

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

NHTSA NO.: RK0504

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



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

Approved by: _____

Dr. Anil V. Khadilkar
Dr. Anil V. Khadilkar

Date: _____

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16. Abstract A 30/15 mph 90° Impact (Moving Deformable Barrier) Test was conducted on the subject 1989 Suzuki Sidekick, 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 August 27, 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 100°F. The target vehicle post test maximum crush was 16.6 inches at level 2. The test vehicle's performance follows: <table border="0" style="width: 100%;"> <thead> <tr> <th></th> <th>DRIVER</th> <th>PASS</th> </tr> </thead> <tbody> <tr> <td>Left Upper Rib (LUR) Accel., g</td> <td>60.0</td> <td>N/A</td> </tr> <tr> <td>Left Lower Rib (LLR) Accel., g</td> <td>96.2</td> <td>N/A</td> </tr> <tr> <td>Lower Spine (T) Accel., g</td> <td>94.7</td> <td>N/A</td> </tr> </tbody> </table> 12 <table border="0" style="width: 100%;"> <tbody> <tr> <td>Thoracic Trauma Index (TTI) d</td> <td>95.5</td> <td>N/A</td> </tr> </tbody> </table> Pelvis (PEV) Accel., g 150.5 N/A 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	60.0	N/A	Left Lower Rib (LLR) Accel., g	96.2	N/A	Lower Spine (T) Accel., g	94.7	N/A	Thoracic Trauma Index (TTI) d	95.5	N/A
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17. Key Words OCCUPANT RESPONSE, MDB, SIDE IMPACT, TTI, SIDE IMPACT DUMMY (SID) MOVING BARRIER CRASH TESTING 1989 SUZUKI SIDEKICK			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	0.04	inches	in
cm	centimeters	0.4	inches	in
m	meters	3.3	feet	ft
m	meters	1.1	yards	yd
km	kilometers	0.6	miles	mi

AREA

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

MASS (weight)

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

VOLUME

ml	milliliters	0.03	fluid ounces	fl oz
l	liters	2.1	pints	pt
l	liters	1.06	quarts	qt
l	liters	0.26	gallons	gal
m ³	cubic meters	36	cubic feet	ft ³
m ³	cubic meters	1.3	cubic yards	yd ³

TEMPERATURE (exact)

°C	Celsius	9/5 (then add 32)	Fahrenheit	°F

APPROXIMATE CONVERSIONS FROM METRIC MEASURES

SYMBOL WHEN YOU KNOW MULTIPLY BY TO FIND SYMBOL

LENGTH

in	inches	2.5	centimeters	cm
ft	feet	30	centimeters	cm
yd	yards	0.9	meters	m
mi	miles	1.6	kilometers	km

AREA

in ²	square inches	6.5	square centimeters	cm ²
ft ²	square feet	0.09	square meters	m ²
yd ²	square yards	0.6	square meters	m ²
mi ²	square miles	2.6	square kilometers	km ²
	acres	0.4	hectares	ha

MASS (weight)

oz	ounces	28	grams	g
lb	pounds	0.45	kilograms	kg
	short tons (2000lb)	0.9	tonnes	t

VOLUME

1sp	teaspoons	5	milliliters	ml
1bsp	tablespoons	15	milliliters	ml
fl oz	fluid ounces	30	milliliters	ml
c	cups	0.24	liters	l
pt	pints	0.47	liters	l
qt	quarts	0.95	liters	l
gal	gallons	3.8	liters	l
ft ³	cubic feet	0.03	cubic meters	m ³
yd ³	cubic yards	0.76	cubic meters	m ³

TEMPERATURE (exact)

°F	Fahrenheit	5/9 (after subtracting 32)	Celsius	°C

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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 $\pm$ 0.5 mph.

The subject vehicle for this test was a 1989 Suzuki Sidekick. The test was performed on 275 August 1992 at an actual impact speed of 33.42 mph. The leading left-hand edge of the MDB contacted the test vehicle 37.8 inches forward of the midpoint between the axles.

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 1991 Suzuki Sidekick, was tested on 27 August 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 forward of the midpoint of the wheelbase.

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.

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. The MDB face was placed at a height such that the bottom of the face was 15 inches above the ground.

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 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 SUZUKI SIDEKICK

VEH. BODY STYLE: 4 WHEEL DRIVE

VIN: J54TA01C3K4103473

VEH. NHTSA NO.: RK0504

VEH. BUILD DATE: 8-88

TEST DATE: 8-27-92 TEST LAB.: MSE

TEST RESULTS:

Vehicle Overall Length = 137.1 inches; Vehicle Overall Width 64.0 inches

Vehicle Test Weight: 737 lbs. Left Front

610 lbs. Left Rear

779 lbs. Right Front

719 lbs. Right Rear

1516 lbs. TOTAL FRONT

1329 lbs. TOTAL REAR

Wheelbase = 86.2 inches

Longitudinal C.G. from center of front axle = 40.2 inches

Impact Angle with respect to impactor = 90 degrees

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

1. LEVEL 1 (14.8 inches above ground) = 11.6 inches

2. LEVEL 2 (28.1 inches above ground) = 16.6 inches

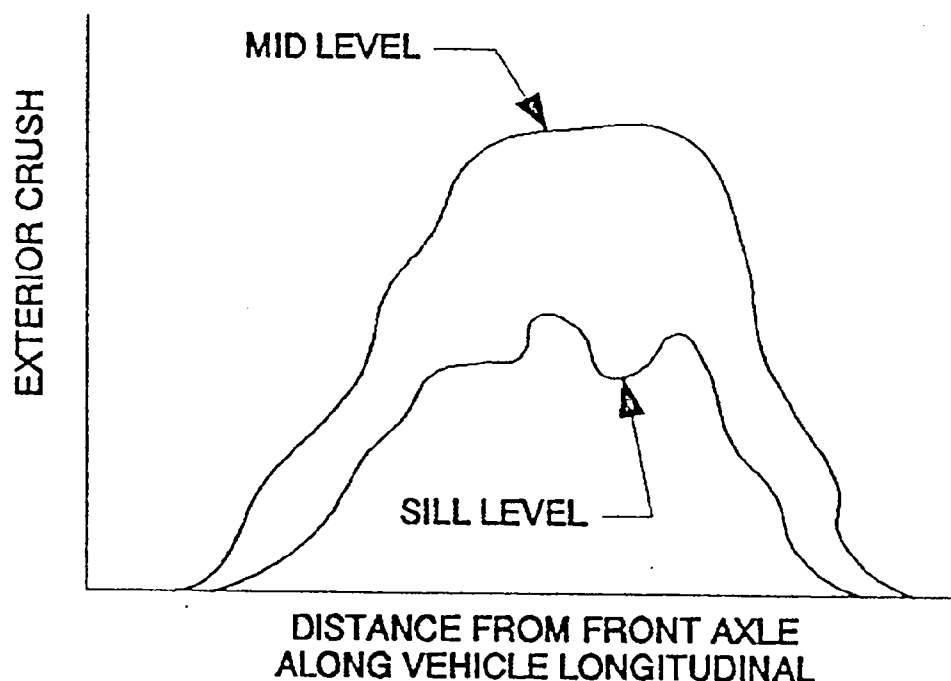
3. LEVEL 3 (29.1 inches above ground) = 16.1 inches

4. LEVEL 4 (42.5 inches above ground) = 12.6 inches

5. LEVEL 5 (61.0 inches above ground) = 5.3 inches

Maximum Post Test Intrusion = 16.6 inches

External Lateral Damage Profile (sample shown below)



Occupants: DRIVER PASS. (LEFT REAR)

Dummy Identification SID # 136 SID # N/A

Restraint Used 3 point continuous webbing
active belt system

Instrumentation:

Number of Data Channels = 29

Number of Cameras: Onboard = 2 High Speed

Offboard = 6 High Speed (2 on MDB), 1 Real Time

Door Opening: LEFT SIDE RIGHT SIDE

FRONT -- NO NO

REAR -- N/A N/A

Arm Rest Location: Front -- N/A

Rear -- N/A

Front Seat Cushion Movement: To the right

Front Seat Back Movement: To the right

Glazing Breakage: Impact side window shattered; windshield cracked but intact

Pillar Failure: None

Sill Separation: None

Other Notable Impact Effect: Driver's seat adjustor right rear anchor point failed. Both of SID's legs were broken above the knee. Some deformation to right side of vehicle aft of door.

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 = 33.21 mph

Maximum Static Crush of Honeycomb Impact Face:

1. ROW A at bumper level = 2.5 inches
2. ROW B at midstack level = 1.5 inches
3. ROW C at top of stack level = 3.1 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 seat belt anchorage bolt is on the B-post, 23.5 inches above the
B-post striker.

Visible Dummy Contact Points--	FRONT SID	REAR SID
HEAD	B-pillar, rear of passenger head restraint	N/A
SHOULDER	B-pillar, door, driver head restraint	
HIP	Door	
LEFT KNEE	Door	
RIGHT KNEE	Center console	
	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>60.0</u> <u>31.3</u> <u>20.8</u> <u>73.1</u>	___ ___
Lower Rib Lateral Y	<u>96.2</u> <u>31.9</u> <u>20.9</u> <u>93.1</u>	___ ___
SPINE ACCELERATIONS:		
Lower Lateral Y	<u>94.7</u> <u>33.8</u> <u>28.9</u> <u>66.3</u>	___ ___
PELVIS ACCELERATIONS:		
Lateral Y	<u>150.5</u> <u>28.1</u> <u>18.1</u> <u>74.4</u>	___ ___

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

REMARKS:

RECORDED BY: Brian O'Keefe DATE: 09/03/92

APPROVED BY: *aw* 9/11/92

SIDE IMPACT DUMMY (SID) TEST DATA SUMMARY
1989 SUZUKI SIDEKICK, NHTSA NO. RK0504

TEST DATE: 08/27/92

	FRONT DUMMY -- ID # 136				REAR DUMMY -- ID # N/A			
	POS.	DIRECT	NEG.	DIRECT	POS.	DIRECT	NEG.	DIRECT
	MAX (g)	TIME (msec)	MAX (g)	TIME (msec)	MAX (g)	TIME (msec)	MAX (g)	TIME (msec)
HEAD ACCELERATIONS:								
Longitudinal --- X	20.2	47.5	29.0	38.2				
Lateral ----- Y	98.0	41.8	6.6	50.3				
Vertical ----- Z	19.6	71.1	25.2	46.3				
RESULTANT ----- R	98.3	41.8						
HIC ----- (TIME INTERVAL, SEC.)	235.8 (0.0391 TO 0.0460)				N/A			
RIB ACCELERATIONS:								
1.Upper Rib Lateral Y	60.0	31.3	20.8	73.1				
2.Upper Rib Lateral Y	63.4	31.3	28.6	72.5				
1.Lower Rib Lateral Y	96.2	31.9	20.9	93.1				
2.Lower Rib Lateral Y	98.5	31.9	20.8	60.0				
SPINE ACCELERATIONS:								
1.Upper Rib Lateral Y	98.5	31.3	31.3	68.1				
2.Upper Rib Lateral Y	98.0	31.3	32.8	68.1				
1.Lower Rib Lateral Y	94.7	33.8	28.9	66.3				
2.Lower Rib Lateral Y	91.2	33.8	32.1	66.3				
PELVIS ACCELERATIONS:								
Lateral Y	150.5	28.1	18.1	74.4				
RIB DEFLECTION:	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
THORACIC TRAUMA INDEX (TTI), G's (d)	95.5							

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 Suzuki Sidekick was impacted at 33.21 mph by the 27 crabbed MDB on 27 August 1992. The MDB's left edge contacted the test vehicle 0.8 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 16.0 inches. Pretest and posttest vehicle dimensions are shown in Data Sheets 5 and 6.

The MDB impacted the 1989 Suzuki Sidekick at a height that was above the sill. As a result, the MDB created extensive deformation to the left side door and "B" pillar. The door contacted the SIDs at the lower and mid torso before the SIDs began to move. The contact to the lower and mid torso, started the SIDs heads to rotate in the counterclockwise direction. The SID's head impacted the B-pillar. The SID then rebounded to the right, it's head hitting the rear of the passenger side head restraint. Both legs were broken between the knee and femur. The SID ended up facing forward, leaning to the right, slightly 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 minor damage with a maximum crush of 3.1 inches on the upper left corner. The crush details for the MDB are given in Data Sheet No. 7.

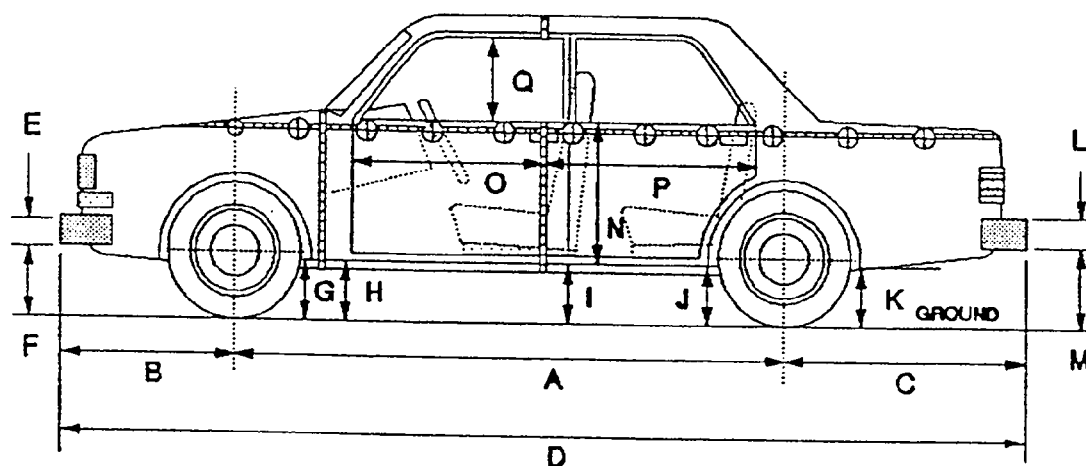
DATA SHEETS NO. 2

PRETEST AND POST TEST MEASUREMENTS

VEH. MOD YR/MAKE/MODEL/BODY: 1989 SUZUKI SIDEKICK 4WD

VEH. NHTSA NO.: RK0504 VIN.: JS4TA01C3K4103473

TEST DATE: 08/27/92 TEST LAB.: MSE



LEFT SIDE VIEW

	Pretest (inches)	Post Test (inches)	Change .		Pretest (inches)	Post Test (inches)	Change
A	<u>86.2</u>	<u>86.0</u>	<u>0.2</u>	J	<u>11.4</u>	<u>17.4</u>	<u>6.0</u>
B	<u>24.5</u>	<u>24.5</u>	<u>0.0</u>	K	<u>12.9</u>	<u>13.4</u>	<u>0.5</u>
C	<u>26.4</u>	<u>26.4</u>	<u>0.0</u>	L	<u>9.8</u>	<u>9.8</u>	<u>0.0</u>
D	<u>137.1</u>	<u>136.9</u>	<u>0.2</u>	M	<u>15.4</u>	<u>16.4</u>	<u>1.0</u>
E	<u>4.3</u>	<u>4.3</u>	<u>0.0</u>	N	<u>26.5</u>	<u>22.9</u>	<u>3.6</u>
F	<u>19.2</u>	<u>19.4</u>	<u>0.2</u>	O	<u>18.6</u>	<u>18.5</u>	<u>0.1</u>
G	<u>10.5</u>	<u>15.3</u>	<u>4.8</u>	P	<u>66.0</u>	<u>61.4</u>	<u>4.6</u>
H	<u>10.9</u>	<u>15.7</u>	<u>4.8</u>	Q	<u>19.1</u>	<u>19.0</u>	<u>0.1</u>
I	<u>11.4</u>	<u>14.7</u>	<u>3.3</u>				

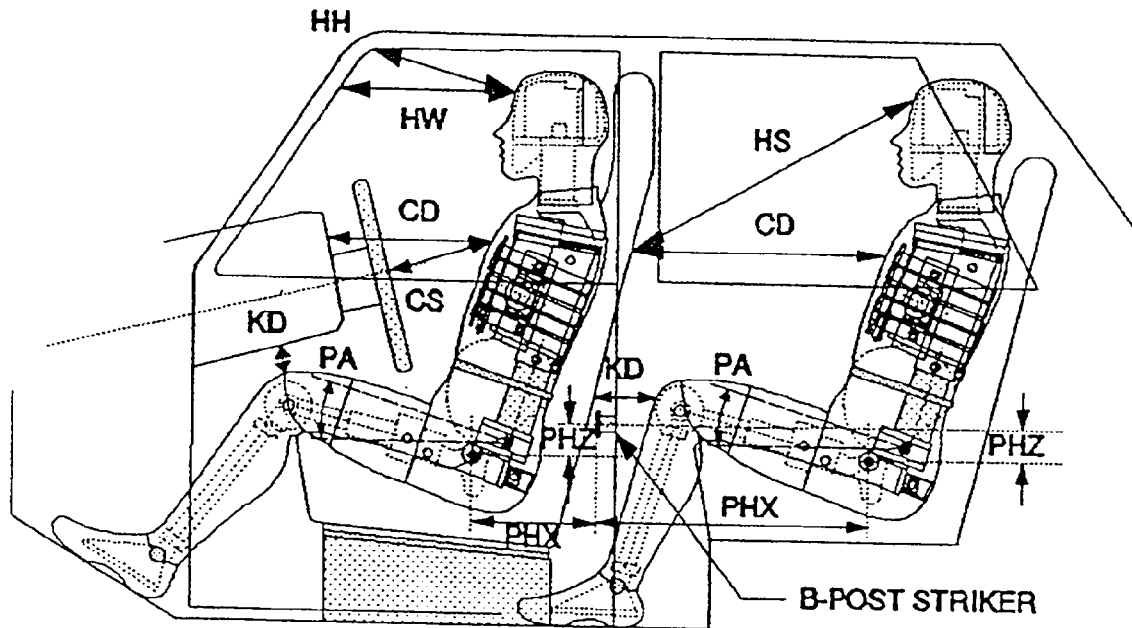
DATA SHEET NO. 3

SID LONGITUDINAL CLEARANCE DIMENSIONS

VEH. MOD YR/MAKE/MODEL/BODY: 1989 SUZUKI SIDEKICK 4WD

VEH. NHTSA NO.: RK0504 VIN.: JS4TA01C3K4103473

TEST DATE: 08/27/92 TEST LAB.: MSE



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	25.7	inches
HW	31.9	inches
HS	25.9	inches
CD	26.2	inches
CS	18.8	inches
KDL	6.7	inches
KDR	6.4	inches
PA	24	degrees
PHX	9.5	inches
PHZ	2.8	inches

REAR SID ID# N/A

_____	inches
_____	inches
_____	inches
_____	inches
_____	inches
_____	inches
_____	inches
_____	inches
_____	inches

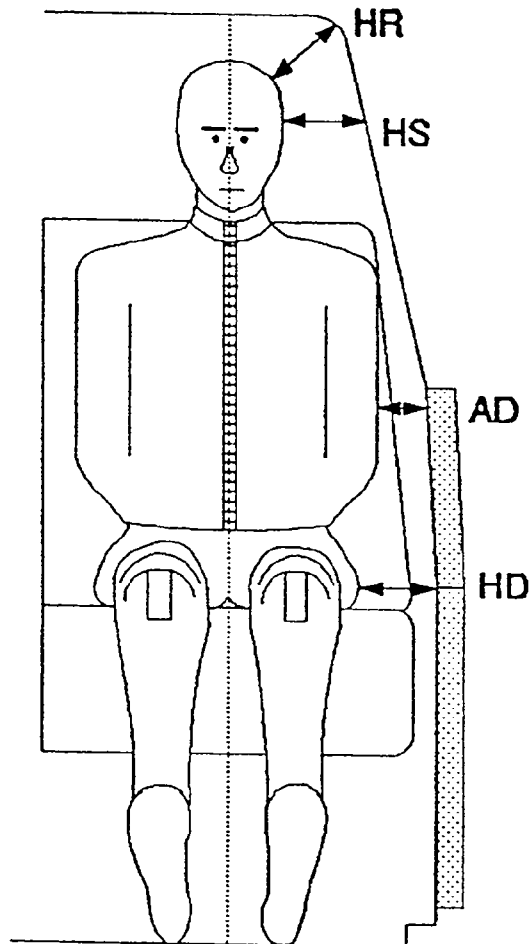
DATA SHEET NO. 4

SID LATERAL CLEARANCE DIMENSIONS

VEH. MOD YR/MAKE/MODEL/BODY: 1989 SUZUKI SIDEKICK

VEH. NHTSA NO.: RK0504 VIN.: JS4TA01C3K4103473

TEST DATE: 08/27/92 TEST LAB.: MSE



DRIVER SID ID# 136

REAR SID ID# N/A

HR	<u>5.8</u>	inches
HS	<u>5.2</u>	inches
AD	<u>1.5</u>	inches
HD	<u>4.5</u>	inches

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

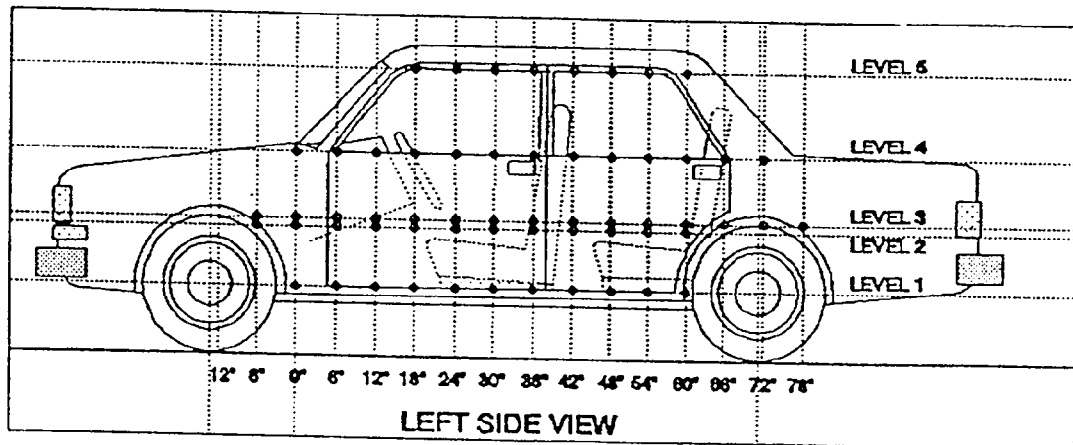
DATA SHEET NO. 5

VEHICLE SIDE MEASUREMENT

VEH. MOD YR/MAKE/MODEL/BODY: 1989 SUZUKI SIDEKICK 4WD

VEH. NHTSA NO.: RK0504 VIN.: JS4TA01C3K4103473

TEST DATE: 08/27/92 TEST LAB.: MSE



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 = 61.0 inches

LEVEL 4 @ Window Sill = 42.5 inches

LEVEL 3 @ Mid Door = 29.1 inches

LEVEL 2 @ Occupant H-Point = 28.1 inches

LEVEL 1 @ Axle Centerline Height = 14.8 inches
(or Sill Top Height)

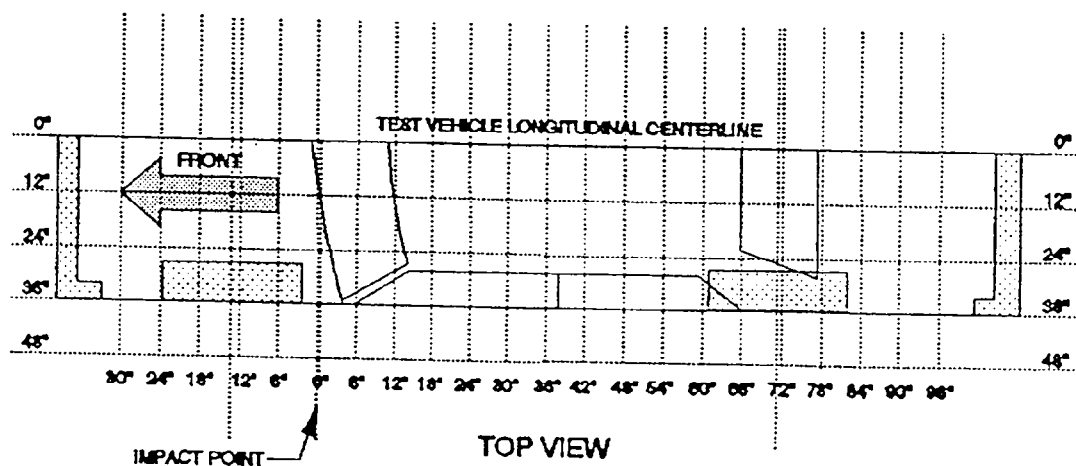
DATA SHEET NO. 6A

PRETEST AND POST TEST VEHICLE EXTERIOR PROFILES

VEH. MOD YR/MAKE/MODEL/BODY: 1989 SUZUKI SIDEKICK 4WD

VEH. NHTSA NO.: RK0504 VIN.: JS4TA01C3K4103473

TEST DATE: 08/27/92 TEST LAB.: MSE



LEVEL 1 AT AXLE CENTERLINE or TOP SIDE SILL

14.8 INCHES ABOVE GROUND LEVEL AT THE DOOR 30" LINE

ADD PROFILE INFORMATION ON THE NEXT PAGE

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>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>26.3</u>	<u>16.3</u>	<u>10.0</u>
18 Inches	<u>28.1</u>	<u>16.5</u>	<u>11.6</u>
24 Inches	<u>28.0</u>	<u>16.5</u>	<u>11.5</u>
30 Inches	<u>28.0</u>	<u>16.5</u>	<u>11.5</u>
36 Inches	<u>27.9</u>	<u>16.5</u>	<u>11.4</u>
42 Inches	<u>27.9</u>	<u>16.5</u>	<u>11.4</u>
48 Inches	<u>27.7</u>	<u>16.5</u>	<u>11.2</u>
54 Inches	<u>27.7</u>	<u>16.8</u>	<u>10.9</u>
60 Inches	<u>26.8</u>	<u>16.6</u>	<u>10.2</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:

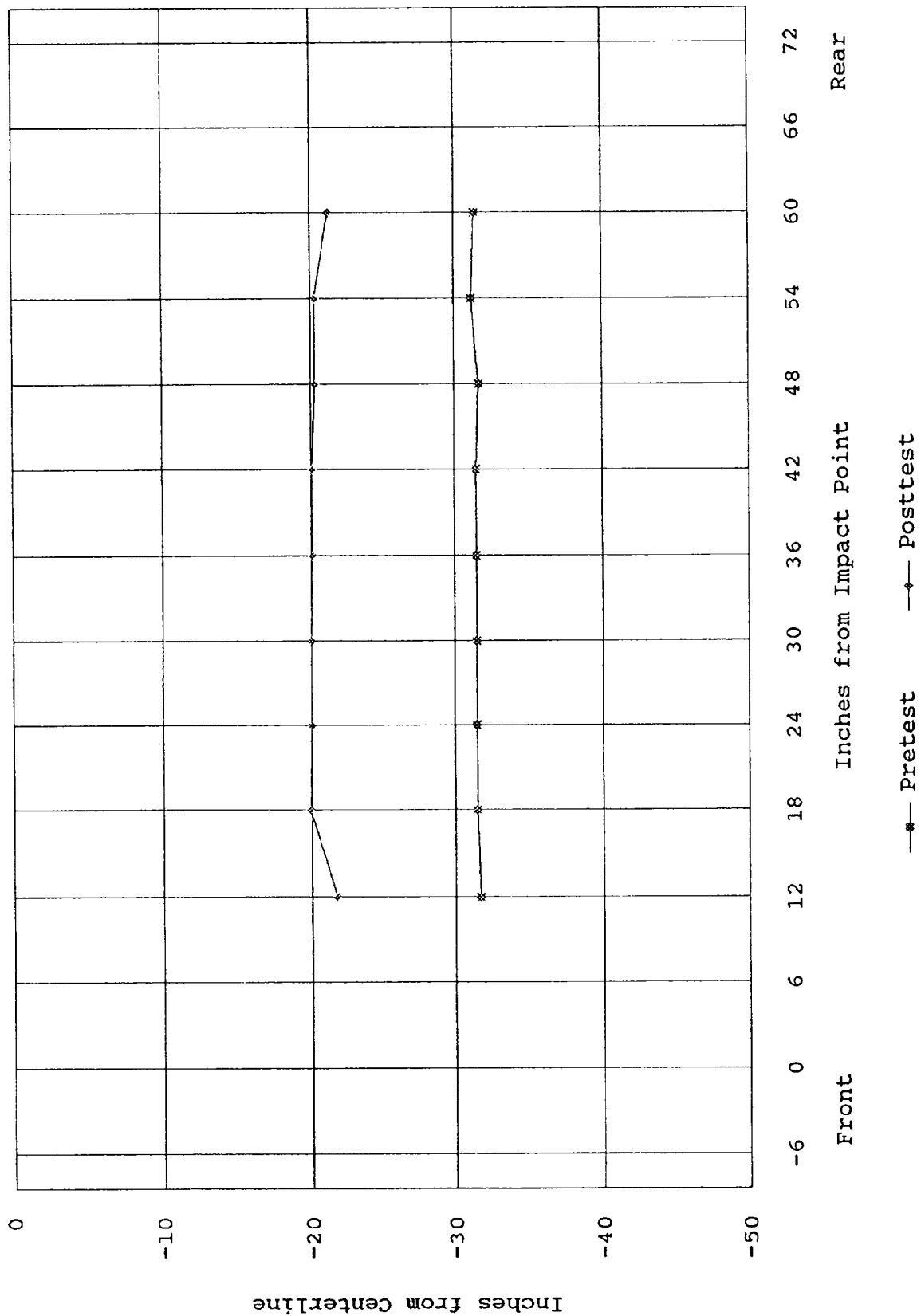
RECORDED BY: Brian O'Keefe

DATE: 08/28/92

APPROVED BY: AME 9/10/92

Pretest and Posttest Exterior Profile

Level 1 - Sill Top Height - 14.8" Above Ground Level



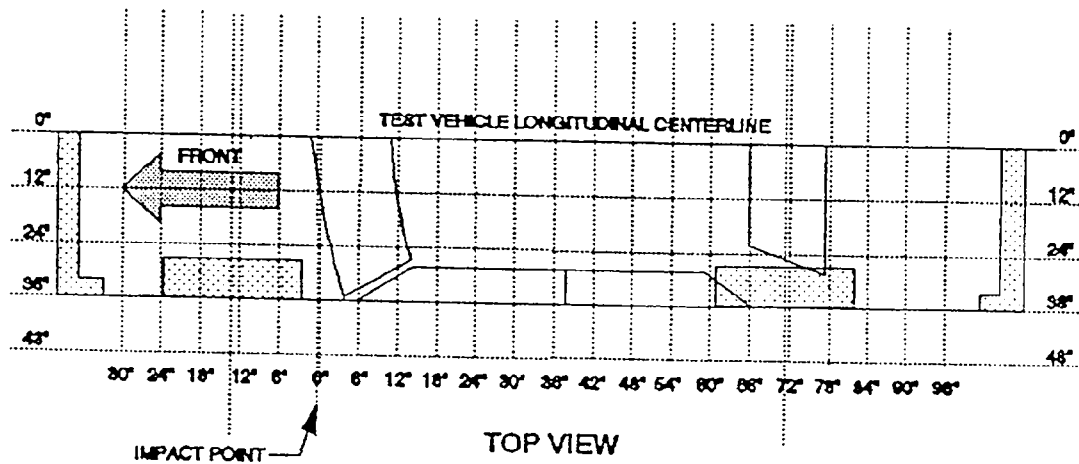
DATA SHEET NO. 6B

PRETEST AND POST TEST VEHICLE EXTERIOR PROFILES

VEH. MOD YR/MAKE/MODEL/BODY: 1989 SUZUKI SIDEKICK

VEH. NHTSA NO.: RK0504 VIN.: JS4TA01C3K4103473

TEST DATE: 08/27/92 TEST LAB.: MSE



LEVEL 2 AT OCCUPANT H-POINT

28.1 INCHES ABOVE GROUND LEVEL AT THE DOOR 30" LINE

ADD PROFILE INFORMATION ON THE NEXT PAGE

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

LEVEL 2 AT OCCUPANT H-POINT

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>31.4</u>	<u>15.9</u>	<u>15.5</u>
12 Inches	<u>31.5</u>	<u>16.6</u>	<u>14.9</u>
18 Inches	<u>31.8</u>	<u>16.8</u>	<u>15.0</u>
24 Inches	<u>32.3</u>	<u>16.8</u>	<u>15.5</u>
30 Inches	<u>32.5</u>	<u>16.8</u>	<u>15.7</u>
36 Inches	<u>32.5</u>	<u>17.0</u>	<u>15.5</u>
42 Inches	<u>32.7</u>	<u>17.0</u>	<u>15.7</u>
48 Inches	<u>33.0</u>	<u>17.0</u>	<u>16.0</u>
54 Inches	<u>33.0</u>	<u>17.0</u>	<u>16.0</u>
60 Inches	<u>33.4</u>	<u>16.8</u>	<u>16.6</u>
66 Inches	<u>32.3</u>	<u>16.0</u>	<u>16.3</u>
72 Inches	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>

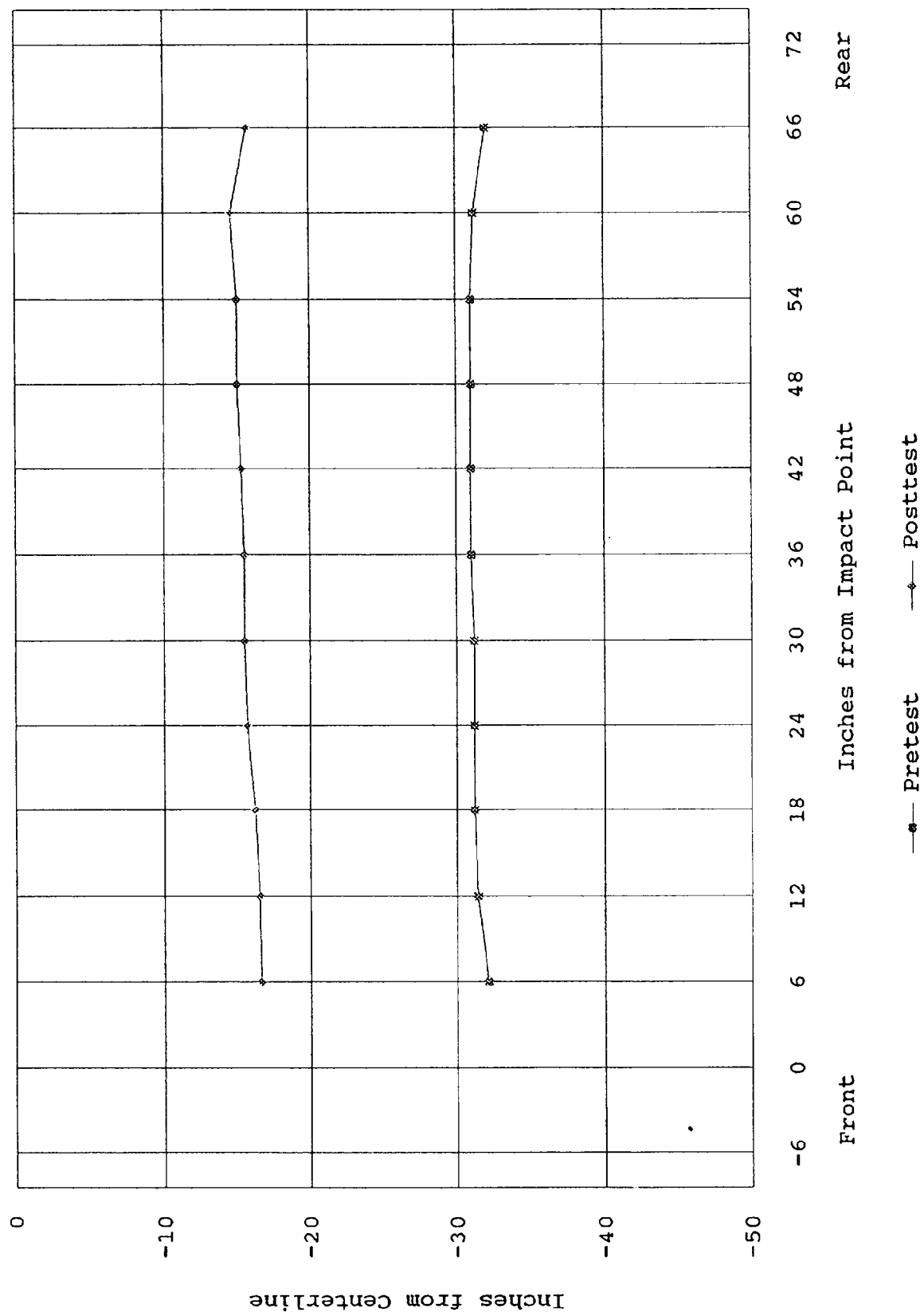
REMARKS:

RECORDED BY: Brian O'Keefe DATE: 08/28/92

APPROVED BY: *amk* 9/10/92

Pretest and Posttest Exterior Profile

Level 2 - Occupant H-point - 28.1" Above Ground Level



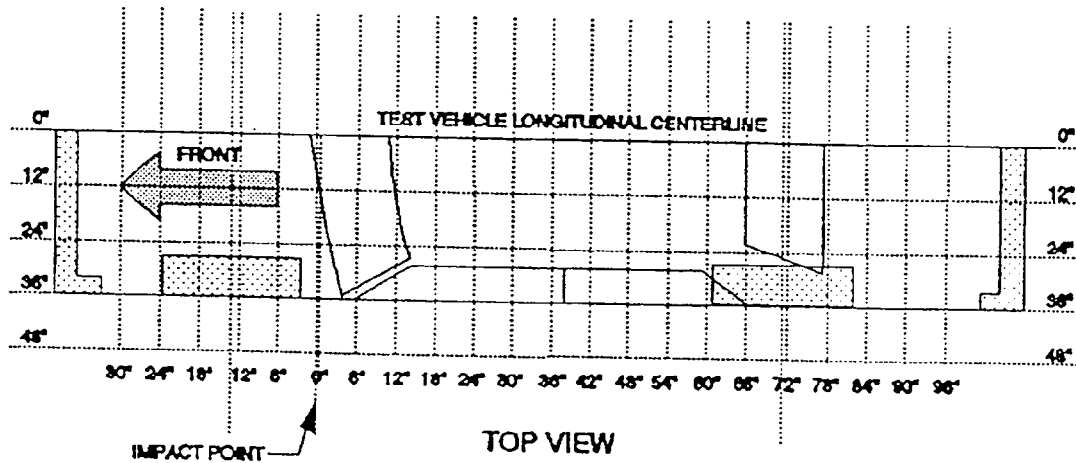
DATA SHEET NO. 6C

PRETEST AND POST TEST VEHICLE EXTERIOR PROFILES

VEH. MOD YR/MAKE/MODEL/BODY: 1989 SUZUKI SIDEKICK 4WD

VEH. NHTSA NO.: RK0504 VIN.: JS4TA01C3K4103473

TEST DATE: 08/27/92 TEST LAB.: MSE



LEVEL 3 AT MID DOOR

29.1 INCHES ABOVE GROUND LEVEL AT THE DOOR 30" LINE

ADD PROFILE INFORMATION ON THE NEXT PAGE

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

LEVEL 3 AT MID-DOOR

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>30.0</u>	<u>15.9</u>	<u>14.1</u>
12 Inches	<u>30.7</u>	<u>16.6</u>	<u>14.1</u>
18 Inches	<u>31.0</u>	<u>16.8</u>	<u>14.2</u>
24 Inches	<u>31.5</u>	<u>16.8</u>	<u>14.7</u>
30 Inches	<u>31.5</u>	<u>16.8</u>	<u>14.7</u>
36 Inches	<u>31.5</u>	<u>17.0</u>	<u>14.5</u>
42 Inches	<u>31.7</u>	<u>17.0</u>	<u>14.7</u>
48 Inches	<u>32.1</u>	<u>17.0</u>	<u>15.1</u>
54 Inches	<u>32.1</u>	<u>17.0</u>	<u>15.1</u>
60 Inches	<u>32.9</u>	<u>16.8</u>	<u>16.1</u>
66 Inches	<u>30.4</u>	<u>16.0</u>	<u>14.4</u>
72 Inches	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>

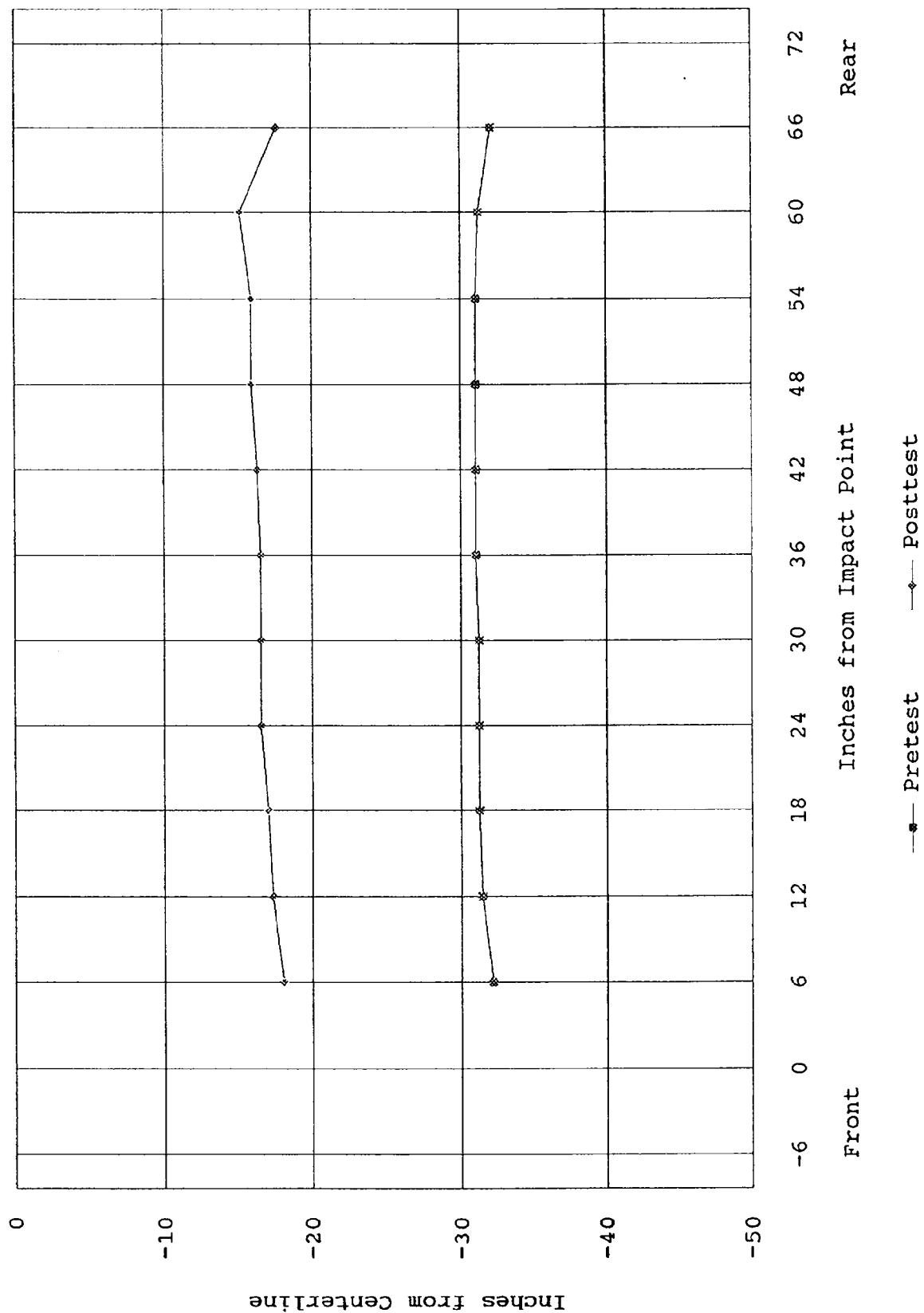
REMARKS:

RECORDED BY: Brian O'Keefe DATE: 08/28/92

APPROVED BY: *am* 9/10/92

Pretest and Posttest Exterior Profile

Level 3 - Mid-door - 29.1" Above Ground Level



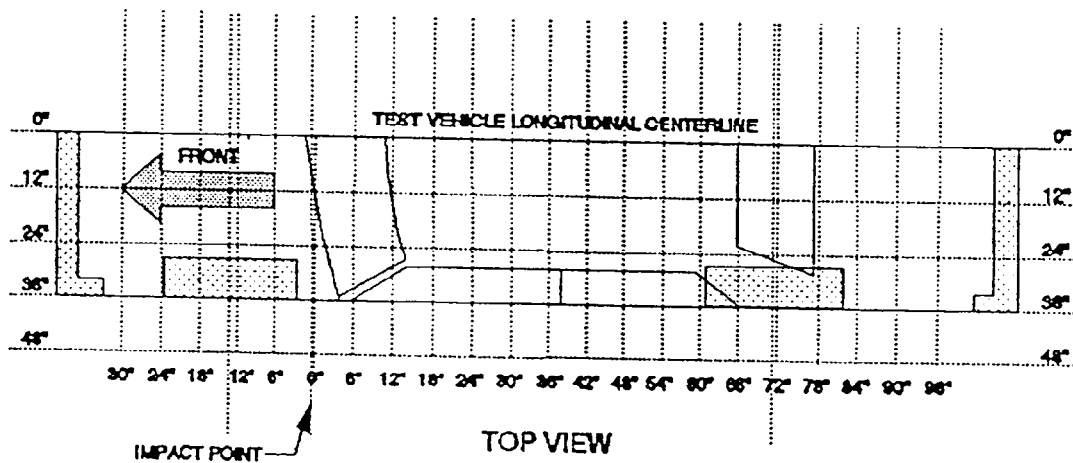
DATA SHEET NO. 6D

PRETEST AND POST TEST VEHICLE EXTERIOR PROFILES

VEH. MOD YR/MAKE/MODEL/BODY: 1989 SUZUKI SIDEKICK 4WD

VEH. NHTSA NO.: RK0504 VIN.: JS4TA01C3K4103473

TEST DATE: 08/27/92 TEST LAB.: MSE



LEVEL 4 AT WINDOW SILL

42.5 INCHES ABOVE GROUND LEVEL AT THE DOOR 30" LINE

ADD PROFILE INFORMATION ON THE NEXT PAGE

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

LEVEL 4 AT WINDOW SILL

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>23.5</u>	<u>20.1</u>	<u>3.4</u>
6 Inches	<u>24.4</u>	<u>19.5</u>	<u>4.9</u>
12 Inches	<u>26.0</u>	<u>18.9</u>	<u>7.1</u>
18 Inches	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
24 Inches	<u>28.4</u>	<u>20.3</u>	<u>8.1</u>
30 Inches	<u>28.5</u>	<u>20.3</u>	<u>8.2</u>
36 Inches	<u>28.7</u>	<u>20.0</u>	<u>8.7</u>
42 Inches	<u>28.8</u>	<u>19.9</u>	<u>8.9</u>
48 Inches	<u>28.8</u>	<u>19.6</u>	<u>9.2</u>
54 Inches	<u>29.2</u>	<u>19.6</u>	<u>9.6</u>
60 Inches	<u>30.5</u>	<u>19.0</u>	<u>11.5</u>
66 Inches	<u>31.5</u>	<u>18.9</u>	<u>12.6</u>
72 Inches	<u>28.2</u>	<u>18.9</u>	<u>9.3</u>

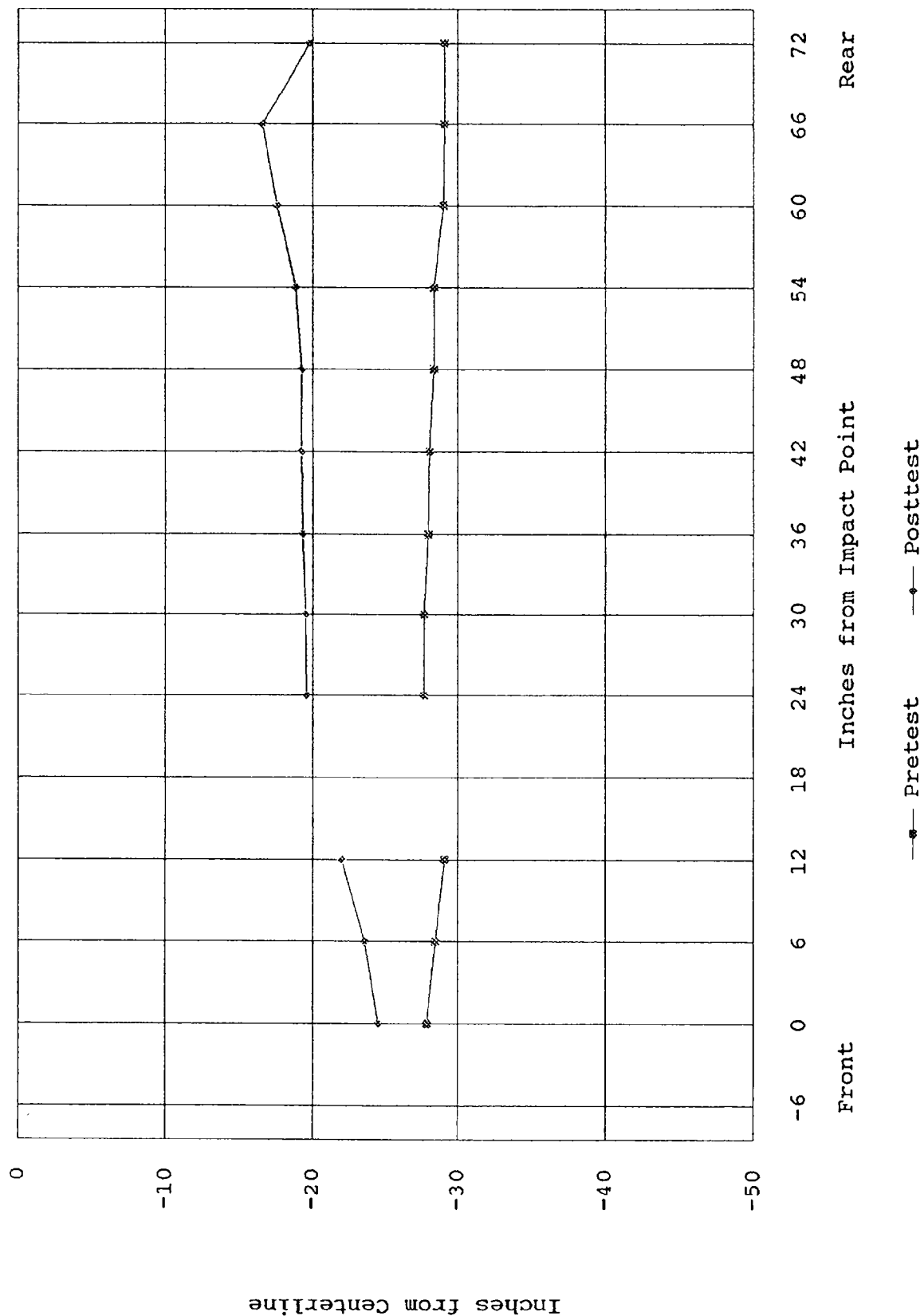
REMARKS:

RECORDED BY: Brian O'Keefe DATE: 08/28/92

APPROVED BY: *[Signature]* 9/10/92

Pretest and Posttest Exterior Profile

Level 4 - Window Sill - 42.5" Above Ground Level



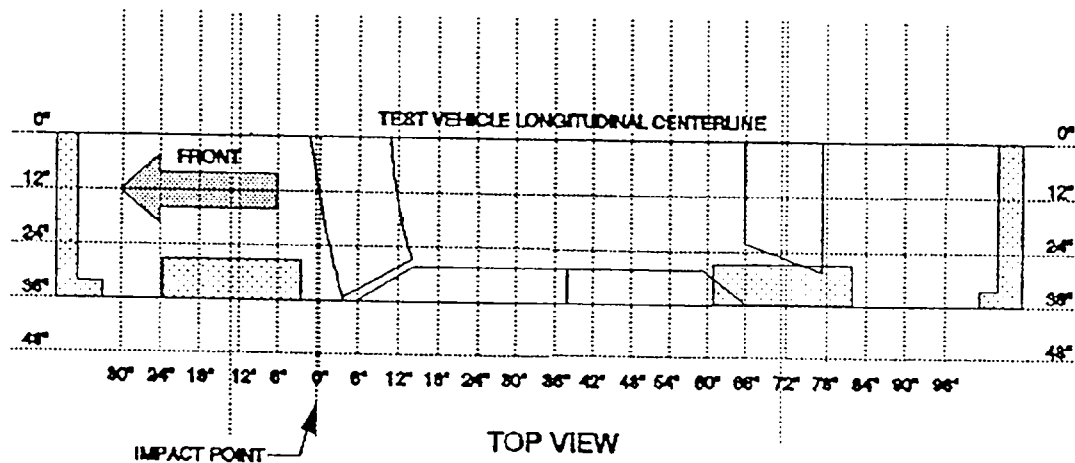
DATA SHEET NO. 6E

PRETEST AND POST TEST VEHICLE EXTERIOR PROFILES

VEH. MOD YR/MAKE/MODEL/BODY: 1989 SUZUKI SIDEKICK 4WD

VEH. NHTSA NO.: RK0504 VIN.: JS4TA01C3K4103473

TEST DATE: 08/27/92 TEST LAB.: MOBILITY SYSTEMS AND EQUIPMENT COMPANY



LEVEL 5 AT WINDOW TOP

61.0 INCHES ABOVE GROUND LEVEL AT THE DOOR 30" LINE

ADD PROFILE INFORMATION ON THE NEXT PAGE

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

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>0.0</u>	<u>0.0</u>	<u>0.0</u>
30 Inches	<u>29.9</u>	<u>25.8</u>	<u>4.1</u>
36 Inches	<u>24.9</u>	<u>25.4</u>	<u>-0.5</u>
42 Inches	<u>25.2</u>	<u>25.5</u>	<u>-0.3</u>
48 Inches	<u>25.3</u>	<u>25.5</u>	<u>-0.2</u>
54 Inches	<u>25.5</u>	<u>25.6</u>	<u>-0.1</u>
60 Inches	<u>30.3</u>	<u>25.5</u>	<u>4.8</u>
66 Inches	<u>30.7</u>	<u>25.4</u>	<u>5.3</u>
72 Inches	<u>30.9</u>	<u>25.8</u>	<u>5.1</u>

REMARKS:

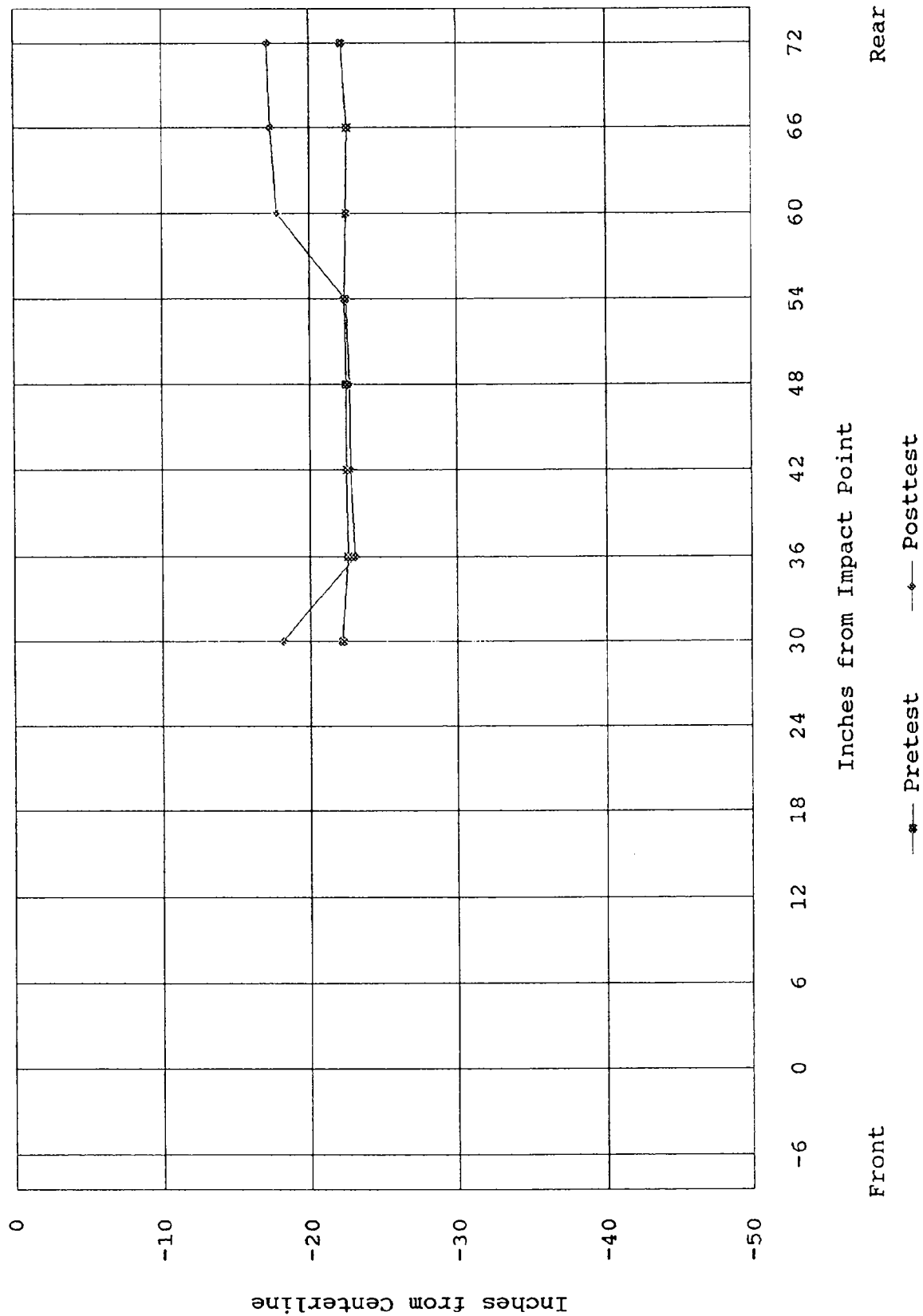
RECORDED BY: Brian O'Keefe

DATE: 08/28/92

APPROVED BY: *awh* 9/10/92

Pretest and Posttest Exterior Profile

Level 5 - Window Top - 61.0" Above Ground Level

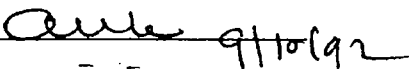


DATA SHEET NO. 6F

SUMMARY OF VEHICLE EXTERIOR PROFILE STATIC CRUSH

VEH. MOD YR/MAKE/MODEL/BODY: 1989 Suzuki SidekickVEH. NHTSA NO.: RK0504 VIN: JS4TA01C3K4103473TEST DATE: 08/27/92 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>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
0 (Impact Pt.)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>3.4</u>	<u>0.0</u>
6 Inches	<u>0.0</u>	<u>15.5</u>	<u>14.1</u>	<u>4.9</u>	<u>0.0</u>
12 Inches	<u>10.0</u>	<u>14.9</u>	<u>14.1</u>	<u>7.1</u>	<u>0.0</u>
18 Inches	<u>11.6</u>	<u>15.0</u>	<u>14.2</u>	<u>0.0</u>	<u>0.0</u>
24 Inches	<u>11.5</u>	<u>15.5</u>	<u>14.7</u>	<u>8.1</u>	<u>0.0</u>
30 Inches	<u>11.5</u>	<u>15.7</u>	<u>14.7</u>	<u>8.2</u>	<u>4.1</u>
36 Inches	<u>11.4</u>	<u>15.5</u>	<u>14.5</u>	<u>8.7</u>	<u>-0.5</u>
42 Inches	<u>11.4</u>	<u>15.7</u>	<u>14.7</u>	<u>8.9</u>	<u>-0.3</u>
48 Inches	<u>11.2</u>	<u>16.0</u>	<u>15.1</u>	<u>9.2</u>	<u>-0.2</u>
54 Inches	<u>10.9</u>	<u>16.0</u>	<u>15.1</u>	<u>9.6</u>	<u>-0.1</u>
60 Inches	<u>10.2</u>	<u>16.6</u>	<u>16.1</u>	<u>11.5</u>	<u>4.8</u>
66 Inches	<u>0.0</u>	<u>16.3</u>	<u>14.4</u>	<u>12.6</u>	<u>5.3</u>
72 Inches	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>9.3</u>	<u>5.1</u>

RECORDED BY: Brian O'KeefeDATE: 08/28/92APPROVED BY: 

DATA SHEET NO. 7

EXTERIOR STATIC CRUSH FOR SIDE IMPACTOR

VEH. MOD YR/MAKE/MODEL/BODY: 1989 SUZUKI SIDEKICK 4WD

VEH. NHTSA NO.: RK0504 VIN.: JS4TA01C3K4103473

TEST DATE: 08/27/92 TEST LAB.: MOBILITY SYSTEMS AND EQUIPMENT COMPANY

LOCATION	TOP OF STACK LEVEL	MID- STACK LEVEL	BUMPER LEVEL
HEIGHT AT CENTERLINE*	39 inches	29 inches	24 inches
DISTANCES RIGHT OF CENTER**	(inches)	(inches)	(inches)
32 inches	<u>3.1</u>	<u>0.1</u>	<u>2.5</u>
28 inches	<u>2.5</u>	<u>0.0</u>	<u>1.5</u>
24 inches	<u>1.6</u>	<u>0.0</u>	<u>1.0</u>
20 inches	<u>1.3</u>	<u>0.0</u>	<u>0.8</u>
16 inches	<u>0.5</u>	<u>0.0</u>	<u>0.7</u>
12 inches	<u>0.0</u>	<u>0.0</u>	<u>0.6</u>
8 inches	<u>-0.2</u>	<u>0.0</u>	<u>0.5</u>
4 inches	<u>-0.2</u>	<u>0.0</u>	<u>0.4</u>
0 inches	<u>-0.2</u>	<u>0.0</u>	<u>0.4</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>-0.2</u>	<u>0.0</u>	<u>0.3</u>
8 inches	<u>-0.2</u>	<u>0.0</u>	<u>0.3</u>
12 inches	<u>-0.2</u>	<u>0.1</u>	<u>0.2</u>
16 inches	<u>-0.2</u>	<u>0.1</u>	<u>0.2</u>
20 inches	<u>0.0</u>	<u>0.1</u>	<u>0.2</u>
24 inches	<u>0.3</u>	<u>0.2</u>	<u>0.2</u>
28 inches	<u>0.3</u>	<u>0.6</u>	<u>0.1</u>
32 inches	<u>0.0</u>	<u>1.5</u>	<u>0.3</u>

* Heights, in inches, measured above ground level

** Impact side

REMARKS:

RECORDED BY: Brian O'Keefe

DATE: 08/28/92

APPROVED BY: *[Signature]* 9/12/92

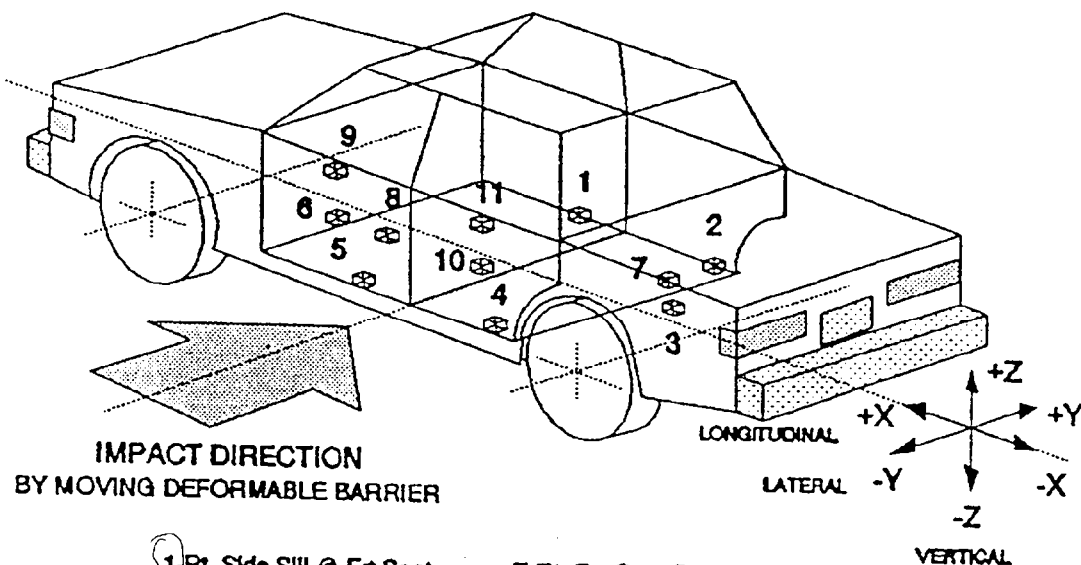
DATA SHEET NO. 8

TEST VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

VEH. MOD YR/MAKE/MODEL/BODY: 1989 SUZUKI SIDEKICK 4WD

VEH. NHTSA NO.: RK0504 VIN.: JS4TA01C3K4103473

TEST DATE: 08/27/92 TEST LAB.: MOBILITY SYSTEMS AND EQUIPMENT



- 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

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	81	25	14	-12.1	7.2	19.2	24.1	-10.7	23.2	23.6	24.0
2	N/A	N/A	N/A	-	-	-	-	-	-	-	-
3	26	0	24	-10.4	1.9	21.7	38.7	-19.6	38.8	29.5	38.8
4	N/A	N/A	N/A	-	-	-	-	-	-	-	-
5	81	-25	15	-	-	55.4	18.6	-	-	-	-
6	70	-26	29	-	-	192.4	8.3	-	-	-	-

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
7	N/A	N/A	N/A	---	--	---	--	---	--	---	--
8.	52	-26	30	---	--	135.0	4.8	---	--	---	--
9.	73	-26	36	---	--	92.9	12.3	---	--	---	--
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:

RECORDED BY: Brian O'Keefe

DATE: 09/03/92

APPROVED BY: *Qule* 9/16/92

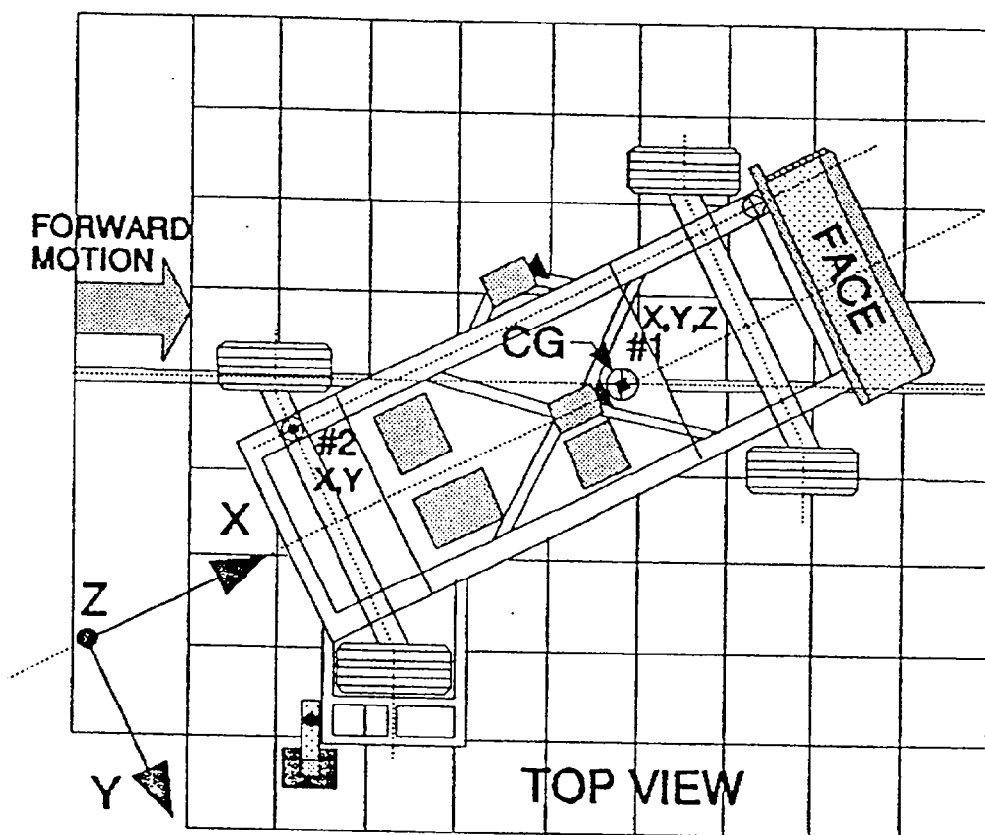
DATA SHEET NO. 9

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

VEH. MOD YR/MAKE/MODEL/BODY: 1989 Suzuki Sidekick 4WD

VEH. NHTSA NO.: RK0504 VIN.: JS4TA01C3K4103473

TEST DATE: 08/27/92 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	<u>73</u>	<u>0</u>	<u>12</u>	<u>3.3</u>	<u>139.5</u>	<u>12.9</u>	<u>21.9</u>
1 Lateral Y	<u>73</u>	<u>0</u>	<u>12</u>	<u>8.2</u>	<u>52.3</u>	<u>4.6</u>	<u>63.4</u>
1 Vertical Z	<u>73</u>	<u>0</u>	<u>12</u>	<u>24.3</u>	<u>151.0</u>	<u>23.1</u>	<u>143.0</u>
1 Resultant R	<u>73</u>	<u>0</u>	<u>12</u>	<u>24.3</u>	<u>151.0</u>	<u>-</u>	<u>-</u>
2 Longitudinal X	<u>12</u>	<u>-19</u>	<u>17</u>	<u>2.3</u>	<u>141.7</u>	<u>14.7</u>	<u>32.5</u>
2 Lateral Y	<u>12</u>	<u>-19</u>	<u>17</u>	<u>3.0</u>	<u>133.1</u>	<u>4.6</u>	<u>22.0</u>

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

REMARKS:

RECORDED BY: Brian O'Keefe

DATE: 09/03/92

APPROVED BY: *[Signature]* 9/10/92

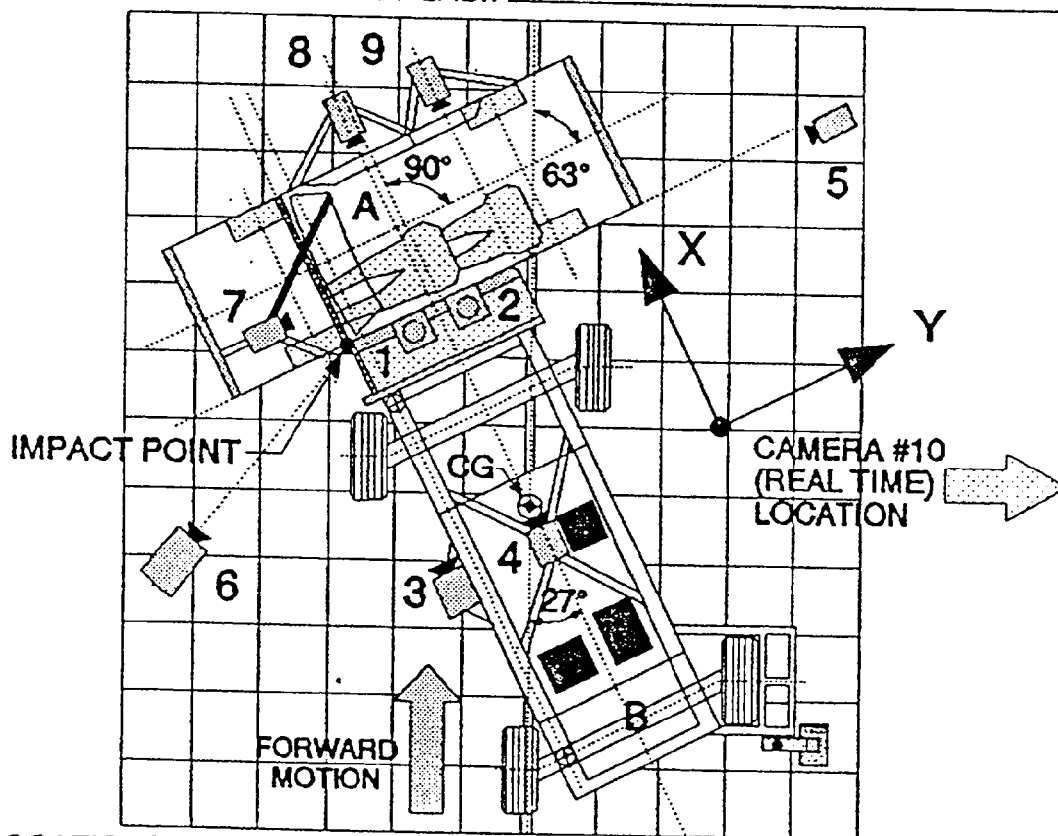
DATA SHEET NO. 10

HIGH SPEED CAMERA LOCATIONS AND DATA

VEH. MOD YR/MAKE/MODEL/BODY: 1989 SUZUKI SIDEKICK 4WD

VEH. NHTSA NO.: RK0504 VIN.: JS4TA01C3K4103473

TEST DATE: 08/27/92 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 SPEED		X*	COORDINATES	
		(mm)	(fps)		Y*	Z*
1	<u>FASTAX II</u>	16	610	<u>12</u>	<u>12</u>	<u>236</u>
2	<u>FASTAX II</u>	28	600	<u>-12</u>	<u>12</u>	<u>236</u>
3	<u>HIMAC</u>	28	620	<u>-121</u>	<u>-37</u>	<u>50</u>
4	<u>HIMAC</u>	16	620	<u>-151</u>	<u>0</u>	<u>72</u>
5	<u>FASTAX II</u>	16	600	<u>-156</u>	<u>648</u>	<u>48</u>
6	<u>FASTAX II</u>	28	600	<u>-96</u>	<u>-504</u>	<u>48</u>
7	<u>FASTAX II</u>	16	600	<u>18</u>	<u>-28</u>	<u>56</u>
8	<u>FASTAX II</u>	16	610	<u>66</u>	<u>45</u>	<u>45</u>
9	<u>N/A</u>	-	-	<u>-</u>	<u>-</u>	<u>-</u>
10	<u>ARRIFLEX</u>	15-70 zoom	24	<u>-</u>	<u>-</u>	<u>-</u>

* REFERENCE (from point of impact)

+X = Forward

+Y = To The Right

+Z = Upward

REMARKS:

RECORDED BY: Brian O'Keefe

DATE: _____

APPROVED BY: *ave* 9/10/92

DATA SHEET NO. 11

TEST VEHICLE DATA

VEH. MOD YR/MAKE/MODEL/BODY: 1989 SUZUKI SIDEKICK 4WD

VEH. NHTSA NO.: RK0504 VIN.: JS4TA01C3K4103473

VEH. BUILD DATE: 8/88 TEST DATE: 08/27/92

TEST LABORATORY: 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): 23/35 psi Front; 23/35 psi Rear

Recommended Tire Size: P205/75R15

Size of Tires Installed on Test Vehicle: P205/75R15

Tire Manufacturer: BRIDGESTONE

Number of Occupants: 2 Front; 2 Rear; 4 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 = 611 lbs.; Left = 665 lbs.; Front Total = 1276 lbs.

(54 % of TOTAL shown below)

Rear: Right = 579 lbs.; Left = 527 lbs.; Rear Total = 1106 lbs.

(46 % of TOTAL shown below)

Front Total + Rear Total = TOTAL DELV. = 2382 lbs.

CALCULATION OF TEST VEHICLE TARGET WEIGHT:

Total Test Vehicle Delivered Weight With Maximum Fluids = 2382 lbs. (A)

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

Weight of one Side Impact Dummies (1 X 164 lbs.) = 164 lbs. (C)

Test Vehicle Target Weight = 2856 (A + B + C)

ACTUAL WEIGHT OF TEST VEHICLE WITH TWO SIDs AND CARGO:

Front: Right = 779 lbs.; Left = 737 lbs.; Front Total = 1516 lbs.

(53 % of TOTAL shown below)

Rear: Right = 719 lbs.; Left = 610 lbs.; Rear Total = 1329 lbs.

(47 % of TOTAL shown below)

Front Total + Rear Total = TOTAL ACTUAL = 2845 lbs. (which includes 160
lbs. of cargo ballast
weight)

TEST VEHICLE ATTITUDE:

As Delivered

Ready For Test

30.9 inches Right Front

29.4 inches Right Front

31.1 inches Left Front

30.7 inches Left Front

30.8 inches Right Rear

29.6 inches Right Rear

31.8 inches Left Rear

30.9 inches Left Rear

DATA SHEET NO. 11 (Cont.)

Test Vehicle Wheelbase = 86.2 inches

C.G. = 40.2 inches Rearward of Front Wheel Centerline

Total Vehicle Length: 133.0 inches Right Side

133.0 inches Left Side

137.1 inches Centerline

Arm Rest Location: N/A

Seat Belt Upper Anchorage Location: Anchorage bolt is on the B-pillar, 23.5
inches above the B-post striker.

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

Total Length of Seat Adjustment Travel = 7.0 inches

Total Number of Seat Adjustment Positions or Detents = 13

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 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: 10.3 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 = 86.2 inches

Impact Point 6.1 is inches rearward of front axle centerline (which is 37" forward of the wheelbase midpoint)

REMARKS: Actual impact point is 5.3 inches rearward of front axle centerline.

RECORDED BY: Brian O'Keefe

DATE: 08/27/92

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: 49	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 100	DASTAT: CF
INSCOM: CHANNEL FAILED AT 55.9 MSEC			

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: 12	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: 5	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: 5	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: 6	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: 6	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: RBLU	
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: 009	
SENTYP: AC	SENLOC: 01	SENATT: RBLU	
AXIS: YL	UNITS: G'S	PREFIL: 1650	
INSMAN: MFG: ENDEVCO, MODEL: 7264-2000, S/N: BL93H			
CALDAT: 02/JAN/92	INSRAT: 2000	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: 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: 5	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: 10	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: 01	SENATT: LPBO	
AXIS: NA	UNITS: LBS	PREFIL: 1650	
INSMAN: MFG: LEBOW, MODEL: 3371, S/N: 333			
CALDAT: 09/APR/92	INSRAT: 3500	CHLMAX: 16	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: 01	SENATT: SHBT	
AXIS: NA	UNITS: LBS	PREFIL: 1650	
INSMAN: MFG: LEBOW, MODEL: 3371, S/N: 327			
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: 015	
SENTYP: AC	SENLOC: 02	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: 8	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: 02	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: 16	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: 02	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: 13	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: 03	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: 15	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: 03	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: 19	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: 03	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: 29	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: 01	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: 157	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: 01	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: 218	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 100	DASTAT: CF
INSCOM: CHANNEL FAILED 19.4 TO 121.9 MSEC			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 2	CURNO: 023	
SENTYP: AC	SENLOC: OT	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: 153	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

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: 123	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 100	DASTAT: CF
INSCOM: CHANNEL FAILED 21.1 TO 53.5 MSEC			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 1	CURNO: 025	
SENTYP: AC	SENLOC: OT	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: 17	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: OT	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: 8	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: 19	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: 30	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: 9	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 Driver SID
19. Posttest Occupant Compartment 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
26. Posttest Driver SID Contact Points
27. Posttest Driver SID Contact Points

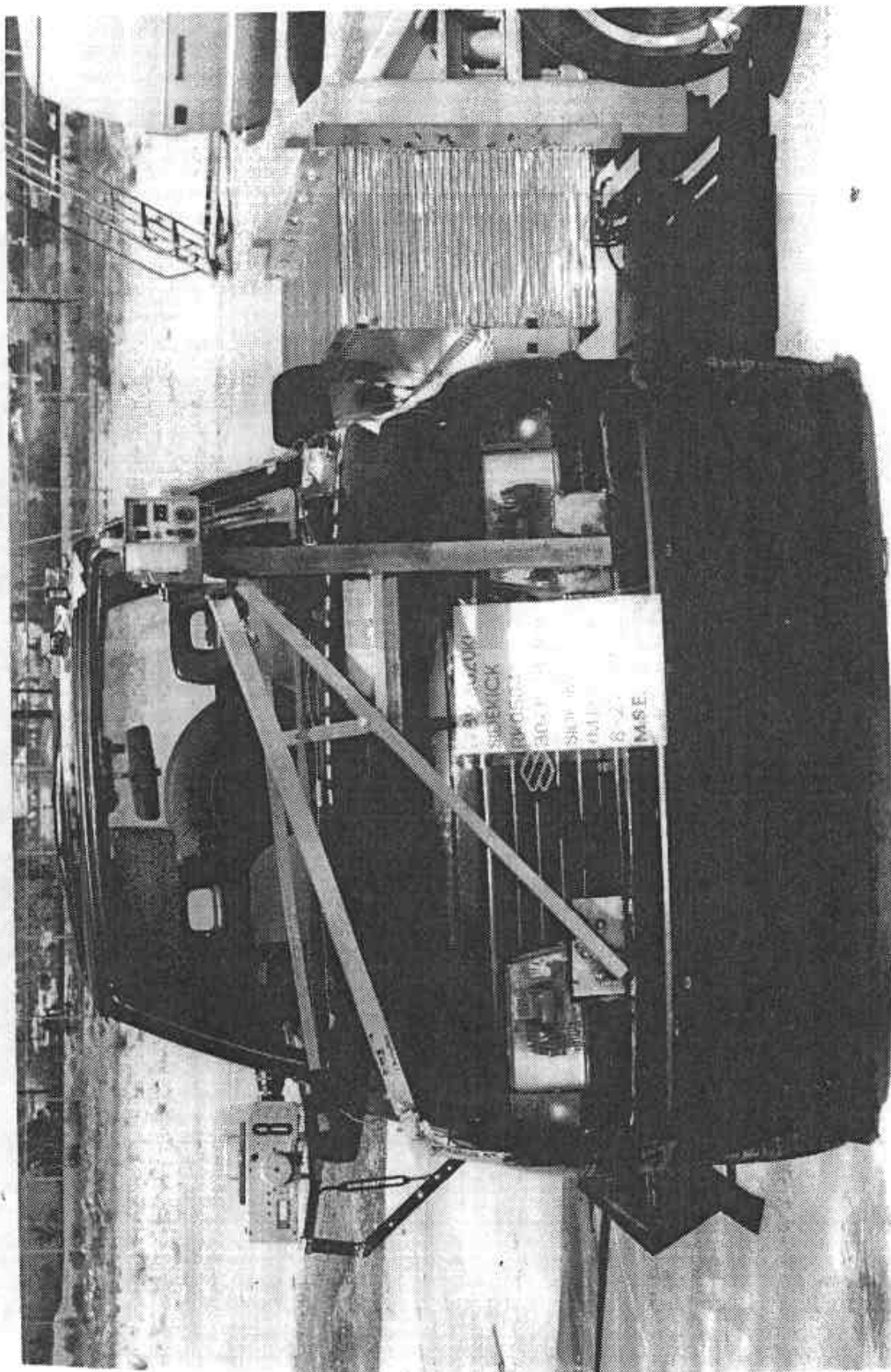


FIGURE 5-1 PRETEST FRONTAL VIEW OF TEST VEHICLE (TARGET VEHICLE)

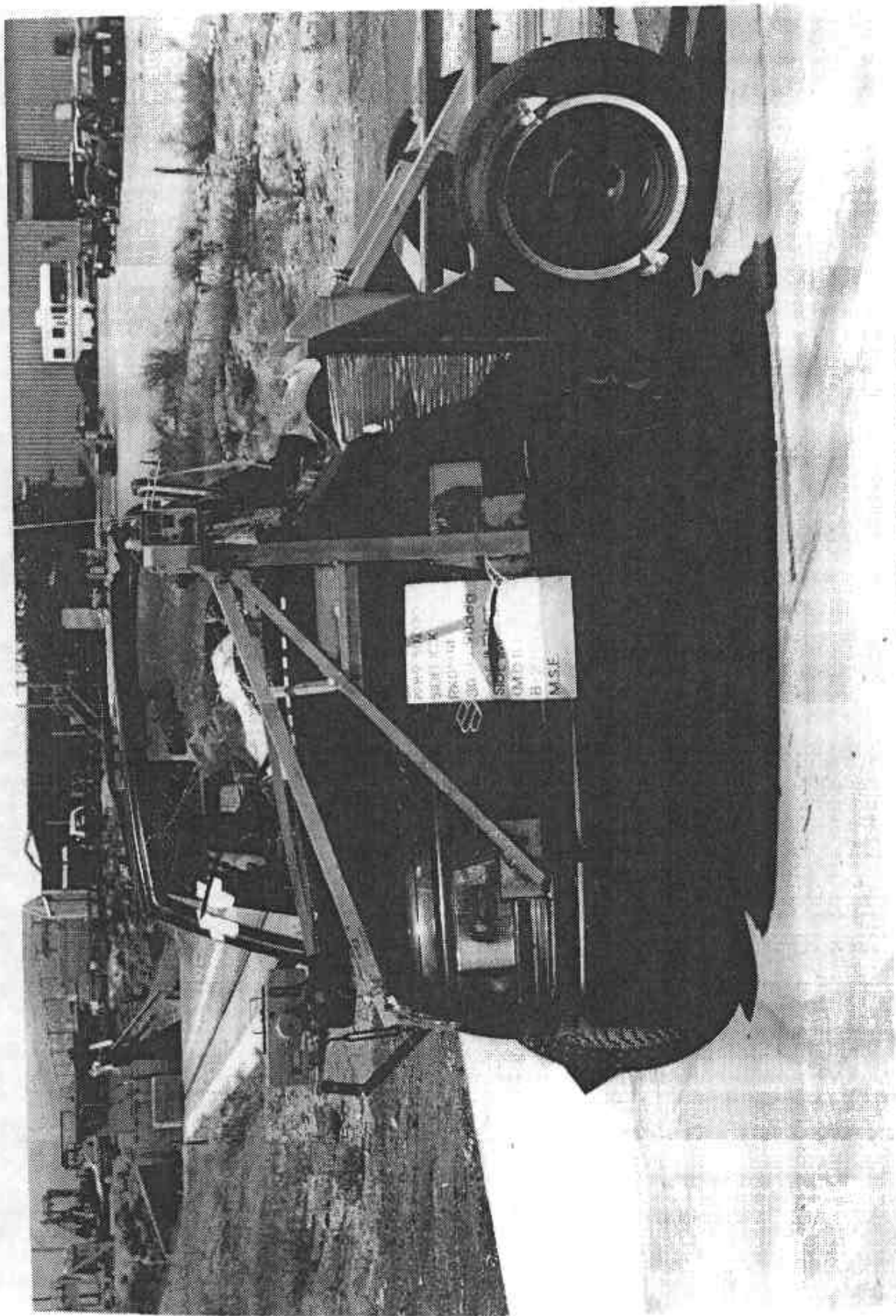


FIGURE 5-2 POSTTEST FRONTAL VIEW OF TEST VEHICLE

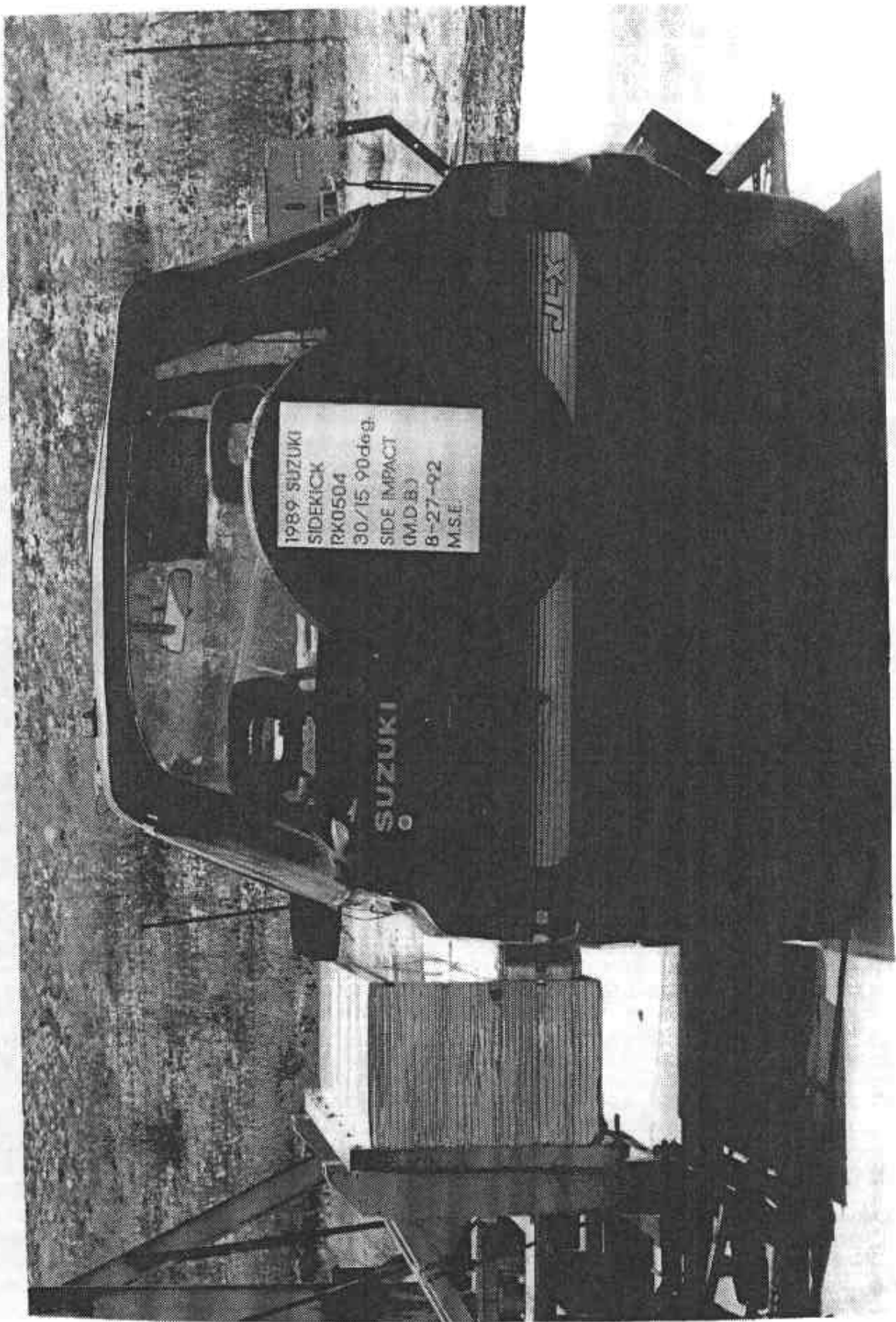


FIGURE 5-3 PRETEST REAR VIEW OF TEST VEHICLE



FIGURE 5-4 POSTTEST REAR VIEW OF TEST VEHICLE

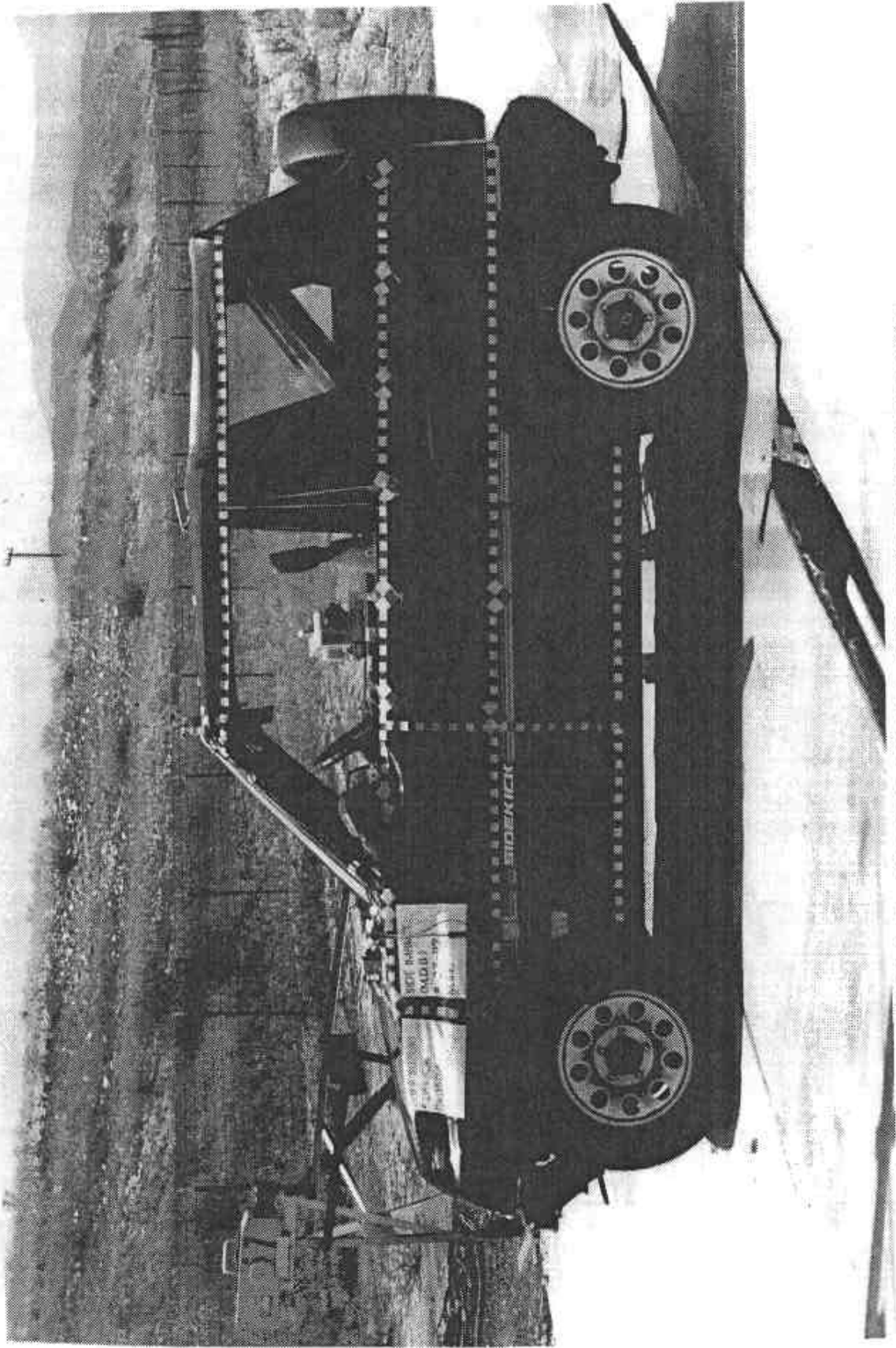


FIGURE 5-5 PRETEST STRUCK SIDE VIEW OF TEST VEHICLE

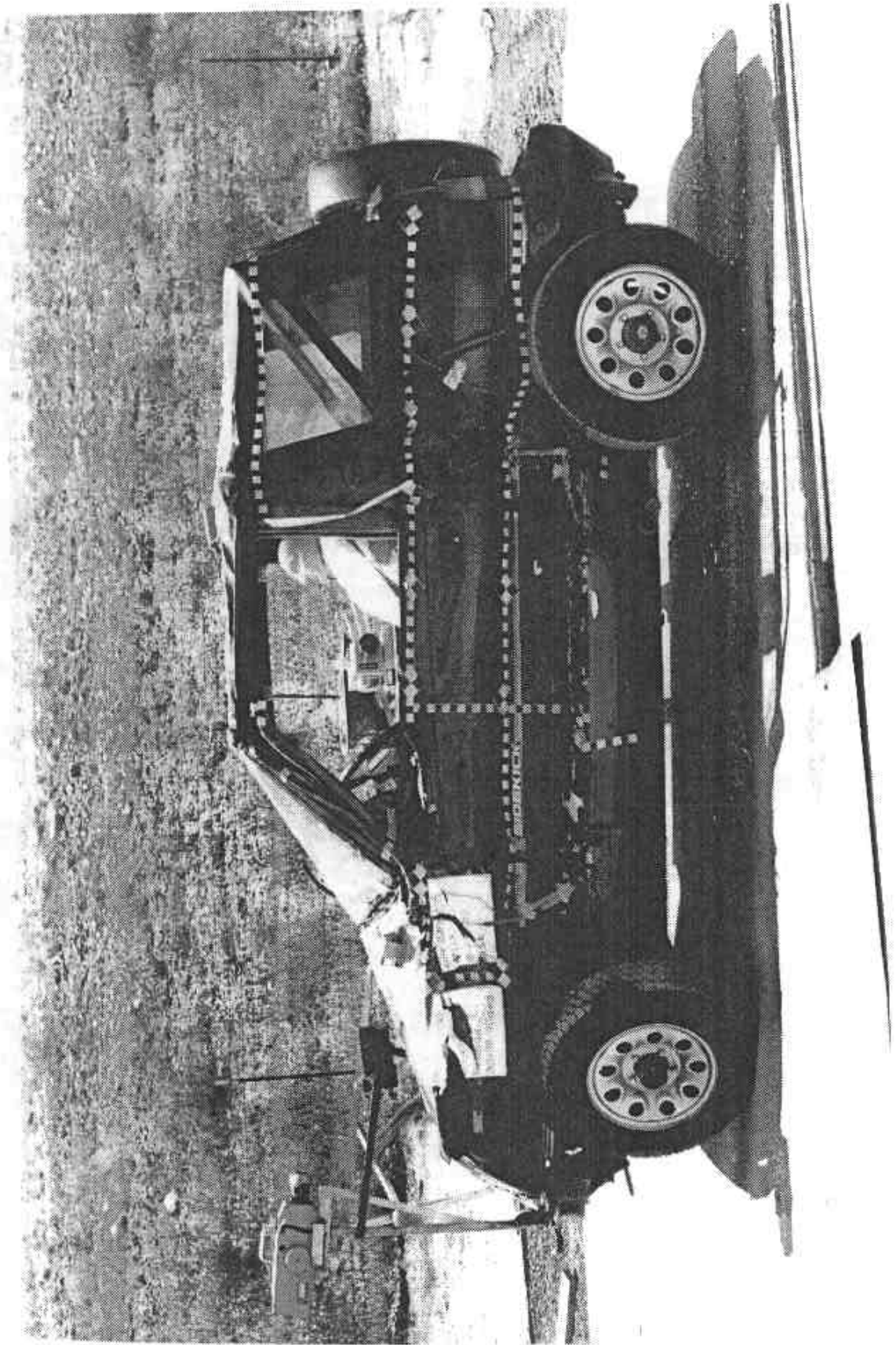


FIGURE 5-6 POSTTEST STRUCK SIDE VIEW OF TEST VEHICLE

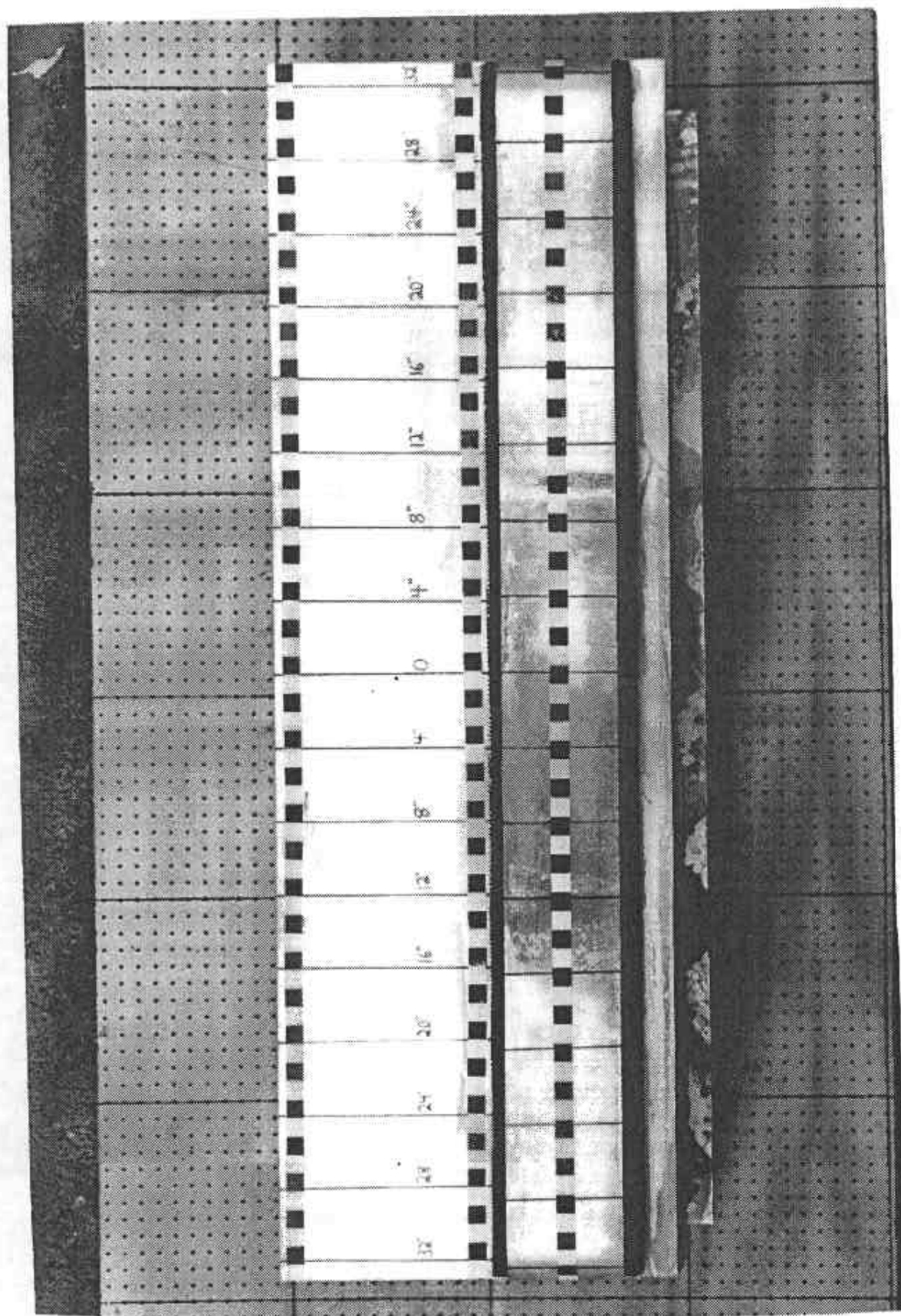


FIGURE 5-7 PRETEST FRONTAL VIEW OF MDB IMPACT FACE

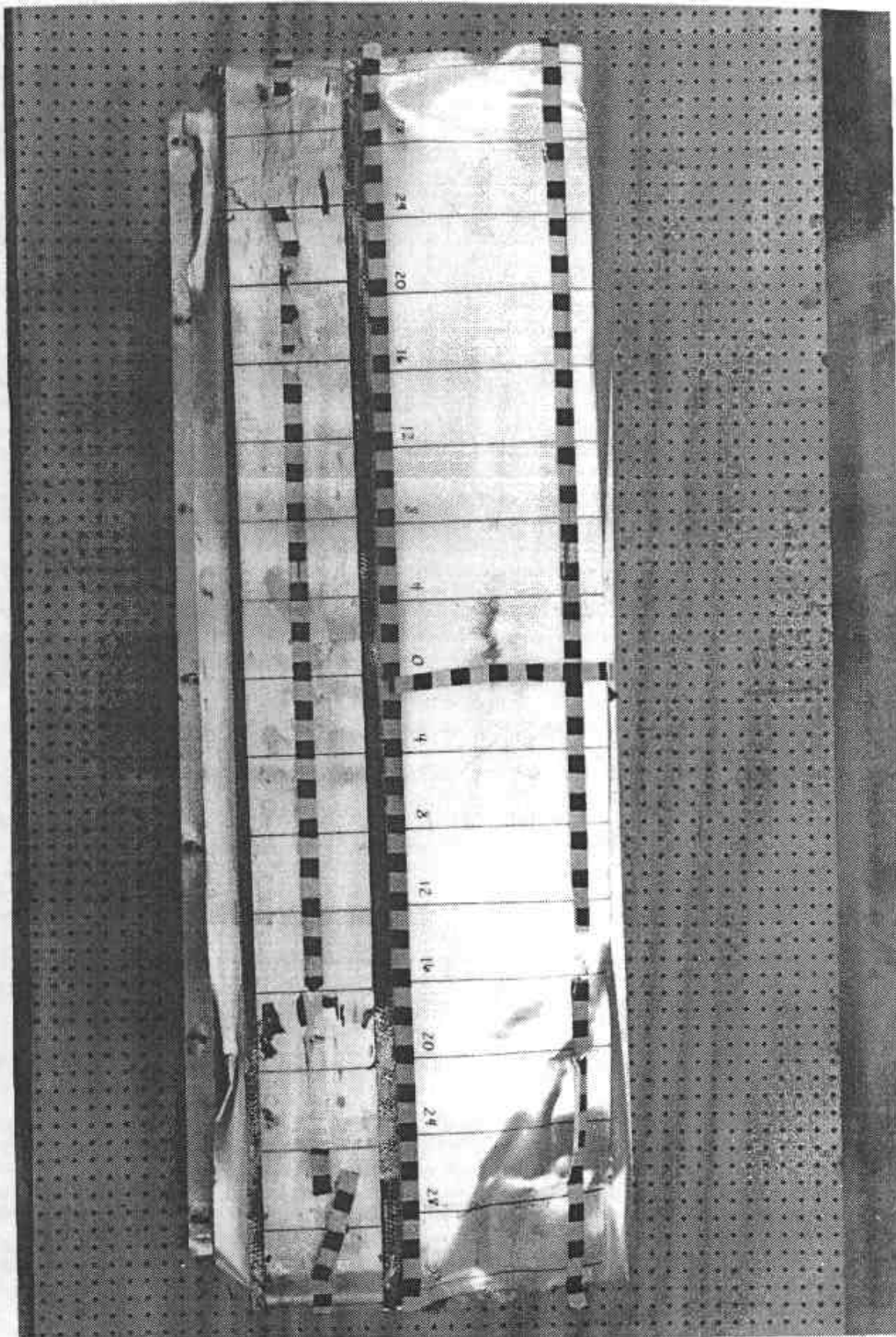


FIGURE 5-8 POSTTEST FRONTAL VIEW OF MDB IMPACT FACE

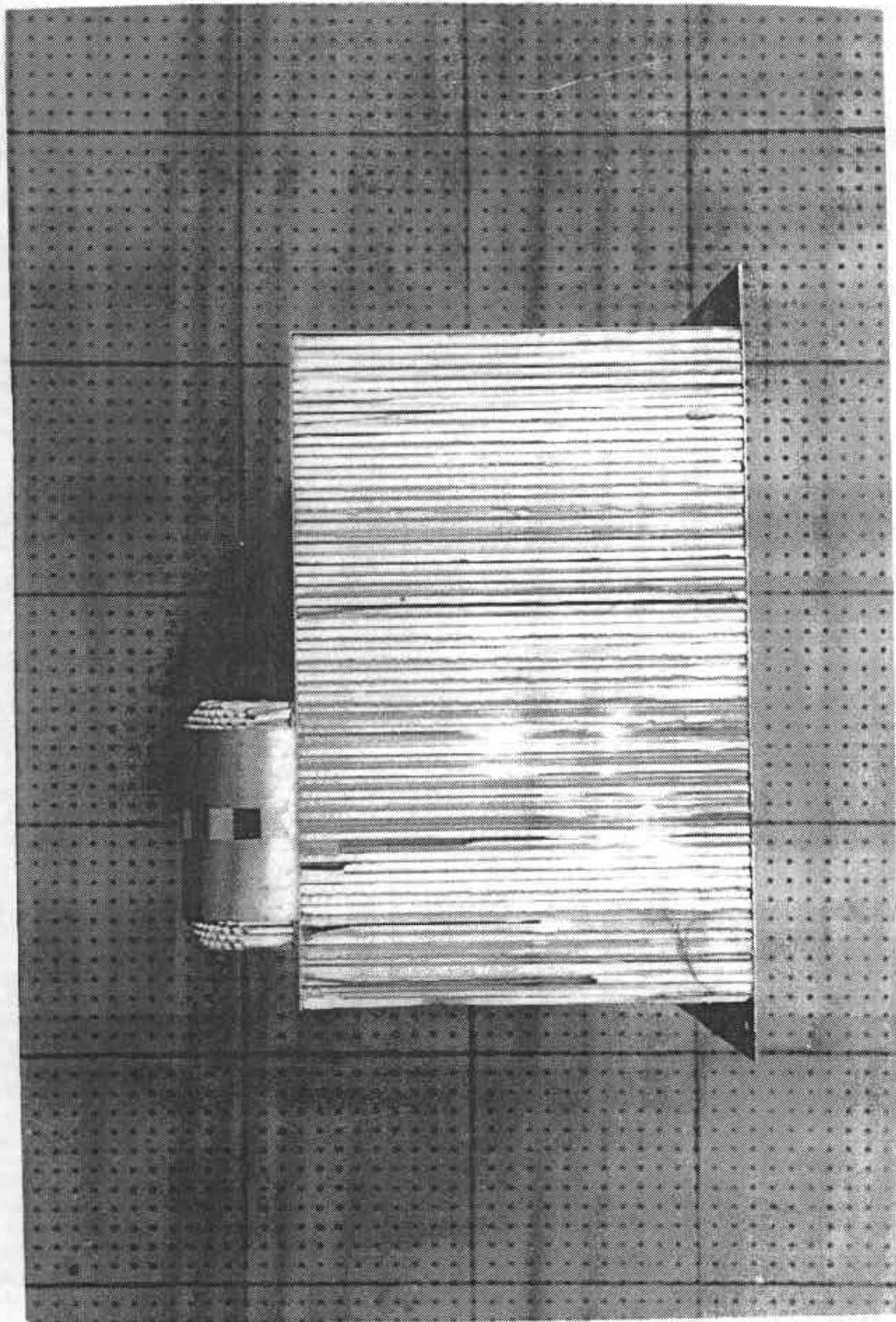


FIGURE 5-9 PRETEST LEFT SIDE VIEW OF MDB IMPACT FACE

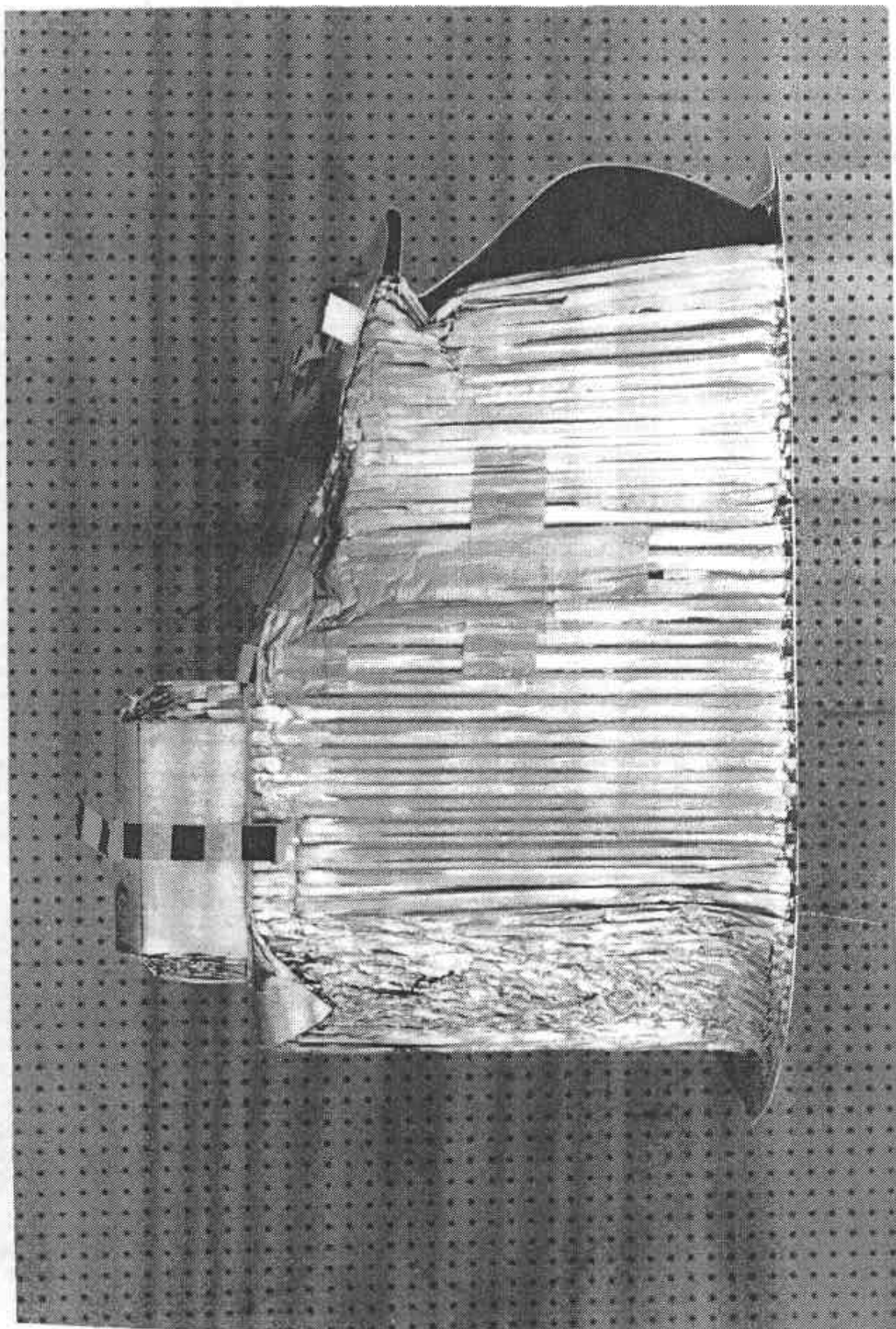


FIGURE 5-10 POSTTEST LEFT SIDE VIEW OF MDB IMPACT FACE

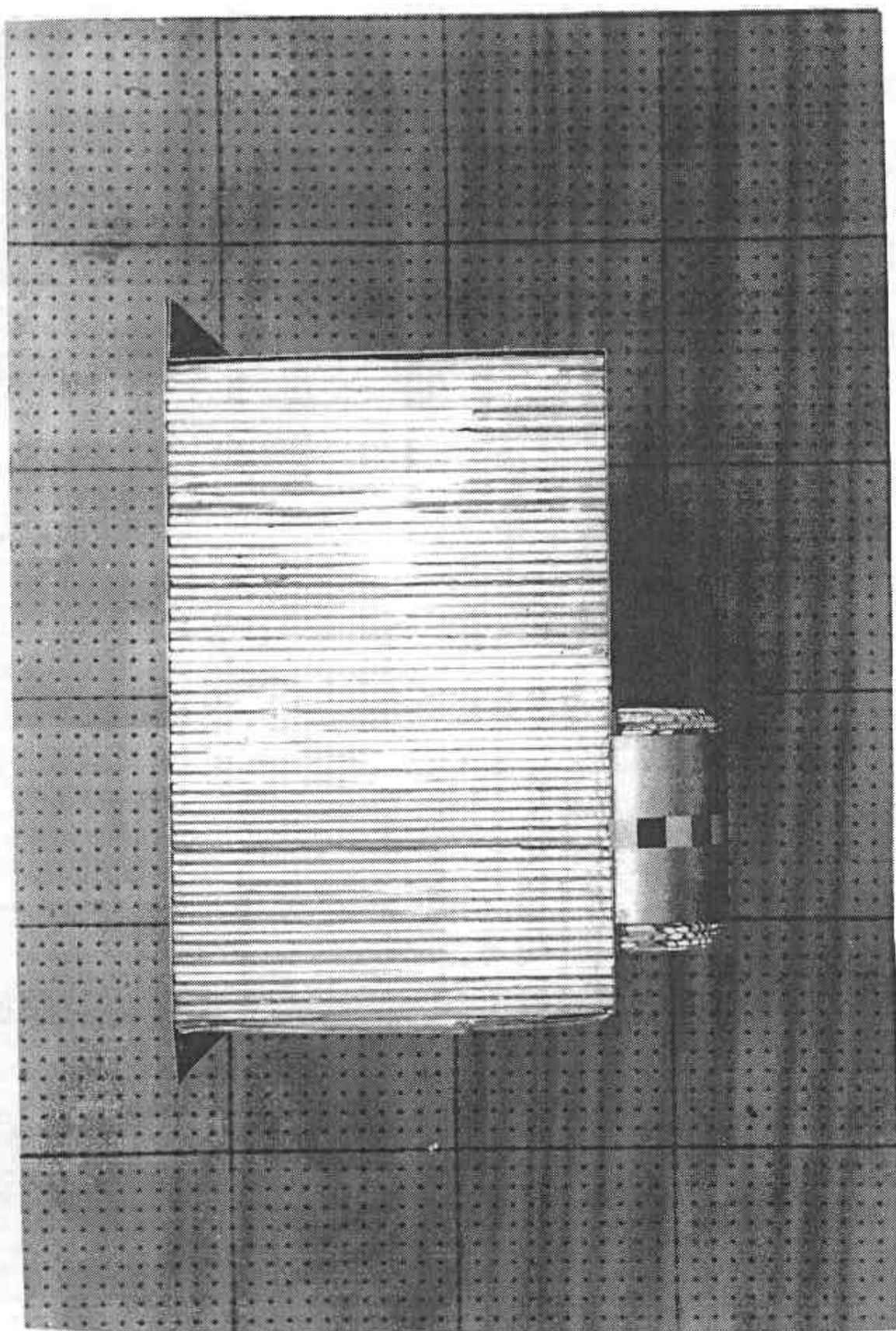


FIGURE 5-11 PRETEST RIGHT SIDE VIEW OF MDB IMPACT FACE

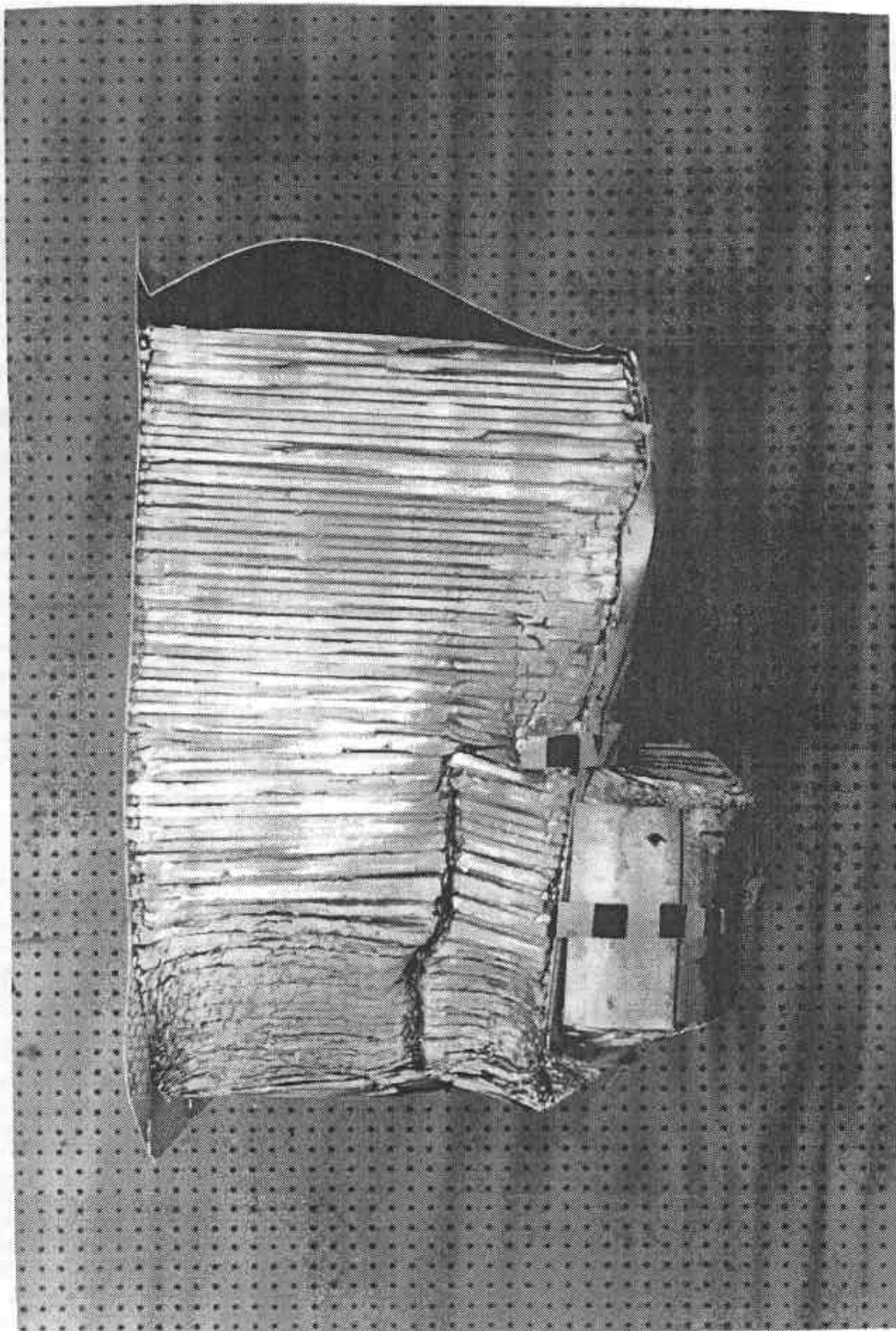


FIGURE 5-12 POSTTEST RIGHT SIDE VIEW OF MDB IMPACT FACE

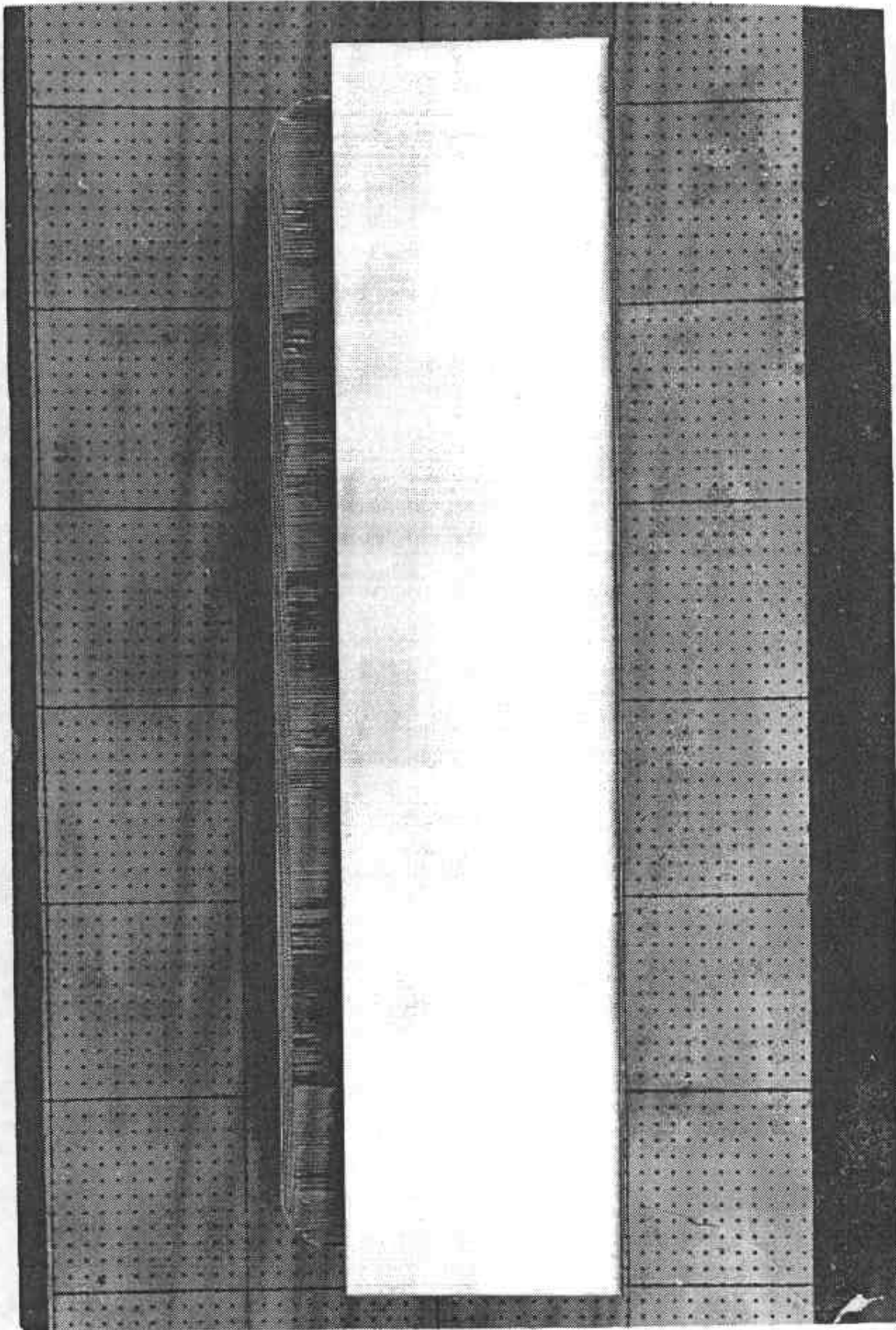


FIGURE 5-13 PRETEST TOP VIEW OF MDB IMPACT FACE

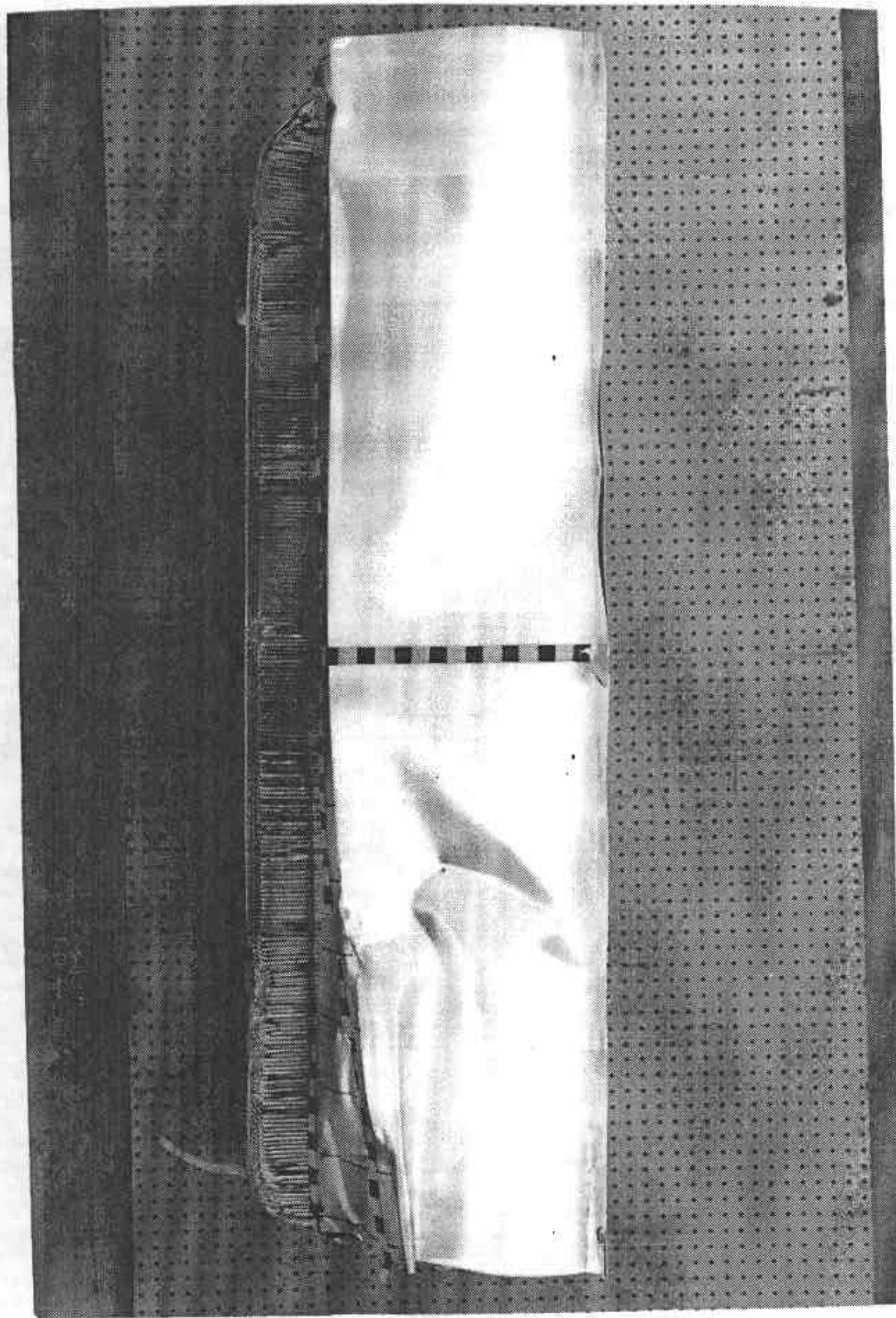


FIGURE 5-14 POSTTEST TOP VIEW OF MDB IMPACT FACE

THIS PAGE WILL BE REPLACED
WITH AN ORIGINAL PHOTOGRAPH
WITHIN A FEW DAYS.

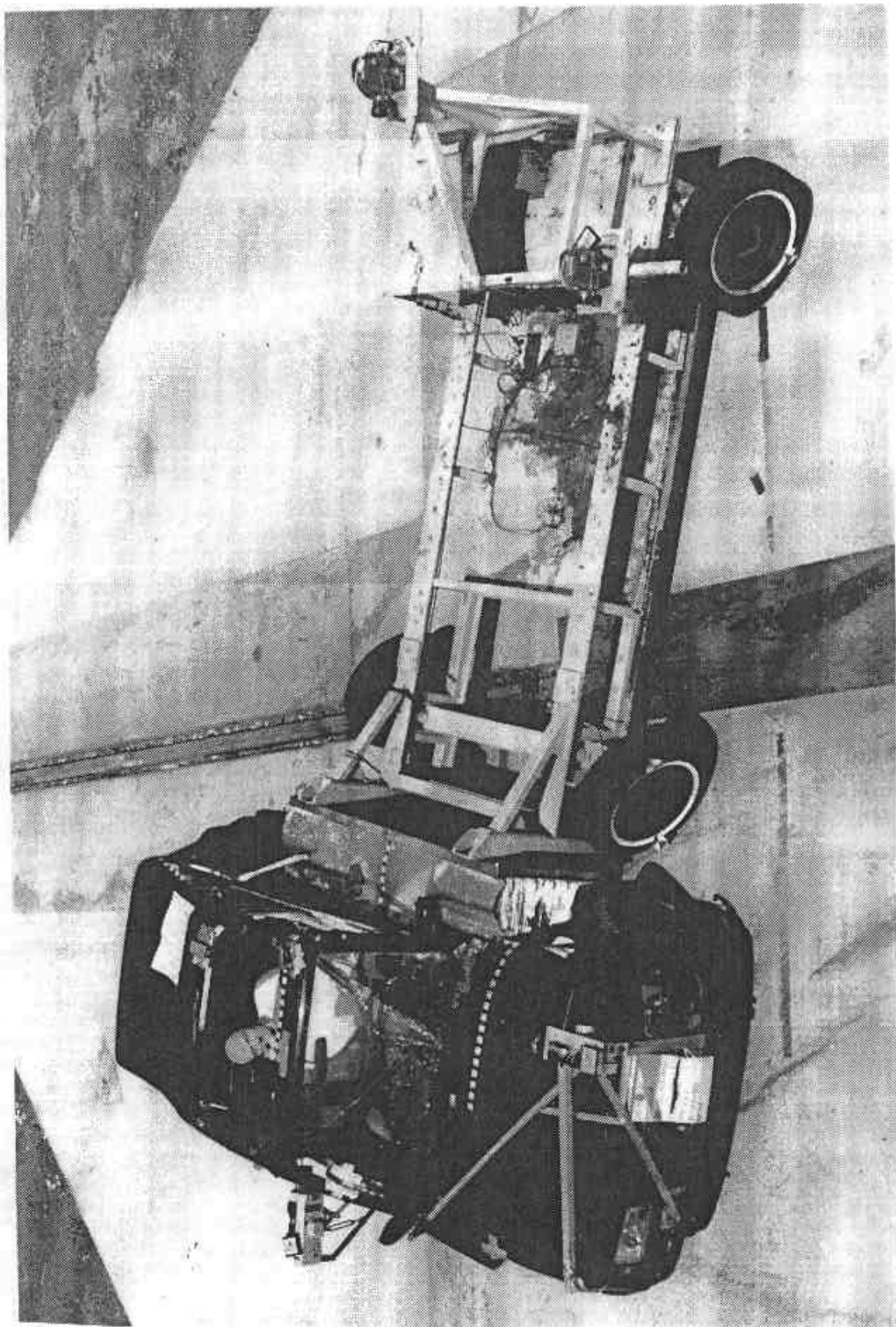


FIGURE 5-16 POSTTEST OVERHEAD VIEW OF MDB POSITIONED AGAINST STRUCK SIDE OF TEST VEHICLE AT IMPACT LOCATION



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

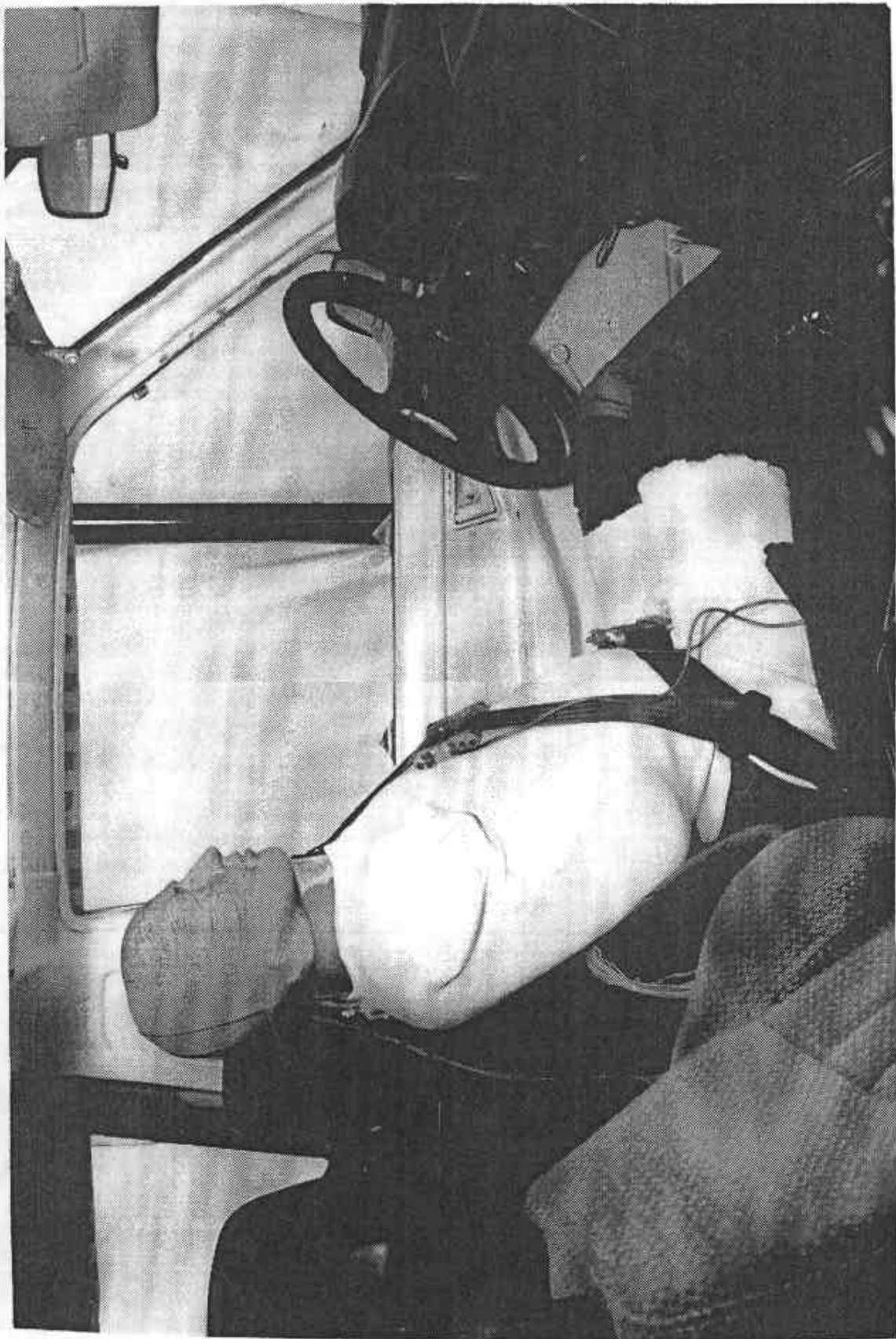


FIGURE 5-18 PRETEST OCCUPANT COMPARTMENT DRIVER SID

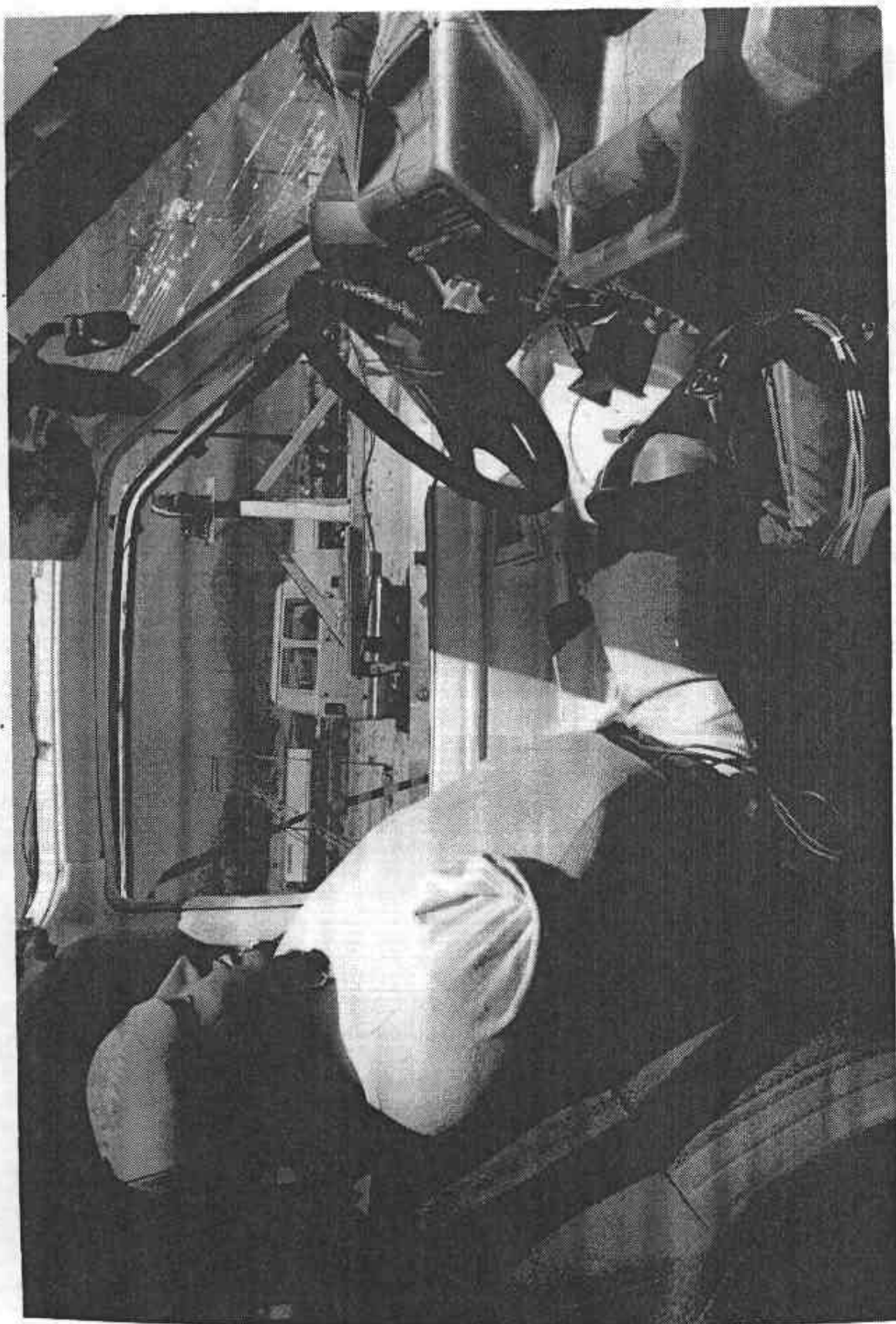


FIGURE 5-19 POSTTEST OCCUPANT COMPARTMENT SHOWING DRIVER SID

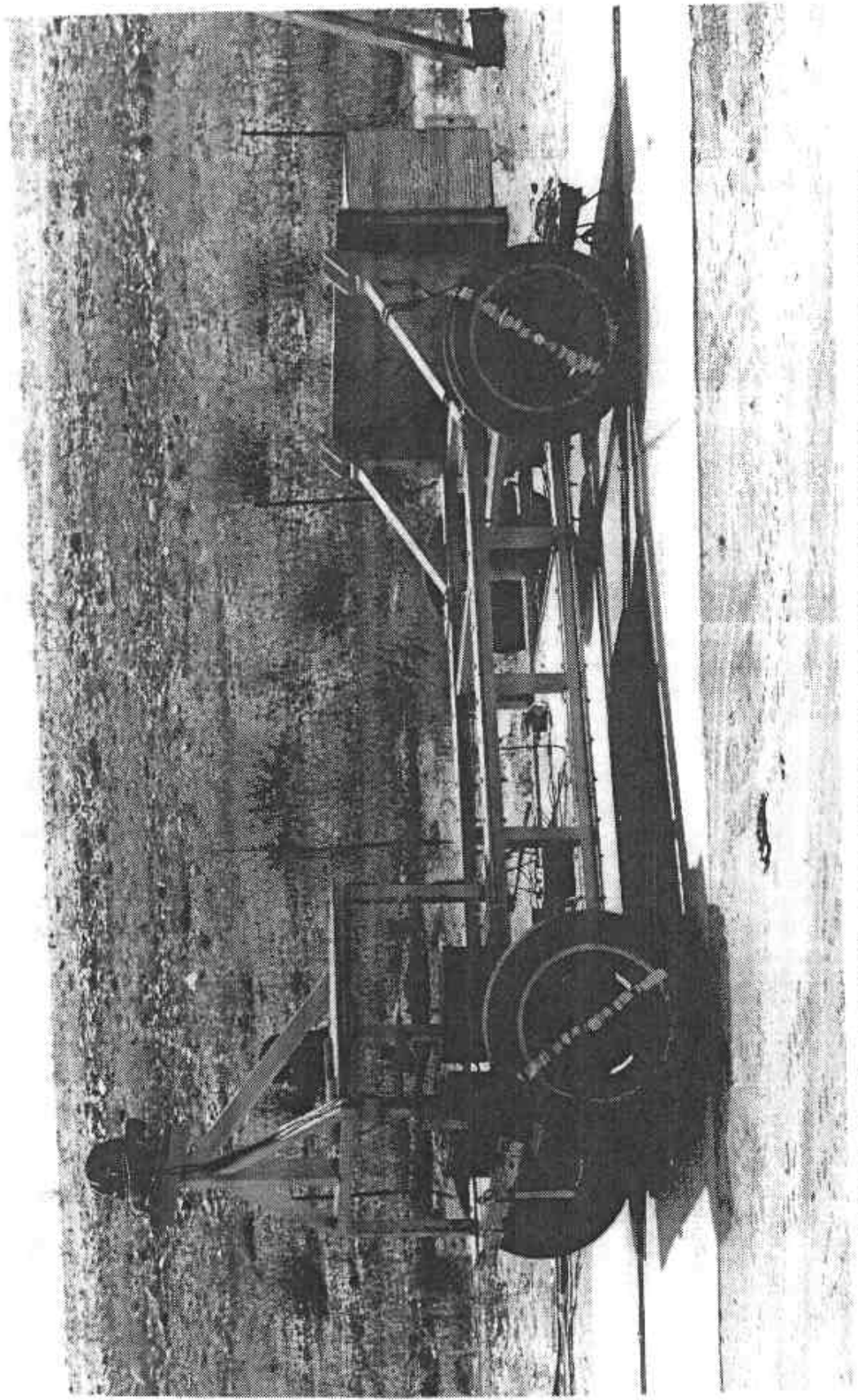


FIGURE 5-20 PRETEST RIGHT SIDE VIEW OF MDB WITH IMPACT FACE IN POSITION

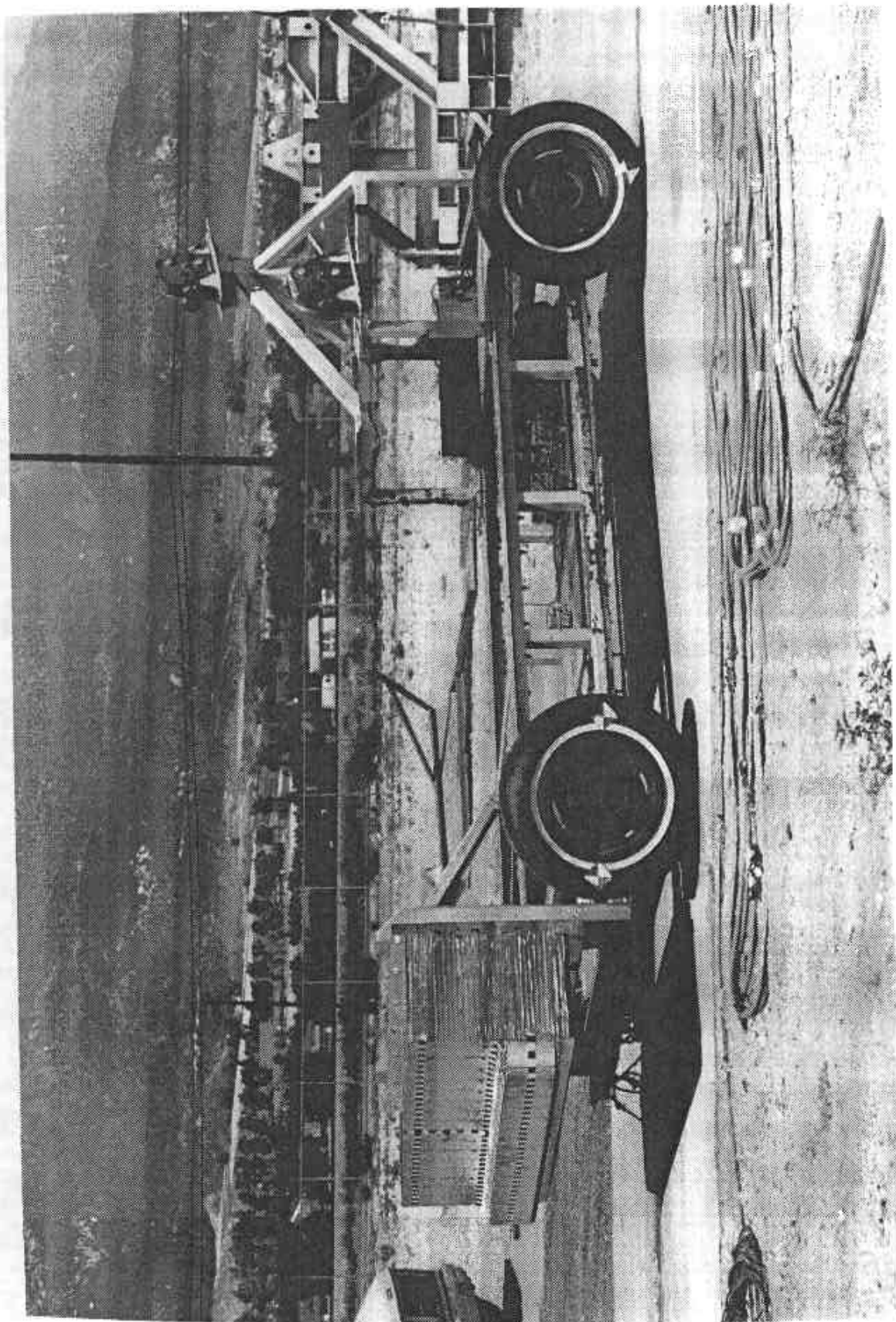


FIGURE 5-21 PRETEST LEFT SIDE VIEW OF MDB WITH IMPACT FACE IN POSITION

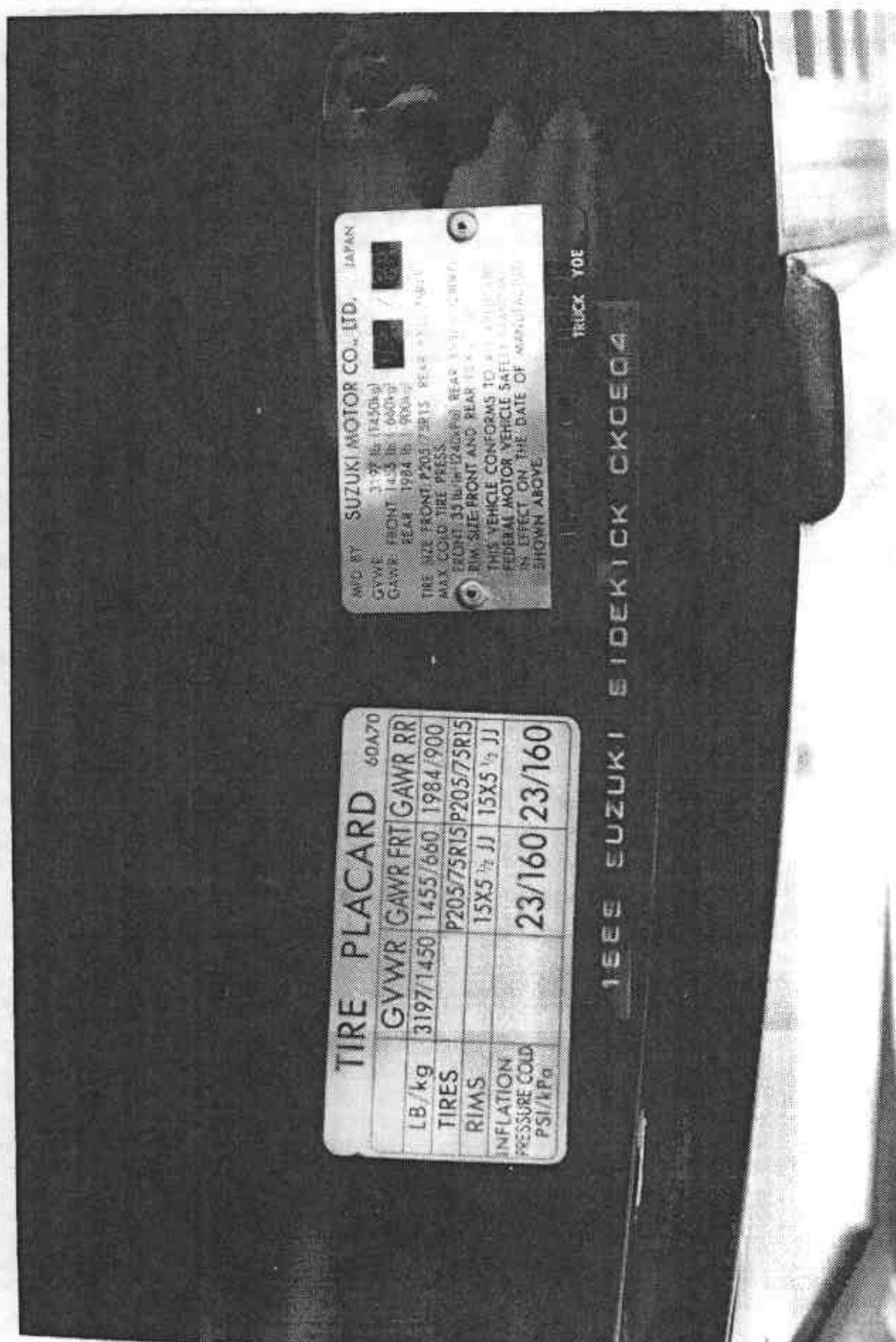


FIGURE 5-22 TEST VEHICLE TIRE PLACARD AND MANUFACTURER'S CERTIFICATION LABELS

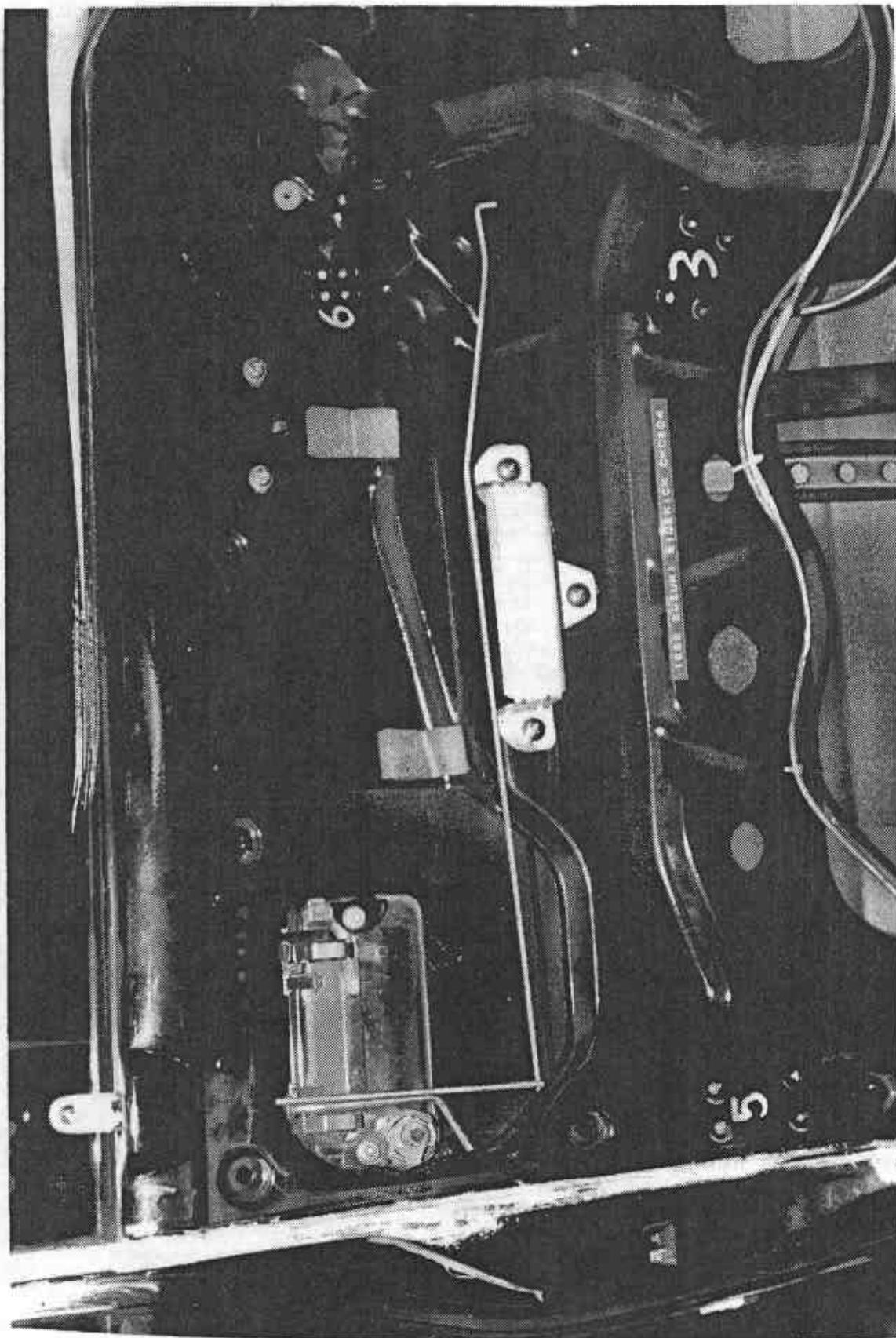


FIGURE 5-23 DRIVER DOOR ACCELEROMETER LOCATIONS



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



FIGURE 5-25 DRIVER SEATING POSITION - POSTTEST

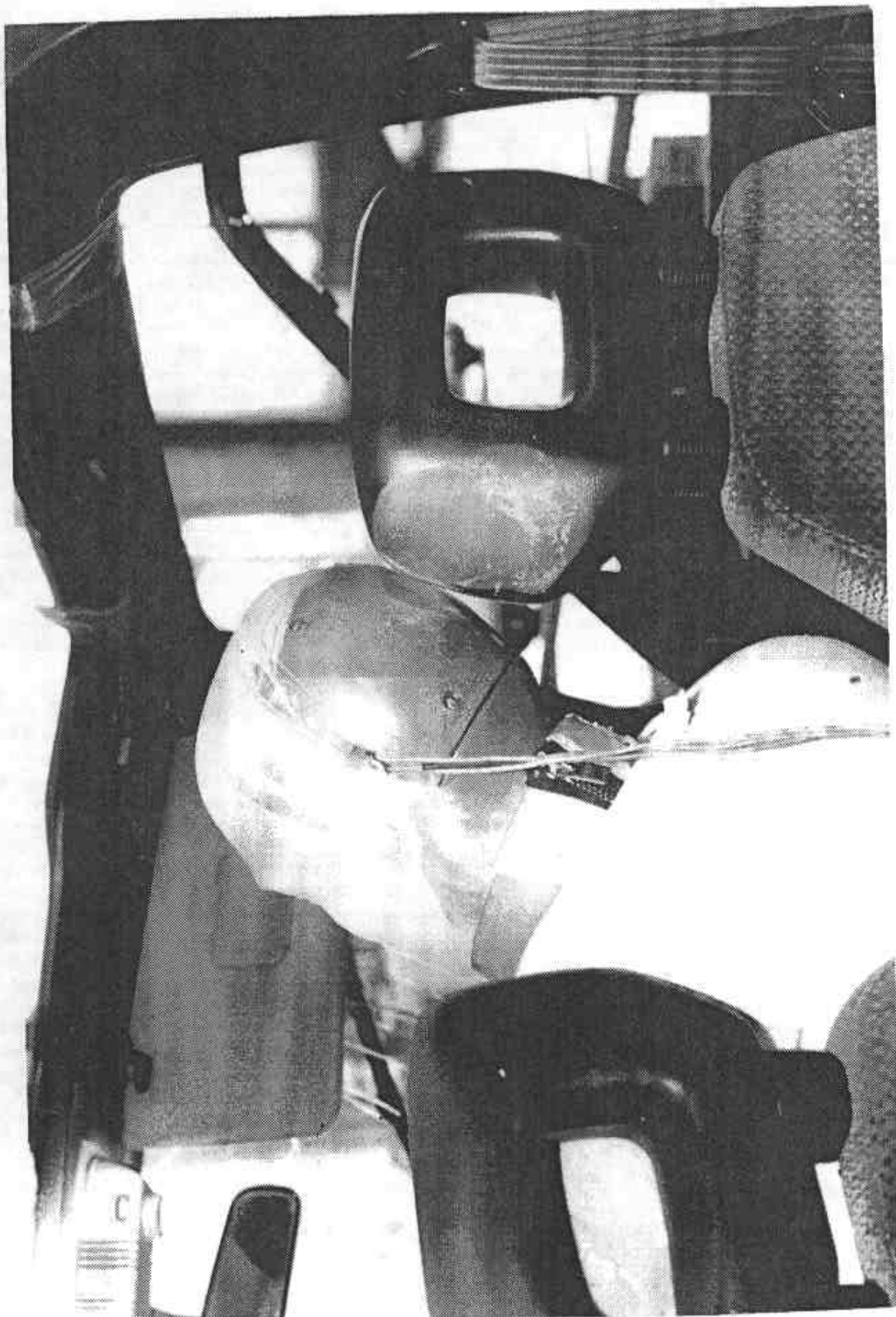


FIGURE 5-26 POSTTEST DRIVER SID CONTACT POINTS

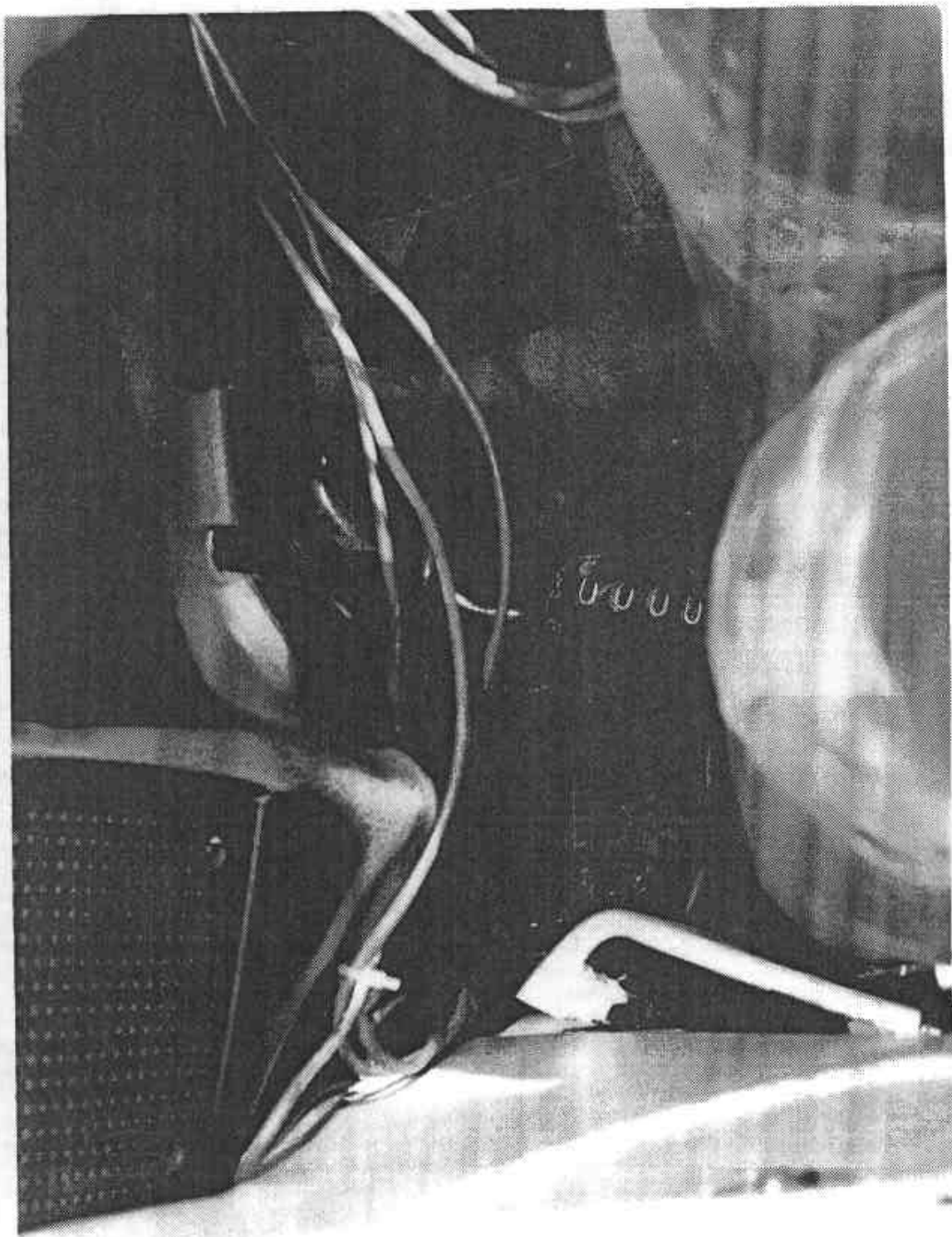


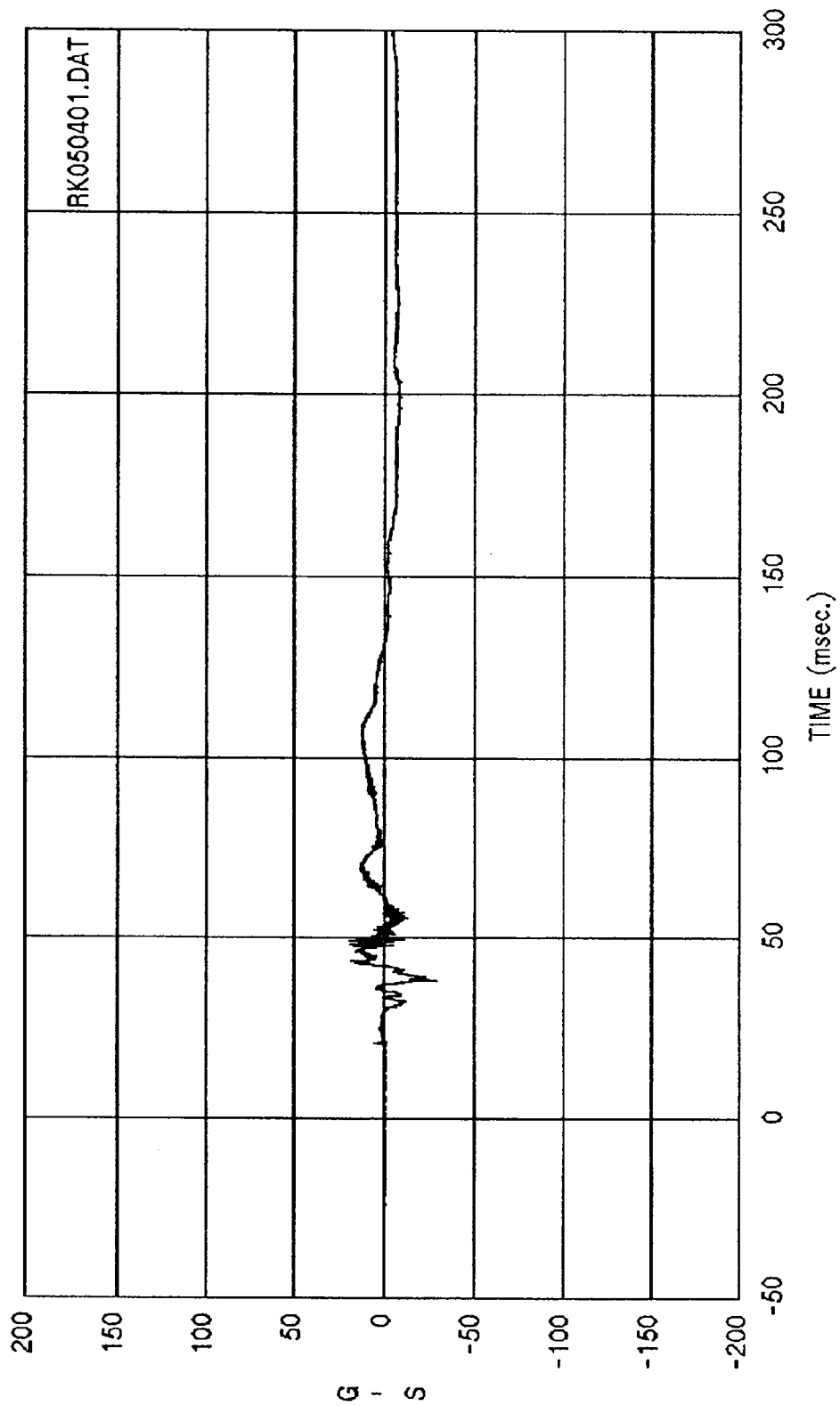
FIGURE 5-27 POSTTEST DRIVER SID CONTACT POINTS

SECTION 6

VEHICLE AND SID RESPONSE DATA

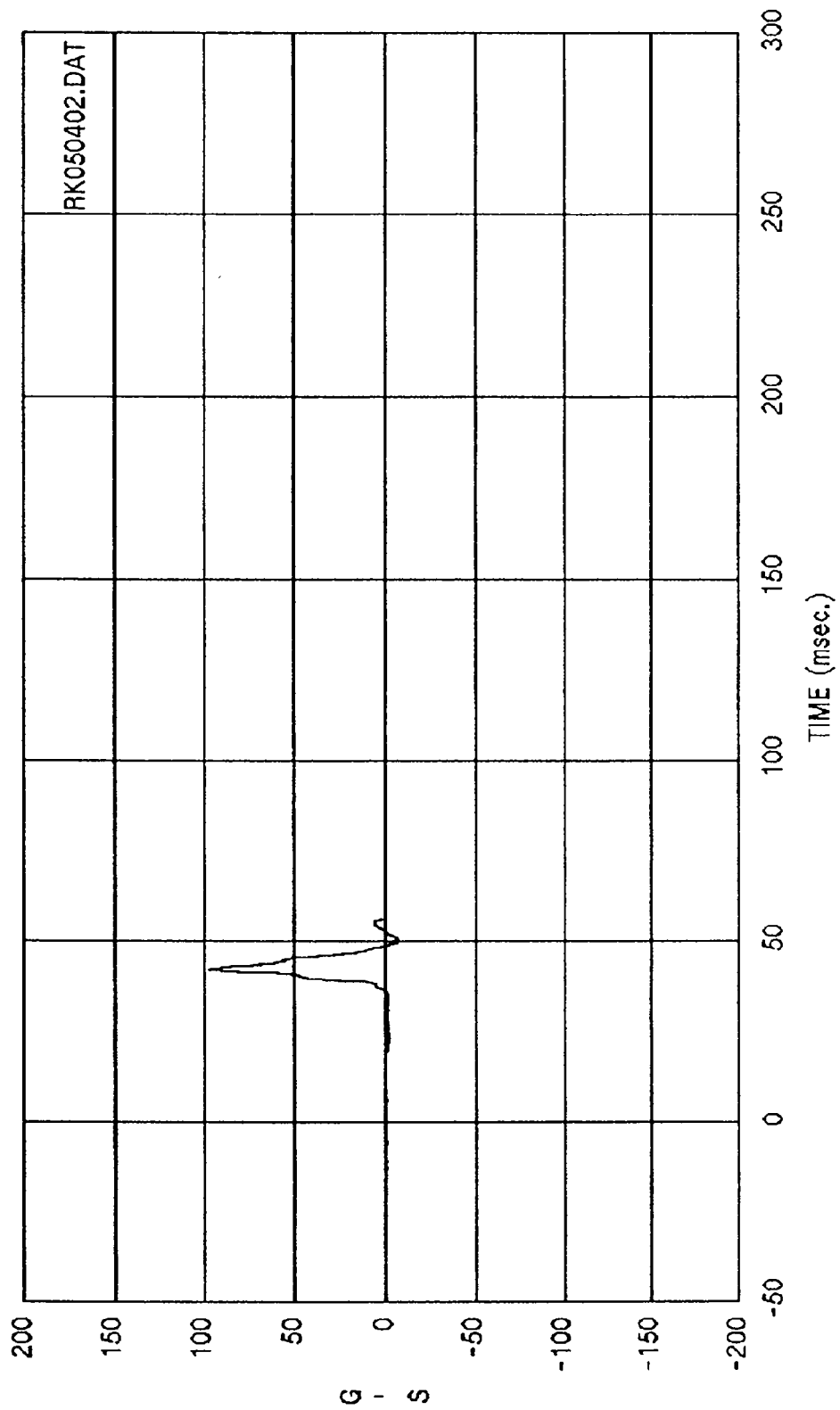
The dataplots from the side impact test are presented in this section.

SID DATA



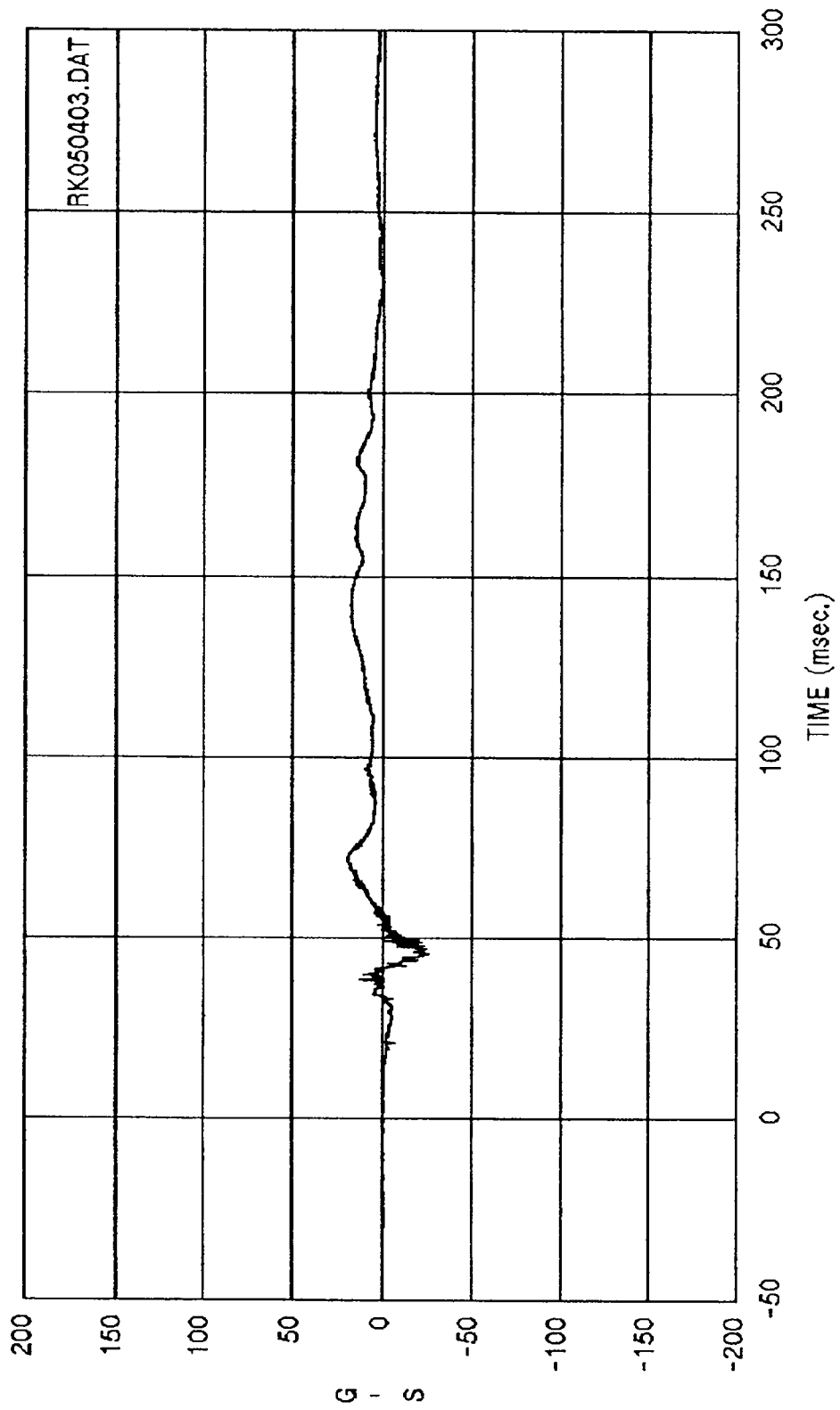
Curve: Driver Head acceleration -- X axis Filter: SAE CLASS 1000 Max = 20.220 Min = -29.041

MSE Date: 08/27/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Suzuki Sidekick



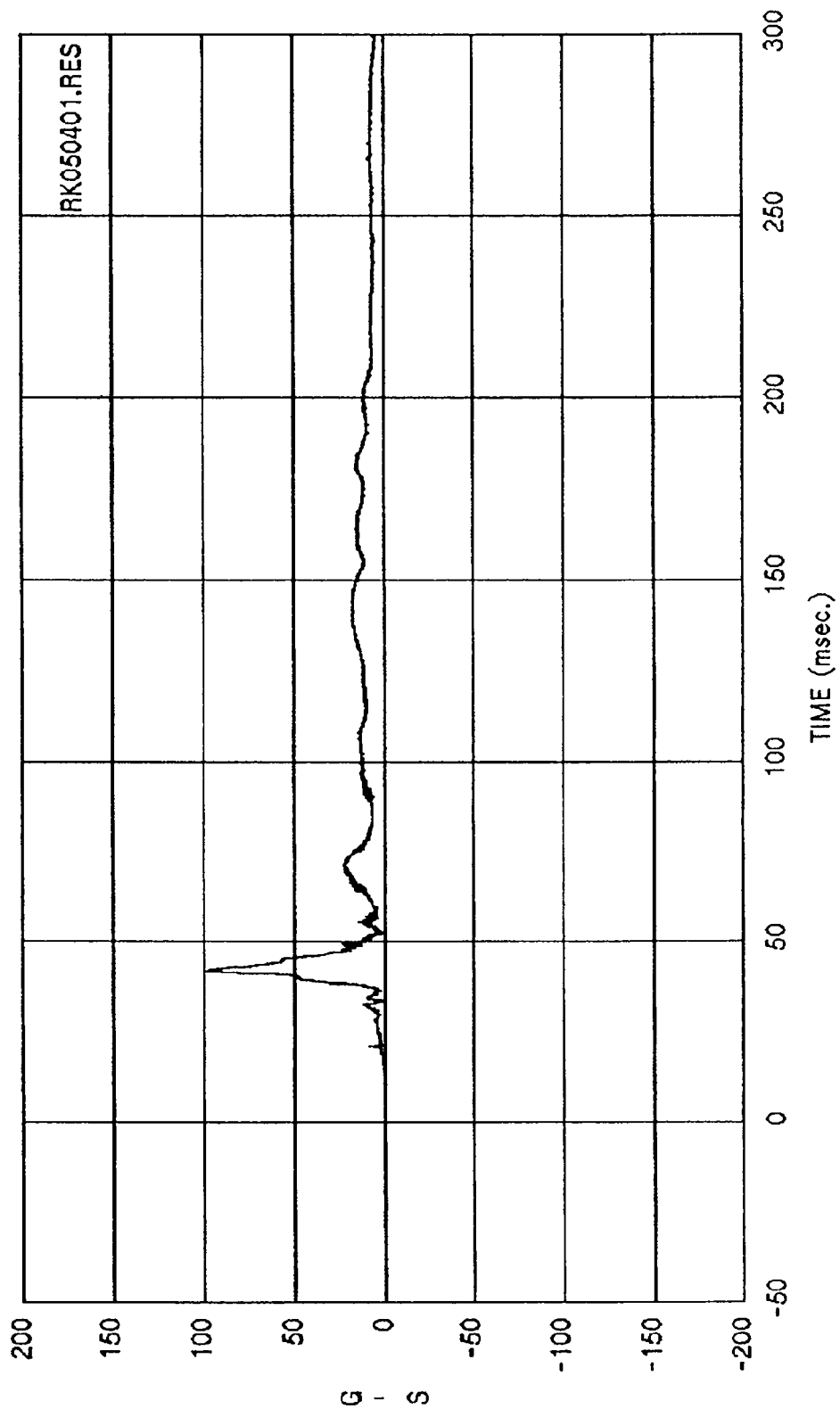
Curve: Driver Head acceleration -- Y axis Filter: SAE CLASS 1000 Max = 97.967 Min = -6.5748

MSE Date: 08/27/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Suzuki Sidekick



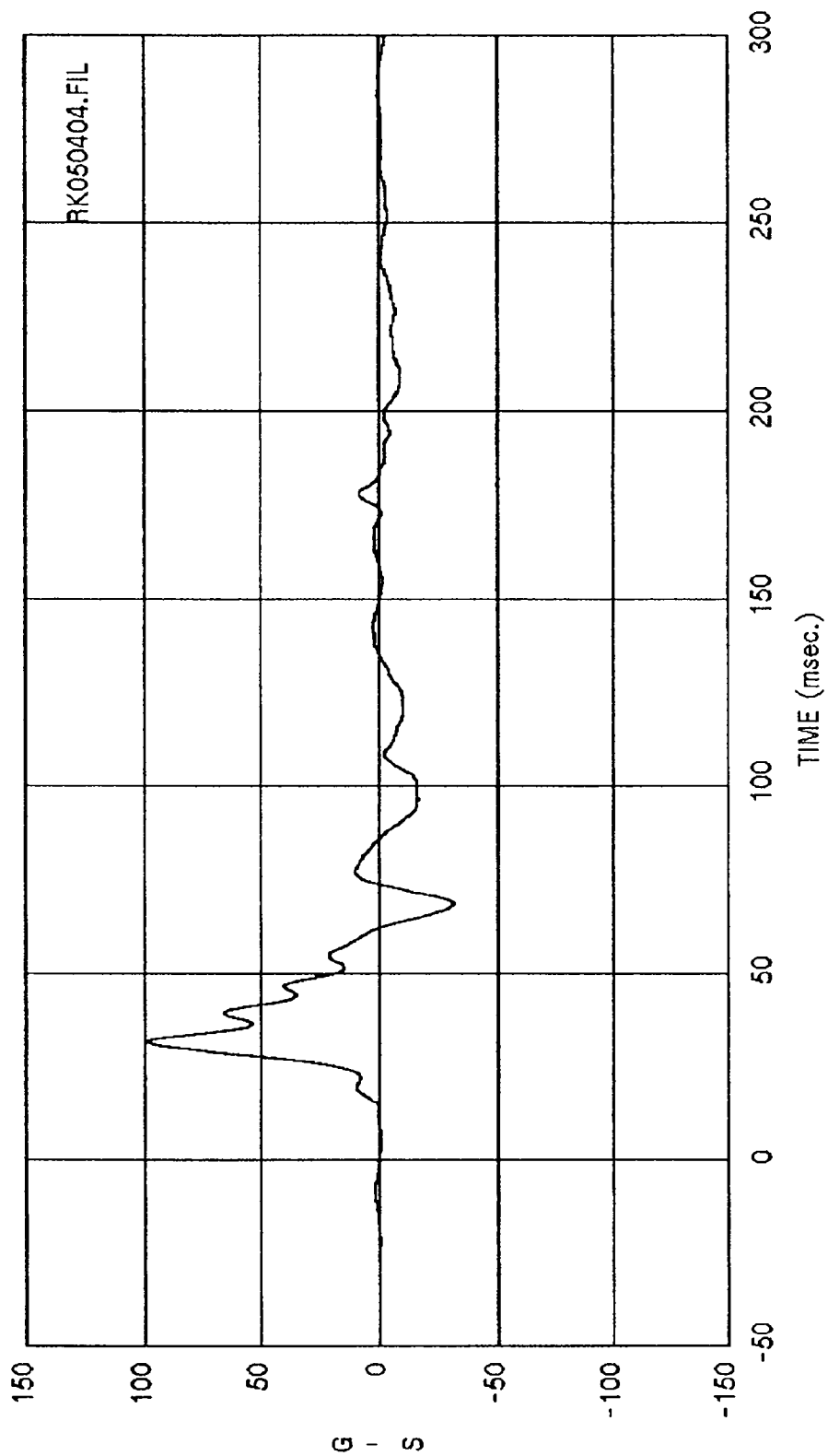
Curve: Driver Head acceleration -- Z axis Filter: SAE CLASS 1000 Max = 19.575 Min = -25.185

MSE Date: 08/27/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Suzuki Sidekick



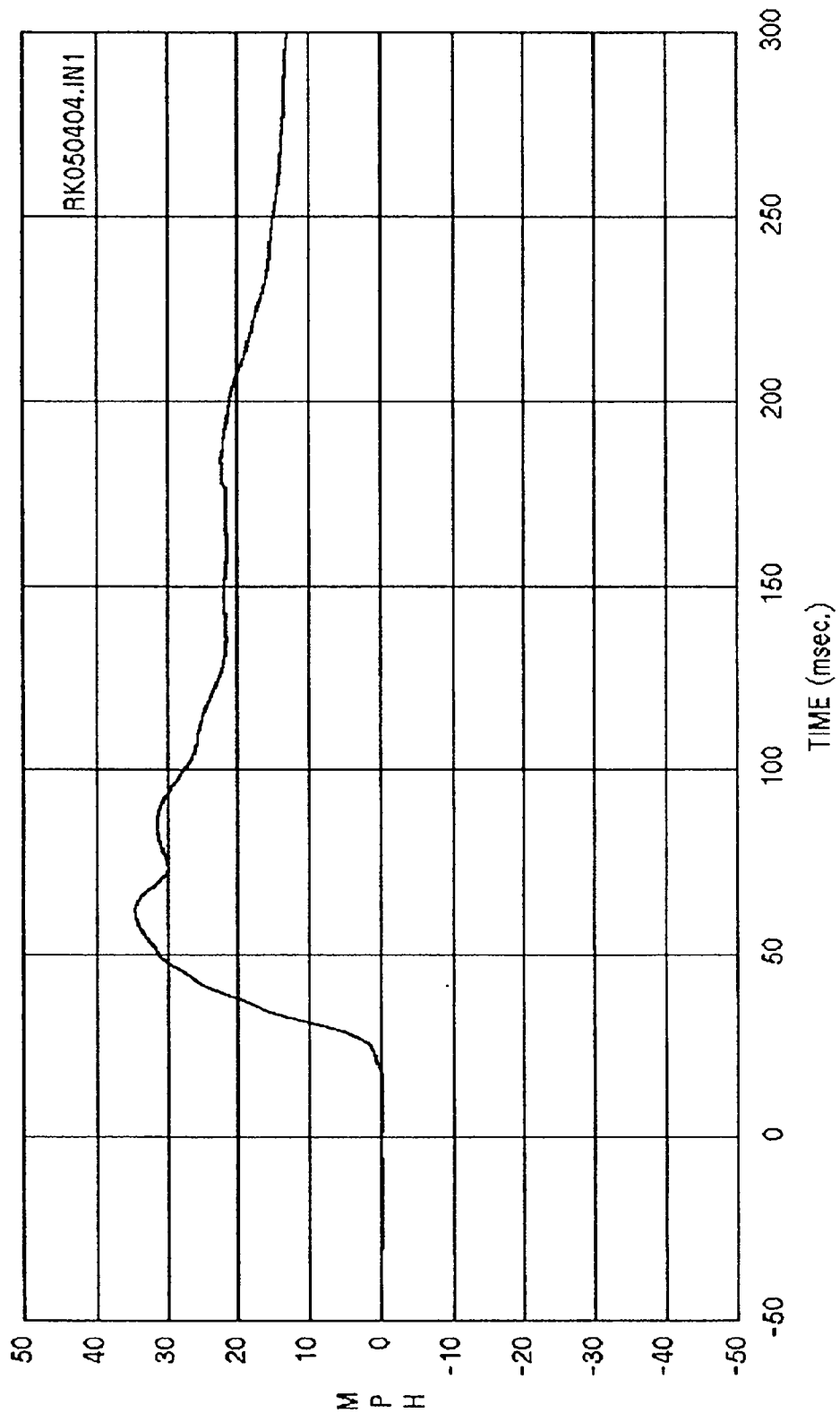
Curve: Driver Head resultant acceleration Filter: SAE CLASS 1000 Max = 98.253 Min = .00000

MSE Date: 08/27/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Suzuki Sidekick



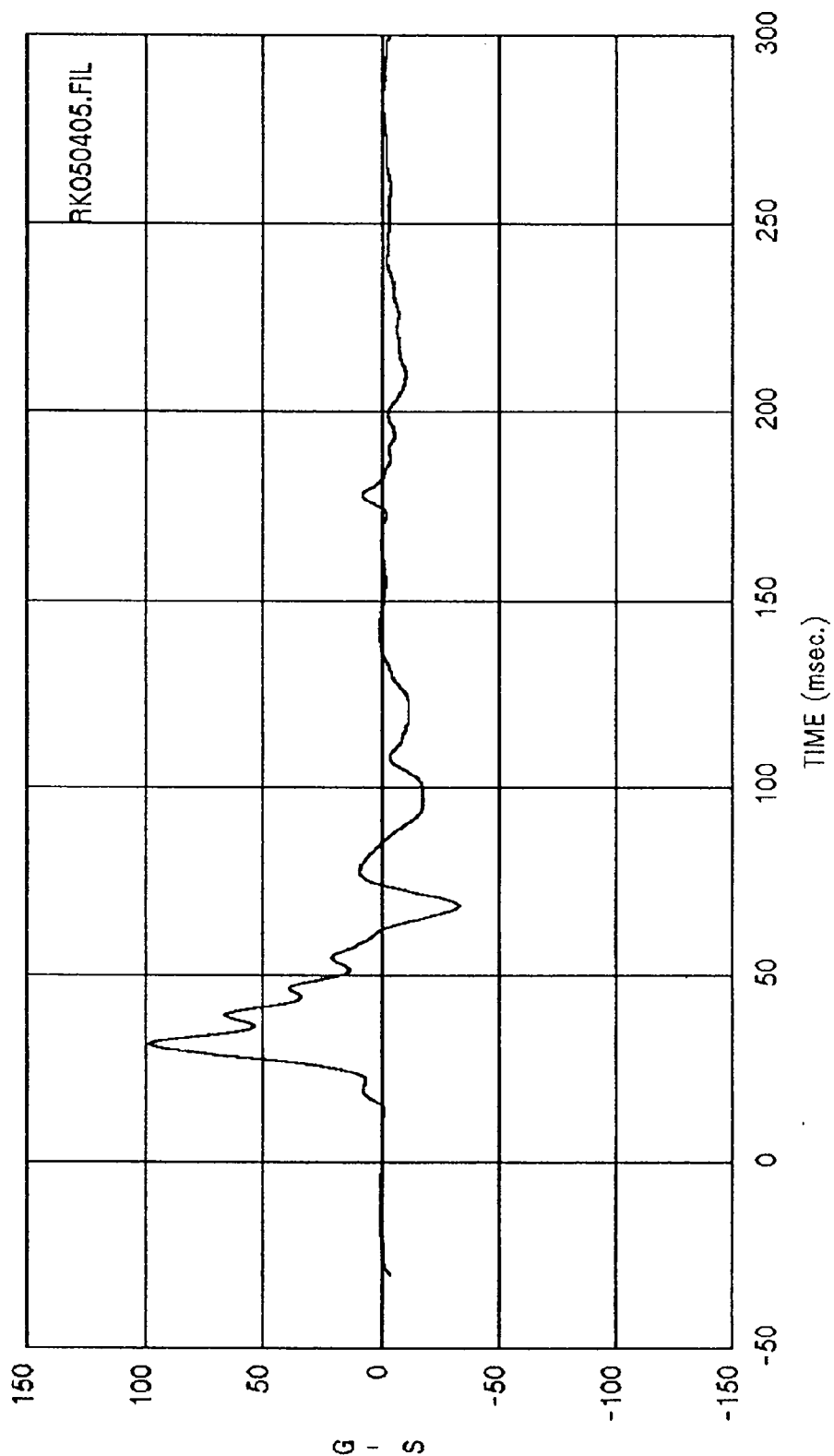
Curve: Driver upper spine acceleration -- Primary Filter: FIR 100 Max = 98.521 Min = -31.290

MSE Date: 08/27/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Suzuki Sidekick



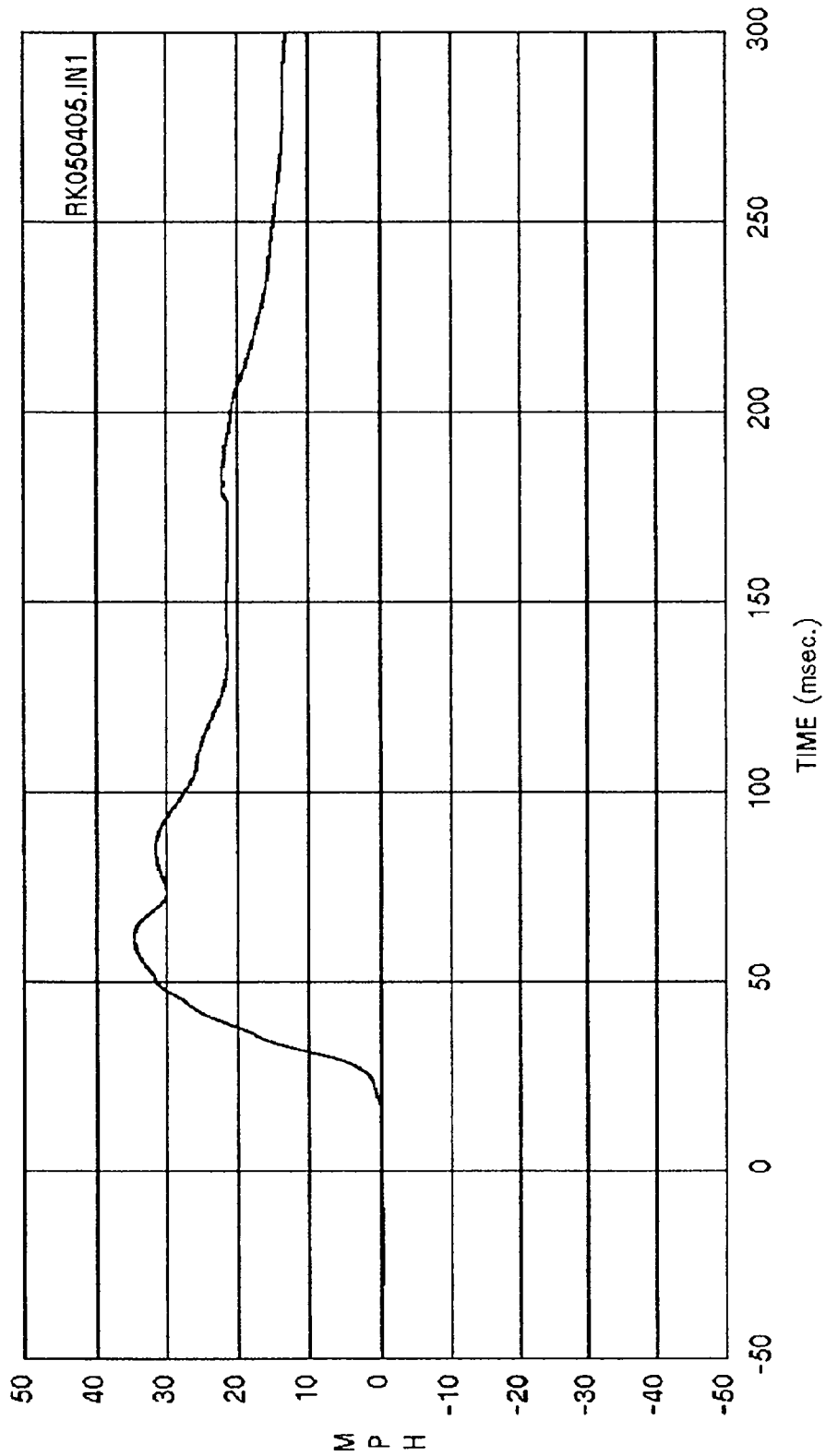
Curve: Driver upper spine delta V -- Primary Filter: SAE CLASS 180 Max = 34.814 Min = -.18373

MSE Date: 08/27/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Suzuki Sidekick



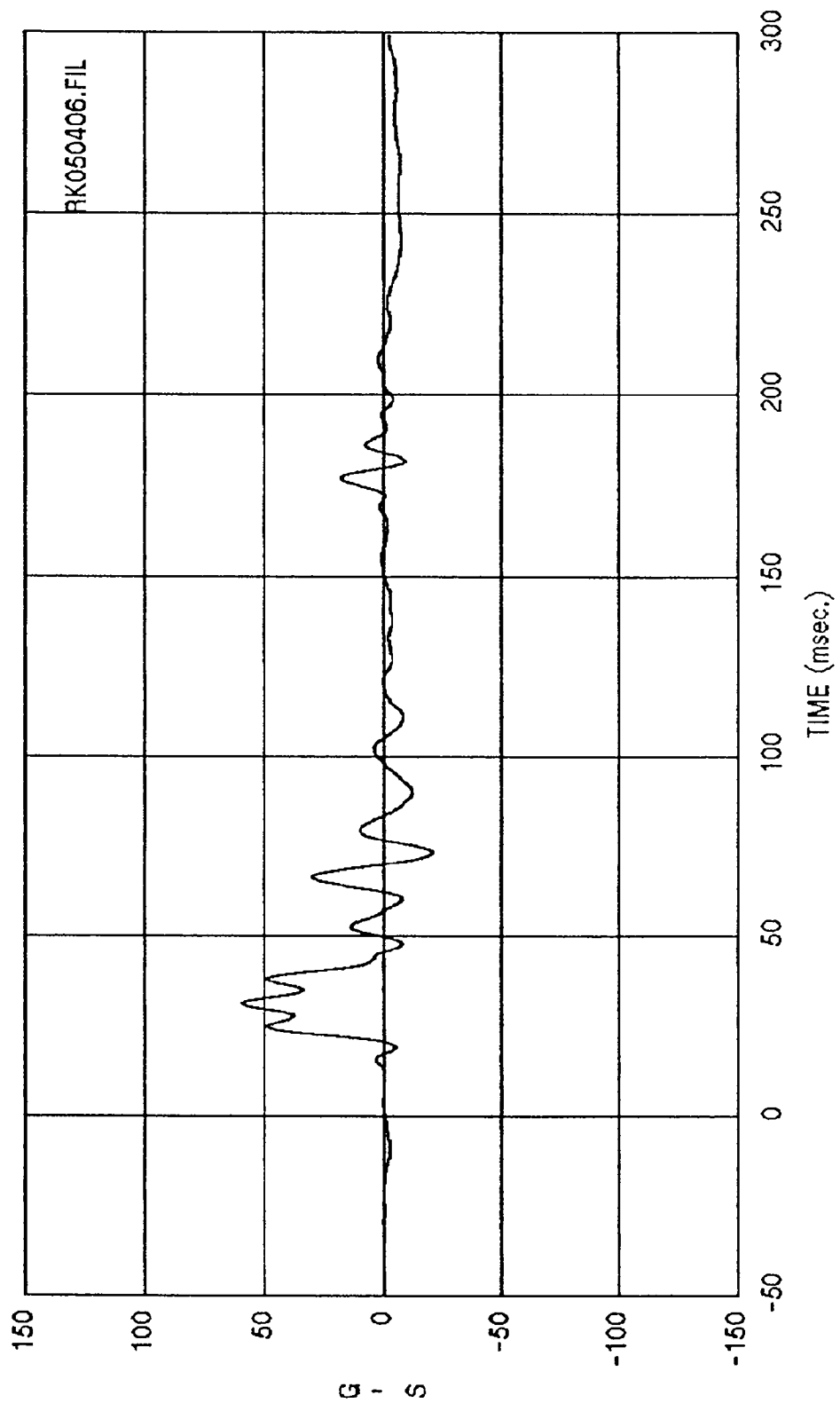
Curve: Driver upper spine acceleration -- Redundant Filter: FIR 100 Max = 97.950 Min = -32.841

MSE Date: 08/27/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Suzuki Sidekick



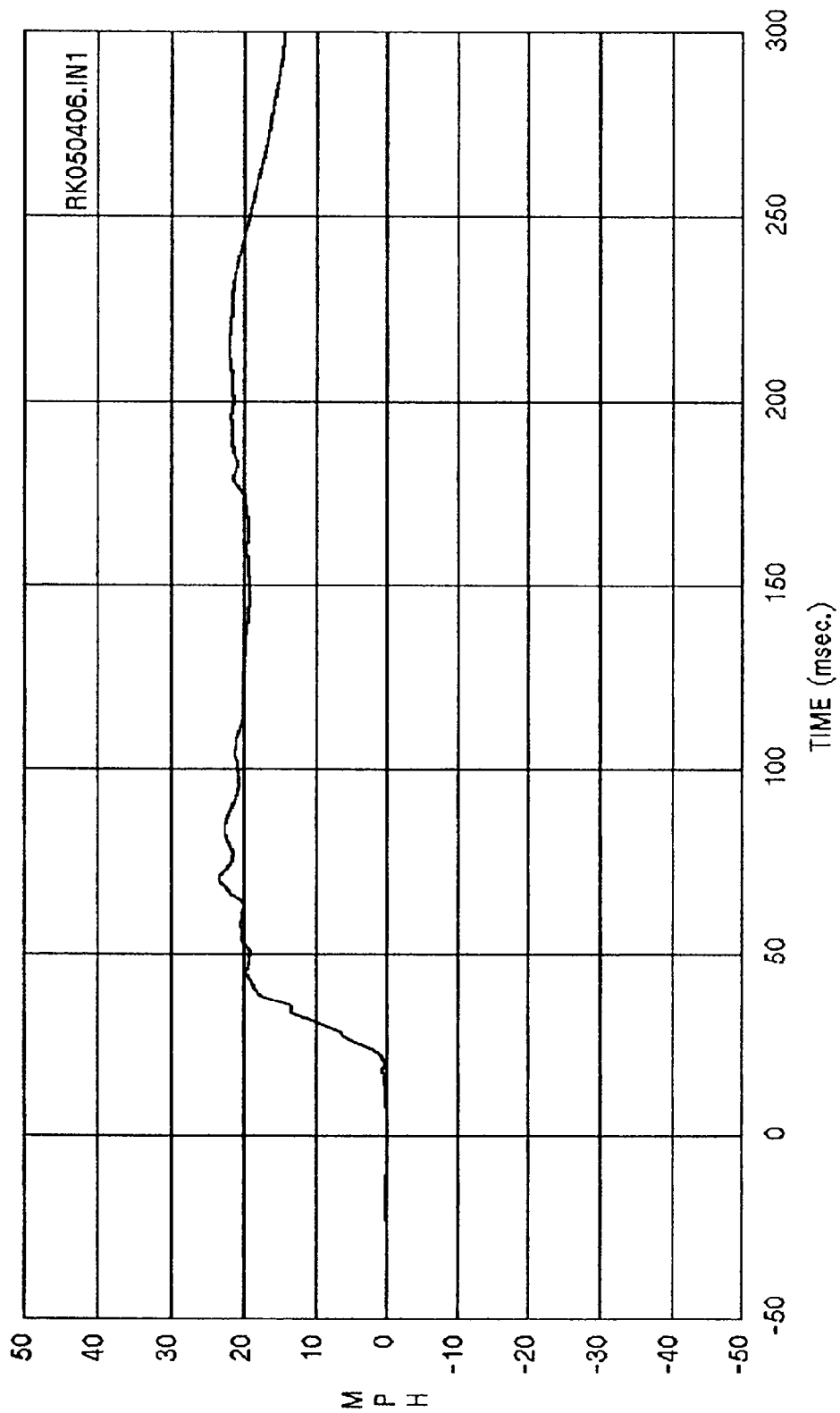
Curve: Driver upper spine delta V -- Redundant Filter: SAE CLASS 180 Max = 34.695 Min = -.308611
01

MSE Date: 08/27/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Suzuki Sidekick



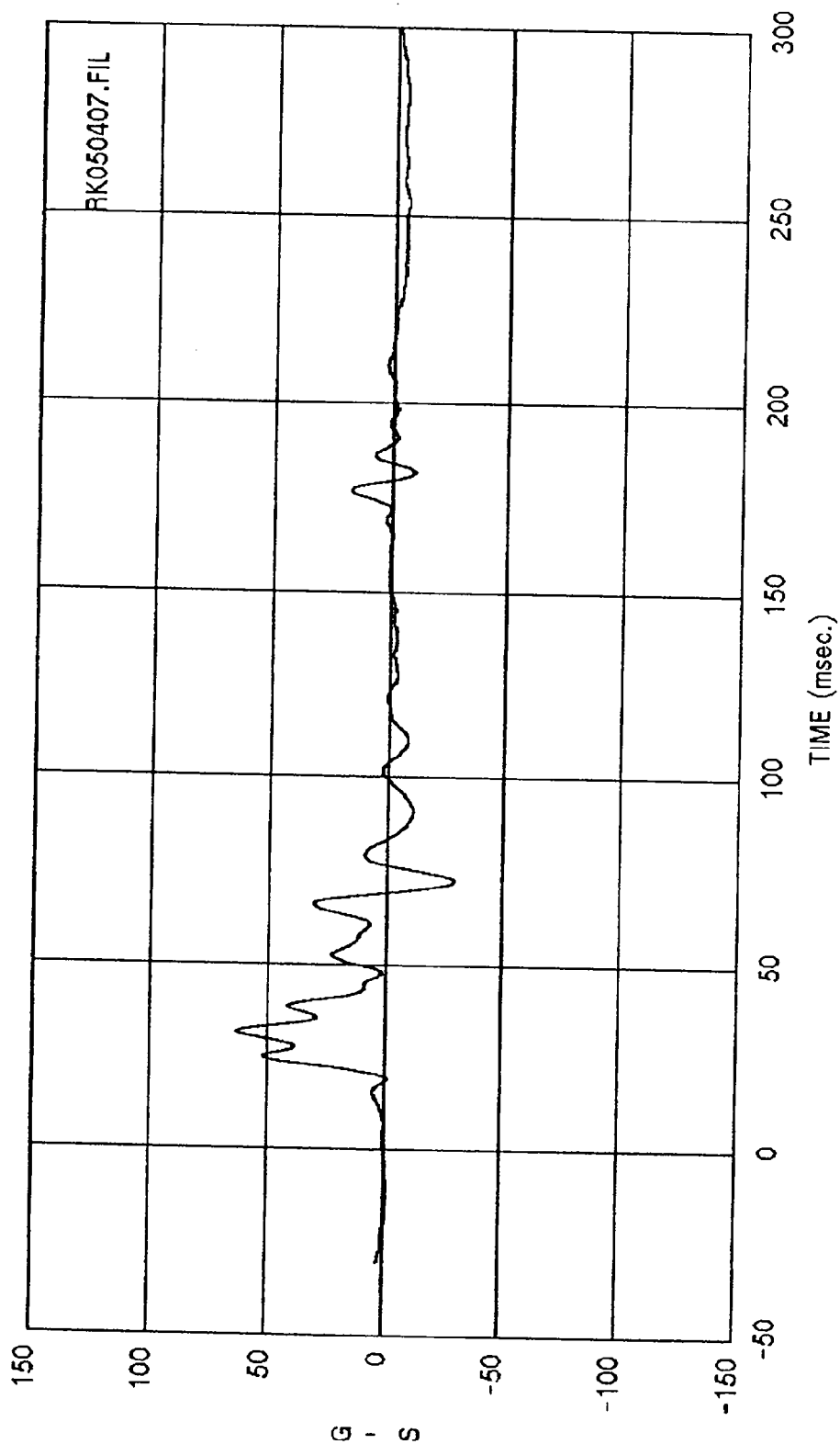
Curve: Driver upper rib acceleration -- Primary Filter: FIR 100 Max = 59.950 Min = -20.807

MSE Date: 08/27/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Suzuki Sidekick



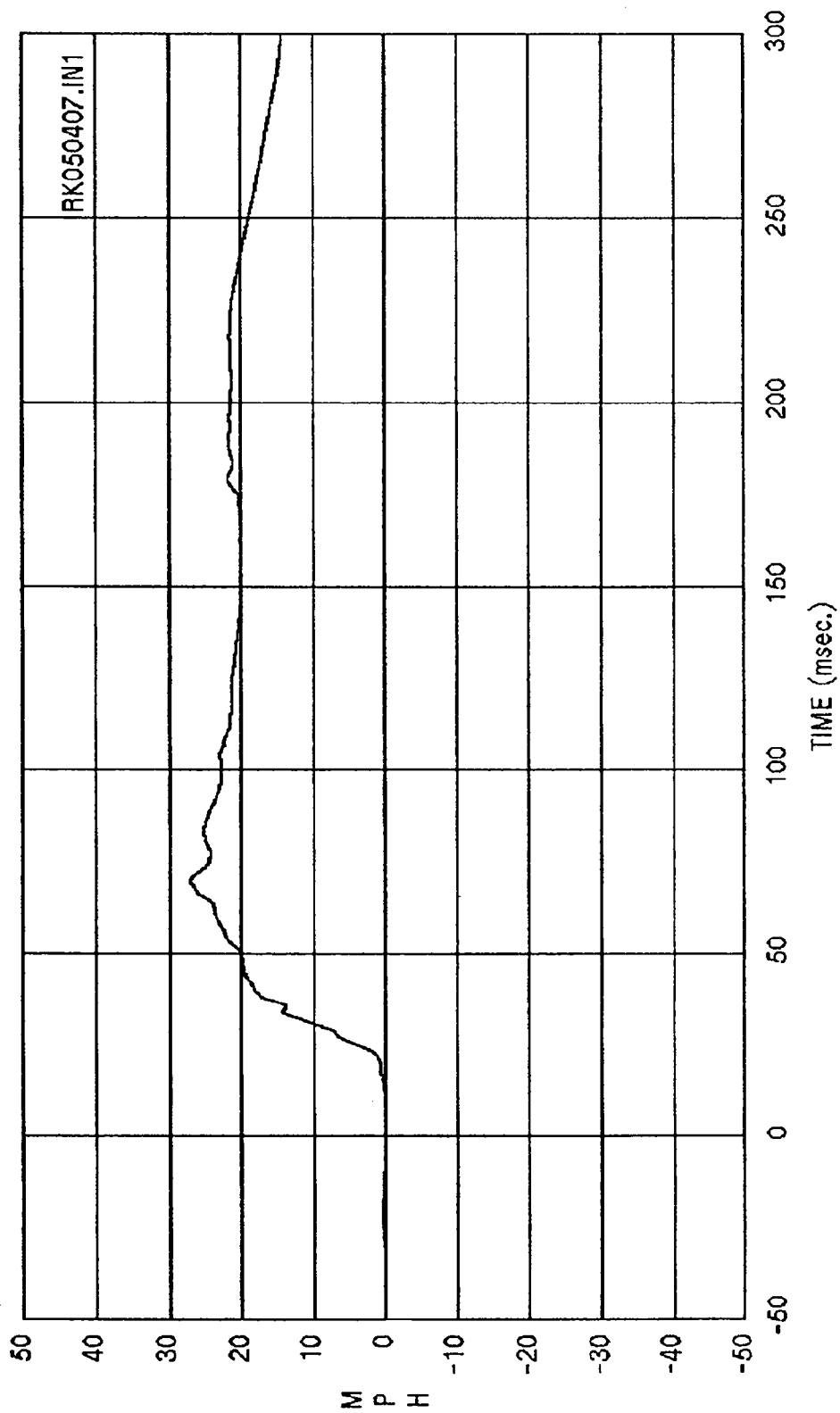
Curve: Driver upper rib delta V -- Primary Filter: SAE CLASS 180 Max = 23.503 Min = .47437

MSE Date: 08/27/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Suzuki Sidekick



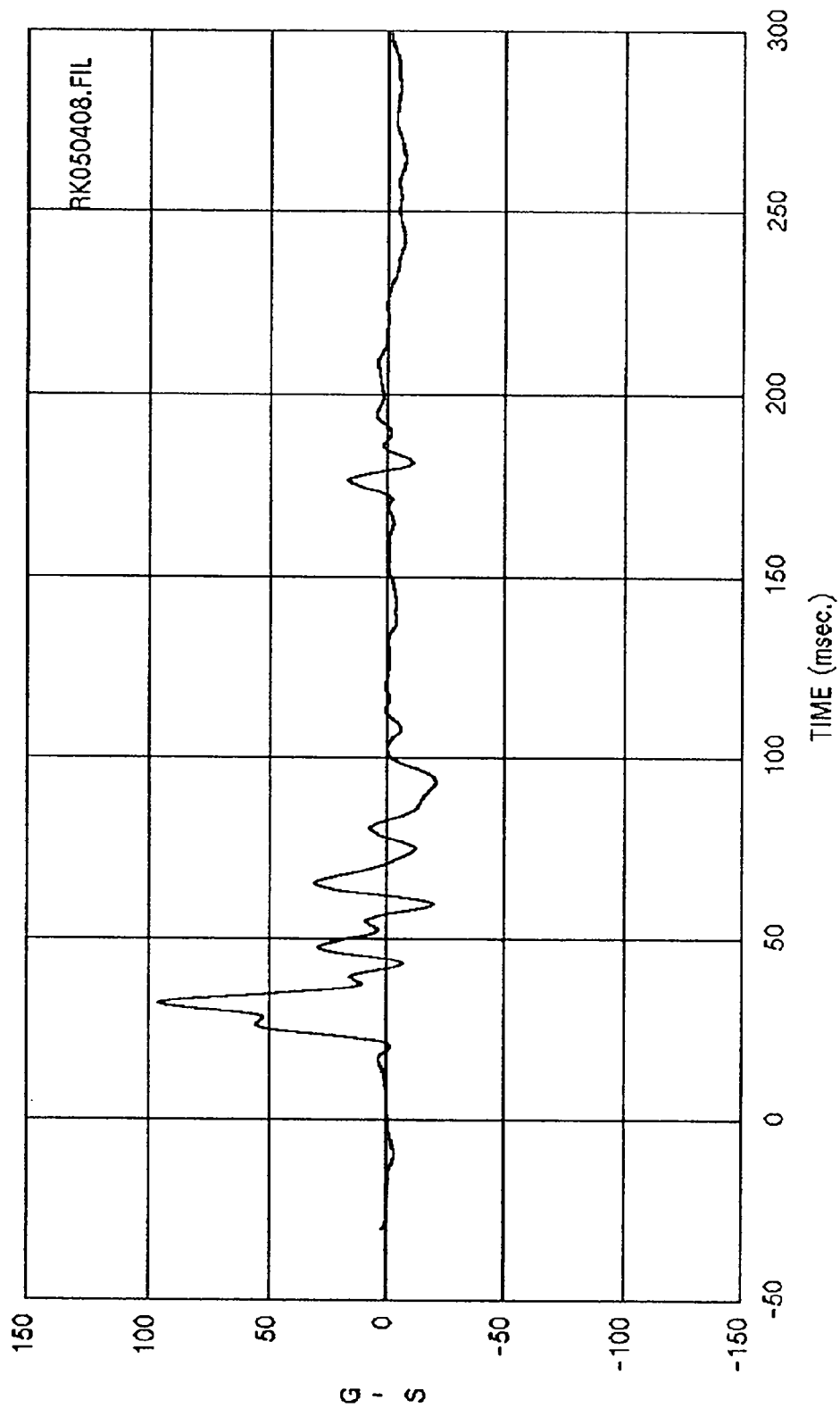
Curve: Driver upper rib acceleration -- Redundant Filter: FIR 100 Max = 63.420 Min = -28.607

MSE Date: 08/27/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Suzuki Sidekick



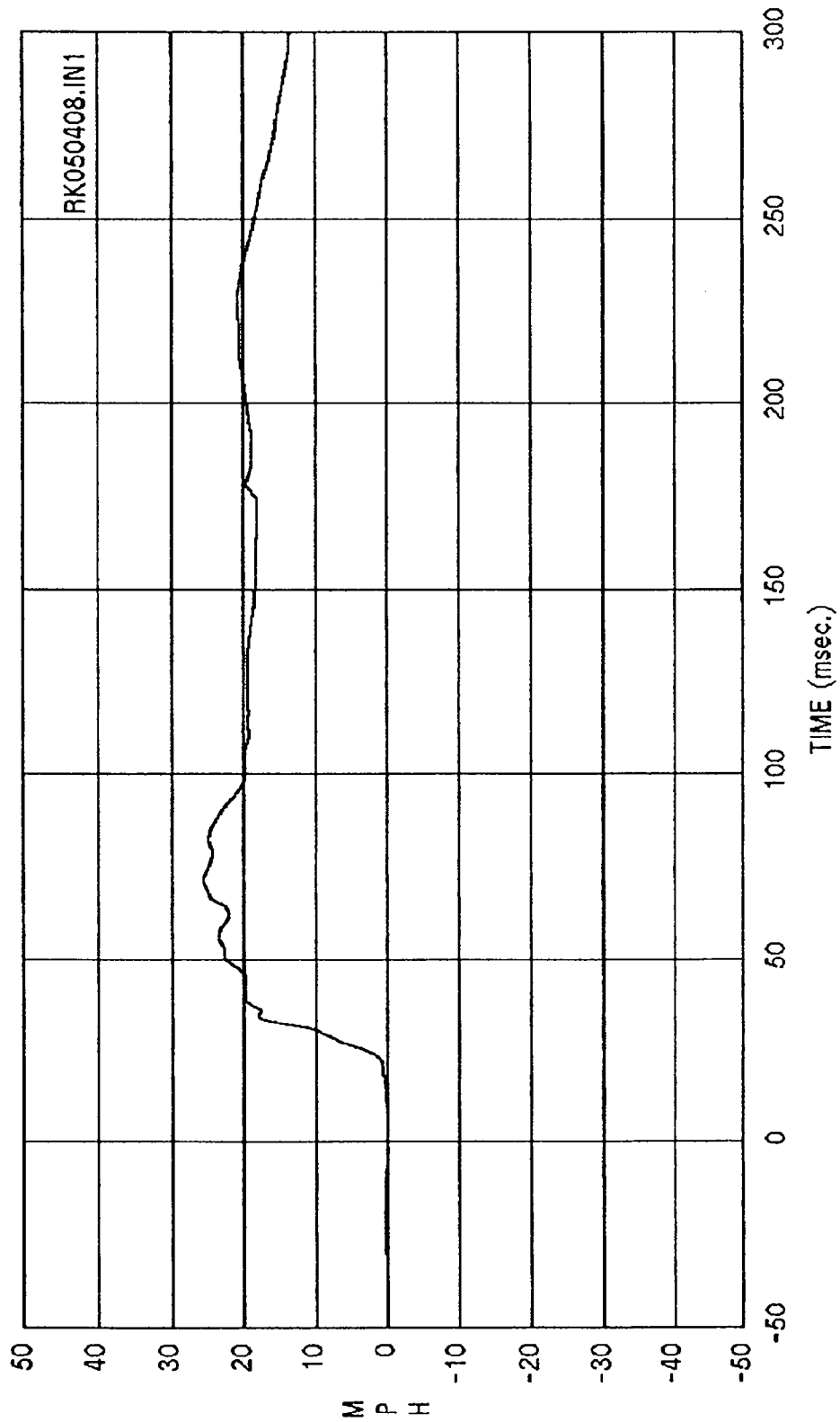
Curve: Driver upper rib delta V -- Redundant Filter: SAE CLASS 180 Max = 27.192 Min = .12953E-

MSE Date: 08/27/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Suzuki Sidekick



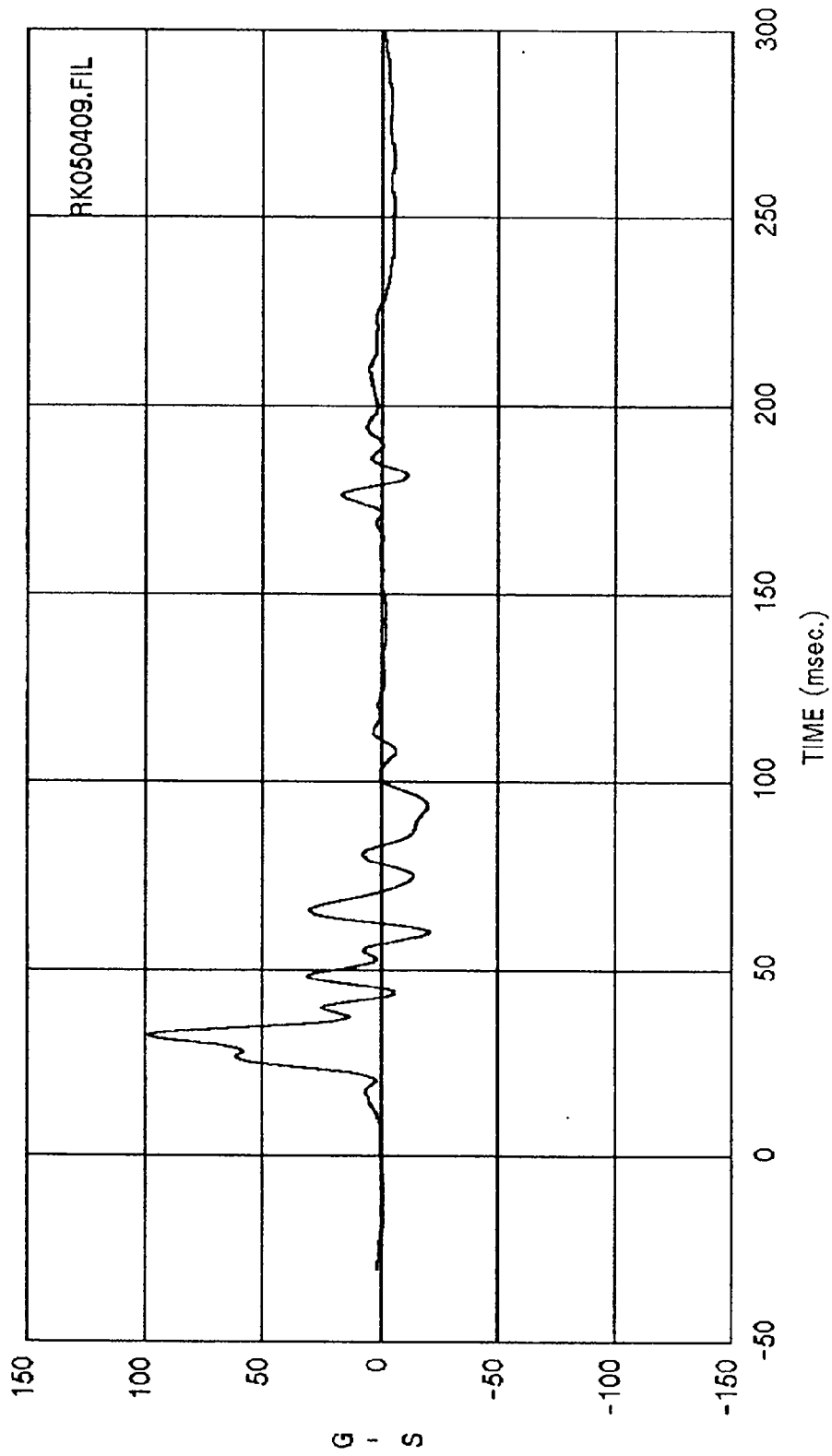
Curve: Driver lower rlb acceleration -- Primary Filter: FIR 100 Max = 96.156 Min = -20.894

MSE Date: 08/27/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Suzuki Sidekick



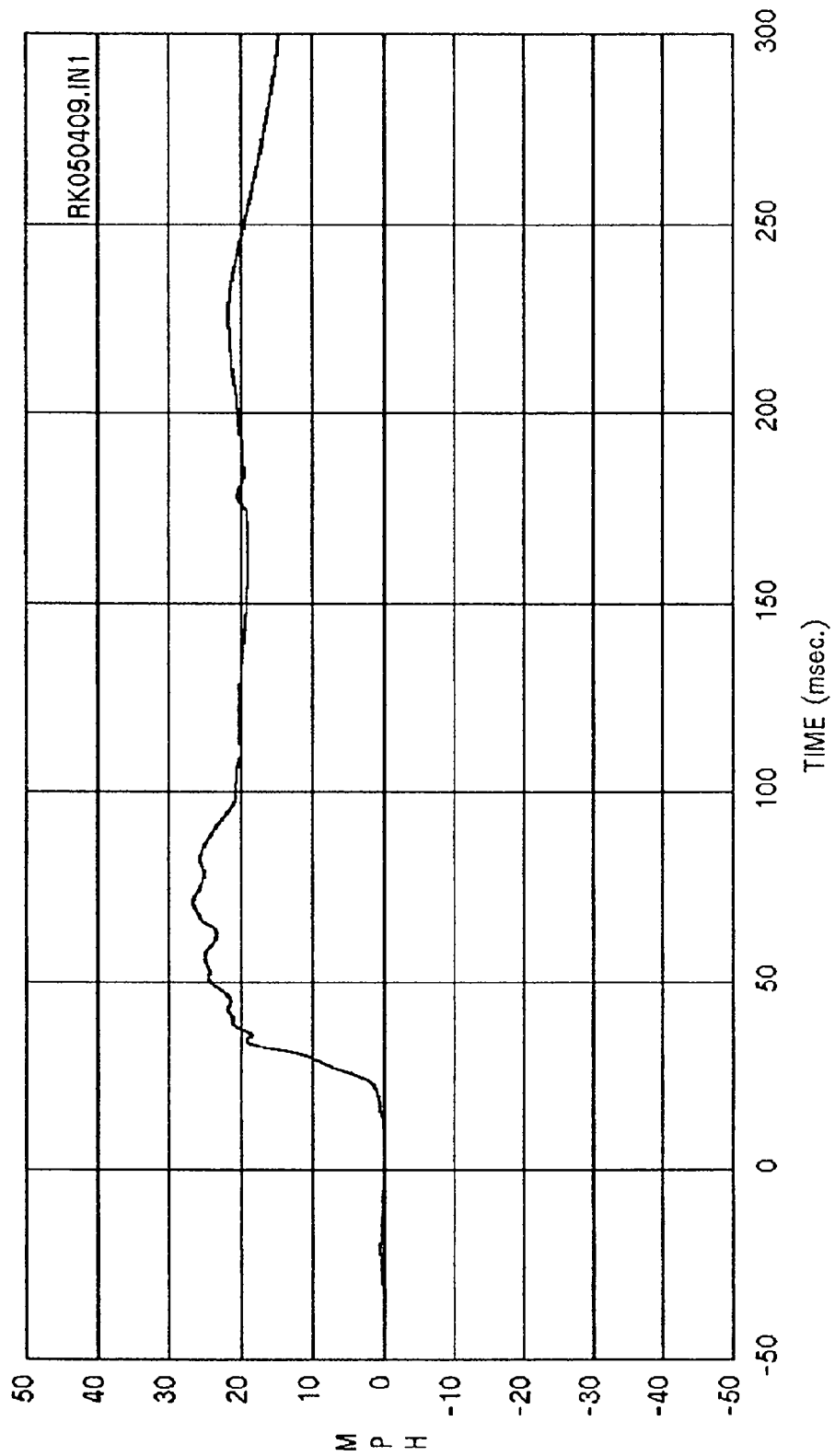
Curve: Driver lower rib delta V -- Primary Filter: SAE CLASS 180 Max = 25.706 Min = 13.638

MSE Date: 08/27/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Suzuki Sidekick



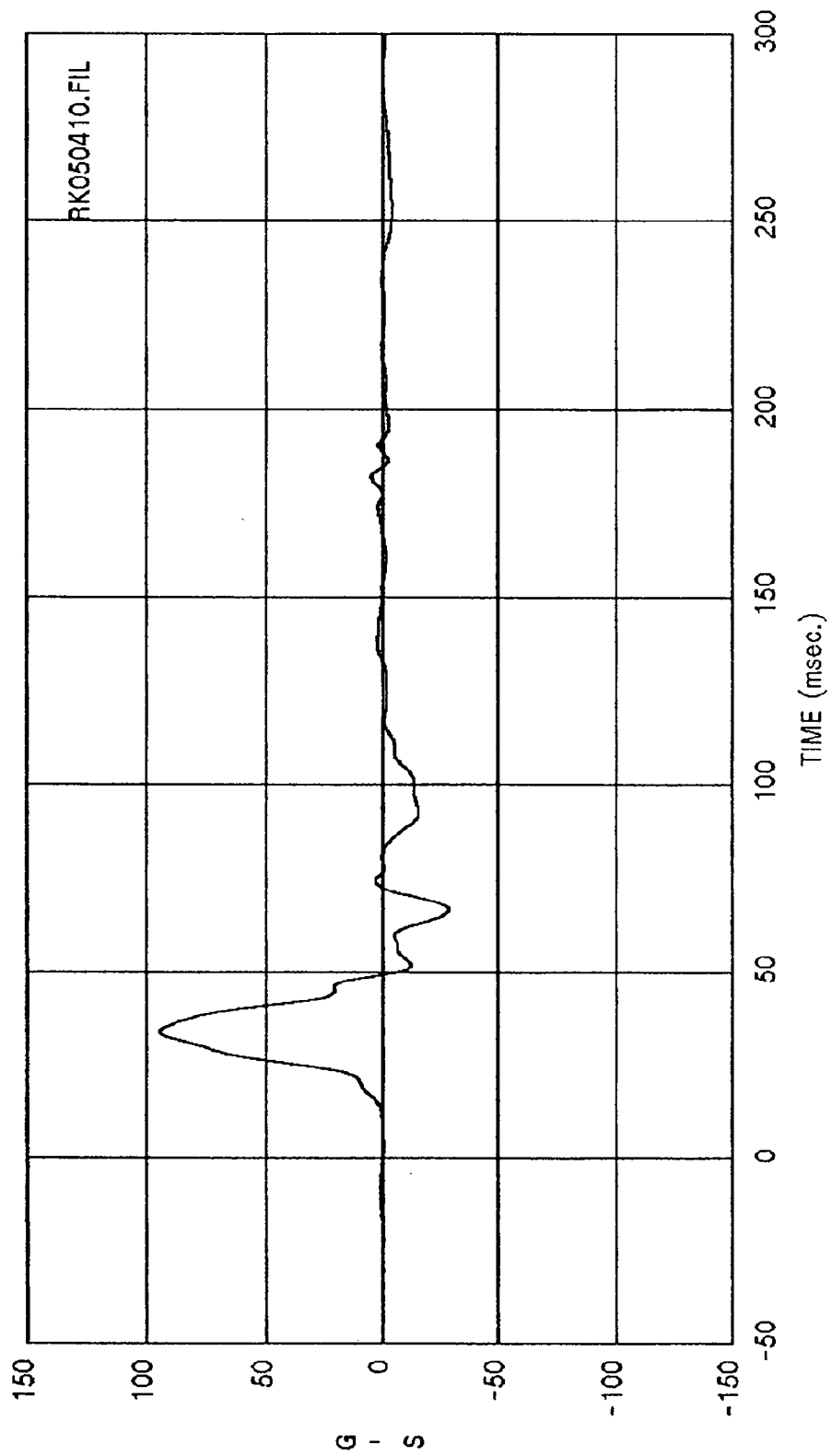
Curve: Driver lower rib acceleration -- Redundant Filter: FIR 100 Max = 98.478 Min = -20.837

MSE Date: 08/27/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Suzuki Sidekick



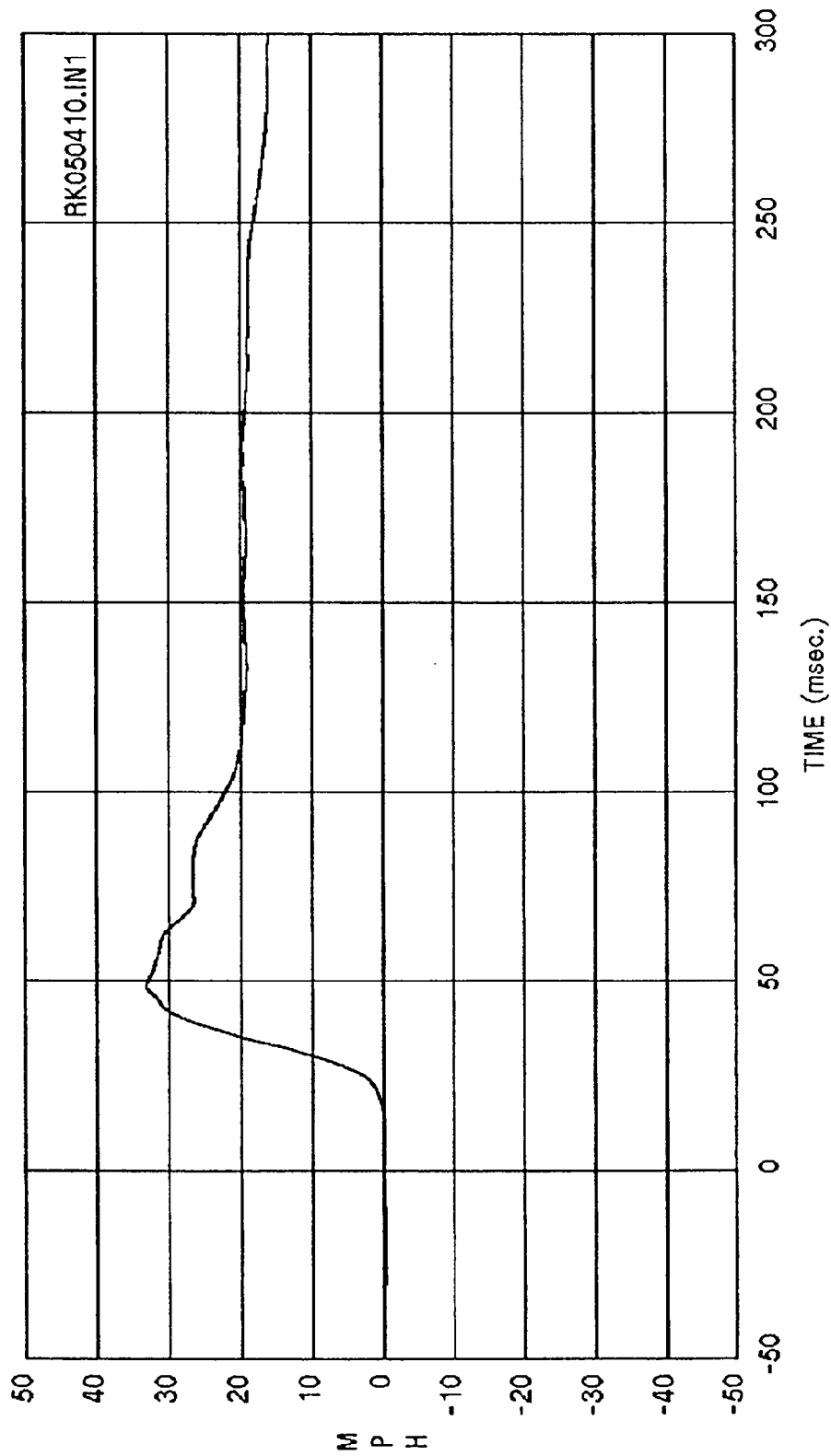
Curve: Driver lower rib delta V -- Redundant Filter: SAE CLASS 180 Max = 26.625 Min = -.16700E
01

MSE Date: 08/27/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Suzuki Sidekick



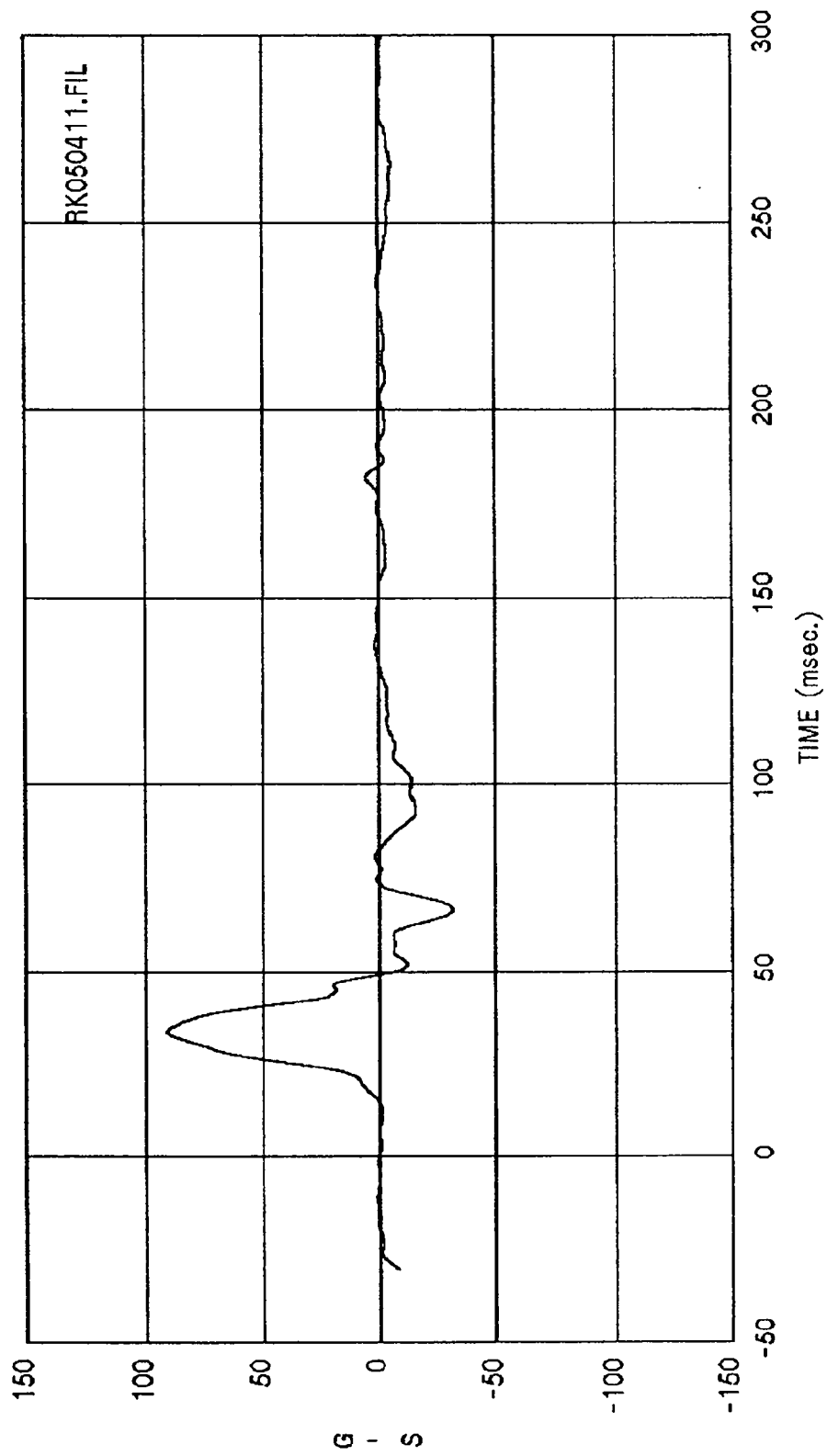
Curve: Driver lower spine acceleration -- Primary Filter: FIR 100 Max = 94.721 Min = -28.932

MSE Date: 08/27/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Suzuki Sidekick



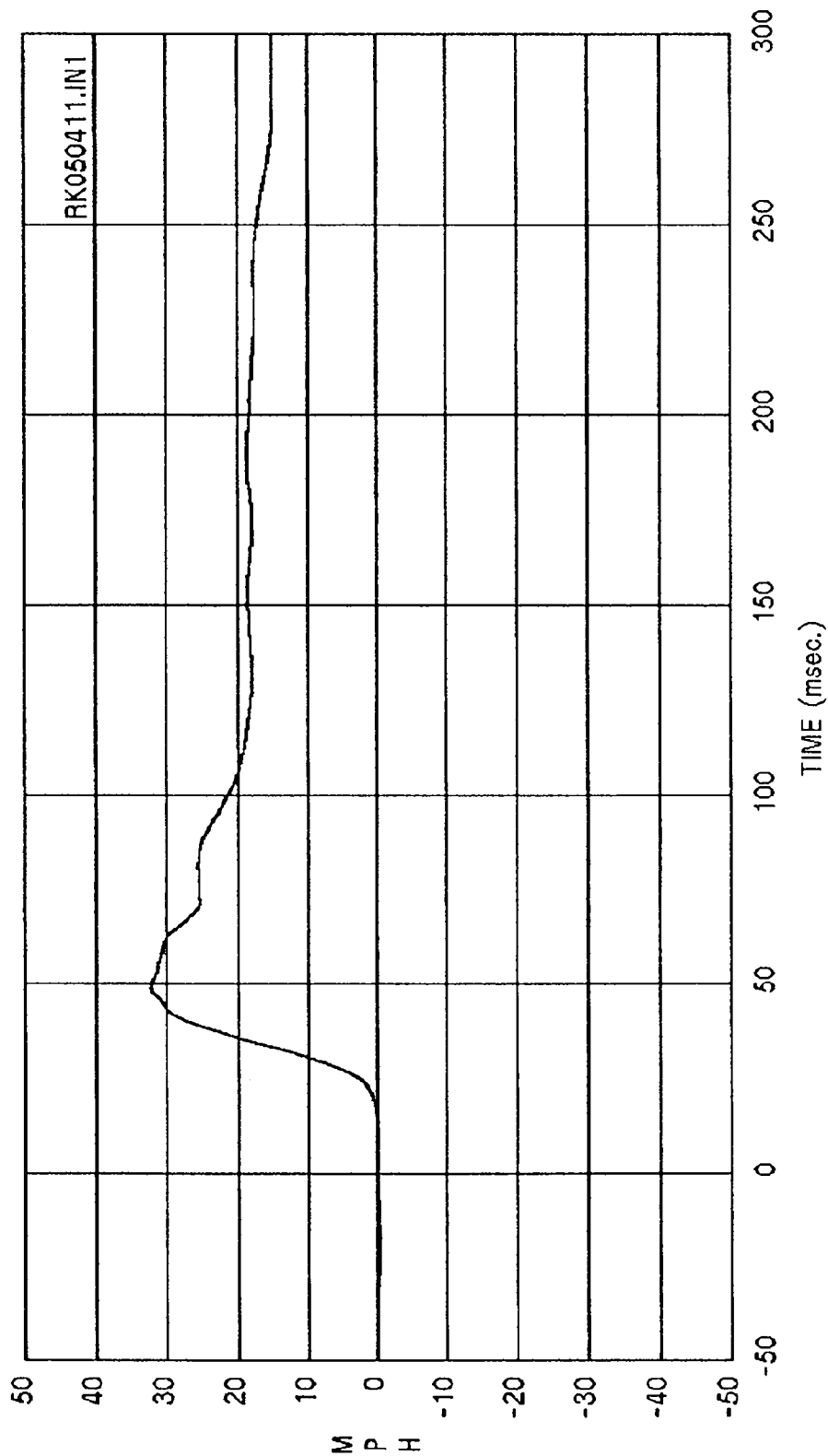
Curve: Driver lower spine delta V -- Primary Filter: SAE CLASS 180 Max = 33.102 Min = -.99304E
01

MSE Date: 08/27/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Suzuki Sidekick



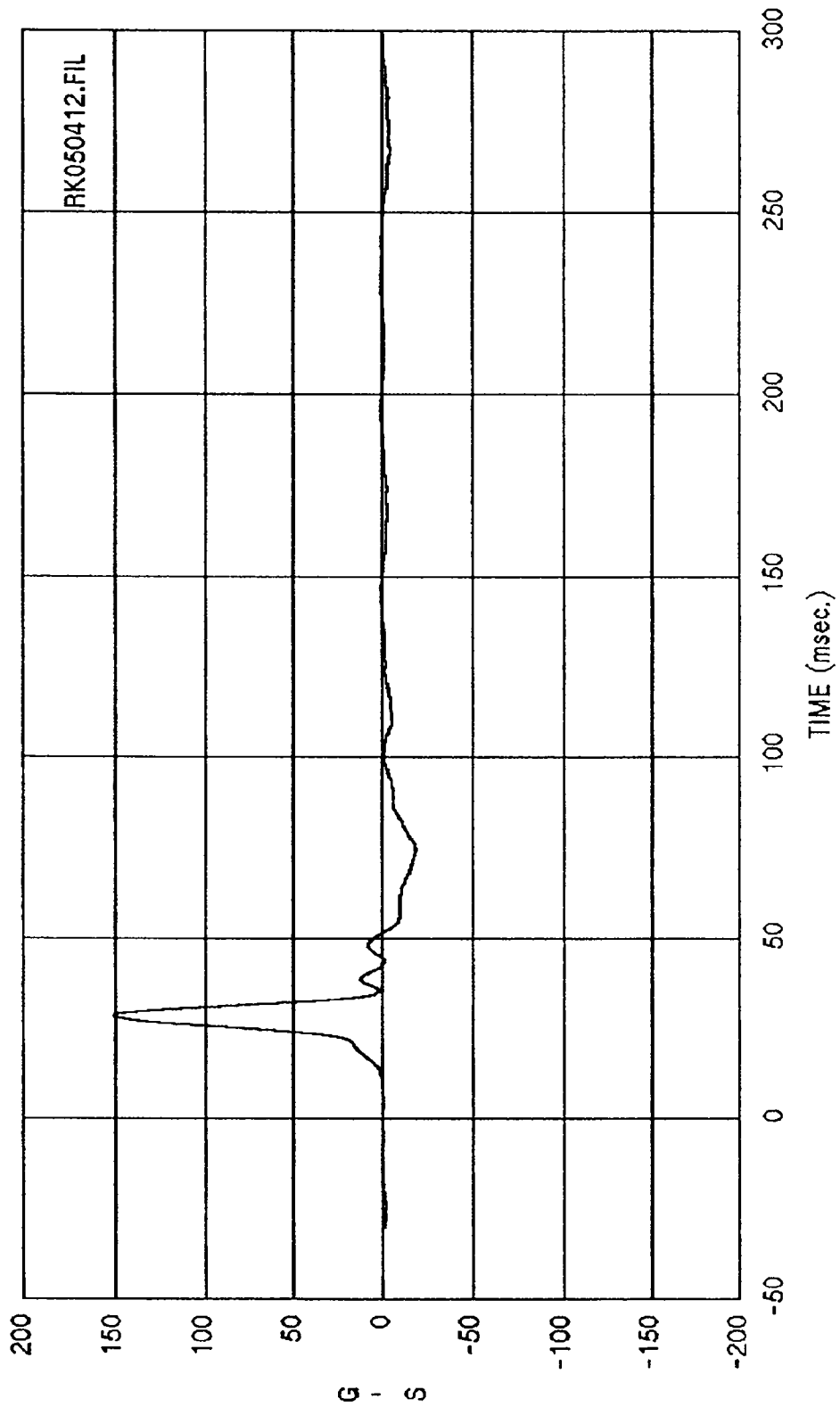
Curve: Driver lower spine acceleration -- Redundant Filter: FIR 100 Max = 91.157 Min = -32.073

MSE Date: 08/27/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Suzuki Sidekick



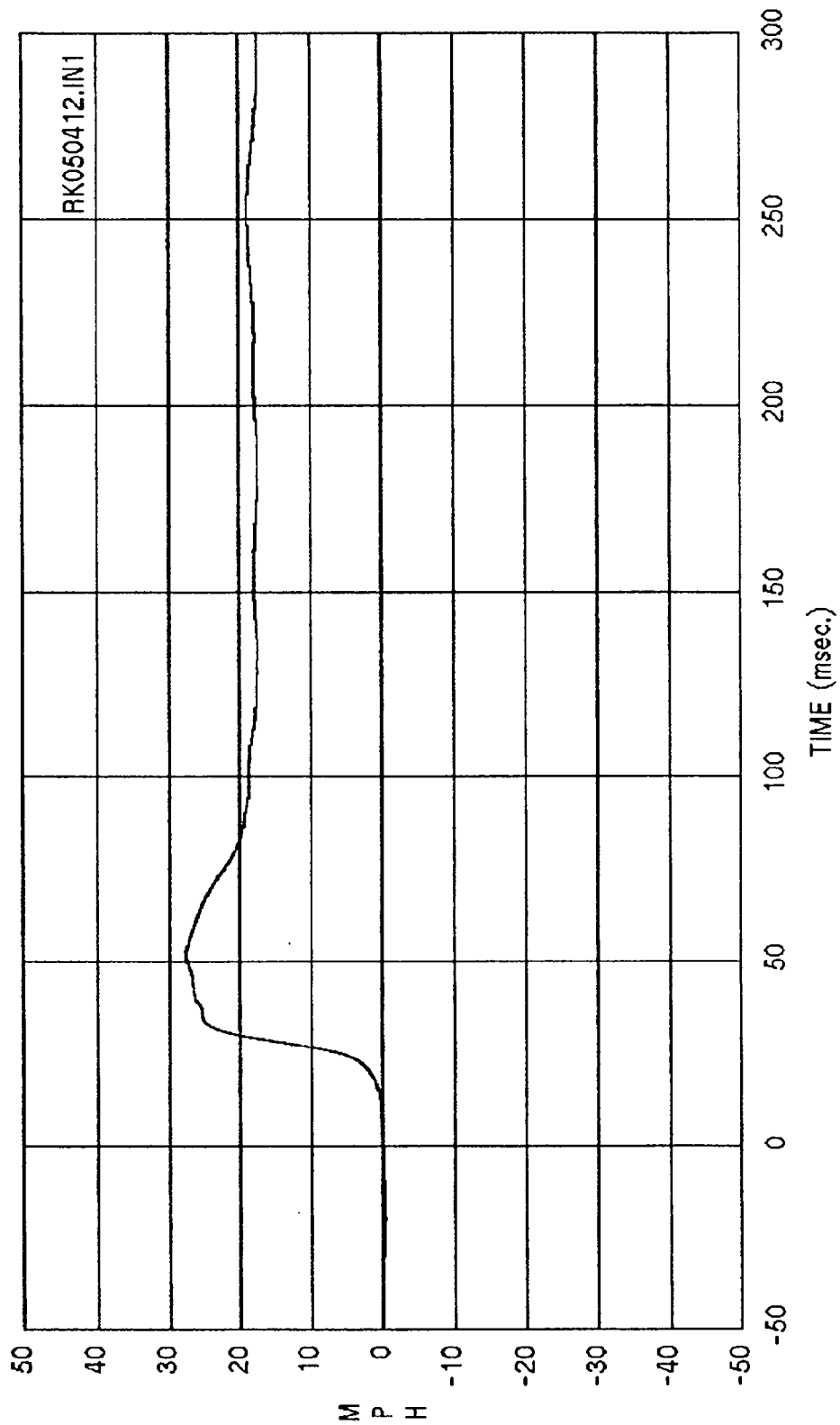
Curve: Driver lower spine delta V -- Redundant Filter: SAE CLASS 180 Max = 32.236 Min = .10381
01

MSE Date: 08/27/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Suzuki Sidekick



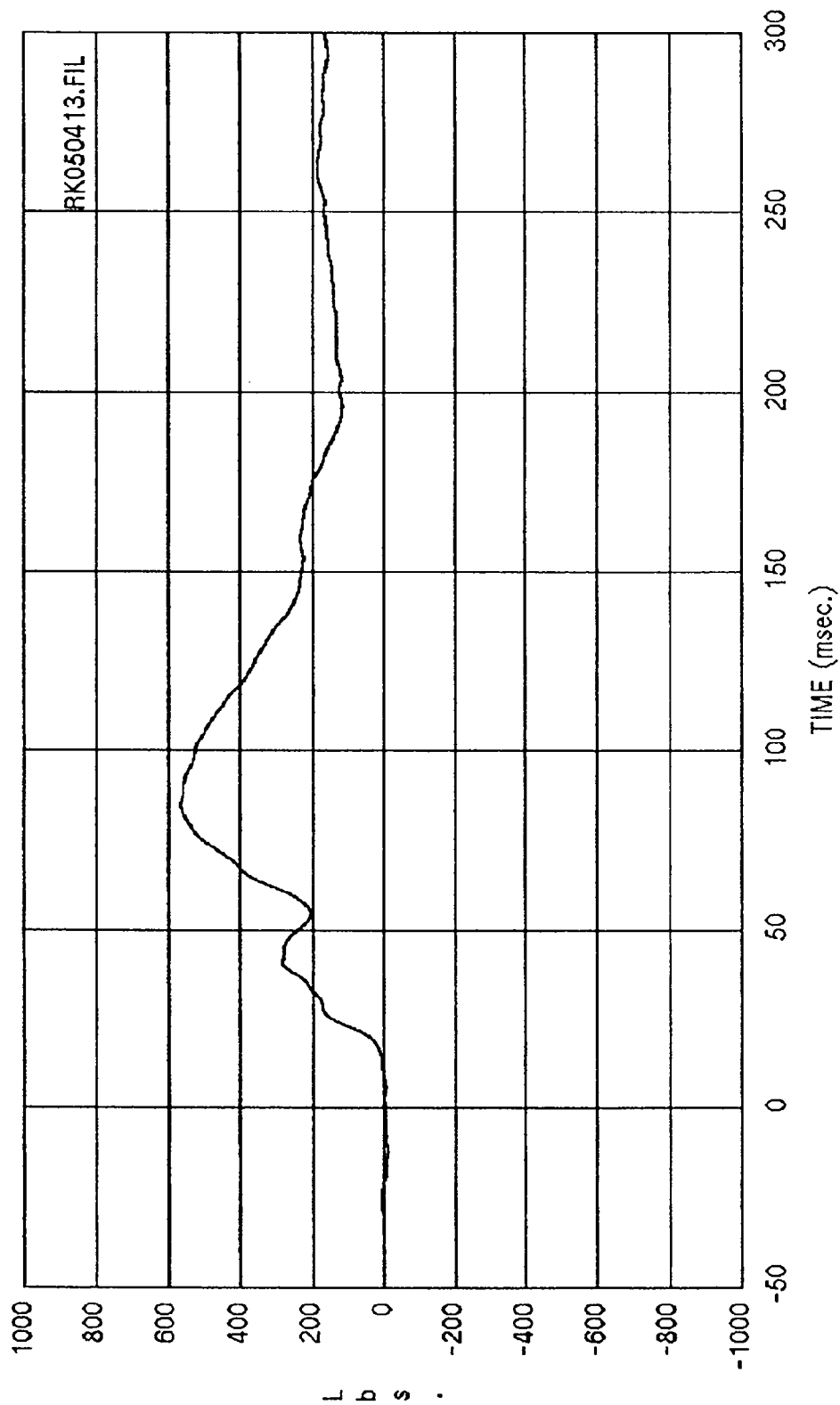
Curve: Driver pelvis acceleration Filter: FIR 100 Max = 150.46 Min = -18.130

MSE Date: 08/27/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Suzuki Sidekick



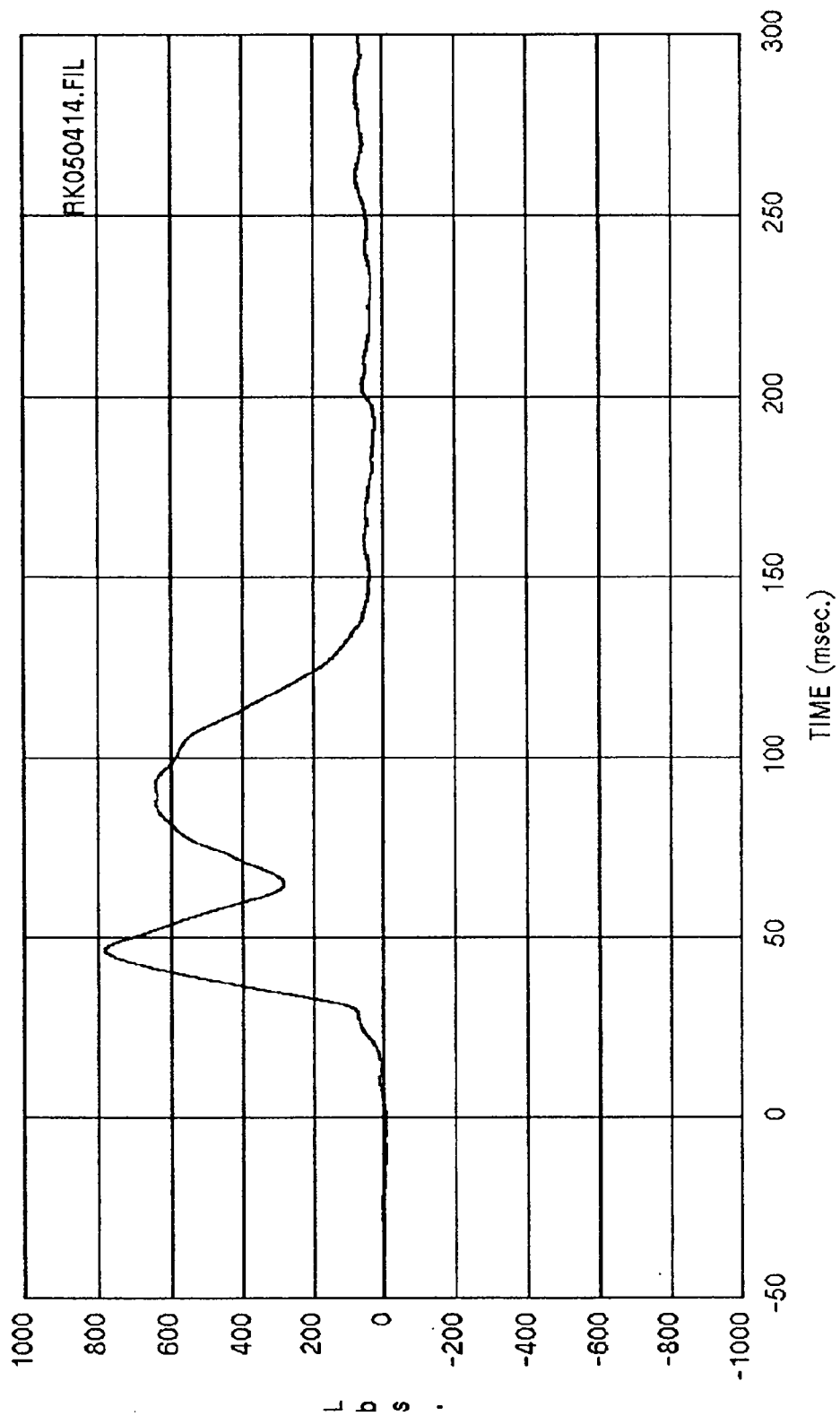
Curve: Driver pelvis delta V Filter: SAE CLASS 180 Max = 27.773 Min = 17.413

MSE Date: 08/27/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Suzuki Sidekick



Curve: Driver lap belt load Filter: SAE CLASS 60 Max = 565.71 Min = -4.2903

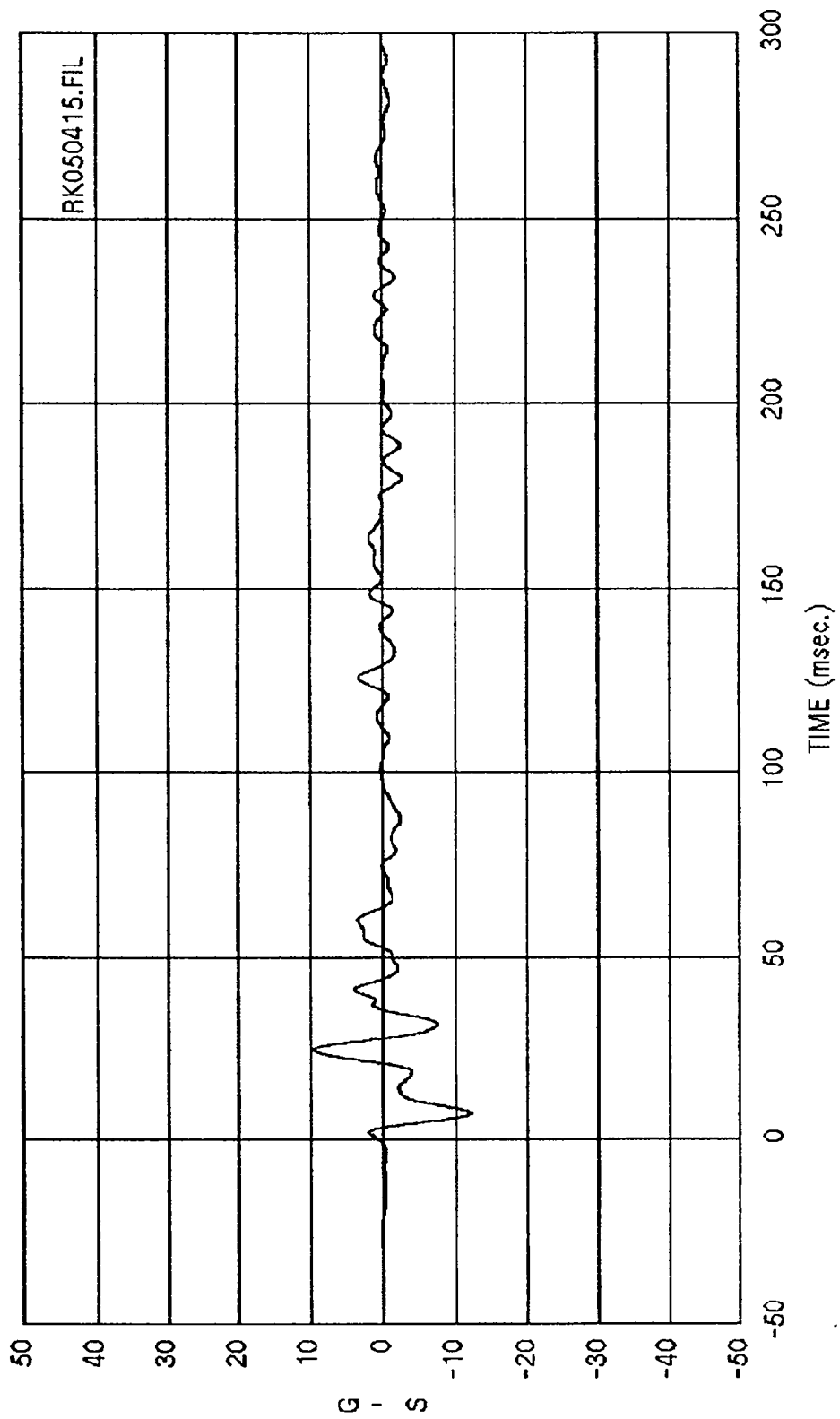
MSE Date: 08/27/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Suzuki Sidekick



Curve: Driver shoulder belt load Filter: SAE CLASS 60 Max = 781.84 Min = 7.7310

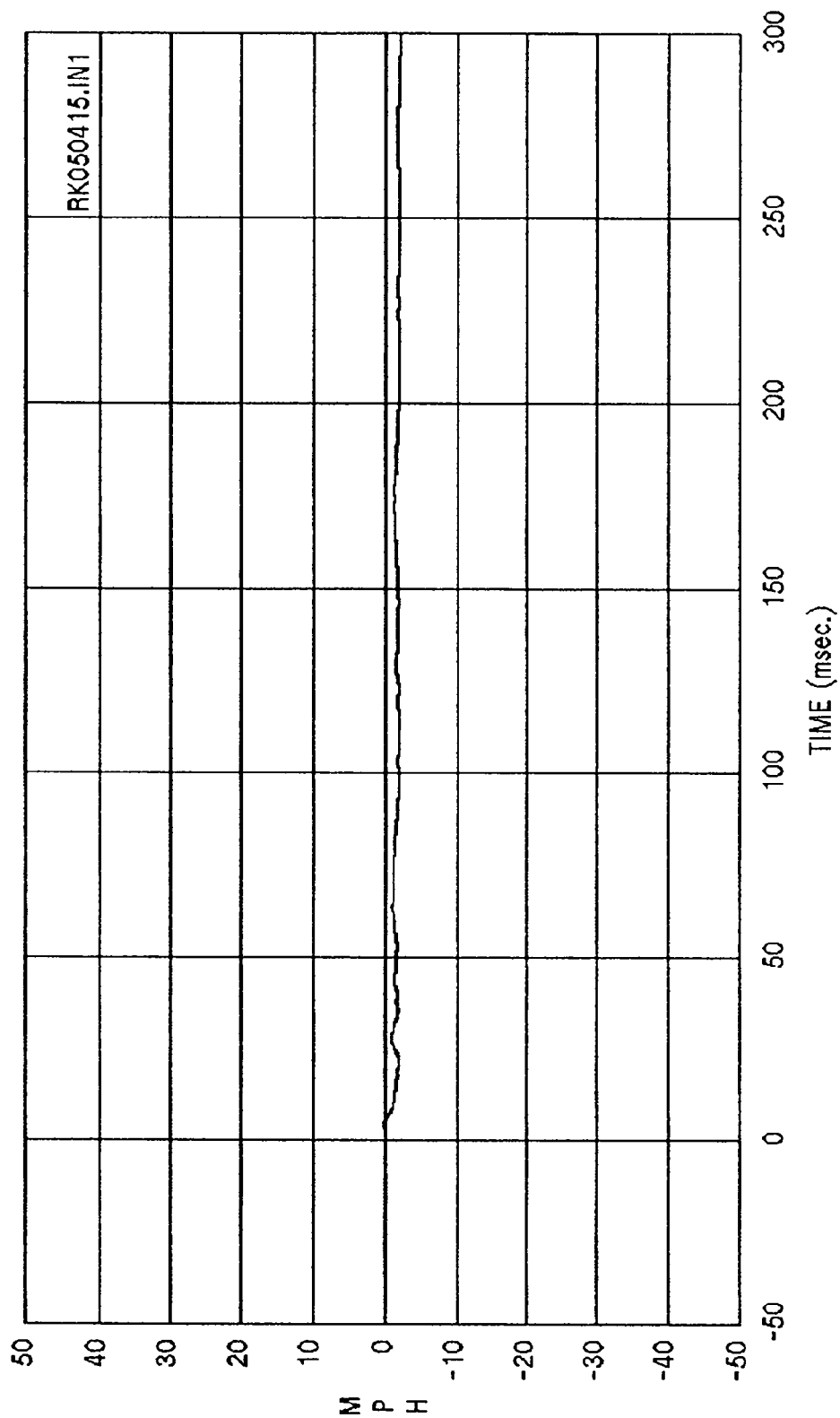
MSE Date: 08/27/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Suzuki Sidekick

VEHICLE ACCELEROMETER DATA



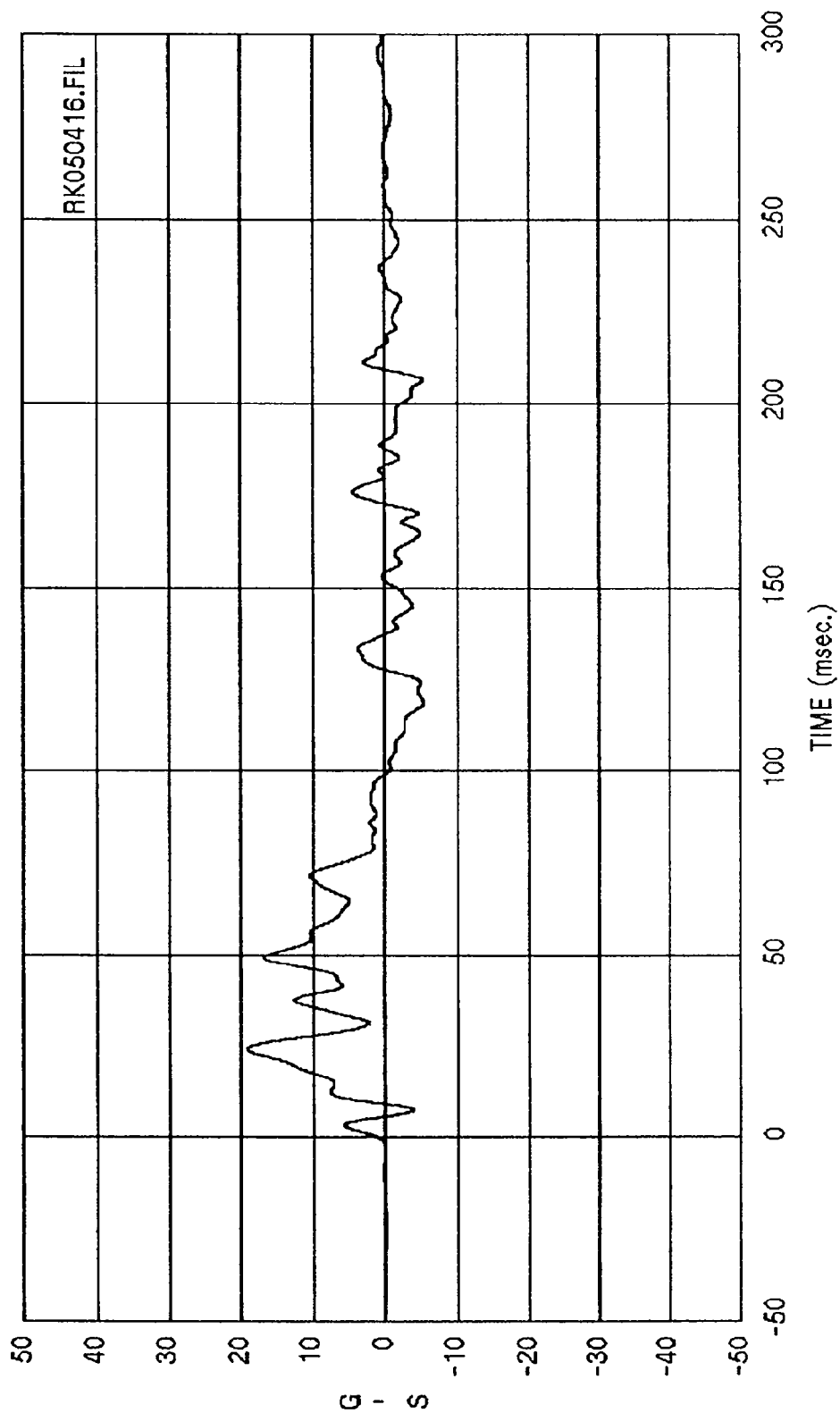
Curve: Front seat right sill acceleration -- X axis Filter: SAE CLASS 60 Max = 9.6174 Min = -12.065

MSE Date: 08/27/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Suzuki Sidekick



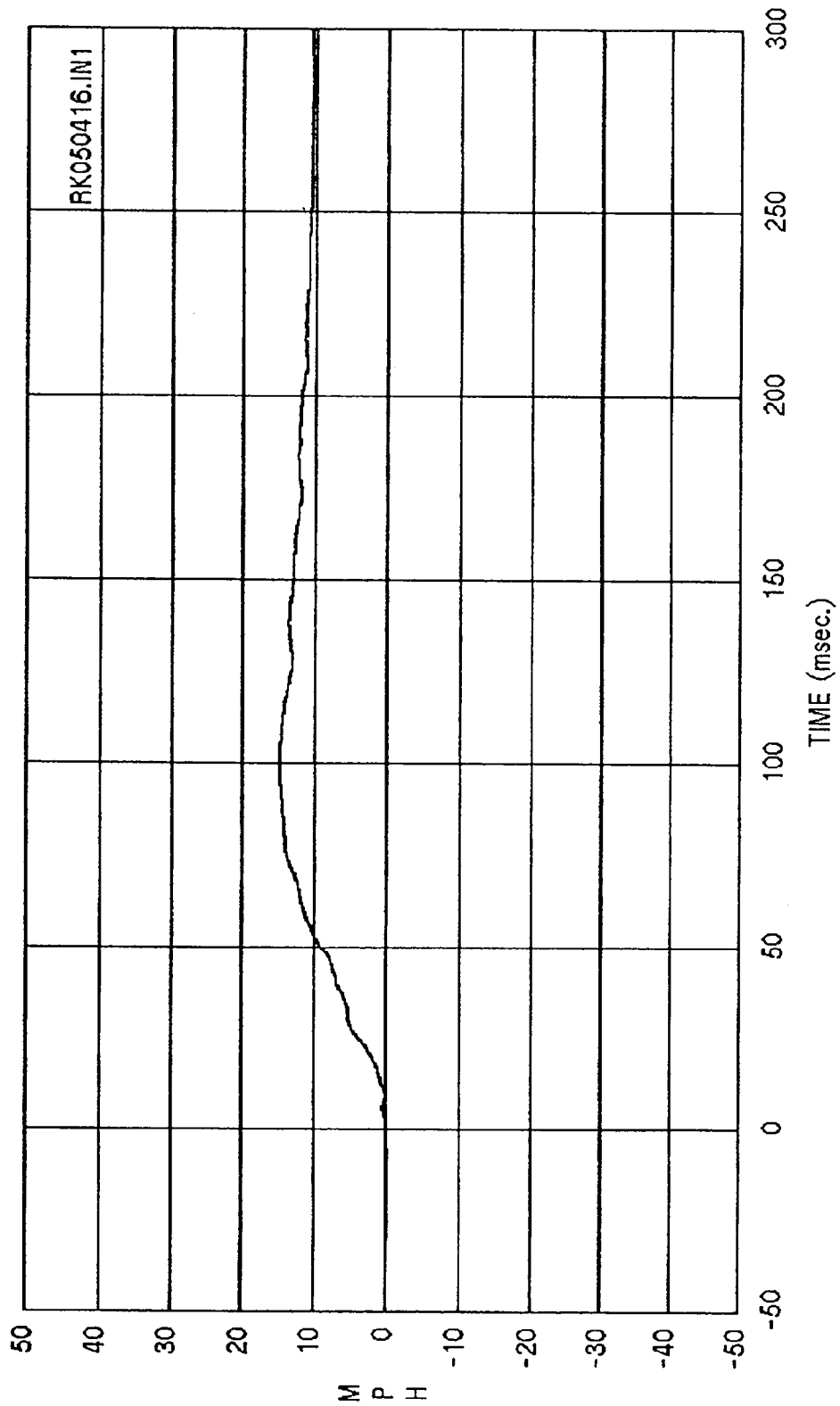
Curve: Front seat right sill delta V -- X axis Filter: SAE CLASS 180 Max = .21099 Min = -1.9185

MSE Date: 08/27/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Suzuki Sidekick



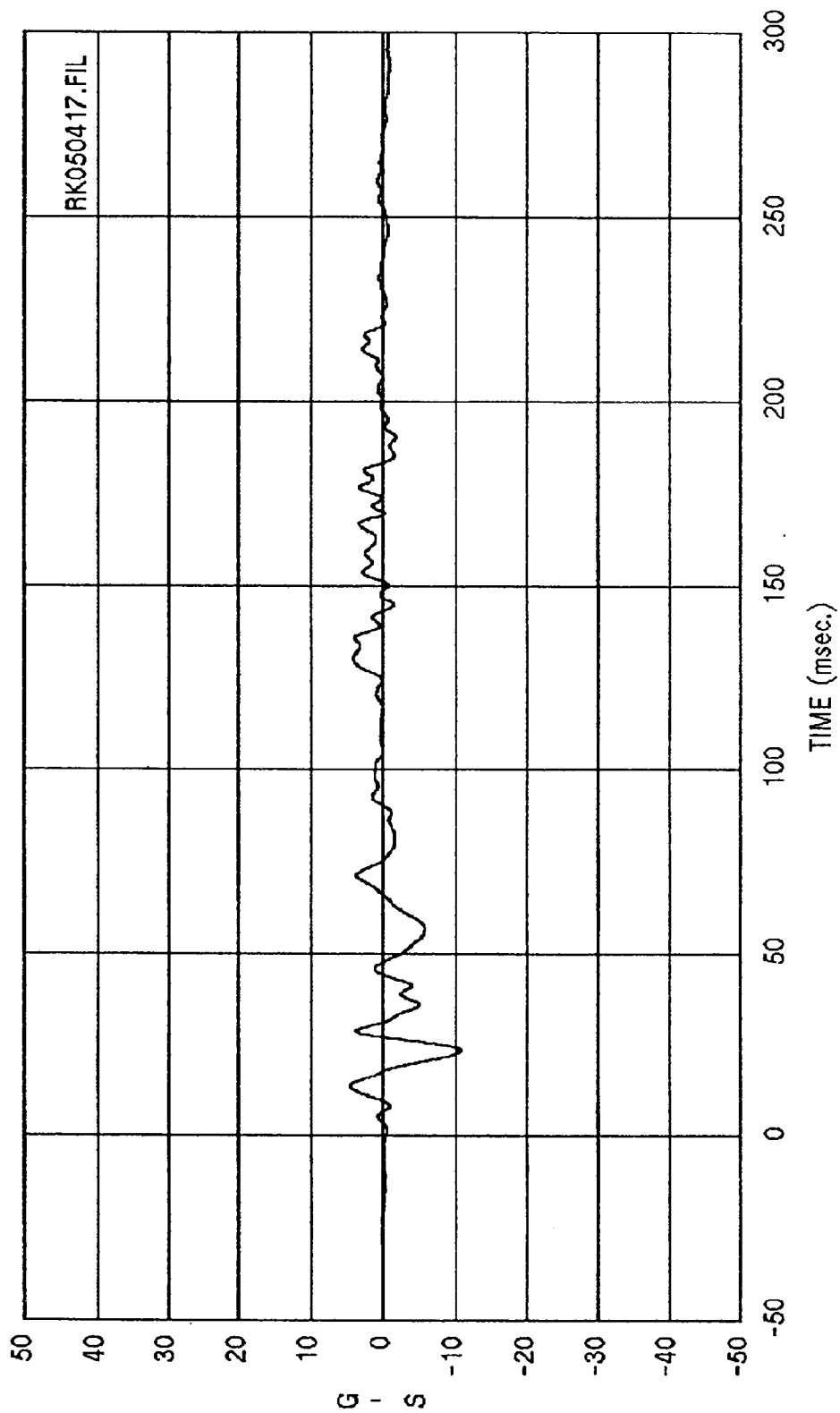
Curve: Front seat right sill acceleration -- Y axis Filter: SAE CLASS 60 Max = 19.246 Min = -5.3208

MSE Date: 08/27/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Suzuki Sidekick



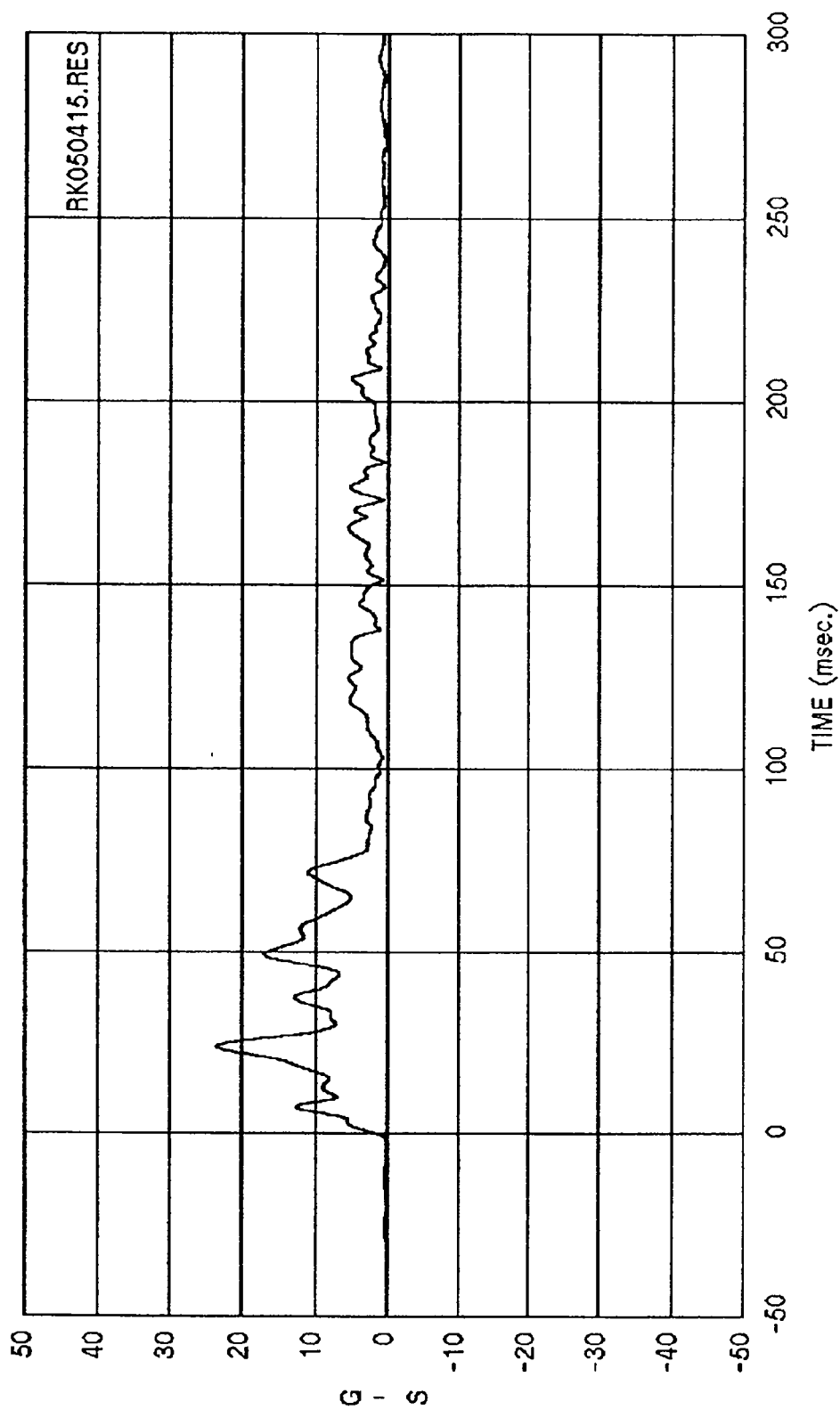
Curve: Front seat right sill delta V -- Y axis Filter: SAE CLASS 180 Max = 14.922 Min = .11687

MSE Date: 08/27/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Suzuki Sidekick



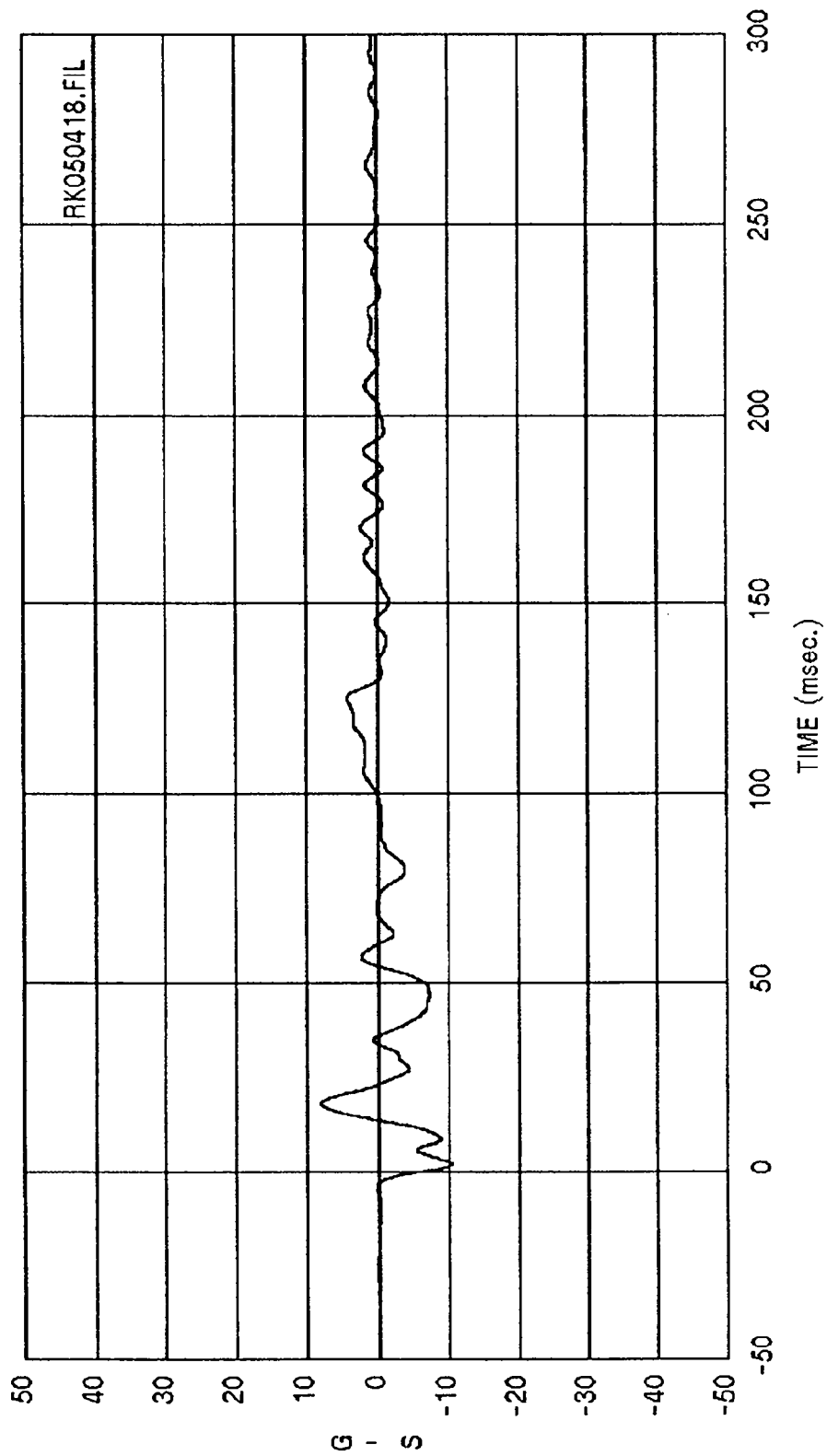
Curve: Front seat right sill acceleration -- Z axis Filter: SAE CLASS 60 Max = 4.5117 Min = -10.725

MSE Date: 08/27/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Suzuki Sidekick



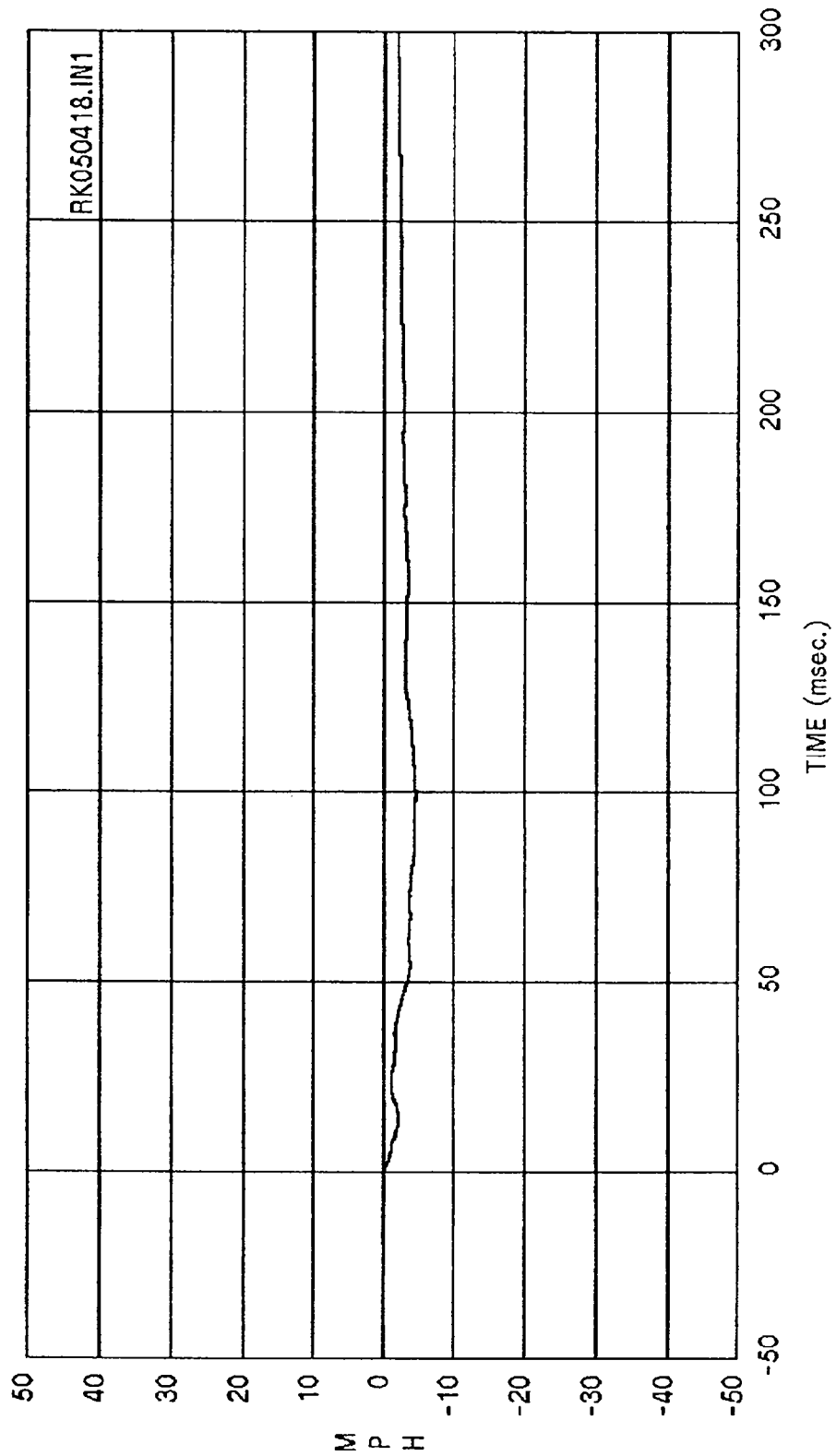
Curve: Front seat right sill resultant acceleration Filter: SAE CLASS 60 Max = 23.617 Min = .34341

MSE Date: 08/27/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Suzuki Sidekick



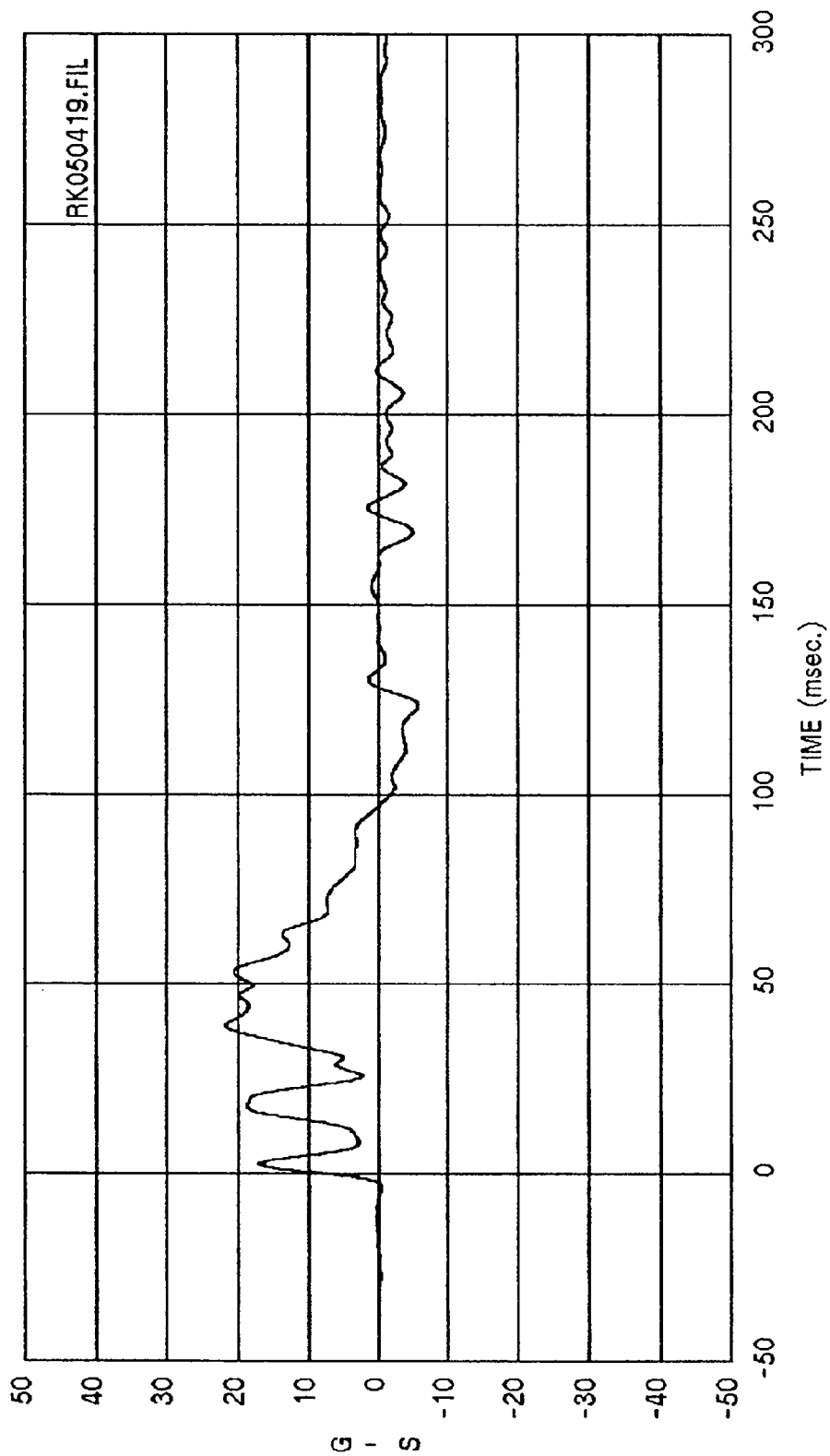
Curve: Rear floor above axle acceleration -- X axis Filter: SAE CLASS 60 Max = 8.0715 Min = -10.365

MSE Date: 08/27/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Suzuki Sidekick



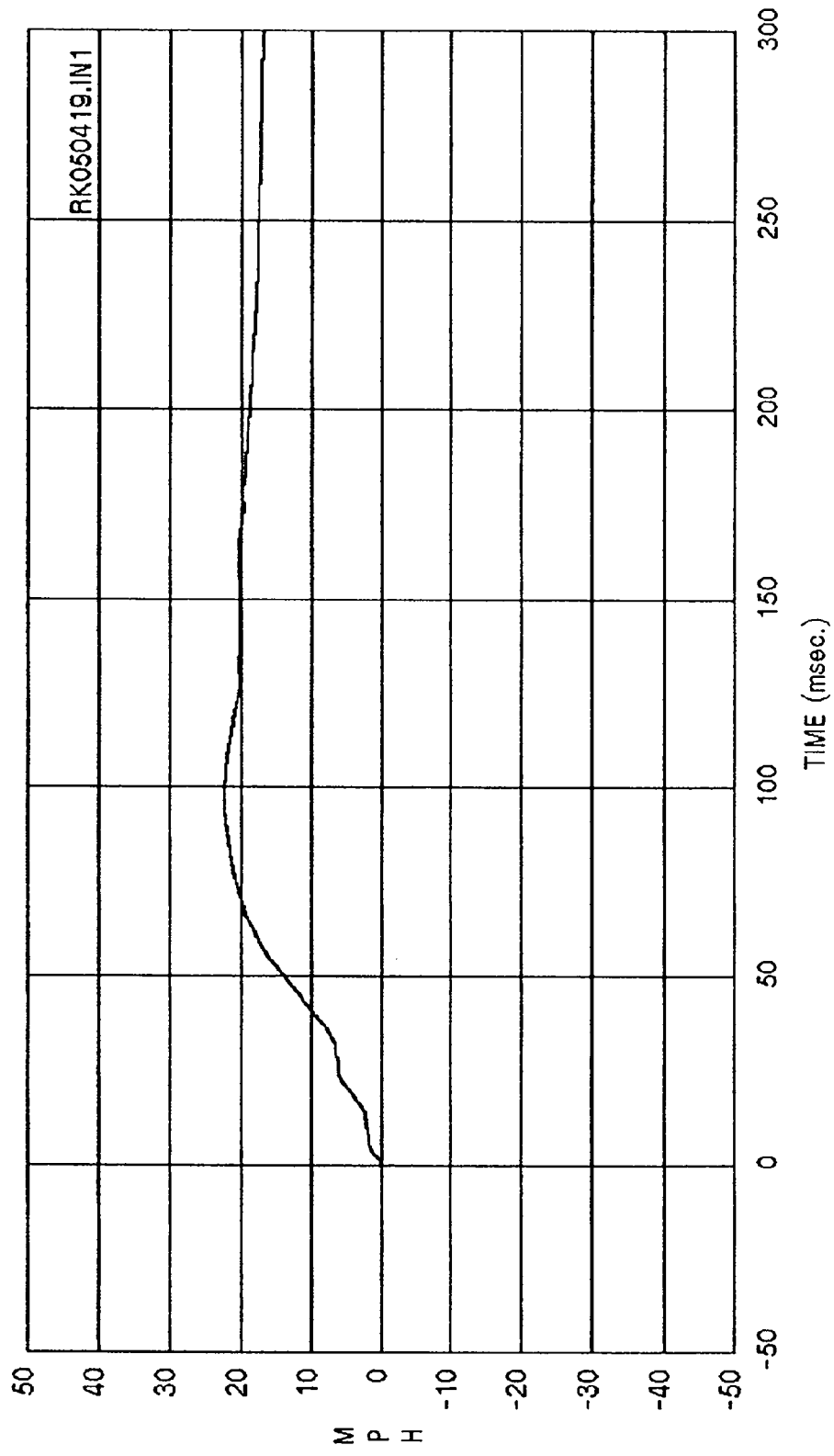
Curve: Rear floor above axle delta V -- X axis Filter: SAE CLASS 180 Max = -.75596E-02 Min = -4.63

MSE Date: 08/27/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Suzuki Sidekick



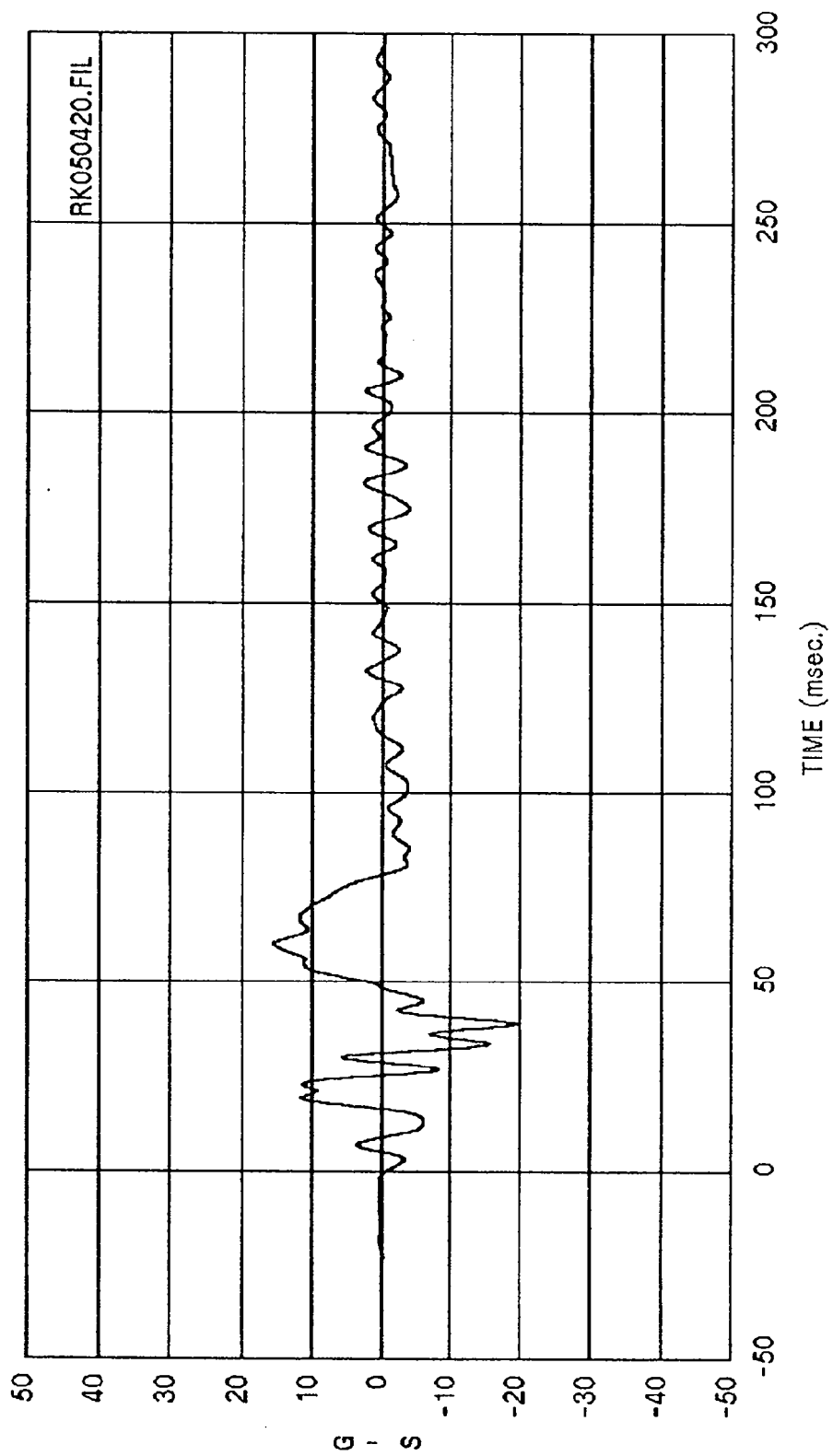
Curve: Rear floor above axle acceleration -- Y axis Filter: SAE CLASS 60 Max = 21.731 Min = -5.7773

MSE Date: 08/27/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Suzuki Sidekick



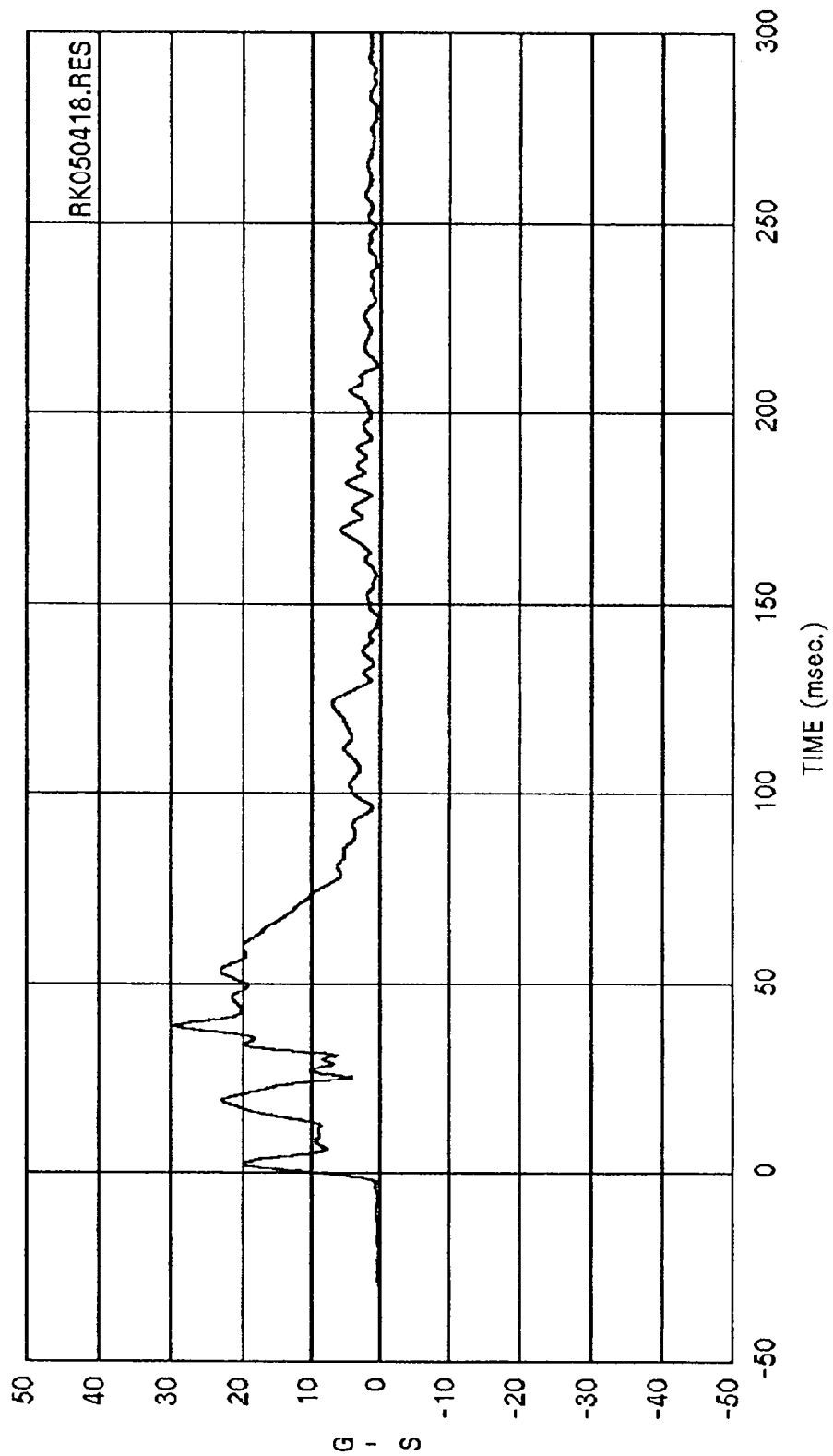
Curve: Rear floor above axle delta V -- Y axis Filter: SAE CLASS 180 Max = 22.370 Min = 1.7788

MSE Date: 08/27/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Suzuki Sidekick



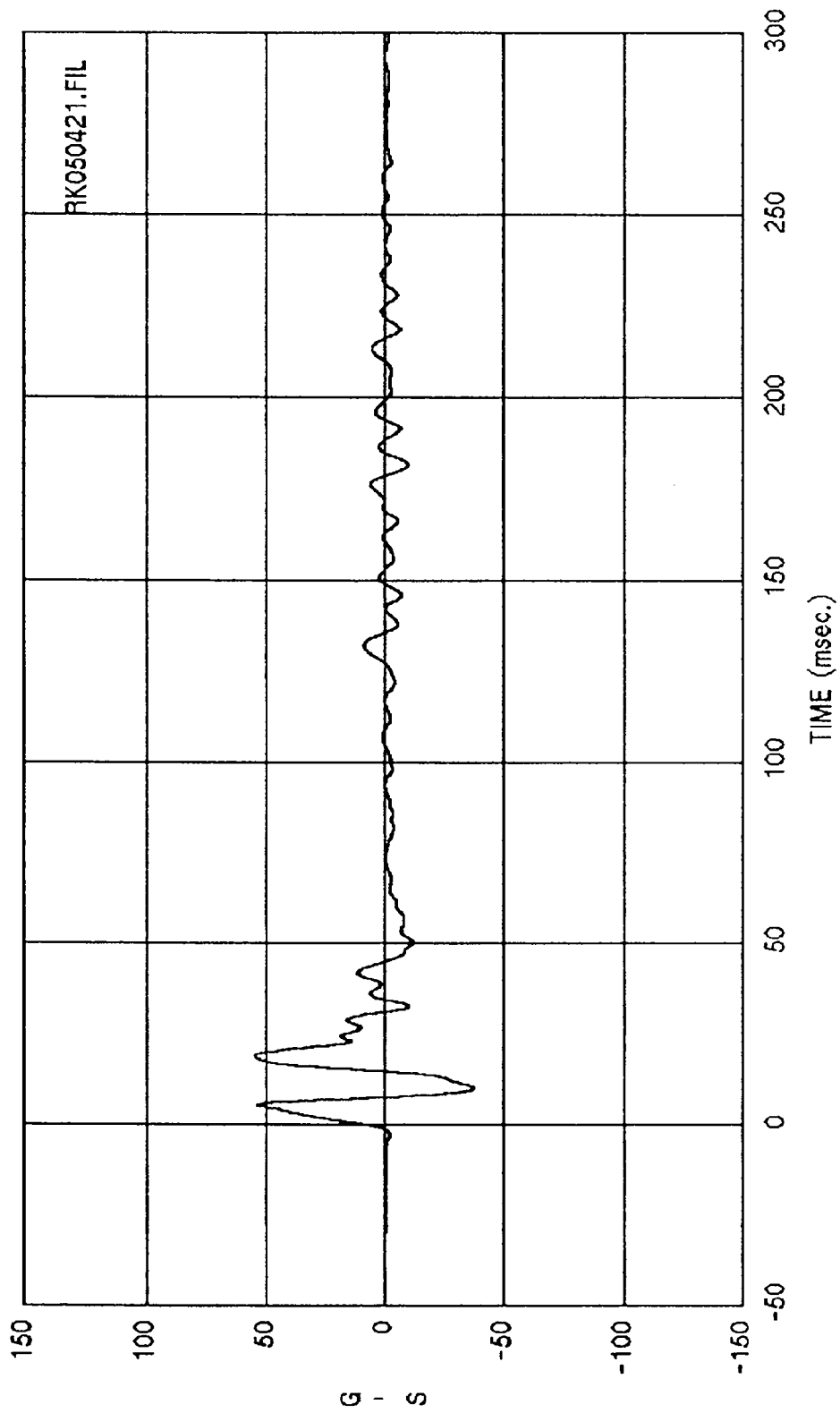
Curve: Rear floor above axle acceleration -- Z axis Filter: SAE CLASS 60 Max = 15.469 Min = -19.576

MSE Date: 08/27/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Suzuki Sidekick



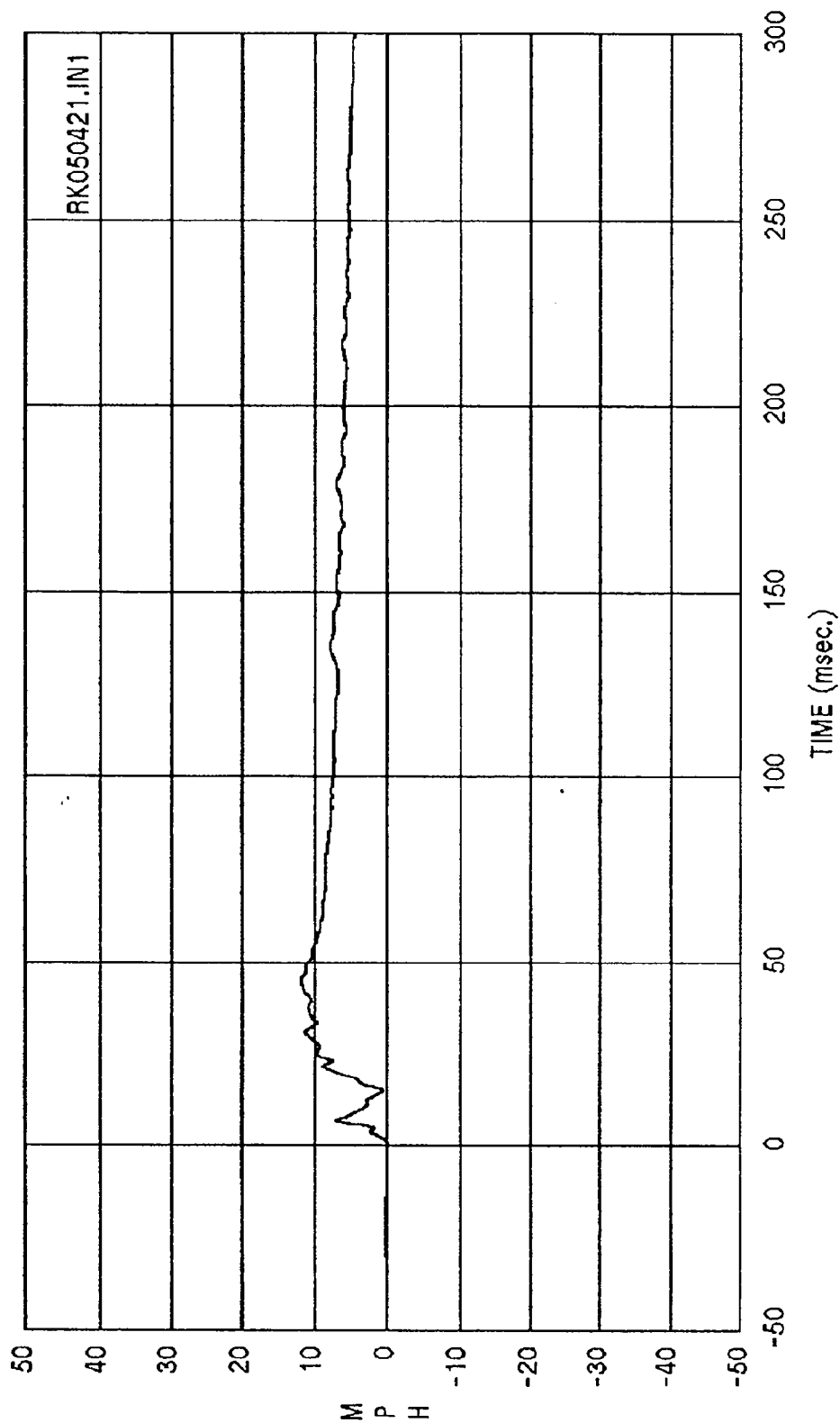
Curve: Rear floor above axle resultant acceleration Filter: SAE CLASS 60 Max = 29.511 Min = .14641

MSE Date: 08/27/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Suzuki Sidekick



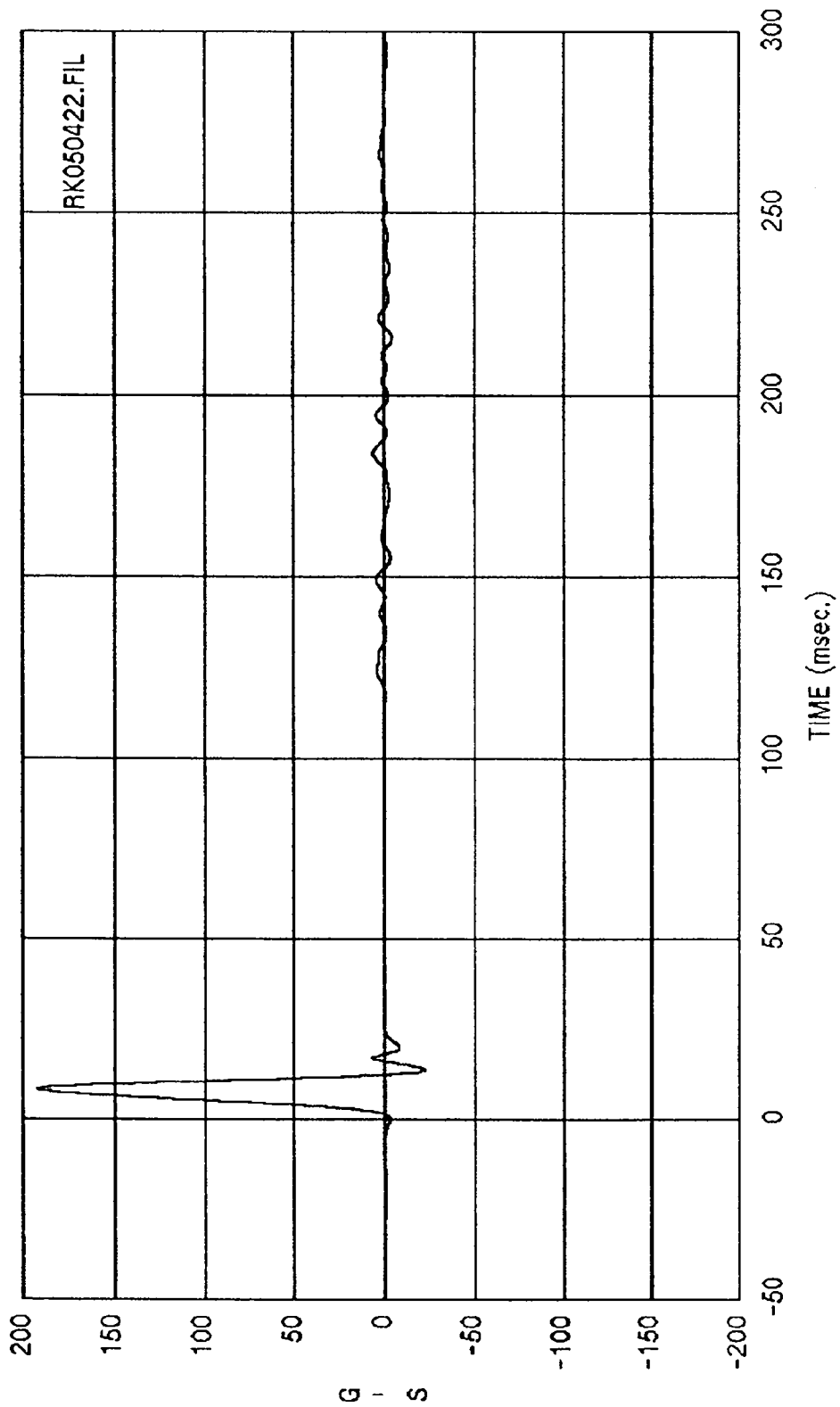
Curve: Front seat left Sill acceleration -- Y axis Filter: SAE CLASS 60 Max = 55.379 Min = -37.191

MSE Date: 08/27/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Suzuki Sidekick



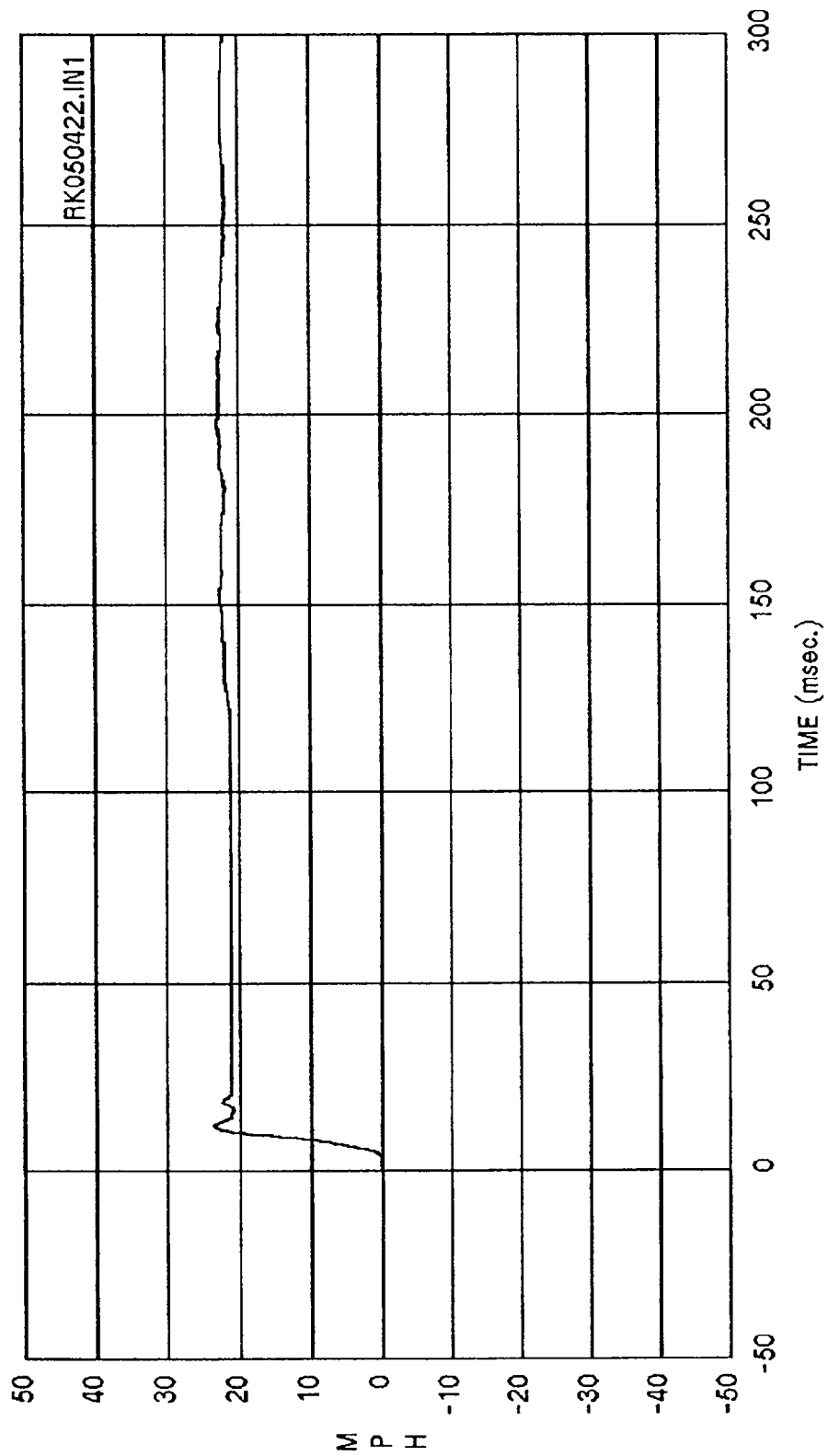
Curve: Front seat left SIII delta V -- Y axis Filter: SAE CLASS 180 Max = 11.896 Min = -.42215E-1

MSE Date: 08/27/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Suzuki Sidekick



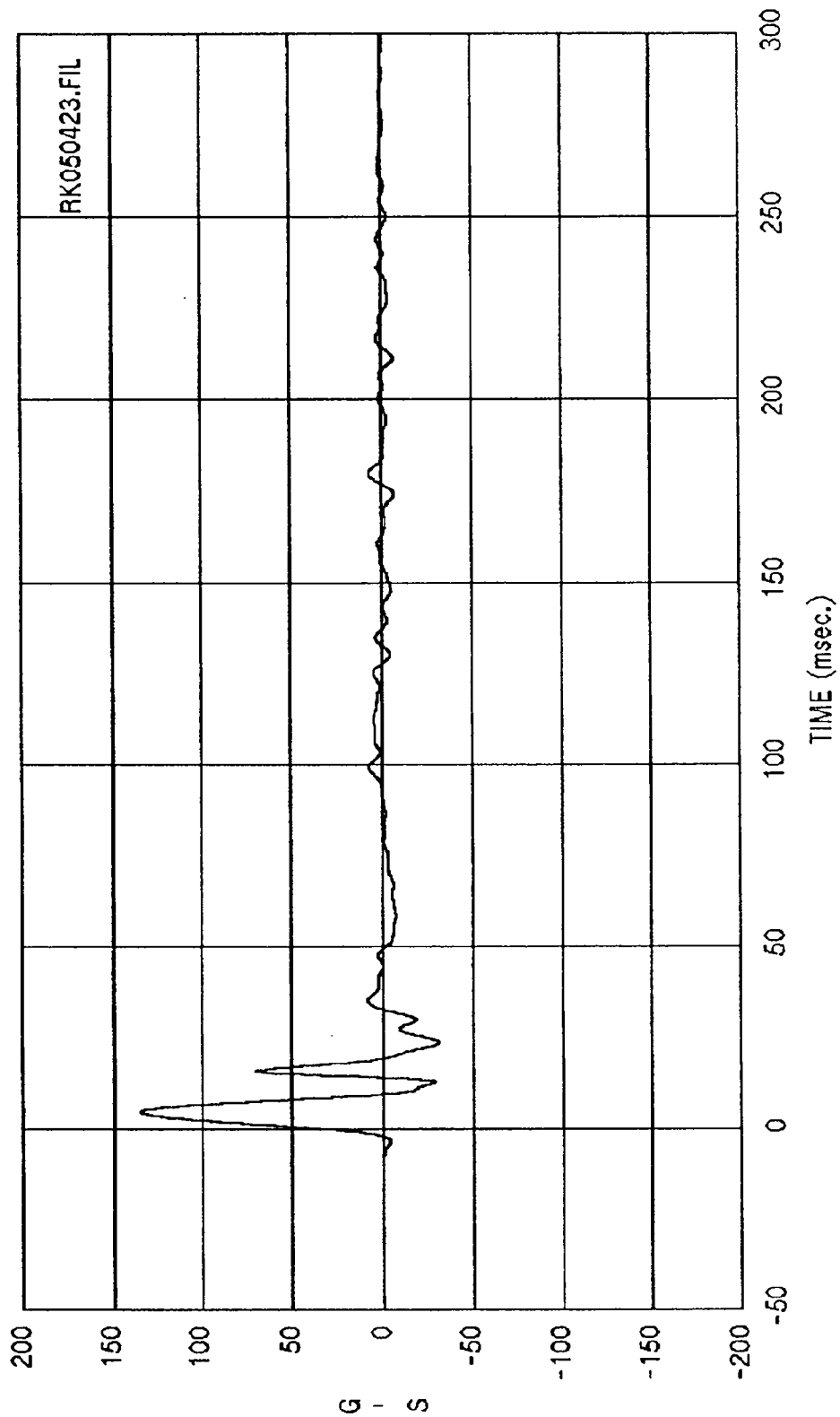
Curve: Left front door at centerline -- Y axis Filter: SAE CLASS 60 Max = 192.44 Min = -22.492

MSE Date: 08/27/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Suzuki Sidekick



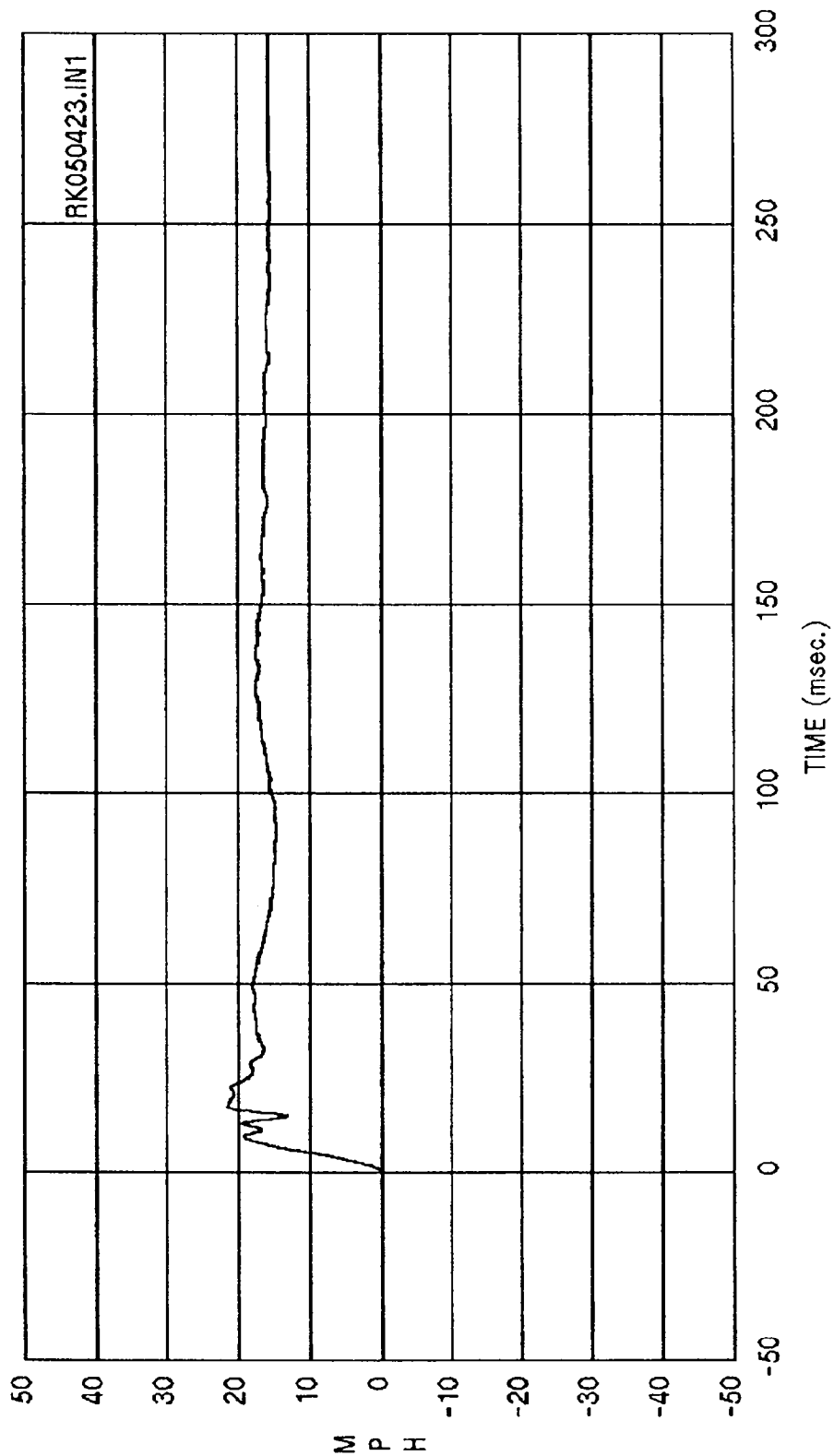
Curve: Left front door at centerline delta V -- Y axis Filter: SAE CLASS 180 Max = 23.426 Min = .928511
01

MSE Date: 08/27/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Suzuki Sidekick



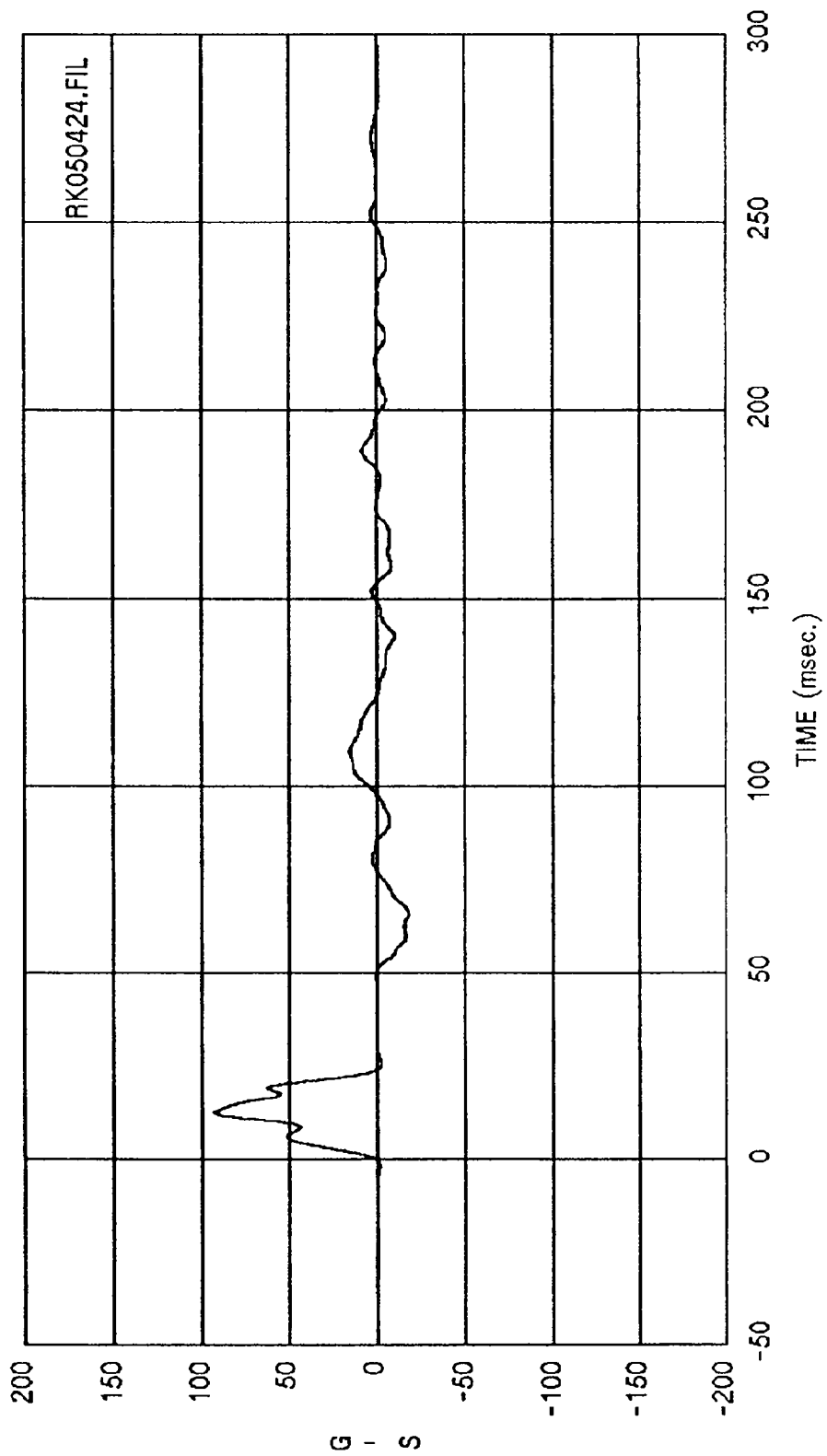
Curve: Left front door at mid-rear -- Y axis Filter: SAE CLASS 60 Max = 134.96 Min = -30.386

MSE Date: 08/27/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Suzuki Sidekick



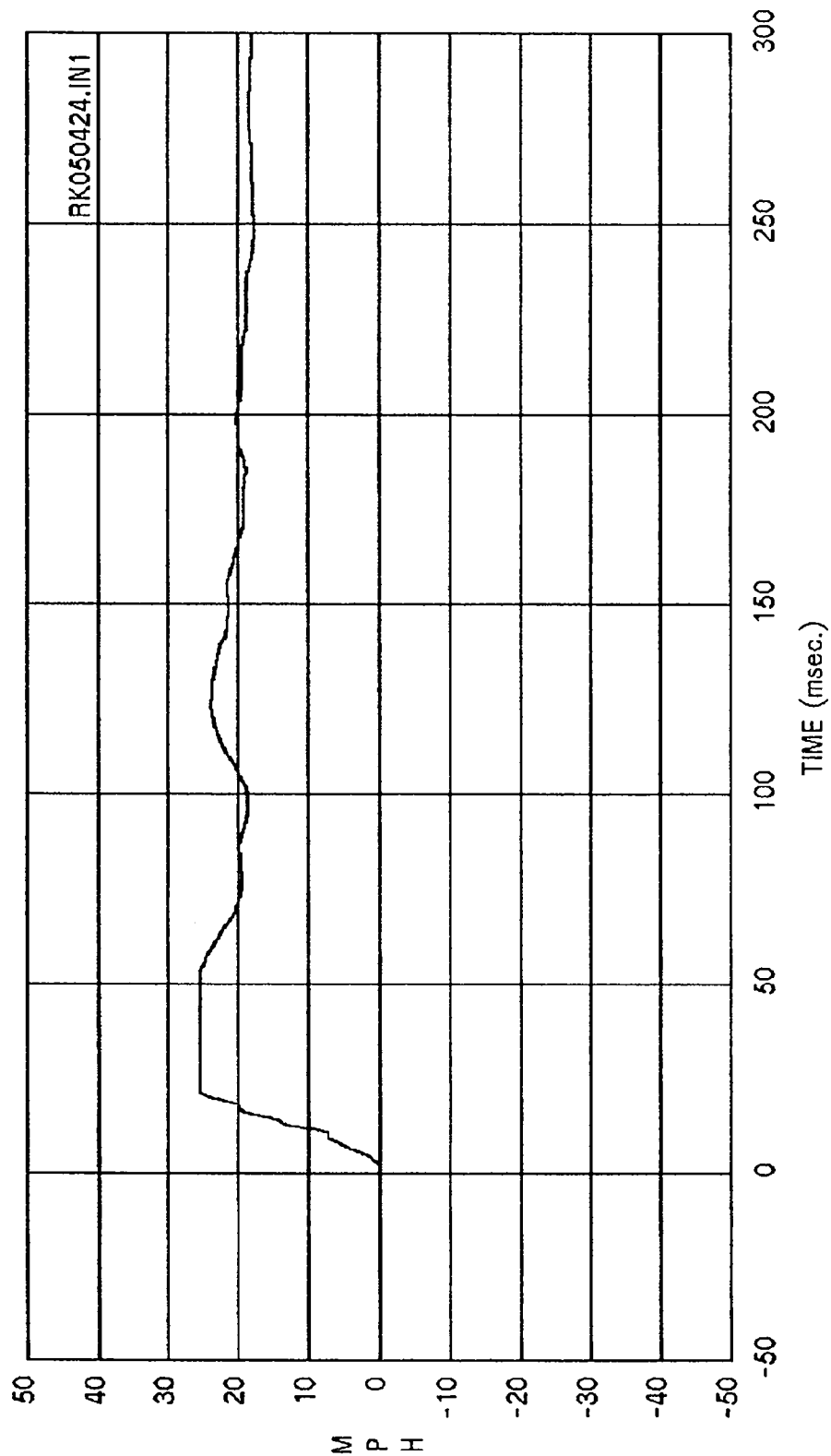
Curve: Left front door at mid-rear delta V -- Y axis Filter: SAE CLASS 180 Max = 21.481 Min = 13.227

MSE Date: 08/27/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Suzuki Sidekick



Curve: Left front door at upper centerline -- Y axis Filter: SAE CLASS 60 Max = 92.905 Min = -17.965

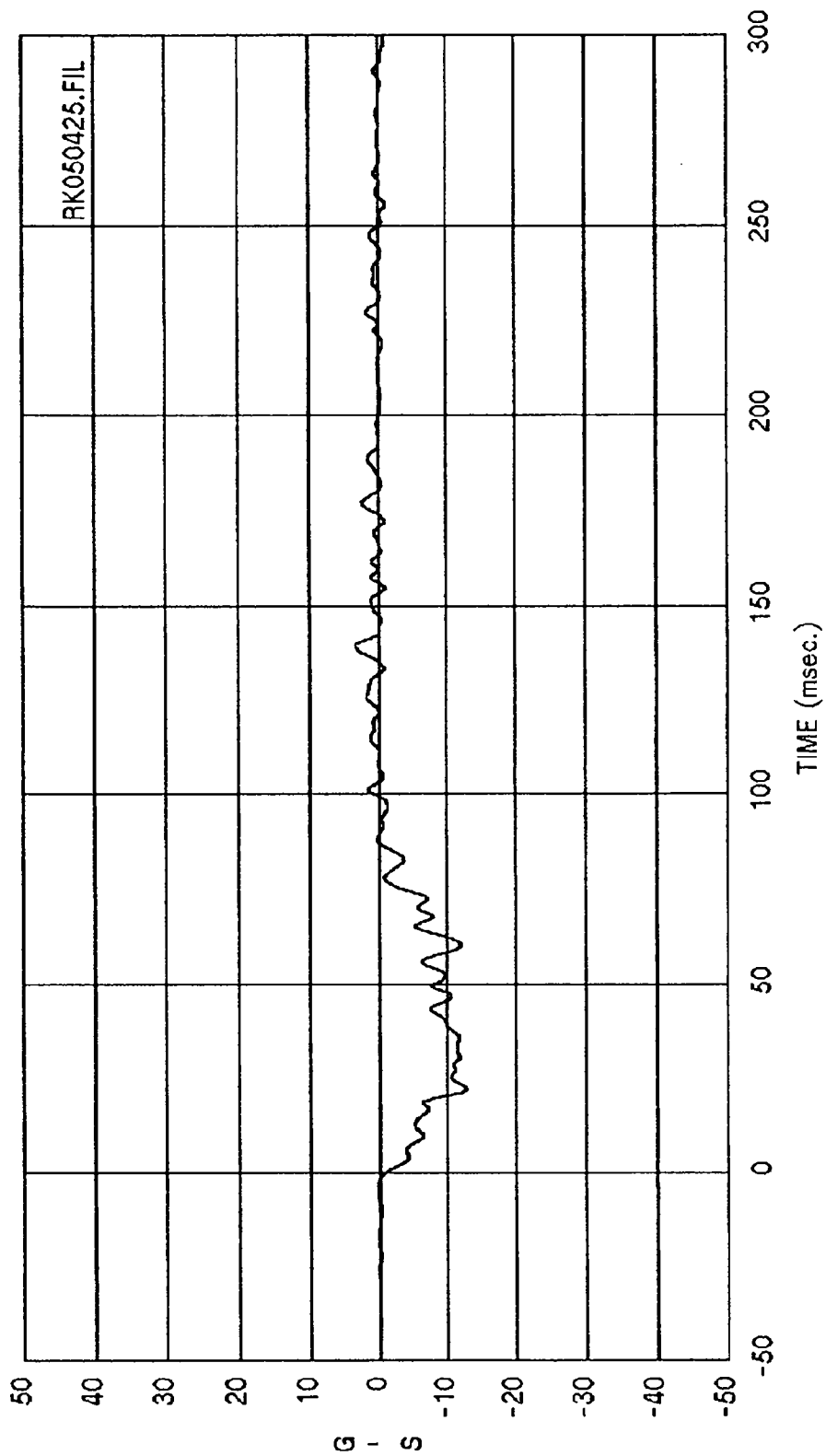
MSE Date: 08/27/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Suzuki Sidekick



Curve: Left front door at upper centerline -- Y axis Filter: SAE CLASS 180 Max = 25.481 Min = -752851
01

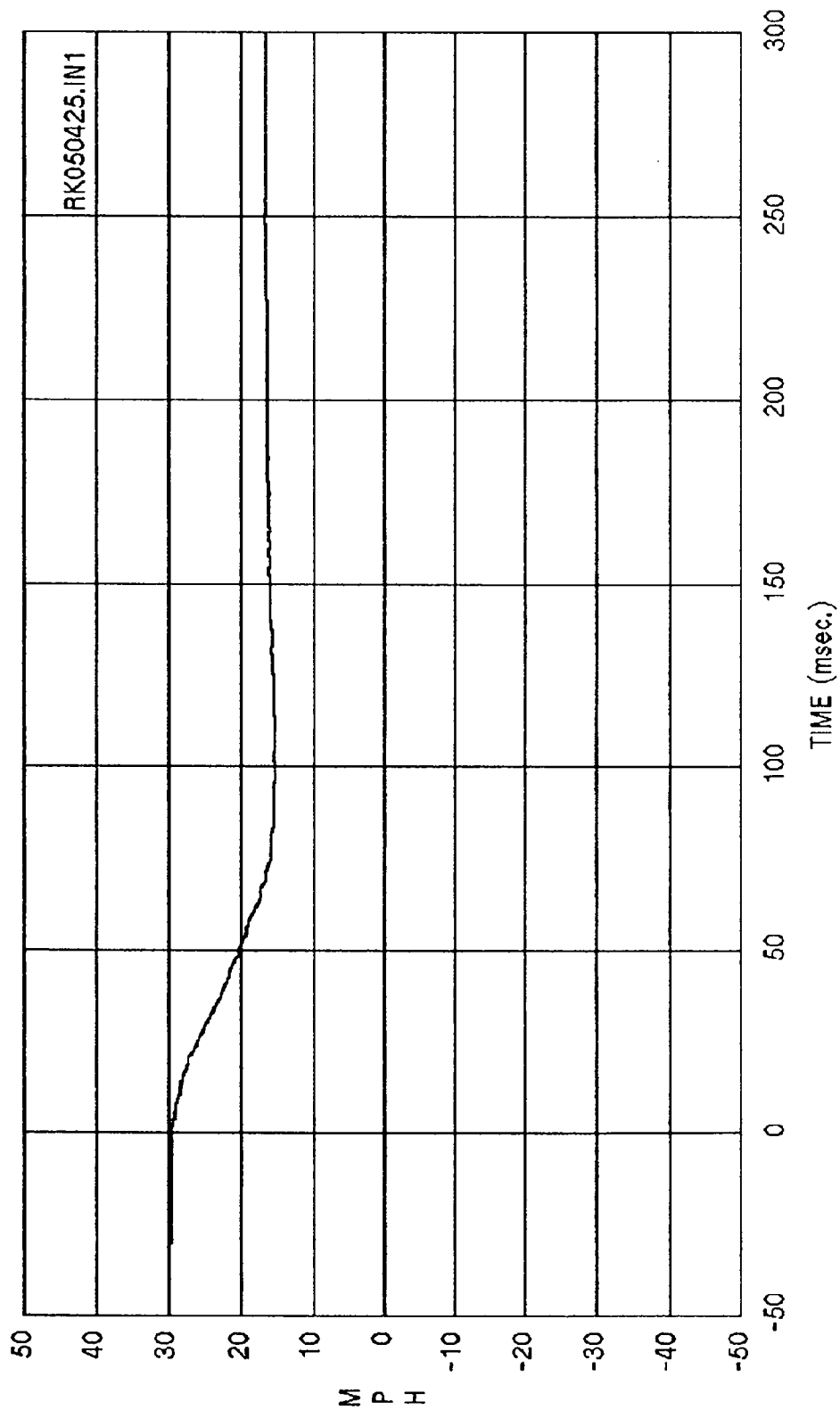
MSE Date: 08/27/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Suzuki Sidekick

MDB ACCELEROMETER DATA



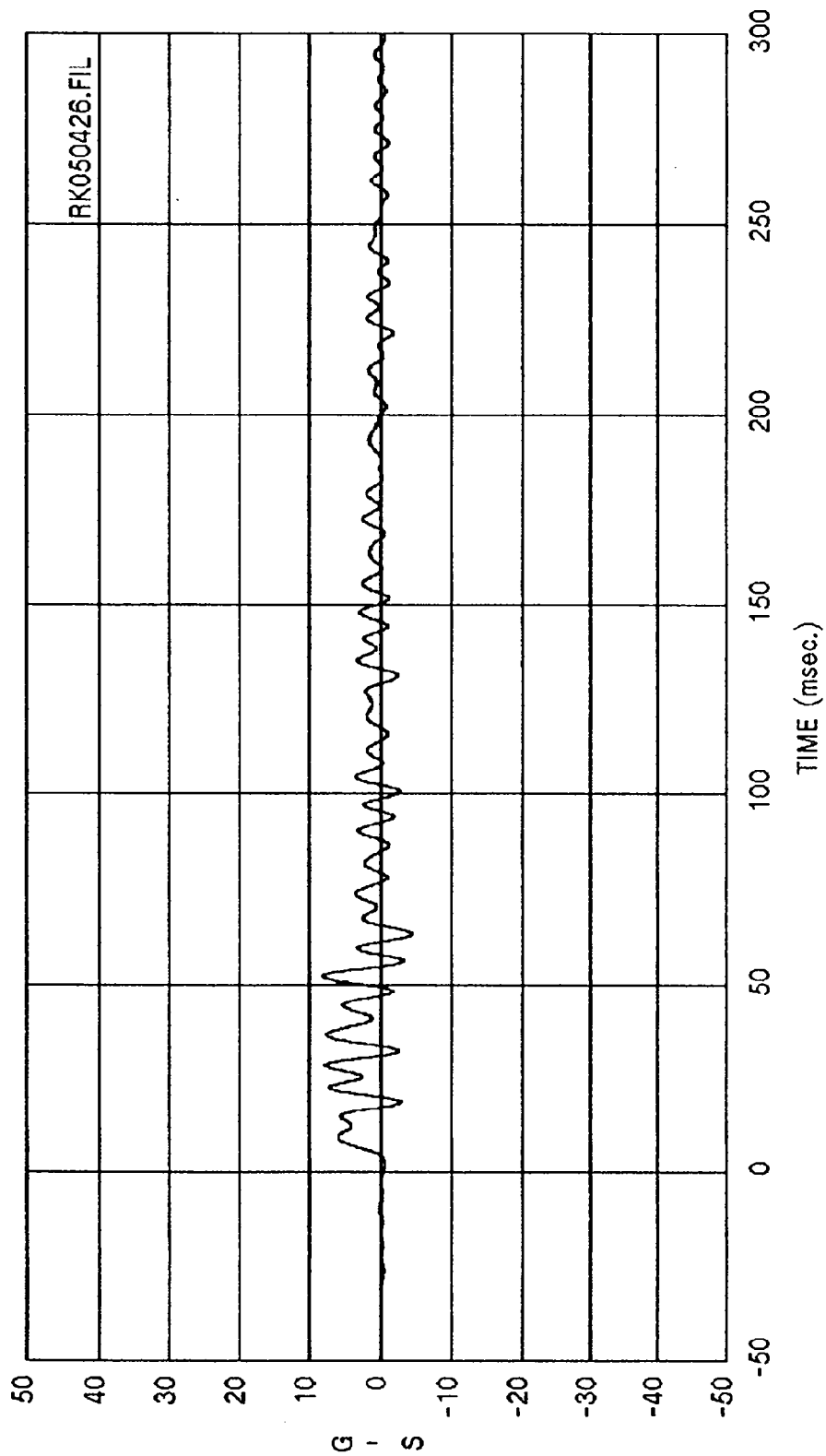
Curve: M.D.B. C/G acceleration -- X axis Filter: SAE CLASS 60 Max = 3.3434 Min = -12.917

MSE Date: 08/27/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Suzuki Sidekick



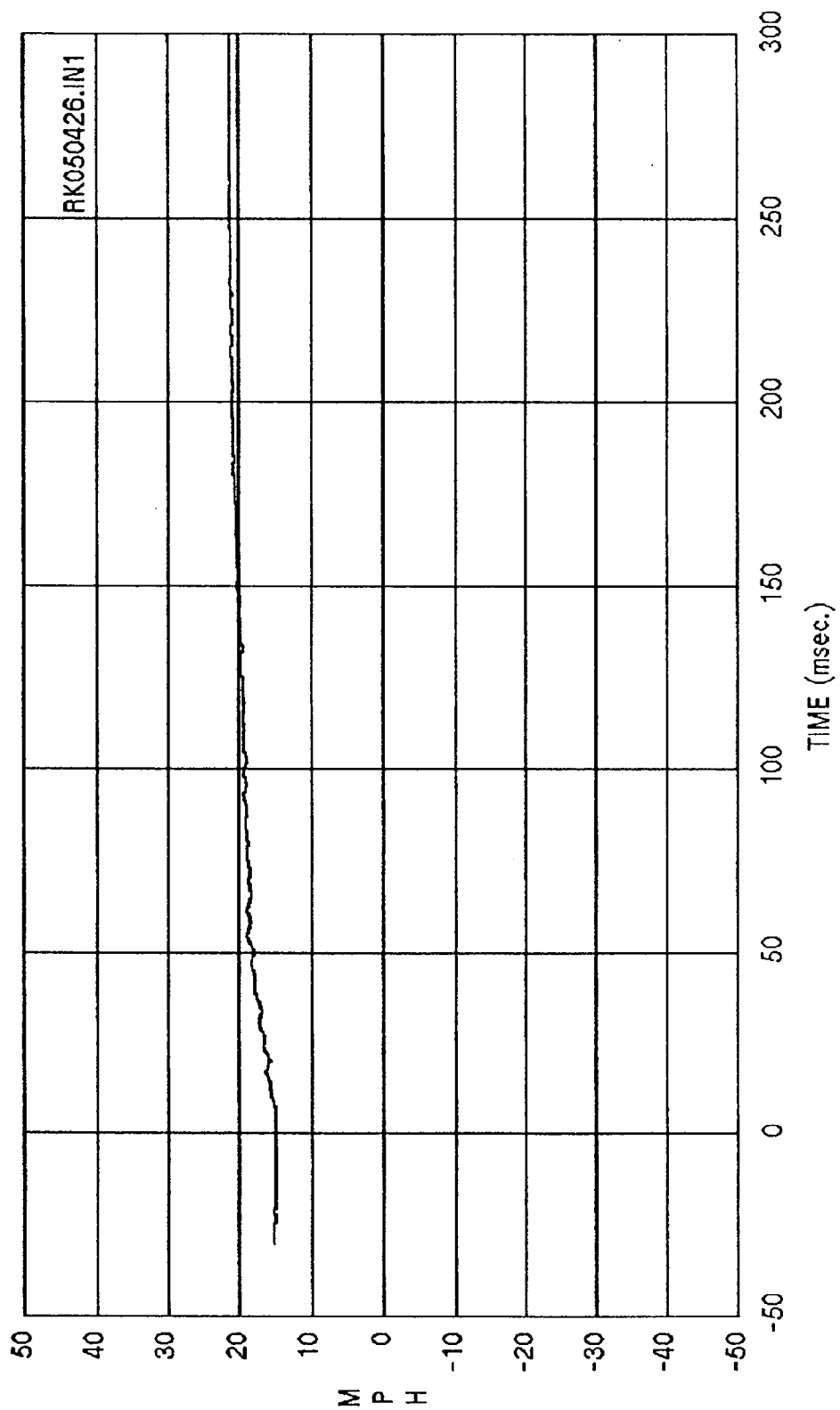
Curve: M.D.B. C/G delta V -- X axis Filter: SAE CLASS 180 Max = 29.589 MIn = 15.371

MSE Date: 08/27/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Suzuki Sidekick



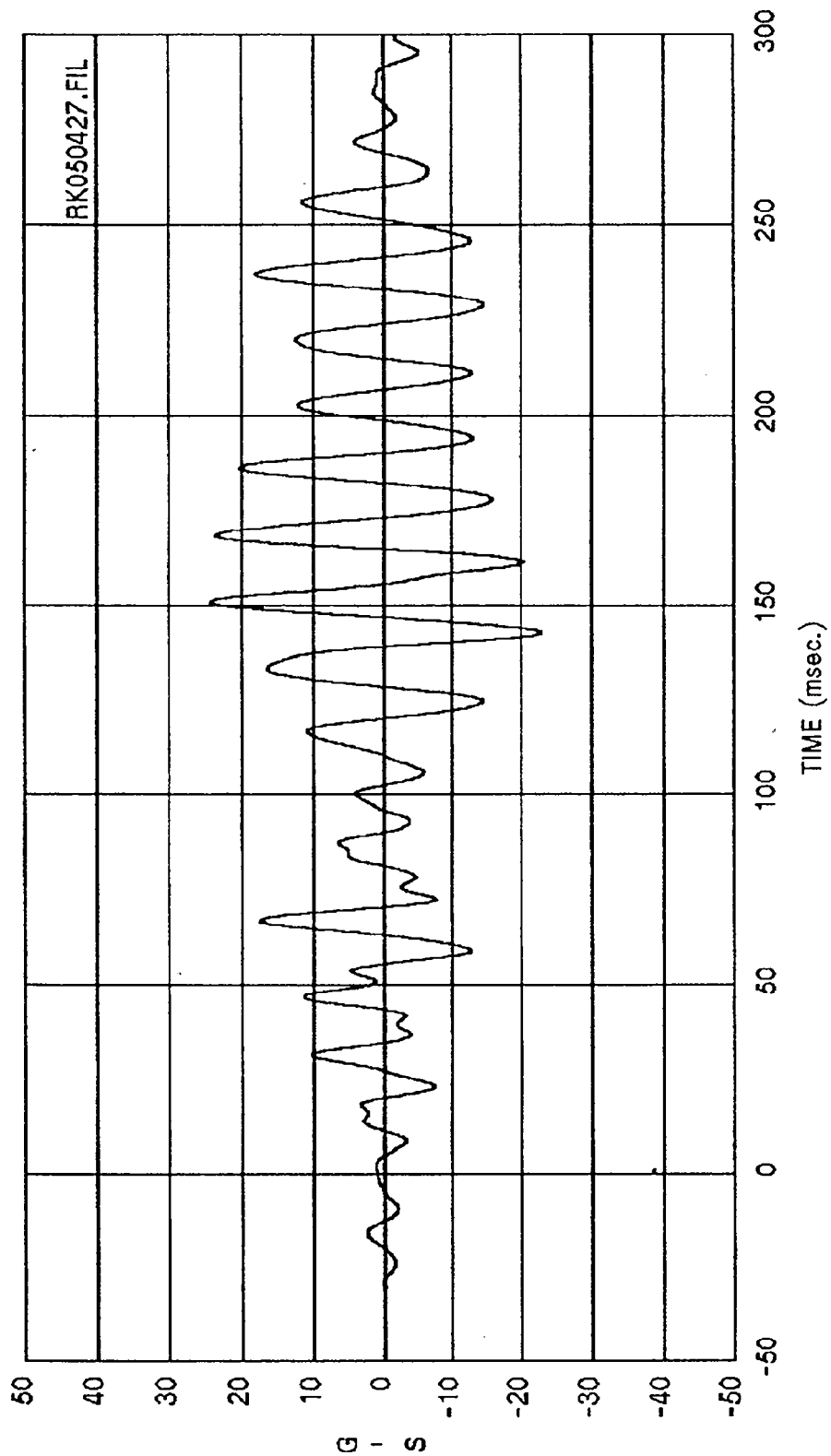
Curve: M.D.B. C/G acceleration -- Y axis Filter: SAE CLASS 60 Max = 8.2305 Min = -4.5899

MSE Date: 08/27/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Suzuki Sidekick

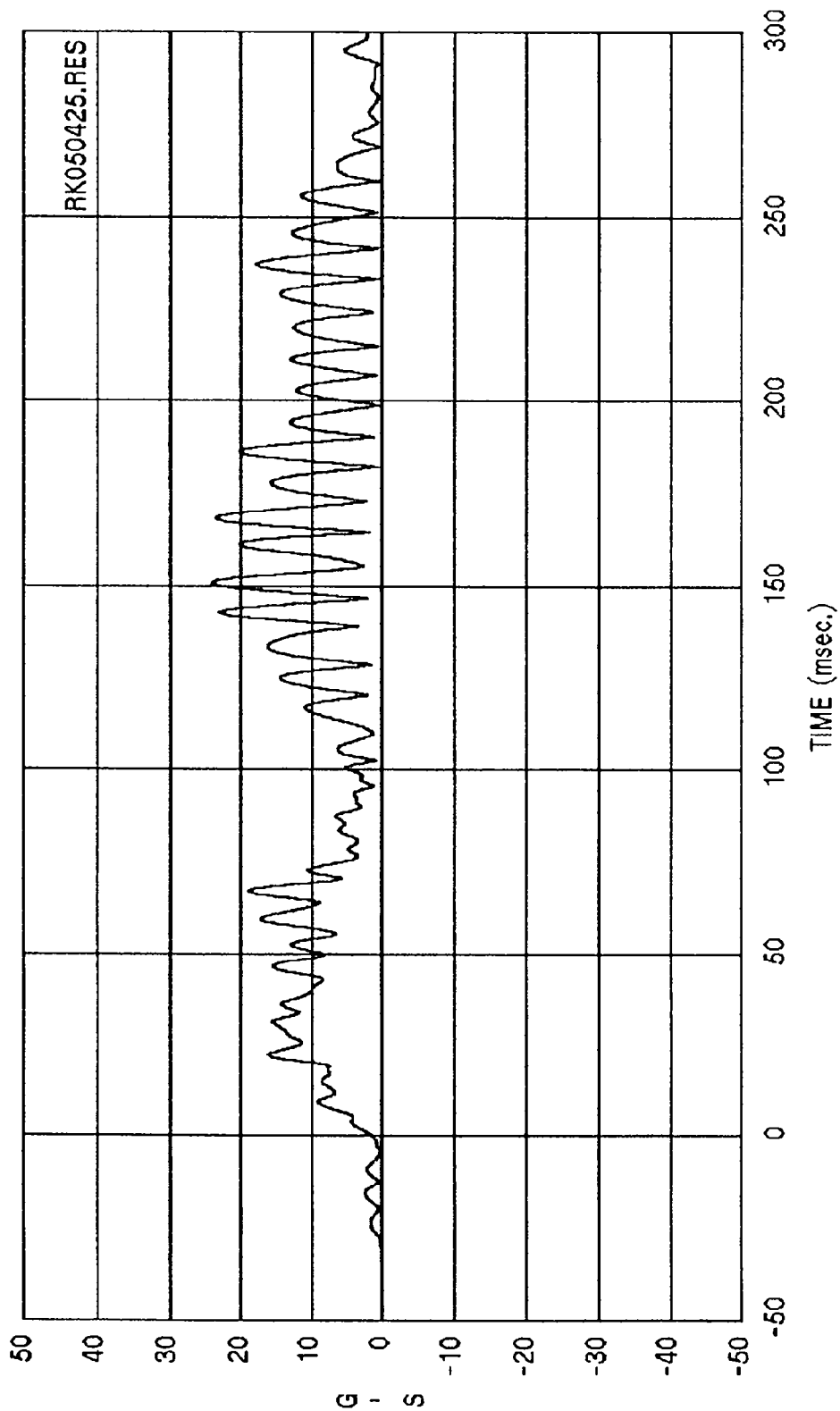


Curve: M.D.B. C/G delta V -- Y axis Filter: SAE CLASS 180 Max = 21.493 Min = 15.033

MSE Date: 08/27/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Suzuki Sidekick

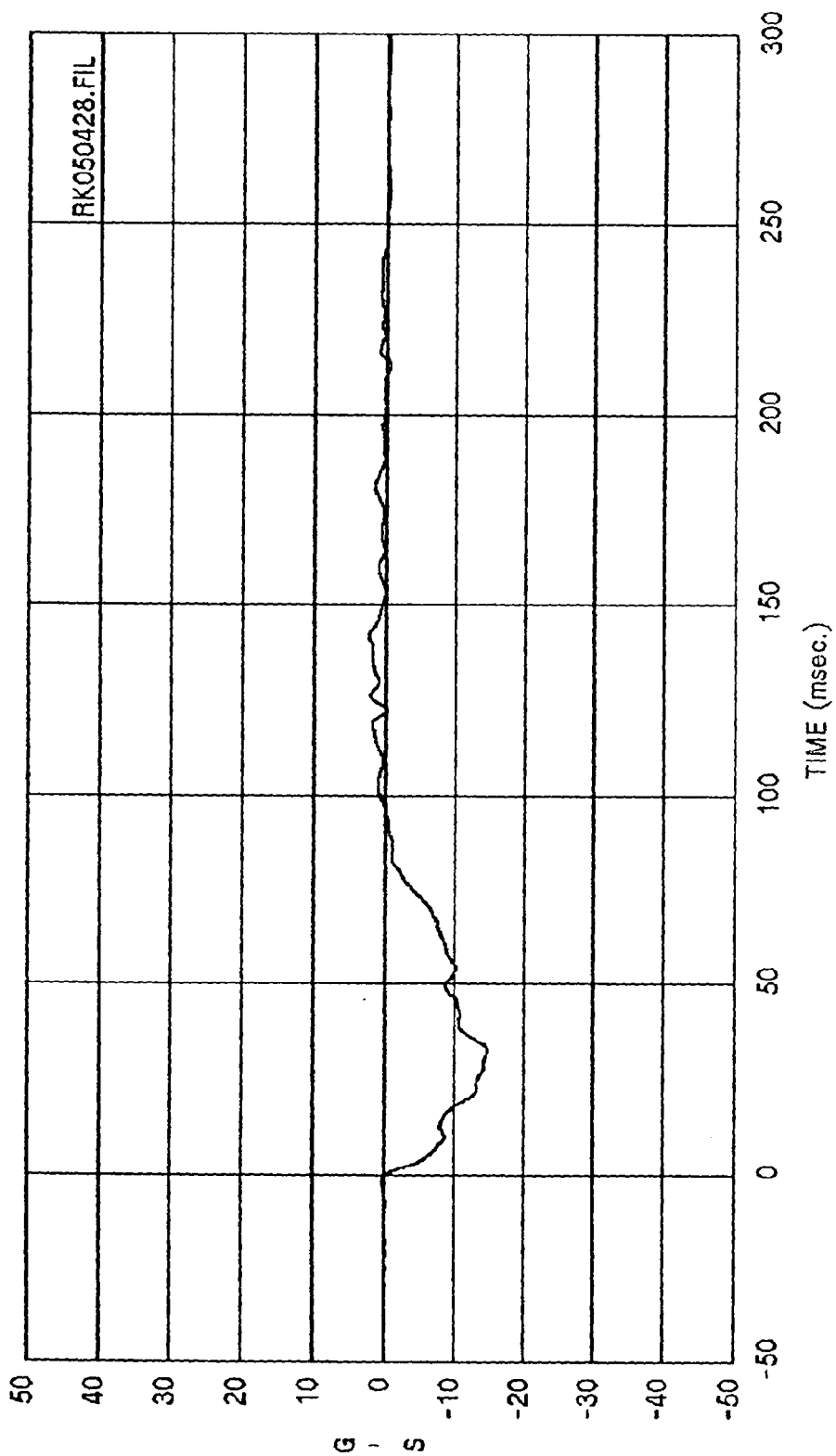


Curve: M.D.B. C/G acceleration -- Z axis Filter: SAE CLASS 60 Max = 24.264 Min = -23.058
MSE Date: 08/27/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Suzuki Sidekick



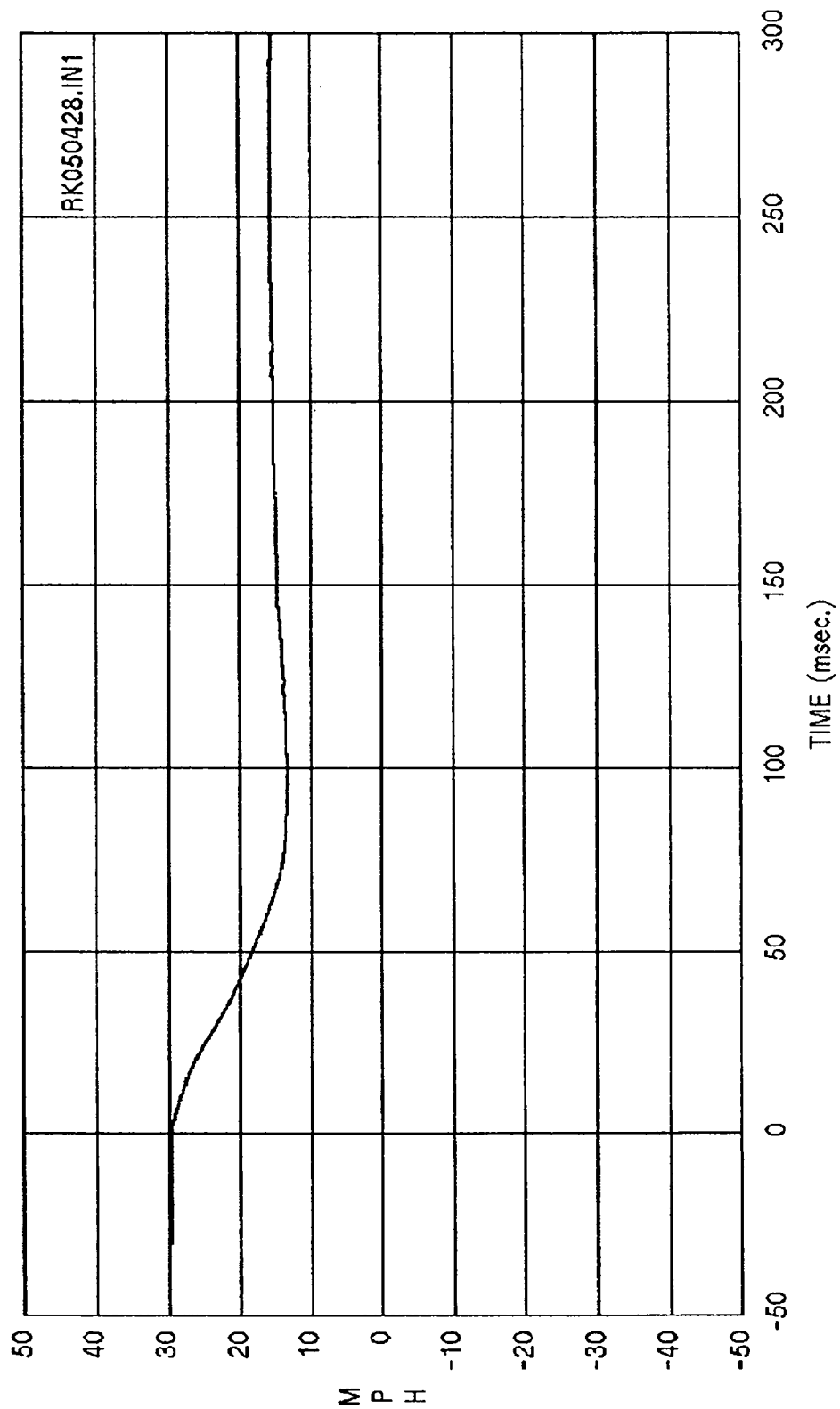
Curve: M.D.B. C/G resultant acceleration Filter: SAE CLASS 60 Max = 24.304 Min = .30229

MSE Date: 08/27/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Suzuki Sidekick



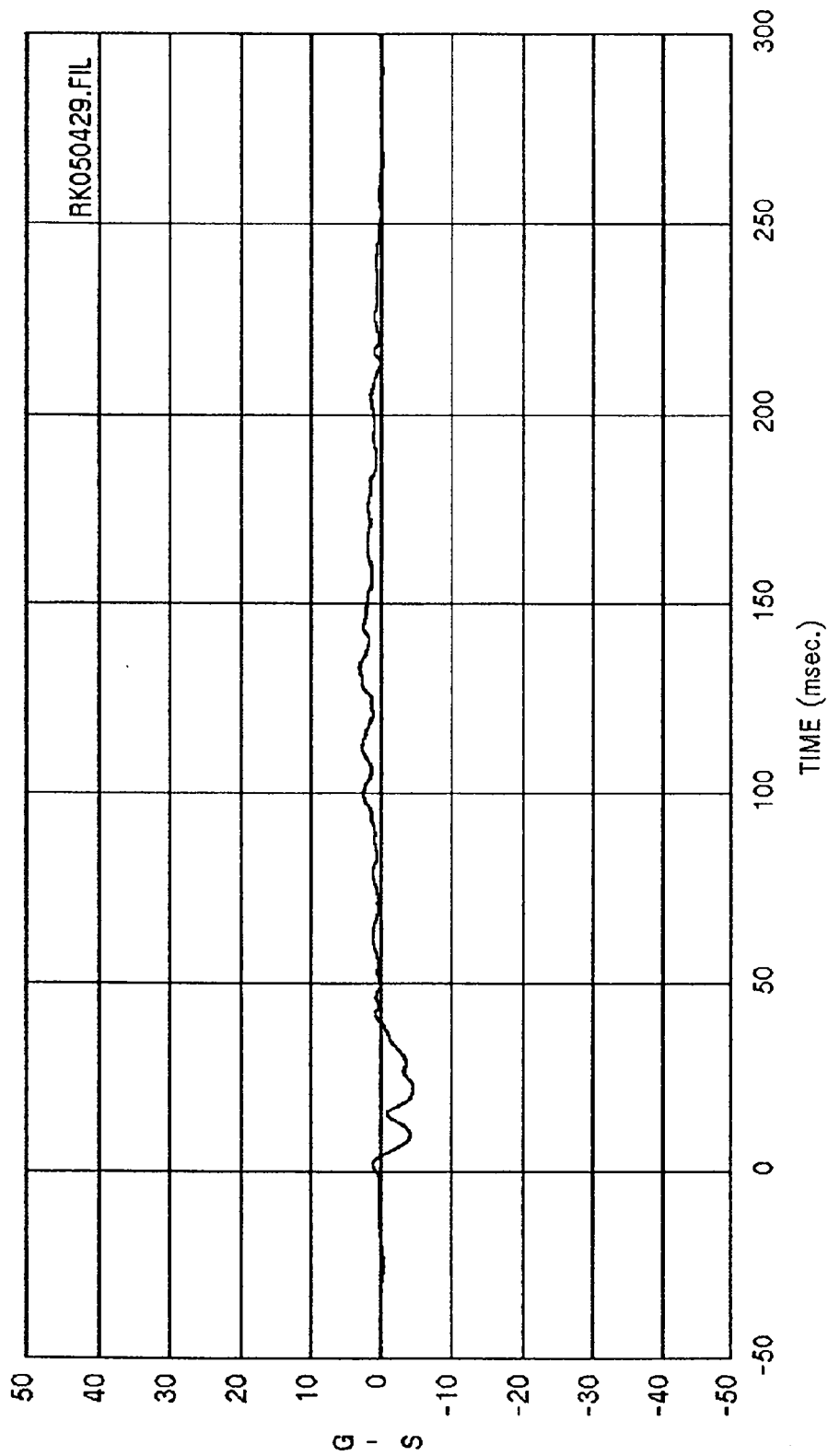
Curve: M.D.B. rear C/G acceleration -- X axis Filter: SAE CLASS 60 Max = 2.3309 Min = -14.668

MSE Date: 08/27/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Suzuki Sidekick



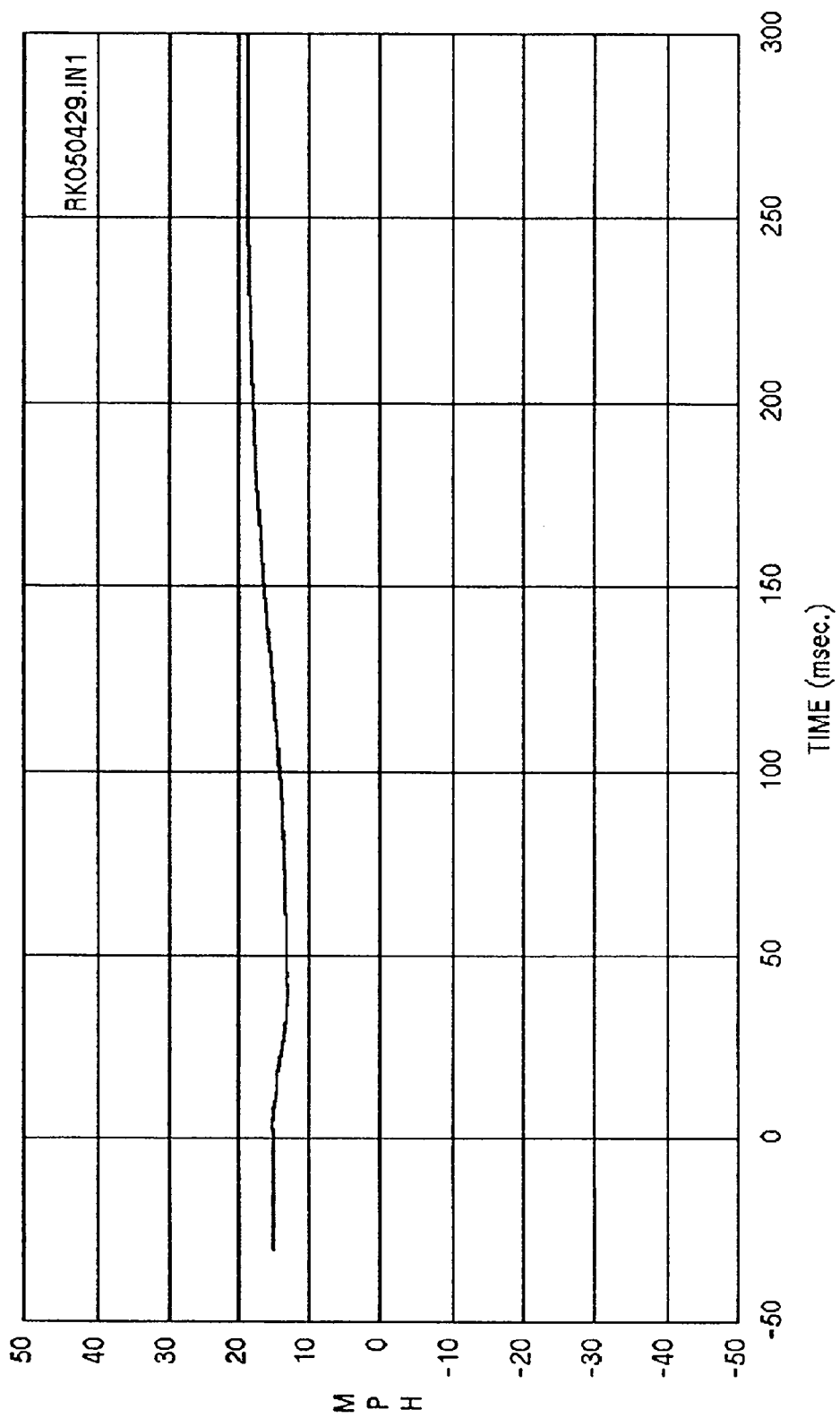
Curve: M.D.B. rear C/L delta V -- X axis Filter: SAE CLASS 180 Max = 29.591 Min = 13.538

MSE Date: 08/27/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Suzuki Sidekick



Curve: M.D.B. rear C/G acceleration -- Y axis Filter: SAE CLASS 60 Max = 3.0461 Min = -4.6106

MSE Date: 08/27/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Suzuki Sidekick



Curve: M.D.B. rear C/L delta V -- Y axis Filter: SAE CLASS 180 Max = 18.820 Min = 13.027

MSE Date: 08/27/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1989 Suzuki Sidekick

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 (DRIVER)

TEST PARAMETER	SPECIFICATION	Pretest Calibration	Posttest Calibration
1. ABDOMINAL COMPRESSION TEST (Preload = 10 pounds)			
a. Force @ .5" - - - -	23 - 36 lbs.	N/A	
b. Force @ .75"- - - -	36 - 50 lbs.	N/A	
c. Force @ 1.0"- - - - -	50 - 63 lbs	N/A	
d. Force @ 1.3"- - - - -	73 - 88 lbs.	N/A	
2. LUMBAR FLEXION TEST:			
a. Force @ 20' - - - -	22 to 34 lbs	N/A	
b. Force @ 30' - - - -	34 to 46 lbs	N/A	
c. Force @ 40' - - - - -	46 to 58 lbs	N/A	
d. Return Angle - - - -	12 maximum	N/A	
3. THORAX IMPACT TEST:	VEL:14.11ft/sec		
a. Upper Rib accel.- - -	Primary 37 - 46g's Sec	43.6 43.7	
b. Lower Rib accel.- - -	Primary 37 - 46g's Sec	45.2 40.6	
c. Lower Spine accel - -	Primary 15 -22 g's Sec	20.0 21.8	
4. PELVIC IMPACT TEST:	Vel:14.01 ft/sec		
Pelvic accel. - - - -	40 - 60g's	52.3	