

V1752

REPORT NO.: MSE-92-07-TR1086-07

R1086-07

**SIDE IMPACT PROTECTION STUDY
IN PRODUCTION VEHICLES
MDB-TO-VEHICLE SIDE IMPACT TEST OF
A 27⁰ CRABBED MOVING DEFORMABLE BARRIER
TO A 1989 MITSUBISHI MIGHTY MAX, PICKUP
AT 33.0 MPH**

NHTSA NO.: RK5600

**MOBILITY SYSTEMS AND EQUIPMENT COMPANY
9920 LA CIENEGA BOULEVARD SUITE 708
INGLEWOOD, CALIFORNIA 90301**



06 OCTOBER 1992

FINAL REPORT

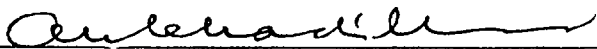
Prepared Under Contract No. DTNH22-87-C-07168, D.O. #3

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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Prepared by Mr. Jerry Kratzke/Mr. Pat Puzzuto/
Mr. Brian O'Keefe

Approved by: 
Dr. Anil V. Khadilkar

Date: 06 October 1992

Report Accepted by OCR:

Accepted by: _____

Acceptance Date: _____

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16. Abstract A 30/15 mph 90° Impact (Moving Deformable Barrier) Test was conducted on the subject 1989 Mitsubishi Mighty Max, Pickup, 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 11, 1992. The impact velocity of the Moving Deformable Barrier (MDB) was 33.21 mph, and the ambient temperature at the struck side (driver's) of the target vehicle at the time of impact was 92°F. The target vehicle post test maximum crush was 11.8 inches at level 2. The test vehicle's performance follows: <table border="1"> <thead> <tr> <th></th> <th>DRIVER</th> <th>PASS</th> </tr> </thead> <tbody> <tr> <td>Left Upper Rib (LUR) Accel., g</td> <td>84.1</td> <td>N/A</td> </tr> <tr> <td>Left Lower Rib (LLR) Accel., g</td> <td>64.4</td> <td>N/A</td> </tr> <tr> <td>Lower Spine (T) Accel., g</td> <td>112.3</td> <td>N/A</td> </tr> <tr> <td colspan="3" style="text-align: center;">12</td> </tr> <tr> <td>Thoracic Trauma Index (TTI)_d</td> <td>98.2</td> <td>N/A</td> </tr> <tr> <td>Pelvis (PEV) Accel., g</td> <td>122.0</td> <td>N/A</td> </tr> </tbody> </table> The door on the struck side of the vehicle did not separate from the body at the hinges or latch and the opposite door did not open during side impact event.							DRIVER	PASS	Left Upper Rib (LUR) Accel., g	84.1	N/A	Left Lower Rib (LLR) Accel., g	64.4	N/A	Lower Spine (T) Accel., g	112.3	N/A	12			Thoracic Trauma Index (TTI) _d	98.2	N/A	Pelvis (PEV) Accel., g	122.0	N/A
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17. Key Words OCCUPANT RESPONSE, MDB, SIDE IMPACT, TTI, SIDE IMPACT DUMMY (SID) MOVING BARRIER CRASH TESTING 1989 MITSUBISHI MIGHTY MAX, PICKUP			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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				22. Price																						

METRIC CONVERSION FACTORS

APPROXIMATE CONVERSIONS FROM METRIC MEASURES

SYMBOL WHEN YOU KNOW MULTIPLY BY TO FIND SYMBOL

LENGTH		
mm	millimeters	0.04 inches
cm	centimeters	0.4 inches
m	meters	3.3 feet
m	meters	1.1 yards
km	kilometers	0.6 miles

AREA		
cm ²	square centimeters	0.16 square inches
m ²	square meters	1.2 square yards
km ²	square kilometers	0.4 square miles
ha	hectares (10,000m ²)	2.5 acres

MASS (weight)		
g	grams	0.035 ounces
kg	kilograms	2.2 pounds
t	tonnes (1000kg)	1.1 short tons

VOLUME		
ml	milliliters	0.03 fluid ounces
l	liters	1.1 quarts
l	liters	0.26 gallons
m ³	cubic meters	36 cubic feet
m ³	cubic meters	1.3 cubic yards

TEMPERATURE (exact)		
°C	Celsius temperature	°F (Fahrenheit temperature)
		add 32

APPROXIMATE CONVERSIONS FROM METRIC MEASURES

SYMBOL WHEN YOU KNOW MULTIPLY BY TO FIND SYMBOL

LENGTH		
in	inches	2.5 centimeters
ft	feet	30 centimeters
y	yards	0.9 meters
mi	miles	1.6 kilometers

AREA		
sq in	square inches	6.5 square centimeters
sq ft	square feet	0.09 square meters
sq yd	square yards	0.8 square meters
sq mi	square miles	2.6 square kilometers
acres	acres	0.4 hectares

MASS (weight)		
oz	ounces	28 grams
lb	pounds	0.45 kilograms
	short tons (2000 lb)	0.9 tonnes

VOLUME		
fl oz	fluid ounces	30 milliliters
qt	quarts	0.95 liters
gal	gallons	3.8 liters
cu ft	cubic feet	0.03 cubic meters
cu yd	cubic yards	0.76 cubic meters

TEMPERATURE (exact)		
°F	Fahrenheit temperature	°C (Celsius temperature)
		subtract 32

x1 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

TABLE OF CONTENTS

<u>SECTIONS</u>		<u>PAGES</u>
1	Purpose of Test	1
2	Data Summary	2
3	Side Impact Dummy (SID) and Vehicle Test Data	8
4	Test Equipment List and Calibration Information	37
5	Photographs	44
6	Vehicle and SID Response Data	70
7	SID Configuration and Performance Verification Data	128

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 $\pm$ 0.5 mph.

The subject vehicle for this test was a 1989 Mitsubishi Mighty Max, Pickup. The test was performed on 11 September 1992 at an actual impact speed of 33.21 mph. The leading left-hand edge of the MDB contacted the test vehicle 18.0 inches rearward of the front axle centerline.

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 and contains data plots for transducers. 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 Mitsubishi Mighty Max Pickup, was tested on 11 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 THE MIDPOINT OF THE WHEEL BASE

One side impact anthropomorphic dummy (SID) was 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 was 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 the SID. 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.

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 29 channels of information was recorded on one (1) FM data tape recorder and one (1) direct analog to digital acquisition unit and data acquisition computer.

DATA SHEET NO. 1

SUMMARY OF RESULTS

VEH. MOD.YR/MAKE/MODEL: 1989 MITSUBISHI MIGHTY MAX

VEH. BODY STYLE: EXTENDED CAB PICKUP

VIN: JA7FL25EXKP002203

VEH. NHTSA NO.: RK5600

VEH. BUILD DATE: 06/88

TEST DATE: 09/11/92 TEST LAB.: MOBILITY SYSTEMS AND EQUIPMENT COMPANY

TEST RESULTS:

Vehicle Overall Length = 191.5 inches; Vehicle Overall Width 65.2 inches

Vehicle Test Weight: 964.0 lbs. Left Front

749.0 lbs. Left Rear

849.0 lbs. Right Front

784.0 lbs. Right Rear

1,813.0 lbs. TOTAL FRONT

1,533.0 lbs. TOTAL REAR

Wheelbase = 116.4 inches

Longitudinal C.G. from center of front axle = 53.0 inches

Impact Angle with respect to impactor = 90 degrees

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

1. LEVEL 1 (12.8 inches above ground) = 7.1 inches

2. LEVEL 2 (25.3 inches above ground) = 11.8 inches

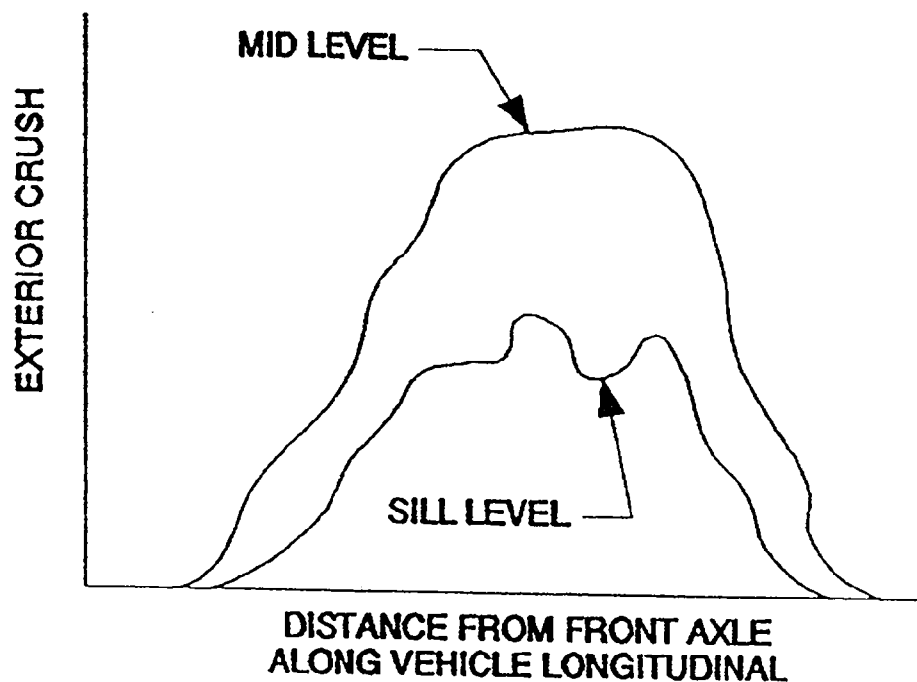
3. LEVEL 3 (26.3 inches above ground) = 10.9 inches

4. LEVEL 4 (38.8 inches above ground) = 7.8 inches

5. LEVEL 5 (57.5 inches above ground) = 3.1 inches

Maximum Post Test Intrusion = 11.8 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>N/A</u>
Restraint Used	3 point continuous webbing active belt system	
Instrumentation:		
Number of Data Channels =	<u>29</u>	
Number of Cameras:	Onboard = <u>2</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	NO
REAR --	N/A	N/A
Arm Rest Location:	Front -- <u>N/A</u>	
	Rear -- <u>N/A</u>	

Front Seat Cushion Movement: To the right

Front Seat Back Movement: To the right

Glazing Breakage: Impact side door window shattered, windshield had a few crack.

Pillar Failure: None

Sill Separation: None

Other Notable Impact Effect: None

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) = 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 = 33.21 mph

Maximum Static Crush of Honeycomb Impact Face:

1. ROW A at bumper level = 7.3 inches
2. ROW B at midstack level = 6.9 inches
3. ROW C at top of stack level = 6.3 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:
Seat belt upper anchorage bolt is on the C-pillar, 28.5 inches above the rear floor.

Visible Dummy Contact Points--

FRONT SID

REAR SID

HEAD	B-pillar, passenger head restraint	N/A
SHOULDER	B-pillar, door, head restraint	N/A
HIP	Door	N/A
LEFT KNEE	Door, right knee	N/A
RIGHT KNEE	Left knee	N/A

	FRONT SID # <u>136</u>		REAR SID # <u>N/A</u>	
	+ DIRECT	-DIRECT	+ DIRECT	-DIRECT
	MaxG ms	MaxG ms	MaxG ms	MaxG ms
RIB ACCELERATIONS:				
Upper Rib Lateral Y	<u>84.1</u> <u>27.5</u>	<u>10.6</u> <u>77.5</u>	___	___
Lower Rib Lateral Y	<u>64.4</u> <u>28.1</u>	<u>13.9</u> <u>64.4</u>	___	___
SPINE ACCELERATIONS:				
Lower Lateral Y	<u>112.3</u> <u>30.6</u>	<u>9.7</u> <u>71.3</u>	___	___
PELVIS ACCELERATIONS:				
Lateral Y	<u>122.0</u> <u>28.8</u>	<u>11.1</u> <u>85.6</u>	___	___

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

REMARKS:

RECORDED BY: Mr. Brian O'Keefe

DATE: 09/15/92

APPROVED BY: 

DATE: 10/06/92

SIDE IMPACT DUMMY (SID) TEST DATA SUMMARY
1989 Mitsubishi Mighty Max Pickup, NHTSA No. RK5600

TEST DATE: 09/11/92

	FRONT SID - ID No. 136				REAR SID ID No. N/A			
	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	27.7	42.8	20.4	52.0				
Lateral ----- Y	210.7	41.9	23.1	52.3				
Vertical ----- Z	15.4	69.0	80.3	42.5				
Resultant ----- R	222.7	41.8	--	--				
RIB ACCELERATIONS:								
Upper Primary ---- Y	84.1	27.5	10.6	77.5				
Upper Redundant -- Y	87.9	27.5	14.5	77.5				
Lower Primary ---- Y	64.4	28.1	13.9	64.4				
Lower Redundant -- Y	68.6	27.5	14.1	64.4				
SPINE ACCELERATIONS:								
Upper Primary ---- Y	102.0	38.8	8.2	188.8				
Upper Redundant -- Y	101.7	38.8	9.0	188.8				
Lower Primary ---- Y	112.3	30.6	9.7	71.3				
Lower Redundant -- Y	113.3	30.6	9.5	95.6				
PELVIS ACCELERATIONS:								
Latrerar ----- Y	122.0	28.8	11.1	85.6				
HEAD INJURY CRITERIA (HIC)	1806.4							
Time Interval (sec)	0.0408 TO 0.0462							
THORACIC TRAUMA INDEX (TTI) (g)	98.2							

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 Mitsubishi Mighty Max, Pickup was impacted at 33.21 mph by the 27⁰ crabbed MDB on 11 September 1992. The MDB's left edge contacted the test vehicle 1.0 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 21.0 inches. Pretest and posttest vehicle dimensions are shown in Data Sheets 5 and 6.

The MDB impacted the 1989 Mitsubishi Mighty Max, Pickup at a height that was above the sill. The MDB face was positioned on the MDB such that the bottom of the face was 15 inches above the ground. As a result, the MDB created extensive deformation to the left side door and "B" pillar. The door contacted the SID 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 "B" pillar. The SID then rebounded, its head hitting the passenger seat head restraint. The seat belt held the lower torso in place. The SID ended up leaning to the right with its head over the passenger seat.

The MDB impacted the test vehicle and was stopped by the remote brake system to prevent a second impact. The aluminum deformable barrier received more damage than usual due to contact with the rear wall of the cab and front wall of the bed. The maximum crush was 7.3 inches on the right side of the bumper.

DATA SHEETS NO. 2

PRETEST AND POST TEST MEASUREMENTS

VEH. MOD.YR/MAKE/MODEL: 1989 MITSUBISHI MIGHTY MAX

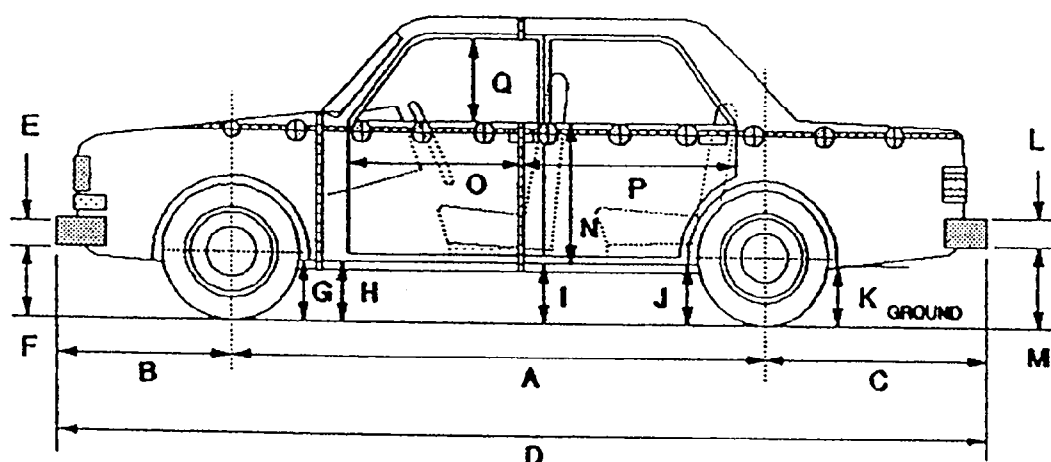
VEH. BODY STYLE: EXTENDED CAB PICKUP

VIN: JA7FL25EXKP002203

VEH. NHTSA NO.: RK5600

VEH. BUILD DATE: 06/88

TEST DATE: 09/11/92 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>116.4</u>	<u>116.1</u>	<u>0.3</u>	J	<u>11.7</u>	<u>12.8</u>	<u>1.1</u>
B	<u>30.1</u>	<u>30.1</u>	<u>0.0</u>	K	<u>12.9</u>	<u>14.4</u>	<u>1.5</u>
C	<u>45.0</u>	<u>45.0</u>	<u>0.0</u>	L	<u>6.5</u>	<u>6.5</u>	<u>0.0</u>
D	<u>191.5</u>	<u>191.2</u>	<u>0.3</u>	M	<u>14.4</u>	<u>13.9</u>	<u>0.5</u>
E	<u>6.7</u>	<u>6.7</u>	<u>0.0</u>	N	<u>24.0</u>	<u>21.9</u>	<u>2.1</u>
F	<u>16.4</u>	<u>16.4</u>	<u>0.0</u>	O	<u>32.5</u>	<u>31.9</u>	<u>0.6</u>
G	<u>10.7</u>	<u>12.1</u>	<u>1.4</u>	P	<u>27.5</u>	<u>26.0</u>	<u>1.5</u>
H	<u>10.8</u>	<u>11.9</u>	<u>1.1</u>	Q	<u>18.0</u>	<u>18.0</u>	<u>0.0</u>
I	<u>11.2</u>	<u>12.1</u>	<u>0.9</u>				

DATA SHEET NO. 3

SID LONGITUDINAL CLEARANCE DIMENSIONS

VEH. MOD.YR/MAKE/MODEL: 1989 MITSUBISHI MIGHTY MAX

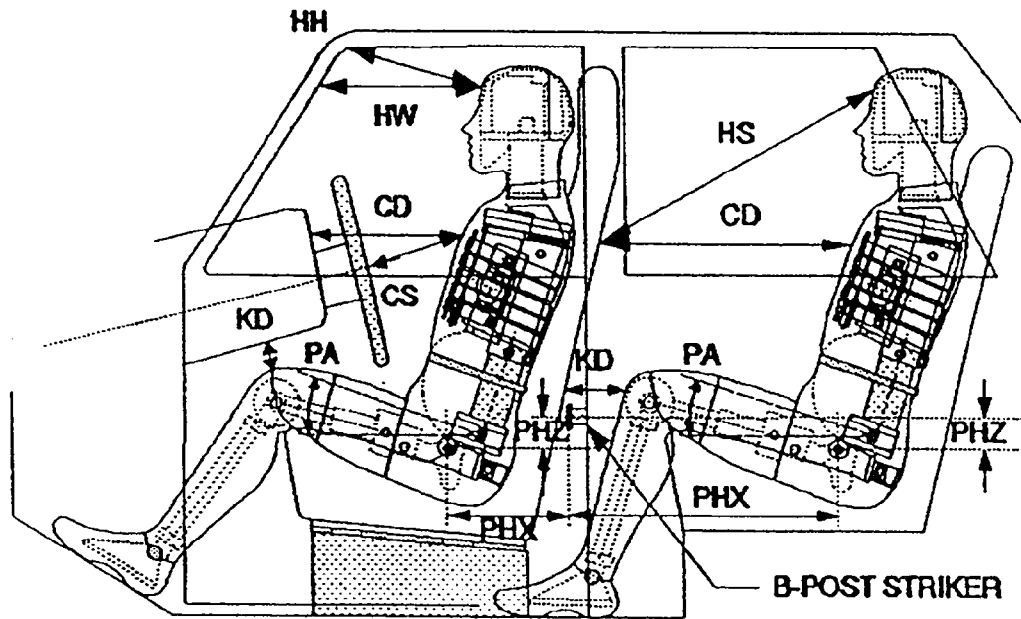
VEH. BODY STYLE: EXTENDED CAB PICKUP

VIN: JA7FL25EXKP002203

VEH. NHTSA NO.: RK5600

VEH. BUILD DATE: 06/88

TEST DATE: 09/11/92 TEST LAB.: MOBILITY SYSTEMS AND EQUIPMENT COMPANY



LEFT SIDE VIEW

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

DRIVER SID ID# 136

HH	<u>20.8</u>	<u>inches</u>
HW	<u>27.0</u>	<u>inches</u>
HS	<u>21.6</u>	<u>inches</u>
CD	<u>27.0</u>	<u>inches</u>
CS	<u>16.2</u>	<u>inches</u>
KDL	<u>4.5</u>	<u>inches</u>
KDR	<u>2.4</u>	<u>inches</u>
PA	<u>25.0</u>	<u>degrees</u>
PHX	<u>6.2</u>	<u>inches</u>
PHZ	<u>3.6</u>	<u>inches</u>

REAR SID ID# N/A

	<u> </u>	<u>inches</u>
	<u> </u>	<u>inches</u>
	<u> </u>	<u>inches</u>
	<u> </u>	<u>inches</u>
	<u> </u>	<u>inches</u>
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	<u> </u>	<u>inches</u>

DATA SHEET NO. 4

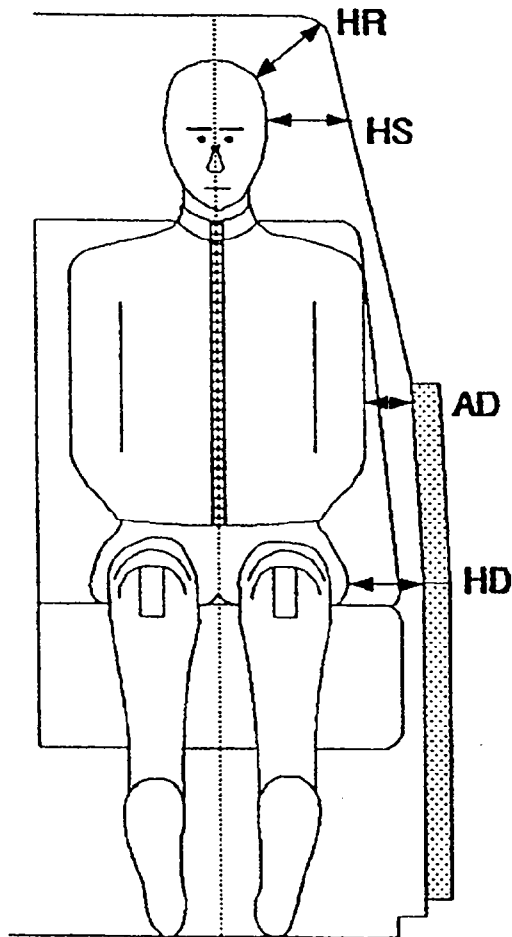
SID LATERAL CLEARANCE DIMENSIONS

VEH. MOD.YR/MAKE/MODEL: 1989 MITSUBISHI MIGHTY MAX

VEH. BODY STYLE: EXTENDED CAB PICKUP VIN: JA7FL25EXKP002203

VEH. NHTSA NO.: RK5600 VEH. BUILD DATE: 06/88

TEST DATE: 09/11/92 TEST LAB.: MOBILITY SYSTEMS AND EQUIPMENT COMPANY



DRIVER SID ID# 136

REAR SID ID# N/A

HR	<u>6.0</u>	inches
HS	<u>6.8</u>	inches
AD	<u>2.4</u>	inches
HD	<u>5.3</u>	inches

_____	inches
_____	inches
_____	inches
_____	inches

DATA SHEET NO. 5

VEHICLE SIDE MEASUREMENT

VEH. MOD.YR/MAKE/MODEL: 1989 MITSUBISHI MIGHTY MAX

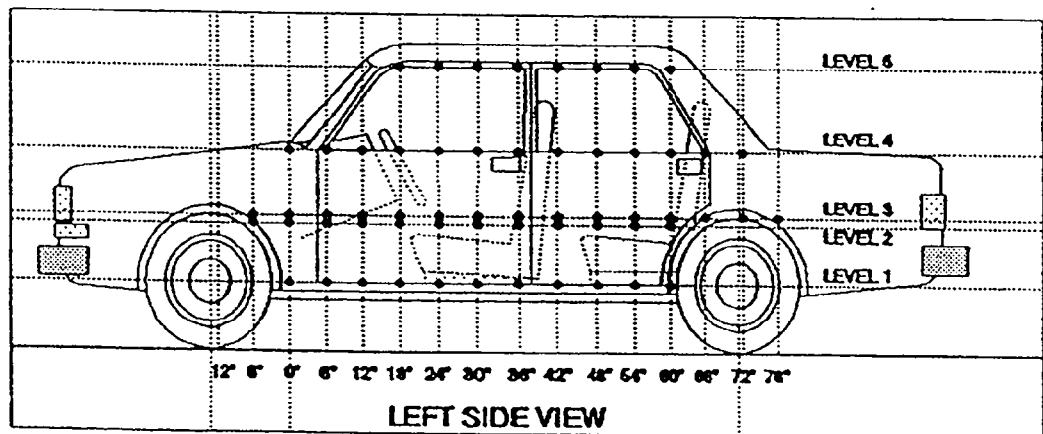
VEH. BODY STYLE: EXTENDED CAB PICKUP

VIN: JA7FL25EXKP002203

VEH. NHTSA NO.: RK5600

VEH. BUILD DATE: 06/88

TEST DATE: 09/11/92 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 = 57.5 inches

LEVEL 4 @ Window Sill = 38.8 inches

LEVEL 3 @ Mid Door = 26.3 inches

LEVEL 2 @ Occupant H-Point = 25.3 inches

LEVEL 1 @ Axle Centerline Height = 12.8 inches
(or Sill Top Height)

DATA SHEET NO. 6A

PRETEST AND POST TEST VEHICLE EXTERIOR PROFILES

VEH. MOD.YR/MAKE/MODEL: 1989 MITSUBISHI MIGHTY MAX

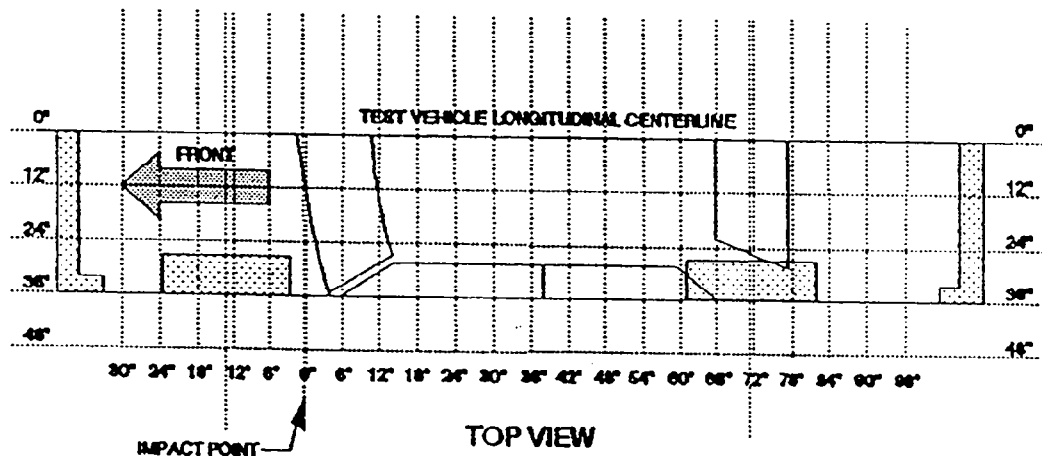
VEH. BODY STYLE: EXTENDED CAB PICKUP

VIN: JA7FL25EXKP002203

VEH. NHTSA NO.: RK5600

VEH. BUILD DATE: 06/88

TEST DATE: 09/11/92 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>18.7</u>	<u>18.8</u>	<u>-0.1</u>
6 Inches	<u>22.7</u>	<u>18.8</u>	<u>3.9</u>
12 Inches	<u>23.8</u>	<u>18.8</u>	<u>5.0</u>
18 Inches	<u>23.8</u>	<u>18.8</u>	<u>5.0</u>
24 Inches	<u>24.1</u>	<u>18.8</u>	<u>5.3</u>
30 Inches	<u>24.2</u>	<u>18.8</u>	<u>5.4</u>
36 Inches	<u>23.7</u>	<u>18.8</u>	<u>4.9</u>
42 Inches	<u>23.4</u>	<u>18.8</u>	<u>4.6</u>
48 Inches	<u>22.8</u>	<u>18.8</u>	<u>4.0</u>
54 Inches	<u>22.0</u>	<u>18.8</u>	<u>3.2</u>
60 Inches	<u>21.1</u>	<u>18.8</u>	<u>2.3</u>
66 Inches	<u>25.9</u>	<u>18.8</u>	<u>7.1</u>
72 Inches	<u>22.8</u>	<u>18.8</u>	<u>4.0</u>

REMARKS:

RECORDED BY: Brian O'Keefe

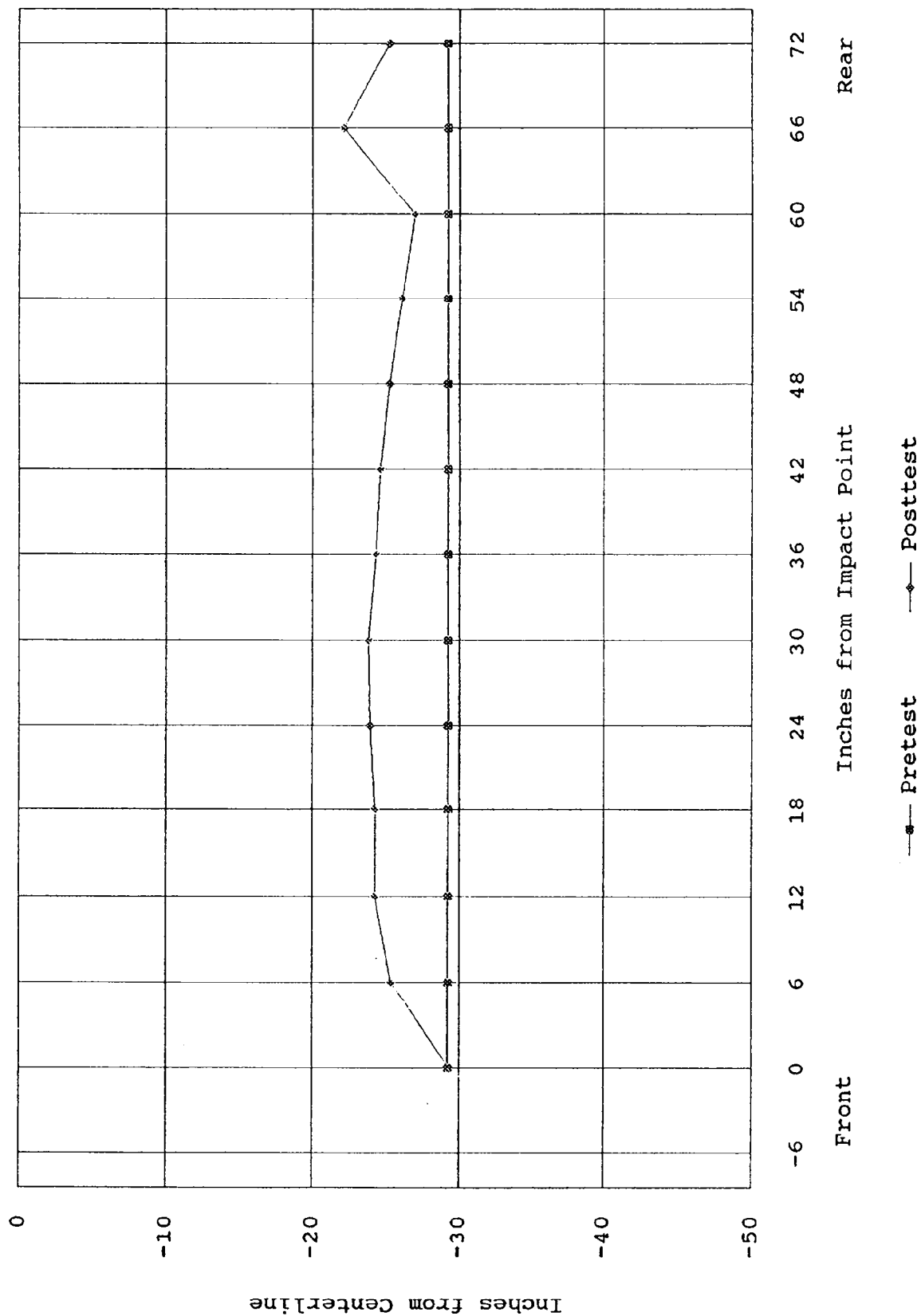
DATE: 09/14/92

APPROVED BY: *Am*

DATE: 10/06/92

Pretest and Posttest Exterior Profile

Level 1 - Axle Centerline Height - 12.8" Above Ground Level



LEVEL 2 AT OCCUPANT H-POINT

INCHES FROM IMPACT POINT	POSTTEST (Inches)	PRETEST (Inches)	STATIC CRUSH (Inches)
-6 Inches	<u>17.3</u>	<u>16.2</u>	<u>1.1</u>
0 (Impact Point)	<u>21.3</u>	<u>16.4</u>	<u>4.9</u>
6 Inches	<u>27.8</u>	<u>16.3</u>	<u>11.5</u>
12 Inches	<u>27.8</u>	<u>16.2</u>	<u>11.6</u>
18 Inches	<u>27.7</u>	<u>15.9</u>	<u>11.8</u>
24 Inches	<u>27.4</u>	<u>15.9</u>	<u>11.5</u>
30 Inches	<u>27.3</u>	<u>15.8</u>	<u>11.5</u>
36 Inches	<u>27.0</u>	<u>15.8</u>	<u>11.2</u>
42 Inches	<u>27.6</u>	<u>15.8</u>	<u>11.8</u>
48 Inches	<u>26.8</u>	<u>15.8</u>	<u>11.0</u>
54 Inches	<u>26.0</u>	<u>15.7</u>	<u>10.3</u>
60 Inches	<u>22.9</u>	<u>15.8</u>	<u>7.1</u>
66 Inches	<u>21.0</u>	<u>16.2</u>	<u>4.8</u>
72 Inches	<u>19.2</u>	<u>16.2</u>	<u>3.0</u>

REMARKS:

RECORDED BY: Brian O'Keefe

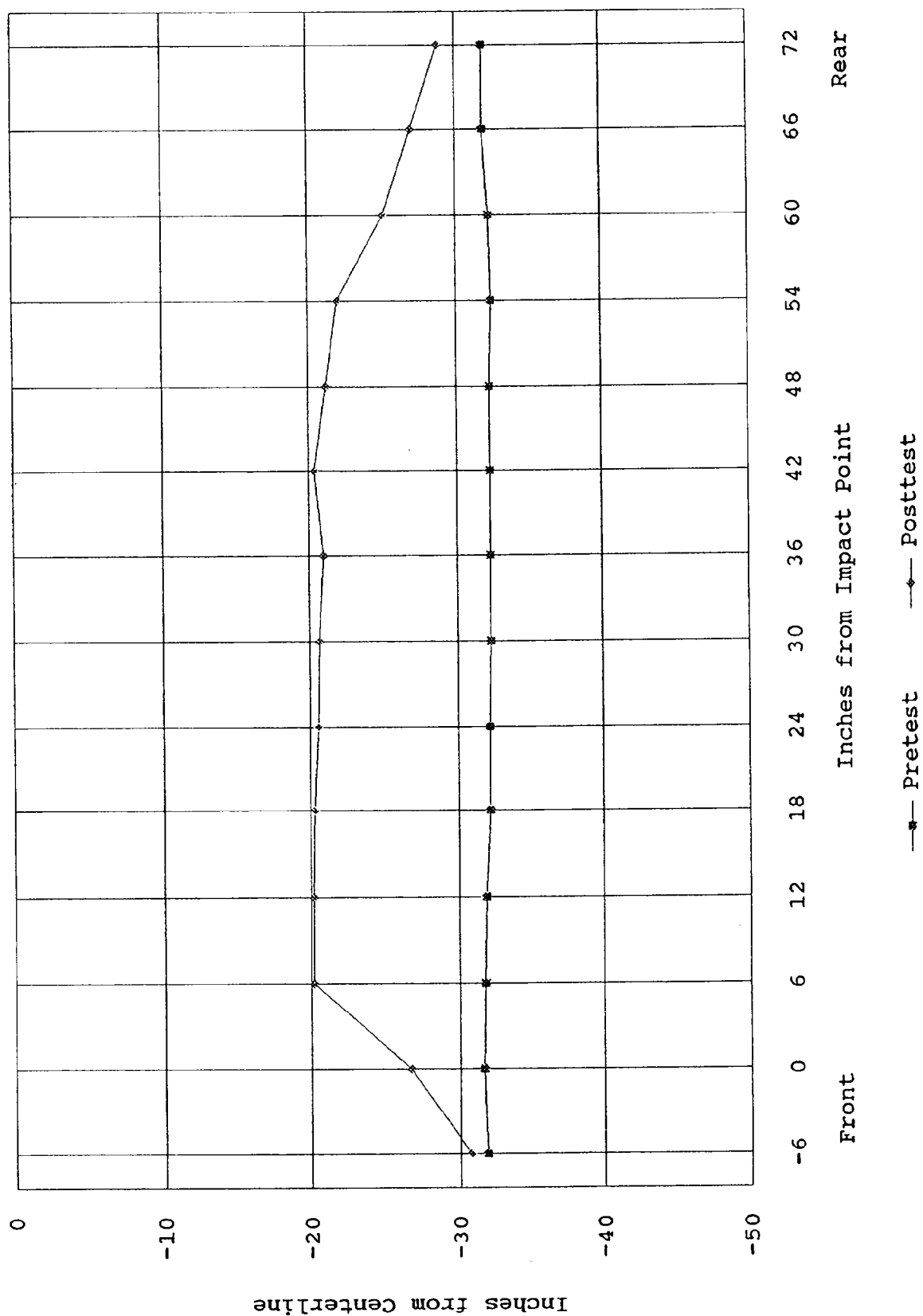
DATE: 09/14/92

APPROVED BY: *ank*

DATE: 10/06/92

Pretest and Posttest Exterior Profile

Level 2 - Occupant H-point - 25.3" Above Ground Level



LEVEL 3 AT MID-DOOR

INCHES FROM IMPACT POINT	POSTTEST (Inches)	PRETEST (Inches)	STATIC CRUSH (Inches)
-6 Inches	<u>16.2</u>	<u>16.4</u>	<u>-0.2</u>
0 (Impact Point)	<u>21.0</u>	<u>16.6</u>	<u>4.4</u>
6 Inches	<u>26.8</u>	<u>16.5</u>	<u>10.3</u>
12 Inches	<u>26.8</u>	<u>16.4</u>	<u>10.4</u>
18 Inches	<u>26.7</u>	<u>16.1</u>	<u>10.6</u>
24 Inches	<u>26.6</u>	<u>16.1</u>	<u>10.5</u>
30 Inches	<u>26.6</u>	<u>16.0</u>	<u>10.6</u>
36 Inches	<u>26.1</u>	<u>16.0</u>	<u>10.1</u>
42 Inches	<u>26.9</u>	<u>16.0</u>	<u>10.9</u>
48 Inches	<u>26.2</u>	<u>16.0</u>	<u>10.2</u>
54 Inches	<u>25.5</u>	<u>15.9</u>	<u>9.6</u>
60 Inches	<u>22.5</u>	<u>16.0</u>	<u>6.5</u>
66 Inches	<u>21.9</u>	<u>16.4</u>	<u>5.5</u>
72 Inches	<u>19.4</u>	<u>16.4</u>	<u>3.0</u>

REMARKS: N/A

RECORDED BY: Brian O'Keefe

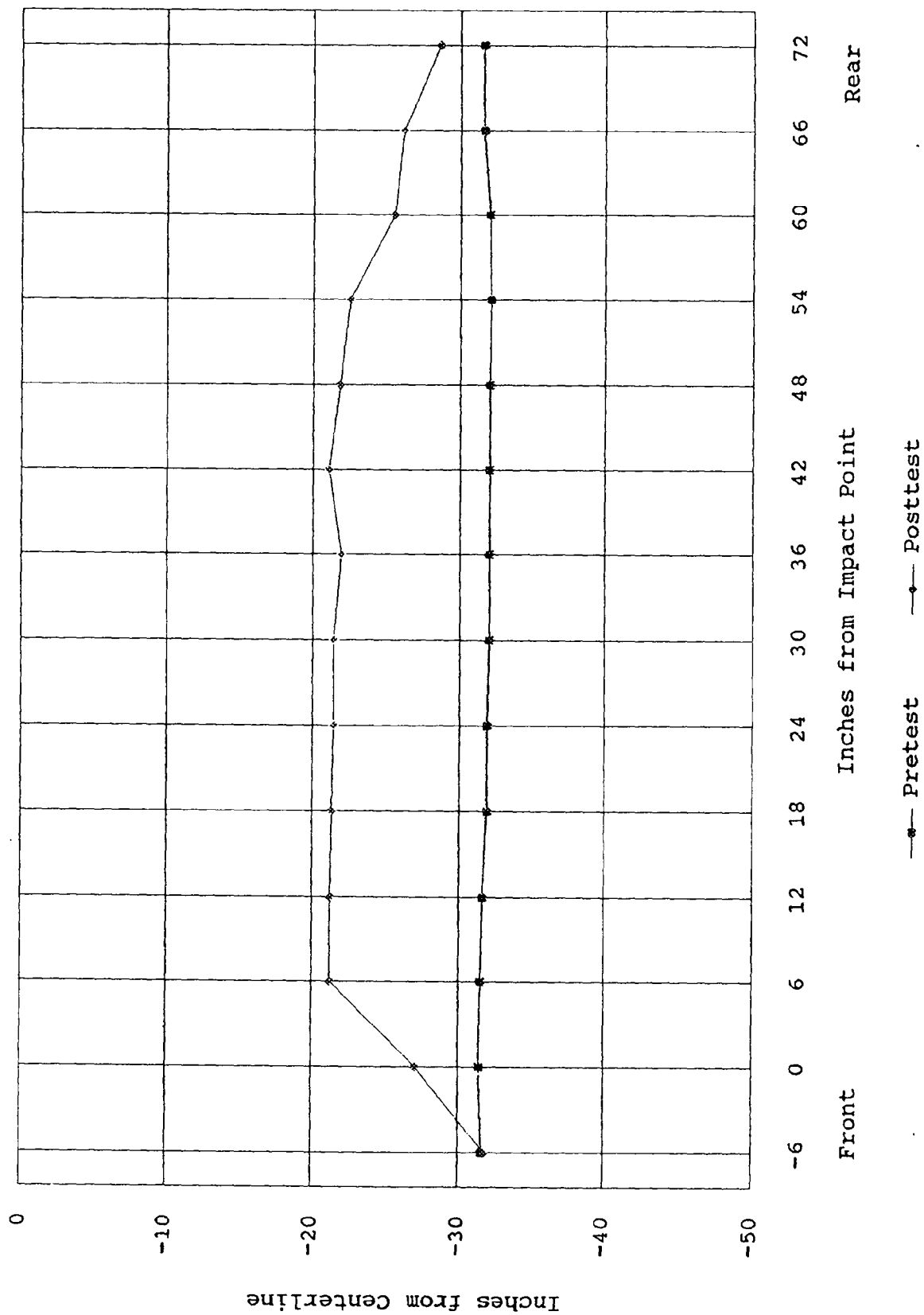
DATE: 09/14/92

APPROVED BY: *Amle*

DATE: 10/06/92

Pretest and Posttest Exterior Profile

Level 3 - Mid-door - 26.3" Above Ground Level



LEVEL 4 AT WINDOW SILL

INCHES FROM IMPACT POINT	POSTTEST (Inches)	PRETEST (Inches)	STATIC CRUSH (Inches)
-6 Inches	<u>19.5</u>	<u>18.4</u>	<u>1.1</u>
0 (Impact Point)	<u>19.7</u>	<u>18.3</u>	<u>1.4</u>
6 Inches	<u>22.4</u>	<u>18.3</u>	<u>4.1</u>
12 Inches	<u>23.4</u>	<u>18.5</u>	<u>4.9</u>
18 Inches	<u>23.8</u>	<u>18.3</u>	<u>5.5</u>
24 Inches	<u>23.8</u>	<u>18.0</u>	<u>5.8</u>
30 Inches	<u>24.3</u>	<u>17.5</u>	<u>6.8</u>
36 Inches	<u>24.0</u>	<u>17.3</u>	<u>6.7</u>
42 Inches	<u>24.9</u>	<u>17.1</u>	<u>7.8</u>
48 Inches	<u>23.8</u>	<u>16.8</u>	<u>7.0</u>
54 Inches	<u>23.7</u>	<u>16.8</u>	<u>6.9</u>
60 Inches	<u>21.3</u>	<u>16.8</u>	<u>4.5</u>
66 Inches	<u>21.3</u>	<u>17.5</u>	<u>3.8</u>
72 Inches	<u>20.4</u>	<u>17.4</u>	<u>3.0</u>

REMARKS: N/A

RECORDED BY: Brian O'Keefe

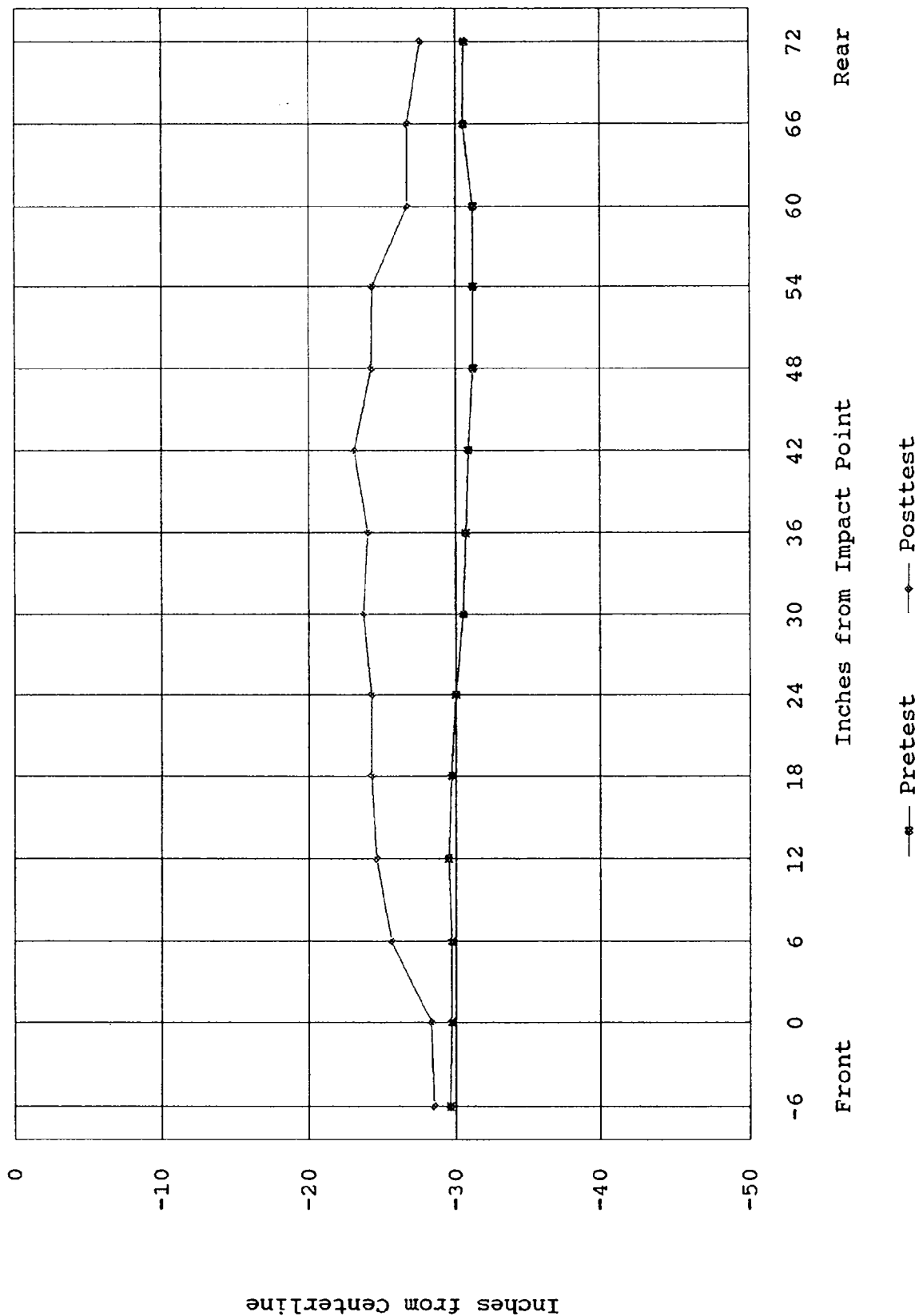
DATE: 09/14/92

APPROVED BY: *amh*

DATE: 10/06/92

Pretest and Posttest Exterior Profile

Level 4 - Window Sill - 38.8" 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>26.3</u>	<u>24.1</u>	<u>2.2</u>
24 Inches	<u>25.8</u>	<u>23.0</u>	<u>2.8</u>
30 Inches	<u>21.9</u>	<u>23.5</u>	<u>-1.6</u>
36 Inches	<u>22.8</u>	<u>23.5</u>	<u>-0.7</u>
42 Inches	<u>26.4</u>	<u>23.5</u>	<u>2.9</u>
48 Inches	<u>25.6</u>	<u>23.5</u>	<u>2.1</u>
54 Inches	<u>26.1</u>	<u>23.0</u>	<u>3.1</u>
60 Inches	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
66 Inches	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
72 Inches	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>

REMARKS: N/A

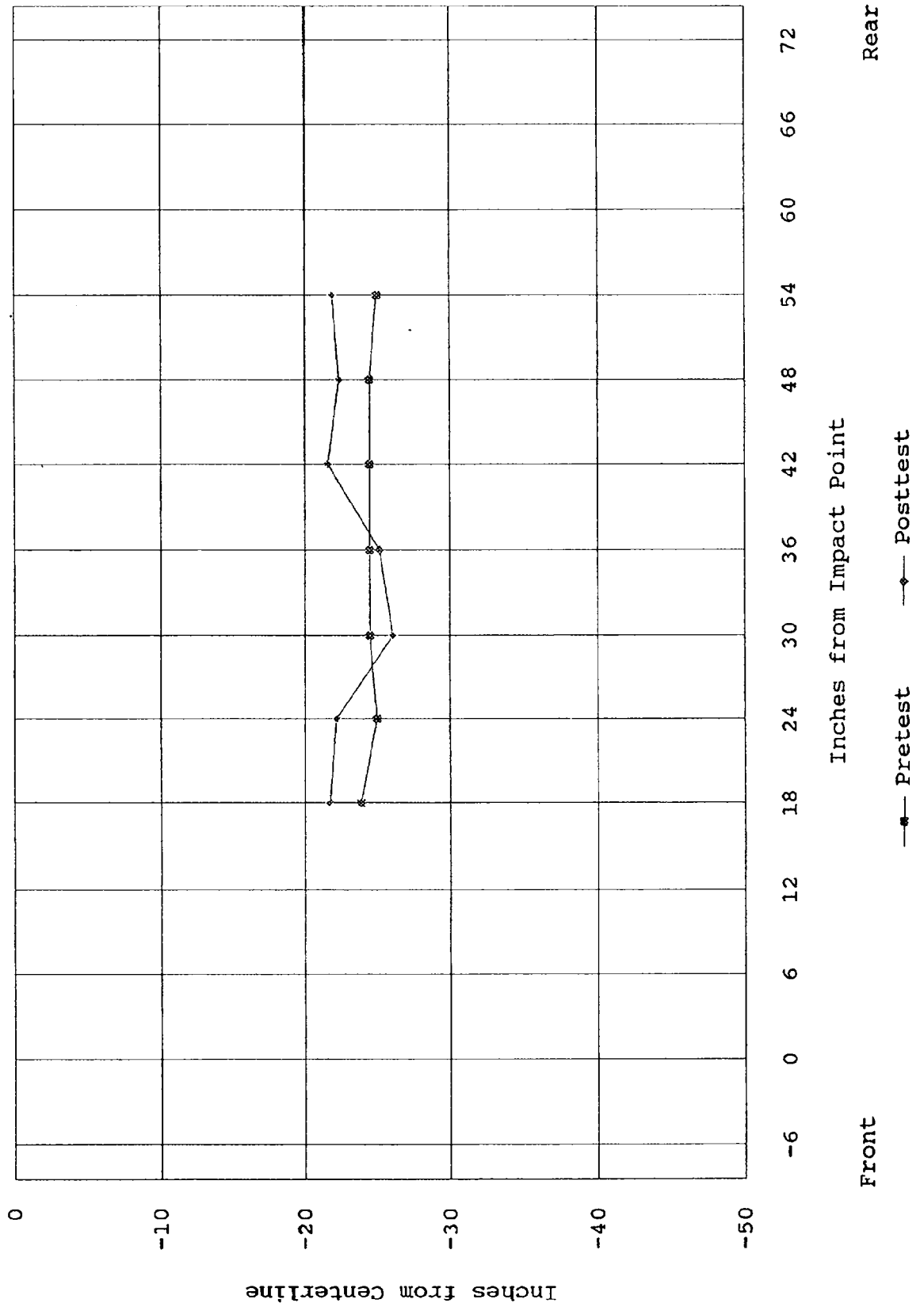
RECORDED BY: Brian O'Keefe

DATE: 09/14/92

APPROVED BY: *ame*

DATE: 10/06/92

Pretest and Posttest Exterior Profile
 Level 5 - Window Top ~ 57.5" Above Ground Level



SUMMARY OF VEHICLE EXTERIOR PROFILE STATIC CRUSH

VEH. MOD YR/MAKE/MODEL/BODY: 1989 Mitsubishi Mighty Max Extended CabVEH. NHTSA NO.: RK5600VIN: JA7FL25EXKP002203TEST DATE: 09/11/92TEST 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>1.1</u>	<u>-0.2</u>	<u>1.1</u>	<u>0.0</u>
0 (Impact Pt.)	<u>-0.1</u>	<u>4.9</u>	<u>4.4</u>	<u>1.4</u>	<u>0.0</u>
6 Inches	<u>3.9</u>	<u>11.5</u>	<u>10.3</u>	<u>4.1</u>	<u>0.0</u>
12 Inches	<u>5.0</u>	<u>11.6</u>	<u>10.4</u>	<u>4.9</u>	<u>0.0</u>
18 Inches	<u>5.0</u>	<u>11.8</u>	<u>10.6</u>	<u>5.5</u>	<u>2.2</u>
24 Inches	<u>5.3</u>	<u>11.5</u>	<u>10.5</u>	<u>5.8</u>	<u>2.8</u>
30 Inches	<u>5.4</u>	<u>11.5</u>	<u>10.6</u>	<u>6.8</u>	<u>-1.6</u>
36 Inches	<u>4.9</u>	<u>11.2</u>	<u>10.1</u>	<u>6.7</u>	<u>-0.7</u>
42 Inches	<u>4.6</u>	<u>11.8</u>	<u>10.9</u>	<u>7.8</u>	<u>2.9</u>
48 Inches	<u>4.0</u>	<u>11.0</u>	<u>10.2</u>	<u>7.0</u>	<u>2.1</u>
54 Inches	<u>3.2</u>	<u>10.3</u>	<u>9.6</u>	<u>6.9</u>	<u>3.1</u>
60 Inches	<u>2.3</u>	<u>7.1</u>	<u>6.5</u>	<u>4.5</u>	<u>0.0</u>
66 Inches	<u>7.1</u>	<u>4.8</u>	<u>5.5</u>	<u>3.8</u>	<u>0.0</u>
72 Inches	<u>4.0</u>	<u>3.0</u>	<u>3.0</u>	<u>3.0</u>	<u>0.0</u>

RECORDED BY: Brian O'KeefeDATE: 09/14/92APPROVED BY: *ane*DATE: 10/06/92

DATA SHEET NO. 7

EXTERIOR STATIC CRUSH FOR SIDE IMPACTOR

VEH. MOD.YR/MAKE/MODEL: 1989 MITSUBISHI MIGHTY MAX

VEH. BODY STYLE: EXTENDED CAB PICKUP

VIN: JA7FL25EXKP002203

VEH. NHTSA NO.: RK5600

VEH. BUILD DATE: 06/88

TEST DATE: 09/11/92

TEST LAB.: MOBILITY SYSTEMS AND EQUIPMENT COMPANY

LOCATION	TOP OF STACK LEVEL	MID- STACK LEVEL	BUMPER LEVEL
HEIGHT AT CENTERLINE*	36 inches	26 inches	21 inches
DISTANCES RIGHT OF CENTER**	(inches)	(inches)	(inches)
32 inches	<u>3.4</u>	<u>0.1</u>	<u>0.0</u>
28 inches	<u>1.8</u>	<u>-0.1</u>	<u>0.0</u>
24 inches	<u>0.4</u>	<u>-0.1</u>	<u>0.1</u>
20 inches	<u>0.0</u>	<u>-0.1</u>	<u>0.3</u>
16 inches	<u>-0.1</u>	<u>-0.1</u>	<u>0.5</u>
12 inches	<u>-0.1</u>	<u>0.0</u>	<u>0.6</u>
8 inches	<u>-0.1</u>	<u>0.1</u>	<u>0.8</u>
4 inches	<u>-0.1</u>	<u>0.2</u>	<u>1.0</u>
0 inches	<u>0.2</u>	<u>0.4</u>	<u>1.3</u>

DATA SHEET NO. 7 (Cont.)

LOCATION	TOP OF STACK LEVEL	MID- STACK LEVEL	BUMPER LEVEL
HEIGHT AT CENTERLINE*	36 inches	26 inches	21 inches
DISTANCES LEFT OF CENTER**	(inches)	(inches)	(inches)
4 inches	<u>0.6</u>	<u>0.6</u>	<u>1.5</u>
8 inches	<u>0.3</u>	<u>0.8</u>	<u>1.9</u>
12 inches	<u>0.4</u>	<u>0.9</u>	<u>2.5</u>
16 inches	<u>0.8</u>	<u>0.9</u>	<u>3.2</u>
20 inches	<u>1.0</u>	<u>1.2</u>	<u>4.0</u>
24 inches	<u>3.3</u>	<u>3.5</u>	<u>5.3</u>
28 inches	<u>6.3</u>	<u>6.5</u>	<u>7.2</u>
32 inches	<u>4.9</u>	<u>6.9</u>	<u>7.3</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: 09/14/92

APPROVED BY: *anh*

DATE: 10/06/92

DATA SHEET NO. 8

VEH. MOD.YR/MAKE/MODEL: 1989 MITSUBISHI MIGHTY MAX

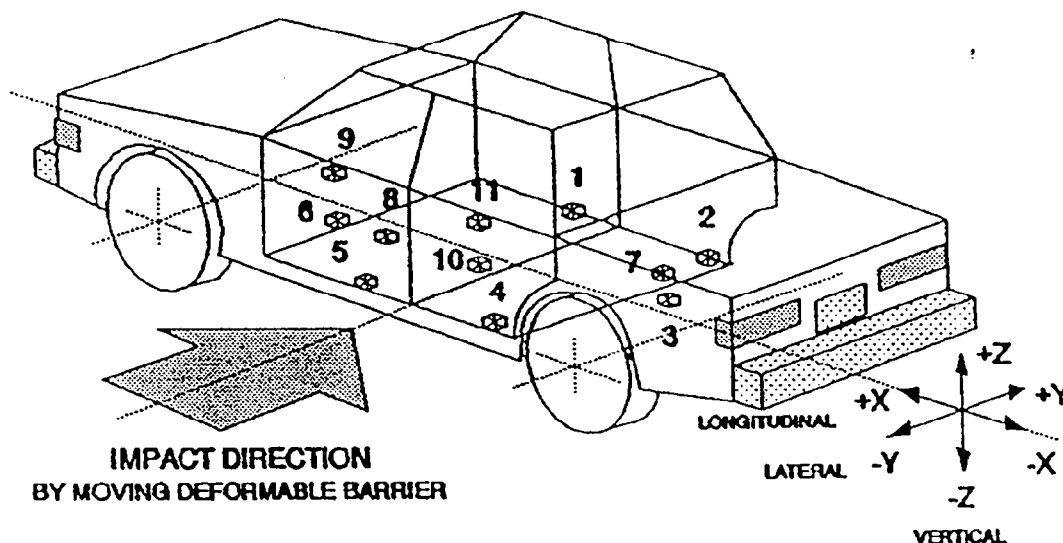
VEH. BODY STYLE: EXTENDED CAB PICKUP

VIN: JA7FL25EXKP002203

VEH. NHTSA NO.: RK5600

VEH. BUILD DATE: 06/88

TEST DATE: 09/11/92 TEST LAB.: MOBILITY SYSTEMS AND EQUIPMENT COMPANY



- 1-Rt. Side Sill @ Frt. Seat
- 2-Rt. Side Sill @ Rr. Seat
- 3-Rr. Floorpan Above Axle
- 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	126	18	14	-12.8	44.6	25.1	17.3	-23.9	32.4	26.2	17.2
2	N/A	N/A	N/A								
3	37	0	30	-9.5	10.4	24.3	41.8	7.7	34.4	24.6	41.7
4	N/A	N/A	N/A								
5	106	-24	19			35.8	14.8				
6	103	-27	32			145.1	12.9				
7	N/A	N/A	N/A								
8	89	-27	31			151.9	4.8				
9	102	-27	42			132.1	15.2				
10	N/A	N/A	N/A								
11	N/A	N/A	N/A								

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

REMARKS: N/A

RECORDED BY: Brian O'Keefe DATE: 09/15/92

APPROVED BY: *amb* DATE: 10/06/92

DATA SHEET NO. 9

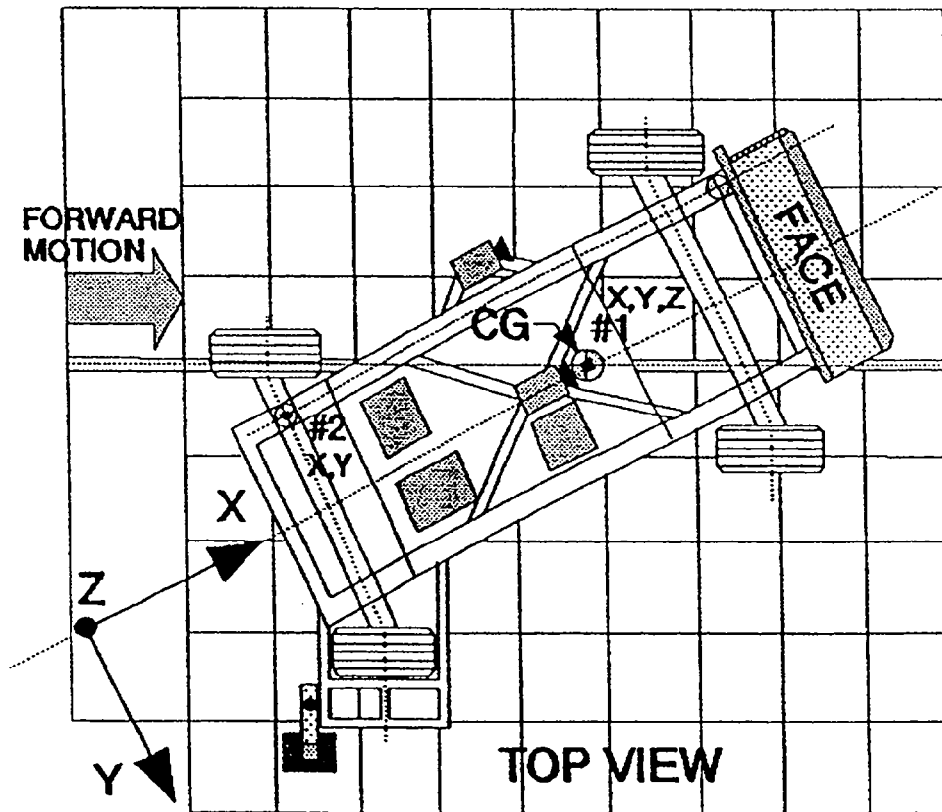
MOVING DEFORMABLE BARRIER (MDB) ACCELEROMETER LOCATIONS
AND SAMPLE DATA SUMMARY

VEH. MOD.YR/MAKE/MODEL: 1989 MITSUBISHI MIGHTY MAX

VEH. BODY STYLE: EXTENDED CAB PICKUP VIN: JA7FL25EXKP002203

VEH. NHTSA NO.: RK5600 VEH. BUILD DATE: 06/88

TEST DATE: 09/11/92 TEST LAB.: MOBILITY SYSTEMS AND EQUIPMENT COMPANY



ACCELEROMETER LOCATIONS:

1 - MDB Center of Gravity (CG)

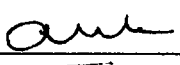
2 - Rear Frame Member

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	1.5	221.2	16.6	41.3
1 Lateral Y	73	0	12	10.8	37.3	5.5	60.4
1 Vertical Z	73	0	12	21.9	43.9	24.0	153.2
1 Resultant R	73	0	12	27.3	51.4	N/A	N/A
2 Longitudinal X	12	-19	17	1.8	116.8	18.5	30.5
2 Lateral Y	12	-19	17	3.3	147.0	2.8	18.6

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

REMARKS: N/A

RECORDED BY: Brian O'Keefe DATE: 09/15/92
 APPROVED BY:  DATE: 10/06/92

DATA SHEET NO. 10

HIGH SPEED CAMERA LOCATIONS AND DATA

VEH. MOD.YR/MAKE/MODEL: 1989 MITSUBISHI MIGHTY MAX

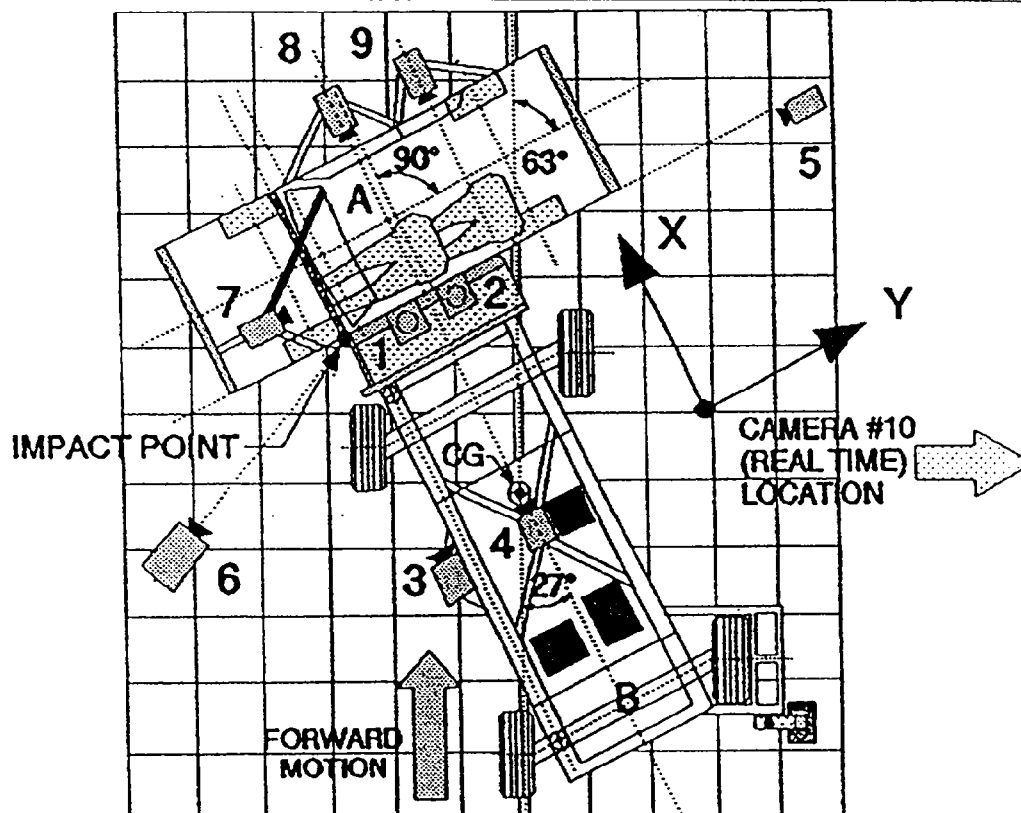
VEH. BODY STYLE: EXTENDED CAB PICKUP

VIN: JA7FL25EXKP002203

VEH. NHTSA NO.: RK5600

VEH. BUILD DATE: 06/88

TEST DATE: 09/11/92 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	610	12	12	236
2	Fastax II	28	600	-12	12	236
3	Himac	28	710	-121	-37	50
4	Himac	16	710	-151	0	72
5	Fastax II	16	600	-190	552	48
6	Fastax II	28	600	-68	-516	48
7	Fastax II	16	600	20	-49	51
8	Fastax II	16	500	68	25	42
9	N/A	-	-	-	-	-
10	Arriflex	15-70 Zoom	24	-	-	-

* REFERENCE (from point of impact)

+X = Forward

+Y = To the right

+Z = Upward

REMARKS: N/A

RECORDED BY: Brian O'KeefeDATE: 09/22/92APPROVED BY: *amb*DATE: 10/06/92

DATA SHEET NO. 11

TEST VEHICLE DATA

VEH. MOD.YR/MAKE/MODEL: 1989 MITSUBISHI MIGHTY MAX
VEH. BODY STYLE: EXTENDED CAB PICKUP VIN: JA7FL25EXKP002203
VEH. NHTSA NO.: RK5600 VEH. BUILD DATE: 06/88
TEST DATE: 09/11/92 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): 26 psi Front; 35 psi Rear

Recommended Tire Size: P195/75R14

Size of Tires Installed on Test Vehicle: P195/75R14

Tire Manufacturer: Allegiance (Front), Bridgestone (Rear)

Number of Occupants: 3 Front; - Rear; 3 TOTAL

Type of Front Seat(s): - Buckets; - Bench; X 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 = 722 lbs.; Left = 871 lbs.; Front Total = 1593 lbs.

(55 % of TOTAL shown below)

Rear: Right = 659 lbs.; Left = 638 lbs.; Rear Total = 1293 lbs.

(45 % of TOTAL shown below)

Front Total + Rear Total = TOTAL DELV. = 2890 lbs.

CALCULATION OF TEST VEHICLE TARGET WEIGHT:

Total Test Vehicle Delivered Weight With Maximum Fluids = 2890 lbs. (A)

Maximum Cargo Carry Capacity of Test Vehicle = 300 lbs. (B)

Weight of One Side Impact Dummy (1 X 164 lbs.) = 164 lbs. (C)

Test Vehicle Target Weight = 3354 (A + B + C)

ACTUAL WEIGHT OF TEST VEHICLE WITH TWO SIDs AND CARGO:

Front: Right = 849 lbs.; Left = 964 lbs.; Front Total = 1813 lbs.

(54 % of TOTAL shown below)

Rear: Right = 784 lbs.; Left = 749 lbs.; Rear Total = 1533 lbs.

(46 % of TOTAL shown below)

Front Total + Rear Total = TOTAL ACTUAL = 3346 lbs. (which includes 100 lbs. of cargo ballast weight)

TEST VEHICLE ATTITUDE:

As Delivered

Ready For Test

29.3 inches Right Front

27.9 inches Right Front

28.8 inches Left Front

28.0 inches Left Front

31.3 inches Right Rear

30.1 inches Right Rear

30.5 inches Left Rear

29.9 inches Left Rear

DATA SHEET NO. 11 (Cont.)

Test Vehicle Wheelbase = 116.4 inches

C.G. = 53.0 inches Rearward of Front Wheel Centerline

Total Vehicle Length: 188.5 inches Right Side

188.5 inches Left Side

191.5 inches Centerline

Arm Rest Location: N/A

Seat Belt Upper Anchorage Location: On C-pillar, 28.5 inches above the rear floor.

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

Total Length of Seat Adjustment Travel = 7.7 inches

Total Number of Seat Adjustment Positions or Detents = 21

Front Seat Back Adjustment Position: 26⁰

Front Seat Back Torso Angle = 26 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 N/A Left Rear
Open Right Front N/A 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: 15.5 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 = 116.4 inches

Impact Point 20.0 inches rearward of front axle centerline (which is 37" forward of the wheelbase midpoint)

REMARKS: Actual impact point is 18.0 inches rearward of front axle centerline.

RECORDED BY: Brian O'Keefe

DATE: 09/22/92

APPROVED BY: 

DATE: 10/06/92

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: 001	
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: 14	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 2	CURNO: 002	
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: 105	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 2	CURNO: 003	
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: 40	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 2	CURNO: 004	
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: 6	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 2	CURNO: 005	
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: 6	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 2	CURNO: 006	
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: 007	
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: 008	
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: 6	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 2	CURNO: 009	
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: 5	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 2	CURNO: 010	
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: 6	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 2	CURNO: 011	
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: 7	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 2	CURNO: 012	
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: 7	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 2	CURNO: 013	
SENTYP: LC	SENLOC: NA	SENATT: LPBO	
AXIS: NA	UNITS: LBS	PREFIL: 1650	
INSMAN: MFG: LEBOW, MODEL: 3371, S/N: 333			
CALDAT: 09/APR/92	INSRAT: 3500	CHLMAX: 23	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 2	CURNO: 014	
SENTYP: LC	SENLOC: NA	SENATT: SHBT	
AXIS: NA	UNITS: LBS	PREFIL: 1650	
INSMAN: MFG: LEBOW, MODEL: 3371, S/N: 327			
CALDAT: 09/APR/92	INSRAT: 3500	CHLMAX: 24	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 2	CURNO: 015	
SENTYP: AC	SENLOC: NA	SENATT: DSRF	
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: 69	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 2	CURNO: 016	
SENTYP: AC	SENLOC: NA	SENATT: DSRF	
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: 68	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 2	CURNO: 017	
SENTYP: AC	SENLOC: NA	SENATT: DSRF	
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: 89	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 2	CURNO: 018	
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: 18	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 2	CURNO: 019	
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: 33	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 2	CURNO: 020	
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: 20	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 2	CURNO: 021	
SENTYP: AC	SENLOC: NA	SENATT: DSLF	
AXIS: YG	UNITS: G'S	PREFIL: 1650	
INSMAN: MFG: I.C. SENSORS, MODEL: 3031-200, S/N: 24-200			
CALDAT: 10/APR/92	INSRAT: 200	CHLMAX: 95	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 2	CURNO: 022	
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: 133	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 2	CURNO: 023	
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: 147	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 100	DASTAT: CF
INSCOM: CHANNEL FAILED AT 13.7 MSEC			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 2	CURNO: 024	
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: 144	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 1	CURNO: 025	
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: 39	INIVEL: 29.6
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 1	CURNO: 026	
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: 14	INIVEL: 15.1
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 1	CURNO: 027	
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: 30	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 1	CURNO: 028	
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: 27	INIVEL: 29.6
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 1	CURNO: 029	
SENTYP: AC	SENLOC: NA	SENATT: IMCR	
AXIS: YG	UNITS: G'S	PREFIL: 1650	
INSMAN: MFG: I.C. SENSORS, MODEL: 3031-100, S/N: 7C-100			
CALDAT: 10/APR/92	INSRAT: 100	CHLMAX: 13	INIVEL: 15.1
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 Right Side View of MDB with Impact Face in Position
21. Pretest Left Side View of MDB with Impact Face in Position
22. Test Vehicle Tire Placard and Manufacturer's Certification Label
23. Driver Door Accelerometer Locations
24. Driver Door Accelerometers installed, Door Panel in Place-Pretest
25. Driver Seating Position - Posttest

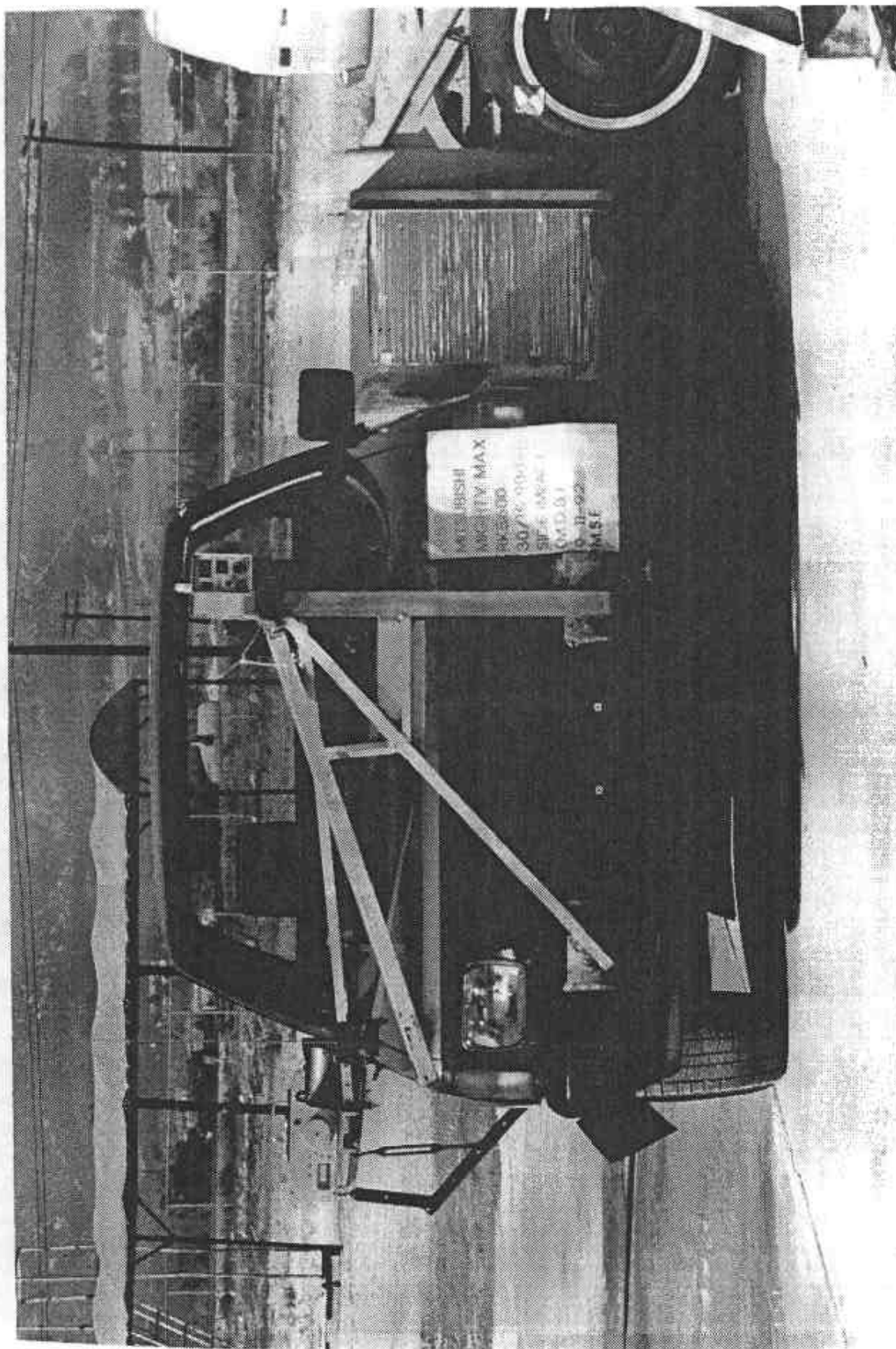


FIGURE 5-1 PRETEST FRONTAL VIEW OF TEST VEHICLE (TARGET VEHICLE)

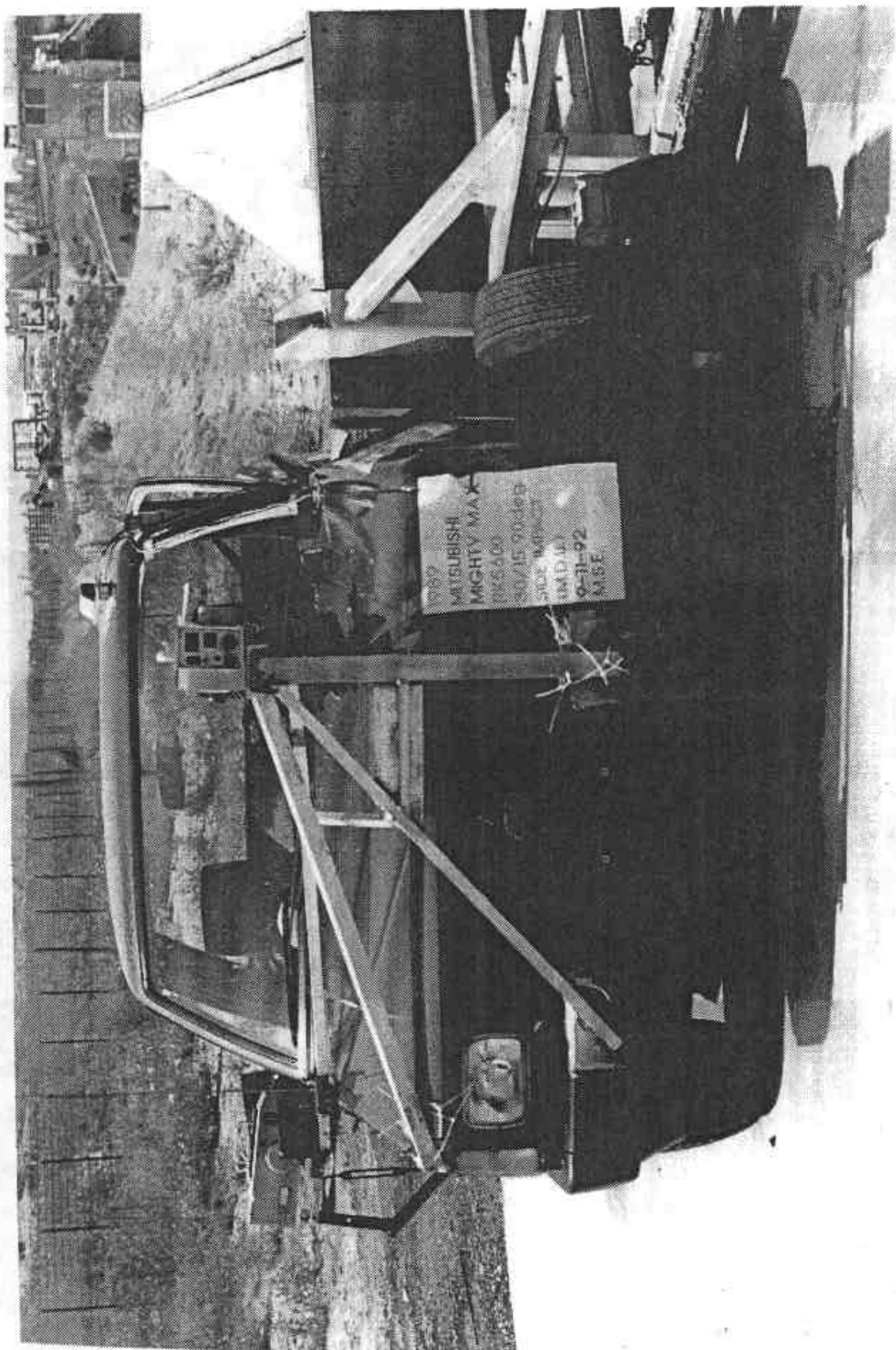


FIGURE 5-2 POSTTEST FRONTAL VIEW OF TEST VEHICLE



FIGURE 5-3 PRETEST REAR VIEW OF TEST VEHICLE



FIGURE 5-4 POSTTEST REAR VIEW OF TEST VEHICLE

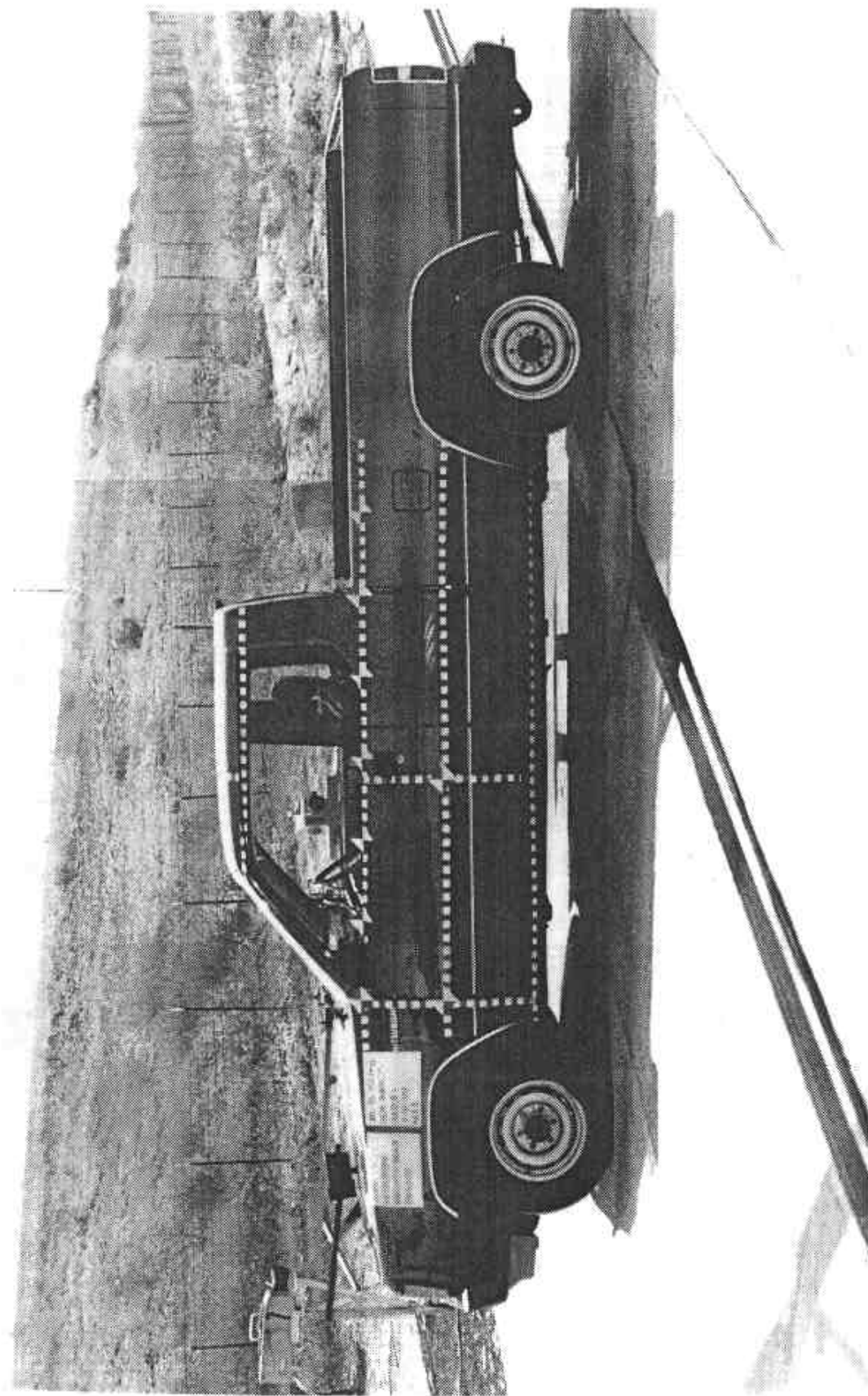


FIGURE 5-5 PRETEST STRUCK SIDE VIEW OF TEST VEHICLE

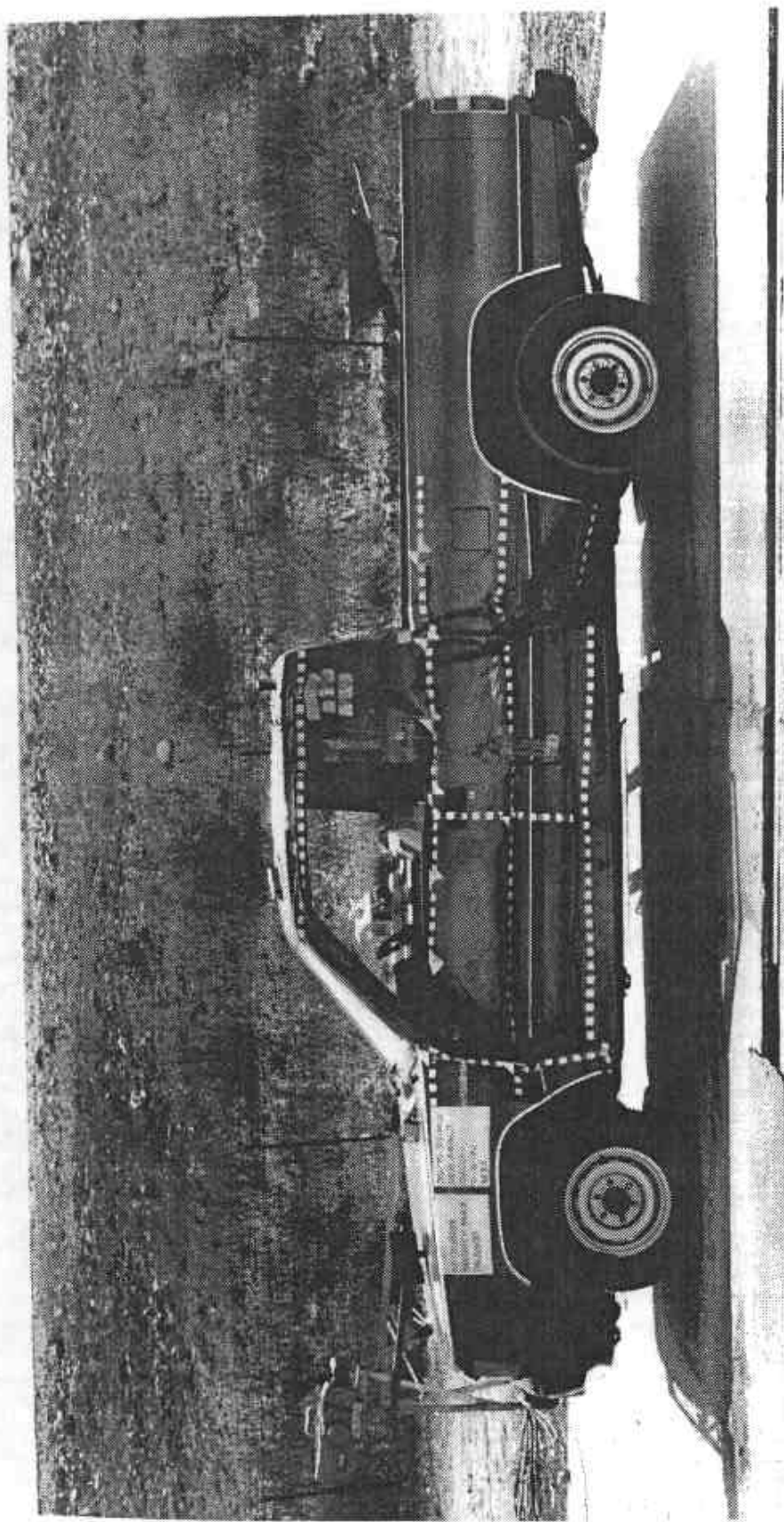


FIGURE 5-6 POSTTEST STRUCK SIDE VIEW OF TEST VEHICLE

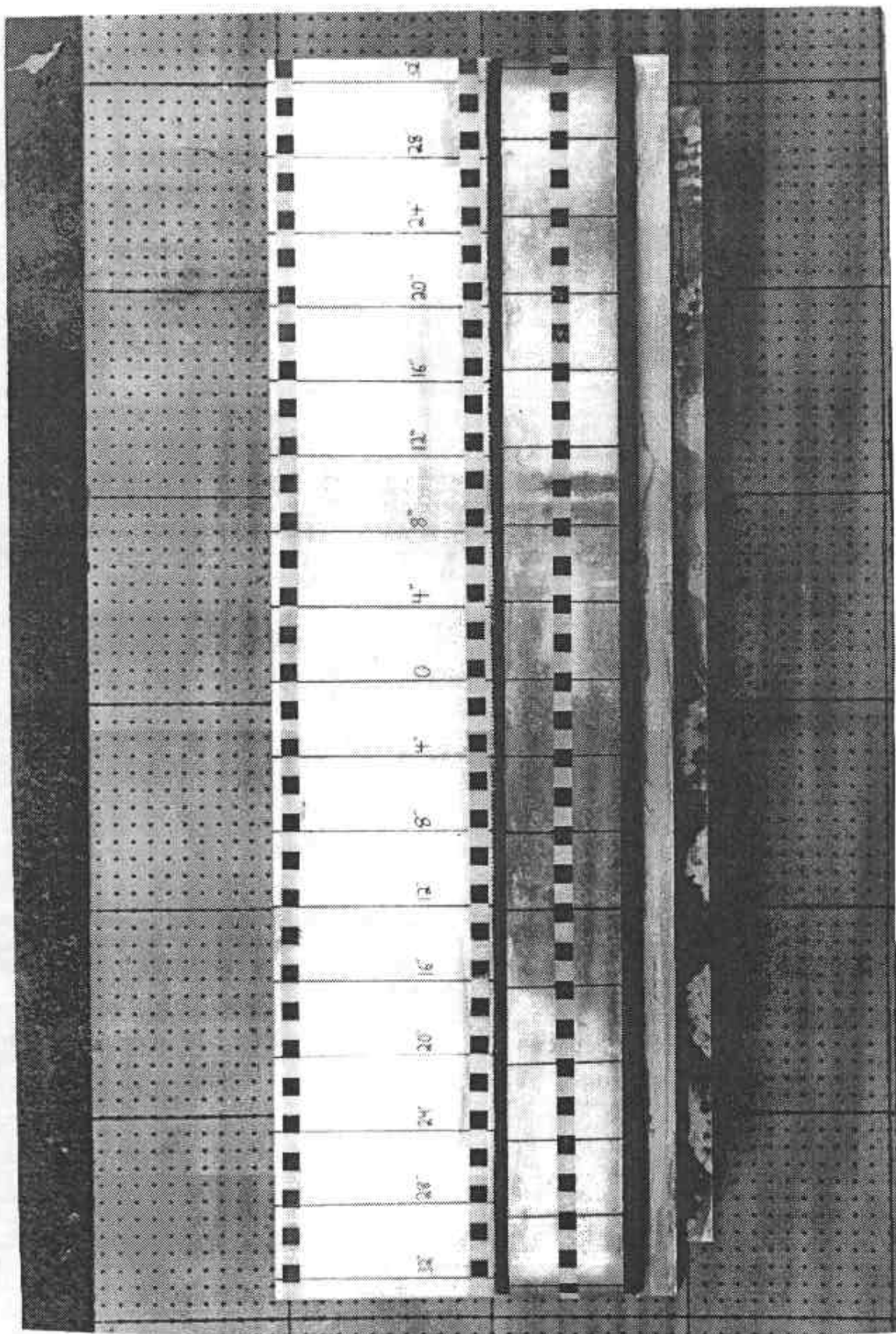


FIGURE 5-7 PRETEST FRONTAL VIEW OF MDB IMPACT FACE

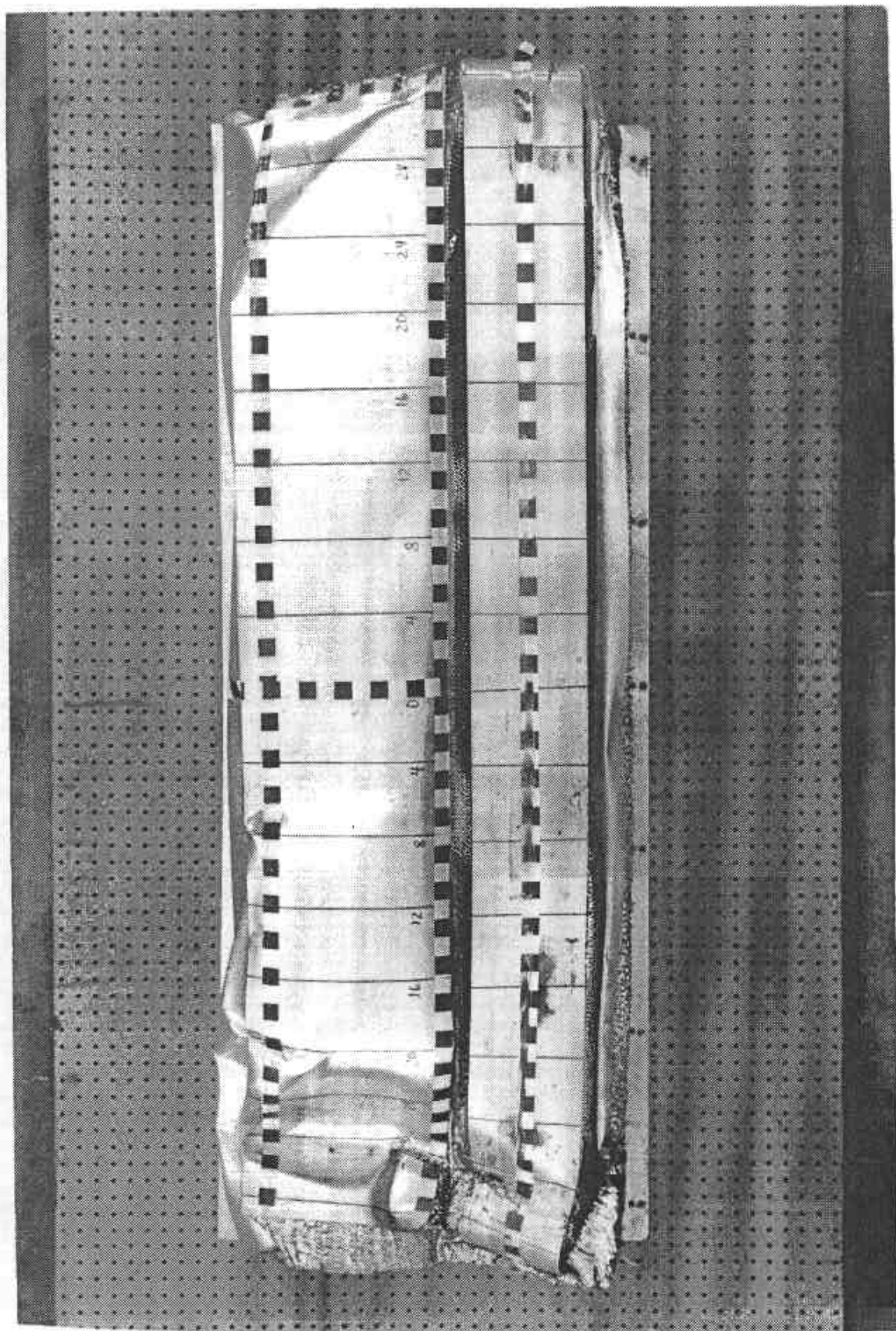


FIGURE 5-8 POSTTEST FRONTAL VIEW OF MDB IMPACT FACE

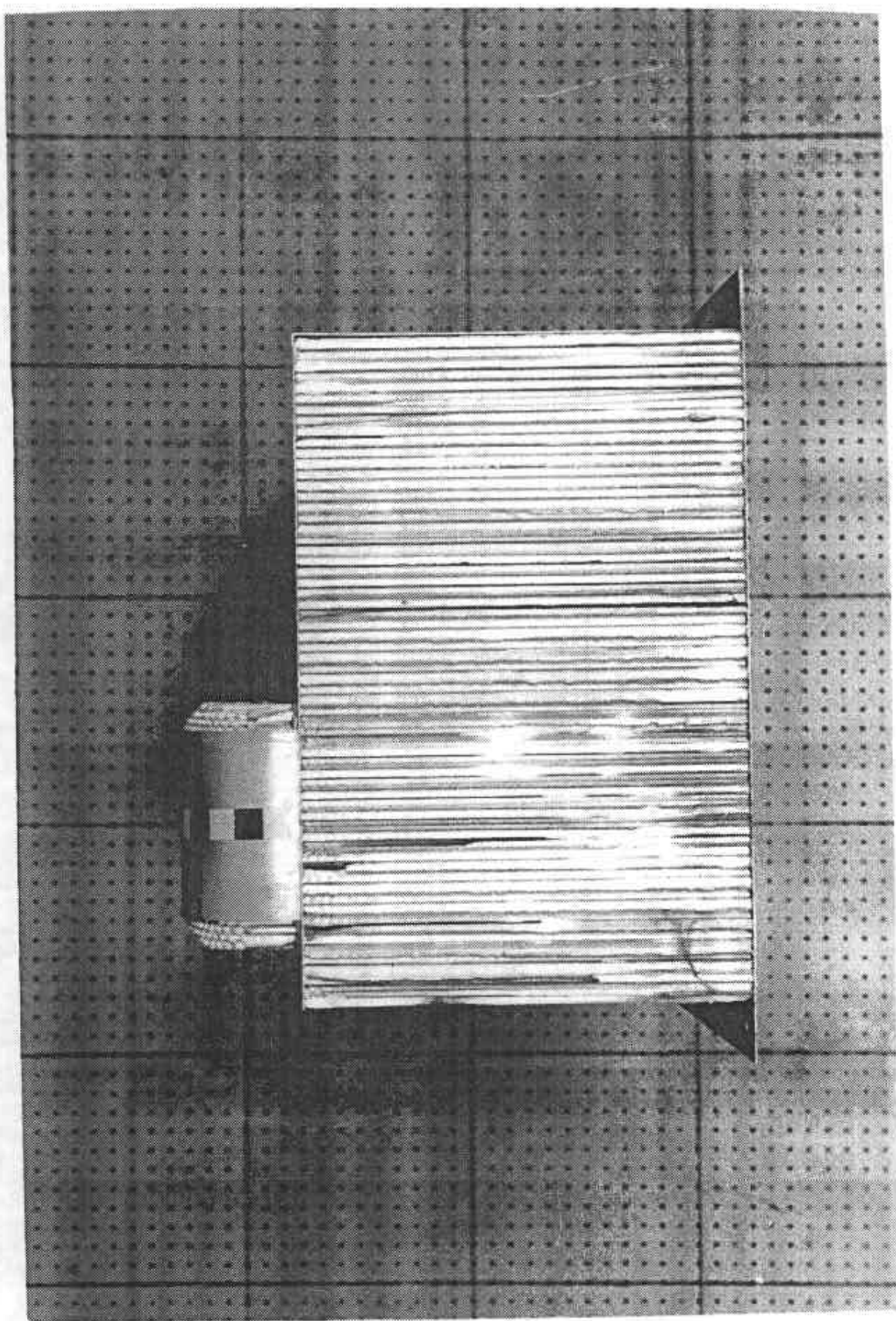


FIGURE 5-9 PRETEST LEFT SIDE VIEW OF MDB IMPACT FACE

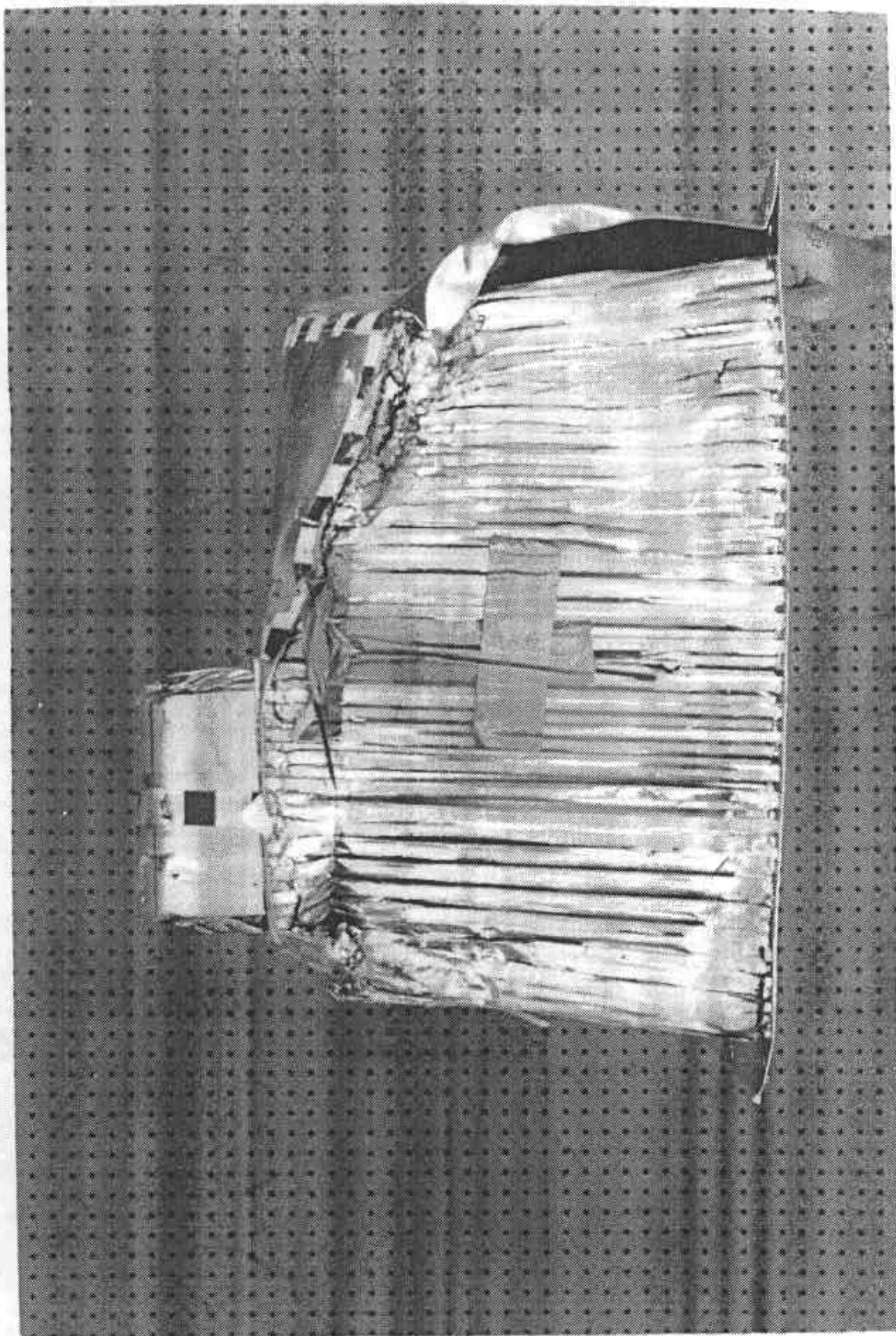


FIGURE 5-10 POSTTEST LEFT SIDE VIEW OF MDB IMPACT FACE

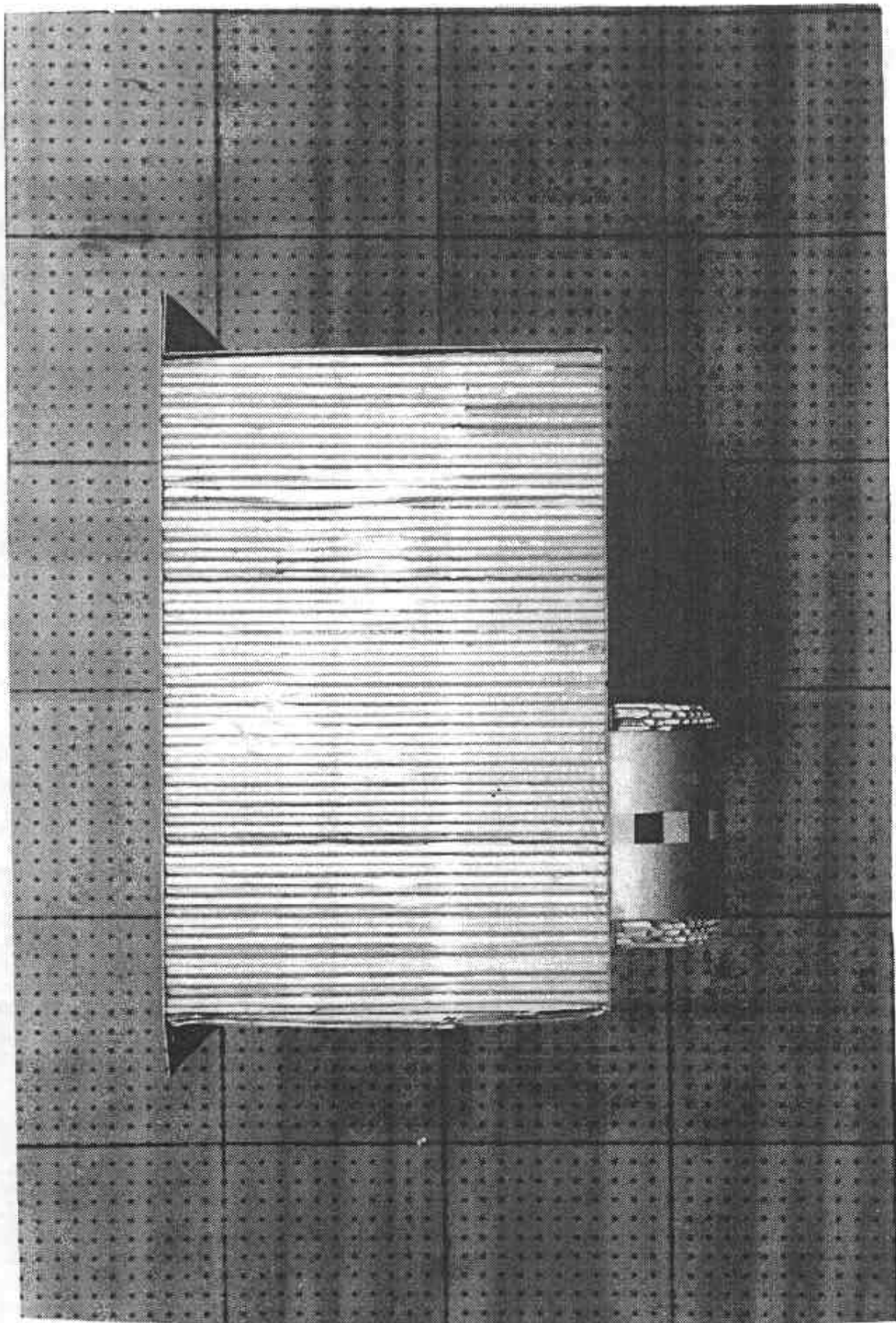


FIGURE 5-11 PRETEST RIGHT SIDE VIEW OF MDB IMPACT FACE

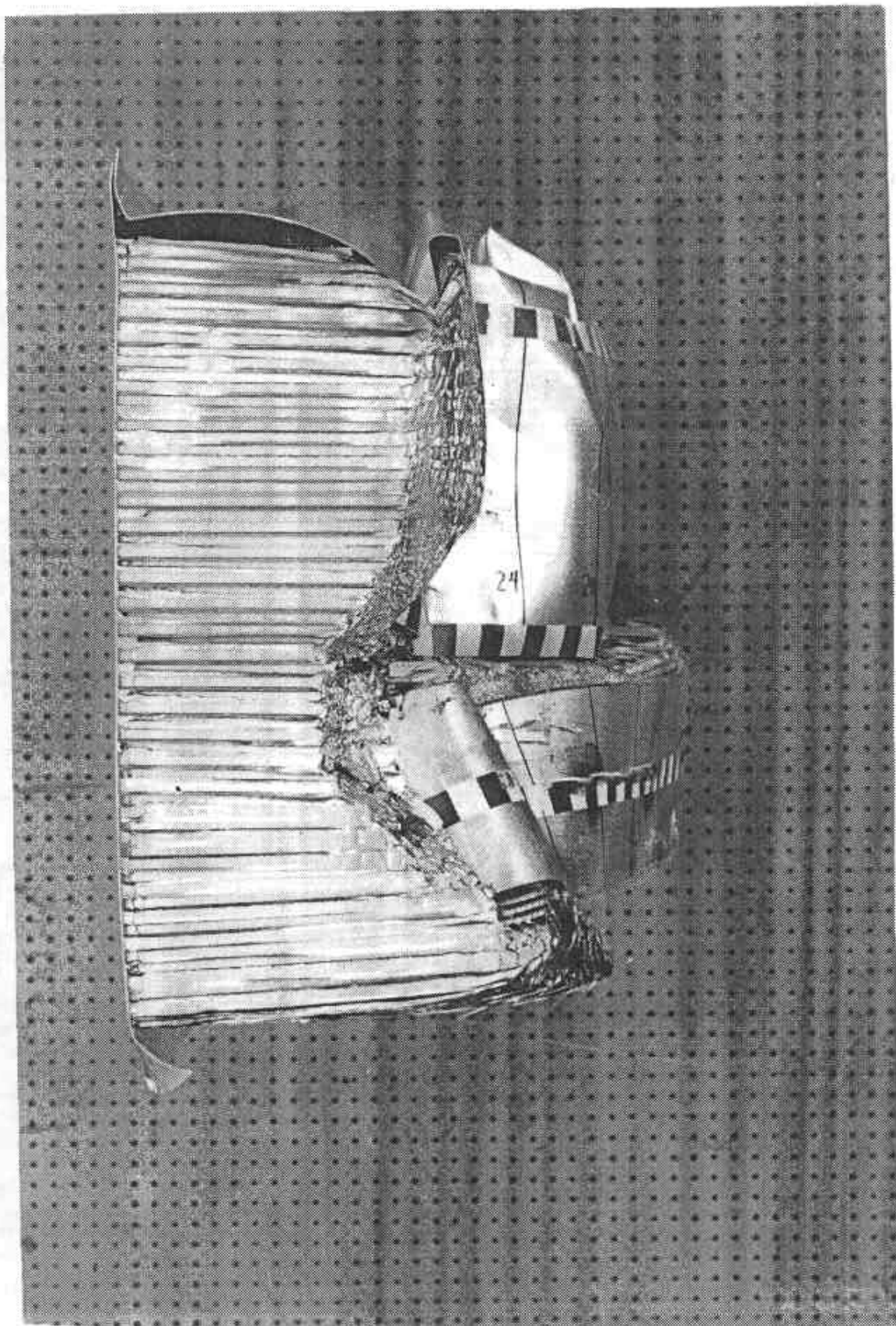


FIGURE 5-12 POSTTEST RIGHT SIDE VIEW OF MDB IMPACT FACE

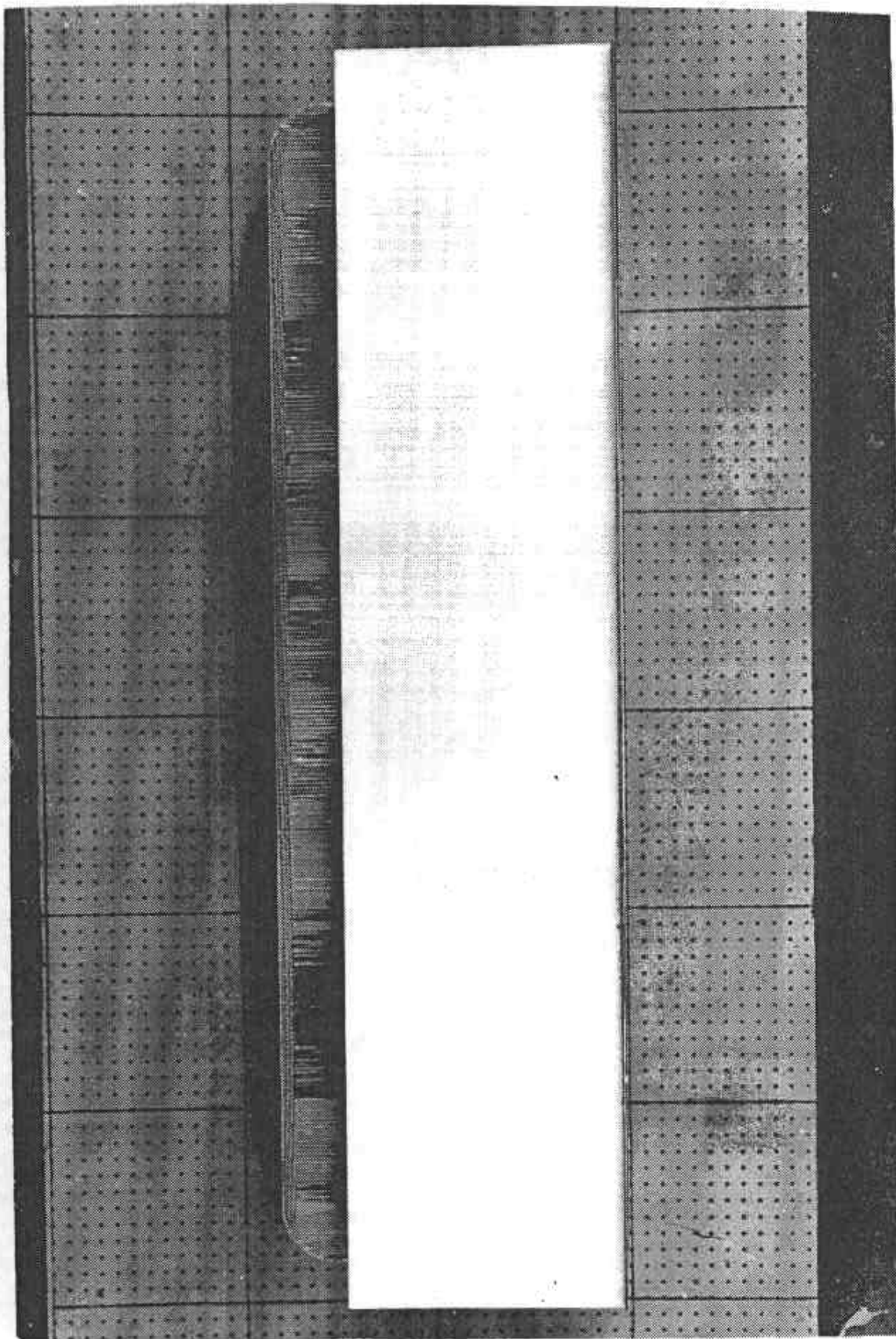


FIGURE 5-13 PRETEST TOP VIEW OF MDB IMPACT FACE

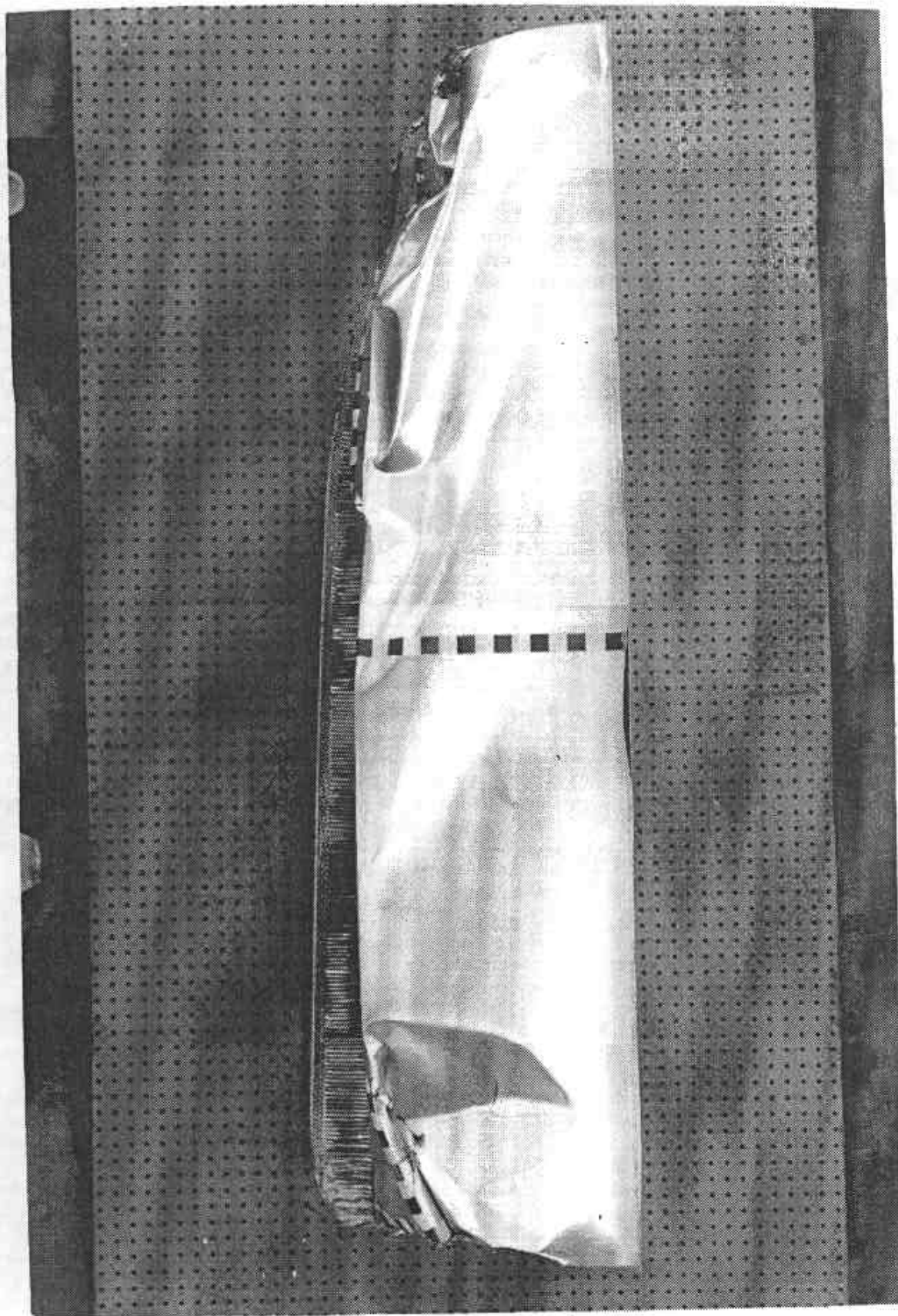


FIGURE 5-14 POSTTEST TOP VIEW OF MDB IMPACT FACE

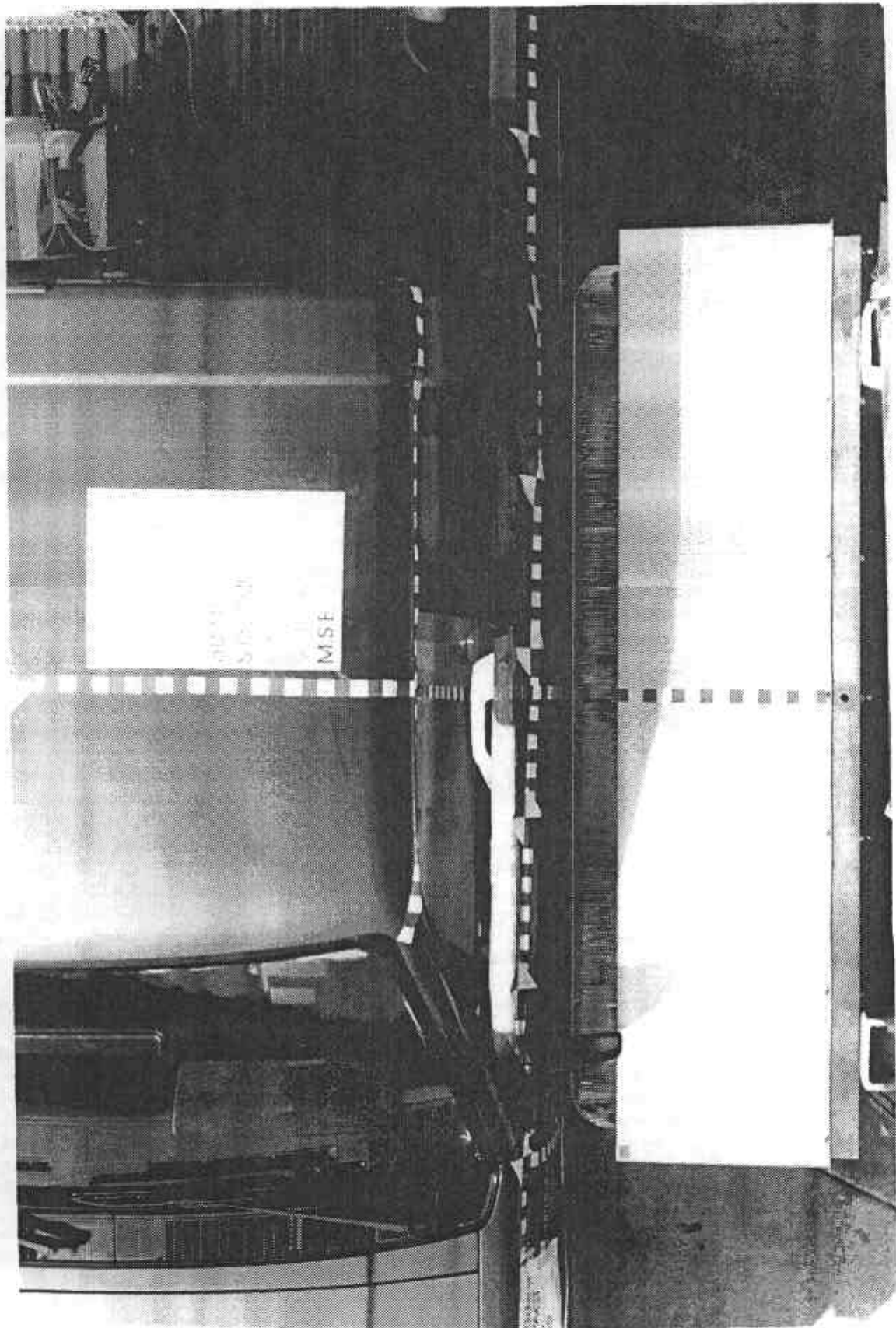


FIGURE 5-15 PRETEST OVERHEAD VIEW OF MDB POSITIONED AGAINST STRUCK SIDE OF TEST VEHICLE AT IMPACT LOCATION

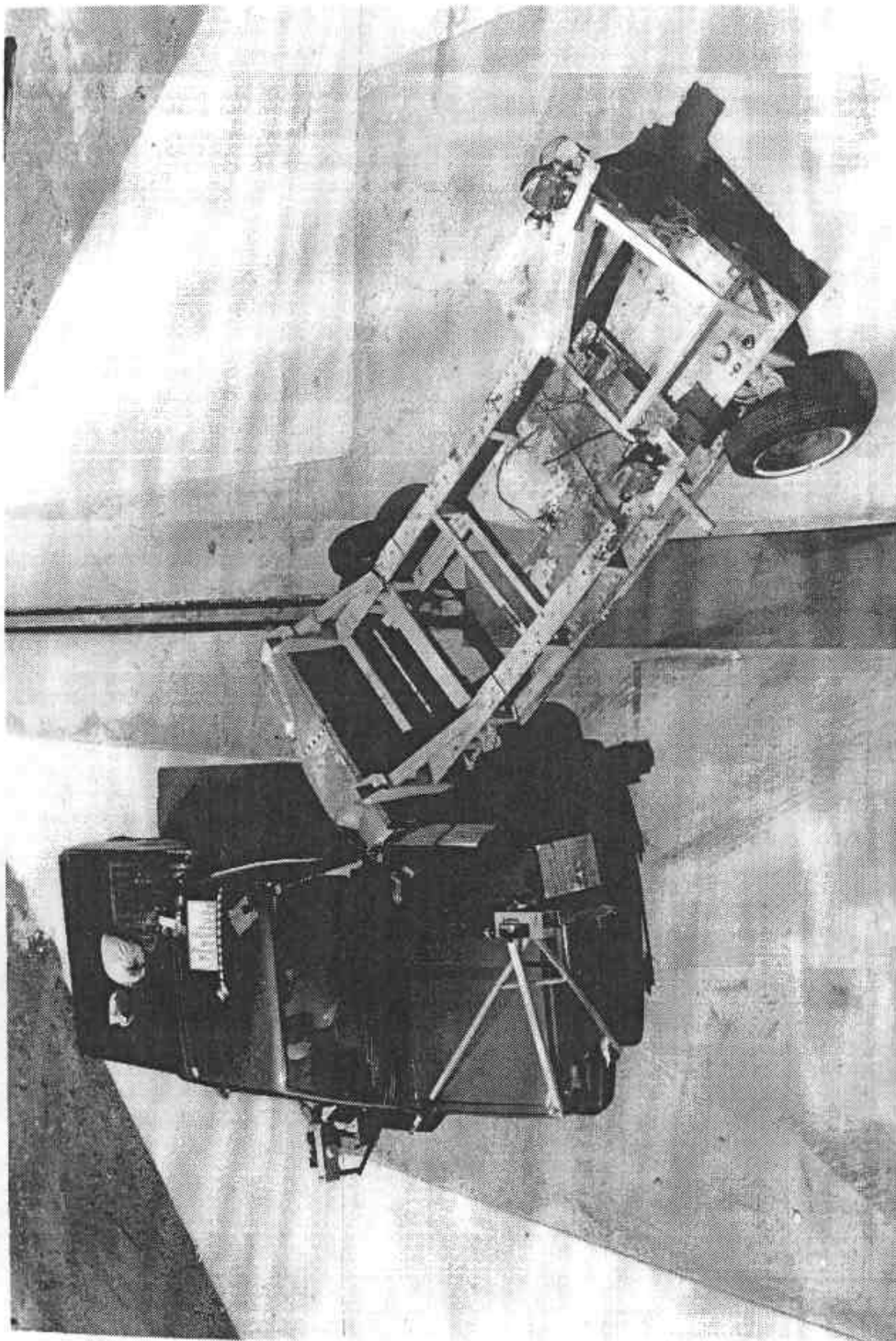


FIGURE 5-16 POSTTEST OVERHEAD VIEW OF MDB POSITIONED AGAINST STRUCK SIDE OF TEST VEHICLE AT IMPACT LOCATION



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

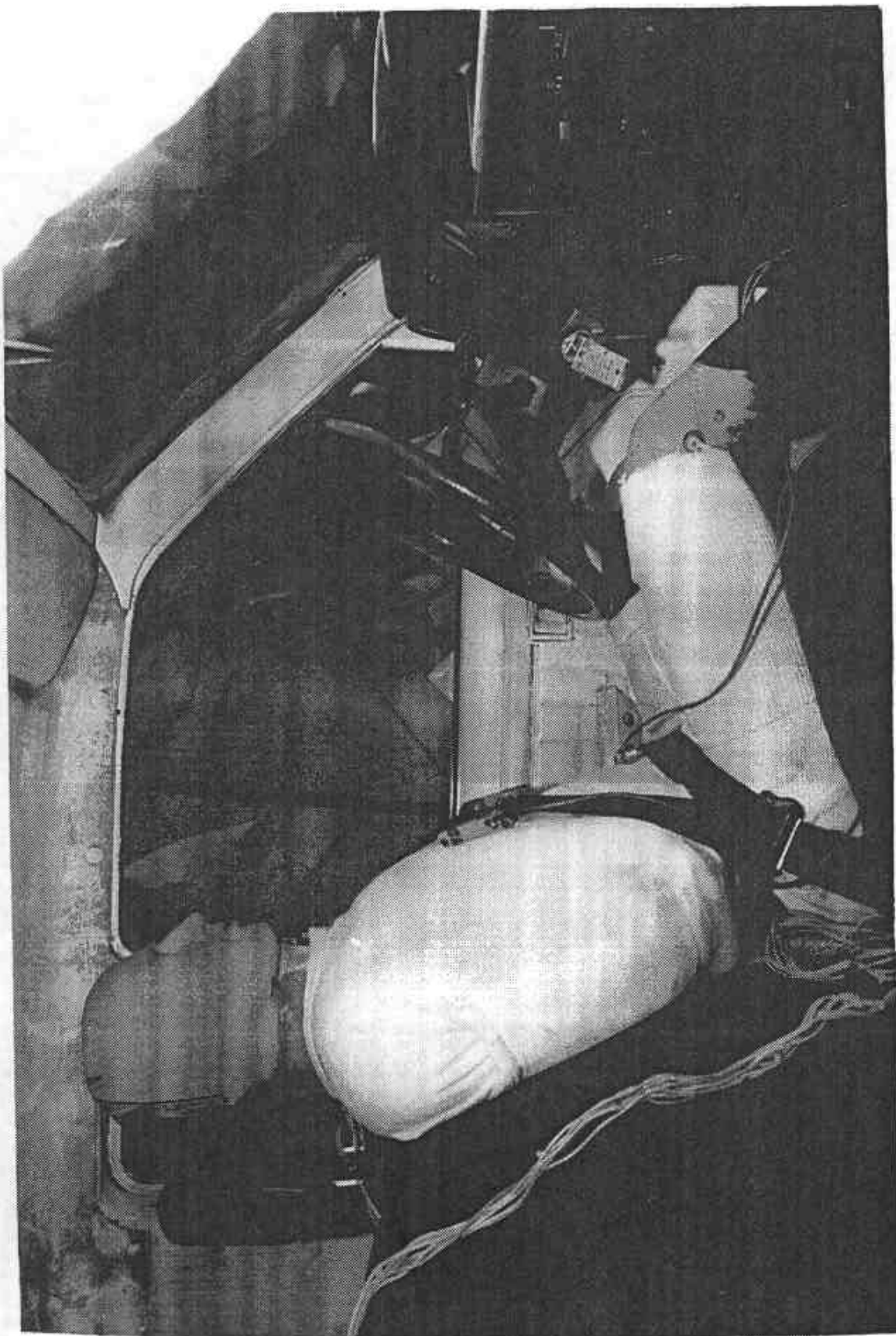


FIGURE 5-18 PRETEST OCCUPANT COMPARTMENT RIGHT SIDE SHOWING DRIVER SID

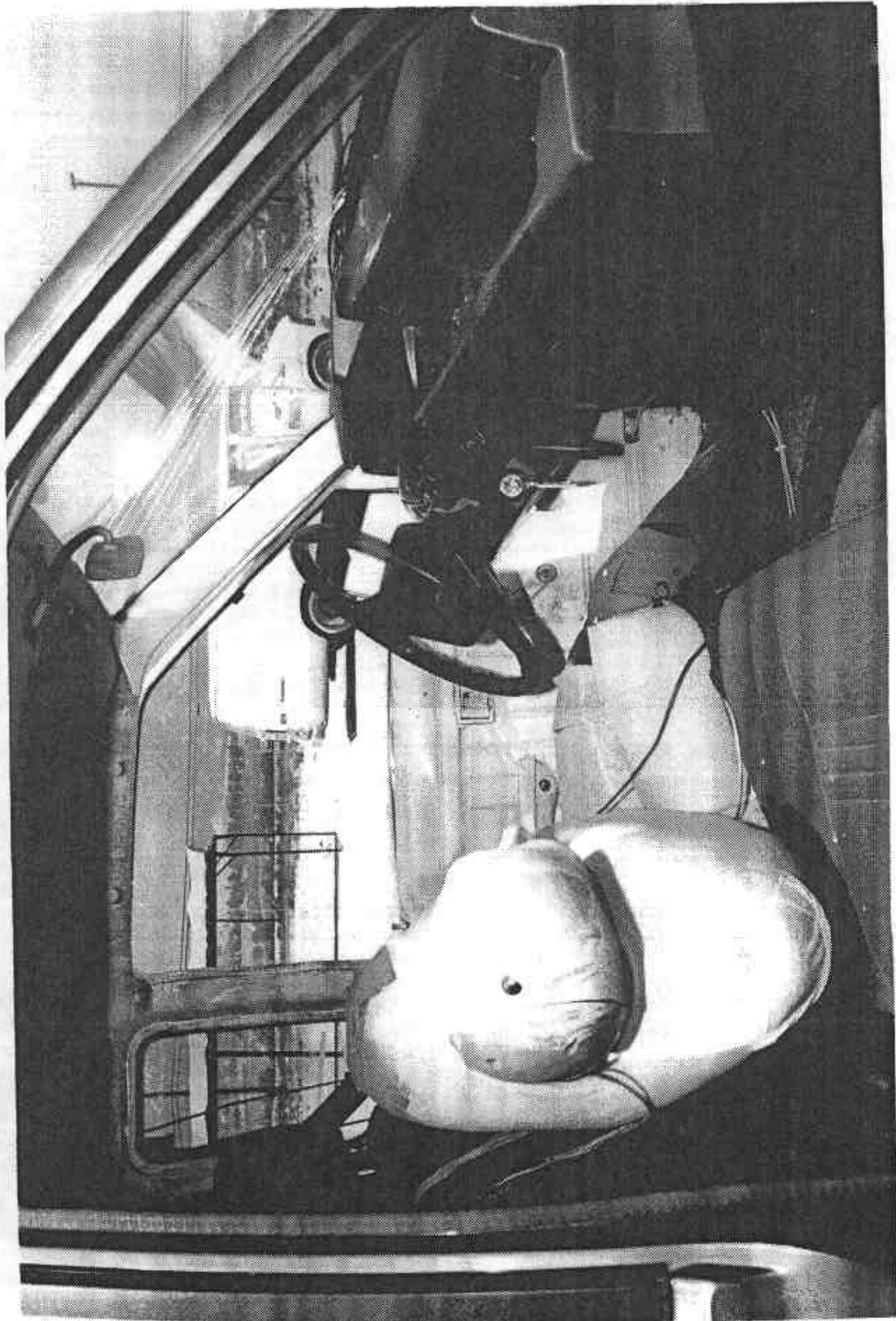


FIGURE 5-19 POSTTEST OCCUPANT COMPARTMENT SHOWING DRIVER SID

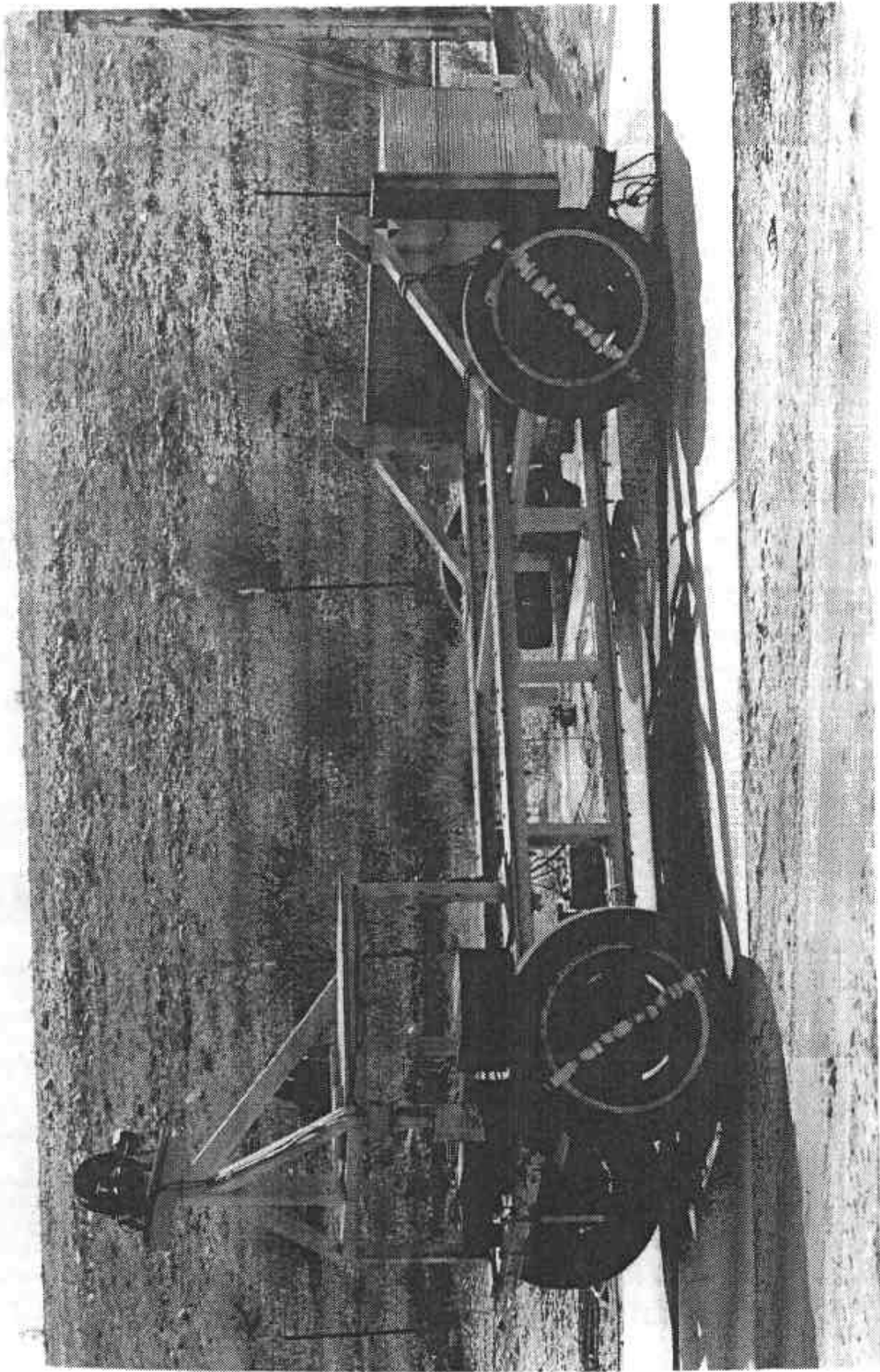


FIGURE 5-20 PRETEST RIGHT SIDE VIEW OF MDB WITH IMPACT FACE IN POSITION

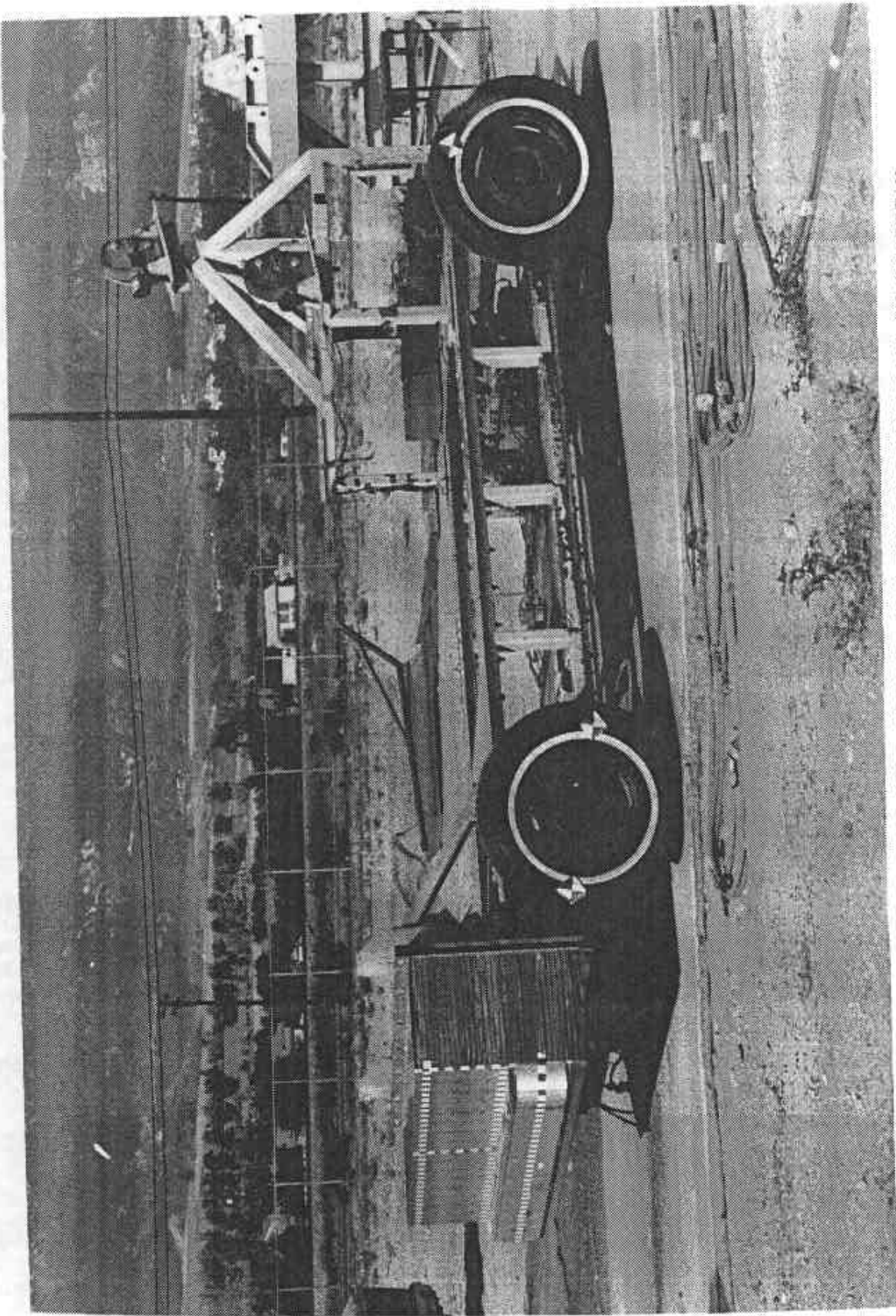


FIGURE 5-21 PRETEST LEFT SIDE VIEW OF MDB WITH IMPACT FACE IN POSITION

MANUFACTURED IN JAPAN BY		GVWR		1925KG	
MITSUBISHI MOTORS CORPORATION		GVWR		4245LBS	
GAWR FRONT		1307KG/2900LBS WITH P195/75R14 TIRES			
GAWR REAR		1152KG/2540LBS WITH P195/75R14 TIRES			
		14" 6JJ RIMS AT 180KPa/26PSI COLD SINGLE			
		14" 6JJ RIMS AT 240KPa/35PSI COLD SINGLE			
THIS VEHICLE CONFORMS TO ALL APPLICABLE FEDERAL MOTOR VEHICLE SAFETY STANDARDS IN EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE					
V.I.N.		MB543009			
		VEHICLE TYPE: TRUCK			

FIGURE 5-22 TEST VEHICLE TIRE PLACARD AND MANUFACTURER'S CERTIFICATION LABEL

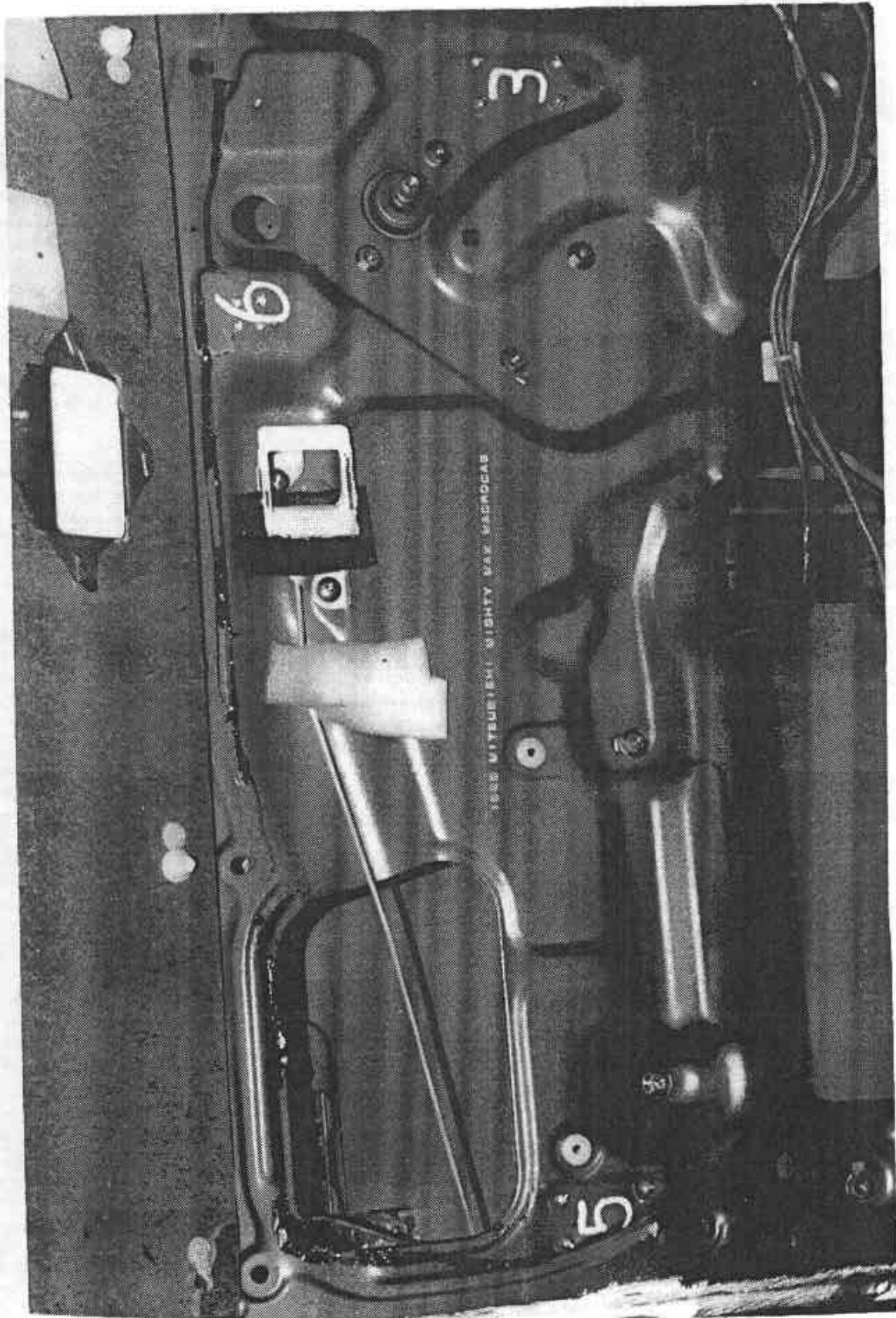


FIGURE 5-23 DRIVER DOOR ACCELEROMETER LOCATIONS



FIGURE 5-24 DRIVER DOOR ACCELEROMETERS INSTALLED, DOOR PANEL IN PLACE-PRETEST

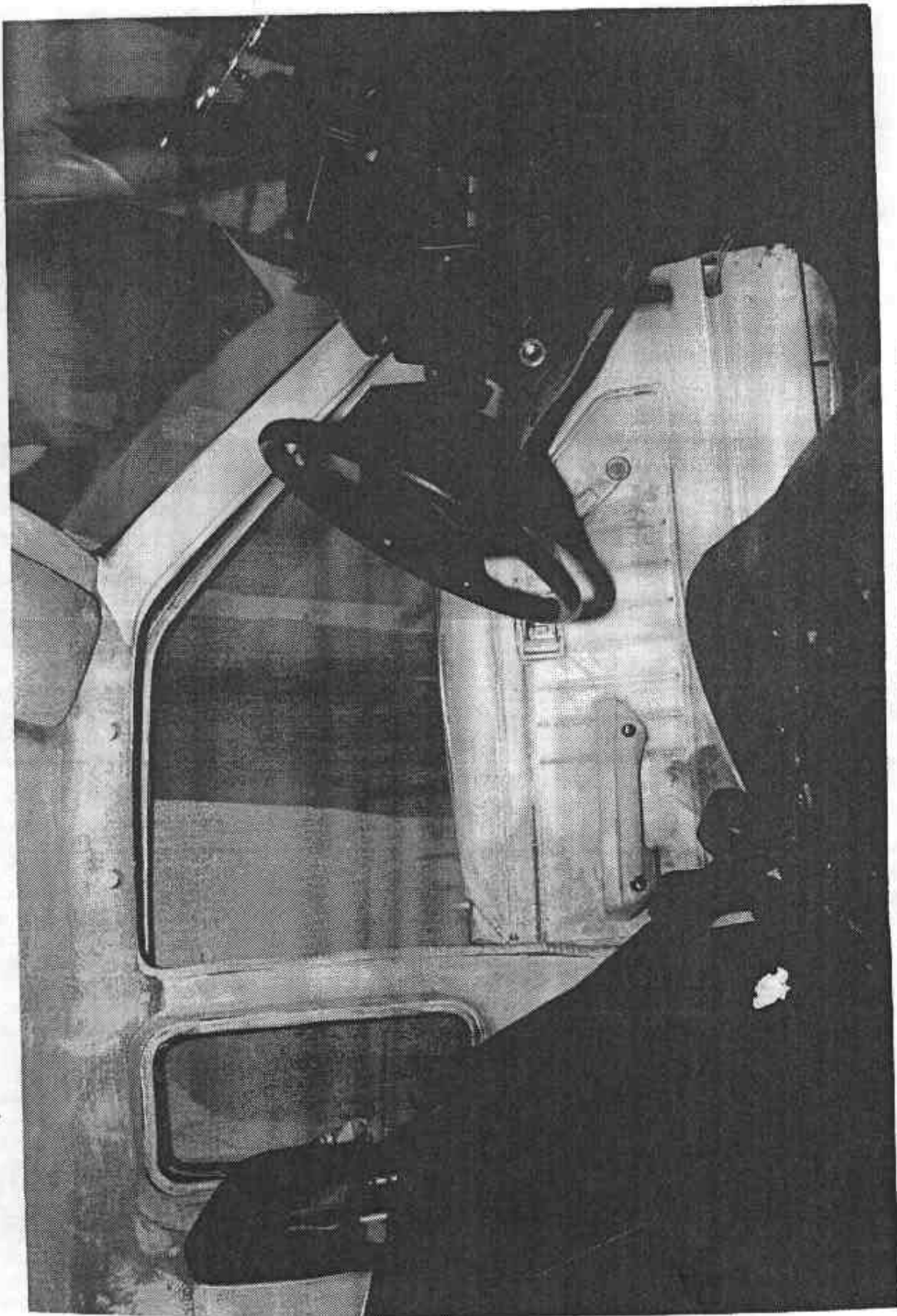


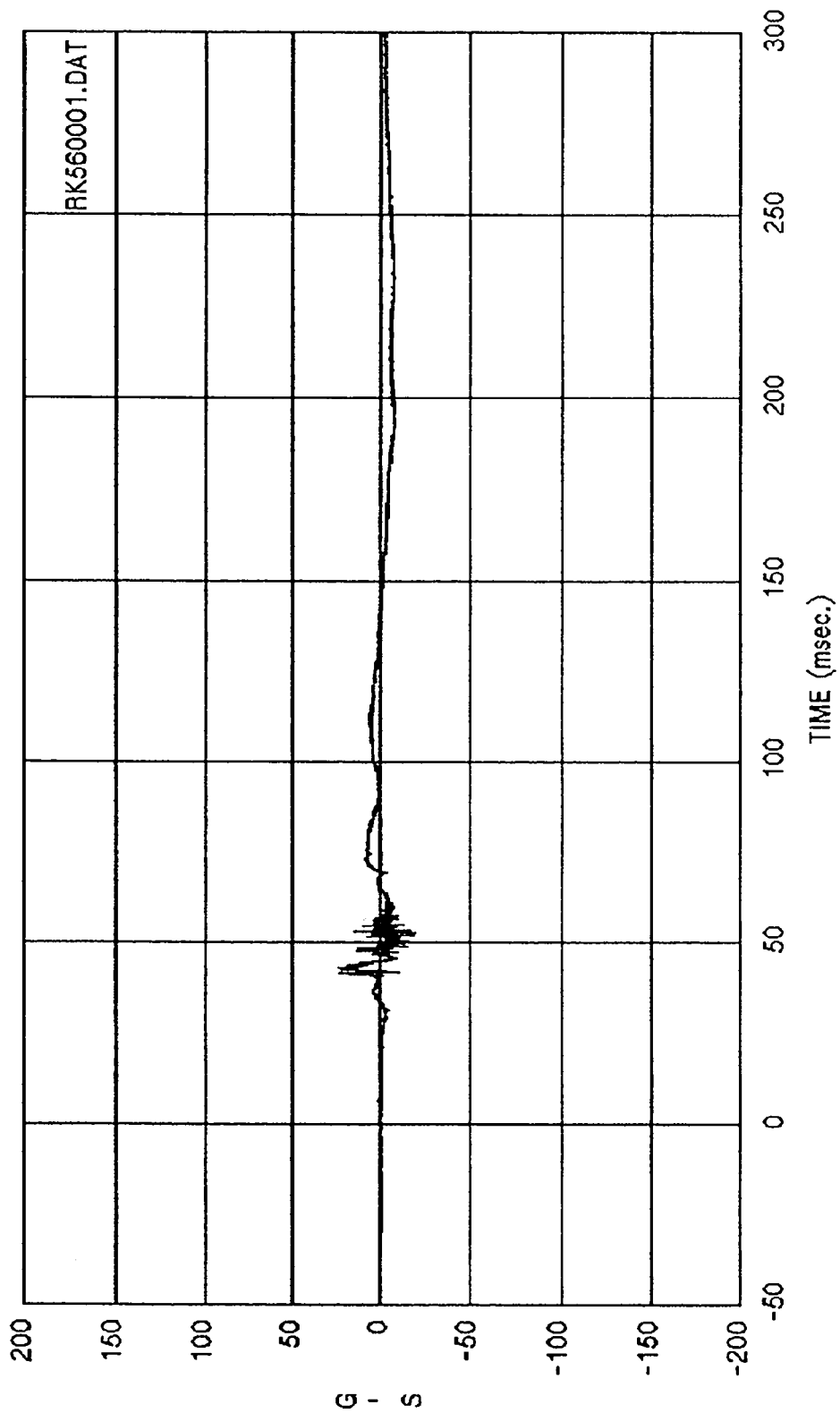
FIGURE 5-25 POSTTEST DRIVER DOOR INTERIOR VIEW

SECTION 6

VEHICLE AND SID RESPONSE DATA

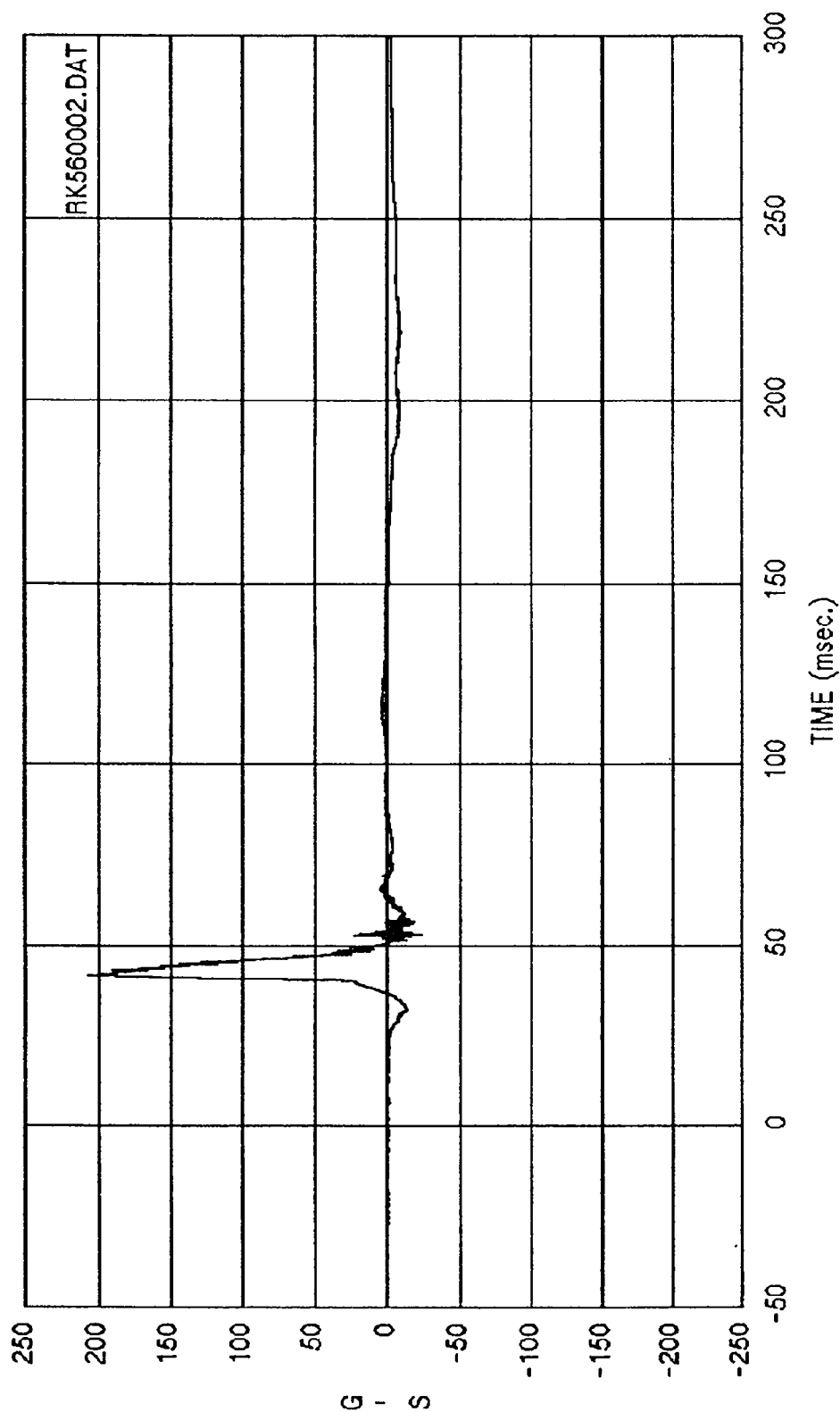
The dataplots from the side impact test are presented in this section.

SID DATA



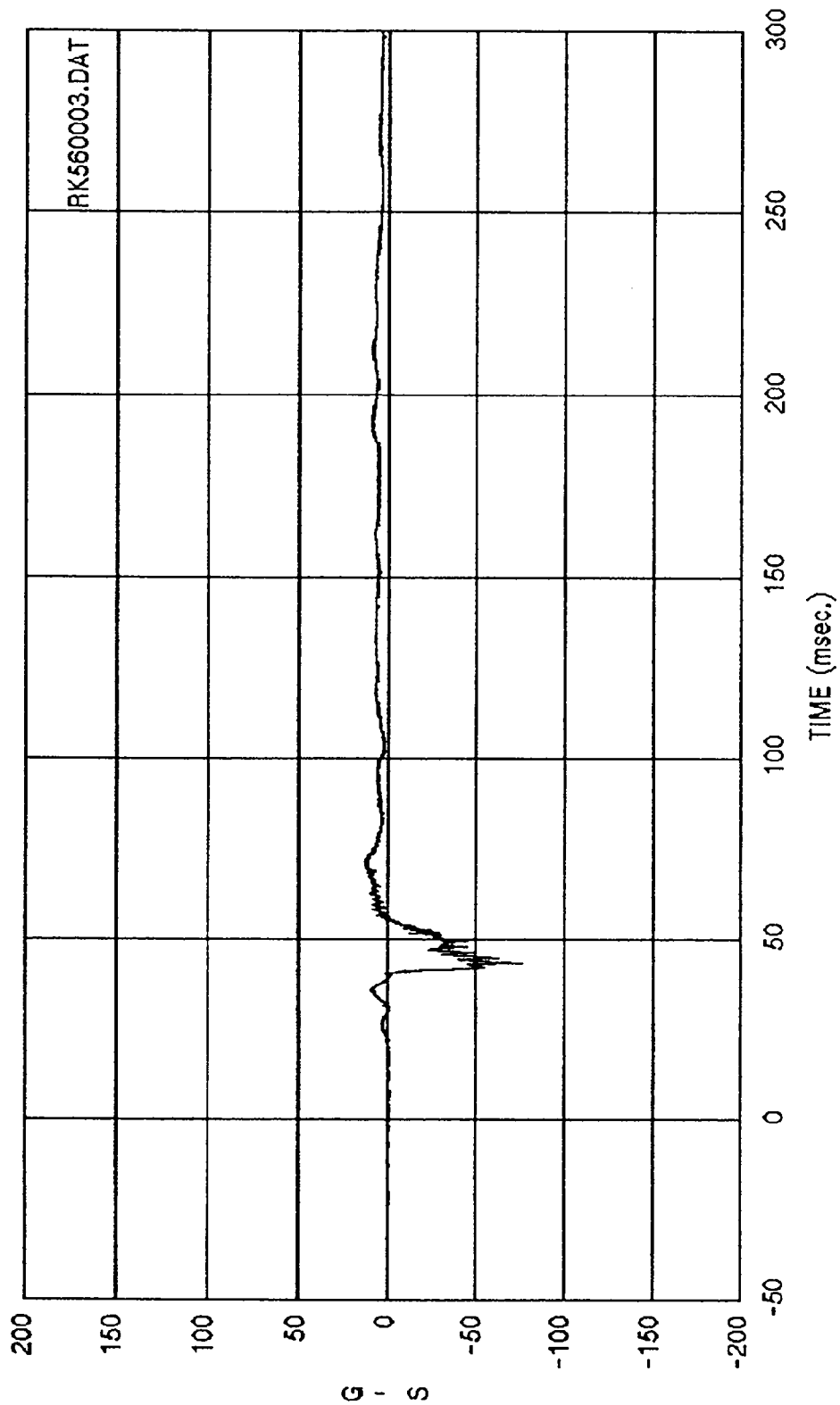
Curve: Driver Head acceleration -- X axis Filter: SAE CLASS 1000 Max = 27.698 Min = -20.402

MSE Date: 09/11/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mitsubishi Mighty Max



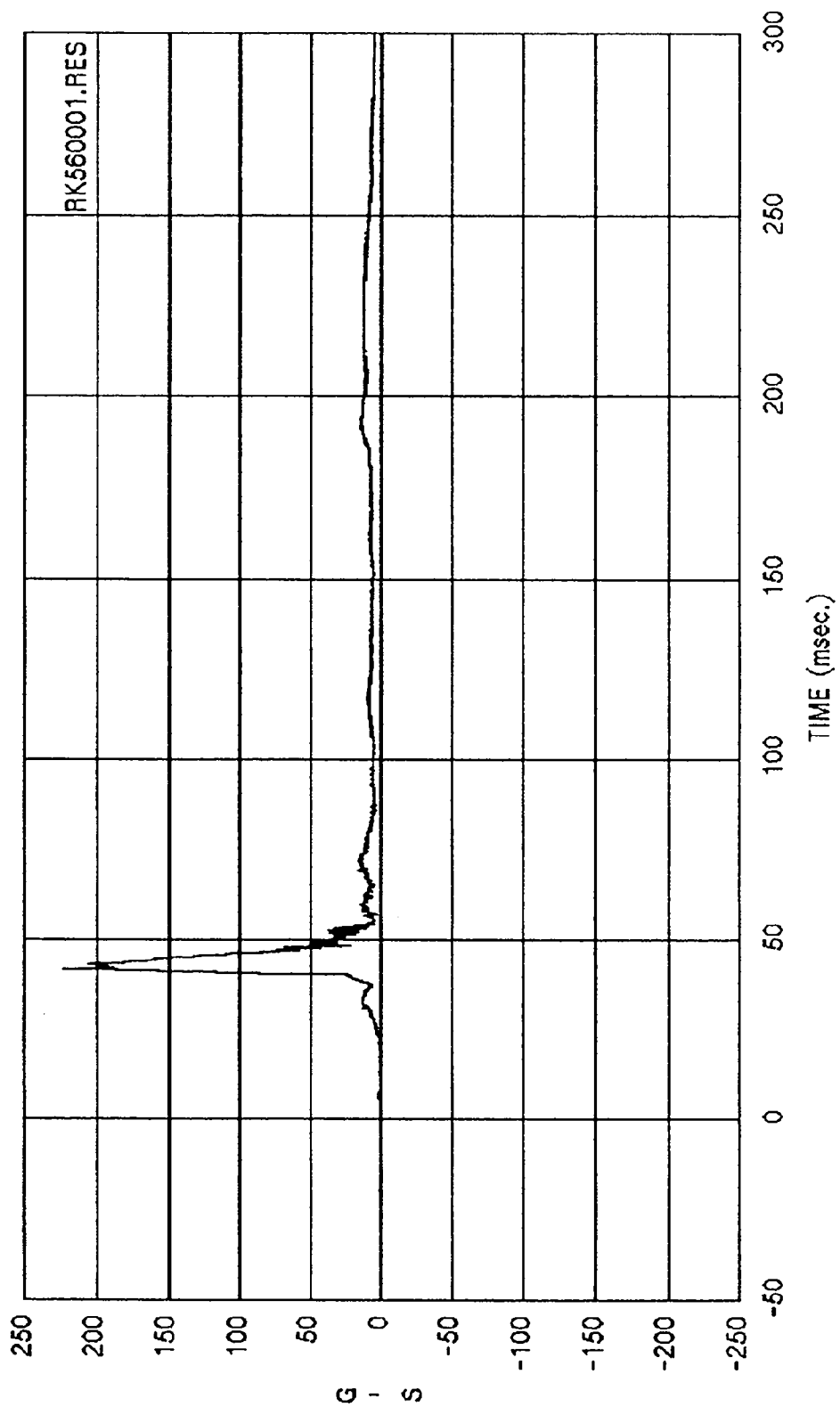
Curve: Driver Head acceleration -- Y axis Filter: SAE CLASS 1000 Max = 210.69 Min = -23.067

MSE Date: 09/11/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mitsubishi Mighty Max



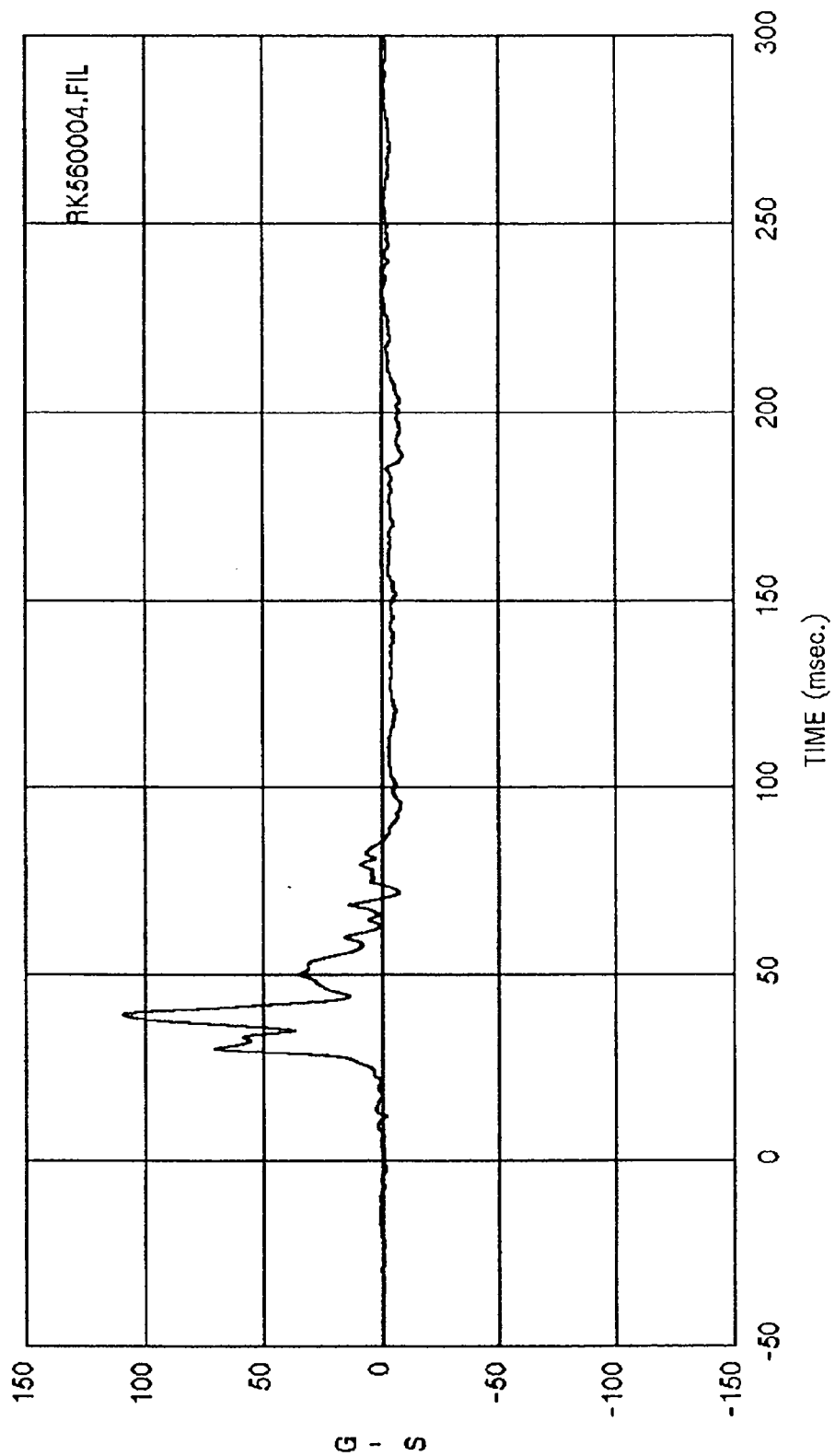
Curve: Driver Head acceleration -- Z axis Filter: SAE CLASS 1000 Max = 15.403 Min = -80.323

MSE Date: 09/11/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mitsubishi Mighty Max



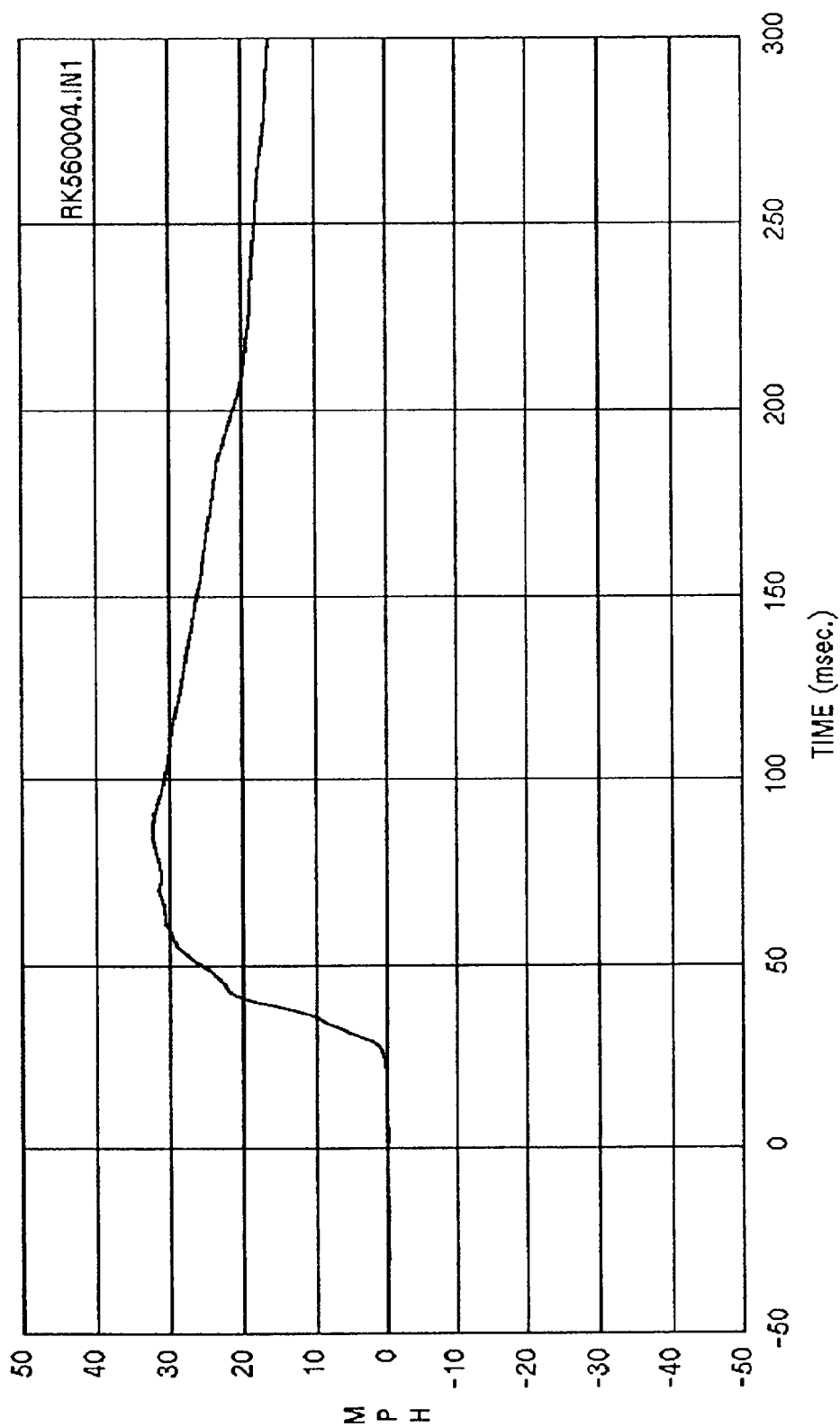
Curve: Driver Head resultant acceleration Filter: SAE CLASS 1000 Max = 222.70 Min = .00000

MSE Date: 09/11/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mitsubishi Mighty Max



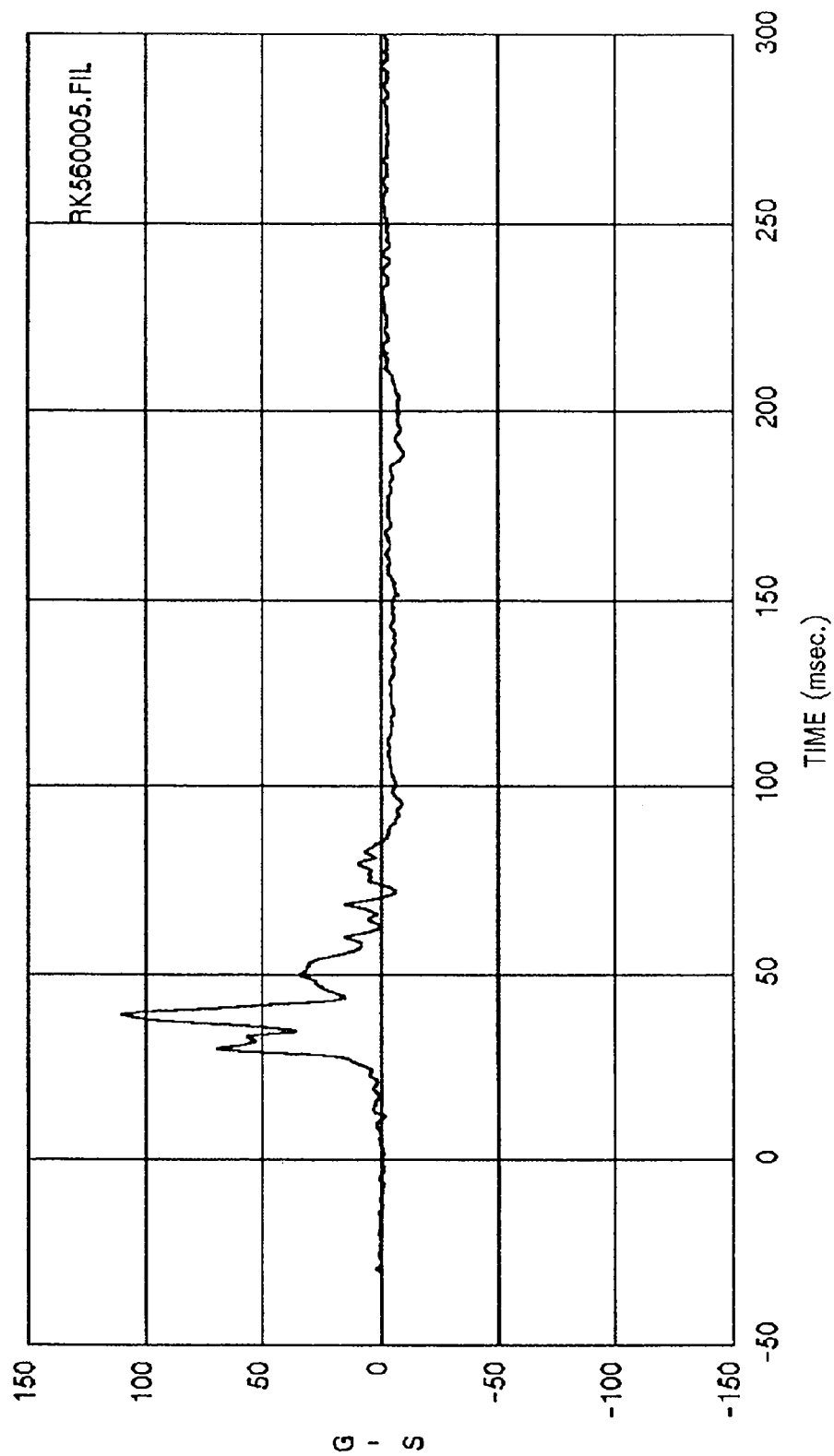
Curve: Driver upper spine acceleration -- Primary Filter: FIR 100 Max = 109.61 Min = -8.7029

MSE Date: 09/11/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mitsubishi Mighty Max



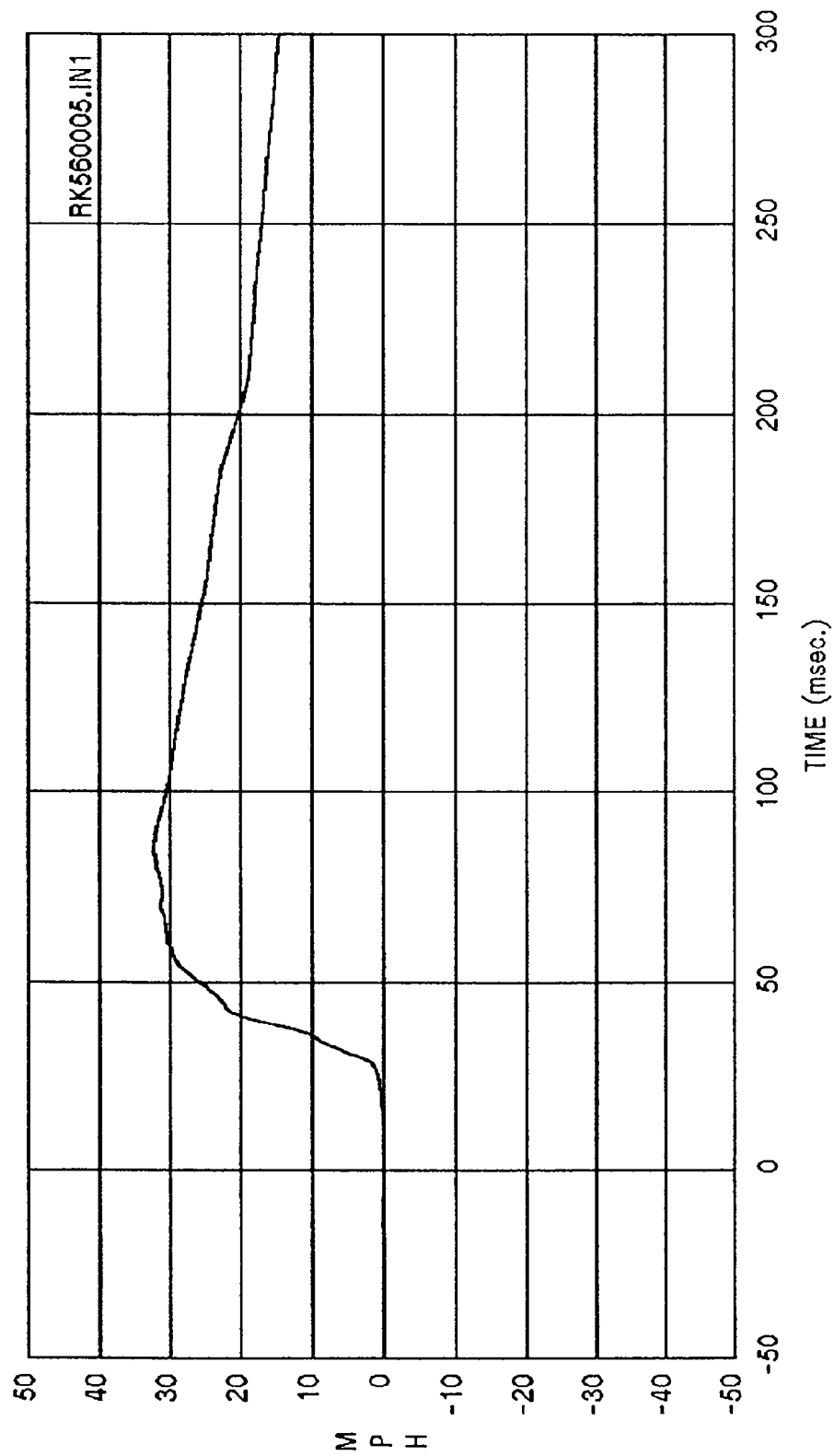
Curve: Driver upper spine delta V -- Primary Filter: SAE CLASS 180 Max = 32.316 Min = -.43029E-

MSE Date: 09/11/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mitsubishi Mighty Max



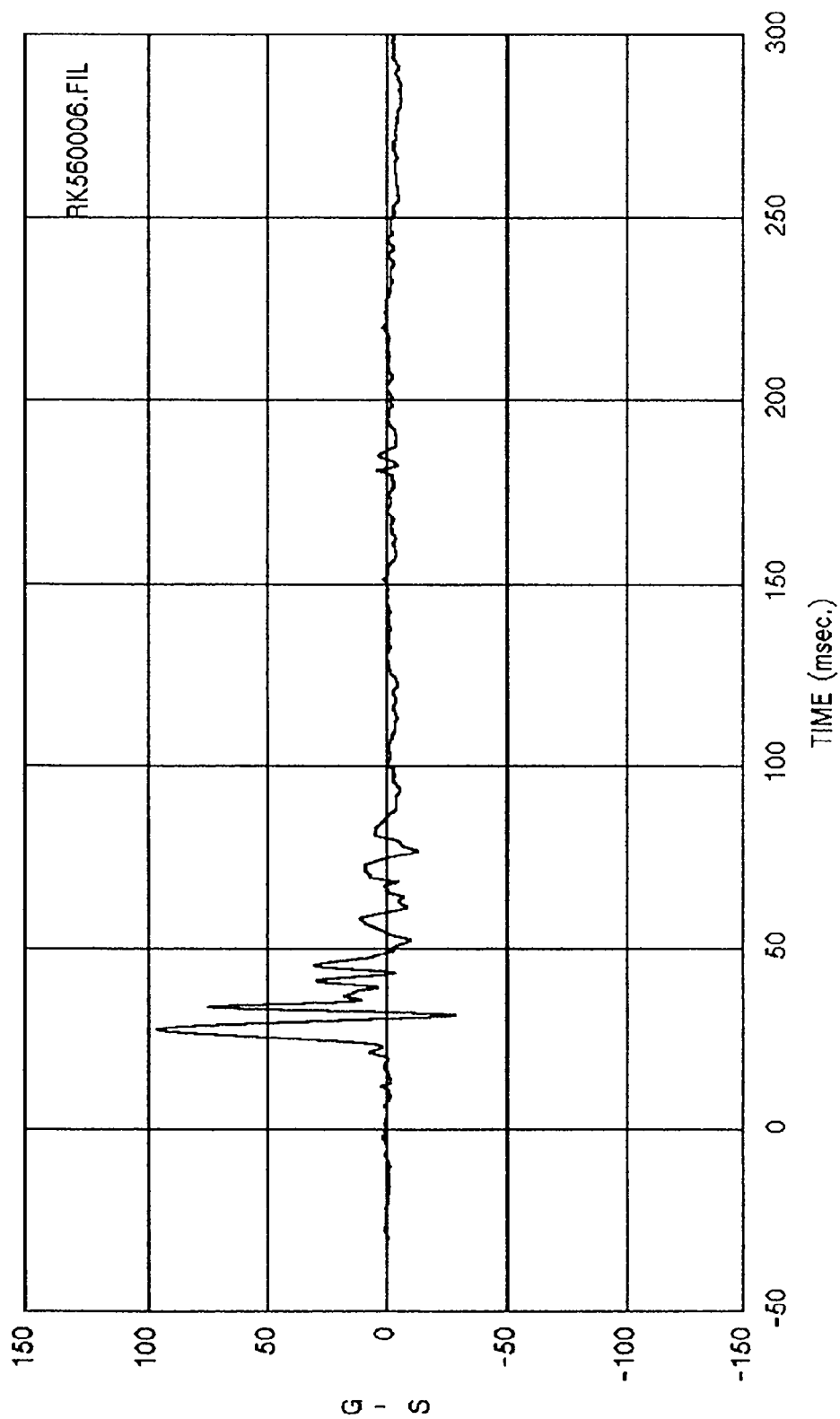
Curve: Driver upper spine acceleration -- Redundant Filter: FIR 100 Max = 109.66 Min = -9.6254

MSE Date: 09/11/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mitsubishi Mighty Max



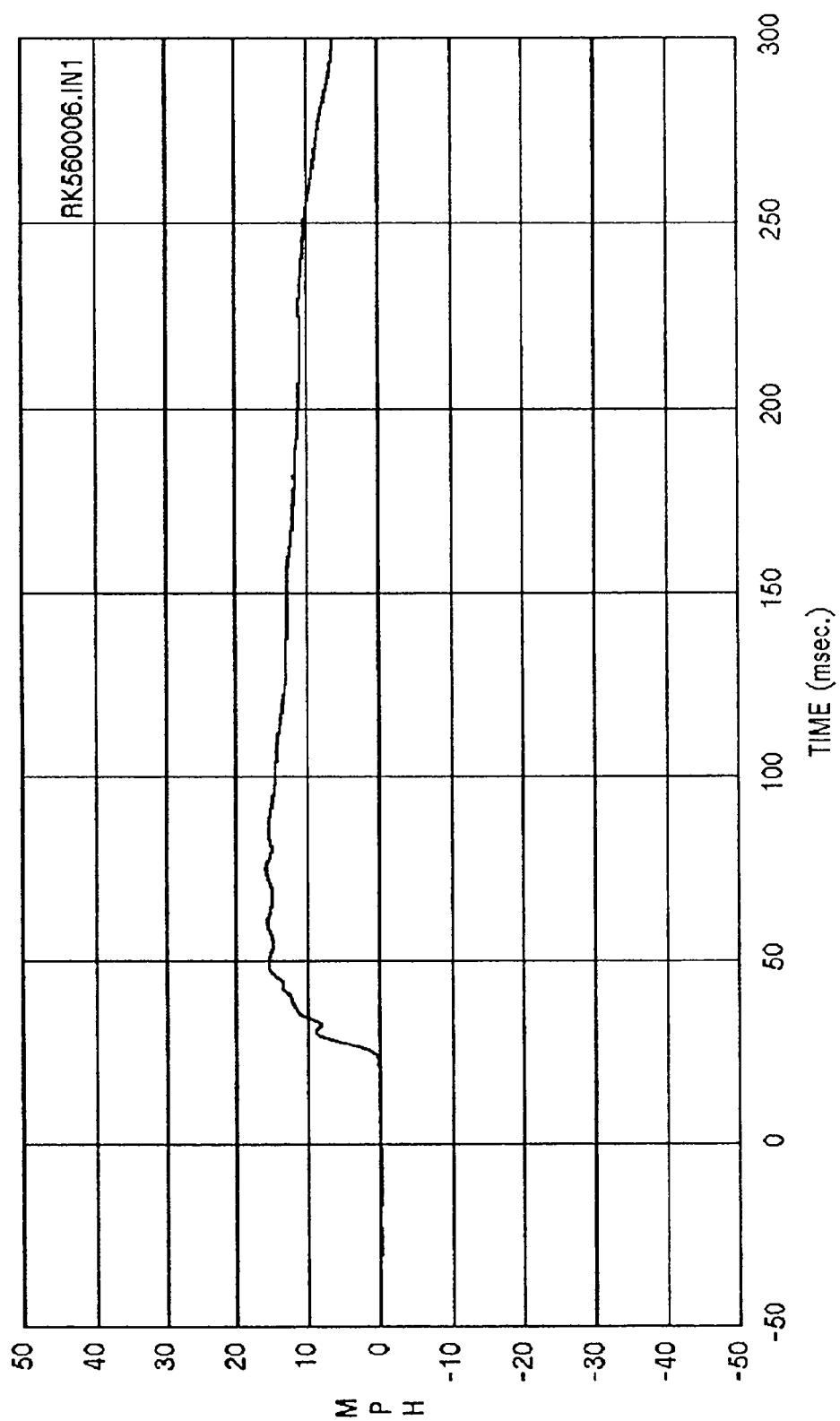
Curve: Driver upper spine delta V -- Redundant Filter: SAE CLASS 180 Max = 32.321 Min = -.495441
01

MSE Date: 09/11/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mitsubishi Mighty Max



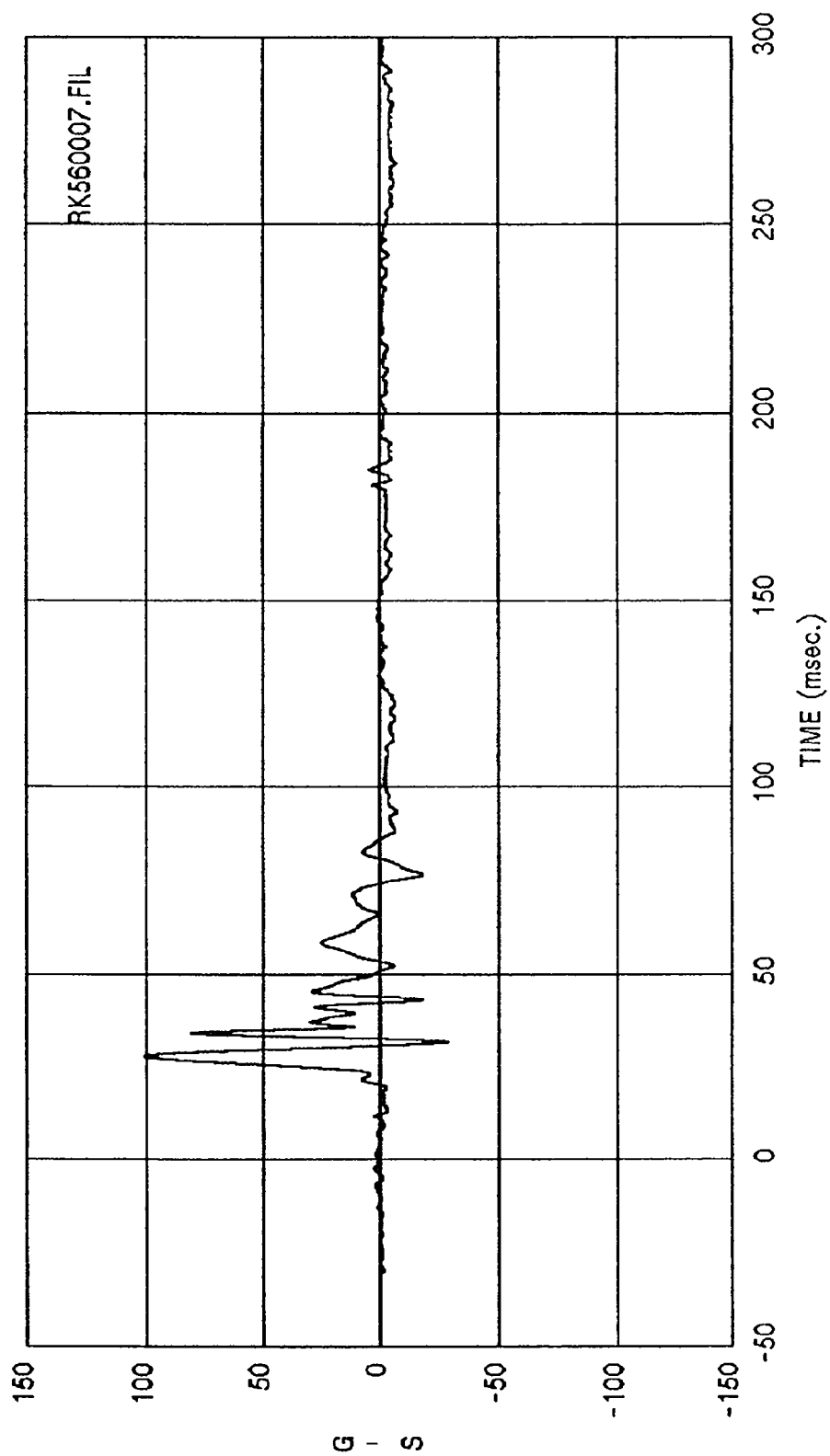
Curve: Driver upper rib acceleration -- Primary Filter: FIR 100 Max = 96.459 Min = -28.601

MSE Date: 09/11/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mitsubishi Mighty Max



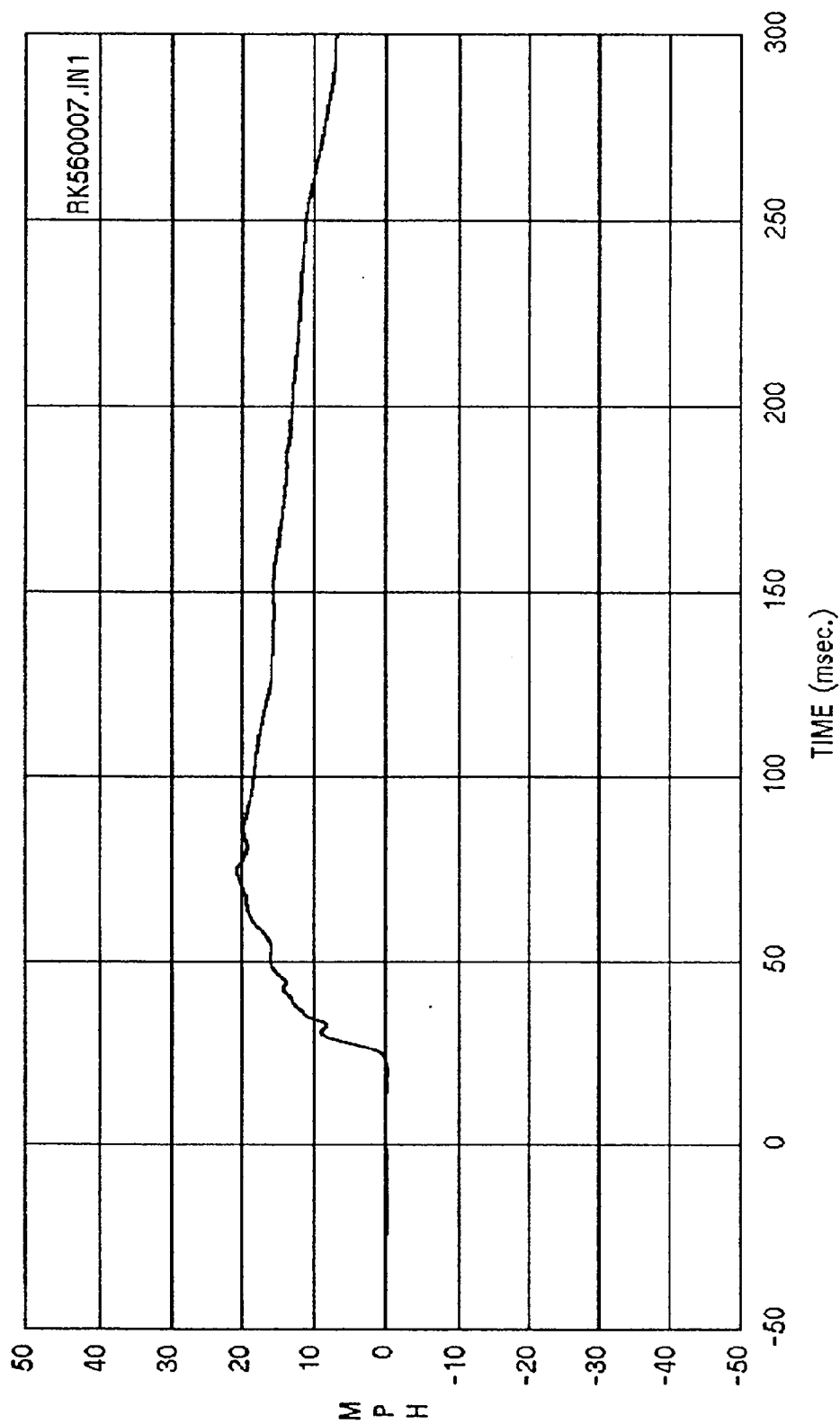
Curve: Driver upper rib delta V -- Primary Filter: SAE CLASS 180 Max = 15.891 Min = -.85480E-1

MSE Date: 09/11/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mitsubishi Mighty Max



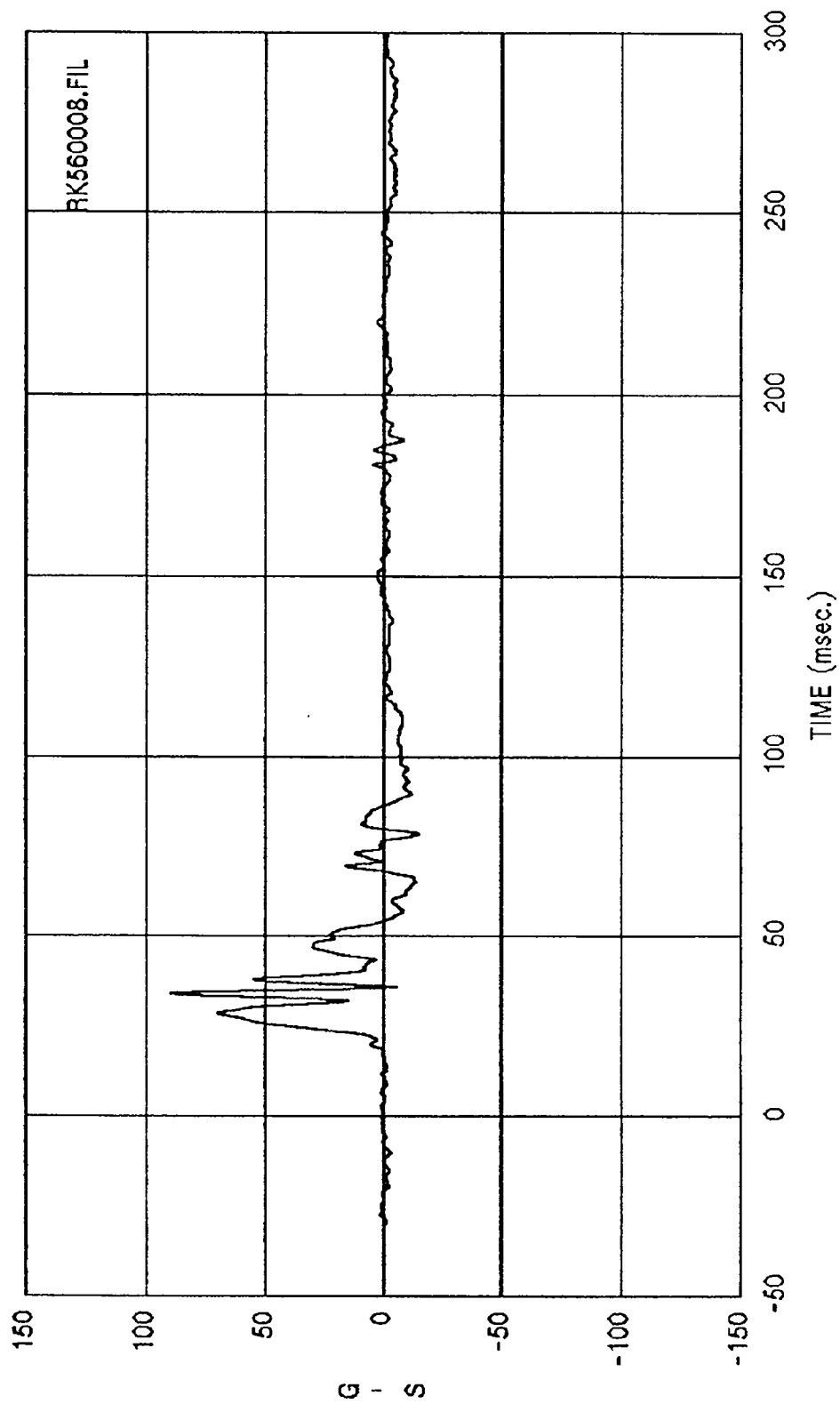
Curve: Driver upper rib acceleration -- Redundant Filter: FIR 100 Max = 100.61 Min = -28.817

MSE Date: 09/11/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mitsubishi Mighty Max



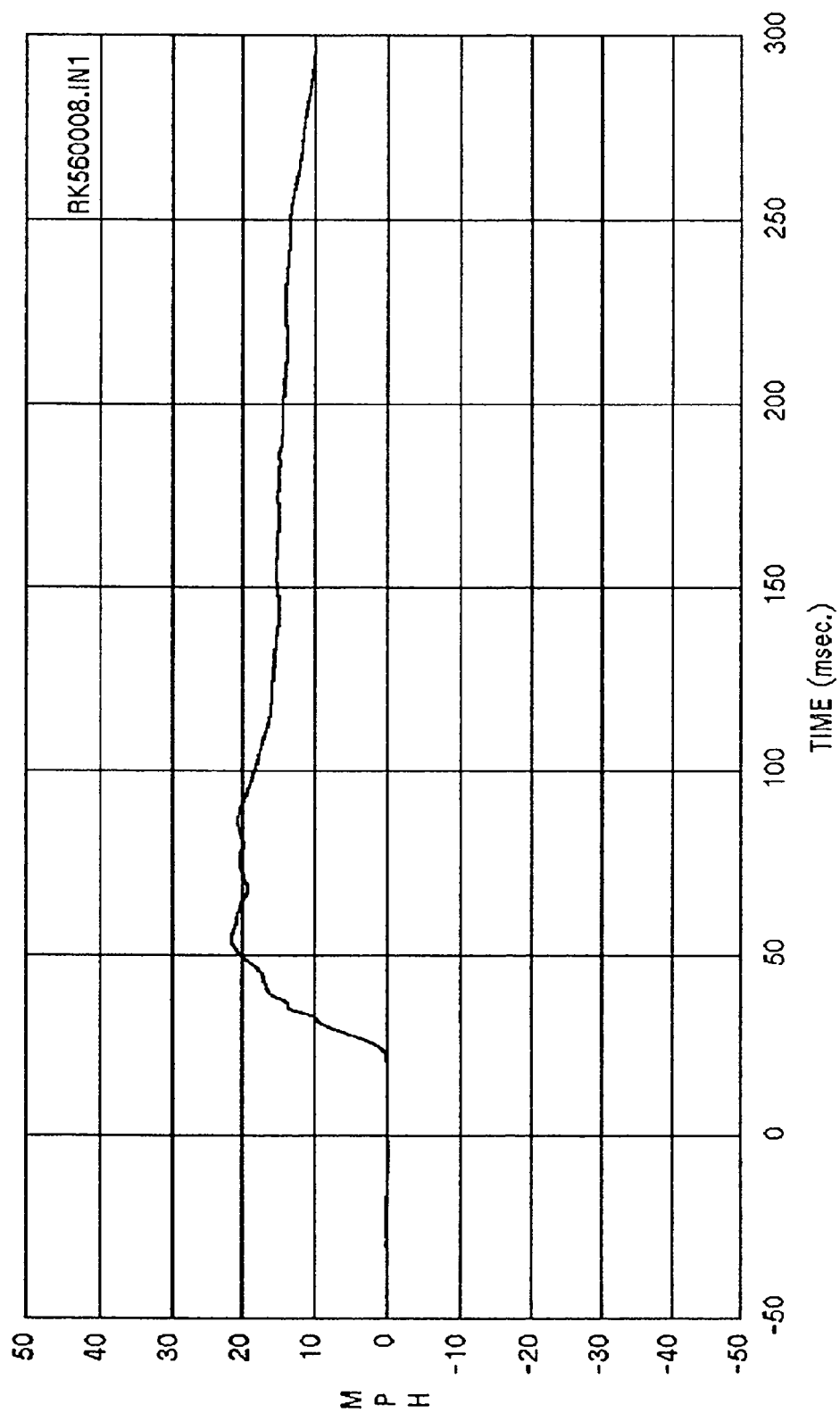
Curve: Driver upper rib delta V -- Redundant Filter: SAE CLASS 180 Max = 20.823 Min = -.26342

MSE Date: 09/11/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mitsubishi Mighty Max



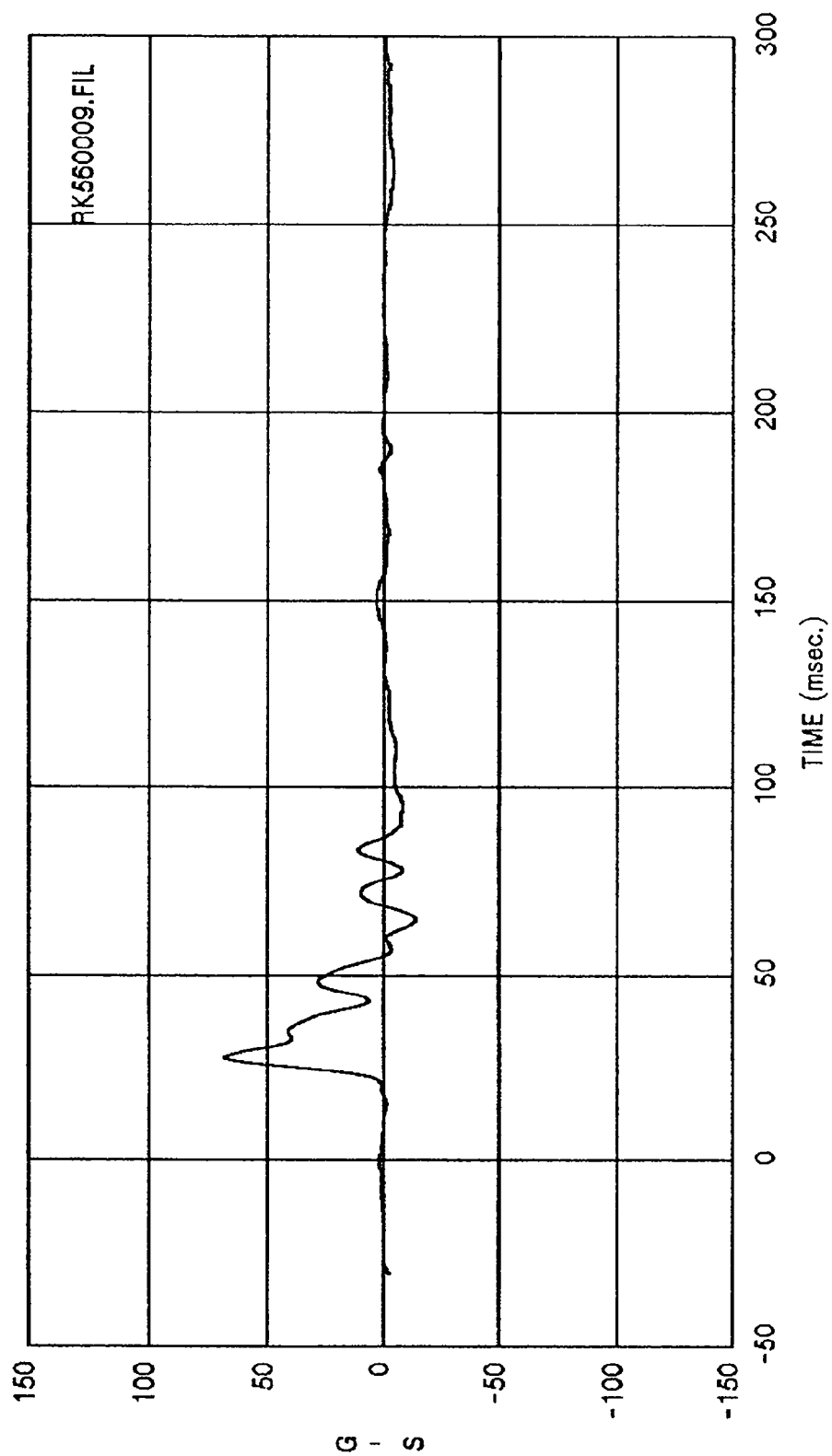
Curve: Driver lower rib acceleration -- Primary Filter: FIR 100 Max = 90.088 Min = -14.189

MSE Date: 09/11/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mitsubishi Mighty Max



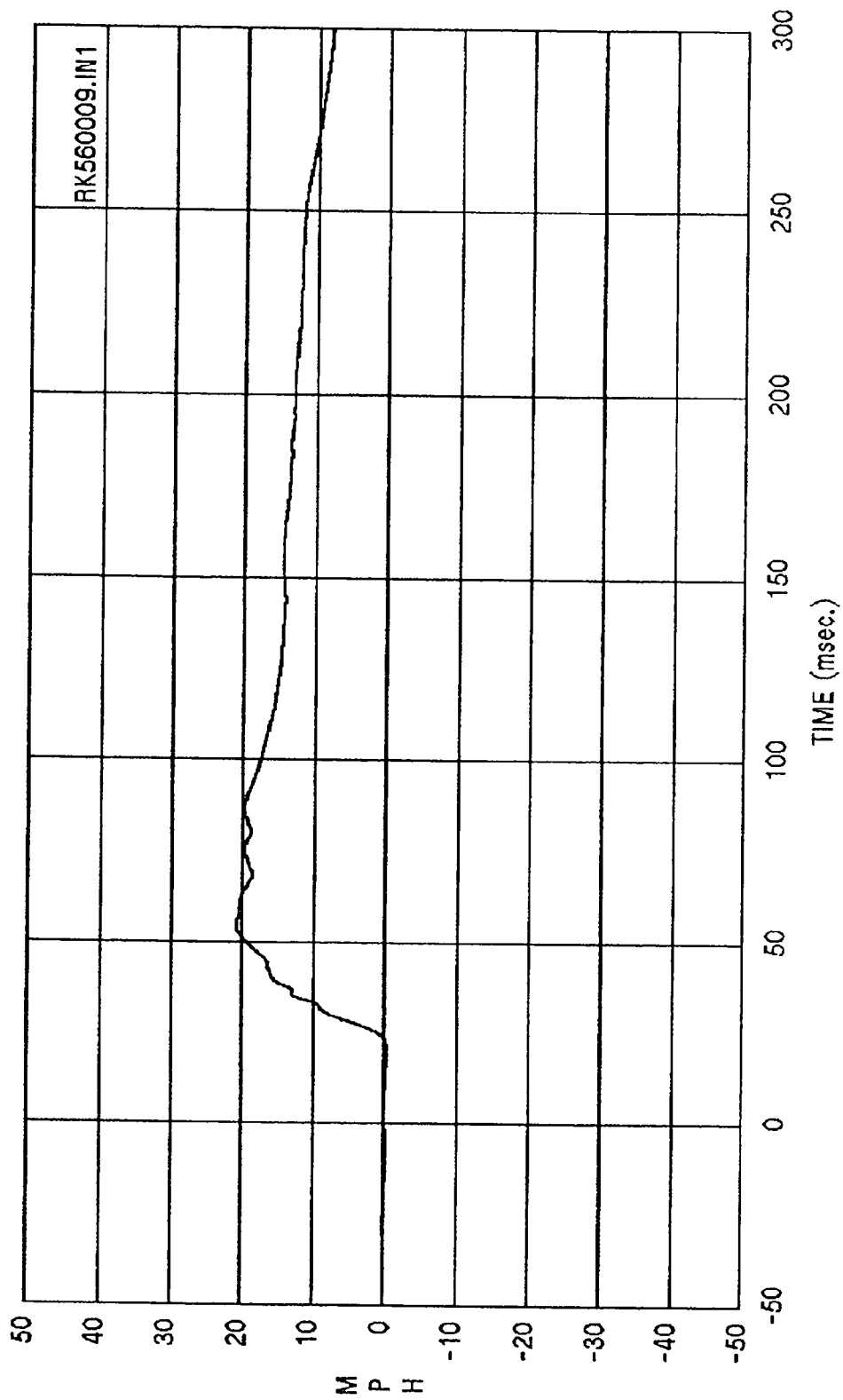
Curve: Driver lower rib delta V -- Primary Filter: SAE CLASS 180 Max = 21.609 Min = -.95241E-

MSE Date: 09/11/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mitsubishi Mighty Max



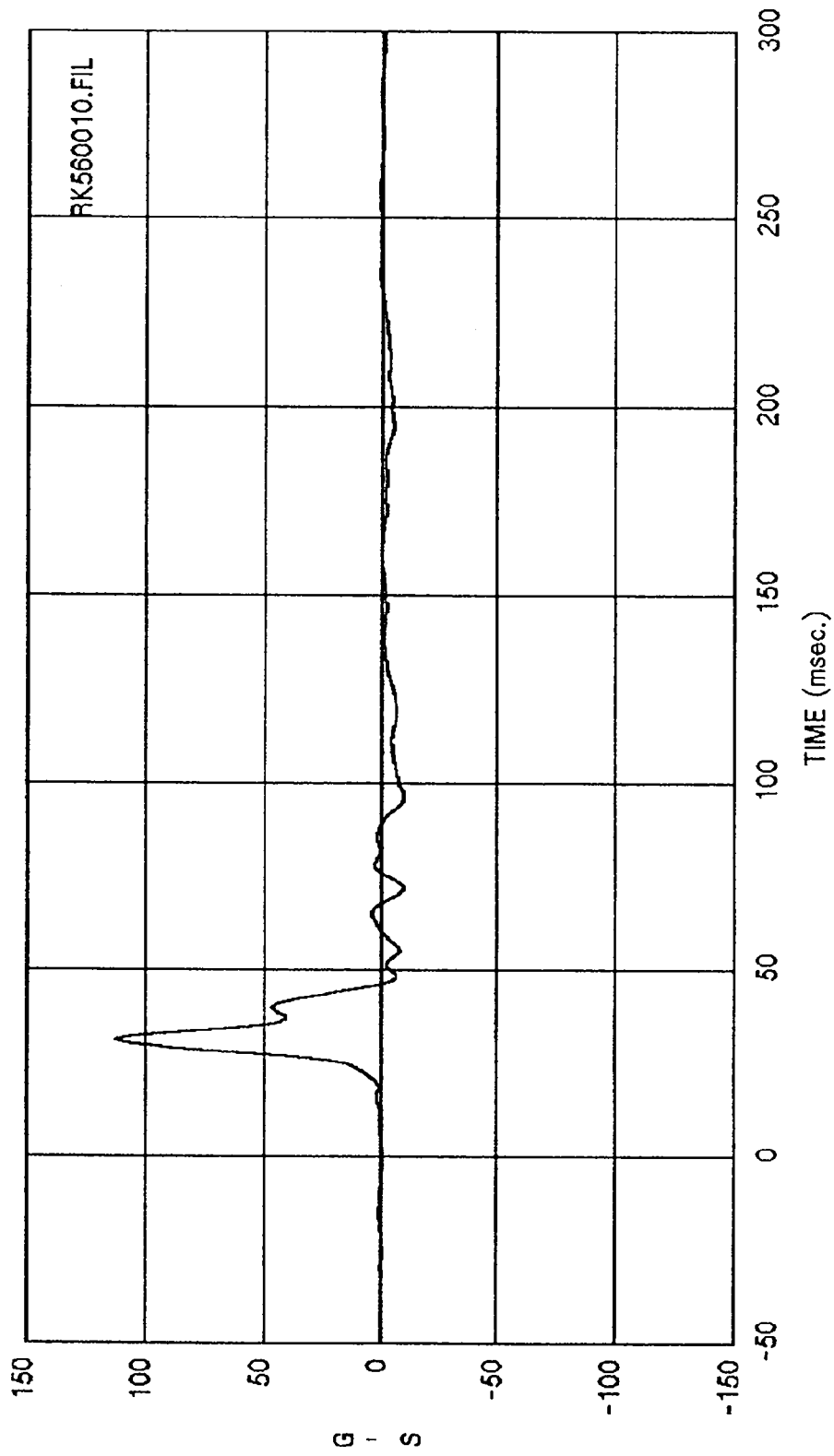
Curve: Driver lower rib acceleration -- Redundant Filter: FIR 100 Max = 68.641 Min = -14.092

MSE Date: 09/11/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mitsubishi Mighty Max



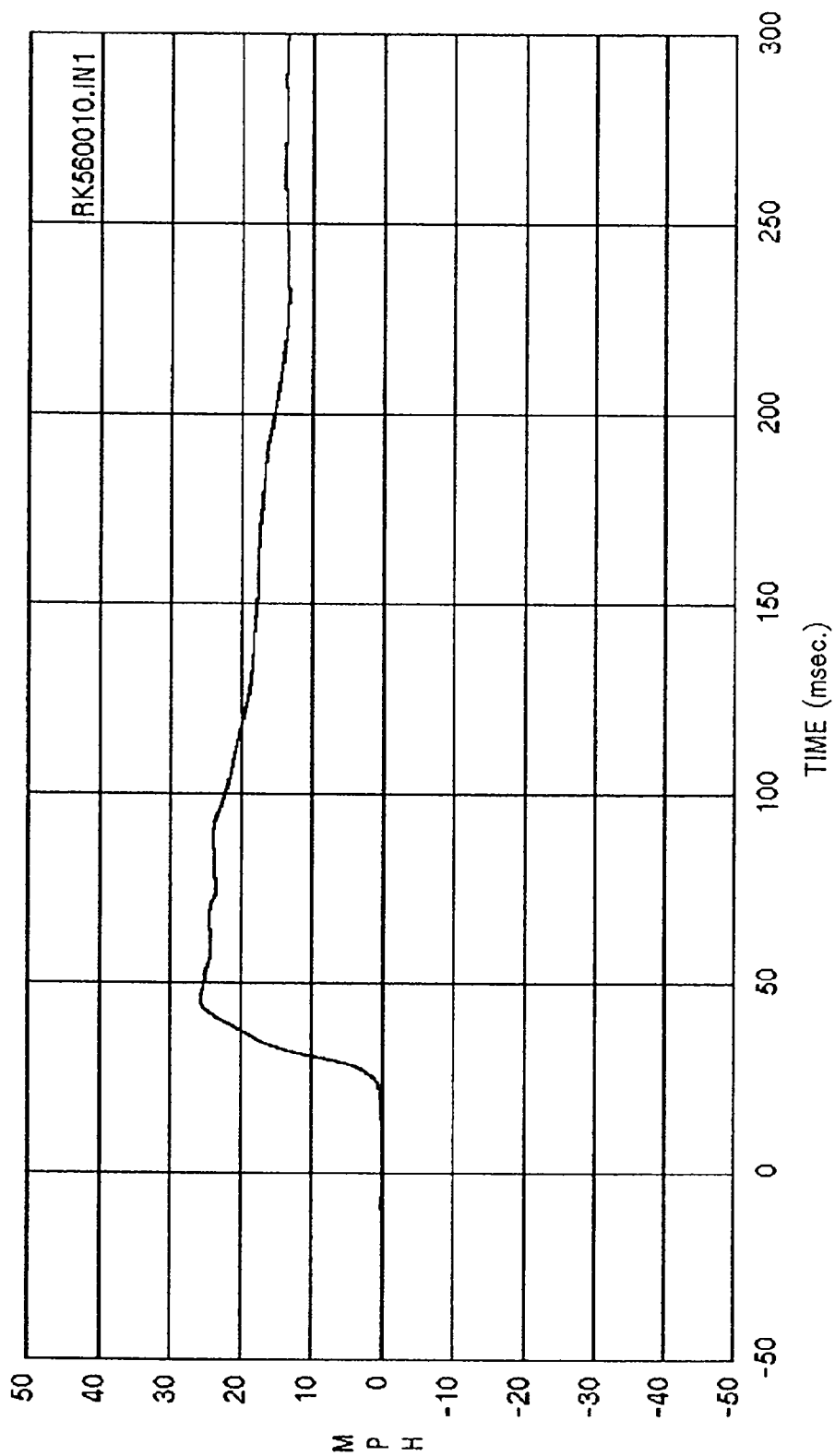
Curve: Driver lower rib delta V -- Redundant Filter: SAE CLASS 180 Max = 20.907 Min = -.33342

MSE Date: 09/11/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mitsubishi Mighty Max



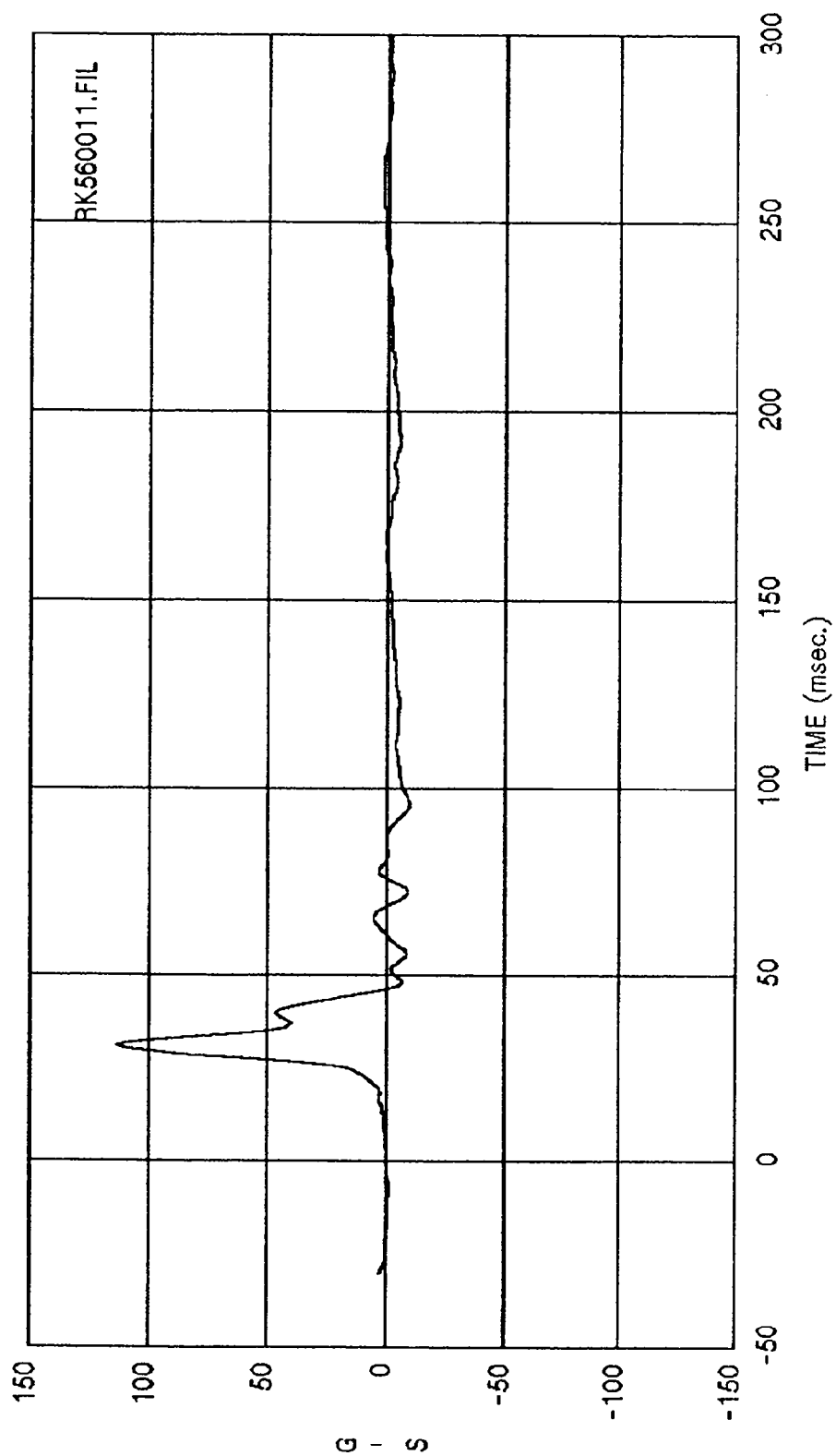
Curve: Driver lower spine acceleration -- Primary Filter: FIR 100 Max = 112.32 Min = -9.7364

MSE Date: 09/11/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mitsubishi Mighty Max

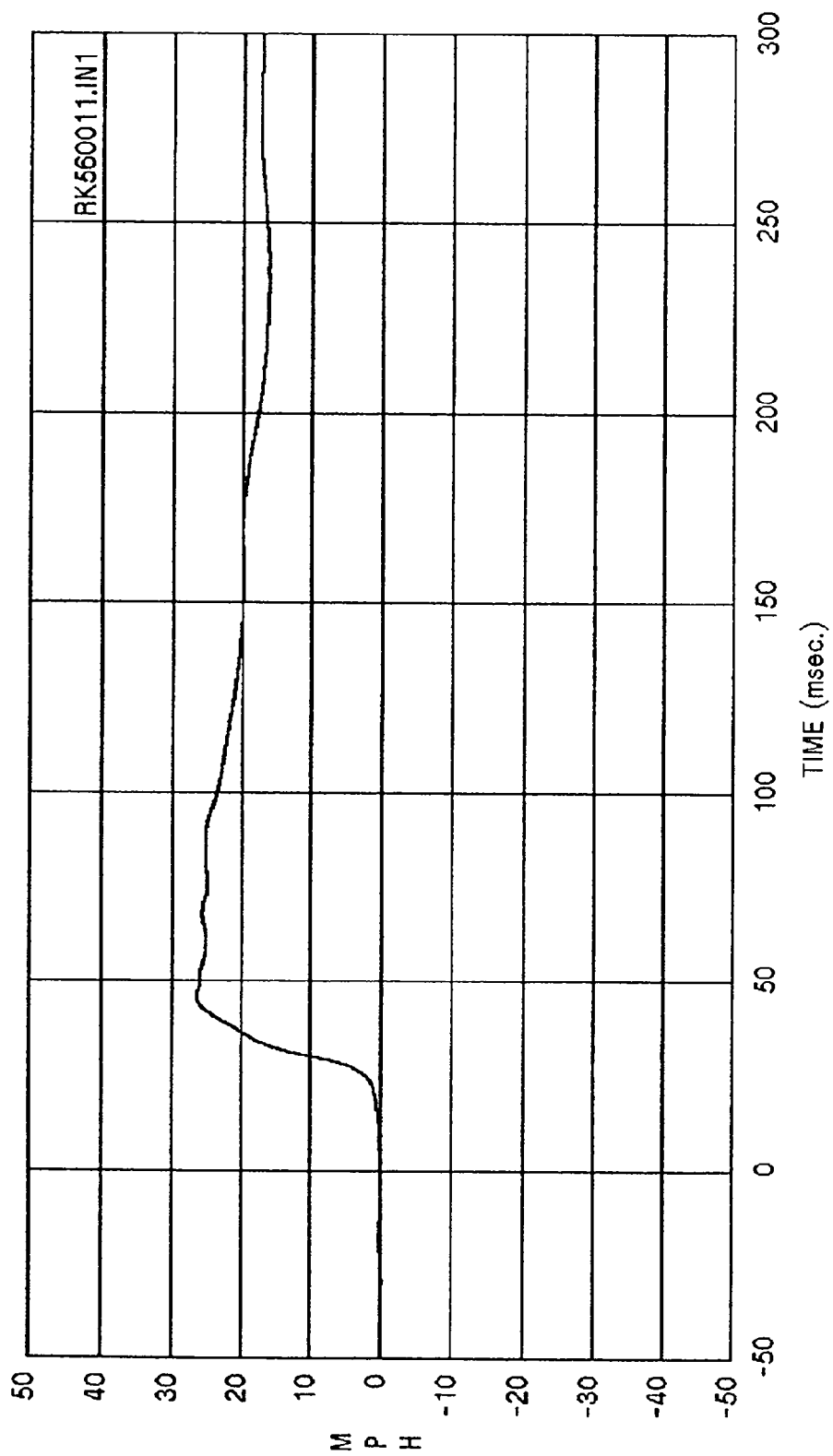


Curve: Driver lower spine delta V -- Primary Filter: SAE CLASS 180 Max = 25.718 Min = -.39258E
01

MSE Date: 09/11/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mitsubishi Mighty Max

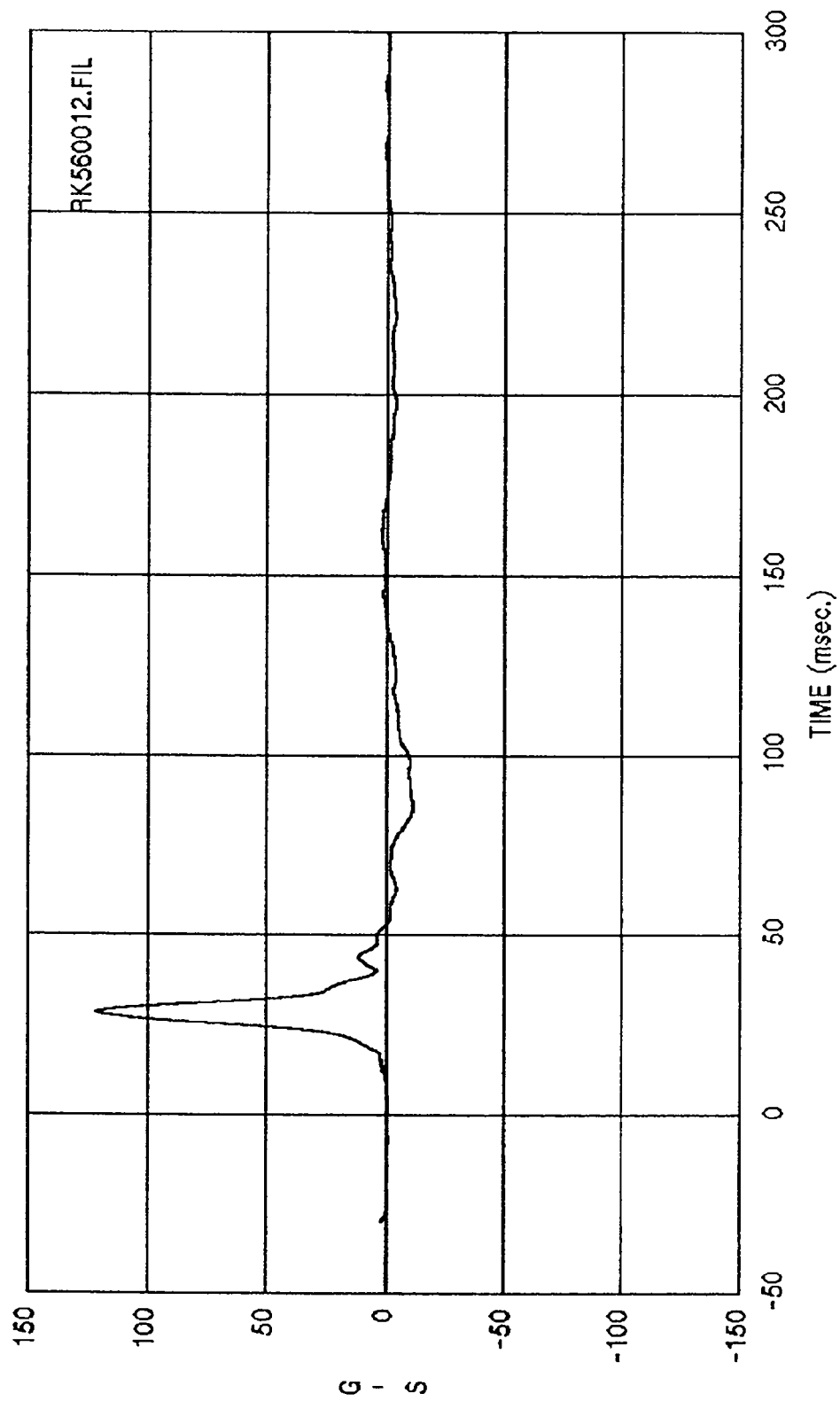


Curve: Driver lower spine acceleration -- Redundant Filter: FIR 100 Max = 113.34 Min = -9.4746
MSE Date: 09/11/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mitsubishi Mighty Max



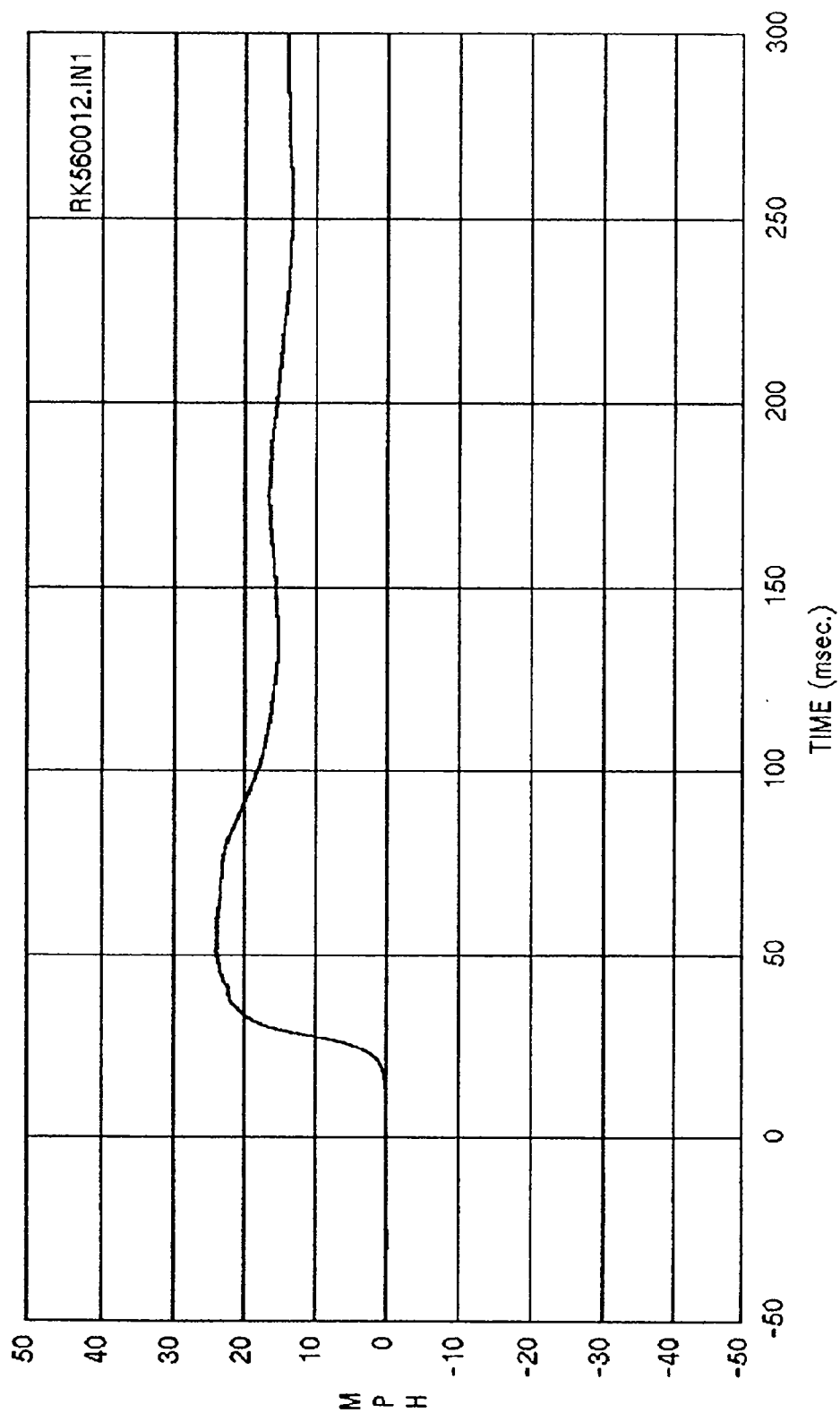
Curve: Driver lower spine delta V -- Redundant Filter: SAE CLASS 180 Max = 26.537 Min = 16.308

MSE Date: 09/11/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mitsubishi Mighty Max



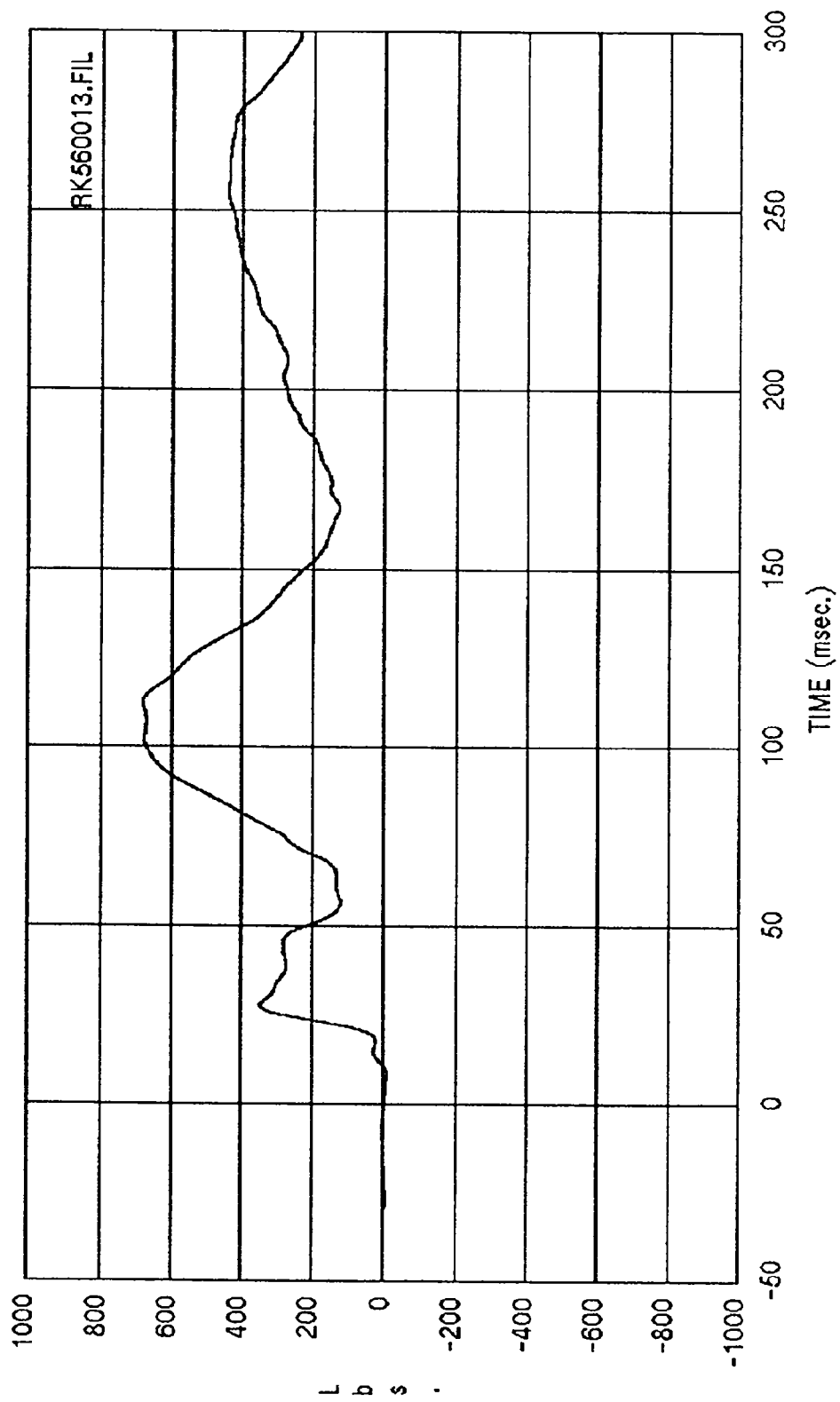
Curve: Driver pelvis acceleration Filter: FIR 100 Max = 121.95 Min = -11.104

MSE Date: 09/11/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mitsubishi Mighty Max



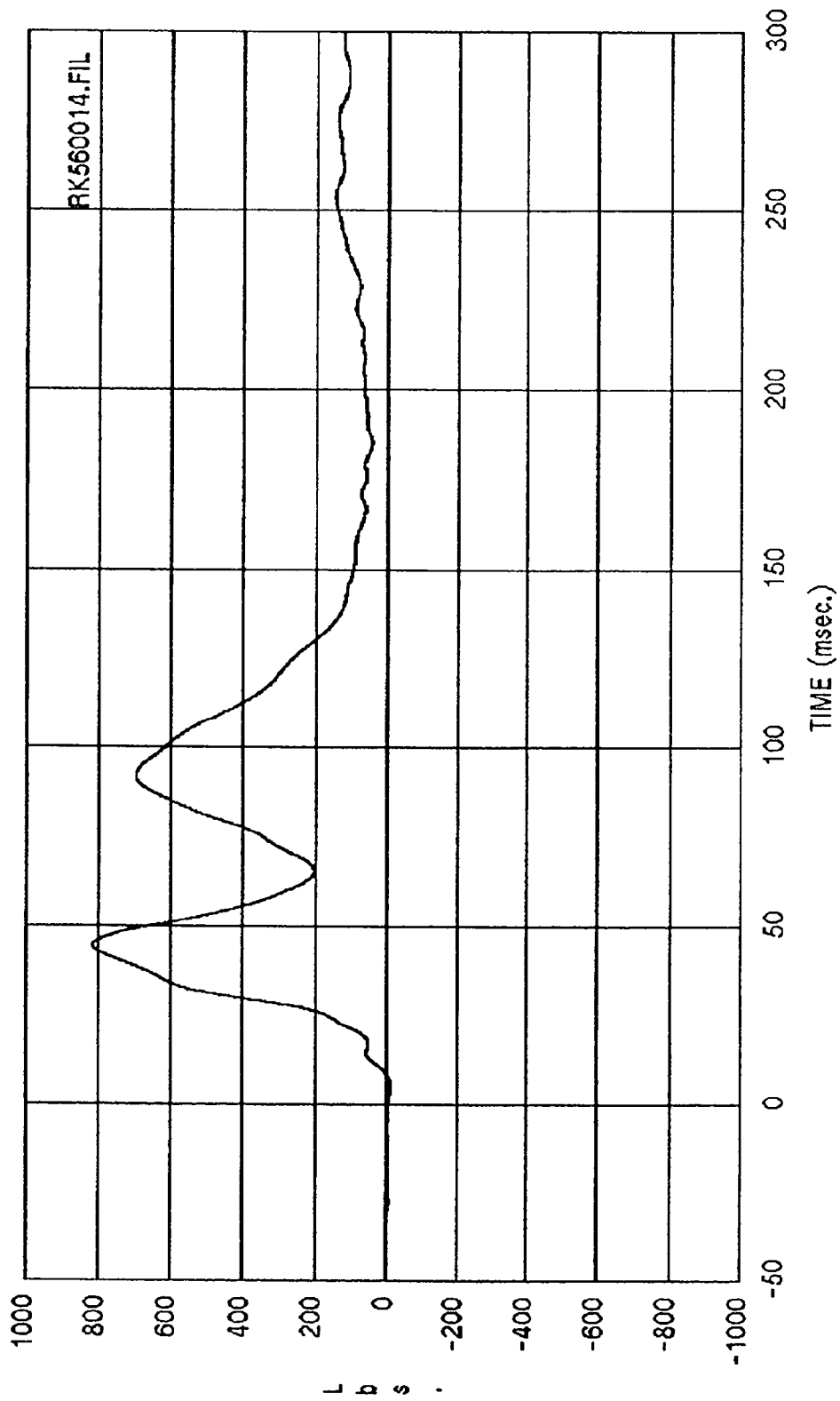
Curve: Driver pelvis delta V Filter: SAE CLASS 180 Max = 24.131 Min = -.19134E-0

MSE Date: 09/11/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mitsubishi Mighty Max



Curve: Driver lap belt load Filter: SAE CLASS 60 Max = 682.59 Min = -8.9150

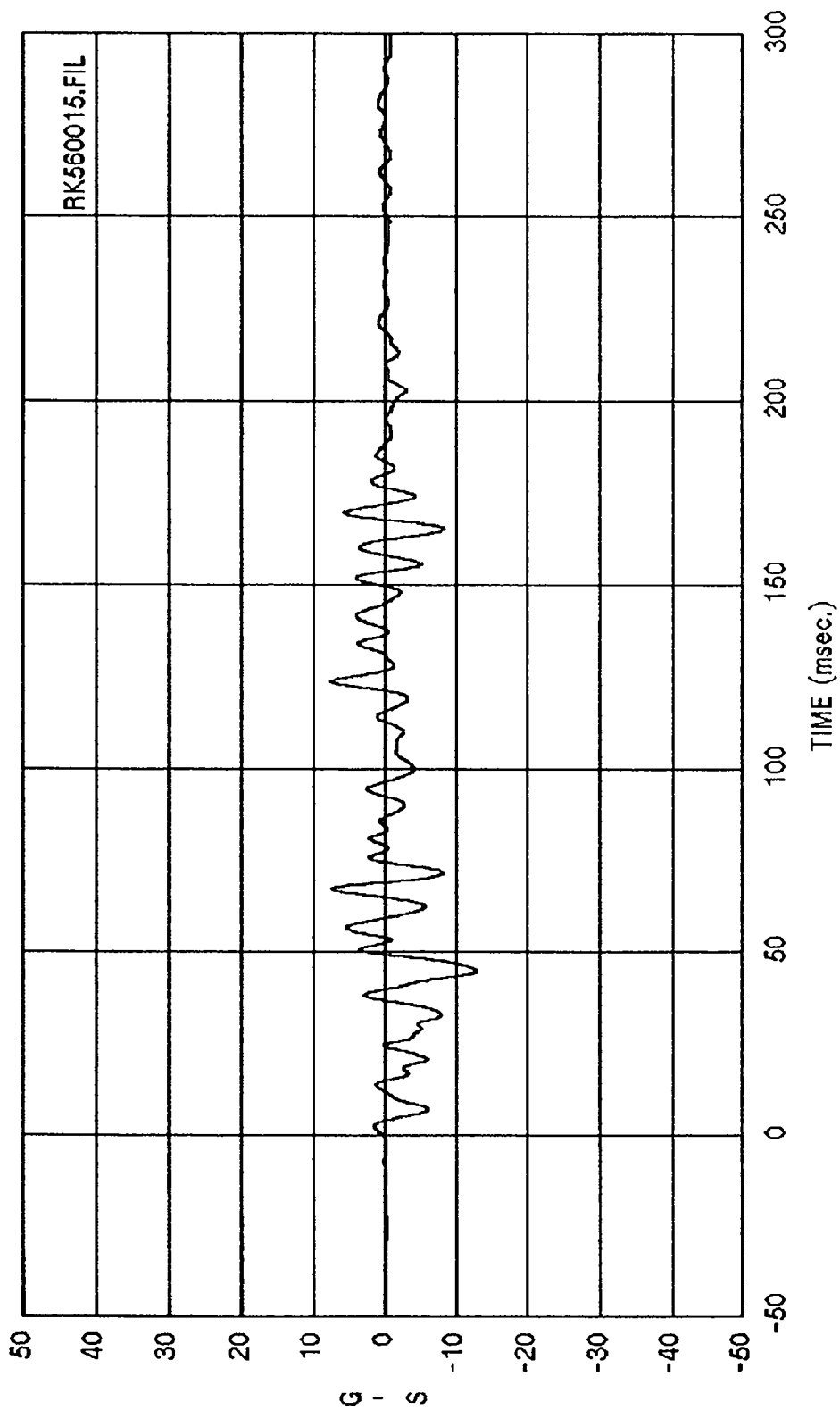
MSE Date: 09/11/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mitsubishi Mighty Max



Curve: Driver shoulder belt load Filter: SAE CLASS 60 Max = 816.74 Min = -11.199

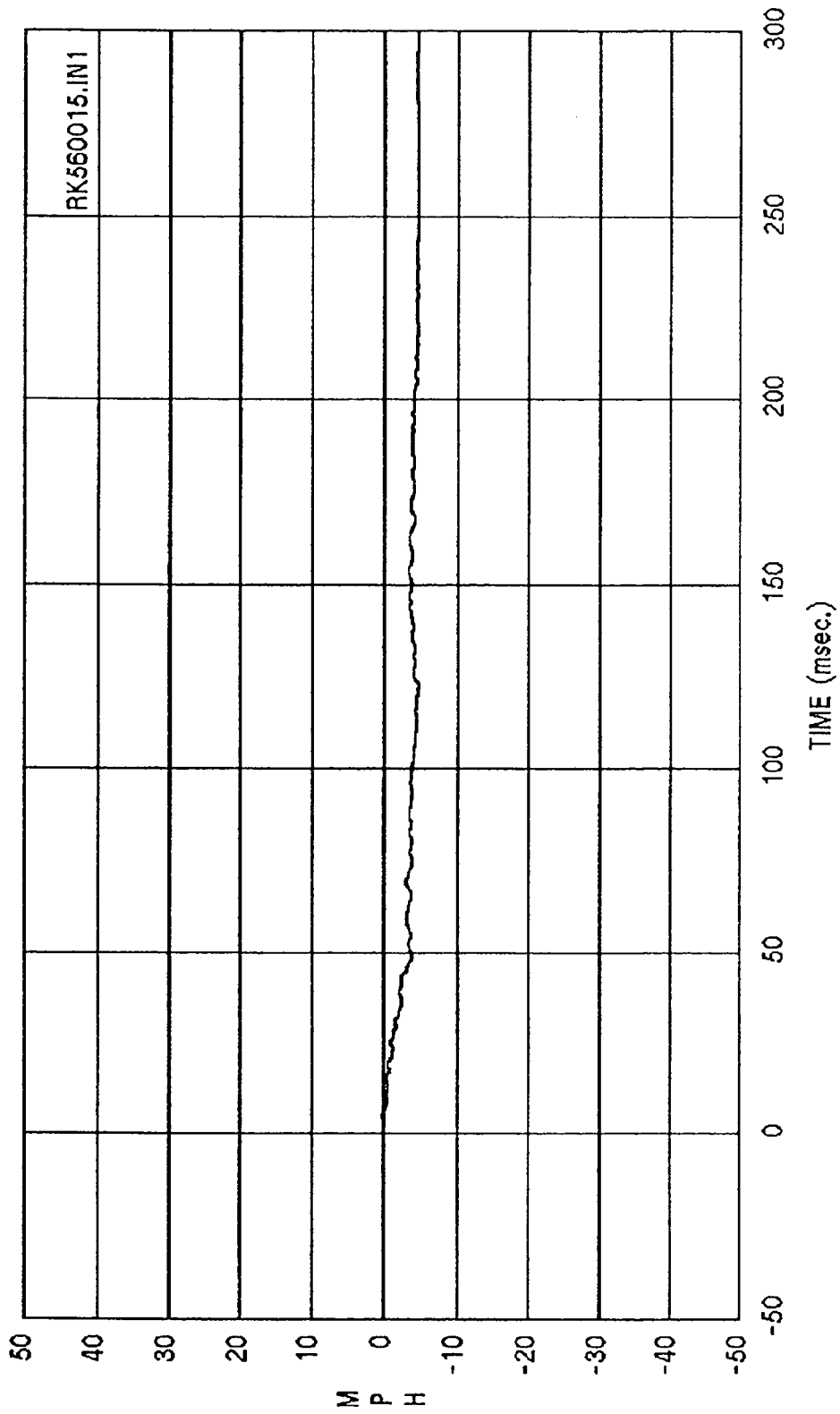
MSE Date: 09/11/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mitsubishi Mighty Max

VEHICLE ACCELEROMETER DATA



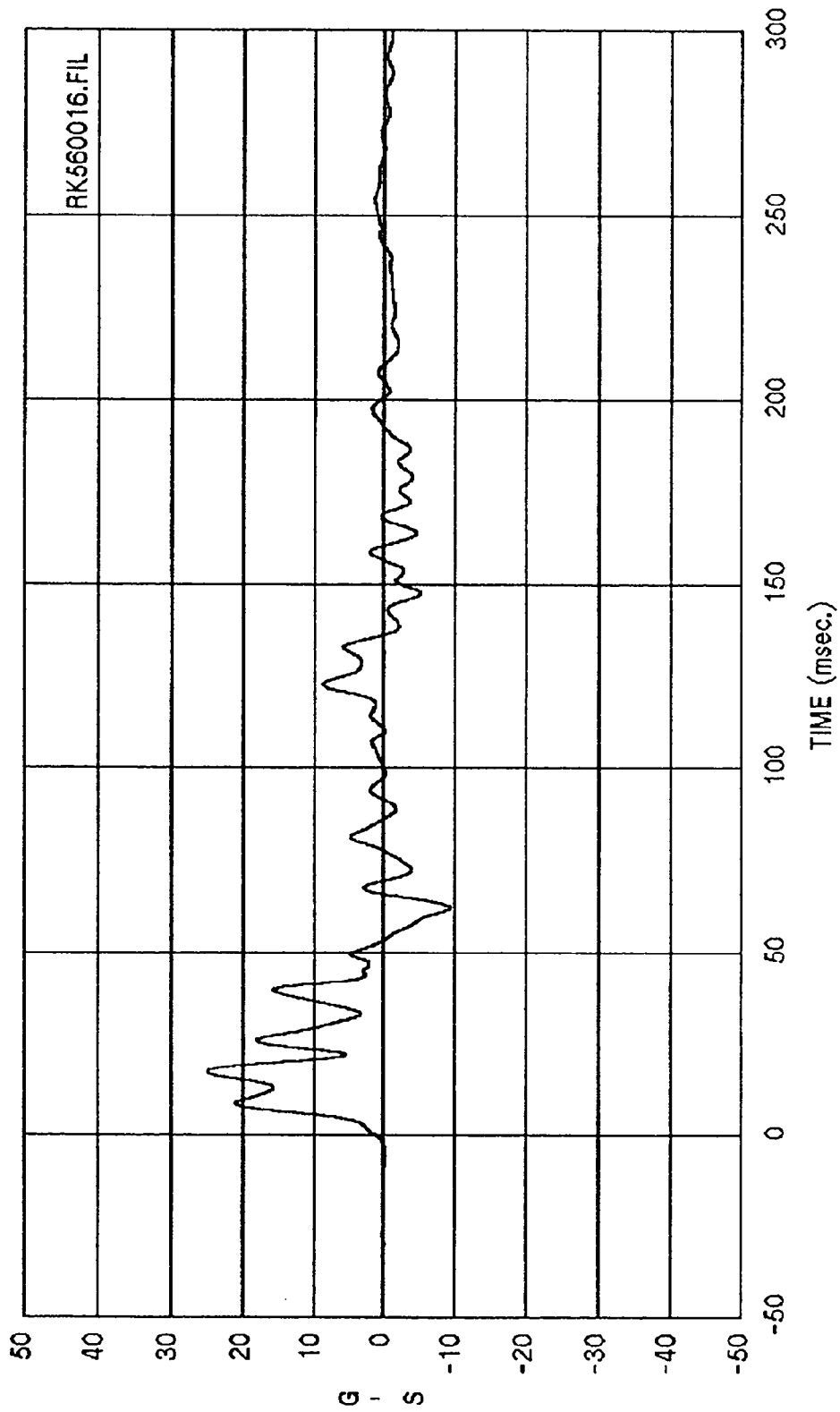
Curve: Front seat right sill acceleration -- X axis Filter: SAE CLASS 60 Max = 7.8826 Min = -12.824

MSE Date: 09/11/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mitsubishi Mighty Max



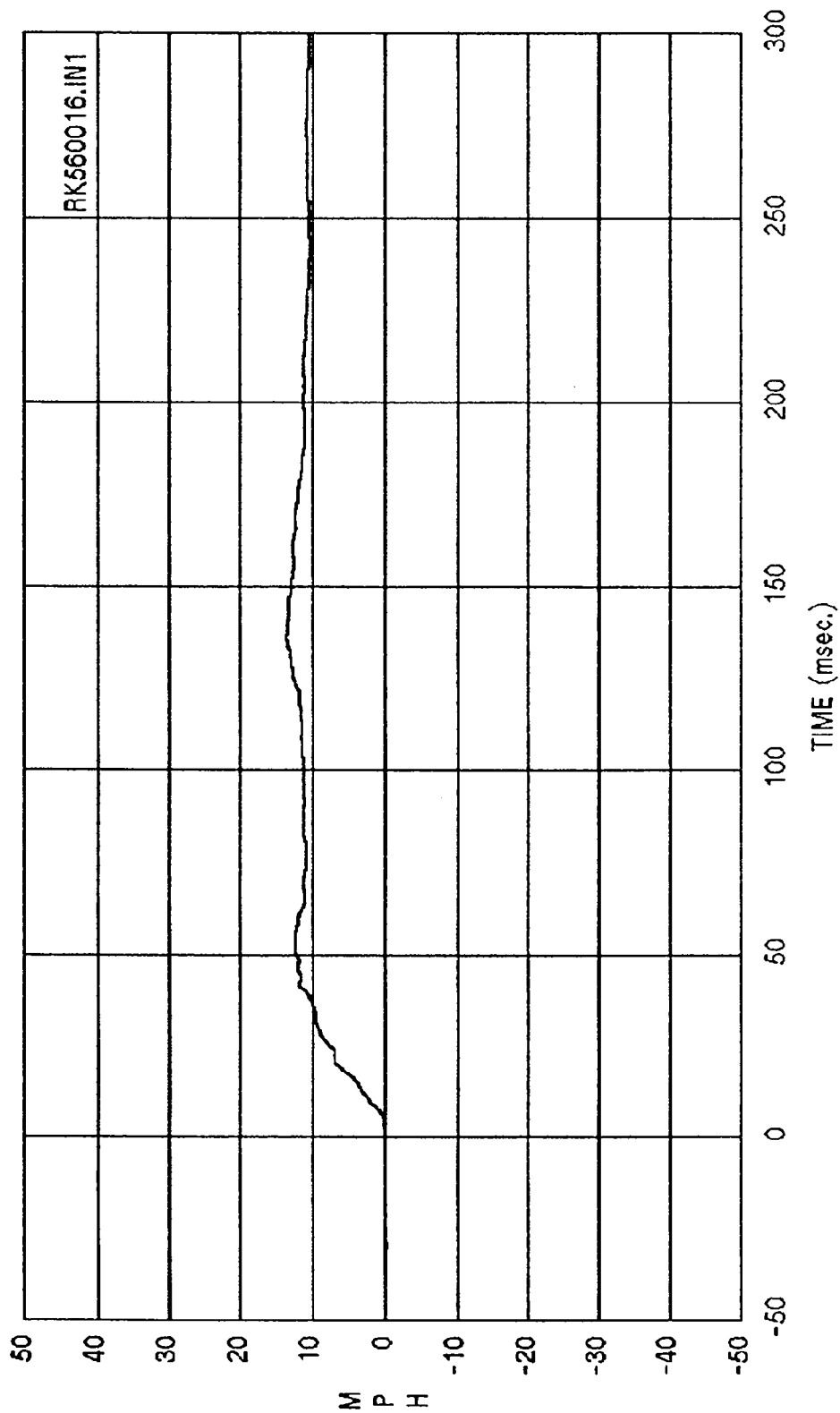
Curve: Front seat right sill delta V -- X axis Filter: SAE CLASS 180 Max = .17188 Min = -4.8315

MSE Date: 09/11/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mitsubishi Mighty Max



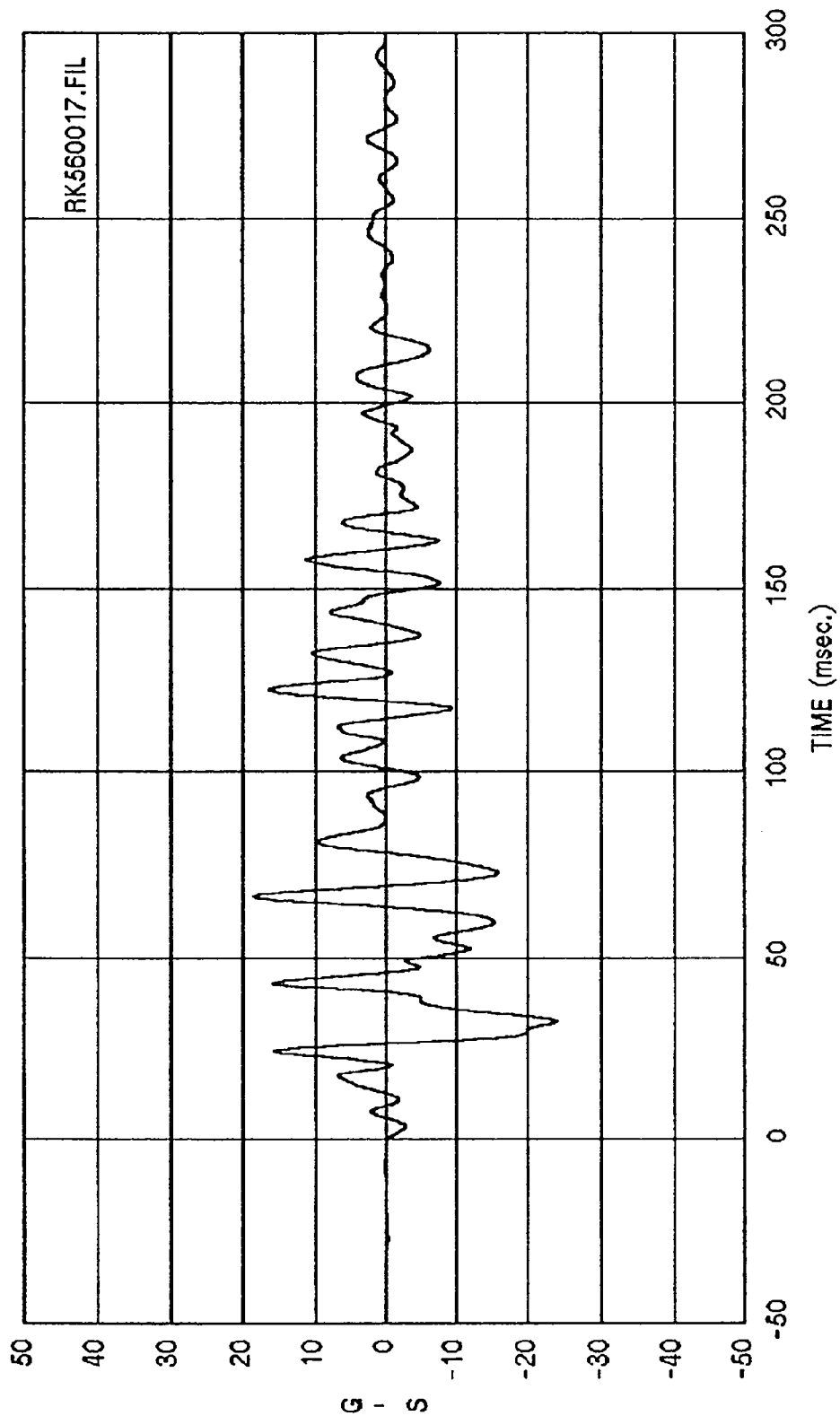
Curve: Front seat right sill acceleration -- Y axis Filter: SAE CLASS 60 Max = 25.141 Min = -9.4481

MSE Date: 09/11/92 Program: Slide Impact, 30/15, 90 deg. Vehicle: 1989 Mitsubishi Mighty Max



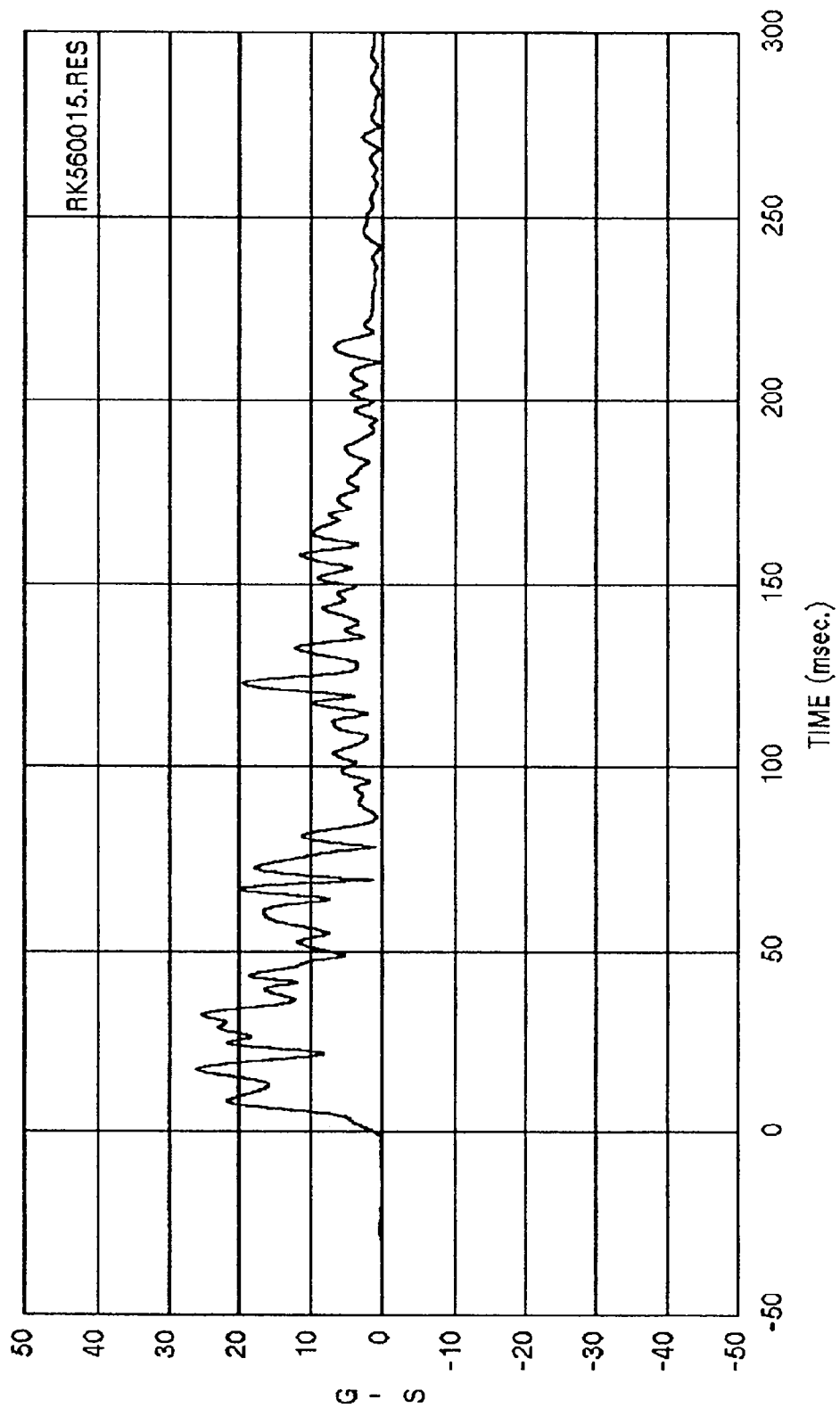
Curve: Front seat right sill delta V -- Y axis Filter: SAE CLASS 180 Max = 13.674 Min = 6.9073

MSE Date: 09/11/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mitsubishi Mighty Max



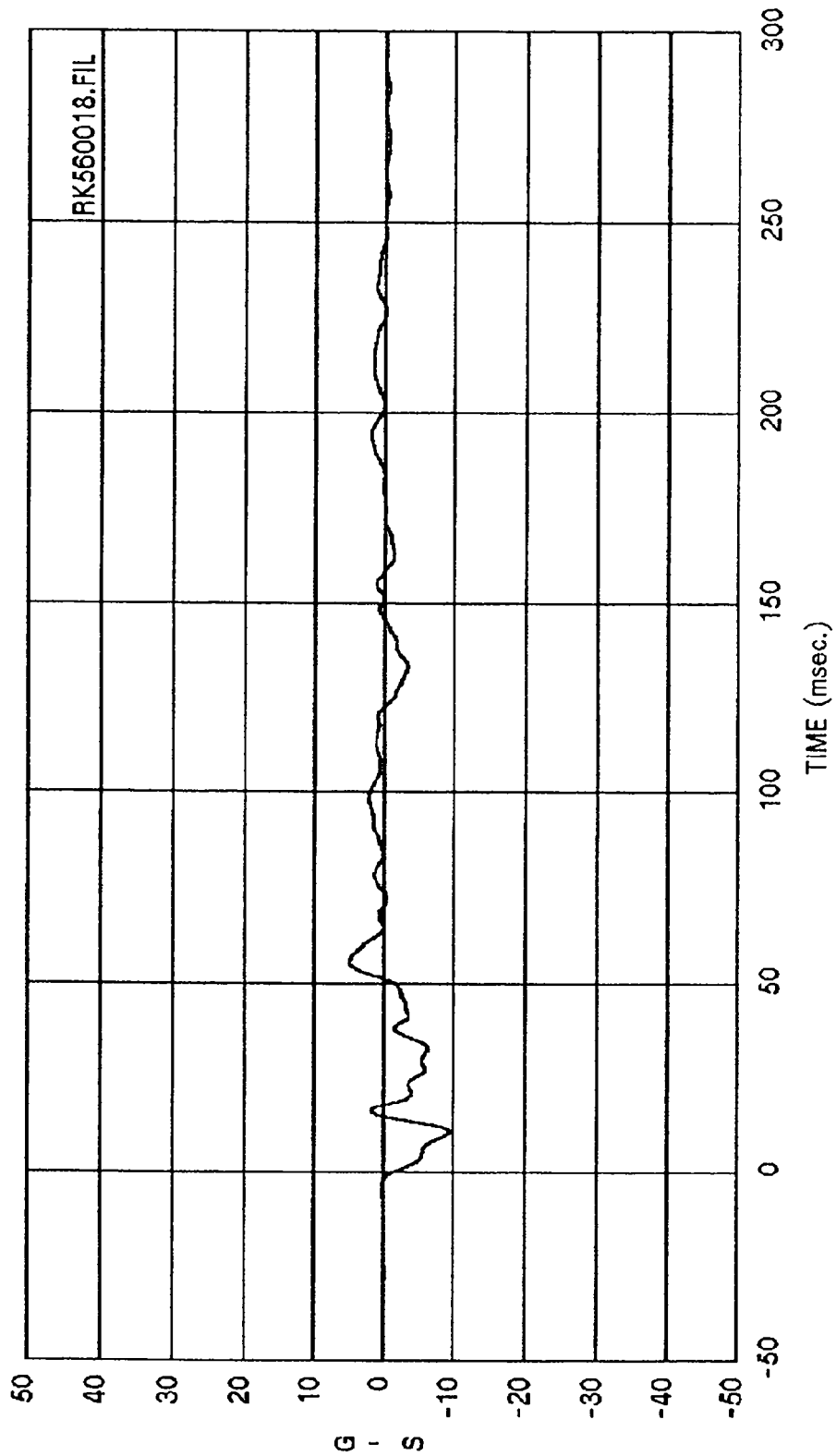
Curve: Front seat right sill acceleration -- Z axis Filter: SAE CLASS 60 Max = 18.594 Min = -23.883

MSE Date: 09/11/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mitsubishi Mighty Max

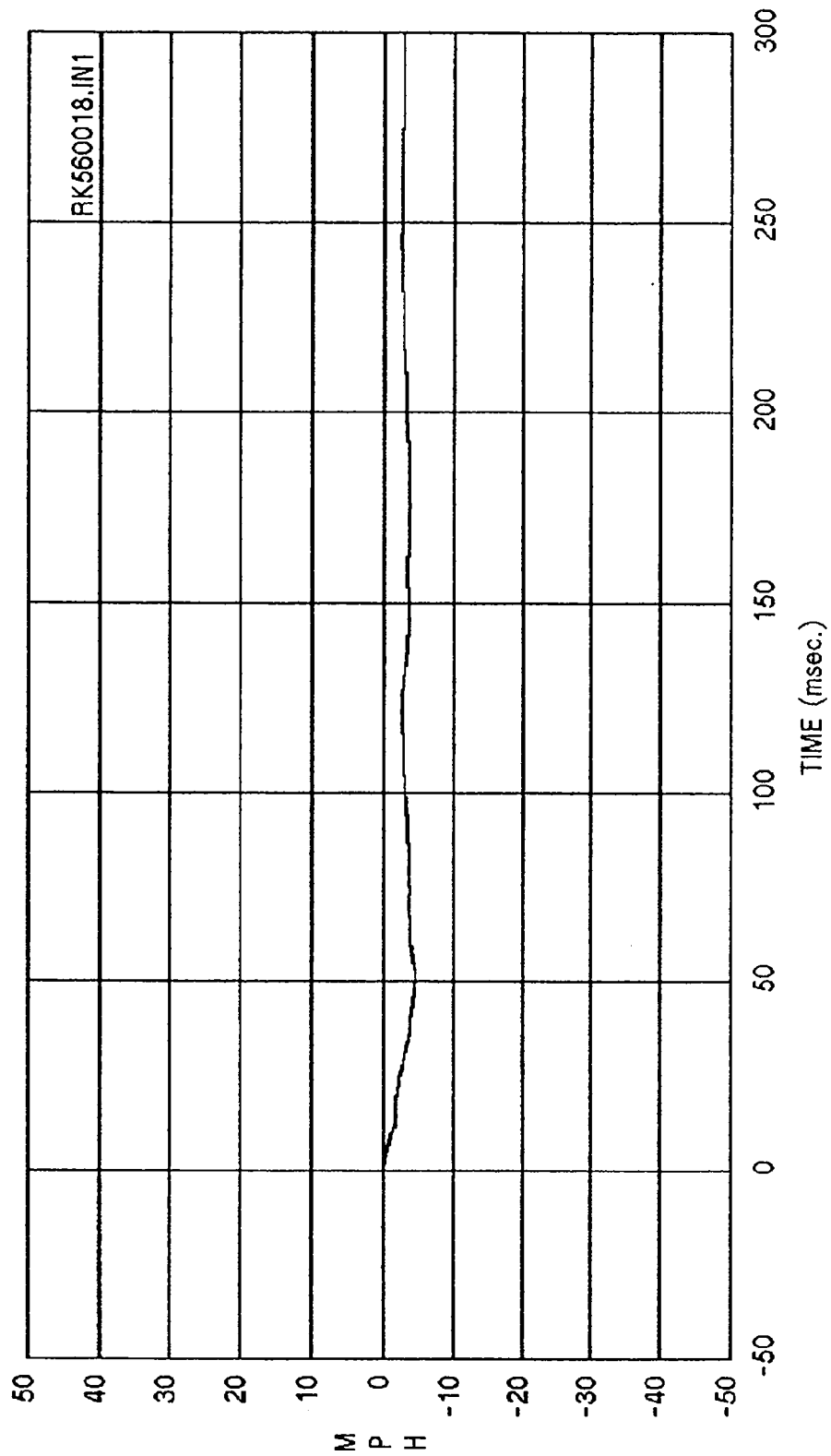


Curve: Front seat right sill resultant acceleration Filter: SAE CLASS 60 Max = 26.201 Min = .32762

MSE Date: 09/11/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mitsubishi Mighty Max

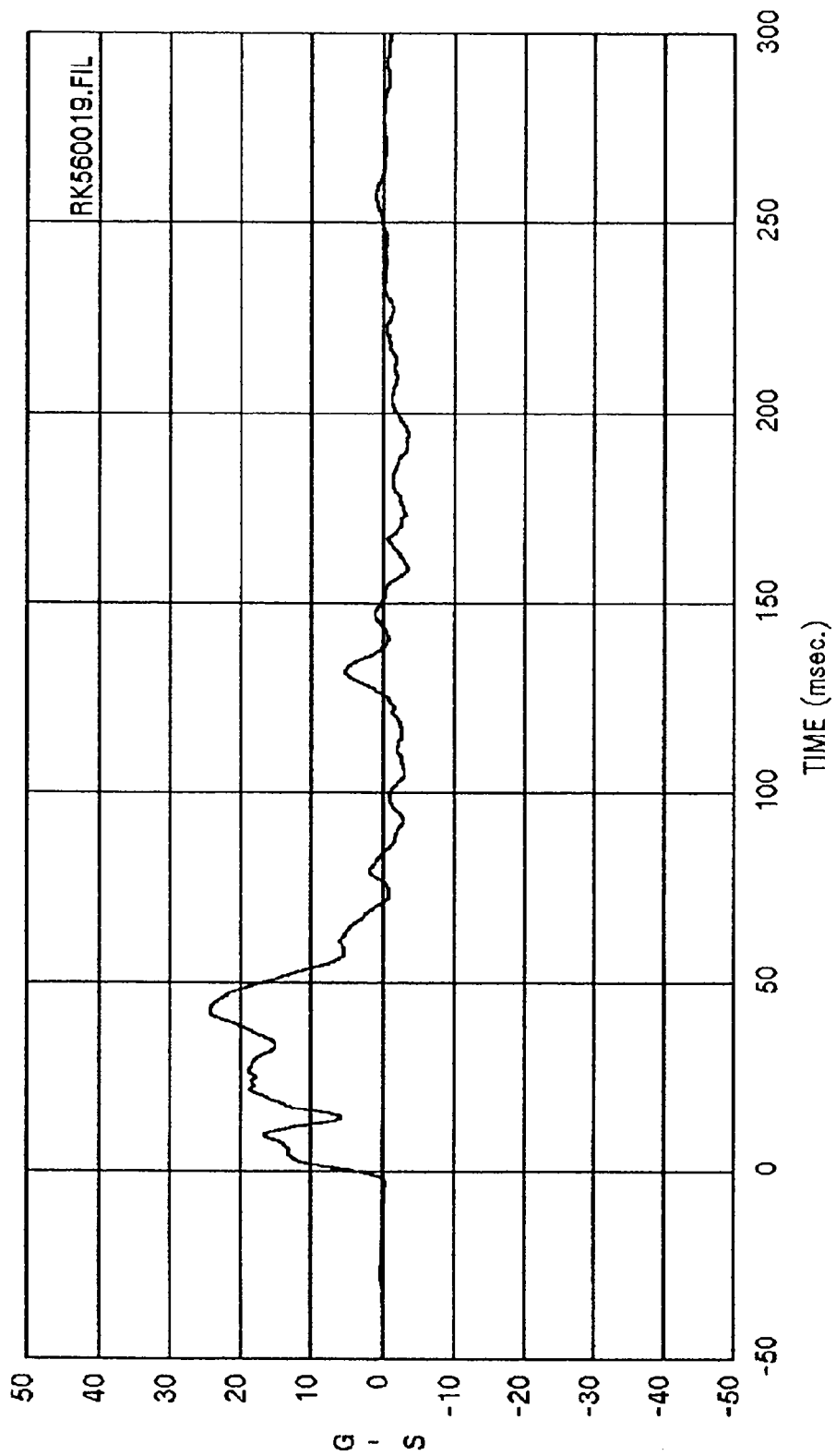


Curve: Rear floor above axle acceleration -- X axis Filter: SAE CLASS 60 Max = 4.8668 Min = -9.5308
MSE Date: 09/11/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mitsubishi Mighty Max

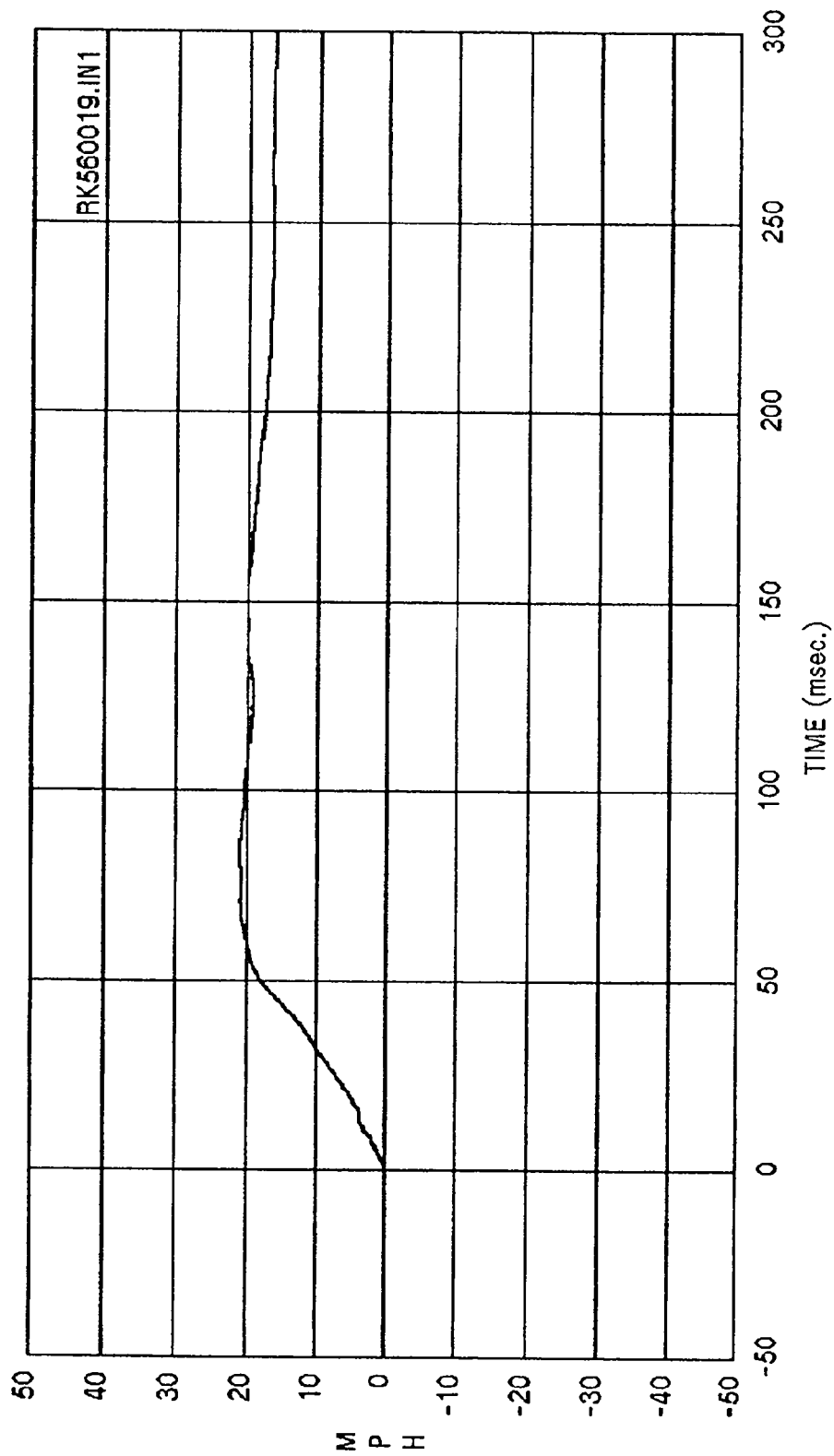


Curve: Rear floor above axle delta V -- X axis Filter: SAE CLASS 180 Max = -.18725E-02 Min = -4.51.

MSE Date: 09/11/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mitsubishi Mighty Max

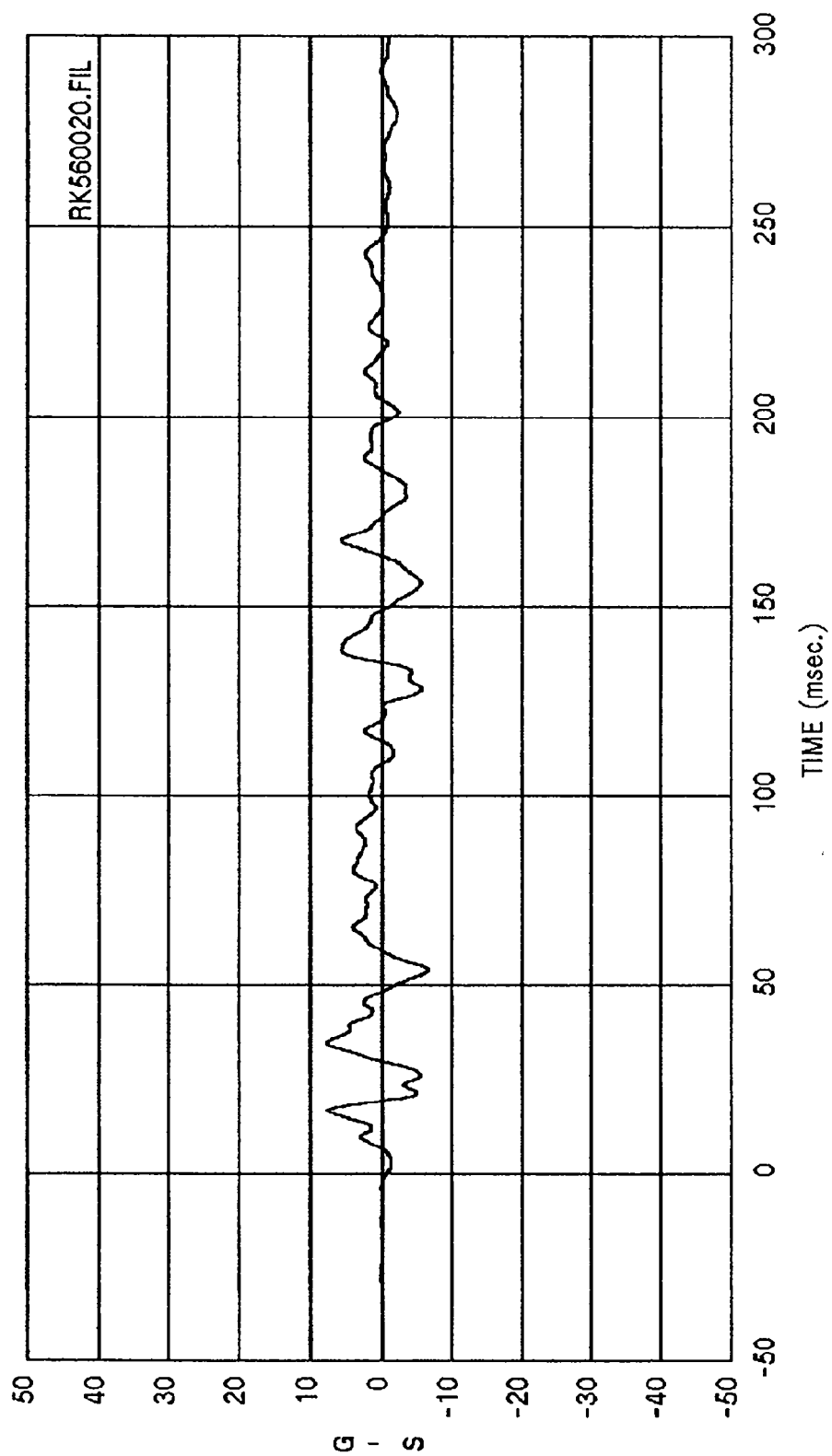


Curve: Rear floor above axle acceleration -- Y axis Filter: SAE CLASS 60 Max = 24,345 Min = -3,5190
MSE Date: 09/11/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mitsubishi Mighty Max



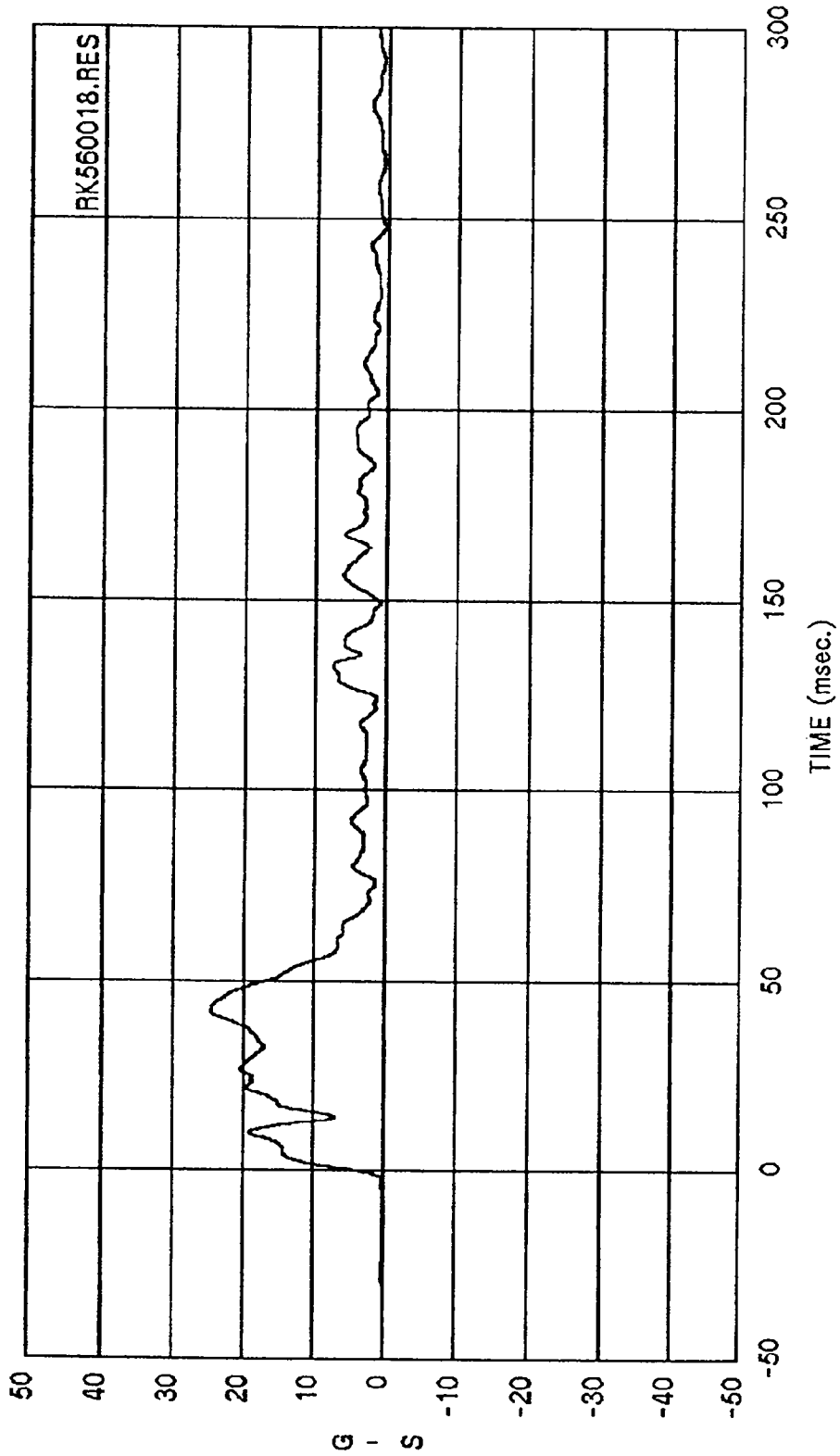
Curve: Rear floor above axle delta V -- Y axis Filter: SAE CLASS 180 Max = 20.940 Min = 3.6631

MSE Date: 09/11/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mitsubishi Mighty Max



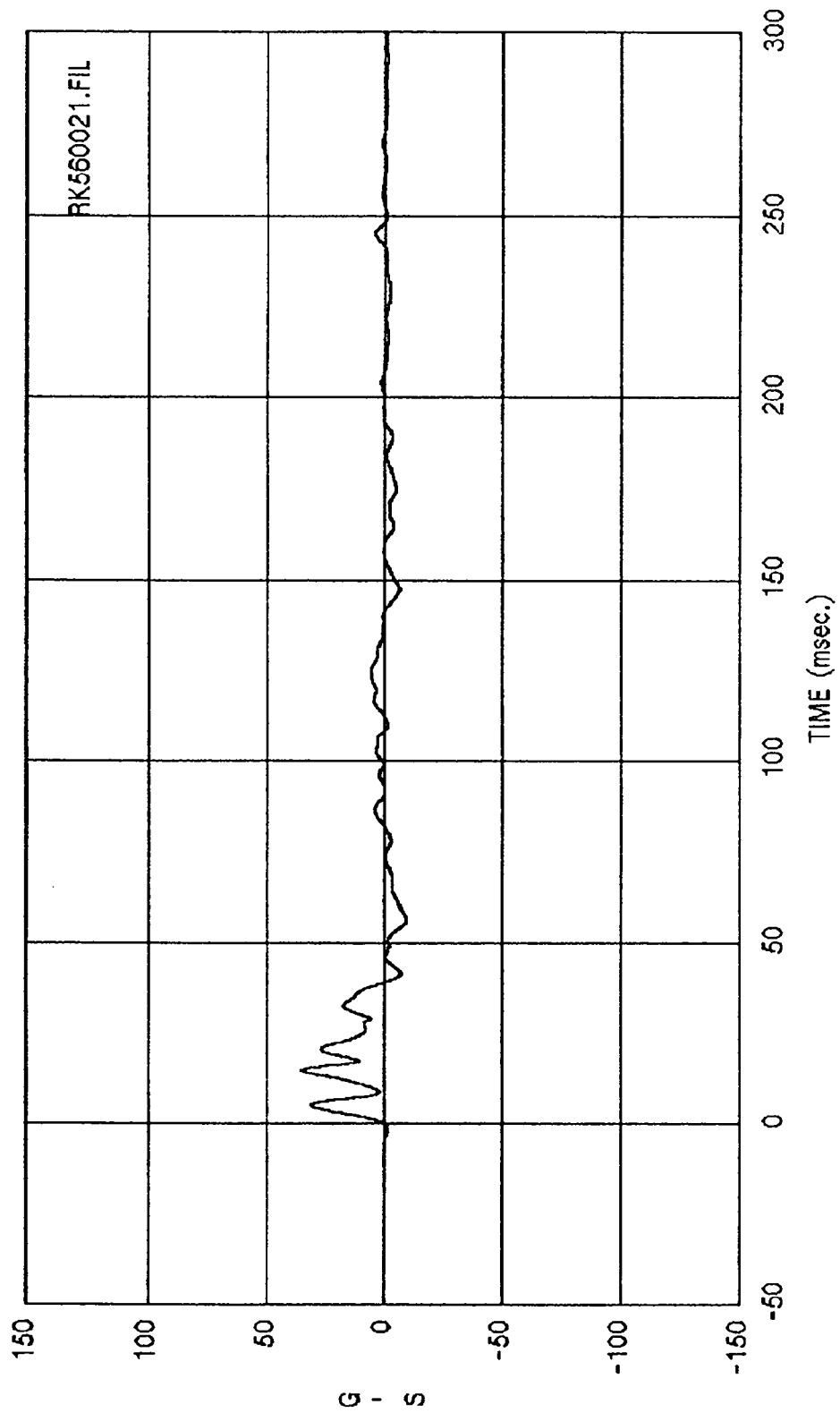
Curve: Rear floor above axle acceleration -- Z axis Filter: SAE CLASS 60 Max = 7.7019 Min = -6.6991

MSE Date: 09/11/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mitsubishi Mighty Max



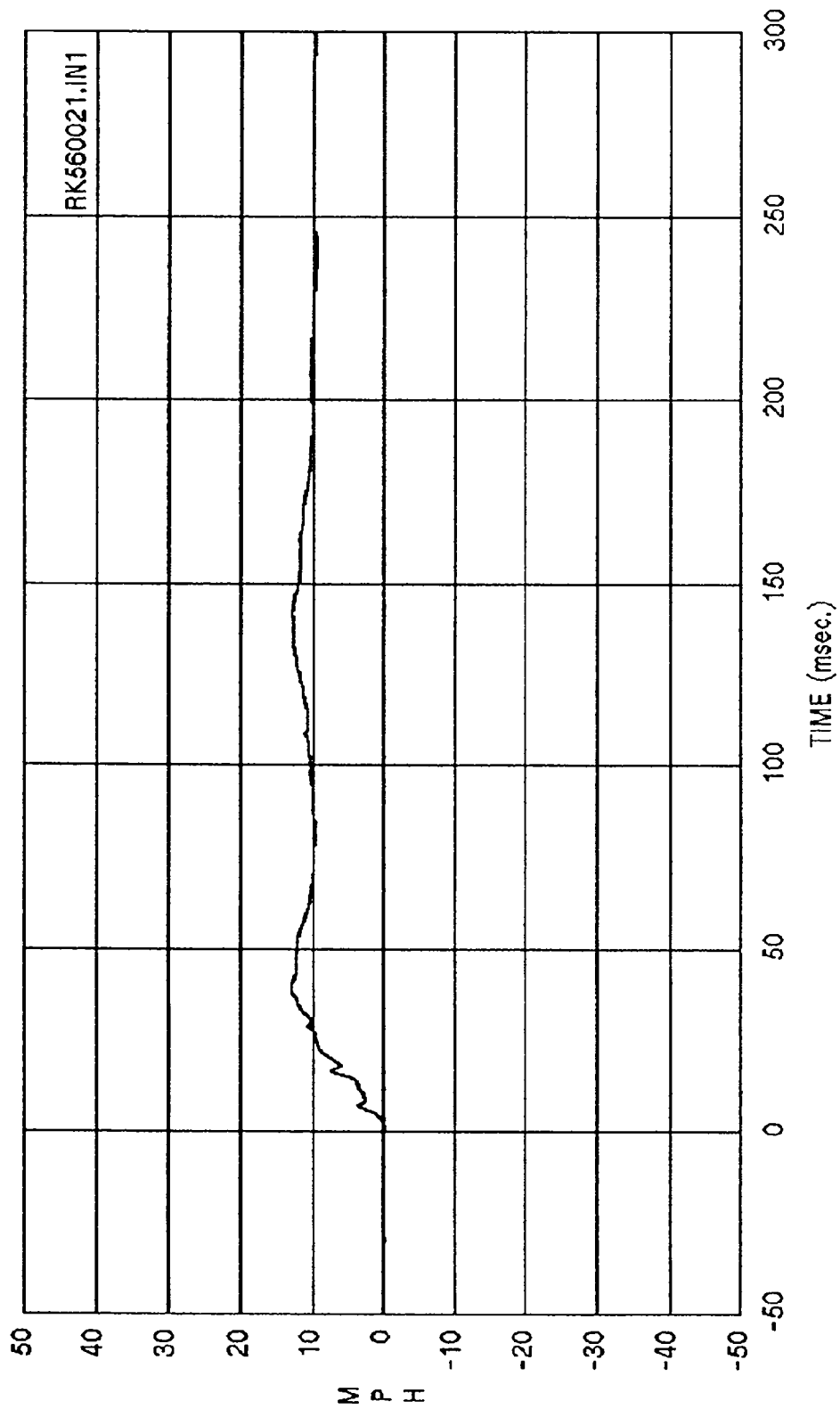
Curve: Rear floor above axle resultant acceleration Filter: SAE CLASS 60 Max = 24.642 Min = .36599

MSE Date: 09/11/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mitsubishi Mighty Max



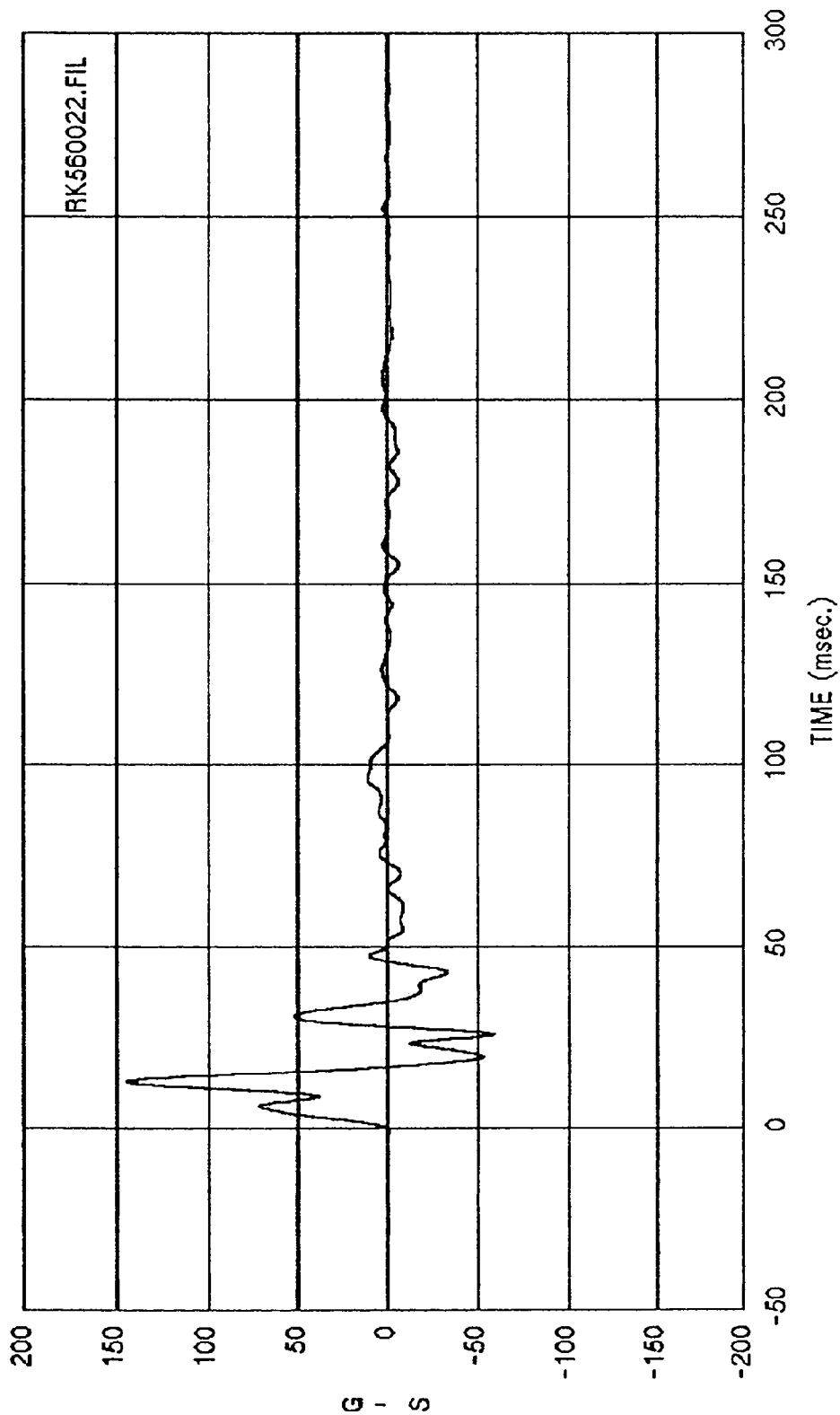
Curve: Front seat left Sill acceleration -- Y axis Filter: SAE CLASS 60 Max = 35.826 Min = -9.4525

MSE Date: 09/11/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mitsubishi Mighty Max



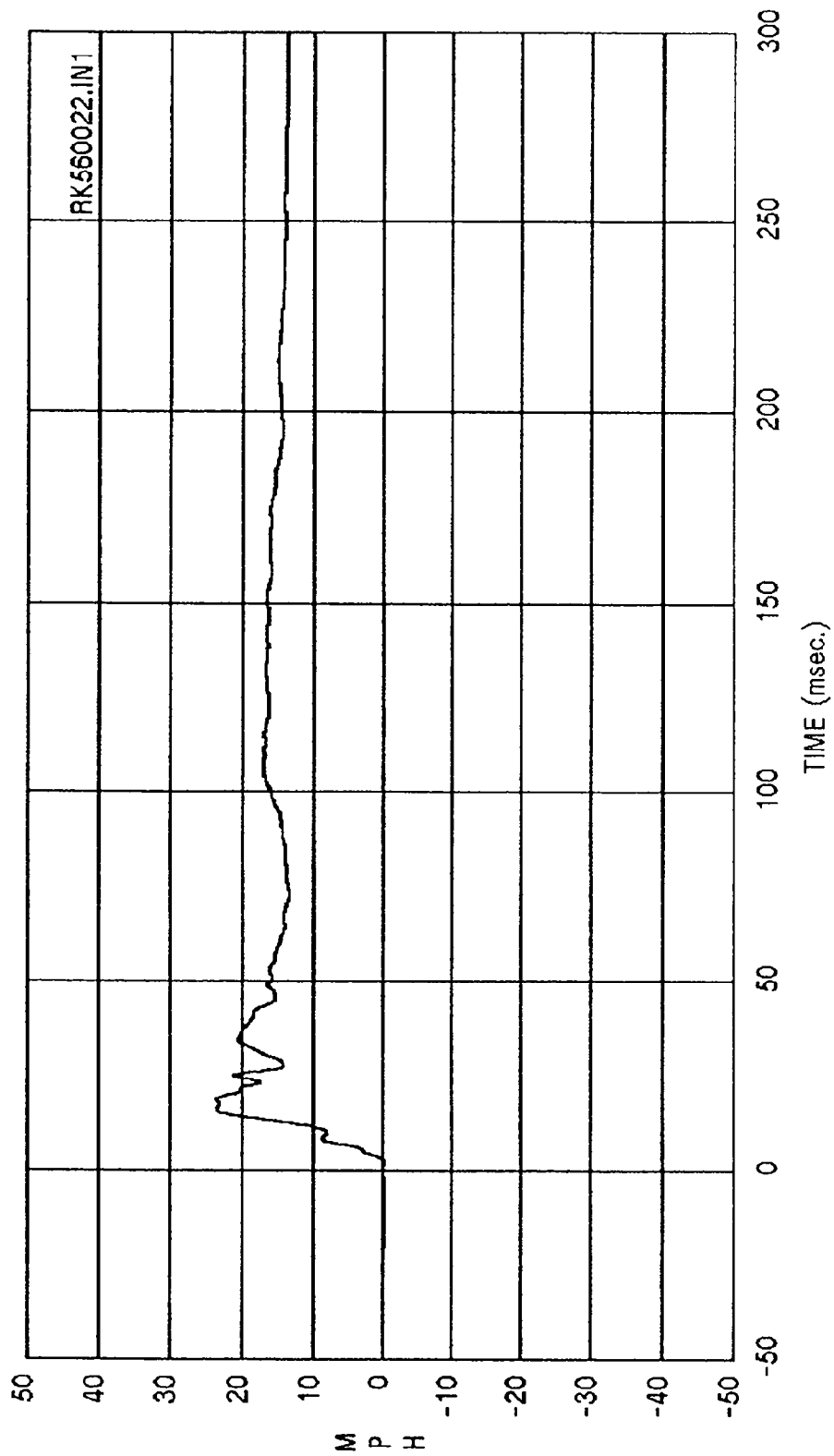
Curve: Front seat left Sill delta V -- Y axis Filter: SAE CLASS 180 Max = 13.061 Min = -.95047E-1

MSE Date: 09/11/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mitsubishi Mighty Max



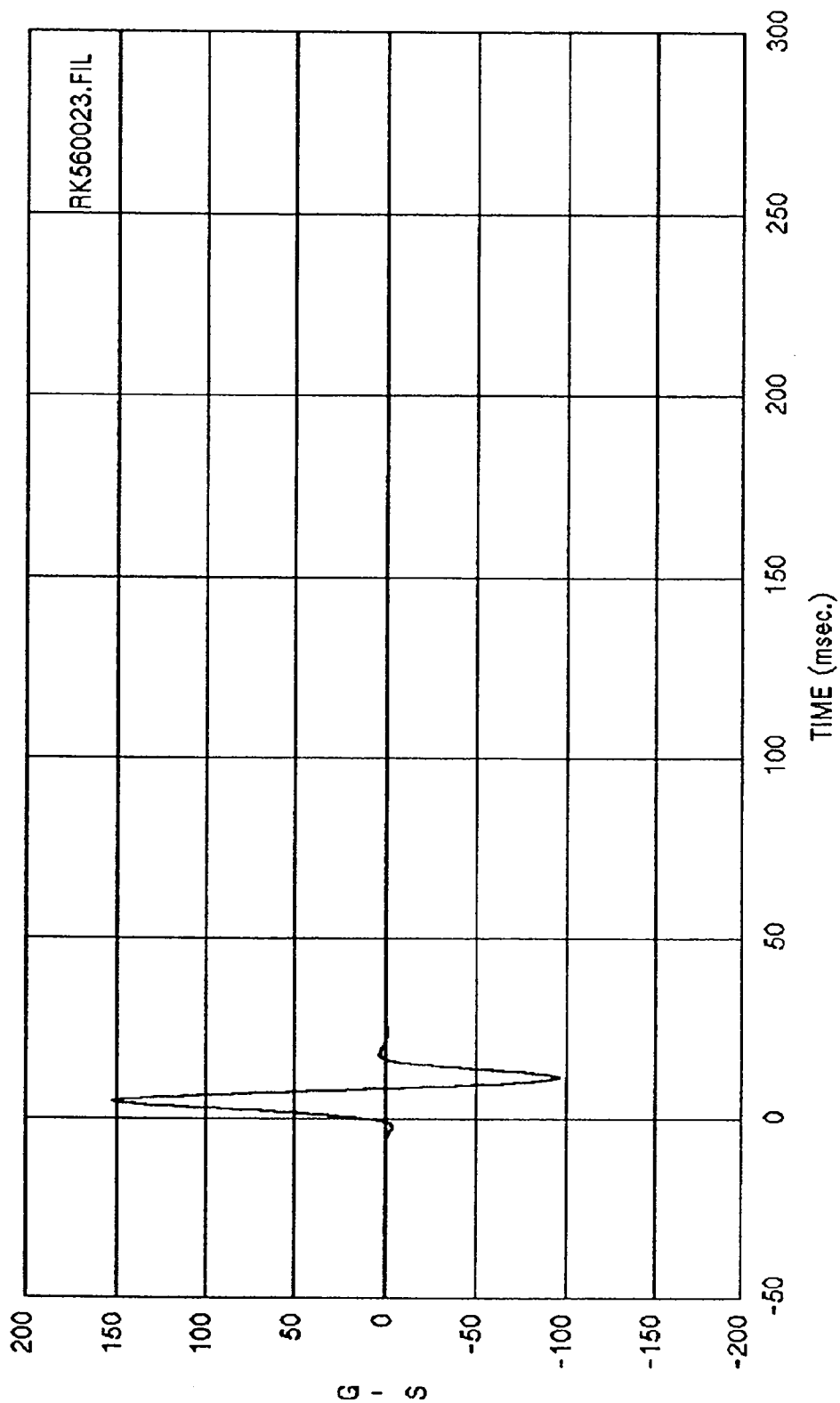
Curve: Left front door at centerline -- Y axis Filter: SAE CLASS 60 Max = 145.14 Min = -58.625

MSE Date: 09/11/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mitsubishi Mighty Max



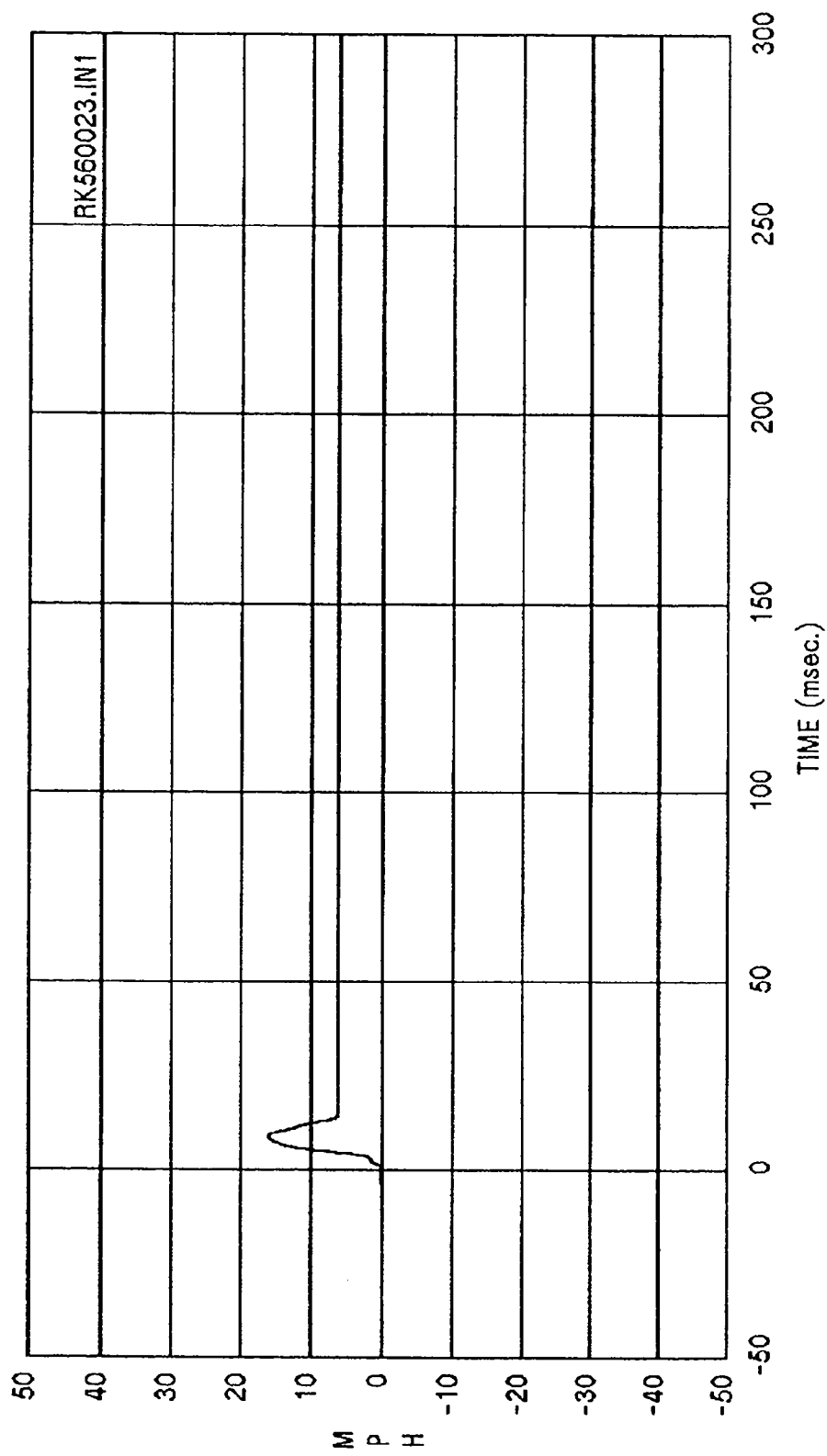
Curve: Left front door at centerline delta V -- Y axis Filter: SAE CLASS 180 Max = 23.794 Min = -.17326

MSE Date: 09/11/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mitsubishi Mighty Max



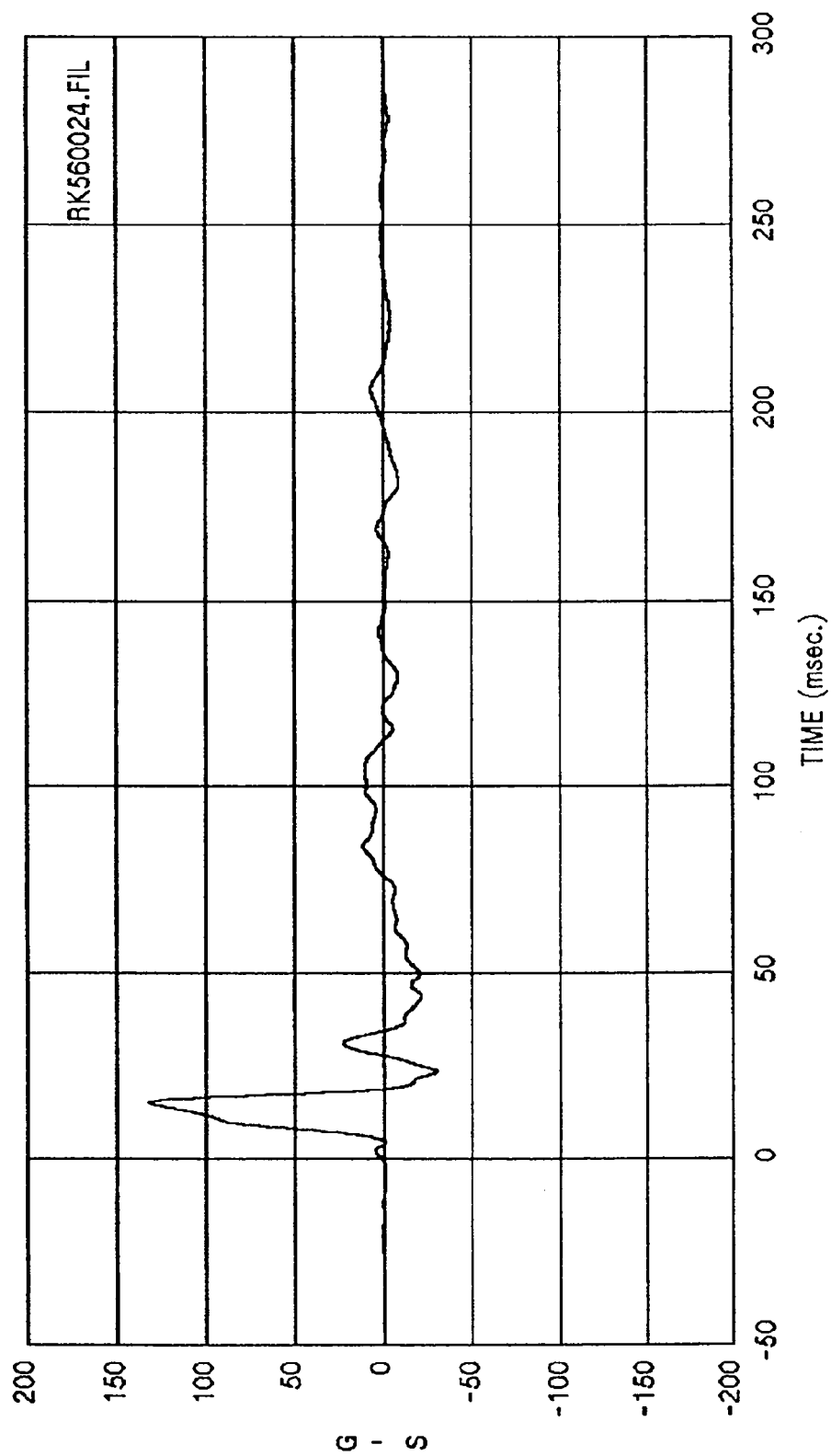
Curve: Left front door at mid-rear -- Y axis Filter: SAE CLASS 60 Max = 151.89 Min = -95.424

MSE Date: 09/11/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mitsubishi Mighty Max



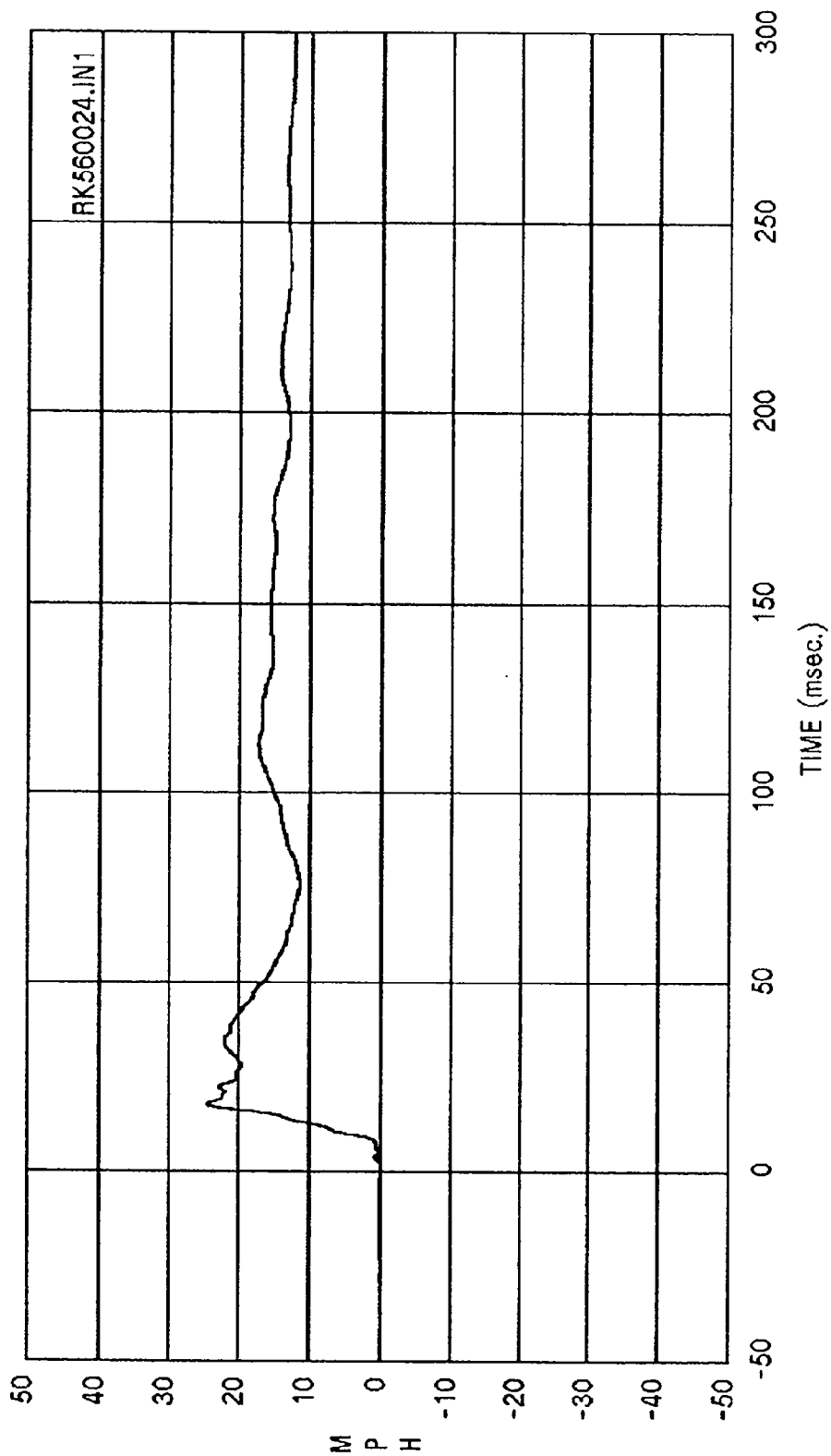
Curve: Left front door at mid-rear delta V -- Y axis Filter: SAE CLASS 180 Max = 16.108 Min = -.17112
01

MSE Date: 09/11/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mitsubishi Mighty Max



Curve: Left front door at upper centerline -- Y axis Filter: SAE CLASS 60 Max = 132.11 Min = -30.007

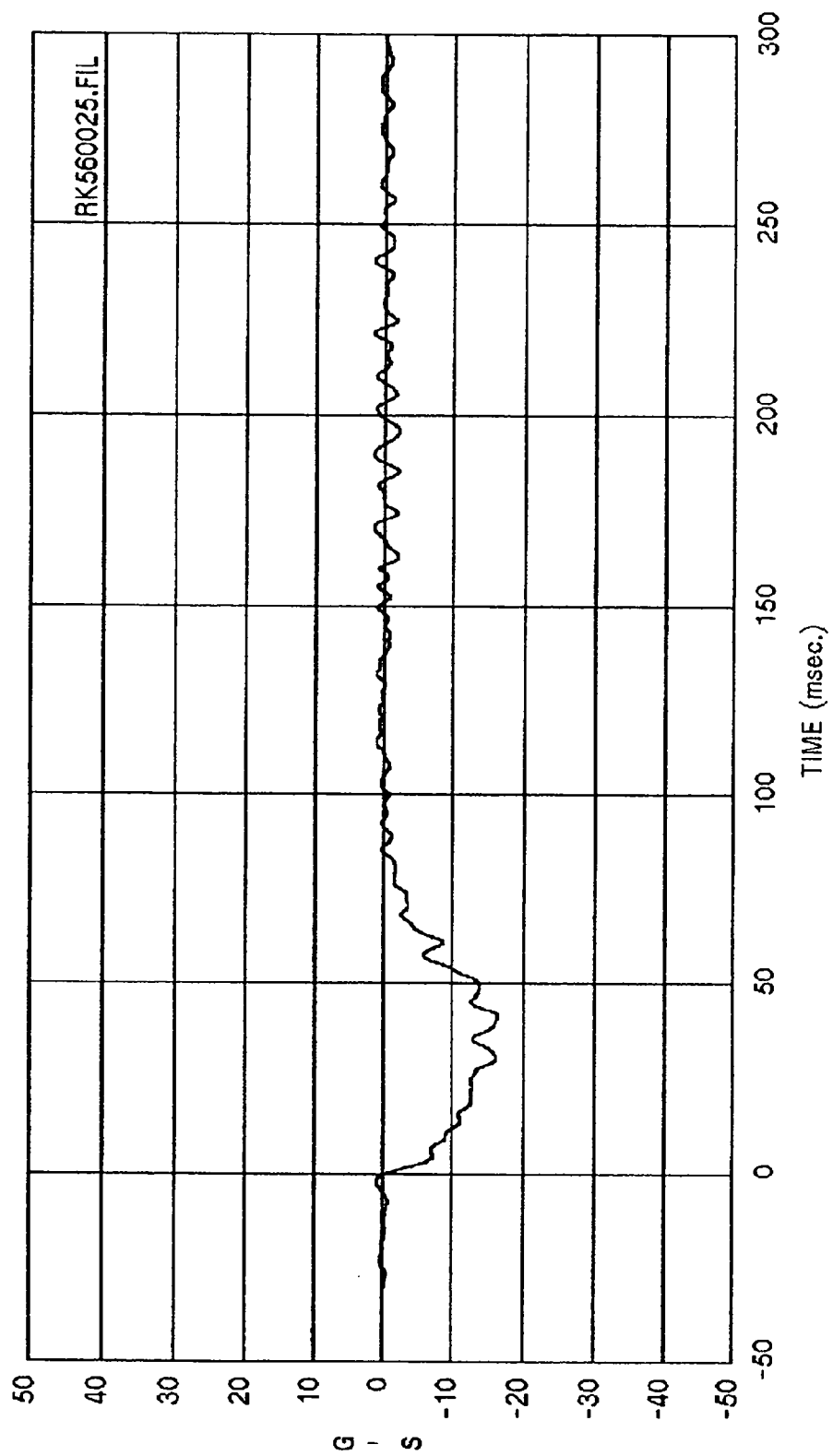
MSE Date: 09/11/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mitsubishi Mighty Max



Curve: Left front door at upper centerline -- Y axis Filter: SAE CLASS 180 Max = 24.557 Min = -.421481
01

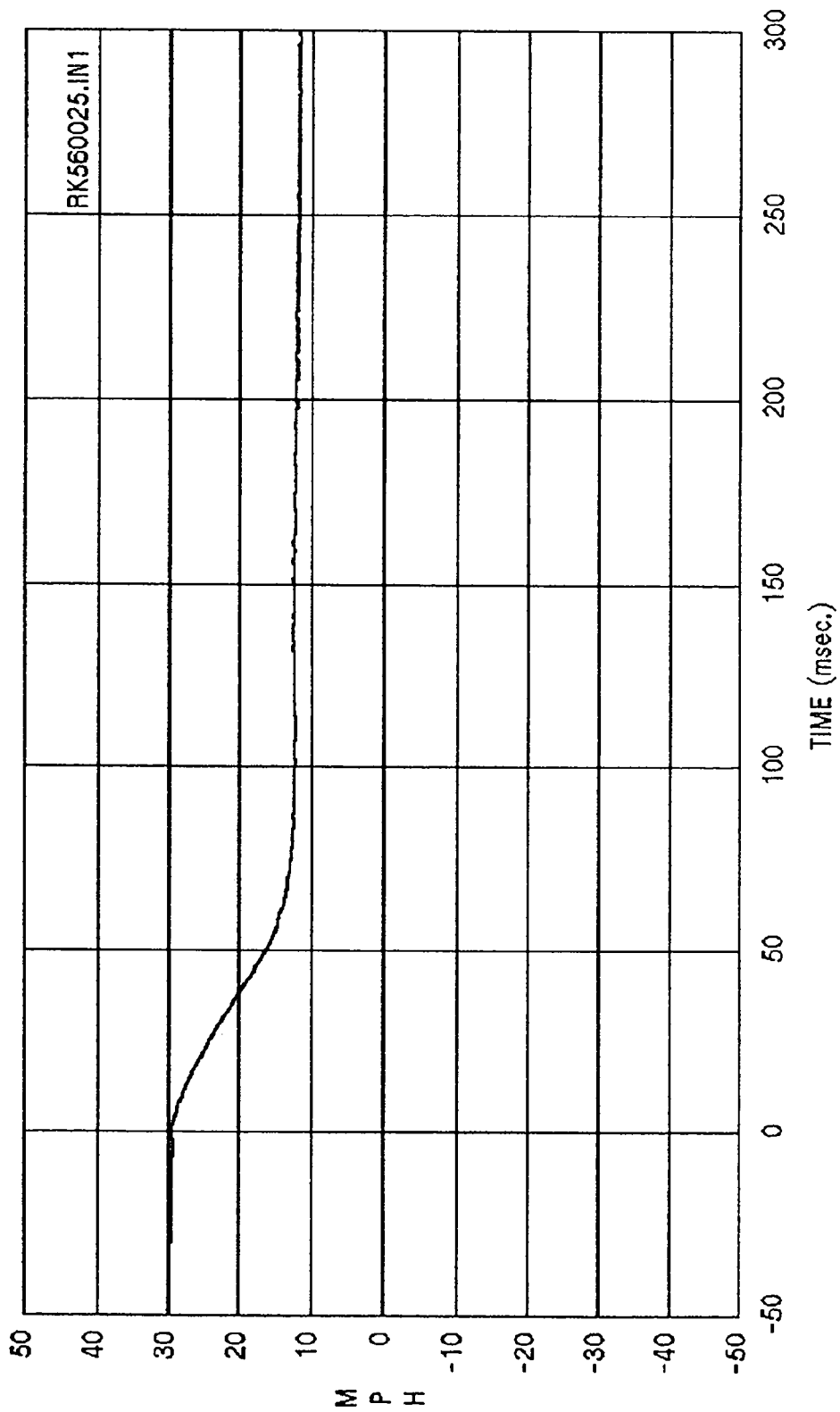
MSE Date: 09/11/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mitsubishi Mighty Max

MDB ACCELEROMETER DATA



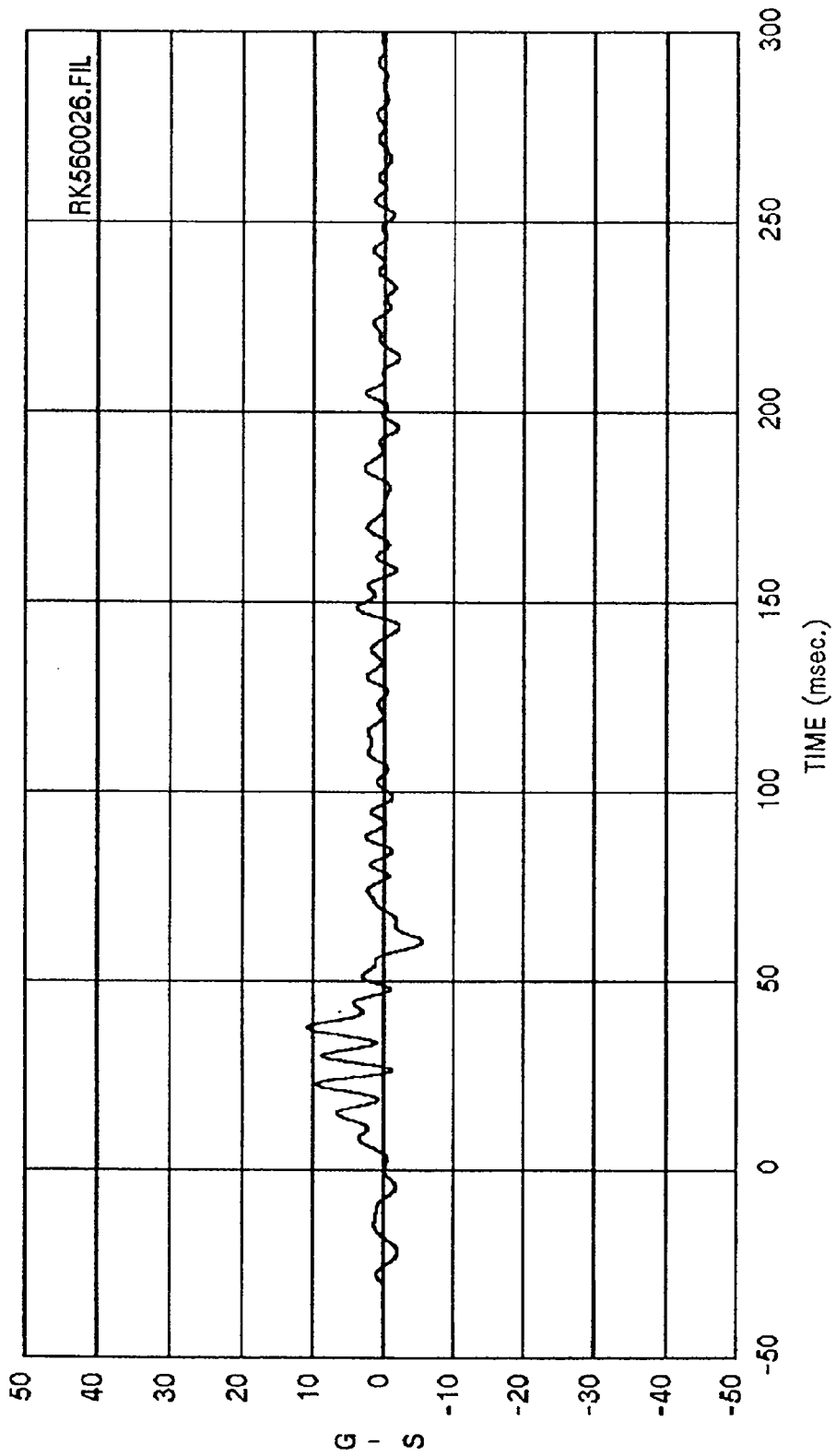
Curve: M.D.B. C/G acceleration -- X axis Filter: SAE CLASS 60 Max = 1.5414 Min = -16.566

MSE Date: 09/11/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mitsubishi Mighty Max



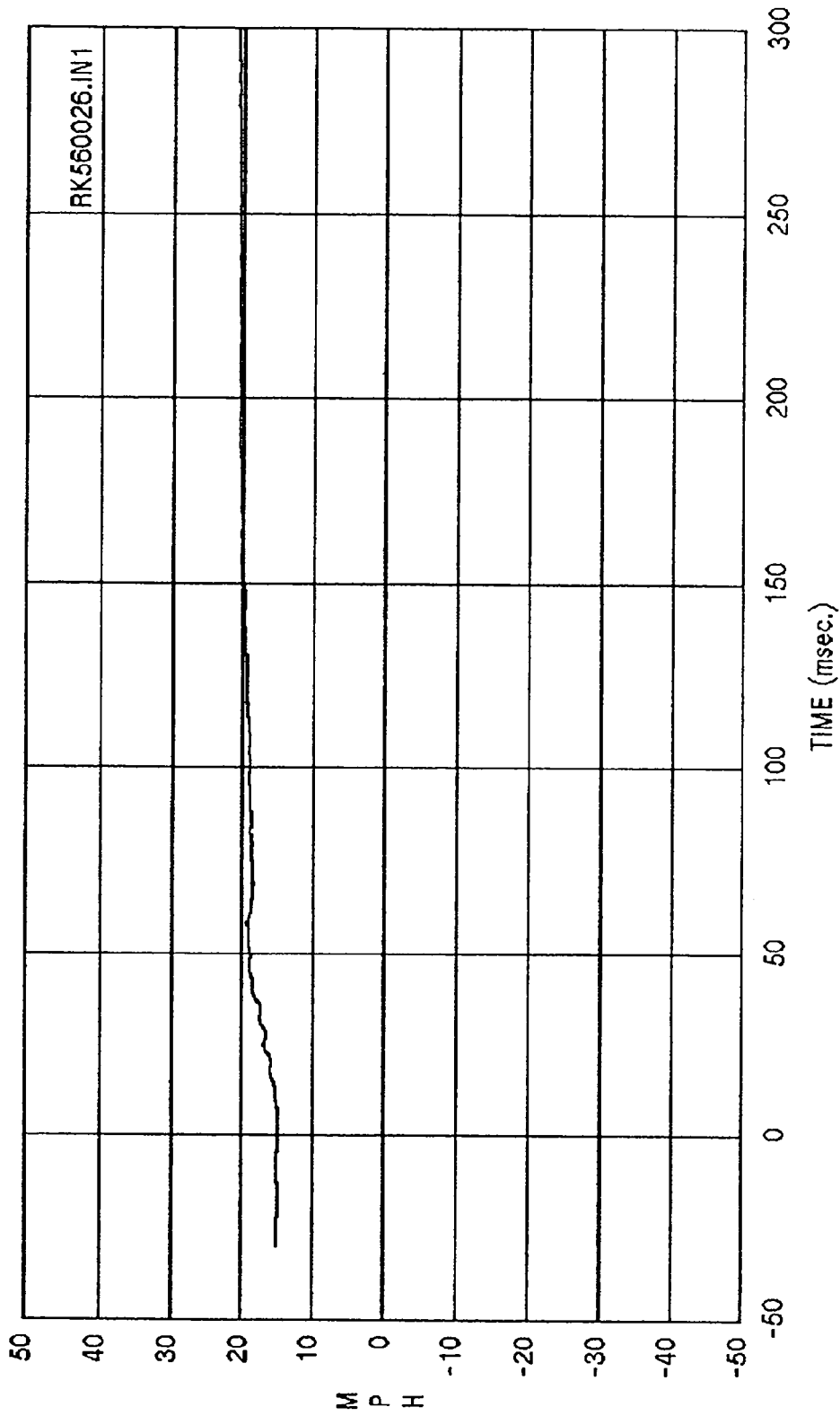
Curve: M.D.B. C/G delta V -- X axis Filter: SAE CLASS 180 Max = 29.592 Min = 11.749

MSE Date: 09/11/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mitsubishi Mighty Max



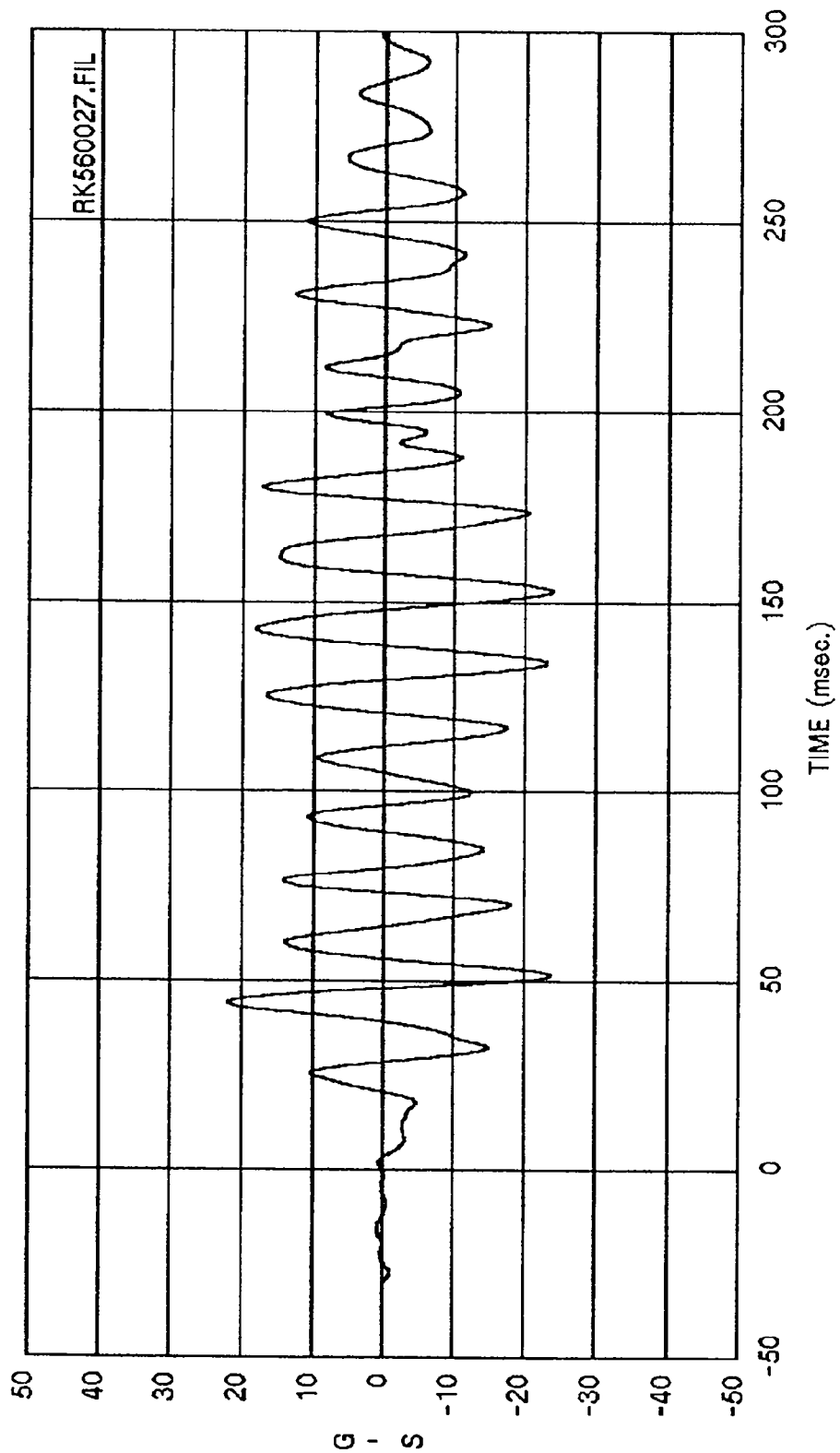
Curve: M.D.B. C/G acceleration -- Y axis Filter: SAE CLASS 60 Max = 10.803 Min = -5.5457

MSE Date: 09/11/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mitsubishi Mighty Max



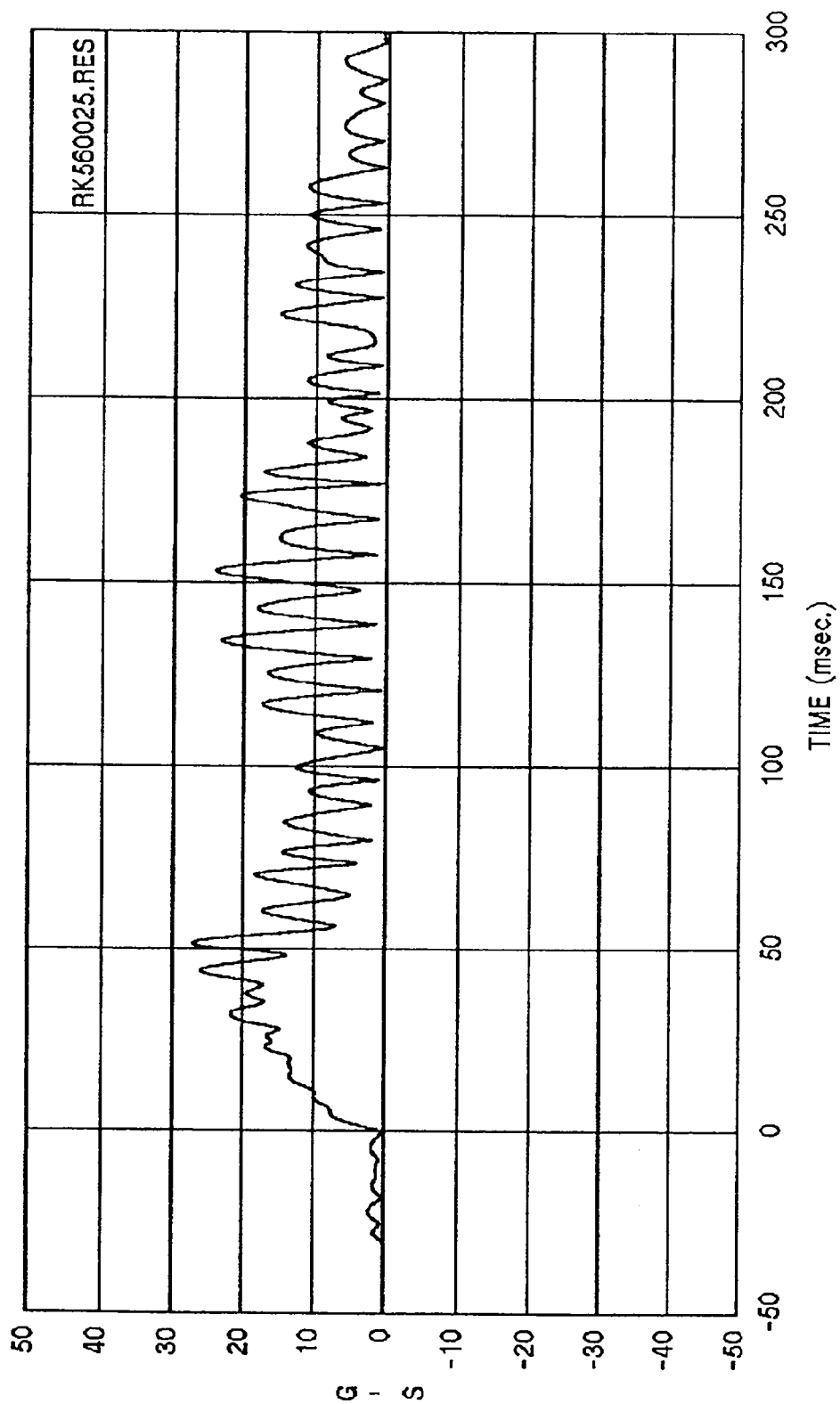
Curve: M.D.B. C/G delta V -- Y axis Filter: SAE CLASS 180 Max = 20.838 Min = 15.021

MSE Date: 09/11/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mitsubishi Mighty Max



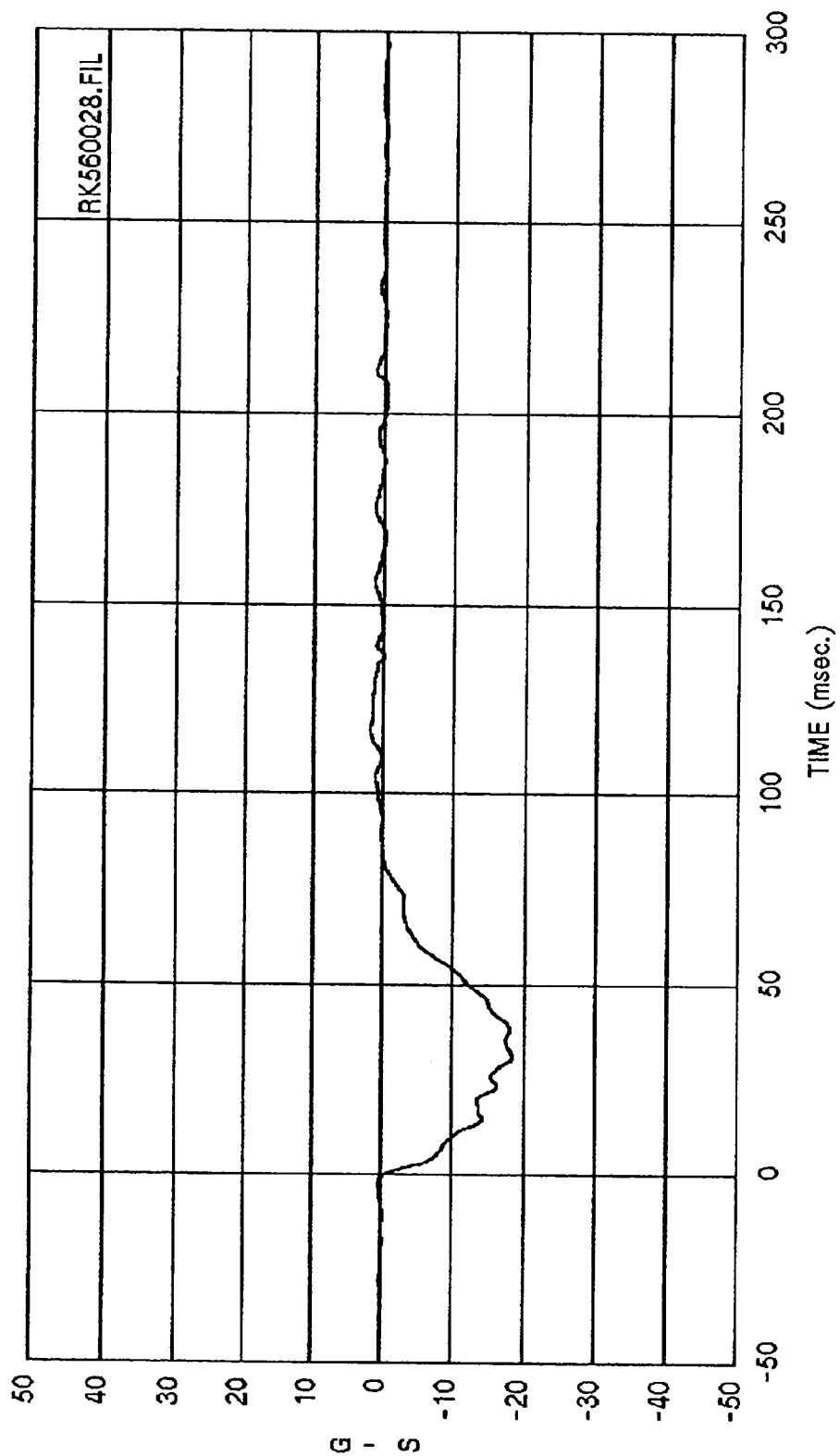
Curve: M.D.B. C/G acceleration -- Z axis Filter: SAE CLASS 60 Max = 21.921 Min = -23.974

MSE Date: 09/11/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mitsubishi Mighty Max



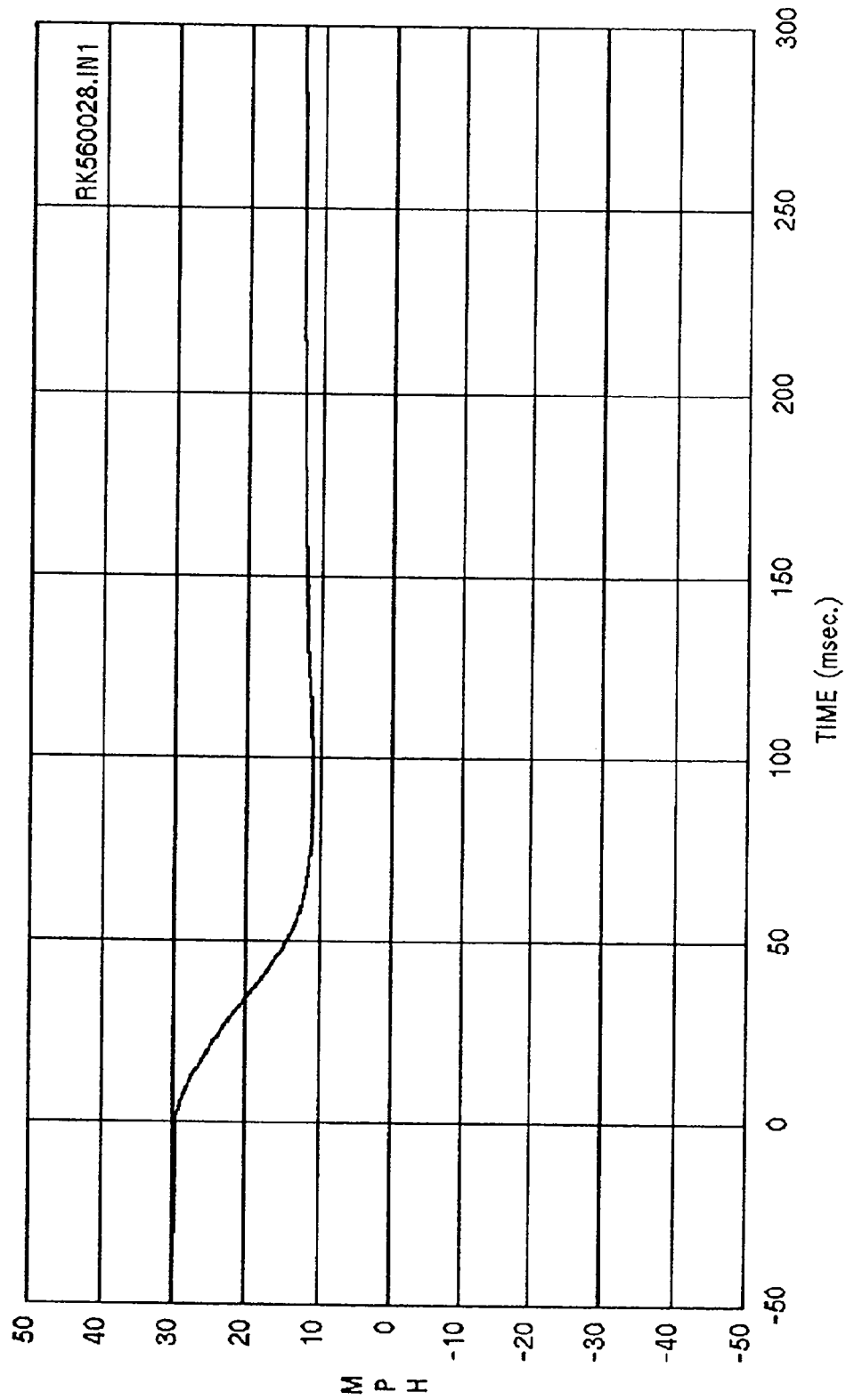
Curve: M.D.B. C/G resultant acceleration Filter: SAE CLASS 60 Max = 27.260 Min = .31604

MSE Date: 09/11/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mitsubishi Mighty Max



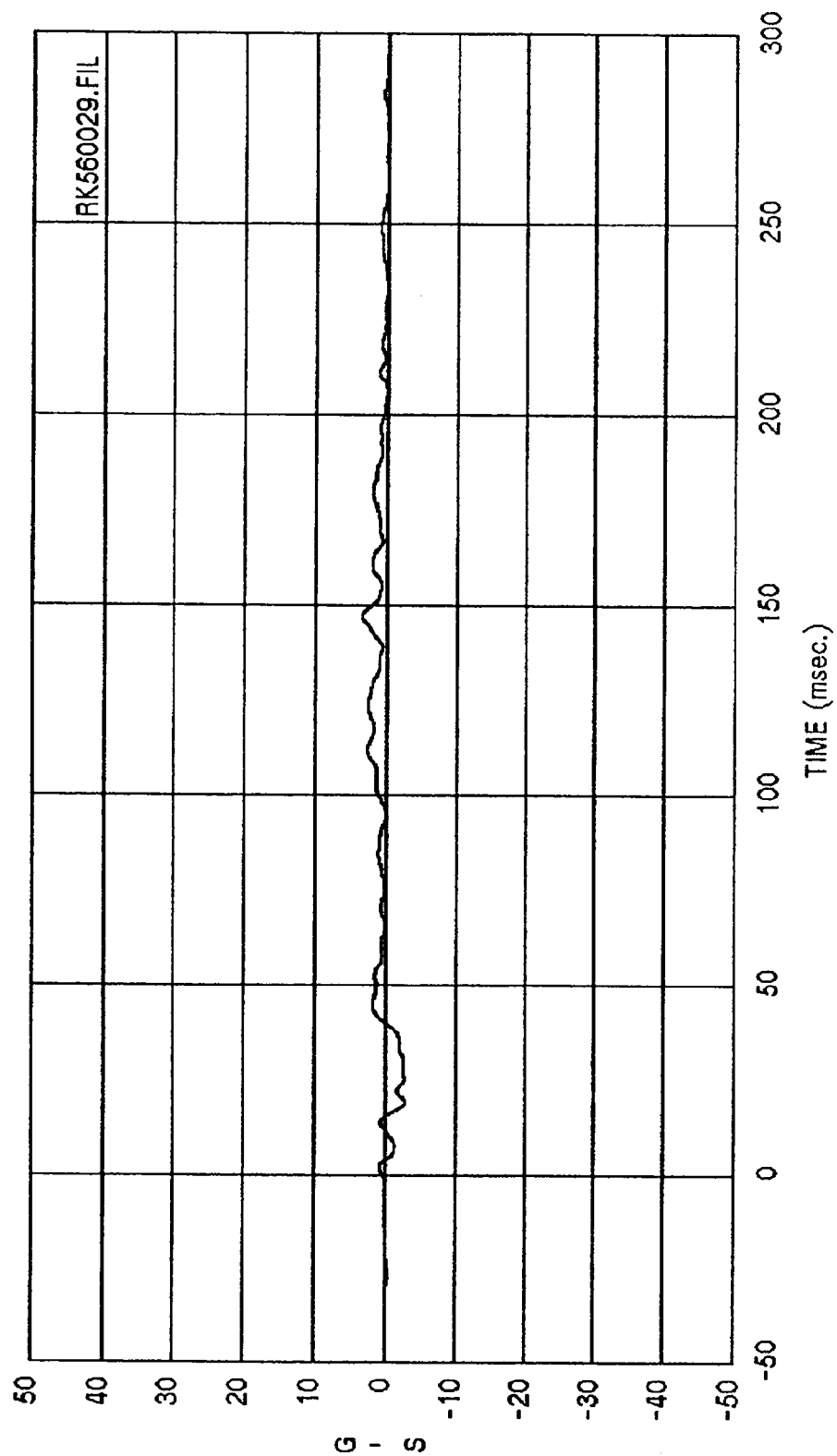
Curve: M.D.B. rear C/G acceleration -- X axis Filter: SAE CLASS 60 Max = 1.7622 Min = -18.500

MSE Date: 09/11/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mitsubishi Mighty Max



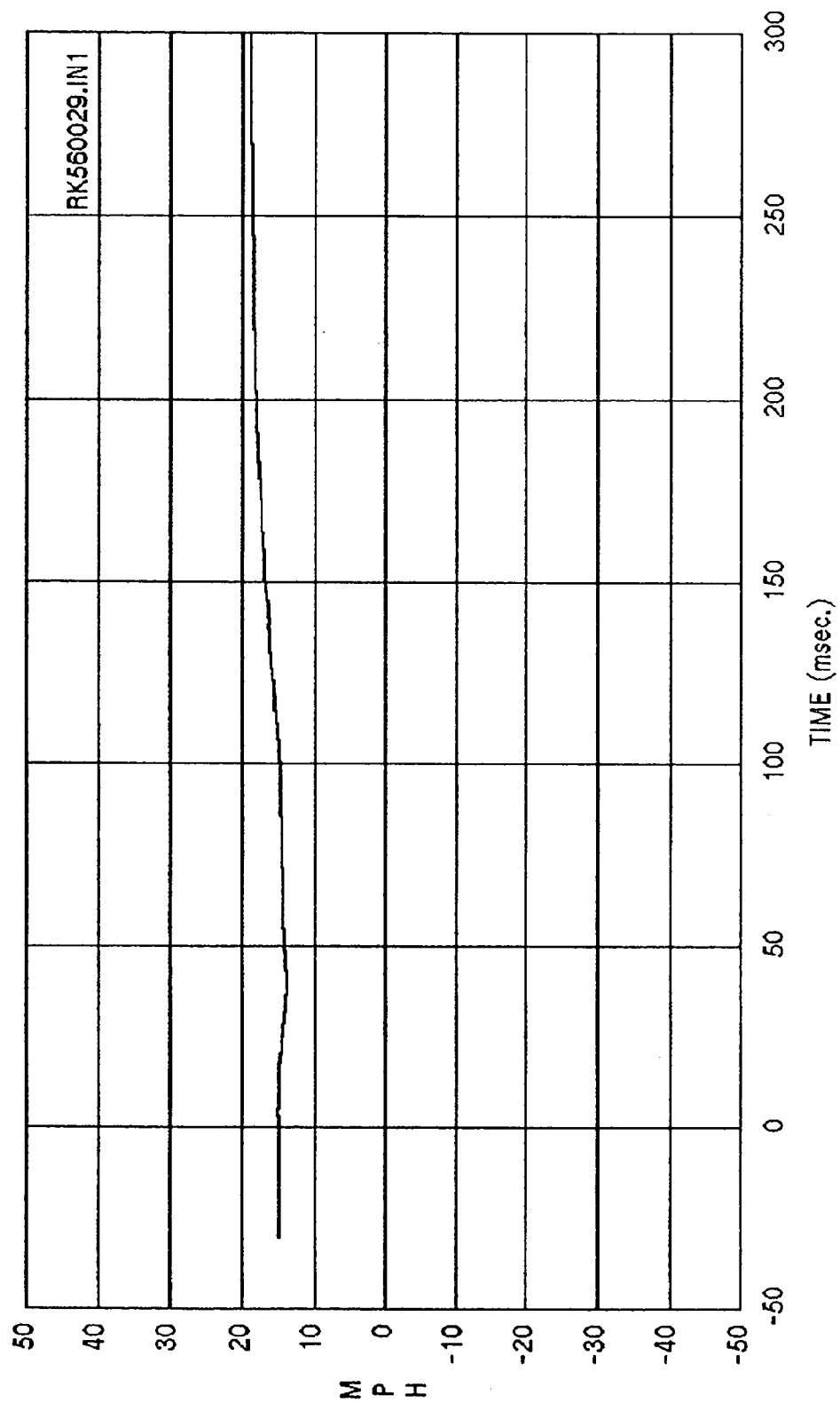
Curve: M.D.B. rear C/L delta V -- X axis Filter: SAE CLASS 180 Max = 29.597 Min = 11.042

MSE Date: 09/11/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mitsubishi Mighty Max



Curve: M.D.B. rear C/G acceleration -- Y axis Filter: SAE CLASS 60 Max = 3.2935 Min = -2.8480

MSE Date: 09/11/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mitsubishi Mighty Max



Curve: M.D.B. rear C/L delta V -- Y axis Filter: SAE CLASS 180 Max = 19.001 Min = 13.927

MSE Date: 09/11/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Mitsubishi Mighty Max

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. N/A

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:		14.0 ft/sec	
A. Upper Rib Accel. Primary	37 - 46 g's		43.9 g's
Secondary	37 - 46 g's		44.2 g's
B. Lower Rib Accel. Primary	37 - 46 g's		42.2 g's
Secondary	37 - 46 g's		42.8 g's
C. Lower Spine Accel. Primary	15 - 22 g's		21.4 g's
Secondary	15 - 22 g's		21.5 g's
PELVIC IMPACT TEST:		14.0 ft/sec	
Pelvic Accel.	40 - 60 g's		51.0 g's



MOBILITY SYSTEMS and EQUIPMENT COMPANY

MAIN OFFICE: MAILING CENTER
9920 La Cienega Blvd., Suite 708
Inglewood, California 90301
Phone: (310) 641-3606
Fax: (310) 641-1930

AUTOMOTIVE RESEARCH CENTER (ARC)
19867 Cajon Boulevard
San Bernardino, California 92407
Phone: (714) 887-1938 *AOA*
Fax: (714) 887-5937
09 October 1992

U.S. Department of Transportation
National Highway Traffic Safety Administration
Office of Crashworthiness Research
400 Seventh Street SW, Room No. 62261
Washington, DC 20590

Attention: Dr. Tom Hollowell, NRD-11

Subject: Submittal of Final Test Report for R&D
"Side Impact Protection Study in
Production Vehicles", (P-1086)
Contract No. DTNH22-87-C-07168, D.O. #3

Dear Mr. Hollowell:

Enclosed herewith are four (4) copies of the subject test report on
the following vehicle:

<u>VEHICLE</u>	<u>NHTSA NO.</u>
MITSUBISHI MIGHTY MAX	RK5600

If you should have any questions regarding the enclosed material,
please do not hesitate to contact us.

Yours truly,

Dr. Anil V. Khadilkar
Project Manager

AVK/pb
Encl.

Khadilkar