1455

NEW CAR ASSESSMENT PROGRAM (NCAP)
FRONTAL BARRIER IMPACT TEST

ISUZU MOTORS LIMITED
1990 ISUZU TROOPER II
NHTSA NO. ML5701

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

APRIL 06, 1990

FINAL REPORT

Prepared For:

U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
OFFICE OF MARKET INCENTIVES
400 Seventh Street, S.W.
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15. Supplementary Notes

16. Abstract

A 35 mph frontal barrier impact test using a load cell barrier was conducted on a 1990 Isuzu Trooper II 4 Door MPV at the Mobility System and Equipment Company (MSE) crash test facility in Mira Loma, CA, on 20 March 1990.

The barrier impact velocity was 35.1 mph, and the ambient temperature at the barrier face at the time of impact was 94 deg. F. The post-test vehicle crush maximum was 20.0 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	1564	1952
Chest Resultant Peak 60 Gs (3 ms clip)	59.6	64.3
Femur Load 2250 Pounds	Left 262 Right 430	307 141

TYPE OF RESTRAINT SYSTEM: 3-point continuous webbing system at each front outboard seating position.

17. Key Words	Distribution Statement
35 MPH FRONTAL BARRIER IMPACT TEST NEW CAR ASSESSMENT PROGRAM (NCAP) 1990 ISUZU TROOPER II, 4 DOOR MPV	COPIES OF THIS REPORT ARE AVAILABLE FROM: Technical Reference Division Nat'l Highway Traffic Safety Admin. Room 5108, Nassif Building 400 7th St. S.W., Wash., DC 20590

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SECTION 1

PURPOSE AND TEST PROCEDURE

This 35 mph frontal barrier impact test is a part of the FY 89 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 Isuzu Trooper II 4 Door MPV, NHTSA No. ML5701, at a velocity of 35.1 mph. The frontal impact test was conducted by Mobility Systems and Equipment Company (MSE) on 20 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 Isuzu Trooper II 4 Door MPV, was equipped with a 2.6 liter, 4 cylinder engine and 5 speed transmission. The test weight of the 1990 Isuzu Trooper II 4 Door MPV, with two (2) 50th percentile male dummies, instrumentation, and cameras was 4,302 pounds.

The 1990 Isuzu Trooper II 4 Door MPV, was involved in a frontal load cell barrier crash at a velocity of 35.1 mph.

The maximum static crush for the vehicle of 20.0 inches occurred at the centerline of the front bumper. The windshield was not cracked and no separation was observed. The driver's front door was opened without the aid of tools. The passenger's front door needed tools to open.

The driver ATD's head hit the steering wheel and hub.

The driver's left and right knees hit the dash panel and steering column. The driver ATD had a HIC value of 1,564, the maximum chest acceleration (resultant clipped) was 59.6 g's and the maximum femur loads were 262 (left) and 430 (right) pounds.

The passenger head did hit the glove box door. Both of his knees hit the dash panel. The HIC value for the passenger ATD was 1,952, the maximum chest acceleration (resultant clipped) was 64.3 g's, and the maximum femur loads were 307 (left) and 141 (right) pounds.

Seat belt spool out, measured by high-speed film analysis, was 7.8 inches for the driver and 9.0 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.

Data Table No. 1 Test Vehicle Data

VEHICLE YEAR/MAKE/MODEL/BODY STYLE: 1990/ISUZU/TROOPER II/4 DOOR MPV

VEHICLE NHTSA NO.: M L 5 7 0 1 VIN: J A C C H 5 8 E 3 L 8 9 0 5 8 5 6

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

ENGINE: 4 Cylinders; _____ C.I.D; 2.6 Liters; _____ CC
X Gas; _____ Diesel: _____ Turbocharged
PLACEMENT-- X Longitudinal; _____ Transverse (Lateral)

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

DATE VEHICLE AVAILABLE FOR 35 MPH CRASH TESTING: February 1990

ODOMETER READING: 33.0 miles; OPTIONS: ___ A/C; ___ P/S; ___ P/Wdo.; ___
___ Tilt Whl.; ___ Cruise Control

DATA RECORD FROM VEHICLE'S TIRE PLACARD:
==========

Tire Pressure (at capacity): 35 psi Front; 35 psi Rear
Recommended Tire Size: P235/75R15
Tires on Vehicle: P235/75R15 ; Manufacturer: Goodyear
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 X Lever
___ Rotating Knob

Vehicle Maximum Capacity Loading = 1056* lbs. (A)
No. of Occupants x 150 lbs.- - - = 750 lbs. (B)
Cargo Capacity (A - B)- - - - - = 306 lbs.
* gvwr - Delivered Weight.

TEST VEHICLE DELIVERED WEIGHT WITH MAXIMUM FLUIDS:
==========

Right Front = 944 lbs.
Left Front = 997 lbs. TOTAL FRONT = 1941 lbs.(53.0% of TOTAL)
Right Rear = 886 lbs.
Left Rear = 857 lbs
TOTAL WEIGHT = 3684 lbs. TOTAL REAR = 1743 lbs.(47.0% of TOTAL)

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

CALCULATION OF TEST VEHICLE TARGET WEIGHT:

Total Test Vehicle Delivered Weight With Maximum Fluids =	3684	lbs.
Maximum Cargo Carrying Capacity of Test Vehicle*- - - - -	300	lbs.
Weight of Two P.572 Dummies (2 x 164 lbs.)- - - - - - - - -	328	lbs.
TEST VEHICLE TARGET WEIGHT	4312	lbs.

*300 lbs. for light trucks and MPVs

ACTUAL WEIGHT OF TEST VEHICLE WITH 2 DUMMIES AND CARGO:

Right Front = 1028 lbs. TOTAL FRONT = 2100 lbs. (48.8% of TOTAL)
Left Front = 1072 lbs.
Right Rear = 1114 lbs. TOTAL REAR = 2202 lbs. (51.2% of TOTAL)
Left Rear = 1088 lbs.

TOTAL WEIGHT= 4302 lbs. (which includes 200 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 = 34.5 inches
Left Front = 34.1 inches
Right Rear = 35.1 inches
Left Rear = 34.9 inches

Ready For Test--Right Front = 34.1 inches
Left Front = 34.0 inches
Right Rear = 33.3 inches
Left Rear = 33.2 inches

Test Vehicle Wheelbase: 104.3 inches; C.G.= 53.4 inches rearward of front wheel centerline

Total Vehicle Length:

Right Side = 165.5 inches
Left Side = 165.2 inches
Centerline = 175.5 inches

Data Table No. 2 Post Crash Test Data

DATA OF 35 MPH FRONTAL BARRIER IMPACT RATING TEST: 03/20/90

TIME OF TEST: 2:58 PM: AMBIENT TEMPERATURE AT BARRIER FACE: 94 °F

VEHICLE'S OCCUPANT COMPARTMENT TEMPERATURE: 72 °F

(spec. Range = 66 to 78 °F.)

VEHICLE WINDSHIELD MOLDING TEMPERATURE: 72 °F.

VEHICLE IMPACT VELOCITY: Primary Speed Trap = 35.04 mph
Secondary Speed Trap 35.06 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 =165.5"; C/Line=175.5"; Left Side=165.2"
Vehicle Post-test Length-Right Side=146.7"; C/Line=155.5"; Left Side=148.5"
Vehicle Static Crush --- Right Side= 18.8"; C/Line= 20.0"; Left Side= 16.7"

VEHICLE REBOUND FROM BARRIER FACE:

Vehicle Right Side = 21.0 inches
Vehicle Centerline = 19.8 inches
Vehicle Left Side = 19.5 inches

VEHICLE DUMMY CONTACT POINTS:

	DRIVER (I.D. No. 467)			PASSENGER (I.D. No. 464)		
	Strg.Col. Hub	Strg. Wheel	Instru. Panel	Instru. Panel	Knee Assy.	Glove Box Door
HEAD	YES	YES	NO	NO	NO	YES
RIGHT KNEE	////////	/////	YES	YES	//////	NO
LEFT KNEE	////////	/////	YES	YES	//////	NO

VEHICLE DOOR OPENING INFORMATION:	RIGHT SIDE		LEFT SIDE	
	OPENED	JAMMED	OPENED	JAMMED
FRONT DOORS	YES	YES	YES	N/A
REAR DOORS	YES	N/A	YES	N/A

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

VEHICLE'S FRONT SEAT MOVEMENT DURING CRASH EVENT:

	RIGHT SIDE	LEFT SIDE
Seat Cushion Shift - - - - -	0.1 " forward;	0.0 " forward
Seat Adjuster Failure- - - -	None ;	None

Details Of Any Failure: N/A

OTHER NOTABLE IMPACT EFFECTS:

- No windshield separation or cracking.
- No solvent leakage.

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/ISUZU/TROOPER II/4 DOOR MPV

VEH. NHTSA NO.: ML5701 ; TEST DATE: 03/20/90

MAXIMUM ACCELERATION VALUES:		DRIVER DUMMY # 467	PASSENGER DUMMY # 464
Head Channel X	HEAD X	-125.38	-96.75
Head Channel Y	Y	-22.06	-19.64
Head Channel Z	Z	78.21	80.09
HEAD RESULTANT	R	132.07	113.37
Chest Channel X	CHEST X	-60.60	-65.37
Chest Channel Y	Y	-13.87	12.54
Chest Channel Z	Z	23.44	23.20
CHEST RESULTANT	R	59.58	64.33
TIME INTERVAL (seconds)		0.0642 to 0.0672	0.0609 to 0.0639

HEAD INJURY CRITERIA (HIC) VALUES:

HIC	HIC	1563.53	1951.98
t_1 (seconds)		0.0559	0.0693
t_2 (seconds)		0.0919	0.1053
Avg. Accel. t_1 to t_2		71.56	78.23

MAXIMUM FEMUR FORCES:

Right Side (lbs.)	FR	430.22	140.86
Left Side (lbs.)	FL	261.93	307.30

MAXIMUM SEAT BELT FORCES:

Lap Belt	LAP	2301.0	1886.6
Shoulder Belt	SHLDR	2051.4	2785.0

MAXIMUM SEAT BELT WEBBING SPOOL-OUT:

Lap/Shoulder Belt Combination	7.8	9.0

Data Table No. 4 Test Dummy Positioning Data

PRE-IMPACT DATA:

Make/Model: 1990/ISUZU TROOPER II
Body Style: 4 DOOR MPV Model Year: 1990
NHTSA No.: ML5701 Color: WHITE

DATA FROM CERTIFICATION LABEL:

Vehicle Manufacturer: ISUZU MOTOR LIMITED
Date of Manufacture: 10/89 ; VIN: JACCH58E3L8905856
GVWR: 4740 lb; GAWR: Front = 2535 lb; Rear = 2645 lb

POST-IMPACT DATA:

Date of Test: 03/20/90 Time: 2:58 PM Temperature: 94 °F
Required Impact Velocity Range: 34.5 to 35.5 mph
Impact Velocity: Primary = 35.04 mph Secondary = 35.06 mph
Seat Type: Bucket Adjuster Type: Lever
Bucket Seat Back Type: Adjustable headrest

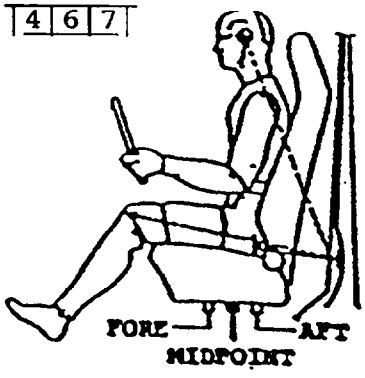
TECHNICIANS: Enrique Marin

DRIVER DUMMY # 467

HEAD 24.0 "
TARGET 88.0

KNEE 20.6 "
JOINT - 1.0

APPROX- 4.6 "
IMATE -31.0
"H"
POINT



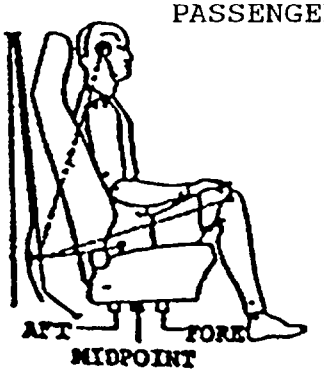
FORE AFT
MIDPOINT

PASSENGER DUMMY # 464

25.2 " HEAD
98.0 TARGET

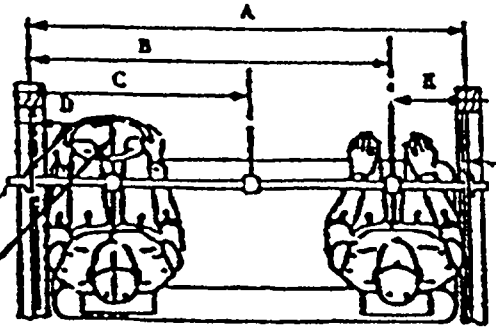
22.2 " KNEE
- 2.0 JOINT

5.5 " APPROX-
- 5.0 MATE
"H"
POINT



AFT FORE
MIDPOINT

A = 57.2 "
B = 42.9 "
C = 28.6 "
D = 14.4 "
E = 14.3 "



LATERAL BAR

ADJUSTABLE POINTER

DOOR GLASS HEIGHT

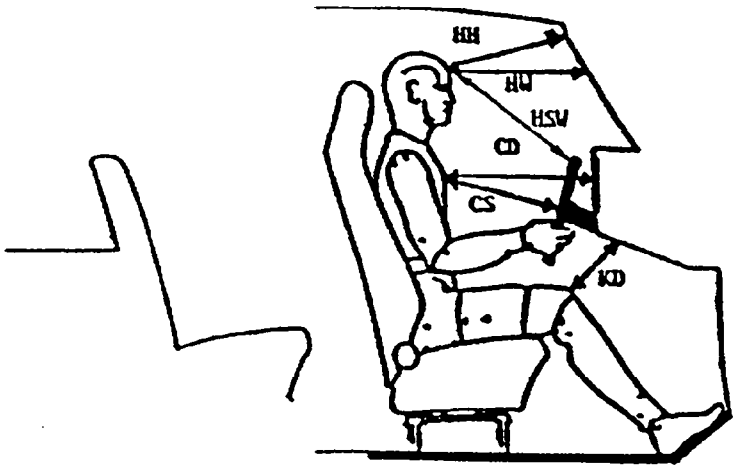
LEFT FRONT DOOR

RIGHT FRONT DOOR

DRIVER DUMMY # 467

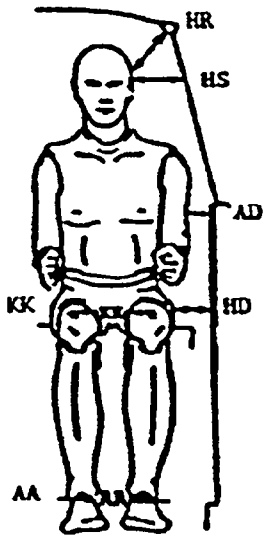
PASSENGER DUMMY # 464

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



	Driver	Passenger
HH	18.2	18.7
HW	21.7	21.7
CD	22.5	25.7
CS	15.5	N/A
KD	L- 5.9	L- 6.2
KD	R- 4.9	R- 6.2
Torso Angle	19.0	Torso Angle 18.0
Seat Back Angle	20.0	Seat Back Angle 20.0
HSW	19.4	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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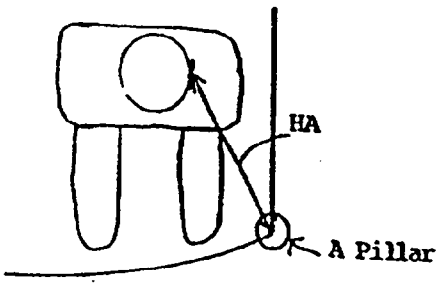
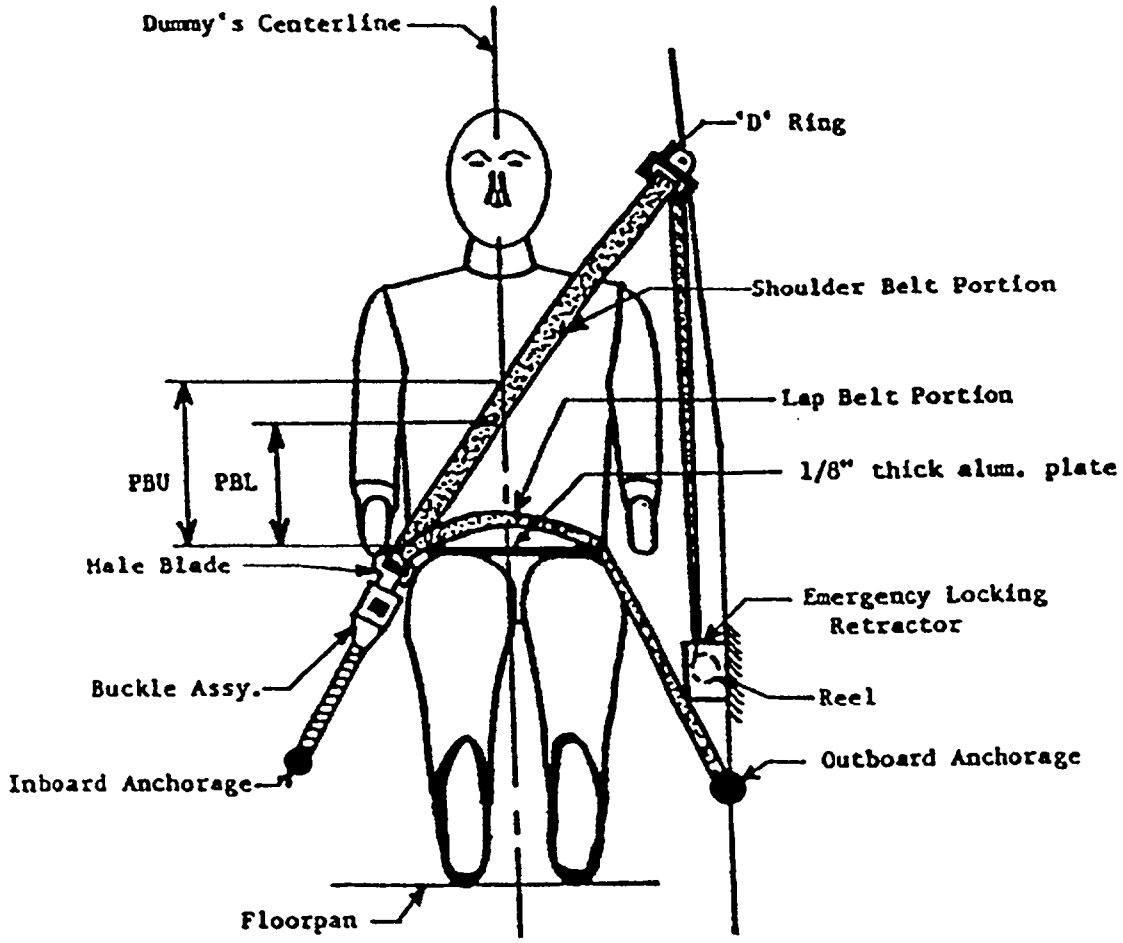


	Driver	Passenger
HR	9.7	8.5
HS	10.8	8.9
AD	3.2	3.3
HD	6.2	5.2
KK	14.7	11.5
AA	15.4	9.5
HA	25.1	25.8

Data Table No. 5 Seat Belt Positoning Data



FRONT VIEW OF DRIVER DUMMY

	DRIVER DUMMY (inches)	PASSENGER DUMMY (inches)
PBU -- Top surface of alum. plate to belt upper edge	14.3	15.0
PBL -- Top surface of alum. plate to belt lower edge	10.5	11.5
LAP BELT TENSION, POUNDS	0.0	0.0
SHOULDER BELT TENSION, POUNDS	0.0	0.0

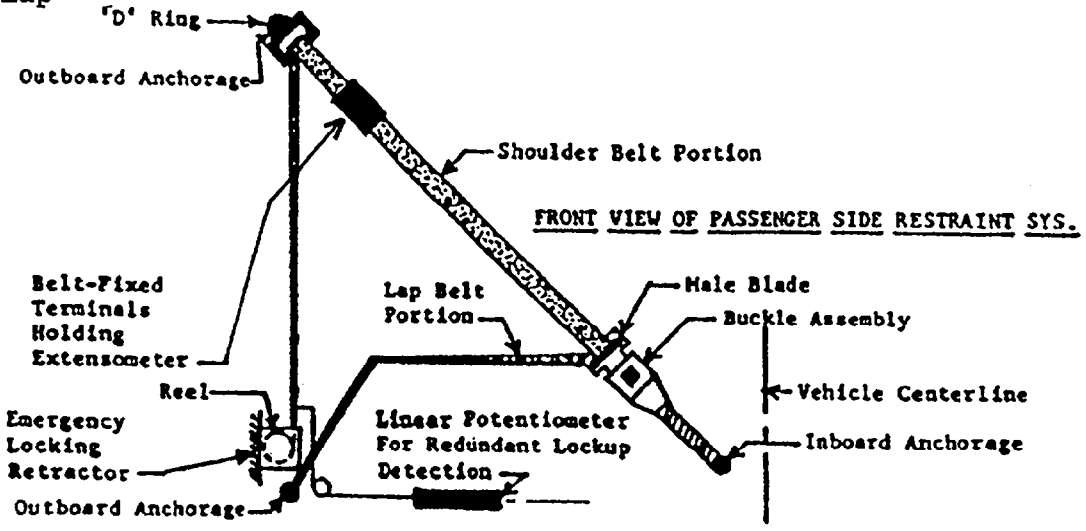
Data Table 6 Seat Belt Performance Assessment Test Data

BELT LENGTH DATA:	DRIVER SIDE		PASSENGER SIDE	
	PRE-TEST	POST-TEST	PRE-TEST	POST-TEST
Total belt length from retractor reel to bolt hole anchor point for continuous webbing systems	114.3	114.3	114.4	114.4
Retractor reel to 'D' ring as measured on Part 572	15.5	15.3	15.5	15.2
Shoulder belt length as measured on Part 572 dummy	32.0	36.5	32.2	36.4
Lap belt length as measured on Part 572 dummy	32.5	36.3	34.2	35.2
Remainder of belt webbing left on retractor reel	34.3	26.2	32.5	27.2

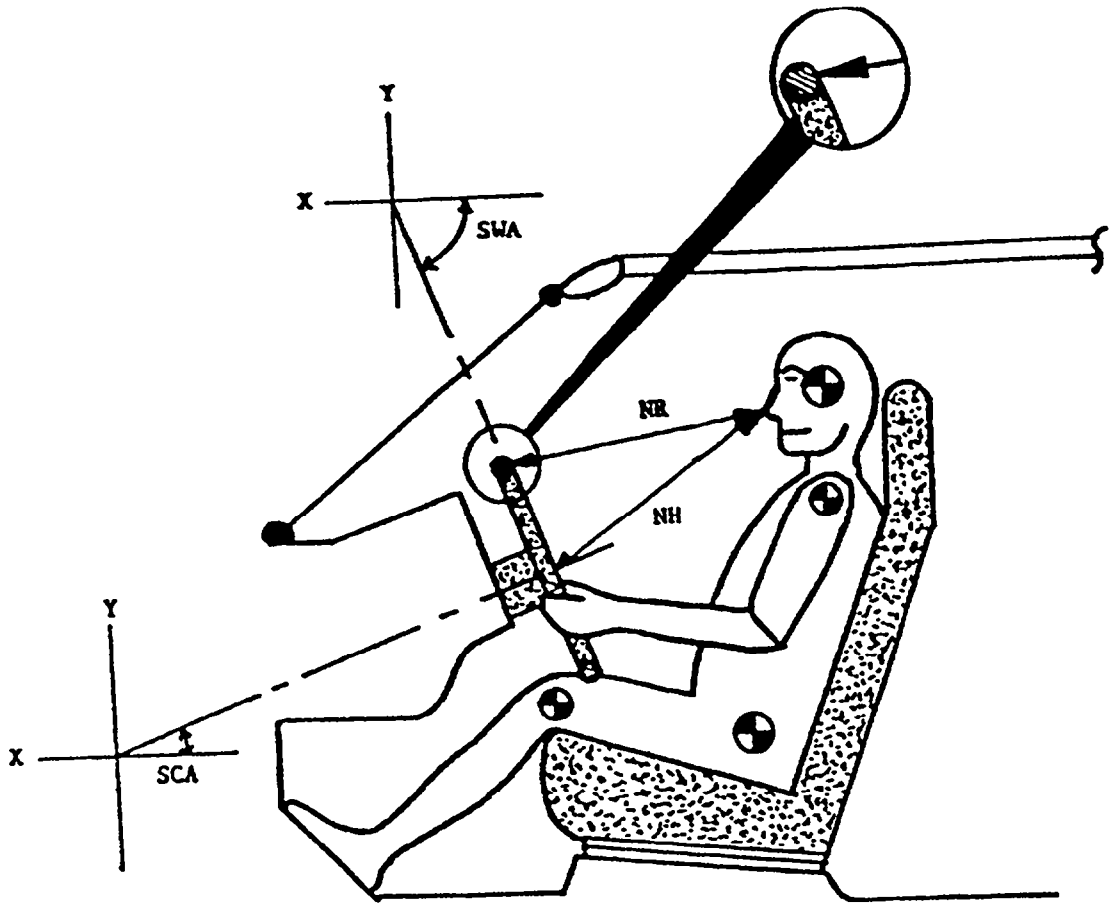
BELT SPOOL-OFF DATA:		
As determined by film analysis	7.8 in	9.0 in
As determined electronically	NOT MEASURED	NOT MEASURED
As determined mechanically	No data	11.0 in

BELT STRAIN DATA:		
Measured between male blade and 'D' ring	9.6 Percent	7.7 Percent

*S = Shoulder
L = Lap



Data Table No. 7 Driver Dummy to Steering Wheel Positioning



LEFT SIDE VIEW

	MEASUREMENTS
NR--Distance from tip of dummy's nose to Top Rear surface of steering wheel rim.	17.5 Inches
NH--Distance from tip of dummy's nose to center of steering column hub.	18.2 Inches
SCA-Angle of steering column relative to the horizontal X axis.	30.0 Degrees
SWA-Angle of steering wheel relative to the horizontal X axis.	63.0 Degrees

Data Table 8 Camera Location Data

VEH. NHTSA NO.: ML5701 ; TEST DATE: 03/20/90 ; TIME: 2:58 PM

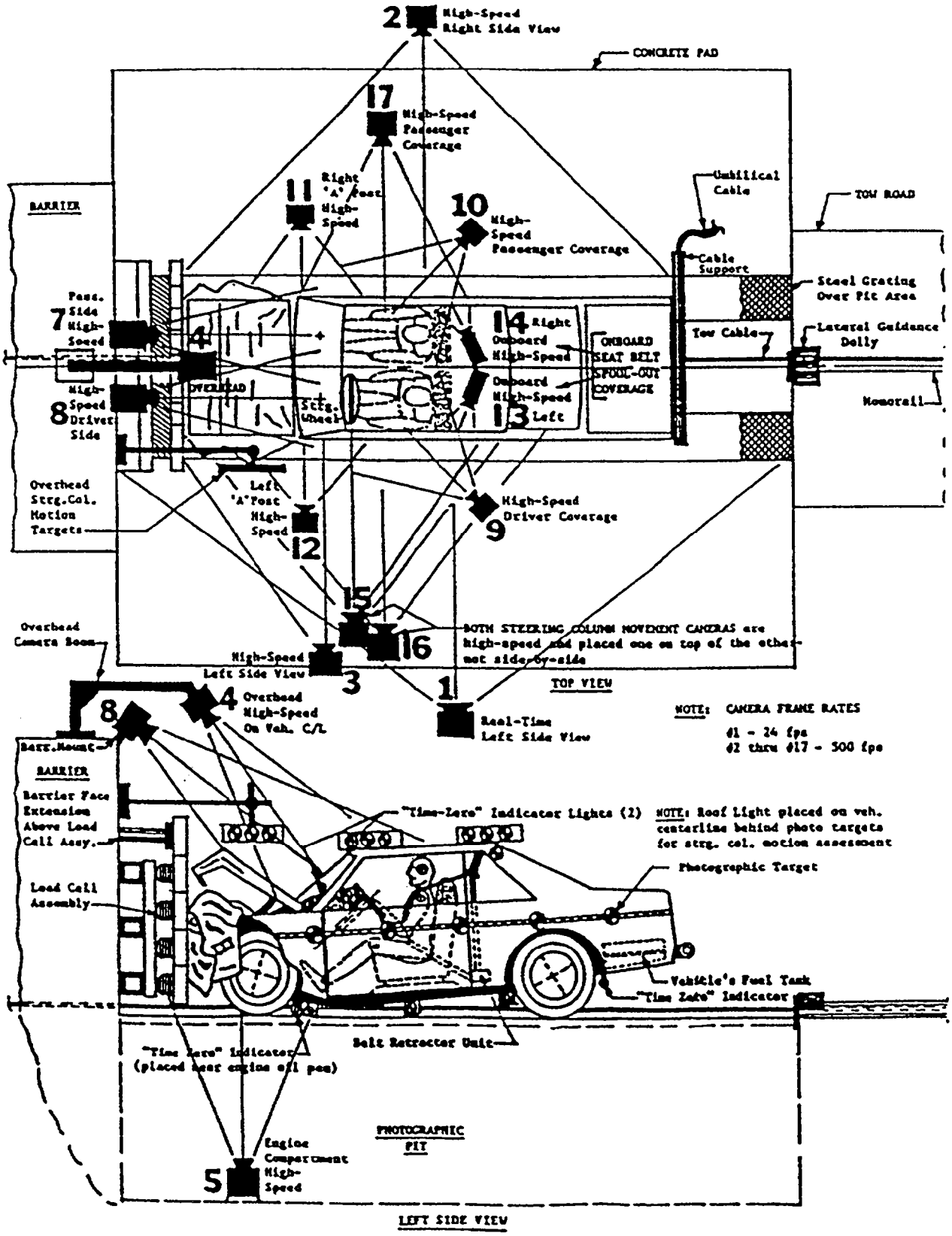
VEH. YEAR/MAKE/MODEL/BODY STYLE: 1990/ISUZU TROOPER II/4 DOOR MPV

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	684	16	24
2	Right Side View	283	246	52.5	0	374	13	600
3	Left Side View	345	292	34	2	390	13	500
4	Overhead	-1	-4	124	-63	107	13	550
5	Pit-Engine	+2	42	-54	43	**	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	-41	106	16	600
8	Front-Driver	-12	-14	104	-45	106	16	600
9	Left Side-Driver	95	99	82.6	+20	82	16	600
10	Right Side-Passenger	105	107	82.5	+20	94	16	600
11	Right Side-'A' Post	135	173	52.2	1	149	28	600
12	Left Side-'A' Post	-295	-32	50.5	1	300	50	800
13	Onboard-Left Side	-12.5	115	36	21	41	13	700
14	Onboard-Right Side	12.5	115	36	20	41	13	750
15	Left Side-Steering Col.	-138	88	128	+12	138	28	600
16	Left Side-Steering Col.	-135	85	111	+10	128	28	600
17	Right Side Passenger	135	148	52.5	+ 2	135	16	650

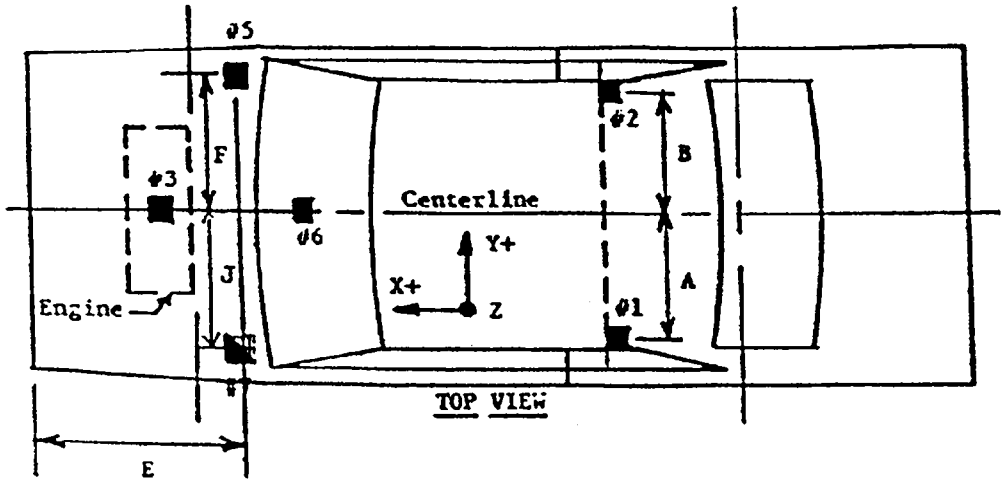
* X = film plane to monorail centerline
  Y = film plane to barrier face
  Z = film plane to ground

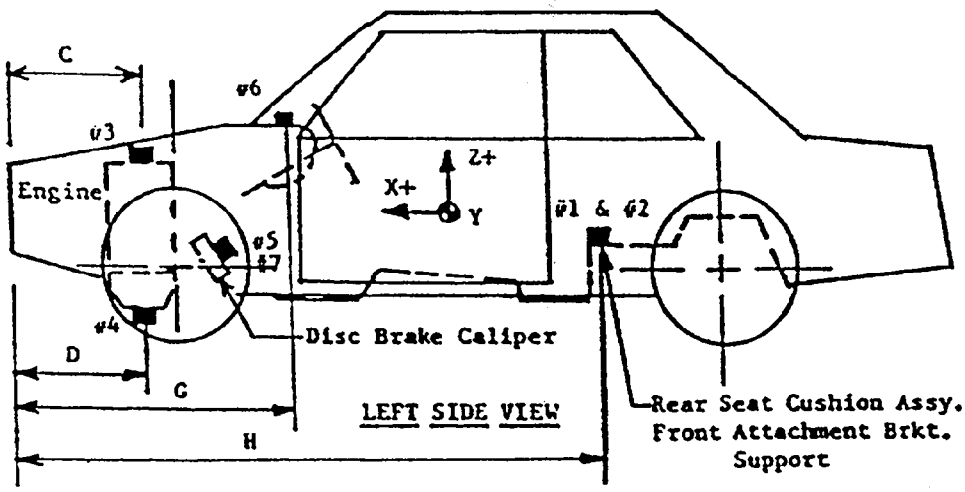
**Pit camera uses refractor lens for imagery.

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



Data Table No. 9 Vehicle Accelerometer Location and Data Summary





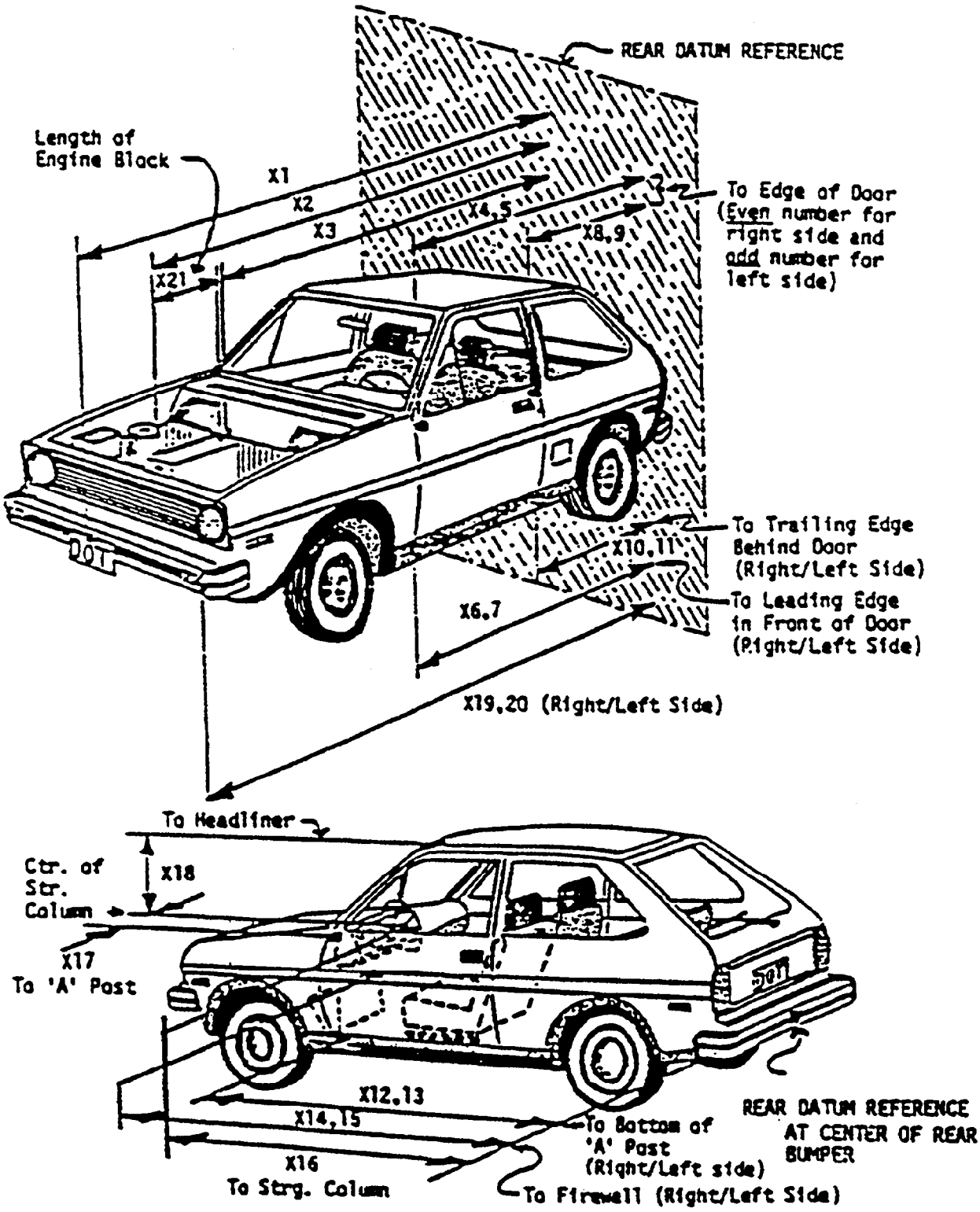
Dimension	Length (in.)
A	23.0
B	23.0
C	26.3
D	45.3
E	35.7
F	23.0
G	59.2
H	115.2
J	23.0

Loc. No.	Description	Maximum Value X-	msec.	X+	msec.
1	Rear seat X-member @ Left Side	-40.9	44.8	1.8	172.3
2	Rear seat X-member @ Right Side	-40.1	34.4	3.3	70.5
3	Top of Engine Block	-203.2	31.5	54.4	39.7
4	Bottom of Engine	-131.9	30.5	22.1	44.1
5	Disc Brake Caliper Right Side	- 73.8	38.0	31.4	54.5
6	Instrument Panel	-64.8	76.8	79.8	64.5
7	Disc Brake Caliper @Left Side	- 96.6	40.0	42.3	48.9

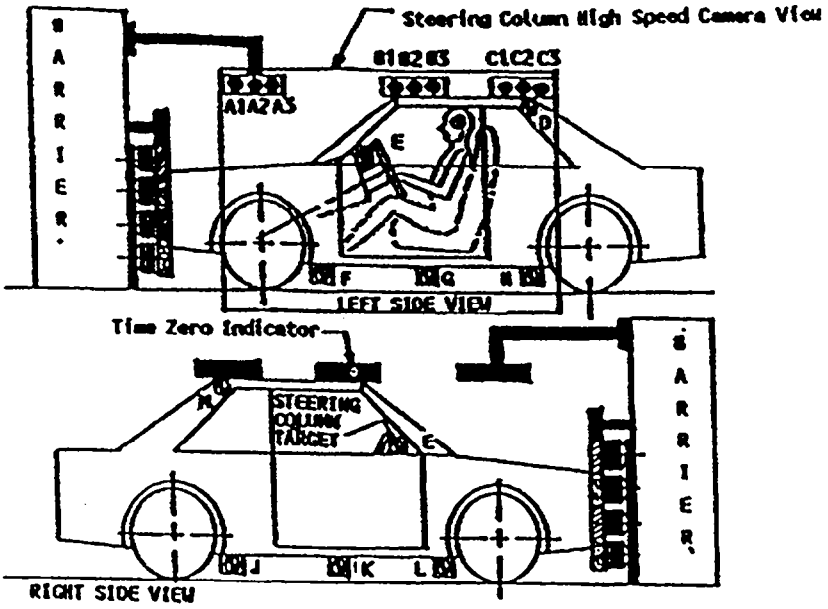
Data Table No. 10 Test Vehicle Measurements

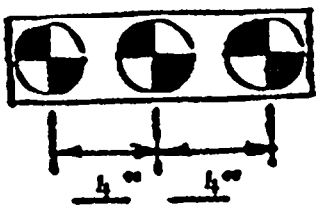
NO.	MEASUREMENT DESCRIPTION	Pre-Test (in.)	Post-Test (in.)	Diff. (in.)
X1	Total Length of Test Vehicle at Centerline	175.5	155.5	20.0
X2	Rear Surface of Vehicle to Front of Engine	156.2	149.3	6.9
X3	Rear Surface of Vehicle to Firewall	133.5	132.8	0.7
X4	Rear Surface to Upr. Leading Edge of Right Door	123.4	121.2	2.2
X5	Rear Surface to Upr. Leading Edge of Left Door	123.2	123.0	0.2
X6	Rear Surface to Lwr. Leading Edge of Right Door	122.4	120.3	2.1
X7	Rear Surface to Lwr. Leading Edge of Left Door	123.2	121.8	1.4
X8	Rear Surface to Upr. Trailing Edge of Right Door	87.0	85.6	1.4
X9	Rear Surface to Upr. Trailing Edge of Left Door	86.8	86.8	0.0
X10	Rear Surface to Lwr. Trailing Edge of Right Door	86.8	84.8	2.0
X11	Rear Surface to Lwr. Trailing Edge of Left Door	86.6	86.1	0.5
X12	Rear Surface to Bottom 'A' Post on Right Side	123.0	121.2	1.8
X13	Rear Surface to Bottom 'A' Post on Left Side	123.0	122.8	0.2
X14	Rear Surface to Firewall on Right Side	133.4	132.7	0.7
X15	Rear Surface to Firewall on Left Side	134.5	134.0	0.5
X16	Rear Surface to Steering Column	107.8	107.7	0.1
X17	Center of Steering Column to 'A' Post	15.2	15.1	0.1
X18	Center Steering Column to Headlining	19.0	21.7	-2.7
X19	Rear Surface to Right Side of Front Bumper	165.5	146.7	18.8
X20	Rear Surface to Left Side of Front Bumper	165.2	148.5	16.7
X21	Length of Engine Block	22.0	22.0	0.0

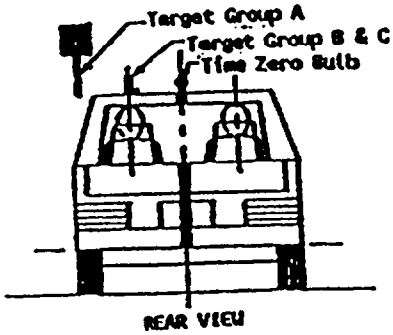
Data Table No. 10 (Cont'd) Test Vehicle Measurements



Data Table No. 11 Pretest Vehicle Target Locations







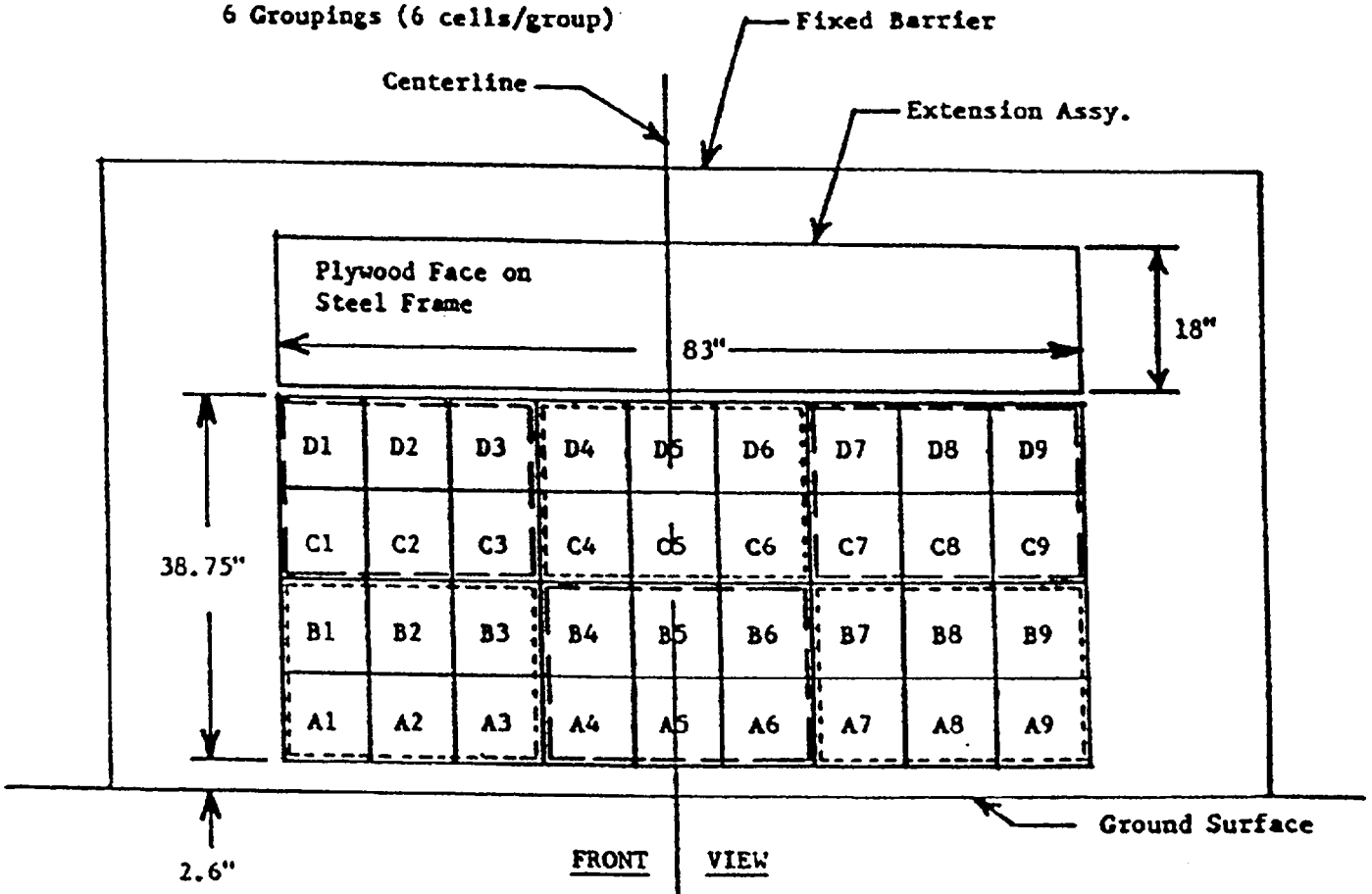
BARRIER TARGETS	'X' From Imag. Barrier Face Vertical Plane	'Y' From Monorail C/L	'Z' Above Ground
A-1	54.5	21.5	87.0
A-2	58.5	21.5	87.0
A-3	62.5	21.5	87.0

BARRIER TARGETS	'X' From Imag. Barrier Face Vertical Plane	'Y' From Monorail C/L	'Z' Above Ground
B-1	66.5	14.0	71.0
B-2	70.5	14.0	71.0
B-3	74.5	14.0	71.0
C-1	152.0	14.0	72.5
C-2	156.0	14.0	72.5
C-3	162.0	14.0	72.5
D	162.5	27.0	64.5
E	61.5	13.7	48.5
F	50.5	27.2	11.7
G	82.0	27.0	12.3
H	113.5	27.2	12.9
J	113.3	27.2	13.3
K	82.2	27.0	12.6
L	50.5	27.2	12.2
M	162.5	27.0	64.5

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

POST TEST FRONT VIEW

PRETEST LEFT SIDE VIEW

POSTTEST LEFT SIDE VIEW

PRETEST RIGHT SIDE VIEW

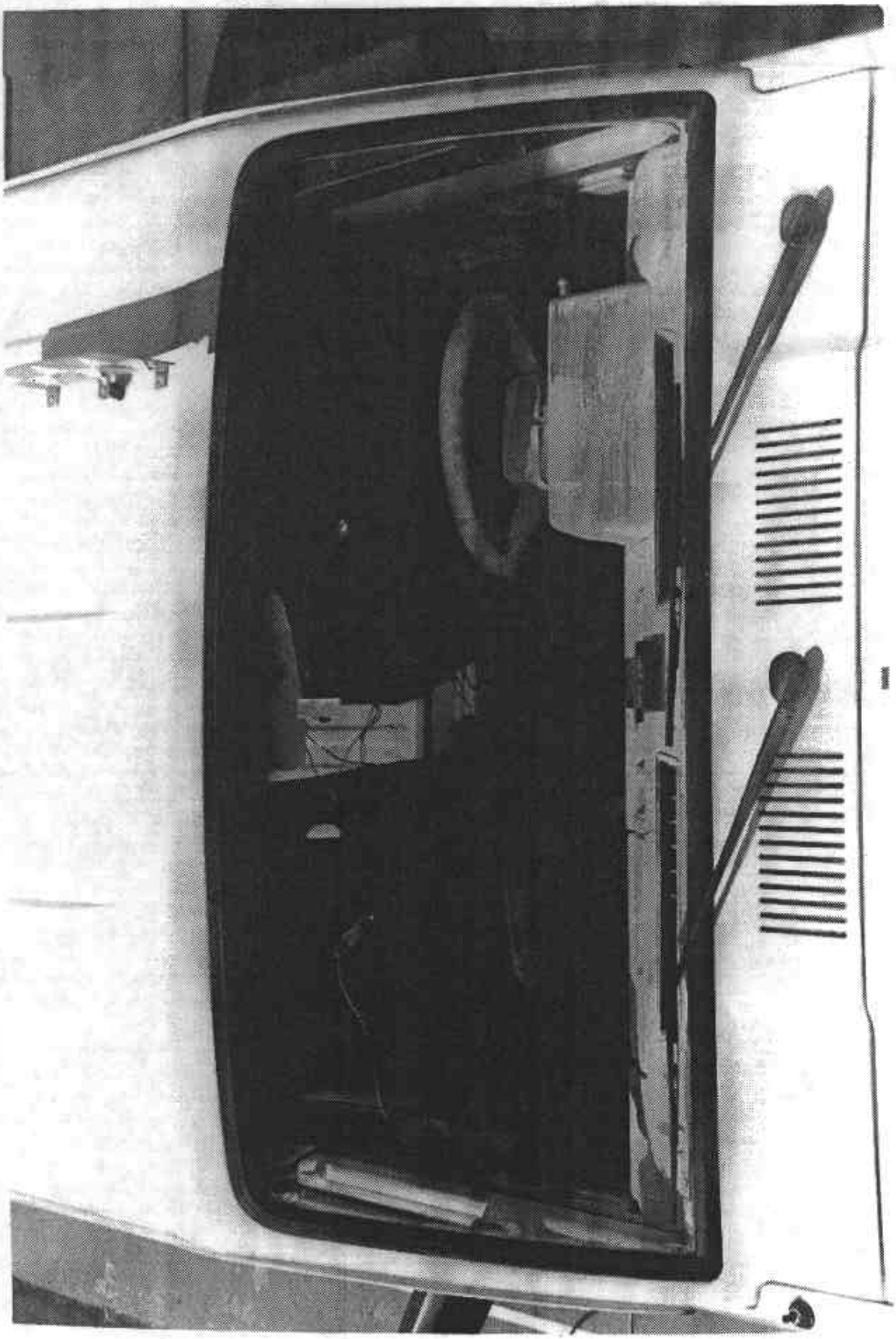
POSTTEST RIGHT SIDE VIEW

PRETEST RIGHT FRONT 3/4 VIEW

POSTTEST RIGHT FRONT 3/4 VIEW

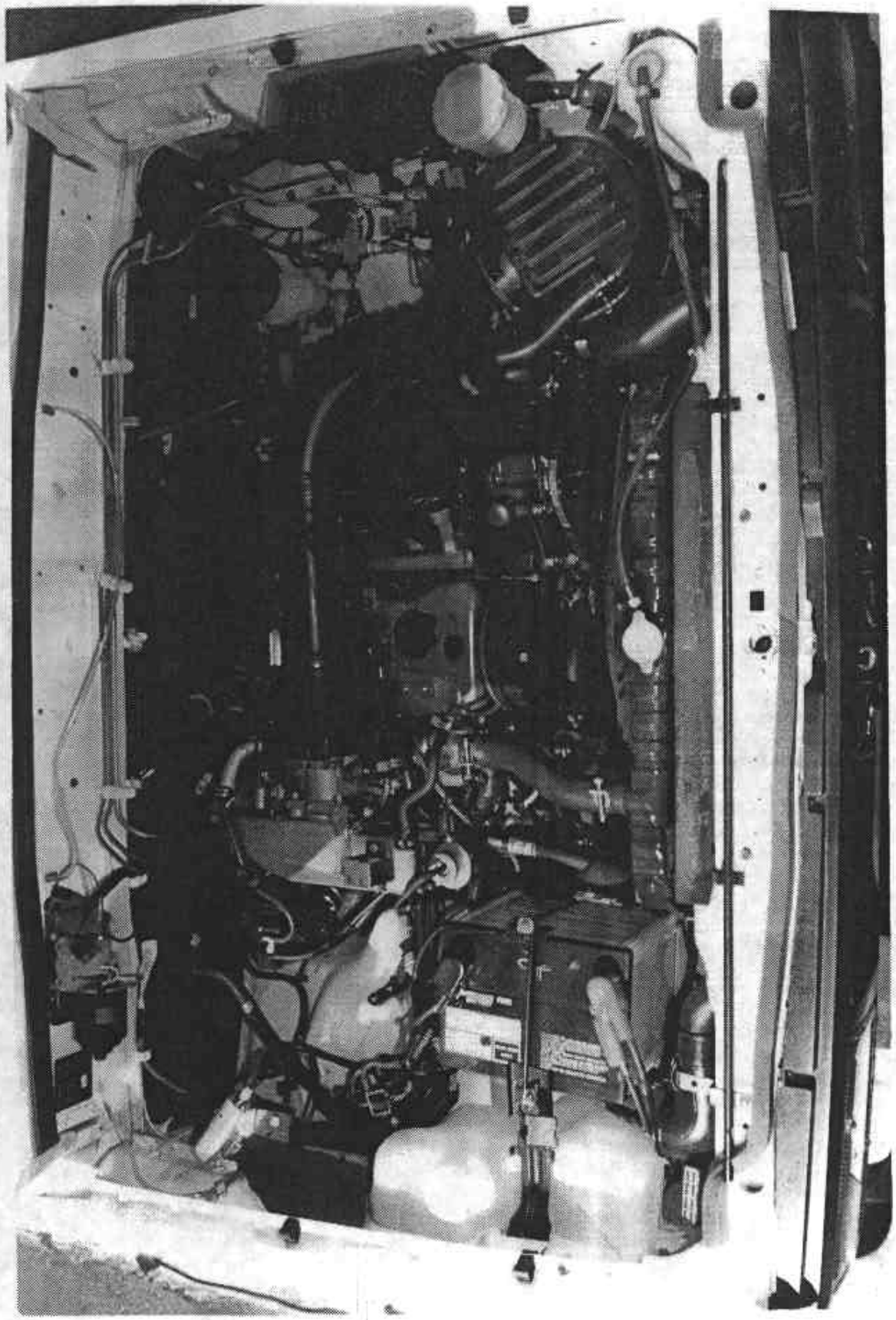
PRETEST LEFT REAR 3/4 VIEW

POSTTEST LEFT REAR 3/4 VIEW



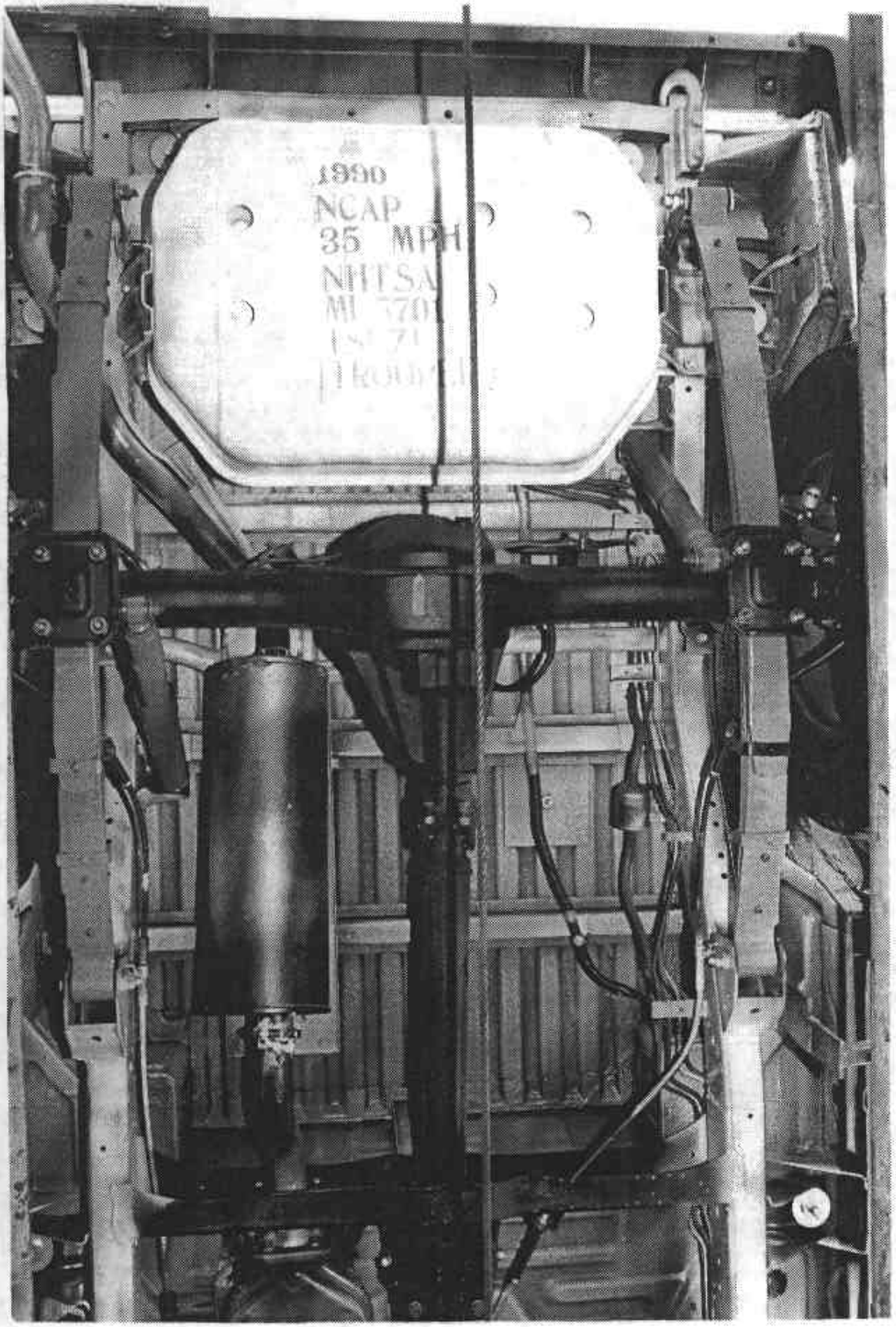
PRETEST WINDSHIELD VIEW

POSTTEST WINDSHIELD VIEW

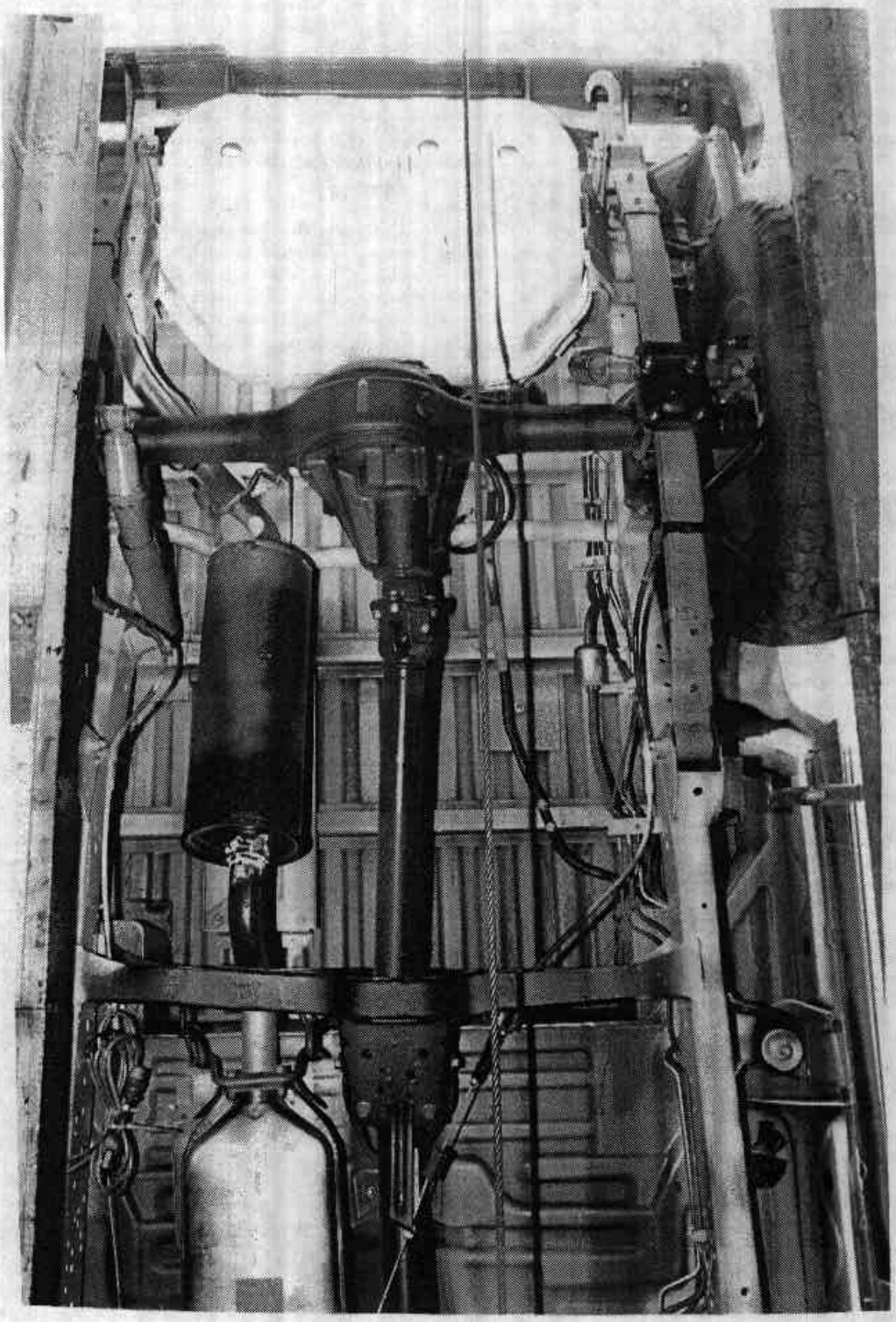


PRETEST ENGINE COMPARTMENT VIEW

POSTTEST ENGINE COMPARTMENT VIEW

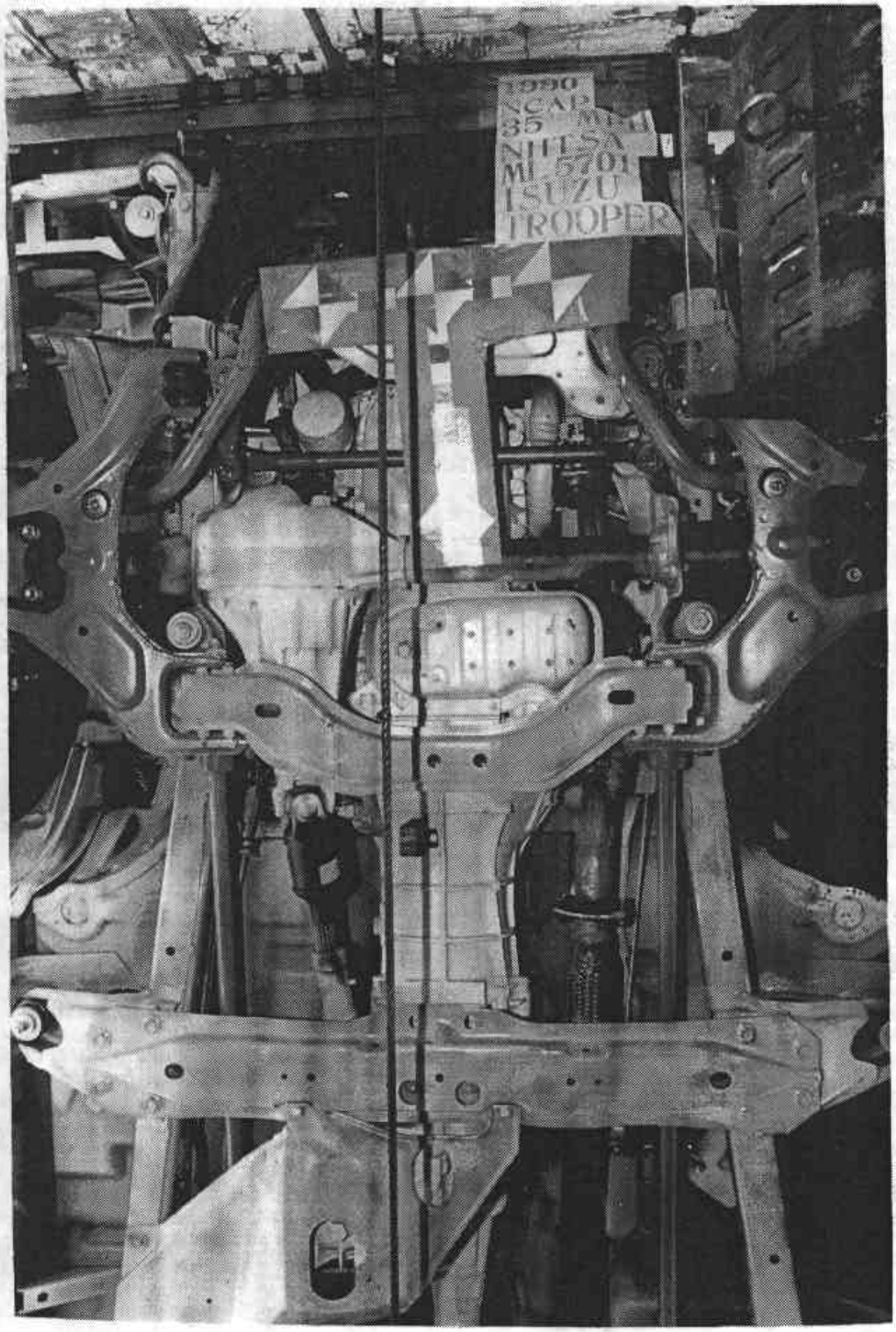


PRETEST FRONT UNDERBODY VIEW

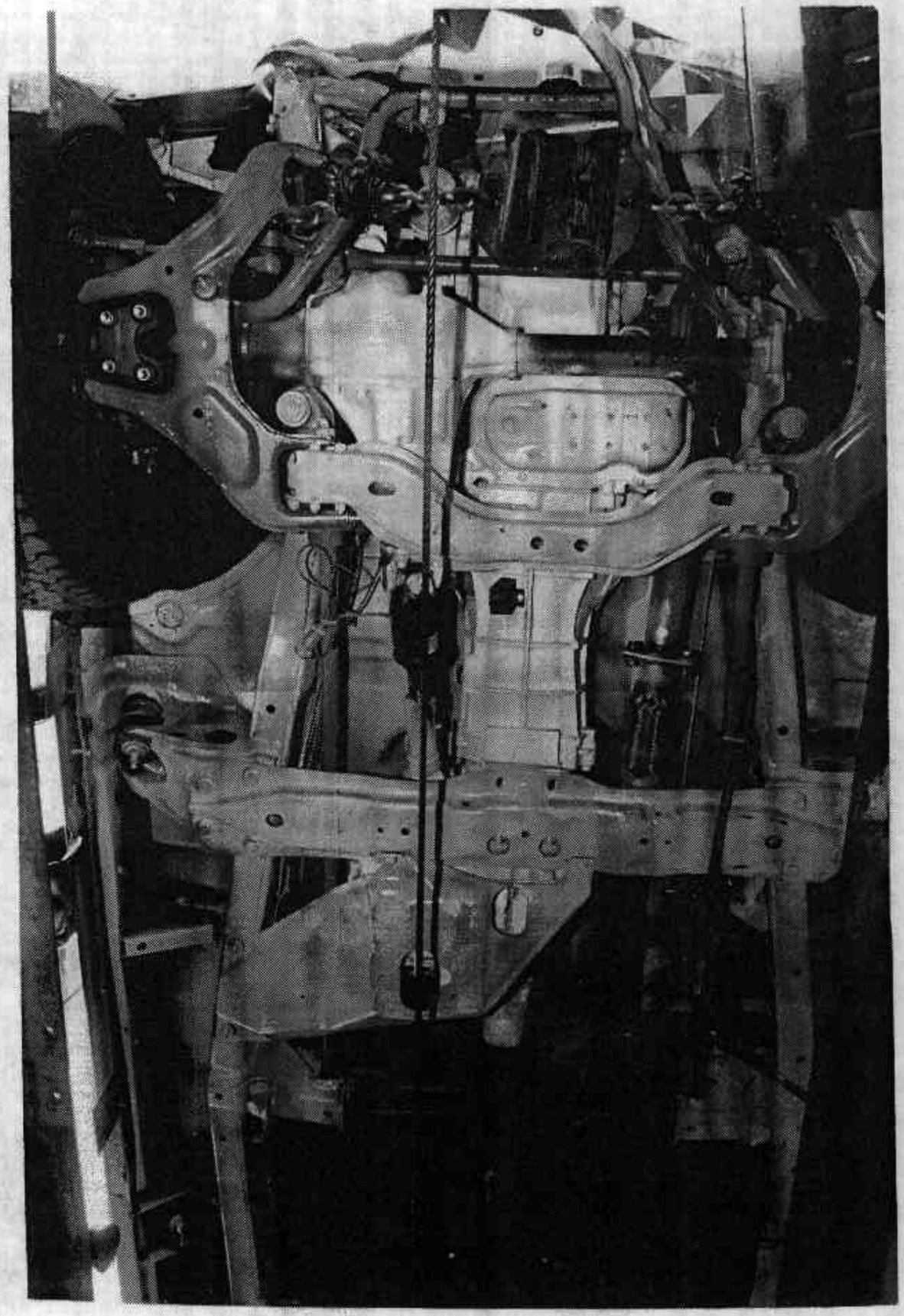


POSTTEST FRONT UNDERBODY VIEW
A-16

MSE-90-R9092-N06



PRETEST REAR UNDERBODY VIEW



POSTTEST REAR UNDERBODY VIEW

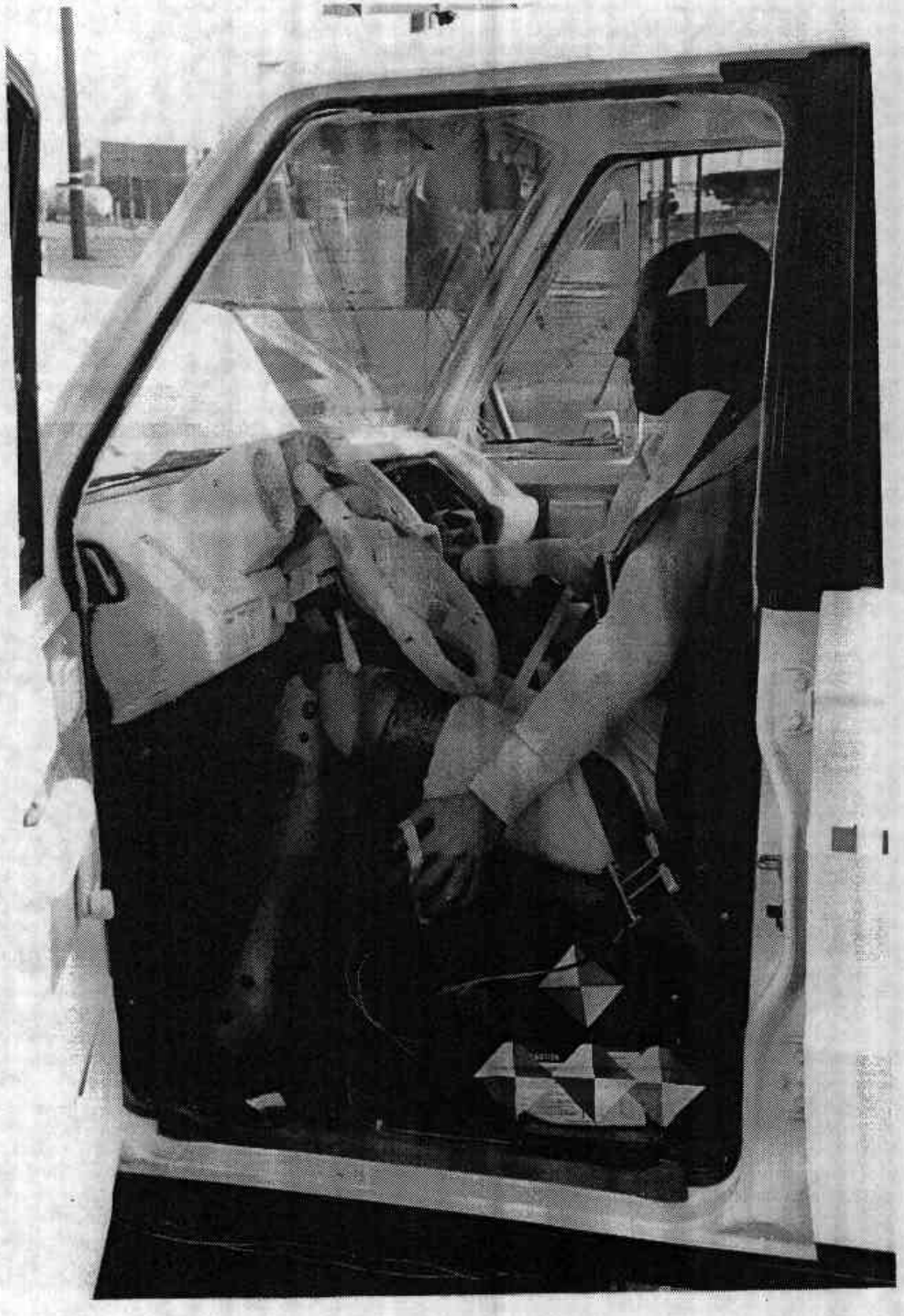
PRETEST DRIVER DUMMY POSITION VIEW

POSTTEST DRIVER DUMMY POSITON VIEW

PRETEST PASSENGER DUMMY POSITION VIEW

POSTTEST PASSENGER DUMMY POSITION VIEW

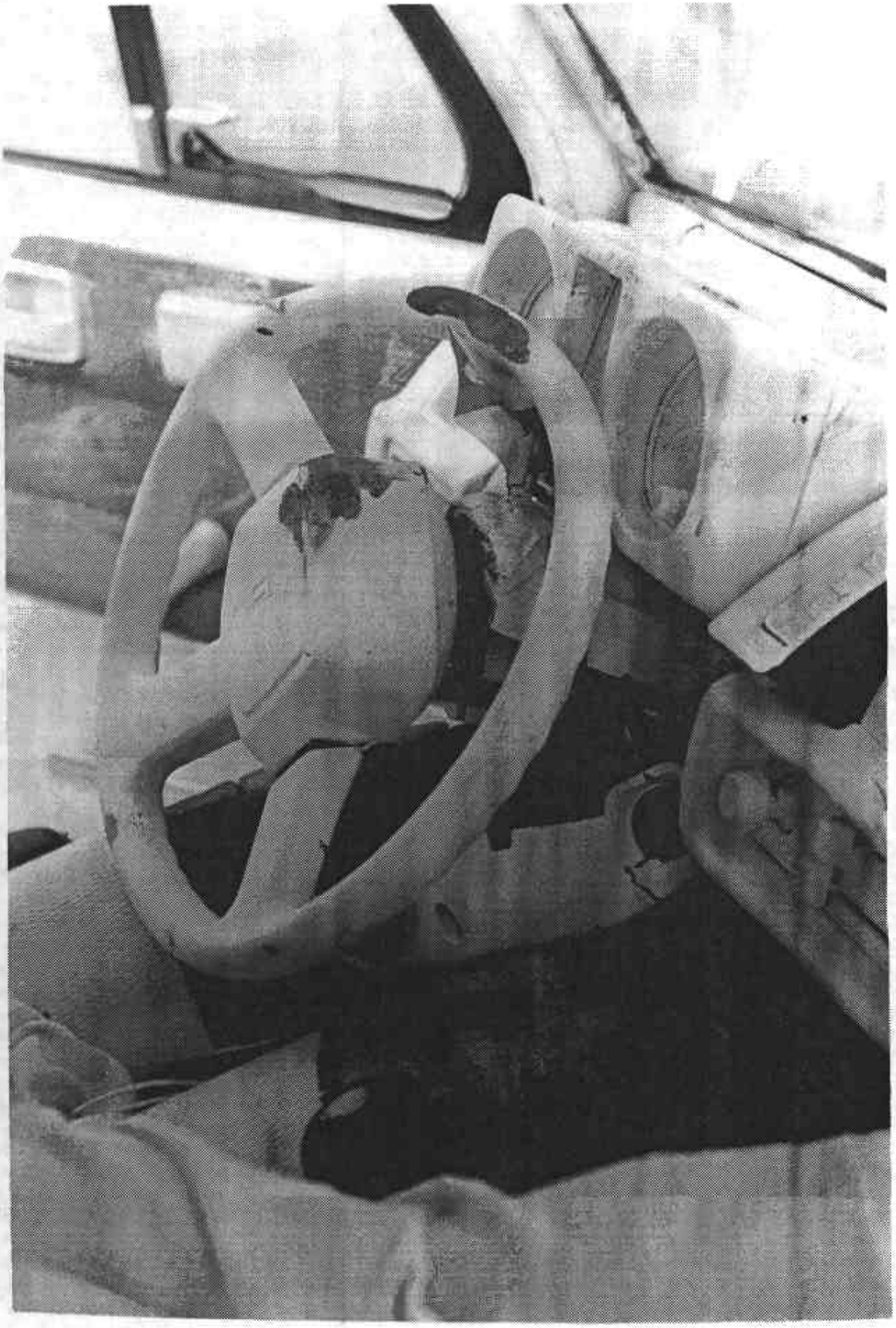
PRETEST DRIVER DUMMY & VEHICLE INTERIOR VIEW (Door Open)



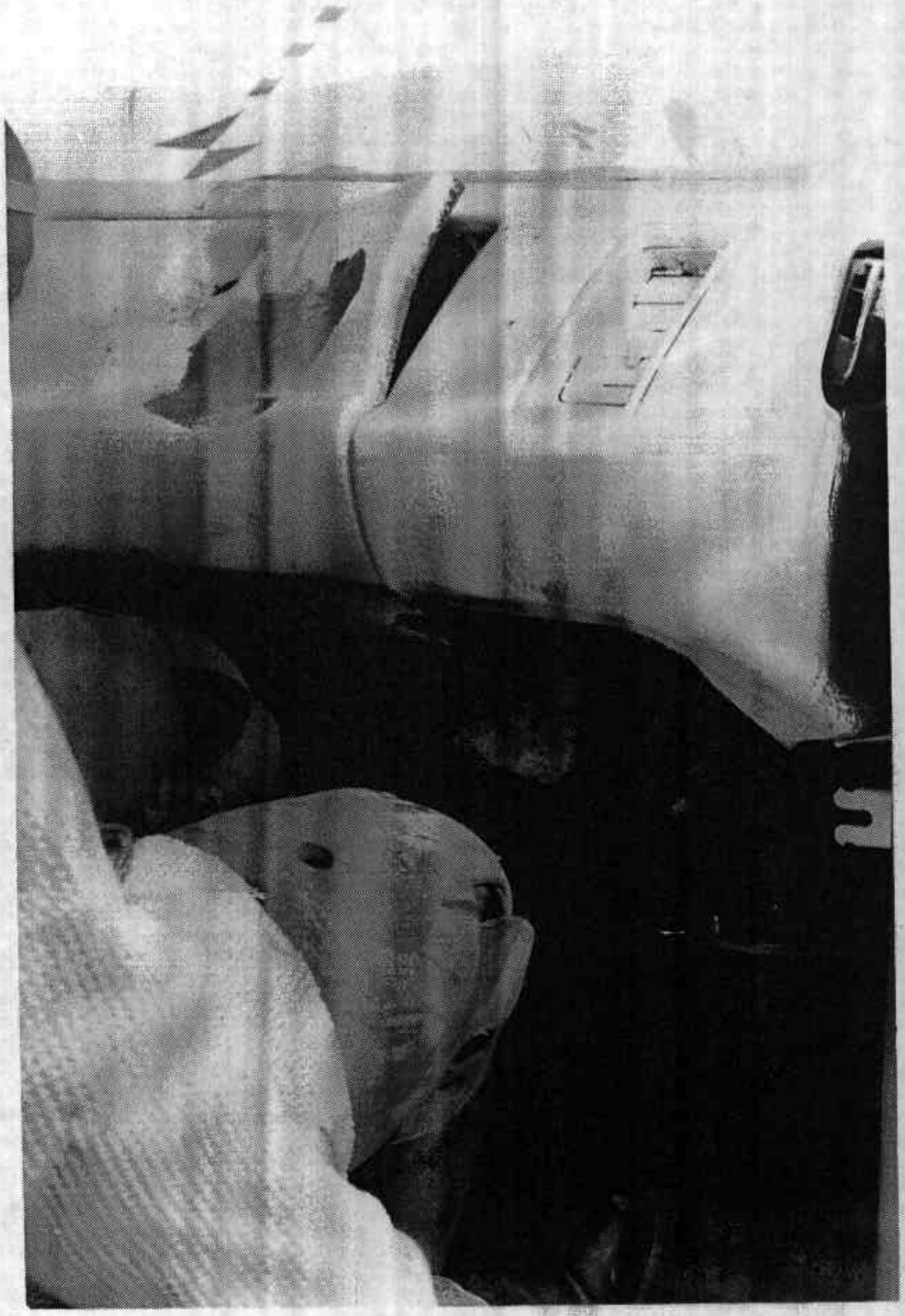
POSTTEST DRIVER DUMMY & VEHICLE INTERIOR VIEW (Door Open)

PRETEST PASSENGER & VEHICLE INTERIOR VIEW (Door Open)

POSTTEST PASSENGER DUMMY & VEHICLE INTERIOR VIEW (Door Open)



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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APPENDIX B-2

LOAD CELL BARRIER DATA

DATA FILTERING:
Load Cell Barrier 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: 20/MAR/90 TSTPRF: MSE CONNO: DTNH22-87-D-02009
TSTREF: NCA120 TSTTYP: NCA TSTCFN: VTB
TKSURF: ASH TKCOND: DRY TEMP: 94 RECTYP: FMT
LINK: UMB CLSSPD: 35.1 IMPANG: 0 OFFSET: 0.0
IMPPNT: 9999.9 MEASUR: ENG TOTCRV: 65
TSTCOM: NO COMMENTS

Vehicle Information

VGID: 2 VEHNO: 1 MAKE: 42 MODEL: 04 YEAR: 90 BODY: 5H
VIN: JACCH58E3L8905856 ENGINE: 4CIF ENGDSP: 2.6 LITER TRANSM: MR
VEHTWT: 4302 WHLBAS: 104.3 VEHLEN: 175.5 VEHWID: 65.0
VEHCG: 48.0 STRSEP: SP COLMEC: OTH MODIND: P
MODDSC: UNMODIFIED
BX
1: 175.5
2: 156.2
3: 133.5
4: 123.4
5: 123.2
6: 122.4
7: 86.6
8: 87.0
9: 86.8
10: 86.8
11: 123.2
12: 123.0
13: 123.0
14: 133.4
15: 134.5
16: 107.8
17: 15.2
18: 19.0
19: 165.5
20: 165.2
21: 22.0
VEHSPD: 35.1 CRBANG: 0 PDOF: 0 BMPENG: NA
SILENG: NA APLENG: NA
DPD
1: 23.7
2: 22.3
3: 22.1
4: 22.1
5: 21.5
6: 20.4
VDI: 12FCAW9 LENCNT: 65.0 DAMDST: 0.0 CRHDST: 23.7
AX
1: 155.5
2: 149.3
3: 132.8
4: 121.2
5: 123.0
6: 120.3
7: 121.8
8: 85.6
9: 86.8
10: 84.8
11: 86.1
12: 121.2
13: 122.8
14: 132.7
15: 134.0
16: 107.7
17: 15.1
18: 21.7
19: 146.7
20: 148.5
21: 22.0
CARANG: 999 VEHOR: 999
VEHCOM: COLMEC IS OFFSET LINKAGE

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: HUMANOID SYSTEMS, S/N: 467
DUMMOD: UNMODIFIED
DUMDSC: NO COMMENTS
HH: 18.2 HW: 21.7 HR: 9.7 HS: 10.8 CD: 22.5 CS: 15.5 AD: 3.2 HD: 6.2
KD: 5.4 HB:999.9 NB:999.9 CB:999.9 KB:999.9
RESTR1: 3PT RESTR2: SWE
RESTXT: NO COMMENTS
SEPOSN: CN AIRDEP: NA
CNTRH1: SR CNTRH2: SH CNTRC1: SW CNTRC2: NO CNTRL1: DP CNTRL2: NO
HIC: 1564. T1: 55.900 T2: 91.900
CLIP3M: 59.6 LFEM: 262. RFEM: 430. CSI: 762. LBELT: 2301. SBELT: 2051.
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: 464
DUMMOD: UNMODIFIED
DUMDSC: NO COMMENTS
HH: 18.7 HW: 21.7 HR: 8.5 HS: 8.9 CD: 25.7 CS:999.9 AD: 3.3 HD: 5.2
KD: 6.2 HB:999.9 NB:999.9 CB:999.9 KB:999.9
RESTR1: 3PT RESTR2: NON
RESTXT: NO COMMENTS
SEPOSN: CN AIRDEP: NA
CNTRH1: OT CNTRH2: NO CNTRC1: NO CNTRC2: NO CNTRL1: DP CNTRL2: NO
HIC: 1951. T1: 69.300 T2: 105.300
CLIP3M: 64.3 LFEM: 307. RFEM: 141. CSI: 735. LBELT: 1887. SBELT: 2785.
OCCCOM: CNTRH1 IS GLOVE BOX

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: BJ61H
CALDAT: 17/JAN/90 INSRAT: 200 CHLMAX: 63 INIVEL: 35.1
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: BG95H
CALDAT: 17/JAN/90 INSRAT: 200 CHLMAX: 11 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: BJ54H
CALDAT: 17/JAN/90 INSRAT: 200 CHLMAX: 39 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: BJ27H
CALDAT: 17/JAN/90 INSRAT: 200 CHLMAX: 31 INIVEL: 35.1
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: BG78H
CALDAT: 17/JAN/90 INSRAT: 200 CHLMAX: 17 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: AR39
CALDAT: 17/JAN/90 INSRAT: 200 CHLMAX: 12 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: 550
CALDAT: 16/JAN/90 INSRAT: 3000 CHLMAX: 9 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM:

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: 559
CALDAT: 16/JAN/90 INSRAT: 3000 CHLMAX: 14 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM:

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: AT34
CALDAT: 17/JAN/90 INSRAT: 200 CHLMAX: 48 INIVEL: 35.1
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: B891H
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: 011
SENTYP: AC SENLOC: 02 SENATT: HDCG
AXIS: ZL UNITS: G'S PREFIL: 1650
INSMAN: MFG: ENDEVCO, MODEL: 7264-200, S/N: BF82H
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: BJ28H
CALDAT: 17/JAN/90 INSRAT: 200 CHLMAX: 33 INIVEL: 35.1
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: BT28H
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: 014
SENTYP: AC SENLOC: 02 SENATT: CHST
AXIS: ZL UNITS: G'S PREFIL: 1650
INSMAN: MFG: ENDEVCO, MODEL: 7264-200, S/N: AE29
CALDAT: 17/JAN/90 INSRAT: 200 CHLMAX: 13 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: 634
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: FHRR
AXIS: XL UNITS: LBS PREFIL: 1650
INSMAN: MFG: GSE INC., MODEL: 2430, S/N: 735
CALDAT: 16/JAN/90 INSRAT: 3000 CHLMAX: 13 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: 66 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 018
SENTYP: LC SENLOC: 01 SENATT: SHBT
AXIS: OT UNITS: LBS PREFIL: 1650
INSMAN: MFG: LEBOW, MODEL: 3371, S/N: 327
CALDAT: 16/JAN/90 INSRAT: 3500 CHLMAX: 59 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: 58 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 020
SENTYP: LC SENLOC: 02 SENATT: SHBT
AXIS: OT UNITS: LBS PREFIL: 1650
INSMAN: MFG: LEBOW, MODEL: 3371, S/N: 308
CALDAT: 16/JAN/90 INSRAT: 3500 CHLMAX: 80 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 021
SENTYP: DS SENLOC: 01 SENATT: SHBT
AXIS: OT UNITS: INS PREFIL: 1650
INSMAN: MFG: ETI, MODEL: LCP12A-12, S/N: 8803-1
CALDAT: 01/MAR/90 INSRAT: 30 CHLMAX: 32 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM: SEAT BELT ELONGATION, UNITS ARE INCHES/IN. (PERCENTAGE BELT STRETCH)

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: 01/MAR/90 INSRAT: 30 CHLMAX: 26 INIVEL: 0.0
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM: SEAT BELT ELONGATION, UNITS ARE INCHES/IN. (PERCENTAGE BELT STRETCH)

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 023
SENTYP: AC SENLOC: NA SENATT: BRCL
AXIS: XG UNITS: G'S PREFIL: 1650
INSMAN: MFG: SETRA, MODEL: 111, S/N: 1123
CALDAT: 17/JAN/90 INSRAT: 250 CHLMAX: 107 INIVEL: 35.1
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM:

Instrumentation Information

Inst. Group ID: 5 VEHNO: 1 CURNO: 024
SENTYP: AC SENLOC: NA SENATT: BRCR
AXIS: XG UNITS: G'S PREFIL: 1650
INSMAN: MFG: SETRA, MODEL: 111, S/N: 1124
CALDAT: 17/JAN/90 INSRAT: 250 CHLMAX: 77 INIVEL: 35.1
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: 74 INIVEL: 35.1
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM:

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: 113 INIVEL: 35.1
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: 78 INIVEL: 35.1
NFP: -300 NLP: 2999 DELT: 100 DASTAT: AM
INSCOM: ACCELEROMETER DISLODGED BY DRIVER DUMMY APPROX T=60 MSEC.

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: 81 INIVEL: 35.1
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: 65 INIVEL: 35.1
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: 3 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: 5	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: 7	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: 5	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: 19	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: 15	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: 4 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: 3 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: 3 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: 5 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: LC83	
AXIS: XG	UNITS: LBS	PREFIL: 1650	
INSMAN: MFG: INTERFACE,	MODEL: 1220-FS,	S/N: 19258	
CALDAT: 14/MAY/85	INSRAT: 50000	CHLMAX: 58	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: LC84	
AXIS: XG	UNITS: LBS	PREFIL: 1650	
INSMAN: MFG: INTERFACE,	MODEL: 1220-FS,	S/N: 19278	
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: 043	
SENTYP: LC	SENLOC: NA	SENATT: LC85	
AXIS: XG	UNITS: LBS	PREFIL: 1650	
INSMAN: MFG: INTERFACE,	MODEL: 1220-FS,	S/N: 19279	
CALDAT: 14/MAY/85	INSRAT: 50000	CHLMAX: 41	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: LC86	
AXIS: XG	UNITS: LBS	PREFIL: 1650	
INSMAN: MFG: INTERFACE,	MODEL: 1220-FS,	S/N: 19282	
CALDAT: 14/MAY/85	INSRAT: 50000	CHLMAX: 69	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: LC87	
AXIS: XG	UNITS: LBS	PREFIL: 1650	
INSMAN: MFG: INTERFACE,	MODEL: 1220-FS,	S/N: 19262	
CALDAT: 14/MAY/85	INSRAT: 50000	CHLMAX: 64	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: 6 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: 3 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: 6 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: NOTE DATA DROPOUTS BETWEEN T=118.8 AND T=156.6 MSEC.

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: 55 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: 23 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: 91 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: 26 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: 38 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: 9 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: 4 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: 5 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: 19 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: 16 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: 11 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: 14 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: 10 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

Instrumentation Information

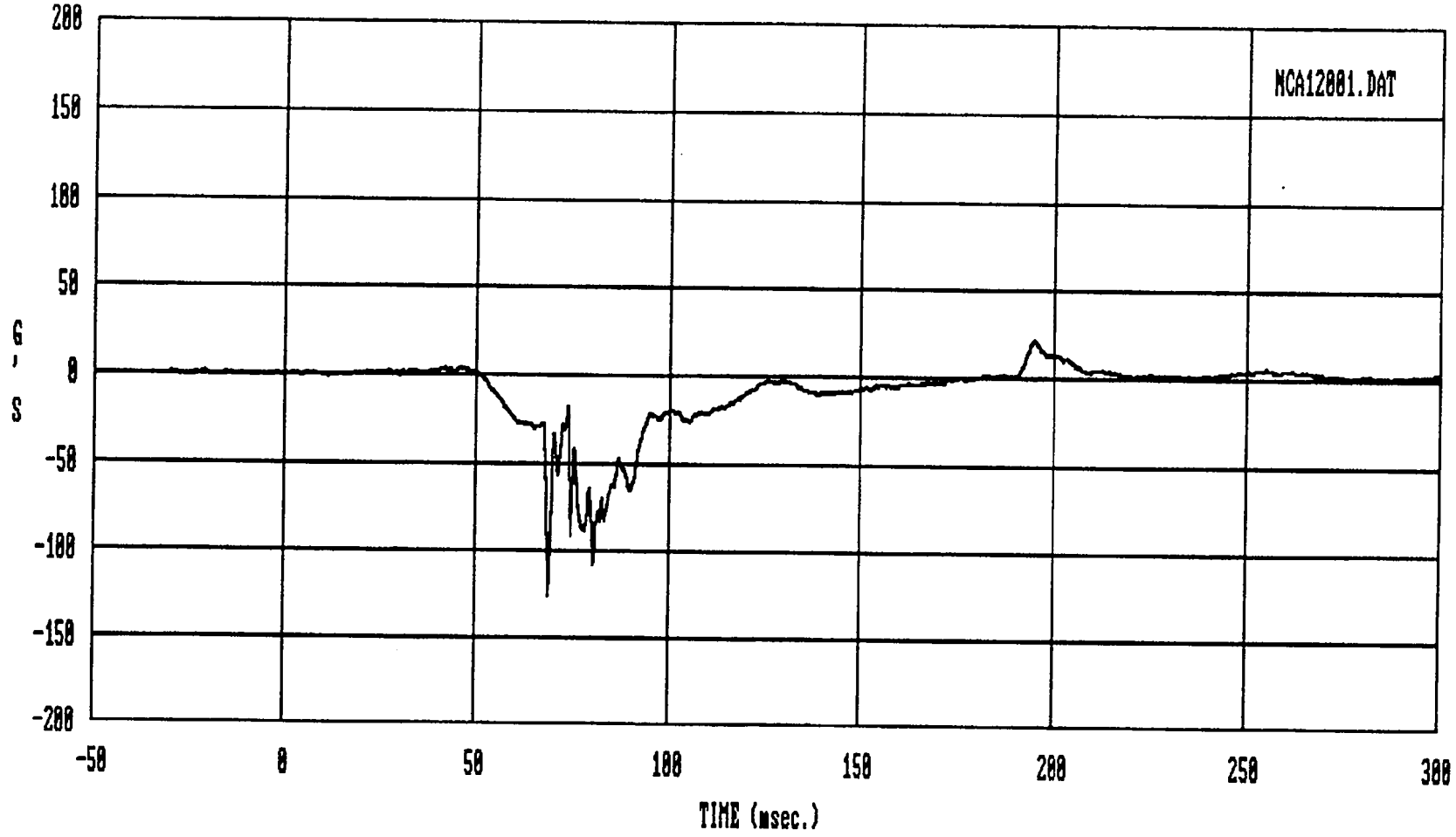
Inst. Group ID: 5 VEHNO: 0 CURNO: 063
SENTYP: LC SENLOC: NA SENATT: LCD7
AXIS: XG UNITS: LBS PREFIL: 1650
INSMAN: MFG: INTERFACE, MODEL: 1220-FS, S/N: 19332
CALDAT: 14/MAY/85 INSRAT: 50000 CHLMAX: 16 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

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: 20 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:

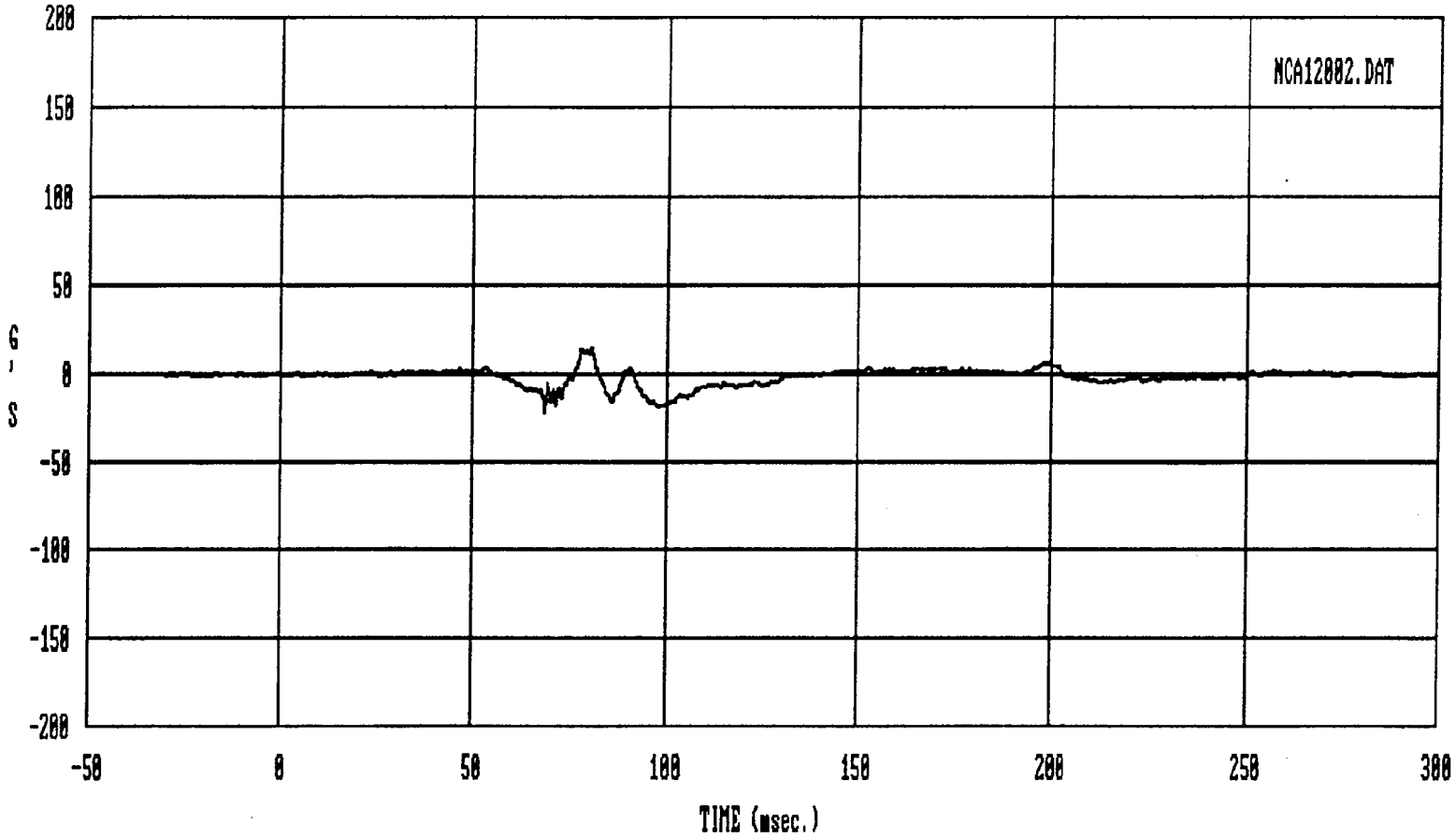
Instrumentation Information

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: 7 INIVEL: 0.0
NFP: -250 NLP: 2499 DELT: 120 DASTAT: AM
INSCOM:



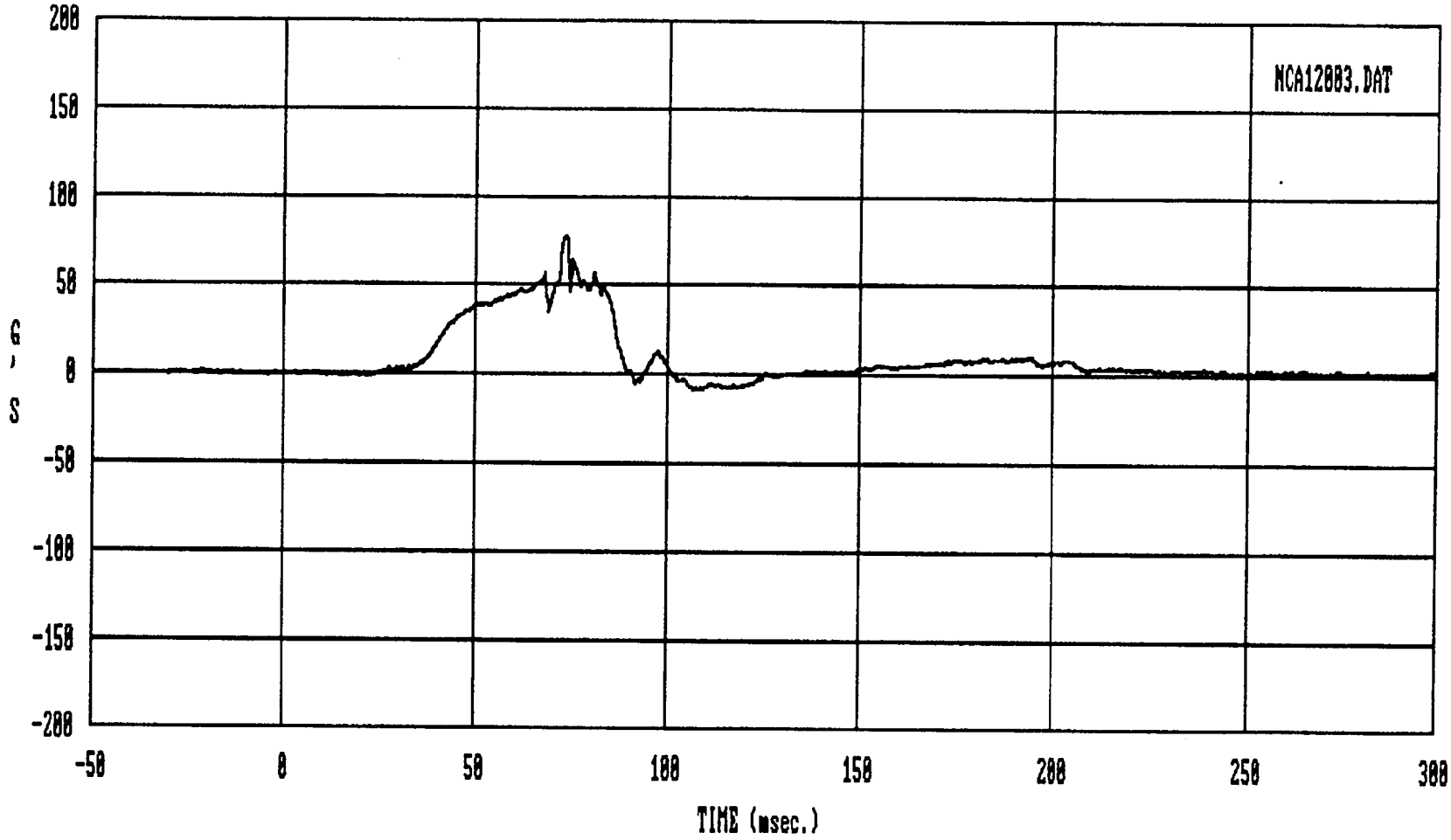
Curve: Driver Head acceleration -- X axis Filter: SAE CLASS 1000 Max = 22.101 Min = -125.38

MSE Date: 03/20/98 Program: 1998 New Car Assessment #12 Vehicle: 1998 Isuzu Trooper



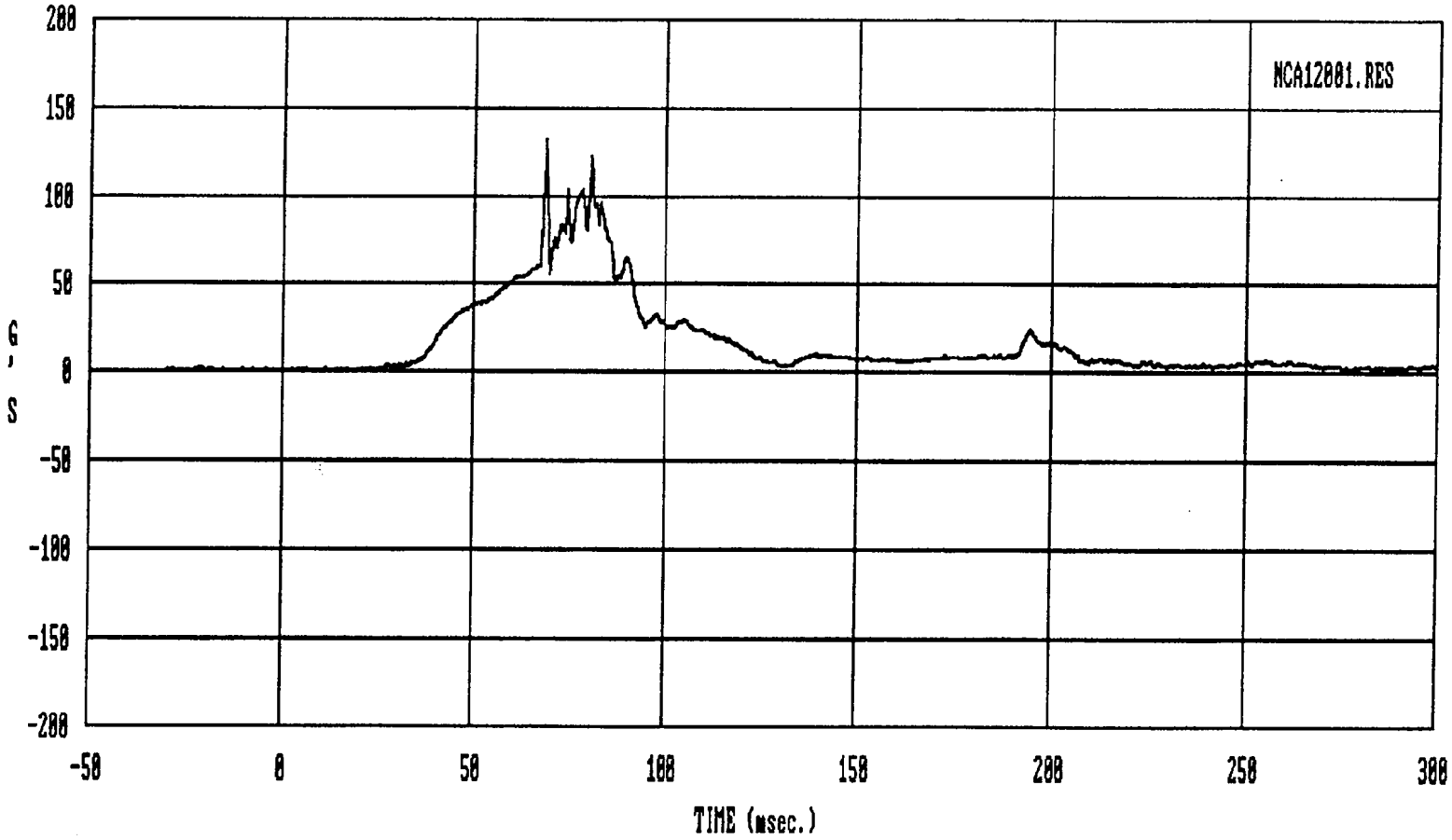
Curve: Driver Head acceleration -- Y axis Filter: SAE CLASS 1000 Max = 14.910 Min = -22.059

MSE Date: 03/20/90 Program: 1990 New Car Assessment #12 Vehicle: 1990 Isuzu Trooper



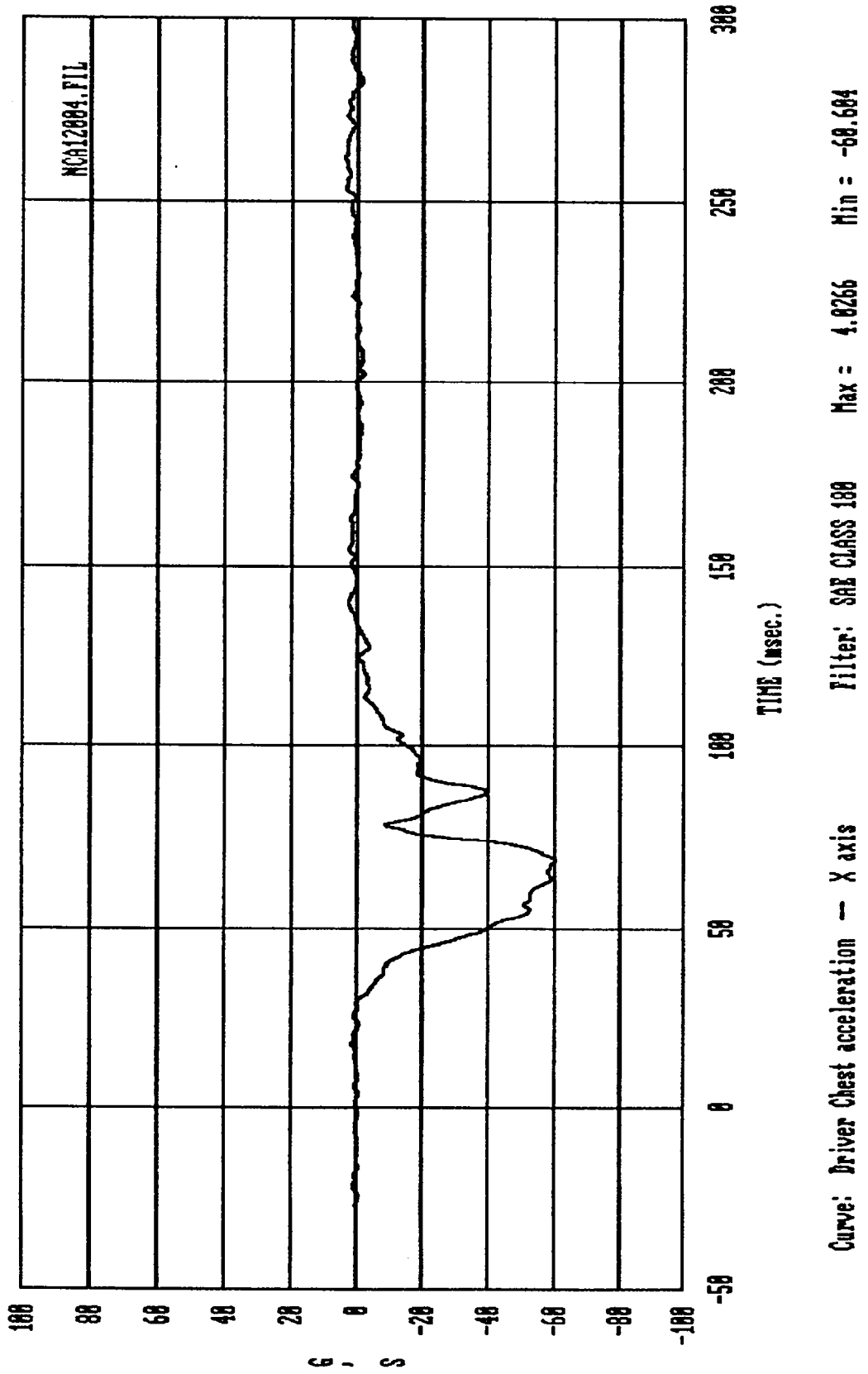
Curve: Driver Head acceleration — Z axis Filter: SAE CLASS 1000 Max = 78.213 Min = -8.8879

MSE Date: 03/20/90 Program: 1990 New Car Assessment #12 Vehicle: 1990 Isuzu Trooper



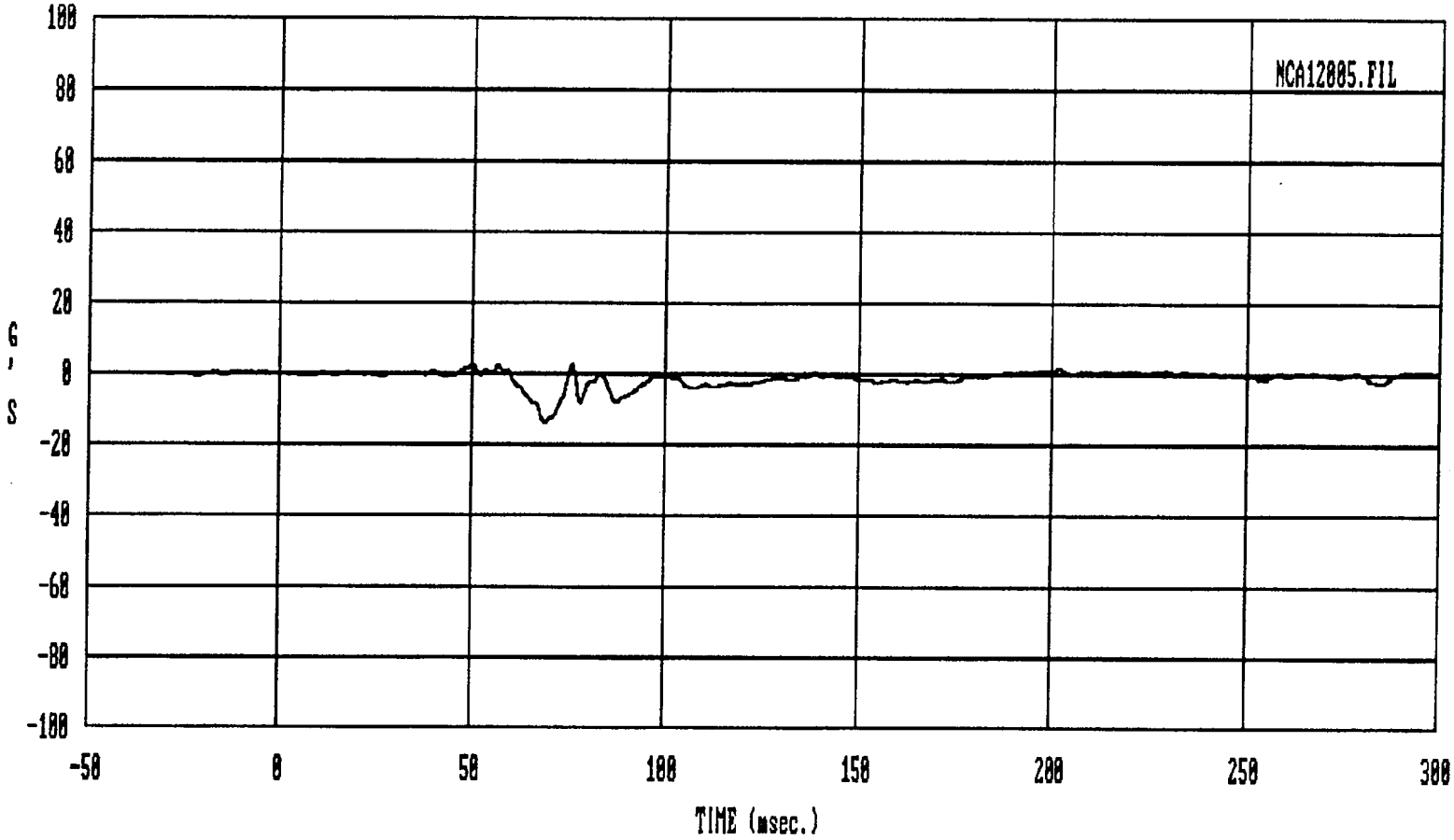
Curve: Driver Head resultant acceleration Filter: SAE CLASS 1000 Max = 132.07 Min = .28425

MSE Date: 03/20/90 Program: 1990 New Car Assessment #12 Vehicle: 1990 Isuzu Trooper



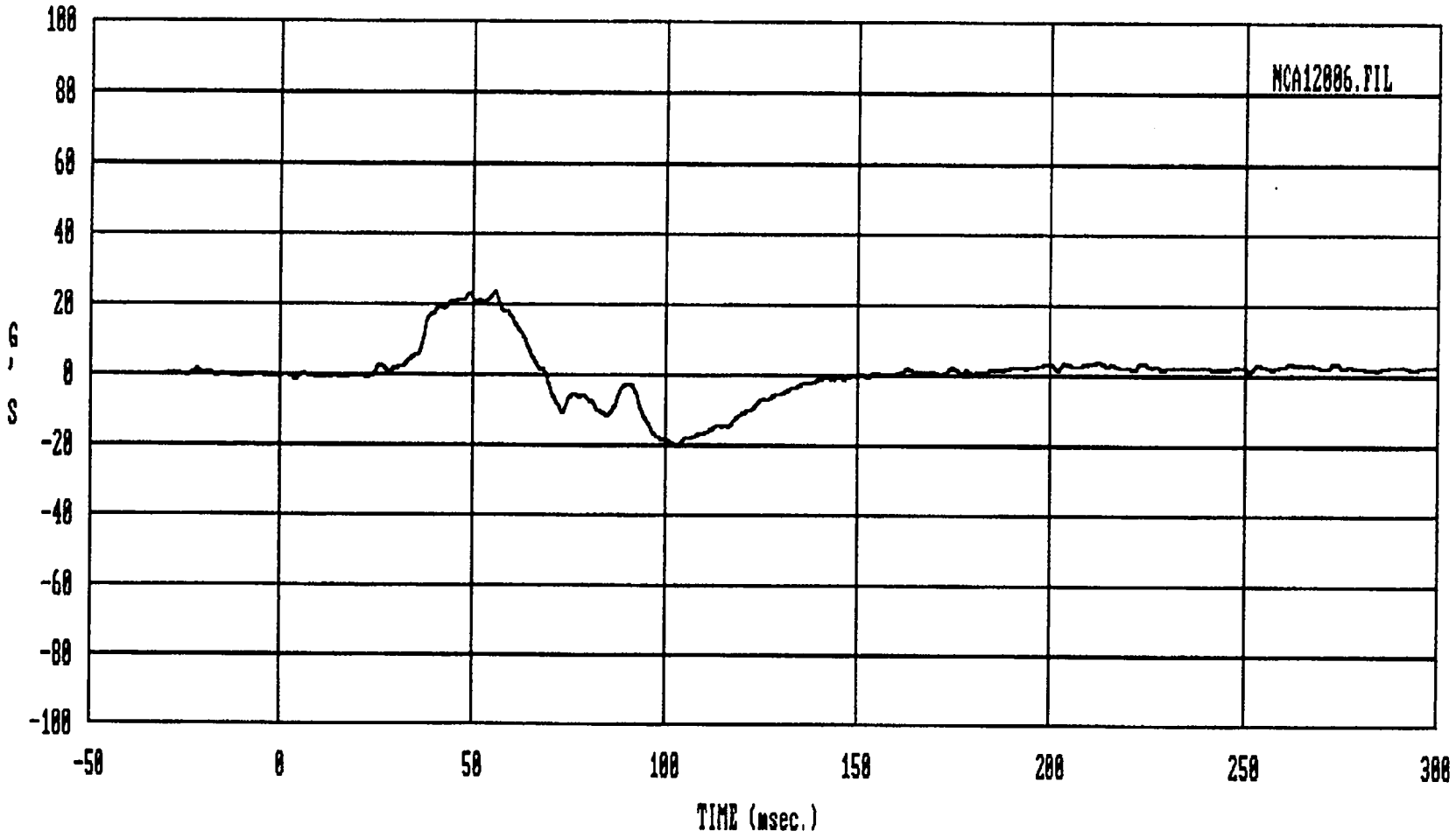
Curve: Driver Chest acceleration — X axis Filter: SAE CLASS 180 Max = 4.8266 Min = -60.604

MSE Date: 03/28/90 Program: 1990 New Car Assessment #12 Vehicle: 1990 Isuzu Trooper



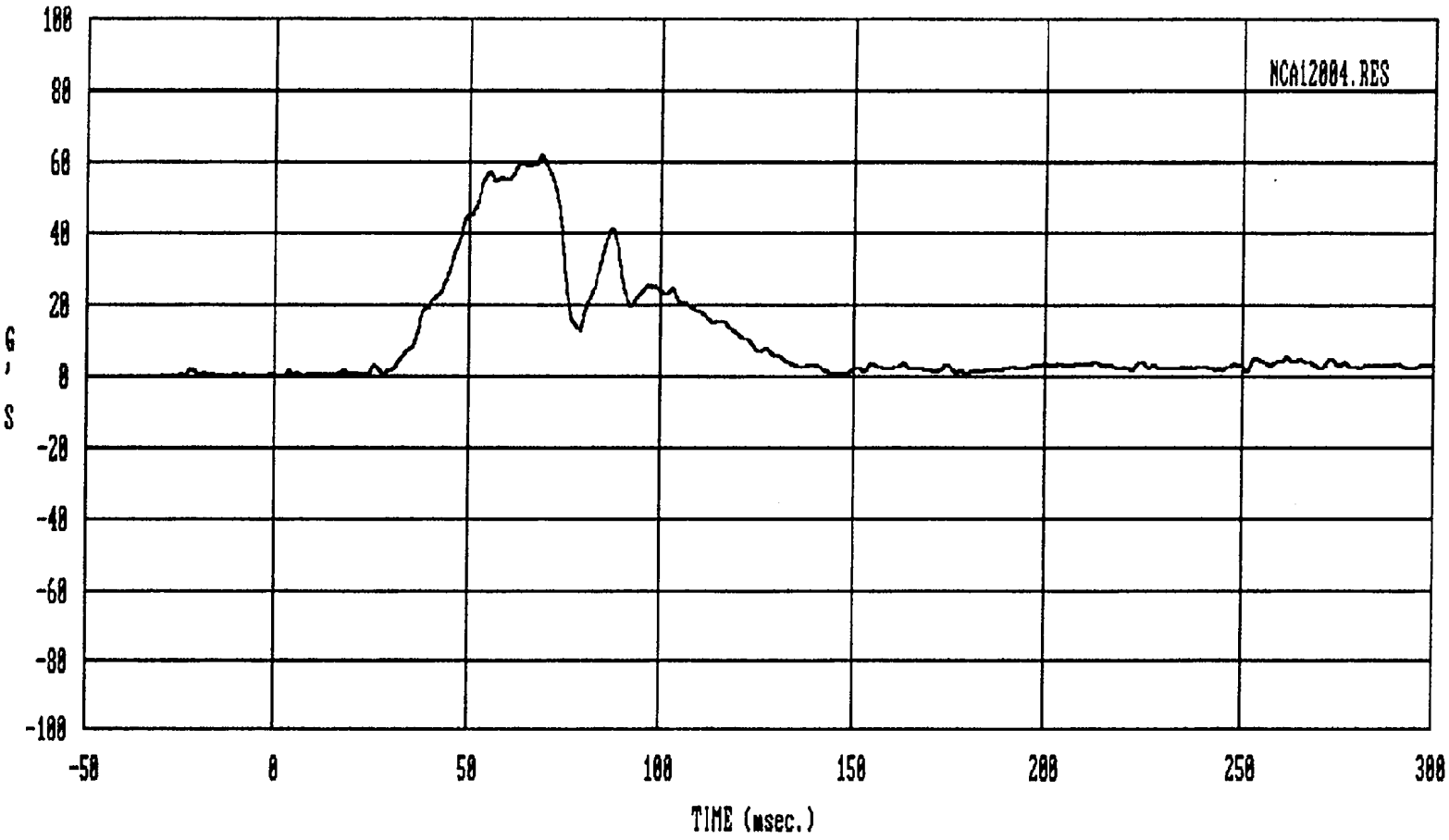
Curve: Driver Chest acceleration — Y axis Filter: SAE CLASS 180 Max = 2.6919 Min = -13.873

MSE Date: 03/20/90 Program: 1990 New Car Assessment #12 Vehicle: 1990 Isuzu Trooper



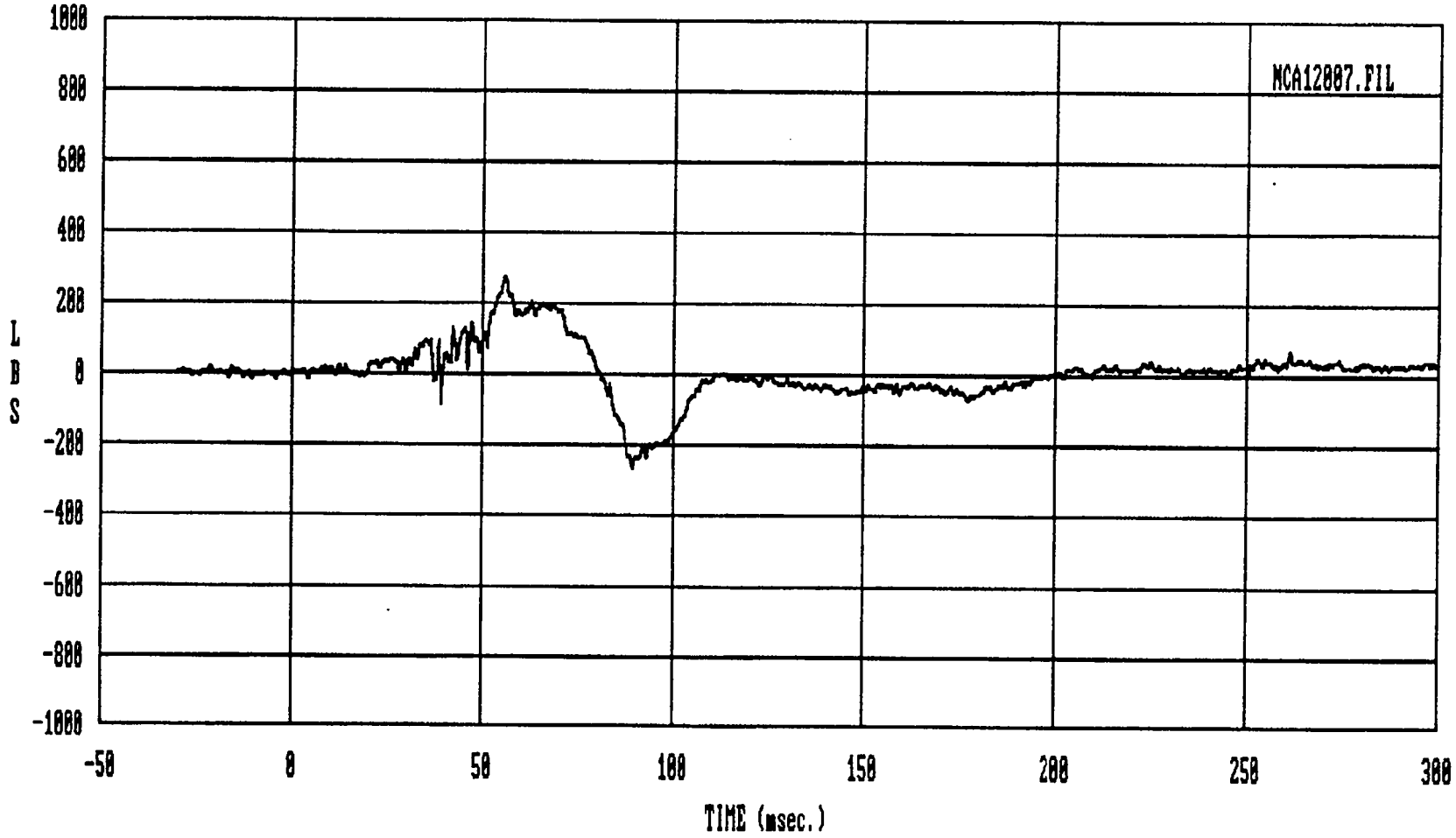
Curve: Driver Chest acceleration — Z axis Filter: SAE CLASS 180 Max = 23.441 Min = -20.445

MSE Date: 03/20/90 Program: 1990 New Car Assessment #12 Vehicle: 1990 Isuzu Trooper



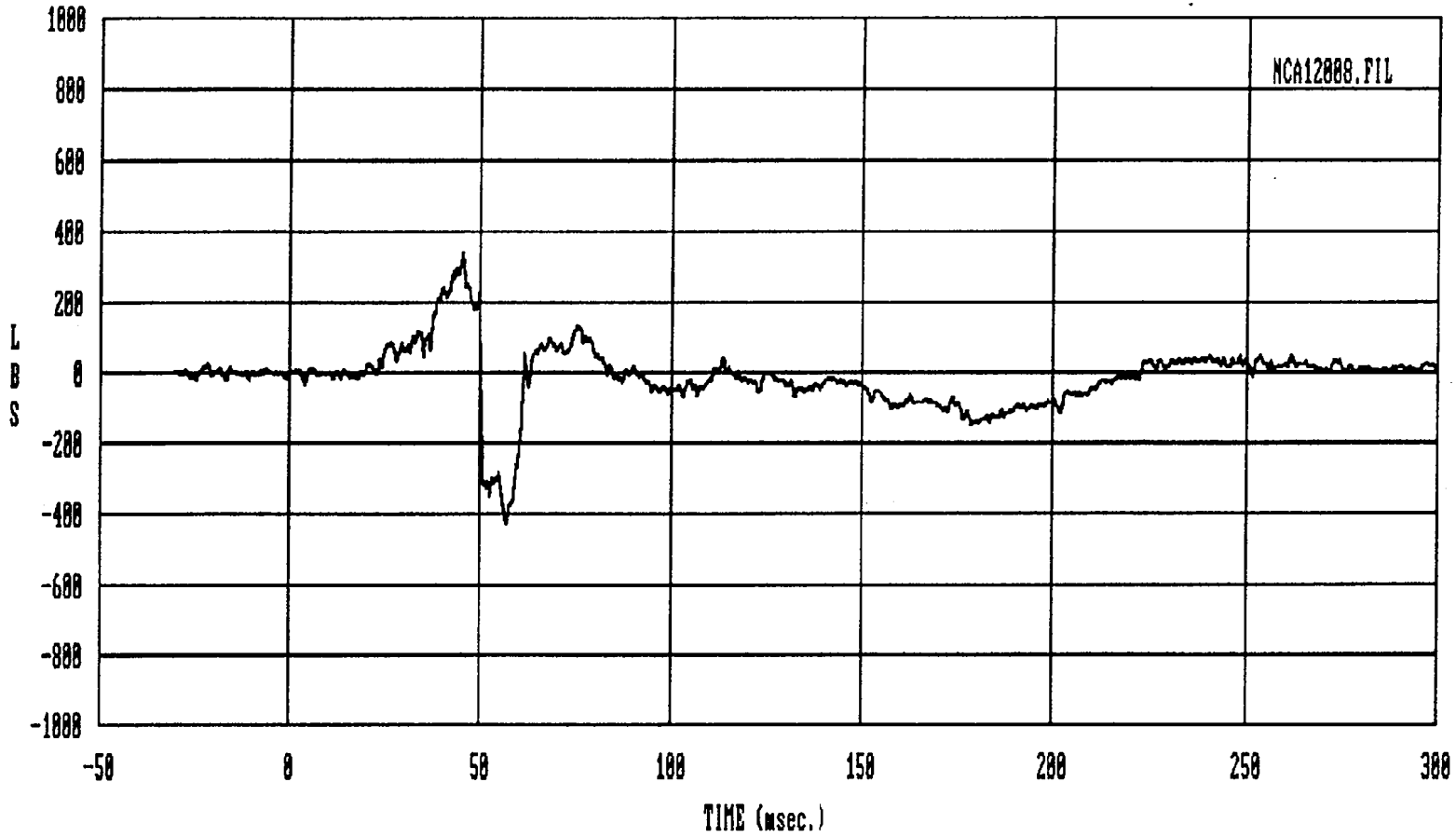
Curve: Driver Chest resultant acceleration Filter: SAE CLASS 180 Max = 61.930 Min = .25273

MSE Date: 03/20/90 Program: 1990 New Car Assessment #12 Vehicle: 1990 Isuzu Trooper



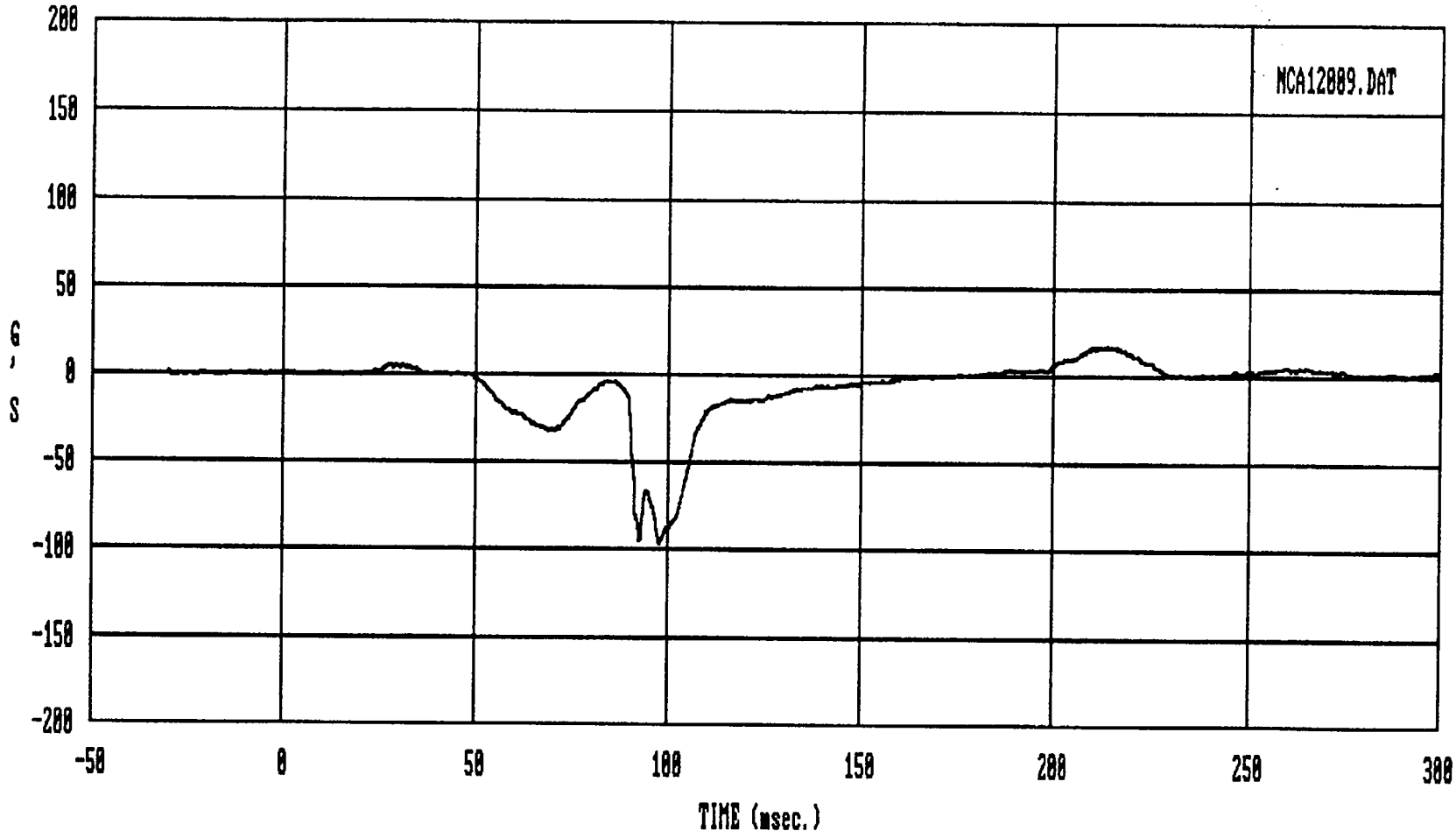
Curve: Driver Left Femur Force Filter: SAE CLASS 600 Max = 274.56 Min = -261.93

MSE Date: 03/20/90 Program: 1990 New Car Assessment #12 Vehicle: 1990 Isuzu Trooper



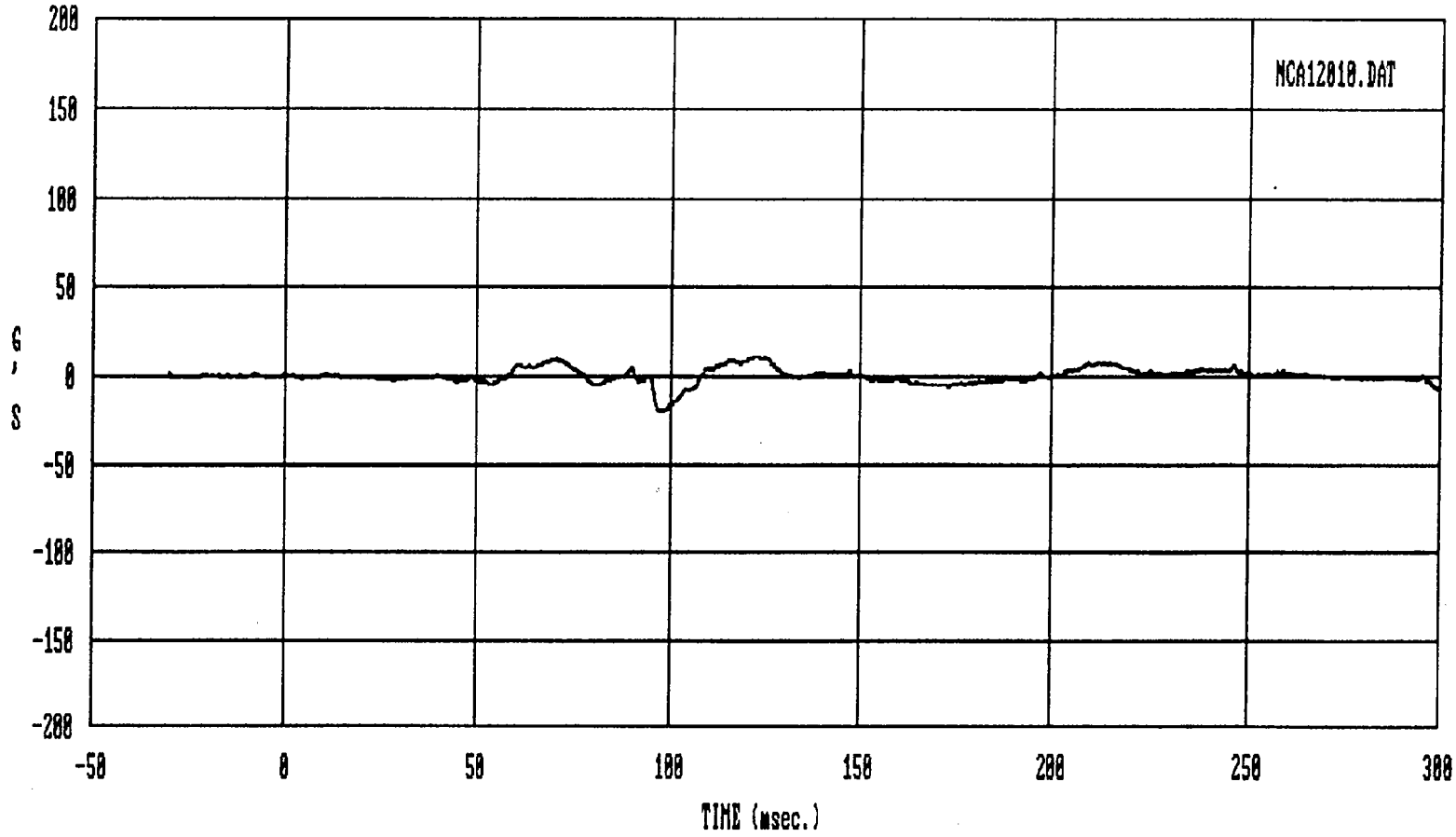
Curve: Driver Right Femur force Filter: SAE CLASS 600 Max = 344.12 Min = -438.22

MSE Date: 03/20/98 Program: 1998 New Car Assessment #12 Vehicle: 1998 Isuzu Trooper



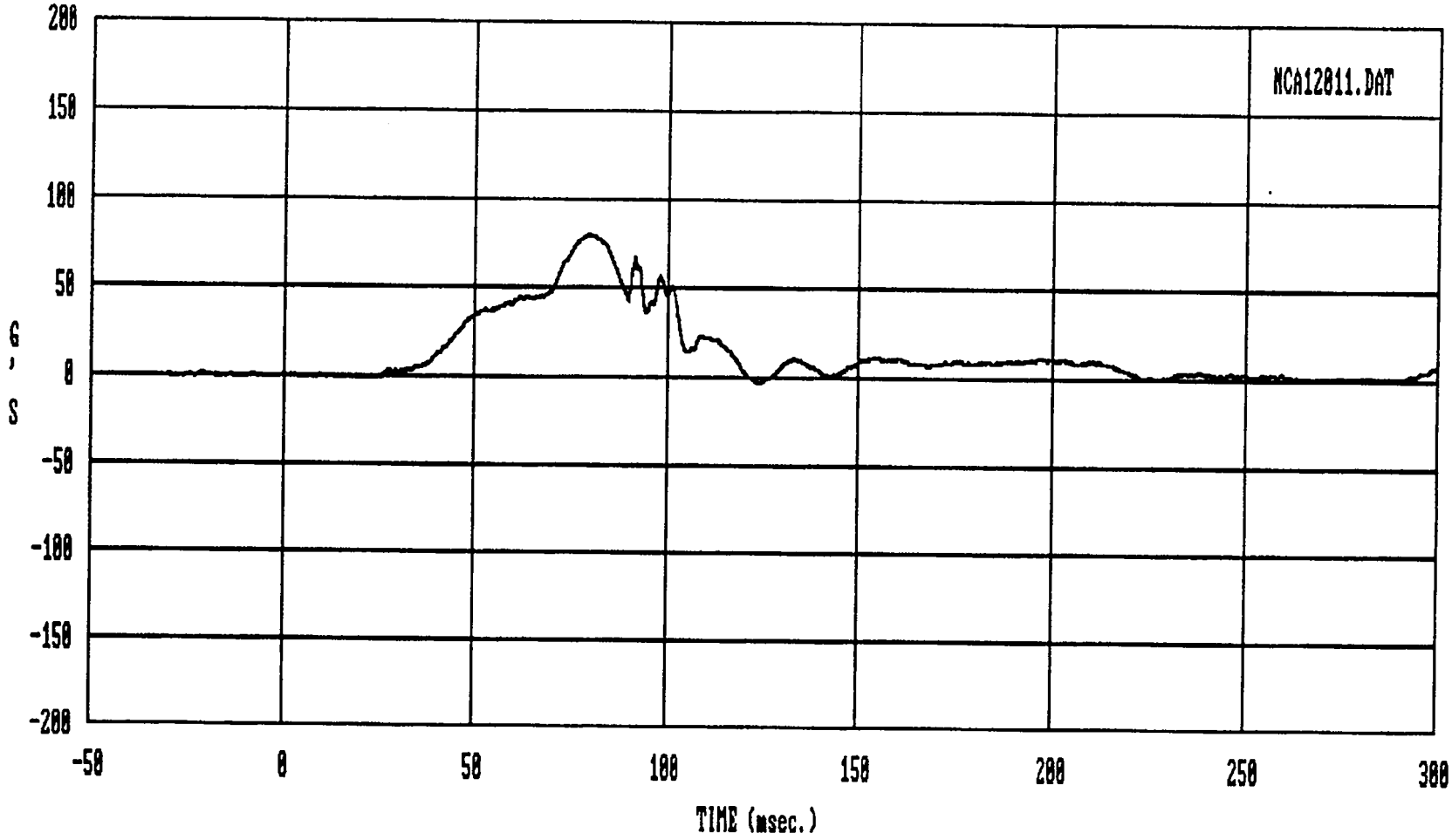
Curve: Pasngr Head acceleration -- X axis Filter: SAE CLASS 1000 Max = 17.000 Min = -96.747

MSE Date: 03/20/90 Program: 1990 New Car Assessment #12 Vehicle: 1990 Isuzu Trooper



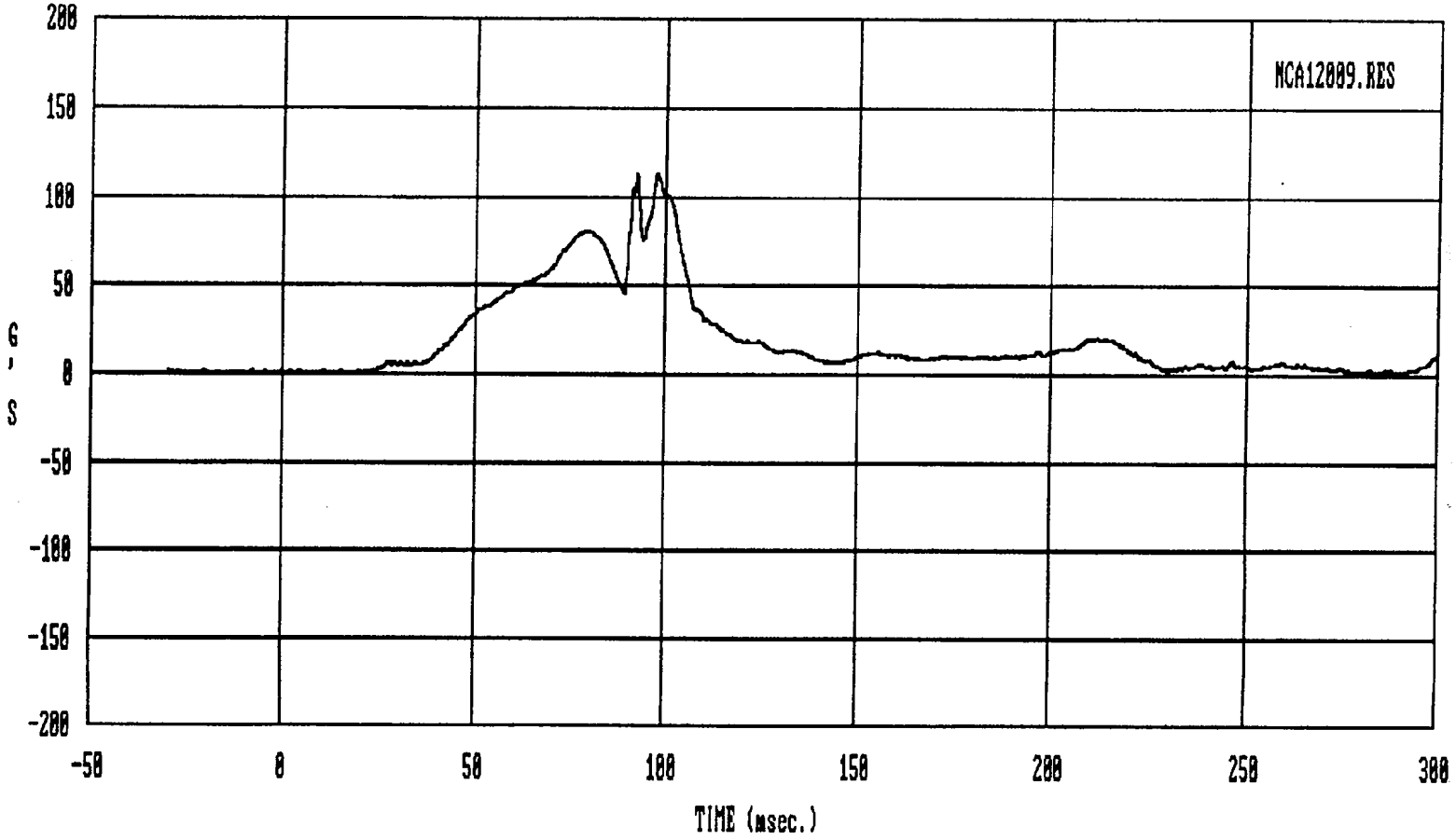
Curve: Pasngr Head acceleration -- Y axis Filter: SAE CLASS 1000 Max = 11.551 Min = -19.636

MSE Date: 03/20/90 Program: 1990 New Car Assessment #12 Vehicle: 1990 Isuzu Trooper



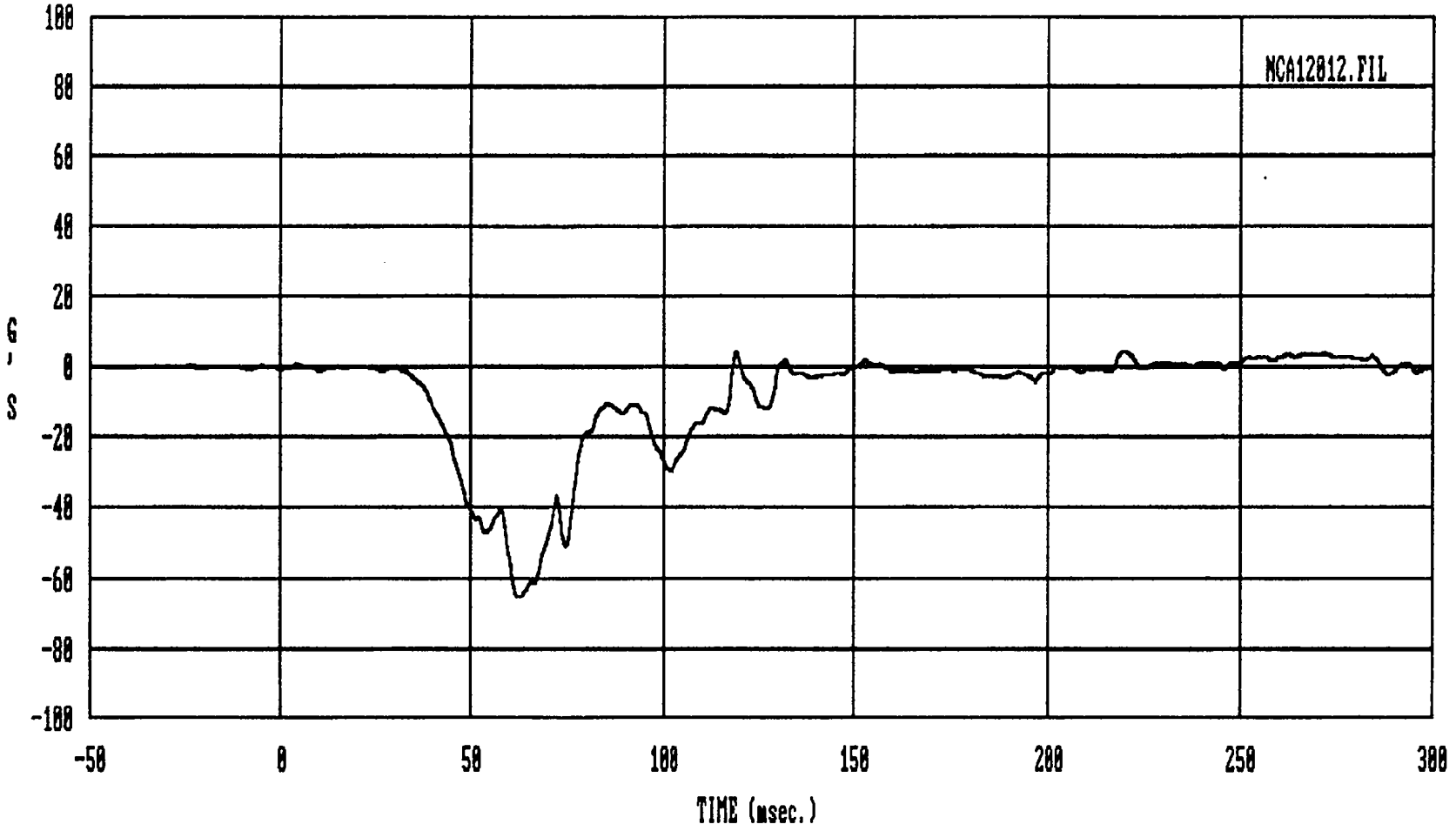
Curve: Pasngr Head acceleration — Z axis Filter: SAE CLASS 1000 Max = 80.893 Min = -3.4688

MSE Date: 03/28/90 Program: 1990 New Car Assessment #12 Vehicle: 1990 Isuzu Trooper



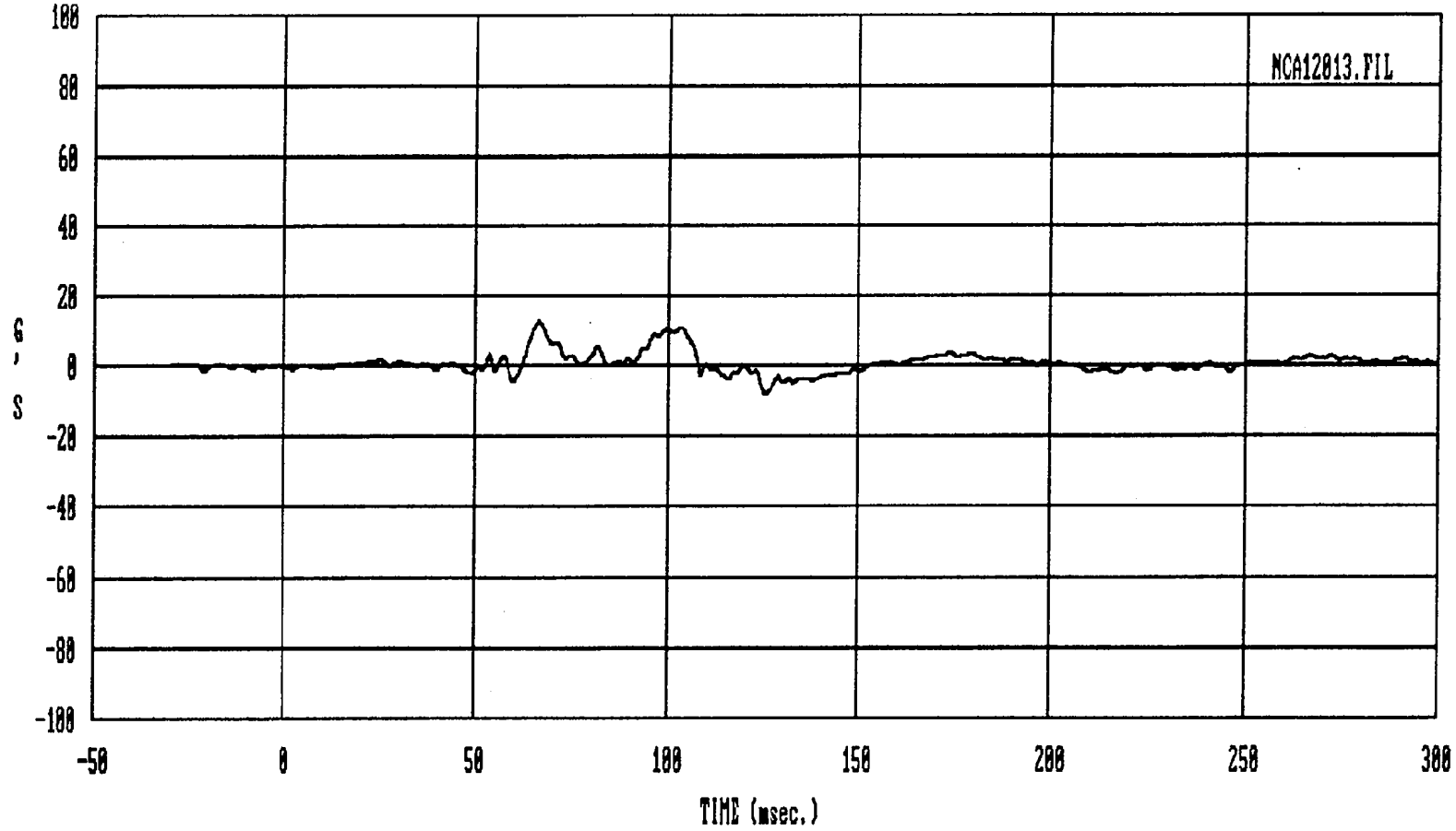
Curve: Pasngr Head resultant acceleration Filter: SAE CLASS 1000 Max = 113.37 Min = .22593

MSE Date: 03/20/98 Program: 1998 New Car Assessment #12 Vehicle: 1998 Isuzu Trooper



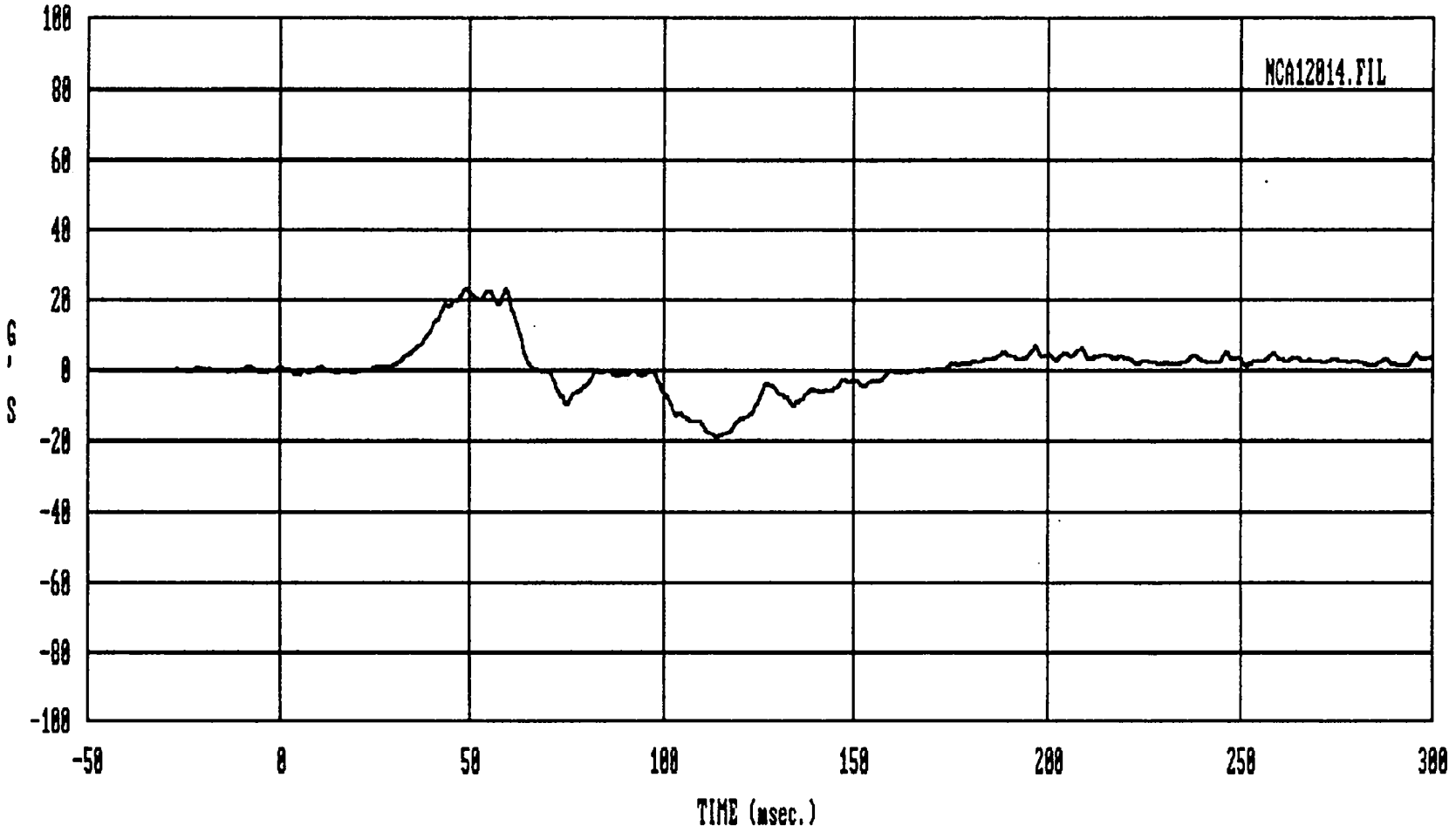
Curve: Pasngr Chest acceleration — X axis Filter: SAE CLASS 180 Max = 4.4299 Min = -65.370

MSE Date: 03/20/90 Program: 1990 New Car Assessment #12 Vehicle: 1990 Isuzu Trooper



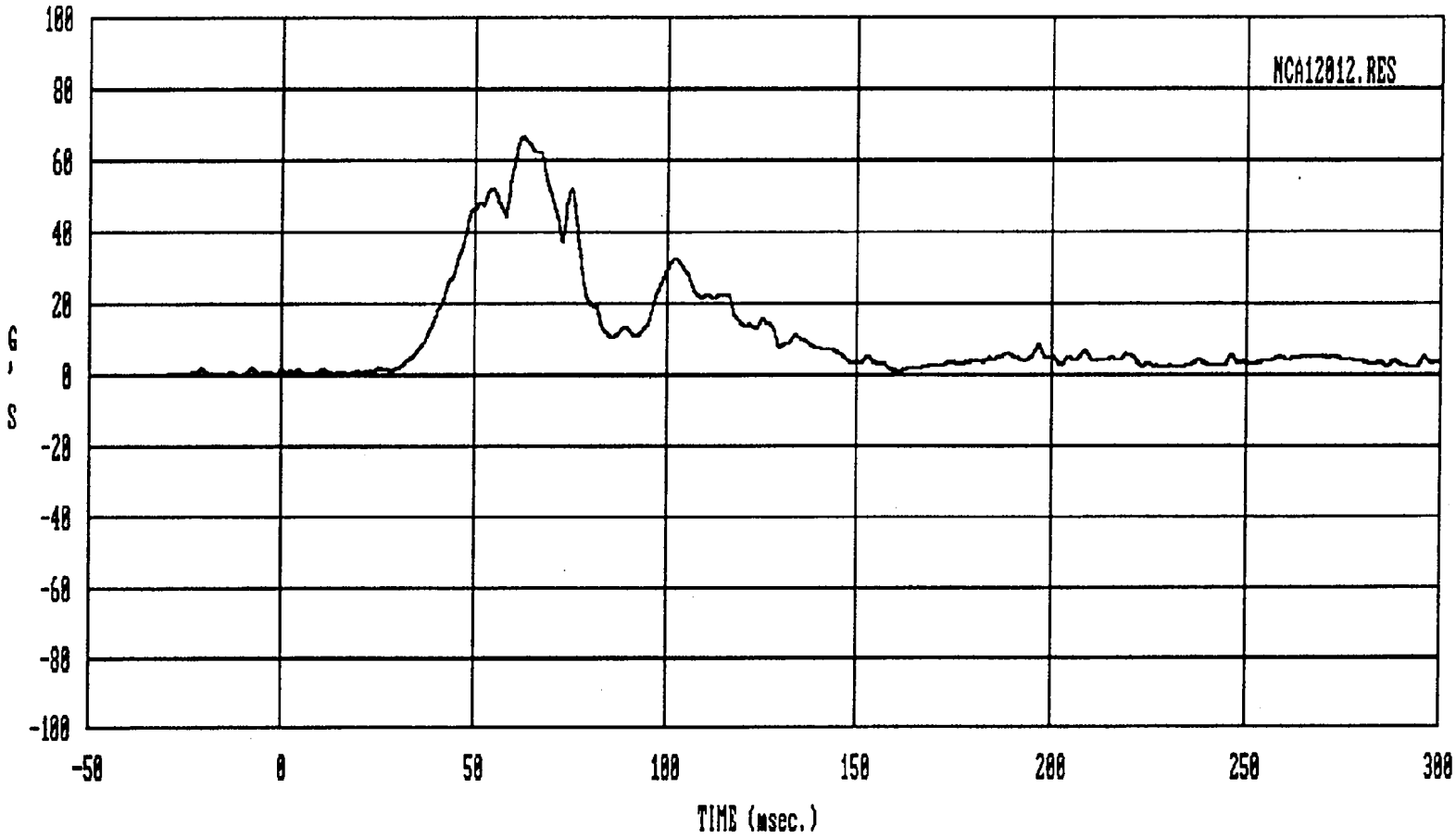
Curve: Pasngr Chest acceleration — Y axis Filter: SAE CLASS 180 Max = 12.537 Min = -7.8332

MSE Date: 03/20/98 Program: 1998 New Car Assessment #12 Vehicle: 1998 Isuzu Trooper



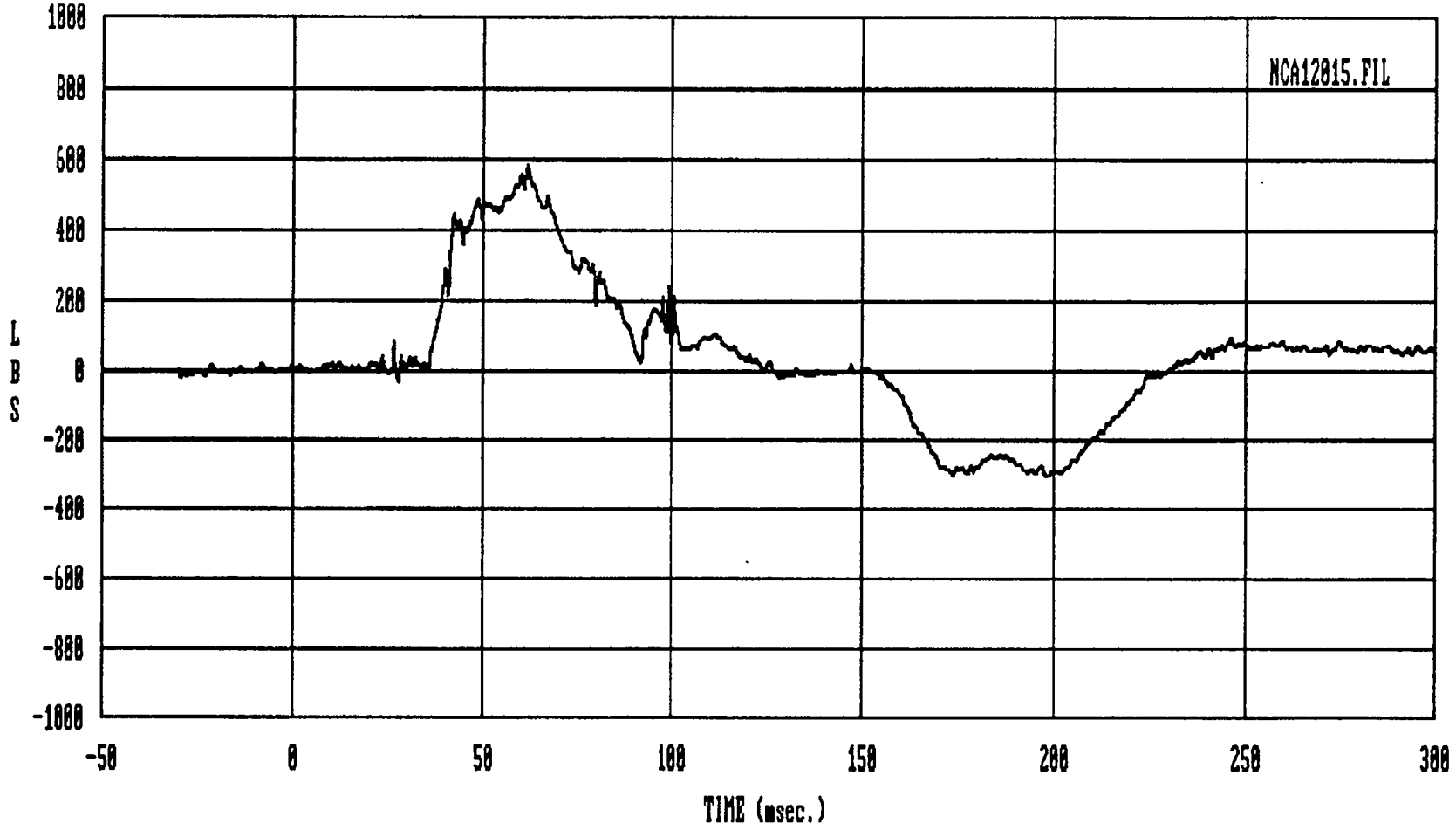
Curve: Pasngr Chest acceleration — Z axis Filter: SAE CLASS 180 Max = 23.196 Min = -18.898

MSE Date: 03/20/90 Program: 1990 New Car Assessment #12 Vehicle: 1990 Isuzu Trooper



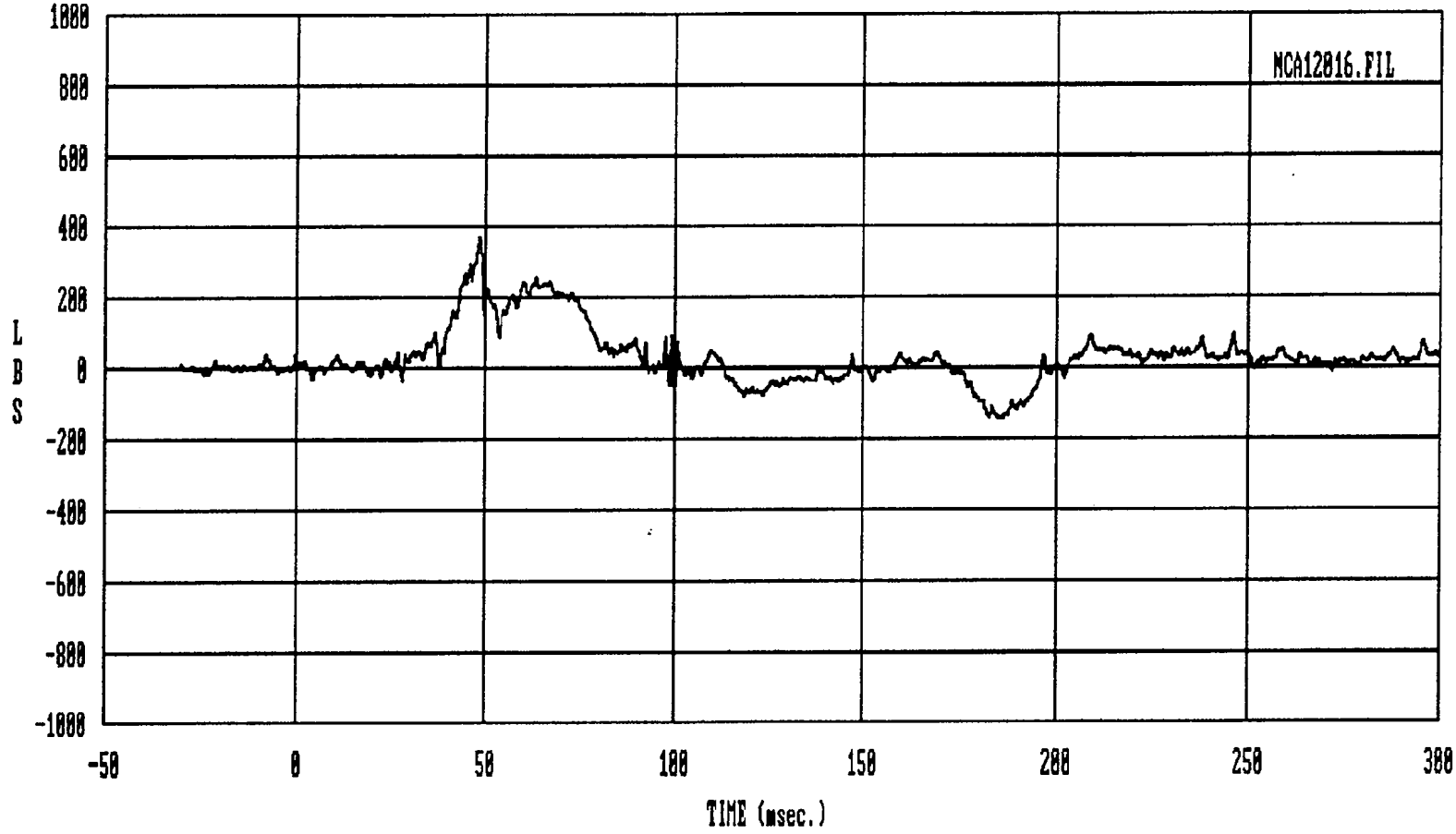
Curve: Pasngr Chest resultant acceleration Filter: SAE CLASS 180 Max = 66.839 Min = .32643

MSE Date: 03/20/98 Program: 1998 New Car Assessment #12 Vehicle: 1998 Isuzu Trooper



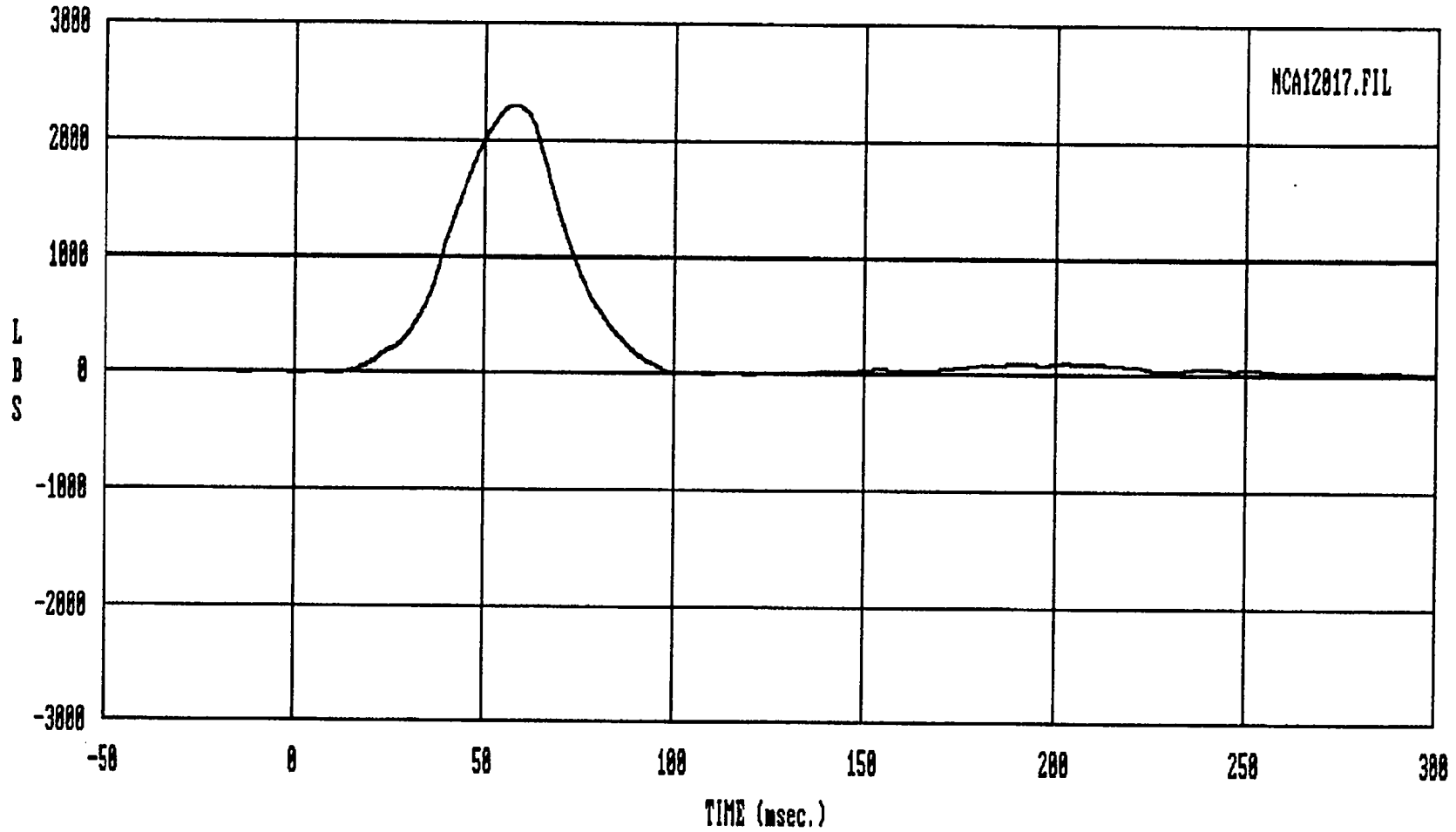
Curve: Pasngr Left Femur Force Filter: SAE CLASS 600 Max = 585.86 Min = -307.30

MSE Date: 03/20/90 Program: 1990 New Car Assessment #12 Vehicle: 1990 Isuzu Trooper



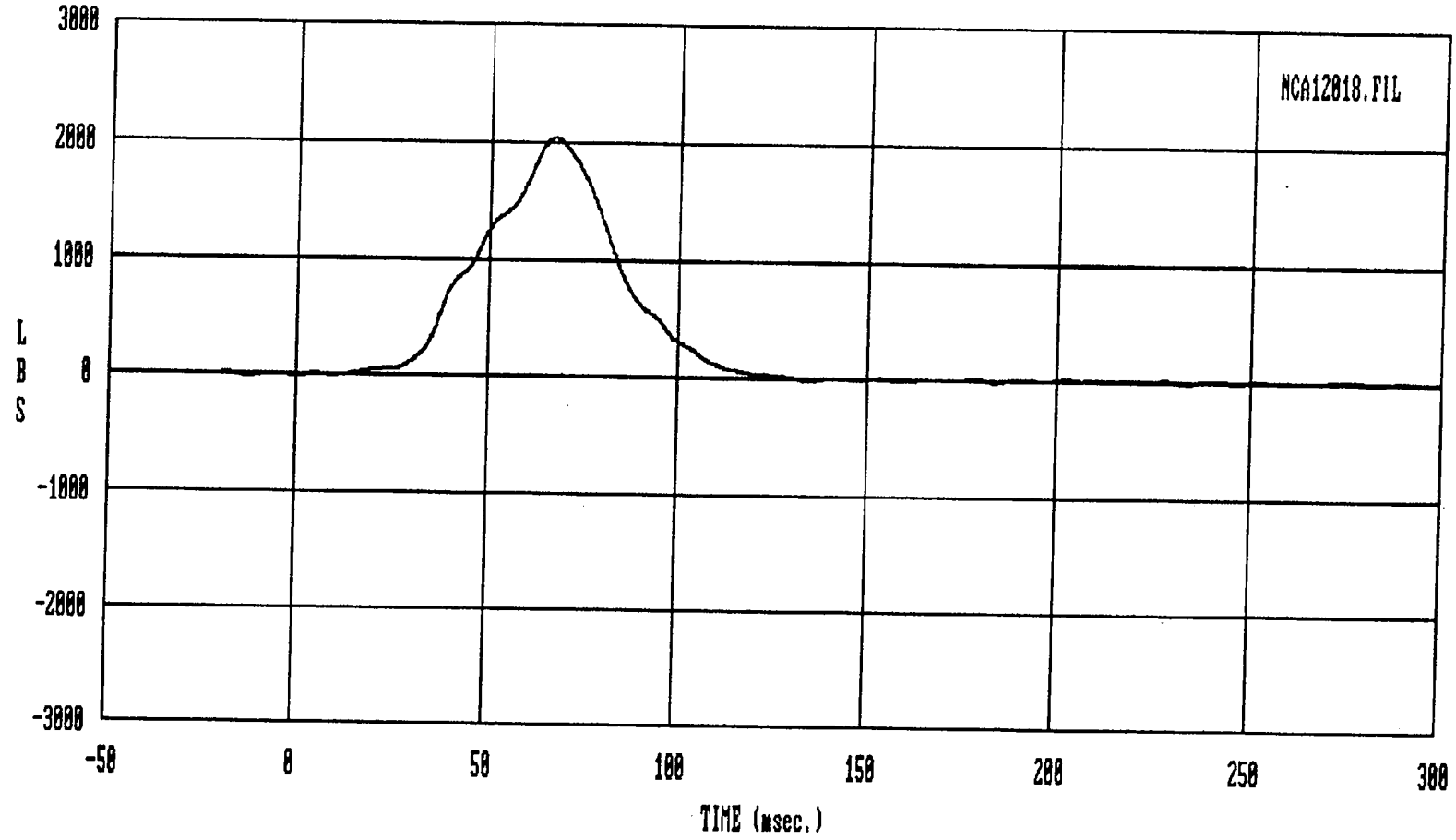
Curve: Pasngr Right Femur Force Filter: SAE CLASS 600 Max = 369.46 Min = -140.86

MSE Date: 03/20/90 Program: 1990 New Car Assessment #12 Vehicle: 1990 Isuzu Trooper



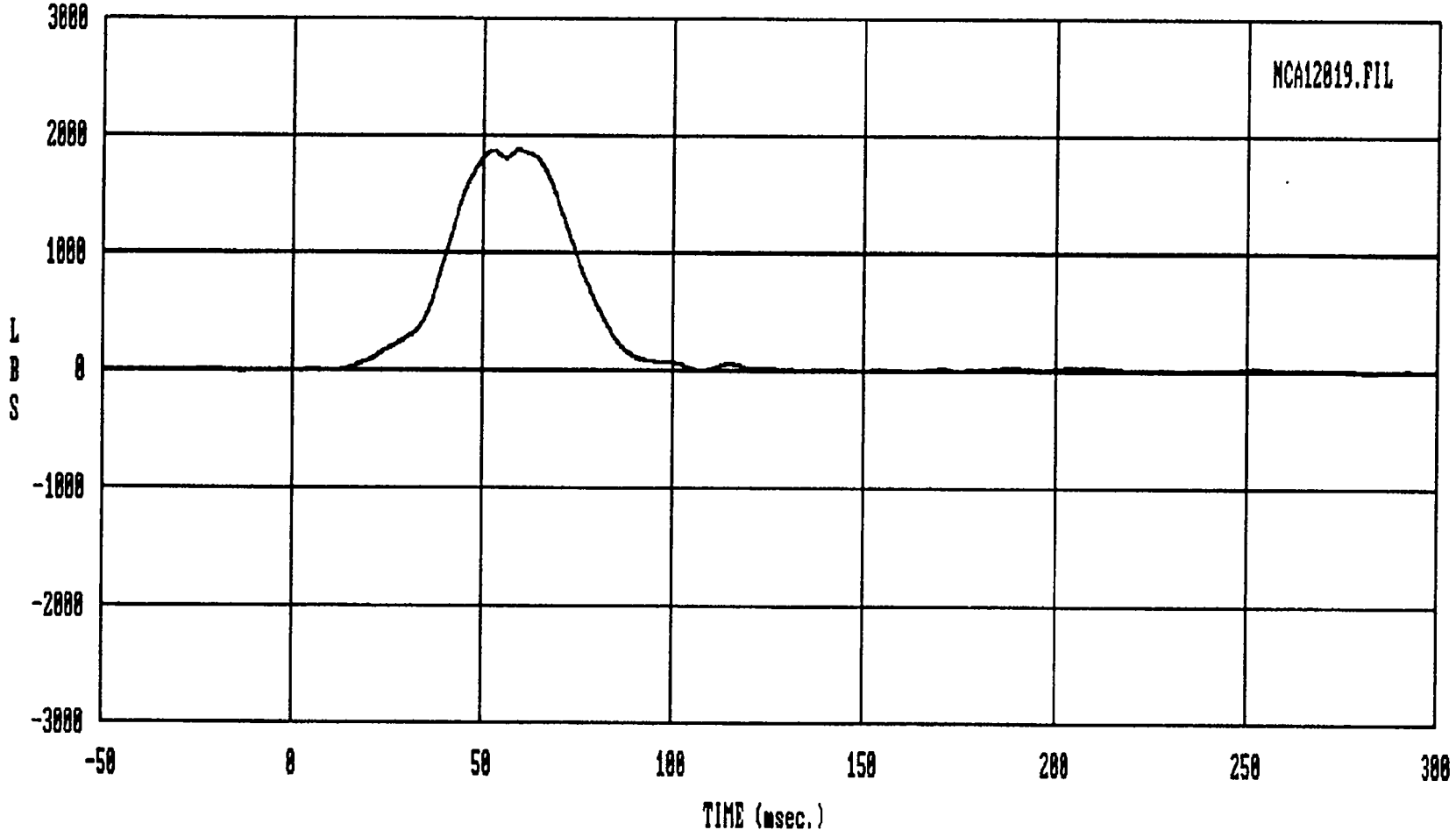
Curve: Driver Lap seat belt force Filter: SAE CLASS 60 Max = 2301.0 Min = -9.3679

MSE Date: 03/20/90 Program: 1990 New Car Assessment #12 Vehicle: 1990 Isuzu Trooper



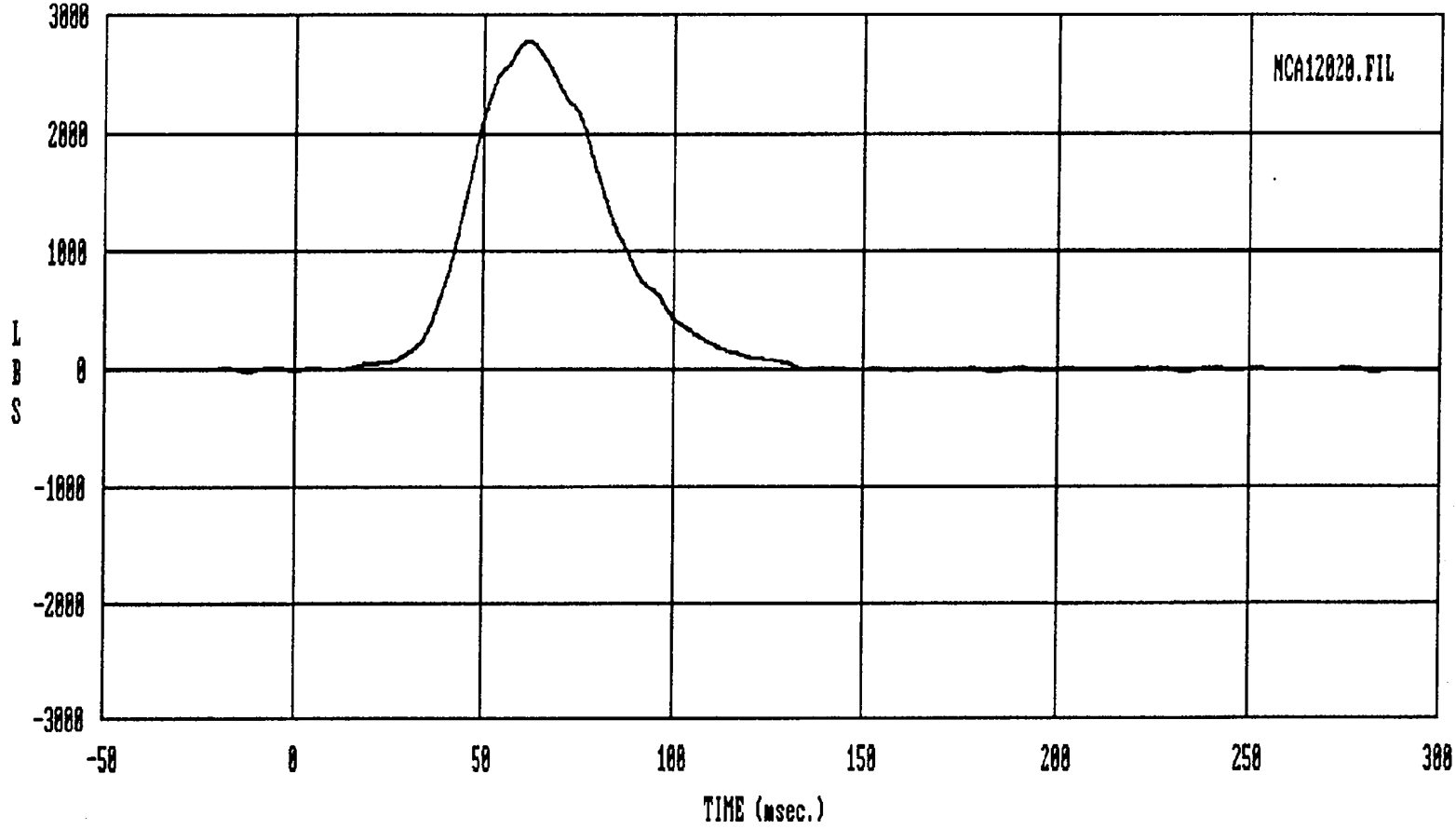
Curve: Driver Shoulder seat belt force Filter: SAE CLASS 60 Max = 2051.4 Min = -25.345

MSE Date: 03/20/98 Program: 1998 New Car Assessment #12 Vehicle: 1998 Isuzu Trooper



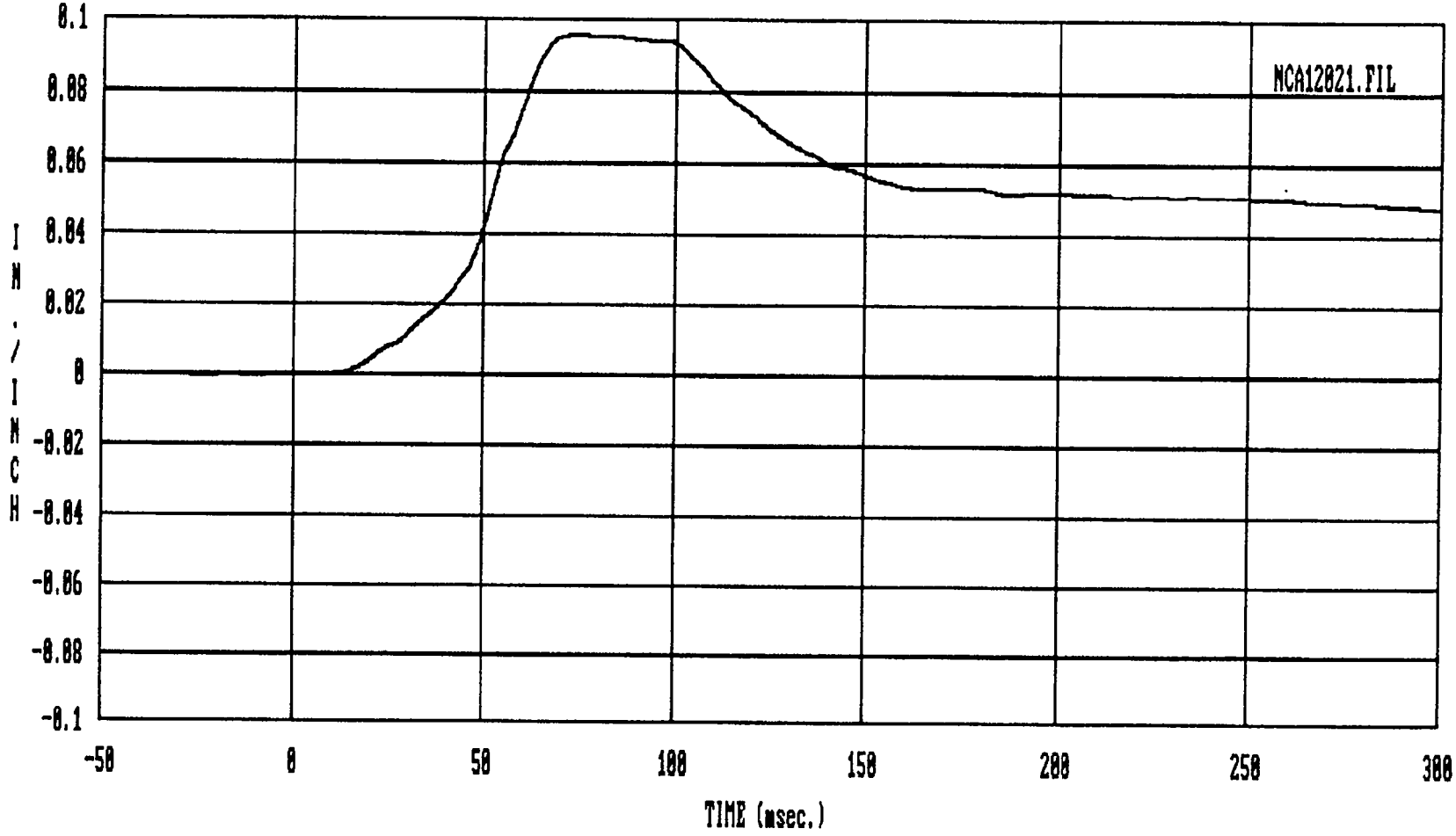
Curve: Pasngr Lap seat belt force Filter: SAE CLASS 60 Max = 1886.6 Min = -8.5857

MSE Date: 03/20/90 Program: 1990 New Car Assessment #12 Vehicle: 1990 Isuzu Trooper



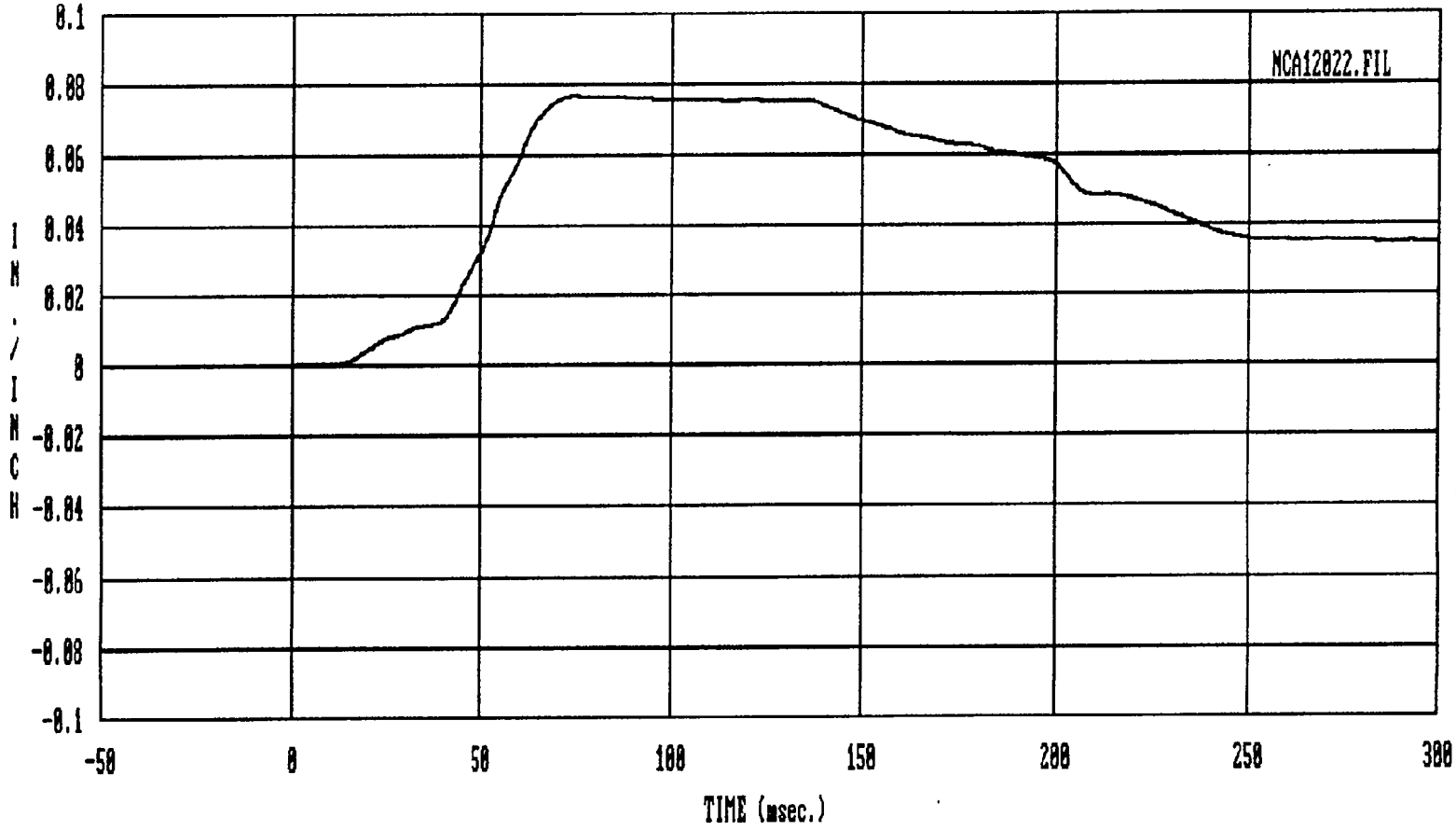
Curve: Pasngr Shoulder seat belt force Filter: SAE CLASS 60 Max = 2785.0 Min = -26.707

MSE Date: 03/20/98 Program: 1998 New Car Assessment #12 Vehicle: 1998 Isuzu Trooper



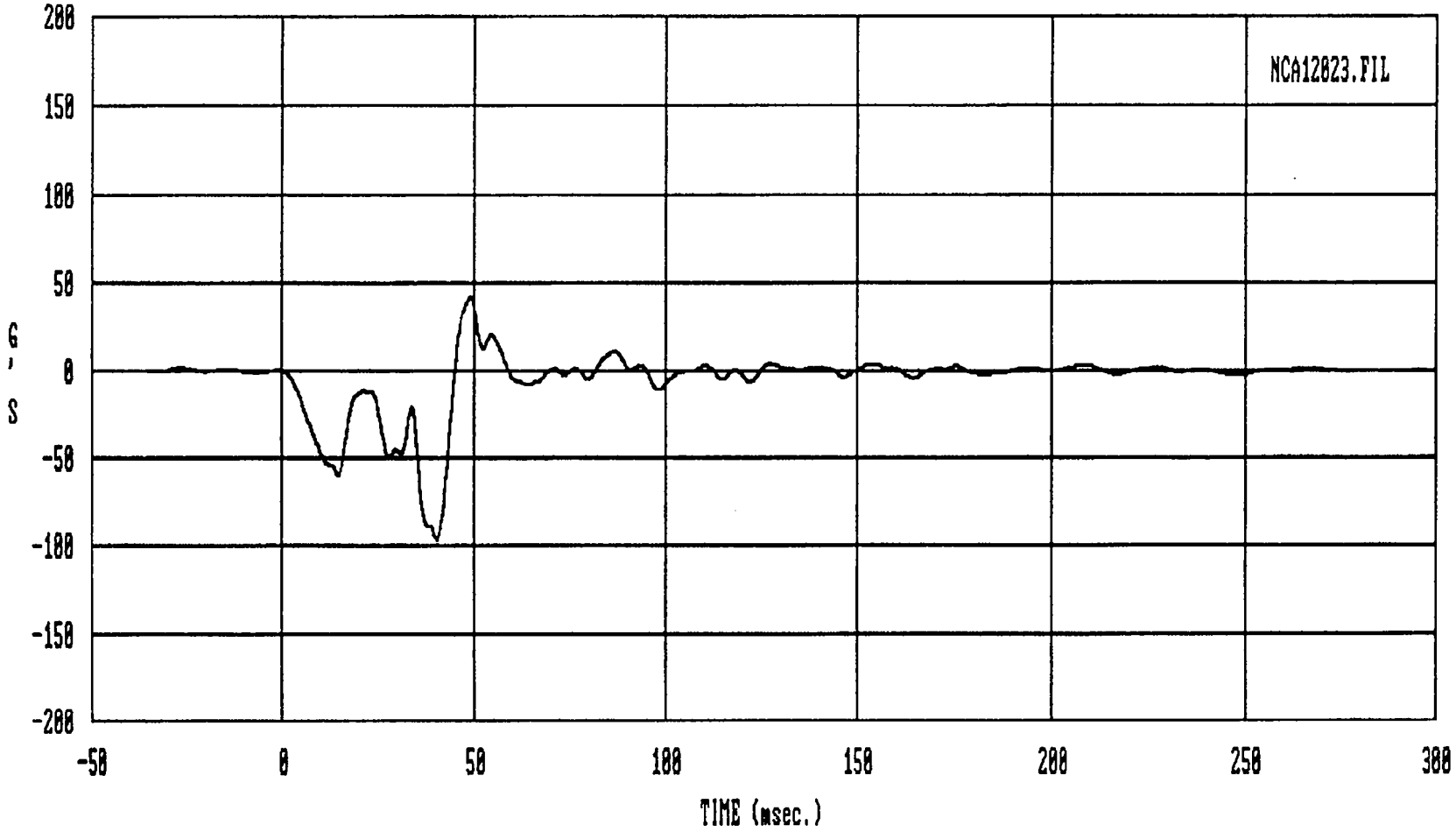
Curve: Driver seat belt elongation (Percent stretch) Filter: SAE CLASS 60 Max = .95879E-01 Min = .14957E-03

MSE Date: 03/20/98 Program: 1998 New Car Assessment #12 Vehicle: 1998 Isuzu Trooper



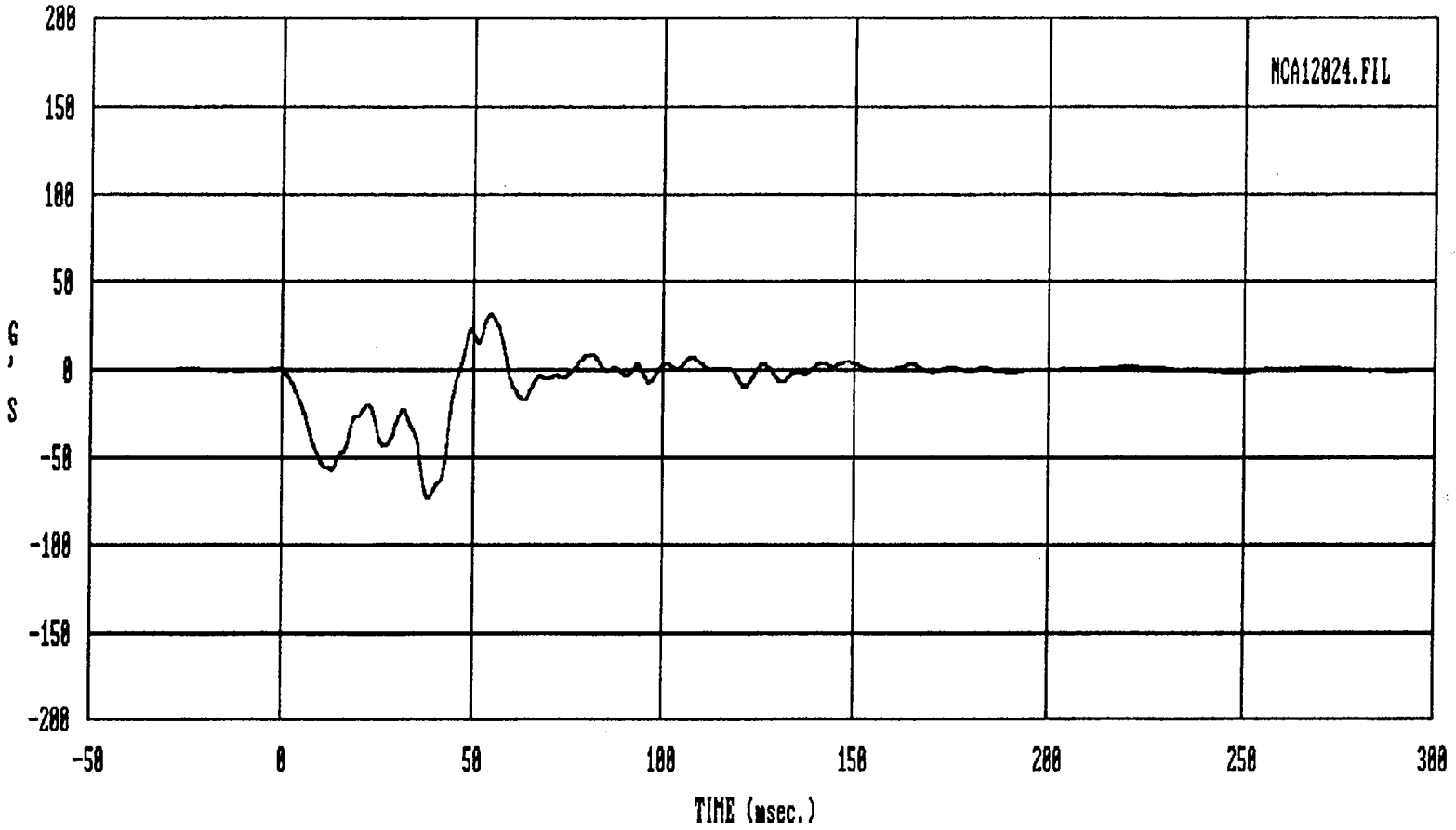
Curve: Pasngr seat belt elongation (Percent stretch) Filter: SAE CLASS 60 Max = .76882E-01 Min = .28898E-03

MSE Date: 03/20/90 Program: 1990 New Car Assessment #12 Vehicle: 1990 Isuzu Trooper



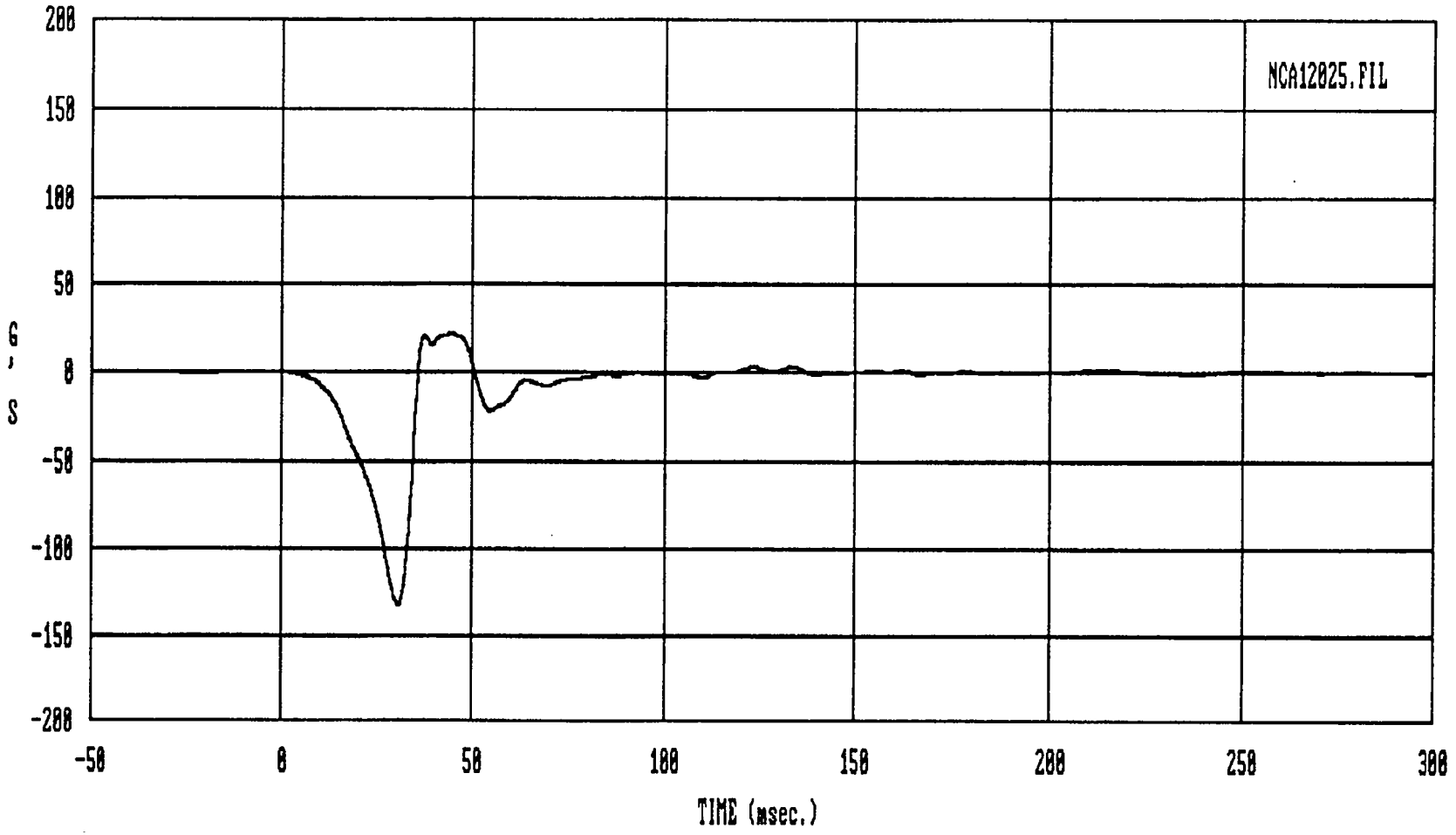
Curve: Left front brake caliper acceleration — X axis Filter: SAE CLASS 60 Max = 42.268 Min = -96.648

MSE Date: 03/20/90 Program: 1990 New Car Assessment #12 Vehicle: 1990 Isuzu Trooper



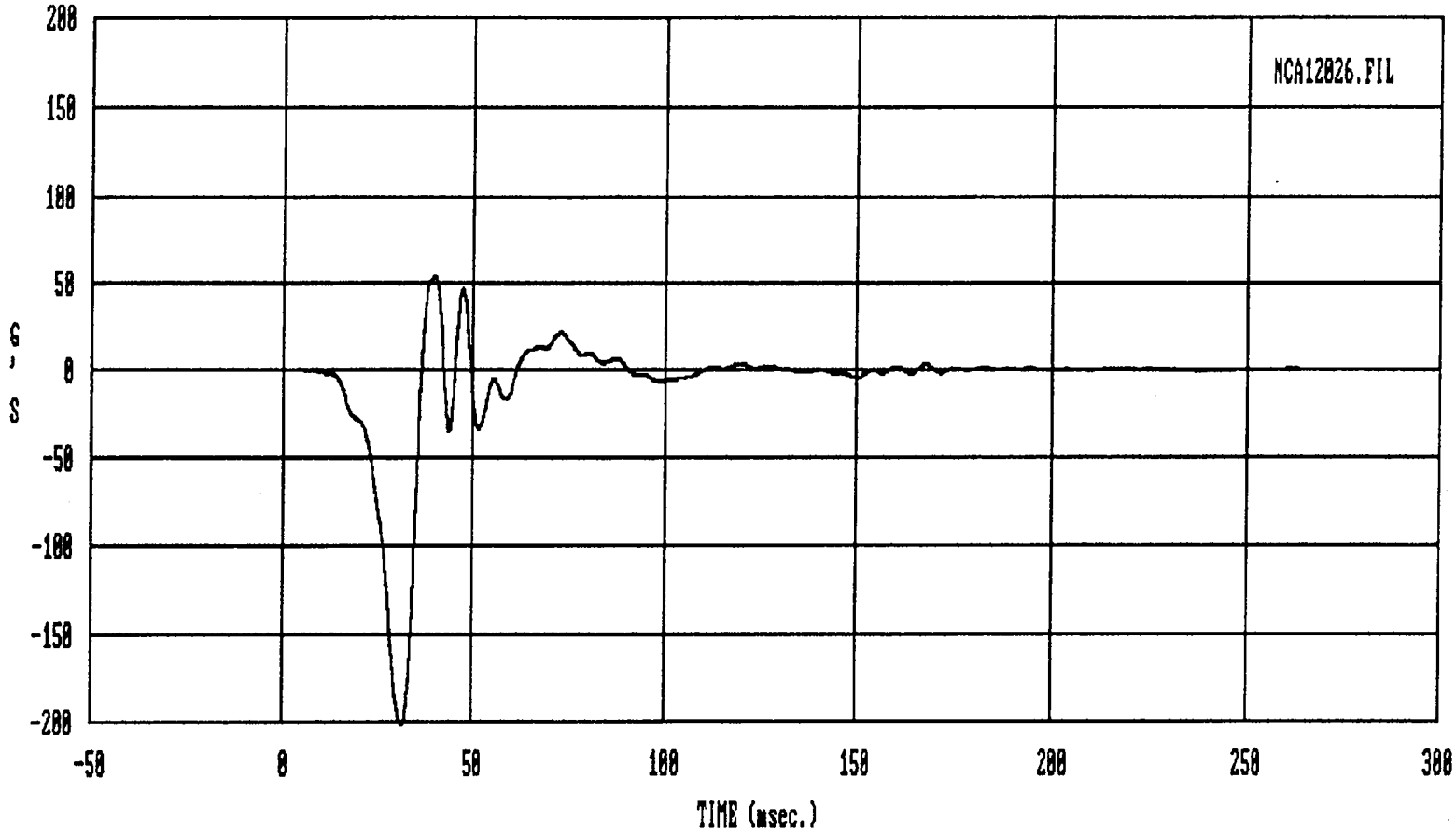
Curve: Right front brake caliper accel. — X axis Filter: SAE CLASS 60 Max = 31.389 Min = -73.849

MSE Date: 03/20/98 Program: 1998 New Car Assessment #12 Vehicle: 1998 Isuzu Trooper



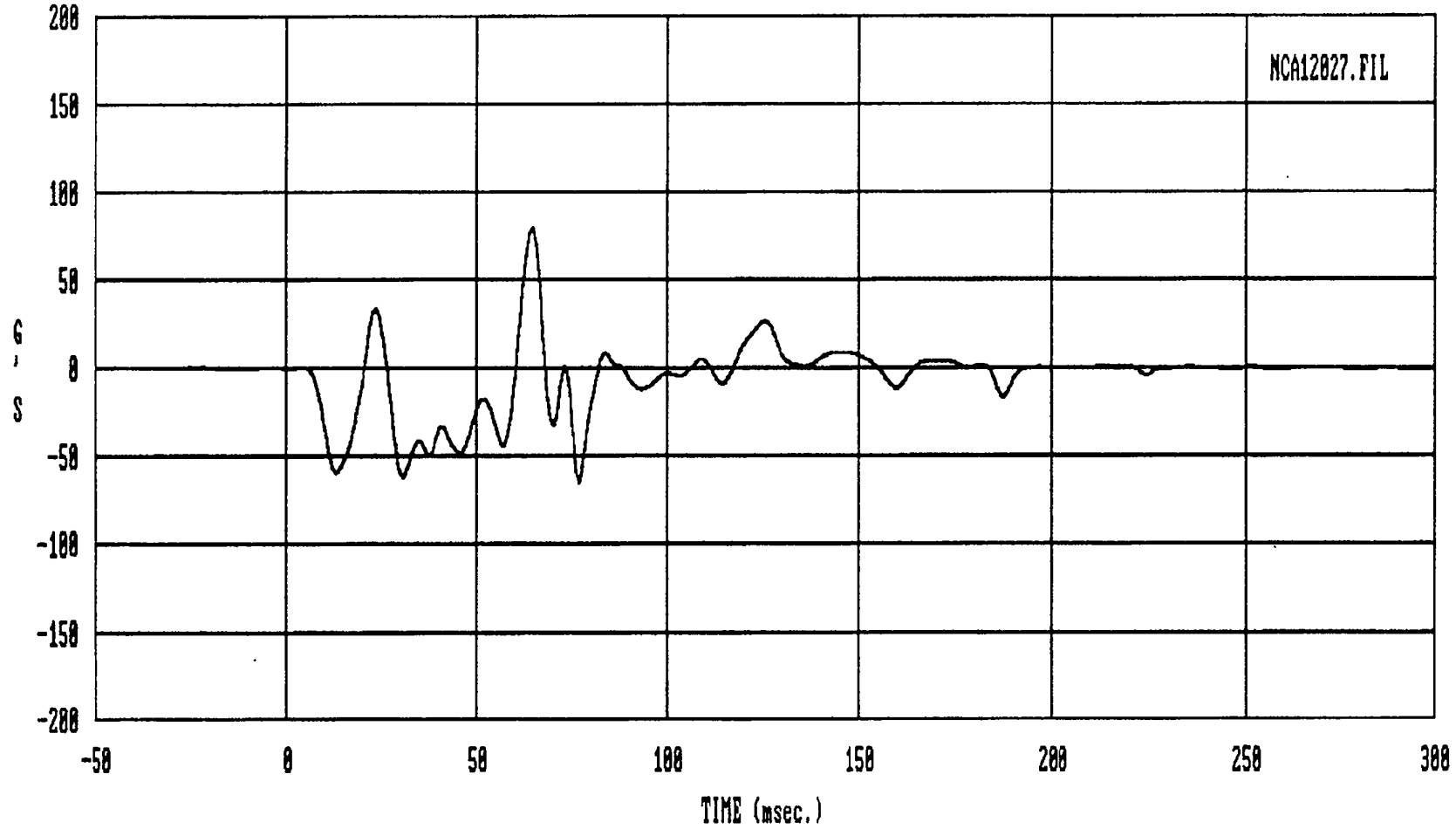
Curve: Engine bottom acceleration — X axis Filter: SAE CLASS 60 Max = 22.142 Min = -131.94

MSE Date: 03/20/90 Program: 1990 New Car Assessment #12 Vehicle: 1990 Isuzu Trooper



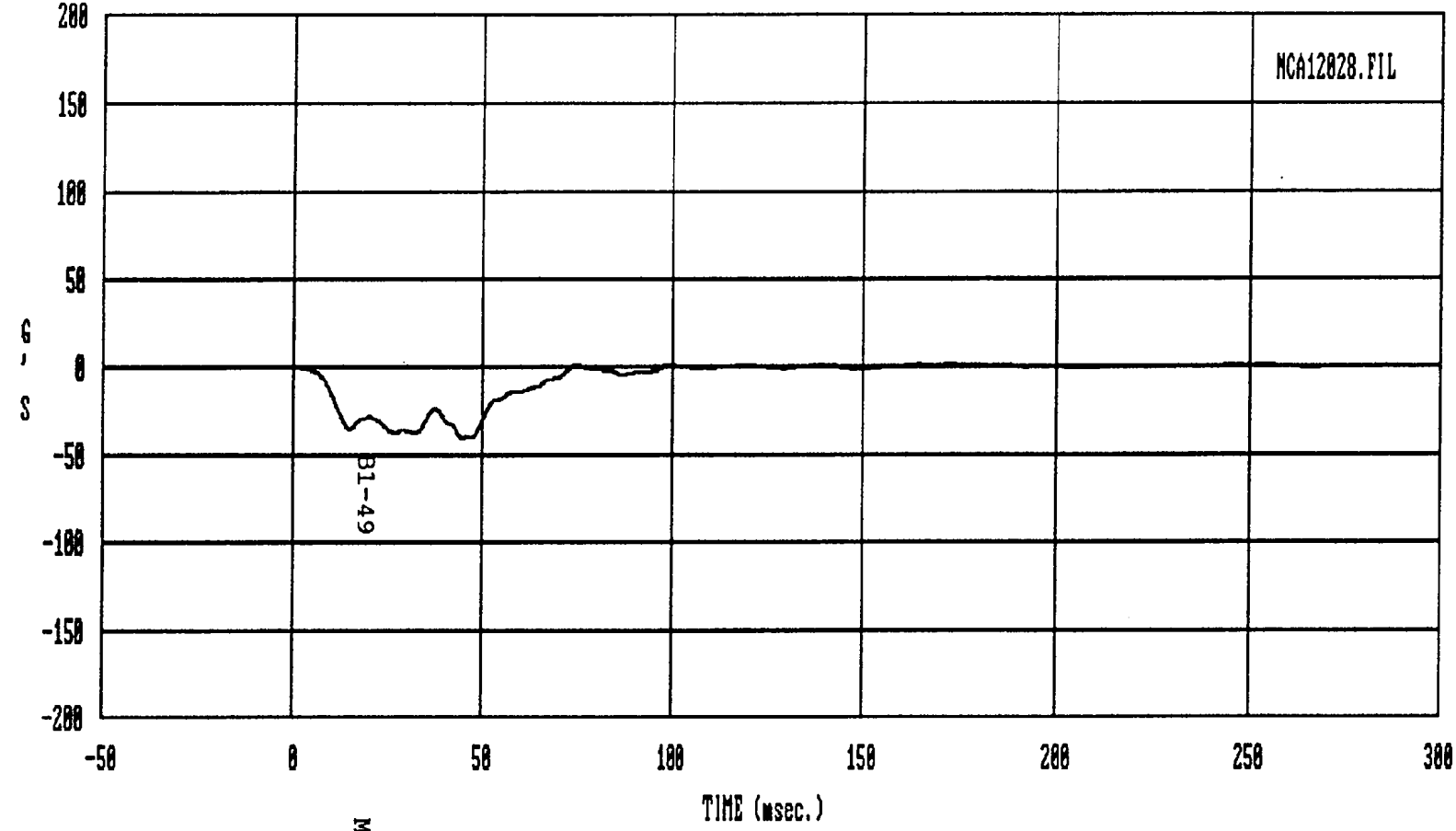
Curve: Engine top acceleration — X axis Filter: SAE CLASS 60 Max = 54.413 Min = -203.15

MSE Date: 03/20/90 Program: 1990 New Car Assessment #12 Vehicle: 1990 Isuzu Trooper



Curve: Instrument panel acceleration -- X axis Filter: SAE CLASS 60 Max = 79.755 Min = -64.791

MSE Date: 03/20/98 Program: 1998 New Car Assessment #12 Vehicle: 1998 Isuzu Trooper



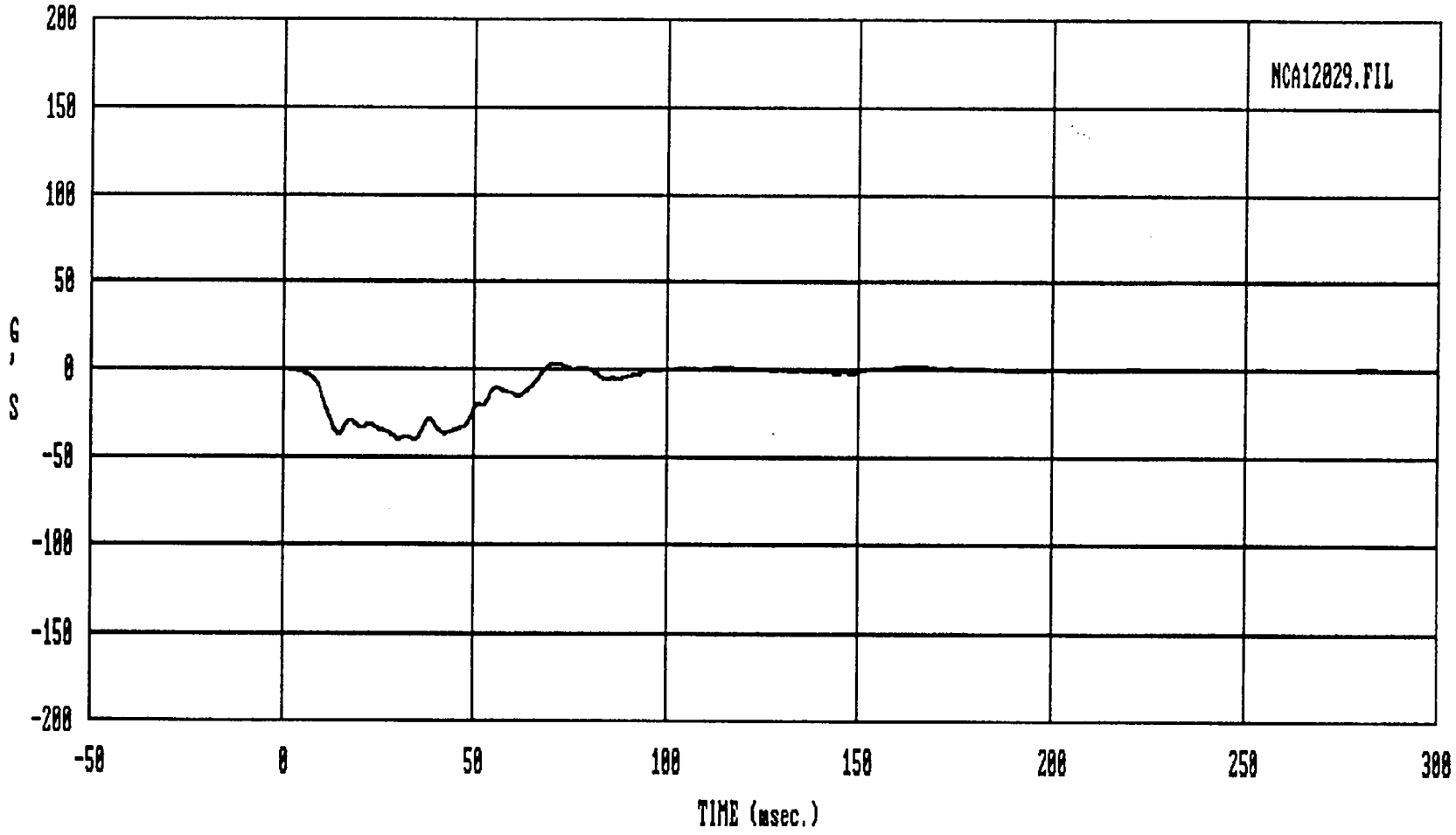
B1-50

MSE-90-R9092-N06

MSE-90-R9092-N06

Curve: Left-rear seat cross-member accel. -- X axis Filter: SAE CLASS 60 Max = 1.7518 Min = -40.940

MSE Date: 03/20/90 Program: 1990 New Car Assessment #12 Vehicle: 1990 Isuzu Trooper



Curve: Right-rear seat cross member accel. — X axis Filter: SAE CLASS 60 Max = 3.3043 Min = -40.093

MSE Date: 03/20/98 Program: 1998 New Car Assessment #12 Vehicle: 1998 Isuzu Trooper

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APPENDIX B-2

LOAD CELL BARRIER DATA

DATA FILTERING:
Load Cell Barrier Channels - Class 60

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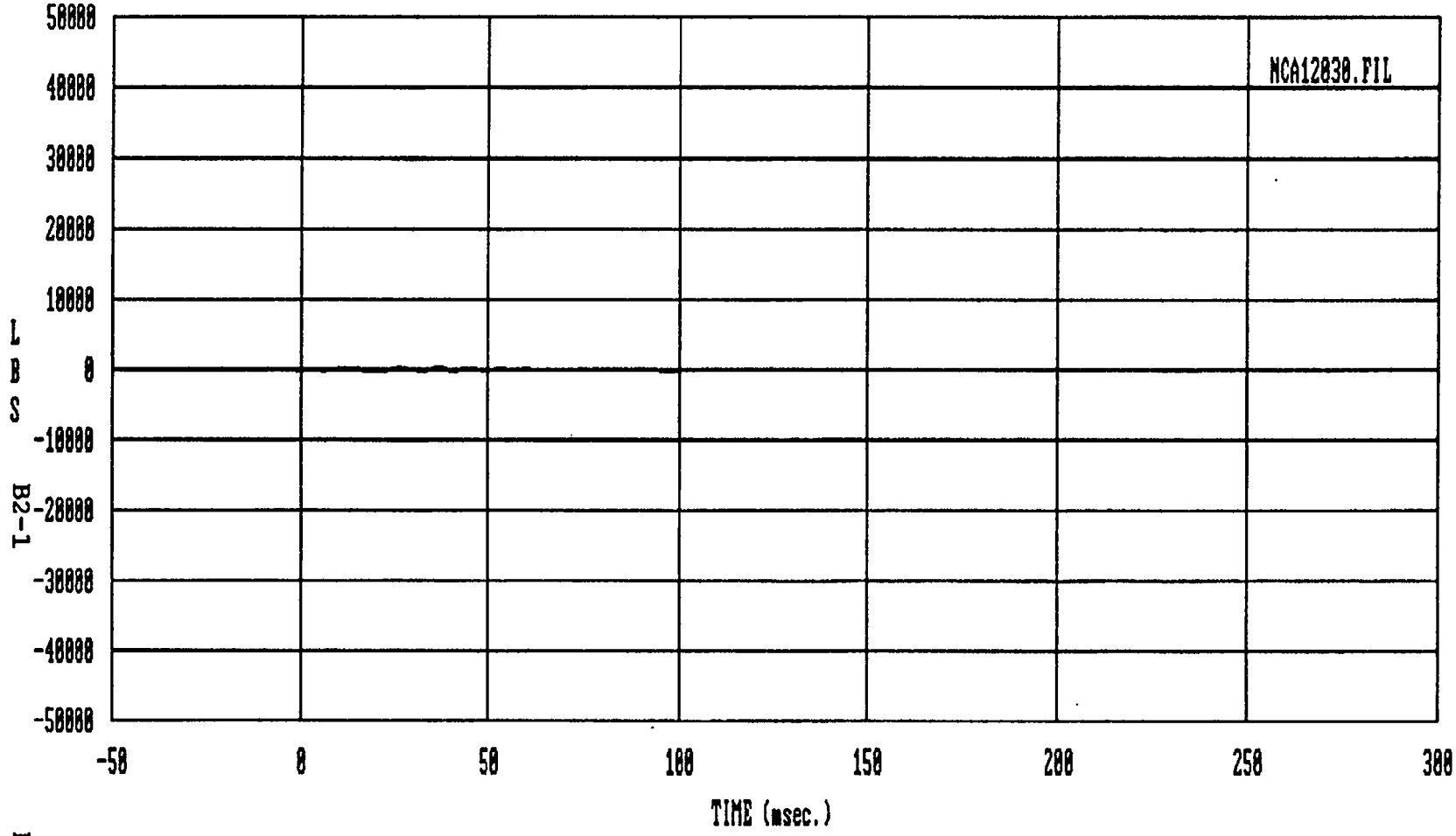
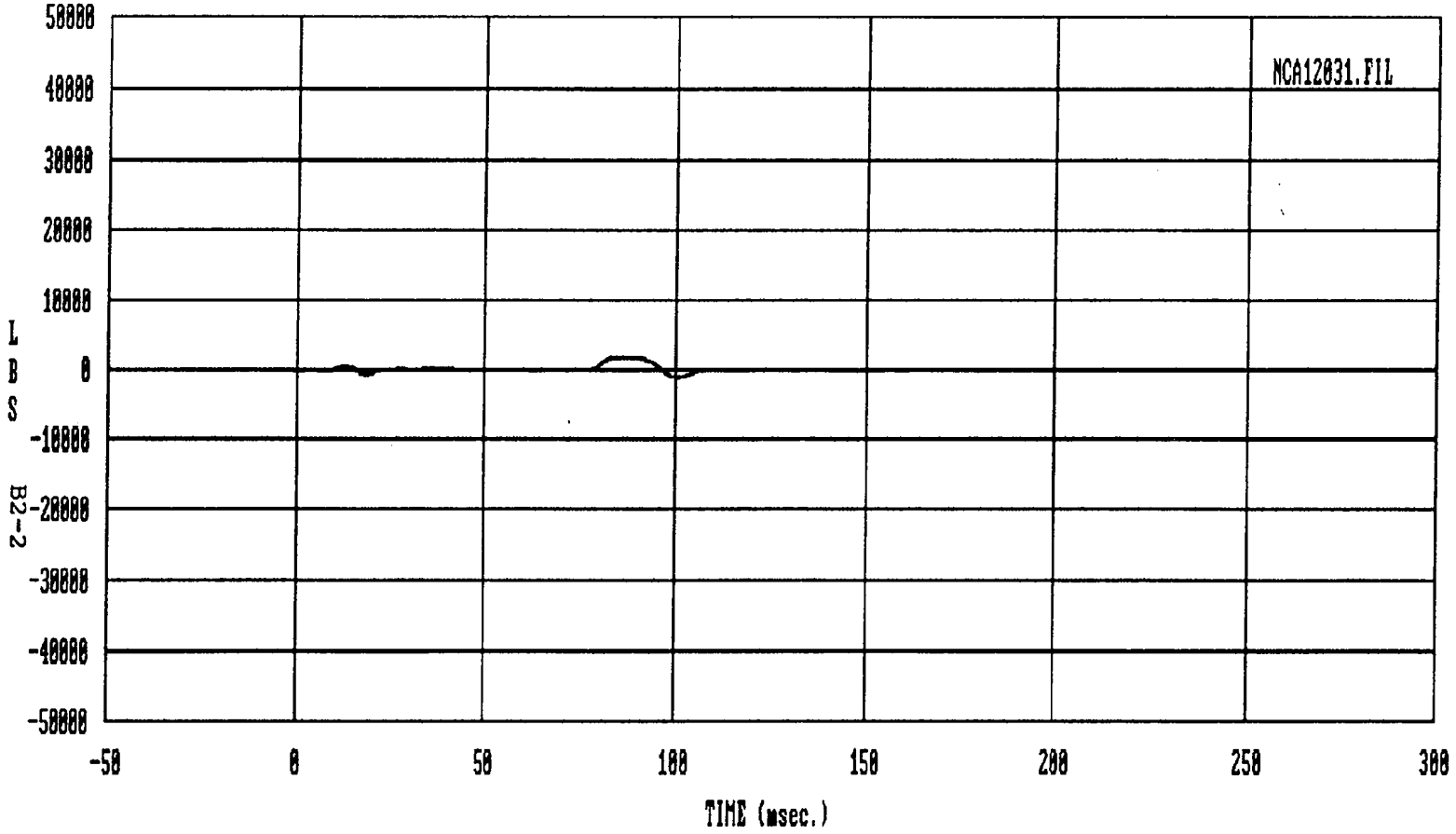


Curve: Force on Barrier load cell A1 Filter: SAE CLASS 60 Max = 378.13 Min = -177.67

MSE Date: 03/20/98 Program: 1998 New Car Assessment #12 Vehicle: 1998 Isuzu Trooper

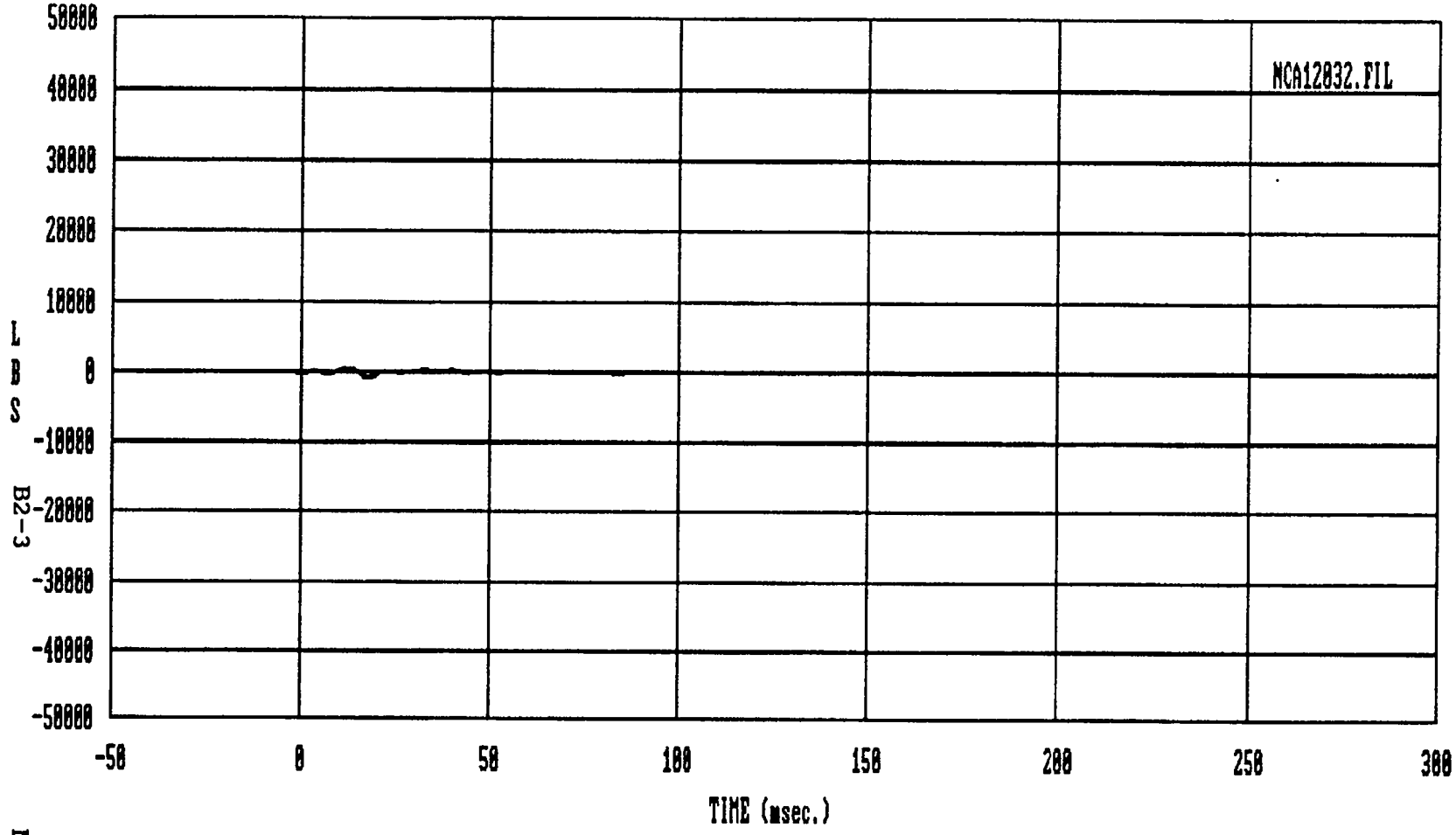
MSE-90+R9092-N06



Curve: Force on Barrier load cell A2 Filter: SAE CLASS 60 Max = 1867.9 Min = -1872.7

MSE Date: 03/20/90 Program: 1990 New Car Assessment #12 Vehicle: 1990 Isuzu Trooper

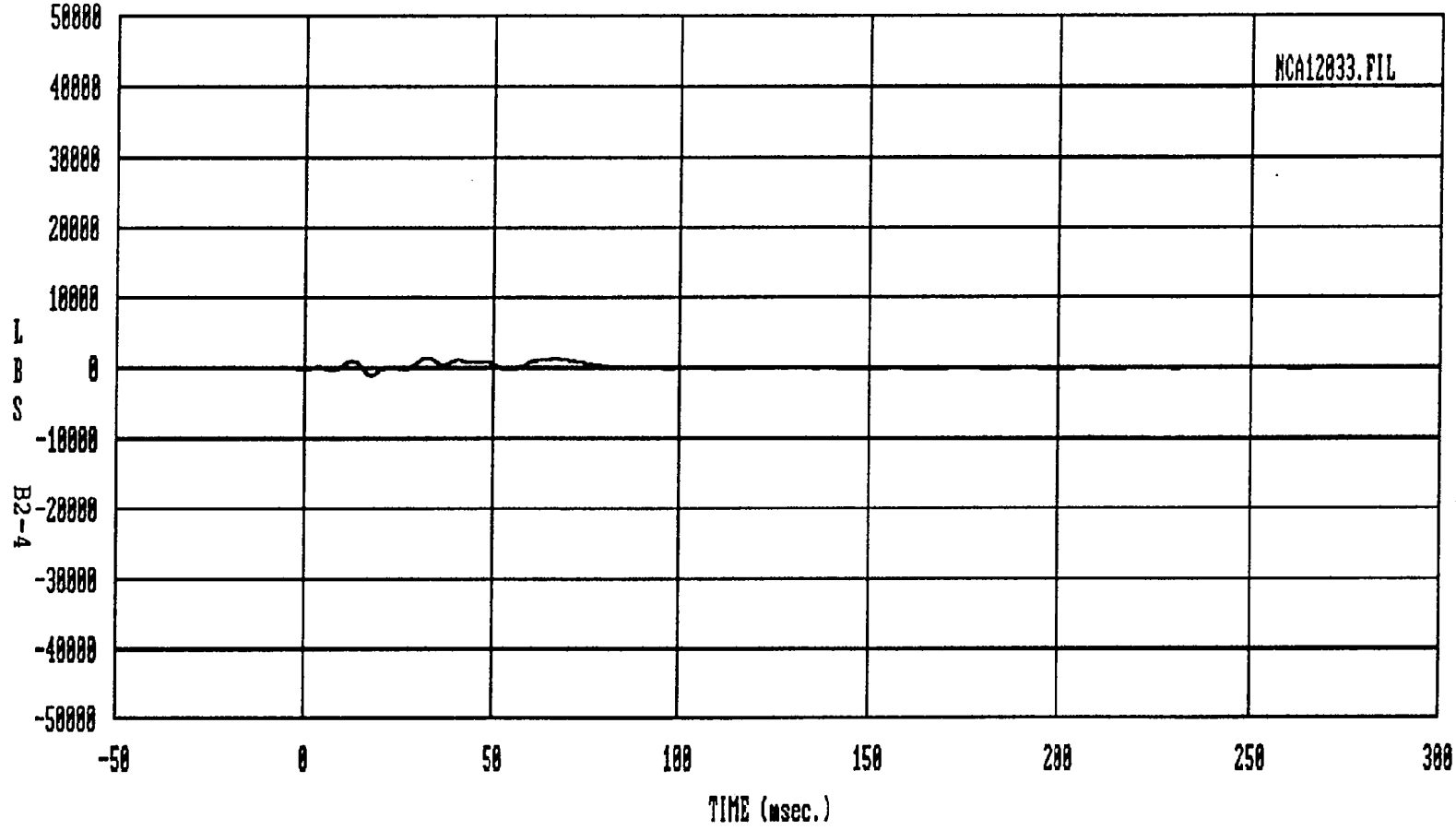
MSE-90-R9092-N06



Curve: Force on Barrier load cell A3 Filter: SAE CLASS 60 Max = 681.25 Min = -861.68

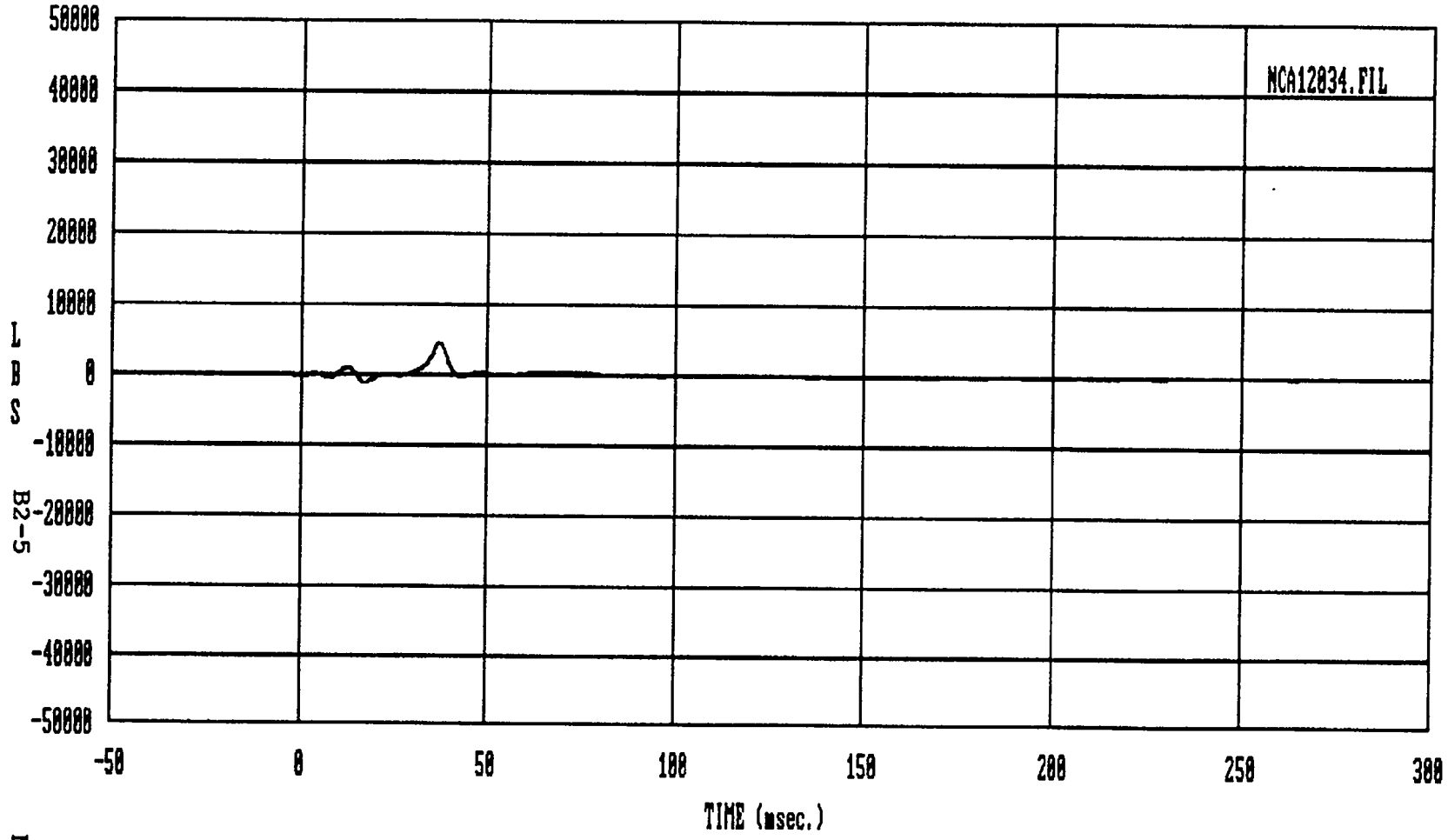
MSE Date: 03/20/90 Program: 1990 New Car Assessment #12 Vehicle: 1990 Isuzu Trooper

MSE-90-R9092-N06



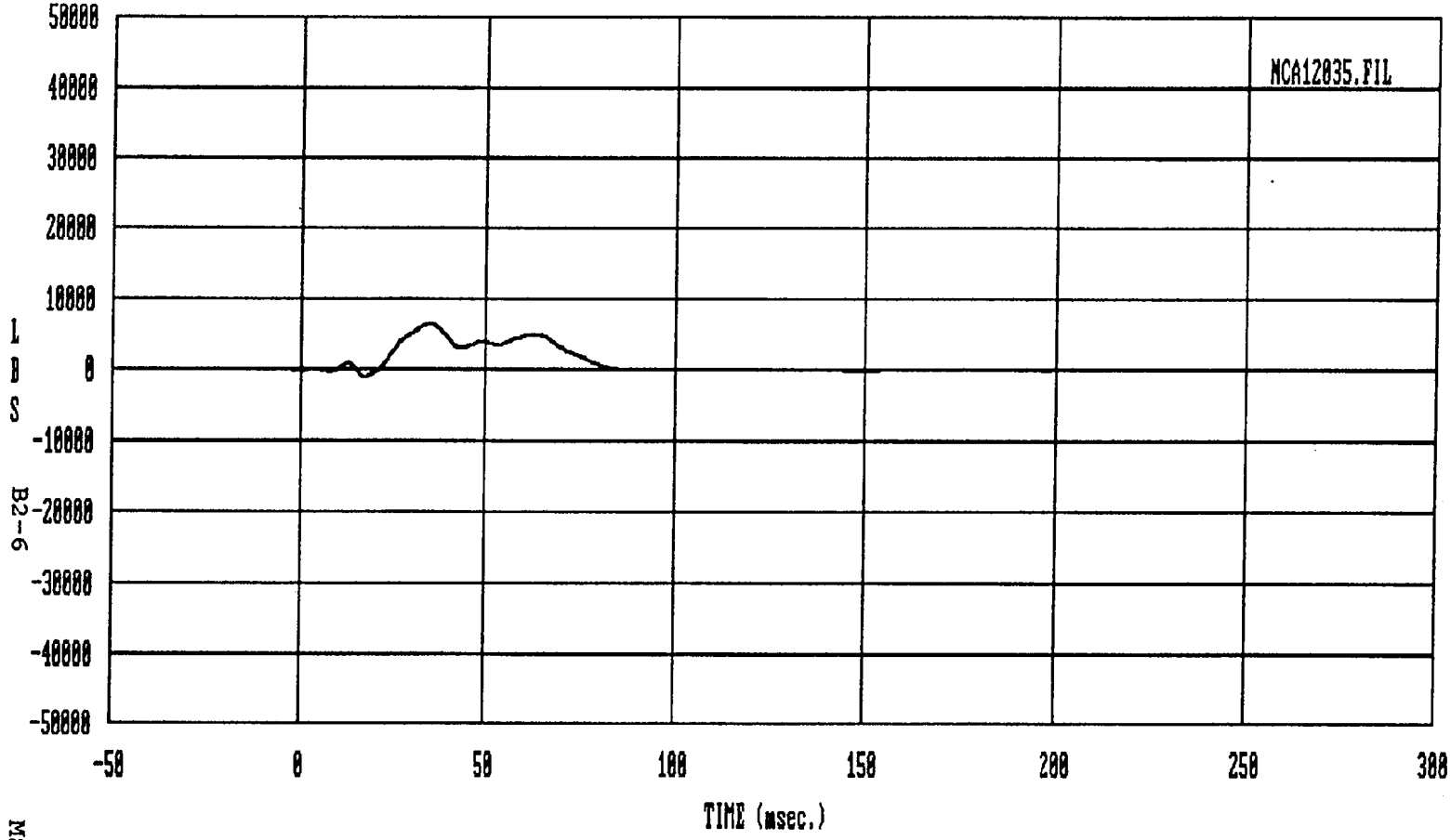
Curve: Force on Barrier load cell A4 Filter: SAE CLASS 60 Max = 1442.6 Min = -1084.9

MSE Date: 03/20/90 Program: 1990 New Car Assessment #12 Vehicle: 1990 Isuzu Trooper



Curve: Force on Barrier load cell A5 Filter: SAE CLASS 60 Max = 4551.9 Min = -1173.0

MSE Date: 03/28/98 Program: 1998 New Car Assessment #12 Vehicle: 1998 Isuzu Trooper

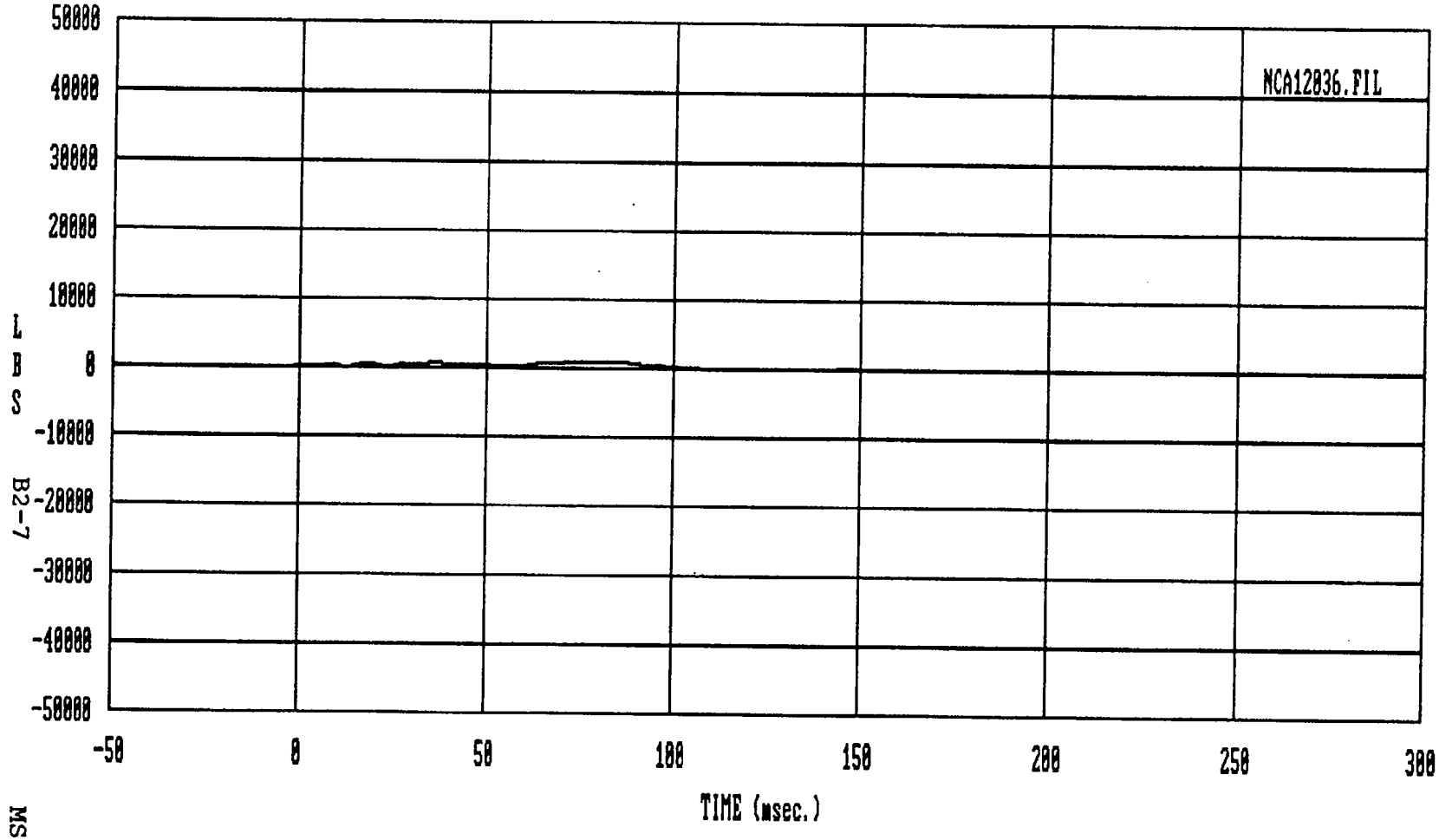


B2-6

Curve: Force on Barrier load cell A6 Filter: SAE CLASS 60 Max = 6576.9 Min = -1004.3

MSE Date: 03/20/90 Program: 1990 New Car Assessment #12 Vehicle: 1990 Isuzu Trooper

MSE-90-R9092-N06

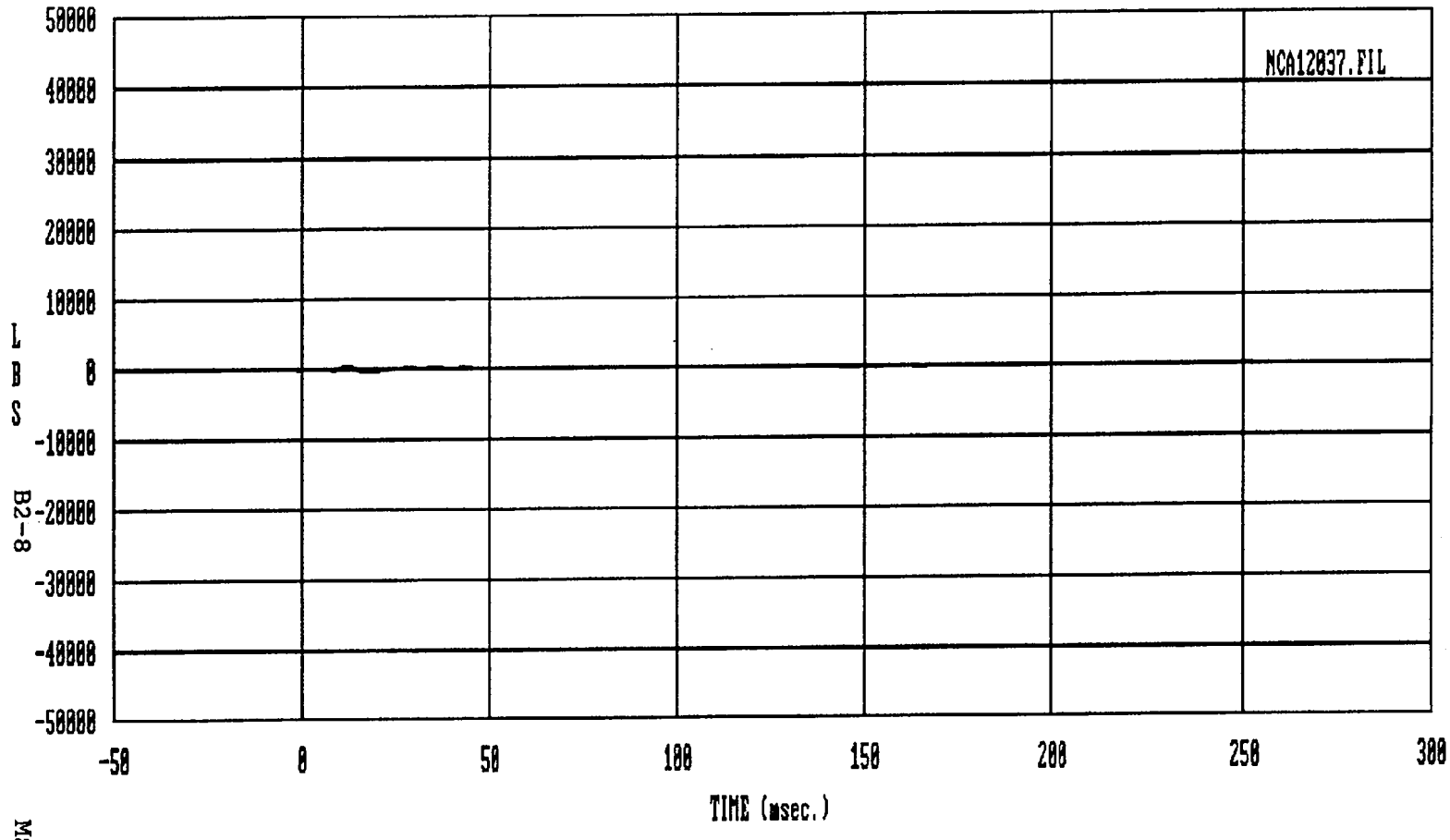


Curve: Force on Barrier load cell A7 Filter: SAE CLASS 60 Max = 1032.8 Min = -23.086

MSE Date: 03/28/90 Program: 1990 New Car Assessment #12 Vehicle: 1990 Isuzu Trooper

B2-7

MSE-90-R9092-N06

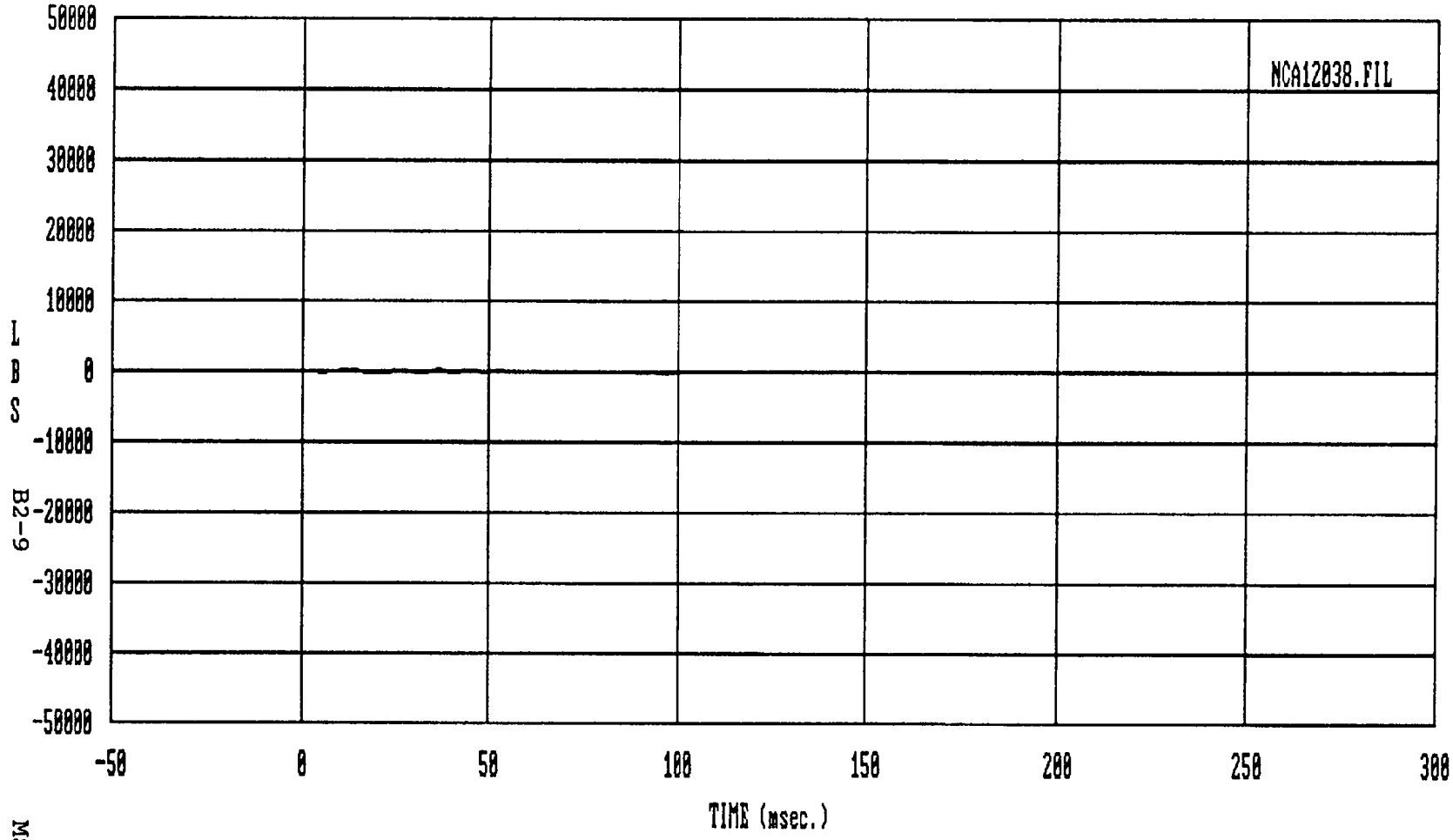


B2-8

MSE-90-R9092-N06

Curve: Force on Barrier load cell A8 Filter: SAE CLASS 60 Max = 462.58 Min = -454.41

MSE Date: 03/20/98 Program: 1998 New Car Assessment #12 Vehicle: 1998 Isuzu Trooper

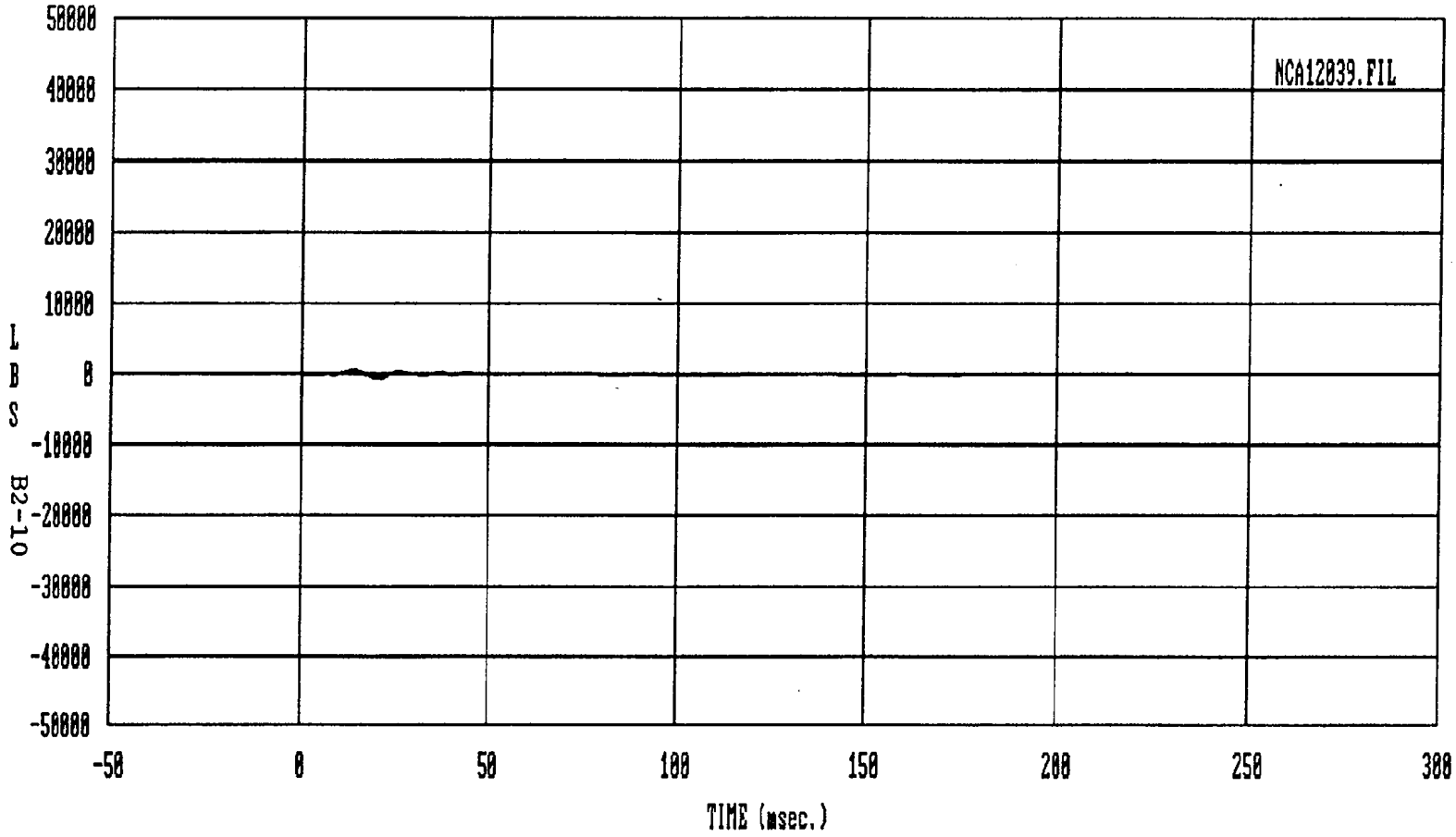


Curve: Force on Barrier load cell A9 Filter: SAE CLASS 60 Max = 349.76 Min = -217.53

MSE Date: 03/20/90 Program: 1990 New Car Assessment #12 Vehicle: 1990 Isuzu Trooper

B2-9

MSE-90-R9092-N06

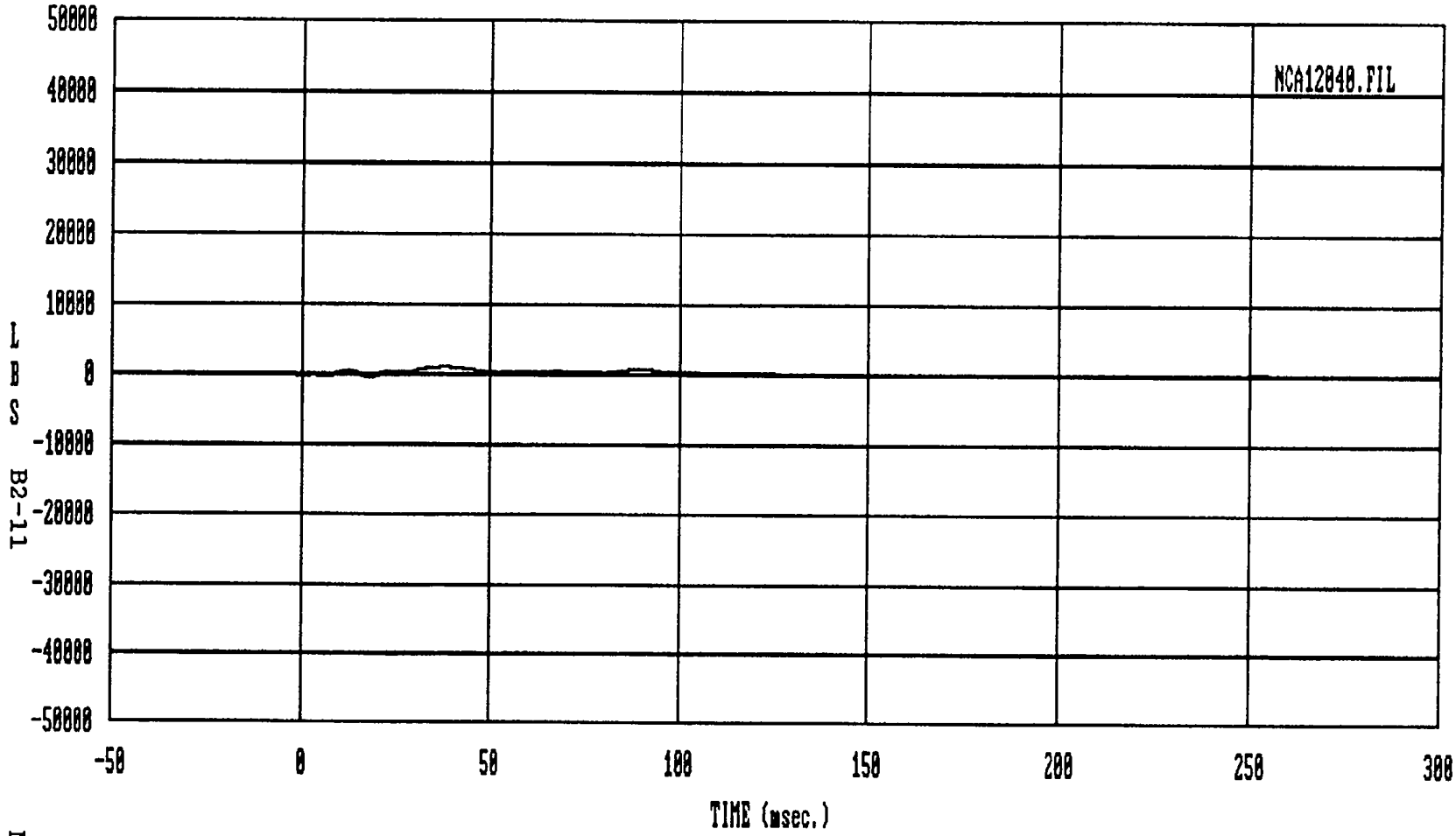


Curve: Force on Barrier load cell B1 Filter: SAE CLASS 60 Max = 571.32 Min = -592.58

MSE Date: 03/20/90 Program: 1990 New Car Assessment #12 Vehicle: 1990 Isuzu Trooper

B2-10

MSE-90-R9092-N06

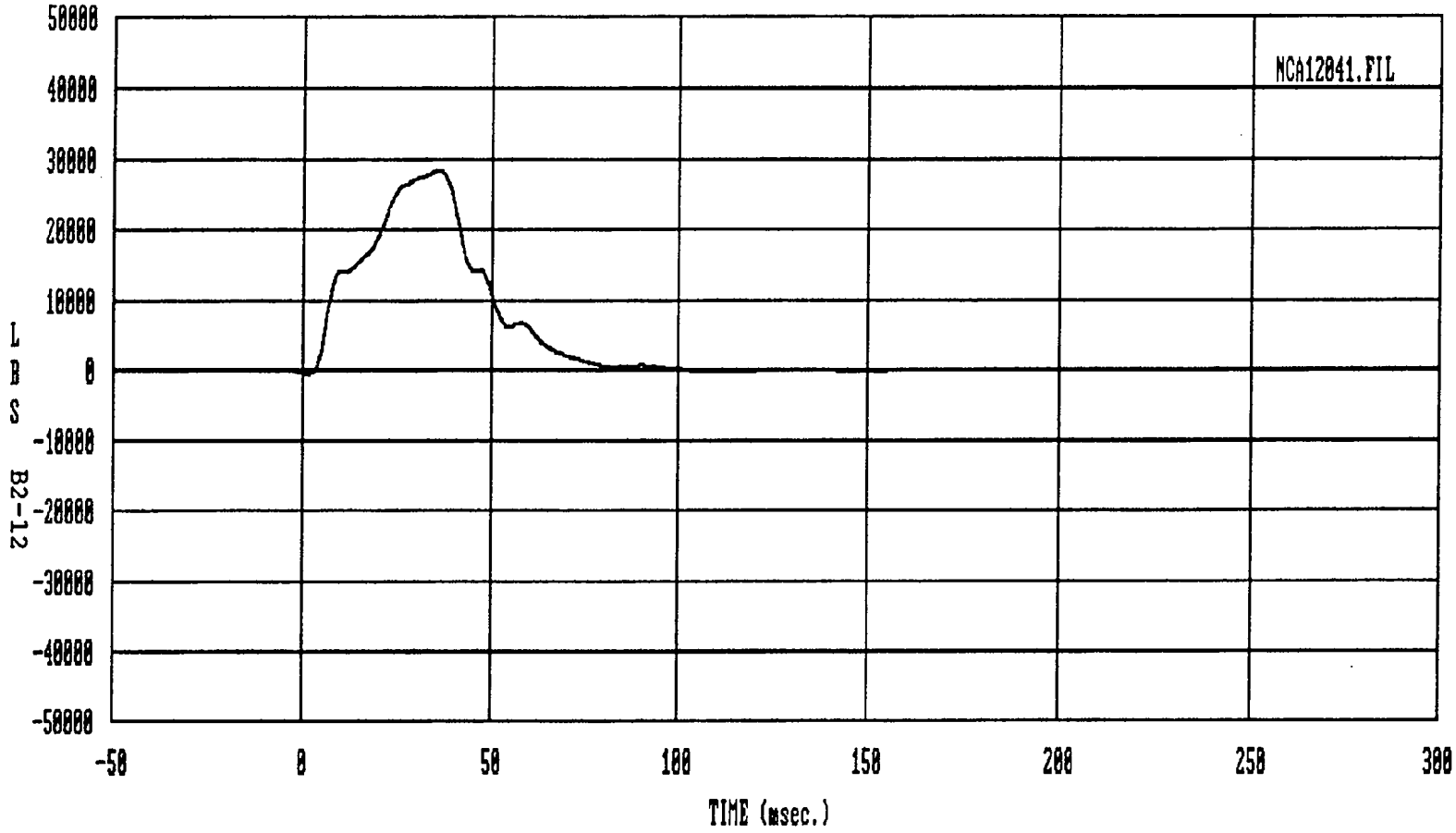


B2-11

MSE-90-R9092-N06

Curve: Force on Barrier load cell B2 Filter: SAE CLASS 60 Max = 1121.7 Min = -375.87

MSE Date: 03/20/98 Program: 1990 New Car Assessment #12 Vehicle: 1990 Isuzu Trooper

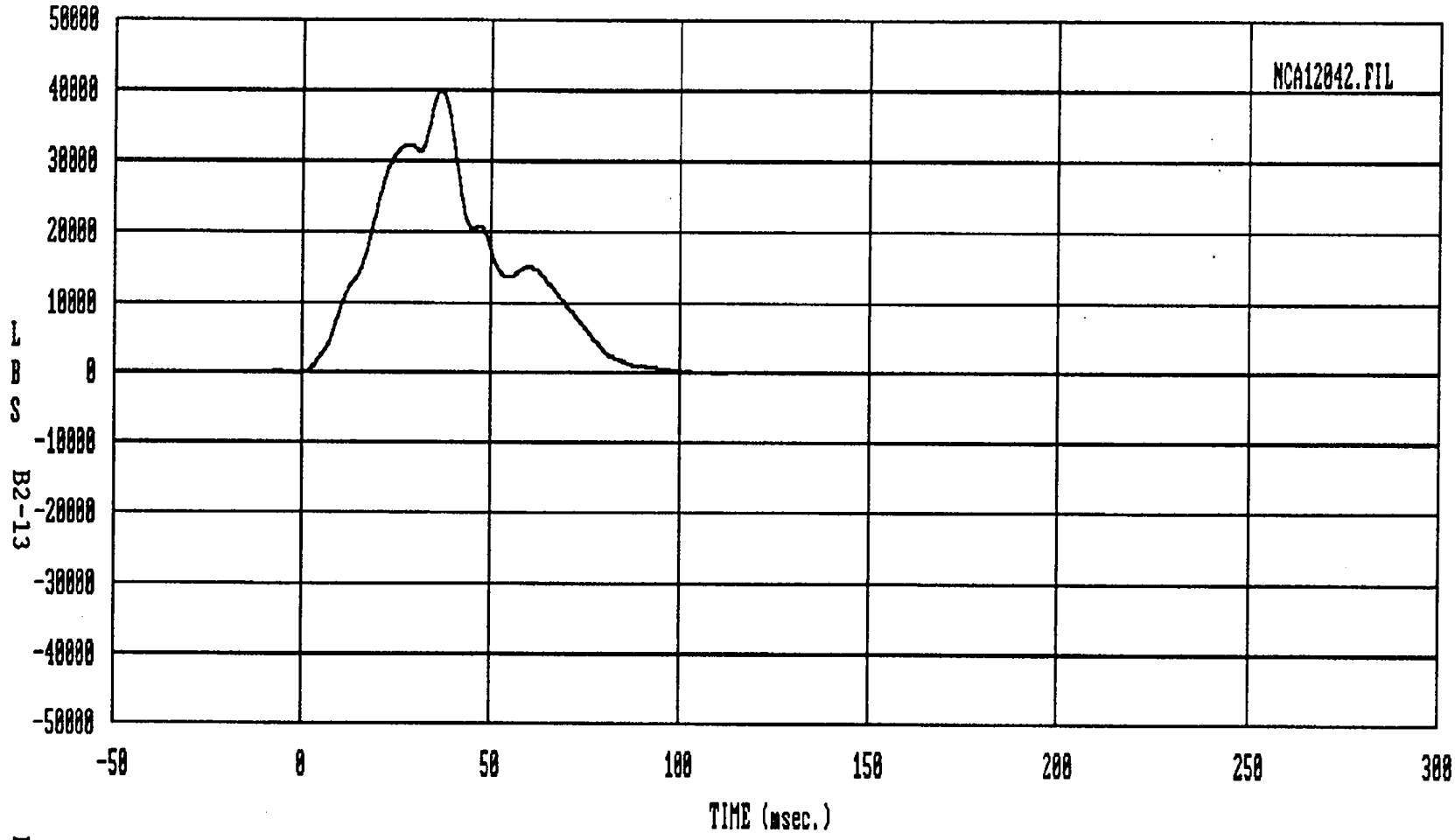


Curve: Force on Barrier load cell H3 Filter: SAE CLASS 60 Max = 28451. Min = -491.62

MSE Date: 03/20/90 Program: 1990 New Car Assessment #12 Vehicle: 1990 Isuzu Trooper

B2-12

MSE-90-R9092-N06

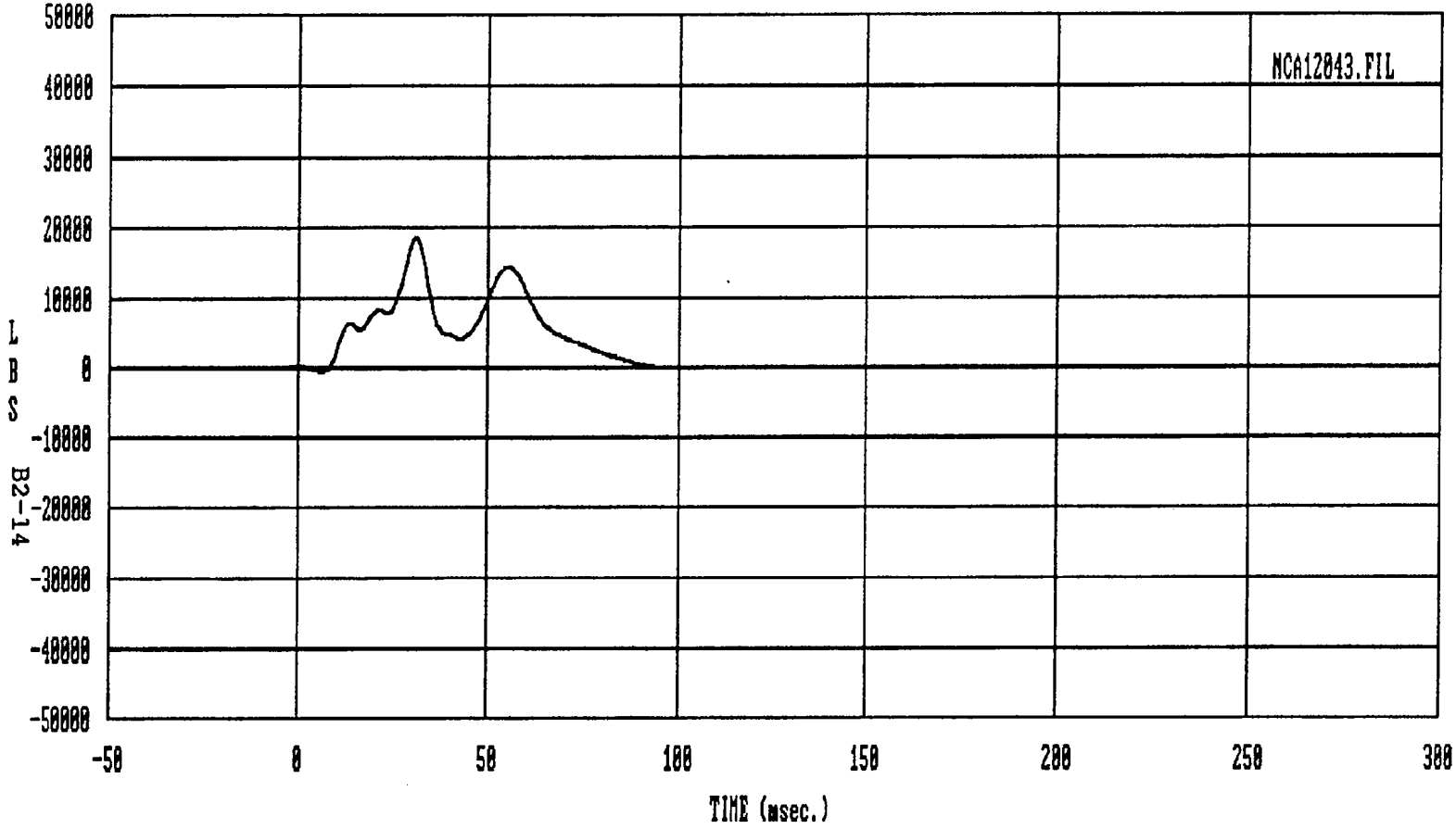


Curve: Force on Barrier load cell B4 Filter: SAE CLASS 60 Max = 40116. Min = -99.448

MSE Date: 03/20/90 Program: 1990 New Car Assessment #12 Vehicle: 1990 Isuzu Trooper

B2-13

MSE-90-R9092-N06

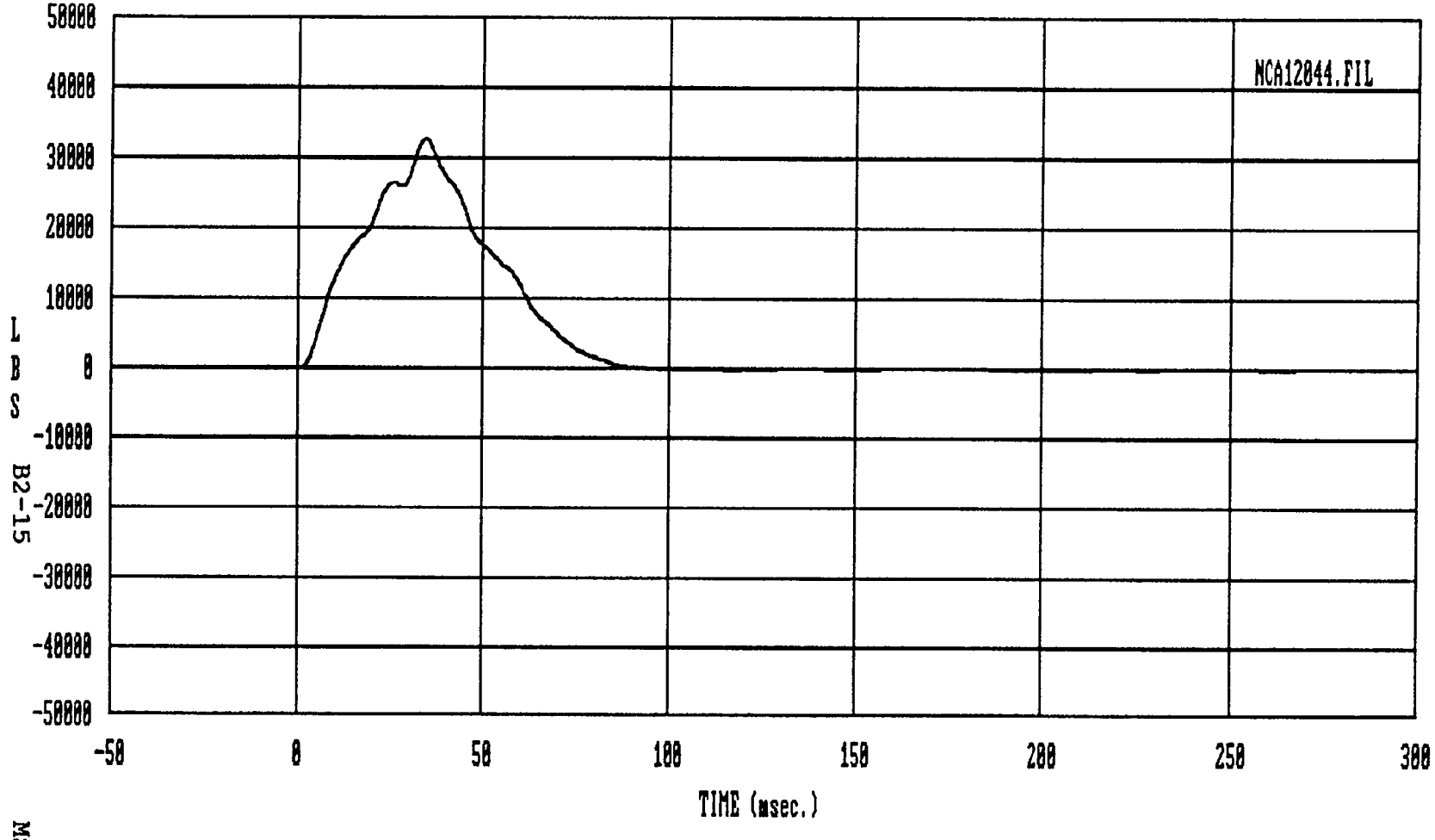


B2-14

Curve: Force on Barrier load cell B5 Filter: SAE CLASS 60 Max = 18653. Min = -513.03

MSE Date: 03/20/90 Program: 1990 New Car Assessment #12 Vehicle: 1990 Isuzu Trooper

MSE-90-R9092-N06

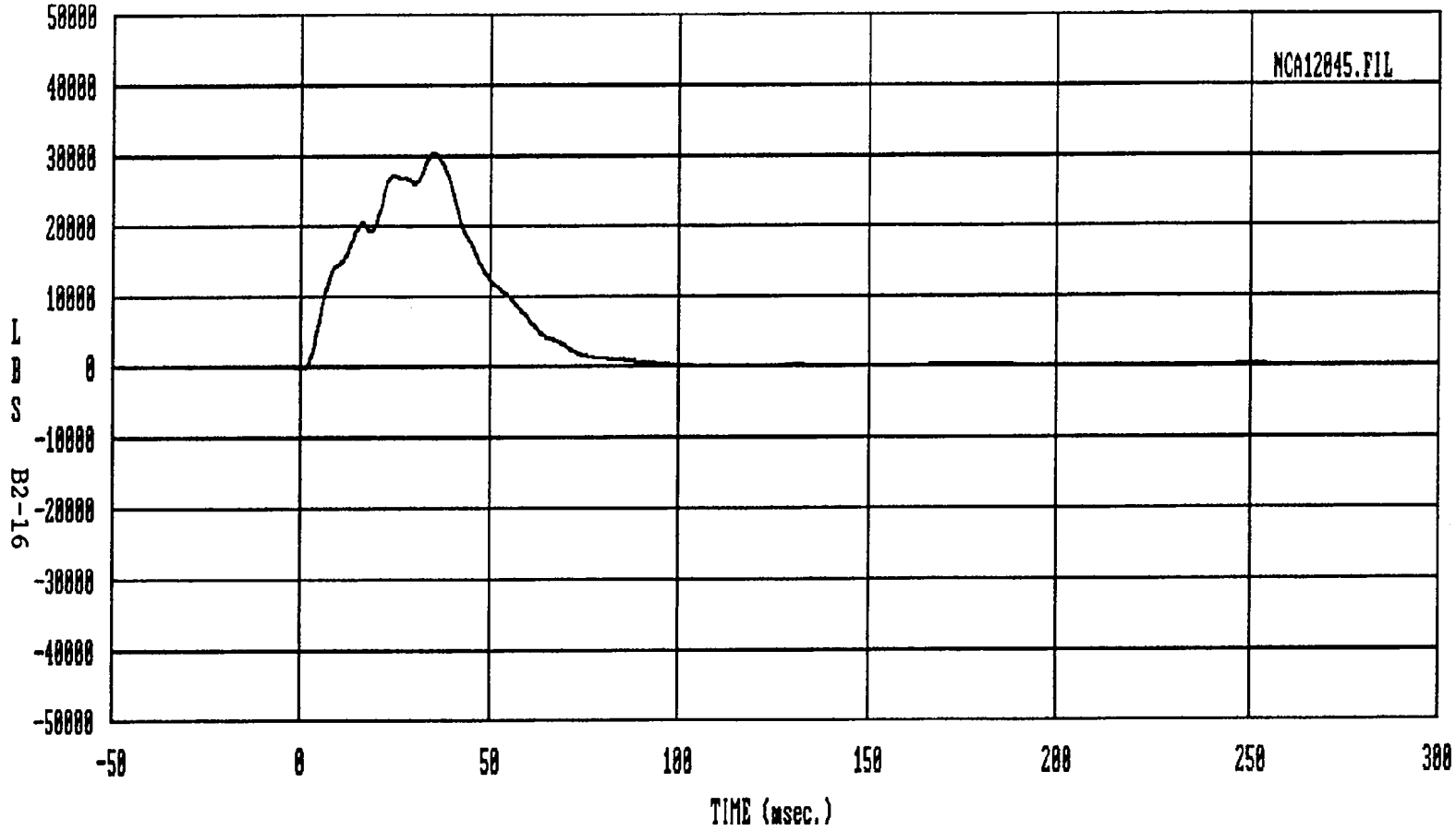


Curve: Force on Barrier load cell B6 Filter: SAE CLASS 60 Max = 32735. Min = -308.22

MSE Date: 03/20/90 Program: 1990 New Car Assessment #12 Vehicle: 1990 Isuzu Trooper

B2-15

MSE-90-R9092-N06

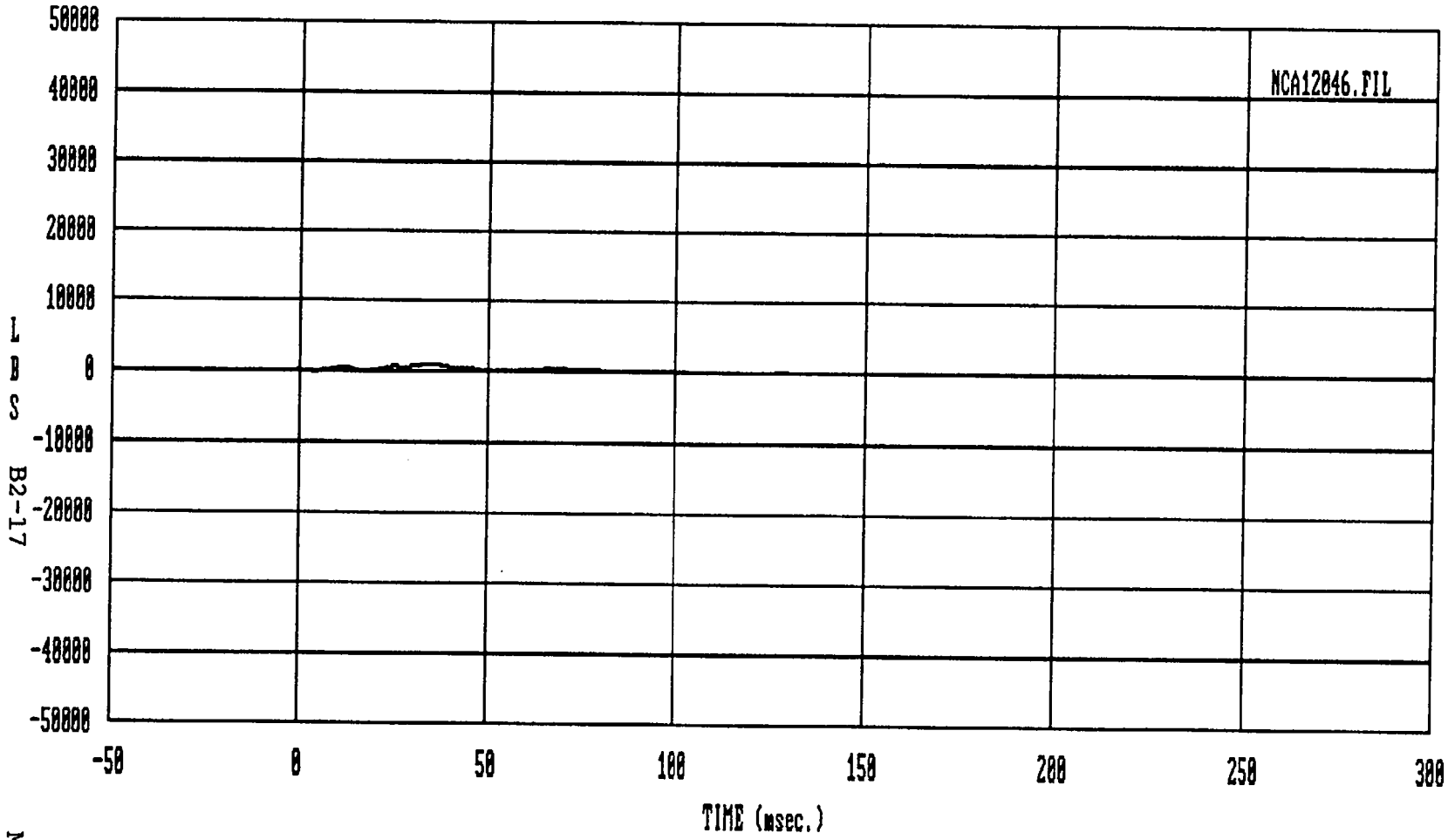


B2-16

Curve: Force on Barrier load cell #7 Filter: SAE CLASS 60 Max = 30466. Min = -216.75

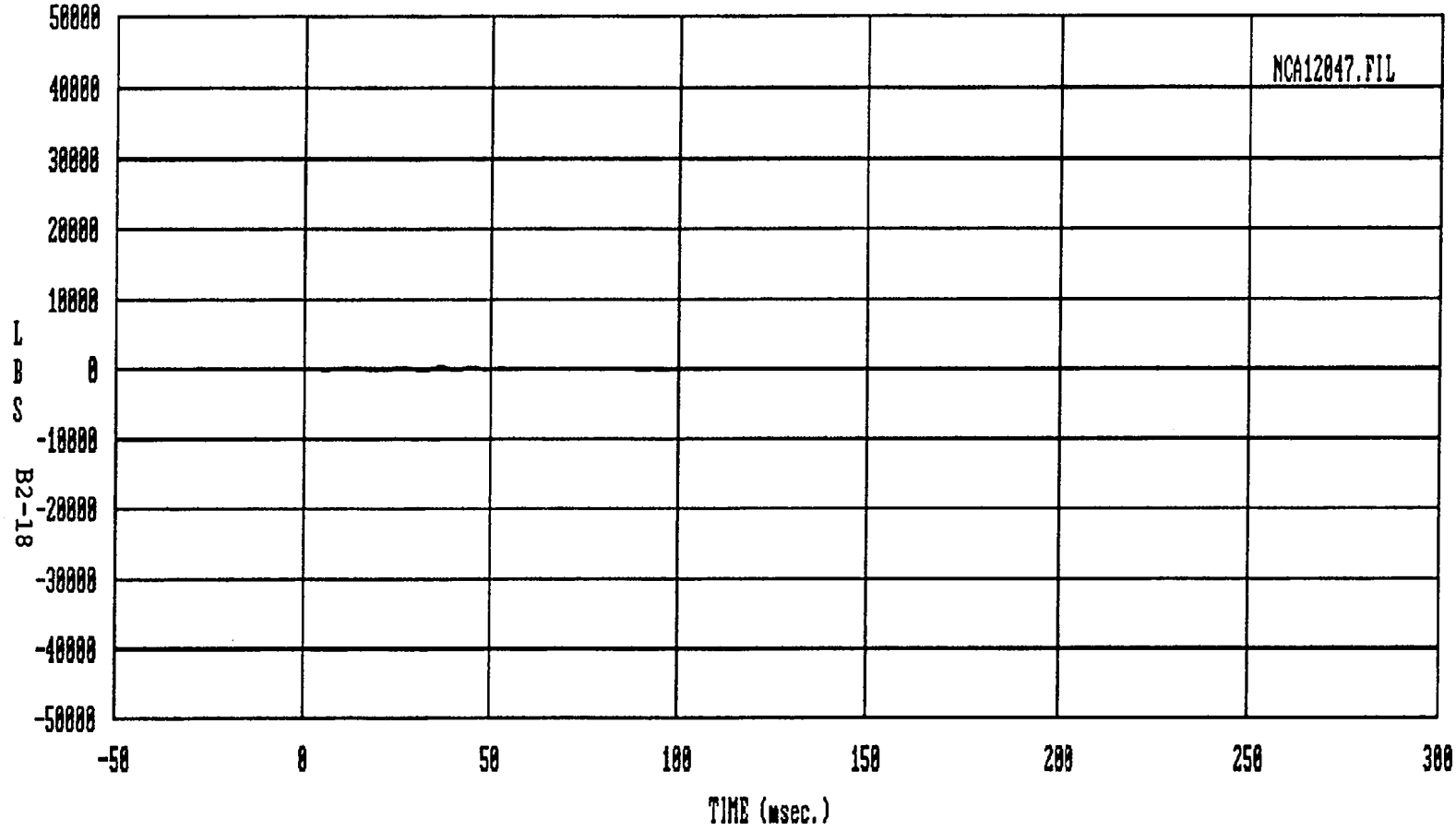
MSE Date: 03/20/90 Program: 1990 New Car Assessment #12 Vehicle: 1990 Isuzu Trooper

MSE-90-R9092-N06



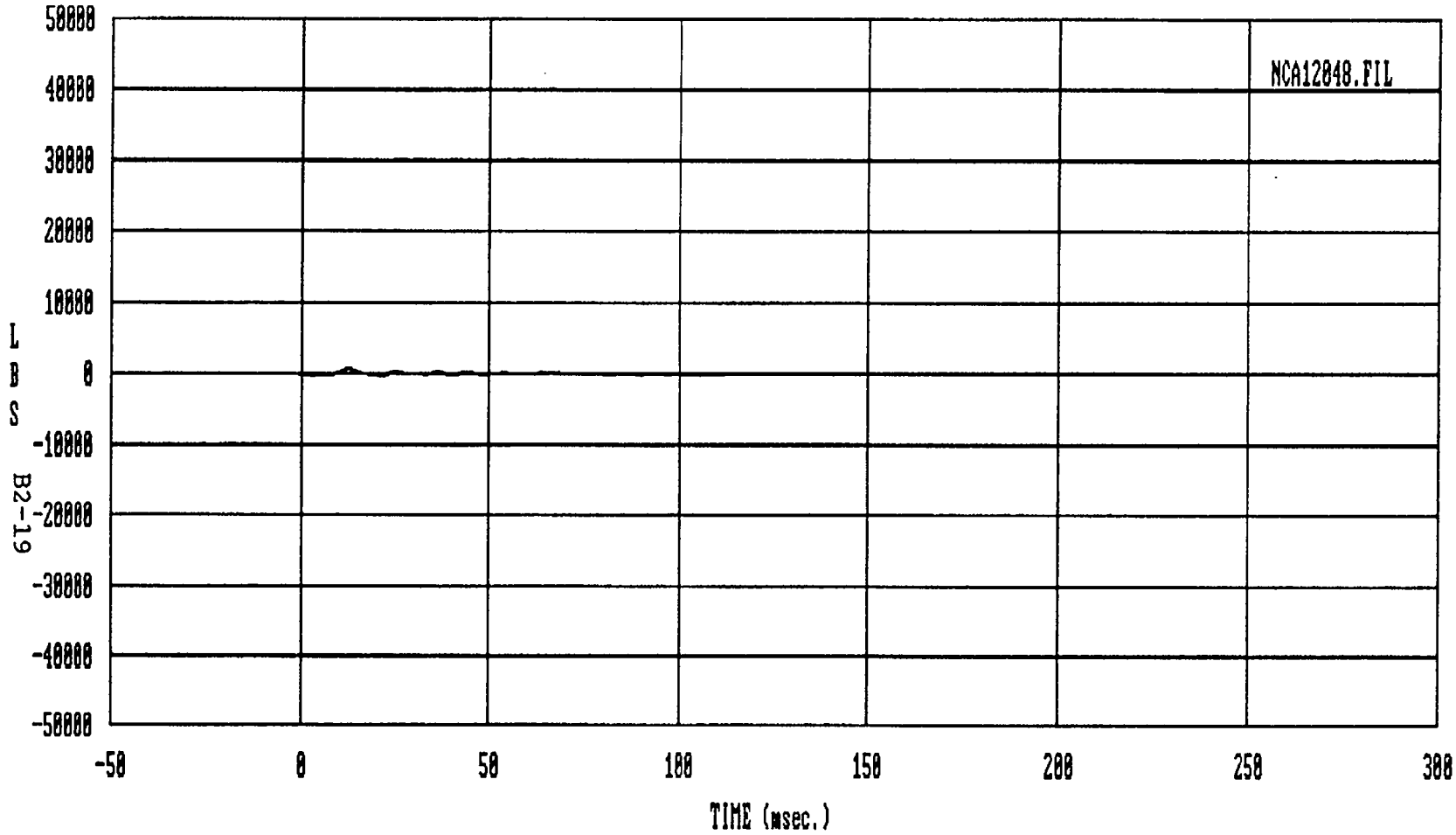
Curve: Force on Barrier load cell B8 Filter: SAE CLASS 60 Max = 1851.1 Min = -112.83

MSE Date: 03/20/98 Program: 1998 New Car Assessment #12 Vehicle: 1998 Isuzu Trooper



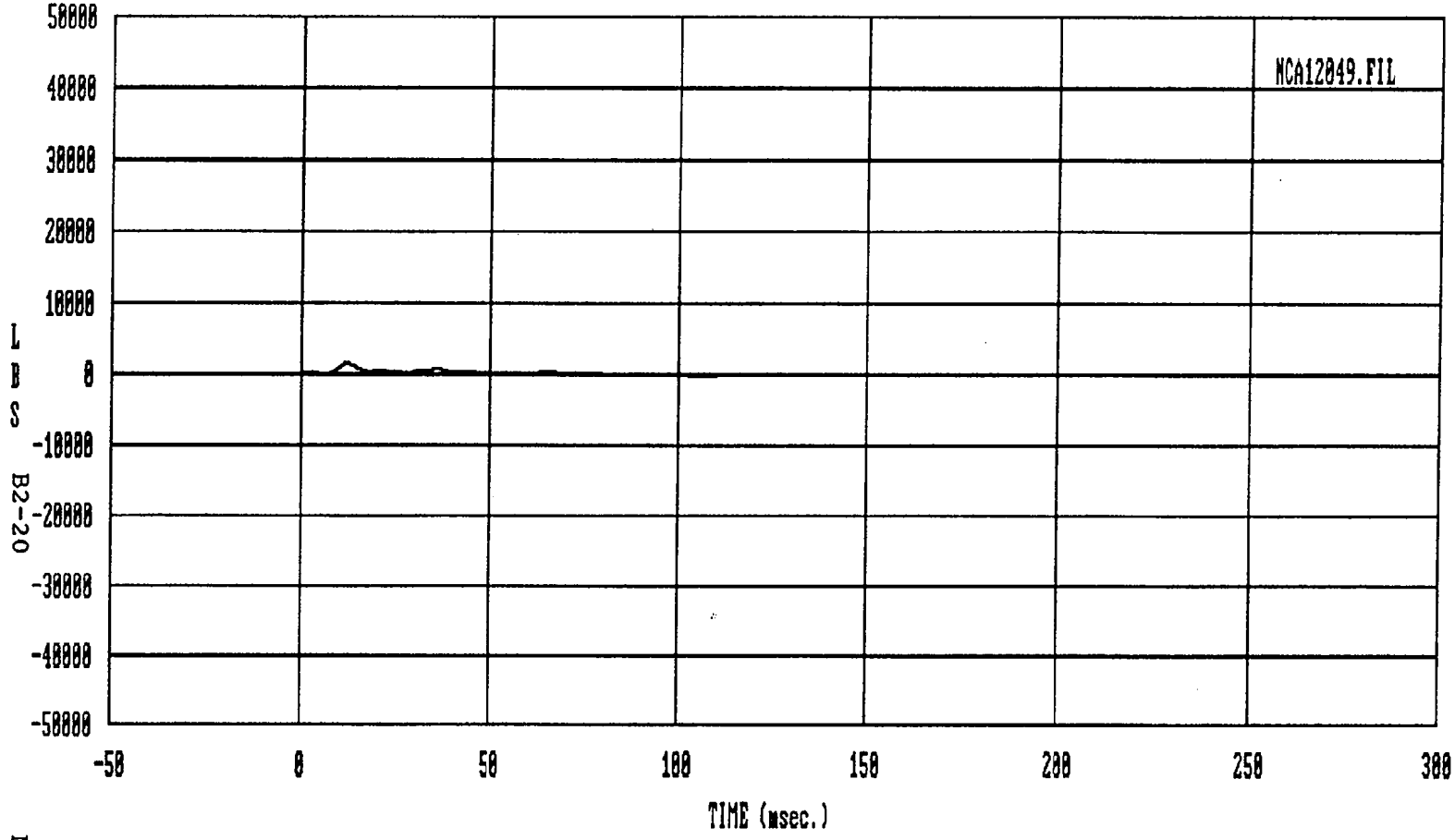
Curve: Force on Barrier load cell B9 Filter: SAE CLASS 60 Max = 349.76 Min = -217.53

MSE Date: 03/20/90 Program: 1990 New Car Assessment #12 Vehicle: 1990 Isuzu Trooper



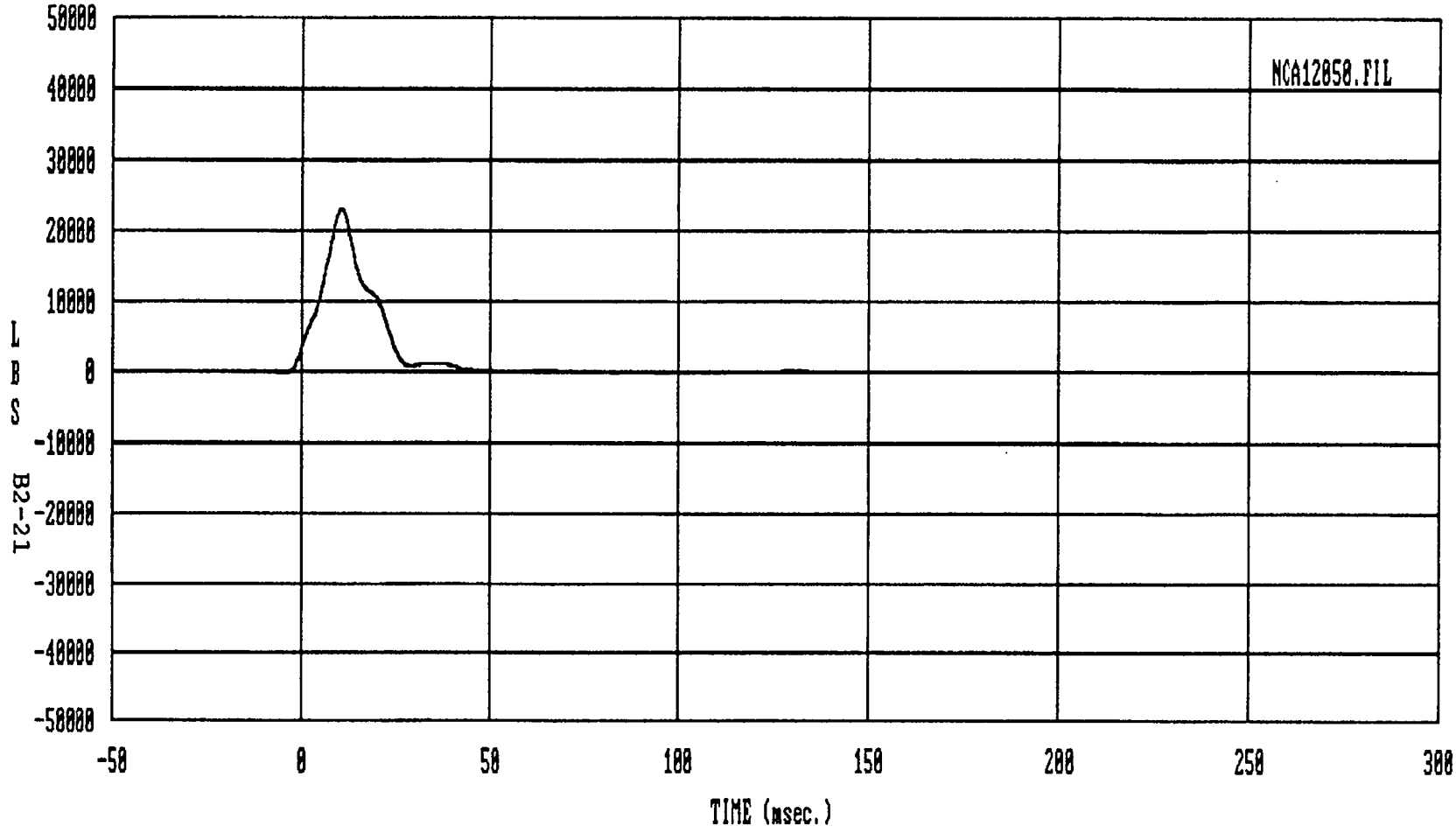
Curve: Force on Barrier load cell C1 Filter: SAE CLASS 60 Max = 752.27 Min = -359.20

MSE Date: 03/20/90 Program: 1990 New Car Assessment #12 Vehicle: 1990 Isuzu Trooper



Curve: Force on Barrier load cell C2 Filter: SAE CLASS 60 Max = 1546.1 Min = -108.14

MSE Date: 03/20/98 Program: 1998 New Car Assessment #12 Vehicle: 1998 Isuzu Trooper

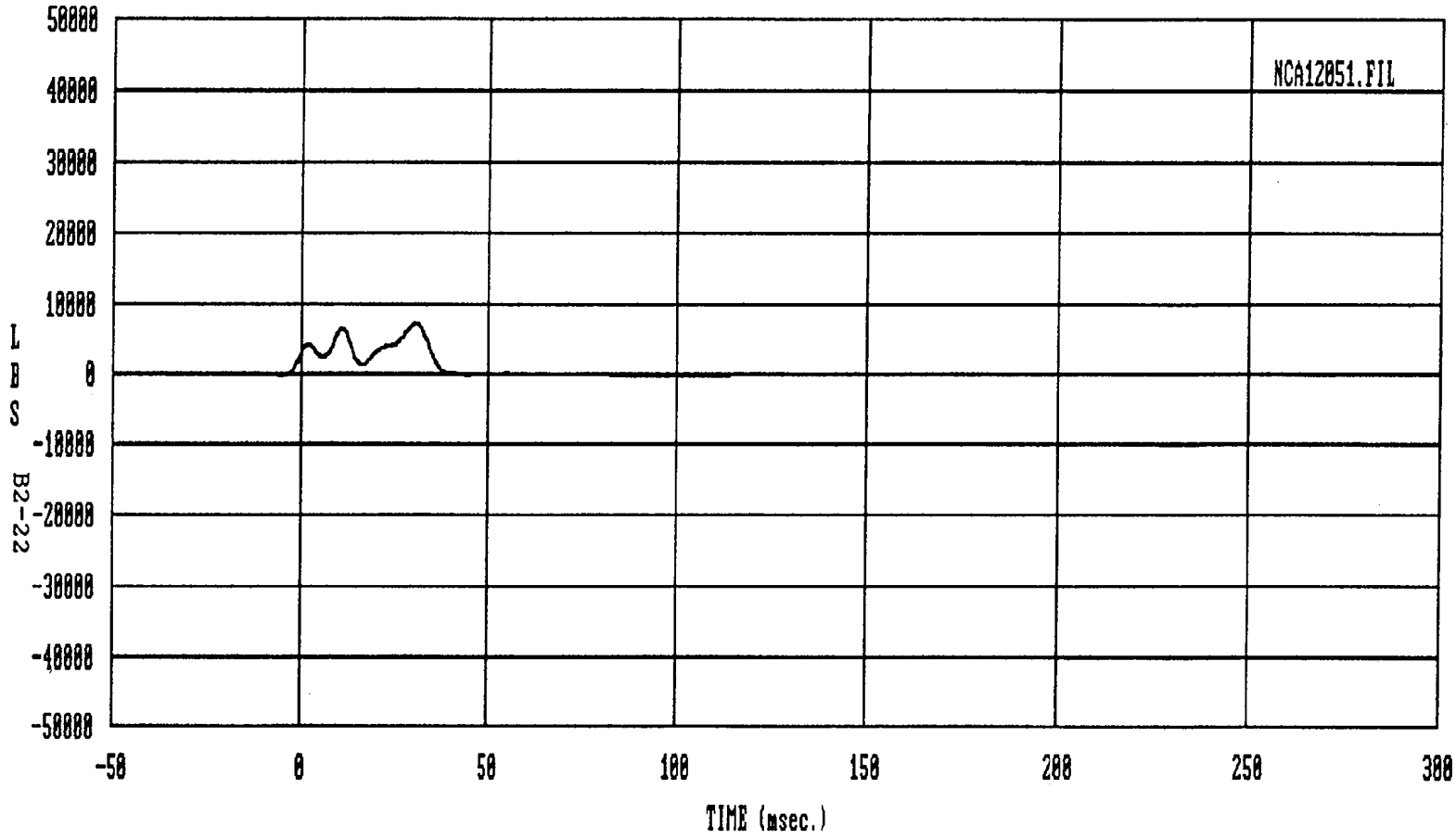


Curve: Force on Barrier load cell C3 Filter: SAE CLASS 60 Max = 23239. Min = -162.38

MSE Date: 03/20/98 Program: 1998 New Car Assessment #12 Vehicle: 1998 Isuzu Trooper

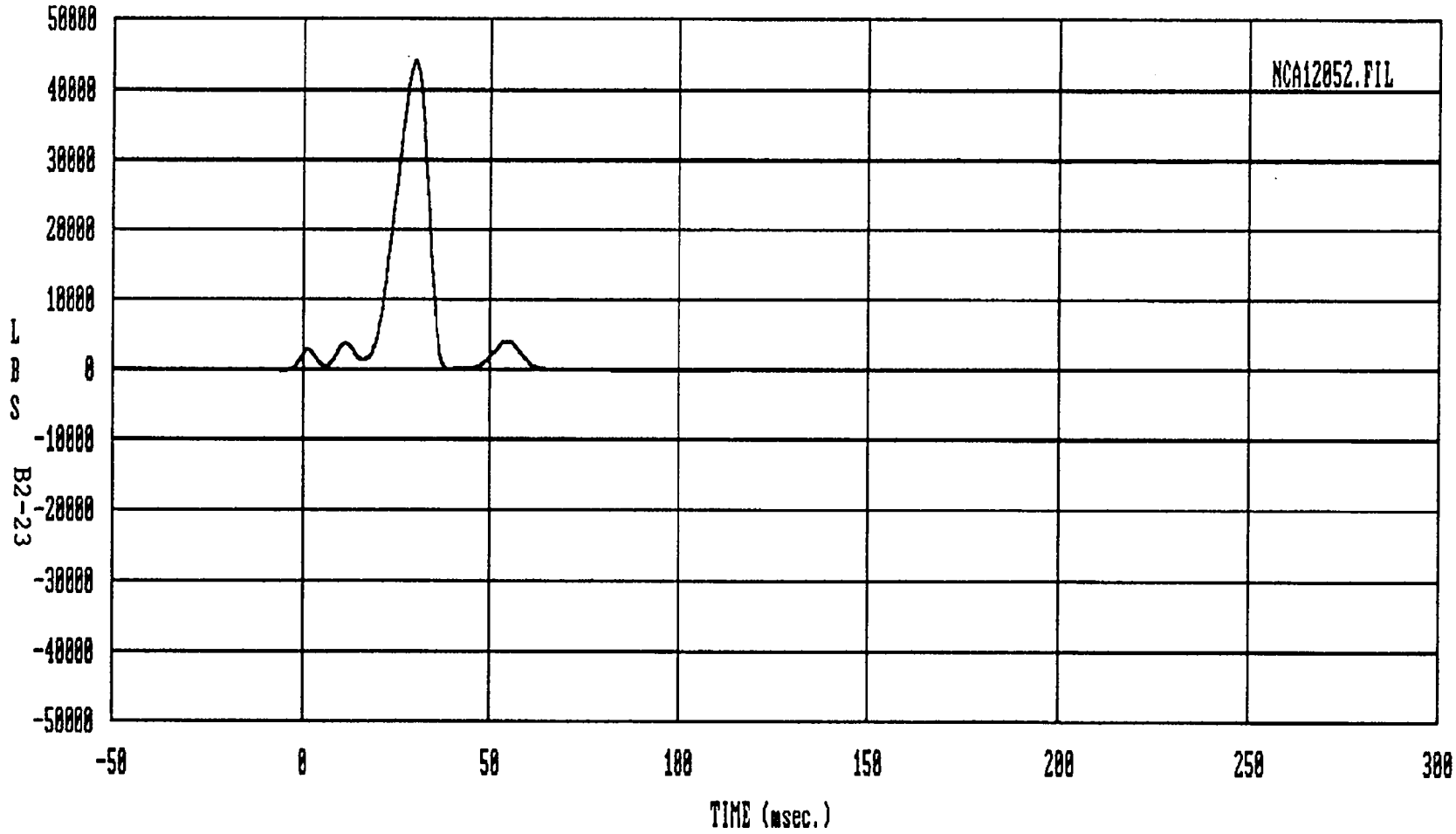
B2-21

MSE-90-R9092-N06



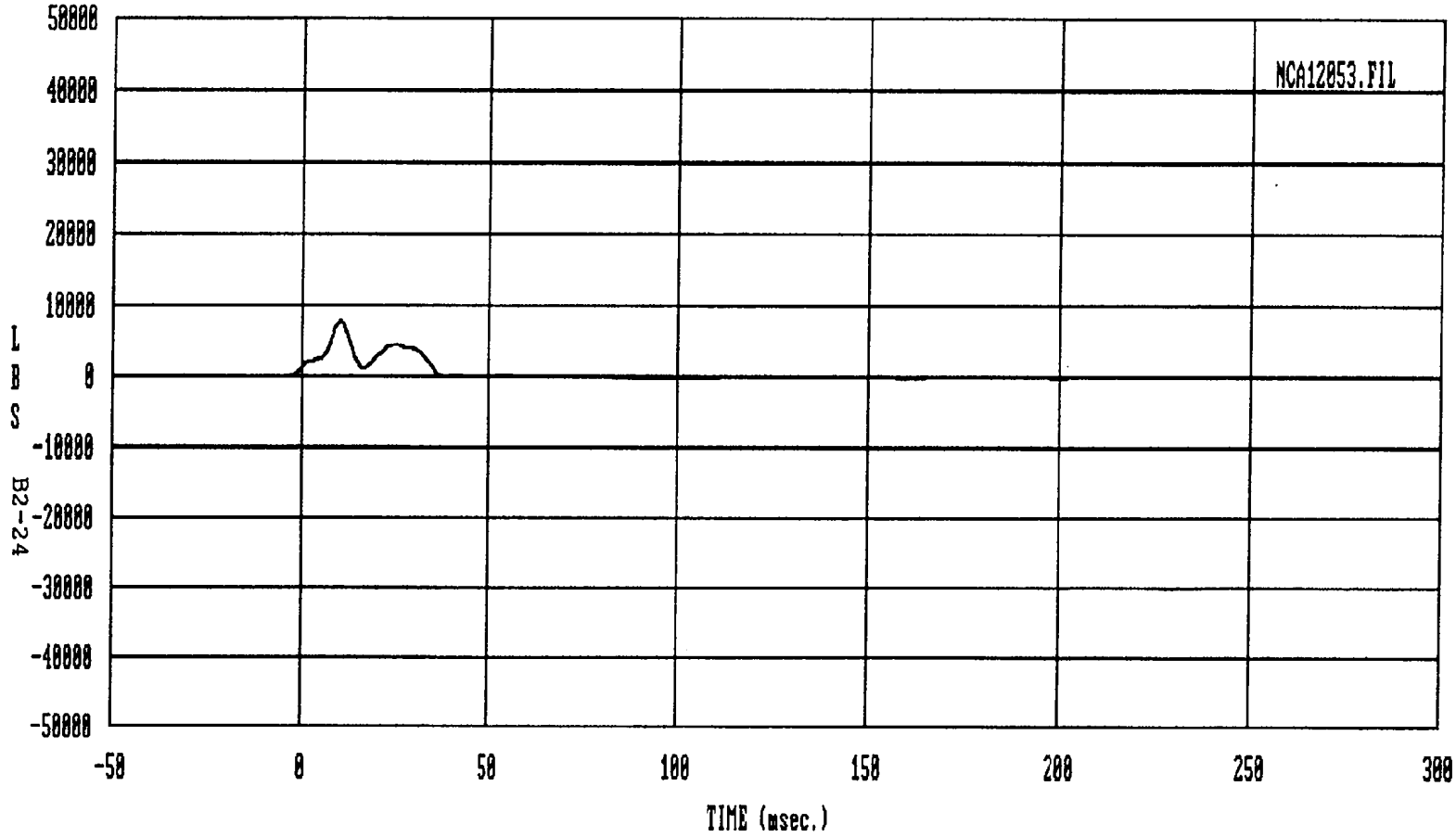
Curve: Force on Barrier load cell C4 Filter: SAE CLASS 60 Max = 7253.8 Min = -155.81

MSE Date: 03/20/90 Program: 1990 New Car Assessment #12 Vehicle: 1990 Isuzu Trooper



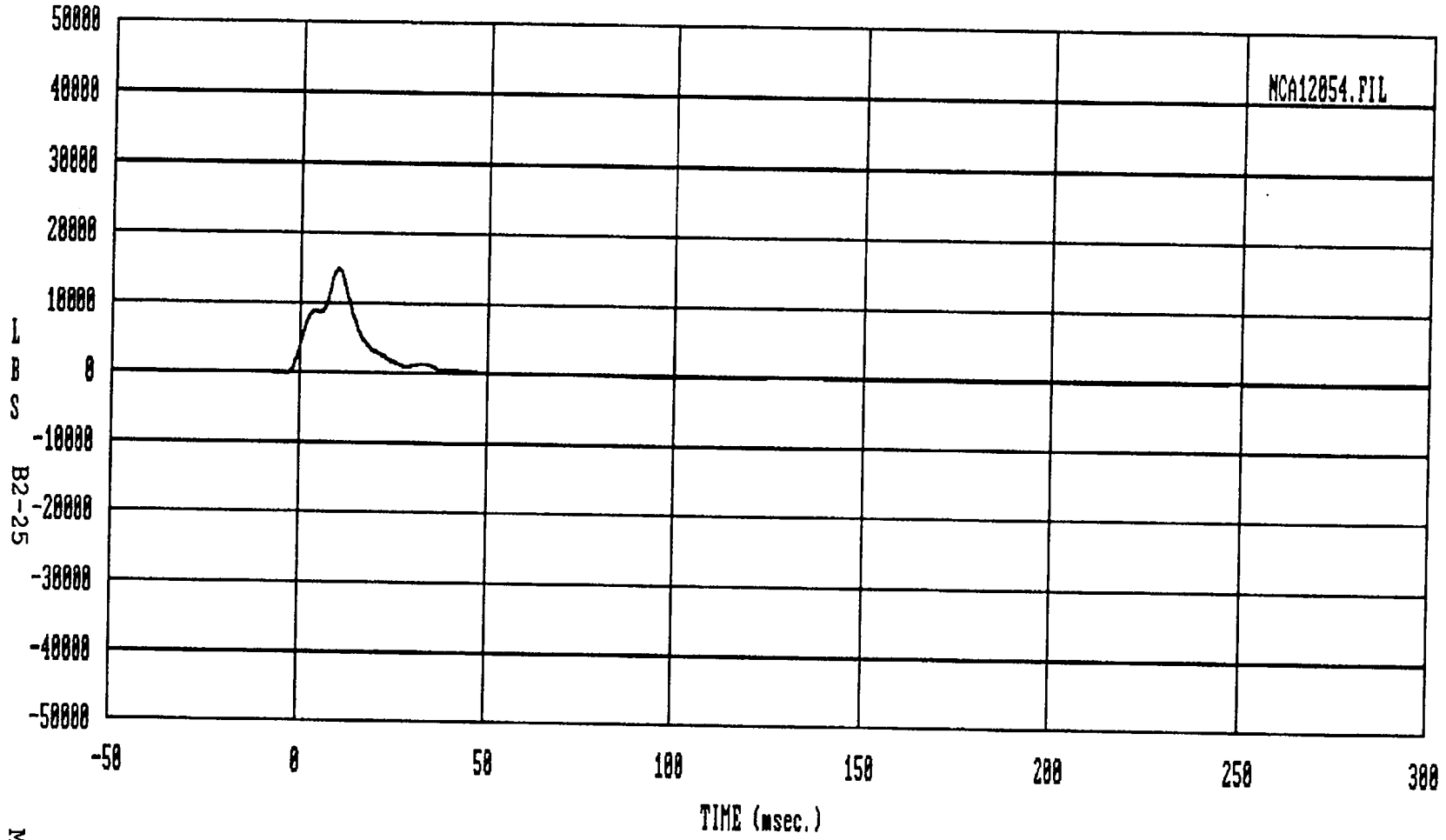
Curve: Force on Barrier load cell C5 Filter: SAE CLASS 60 Max = 44306. Min = -183.20

MSE Date: 03/20/98 Program: 1998 New Car Assessment #12 Vehicle: 1998 Isuzu Trooper



Curve: Force on Barrier load cell C6 Filter: SAE CLASS 60 Max = 7889.5 Min = -232.21

MSE Date: 03/20/90 Program: 1990 New Car Assessment #12 Vehicle: 1990 Isuzu Trooper

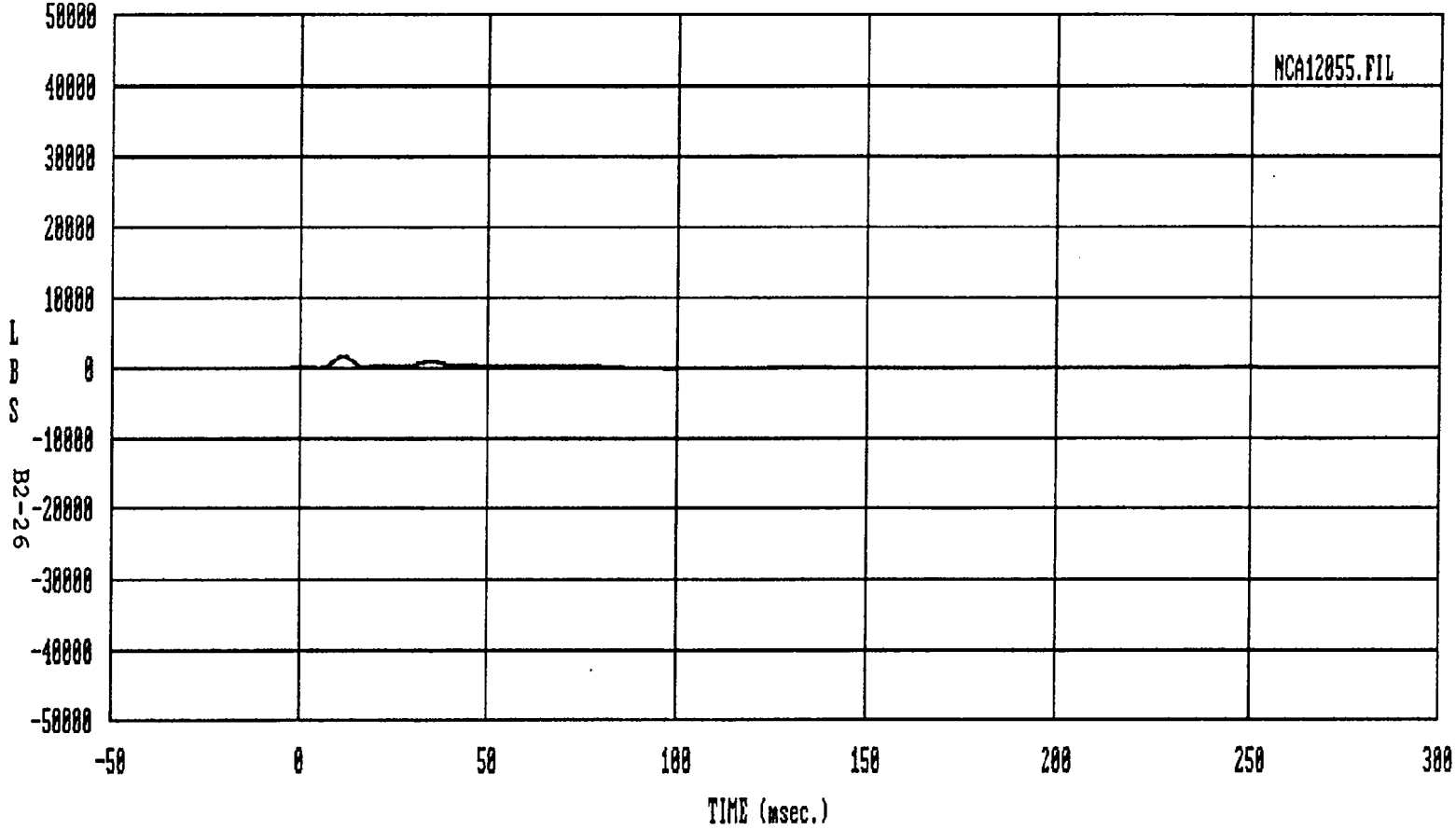


Curve: Force on Barrier load cell C7 Filter: SAE CLASS 60 Max = 14981. Min = -182.52

MSE Date: 03/20/98 Program: 1998 New Car Assessment #12 Vehicle: 1998 Isuzu Trooper

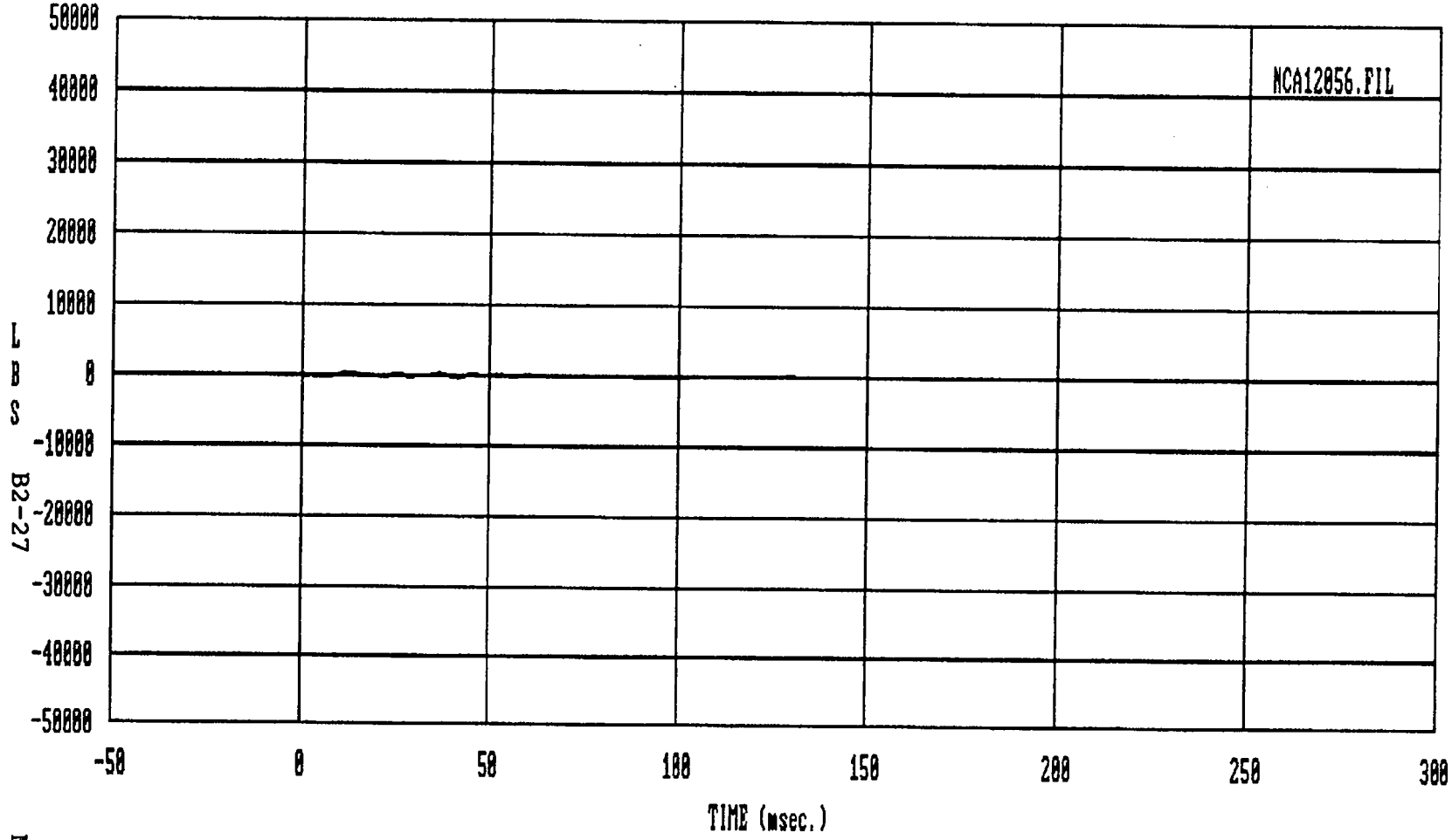
B2-25

MSE-90-R9092-N06



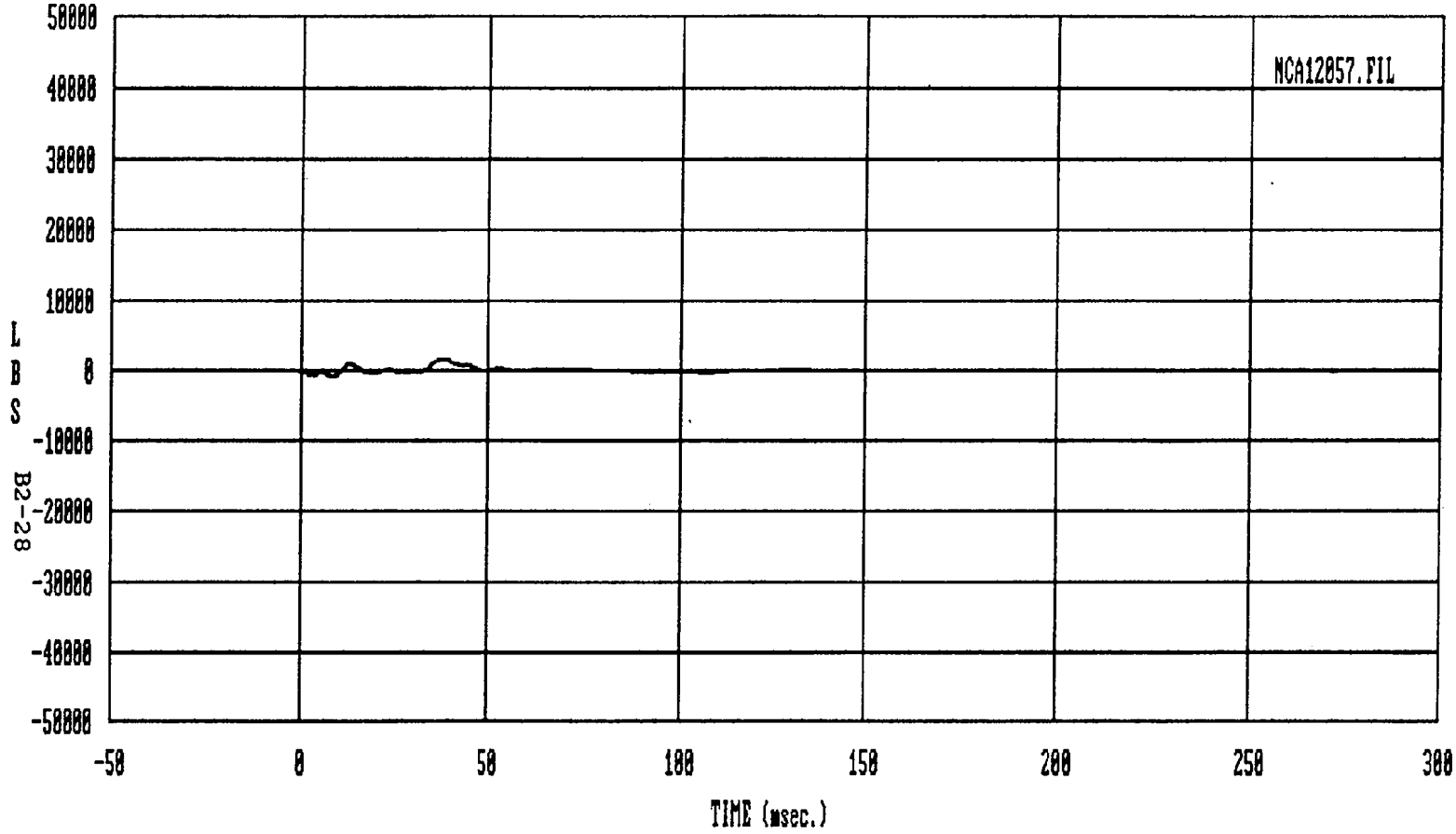
Curve: Force on Barrier load cell C8 Filter: SAE CLASS 60 Max = 1796.2 Min = -86.891

MSE Date: 03/20/90 Program: 1990 New Car Assessment #12 Vehicle: 1990 Isuzu Trooper



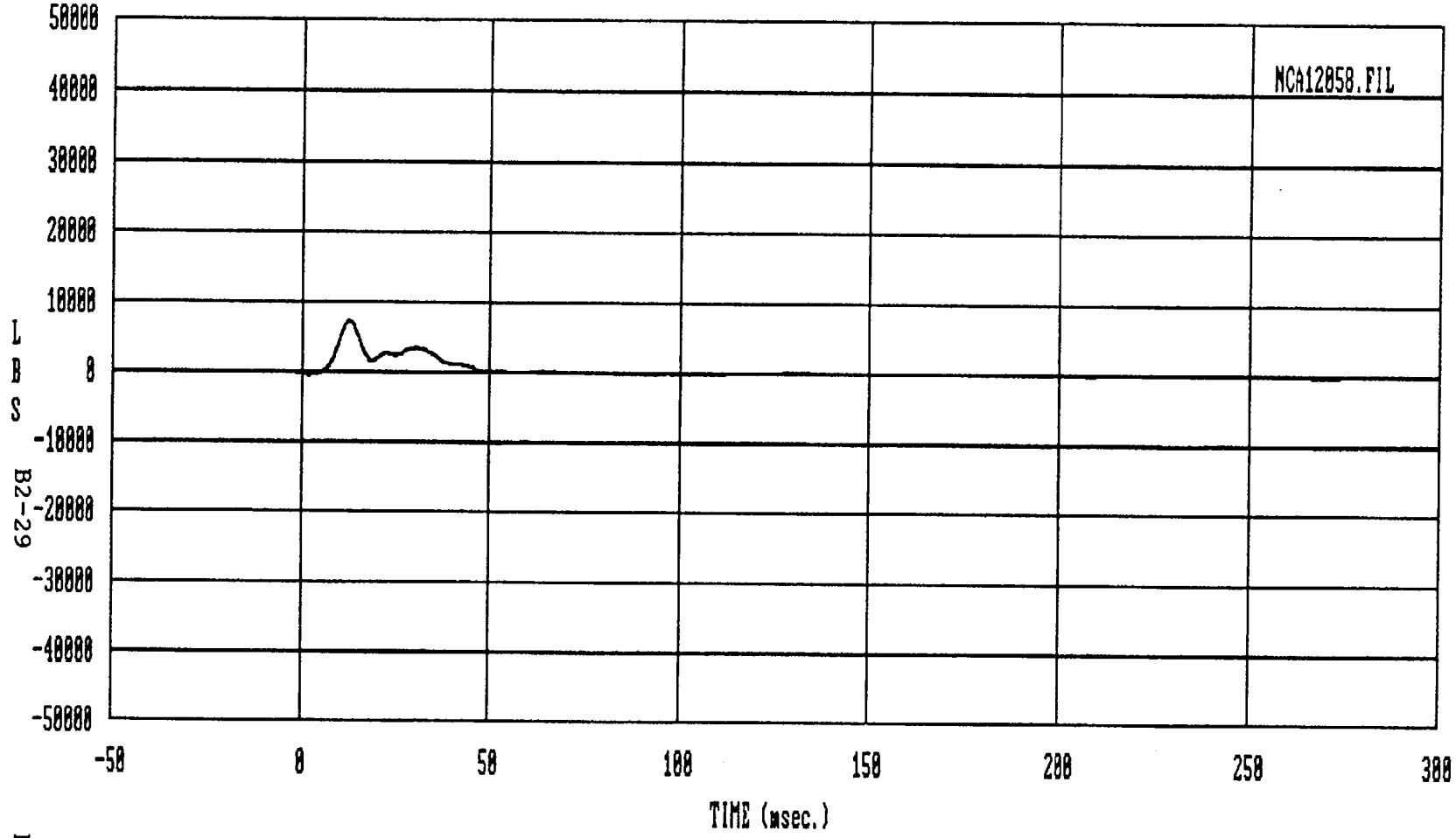
Curve: Force on Barrier load cell C9 Filter: SAE CLASS 60 Max = 504.98 Min = -357.66

MSE Date: 03/28/90 Program: 1990 New Car Assessment #12 Vehicle: 1990 Isuzu Trooper



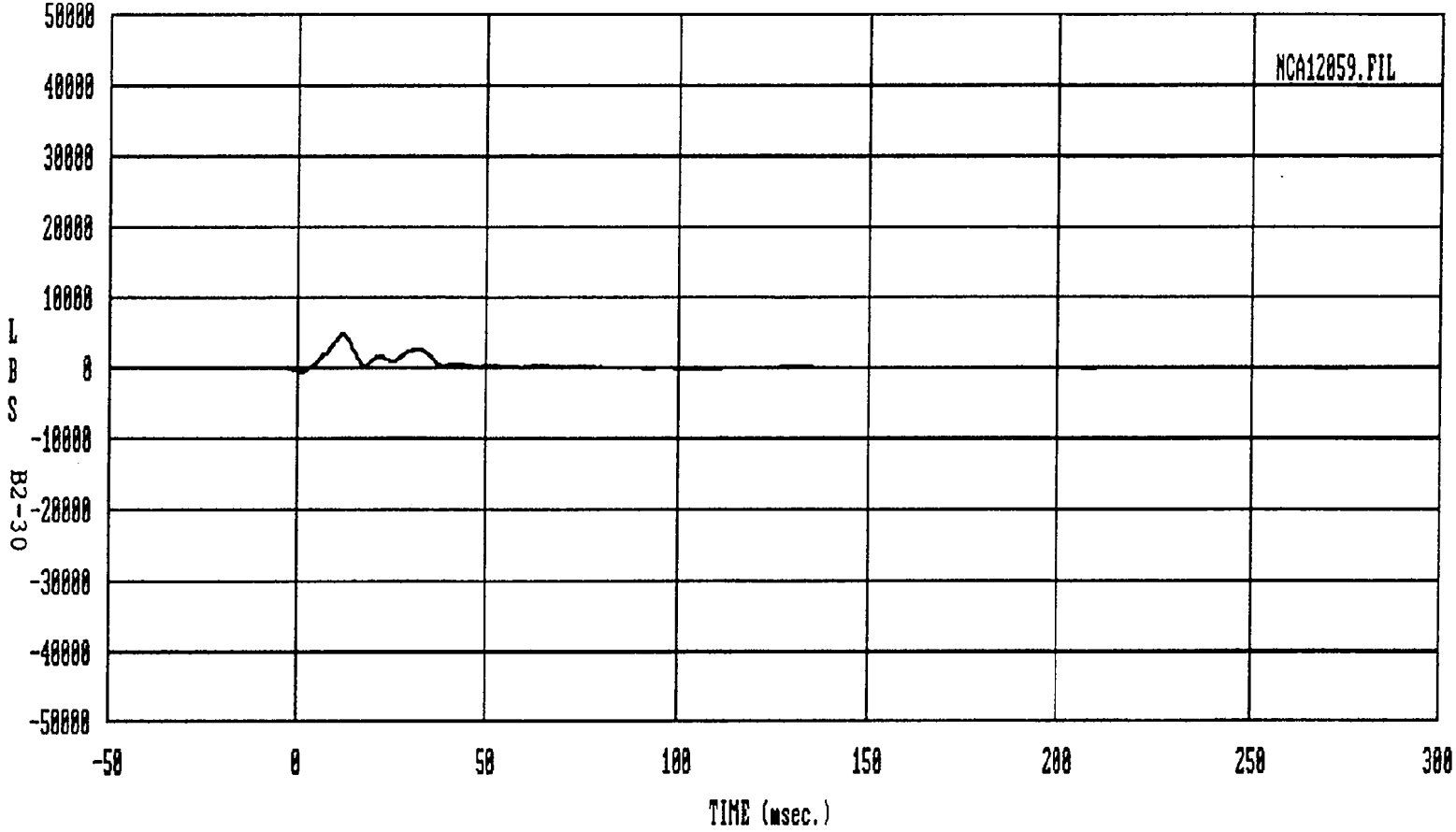
Curve: Force on Barrier load cell D1 Filter: SAE CLASS 60 Max = 1675.8 Min = -849.67

MSE Date: 03/20/90 Program: 1990 New Car Assessment #12 Vehicle: 1990 Isuzu Trooper



Curve: Force on Barrier load cell D2 Filter: SAE CLASS 60 Max = 7340.5 Min = -478.40

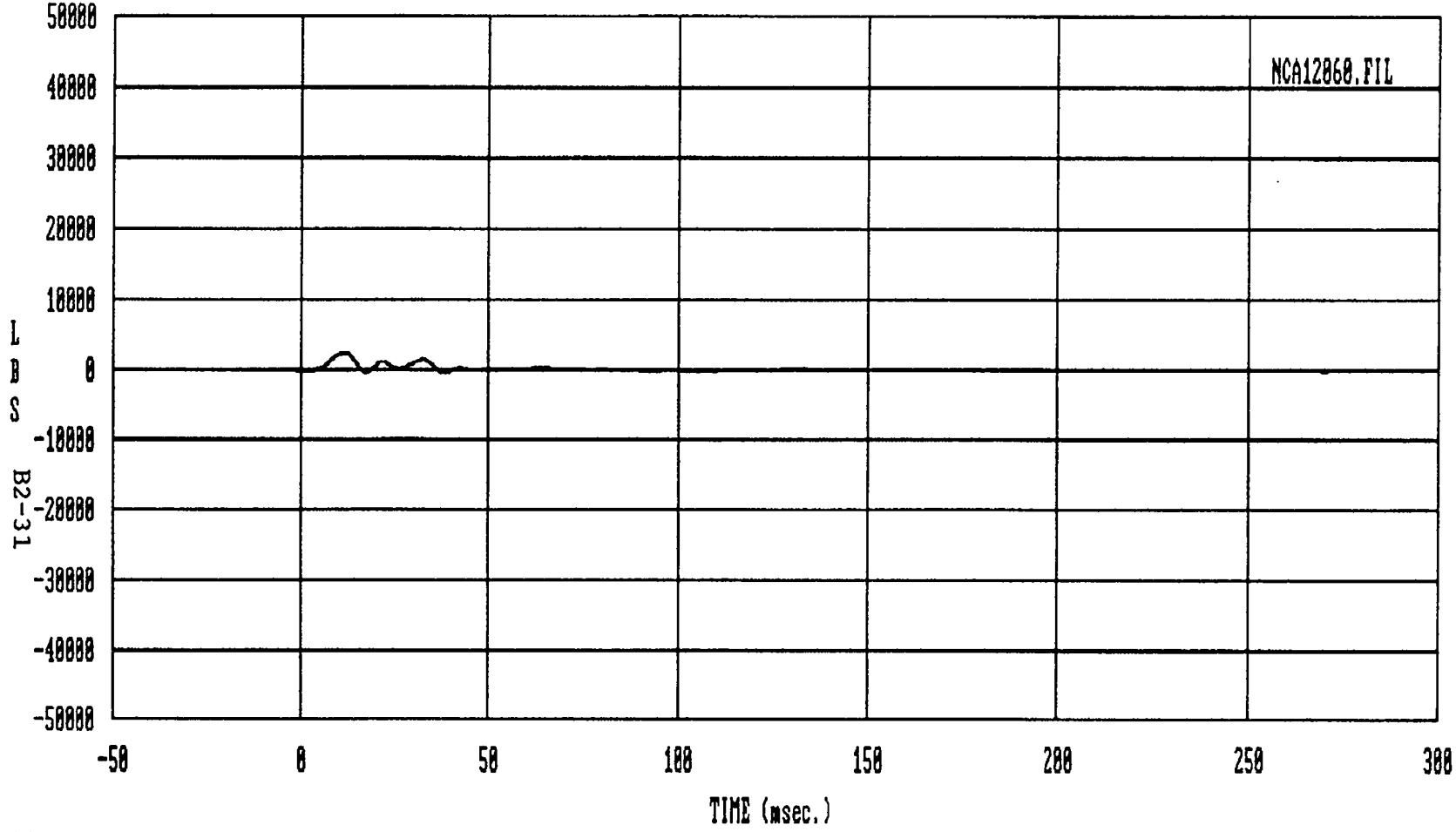
MSE Date: 03/20/90 Program: 1990 New Car Assessment #12 Vehicle: 1990 Isuzu Trooper



Curve: Force on Barrier load cell B3 Filter: SAE CLASS 60 Max = 4744.3 Min = -585.44

MSE Date: 03/20/90 Program: 1990 New Car Assessment #12 Vehicle: 1990 Isuzu Trooper

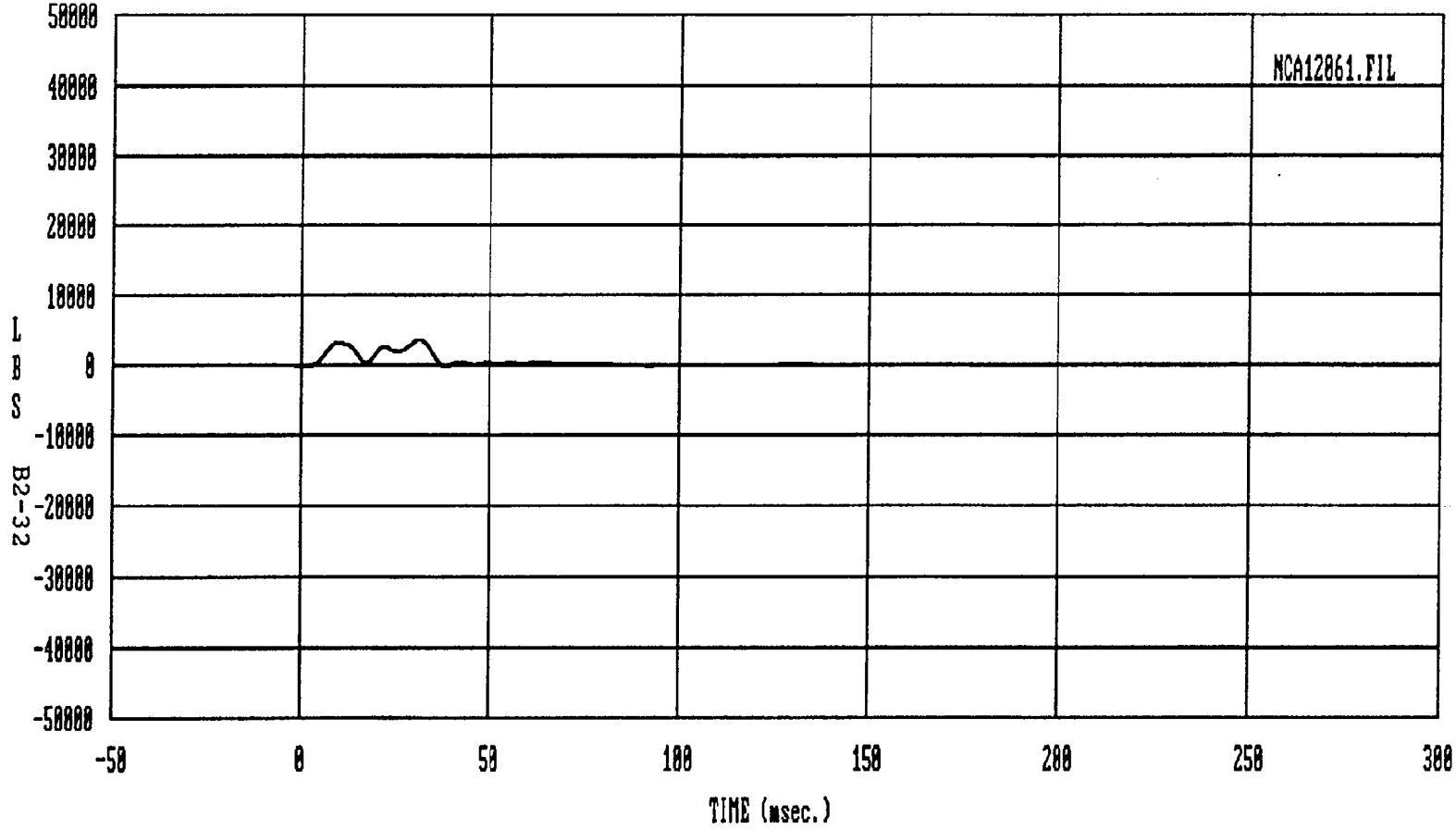
MSE-90-R9092-N06



Curve: Force on Barrier load cell D4 Filter: SAE CLASS 60 Max = 2439.7 Min = -441.89

MSE Date: 03/20/90 Program: 1990 New Car Assessment #12 Vehicle: 1990 Isuzu Trooper

MSE-90-R9092-N06

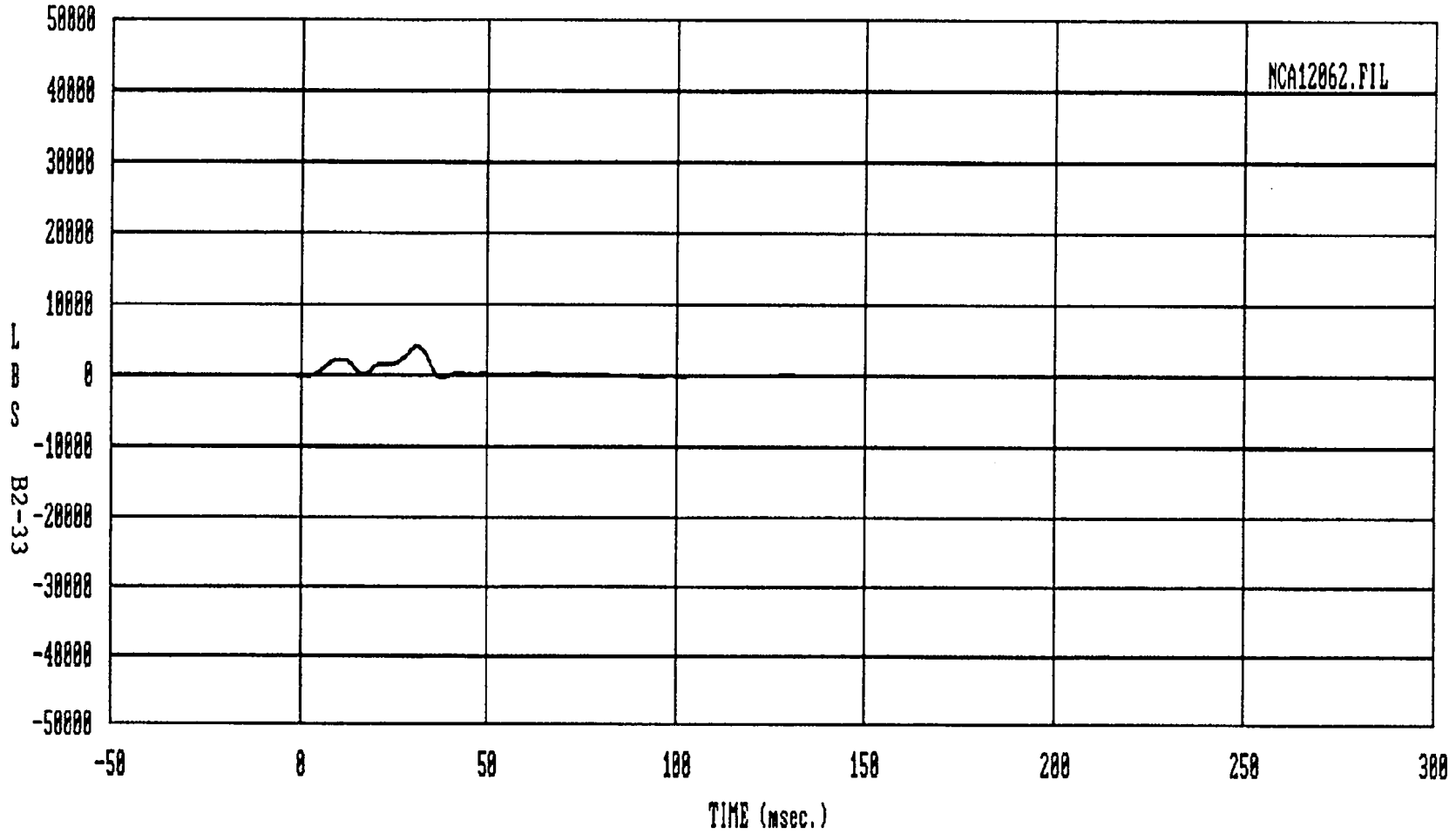


B2-32

MSE-90-R9092-N06

Curve: Force on Barrier load cell D5 Filter: SAE CLASS 60 Max = 3572.1 Min = -270.61

MSE Date: 03/20/98 Program: 1998 New Car Assessment #12 Vehicle: 1998 Isuzu Trooper

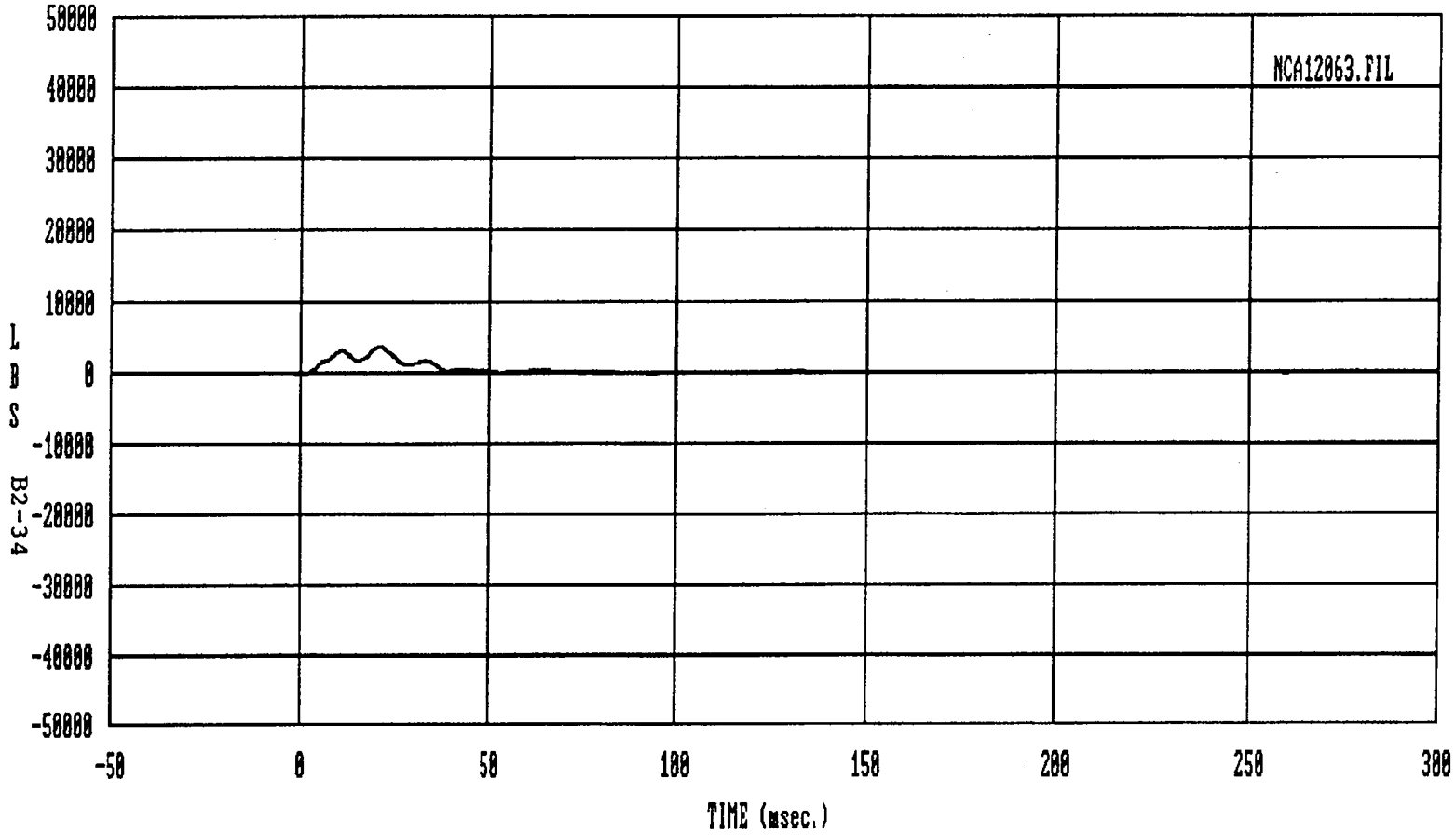


Curve: Force on Barrier load cell D6 Filter: SAE CLASS 60 Max = 4134.4 Min = -341.96

MSE Date: 03/20/98 Program: 1998 New Car Assessment #12 Vehicle: 1998 Isuzu Trooper

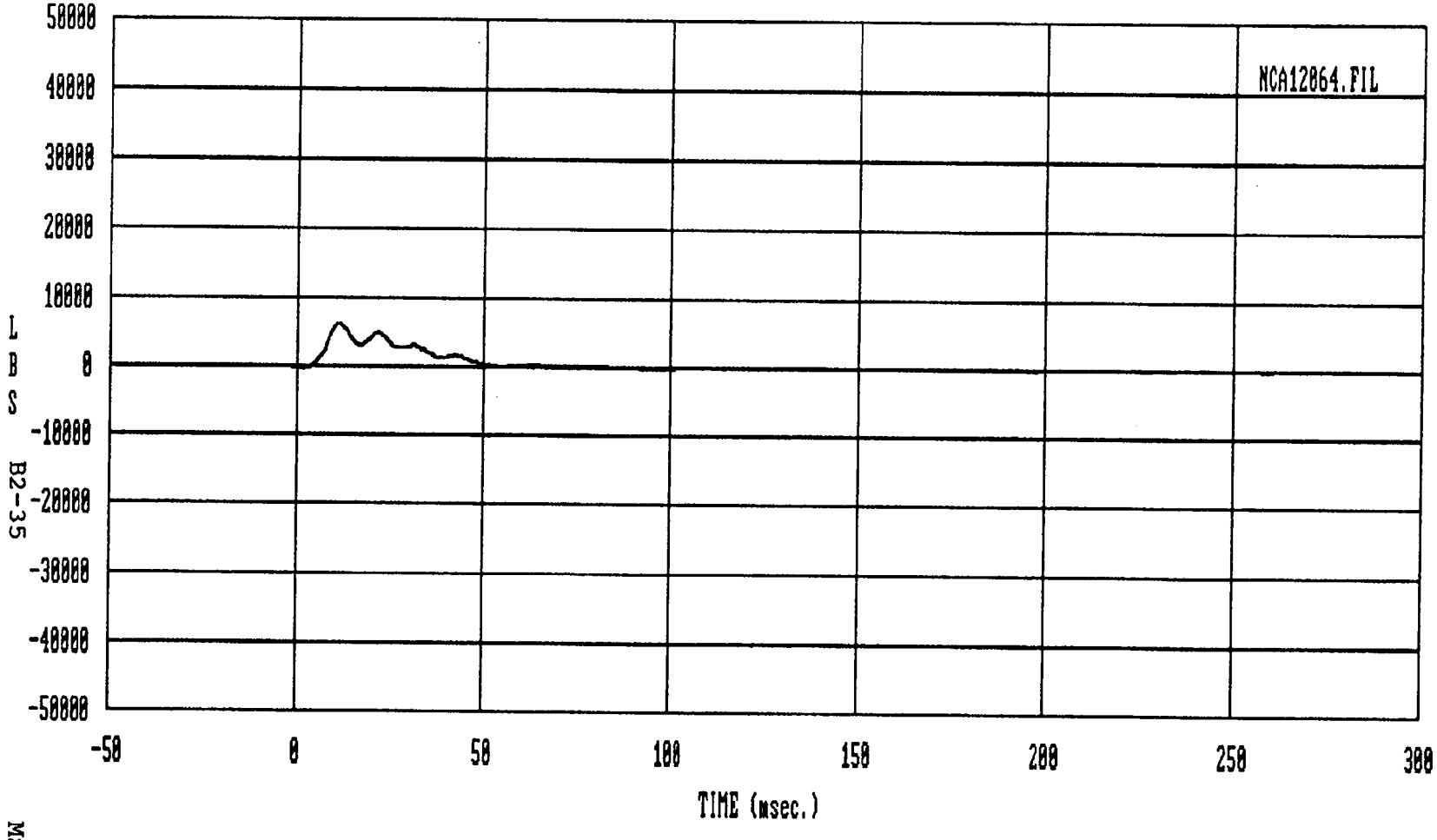
B2-33

MSE-90-R9092-N06



Curve: Force on Barrier load cell D7 Filter: SAE CLASS 60 Max = 3733.7 Min = -226.54

MSE Date: 03/20/90 Program: 1990 New Car Assessment #12 Vehicle: 1990 Isuzu Trooper

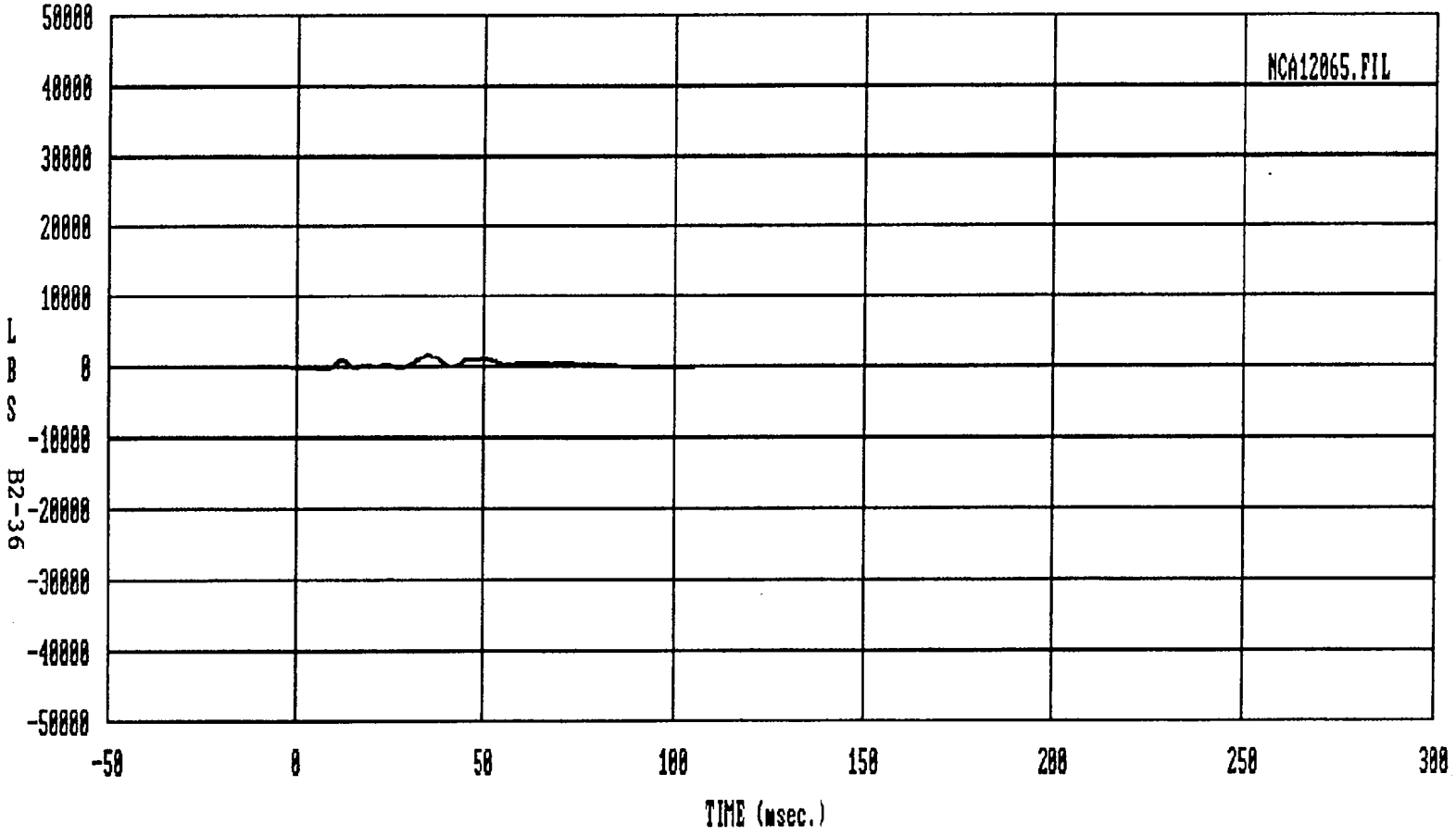


B2-35

MSE-90-R9092-N06

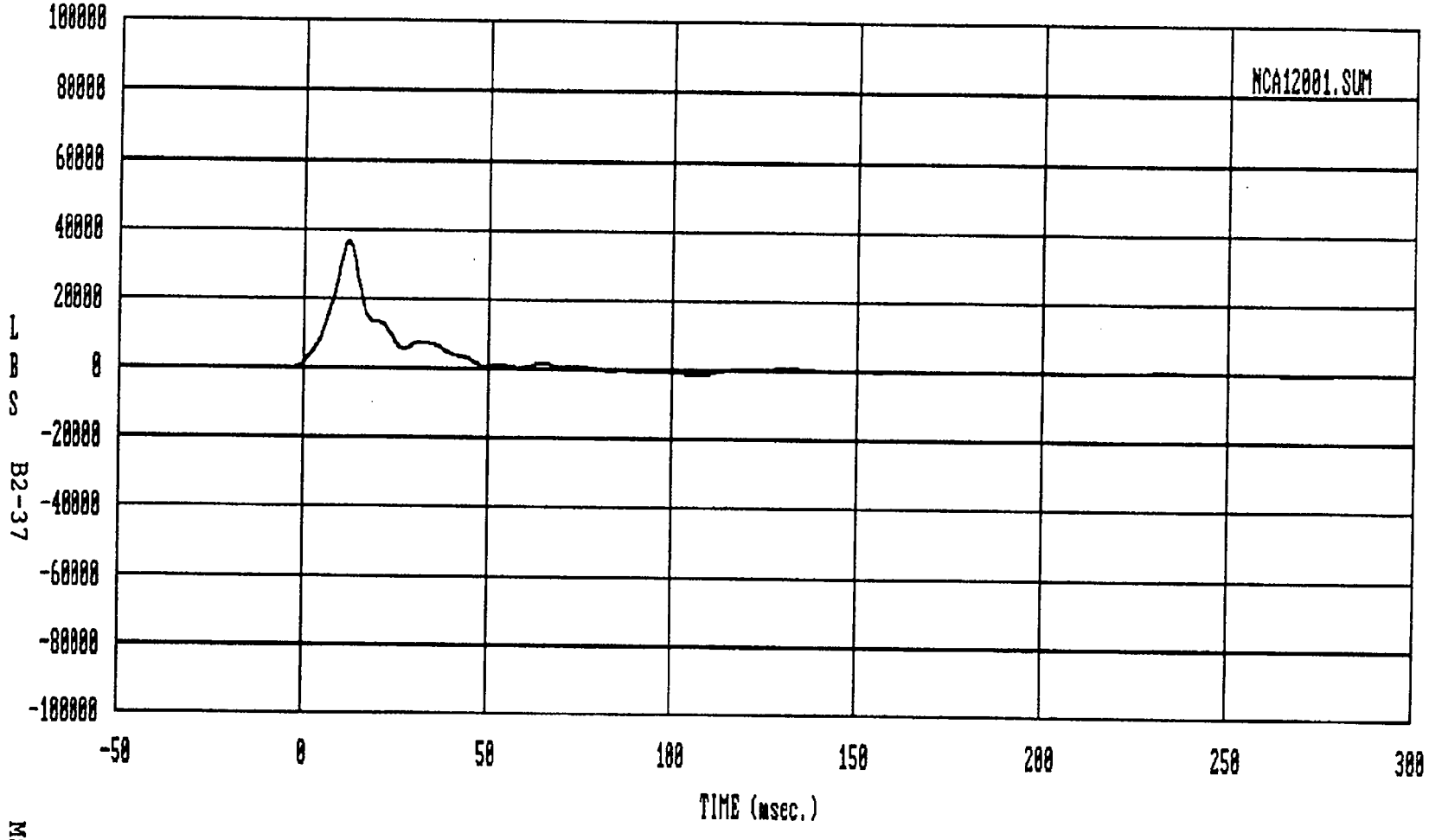
Curve: Force on Barrier load cell D8 Filter: SAE CLASS 60 Max = 6339.5 Min = -285.58

MSE Date: 03/20/98 Program: 1998 New Car Assessment #12 Vehicle: 1998 Isuzu Trooper



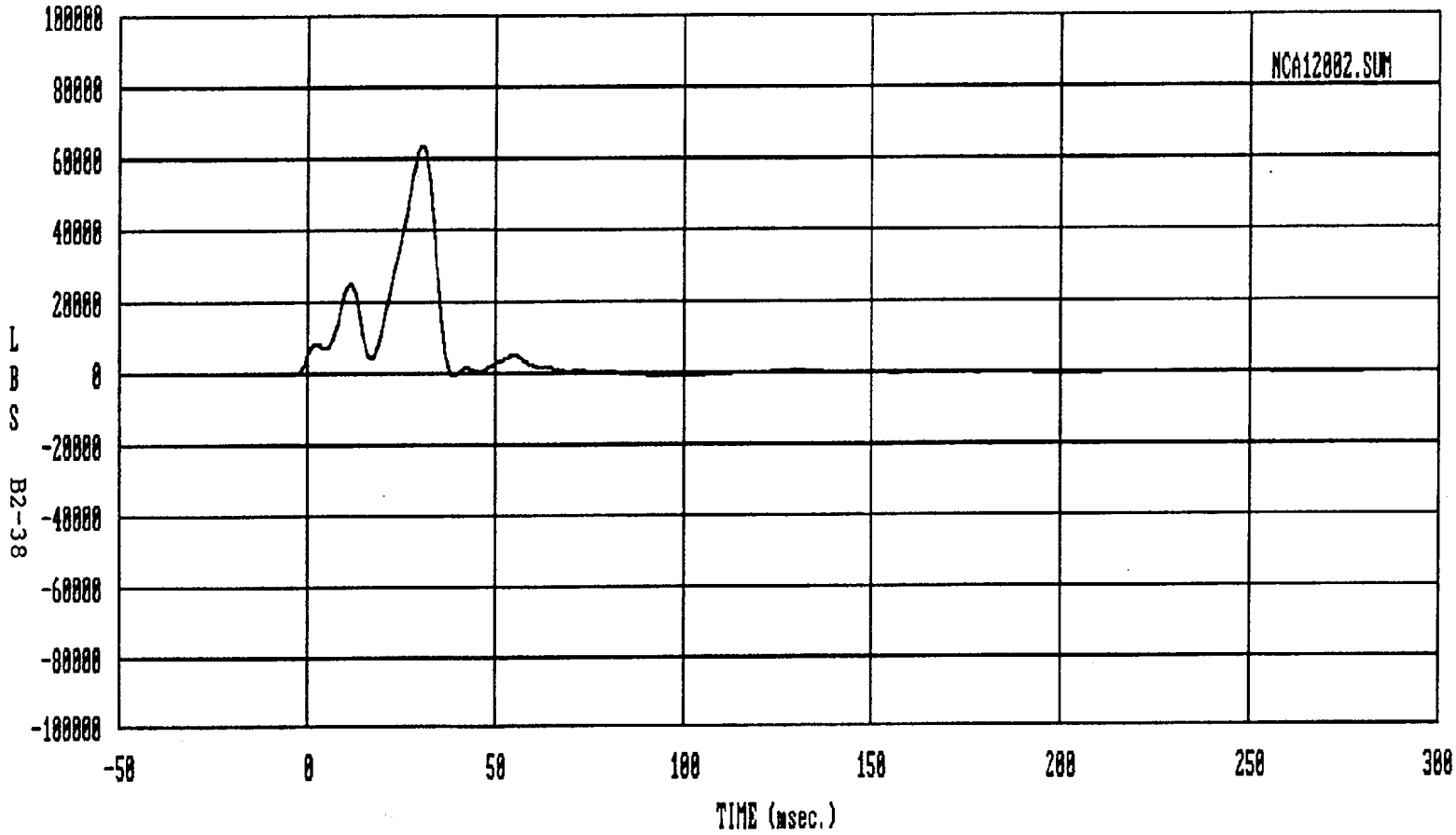
Curve: Force on Barrier load cell D9 Filter: SAE CLASS 60 Max = 1522.0 Min = -454.55

MSE Date: 03/20/98 Program: 1998 New Car Assessment #12 Vehicle: 1998 Isuzu Trooper



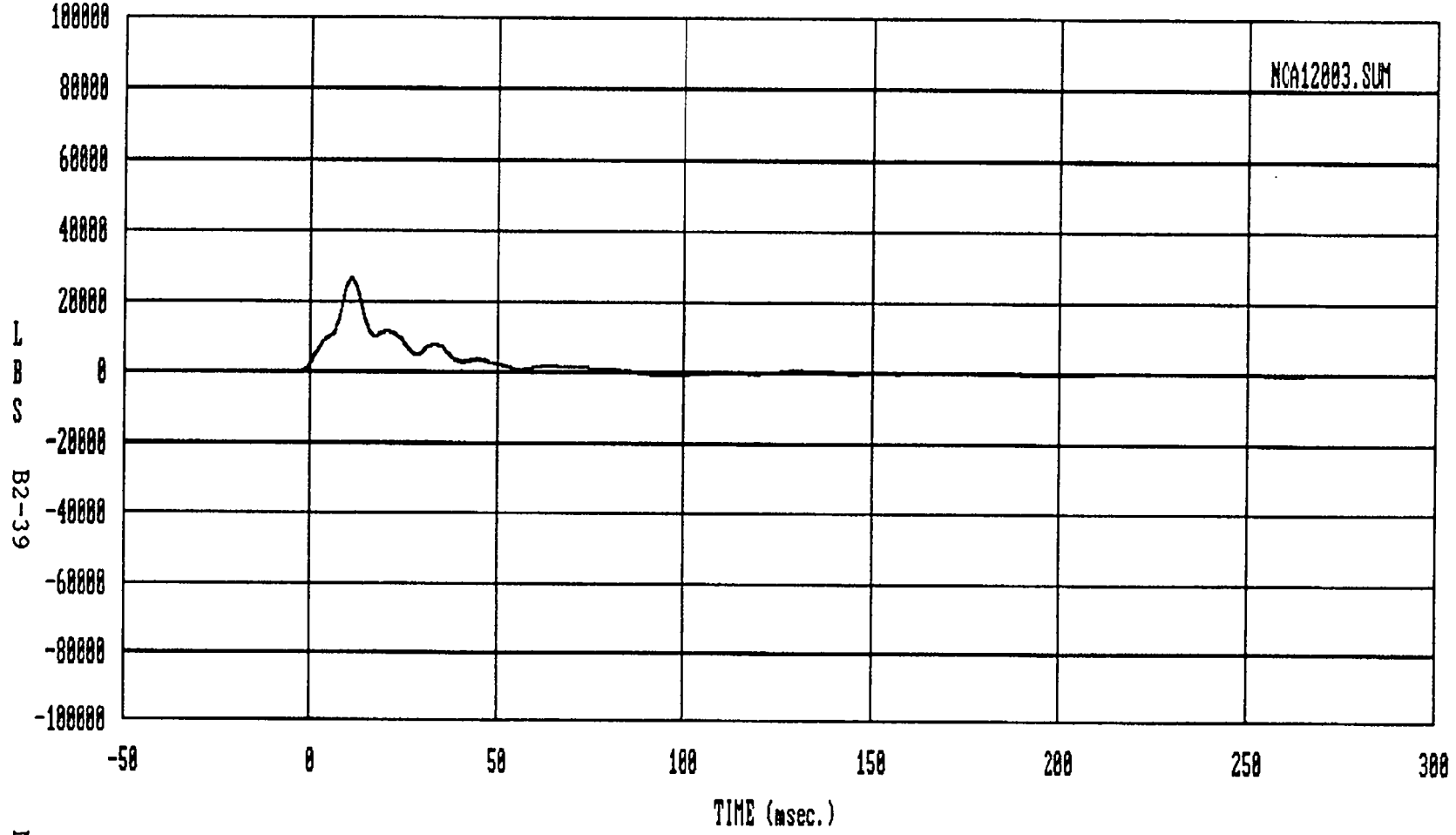
Curve: LCB sum force C1,C2,C3,D1,D2,D3 — Group 1 Filter: SAE CLASS 60 Max = 36871. Min = -1242.8

MSE Date: 03/20/98 Program: 1998 New Car Assessment #12 Vehicle: 1998 Isuzu Trooper



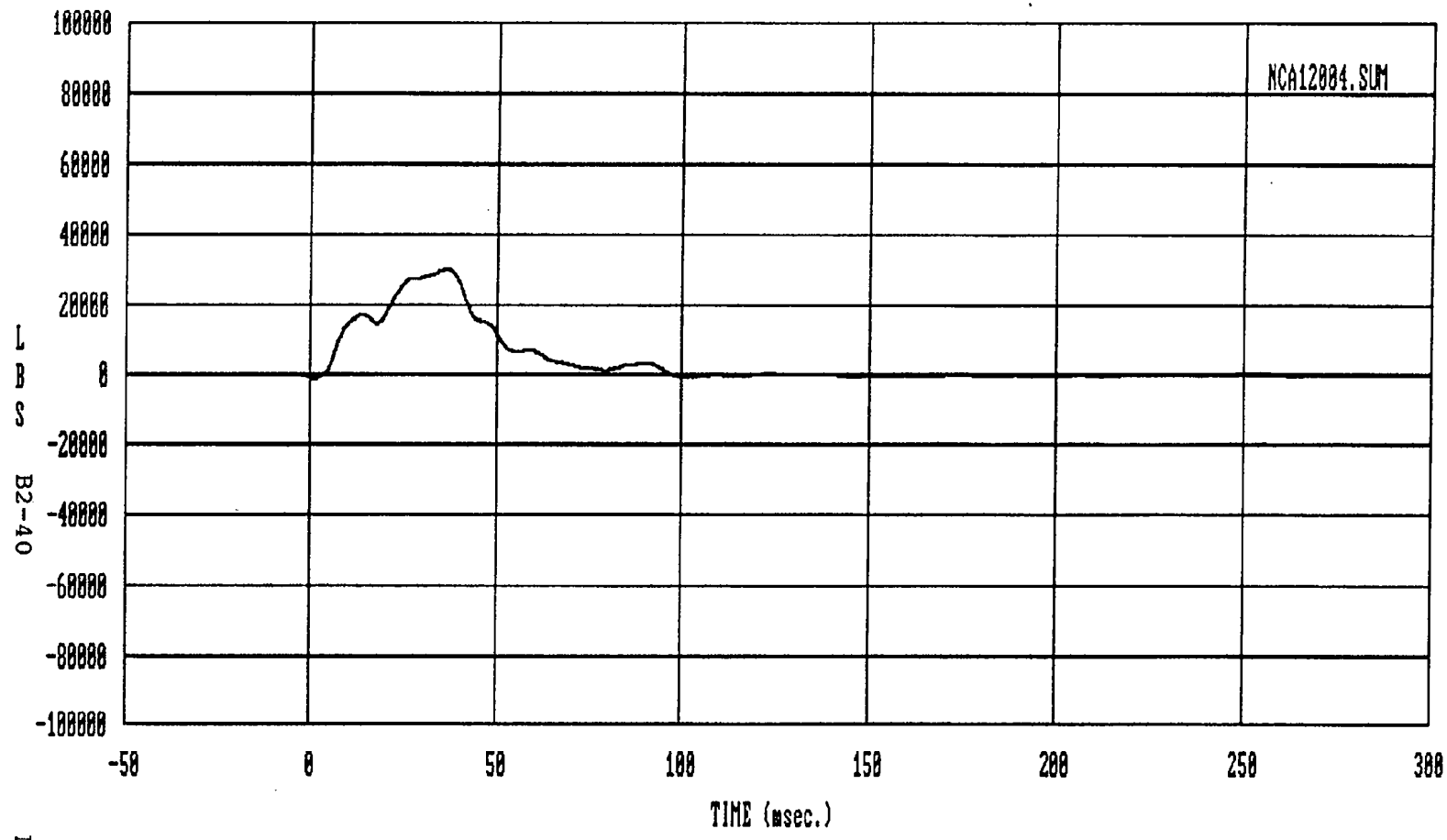
Curve: LCB sum force C4,C5,C6,D4,D5,D6 — Group 2 Filter: SAE CLASS 60 Max = 63887. Min = -892.65

MSE Date: 03/20/90 Program: 1990 New Car Assessment #12 Vehicle: 1990 Isuzu Trooper



Curve: LCB sum force C7,C8,C9,D7,D8,D9 — Group 3 Filter: SAE CLASS 60 Max = 26853. Min = -864.12

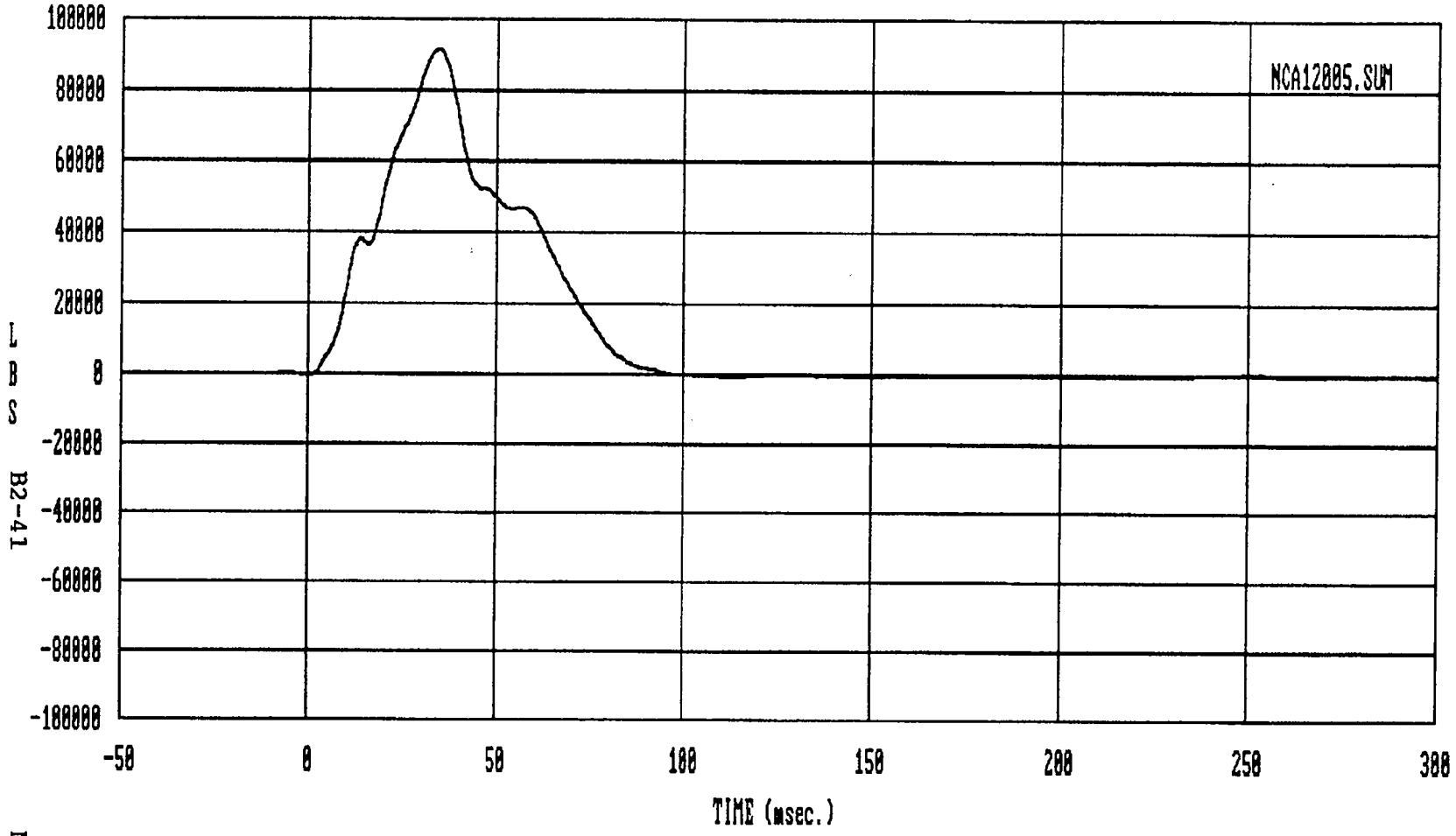
MSE Date: 03/20/98 Program: 1998 New Car Assessment #12 Vehicle: 1998 Isuzu Trooper



Curve: LCB sum force A1,A2,A3,B1,B2,B3 -- Group 4 Filter: SAE CLASS 60 Max = 38291. Min = -1015.3

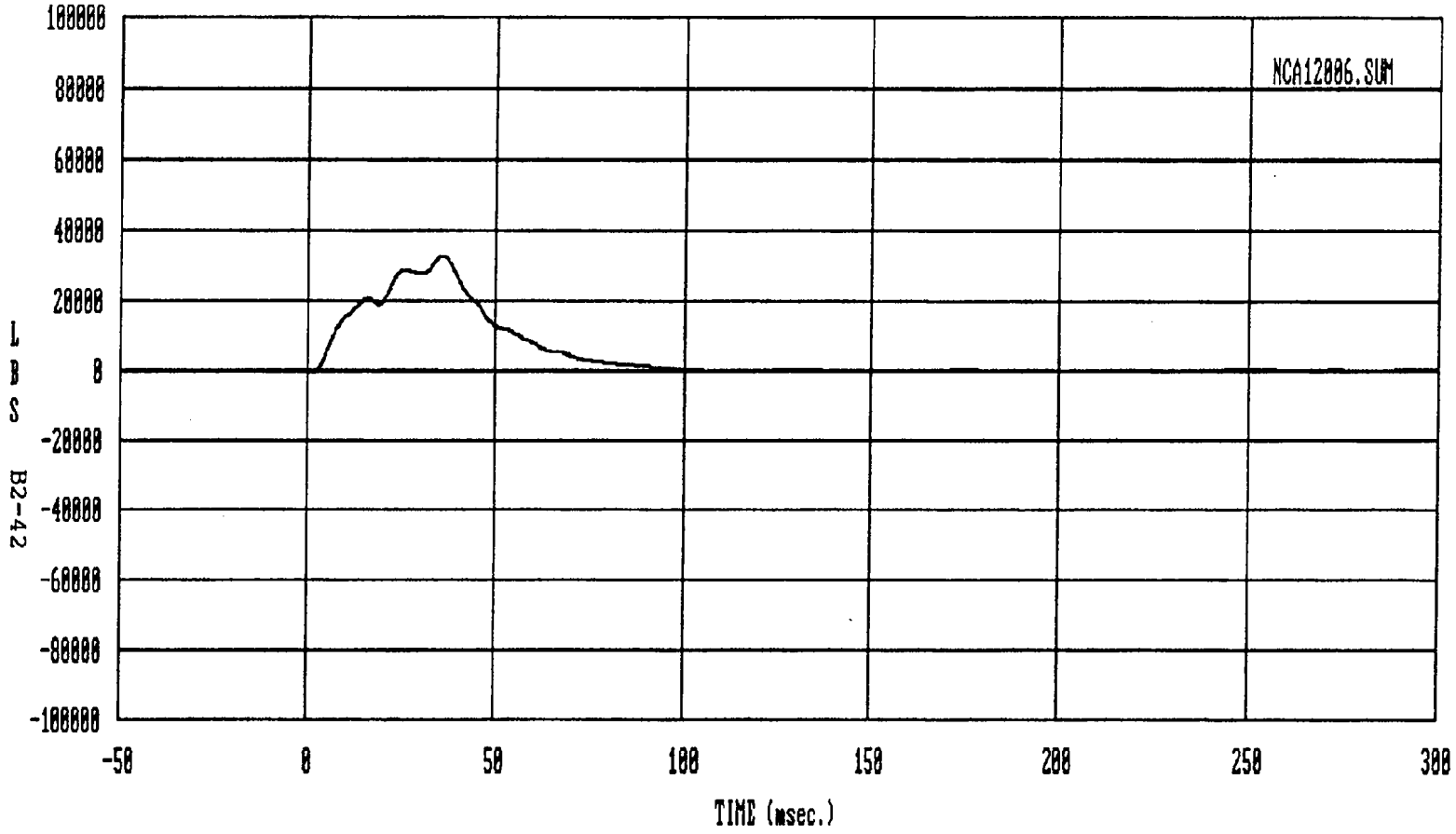
MSE Date: 03/20/98 Program: 1998 New Car Assessment #12 Vehicle: 1998 Isuzu Trooper

MSE-90-R9092-N06



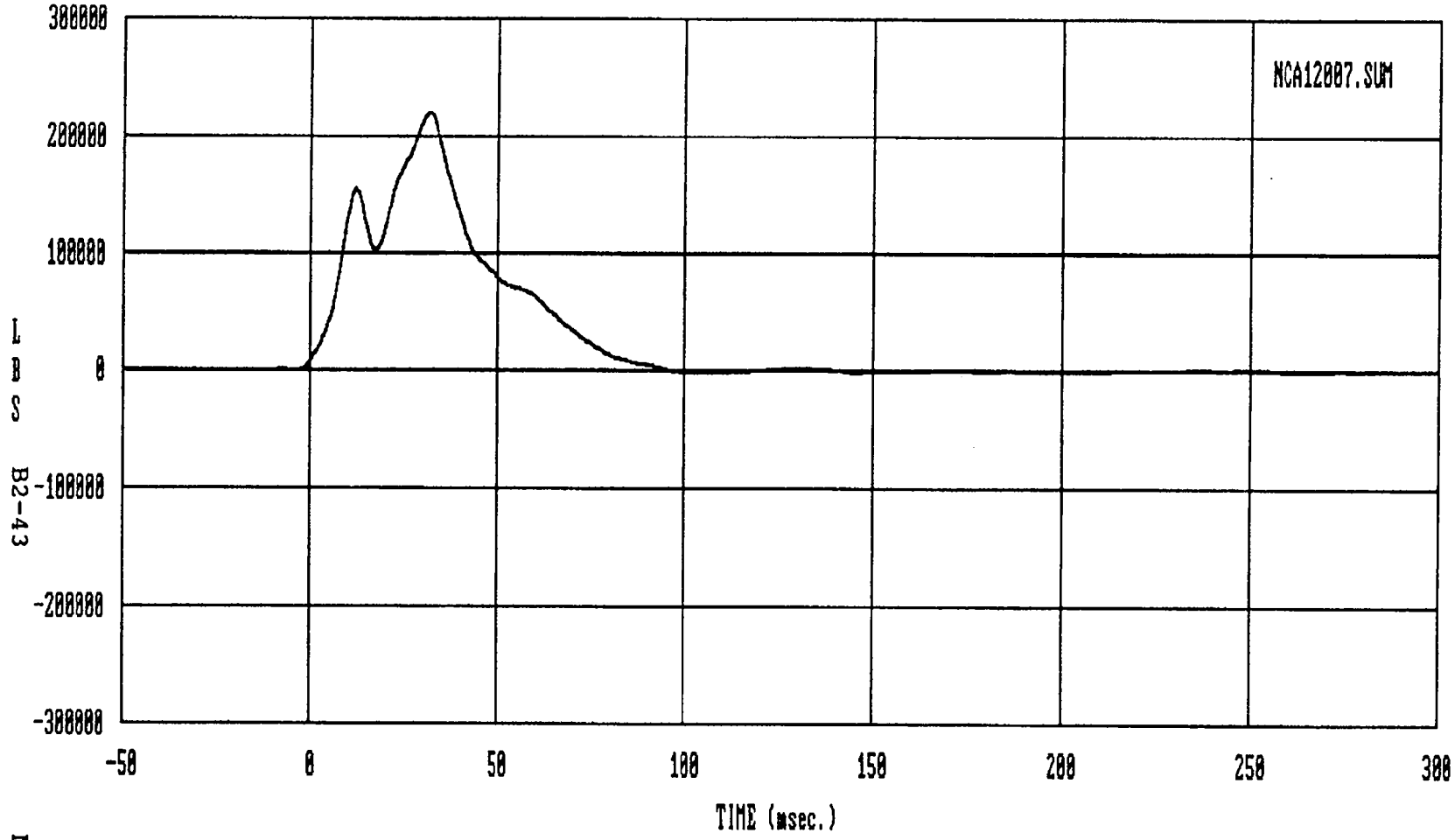
Curve: LCB sum force A4,A5,A6,B4,B5,B6 — Group 5 Filter: SAE CLASS 60 Max = 91781. Min = -686.82

MSE Date: 03/20/98 Program: 1998 New Car Assessment #12 Vehicle: 1998 Isuzu Trooper



Curve: LCB sum force A7,A8,A9,B7,B8,B9 — Group 6 Filter: SAE CLASS 60 Max = 32814. Min = -260.27

MSE Date: 03/20/90 Program: 1990 New Car Assessment #12 Vehicle: 1990 Isuzu Trooper



Curve: Load Cell Barrier total force Filter: SAE CLASS 60 Max = .22837E+06 Min = -2688.2

MSE Date: 03/20/90 Program: 1990 New Car Assessment #12 Vehicle: 1990 Isuzu Trooper

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APPENDIX C

PART 572 DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION TESTS

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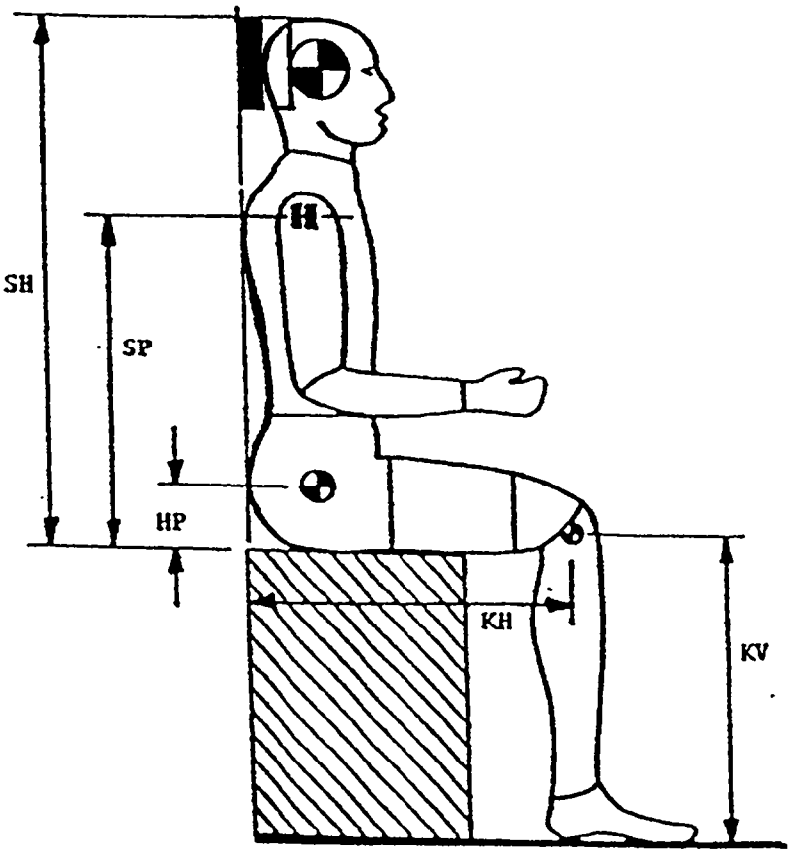
PART 572 DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

NHTSA DUMMY I.D. NO.: | 4 | 6 | 7 |

I. CONFIGURATION VERIFICATION DATA:



	P. 572 SPECIFICATION	PRE-TEST (if required)	POST-TEST (if required)
DATE OF CONFIGURATION VERIFICATION	//////////////	02/05/90 to 02/20/90	
VERIFICATION NUMBER FOR DUMMY* ---	//////////////	03	
SH - Seated Height- - - - - - - - -	35.6 to 35.8"	35.60	
SP - Shoulder Pivot Height- - - -	21.8 to 22.4"	21.80	
HP - Hip Pivot Height - - - - - -	3.9 ref.	3.90	
KH - Knee Pivot from back line- -	20.1 to 20.7"	20.70	
KV - Knee Pivot from floor- - - -	19.3 to 19.9"	19.30	
SW - Shoulder Width - - - - - - -	17.8 to 18.4"	18.20	
HW - Hip Width- - - - - - - - - -	14.0 to 15.4"	14.50	

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 7
TECHNICIAN NAME: APURVA MAPARA

		PRE-TEST (if required)	POST-TEST (if required)
DATE OF PERFORMANCE VERIFICATION----------		02/05-02/20/90	
SEQUENTIAL VERIFICATION NUMBER FOR DUMMY*-----		03	
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	222.84	
b. Peak Lateral Accel.-	<10G	3.07	
c. Time above 100G - - -	0.9 to 1.5 ms	1.20	
2. NECK BENDING TEST--			
a. Pendulum Speed- - - -	21.5 to 22.5 fps	22.00	
b. Pend. Avg. Decel. over $t_3 - t_2$	20 to 24G	22.34	
c. Peak Resultant Head Acceleration - - - -	26G max.	24.43	
d. Pendulum Decel.$(t_2 - t_1)$	<3 ms	2.65	
e. Pendulum Decel.$(t_3 - t_2)$	25 to 30 ms	26.70	
f. Pendulum Decel.$(t_4 - t_3)$	<10 ms	10.00	
g. Max. Head Rotation -	63 to 73	68.40	
h. Chordal Displacement-Head Rotation Angle-			
0^o Time- -	-2 to 2 ms	0.00	
0^o Displ.-	-.5 to .5"	0.012	
30^o Time- -	22.6 to 34 ms	29.60	
30^o Displ.-	2.1 to 3.1"	2.79	
60^o Time- -	40.3 to 51.7ms	46.20	
60^o Displ.-	4.3 to 5.3"	5.30	
Maximum (68.4^o) Time- -	53.2 to 66.8ms	59.90	
Maximum (68.4^o) Displ.-	5.0 to 6.0"	6.00	

*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 7

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	71.90	
	Displ.-	4.3 to 5.3 in.	5.30	
30°	Time- -	85.4 to 104.6 ms	888.45	
	Displ.-	2.1 to 3.1 in.	2.50	
0°	Time- -	101.0 to 123.0 ms	101.00	
	Displ.-	-.5 to 0.5 in.	0.15	
3. ABDOMINAL COMPRESSION TEST:(Preload=10 pounds)				
a. Force @ .5" - - - - -		23 to 36 lbs.	32.00	
b. Force @ .75" - - - - -		36 to 50 lbs.	49.00	
c. Force @ 1.0"- - - - -		50 to 63 lbs.	63.00	
d. Force @ 1.3"- - - - -		73 to 88 lbs.	85.00	
4. LUMBAR FLEXION TEST:				
a. Force @ 20° - - - - -		22 to 34 lbs.	31.00	
b. Force @ 30° - - - - -		34 to 46 lbs.	41.80	
c. Force @ 40° - - - - -		46 to 58 lbs.	51.00	
d. Return Angle- - - - -		12° maximum	5.20	
5. CHEST IMPACT TESTS:				
a. High Speed				
(1) Probe Speed - - -		21.78-22.22 fps	22.00	
(2) Peak Deflection -		1.7" maximum	1.69	
(3) Peak Resistive Force - - - - - -		2250 lbs.maximum	1969.50	
(4) Internal Hysteresis		50 to 70%	53.50	
b. Low Speed				
(1) Probe Speed - - -		13.86-14.14 fps	14.00	
(2) Peak Deflection -		1.1" maximum	1.00	
(3) Peak Resistive Force - - - - - -		1450 lbs.maximum	1271.40	
(4) Internal Hysteresis		50 to 70%	61.60	

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

II. PERFORMANCE VERIFICATION DATA: NHTSA DUMMY I.D. NO.: 4 6 7

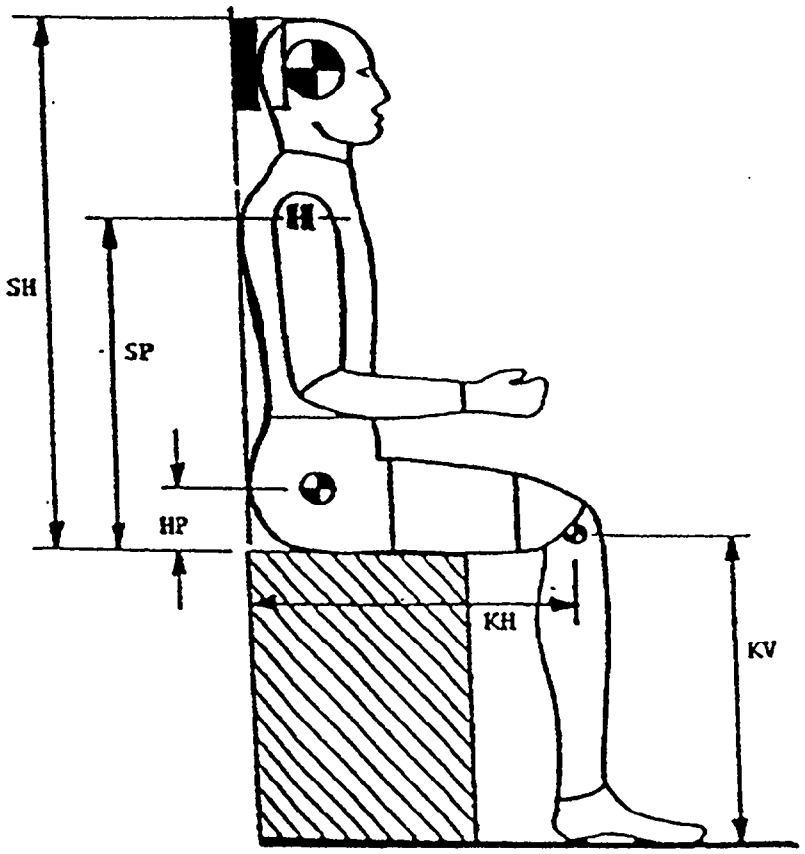
TECHNICIAN NAME: APURVA MAPARA

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	6.88	
(2) Maximum Force - -	1850 to 2500 lbs	2214.60	
(3) Time Above 1000#-	1.7 ms minimum	1.70	
b. Left Side--			
(1) Probe Speed - - -	6.76 to 7.04 fps	6.88	
(2) Maximum Force - -	1850 to 2500 lbs	1866.48	
(3) Time Above 1000#-	1.7 ms minimum	2.10	

PART 572 DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

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

I. CONFIGURATION VERIFICATION DATA:



	P. 572 SPECIFICATION	PRE-TEST (if required)	POST-TEST (if required)
DATE OF CONFIGURATION VERIFICATION	//////////	03/14/90 to 03/17/90	
VERIFICATION NUMBER FOR DUMMY* ---	//////////	06	
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"	20.55	
KV - Knee Pivot from floor- - - -	19.3 to 19.9"	19.40	
SW - Shoulder Width - - - - - - - -	17.8 to 18.4"	18.20	
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 4

TECHNICIAN NAME: APURVA MAPARA

		PRE-TEST (if required)	POST-TEST (if required)
DATE OF PERFORMANCE VERIFICATION----------		03/14-03/17/90	
SEQUENTIAL VERIFICATION NUMBER FOR DUMMY*-----		06	
VERIF. LAB. TEMPERATURE (66 to 78 F Range)----		65-72 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	221.70	
b. Peak Lateral Accel.-	<10G	8.80	
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	23.40	
c. Peak Resultant Head Acceleration - - - -	26G max.	26.00	
d. Pendulum Decel.($t_2 - t_1$)	<3 ms	29.00	
e. Pendulum Decel.($t_3 - t_2$)	25 to 30 ms	28.05	
f. Pendulum Decel.($t_4 - t_3$)	<10 ms	7.80	
g. Max. Head Rotation -	63 to 73	70.70	
h. Chordal Displacement-Head Rotation Angle-			
0° Time- -	-2 to 2 ms	0.00	
0° Displ.-	-.5 to .5"	0.02	
30° Time- -	22.6 to 34 ms	29.70	
30° Displ.-	2.1 to 3.1"	2.80	
60° Time- -	40.3 to 51.7ms	41.40	
60° Displ.-	4.3 to 5.3"	5.10	
Maximum (70.7°) Time- -	53.2 to 66.8ms	60.00	
Maximum (70.7°) Displ.-	5.0 to 6.0"	6.00	

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

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

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	73.10	
	Displ.-	4.3 to 5.3 in.	5.28	
30°	Time- -	85.4 to 104.6 ms	88.90	
	Displ.-	2.1 to 3.1 in.	2.45	
0°	Time- -	101.0 to 123.0 ms	101.00	
	Displ.-	-.5 to 0.5 in.	0.50	
3. ABDOMINAL COMPRESSION TEST: (Preload=10 pounds)				
a. Force @ .5" - - - -		23 to 36 lbs.	32.00	
b. Force @ .75" - - - -		36 to 50 lbs.	42.00	
c. Force @ 1.0"- - - - -		50 to 63 lbs.	56.00	
d. Force @ 1.3"- - - - -		73 to 88 lbs.	80.00	
4. LUMBAR FLEXION TEST:				
a. Force @ 20° - - - - -		22 to 34 lbs.	29.00	
b. Force @ 30° - - - - -		34 to 46 lbs.	39.30	
c. Force @ 40° - - - - -		46 to 58 lbs.	47.30	
d. Return Angle- - - - -		12° maximum	11.00	
5. CHEST IMPACT TESTS:				
a. High Speed				
(1) Probe Speed - - -		21.78-22.22 fps	21.90	
(2) Peak Deflection -		1.7" maximum	1.58	
(3) Peak Resistive Force - - - - - -		2250 lbs.maximum	1906.10	
(4) Internal Hysteresis		50 to 70%	66.50	
b. Low Speed				
(1) Probe Speed - - -		13.86-14.14 fps	14.00	
(2) Peak Deflection -		1.1" maximum	1.05	
(3) Peak Resistive Force - - - - - -		1450 lbs.maximum	1247.90	
(4) Internal Hysteresis		50 to 70%	62.20	

DUMMY CONFIG. & PERF. VERIF. DATA....Continued:
II. PERFORMANCE VERIFICATION DATA: NHTSA DUMMY I.D. NO.: 4 6 4
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	2443.40	
(3) Time Above 1000#-	1.7 ms minimum	2.20	
b. Left Side--			
(1) Probe Speed - - -	6.76 to 7.04 fps	7.00	
(2) Maximum Force - -	1850 to 2500 lbs	2150.50	
(3) Time Above 1000#-	1.7 ms minimum	1.70	

APPENDIX D

VEHICLE OWNER'S MANUAL OCCUPANT RESTRAINT SYSTEM INSTRUCTIONS

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FRONT SEAT LAP/ SHOULDER BELT

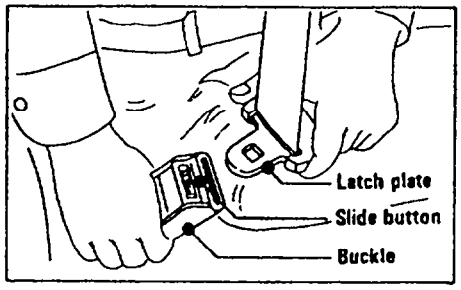
The National Safety Council's statistics clearly indicate that the use of seat belts drastically reduces the probability of serious injury or even fatality in the event of an accident or a sudden stop. Prior to starting the vehicle, ensure that all passengers have properly adjusted and latched their seat belts.

There is a seat belt provided for each position designated for occupant seating. Lap-shoulder belts are located in the front seats. In the four door models, lap-shoulder belts are also provided for the rear outboard seating positions.

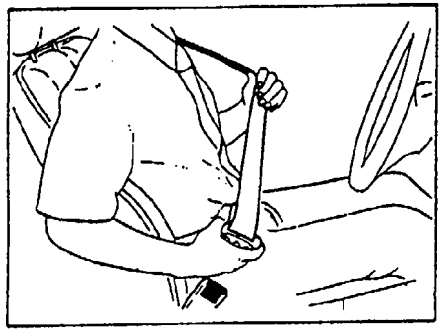
NOTE

- *Special instructions for use of seat belts for children and pregnant women are on the following pages.*

FRONT AND REAR SEAT LAP-SHOULDER BELTS



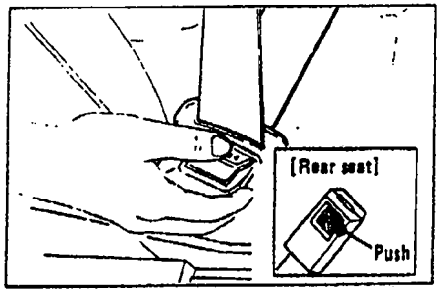
- Taking the latch plate, pull the lap-shoulder belt across your body. Insert the latch plate into the buckle. Push firmly until the plate latches in the buckle.
- Position the "lap" portion of the belt across your lap as LOW ON THE HIPS as possible. Then, adjust it to a SNUG FIT by grasping the "shoulder" portion of the seat belt and pulling it UPWARD through the latch plate until the lap portion is snug across your lap. This reduces the risk of sliding under the belt during an accident.



- A snug fit with the lap belt positioned low on the hips is necessary to help lessen the chance and/or severity of injury in an accident. This spreads the force of the lap belt over the hip bone instead of across the abdomen.

CAUTION

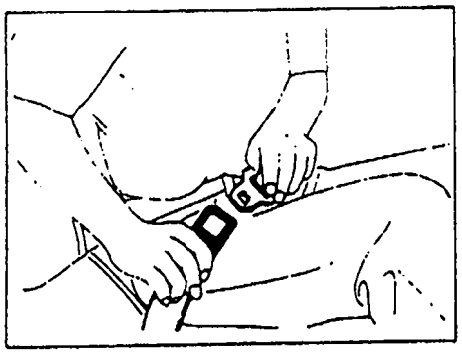
- *Never use the same belt for more than one person at a time. Do not wear belts twisted, and do not let belts or belt hardware become damaged by pinching them in the seat or door.*
- *Do not remove the retractor. These are intricate mechanisms and require special skills to correct or repair. If the retractor does not work properly take your vehicle to your Isuzu dealer for repair or replacement.*
- *The lap-shoulder belts are designed to permit normal free forward body movement. However, when they are subjected to sudden and harsh impact, the retractor mechanisms will engage, restricting the passengers' forward movement.*
- *Too much shoulder belt slack could reduce the amount of protection because the belt may not be able to properly restrain you in an accident.*
- *Do not wear the shoulder portion of the belt under your arm nearest the door or otherwise out of position. Such use could increase the chance and/or the severity of injury in an accident.*
- To unfasten the belts, push in the slide button in the center of the buckle (**Front**).
- To unfasten the belts, push in the button in the side of the buckle (**4-door Rear**).



- When no longer in use, seat belts should be stowed by letting them rewind into their retractors. If necessary, move the keeper along the front seat belt webbing to let the belt retract fully. This will also put the latch plate within easy reach on the door pillar.

REAR SEAT LAP BELT (RETRACTOR TYPE)

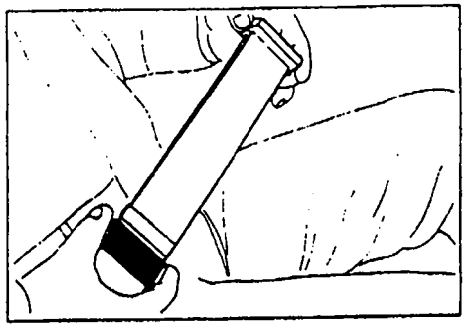
- The rear seat is provided with three sets of lap belts (for the right, center and left side seat occupants).
- The right and left side lap belts are equipped with an individual retractor which is designed to take up extra webbing automatically.



- To use the rear seat belts, hold the latch plate and pull out the webbing until it reaches the buckle. Push the latch plate into the buckle until it clicks.
- After fastening, check that the belt is SNUG by pulling the belt firmly across the lap toward the lap belt retractor. This will allow the retractor to take up slack.
- To unfasten the belts, push in the button in the center of the buckle.

REAR SEAT LAP BELT (NON-RETRACTOR TYPE)

- The rear center seat belts are provided with a non-retractable type lap belt at center.
- To fasten the lap belt, insert the latch plate into the buckle.



- You will hear a click when the latch plate locks into the buckle. Make sure the connection is secure and the belt is not twisted. If the belt is too short for you, hold the latch plate at a right angle to the belt and pull on the latch plate.
- To lengthen a lap belt, place the latch plate at right angles to the belt webbing and pull on the latch plate: the belt should then slide easily through the latch plate.
- To unfasten the belts, push the button in the center of buckle.

SEAT BELT INSPECTION

- Occasionally check that the belts, buckles, latch plates, retractors, reminder systems, guide loops, keepers, and anchors work properly. Also check for damage that could keep the restraint system from doing its job.
- Keep sharp edges and damaging objects away from the belts and other parts of the restraint system.
- Replace belts if cut, weakened, or frayed. Also, have belts replaced if they have been worn in a collision.
- If there is any doubt have all related parts including belts replaced.
- Keep belts clean and dry.
- Clean only with mild soap and lukewarm water.
- Do not bleach or dye belts since this may badly weaken them.

RESTRAINT OF PREGNANT WOMEN

It is recommended that pregnant women use seat belts. Check with your doctor for specific recommendations. The lap belt should be snug and positioned as low as possible around the hips. Do not position the lap belt around the waist. This can be very dangerous in the event of an accident or sudden stop.

CHILD RESTRAINT

Children in vehicles should be restrained to help lessen the chance and/or severity of in-

jury in accidents or sudden stops. Never let a child of any age stand or kneel on any seat. Use of infant or child restraint systems which conform to federal motor vehicle safety standards and which are installed according to their instructions is the surest way of minimizing the risk of injury to young passengers. Child restraint systems are designed to be secured in vehicle seats by lap belt or the lap belt portion of a lap-shoulder belt. Children could be endangered in a crash if their child restraints are not properly secured in the vehicle.

According to accident statistics, children are safer when properly restrained in the rear seating positions than in the front seating positions. Older children should be placed on a seat and restrained with the seat belts provided with your vehicle. Both lap and shoulder belts should be used.

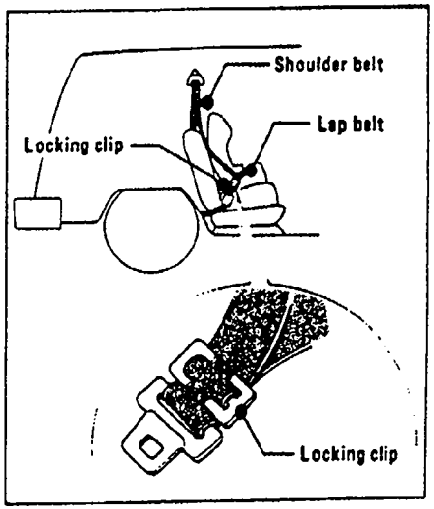
The use of infant or child restraint systems may be required by the laws of your state. You should check with the appropriate state authorities to ensure that you are in compliance with these laws.

WARNING

- *For effective protection in automobile accidents and sudden stops, children should not be transported unrestrained. The preferred restraints for small children are child restraint system. If these are not available, children should be placed in the rear seat and restrained with the lap belt if they are old enough to sit alone.*
- *Holding a child in your arms is dangerous. In an accident, a child held in a person's arms can be struck or crushed by any unrestrained occupant. An unrestrained child also be injured by striking the interior, or by being ejected from the vehicle during a sudden maneuver or impact.*
- *If an adult must sit in the rear seat of a 2-door model, do not use a child restraint system on the front seat as this would block the adult's emergency exit. Instead, place the child in the rear seat with the adult.*

Installation on Rear Seat

1. Place the shoulder belt between the vehicle seat back and child restraint system.
2. Fully extend the lap belt.
3. Fasten the lap belt over the child restraint system.
4. Keep slack out of the lap portion of the belt by pulling shoulder belt.
5. Install a locking clip near the tab of the lap and shoulder belt.



Installation on Front Seat

1. Slide the seat to the rearmost position.
2. Place the shoulder belt between the vehicle seatback and the child restraint system.
3. Fully extend the lap belt.

WARNING

- *You must fully extend the lap belt to change its locking operation and make it suitable*

for use with a child seat.

4. Fasten the lap belt over the child restraint system.
5. Keep slack out of the lap portion of the bolt by pulling shoulder belt.
6. Install a locking clip near the tab of the lap and shoulder belt.
7. Slide the seat forward so that the lap belt is fully extended.