DOT 1459

NEW CAR ASSESSMENT PROGRAM (NCAP)
FRONTAL BARRIER IMPACT TEST

MERCEDES BENZ AG
1990 MERCEDES 190E
4 DOOR SEDAN (ACP)
NHTSA NO. ML0501

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

April
~~MARCH~~ 10, 1990

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)
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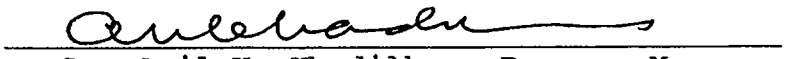
APPROVED BY: 

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MANAGER, New Car Assessment Program

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16. Abstract

A 35 mph frontal barrier impact test using a load cell barrier was conducted on a 1990 Mercedes Benz 190E, 4 Door Sedan at the Mobility Systems and Equipment Company (MSE) crash test facility in Mira Loma, CA, on 23 March 1990.

The barrier impact velocity was 34.8 mph, and the ambient temperature at the barrier face at the time of impact was 85 deg. F. The post-test vehicle crush maximum was 13.4 in.

A summary of occupant injury measure data from the test appears below:

Injury Criteria Threshold Value	Driver Dummy	Passenger Dummy
Head Injury Criterion HIC = 1000	800	833
Chest Resultant Peak 60 Gs (3 ms clip)	60.1	58.2
Femur Load 2250 Pounds	Left 705	582
	Right 1028	331

TYPE OF RESTRAINT SYSTEM: Manual 3-point continuous webbing system with pre-tensioning retractors and driver airbag and knee bolster.

17. Key Words
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(ACP)

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SECTION 1

PURPOSE AND TEST PROCEDURE

This 35 mph frontal barrier impact test is a part of the FY 90 Vehicle Barrier Impact and Testing Program sponsored by the National Highway Traffic Safety Administration (NHTSA) under Contract No. DTNH22-87-D-02009. 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 September 1986.

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SECTION 2

SUMMARY OF FRONTAL BARRIER IMPACT TESTS

A load cell barrier consisting of 36 cell units was impacted by a 1990 Mercedes Benz 190E, 4 Door Sedan, NHTSA No. ML0501, at a velocity of 34.8 mph. The frontal impact test was conducted by Mobility Systems and Equipment Company (MSE) on 23 March 1990. 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.

Sixty-five (65) channels of crash parameters were recorded using two (2) FM tape recorders, three (3) computers and associated data acquisition system. Time history plots of all recorded channels are presented in Appendix B.

2.1 GENERAL COMMENTS

The 1990 Mercedes Benz 190E, 4 Door Sedan, was equipped with a 2.6 liter 6 cylinder engine and 5 speed transmission. The test weight of the 1990 Mercedes Benz 190E, 4 Door Sedan, with two (2) 50th percentile male dummies, instrumentation, and cameras was 3,492 pounds.

The 1990 Mercedes Benz 190E, 4 Door Sedan, involved in a frontal load cell barrier crash at a velocity of 34.8 mph.

The maximum static crush for the vehicle of 13.4 inches occurred at the vehicle right side. The windshield was cracked, but no separation was observed. Both the driver's and passenger's front doors were opened without the aid of tools.

The driver ATD's head hit the airbag. The driver's left and right knees hit the dash panel.

The driver ATD had a HIC value of 800, the maximum chest acceleration (resultant clipped) was 60.1 g's and the maximum femur loads were 705 (left) and 1,028 (right) pounds.

The passenger ATD's head did not hit the dash panel or knee assembly. His left knee hit the dash panel. Both of his knees hit the glovebox door. The HIC value for the passenger ATD was 833, the maximum chest acceleration (resultant clipped) was 58.2 g's, and the maximum femur loads were 582 (left) and 331 (right) pounds.

Seat belt spool out, measured by high-speed film analysis, was not obtainable for the driver and 2.8 inches for the passenger belts.

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

There were no apparent visual indications of any stoddard solvent leaks.

Each of the test vehicle's front outboard seating position was equipped with a manual 3-point continuous webbing system with pretensioning retractors and also driver airbag and knee bolster.

Data Table No. 1 Test Vehicle Data

VEHICLE YEAR/MAKE/MODEL/BODY STYLE: 1990/MERCEDES BENZ/190E/4 DOOR SEDAN

VEHICLE NHTSA NO.: M L 0 5 0 1 VIN: W D B D A 2 9 D 7 L F 6 7 8 6 5 0

VEHICLE BODY COLOR: WHITE ; MONTH & YEAR OF MANUFACTURE: 10/89

ENGINE: 6 Cylinders; _____ C.I.D; 2.6 Liters; _____ CC
X Gas; _____ Diesel: _____ Turbocharged
PLACEMENT-- X Longitudinal; _____ Transverse (Lateral)

TRANSMISSION: 5 Speed; ____ Manual; X Automatic;_____ Overdrive
FINAL DRIVE: ____ Front Wheel Drive X Rear Wheel Drive;
____ Four Wheel Drive

DATE VEHICLE AVAILABLE FOR 35 MPH CRASH TESTING: February 1990

ODOMETER READING: 119 miles; OPTIONS: X A/C; X P/S; X P/Wdo.; ___
____ Tilt Whl.; X Cruise Control

DATA RECORD FROM VEHICLE'S TIRE PLACARD:

Tire Pressure (at capacity): 29 psi Front; 34 psi Rear
Recommended Tire Size: 185/65 R15 87V
Tires on Vehicle: 185/65 R15 87V ; Manufacturer: CONTINENTAL
Number of Occupants: 2 Front; 3 Rear; ____ 3rd Seat; 5 TOTAL
Type of Front Seats: X Bucket; _____ Bench; _____ Split Bench
Type of Front Seat Back: ____ Fixed; X Adjustable With*____ Lever
___Rotating Knob

Vehicle Maximum Capacity Loading = 865 lbs. (A)
No. of Occupants x 150 lbs.- - - = 750 lbs. (B)
Cargo Capacity (A - B)- - - - - = 115 lbs.
* gvw - Delivered Weight.

TEST VEHICLE DELIVERED WEIGHT WITH MAXIMUM FLUIDS:

Right Front = 866 lbs.
Left Front = 856 lbs. TOTAL FRONT = 1722 lbs.(56.3% of TOTAL)
Right Rear = 658 lbs.
Left Rear = 678 lbs
TOTAL WEIGHT = 3058 lbs. TOTAL REAR = 1336 lbs.(43.7% of TOTAL)

* Power Adjustment (Electrical)

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

CALCULATION OF TEST VEHICLE TARGET WEIGHT:

Total Test Vehicle Delivered Weight With Maximum Fluids = 3058 lbs.
Maximum Cargo Carrying Capacity of Test Vehicle*- - - - - 115 lbs.
Weight of Two P.572 Dummies (2 x 164 lbs.)- - - - - - - - 328 lbs.
TEST VEHICLE TARGET WEIGHT 3501 lbs.
*300 lbs. for light trucks and MPVs

ACTUAL WEIGHT OF TEST VEHICLE WITH 2 DUMMIES AND CARGO:

Right Front = 950 lbs. TOTAL FRONT = 1866 lbs.(53.4% of TOTAL)
Left Front = 916 lbs.
Right Rear = 815 lbs. TOTAL REAR = 1626 lbs.(46.6% of TOTAL)
Left Rear = 811 lbs.

TOTAL WEIGHT= 3492 lbs. (which includes 25 lbs. of cargo ballast weight placed in the cargo/luggage area)

VEHICLE COMPONENTS REMOVED TO MEET TARGET WEIGHT:

1. X Spare Tire
2. __ Rear Bumper Assembly
3. X Tail lamp hsg. ___ Rt.Side X Left Side
4. Rear Seat Assembly

TEST VEHICLE ATTITUDE:

As Delivered----Right Front = 26.4 inches
Left Front = 26.0 inches
Right Rear = 25.8 inches
Left Rear = 26.0 inches

Ready For Test--Right Front = 25.8 inches
Left Front = 25.8 inches
Right Rear = 24.2 inches
Left Rear = 24.3 inches

Test Vehicle Wheelbase: 105.0 inches; C.G.= 48.9 inches rearward of front wheel centerline

Total Vehicle Length:

Right Side = 158.4 inches
Left Side = 159.6 inches
Centerline = 175.0 inches

Data Table No. 2 Post Crash Test Data

DATA OF 35 MPH FRONTAL BARRIER IMPACT RATING TEST: 03/23/90

TIME OF TEST: 2:40 PM: AMBIENT TEMPERATURE AT BARRIER FACE: 85 °F

VEHICLE'S OCCUPANT COMPARTMENT TEMPERATURE: 73 °F

(spec. Range = 66 to 78 °F.)

VEHICLE WINDSHIELD MOLDING TEMPERATURE: 73 °F.

VEHICLE IMPACT VELOCITY: Primary Speed Trap = 34.78 mph
Secondary Speed Trap 34.80 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 =158.4"; C/Line=175.0"; Left Side=159.6"
Vehicle Post-test Length-Right Side=145.0"; C/Line=162.0"; Left Side=147.5"
Vehicle Static Crush --- Right Side= 13.4"; C/Line= 13.0"; Left Side= 12.1"

VEHICLE REBOUND FROM BARRIER FACE:

Vehicle Right Side = 11.7 inches
Vehicle Centerline = 8.4 inches
Vehicle Left Side = 11.4 inches

VEHICLE DUMMY CONTACT POINTS:

	DRIVER (I.D. No. 466)			PASSENGER (I.D. No. 465)		
	Strg.Col. Hub	Strg. Wheel	Instru. Panel	Instru. Panel	Knee Assy.	Glove Box Door
HEAD	NO	NO	NO	NO	NO	NO
RIGHT KNEE	////////	/////	YES	NO	//////	YES
LEFT KNEE	////////	/////	YES	YES	//////	YES

VEHICLE DOOR OPENING INFORMATION:

	RIGHT SIDE		LEFT SIDE	
	OPENED	JAMMED	OPENED	JAMMED
FRONT DOORS	YES	NO	YES	NO
REAR DOORS	YES	NO	YES	NO

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 - - - - -	0.0 " forward;	0.0 " forward
Seat Adjuster Failure- - - -	None ;	None

Details Of Any Failure: N/A

OTHER NOTABLE IMPACT EFFECTS:

- No solvent leakage.
- No windshield separation.
- Adjustable height "D" ring moved downwards from its pretest upper most position 0.2 inches down on the drivers side and 0.1 inches down on the passenger's side.

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: 1990/MERCEDES BENZ/190E/4 DOOR SEDAN

VEH. NHTSA NO.: ML0501 ; TEST DATE: 03/23/90

MAXIMUM ACCELERATION VALUES:		DRIVER DUMMY # 466	PASSENGER DUMMY # 465
Head Channel X	HEAD X	-60.69	-45.74
Head Channel Y	Y	-36.85	-9.32
Head Channel Z	Z	42.41	79.94
HEAD RESULTANT	R	80.47	84.92
Chest Channel X	CHEST X	-60.88	-63.41
Chest Channel Y	Y	-12.64	-8.91
Chest Channel Z	Z	15.04	-12.19
CHEST RESULTANT	R	60.06	58.20
TIME INTERVAL (seconds)		0.0584 to 0.0614	0.0636 to 0.0666

HEAD INJURY CRITERIA (HIC) VALUES:

HIC	HIC	800.36	832.88
t_1 (seconds)		0.0447	0.0631
t_2 (seconds)		0.0803	0.0991
Avg. Accel. t_1 to t_2		54.99	55.66

MAXIMUM FEMUR FORCES:

Right Side (lbs.)	FR	1027.7	331.1
Left Side (lbs.)	FL	705.0	582.3

MAXIMUM SEAT BELT FORCES:

Lap Belt	LAP	1893.9	1857.3
Shoulder Belt	SHLDR	1807.1	2107.7

MAXIMUM SEAT BELT WEBBING SPOOL-OUT:

Lap/Shoulder Belt Combination *	3.0	3.0

* Determined Mechanically

Data Table No. 4 Test Dummy Positioning Data

PRE-IMPACT DATA:

Make/Model: MERCEDES BENZ/190E

Body Style: 4 DOOR SEDAN Model Year: 1990

NHTSA No.: ML0501 Color: WHITE

DATA FROM CERTIFICATION LABEL:

Vehicle Manufacturer: MERCEDES BENZ AG

Date of Manufacture: 10/89 ; VIN: WDBDA2907LF678650

GVWR: 3970 lb; GAWR: Front = 1950 lb; Rear = 2020 lb

POST-IMPACT DATA:

Date of Test: 03/23/90 Time: 2:40 PM Temperature: 85 °F

Required Impact Velocity Range: 34.5 to 35.5 mph

Impact Velocity: Primary = 34.78 mph Secondary = 34.80 mph

Seat Type: Bucket Adjuster Type: Electric

Bucket Seat Back Type: Adjustable headrest

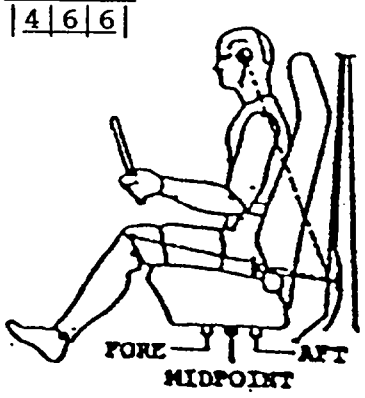
TECHNICIANS: Enrique Marin

DRIVER DUMMY # |4|6|6|

HEAD 15.4 "
TARGET 92.0

KNEE 21.9 "
JOINT -18.0

APPROX- 10.6 "
IMATE -65.0
"H"
POINT



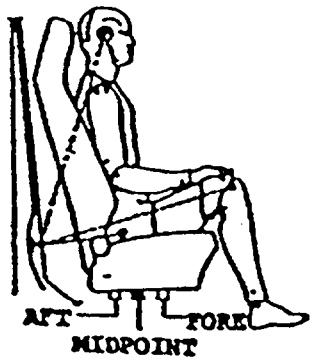
FORE AFT
MIDPOINT

PASSENGER DUMMY # |4|6|5|

15.8 " HEAD
92.0 TARGET

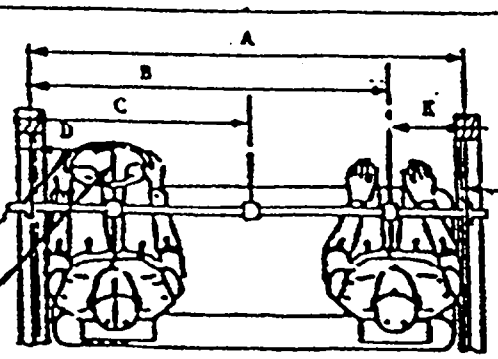
23.1 " KNEE
- 9.0 JOINT

11.7 " APPROX-
-54.0 MATE
"H"
POINT



AFT FORE
MIDPOINT

A = 57.8 "
B = 43.1 "
C = 28.9 "
D = 14.7 "
E = 14.7 "



LATERAL BAR

ADJUSTABLE
POINTER

DOOR
GLASS
HEIGHT

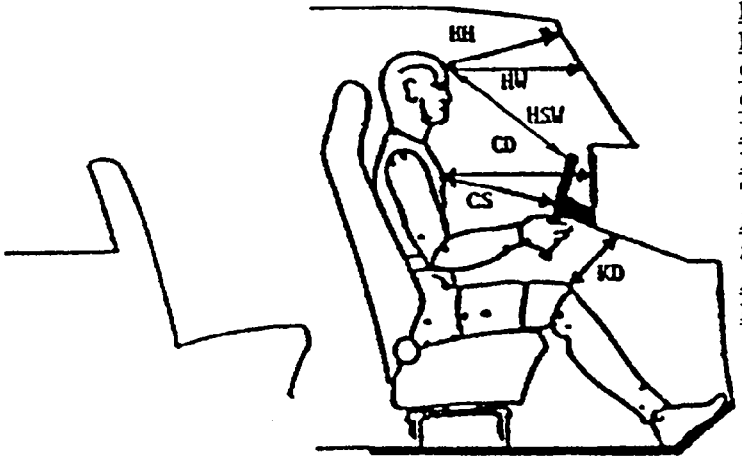
LEFT
FRONT
DOOR

RIGHT
FRONT
DOOR

DRIVER DUMMY # |4|6|6|

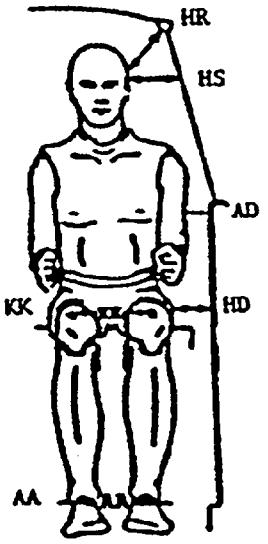
PASSENGER DUMMY # |4|6|5|

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



	Driver	Passenger
HH	15.5	15.6
HW	21.6	21.6
CD	24.0	22.5
CS	15.3	N/A
KD	L- 5.2	L- 7.4
KD	R- 4.6	R- 7.5
Torso Angle	20.0	Torso Angle 20.0
Seat Back Angle	19.0	Seat Back Angle 19.0
HSW	20.5	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.)



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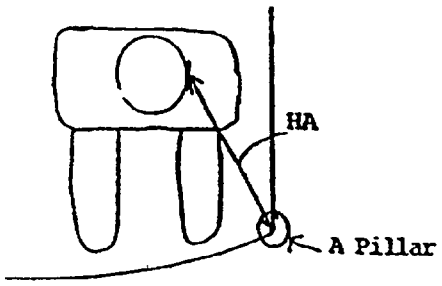
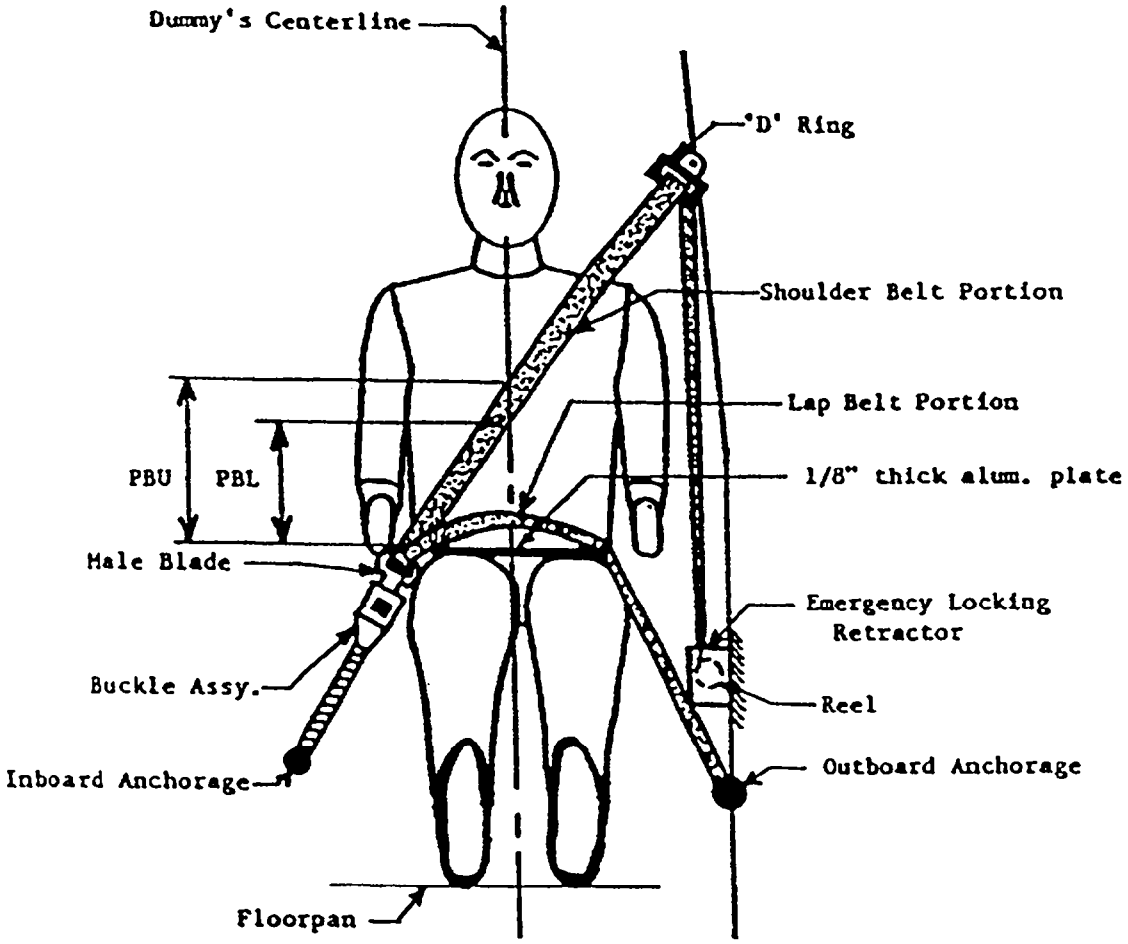


	Driver	Passenger
HR	7.2	7.1
HS	8.8	8.4
AD	3.4	3.3
HD	5.6	4.8
KK	14.5	11.7
AA	14.7	9.5
HA	22.2	23.2



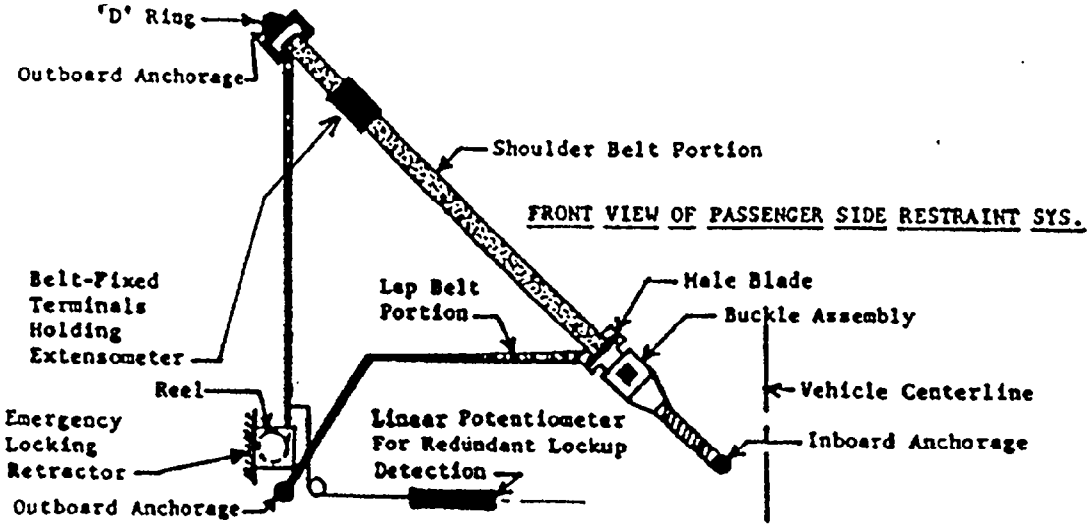
FRONT VIEW OF DRIVER DUMMY

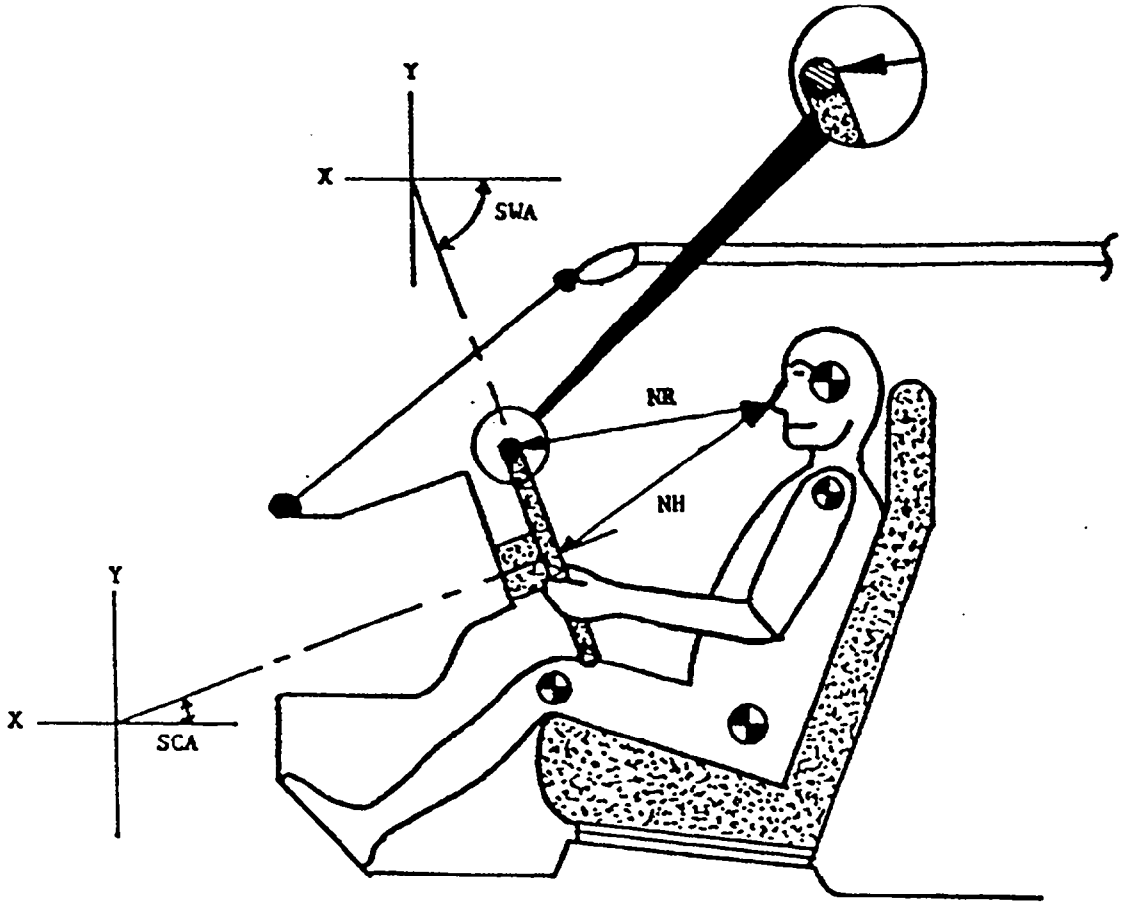
	DRIVER DUMMY (inches)	PASSENGER DUMMY (inches)
PBU -- Top surface of alum. plate to belt upper edge	15.2	15.2
PBL -- Top surface of alum. plate to belt lower edge	11.7	11.2
LAP BELT TENSION, POUNDS	3.0	3.0
SHOULDER BELT TENSION, POUNDS	0.0	0.0

Data Table 6 Seat Belt Performance Assessment Test Data

	DRIVER SIDE		PASSENGER SIDE	
BELT LENGTH DATA:	PRE-TEST	POST-TEST	PRE-TEST	POST-TEST
Total belt length from retractor reel to bolt hole anchor point for continuous webbing systems	86.8	86.8	91.8	91.8
Retractor reel to 'D' ring as measured on Part 572	N/A	N/A	N/A	N/A
Shoulder belt length as measured on Part 572 dummy	33.0	32.5	32.2	30.0
Lap belt length as measured on Part 572 dummy	30.5	29.5	32.2	32.0
Remainder of belt webbing left on retractor reel	23.3	24.8	27.4	29.8
BELT SPOOL-OFF DATA:				
As determined by film analysis	Not attainable		2.8 in	
As determined electronically	NOT MEASURED		NOT MEASURED	
As determined mechanically	3.0 in		3.0 in	
BELT STRAIN DATA:				
Measured between male blade and 'D' ring	No data	Percent	No data	Percent

*S = Shoulder
L = Lap





LEFT SIDE VIEW

	MEASUREMENTS
NR--Distance from tip of dummy's nose to Top Rear surface of steering wheel rim.	18.4 Inches
NH--Distance from tip of dummy's nose to center of steering column hub.	19.0 Inches
SCA-Angle of steering column relative to the horizontal X axis.	22.0 Degrees
SWA-Angle of steering wheel relative to the horizontal X axis.	67.0 Degrees

Data Table 8 Camera Location Data

VEH. NHTSA NO.: ML0501 ; TEST DATE: 03/23/90 ; TIME: 2:40 PM

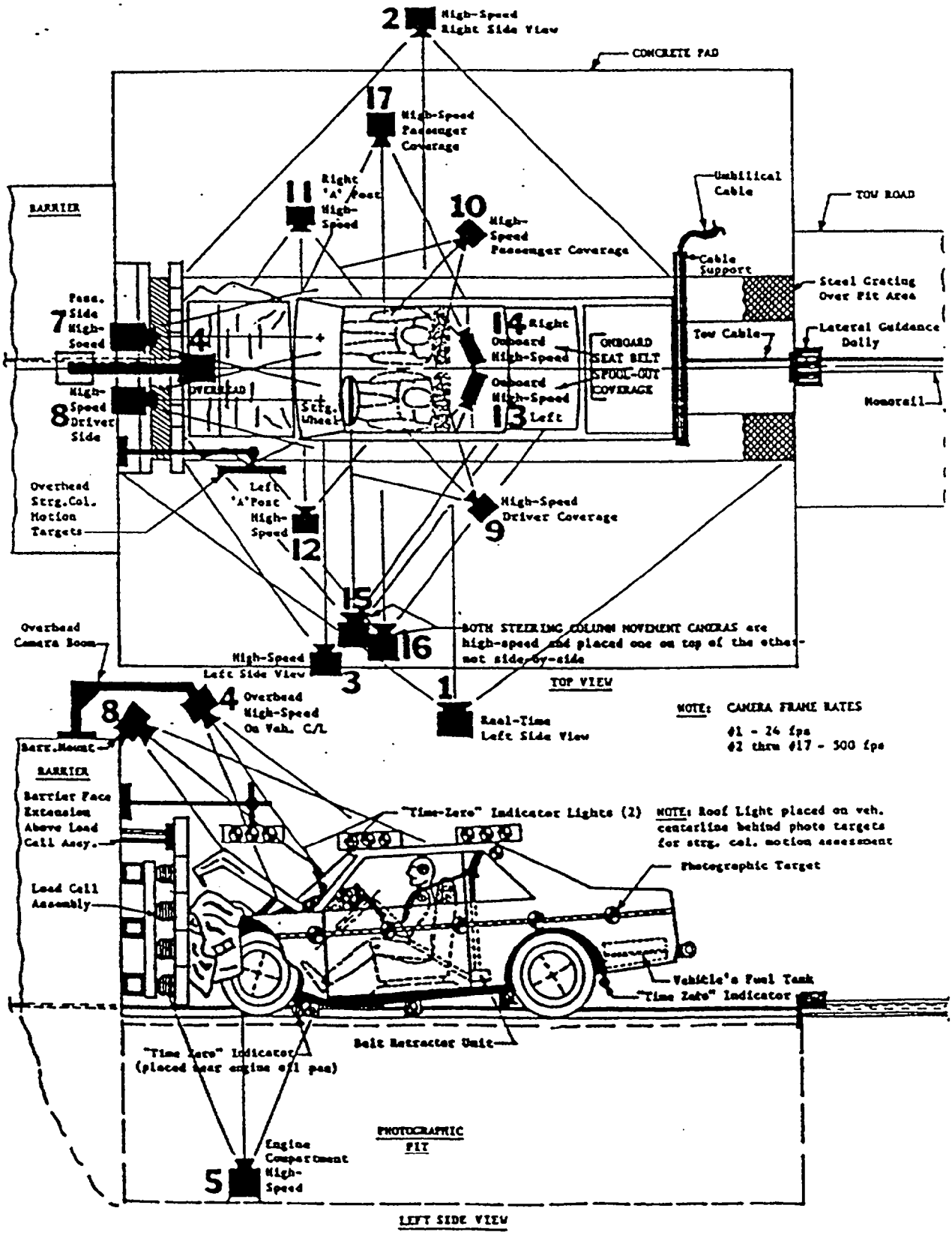
VEH. YEAR/MAKE/MODEL/BODY STYLE: 1990/MERCEDES BENZ/190E/4 DOOR SEDAN

CAMERA NO.	VIEW	CAMERA POS. (in.) X	Y	Z	ANGLE (deg)	FILM PLANE TO HEAD TARGET	LENS (mm)	SPEED (fps)
1	Left Side View	-676	268	57	3	697	15-70 ZOOM	24
2	Right Side View	311	80	52.5	0	299	16	600
3	Left Side View	-294	71	35	0	285	13	500
4	Overhead	-1	-4	124	+68	60	13	500
5	Pit-Engine	2	42	-54	28	**	13	600
6	Pit-Fuel Tank	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.	N.R.
7	Front-Passenger	13	-14	104	50	60	16	600
8	Front-Driver	-12	-14	104	44	60	16	600
9	Left Side-Driver	-93	94	77	22	92	16	600
10	Right Side-Passenger	103	98	74.5	18	103	16	600
11	Right Side-'A' Post	177	16	52	5	168	50	600
12	Left Side-'A' Post	-295	-32	50.5	6	282	28	800
13	Onboard-Left Side	-10	122	25	-37	103	13	750
14	Onboard-Right Side	10	122	25	-37	103	13	700
15	Left Side-Steering Col.	-343	81	128	15	330	28	600
16	Left Side-Steering Col.	-339	84	111	11	325	28	650
17	Right Side Passenger	139	65	52	7	131	16	700

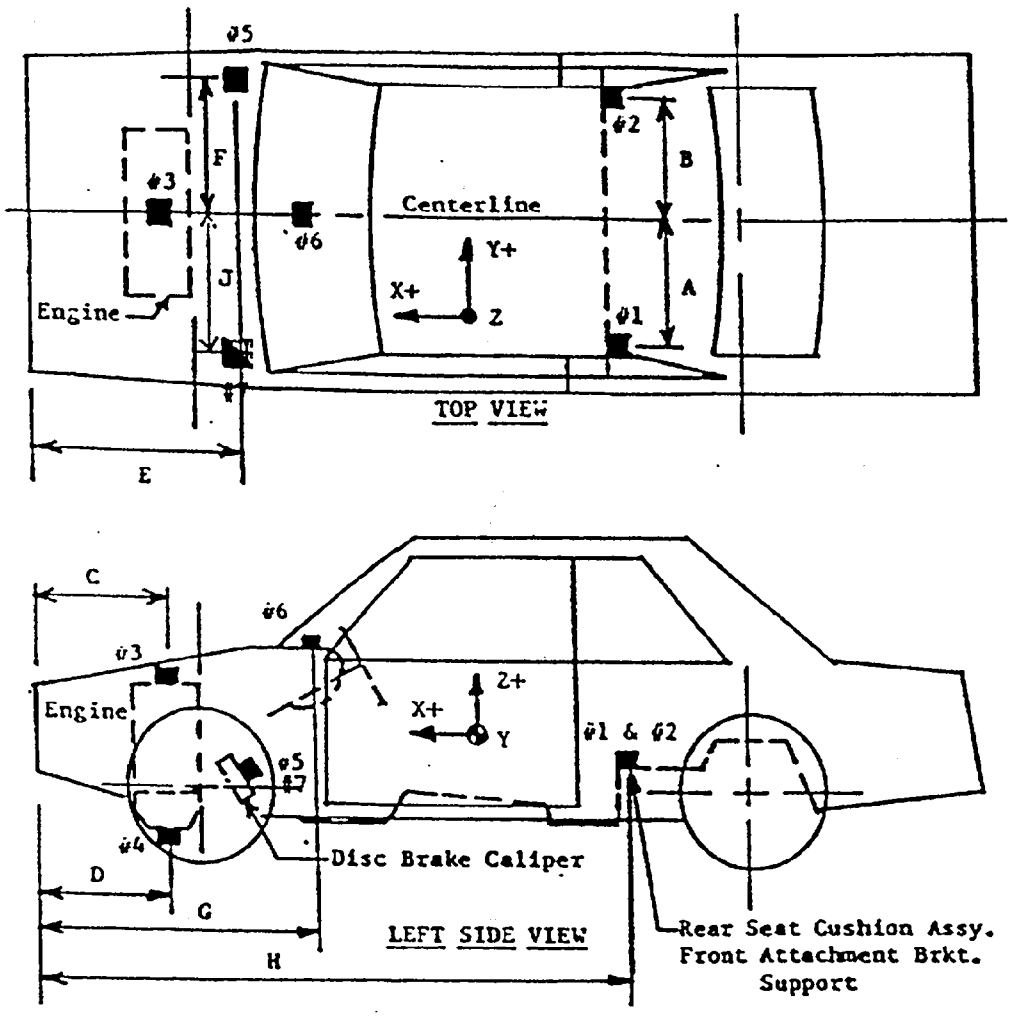
* X = film plane to monorail centerline
  Y = film plane to barrier face
  Z = film plane to ground

**Pit camera uses refractor lens for imagery.

Data Table No. 8 (Cont'd) Camera Location Data



Data Table No. 9 Vehicle Accelerometer Location and Data Summary

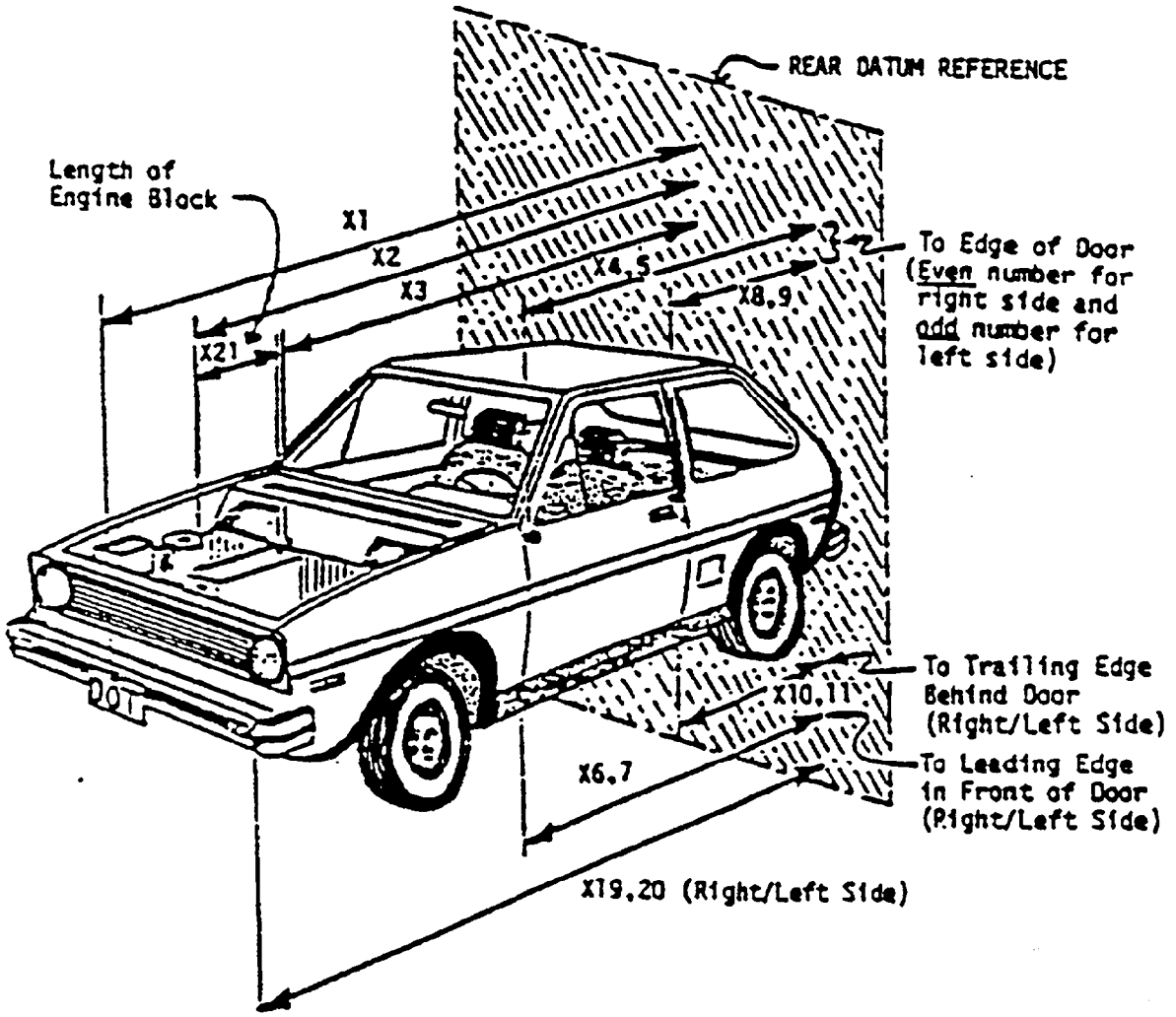


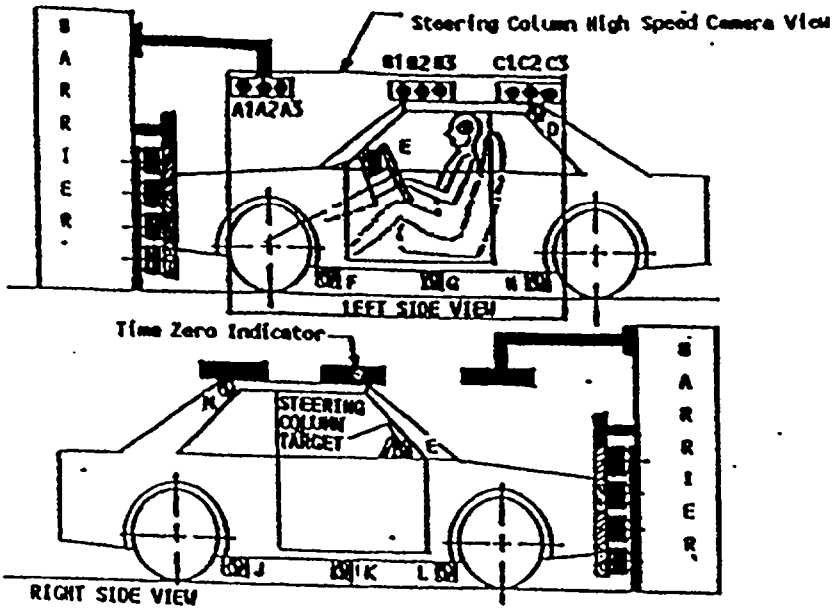
Dimension	Length (in.)
A	25.0
B	25.0
C	31.5
D	60.0
E	51.0
F	26.6
G	58.2
H	108.0
J	26.6

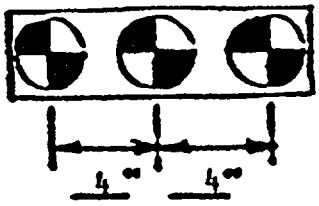
Loc. No.	Description	Maximum Value X-	msec.	X+	msec.
1	Rear seat X-member @ Left Side	-49.8	26.0	3.4	112.4
2	Rear seat X-member @ Right Side	-55.4	22.7	1.1	111.4
3	Top of Engine Block	-196.2	17.7	38.6	26.8
4	Bottom of Engine	-200.7	17.6	175.2	81.2
5	Disc Brake Caliper Right Side	- 96.2	30.6	50.0	52.2
6	Instrument Panel	-46.2	47.5	3.9	89.1
7	Disc Brake Caliper @Left Side	-116.2	30.9	33.4	56.9

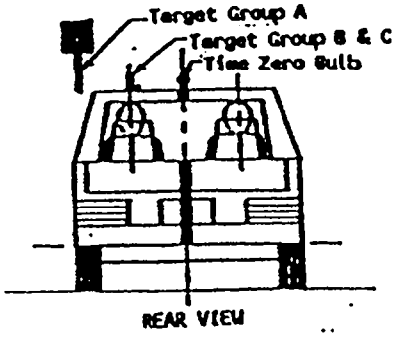
NO.	MEASUREMENT DESCRIPTION	Pre-Test (in.)	Post-Test (in.)	Diff. (in.)
X1	Total Length of Test Vehicle at Centerline	175.0	162.0	13.0
X2	Rear Surface of Vehicle to Front of Engine	162.8	148.5	14.3
X3	Rear Surface of Vehicle to Firewall	133.0	132.0	1.0
X4	Rear Surface to Upr. Leading Edge of Right Door	119.2	118.5	0.7
X5	Rear Surface to Upr. Leading Edge of Left Door	119.2	118.4	0.8
X6	Rear Surface to Lwr. Leading Edge of Right Door	118.2	117.3	0.9
X7	Rear Surface to Lwr. Leading Edge of Left Door	118.3	117.5	0.8
X8	Rear Surface to Upr. Trailing Edge of Right Door	81.0	80.7	0.3
X9	Rear Surface to Upr. Trailing Edge of Left Door	81.2	80.3	0.9
X10	Rear Surface to Lwr. Trailing Edge of Right Door	80.2	79.3	0.9
X11	Rear Surface to Lwr. Trailing Edge of Left Door	80.2	79.5	0.7
X12	Rear Surface to Bottom 'A' Post on Right Side	117.4	116.8	0.6
X13	Rear Surface to Bottom 'A' Post on Left Side	117.6	117.0	0.6
X14	Rear Surface to Firewall on Right Side	125.2	123.3	1.9
X15	Rear Surface to Firewall on Left Side	125.9	124.2	1.7
X16	Rear Surface to Steering Column	101.2	103.5	-2.3
X17	Center of Steering Column to 'A' Post	16.4	13.5	2.9
X18	Center Steering Column to Headlining	18.0	15.0	3.0
X19	Rear Surface to Right Side of Front Bumper	158.4	145.0	13.4
X20	Rear Surface to Left Side of Front Bumper	159.6	147.5	12.1
X21	Length of Engine Block	28.0	28.0	0.0

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









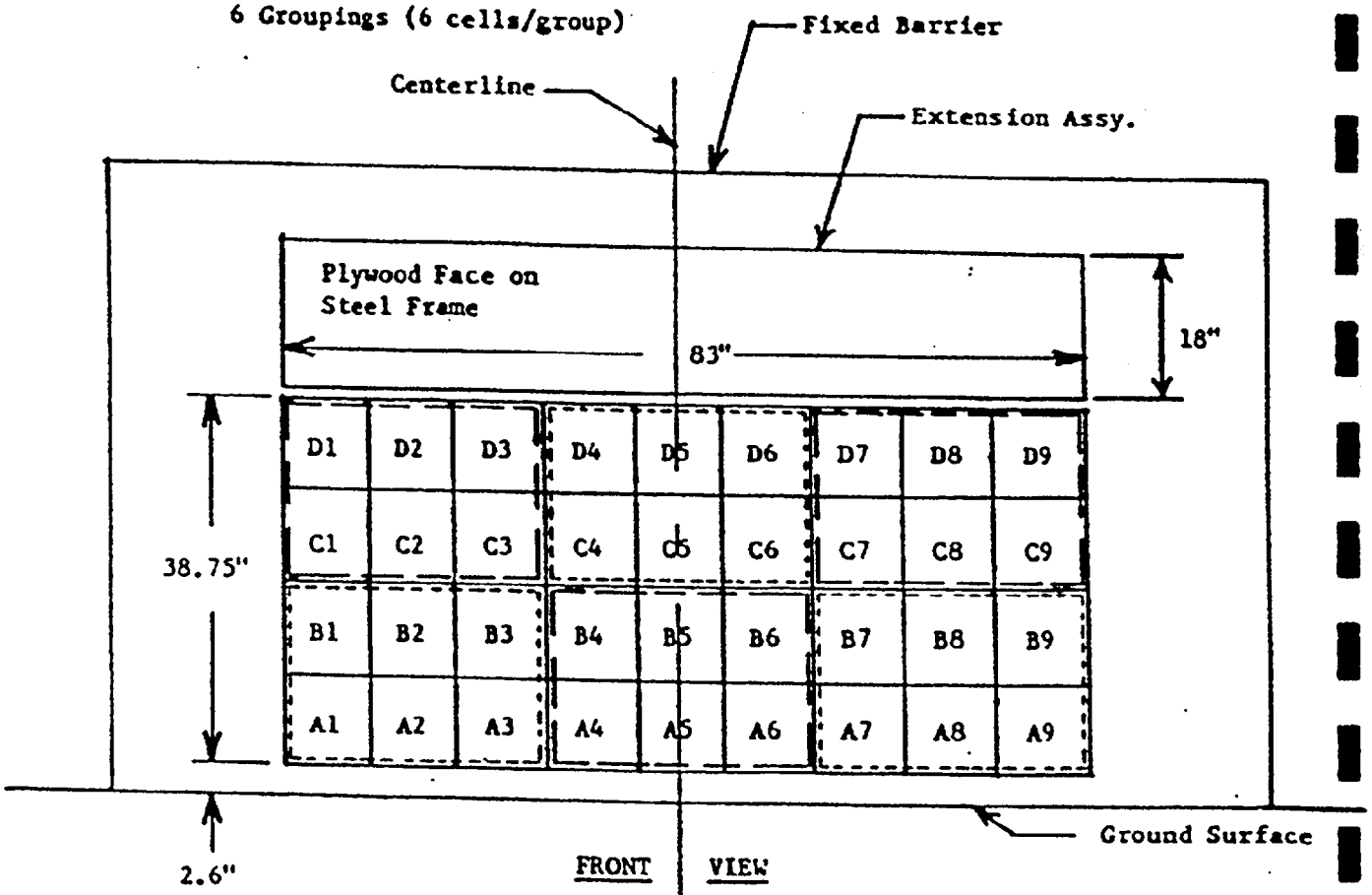
BARRIER TARGETS	'X' From Imag. Barrier Face Vertical Plane	'Y' From Monorail C/L	'Z' Above Ground
A-1	62.5	21.5	70.3
A-2	66.5	21.5	70.3
A-3	70.5	21.5	70.3

BARRIER TARGETS	'X' From Imag. Barrier Face Vertical Plane	'Y' From Monorail C/L	'Z' Above Ground
B-1	74.5	13.5	54.3
B-2	78.5	13.5	54.3
B-3	82.5	13.5	54.3
C-1	119.5	13.5	54.2
C-2	123.5	13.5	54.2
C-3	127.5	13.5	54.2
D	127.5	23.3	46.6
E	65.0	12.5	34.0
F	47.0	29.9	8.8
G	82.8	30.0	8.7
H	118.5	30.0	8.7
J	119.0	30.0	8.0
K	83.3	29.9	8.0
L	47.5	39.9	8.0
M	127.5	23.3	47.2

NOTE: Diameter of all photo targets is 4".

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)

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 & 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) HEAD AND KNEE CONTACT AREA

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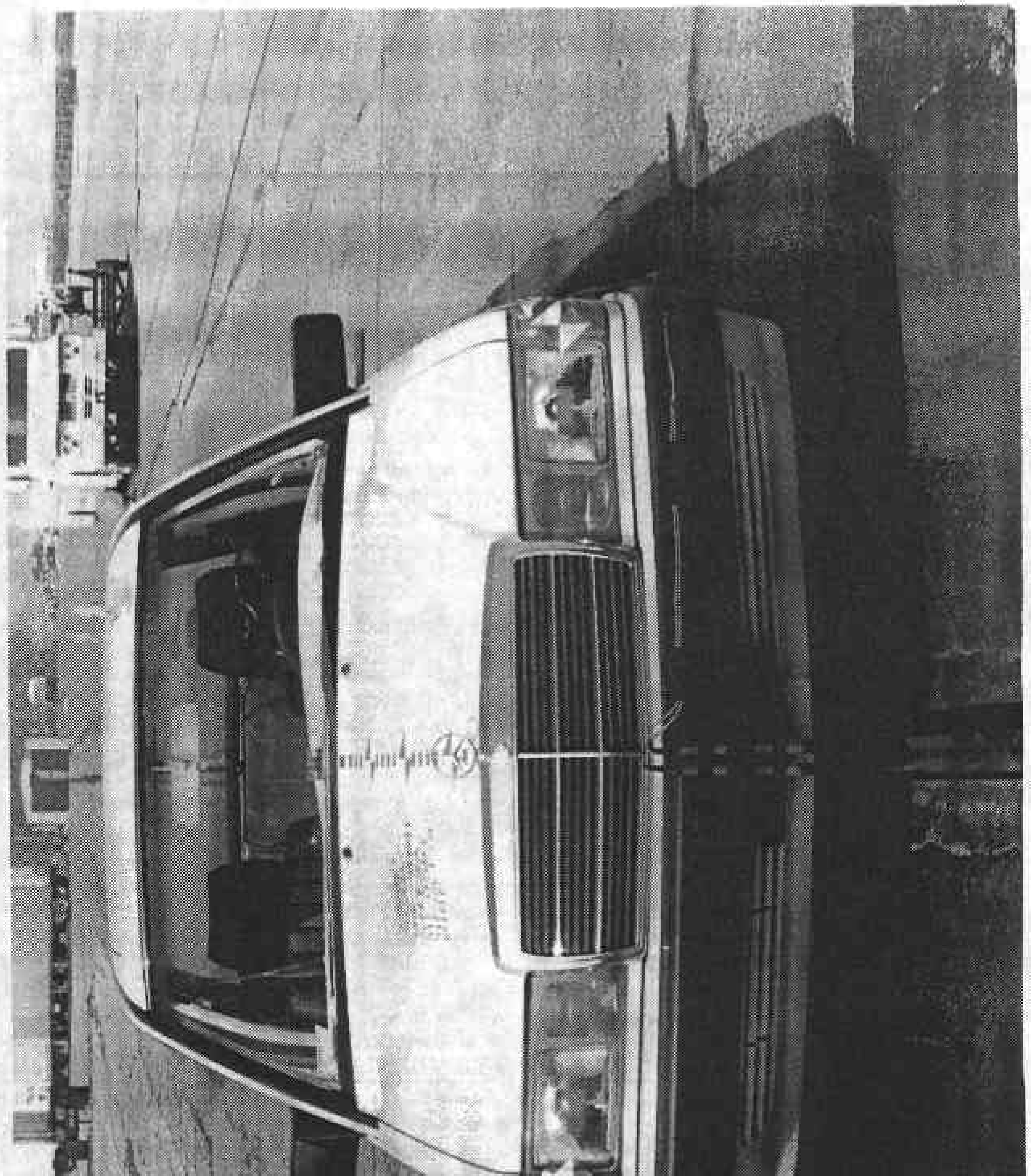
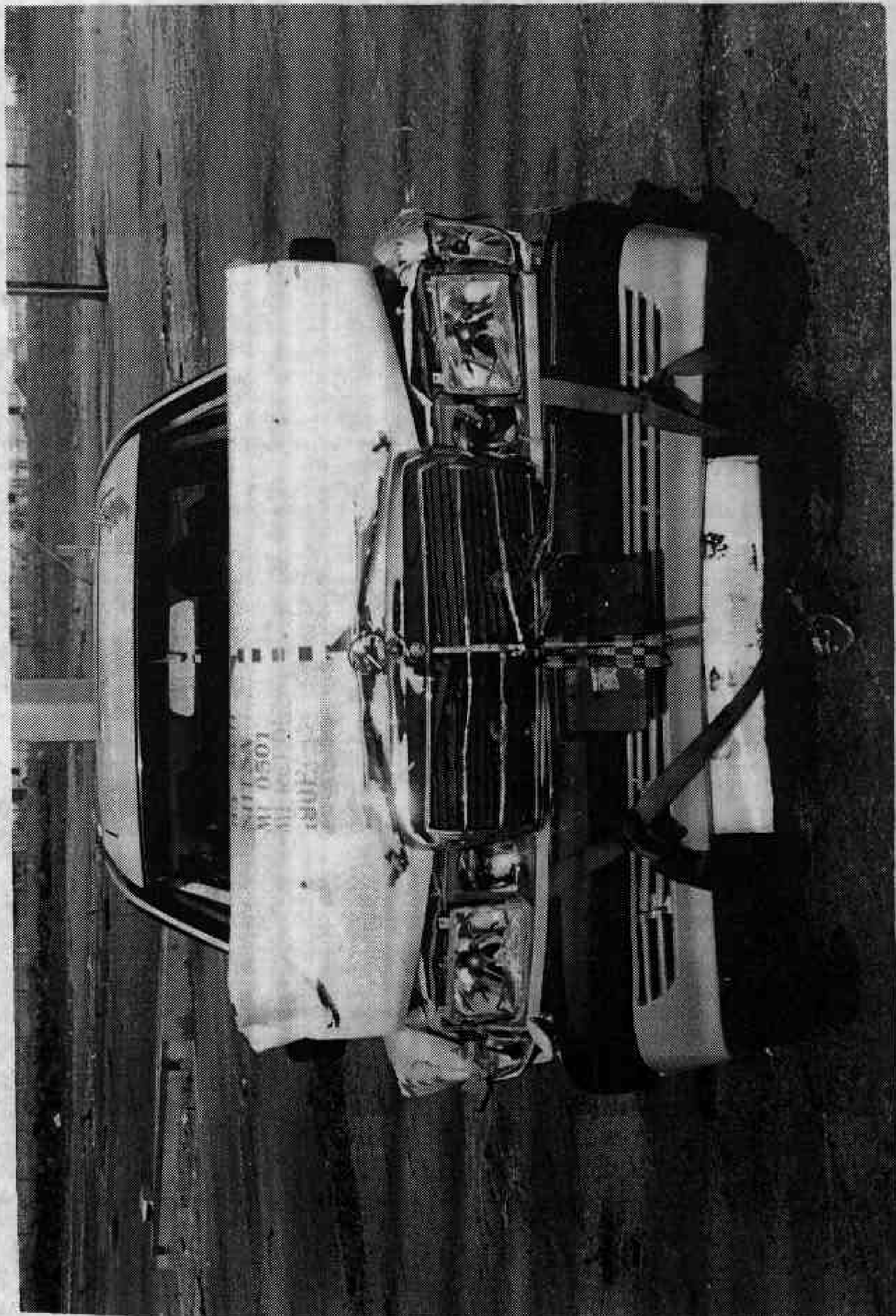
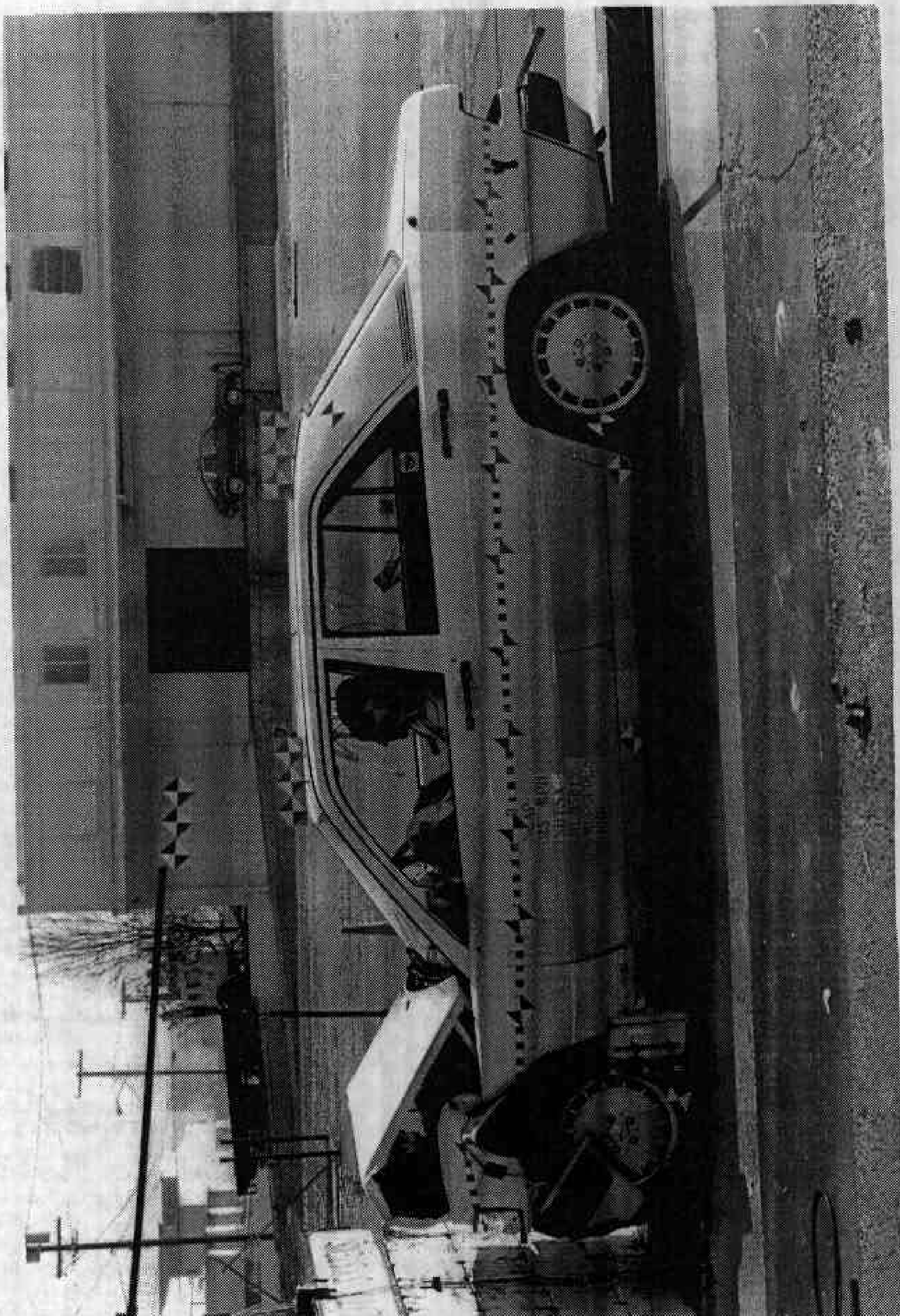


PRETEST FRONT VIEW



POSTTEST FRONT VIEW

PRETEST LEFT SIDE VIEW



POSTTEST LEFT SIDE VIEW

PRETEST RIGHT SIDE VIEW

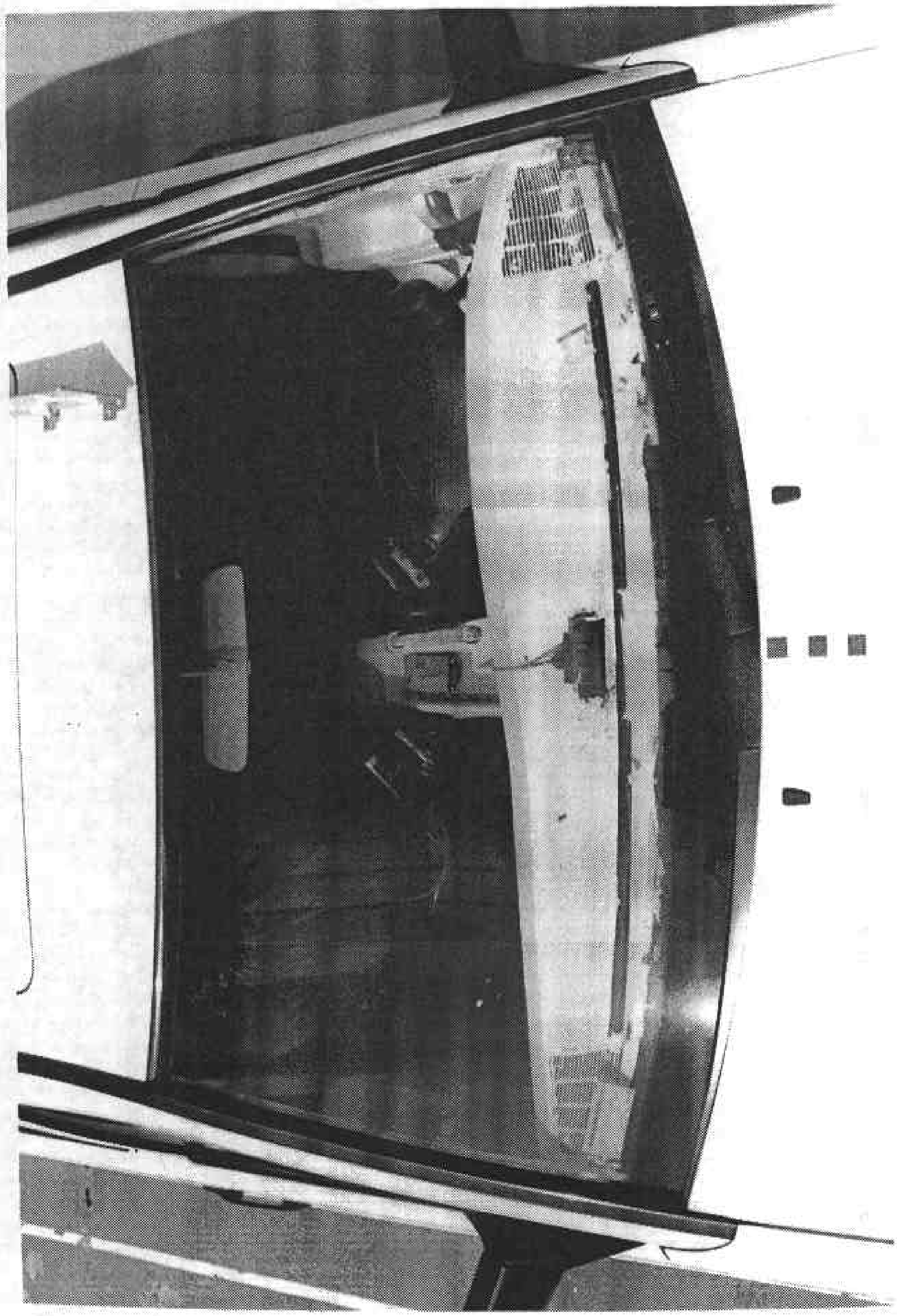
POSTTEST RIGHT SIDE VIEW

PRETEST RIGHT FRONT 3/4 VIEW

POSTTEST RIGHT FRONT 3/4 VIEW

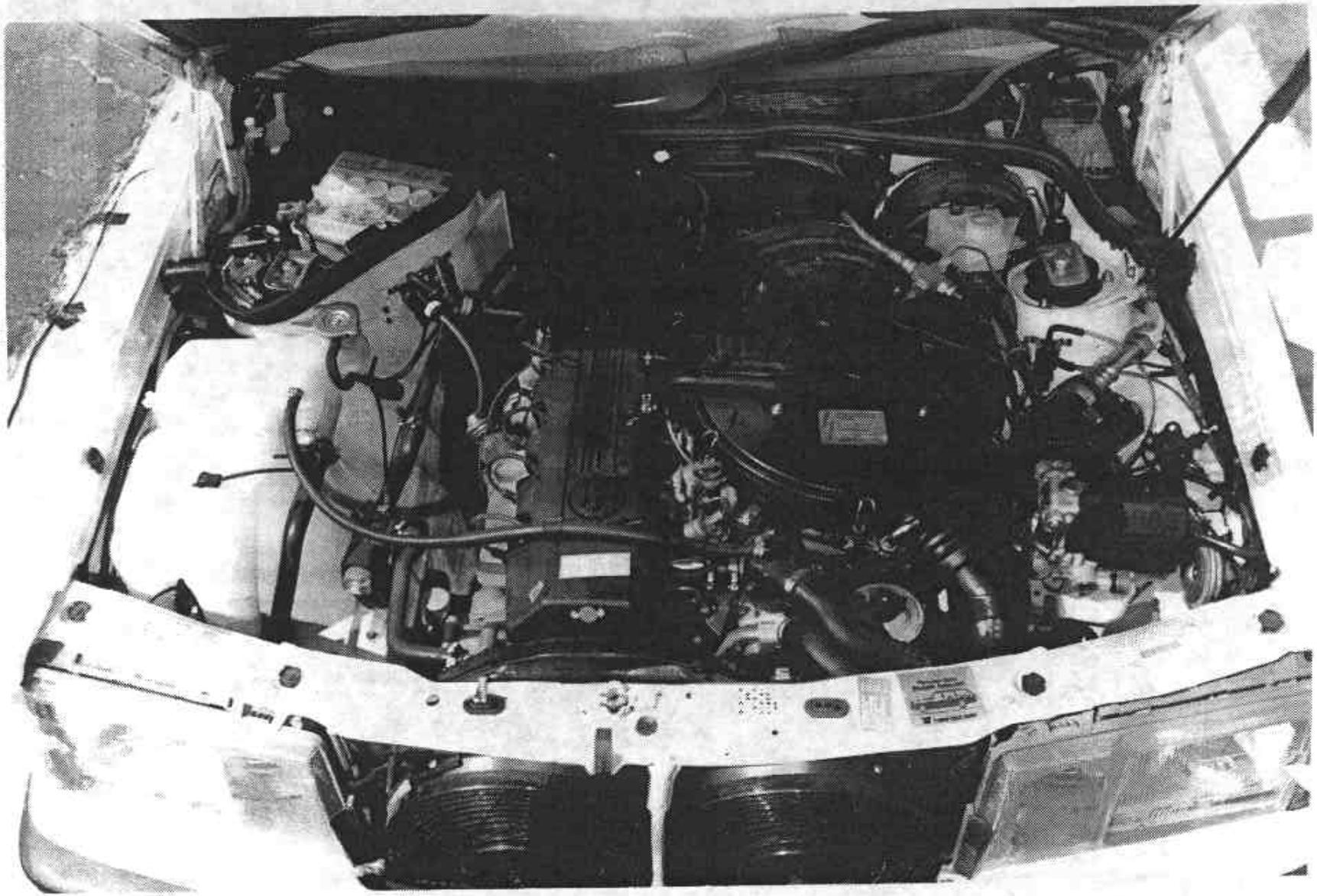
PRETEST LEFT REAR 3/4 VIEW

POSTTEST LEFT REAR 3/4 VIEW

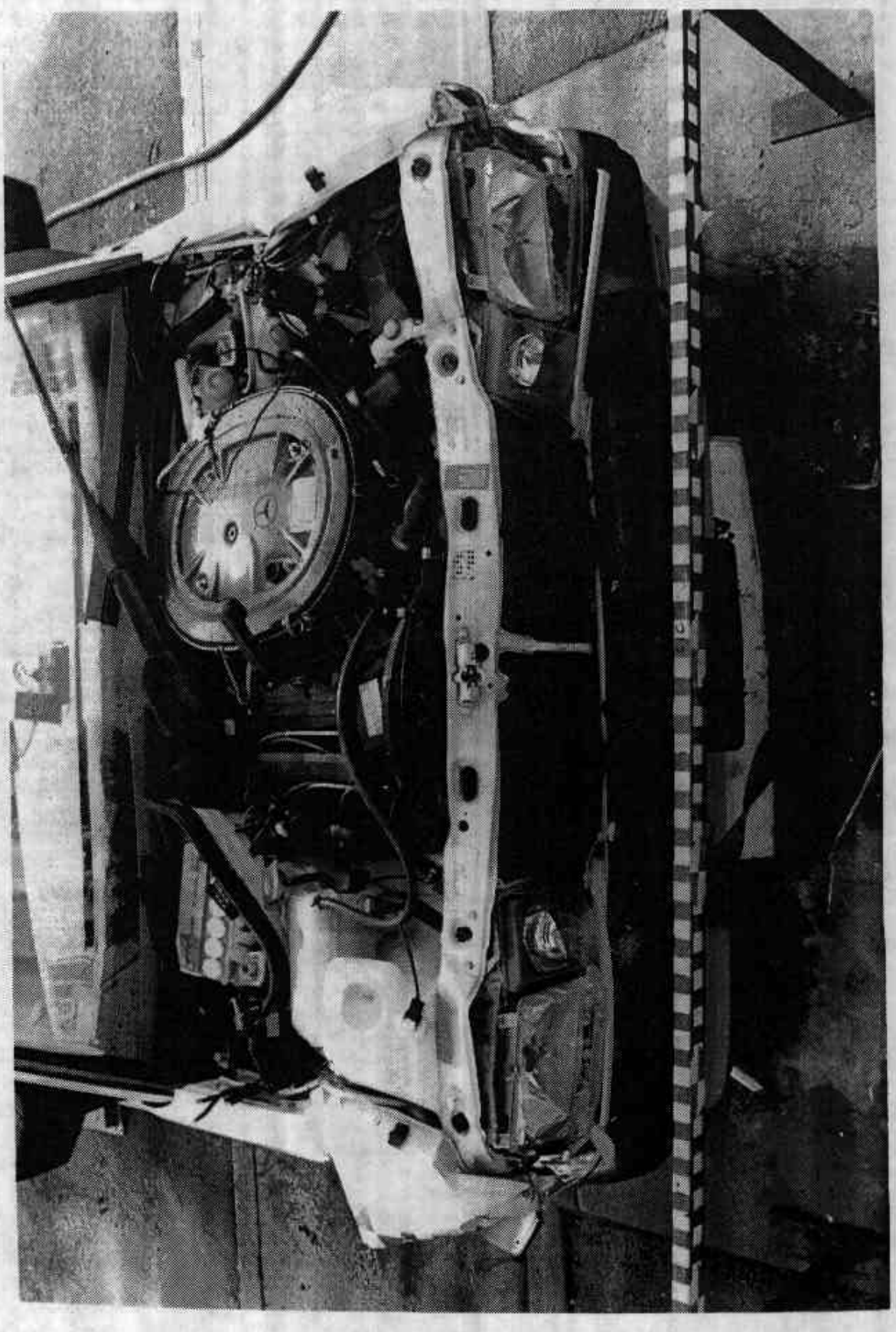


PRETEST WINDSHIELD VIEW

POSTTEST WINDSHIELD VIEW

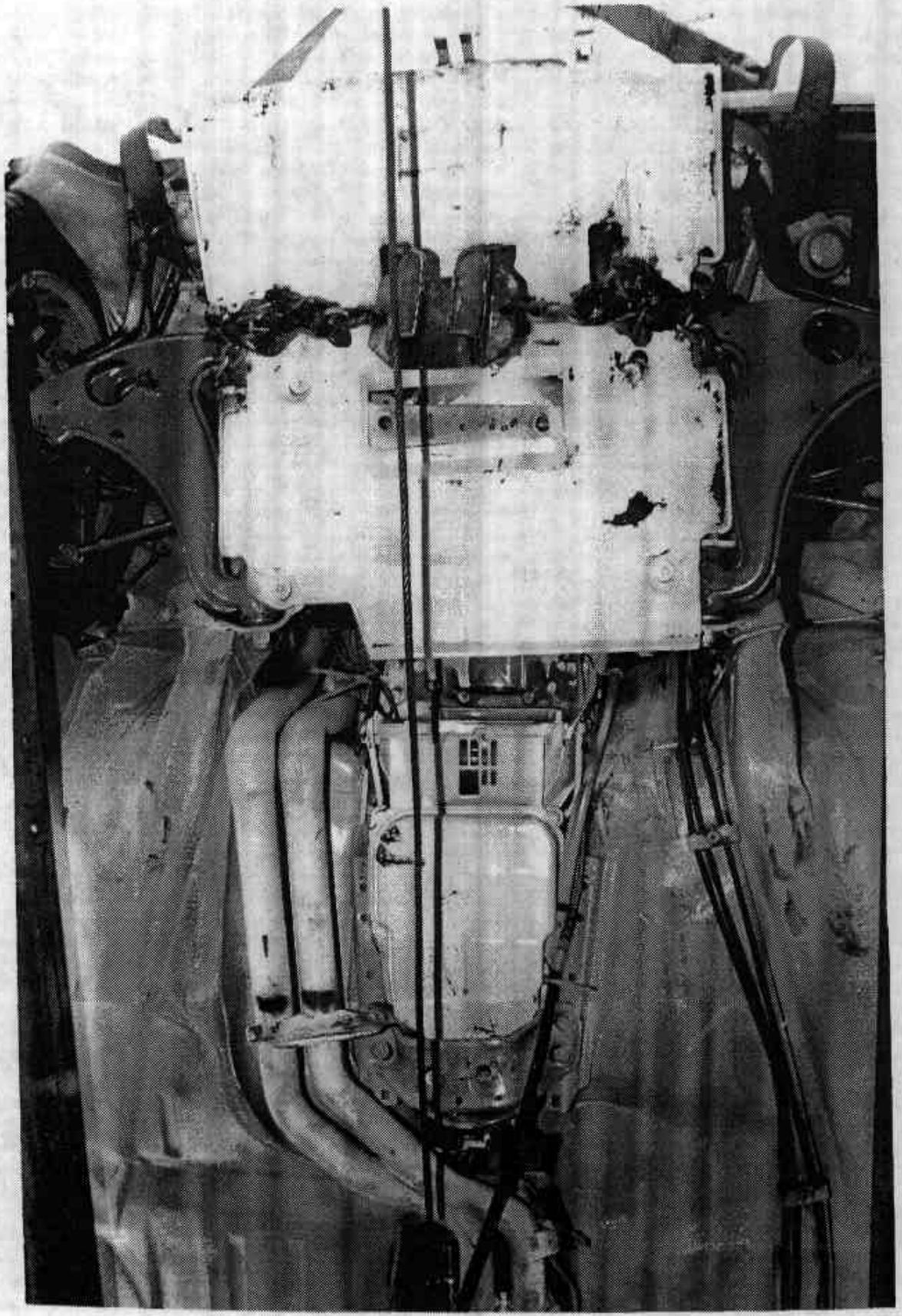


PRETEST ENGINE COMPARTMENT VIEW

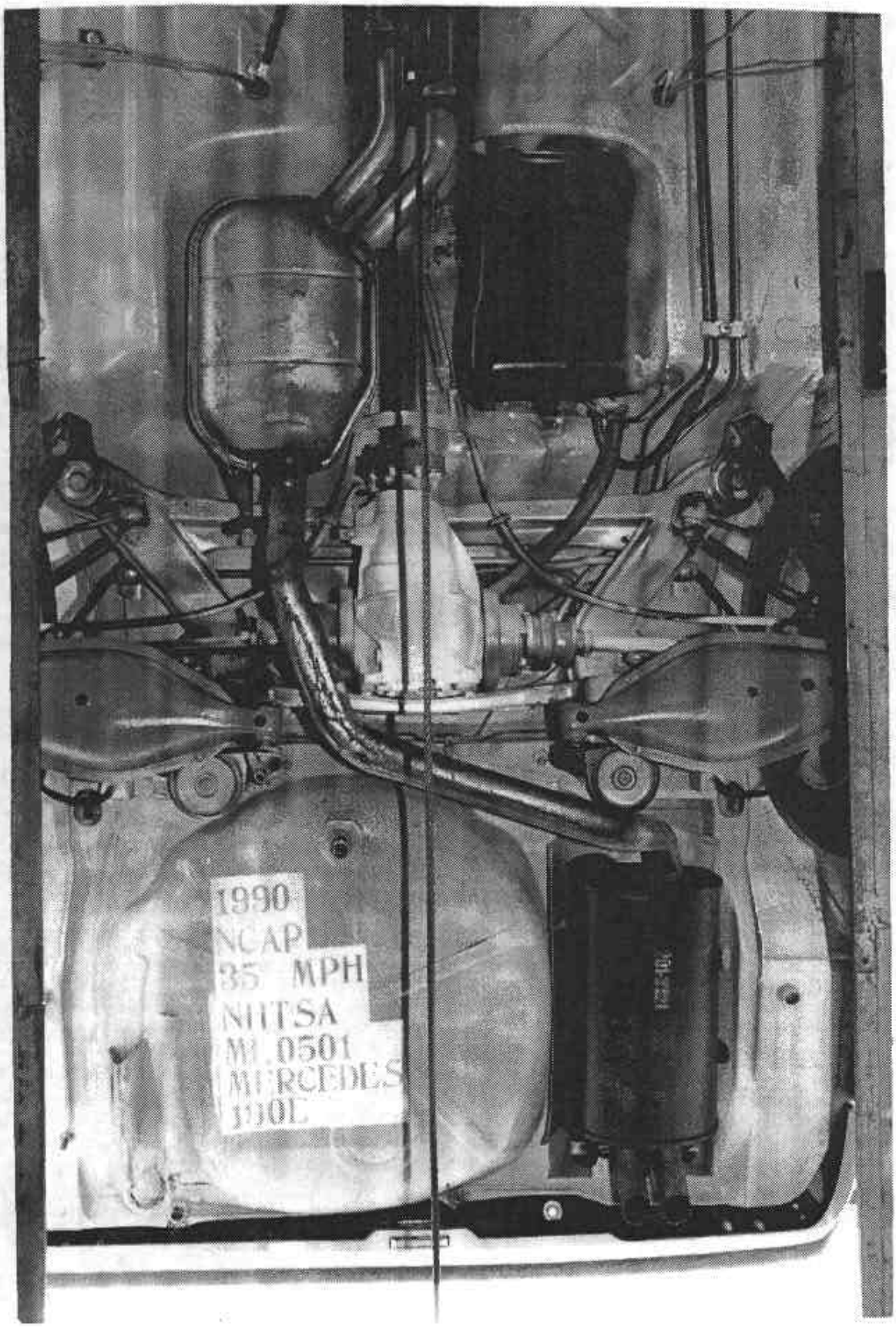


POSTTEST ENGINE COMPARTMENT VIEW

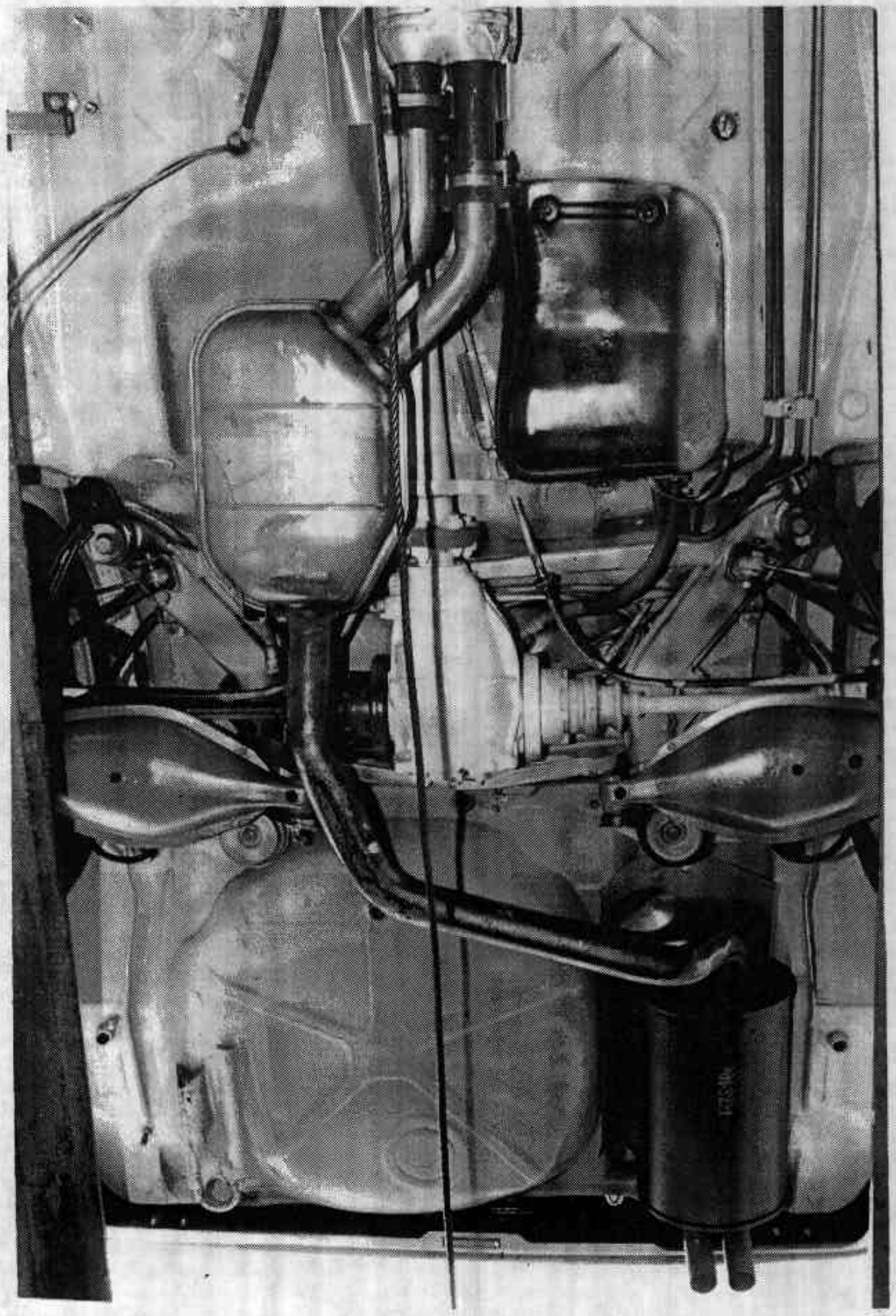
PRETEST FRONT UNDERBODY VIEW



POSTTEST FRONT UNDERBODY VIEW



PRETEST REAR UNDERBODY VIEW
A-17



POSTTEST REAR UNDERBODY VIEW
A-18

MSE-90-R9092-N07

PRETEST DRIVER DUMMY POSITION VIEW

POSTTEST DRIVER DUMMY POSITON VIEW

PRETEST PASSENGER DUMMY POSITION VIEW

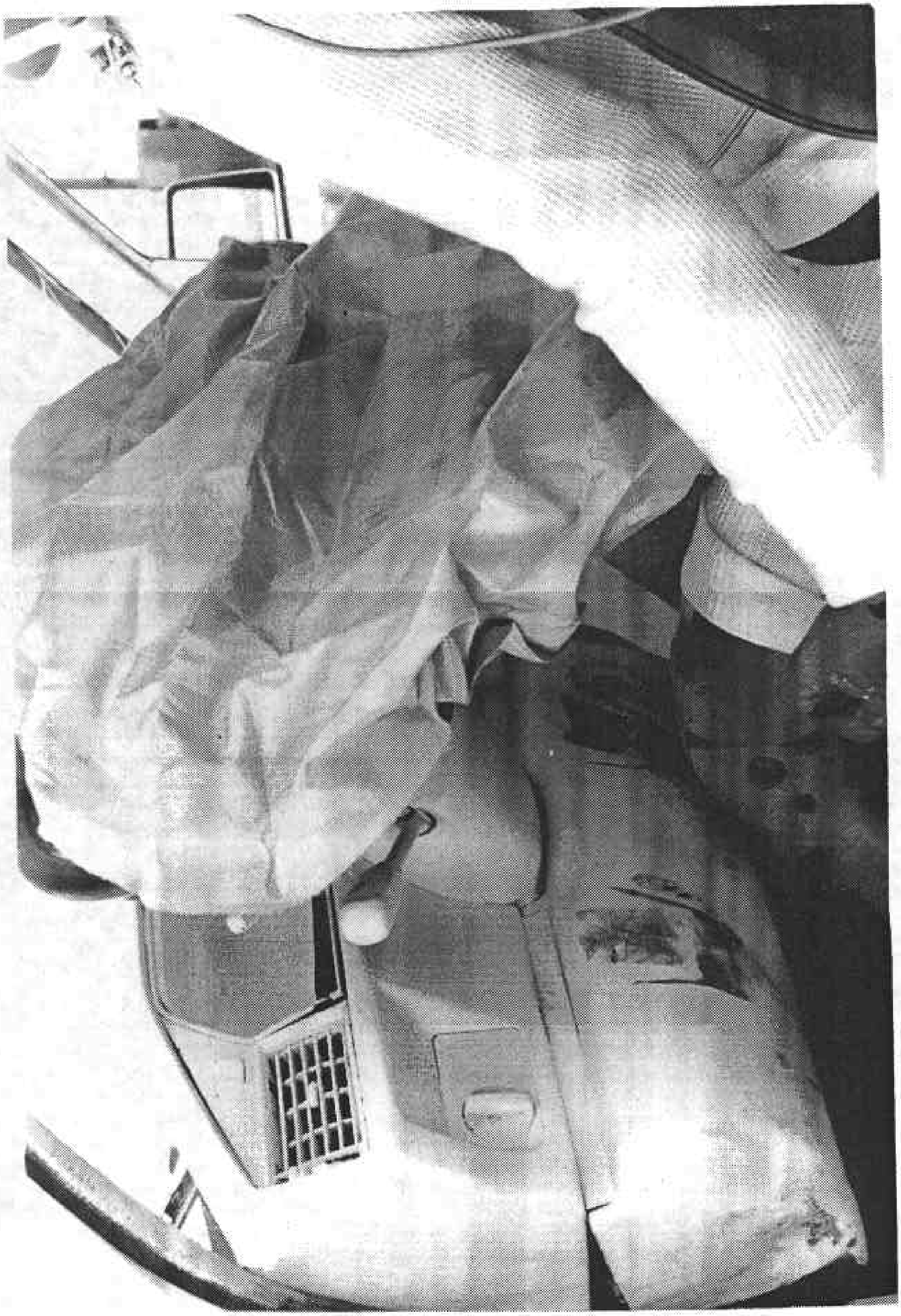
POSTTEST PASSENGER DUMMY POSITION VIEW

PRETEST DRIVER DUMMY & VEHICLE INTERIOR VIEW (Door Open)

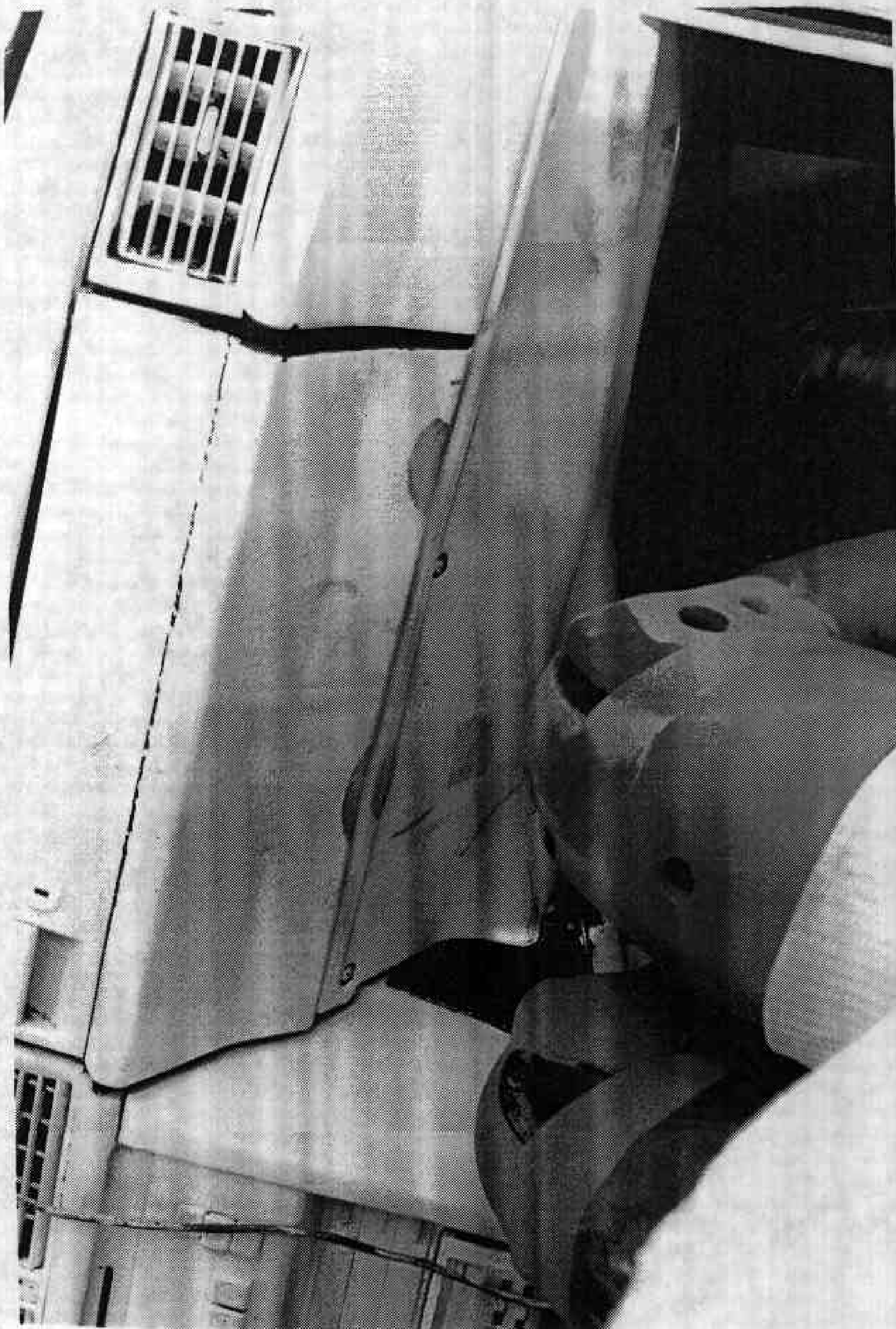
POSTTEST DRIVER DUMMY & VEHICLE INTERIOR VIEW (Door Open)

PRETEST PASSENGER & VEHICLE INTERIOR VIEW (Door Open)

POSTTEST PASSENGER DUMMY & VEHICLE INTERIOR VIEW (Door Open)
A-26 MSE-90-R9092-N07



POSTTEST DRIVER DUMMY (ATD) HEAD AND KNEE CONTACT AREA



POSTTEST PASSENGER DUMMY (ATD) HEAD AND 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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General Test Information

VERSNO: V2 TGID: 1
TITLE: 1990 35MPH NCAP FRONTAL BARRIER IMPACT
TSTOBJ: ACQUIRE NCAP DATA USING TWO INSTR. DUMMIES AND LOAD CELL BARRIER
TSTDAT: 23/MAR/90 TSTPRF: MSE CONNO: DTNH22-87-D-02009
TSTREF: NCA130 TSTTYP: NCA TSTCFN: VTB
TKSURF: ASH TKCOND: DRY TEMP: 85 RECTYP: FMT
LINK: UMB CLSSPD: 34.8 IMPANG: 0 OFFSET: 0.0
IMPPNT: 9999.9 MEASUR: ENG TOTCRV: 65
TSTCOM: NO COMMENTS

Vehicle Information

VGID: 2 VEHNO: 1 MAKE: 28 MODEL: 99 YEAR: 90 BODY: 4S
VIN: WDBDA29D7LF678650 ENGINE: S61F ENGDSP: 2.6 LITERS TRANSM: AR
VEHTWT: 3492 WHLBAS: 105.0 VEHLEN: 175.0 VEHWID: 66.5
VEHCG: 45.9 STRSEP: NA COLMEC: CON MODIND: P
MODDSC: UNMODIFIED
BX
1: 175.0
2: 162.8
3: 133.0
4: 119.2
5: 119.2
6: 118.2
7: 118.3
8: 81.0
9: 81.2
10: 80.2
11: 80.2
12: 117.4
13: 166.0
14: 125.2
15: 125.9
16: 101.2
17: 16.4
18: 18.0
19: 158.4
20: 159.6
21: 28.0
VEHSPD: 34.8 CRBANG: 0 PDOF: 0 BMPENG: NA
SILENG: NA APLENG: NA
DPD
1: 10.2
2: 12.0
3: 12.9
4: 12.9
5: 11.4
6: 10.5
VDI: 12FCAW9 LENCNT: 68.0 DAMDST: 0.0 CRHDST: 12.9
AX
1: 162.0
2: 148.5
3: 132.0
4: 118.5
5: 118.4
6: 117.3
7: 117.5
8: 80.7
9: 80.3
10: 79.3
11: 79.5
12: 116.8
13: 117.0
14: 123.3
15: 124.2
16: 103.5
17: 13.5
18: 15.0
19: 145.0
20: 147.5
21: 28.0
CARANG: 999 VEHOR: 999
VEHCOM: NO COMMENTS

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: P5 OCCAGE: 99 OCCSEX: M OCCHT: 999 OCCWT: 999
MTHCAL: P5 DUMSIZ: 50
DUMMAN: MFG: HUMANIOD SYSTEMS, S/N: 466
DUMMOD: UNMODIFIED
DUMDSC: NO COMMENTS
HH: 15.5 HW: 21.6 HR: 7.2 HS: 8.8 CD: 24.0 CS: 15.3 AD: 3.4 HD: 5.6
KD: 4.9 HB:999.9 NB:999.9 CB:999.9 KB:999.9
RESTR1: 3PT RESTR2: ABG
RESTXT: NO COMMENTS
SEPOSN: CN AIRDEP: DP
CNTRH1: NO CNTRH2: NO CNTRC1: NO CNTRC2: NO CNTRL1: KR CNTRL2: NO
HIC: 800. T1: 44.700 T2: 80.300
CLIP3M: 60.1 LFEM: 705. RFEM: 1028. CSI: 588. LBELT: 1894. SBELT: 1807.
OCCCOM:

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: HUMANIOD SYSTEMS, S/N: 465
DUMMOD: UNMODIFIED
DUMDSC: NO COMMENTS
HH: 15.6 HW: 21.6 HR: 7.1 HS: 8.4 CD: 22.5 CS:999.9 AD: 3.3 HD: 4.8
KD: 7.5 HB:999.9 NB:999.9 CB:999.9 KB:999.9
RESTR1: 3PT RESTR2: DPL
RESTXT: NO COMMENTS
SEPOSN: CN AIRDEP: NA
CNTRH1: NO CNTRH2: NO CNTRC1: NO CNTRC2: NO CNTRL1: DP CNTRL2: NO
HIC: 833. T1: 63.100 T2: 99.100
CLIP3M: 58.2 LFEM: 582. RFEM: 331. CSI: 503. LBELT: 1857. SBELT: 2108.
OCCCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 001
SENTYP: AC SENLOC: 01 SENATT: HDCG
AXIS: XL UNITS: G'S PREFIL: 1650
INSMAN: MFG: ENDEVCO, MODEL: 7264-200, S/N: AE09
CALDAT: 17/JAN/90 INSRAT: 200 CHLMAX: 30 INIVEL: 35.3
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 002
SENTYP: AC SENLOC: 01 SENATT: HDCG
AXIS: YL UNITS: G'S PREFIL: 1650
INSMAN: MFG: ENDEVCO, MODEL: 7264-200, S/N: AD61
CALDAT: 17/JAN/90 INSRAT: 200 CHLMAX: 18 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 003
SENTYP: AC SENLOC: 01 SENATT: HDCG
AXIS: ZL UNITS: G'S PREFIL: 1650
INSMAN: MFG: ENDEVCO, MODEL: 7264-200, S/N: AD98
CALDAT: 17/JAN/90 INSRAT: 200 CHLMAX: 21 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM:

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: BI14H
CALDAT: 17/JAN/90 INSRAT: 200 CHLMAX: 32 INIVEL: 35.3
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM:

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: BI19H
CALDAT: 17/JAN/90 INSRAT: 200 CHLMAX: 9 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM:

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: 7264-200, S/N: BI92H
CALDAT: 17/JAN/90 INSRAT: 200 CHLMAX: 8 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM:

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: 16/JAN/90 INSRAT: 3000 CHLMAX: 24 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: QD
INSCOM: NOISE APPEARS BEFORE DATA FROM T=10 TO T=30 MSEC. -- UNKNOWN CAUSE

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: 16/JAN/90 INSRAT: 3000 CHLMAX: 35 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: QD
INSCOM: NOISE APPEARS BEFORE DATA FROM T=10 TO T=30 MSEC. -- UNKNOWN CAUSE

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 009
SENTYP: AC SENLOC: 02 SENATT: HDCG
AXIS: YL UNITS: G'S PREFIL: 1650
INSMAN: MFG: ENDEVCO, MODEL: 7264-200, S/N: BF83H
CALDAT: 17/JAN/90 INSRAT: 200 CHLMAX: 23 INIVEL: 35.3
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 010
SENTYP: AC SENLOC: 02 SENATT: HDCG
AXIS: YL UNITS: G'S PREFIL: 1650
INSMAN: MFG: ENDEVCO, MODEL: 7264-200, S/N: BJ15H
CALDAT: 17/JAN/90 INSRAT: 200 CHLMAX: 5 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 011
SENTYP: AC SENLOC: 02 SENATT: HDCG
AXIS: ZL UNITS: G'S PREFIL: 1650
INSMAN: MFG: ENDEVCO, MODEL: 7264-200, S/N: BG29H
CALDAT: 17/JAN/90 INSRAT: 200 CHLMAX: 40 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM:

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: 17/JAN/90 INSRAT: 200 CHLMAX: 35 INIVEL: 35.3
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM:

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: 17/JAN/90 INSRAT: 200 CHLMAX: 10 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM:

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: BI60H
CALDAT: 17/JAN/90 INSRAT: 200 CHLMAX: 10 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM:

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: 701
CALDAT: 16/JAN/90 INSRAT: 3000 CHLMAX: 20 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM:

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: 707
CALDAT: 16/JAN/90 INSRAT: 3000 CHLMAX: 16 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: LPBO
AXIS: OT UNITS: LBS PREFIL: 1650
INSMAN: MFG: LEBOW, MODEL: 3371, S/N: 333
CALDAT: 20/MAR/90 INSRAT: 3500 CHLMAX: 55 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: 308
CALDAT: 16/JAN/90 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: 019
SENTYP: LC SENLOC: 02 SENATT: LPBO
AXIS: OT UNITS: LBS PREFIL: 1650
INSMAN: MFG: LEBOW, MODEL: 3371, S/N: 330
CALDAT: 16/JAN/90 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: 020
SENTYP: LC SENLOC: 02 SENATT: SHBT
AXIS: OT UNITS: LBS PREFIL: 1650
INSMAN: MFG: LEBOW, MODEL: 3371, S/N: 327
CALDAT: 16/JAN/90 INSRAT: 3500 CHLMAX: 61 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: OTH PREFIL: 1650
INSMAN: MFG: ETI, MODEL: LCP12A-12, S/N: 8803-1
CALDAT: 23/MAR/90 INSRAT: 30 CHLMAX: 7 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: QD
INSCOM: BELT ELONG. DATA INVALID -- INTERFERENCE WITH PRETENSION MECHANISM

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 022
SENTYP: DS SENLOC: 02 SENATT: SHBT
AXIS: OT UNITS: OTH PREFIL: 1650
INSMAN: MFG: ETI, MODEL: LCP12A-12, S/N: 8712-1
CALDAT: 23/MAR/90 INSRAT: 30 CHLMAX: 81 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: QD
INSCOM: BELT ELONG. DATA INVALID -- INTERFERENCE WITH PRETENSION MECHANISM

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 023
SENTYP: AC SENLOC: NA SENATT: SULF
AXIS: XG UNITS: G'S PREFIL: 1650
INSMAN: MFG: SETRA, MODEL: 111, S/N: 1123
CALDAT: 17/JAN/90 INSRAT: 250 CHLMAX: 124 INIVEL: 34.8
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 024
SENTYP: AC SENLOC: NA SENATT: SURF
AXIS: XG UNITS: G'S PREFIL: 1650
INSMAN: MFG: SETRA, MODEL: 111, S/N: 1124
CALDAT: 17/JAN/90 INSRAT: 250 CHLMAX: 120 INIVEL: 34.8
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 025
SENTYP: AC SENLOC: NA SENATT: ENGN
AXIS: XG UNITS: G'S PREFIL: 1650
INSMAN: MFG: SETRA, MODEL: 113B, S/N: 1877
CALDAT: 17/JAN/90 INSRAT: 250 CHLMAX: 196 INIVEL: 34.8
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM: DATA VALID TO T=75 MSEC. -- ACCEL. WIRE SEVERED

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 026
SENTYP: AC SENLOC: NA SENATT: ENGN
AXIS: XG UNITS: G'S PREFIL: 1650
INSMAN: MFG: SETRA, MODEL: 1138, S/N: 1878
CALDAT: 17/JAN/90 INSRAT: 250 CHLMAX: 105 INIVEL: 34.8
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 027
SENTYP: AC SENLOC: NA SENATT: DPLC
AXIS: XG UNITS: G'S PREFIL: 1650
INSMAN: MFG: SETRA, MODEL: 111, S/N: 1108
CALDAT: 17/JAN/90 INSRAT: 250 CHLMAX: 30 INIVEL: 34.8
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 028
SENTYP: AC SENLOC: NA SENATT: FLLR
AXIS: XG UNITS: G'S PREFIL: 1650
INSMAN: MFG: SETRA, MODEL: 111, S/N: 1103
CALDAT: 17/JAN/90 INSRAT: 100 CHLMAX: 117 INIVEL: 34.8
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 029
SENTYP: AC SENLOC: NA SENATT: FLRR
AXIS: XG UNITS: G'S PREFIL: 1650
INSMAN: MFG: SETRA, MODEL: 111, S/N: 1105
CALDAT: 17/JAN/90 INSRAT: 100 CHLMAX: 117 INIVEL: 34.8
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 0 CURNO: 030
SENTYP: LC SENLOC: NA SENATT: LCA1
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19349
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 4 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 0 CURNO: 031
SENTYP: LC SENLOC: NA SENATT: LCA2
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19324
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 3 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 0 CURNO: 032
SENTYP: LC SENLOC: NA SENATT: LCA3
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19283
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 4 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 0 CURNO: 033
SENTYP: LC SENLOC: NA SENATT: LCA4
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19263
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 4 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 0 CURNO: 034
SENTYP: LC SENLOC: NA SENATT: LCA5
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19265
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 6 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 0 CURNO: 035
SENTYP: LC SENLOC: NA SENATT: LCA6
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19266
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 9 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 0 CURNO: 036
SENTYP: LC SENLOC: NA SENATT: LCA7
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19317
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 2 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 0 CURNO: 037
SENTYP: LC SENLOC: NA SENATT: LCA8
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19270
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 3 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 0 CURNO: 038
SENTYP: LC SENLOC: NA SENATT: LCA9
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19428
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 4 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 0 CURNO: 039
SENTYP: LC SENLOC: NA SENATT: LCB1
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19273
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 4 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 0 CURNO: 040
SENTYP: LC SENLOC: NA SENATT: LCB2
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19276
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 8 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 0 CURNO: 041
SENTYP: LC SENLOC: NA SENATT: LCB3
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19258
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 40 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 0 CURNO: 042
SENTYP: LC SENLOC: NA SENATT: LCB4
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19278
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 71 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 0 CURNO: 043
SENTYP: LC SENLOC: NA SENATT: LCB5
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19279
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 93 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 0 CURNO: 044
SENTYP: LC SENLOC: NA SENATT: LCB6
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19282
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 83 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 0 CURNO: 045
SENTYP: LC SENLOC: NA SENATT: LCB7
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19262
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 47 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 0 CURNO: 046
SENTYP: LC SENLOC: NA SENATT: LCB8
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19285
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 13 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 0 CURNO: 047
SENTYP: LC SENLOC: NA SENATT: LCB9
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19286
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 4 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 0 CURNO: 048
SENTYP: LC SENLOC: NA SENATT: LCC1
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19287
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 4 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 0 CURNO: 049
SENTYP: LC SENLOC: NA SENATT: LCC2
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19288
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 10 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 0 CURNO: 050
SENTYP: LC SENLOC: NA SENATT: LCC3
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19289
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 9 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 0 CURNO: 051
SENTYP: LC SENLOC: NA SENATT: LCC4
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19291
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 24 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 0 CURNO: 052
SENTYP: LC SENLOC: NA SENATT: LCC5
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19324
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 31 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 0 CURNO: 053
SENTYP: LC SENLOC: NA SENATT: LCC6
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19313
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 33 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 0 CURNO: 054
SENTYP: LC SENLOC: NA SENATT: LCC7
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19314
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 11 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 0 CURNO: 055
SENTYP: LC SENLOC: NA SENATT: LCC8
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19315
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 8 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 0 CURNO: 056
SENTYP: LC SENLOC: NA SENATT: LCC9
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19316
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 3 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 0 CURNO: 057
SENTYP: LC SENLOC: NA SENATT: LCD1
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19460
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 3 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 0 CURNO: 058
SENTYP: LC SENLOC: NA SENATT: LCD2
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19318
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 7 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 0 CURNO: 059
SENTYP: LC SENLOC: NA SENATT: LCD3
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19322
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 4 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 0 CURNO: 060
SENTYP: LC SENLOC: NA SENATT: LCD4
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19323
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 7 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 0 CURNO: 061
SENTYP: LC SENLOC: NA SENATT: LCD5
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 120-FS, S/N: 19260
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 8 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 0 CURNO: 062
SENTYP: LC SENLOC: NA SENATT: LCD6
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19325
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 6 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

Instrumentation Information

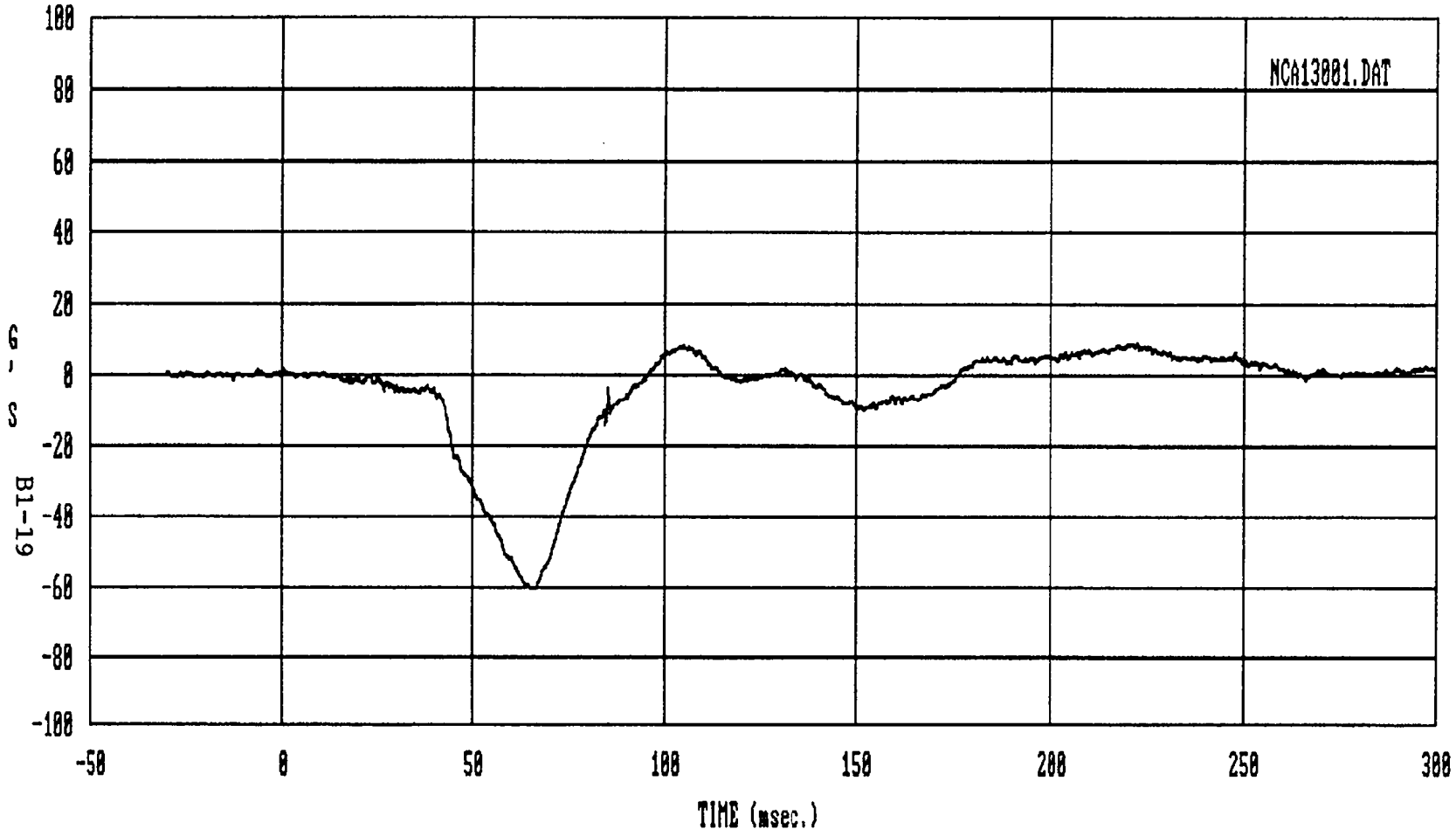
Inst. Group ID: 5 VEHNO: 0 CURNO: 063
SENTYP: LC SENLOC: NA SENATT: LCD7
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19332
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 4 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 0 CURNO: 064
SENTYP: LC SENLOC: NA SENATT: LCD8
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19333
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 6 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

Instrumentation Information

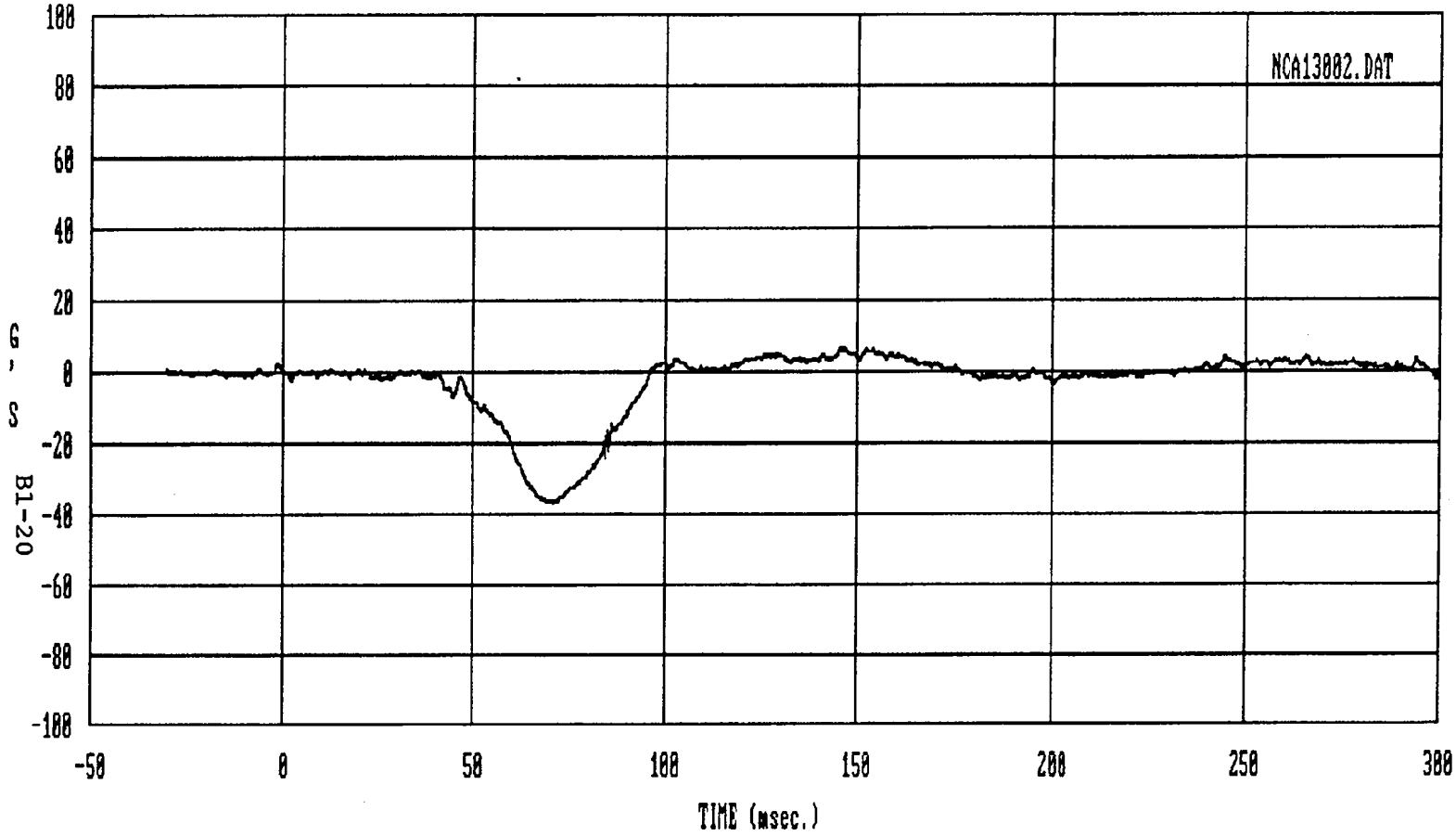
Inst. Group ID: 5 VEHNO: 0 CURNO: 065
SENTYP: LC SENLOC: NA SENATT: LCD9
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19466
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 3 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:



Curve: Driver Head acceleration -- X axis Filter: SAE CLASS 1000 Max = 9.1451 Min = -60.690

MSE Date: 03/23/90 Program: 1990 New Car Assessment #13 Vehicle: 1990 Mercedes 190E

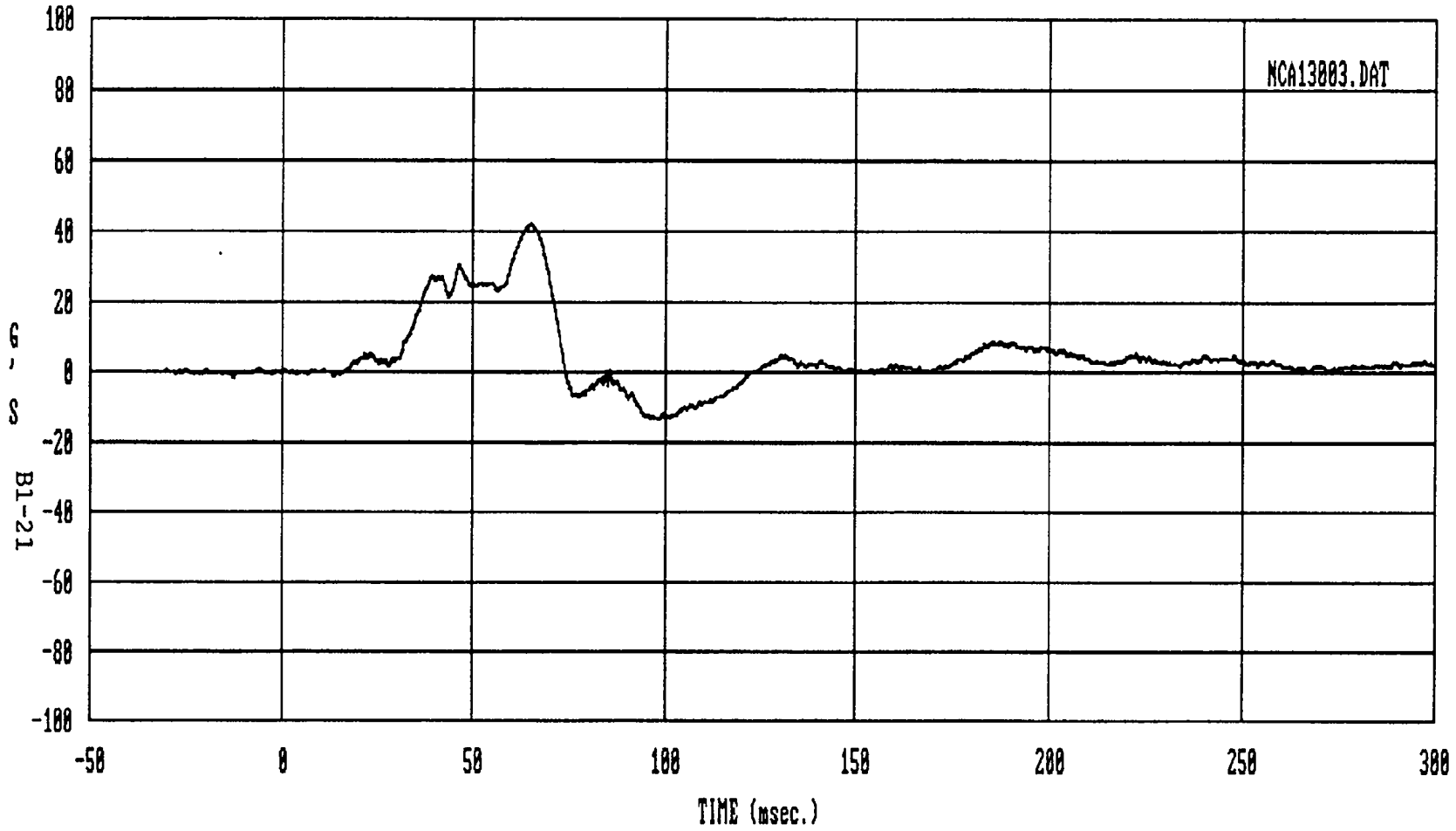
MSE-90-R9092-N07



Curve: Driver Head acceleration -- Y axis Filter: SAE CLASS 1000 Max = 6.8553 Min = -36.847

MSE Date: 03/23/98 Program: 1998 New Car Assessment #13 Vehicle: 1998 Mercedes 190E

MSE-90-R9092-NO

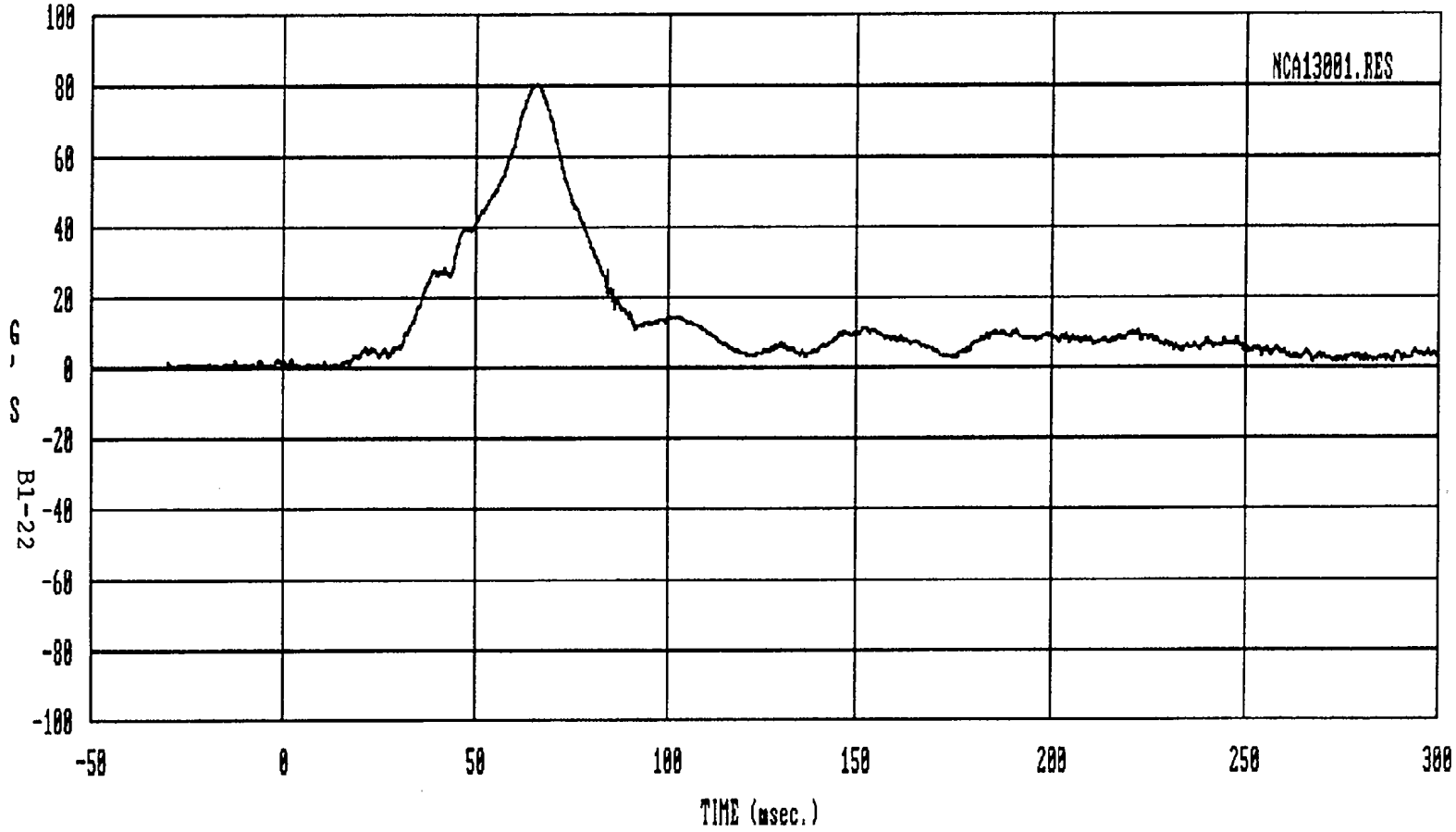


B1-21

Curve: Driver Head acceleration -- Z axis Filter: SAE CLASS 1000 Max = 42.414 Min = -13.553

MSE Date: 03/23/90 Program: 1990 New Car Assessment #13 Vehicle: 1990 Mercedes 190E

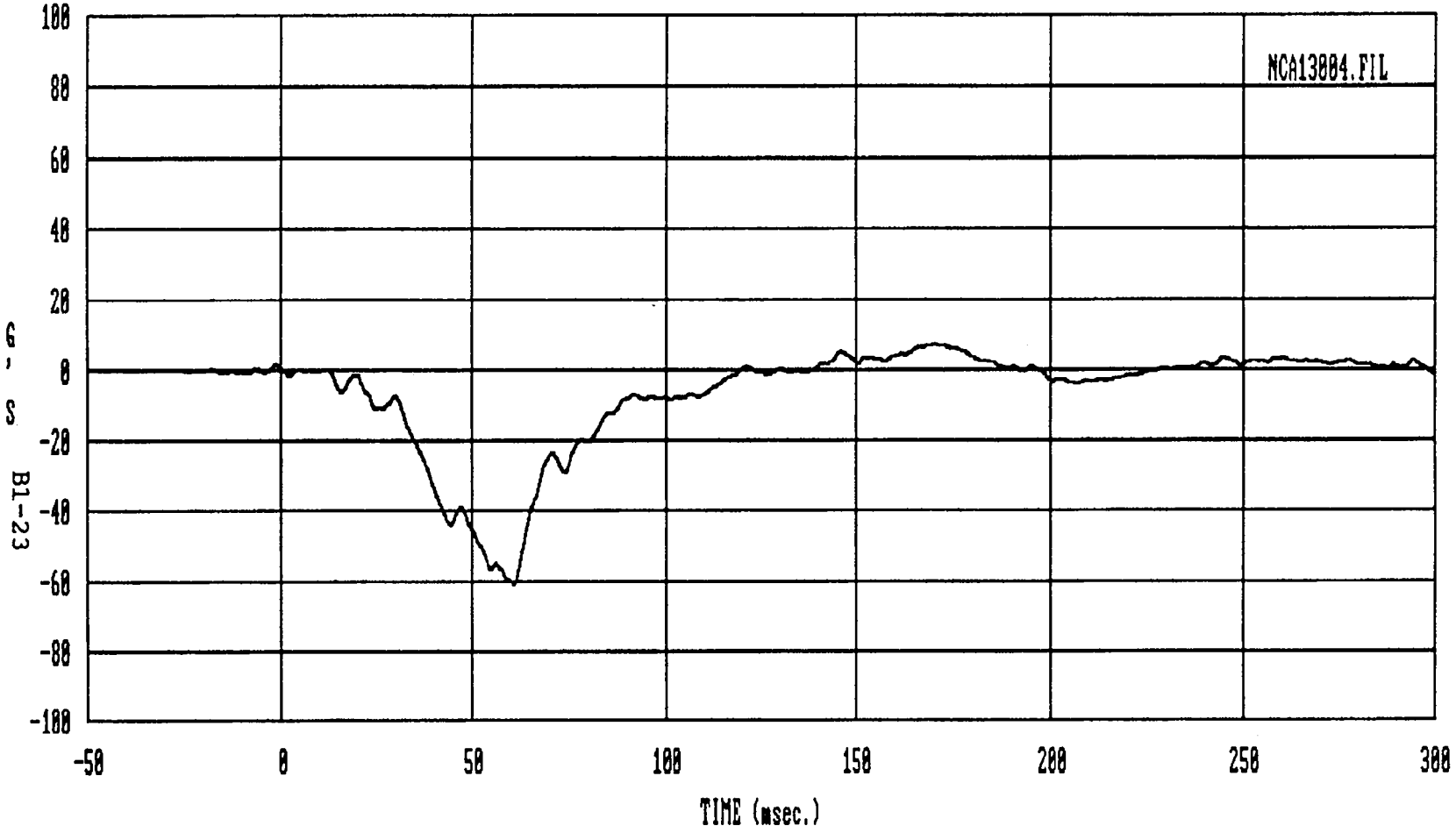
MSE-90-R9092-N07



Curve: Driver Head resultant acceleration Filter: SAE CLASS 1000 Max = 80.473 Min = .16627

MSE Date: 03/23/90 Program: 1990 New Car Assessment #13 Vehicle: 1990 Mercedes 190E

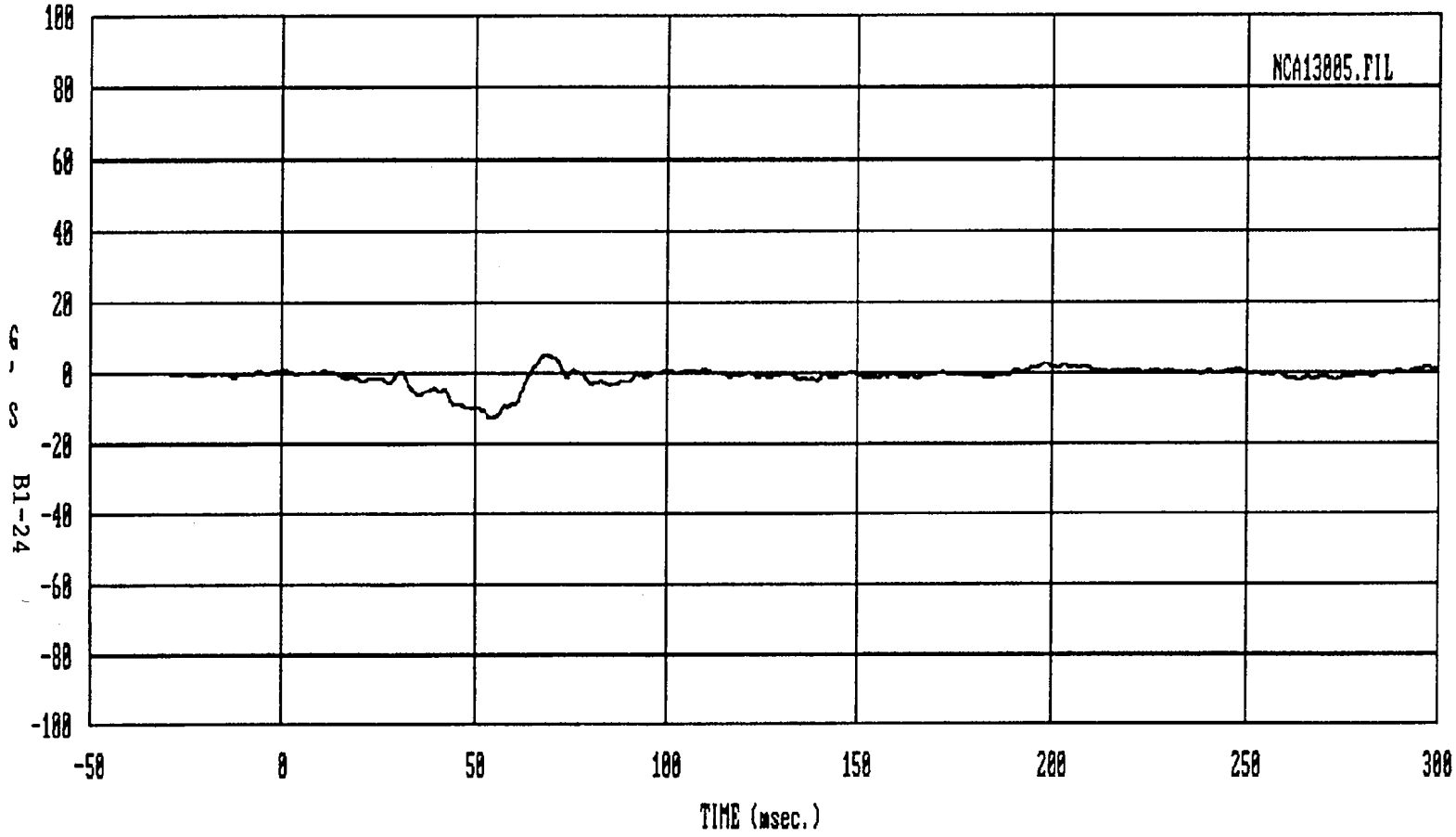
MSE-90-R9092-NO



Curve: Driver Chest acceleration — X axis Filter: SAE CLASS 180 Max = 7.4693 Min = -60.875

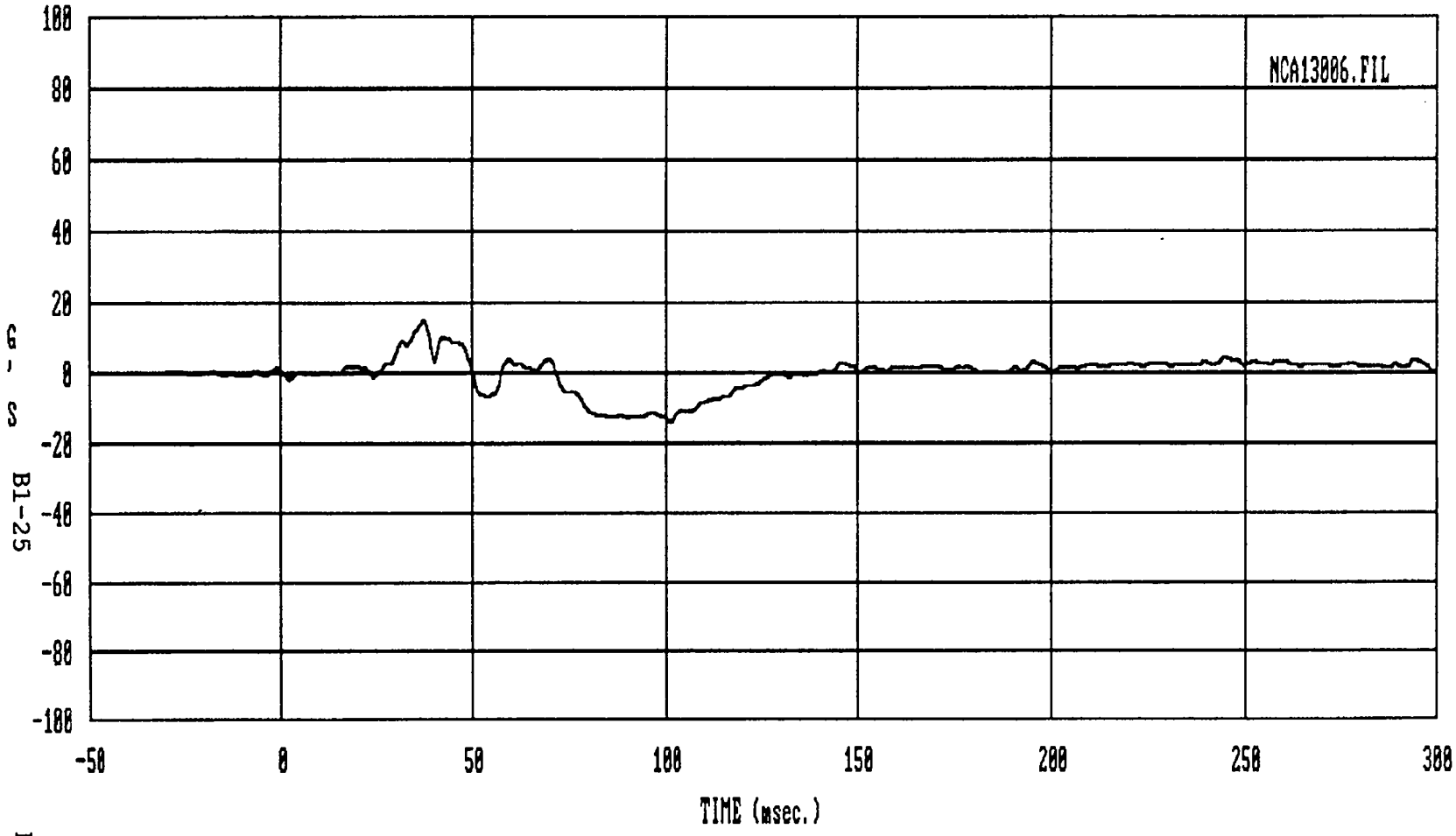
MSE Date: 03/23/98 Program: 1998 New Car Assessment #13 Vehicle: 1998 Mercedes 190E

MSE-90-R9092-N07



Curve: Driver Chest acceleration — Y axis Filter: SAE CLASS 180 Max = 5.0415 Min = -12.644

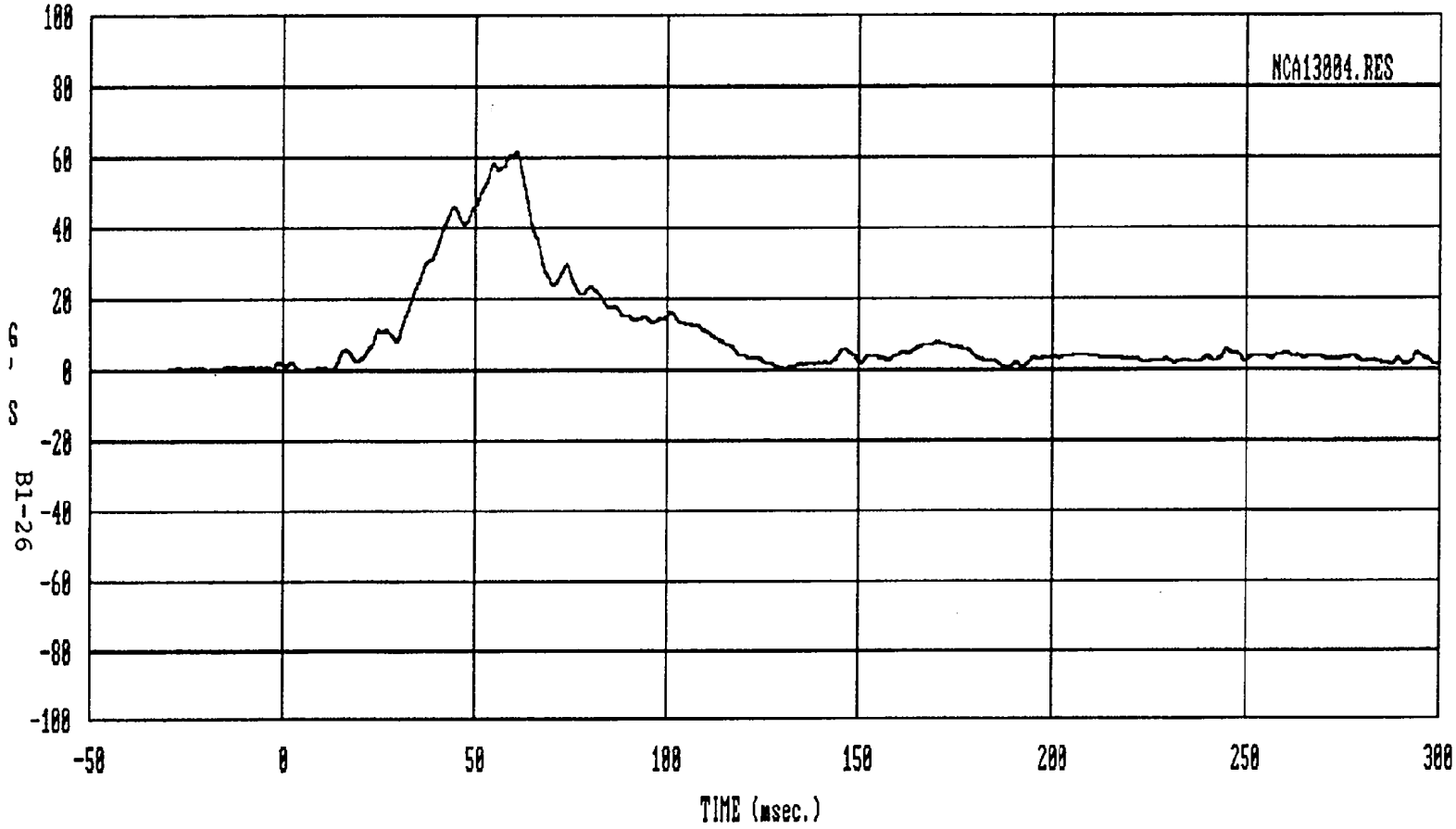
MSE Date: 03/23/90 Program: 1990 New Car Assessment #13 Vehicle: 1990 Mercedes 190E



Curve: Driver Chest acceleration — Z axis Filter: SAE CLASS 180 Max = 15.042 Min = -13.966

MSE Date: 03/23/90 Program: 1990 New Car Assessment #13 Vehicle: 1990 Mercedes 190E

MSE-90-R9092-N07

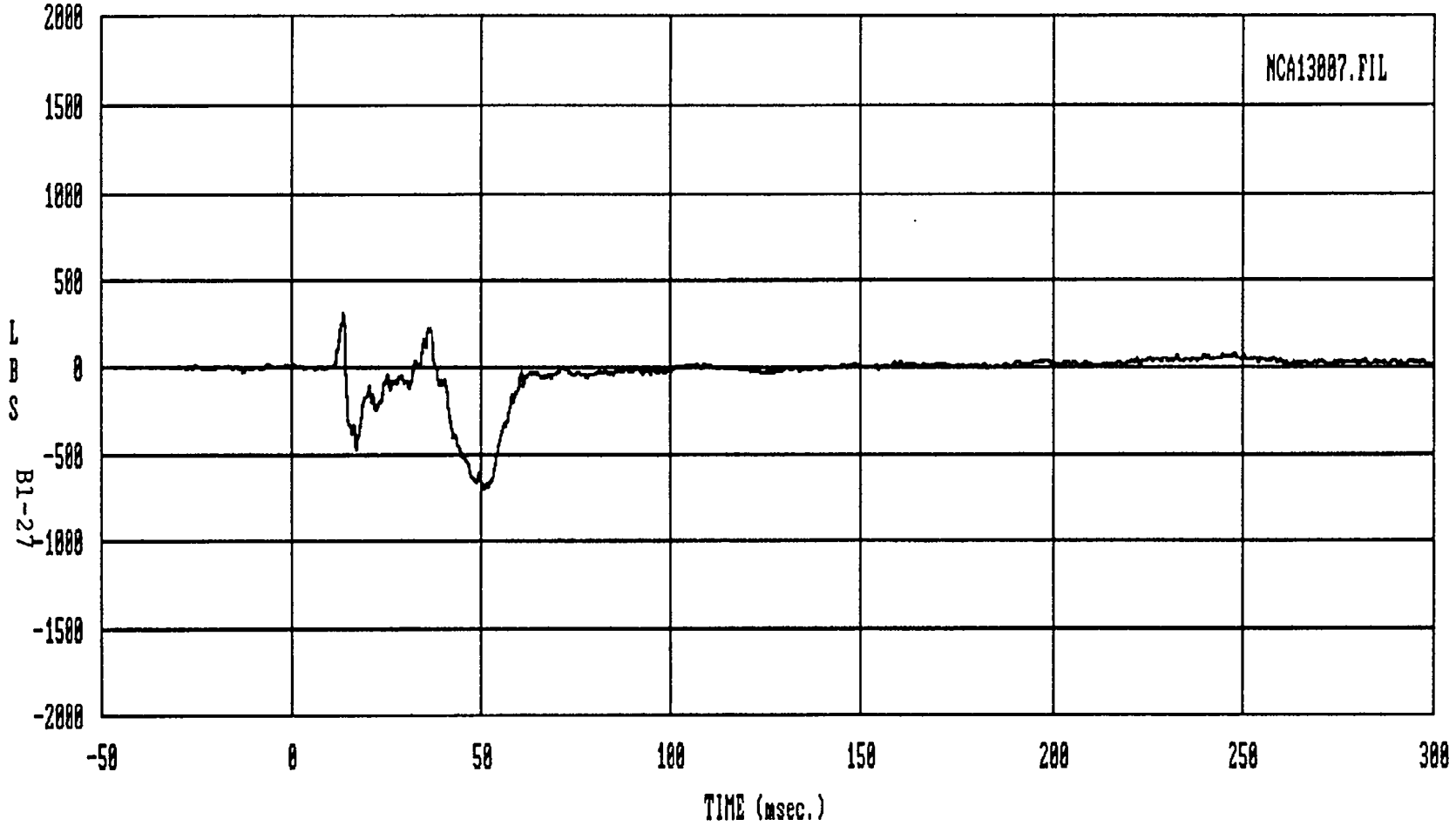


B1-26

Curve: Driver Chest resultant acceleration Filter: SAE CLASS 180 Max = 61.546 Min = .67676E-01

MSE Date: 03/23/98 Program: 1998 New Car Assessment #13 Vehicle: 1998 Mercedes 190E

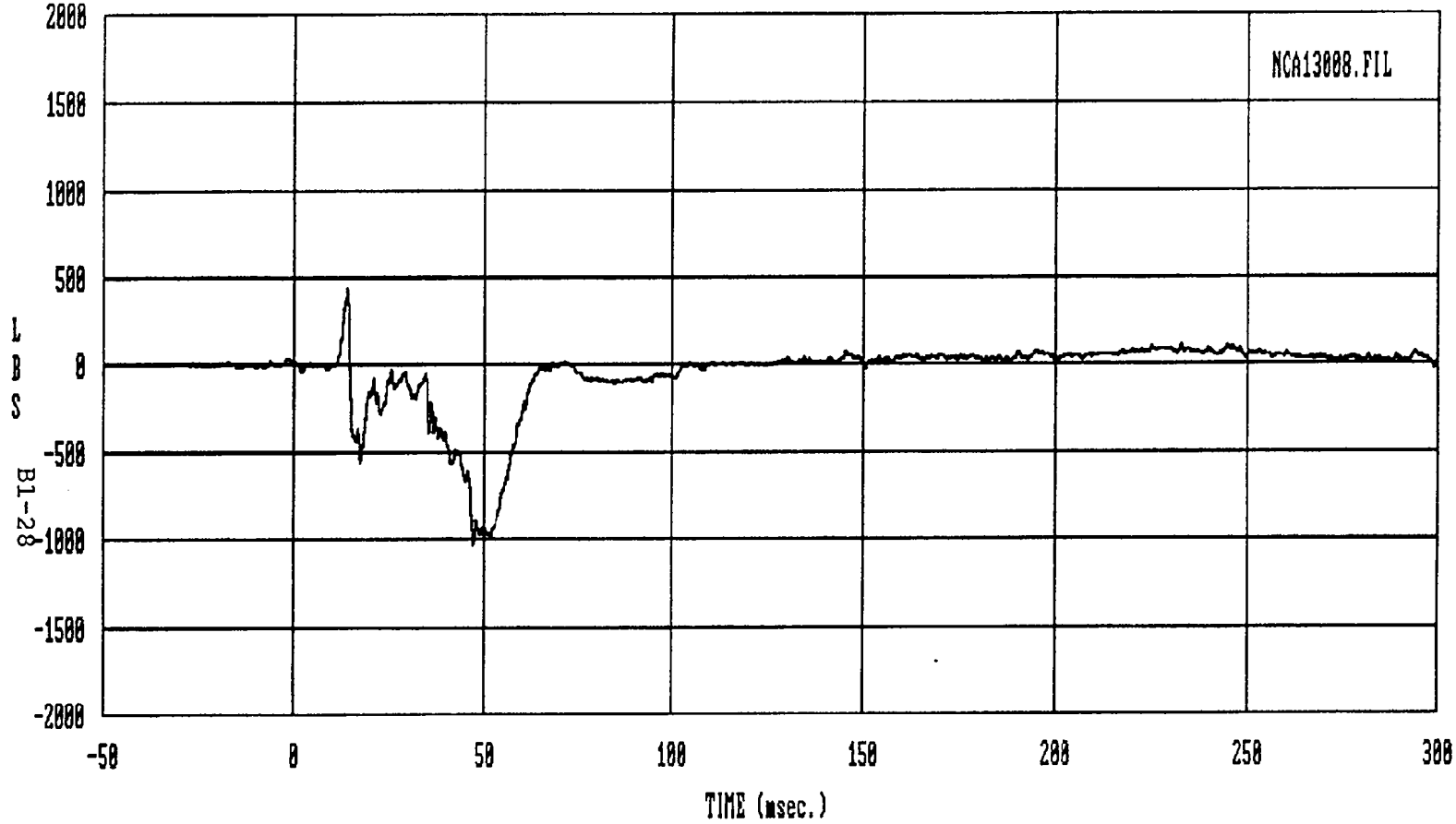
MSE-90-R9092-N07



Curve: Driver Left Femur Force Filter: SAE CLASS 600 Max = 316.48 Min = -705.04

MSE Date: 03/23/90 Program: 1990 New Car Assessment #13 Vehicle: 1990 Mercedes 190E

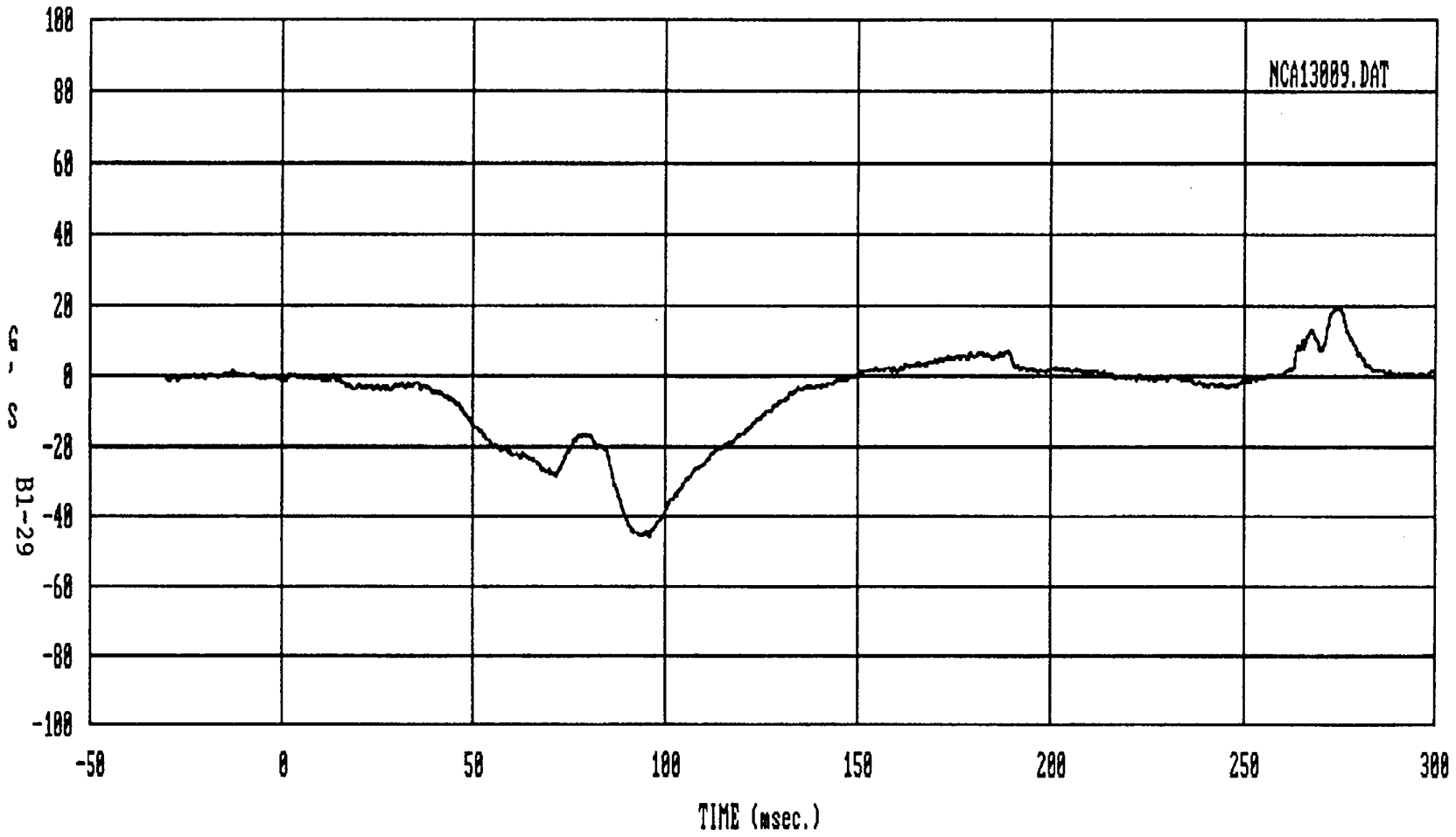
MSE-90-R9092-N07



Curve: Driver Right Femur force Filter: SAE CLASS 600 Max = 444.73 Min = -1627.7

MSE Date: 03/23/90 Program: 1990 New Car Assessment #13 Vehicle: 1990 Mercedes 190E

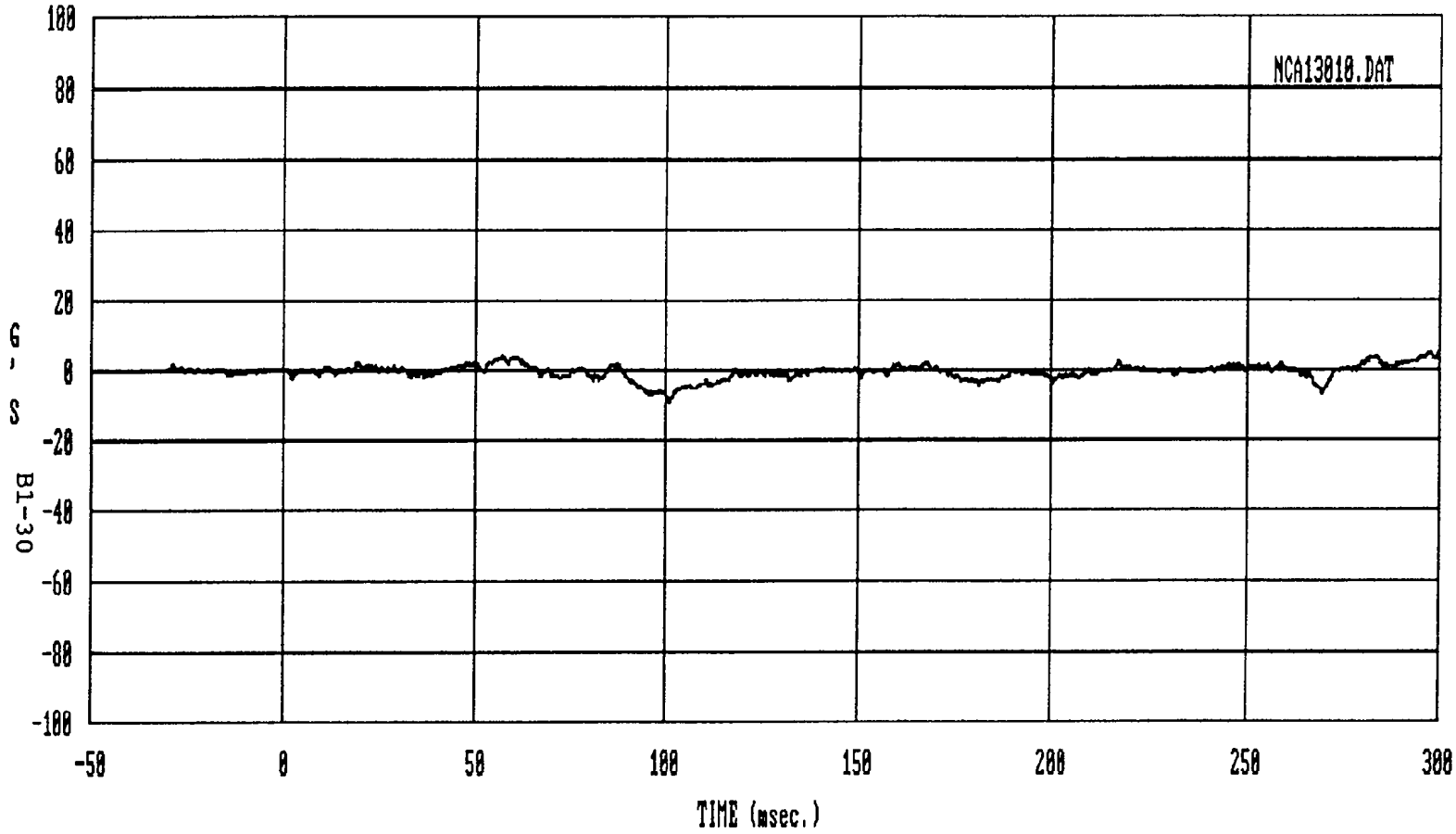
MSE-90-R9092-N07



Curve: Pasngr Head acceleration — X axis Filter: SAE CLASS 1000 Max = 19.992 Min = -45.743

MSE Date: 03/23/90 Program: 1990 New Car Assessment #13 Vehicle: 1990 Mercedes 190E

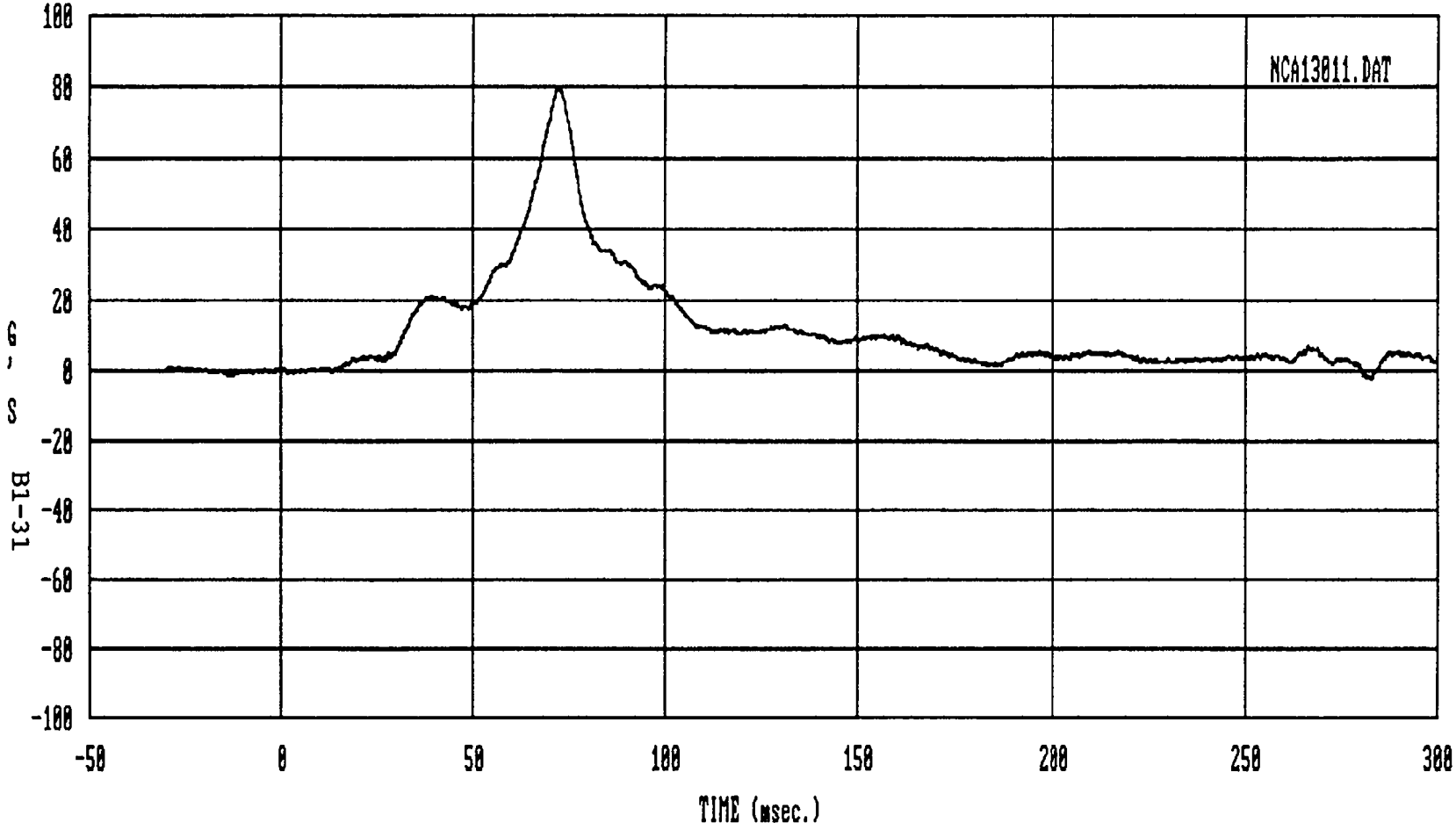
MSE-90-R9092-N07



Curve: Pasngr Head acceleration -- Y axis Filter: SAE CLASS 1000 Max = 5.2504 Min = -9.3152

MSE Date: 03/23/90 Program: 1990 New Car Assessment #13 Vehicle: 1990 Mercedes 190E

MSE-90-R9092-NO

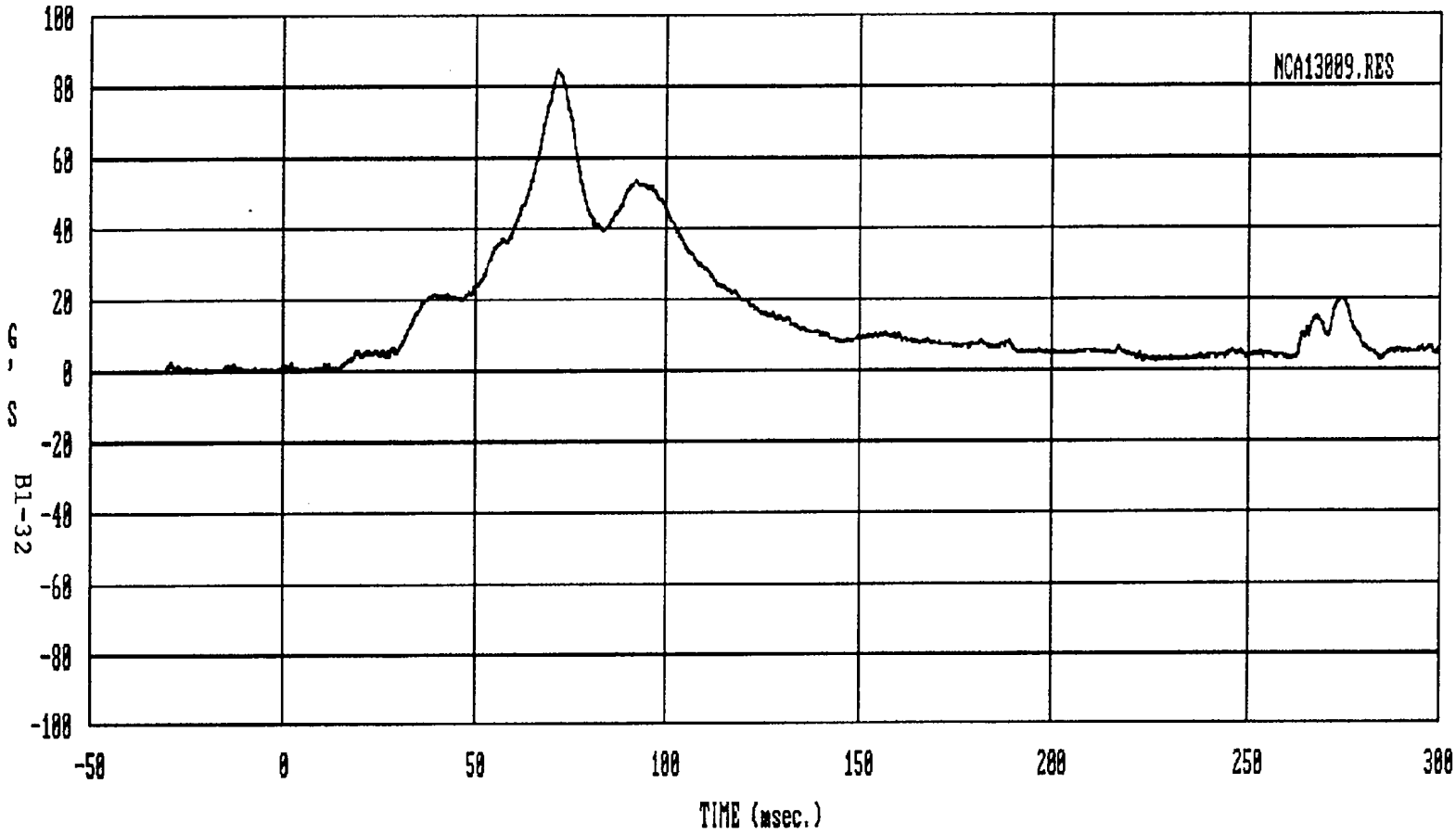


B1-31

Curve: Pasngr Head acceleration — Z axis Filter: SAE CLASS 1000 Max = 79.936 Min = -2.2608

MSE Date: 03/23/90 Program: 1990 New Car Assessment #13 Vehicle: 1990 Mercedes 190E

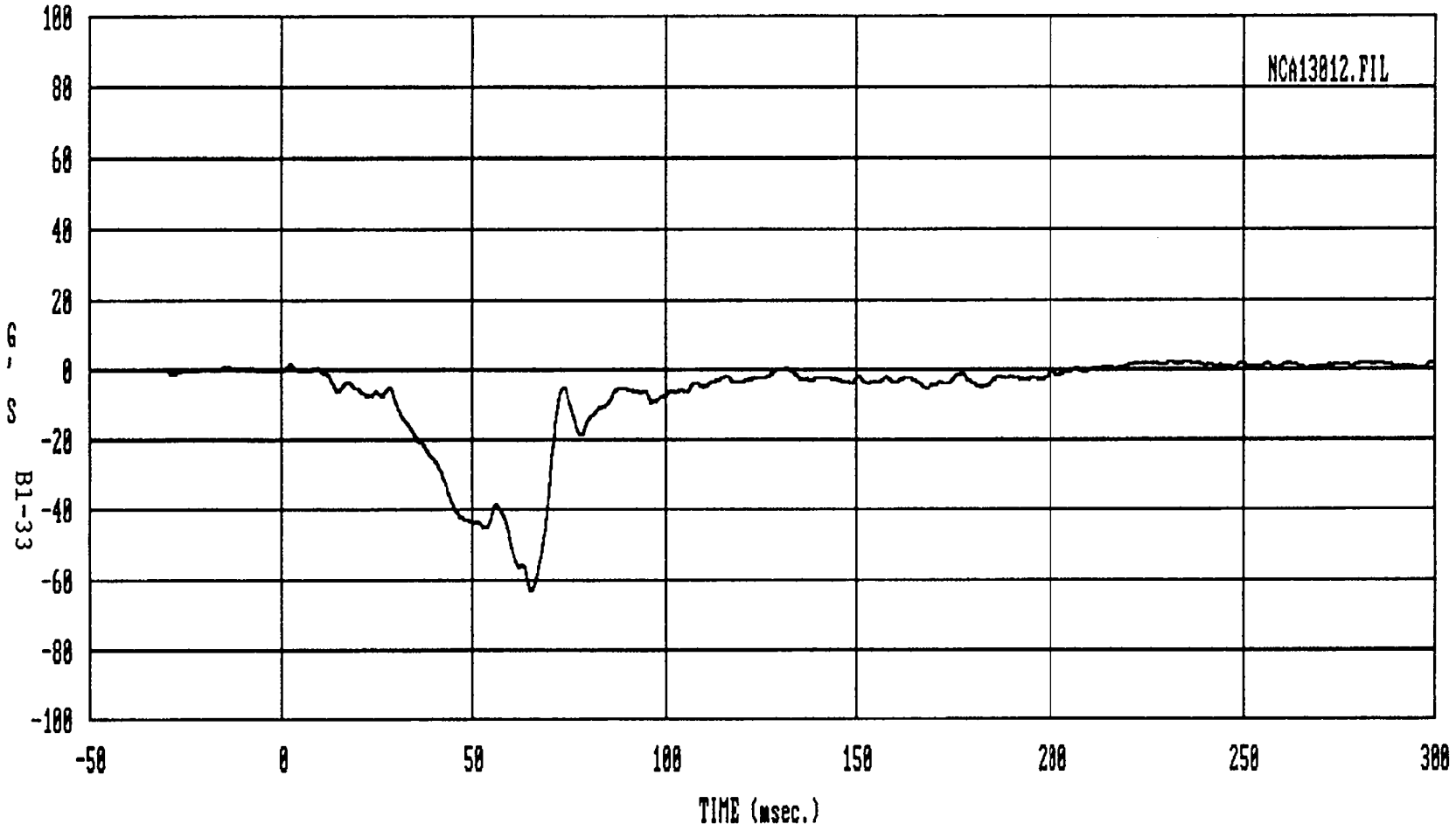
MSE-90-R9092-N07



Curve: Pasngr Head resultant acceleration Filter: SAE CLASS 1000 Max = 84.922 Min = .16149

MSE Date: 03/23/90 Program: 1990 New Car Assessment #13 Vehicle: 1990 Mercedes 190E

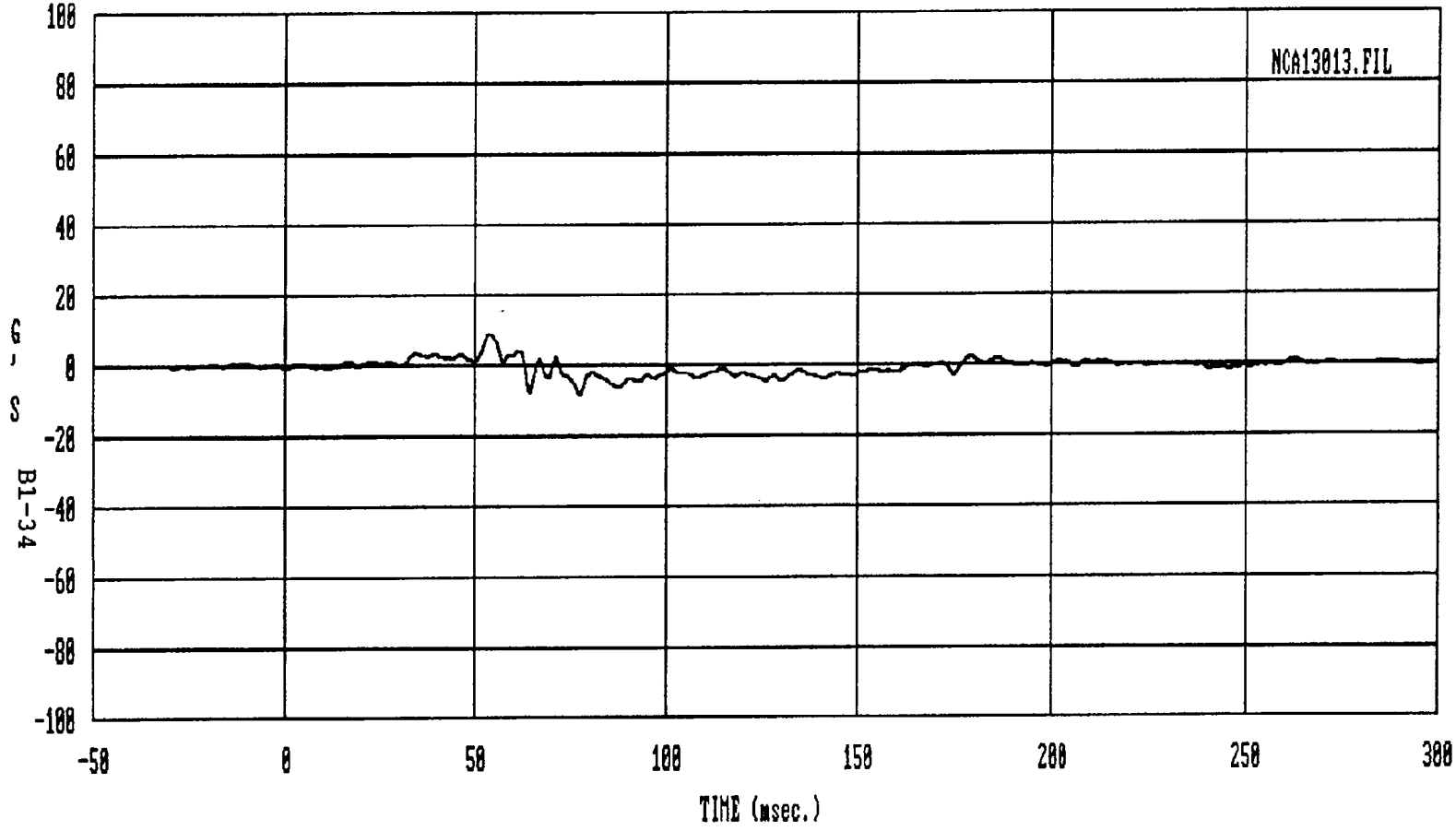
MSE-90-R9092-N07



Curve: Pasngr Chest acceleration — X axis Filter: SAE CLASS 180 Max = 2.5173 Min = -63.409

MSE Date: 03/23/90 Program: 1990 New Car Assessment #13 Vehicle: 1990 Mercedes 190E

MSE-90-R9092-N07

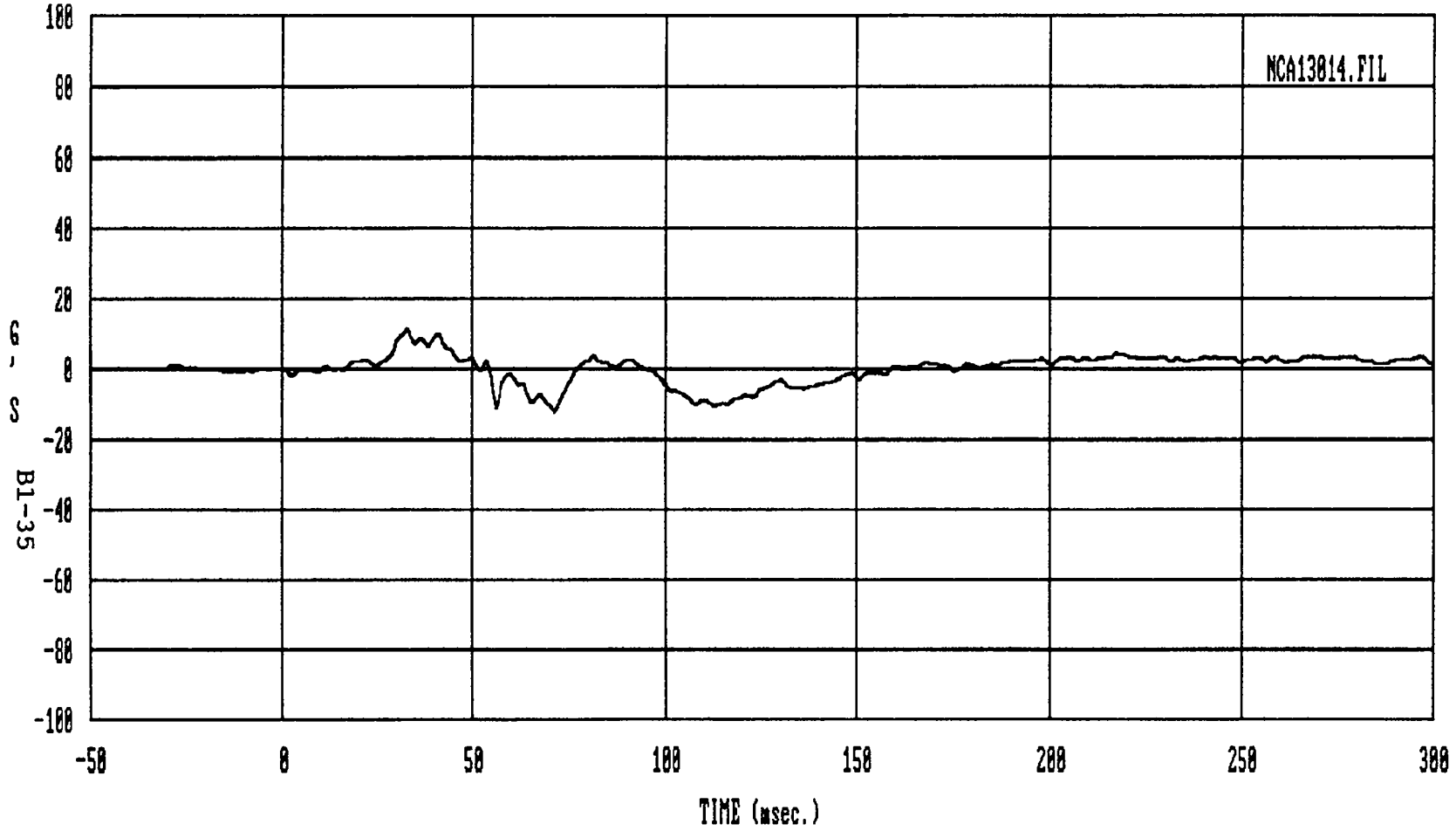


Curve: Pasngr Chest acceleration — Y axis Filter: SAE CLASS 180 Max = 8.8820 Min = -8.9871

MSE Date: 03/23/90 Program: 1990 New Car Assessment #13 Vehicle: 1990 Mercedes 190E

B1-34

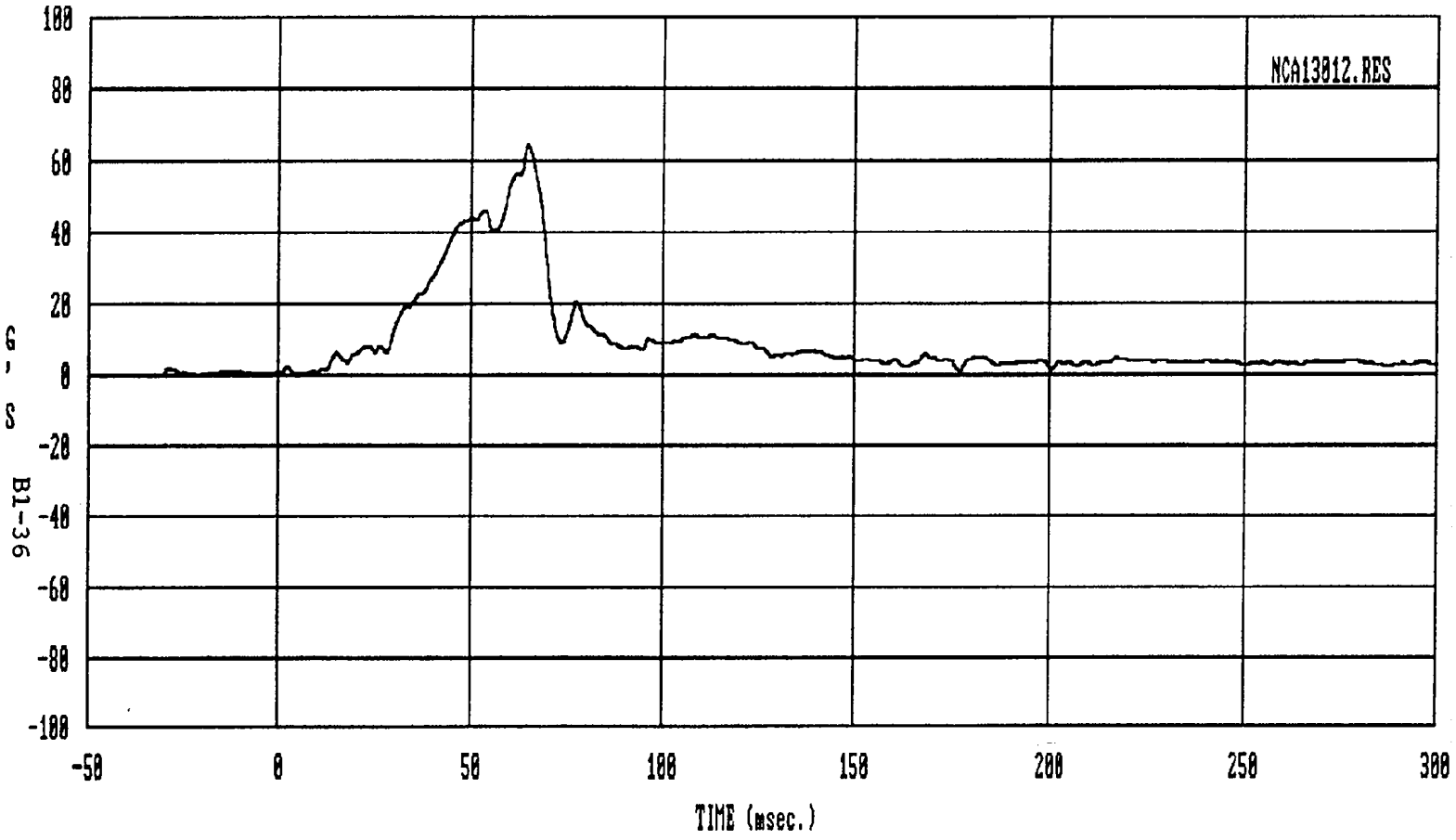
MSE-90-R9092-NO7



Curve: Pasngr Chest acceleration — Z axis Filter: SAE CLASS 180 Max = 11.524 Min = -12.186

MSE Date: 03/23/90 Program: 1990 New Car Assessment #13 Vehicle: 1990 Mercedes 190E

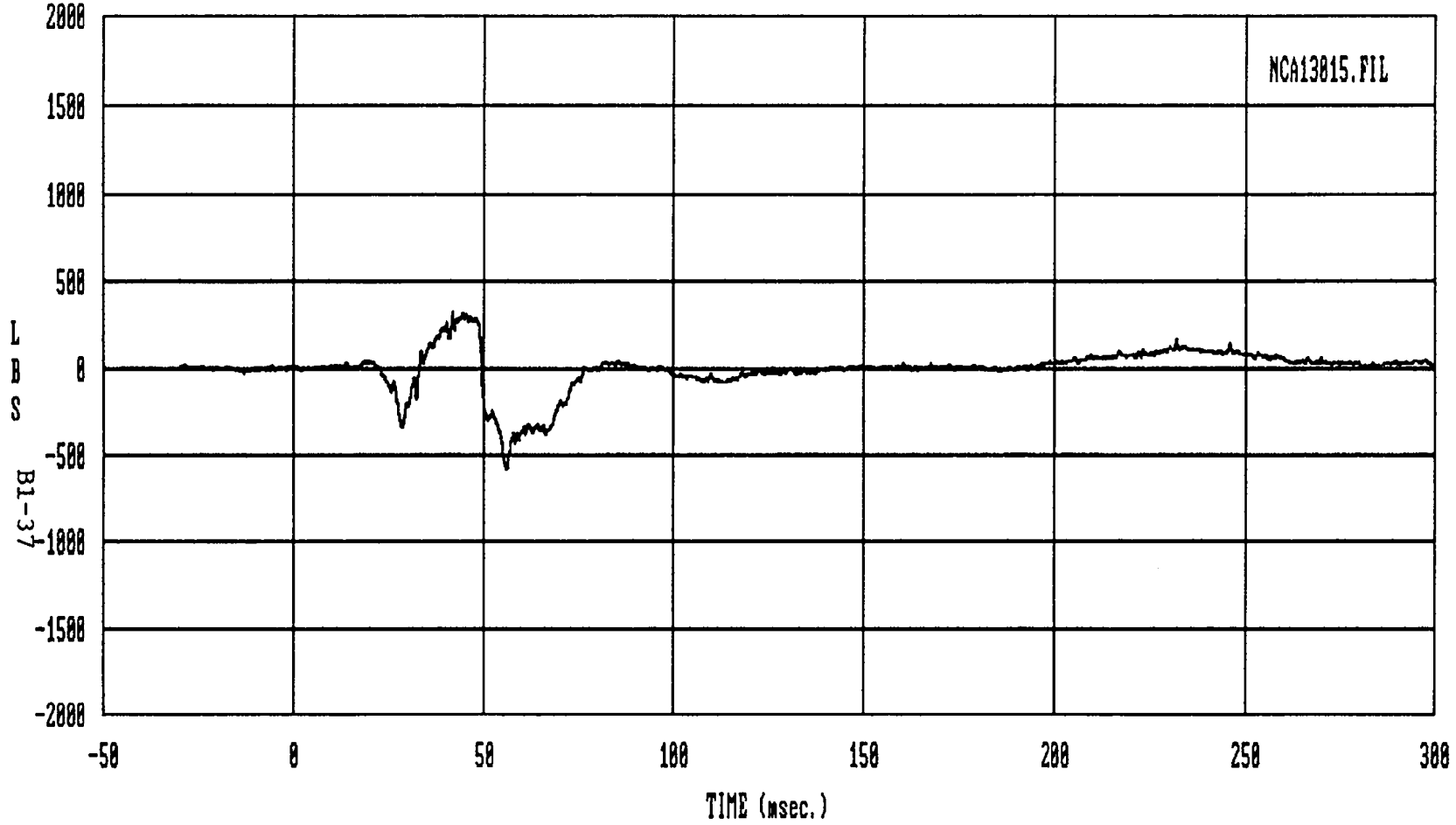
MSE-90-R9092-N07



Curve: Pasngr Chest resultant acceleration Filter: SAE CLASS 180 Max = 64.368 Min = .36885

MSE Date: 03/23/90 Program: 1990 New Car Assessment #13 Vehicle: 1990 Mercedes 190E

MSE-90-R9092-NO1

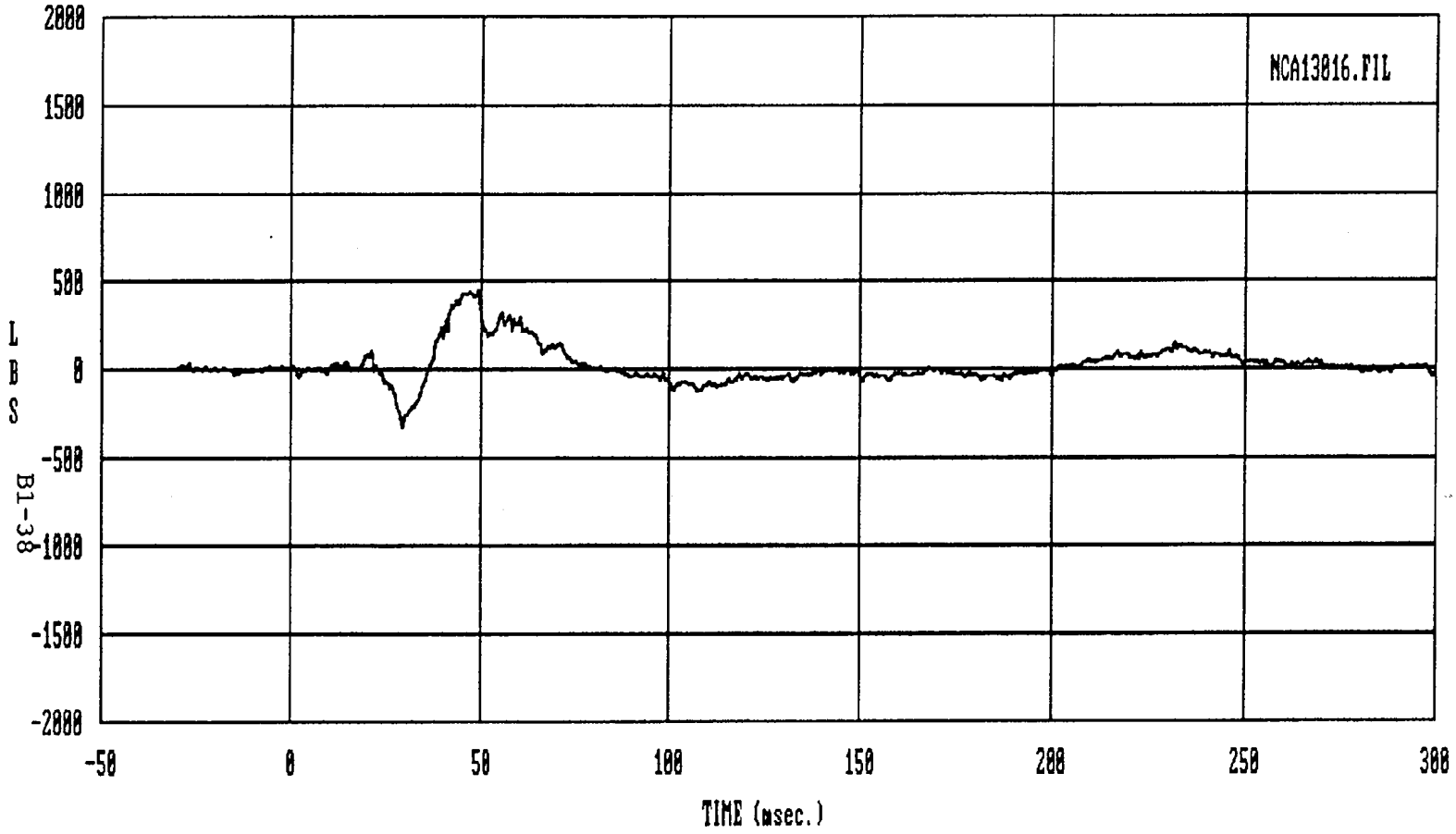


B1-37

MSE-90-R9092-N07

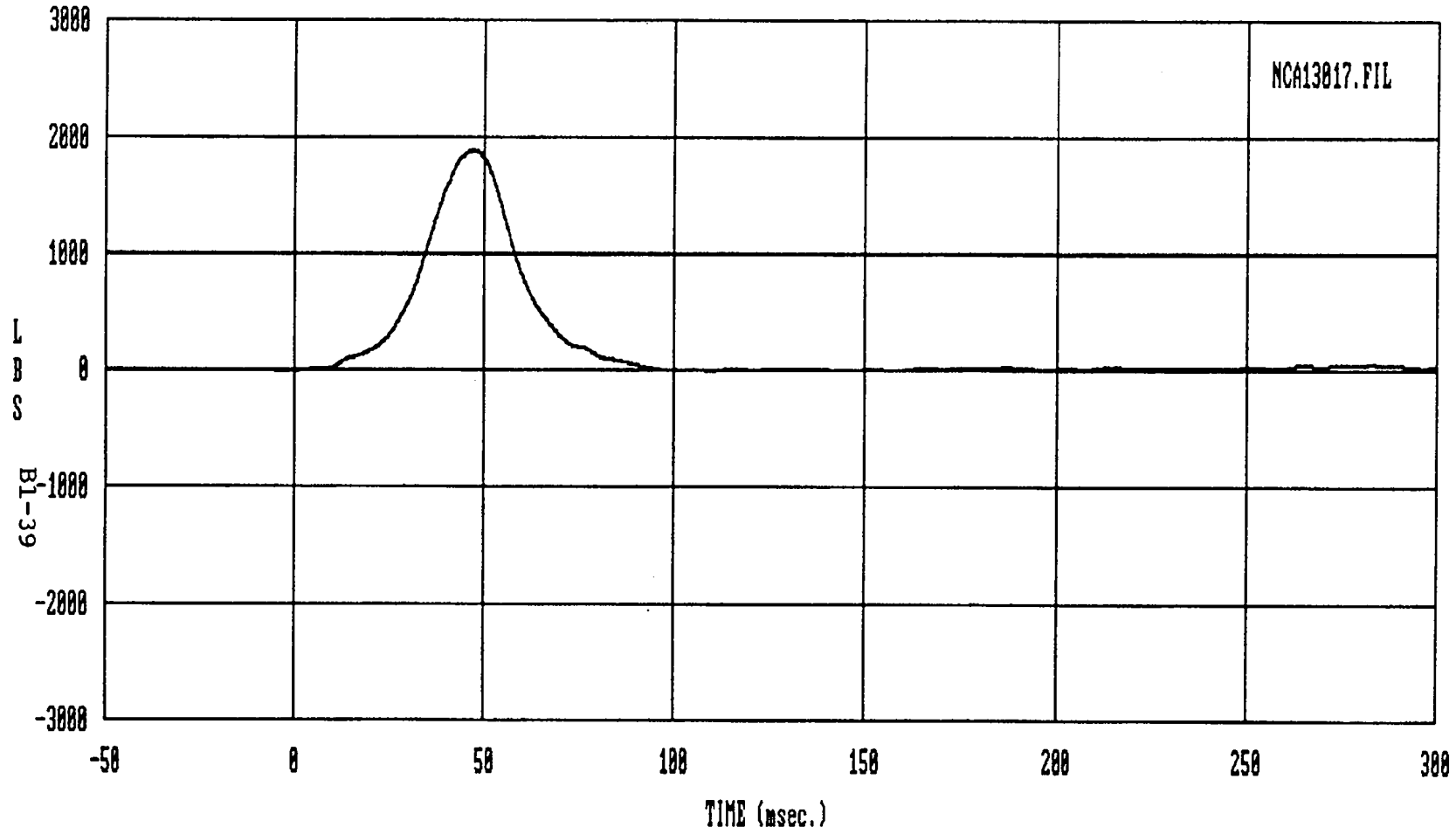
Curve: Pasngr Left Femur force Filter: SAE CLASS 600 Max = 333.70 Min = -582.29

MSE Date: 03/23/90 Program: 1990 New Car Assessment #13 Vehicle: 1990 Mercedes 190E



Curve: Pasngr Right Femur force Filter: SAE CLASS 600 Max = 447.47 Min = -331.06

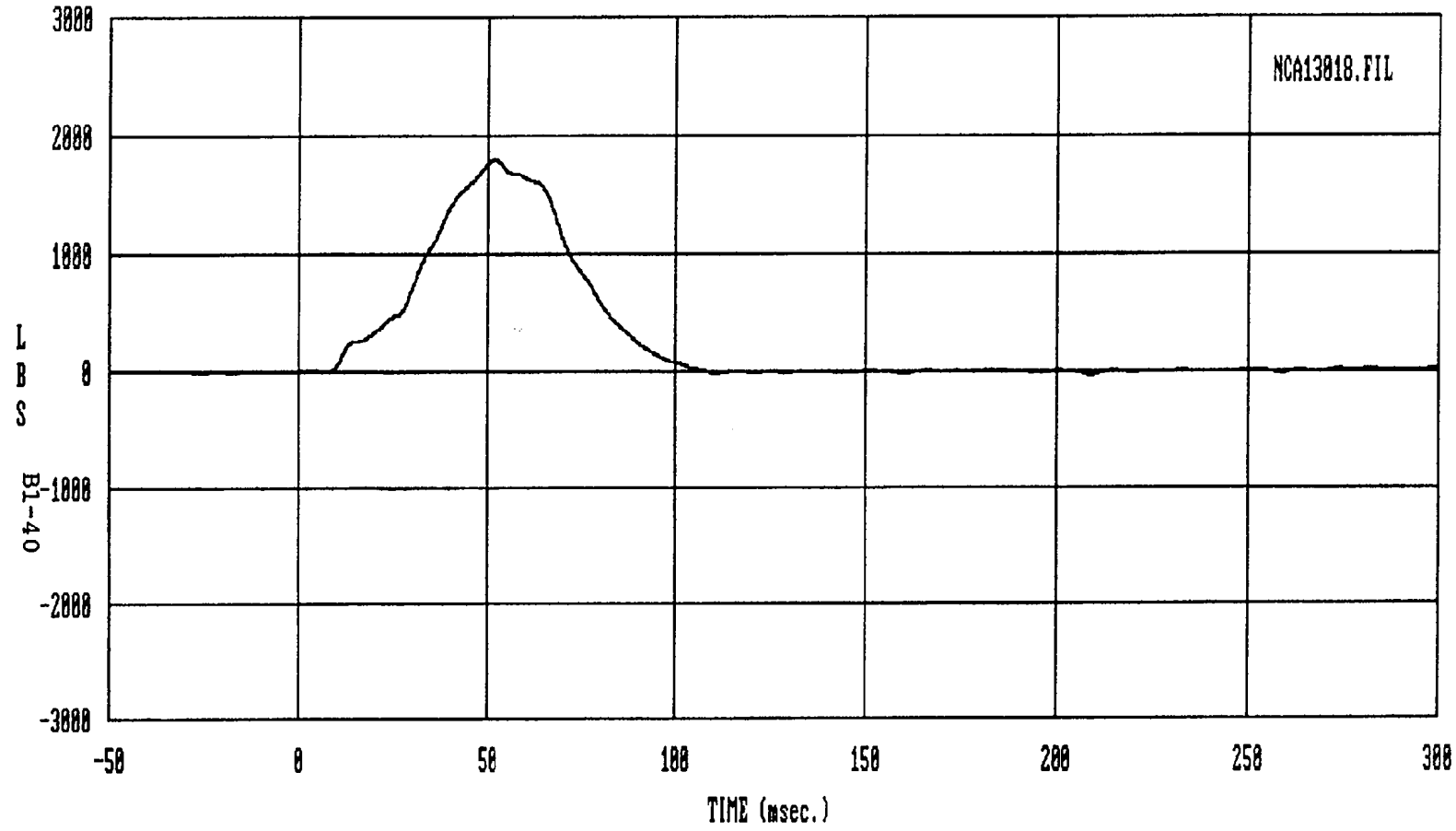
MSE Date: 03/23/90 Program: 1990 New Car Assessment #13 Vehicle: 1990 Mercedes 190E



MSE-90-R9092-N07

Curve: Driver Lap seat belt force Filter: SAE CLASS 60 Max = 1893.9 Min = -7.0222

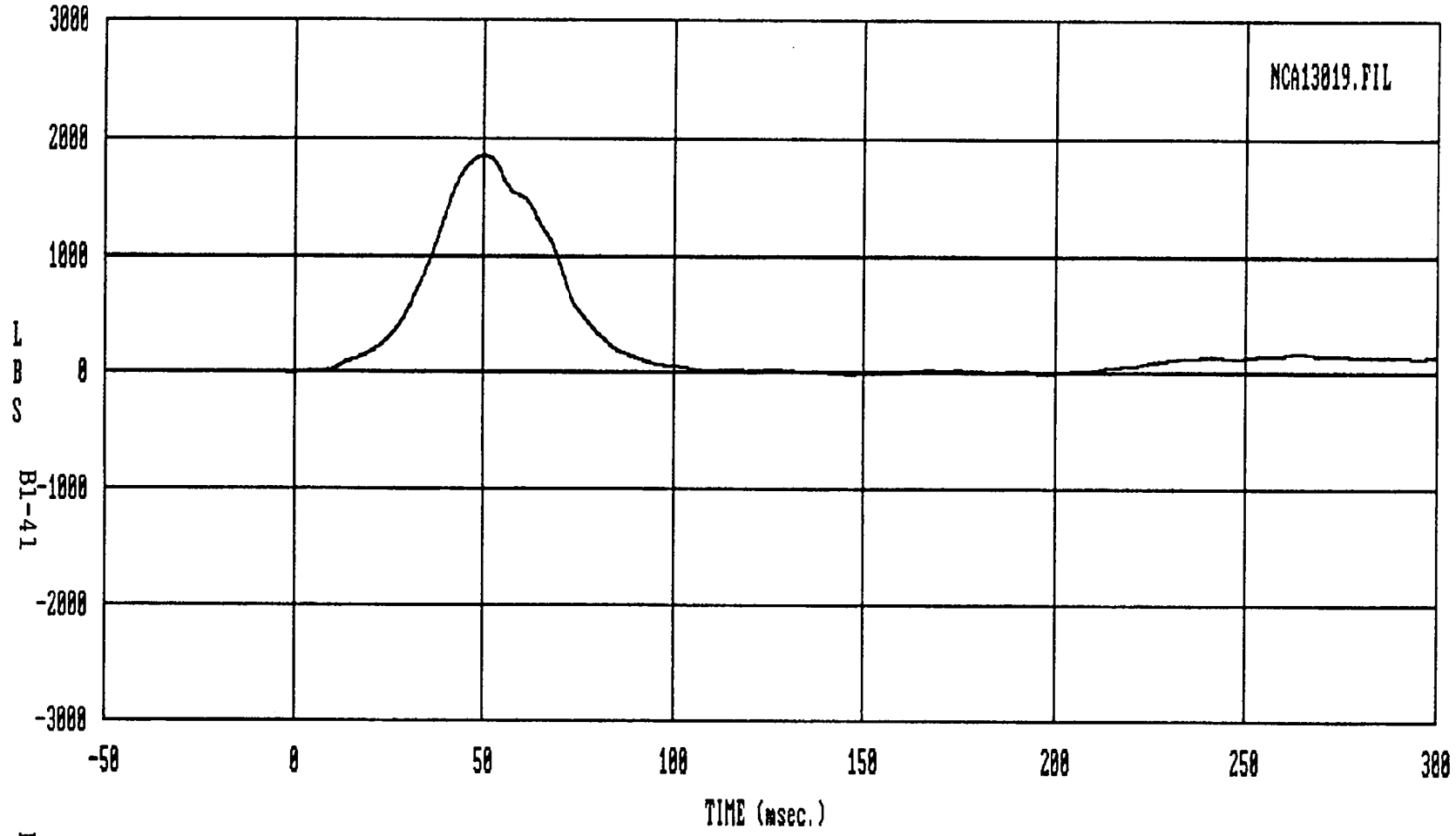
MSE Date: 03/23/98 Program: 1998 New Car Assessment #13 Vehicle: 1998 Mercedes 198E



Curve: Driver Shoulder seat belt force Filter: SAE CLASS 60 Max = 1807.1 Min = -31.331

MSE Date: 03/23/90 Program: 1990 New Car Assessment #13 Vehicle: 1990 Mercedes 190E

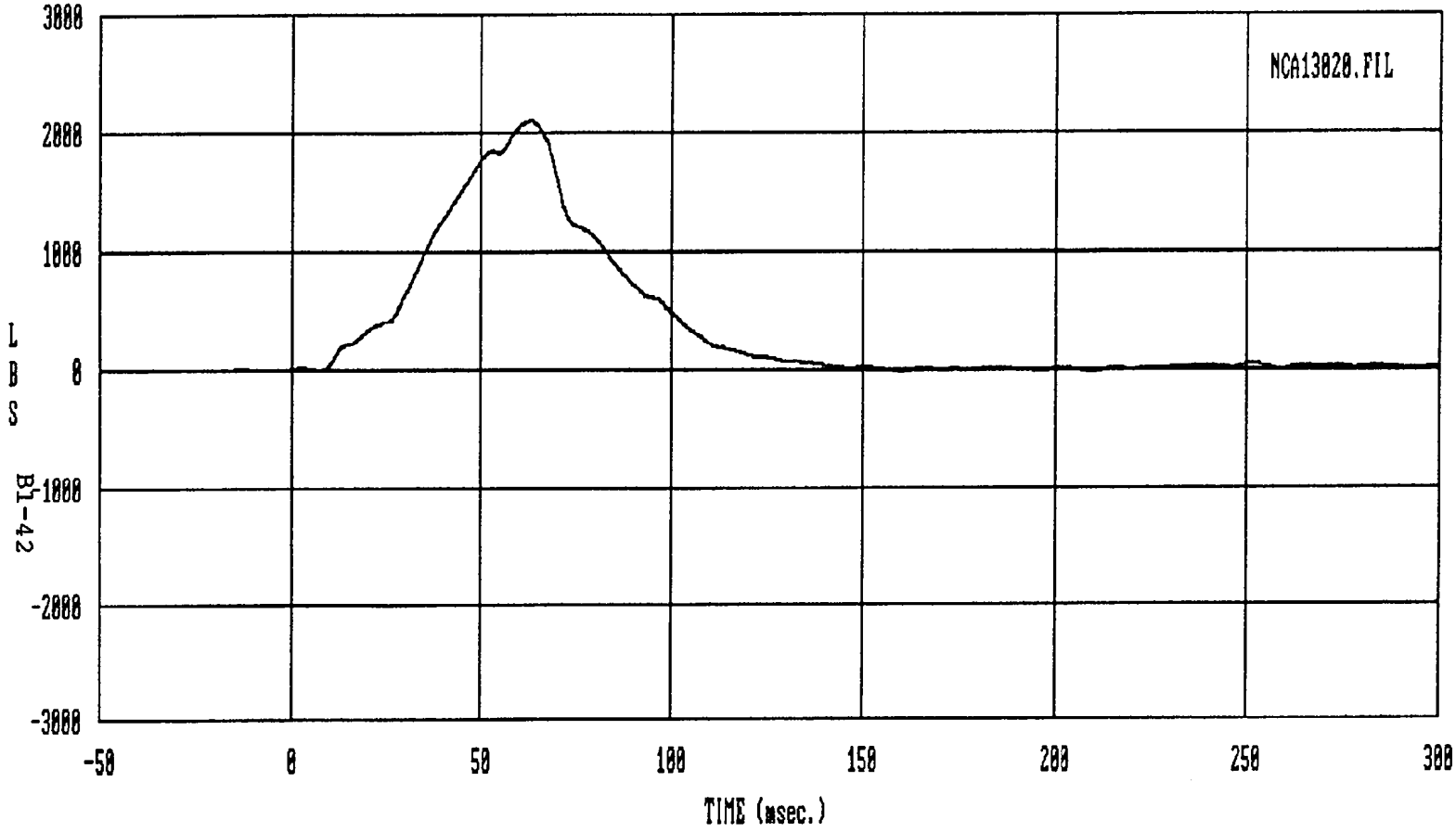
MSE-90-R9092-NO



Curve: Pasngr Lap seat belt force Filter: SAE CLASS 60 Max = 1857.3 Min = -18.646

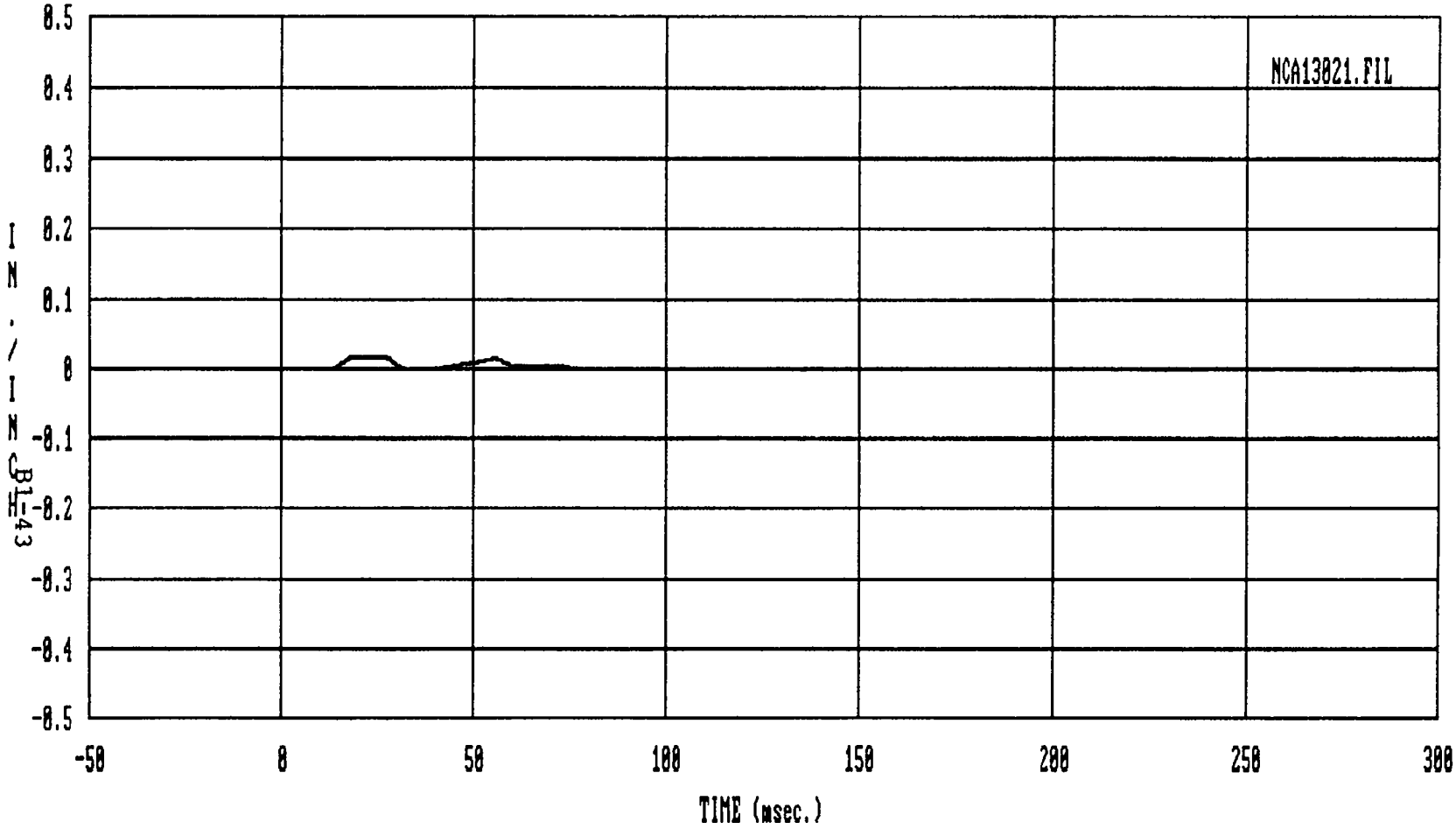
MSE Date: 03/23/90 Program: 1990 New Car Assessment #13 Vehicle: 1990 Mercedes 190E

MSE-90-R9092-N07



Curve: Pasngr Shoulder seat belt force Filter: SAE CLASS 60 Max = 2107.7 Min = -22.205

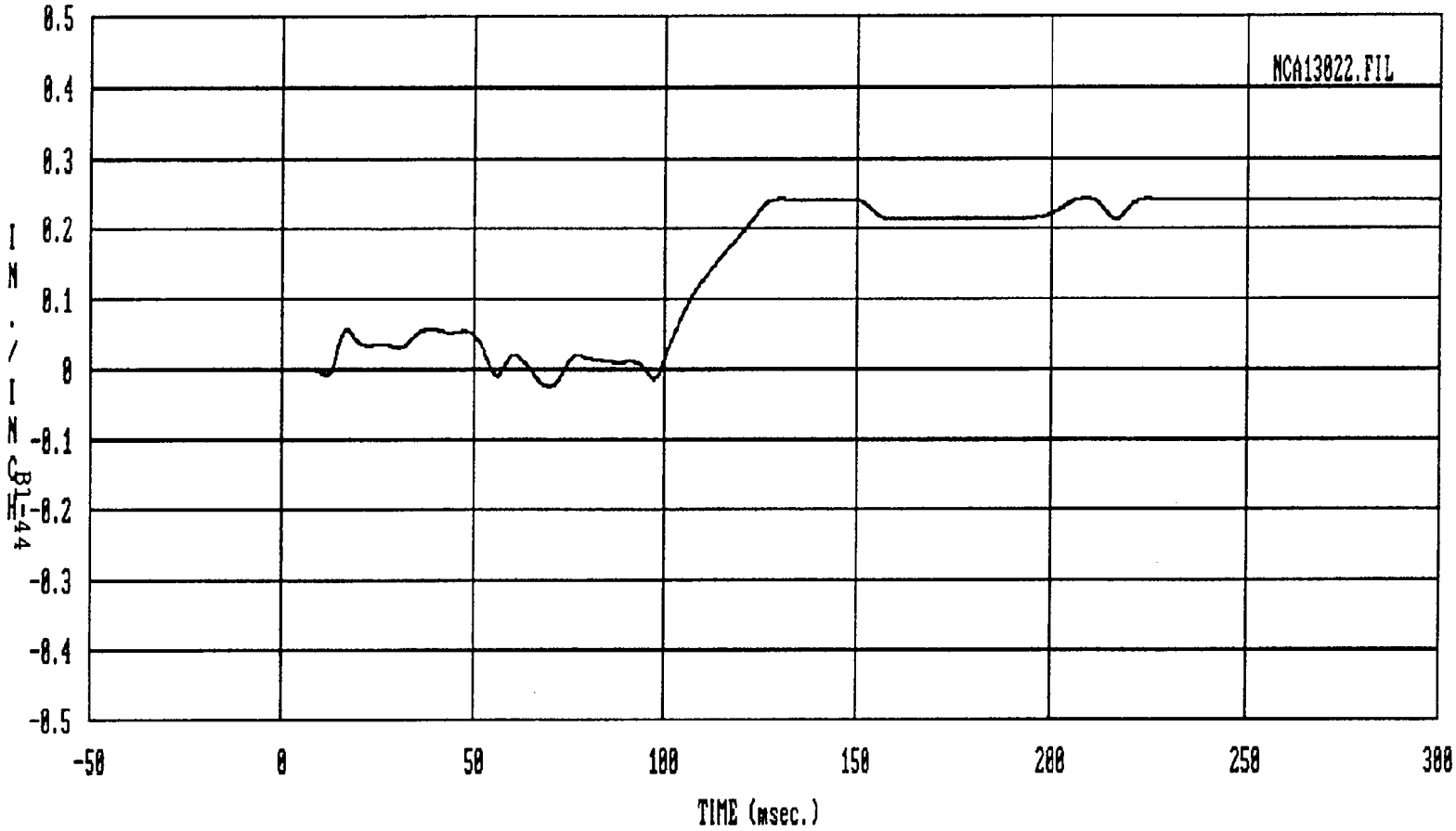
MSE Date: 03/23/90 Program: 1990 New Car Assessment #13 Vehicle: 1990 Mercedes 190E



Curve: Driver seat belt elongation (Channel failed) Filter: SAE CLASS 60 Max = .17886E-01 Min = -.52728E-03

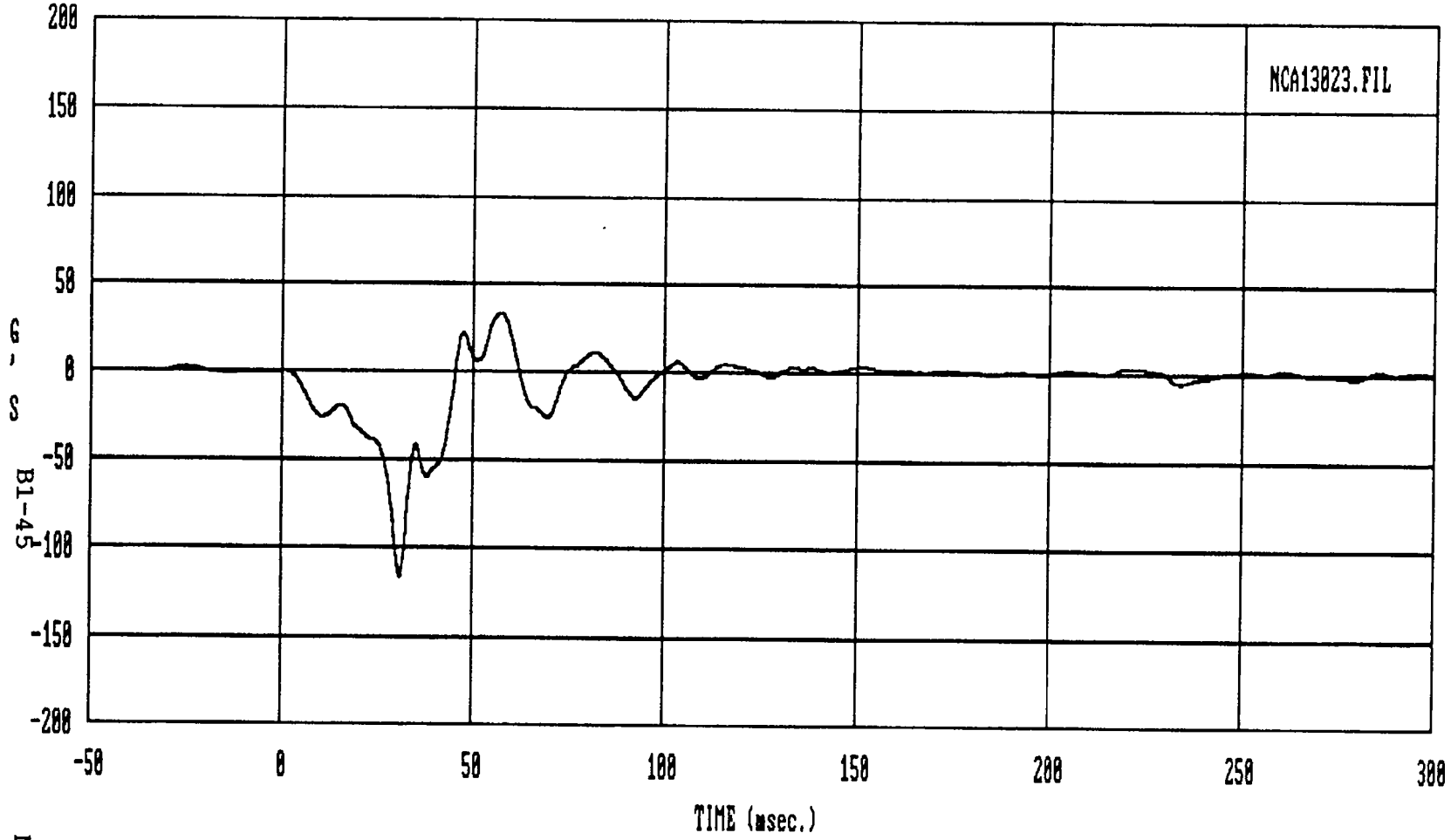
MSE Date: 03/23/90 Program: 1990 New Car Assessment #13 Vehicle: 1990 Mercedes 190E

MSE-90-R9092-N07



Curve: Pasngr seat belt elongation (Channel failed) Filter: SAE CLASS 60 Max = .24338 Min = -.22971E-01

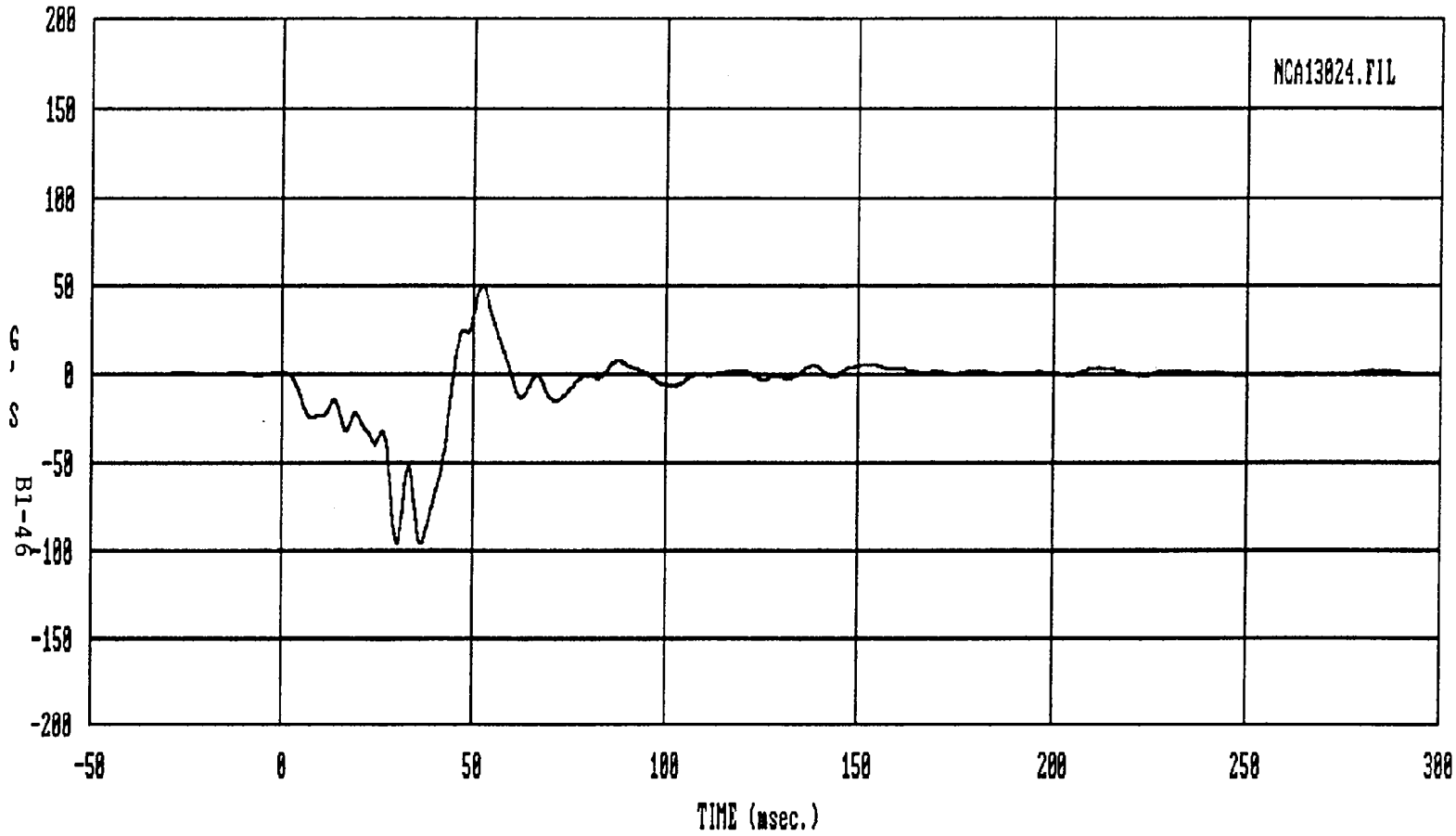
MSE Date: 03/23/90 Program: 1990 New Car Assessment #13 Vehicle: 1990 Mercedes 190E



Curve: Left front brake caliper acceleration — X axis Filter: SAE CLASS 60 Max = 33.409 Min = -116.20

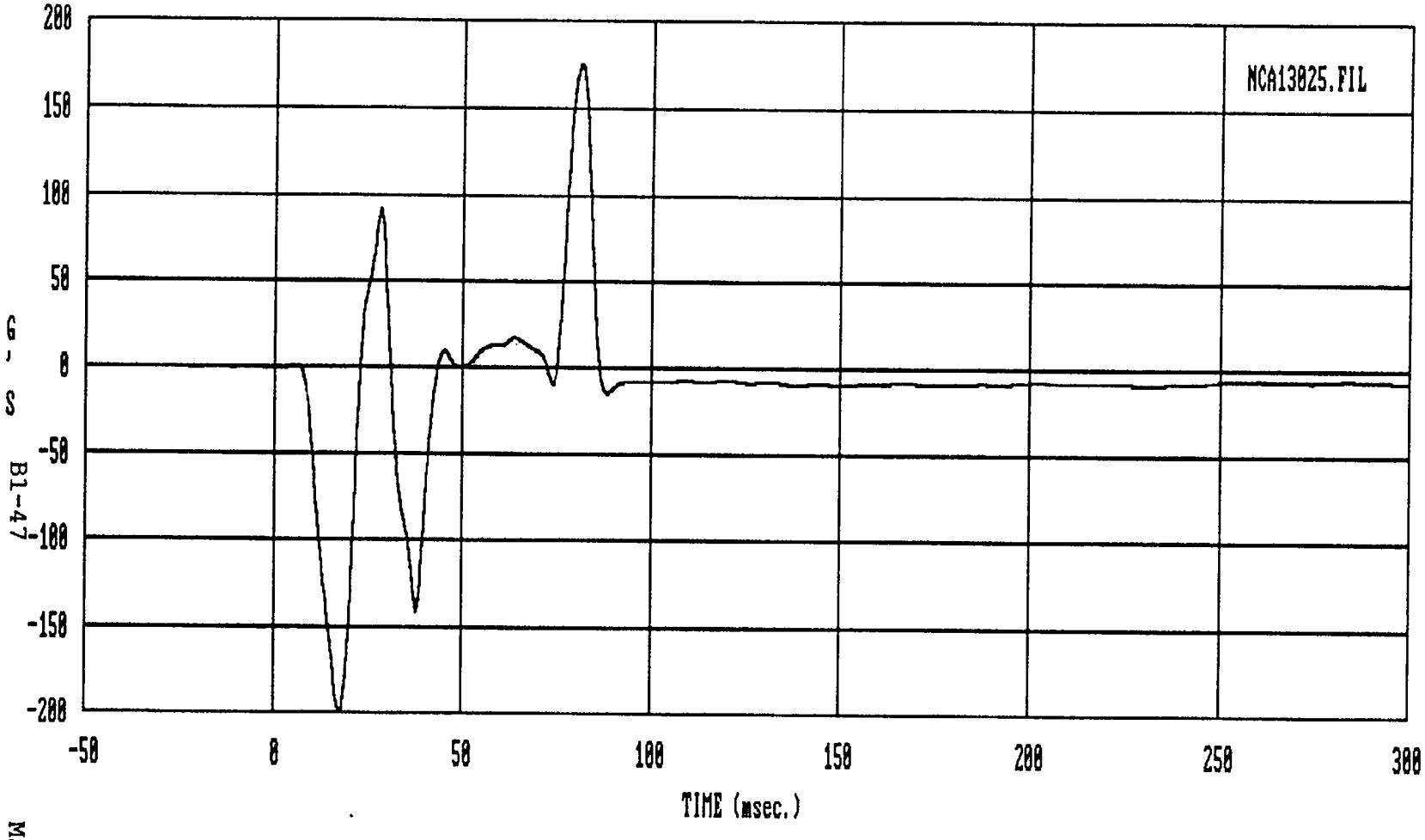
MSE Date: 03/23/90 Program: 1990 New Car Assessment #13 Vehicle: 1990 Mercedes 190E

MSE-90-R9092-N07



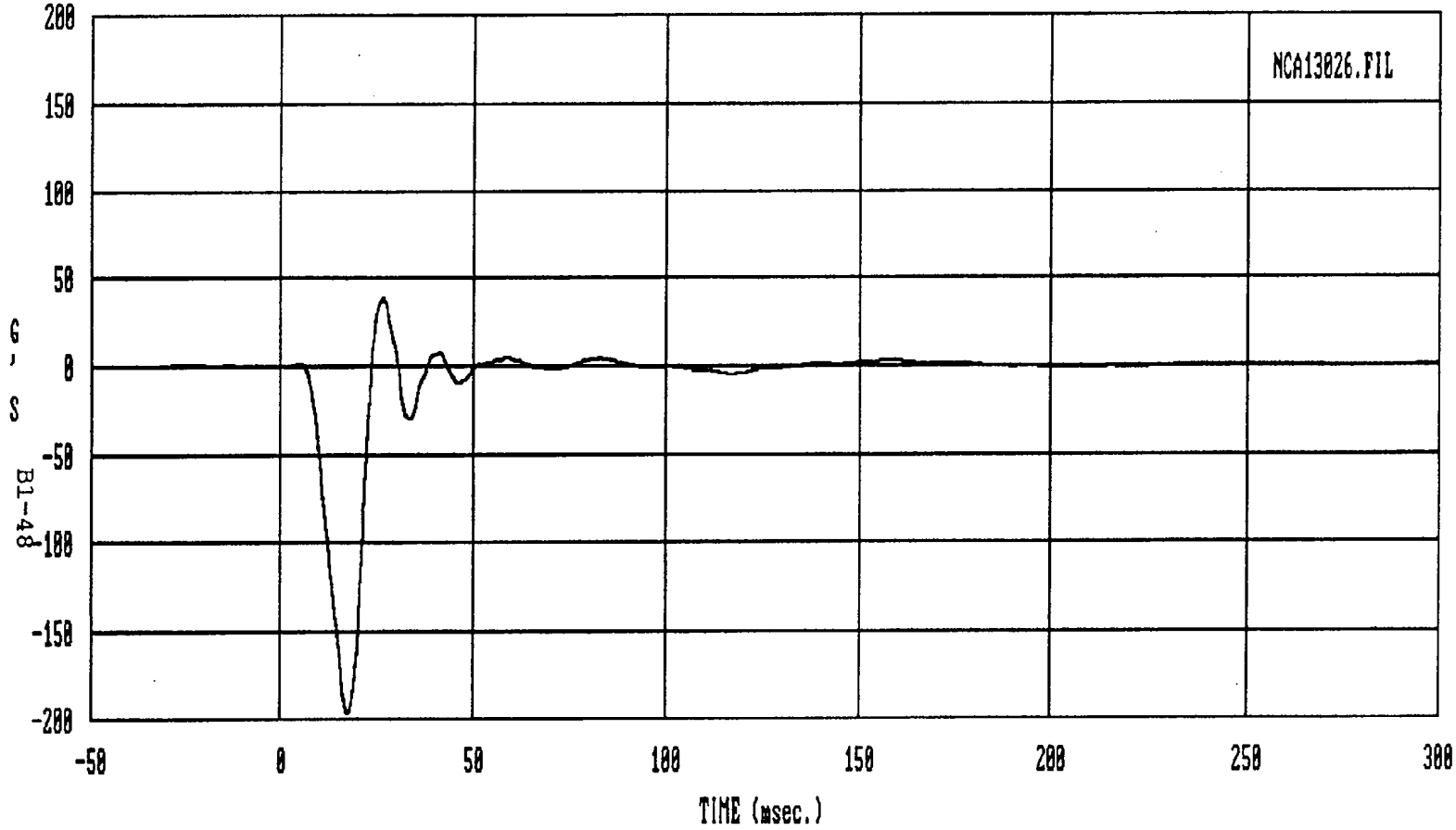
Curve: Right front brake caliper accel. — X axis Filter: SAE CLASS 60 Max = 50.041 Min = -96.282

MSE Date: 03/23/98 Program: 1998 New Car Assessment #13 Vehicle: 1998 Mercedes 190E



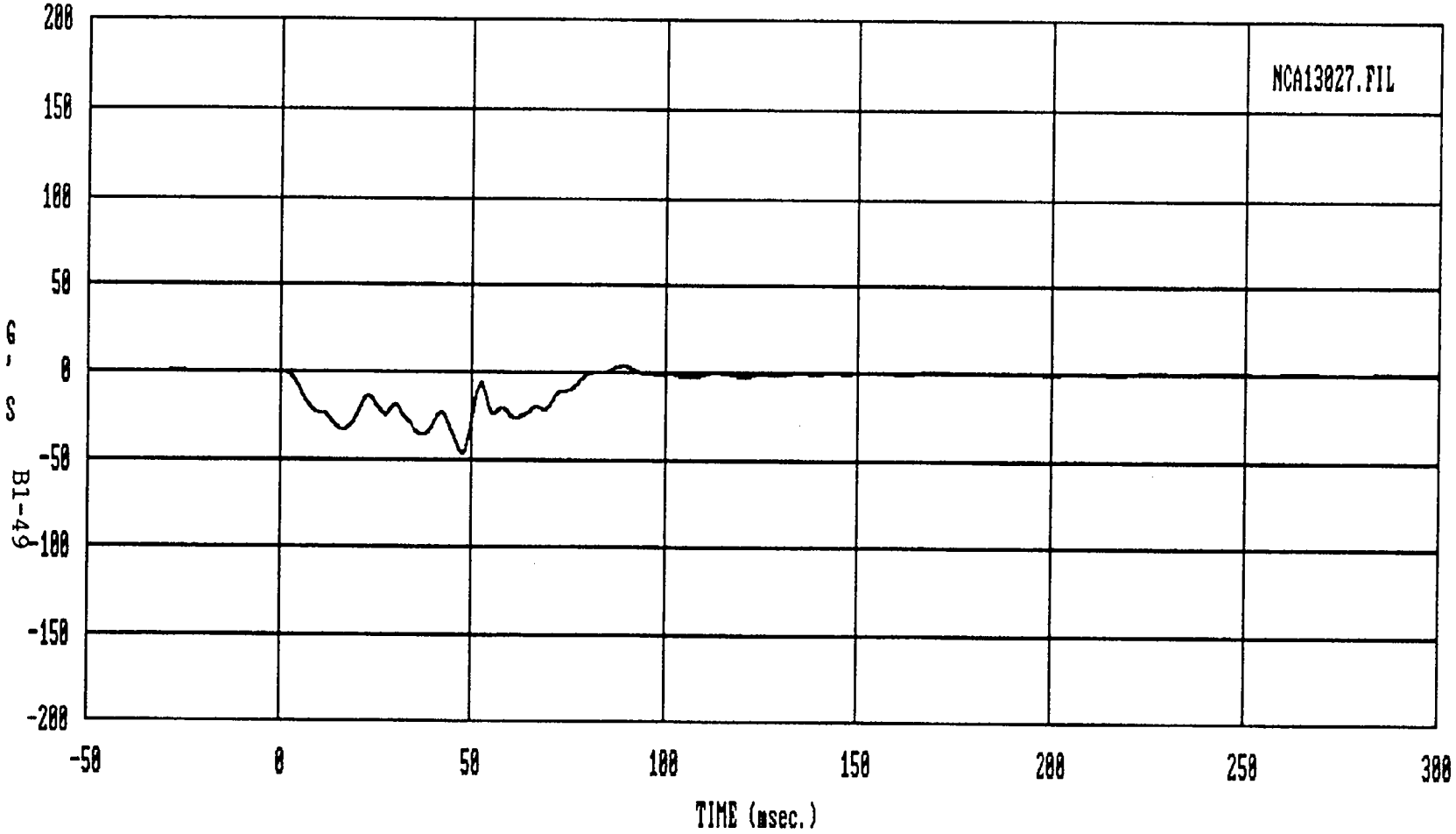
Curve: Engine bottom acceleration — X axis Filter: SAE CLASS 60 Max = 175.24 Min = -200.68

MSE Date: 03/23/90 Program: 1990 New Car Assessment #13 Vehicle: 1990 Mercedes 190E



Curve: Engine top acceleration -- X axis Filter: SAE CLASS 60 Max = 38.595 Min = -196.24

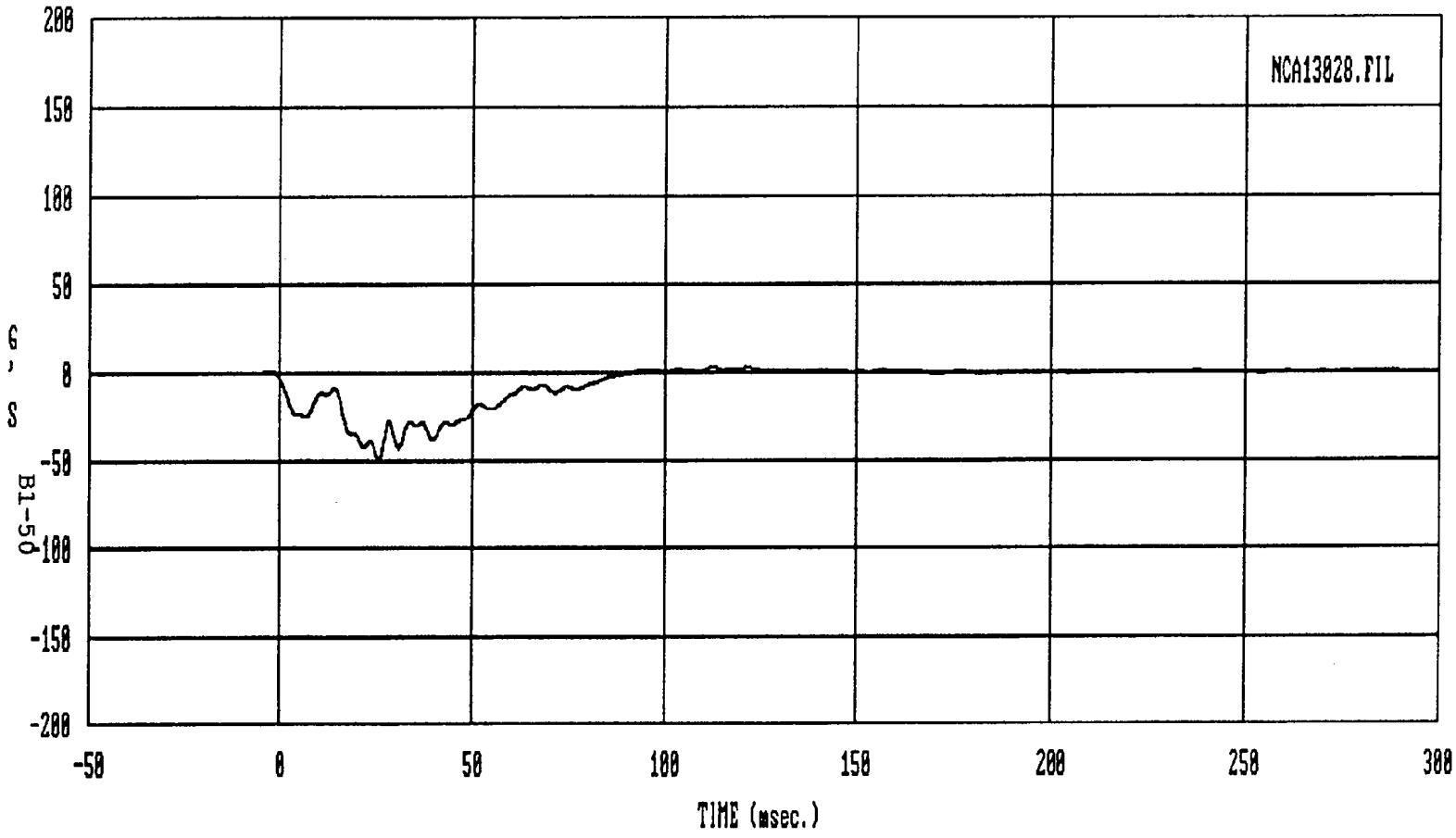
MSE Date: 03/23/90 Program: 1990 New Car Assessment #13 Vehicle: 1990 Mercedes 190E



Curve: Instrument panel acceleration — X axis Filter: SAE CLASS 60 Max = 3.8514 Min = -46.216

MSE Date: 03/23/90 Program: 1990 New Car Assessment #13 Vehicle: 1990 Mercedes 190E

MSE-90-R9092-N07

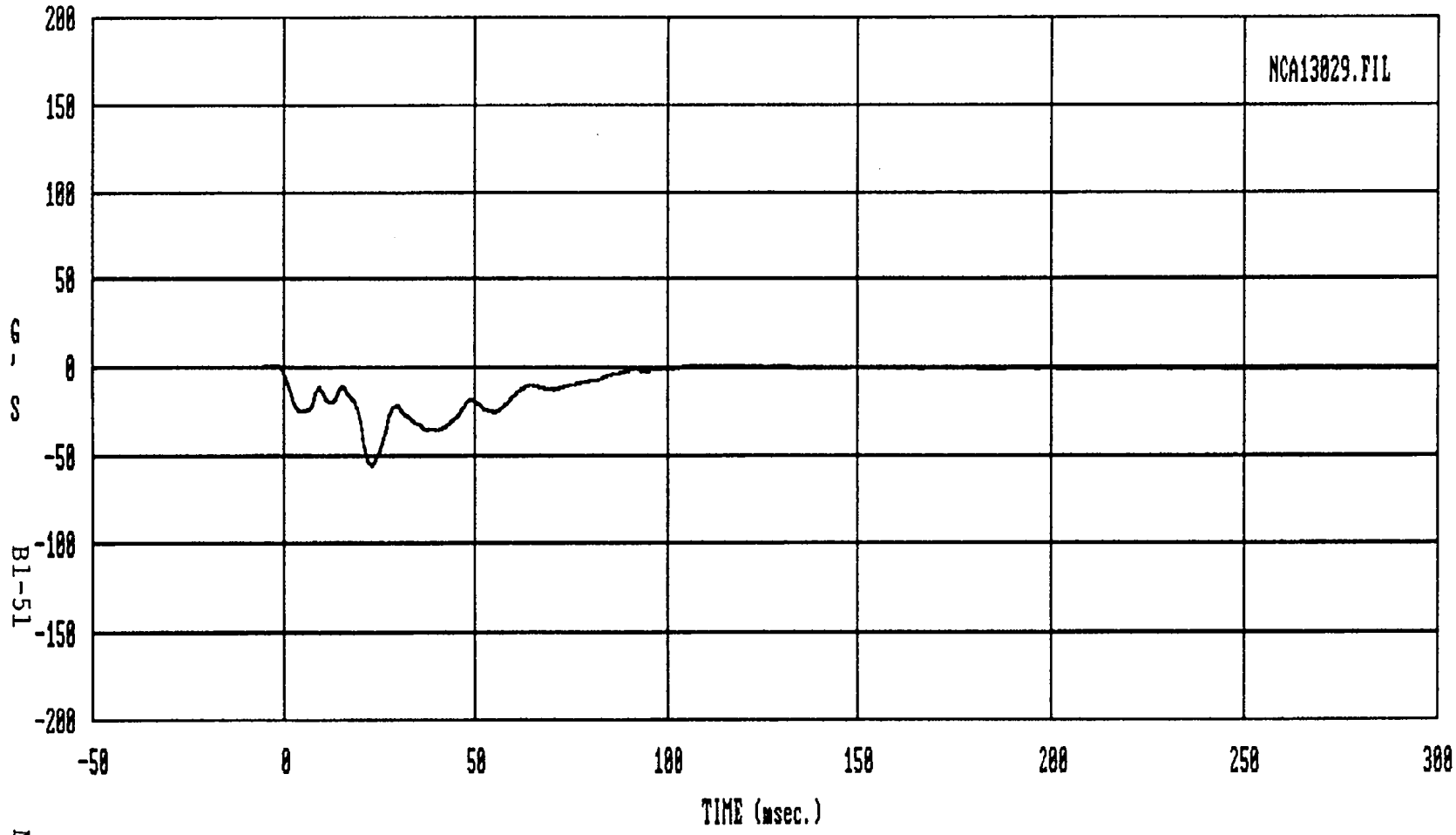


Curve: Left-rear seat cross-member accel. -- X axis Filter: SAE CLASS 60 Max = 3.4409 Min = -49.806

MSE Date: 03/23/98 Program: 1998 New Car Assessment #13 Vehicle: 1998 Mercedes 198E

B1-50

MSE-90-R9092-NO7



Curve: Right-rear seat cross member accel. — X axis Filter: SAE CLASS 60 Max = 1.0792 Min = -55.404

MSE Date: 03/23/98 Program: 1998 New Car Assessment #13 Vehicle: 1998 Mercedes 190E

B1-51

MSE-90-R9092-N07

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APPENDIX B-2

LOAD CELL BARRIER DATA

DATA FILTERING:
Load Cell Barrier Channels - Class 60

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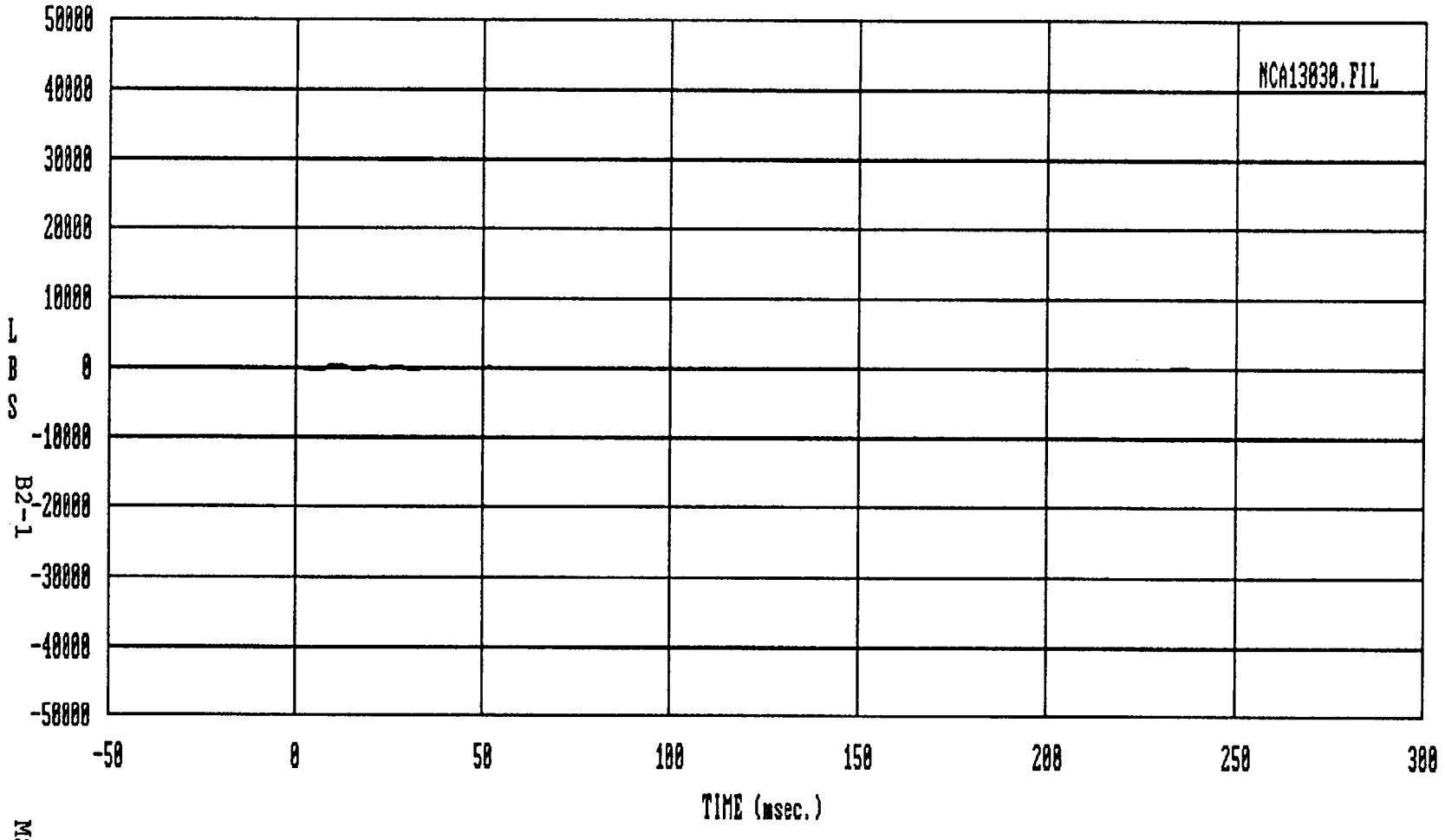
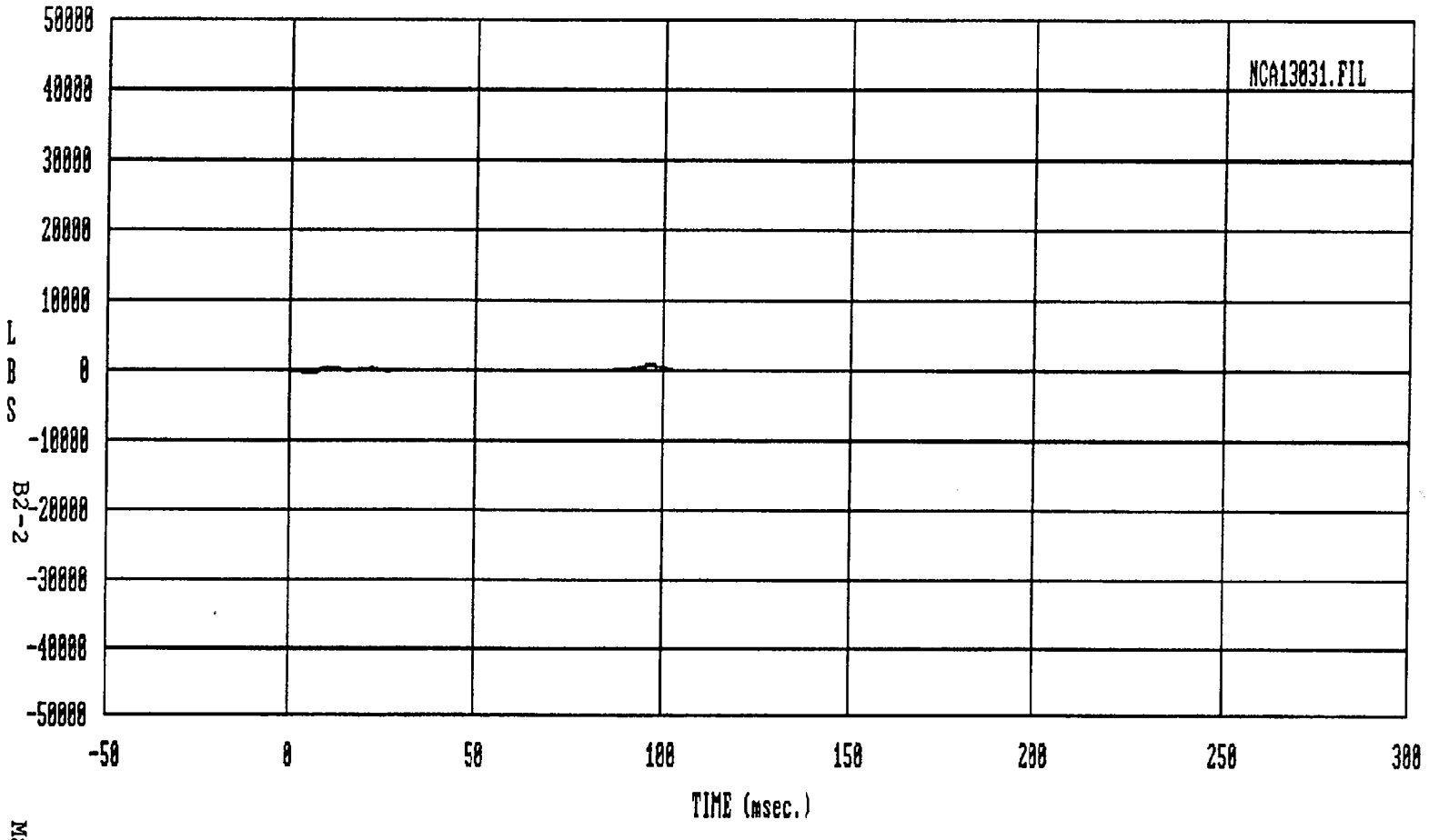


Curve: Force on Barrier load cell A1 Filter: SAE CLASS 60 Max = 491.82 Min = -378.28

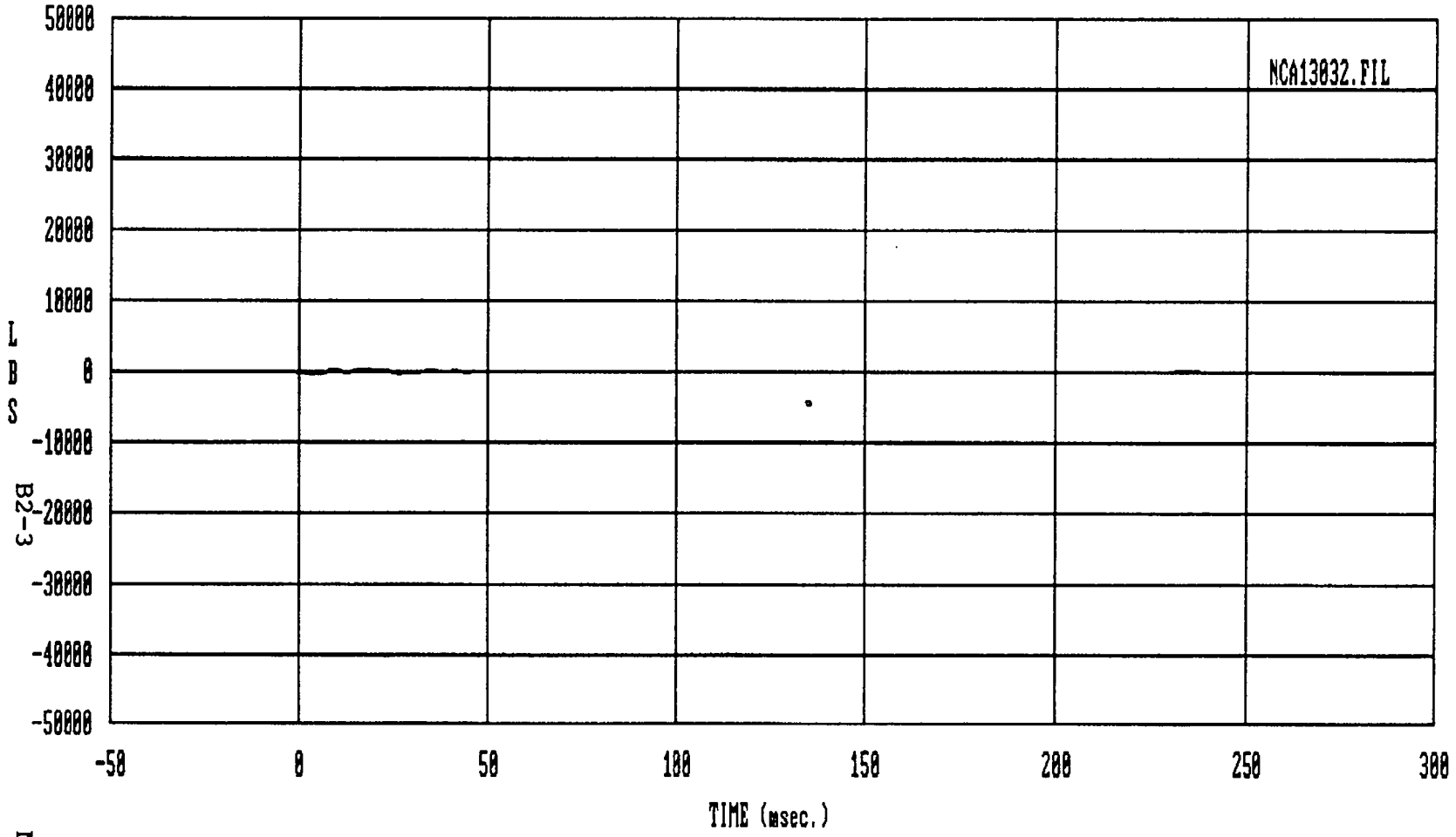
MSE Date: 03/23/90 Program: 1990 New Car Assessment #13 Vehicle: 1990 Mercedes 190E

MSE-90-R9092-N07



Curve: Force on Barrier load cell A2 Filter: SAE CLASS 60 Max = 766.30 Min = -424.00

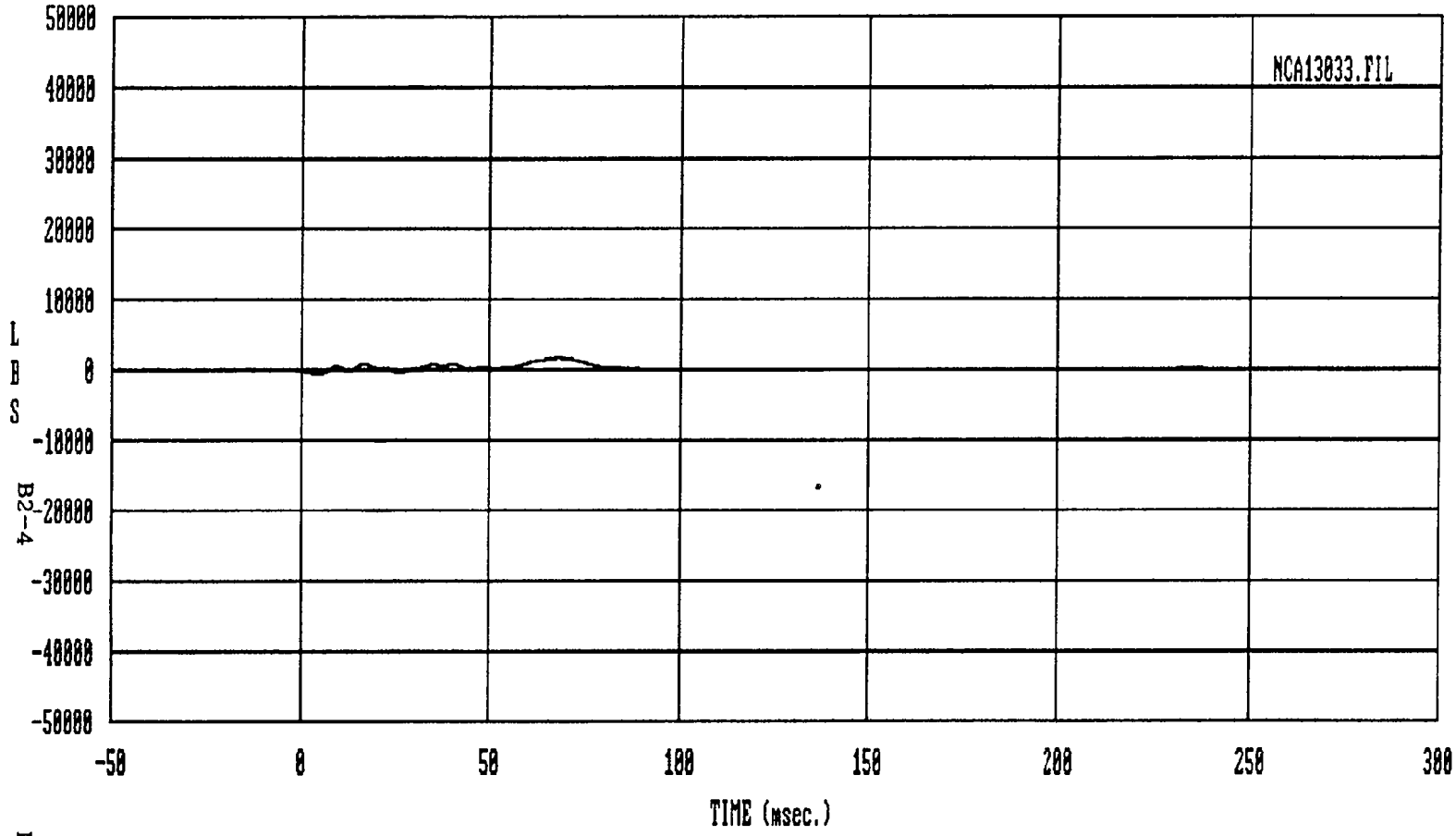
MSE Date: 03/23/98 Program: 1998 New Car Assessment #13 Vehicle: 1998 Mercedes 190E



MSE-90-R9092-N07

Curve: Force on Barrier load cell A3 Filter: SAE CLASS 60 Max = 453.26 Min = -437.26

MSE Date: 03/23/90 Program: 1990 New Car Assessment #13 Vehicle: 1990 Mercedes 190E

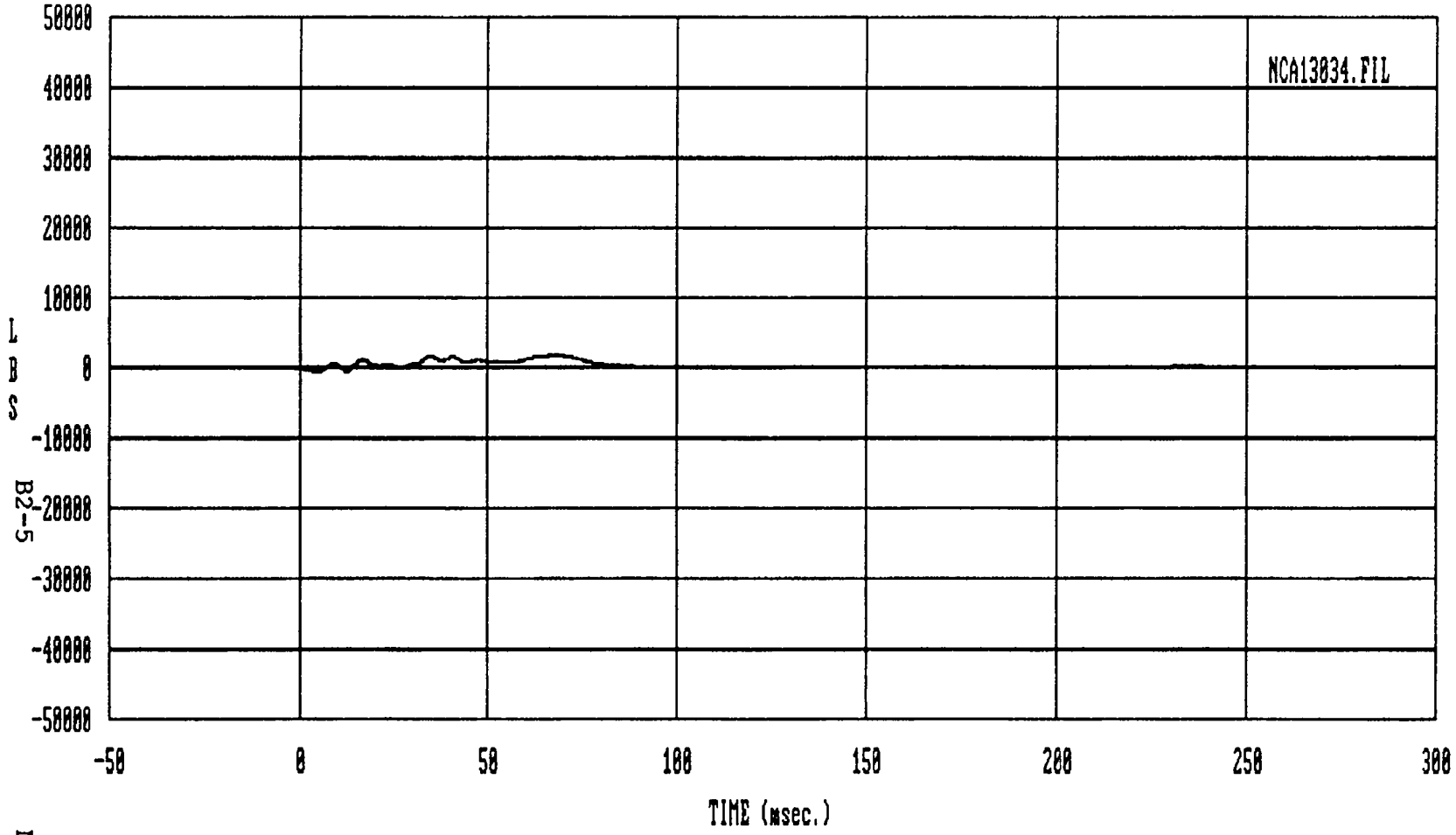


B2-4

Curve: Force on Barrier load cell A4 Filter: SAE CLASS 60 Max = 1692.6 Min = -563.34

MSE Date: 03/23/90 Program: 1990 New Car Assessment #13 Vehicle: 1990 Mercedes 190E

MSE-90-R9092-N07

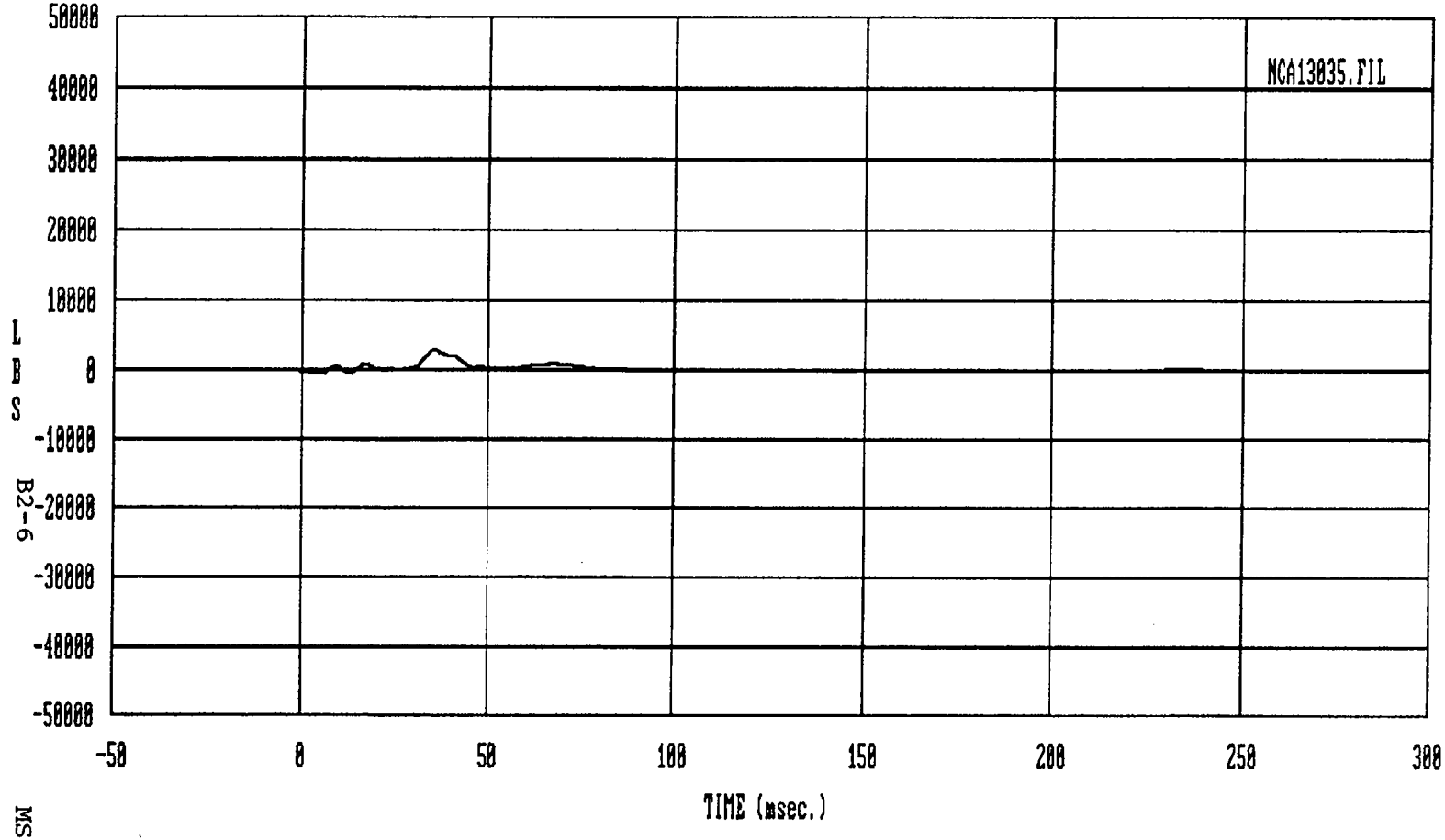


B2-5

MSE-90-R9092-N07

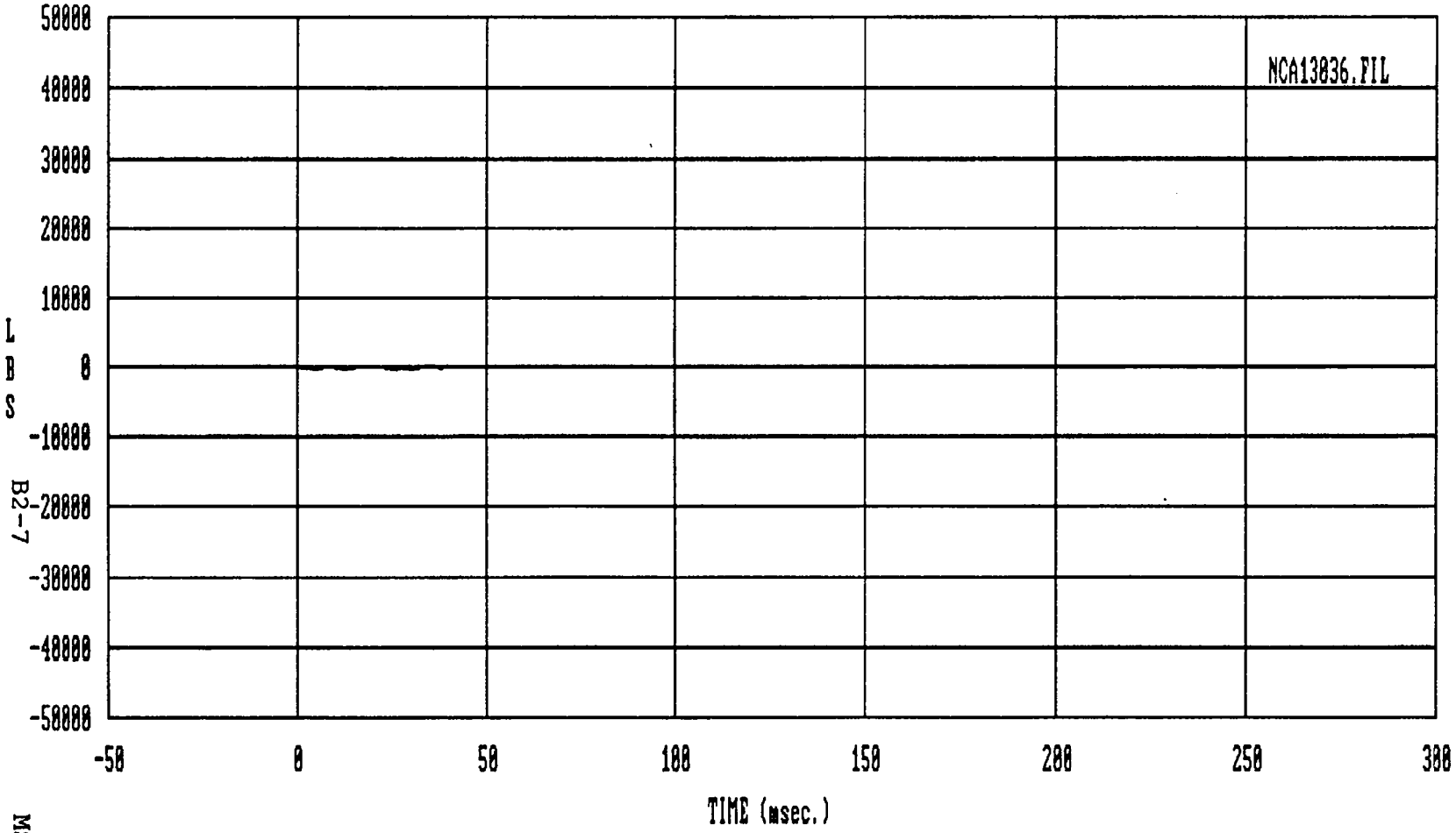
Curve: Force on Barrier load cell A5 Filter: SAE CLASS 60 Max = 1771.8 Min = -535.04

MSE Date: 03/23/90 Program: 1990 New Car Assessment #13 Vehicle: 1990 Mercedes 190E



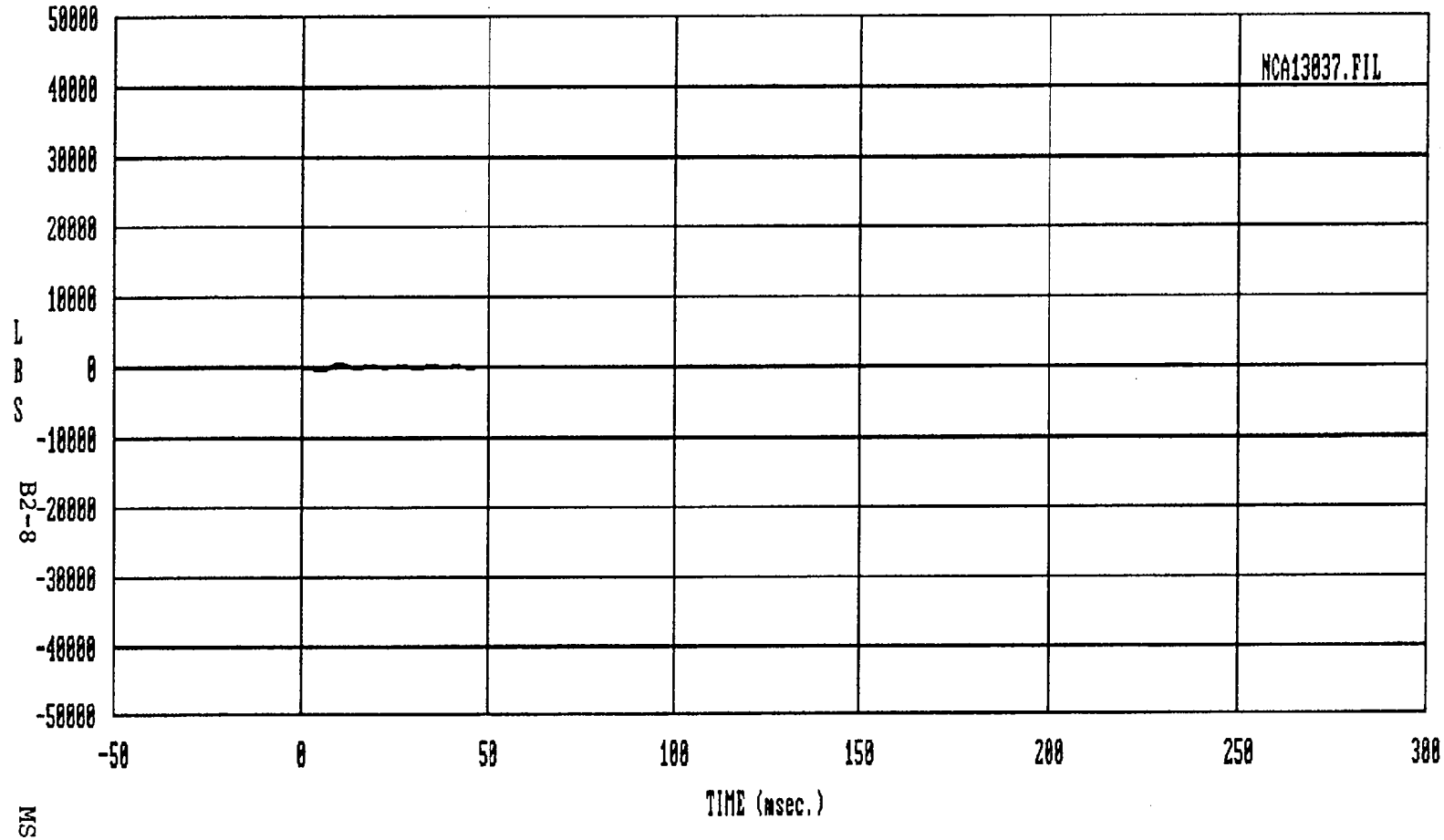
Curve: Force on Barrier load cell A6 Filter: SAE CLASS 60 Max = 2946.7 Min = -459.16

MSE Date: 03/23/90 Program: 1990 New Car Assessment #13 Vehicle: 1990 Mercedes 190E



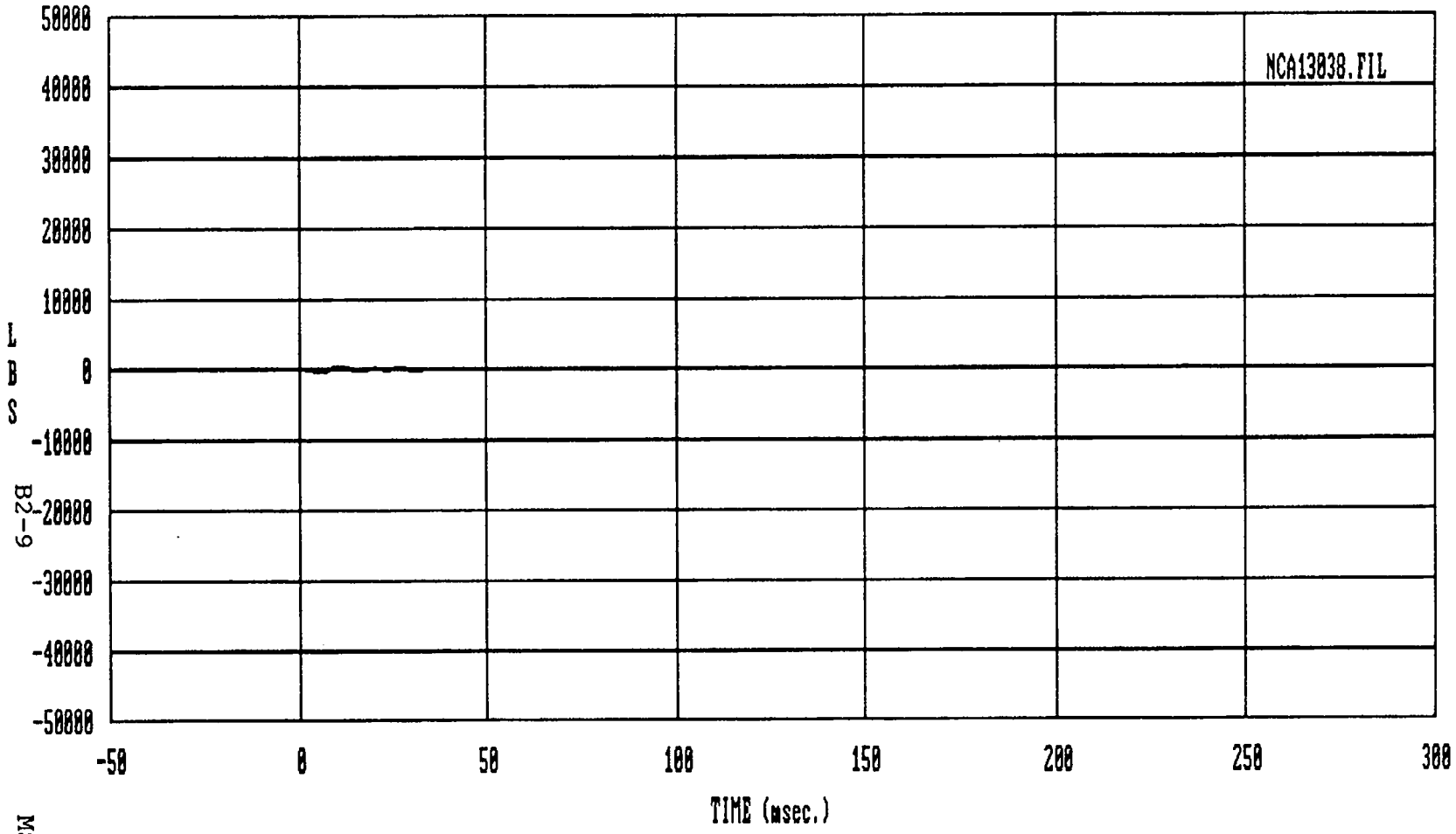
Curve: Force on Barrier load cell A7 Filter: SAE CLASS 60 Max = 152.87 Min = -299.47

MSE Date: 03/23/98 Program: 1998 New Car Assessment #13 Vehicle: 1998 Mercedes 190E



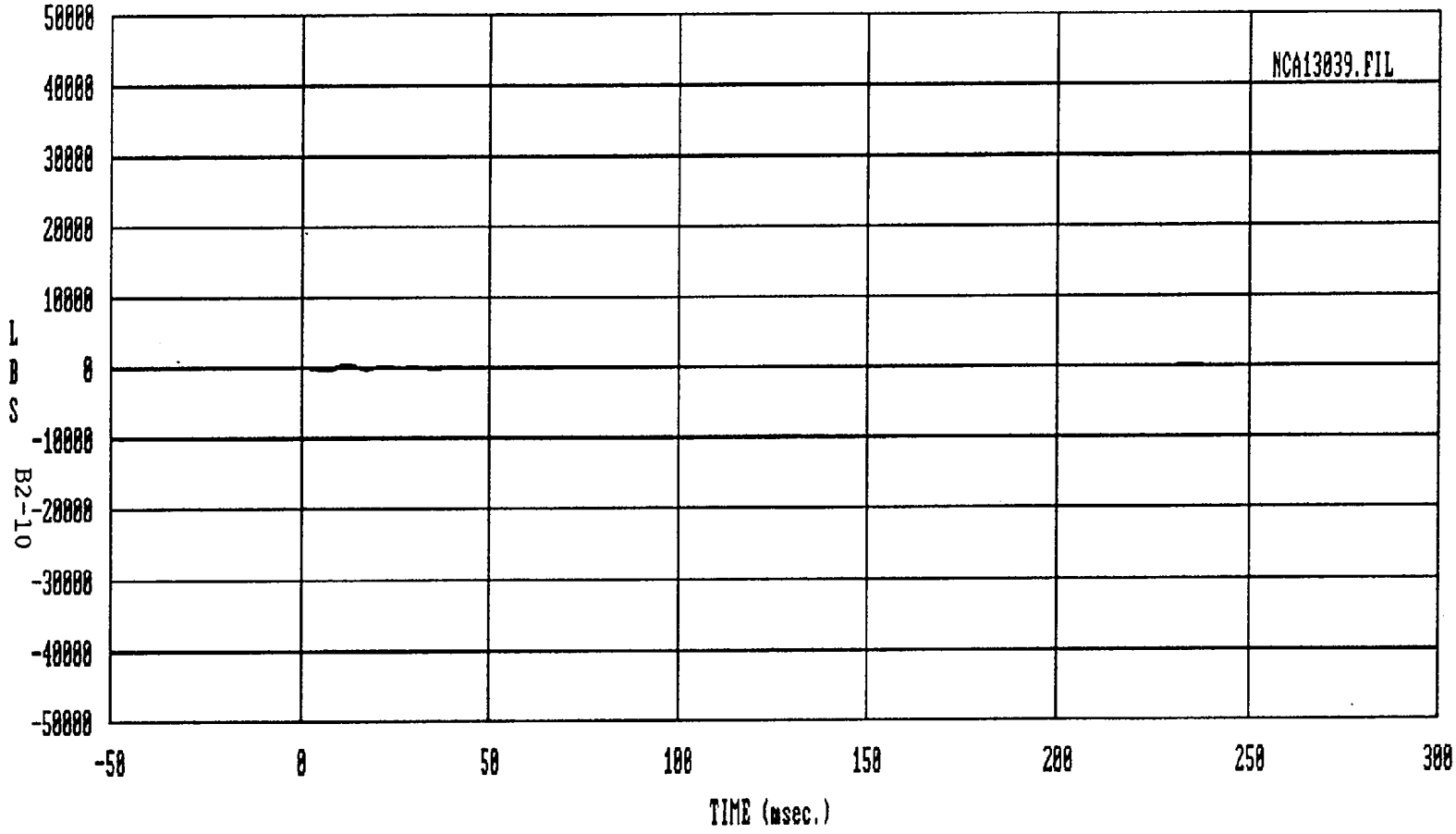
Curve: Force on Barrier load cell A8 Filter: SAE CLASS 60 Max = 554.92 Min = -433.92

MSE Date: 03/23/98 Program: 1998 New Car Assessment #13 Vehicle: 1998 Mercedes 190E



Curve: Force on Barrier load cell A9 Filter: SAE CLASS 60 Max = 480.27 Min = -410.74

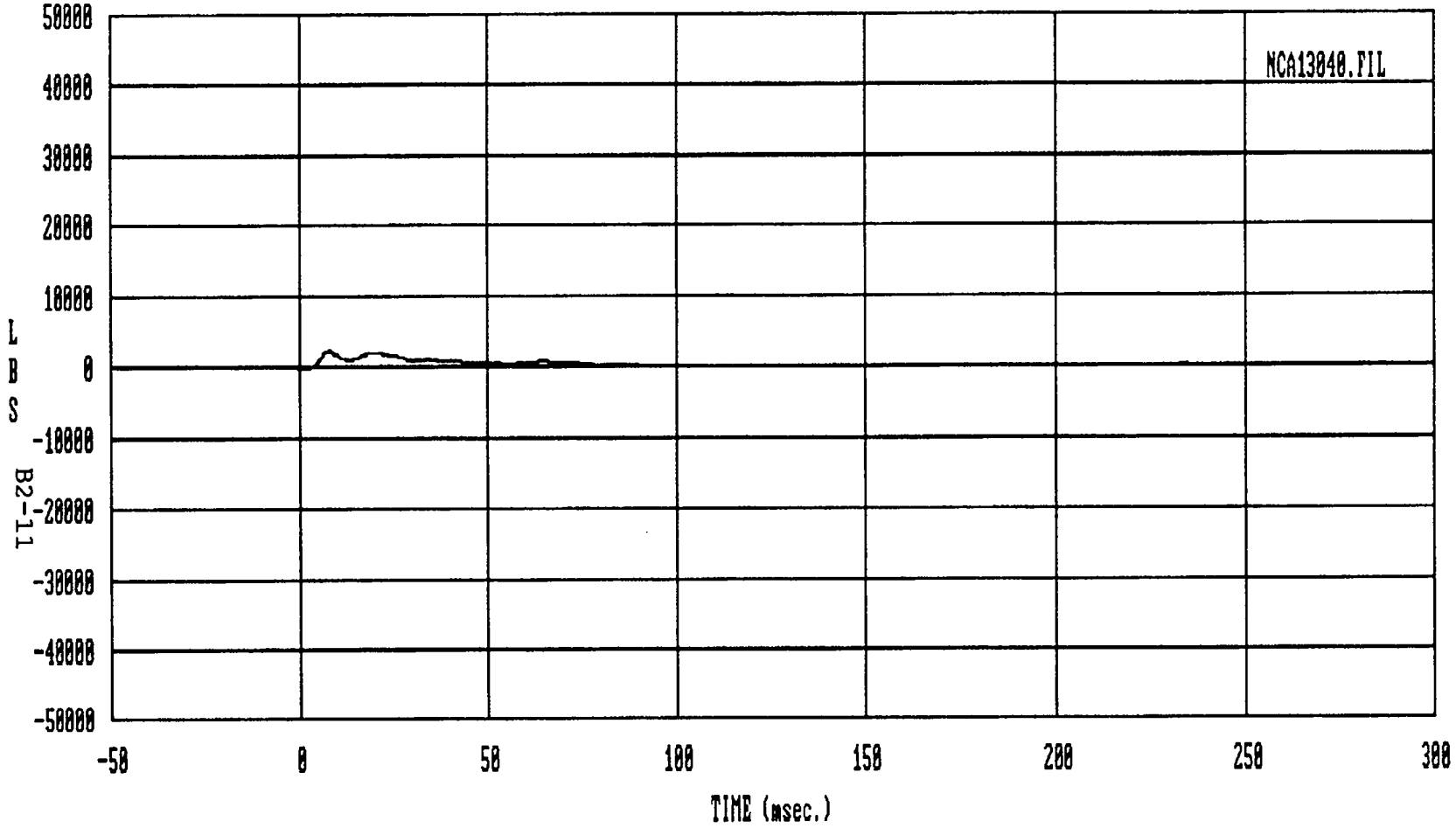
MSE Date: 03/23/90 Program: 1990 New Car Assessment #13 Vehicle: 1990 Mercedes 190E



Curve: Force on Barrier load cell B1 Filter: SAE CLASS 60 Max = 609.93 Min = -412.28

MSE Date: 03/23/90 Program: 1990 New Car Assessment #13 Vehicle: 1990 Mercedes 190E

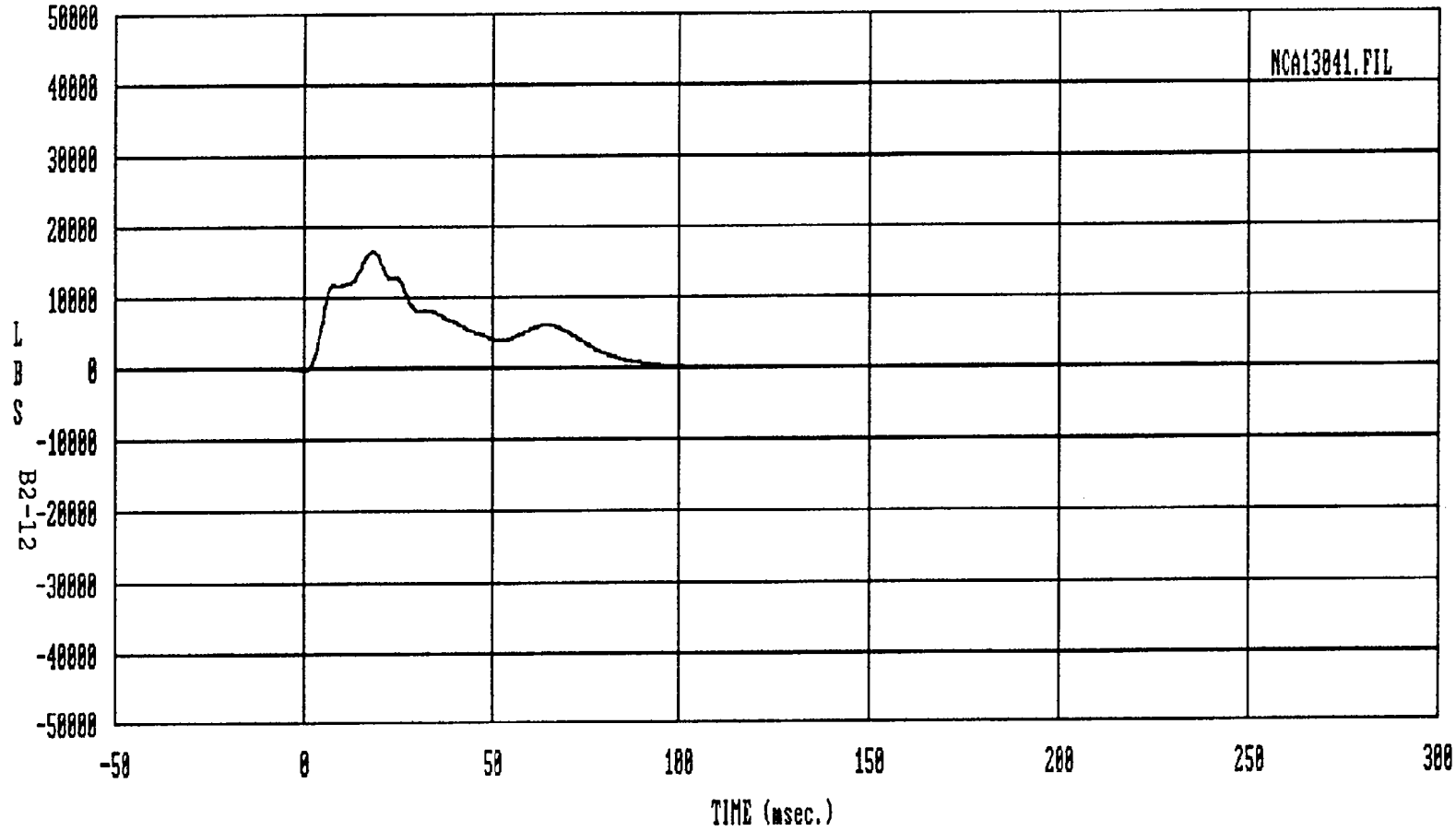
MSE-90-R9092-NO1



Curve: Force on Barrier load cell B2 Filter: SAE CLASS 60 Max = 2286.2 Min = -199.40

MSE Date: 03/23/90 Program: 1990 New Car Assessment #13 Vehicle: 1990 Mercedes 190E

MSE-90-R9092-N07

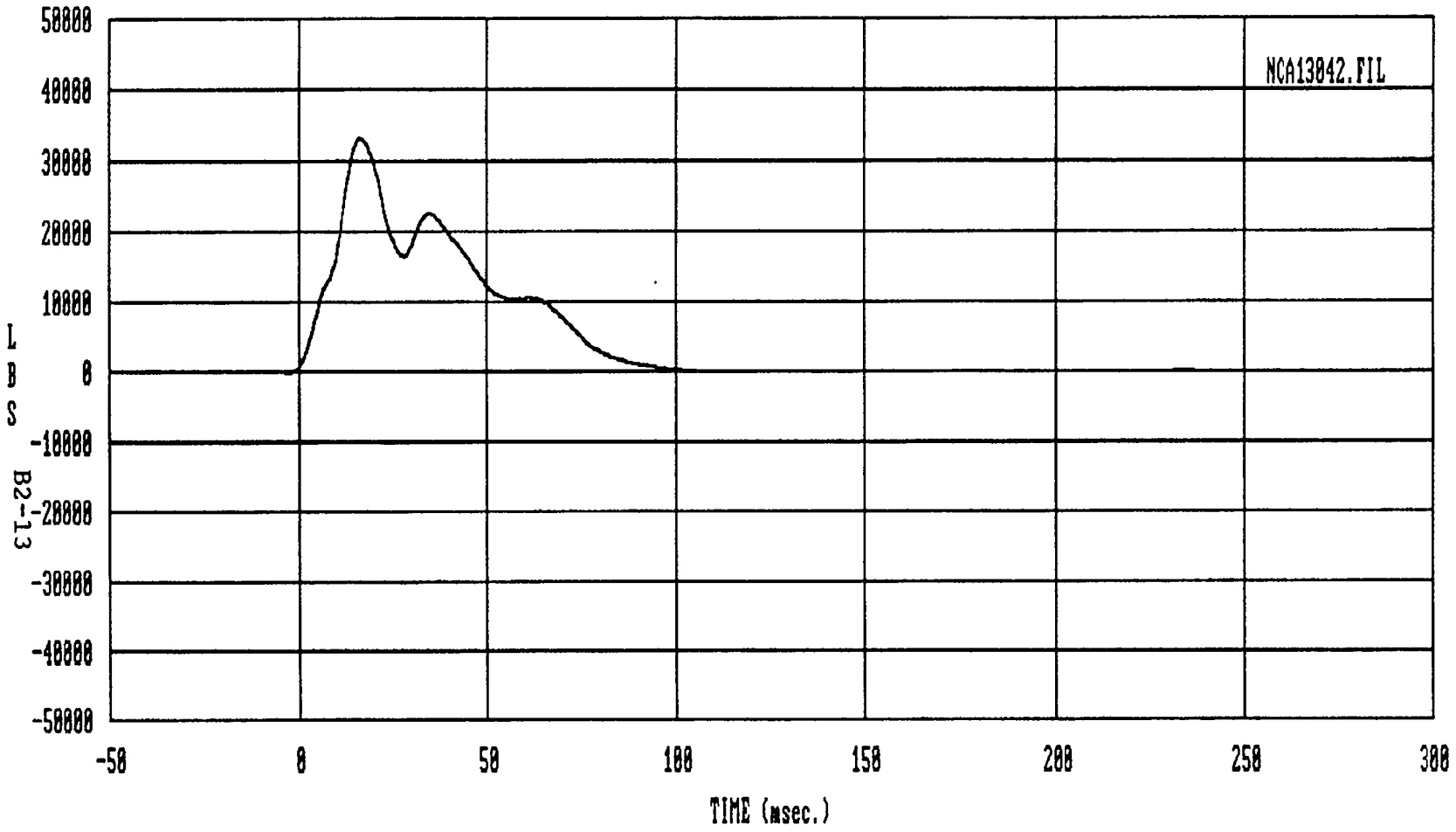


B2-12

MSE-90-R9092-N07

Curve: Force on Barrier load cell B3 Filter: SAE CLASS 60 Max = 16541. Min = -361.81

MSE Date: 03/23/90 Program: 1990 New Car Assessment #13 Vehicle: 1990 Mercedes 190E

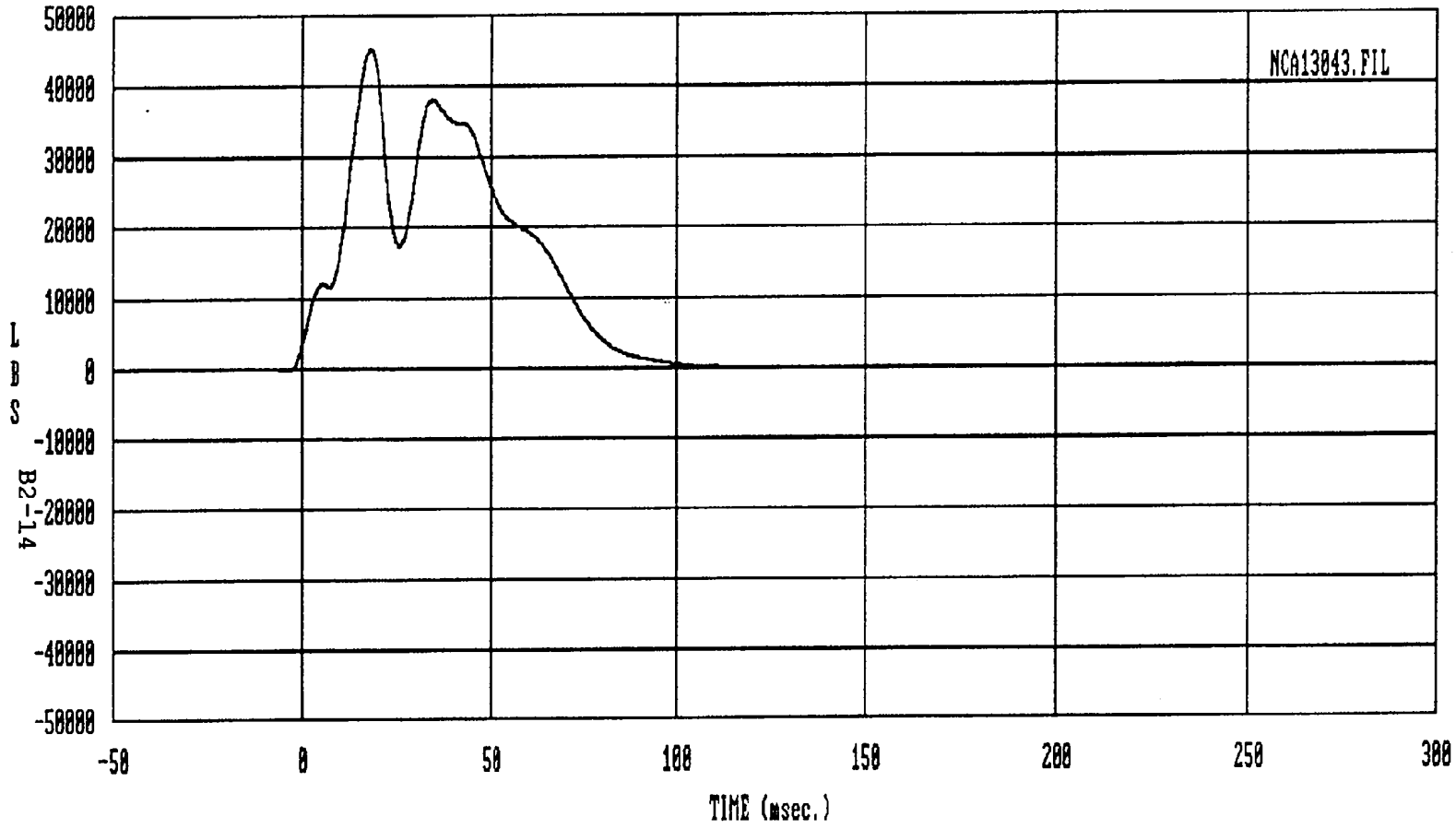


Curve: Force on Barrier load cell B4 Filter: SAE CLASS 60 Max = 33238. Min = -38.236

MSE Date: 03/23/90 Program: 1990 New Car Assessment #13 Vehicle: 1990 Mercedes 190E

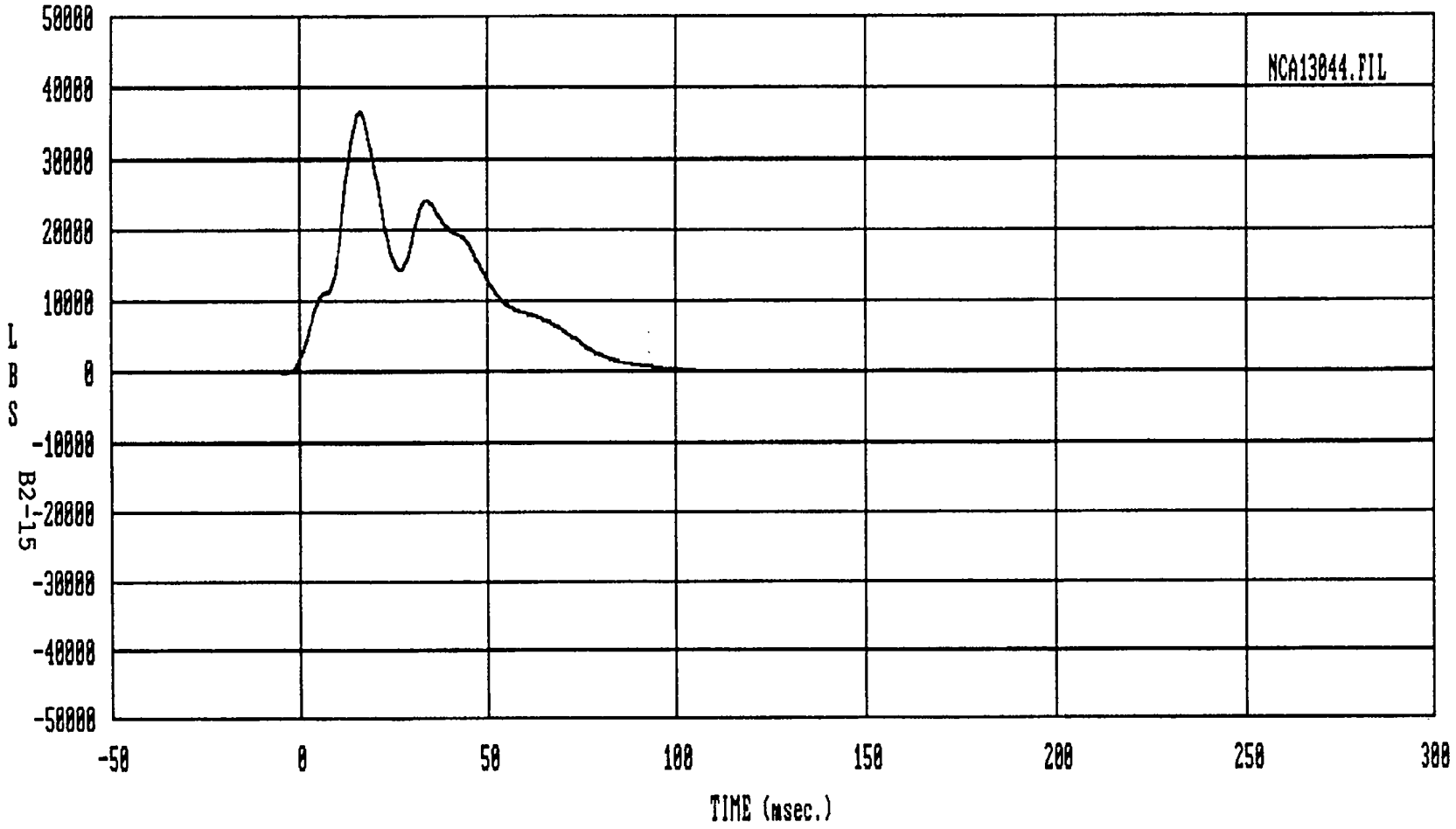
B2-13

MSE-90-R9092-N07



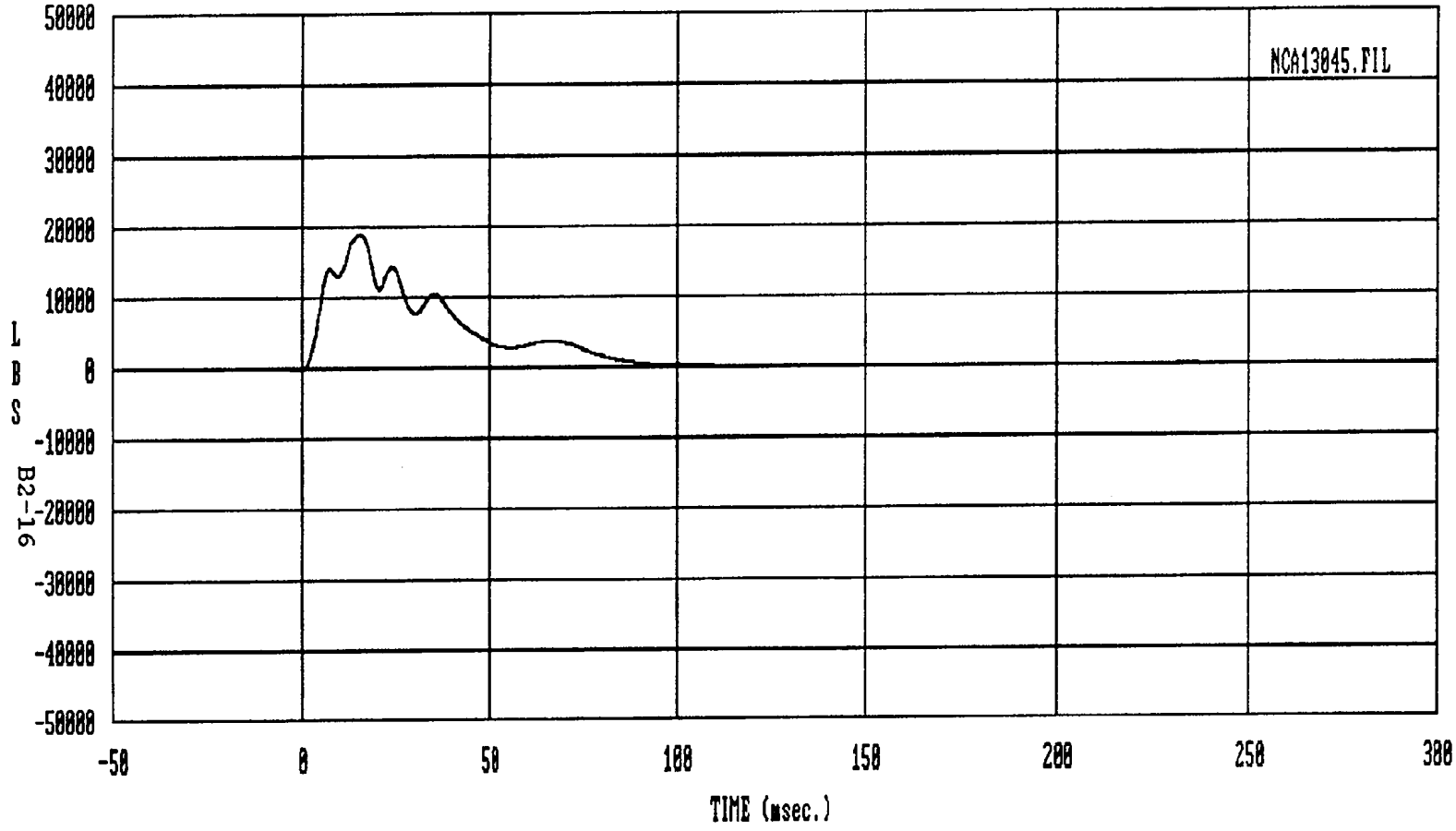
Curve: Force on Barrier load cell B5 Filter: SAE CLASS 60 Max = 45357. Min = -37.653

MSE Date: 03/23/98 Program: 1998 New Car Assessment #13 Vehicle: 1998 Mercedes 190E



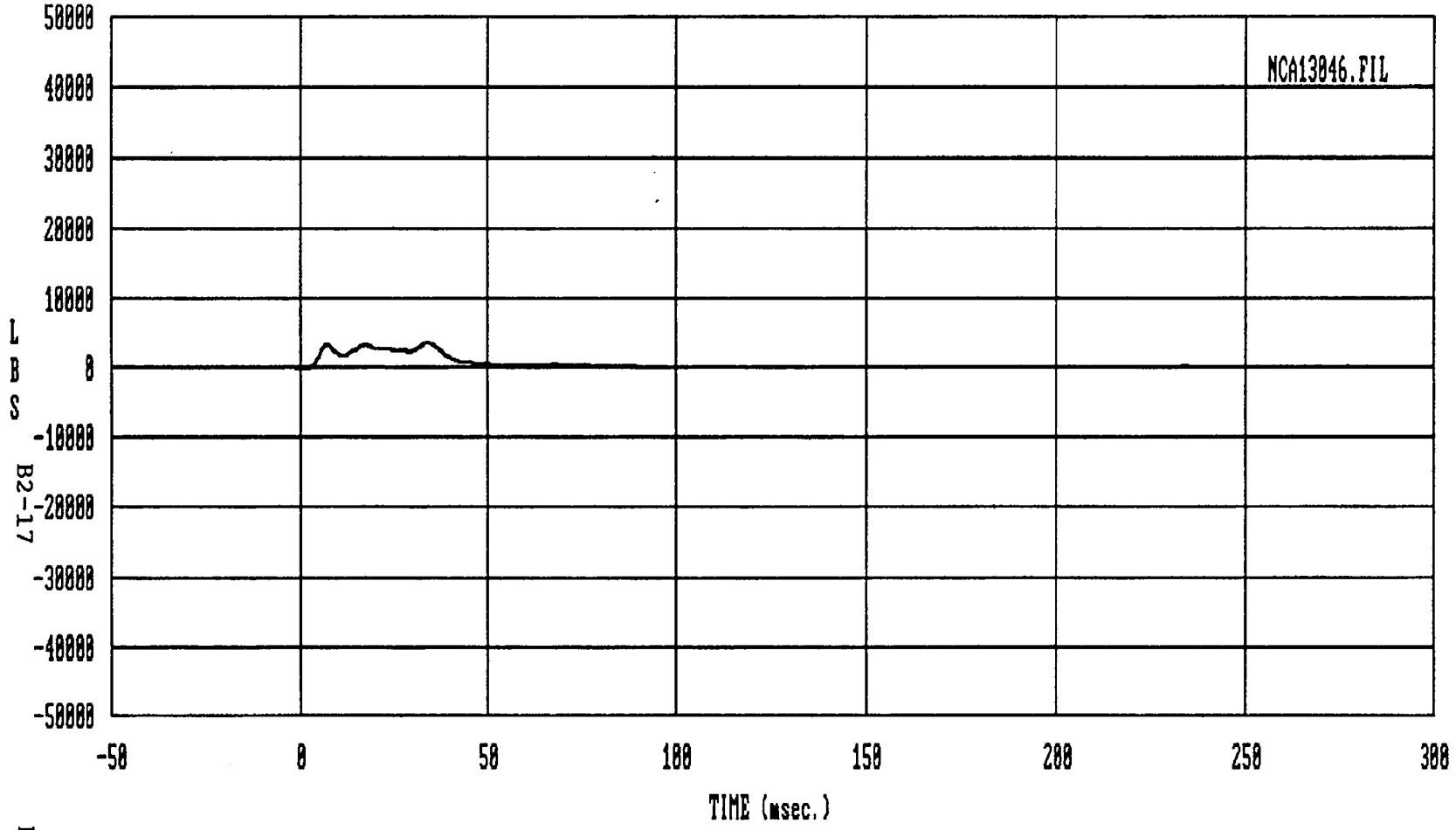
Curve: Force on Barrier load cell B6 Filter: SAE CLASS 60 Max = 36690. Min = -54.743

MSE Date: 03/23/98 Program: 1998 New Car Assessment #13 Vehicle: 1998 Mercedes 190E



Curve: Force on Barrier load cell B7 Filter: SAE CLASS 60 Max = 18883. Min = -7.2604

MSE Date: 03/23/90 Program: 1990 New Car Assessment #13 Vehicle: 1990 Mercedes 190E



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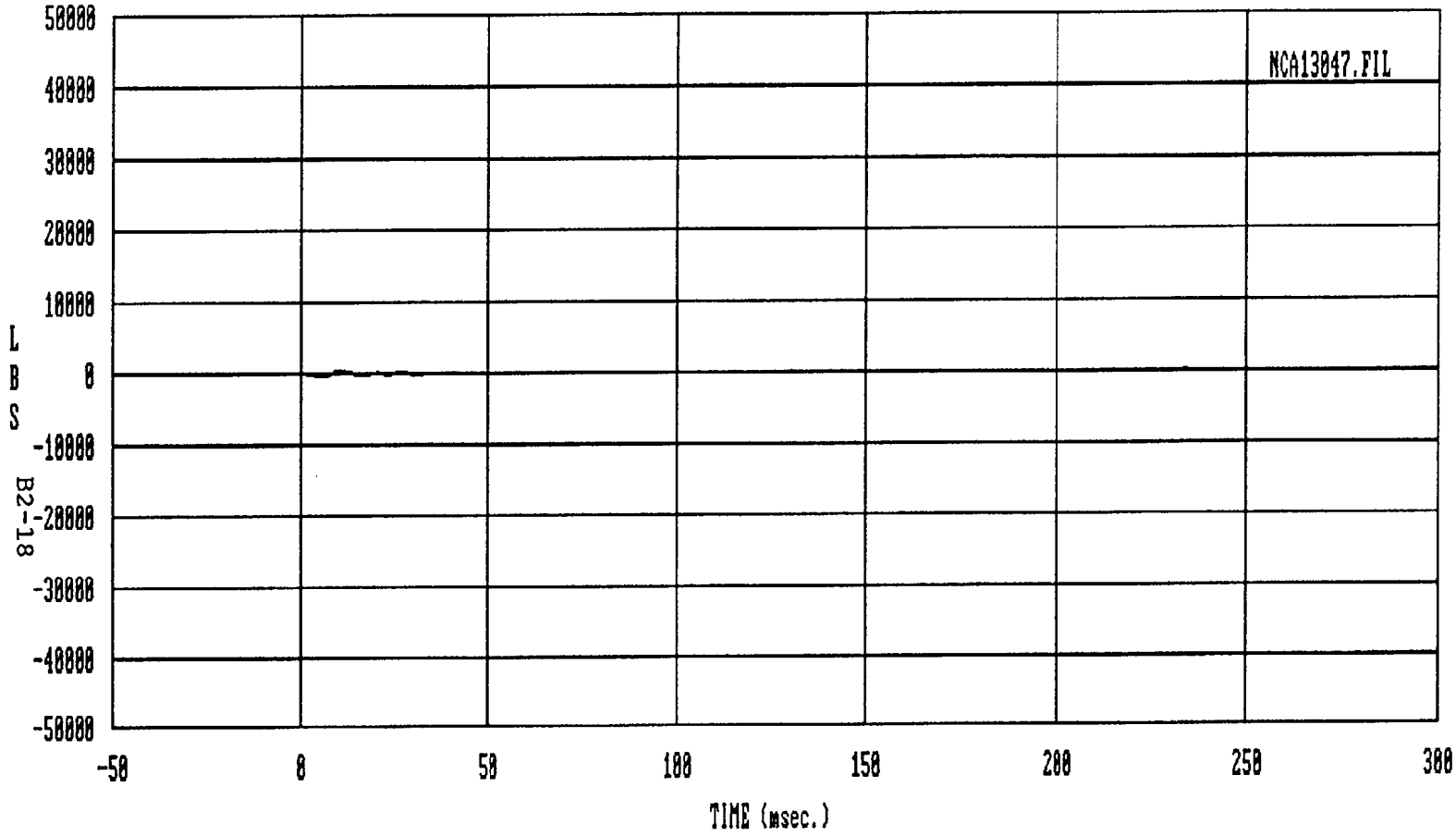
MSE-90-R9092-N07

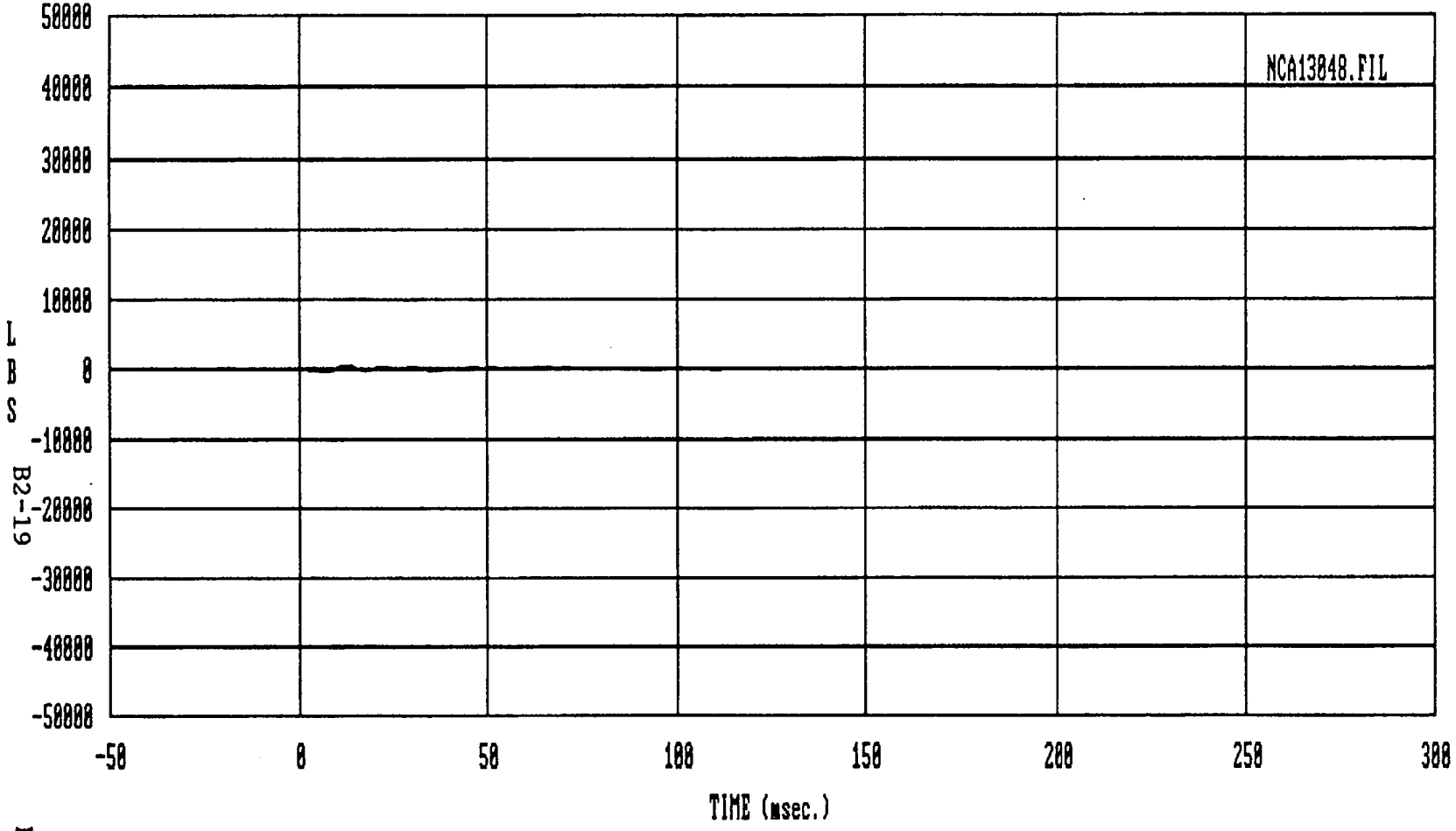
Curve: Force on Barrier load cell B8 Filter: SAE CLASS 60 Max = 3657.9 Min = -242.76

MSE Date: 03/23/98 Program: 1998 New Car Assessment #13 Vehicle: 1998 Mercedes 190E



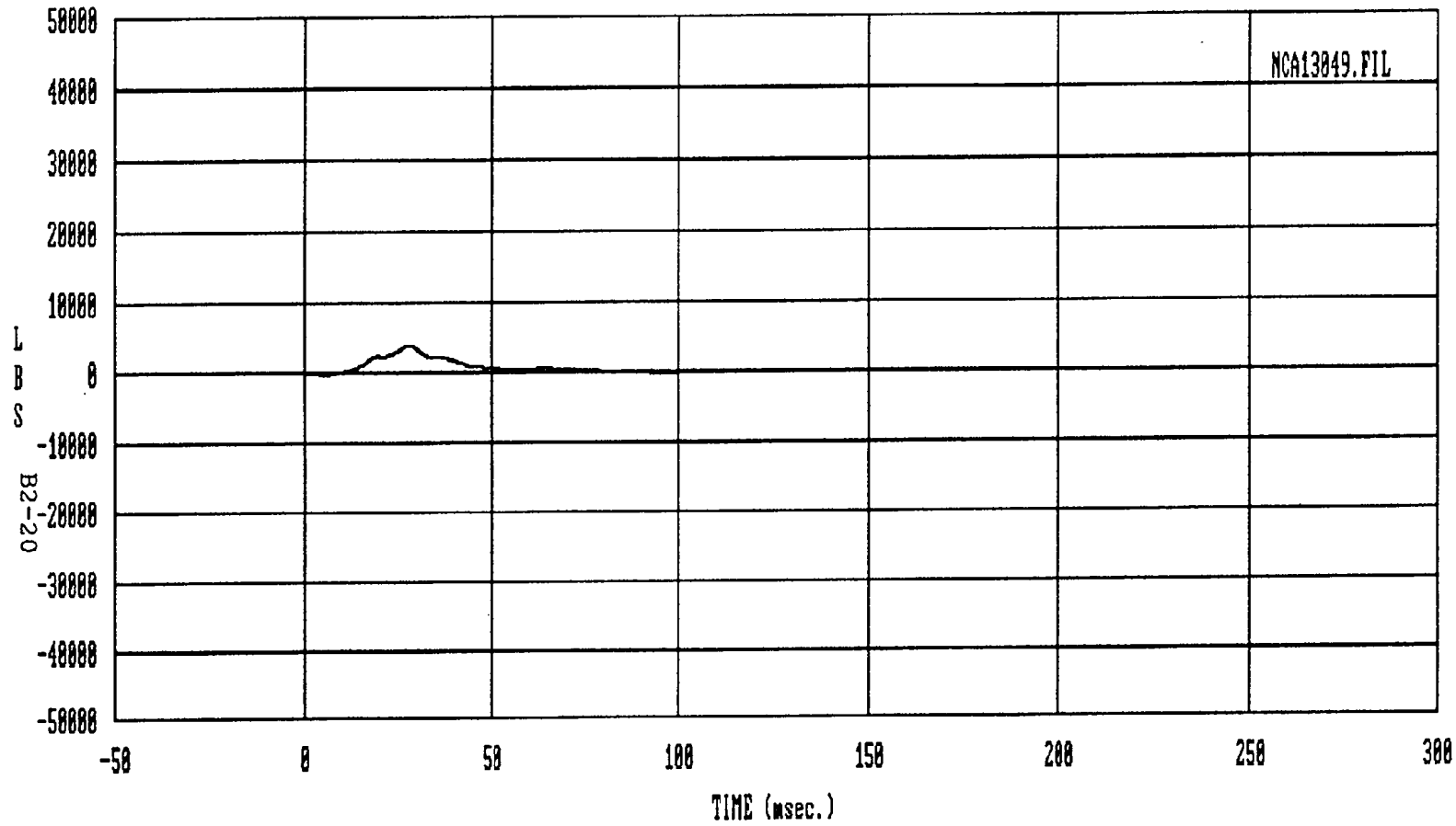
Curve: Force on Barrier load cell B9 Filter: SAE CLASS 60 Max = 480.27 Min = -418.74

MSE Date: 03/23/90 Program: 1990 New Car Assessment #13 Vehicle: 1990 Mercedes 190E



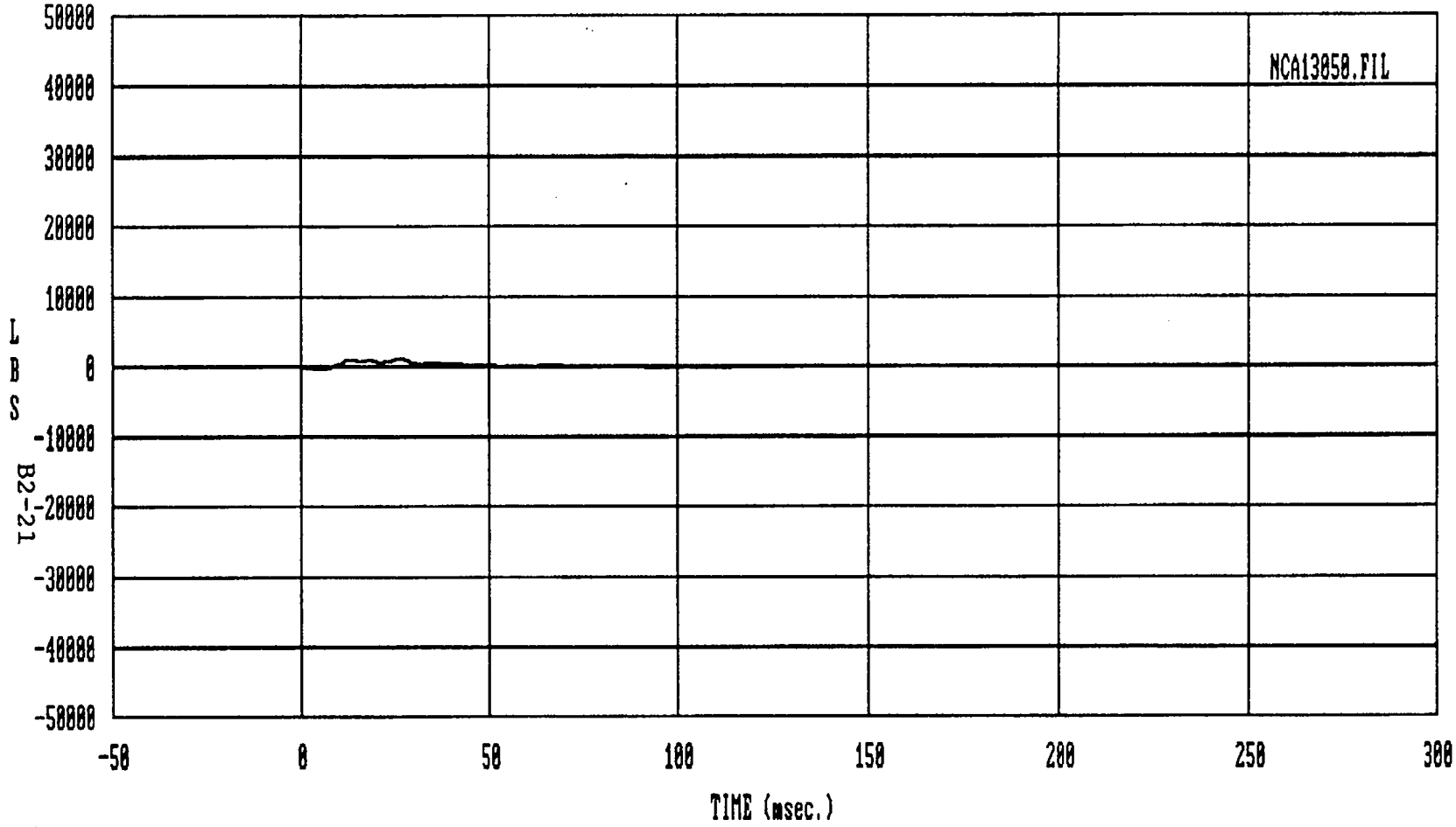
Curve: Force on Barrier load cell C1 Filter: SAE CLASS 60 Max = 418.94 Min = -343.47

MSE Date: 03/23/90 Program: 1990 New Car Assessment #13 Vehicle: 1990 Mercedes 190E



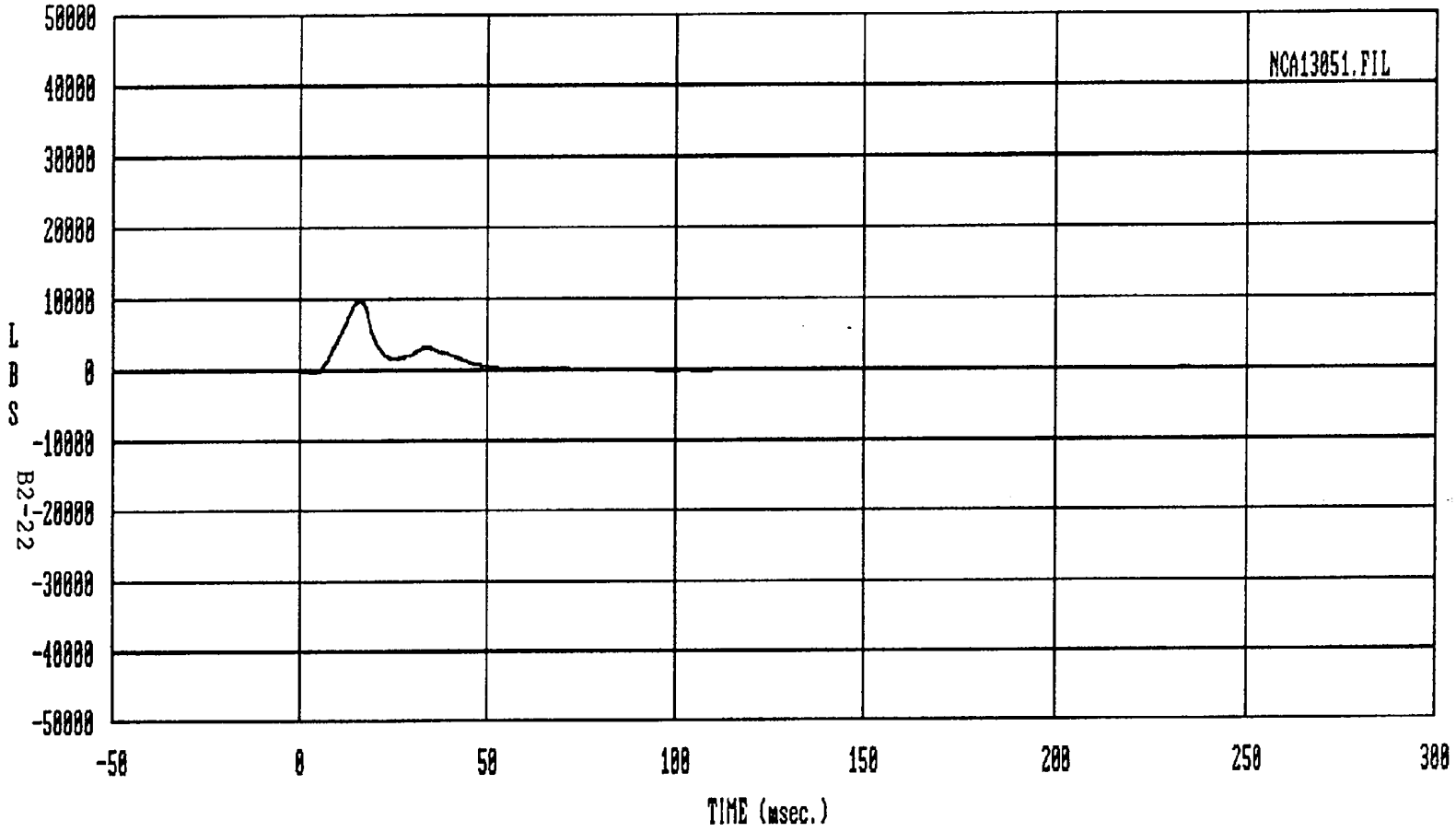
Curve: Force on Barrier load cell C2 Filter: SAE CLASS 60 Max = 3838.8 Min = -348.89

MSE Date: 03/23/98 Program: 1998 New Car Assessment #13 Vehicle: 1998 Mercedes 190E



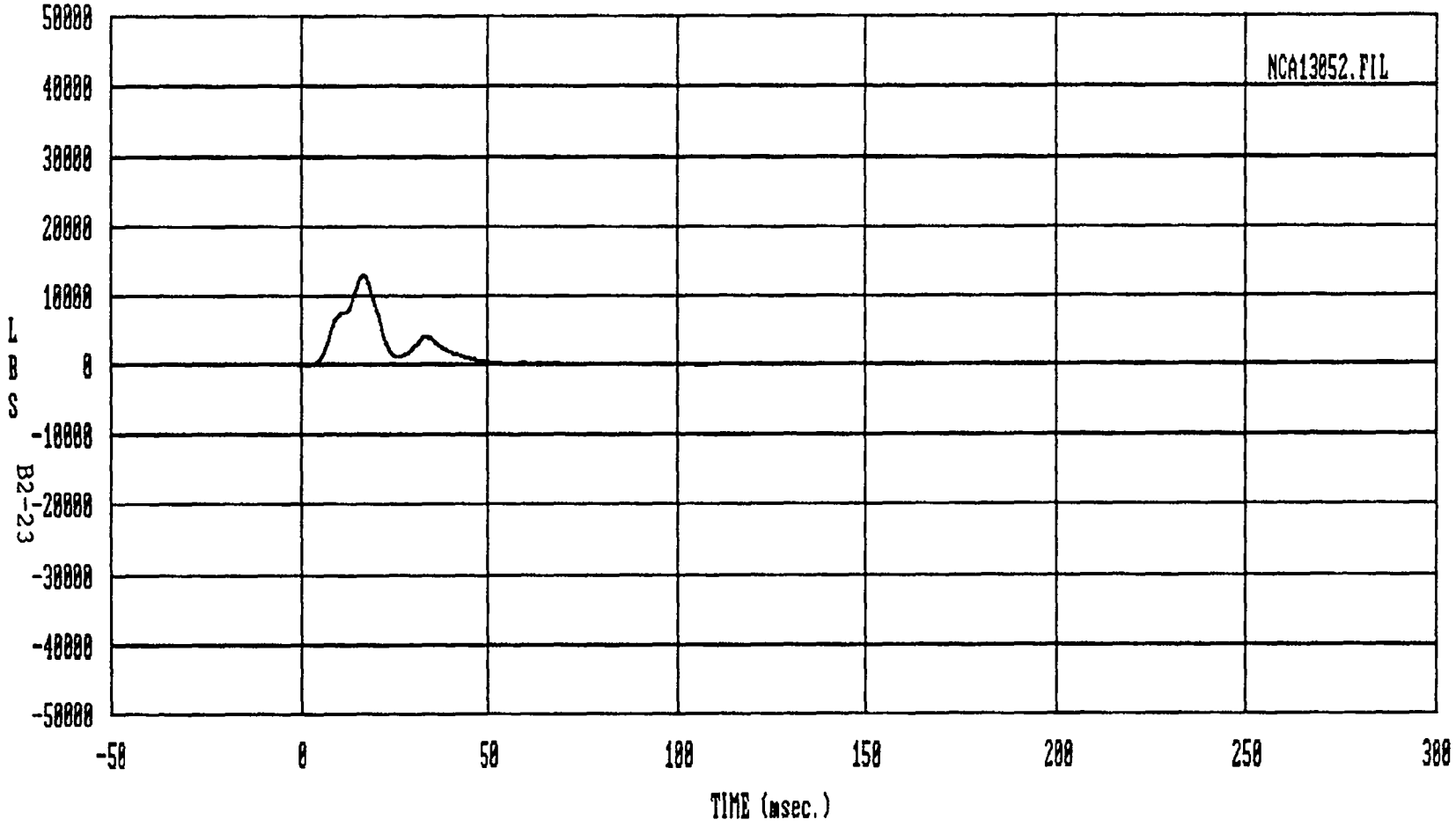
Curve: Force on Barrier load cell C3 Filter: SAE CLASS 60 Max = 1215.7 Min = -384.36

MSE Date: 03/23/98 Program: 1990 New Car Assessment #13 Vehicle: 1990 Mercedes 190E



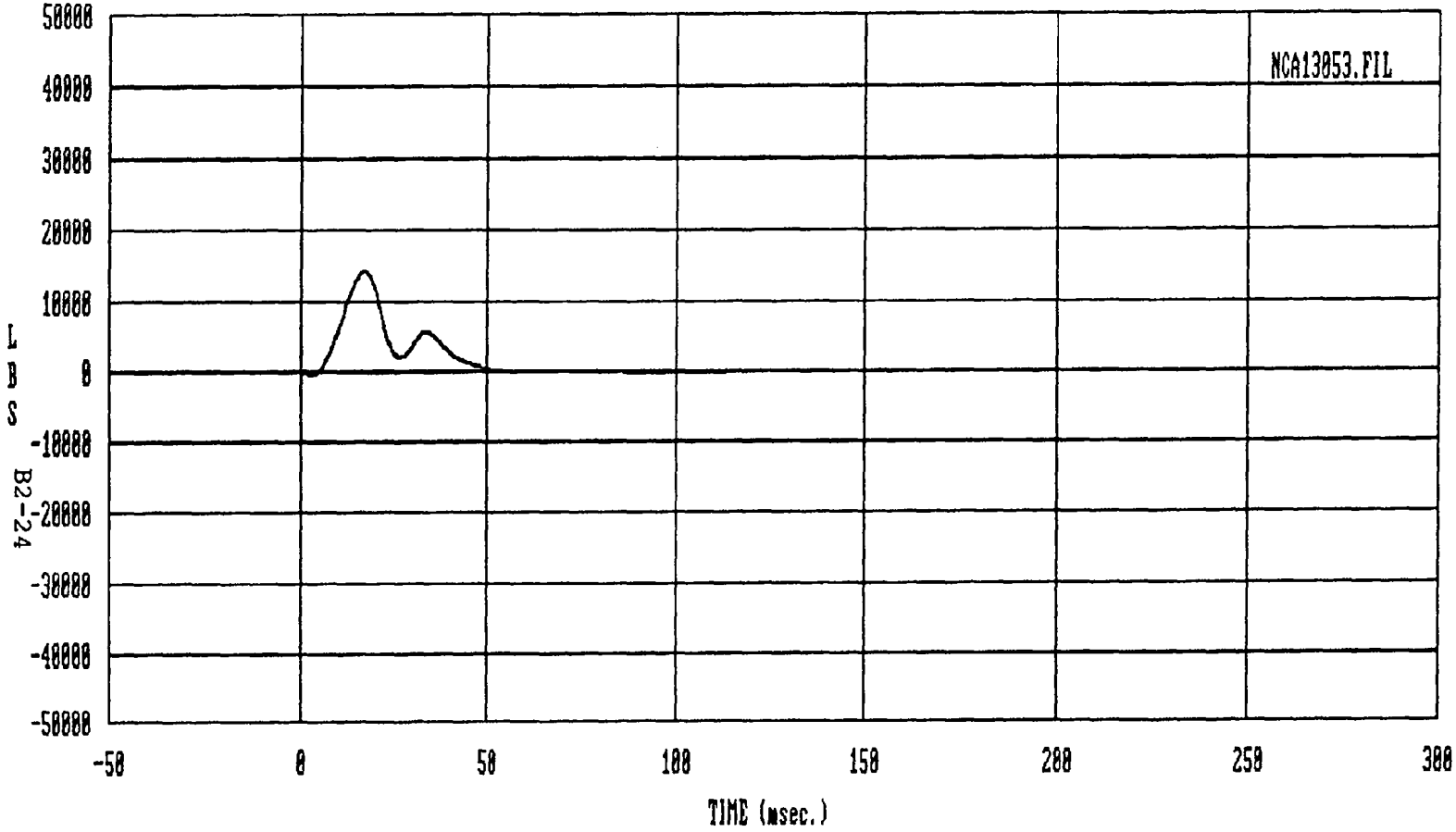
Curve: Force on Barrier load cell C4 Filter: SAE CLASS 60 Max = 9950.6 Min = -355.96

MSE Date: 03/23/98 Program: 1998 New Car Assessment #13 Vehicle: 1998 Mercedes 190E



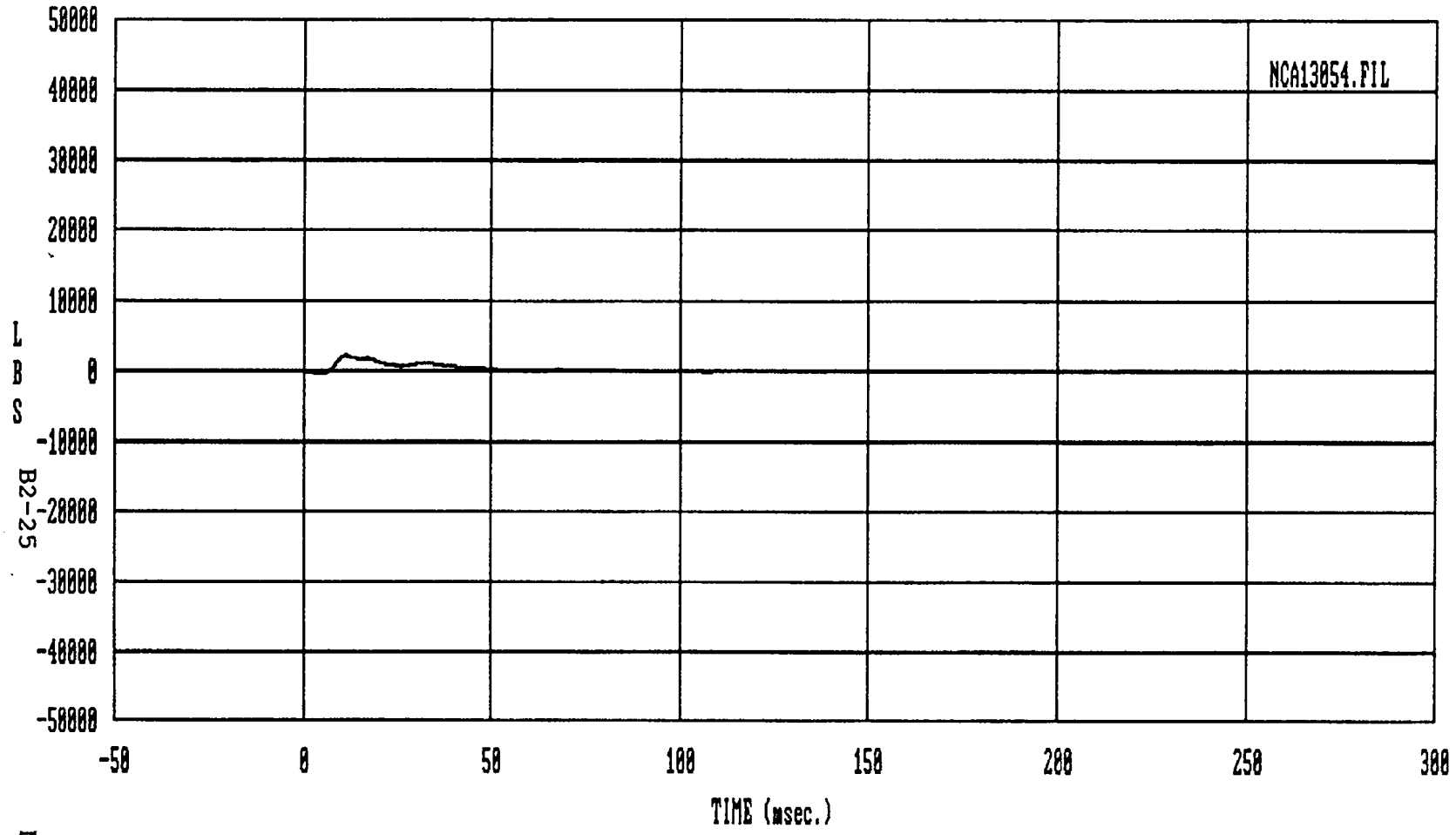
Curve: Force on Barrier load cell C5 Filter: SAE CLASS 60 Max = 13102. Min = -151.07

MSE Date: 03/23/98 Program: 1998 New Car Assessment #13 Vehicle: 1998 Mercedes 190E



Curve: Force on Barrier load cell C6 Filter: SAE CLASS 60 Max = 14372. Min = -321.87

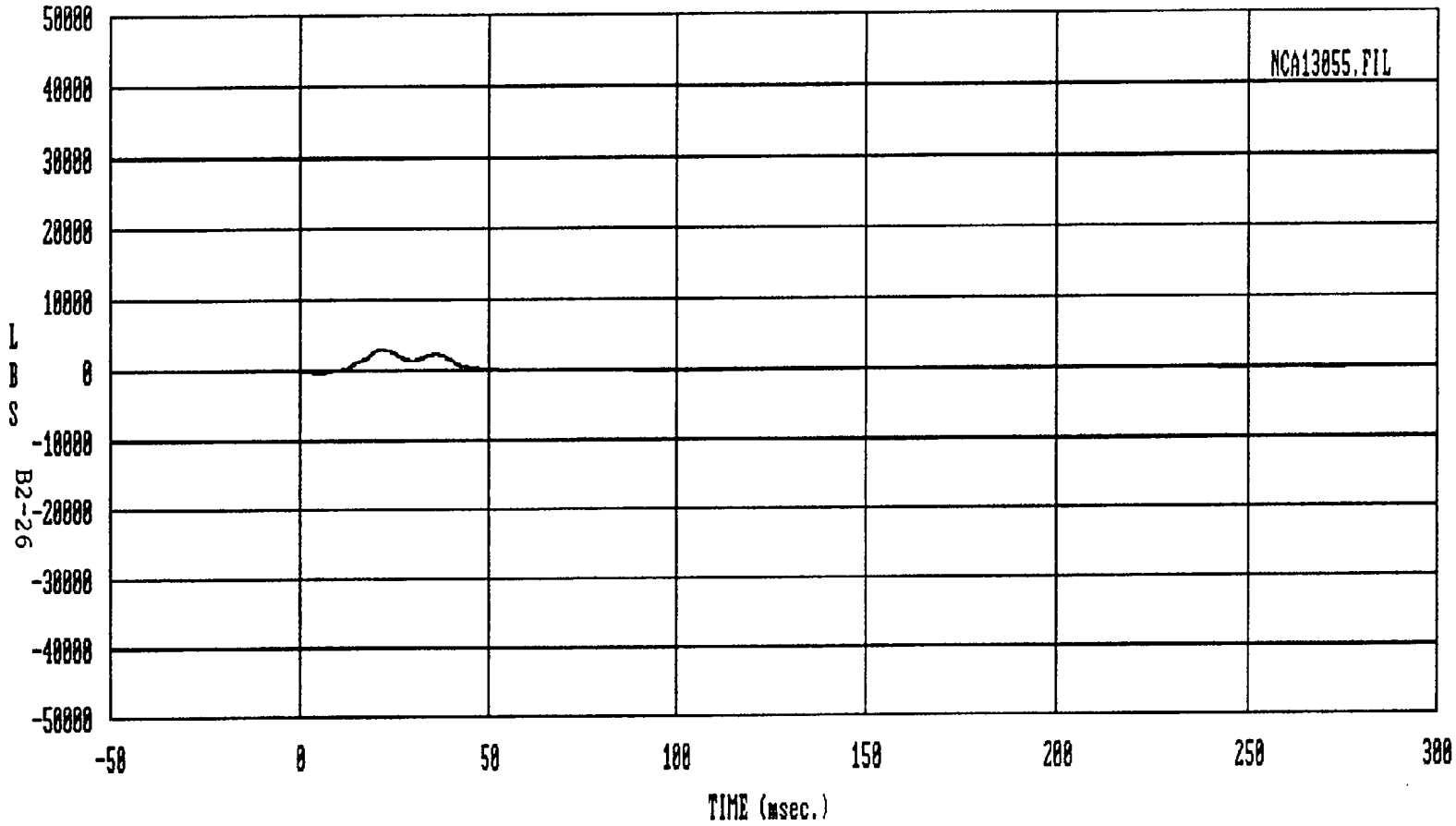
MSE Date: 03/23/98 Program: 1998 New Car Assessment #13 Vehicle: 1998 Mercedes 190E



MSE-90-R9092-N07

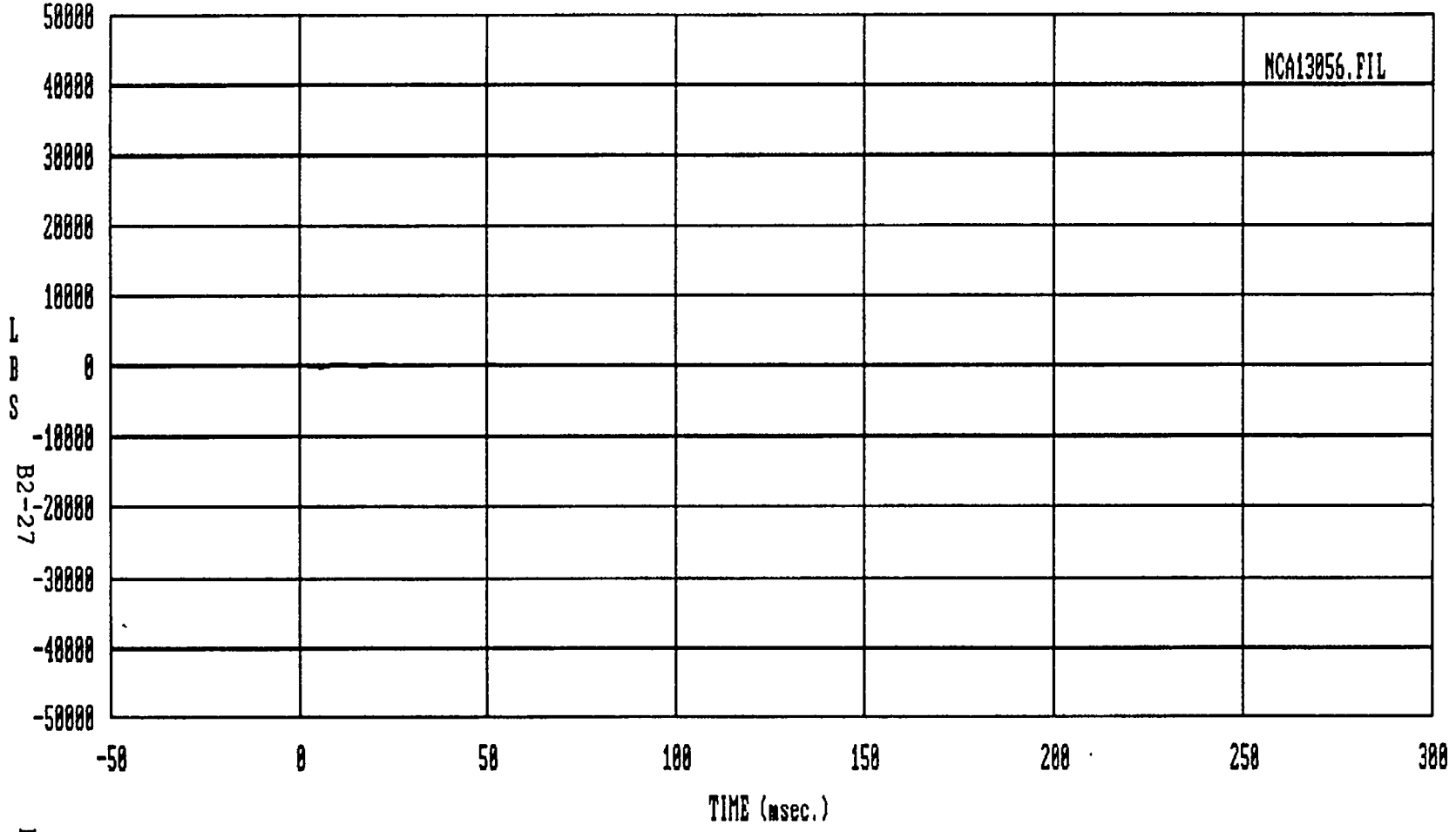
Curve: Force on Barrier load cell C7 Filter: SAE CLASS 60 Max = 2281.6 Min = -402.88

MSE Date: 03/23/98 Program: 1998 New Car Assessment #13 Vehicle: 1998 Mercedes 190E



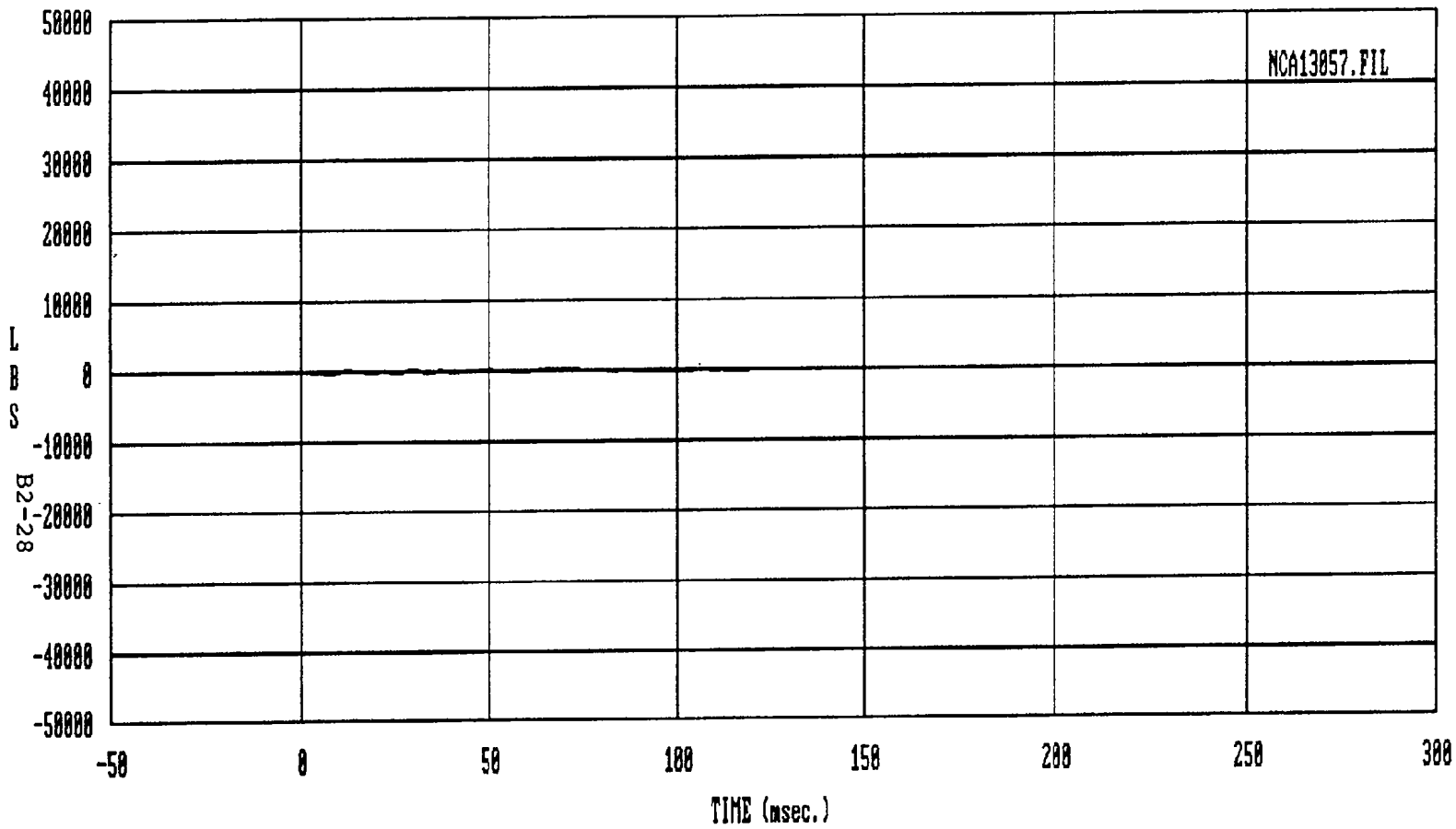
Curve: Force on Barrier load cell C8 Filter: SAE CLASS 60 Max = 2923.1 Min = -389.35

MSE Date: 03/23/90 Program: 1990 New Car Assessment #13 Vehicle: 1990 Mercedes 190E



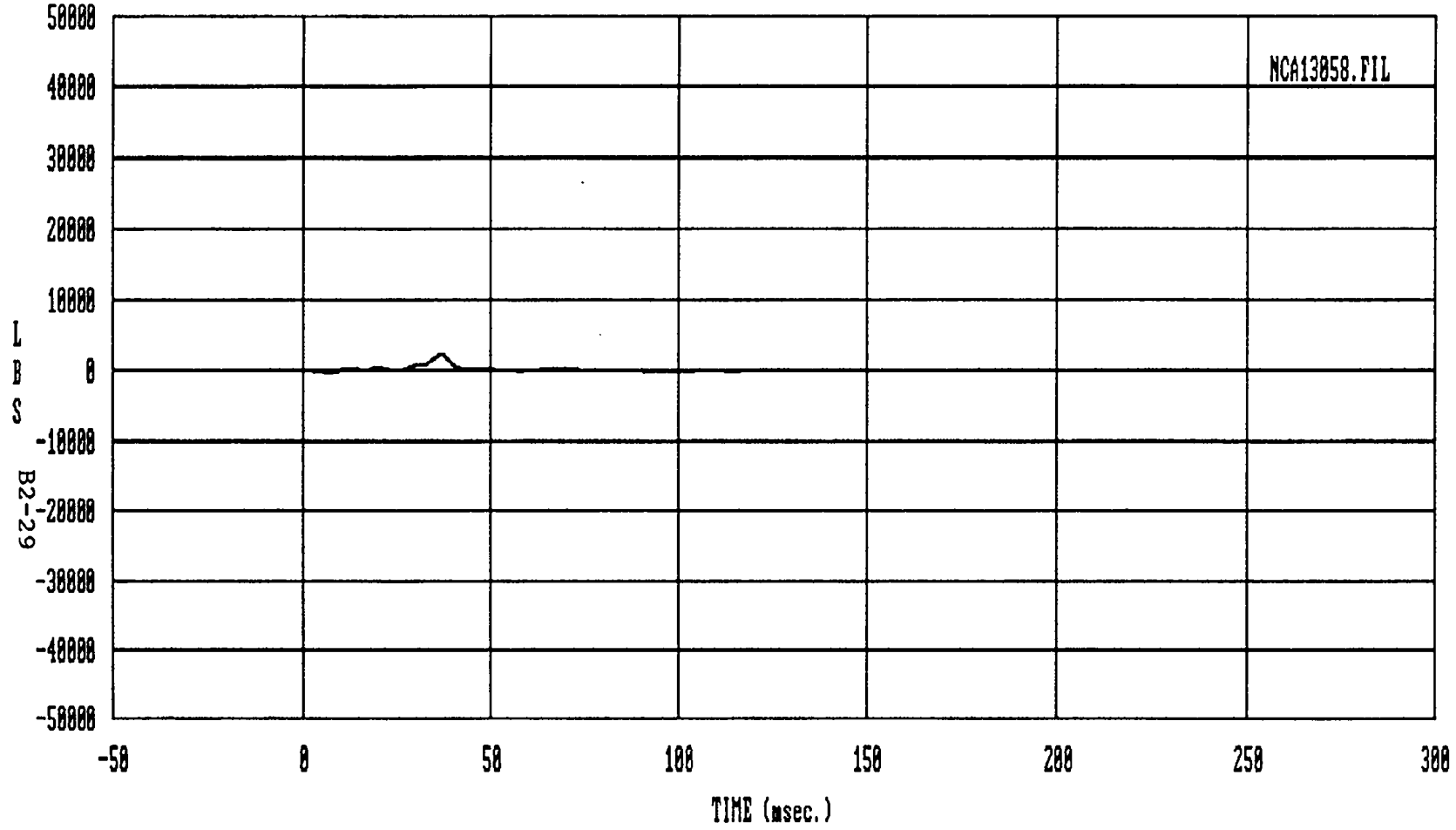
Curve: Force on Barrier load cell C9 Filter: SAE CLASS 60 Max = 296.23 Min = -290.97

MSE Date: 03/23/90 Program: 1990 New Car Assessment #13 Vehicle: 1990 Mercedes 190E



Curve: Force on Barrier load cell D1 Filter: SAE CLASS 60 Max = 205.05 Min = -367.31

MSE Date: 03/23/98 Program: 1998 New Car Assessment #13 Vehicle: 1998 Mercedes 190E

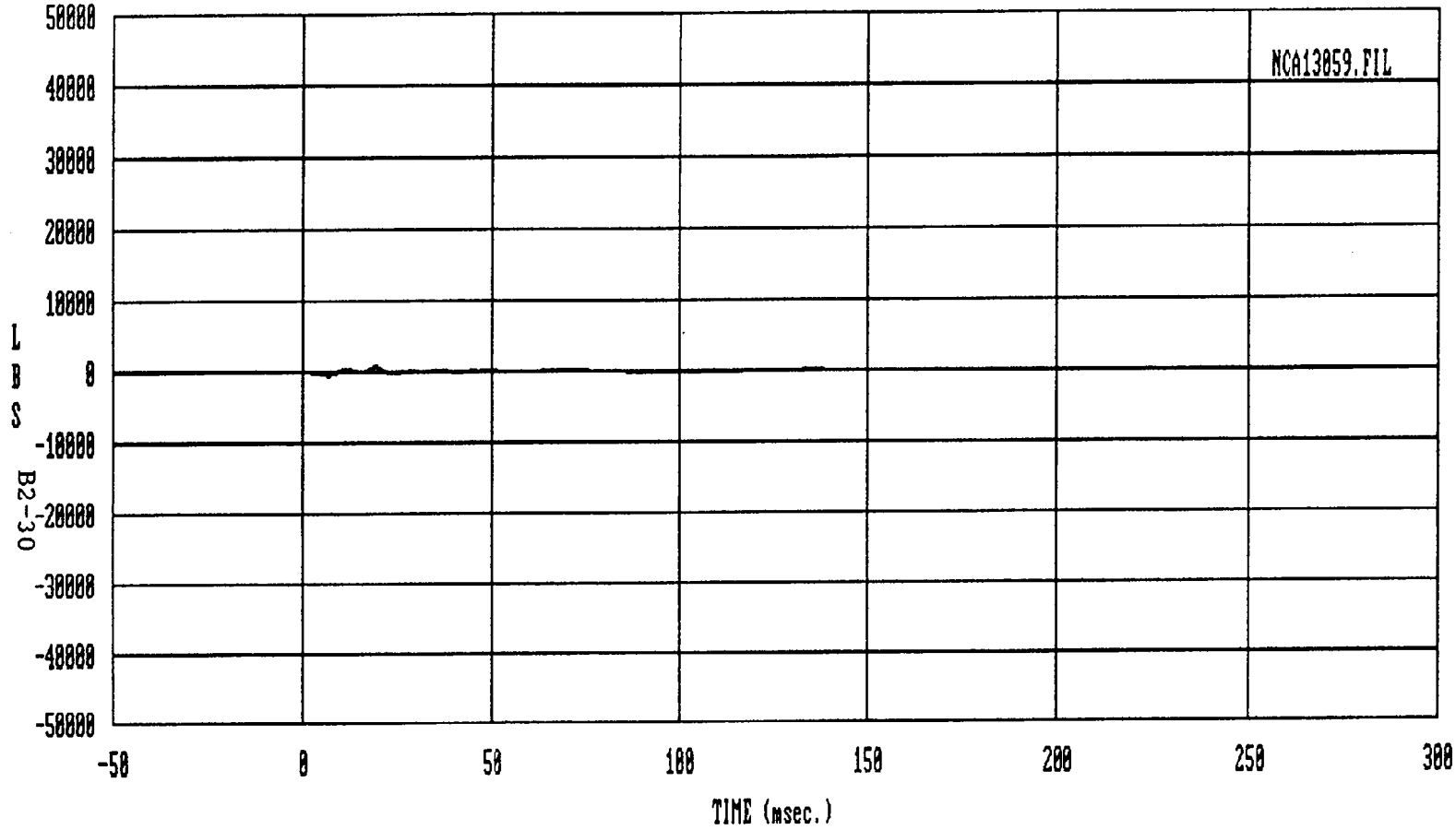


Curve: Force on Barrier load cell D2 Filter: SAE CLASS 60 Max = 2395.5 Min = -337.79

MSE Date: 03/23/90 Program: 1990 New Car Assessment #13 Vehicle: 1990 Mercedes 190E

B2-29

MSE-90-R9092-N07

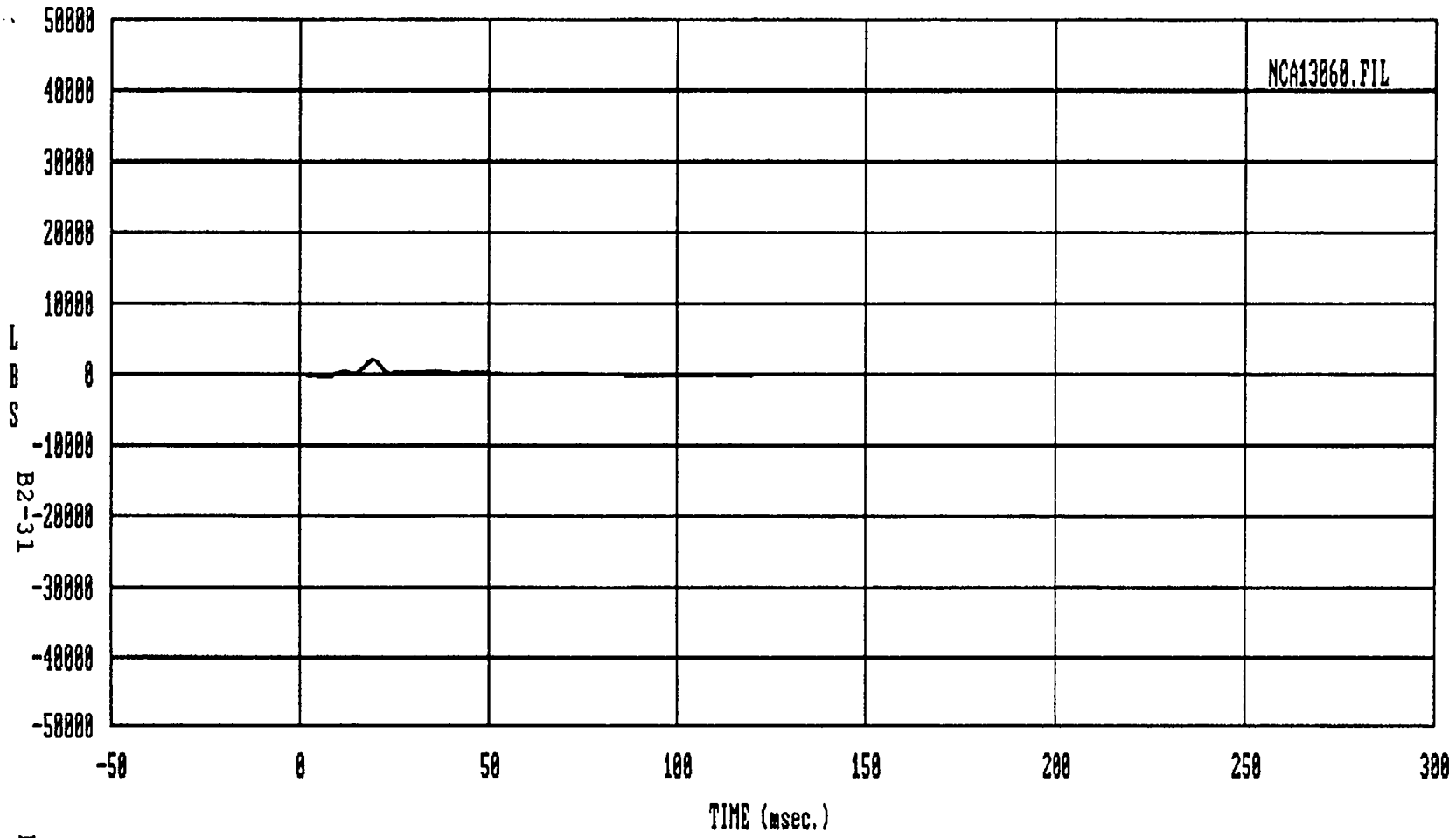


B2-30

MSE-90-R9092-N07

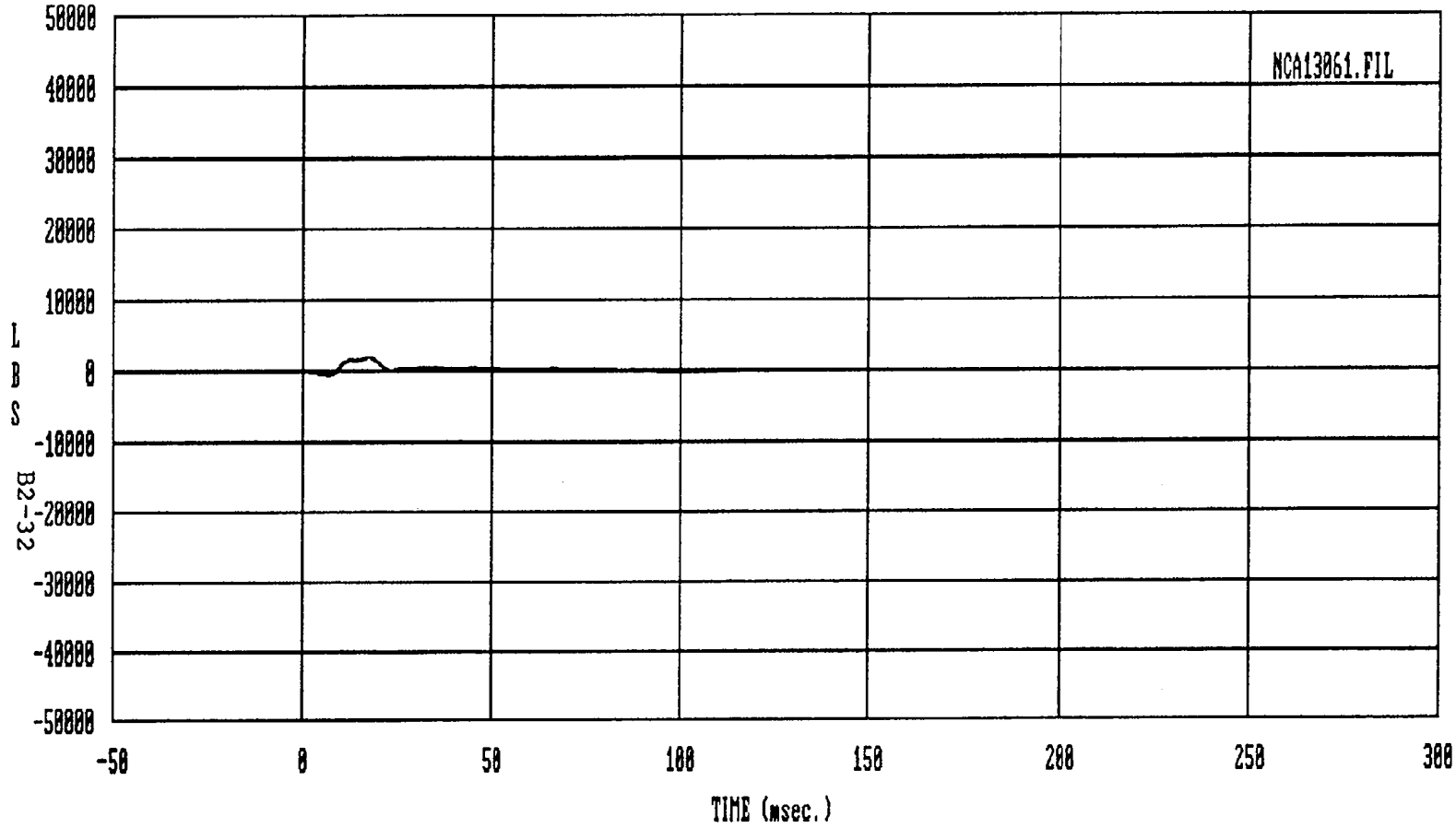
Curve: Force on Barrier load cell D3 Filter: SAE CLASS 60 Max = 749.06 Min = -476.27

MSE Date: 03/23/90 Program: 1990 New Car Assessment #13 Vehicle: 1990 Mercedes 190E



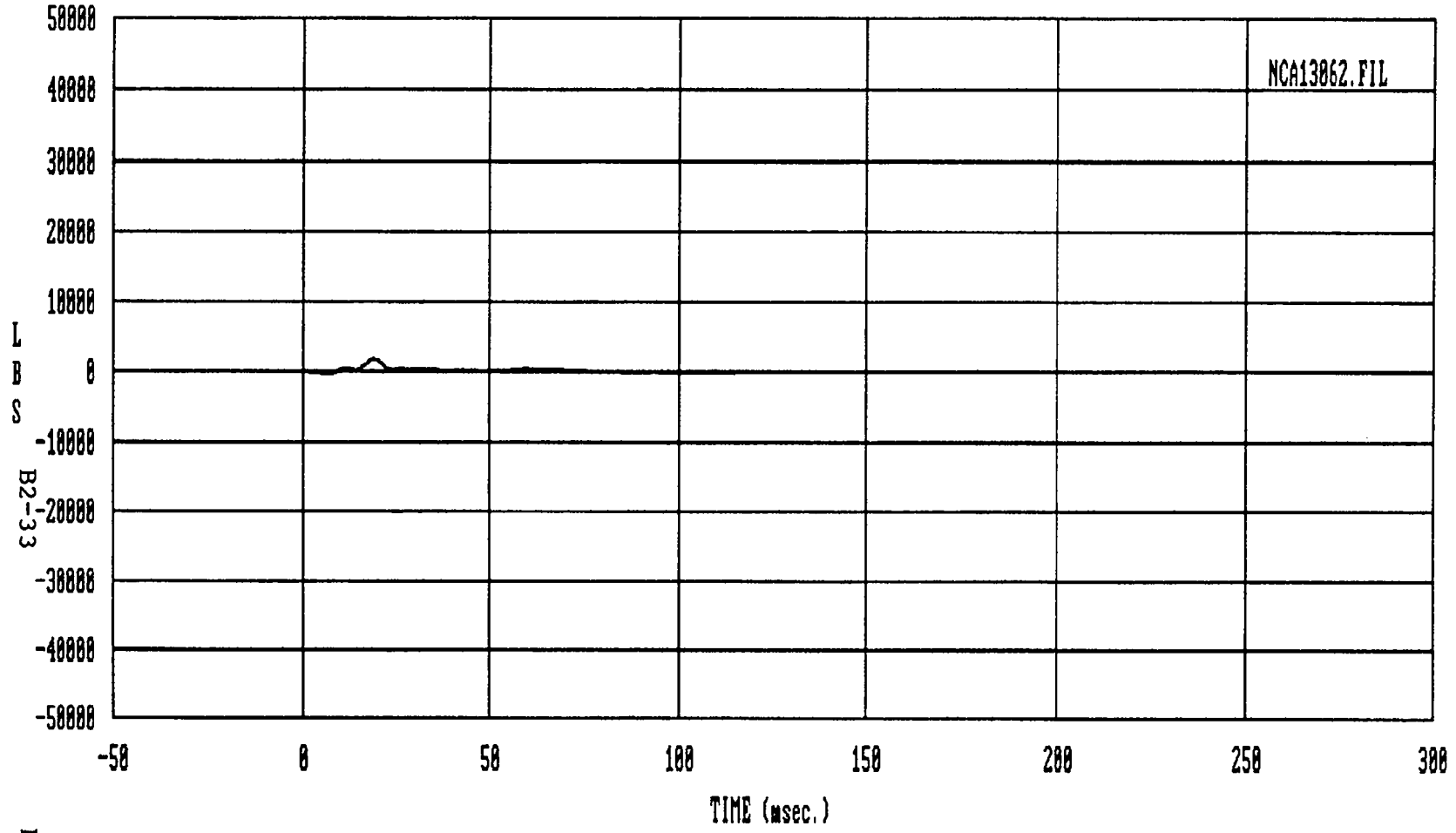
Curve: Force on Barrier load cell D4 Filter: SAE CLASS 60 Max = 2094.6 Min = -462.82

MSE Date: 03/23/90 Program: 1990 New Car Assessment #13 Vehicle: 1990 Mercedes 190E



Curve: Force on Barrier load cell D5 Filter: SAE CLASS 60 Max = 1970.4 Min = -496.68

MSE Date: 03/23/90 Program: 1990 New Car Assessment #13 Vehicle: 1990 Mercedes 190E

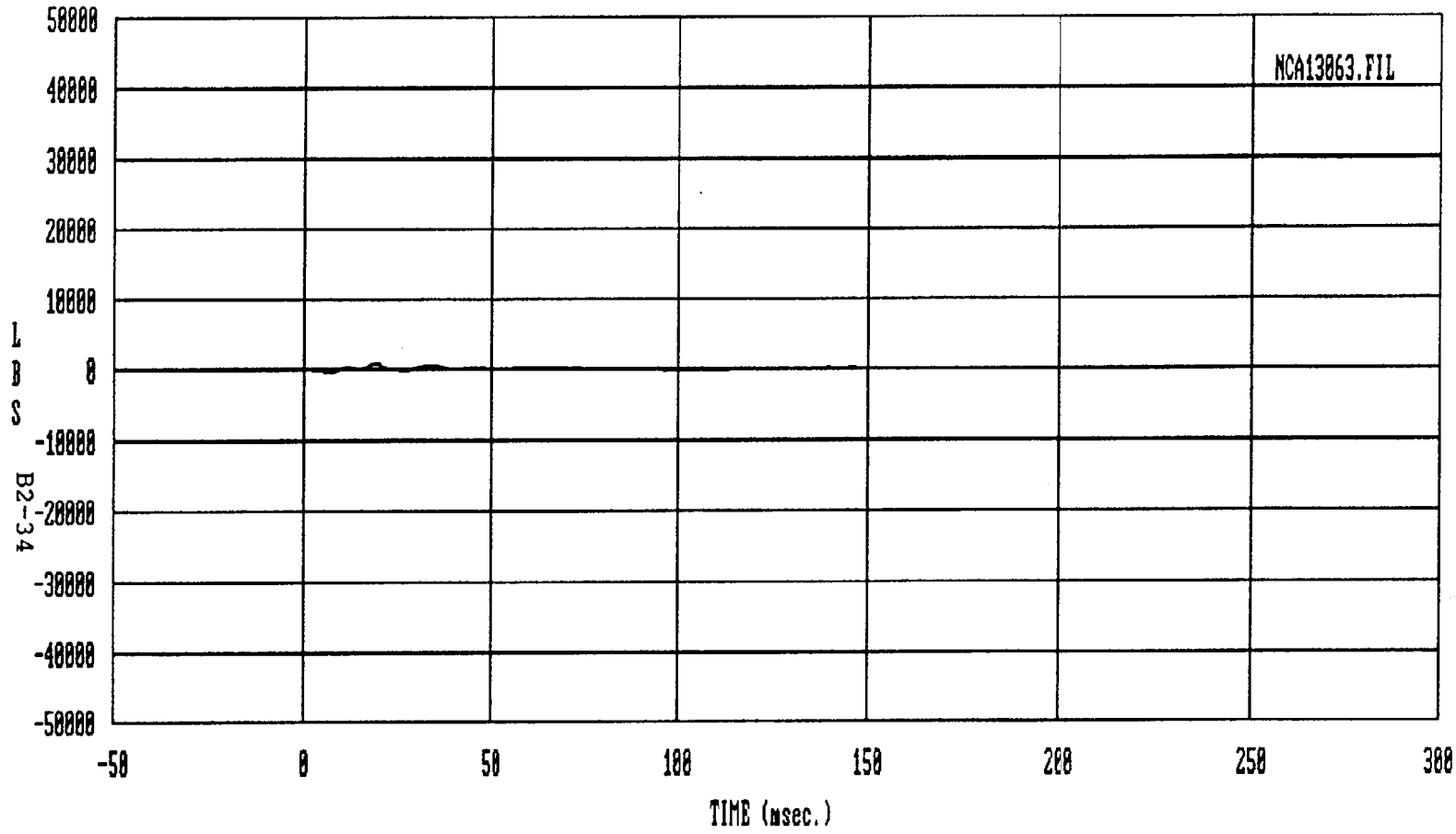


B2-33

MSE-90-R9092-N07

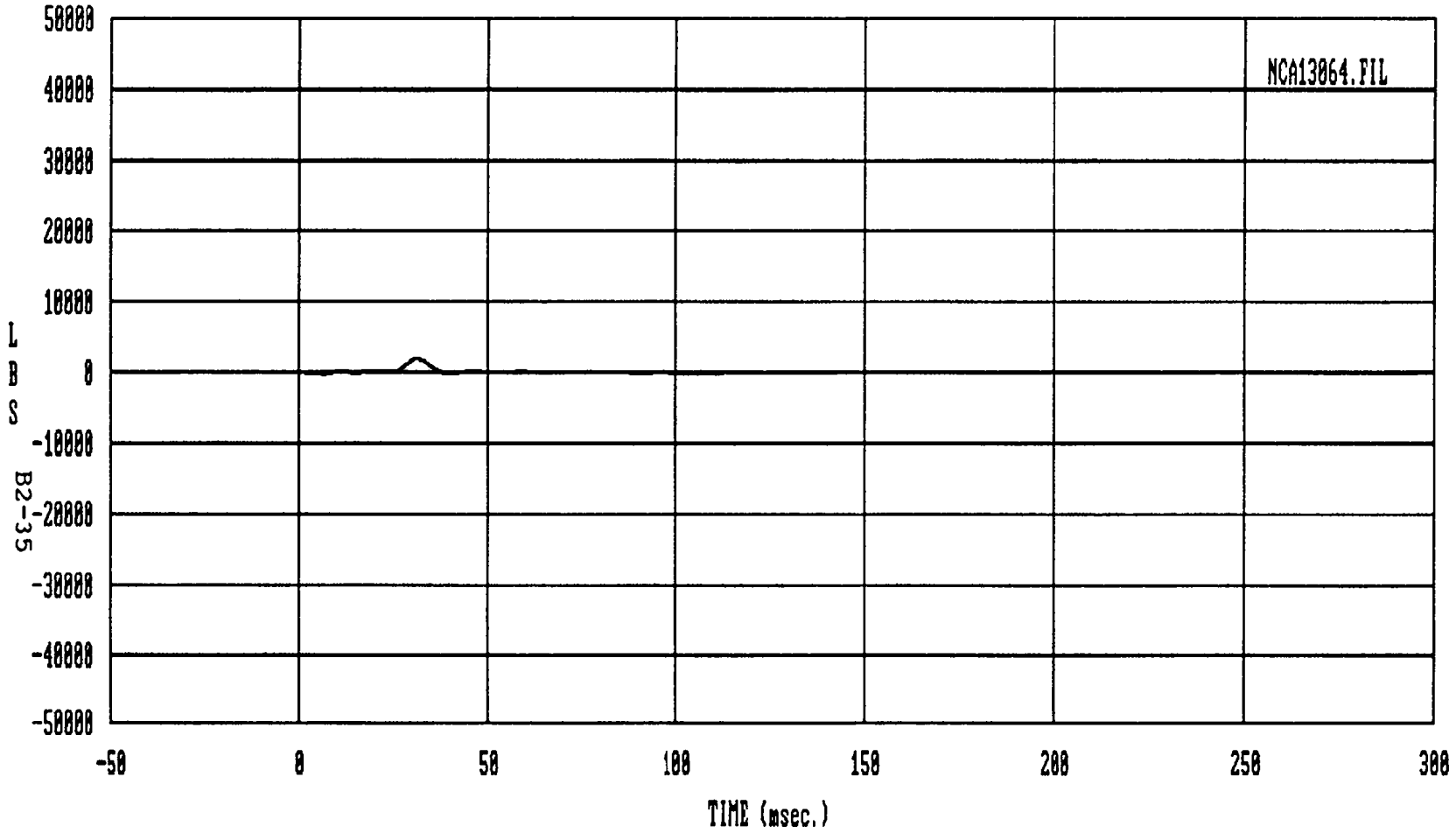
Curve: Force on Barrier load cell D6 Filter: SAE CLASS 60 Max = 1888.7 Min = -449.14

MSE Date: 03/23/90 Program: 1990 New Car Assessment #13 Vehicle: 1990 Mercedes 190E



Curve: Force on Barrier load cell D7 Filter: SAE CLASS 60 Max = 834.37 Min = -366.55

MSE Date: 03/23/90 Program: 1990 New Car Assessment #13 Vehicle: 1990 Mercedes 190E

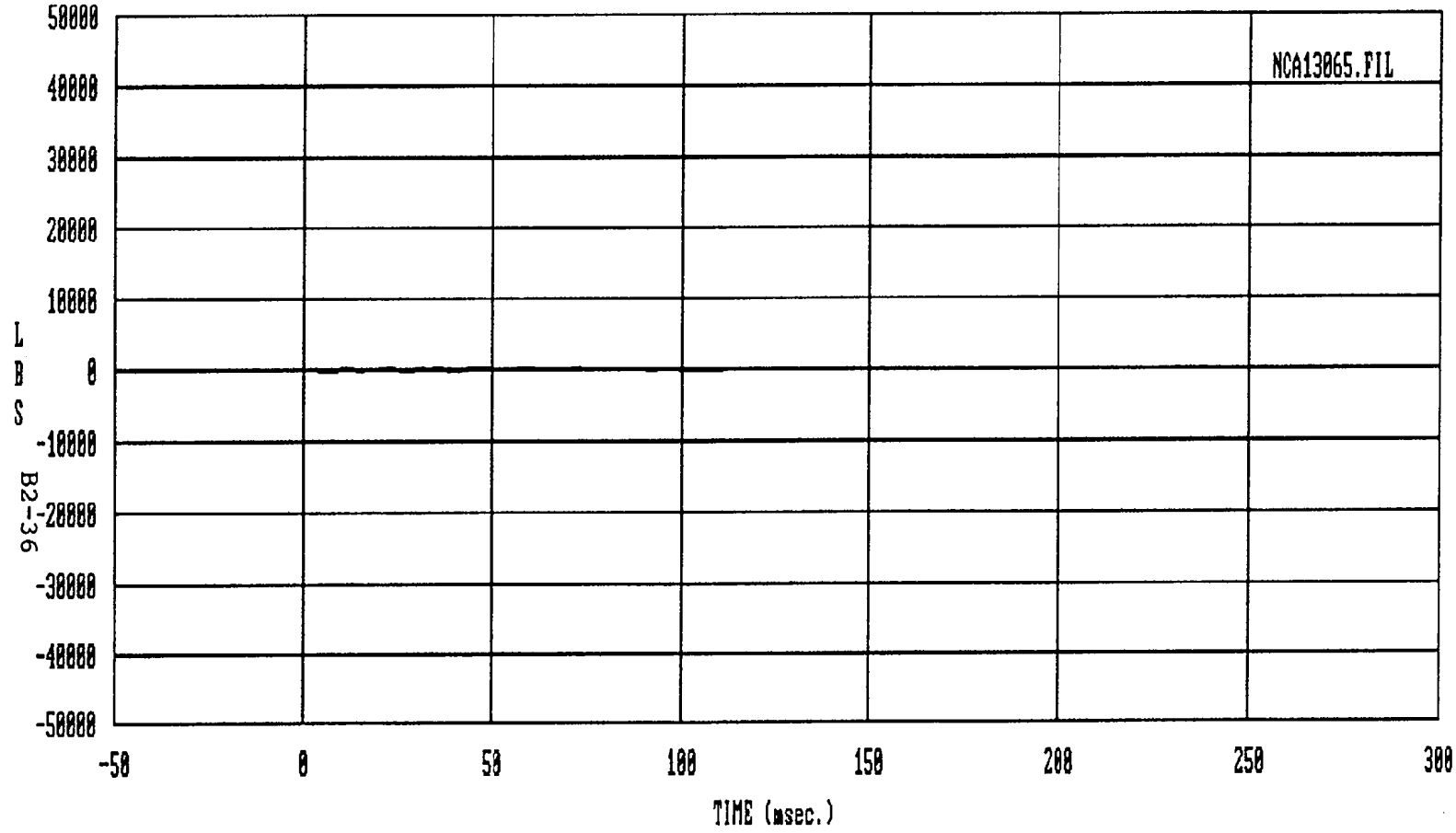


Curve: Force on Barrier load cell D8 Filter: SAE CLASS 60 Max = 1967.1 Min = -292.71

MSE Date: 03/23/90 Program: 1990 New Car Assessment #13 Vehicle: 1990 Mercedes 190E

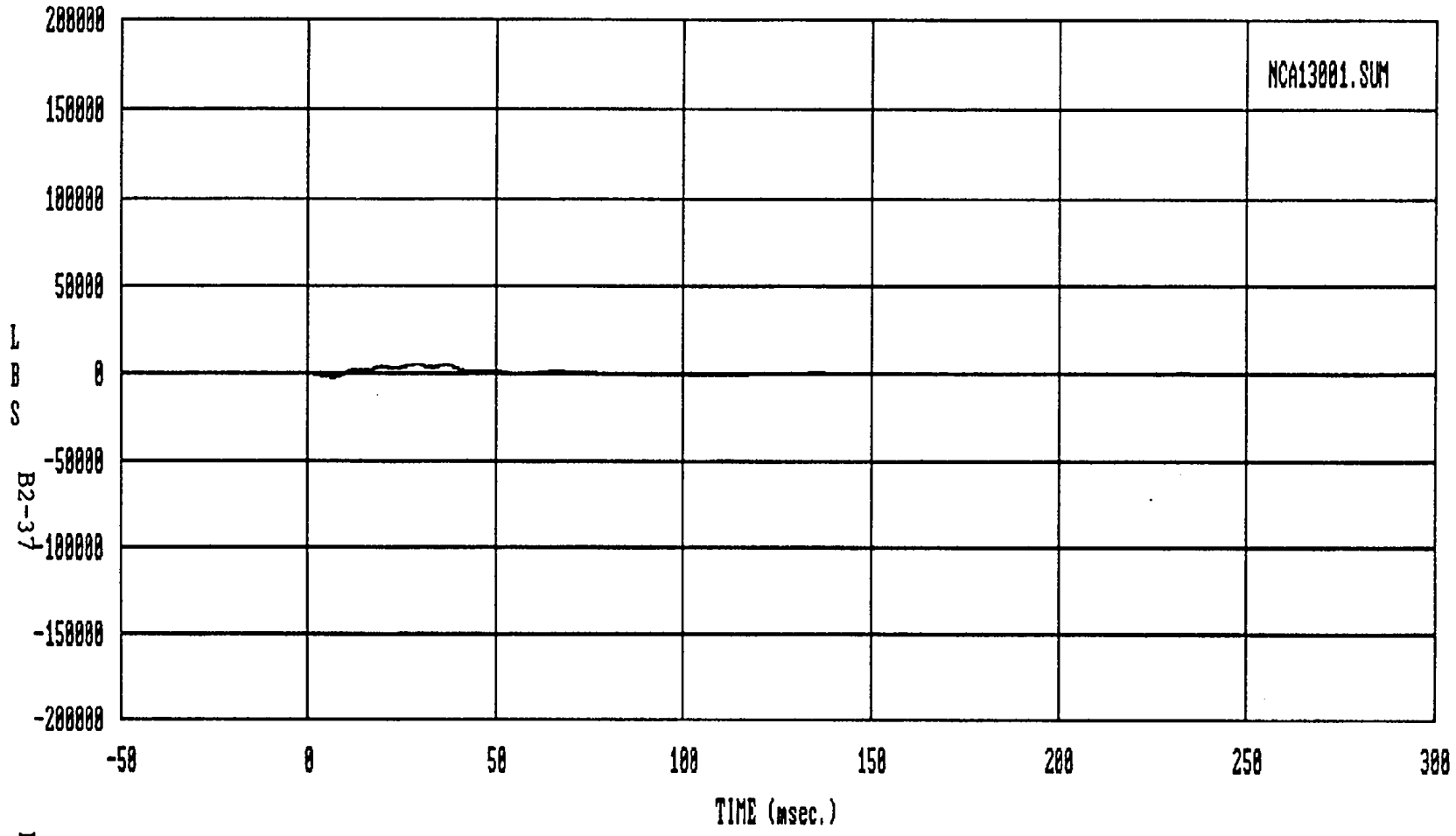
B2-35

MSE-90-R9092-N07



Curve: Force on Barrier load cell D9 Filter: SAE CLASS 60 Max = 298.69 Min = -257.82

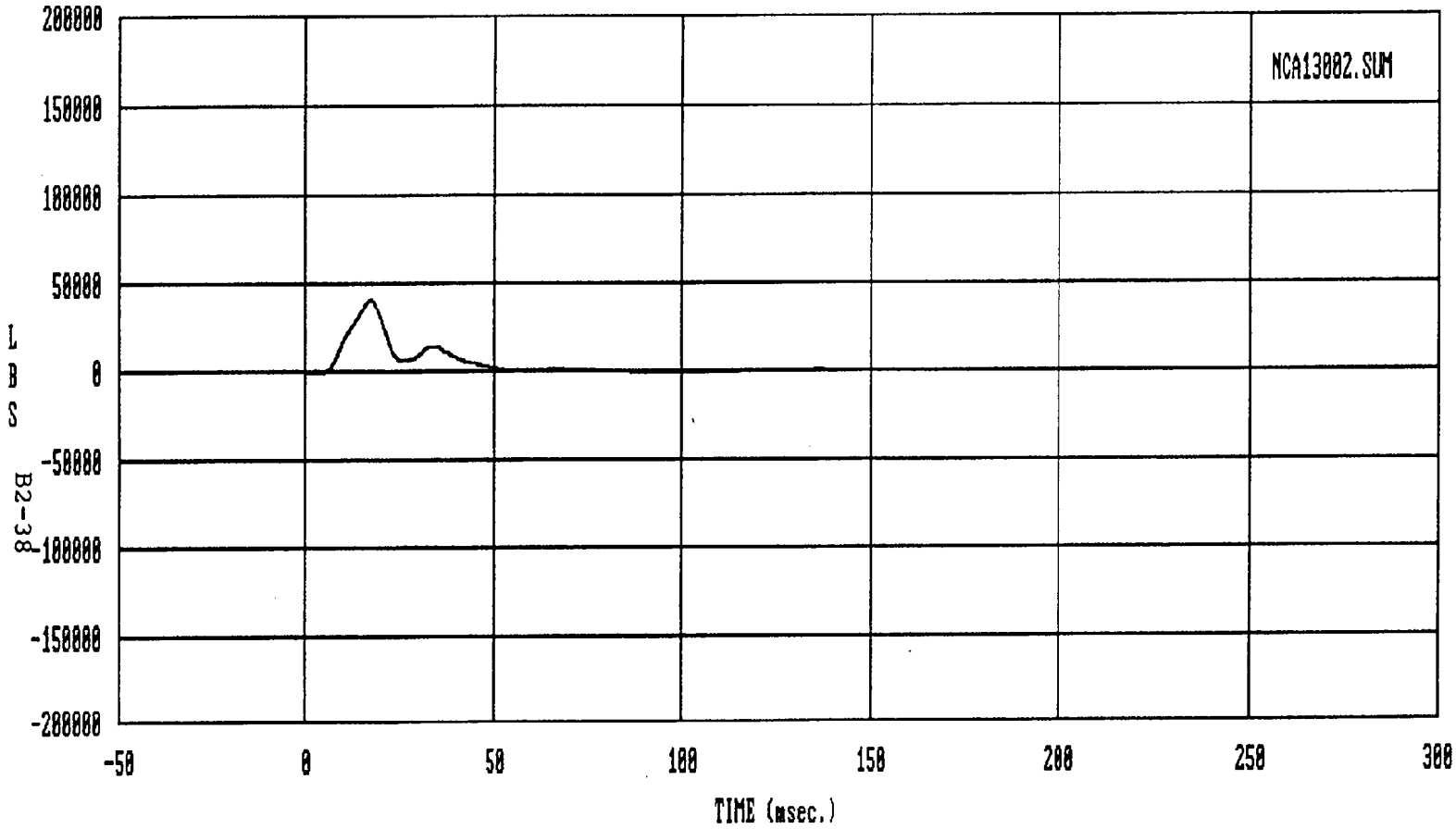
MSE Date: 03/23/90 Program: 1990 New Car Assessment #13 Vehicle: 1990 Mercedes 190E



Curve: LCB sum force C1,C2,C3,D1,D2,D3 — Group 1 Filter: SAE CLASS 60 Max = 5364.9 Min = -2031.1

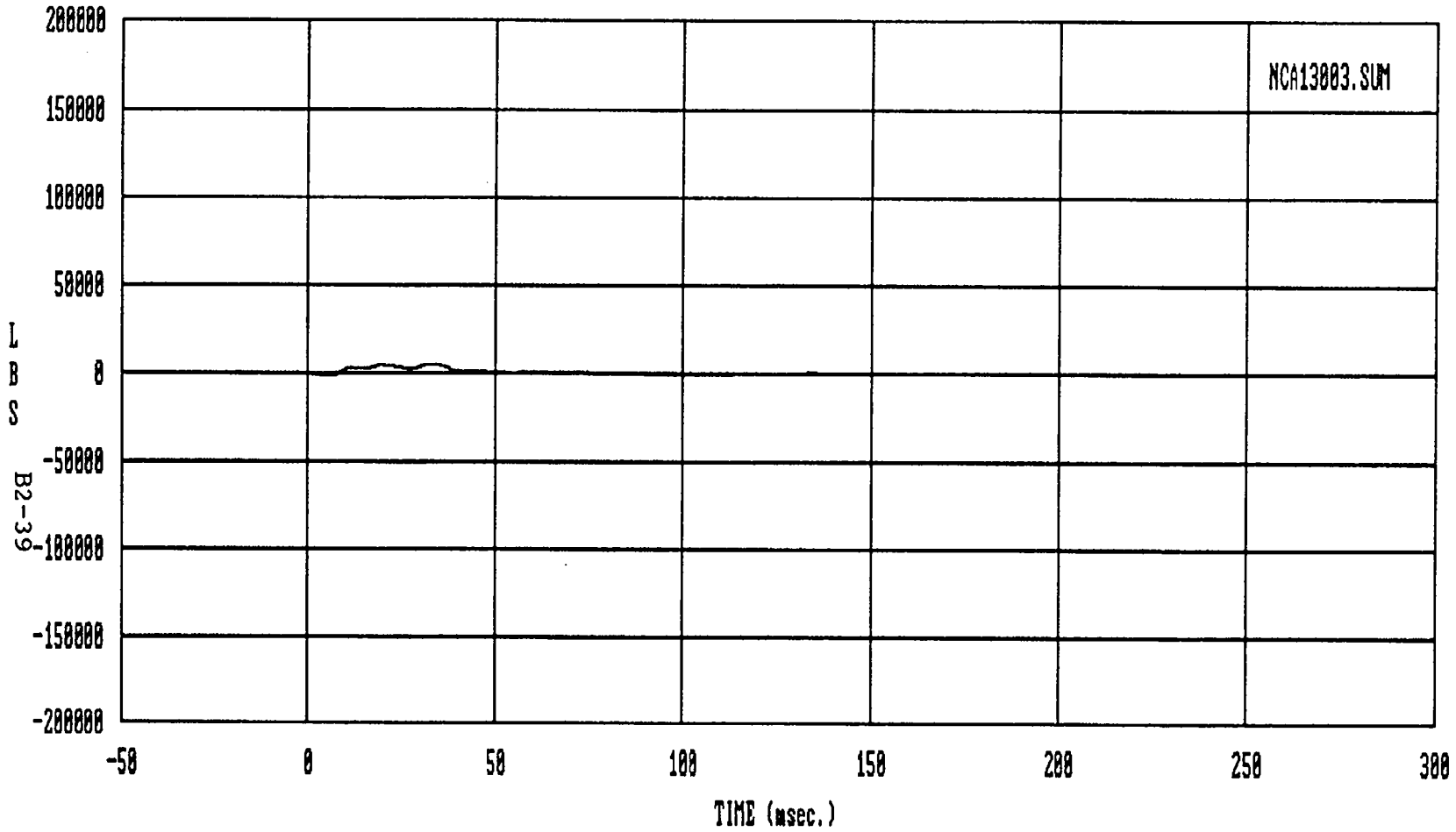
MSE Date: 03/23/90 Program: 1990 New Car Assessment #13 Vehicle: 1990 Mercedes 190E

MSE-90-R9092-N07



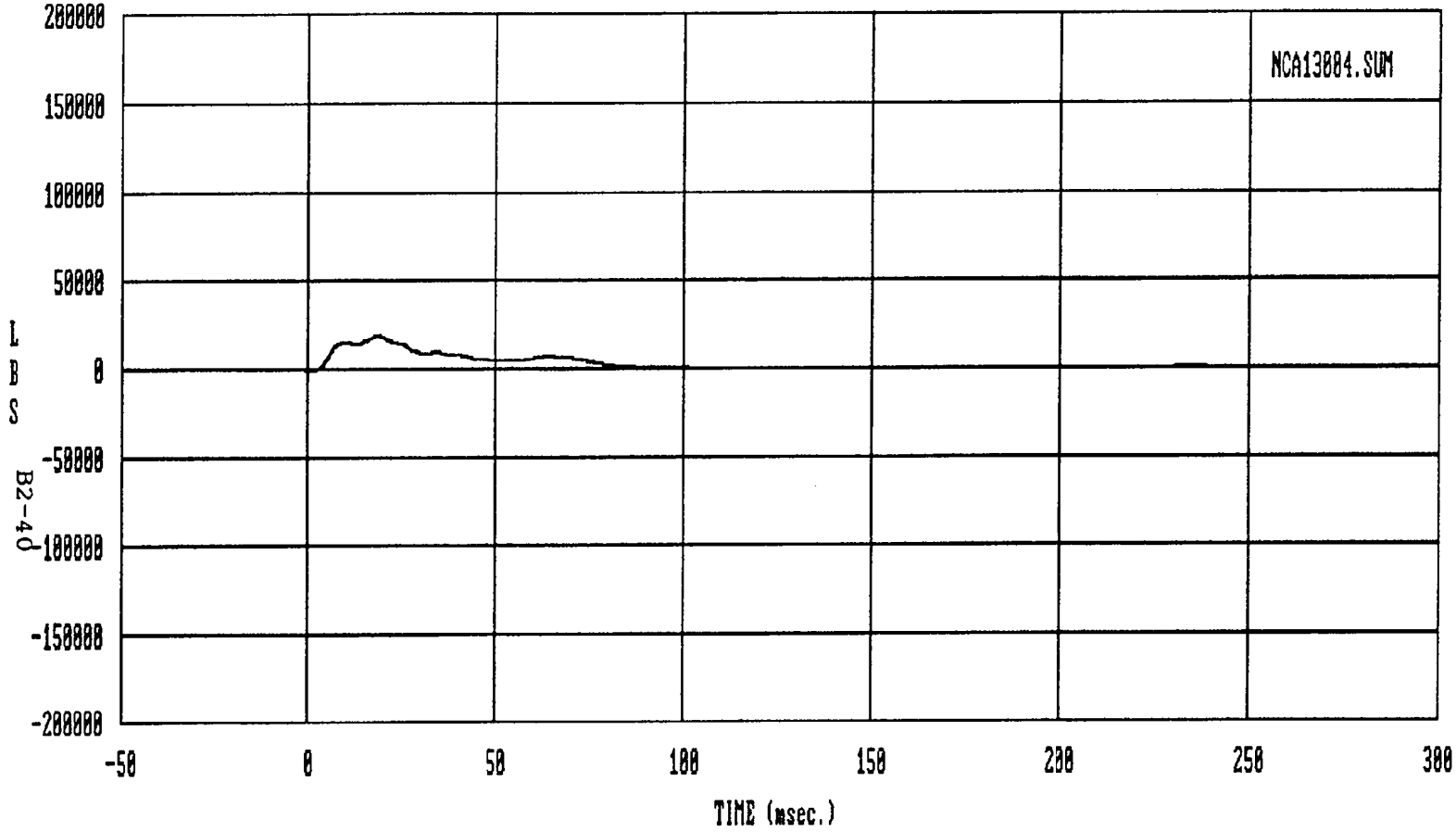
Curve: LCB sum force C4,C5,C6,D4,D5,D6 -- Group 2 Filter: SAE CLASS 60 Max = 40987. Min = -1114.7

MSE Date: 03/23/90 Program: 1990 New Car Assessment #13 Vehicle: 1990 Mercedes 190E



Curve: LCB sum force C7,C8,C9,D7,D8,D9 — Group 3 Filter: SAE CLASS 60 Max = 5725.2 Min = -1735.4

MSE Date: 03/23/98 Program: 1998 New Car Assessment #13 Vehicle: 1998 Mercedes 190E



Curve: LCB sum force A1,A2,A3,B1,B2,B3 -- Group 4 Filter: SAE CLASS 60 Max = 18871. Min = -704.79

MSE Date: 03/23/90 Program: 1990 New Car Assessment #13 Vehicle: 1990 Mercedes 190E

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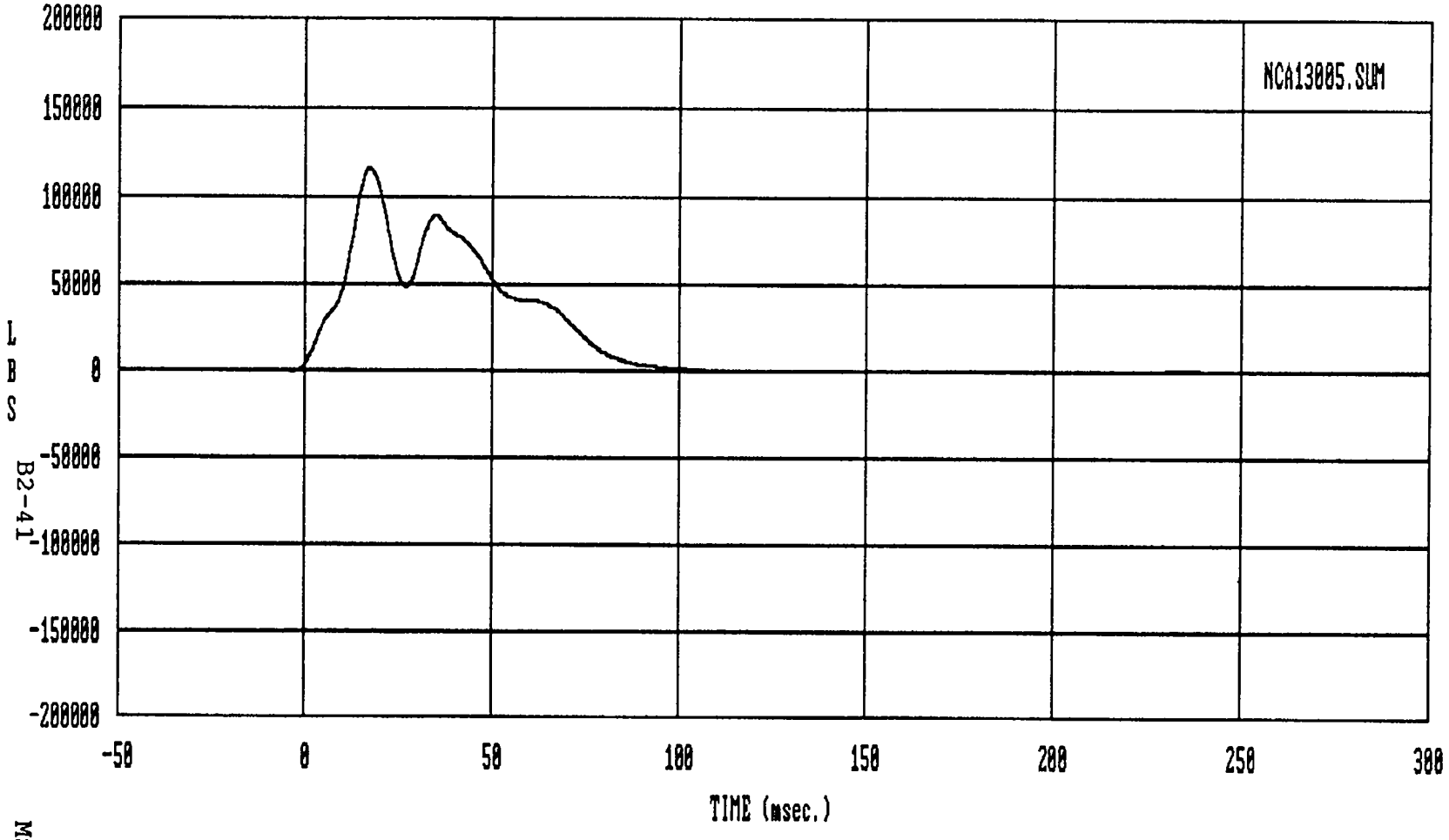
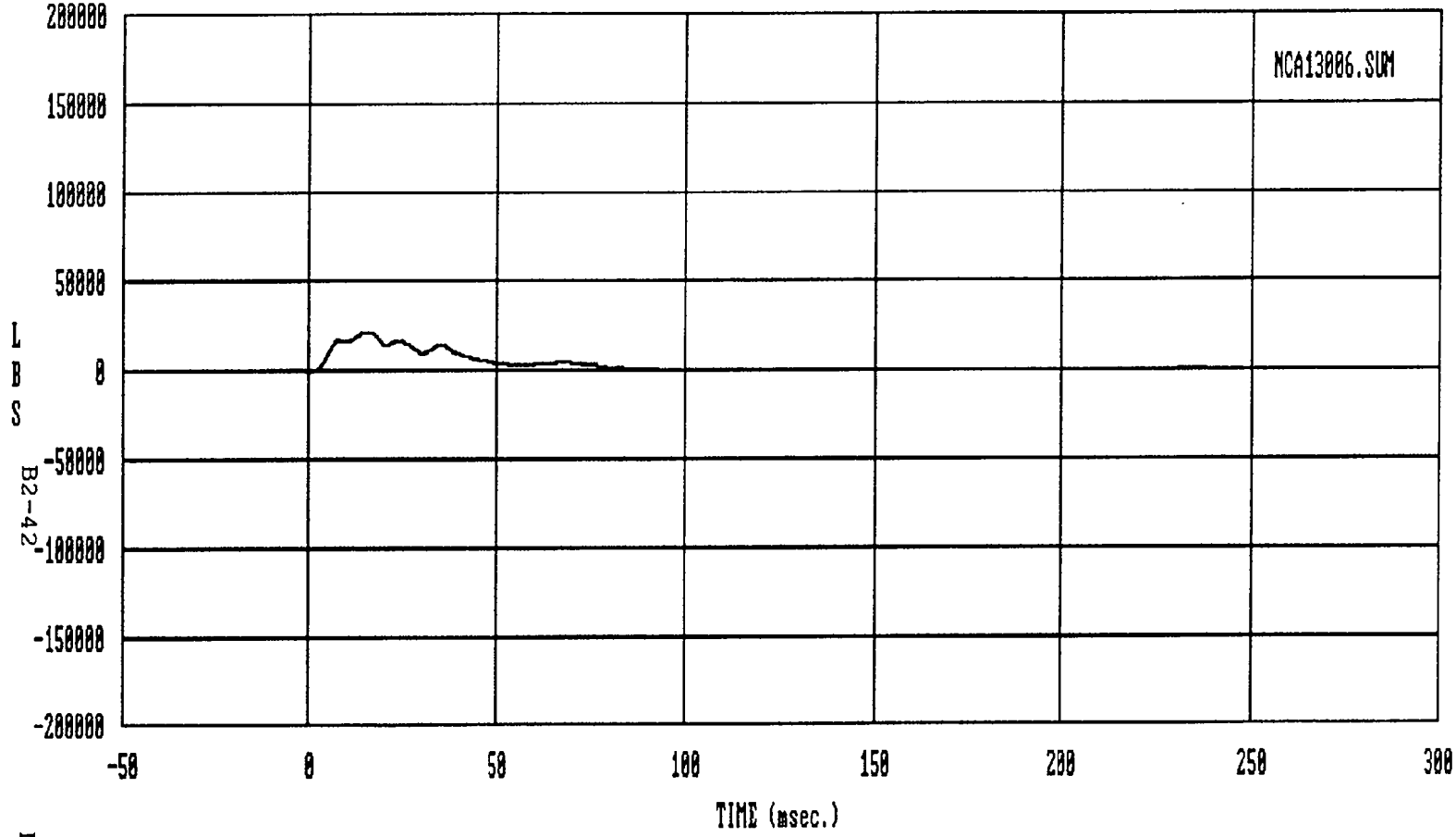
MSE-90-R9092-N07



Curve: LCB sum force A4,A5,A6,B4,B5,B6 -- Group 5 Filter: SAE CLASS 60 Max = .11646E+06 Min = -213.91

MSE Date: 03/23/90 Program: 1990 New Car Assessment #13 Vehicle: 1990 Mercedes 190E



Curve: LCB sum force A7,A8,A9,B7,B8,B9 -- Group 6 Filter: SAE CLASS 60 Max = 21458. Min = -414.19

MSE Date: 03/23/90 Program: 1990 New Car Assessment #13 Vehicle: 1990 Mercedes 190E

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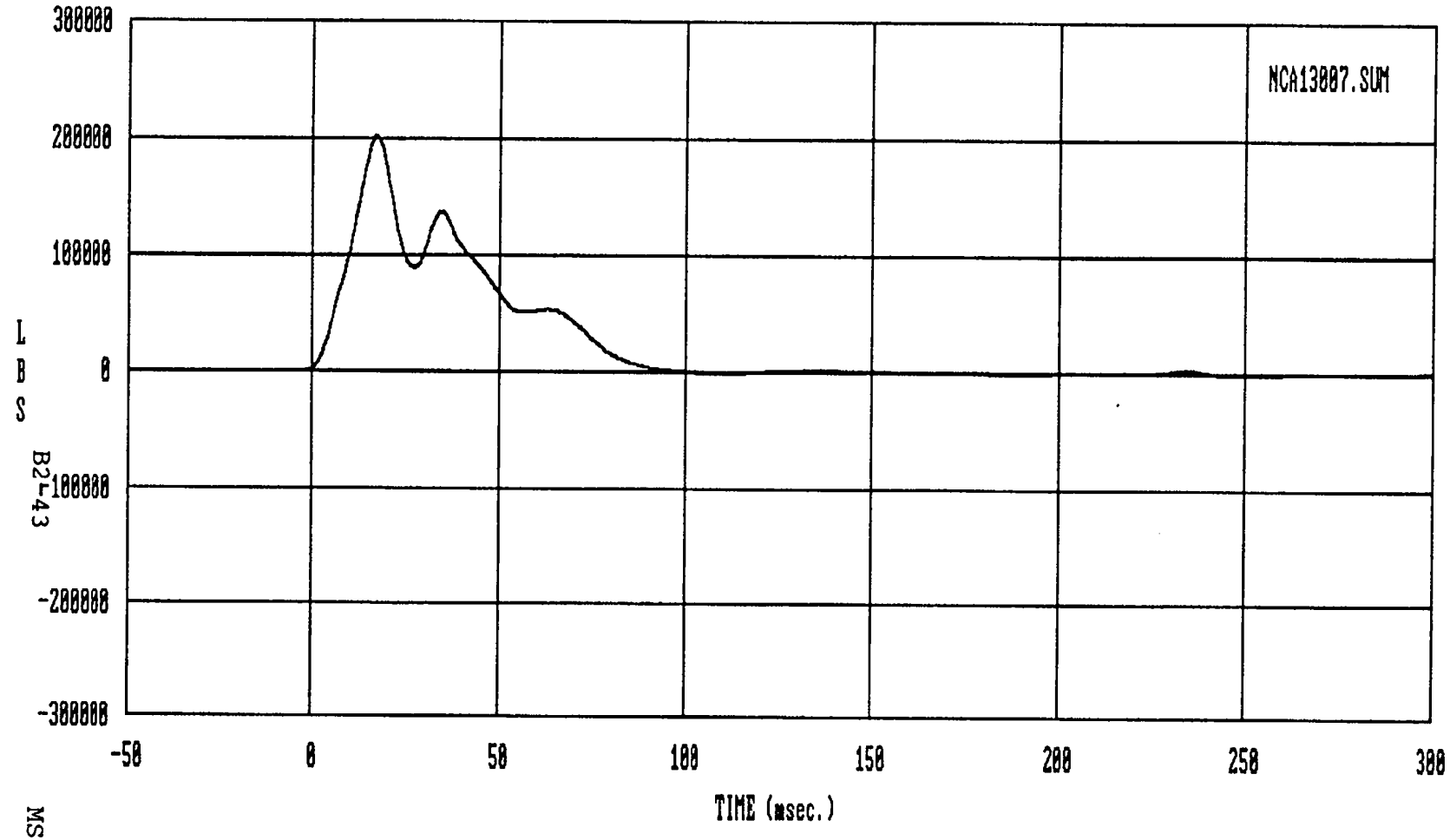
MSE-90-R9092-N07



Curve: Load Cell Barrier total force Filter: SAE CLASS 60 Max = .20247E+06 Min = -1449.4

MSE Date: 03/23/90 Program: 1990 New Car Assessment #13 Vehicle: 1990 Mercedes 190E

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APPENDIX C

PART 572 DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION TESTS

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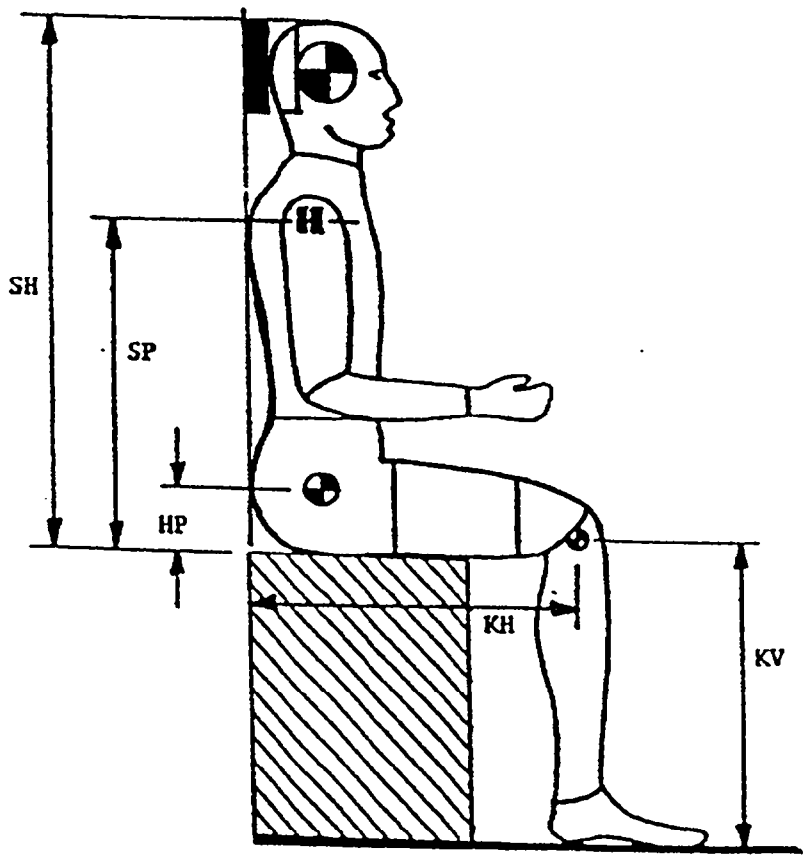
NHTSA DUMMY I.D. NO.: | 4 | 6 | 6 |

I. CONFIGURATION VERIFICATION DATA:



	P. 572 SPECIFICATION	PRE-TEST (if required)	POST-TEST (if required)
DATE OF CONFIGURATION VERIFICATION	//////////	03/09/90 to 03/13/90	
VERIFICATION NUMBER FOR DUMMY* ---	//////////	03	
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"	19.30	
SW - Shoulder Width - - - - - - - -	17.8 to 18.4"	18.40	
HW - Hip Width- - - - - - - - - - -	14.0 to 15.4"	15.00	

TECHNICIAN'S NAME: APURVA MAPARA

*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.: 4 6 6

TECHNICIAN NAME: APURVA MAPARA

		PRE-TEST (if required)	POST-TEST (if required)
DATE OF PERFORMANCE VERIFICATION----------		03/09-03/13/90	
SEQUENTIAL VERIFICATION NUMBER FOR DUMMY*-----		03	
VERIF. LAB. TEMPERATURE (66 to 78 F Range)----		65-75 F	F
VERIF. LAB. HUMIDITY (10 to 70% Range---------		50-70 %	%
TEST PARAMETER	SPECIFICATION		
1. HEAD DROP TEST--			
a. Peak Resultant Accel.	210 to 260G	222.20	
b. Peak Lateral Accel.-	<10G	3.85	
c. Time above 100G - - -	0.9 to 1.5 ms	1.30	
2. NECK BENDING TEST--			
a. Pendulum Speed- - - -	21.5 to 22.5 fps	22.00	
b. Pend. Avg. Decel. over $t_3 - t_2$	20 to 24G	22.40	
c. Peak Resultant Head Acceleration - - - -	26G max.	24.20	
d. Pendulum Decel. $(t_2 - t_1)$	<3 ms	2.15	
e. Pendulum Decel. $(t_3 - t_2)$	25 to 30 ms	28.20	
f. Pendulum Decel. $(t_4 - t_3)$	<10 ms	7.00	
g. Max. Head Rotation -	63 to 73	65.33	
h. Chordal Displacement-Head Rotation Angle-			
0° Time- -	-2 to 2 ms	0.00	
0° Displ.-	-.5 to .5"	0.01	
30° Time- -	22.6 to 34 ms	28.40	
30° Displ.-	2.1 to 3.1"	2.60	
60° Time- -	40.3 to 51.7ms	45.10	
60° Displ.-	4.3 to 5.3"	5.10	
Maximum (65.3°) Time- -	53.2 to 66.8ms	57.90	
(65.3°) Displ.-	5.0 to 6.0"	5.70	

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

TECHNICIAN NAME: APURVA MAPARA

TEST PARAMETER		SPECIFICATION	PRE-TEST (if required)	POST-TEST (if required)
2. NECK BENDING TEST---- Continued: h. Chordal Displacement-Head Rotation Angle-				
60°	Time- -	67.0 to 83.0 ms	67.00	
	Displ.-	4.3 to 5.3 in.	5.20	
30°	Time- -	85.4 to 104.6 ms	86.00	
	Displ.-	2.1 to 3.1 in.	2.50	
0°	Time- -	101.0 to 123.0 ms	101.40	
	Displ.-	-.5 to 0.5 in.	0.50	
3. ABDOMINAL COMPRESSION TEST:(Preload=10 pounds)				
a. Force @ .5" - - - -		23 to 36 lbs.	29.50	
b. Force @ .75" - - - -		36 to 50 lbs.	42.00	
c. Force @ 1.0"- - - - -		50 to 63 lbs.	62.00	
d. Force @ 1.3"- - - - -		73 to 88 lbs.	82.50	
4. LUMBAR FLEXION TEST:				
a. Force @ 20° - - - - -		22 to 34 lbs.	33.20	
b. Force @ 30° - - - - -		34 to 46 lbs.	43.40	
c. Force @ 40° - - - - -		46 to 58 lbs.	50.70	
d. Return Angle- - - - -		12° maximum	8.20	
5. CHEST IMPACT TESTS:				
a. High Speed				
(1) Probe Speed - - -		21.78-22.22 fps	21.88	
(2) Peak Deflection -		1.7" maximum	1.69	
(3) Peak Resistive Force - - - - - -		2250 lbs.maximum	1858.00	
(4) Internal Hysteresis		50 to 70%	52.00	
b. Low Speed				
(1) Probe Speed - - -		13.86-14.14 fps	14.00	
(2) Peak Deflection -		1.1" maximum	1.01	
(3) Peak Resistive Force - - - - - -		1450 lbs.maximum	1255.00	
(4) Internal Hysteresis		50 to 70%	62.50	

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

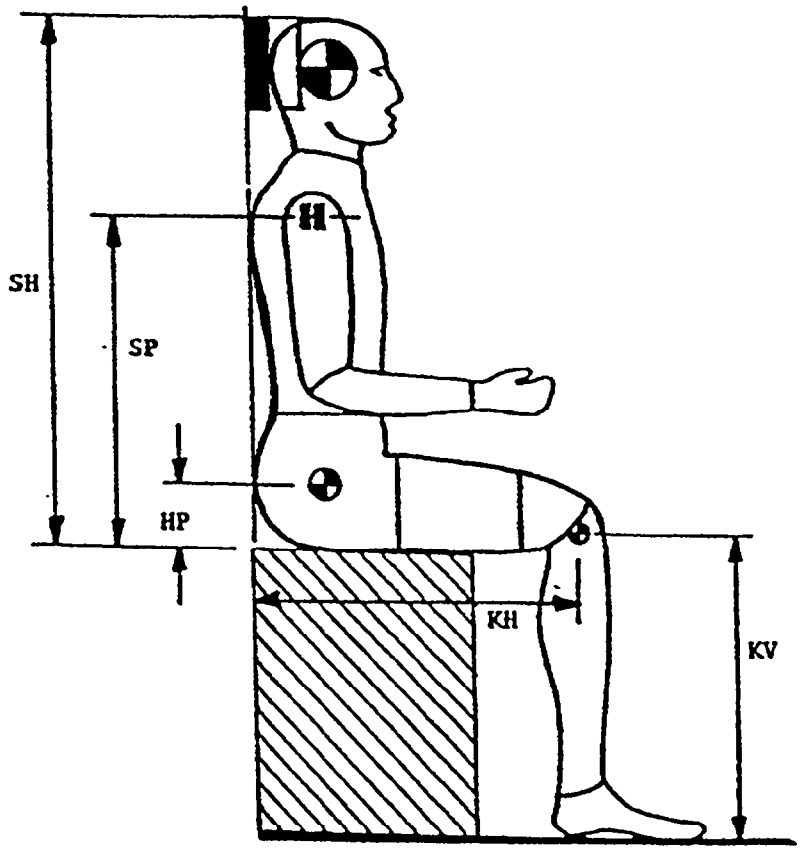
II. PERFORMANCE VERIFICATION DATA: NHTSA DUMMY I.D. NO.: | 4 | 6 | 6 |

TECHNICIAN NAME: APURVA MAPARA

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	7.00	
(2) Maximum Force - -	1850 to 2500 lbs	1945.00	
(3) Time Above 1000#-	1.7 ms minimum	1.70	
b. Left Side--			
(1) Probe Speed - - -	6.76 to 7.04 fps	7.00	
(2) Maximum Force - -	1850 to 2500 lbs	1888.00	
(3) Time Above 1000#-	1.7 ms minimum	1.70	

NHTSA DUMMY I.D. NO.: | 4 | 6 | 5 |

I. CONFIGURATION VERIFICATION DATA:



	P. 572 SPECIFICATION	PRE-TEST (if required)	POST-TEST (if required)
DATE OF CONFIGURATION VERIFICATION	//////////////	03/18/90 to 03/21/90	
VERIFICATION NUMBER FOR DUMMY* ---	//////////////	05	
SH - Seated Height- - - - - - - - -	35.6 to 35.8"	35.60	
SP - Shoulder Pivot Height- - - -	21.8 to 22.4"	21.80	
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"	19.30	
SW - Shoulder Width - - - - - - - -	17.8 to 18.4"	18.10	
HW - Hip Width- - - - - - - - - - -	14.0 to 15.4"	15.10	

TECHNICIAN'S NAME: APURVA MAPARA

*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.: 4 6 5

TECHNICIAN NAME: APURVA MAPARA

		PRE-TEST (if required)	POST-TEST (if required)
DATE OF PERFORMANCE VERIFICATION----------		03/18-03/21/90	
SEQUENTIAL VERIFICATION NUMBER FOR DUMMY*-----		05	
VERIF. LAB. TEMPERATURE (66 to 78 F Range)----		68-72 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	231.80	
b. Peak Lateral Accel.-	<10G	9.32	
c. Time above 100G - - -	0.9 to 1.5 ms	1.30	
2. NECK BENDING TEST--			
a. Pendulum Speed- - - -	21.5 to 22.5 fps	22.20	
b. Pend. Avg. Decel. over $t_3 - t_2$	20 to 24G	23.20	
c. Peak Resultant Head Acceleration - - - -	26G max.	25.80	
d. Pendulum Decel. $(t_2 - t_1)$	<3 ms	2.05	
e. Pendulum Decel. $(t_3 - t_2)$	25 to 30 ms	30.00	
f. Pendulum Decel. $(t_4 - t_3)$	<10 ms	6.20	
g. Max. Head Rotation -	63 to 73	69.21	
h. Chordal Displacement-Head Rotation Angle-			
0^o Time- -	-2 to 2 ms	0.00	
0^o Displ.-	-.5 to .5"	0.01	
30^o Time- -	22.6 to 34 ms	28.00	
30^o Displ.-	2.1 to 3.1"	2.74	
60^o Time- -	40.3 to 51.7ms	43.00	
60^o Displ.-	4.3 to 5.3"	5.15	
Maximum (69.2^o) Time- -	53.2 to 66.8ms	57.40	
Maximum (69.2^o) Displ.-	5.0 to 6.0"	6.00	

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

TECHNICIAN NAME: APURVA MAPARA

TEST PARAMETER		SPECIFICATION	PRE-TEST (if required)	POST-TEST (if required)
2. NECK BENDING TEST---- Continued:				
h. Chordal Displacement- Head Rotation Angle-				
60°	Time- -	67.0 to 83.0 ms	69.90	
	Displ.-	4.3 to 5.3 in.	5.20	
30°	Time- -	85.4 to 104.6 ms	85.50	
	Displ.-	2.1 to 3.1 in.	2.40	
0°	Time- -	101.0 to 123.0 ms	101.50	
	Displ.-	-.5 to 0.5 in.	0.06	
3. ABDOMINAL COMPRESSION TEST:(Preload=10 pounds)				
a. Force @ .5" - - - -		23 to 36 lbs.	28.00	
b. Force @ .75" - - - -		36 to 50 lbs.	40.00	
c. Force @ 1.0"- - - - -		50 to 63 lbs.	57.00	
d. Force @ 1.3"- - - - -		73 to 88 lbs.	85.00	
4. LUMBAR FLEXION TEST:				
a. Force @ 20° - - - - -		22 to 34 lbs.	29.30	
b. Force @ 30° - - - - -		34 to 46 lbs.	42.00	
c. Force @ 40° - - - - -		46 to 58 lbs.	51.00	
d. Return Angle- - - - -		12° maximum	6.00	
5. CHEST IMPACT TESTS:				
a. High Speed				
(1) Probe Speed - - -		21.78-22.22 fps	21.88	
(2) Peak Deflection -		1.7" maximum	1.65	
(3) Peak Resistive Force - - - - - -		2250 lbs.maximum	1929.70	
(4) Internal Mysteresis		50 to 70%	53.50	
b. Low Speed				
(1) Probe Speed - - -		13.86-14.14 fps	14.10	
(2) Peak Deflection -		1.1" maximum	1.05	
(3) Peak Resistive Force - - - - - -		1450 lbs.maximum	1209.00	
(4) Internal Mysteresis		50 to 70%	70.00	

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

II. PERFORMANCE VERIFICATION DATA: NHTSA DUMMY I.D. NO.: | 4 | 6 | 5 |

TECHNICIAN NAME: APURVA MAPARA

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	7.01	
(2) Maximum Force - -	1850 to 2500 lbs	2397.90	
(3) Time Above 1000#-	1.7 ms minimum	1.90	
b. Left Side--			
(1) Probe Speed - - -	6.76 to 7.04 fps	7.00	
(2) Maximum Force - -	1850 to 2500 lbs	2358.70	
(3) Time Above 1000#-	1.7 ms minimum	1.90	

APPENDIX D

VEHICLE OWNER'S MANUAL OCCUPANT RESTRAINT SYSTEM INSTRUCTIONS

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Seat Belts and Supplemental Restraint System (SRS)

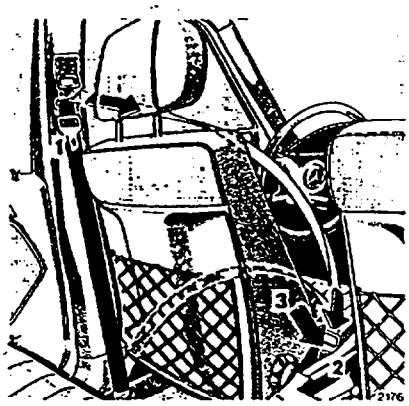
Your vehicle is equipped with seat belts for all seats, emergency tensioning retractors for the front seats, driver airbag and knee bolster.

Seat Belts

Important!

Laws in most states and provinces require seat belt use.

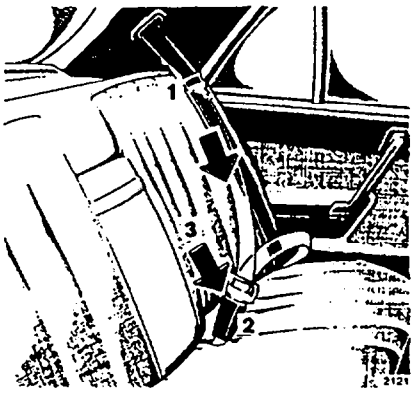
All states and provinces require child restraint use that complies with U.S. Federal Motor Vehicle Safety Standard 213 and Canadian Motor Vehicle Safety Standard 213.1.



Seat Belt Warning System

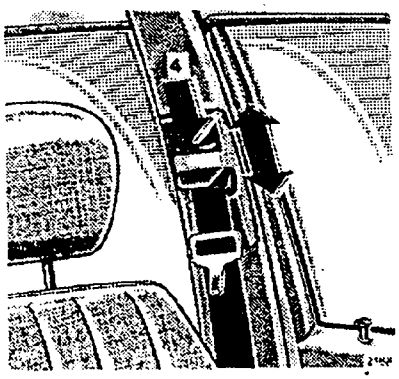
With the key in steering lock position 2, a warning buzzer sounds for a short time if the driver's seat belt is not fastened.

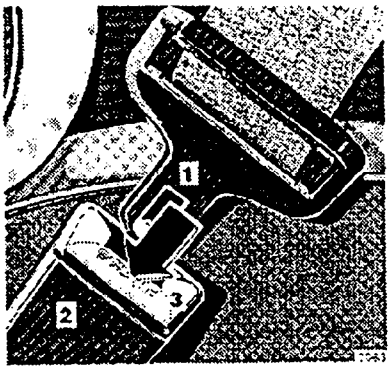
When someone enters the car (front) the reminder lamp, located below the front interior/reading lamp, flashes for a short time to remind all occupants to fasten seat belts.

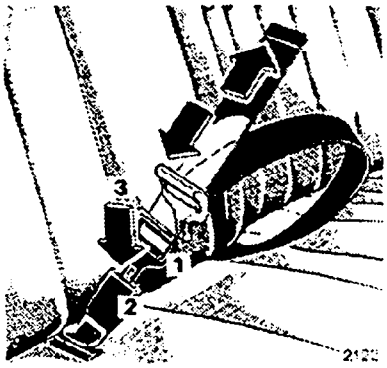


Fastening

- Pull belt with latch plate (1) across shoulder and lap so that the lap belt is positioned as low on your hips as possible. Do not twist the belt. For safety reasons, avoid adjusting the seat into positions which could affect the correct seat belt position.
- Push latch plate (1) into buckle (2) until it clicks.







- Adjust front seat belts so that the shoulder portion of the belt is located as close as possible to the middle of the shoulder (it should not touch the neck). For this purpose, raise or lower the belt outlet (3 positions). To lower the belt outlet, press button (4).

  The belt must be pulled snug and checked for snugness immediately after engaging it and during driving. If necessary, tighten the lap portion to a snug fit by pulling shoulder portion up.

Unfastening

- Push in the red button (3) in the belt buckle (2).
- Allow the retractor to completely rewind the seat belt by guiding the latch plate (1).

Operation:

The inertia reel stops the belt from unwinding during sudden vehicle stops or when quickly pulling on the belt.
The emergency tensioning retractor tightens the seat belt upon major frontal impacts within the shaded area as shown on page 40.
The locking function of the reel may be checked by quickly pulling out the belt.

Lap belt for center seating position of the rear seat

Pull belt with latch plate (1) over lap so that the belt is positioned as low on your hips as possible. Push latch plate (1) into buckle (2) until it clicks. Do not twist the belt but keep it tight. For safety reasons, avoid adjusting the seat into positions which could affect the correct seat belt position.

To shorten the belt: With the latch plate engaged, pull the loose end of the belt.

To lengthen the belt: With the belt unfastened, turn the latch plate so that it is a little more than 90° perpendicular to the belt, then extend the belt. Fasten the belt and shorten as stated above.

To disengage the belt, push red button (3) in the buckle.

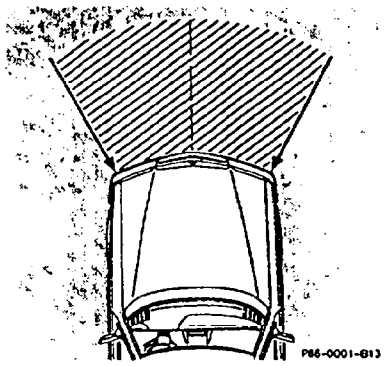
If the center seat is not occupied, the belt buckle and rolled-up seat belt can be stored in the space next to the rear arm rest (to the left or right of arm rest).

Warning!

- **Each occupant should wear their seat belt at all times. Together with the "SRS" (driver airbag, ETR's and driver-side knee bolster), the seat belt offers the best conditions for protection of the body in case of major frontal impact.**
- **Never wear the shoulder belt under your arm or otherwise out of position. Position the lap belt as low as possible around the hips (not the waist).**
- **Improperly positioned seat belts do not provide maximum protection and may cause serious injuries in case of an accident.**
- **According to accident statistics, children are safer when properly restrained in the rear seating positions than in the front seating positions.**
- **Infants and small children must be seated in an infant or child restraint system, which is properly secured by a lap belt or lap belt portion of a lap-shoulder belt. Children could be endangered in an accident if their child restraints are not properly secured in the vehicle.**
- **Children too big for child restraint systems should ride in rear seats using regular seat belts. Position shoulder belt across the chest and shoulder, not the face or neck. A booster seat may be necessary.**
- **Each seat belt should not be used for more than one person at a time.**
- **Belts should not be worn twisted.**
- **Pregnant women should select a seat with a lap-shoulder belt whenever possible. The lap belt should be positioned as low as possible around the hips to avoid any possible pressure on the abdomen.**

For cleaning and care of the seat belts, see page 84.

SUPPLEMENTAL RESTRAINT SYSTEM (SRS)



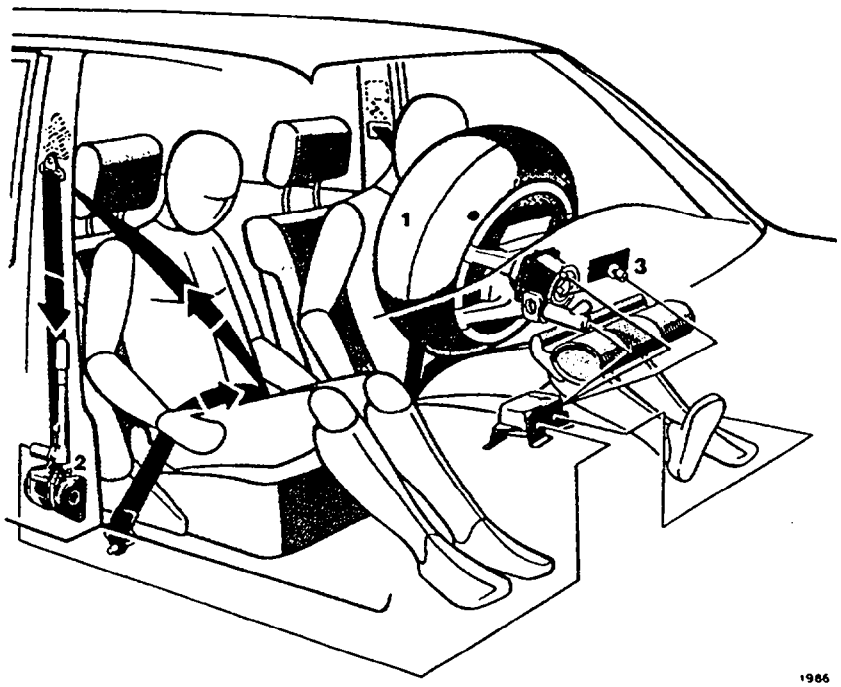
Emergency Tensioning Retractor (ETR)

The seat belts for the front seats are equipped with emergency tensioning retractors. These tensioning retractors are located in each belt's inertia reel and become operationally ready with the key in steering lock position 1 or 2.

The emergency tensioning retractors are designed to activate only when the seat belts are fastened during major frontal impacts within the shaded area shown. They tighten the belts in such a way that they fit more snugly against the body restricting its forward movement as much as possible.

In cases of less severe frontal impacts, roll-overs, certain side impacts, rear collisions, or other accidents without major frontal forces, the emergency tensioning retractors will not be activated. The driver and passengers will then be protected by the fastened seat belts and inertia reel in the usual manner.

For seat belt and emergency tensioning retractor safety guidelines, see page 43.



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Driver Airbag

The most effective occupant restraint system yet developed for use in production vehicles is the three-point seat belt. In some cases, however, the protective effect of seat belts can be further enhanced by an airbag.

The airbag (1) is located in the steering wheel hub and, in conjunction with wearing the seat belts with emergency tensioning retractors (2), provides increased protection for the driver.

The operational readiness of the airbag system is verified by the indicator lamp "SRS" (3) in the instrument cluster. If no fault is detected, the lamp will go out after approximately 4 seconds; after the lamp goes out, the system continues to monitor the components and circuitry of the airbag system and will indicate a malfunction by coming on again.

The following system components are monitored or undergo a self-check: crash-sensor, airbag ignition circuit, driver and front passenger seat belt buckles. Initially, when the key is turned from steering lock position 0 to positions 1 or 2, malfunctions in the crash-sensor are detected and indicated (the "SRS" indicator lamp stays on longer than 4 seconds).

In the operational mode, after the indicator lamp has gone out after the initial check, interruptions and short circuits in the airbag ignition circuit and in the driver and front passenger seat belt buckle harnesses, and low voltage in the entire system are detected and indicated.

In the event a malfunction of the "SRS" is indicated as outlined above, we strongly recommend that you visit an authorized MERCEDES-BENZ dealer immediately to have the system checked; otherwise the "SRS" may not be activated in a major frontal accident.

Important note:

The airbag is designed to activate only in frontal and front-angled impacts within the shaded area as shown in the illustration on page 40 and wich may cause severe injuries. Only during these types of impacts will it provide its supplemental protection. The driver should always wear the seat belt, otherwise it is not possible for the airbag to provide its intended protection.

In cases of less severe frontal impacts, roll-overs, certain side impacts, rear collisions, or other accidents without severe frontal forces, the airbag will not be activated. The driver and other passengers will then be protected by the fastened seat belts.

Important note:

The "SRS" is designed to reduce the potential of injury in frontal and front-angled impacts which may cause severe injuries, however, no system available today can totally eliminate injuries and fatalities.

The activation of the "SRS" temporarily releases a small amount of dust from the airbag and the seat belt emergency tensioning retractors. This dust, however, is neither injurious to your health, nor does it indicate a fire in the vehicle.

Several airbag system components get hot after inflation. Don't try to touch them.

The service life of the airbag extends to the date indicated on the label located on the driver-side door latch post. To provide continued reliability after that date, it should be inspected by an authorized MERCEDES-BENZ dealer at that time and replaced when necessary.

Warning!

It is very important for your safety to be in a proper seating position.

For maximum protection in the event of a frontal collision always ride in an upright position with your back against the seat back.

Fasten your seat belt and ensure that it is properly positioned on the body.

Since the airbag inflates with considerable force at the beginning of deployment always keep a safe distance to the airbag cover:

- **Sit properly belted in an upright position with your back against the seat back.**
- **Do not lean with your head to the steering wheel or dashboard.**
- **Adjust the passenger seat as far as possible away from the dashboard.**
- **Children below 40 lbs, infants and small children must only be seated in a rear seat and be properly secured using a child or infant safety seat/restraint system.**

Failure to follow these instructions can result in severe injuries to you or other occupants.

Safety Guidelines for the Seat Belt, Emergency Tensioning Retractor and Airbag

Warning!

- **Damaged belts or belts that were highly stressed in an accident must be replaced and their anchoring points must also be checked. Use only belts installed or supplied by an authorized MERCEDES-BENZ dealer.**
- **Do not pass belts over sharp edges.**
- **Do not make any modification that could change the effectiveness of the belts.**
- **The "SRS" is designed to function on a one-timeonly bases. An airbag or emergency tensioning retractor (ETR) that was activated must be replaced.**
- **No modifications of any kind may be made to any components or wiring of the "SRS". This includes the installation of additional trim material, badges, etc. over the steering wheel hub or front passenger airbag cover and installation of additional electrical/electronic equipment on or near "SRS" components and wiring.**
- **Improper work on the system, including incorrect installation and removal, can lead to possible injury through an uncontrolled activation of the "SRS". In addition, through improper work there is the risk of rendering the "SRS" inoperative. Work on the "SRS" must therefore only be performed by an authorized MERCEDES-BENZ dealer.**
- **When scrapping the airbag unit or emergency tensioning retractor, it is mandatory to follow our safety instructions. These instructions are available at your authorized MERCEDES-BENZ dealer.**

When you sell the vehicle we strongly urge you to give notice to the subsequent owner that it is equipped with a "SRS" by alerting him to the applicable section in the Owner's Manual.