

**NEW CAR ASSESSMENT PROGRAM (NCAP)
FRONTAL BARRIER IMPACT TEST**

FORD MOTOR COMPANY
1992 FORD RANGER
2 DOOR PICKUP
NHTSA NO. MN0205

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



MAY 20, 1992

FINAL REPORT

Prepared For:

U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
OFFICE OF MARKET INCENTIVES
400 Seventh Street, S.W.
Room No. 5313 (NRM-22)
Washington, DC 20590

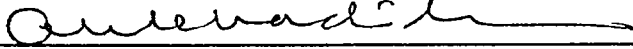
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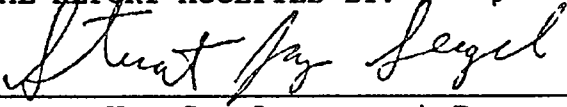
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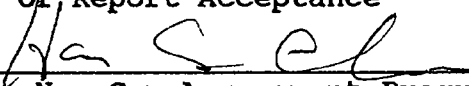
MOBILITY SYSTEMS AND EQUIPMENT COMPANY

Approved by: 
Dr. Anil V. Khadilkar

Date: 20 May 1992

FINAL REPORT ACCEPTED BY:


Manager, New Car Assessment Program
AUG 19 1992

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COTR, New Car Assessment Program
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<p>A 35 mph frontal barrier impact test using a load cell barrier was conducted on a 1992 Ford Ranger, Pickup, at the Mobility Systems and Equipment Company (MSE) crash test facility in San Bernardino, CA, on May 7, 1992.</p> <p>The barrier impact velocity was 35.19 mph, and the ambient temperature at the barrier face at the time of impact was 76 deg. F. The post-test vehicle crush maximum was 19.3 in.</p> <p>A summary of occupant injury measure data from the test appears below:</p> <table border="1"> <thead> <tr> <th>Injury Criteria Threshold Value</th> <th>Driver Dummy</th> <th>Passenger Dummy</th> </tr> </thead> <tbody> <tr> <td>Head Injury Criterion HIC = 1000</td> <td>1,009</td> <td>415</td> </tr> <tr> <td>Chest Resultant Peak 60 Gs (3 ms clip)</td> <td>48</td> <td>37</td> </tr> <tr> <td>Femur Load Left 2250 Pounds</td> <td>1,251</td> <td>436</td> </tr> <tr> <td>Right</td> <td>1,875</td> <td>306</td> </tr> </tbody> </table> <p>TYPE OF RESTRAINT SYSTEM: Manual 3 point continuous webbing system at each front outboard seating positions.</p>						Injury Criteria Threshold Value	Driver Dummy	Passenger Dummy	Head Injury Criterion HIC = 1000	1,009	415	Chest Resultant Peak 60 Gs (3 ms clip)	48	37	Femur Load Left 2250 Pounds	1,251	436	Right	1,875	306
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SECTION 1

PURPOSE AND TEST PROCEDURE

This 35 mph frontal barrier impact test is a part of the FY'92 Vehicle Barrier Impact and Testing Program sponsored by the National Highway Traffic Safety Administration (NHTSA) under Contract No. DTNH22-90-D-32121. The purpose of this test was to obtain vehicle crashworthiness and occupant restraint system performance data for an impact speed in excess of the current 30 mph FMVSS 208/212/219/301-75 requirements.

This 35 mph frontal barrier impact test was conducted in accordance with the Office of Market Incentives (OMI) Laboratory Indicant Test Procedure, dated 01 January 1990.

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SECTION 2

SUMMARY OF FRONTAL BARRIER IMPACT TEST

A barrier was impacted by a 1992 Ford Ranger, Pickup, NHTSA No. MN0205, at a velocity of 35.19 mph. The frontal impact test was conducted by Mobility Systems and Equipment Company (MSE) on 07 May 1992. The general test and vehicle description information is presented in Tables 1 and 2. Pretest and posttest photographs of the test vehicle and dummies are shown in Appendix A.

Two (2) Part 572 50th percentile adult male Anthropomorphic Test Devices (ATDs) were placed in the driver and right front passenger designated seating positions (DSP's) according to the NHTSA test requirements.

The ATD's were instrumented with head and chest triaxial accelerometers and right/left femur load cells. In addition, load cells were placed on the driver's and passenger's lap and shoulder belts to measure dummy upper torso and pelvic section belt loading. A summary of dummy configuration and performance verification test data is presented in Appendix C.

The frontal impact event was documented by one (1) real time camera and fifteen (15) high-speed cameras. The camera location data are presented in Table 8.

Thirty-three (33) channels of crash parameters were recorded using two (2) FM tape recorders, and one (1) direct analog to digital acquisition unit. Time history plots of all recorded channels are presented in Appendix B.

2.1 GENERAL COMMENTS

The 1992 Ford Ranger, Pickup, was equipped with a 182.0 cubic inch 6 cylinder engine and 4 speed automatic transmission. The test weight of the 1992 Ford Ranger, Pickup, with two (2) 50th percentile male dummies, instrumentation, and cameras was 3,722 pounds.

The 1992 Ford Ranger, Pickup, involved in a frontal barrier crash at a velocity of 35.19 mph.

The maximum static crush for the vehicle of 19.3 inches occurred at the centerline of the front bumper. The windshield was cracked, but otherwise the vehicle glazing remained intact. The passenger's front door was opened without the aid of tools. The driver's door was slightly jammed and required the aid of a crowbar to open.

The driver ATD's face hit the steering wheel center hub. The top of the driver's head hit the top left section of the steering wheel. The driver's left and right knees hit the steering column and the dash panel. The driver ATD had a HIC value of 1,009, the maximum chest acceleration (resultant clipped) was 48 g's and the maximum femur loads were 1251 (left) and 1875 (right) pounds.

The passenger ATD's head made no contact. The passenger ATD's both knees hit the dash panel and the glove compartment. The HIC value for the passenger ATD was 415, the maximum chest acceleration (resultant clipped) was 37 g's, and the maximum femur loads were 436 (left) and 306 (right) pounds.

Seat belt spool out, measured by high-speed film analysis, was 1.8 inches for the driver, and 3.5 inches for the passenger.

The inboard and outboard track latching devices of the front seats remained latched.

There were no apparent visual indications of any standard solvent leaks, windshield periphery separation or hood contact with the windshield.

Appendix D shows occupant restraint system instructions by the manufacturer and Appendix E shows the instrumentations and calibration data.

Data Table No. 1 Test Vehicle Data

VEHICLE YEAR/MAKE/MODEL/BODY STYLE: 1992/FORD RANGER/PICKUP

VEHICLE NHTSA NO.: M N 0 2 0 5 VIN: 1 F T C R 1 O U O N U C 2 6 6 7 8

VEHICLE BODY COLOR: BLUE; MONTH & YEAR OF MANUFACTURE: 02/92

ENGINE: 6 Cylinders; 182 C.I.D.; 3 Liters; CC
X Gas; Diesel; Turbocharged
PLACEMENT-- X Longitudinal; Transverse (Lateral)

TRANSMISSION: 4 Speed; Manual; X Automatic; X Overdrive
FINAL DRIVE: Front Wheel Drive X Rear Wheel Drive;
 Four Wheel Drive

DATE VEHICLE AVAILABLE FOR 35 MPH CRASH TESTING: 04/09/92

ODOMETER READING: 96 miles; OPTIONS: X A/C; X P/S; P/Wdo.;
 Tilt Whl.; Cruise Control

DATA RECORD FROM VEHICLE'S TIRE PLACARD:

=====

Tire Pressure (at capacity): 35 psi Front; 35 psi Rear
Recommended Tire Size: P215/70 R14 SL
Tires on Vehicle: P215/70 R14 M+S; Manufacturer: FIRESTONE
Number of Occupants: 2 Front; N/A Rear; 3rd Seat; 2 TOTAL
Type of Front Seats: Bucket; Bench; X Split Bench
Type of Front Seat Back: Fixed; X Adjustable With X Lever
 Rotating Knob

Vehicle Maximum Capacity Loading = N/A lbs. (A)
No. of Occupants x 150 lbs. - - - = N/A lbs. (B)
Cargo Capacity (A - B) - - - - = 300 lbs.

TEST VEHICLE DELIVERED WEIGHT WITH MAXIMUM FLUIDS:

=====

Right Front = 867 lbs.
Left Front = 935 lbs. TOTAL FRONT = 1802 lbs. (58.0% of TOTAL)
Right Rear = 621 lbs.
Left Rear = 687 lbs.
TOTAL WEIGHT = 3110 lbs. TOTAL REAR = 1308 lbs. (42.0% of TOTAL)

Data Table No. 1 (Con't) Test Vehicle Data

CALCULATION OF TEST VEHICLE TARGET WEIGHT:

Total Test Vehicle Delivered Weight With Maximum Fluids =	<u>3110</u>	lbs.
Maximum Cargo Carrying Capacity of Test Vehicle*- - - - -	<u>300</u>	lbs.
Weight of Two P.572 Dummies (2 x 164 lbs.)- - - - -	<u>328</u>	lbs.
TEST VEHICLE TARGET WEIGHT	<u>3738</u>	lbs.

*300 lbs. for light trucks and MPVs

ACTUAL WEIGHT OF TEST VEHICLE WITH 2 DUMMIES AND CARGO:

Right Front =	<u>997</u>	lbs.	TOTAL FRONT =	<u>2045</u>	lbs. (55.0% of TOTAL)
Left Front =	<u>1048</u>	lbs.			
Right Rear =	<u>845</u>	lbs.	TOTAL REAR =	<u>1677</u>	lbs. (45.0% of TOTAL)
Left Rear =	<u>832</u>	lbs.			

TOTAL WEIGHT= 3722 lbs. (which includes 100 lbs. of cargo ballast weight placed in the cargo/luggage area)

VEHICLE COMPONENTS REMOVED TO MEET TARGET WEIGHT:

1. Spare Tire
2. Rear Bumper Assembly
3. Tail lamp hsg. Rt.Side Left Side
4. _____

TEST VEHICLE ATTITUDE:

As Delivered----Right Front = 28.25 inches
Left Front = 28.10 inches
Right Rear = 30.00 inches
Left Rear = 29.60 inches

Ready For Test--Right Front = 27.50 inches
Left Front = 27.90 inches
Right Rear = 27.80 inches
Left Rear = 27.60 inches

Test Vehicle Wheelbase: 108.00 inches; C.G.= 47.70 inches rearward of front wheel centerline

Total Vehicle Length:

Right Side =	<u>178.30</u>	inches
Left Side =	<u>178.30</u>	inches
Centerline =	<u>181.30</u>	inches

Data Table No. 2 Post Crash Test Data

DATA OF 35 MPH FRONTAL BARRIER IMPACT RATING TEST: 05/07/92

TIME OF TEST: 5:00 PM: AMBIENT TEMPERATURE AT BARRIER FACE: 76^o F

VEHICLE'S OCCUPANT COMPARTMENT TEMPERATURE: 74^o F

(spec. Range = 66^o to 78 F.)

VEHICLE WINDSHIELD MOLDING TEMPERATURE: 74^o F.

VEHICLE IMPACT VELOCITY: Primary Speed Trap = 35.19 mph
 Secondary Speed Trap 35.14 mph
 (Specified Range = 34.5 to 35.5 mph)

Distance from vehicle's front bumper forwardmost surface to barrier face when--

- (a) entering the speed trap = 5.0 ft
- (b) exiting the speed trap = 1.0 ft

VEHICLE STATIC CRUSH:

Vehicle Pre-test Length-Right Side =178.3"; C/Line=181.3"; Left Side=178.3"
 Vehicle Post-test Length-Right Side=161.6"; C/Line=162.0"; Left Side=161.0"
 Vehicle Static Crush --- Right Side=16.7"; C/Line=19.3"; Left Side=17.3"

VEHICLE REBOUND FROM BARRIER FACE:

Vehicle Right Side = 3.5 inches
 Vehicle Centerline = 7.0 inches
 Vehicle Left Side = 5.0 inches

VEHICLE DUMMY CONTACT POINTS:

	DRIVER (I.D. No. 758)			PASSENGER (I.D. No. 814)		
	Strg. Col. Hub	Strg. Wheel	Instru. Panel	Instru. Panel	Knee Assy.	Glove Box Door
HEAD - - - - -	YES	YES	NO	NO	NO	NO
RIGHT KNEE - -	////////	////	YES	YES	////////	YES
LEFT KNEE - -	////////	////	YES	YES	////////	YES

VEHICLE DOOR OPENING INFORMATION:

	RIGHT SIDE		LEFT SIDE	
	OPENED	JAMMED	OPENED	JAMMED
FRONT DOORS - - - - -	YES	NO	YES	YES
REAR DOORS - - - - -	N/A	N/A	N/A	N/A

Data Table No. 2 (Cont'd) Post Crash Test Data

VEHICLE'S FRONT SEAT MOVEMENT DURING CRASH EVENT:

	RIGHT SIDE	LEFT SIDE
Seat Cushion Shift - - - - -	<u>0.4</u> " forward;	<u>0.4</u> " forward
Seat Adjuster Failure- - - -	<u>None</u> ;	<u>None</u>

Details of Any Failure: None

OTHER NOTABLE IMPACT EFFECTS: None

SECTION 3

OCCUPANT AND VEHICLE INFORMATION

I. OMI DATA

Dummy Injury Criteria Data Summary
Dummy Positioning Data
Seat Belt Positioning Data
Seat Belt Performance Assessment Data
Driver Dummy to Steering Column Dimensions
Camera Locations

II. OVR DATA

Load Cell Barrier Data
Vehicle Accelerometer Data

Data Table No. 3 FMVSS No. 208 Occupant Crash Protection Data Sheet

VEH. YR./MAKE/MODEL/BODY STYLE: 1992 FORD RANGER PICKUP

VEH. NHTSA NO.: MN0205

TEST DATE: 05/07/92

MAXIMUM ACCELERATION VALUES:

	DRIVER DUMMY # 758	PASSENGER DUMMY # 814
Head Channel X HEAD X	-94.174	-22.790
Head Channel Y Y	-27.048	-19.534
Head Channel Z Z	86.328	49.324
HEAD RESULTANT R	120.860	50.414
Chest Channel X CHEST X	-48.702	-35.921
Chest Channel Y Y	-41.126	-15.544
Chest Channel Z Z	15.706	22.247
CHEST RESULTANT (3 msec clip) R	48.00	37.00
TIME INTERVAL (seconds)	.0527 - .0557	0.0602 - .0632

HEAD INJURY CRITERIA (HIC) VALUES:

HIC	HIC	
	1,009.00	415.00
t_1 (seconds)	0.0581	0.0507
t_2 (seconds)	0.0840	0.0867
Avg. Accel. t_1 to t_2	68.50	42.10

MAXIMUM FEMUR FORCES:

Right Side (lbs.) FR	-1874.70	- 305.54
Left Side (lbs.) FL	-1250.80	-435.52

MAXIMUM SEAT BELT FORCES:

Lap Belt LAP	1658.60	1803.20
Shoulder Belt SHLDR	1851.80	1831.70

MAXIMUM SEAT BELT WEBBING SPOOL-OUT:

Lap/Shoulder Belt Combination	1.90 in.	5.80 in.*
-------------------------------	----------	-----------

* THE STRING WAS CAUGHT IN THE JACK WHICH IS BEHIND THE RF PASSENGER SEAT.

Data Table No. 4 Test Dummy Positioning Data

PRE-IMPACT DATA:

Make/Model: FORD RANGER
 Body Style: PICKUP Model Year: 1992
 NHTSA No.: MN0205 Color: BLUE

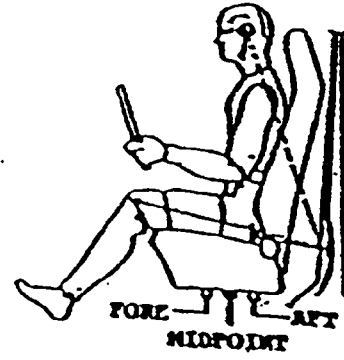
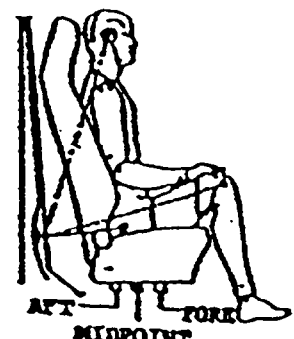
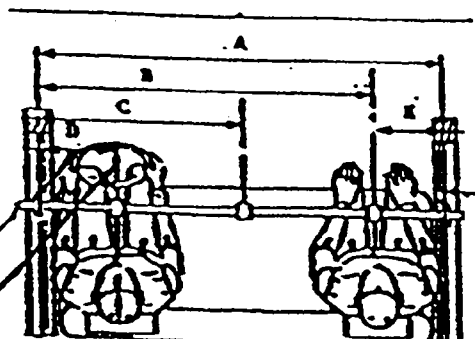
DATA FROM CERTIFICATION LABEL:

Vehicle Manufacturer: FORD
 Date of Manufacture: 02/92 ; VIN: 1FTCR10UONUC26678
 GVWR: 4100 lb; GAWR: Front = 2060 lb; Rear = 2384 lb

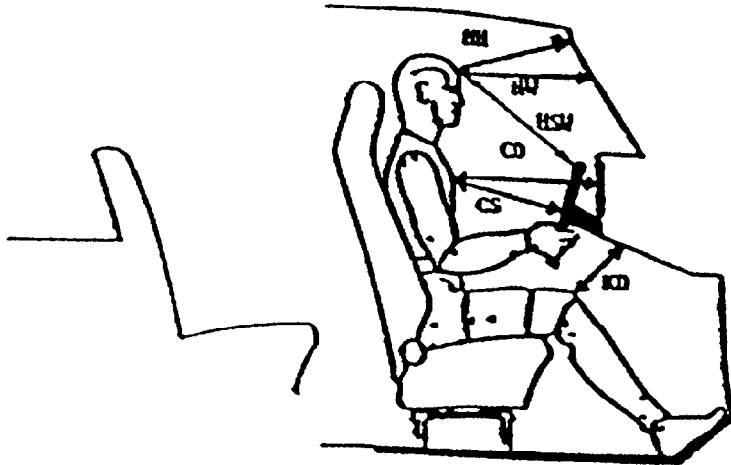
POST-IMPACT DATA:

Date of Test: 05/07/92 Time: 5:00 PM Temperature: 76 °F
 Required Impact Velocity Range: 34.5 to 35.5 mph
 Impact Velocity: Primary = 35.19 mph Secondary = 35.14 mph
 Seat Type: Split Bench Adjuster Type: Lever
 Bucket Seat Back Type: N/A

TECHNICIANS: Mr. Levi Navarro

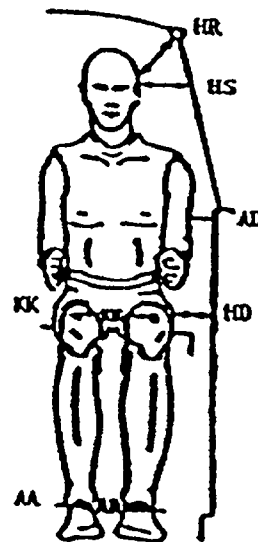
<p>DRIVER DUMMY # <u>7 5 8 </u></p> <p>HEAD <u>22.50"</u> TARGET <u>79.00°</u></p> <p>KNEE <u>24.60"</u> JOINT <u>- 4.00°</u></p> <p>APPROX- <u>10.25"</u> IMATE <u>-29.00°</u> "H" POINT</p>	<p>PASSENGER DUMMY # <u>8 1 4 </u></p> <p><u>22.50"</u> HEAD <u>76.00°</u> TARGET</p> <p><u>24.75"</u> KNEE <u>- 3.00°</u> JOINT</p> <p><u>10.40"</u> APPROX- <u>-32.00°</u> IMATE "H" POINT</p>
 <p>FORE MIDPOINT AFT</p>	 <p>AFT MIDPOINT FORE</p>
<p>A = <u>57.60</u> "</p> <p>B = <u>43.40</u> "</p> <p>C = <u>28.80</u> "</p> <p>D = <u>14.60</u> "</p> <p>E = <u>14.20</u> "</p>	<p>LEFT FRONT DOOR</p> <p>RIGHT FRONT DOOR</p>
<p>LATERAL BAR</p> <p>ADJUSTABLE POINTER</p>	<p>DOOR GLASS HEIGHT</p>
	
<p>DRIVER DUMMY # <u>7 5 8 </u></p>	<p>PASSENGER DUMMY # <u>8 1 4 </u></p>

Data Table No. 4 (Cont'd) Test Dummy Positioning Data

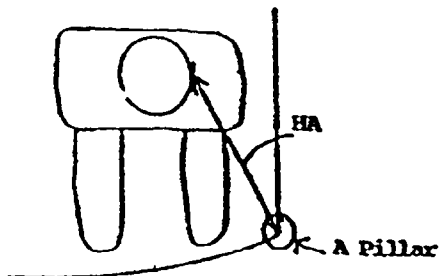


	Driver	Passenger
HH	16.00	16.00
HW	19.90	19.60
CD	21.50	21.75
CS	12.25	N/A
KD	L- 6.00	L- 7.50
KD	R- 7.50	R- 7.75
Torso Angle	12.00	Torso Angle 12.00
Seat Back Angle	16.00	Seat Back Angle 16.00
HSW	17.75	N/A

HSW = Head to Steering Wheel (in.)
 HA = Head Target to A Pillar (in.)
 HH = Head to Windshield Header (in.)
 HW = Head to Windshield (in.)
 CD = Chest to Dash (in.)
 CS = Chest to Steering Wheel (in.)
 HR = Head to Side Roof
 HS = Head to Side Window (in.)
 AD = Arm to Door (in.)
 HD = Hip to Door (in.)
 KK = Knee to Knee (in.)
 Torso and seat back angles
 are relative to vertical. (deg.)

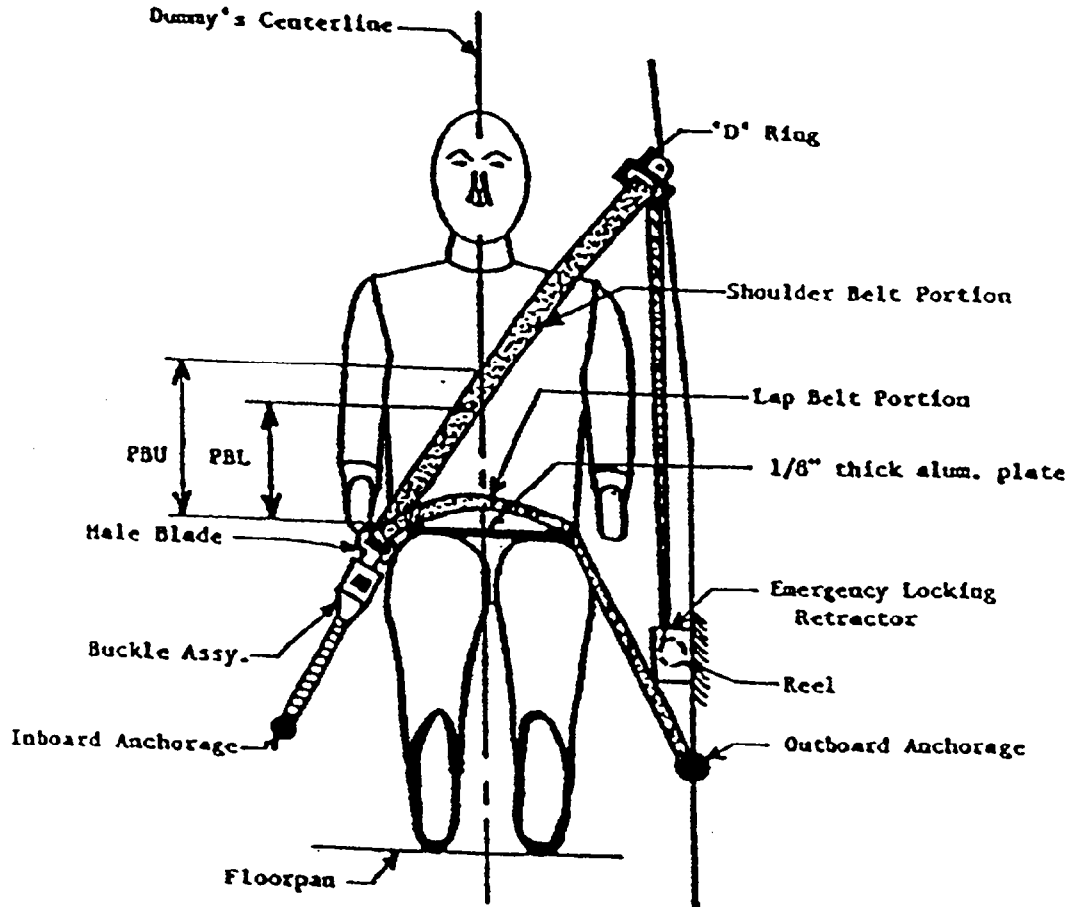


REMARKS



	Driver	Passenger
HR	7.60	7.50
HS	9.50	9.25
AD	2.75	2.75
HD	5.00	4.50
KK	13.75	12.25
AA	12.50	10.00
HA	17.50	18.00

Data Table No. 5 Seat Belt Positioning Data



FRONT VIEW OF DRIVER DUMMY

	DRIVER DUMMY (inches)	PASSENGER DUMMY (inches)
<u>PBU</u> -- Top surface of alum. plate to belt upper edge	11.25	12.00
<u>PBL</u> -- Top surface of alum. plate to belt lower edge	8.25	8.60
<u>LAP BELT TENSION, POUNDS</u>	3.00	2.50
<u>SHOULDER BELT TENSION, POUNDS</u>	3.00	2.50

Data Table 6 Seat Belt Performance Assessment Test Data

BELT LENGTH DATA:

Total belt length from retractor reel to bolt hole anchor point for continuous webbing systems _____

Retractor reel to 'D' ring as measured on Part 572 _____

Shoulder belt length as measured on Part 572 dummy _____

Lap belt length as measured on Part 572 dummy _____

Remainder of belt webbing left on retractor reel _____

	DRIVER SIDE		PASSENGER SIDE	
	PRE-TEST	POST-TEST	PRE-TEST	POST-TEST
Total belt length from retractor reel to bolt hole anchor point for continuous webbing systems _____	77.50	78.50	80.00	81.00
Retractor reel to 'D' ring as measured on Part 572 _____	16.00	16.00	16.00	16.00
Shoulder belt length as measured on Part 572 dummy _____	32.00	32.50	33.00	33.50
Lap belt length as measured on Part 572 dummy _____	29.50	29.50	31.00	31.50
Remainder of belt webbing left on retractor reel _____	22.00	21.00	19.00	18.00

BELT SPOOL-OFF DATA:

As determined by film analysis _____

As determined electronically _____

As determined mechanically _____

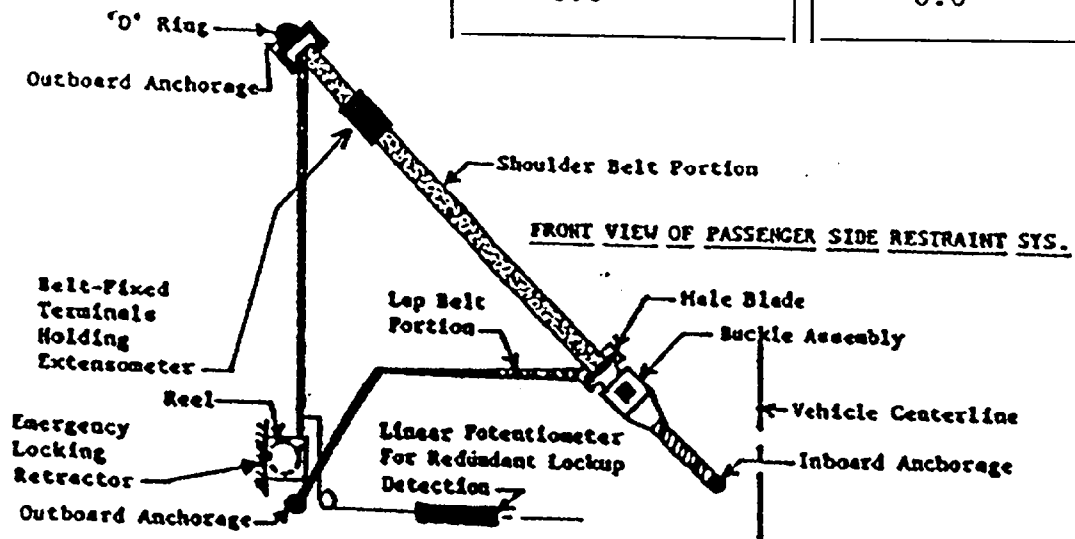
As determined by film analysis _____	1.80 in.	3.50 in.
As determined electronically _____	1.90 in	5.80 in
As determined mechanically _____	1.25 in	1.50 in

BELT STRAIN DATA:

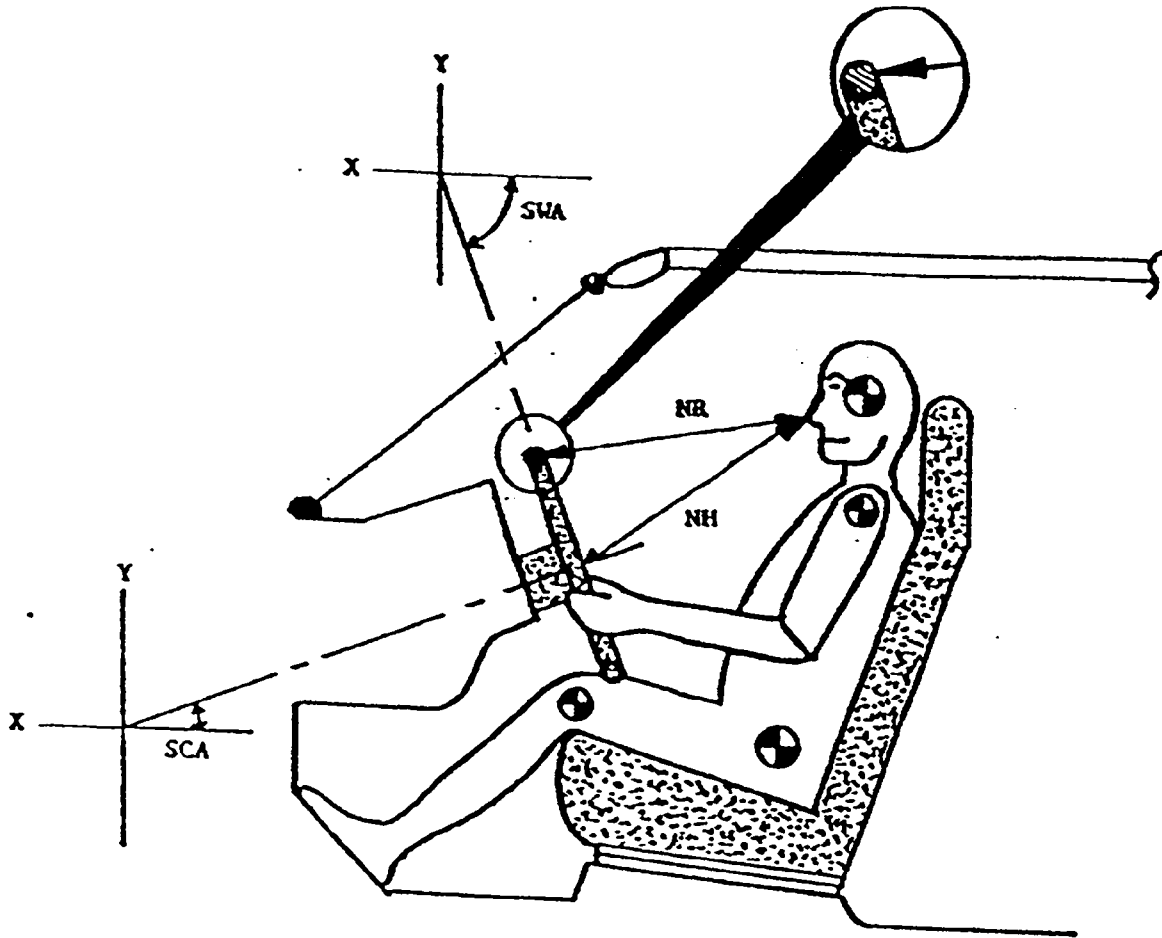
Measured between male blade and 'D' ring, electronic _____

mechanical _____

Measured between male blade and 'D' ring, electronic _____	4.4 Percent	3.2 Percent
mechanical _____	0.0	0.0



Data Table No. 7 Driver Dummy to Steering Wheel Positioning



LEFT SIDE VIEW

MEASUREMENTS	
<u>NR</u> --Distance from tip of dummy's nose to Top Rear surface of steering wheel rim.	15.50 Inches
<u>NH</u> --Distance from tip of dummy's nose to center of steering column hub.	16.25 Inches
<u>SCA</u> --Angle of steering column relative to the horizontal X axis.	32.00 Degrees
<u>SWA</u> --Angle of steering wheel relative to the horizontal X axis.	63.00 Degrees

Data Table 8 Camera Location Data

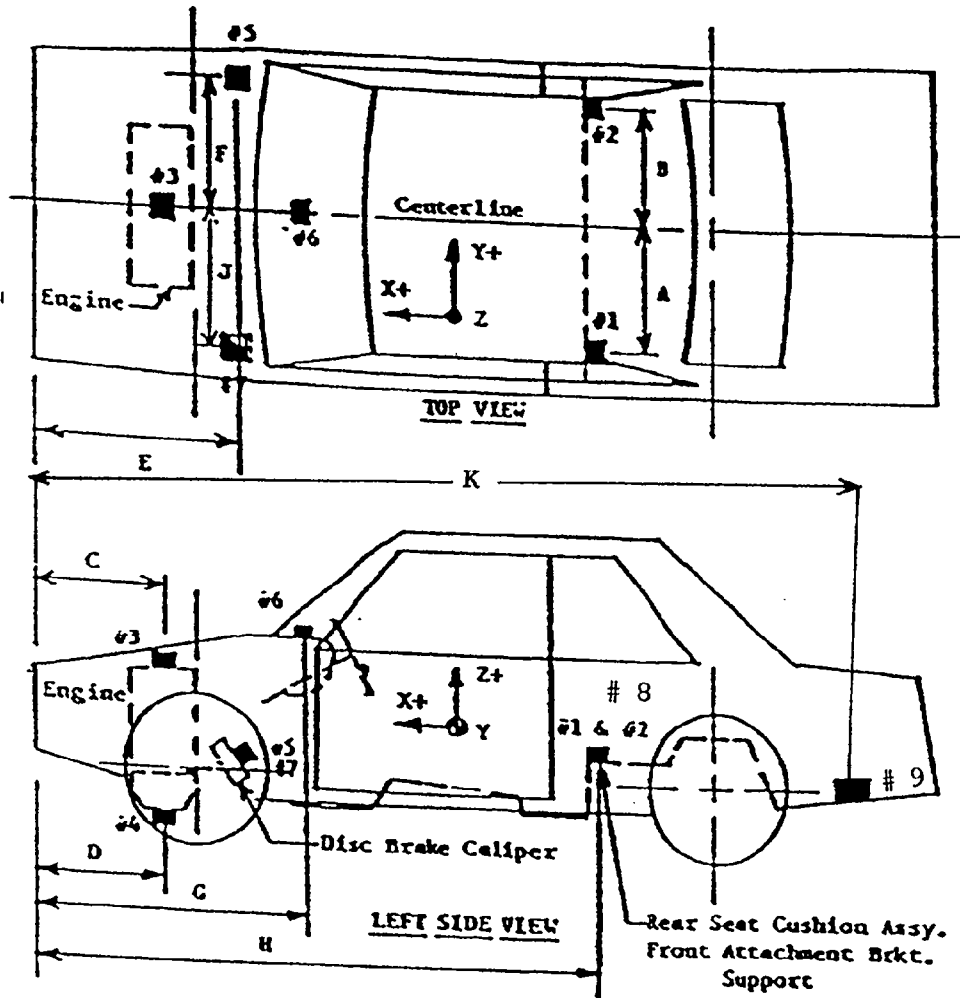
VEH. NHTSA NO.: MN0205; TEST DATE: 05/07/92; TIME: 5.00 PM

VEH. YEAR/MAKE/MODEL/BODY STYLE: 1992/FORD RAMGER/ PICKUP

CAMERA NO.	VIEW	CAMERA POS. (in.)			ANGLE (deg)	FILM PLANE TO HEAD TARGET	LENS (mm)	SPEED (fps)
		X	Y	Z				
1	Left Side View	231	565	134	-20	572	15-70 ZOOM	24
2	Right Side View	33	298	50	- 7	286	13	600
3	Left Side View	48	397	68	- 8	382	25	350
4	Overhead	-23	0	159	-62	152	13	600
5	Pit-Engine	25	0	-72	+90	143	13	600
6	Pit-Fuel Tank	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.
7	Front-Passenger	23	14	95	-44	75	16	600
8	Front-Driver	23	14	95	-38	75	16	600
9	Left Side-Driver	86	102	80	-17	88	16	600
10	Right Side-Passenger	96	112	78	-16	98	16	600
11	Right Side-'A' Post	12	217	46	+ 3	214	28	600
12	Left Side-'A' Post	25	439	5	- 7	430	50	360
13	Onboard-Left Side	109	11	50	+12	24	13	700
14	Onboard-Right Side	109	11	50	+12	24	13	700
15	Left Side-Steering Col.	56	397	132	-13	389	28	600
16	Left Side-Steering Col.	56	397	122	-14	387	28	550
17	Right Side Passenger	70	139	60	- 8	123	16	500

* X = film plane to monorail centerline
 Y = film plane to barrier face
 Z = film plane to ground

Data Table No. 9 Vehicle Accelerometer Location and Data Summary



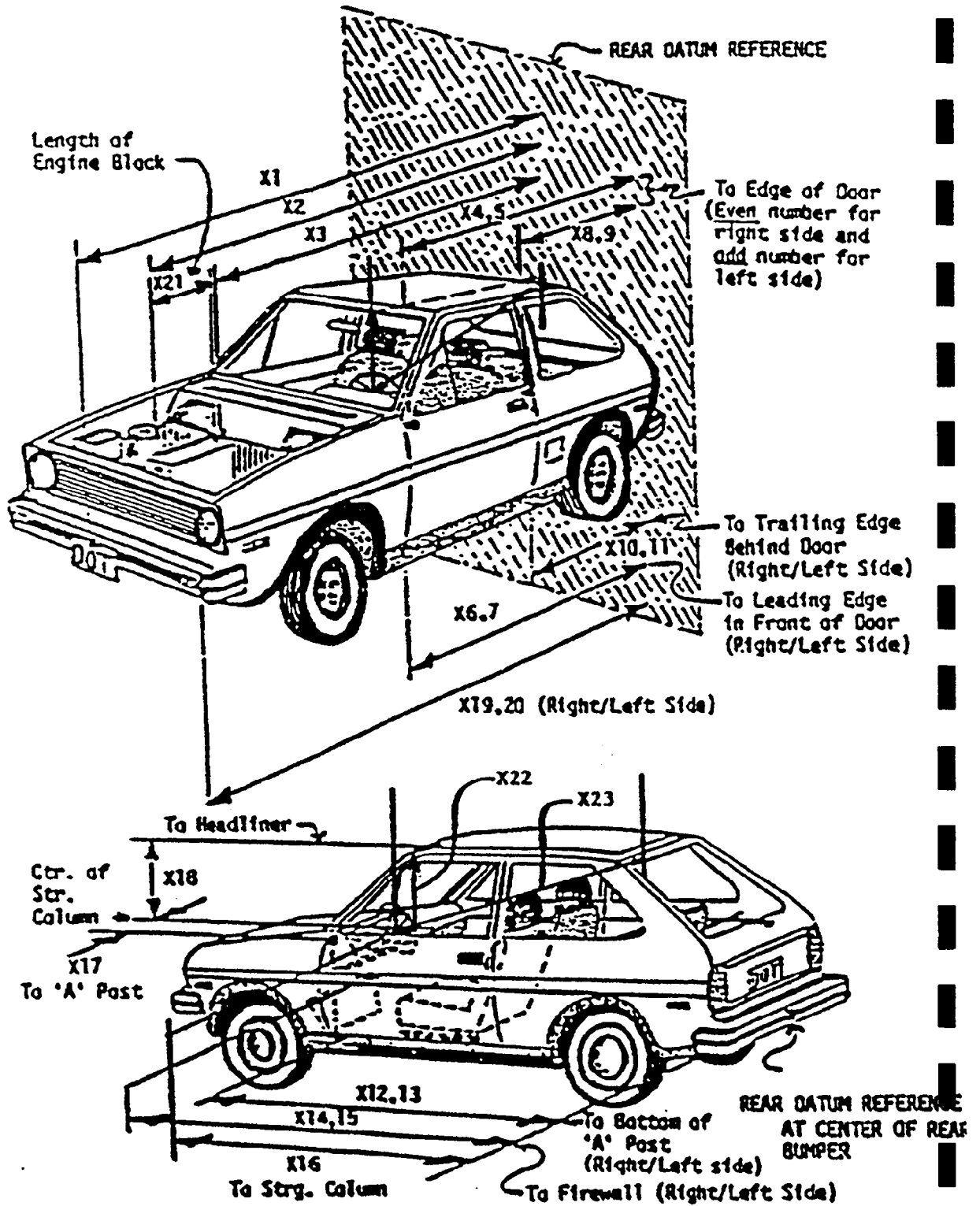
Dimension	Length (in.)
A	22
B	22
C	30
D	37
E	36
F	21
G	61
H	119
J	21
K	168

Loc. No.	Description	Maximum Value			
		X-	msec.	X+	msec.
1	Rear seat X-member @ Left Side	-29.8	10.7	2.3	197.0
2	Rear seat X-member @ Right Side	31.4	7.2	1.6	8.6
3	Top of Engine Block	116.8	31.3	31.4	45.0
4	Bottom of Engine Block	79.3	31.1	40.9	56.9
5	Disc Brake Caliper Right Side	68.8	32.3	30.4	70.6
6	Instrument Panel	51.7	10.0	11.6	55.9
7	Disc Brake Caliper @Left Side	112.3	14.9	86.9	56.2
Loc. No.		Z-	msec	Z+	msec
8	Center Rear X Member	24.8	22.3	31.5	38.2
9	Vehicle Rear	39.9	10.9	25.2	8.0

Data Table No. 10 Test Vehicle Measurements

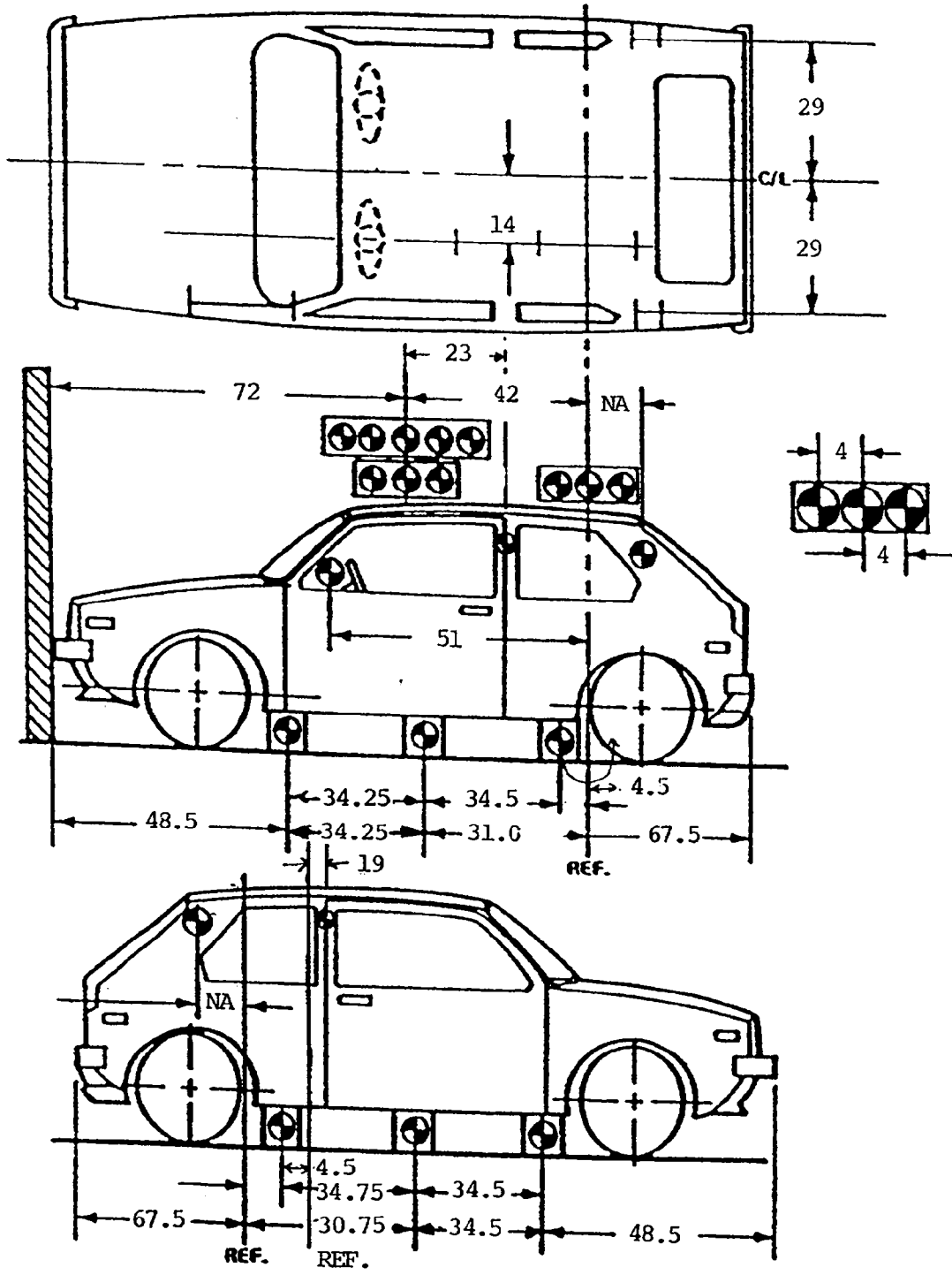
NO.	MEASUREMENT DESCRIPTION	Pre-Test (in.)	Post-Test (in.)	Diff. (in.)
X1	Total Length of Test Vehicle at Centerline	181.3	162.0	19.3
X2	Rear Surface of Vehicle to Front of Engine	157.3	150.5	6.8
X3	Rear Surface of Vehicle to Firewall	138.3	132.0	6.3
X4	Rear Surface to Upr. Leading Edge of Right Door	109.5	107.5	2.0
X5	Rear Surface to Upr. Leading Edge of Left Door	109.5	109.0	0.5
X6	Rear Surface to Lwr. Leading Edge of Right Door	127.0	126.0	1.0
X7	Rear Surface to Lwr. Leading Edge of Left Door	127.0	126.2	0.8
X8	Rear Surface to Upr. Trailing Edge of Right Door	87.8	84.5	3.3
X9	Rear Surface to Upr. Trailing Edge of Left Door	87.8	86.0	1.8
X10	Rear Surface to Lwr. Trailing Edge of Right Door	85.0	84.0	1.0
X11	Rear Surface to Lwr. Trailing Edge of Left Door	85.0	85.0	0.0
X12	Rear Surface to Bottom 'A' Post on Right Side	127.0	124.0	3.0
X13	Rear Surface to Bottom 'A' Post on Left Side	127.0	127.0	0.0
X14	Rear Surface to Firewall on Right Side	139.5	134.5	5.0
X15	Rear Surface to Firewall on Left Side	138.5	138.0	0.5
X16	Rear Surface to Steering Column	110.5	111.0	-0.5
X17	Center of Steering Column to 'A' Post	13.0	13.0	0.0
X18	Center Steering Column to Headlining	19.0	18.5	0.5
X19	Rear Surface to Right Side of Front Bumper	178.3	161.6	16.7
X20	Rear Surface to Left Side of Front Bumper	178.3	161.0	17.3
X21	Length of Engine Block	18.5	18.5	0.0

Data Table No. 10 (Cont'd) Test Vehicle Measurements



DATA TABLE 11

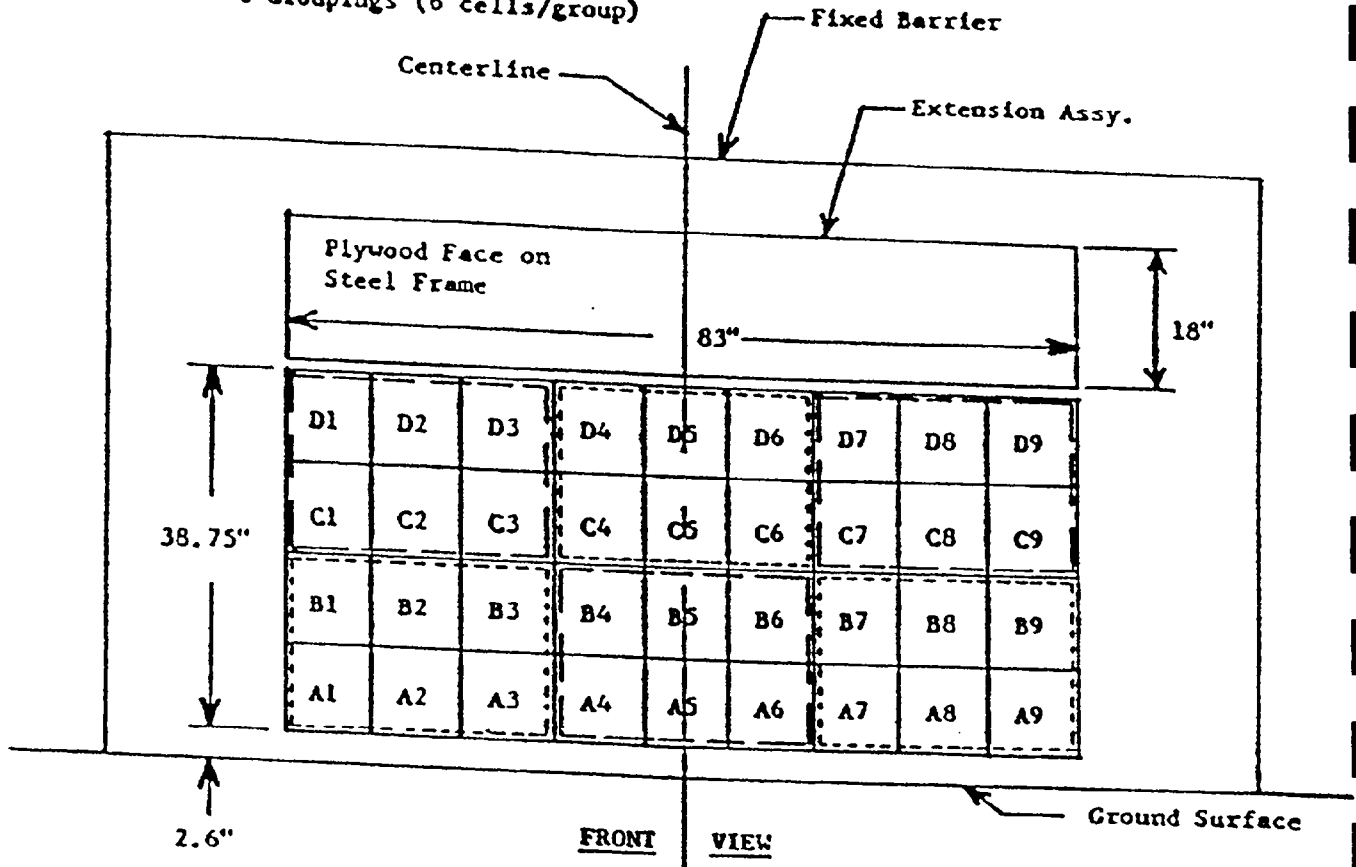
VEHICLE TARGET LOCATIONS



(DIMENSIONS IN INCHES)

Data Table No. 12 Load Cell Locations on Fixed Barrier

- 36 Load Cells
- 4 Rows
- 9 Columns
- 6 Groupings (6 cells/group)



6 GROUPINGS OF 6 LOAD CELLS EACH

C1 thru D3	C4 thru D6	C7 thru D9
A1 thru B3	A4 thru B6	A7 thru B9

- DATA REQUIREMENTS:**
- (1) Data from 36 individual load cells
 - (2) Total or Sum of 36 individual load cells
 - (3) Data from 6 Groupings shown above (6 cells/group)

DATA TABLE 13

ACCIDENT INVESTIGATION DIVISION DATA FOR 35 MPH FRONTAL BARRIER IMPACT

VEHICLE MAKE/MODEL/BODY/STYLE: 1992 FORD RANGER PICKUP

VEH. NHTSA NO.: MN0205; VIN: 1FTCR10U0N0C26678

MODEL YEAR: 1992; BUILD DATE: 02/92; TEST DATE: 05/07/92

VEH. SIZE CATEGORY: PICKUP; TEST WEIGHT: 3722

VEH. WHEELBASE: 108 IN.; FRONT OVERHANG: 29.3 in.; OVERALL WIDTH: 67.0 in.

ACCELEROMETER DATA:

LOCATION: LEFT AND RIGHT SIDE PASSENGER COMPARTMENT

CALIBRATION PROCEDURE: 6 MO.S/DROP TEST

LINEARITY: GOOD; INTEGRATION ALGORITHM: NHTSA STANDARD

VEH. IMPACT SPEED: 35.19 MPH; TIME OF SEPARATION: 100 msec

VELOCITY CHANGE: 38.28 mph (Left), 39.02 mph (Right)

COLLISION DEFORMATION CLASSIFICATION (CDC) CODE: _____

F (FRONTAL)

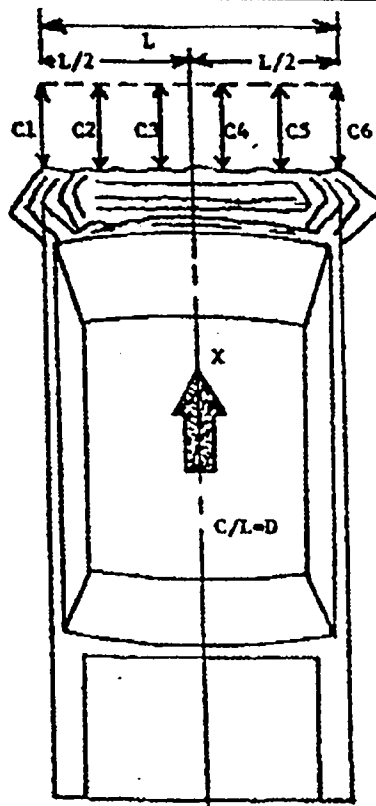
- CRUSH DEPTH DIMENSIONS:
- C1 = 15.50 INCHES
 - C2 = 18.00 INCHES
 - C3 = 19.10 INCHES
 - C4 = 19.25 INCHES
 - C5 = 17.90 INCHES
 - C6 = 14.10 INCHES

MIDPOINT OF DAMAGE:

D = VEHICLE CENTERLINE (LONGITUD.)

LENGTH OF DAMAGED REGION:

L = 61.75 INCHES

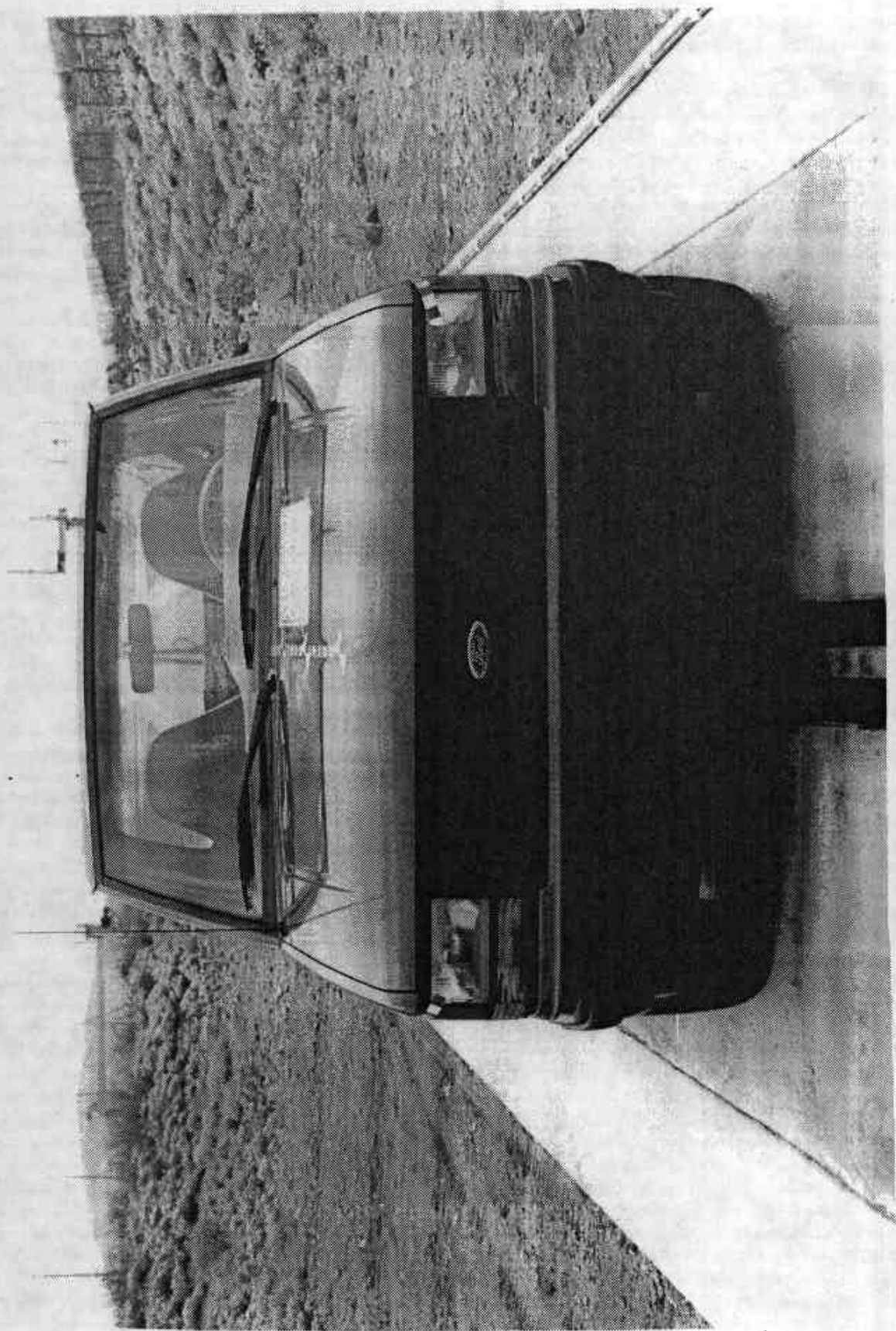


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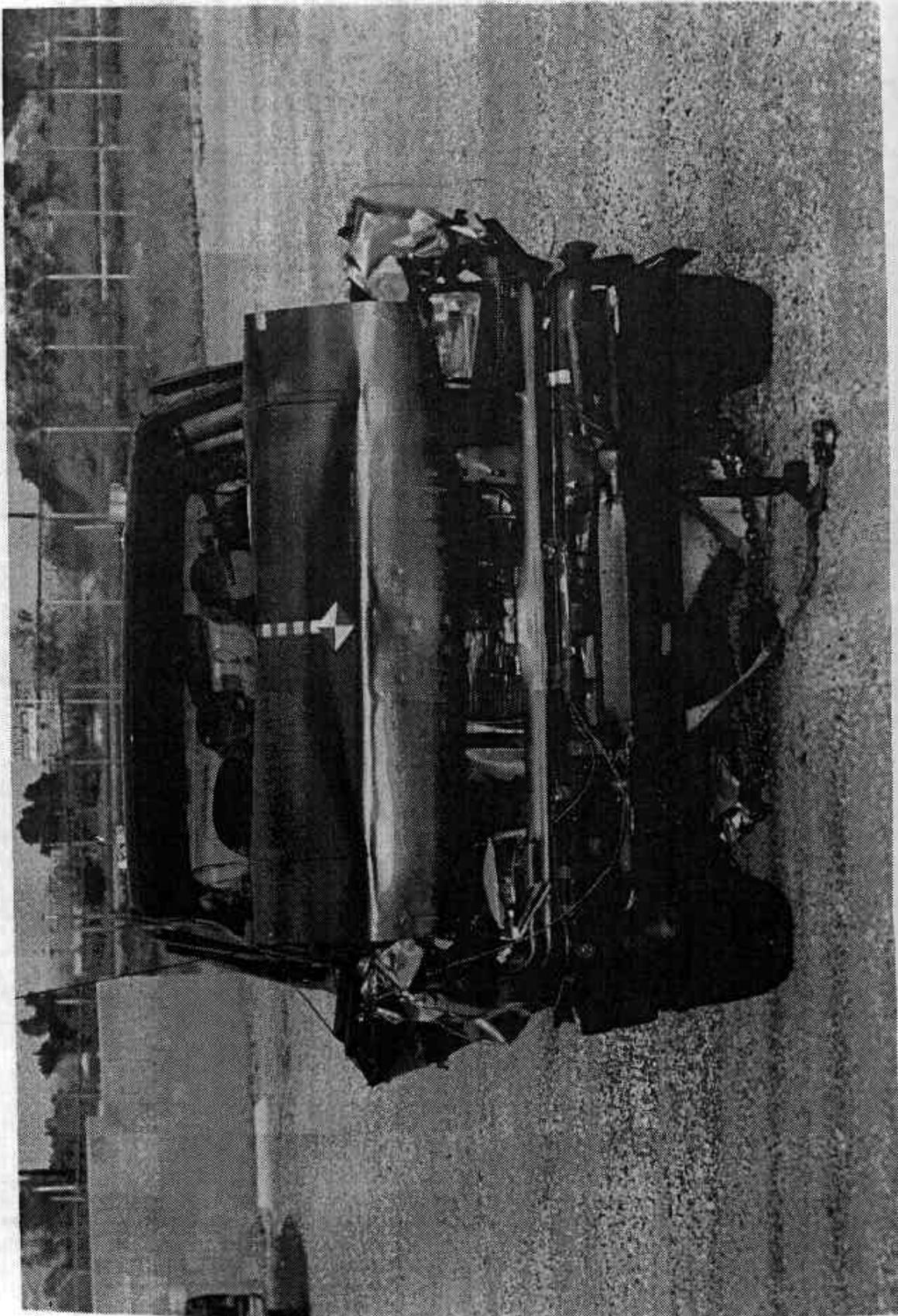
APPENDIX A
PHOTOGRAPHS

PRETEST FRONT VIEW
POSTTEST FRONT VIEW
PRETEST LEFT SIDE VIEW
POSTTEST LEFT SIDE VIEW
PRETEST RIGHT SIDE VIEW
POSTTEST RIGHT SIDE VIEW
PRETEST RIGHT FRONT 3/4 VIEW
POSTTEST RIGHT FRONT 3/4 VIEW
PRETEST LEFT REAR 3/4 VIEW
POSTTEST LEFT REAR 3/4 VIEW
PRETEST WINDSHIELD VIEW
POSTTEST WINDSHIELD VIEW
PRETEST ENGINE COMPARTMENT VIEW
POSTTEST ENGINE COMPARTMENT VIEW
PRETEST FRONT UNDERBODY VIEW
POSTTEST FRONT UNDERBODY VIEW
PRETEST REAR UNDERBODY VIEW
POSTTEST REAR UNDERBODY VIEW
PRETEST DRIVER DUMMY POSITION VIEW
POSTTEST DRIVER DUMMY POSITION VIEW
PRETEST PASSENGER DUMMY POSITION VIEW
POSTTEST PASSENGER DUMMY POSITION VIEW
PRETEST DRIVER DUMMY & VEHICLE INTERIOR VIEW (Door Open)
POSTTEST DRIVER DUMMY & VEHICLE INTERIOR VIEW (Door Open)
PRETEST PASSENGER DUMMY & VEHICLE INTERIOR VIEW (Door Open)
POSTTEST PASSENGER DUMMY & VEHICLE INTERIOR VIEW (Door Open)
POSTTEST DRIVER DUMMY (ATD) HEAD AND KNEE CONTACT AREA
POSTTEST PASSENGER DUMMY (ATD) KNEE CONTACT AREA

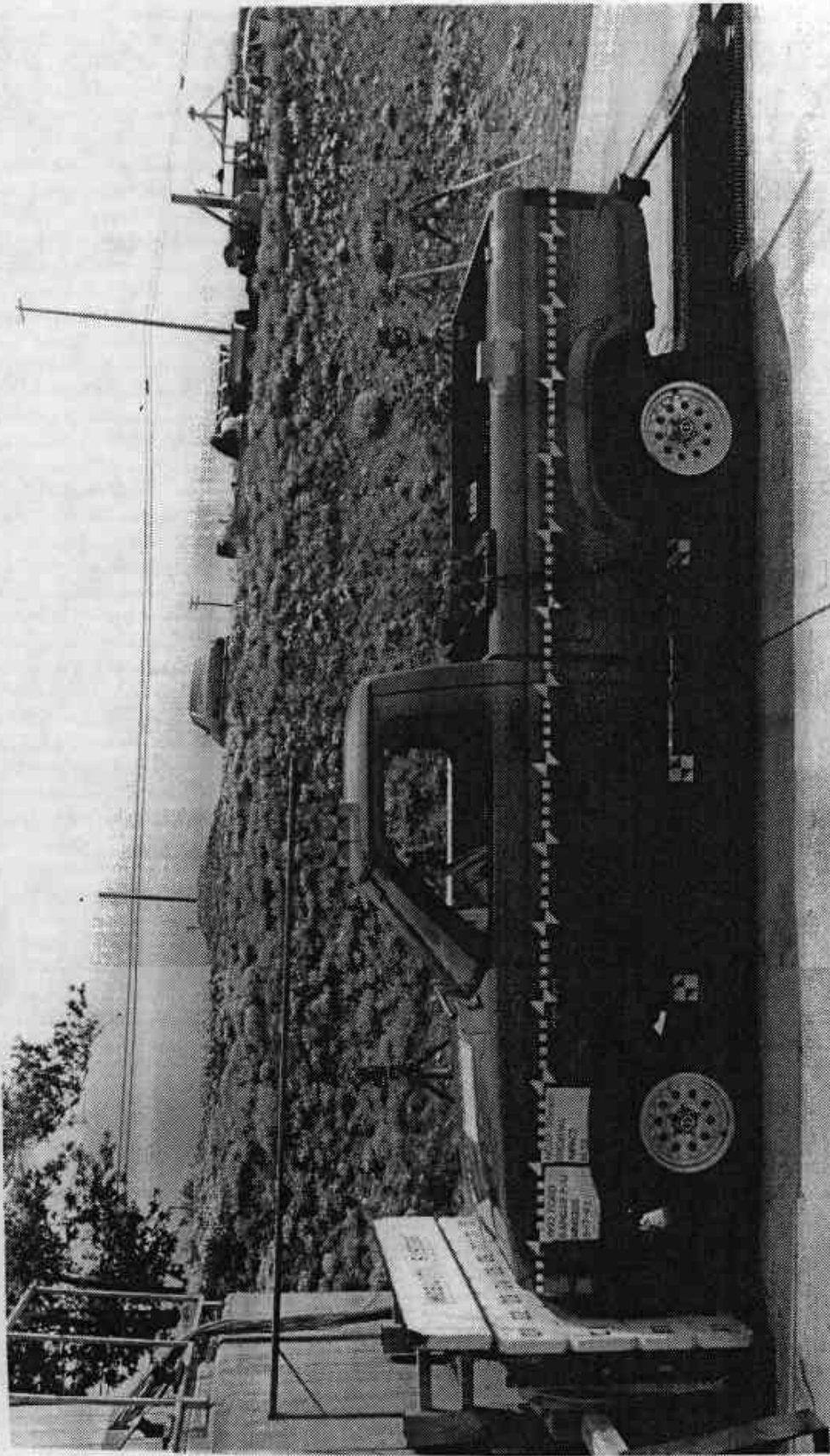
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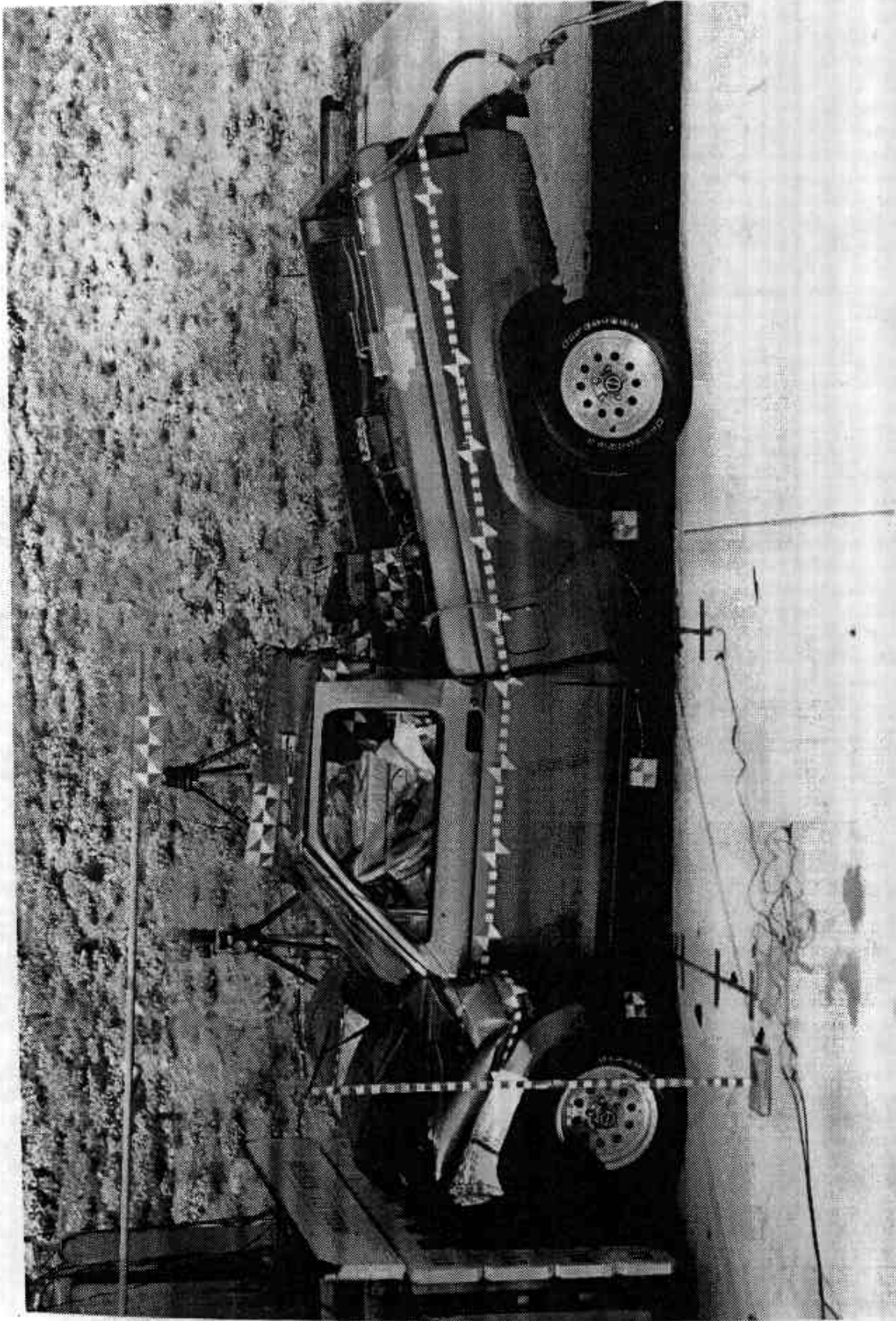
PRETEST FRONT VIEW



POSTTEST FRONT VIEW



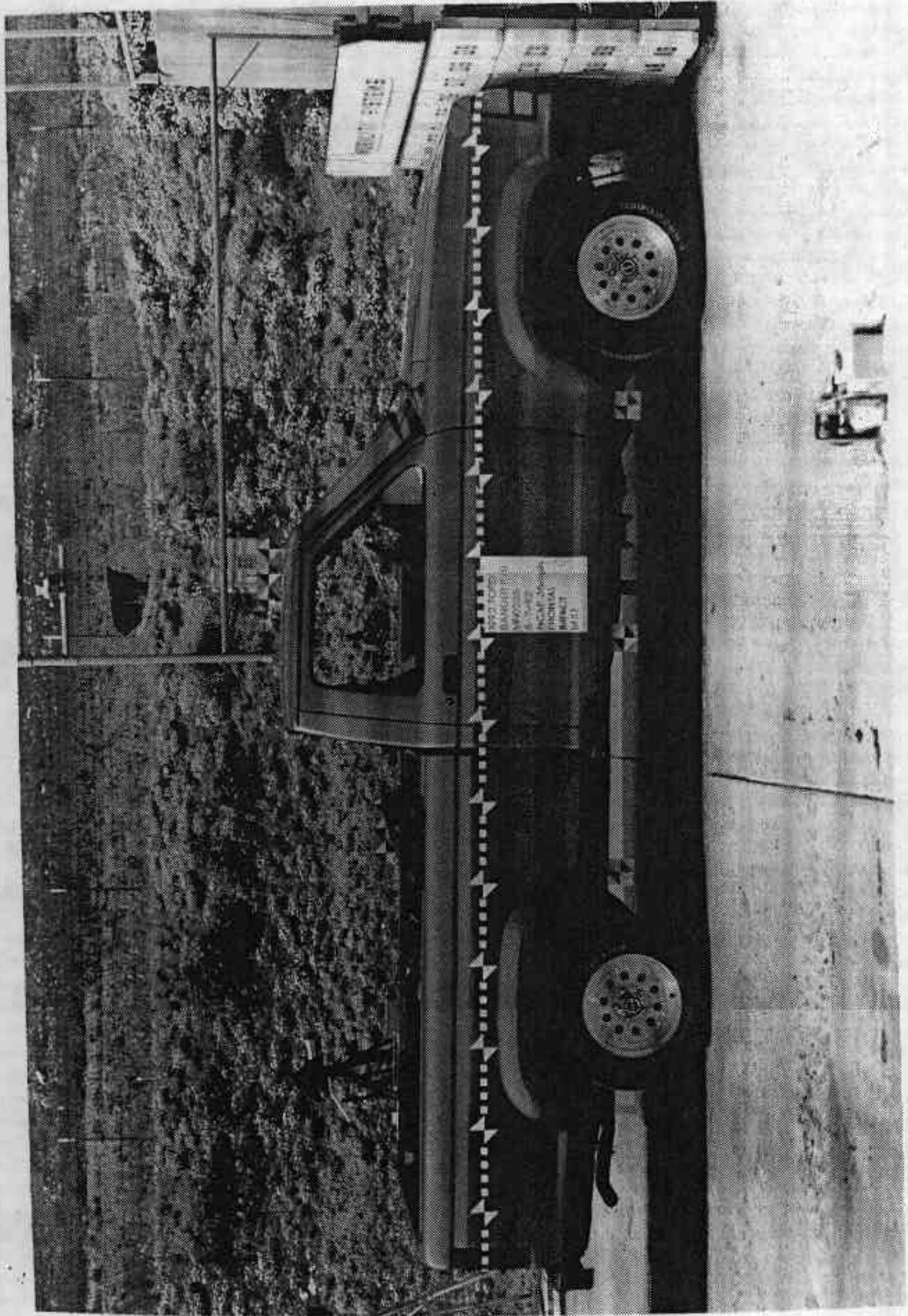
PRETEST LEFT SIDE VIEW



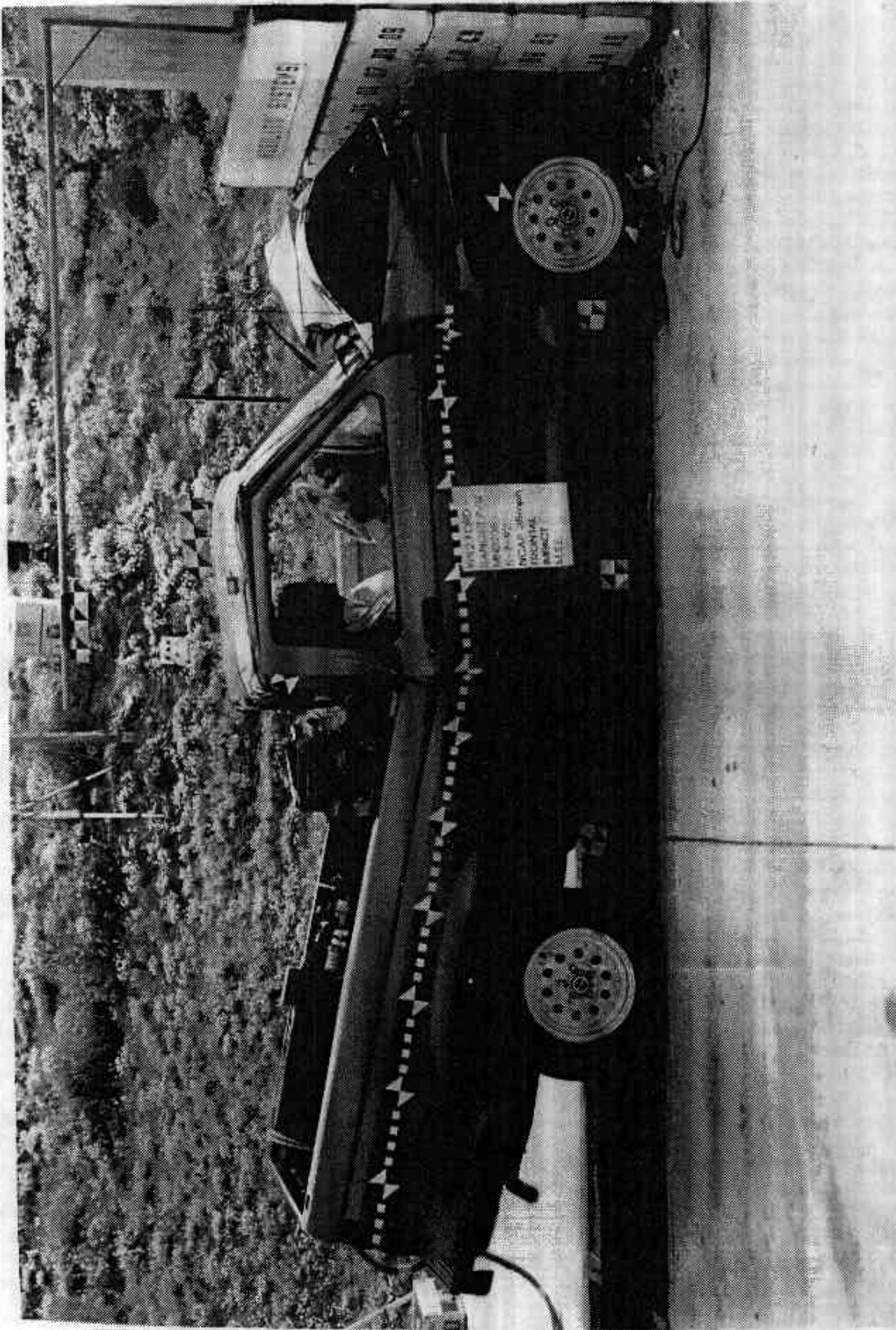
POSTTEST LEFT SIDE VIEW

A-4

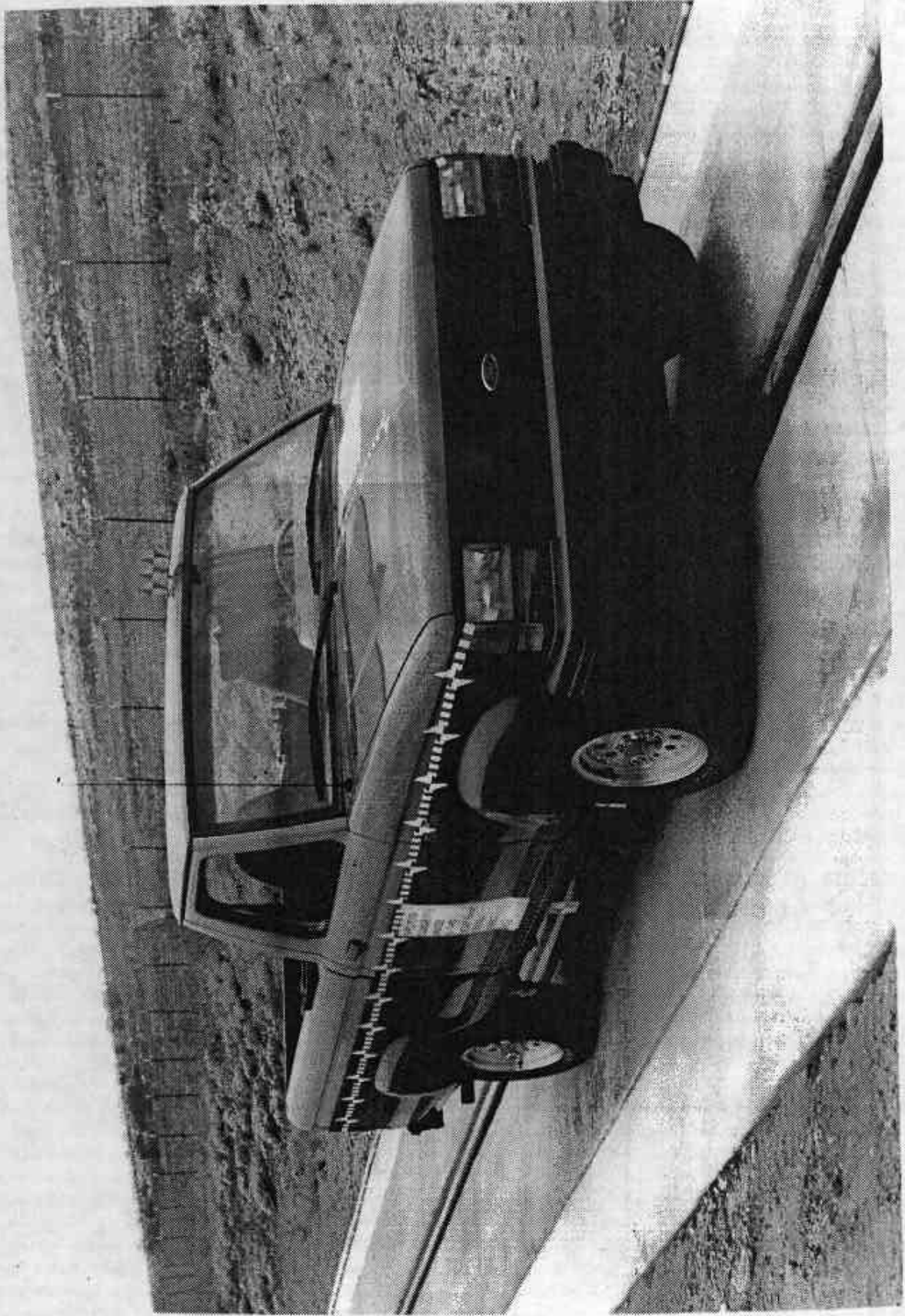
MSE-92-R92027-N01



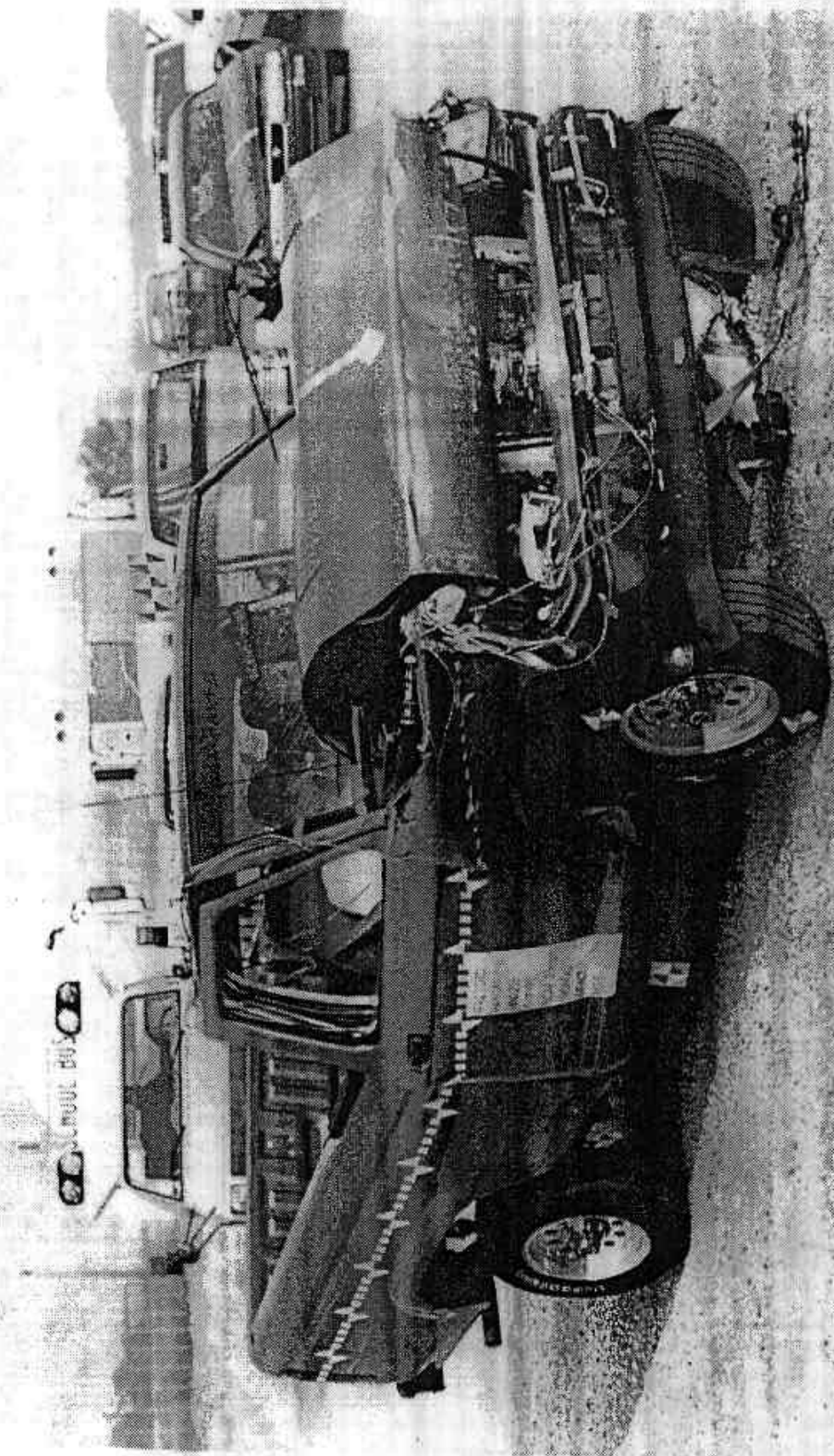
PRETEST RIGHT SIDE VIEW



POSTTEST RIGHT SIDE VIEW



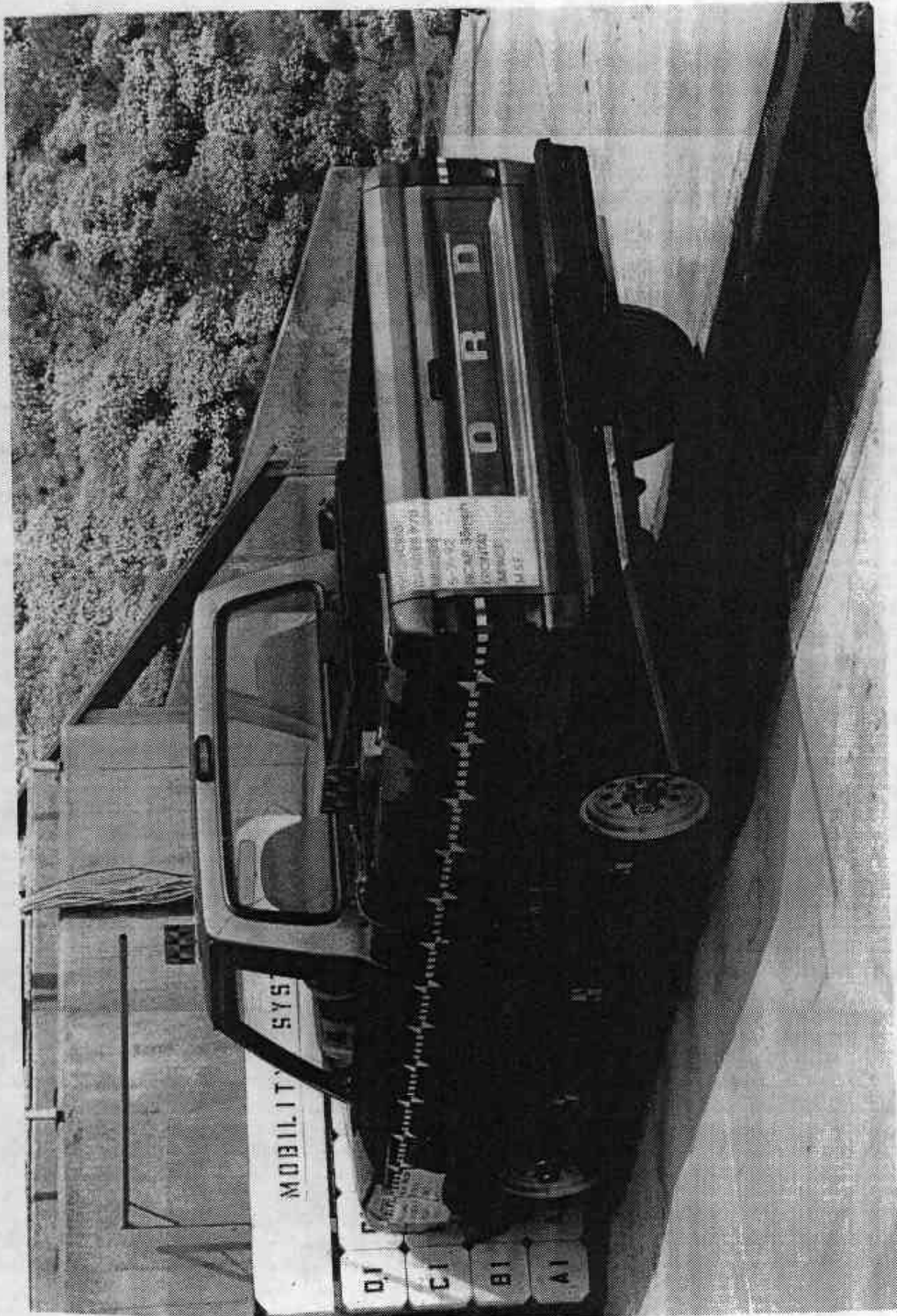
PRETEST RIGHT FRONT 3/4 VIEW



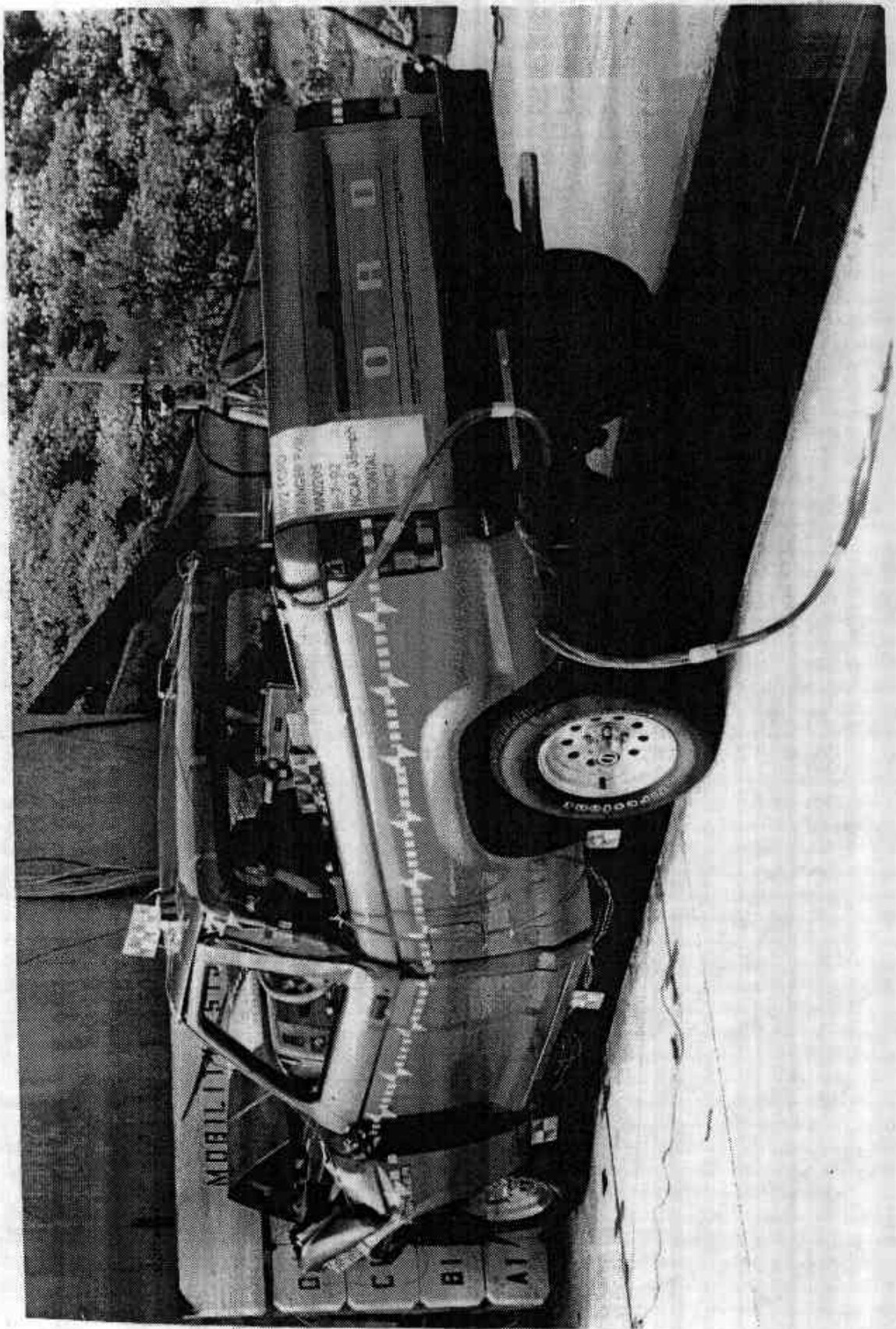
POSTTEST RIGHT FRONT 3/4 VIEW

A-8

MSE-92-R92027-N01



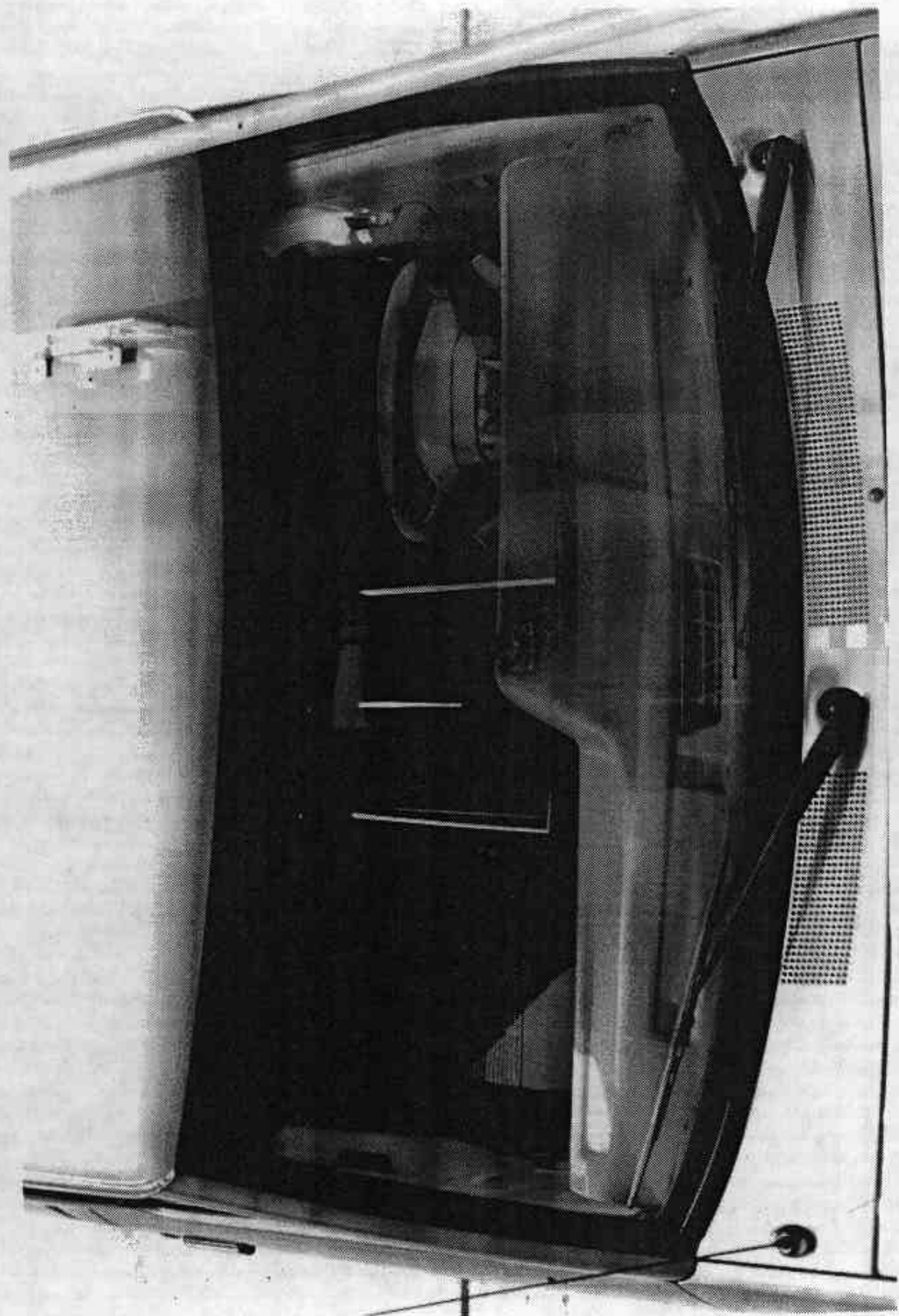
PRETEST LEFT REAR 3/4 VIEW



POSTTEST LEFT REAR 3/4 VIEW

A-10

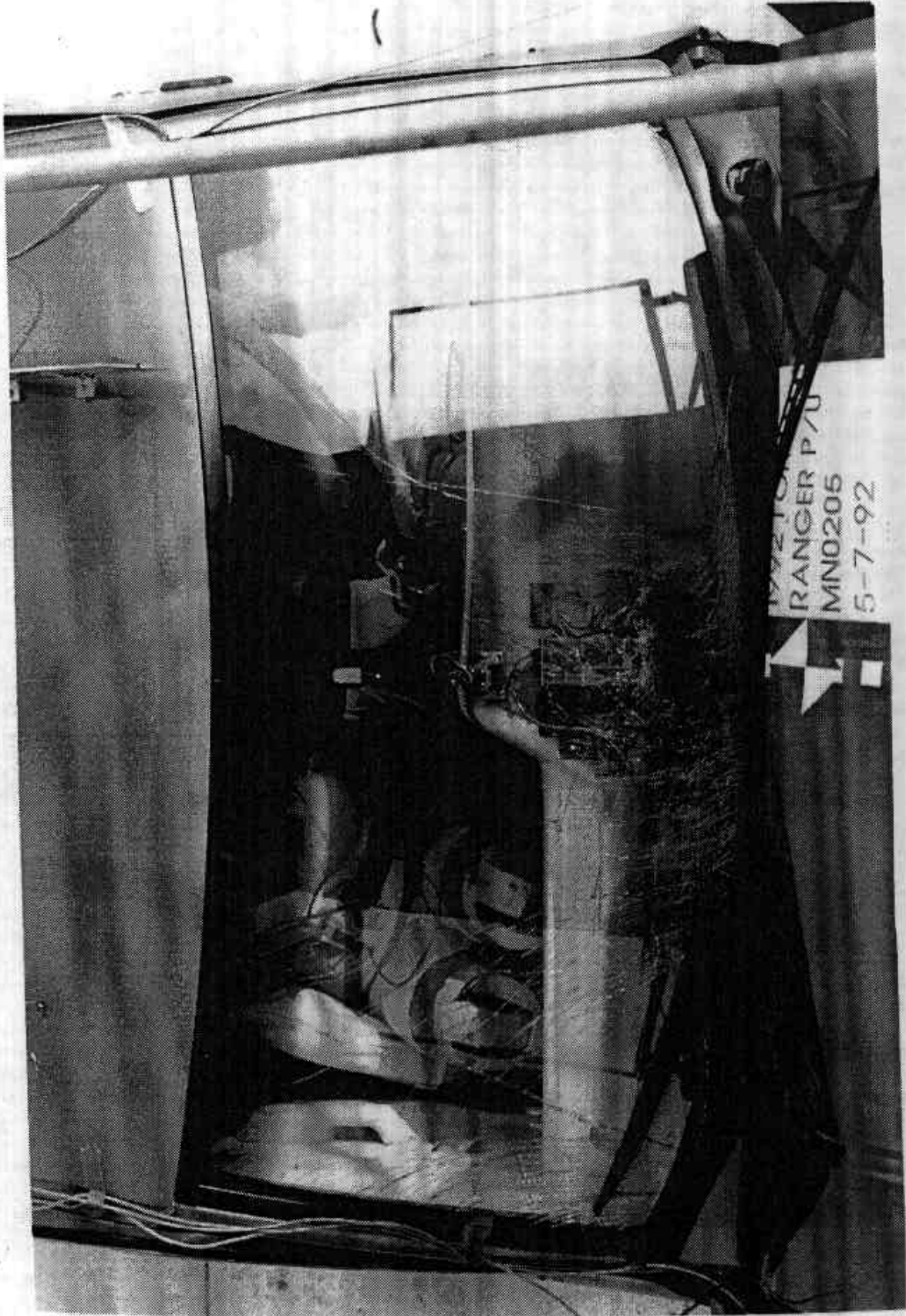
MSE-92-R92027-N01



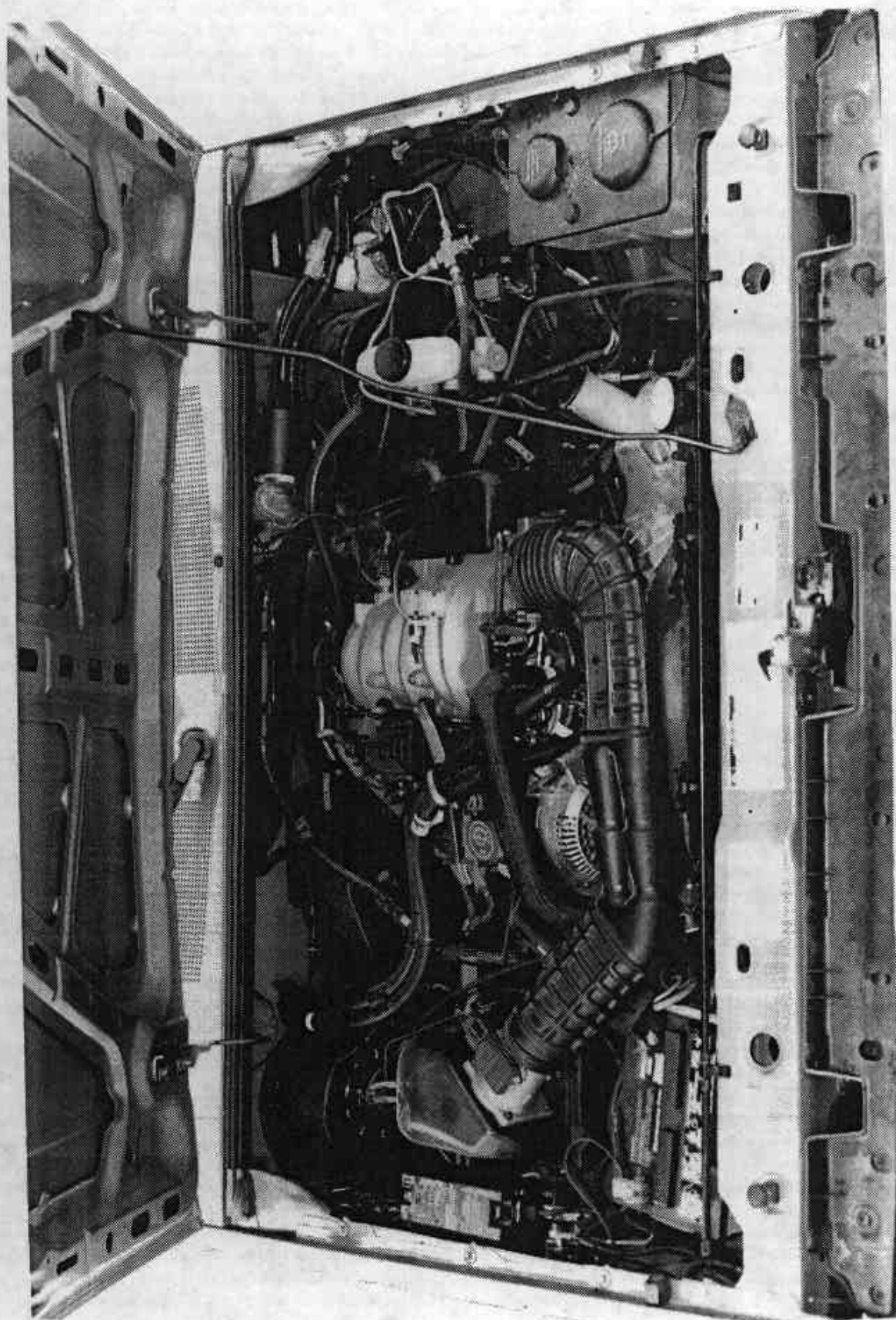
PRETEST WINDSHIELD VIEW

A-11

MSE-92-R92027-N01



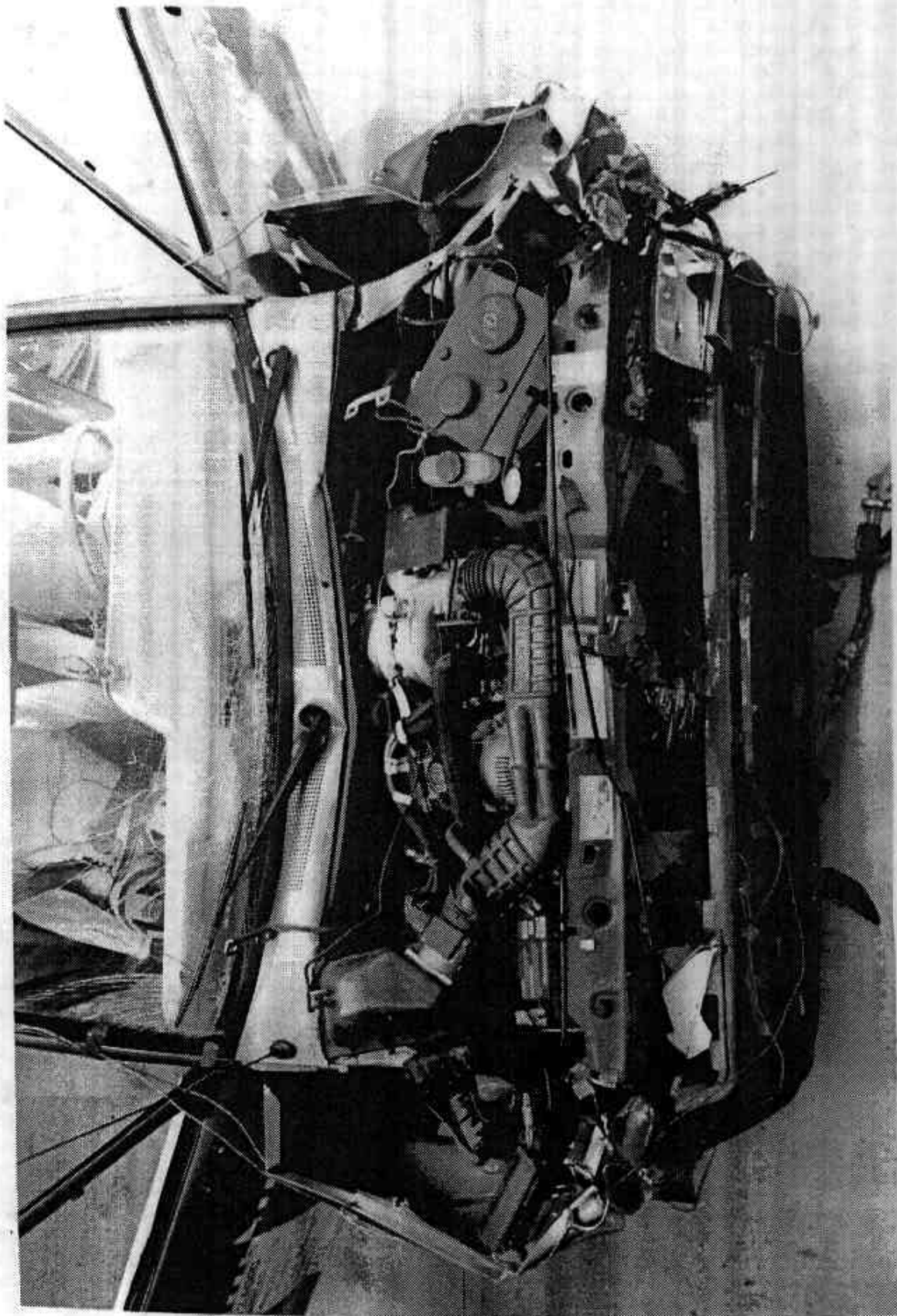
POSTTEST WINDSHIELD VIEW



PRETEST ENGINE COMPARTMENT VIEW

A-13

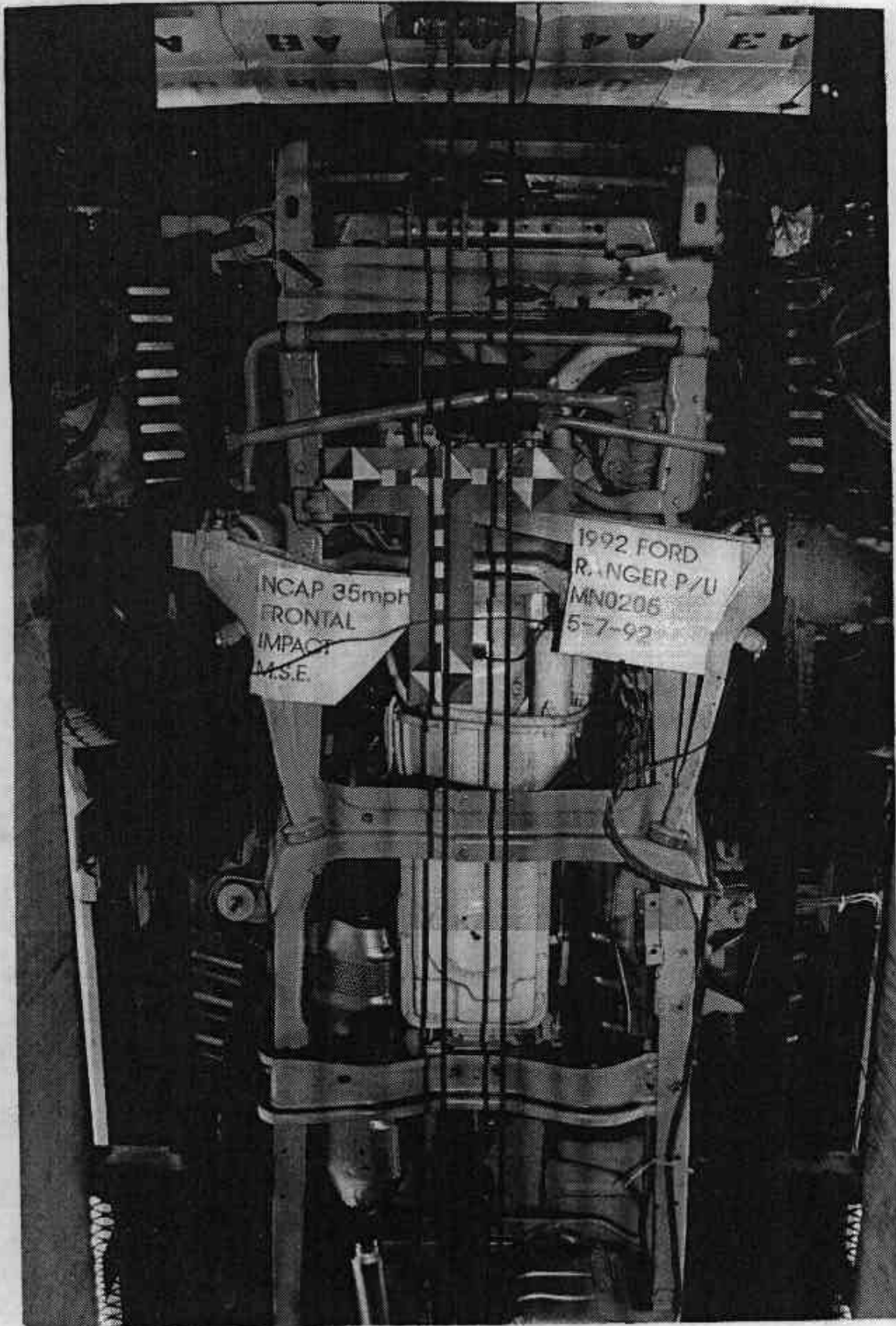
MSE-92-R92027-N01



POSTTEST ENGINE COMPARTMENT VIEW

A-14

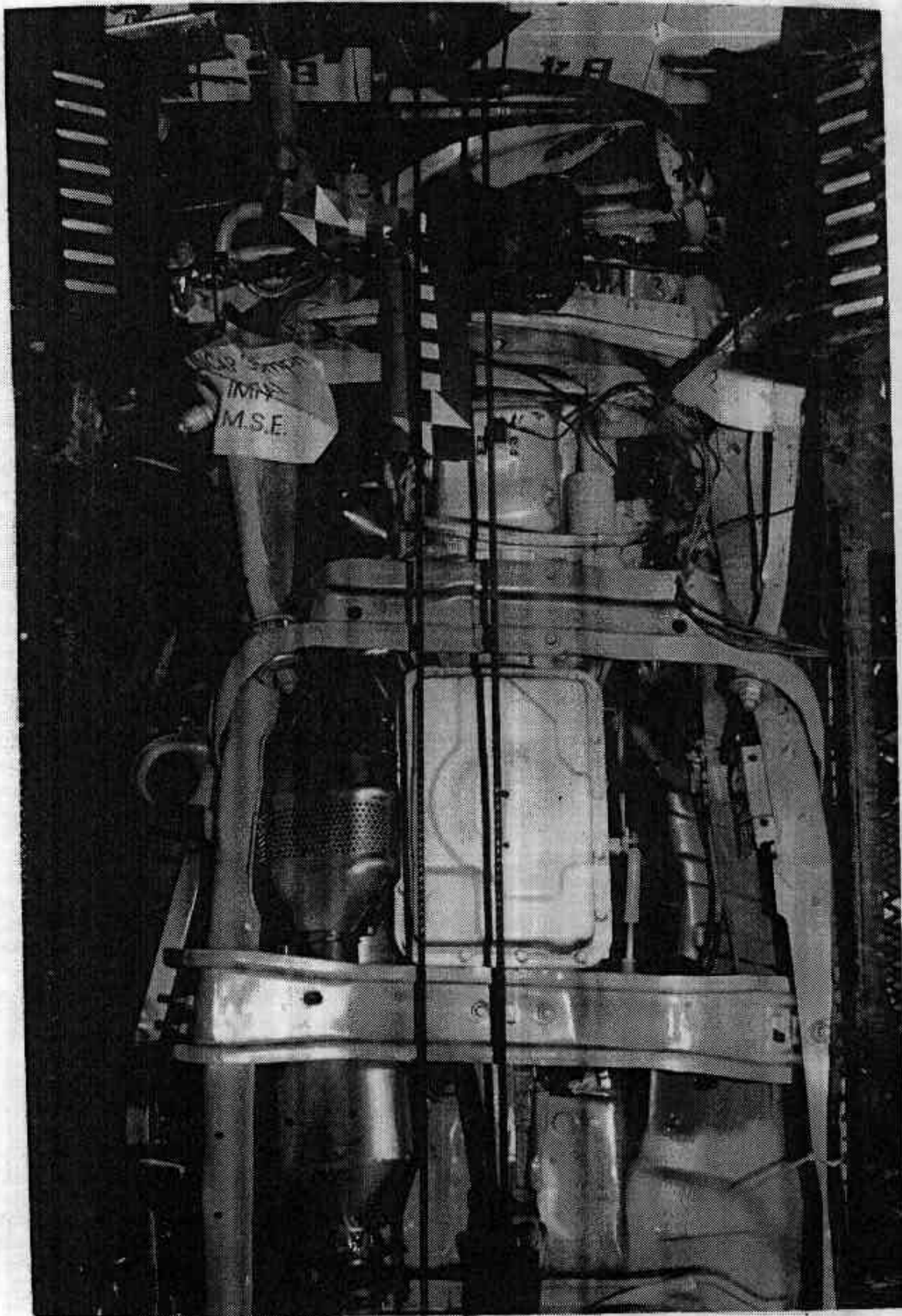
MSE-92-R92027-N01



PRETEST FRONT UNDERBODY VIEW

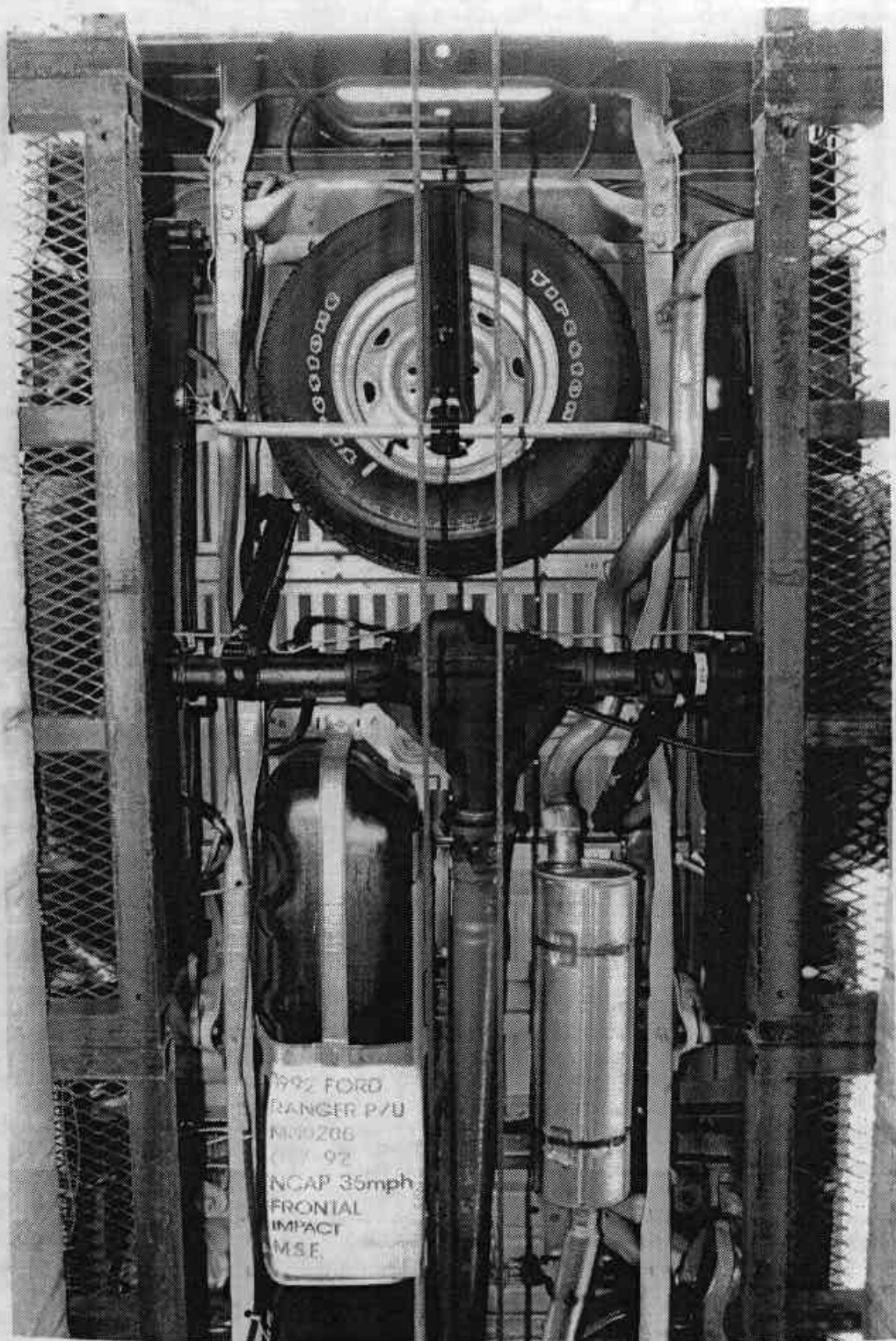
A-15

MSE-92-R92027-N01



POSTTEST FRONT UNDERBODY VIEW
A-16

MSE-92-R92027-N01



PRETEST REAR UNDERBODY VIEW

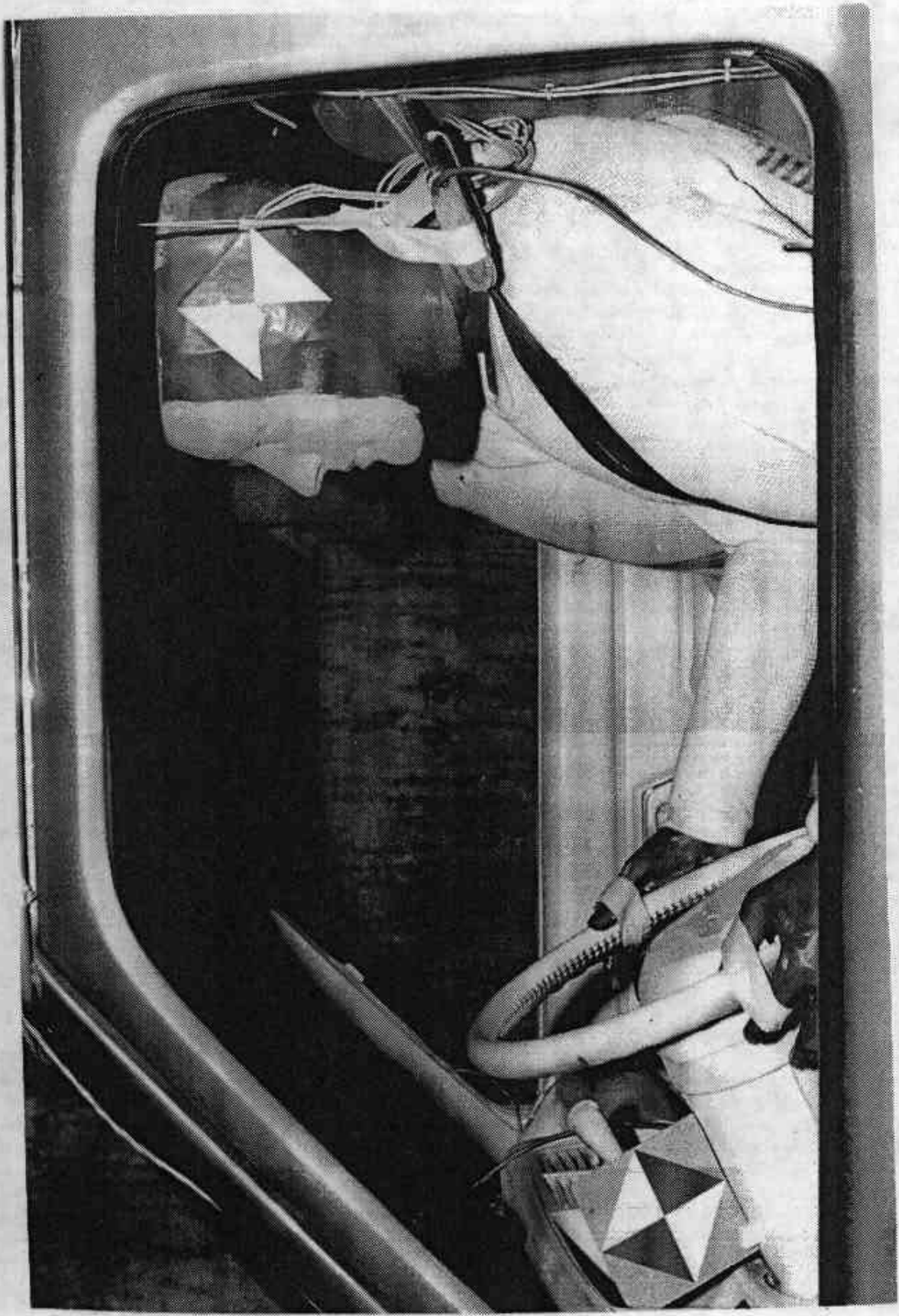
A-17

MSE-92-R92027-N01



POSTTEST REAR UNDERBODY VIEW
A-18

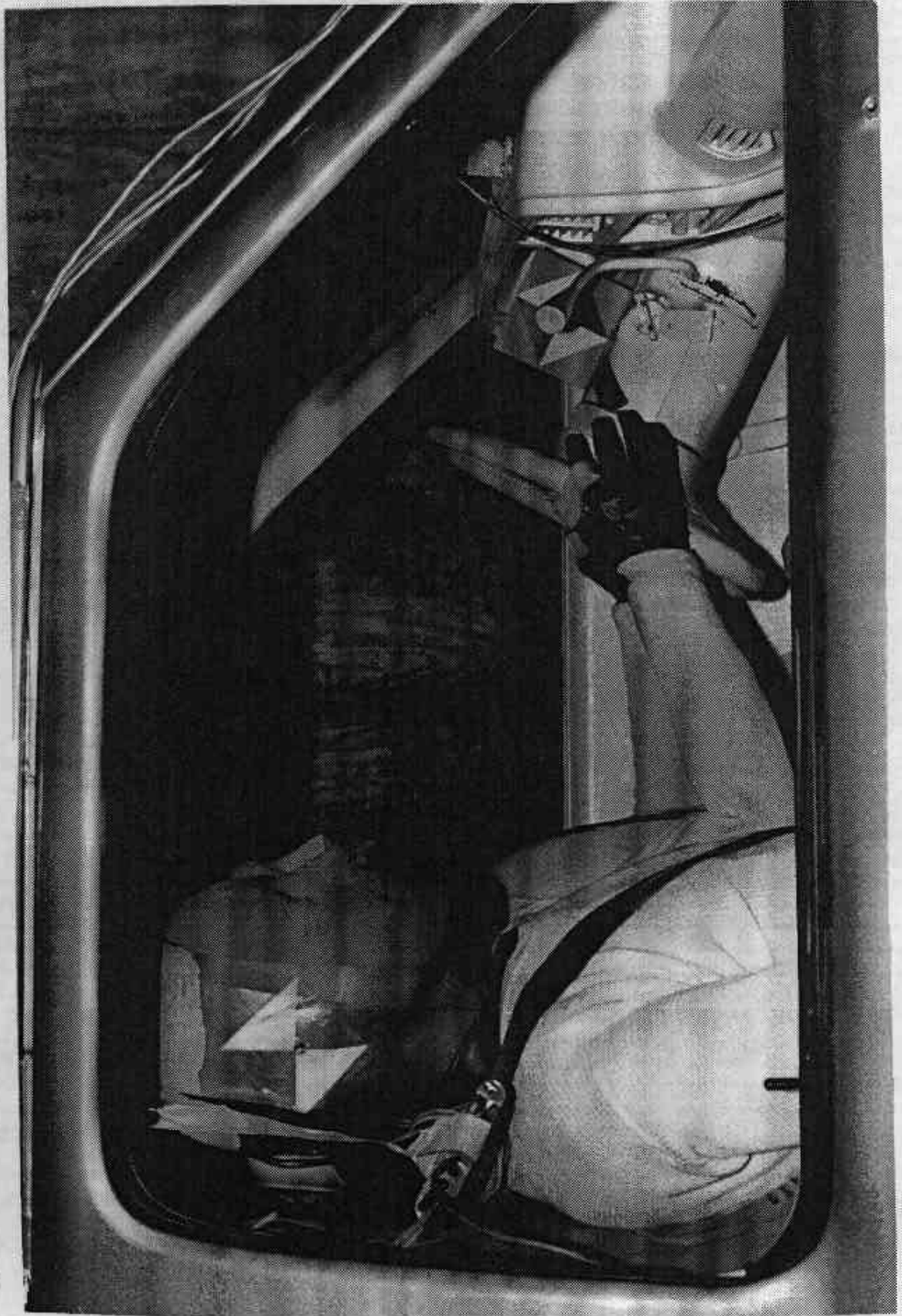
MSE-92-R92027-N01



PRETEST DRIVER DUMMY POSITION VIEW



POSTTEST DRIVER DUMMY POSITION VIEW



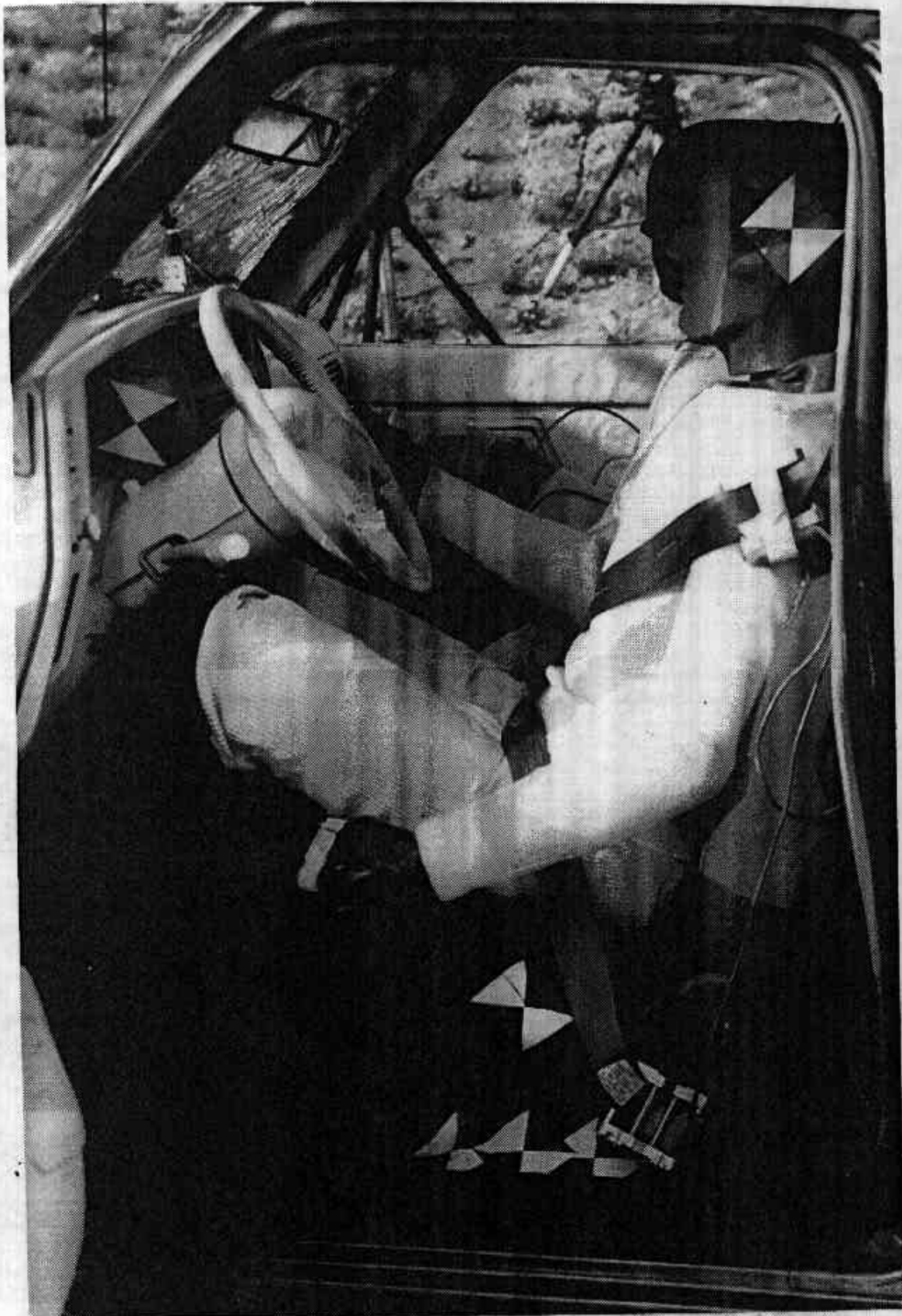
PRETEST PASSENGER DUMMY POSITION VIEW



POSTTEST PASSENGER DUMMY POSITION VIEW



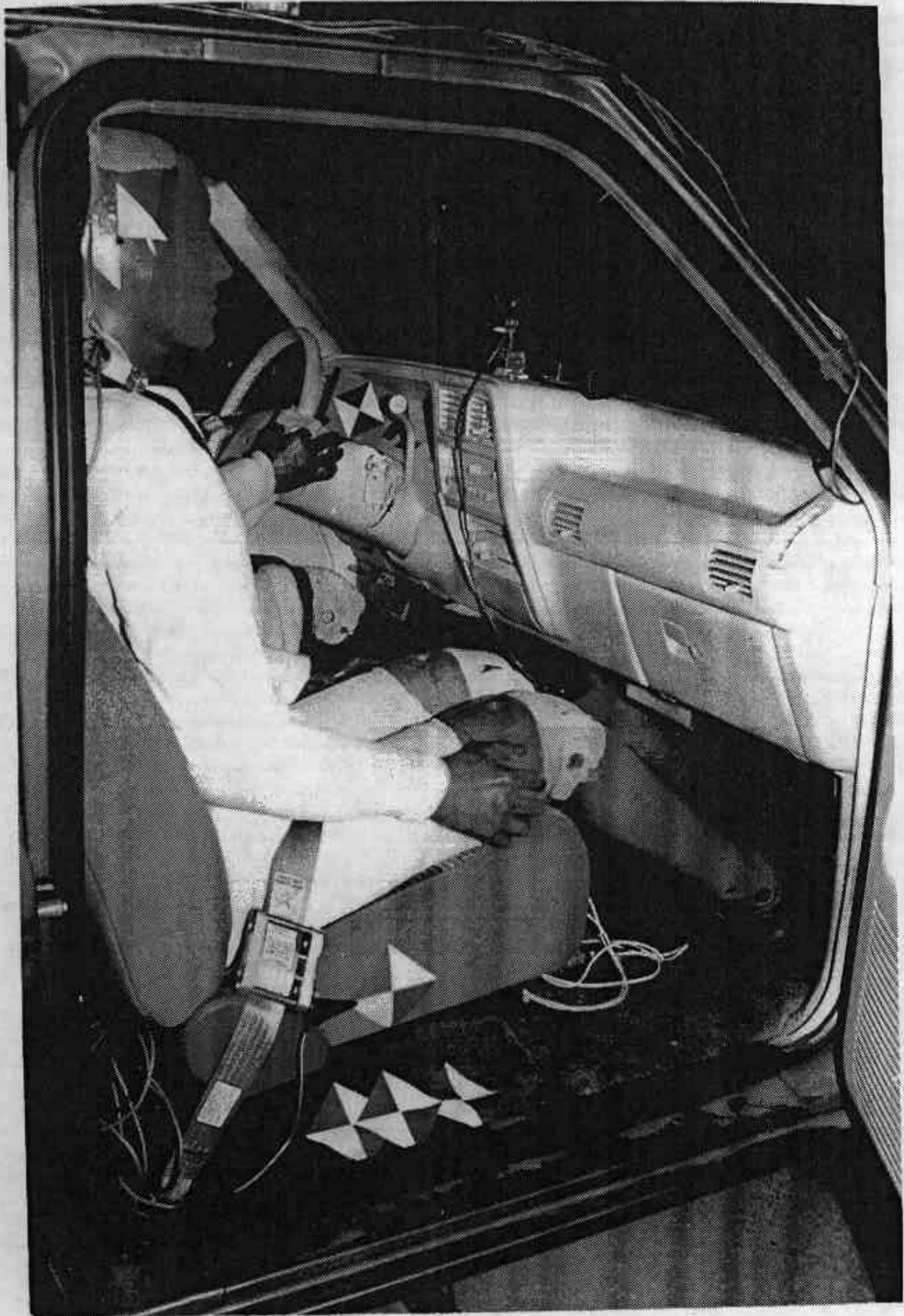
PRETEST DRIVER DUMMY & VEHICLE INTERIOR VIEW (Door Open)
A-23 MSE-92-R92027-N01



POSTTEST DRIVER DUMMY & VEHICLE INTERIOR VIEW (Door Open)

A-24

MSE-92-R92027-N01



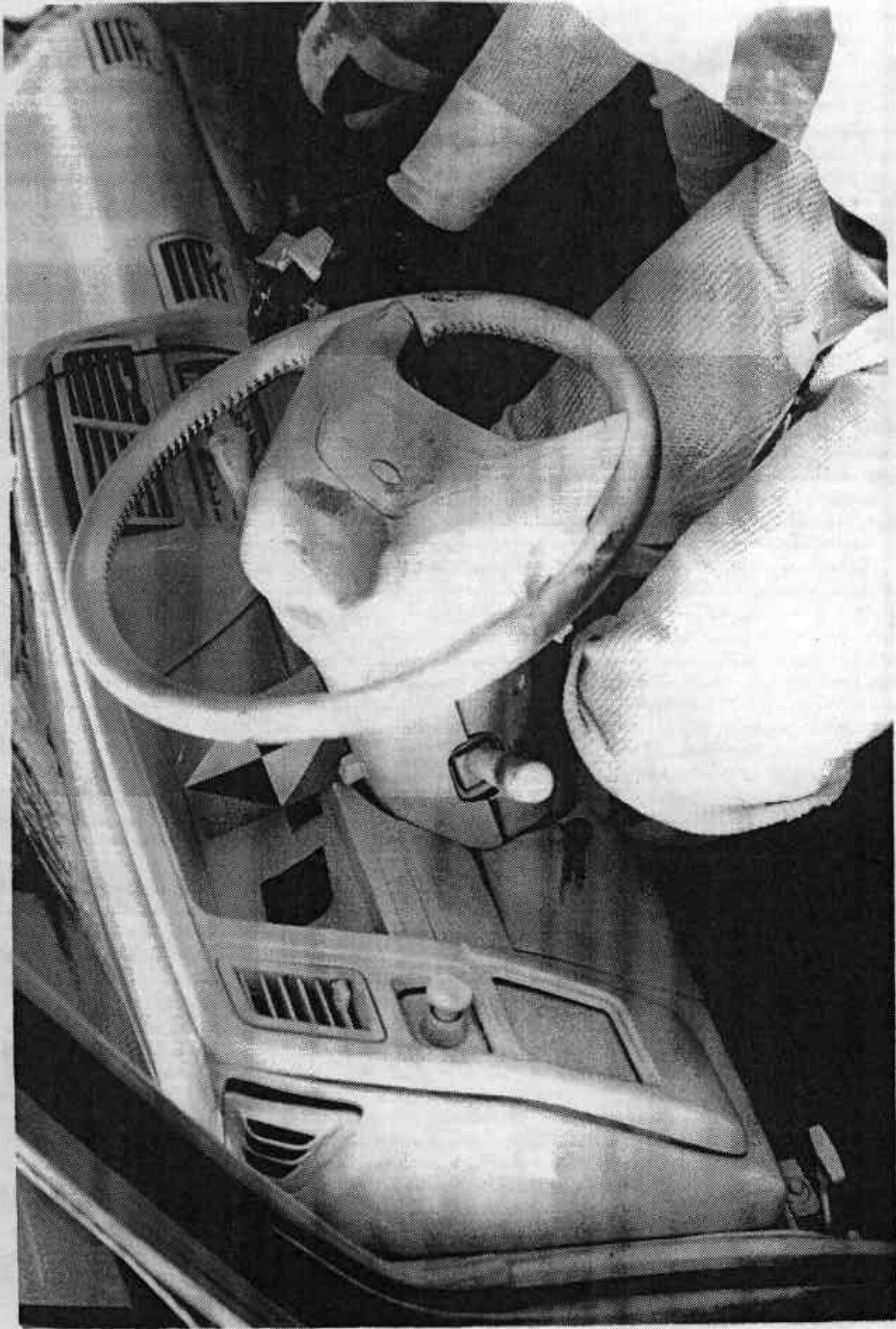
PRETEST PASSENGER DUMMY & VEHICLE INTERIOR VIEW (Door Open)

A-25

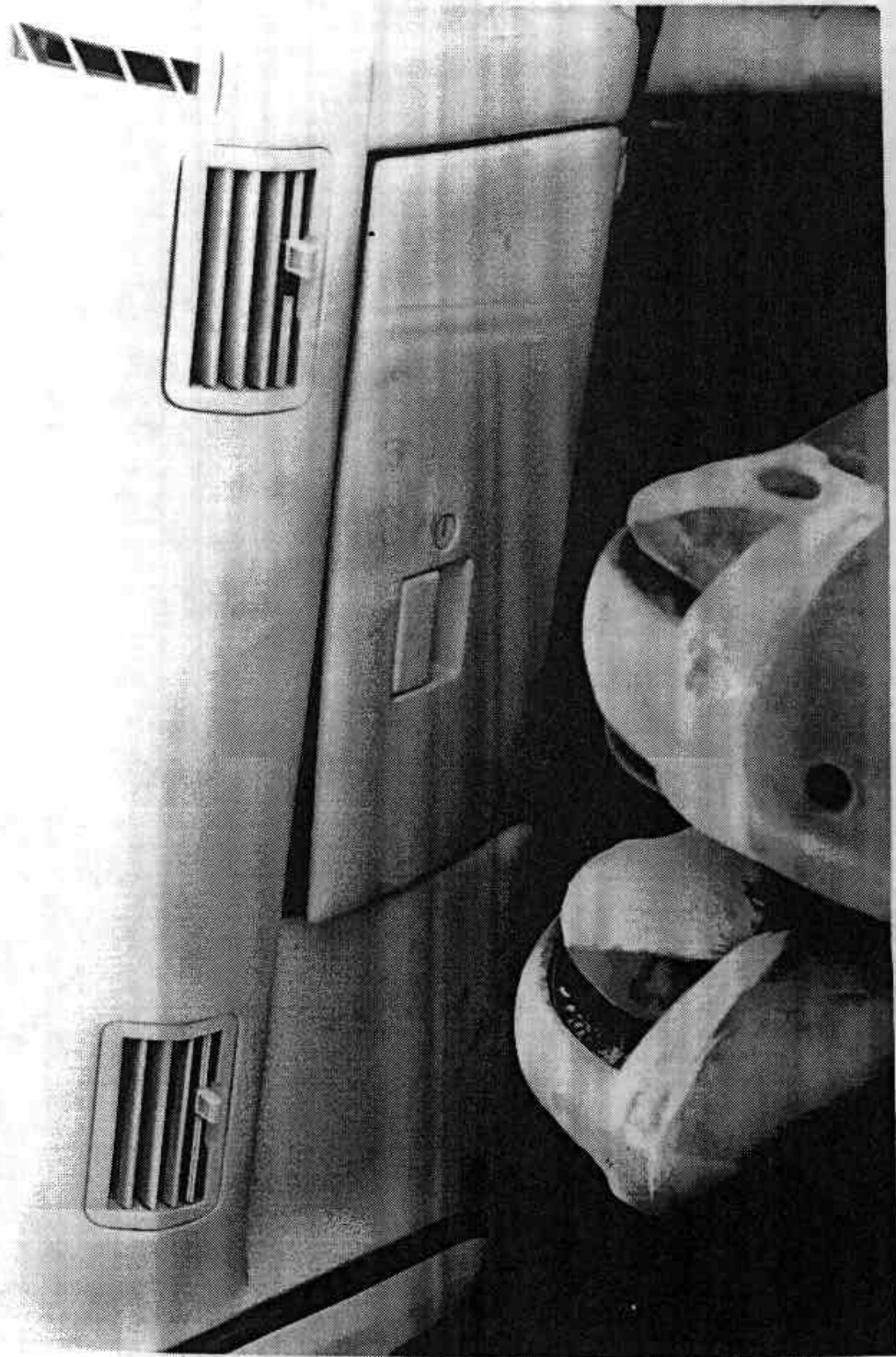
MSE-92-R92027-N01



POSTTEST PASSENGER DUMMY & VEHICLE INTERIOR VIEW (Door Open)
A-26 MSE-92-R92027-N01



POSTTEST DRIVER DUMMY (ATD) HEAD AND KNEE CONTACT AREA



POSTTEST PASSENGER DUMMY (ATD) KNEE CONTACT AREA

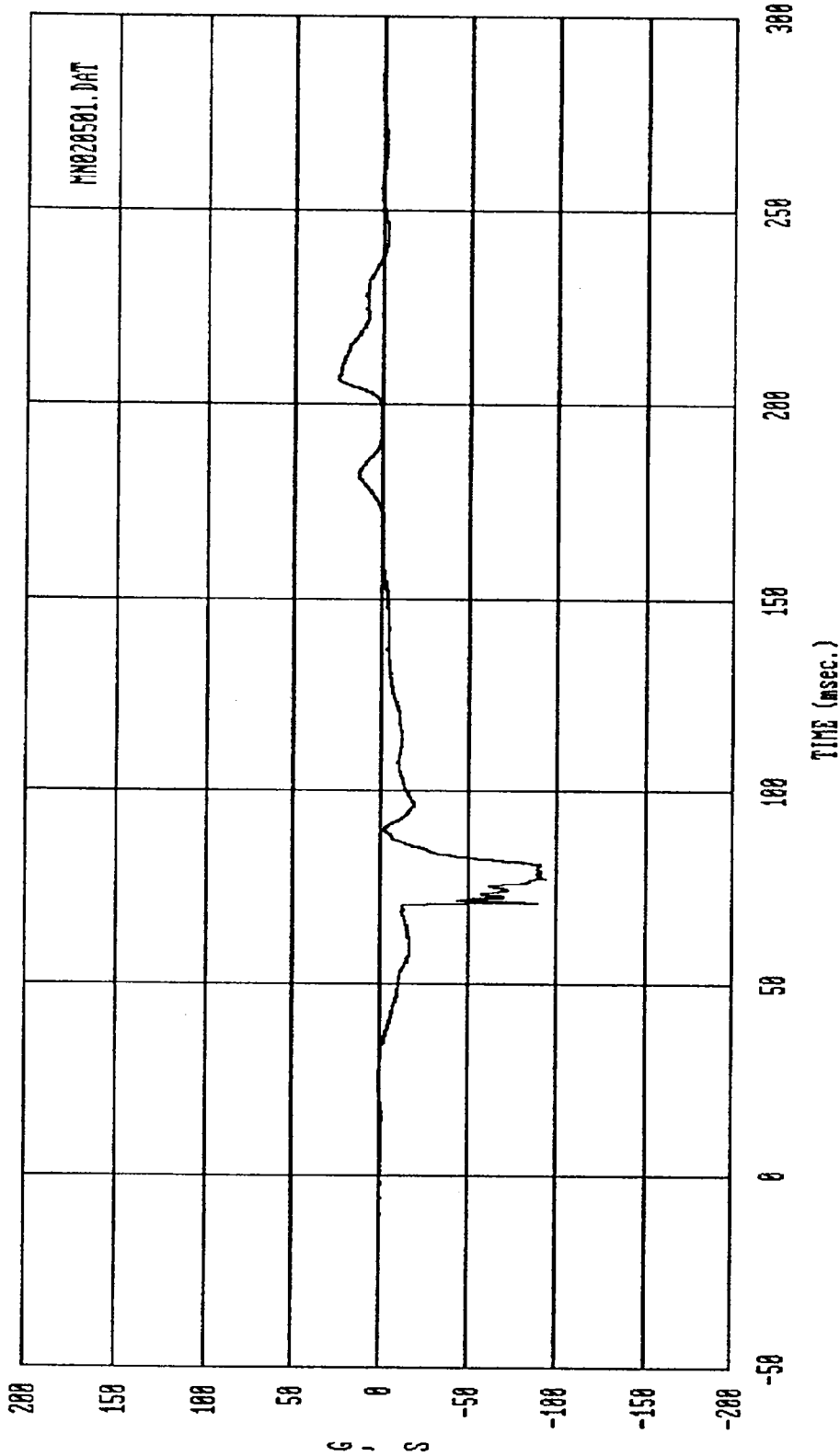
APPENDIX B-1

VEHICLE AND DUMMY (ATD) RESPONSE DATA

DATA FILTERING:

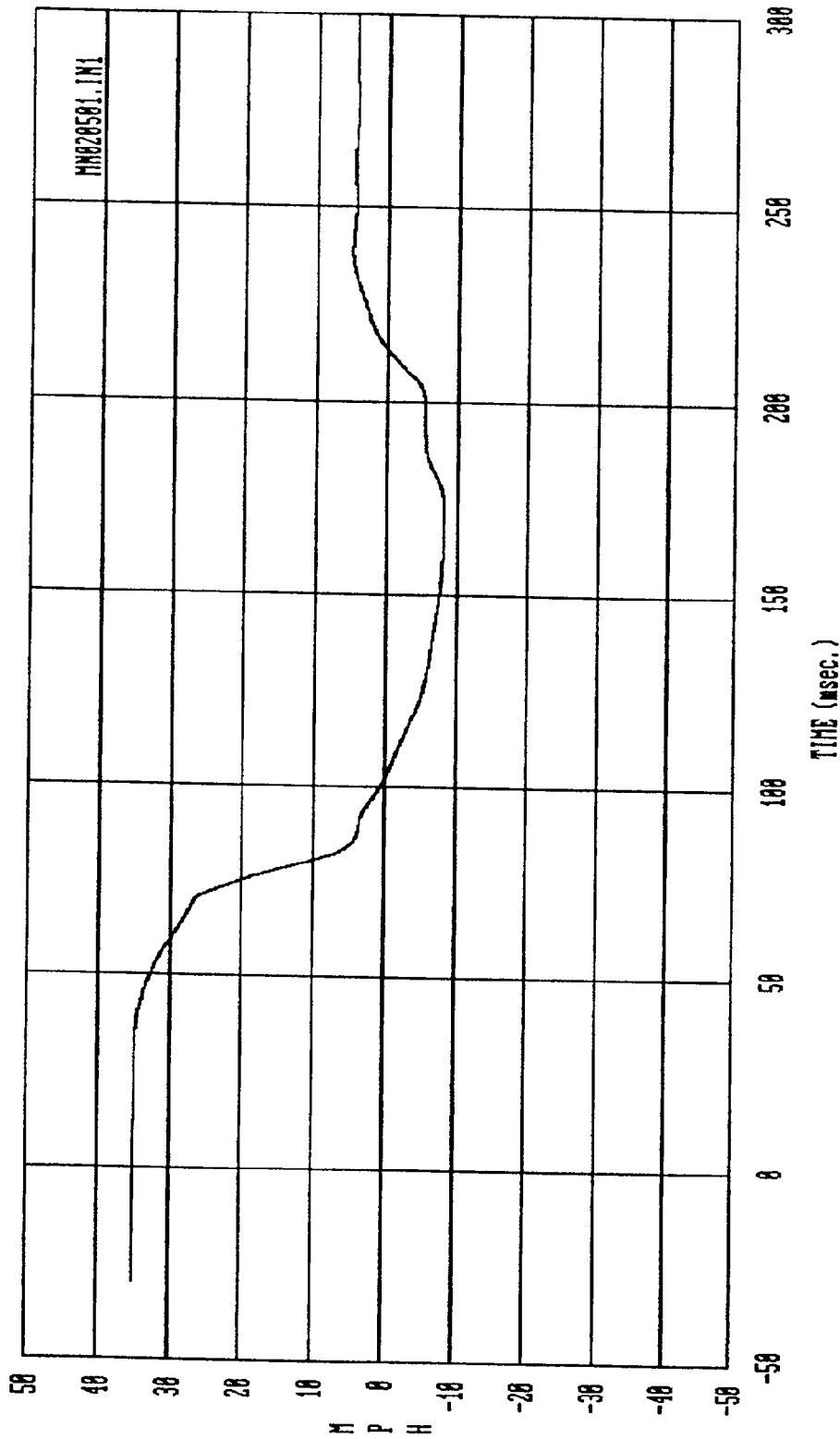
ATD Head Channels	- Class 1000
ATD Chest Channels	- Class 180
ATD Femur Channels	- Class 600
Vehicle Channels	- Class 60

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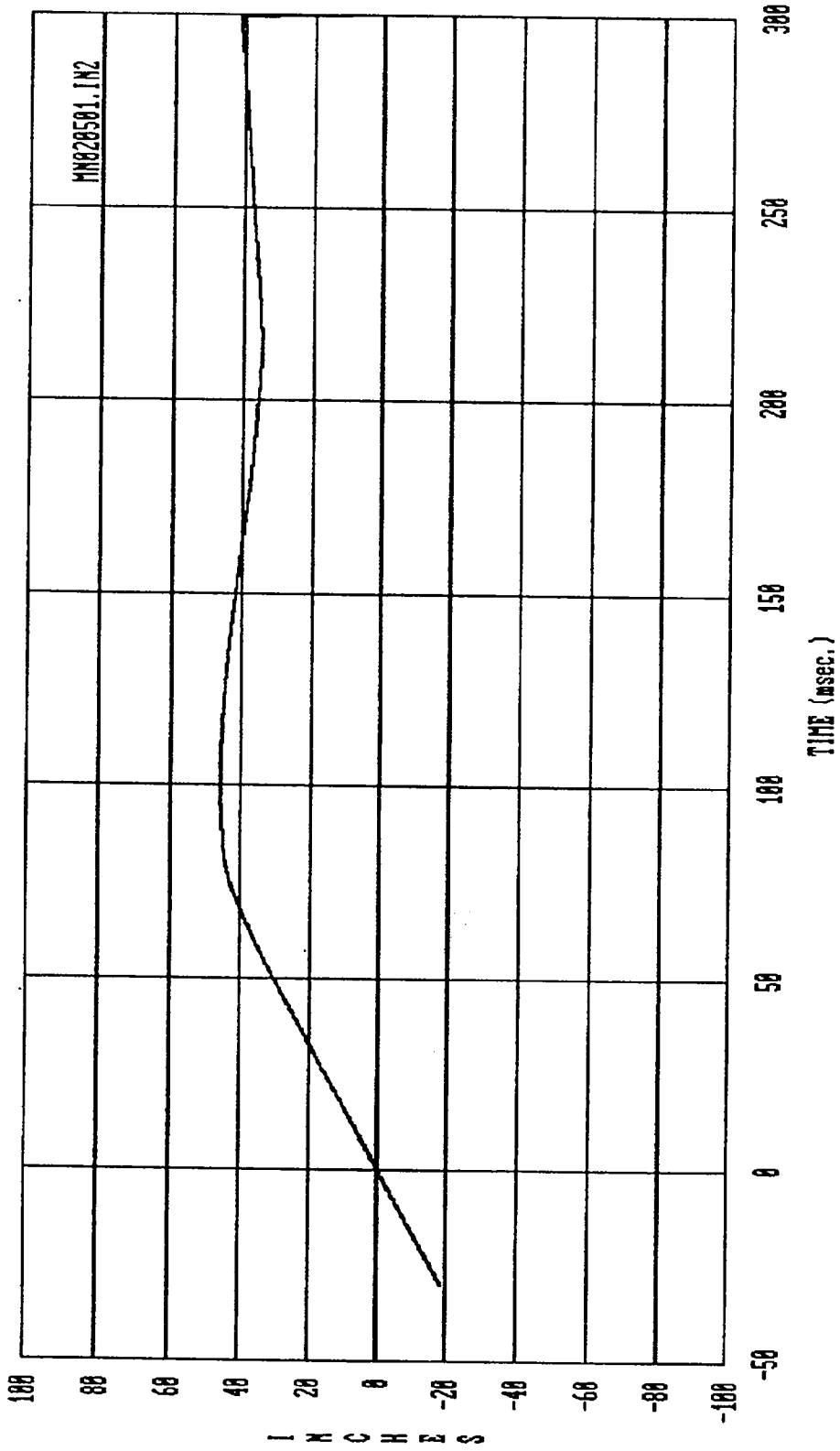
Curve: Driver head acceleration -- X axis Filter: SAE CLASS 1000 Max = 26.288 Min = -94.174

MSE Date: 85/07/92 Program: 1992 NCAP - #1 Vehicle: 1992 Ford Ranger

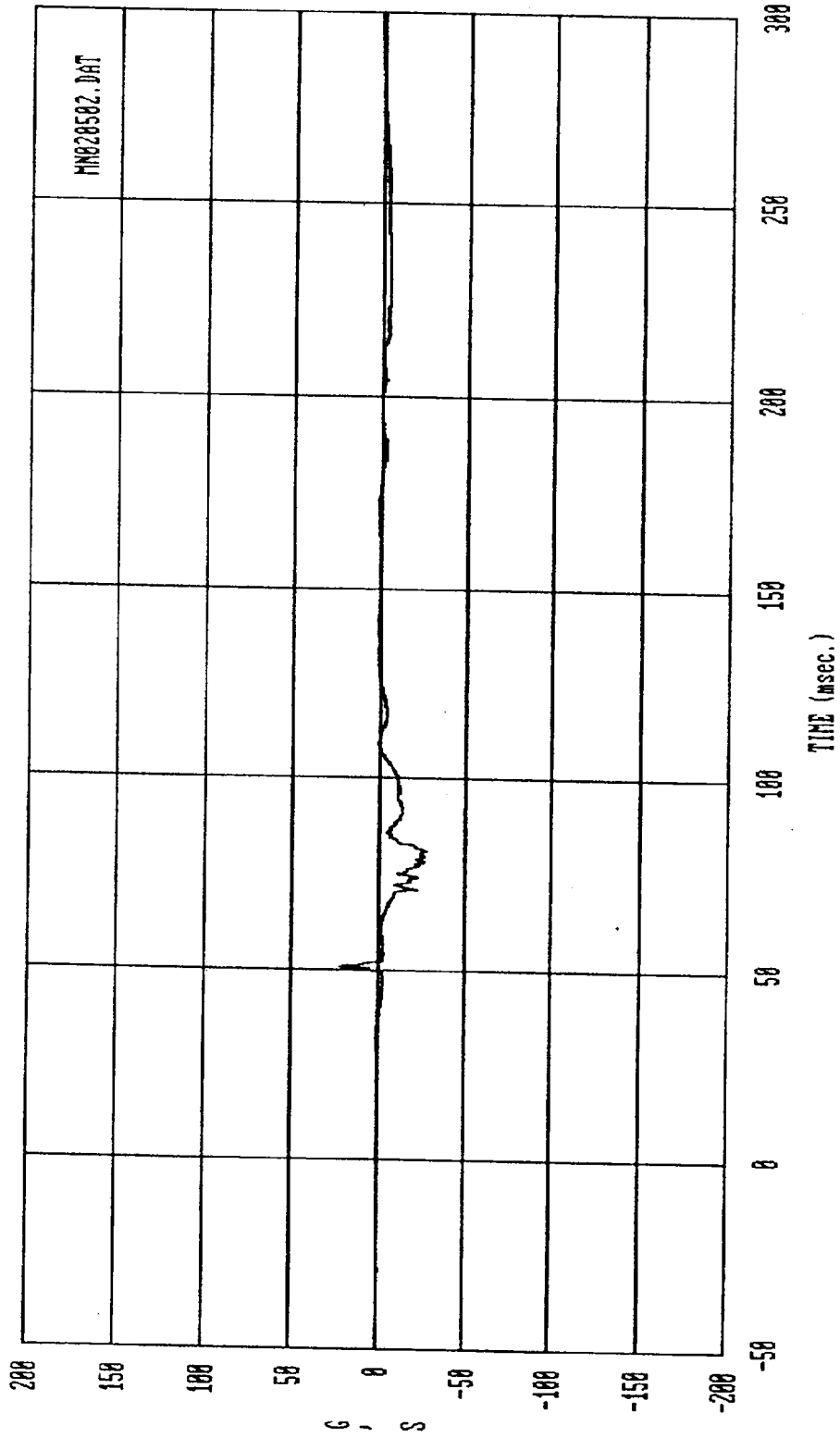


Curve: Driver head delta V -- X axis Filter: SAE CLASS 100 Max = 35.200 Min = -8.1024

MSE Date: 05/07/92 Program: 1992 NCAP - M1 Vehicle: 1992 Ford Ranger

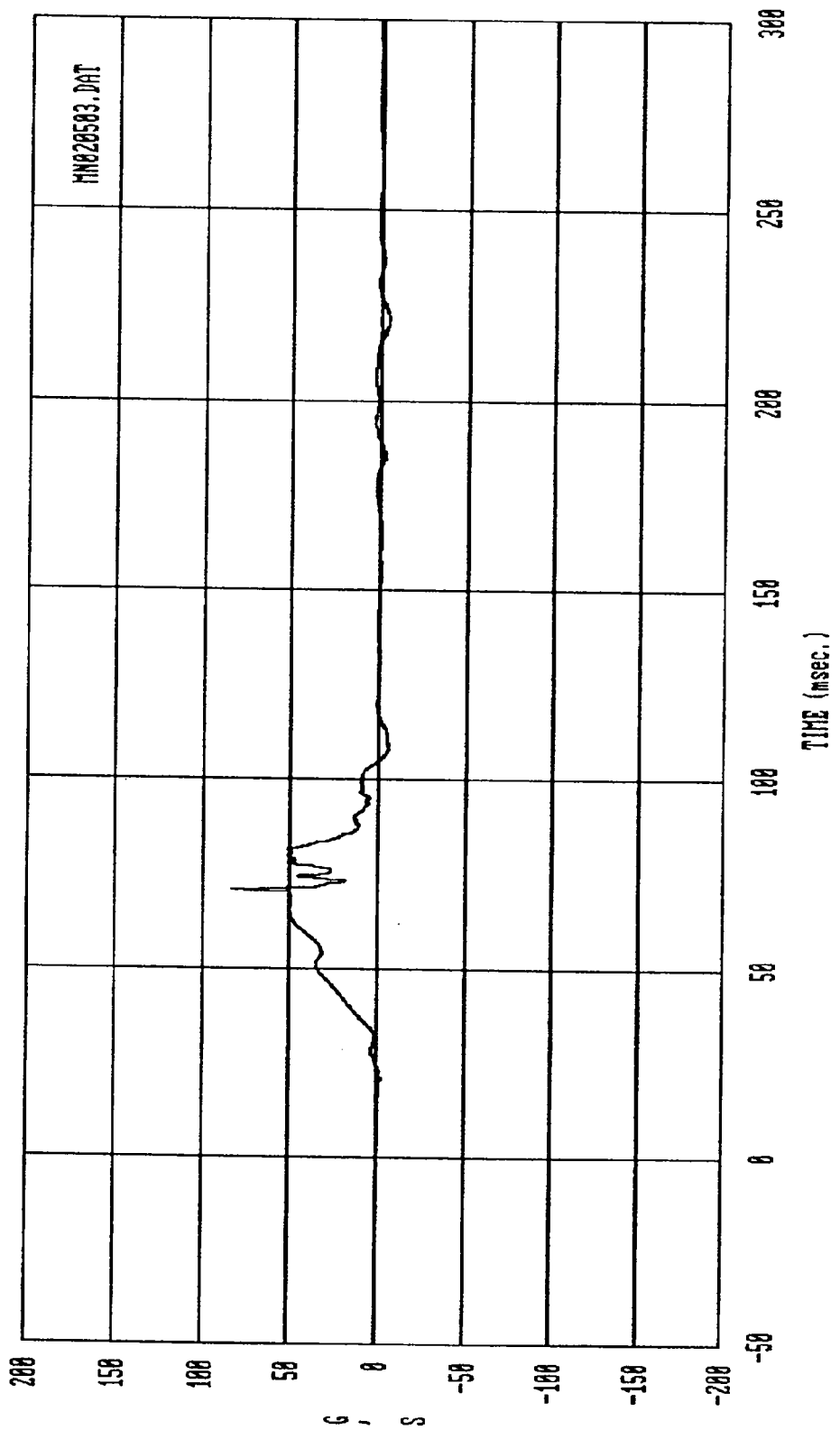


Curve: Driver head displacement — X axis Filter: SAE CLASS 180 Max = 45.954 Min = 35.897
MSE Date: 05/07/92 Program: 1992 NCAP - #1 Vehicle: 1992 Ford Ranger

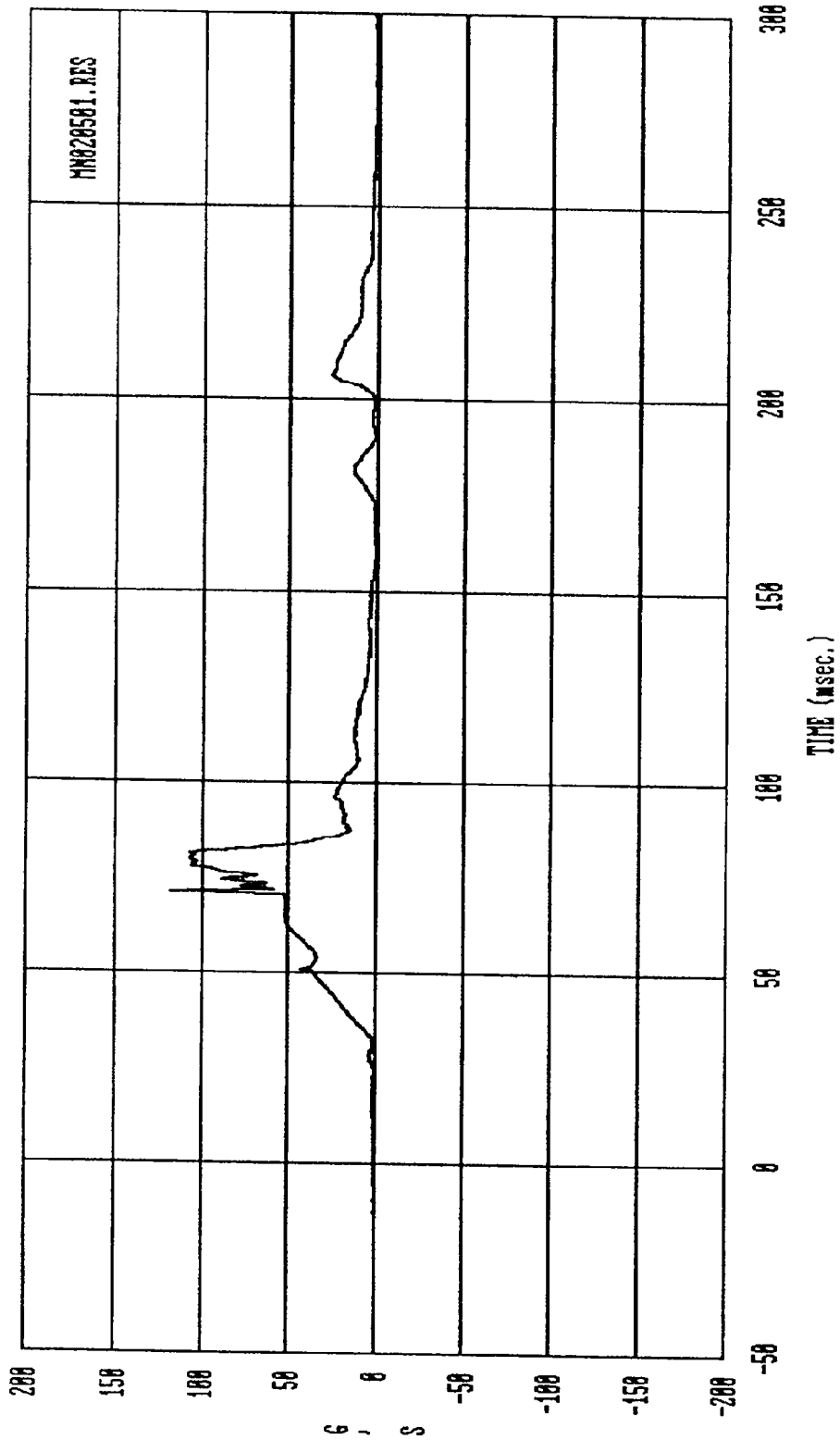


Curve: Driver head acceleration -- Y axis Filter: SAE CLASS 1000 Max = 26.740 Min = -27.048

MSE Date: 05/07/92 Program: 1992 NCAP - #1 Vehicle: 1992 Ford Ranger

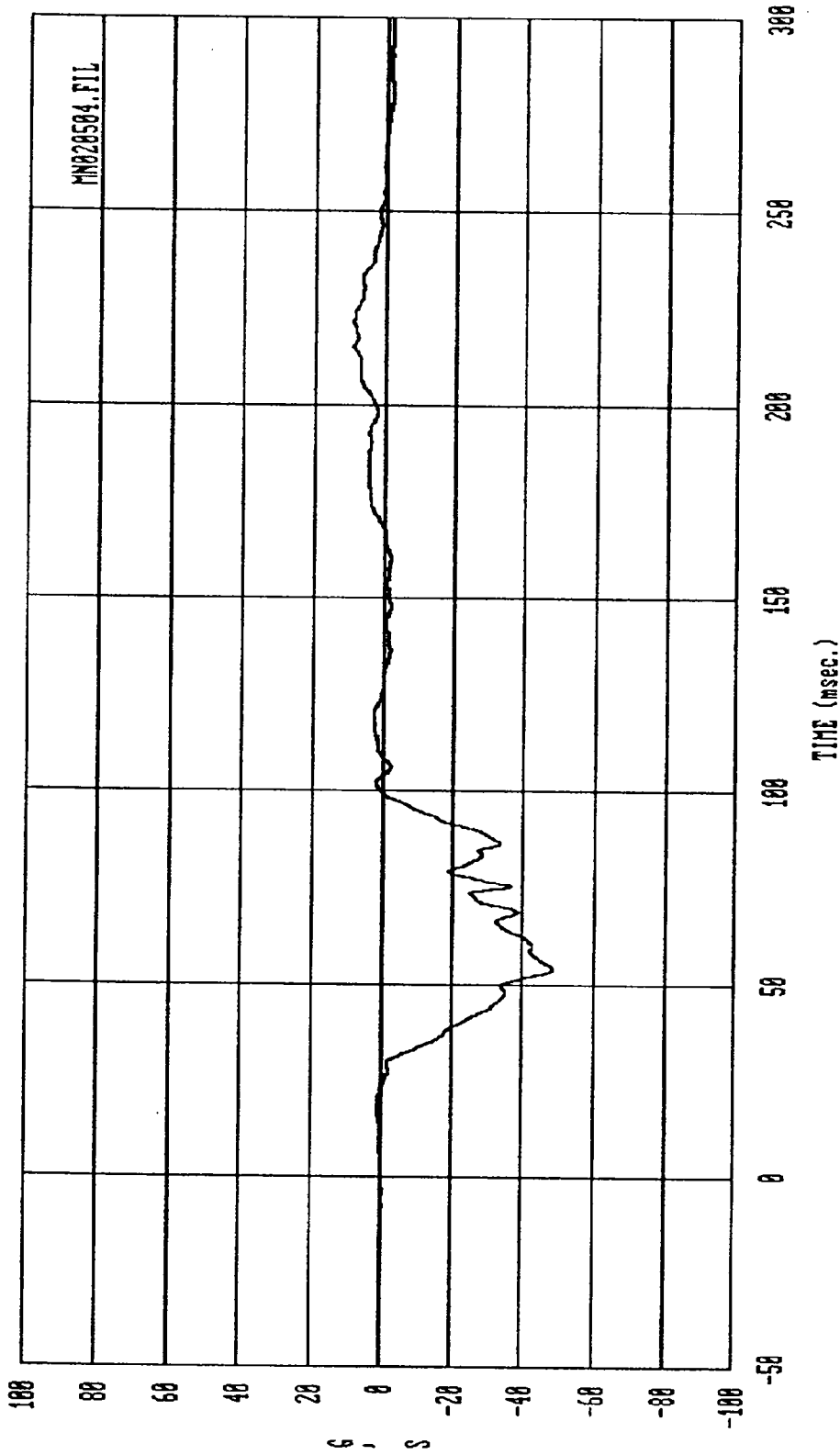


Curve: Driver head acceleration -- Z axis Filter: SAE CLASS 1000 Max = 86.328 Min = -5.3050
 MSE Date: 05/07/92 Program: 1992 NCAP - #1 Vehicle: 1992 Ford Ranger

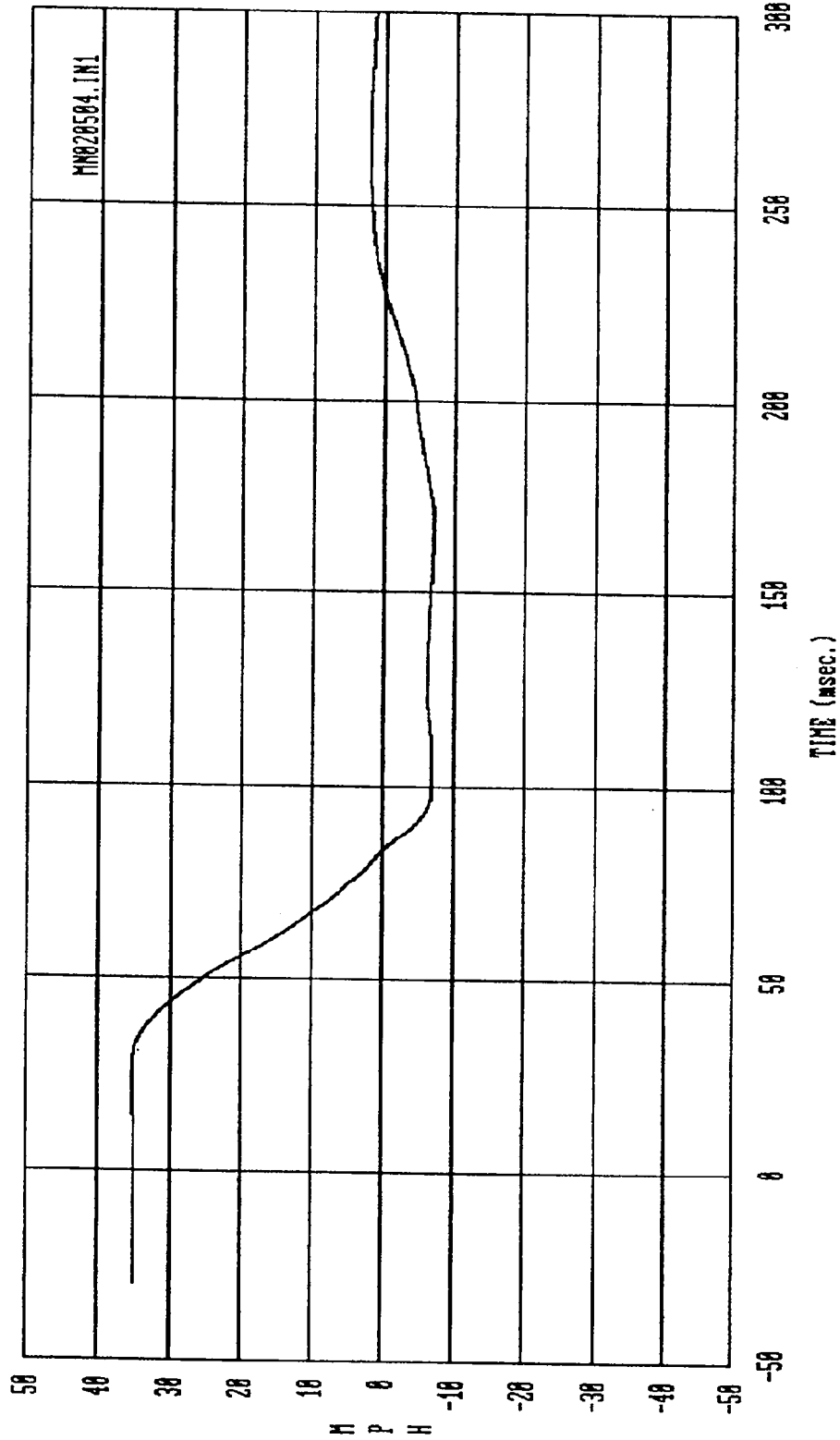


Curve: Driver head acceleration -- Resultant Filter: SAE CLASS 1000 Max = 120.86 Min = .49572

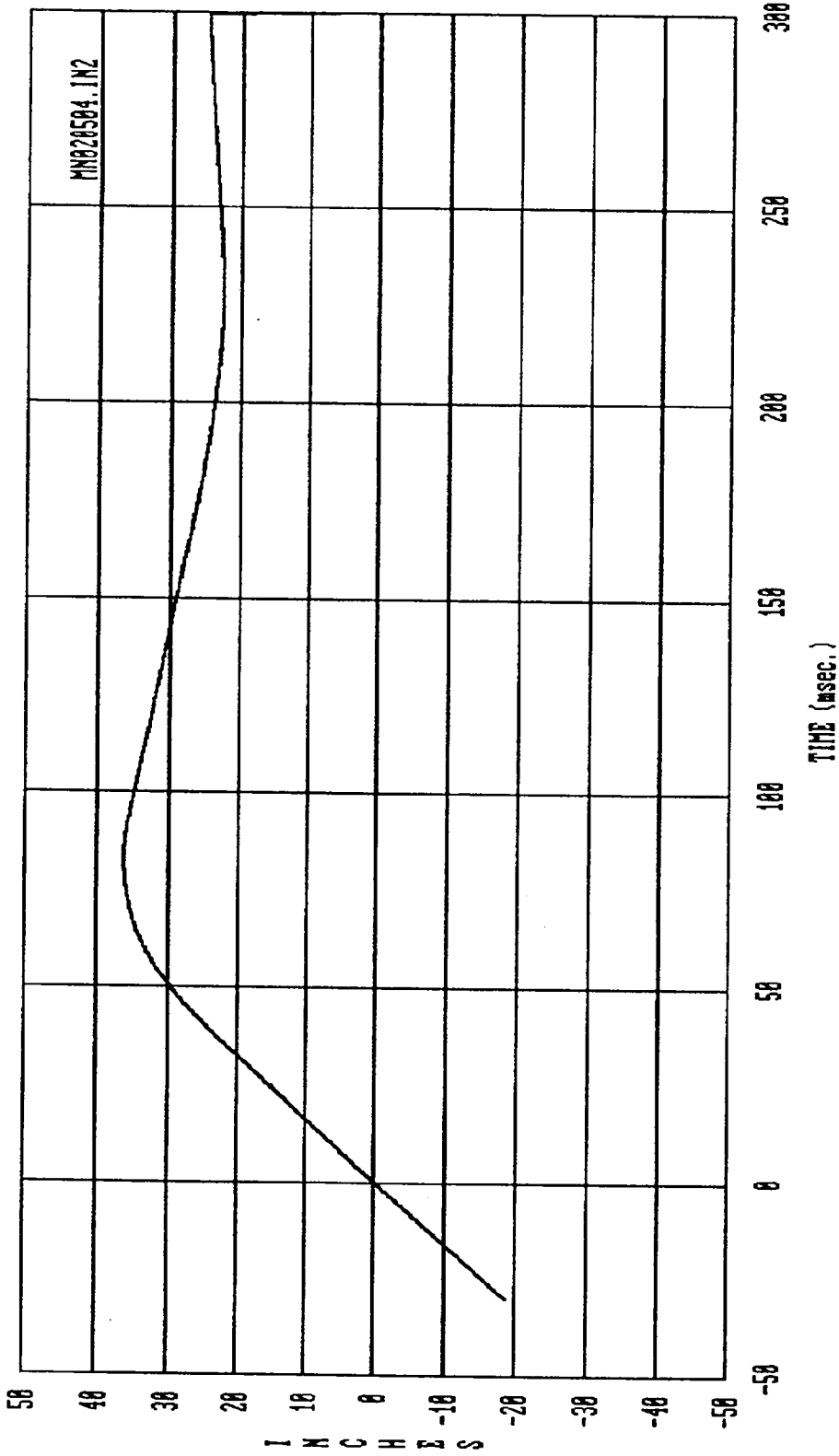
MSE Date: 05/07/92 Program: 1992 NCAP - #1 Vehicle: 1992 Ford Ranger



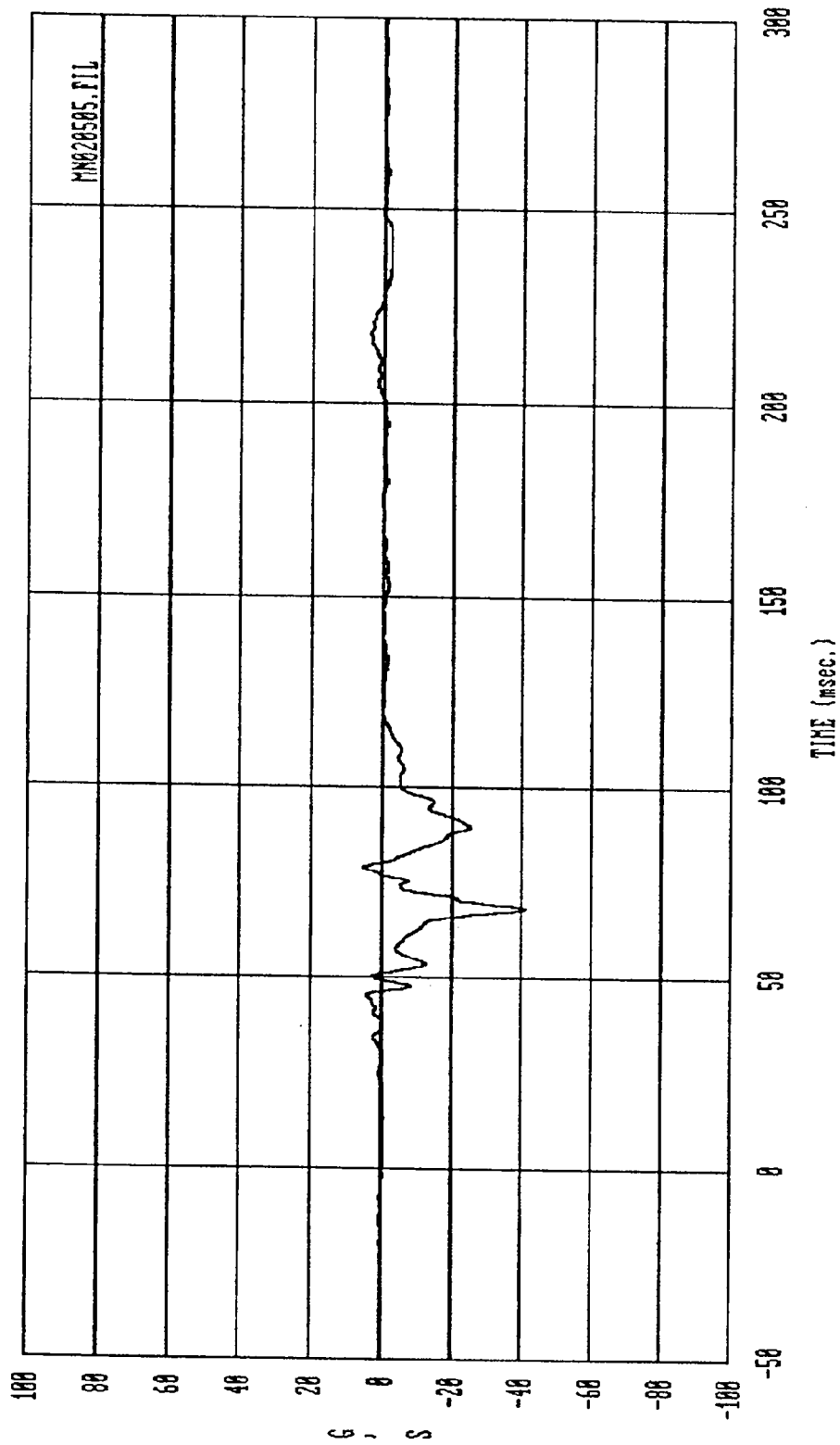
Curve: Driver chest acceleration -- X axis Filter: SAE CLASS 100 Max = 9.4197 Min = -48.702
 MSE Date: 05/07/92 Program: 1992 NCAP - #1 Vehicle: 1992 Ford Ranger



Curve: Driver chest delta V — X axis Filter: SAE CLASS 100 Max = 35.455 Min = -7.0769
MSE Date: 05/07/92 Program: 1992 NCAP - #1 Vehicle: 1992 Ford Ranger

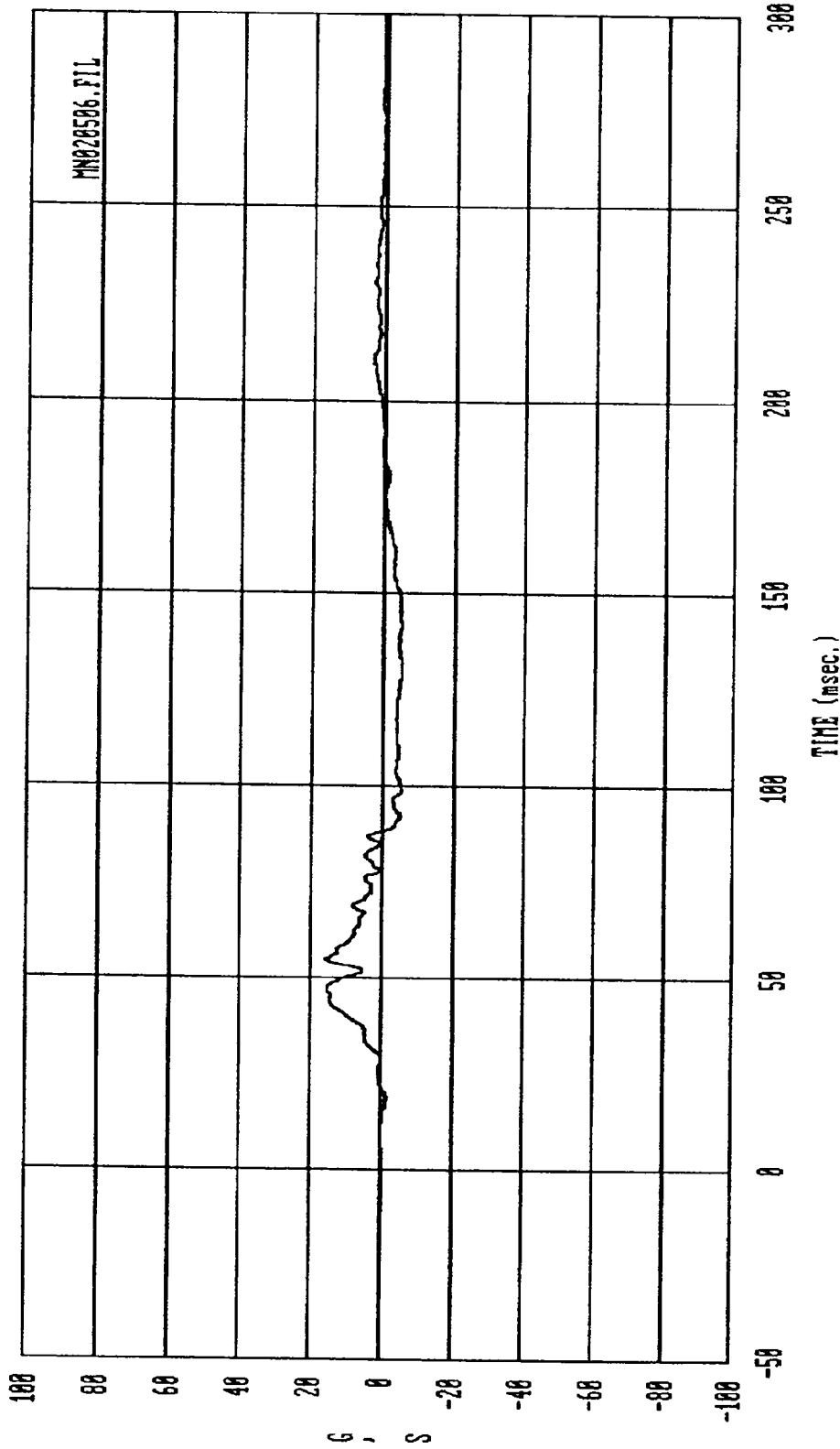


Curve: Driver chest displacement -- X axis Filter: SAE CLASS 180 Max = 36.318 Min = 22.586
MSE Date: 05/07/92 Program: 1992 NCAP - #1 Vehicle: 1992 Ford Ranger



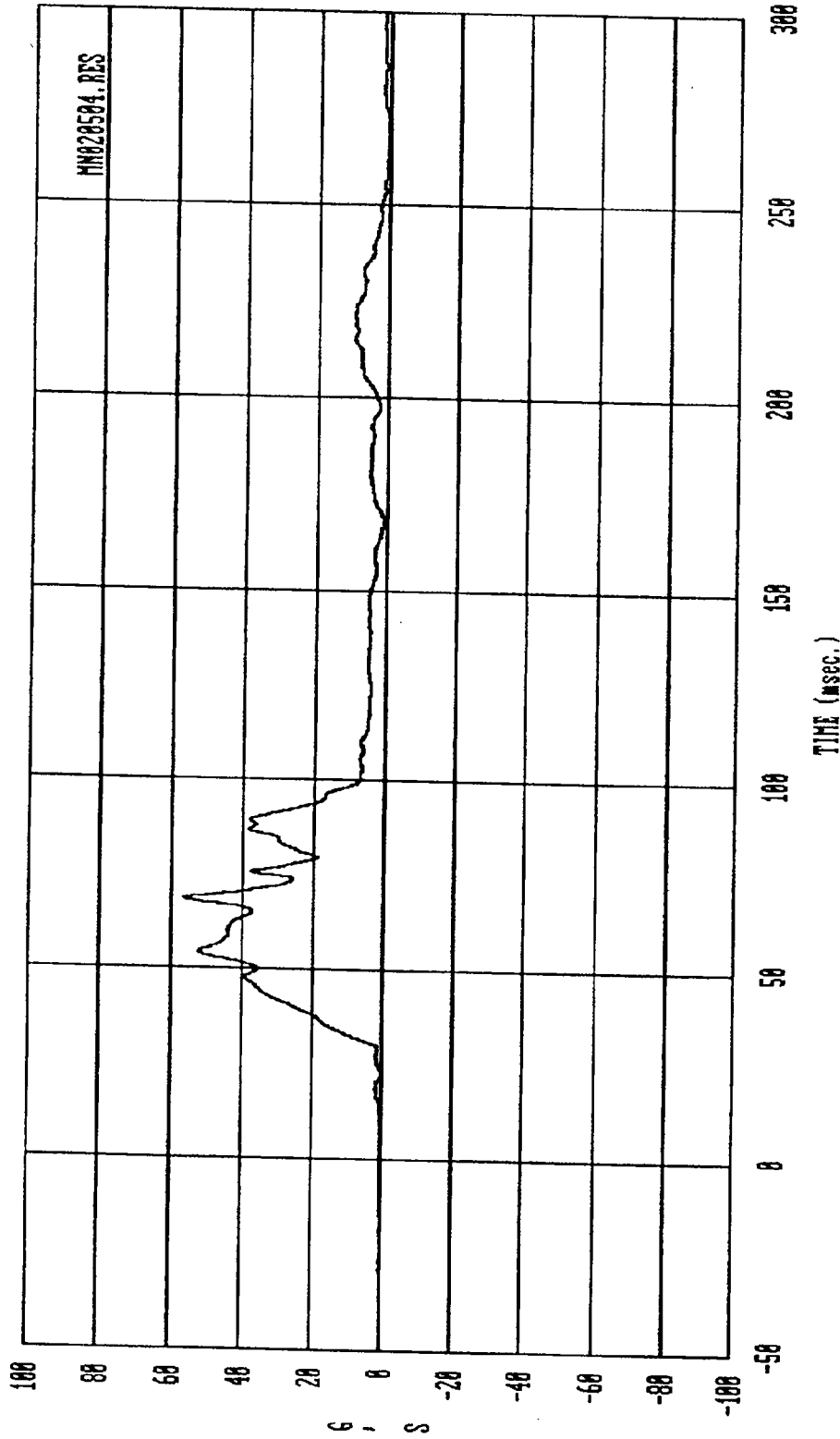
Curve: Driver chest acceleration -- Y axis Filter: SAE CLASS 100 Max = 5.4177 Min = -41.126

MSE Date: 05/07/92 Program: 1992 NCAP - #1 Vehicle: 1992 Ford Ranger



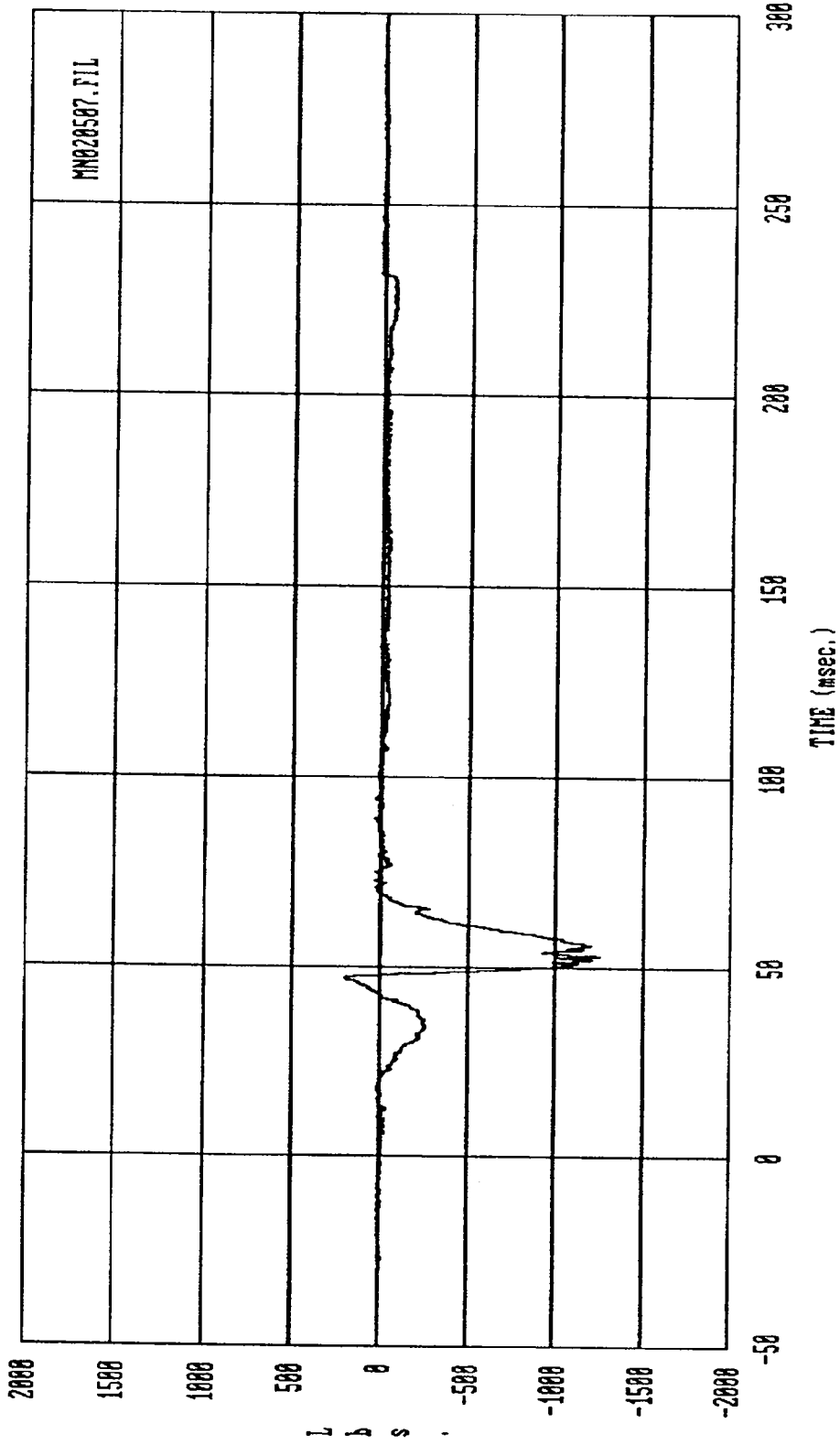
Curve: Driver chest acceleration -- Z axis Filter: SAE CLASS 180 Max = 15.706 Min = -5.2837

MSE Date: 05/07/92 Program: 1992 NCAP - #1 Vehicle: 1992 Ford Ranger

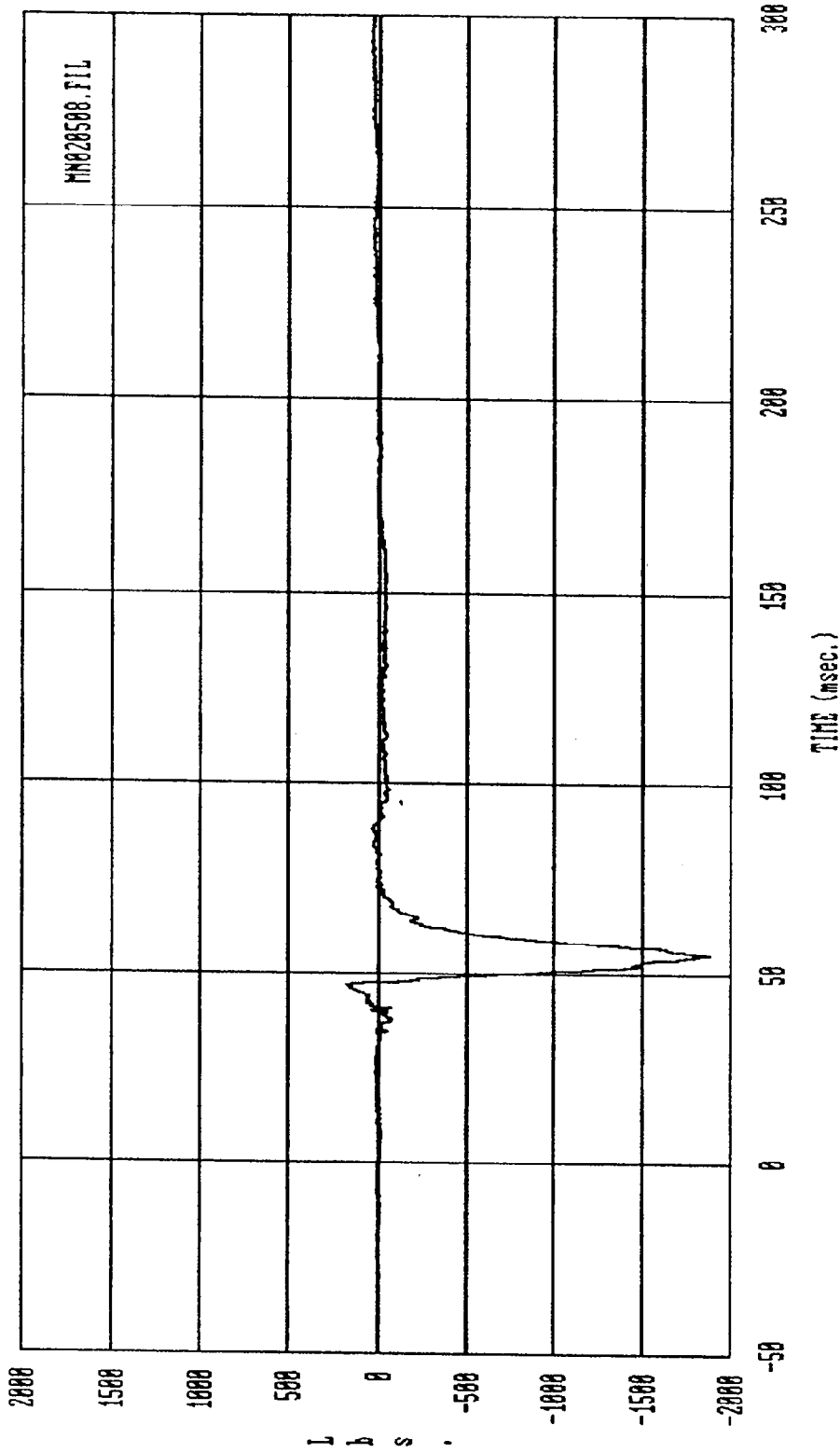


Curve: Driver chest acceleration -- Resultant Filter: SAE CLASS 100 Max = 56.503 Min = .43976

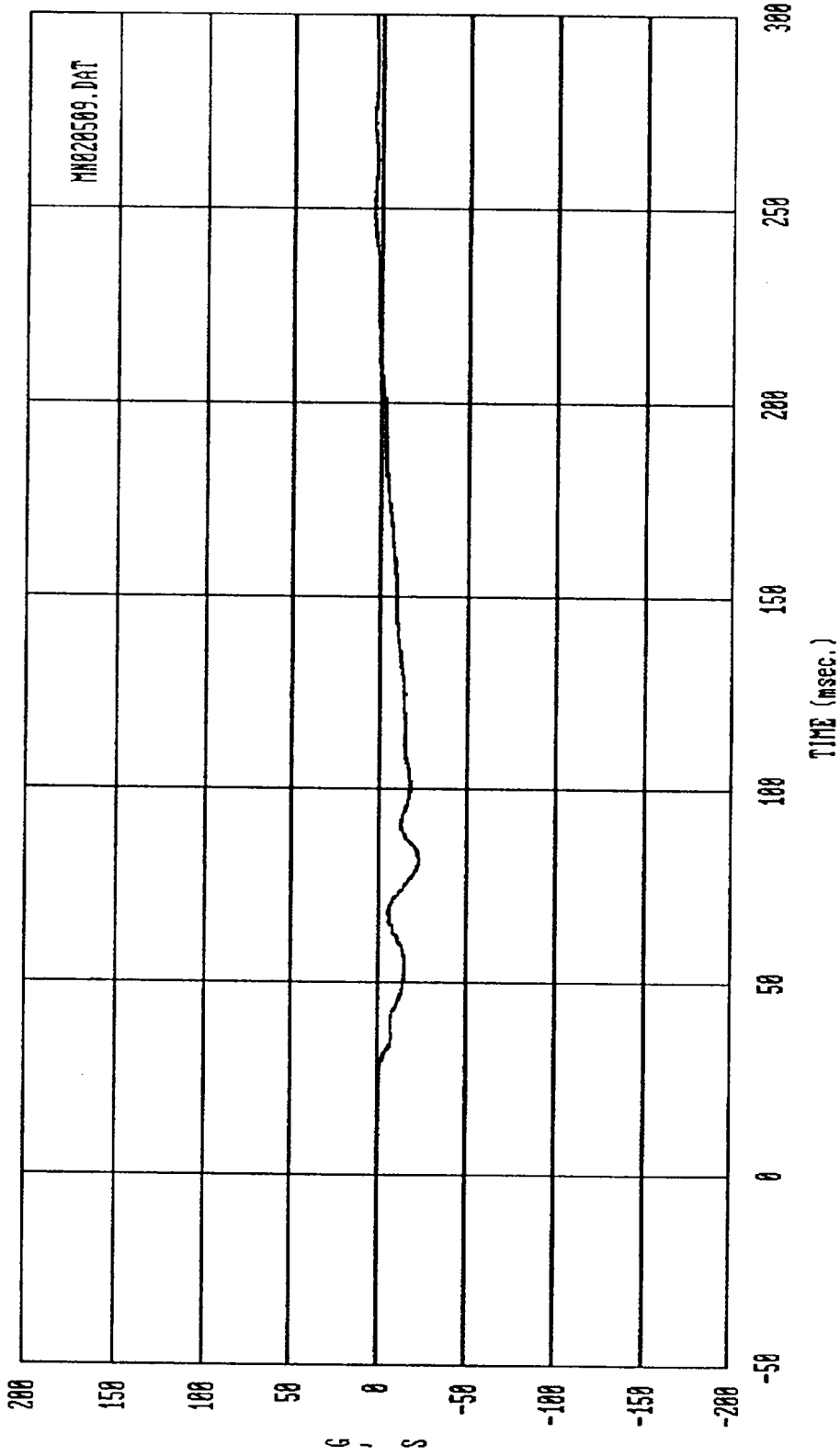
MSE Date: 05/07/92 Program: 1992 NCAP - #1 Vehicle: 1992 Ford Ranger



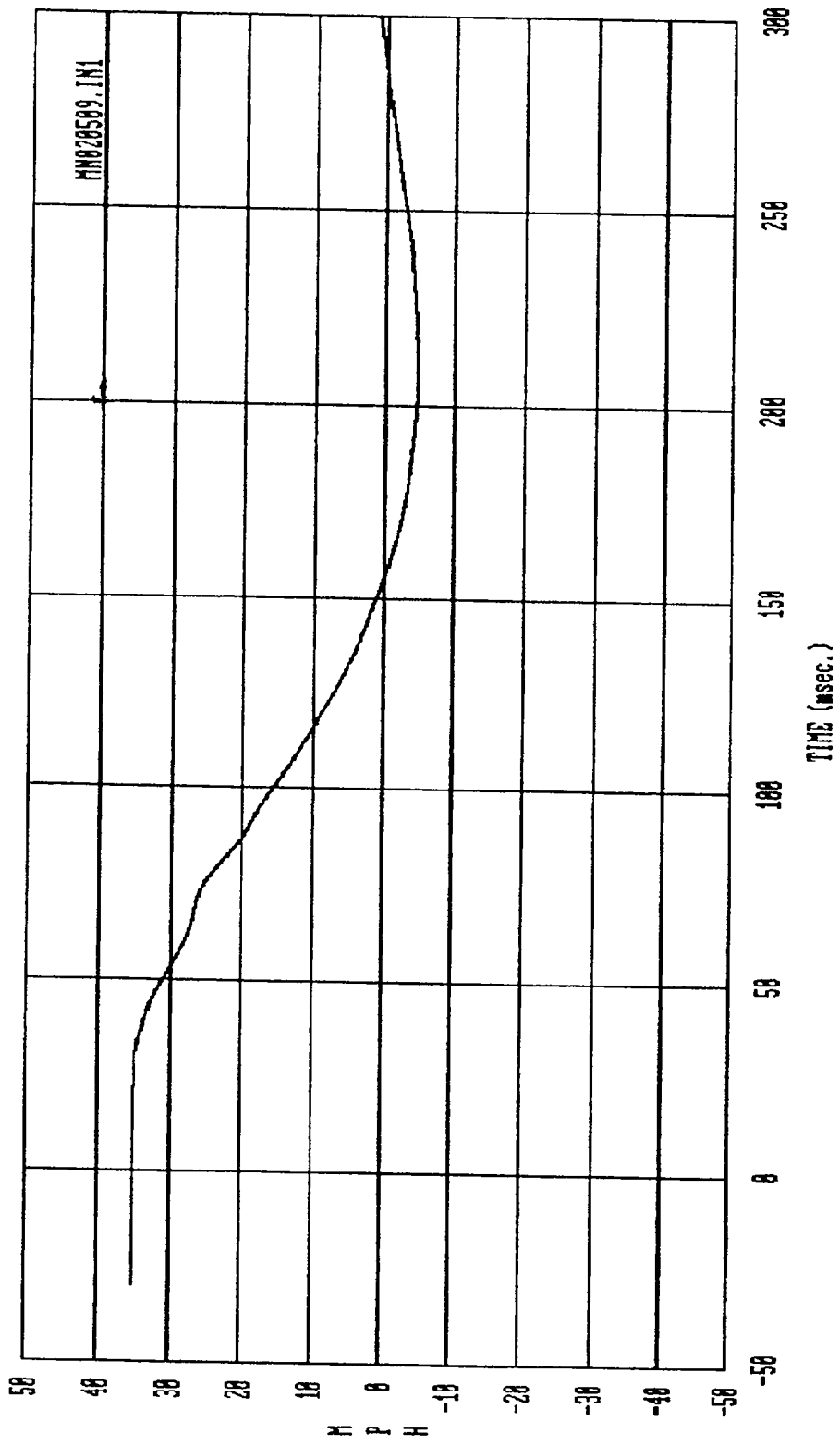
Curve: Driver femur load -- Left femur Filter: SAE CLASS 600 Max = 209.82 Min = -1250.8
 MSE Date: 05/07/92 Program: 1992 NCAP - #1 Vehicle: 1992 Ford Ranger



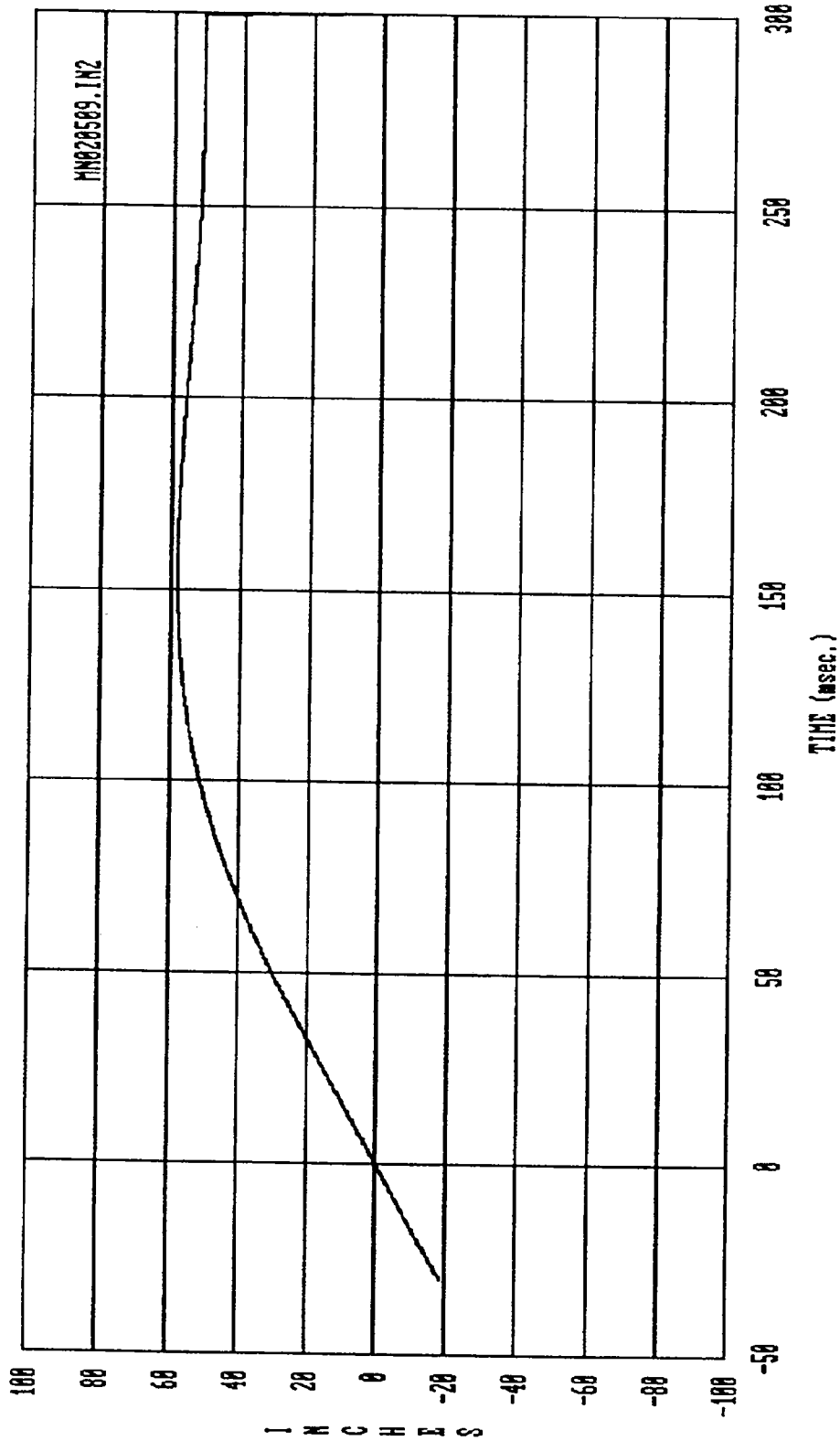
Curve: Driver femur load -- Right femur Filter: SAE CLASS 600 Max = 101.24 Min = -1874.7
MSE Date: 05/07/92 Program: 1992 NCAP - #1 Vehicle: 1992 Ford Ranger



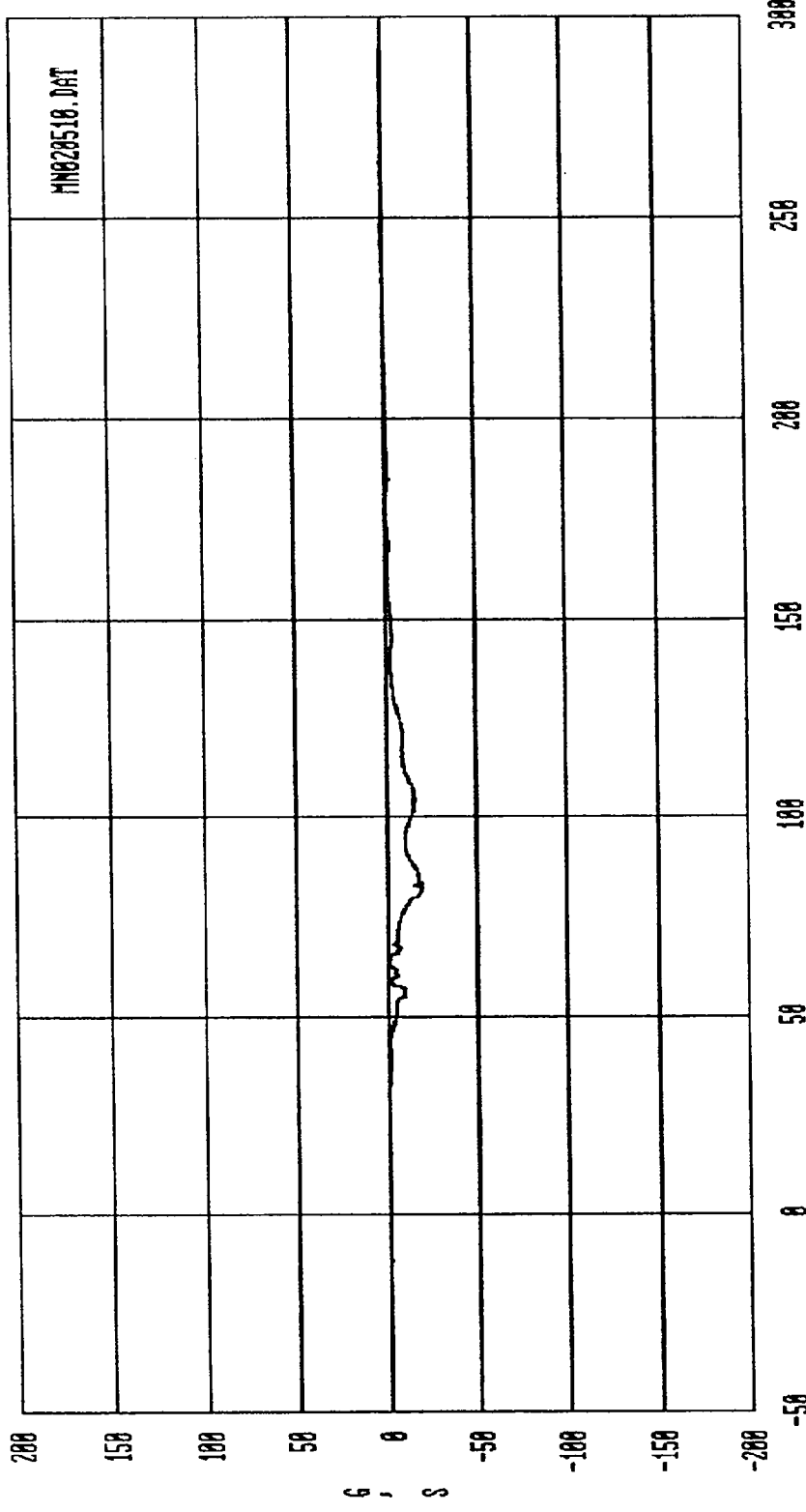
Curve: Passenger head acceleration -- X axis Filter: SAE CLASS 1000 Max = 4.9276 Min = -22.790
 MSE Date: 05/07/92 Program: 1992 NCAP - #1 Vehicle: 1992 Ford Ranger



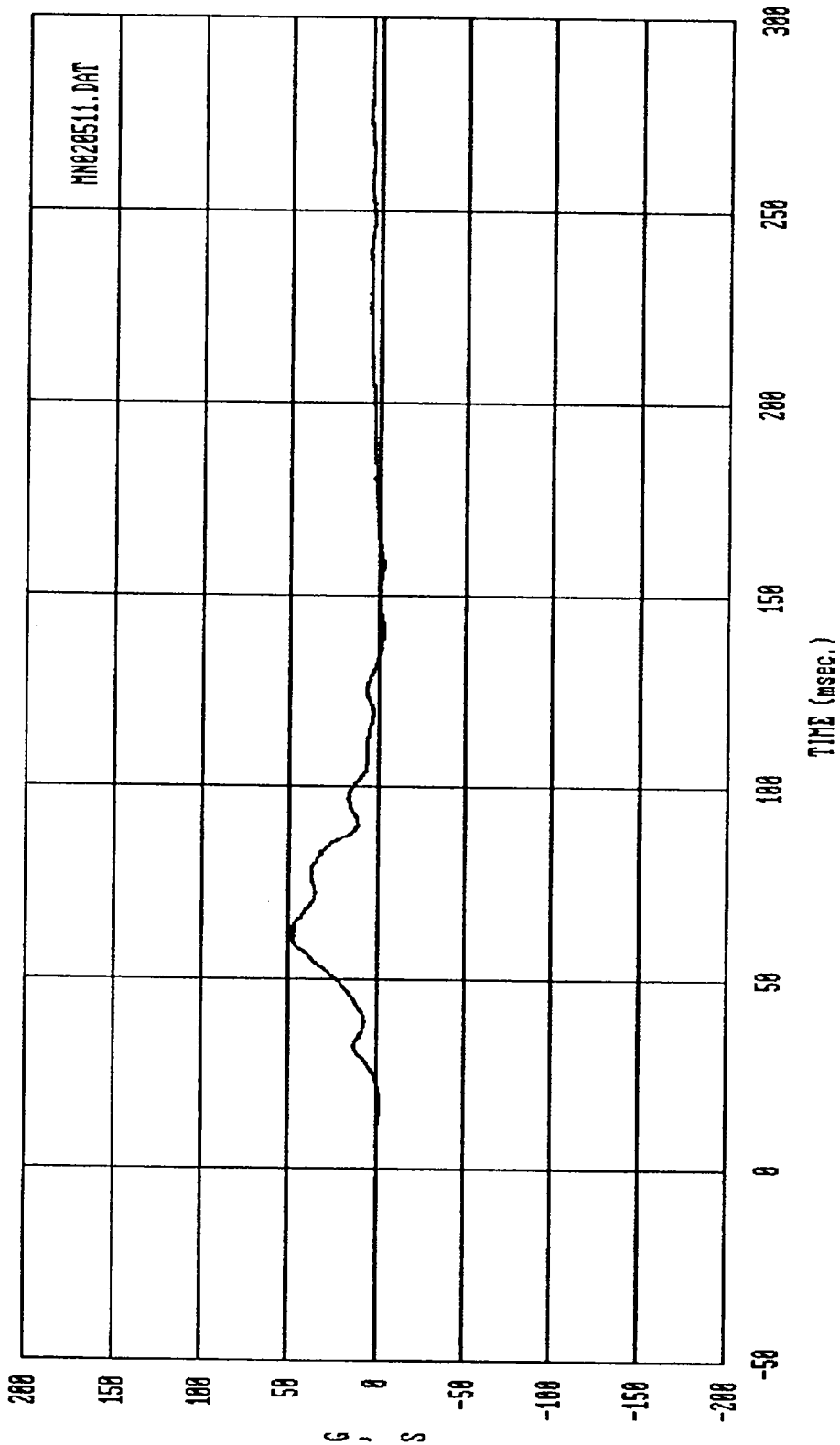
Curve: Passenger head delta V -- X axis
 Filter: SAE CLASS 188 Max = 35.200 Min = -4.7450
 MSE Date: 85/87/92 Program: 1992 NCAP - #1 Vehicle: 1992 Ford Ranger



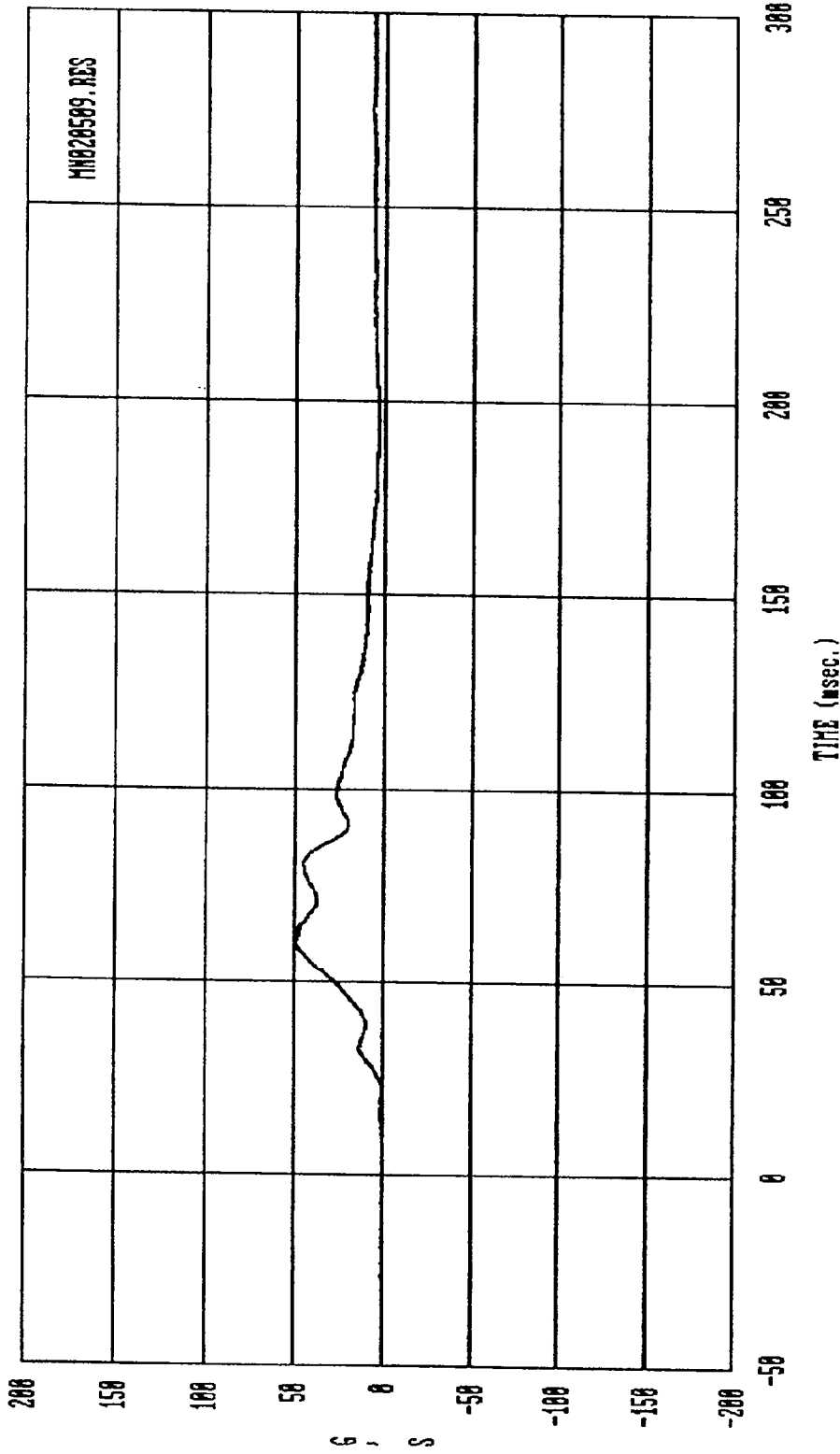
Curve: Passenger head displacement -- X axis Filter: SAE CLASS 100 Max = 58.234 Min = 51.388
MSE Date: 05/07/92 Program: 1992 NCAP - #1 Vehicle: 1992 Ford Ranger



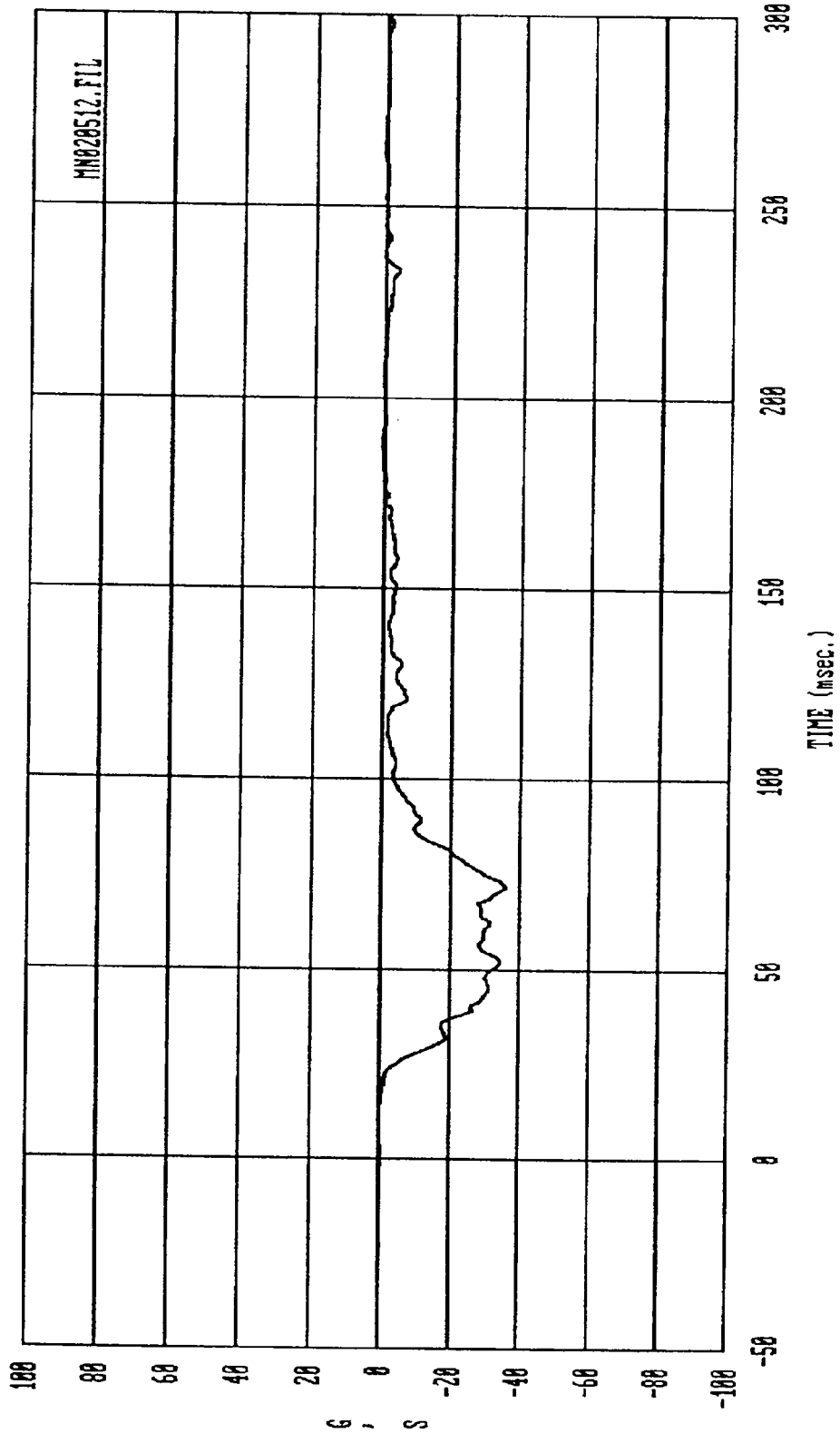
Curve: Passenger head acceleration -- Y axis Filter: SAE CLASS 1000 Max = 1.5450 Min = -19.534
 MSE Date: 05/07/92 Program: 1992 NCAP - #1 Vehicle: 1992 Ford Ranger



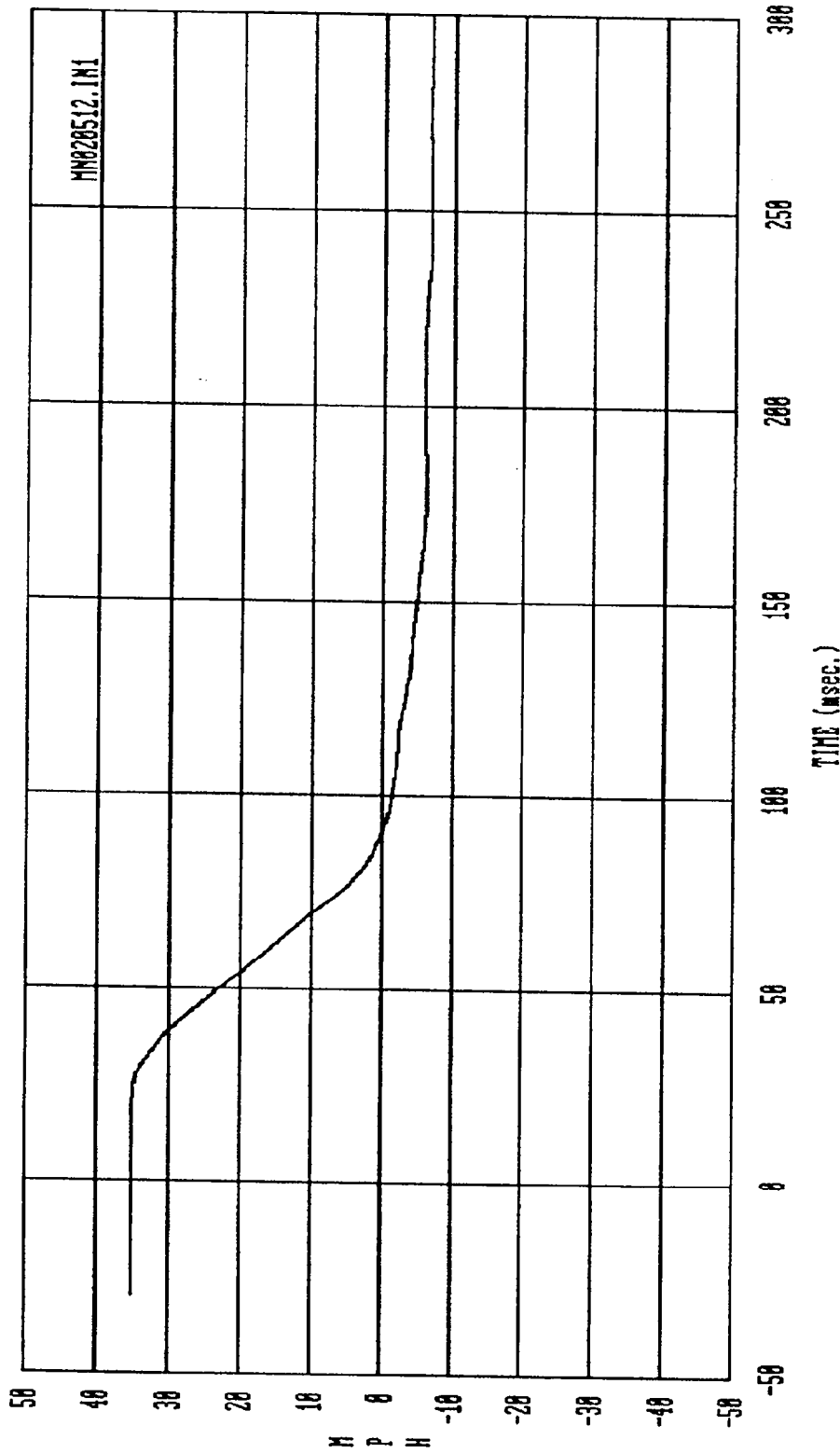
Curve: Passenger head acceleration - Z axis Filter: SAE CLASS 1000 Max = 49.324 Min = -2.3382
 MSE Date: 05/07/92 Program: 1992 NCAP - #1 Vehicle: 1992 Ford Ranger



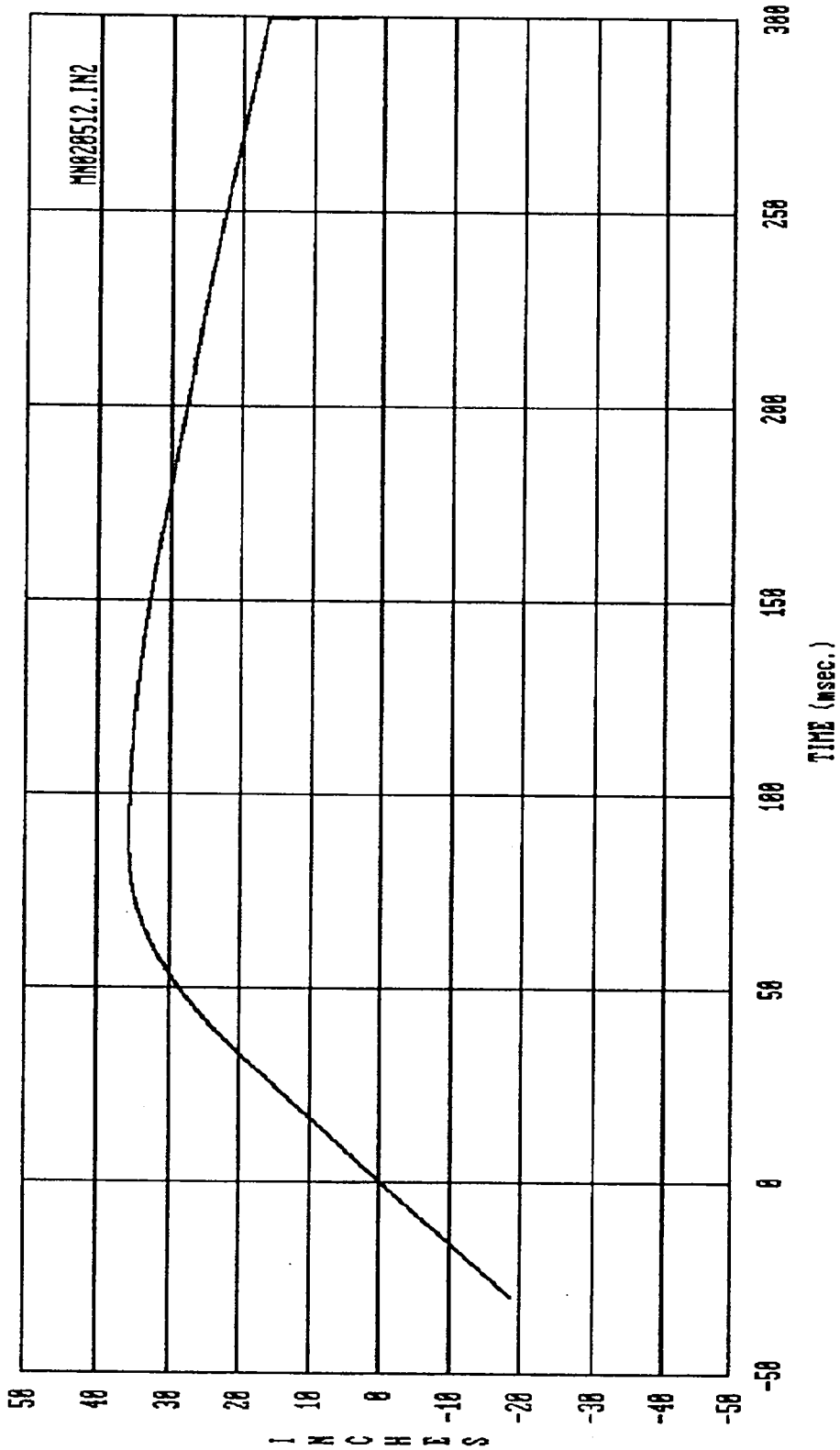
Curve: Passenger head acceleration -- Resultant Filter: SAE CLASS 1000 Max = 50.414 Min = .00000
MSE Date: 05/07/92 Program: 1992 NCAP - #1 Vehicle: 1992 Ford Ranger



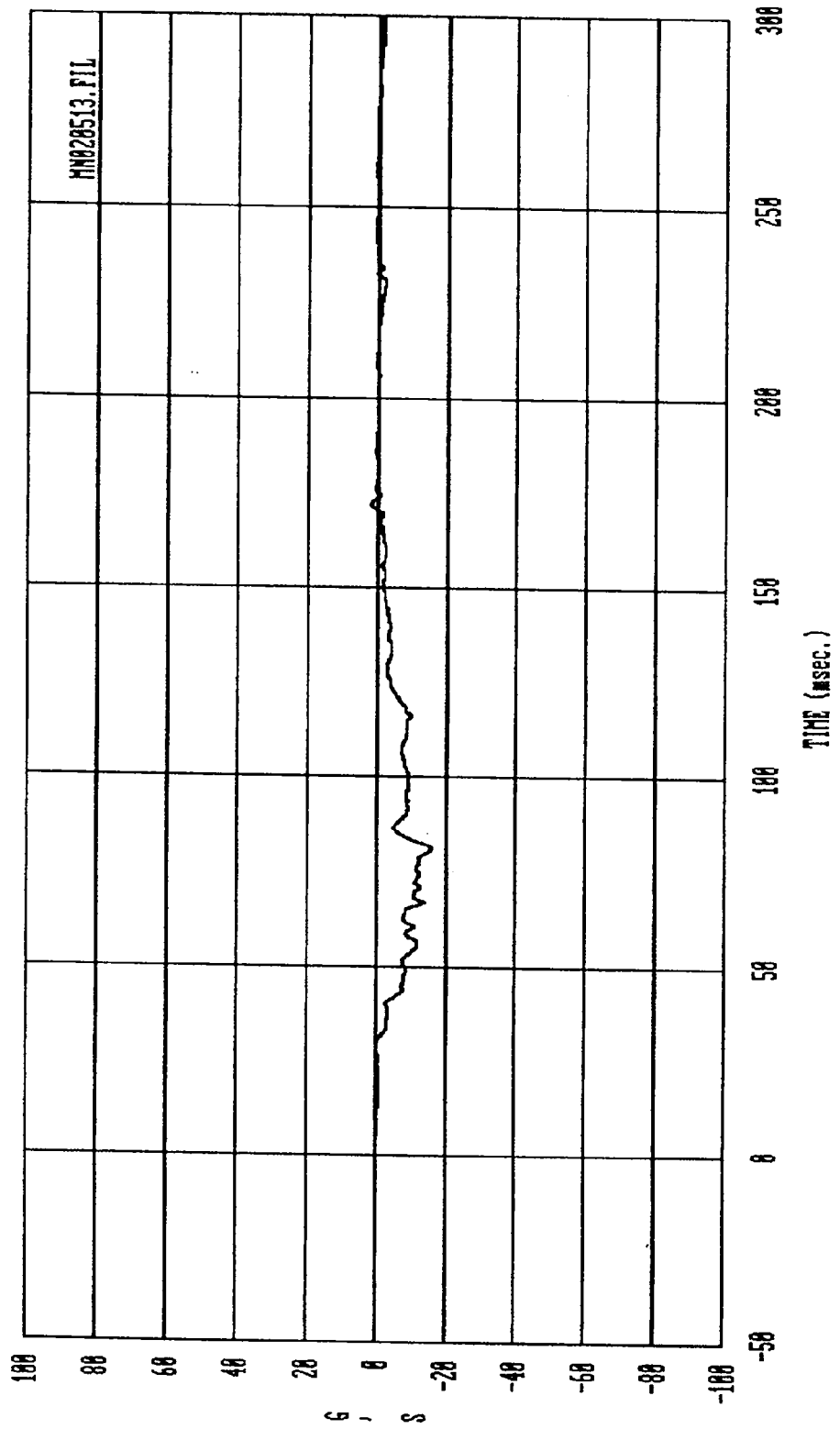
Curve: Passenger chest acceleration -- X axis Filter: SAE CLASS 180 Max = .04474 Min = -35.921
 MSE Date: 05/07/92 Program: 1992 NCAP - #1 Vehicle: 1992 Ford Ranger



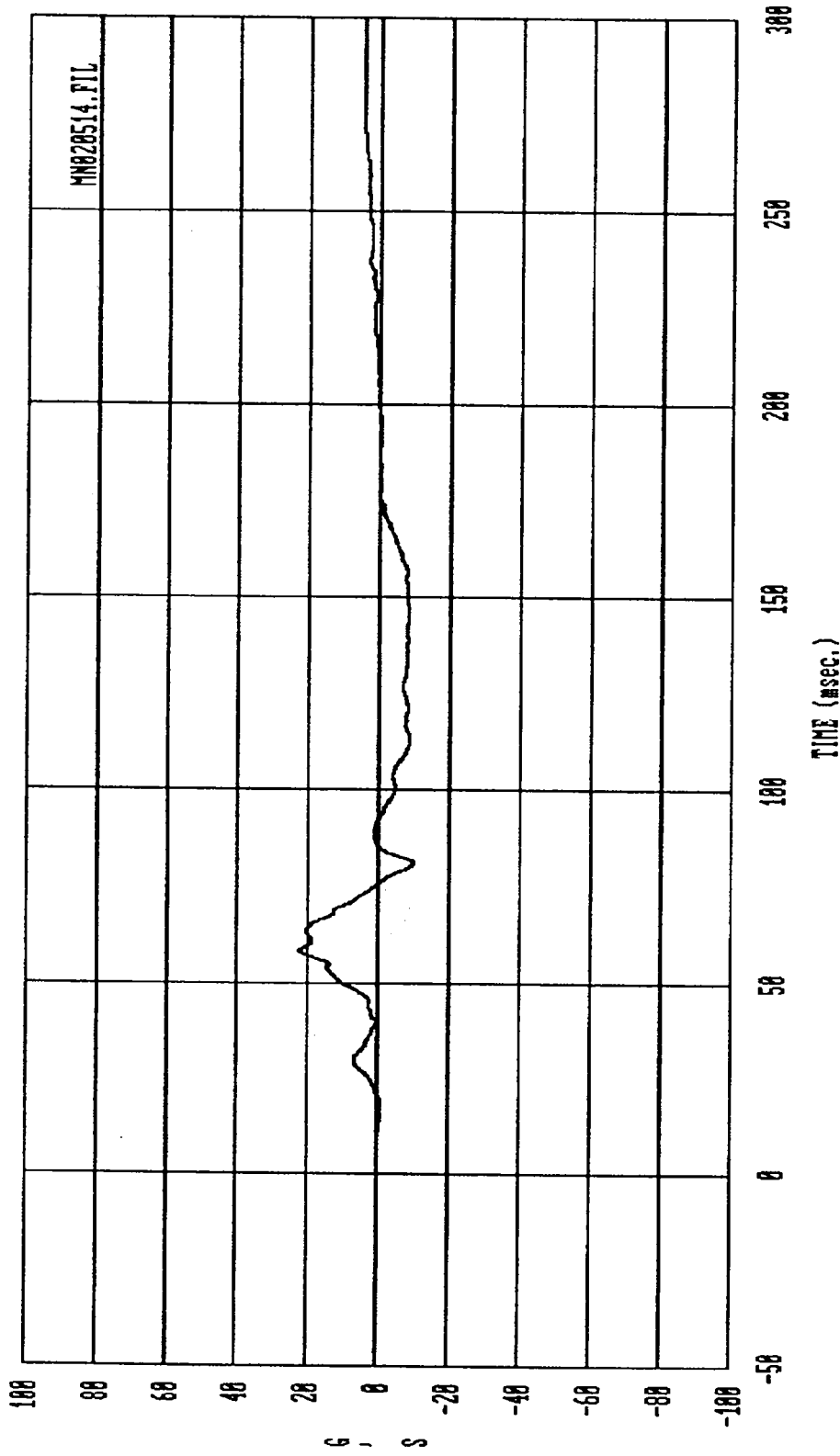
Curve: Passenger chest delta V -- X axis Filter: SHE CLASS 100 Max = 35.200 Min = -6.7329
MSE Date: 05/07/92 Program: 1992 NCAP - #1 Vehicle: 1992 Ford Ranger



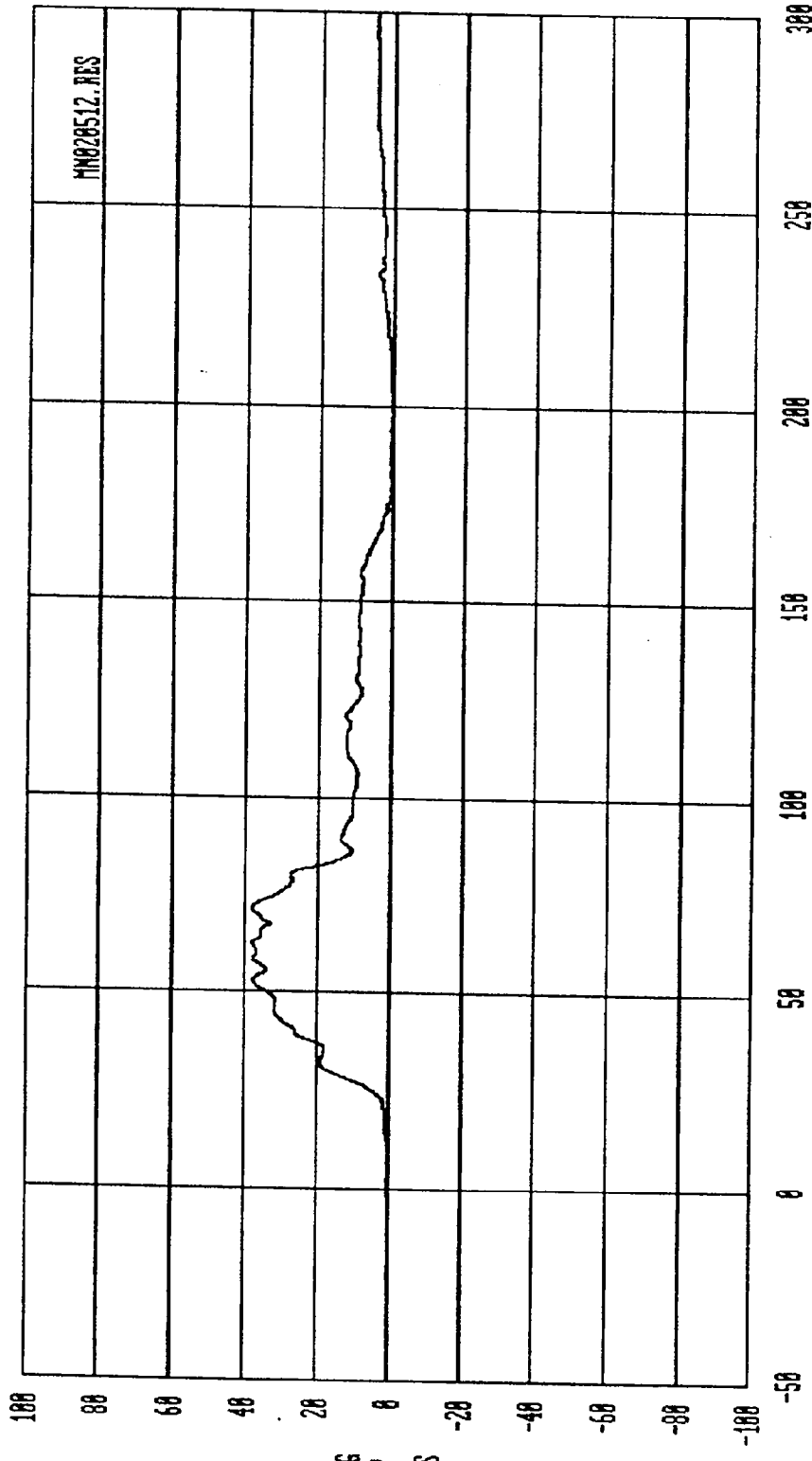
Curve: Passenger chest displacement -- X axis Filter: SAE CLASS 180 Max = 35.736 Min = 16.614
MSE Date: 05/07/92 Program: 1992 NCAP - #1 Vehicle: 1992 Ford Ranger



Curve: Passenger chest acceleration -- Y axis Filter: SAE CLASS 180 Max = 1.9728 Min = -15.544
 MSE Date: 05/07/92 Program: 1992 NCAP - #1 Vehicle: 1992 Ford Ranger

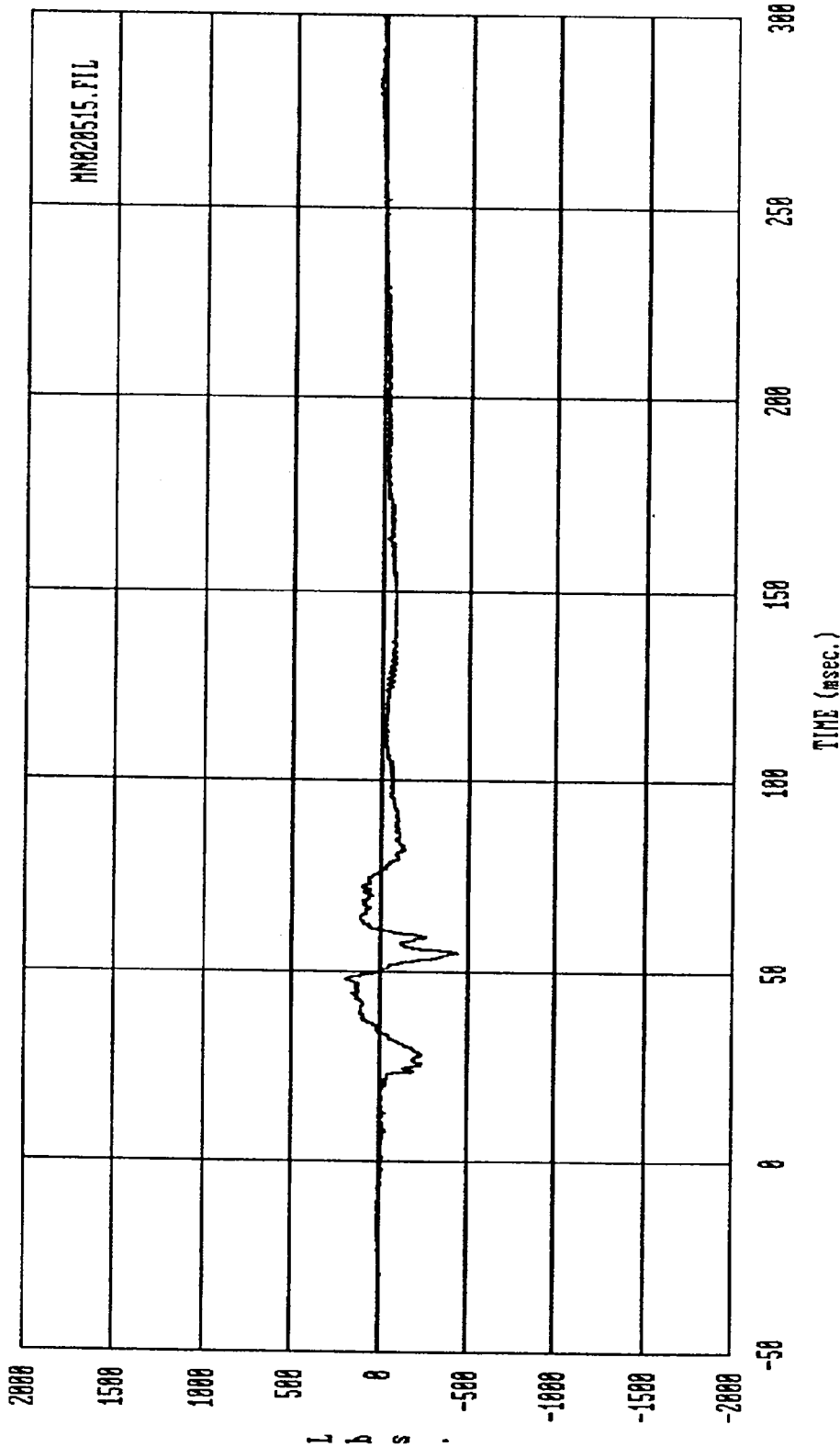


Curve: Passenger chest acceleration -- Z axis Filter: SAE CLASS 100 Max = 22.247 Min = -9.9262
MSE Date: 05/07/92 Program: 1992 NCAP - #1 Vehicle: 1992 Ford Ranger



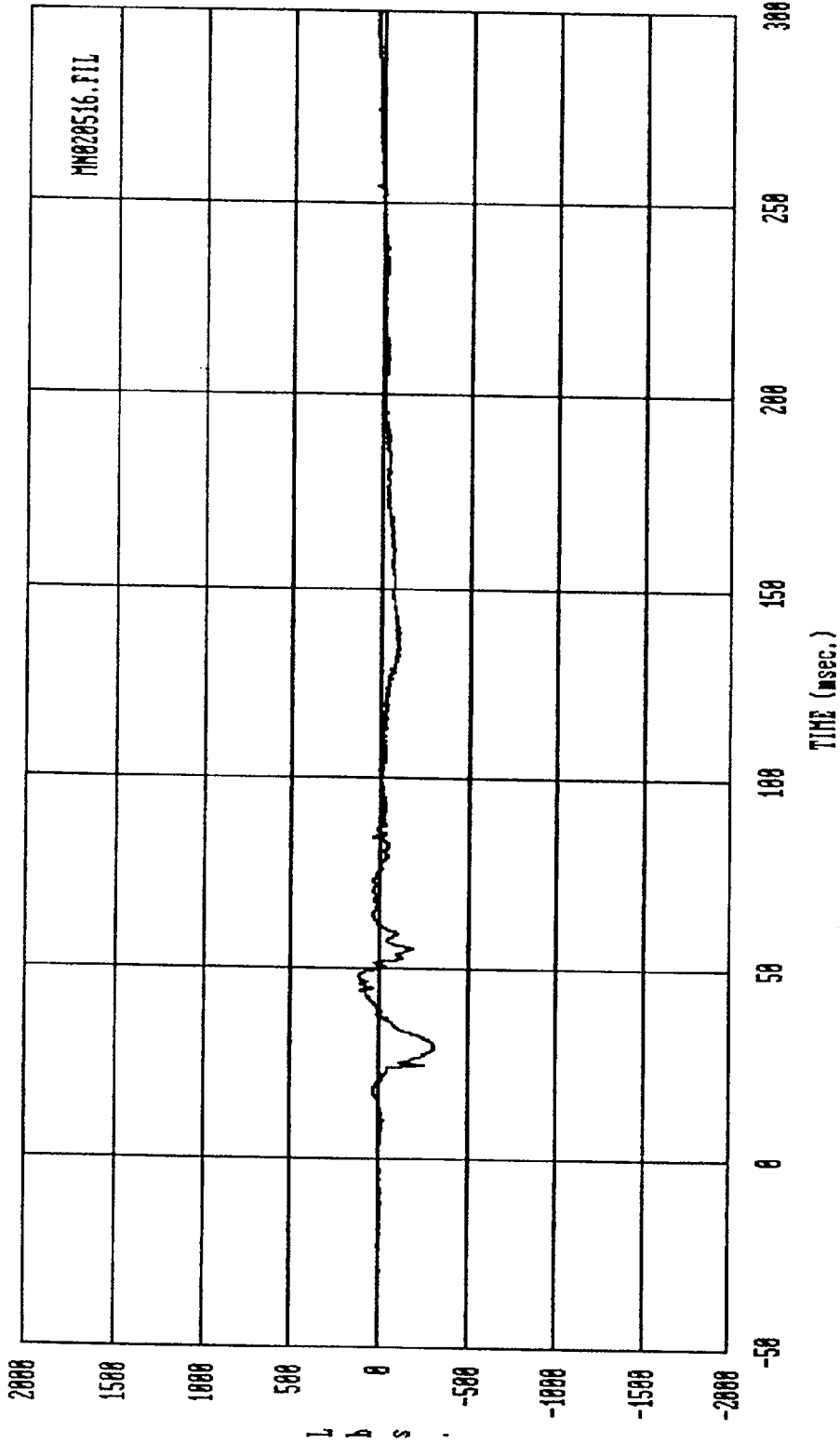
Curve: Passenger chest acceleration -- Resultant Filter: SAE CLASS 100 Max = 38.138 Min = .18556

MSE Date: 05/07/92 Program: 1992 NCAP - #1 Vehicle: 1992 Ford Ranger

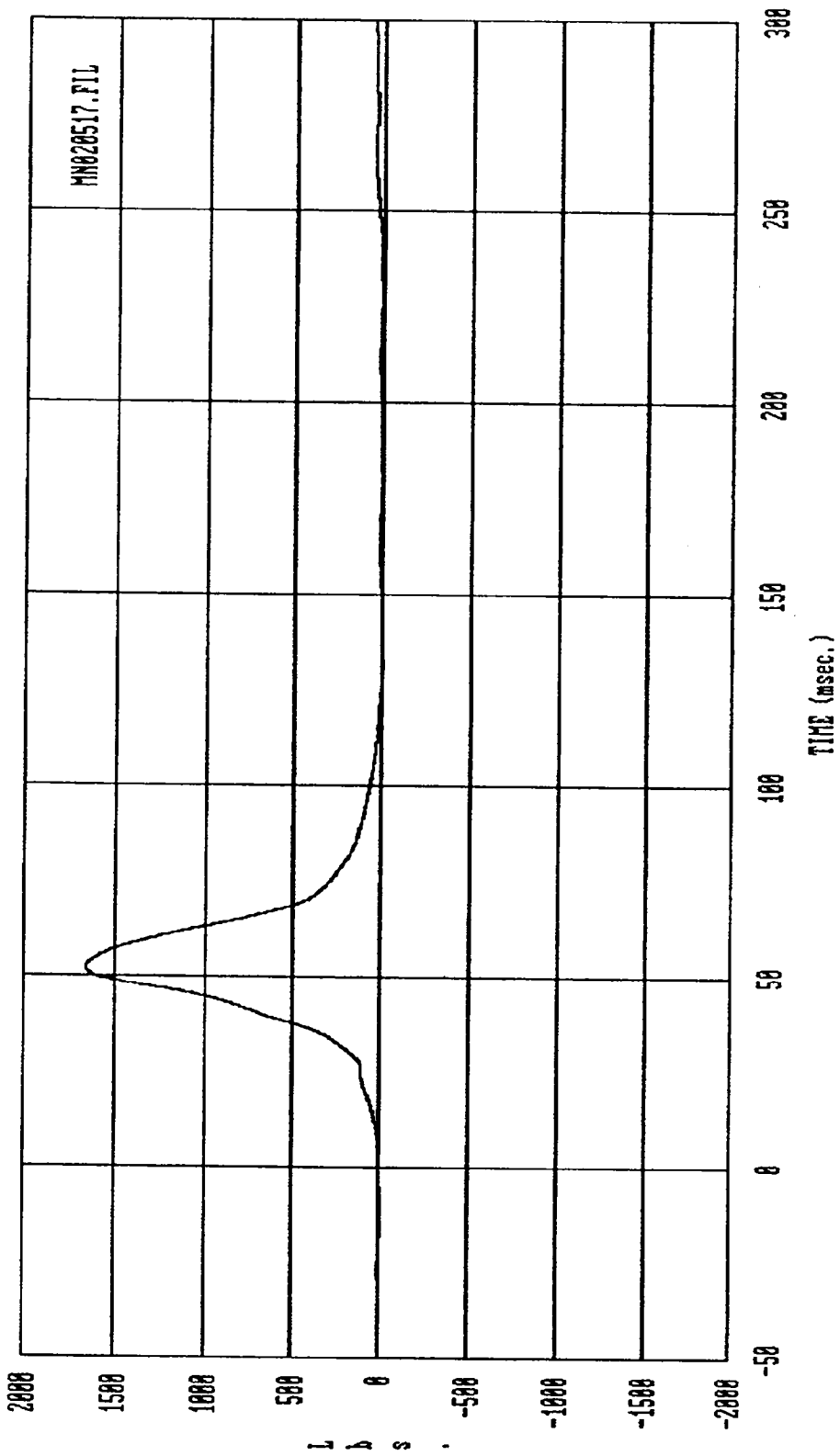


Curve: Passenger femur load -- Left femur Filter: SAE CLASS 600 Max = 195.17 Min = -435.52

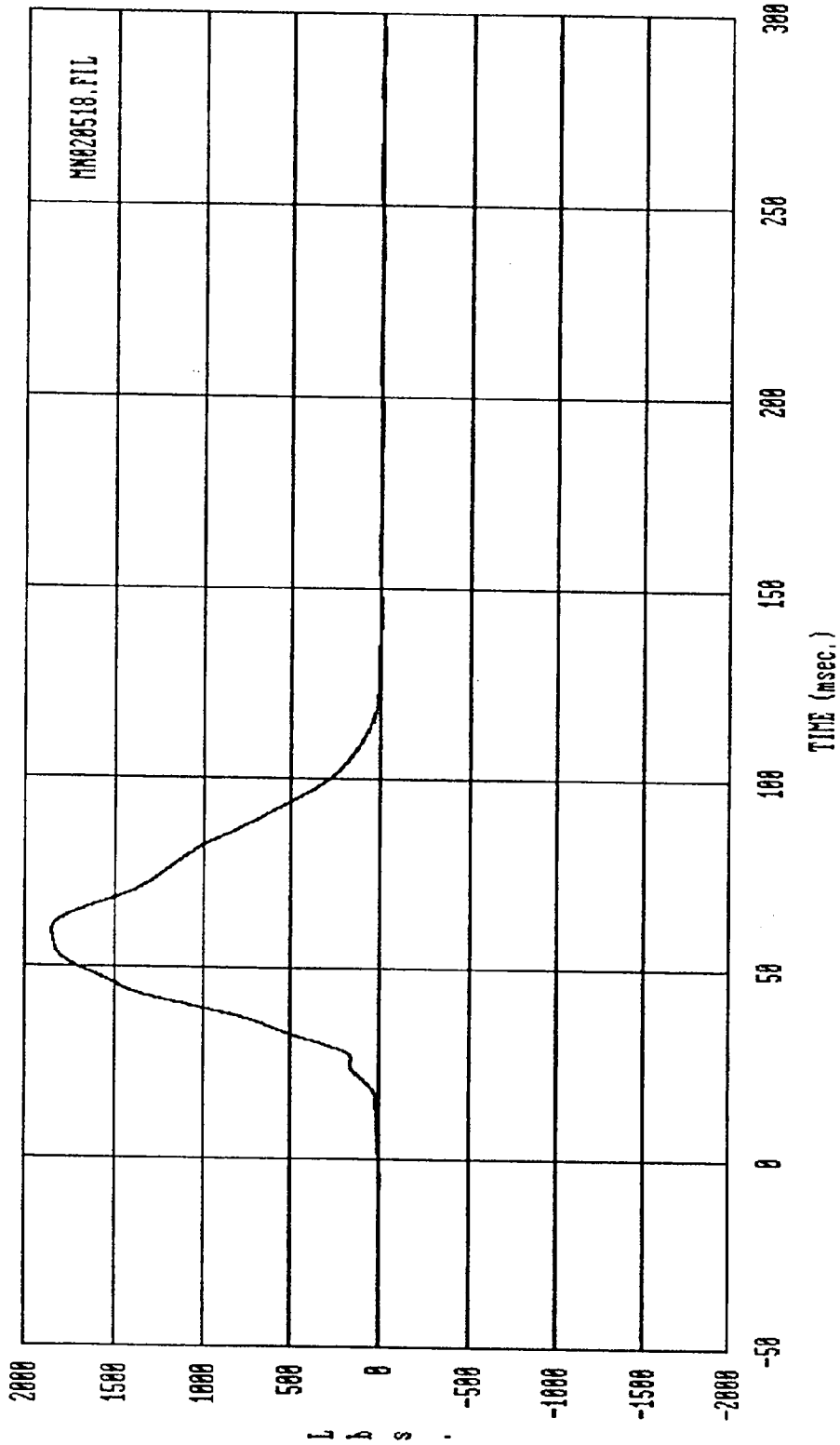
MSE Date: 05/07/92 Program: 1992 NCAP - #1 Vehicle: 1992 Ford Ranger



Curve: Passenger femur load -- Right femur Filter: SAE CLASS 600 Max = 119.71 Min = -385.54
 MSE Date: 85/87/92 Program: 1992 NCAP - #1 Vehicle: 1992 Ford Ranger

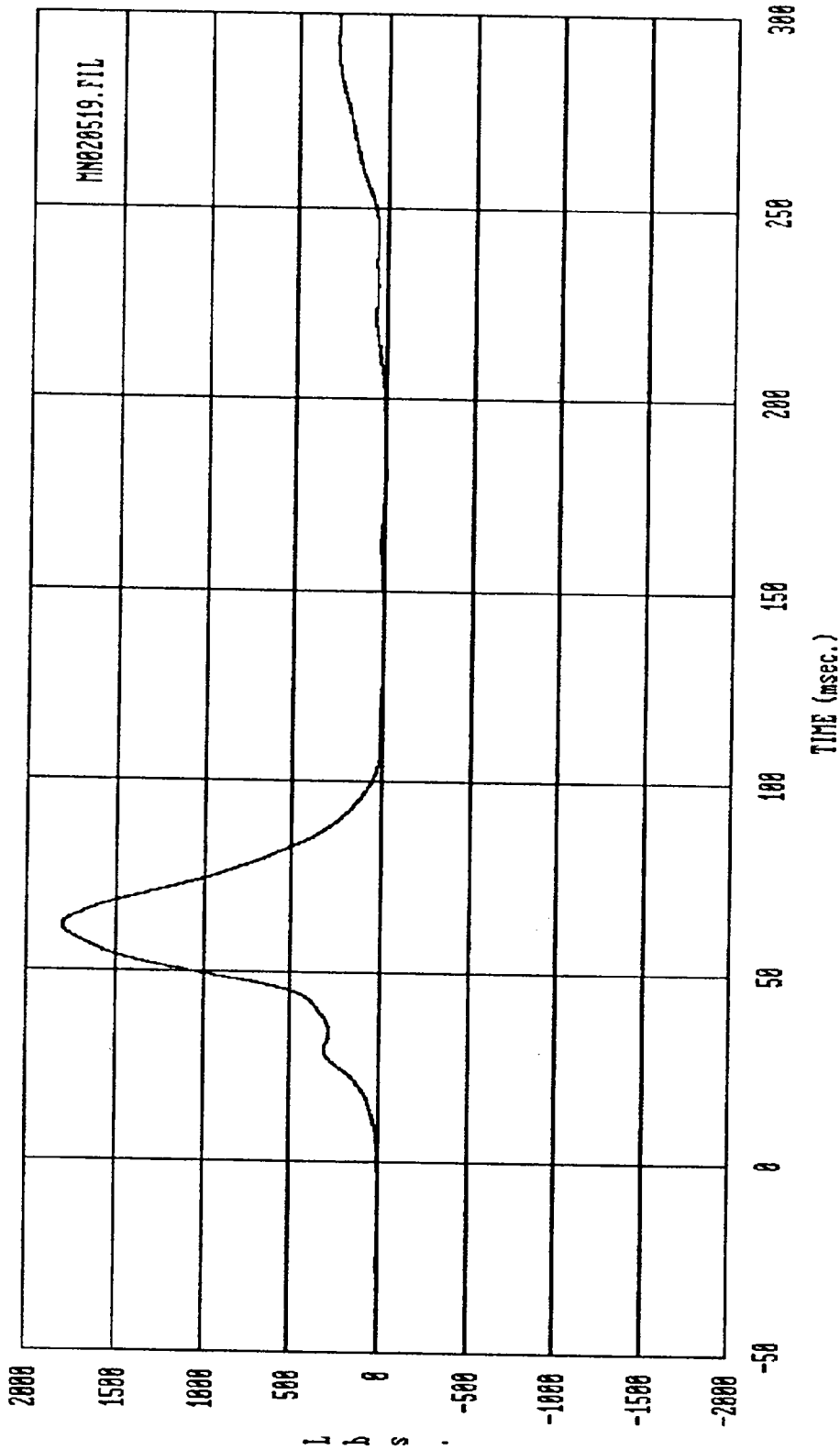


Curve: Driver lap belt load Filter: SAE CLASS 60 Max = 1658.6 Min = -3.6705
MSE Date: 05/07/92 Program: 1992 NCAP - #1 Vehicle: 1992 Ford Ranger

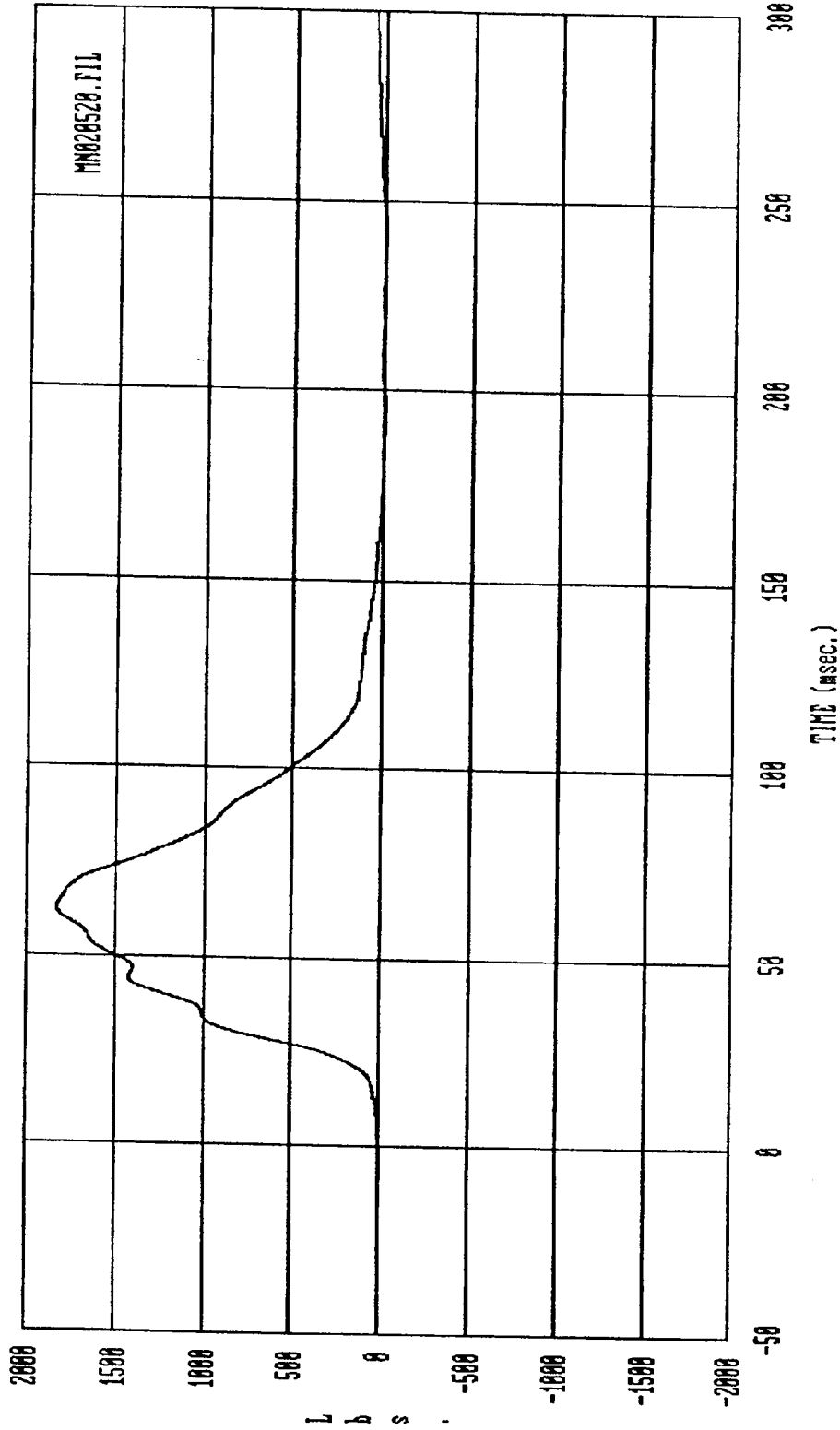


Curve: Driver shoulder belt load Filter: SAE CLASS 60 Max = 1851.8 Min = -9.9124

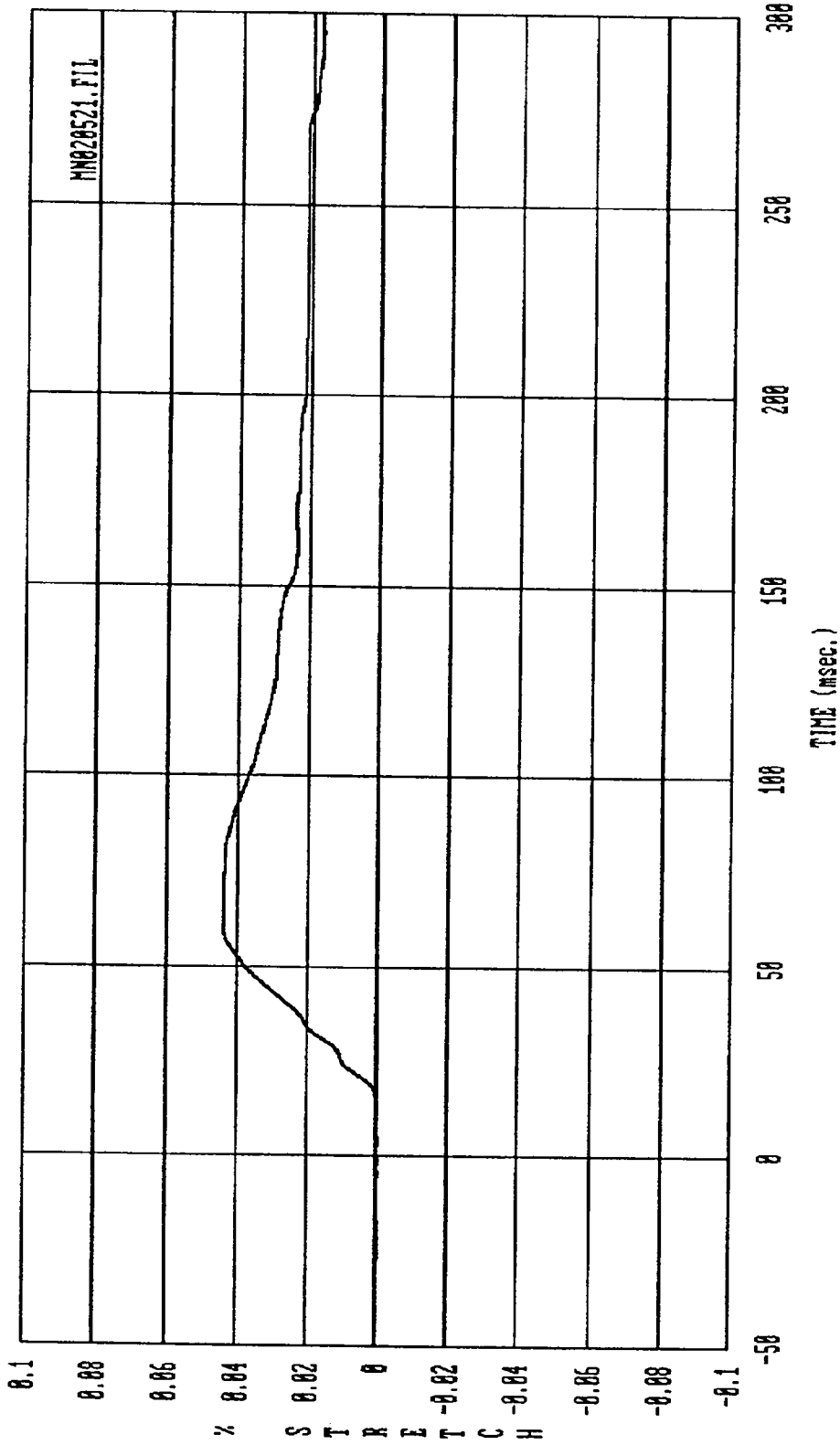
MSE Date: 05/07/92 Program: 1992 NCAP - #1 Vehicle: 1992 Ford Ranger



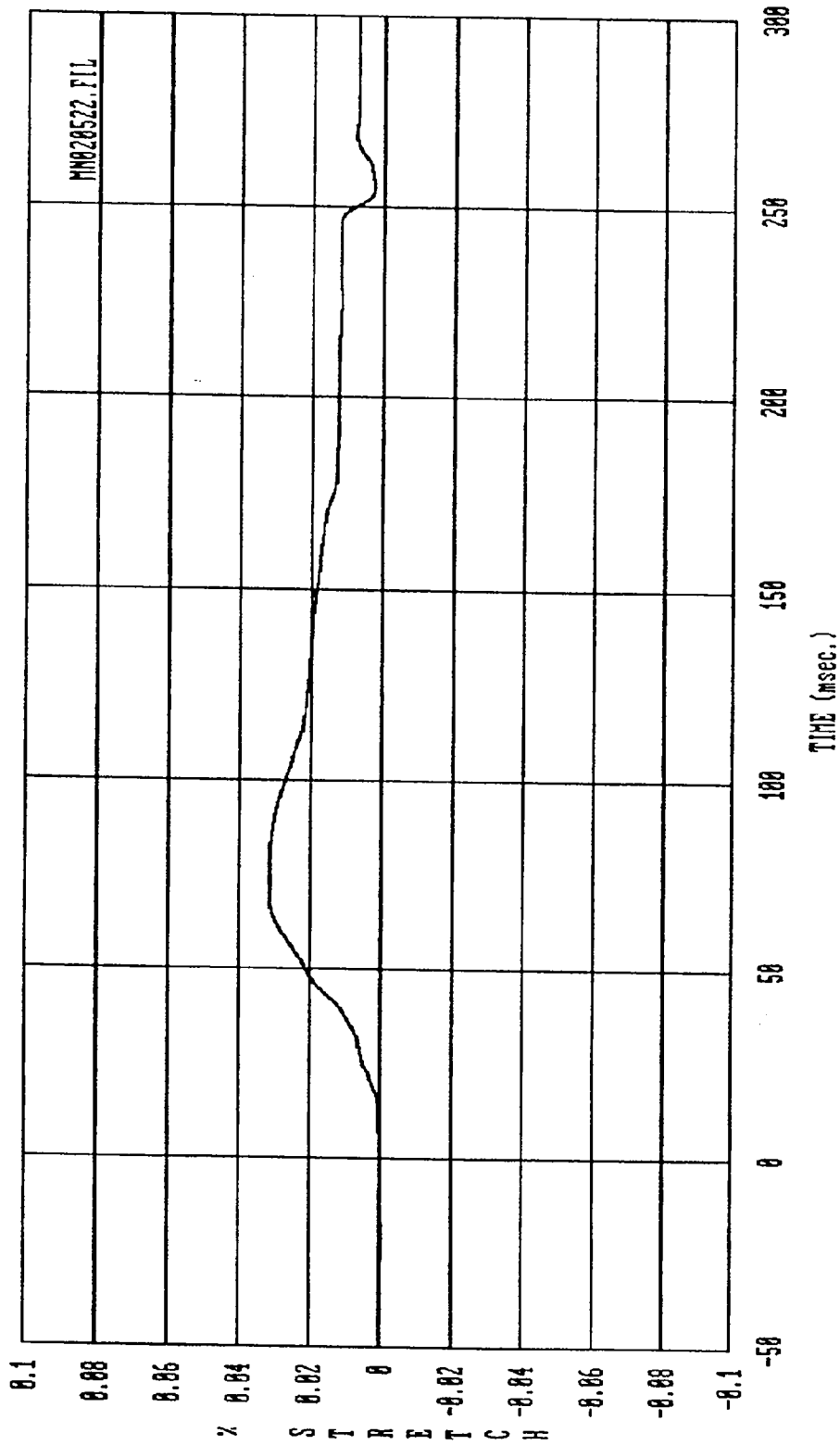
Curve: Passenger lap belt load Filter: SAE CLASS 60 Max: 1803.2 Min: -3.8380
MSE Date: 05/07/92 Program: 1992 NCAP - #1 Vehicle: 1992 Ford Ranger



Curve: Passenger shoulder belt load
 Filter: SAE CLASS 60 Max = 1831.7 Min = -0.9286
 MSE Date: 05/07/92 Program: 1992 NCAP - #1 Vehicle: 1992 Ford Ranger

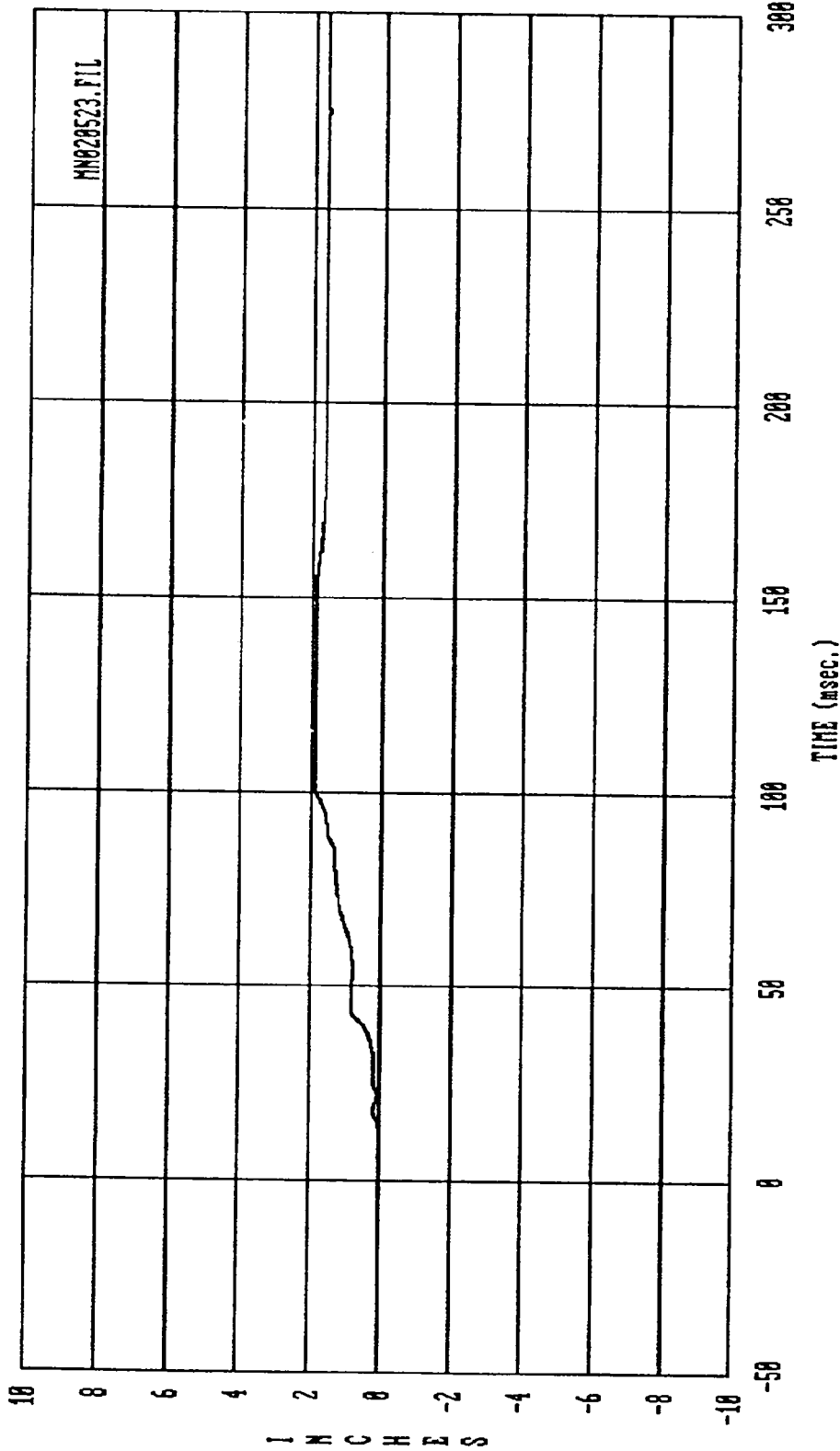


Curve: Driver seat belt elongation (Percent Stretch) Filter: SAE CLASS 60 Max = .441740-81 Min = -.19247E-83
 MSE Date: 05/07/92 Program: 1992 NCAP - #1 Vehicle: 1992 Ford Ranger

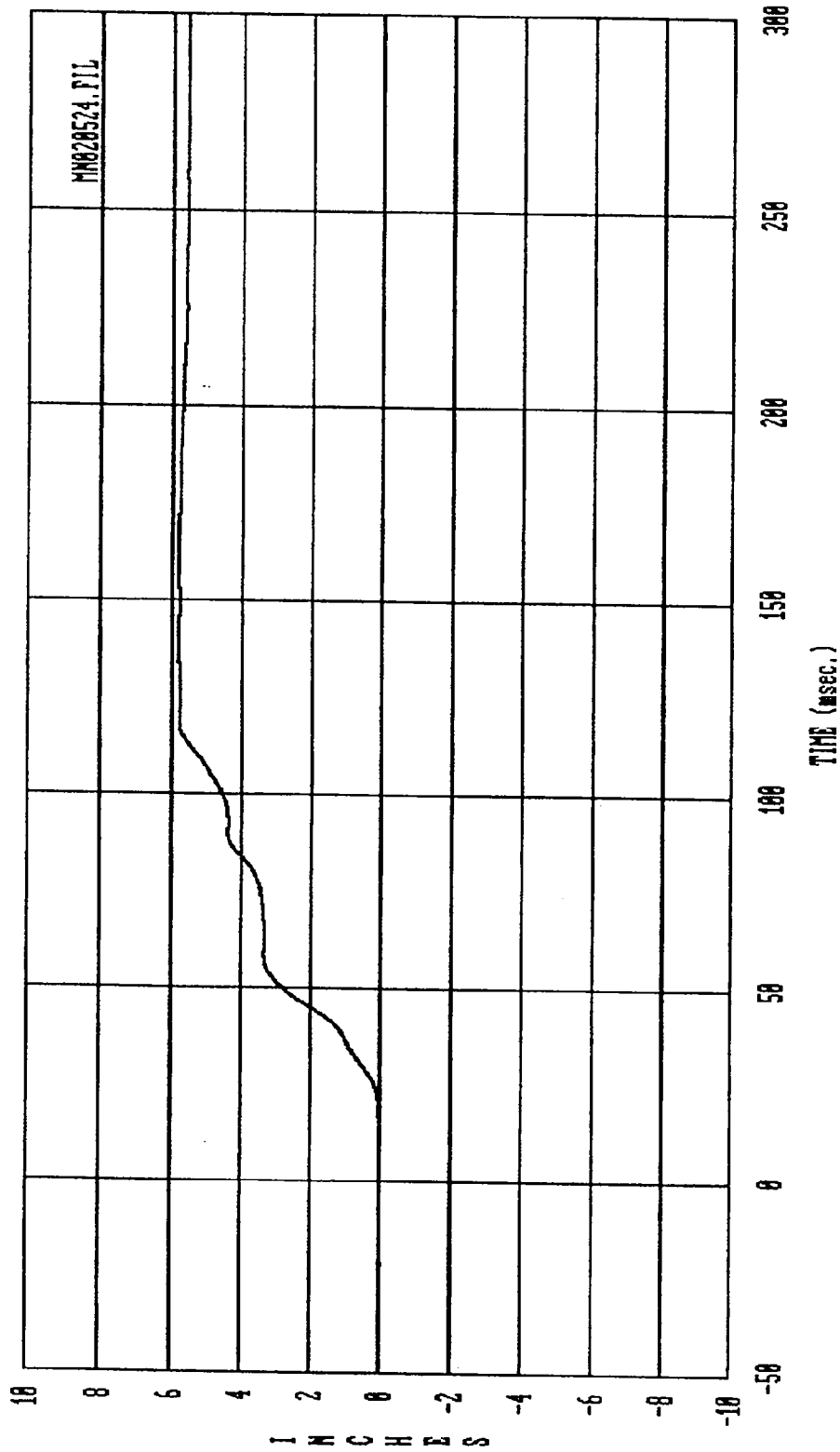


Curve: Passenger seat belt elongation (Percent Stretch) Filter: SAE CLASS 60 Max = .31640E-01 Min = .11984E-03

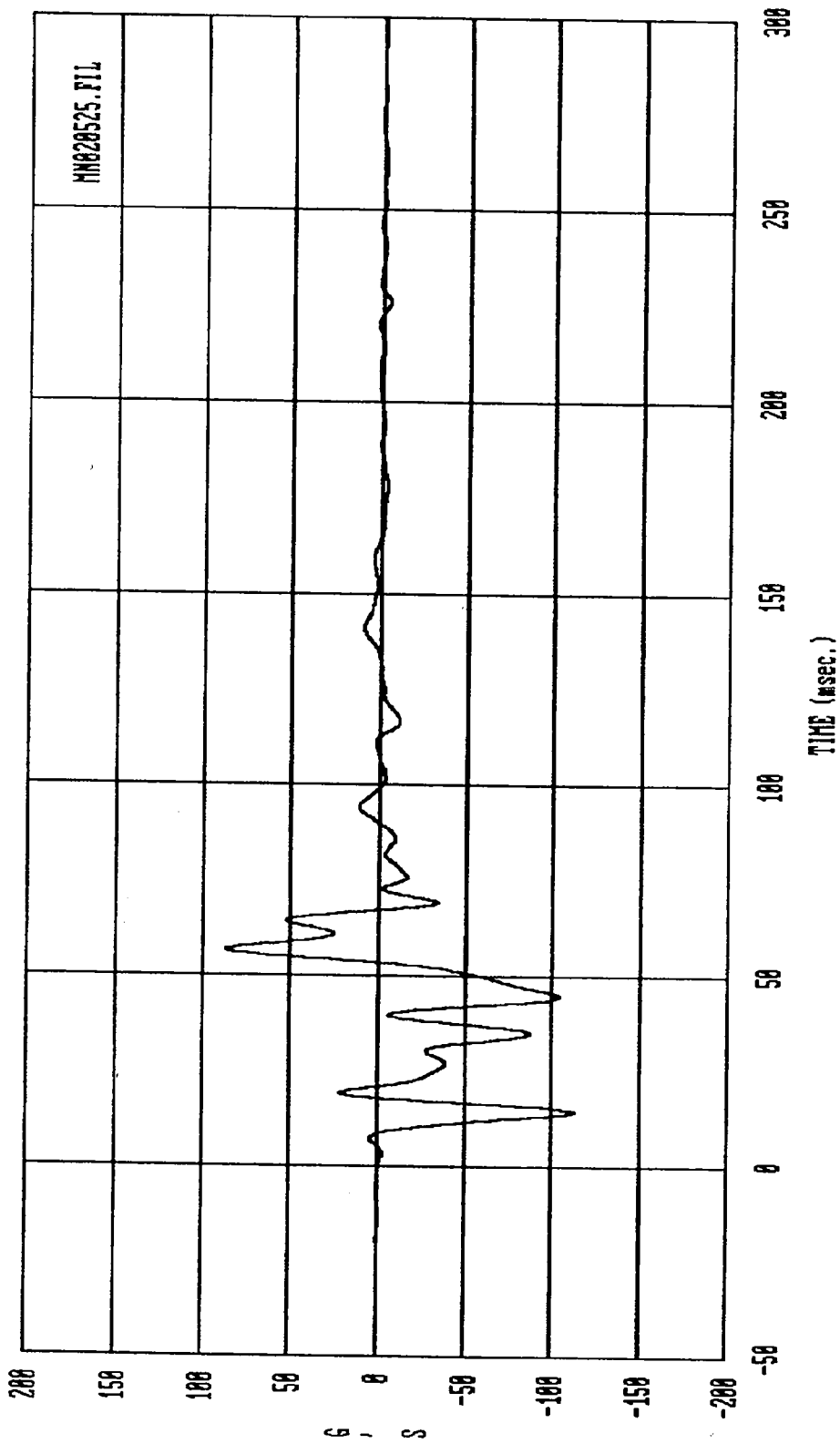
MSE Date: 05/07/92 Program: 1992 NCAP - #1 Vehicle: 1992 Ford Ranger



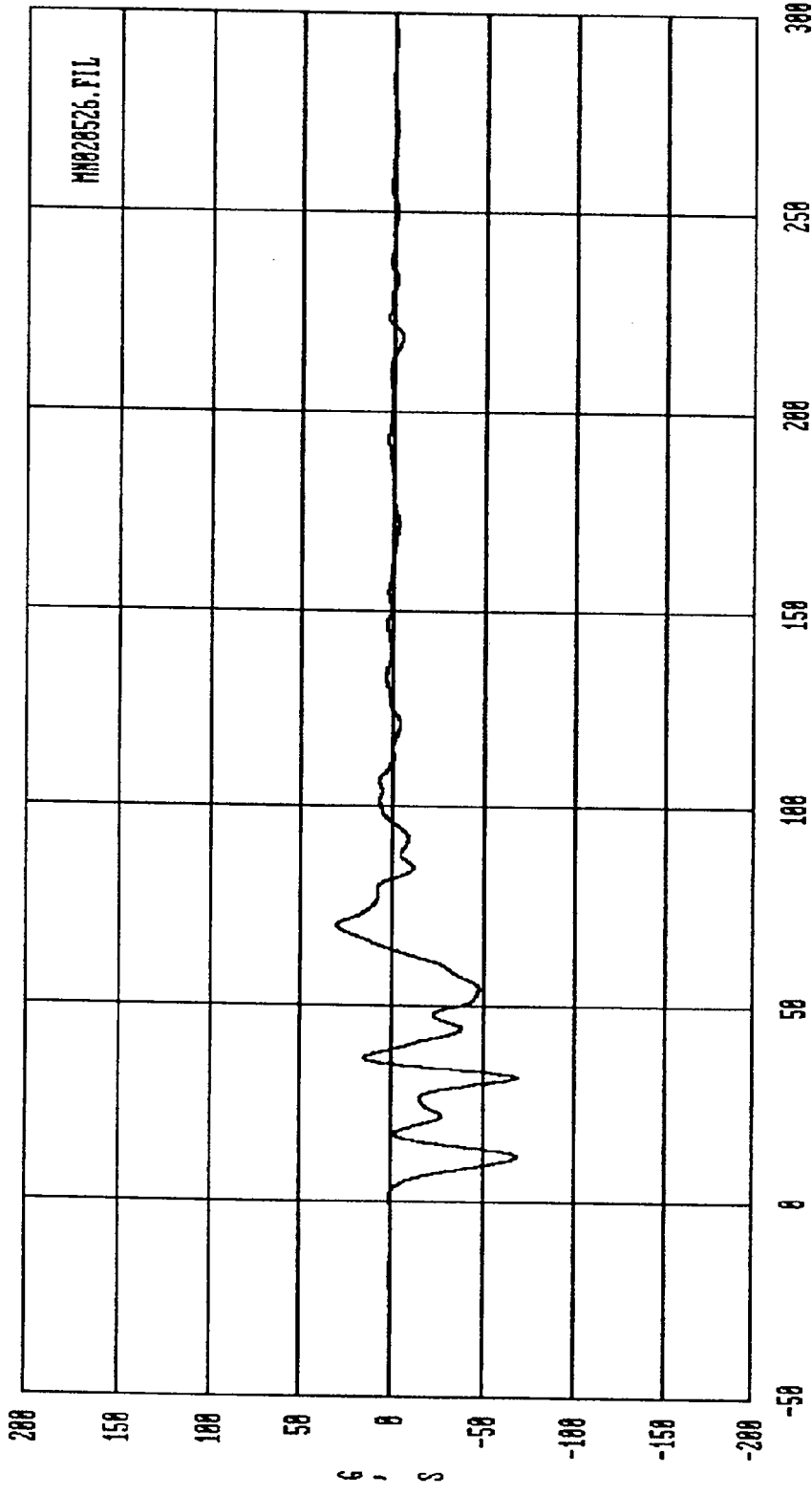
Curve: Driver seat belt pullout
 Filter: SAE CLASS 60 Max = 1.9889 Min = -.18915E-02
 MSE Date: 05/07/92 Program: 1992 NCAP - #1 Vehicle: 1992 Ford Ranger



Curve: Passenger seat belt pullout Filter: SAE CLASS 60 Max = 5.8110 Min = -.10540E-02
MSE Date: 05/07/92 Program: 1992 NCAP - #1 Vehicle: 1992 Ford Ranger

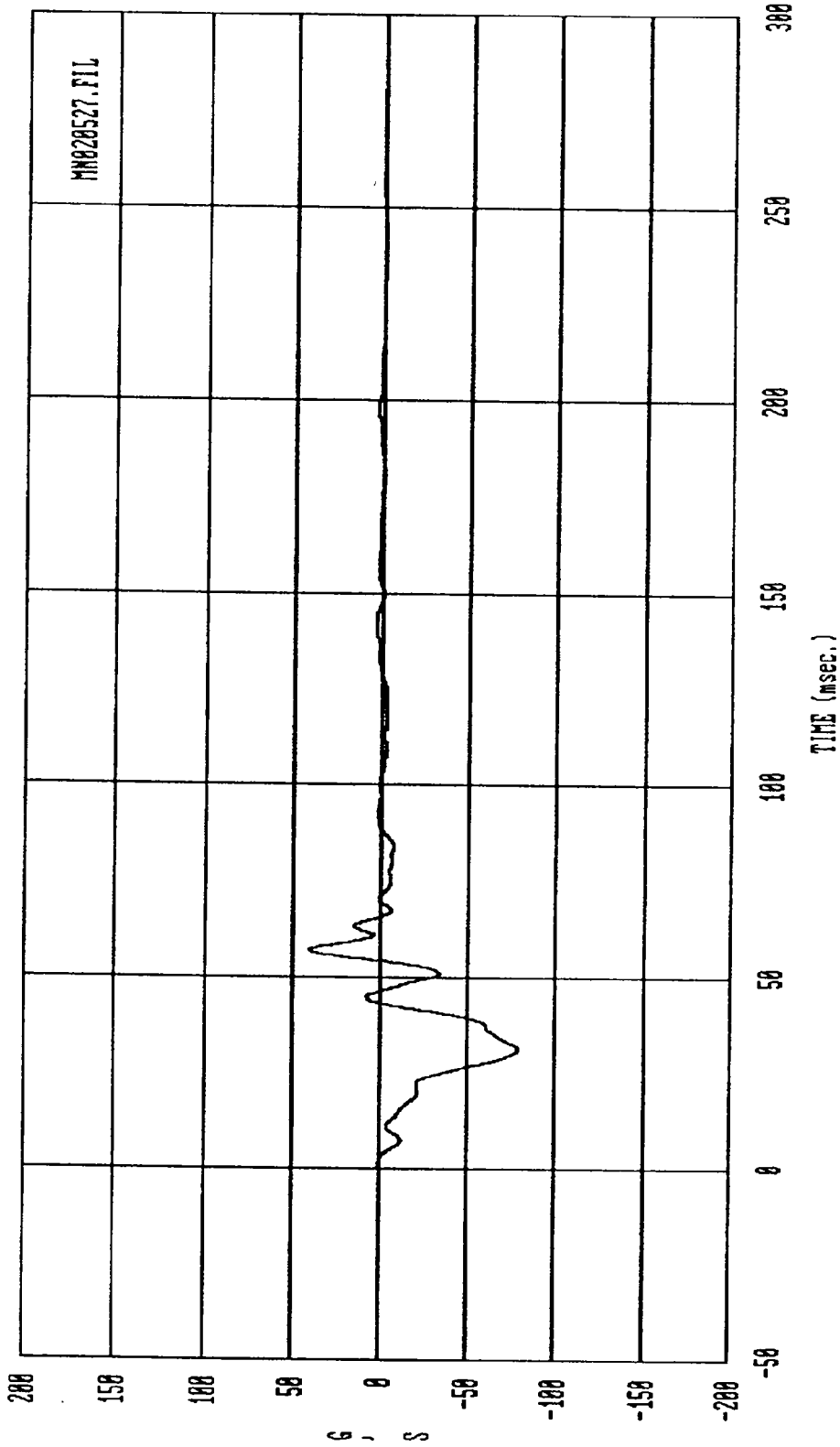


Curve: Left front caliper acceleration -- X axis Filter: SAE CLASS 60 Max = 86.897 Min = -112.34
 MSE Date: 05/07/92 Program: 1992 NCAP - #1 Vehicle: 1992 Ford Ranger



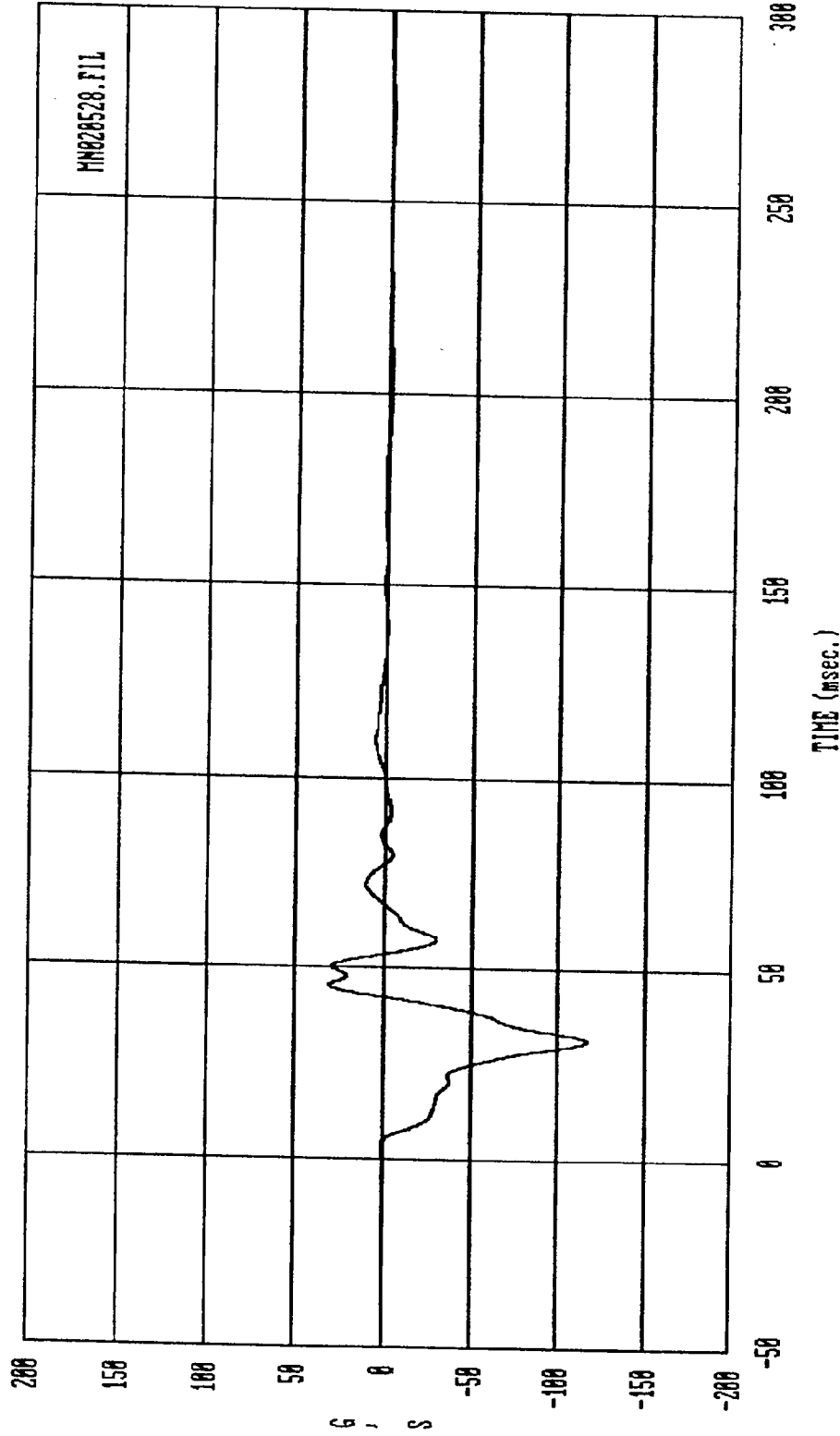
Curve: Right front caliper acceleration — X axis Filter: SAE CLASS 60 Max = 30.407 Min = -68.818

MSE Date: 05/07/92 Program: 1992 NCAP - #1 Vehicle: 1992 Ford Ranger

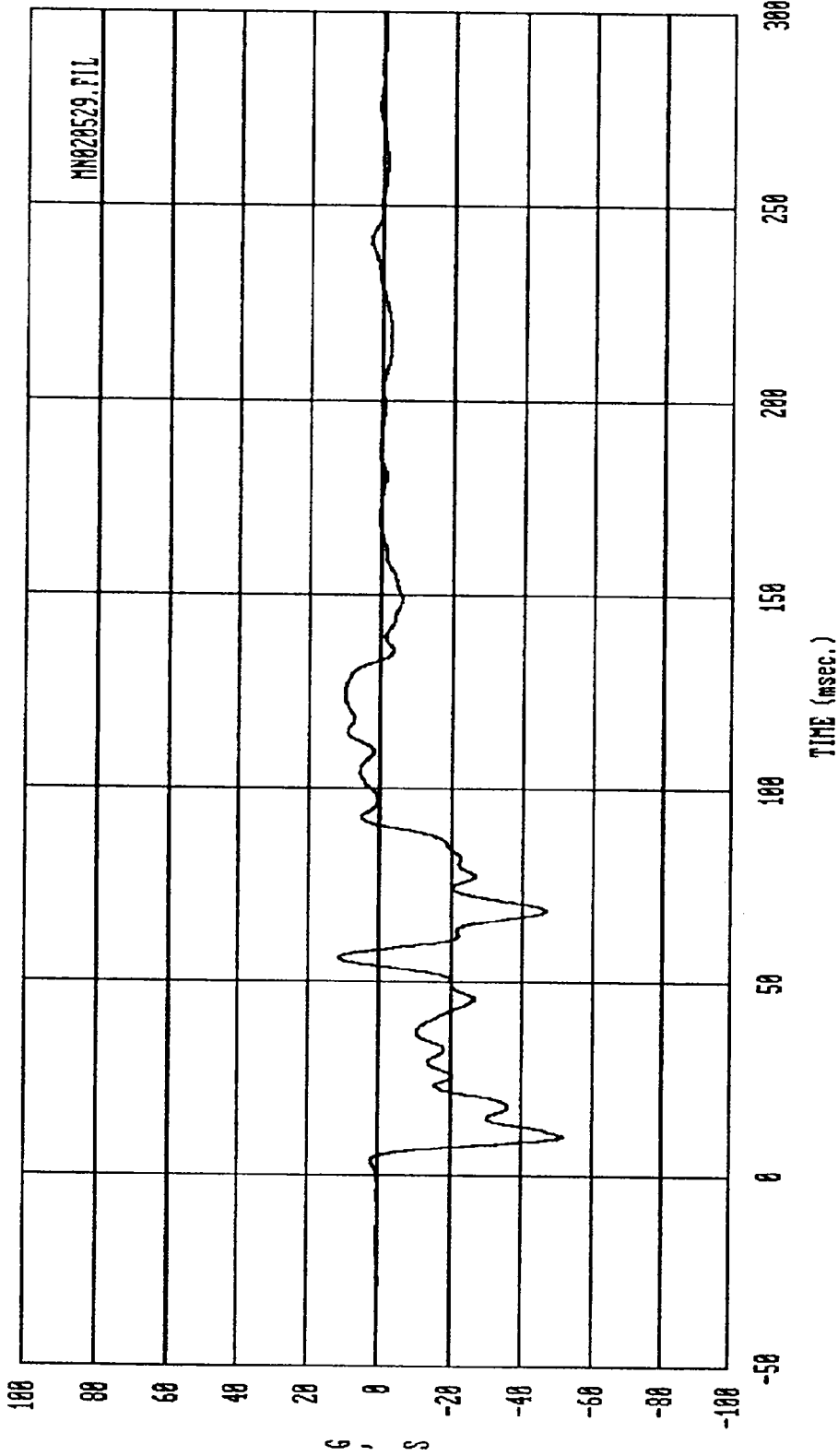


Curve: Engine bottom acceleration -- X axis Filter: SAE CLASS 60 Max = 40.938 Min = -79.272

MSE Date: 05/07/92 Program: 1992 NCAP - #1 Vehicle: 1992 Ford Ranger

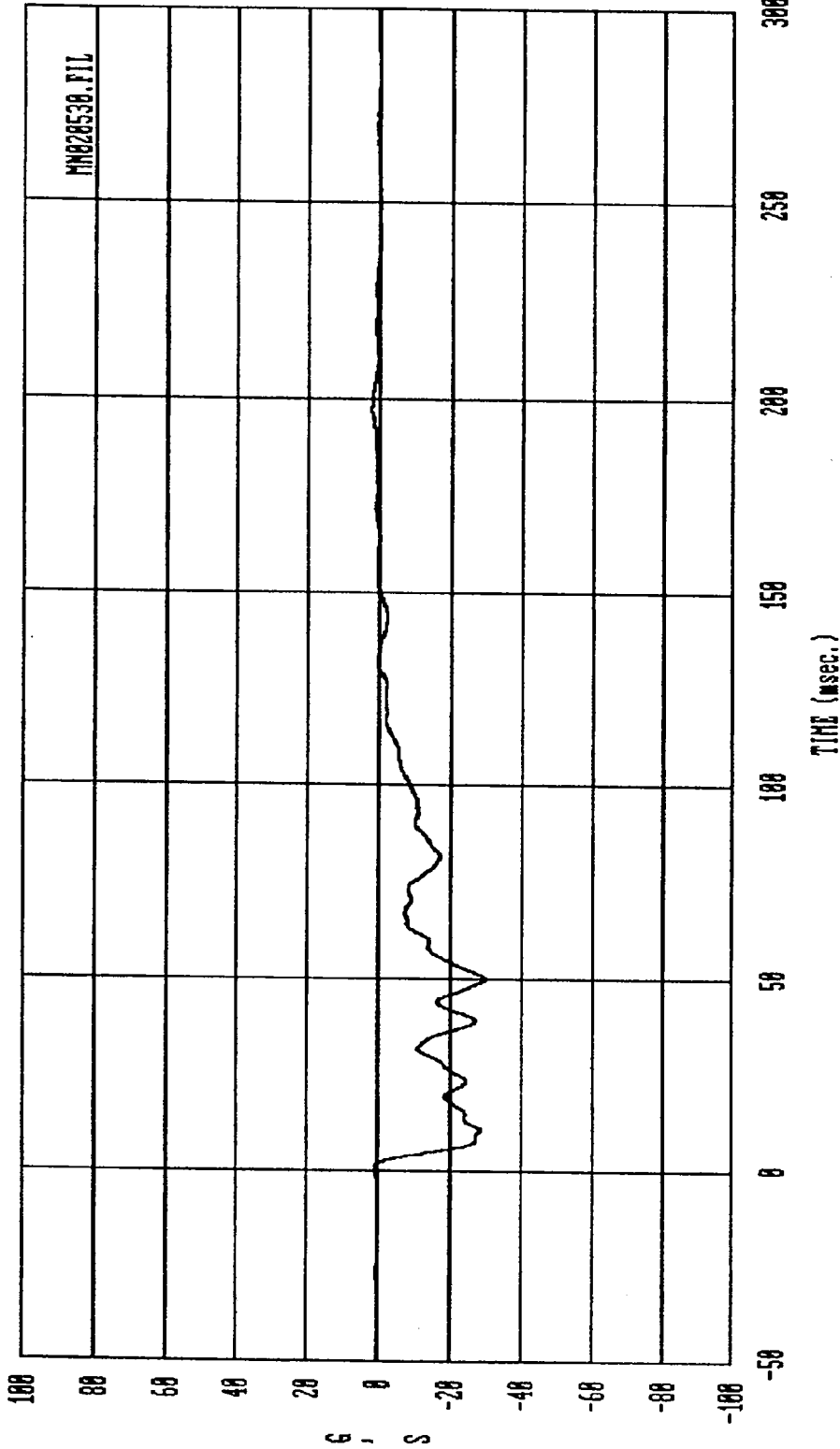


Curve: Engine top acceleration -- X axis
 Filter: SAE CLASS 60 Max = 31.381 Min = -116.78
 MSE Date: 05/07/92 Program: 1992 NCAP - #1 Vehicle: 1992 Ford Ranger



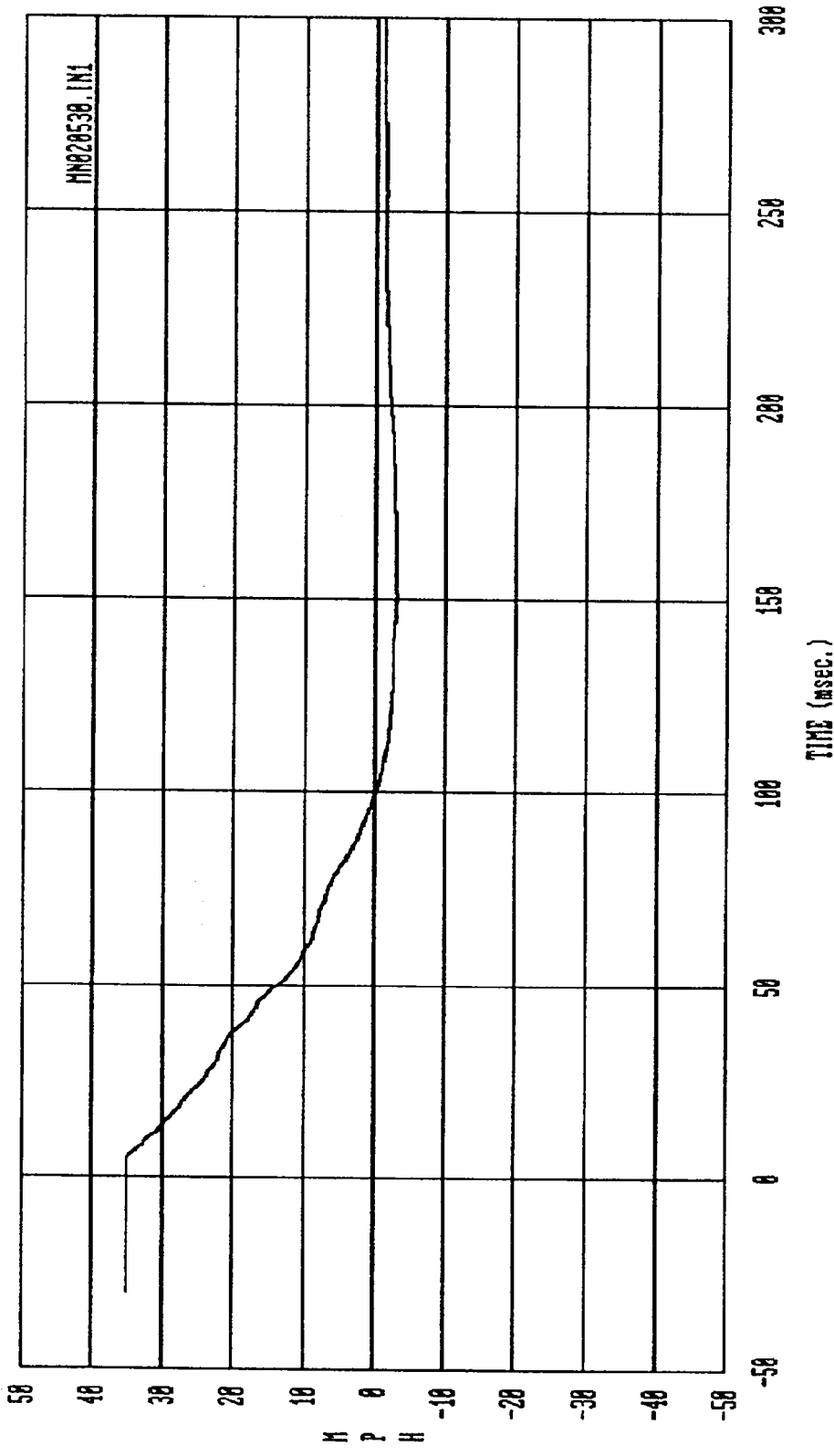
Curve: Dashpanel acceleration - X axis Filter: SAE CLASS 60 Max = 11.553 Min = -51.713

MSE Date: 05/07/92 Program: 1992 NCAP - #1 Vehicle: 1992 Ford Ranger

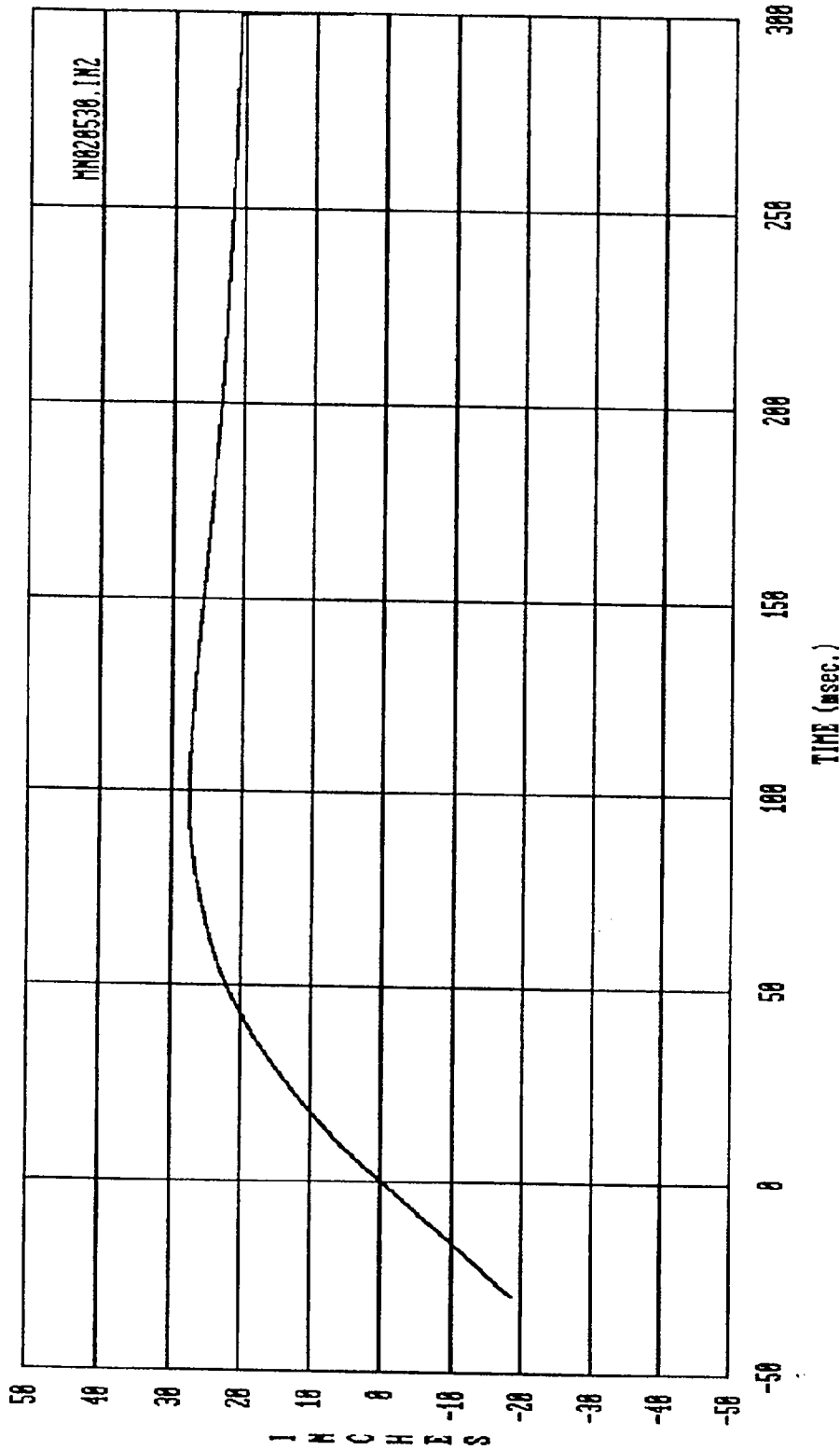


Curve: Left rear cross-member accel. -- X axis Filter: SAE CLASS 60 Max = 2.2657 Min = -29.764

MSE Date: 05/07/92 Program: 1992 NCAP - #1 Vehicle: 1992 Ford Ranger

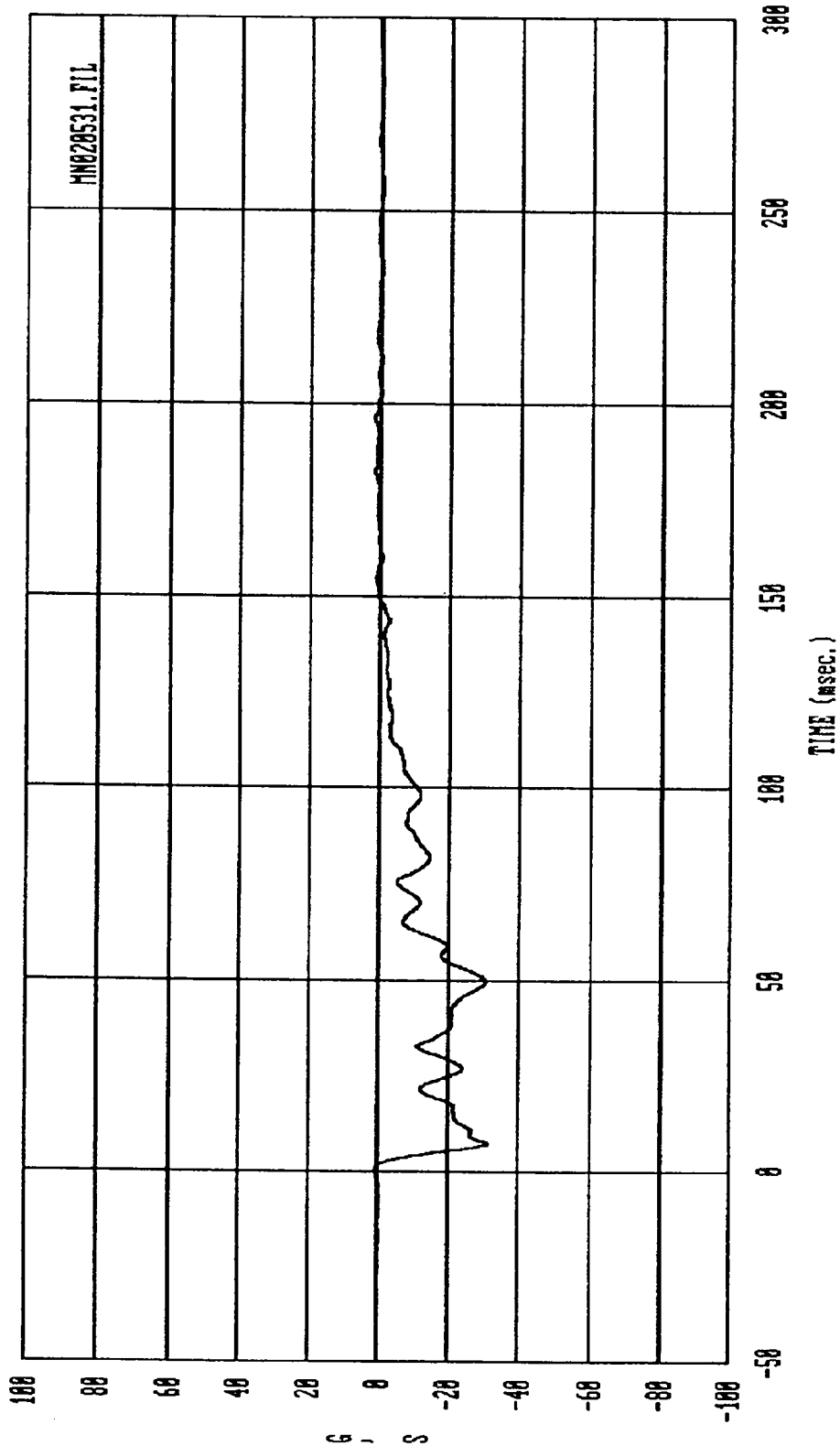


Curve: Left rear seat cross-member delta V -- X axis Filter: SAE CLASS 100 Max = 35.226 Min = -3.0515
MSE Date: 05/07/92 Program: 1992 NCAP - #1 Vehicle: 1992 Ford Ranger



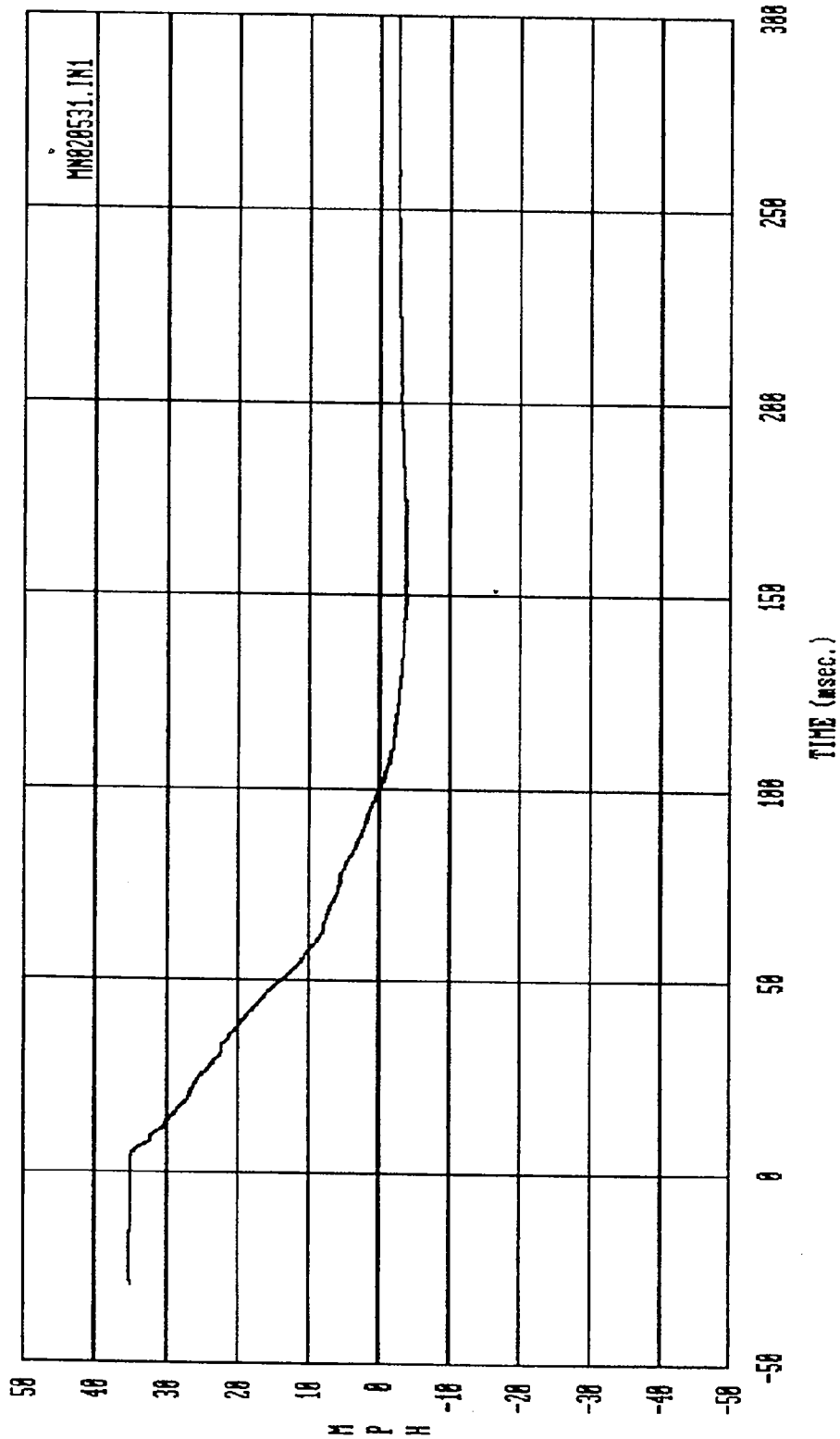
Curve: Left rear seat cross-member disp. — X axis Filter: SAE CLASS 100 Max = 27.564 Min = 20.724

MSE Date: 05/07/92 Program: 1992 NCAP - #1 Vehicle: 1992 Ford Ranger



Curve: Right rear cross-member accel. -- X axis Filter: SAE CLASS 60 Max = 1.5717 Min = -31.374

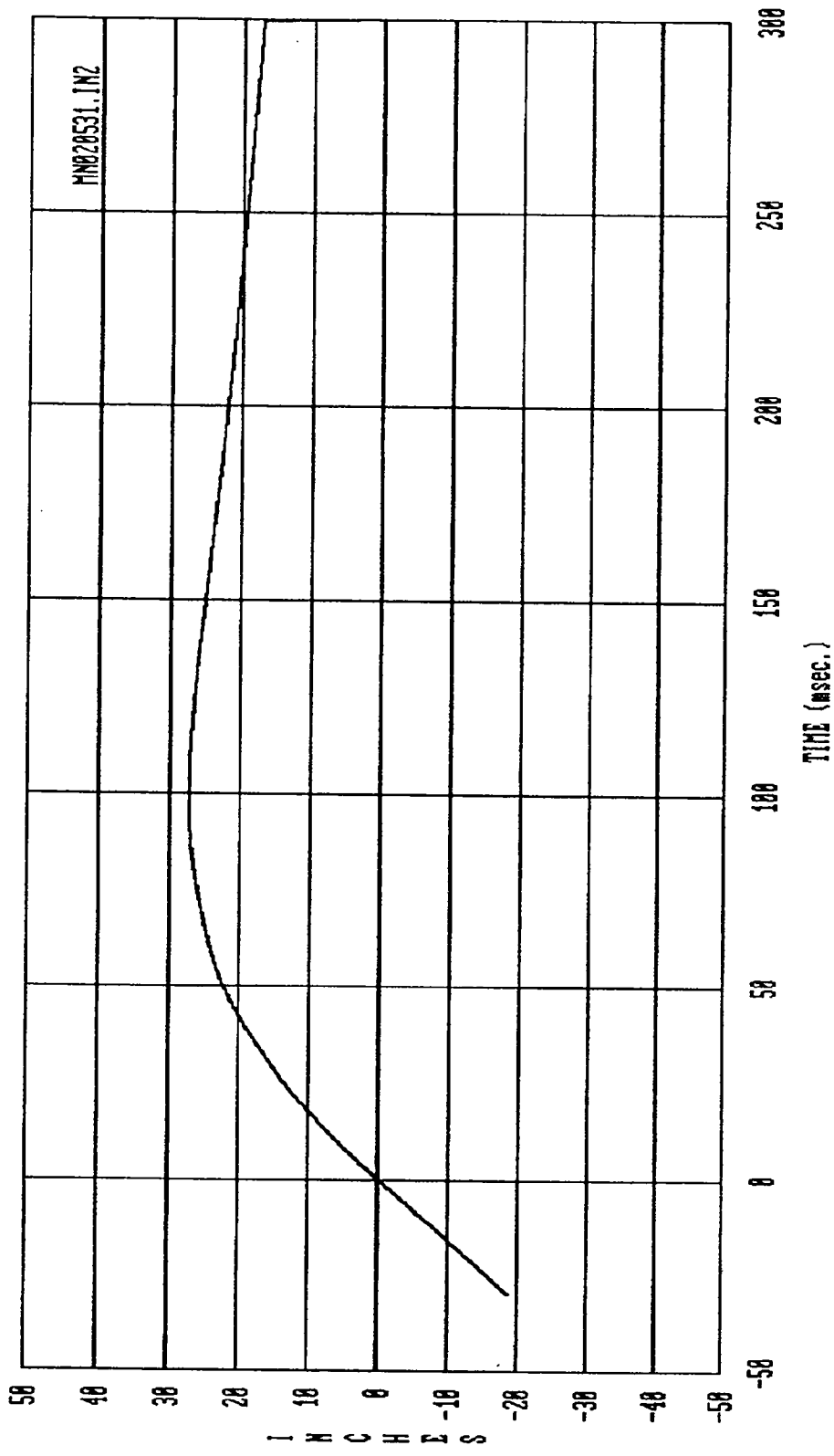
MSE Date: 05/07/92 Program: 1992 NCAP - #1 Vehicle: 1992 Ford Ranger



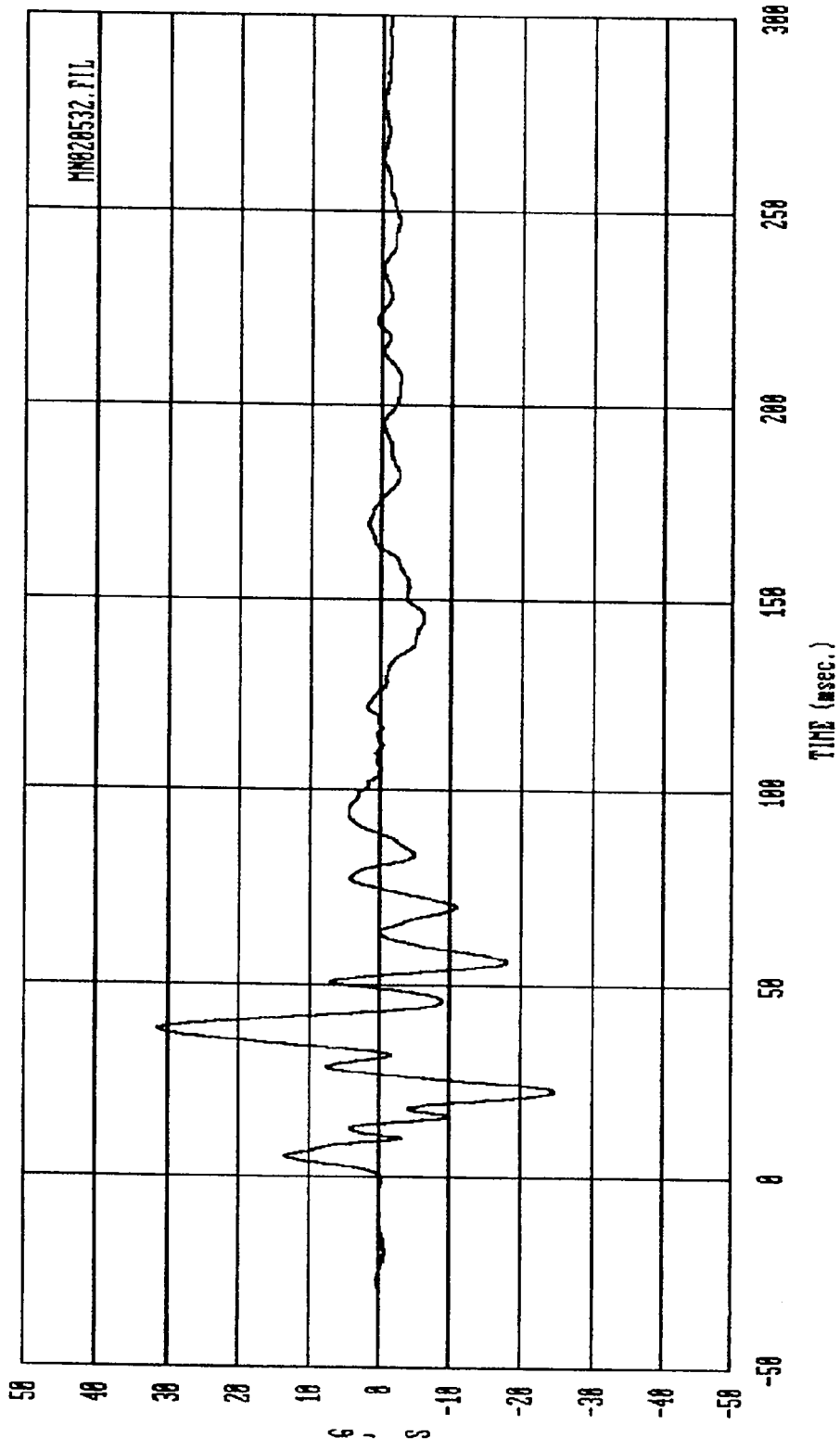
MN820531.IN1

Curve: Right rear seat cross-member delta V — X axis Filter: SAE CLASS 100 Max = 35.200 Min = -3.8204

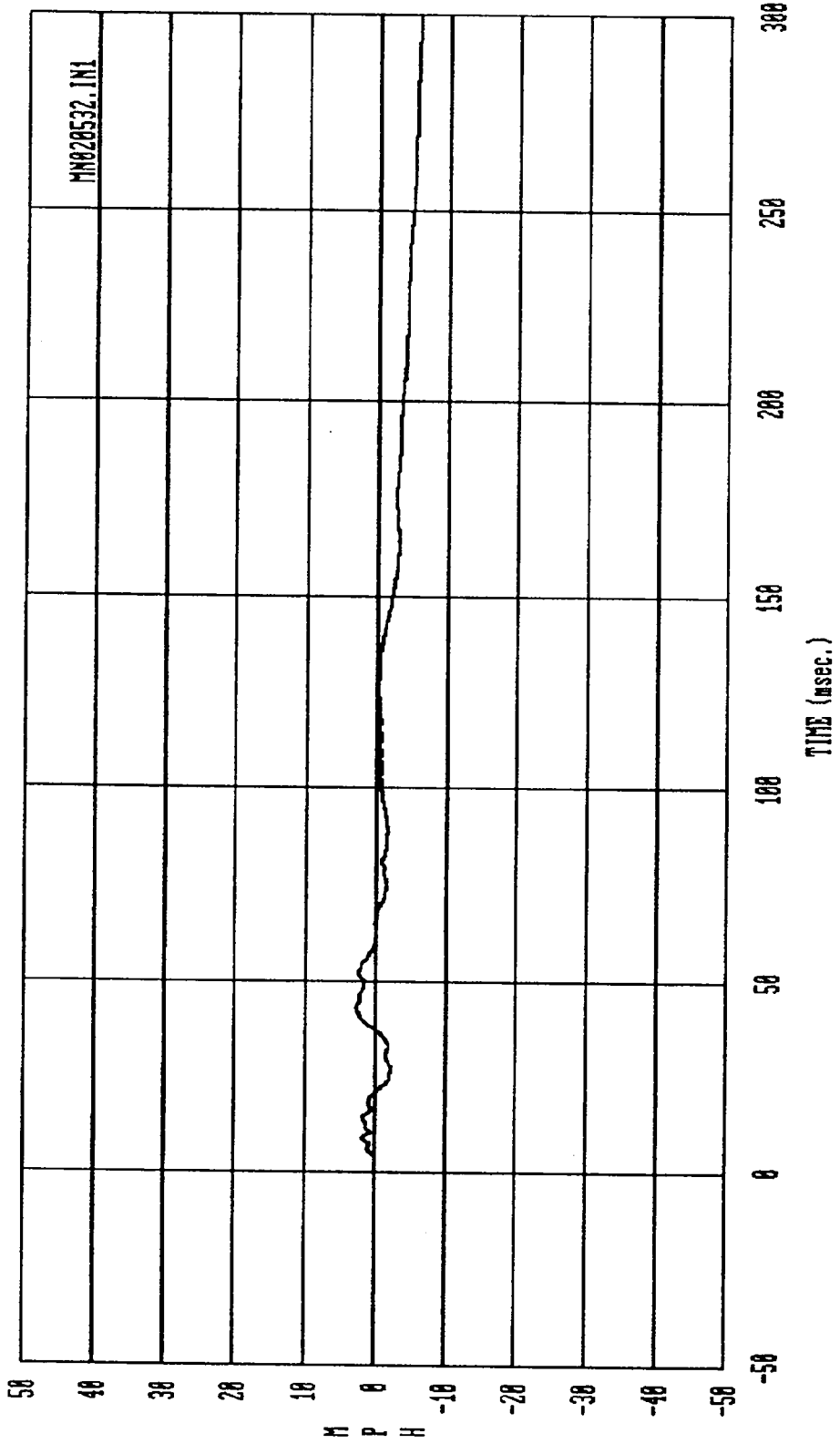
MSE Date: 05/07/92 Program: 1992 NCAP - #1 Vehicle: 1992 Ford Ranger



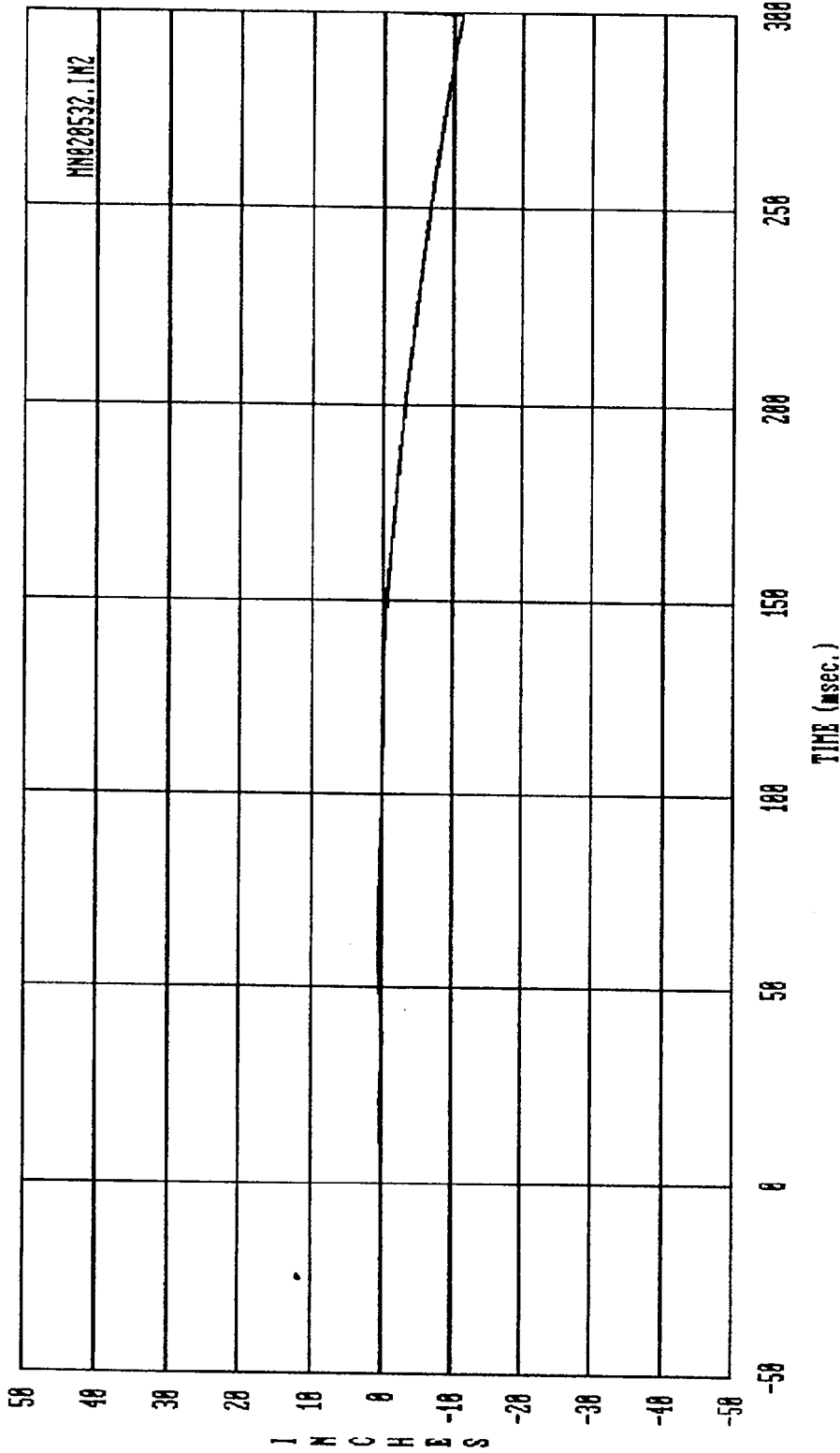
Curve: Right rear seat cross-member disp. -- X axis Filter: SAE CLASS 180 Max: 27.485 Min: 17.303
MSE Date: 05/07/92 Program: 1992 NCAP - #1 Vehicle: 1992 Ford Ranger



Curve: Center rear cross-member accel. -- Z axis Filter: SAE CLASS 60 Max = 31.516 Min = -24.826
 MSE Date: 05/07/92 Program: 1992 NCAP - #1 Vehicle: 1992 Ford Ranger

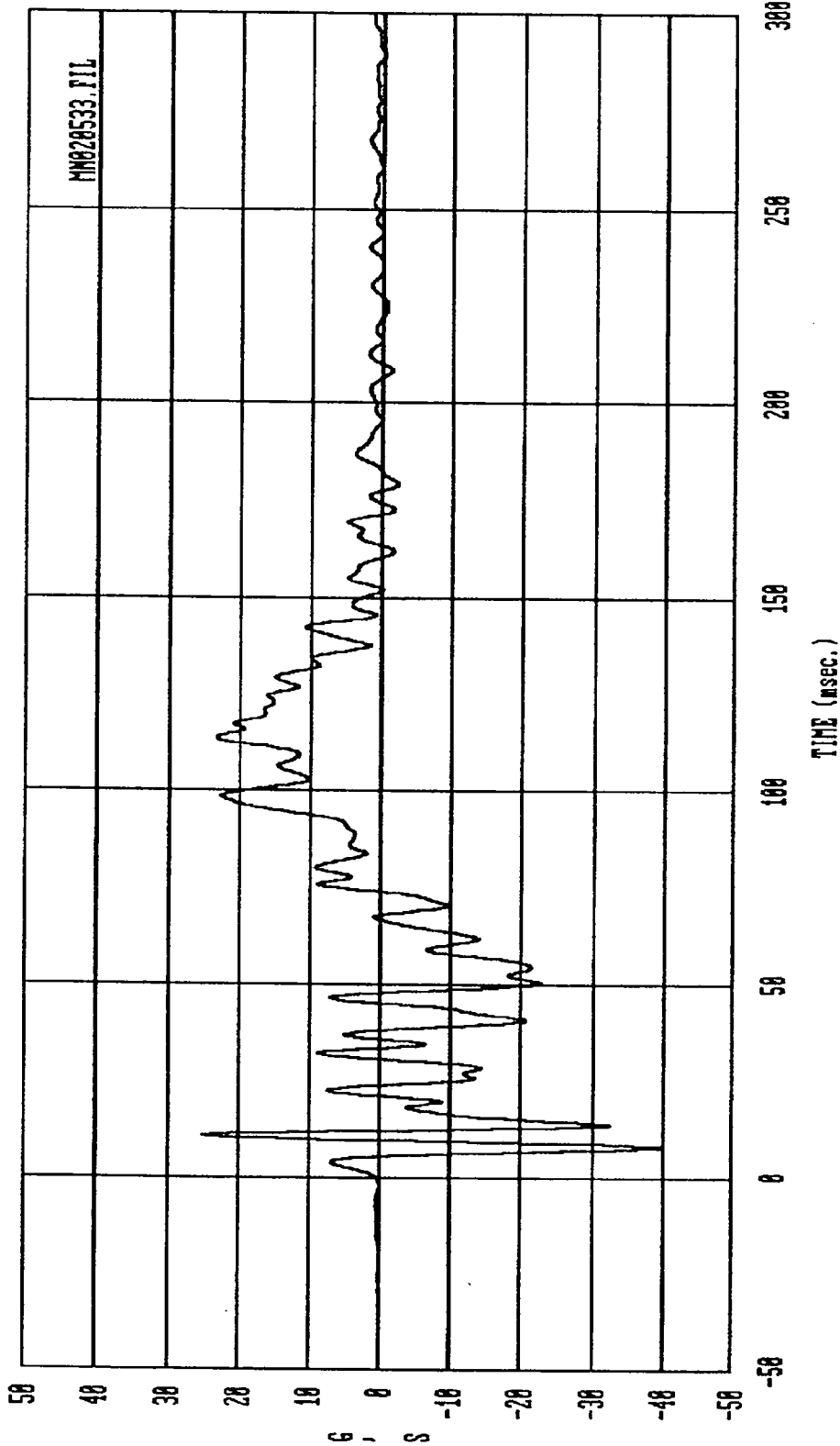


Curve: Center rear seat cross-member delta V -- Z axis Filter: SAE CLASS 100 Max = 2.9142 Min = -5.7746
 MSE Date: 05/07/92 Program: 1992 NCAP - #1 Vehicle: 1992 Ford Ranger



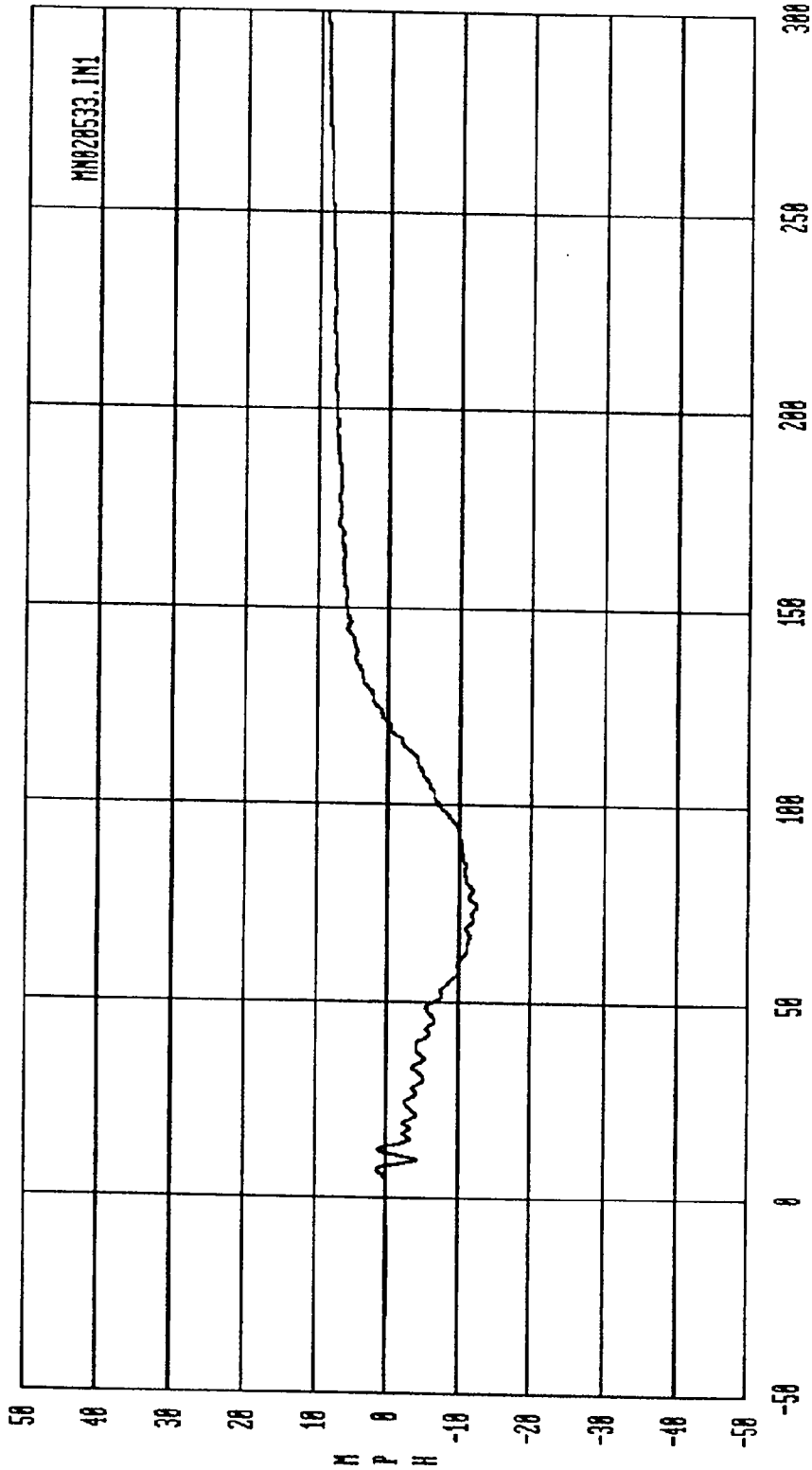
Curve: Center rear seat cross-member disp. - Z axis Filter: SAE CLASS 100 Max = .63863 Min = -11.280

MSE Date: 05/07/92 Program: 1992 NCAP - #1 Vehicle: 1992 Ford Ranger

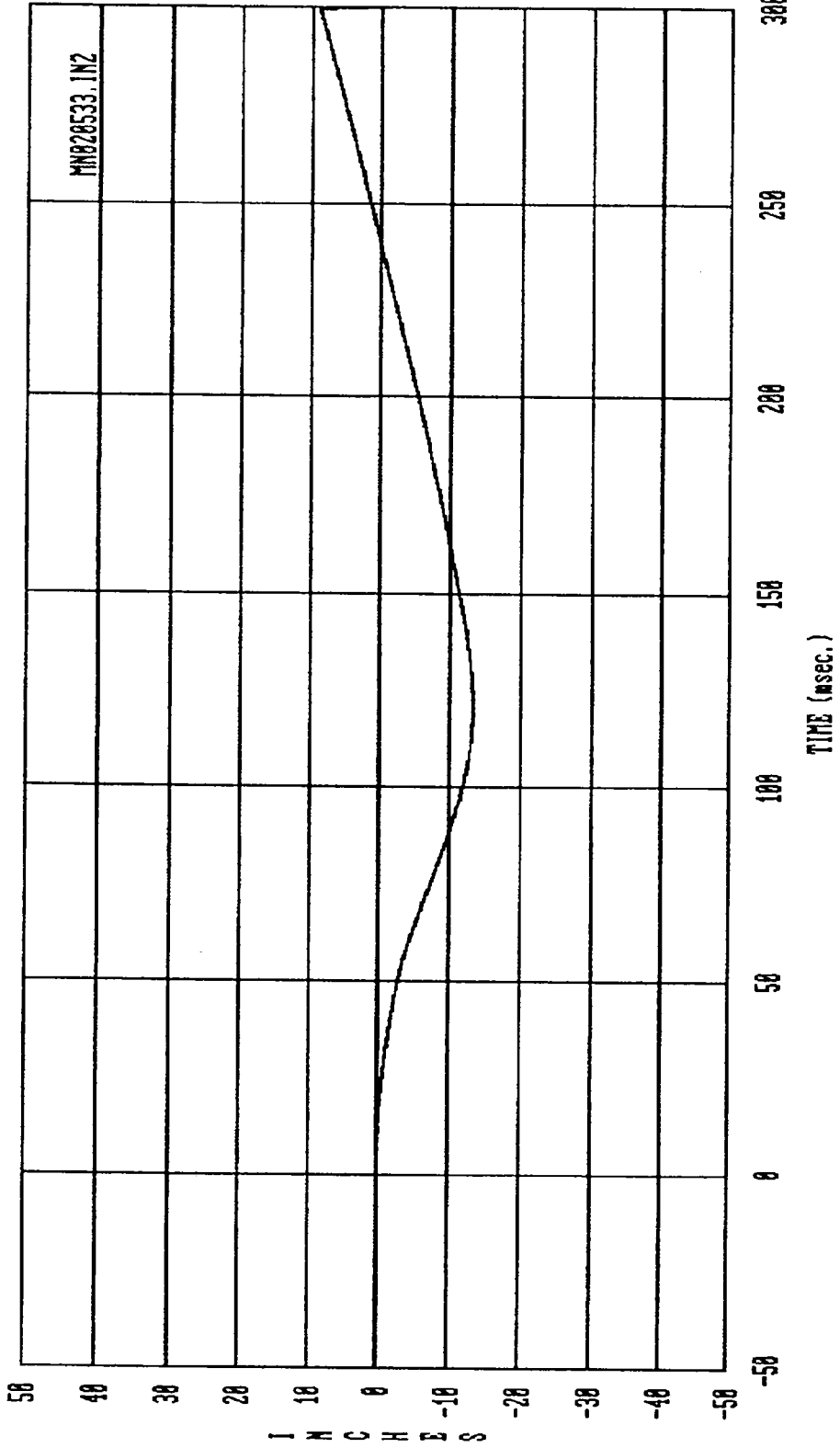


Curve: Center rear acceleration — Z axis Filter: SAE CLASS 60 Max = 25.228 Min = -39.872

MSE Date: 05/07/92 Program: 1992 NCAP - #1 Vehicle: 1992 Ford Ranger



Curve: Center rear delta V -- Z axis
 Filter: SAE CLASS 100 Max = 9.0366 Min = -12.594
 MSE Date: 05/07/92 Program: 1992 NCAP - #1 Vehicle: 1992 Ford Ranger



Curve: Center rear disp. - Z axis Filter: SAE CLASS 100 Max = 9.0550 Min = -13.307
MSE Date: 05/07/92 Program: 1992 NCAP - #1 Vehicle: 1992 Ford Ranger

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B1-54

MSE-92-R92027-N01

APPENDIX B-2

LOAD CELL BARRIER DATA

DATA FILTERING:

Load Cell Barrier Channels - Class 60

LOAD CELL BARRIER DATA WAS NOT RECORDED DURING THIS TEST.

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APPENDIX C

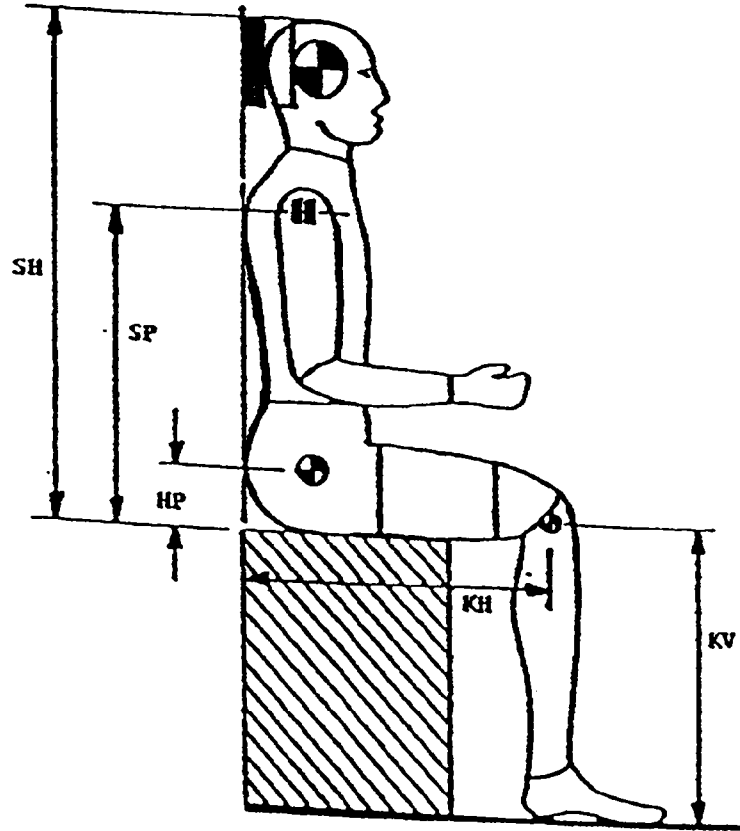
PART 572 DUMMY CONFIGURATION AND
PERFORMANCE VERIFICATION TESTS

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PART 572 DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

NHTSA DUMMY I.D. NO.: | 7 | 5 | 8 |

I. CONFIGURATION VERIFICATION DATA:



	P. 572 SPECIFICATION	PRE-TEST (if required)	POST-TEST (if required)
DATE OF CONFIGURATION VERIFICATION	////////////////	05/03/92	
VERIFICATION NUMBER FOR DUMMY* ---	////////////////	01	
SH - Seated Height- - - - -	35.6 to 35.8"	35.60	
SP - Shoulder Pivot Height- - - -	21.8 to 22.4"	22.10	
HP - Hip Pivot Height - - - - -	3.9 ref.	3.90	
KH - Knee Pivot from back line- -	20.1 to 20.7"	20.50	
KV - Knee Pivot from floor- - - -	19.3 to 19.9"	19.40	
SW - Shoulder Width - - - - -	17.8 to 18.4"	18.10	
HW - Hip Width- - - - -	14.0 to 15.4"	14.50	

TECHNICIAN'S NAME: MR. MARK WALKER

*Sequential number beginning with "1" at the start of each fiscal year's crash test program

DUMMY CONFIG. & PERF. VERIF. DATA....Continued:

II. PERFORMANCE VERIFICATION DATA:

NHTSA DUMMY I.D. NO.:

7	5	8
---	---	---

TECHNICIAN NAME: MR. MARK WALKER

		PRE-TEST (if required)	POST-TEST (if required)
DATE OF PERFORMANCE VERIFICATION-----		05/03/92	
SEQUENTIAL VERIFICATION NUMBER FOR DUMMY*-----		01	
VERIF. LAB. TEMPERATURE (66 ^o to 78 ^o F Range)-----		68-72 ^o F	F
VERIF. LAB. HUMIDITY (10 to 70% Range)-----		60-70 %	%
TEST PARAMETER	SPECIFICATION		
=====			
1. HEAD DROP TEST--			
a. Peak Resultant Accel.	210 to 260G	251.90	
b. Peak Lateral Accel.-	<10G	4.00	
c. Time above 100G - - -	0.9 to 1.5 ms	1.20	
=====			
2. NECK BENDING TEST--			
a. Pendulum Speed- - - -	21.5 to 22.5 fps	22.10	
b. Pend. Avg. Decel. over $\left(\frac{t_3 - t_2}{3} \right)$	20 to 24G	21.00	
c. Peak Resultant Head Acceleration - - - -	26G max.	23.00	
d. Pendulum Decel. $\left(\frac{t_2 - t_1}{2} \right)$	<3 ms	3.00	
e. Pendulum Decel. $\left(\frac{t_3 - t_2}{3} \right)$	25 to 30 ms	27.00	
f. Pendulum Decel. $\left(\frac{t_4 - t_3}{4} \right)$	<10 ms	10.00	
g. Max. Head Rotation -	63 to 73	64.80	
h. Chordal Displacement- Head Rotation Angle-			
0 ^o	Time- -	-2 to 2 ms	0.00
	Displ.-	-.5 to .5"	0.00
30 ^o	Time- -	22.6 to 34 ms	31.00
	Displ.-	2.1 to 3.1"	2.75
60 ^o	Time- -	40.3 to 51.7ms	47.00
	Displ.-	4.3 to 5.3"	5.00
Maximum 0 ^o (64.8)	Time- -	53.2 to 66.8ms	65.00
	Displ.-	5.0 to 6.0"	5.90

*beginning with "1" at the start of each fiscal year's crash test program

DUMMY CONFIG. & PERF. VERIF. DATA....Continued:

II. PERFORMANCE VERIFICATION DATA:

NHTSA DUMMY I.D. NO.: 7 | 5 | 8 |

TECHNICIAN NAME: MR. MARK WALKER

TEST PARAMETER		SPECIFICATION	PRE-TEST (if required)	POST-TEST (if required)
2. NECK BENDING TEST----				
<u>Continued:</u>				
h. Chordal Displacement- Head Rotation Angle-				
60°	Time- -	67.0 to 83.0 ms	70.00	
	Displ.-	4.3 to 5.3 in.	5.20	
30°	Time- -	85.4 to 104.6 ms	90.00	
	Displ.-	2.1 to 3.1 in.	2.15	
0°	Time- -	101.0 to 123.0 ms	101.00	
	Displ.-	-.5 to 0.5 in.	-0.02	
3. ABDOMINAL COMPRESSION TEST: (Preload=10 pounds)				
a. Force @ .5" - - - - -		23 to 36 lbs.	27.00	
b. Force @ .75" - - - - -		36 to 50 lbs.	39.00	
c. Force @ 1.0" - - - - -		50 to 63 lbs.	53.00	
d. Force @ 1.3" - - - - -		73 to 88 lbs.	77.00	
4. LUMBAR FLEXION TEST:				
a. Force @ 20° - - - - -		22 to 34 lbs.	31.00	
b. Force @ 30° - - - - -		34 to 46 lbs.	40.00	
c. Force @ 40° - - - - -		46 to 58 lbs.	49.00	
d. Return Angle- - - - -		12° maximum	12.00	
5. CHEST IMPACT TESTS:				
a. High Speed				
(1) Probe Speed - - -		21.78-22.22 fps	22.05	
(2) Peak Deflection -		1.7" maximum	1.67	
(3) Peak Resistive Force - - - - -		2250 lbs.maximum	2096.60	
(4) Internal Hysteresis		50 to 70%	62.00	
b. Low Speed				
(1) Probe Speed - - -		13.86-14.14 fps	14.07	
(2) Peak Deflection -		1.1" maximum	0.52	
(3) Peak Resistive Force - - - - -		1450 lbs.maximum	1175.70	
(4) Internal Hysteresis		50 to 70%	70.00	

DUMMY CONFIG. & PERF. VERIF. DATA....Continued:

II. PERFORMANCE VERIFICATION DATA:

NHTSA DUMMY I.D. NO.:

7	5	8
---	---	---

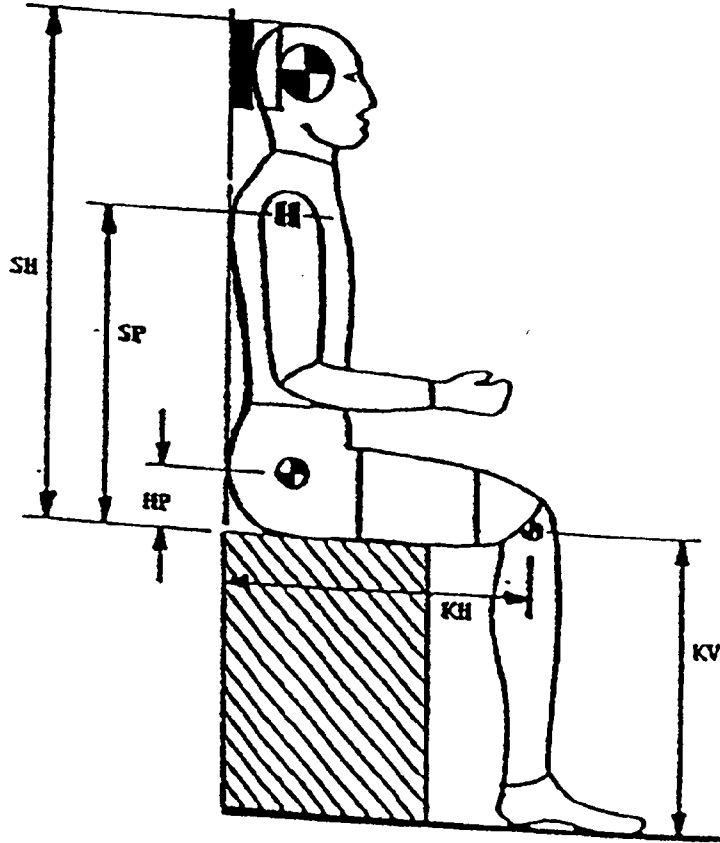
TECHNICIAN NAME: MR. MARK WALKER

TEST PARAMETER	SPECIFICATION	PRE-TEST (if required)	POST-TEST (if required)
6. KNEE IMPCT TESTS:			
a. Right Side--			
(1) Probe Speed - - -	6.76 to 7.04 fps	7.02	
(2) Maximum Force - -	1850 to 2500 lbs	2054.60	
(3) Time Above 1000#-	1.7 ms minimum	2.00	
b. Left Side--			
(1) Probe Speed - - -	6.76 to 7.04 fps	6.98	
(2) Maximum Force - -	1850 to 2500 lbs	2002.50	
(3) Time Above 1000#-	1.7 ms minimum	1.90	

PART 572 DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

NHTSA DUMMY I.D. NO.: | 8 | 1 | 4 |

I. CONFIGURATION VERIFICATION DATA:



	P. 572 SPECIFICATION	PRE-TEST (if required)	POST-TEST (if required)
DATE OF CONFIGURATION VERIFICATION	////////////////	05/03/92	
VERIFICATION NUMBER FOR DUMMY* ---	////////////////	01	
SH - Seated Height- - - - -	35.6 to 35.8"	35.60	
SP - Shoulder Pivot Height- - - -	21.8 to 22.4"	21.90	
HP - Hip Pivot Height - - - - -	3.9 ref.	3.90	
KH - Knee Pivot from back line- -	20.1 to 20.7"	20.50	
KV - Knee Pivot from floor- - - -	19.3 to 19.9"	19.50	
SW - Shoulder Width - - - - -	17.8 to 18.4"	18.10	
HW - Hip Width- - - - -	14.0 to 15.4"	14.50	

TECHNICIAN'S NAME: MR. MARK WALKER

*Sequential number beginning with "1" at the start of each fiscal year's crash test program

DUMMY CONFIG. & PERF. VERIF. DATA....Continued:

II. PERFORMANCE VERIFICATION DATA: NHTSA DUMMY I.D. NO.: 8 | 1 | 4
 TECHNICIAN NAME: MR. MARK WALKER

DATE OF PERFORMANCE VERIFICATION-----		PRE-TEST (if required)	POST-TEST (if required)
SEQUENTIAL VERIFICATION NUMBER FOR DUMMY*-----		05/03/92	
VERIF. LAB. TEMPERATURE (66° to 78°F Range)-----		01	
VERIF. LAB. HUMIDITY (10 to 70% Range)-----		65-72 °F	F
TEST PARAMETER		40-70 %	%
TEST PARAMETER	SPECIFICATION		
=====			
1. HEAD DROP TEST--			
a. Peak Resultant Accel.	210 to 260G	244.90	
b. Peak Lateral Accel.--	<10G	5.00	
c. Time above 100G - - -	0.9 to 1.5 ms	1.20	
=====			
2. NECK BENDING TEST--			
a. Pendulum Speed- - - -	21.5 to 22.5 fps	21.90	
b. Pend. Avg. Decel. over (t ₃ - t ₂)	20 to 24G	21.20	
c. Peak Resultant Head Acceleration - - - -	26G max.	24.06	
d. Pendulum Decel. (t ₂ - t ₁)	<3 ms	1.50	
e. Pendulum Decel. (t ₃ - t ₂)	25 to 30 ms	28.00	
f. Pendulum Decel. (t ₄ - t ₃)	<10 ms	7.00	
g. Max. Head Rotation -	63 to 73	65.70	
h. Chordal Displacement- Head Rotation Angle-			
0°	Time- -	-2 to 2 ms	0.00
	Displ.-	-.5 to .5"	0.00
30°	Time- -	22.6 to 34 ms	30.00
	Displ.-	2.1 to 3.1"	2.75
60°	Time- -	40.3 to 51.7ms	45.50
	Displ.-	4.3 to 5.3"	5.20
Maximum 0° (65.7°)	Time- -	53.2 to 66.8ms	59.00
	Displ.-	5.0 to 6.0"	5.90

*beginning with "1" at the start of each fiscal year's crash test program

DUMMY CONFIG. & PERF. VERIF. DATA....Continued:

II. PERFORMANCE VERIFICATION DATA:

NHTSA DUMMY I.D. NO.: | 8 | 1 | 4 |

TECHNICIAN NAME: MR. MARK WALKER

TEST PARAMETER		SPECIFICATION	PRE-TEST (if required)	POST-TEST (if required)
2. NECK BENDING TEST----				
<u>Continued:</u>				
h. Chordal Displacement- Head Rotation Angle-				
60°	Time- -	67.0 to 83.0 ms	72.00	
	Displ.-	4.3 to 5.3 in.	5.30	
30°	Time- -	85.4 to 104.6 ms	89.00	
	Displ.-	2.1 to 3.1 in.	2.70	
0°	Time- -	101.0 to 123.0 ms	103.00	
	Displ.-	-.5 to 0.5 in.	0.30	
3. ABDOMINAL COMPRESSION				
<u>TEST: (Preload=10 pounds)</u>				
a. Force @ .5" - - - -		23 to 36 lbs.	28.00	
b. Force @ .75" - - - -		36 to 50 lbs.	41.00	
c. Force @ 1.0" - - - -		50 to 63 lbs.	57.00	
d. Force @ 1.3" - - - -		73 to 88 lbs.	82.00	
4. LUMBAR FLEXION TEST:				
a. Force @ 20° - - - -		22 to 34 lbs.	23.00	
b. Force @ 30° - - - -		34 to 46 lbs.	34.00	
c. Force @ 40° - - - -		46 to 58 lbs.	49.00	
d. Return Angle- - - -		12° maximum	10.00	
5. CHEST IMPACT TESTS:				
a. High Speed				
(1) Probe Speed - - -		21.78-22.22 fps	22.08	
(2) Peak Deflection -		1.7" maximum	1.62	
(3) Peak Resistive Force - - - - -		2250 lbs.maximum	1900.80	
(4) Internal Hysteresis		50 to 70%	65.00	
b. Low Speed				
(1) Probe Speed - - -		13.86-14.14 fps	14.04	
(2) Peak Deflection -		1.1" maximum	0.52	
(3) Peak Resistive Force - - - - -		1450 lbs.maximum	1257.70	
(4) Internal Hysteresis		50 to 70%	62.00	

DUMMY CONFIG. & PERF. VERIF. DATA....Continued:

II. PERFORMANCE VERIFICATION DATA:

NHTSA DUMMY I.D. NO.:

8	1	4
---	---	---

TECHNICIAN NAME: MR. MARK WALKER

TEST PARAMETER	SPECIFICATION	PRE-TEST (if required)	POST-TEST (if required)
6. KNEE IMPCT TESTS:			
a. Right Side--			
(1) Probe Speed - - -	6.76 to 7.04 fps	6.92	
(2) Maximum Force - -	1850 to 2500 lbs	2209.50	
(3) Time Above 1000#-	1.7 ms minimum	1.85	
b. Left Side--			
(1) Probe Speed - - -	6.76 to 7.04 fps	6.88	
(2) Maximum Force - -	1850 to 2500 lbs	2108.30	
(3) Time Above 1000#-	1.7 ms minimum	1.90	

APPENDIX D

VEHICLE OWNER'S MANUAL OCCUPANT RESTRAINT SYSTEM INSTRUCTIONS

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Safety Restraints

Using Safety Restraints Properly

Safety Belts

The use of safety belts help to restrain you and your passengers in case of a collision. In most states, the law requires their use. We strongly recommend that you use them every time you travel in your vehicle.

Safety belts provide best restraint when:

- the seat back is upright
- the occupant is sitting upright (not slouched)
- the lap belt is snug and low on the hips
- the shoulder belt is snug against the chest
- the knees are straight forward

For your safety, your vehicle has different types of safety belts:

- Combination lap and shoulder belts
- Lap belts without retractors
- Rear lap belts with retractors

See the following sections for directions on how to properly use these safety belts. Also see *Safety Restraints for Children* in this chapter for special instructions about using safety belts for children.

Warning: Make sure that you and your passengers, including pregnant women, wear safety belts. Be sure that lap belts fit snugly and as low as possible around the hips. If safety belts are not used properly, the risk of you or your passengers being injured in a collision greatly increases.

Warning: Always drive and ride with your seatback upright and the lap belt snug and low across the hips to reduce the risk of serious injury to the abdomen or neck that could be caused by sliding under the safety belts in a collision.

Do not allow any people to ride in the cargo area of your vehicle. People who are not riding in seats with their safety belts fastened are much more likely to be injured in a collision.

Never let a passenger hold a child on his or her lap while the vehicle is moving. The passenger cannot protect the child from injury in a collision.

Children should always ride with the seatback in the fully upright position. When the seatback is not fully upright, there is a greater risk that the child will slide under the safety belt and be seriously injured in a collision.

Never use a single belt for more than one person or across more than one seating position. This greatly increases the risk that one or both of the people will be injured in a collision. Each seating position in your vehicle has a specific safety belt assembly which is made up of one buckle and one tongue that are designed to be used as a pair.

Warning: Use the shoulder belt on the outside shoulder only. Never wear the shoulder belt under the arm. Never swing it around the neck over the inside shoulder. Failure to follow these precautions could increase the risk and/or severity of injury in an accident.

Warning: Be sure to lock all doors before you drive away. This will lessen your risk of being thrown from the vehicle in a collision.

Combination Lap and Shoulder Belts

While your vehicle is in motion, the combination lap and shoulder belt adjusts to your movement. However, if you brake hard, corner hard or if your vehicle receives an impact of 5 mph (8 km/h) or more, the lap and shoulder belt locks and prevents you from moving. Your belt system cannot be made to lock by jerking on the belt.

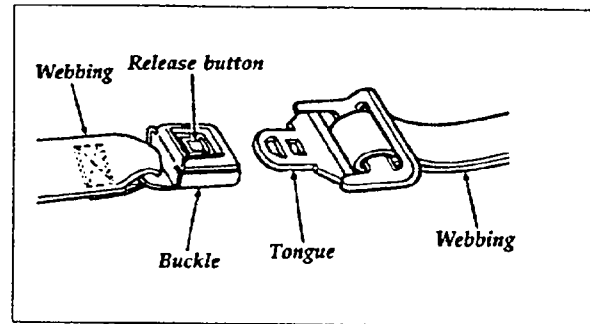
After you get into your vehicle, close the door and lock it. Then adjust the seat to the position that suits you best.

To fasten the belt, pull the lap-shoulder belt from the retractor so that the shoulder portion of the belt crosses your shoulder and chest.

Insert the belt tongue into the proper buckle until you hear a snap and feel it latch.

Warning: Use the shoulder belt only on the shoulder that is closest to the side of the vehicle. Never wear the belt under your arm. Never swing it around your neck over the inside shoulder. If you do not use the shoulder belt properly, the chances of your being injured in a collision greatly increase.

To tighten the lap portion of the belt, pull up on the shoulder belt until it fits you snugly. The belt should rest as low on your hips as possible.



Unfastening the outboard lap/shoulder belts

Center Front Lap Belt (60/40 Split Seat)

The lap belt in the center of the front seat does not adjust automatically. You must adjust it to fit snugly around your hips. Do not wear it around your waist.

Before you fasten your center position lap belt in the front seat, you may need to lengthen it.

To lengthen the belt, tip the belt tongue at a right angle to the belt. Pull the belt tongue over your lap until it reaches the buckle.

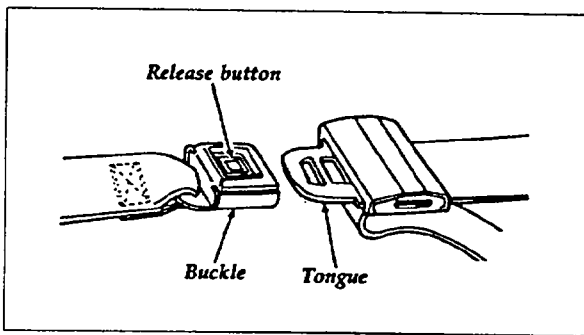
To fasten the belt, pull the belt across your hips and insert the tongue into the correct buckle on your seat until you hear a snap and feel it lock. Make sure the buckle is securely fastened.

Adjust the belt so that it fits snugly and low around your hips:

- If you need to shorten the belt, pull on the loose end of the webbing.

To unfasten the belt, push the release button on the buckle. This allows the tongue to unlatch from the buckle.

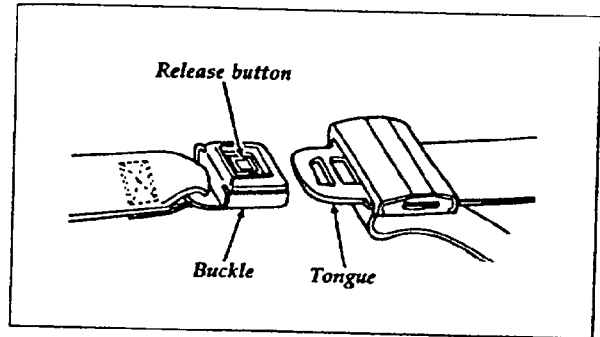
Because the center front lap belt does not have a retractor, it should be shortened and fastened when not in use.



Fastening and unfastening the front center safety belt

Lap Belts Without Retractors

On the center seat of the front three-passenger bench seat, you will find a lap belt without a retractor. Shorten and fasten your belt when you are not using it. To make your belt longer, tip the tongue at a right angle to the belt and pull the belt over your lap until the tongue reaches the buckle.



Fastening and unfastening rear occupant safety belts

To fasten the belt, pull the belt across your hips and insert the tongue into the correct buckle on your seat until you hear a snap and feel it lock. Make sure the buckle is securely fastened.

Adjust the belt so that it fits snugly and as low as possible around the hips:

- If you need to lengthen the belt, unfasten it and repeat the procedure above.
- If you need to shorten the belt, pull on the loose end of the webbing.

Rear Lap Belt with Retractor

Pull the belt out of the retractor with a steady motion and insert the tongue into the proper buckle until you hear a snap and feel the latch engage.

To Unfasten the Safety Belts with Retractors:

1. Push the release button on the buckle. This allows the tongue to unlatch from the buckle.

2. While the belt retracts, guide the tongue to its original position. If you do not guide the tongue, it may strike you or part of the vehicle.

To Untwist or Unjam a Safety Belt (Retractor):

If you should jam the lap belt retractor by allowing the belt to retract when it is twisted, you can free the webbing with this procedure:

1. Pull on the belt with both hands to tighten it on the retractor spool.
2. Feed the belt back into the retractor until it is completely retracted. Repeat previous step if necessary.
3. Pull the belt out of its holder as far as it will go and untwist the belt or remove the object that is jamming the belt. Let the belt retract.
4. Then, pull the belt out and let it retract several times to make sure that the belt works properly.

Safety Belt Extension Assembly

For some people, the safety belt may be too short even when it is fully extended. You can add about eight inches (20 cm) to the belt length with a safety belt extension assembly (611C22). Safety belt extensions are available from your dealer.

Warning: To ensure that the safety belt extension assembly will hold in the event of a collision, only safety belt extensions manufactured by the same supplier as the safety belt should be used. Manufacturer identification is located at the end of the webbing on a label.

Safety Belt Maintenance

Check your safety belt system periodically to make sure that it works properly and isn't damaged. If the webbing shows any wear, nicks or cuts, have it examined by a qualified technician to determine if replacement is necessary. Always have your safety belt system checked after a collision.

For information on cleaning the webbing of seat belt assemblies, see "Cleaning the Safety Belts" in the Index.

Warning: All safety belt assemblies including retractors and attaching hardware should be inspected after any collision. Ford recommends that all safety belt assemblies used during a collision be replaced unless the technician finds that the belts do not show damage and continue to operate properly. Safety belt assemblies not in use during a collision should also be inspected and replaced if either damage or improper operation is noted.

Safety Restraints for Children

In most states, you are required by law to use safety restraints for children. If small children ride in your vehicle — this generally includes children who are four years old or younger and who weigh 40 pounds (18 kg) or less — you must put them in safety seats that are made specially for children. Safety belts alone do not provide maximum protection for these children. Check your local and state laws for specific requirements.

Warning: Never let a passenger hold a child on his or her lap while the vehicle is moving. The passenger cannot protect the child from injury in a collision.

Warning: Never let children or adults ride in the cargo area of your vehicle. Make sure that all passengers sit where they can be properly restrained. If they are not restrained, the risk of their being injured in a collision greatly increases.

Warning: When using any infant or child restraint system, it is important that you follow the instructions and warnings provided by the manufacturer concerning its installation and use. Failure to follow each of the restraint manufacturer's instructions could increase the risk or severity of an injury in the event of a collision or sudden stop.

When possible, put children in the rear seat of your vehicle. Accident statistics suggest that children are safer when properly restrained in the rear seating positions than in the front seating positions.

Do not install a child seat in a center facing jump seat. Safety seats for children are not intended for use in center facing seats.

Safety belts and seats can become hot in a vehicle that has been closed up in sunny weather; they could burn a small child. Check seat covers and buckles before you place a child anywhere near them.

Warning: Never leave a child unattended in your vehicle. Always remove the key from the ignition and take it with you.

Safety Belts for Children

Children who are too large for child safety seats should always wear safety belts. (See instructions with your child seat, or contact its manufacturer, to determine maximum size of child.)

Warning: If safety belts are not properly worn and adjusted as described, the risk of serious injury to the child in a collision will be much greater.

If the shoulder belt portion of one of the lap and shoulder belts can be positioned so that it does not cross or rest in front of the child's face or neck, the child should wear the lap and shoulder belt. Moving the child closer to the center of the vehicle may help provide a good shoulder belt fit.

If the shoulder belt cannot be properly positioned, move the child to one of the seats with a lap belt only (preferably in a rear seat) and use the lap belt.

Lap belts and the lap belt portion of lap and shoulder belts should always be worn snugly and below the hips, touching the child's thighs.

Children should always ride with the seatback in the fully upright position. When the seatback is not fully upright, there is a greater risk that the child will slide under the safety belt and be seriously injured in a collision.

Safety Seats for Children

Use a safety seat that is recommended for the size and weight of the child. Always follow the safety seat manufacturer's instructions when installing and using the safety seat.

Warning: All safety seats for children are designed to be secured to the seat of your vehicle by lap belts or by the lap portion of a lap and shoulder belt. If you do not properly secure the safety seat to the vehicle, the risk is greater that a child, occupying the seat during a collision or sudden stop, will be injured. An unsecured safety seat could also injure other passengers in the vehicle.

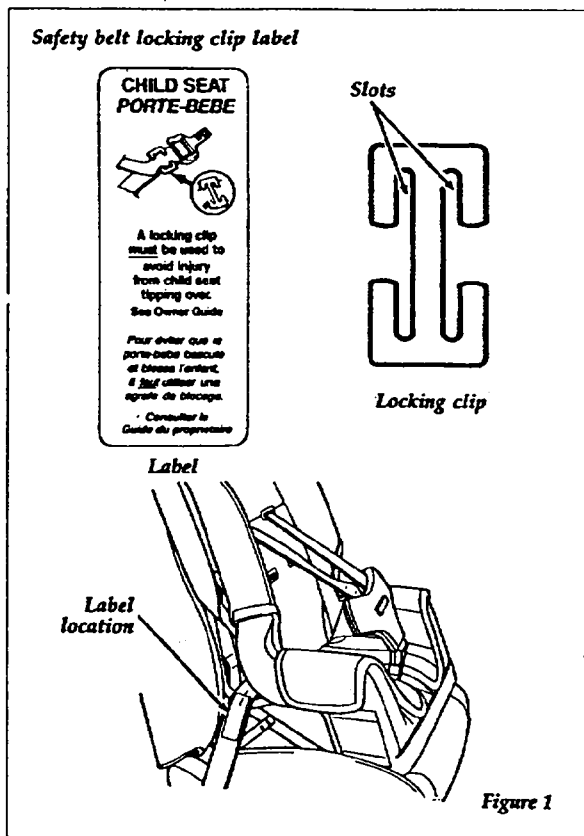
Warning: Carefully follow all of the manufacturer's instructions that come with the safety seat that you put in your vehicle. Make sure that the shoulder belt (if provided at the seating position where the safety seat is being used) does not cross or rest in front of the child's face or neck. If you do not install and use the safety seat properly, the child may be injured in a sudden stop or collision.

Seat backs should be upright for use with child safety seats.

Installation Instructions for Child Safety Seat Locking Clip

Obtain the locking clip kit at no charge from an authorized dealer (Basic number 61248).

The locking clip must be used to secure a child seat when your vehicle has a shoulder and lap belt with a sliding tongue. Every seat belt that requires a locking clip is identified on the belt, with the label as shown in FIGURE 1. The locking clip is installed in a sample piece of webbing to show proper installation.

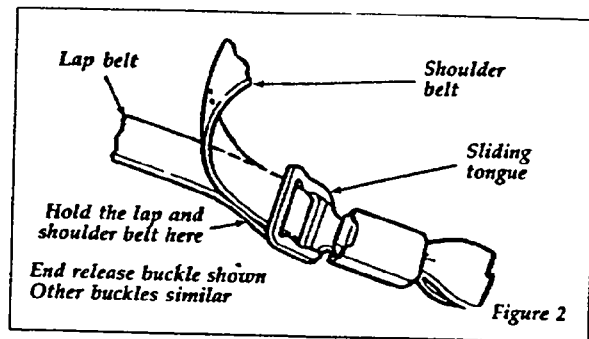


Warning: If you do not use a locking clip, injuries could result from the child seat tipping over during normal vehicle braking or cornering.

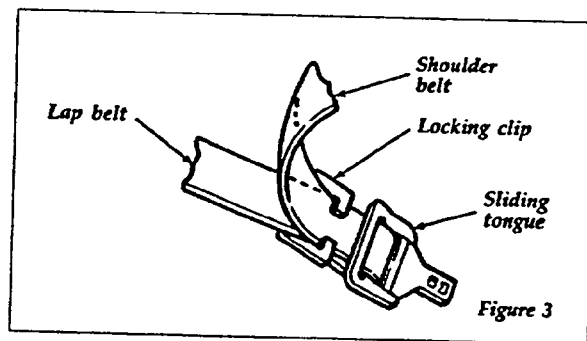
To Install the Locking Clip

1. Thread the belt webbing through the child seat according to the child seat manufacturer's instructions.

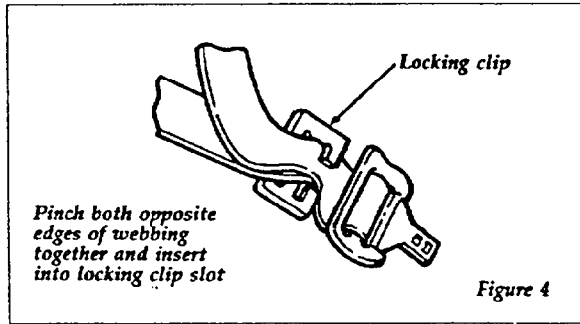
2. Buckle seat belt.



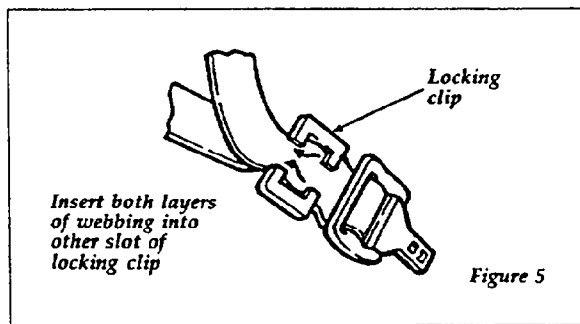
3. Pull on shoulder portion of the belt to make the lap portion fit snugly. Keeping the lap belt snug, hold the lap and shoulder belt portions of the webbing together next to the slip tongue and unbuckle the seat belt, FIGURE 2.



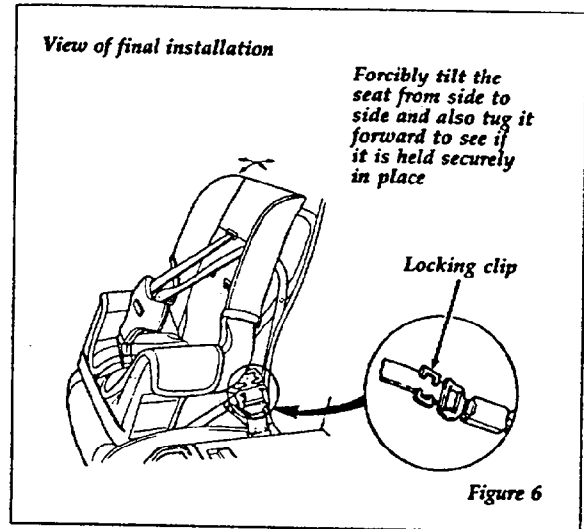
4. Slide either corner of the locking clip slot closest to the tongue over both layers of webbing as shown in FIGURE 3.



- Pinch both opposite edges of webbing together and insert them into the locking clip slot as shown in FIGURE 4.



- Pinch both layers of webbing together and insert into other slot of locking clip, FIGURE 5.



- Re-buckle belt. Forcibly tilt the child seat from side to side and also tug it forward to see if it is held securely in place, FIGURE 6. If excessive movement occurs, repeat steps 2 through 7 or properly install child seat in a different seating position in the vehicle.

Warning: Once you have attached the safety seat, test the seat before you place the child in it. Tilt the seat from side to side. Also try to tug the seat forward. Check to see if the belt holds the seat in place. If the lap belt is too loose, tighten it by moving the locking clip, or put the safety seat in another seat and test it again. If the safety seat is not anchored properly, the risk of a child being injured in a collision or sudden stop greatly increases. Reclining seat backs should be in the most upright position for use with child safety seats.

Attaching Safety Seats with Tether Straps

General Instructions

You can attach a tether strap anchor bracket to the cab inner back panel by using a tether anchor kit available from any Ford dealer.

Read and follow the instructions provided with the kit carefully for installation of the child tether strap anchor.

Some manufacturers make safety seats with a tether strap that goes over the back of the vehicle seat and attaches to an anchoring point behind the vehicle seat.

Follow the child seat manufacturer's instructions to attach the tether strap to the tether bracket.

Warning: Use only the tether attachment hole locations shown in the instructions. The tether anchorage may not perform properly if the wrong mounting location is used.

Warning: Failure to follow these precautions could increase the chance and/or severity of injury in an accident.

Warning: In Super Cabs equipped with Center Facing Jump Seats, the tether strap anchor bracket should be installed only at the center of the cab's back panel with the child seat in the front center seating position. Installing an anchor bracket at the right rear of the cab may increase risk of injury to an occupant of the right rear center facing jump seat in the event of a collision or sudden stop. If a tethered child seat is installed in the right front seating position, secure the tether strap to the webbing of the buckled right rear lap belt. Do not install a child seat in a center facing jump seat. Safety seats for children are not intended for use in center facing seats.

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APPENDIX E
INSTRUMENTATION AND CALIBRATION DATA

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General Test Information

VERSHD: V2 TGID: 1
TITLE: 1992 35 MPH NCAP FRONTAL BARRIER IMPACT
TSTOBJ: ACQUIRE NCAP DATA USING TWO INSTR. DUMMIES AND LOAD CELL BARRIER
TSTDAT: 07/MAY/92 TSTPRF: MSE CONNO: DTNH22-90-D-32121
TSTREF: MN0205 TSTTYP: MCA TSTCFM: VTB
TKSURF: COM TKCOND: DRY TEMP: 80 RECTYP: FMT
LINK: UMB CLSSPD: 35.2 IMPANG: 0 OFFSET: 0.0
IMPNT: 9999.9 MEASUR: ENG TOTCRV: 33
TSTCOM: NO COMMENTS

Vehicle Information

VGID: 2 VEHNO: 1 MAKE: 02 MODEL: 99 YEAR: 92 BODY: PU
VIN: 1FTCR10U0NUC26678 ENGINE: V6IF ENGDISP: 3.0 LITER TRANSM: AR
VEHTWT: 3722 WHLBAS: 108.0 VEHLEN: 181.3 VEHWID: 67.0
VEHCG: 48.7 STRSEP: NO COLMEC: OTH MODIND: P
MODDSC: UNMODIFIED

- 8X
- 1: 181.3
- 2: 157.3
- 3: 138.3
- 4: 109.5
- 5: 109.5
- 6: 127.0
- 7: 127.0
- 8: 87.8
- 9: 87.8
- 10: 85.0
- 11: 85.0
- 12: 127.0
- 13: 127.0
- 14: 139.5
- 15: 138.5
- 16: 110.5
- 17: 13.0
- 18: 19.0
- 19: 178.3
- 20: 178.3
- 21: 18.5

VEHSPD: 35.2 CRBANG: 0 PDOF: 0 BHPENG: NA
SILENG: NA APLENG: NA

- DPD
- 1: 15.5
- 2: 18.0
- 3: 19.1
- 4: 19.3
- 5: 17.9
- 6: 14.1

VDI: 12FCAM9 LENCNT: 61.8 DAMDST: 0.0 CRHDST: 19.3

- AX
- 1: 162.0
- 2: 150.5
- 3: 132.0
- 4: 107.5
- 5: 109.0
- 6: 126.0
- 7: 126.2
- 8: 84.5
- 9: 86.0
- 10: 84.0
- 11: 85.0
- 12: 124.0
- 13: 127.0
- 14: 134.5
- 15: 138.0
- 16: 111.0
- 17: 13.0
- 18: 18.5
- 19: 161.6
- 20: 161.0
- 21: 18.5

CARANG: 999 VEHOR: 999
VEHCOM: VEHICLE MODEL IS RANGER.

Barrier Information

Barrier ID: 3

BARRIG: R

BARSHP: LCB

BARANG: 0

BARDIA: 999.9

BARCOM: 36 50KLB LOAD CELLS ARRANGED IN A 9 WIDE BY 4 HIGH MATRIX.

Occupant Information

Occupant Group ID: 4 VEHNO: 1
OCCLOC: 01 OCCTYP: PS OCCAGE: 99 OCCSEX: M OCCHT: 999 OCCWT: 999
MTHCAL: PS DUMSIZ: 50
DUMMAN: MFG: HUMANOID SYSTEMS, S/N 758
DUMMOD: UNMODIFIED
DUMDSC: NO COMMENTS
HH: 16.0 HW: 19.9 HR: 7.6 HS: 9.5 CD: 21.5 CS: 12.3 AD: 2.3 HD: 5.0
KD: 7.5 HB:999.9 NB:999.9 CB:999.9 KB:999.9
RESTR1: 3PT RESTR2: SWE
REXTXT: NO COMMENTS
SEPOSN: CN AIRDEP: NA
CNTRH1: SR CNTRH2: SH CNTRC1: SW CNTRC2: NO CNTRL1: DP CNTRL2: OT
HIC: 1009. T1: 58.100 T2: 84.000
CLIP3M: 48.0 LFEM: 1251. RFEM: 1875. CS1: 503. LBELT: 1659. SBELT: 1852.
OCCCOM: NONE

Occupant Information

Occupant Group ID: 4 VEHNO: 1
OCCLOC: 02 OCCTYP: P5 OCCAGE: 99 OCCSEX: M OCCHT: 999 OCCWT: 999
MTHCAL: P5 DUMSIZ: 50
DUMMAN: MFG: HUMANOID SYSTEMS, S/N 814
DUMMOD: UNMODIFIED
DUMDSC: NO COMMENTS
HH: 16.0 HW: 19.6 HR: 7.5 HS: 9.3 CD: 21.8 CS:999.9 AD: 2.3 HD: 4.5
KD: 7.8 HB:999.9 NB:999.9 CB:999.9 KB:999.9
RESTR1: 3PT RESTR2: NON
REXTXT: NO COMMENTS
SEPOSN: CM AIRDEP: NA
CNTRH1: NO CNTRH2: NO CNTRC1: NO CNTRC2: NO CNTRL1: DP CNTRL2: NO
HIC: 415. T1: 50.700 T2: 86.700
CLIP3M: 36.9 LFEM: 386. RFEM: 436. CSI: 335. LBELT: 1803. SBELT: 1832.
OCCCOM: NONE

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 001
SENTYP: AC SENLOC: 01 SENATT: HCCG
AXIS: XL UNITS: G'S PREFIL: 1650
INSMAN: MFG: ENDEVCO, MODEL: 7264-200, S/N: AE09
CALDAT: 26/MAR/92 INSRAT: 200 CHLMAX: 47
NFP: -300 NLP: 2999 DELT: 100
INSCOM: INIVEL: 35.2
DASTAT: AM

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 002
SENTYP: AC SENLOC: 01 SENATT: HCCG
AXIS: YL UNITS: G'S PREFIL: 1650
INSMAN: MFG: ENDEVCO, MODEL: 7264-200, S/N: AD61
CALDAT: 26/MAR/92 INSRAT: 200 CHLMAX: 13
NFP: -300 NLP: 2999 DELT: 100
INSCOM: INIVEL: 0.0
DASTAT: AM

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 003
SENTYP: AC SENLOC: 01 SENATT: HCCG
AXIS: ZL UNITS: G'S PREFIL: 1650
INSMAN: MFG: ENDEVCO, MODEL: 7264-200, S/N: AD98
CALDAT: 26/MAR/92 INSRAT: 200 CHLMAX: 43
NFP: -300 NLP: 2999 DELT: 100
INSCOM: INIVEL: 0.0
DASTAT: AM

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 004
SENTYP: AC SENLOC: 01 SENATT: CHST
AXIS: XL UNITS: G'S PREFIL: 1650
INSMAN: MFG: ENDEVCO, MODEL: 7264-200, S/N: B114H
CALDAT: 26/MAR/92 INSRAT: 200 CHLMAX: 33
NFP: -300 NLP: 2999 DELT: 100
INSCOM: INIVEL: 35.2
DASTAT: AM

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 005
SENTYP: AC SENLOC: 01 SENATT: CHST
AXIS: YL UNITS: G'S PREFIL: 1650
INSMAN: MFG: ENDEVCO, MODEL: 7264-200, S/N: B119H
CALDAT: 26/MAR/92 INSRAT: 200 CHLMAX: 42
NFP: -300 NLP: 2999 DELT: 100
INSCOM: INIVEL: 0.0
DASTAT: AM

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 006
SENTYP: AC SENLOC: 01 SENATT: CHST
AXIS: ZL UNITS: G'S PREFIL: 1650
INSMAN: MFG: ENDEVCO, MODEL: 7254-200, S/N: B192H
CALDAT: 26/MAR/92 INSRAT: 200 CHLMAX: 31
NFP: -300 NLP: 2999 DELT: 100
INSCOM: INIVEL: 0.0
DASTAT: AM

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 007
SENTYP: LC SENLOC: 01 SENATT: FMRL
AXIS: XL UNITS: LBS PREFIL: 1650
INSMAN: MFG: GSE INC, MODEL: 2430, S/N: 709
CALDAT: 07/APR/92 INSRAT: 3000 CHLMAX: 45
NFP: -300 NLP: 2999 DELT: 100
INSCOM: INIVEL: 0.0
DASTAT: AM

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 008
SENTYP: LC SENLOC: 01 SENATT: FMRR
AXIS: XL UNITS: LBS PREFIL: 1650
INSMAN: MFG: GSE INC, MODEL: 2430, S/N: 710
CALDAT: 07/APR/92 INSRAT: 3000 CHLMAX: 64
NFP: -300 NLP: 2999 DELT: 100
INSCOM: INIVEL: 0.0
DASTAT: AM

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 009
SENTYP: AC SENLOC: 02 SENATT: HOCG
AXIS: XL UNITS: G'S PREFIL: 1650
INSMAN: MFG: ENDEVCO, MODEL: 7264-200, S/N: BJ27H
CALDAT: 26/MAR/92 INSRAT: 200 CHLMAX: 12
NFP: -300 NLP: 2999 DELT: 100
INSCOM: INIVEL: 35.2
DASTAT: AM

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 010
SENTYP: AC SENLOC: 02 SENATT: HOCG
AXIS: YL UNITS: G'S PREFIL: 1650
INSMAN: MFG: ENDEVCO, MODEL: 7264-200, S/N: BG78H
CALDAT: 26/MAR/92 INSRAT: 200 CHLMAX: 10
NFP: -300 NLP: 2999 DELT: 100
INSCOM: INIVEL: 0.0
DASTAT: AM

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 011
SENTYP: AC SENLOC: 02 SENATT: H0CG
AXIS: ZL UNITS: G'S PREFIL: 1650
INSMAN: MFG: ENDEVCO, MODEL: 7254-200, S/N: AR39
CALDAT: 26/MAR/92 INSRAT: 200 CHLMAX: 25
NFP: -300 NLP: 2999 DELT: 100
INSCOM: INIVEL: 0.0
DASTAT: AM

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 012
SENTYP: AC SENLOC: 02 SENATT: CHST
AXIS: XL UNITS: G'S PREFIL: 1650
INSMAN: MFG: ENDEVCO, MODEL: 7264-200, S/N: AD76
CALDAT: 26/MAR/92 INSRAT: 200 CHLMAX: 19
NFP: -300 NLP: 2999 DELT: 100
INSCOM: INIVEL: 35.2
DASTAT: AM

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 013
SENTYP: AC SENLOC: 02 SENATT: CHST
AXIS: YL UNITS: G'S PREFIL: 1650
INSMAN: MFG: ENDEVCO, MODEL: 7264-200, S/N: AD99
CALDAT: 26/MAR/92 INSRAT: 200 CHLMAX: 8
NFP: -300 NLP: 2999 DELT: 100
INSCOM: INIVEL: 0.0
DASTAT: AM

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 014
SENTYP: AC SENLOC: 02 SENATT: CHST
AXIS: ZL UNITS: G'S PREFIL: 1650
INSMAN: MFG: ENDEVCO, MODEL: 7264-200, S/N: 8160H
CALDAT: 26/MAR/92 INSRAT: 200 CHLMAX: 12
NFP: -300 NLP: 2999 DELT: 100
INSCOM: INIVEL: 0.0
DASTAT: AM

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 015
SENTYP: LC SENLOC: 02 SENATT: FMRL
AXIS: XL UNITS: LBS PREFIL: 1650
INSMAN: MFG: GSE INC, MODEL: 2430, S/N: 634
CALDAT: 07/APR/92 INSRAT: 3000 CHLMAX: 16
NFP: -300 NLP: 2999 DELT: 100
INSCOM: INIVEL: 0.0
DASTAT: AM

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 016
SENTYP: LC SENLOC: 02 SENATT: FMRR
AXIS: XL UNITS: LBS PREFIL: 1650
INSMAN: MFG: GSE INC, MODEL: 2430, S/N: 701
CALDAT: 07/APR/92 INSRAT: 3000 CHLMAX: 11 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 017
SENTYP: LC SENLOC: 01 SENATT: LP80
AXIS: OT UNITS: LBS PREFIL: 1650
INSMAN: MFG: LEBOW, MODEL: 3371, S/N: 333
CALDAT: 09/APR/92 INSRAT: 3500 CHLMAX: 57 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 018
SENTYP: LC SENLOC: 01 SENATT: SHBT
AXIS: OT UNITS: LBS PREFIL: 1650
INSMAN: MFG: LEBOW, MODEL: 3371, S/N: 327
CALDAT: 09/APR/92 INSRAT: 3500 CHLMAX: 54 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 019
SENTYP: LC SENLOC: 02 SENATT: LP80
AXIS: OT UNITS: LBS PREFIL: 1650
INSMAN: MFG: LEBOW, MODEL: 3371, S/N: 330
CALDAT: 09/APR/92 INSRAT: 3500 CHLMAX: 53 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 020
SENTYP: LC SENLOC: 02 SENATT: SHBT
AXIS: OT UNITS: LBS PREFIL: 1650
INSMAN: MFG: LEBOW, MODEL: 3371, S/N: 308
CALDAT: 09/APR/92 INSRAT: 3500 CHLMAX: 53 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 021
SENTYP: DS SENLOC: 01 SENATT: SHBT
AXIS: OT UNITS: INS PREFIL: 1650
INSMAN: MFG: ET1, MODEL: LCP12A-12, S/N: 1
CALDAT: 07/MAY/92 INSRAT: 25 CHLMAX: 0 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM: SEAT BELT ELONGATION, UNITS ARE IN./IN., (PERCENTAGE ELONGATION)

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 022
SENTYP: DS SENLOC: 02 SENATT: SHBT
AXIS: OT UNITS: INS PREFIL: 1650
INSMAN: MFG: ET1, MODEL: LCP12A-12, S/N: 2
CALDAT: 07/MAY/92 INSRAT: 25 CHLMAX: 0 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM: SEAT BELT ELONGATION, UNITS ARE IN./IN. (PERCENTAGE ELONGATION)

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 023
SENTYP: DS SENLOC: 01 SENATT: SHBE
AXIS: OT UNITS: OTH PREFIL: 1650
INSMAN: MFG: CELESCO, MODEL: 20 IN., S/N: NA
CALDAT: 07/MAY/92 INSRAT: 20 CHLMAX: 13 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 024
SENTYP: DS SENLOC: 02 SENATT: SHBE
AXIS: OT UNITS: OTH PREFIL: 1650
INSMAN: MFG: MSE, MODEL: 24 IN. LIN., S/N: 112
CALDAT: 07/MAY/92 INSRAT: 24 CHLMAX: 25 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM: NONE

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 025
SENTYP: AC SENLOC: NA SENATT: SULF
AXIS: XG UNITS: G'S PREFIL: 1650
INSMAN: MFG: I.C. SENSOR, MODEL: 3031-200, S/N: 25-200
CALDAT: 10/APR/92 INSRAT: 200 CHLMAX: 115 INIVEL: 35.2
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 031
SENTYP: AC SENLOC: NA SENATT: FLRR
AXIS: XG UNITS: G'S PREFIL: 1650
INSMAN: MFG: I.C. SENSOR, MODEL: 3031-200, S/N: 27-200
CALDAT: 10/APR/92 INSRAT: 200 CHLMAX: 55 INIVEL: 35.2
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 032
SENTYP: AC SENLOC: NA SENATT: OTHR
AXIS: XG UNITS: G'S PREFIL: 1650
INSMAN: MFG: I.C. SENSOR, MODEL: 3031-200, S/N: 26-200
CALDAT: 10/APR/92 INSRAT: 200 CHLMAX: 96 INIVEL: 35.2
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM: SENSOR WAS LOCATED ABOVE REAR CROSSMEMBER ON CEN. LINE OF VEHICLE.

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 033
SENTYP: AC SENLOC: NA SENATT: OTHR
AXIS: XG UNITS: G'S PREFIL: 1650
INSMAN: MFG: I.C. SENSOR, MODEL: 3031-200, S/N: 29-200
CALDAT: 10/APR/92 INSRAT: 200 CHLMAX: 145 INIVEL: 35.2
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM: SENSOR WAS LOCATED IN THE REAR ON CEN. LINE OF THE VEHICLE.

Calibration data for instrumentation used in
dummy calibration is shown on next page.

CALIBRATION DATA FOR INSTRUMENTATION USED IN DUMMY CALIBRATION

DUMMY INSTRUMENTS	MFR	MODEL	S/N	CAL DATE	CAL DUE DATE
CHEST DEFLECTION POT	BECKMAN	5311	N/A	EACH USE	EACH USE
CHEST IMPACTOR ACCEL	ENTRAN	EGV-1	14N3N-V13-1	03/17/92	09/17/92
NECK PENDULUM ACCEL	"	"	"	"	"
NECK ROTATION NO. 1	BECKMAN	5311	N/A	EACH USE	EACH USE
NECK ROTATION NO. 2	BECKMAN	5311	N/A	EACH USE	EACH USE
NECK EXTENSION POT	BOURNS	80294- 20518- 1840202	1684-067	EACH USE	EACH USE
ABDOMINAL COMPRESSION LOAD	LEBOW/EATON	3167	1573	03/17/92	09/17/92
LUMBAR FLEXION LOAD	"	"	"	"	"
LUMBAR ROTATION	BOURNS	3590S-2-102	N/A	EACH USE	EACH USE
ABDOMINAL DISPLACEMENT	CELESCO	PT-101-15B	0786551	EACH USE	EACH USE
TIMER	MSE	MSE TIM	#1	02/18/92	08/18/92
TIME TRAP	MSE	1"	#1	08/18/92	08/18/92

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