V1745

REPORT NO.: MSE-92-02-TR1086-02 R1086-02

SIDE IMPACT PROTECTION STUDY IN PRODUCTION VEHICLES

MDB-TO-VEHICLE SIDE IMPACT TEST OF A 27° CRABBED MOVING DEFORMABLE BARRIER TO A 1989 FORD RANGER XLT PICKUP AT 33.0 MPH

NHTSA NO.: RK0600

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

01 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
400 Seventh Street, S.W.
Washington, DC 20590

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Date: 01 September 1992

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NHTSA NO. RK0600

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16. Abstract

A 30/15 mph 90° Impact (Moving Deformable Barrier) Test was conducted on the subject 1989 Ford Ranger XLT 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 August 19, 1992.

The impact velocity of the Moving Deformable Barrier (MDB) was 33.03 mph, and the ambient temperature at the struck side (driver's) of the target vehicle at the time of impact was 107°F. The target vehicle post test maximum crush was 18.5 inches at level 2. The test vehicle's performance follows:

	DRIVER	PASS
Left Upper Rib (LUR) Accel., g	55.6	N/A
Left Lower Rib (LLR) Accel., g	52.8	N/A
Lower Spine (T_{12}) Accel., g	91.8	N/A
Thoracic Trauma Index (TTI_d)	73.7	N/A
Pelvis (PEV) Accel., g	162.7	N/A

The two doors on the struck side of the vehicle did not separate from the body at the hinges or latches and the opposite doors did not open during side impact event.

17. Key Words
OCCUPANT RESPONSE, MDB,
SIDE IMPACT, TTI, SIDE IMPACT
DUMMY (SID) MOVING BARRIER CRASH TESTING
1989 FORD RANGER XLT, PICKUP

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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 ($10,000 m^2$)	2.5	acres	
	MASS (weight)			
g	grams	0.035	ounces	oz
kg	kilograms	2.2	pounds	lb
t	tonnes (1000 kg)	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 temperature	9/5 (then add 32)	Fahrenheit temperature	°F

°F: -40, 0, 32, 98.6, 120, 160, 200, 212
°C: -40, -20, 0, 20, 37, 60, 80, 100

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 ($10,000 m^2$)	2.5	acres	
	MASS (weight)			
g	grams	0.035	ounces	oz
kg	kilograms	2.2	pounds	lb
t	tonnes (1000 kg)	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 temperature	9/5 (then add 32)	Fahrenheit temperature	°F

°F: -40, 0, 32, 98.6, 120, 160, 200, 212
°C: -40, -20, 0, 20, 37, 60, 80, 100

TABLE OF CONTENTS

SECTION 1

PURPOSE AND INTRODUCTION

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

The subject vehicle for this test was a 1989 Ford Ranger XLT Pickup. The test was performed on 19 August 1992 at an actual impact speed of 33.03 mph. The leading left-hand edge of the MDB contacted the test vehicle 19.6 inches rearward of the front axle.

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 Ford Ranger XLT Pickup, was tested on 19 August 1992. General test vehicle information and pretest conditions are given in Data Sheet No. 11. 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 20 inches rearward of front axle. The impact point was selected using FMVSS 214D test procedure.

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. The MDB face was placed at a height such that the bottom of the face was 18 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 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 FORD RANGER XLT

VEH. BODY STYLE: PICKUP VIN: 1FTCR14T8KPA78517

VEH. NHTSA NO.: RK0600 VEH. BUILD DATE: 02/89

TEST DATE: 08/19/92 TEST LAB.: MOBILITY SYSTEMS AND EQUIPMENT COMPANY

TEST RESULTS:

Vehicle Overall Length = 194.5 inches; Vehicle Overall Width 68.5 inches

Vehicle Test Weight:	1165 lbs. Left Front	815 lbs. Left Rear
	1045 lbs. Right Front	836 lbs. Right Rear
	2210 lbs. TOTAL FRONT	1651 lbs. TOTAL REAR

Wheelbase = 126.5 inches

Longitudinal C.G. from center of front axle = 53.7 inches

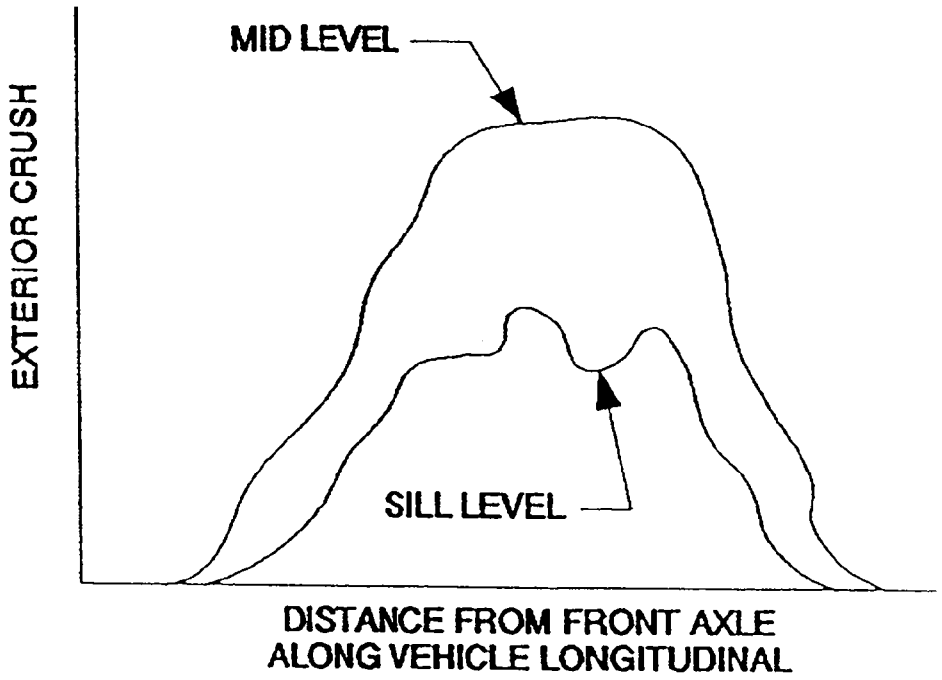
Impact Angle with respect to impactor = 90 degrees

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

1. LEVEL 1 (15.5 inches above ground) = 10.1 inches
2. LEVEL 2 (27.0 inches above ground) = 18.5 inches
3. LEVEL 3 (29.3 inches above ground) = 17.5 inches
4. LEVEL 4 (42.3 inches above ground) = 13.9 inches
5. LEVEL 5 (59.0 inches above ground) = 8.1 inches

Maximum Post Test Intrusion = 18.5 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 -- Driver's side of split bench seat

Rear -- N/A

Front Seat Cushion Movement: Moved to the right

Front Seat Back Movement: Moved to the right

Glazing Breakage: 2 Impact side windows and the driver side section of the rear window shattered. Windshield cracked but remained intact.

Pillar Failure: B-pillar separated at bottom from sill along approximately 4 inches.

Sill Separation: None

Other Notable Impact Effect: Barrier face wedged between the front fender and the bed of the pickup and had to be priced out.

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:

835 lbs. Left Front	645 Left Rear
835 lbs. Right Front	645 Right Rear
1670 lbs. TOTAL FRONT	1290 TOTAL REAR

TOTAL WEIGHT OF MDB = 2960 lbs.

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

Impact Speed = 33.03 mph

Maximum Static Crush of Honeycomb Impact Face:

1. ROW A at bumper level = 4.0 inches
2. ROW B at midstack level = 1.8 inches
3. ROW C at top of stack level = 4.3 inches

Instrumentation:

Number of MDB Data Channels = 5

SIDE IMPACT DUMMY (SID) RESULTS

Location of B-Post Upper Anchorage Bolt or Side Rail (Auto. Belts) for Head Contact Analysis:
B-post upper anchorage bolt is on the center of the B-post, 21.5 inches above the B-post striker.

Visible Dummy Contact Points--	FRONT SID	REAR SID
HEAD	B-Pillar	N/A
SHOULDER	B-Pillar, door	
HIP	Door	
LEFT KNEE	Door	
RIGHT KNEE	No contact	

	FRONT SID # 136				REAR SID # N/A			
	+ DIRECT MaxG	ms	-DIRECT MaxG	ms	+ DIRECT MaxG	ms	-DIRECT MaxG	ms
RIB ACCELERATIONS:								
Upper Rib Lateral Y	55.6	26.9	26.7	73.1	___	___	___	___
Lower Rib Lateral Y	52.8	35.0	15.1	93.1	___	___	___	___
SPINE ACCELERATIONS:								
Lower Lateral Y	91.8	30.0	21.0	67.5	___	___	___	___
PELVIS ACCELERATIONS:								
Lateral Y	167.7	29.4	20.9	84.4	___	___	___	___

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

REMARKS:

RECORDED BY: Mr. Brian O'Keefe DATE: 08/20/92

APPROVED BY: 9/1/92

SIDE IMPACT DUMMY (SID) TEST DATA SUMMARY
1989 FORD RANGER XLT PICKUP, NHTSA NO. RK0600

TEST DATE: 08/19/92

	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	24.8	42.0	15.1	57.8	-	-	-	-
Lateral -------- Y	151.1	42.9	8.2	57.3	-	-	-	-
Vertical ------- Z	29.2	161.1	43.4	44.5	-	-	-	-
RESULTANT ------ R	155.3	42.9	0.0	0.0	-	-	-	-
HIC ----------	1118.6				N/A			
(TIME INTERVAL, SEC.)	(0.0413 TO 0.0489)							
RIB ACCELERATIONS:								
1.Upper Rib Lateral Y	55.6	26.9	26.7	73.1	-	-	-	-
2.Upper Rib Lateral Y	56.6	26.3	22.3	73.8	-	-	-	-
1.Lower Rib Lateral Y	52.8	35.0	15.1	93.1	-	-	-	-
2.Lower Rib Lateral Y	47.2	35.6	15.3	93.8	-	-	-	-
SPINE ACCELERATIONS:								
1.Upper Spine LateralY	103.0	38.8	12.7	128.1	-	-	-	-
2.Upper Spine LateralY	103.5	38.8	13.5	128.1	-	-	-	-
1.Lower Spine LateralY	91.8	30.0	21.0	67.5	-	-	-	-
2.Lower Spine LateralY	91.0	30.0	20.2	67.5	-	-	-	-
PELVIS ACCELERATIONS:								
Lateral Y	162.7	29.4	20.9	84.4	-	-	-	-
RIB DEFLECTION:	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
THORACIC TRAUMA INDEX (TTI (d)), G's	73.7				N/A			

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 Ford Ranger XLT Pickup was impacted at 33.03 mph by the 27° crabbed MDB on 19 August 1992. The MDB's left edge contacted the test vehicle 0.4 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 and bed were crushed inwards a maximum of ~~17.4~~ 18.5" inches. Pretest and posttest vehicle dimensions are shown in Data Sheet 5 and 6.

The MDB impacted the 1989 Ford Ranger XLT Pickup 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 head to rotate in the counterclockwise direction. The front SIDs head impacted the seat belt anchor bolt area on the "B" pillar. The SID then rebounded in a rotating clock wise motion. The SID ended up leaning across the right 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 4.3 inches on the upper right-hand corner. The crush details for the MDB are given in Data Sheet No. 7.

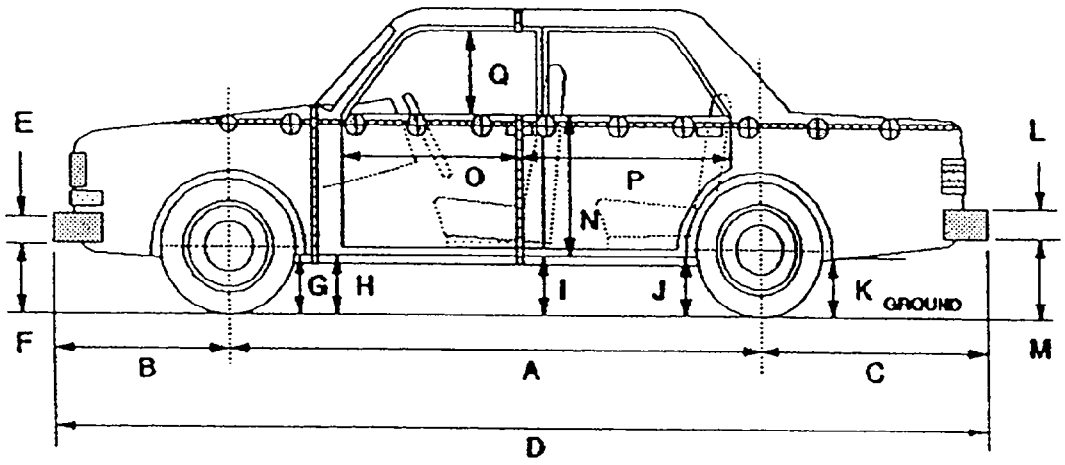
DATA SHEETS NO. 2

PRETEST AND POST TEST MEASUREMENTS

VEH. MOD YR/MAKE/MODEL/BODY: 1989 FORD RANGER XLT PICKUP

VEH. NHTSA NO.: RK0600 VIN.: 1FTCR14T8KPA78517

TEST DATE: 08/19/92 TEST LAB.: MOBILITY SYSTEMS AND EQUIPMENT COMPANY



LEFT SIDE VIEW

	Pretest (inches)	Post Test (inches)	Change		Pretest (inches)	Post Test (inches)	Change
A	126.5	124.8	1.7	J	14.4	15.8	1.4
B	28.5	29.1	0.6	K	15.9	16.4	0.5
C	39.5	40.8	1.3	L	0.0	0.0	0.0
D	194.5	194.7	0.2	M	22.6	22.5	0.1
E	7.5	7.5	0.0	N	26.0	22.5	3.5
F	15.0	15.5	0.5	O	29.1	28.6	0.5
G	12.5	12.5	0.0	P	34.4	34.9	0.5
H	12.7	20.3	7.6	Q	16.8	15.8	1.0
I	13.4	21.2	7.8				

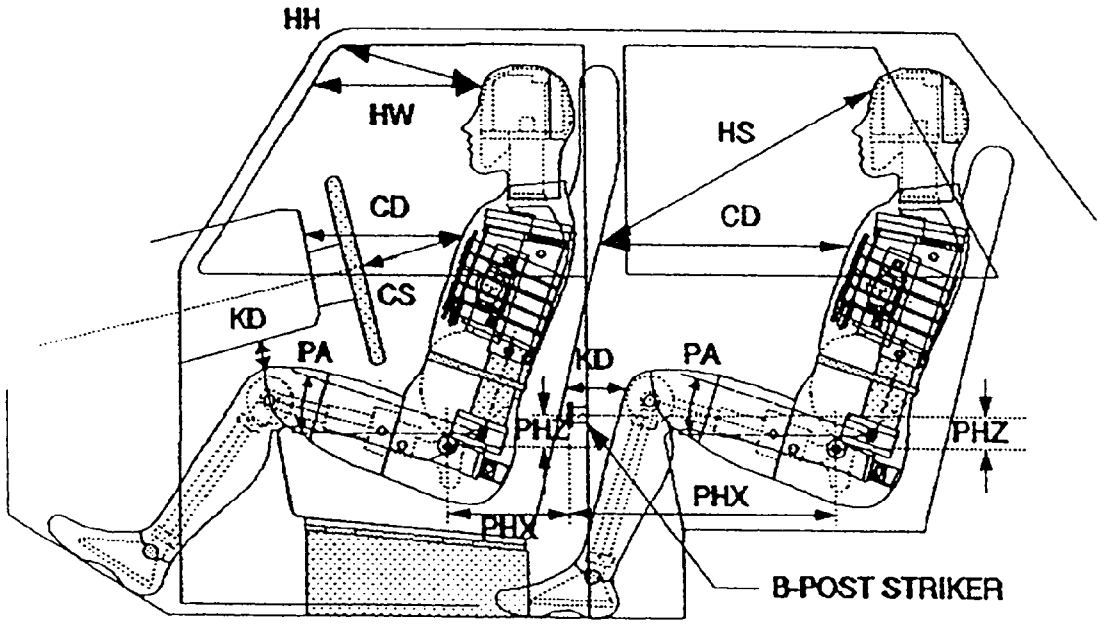
DATA SHEET NO. 3

SID LONGITUDINAL CLEARANCE DIMENSIONS

VEH. MOD YR/MAKE/MODEL/BODY: 1989 FORD RANGER XLT PICKUP

VEH. NHTSA NO.: RK0600 VIN.: 1FTCR14T8KPA78517

TEST DATE: 08/19/92 TEST LAB.: MOBILITY SYSTEMS AND EQUIPMENT COMPANY



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

LEFT SIDE VIEW

	DRIVER SID ID# 136		REAR SID ID# N/A	
HH	25.4	inches	N/A	inches
HW	31.5	inches	N/A	inches
HS	25.0	inches	N/A	inches
CD	27.5	inches	N/A	inches
CS	16.0	inches	N/A	inches
KDL	4.4	inches	N/A	inches
KDR	4.2	inches	N/A	inches
PA	25.0	degrees	N/A	degrees
PHX	8.7	inches	N/A	inches
PHY	5.7	inches	N/A	inches

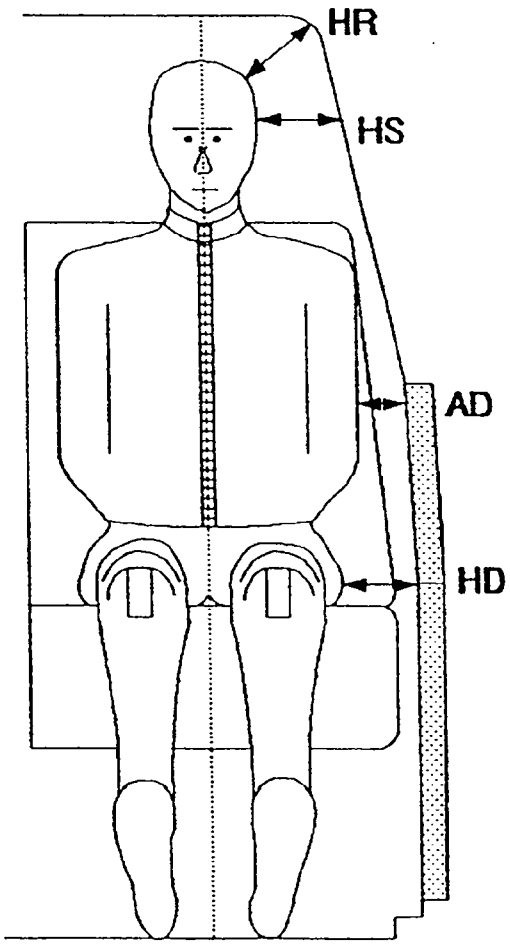
DATA SHEET NO. 4

SID LATERAL CLEARANCE DIMENSIONS

VEH. MOD YR/MAKE/MODEL/BODY: 1989 FORD RANGER XLT PICKUP

VEH. NHTSA NO.: RK0600 VIN.: 1FTCR14T8KPA78517

TEST DATE: 08/19/92 TEST LAB.: MOBILITY SYSTEMS AND EQUIPMENT COMPANY



	DRIVER SID ID# 136		REAR SID ID# N/A	
HR	7.4	inches	N/A	inches
HS	5.7	inches	N/A	inches
AD	2.0	inches	N/A	inches
HD	5.2	inches	N/A	inches

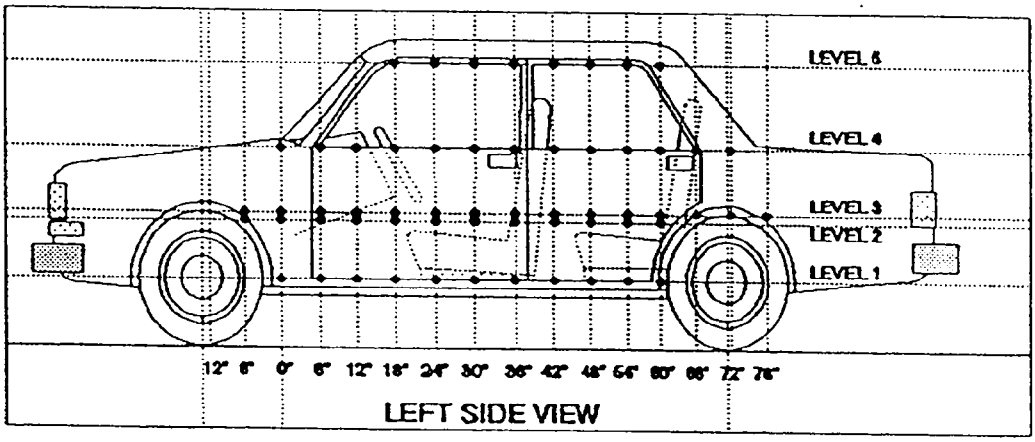
DATA SHEET NO. 5

VEHICLE SIDE MEASUREMENT

VEH. MOD YR/MAKE/MODEL/BODY: 1989 FORD RANGER XLT PICKUP

VEH. NHTSA NO.: RK0600 VIN.: 1FTCR14T8KPA78517

TEST DATE: 08/19/9s TEST LAB.: MOBILITY SYSTEMS AND EQUIPMENT COMPANY



LEFT SIDE VIEW

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 = 59.0 inches

LEVEL 4 @ Window Sill = 42.3 inches

LEVEL 3 @ Mid Door = 29.3 inches

LEVEL 2 @ Occupant H-Point = 27.0 inches

LEVEL 1 @ Axle Centerline Height = 15.5 inches
(or Sill Top Height)

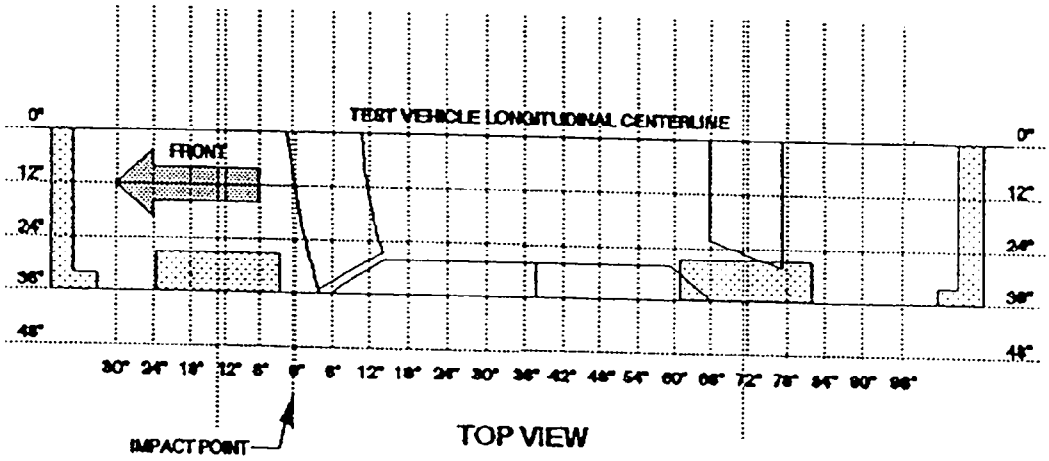
DATA SHEET NO. 6A

PRETEST AND POST TEST VEHICLE EXTERIOR PROFILES

VEH. MOD YR/MAKE/MODEL/BODY: 1989 FORD RANGER XLT PICKUP

VEH. NHTSA NO.: RK0600 VIN.: 1FTCR14T8KPA78517

TEST DATE: 08/19/92 TEST LAB.: MOBILITY SYSTEMS AND EQUIPMENT COMPANY



TOP VIEW

LEVEL 1 AT AXLE CENTERLINE or TOP SIDE SILL

15.5 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 1 AT AXLE CENTERLINE

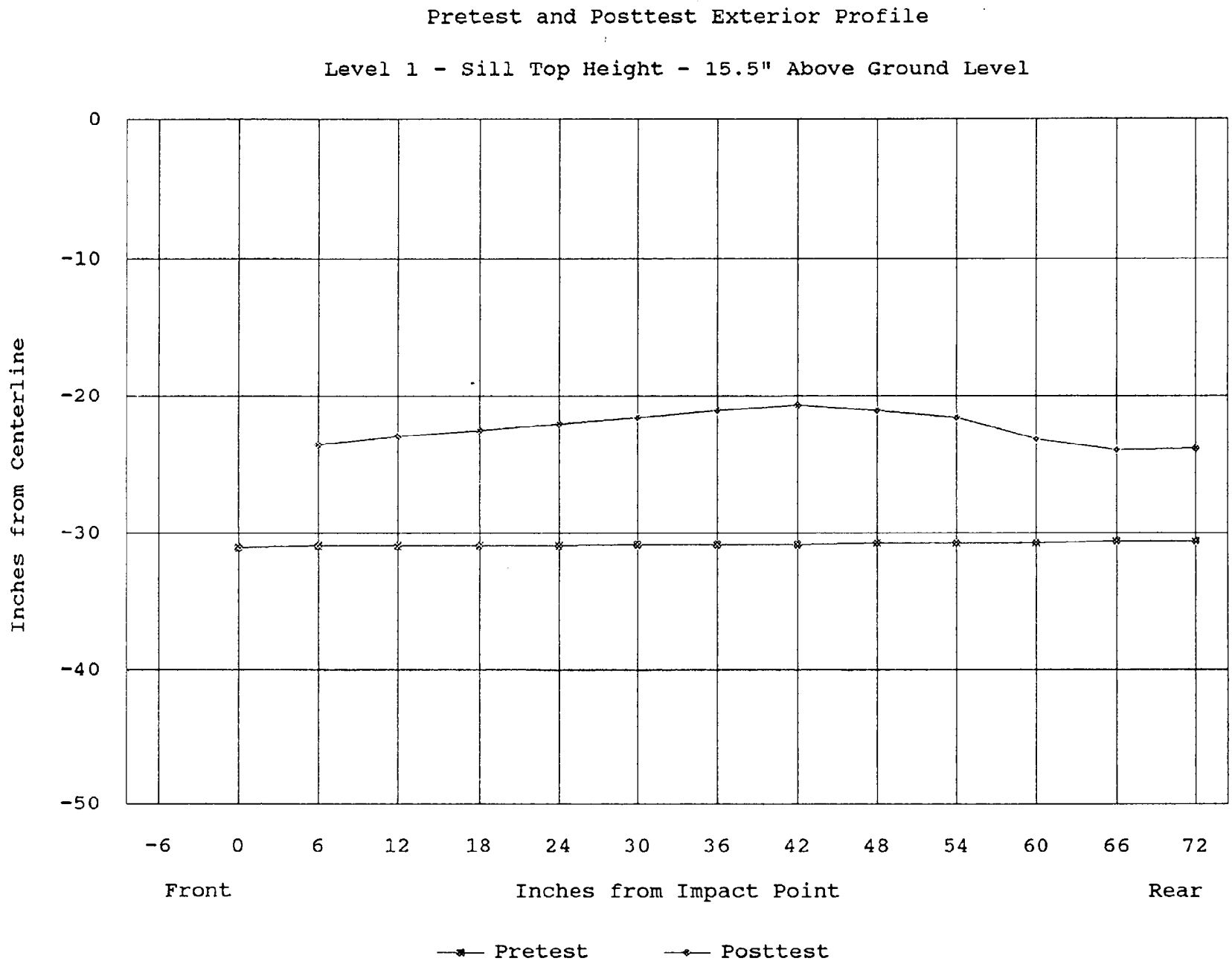
	POST TEST (inches)	PRETEST (inches)	STATIC CRUSH (inches)
-6inches	N/A	N/A	N/A
0 inch (impact point)	*	17.0	*
6 inches	24.4	17.1	7.3
12 inches	25.0	17.1	7.9
18 inches	25.4	17.1	8.3
24 inches	25.9	17.1	8.8
30 inches	26.4	17.2	9.2
36 inches	26.9	17.2	9.7
42 inches	27.3	17.2	10.1
48 inches	26.9	17.3	9.6
54 inches	26.4	17.3	9.1
60 inches	24.8	17.3	7.5
66 inches	24.0	17.4	6.6
72 inches	24.1	17.4	6.7

REMARKS:

* Measurement not possible due to post-test damage to fender.

RECORDED BY: Mr. Brian O'Keefe DATE: 08/20/92

APPROVED BY: 9/1/92


Pretest and Posttest Exterior Profile
Level 1 - Sill Top Height - 15.5" Above Ground Level
Inches from Centerline
0
-10
-20
-30
-40
-50
-6
0
6
12
18
24
30
36
42
48
54
60
66
72
Front
Inches from Impact Point
Rear
Pretest
Posttest

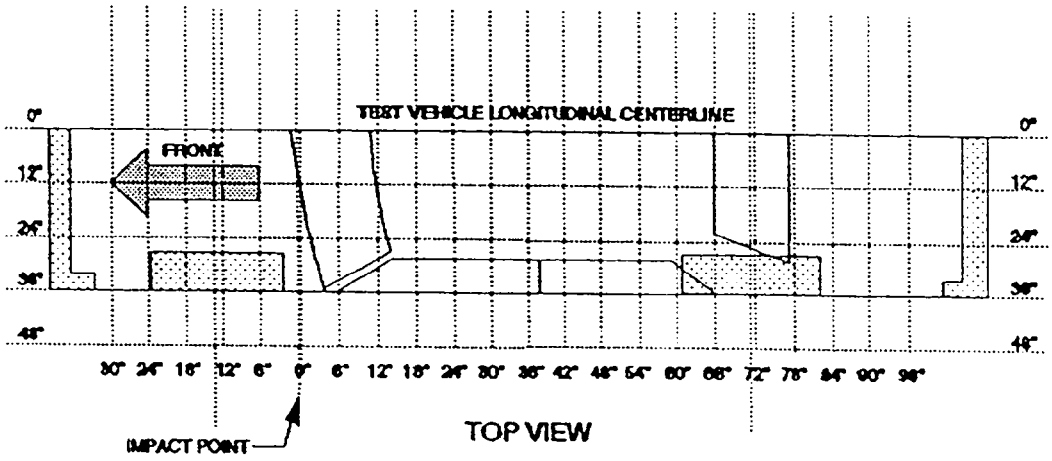
DATA SHEET NO. 6B

PRETEST AND POST TEST VEHICLE EXTERIOR PROFILES

VEH. MOD YR/MAKE/MODEL/BODY: 1989 FORD RANGER XLT PICKUP

VEH. NHTSA NO.: RK0600 VIN.: 1FTCR14T8KPA78517

TEST DATE: 08/19/92 TEST LAB.: MOBILITY SYSTEMS AND EQUIPMENT COMPANY



TOP VIEW

LEVEL 2 AT OCCUPANT H-POINT

27.0 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 2 AT OCCUPANT H-POINT

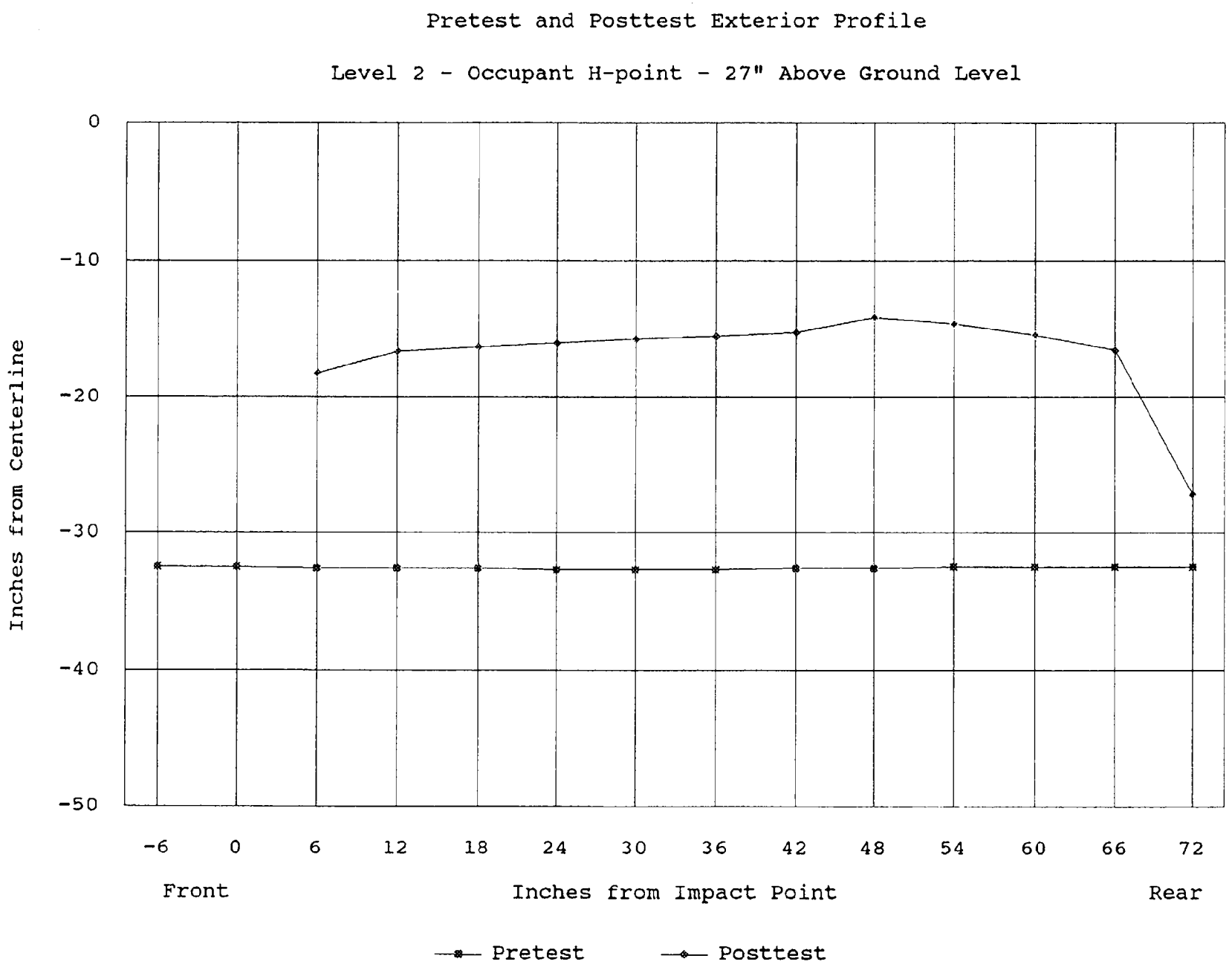
	POST TEST (inches)	PRETEST (inches)	STATIC CRUSH (inches)
-6inches	*	15.5	*
0 inch (impact point)	*	15.5	*
6 inches	29.8	15.4	14.4
12 inches	31.4	15.4	16.0
18 inches	31.7	15.4	16.3
24 inches	32.0	15.3	16.7
30 inches	32.3	15.3	17.0
36 inches	32.5	15.3	17.2
42 inches	32.8	15.4	17.4
48 inches	33.9	15.4	18.5
54 inches	33.4	15.5	17.9
60 inches	32.6	15.5	17.1
66 inches	31.5	15.5	16.0
72 inches	20.8	15.5	5.3

REMARKS:

* Measurement not possible due to post-test damage to fender.

RECORDED BY: Mr. Brian O'Keefe DATE: 08/20/92

APPROVED BY: 9/1/92


Pretest and Posttest Exterior Profile
Level 2 - Occupant H-point - 27" Above Ground Level
Inches from Centerline
0
-10
-20
-30
-40
-50
-6
0
6
12
18
24
30
36
42
48
54
60
66
72
Front
Inches from Impact Point
Rear
Pretest
Posttest

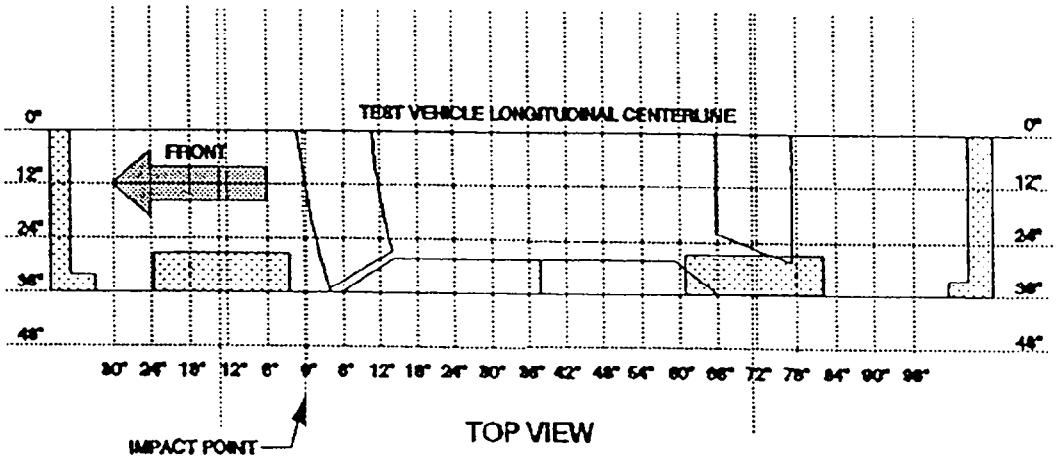
DATA SHEET NO. 6C

PRETEST AND POST TEST VEHICLE EXTERIOR PROFILES

VEH. MOD YR/MAKE/MODEL/BODY: 1989 FORD RANGER XLT PICKUP

VEH. NHTSA NO.: RK0600 VIN.: 1FTCR14T8KPA78517

TEST DATE: 08/19/92 TEST LAB.: MOBILITY SYSTEMS AND EQUIPMENT COMPANY



TOP VIEW

LEVEL 3 AT MID DOOR

29.3 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

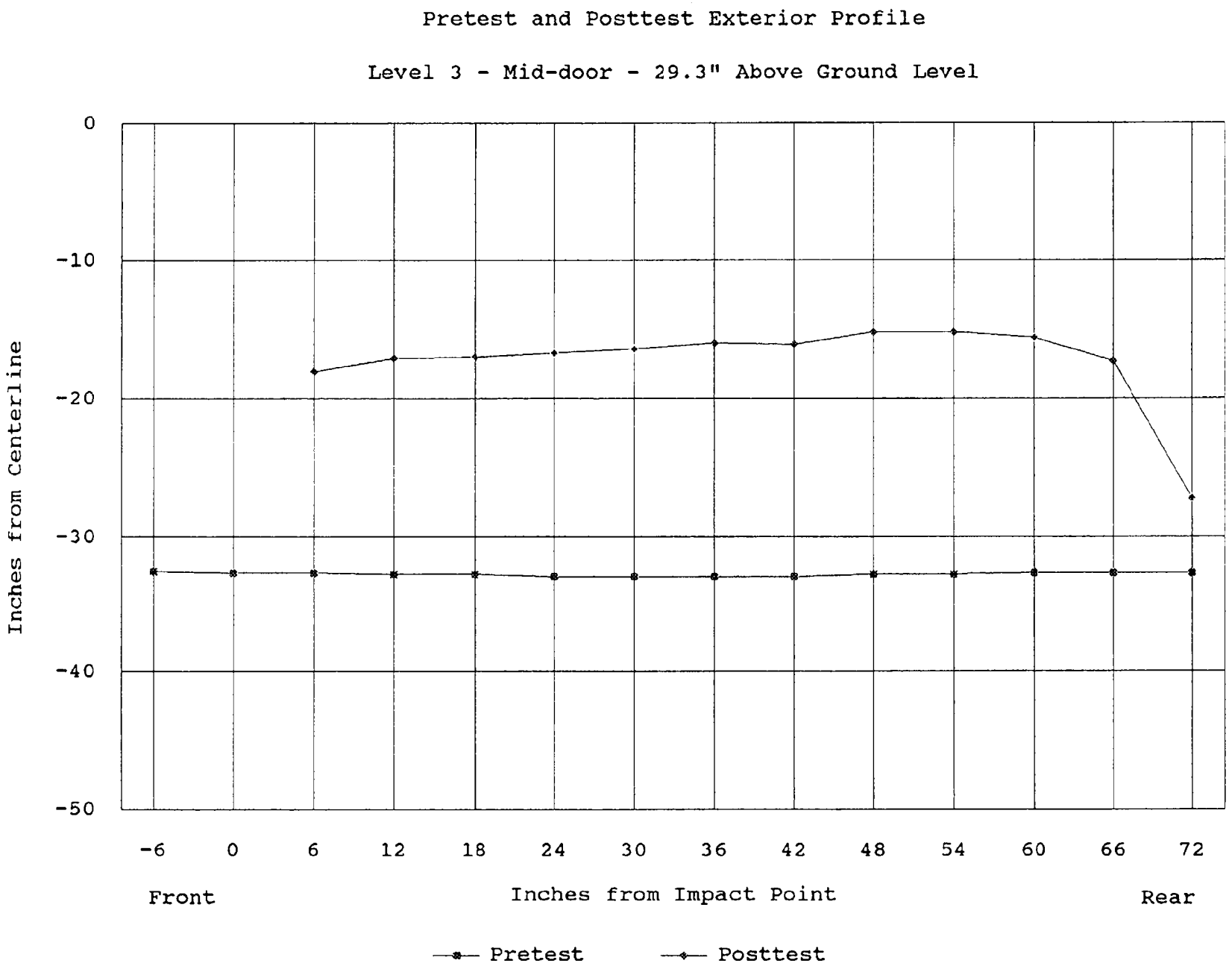
	POST TEST (inches)	PRETEST (inches)	STATIC CRUSH (inches)
-6inches	*	15.5	*
0 inch (impact point)	*	15.4	*
6 inches	29.9	15.4	14.5
12 inches	30.9	15.3	15.6
18 inches	31.0	15.3	15.7
24 inches	31.3	15.1	16.2
30 inches	31.6	15.1	16.5
36 inches	32.0	15.1	16.9
42 inches	31.9	15.1	16.8
48 inches	32.8	15.3	17.5
54 inches	32.8	15.3	17.5
60 inches	32.4	15.4	17.0
66 inches	30.7	15.4	15.3
72 inches	20.8	15.4	5.4

REMARKS:

* Measurement not possible due to post-test damage to fender.

RECORDED BY: Mr. Brain O'Keefe DATE: 08/20/92

APPROVED BY: 9/1/92


Pretest and Posttest Exterior Profile
Level 3 - Mid-door - 29.3" Above Ground Level
Inches from Centerline
0
-10
-20
-30
-40
-50
-6
0
6
12
18
24
30
36
42
48
54
60
66
72
Front
Inches from Impact Point
Rear
Pretest
Posttest

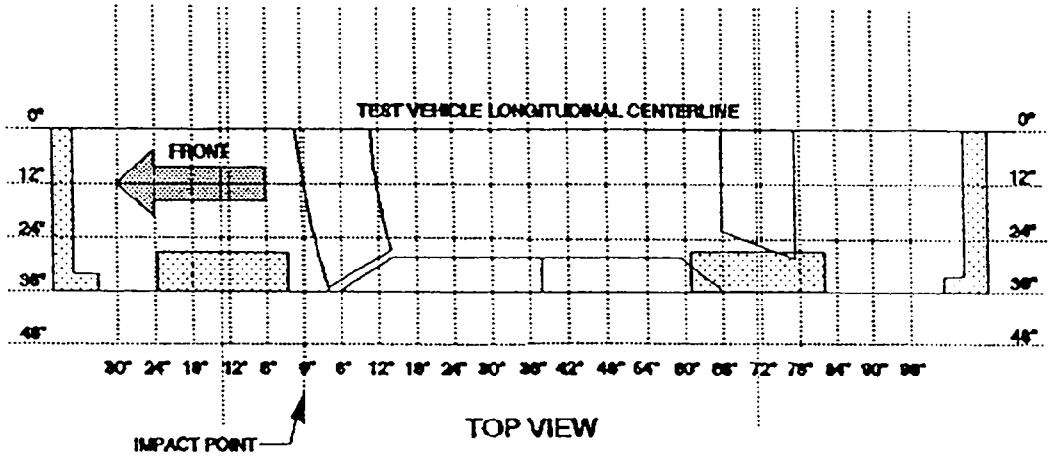
DATA SHEET NO. 6D

PRETEST AND POST TEST VEHICLE EXTERIOR PROFILES

VEH. MOD YR/MAKE/MODEL/BODY: 1989 FORD RANGER XLT PICKUP

VEH. NHTSA NO.: RK0600 VIN.: 1FTCR14T8KPA78517

TEST DATE: 08/19/92 TEST LAB.: MOBILITY SYSTEMS AND EQUIPMENT COMPANY



TOP VIEW

LEVEL 4 AT WINDOW SILL

42.3 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

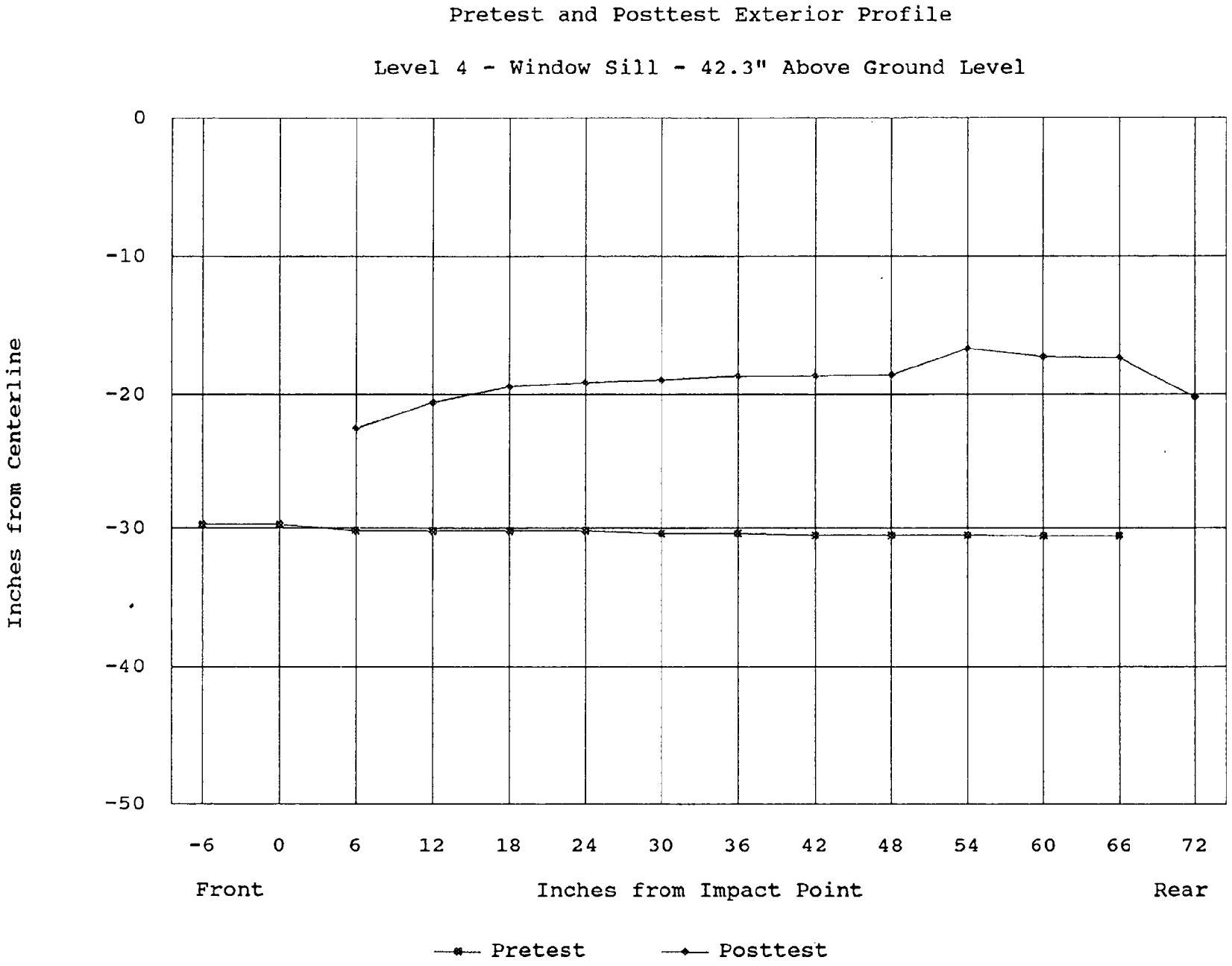
	POST TEST (inches)	PRETEST (inches)	STATIC CRUSH (inches)
-6inches	*	18.3	*
0 inch (impact point)	*	18.3	*
6 inches	25.5	17.8	7.7
12 inches	27.4	17.8	9.6
18 inches	28.6	17.8	10.8
24 inches	28.9	17.8	11.1
30 inches	29.1	17.6	11.5
36 inches	29.4	17.6	11.8
42 inches	29.5	17.5	12.0
48 inches	31.4	17.5	13.9
54 inches	30.8	17.5	13.3
60 inches	30.7	17.4	13.3
66 inches	27.8	17.4	10.4
72 inches	N/A	N/A	N/A

REMARKS:

* Measurement not possible due to post-test damage to fender.

RECORDED BY: Mr. Brian O'Keefe DATE: 08/20/92

APPROVED BY: _____ 9/1/92


Pretest and Posttest Exterior Profile
Level 4 - Window Sill - 42.3" Above Ground Level
Inches from Centerline
0
-10
-20
-30
-40
-50
-6
0
6
12
18
24
30
36
42
48
54
60
66
72
Front
Inches from Impact Point
Rear
Pretest
Posttest

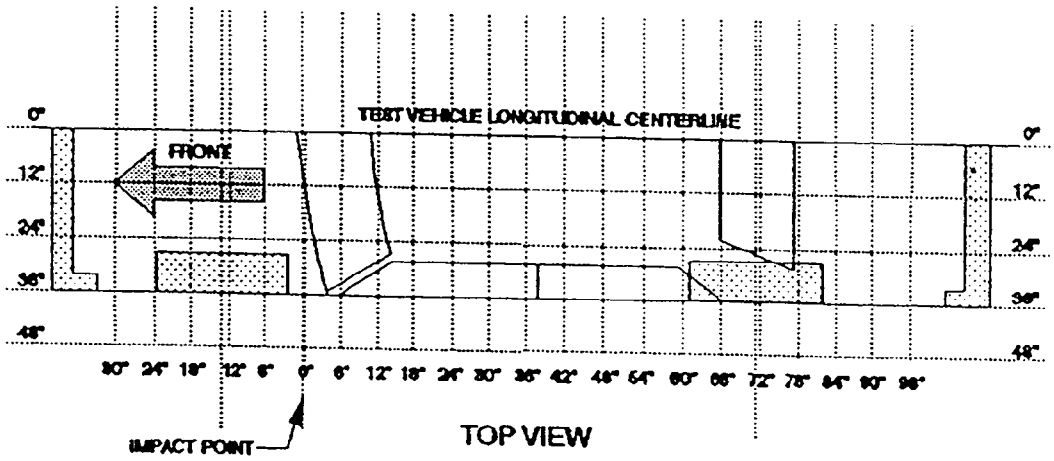
DATA SHEET NO. 6E

PRETEST AND POST TEST VEHICLE EXTERIOR PROFILES

VEH. MOD YR/MAKE/MODEL/BODY: 1989 FORD RANGER XLT PICKUP

VEH. NHTSA NO.: RK0600 VIN.: 1FTCR14T8KPA78517

TEST DATE: 08/19/92 TEST LAB.: MOBILITY SYSTEMS AND EQUIPEMENT COMPANY



LEVEL 5 AT WINDOW TOP

59.0 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

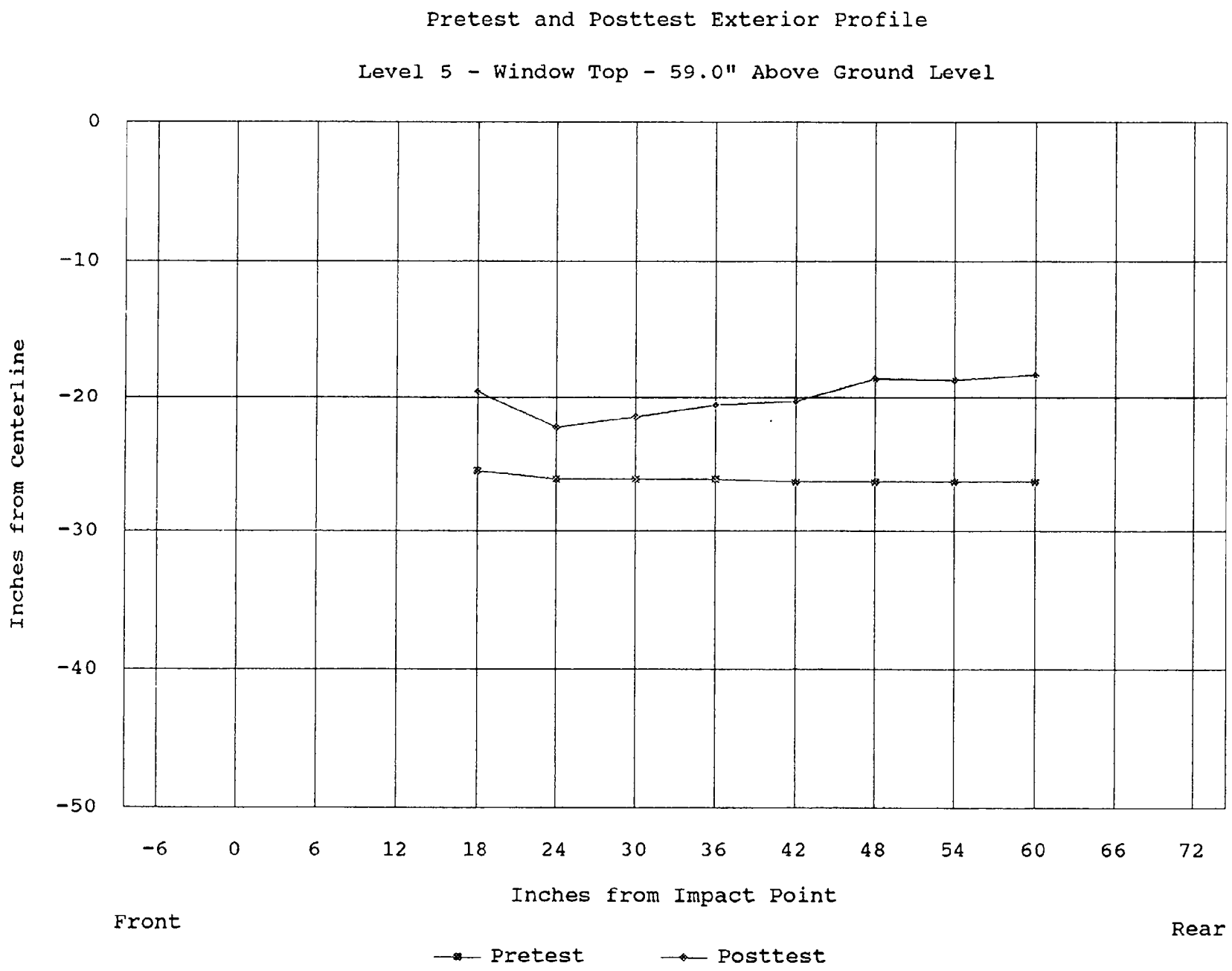
LEVEL 5 AT WINDOW TOP

	POST TEST (inches)	PRETEST (inches)	STATIC CRUSH (inches)
-6inches	N/A	N/A	N/A
0 inch (impact point)	N/A	N/A	N/A
6 inches	N/A	N/A	N/A
12 inches	N/A	N/A	N/A
18 inches	28.4	22.4	6.0
24 inches	25.7	21.8	3.9
30 inches	26.5	21.8	4.7
36 inches	27.4	21.8	5.6
42 inches	27.7	21.6	6.1
48 inches	29.4	21.6	7.8
54 inches	29.3	21.6	7.7
60 inches	29.7	21.6	8.1
66 inches	N/A	N/A	N/A
72 inches	N/A	N/A	N/A

REMARKS:

RECORDED BY: Mr. Brian O'Keefe DATE: 08/20/92

APPROVED BY: _____ 9/1/92


Pretest and Posttest Exterior Profile
Level 5 - Window Top - 59.0" Above Ground Level
0
-10
-20
-30
-40
-50
Inches from Centerline
-6
0
6
12
18
24
30
36
42
48
54
60
66
72
Inches from Impact Point
Front
Rear
Pretest
Posttest

DATA SHEET NO. 6F

SUMMARY OF VEHICLE EXTERIOR PROFILE STATIC CRUSH

VEH. MOD YR/MAKE/MODEL/BODY: 1989 FORD RANGER XLT PICKUP

VEH. NHTSA NO.: RK0600 VIN.: 1FTCR14T8KPA78517

TEST DATE: 08/19/92 TEST LAB.: MOBILITY SYSTEMS AND EQUIPMENT COMPANY

POSITION	LEVEL 1 (inches)	LEVEL 2 (inches)	LEVEL 3 (inches)	LEVEL 4 (inches)	LEVEL 5 (inches)
-6 inches	N/A	—	—	—	N/A
0 inch Impact Point	N/A	—	—	—	N/A
6 inches	7.3	14.4	14.5	7.7	N/A
12 inches	7.9	16.0	15.6	9.6	N/A
18 inches	8.3	16.3	15.7	10.8	6.0
24 inch	8.8	16.7	16.2	11.1	3.9
30 inches	9.2	17.0	16.5	11.5	4.7
36 inches	9.7	17.2	16.9	11.8	5.6
42 inches	10.1	17.4	16.8	12.0	6.1
48 inches	9.6	18.5	17.5	13.9	7.8
54 inches	9.1	17.9	17.5	13.3	7.7
60 inches	7.5	17.1	17.0	13.3	8.1
66 inches	6.6	16.0	15.3	10.4	N/A
72 inches	6.7	5.3	5.4	N/A	N/A

RECORDED BY: Mr. Brian O'Keefe DATE: 08/20/92

APPROVED BY: 9/1/92

DATA SHEET NO. 7

EXTERIOR STATIC CRUSH FOR SIDE IMPACTOR

VEH. MOD YR/MAKE/MODEL/BODY: 1989 FORD RANGER XLT PICKUP

VEH. NHTSA NO.: RK0600 VIN.: 1FTCR14T8KPA78517

TEST DATE: 08/19/92 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	2.9	0.4	1.1
28 inches	0.8	0.0	1.2
24 inches	0.0	-0.1	0.4
20 inches	0.0	-0.1	0.4
16 inches	0.2	-0.1	0.4
12 inches	-0.1	-0.1	0.4
8 inches	-0.1	-0.1	0.4
4 inches	-0.1	-0.1	0.4
0 inches	-0.2	-0.2	0.5

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	-0.2	-0.2	0.5
8 inches	-0.2	-0.2	0.5
12 inches	-0.2	-0.3	0.6
16 inches	-0.3	-0.3	0.8
20 inches	-0.3	-0.2	1.2
24 inches	0.1	0.1	2.0
28 inches	2.2	0.8	3.0
32 inches	4.3	1.8	4.0

* 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: 08/21/92

APPROVED BY: 9/1/92

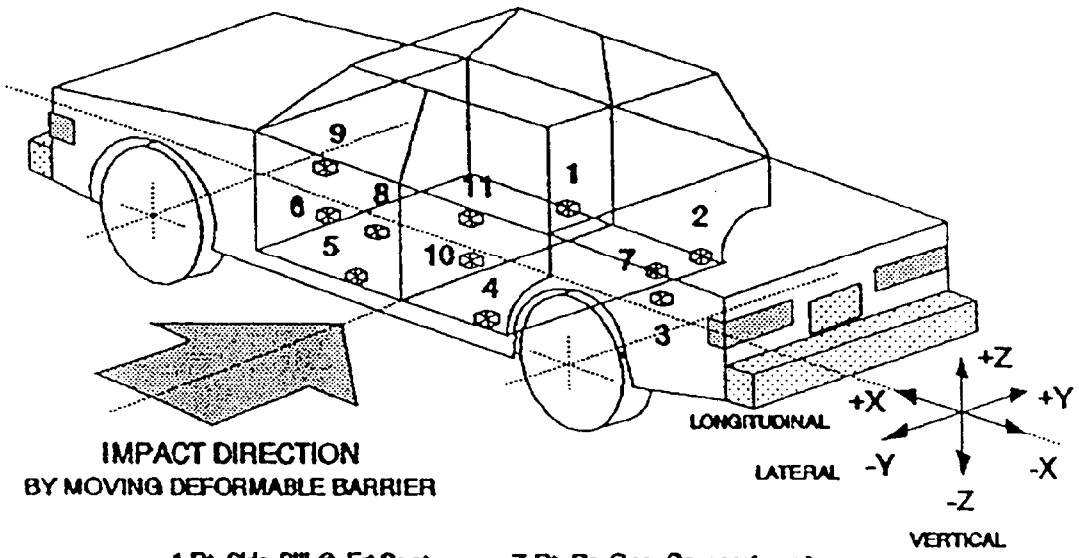
DATA SHEET NO. 8

TEST VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

VEH. MOD YR/MAKE/MODEL/BODY: 1989 FORD RANGER XLT PICKUP

VEH. NHTSA NO.: RK0600 VIN.: 1FTCR14T8KPA78517

TEST DATE: 08/19/92 TEST LAB.: MOBILITY SYSTEMS AND EQUIPMENT COMPANY



IMPACT DIRECTION
BY MOVING DEFORMABLE BARRIER

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 X (in.)	Y (in.)	Z (in.)	LONG.-X (+/-) MaxG	ms	LAT.-Y(+/-) MaxG	ms	VERT.-Z(+/-) MaxG	ms	RES.-R(+/-) MaxG	ms
1	130	19	16	-7.9	24.3	23.5	11.0	-10.1	32.2	18.5	37.6
2	—	—	—	—	—	—	—	—	—	—	—
3	42	0	27	-7.8	24.3	+17.1	27.4	-10.5	51.2	24.8	47.9
4	N/A	N/A	N/A	—	—	—	—	—	—	—	—
5	131	-25	16	—	—	36.6	6.3	—	—	—	—
6	120	-27	26	—	—	169.7	15.1	—	—	—	—

DATA SHEET NO. 8 (Cont.)

NO.	COORDINATES X (in.)	Y (in.)	Z (in.)	LONG.-X (+/-) MaxG	ms	LAT.-Y(+/-) MaxG	ms	VERT.-Z(+/-) MaxG	ms	RES.-R(+/-) MaxG	ms
7	N/A	N/A	N/A	---	--	—	—	---	--	---	--
8	104	-27	27	---	--	112.1	3.6	---	--	---	--
9	126	-27	40	---	--	56.5	8.1	---	--	---	--
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: Mr. Brian O'Keefe DATE: 08/21/92

APPROVED BY: _____ 9/1/92

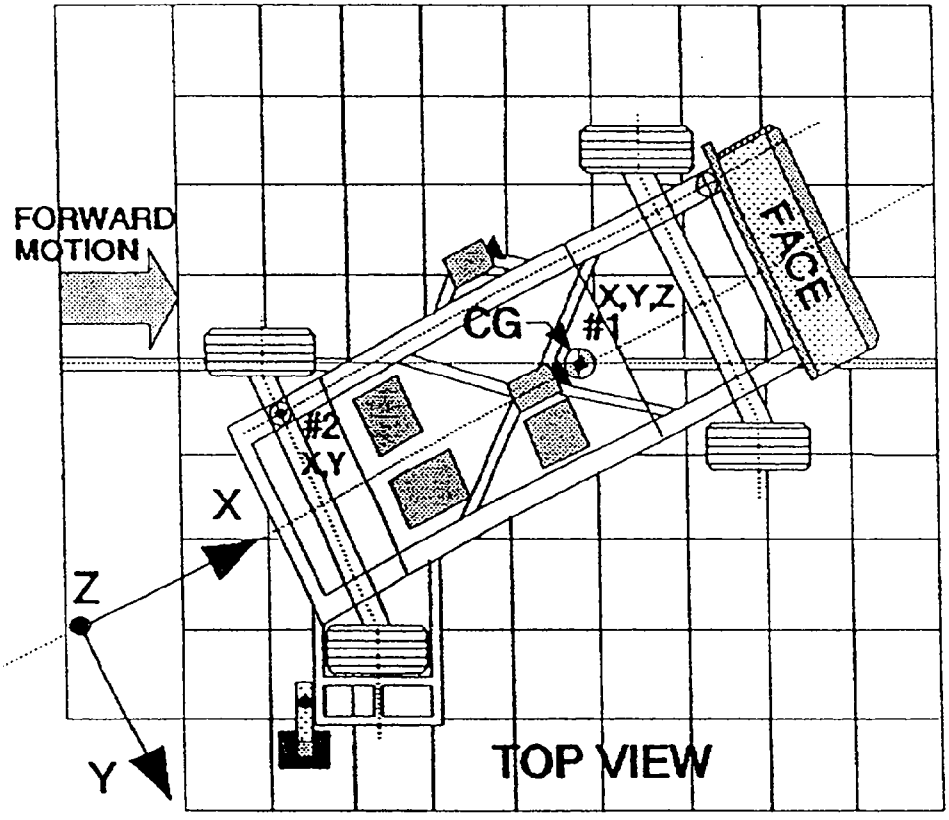
DATA SHEET NO. 9

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

VEH. MOD YR/MAKE/MODEL/BODY: 1989 FORD RANGER XLT PICKUP

VEH. NHTSA NO.: RK0600 VIN.: 1FTCR14T8KPA78517

TEST DATE: 08/19/92 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 X* (in.)	Y* (in.)	Z* (in.)	POS. DIRECTION MaxG	ms	NEG. DIRECTION MaxG	ms
1 Longitudinal X	73	0	12	3.3	159.3	13.1	49.0
1 Lateral Y	73	0	12	9.4	40.7	1.8	87.5
1 Vertical Z	73	0	12	23.5	64.6	23.2	55.6
1 Resultant R	73	0	12	24.8	47.9	—	—
2 Longitudinal X	12	-19	17	2.4	121.3	15.7	33.9
2 Lateral Y	12	-19	17	4.2	137.3	5.3	21.0

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

REMARKS:

RECORDED BY: Mr. Brian O'Keefe DATE: 08/21/92

APPROVED BY: 9/1/92

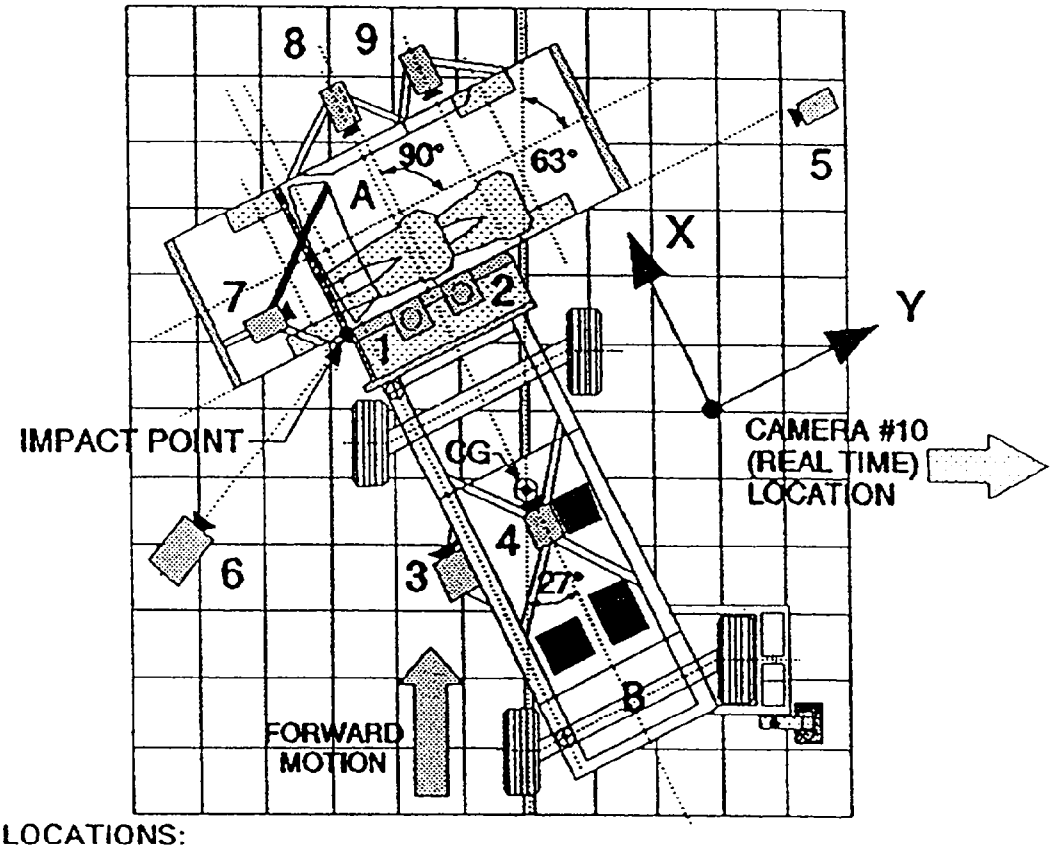
DATA SHEET NO. 10

HIGH SPEED CAMERA LOCATIONS AND DATA

VEH. MOD YR/MAKE/MODEL/BODY: 1989 FORD RANGER XLT PICKUP

VEH. NHTSA NO.: RK0600 VIN.: 1FTCR14T8KPA78517

TEST DATE: 08/19/92 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 (mm)	(fps)	COORDINATES X*	Y*	Z*
1	FASTAX II	16		12	12	236
2	FASTAX II	28		-12	12	236
3	HIMAC	28		-121	-37	50
4	HIMAC	16		-151	0	72
5	FASTAX II	16		-168	648	48
6	FASTAX II	28		-144	-576	48
7	FASTAX II	16		18	-48	53
8	FASTAX II	16		69	31	46
9	N/A	—		—	—	—
10	ARRIFLEX	15 - 70 ZOOM		—	—	—

* REFERENCE (from point of impact)
+X = Forward
+Y = To The Right
+Z = Upward

REMARKS:

RECORDED BY: MR. BRIAN O'KEEFE DATE: 9/1/92

APPROVED BY: [signature] 9/1/92

DATA SHEET NO. 11

TEST VEHICLE DATA

VEH. MOD YR/MAKE/MODEL/BODY: 1989 FORD RANGER XLT PICKUP

VEH. NHTSA NO.: RK0600 VIN.: 1FTCR14T8KPA8517

VEH. BUILD DATE: 02/89 TEST DATE: 08/19/92

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): 35 psi Front; 35 psi Rear

Recommended Tire Size: P215/70R14 SL

Size of Tires Installed on Test Vehicle: P215/70R14

Tire Manufacturer: Firestone (front), Cornell (rear)

Number of Occupants: 3 Front; 2 Rear; 5 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 = 994 lbs.; Left = 1006 lbs.; Front Total = 2000 lbs.

(58 % of TOTAL shown below)

Rear: Right = 738 lbs.; Left = 681 lbs.; Front Total = 1419 lbs.

(42 % of TOTAL shown below)

Front Total + Rear Total = TOTAL DELV. = 3419 lbs.

CALCULATION OF TEST VEHICLE TARGET WEIGHT:

Total Test Vehicle Delivered Weight With Maximum Fluids = 3419 lbs. (A)

Maximum Cargo Carry Capacity of Test Vehicle = 30 lbs. (B)

Weight of one Side Impact Dummy = 164 lbs. (C)

Test Vehicle Target Weight = 3883 (A + B + C)

ACTUAL WEIGHT OF TEST VEHICLE WITH TWO SIDs AND CARGO:

Front: Right = 1045 lbs.; Left = 1165 lbs.; Front Total = 2210 lbs.

(57 % of TOTAL shown below)

Rear: Right = 836 lbs.; Left = 815 lbs.; Front Total = 1651 lbs.

(43 % of TOTAL shown below)

Front Total + Rear Total = TOTAL ACTUAL = 3861 lbs. (which includes 200 lbs. of cargo ballast weight)

TEST VEHICLE ATTITUDE:

As Delivered	Ready For Test
28.0 inches Right Front	27.2 inches Right Front
27.8 inches Left Front	27.1 inches Left Front
28.3 inches Right Rear	27.7 inches Right Rear
28.3 inches Left Rear	27.1 inches Left Rear

DATA SHEET NO. 11 (Cont.)

Test Vehicle Wheelbase = 125.6 inches

C.G. = 53.7 inches Rearward of Front Wheel Centerline

Total Vehicle Length: 193.0 inches Right Side

193.0 inches Left Side

194.5 inches Centerline

Arm Rest Location: Driver's side of split bench seat.

Seat Belt Upper Anchorage Location: Upper anchorage bolt is on the center of the B-pillar, 21.5 inches above the B-post striker.

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

Total Length of Seat Adjustment Travel = 6 inches

Total Number of Seat Adjustment Positions or Detents = 11

Front Seat Back Adjustment Position: 25^{0}

Front Seat Back Torso Angle = 25 degrees

Front Seat Cushion Vertical Position: full down

DATA SHEET NO. 11 (Cont.)

ADJUSTABLE STEERING COLUMN POSITION: N/A
(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: 19.5 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 = 125.6 inches

Impact Point is 200 inches rearward of front axle centerline.

REMARKS: Actual impact point is 19.6 inches rearward of front axle centerline.

RECORDED BY: Mr. Brian O'Keefe DATE: 08/20/92

SECTION 4

TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

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

Instrumentation Information

Inst. Group ID: 5 VEHNO: 2 CURNO: 1
SENTYP: AC SENLOC: 01 SENATT: HDCG
AXIS: XL UNITS: G'S PREFIL: 1650
INSMAN: MFG: ENDEVCO, MODEL: 7264-200, S/N: BJ27H
CALDAT: 26/MAR/92 INSRAT: 200 CHLMAX: 11 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM: NO COMMENT

Instrumentation Information

Inst. Group ID: 5 VEHNO: 2 CURNO: 2
SENTYP: AC SENLOC: 01 SENATT: HDCG
AXIS: YL UNITS: G'S PREFIL: 1650
INSMAN: MFG: ENDEVCO, MODEL: 7264-200, S/N: BG78H
CALDAT: 26/MAR/92 INSRAT: 200 CHLMAX: 65 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM: NO COMMENT

Instrumentation Information

Inst. Group ID: 5 VEHNO: 2 CURNO: 3
SENTYP: AC SENLOC: 01 SENATT: HDCG
AXIS: ZL UNITS: G'S PREFIL: 1650
INSMAN: MFG: ENDEVCO, MODEL: 7264-200, S/N: AR39
CALDAT: 26/MAR/92 INSRAT: 200 CHLMAX: 14 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM: NO COMMENT

Instrumentation Information

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

Instrumentation Information

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

Instrumentation Information

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

Instrumentation Information

Inst. Group ID: 5	VEHNO: 2	CURNO: 7	
SENTYP: AC	SENLOC: 01	SENATT: RBLU	
AXIS: YL	UNITS: G'S	PREFIL: 1650	
INSMAN: MFG: ENDEVCO, MODEL: 7264-2000, S/N:BE33J			
CALDAT: 02/JAN/92	INSRAT: 2000	CHLMAX: 6	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 2	CURNO: 8	
SENTYP: AC	SENLOC: 01	SENATT: RBLL	
AXIS: YL	UNITS: G'S	PREFIL: 1650	
INSMAN: MFG: ENDEVCO, MODEL: 7264-2000, S/N:BY89H			
CALDAT: 02/JAN/92	INSRAT: 2000	CHLMAX: 6	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 2	CURNO: 9	
SENTYP: AC	SENLOC: 01	SENATT: RBLL	
AXIS: YL	UNITS: G'S	PREFIL: 1650	
INSMAN: MFG: ENDEVCO, MODEL: 7264-2000, S/N: BL93H			
CALDAT: 02/JAN/92	INSRAT: 2000	CHLMAX: 6	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 2	CURNO: 10	
SENTYP: AC	SENLOC: 01	SENATT: SPNL	
AXIS: YL	UNITS: G'S	PREFIL: 1650	
INSMAN: MFG: ENDEVCO, MODEL: 7264-2000, S/N: BH50J			
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: 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: 9 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: 32 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: 32 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: 23 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: 42 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: 44 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: 27 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: 28 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: 49 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: 104 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: AM
INSCOM: NO COMMENT

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: 222 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: CF
INSCOM: CHANNEL FAILED AT 23.9 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: 123 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: 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: 18 INIVEL: 29.4
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: 11 INIVEL: 15.0
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: 24 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: 39 INIVEL: 29.4
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: 29 INIVEL: 15.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM: NO COMMENT

SECTION 5

PHOTOGRAPHS

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

1. Pretest Frontal View of Test Vehicle (Target Vehicle)
2. Posttest Frontal View of Test Vehicle
3. Pretest Rear View of Test Vehicle
4. Posttest Rear View of Test Vehicle
5. Pretest Struck Side View of Test Vehicle
6. Posttest Struck Side View of Test Vehicle
7. Pretest Frontal View of MDB Impact Face
8. Posttest Frontal View of MDB Impact Face
9. Pretest Left Side view of MDB Impact Face
10. Posttest Left Side View of MDB Impact Face
11. Pretest Right Side View of MDB Impact Face
12. Posttest Right Side View of MDB Impact Face
13. Pretest Top View of MDB Impact Face
14. Posttest Top View of MDB Impact Face
15. Pretest Overhead View of MDB Positioned Against Struck Side of Test Vehicle at Impact Locations
16. Posttest Overhead View of MDB Positioned Against Struck Side of Test Vehicle at Impact Locaions
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. Manufacturer's Certification and Tire Placard 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

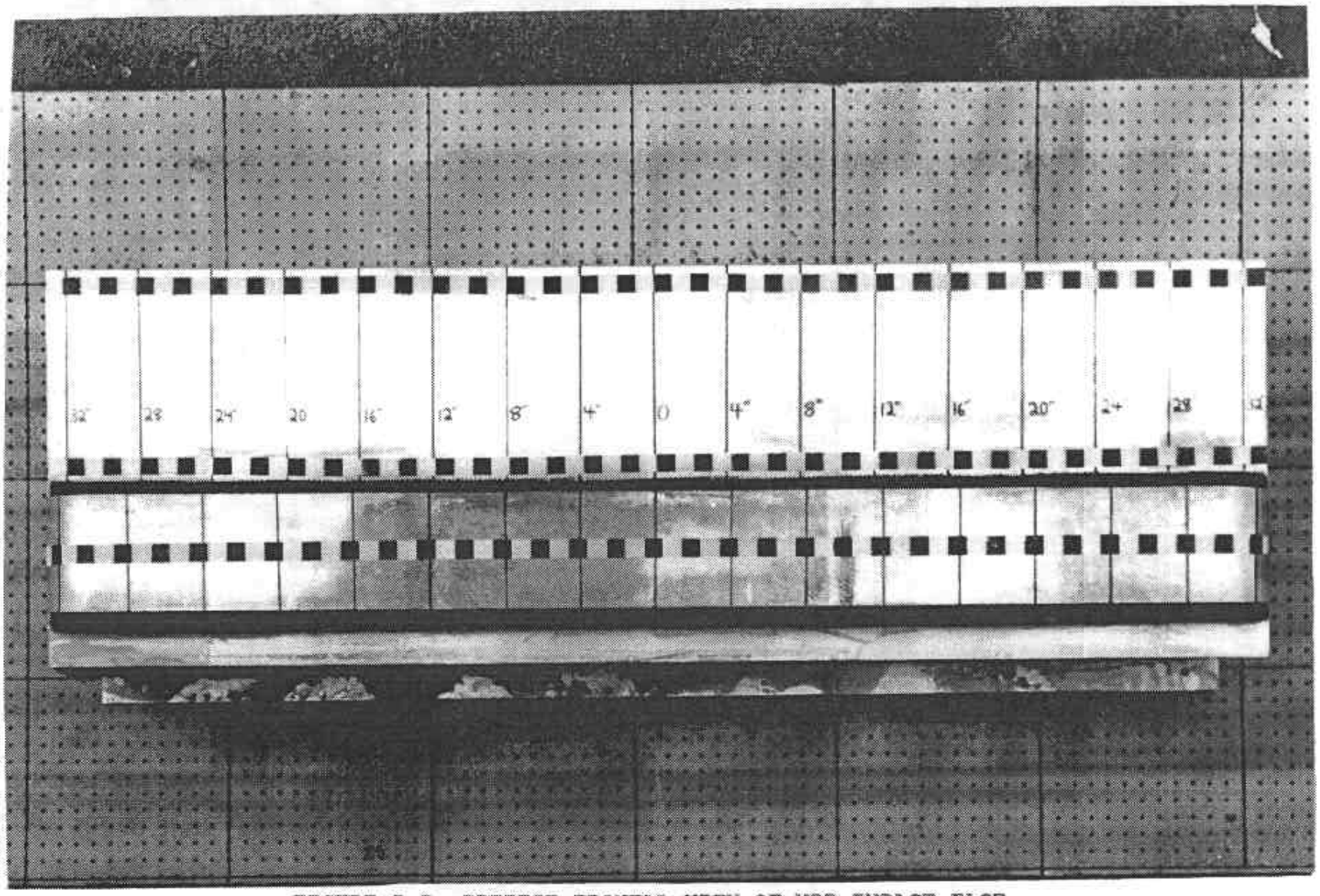


FIGURE 5-7 PRETEST FRONTAL VIEW OF MDB IMPACT FACE

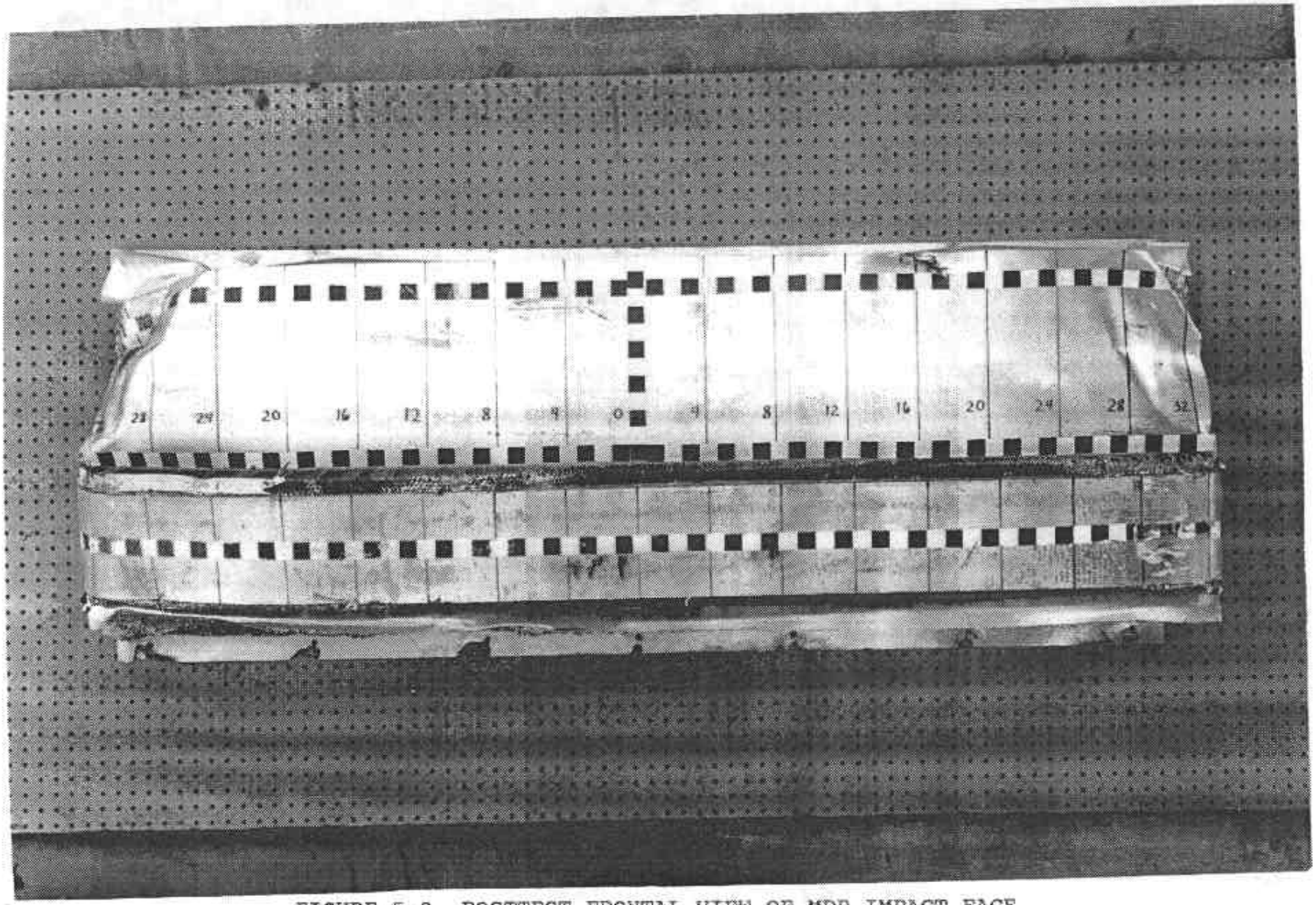


FIGURE 5-8 POSTTEST FRONTAL VIEW OF MDB IMPACT FACE

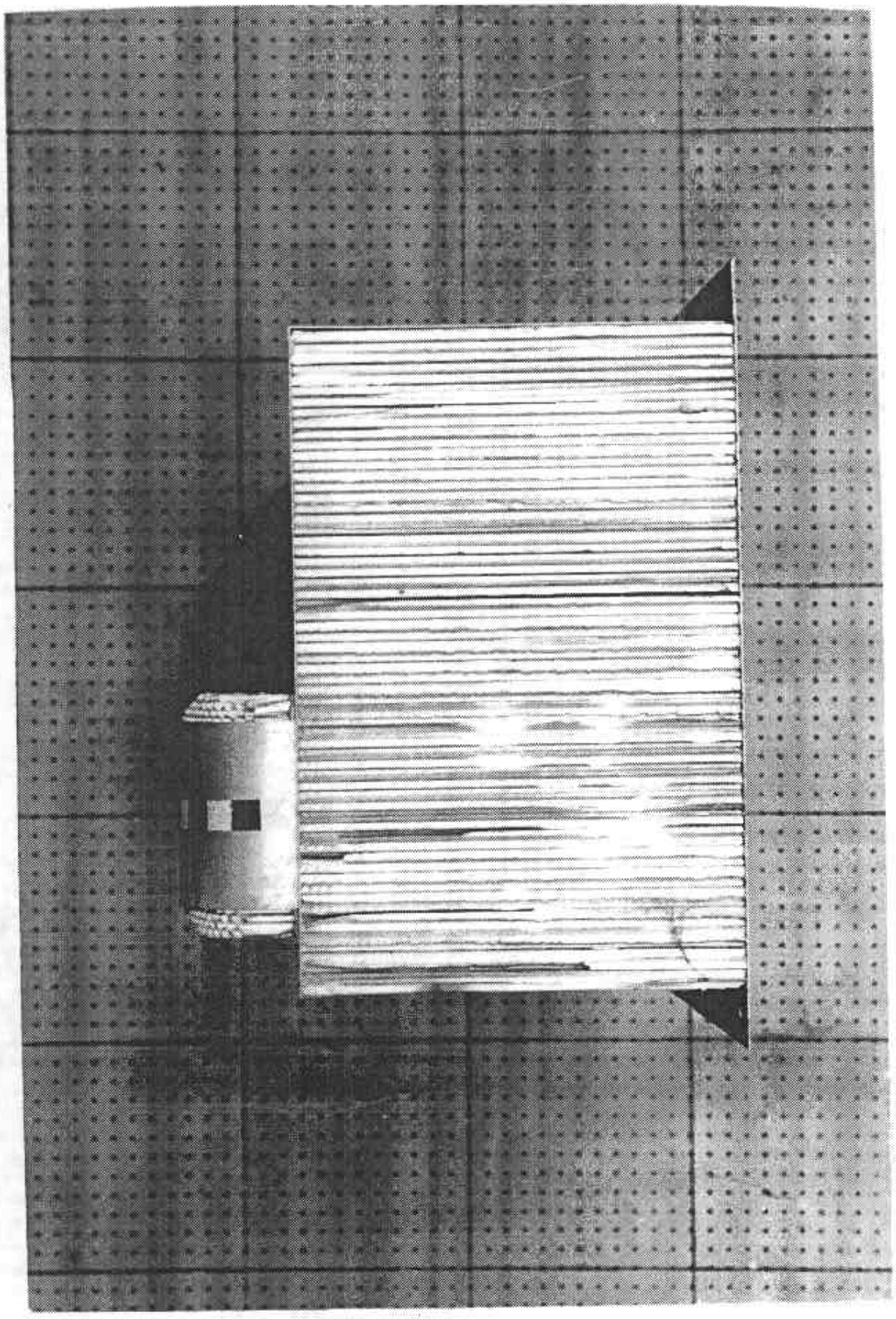


FIGURE 5-9 PRETEST LEFT SIDE VIEW OF MDB IMPACT FACE

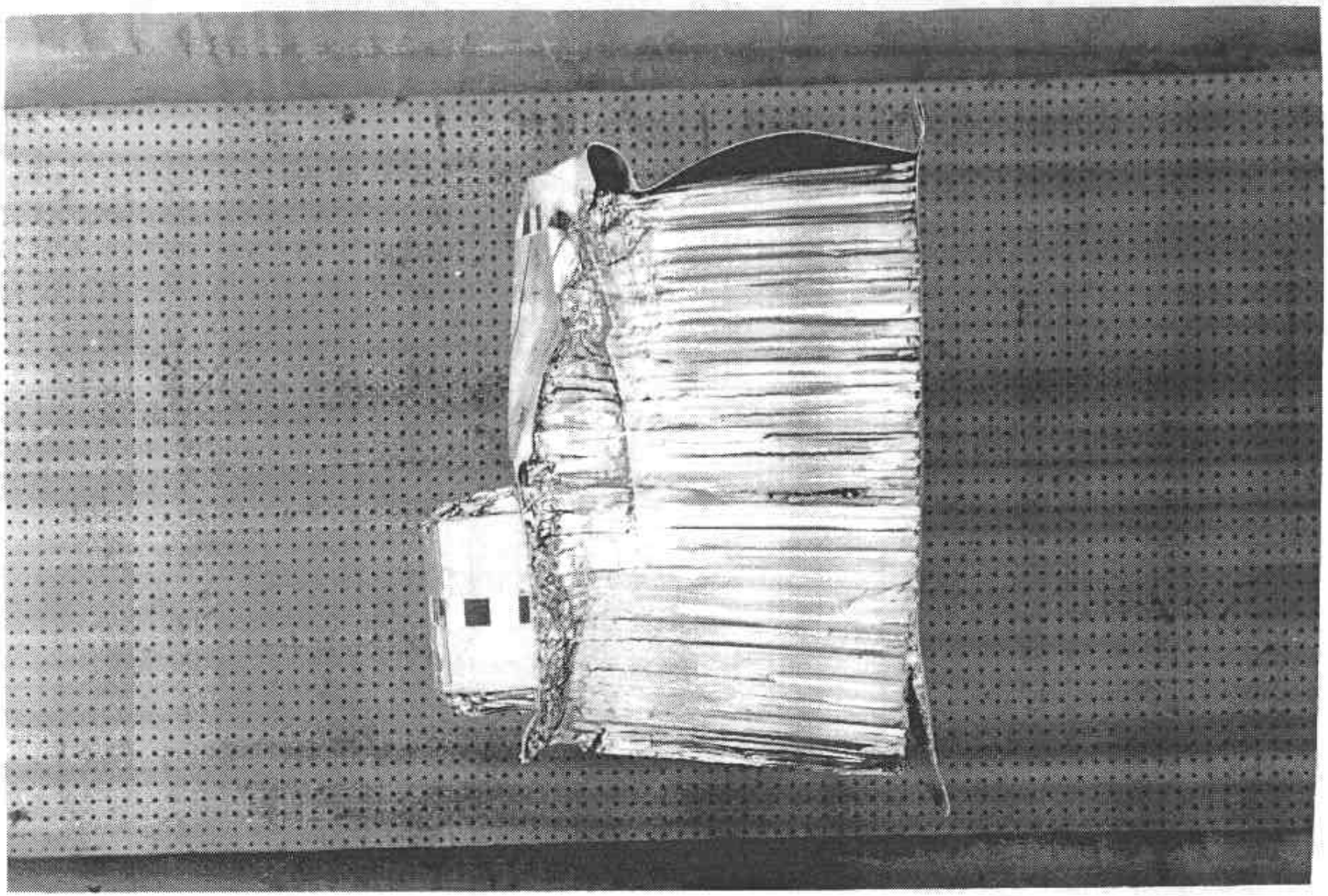


FIGURE 5-10 POSTTEST LEFT SIDE VIEW OF MDB IMPACT FACE

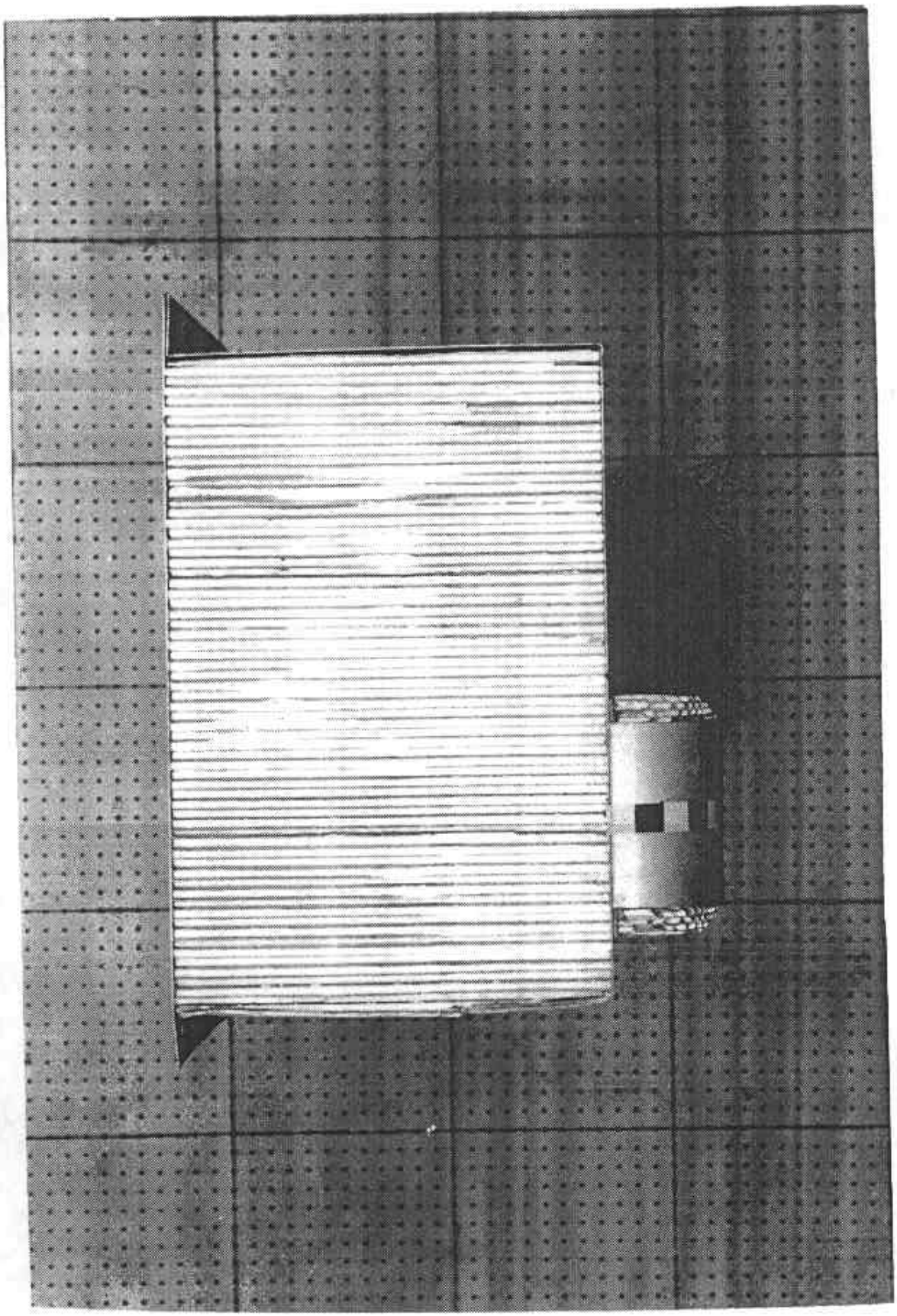


FIGURE 5-11 PRETEST RIGHT SIDE VIEW OF MDB IMPACT FACE

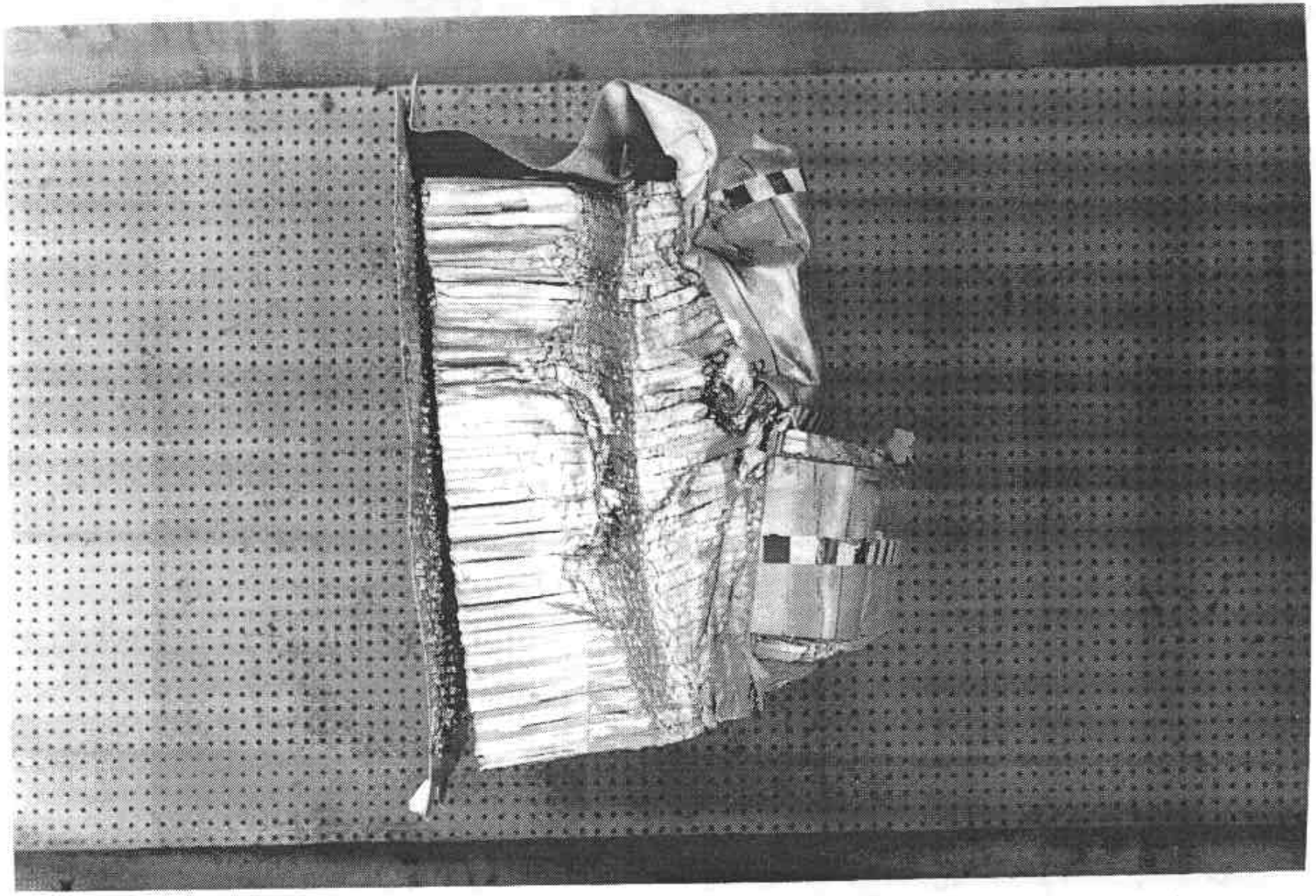


FIGURE 5-12 POSTTEST RIGHT SIDE VIEW OF MDB IMPACT FACE

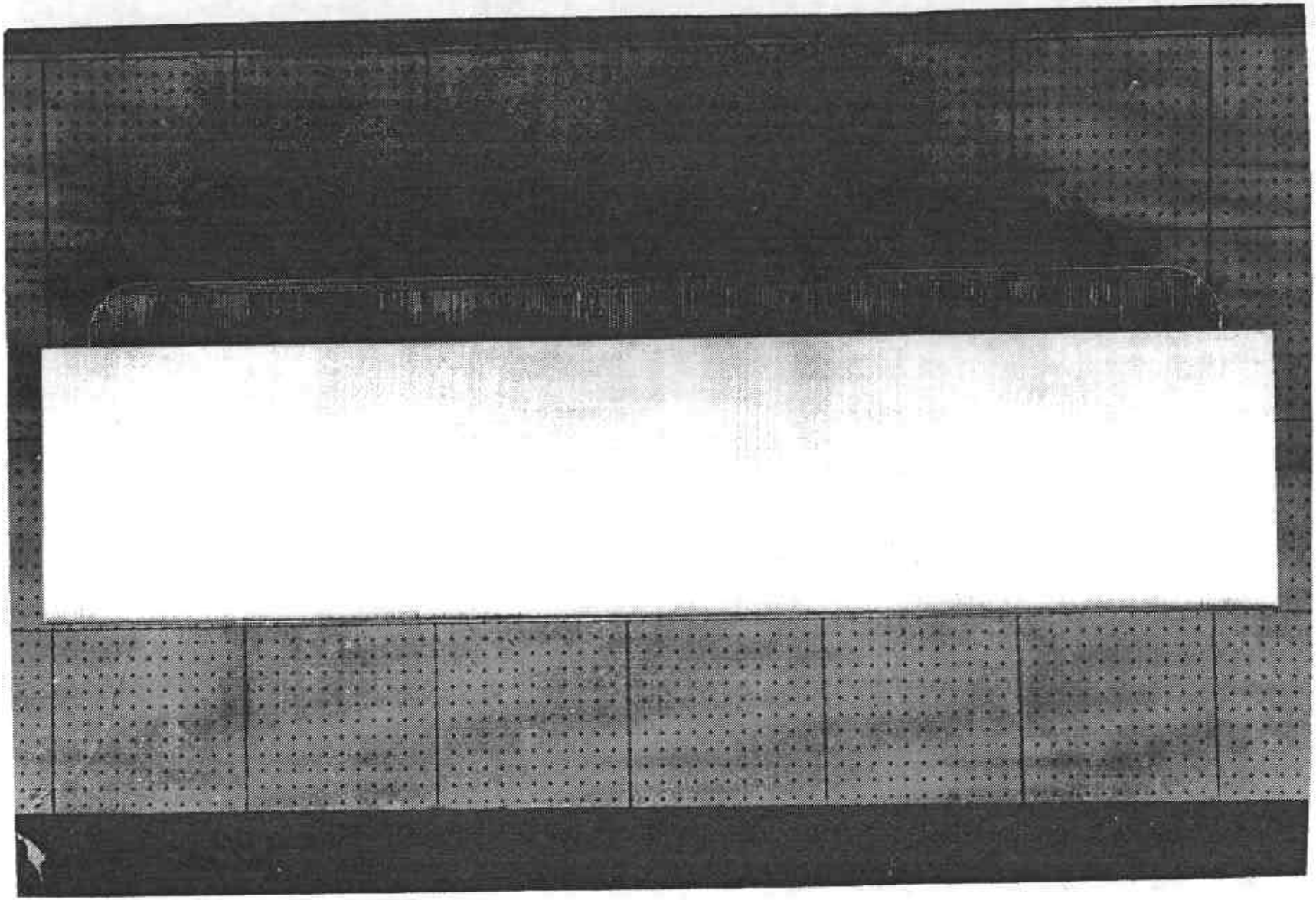


FIGURE 5-13 PRETEST TOP VIEW OF MDB IMPACT FACE

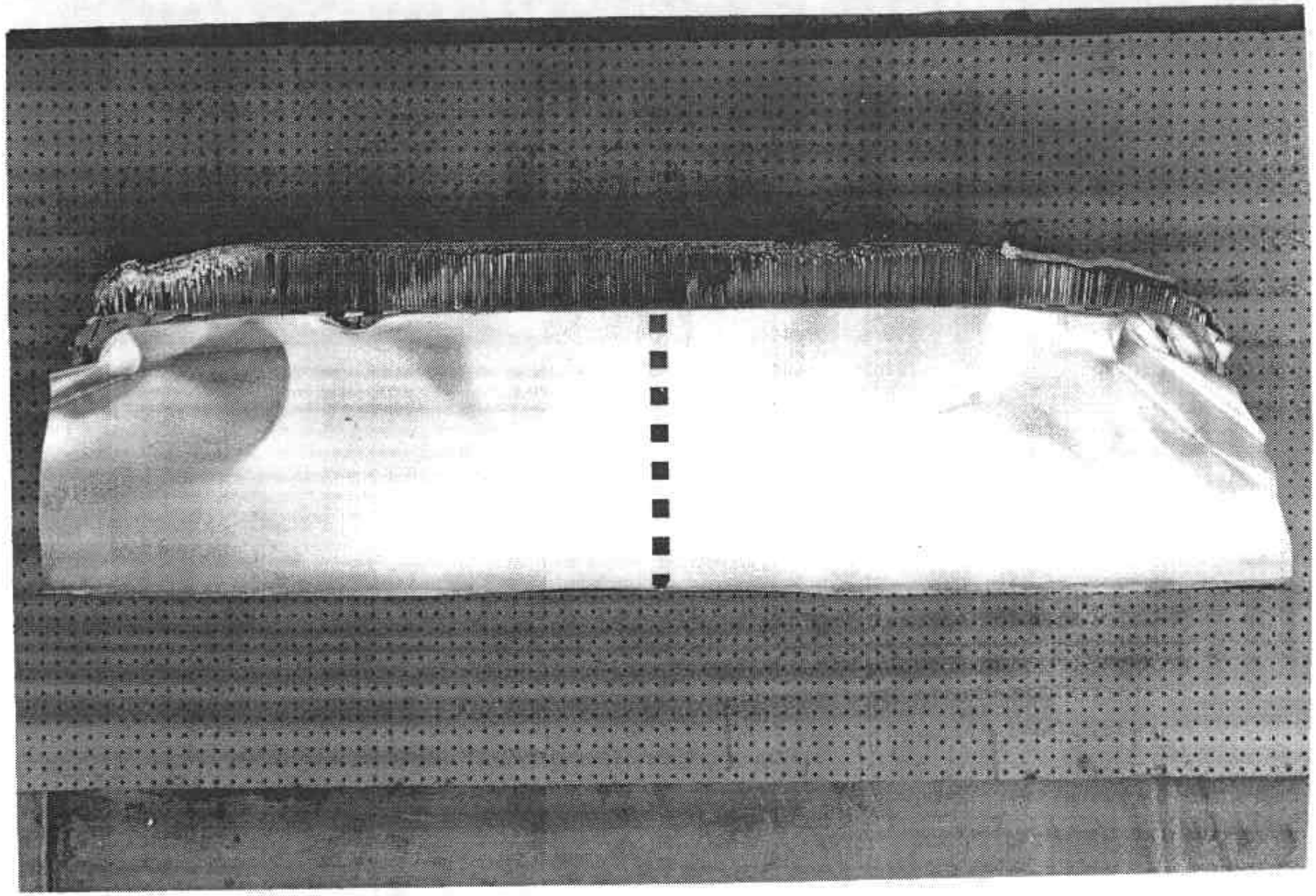


FIGURE 5-14 POSTTEST TOP VIEW OF MDB IMPACT FACE

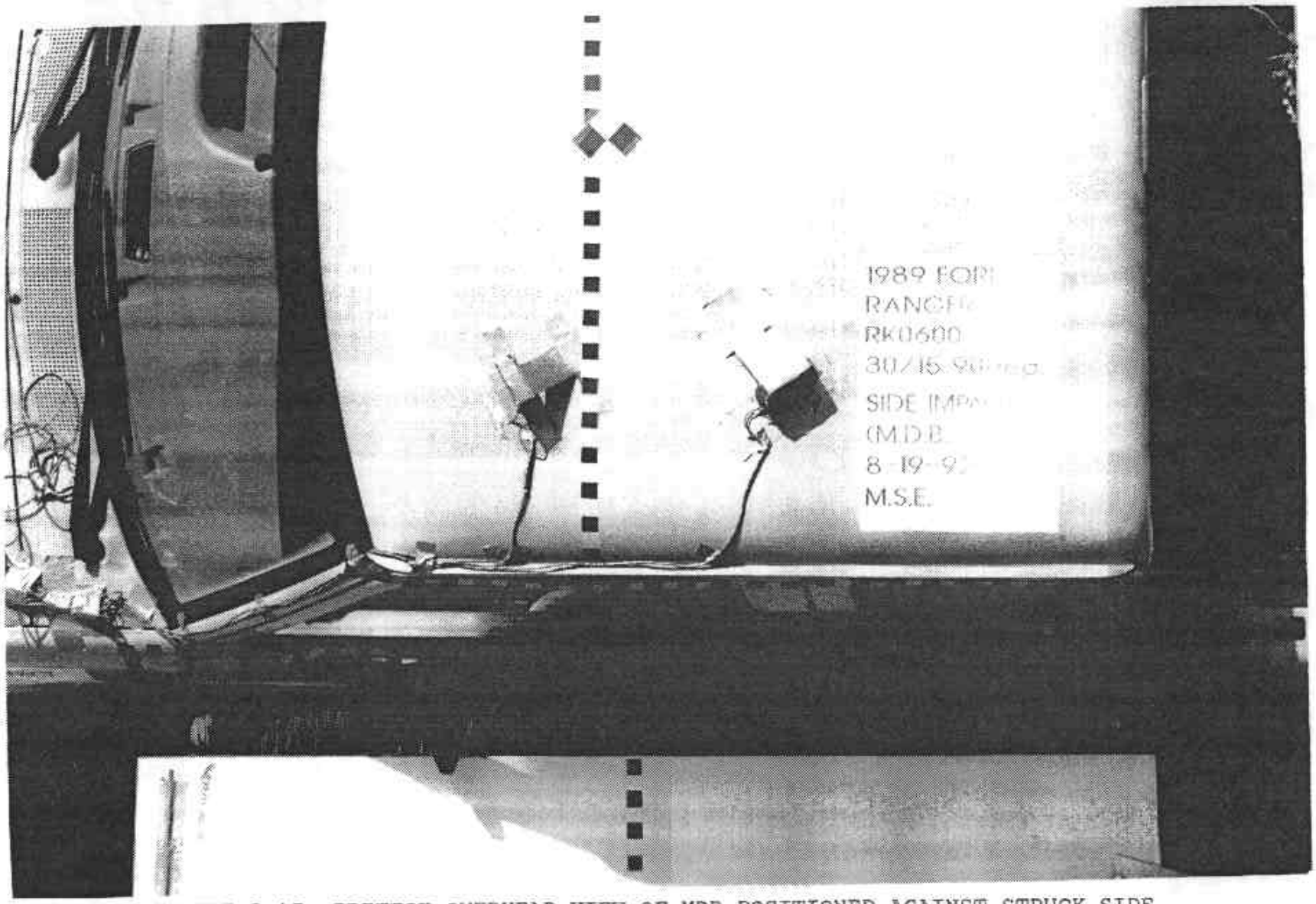


FIGURE 5-15 PRETEST OVERHEAD VIEW OF MDB POSITIONED AGAINST STRUCK SIDE OF TEST VEHICLE AT IMPACT LOCATION

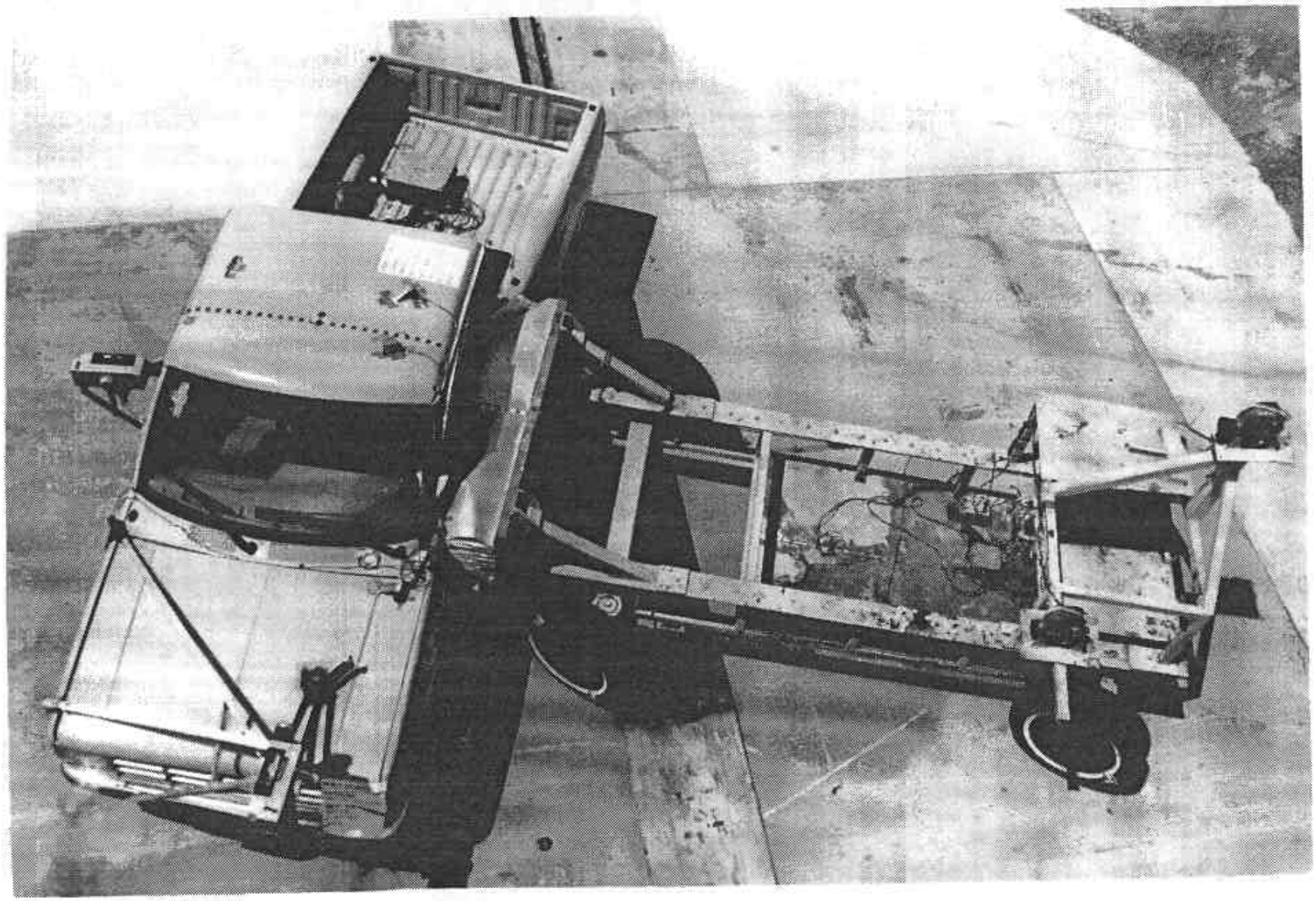


FIGURE 5-16 POSTTEST OVERHEAD VIEW OF MDB POSITIONED AGAINST STRUCK SIDE OF TEST VEHICLE AT IMPACT LOCATION

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

FIGURE 5-18 PRETEST OCCUPANT COMPARTMENT DRIVER SID

FIGURE 5-19 POSTTEST OCCUPANT COMPARTMENT DRIVER SID

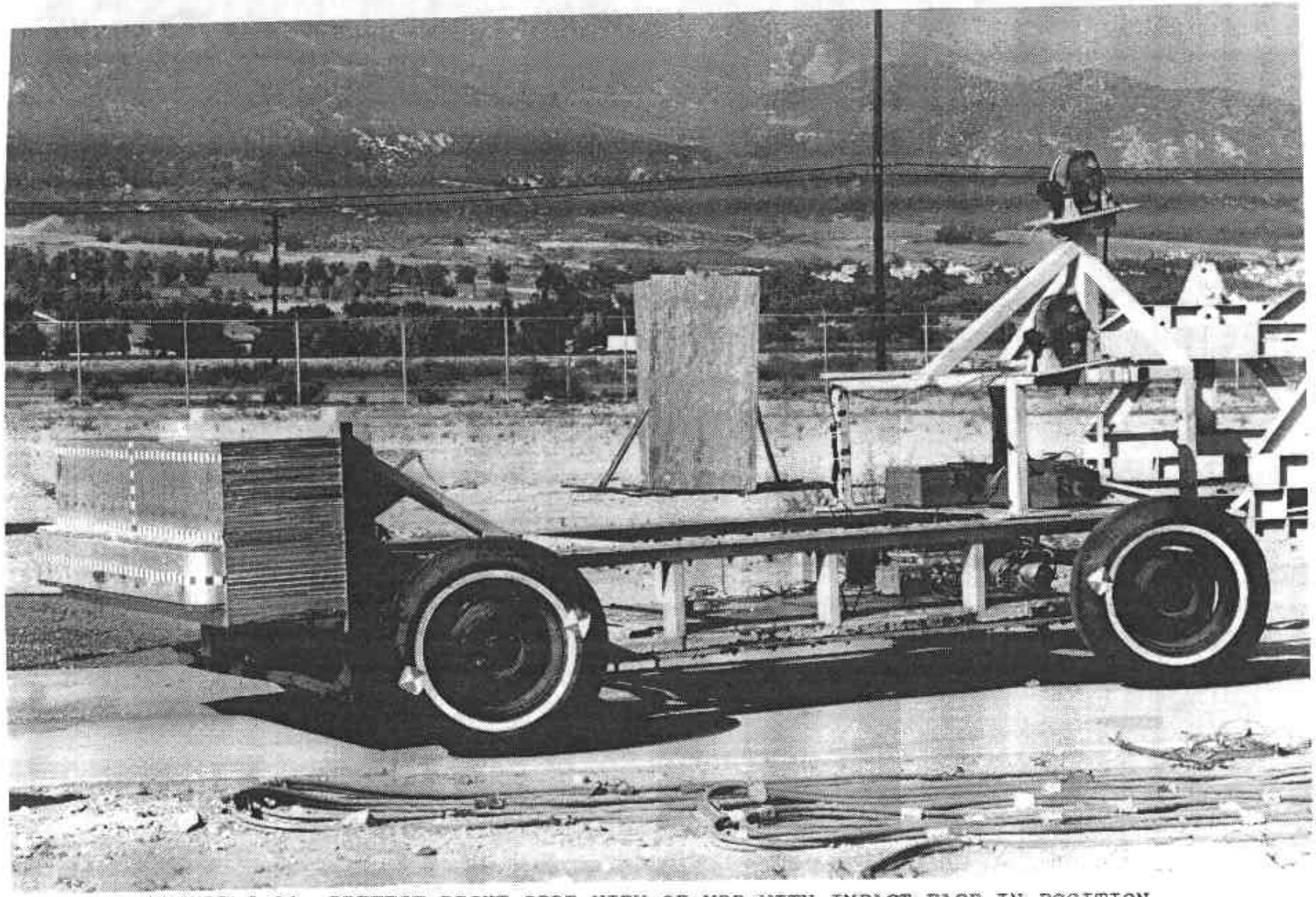


FIGURE 5-20 PRETEST RIGHT SIDE VIEW OF MDB WITH IMPACT FACE IN POSITION

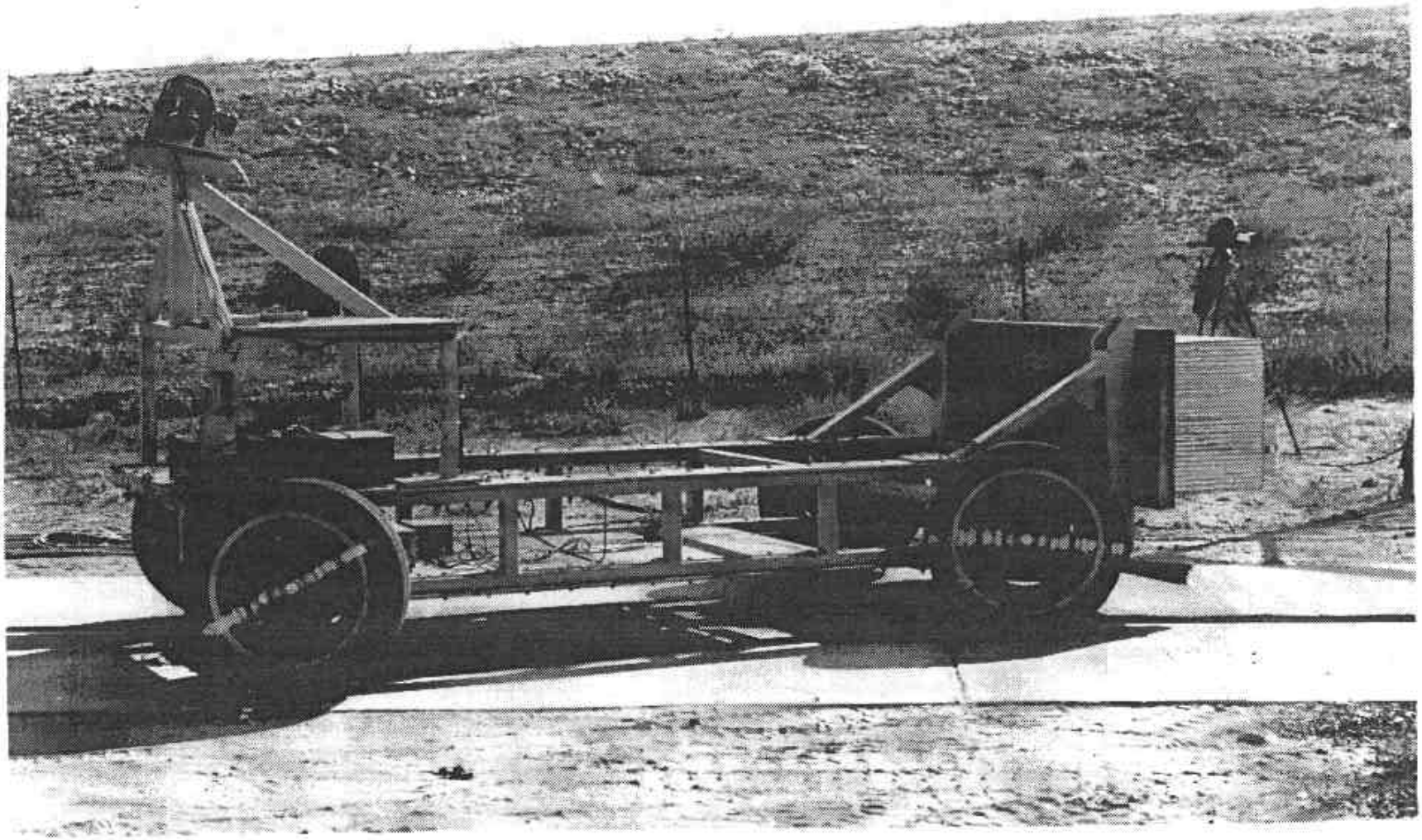


FIGURE 5-21 PRETEST LEFT SIDE VIEW OF MDB WITH IMPACT FACE IN POSITION

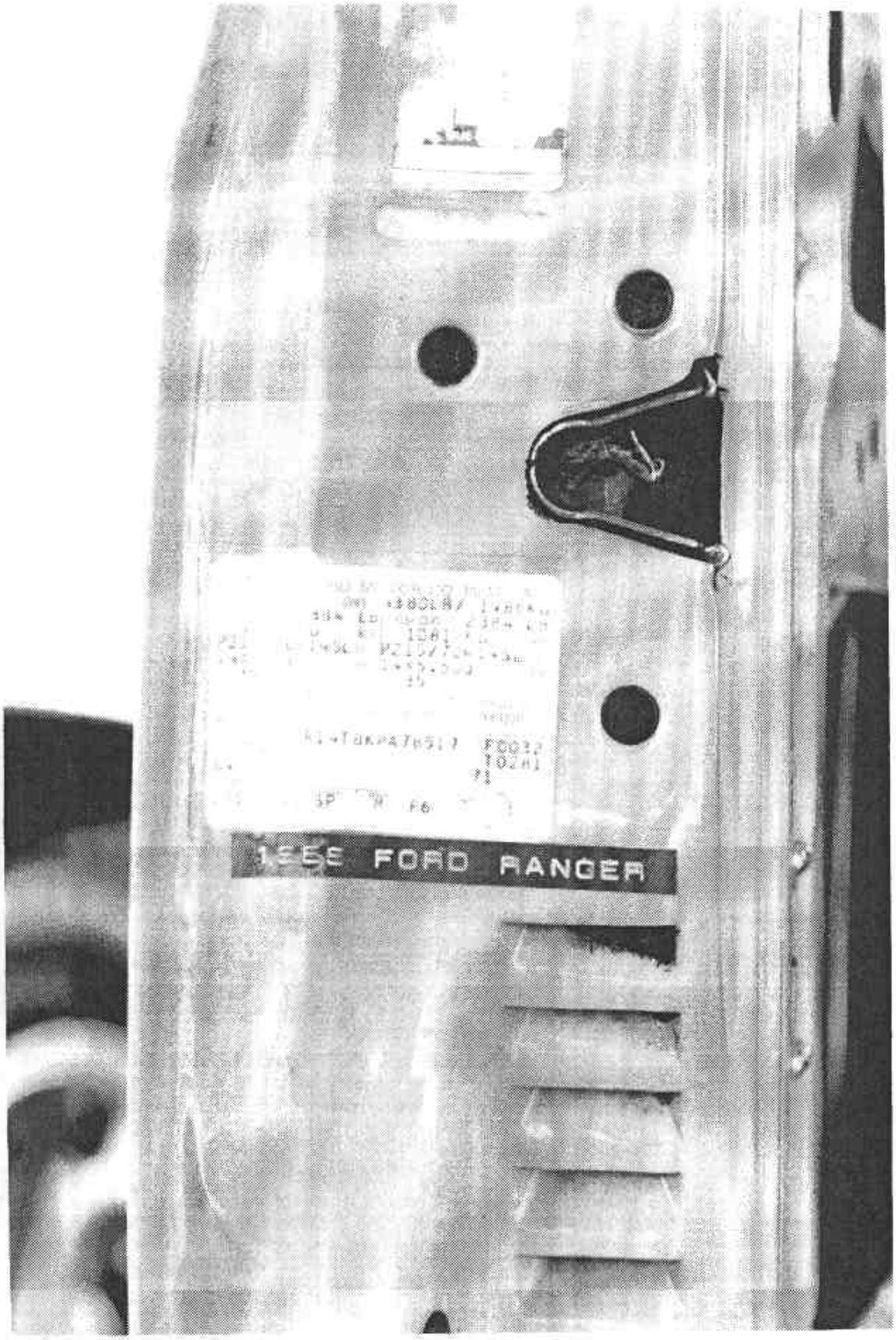


FIGURE 5-22 MANUFACTURER'S CERTIFICATION AND TIRE PLACARD LABEL

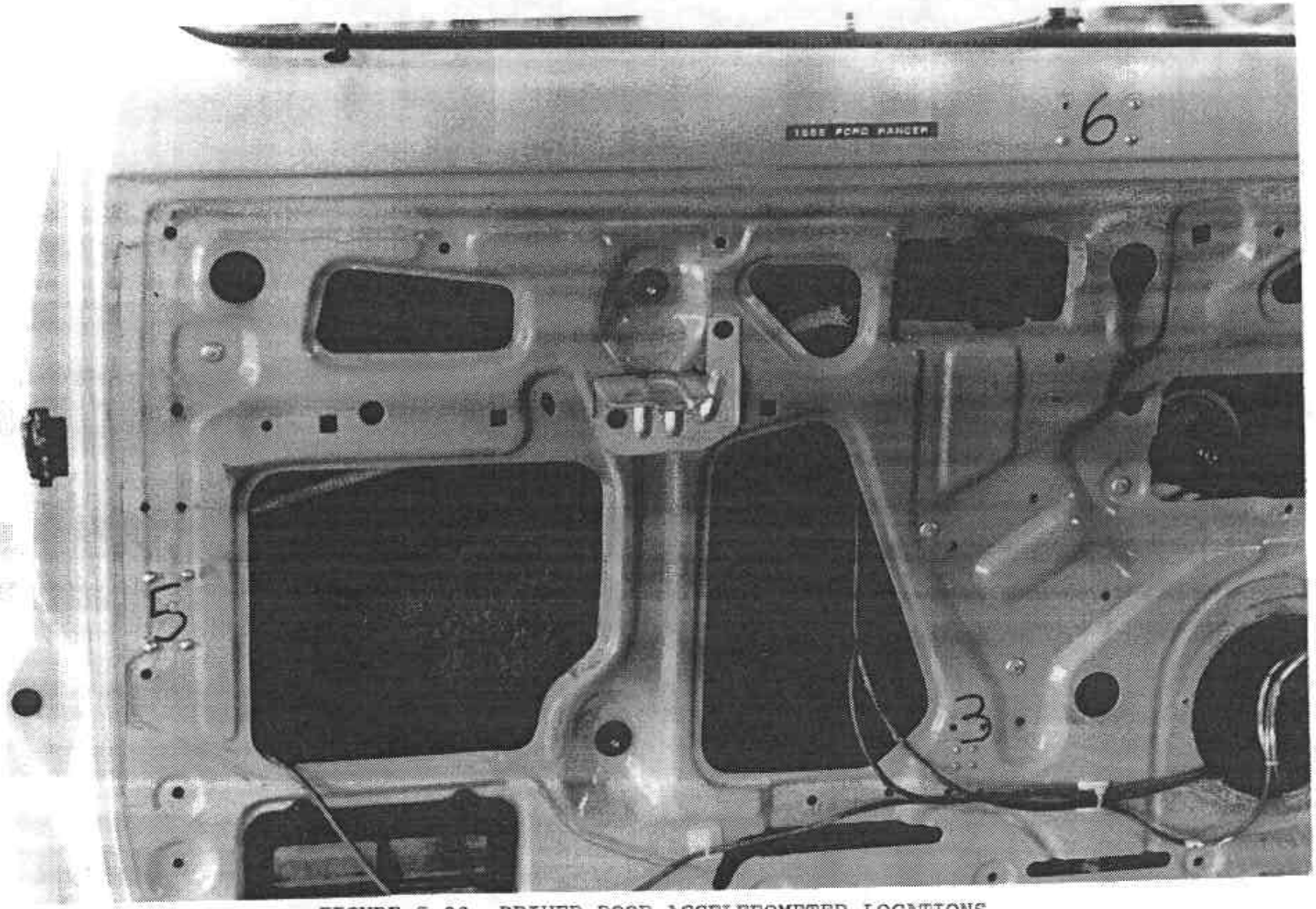


FIGURE 5-23 DRIVER DOOR ACCELEROMETER LOCATIONS

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

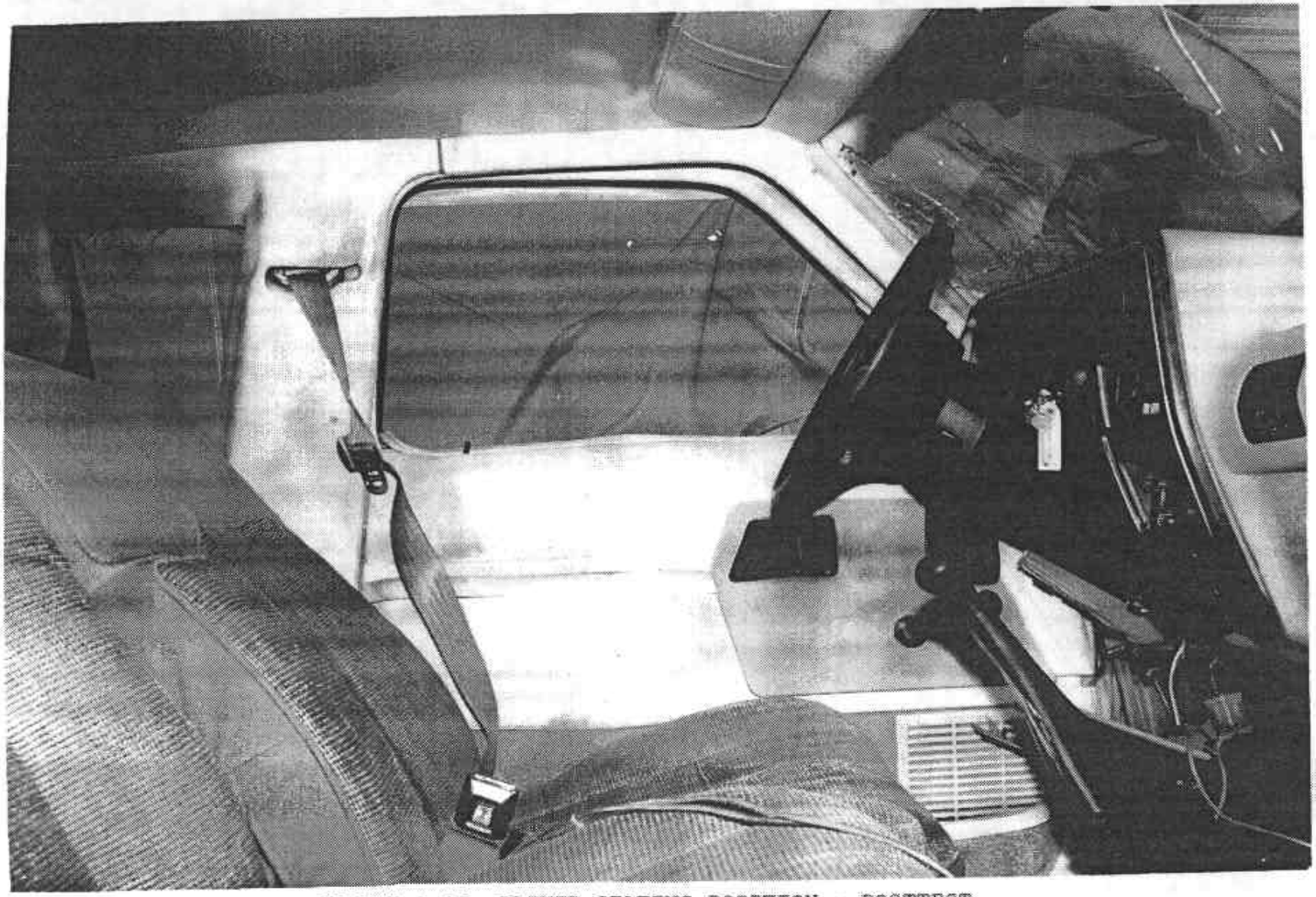


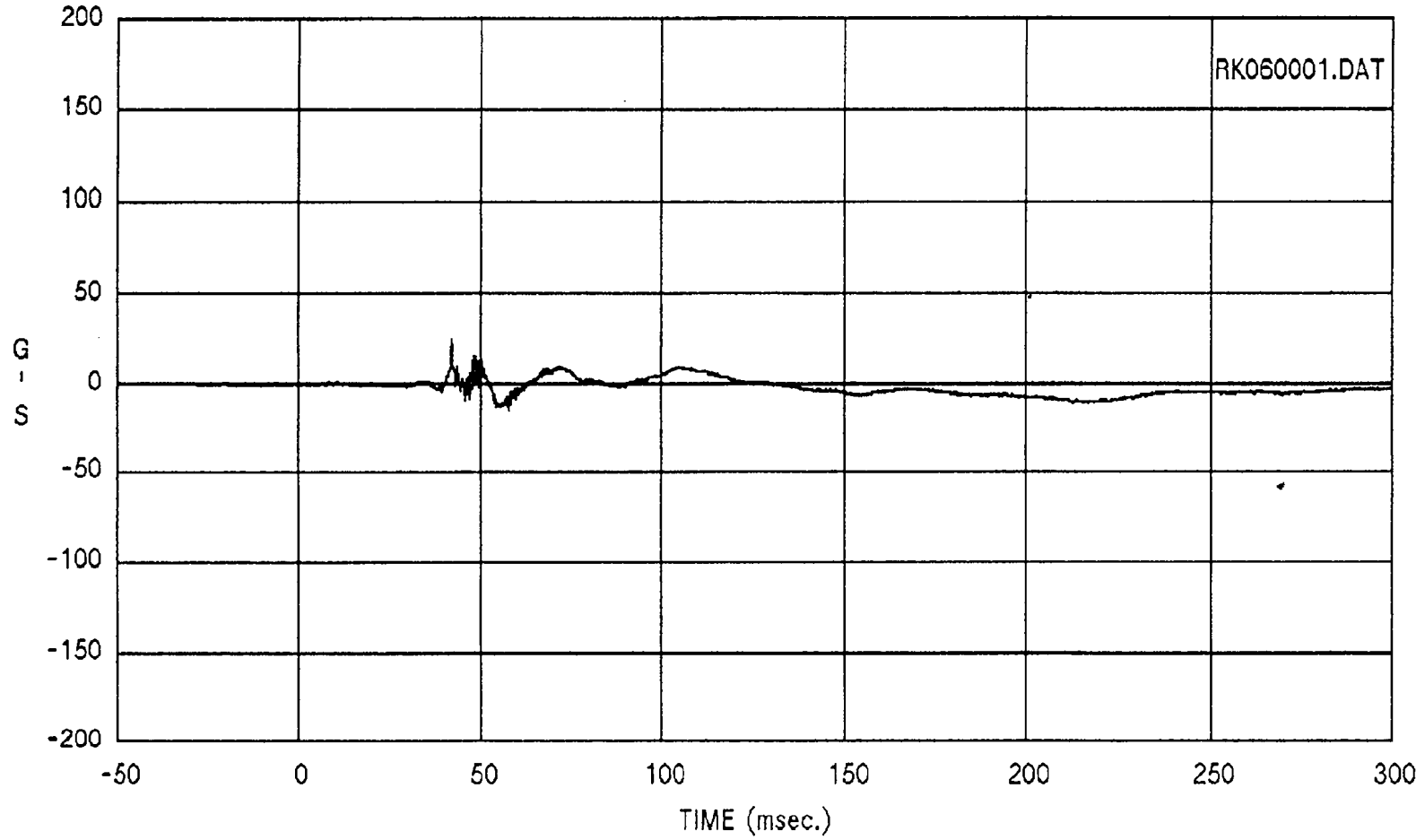
FIGURE 5-25 DRIVER SEATING POSITION - POSTTEST

SECTION 6

VEHICLE AND SID RESPONSE DATA

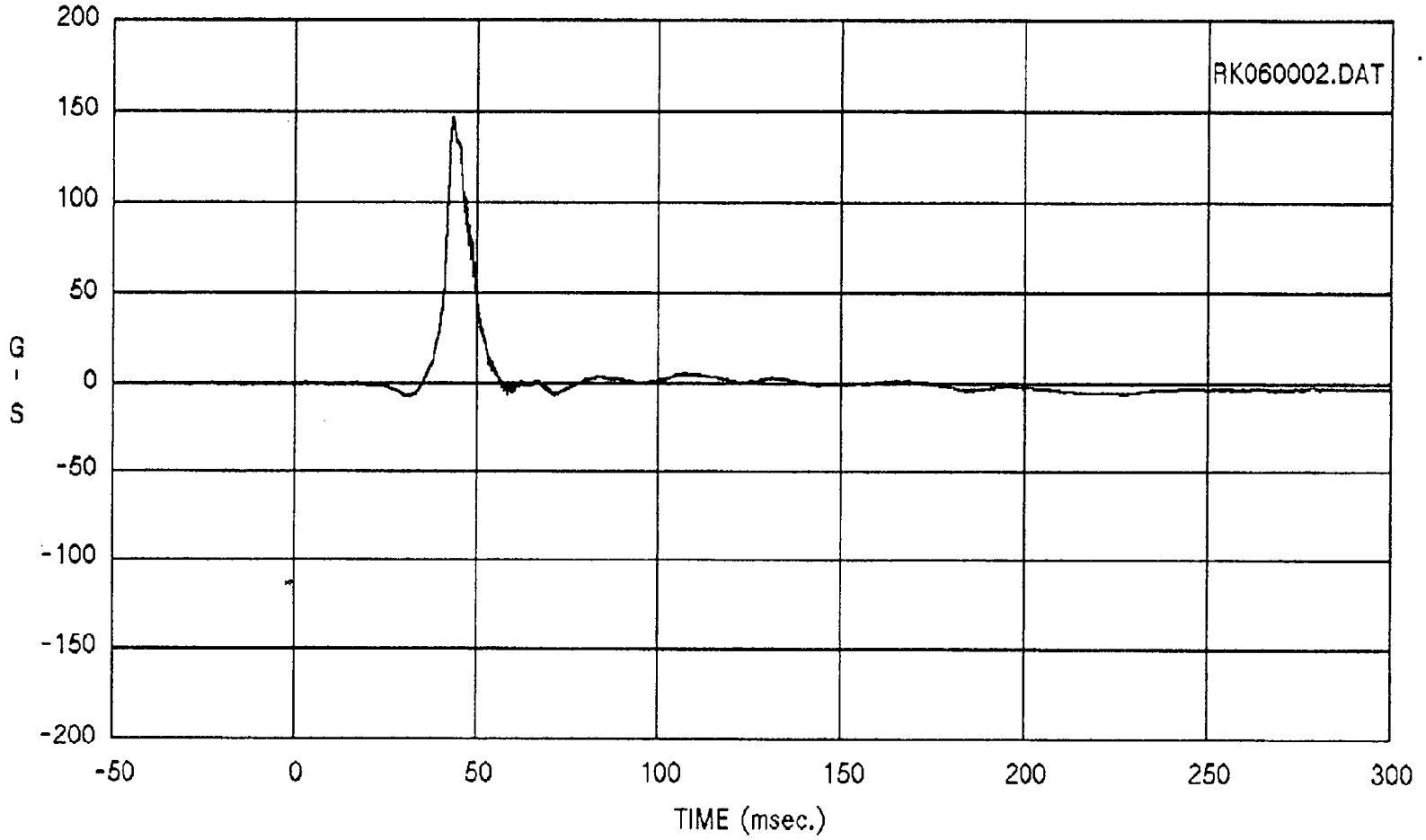
The dataplots from the side impact test are presented in this section.

SID DATA



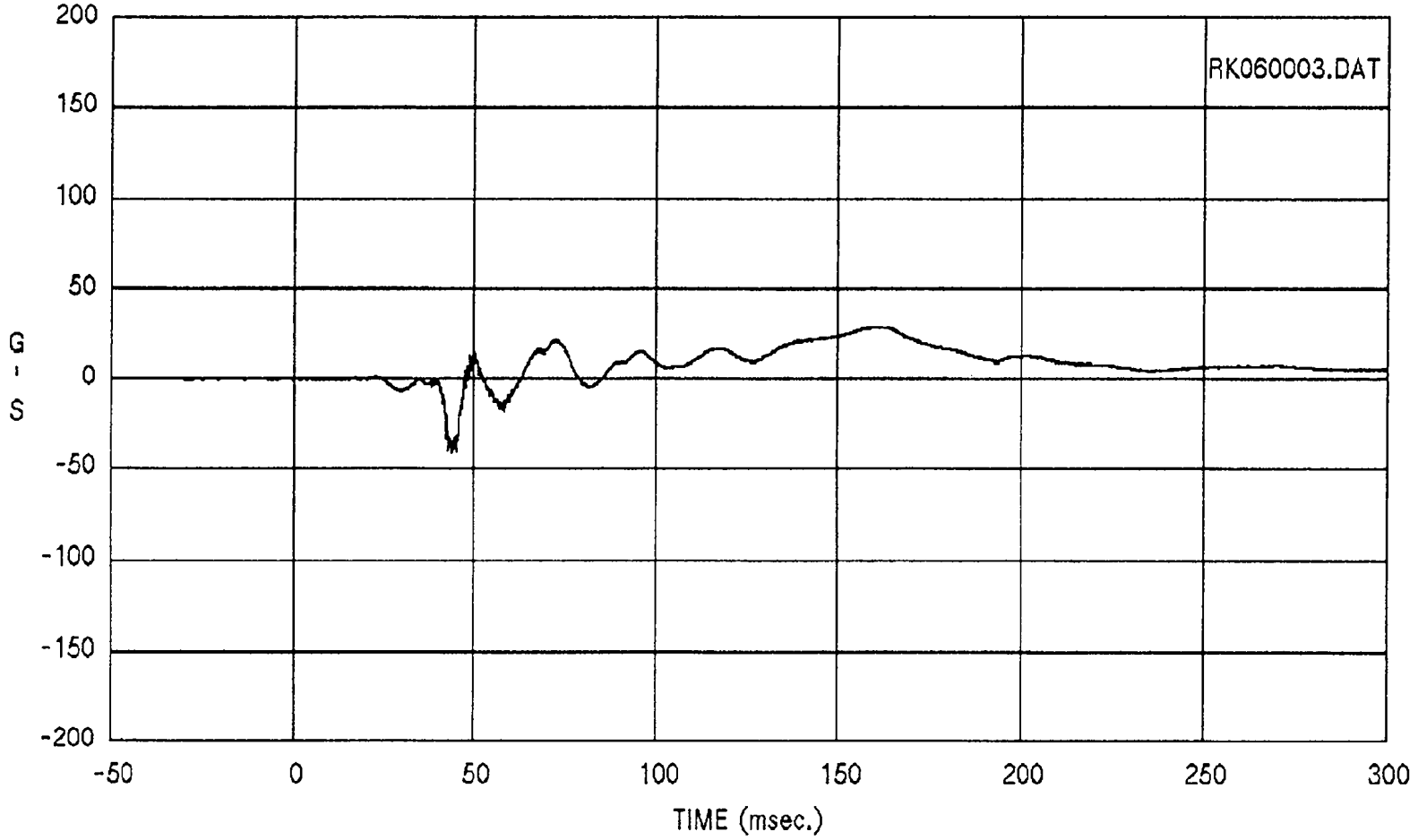
Curve: Driver Head acceleration -- X axis Filter: SAE CLASS 1000 Max = 24.846 Min = -15.070

MSE Date: 08/19/92 Program: Side Impact, 30/15, 90 deg. Vehicle:1989 Ford Ranger XLT Pickup



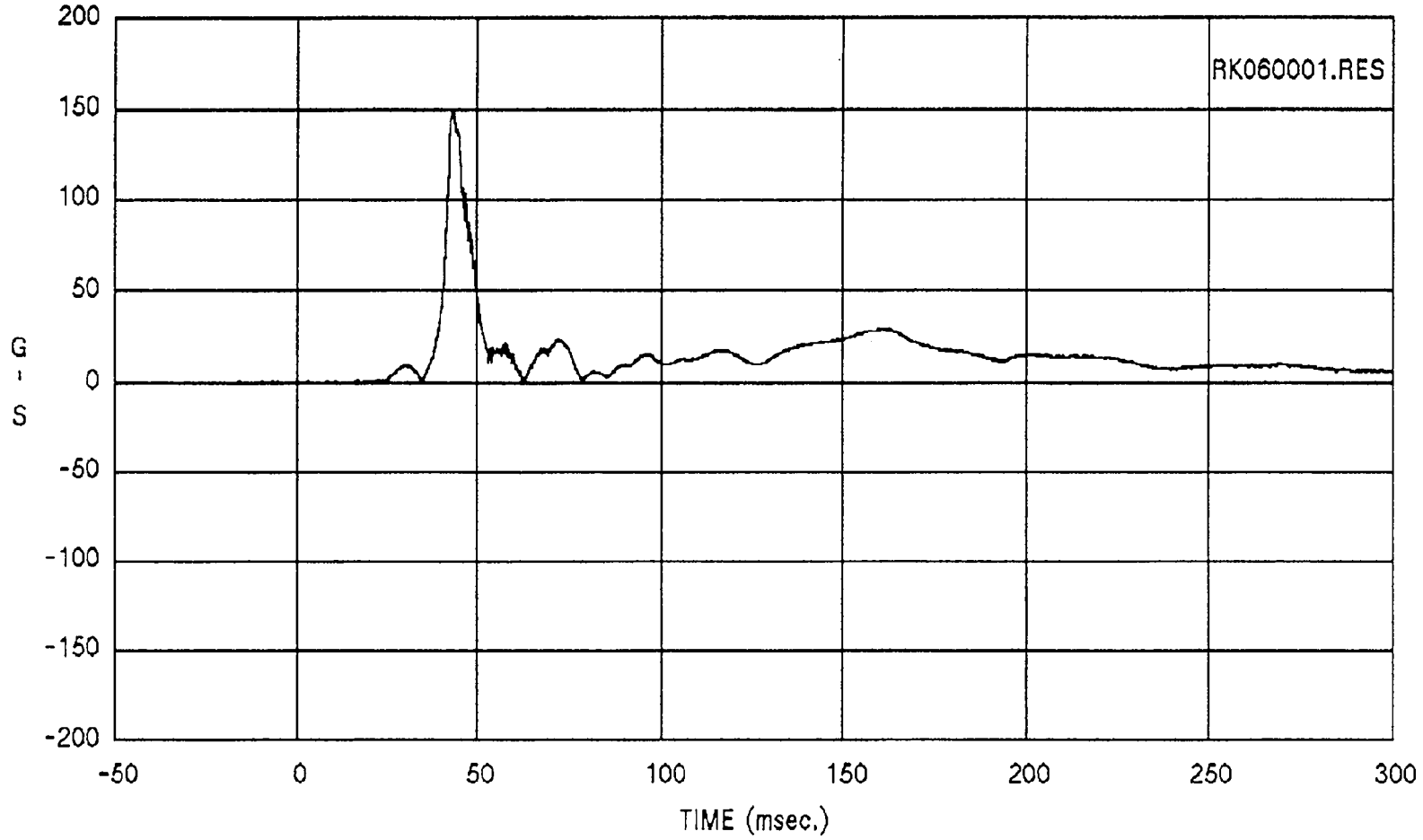
Curve: Driver Head acceleration -- Y axis Filter: SAE CLASS 1000 Max = 151.09 Min = -8.1747

MSE Date: 08/19/92 Program: Side Impact, 30/15, 90 deg. Vehicle:1989 Ford Ranger XLT Pickup



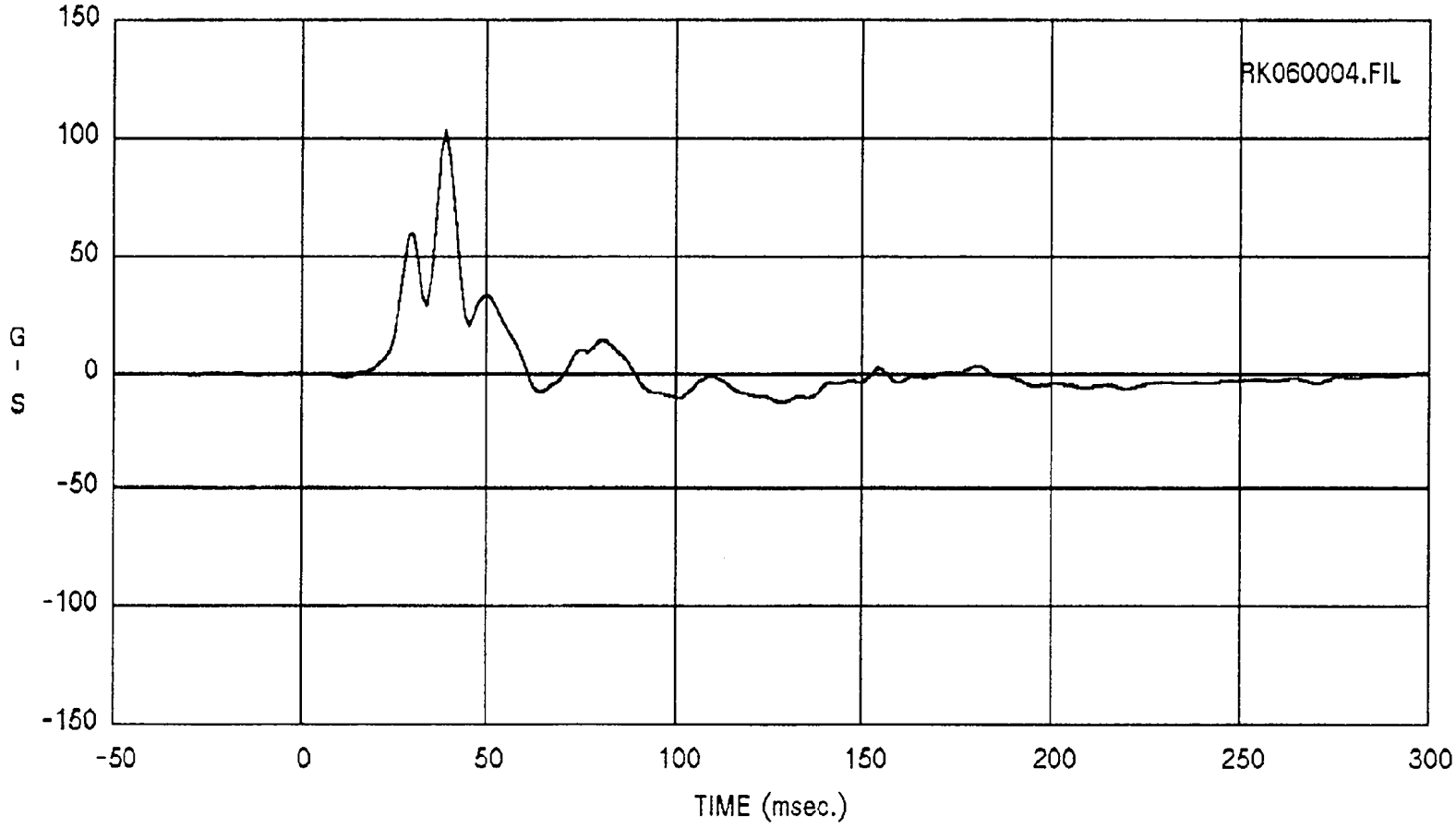
Curve: Driver Head acceleration -- Z axis Filter: SAE CLASS 1000 Max = 29.205 Min = -43.406

MSE Date: 08/19/92 Program: Side Impact, 30/15, 90 deg. Vehicle:1989 Ford Ranger XLT Pickup



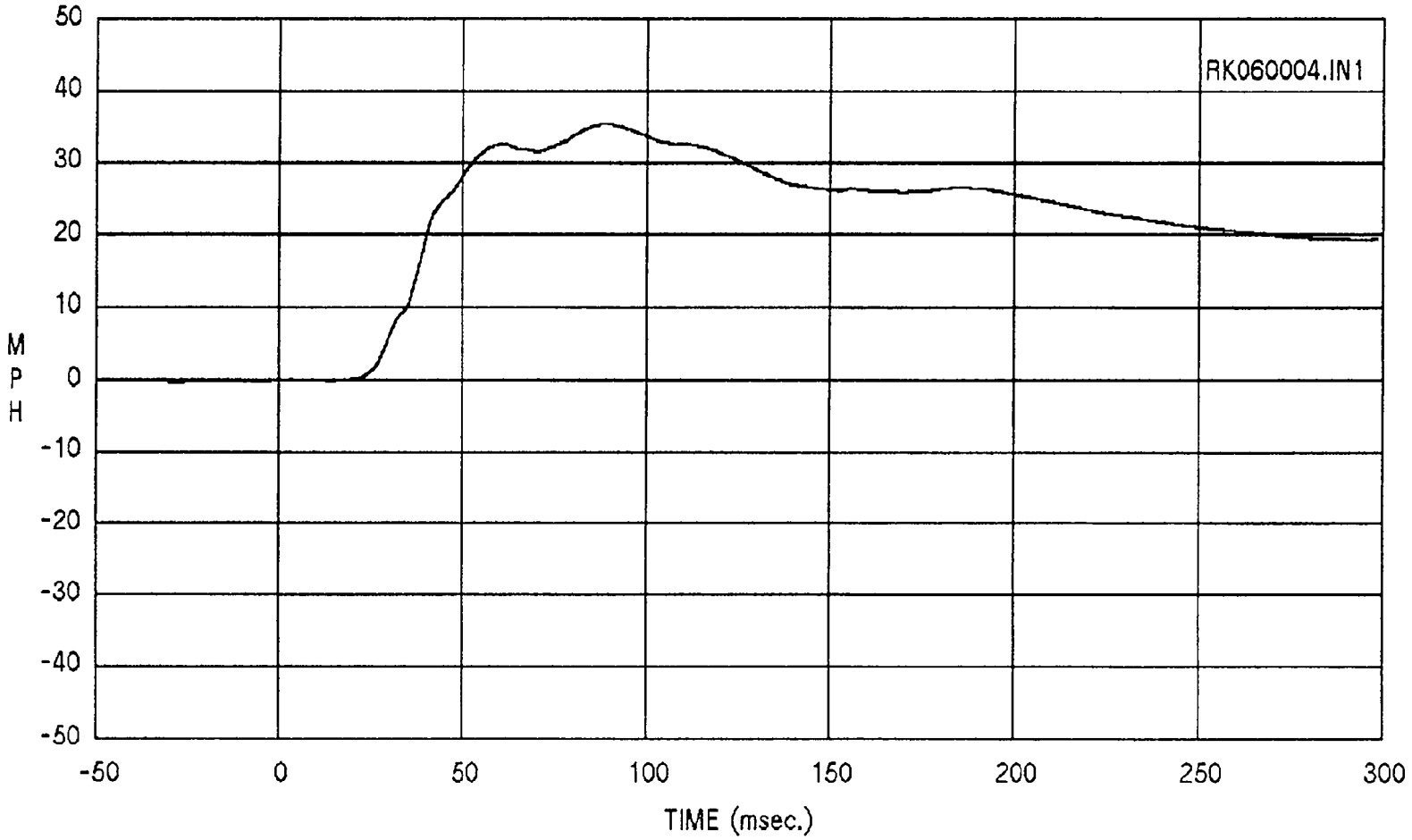
Curve: Driver Head resultant acceleration Filter: SAE CLASS 1000 Max = 155.29 Min = .00000

MSE Date: 08/19/92 Program: Side Impact, 30/15, 90 deg. Vehicle:1989 Ford Ranger XLT Pickup



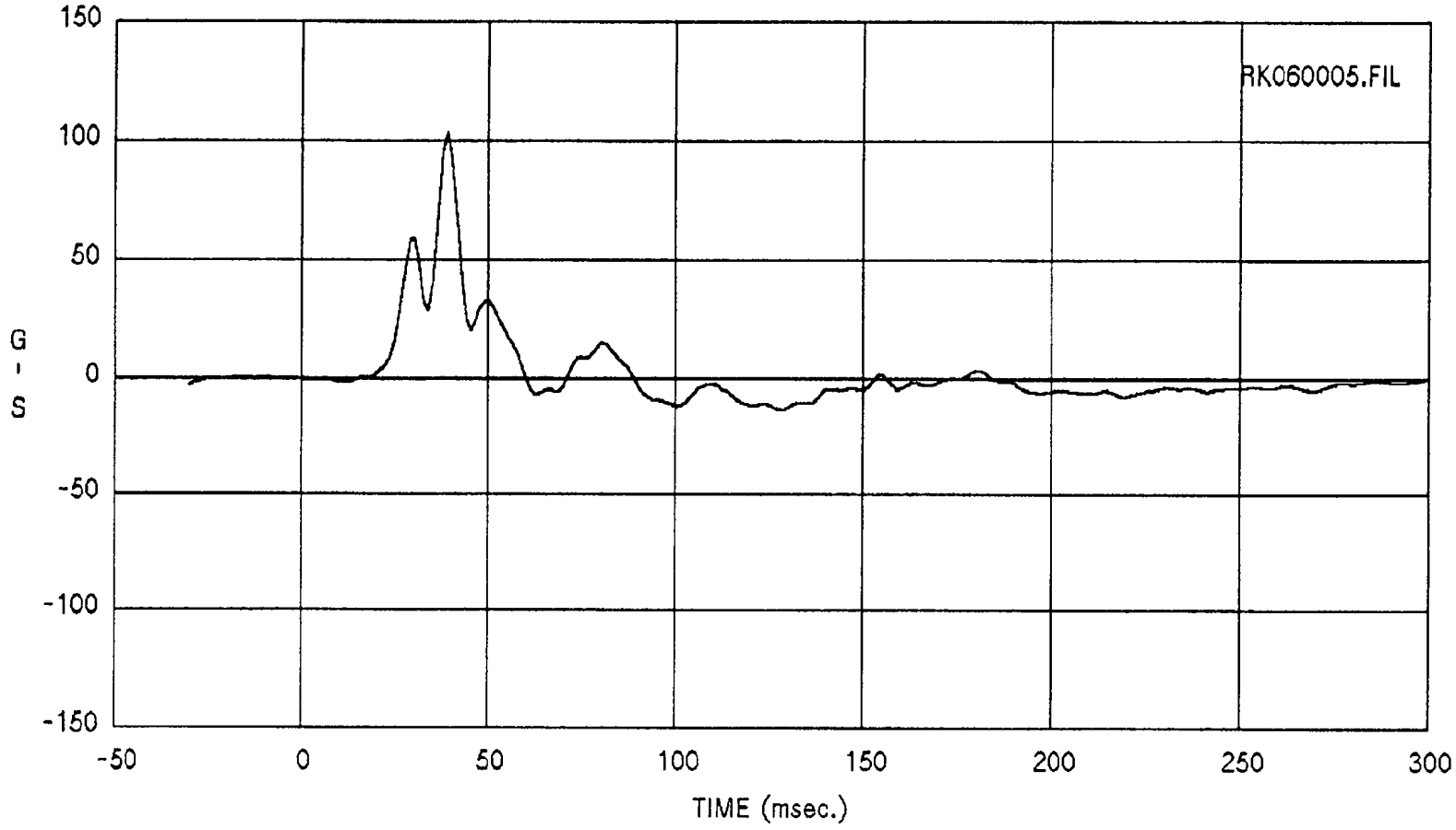
Curve: Driver upper spine acceleration -- Primary Filter: FIR 100 Max = 103.01 Min = -12.685

MSE Date: 08/19/92 Program: Side Impact, 30/15, 90 deg. Vehicle:1989 Ford Ranger XLT Pickup



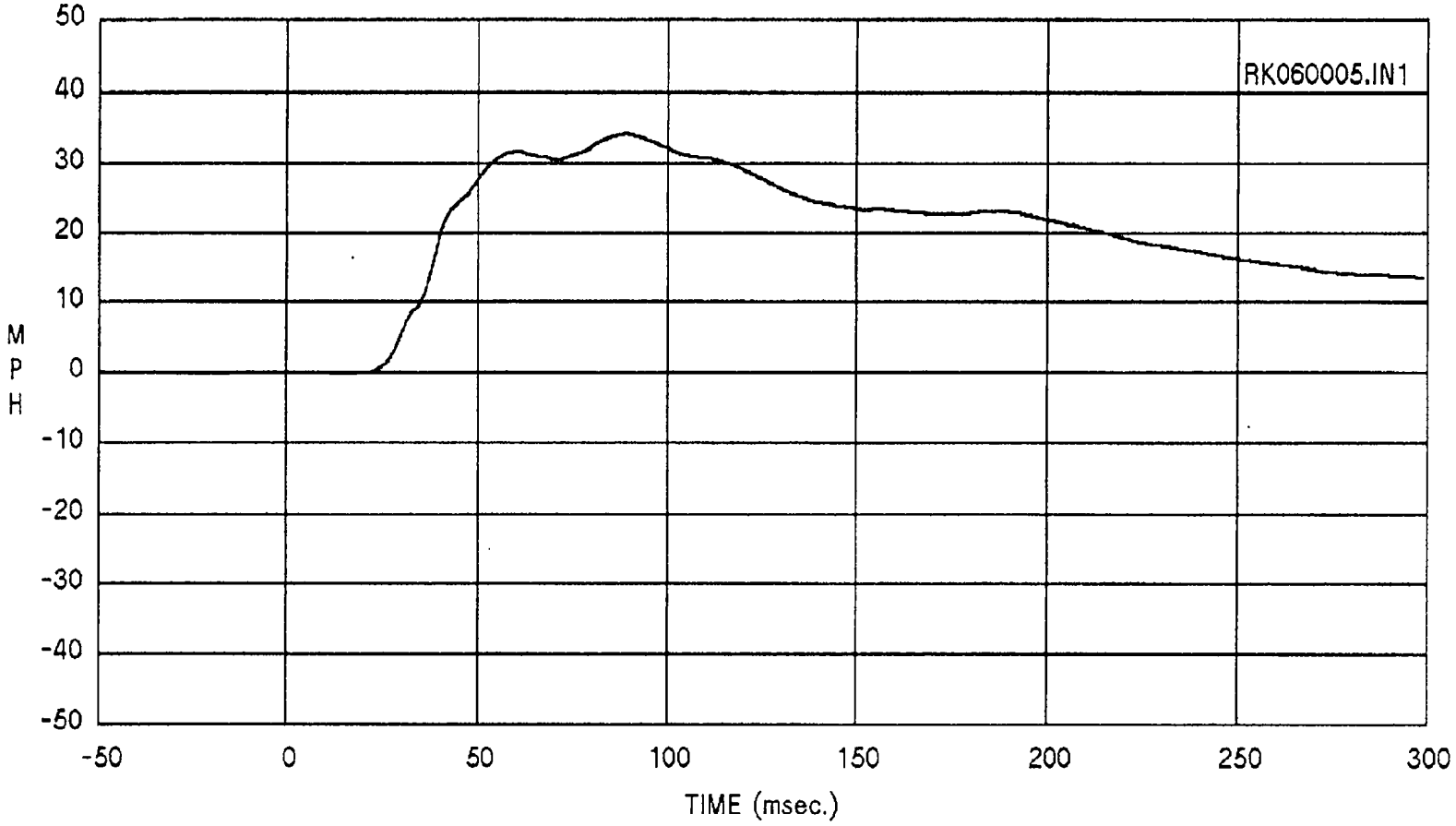
Curve: Driver upper spine delta V -- Primary Filter: SAE CLASS 180 Max = 35.488 Min = -.47972E-

MSE Date: 08/19/92 Program: Side Impact, 30/15, 90 deg. Vehicle:1989 Ford Ranger XLT Pickup



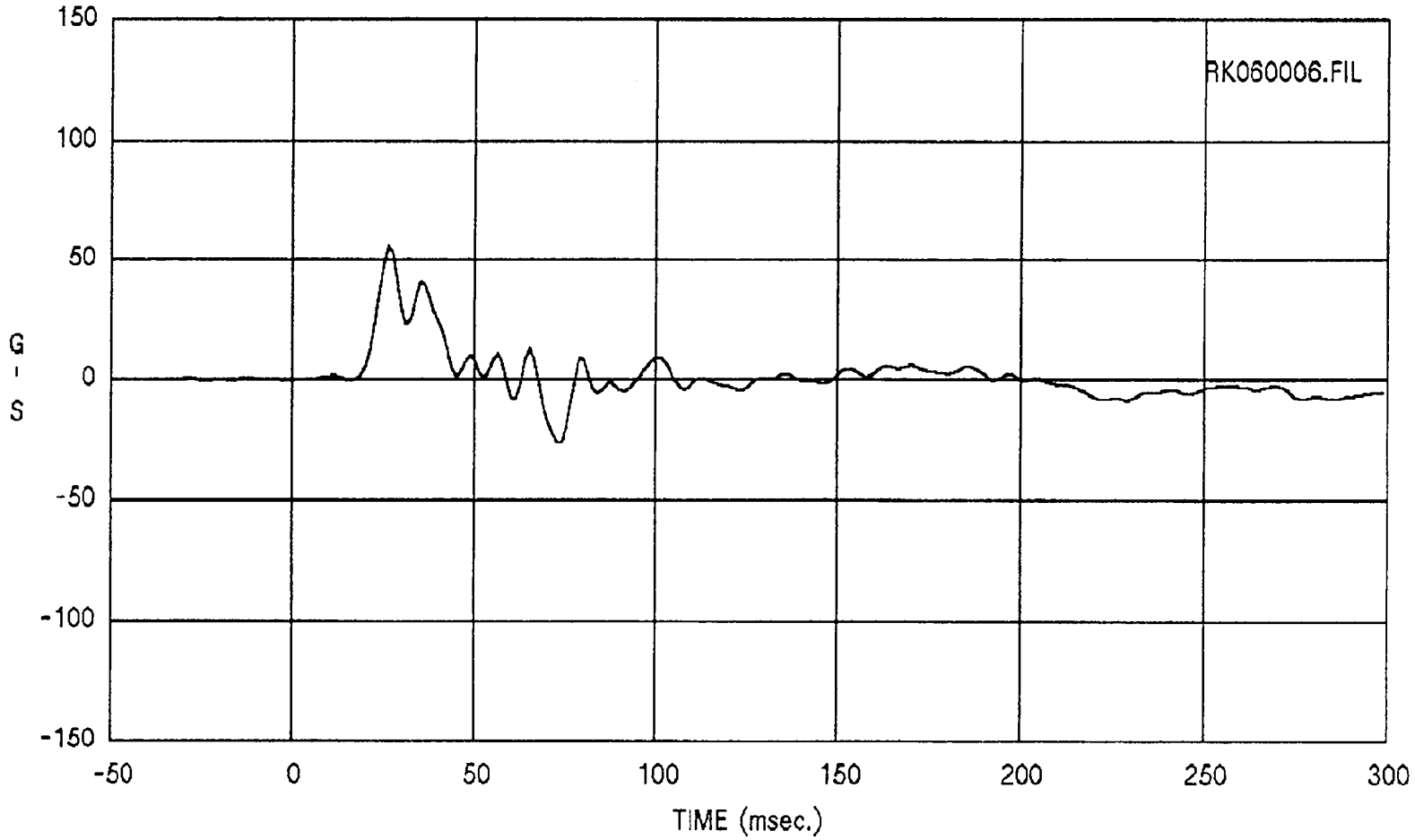
Curve: Driver upper spine acceleration -- Redundant Filter: FIR 100 Max = 103.49 Min = -13.548

MSE Date: 08/19/92 Program: Side Impact, 30/15, 90 deg. Vehicle:1989 Ford Ranger XLT Pickup



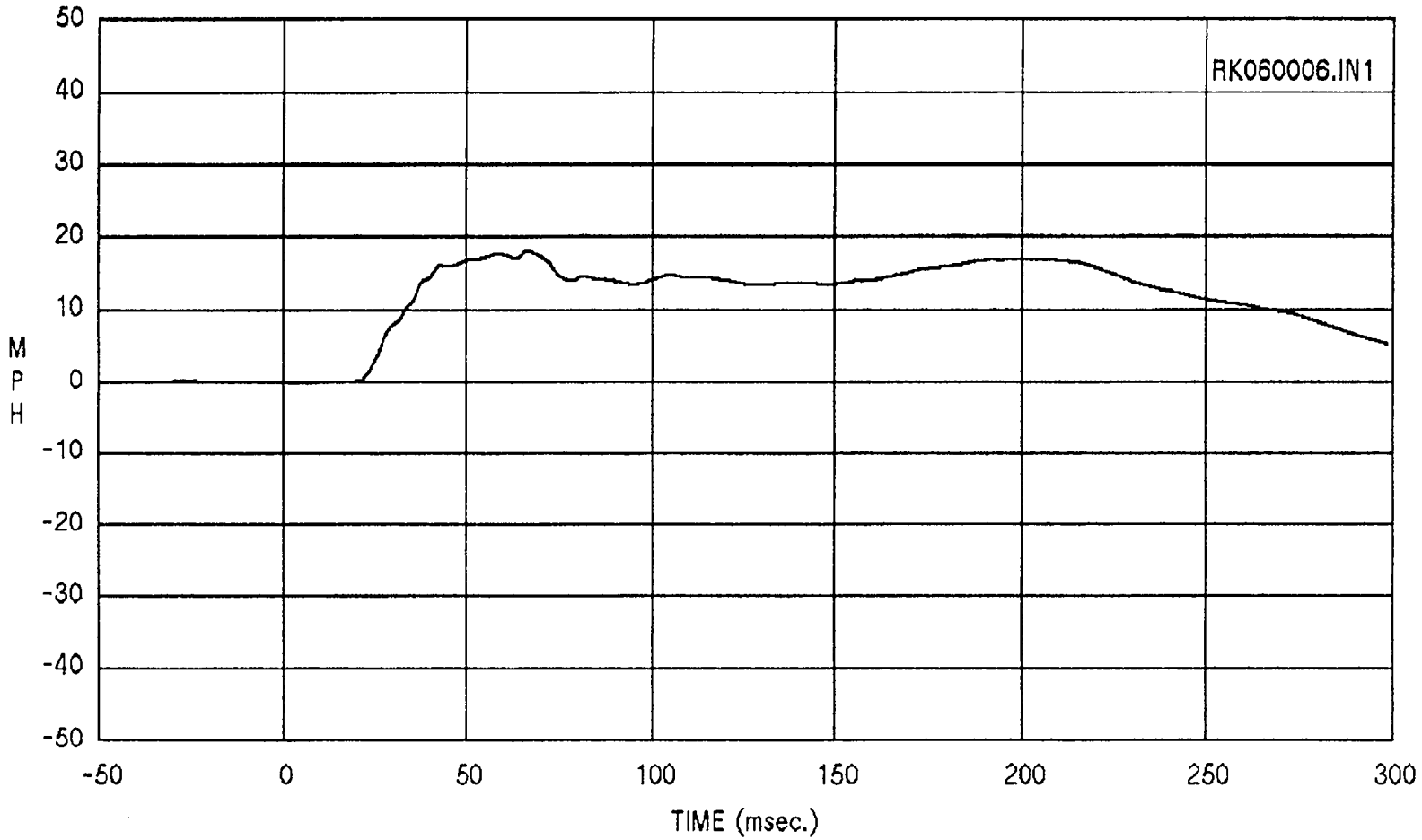
Curve: Driver upper spine delta V -- Redundant Filter: SAE CLASS 180 Max = 34.212 Min = -.21302

MSE Date: 08/19/92 Program: Side Impact, 30/15, 90 deg. Vehicle:1989 Ford Ranger XLT Pickup



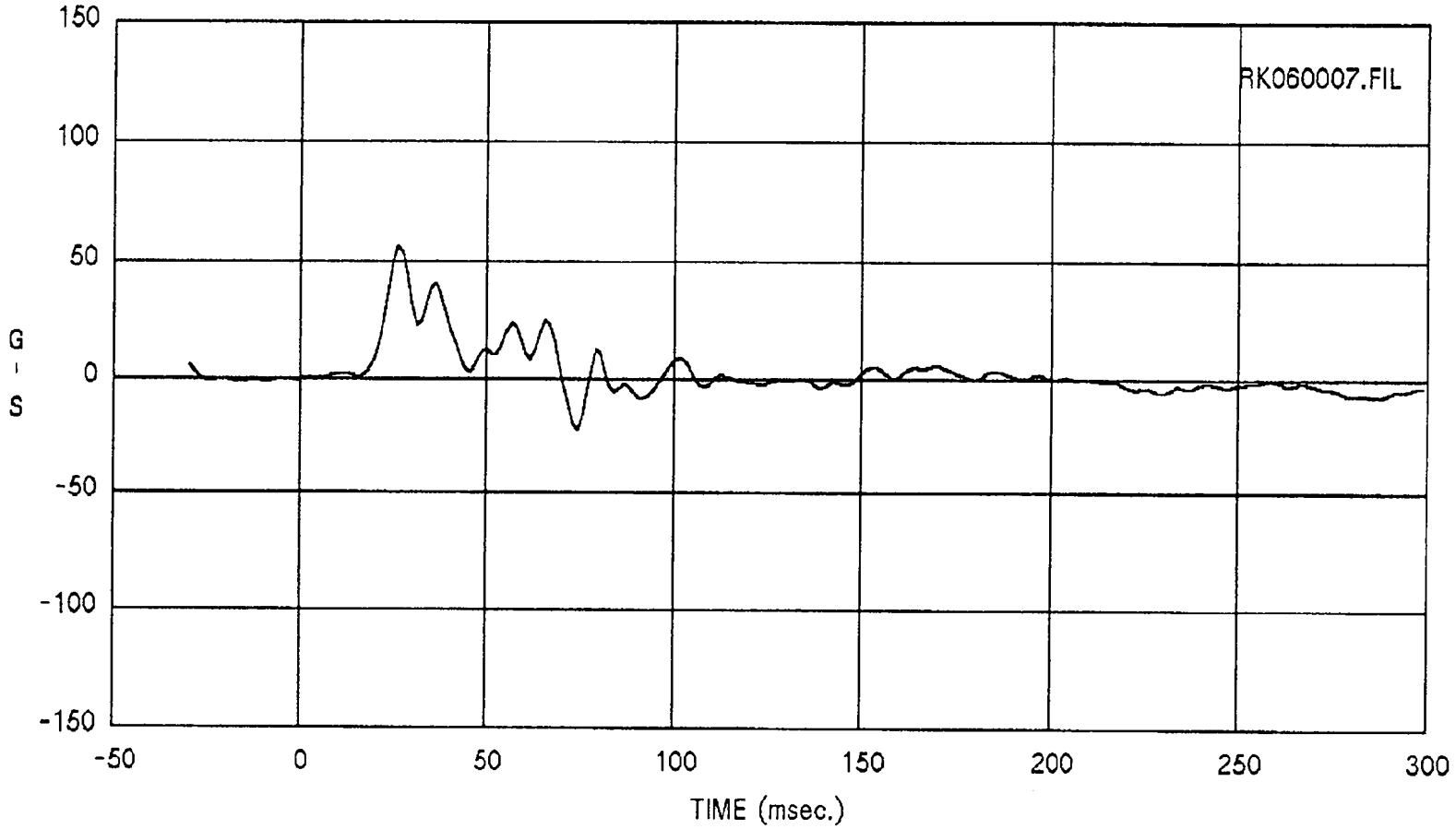
Curve: Driver upper rib acceleration -- Primary Filter: FIR 100 Max = 55.629 Min = -26.668

MSE Date: 08/19/92 Program: Side Impact, 30/15, 90 deg. Vehicle:1989 Ford Ranger XLT Pickup



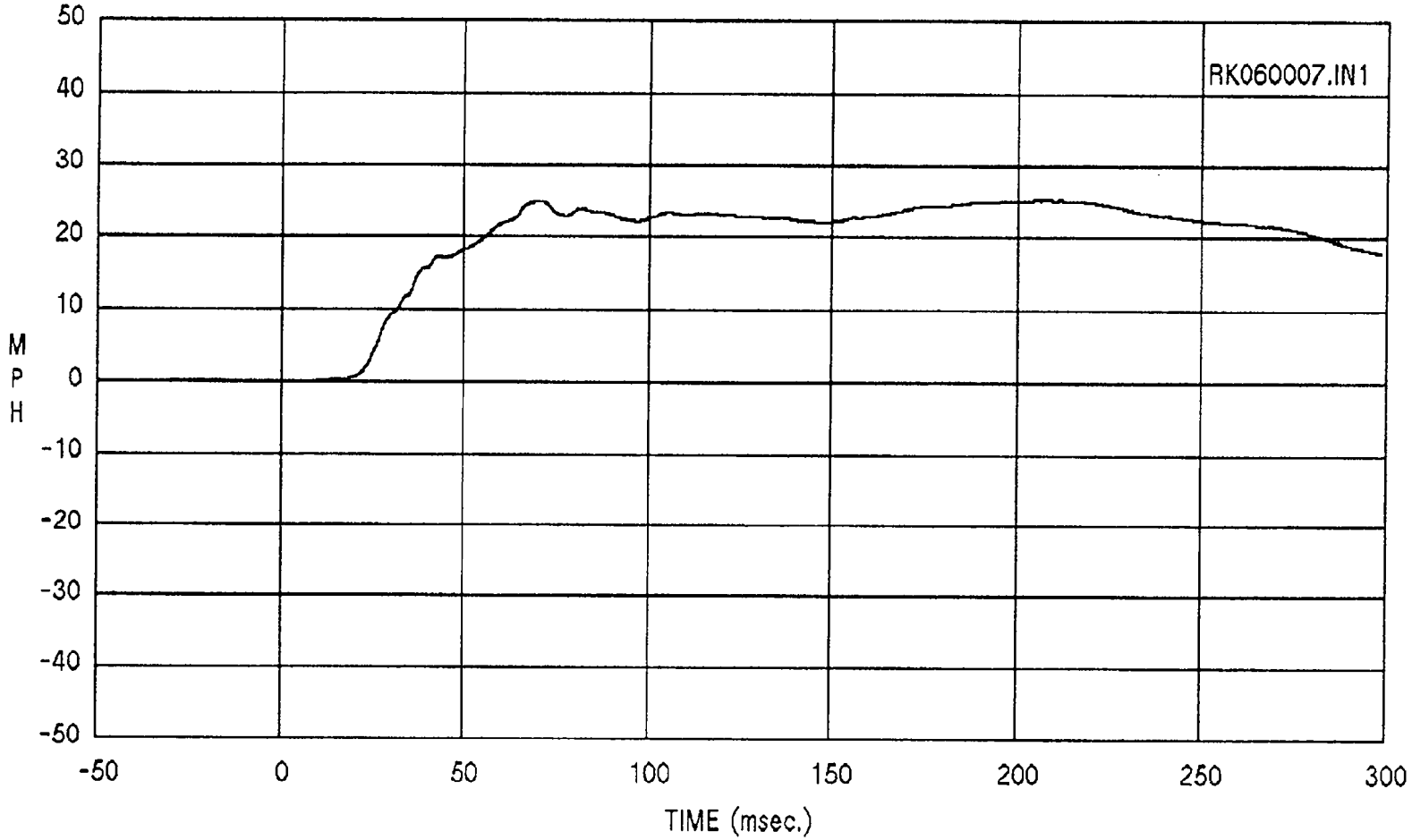
Curve: Driver upper rib delta V -- Primary Filter: SAE CLASS 180 Max = 18.129 Min = -.40044E-1

MSE Date: 08/19/92 Program: Side Impact, 30/15, 90 deg. Vehicle:1989 Ford Ranger XLT Pickup



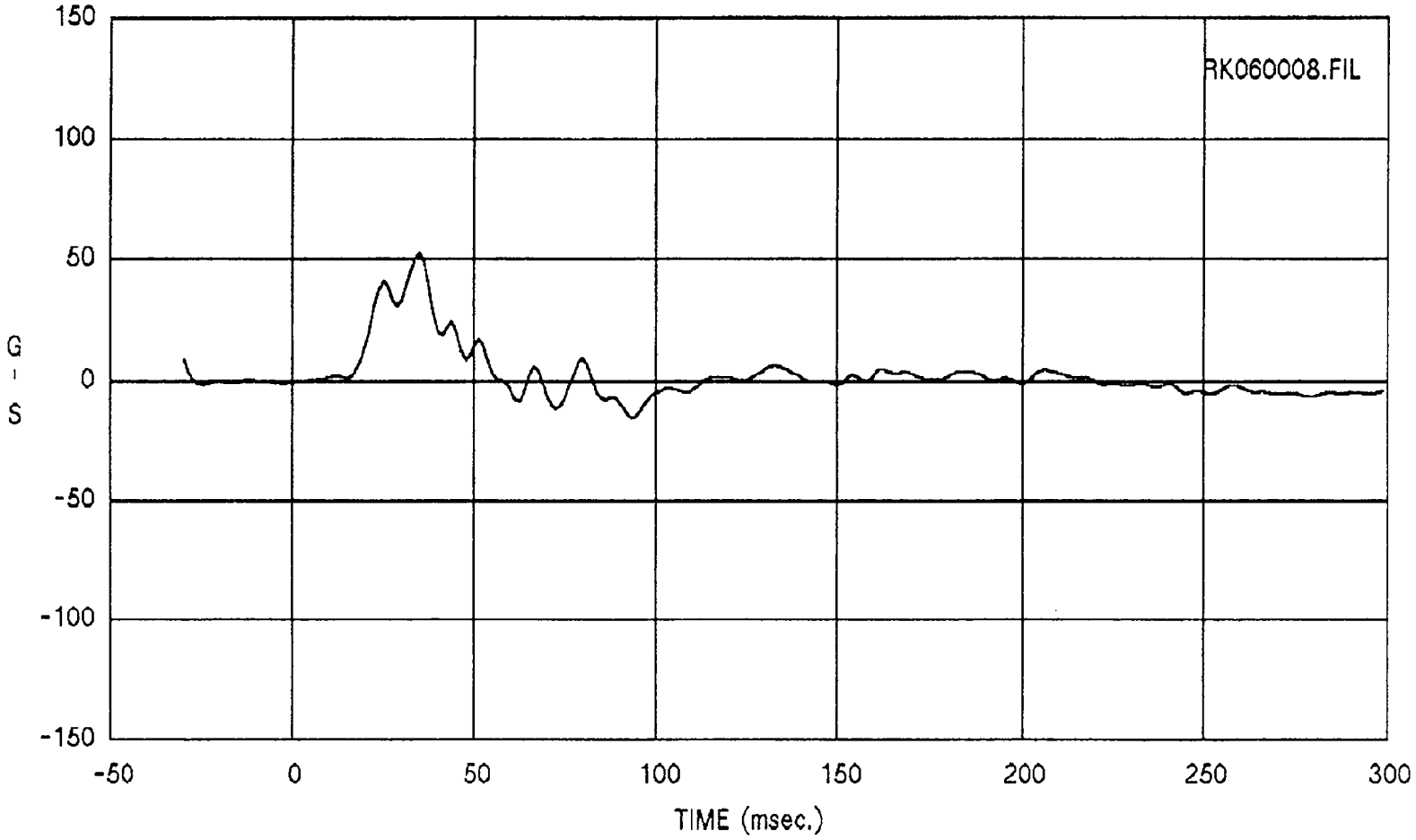
Curve: Driver upper rib acceleration -- Redundant Filter: FIR 100 Max = 56.575 Min = -22.260

MSE Date: 08/19/92 Program: Side Impact, 30/15, 90 deg. Vehicle:1989 Ford Ranger XLT Pickup



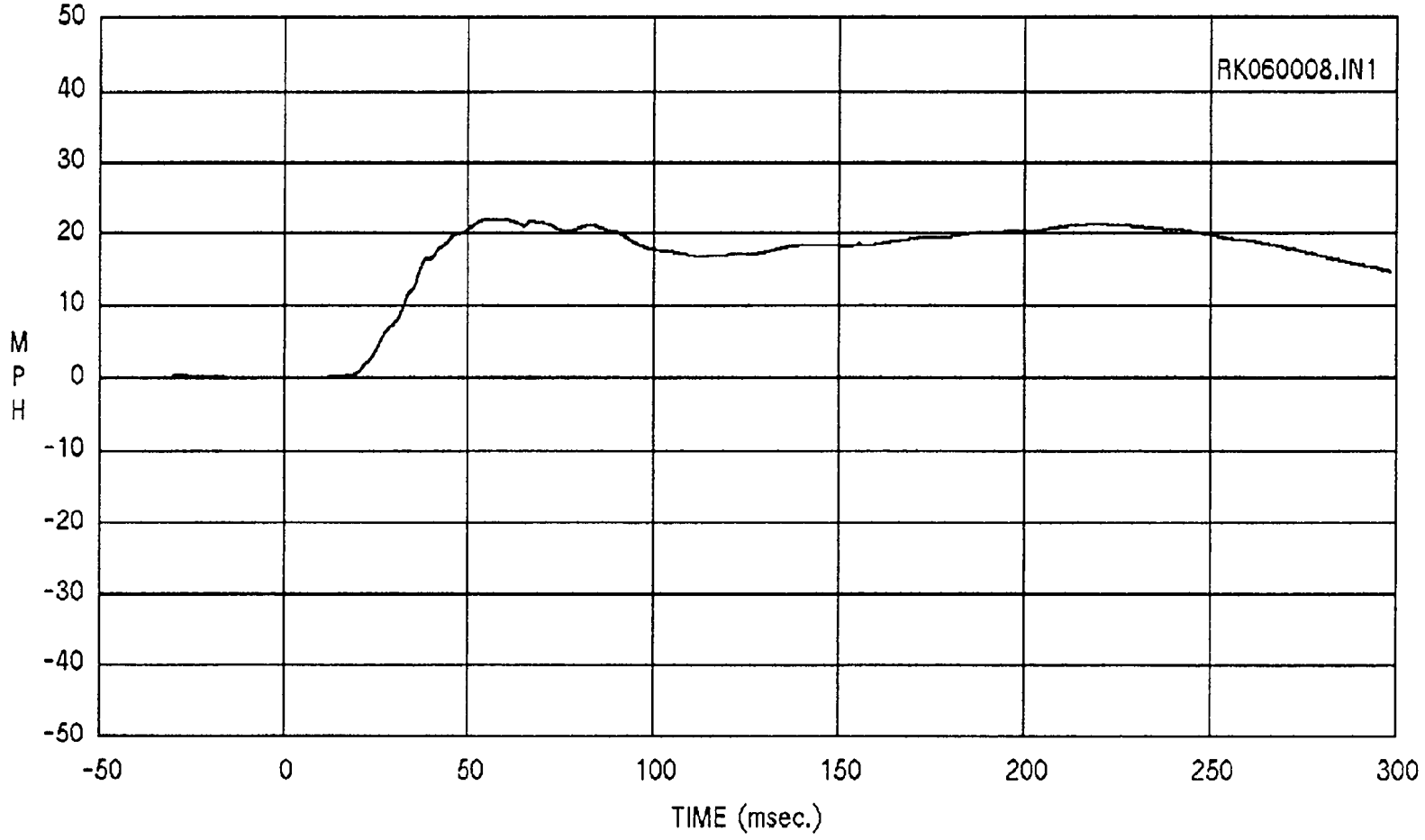
Curve: Driver upper rib delta V -- Redundant Filter: SAE CLASS 180 02 Max = 25.253 Min = -.65605E

MSE Date: 08/19/92 Program: Side Impact, 30/15, 90 deg. Vehicle:1989 Ford Ranger XLT Pickup



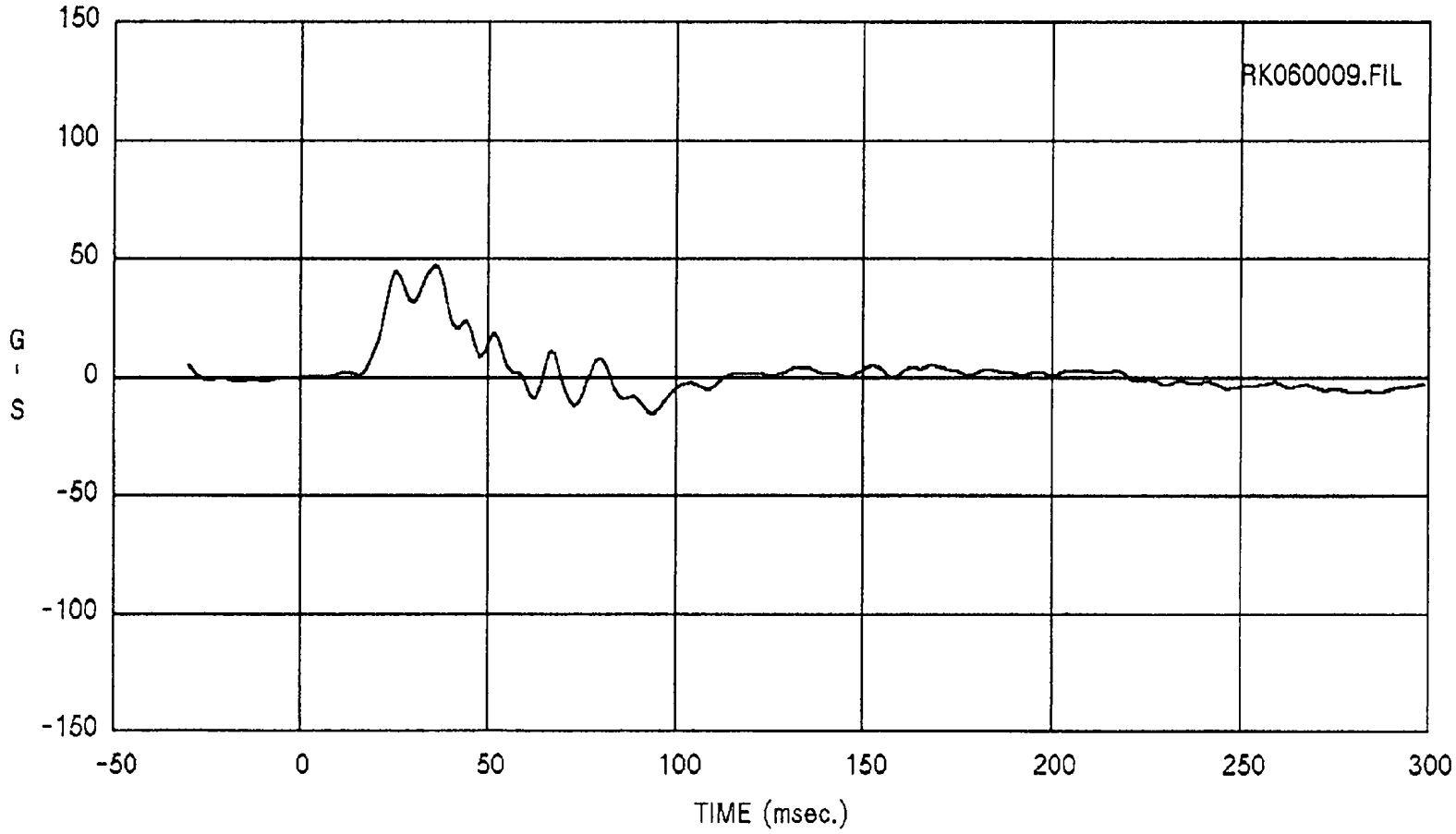
Curve: Driver lower rib acceleration -- Primary Filter: FIR 100 Max = 52.820 Min = -15.091

MSE Date: 08/19/92 Program: Side Impact, 30/15, 90 deg. Vehicle:1989 Ford Ranger XLT Pickup



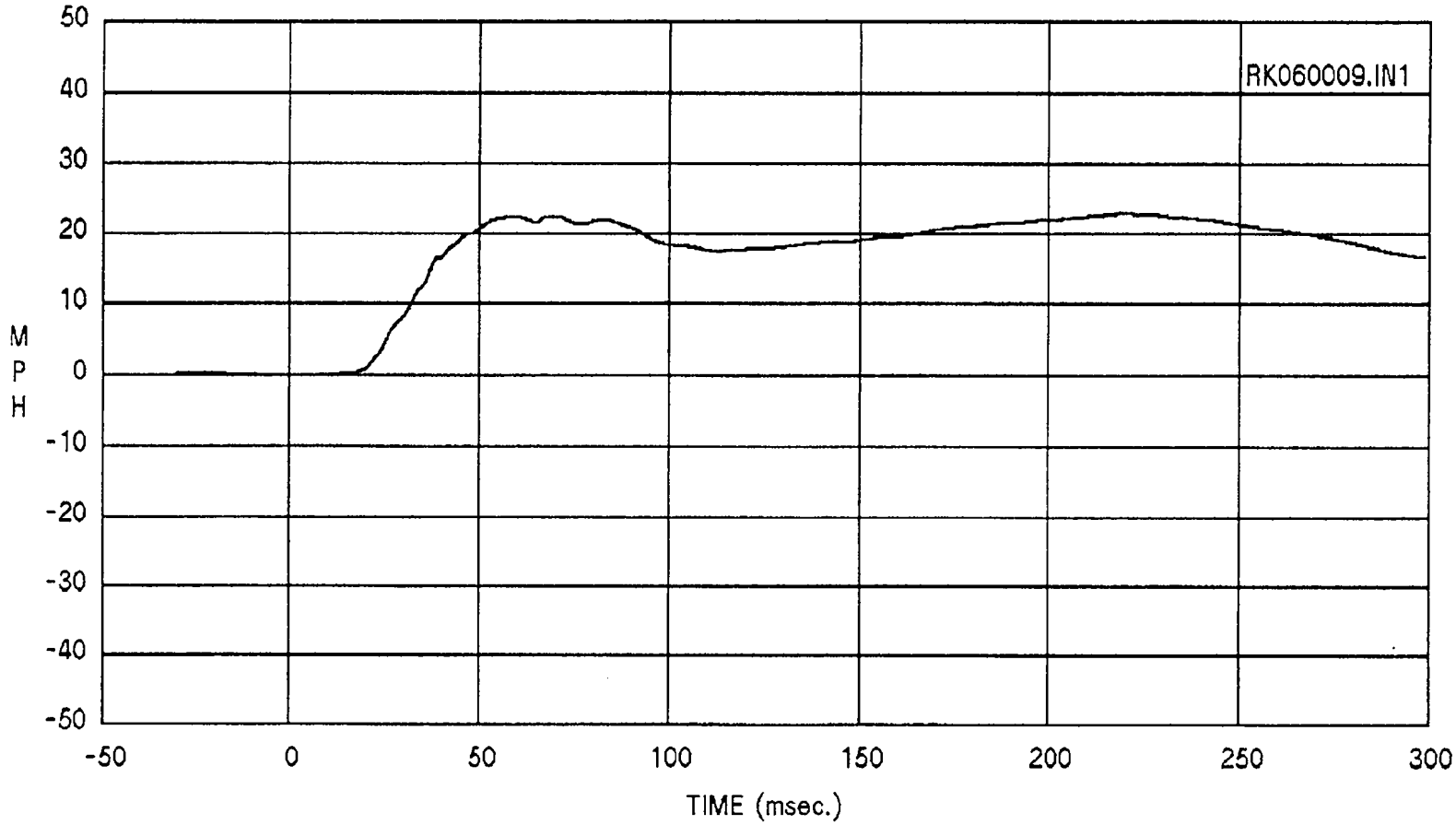
Curve: Driver lower rib delta V -- Primary Filter: SAE CLASS 180 Max = 22.058 Min = -.19580E-

MSE Date: 08/19/92 Program: Side Impact, 30/15, 90 deg. Vehicle:1989 Ford Ranger XLT Pickup



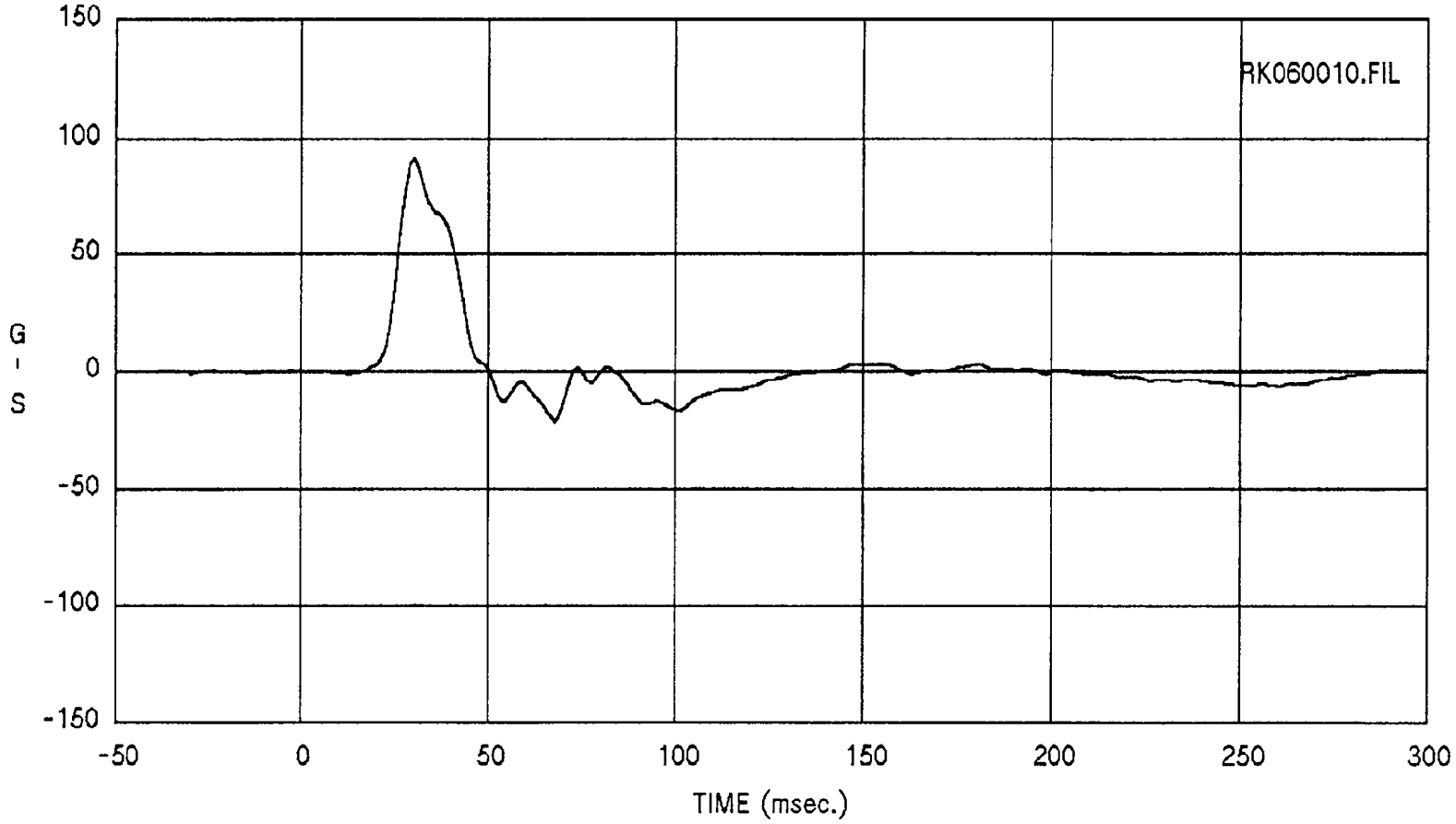
Curve: Driver lower rib acceleration -- Redundant Filter: FIR 100 Max = 47.151 Min = -15.267

MSE Date: 08/19/92 Program: Side Impact, 30/15, 90 deg. Vehicle:1989 Ford Ranger XLT Pickup



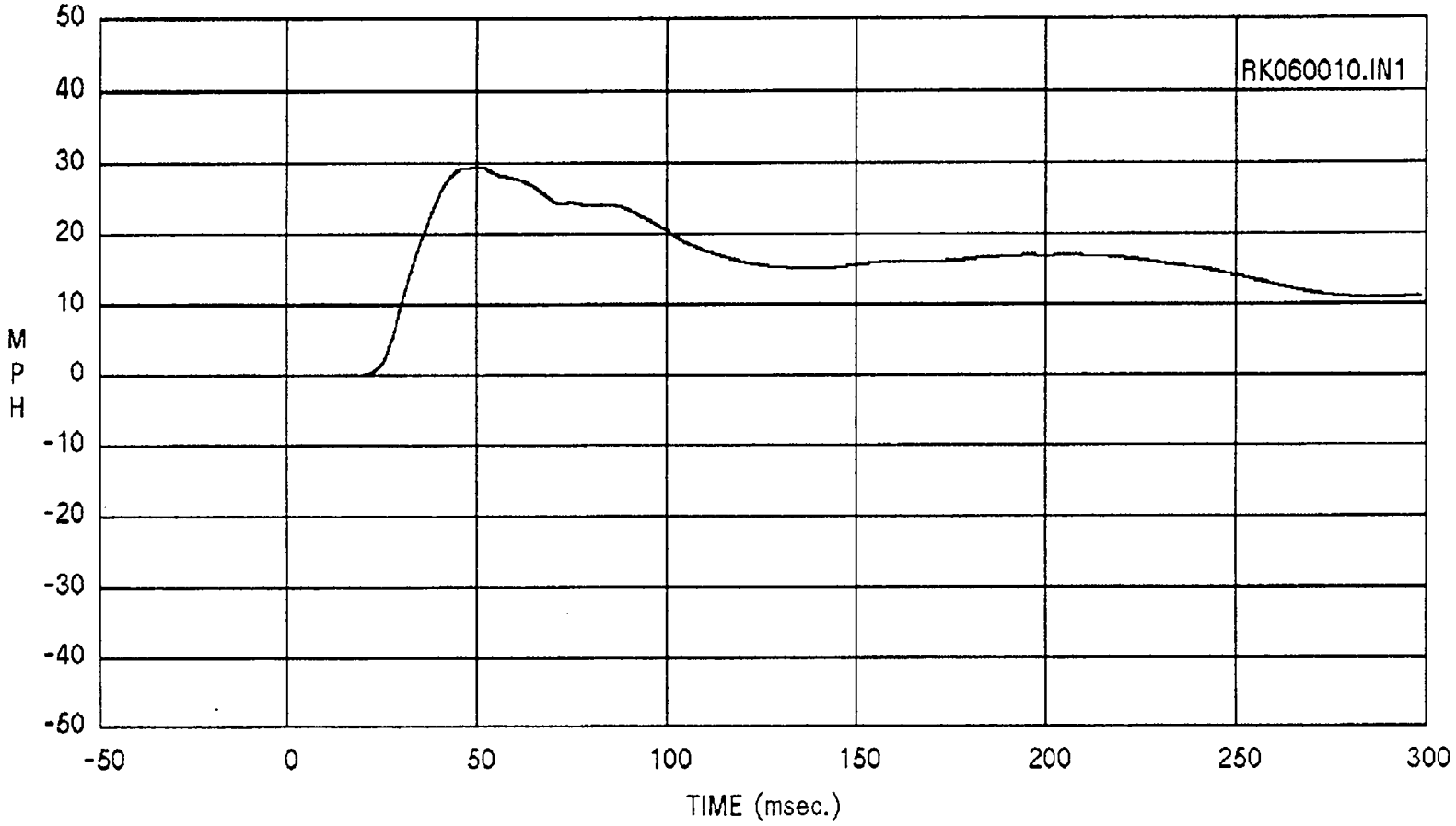
Curve: Driver lower rib delta V -- Redundant Filter: SAE CLASS 180 02 Max = 22.887 Min = -.78962E

MSE Date: 08/19/92 Program: Side Impact, 30/15, 90 deg. Vehicle:1989 Ford Ranger XLT Pickup



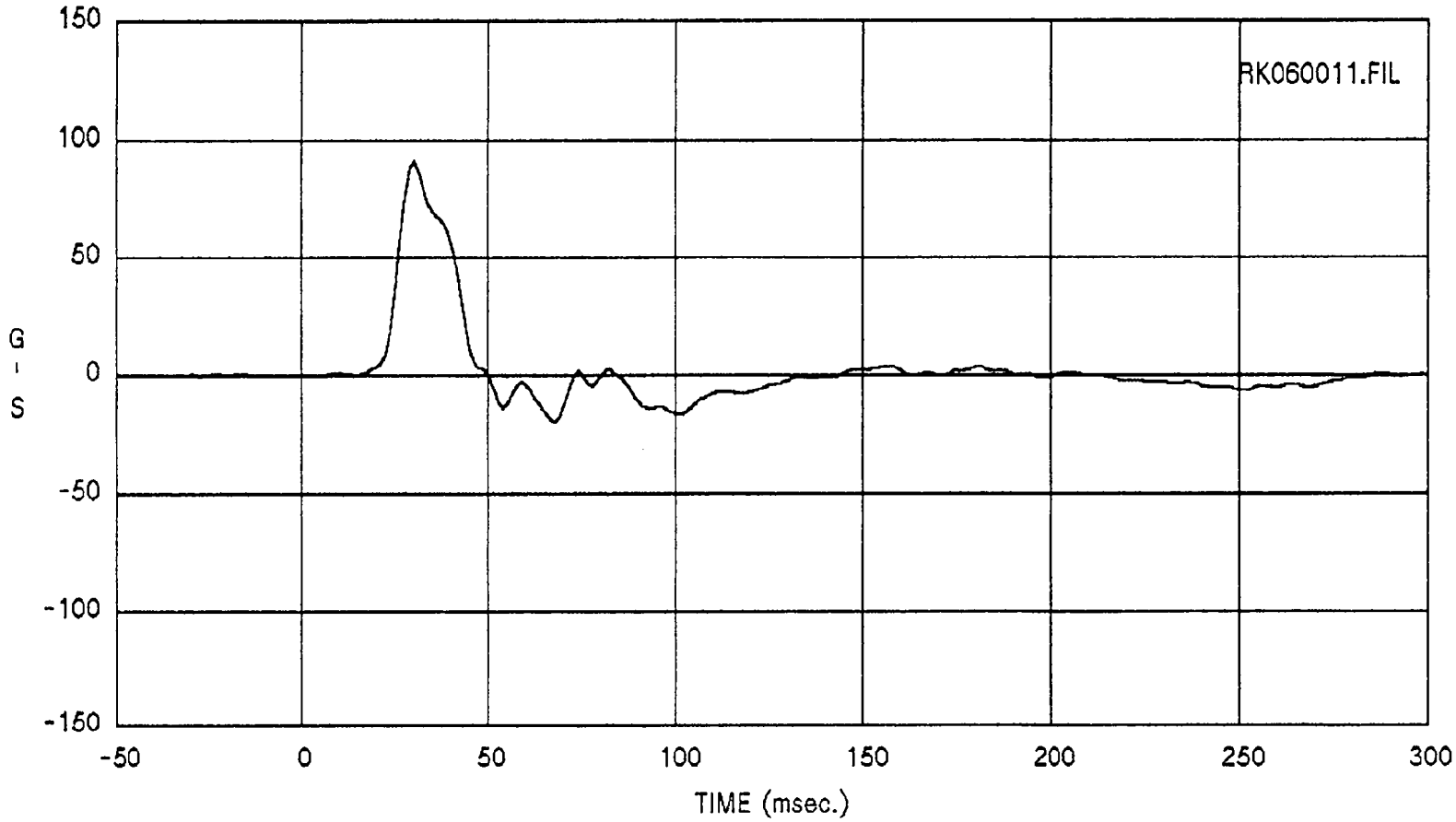
Curve: Driver lower spine acceleration -- Primary Filter: FIR 100 Max = 91.813 Min = -20.959

MSE Date: 08/19/92 Program: Side Impact, 30/15, 90 deg. Vehicle:1989 Ford Ranger XLT Pickup



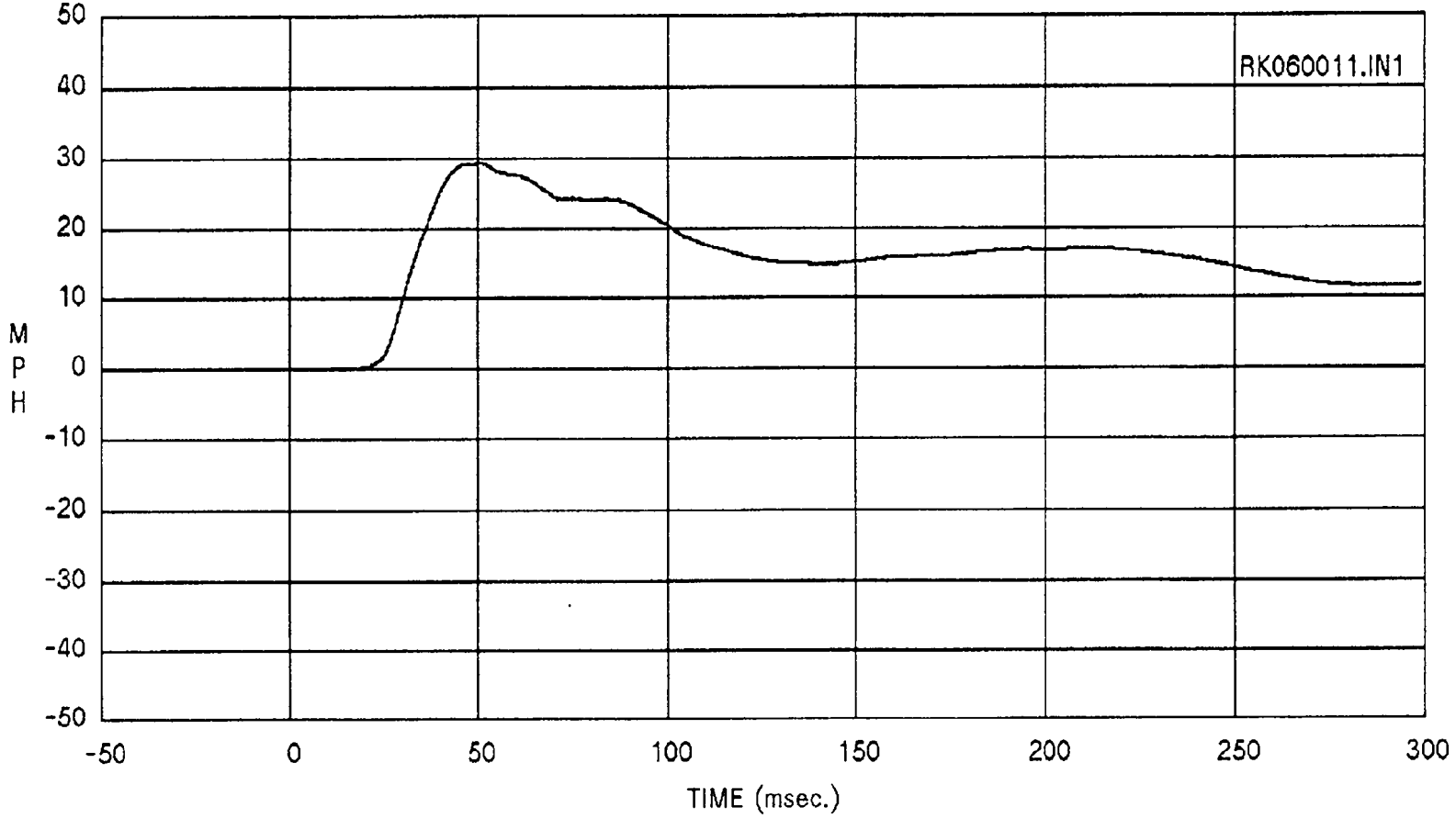
Curve: Driver lower spine delta V -- Primary Filter: SAE CLASS 180 Max = 29.465 Min = -.69993E
01

MSE Date: 08/19/92 Program: Side Impact, 30/15, 90 deg. Vehicle:1989 Ford Ranger XLT Pickup



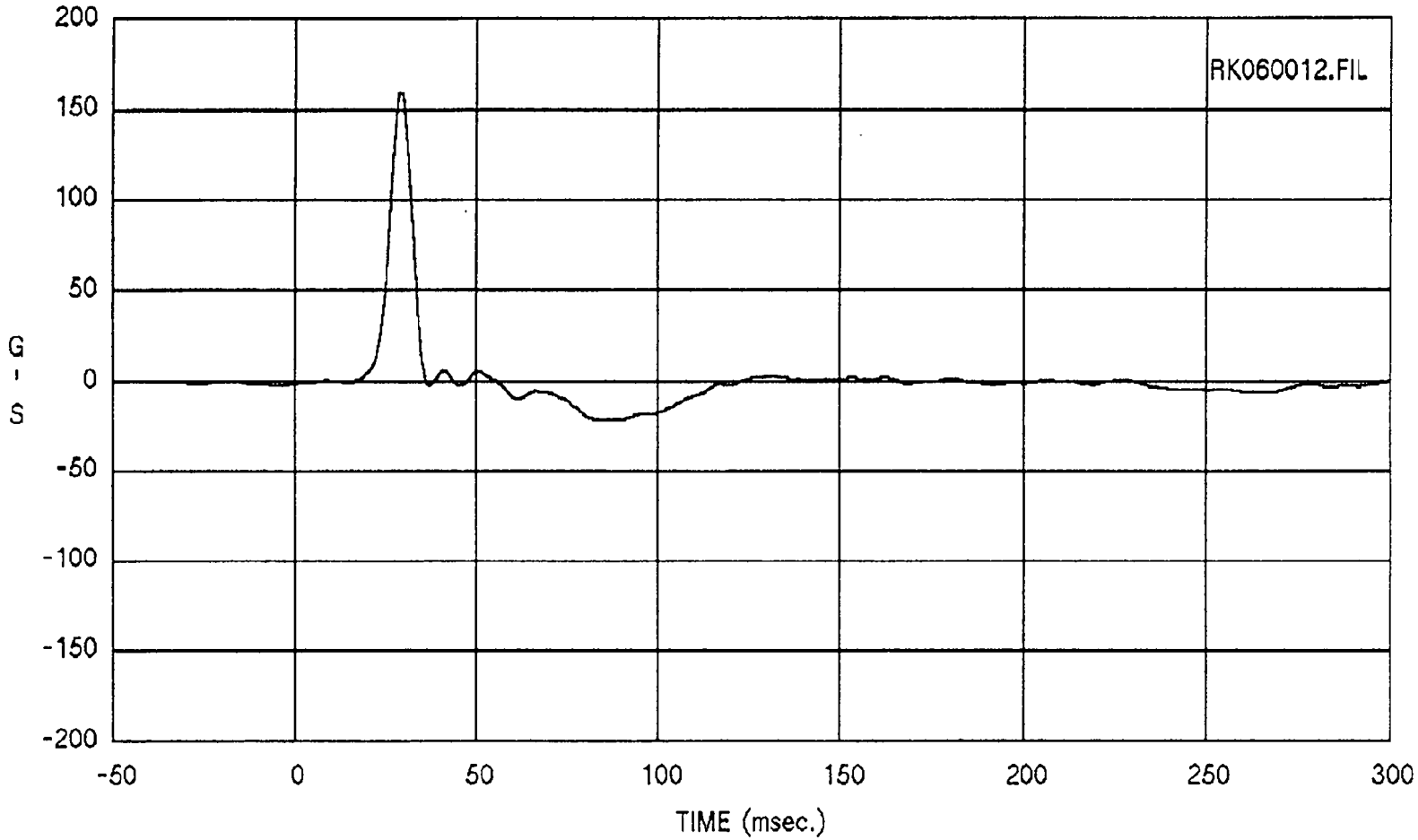
Curve: Driver lower spine acceleration -- Redundant Filter: FIR 100 Max = 91.037 Min = -20.157

MSE Date: 08/19/92 Program: Side Impact, 30/15, 90 deg. Vehicle:1989 Ford Ranger XLT Pickup



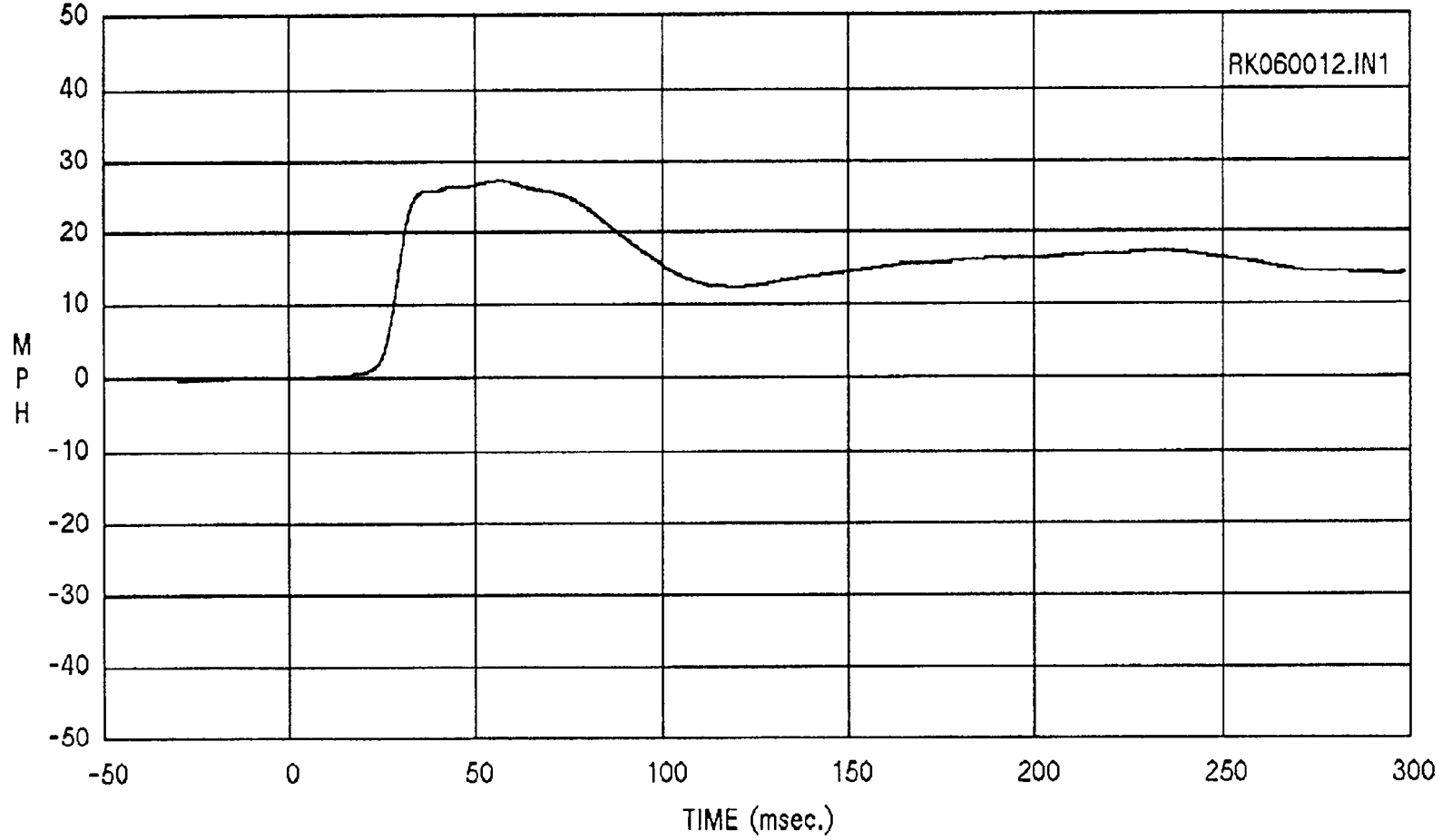
Curve: Driver lower spine delta V -- Redundant Filter: SAE CLASS 180 Max = 29.364 Min = -.10834
01

MSE Date: 08/19/92 Program: Side Impact, 30/15, 90 deg. Vehicle:1989 Ford Ranger XLT Pickup



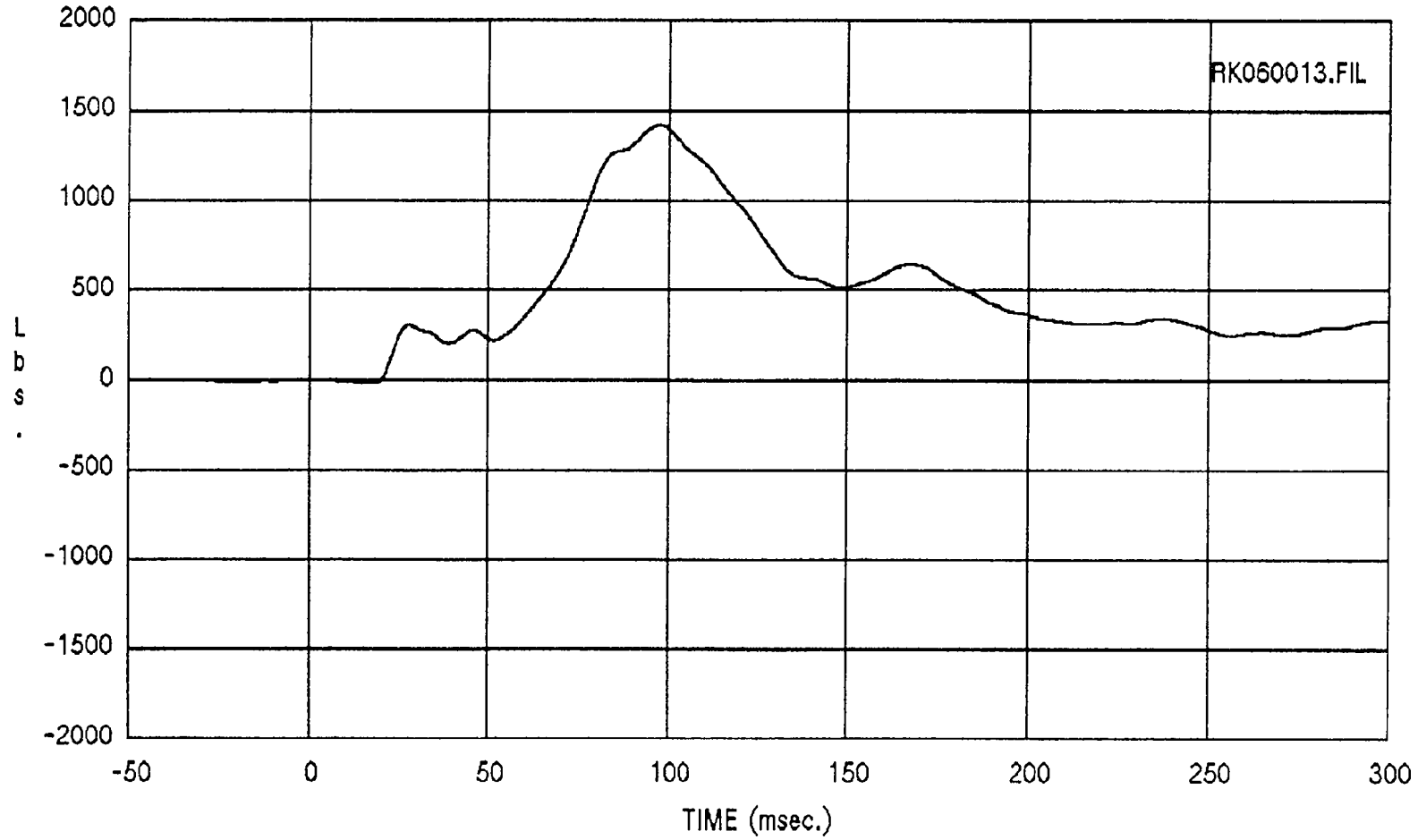
Curve: Driver pelvis acceleration Filter: FIR 100 Max = 162.73 Min = -20.935

MSE Date: 08/19/92 Program: Side Impact, 30/15, 90 deg. Vehicle:1989 Ford Ranger XLT Pickup



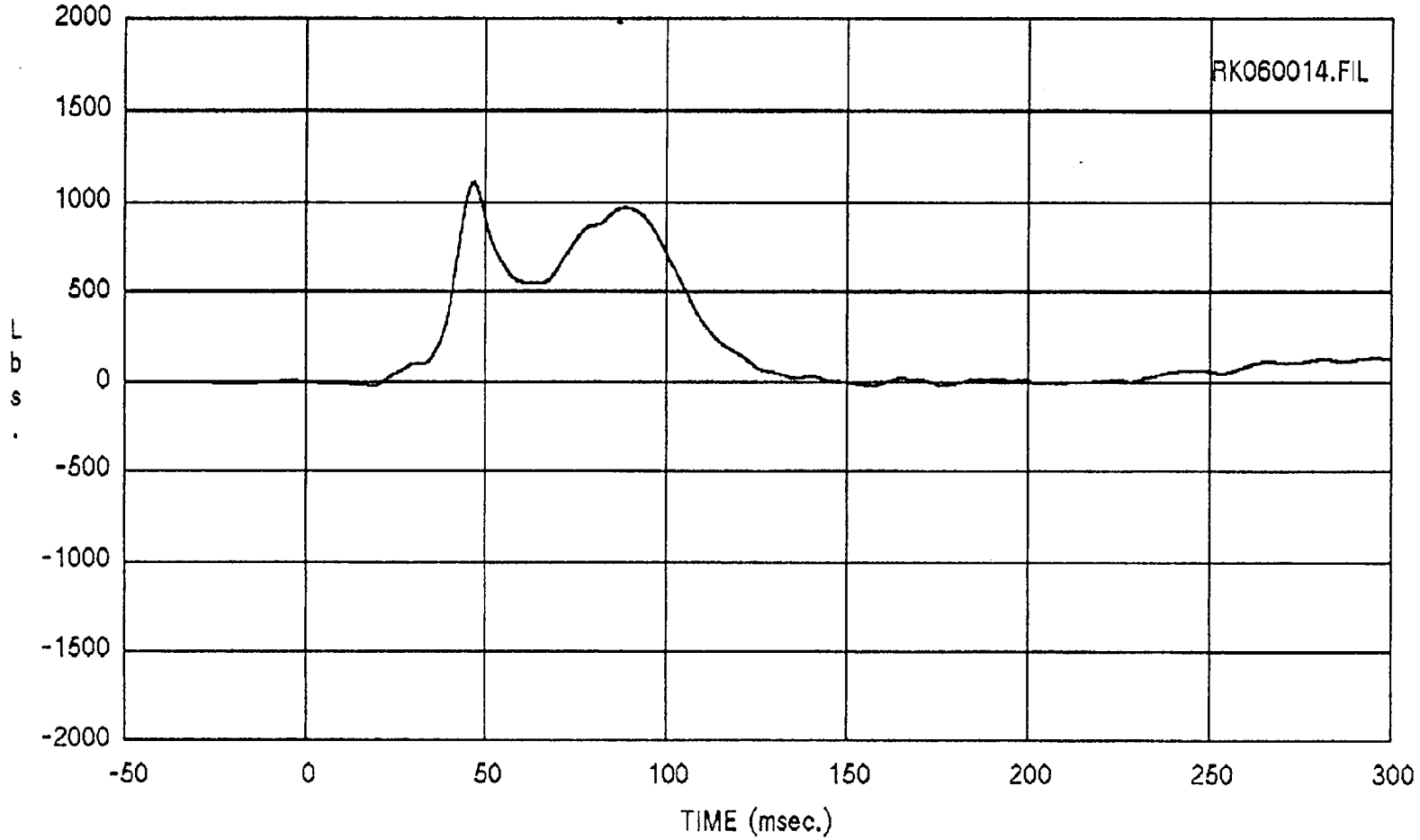
Curve: Driver pelvis delta V Filter: SAE CLASS 180 Max = 27.351 Min = 12.474

MSE Date: 08/19/92 Program: Side Impact, 30/15, 90 deg. Vehicle:1989 Ford Ranger XLT Pickup



Curve: Driver lap belt load Filter: SAE CLASS 60 Max = 1426.1 Min = -14.764

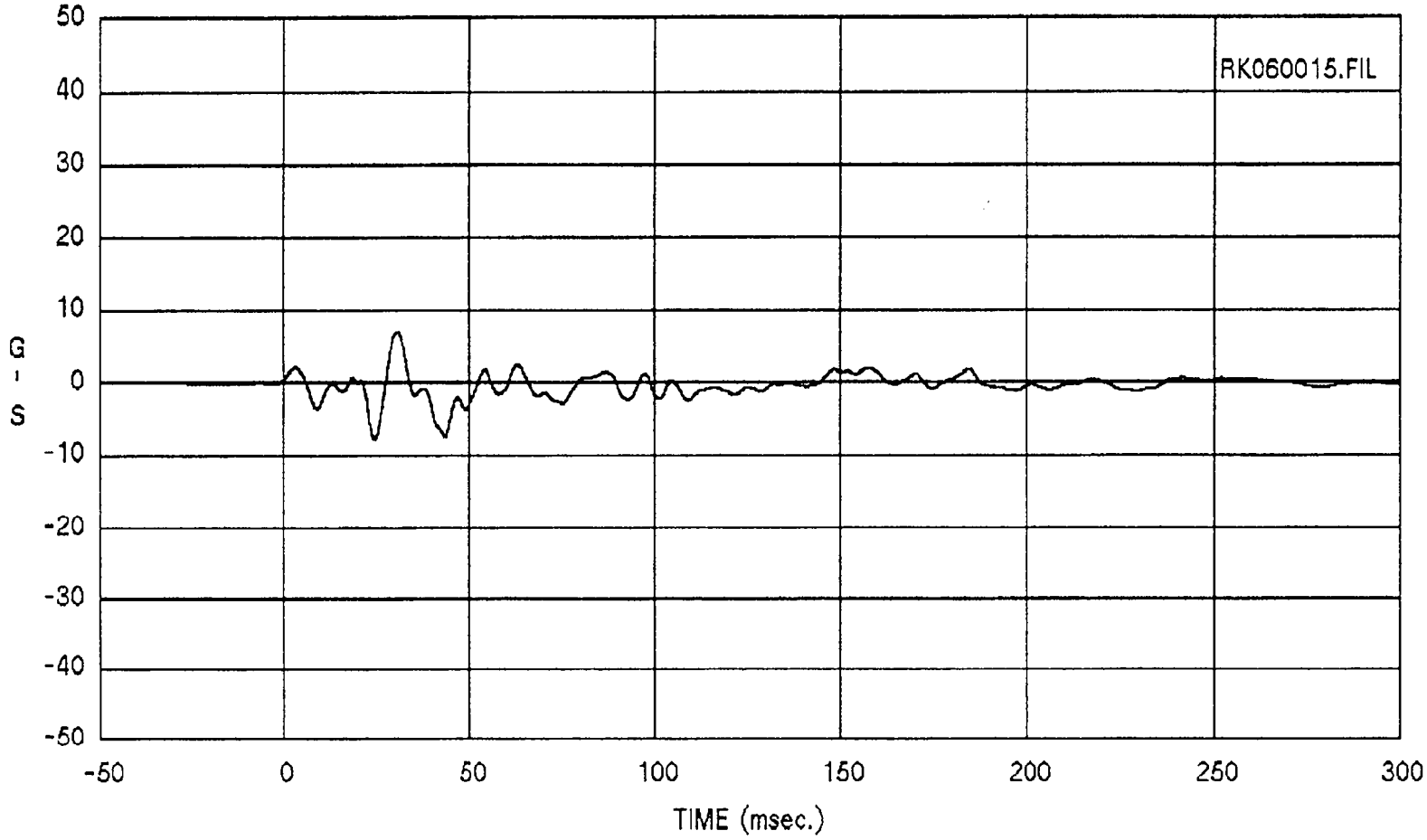
MSE Date: 08/19/92 Program: Side Impact, 30/15, 90 deg. Vehicle:1989 Ford Ranger XLT Pickup



Curve: Driver shoulder belt load Filter: SAE CLASS 60 Max = 1109.0 Min = -20.917

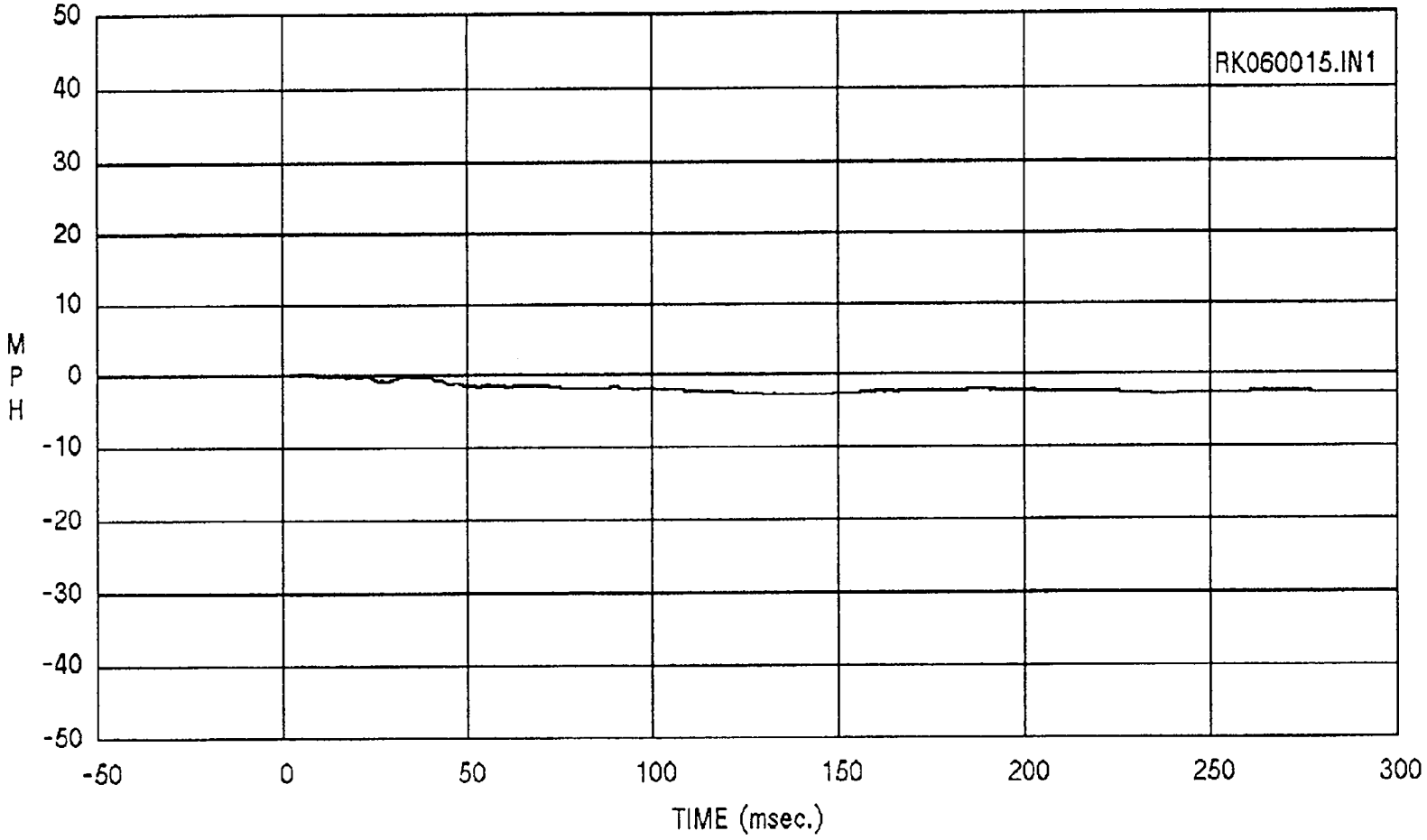
MSE Date: 08/19/92 Program: Side Impact, 30/15, 90 deg. Vehicle:1989 Ford Ranger XLT Pickup

VEHICLE ACCELEROMETER DATA



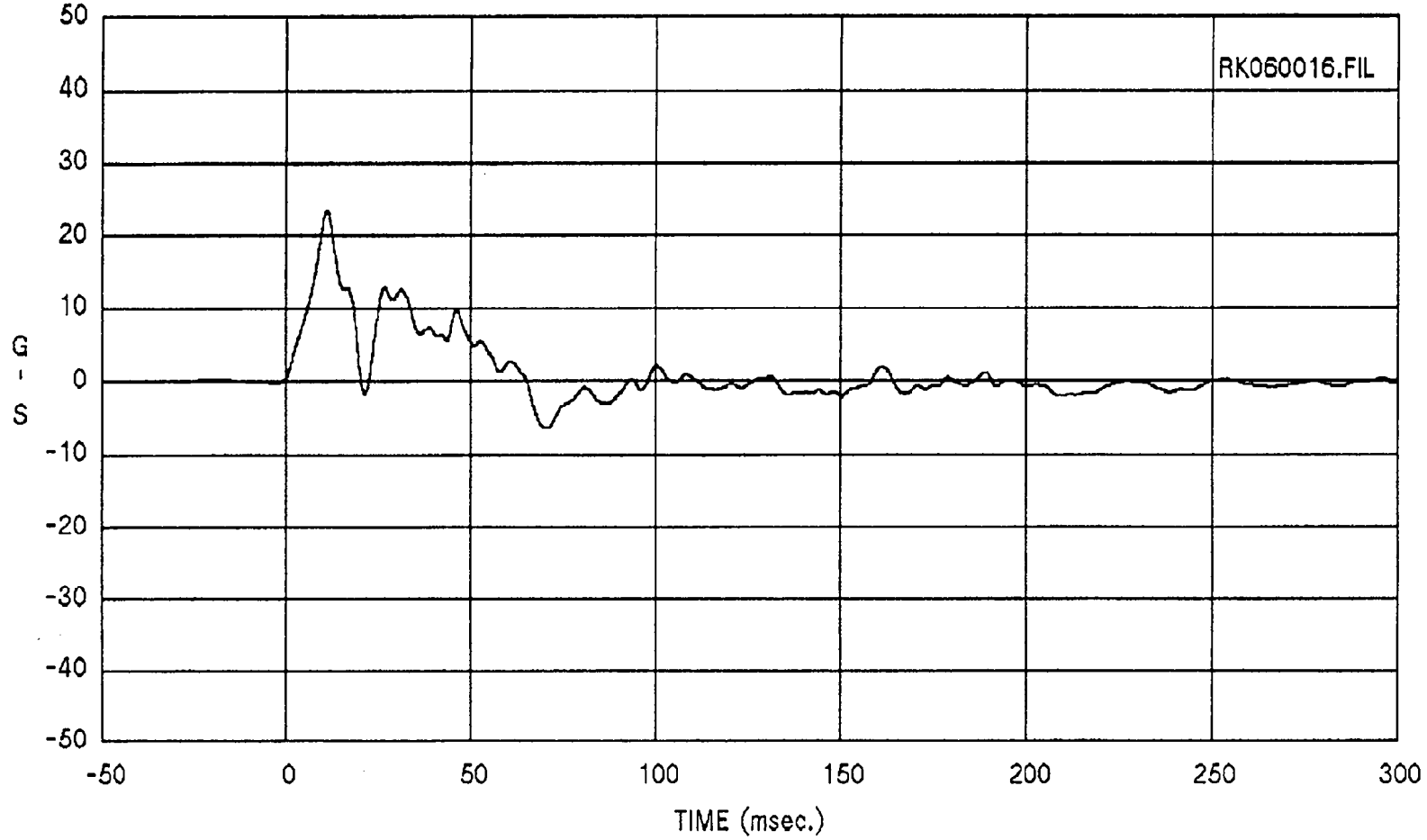
Curve: Front seat right sill acceleration -- X axis Filter: SAE CLASS 60 Max = 7.0270 Min = -7.8686

MSE Date: 08/19/92 Program: Side Impact, 30/15, 90 deg. Vehicle:1989 Ford Ranger XLT Pickup



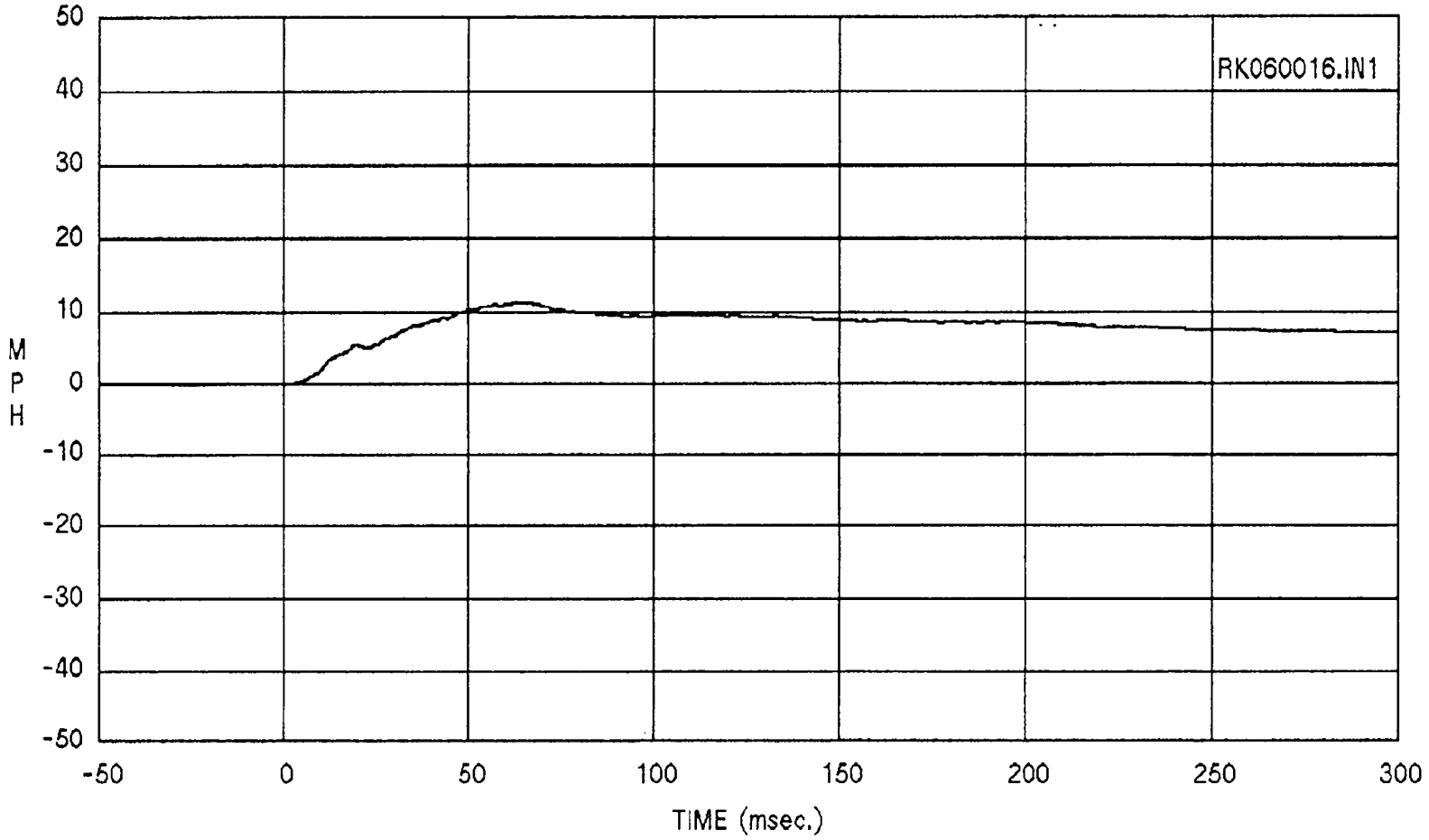
Curve: Front seat right sill delta V -- X axis Filter: SAE CLASS 180 Max = .21003 Min = -2.7545

MSE Date: 08/19/92 Program: Side Impact, 30/15, 90 deg. Vehicle:1989 Ford Ranger XLT Pickup



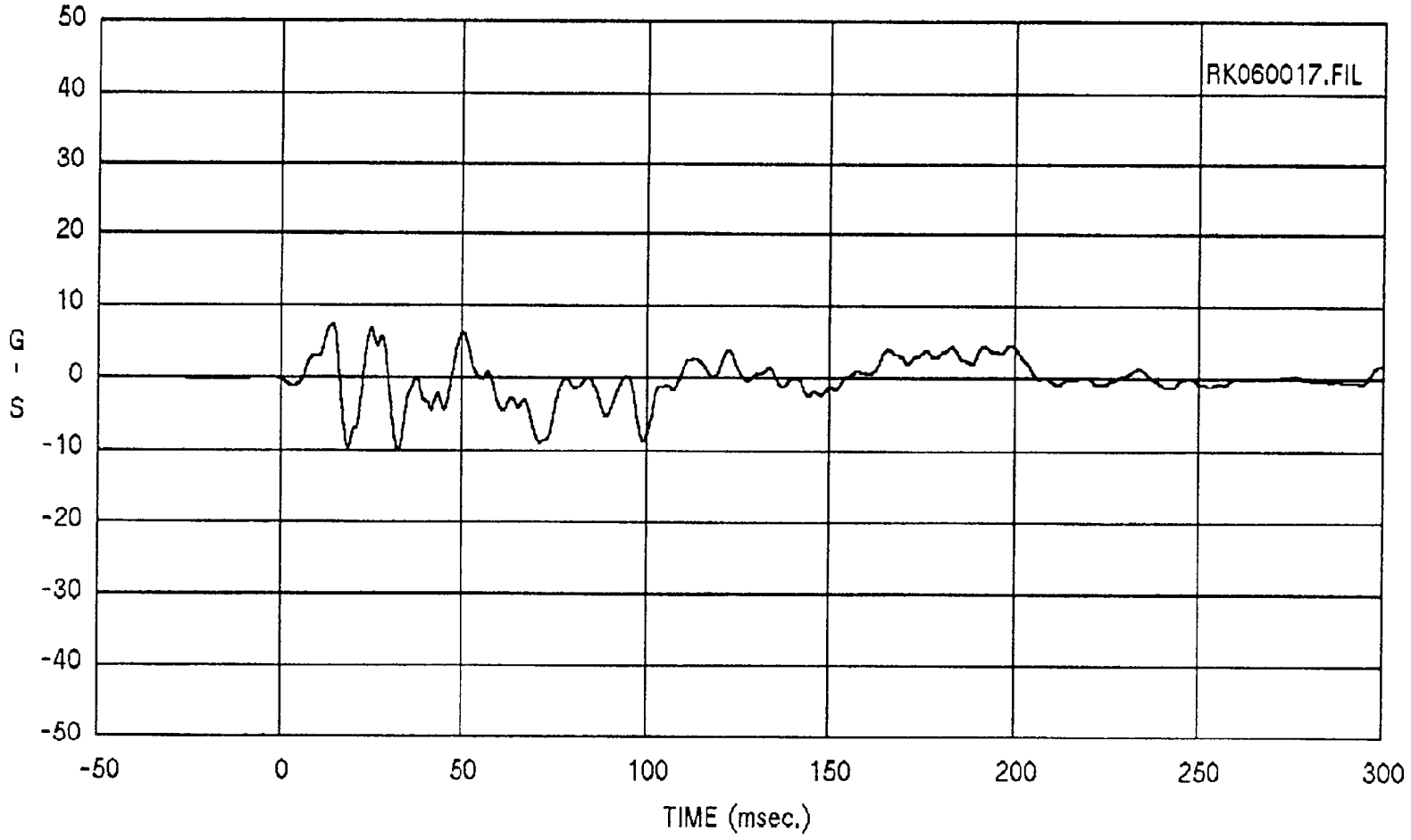
Curve: Front seat right sill acceleration -- Y axis Filter: SAE CLASS 60 Max = 23.521 Min = -6.3701

MSE Date: 08/19/92 Program: Side Impact, 30/15, 90 deg. Vehicle:1989 Ford Ranger XLT Pickup



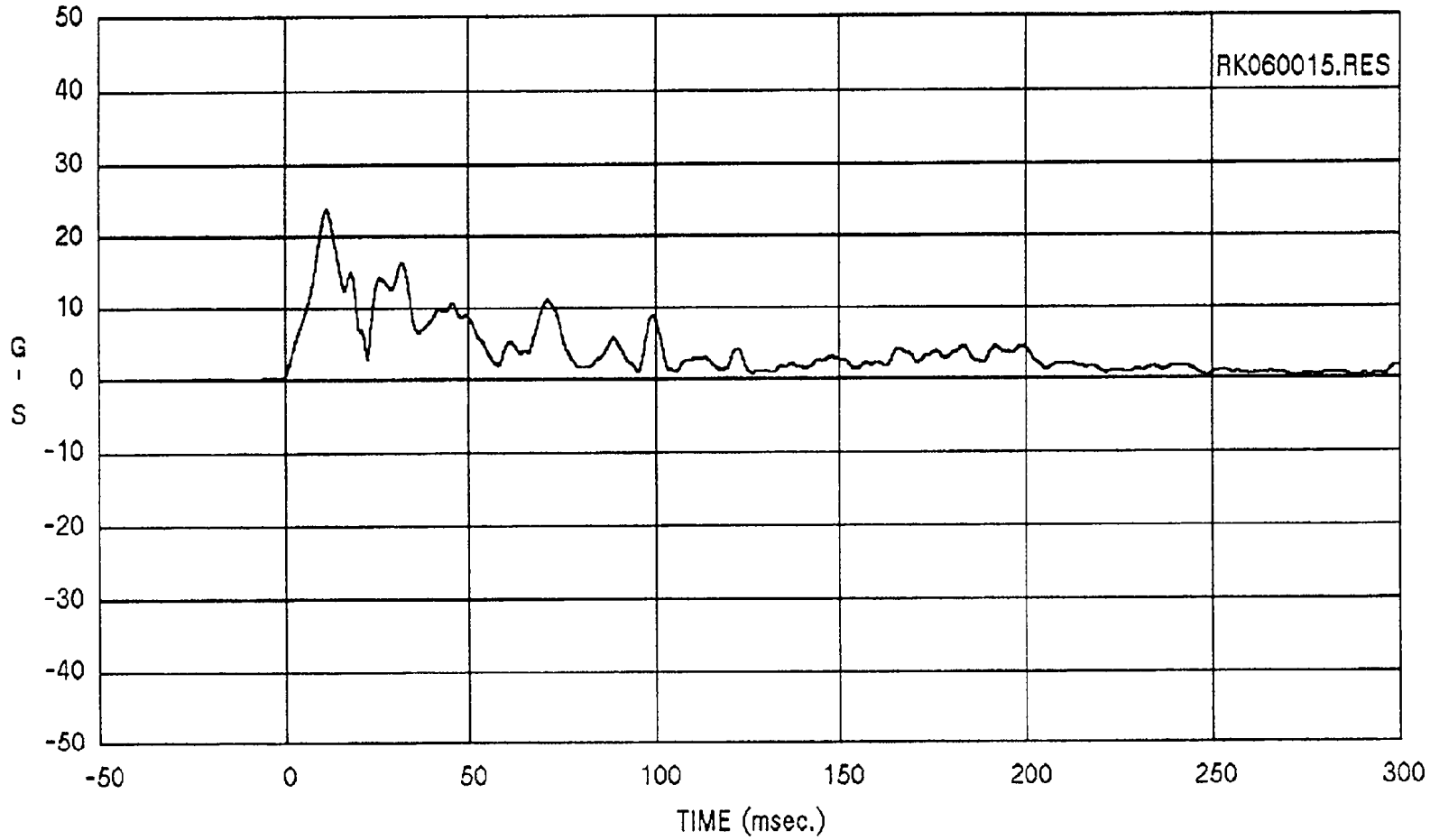
Curve: Front seat right sill delta V -- Y axis Filter: SAE CLASS 180 Max = 11.350 Min = -.37142E-(

MSE Date: 08/19/92 Program: Side Impact, 30/15, 90 deg. Vehicle:1989 Ford Ranger XLT Pickup



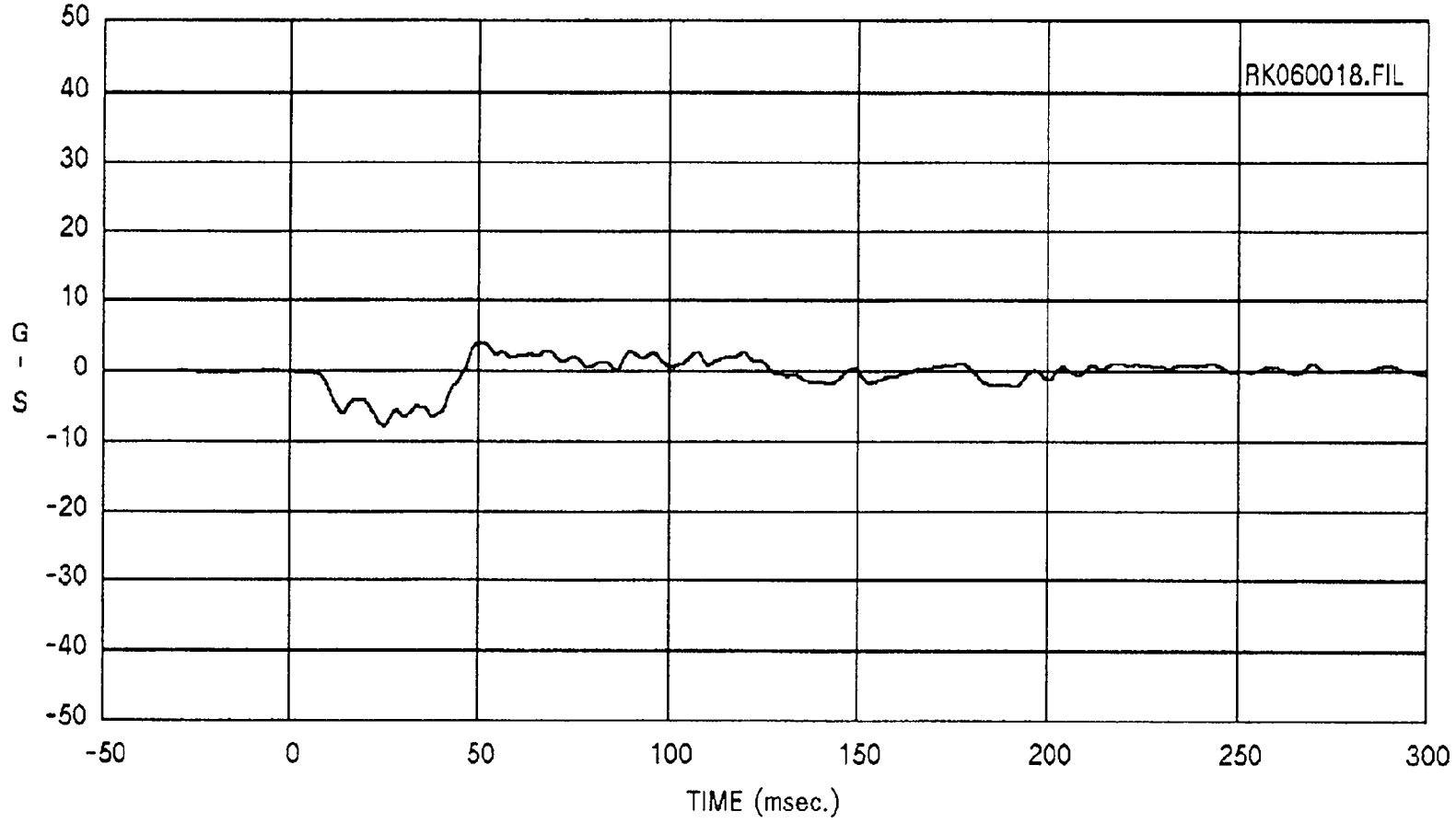
Curve: Front seat right sill acceleration -- Z axis Filter: SAE CLASS 60 Max = 7.3614 Min = -10.112

MSE Date: 08/19/92 Program: Side Impact, 30/15, 90 deg. Vehicle:1989 Ford Ranger XLT Pickup



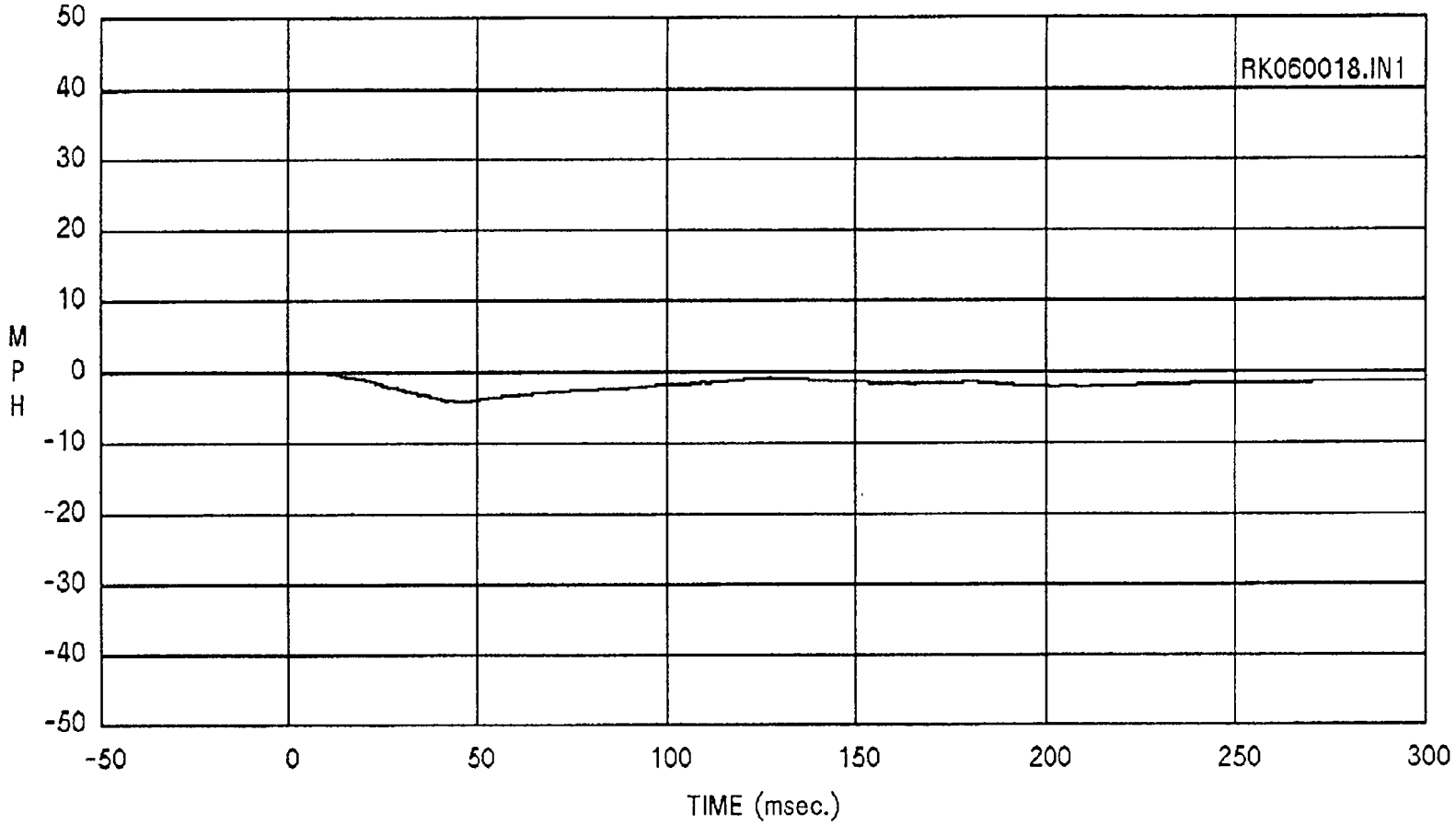
Curve: Front seat right sill resultant acceleration Filter: SAE CLASS 60 Max = 23.826 Min = .35899

MSE Date: 08/19/92 Program: Side Impact, 30/15, 90 deg. Vehicle:1989 Ford Ranger XLT Pickup



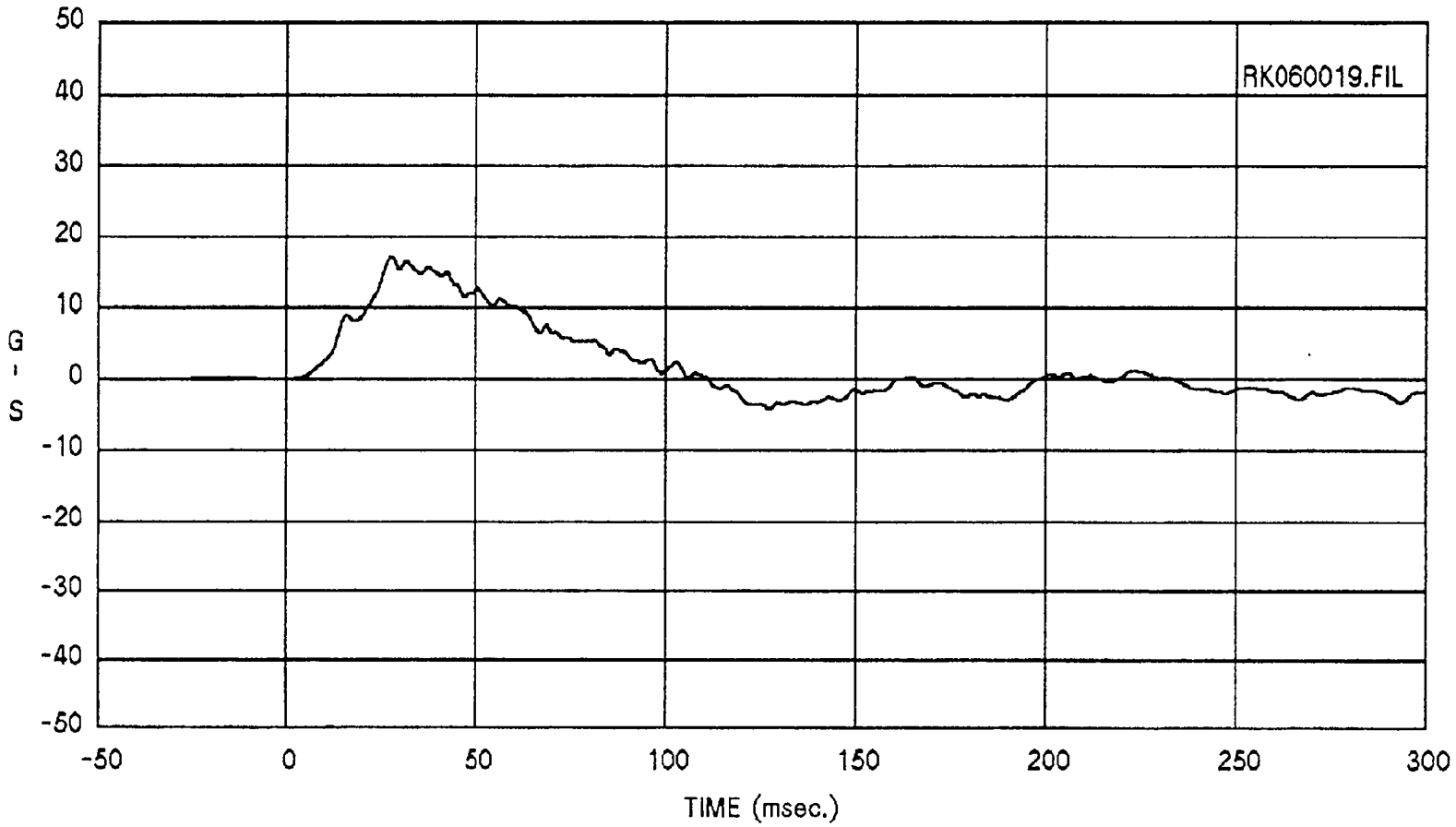
Curve: Rear floor above axle acceleration -- X axis Filter: SAE CLASS 60 Max = 3.8864 Min = -7.8059

MSE Date: 08/19/92 Program: Side Impact, 30/15, 90 deg. Vehicle:1989 Ford Ranger XLT Pickup



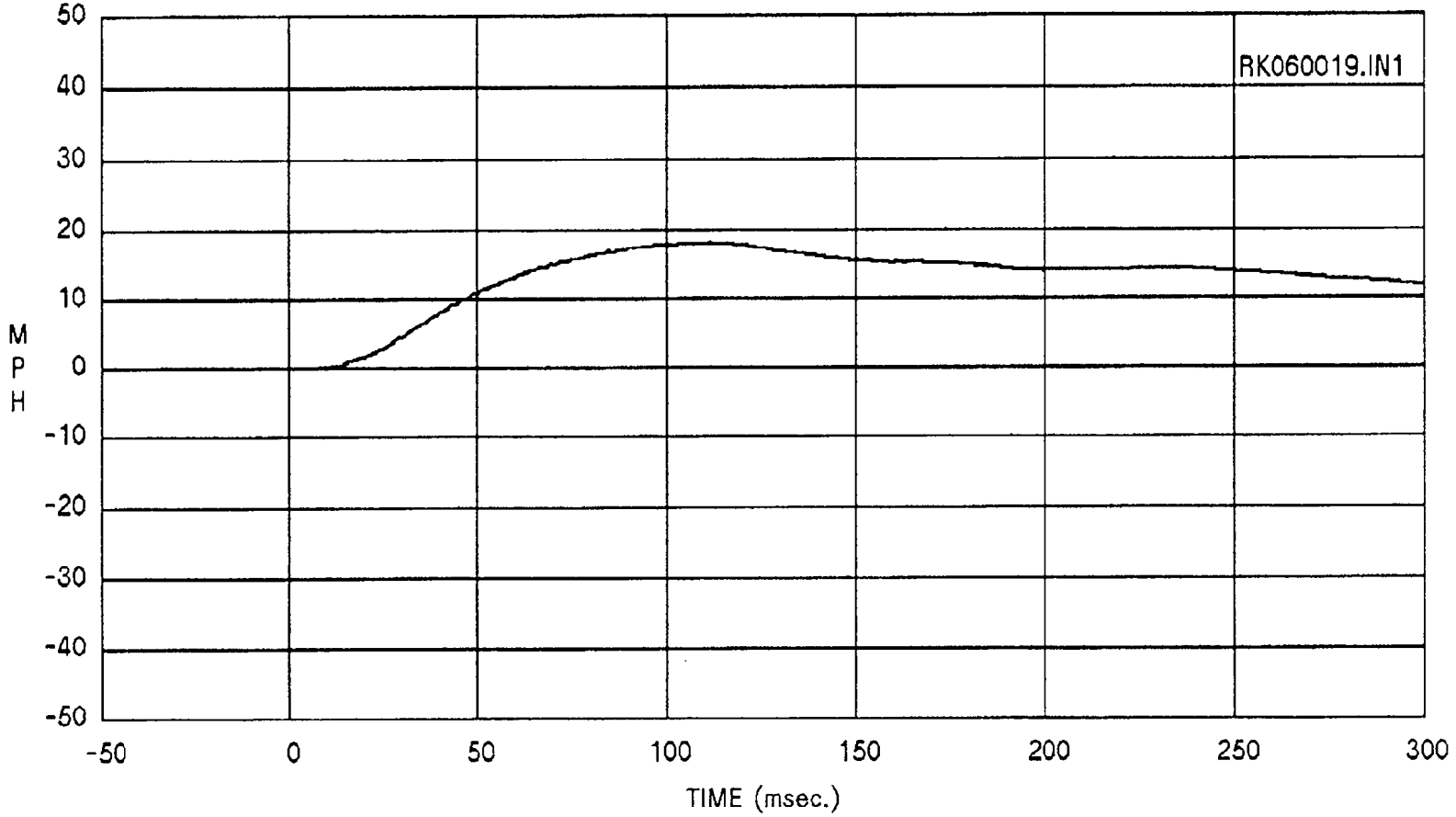
Curve: Rear floor above axle delta V -- X axis Filter: SAE CLASS 180 Max = -.43375E-03 Min = -4.16

MSE Date: 08/19/92 Program: Side Impact, 30/15, 90 deg. Vehicle:1989 Ford Ranger XLT Pickup



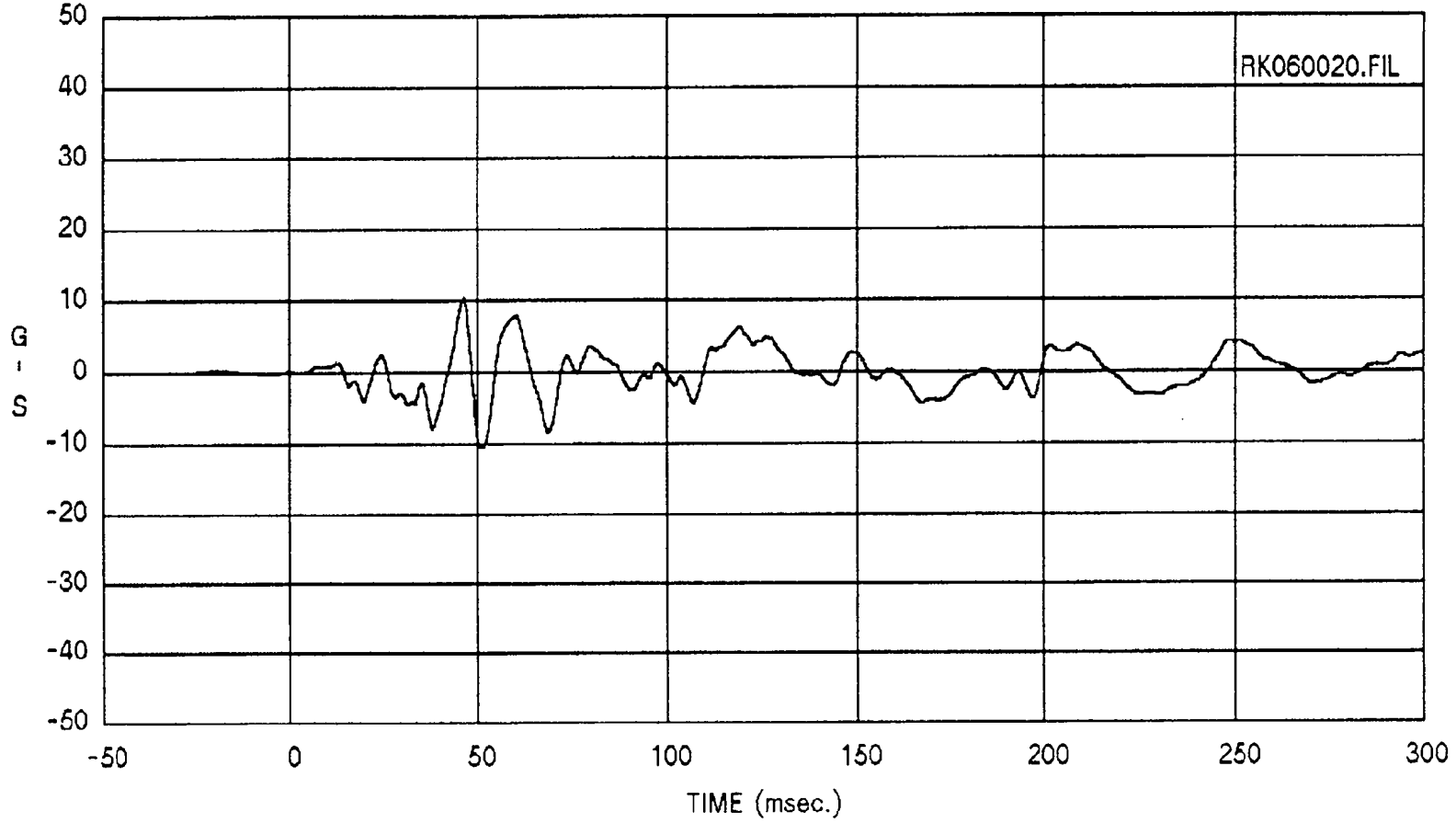
Curve: Rear floor above axle acceleration -- Y axis Filter: SAE CLASS 60 Max = 17.076 Min = -4.1179

MSE Date: 08/19/92 Program: Side Impact, 30/15, 90 deg. Vehicle:1989 Ford Ranger XLT Pickup



Curve: Rear floor above axle delta V -- Y axis Filter: SAE CLASS 180 Max = 18.117 Min = 9.2160

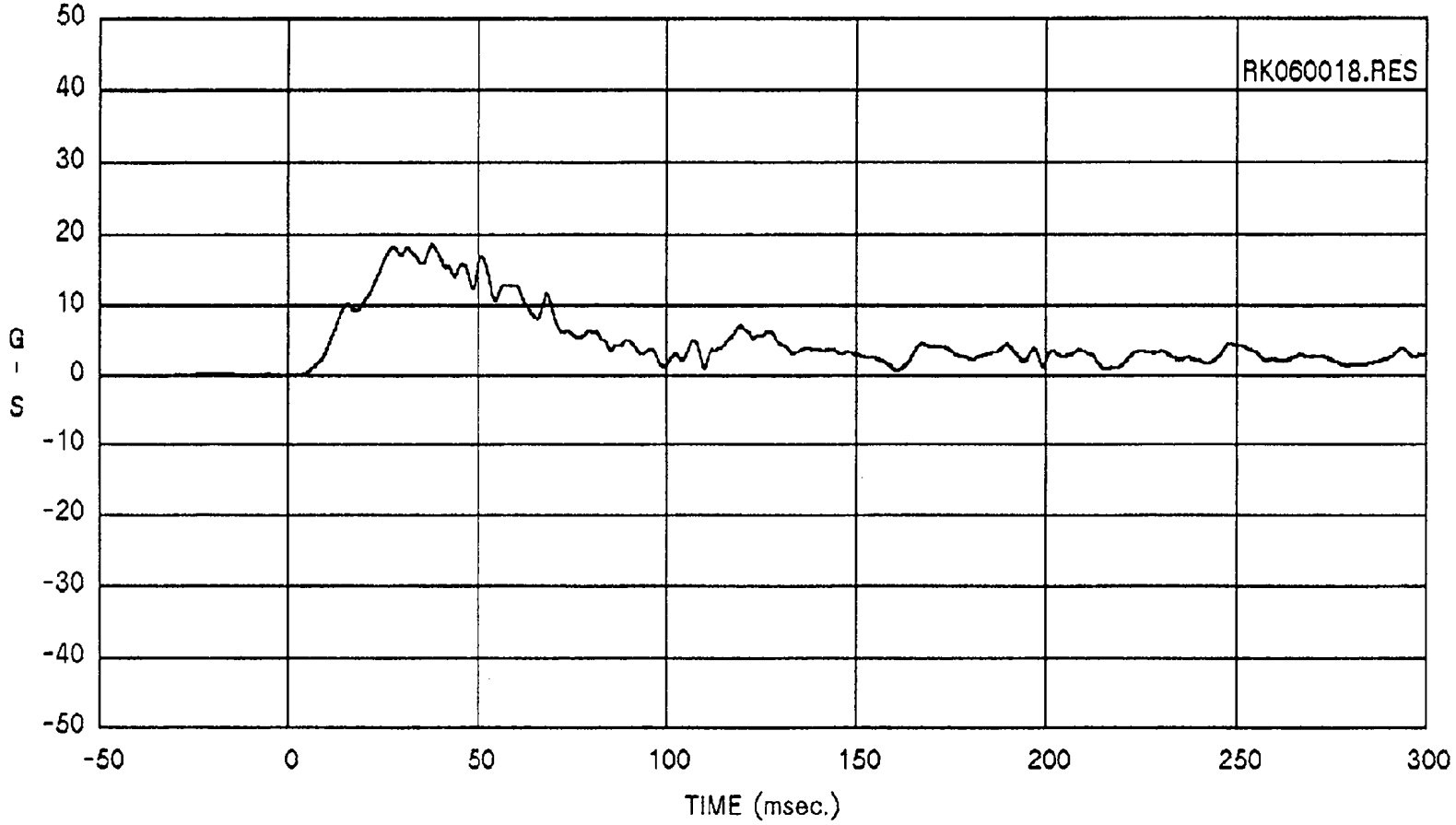
MSE Date: 08/19/92 Program: Side Impact, 30/15, 90 deg. Vehicle:1989 Ford Ranger XLT Pickup



Curve: Rear floor above axle acceleration -- Z axis Filter: SAE CLASS 60 Max = 10.376 Min = -10.491

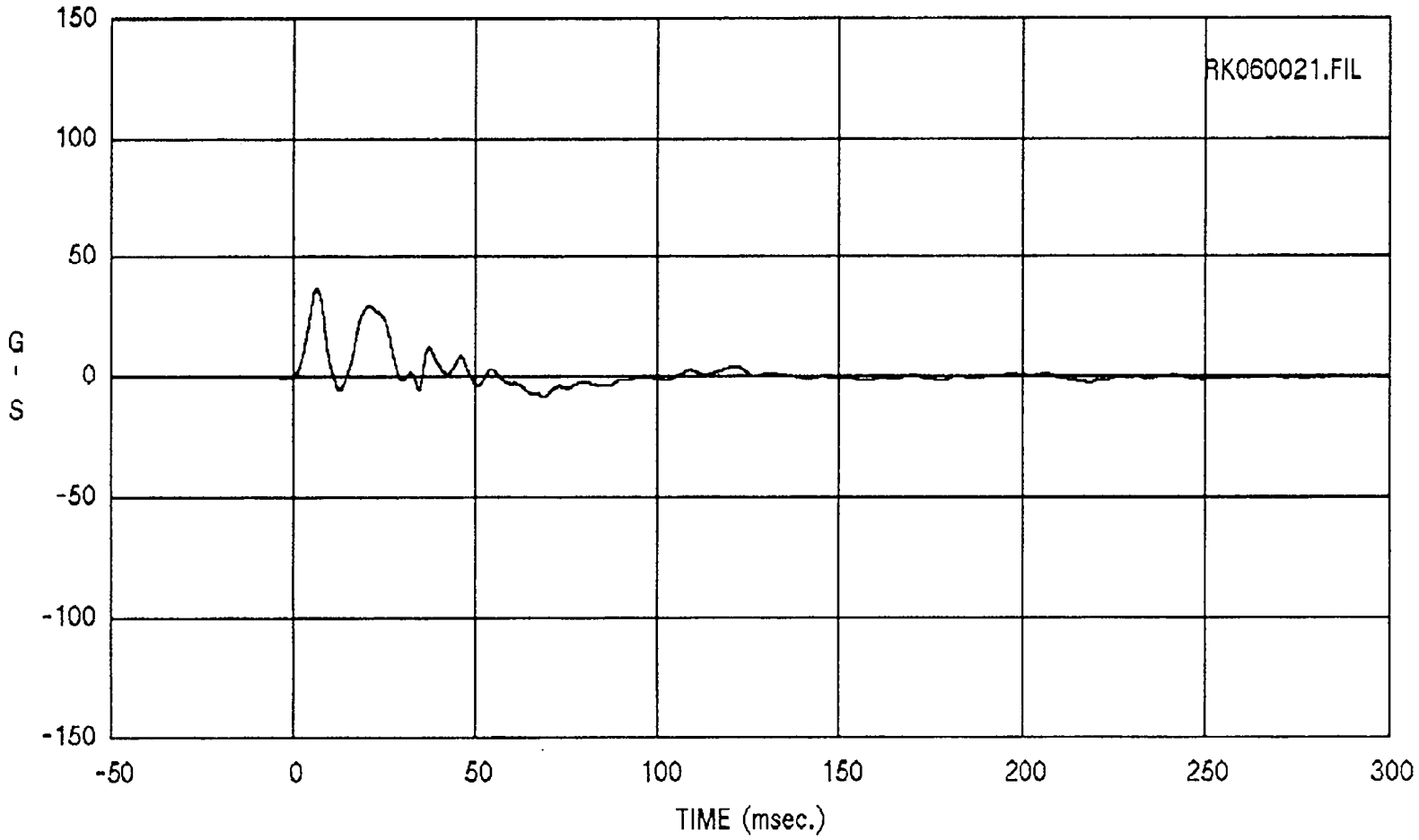
MSE Date: 08/19/92 Program: Side Impact, 30/15, 90 deg. Vehicle:1989 Ford Ranger XLT Pickup

111



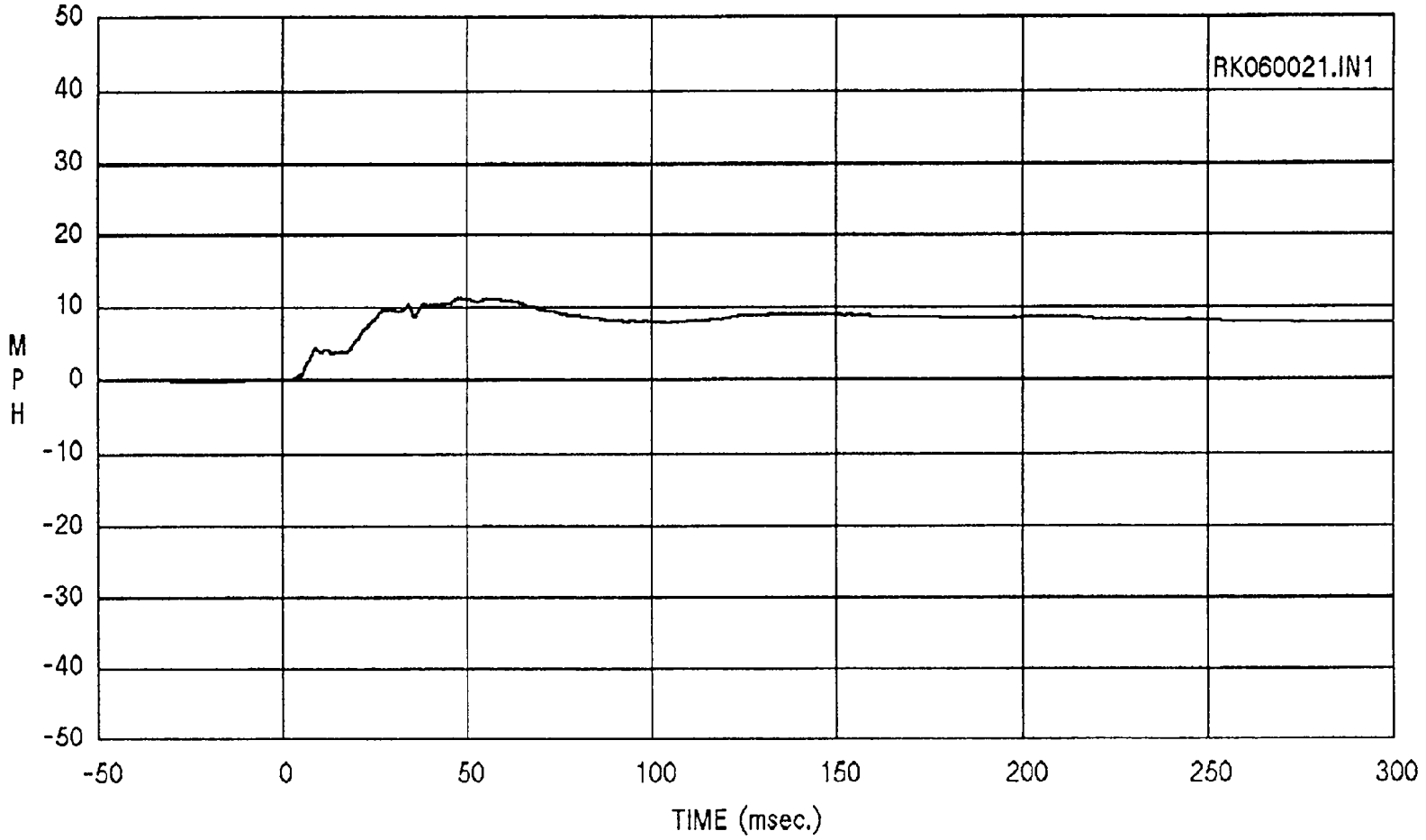
Curve: Rear floor above axle resultant acceleration Filter: SAE CLASS 60 Max = 18.506 Min = .15825

MSE Date: 08/19/92 Program: Side Impact, 30/15, 90 deg. Vehicle:1989 Ford Ranger XLT Pickup



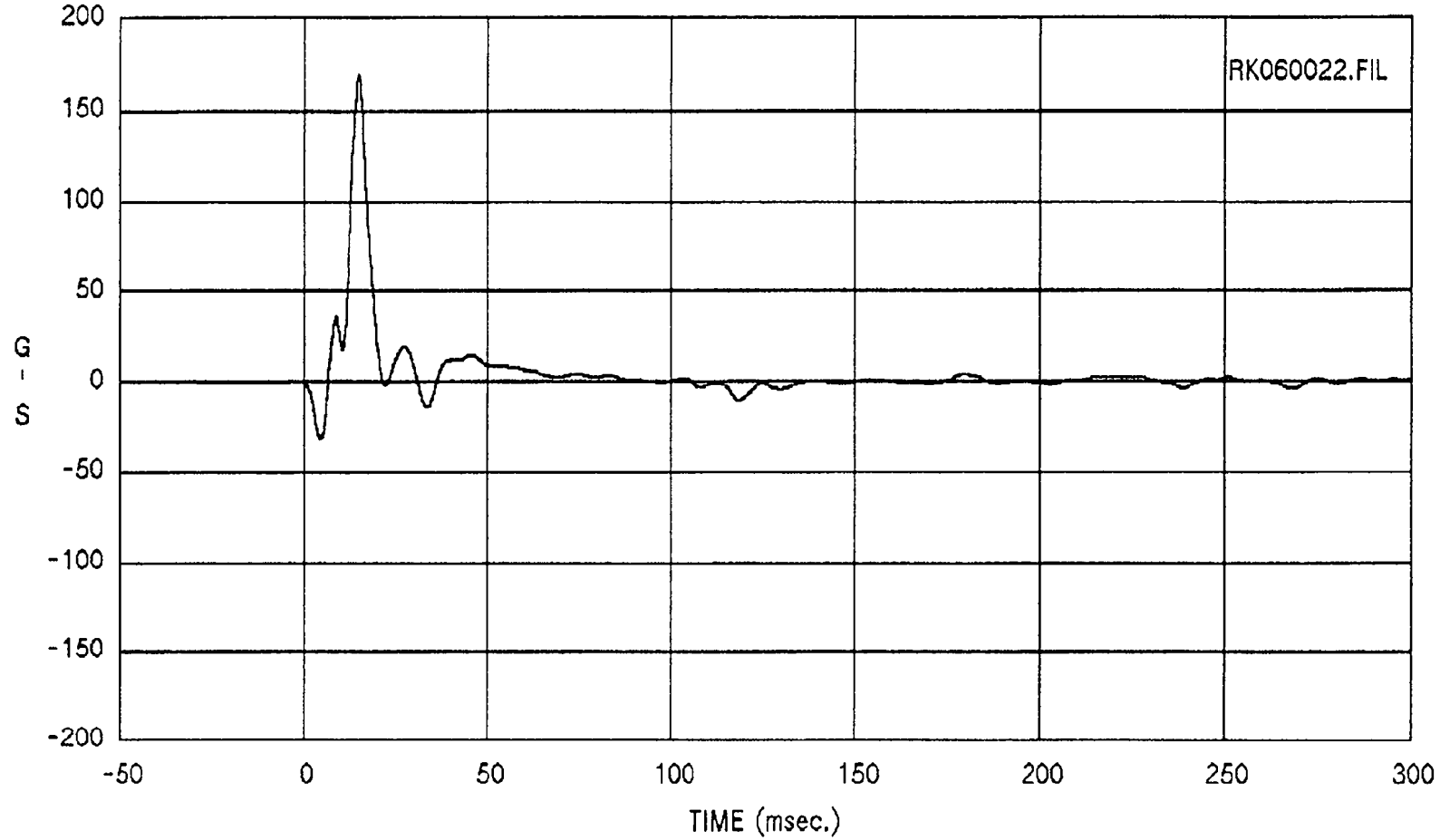
Curve: Front seat left Sill acceleration -- Y axis Filter: SAE CLASS 60 Max = 36.641 Min = -8.4687

MSE Date: 08/19/92 Program: Side Impact, 30/15, 90 deg. Vehicle:1989 Ford Ranger XLT Pickup



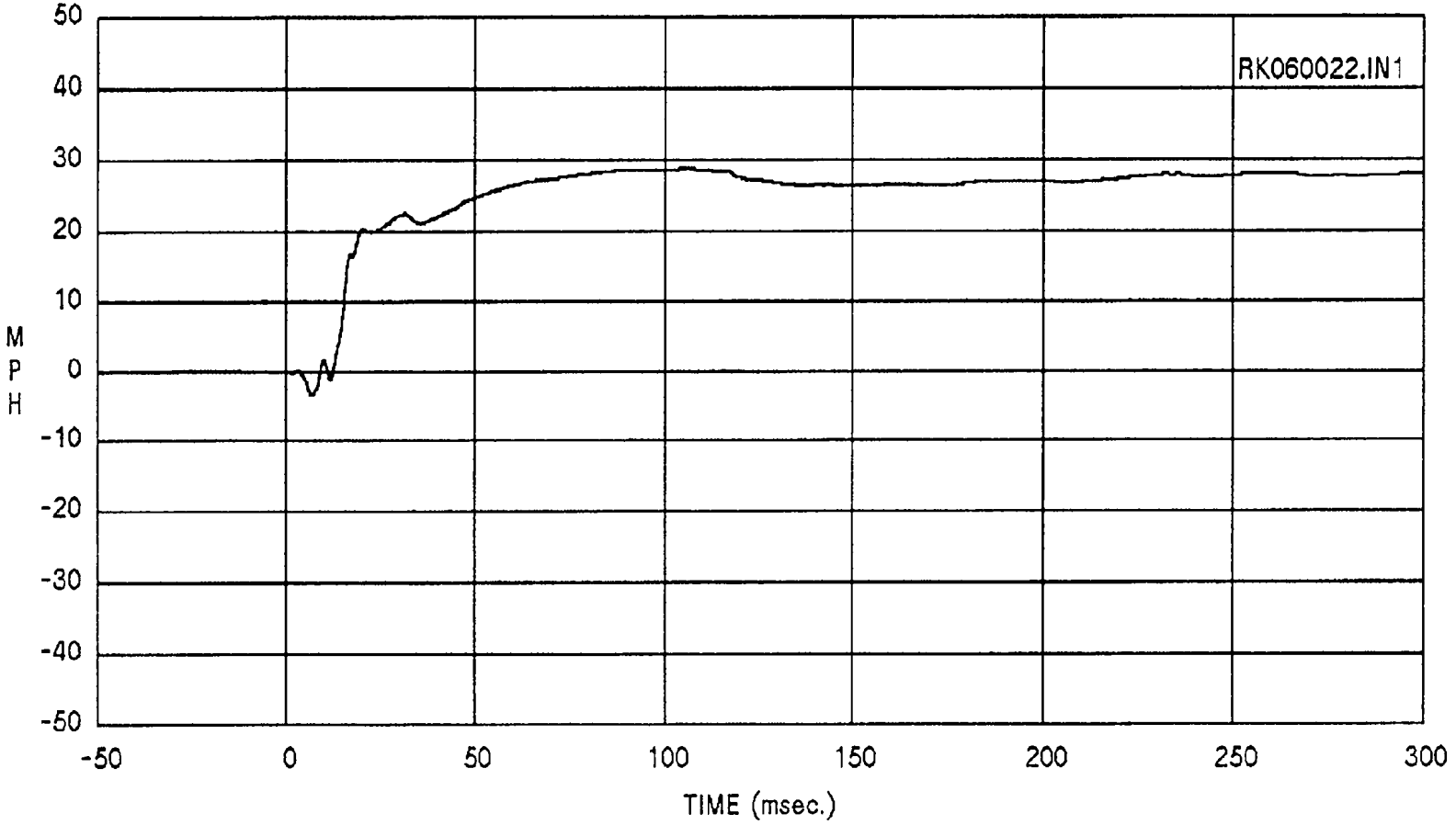
Curve: Front seat left SIII delta V -- Y axis Filter: SAE CLASS 180 Max = 11.279 Min = -.49025E-1

MSE Date: 08/19/92 Program: Side Impact, 30/15, 90 deg. Vehicle:1989 Ford Ranger XLT Pickup



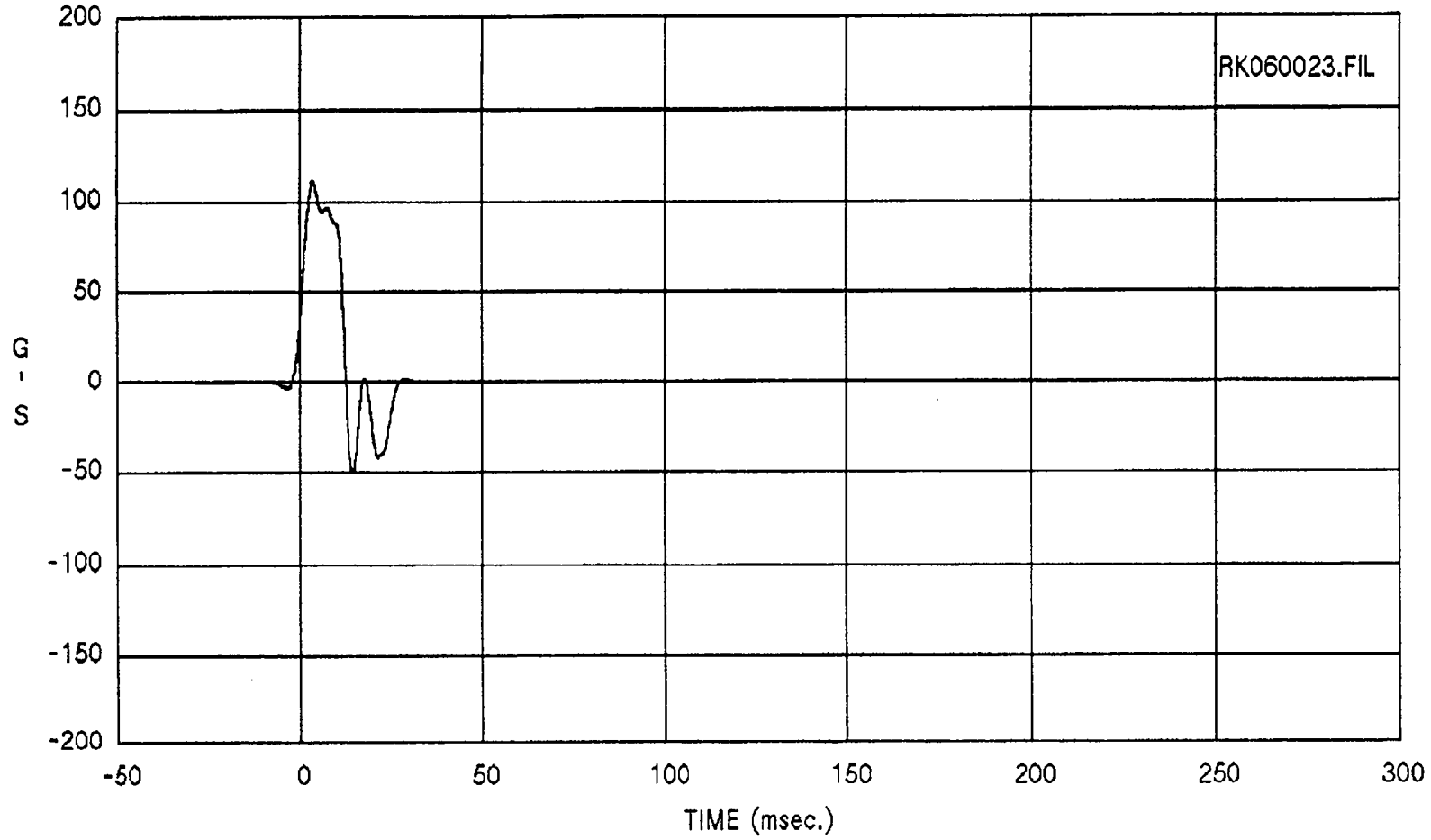
Curve: Left front door at centerline -- Y axis Filter: SAE CLASS 60 Max = 169.67 Min = -31.292

MSE Date: 08/19/92 Program: Side Impact, 30/15, 90 deg. Vehicle:1989 Ford Ranger XLT Pickup



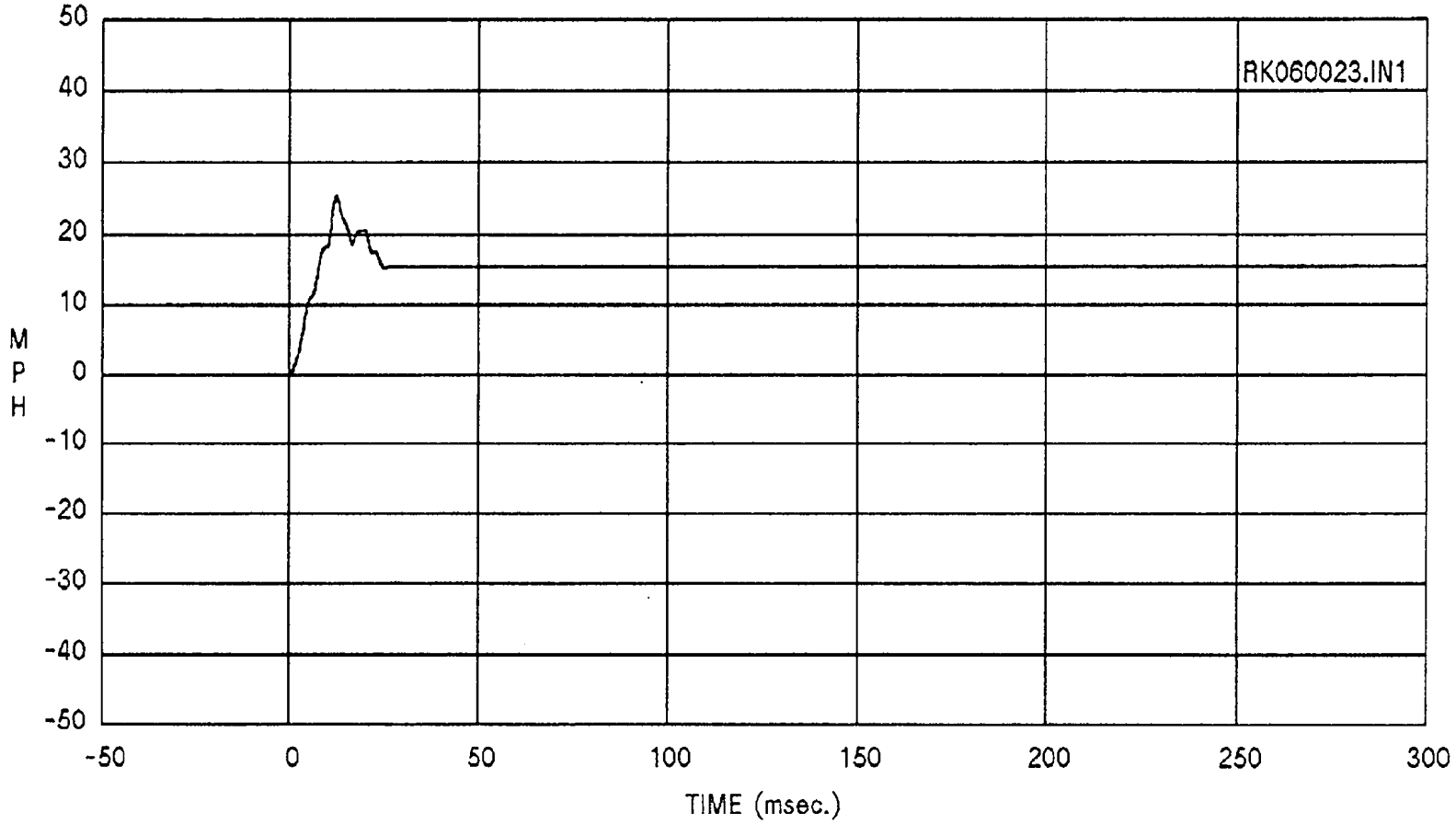
Curve: Left front door at centerline delta V -- Y axis Filter: SAE CLASS 180 Max = 28.840 Min = -3.4404

MSE Date: 08/19/92 Program: Side Impact, 30/15, 90 deg. Vehicle:1989 Ford Ranger XLT Pickup



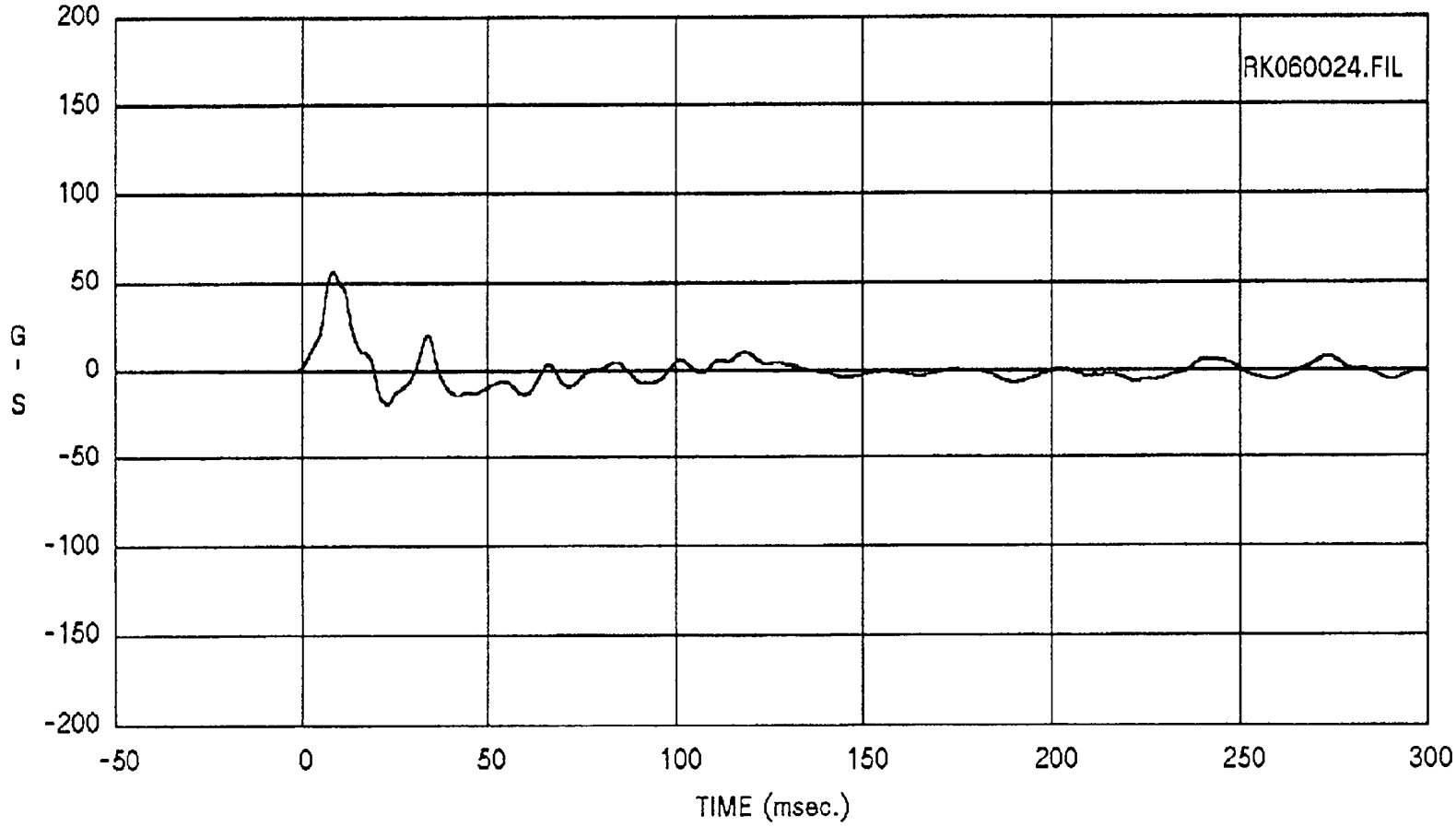
Curve: Left front door at mid-rear -- Y axis Filter: SAE CLASS 60 Max = 112.14 Min = -50.024

MSE Date: 08/19/92 Program: Side Impact, 30/15, 90 deg. Vehicle:1989 Ford Ranger XLT Pickup



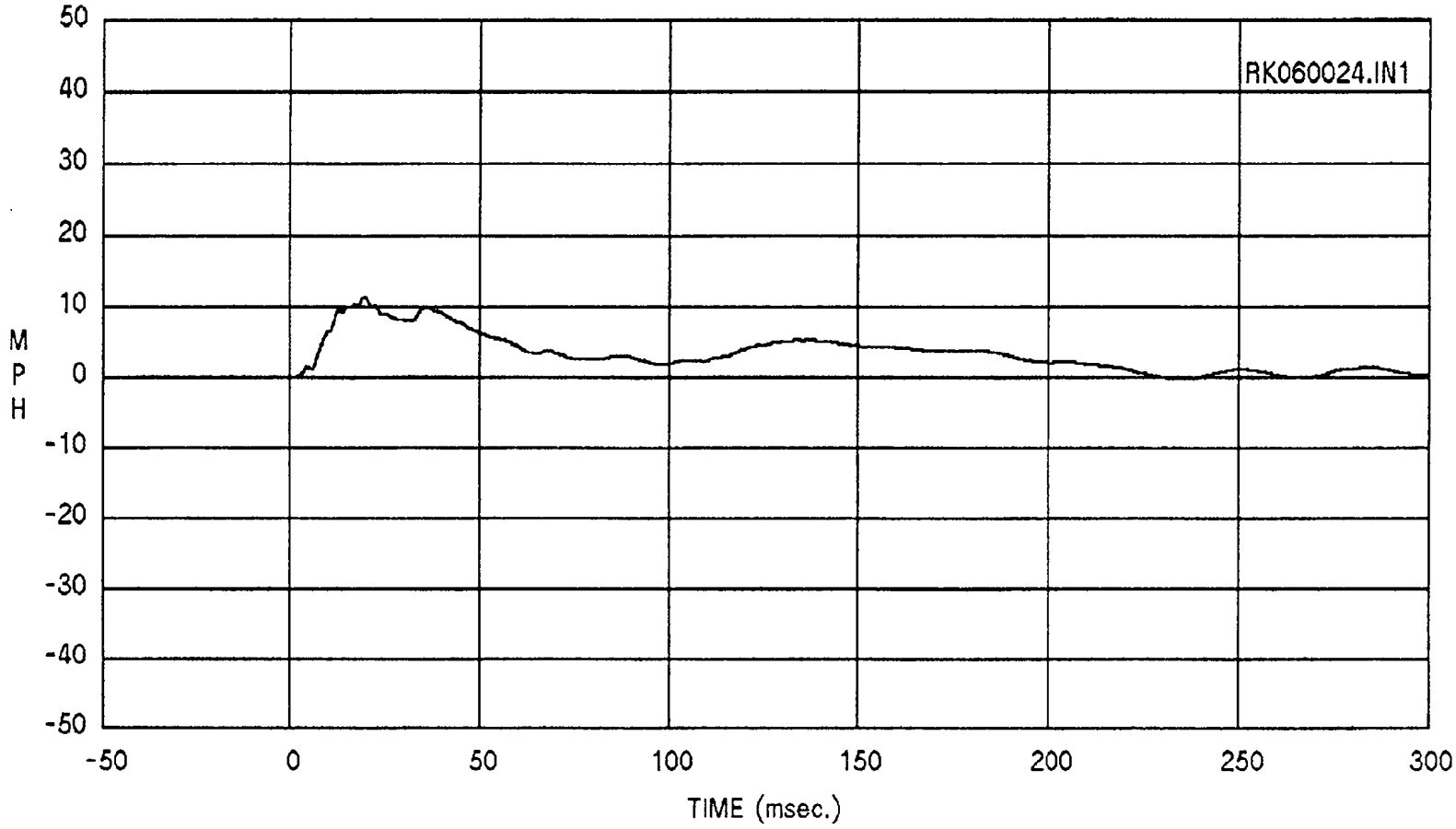
Curve: Left front door at mid-rear delta V -- Y axis Filter: SAE CLASS 180 Max = 25.532 Min = 15.331

MSE Date: 08/19/92 Program: Side Impact, 30/15, 90 deg. Vehicle:1989 Ford Ranger XLT Pickup



Curve: Left front door at upper centerline -- Y axis Filter: SAE CLASS 60 Max = 56.527 Min = -19.002

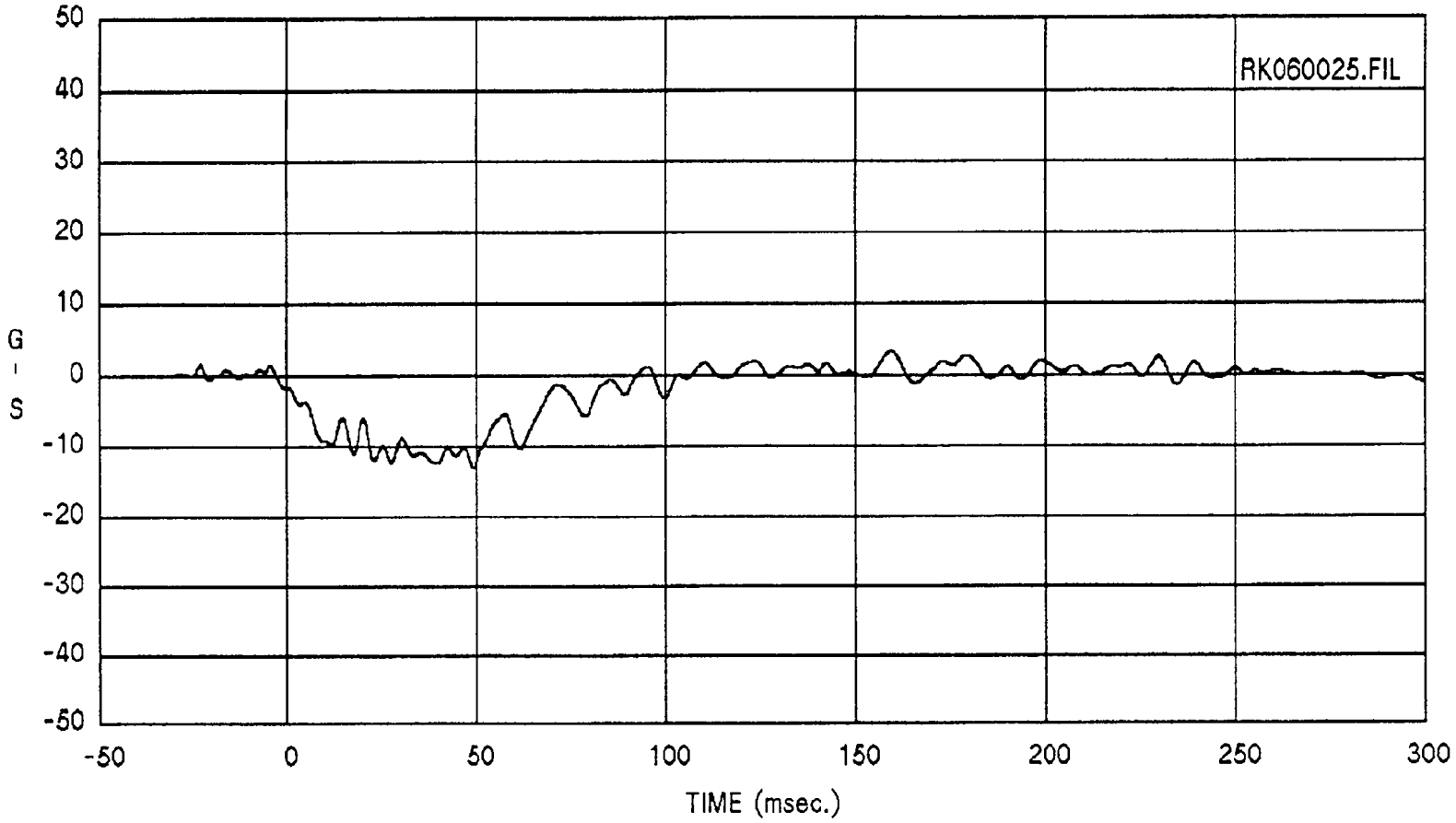
MSE Date: 08/19/92 Program: Side Impact, 30/15, 90 deg. Vehicle:1989 Ford Ranger XLT Pickup



Curve: Left front door at upper centerline -- Y axis Filter: SAE CLASS 180 Max = 11.337 Min = -.30526

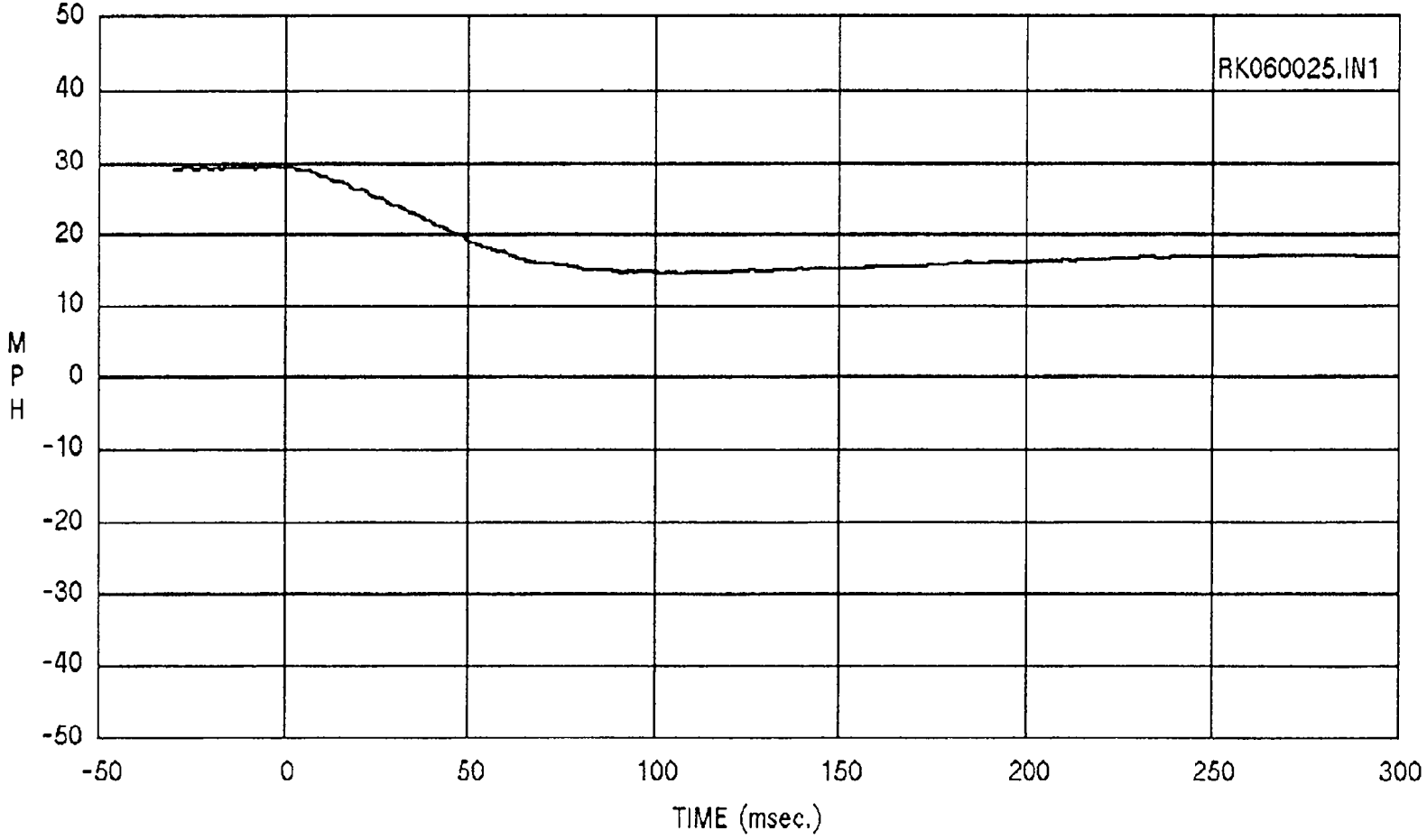
MSE Date: 08/19/92 Program: Side Impact, 30/15, 90 deg. Vehicle:1989 Ford Ranger XLT Pickup

MDB ACCELEROMETER DATA



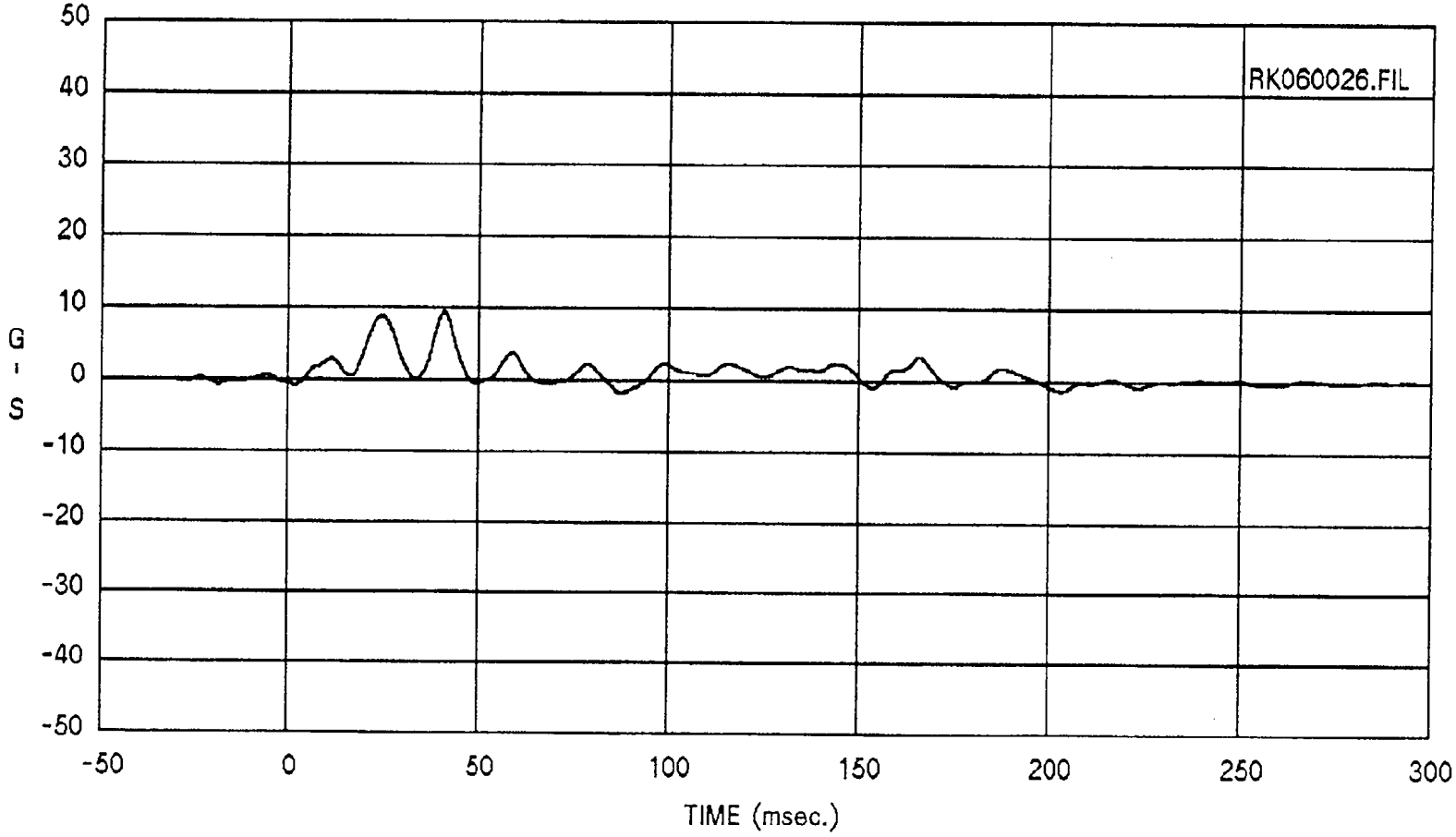
Curve: M.D.B. C/G acceleration -- X axis Filter: SAE CLASS 60 Max = 3.2870 Min = -13.094

MSE Date: 08/19/92 Program: Side Impact, 30/15, 90 deg. Vehicle:1989 Ford Ranger XLT Pickup



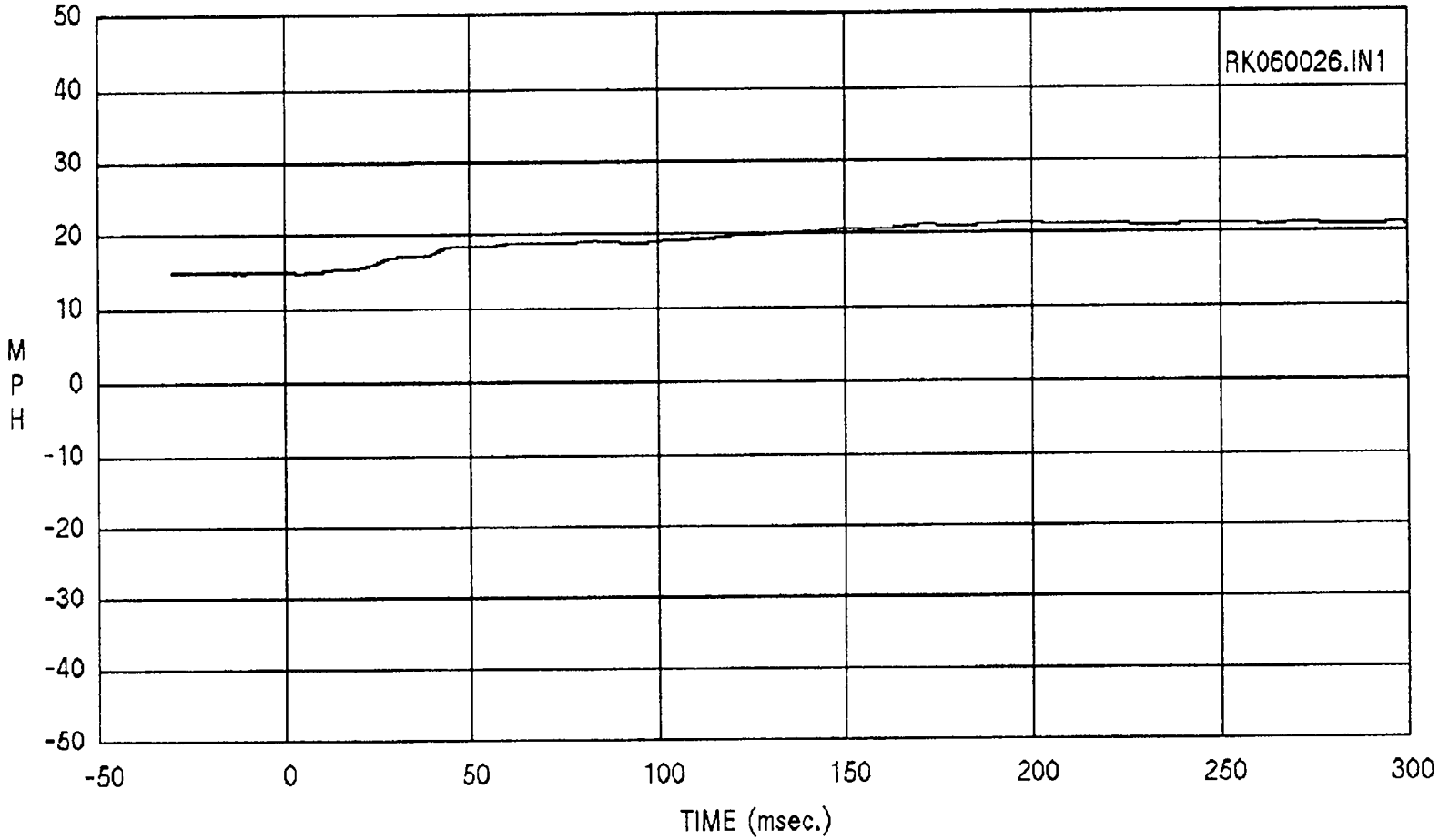
Curve: M.D.B. C/G delta V -- X axis Filter: SAE CLASS 180 Max = 29.506 Min = 14.722

MSE Date: 08/19/92 Program: Side Impact, 30/15, 90 deg. Vehicle:1989 Ford Ranger XLT Pickup



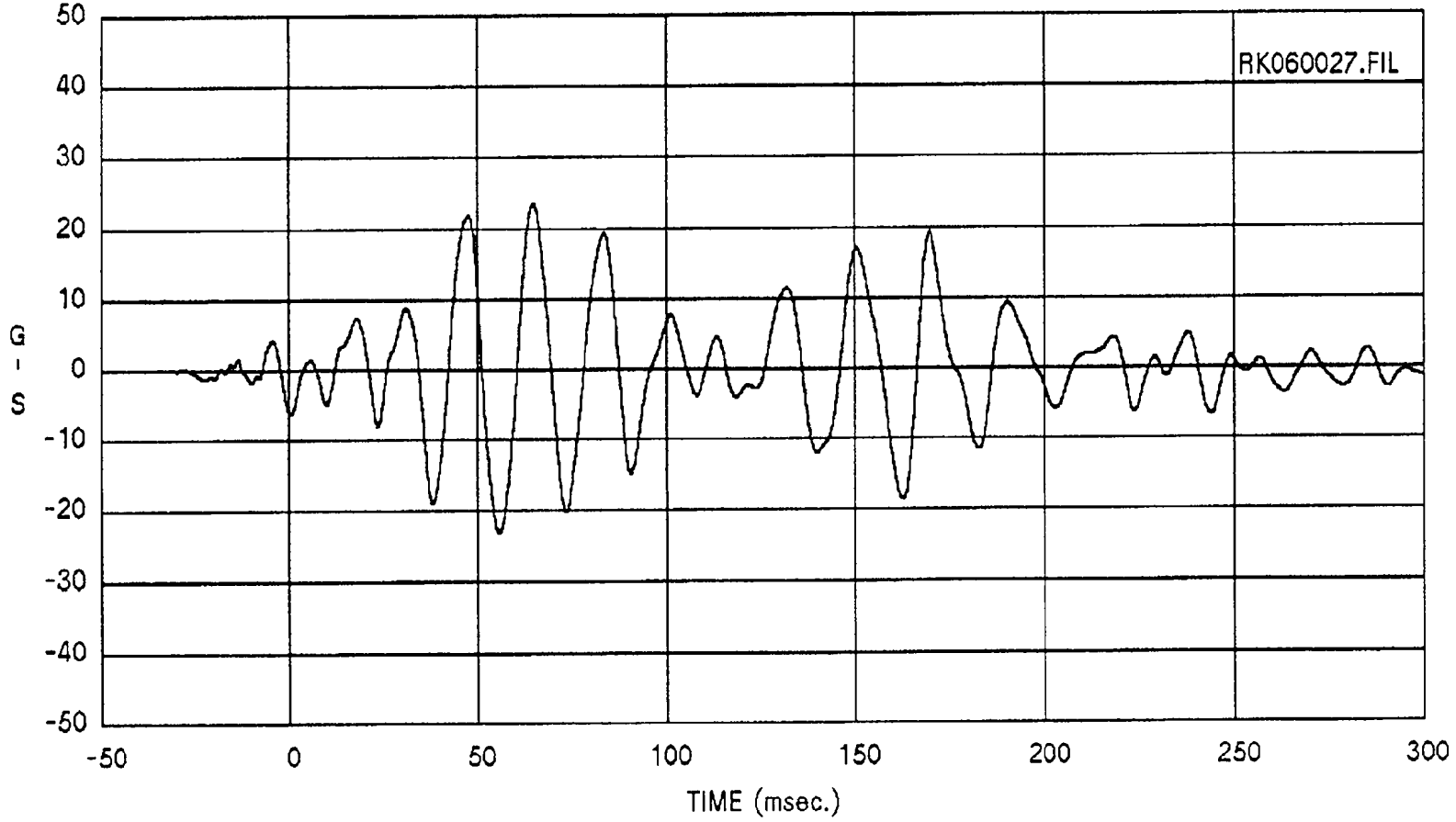
Curve: M.D.B. C/G acceleration -- Y axis Filter: SAE CLASS 60 Max = 9.3669 Min = -1.7836

MSE Date: 08/19/92 Program: Side Impact, 30/15, 90 deg. Vehicle:1989 Ford Ranger XLT Pickup



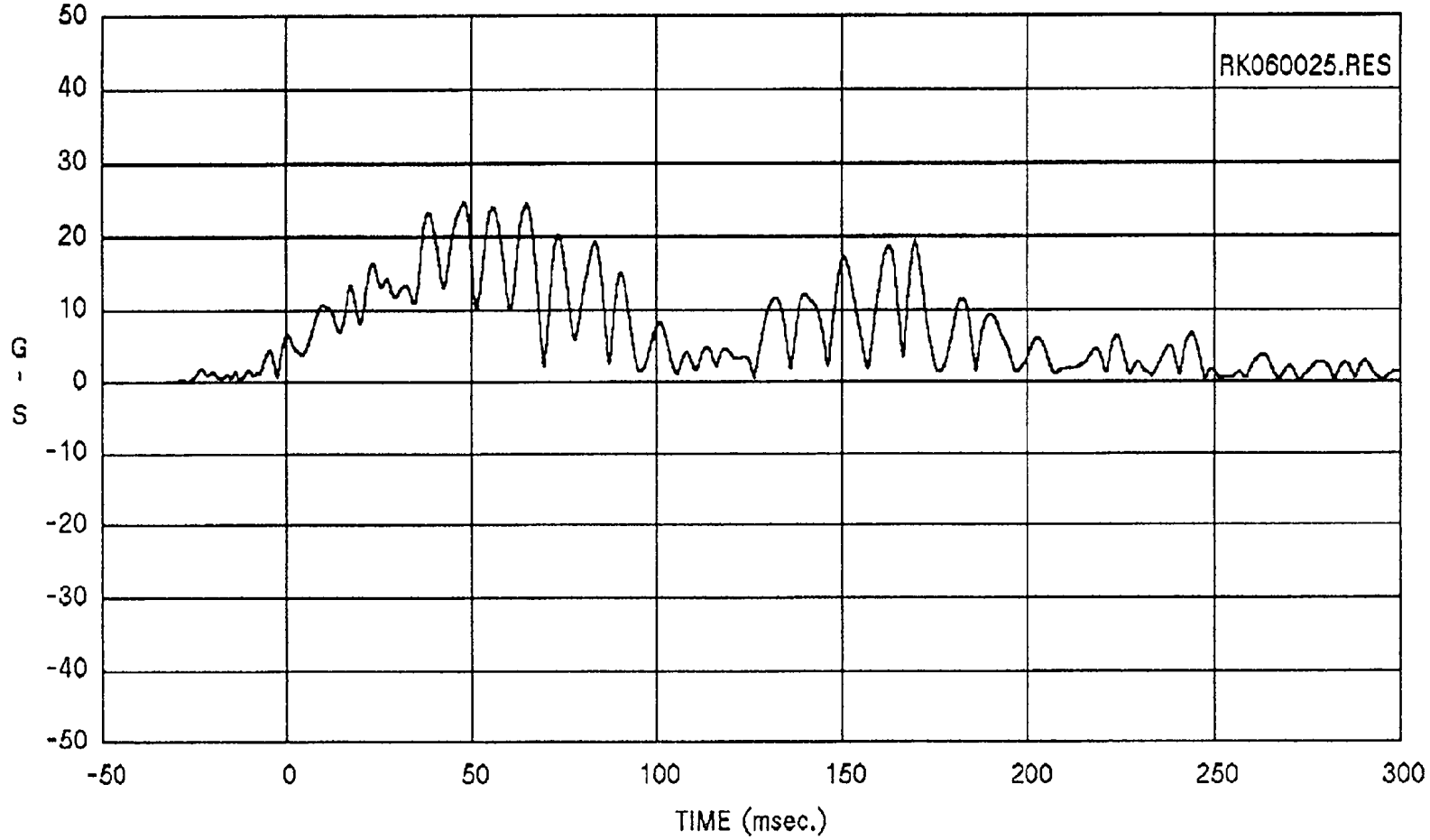
Curve: M.D.B. C/G delta V -- Y axis Filter: SAE CLASS 180 Max = 21.408 Min = 14.919

MSE Date: 08/19/92 Program: Side Impact, 30/15, 90 deg. Vehicle:1989 Ford Ranger XLT Pickup



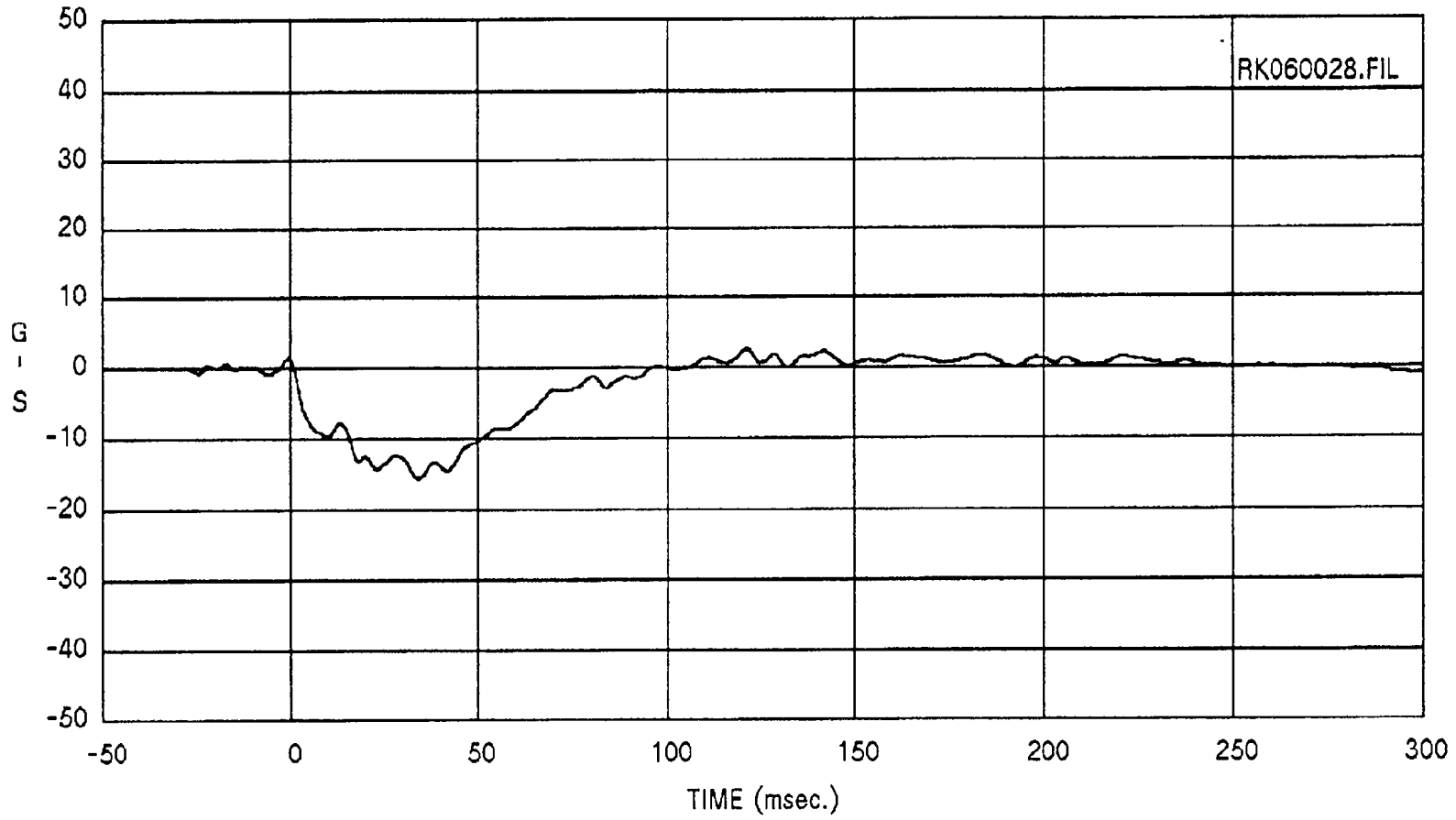
Curve: M.D.B. C/G acceleration -- Z axis Filter: SAE CLASS 60 Max = 23.510 Min = -23.201

MSE Date: 08/19/92 Program: Side Impact, 30/15, 90 deg. Vehicle:1989 Ford Ranger XLT Pickup



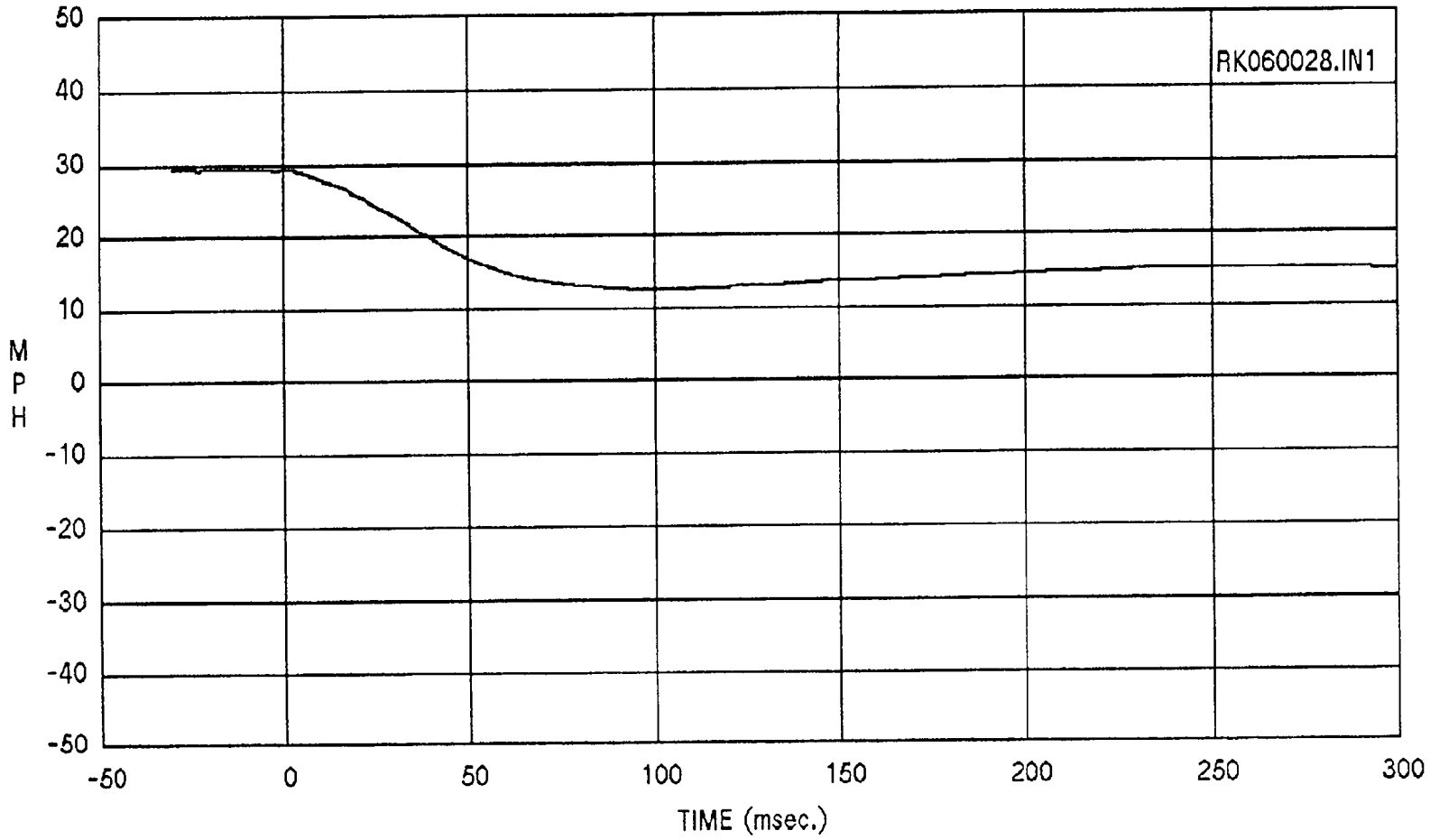
Curve: M.D.B. C/G resultant acceleration Filter: SAE CLASS 60 Max = 24.808 Min = .10830

MSE Date: 08/19/92 Program: Side Impact, 30/15, 90 deg. Vehicle:1989 Ford Ranger XLT Pickup



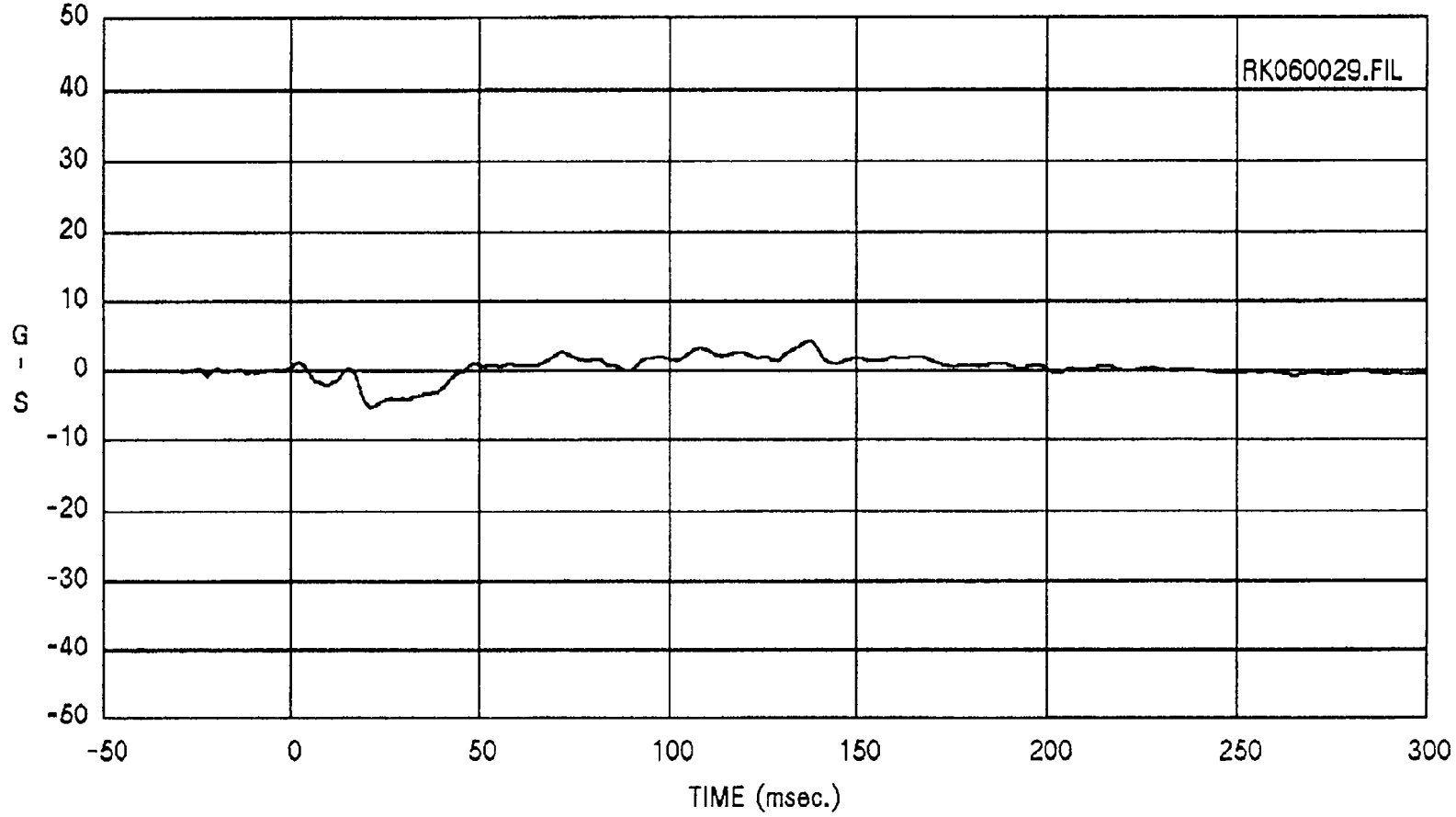
Curve: M.D.B. rear C/G acceleration -- X axis Filter: SAE CLASS 60 Max = 2.4451 Min = -15.687

MSE Date: 08/19/92 Program: Side Impact, 30/15, 90 deg. Vehicle:1989 Ford Ranger XLT Pickup



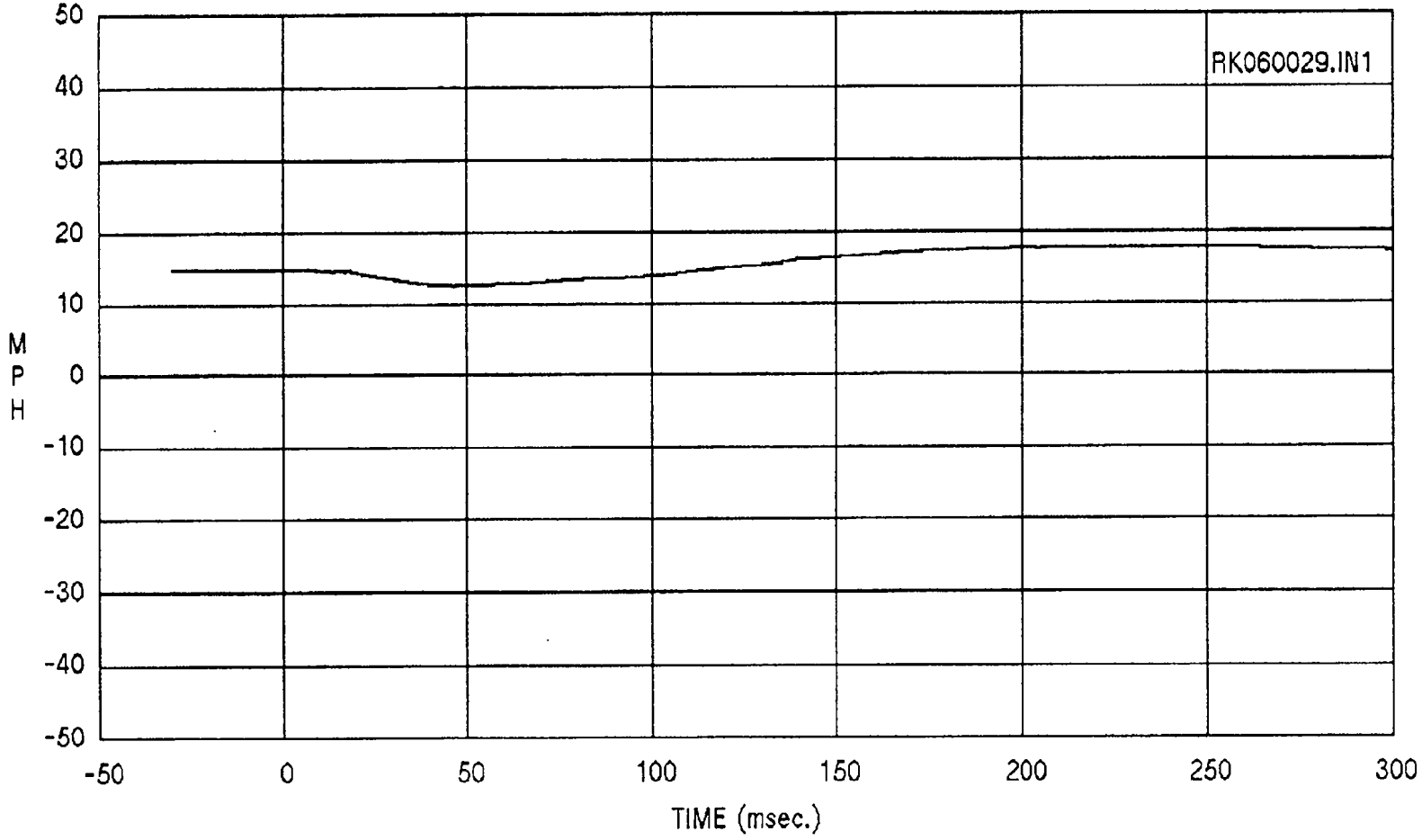
Curve: M.D.B. rear C/L delta V -- X axis Filter: SAE CLASS 180 Max = 29.485 Min = 12.628

MSE Date: 08/19/92 Program: Side Impact, 30/15, 90 deg. Vehicle:1989 Ford Ranger XLT Pickup



Curve: M.D.B. rear C/G acceleration -- Y axis Filter: SAE CLASS 60 Max = 4.2384 Min = -5.2935

MSE Date: 08/19/92 Program: Side Impact, 30/15, 90 deg. Vehicle:1989 Ford Ranger XLT Pickup



Curve: M.D.B. rear C/L delta V -- Y axis Filter: SAE CLASS 180 Max = 17.935 Min = 12.698

MSE Date: 08/19/92 Program: Side Impact, 30/15, 90 deg. Vehicle:1989 Ford Ranger XLT Pickup

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:14.07ft/sec		
	Primary	45.2	
a. Upper Rib accel.- - -	37 - 46g's Sec	45.2	
	Primary	41.7	
b. Lower Rib accel.- - -	37 - 46g's Sec	42.0	
	Primary	20.3	
c. Lower Spine accel - -	15 -22 g's Sec	20.2	
4. PELVIC IMPACT TEST:	Vel:13.98 ft/sec		
Pelvic accel. - - - -	40 - 60g's	52.0	