V1748

REPORT NO.: MSE-92-05-TR1086-05 R1086-05

SIDE IMPACT PROTECTION STUDY IN PRODUCTION VEHICLES

MDB-TO-VEHICLE SIDE IMPACT TEST OF A 27° CRABBED MOVING DEFORMABLE BARRIER TO A 1990 FORD F-150 PICKUP AT 33.0 MPH

NHTSA NO.: RL0601

MOBILITY SYSTEMS AND EQUIPMENT COMPANY
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16 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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16. Abstract

A 30/15 mph 90° Impact (Moving Deformable Barrier) Test was conducted on the subject 1990 Ford F-150, Pickup in accordance with the specifications of the Office of Market Incentives "Side Impact Protection Study" Test Procedure. The test was conducted at the MSE facility in San Bernardino, on September 02, 1992.

The impact velocity of the Moving Deformable Barrier (MDB) was 33.12 mph, and the ambient temperature at the struck side (driver's) of the target vehicle at the time of impact was 77 °F. The target vehicle post test maximum crush was 23.6 inches at level 3.0 The test vehicle's performance follows:

	DRIVER	PASS
Left Upper Rib (LUR) Accel., g	77.7	N/A
Left Lower Rib (LLR) Accel., g	76.7	N/A
Lower Spine (T_{12}) Accel., g	65.5	N/A
Thoracic Trauma Index (TTI_d)	71.6	N/A
Pelvis (PEV) Accel., g	77.5	N/A

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

17. Key Words	18. Distribution Statement
OCCUPANT RESPONSE, MDB, SIDE IMPACT, TTI, SIDE IMPACT DUMMY (SID) MOVING BARRIER CRASH TESTING 1990 FORD F-150 PICKUP	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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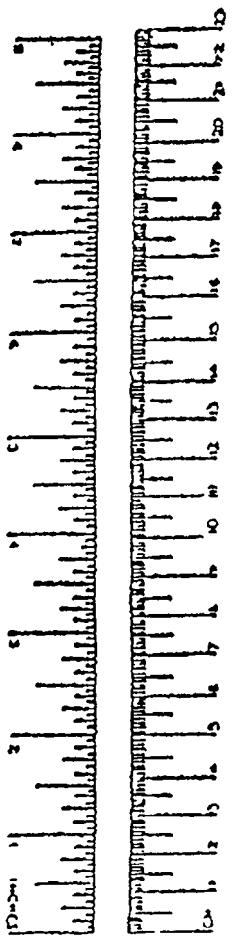
METRIC CONVERSION FACTORS

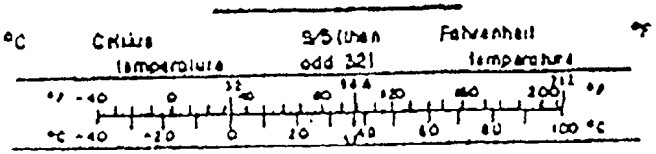
APPROXIMATE CONVERSIONS FROM METRIC MEASURES

SYMBOL	WHEN YOU KNOW	MULTIPLY BY	TO FIND	SYMBOL
	LENGTH			
in	inches	2.8	centimeters	cm
ft	feet	30	centimeters	cm
yd	yards	0.9	meters	m
mi	miles	1.6	kilometers	km
	AREA			
in^2	square inches	6.6	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 (2000 lb)	0.9	tonnes	t
	VOLUME			
tsp	teaspoons	5	milliliters	ml
tbsp	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 temperature	5/9 (after subtracting 32)	Celsius temperature	°C



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



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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 1990 Ford F-150 Pickup. The test was performed on 02 September 1992 at an actual impact speed of 33.12 mph. The leading left-hand edge of the MDB contacted the test vehicle 19.0 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 1990 Ford F-150 Pickup, was tested on 02 September 1992. General test vehicle information and pretest conditions are given in Data Sheet No. 1. A crash test summary is shown in Data Sheet No. 1. The vehicle was instrumented with 10 accelerometer channels and two onboard high-speed movie cameras. Accelerometer locations and peak values are shown in Data Sheet No. 8. All pretest measurements were made detailing the left side vehicle profile. The impact point was marked on the vehicle 20 inches rearward of the front axle.

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

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

Additional film coverage of the test was also provided by two (2) overhead and two (2) ground high-speed movie cameras and one real-time camera. Camera locations are given in Data Sheet No. 10. A total of 29 channels of information was recorded on one (1) FM data tape recorder and one (1) direct analog to digital acquisition unit and data acquisition computer.

DATA SHEET NO. 1

SUMMARY OF RESULTS

VEH. MOD.YR/MAKE/MODEL: 1990 FORD F-150

VEH. BODY STYLE: PICKUP VIN: 1FTDF15Y3LLA86220

VEH. NHTSA NO.: RL0601 VEH. BUILD DATE: 02/90

TEST DATE: 09/02/92 TEST LAB.: MOBILITY SYSTEMS AND EQUIPMENT COMPANY

TEST RESULTS:

Vehicle Overall Length = 210.0 inches; Vehicle Overall Width 78.5 inches

Vehicle Test Weight:

1329 lbs. Left Front	984 lbs. Left Rear
1262 lbs. Right Front	973 lbs. Right Rear
2591 lbs. TOTAL FRONT	1957 lbs. TOTAL REAR

Wheelbase = 133.3 inches

Longitudinal C.G. from center of front axle = 57.4 inches

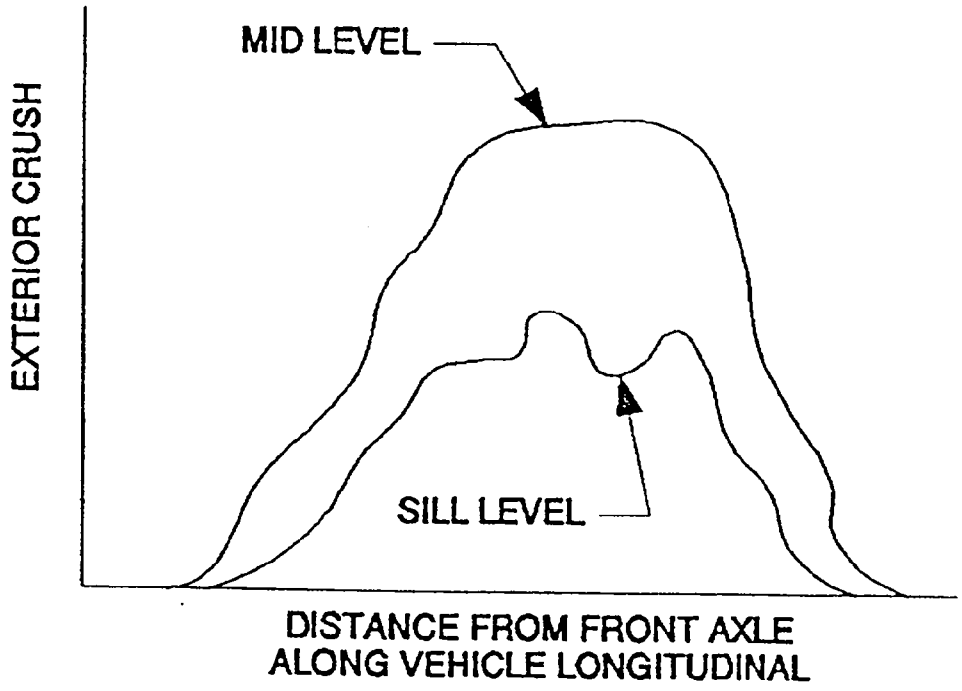
Impact Angle with respect to impactor = 90 degrees

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

1. LEVEL 1 (19.5 inches above ground) = 22.6 inches
2. LEVEL 2 (34.0 inches above ground) = 23.4 inches
3. LEVEL 3 (33.0 inches above ground) = 23.6 inches
4. LEVEL 4 (48.0 inches above ground) = 17.0 inches
5. LEVEL 5 (66.1 inches above ground) = 11.9 inches

Maximum Post Test Intrusion = 23.6 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, winshield cracked but intact

Pillar Failure: None

Sill Separation: None

Other Notable Impact Effect: None

MOVING DEFORMABLE BARRIER (MDB) RESULTS:

Overall Width of Framework Carriage = 52.5 inches

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

Wheelbase of Frame work Carriage (front and Rear) = 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 = 33.12 mph

Maximum Static Crush of Honeycomb Impact Face:

1. ROW A at bumper level = 2.3 inches
2. ROW B at midstack level = 0.9 inches
3. ROW C at top of stack level = 2.9 inches

Instrumentation:

Number of MDB Data Channels = 5

SIDE IMPACT DUMMY (SID) RESULTS

Location of B-Post Upper Anchorage Bolt or Side Rail (Auto. Belts) for Head Contact Analysis:
Upper anchorage bolt is on the B-Pillar, 25.5 inches above the B-Post striker

Visible Dummy Contact Points--	FRONT SID	REAR SID
HEAD	No contact	
CHEST	Door	
ABDOMEN	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	77.7 42.5	17.9 86.3	___ ___	___ ___
Lower Rib Lateral Y	76.7 40.6	13.7 106.3	___ ___	___ ___
SPINE ACCELERATIONS:				
Lower Lateral Y	65.5 45.0	9.2 100.6	___ ___	___ ___
PELVIS ACCELERATIONS:				
Lateral Y	77.5 38.1	12.6 107.5	___ ___	___ ___

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

REMARKS:

RECORDED BY: Brian O'Keefe DATE: 09/04/92

APPROVED BY: 9-16-92

SIDE IMPACT DUMMY (SID) TEST DATA SUMMARY
1990 FORD F-150 PICKUP, NHTSA NO. RL0601

TEST DATE: 09/02/92

	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	8.5	67.1	12.5	86.5				
Lateral ------- Y	32.6	56.7	8.9	43.7				
Vertical ------- Z	37.4	71.8	7.5	35.8				
RESULTANT ------ R	37.6	71.8	----	----				
HIC ----------	159.1							
(TIME INTERVAL, SEC.)	(.0529 TO .0889)							
RIB ACCELERATIONS:								
1.Upper Rib Lateral Y	77.7	42.5	17.9	86.3				
2.Upper Rib Lateral Y	76.5	42.5	17.4	86.3				
1.Lower Rib Lateral Y	76.7	40.6	13.7	106.3				
2.Lower Rib Lateral Y	76.3	40.6	10.9	105.6				
SPINE ACCELERATIONS:								
1.Upper Spine Lateraly	58.8	48.1	11.3	75.6				
2.Upper Spine Lateraly	57.1	48.1	12.5	75.6				
1.Lower Spine Lateraly	65.5	45.0	9.2	100.6				
2.Lower Spine Lateraly	63.8	45.0	10.3	101.3				
PELVIS ACCELERATIONS:								
Lateral Y	77.5	38.1	12.6	107.5				
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	71.6							

REFERENCE: Positive Direction -- Longitudinal (X) = forward
Lateral (Y) = to right
Vertical (Z) = down

Negative Direction -- Longitudinal (X) = rearward
Lateral (Y) = to left
Vertical (Z) = up

SECTION 3

TEST RESULTS

The 1990 was impacted at 33.12 mph by the 27 crabbed MDB on 27 August 1992. The MDB's left edge contacted the test vehicle 1.0 inches forward of the impact line. The test vehicle spun around counterclockwise and pushed back due to impact with barrier. The vehicle driver side door was crushed inwards a maximum of 21.0 inches. Pretest and posttest vehicle dimensions are shown in Data Sheets 5 and 6.

The MDB impacted the 1990 Ford F-150, Pickup at a height that was above the sill. The impact face was mounted on the sled such that the bottom of the face was 22.0 inches above ground level. 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 SID began to move. The contact to the lower torso caused the SID's head to rotate towards the door, passing slightly through the plane of the already shattered window. There was no impact to the head. The SID then rebounded away from the door. The seat belt haulted any further motion. The SID ended up sitting in an upright position and facing forward.

The MDB impacted the test vehicle and was stopped by the remote brake system to prevent a second impact. The aluminum deformable barrier received minor damage with a maximum crush of 2.9 inches on the top left corner. The crush details for the MDB are given in Data Sheet No. 7.

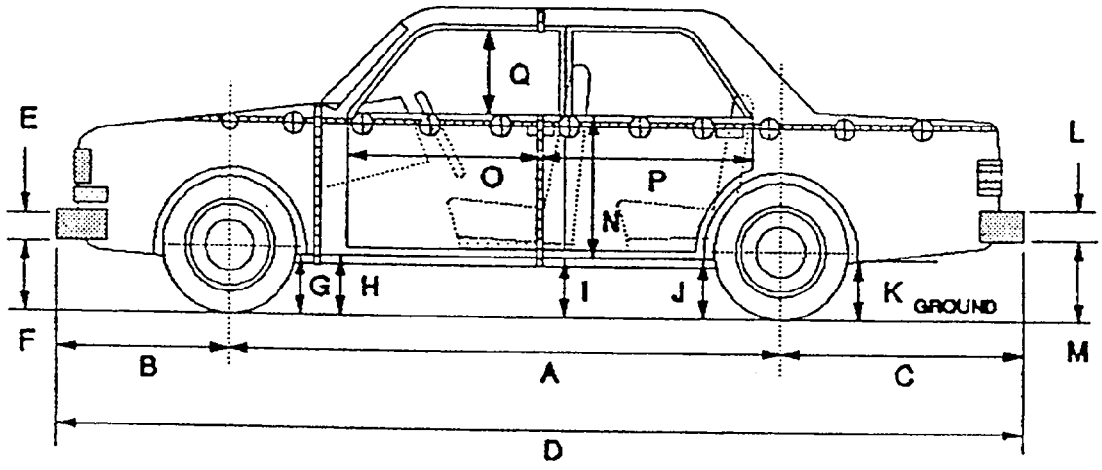
DATA SHEETS NO. 2

PRETEST AND POST TEST MEASUREMENTS

VEH. MOD YR/MAKE/MODEL/BODY: 1990 FORD F-150 PICKUP

VEH. NHTSA NO.: RL0601 VIN.: 1FTDF15Y3LLA86220

TEST DATE: 09/02/92 TEST LAB.: MOBILITY SYSTEMS AND EQUIPMENT COMPANY



LEFT SIDE VIEW

	Pretest (inches)	Post Test (inches)	Change		Pretest (inches)	Post Test (inches)	Change
A	133.3	130.1	3.2	J	18.4	19.9	1.5
B	30.3	31.0	0.7	K	21.4	21.3	0.1
C	46.0	45.5	0.5	L	0.0	0.0	0.0
D	210.0	209.9	0.1	M	26.7	25.3	1.4
E	11.4	11.4	0.0	N	30.4	26.6	3.8
F	14.0	13.9	0.1	O	25.5	25.4	0.1
G	16.0	16.8	0.8	P	22.5	22.7	0.2
H	16.2	20.0	3.8	Q	18.7	18.3	0.4
I	16.8	19.9	3.1				

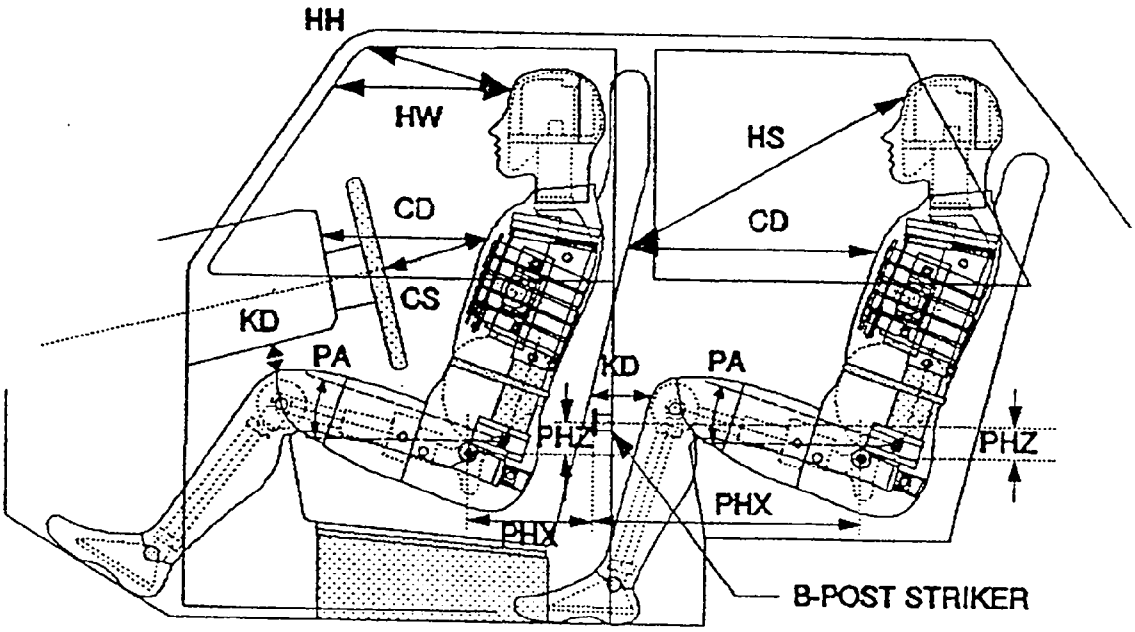
DATA SHEET NO. 3

SID LONGITUDINAL CLEARANCE DIMENSIONS

VEH. MOD YR/MAKE/MODEL/BODY: 1990 FORD F-150 PICKUP

VEH. NHTSA NO.: RL0601 VIN.: 1FTD15Y3LLA86220

TEST DATE: 09/02/92 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	20.4	inches	_____ inches
HW	27.5	inches	_____ inches
HS	18.8	inches	_____ inches
CD	23.5	inches	_____ inches
CS	13.0	inches	_____ inches
KDL	4.4	inches	_____ inches
KDR	3.7	inches	_____ inches
PA	23	degrees	_____ inches
PHX	13.5	inches	_____ inches
PHY	1.5	inches	_____ inches

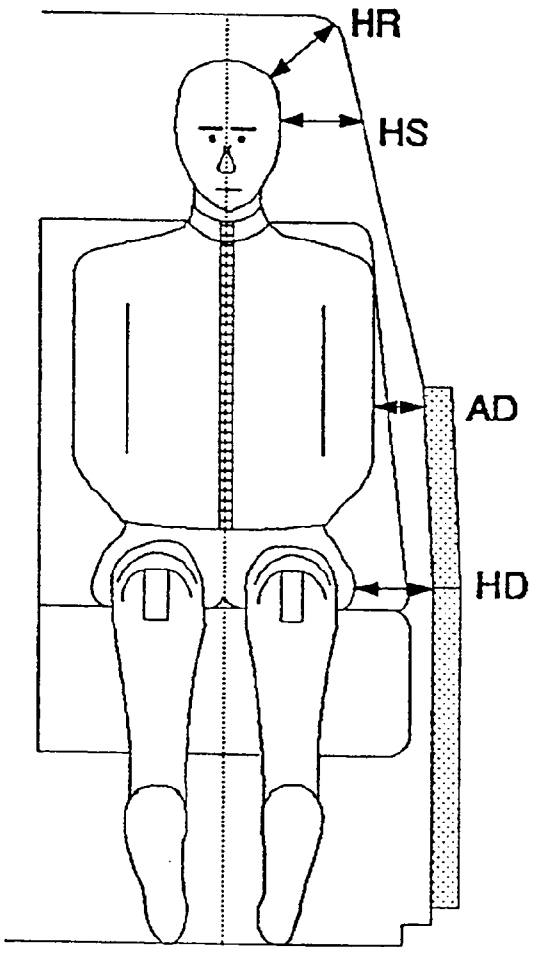
DATA SHEET NO. 4

SID LATERAL CLEARANCE DIMENSIONS

VEH. MOD YR/MAKE/MODEL/BODY: 1990 FORD F-150 PICKUP

VEH. NHTSA NO.: RL0601 VIN.: 1FTDF15Y3LLA86220

TEST DATE: 09/02/92 TEST LAB.: MOBILITY SYSTEMS AND EQUIPMENT



	DRIVER SID ID# 136		REAR SID ID# N/A	
HR	8.7	inches		inches
HS	10.2	inches		inches
AD	5.0	inches		inches
HD	4.5	inches		inches

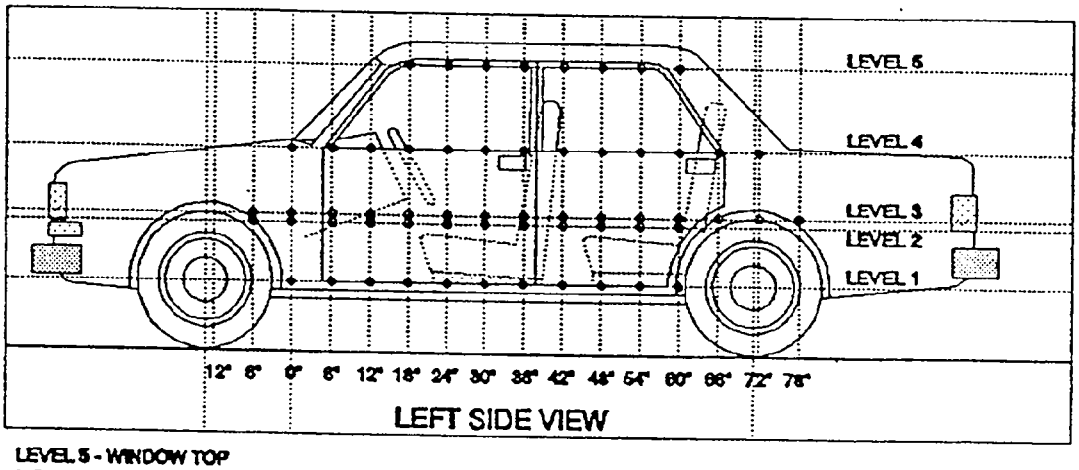
DATA SHEET NO. 5

VEHICLE SIDE MEASUREMENT

VEH. MOD YR/MAKE/MODEL/BODY: 1990 FORD F-150 PICKUP

VEH. NHTSA NO.: RL0601 VIN.: 1FTDF15Y3LLA86220

TEST DATE: 09/02/92 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 = 66.1 inches

LEVEL 4 @ Window Sill = 48.0 inches

LEVEL 3 @ Mid Door = 33.0 inches

LEVEL 2 @ Occupant H-Point = 34.0 inches

LEVEL 1 @ Axle Centerline Height = 19.5 inches
(or Sill Top Height)

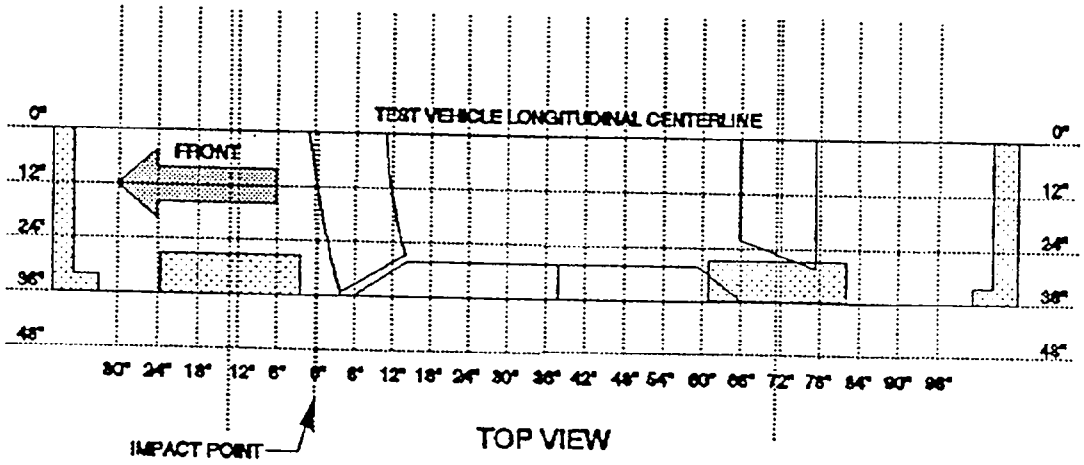
DATA SHEET NO. 6

PRETEST AND POST TEST VEHICLE EXTERIOR PROFILES

VEH. MOD YR/MAKE/MODEL/BODY: 1990 FORD F-150 PICKUP

VEH. NHTSA NO.: RL0601 VIN.: 1FTD15Y3LLA86220

TEST DATE: 09/02/92 TEST LAB.: MOBILITY SYSTEMS AND EQUIPMENT COMPANY



Profile information follows on the following 10 pages for each of the 5 levels from data sheet #5

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

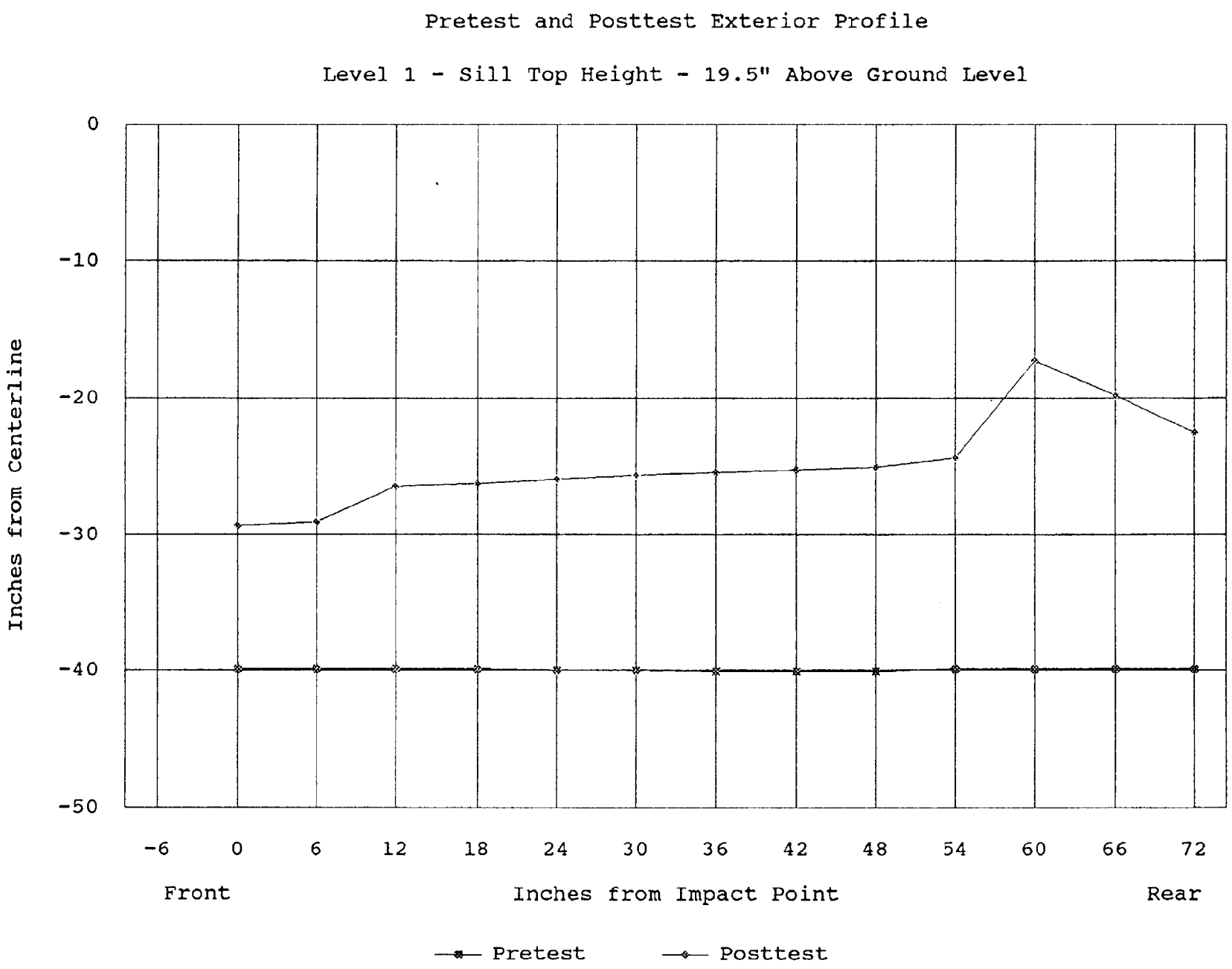
LEVEL 1 AT AXLE CENTERLINE

INCHES FROM IMPACT POINT	POSTTEST (Inches)	PRETEST (Inches)	STATIC CRUSH (Inches)
-6 Inches	0.0	0.0	0.0
0 (Impact Point)	18.7	8.1	10.6
6 Inches	19.0	8.1	10.9
12 Inches	21.6	8.1	13.5
18 Inches	21.8	8.1	13.7
24 Inches	22.1	8.0	14.1
30 Inches	22.4	8.0	14.4
36 Inches	22.6	7.9	14.7
42 Inches	22.8	7.9	14.9
48 Inches	23.0	7.9	15.1
54 Inches	23.7	8.1	15.6
60 Inches	30.7	8.1	22.6
66 Inches	28.2	8.1	20.1
72 Inches	25.5	8.1	17.4

REMARKS:

RECORDED BY: Brian O'Keefe DATE: 09/02/92

APPROVED BY: 9/16/92


Pretest and Posttest Exterior Profile
Level 1 - Sill Top Height - 19.5" 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

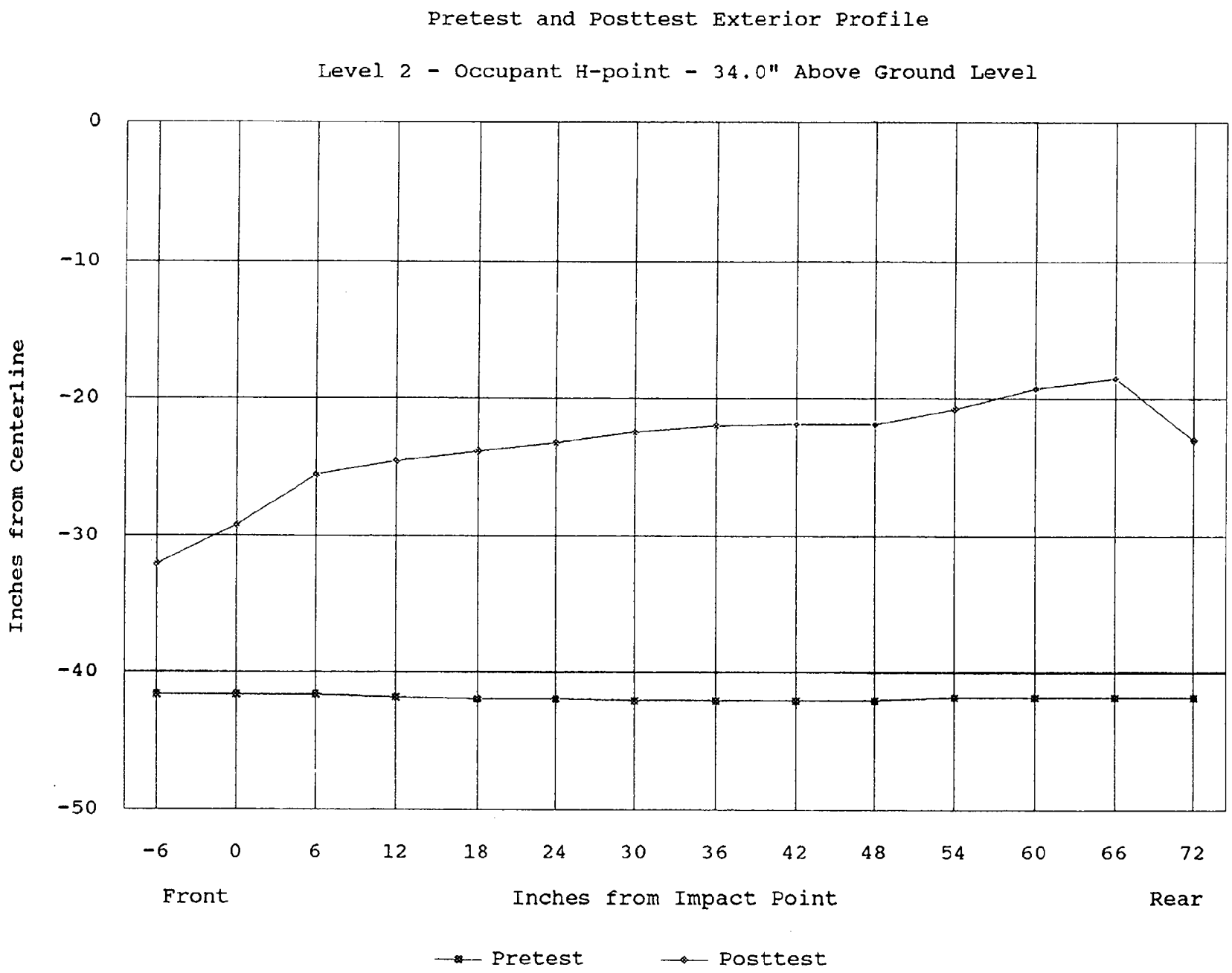
LEVEL 2 AT OCCUPANT H-POINT

INCHES FROM IMPACT POINT	POSTTEST (Inches)	PRETEST (Inches)	STATIC CRUSH (Inches)
-6 Inches	16.0	6.3	9.7
0 (Impact Point)	18.8	6.3	12.5
6 Inches	22.4	6.3	16.1
12 Inches	23.4	6.1	17.3
18 Inches	24.1	6.0	18.1
24 Inches	24.7	6.0	18.7
30 Inches	25.5	5.9	19.6
36 Inches	26.0	5.9	20.1
42 Inches	26.1	5.9	20.2
48 Inches	26.1	5.9	20.2
54 Inches	27.2	6.1	21.1
60 Inches	28.7	6.1	22.6
66 Inches	29.5	6.1	23.4
72 Inches	24.9	6.1	18.8

REMARKS:

RECORDED BY: Brian O'Keefe DATE: 09/02/92

APPROVED BY: 9/16/92


Pretest and Posttest Exterior Profile
Level 2 - Occupant H-point - 34.0" 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

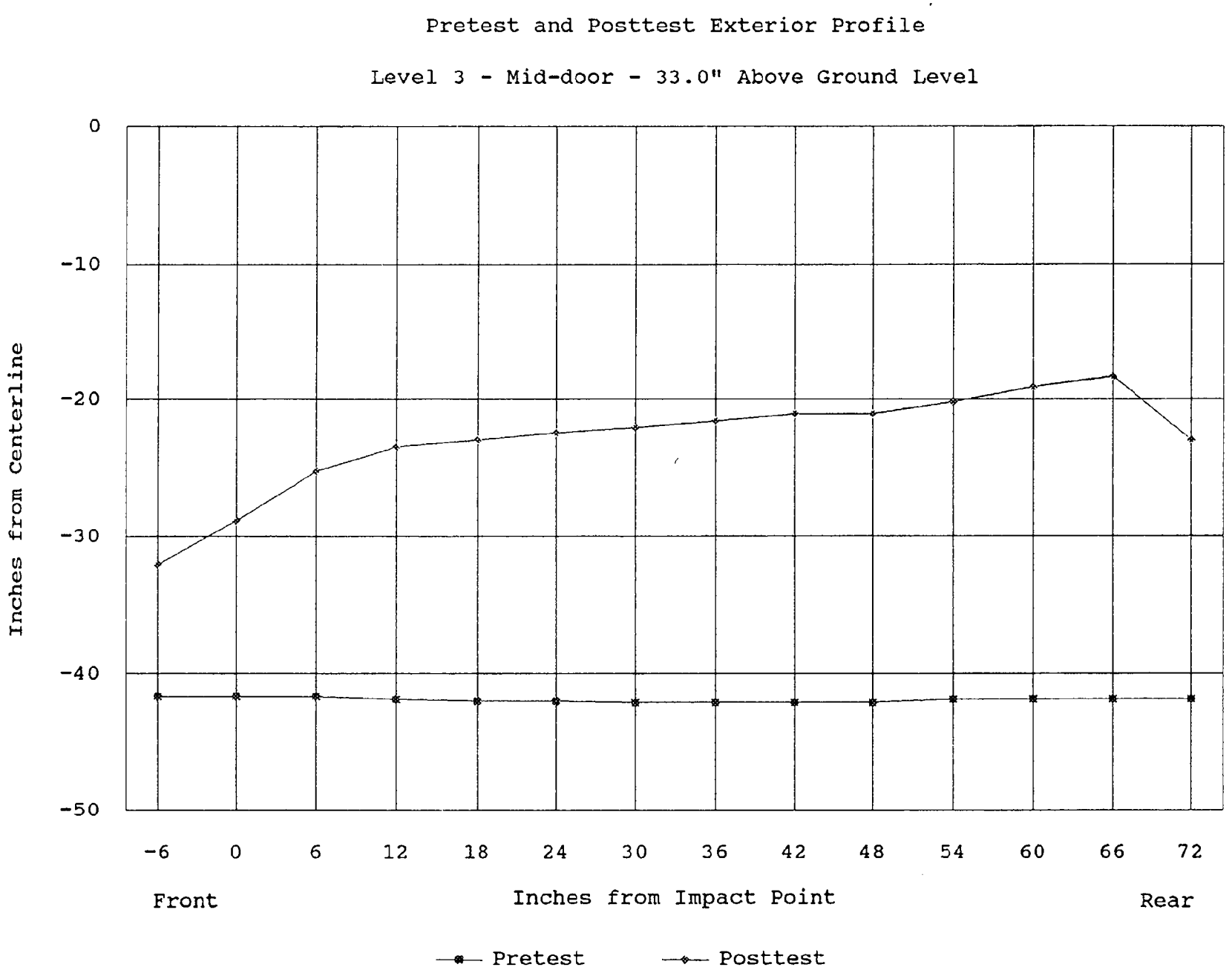
LEVEL 3 AT MID-DOOR

INCHES FROM IMPACT POINT	POSTTEST (Inches)	PRETEST (Inches)	STATIC CRUSH (Inches)
-6 Inches	16.0	6.3	9.7
0 (Impact Point)	19.1	6.3	12.8
6 Inches	22.7	6.3	16.4
12 Inches	24.5	6.1	18.4
18 Inches	25.0	6.0	19.0
24 Inches	25.5	6.0	19.5
30 Inches	25.9	5.9	20.0
36 Inches	26.4	5.9	20.5
42 Inches	26.9	5.9	21.0
48 Inches	26.9	5.9	21.0
54 Inches	27.8	6.1	21.7
60 Inches	28.9	6.1	22.8
66 Inches	29.7	6.1	23.6
72 Inches	25.0	6.1	18.9

REMARKS:

RECORDED BY: Brian O'Keefe DATE: 09/02/92

APPROVED BY: 9/16/92


Pretest and Posttest Exterior Profile
Level 3 - Mid-door - 33.0" 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
Front
Inches from Impact Point
Rear
Pretest
Posttest

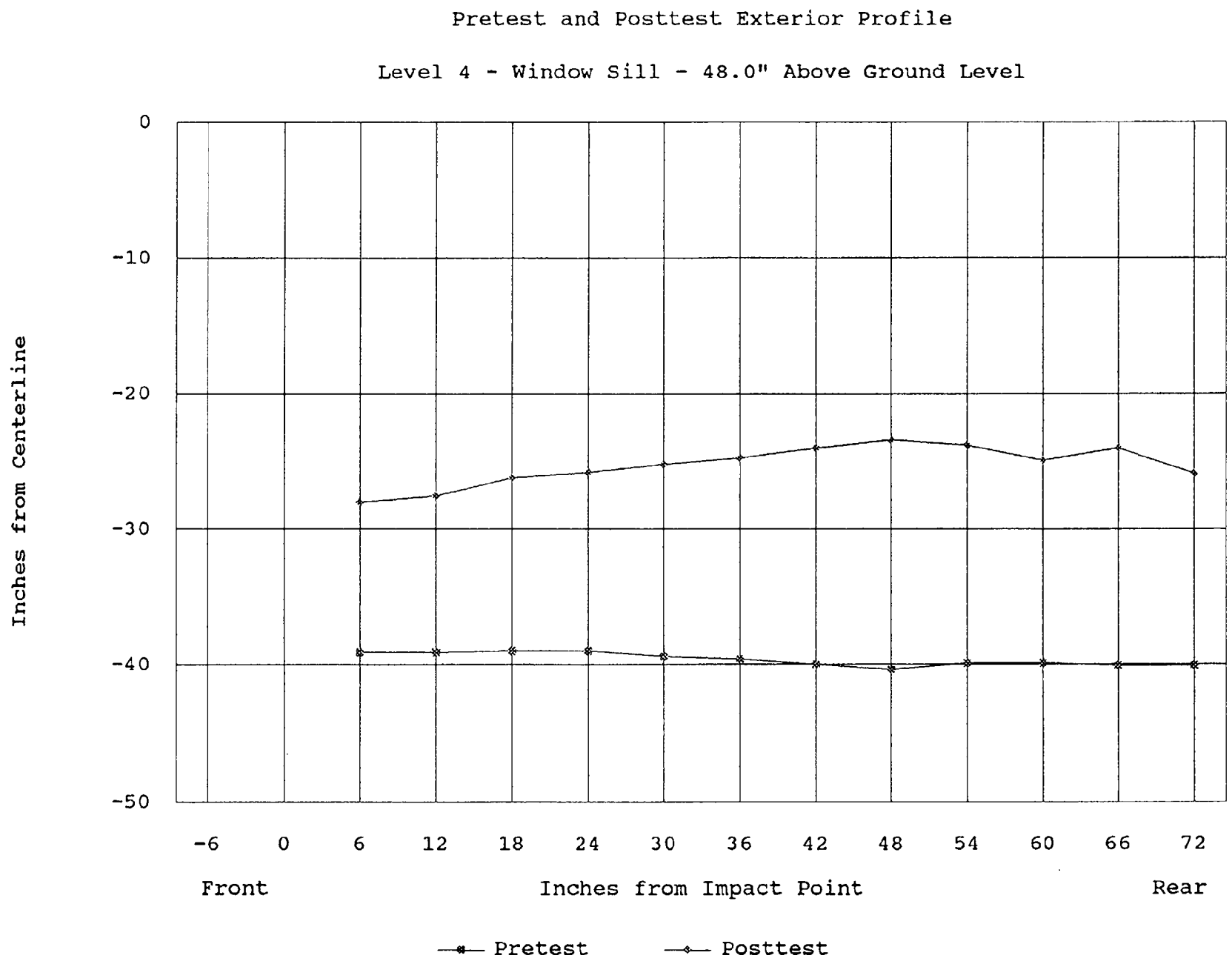
LEVEL 4 AT WINDOW SILL

INCHES FROM IMPACT POINT	POSTTEST (Inches)	PRETEST (Inches)	STATIC CRUSH (Inches)
-6 Inches	0.0	0.0	0.0
0 (Impact Point)	0.0	0.0	0.0
6 Inches	20.0	8.9	11.1
12 Inches	20.5	8.9	11.6
18 Inches	21.8	9.0	12.8
24 Inches	22.2	9.0	13.2
30 Inches	22.8	8.6	14.2
36 Inches	23.3	8.4	14.9
42 Inches	24.0	8.0	16.0
48 Inches	24.6	7.6	17.0
54 Inches	24.2	8.1	16.1
60 Inches	23.1	8.1	15.0
66 Inches	24.0	7.9	16.1
72 Inches	22.1	7.9	14.2

REMARKS:

RECORDED BY: Brian O'Keefe DATE: 09/02/92

APPROVED BY: [signature] 9/16/92


Pretest and Posttest Exterior Profile
Level 4 - Window Sill - 48.0" 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

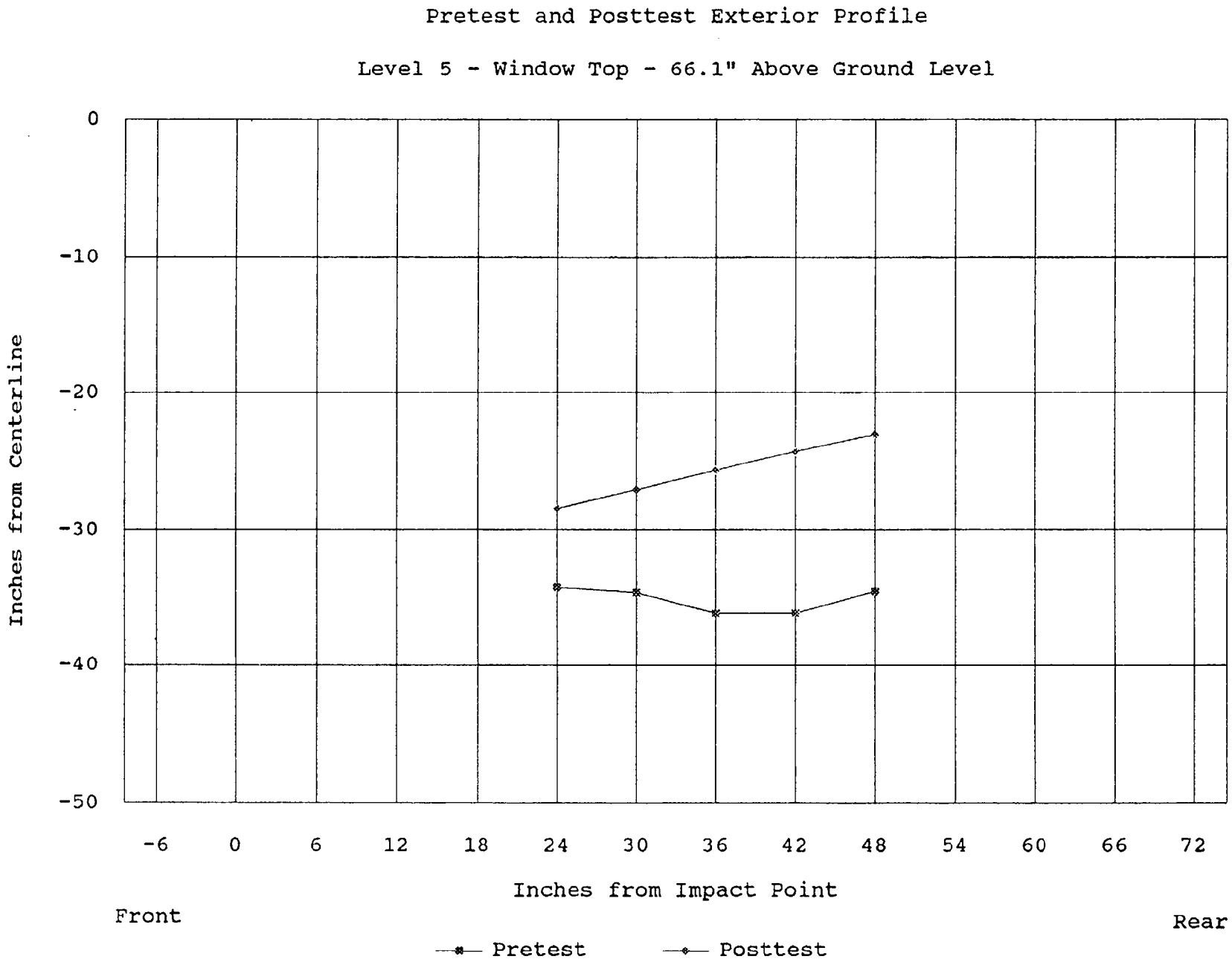
LEVEL 5 AT TOP OF WINDOW

INCHES FROM IMPACT POINT	POSTTEST (Inches)	PRETEST (Inches)	STATIC CRUSH (Inches)
-6 Inches	0.0	0.0	0.0
0 (Impact Point)	0.0	0.0	0.0
6 Inches	0.0	0.0	0.0
12 Inches	0.0	0.0	0.0
18 Inches	0.0	0.0	0.0
24 Inches	19.6	13.8	5.8
30 Inches	21.0	13.4	7.6
36 Inches	22.4	11.9	10.5
42 Inches	23.8	11.9	11.9
48 Inches	25.0	13.5	11.5
54 Inches	0.0	0.0	0.0
60 Inches	0.0	0.0	0.0
66 Inches	0.0	0.0	0.0
72 Inches	0.0	0.0	0.0

REMARKS:

RECORDED BY: Brian O'Keefe DATE: 09/02/92

APPROVED BY: 9/16/92


Pretest and Posttest Exterior Profile
Level 5 - Window Top - 66.1" 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: 1990 Ford F-150 Pickup

VEH. NHTSA NO.: RL0601 VIN: 1FTDF15Y3LLA86220

TEST DATE: 09/02/92 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	0.0	9.7	9.7	0.0	0.0
0 (Impact Pt.)	10.6	12.5	12.8	0.0	0.0
6 Inches	10.9	16.1	16.4	11.1	0.0
12 Inches	13.5	17.3	18.4	11.6	0.0
18 Inches	13.7	18.1	19.0	12.8	0.0
24 Inches	14.1	18.7	19.5	13.2	5.8
30 Inches	14.4	19.6	20.0	14.2	7.6
36 Inches	14.7	20.1	20.5	14.9	10.5
42 Inches	14.9	20.2	21.0	16.0	11.9
48 Inches	15.1	20.2	21.0	17.0	11.5
54 Inches	15.6	21.1	21.7	16.1	0.0
60 Inches	22.6	22.6	22.8	15.0	0.0
66 Inches	20.1	23.4	23.6	16.1	0.0
72 Inches	17.4	18.8	18.9	14.2	0.0

RECORDED BY: Brian O'Keefe DATE: 09/02/92

APPROVED BY: 9/16/92

DATA SHEET NO. 7

EXTERIOR STATIC CRUSH FOR SIDE IMPACTOR

VEH. MOD YR/MAKE/MODEL/BODY: 1990 FORD F-150 PICKUP

VEH. NHTSA NO.: RL0601 VIN.: 1FTD15Y3LLA86220

TEST DATE: 09/02/92 TEST LAB.: MOBILITY SYSTEMS AND EQUIPMENT COMPANY

LOCATION	TOP OF STACK LEVEL	MID-STACK LEVEL	BUMPER LEVEL
HEIGHT AT CENTERLINE*	43 inches	33 inches	28 inches
DISTANCES RIGHT OF CENTER**	(inches)	(inches)	(inches)
32 inches	2.9	0.3	1.6
28 inches	1.1	0.2	1.0
24 inches	0.5	0.0	0.8
20 inches	-0.2	-0.2	0.5
16 inches	-0.2	-0.2	0.4
12 inches	-0.3	-0.2	0.3
8 inches	-0.3	-0.2	0.3
4 inches	-0.4	-0.2	0.3
0 inches	-0.4	-0.2	0.3

DATA SHEET NO. 7 (Cont.)

LOCATION	TOP OF STACK LEVEL	MID-STACK LEVEL	BUMPER LEVEL
HEIGHT AT CENTERLINE*	43 inches	33 inches	28 inches
DISTANCES LEFT OF CENTER**	(inches)	(inches)	(inches)
4 inches	-0.4	-0.3	0.3
8 inches	-0.2	-0.3	0.6
12 inches	0.0	-0.2	0.8
16 inches	0.2	0.0	1.2
20 inches	1.0	0.2	1.7
24 inches	0.8	0.5	2.1
28 inches	0.9	0.6	1.8
32 inches	1.5	0.9	2.3

* Heights, in inches, measured above ground level
** Impact side

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

RECORDED BY: Brian O'Keefe DATE: 09/04/92

APPROVED BY: _____ 9/16/92

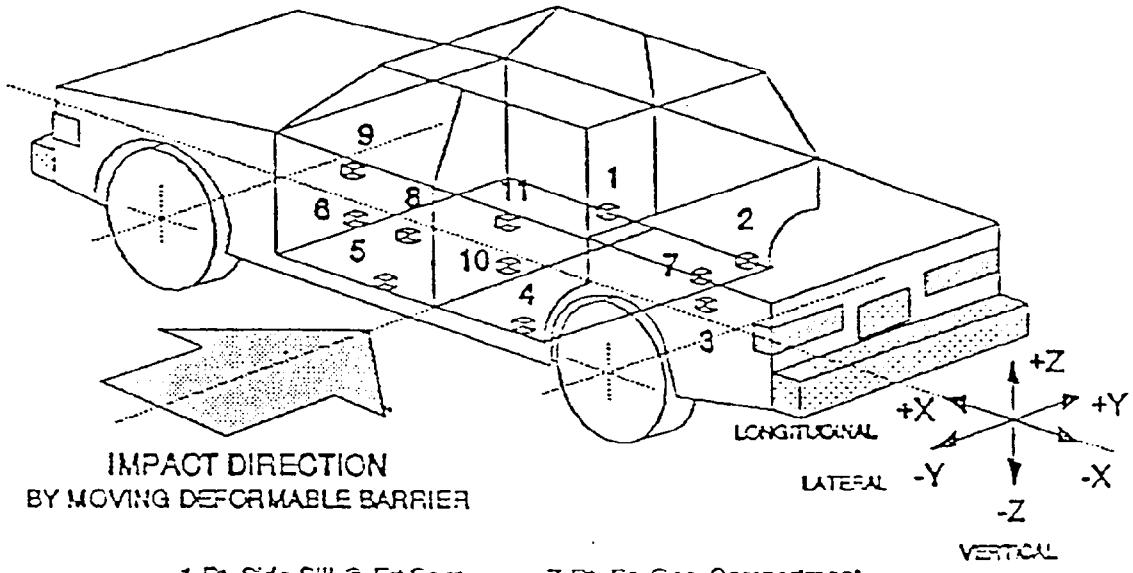
DATA SHEET NO. 8

TEST VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

VEH. MOD YR/MAKE/MODEL/BODY: 1990 FORD F-150 Pickup

VEH. NHTSA NO.: RL0601 VIN.: 1FTDF15Y3LLA86220

TEST DATE: 09/02/92 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-Fr. Floorpan Above Axle
4-Left Side Sill @ Rr. Seat
5-Left Side Sill @ Frt. Seat
6-Left Frt. Door On Centerline
7-Rt. Fr. Occ. Compartment
8-Midrear of Left Frt. Door
9-Left Frt. Door Upper Centerline
10-Midrear of Left Rear Door
11-Left Rear Door Upper Centerline

DATA SHEET NO. 8 (Cont.)

NO.	COORDINATES			LONG. X(+/-)		LAT. Y(+/-)		VERT. Z(+/-)		RES. R(+/-)	
	X in.	Y in.	Z in.	MaxG	ms	MaxG	ms	MaxG	ms	MaxG	ms
1	130	27	20	-10.9	50.3	21.1	25.0	-18.1	35.4	23.1	20.6
2											
3	60	0	32	-9.2	18.5	20.1	13.1	8.3	51.1	20.8	13.0
4	N/A	N/A	N/A								
5	130	-28	20			34.6	15.5				
6	131	-34	30			106.8	8.8				
7	N/A	N/A	N/A								
8	113	-34	38			-192.1	14.5				
9	131	-34	40			137.0	10.6				
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 - (+ = Upward)

REMARKS:

RECORDED BY: Brian O'Keefe DATE: 9-4-92

APPROVED BY: 9/16/92

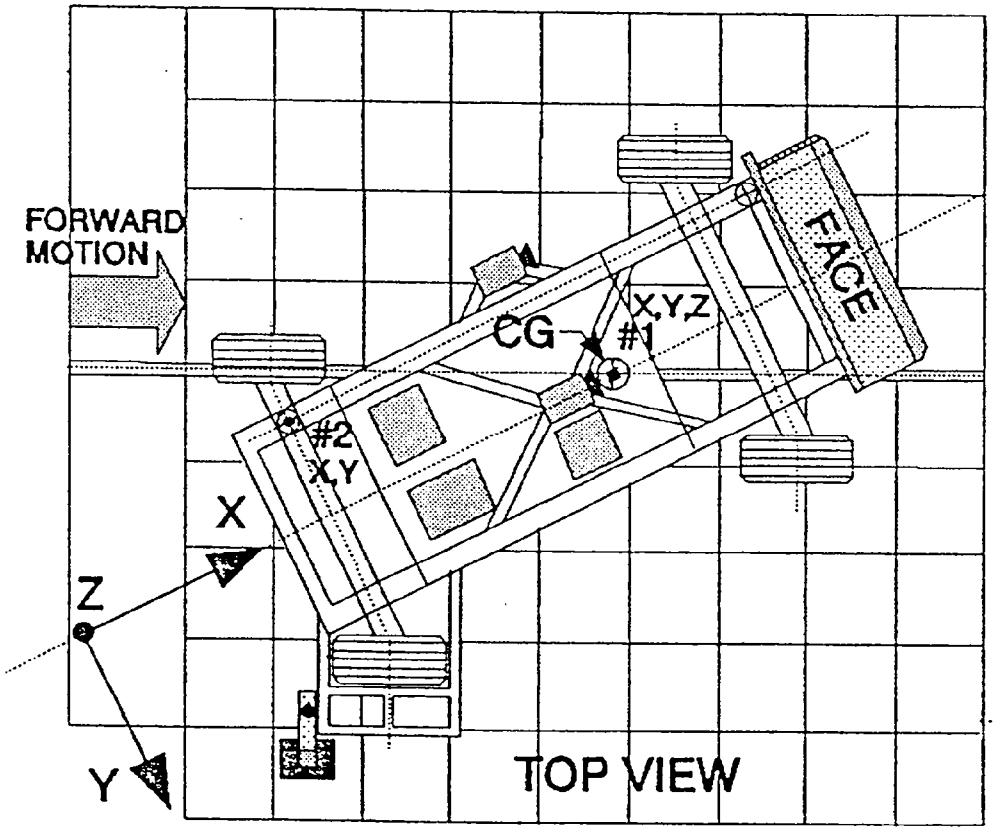
DATA SHEET NO. 9

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

VEH. MOD YR/MAKE/MODEL/BODY: 1990 FORD F-150 PICKUP

VEH. NHTSA NO.: RL0601 VIN.: 1FTDF15Y3LLA86220

TEST DATE: 09/02/92 TEST LAB.: MOBILITY SYSTEMS AND EQUIPMENT



ACCELEROMETER LOCATIONS:

1 - MDB Center of Gravity (CG)

2 - Rear Frame Member

DATA SHEET NO. 9 (Cont.)

NO.	COORDINATES			POS. DIRECTION		NEG. DIRECTION	
	X (in.)	Y (in.)	Z (in.)	MaxG	ms	MaxG	ms
1 Longitudinal X	73	0	12	1.9	151.2	16.3	34.9
1 Lateral Y	73	0	12	11.3	24.1	6.2	19.8
1 Vertical Z	73	0	12	32.8	68.7	33.1	61.4
1 Resultant R	73	0	12	34.0	61.4	N/A	N/A
2 Longitudinal X	12	-19	17	1.2	145.4	17.9	35.1
2 Lateral Y	12	-19	17	5.1	106.5	5.7	29.5

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

REMARKS:

RECORDED BY: Brian O'Keefe DATE: 9-4-92

APPROVED BY: 9/16/92

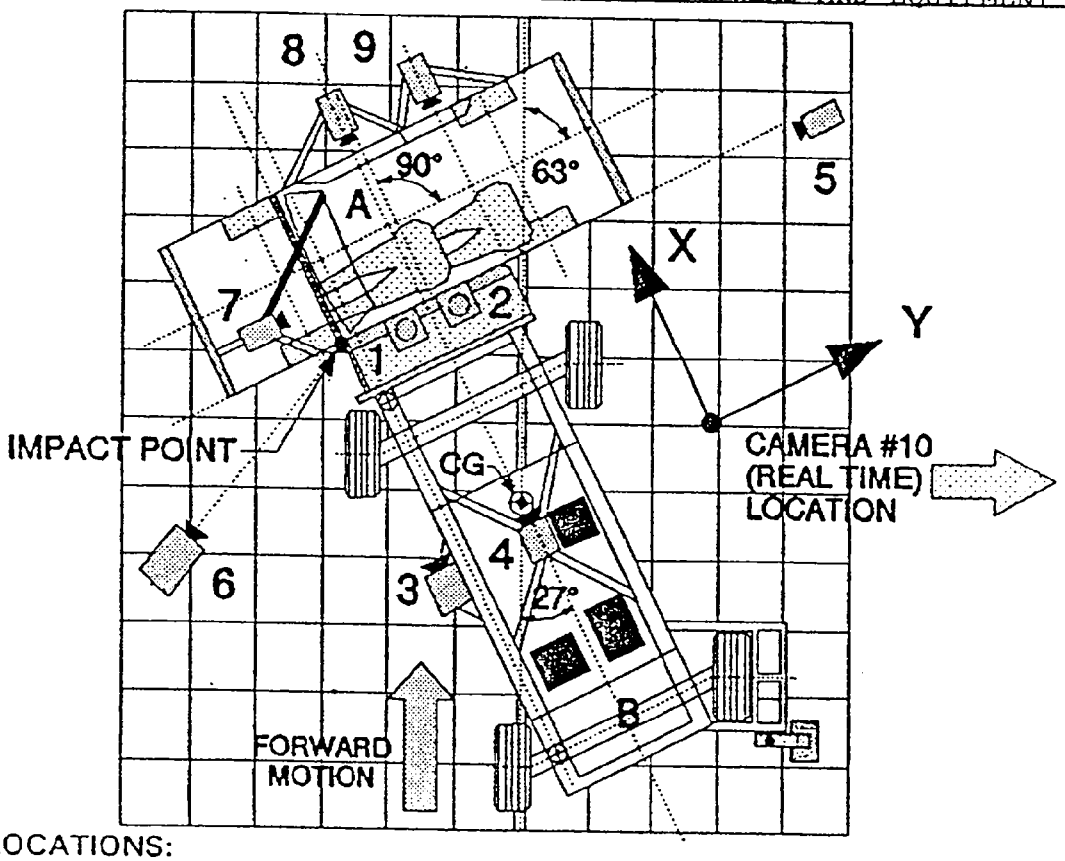
DATA SHEET NO. 10

HIGH SPEED CAMERA LOCATIONS AND DATA

VEH. MOD YR/MAKE/MODEL/BODY: 1990 FORD F-150 PICKUP

VEH. NHTSA NO.: RL0601 VIN.: 1FTDF15Y3LLA86220

TEST DATE: 09/02/92 TEST LAB.: MOBILITY SYSTEMS AND EQUIPMENT COMPANY



CAMERA LOCATIONS:

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

DATA SHEET NO. 10 (Cont.)

NO.	TYPE	LENS SIZE (mm)	FILM SPEED (fps)	* COORDINATES		
				X	Y	Z
1	Fastax II	16	610	12	12	236
2	Fastax II	28	600	-12	12	236
3	Himac	28	630	-121	-37	50
4	Himac	16	630	-151	0	72
5	Fastax II	16	600	-156	648	48
6	Fastax II	28	610	-96	-504	48
7	Fastax II	16	600	20	-50	61
8	Fastax II	16	610	81	30	51
9	N/A	-	-	-	-	-
10	Arriflex	15-70 Zoom	24	-	-	-

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

REMARKS:

RECORDED BY: Brian O'Keefe DATE: 9-16-92

APPROVED BY: 9/16/92

DATA SHEET NO. 11

TEST VEHICLE DATA

VEH. MOD YR/MAKE/MODEL/BODY: 1990 FORD F-150 PICKUP

VEH. NHTSA NO.: RL0601 VIN.: 1FTDF15Y3LLA86220

VEH. BUILD DATE: 02/90 TEST DATE: 09/02/92

TEST LABORATORY: MOBILITY SYSTEMS ANDEQUIPMENT 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; 41 psi Rear

Recommended Tire Size: P235/ 75R15 XL

Size of Tires Installed on Test Vehicle: P235/75R15

Tire Manufacturer: GENERAL

Number of Occupants: 3 Front; N/A Rear; 3 TOTAL

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

Type of Front Seat Back: X Fixed; ____ Adjustable with ___ 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 = 1203 lbs.; Left = 1205 lbs.; Front Total = 2408 lbs.

(59 % of TOTAL shown below)

Rear: Right = 845 lbs.; Left = 833 lbs.; Rear Total = 1678 lbs.

(41 % of TOTAL shown below)

Front Total + Rear Total = TOTAL DELV. = 4086 lbs.

CALCULATION OF TEST VEHICLE TARGET WEIGHT:

Total Test Vehicle Delivered Weight With Maximum Fluids = 4086 lbs. (A)

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

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

Test Vehicle Target Weight = 4550 (A + B + C)

ACTUAL WEIGHT OF TEST VEHICLE WITH TWO SIDs AND CARGO:

Front: Right = 1262 lbs.; Left = 1329 lbs.; Front Total = 2591 lbs.

(57 % of TOTAL shown below)

Rear: Right = 973 lbs.; Left = 984 lbs.; Front Total = 1957 lbs.

(43 % of TOTAL shown below)

Front Total + Rear Total = TOTAL ACTUAL = 4548 lbs. (which includes 140 lbs. of cargo ballast weight)

TEST VEHICLE ATTITUDE:

As Delivered	Ready For Test
31.5 inches Right Front	31.6 inches Right Front
31.4 inches Left Front	31.3 inches Left Front
36.0 inches Right Rear	35.6 inches Right Rear
36.0 inches Left Rear	35.0 inches Left Rear

DATA SHEET NO. 11 (Cont.)

Test Vehicle Wheelbase = 133.3 inches

C.G. = 57.4 inches Rearward of Front Wheel Centerline

Total Vehicle Length: 209.0 inches Right Side

209.0 inches Left Side

210.0 inches Centerline

Arm Rest Location: N/A

Seat Belt Upper Anchorage Location: Upper anchorage bolt is on the B-Pillar, 25.5 inches above the B-Post striker

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

Total Length of Seat Adjustment Travel = 5.0 inches

Total Number of Seat Adjustment Positions or Detents = 9

Front Seat Back Adjustment Position: N/A

Front Seat Back Torso Angle = 15 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: 37 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 = 133.3 inches

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

REMARKS:

Actual impact point is 19.0 inches rearward of front axle centerline

RECORDED BY: Brian O'Keefe DATE: 09/02/92

9/16/92

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: 6	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: 16	INIVEL: 0.0
NFP: -300	NLP: 2999	DELT: 100	DASTAT: AM
INSCOM: NO COMMENT			

Instrumentation Information

Inst. Group ID: 5	VEHNO: 2	CURNO: 003	
SENTYP: AC	SENLOC: 01	SENATT: HDCG	
AXIS: ZL	UNITS: G'S	PREFIL: 1650	
INSMAN: MFG: ENDEVCO, MODEL: 7264-200, S/N: AR39			
CALDAT: 26/MAR/92	INSRAT: 200	CHLMAX: 18	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: 3	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: 3	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: 4 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: 4 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM: NO COMMENT

Instrumentation Information

Inst. Group ID: 5 VEHNO: 2 CURNO: 008
SENTYP: AC SENLOC: 01 SENATT: RBLL
AXIS: YL UNITS: G'S PREFIL: 1650
INSMAN: MFG: ENDEVCO, MODEL: 7264-2000, S/N: BY89H
CALDAT: 02/JAN/92 INSRAT: 2000 CHLMAX: 4 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM: NO COMMENT

Instrumentation Information

Inst. Group ID: 5 VEHNO: 2 CURNO: 009
SENTYP: AC SENLOC: 01 SENATT: RBLL
AXIS: YL UNITS: G'S PREFIL: 1650
INSMAN: MFG: ENDEVCO, MODEL: 7264-2000, S/N: BL93H
CALDAT: 02/JAN/92 INSRAT: 2000 CHLMAX: 4 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: 4 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: 3 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: 4 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM: NO COMMENT

Instrumentation Information

Inst. Group ID: 5 VEHNO: 2 CURNO: 013
SENTYP: LC SENLOC: NA SENATT: LPBO
AXIS: NA UNITS: LBS PREFIL: 1650
INSMAN: MFG: LEBOW, MODEL: 3371, S/N: 333
CALDAT: 09/APR/92 INSRAT: 3500 CHLMAX: 27 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM: NO COMMENT

Instrumentation Information

Inst. Group ID: 5 VEHNO: 2 CURNO: 014
SENTYP: LC SENLOC: NA SENATT: SHBT
AXIS: NA UNITS: LBS PREFIL: 1650
INSMAN: MFG: LEBOW, MODEL: 3371, S/N: 327
CALDAT: 09/APR/92 INSRAT: 3500 CHLMAX: 22 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM: NO COMMENT

Instrumentation Information

Inst. Group ID: 5 VEHNO: 2 CURNO: 015
SENTYP: AC SENLOC: NA SENATT: DSRF
AXIS: XG UNITS: G'S PREFIL: 1650
INSMAN: MFG: I.C. SENSORS, MODEL: 3031-200, S/N 1X-200
CALDAT: 10/APR/92 INSRAT: 200 CHLMAX: 19 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM: NO COMMENT

Instrumentation Information

Inst. Group ID: 5 VEHNO: 2 CURNO: 016
SENTYP: AC SENLOC: NA SENATT: DSRF
AXIS: YG UNITS: G'S PREFIL: 1650
INSMAN: MFG: I.C. SENSORS, MODEL: 3031-200, S/N: 1Y-200
CALDAT: 10/APR/92 INSRAT: 200 CHLMAX: 30 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM: NO COMMENT

Instrumentation Information

Inst. Group ID: 5 VEHNO: 2 CURNO: 017
SENTYP: AC SENLOC: NA SENATT: DSRF
AXIS: ZG UNITS: G'S PREFIL: 1650
INSMAN: MFG: I.C. SENSORS, MODEL:3031-200, S/N 1Z-200
CALDAT: 10/APR/92 INSRAT: 200 CHLMAX: 47 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM: NO COMMENT

Instrumentation Information

Inst. Group ID: 5 VEHNO: 2 CURNO: 018
SENTYP: AC SENLOC: NA SENATT: FLRR
AXIS: XG UNITS: G'S PREFIL: 1650
INSMAN: MFG: I.C. SENSORS, MODEL: 3031-200, S/N: 2X-200
CALDAT: 10/APR/92 INSRAT: 200 CHLMAX: 28 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM: NO COMMENT

Instrumentation Information

Inst. Group ID: 5 VEHNO: 2 CURNO: 019
SENTYP: AC SENLOC: NA SENATT: FLRR
AXIS: YG UNITS: G'S PREFIL: 1650
INSMAN: MFG: I.C. SENSORS, MODEL: 3031-200, S/N: 2Y-200
CALDAT: 10/APR/92 INSRAT: 200 CHLMAX: 50 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM: NO COMMENT

Instrumentation Information

Inst. Group ID: 5 VEHNO: 2 CURNO: 020
SENTYP: AC SENLOC: NA SENATT: FLRR
AXIS: ZG UNITS: G'S PREFIL: 1650
INSMAN: MFG: I.C. SENSORS, MODEL: 3031-200, S/N: 2Z-200
CALDAT: 10/APR/92 INSRAT: 200 CHLMAX: 40 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM: NO COMMENT

Instrumentation Information

Inst. Group ID: 5 VEHNO: 2 CURNO: 021
SENTYP: AC SENLOC: NA SENATT: DSLF
AXIS: YG UNITS: G'S PREFIL: 1650
INSMAN: MFG: I.C. SENSORS, MODEL: 3031-200, S/N:24-200
CALDAT: 10/APR/92 INSRAT: 200 CHLMAX: 58 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM: NO COMMENT

Instrumentation Information

Inst. Group ID: 5 VEHNO: 2 CURNO: 022
SENTYP: AC SENLOC: NA SENATT: DRLF
AXIS: YG UNITS: G'S PREFIL: 1650
INSMAN: MFG: I.C. SENSORS, MODEL: 3031-200, S/N: 27-200
CALDAT: 10/APR/92 INSRAT: 200 CHLMAX: 148 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM: NO COMMENT

Instrumentation Information

Inst. Group ID: 5 VEHNO: 2 CURNO: 023
SENTYP: AC SENLOC: NA SENATT: DRLF
AXIS: YG UNITS: G'S PREFIL: 1650
INSMAN: MFG: I.C. SENSORS, MODEL: 3031-200, S/N: 30-200
CALDAT: 10/APR/92 INSRAT: 200 CHLMAX: 220 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: 139 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM: NO COMMENT

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 025
SENTYP: AC SENLOC: NA SENATT: IMCG
AXIS: XG UNITS: G'S PREFIL: 1650
INSMAN: MFG: I.C. SENSORS, MODEL: 3031-200, S/N: 28-200
CALDAT: 10/APR/92 INSRAT: 200 CHLMAX: 19 INIVEL: 29.5
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM: NO COMMENT

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 026
SENTYP: AC SENLOC: NA SENATT: IMCG
AXIS: YG UNITS: G'S PREFIL: 1650
INSMAN: MFG: I.C. SENSORS, MODEL: 3031-200, S/N: 31-200
CALDAT: 10/APR/92 INSRAT: 200 CHLMAX: 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: 21 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: 58 INIVEL: 29.5
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: 28 INIVEL: 15.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM: NO COMMENT

SECTION 5

PHOTOGRAPHS

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

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

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

FIGURE 5-2 POSTTEST FRONTAL VIEW OF TEST VEHICLE

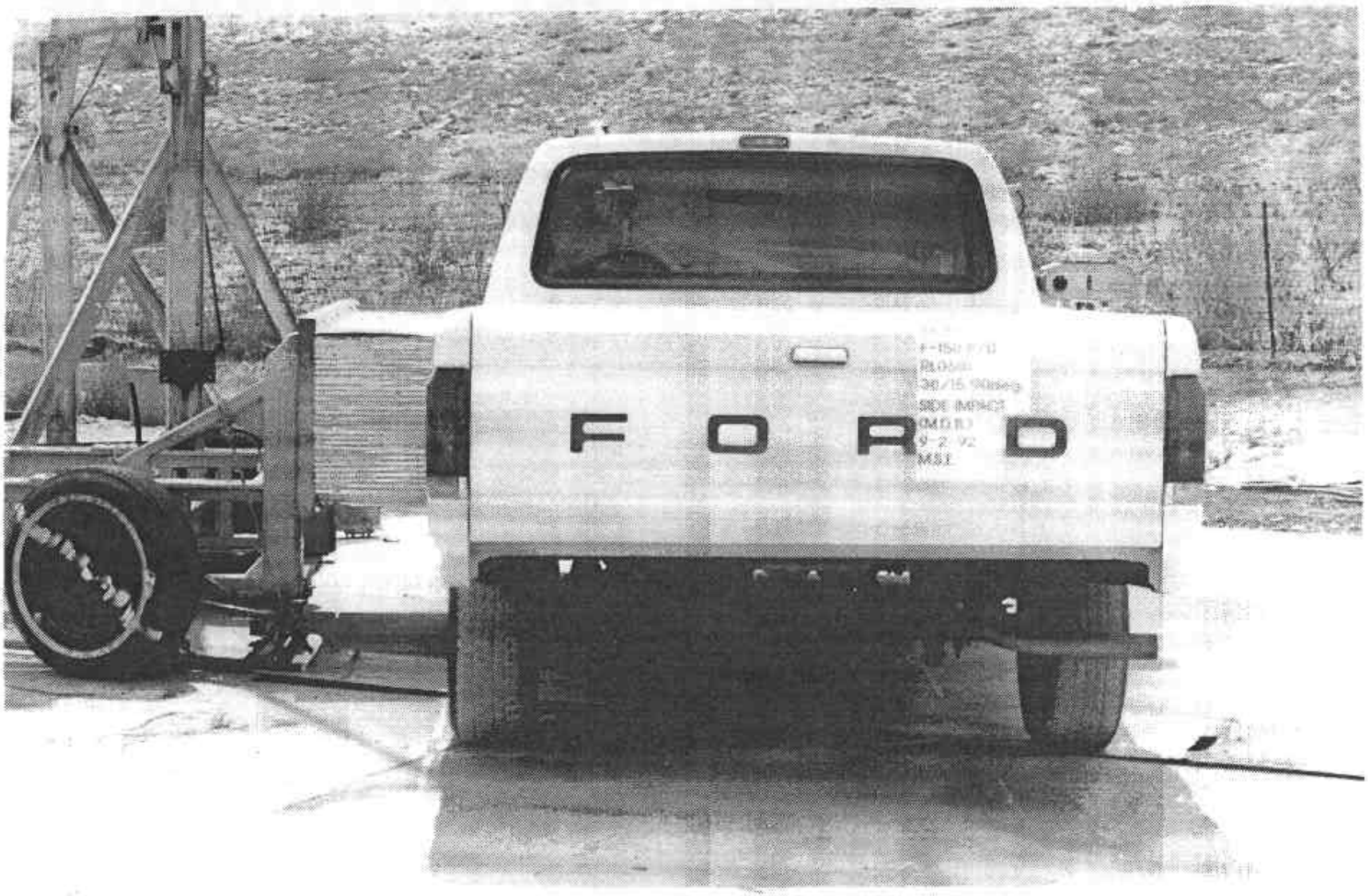


FIGURE 5-3 PRETEST REAR VIEW OF TEST VEHICLE

FIGURE 5-4 POSTTEST REAR VIEW OF TEST VEHICLE

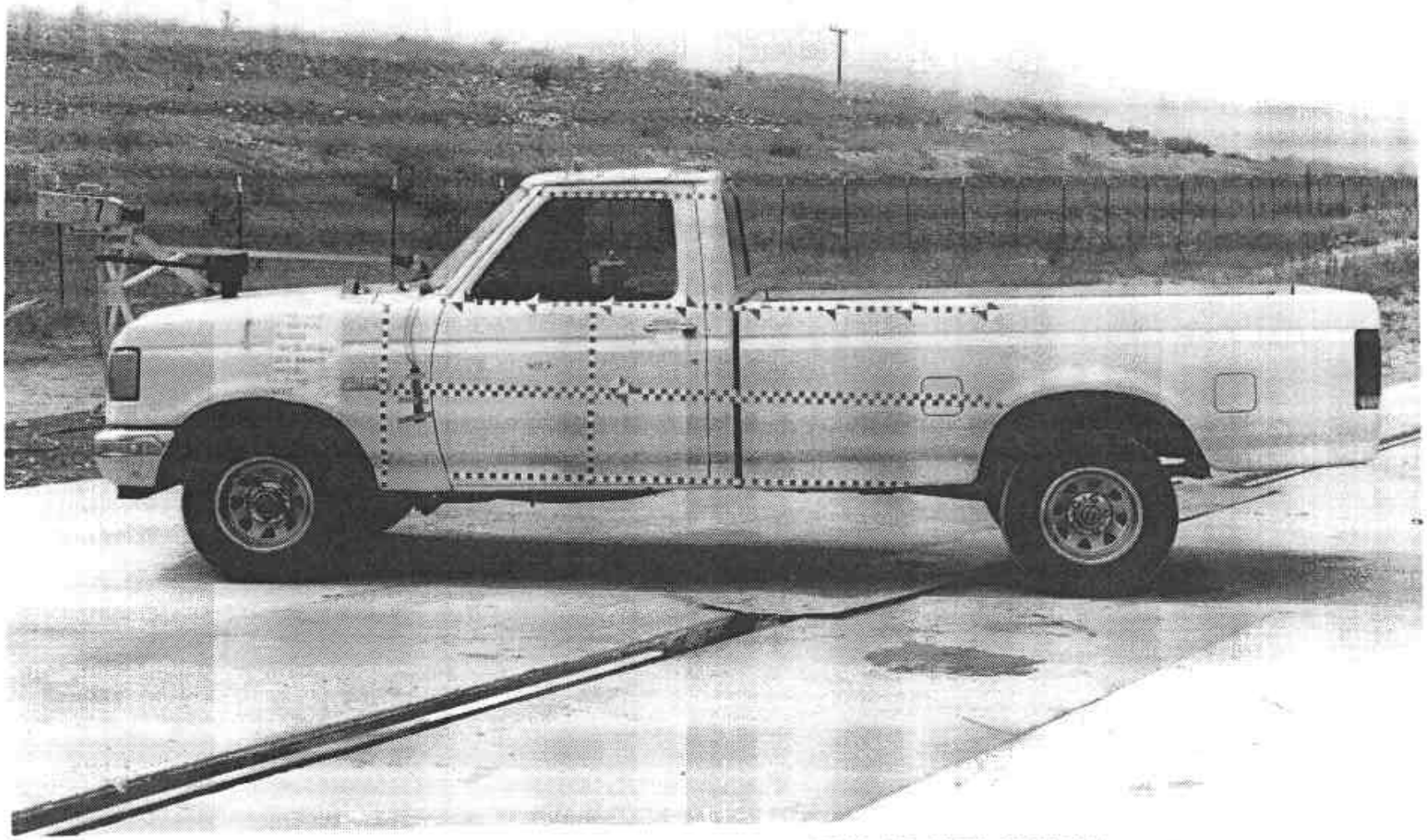


FIGURE 5-5 PRETEST STRUCK SIDE VIEW OF TEST VEHICLE

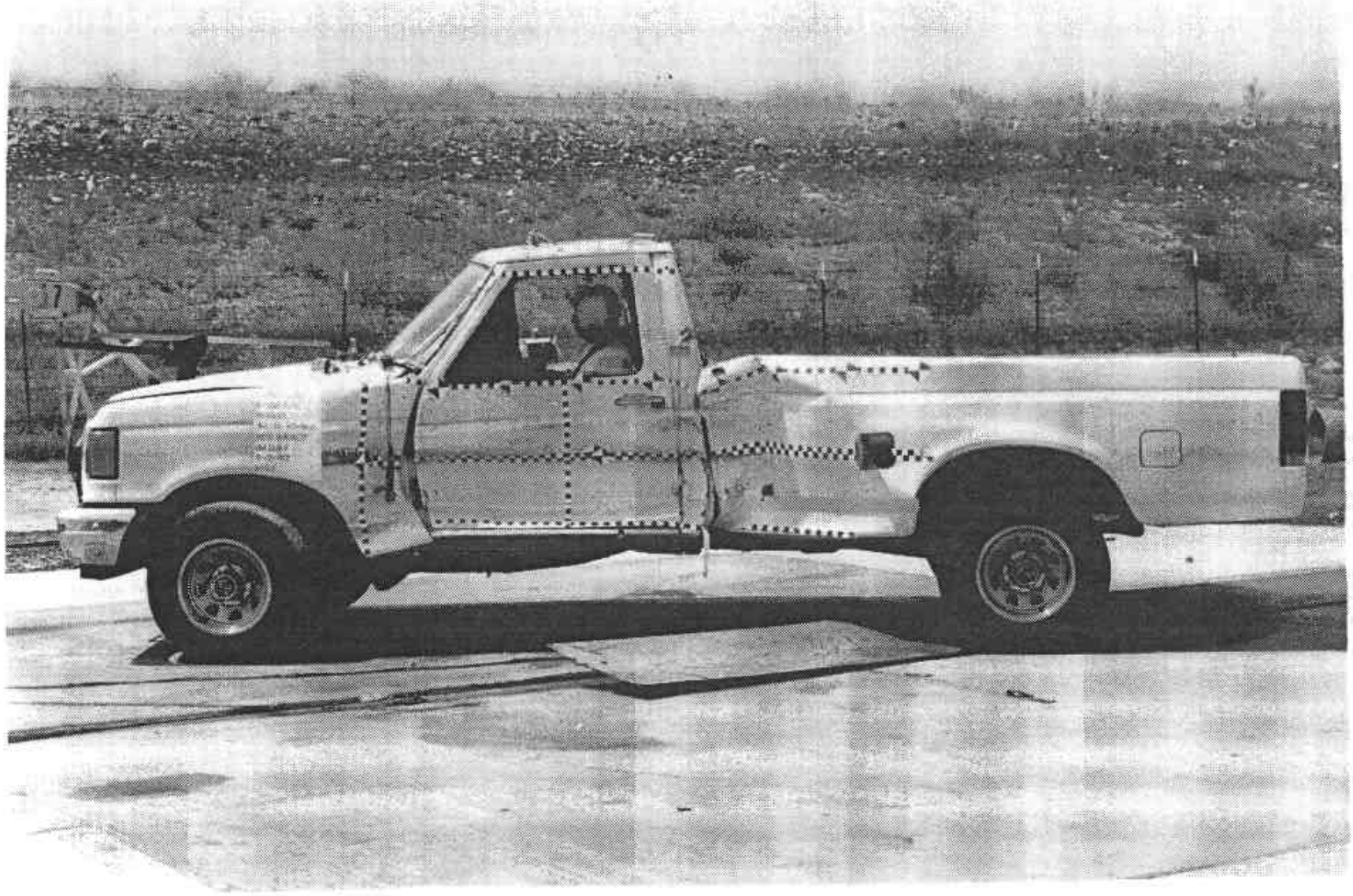


FIGURE 5-6 POSTTEST STRUCK SIDE VIEW OF TEST VEHICLE

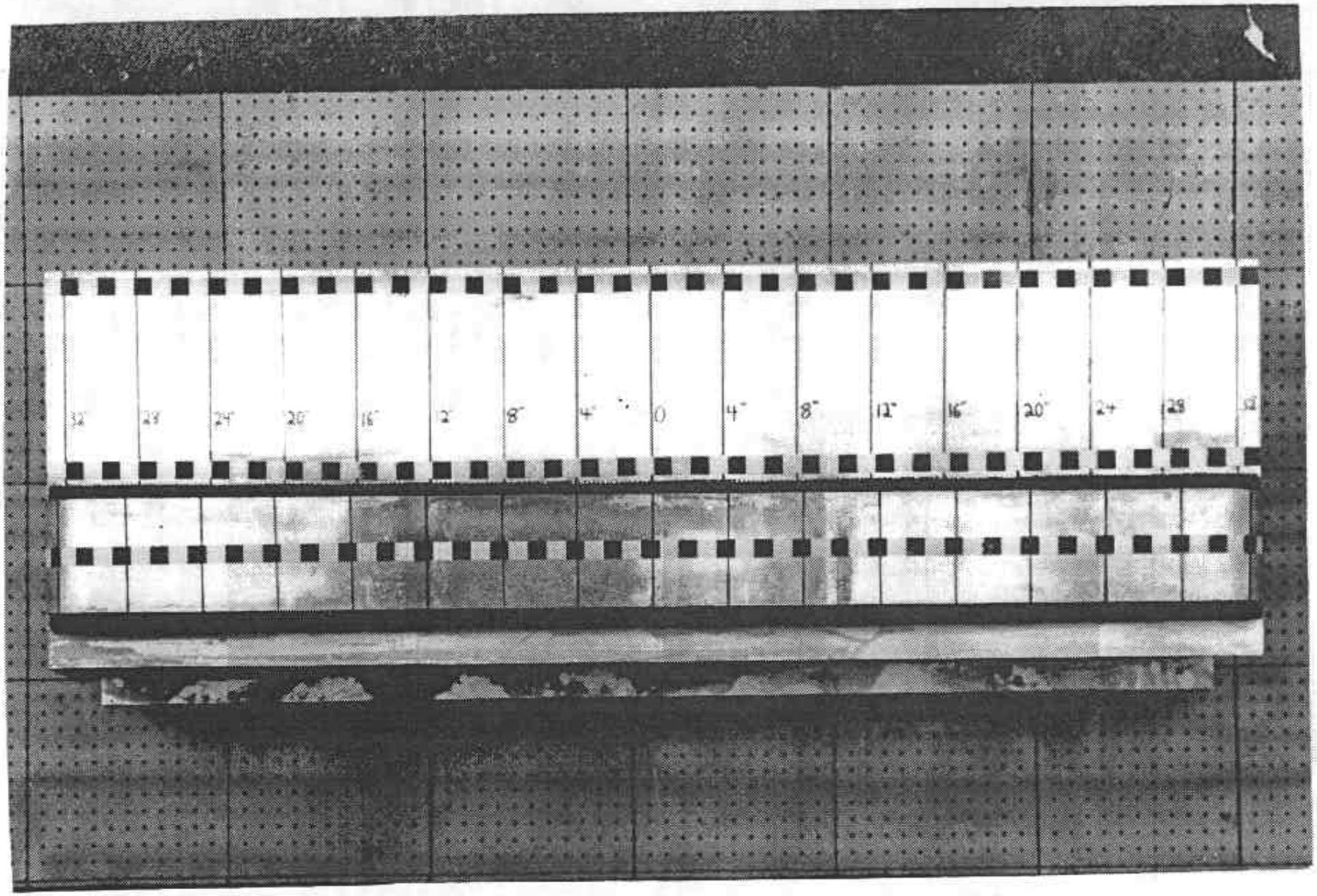


FIGURE 5-7 PRETEST FRONTAL VIEW OF MDB IMPACT FACE

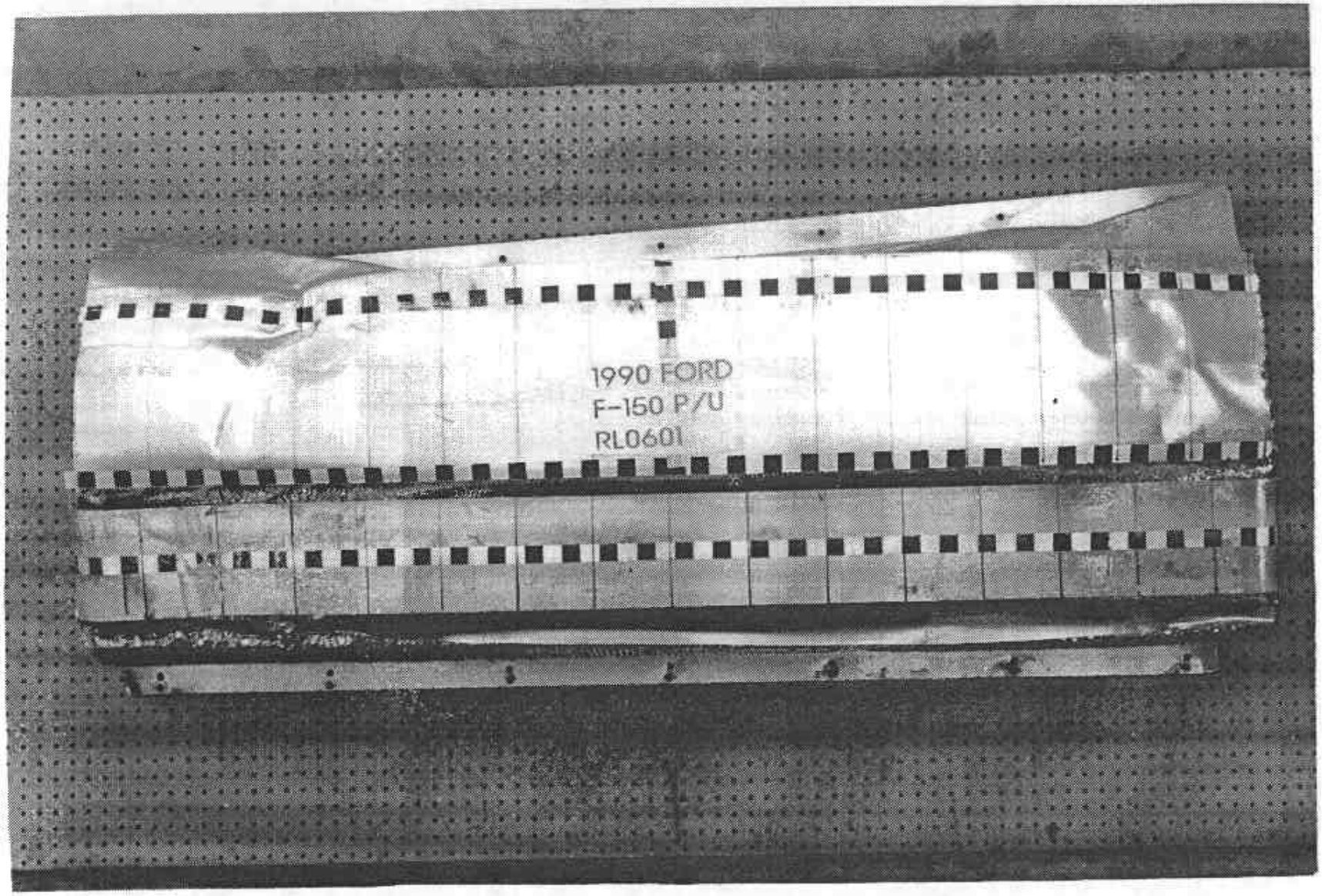


FIGURE 5-8 POSTTEST FRONTAL VIEW OF MDB IMPACT FACE

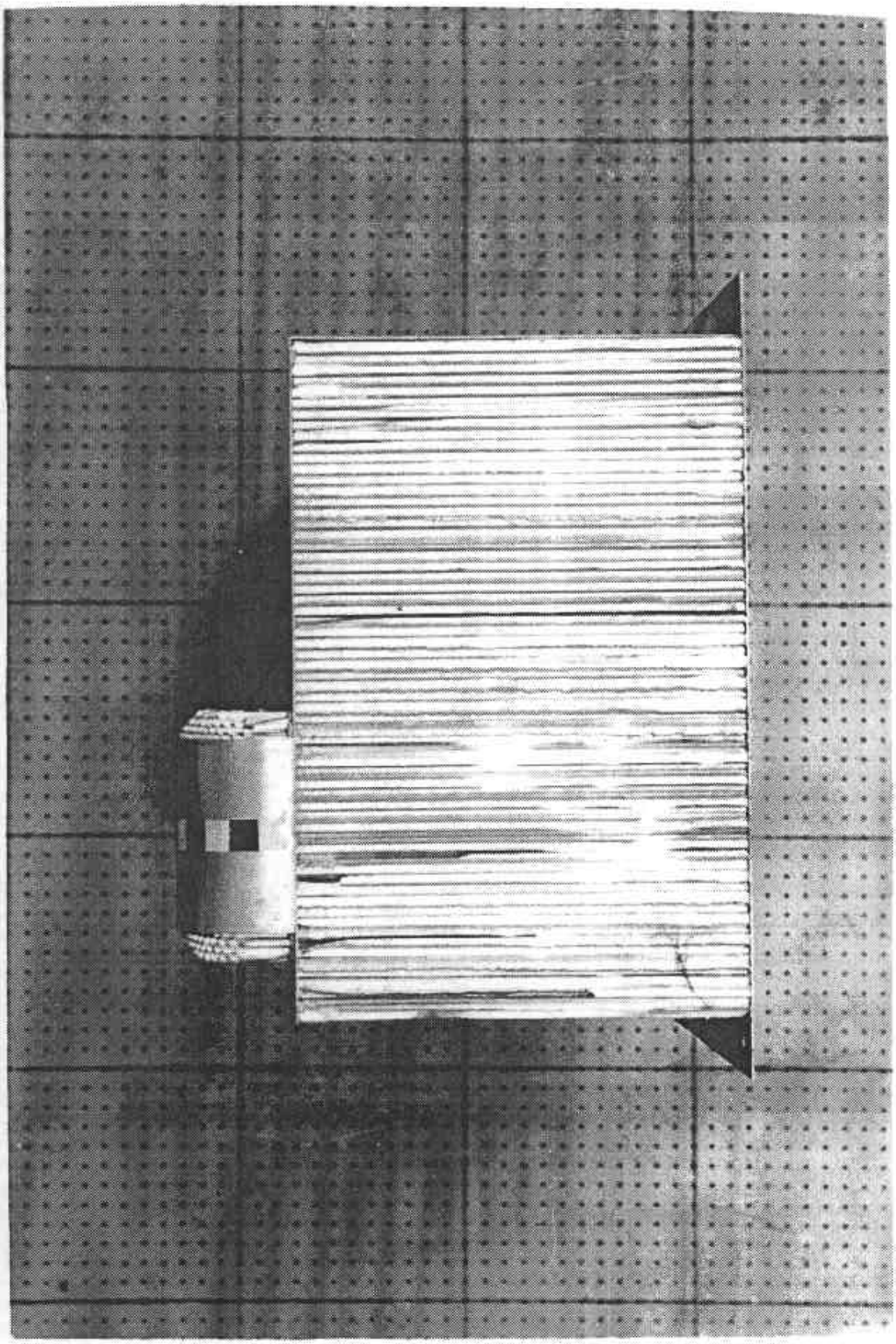


FIGURE 5-9 PRETEST LEFT SIDE VIEW OF MDB IMPACT FACE

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

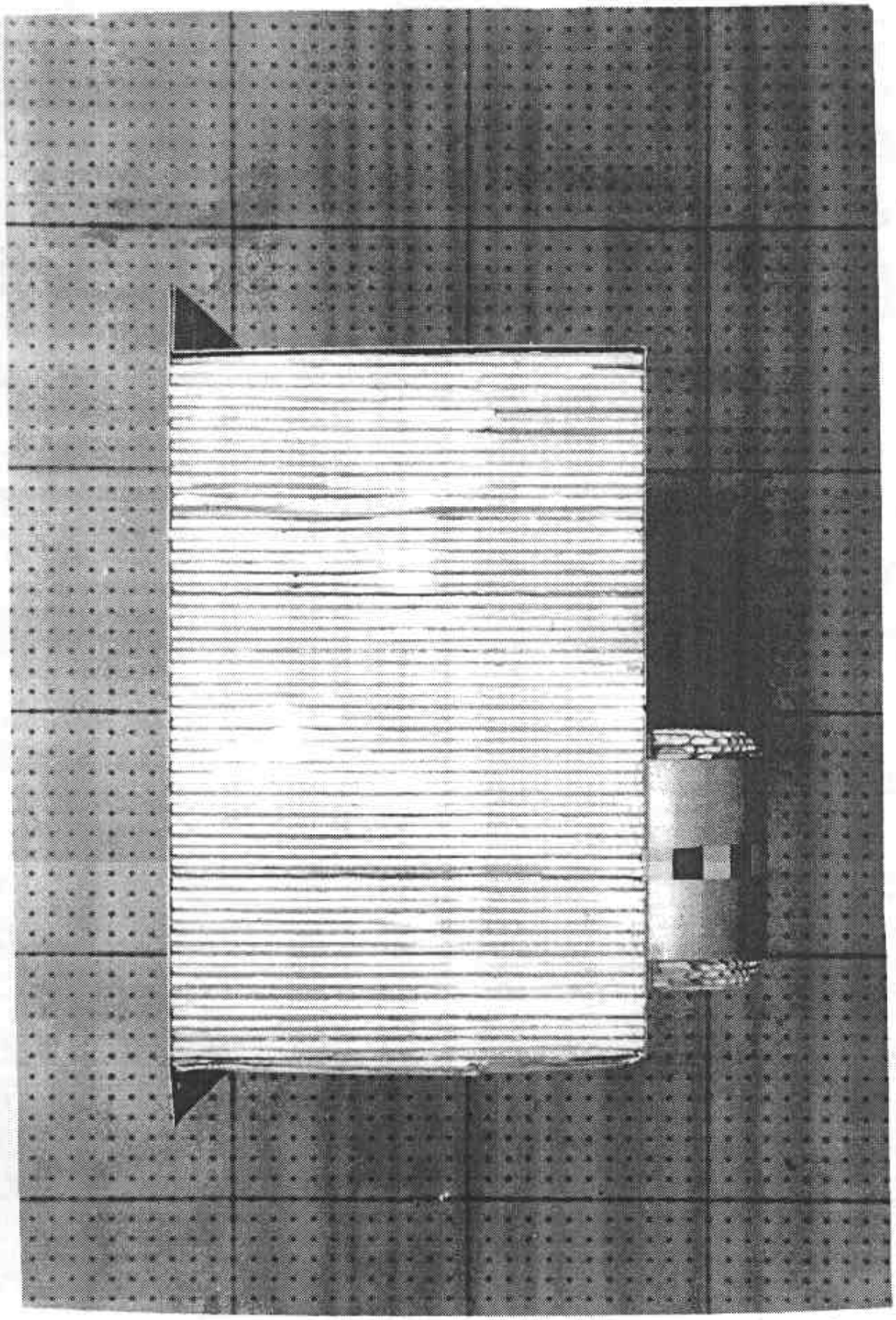


FIGURE 5-11 PRETEST RIGHT SIDE VIEW OF MDB IMPACT FACE

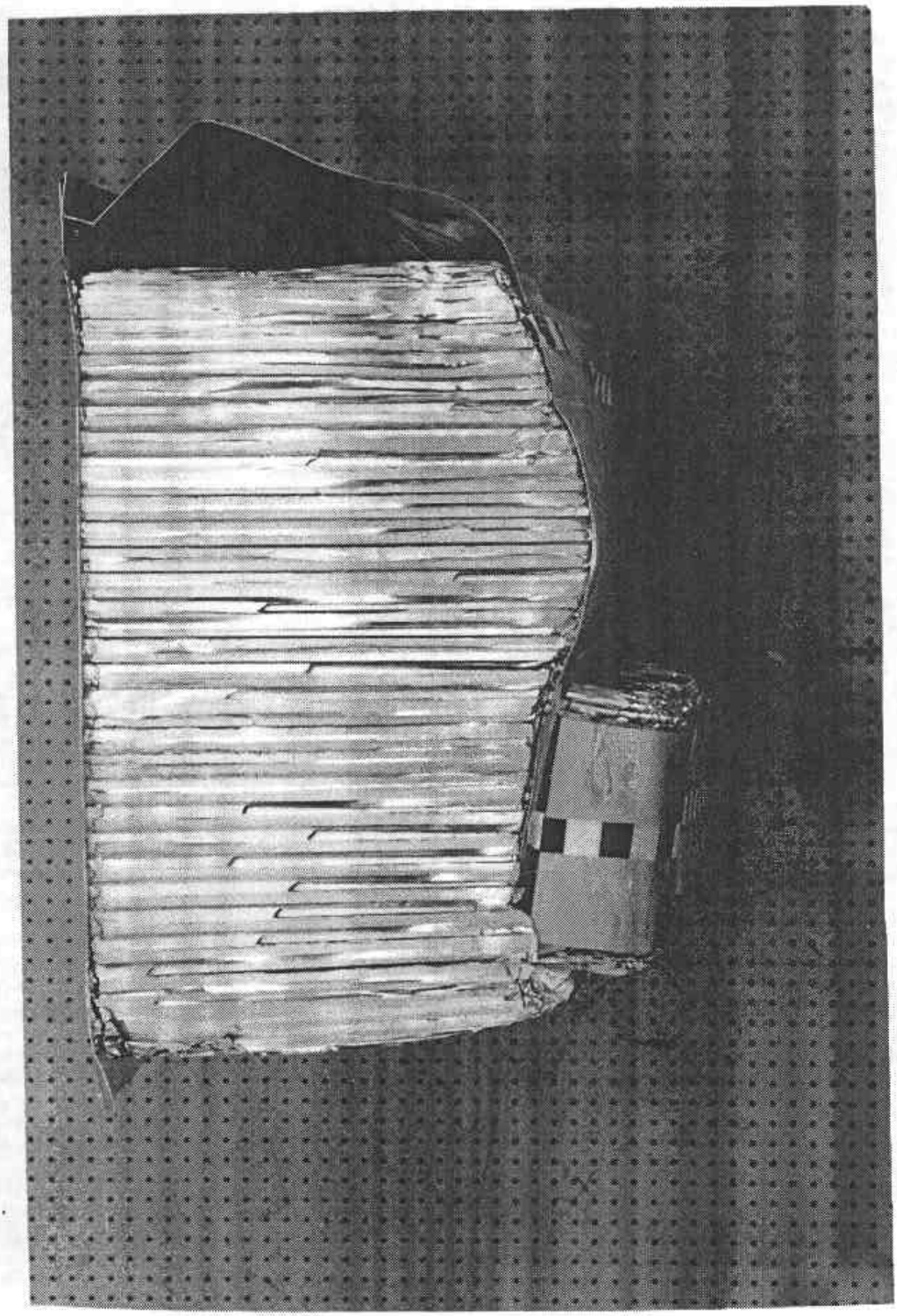


FIGURE 5-12 POSTTEST RIGHT SIDE VIEW OF MDB IMPACT FACE

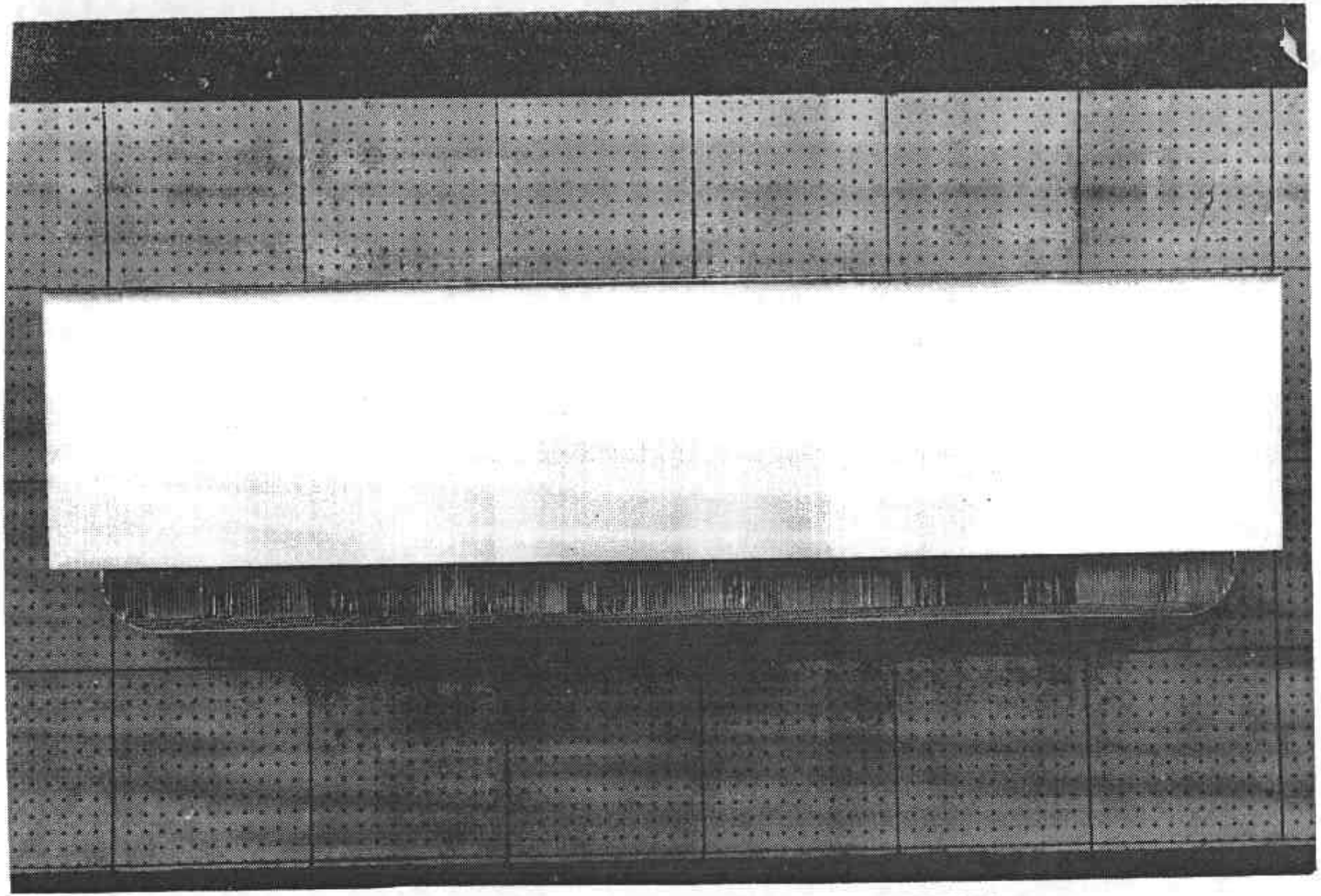


FIGURE 5-13 PRETEST TOP VIEW OF MDB IMPACT FACE

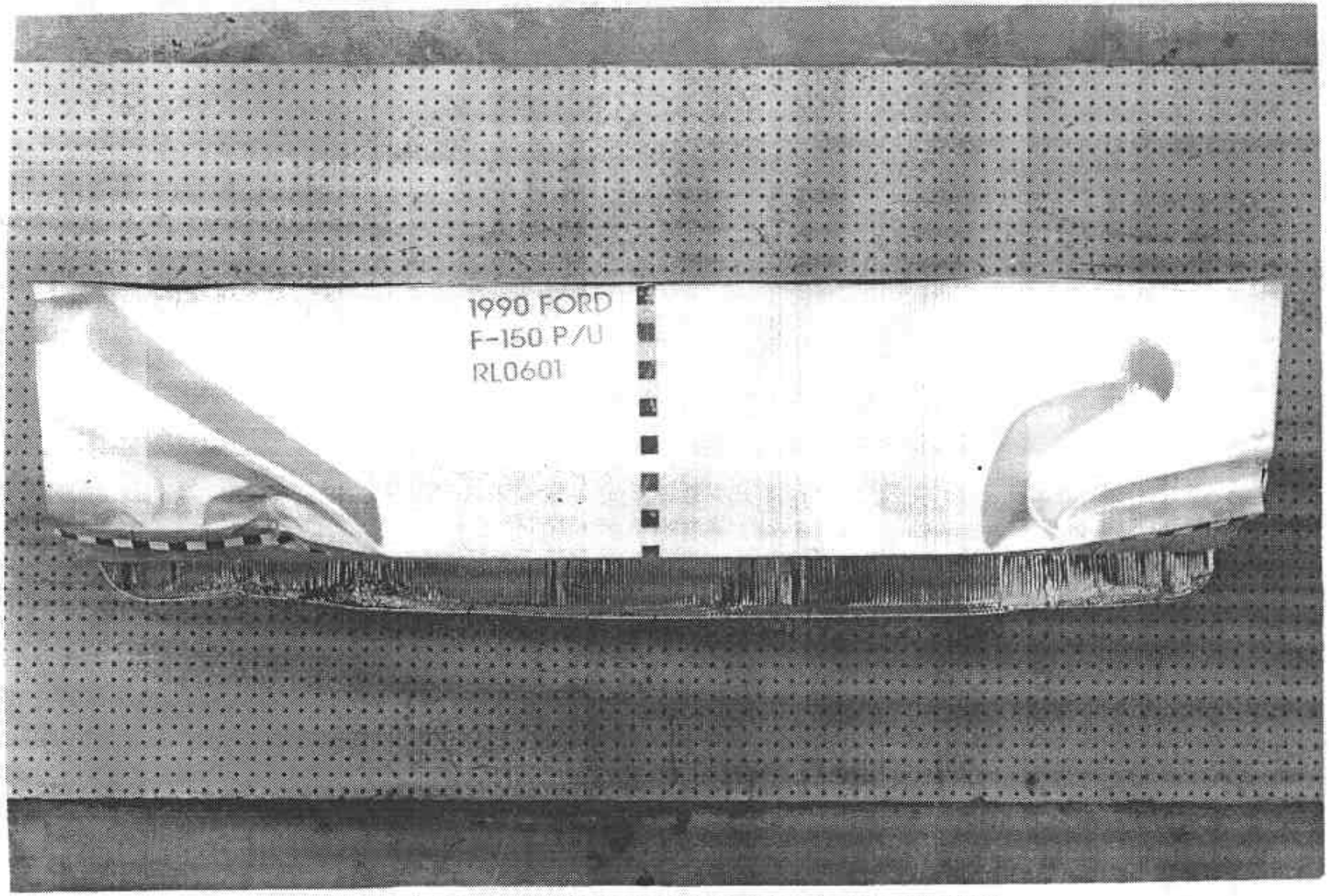


FIGURE 5-14 POSTTEST TOP VIEW OF MDB IMPACT FACE

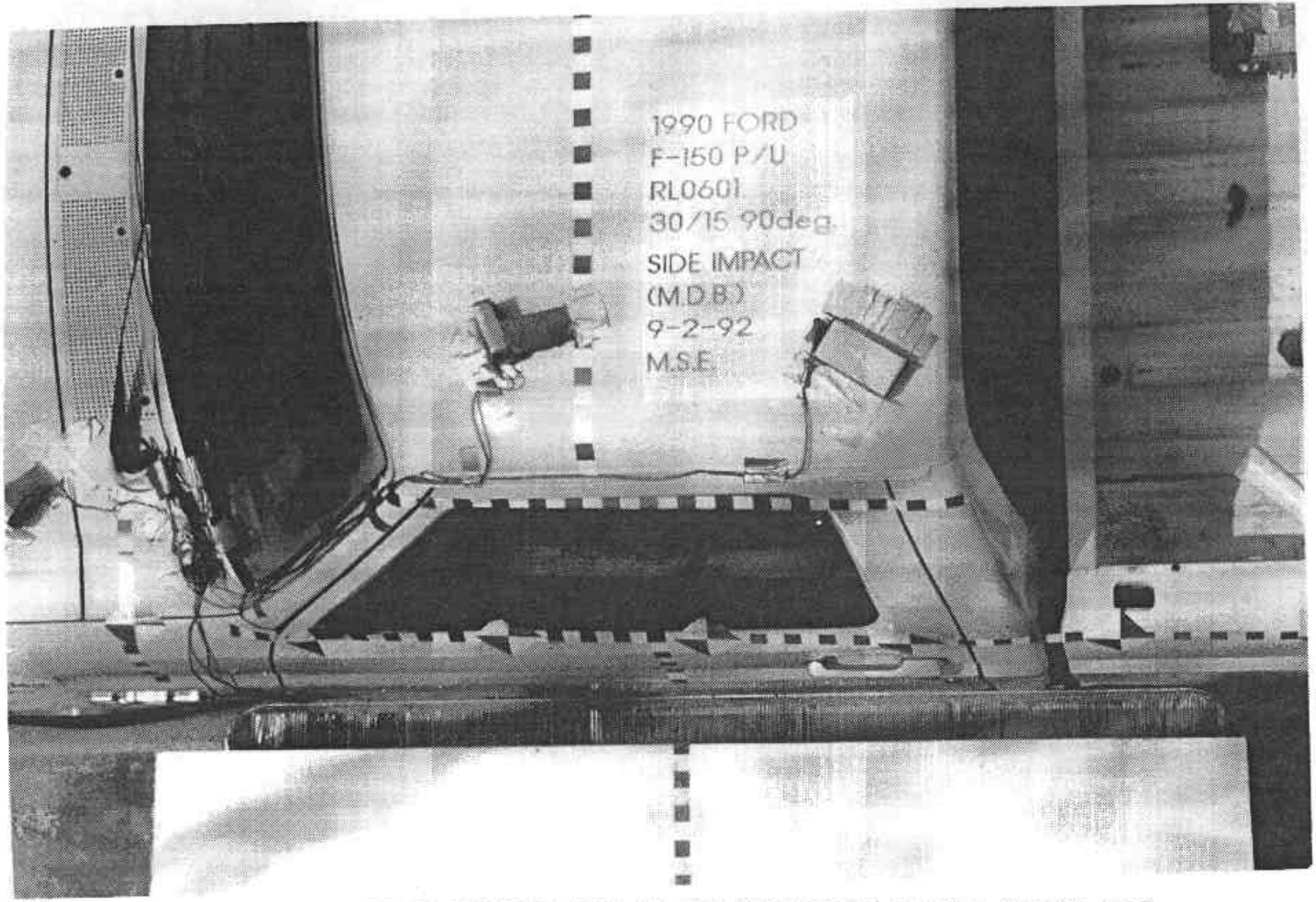


FIGURE 5-15 PRETEST OVERHEAD VIEW OF MDB POSITIONED AGAINST STRUCK SIDE OF TEST VEHICLE AT IMPACT LOCATION

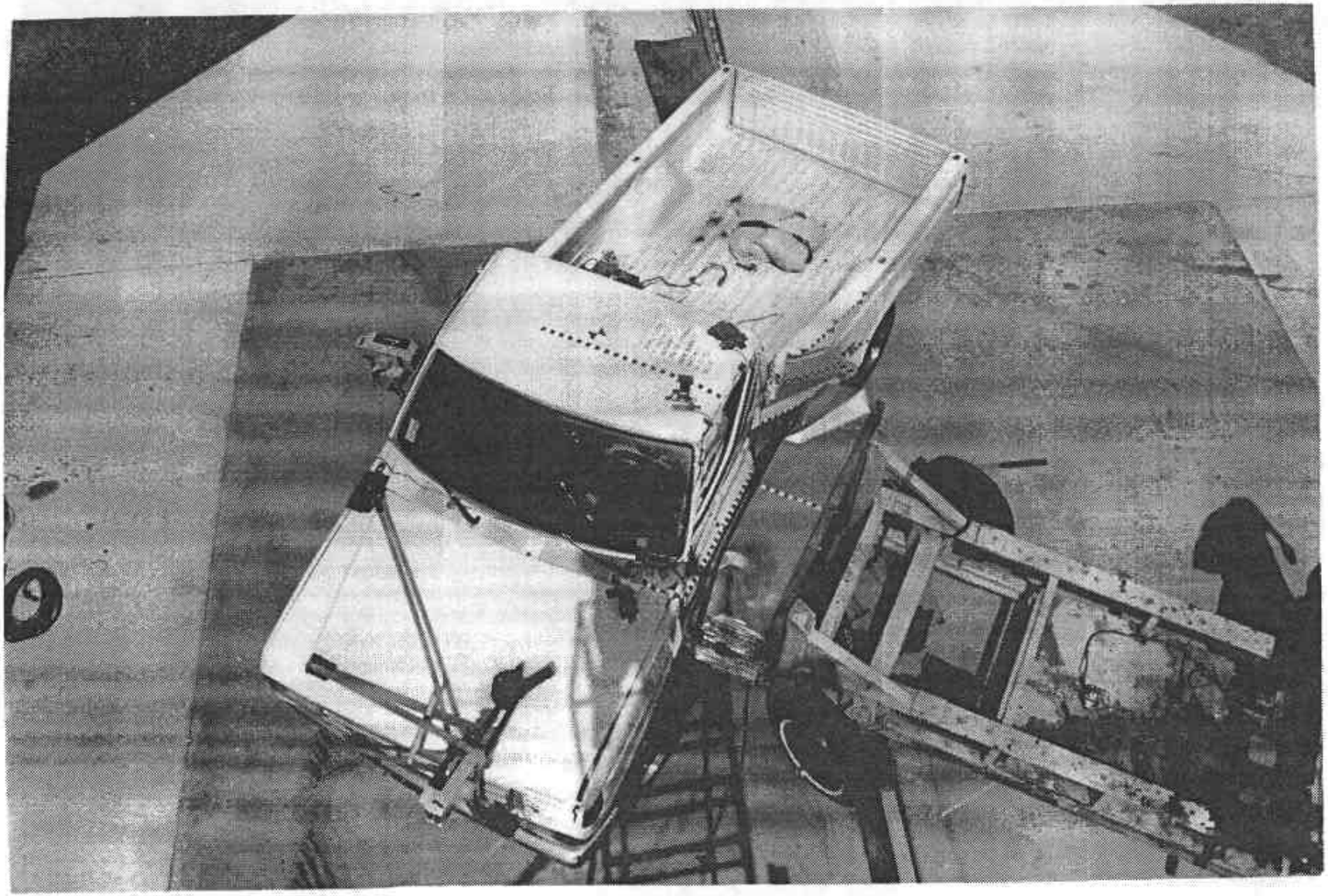


FIGURE 5-16 POSTTEST OVERHEAD VIEW OF MDB POSITIONED AGAINST STRUCK SIDE OF TEST VEHICLE AT IMPACT LOCATION

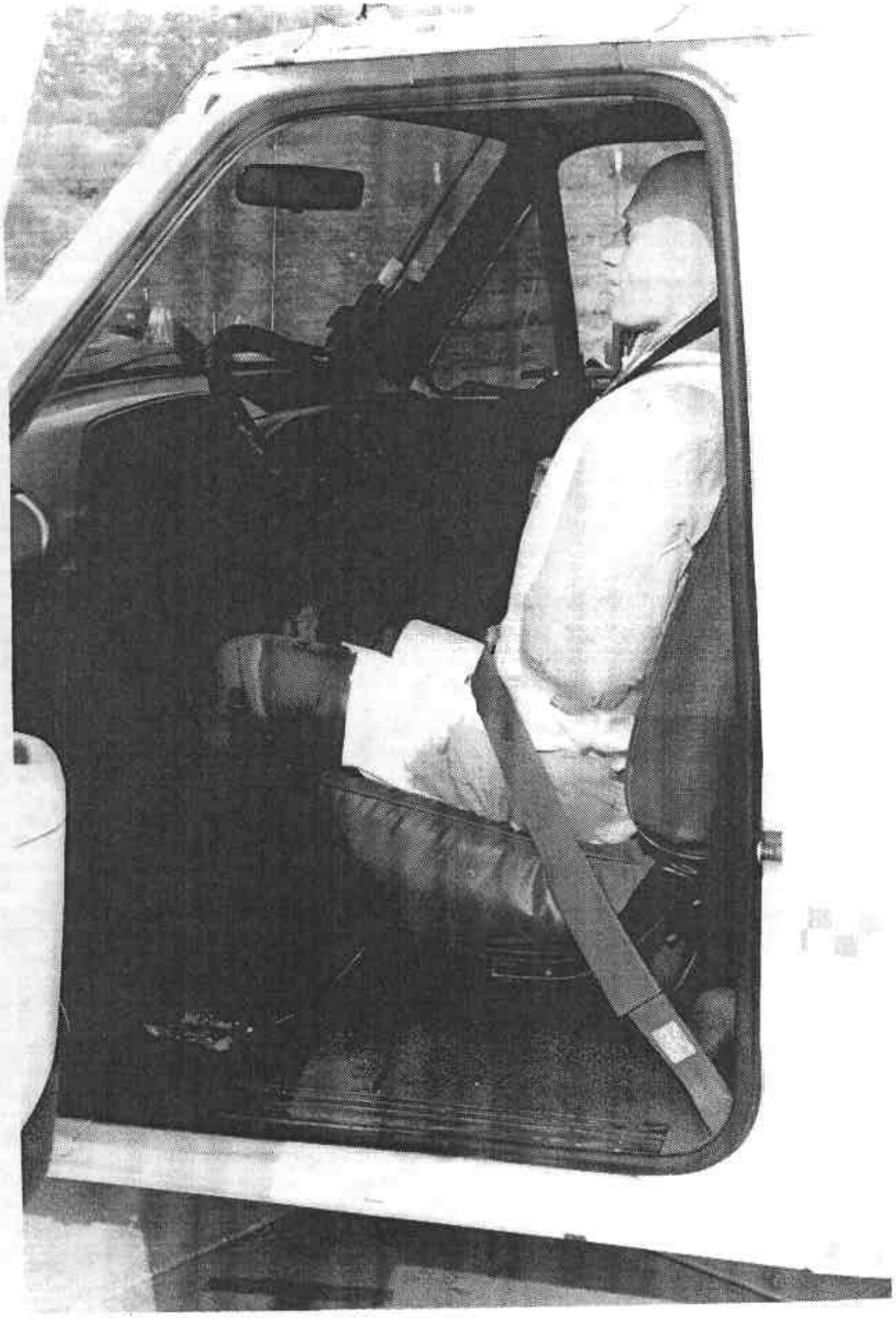


FIGURE 5-17 PRETEST OCCUPANT COMPARTMENT LEFT SIDE SHOWING DRIVER SID

FIGURE 5-18 PRETEST OCCUPANT COMPARTMENT SHOWING DRIVER SID

FIGURE 5-19 POSTTEST OCCUPANT COMPARTMENT SHOWING DRIVER SID

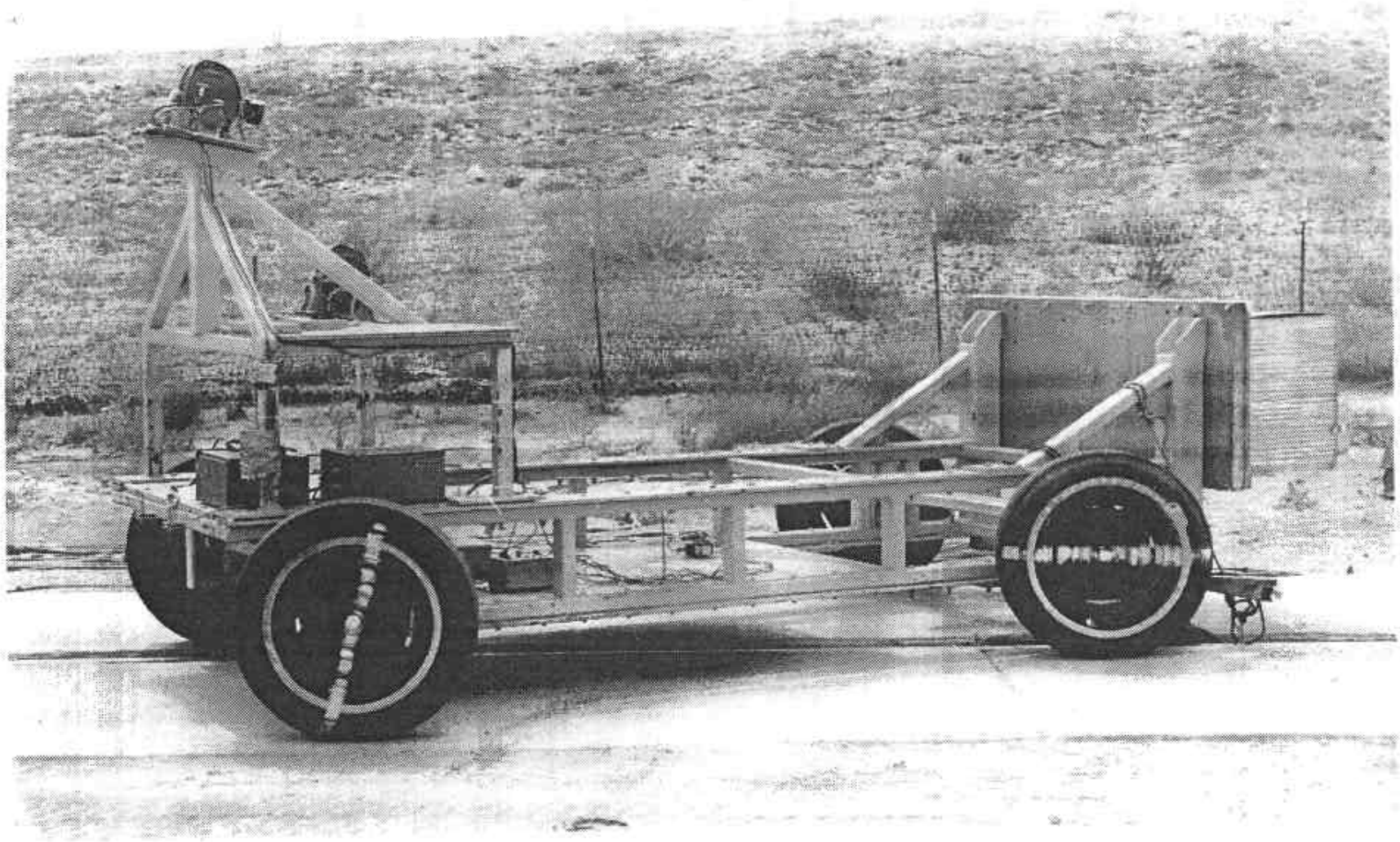


FIGURE 5-20 PRETEST RIGHT SIDE VIEW OF MDB WITH IMPACT FACE IN POSITION

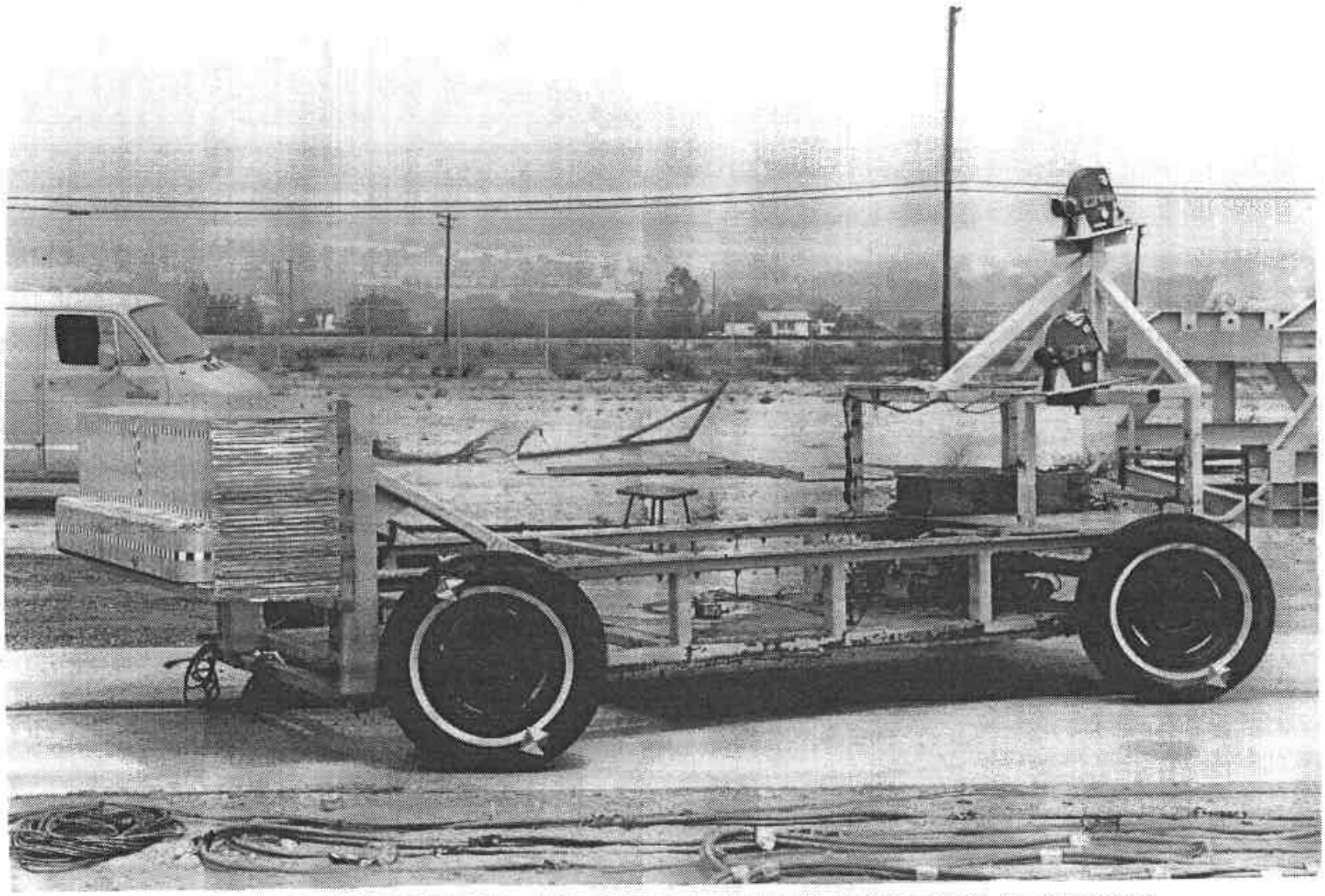


FIGURE 5-21 PRETEST LEFT SIDE VIEW OF MDB WITH IMPACT FACE IN POSITION

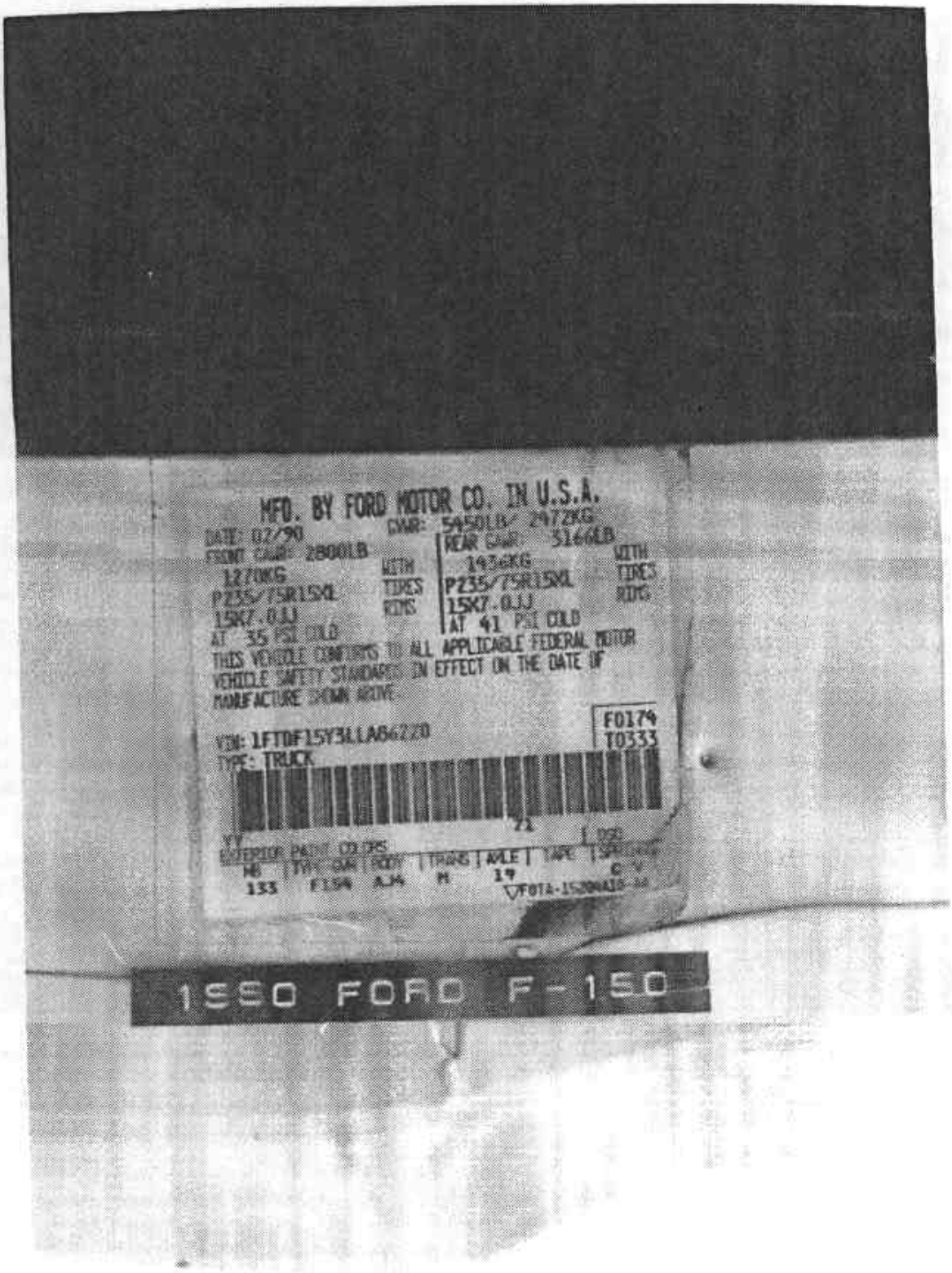


FIGURE 5-22 TEST VEHICLE TIRE PLACARD & MANUFACTURER'S CERTIFICATION LABEL

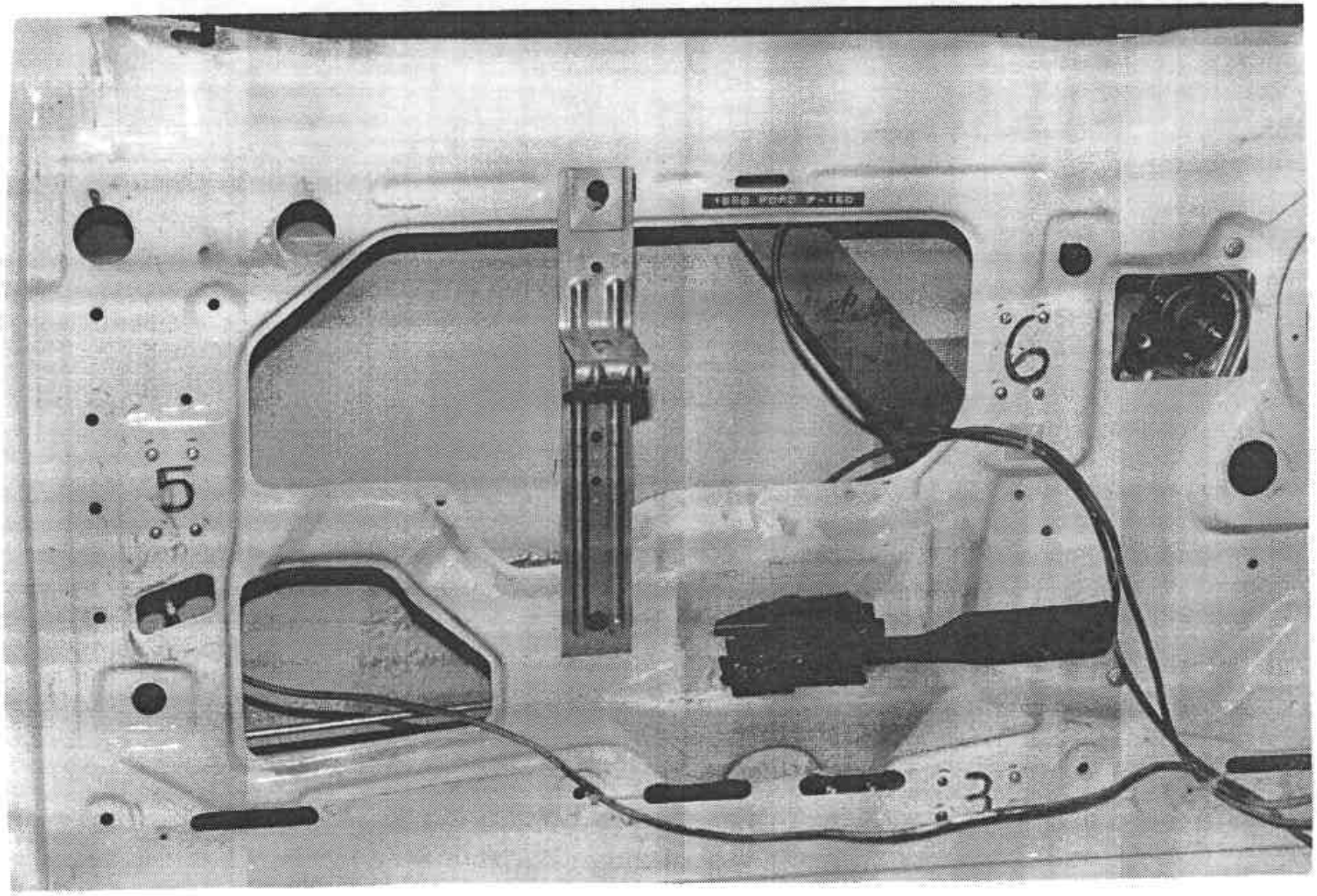


FIGURE 5-23 DRIVER DOOR ACCELEROMETER LOCATIONS

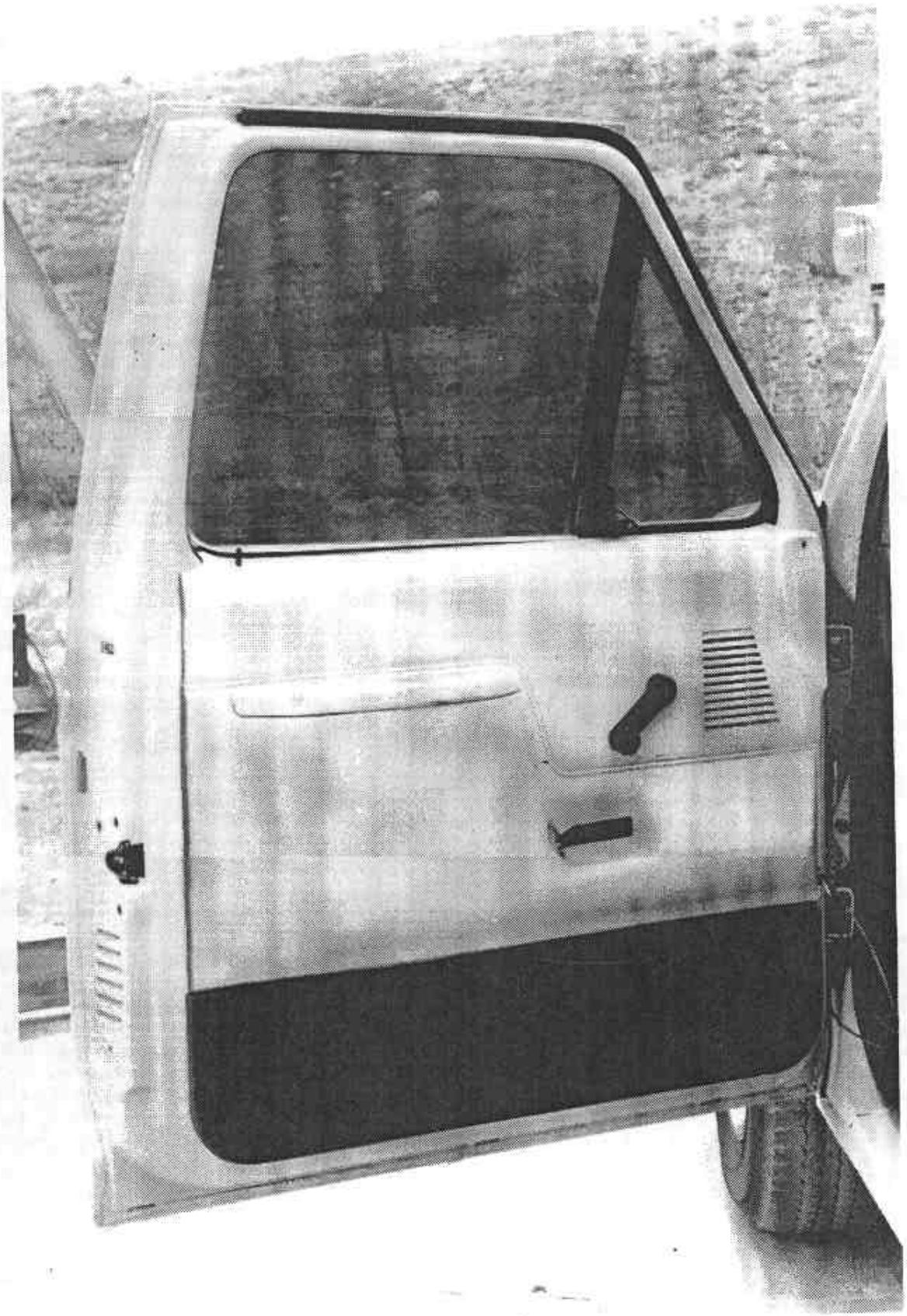


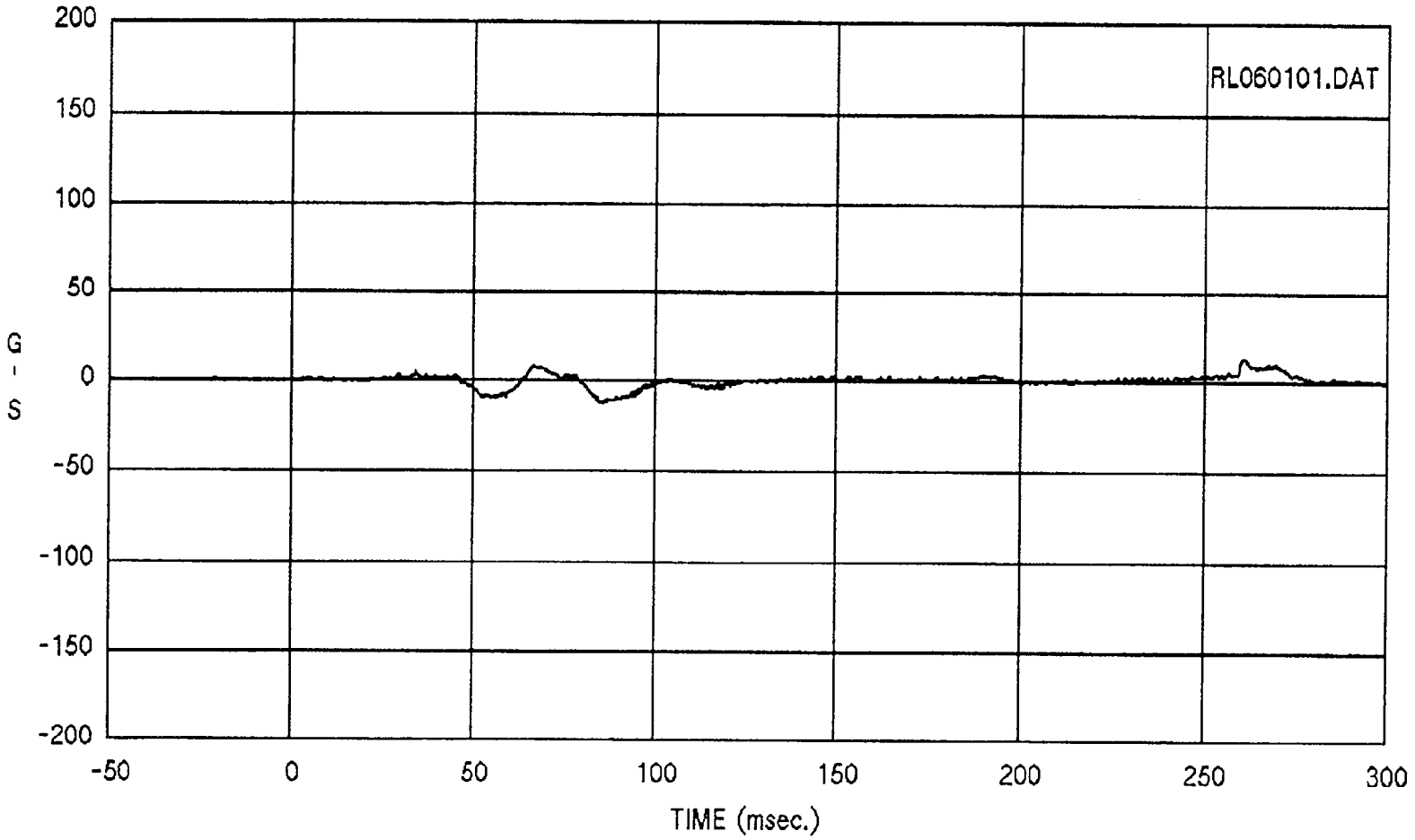
FIGURE 5-24 DRIVER DOOR ACCELEROMETERS INSTALLED, DOOR PANEL IN PLACE-PRETEST

SECTION 6

VEHICLE AND SID RESPONSE DATA

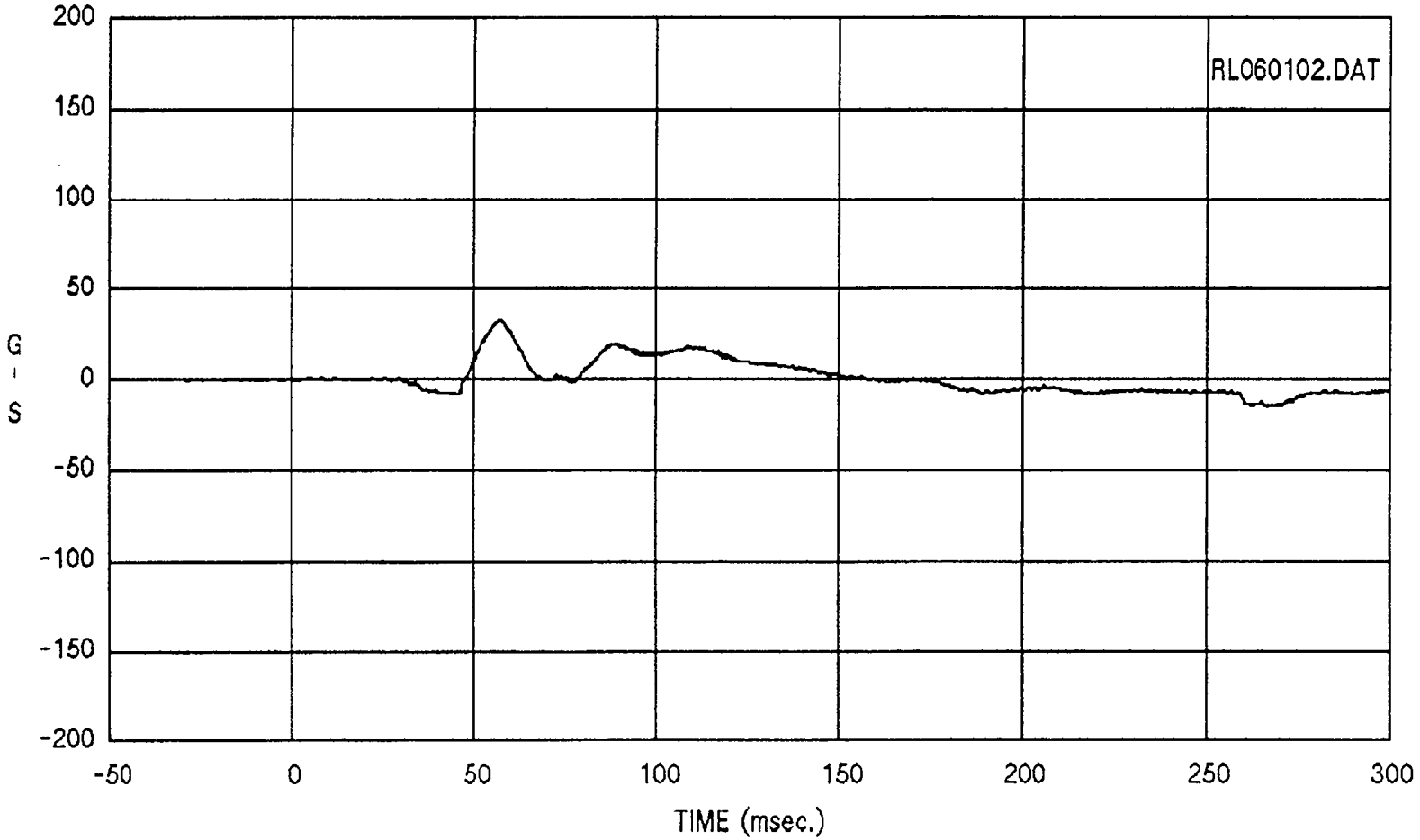
The dataplots from the side impact test are presented in this section.

SID DATA



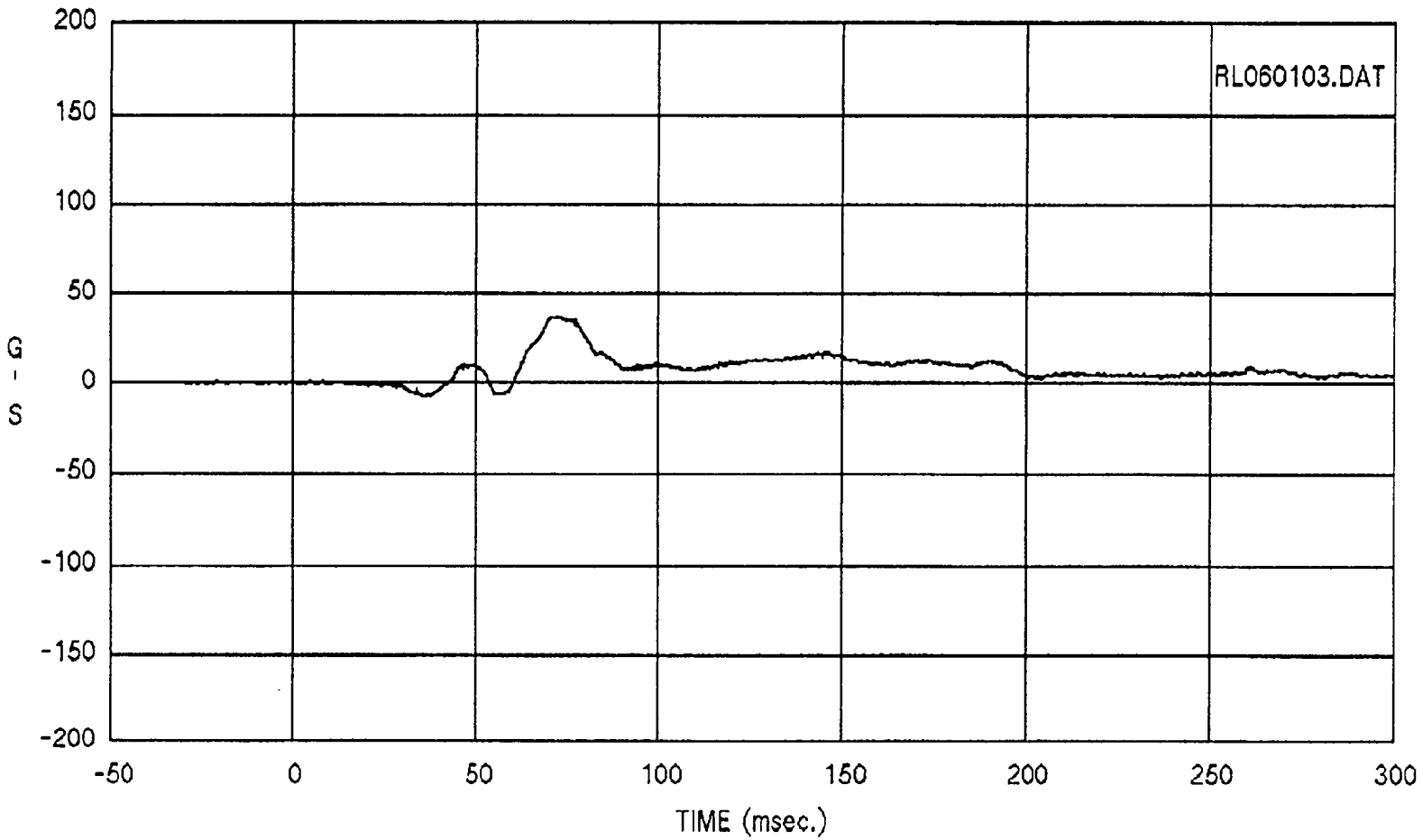
Curve: Driver Head acceleration -- X axis Filter: SAE CLASS 1000 Max = 13.966 Min = -12.475

MSE Date: 09/02/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1990 Ford F-150 Pickup



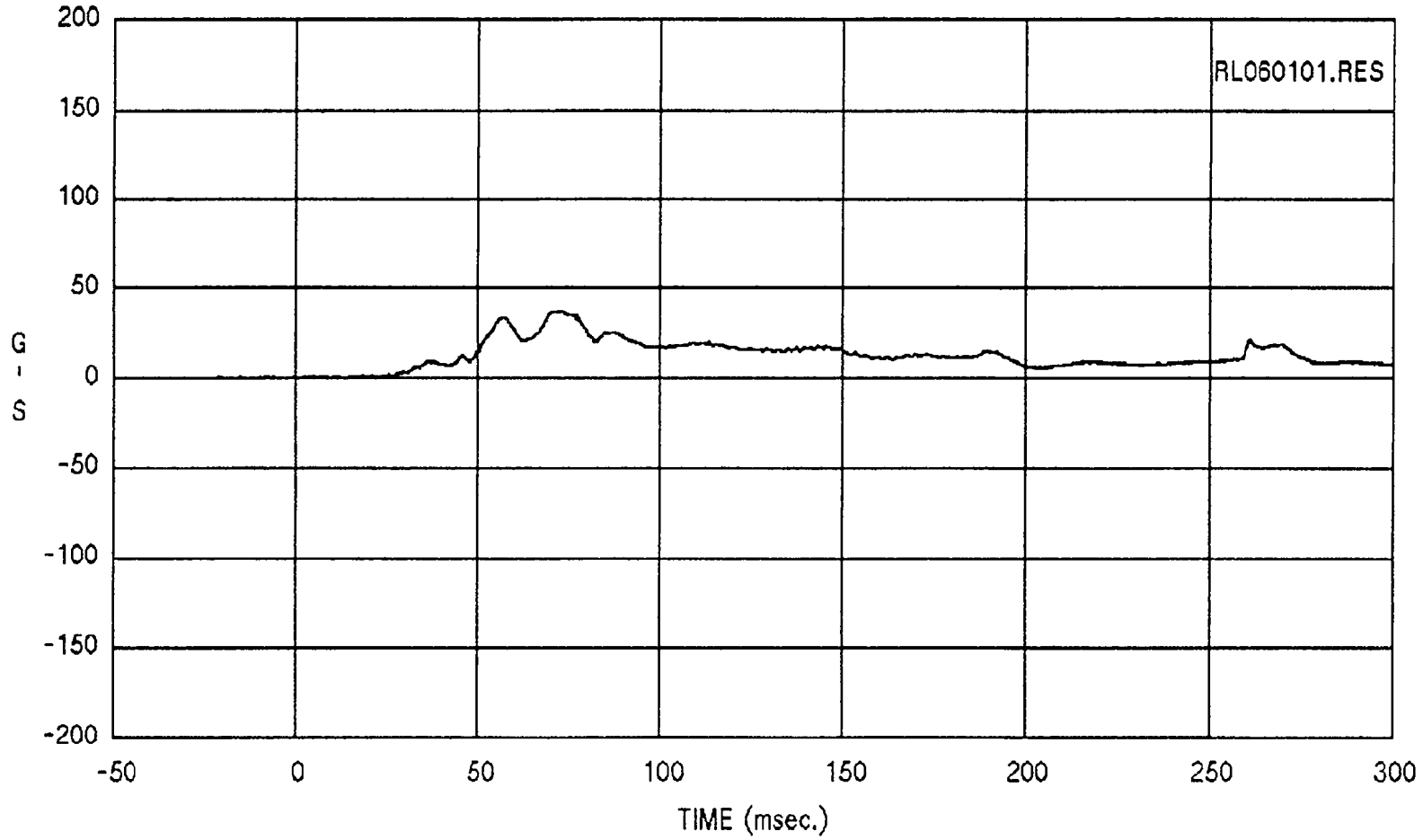
Curve: Driver Head acceleration -- Y axis Filter: SAE CLASS 1000 Max = 32.577 Min = -14.808

MSE Date: 09/02/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1990 Ford F-150 Pickup



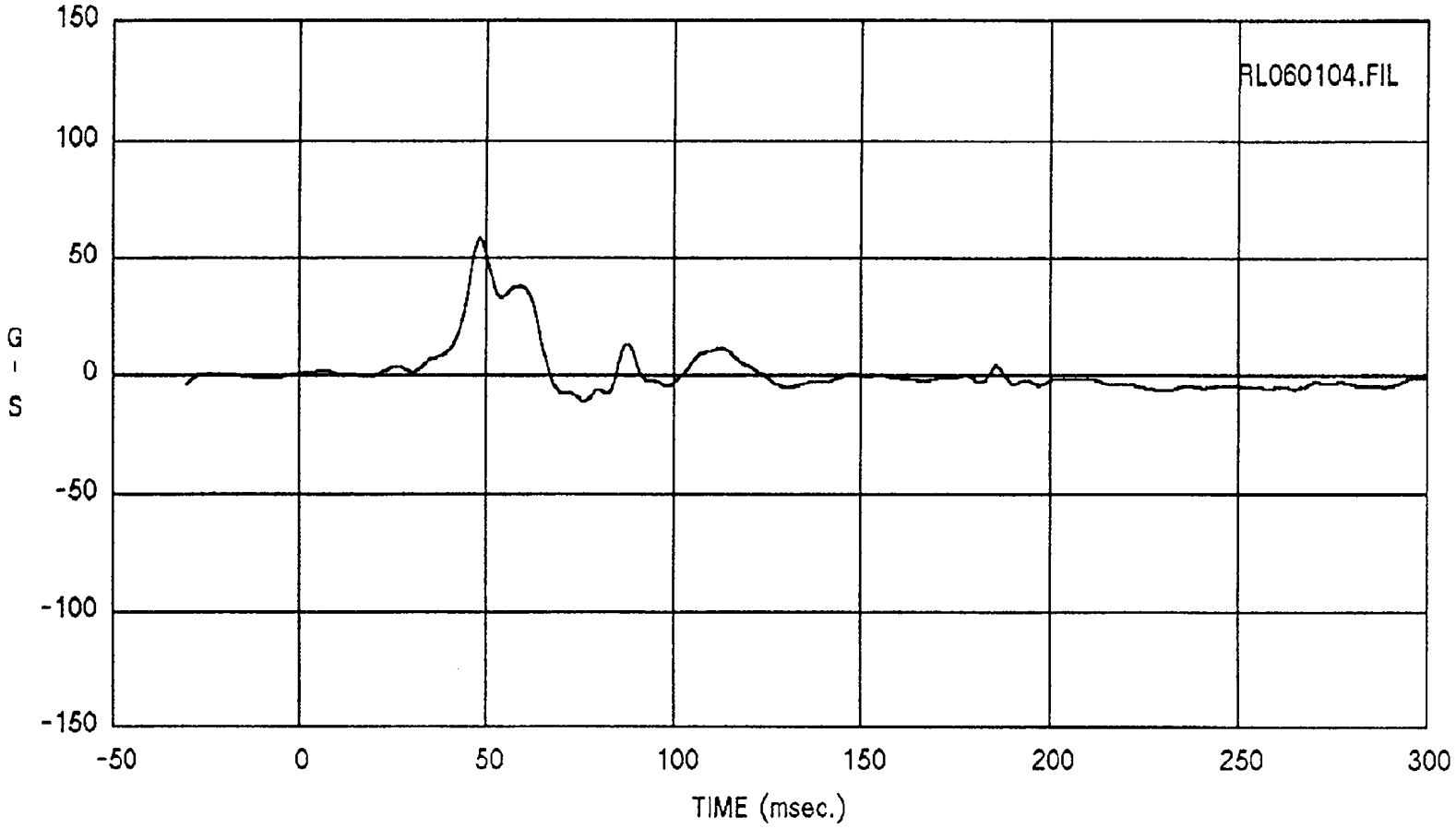
Curve: Driver Head acceleration -- Z axis Filter: SAE CLASS 1000 Max = 37.357 Min = -7.5400

MSE Date: 09/02/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1990 Ford F-150 Pickup



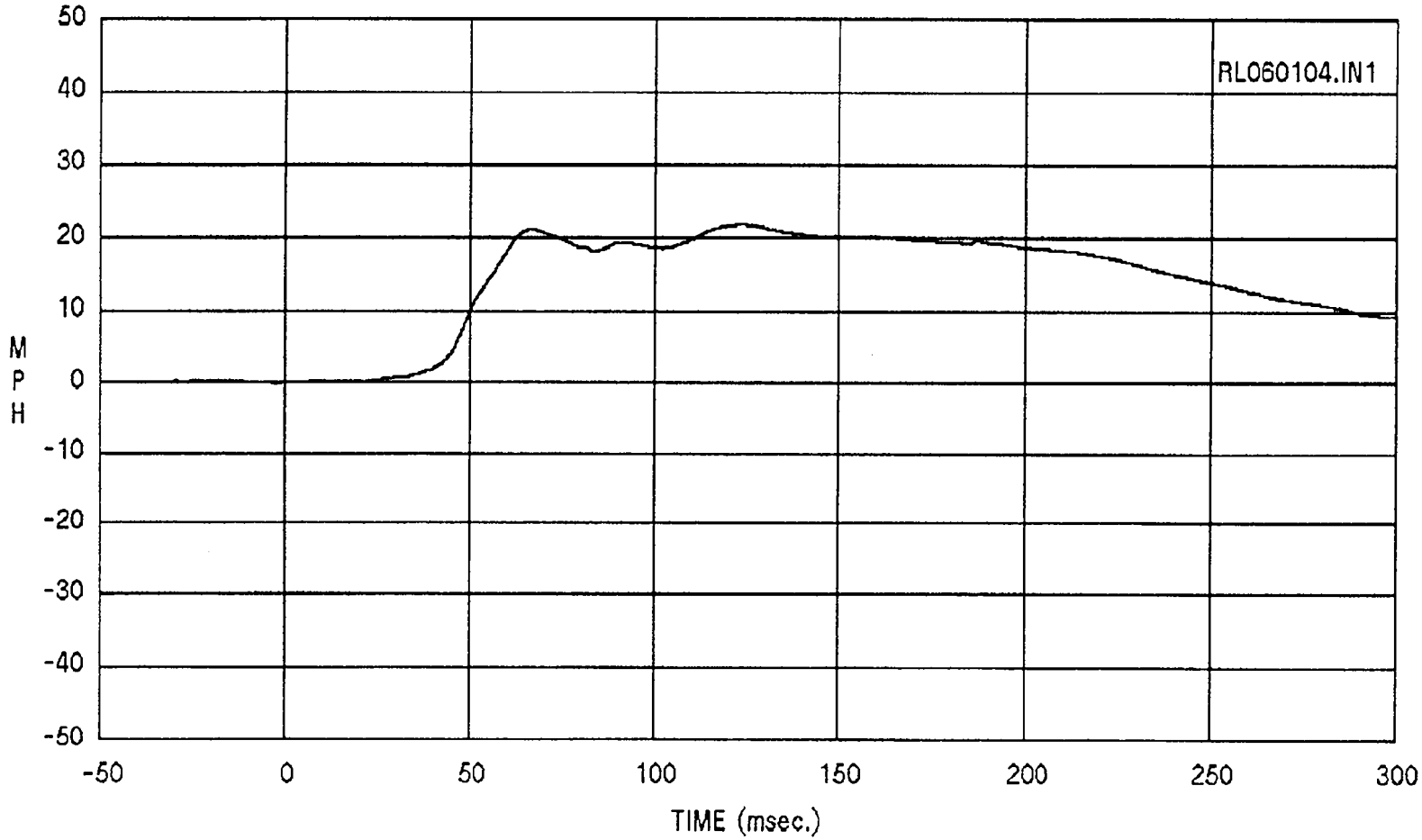
Curve: Driver Head resultant acceleration Filter: SAE CLASS 1000 Max = 37.563 Min = .13660

MSE Date: 09/02/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1990 Ford F-150 Pickup



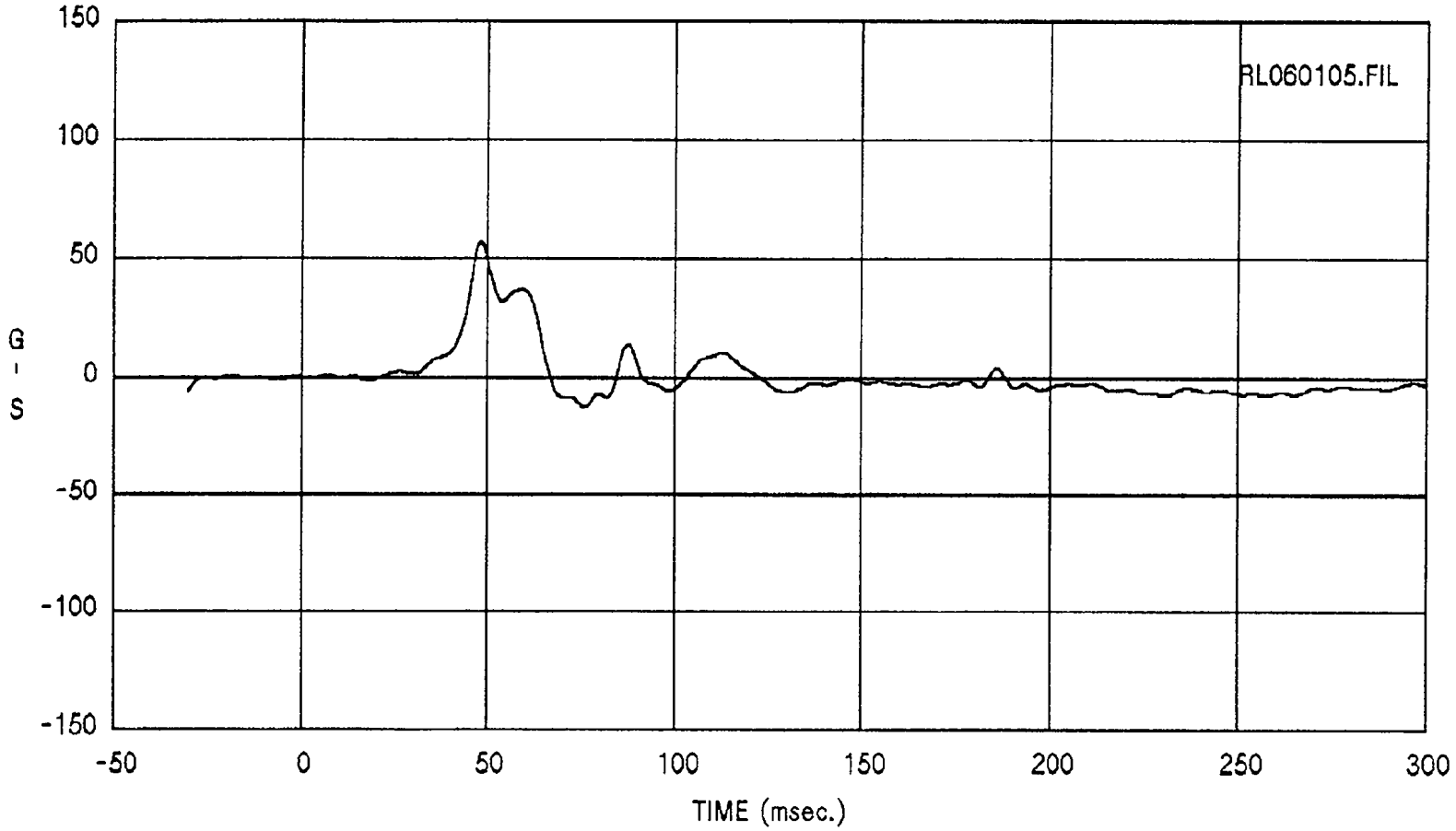
Curve: Driver upper spine acceleration -- Primary Filter: FIR 100 Max = 58.828 Min = -11.289

MSE Date: 09/02/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1990 Ford F-150 Pickup



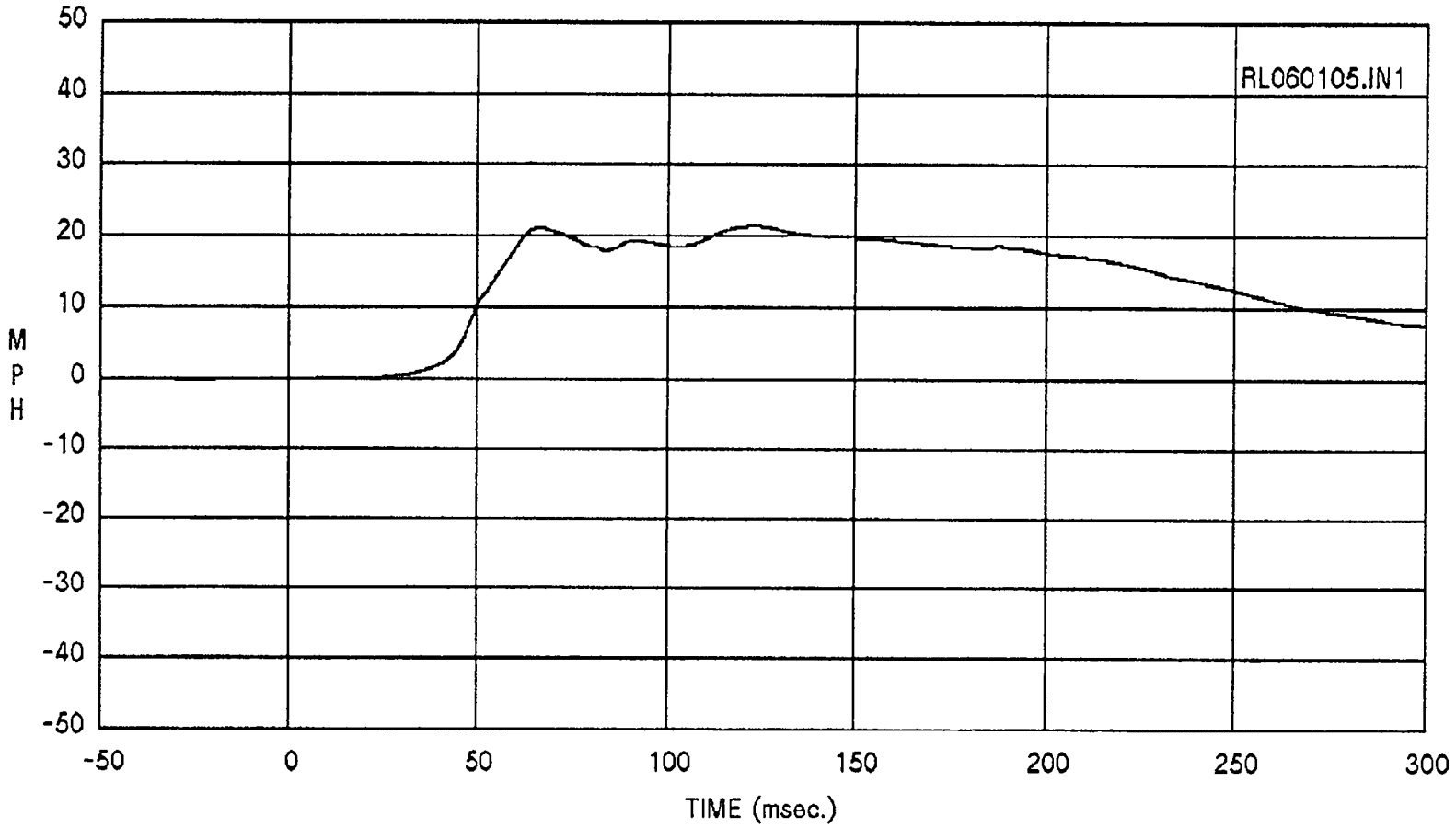
Curve: Driver upper spine delta V -- Primary Filter: SAE CLASS 180 Max = 21.898 Min = .23676

MSE Date: 09/02/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1990 Ford F-150 Pickup



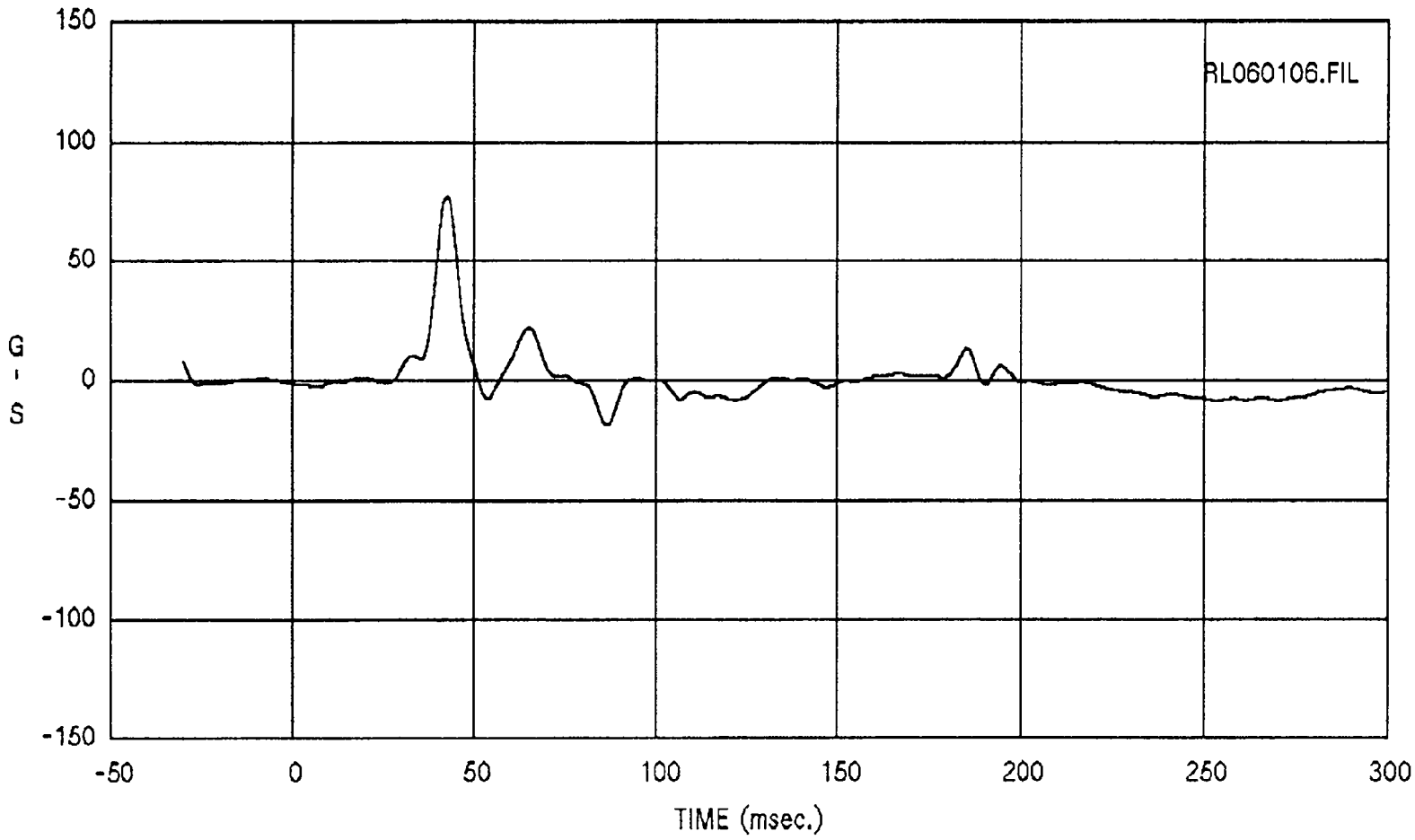
Curve: Driver upper spine acceleration -- Redundant Filter: FIR 100 Max = 57.133 Min = -12.463

MSE Date: 09/02/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1990 Ford F-150 Pickup



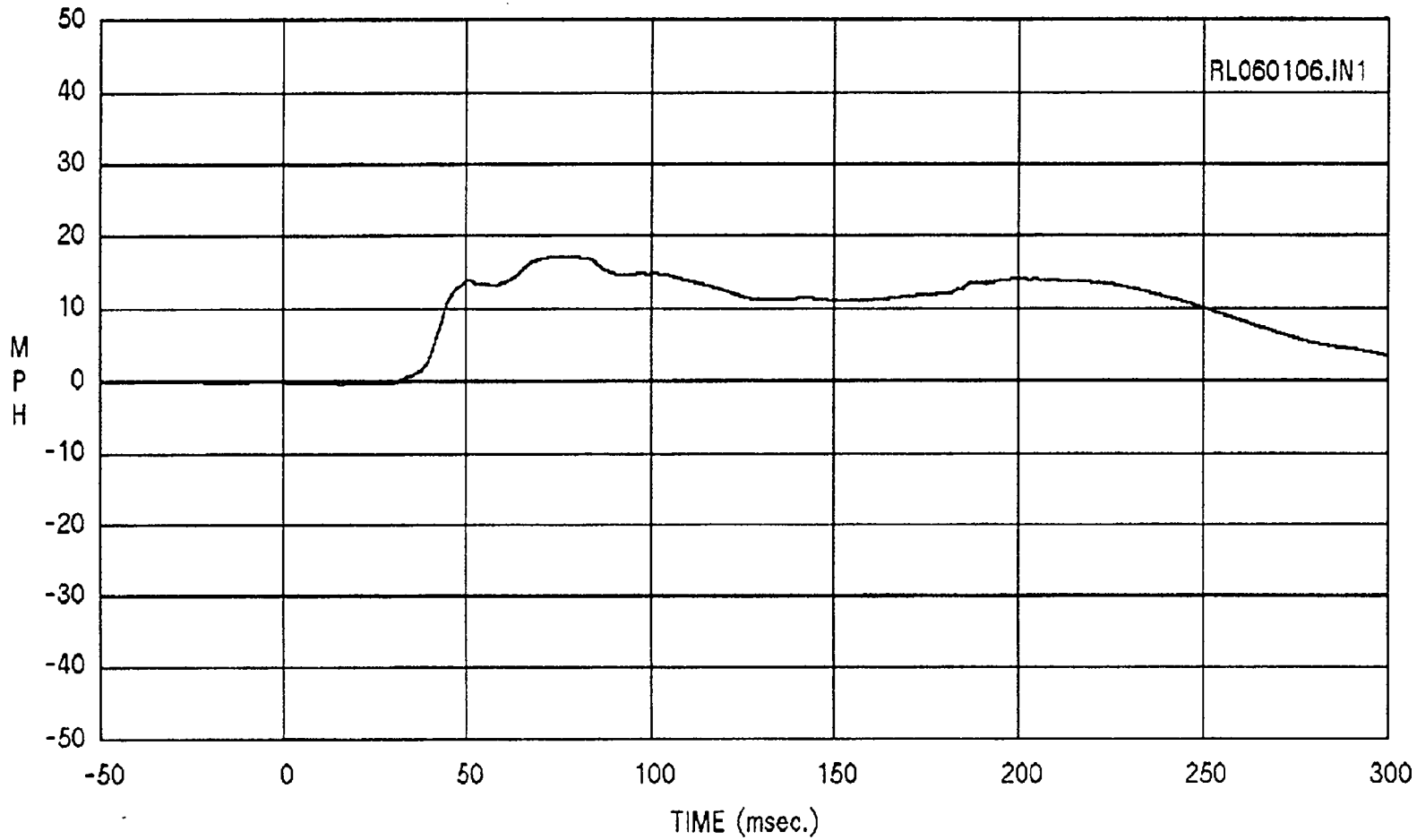
Curve: Driver upper spine delta V -- Redundant Filter: SAE CLASS 180 01 Max = 21.305 Min = -.10045

MSE Date: 09/02/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1990 Ford F-150 Pickup



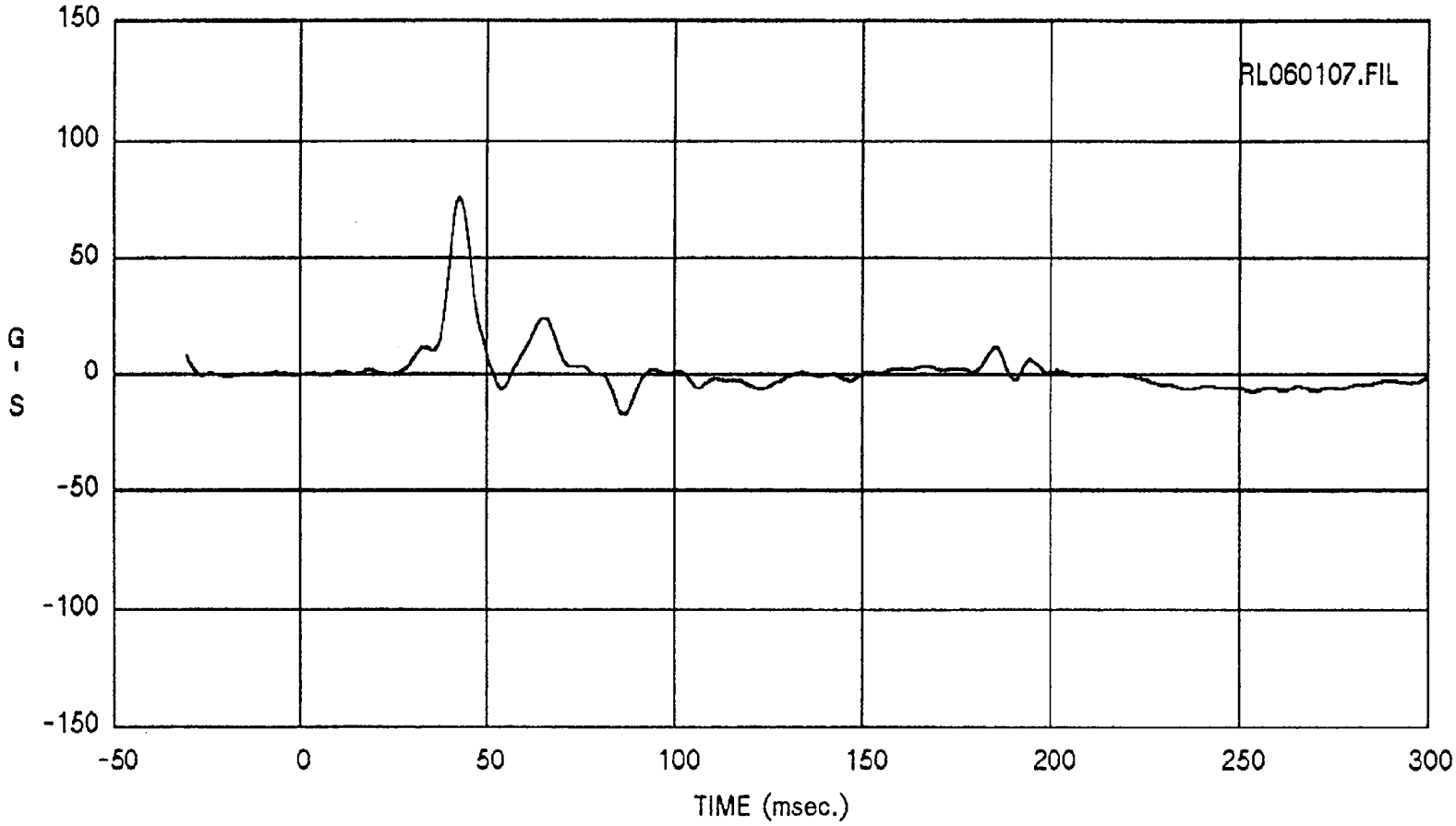
Curve: Driver upper rib acceleration -- Primary Filter: FIR 100 Max = 77.739 Min = -17.931

MSE Date: 09/02/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1990 Ford F-150 Pickup



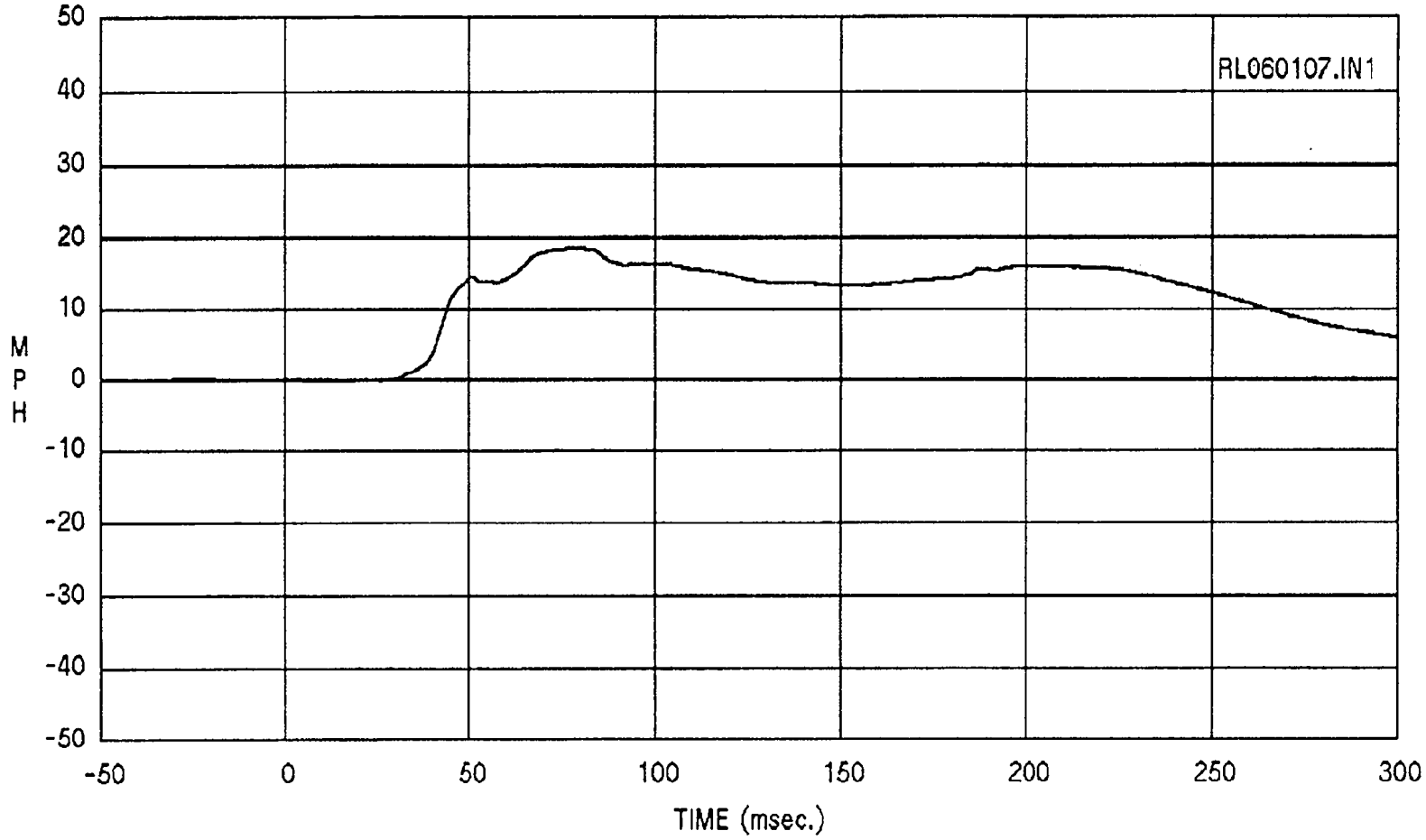
Curve: Driver upper rib delta V -- Primary Filter: SAE CLASS 180 Max = 17.161 Min = -.40279

MSE Date: 09/02/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1990 Ford F-150 Pickup



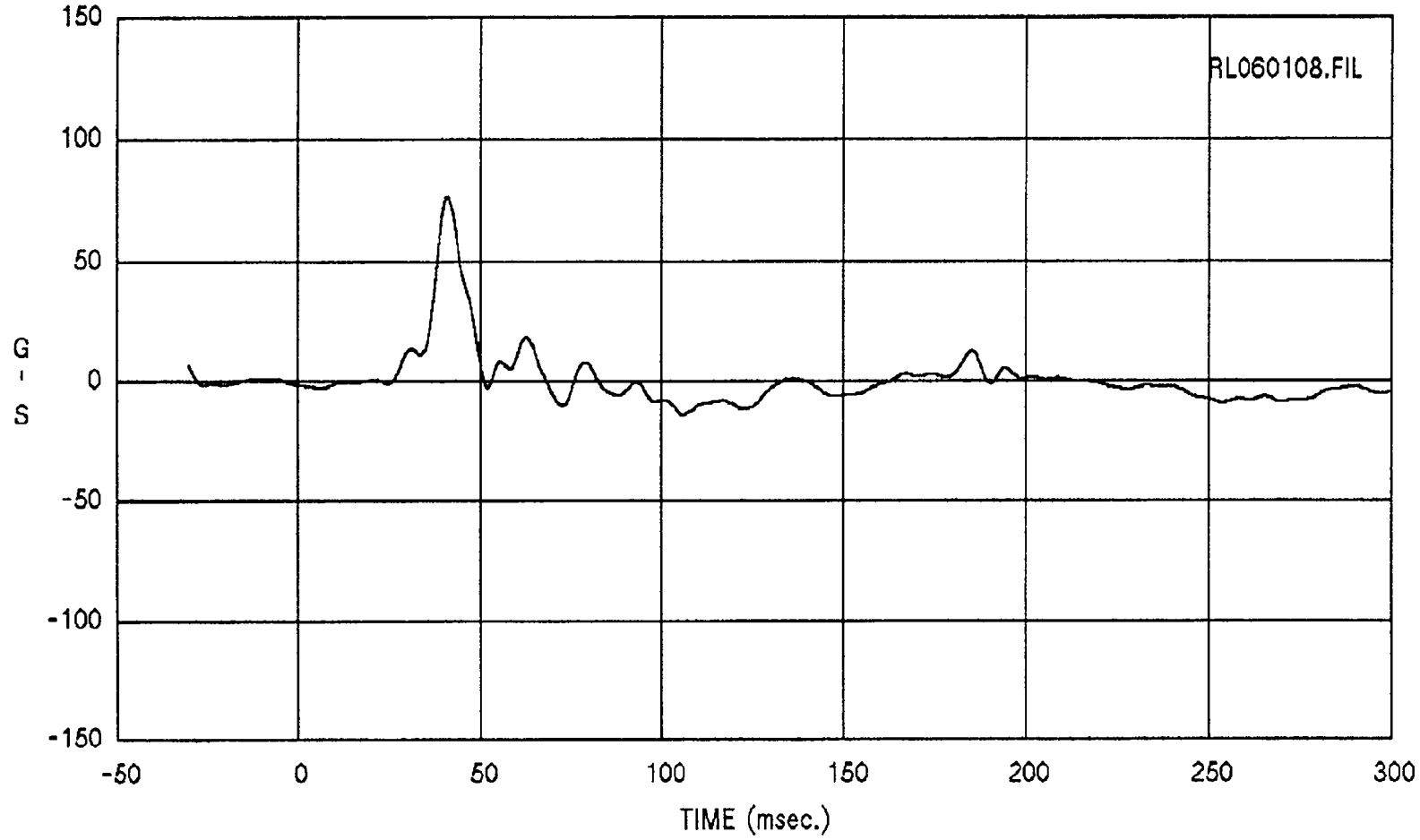
Curve: Driver upper rib acceleration -- Redundant Filter: FIR 100 Max = 76.467 Min = -17.388

MSE Date: 09/02/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1990 Ford F-150 Pickup



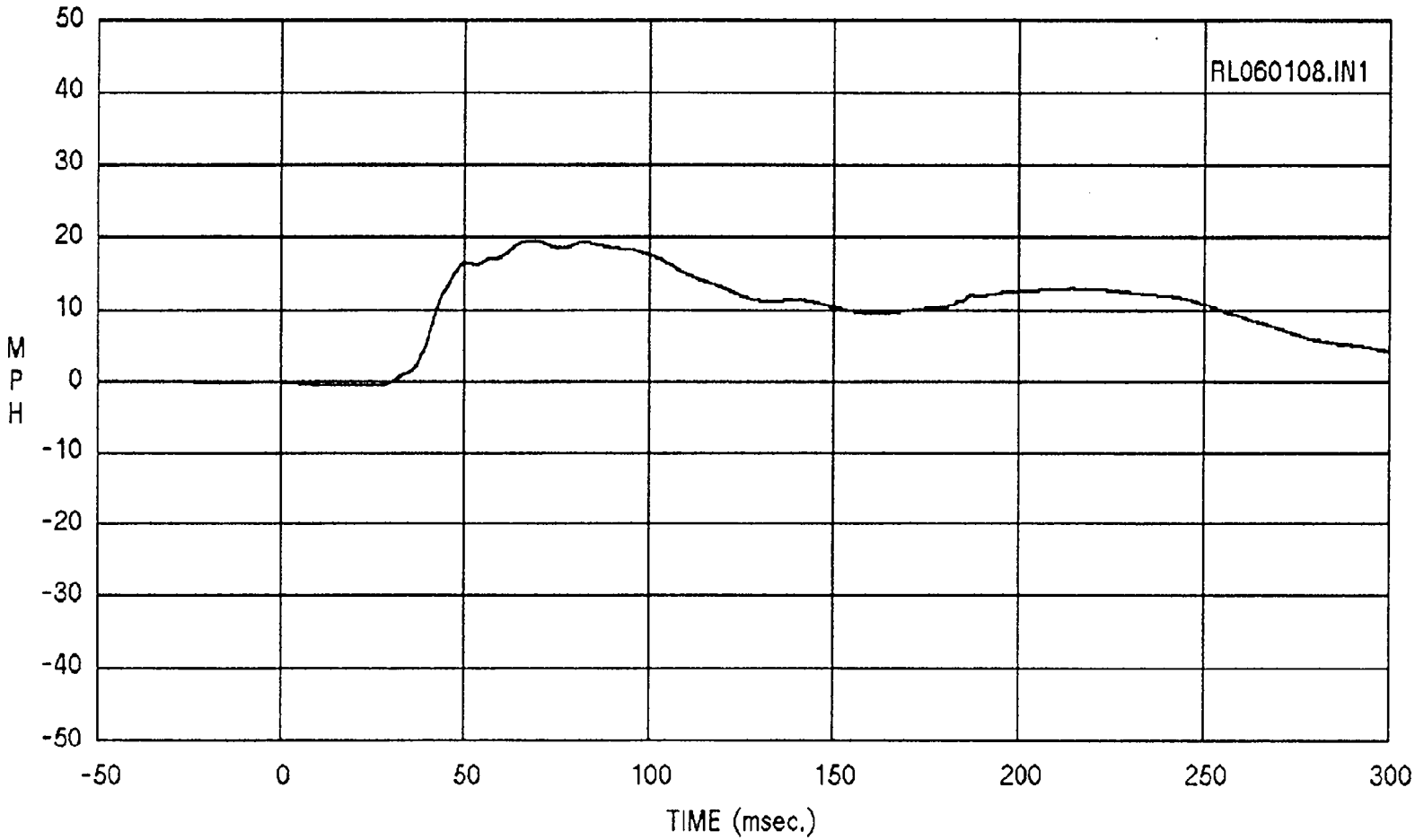
Curve: Driver upper rib delta V -- Redundant Filter: SAE CLASS 180 Max = 18.633 Min = -.10699

MSE Date: 09/02/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1990 Ford F-150 Pickup



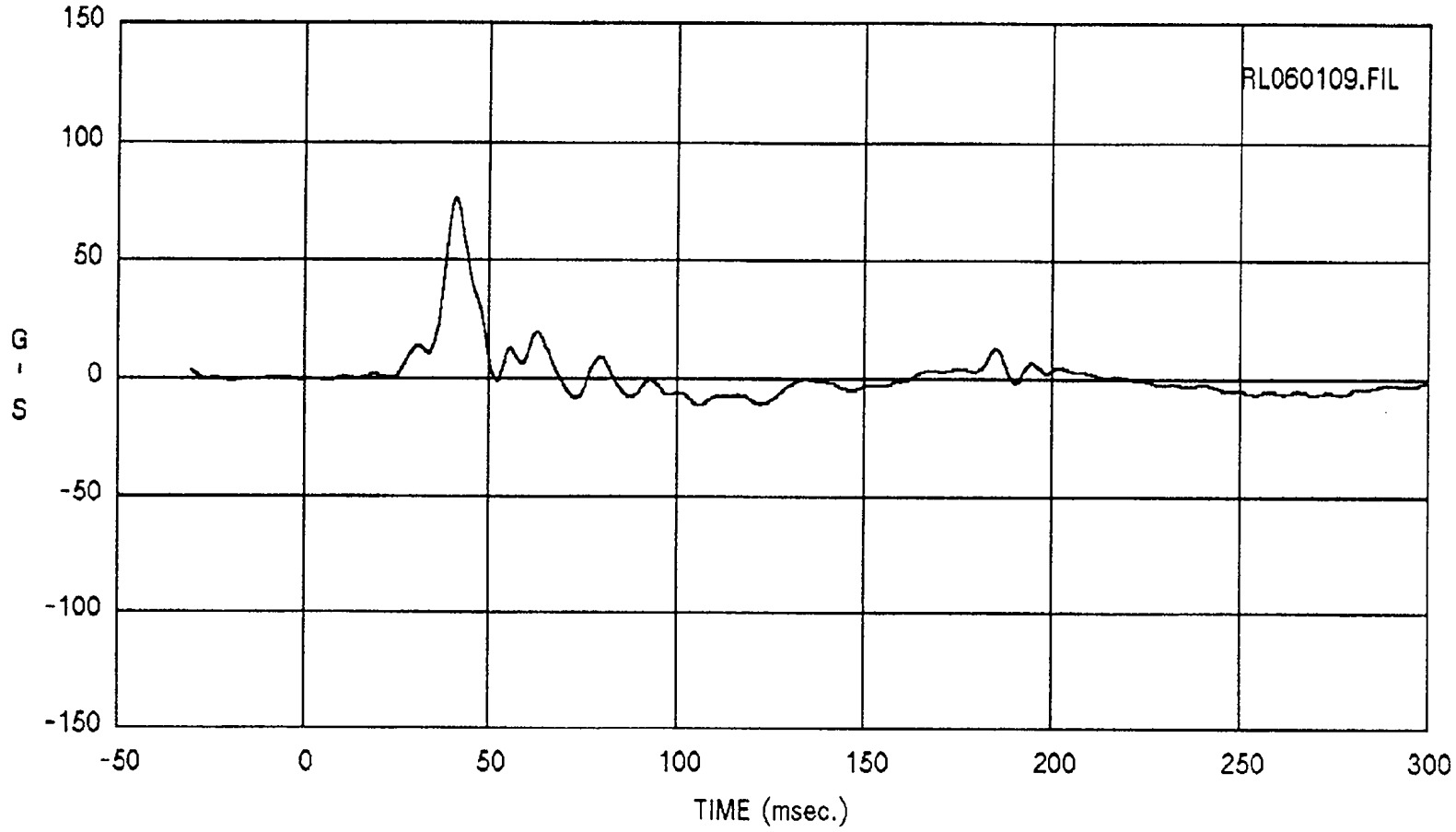
Curve: Driver lower rib acceleration -- Primary Filter: FIR 100 Max = 76.680 Min = -13.680

MSE Date: 09/02/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1990 Ford F-150 Pickup



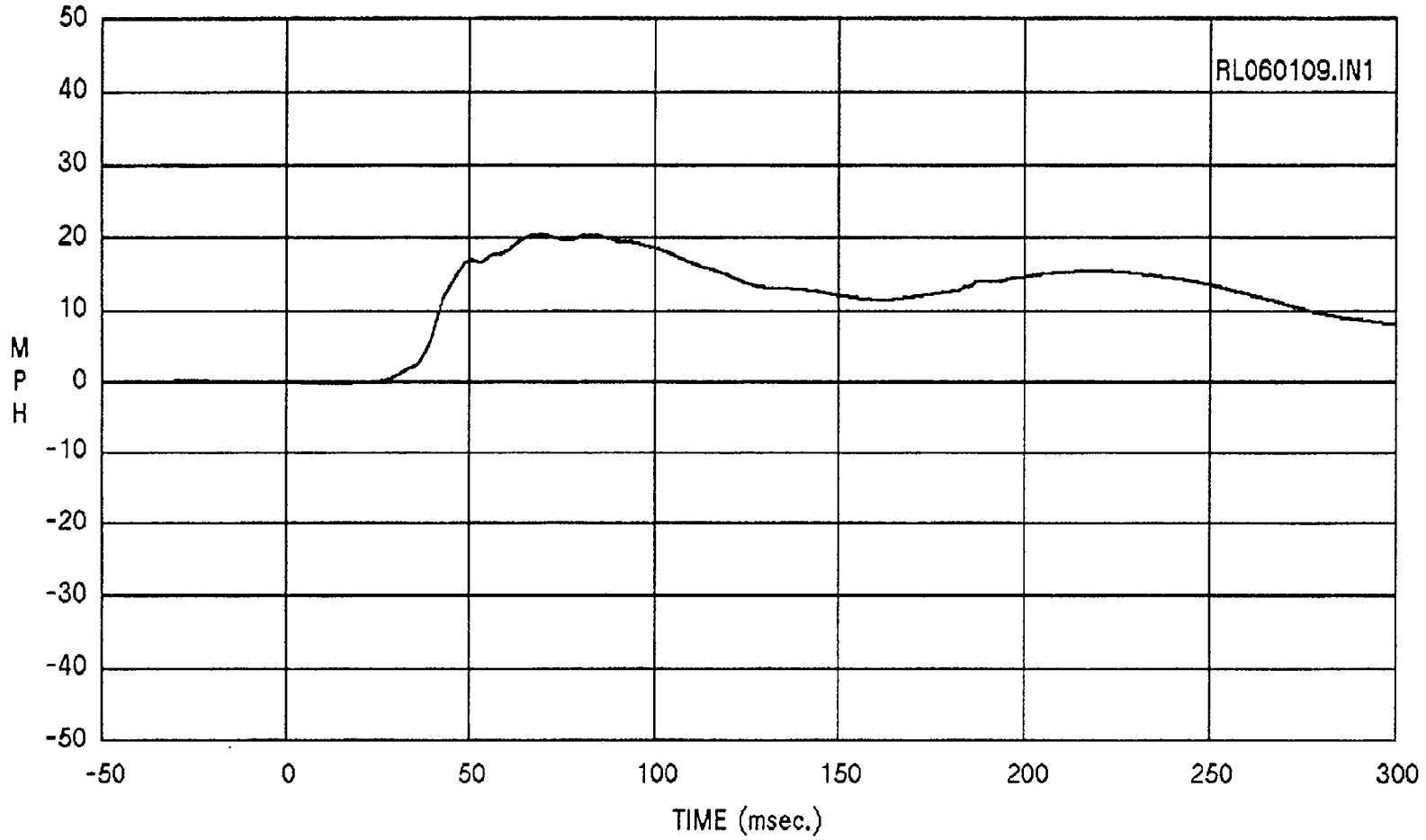
Curve: Driver lower rib delta V -- Primary Filter: SAE CLASS 180 Max = 19.621 Min = -.52450

MSE Date: 09/02/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1990 Ford F-150 Pickup



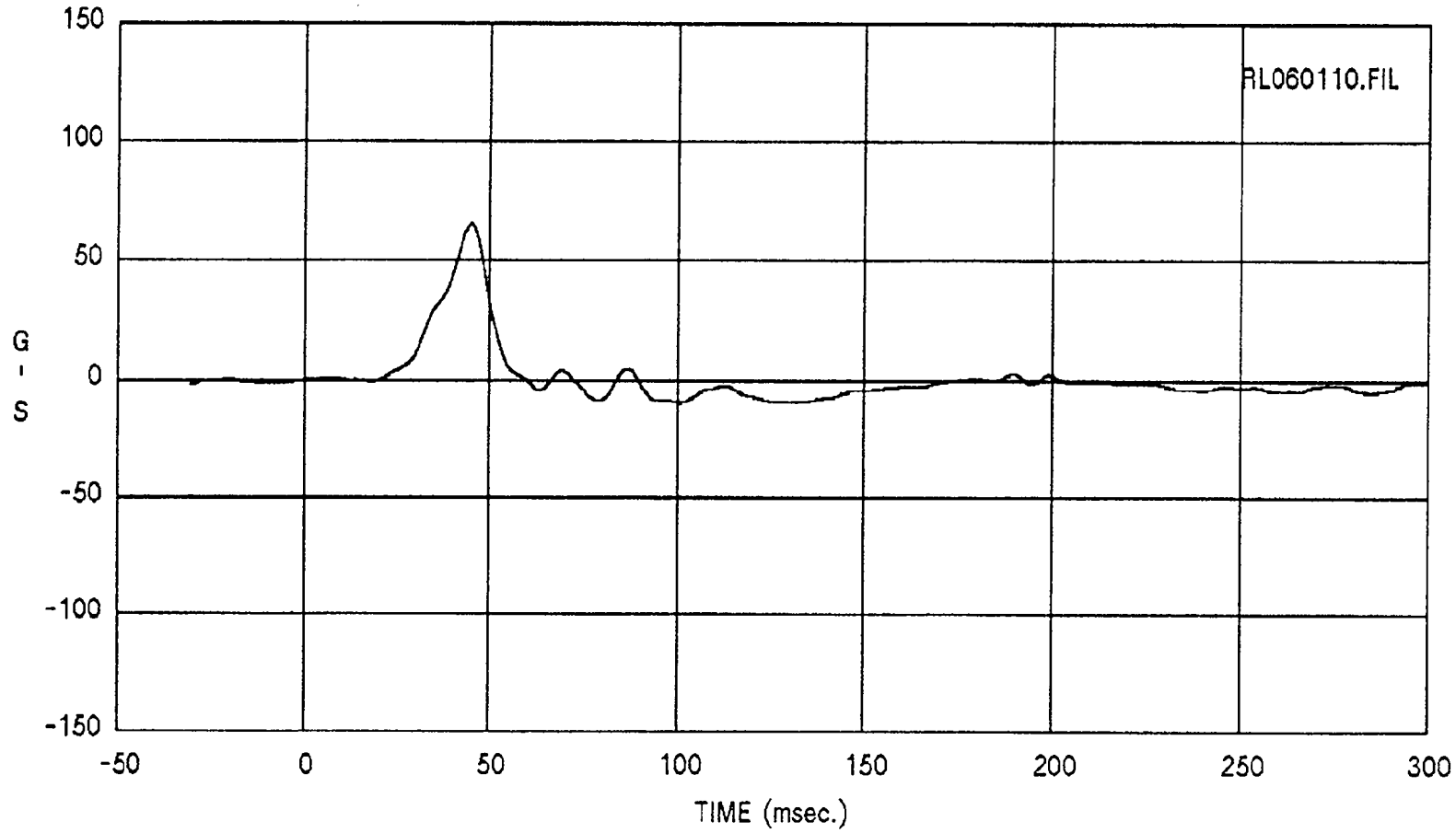
Curve: Driver lower rib acceleration -- Redundant Filter: FIR 100 Max = 76.268 Min = -10.925

MSE Date: 09/02/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1990 Ford F-150 Pickup



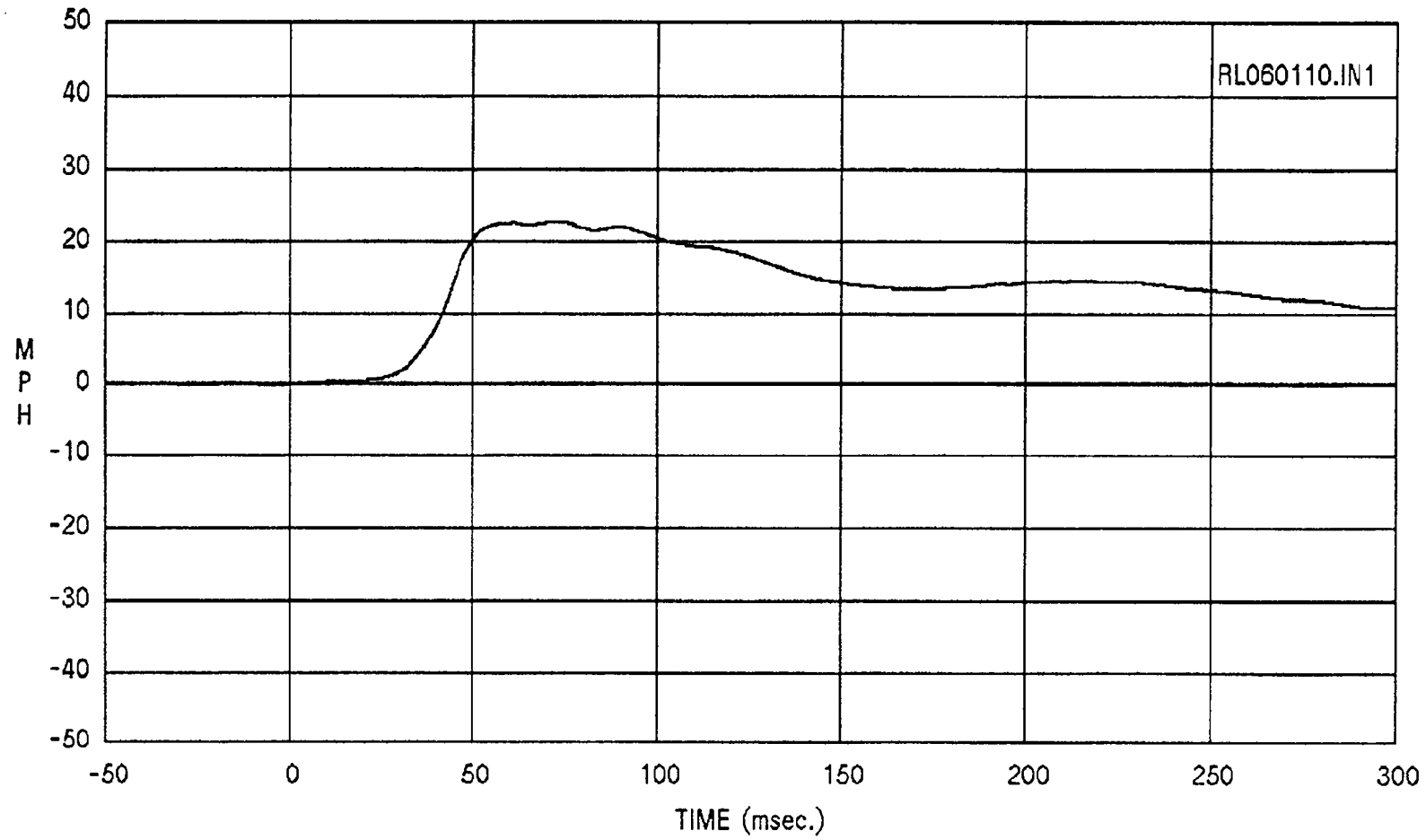
Curve: Driver lower rib delta V -- Redundant Filter: SAE CLASS 180 Max = 20.572 Min = -.11387

MSE Date: 09/02/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1990 Ford F-150 Pickup



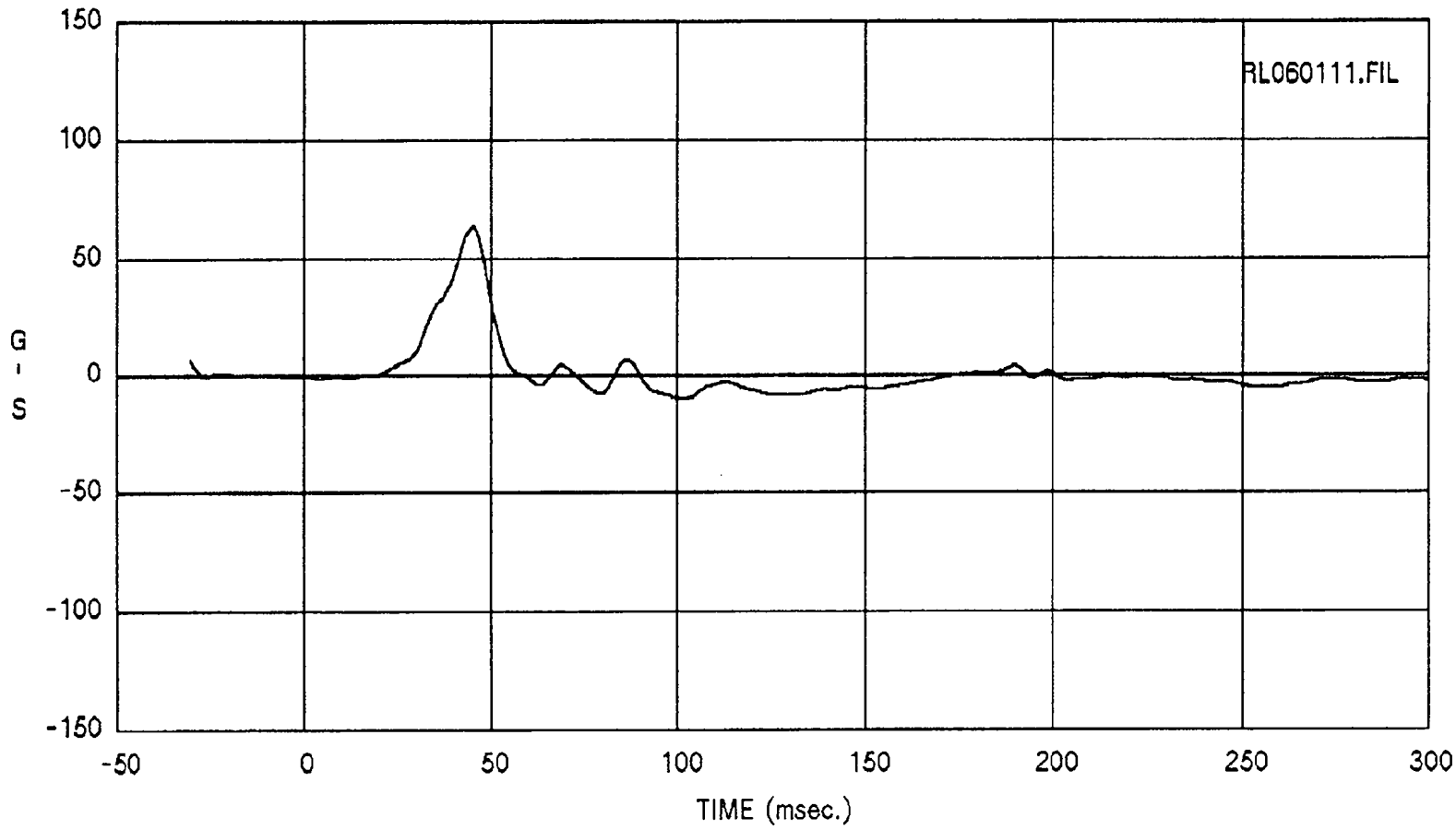
Curve: Driver lower spine acceleration -- Primary Filter: FIR 100 Max = 65.506 Min = -9.1948

MSE Date: 09/02/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1990 Ford F-150 Pickup



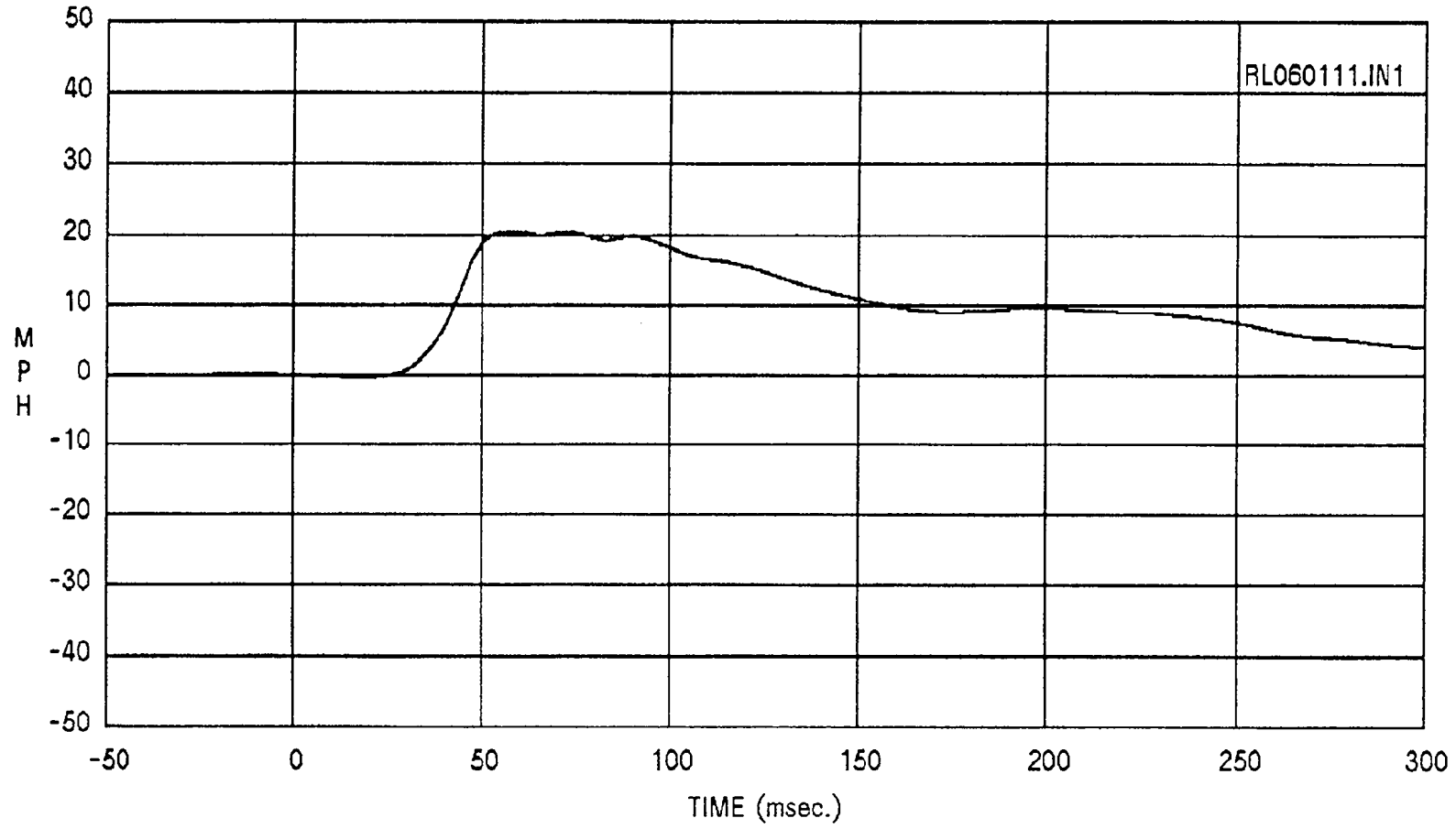
Curve: Driver lower spine delta V -- Primary Filter: SAE CLASS 180 Max = 22.802 Min = 10.872

MSE Date: 09/02/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1990 Ford F-150 Pickup



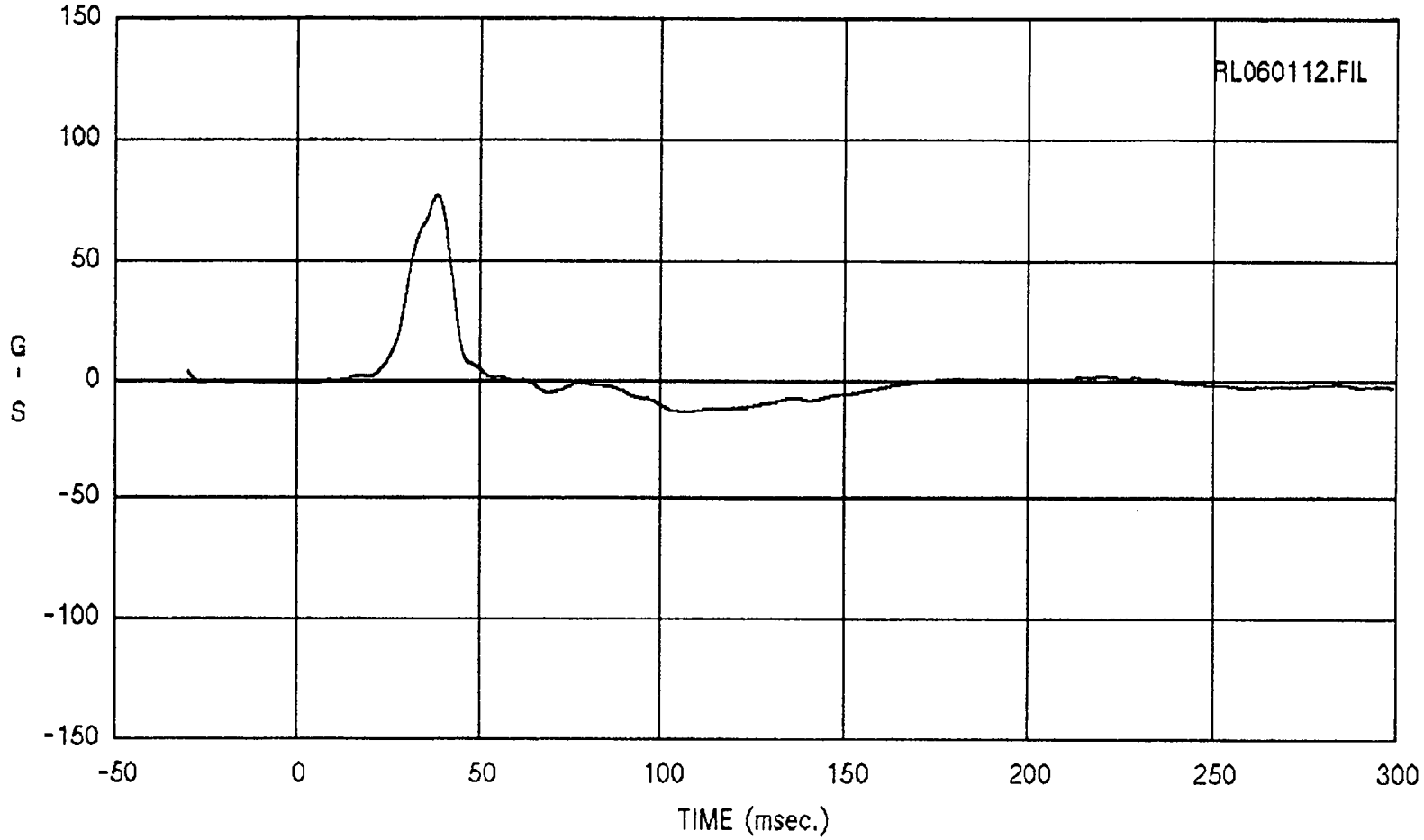
Curve: Driver lower spine acceleration -- Redundant Filter: FIR 100 Max = 63.768 Min = -10.321

MSE Date: 09/02/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1990 Ford F-150 Pickup



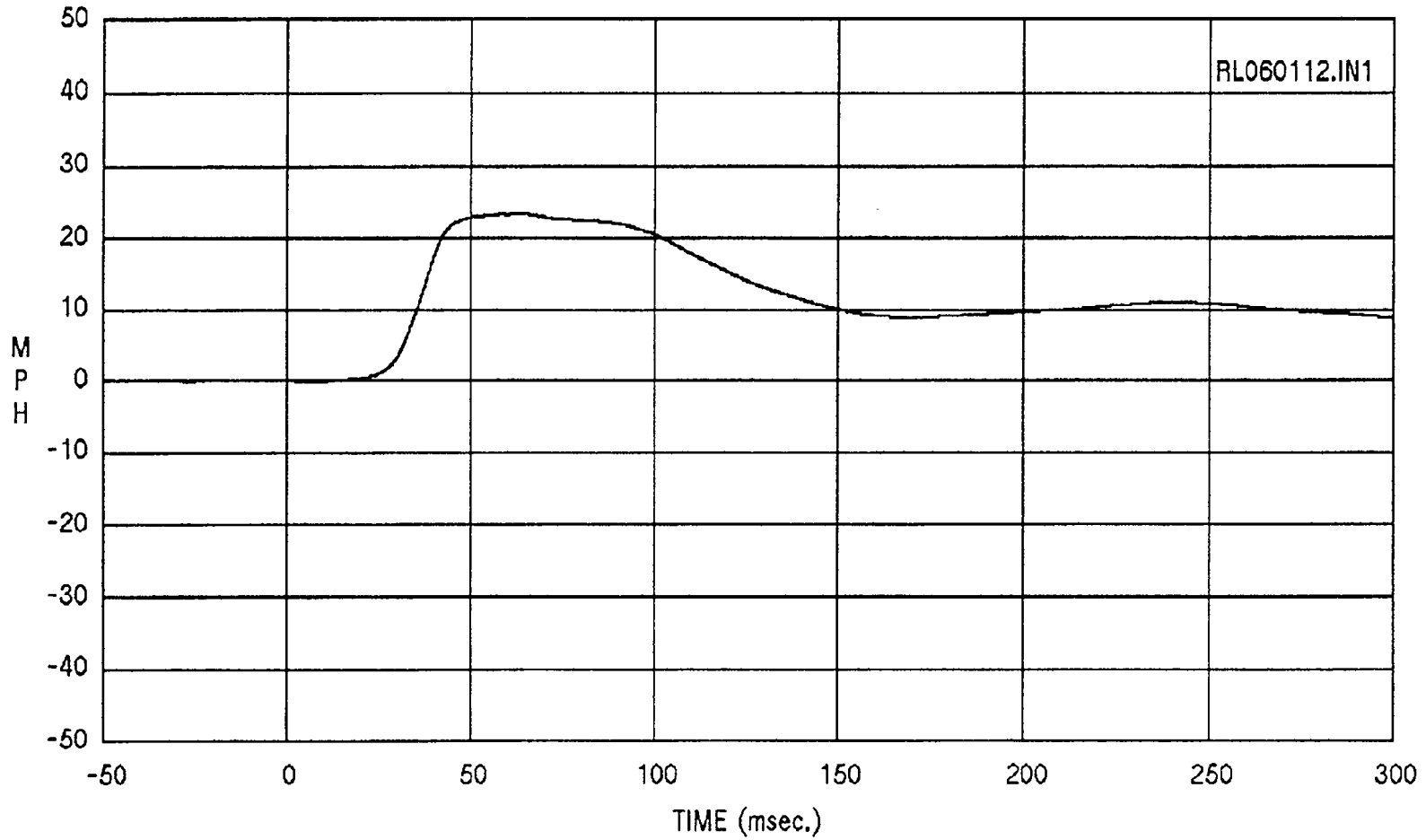
Curve: Driver lower spine delta V -- Redundant Filter: SAE CLASS 180 Max = 20.452 Min = -.34955

MSE Date: 09/02/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1990 Ford F-150 Pickup



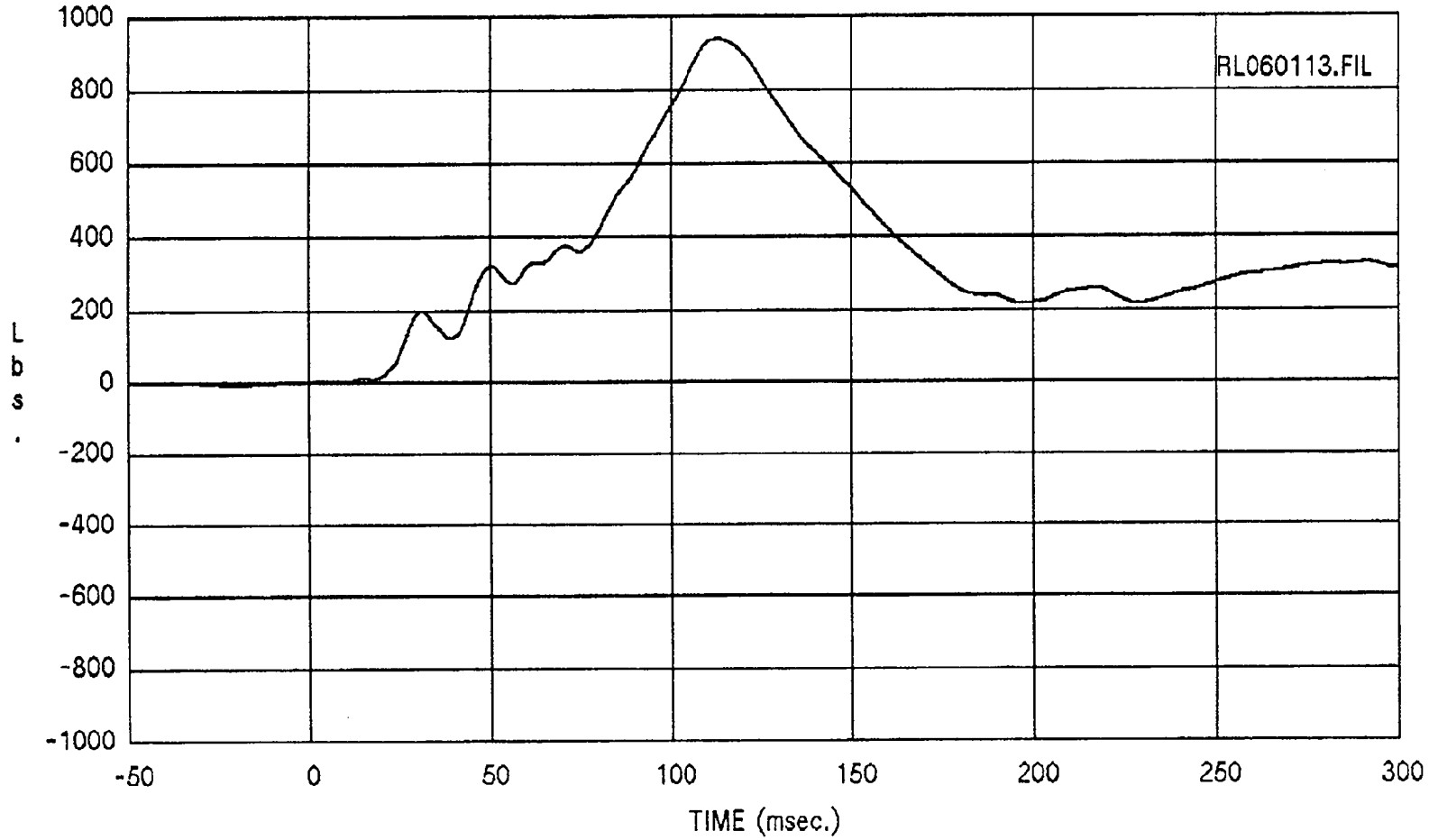
Curve: Driver pelvis acceleration Filter: FIR 100 Max = 77.457 Min = -12.557

MSE Date: 09/02/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1990 Ford F-150 Pickup



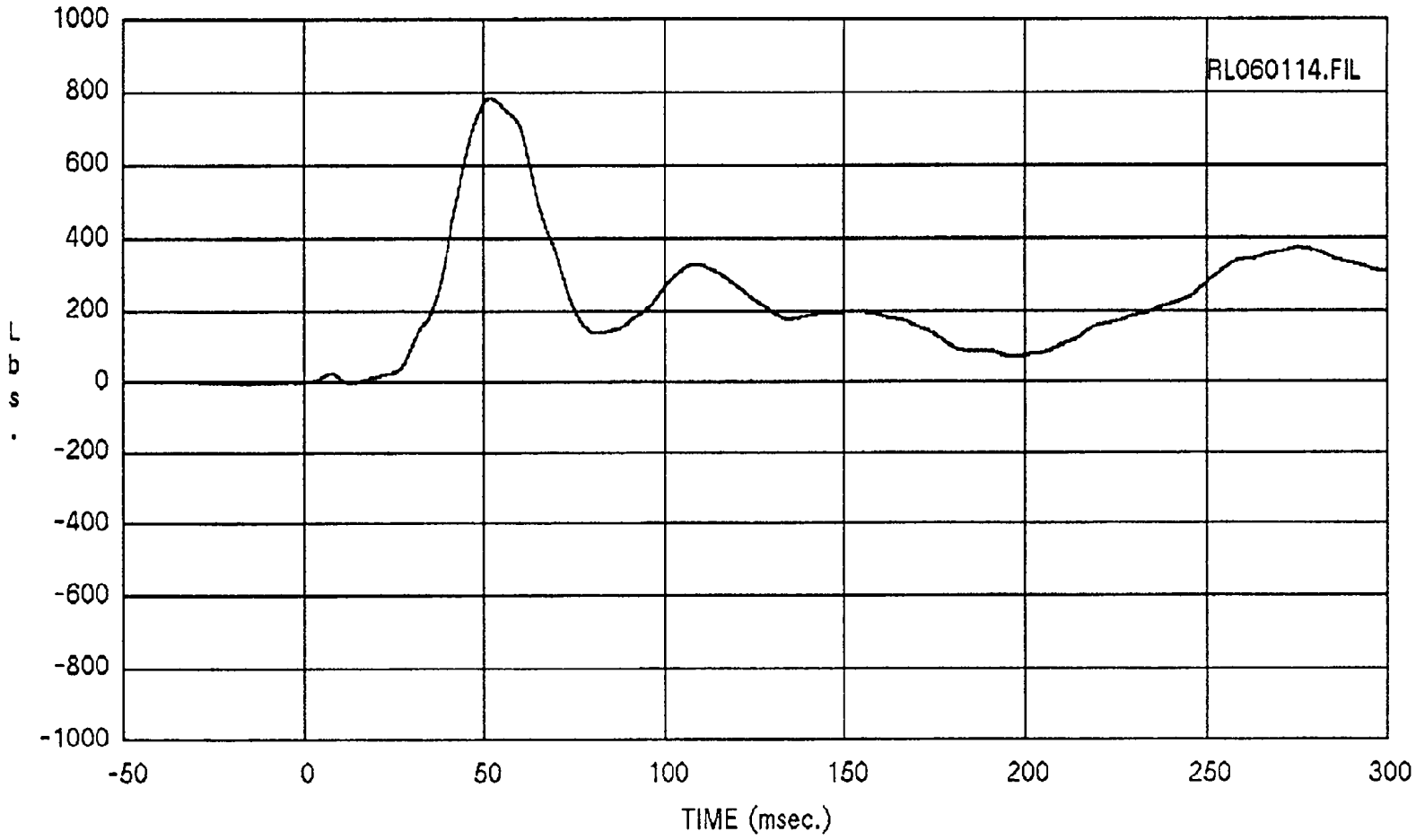
Curve: Driver pelvis delta V Filter: SAE CLASS 180 Max = 23.435 Min = -.78693E-0

MSE Date: 09/02/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1990 Ford F-150 Pickup



Curve: Driver lap belt load Filter: SAE CLASS 60 Max = 939.82 Min = 4.6855

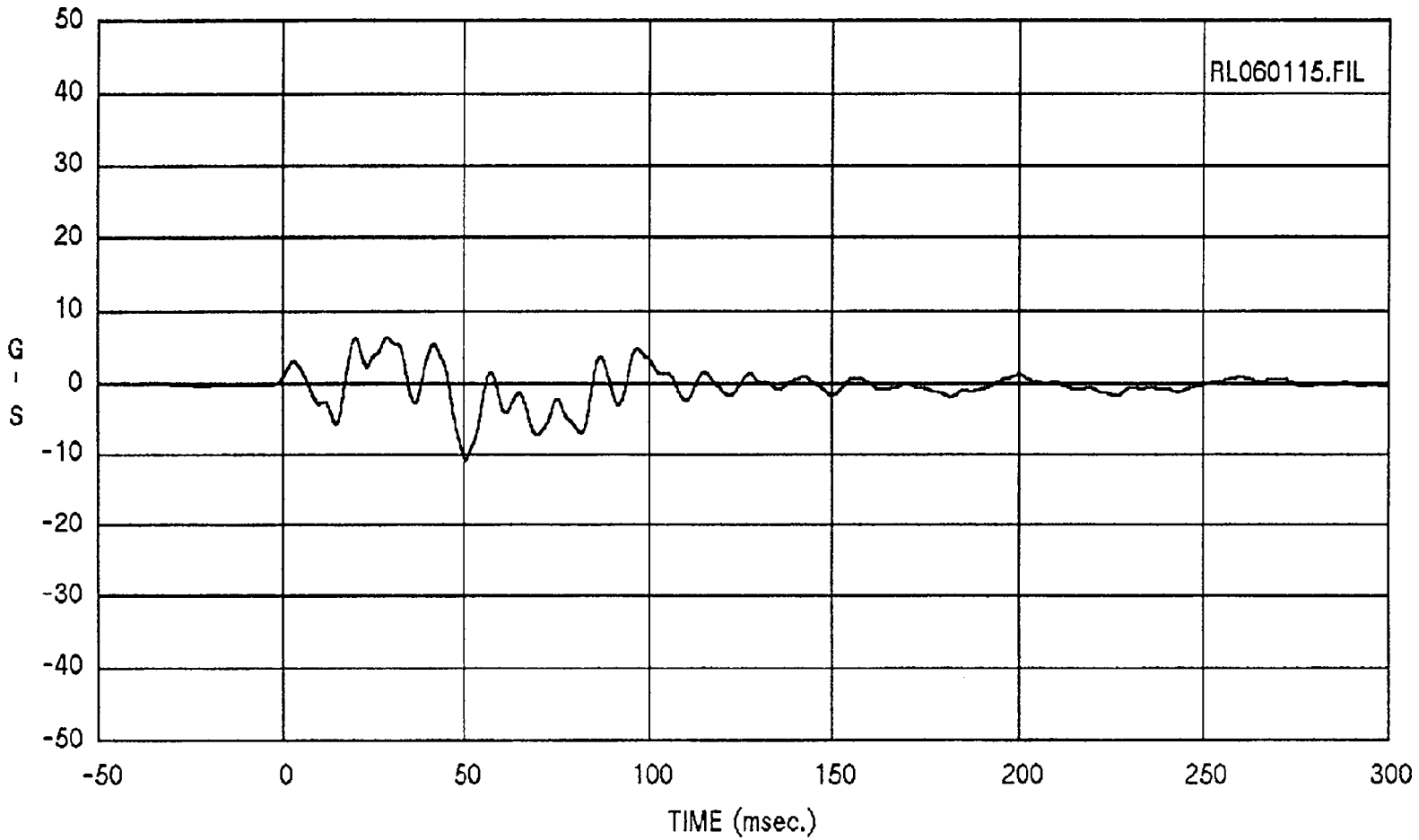
MSE Date: 09/02/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1990 Ford F-150 Pickup



Curve: Driver shoulder belt load Filter: SAE CLASS 60 Max = 783.46 Min = -2.2819

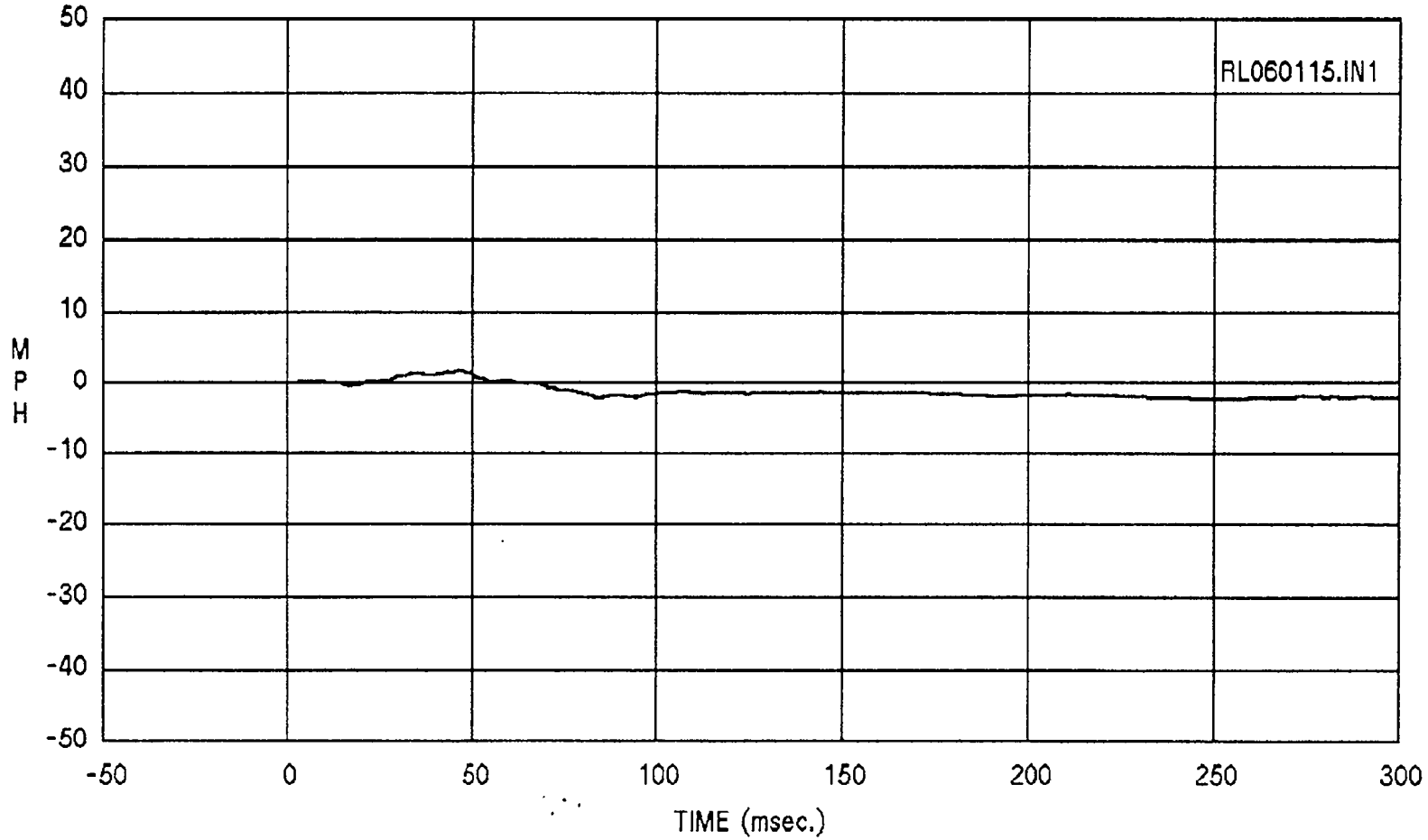
MSE Date: 09/02/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1990 Ford F-150 Pickup

VEHICLE ACCELEROMETER DATA



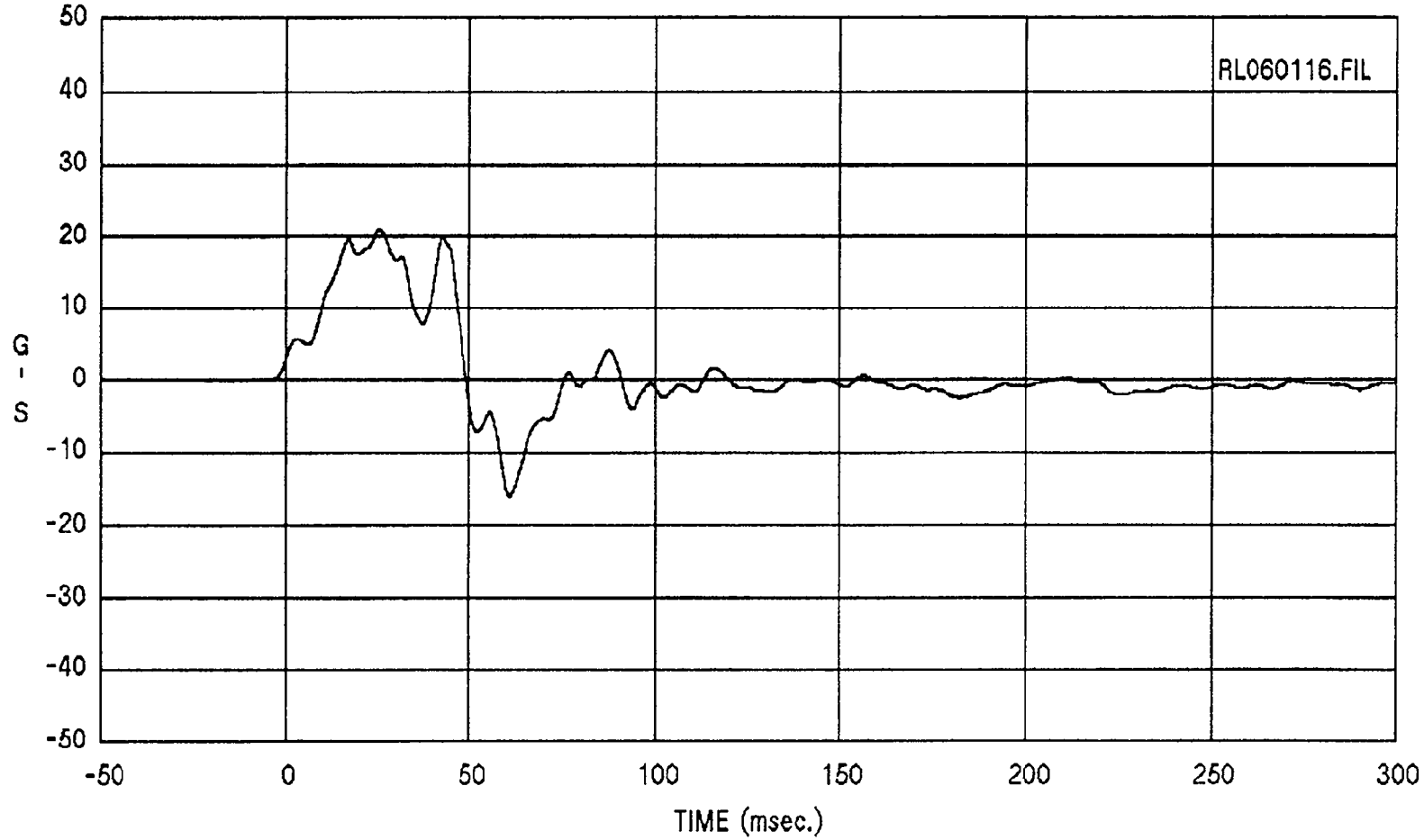
Curve: Front seat right sill acceleration -- X axis Filter: SAE CLASS 60 Max = 6.4190 Min = -10.907

MSE Date: 09/02/92 Program: Side impact, 30/15, 90 deg. Vehicle: 1990 Ford F-150 Pickup



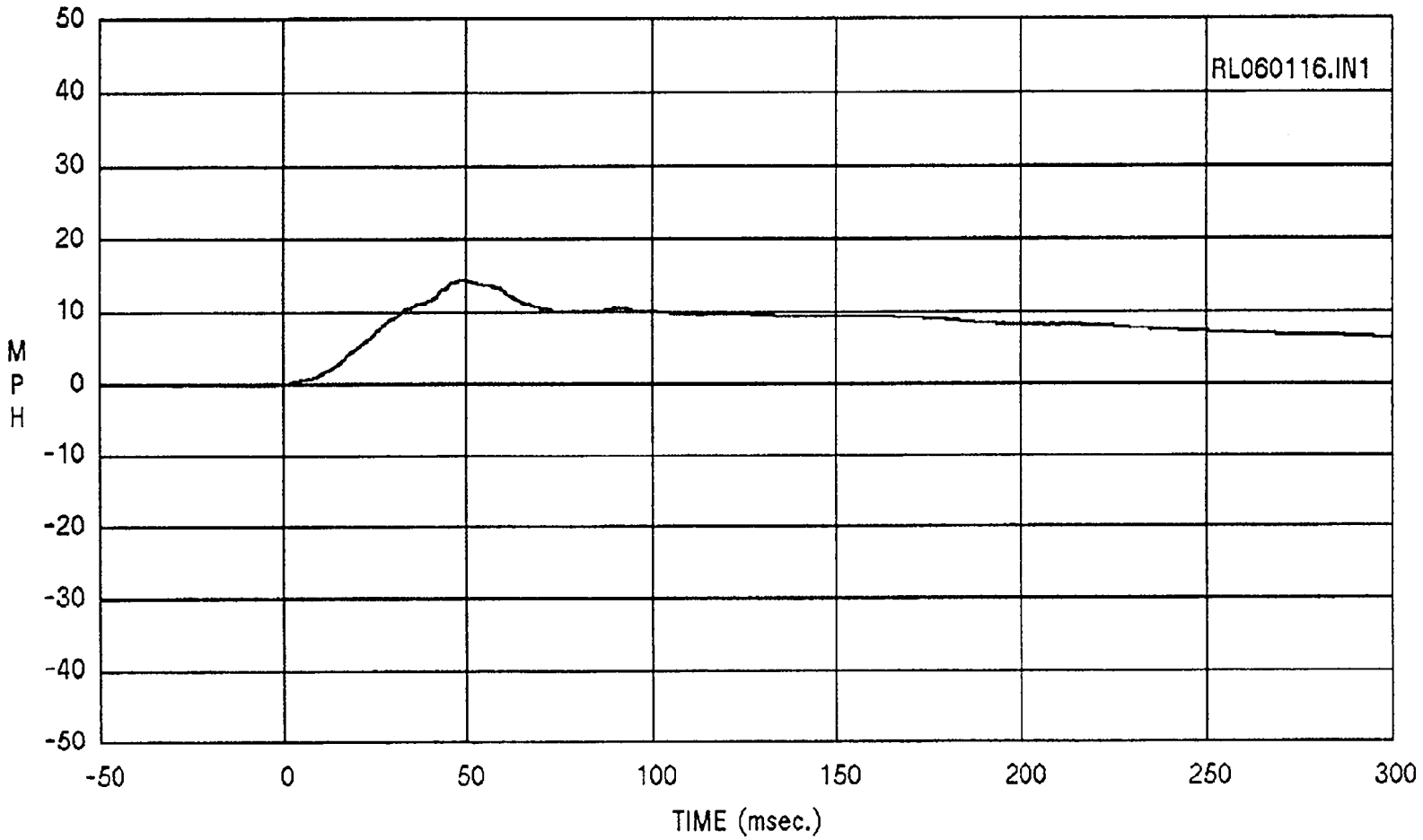
Curve: Front seat right sill delta V -- X axis Filter: SAE CLASS 180 Max = 1.9042 Min = -2.3535

MSE Date: 09/02/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1990 Ford F-150 Pickup



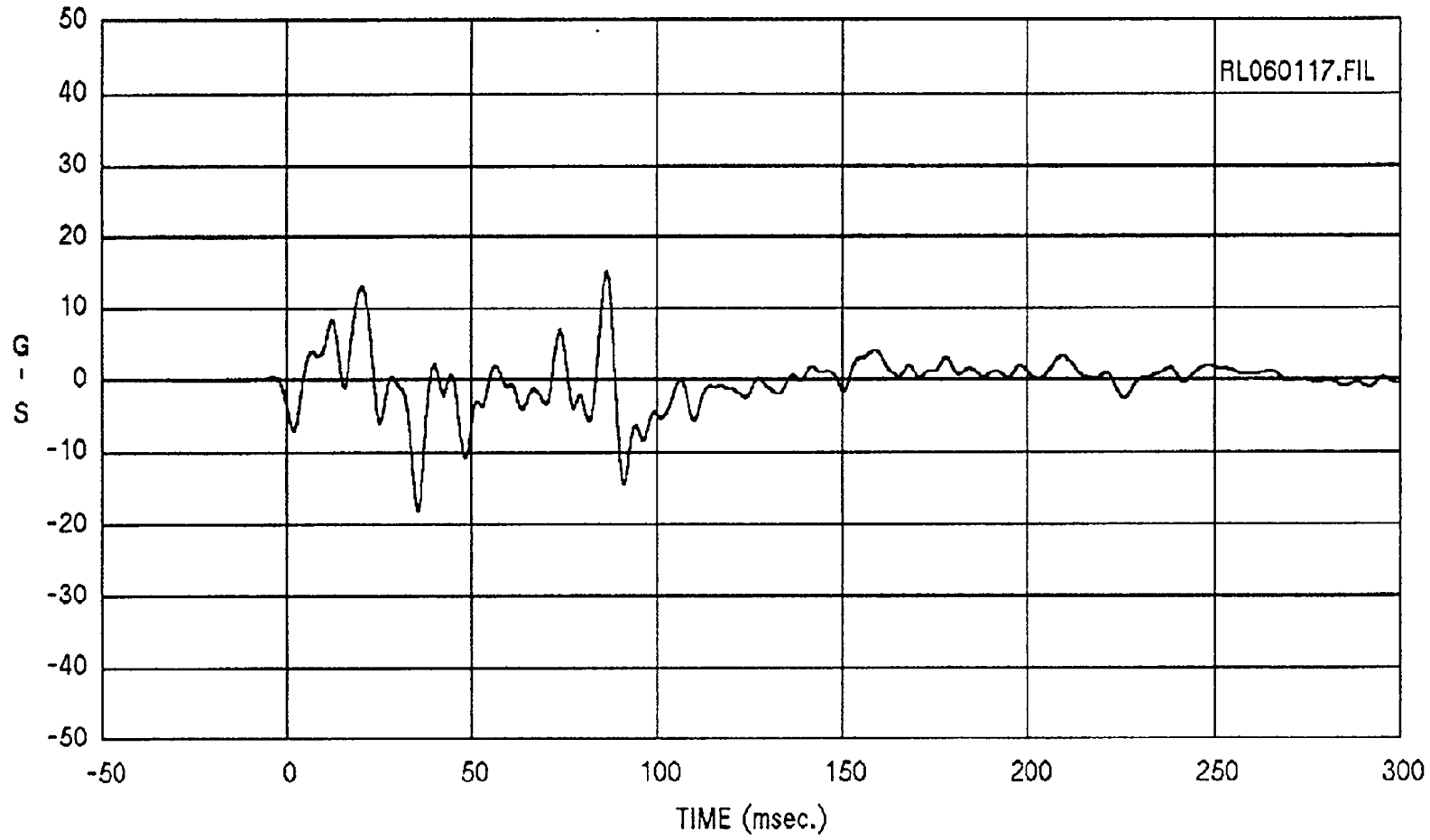
Curve: Front seat right sill acceleration -- Y axis Filter: SAE CLASS 60 Max = 21.098 Min = -15.961

MSE Date: 09/02/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1990 Ford F-150 Pickup



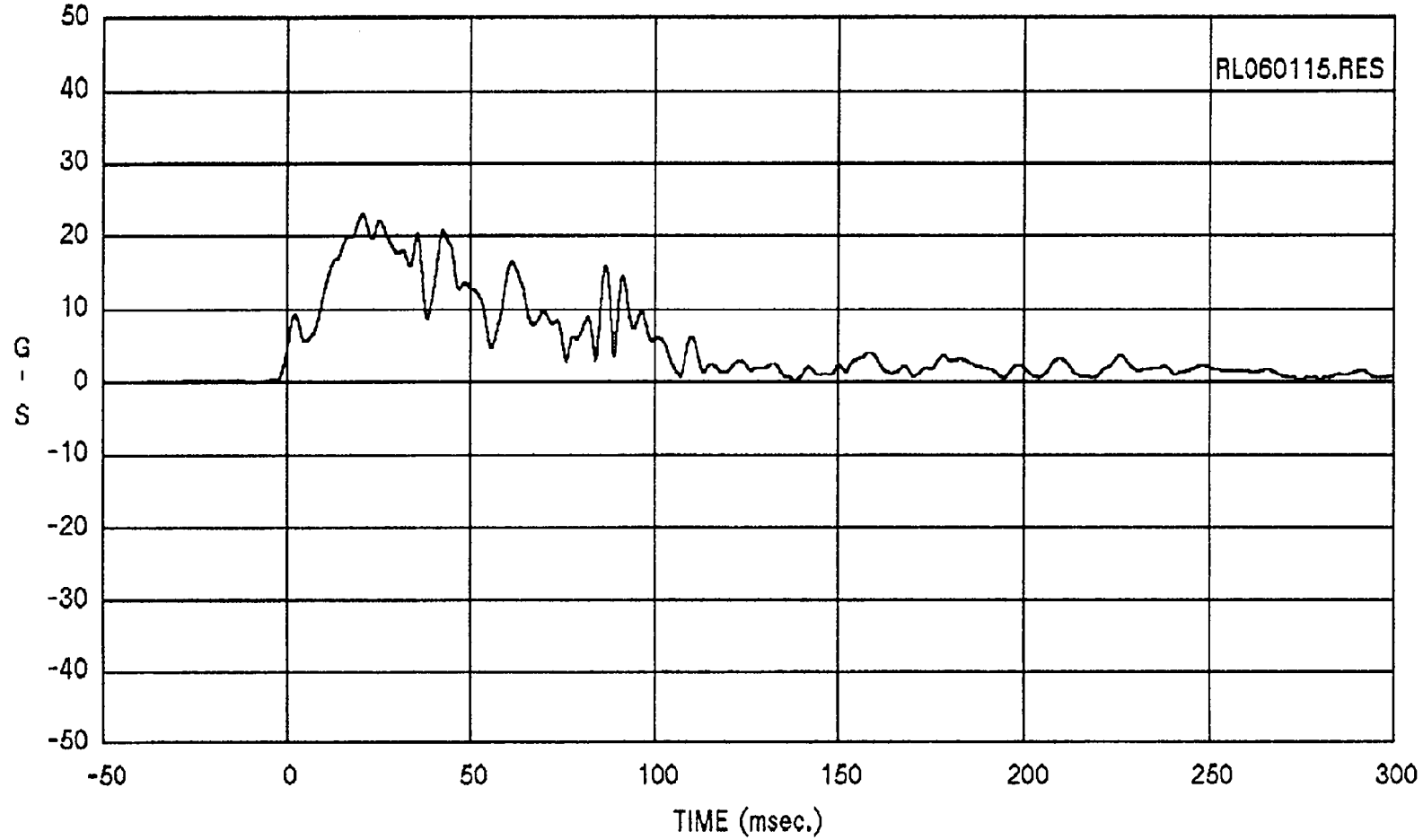
Curve: Front seat right sill delta V -- Y axis Filter: SAE CLASS 180 Max = 14.535 Min = 6.4661

MSE Date: 09/02/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1990 Ford F-150 Pickup



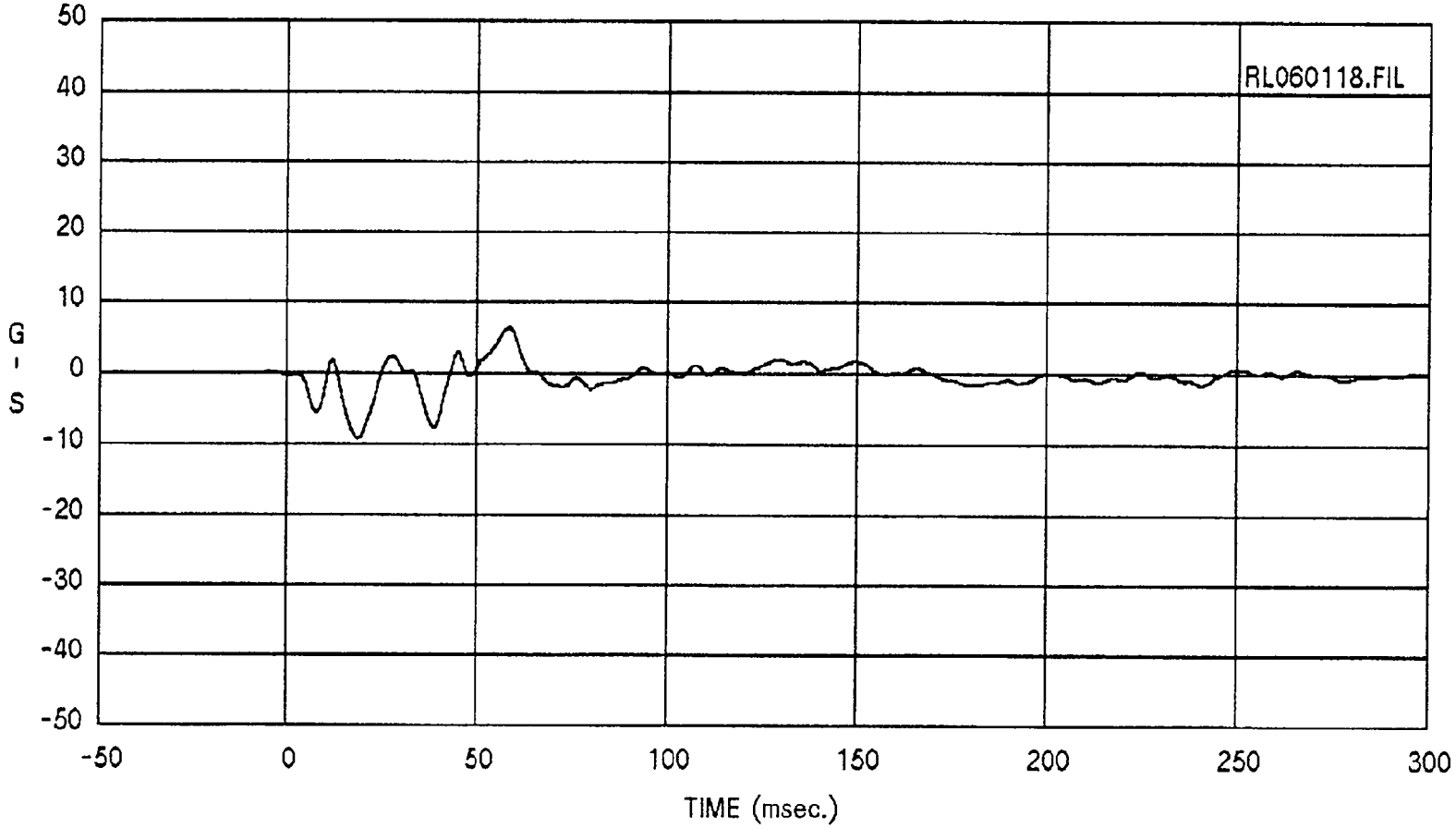
Curve: Front seat right sill acceleration -- Z axis Filter: SAE CLASS 60 Max = 15.171 Min = -18.139

MSE Date: 09/02/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1990 Ford F-150 Pickup



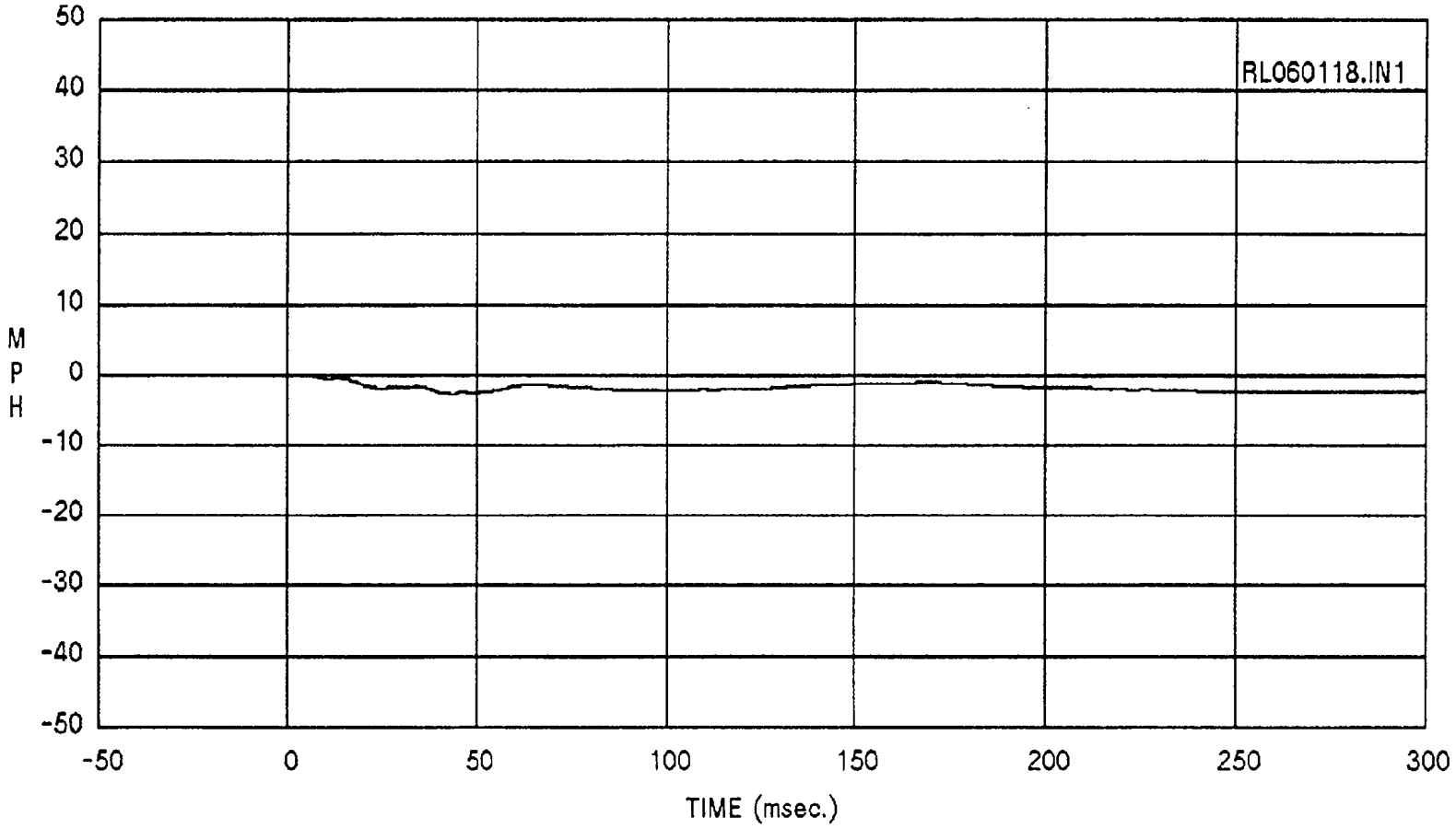
Curve: Front seat right sill resultant acceleration Filter: SAE CLASS 60 Max = 23.055 Min = .15515

MSE Date: 09/02/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1990 Ford F-150 Pickup



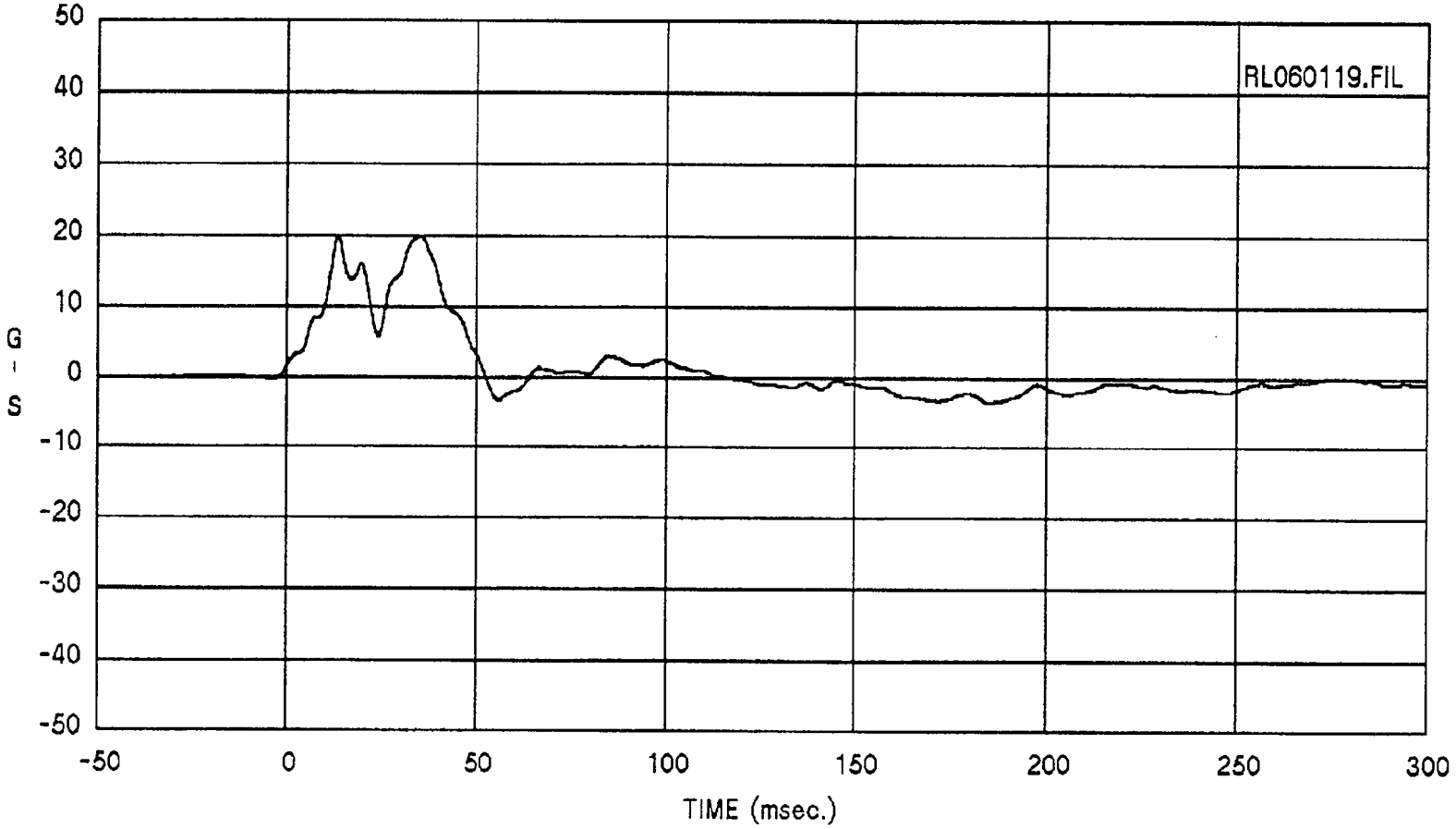
Curve: Rear floor above axle acceleration -- X axis Filter: SAE CLASS 60 Max = 6.3733 Min = -9.1865

MSE Date: 09/02/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1990 Ford F-150 Pickup



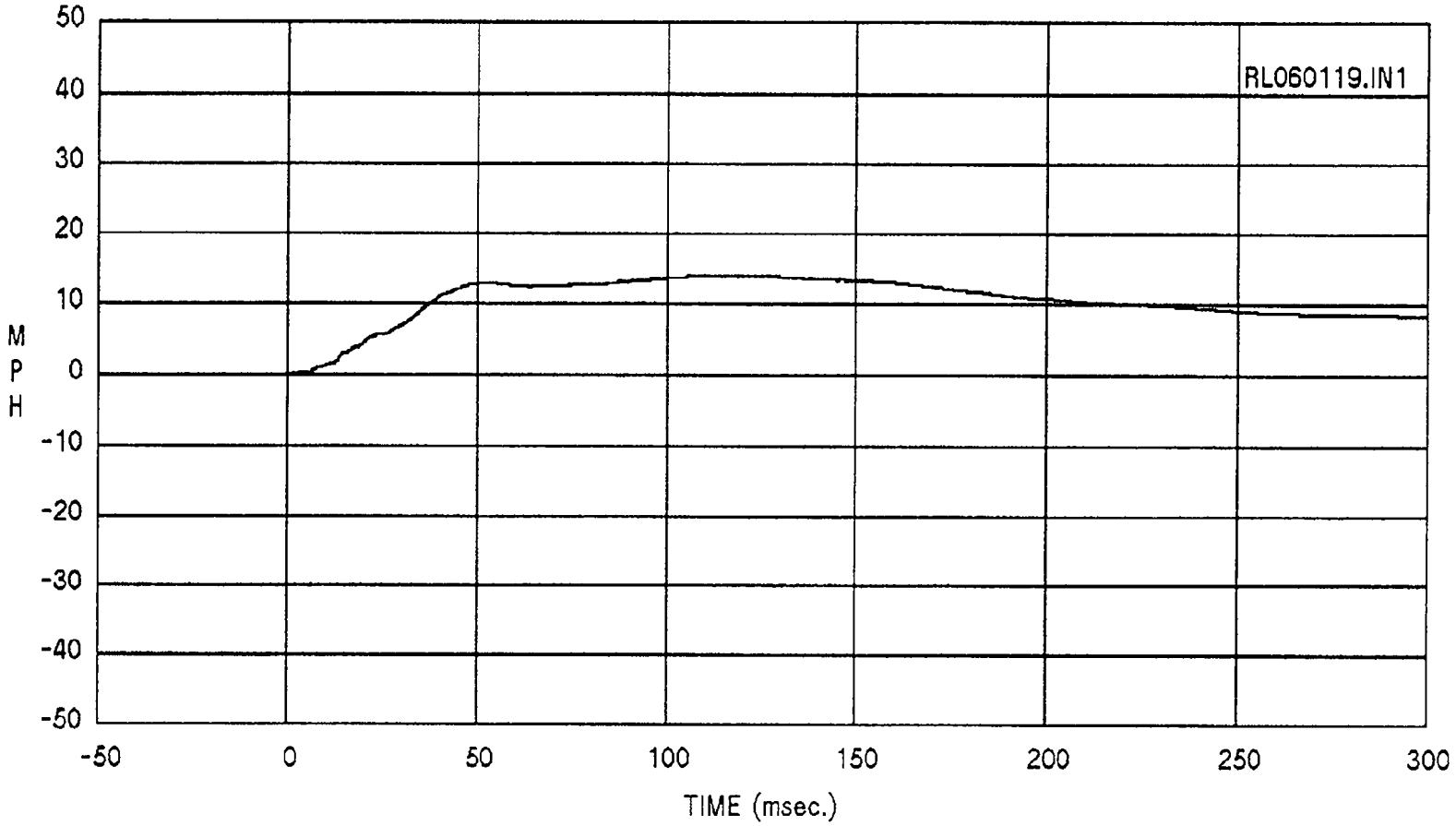
Curve: Rear floor above axle delta V -- X axis Filter: SAE CLASS 180 Max = -.17105E-02 Min = -2.73

MSE Date: 09/02/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1990 Ford F-150 Pickup



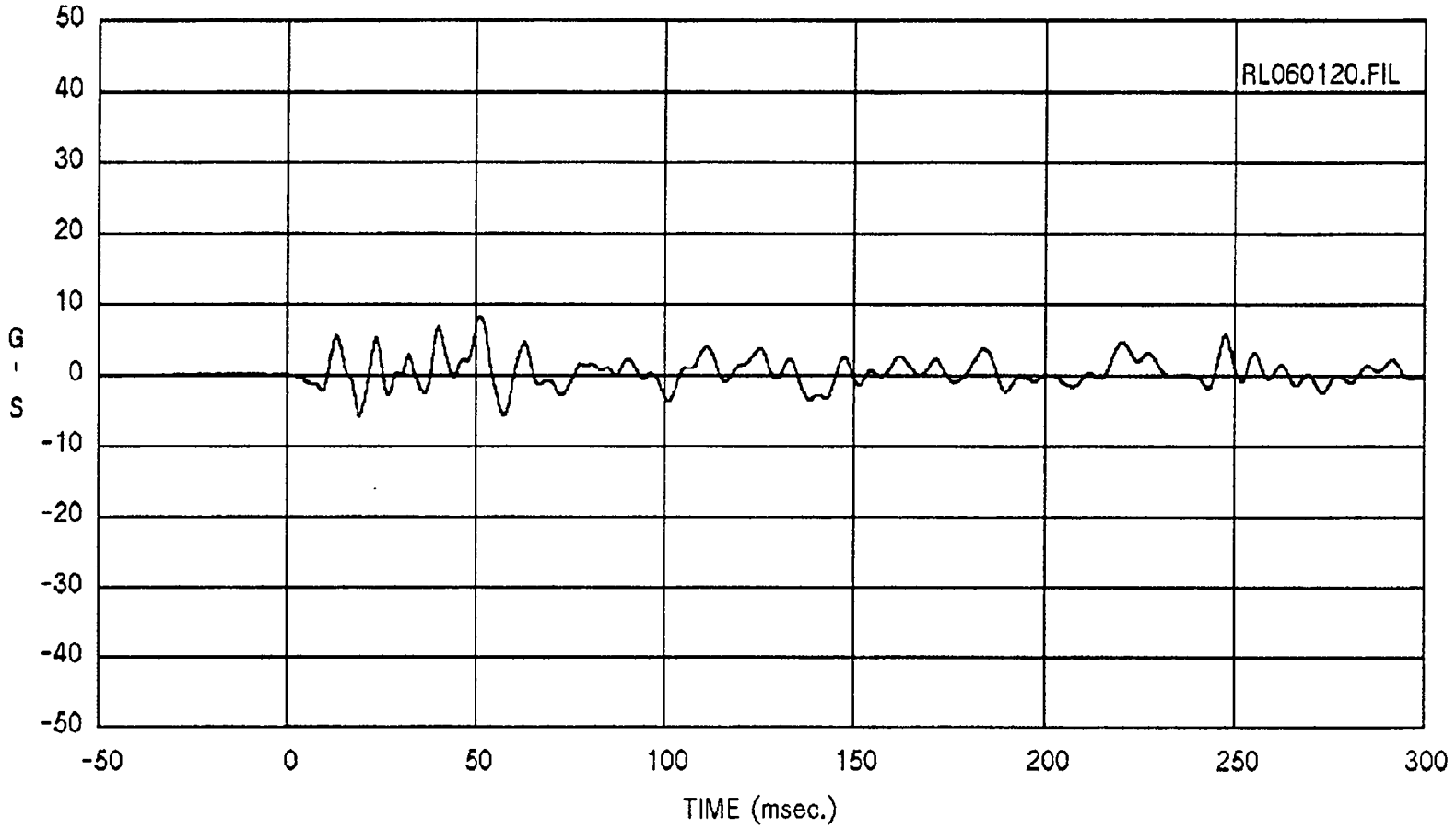
Curve: Rear floor above axle acceleration -- Y axis Filter: SAE CLASS 60 Max = 20.061 Min = -3.5595

MSE Date: 09/02/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1990 Ford F-150 Pickup



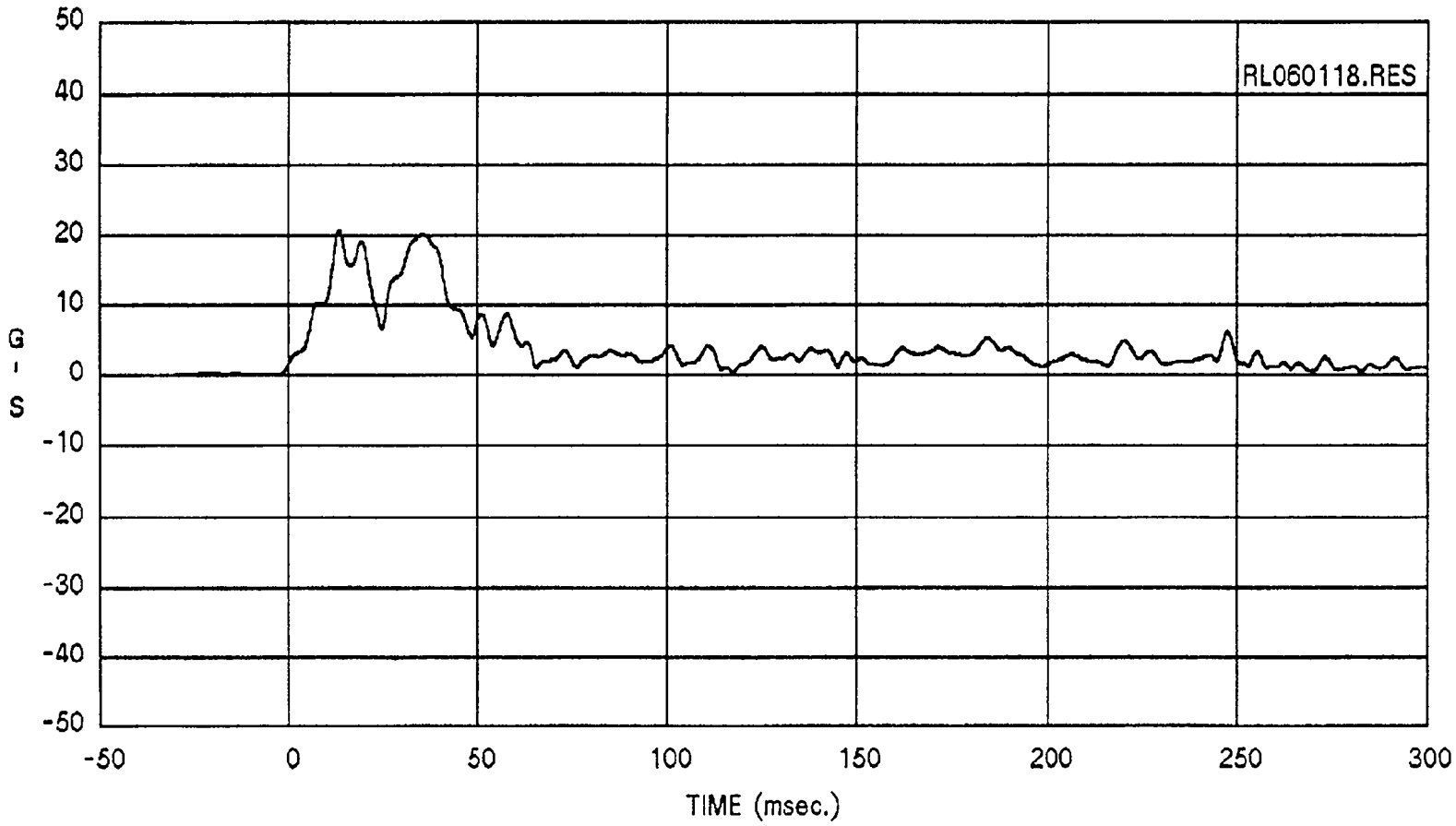
Curve: Rear floor above axle delta V -- Y axis Filter: SAE CLASS 180 Max = 13.981 Min = .29084

MSE Date: 09/02/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1990 Ford F-150 Pickup



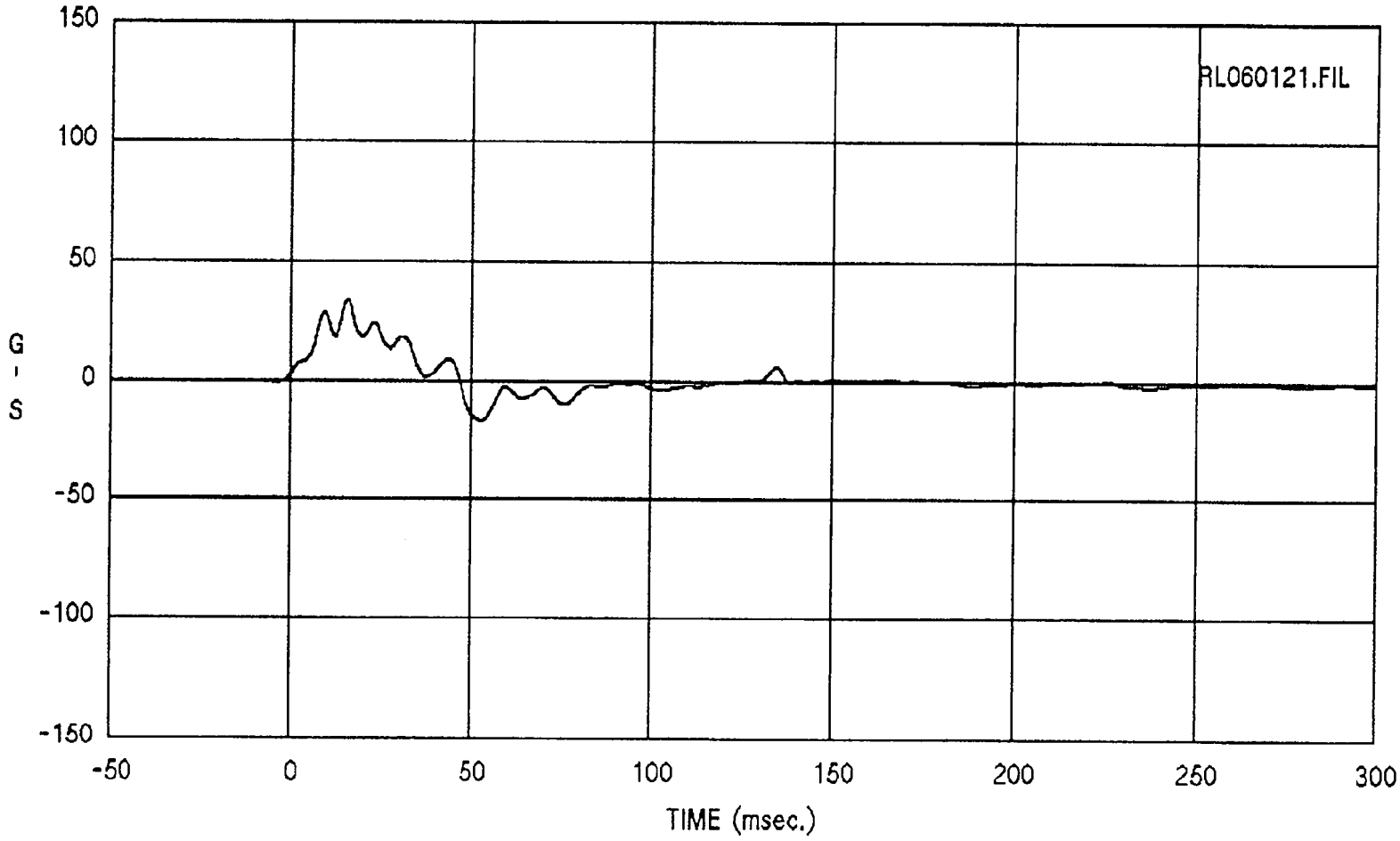
Curve: Rear floor above axle acceleration -- Z axis Filter: SAE CLASS 60 Max = 8.2504 Min = -5.7796

MSE Date: 09/02/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1990 Ford F-150 Pickup



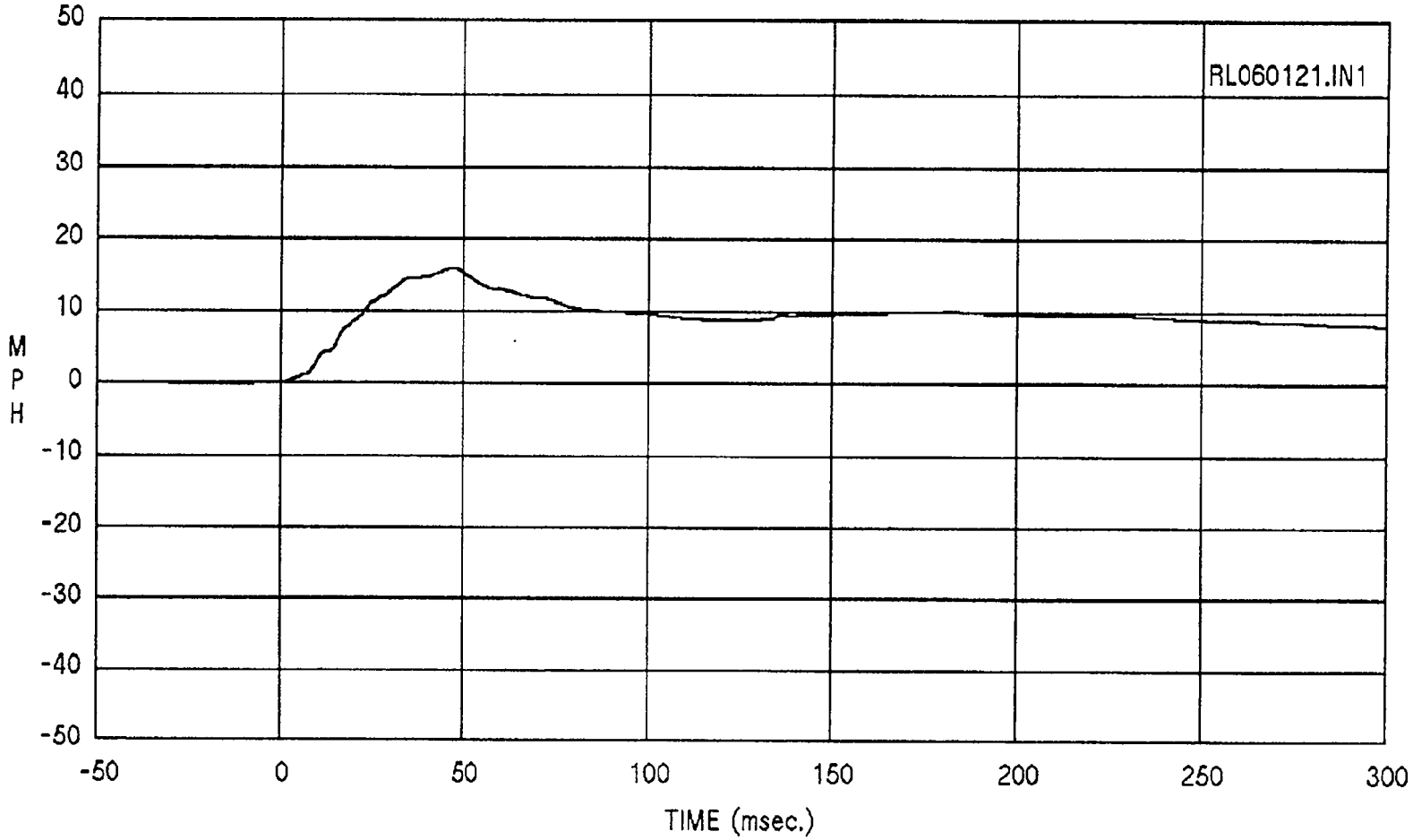
Curve: Rear floor above axle resultant acceleration Filter: SAE CLASS 60 Max = 20.794 Min = .23509

MSE Date: 09/02/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1990 Ford F-150 Pickup



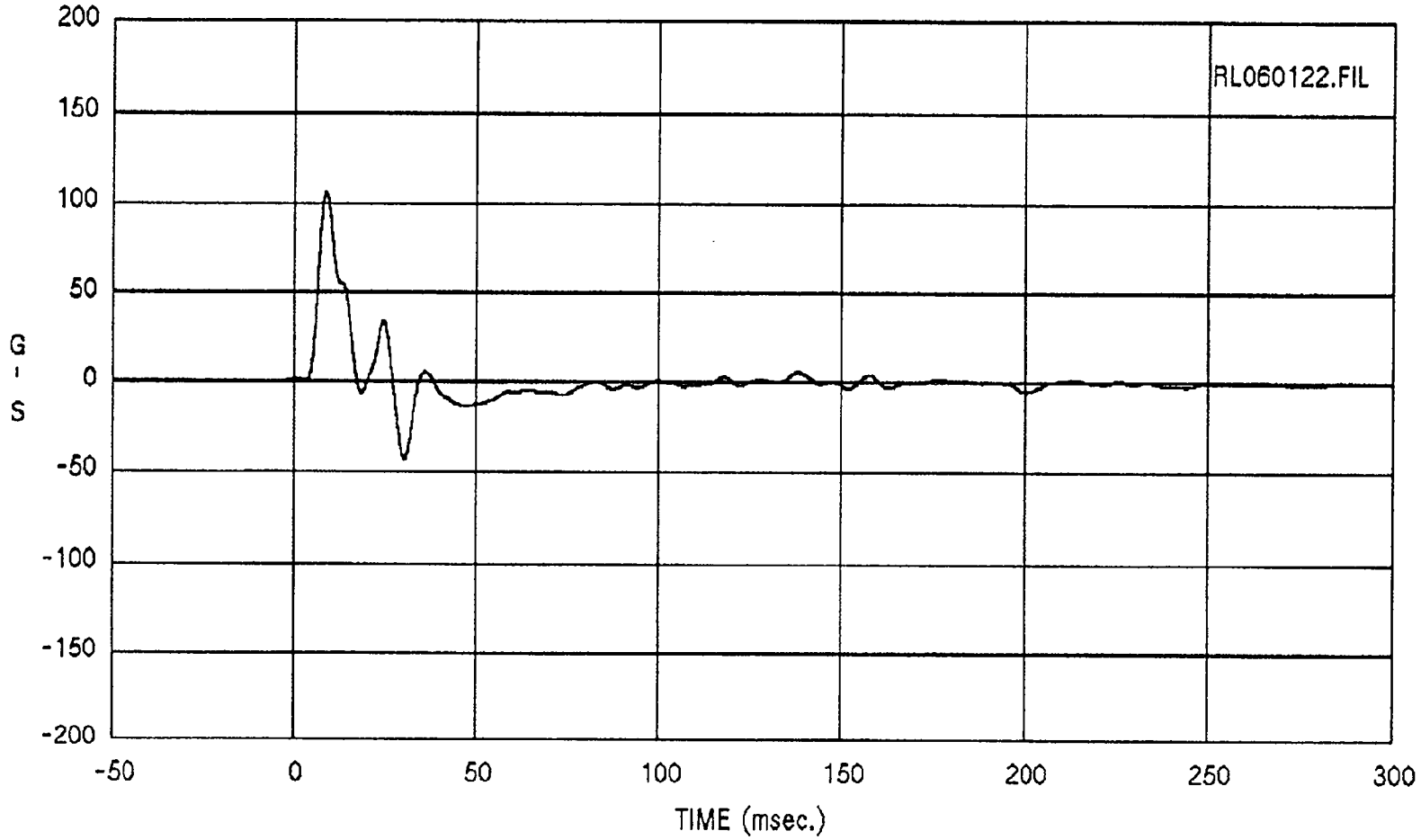
Curve: Front seat left Sill acceleration -- Y axis Filter: SAE CLASS 60 Max = 34.595 Min = -16.517

MSE Date: 09/02/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1990 Ford F-150 Pickup



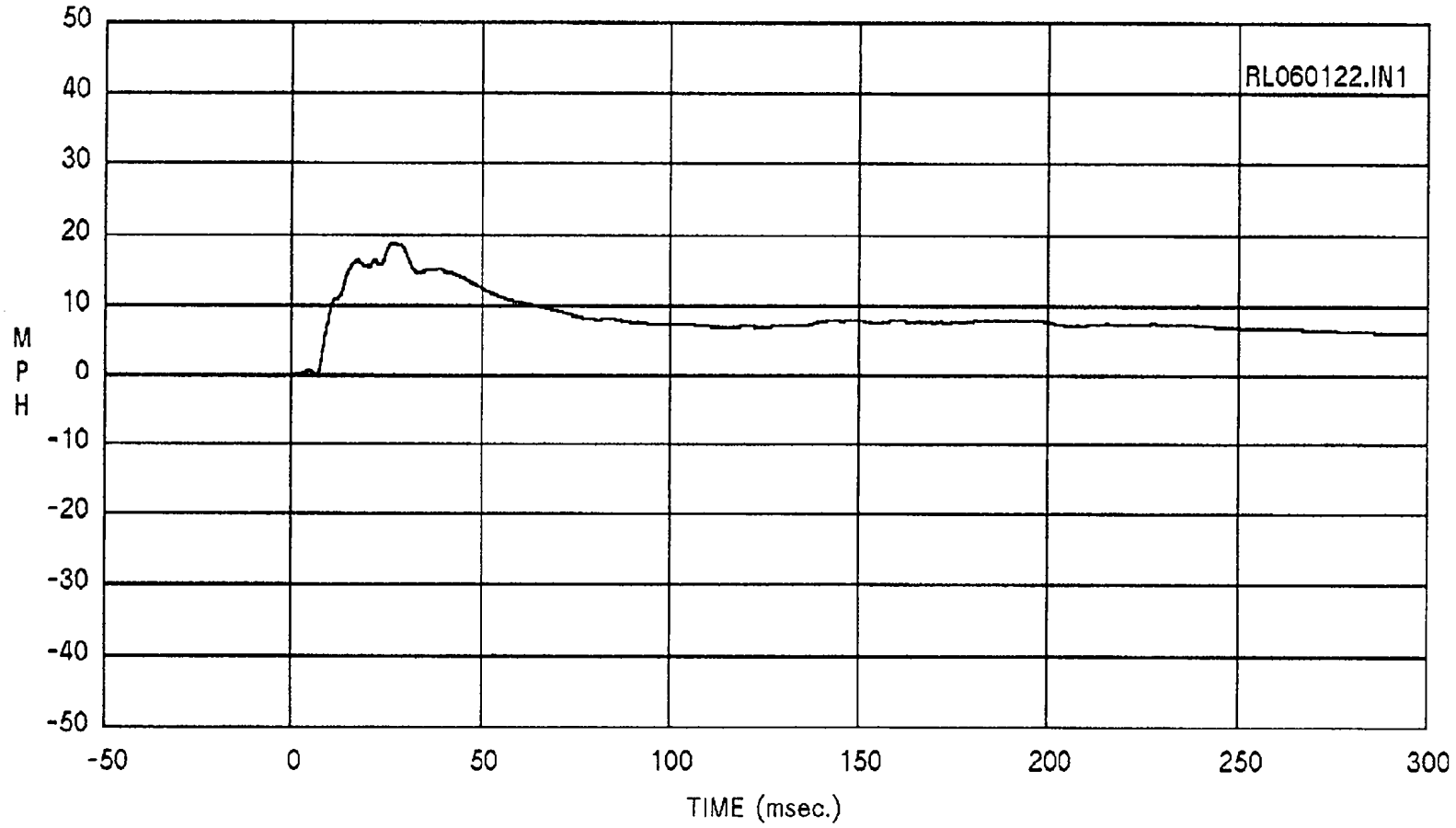
Curve: Front seat left SIII delta V -- Y axis Filter: SAE CLASS 180 Max = 16.073 Min = 4.2822

MSE Date: 09/02/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1990 Ford F-150 Pickup



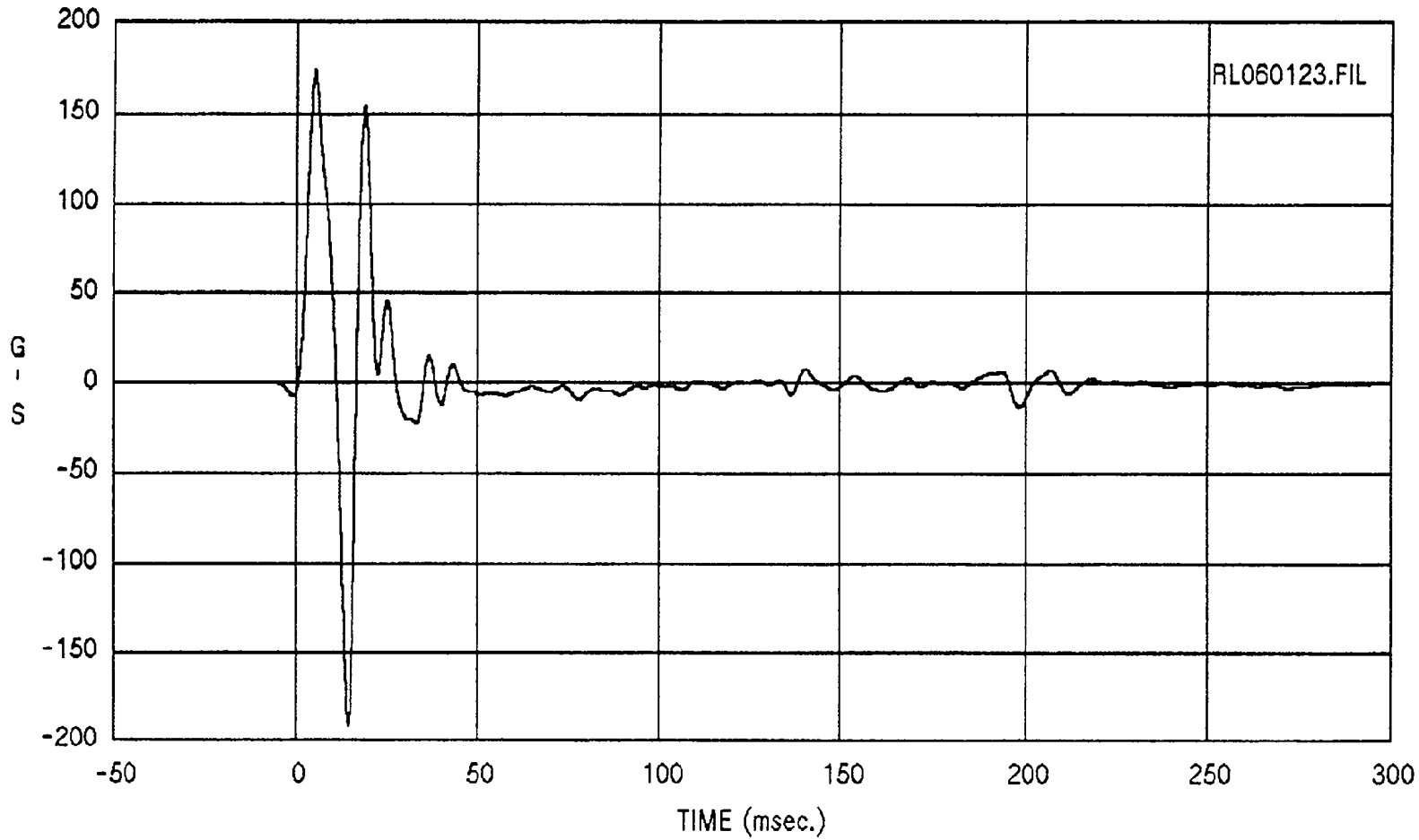
Curve: Left front door at centerline -- Y axis Filter: SAE CLASS 60 Max = 106.80 Min = -43.048

MSE Date: 09/02/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1990 Ford F-150 Pickup



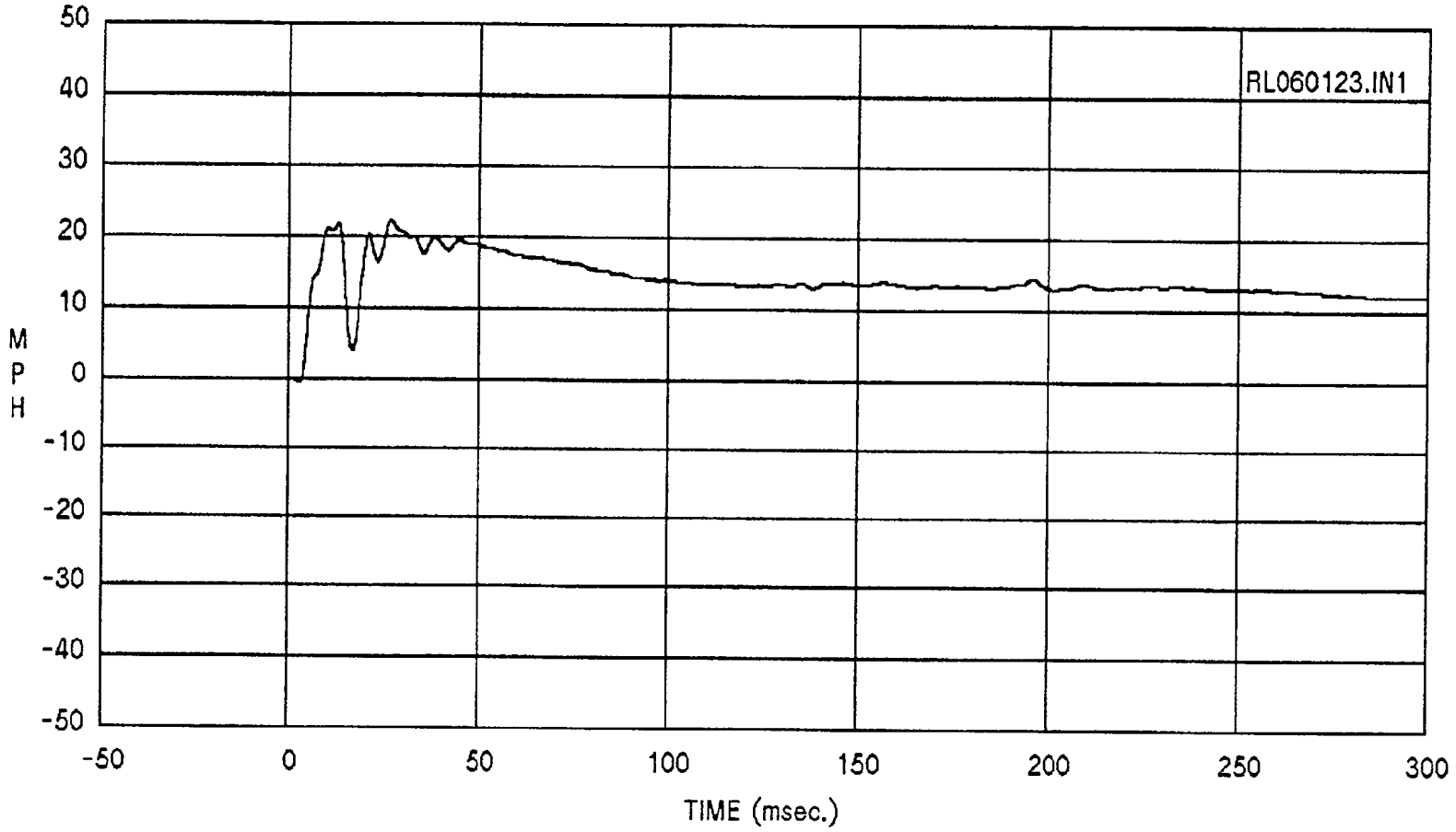
Curve: Left front door at centerline delta V -- Y axis Filter: SAE CLASS 180 Max = 18.820 Min = .12970

MSE Date: 09/02/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1990 Ford F-150 Pickup



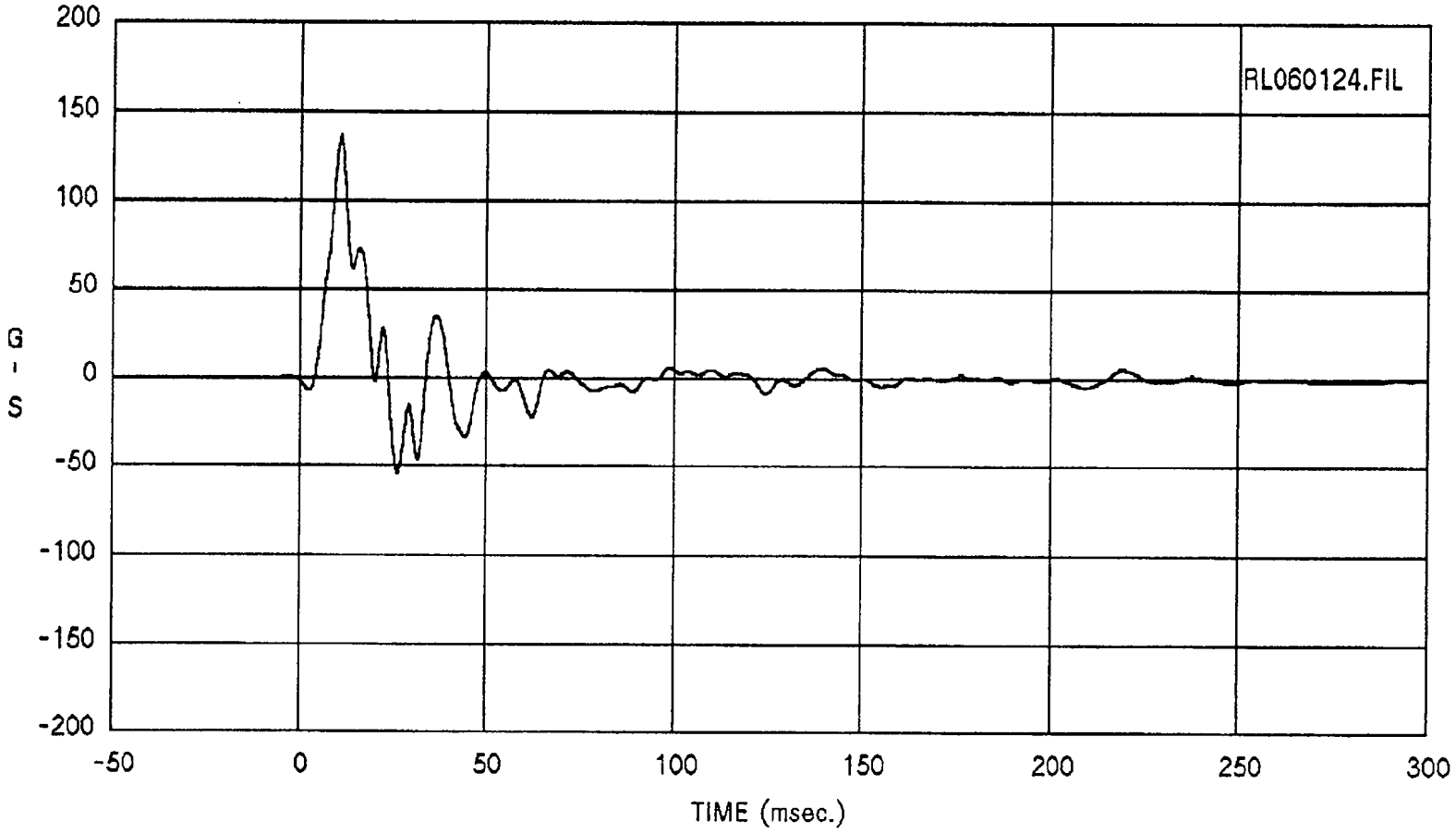
Curve: Left front door at mid-rear -- Y axis Filter: SAE CLASS 60 Max = 173.99 Min = -192.13

MSE Date: 09/02/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1990 Ford F-150 Pickup



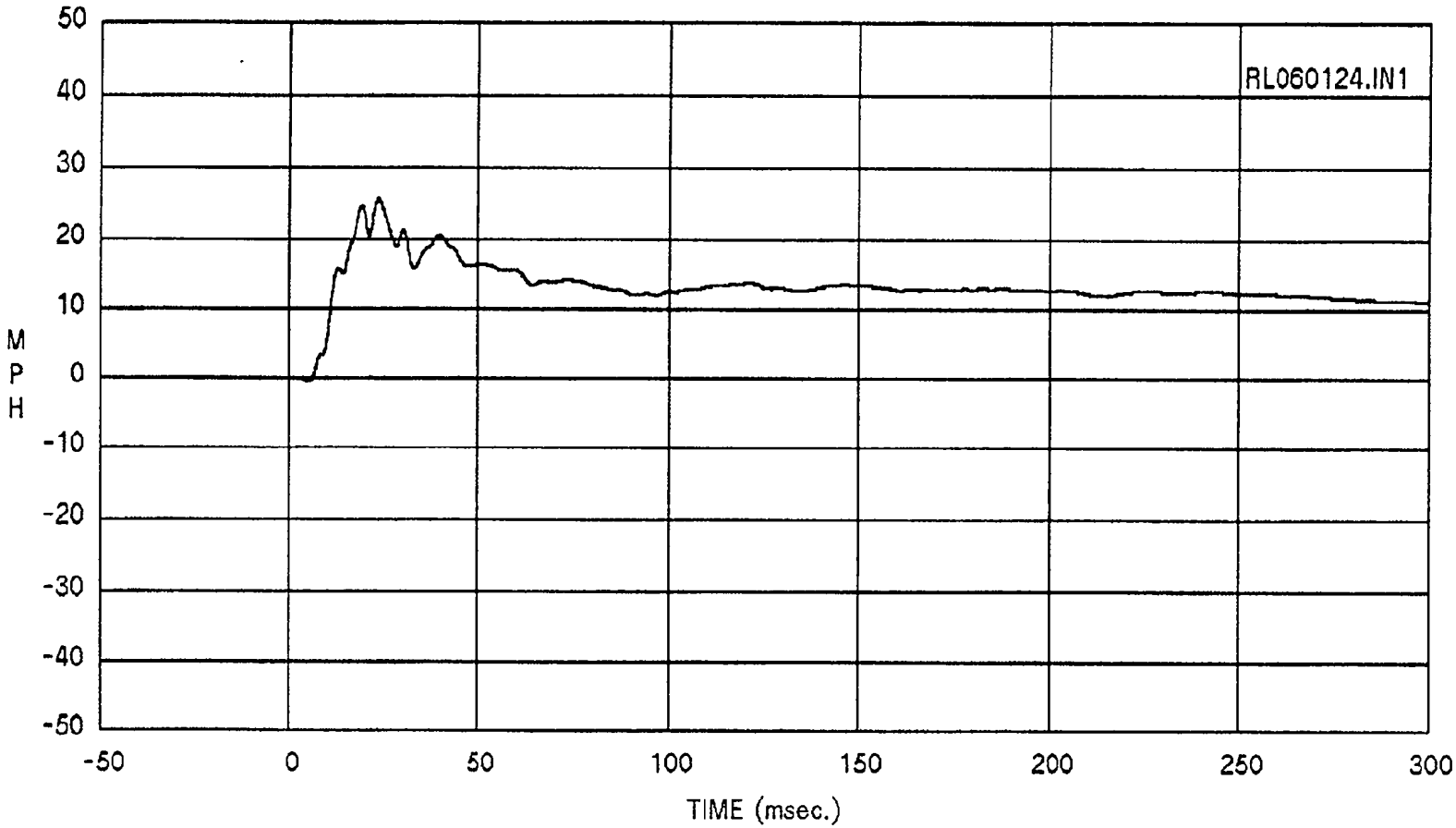
Curve: Left front door at mid-rear delta V -- Y axis Filter: SAE CLASS 180 Max = 22.247 Min = -.46073

MSE Date: 09/02/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1990 Ford F-150 Pickup



Curve: Left front door at upper centerline -- Y axis Filter: SAE CLASS 60 Max = 136.98 Min = -53.371

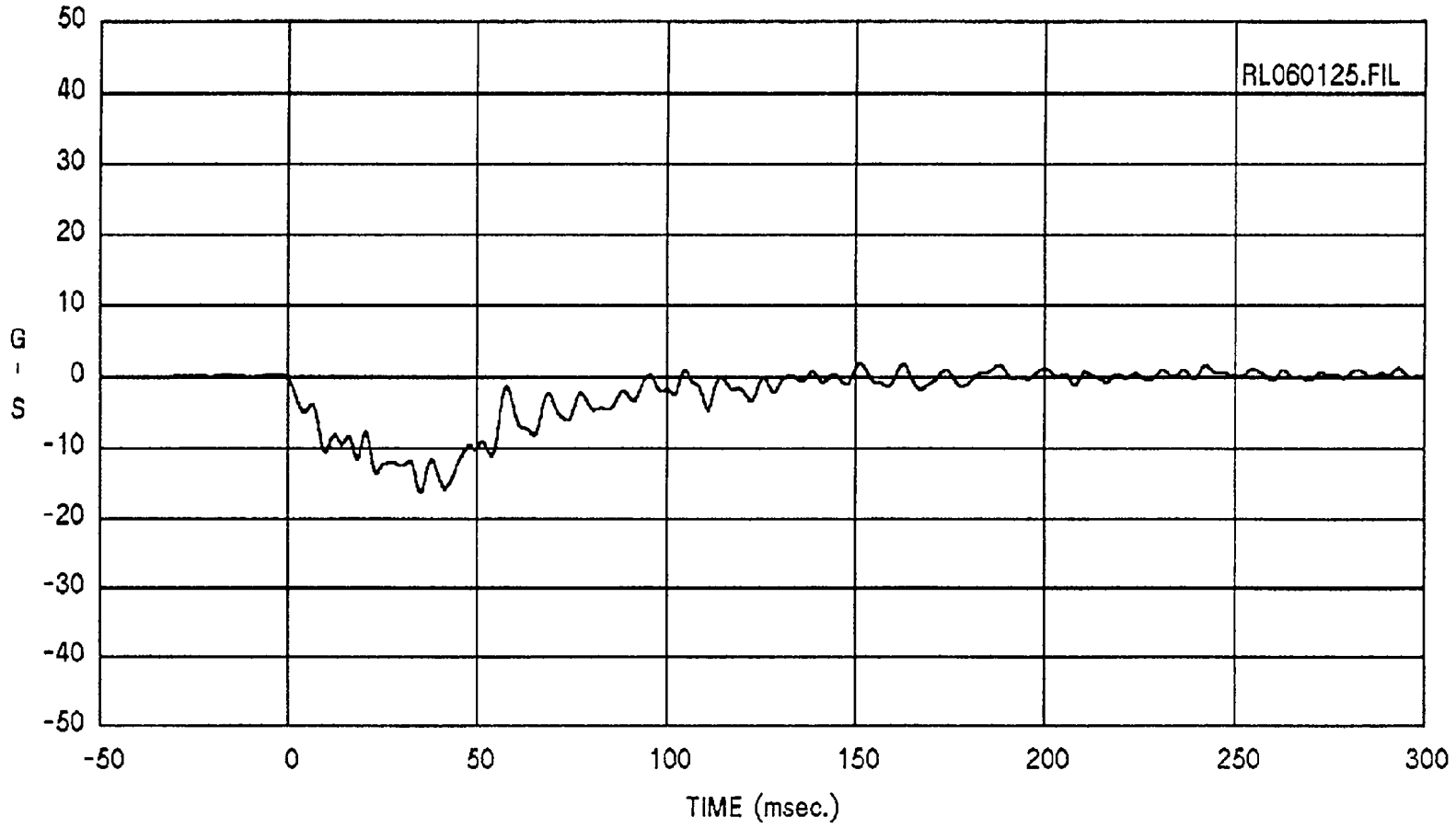
MSE Date: 09/02/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1990 Ford F-150 Pickup



Curve: Left front door at upper centerline -- Y axis Filter: SAE CLASS 180 Max = 25.659 Min = -.54219

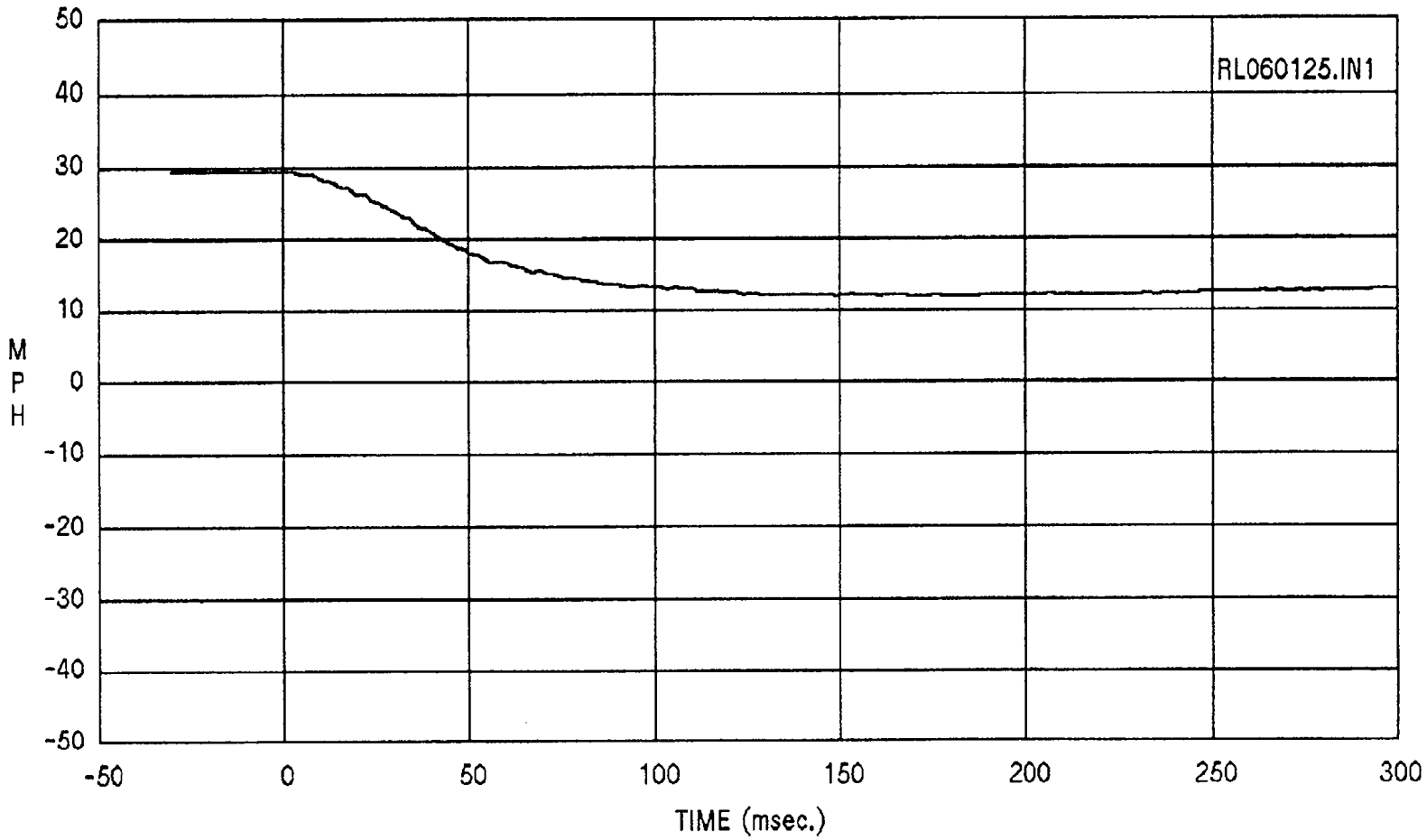
MSE Date: 09/02/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1990 Ford F-150 Pickup

MDB ACCELEROMETER DATA



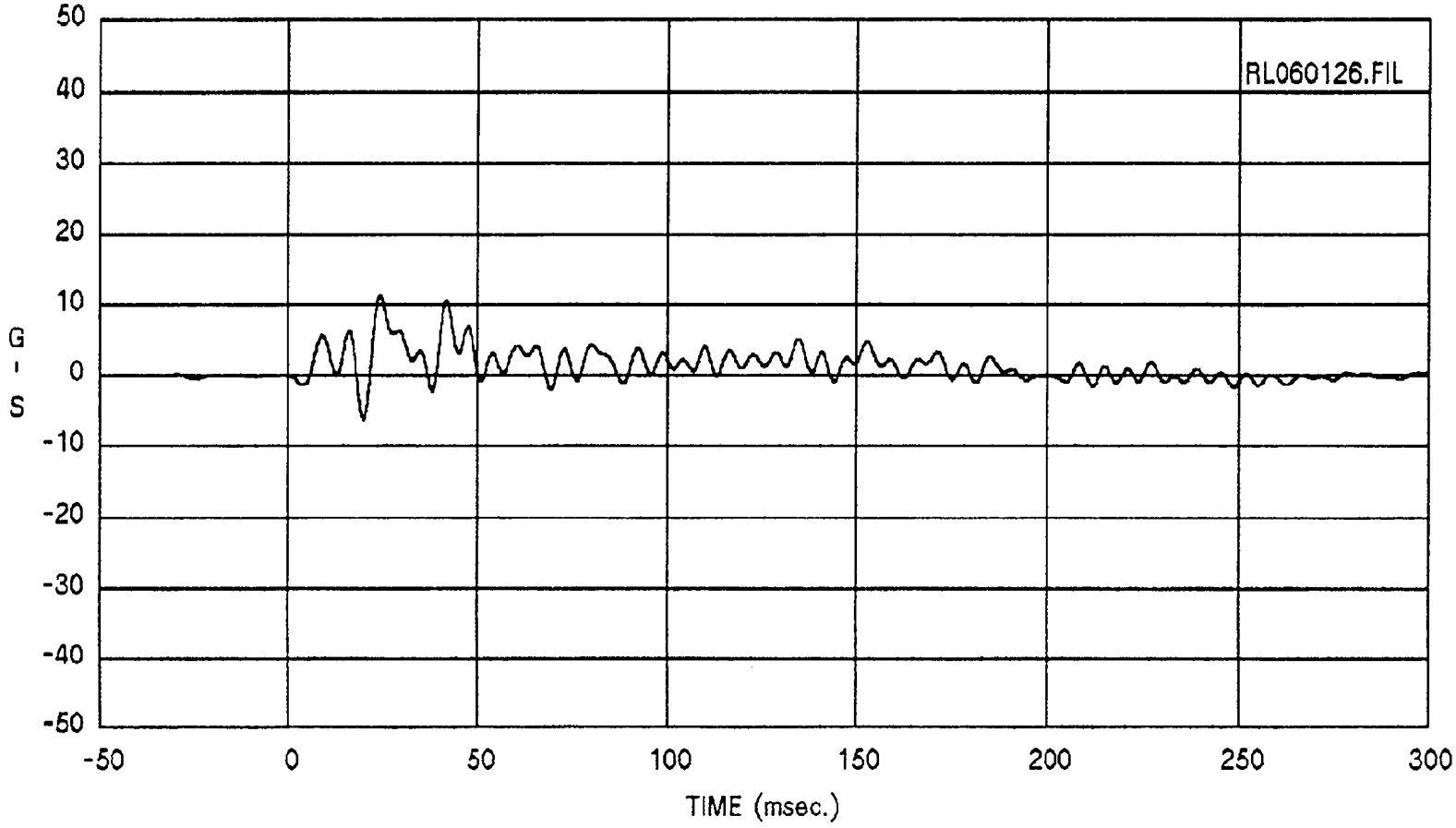
Curve: M.D.B. C/G acceleration -- X axis Filter: SAE CLASS 60 Max = 1.8720 Min = -16.314

MSE Date: 09/02/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1990 Ford F-150 Pickup



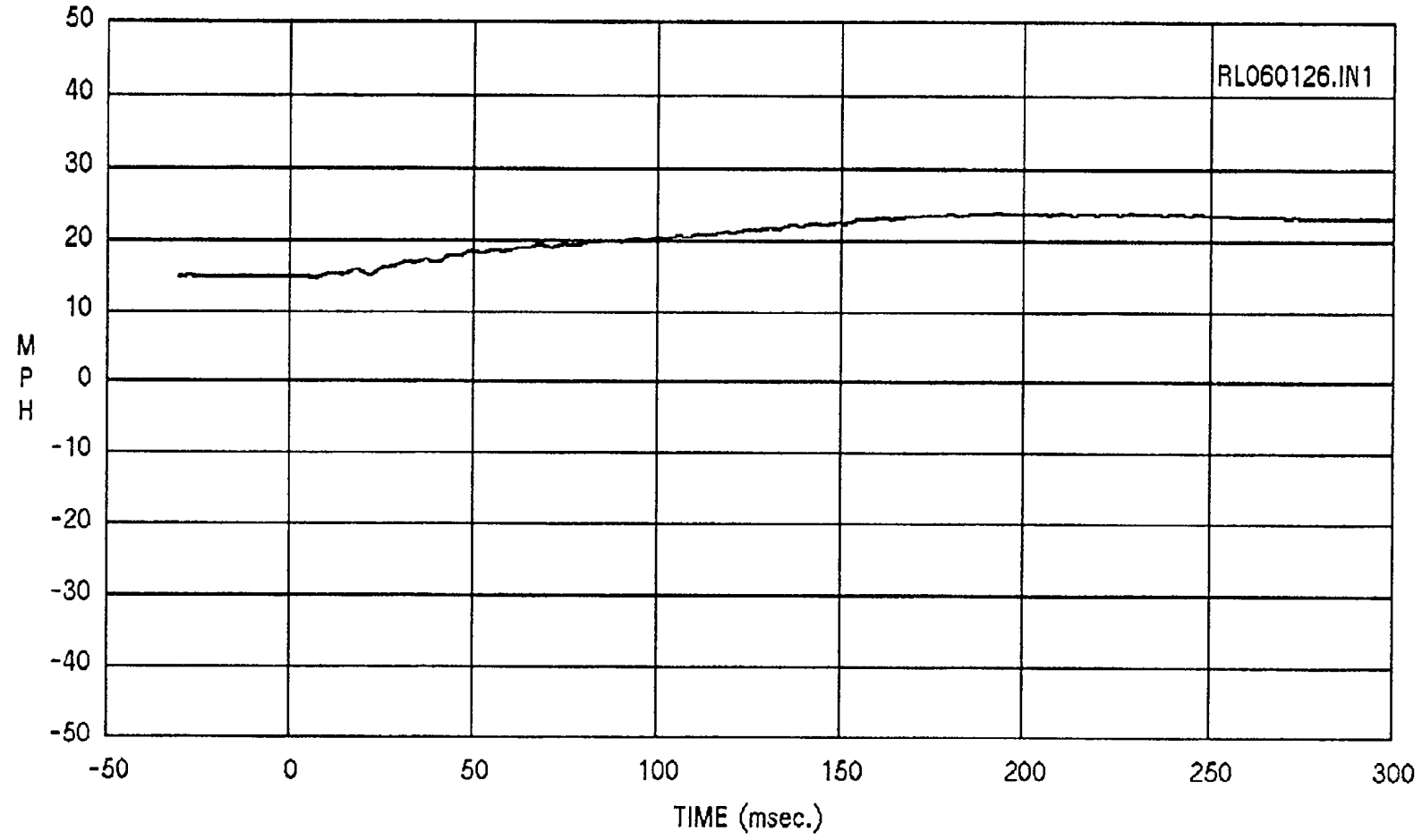
Curve: M.D.B. C/G delta V -- X axis Filter: SAE CLASS 180 Max = 29.512 Min = 12.034

MSE Date: 09/02/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1990 Ford F-150 Pickup



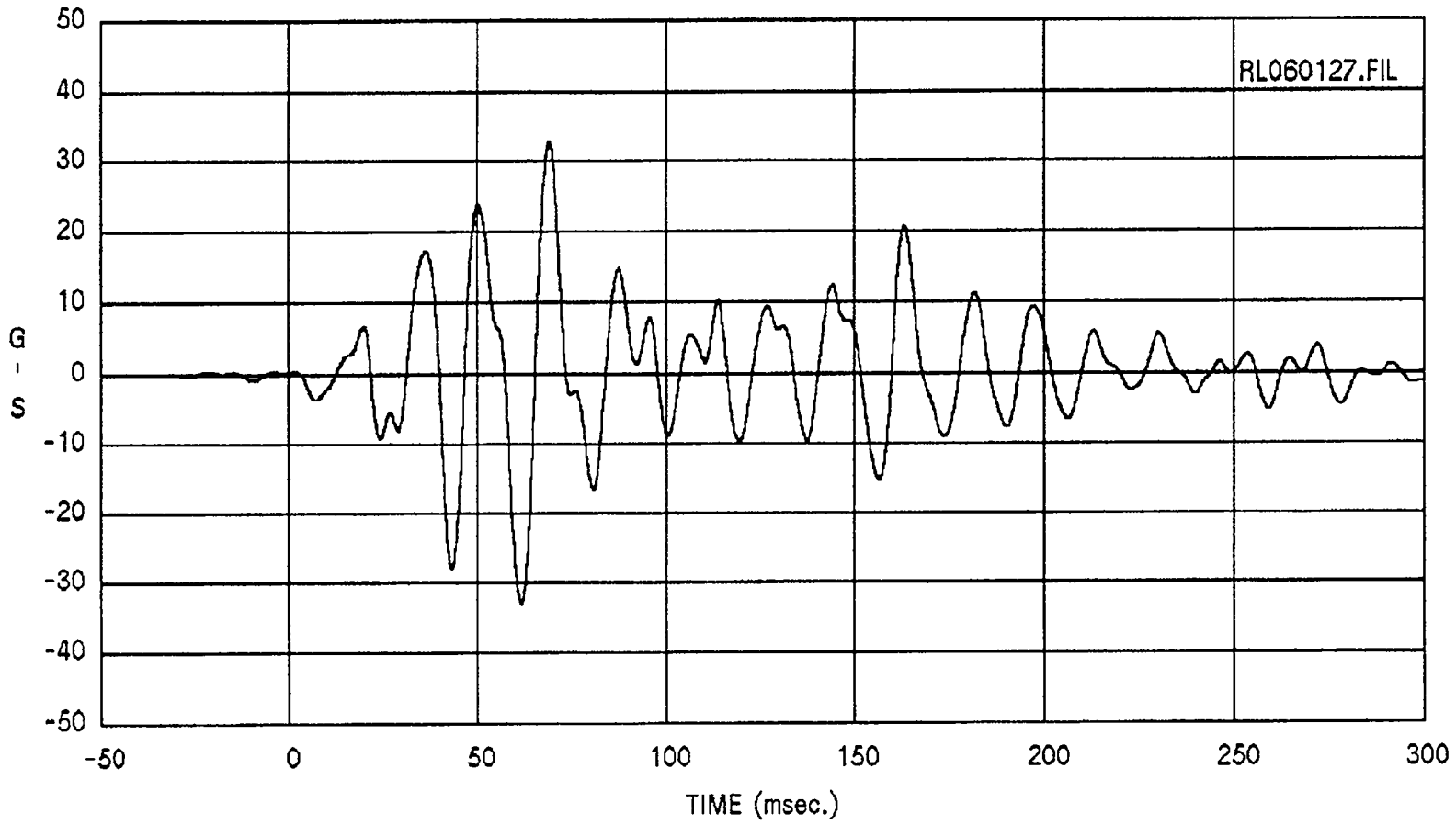
Curve: M.D.B. C/G acceleration -- Y axis Filter: SAE CLASS 60 Max = 11.319 Min = -6.2152

MSE Date: 09/02/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1990 Ford F-150 Pickup



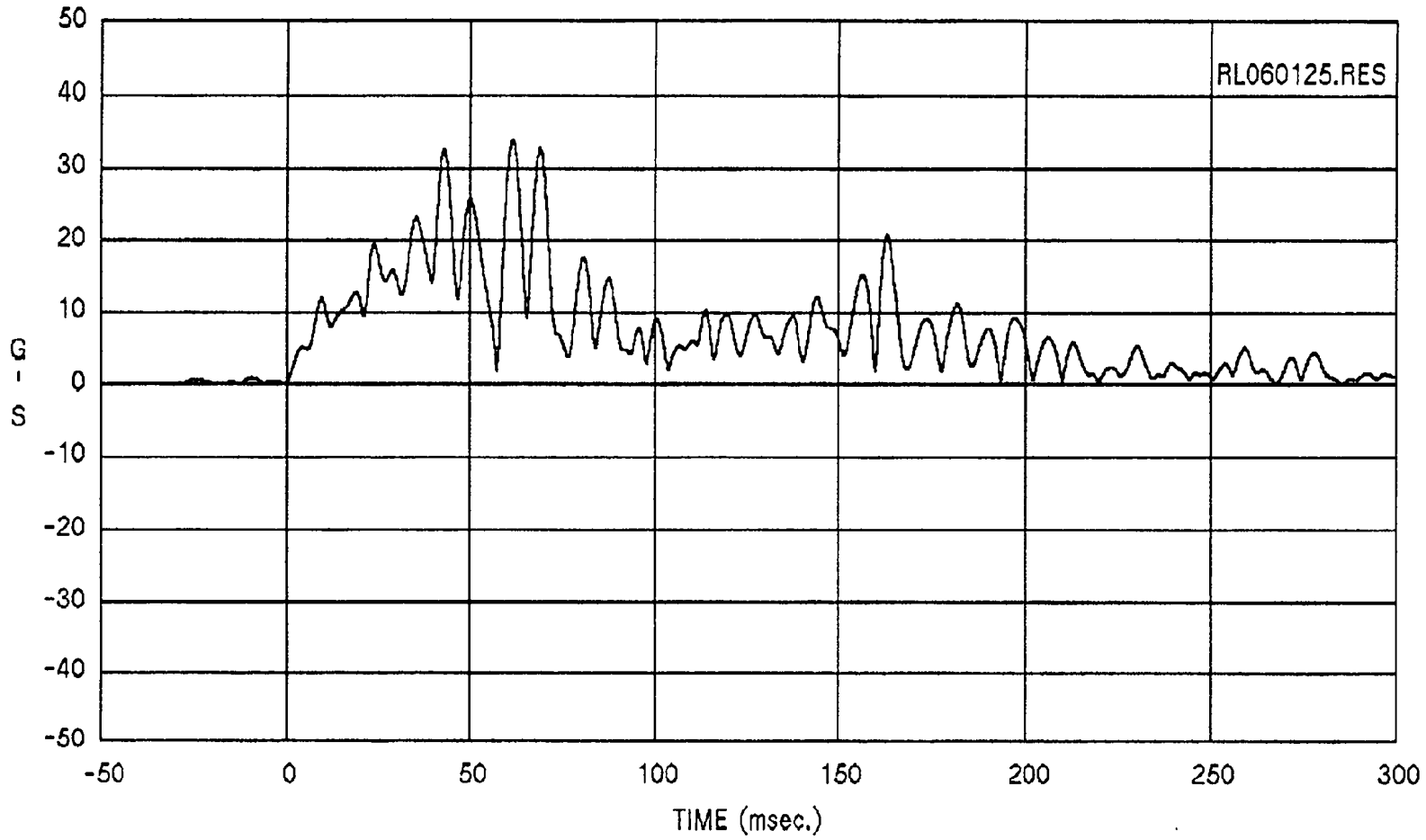
Curve: M.D.B. C/G delta V -- Y axis Filter: SAE CLASS 180 Max = 23.958 Min = 14.905

MSE Date: 09/02/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1990 Ford F-150 Pickup



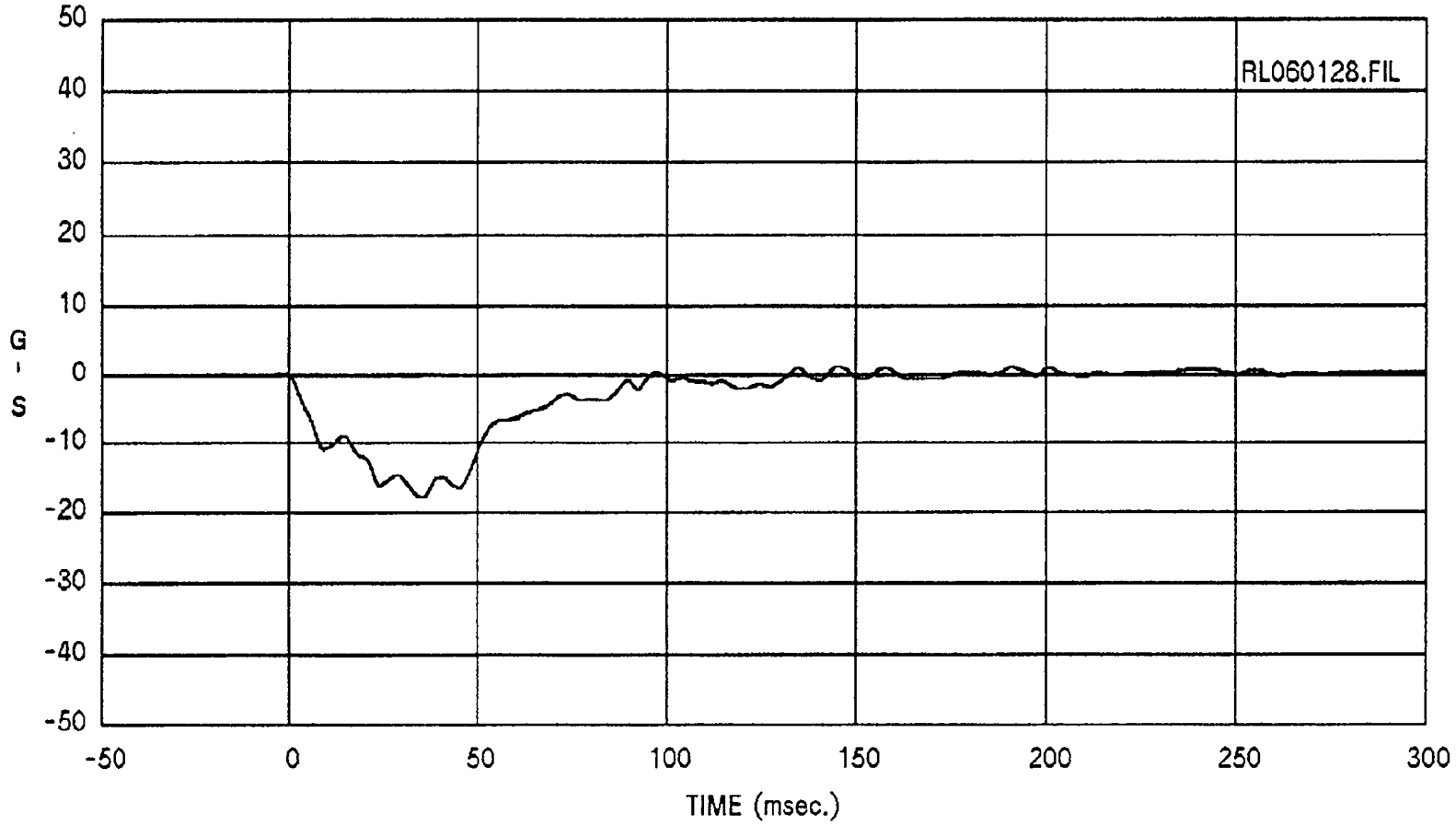
Curve: M.D.B. C/G acceleration -- Z axis Filter: SAE CLASS 60 Max = 32.760 Min = -33.091

MSE Date: 09/02/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1990 Ford F-150 Pickup



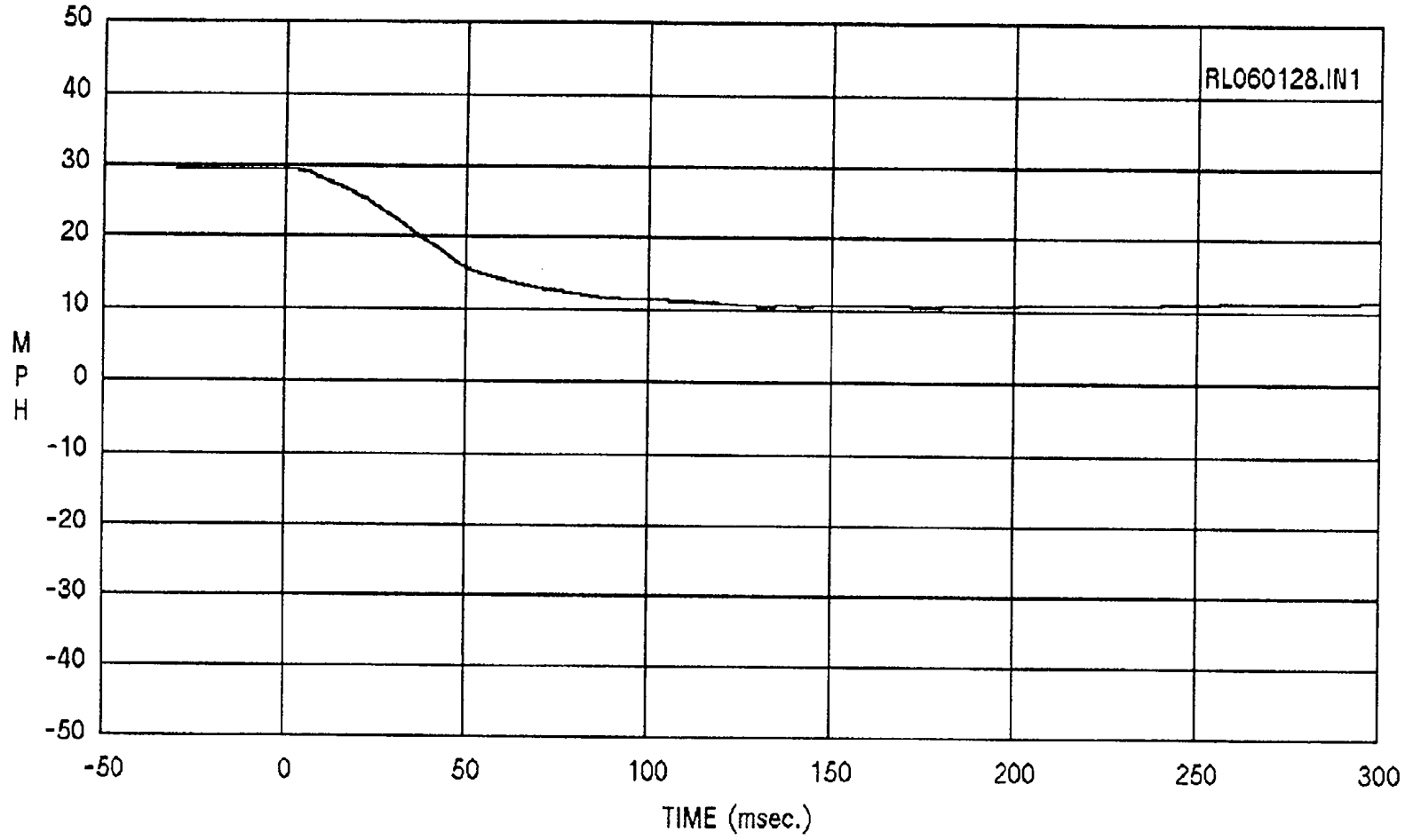
Curve: M.D.B. C/G resultant acceleration Filter: SAE CLASS 60 Max = 34.023 Min = .17895

MSE Date: 09/02/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1990 Ford F-150 Pickup



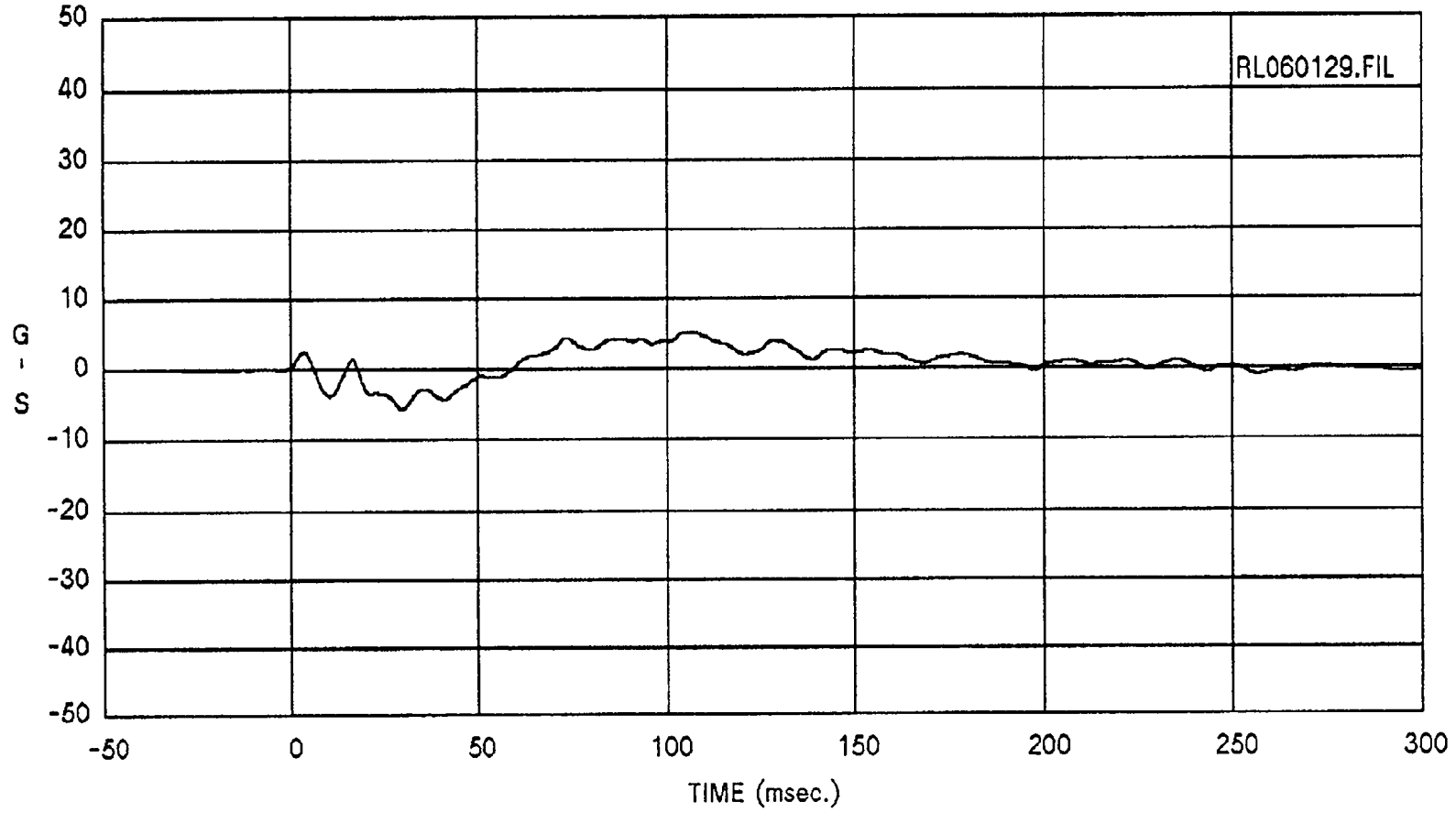
Curve: M.D.B. rear C/G acceleration -- X axis Filter: SAE CLASS 60 Max = 1.2466 Min = -17.862

MSE Date: 09/02/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1990 Ford F-150 Pickup



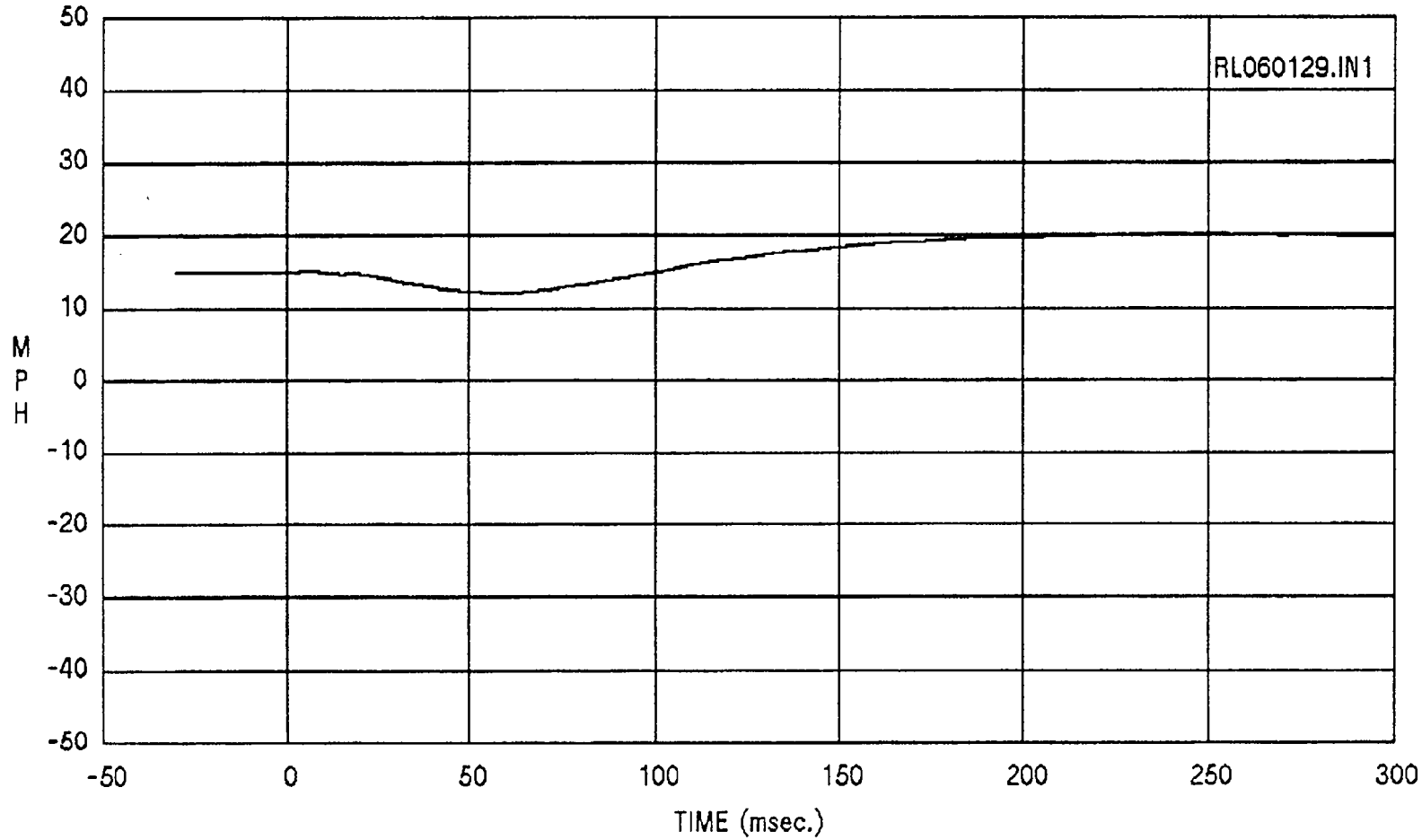
Curve: M.D.B. rear C/L delta V -- X axis Filter: SAE CLASS 180 Max = 29.513 Min = 10.603

MSE Date: 09/02/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1990 Ford F-150 Pickup



Curve: M.D.B. rear C/G acceleration -- Y axis Filter: SAE CLASS 60 Max = 5.1186 Min = -5.7329

MSE Date: 09/02/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1990 Ford F-150 Pickup



Curve: M.D.B. rear C/L delta V -- Y axis Filter: SAE CLASS 180 Max = 20.244 Min = 12.205

MSE Date: 09/02/92 Program: Side Impact, 30/15, 90 deg. Vehicle: 1990 Ford F-150 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

TEST PARAMETER		REQUIREMENT	VELOCITY	PRETEST CAL.
THORAX IMPACT TEST:			14.1 ft/sec	
A. Upper Rib Accel.	Primary	37 - 46 g's		44.0 g's
	Secondary	37 - 46 g's		44.0 g's
B. Lower Rib Accel.	Primary	37 - 46 g's		42.0 g's
	Secondary	37 - 46 g's		42.6 g's
C. Lower Spine Accel.	Primary	15 - 22 g's		21.4 g's
	Secondary	15 - 22 g's		21.7 g's
PELVIC IMPACT TEST:			13.9 ft/sec	
Pelvic Accel.		40 - 60 g's		44.0 g's