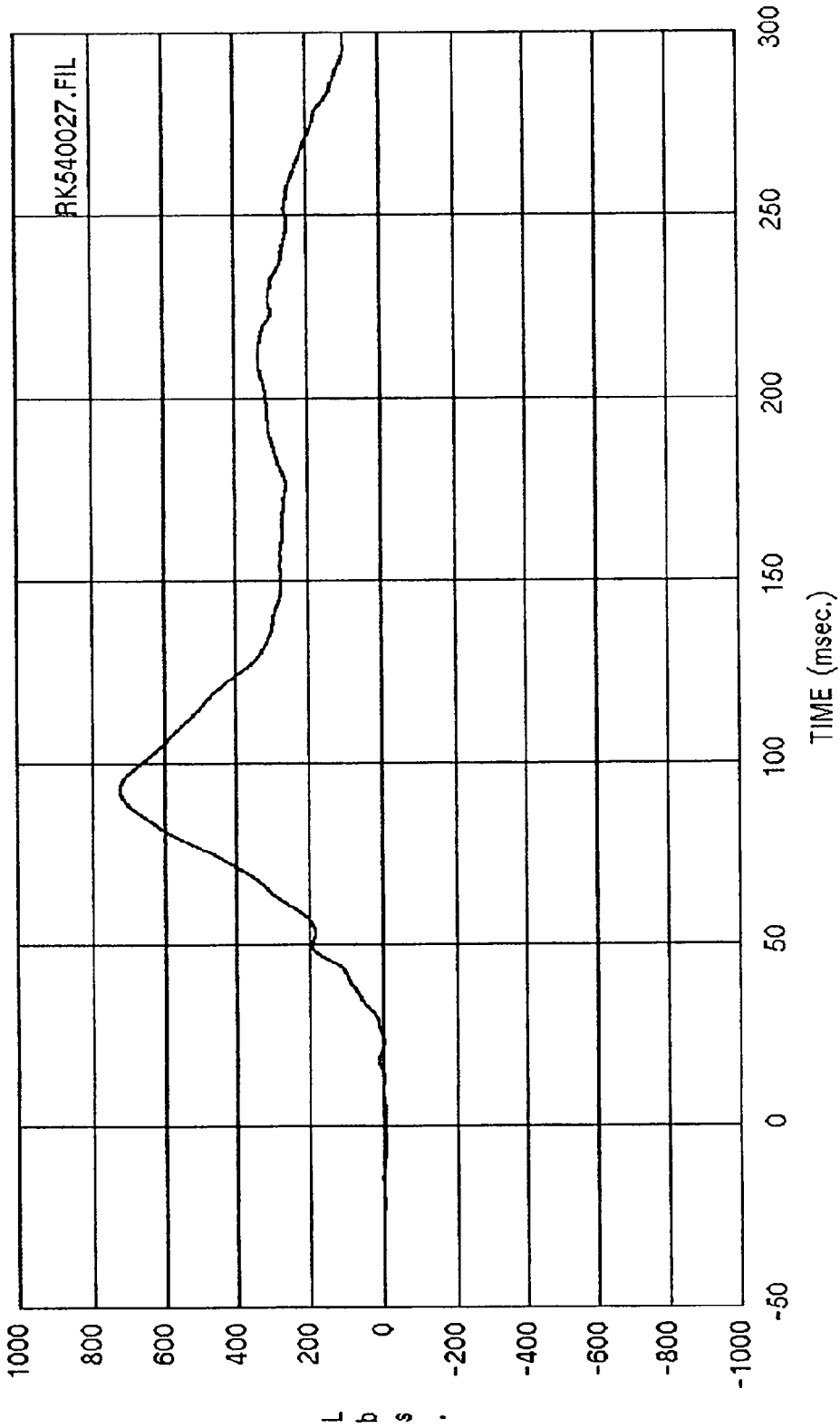


Curve: Passenger pelvis acceleration Filter: FIR 100 Max = 110.62 Min = -21.208

MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV

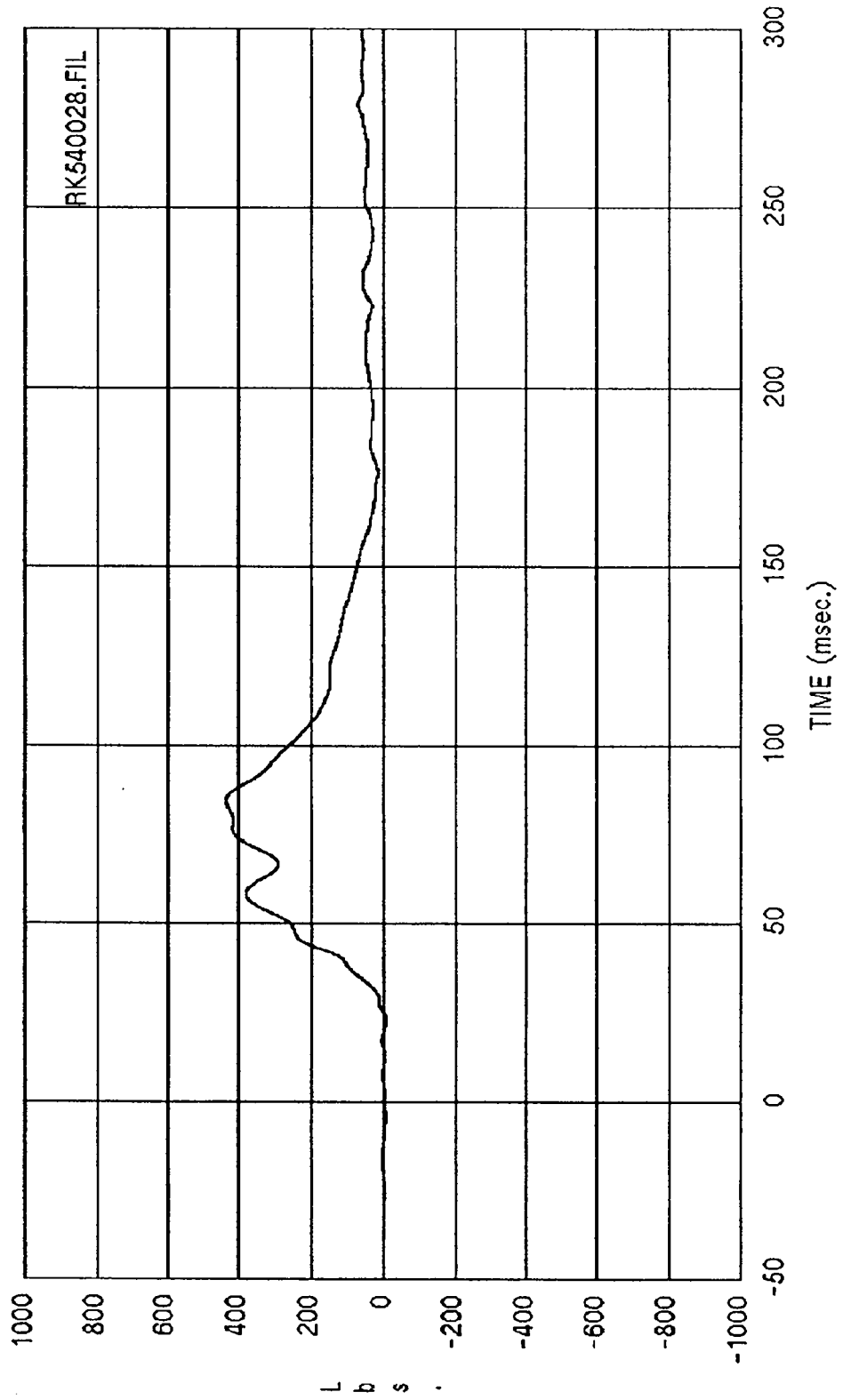


Curve: Passenger pelvis delta V Filter: SAE CLASS 180 Max = 25.463 Min = -.89296E-C
MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV



Curve: Passenger lap belt load Filter: SAE CLASS 60 Max = 725.64 Min = -7.5645

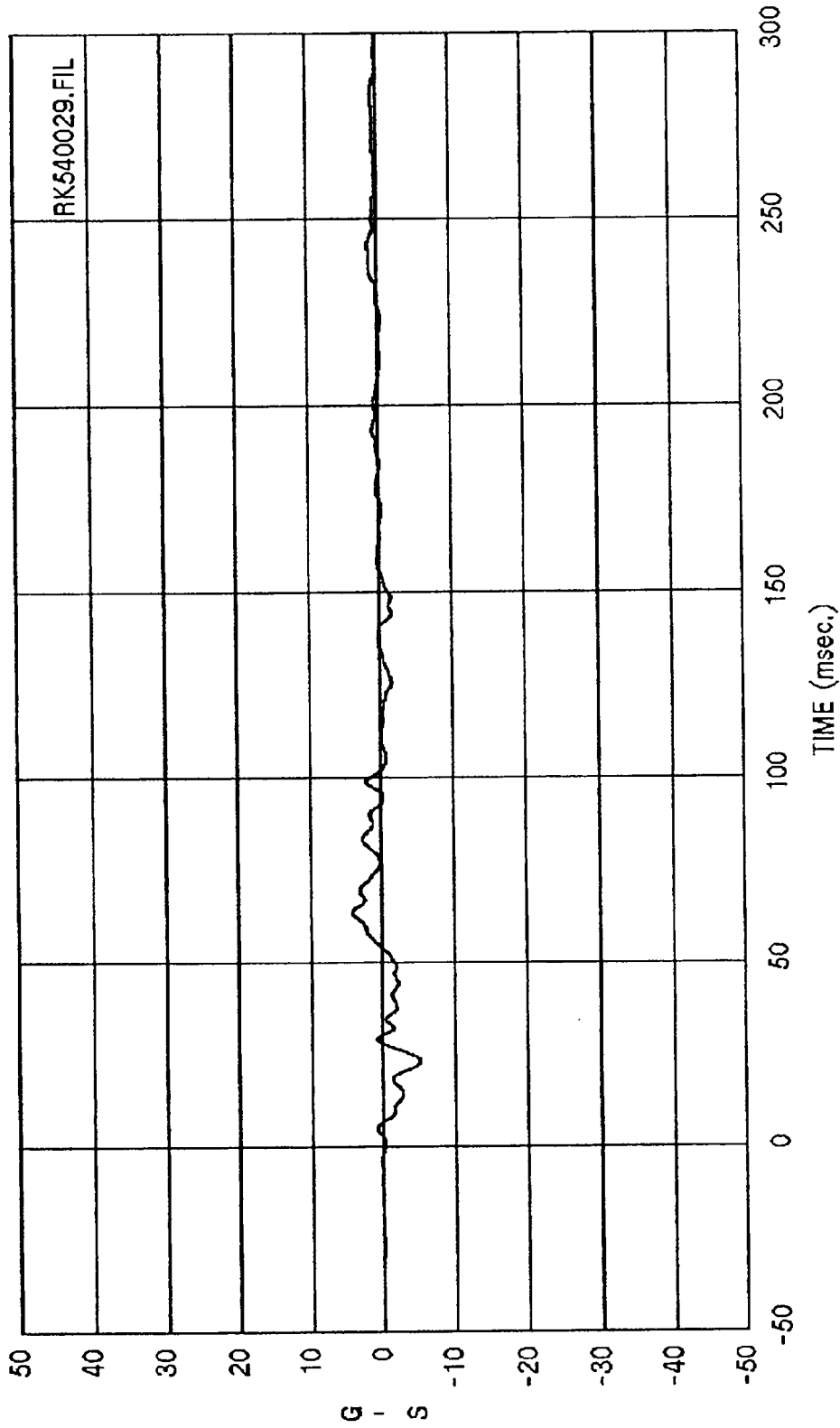
MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV



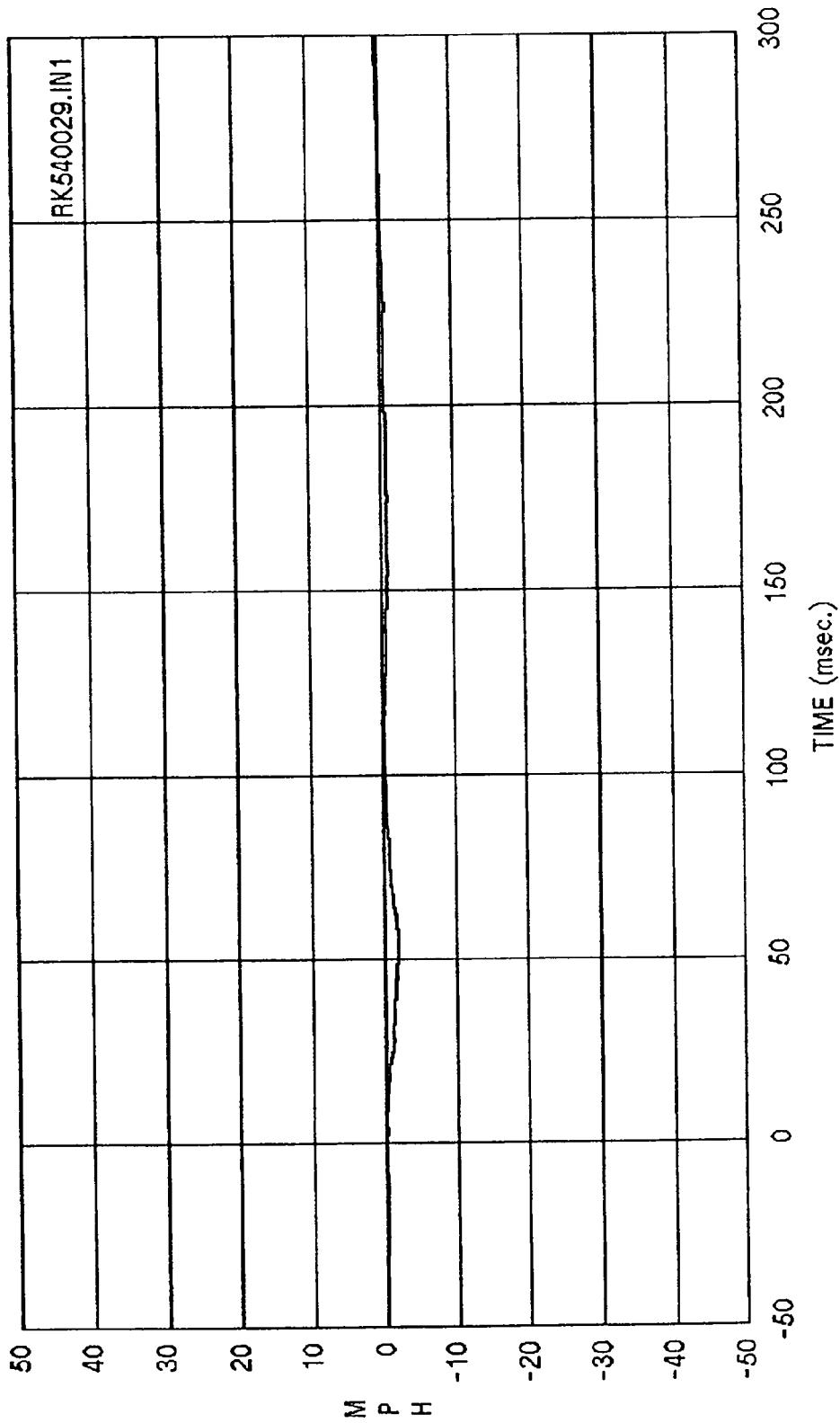
Curve: Passenger shoulder belt load Filter: SAE CLASS 60 Max = 436.11 Min = -6.4527

MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV

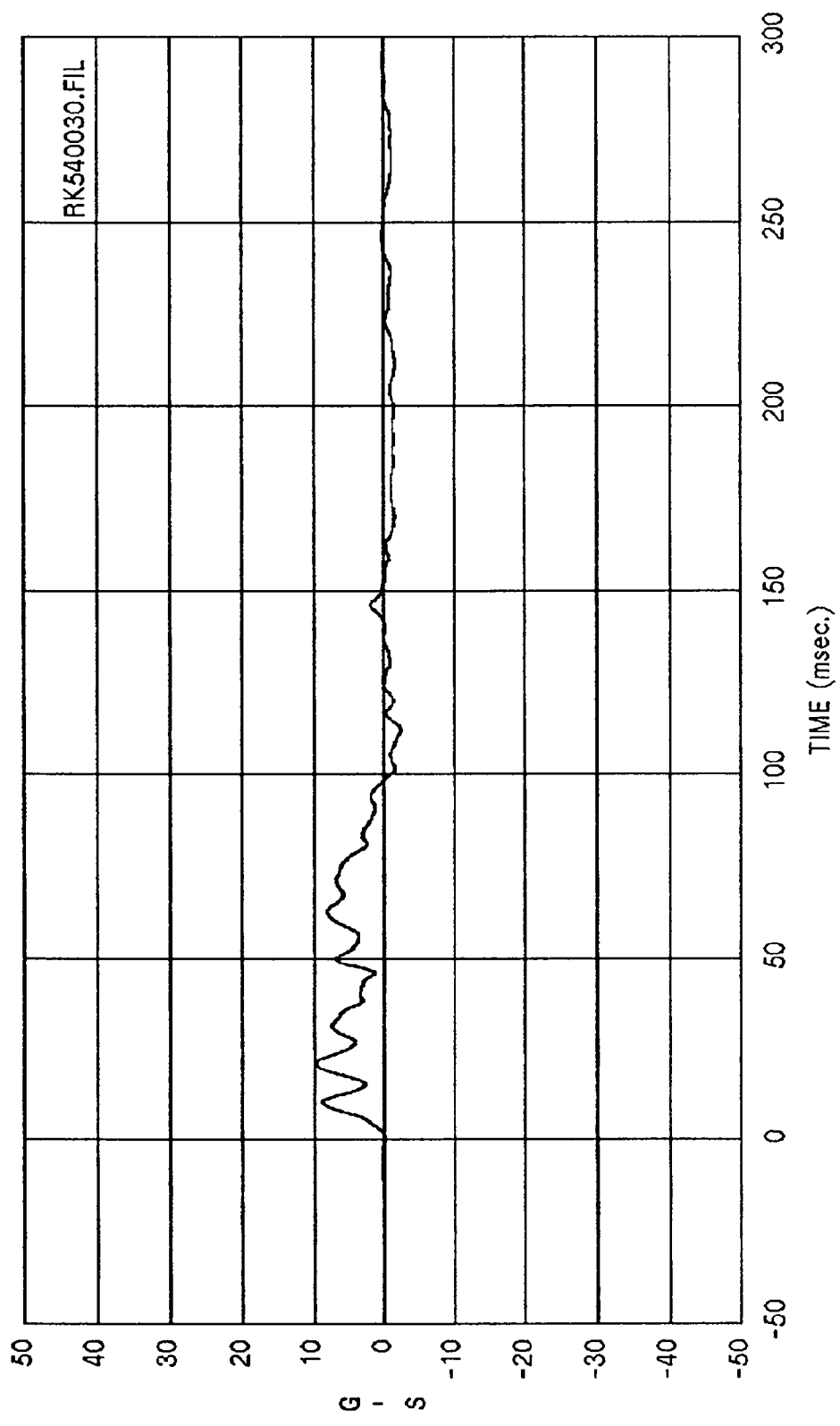
VEHICLE ACCELEROMETER DATA



Curve: Front seat right sill acceleration -- X axis Filter: SAE CLASS 60 Max = 4.1746 Min = -5.2624
 MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV

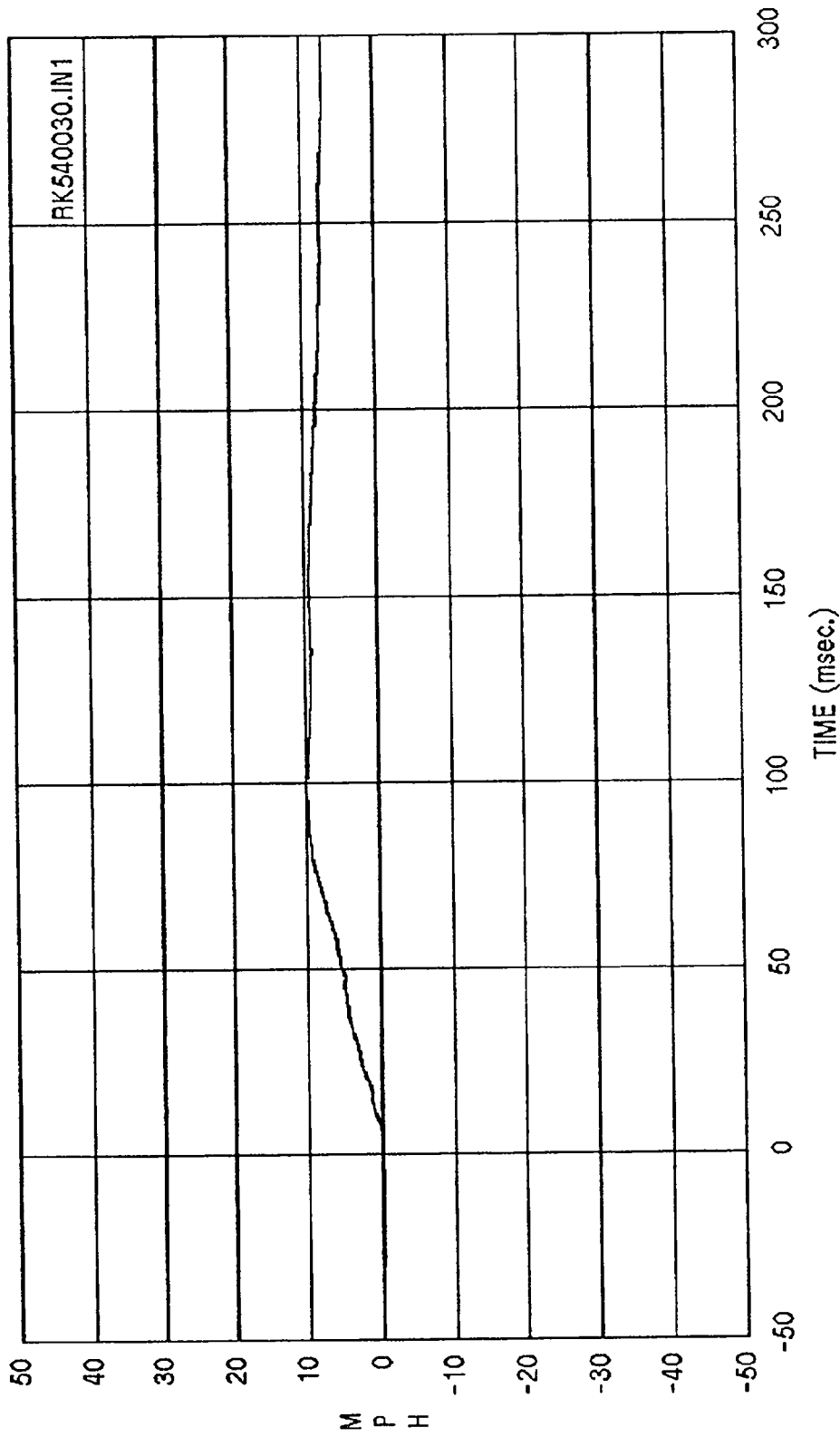


Curve: Front seat right sill delta V -- X axis Filter: SAE CLASS 180 Max = .39814 Min = -1.8555
 MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV

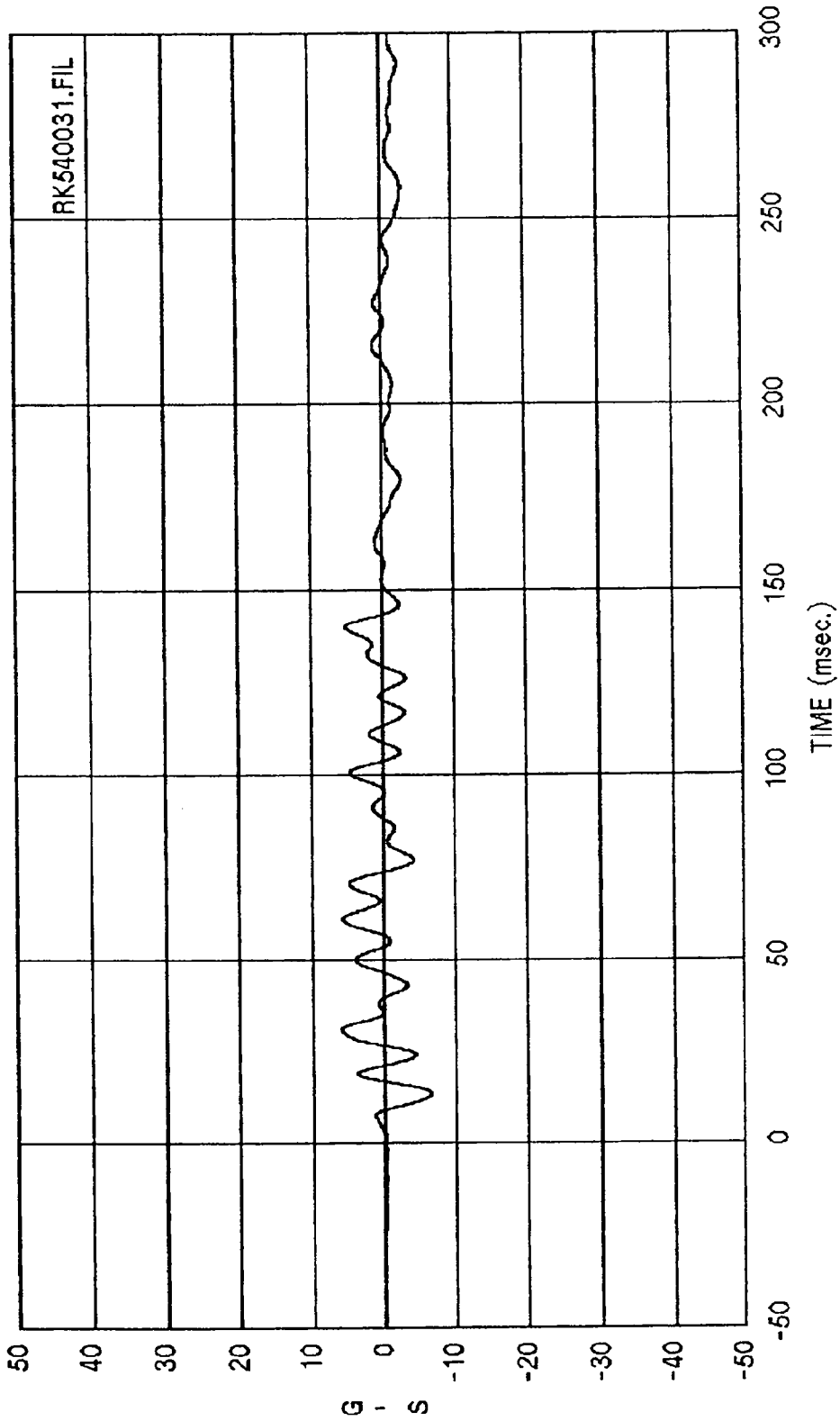


Curve: Front seat right sill acceleration -- Y axis Filter: SAE CLASS 60 Max = 9.8086 Min = -2.4815

MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV

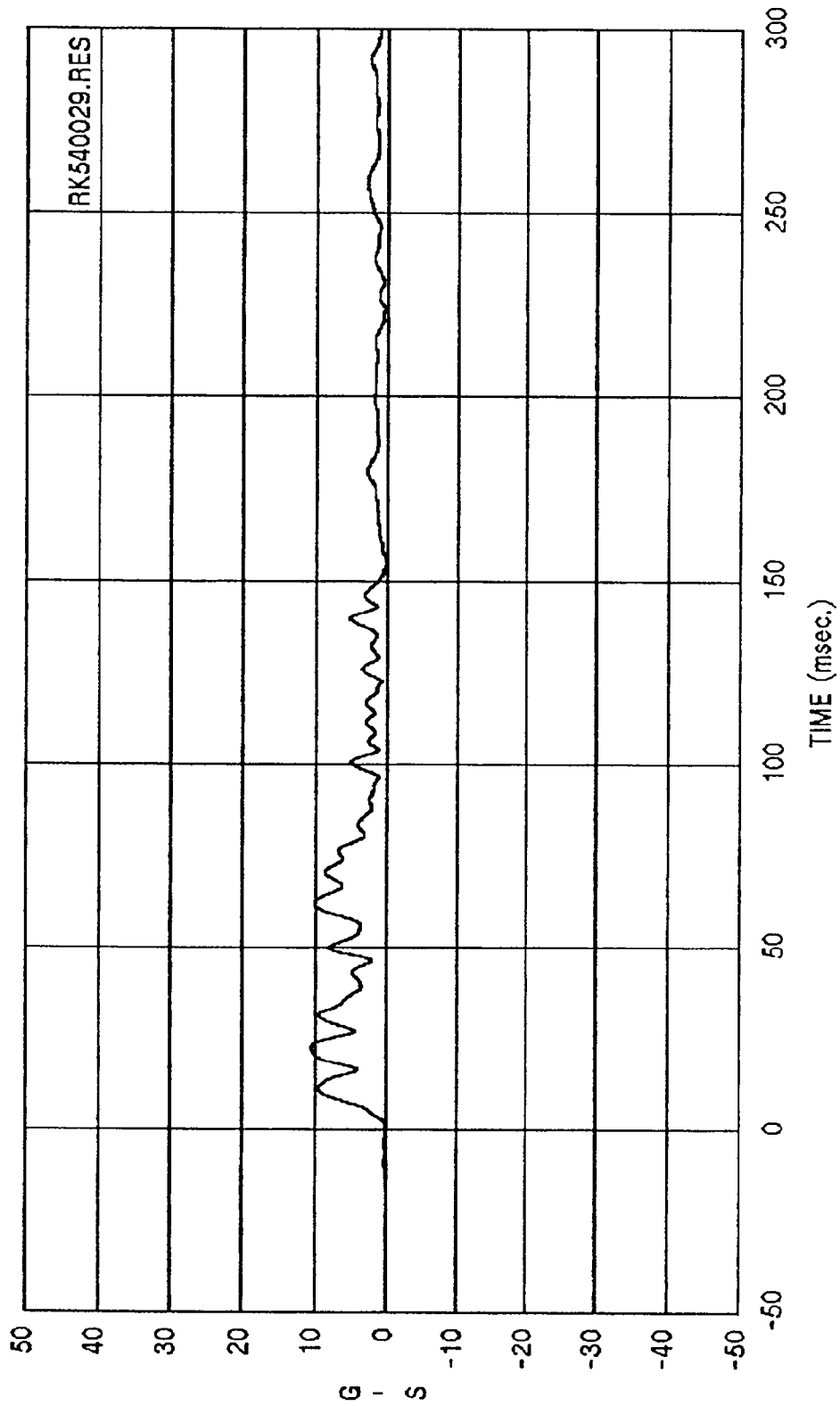


Curve: Front seat right sill delta V -- Y axis Filter: SAE CLASS 180 Max = 9.9629 Min = -.16042E-6
 MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV



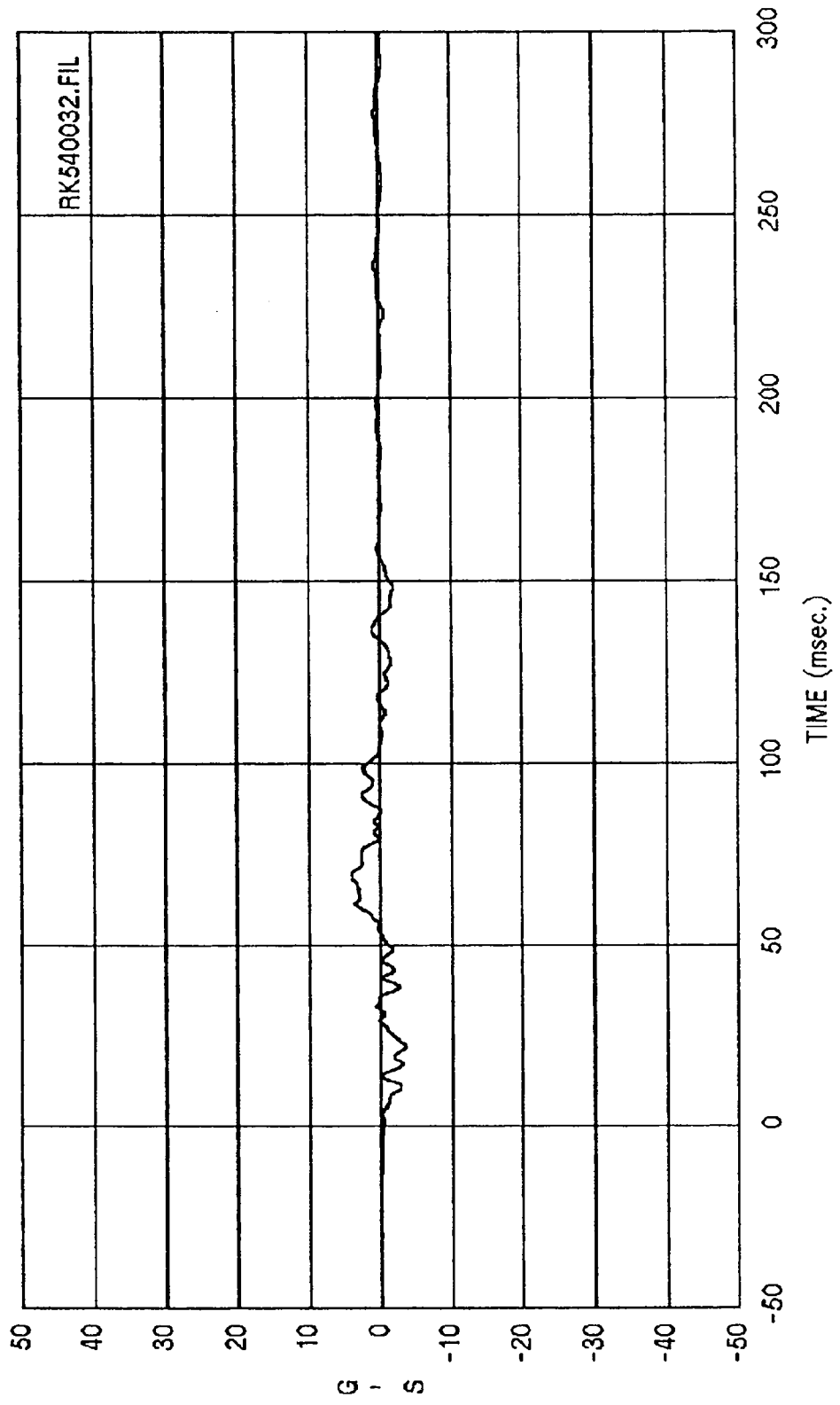
Curve: Front seat right sill acceleration -- Z axis Filter: SAE CLASS 60 Max = 6.1206 Min = -6.5979

MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV



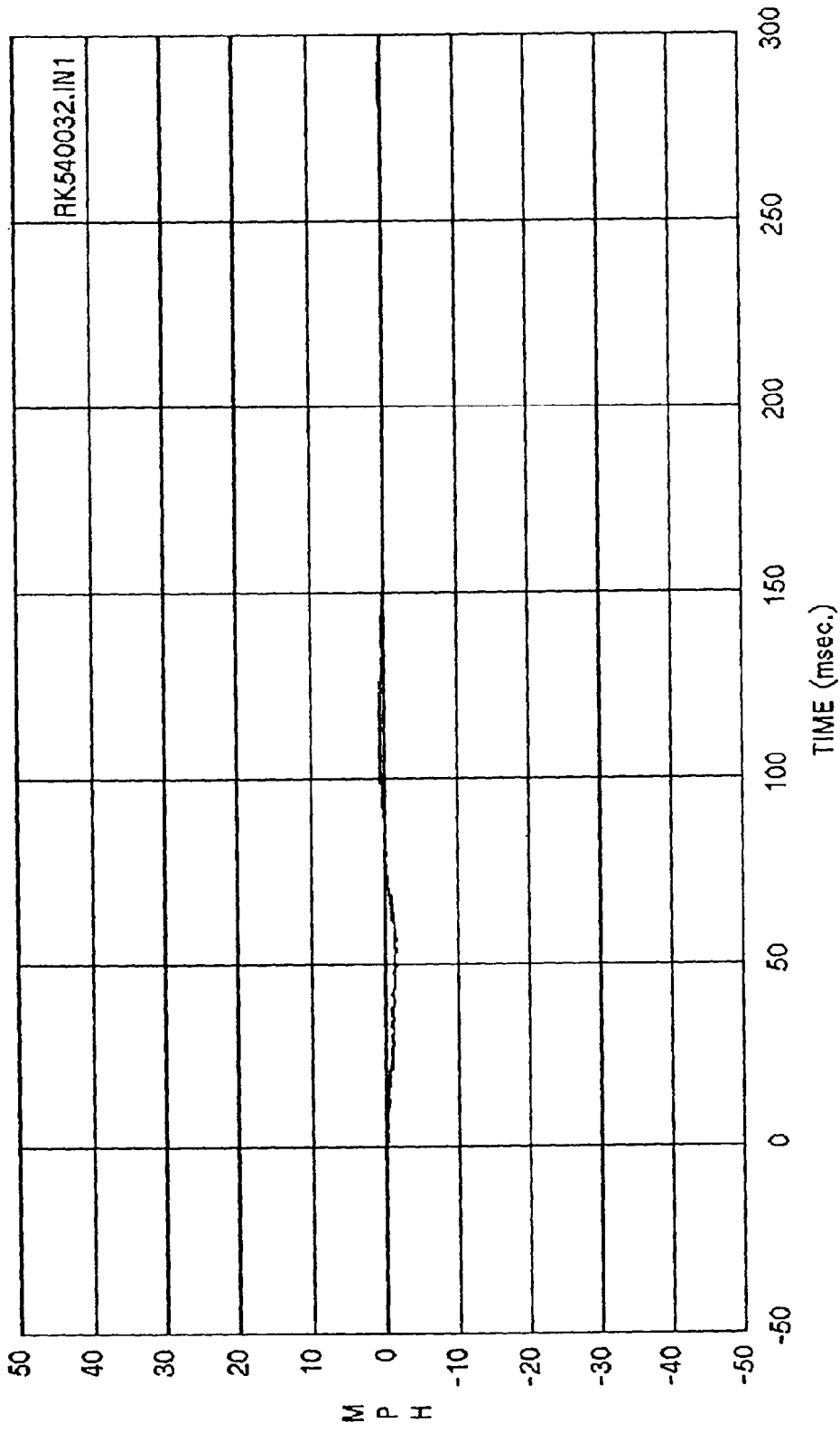
Curve: Front seat right sill resultant acceleration Filter: SAE CLASS 60 Max = 10.670 Min = .18920

MSE Date: 09/18/92 Program: Side Impact 30/15 90 Deg. Vehicle: 1989 Mazda MPV

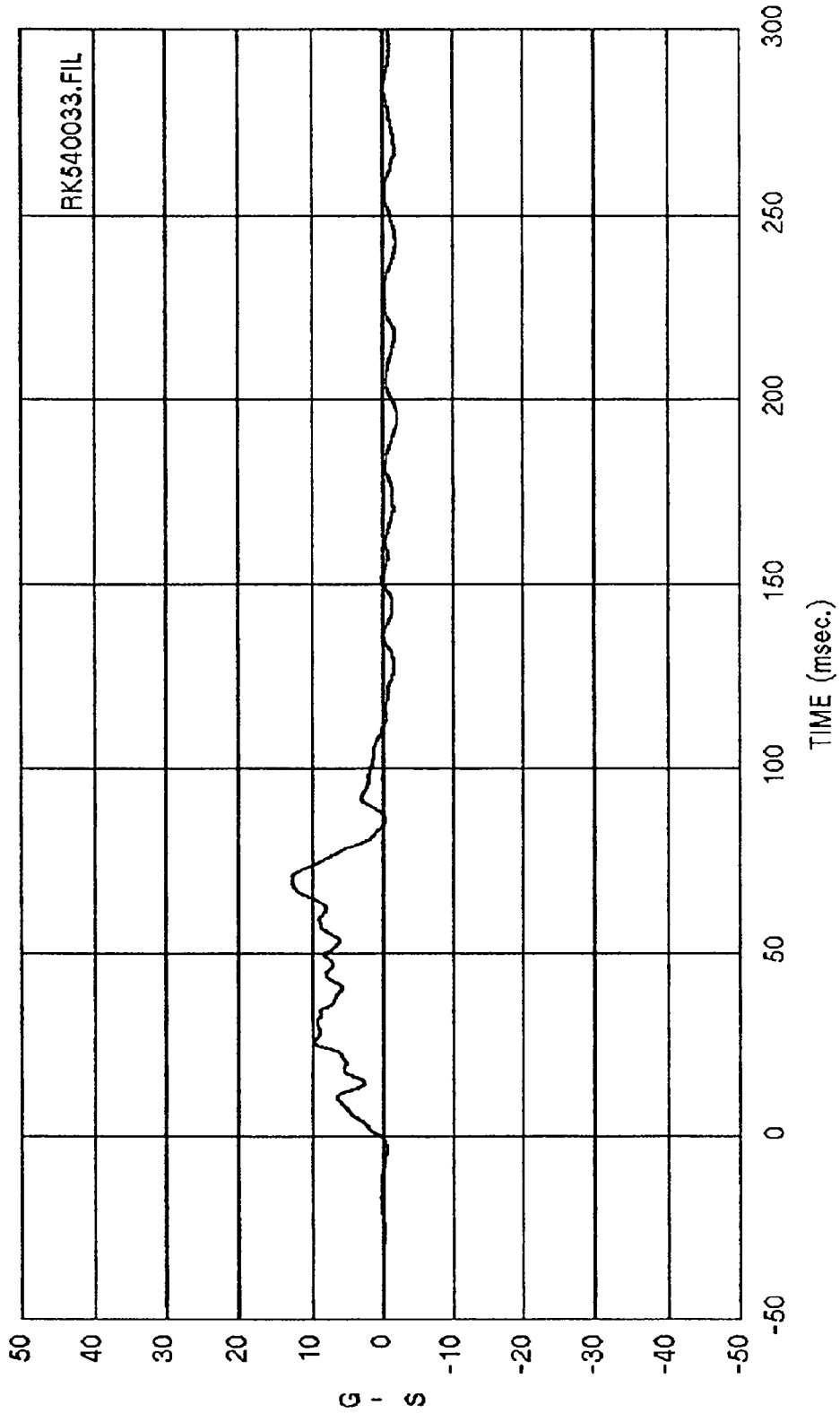


Curve: Rear seat right sill acceleration -- X axis Filter: SAE CLASS 60 Max = 4.0937 Min = -3.4012

MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV

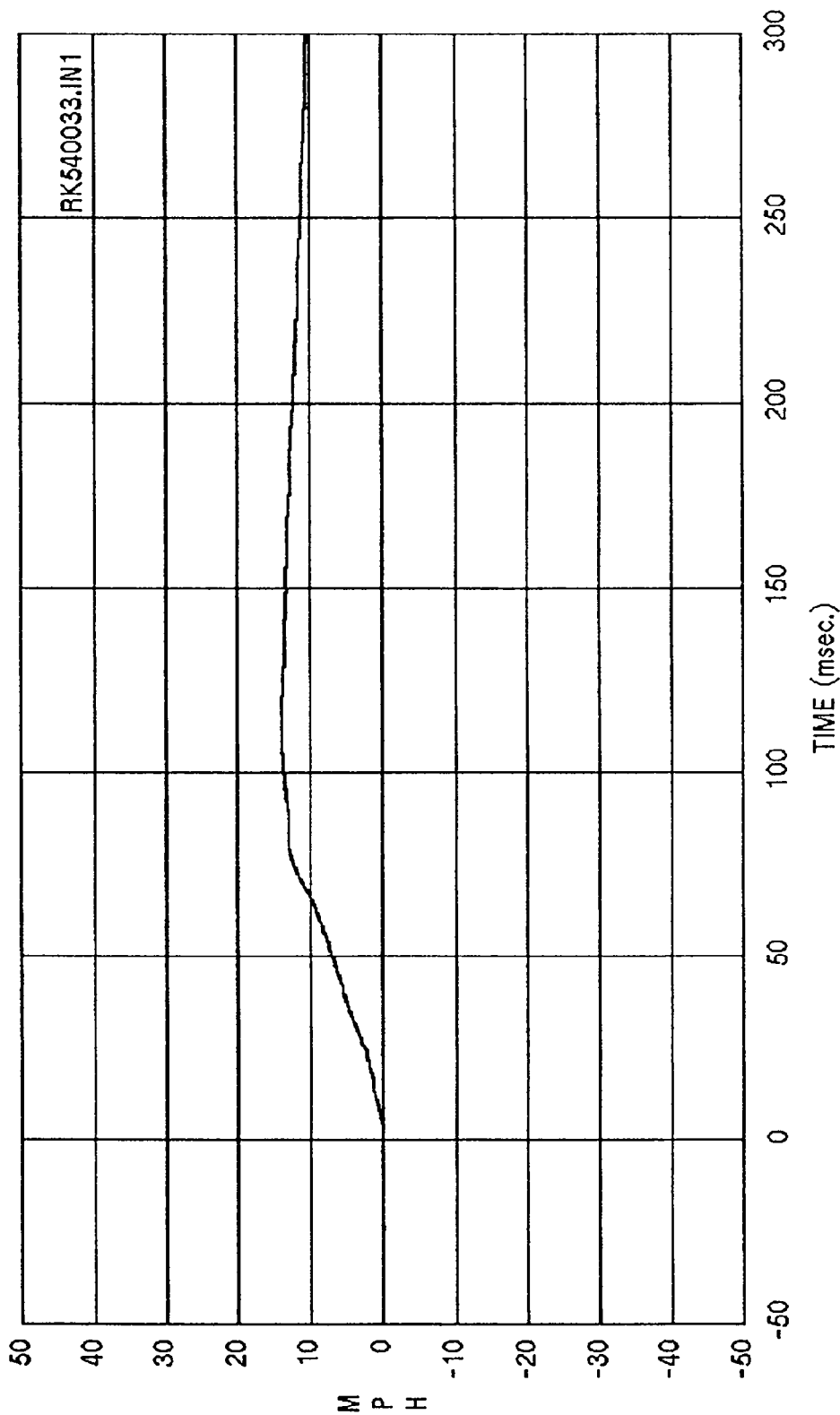


Curve: Rear seat right sill delta V -- X axis Filter: SAE CLASS 180 Max = .67853 Min = -1.3510
 MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV



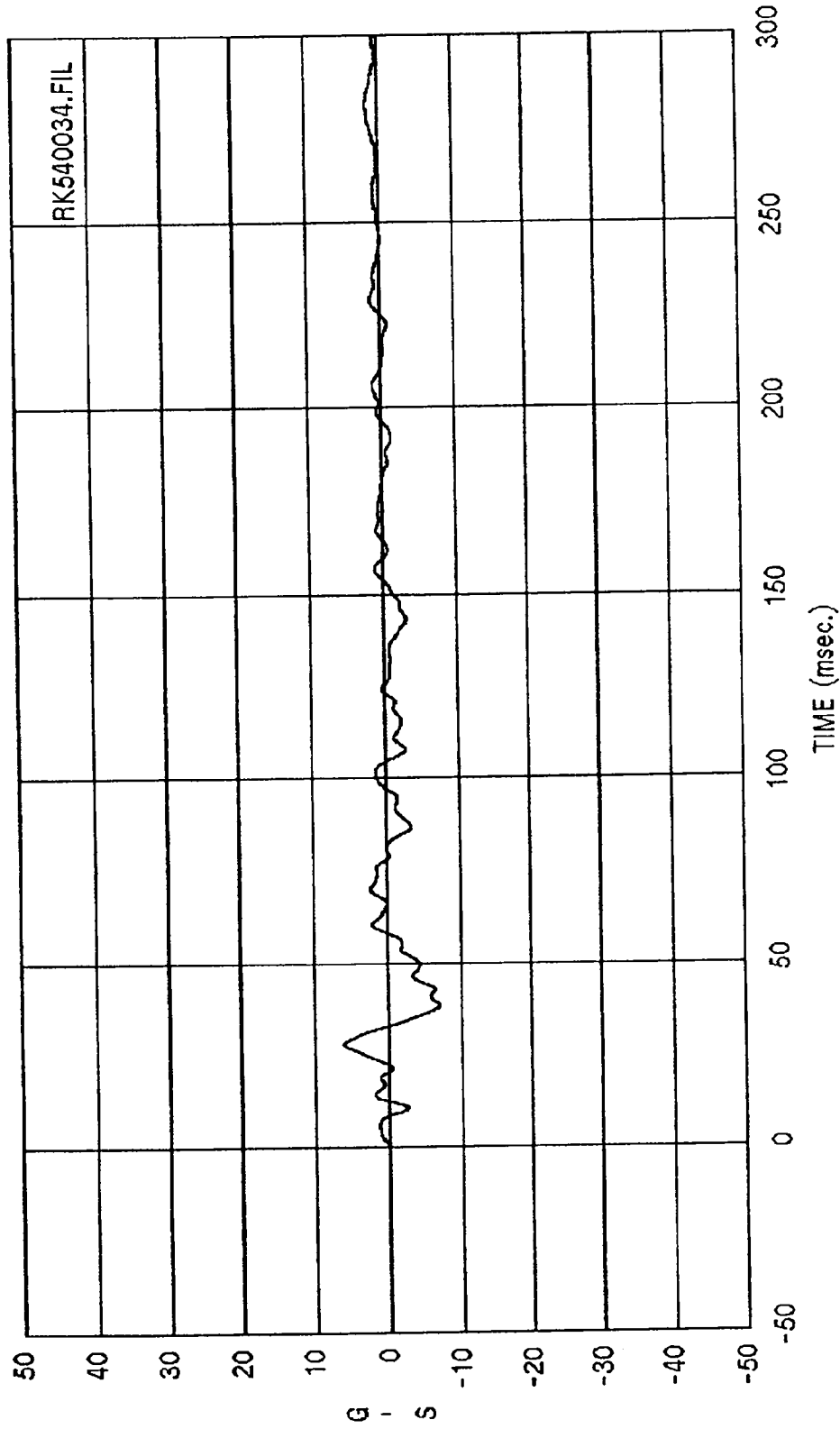
Curve: Rear seat right sill acceleration -- Y axis Filter: SAE CLASS 60 Max = 12.838 Min = -2.0078

MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV

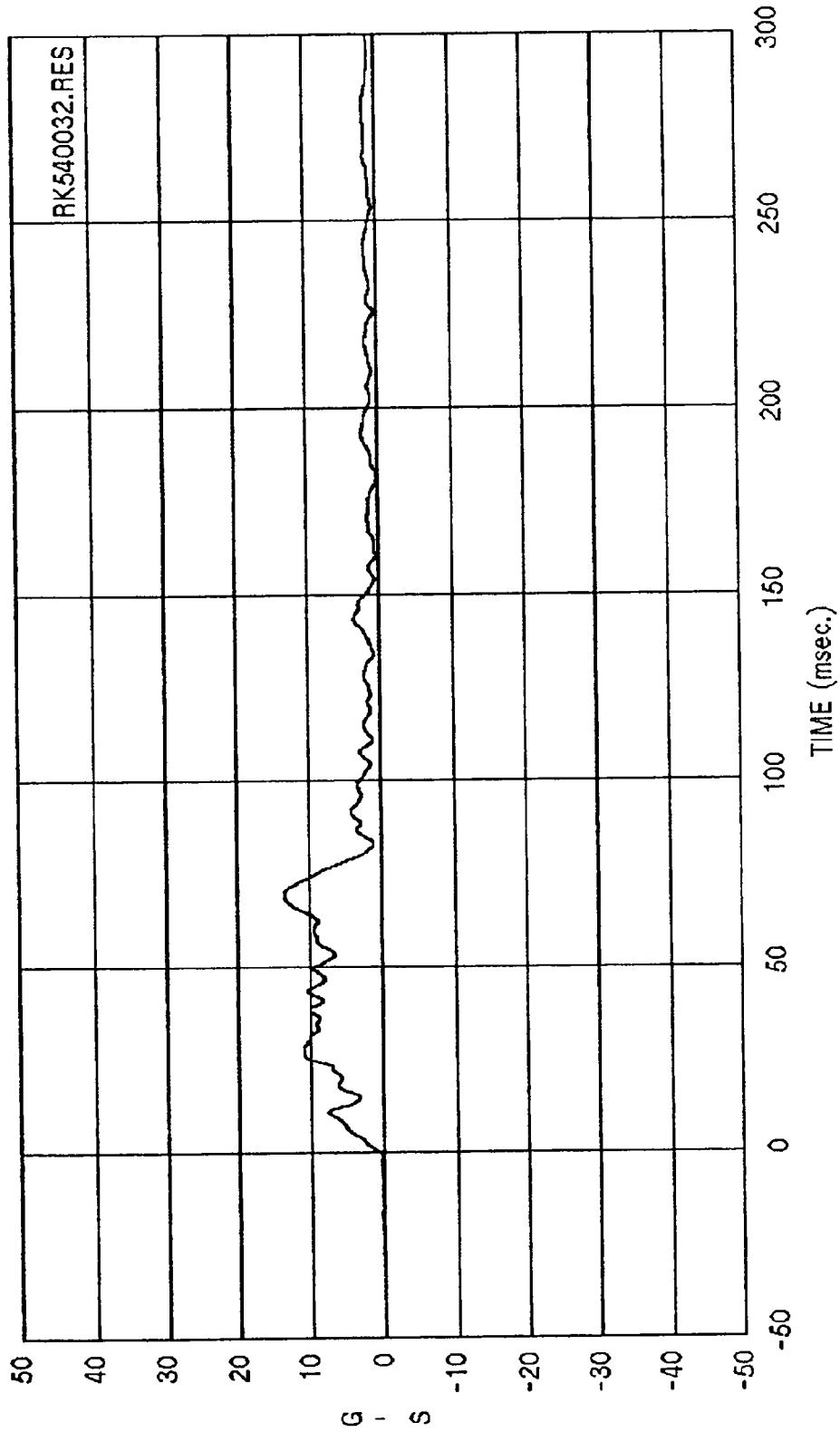


Curve: Rear seat right sill delta V -- Y axis Filter: SAE CLASS 180 Max = 13.946 Min = -.54476E-1

MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV

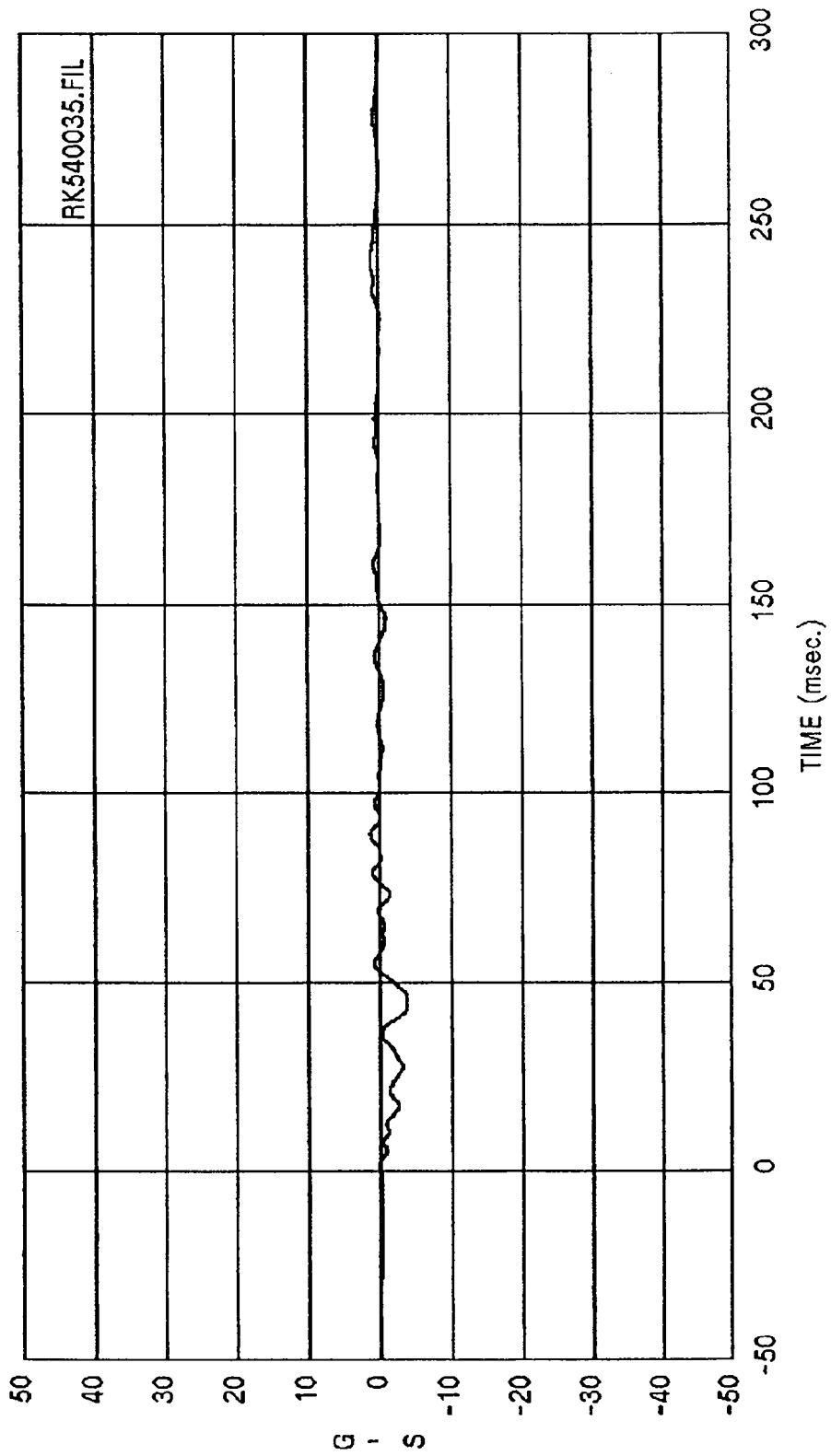


Curve: Rear seat right sill acceleration -- Z axis Filter: SAE CLASS 60 Max = 6.1601 Min = -7.0389
 MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV



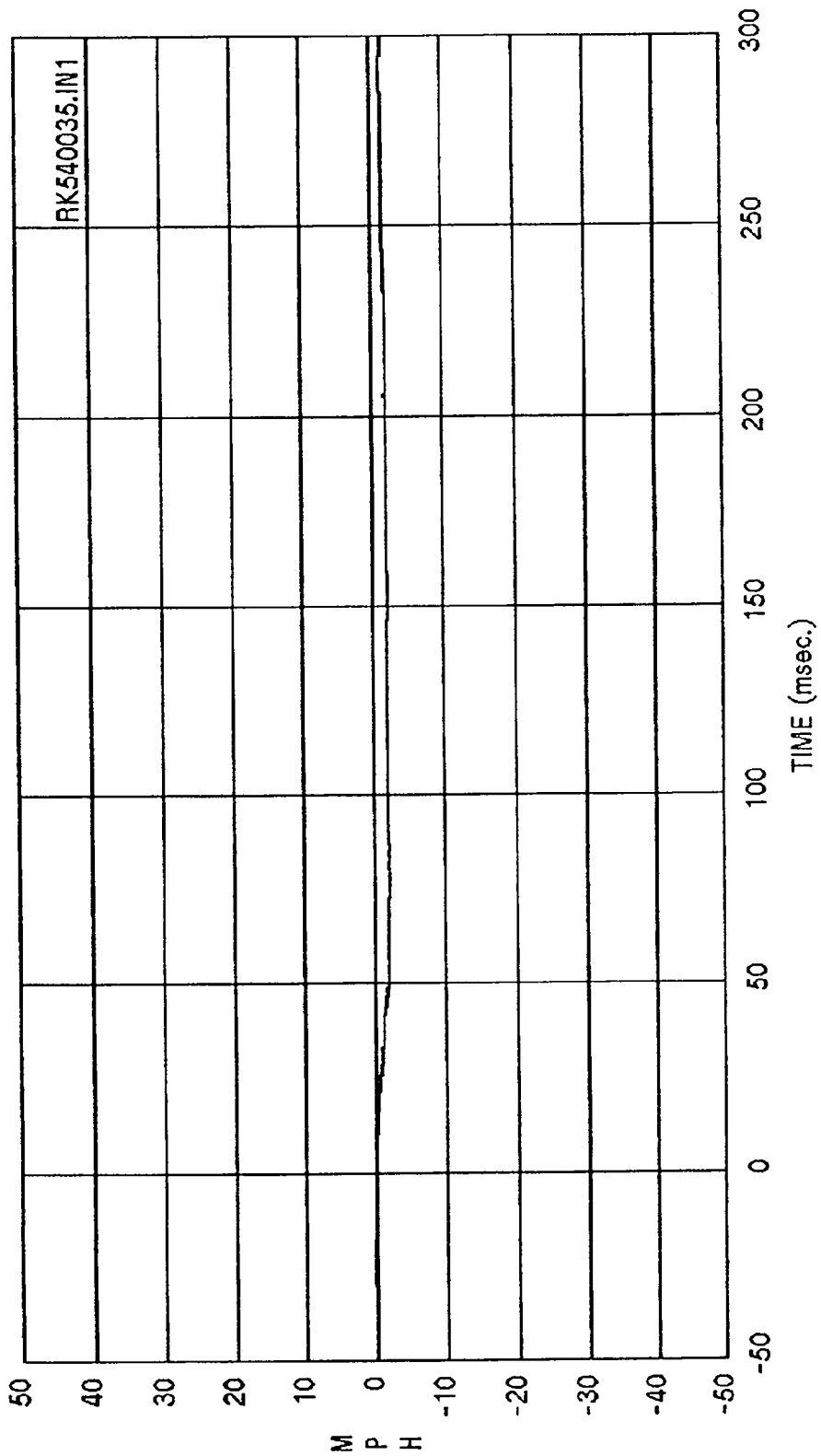
Curve: Rear seat right sill resultant acceleration Filter: SAE CLASS 60 Max = 13.642 Min = .31081

MSE Date: 09/18/92 Program: Side Impact 30/15 90 Deg. Vehicle: 1989 Mazda MPV



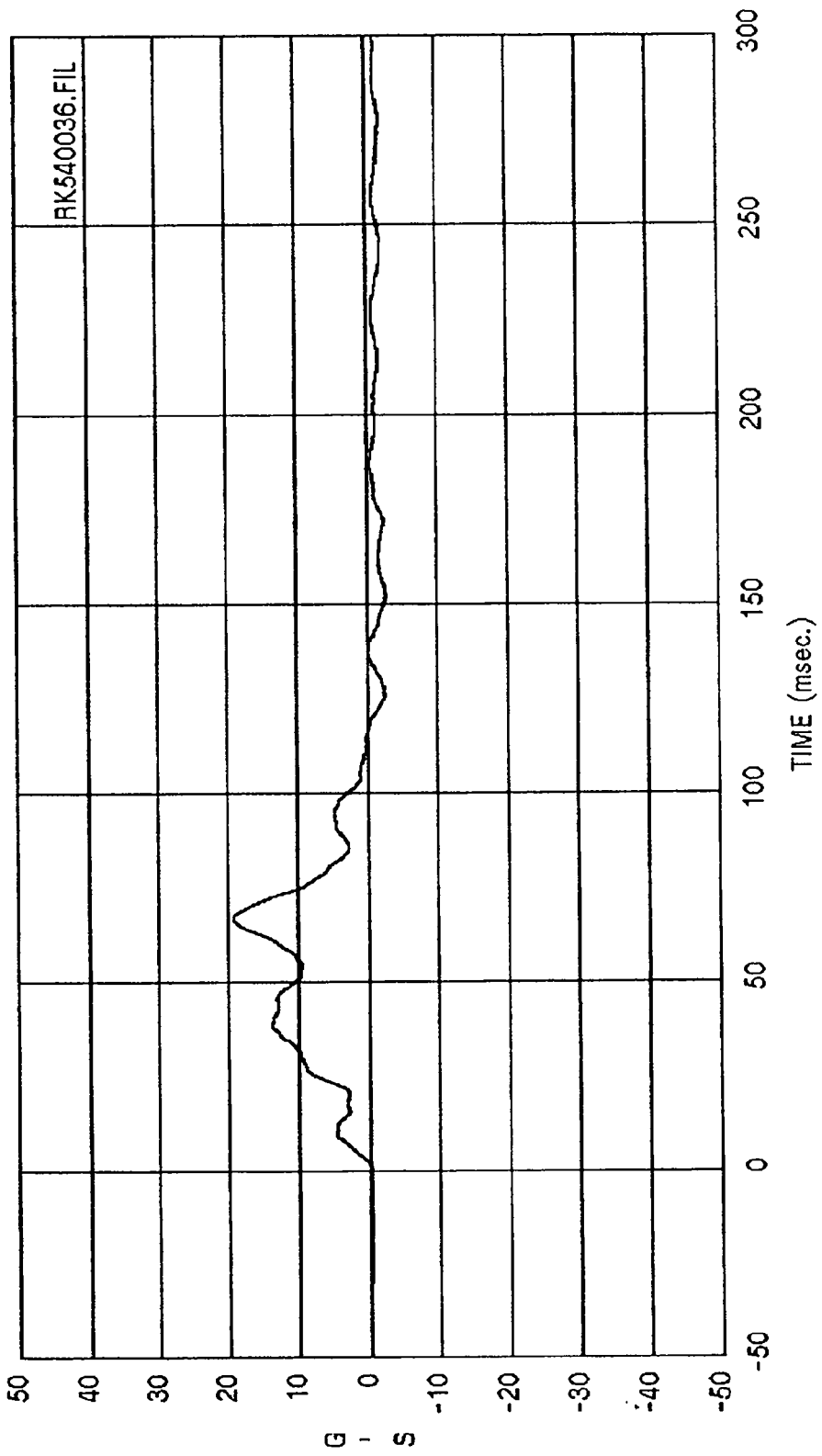
Curve: Rear floor above axle acceleration -- X axis Filter: SAE CLASS 60 Max = 1.2529 Min = -3.8394

MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV



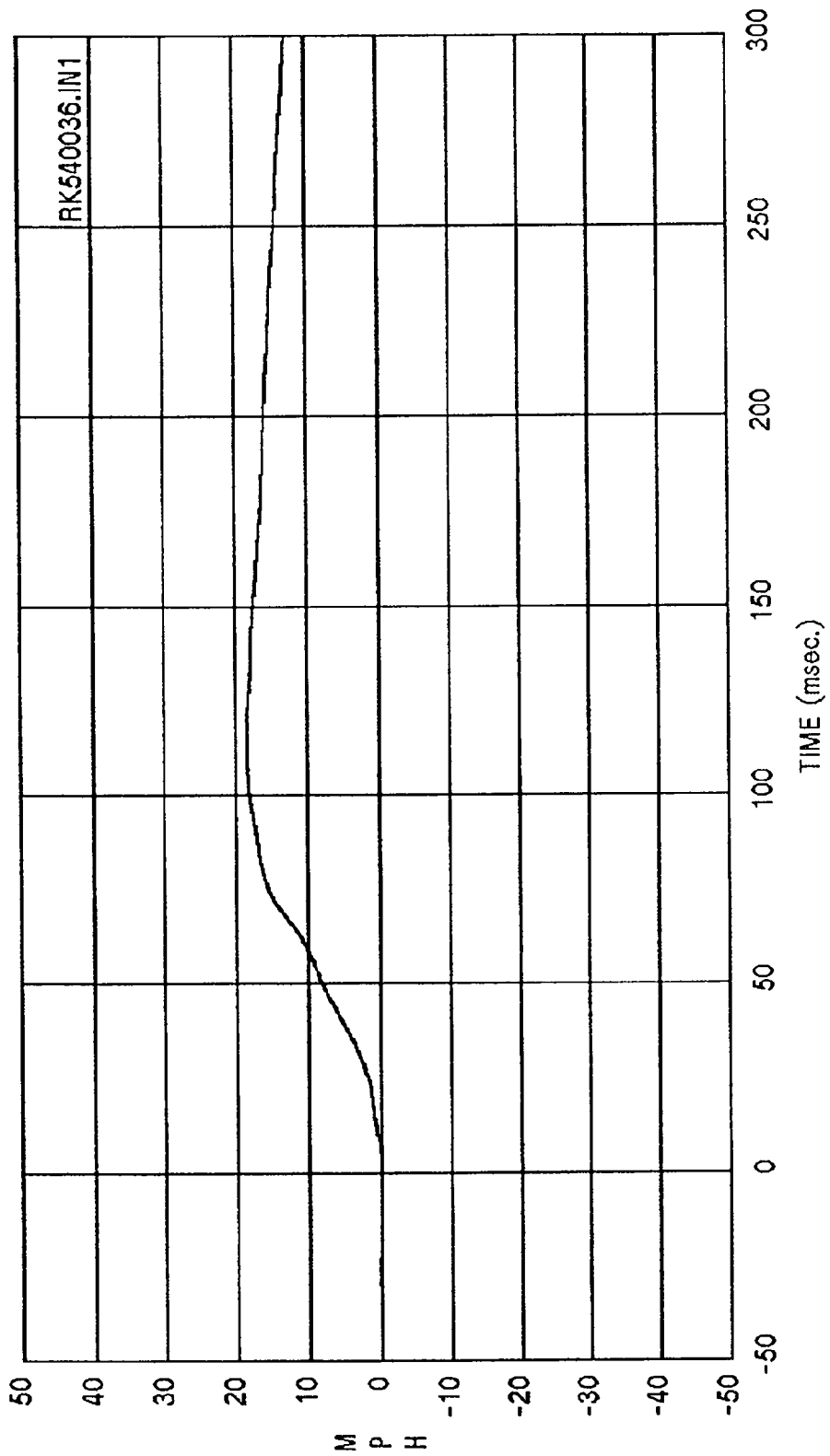
Curve: Rear floor above axle delta V -- X axis Filter: SAE CLASS 180 Max = .31228E-01 Min = -2.17'

MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV



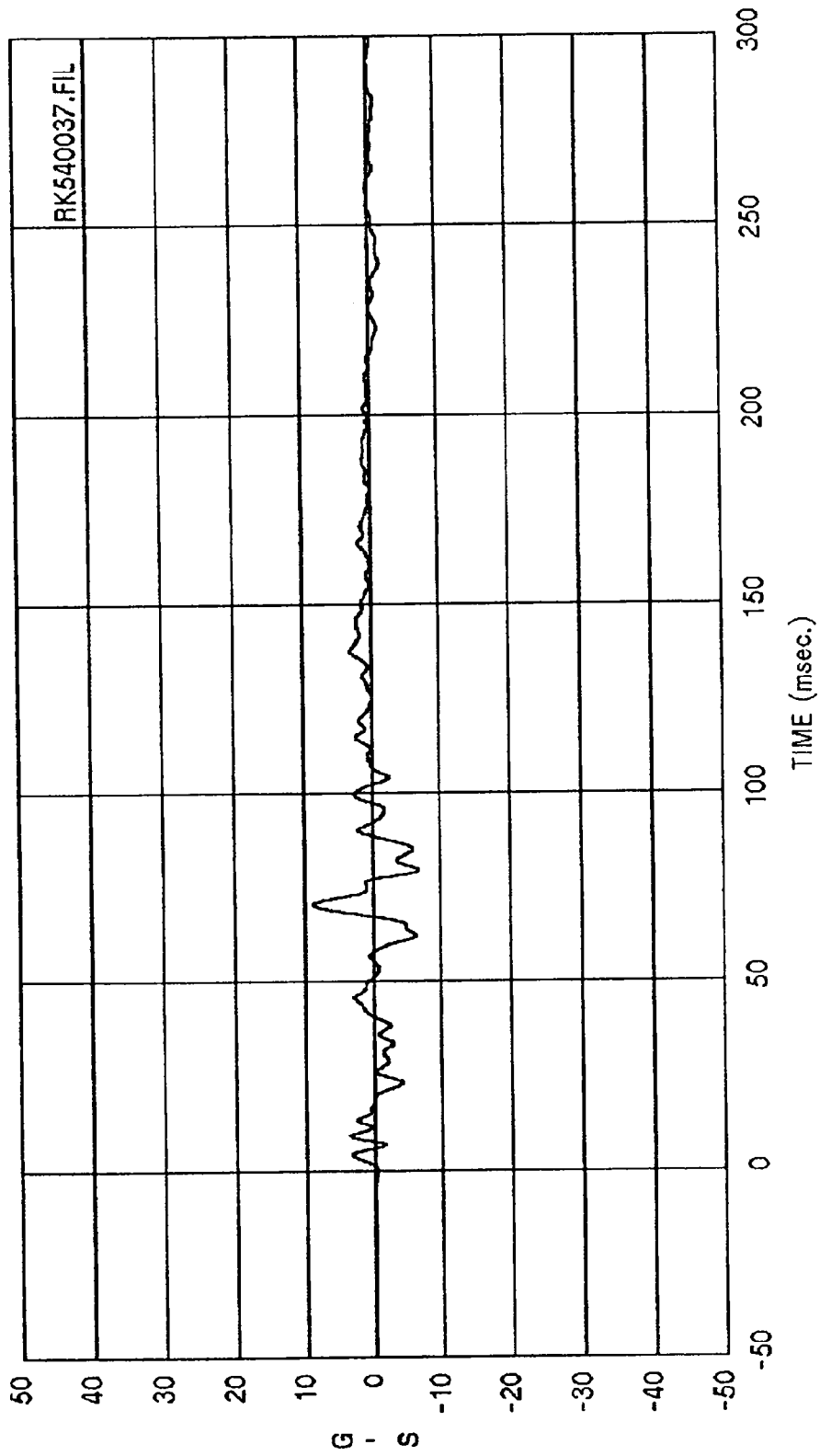
Curve: Rear floor above axle acceleration -- Y axis Filter: SAE CLASS 60 Max = 19.285 Min = -2.6924

MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV

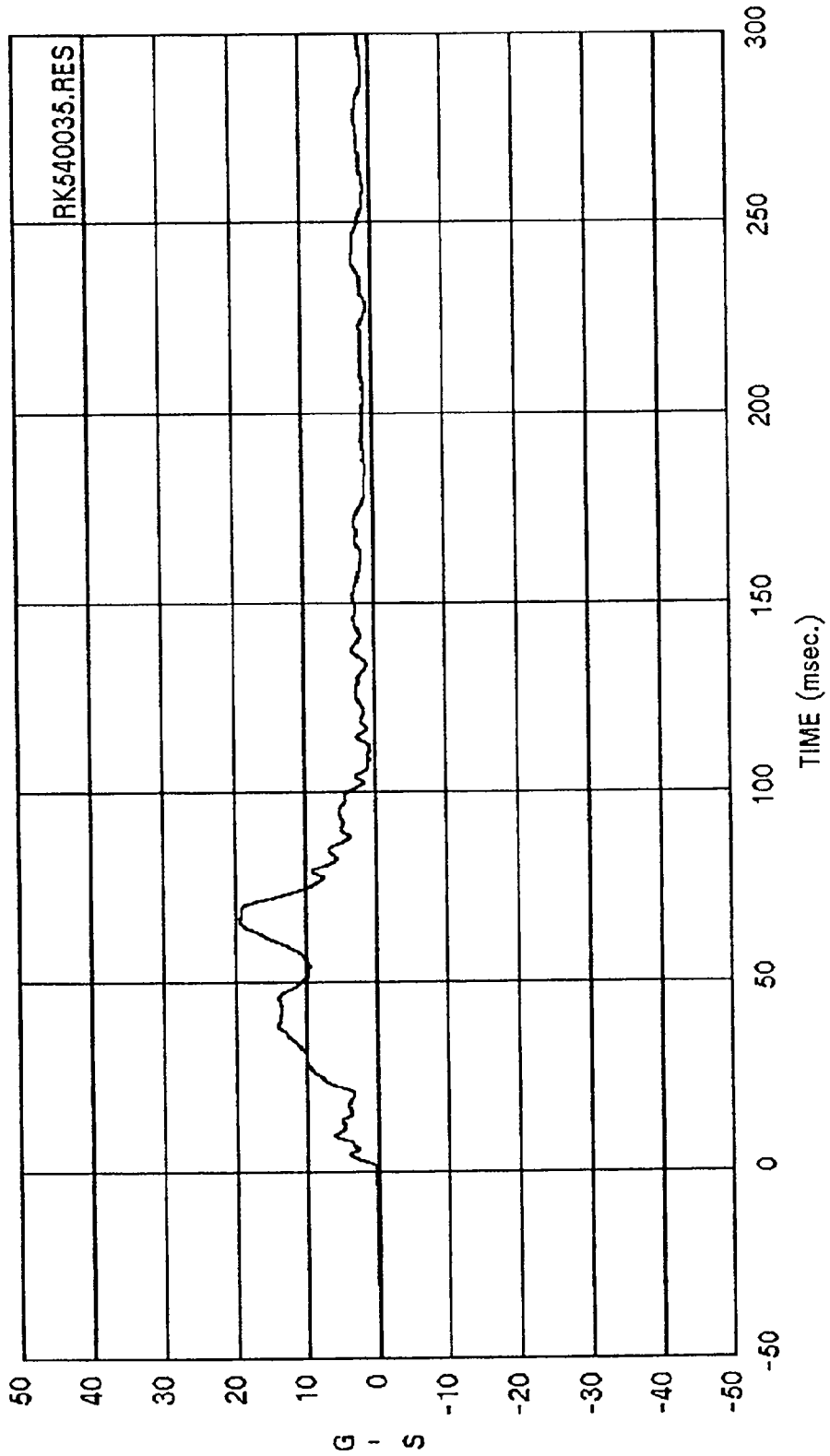


Curve: Rear floor above axle delta V -- Y axis Filter: SAE CLASS 180 Max = 18.455 Min = -92804
 02

MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV

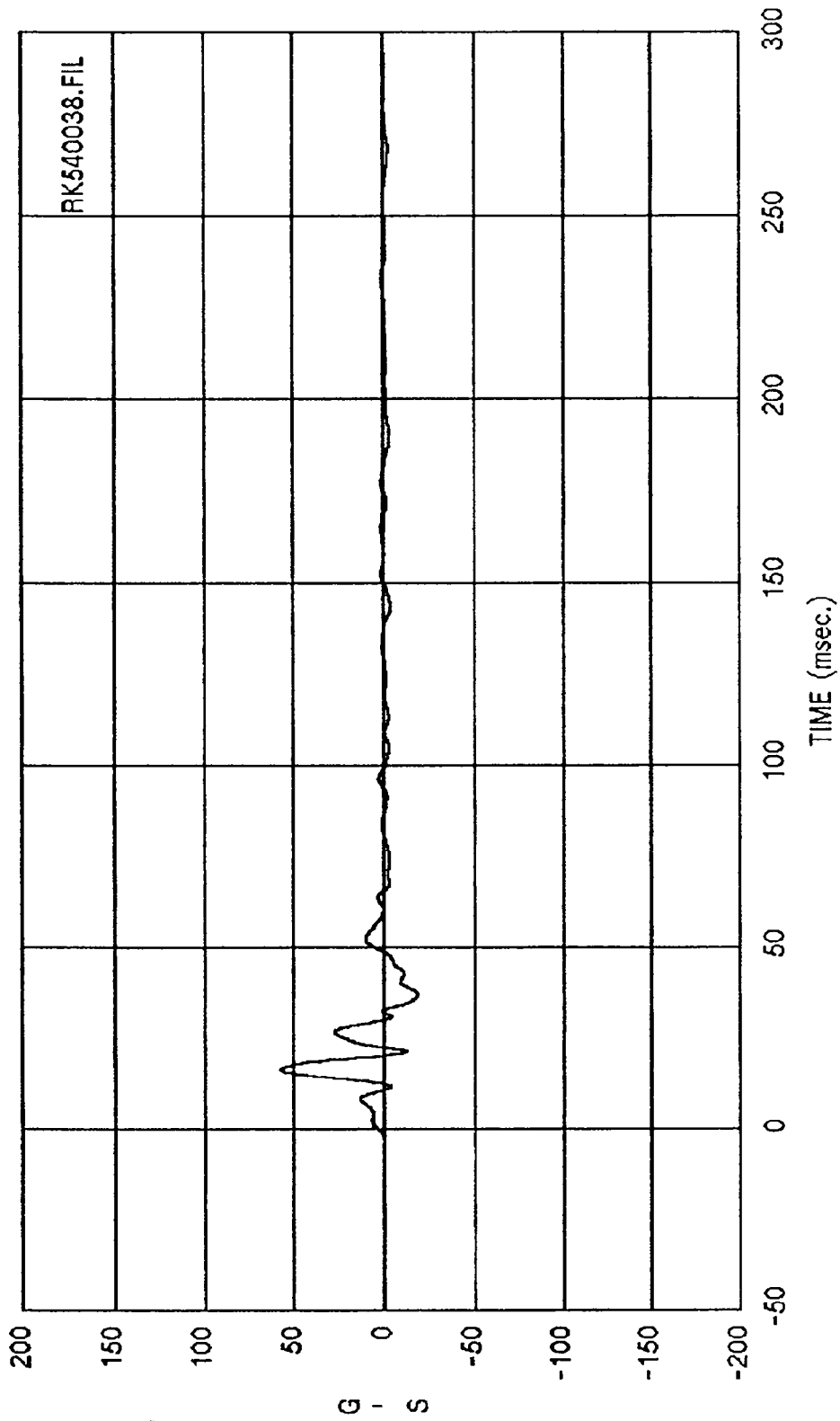


Curve: Rear floor above axle acceleration -- Z axis Filter: SAE CLASS 60 Max = 8.8670 Min = -6.7971
 MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV



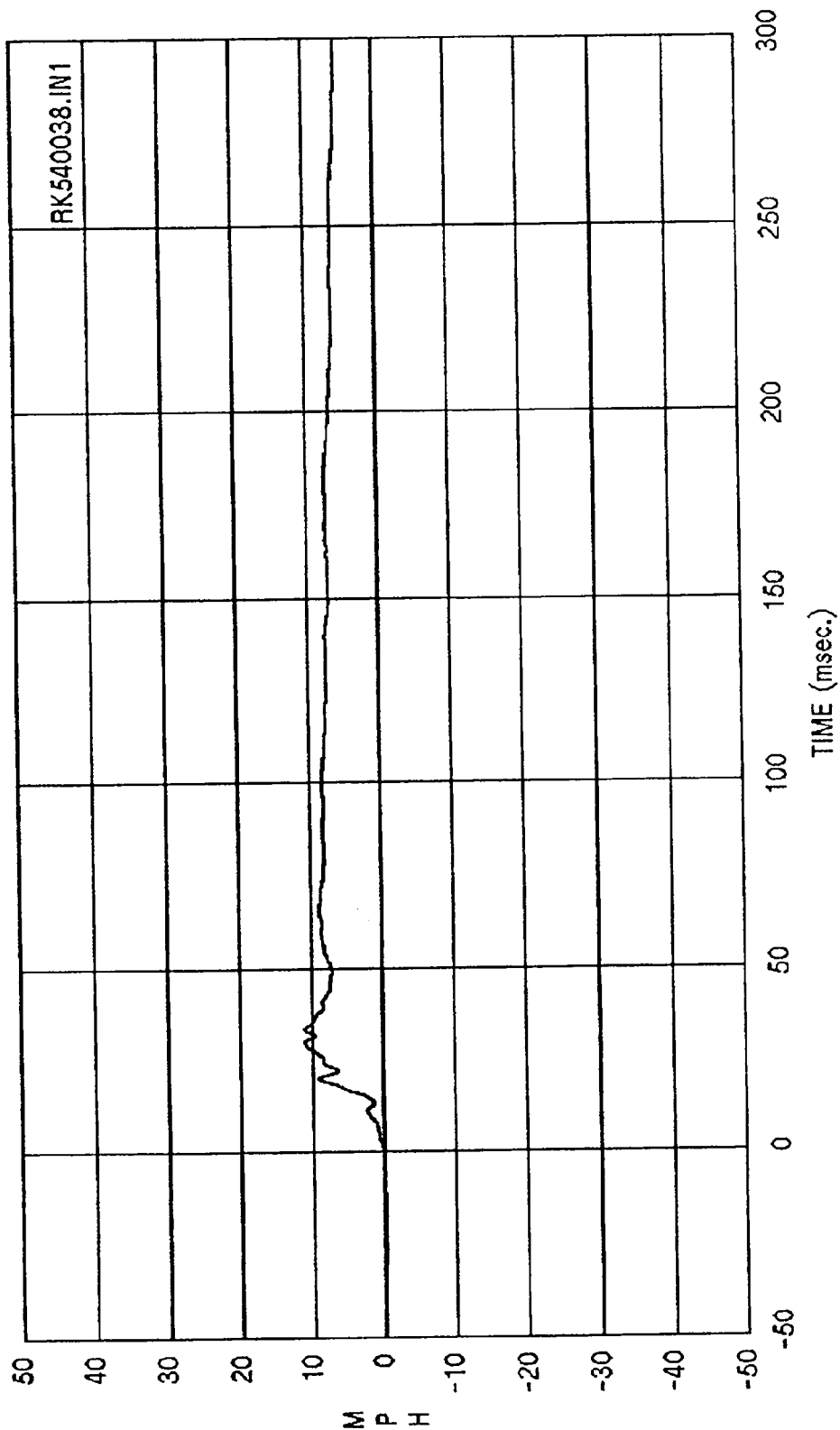
Curve: Rear floor above axle resultant acceleration Filter: SAE CLASS 60 Max = 19.366 Min = .12002

MSE Date: 09/18/92 Program: Side Impact 30/15 90 Deg. Vehicle: 1989 Mazda MPV



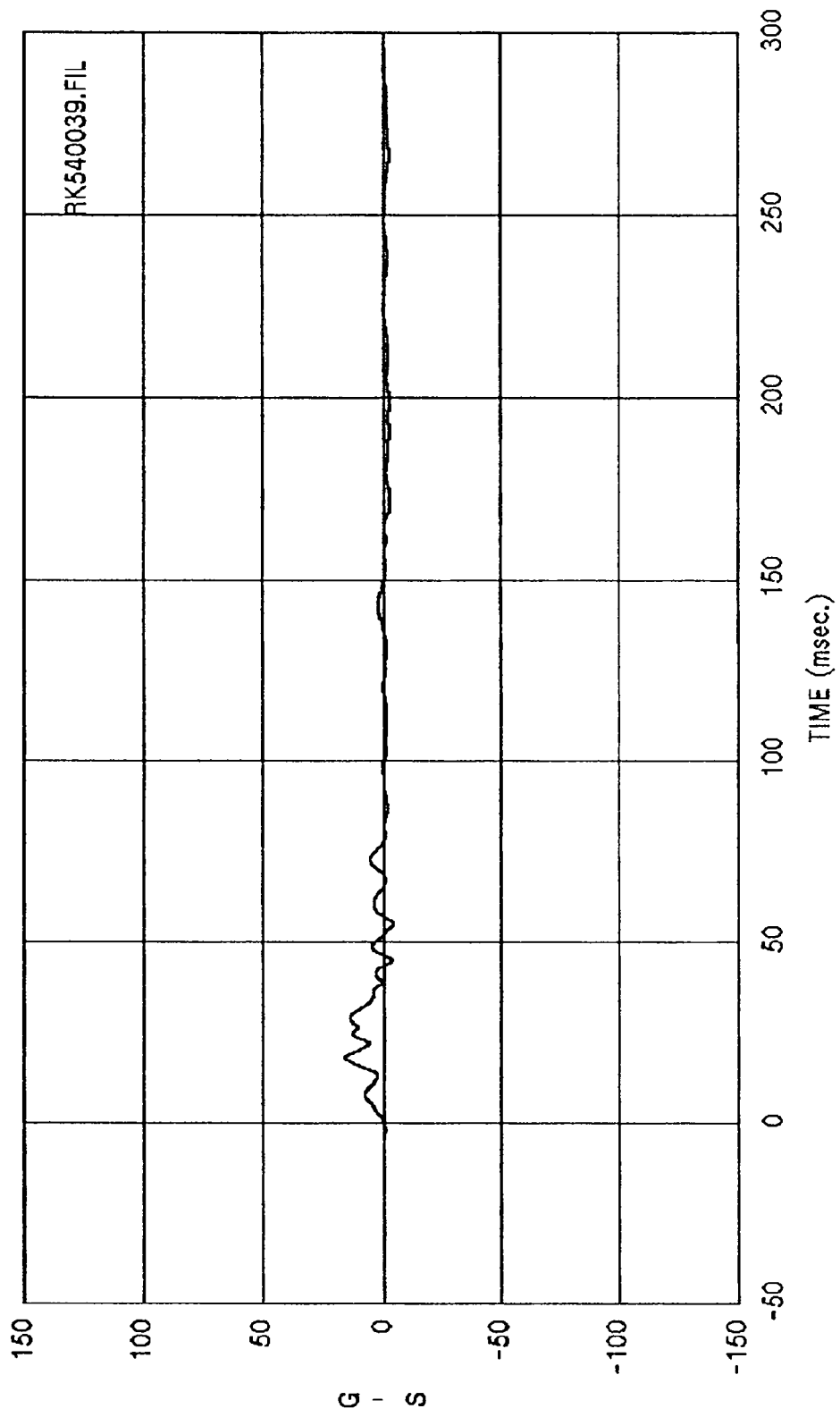
Curve: Rear seat left sill acceleration -- Y axis Filter: SAE CLASS 60 Max = 58.032 Min = -17.767

MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV

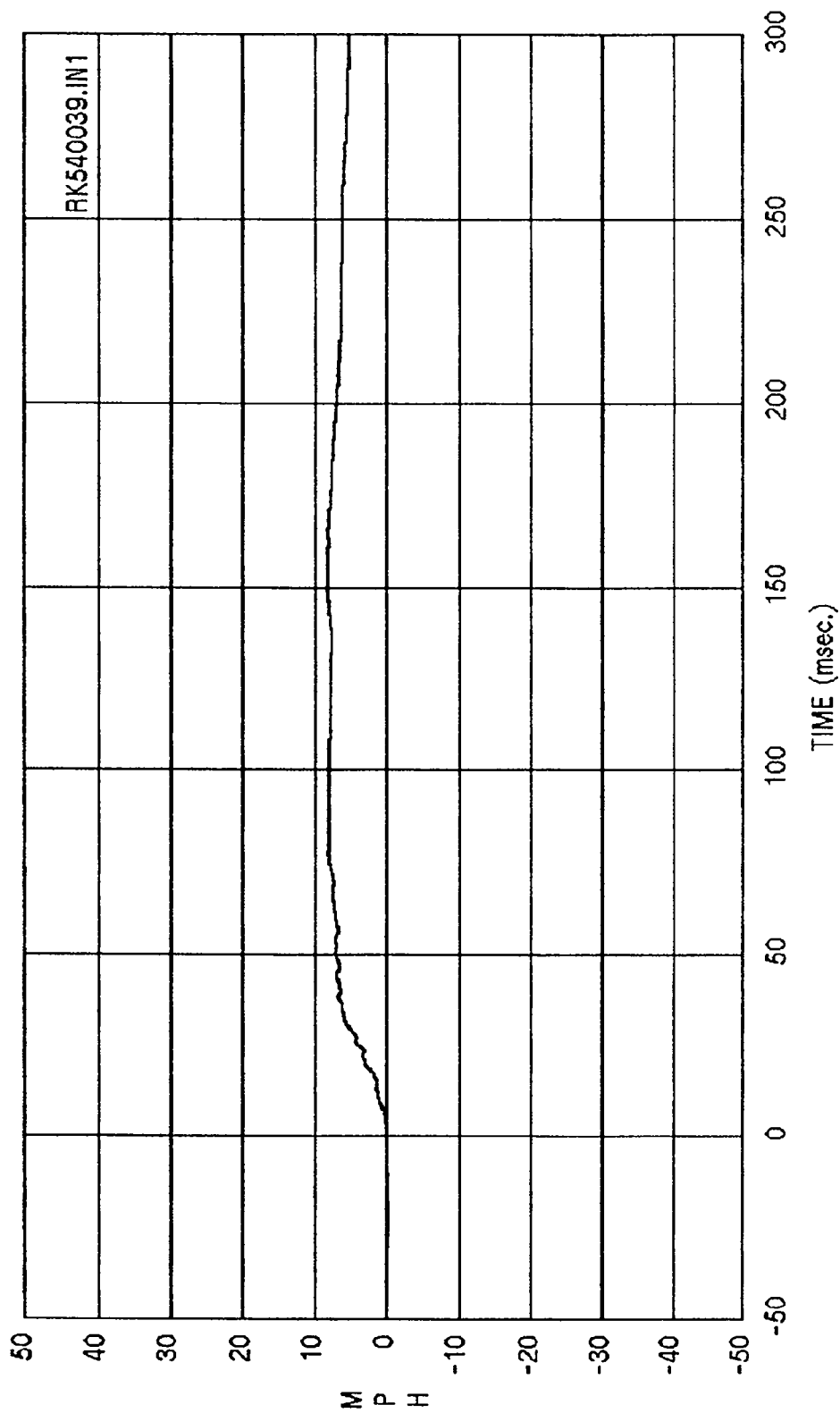


Curve: Rear seat left sill delta V -- Y axis Filter: SAE CLASS 180 Max = 11.094 Min = 1.4569

MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV

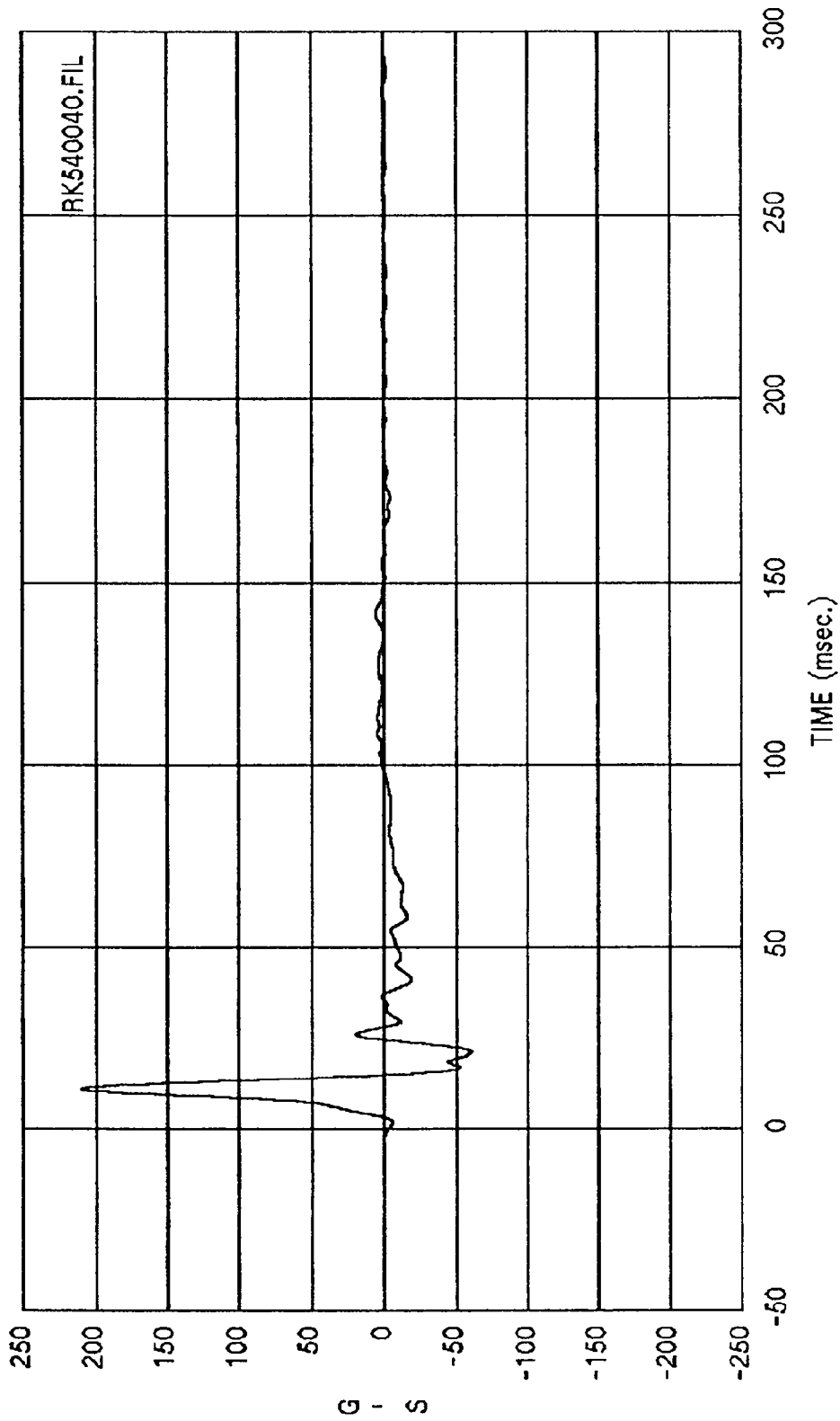


Curve: Front seat left Sill acceleration -- Y axis Filter: SAE CLASS 60 Max = 16.417 Min = -3.6859
 MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV



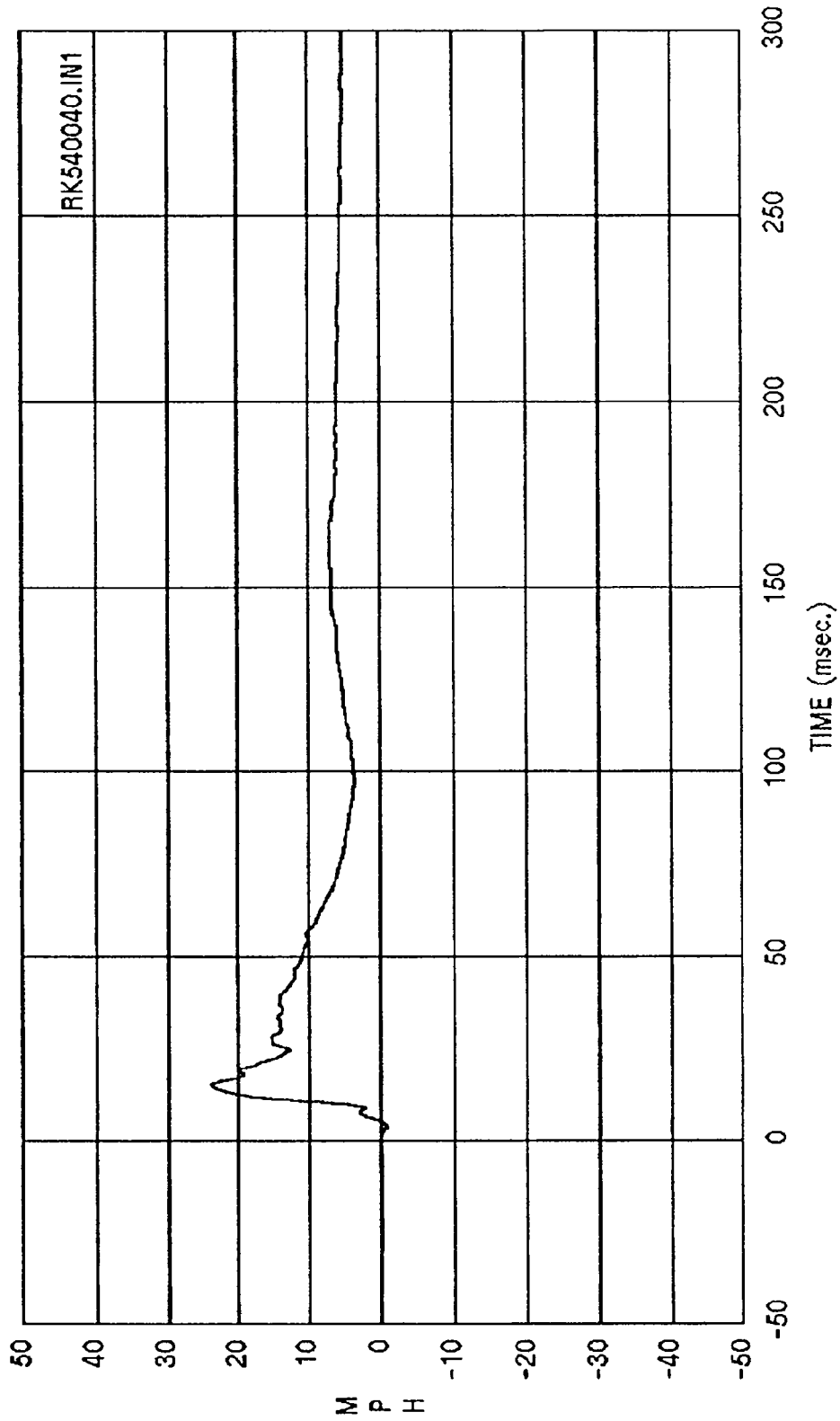
Curve: Front seat left Sill delta V -- Y axis Filter: SAE CLASS 180 Max = 8.3019 Min = -.35657E-1

MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV



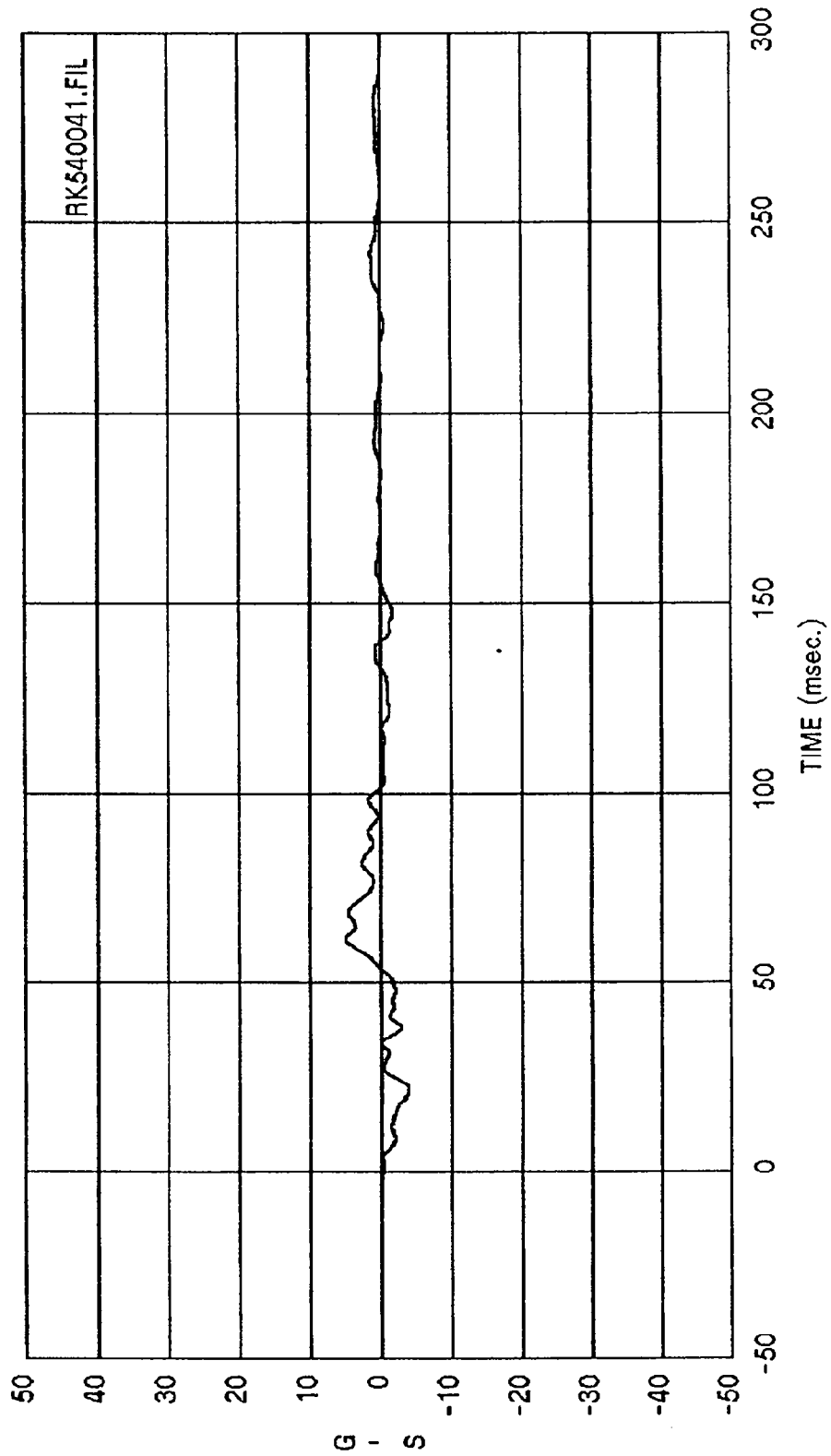
Curve: Left front door at centerline -- Y axis Filter: SAE CLASS 60 Max = 210.44 Min = -60.151

MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV



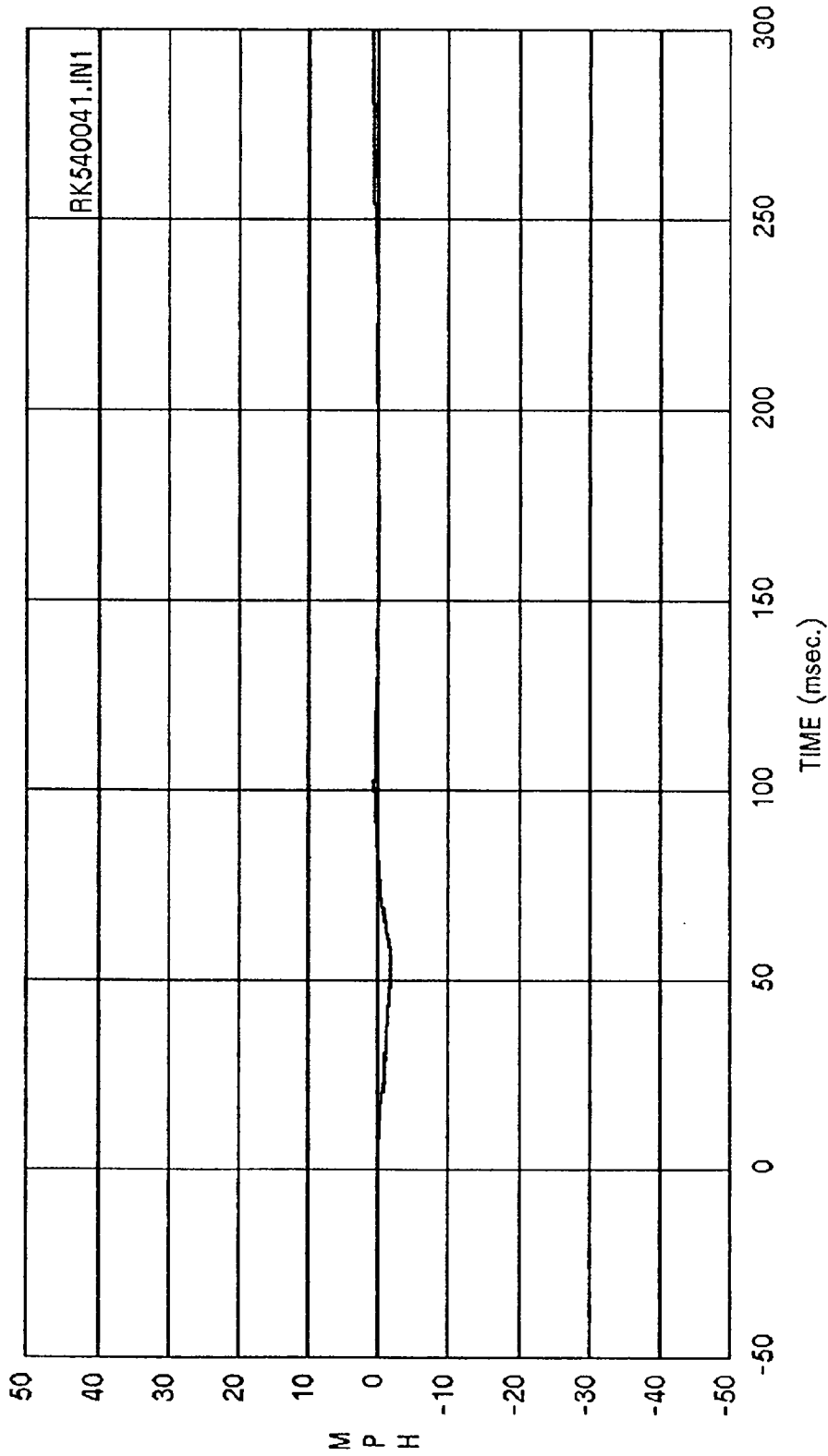
Curve: Left front door at centerline -- Y axis Filter: SAE CLASS 180 Max = 23.777 Min = -7.1659

MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV



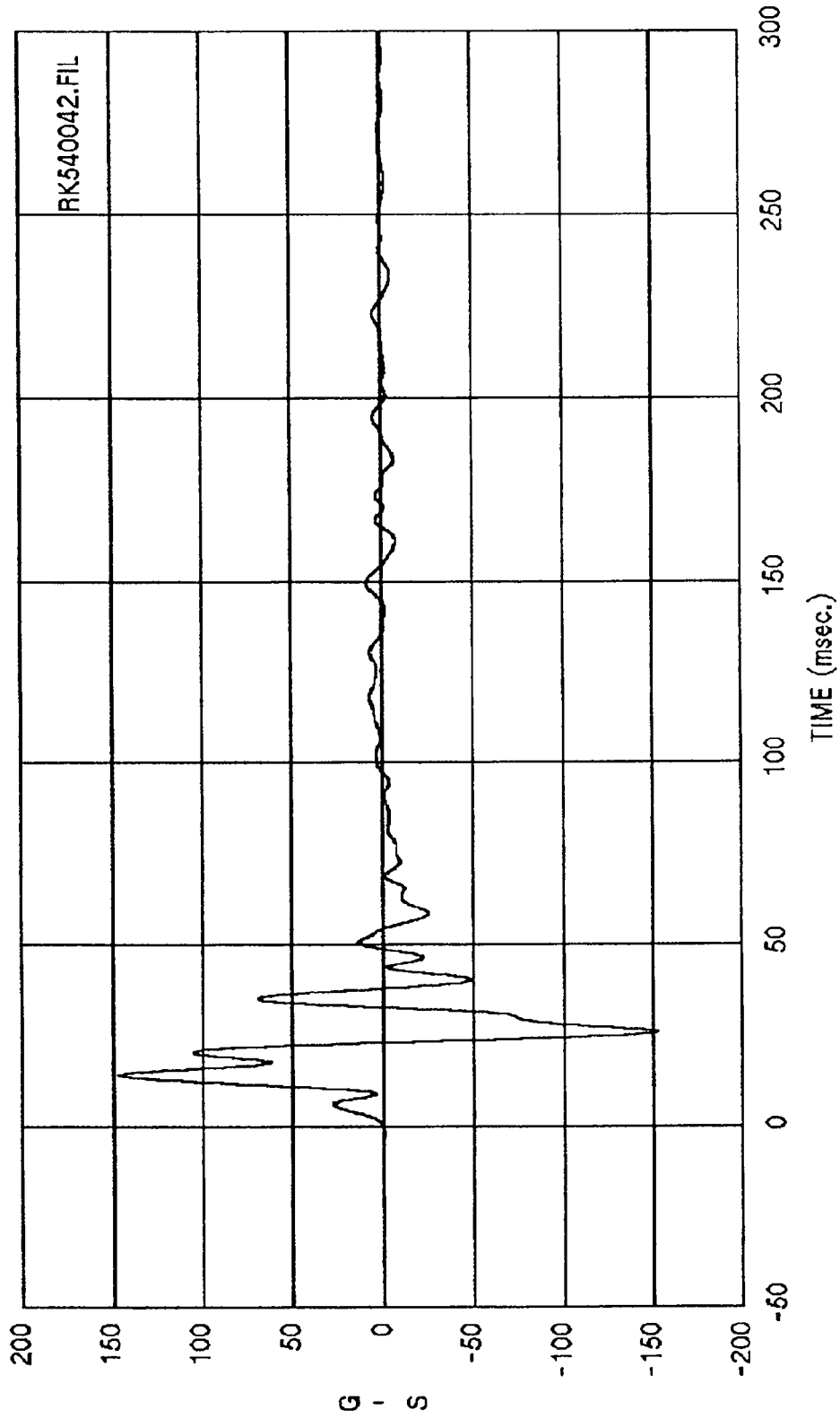
Curve: Right rear occupant compartment -- X axis Filter: SAE CLASS 60 Max = 4.9113 Min = -3.8463

MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV



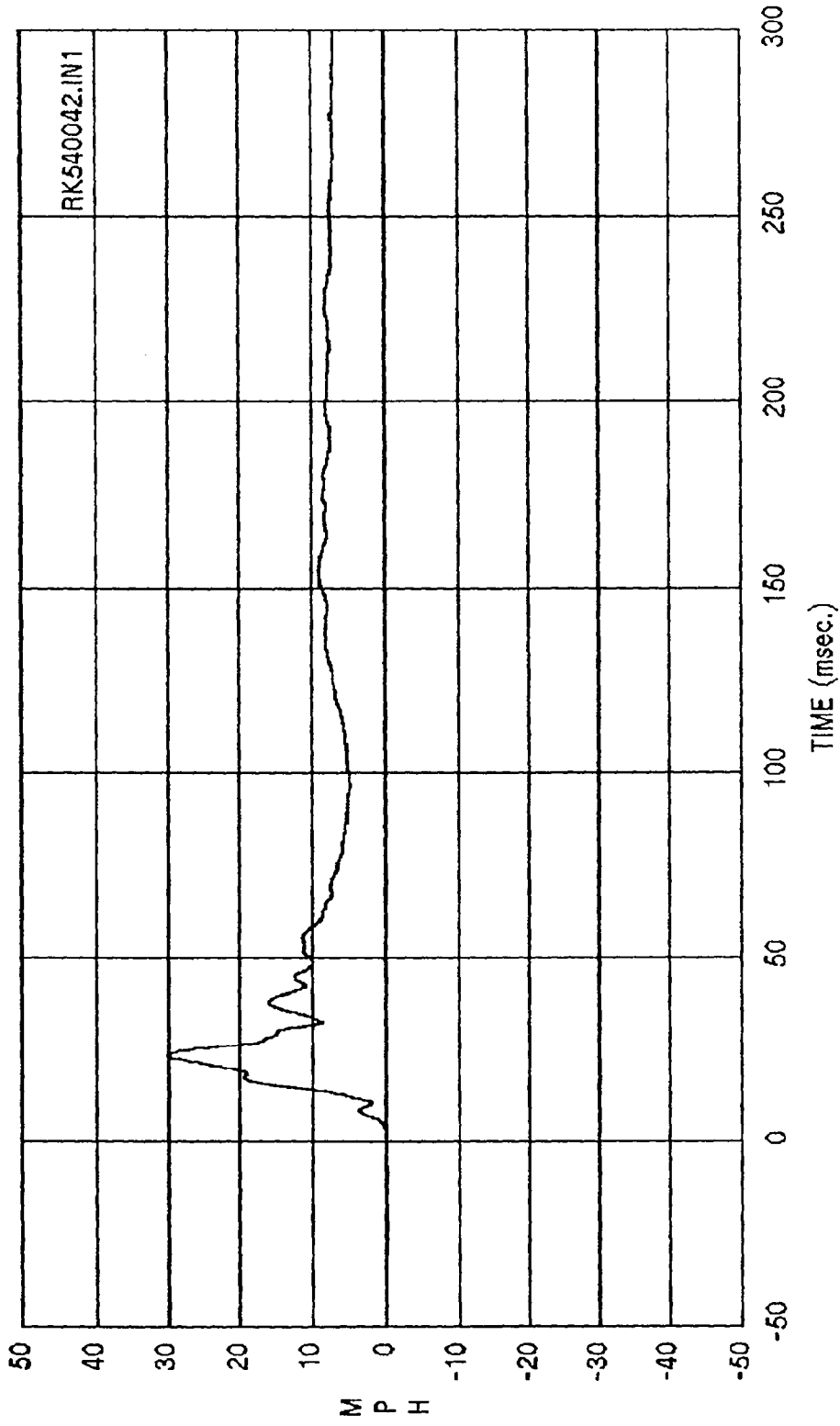
Curve: Right rear occupant compartment -- X axis Filter: SAE CLASS 180 Max = .76093 Min = -1.8614

MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV

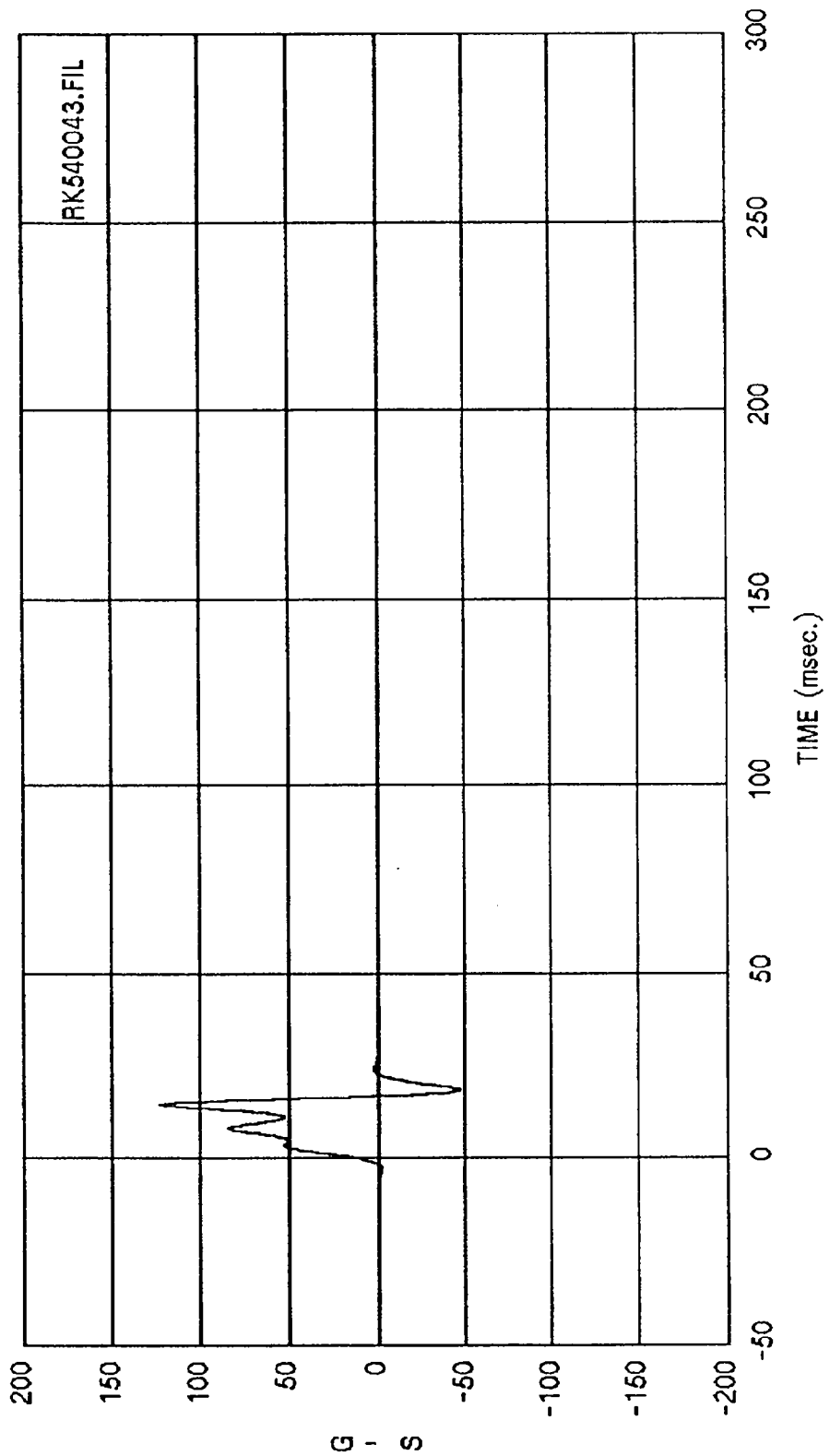


Curve: Left front door at mid-rear -- Y axis Filter: SAE CLASS 60 Max = 147.56 Min = -152.25

MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV

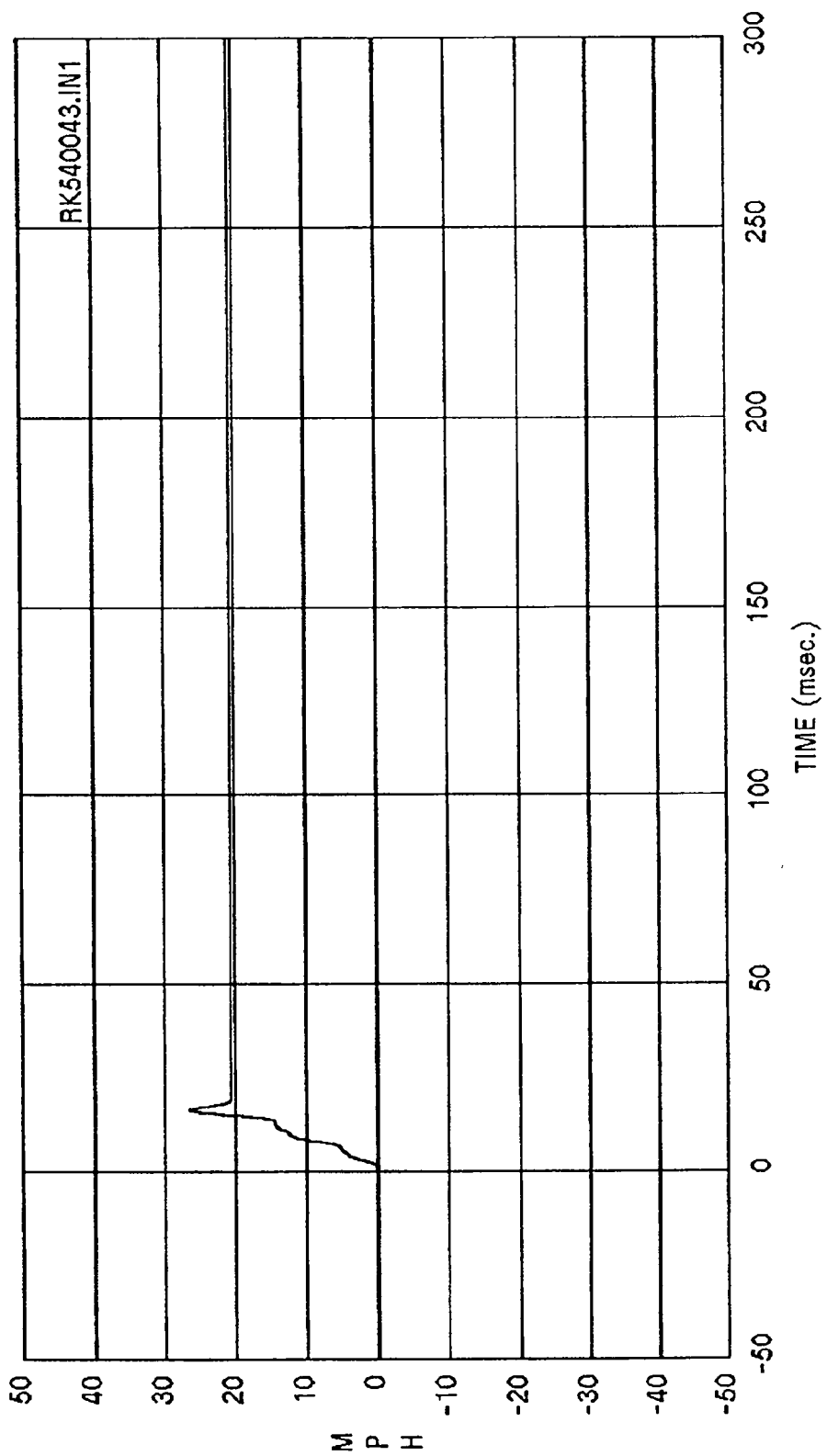


Curve: Left front door at mid-rear -- Y axis Filter: SAE CLASS 180 Max = 30.256 Min = .11672
 MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV



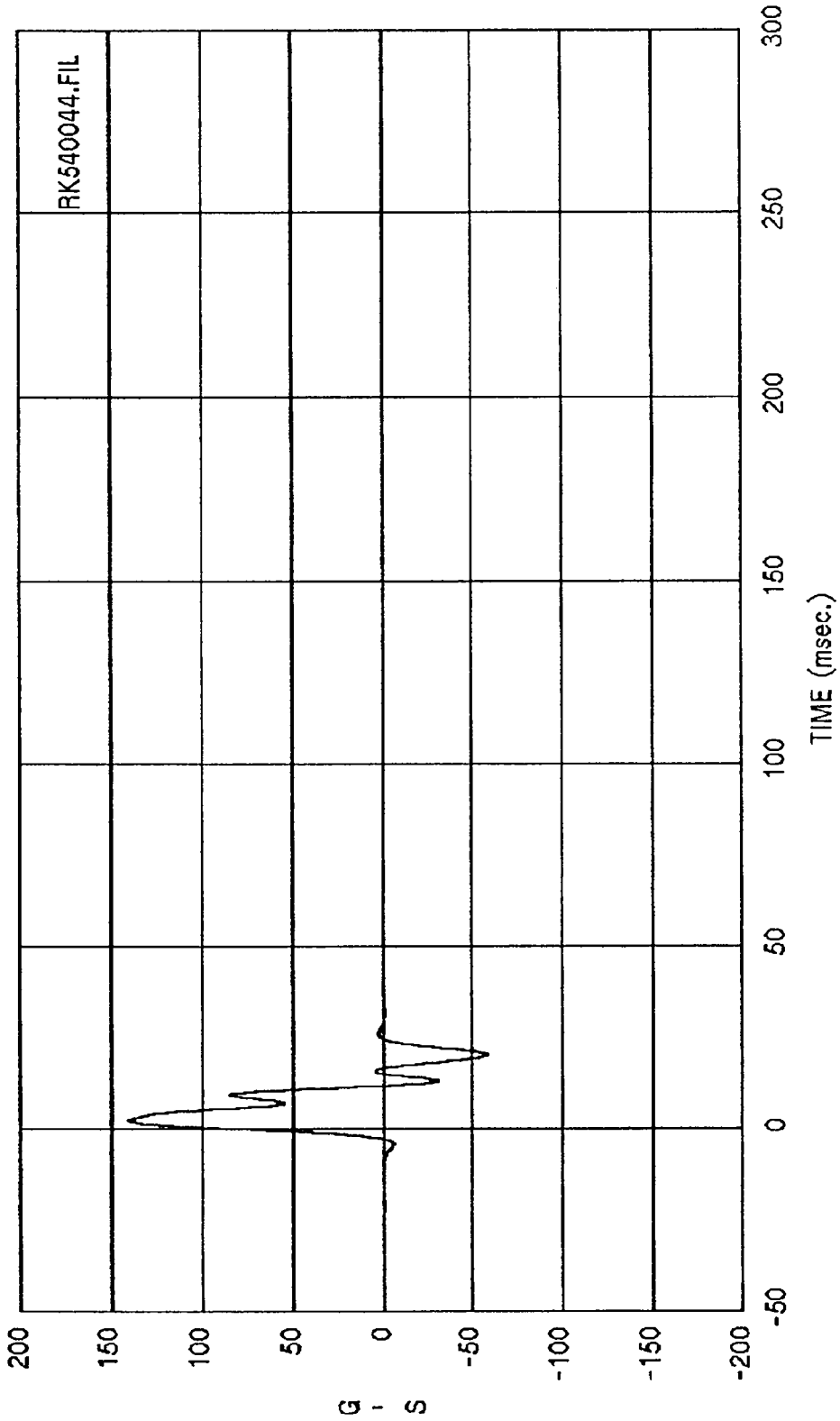
Curve: Left front door at upper centerline -- Y axis Filter: SAE CLASS 60 Max = 123.10 Min = -46.459

MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV



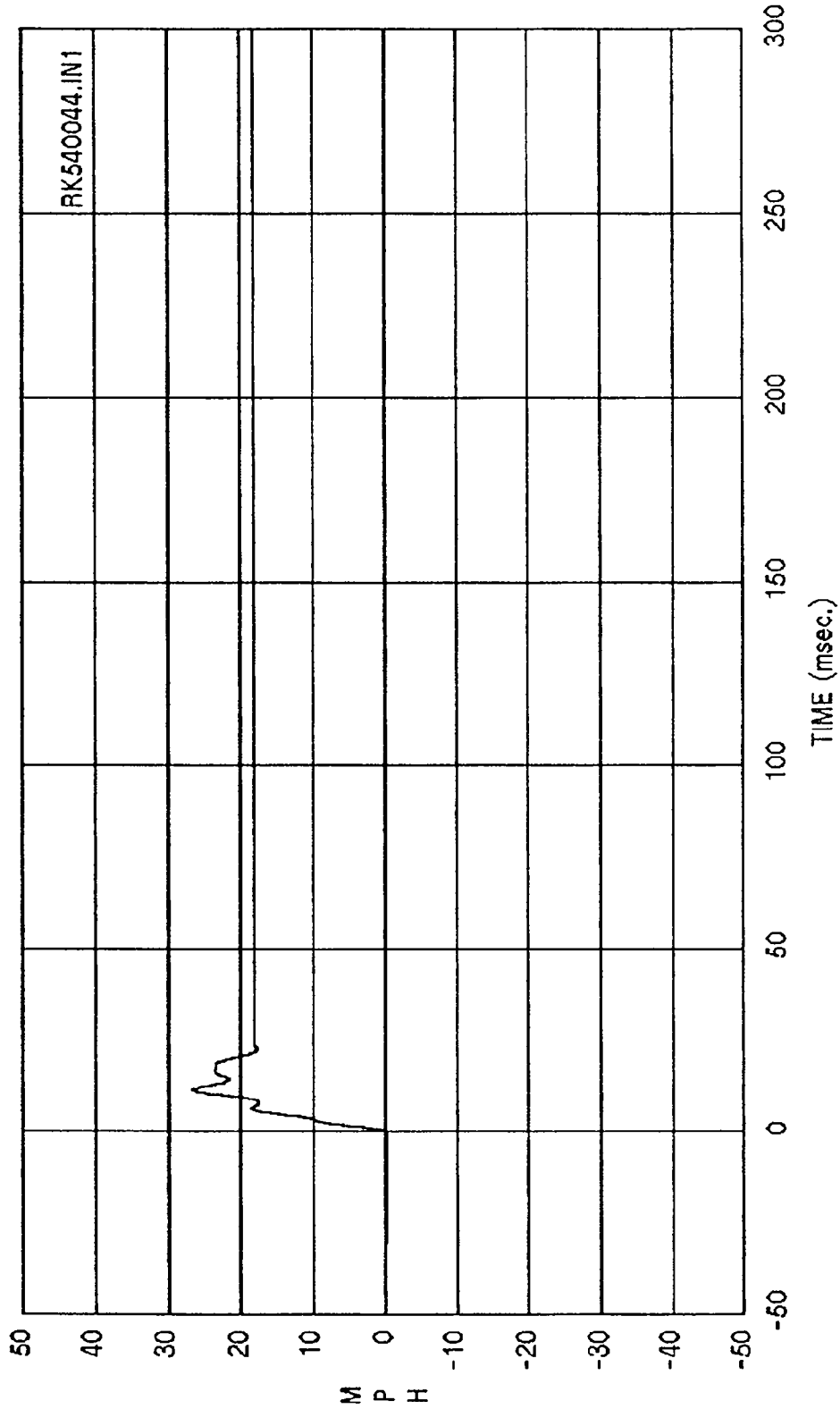
Curve: Left front door at upper centerline -- Y axis Filter: SAE CLASS 180 Max = 26.453 Min = -.660801
02

MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV



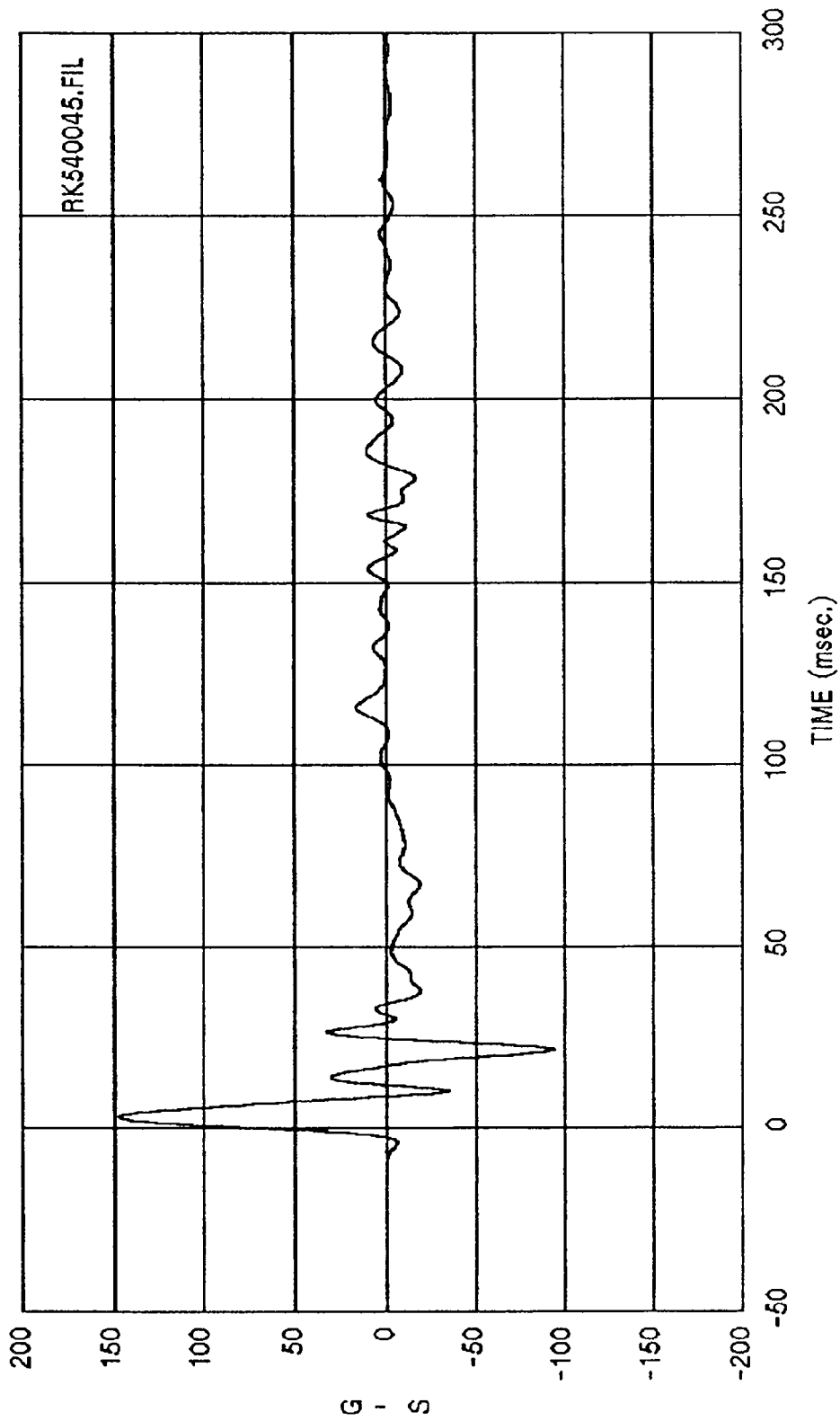
Curve: Left rear door at mid-rear -- Y axis Filter: SAE CLASS 60 Max = 140.38 Min = -58.597

MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV



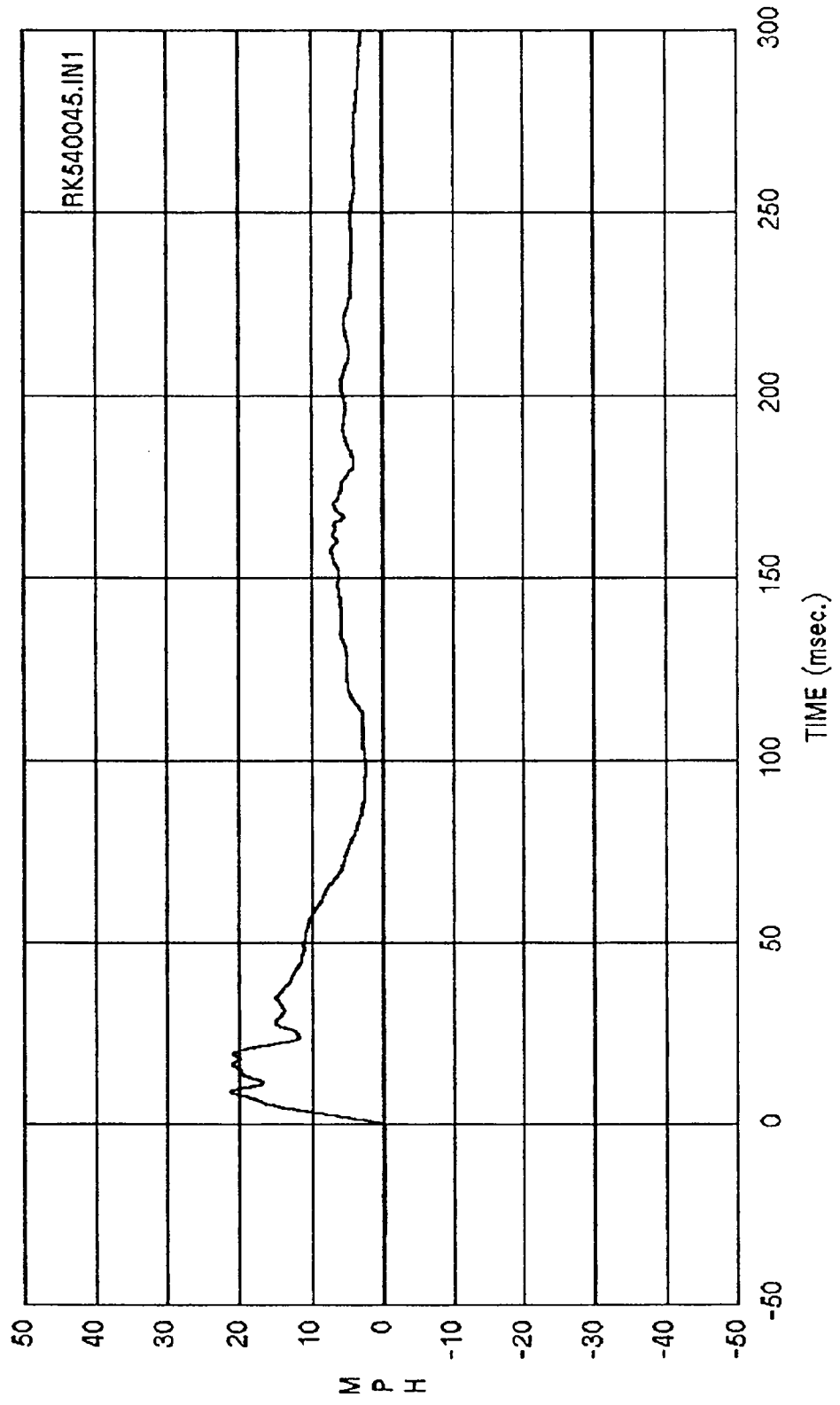
Curve: Left rear door at mid-rear -- Y axis Filter: SAE CLASS 180 Max = 26.766 Min = 17.647

MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV



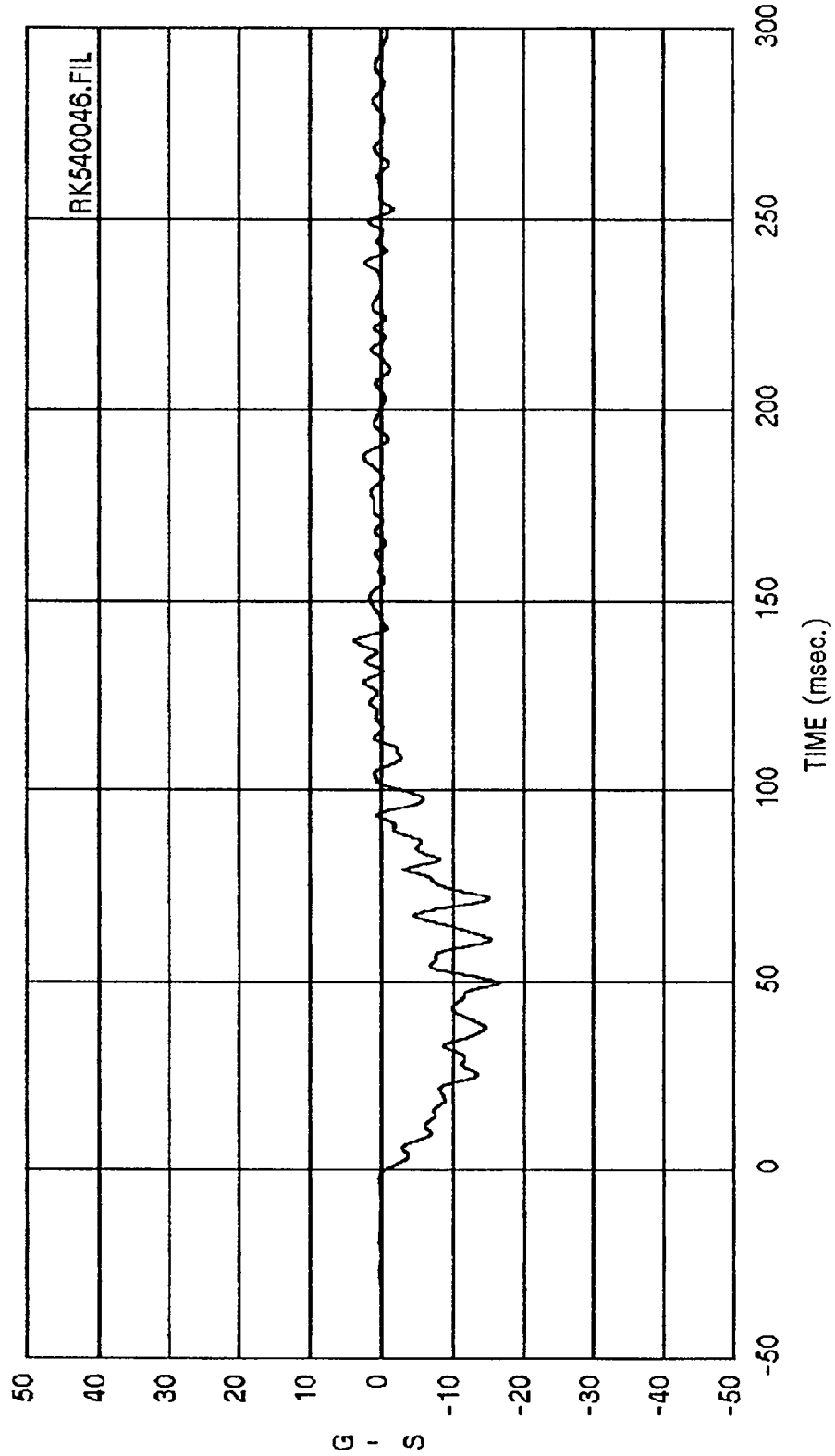
Curve: Left rear door at upper centerline -- Y axis Filter: SAE CLASS 60 Max = 147.62 Min = -94.260

MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV



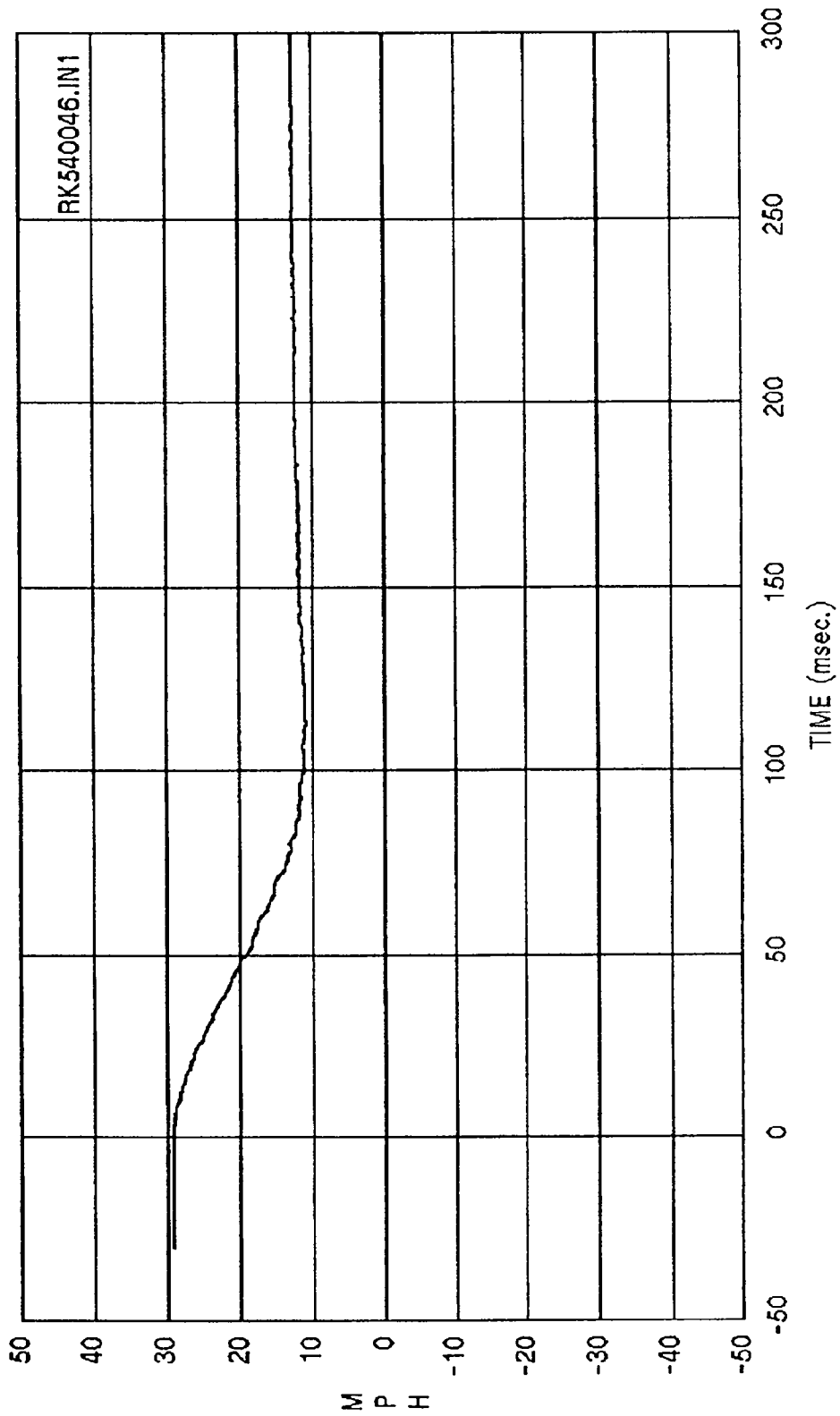
Curve: Left rear door at upper centerline -- Y axis Filter: SAE CLASS 180 Max = 21.478 Min = 2.4422
MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV

MDB ACCELEROMETER DATA



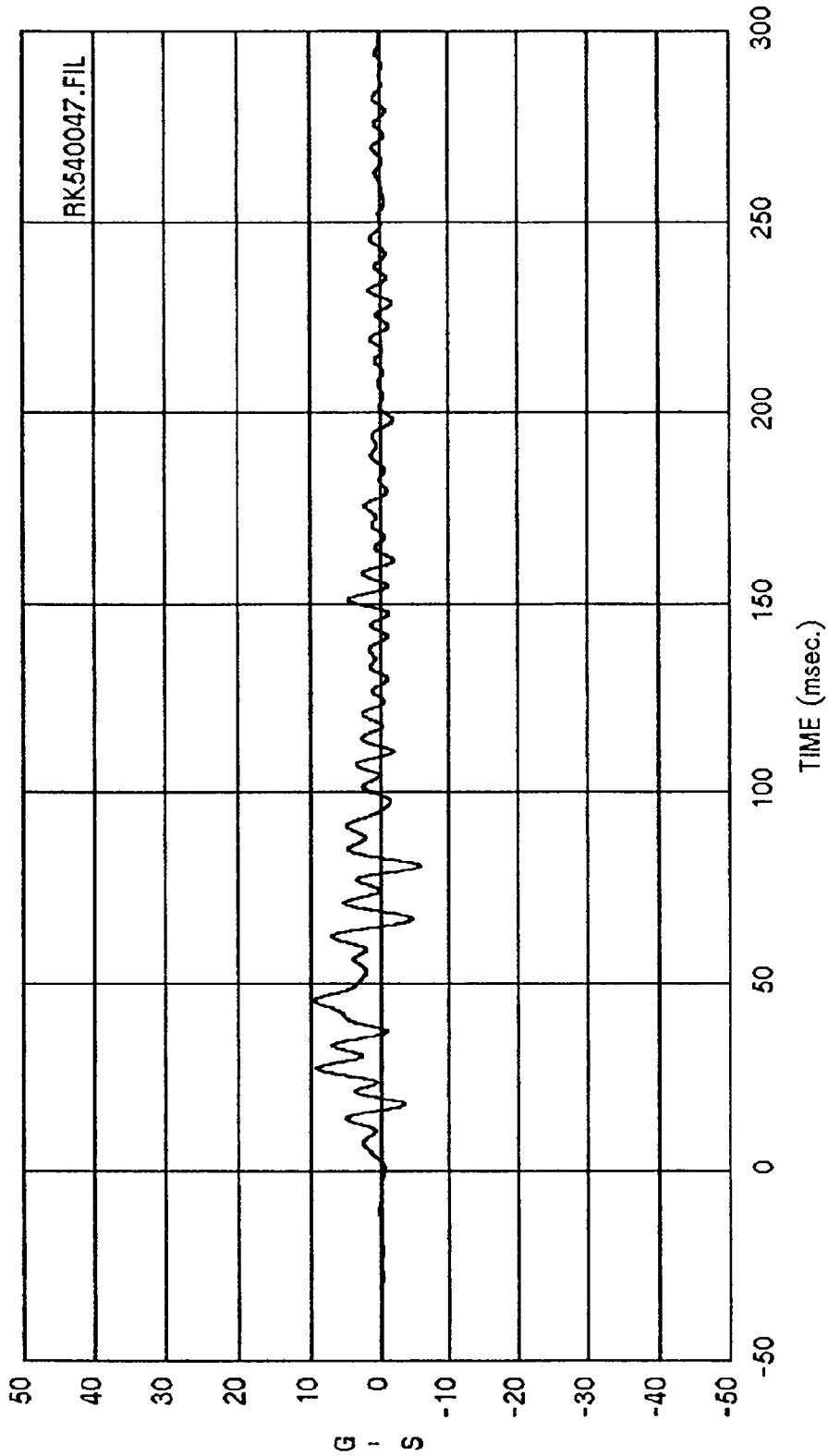
Curve: M.D.B. C/G acceleration -- X axis Filter: SAE CLASS 60 Max = 3.7720 Min = -16.536

MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV

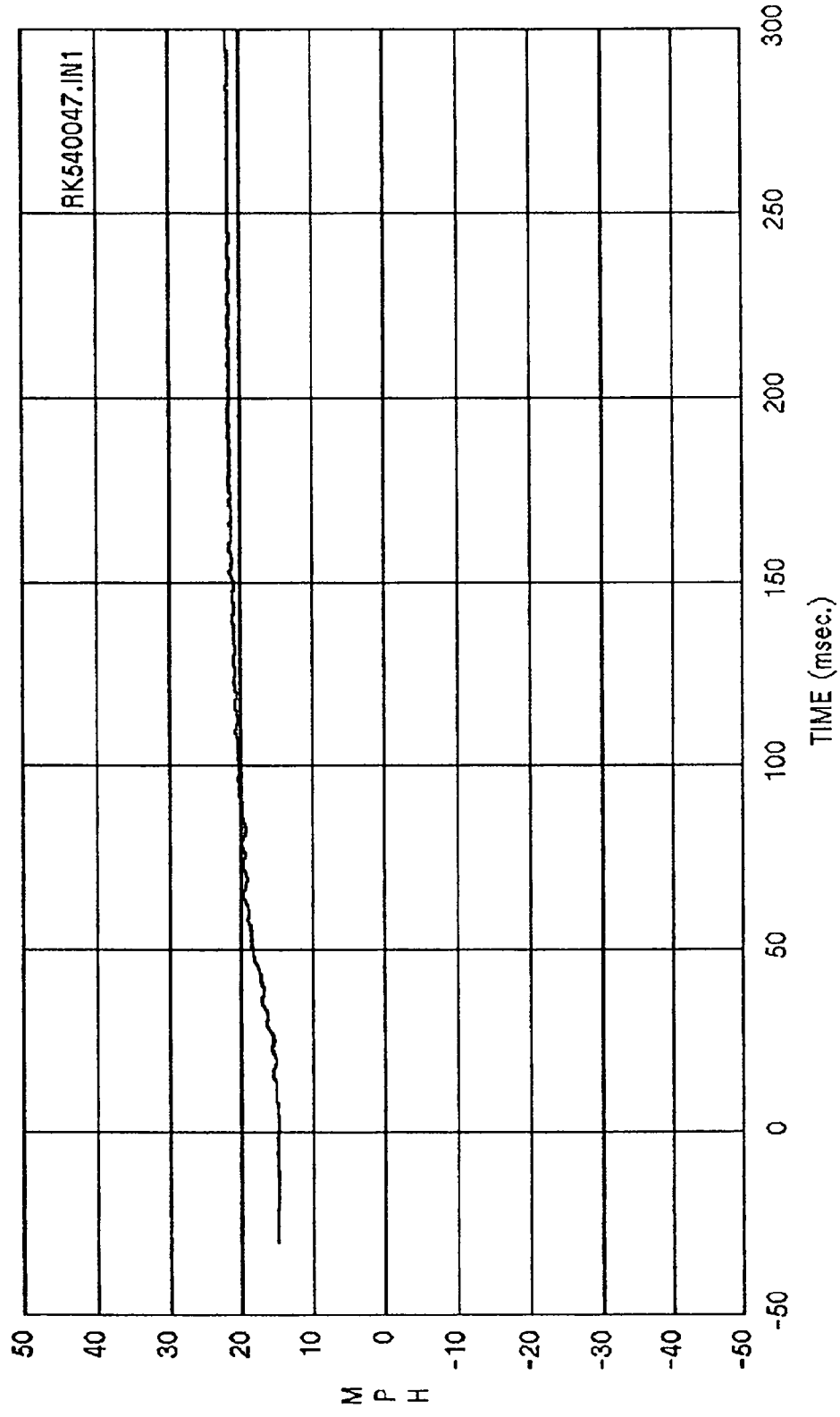


Curve: M.D.B. C/G delta V -- X axis Filter: SAE CLASS 180 Max = 29.350 Min = 10.951

MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV

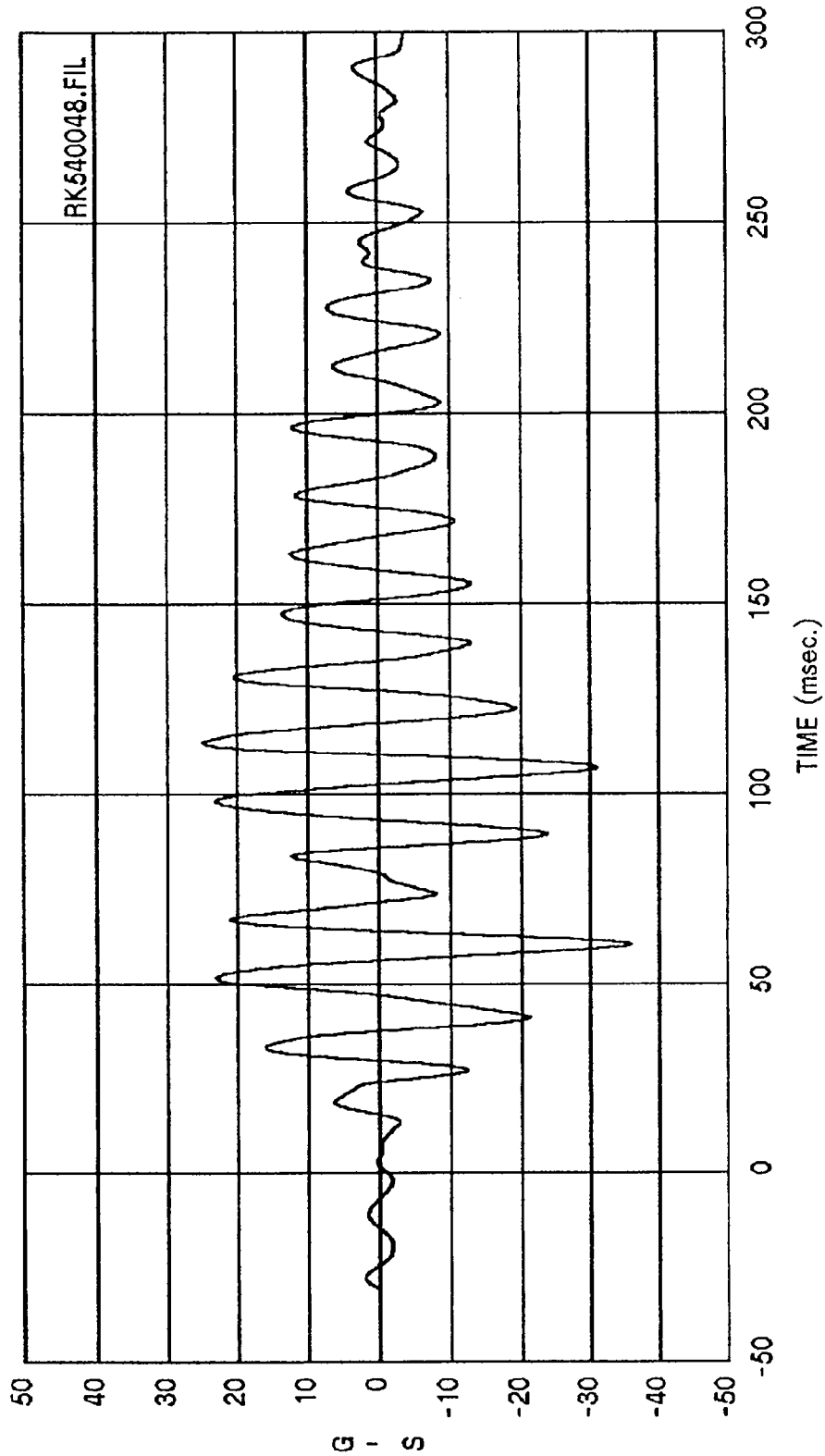


Curve: M.D.B. C/G acceleration -- Y axis Filter: SAE CLASS 60 Max = 9.5396 Min = -5.8222
 MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV



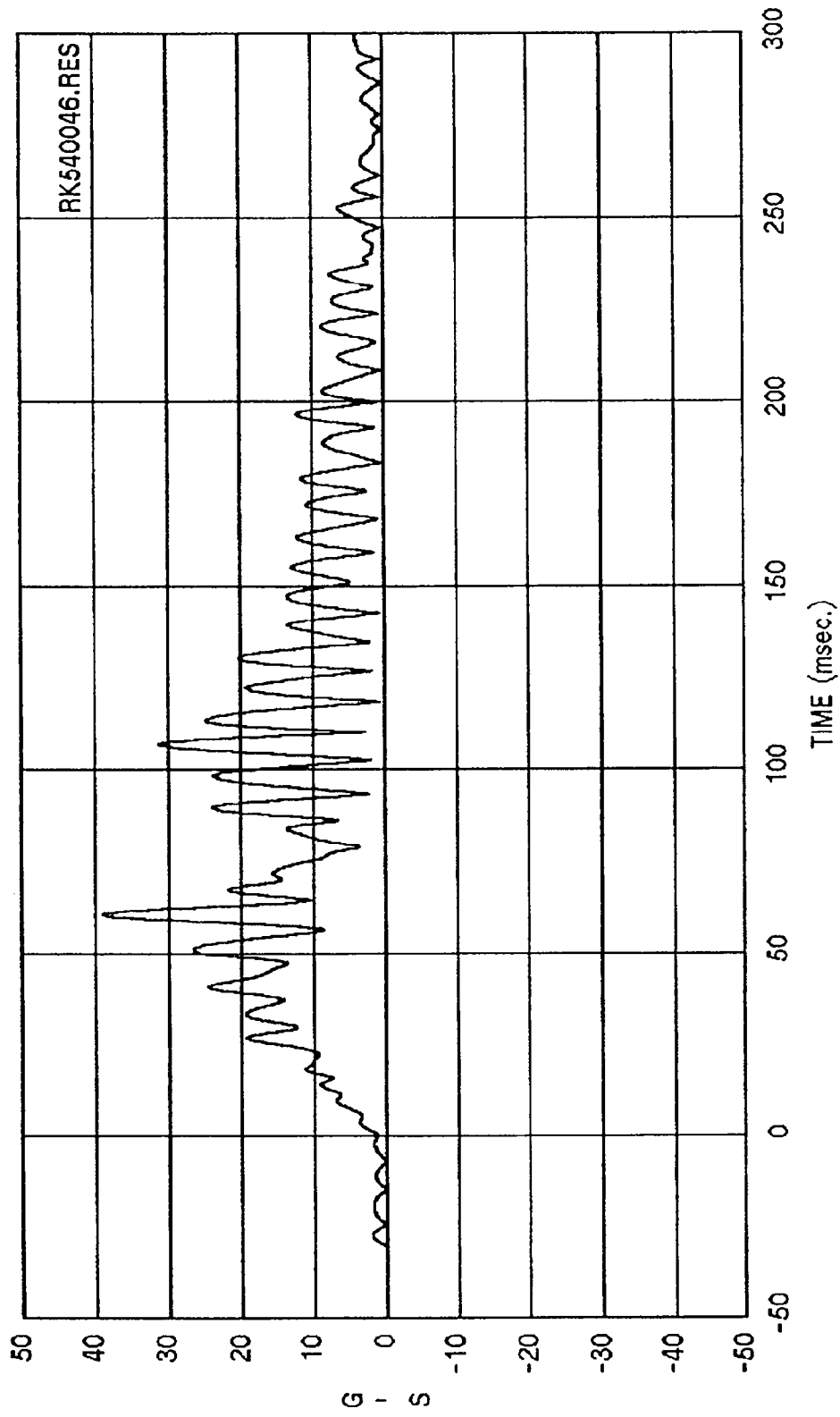
Curve: M.D.B. C/G delta V -- Y axis Filter: SAE CLASS 180 Max = 21.914 Min = 14.913

MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV



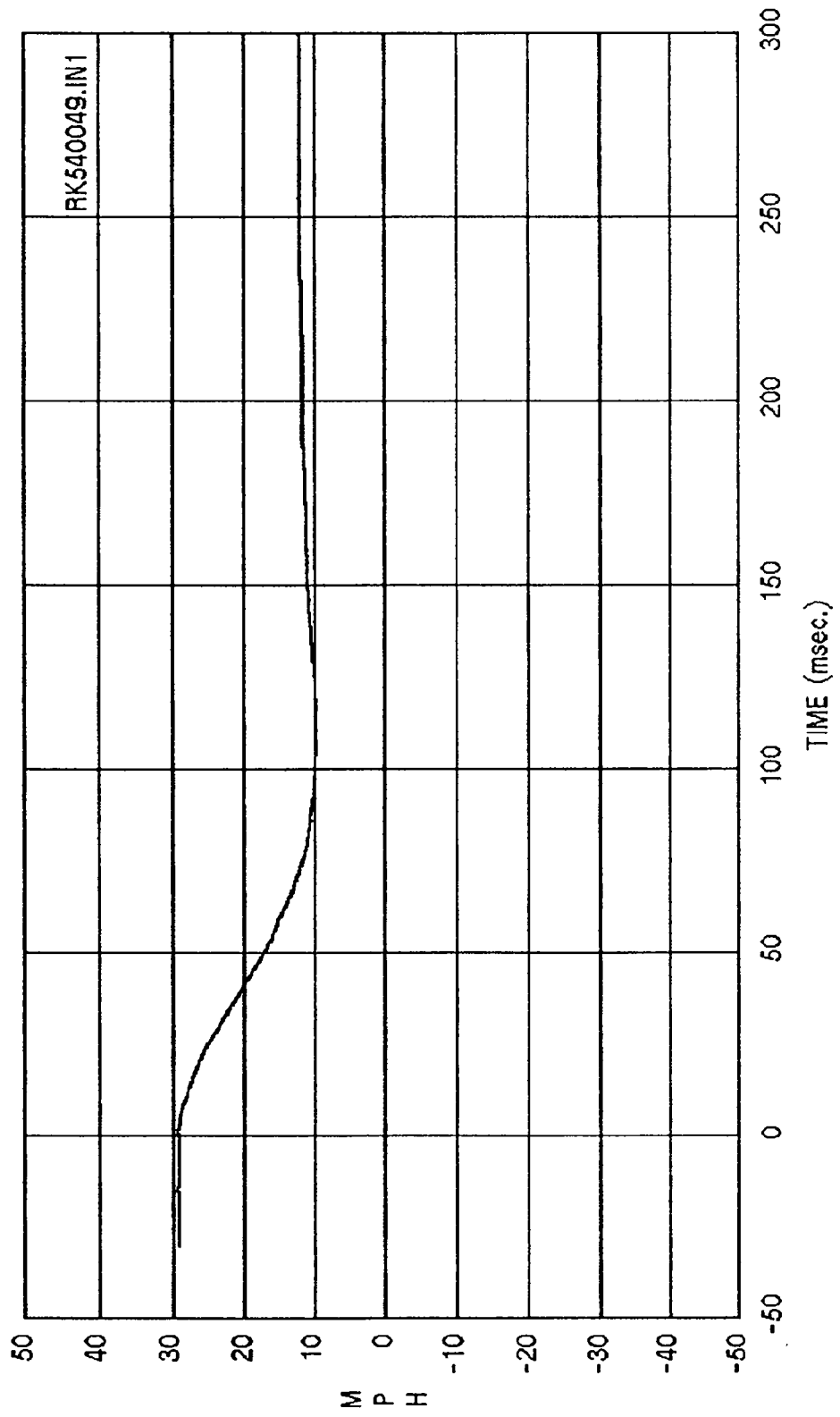
Curve: M.D.B. C/G acceleration -- Z axis Filter: SAE CLASS 60 Max = 24.857 Min = -35.855

MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV

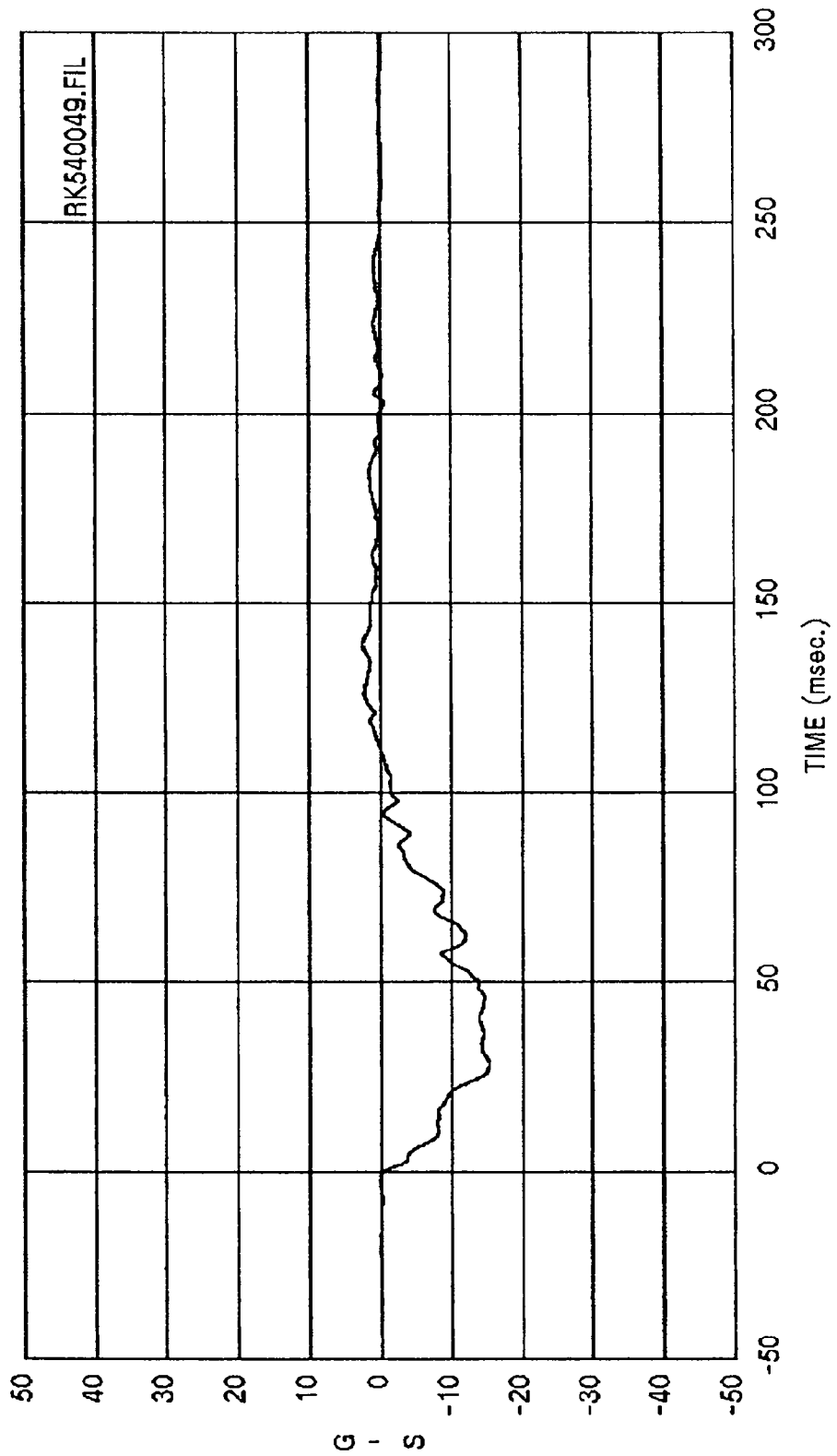


Curve: M.D.B. C/G resultant acceleration Filter: SAE CLASS 60 Max = 39.093 Min = .22776

MSE Date: 09/18/92 Program: Side Impact 30/15 90 Deg. Vehicle: 1989 Mazda MPV

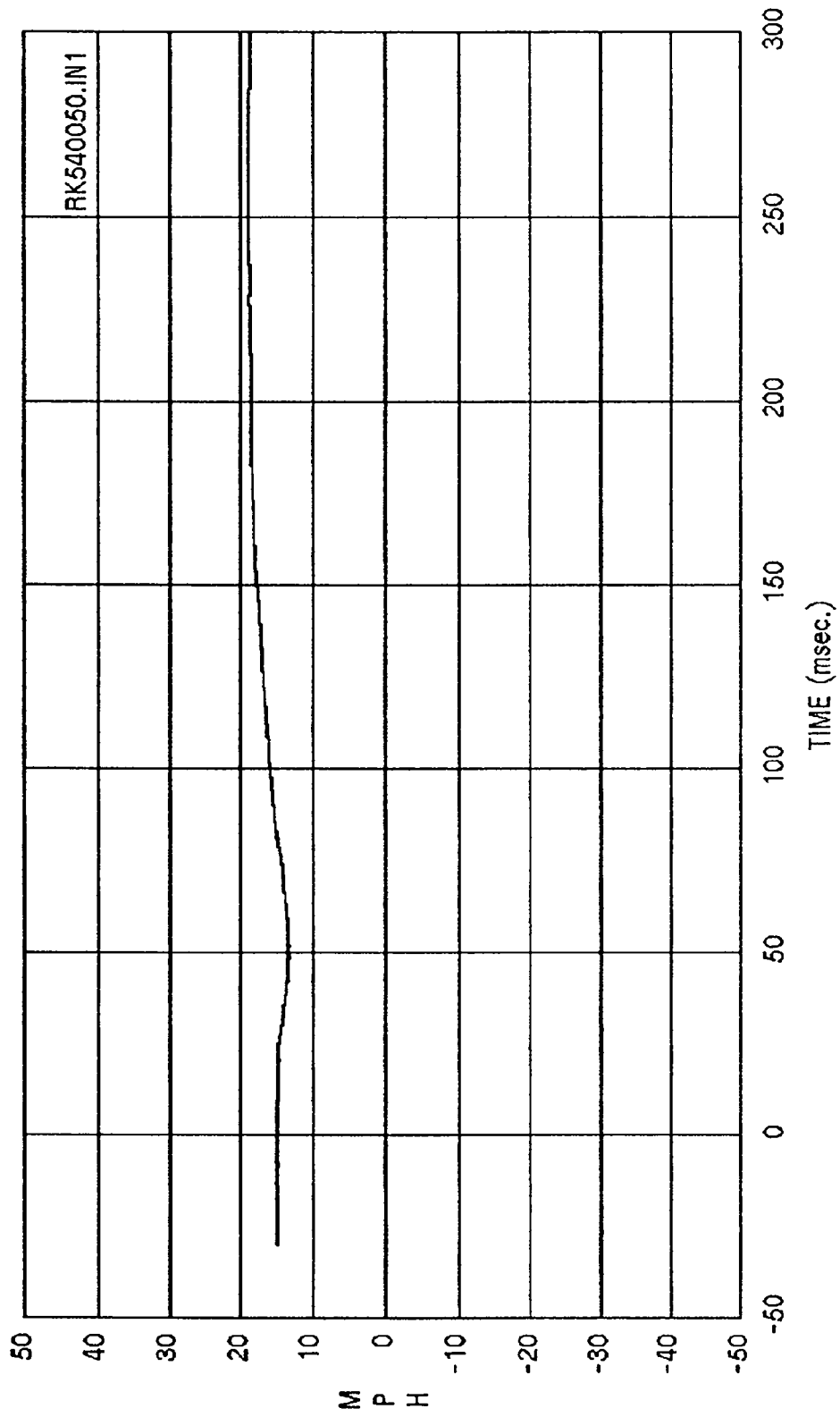


Curve: M.D.B. rear C/G delta V -- X axis Filter: SAE CLASS 180 Max = 29.378 Min = 9.7687
 MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV



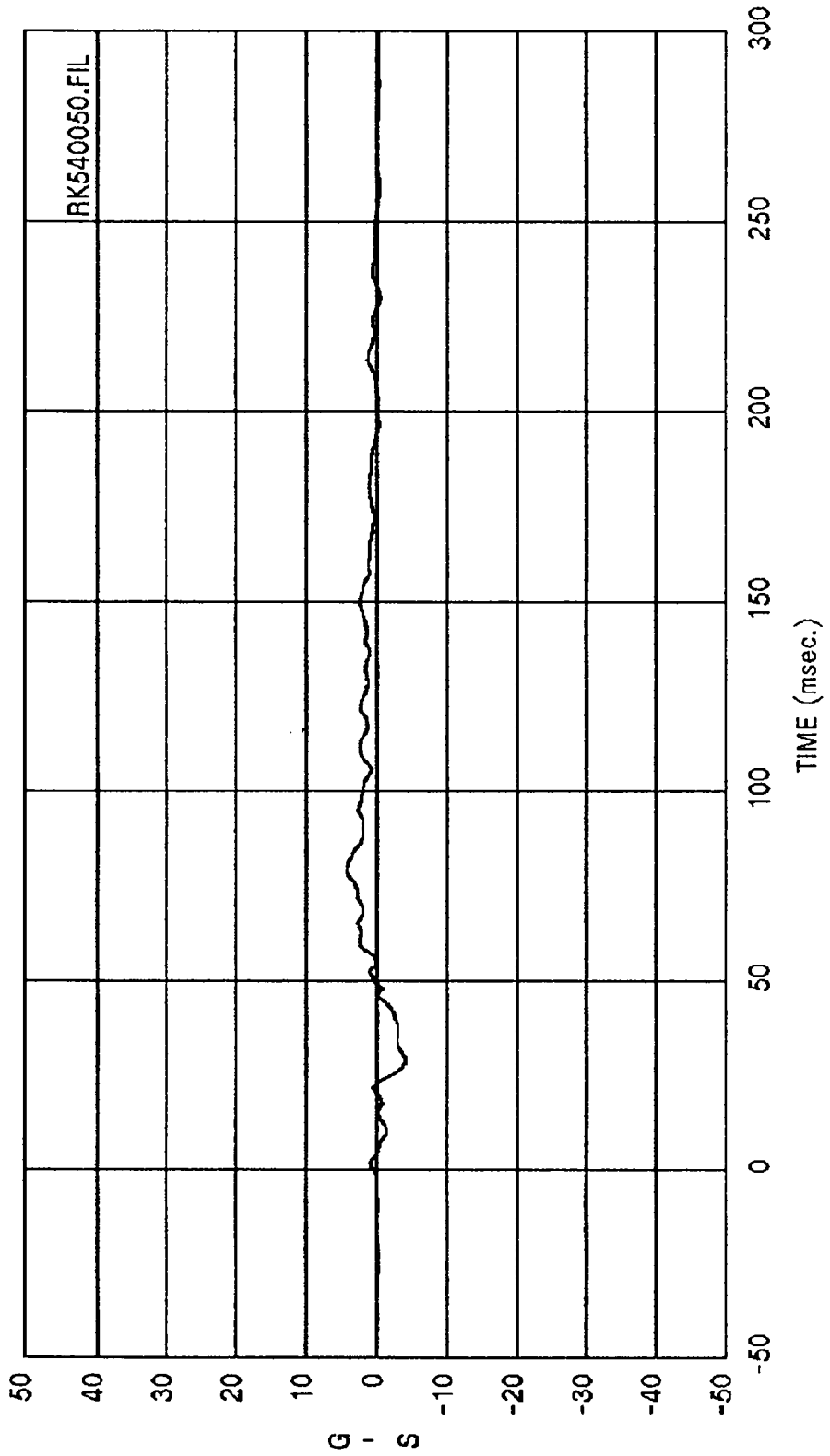
Curve: M.D.B. rear C/G acceleration -- X axis Filter: SAE CLASS 60 Max = 2.4760 Min = -15.328

MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV



Curve: M.D.B. rear C/G delta V -- Y axis Filter: SAE CLASS 180 Max = 19.000 Min = 13.412

MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV



Curve: M.D.B. rear C/G acceleration -- Y axis Filter: SAE CLASS 60 Max = 4.2068 Min = -3.9962

MSE Date: 09/18/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mazda MPV

SECTION 7

SID CONFIGURATION AND PERFORMANCE VERIFICATION DATA

Two SID's were used during the test. They were: .

DRIVER POSITION: SID, SERIAL NO. 136

LEFT REAR PASSENGER

POSITION: SID, SERIAL NO. 137

The pretest SID calibration data are shown in this section.

SID IMPACT CALIBRATION SUMMARY SHEET

S.I.D. I.D. No.: 136

TEST PARAMETER	REQUIREMENT	VELOCITY	PRETEST CAL.
THORAX IMPACT TEST:		14.1 ft/sec	
A. Upper Rib Accel. Primary	37 - 46 g's		43.5 g's
Secondary	37 - 46 g's		43.6 g's
B. Lower Rib Accel. Primary	37 - 46 g's		42.1 g's
Secondary	37 - 46 g's		42.9 g's
C. Lower Spine Accel. Primary	15 - 22 g's		20.9 g's
Secondary	15 - 22 g's		20.9 g's
PELVIC IMPACT TEST:		13.9 ft/sec	
Pelvic Accel.	40 - 60 g's		43.9 g's

SID IMPACT CALIBRATION SUMMARY SHEET

S.I.D. I.D. No.: 137

TEST PARAMETER	REQUIREMENT	VELOCITY	PRETEST CAL.
THORAX IMPACT TEST:		14.1 ft/sec	
A. Upper Rib Accel. Primary	37 - 46 g's		43.5 g's
Secondary	37 - 46 g's		44.4 g's
B. Lower Rib Accel. Primary	37 - 46 g's		41.4 g's
Secondary	37 - 46 g's		42.7 g's
C. Lower Spine Accel. Primary	15 - 22 g's		20.9 g's
Secondary	15 - 22 g's	20.1 g's	
PELVIC IMPACT TEST:		14.0 ft/sec	
Pelvic Accel.	40 - 60 g's		49.5 g's