

NEW CAR ASSESSMENT PROGRAM
SIDE IMPACT TESTING
PASSENGER CARS

1998 BUICK LESABRE
4-DOOR SEDAN
NHTSA NO: MW0113

MGA PROVING GROUNDS
5000 WARREN ROAD
BURLINGTON, WI 53105



Test Date: September 16, 1997

Report Date: September 22, 1997

FINAL REPORT

Prepared For:

U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
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				14. Sponsoring Agency Code NPS-10																			
15. Supplementary Notes																							
16. Abstract A 90° Moving Deformable Barrier NCAP left side impact was conducted on the subject 1998 Buick LeSabre to obtain new car assessment and research data indicant of FMVSS No. 214D performance. The test was conducted at MGA Research Corporation in Burlington, Wisconsin, on September 16, 1997. The impact velocity of the Moving Deformable Barrier (MDB) was 61.2 kph, and the ambient temperature at the struck side (driver) of the target vehicle at the time of impact was 23°C. The target vehicle post test maximum crush was 505 mm at level 2. The test vehicle's performance follows: <table border="1"> <thead> <tr> <th></th> <th>DRIVER</th> <th>PASS.</th> </tr> </thead> <tbody> <tr> <td>Left Upper Rib (LUR) Accel., g</td> <td>63</td> <td>71</td> </tr> <tr> <td>Left Lower Rib (LLR) Accel., g</td> <td>65</td> <td>85</td> </tr> <tr> <td>Lower Spine (T₁₂) Accel., g</td> <td>93</td> <td>75</td> </tr> <tr> <td>Thoracic Trauma Index (TTI)</td> <td>79</td> <td>80</td> </tr> <tr> <td>Pelvis (PEV) Accel., g</td> <td>98</td> <td>129</td> </tr> </tbody> </table> The doors on the struck side of the vehicle did not separate from the body at the hinges or latches and the opposite doors did not open during the side impact event.							DRIVER	PASS.	Left Upper Rib (LUR) Accel., g	63	71	Left Lower Rib (LLR) Accel., g	65	85	Lower Spine (T ₁₂) Accel., g	93	75	Thoracic Trauma Index (TTI)	79	80	Pelvis (PEV) Accel., g	98	129
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17. Key Words New Car Assessment Program (NCAP) FMVSS No. 214D Side Impact Dummy (SID) Occupant Side Impact Protection				18. Distribution Statement Copies of this report are available from: National Highway Traffic Safety Adm. Technical Ref. Division, Room 5108 (NAD-52) 400 Seventh Street, S.W. Washington, D.C. 20590																			
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SECTION 1
PURPOSE AND TEST PROCEDURE

This side impact test is part of the FY98 NCAP Side Impact Program, sponsored by the National Highway Traffic Safety Administration (NHTSA), under Contract No. DTNH22-93-C-02047. The purpose of this test was to evaluate side impact protection of a 1998 Buick LeSabre 4-Door

This side impact test was conducted in accordance with the New Car Assessment Program Side Impact Testing Procedure dated October 1996.

MGA does not endorse or certify products. The manufacturer's name appears solely for identification purposes only.

SECTION 2

SUMMARY OF SIDE IMPACT TEST

A 1998 Buick LeSabre 4-Door was impacted on the left or driver's side by a Moving Deformable Barrier (MDB) which was moving forward in a 27° crabbed position to the tow road guidance system at a velocity of 38.0 mph (61.2 kph). The target vehicle was stationary and was positioned at an angle of 63° to the line of forward motion. The side impact test was conducted by MGA Research Corporation in Burlington, Wisconsin, on September 16, 1997. Pre- and post-test photographs of the test vehicle, the MDB and the side impact dummies (SIDs) are included in Appendix A.

Two Side Impact Dummies (SIDs) were placed in the driver and left rear designated seating positions according to instructions specified in the New Car Assessment Program Side Impact Laboratory Test Procedure which is dated October 1996. The side impact event was documented by nine high speed cameras. Camera locations and other pertinent camera information can be found in this report.

The SIDs were instrumented with the following accelerometers.

1. Left Upper Rib (LUR) uniaxial accelerometer (Y-direction)
2. Left Lower Rib (LLR) uniaxial accelerometer (Y-direction)
3. Lower Thoracic Spine (T₁₂) uniaxial accelerometer (Y-direction)
4. Pelvic (PEV) section uniaxial accelerometer (Y-direction)
5. Head Center of Gravity triaxial accelerometers (X, Y, and Z-direction)

Appendix B contains the vehicle and dummy response data traces. A summary of the side impact dummy (SID) configuration and performance verification test data is shown in Appendix C. Dummy and vehicle calibration data can be found in Appendix D of this report.

SECTION 3
SIDE IMPACT DUMMY (SID) AND
VEHICLE TEST DATA

DATA SHEET NO. 1

GENERAL VEHICLE TEST PARAMETER DATA

TEST VEHICLE INFORMATION:

Year/Make/Model/Body Style: 1998/Buick/LeSabre/4-Door

Vehicle NHTSA No.: MW0113 VIN: 1G4HP52KZWH402313

Vehicle Body Color: Green Build Date: 7/97

Engine Data: 6 Cylinders; CID; 3.8 Liter; cc

Placement Longitudinal; X Lateral

Transmission: 4 Speed; Manual; X Automatic; X Overdrive

Final Drive: Rear Wheel Drive; X Frt. Wheel Drive; Four Wheel Drive

Odometer Reading 152 miles

Options: X A/C; X Pwr. Steering; X Pwr. Brakes; X Pwr. Windows;

 X Cruise Control; X Tilt Wheel; X Power Door Locks; X ABS

DATA FROM TIRE PLACARD:

Tire Pressure (at capacity): 30 Psi FRONT

30 Psi REAR

Recommended Tire Size: P205/70R15

Tires on Test Vehicle: P205/70R15 Manufacturer: General

Vehicle Capacity Data:

Number of Occupants: 3 Front; 3 Rear; 0 3rd Seat, 6 Total

Type of Front Seats: Bucket; Bench; X Split Bench

Type of Front Seat Back: Fixed; X Adjustable with X Lever and X Power

Vehicle Maximum Capacity Loading = 488.1 kg (A)

No. of Occupants x 68.04 kg. = 408.2 kg (B)

Cargo Capacity (A-B) = 79.9 kg

GENERAL VEHICLE TEST PARAMETER DATA (Cont'd)

WEIGHT OF TEST VEHICLE WITH MAXIMUM FLUIDS:

Right Front	=	<u>508.5</u>	kg	Right Rear	=	<u>275.8</u>	kg
Left Front	=	<u>508.9</u>	kg	Left Rear	=	<u>276.7</u>	kg
TOTAL FRONT	=	<u>1017.4</u>	kg	TOTAL REAR	=	<u>552.5</u>	kg
% of Total Vehicle Weight	=	<u>64.8</u>	%;	% of Total Weight	=	<u>35.2</u>	%
TOTAL WEIGHT	=	<u>1569.9</u>	kg				

GENERAL VEHICLE TEST PARAMETER DATA (Cont'd)

Year/Make/Model/Body Style: 1998/Buick/LeSabre/4-Door

Vehicle NHTSA No.: MW0113 Test Date: September 16, 1997

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Total Test Vehicle Delivered Weight with Maximum Fluids	=	<u>1569.9</u> kg
Cargo Carrying Capacity of Test Vehicle	=	<u>79.9</u> kg
Weight of 2 Side Impact Dummies (2 x <u>80.7</u> kg.)	=	<u>161.4</u> kg
TEST VEHICLE TARGET WEIGHT	=	<u>1811.2</u> kg

ACTUAL WEIGHT OF TEST VEHICLE WITH 2 DUMMIES AND CARGO (Fully Loaded):

Right Front	=	<u>564.3</u> kg	Right Rear	=	<u>353.4</u> kg
Left Front	=	<u>511.2</u> kg	Left Rear	=	<u>381.5</u> kg
TOTAL FRONT	=	<u>1075.5</u> kg	TOTAL REAR	=	<u>734.9</u> kg
% of Total Weight	=	<u>59.4</u> %	% of Total Weight	=	<u>40.6</u> %
TOTAL TEST WEIGHT	=	<u>1810.4</u> kg			

TEST VEHICLE ATTITUDE:

CURB WEIGHT ATTITUDE:

Right Front 705 mm Left Front 707 mm Right Rear 720 mm Left Rear 711 mm

FULLY LOADED WEIGHT ATTITUDE:

Right Front 705 mm Left Front 687 mm Right Rear 676 mm Left Rear 651 mm

TEST ATTITUDE:

Right Front 698 mm Left Front 690 mm Right Rear 678 mm Left Rear 661 mm

GENERAL VEHICLE TEST PARAMETER DATA (Cont'd)

Test Vehicle Wheelbase: 2812 mm

C.G. = 1113 mm rearward of front wheel centerline

TOTAL VEHICLE LENGTH:

Right Side = 4775 mm

Centerline = 5064 mm

Left Side = 4775 mm

GENERAL VEHICLE TEST PARAMETER DATA (Cont'd)

Year/Make/Model/Body Style: 1998/Buick/LeSabre/4-Door

Vehicle NHTSA No.: MW0113 Test Date: September 16, 1997

FRONT SEAT CUSHION PLACEMENT:

Total Length of Adjustment Travel: 204 mm

Test Position: 102 mm of 204 mm

FRONT SEAT BACK ADJUSTMENT POSITION:

Seat Back Angle = 26°

SECOND POSITION SEAT:

Total Length of Fore/Aft Adjustment Travel: Non-Adjustable

Seat Back Adjustment Position: Non-Adjustable

ADJUSTABLE STEERING COLUMN POSITION:

WINDOW POSITIONS: Left Front Closed Left Rear Closed
Right Front Open Right Rear Open

AMOUNT OF STODDARD SOLVENT IN FUEL TANK:

Fuel system usable capacity = 18.0 gallons

Test Volume: 16.8 gallons 93 % of capacity

LOCATIONS OF IMPACT POINT ON TEST VEHICLE SIDE TO BE IMPACTED:

Wheelbase: = 2812 mm

Impact Point is 466 mm rearward of front axle centerline

DATA SHEET NO. 2
TEST VEHICLE SUMMARY OF RESULTS

Year/Make/Model/Body Style: 1998/Buick/LeSabre/4-Door

Vehicle NHTSA No.: MW0113 Test Date: September 16, 1997

Overall Length = 5064 mm; Overall Width = 1894 mm

TEST WEIGHT:

Right Front = 526.6 kg Right Rear = 345.6 kg

Left Front = 564.3 kg Left Rear = 368.8 kg

TOTAL FRONT = 1090.9 kg TOTAL REAR = 714.4 kg

% of Total Weight = 60.4 % % of Total Weight = 39.6 %

TOTAL VEHICLE WEIGHT = 1805.3 kg

Wheelbase = 2812 mm

Longitudinal C.G. from Center of Front Axle = 1113 mm

Impact Angle with Respect to Impactor = 90 ° degrees

MAXIMUM EXTERIOR STATIC CRUSH:

1. LEVEL 1 (234 mm above ground) = 307 mm

2. LEVEL 2 (460 mm above ground) = 505 mm

3. LEVEL 3 (578 mm above ground)* = 387 mm

4. LEVEL 4 (885 mm above ground) = 407 mm

5. LEVEL 5 (1338 mm above ground) = 178 mm

Maximum Post-Test Intrusion = 505 mm

* Trim fell off during impact.

OCCUPANTS:

	<u>Left Front Passenger</u>	<u>Left Rear Passenger</u>
Type of Dummy	<u>SID</u>	<u>SID</u>
Restraints Used	<u>type II belt</u> <u>and frontal airbag</u>	<u>type II belt</u>

TEST VEHICLE SUMMARY OF RESULTS (Cont'd)

INSTRUMENTATION:

Number of Vehicle Data Channels:	=	<u>25</u>
Number of Cameras: Onboard Vehicle	=	<u>3</u>
Offboard Vehicle	=	<u>4</u>
Deformable Barrier	=	<u>2</u>
TOTAL	=	<u>9</u>

DATA SHEET NO. 3

MOVING DEFORMABLE BARRIER (MDB) SUMMARY OF RESULTS

Year/Make/Model/Body Style: 1998/Buick/LeSabre/4-Door

Vehicle NHTSA No.: MW0113 Test Date: September 16, 1997

POSITION OF IMPACT (MDB) ON MONORAIL:

Crabbed 27° to left

MDB DETAILS:

Overall Width of Framework Carriage	=	<u>1252 mm</u>
Overall Length of MDB (incl. honeycomb impact face)	=	<u>4115 mm</u>
Wheelbase of Framework Carriage	=	<u>2591 mm</u>
Tread of Framework Carriage (Front & Rear)	=	<u>1880 mm</u>
C.G. Location Rearward of Front Axle	=	<u>1105 mm</u>
C.G. Location From Center Line	=	<u>-12 mm</u>
C.G. Location Above Ground Level	=	<u>484 mm</u>

MDB WEIGHT:

Left Front	=	<u>440.0 kg</u>	Left Rear	=	<u>242.5 kg</u>
Right Front	=	<u>338.2 kg</u>	Right Rear	=	<u>331.9 kg</u>
TOTAL FRONT	=	<u>778.2 kg</u>	TOTAL REAR	=	<u>574.4 kg</u>
TOTAL MDB WEIGHT	=	<u>1352.9 kg</u>			

Impact Angle (MDB C/L to Target Vehicle C/L) = 90° degrees

Impact Speed = Primary: 38.0 mph (61.2 kph) Secondary: 38.3 mph (61.6 kph)

CRASH TEST SUMMARY FOR SIDE IMPACTOR (Cont'd)

MAXIMUM STATIC CRUSH OF HONEYCOMB IMPACT FACE:

- | | | |
|----|---------------------------------|-----------------|
| 1. | Row A Top of Stack (813 mm) | = <u>180</u> mm |
| 2. | Row B Mid Stack (686 mm) | = <u>102</u> mm |
| 3. | Row C Top of Bumper (533 mm) | = <u>71</u> mm |
| 4. | Row D Center of Bumper (432 mm) | = <u>99</u> mm |

INSTRUMENTATION:

Number of MDB Data Channels = 5

DATA SHEET NO. 4
POST-TEST OBSERVATIONS

Year/Make/Model/Body Style: 1998/Buick/LeSabre/4-Door

Vehicle NHTSA No.: MW0113 Test Date: September 16, 1997

VISIBLE DUMMY CONTACT POINTS:

	<u>LEFT FRONT SID</u>	<u>LEFT REAR SID</u>
Head	<u>to B post and passenger seat</u>	<u>to C post</u>
Arm	<u>to door trim panel</u>	<u>to door trim panel</u>
Pelvis	<u>to door trim panel</u>	<u>to door trim panel</u>
Left Knee	<u>to door trim panel and</u> <u>armrest</u>	<u>to door trim panel and</u> <u>armrest</u>
Right Knee	<u>to left knee</u>	<u>to left knee</u>

DOOR OPENING:

	<u>LEFT SIDE</u>	<u>RIGHT SIDE</u>
Front	<u>Remained closed</u>	<u>Remained closed</u>
Rear	<u>Remained closed</u>	<u>Remained closed</u>

MDB DISTANCE FROM TARGET IMPACT POINT:

Horizontal: 7 mm forward Vertical: 3 mm high

ARM REST LOCATIONS:

Front: 240 mm from bottom of window
Rear: 260 mm from bottom of window

POST-TEST OBSERVATIONS (Cont'd)

SEAT CRUSH:

Front Seat Back: 232 mm Front Seat Cushion: 125 mm

Left Rear Seat Back: 221 mm Rear Seat Cushion: 302 mm

GLAZING DAMAGE:

Windshield cracked, left front door glass, left rear door glass

PILLAR PERFORMANCE:

None noted

SILL SEPARATION:

None noted

OTHER NOTABLE IMPACT EFFECTS:

Parking brake released

Frontal airbags did not deploy

AIRBAG DEPLOYMENT STATUS:

	<u>DRIVER</u>	<u>PASSENGER</u>
Front:	<u>No</u>	<u>No</u>
Side:	<u>None</u>	<u>None</u>



SECTION 4
OCCUPANT AND VEHICLE INFORMATION

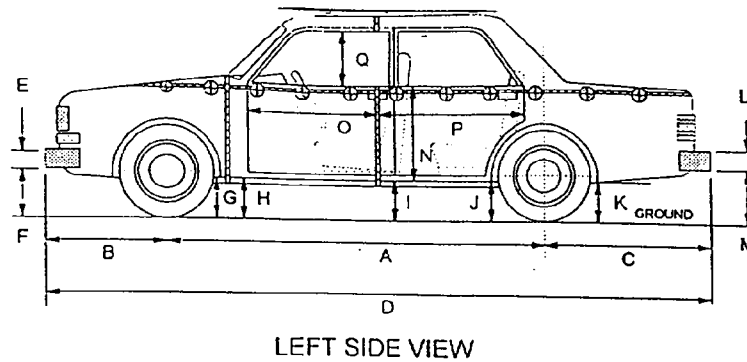
DATA SHEET NO. 5
SIDE IMPACT DUMMY (SID) INSTRUMENTATION DATA

Year/Make/Model/Body Style: 1998/Buick/LeSabre/4-Door
Vehicle NHTSA No.: MW0113 Test Date: September 16, 1997

	Front Dummy ID #			Rear Dummy ID #		
	Pos. Direct.		Neg. Direct	Pos. Direct.		Neg. Direct
	Max (g)	Time (msec)	Max (g)	Max (g)	Time (msec)	Max (g)
RIB ACCELERATIONS						
Left Upper Rib (LUR) Y	63.3	31	-23.1	71.1	44	-23.1
Left Lower Rib (LLR) Y	64.8	31	-17.9	84.6	42	-24.8
SPINE ACCELERATIONS						
Lower Lateral Y	93.2	39	-28.3	75.3	41	-43.0
PELVIS ACCELERATIONS						
Lateral Y	98.1	32	-36.2	128.5	38	-29.4
						79

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

DATA SHEET NO. 6
VEHICLE PRE AND POST-TEST MEASUREMENTS



D = Length at Centerline
R = Right Side Length
S = Left Side Length
T = Width at B Post
E & L = Bumper Thickness

J1 = To Pinch Weld
J2 = To Sill

ALL MEASUREMENTS IN (mm)

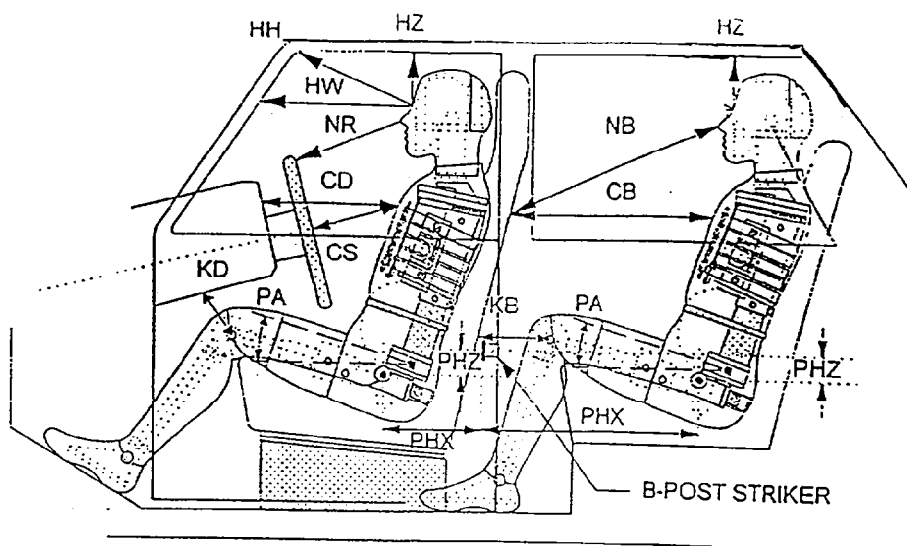
	PRE-TEST	POST-TEST	Δ CHANGE
A	2812	2713	99
B	1124	1100	24
C	1128	1123	5
D	5064	4936	128
E	175	173	2
F	354	367	-13
G	197	188	9
H	193	207	-14
I	178	218	-40
J1/J2	172/164	177/168	-5/-4
K	227	239	-12
L	210	212	-2
M	314	339	-25
N	635	580	55
O	808	734	74
P	1213	1043	170
Q	434	422	12
R	4775	4790	-15
S	4775	4682	93
T	1894	1536	358

DATA SHEET NO. 7

SIDE IMPACT DUMMY (SID) LONGITUDINAL CLEARANCE DIMENSIONS

Year/Make/Model/Body Style: 1998/Buick/LeSabre/4-Door

NHTSA NO.: MW0113 Test Date: September 16, 1997



NOTE: All dimensions are in mm with tolerance of ± 3 mm

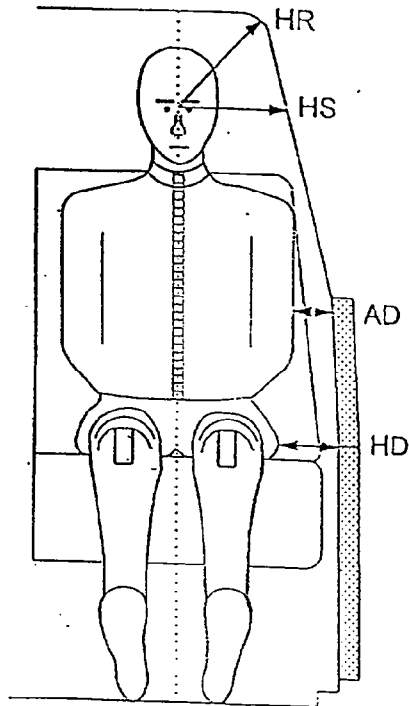
	DRIVER SID ID #271		LEFT REAR PASSENGER SID ID #272
HH	382	HZ	150
HW	650	NB	734
HZ	194	CB	634
NR	418	KBL (KBA)	278 (3.2°)
CD	562	KBR (KBA)	270 (4.8°)
CS	298	PA°	24.0°
KDL(KDA°)	184(26.9°)	PHX	214
KDR(KDA°)	180 (27.7°)	PHZ	292
PA°	23.9°		
PHX	200		
PHZ	170		

NOTE: 2-door vehicle shown. Rear dummy PHX & PHZ measurements for 4-door vehicle would use the C-post striker as reference point.

DATA SHEET NO. 8
SIDE IMPACT DUMMY (SID) LATERAL CLEARANCE DIMENSIONS

Year/Make/Model/Body Style: 1998/Buick/LeSabre/4-Door

NHTSA NO.: MW0113 Test Date: September 16, 1997



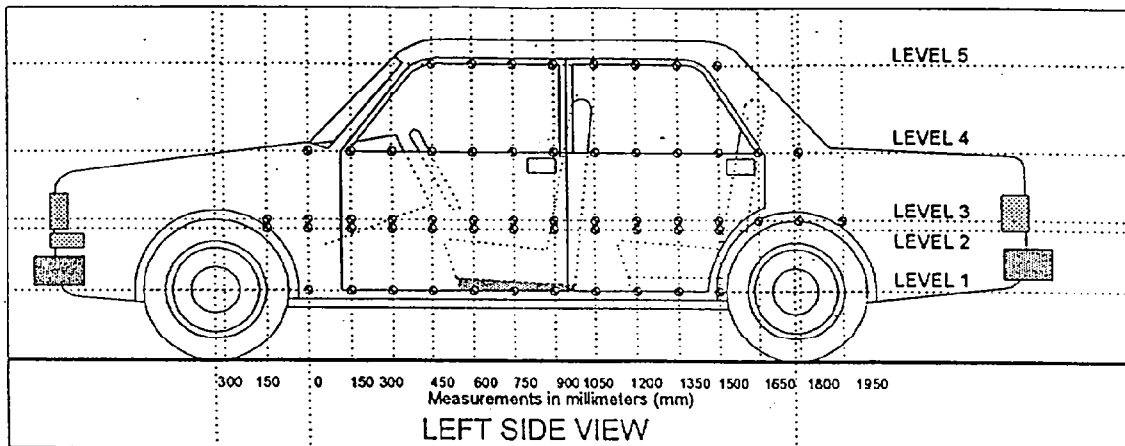
NOTE: All dimensions are in mm

	DRIVER SID ID #271	LEFT REAR PASSENGER SID ID #272
HR	243	214
HS	362	258
AD	146	158
HD	149	180

DATA SHEET NO. 9
VEHICLE SIDE MEASUREMENTS

Year/Make/Model/Body Style: 1998/Buick/LeSabre/4-Door

NHTSA NO.: MW0113 Test Date: September 16, 1997



MEASUREMENTS ARE TAKEN WHEN THE VEHICLE IS IN THE "AS TESTED"
CONFIGURATION

MEASUREMENTS ALONG THE VERTICAL 750 mm. LINE SHOWN ABOVE

Level 1 @ Axle Centerline Height

(or Sill Top Height) = 234 mm

Level 2 @ Occupant H-Point = 460 mm

Level 3 @ Mid Door = 578 mm

Level 4 @ Window Sill = 885 mm

Level 5 @ Window Top = 1338 mm

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES

	Level 1 - Axle Centerline		
Longitudinal Distance (mm)	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
-1800			
-1650			
-1500			
-1350			
-1200			
-1050	769	790	21
-900	755	783	28
-750			
-600			
-450			
-300			
-150			
0 (impact point)	728	802	74
150	727	838	111
300	724	857	133
450	723	883	160
600	723	985	262
750	720	932	212
900	720	960	240
1050	720	994	274
1200	718	1025	307
1350	718	1002	284
1500	718	930	212
1650	717	860	143
1800	720	810	90

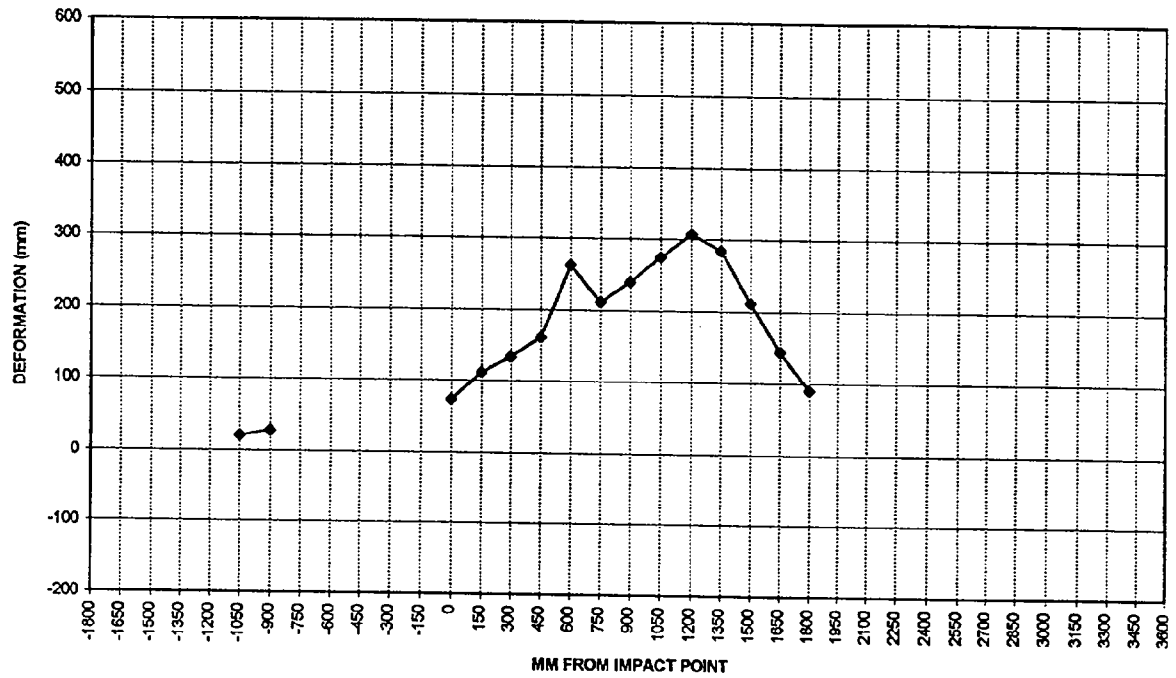
Reference plane is parallel to test vehicle longitudinal centerline.
 Given dimensions = Reference plane to car body

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES

	Level 1 - Axle Centerline		
Longitudinal Distance (mm)	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
1950			
2100			
2250			
2400			
2550			
2700			
2850			
3000			
3150			
3300			
3450			
3600			

Reference plane is parallel to test vehicle longitudinal centerline.
 Given dimensions = Reference plane to car body

VEHICLE EXTERIOR STATIC CRUSH



LEVEL 1 - AXLE CENTERLINE

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES

	Level 2 - Occupant H-Point		
Longitudinal Distance (mm)	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
-1800			
-1650			
-1500			
-1350			
-1200			
-1050	657	683	26
-900	646	658	12
-750			
-600			
-450			
-300			
-150			
0 (impact point)	608	719	111
150	607	1000	393
300	606	1040	434
450	605	1038	433
600	603	1058	455
750	601	1067	466
900	599	N/A	N/A
1050	598	1080	482
1200	598	1082	484
1350	599	1104	505
1500	600	1105	505
1650	601	1000	399
1800	602	1075	473

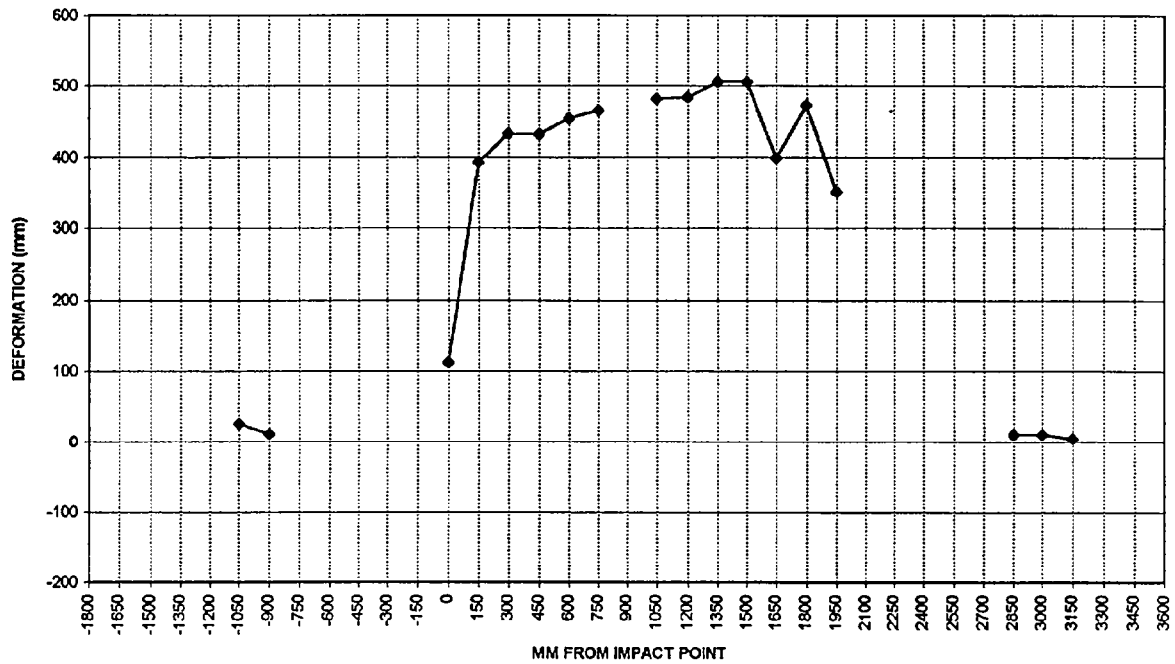
Reference plane is parallel to test vehicle longitudinal centerline.
 Given dimensions = Reference plane to car body

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES

	Level 2 - Occupant H-Point		
Longitudinal Distance (mm)	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
1950	603	954	351
2100			
2250			
2400			
2550			
2700			
2850	661	672	11
3000	674	685	11
3150	695	700	5
3300			
3450			
3600			

Reference plane is parallel to test vehicle longitudinal centerline.
 Given dimensions = Reference plane to car body

VEHICLE EXTERIOR STATIC CRUSH



LEVEL 2 - OCCUPANT H-POINT

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES

	Level 3 - Mid-Door		
Longitudinal Distance (mm)	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
-1800			
-1650			
-1500			
-1350			
-1200	675	695	20
-1050	649	673	24
-900	630	660	30
-750			
-600			
-450			
-300			
-150			
0 (impact point)	592	620	28
150	593	*	N/A
300	592	*	N/A
450	589	*	N/A
600	589	*	N/A
750	587	*	N/A
900	585	*	N/A
1050	584	*	N/A
1200	584	*	N/A
1350	584	*	N/A
1500	585	*	N/A
1650	586	*	N/A
1800	586	*	N/A

Reference plane is parallel to test vehicle longitudinal centerline.

Given dimensions = Reference plane to car body

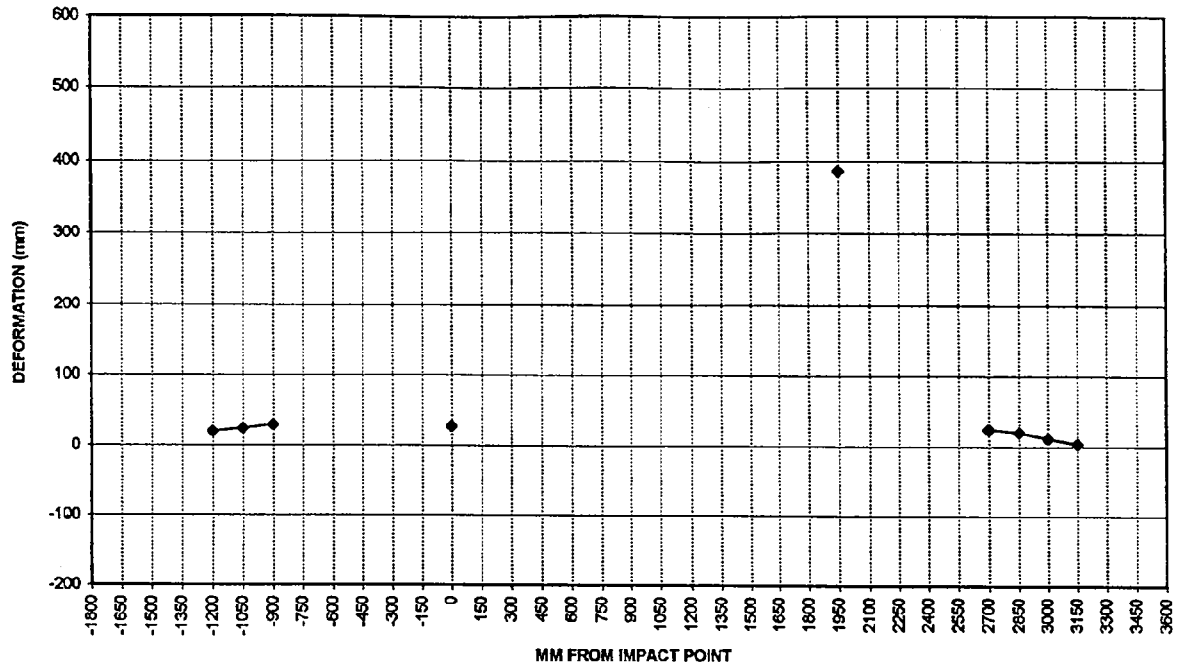
* Trim fell off during impact.

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES

	Level 3 - Mid-Door		
Longitudinal Distance (mm)	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
1950	588	975	387
2100			
2250			
2400			
2550			
2700	636	661	25
2850	651	672	21
3000	670	682	12
3150	696	700	4
3300			
3450			
3600			

Reference plane is parallel to test vehicle longitudinal centerline.
 Given dimensions = Reference plane to car body

VEHICLE EXTERIOR STATIC CRUSH



LEVEL 3 - MID-DOOR

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES

	Level 4 - Window Sill		
Longitudinal Distance (mm)	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
-1800			
-1650			
-1500			
-1350			
-1200	749	765	16
-1050	727	745	18
-900	713	736	23
-750	697	728	31
-600	687	725	38
-450	676	721	45
-300	668	721	53
-150	665	726	61
0 (impact point)	662	727	65
150	656	765	109
300	654	839	185
450	N/A	N/A	N/A
600	652	938	286
750	645	970	325
900	644	1005	361
1050	644	1043	399
1200	645	1052	407
1350	645	1035	390
1500	648	1025	377
1650	647	1022	375
1800	644	948	304

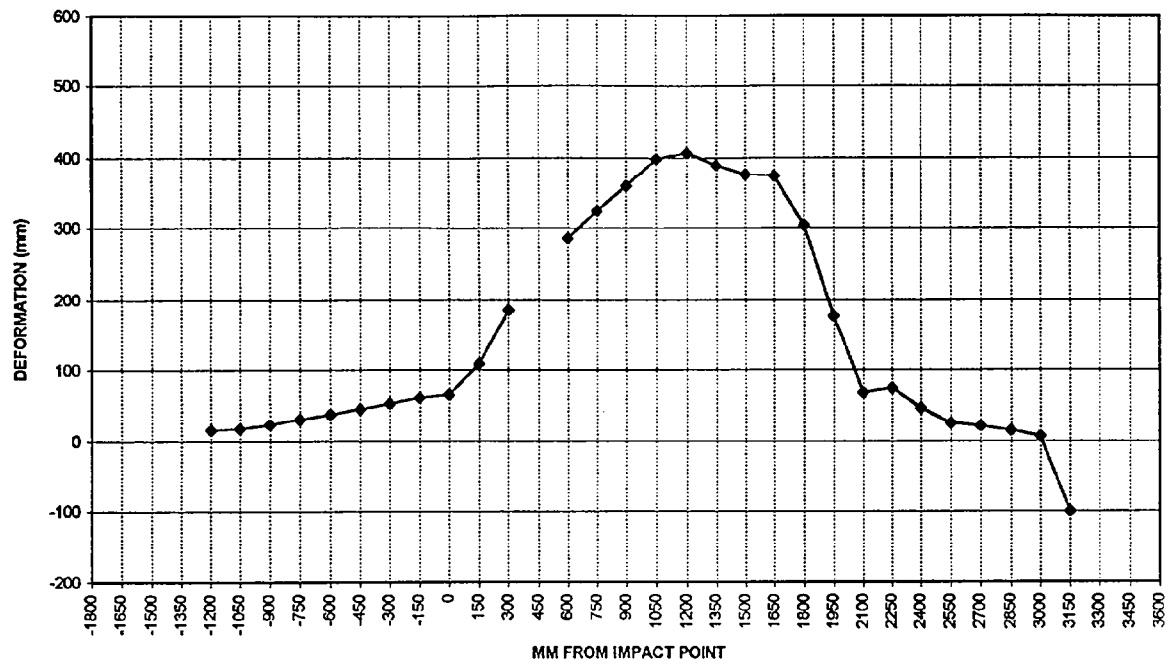
Reference plane is parallel to test vehicle longitudinal centerline.
Given dimensions = Reference plane to car body

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES

	Level 4 - Window Sill		
Longitudinal Distance (mm)	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
1950	645	822	177
2100	652	720	68
2250	656	730	74
2400	663	710	47
2550	676	701	25
2700	691	712	21
2850	707	722	15
3000	727	734	7
3150	754	654	-100
3300			
3450			
3600			

Reference plane is parallel to test vehicle longitudinal centerline.
 Given dimensions = Reference plane to car body

VEHICLE EXTERIOR STATIC CRUSH



LEVEL 4 - WINDOW SILL

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES

	Level 5 - Window Top		
Longitudinal Distance (mm)	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
-1800			
-1650			
-1500			
-1350			
-1200			
-1050			
-900			
-750			
-600			
-450			
-300			
-150			
0 (impact point)			
150			
300			
450			
600			
750	905	1014	109
900	905	1044	139
1050	906	1000	94
1200	909	1087	178
1350	910	1078	168
1500	911	1039	128
1650	911	1005	94
1800	911	985	74

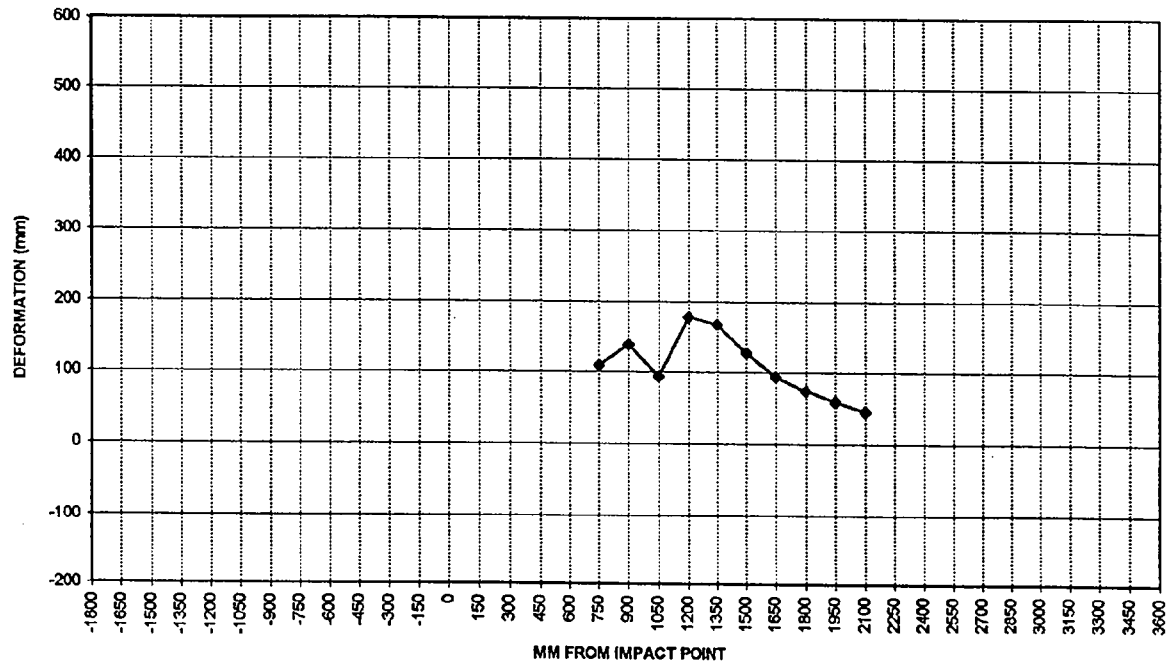
Reference plane is parallel to test vehicle longitudinal centerline.
 Given dimensions = Reference plane to car body

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES

	Level 5 - Window Top		
Longitudinal Distance (mm)	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
1950	918	977	59
2100	934	980	46
2250			
2400			
2550			
2700			
2850			
3000			
3150			
3300			
3450			
3600			

Reference plane is parallel to test vehicle longitudinal centerline.
 Given dimensions = Reference plane to car body

VEHICLE EXTERIOR STATIC CRUSH



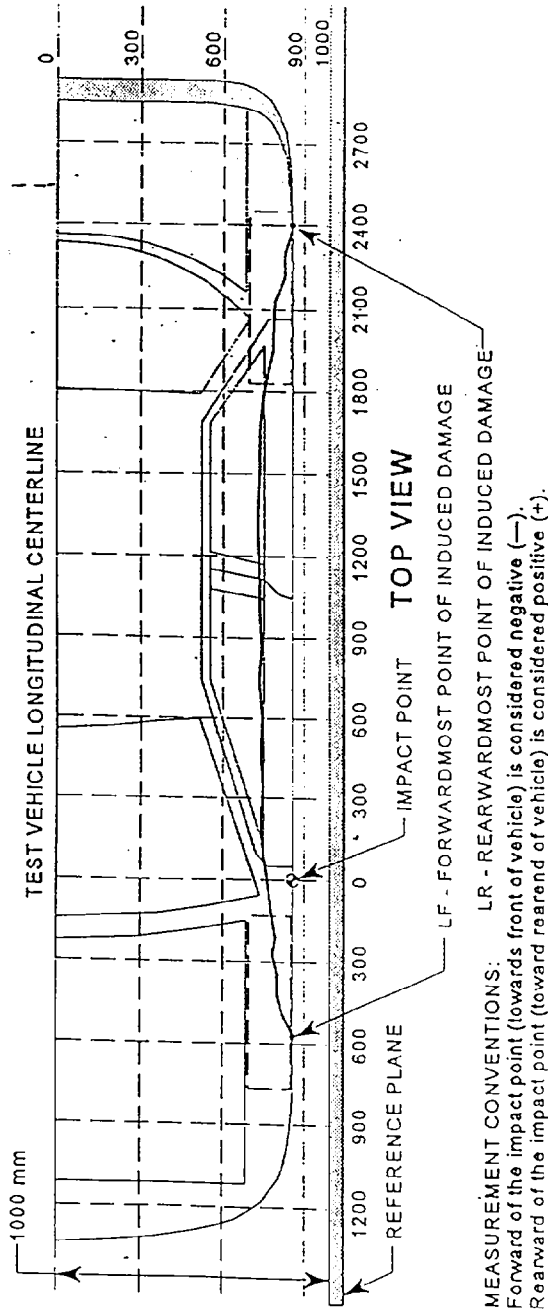
LEVEL 5 - WINDOW TOP

DATA SHEET NO. 11

VEHICLE DAMAGE PROFILE DISTANCES

Year/Make/Model/Body Style: 1998/Buick/LeSabre/4-Door

NHTSA NO.: MW0113 Test Date: September 16, 1997



DPD MEASUREMENTS	POST-TEST (mm)	PRE-TEST (mm)	STATIC CRUSH (mm)
1. (LF = <u>-900</u> mm)	620	646	34
2. <u>-150</u> mm	708	608	100
3. <u>600</u> mm	1056	603	453
4. <u>1350</u> mm	1100	599	501
5. <u>2100</u> mm	692	603	89
6. (LR = <u>2850</u> mm)	680	661	19

DATA SHEET NO. 12

EXTERIOR STATIC CRUSH FOR SIDE IMPACTOR

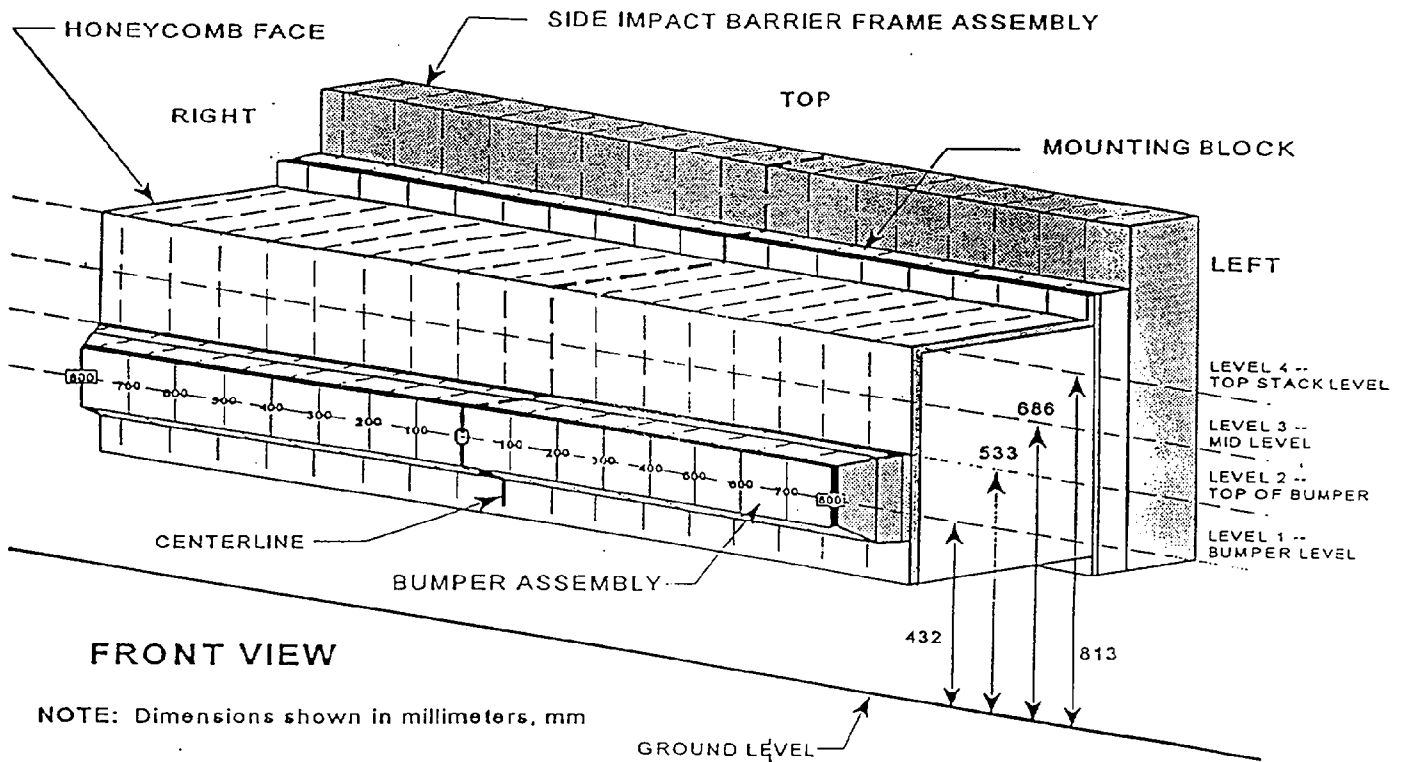
Year/Make/Model/Body Style: 1998/Buick/LeSabre/4-Door

Vehicle NHTSA No.: MW0113 Test Date: September 16, 1997

Location	Height at CL	Distance Right of Center (mm)								0	Distance Left of Center (mm)							
		800	700	600	500	400	300	200	100		100	200	300	400	500	600	700	800
Top Stack Level 4	813 mm	39	0	-3	-3	-2	-1	0	2	6	8	10	15	27	57	89	133	180
Mid Level Level 3	686 mm	14	-8	-6	-4	-4	-3	-2	1	0	0	1	4	4	13	35	63	102
Top Bumper Level 2	533 mm	32	22	15	15	23	21	17	17	14	18	21	25	27	33	43	59	71
Mid Bumper Level 1	432 mm	48	34	24	22	25	33	33	28	26	28	32	38	41	47	57	79	99

See next page for Barrier Face Graphic

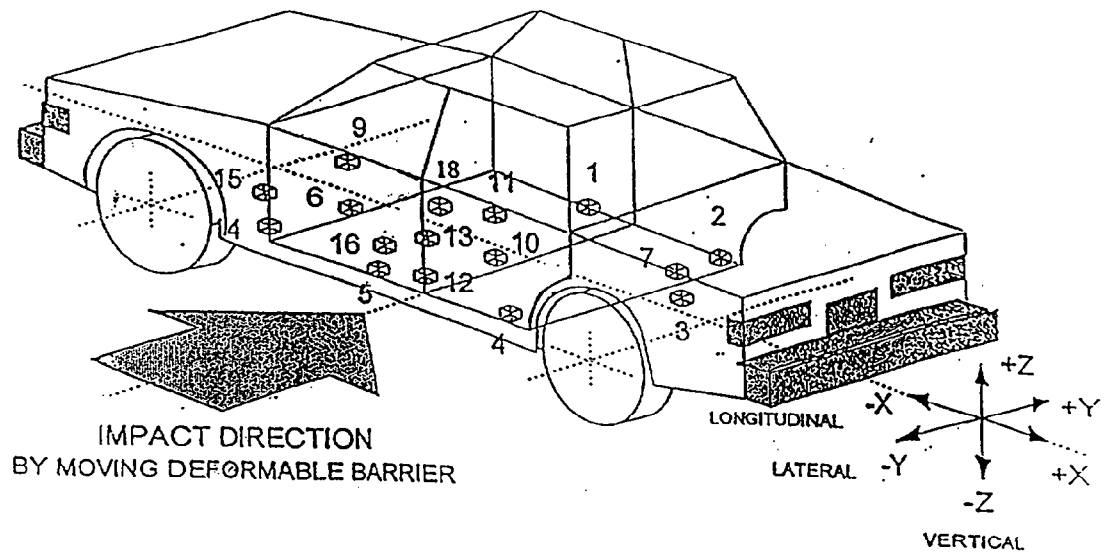
DATA SHEET NO. 12 (Cont'd)



DATA SHEET 13
TEST VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

Year/Make/Model/Body Style: 1998/Buick/LeSabre/4-Door

Vehicle NHTSA No.: MW0113 Test Date: September 16, 1997



1-RT. Side Sill @ Frt Seat
 2-RT. Side Sill @ Rr. Seat
 3-Rr. Floorpan Above Axle
 4-Left Side Sill @ Rr. Seat
 5-Left Side Sill @ Frt. Seat
 6-Left Frt. Door on Centerline
 7-Rt. Rr. Occ. Compartment
 9-Left Frt. Door Upper Ctrline

10-Midrear of Left Rear Door
 11-Left Rear Door Upper Ctrline
 12-Left Lower B-Post
 13-Left Middle B-Post
 14-Left Lower A-Post
 15-Left Middle A-Post
 16-Front Seat Track
 18-Vehicle C.G.

DATA SHEET NO. 13

TEST VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

Year/Make/Model/Body Style: 1998/Buick/LeSabre/4-Door

Vehicle NHTSA No.: MW0113 Test Date: September 16, 1997

Accel. No.	Description	Coordinates (mm)*			Long. (X) Maximums (g's)		Lat. (Y) Maximums (g's)		Vert. (Z) Maximums (g's)		Resultant (g's)
		X	Y	Z	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	
1	Rt. Side Sill @ Front Seat	2531	696	212	3.1	-5.1	26.1	-2.3	7.3	-7.0	26.7
2	Rt. Side Sill @ Rear Seat	1544	693	220	3.5	-4.0	22.2	-2.5	8.4	-4.7	22.3
3	Rr. Floorpan Above Axle	1300	0	442	8.5	-7.2	22.3	-2.1	13.2	-6.7	23.6
4	Left Side Sill @ Rr. Seat	1586	-693	213	---	---	59.1	-19.4	---	---	---
5	Left Side Sill @ Frt. Seat	2524	-696	215	---	---	84.0	-12.1	---	---	---
6	Left Front Door Centerline	2817	-802	624	---	---	190.6	-78.3	---	---	---
7	Right Rear Occupant Compartment	1929	318	343	---	---	26.7	-2.0	---	---	---
8	Mid Rear of Left Front Door	2488	-802	618	---	---	196.1	-87.9	---	---	---
9	Left Front Door Upper Centerline	2867	-805	830	---	---	197.7	-38.5	---	---	---
10	Left Rear Door Mid Rear	1537	-807	714	---	---	276.4	-73.6	---	---	---
11	Left Rear Door Upper Centerline	1799	-804	903	---	---	78.1	-22.8	---	---	---
12	Left Lower B-Post	2261	-746	401	---	---	154.0	-55.1	---	---	---
13	Left Mid B-Post	2258	-768	854	---	---	126.3	-32.4	---	---	---
14	Left Lower A-Post	3389	-734	383	---	---	141.0	-54.1	---	---	---
15	Left Mid A-Post	3356	-810	876	---	---	33.0	-7.9	---	---	---
16	Driver Left Seat Track	2457	-518	245	---	---	90.3	-18.4	---	---	---
18	Vehicle CG	2835	0	356	4.6	-7.5	23.9	-1.5	11.5	-16.8	26.5

*Reference: X - Rear Bumper (+ Forward)

Y - Vehicle Centerline (+ To right)

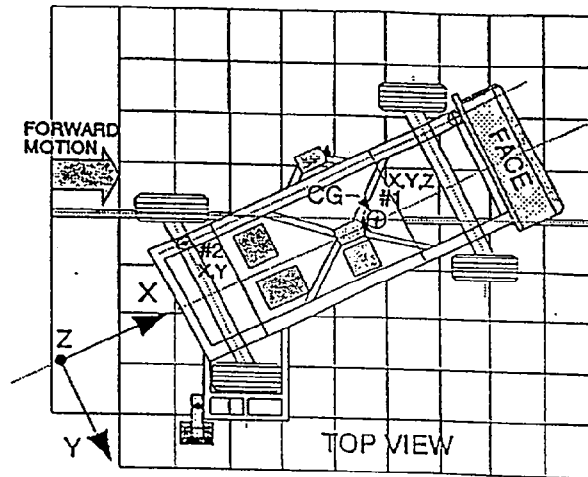
Z - Ground Level (+ Up)

DATA SHEET NO. 14

MOVING DEFORMABLE BARRIER (MDB) ACCELEROMETER LOCATIONS AND DATA SUMMARY

Year/Make/Model/Body Style: 1998/Buick/LeSabre/4-Door

Vehicle NHTSA No.: MW0113 Test Date: September 16, 1997

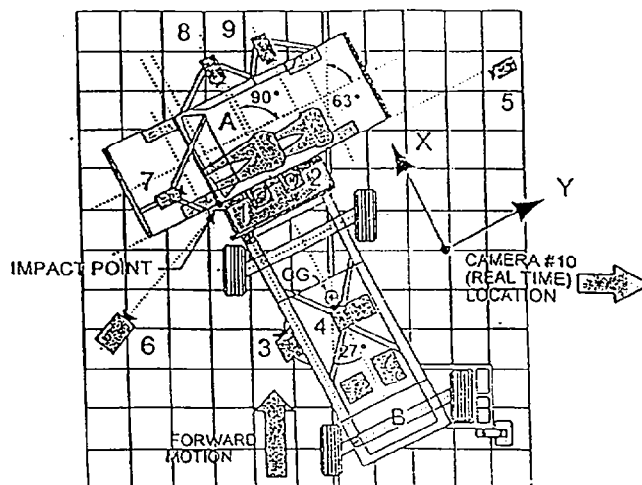


Accel. No.	Description	Coordinates (mm)*			(+) Positive		(-) Negative	
		X	Y	Z	Max. (g)	Time (msec)	Max. (g)	Time (msec)
1	MDB Center of Gravity	-1105	-12	484				
	Longitudinal (X)	---	---	---	1.4	174	-16.5	32
	Lateral (Y)	---	---	---	1.3	74	-5.0	43
	Vertical (Z)	---	---	---	26.4	49	-27.3	43
	Resultant (R)	---	---	---	31.7	43	---	---
2	Rear Frame Member	-2591	-625	622				
	Longitudinal (X)	---	---	---	1.6	181	-21.3	42
	Lateral (Y)	---	---	---	4.2	40	-1.2	199

*Reference: X - Front Axle (+ Forward)
Y - Vehicle Centerline (+ To right)
Z - Ground Level (+ Up)

DATA SHEET NO. 15
HIGH SPEED CAMERA LOCATIONS AND DATA

Year/Make/Model/Body Style: 1998/Buick/LeSabre/4-Door
 Vehicle NHTSA No.: MW0113 Test Date: September 16, 1997



Camera No.	View	Coordinates (mm)*			Angle	Lens (mm)	Film Speed (fps)
		X	Y	Z			
	Real Time						
6	Left Impact	-550	-2560	1640		13	1000
8	Onboard Hood					13	966
9	Onboard Front Occupant					8	909
7	Onboard Rear Occupant					8	1053
5	Right Impact	-260	10580	1650		25	1020
1	Top Overall	30	1350	5000		8	1020
2	Top Impact	-280	0	5000		13	957
4	Cart Overall					13	917
3	Cart Impact					35	1010

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

DATA SHEET 16
FUEL SYSTEM INTEGRITY POST IMPACT TEST DATA

Vehicle Year/Make/Model/Body Style: 1998/Buick/LeSabre/4-Door

Vehicle NHTSA No.: MW0113 Test Date: September 16, 1997

TEST REQUIREMENTS:

Drain the test vehicle's fuel system and operate the engine until the fuel system is dry. Add Stoddard solvent, which has been dyed purple, until 92-94% of the stated usable capacity is reached. Operate the engine to assure the Stoddard solvent is present throughout the entire fuel system.

TEST VEHICLE IMPACT TYPE: X Side Impact MDB 38.0 mph (61.2 kph)

FUEL SPILLAGE MEASUREMENT:

POST IMPACT TEST	TEST RESULTS	MAXIMUM ALLOWABLE
1. From impact until vehicle motion ceases	0	1 oz
2. For 5 minute period after vehicle motion ceases	0	5 oz
3. For next 25 minutes	0	1 oz./1 min

FUEL SPILLAGE LOCATION(S): None

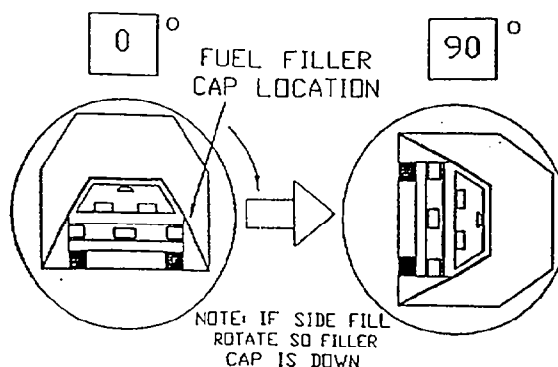
DATA SHEET 16

FMVSS 301 STATIC ROLLOVER TEST DATA

Vehicle Year/Make/Model/Body Style: 1998/Buick/LeSabre/4-Door

Vehicle NHTSA No.: MW0113 Test Date: September 16, 1997

TEST PHASE: 0° - 90°



DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time = 2 minutes 44 seconds

(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time = 5 minutes 0 seconds

TOTAL TIME = 7 minutes 44 seconds

Next Whole Minute Interval = 8 minutes

FUEL SPILLAGE MEASUREMENT:

0° TO 90° ROTATION (FILLER CAP DOWN)	TEST RESULTS	MAXIMUM ALLOWABLE
1. First 5 Minutes From Onset of Rotation	0 oz	5 oz
2. Sixth Minute From Onset of Rotation	0 oz	1 oz
3. Seventh Minute From Onset of Rotation	0 oz	1 oz
4. Eighth Minute if Required	0 oz	1 oz

FUEL SPILLAGE LOCATIONS(S): None

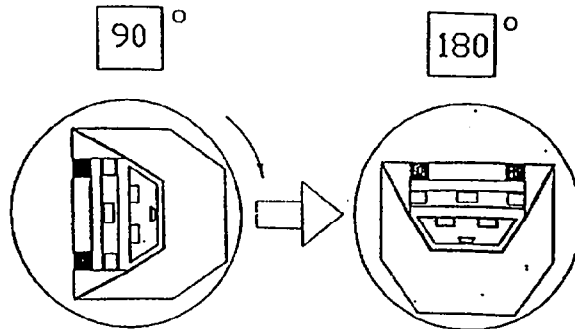
DATA SHEET 16

FMVSS 301 STATIC ROLLOVER TEST DATA (Cont'd)

Vehicle Year/Make/Model/Body Style: 1998/Buick/LeSabre/4-Door

Vehicle NHTSA No.: MW0113 Test Date: September 16, 1997

TEST PHASE: 90° - 180°



DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time = 2 minutes 21 seconds
(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time = 5 minutes 0 seconds

TOTAL TIME = 7 minutes 21 seconds

Next Whole Minute Interval = 8 minutes

FUEL SPILLAGE MEASUREMENT:

90° TO 180° ROTATION	TEST RESULTS	MAXIMUM ALLOWABLE
1. First 5 Minutes From Onset of Rotation	0 oz	5 oz
2. Sixth Minute From Onset of Rotation	0 oz	1 oz
3. Seventh Minute From Onset of Rotation	0 oz	1 oz
4. Eighth Minute if Required	0 oz	1 oz

FUEL SPILLAGE LOCATIONS(S): None

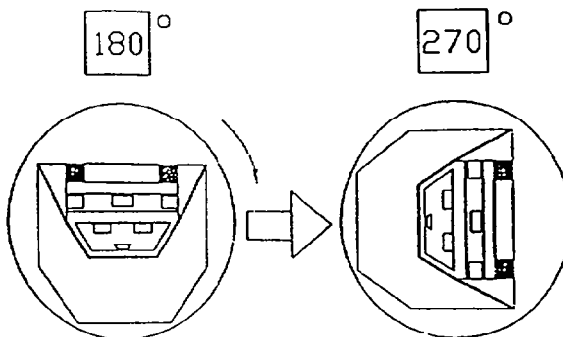
DATA SHEET 16

FMVSS 301 STATIC ROLLOVER TEST DATA (Cont'd)

Vehicle Year/Make/Model/Body Style: 1998/Buick/LeSabre/4-Door

Vehicle NHTSA No.: MW0113 Test Date: September 16, 1997

TEST PHASE: 180° - 270°



DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time = 2 minutes 27 seconds

(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time = 5 minutes 0 seconds

TOTAL TIME = 7 minutes 27 seconds

Next Whole Minute Interval = 8 minutes

FUEL SPILLAGE MEASUREMENT:

180° TO 270° ROTATION	TEST RESULTS	MAXIMUM ALLOWABLE
1. First 5 Minutes From Onset of Rotation	0 oz	5 oz
2. Sixth Minute From Onset of Rotation	0 oz	1 oz
3. Seventh Minute From Onset of Rotation	0 oz	1 oz
4. Eighth Minute if Required	0 oz	1 oz

FUEL SPILLAGE LOCATIONS(S): None

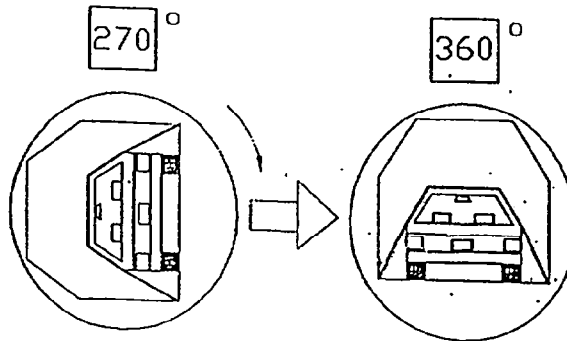
DATA SHEET 16

FMVSS 301 STATIC ROLLOVER TEST DATA

Vehicle Year/Make/Model/Body Style: 1998/Buick/LeSabre/4-Door

Vehicle NHTSA No.: MW0113 Test Date: September 16, 1997

TEST PHASE: 270° - 360°



DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time = 2 minutes 51 seconds

(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time = 5 minutes 0 seconds

TOTAL TIME = 7 minutes 51 seconds

Next Whole Minute Interval = 8 minutes

FUEL SPILLAGE MEASUREMENT:

270° TO 360° ROTATION	TEST RESULTS	MAXIMUM ALLOWABLE
1. First 5 Minutes From Onset of Rotation	0 oz	5 oz
2. Sixth Minute From Onset of Rotation	0 oz	1 oz
3. Seventh Minute From Onset of Rotation	0 oz	1 oz
4. Eighth Minute if Required	0 oz	1 oz

FUEL SPILLAGE LOCATIONS(S): None

APPENDIX A - PHOTOGRAPHS

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* Post-Test MDB Positioned Against Vehicle photographs were not taken due to the final vehicle position.

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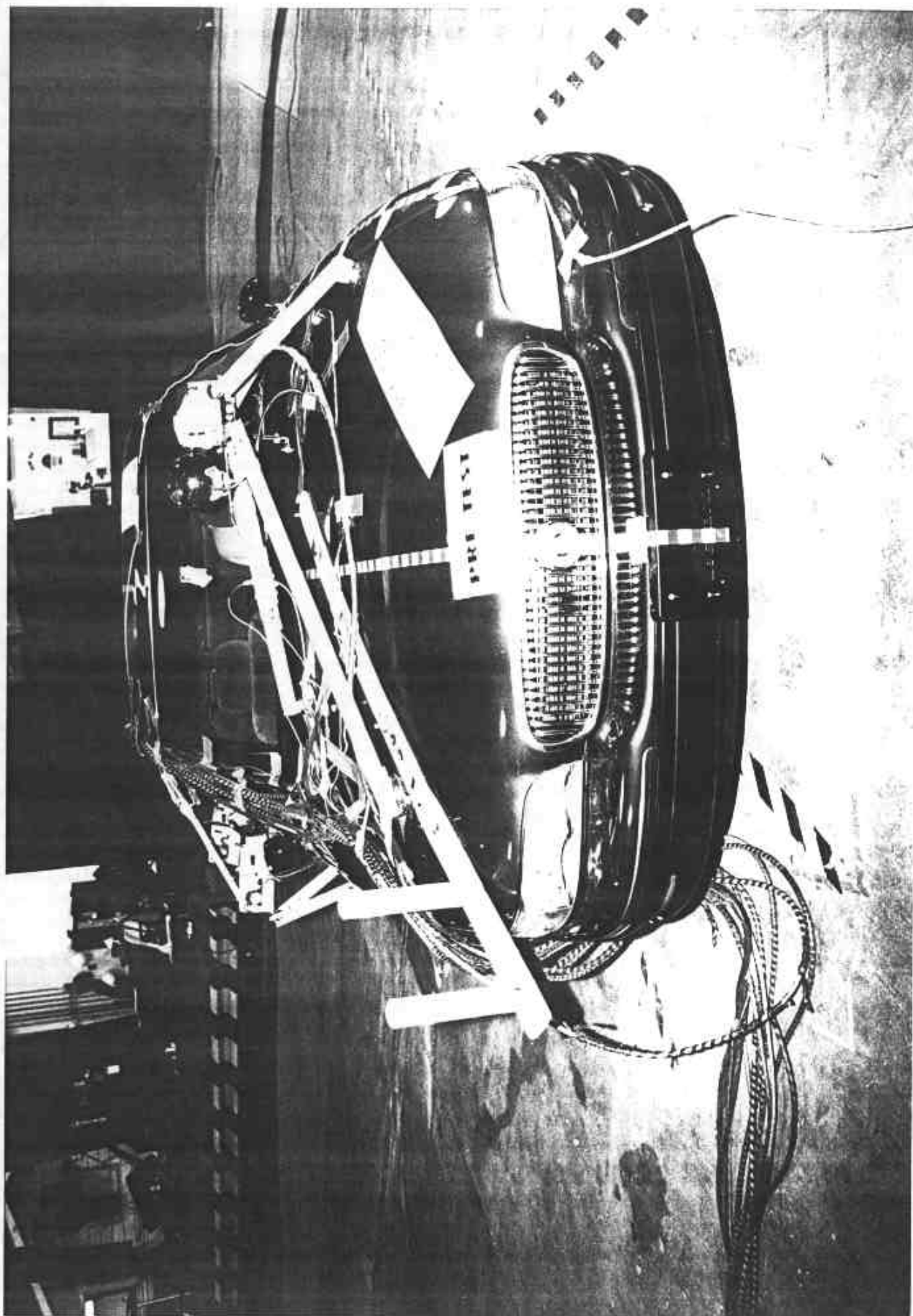


Photo No. A-1 - Pre-Test Front View of Test Vehicle

A-1

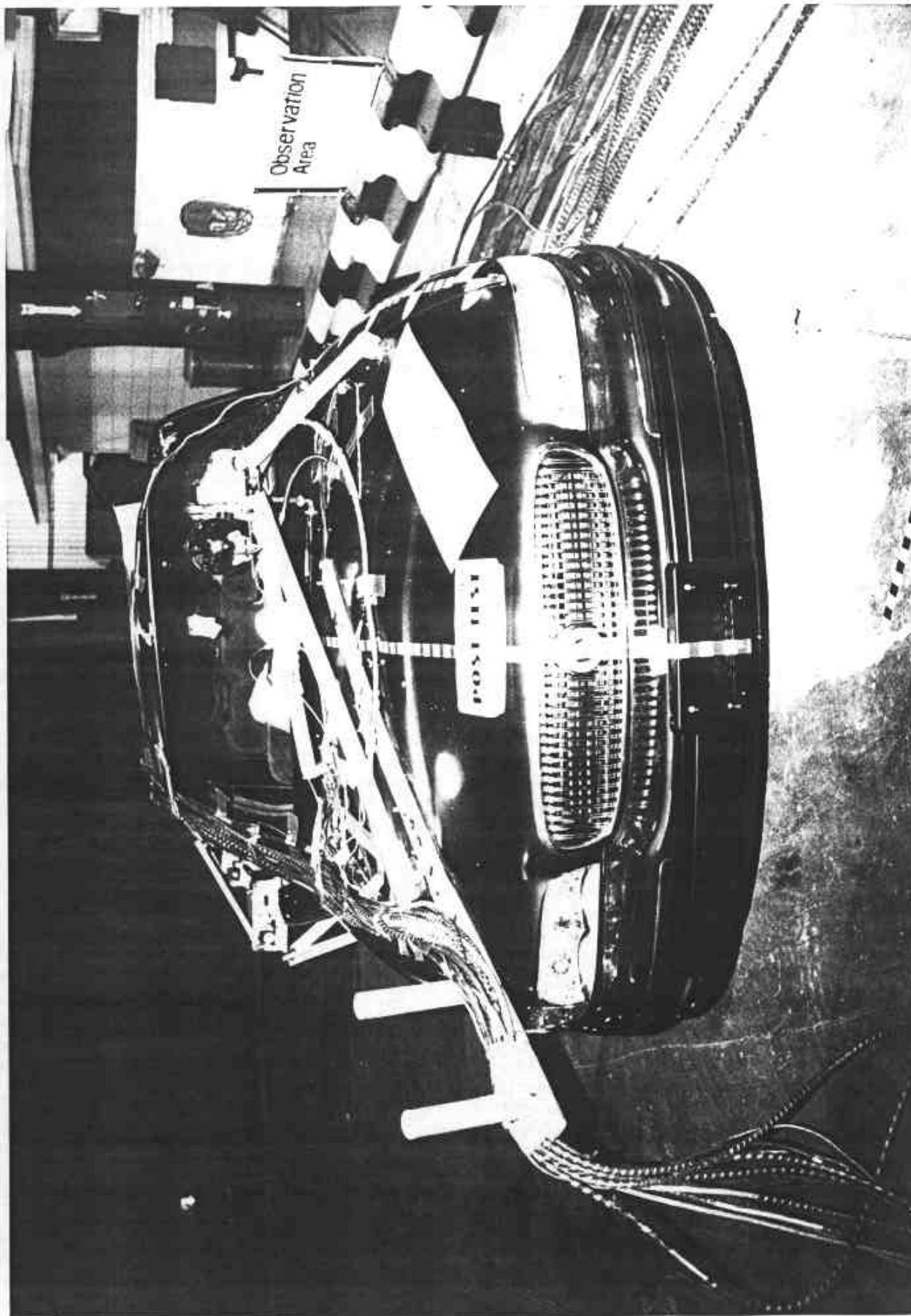


Photo No. A-2 - Post-Test Front View of Test Vehicle

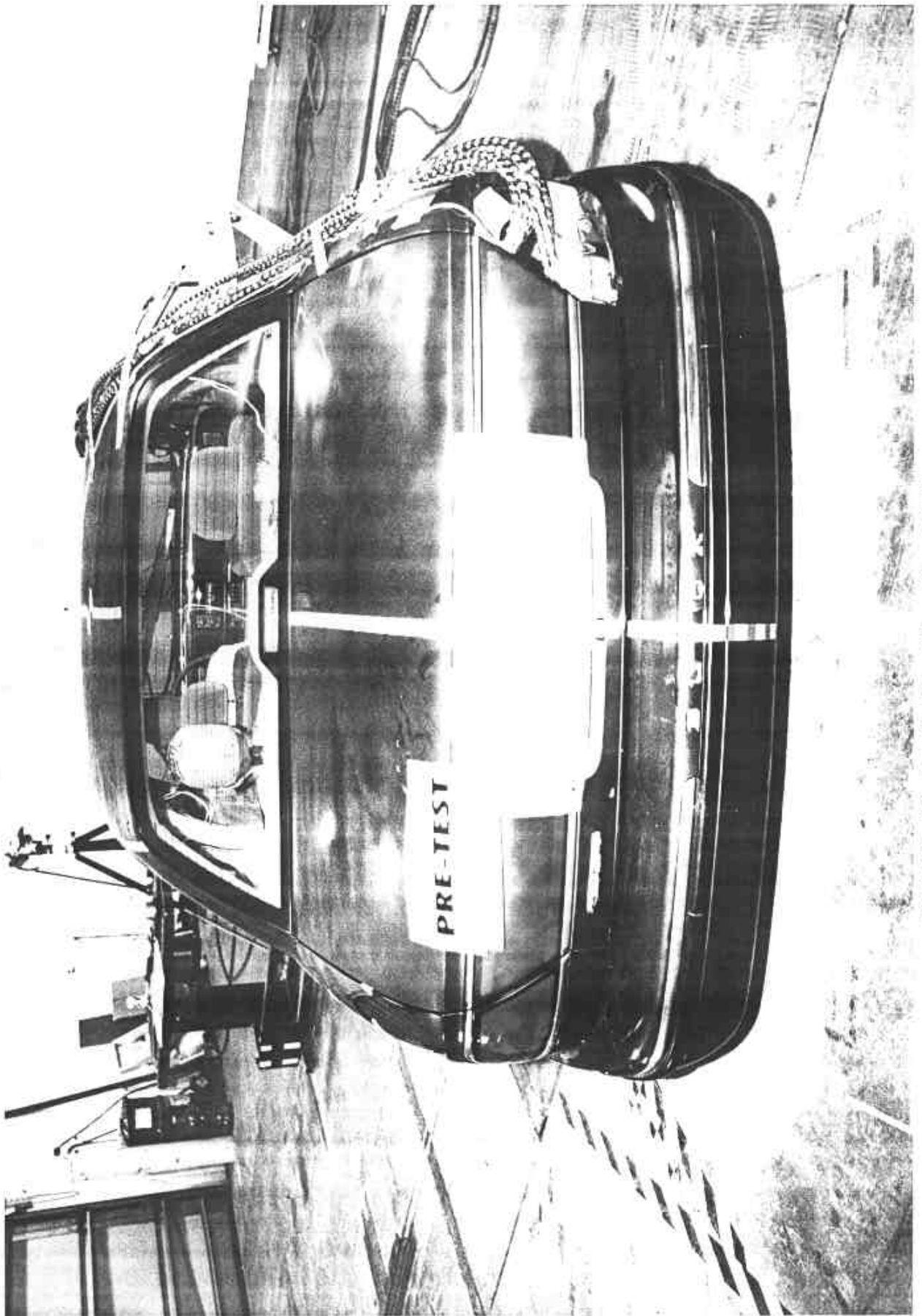


Photo No. A-3 - Pre-Test Rear View of Test Vehicle

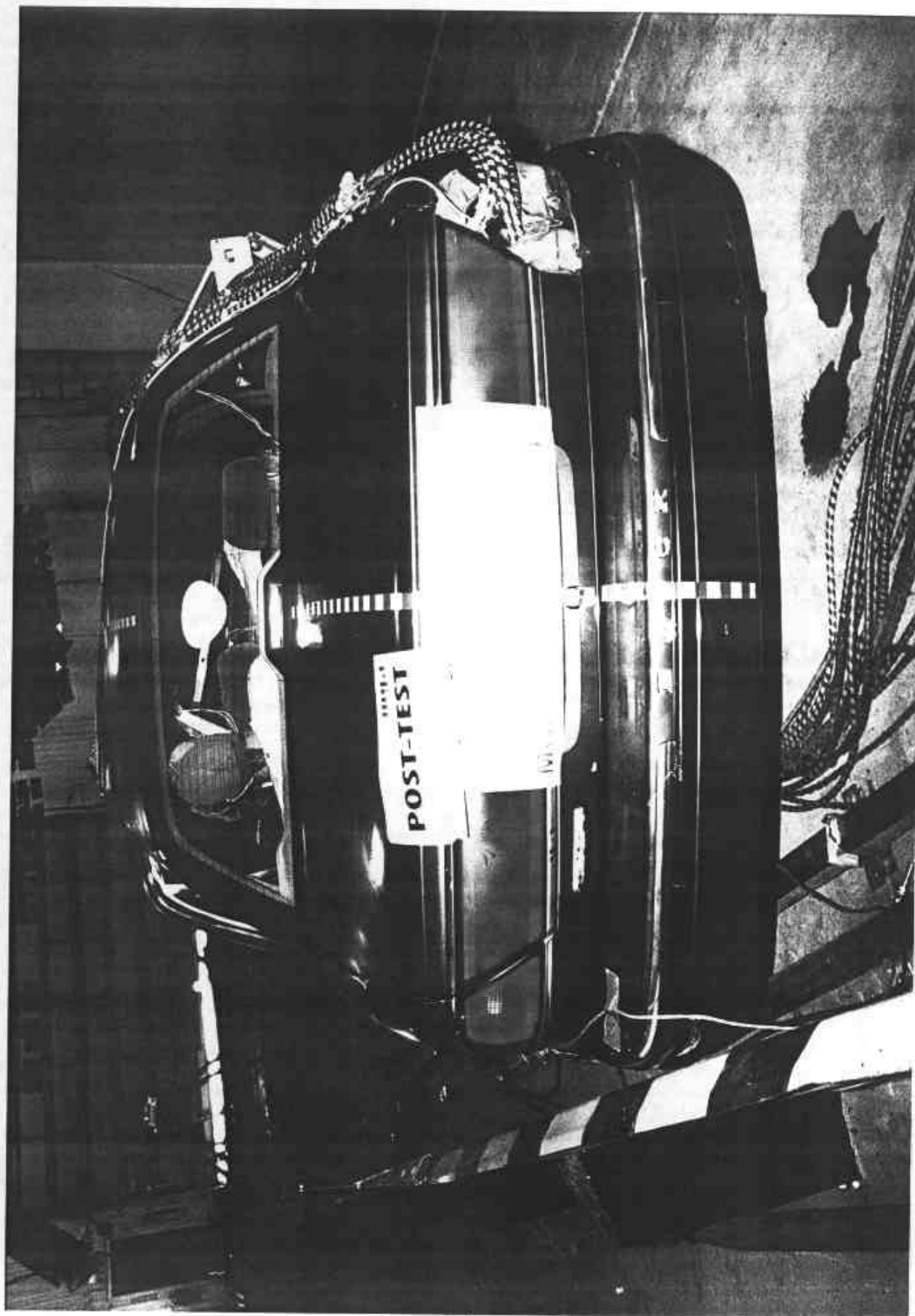


Photo No. A-4 - Post-Test Rear View of Test Vehicle

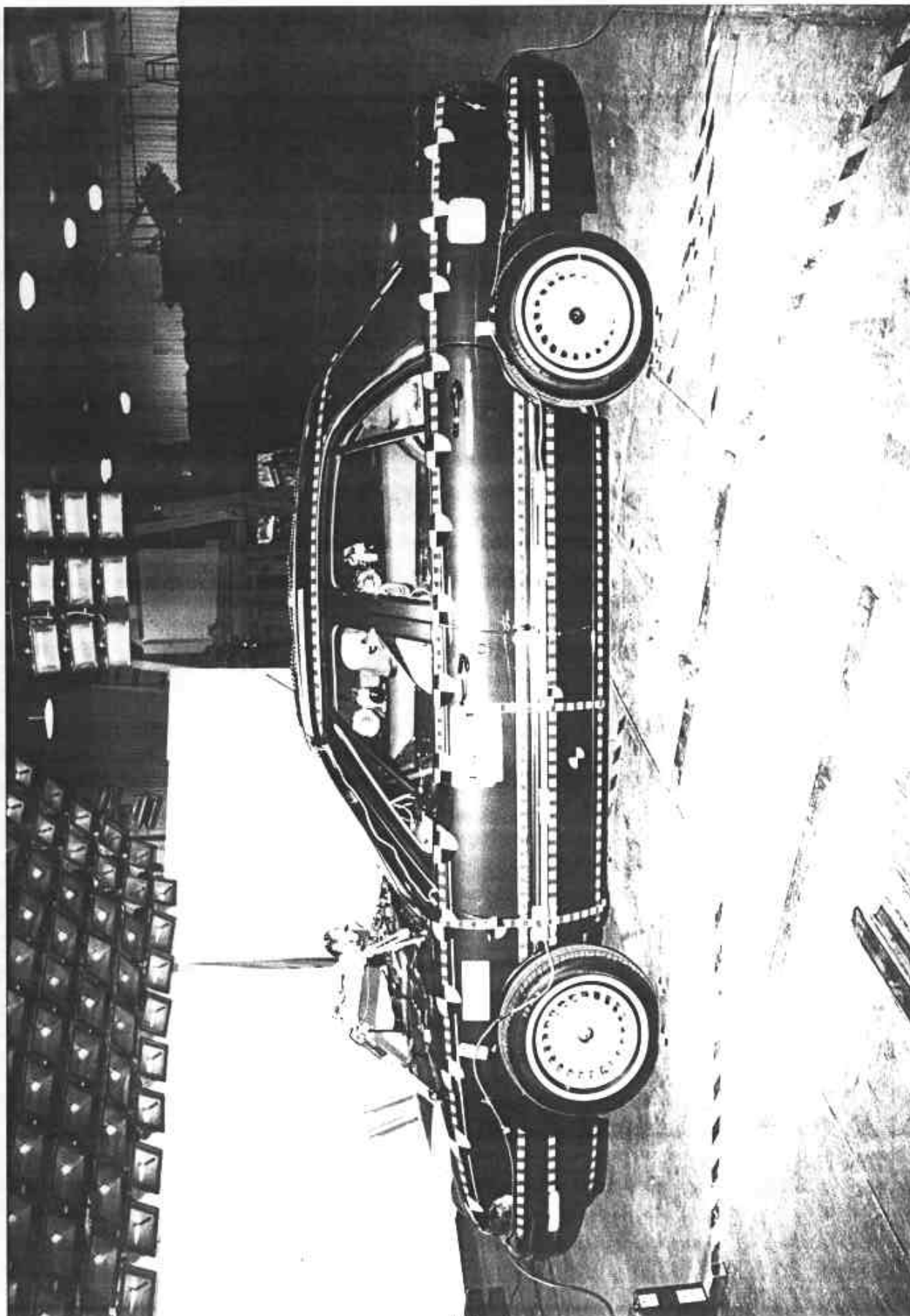


Photo No. A-5 - Pre-Test Left Side View of Test Vehicle

A-5

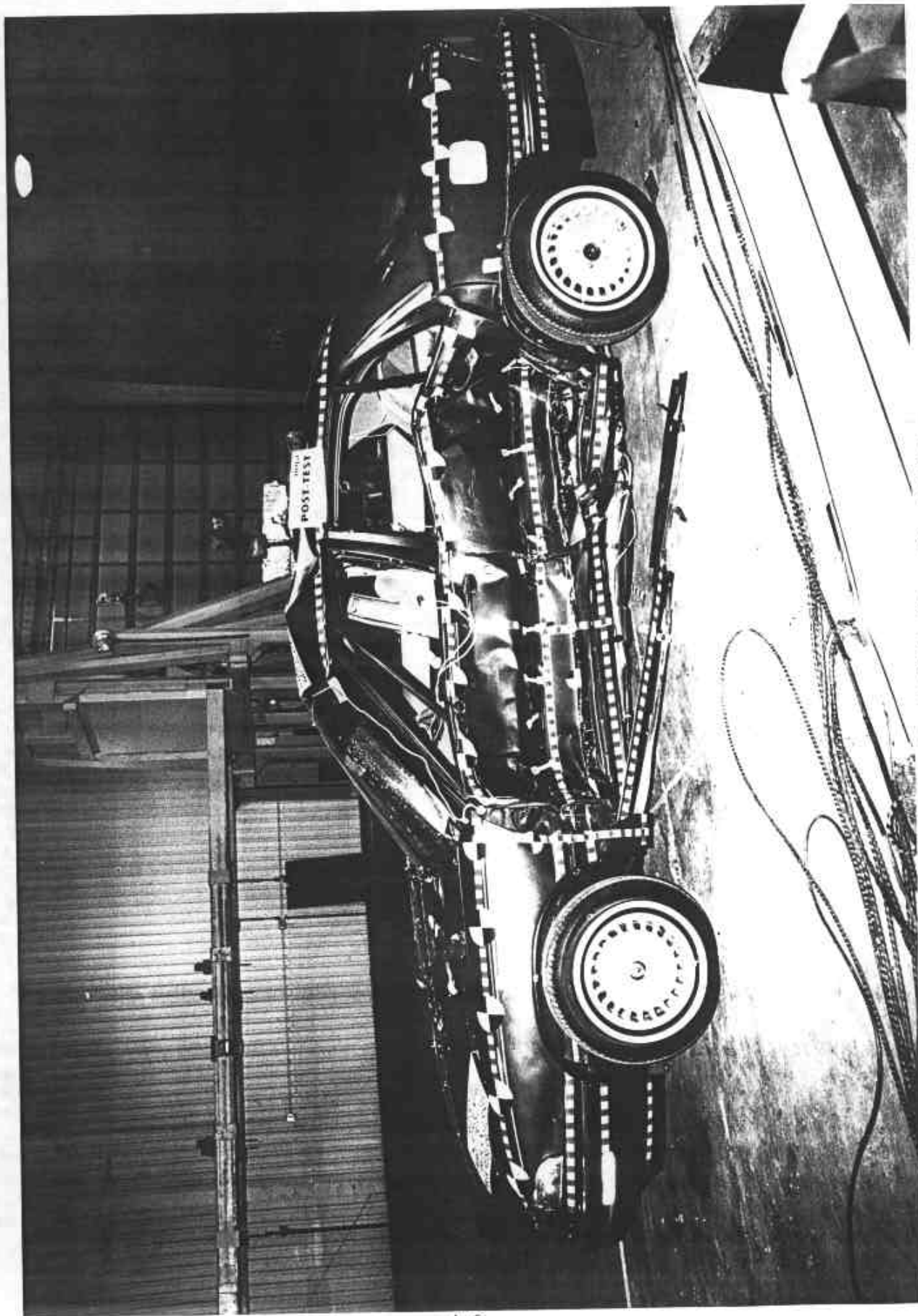


Photo No. A-6 - Post-Test Left Side View of Test Vehicle

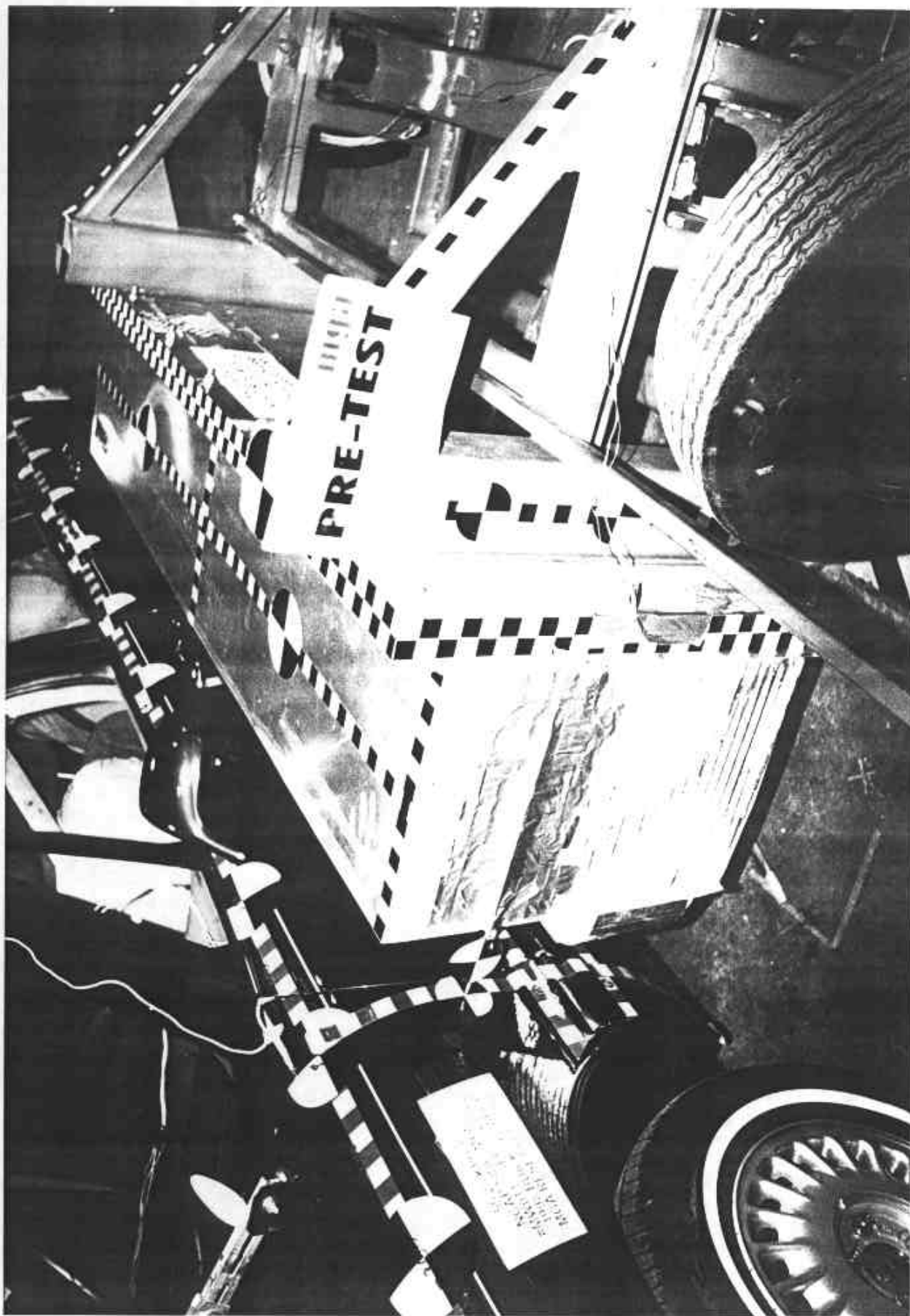


Photo No. A-7 - Pre-Test MDB Positioned Against Vehicle (left side)

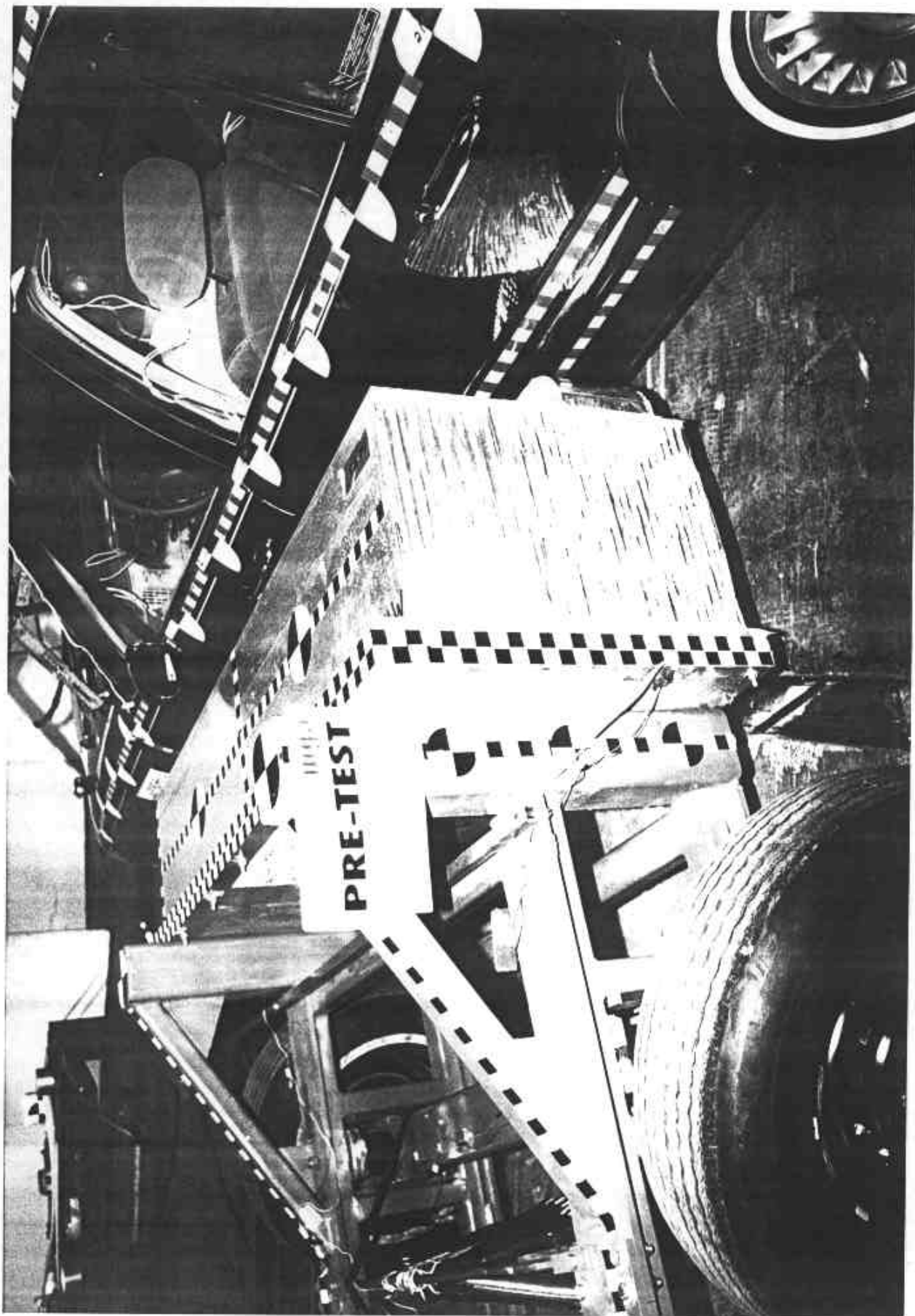


Photo No. A-8 - Pre-Test MDB Positioned Against Vehicle (right side)

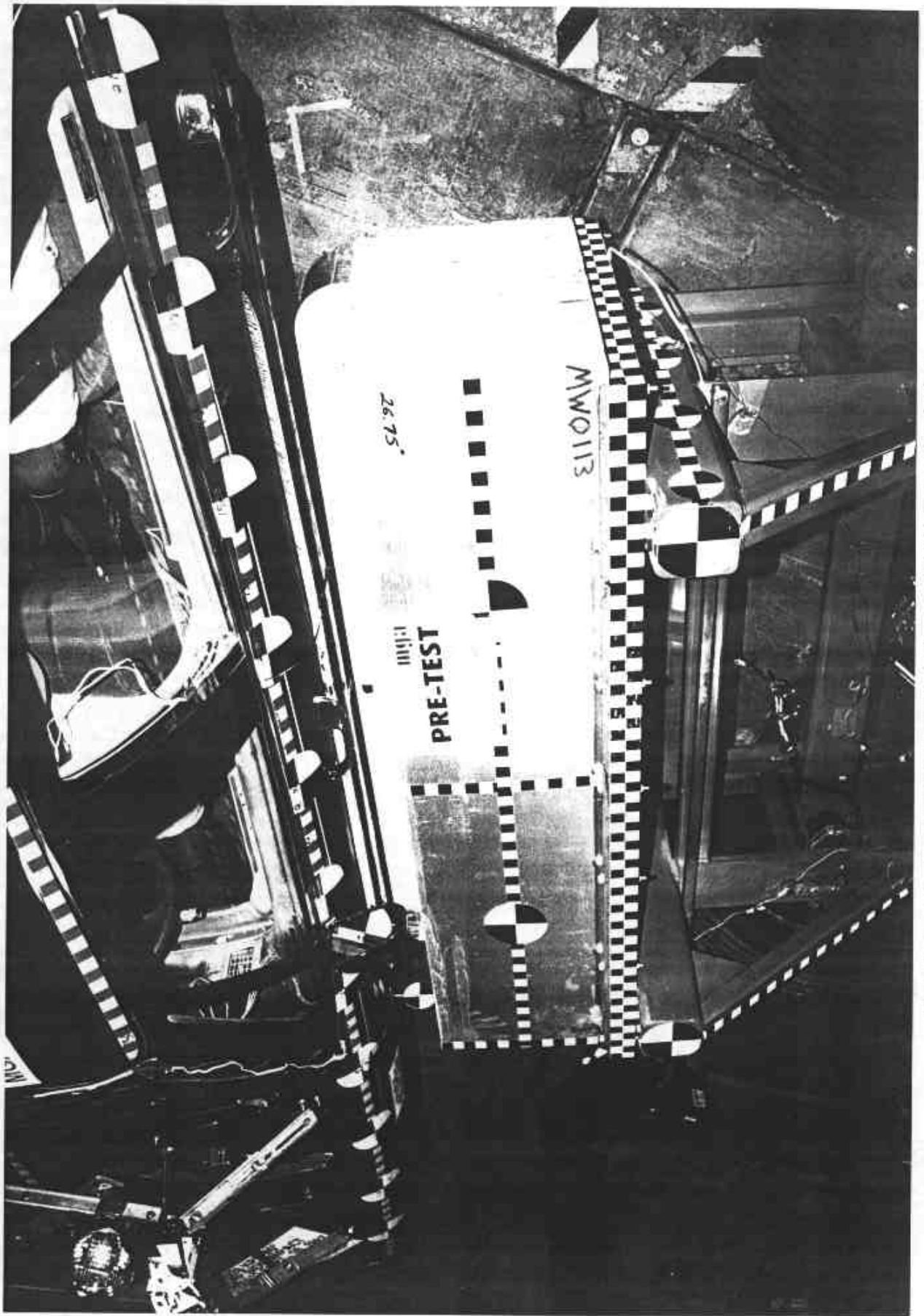


Photo No. A-9 - Pre-Test MDB Positioned Against Vehicle Overhead View

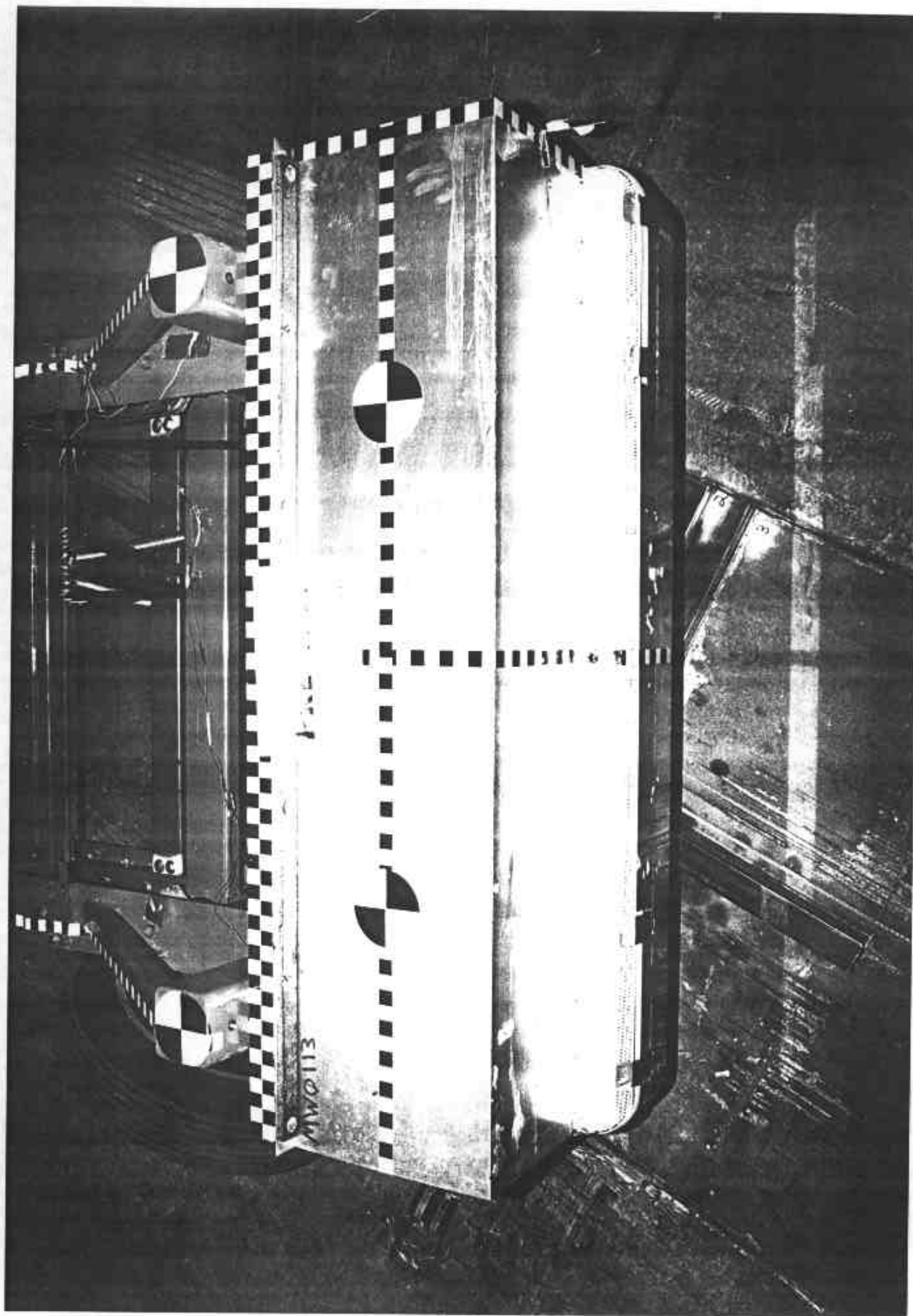


Photo No. A-10 - Pre-Test MDB Top View

A-10

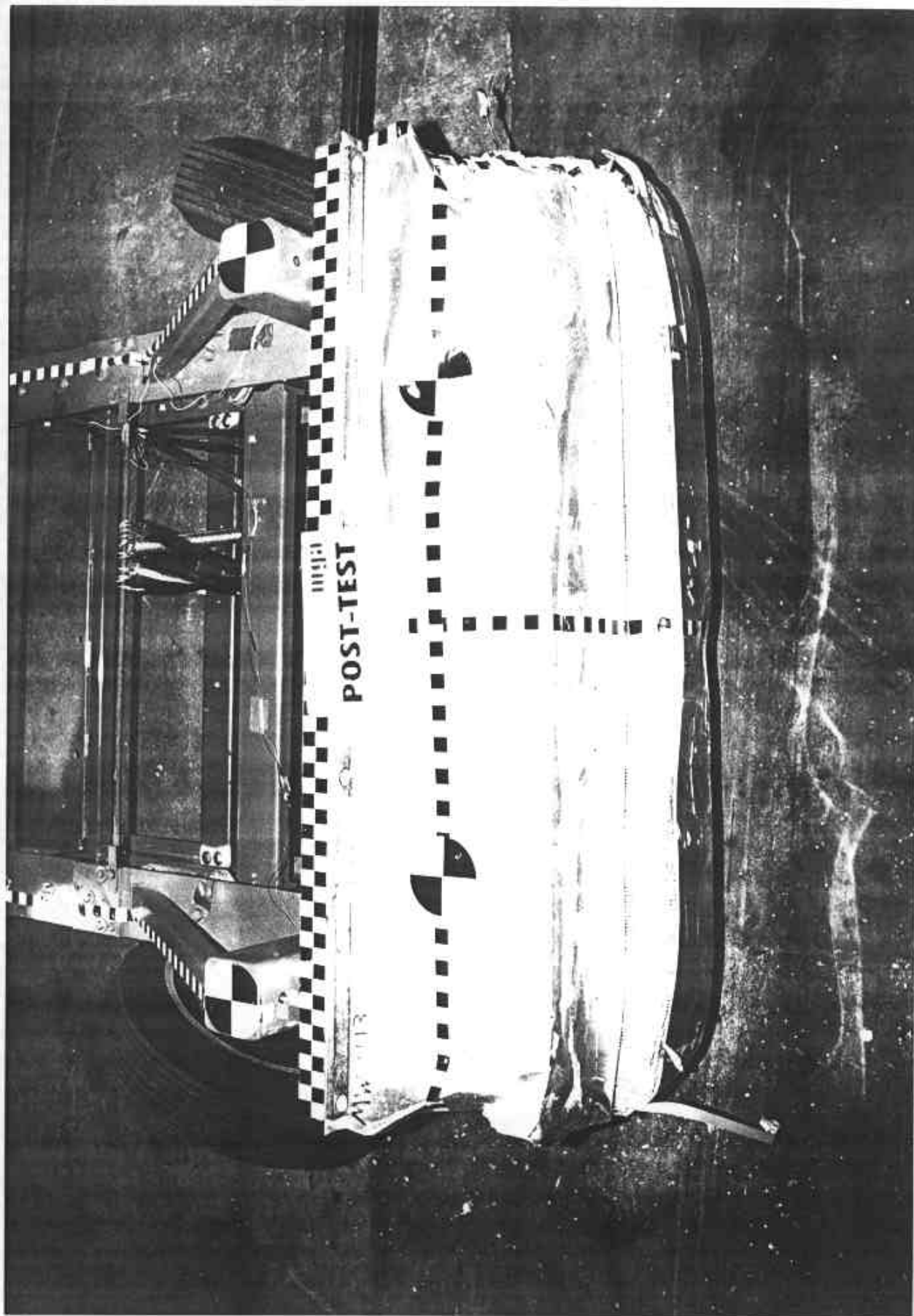


Photo No. A-11 - Post-Test MDB Top View

A-11

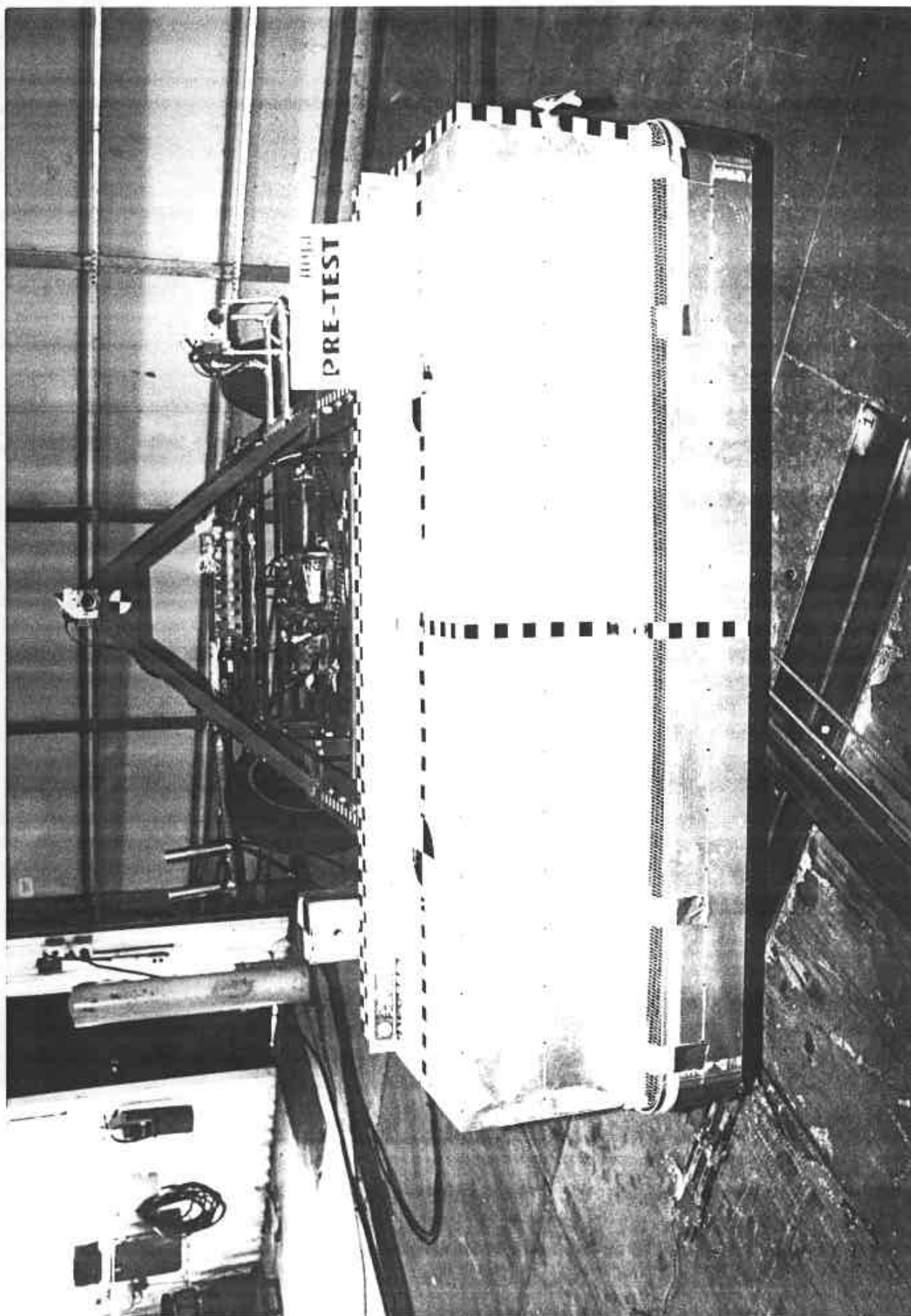
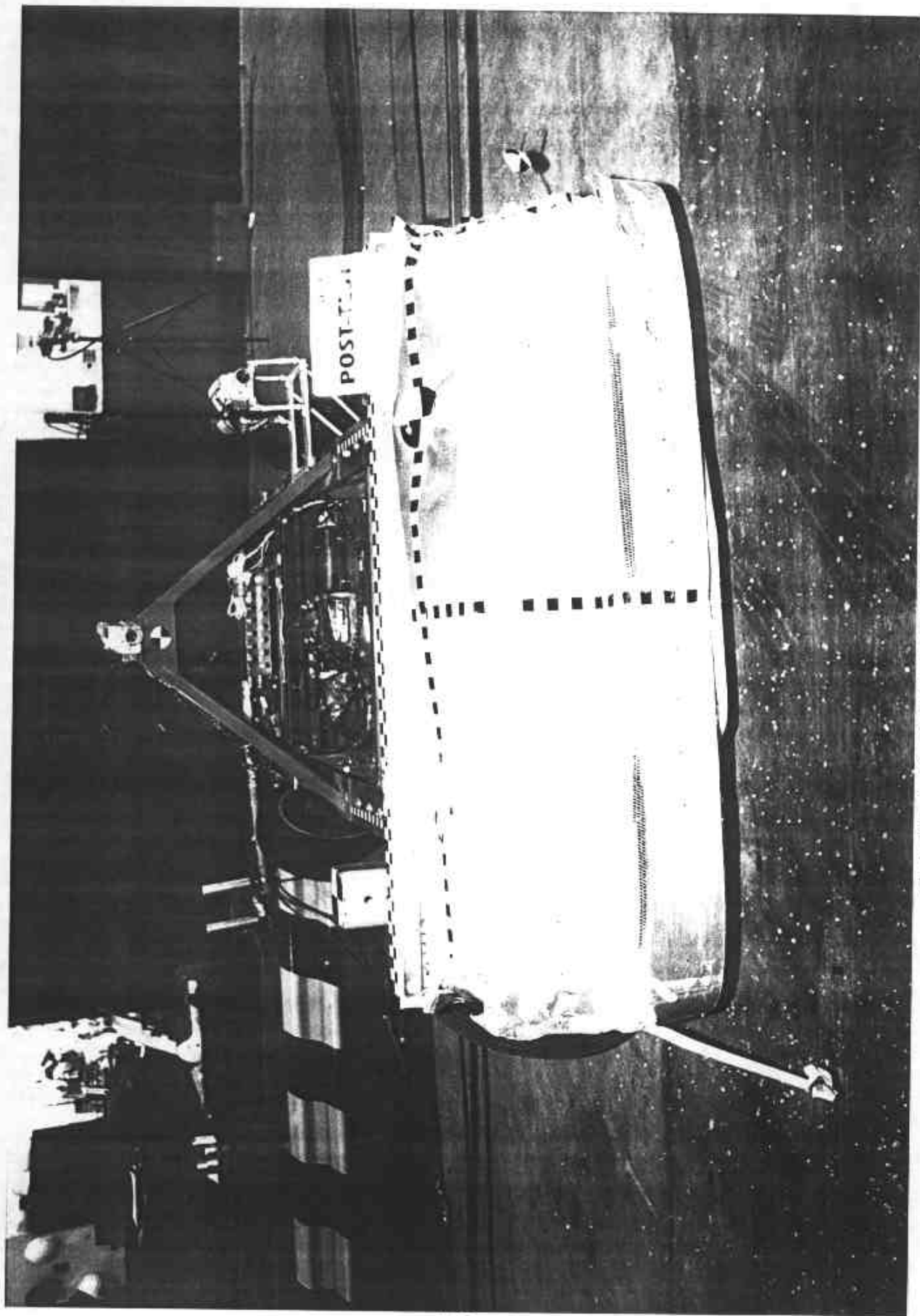


Photo No. A-12 - Pre-Test MDB Front View

A-12



A-13

Photo No. A-13 - Post-Test MDB Front View

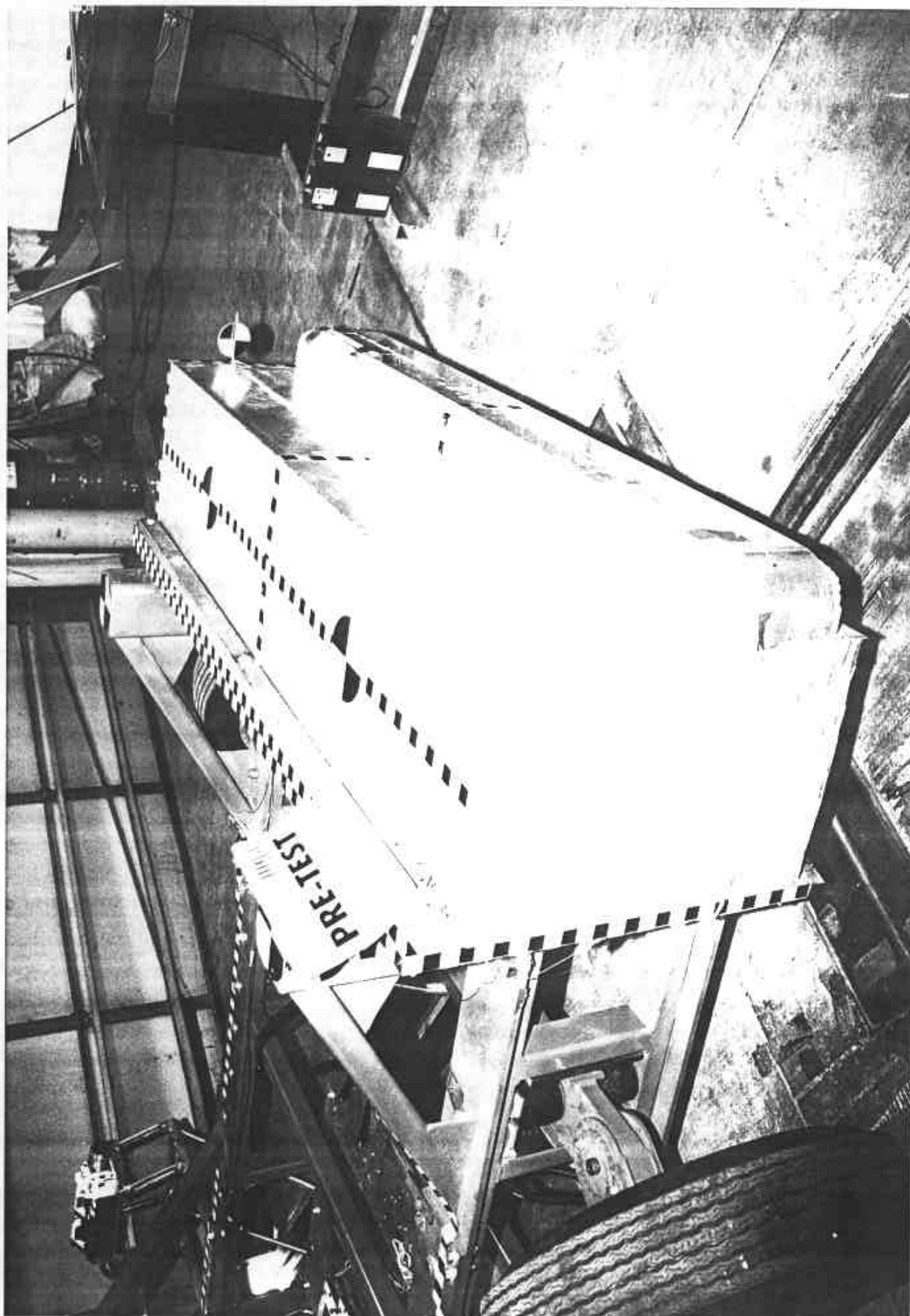


Photo No. A-14 - Pre-Test MDB Right Side View

A-14

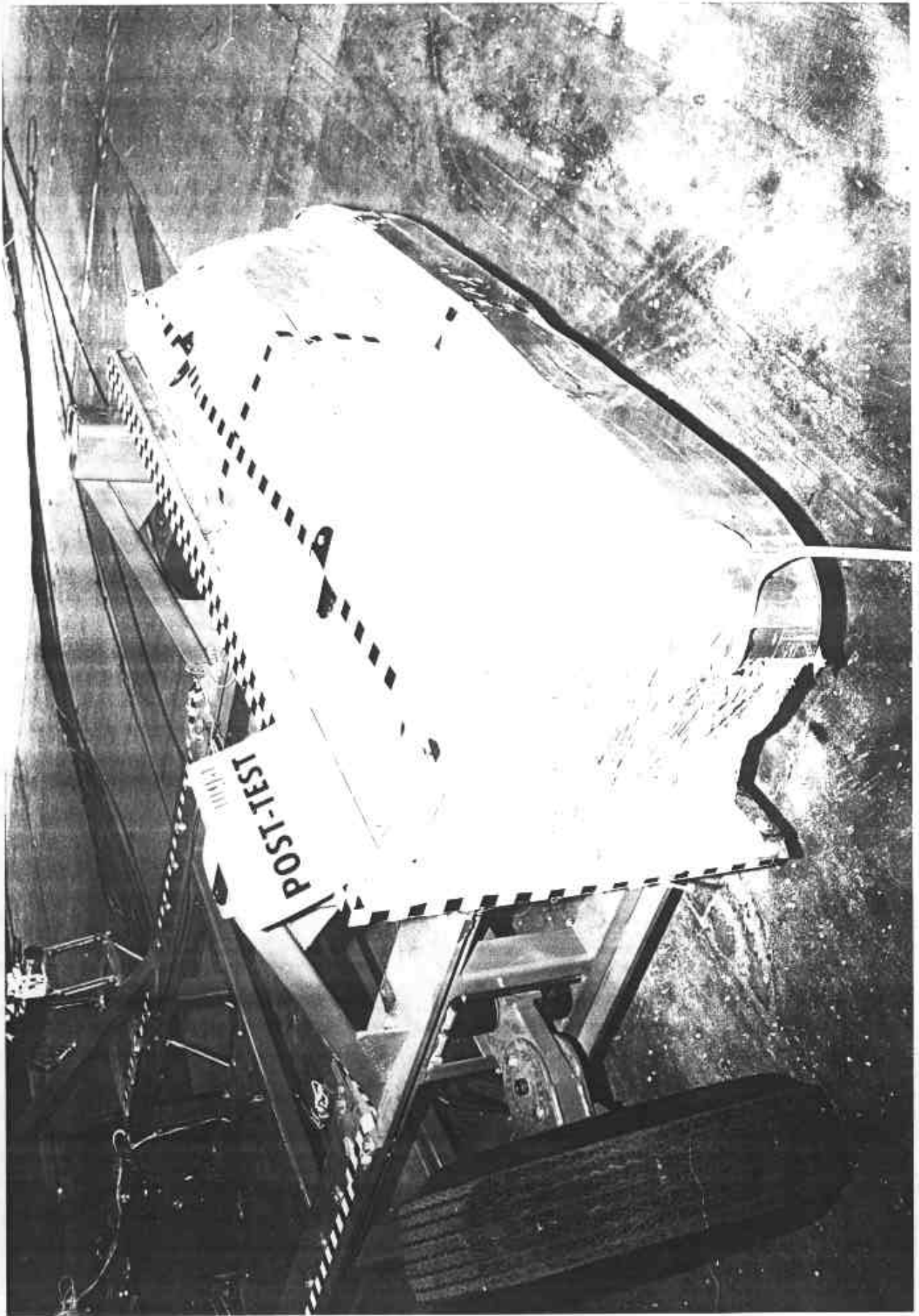


Photo No. A-15 - Post-Test MDB Right Side View

A-15

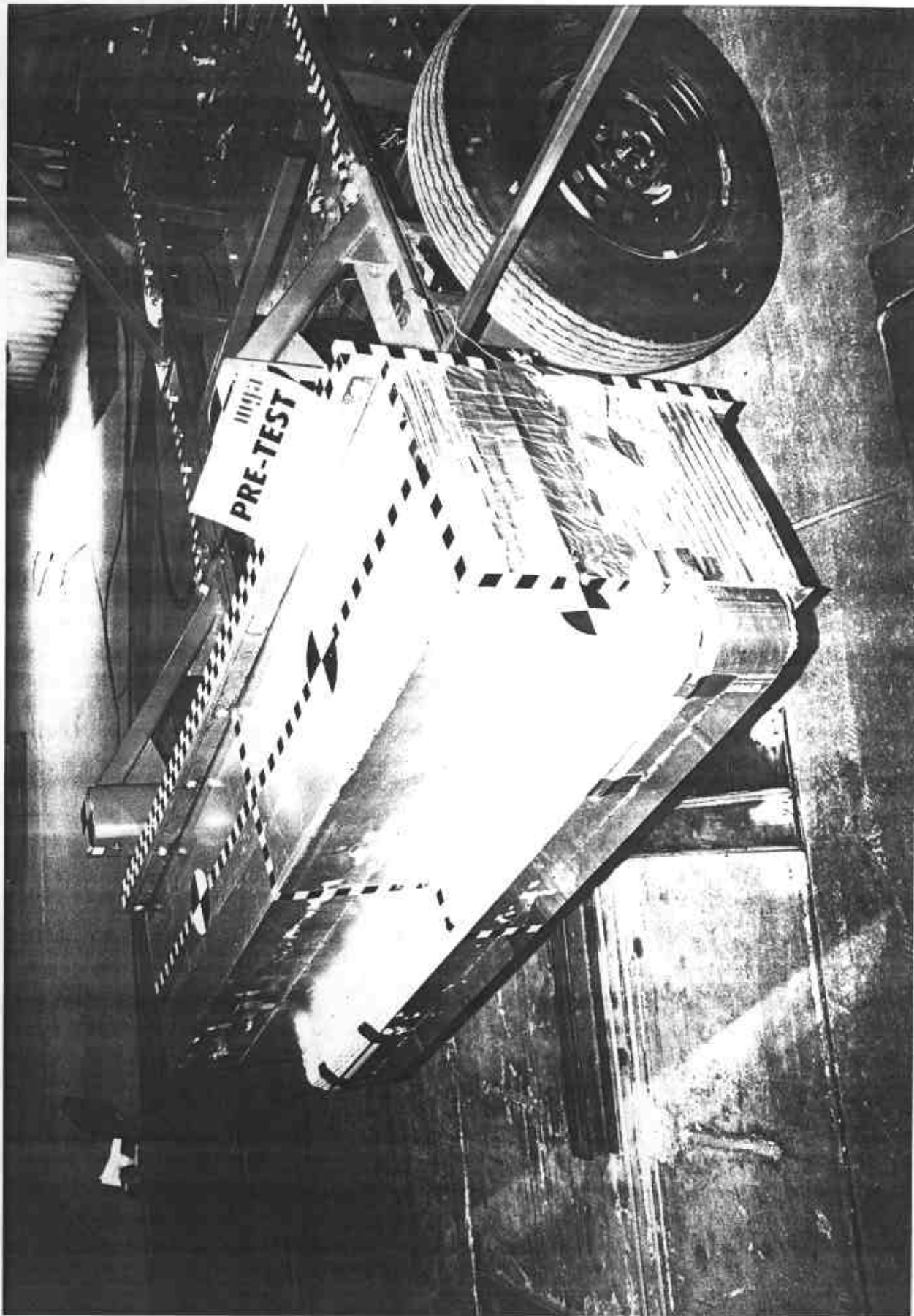


Photo No. A-16 - Pre-Test MDB Left Side View

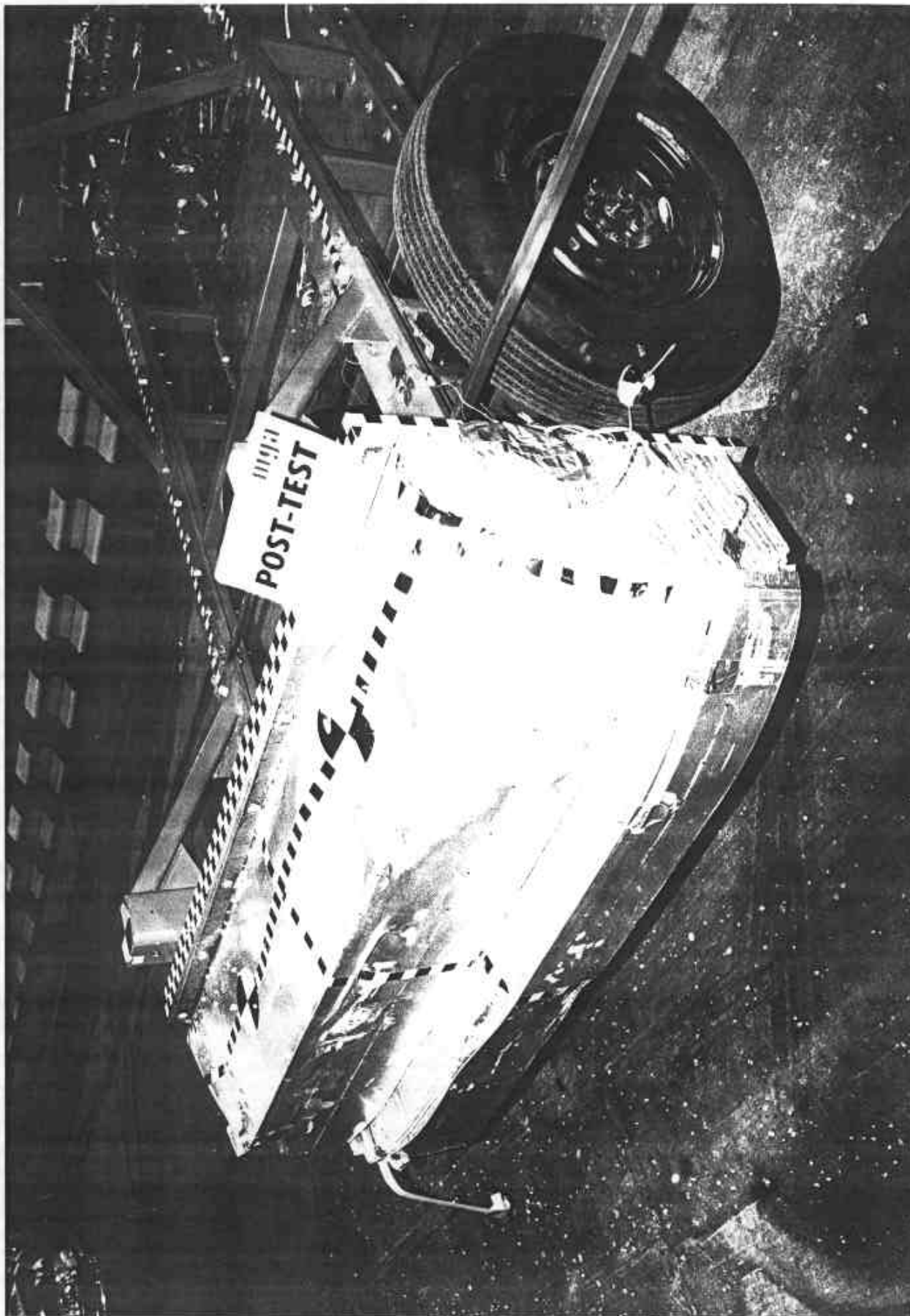


Photo No. A-17 - Post-Test MDB Left Side View

A-17

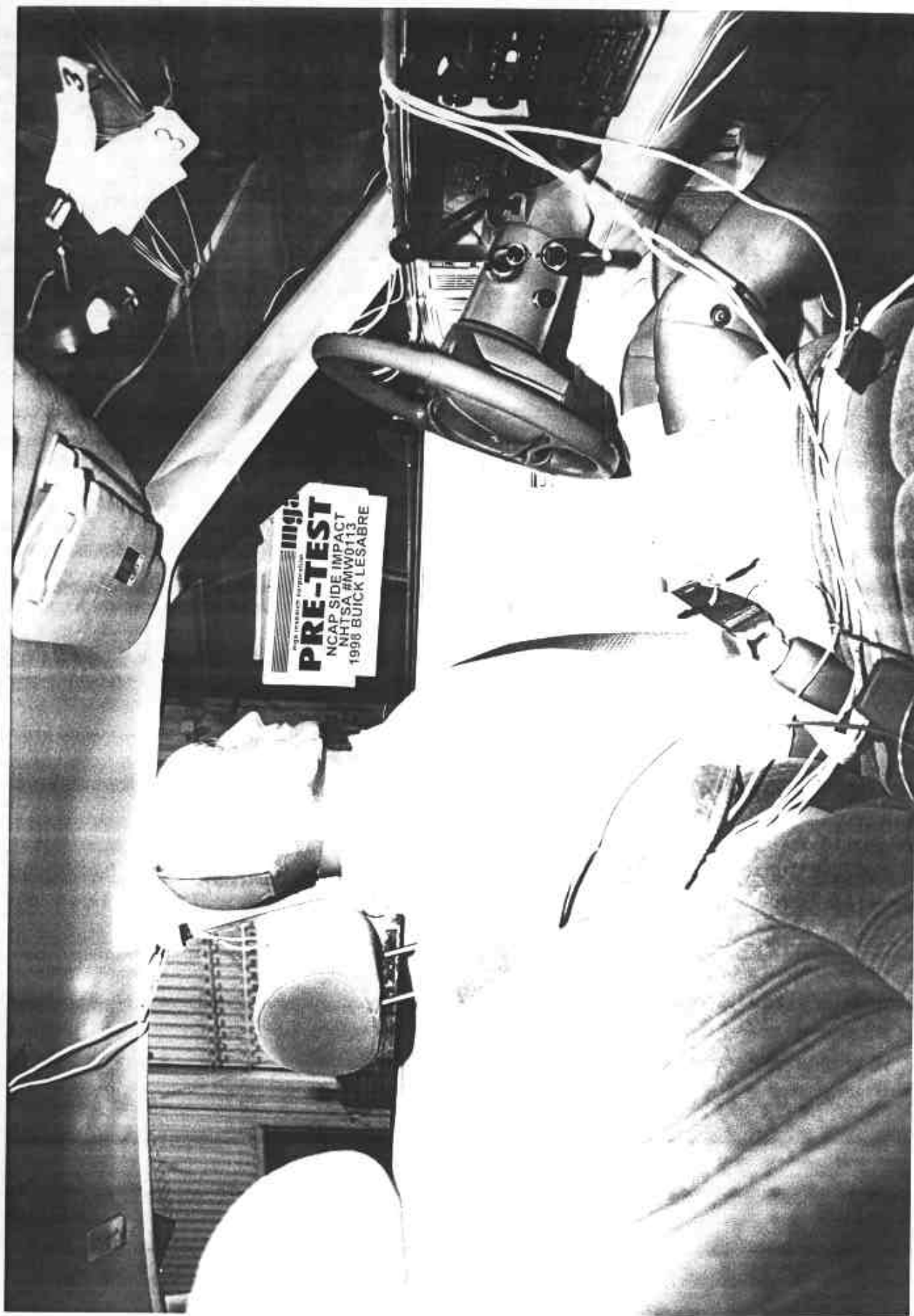


Photo No. A-18 - Pre-Test Driver Dummy Right Side View



Photo No. A-19 - Post-Test Driver Dummy Right Side View

A-19

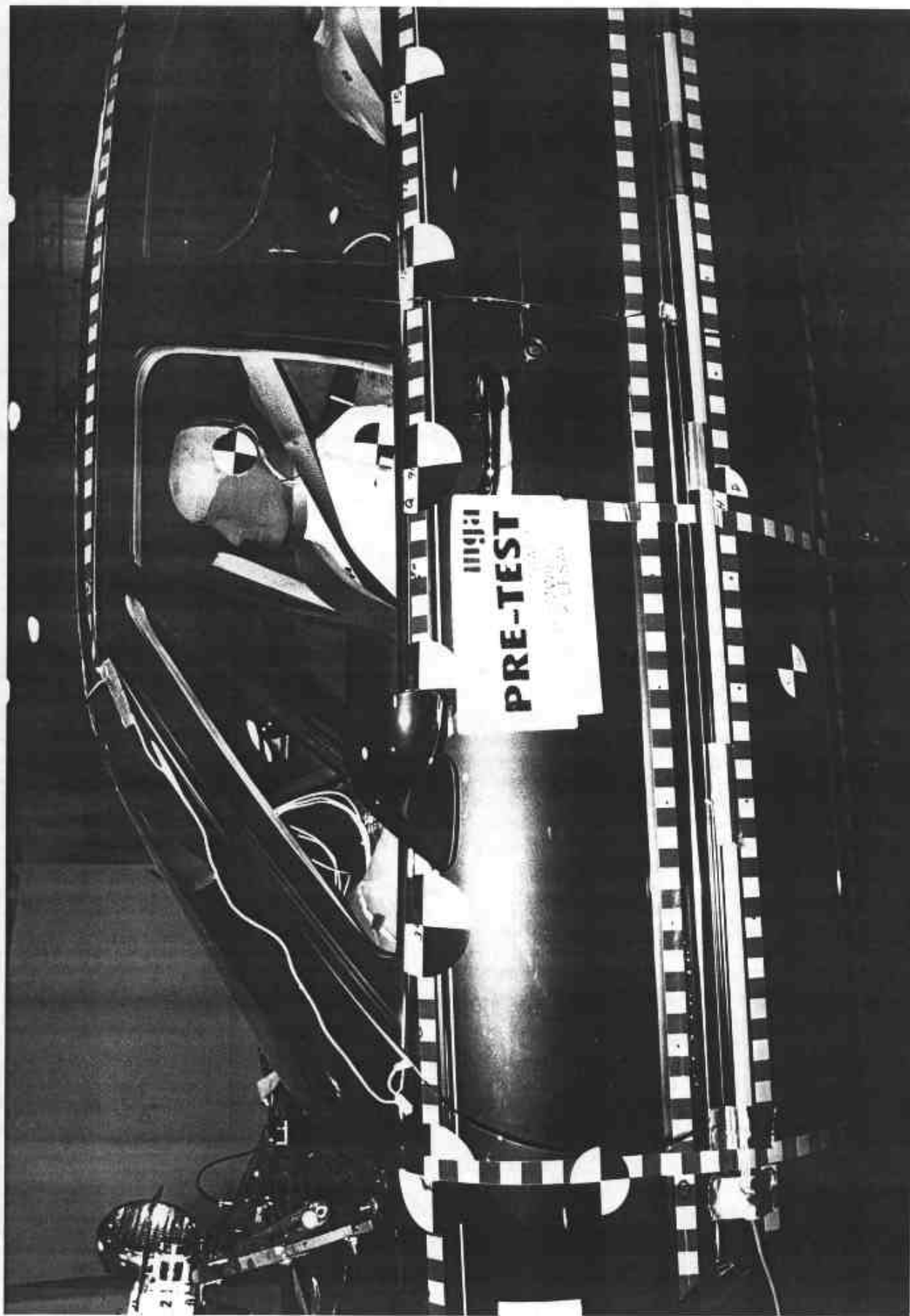


Photo No. A-20 - Pre-Test Driver Dummy Left Side View

A-20

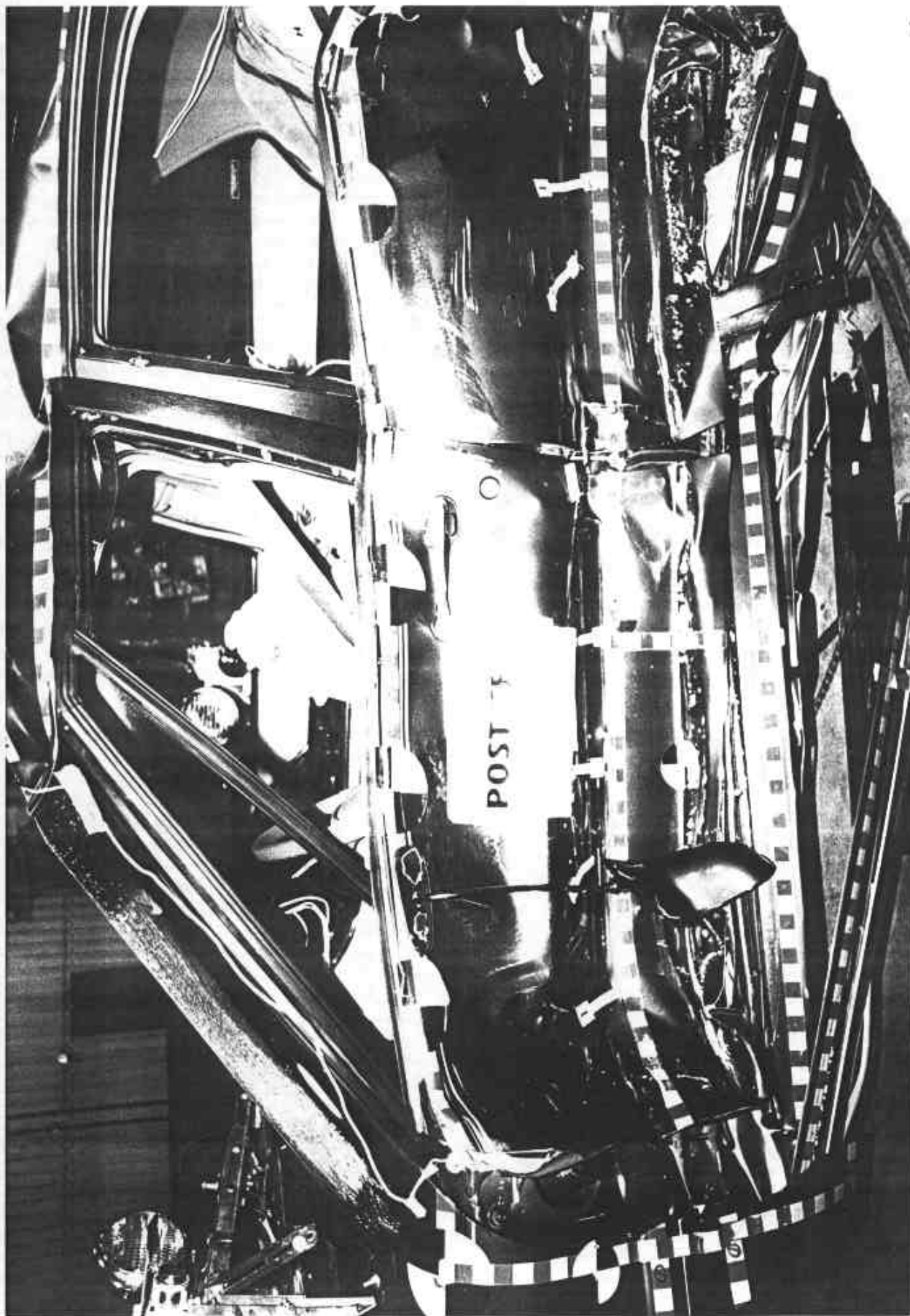


Photo No. A-21 - Post-Test Driver Dummy Left Side View

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Photo No. A-22 - Pre-Test Driver Dummy Left Side View (Door Open)



A-23

Photo No. A-23 - Pre-Test Driver Dummy Shoulder and Door Top View



Photo No. A-25 - Post-Test Driver Dummy Contact



Photo No. A-26 - Post-Test Driver Dummy Contact



Photo No. A-27 - Post-Test Driver Dummy Head Contact

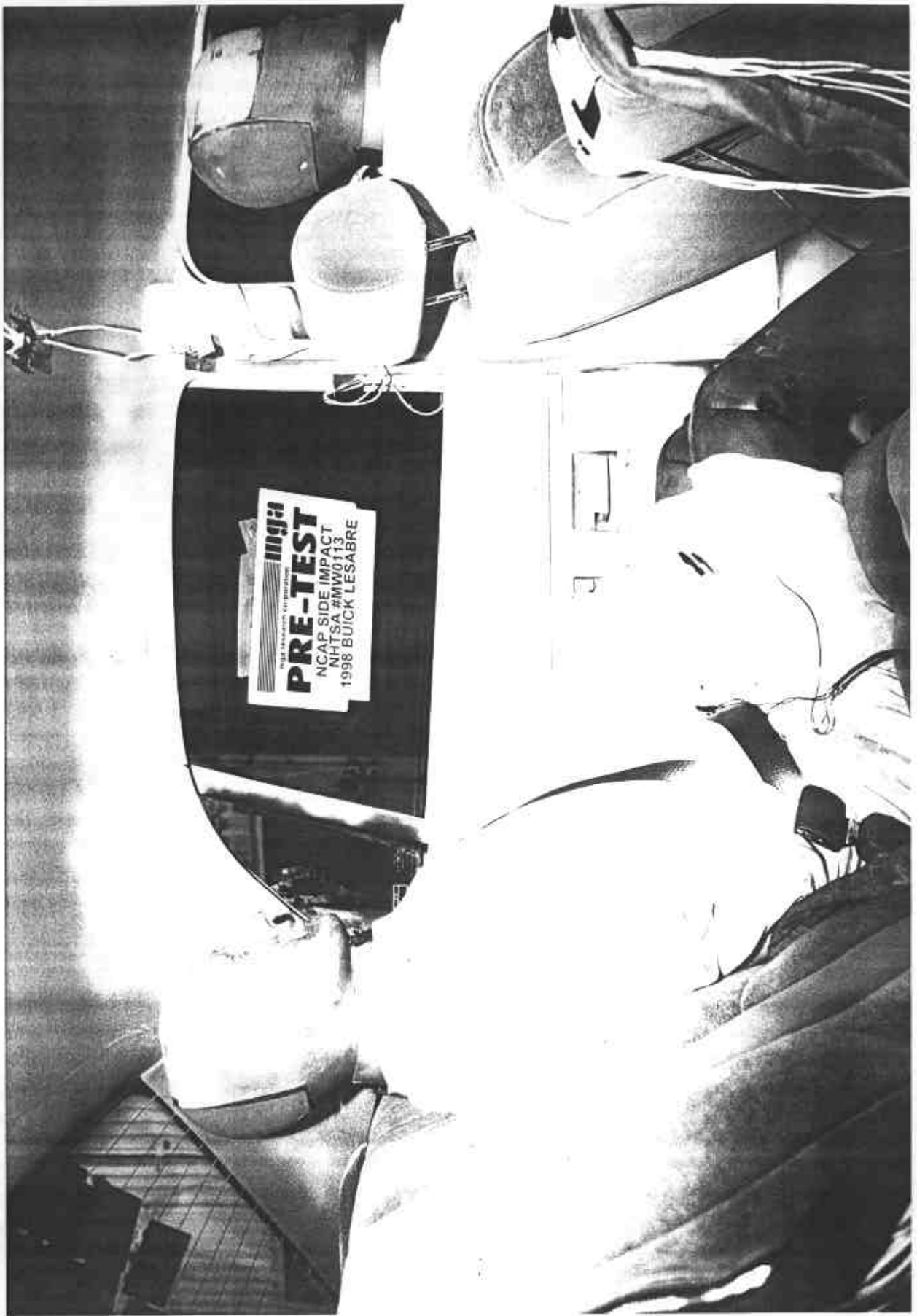


Photo No. A-28 - Pre-Test Passenger Dummy Right Side View

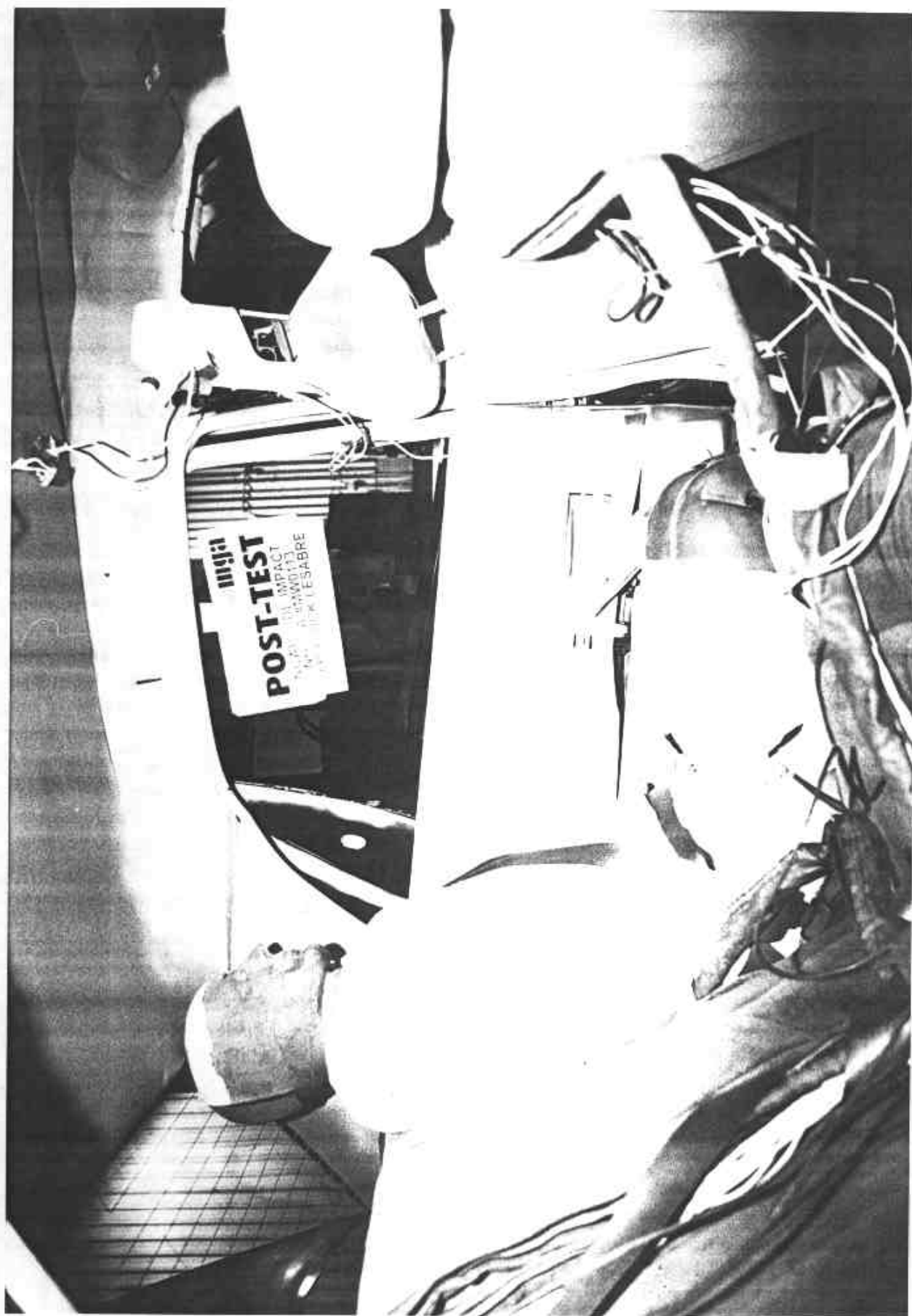
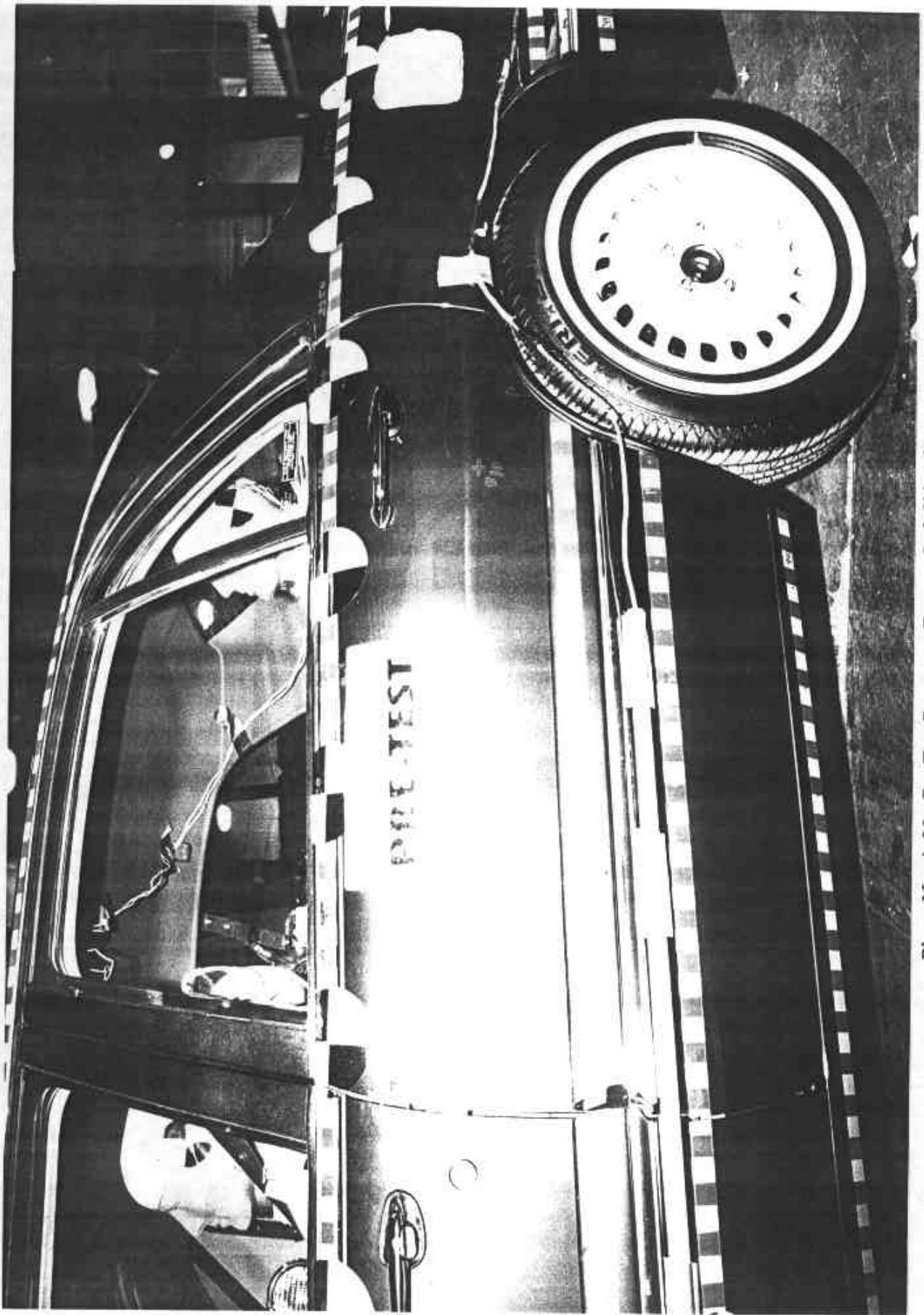


Photo No. A-29 - Post-Test Passenger Dummy Right Side View



A-30

Photo No. A-30 - Pre-Test Passenger Dummy Left Side View

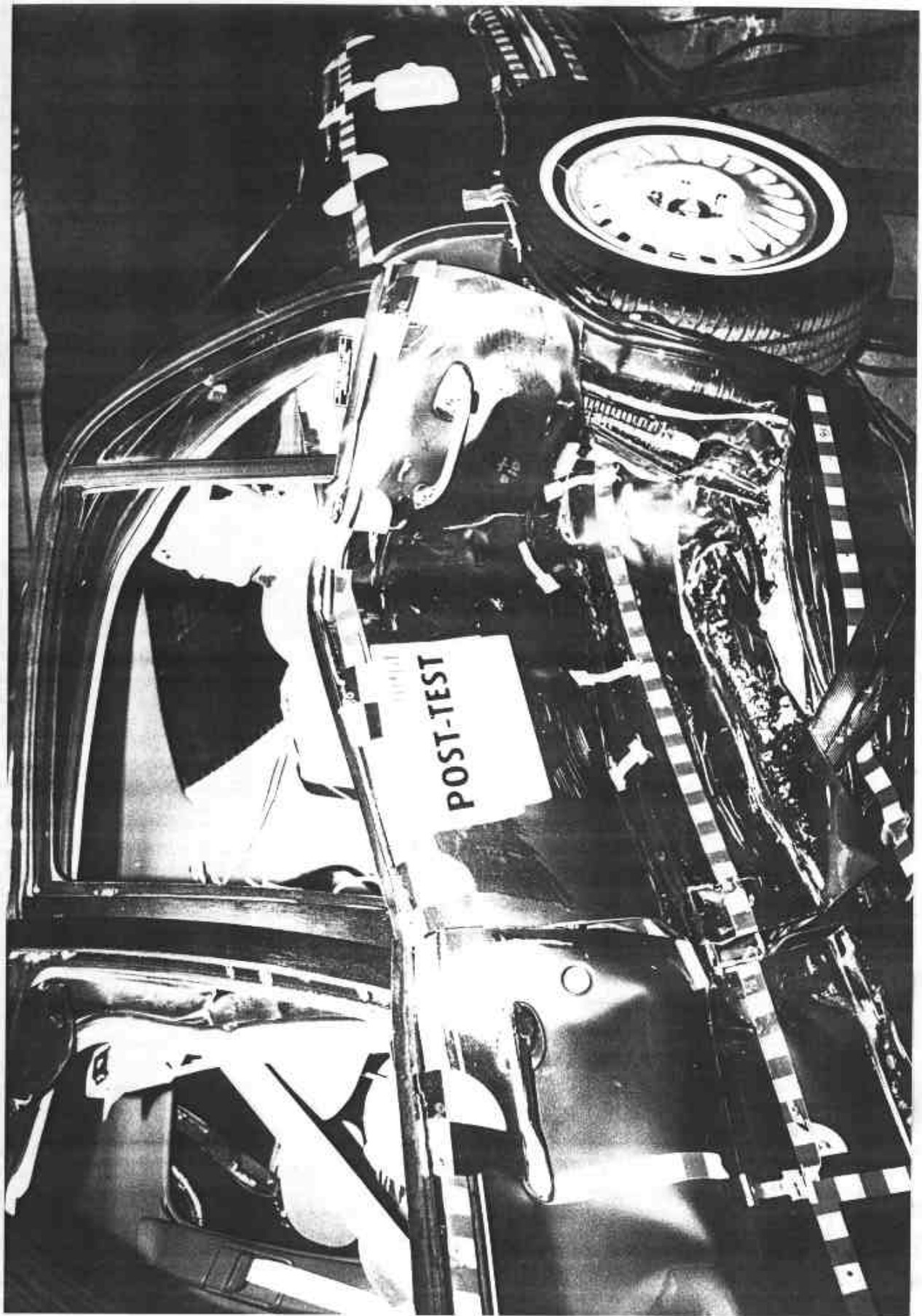


Photo No. A-31 - Post-Test Passenger Dummy Left Side View

A-31

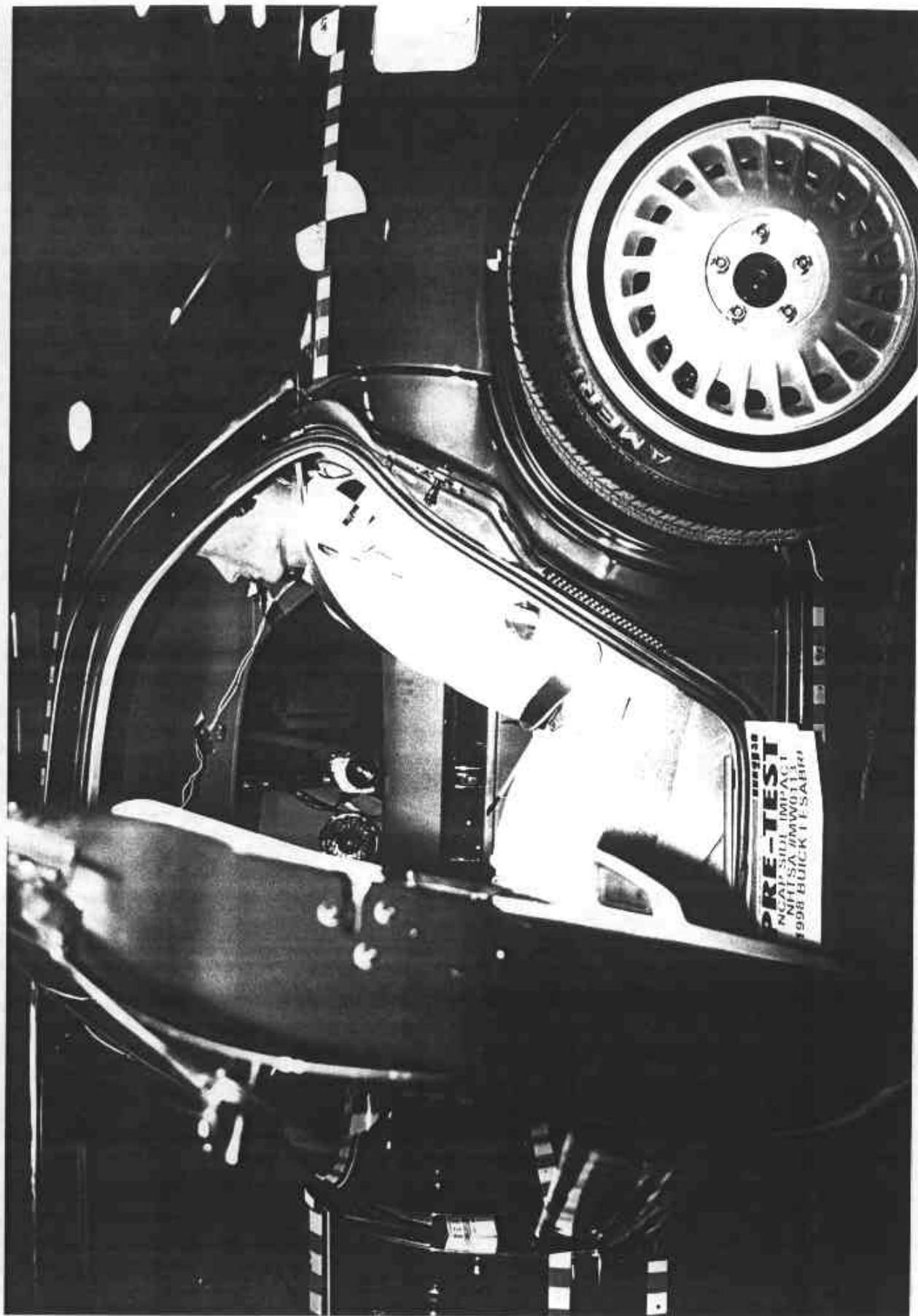


Photo No. A-32 - Pre-Test Passenger Dummy Left Side View (Door Open)

A-32



A-33

Photo No. A-33 - Pre-Test Passenger Dummy Shoulder and Door Top View



Photo No. A-34 - Post-Test Passenger Dummy Shoulder and Door Top View

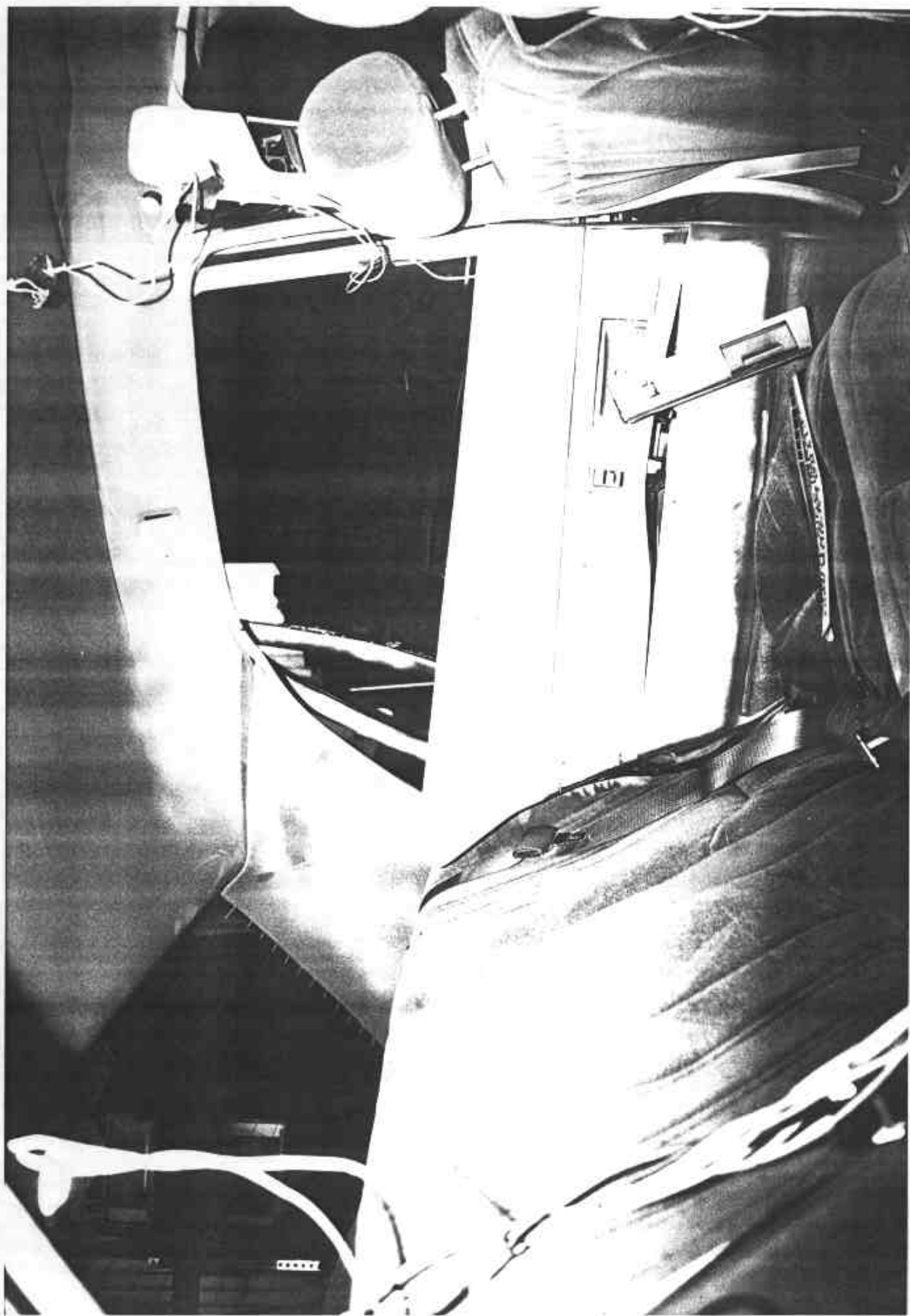


Photo No. A-35 - Post-Test Passenger Dummy Contact

A-35



Photo No. A-36 - Post-Test Passenger Dummy Head Contact

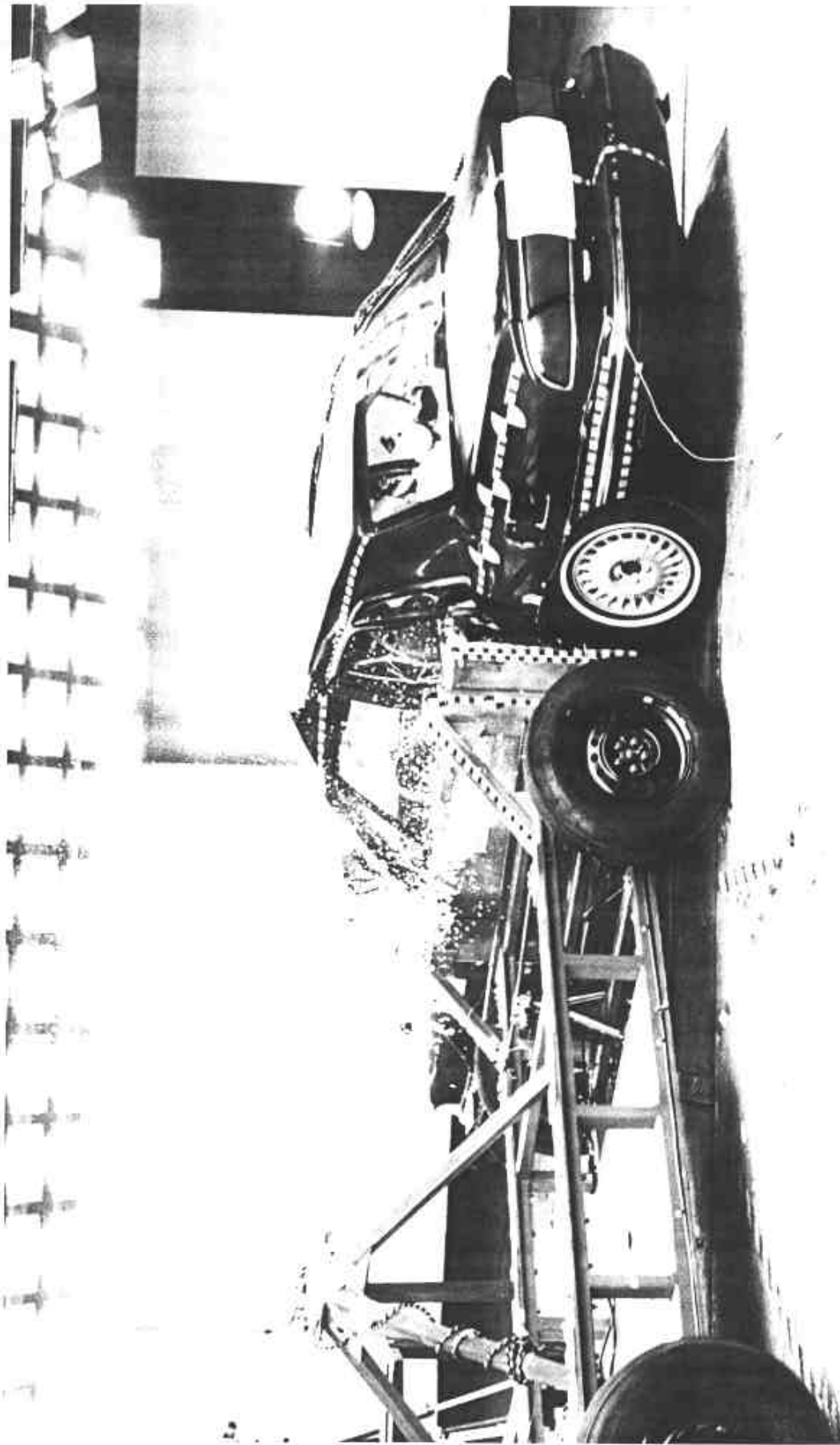
A-36



Photo No. A-37 - Pre-Test Left Front Impact Point on Vehicle



Photo No. A-38 - Post-Test Left Front Impact Point on Vehicle



A-39

Photo No. A-39 - Impact

VEHICLE CAP. WT.
LBS
1076
GROSS WEIGHT

PRESSURE
PSI
PSI
PSI



MADE BY GENERAL MOTORS CORP

DATE
07/97

GVWR
2058 KG
4538 LB

GAWR FRT
1136 KG
2505 LB

GAWR RR
922 KG
2033 LB

THIS VEHICLE CONFORMS TO ALL APPLICABLE U.S. FEDERAL MOTOR
VEHICLE SAFETY, BUMPER, AND THEFT PREVENTION STANDARDS IN
EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE.

1G4HP52K2WH402313

TYPE: PASS CAR

TIRE - LOADING INFORMATION



VEHICLE CAP. WT.

OCCUPANTS

FRT.	CTR.	RR.	TOTAL	KG	LBS
3	0	3	6	488	1076

MAX. LOADING @ GVWR SAME AS VEHICLE CAPACITY WEIGHT.
1G4HP52K2WH402313

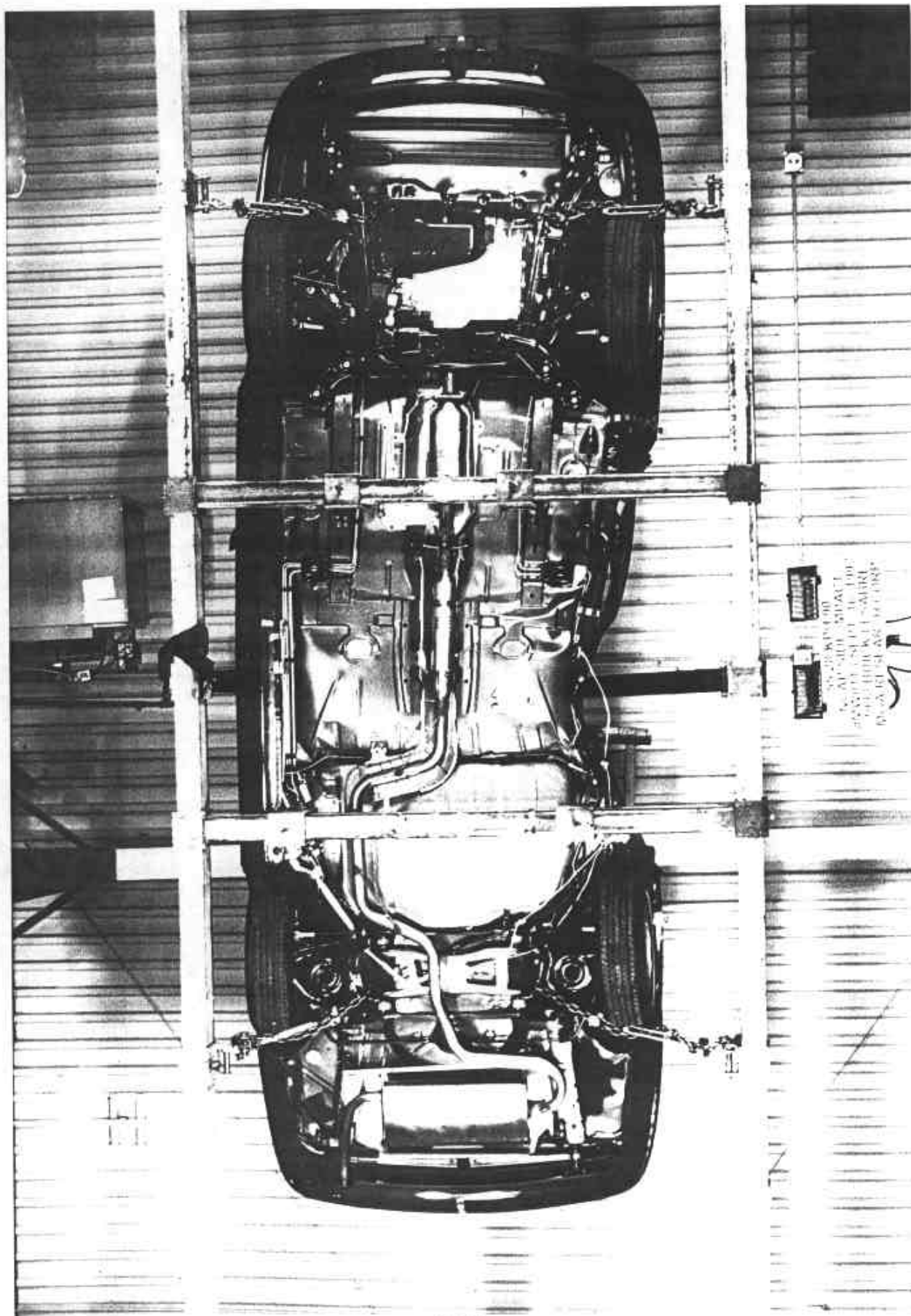
MODEL: HP69 HAA

TIRE SIZE	SPEED RTG	COLD TIRE PRESSURE
FRT P205/70R15	S	210KPA(30PSI)
RR P205/70R15	S	210KPA(30PSI)
SPA T125/70D15	M	420KPA(60PSI)

IF TIRES ARE HOT, ADD 29KPA(4LBS)
SEE OWNER'S MANUAL FOR MORE INFORMATION

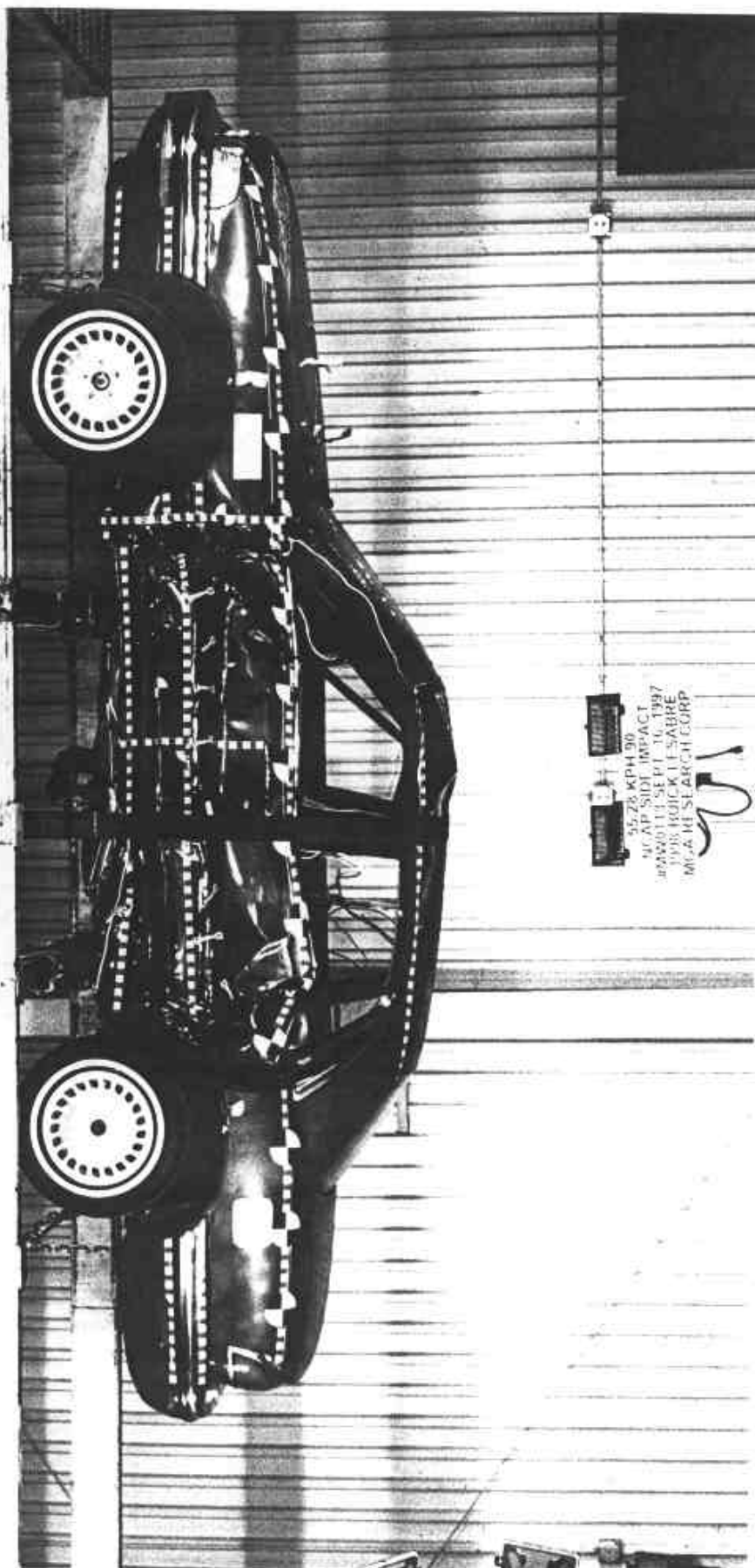
MFD BY GENERAL MOTORS CORP
DATE 07/97
GVWR 2058 KG 4538 LB
GAWR FRT 1136 KG 2505 LB
GAWR RR 922 KG 2033 LB
THIS VEHICLE CONFORMS TO ALL APPLICABLE U.S. FEDERAL MOTOR VEHICLE SAFETY, BUMPER, AND THEFT PREVENTION STANDARDS IN EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE
1G4HP52K2WH402313 TYPE PASS CAR





A-42

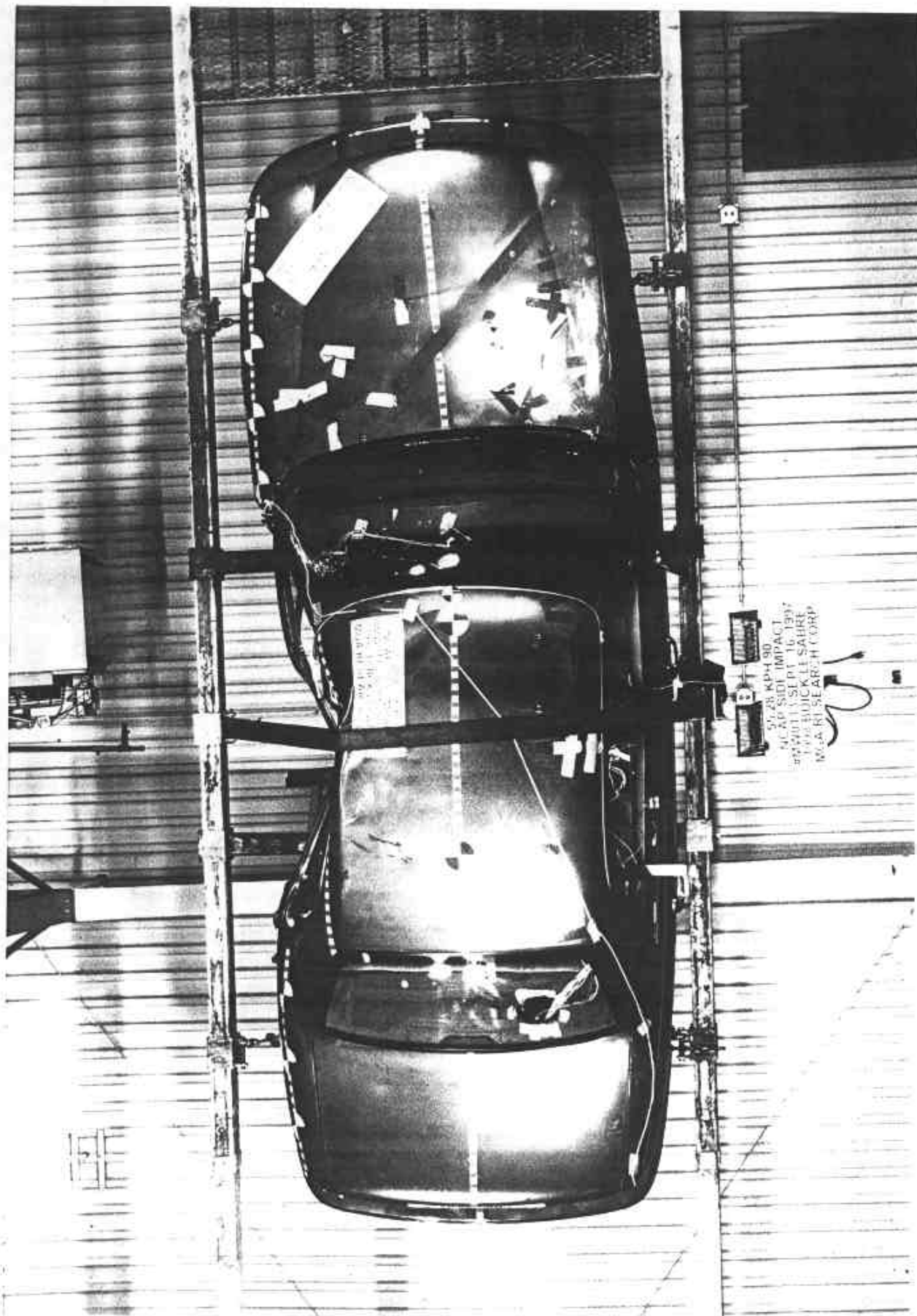
Photo No. A-42 - Rollover 90°



55.28 KPH 30
NCAI SIDE IMPACT
JANUARY 1997
1995 BUICK LESABRE
W.A.M. SEARCH CORP.

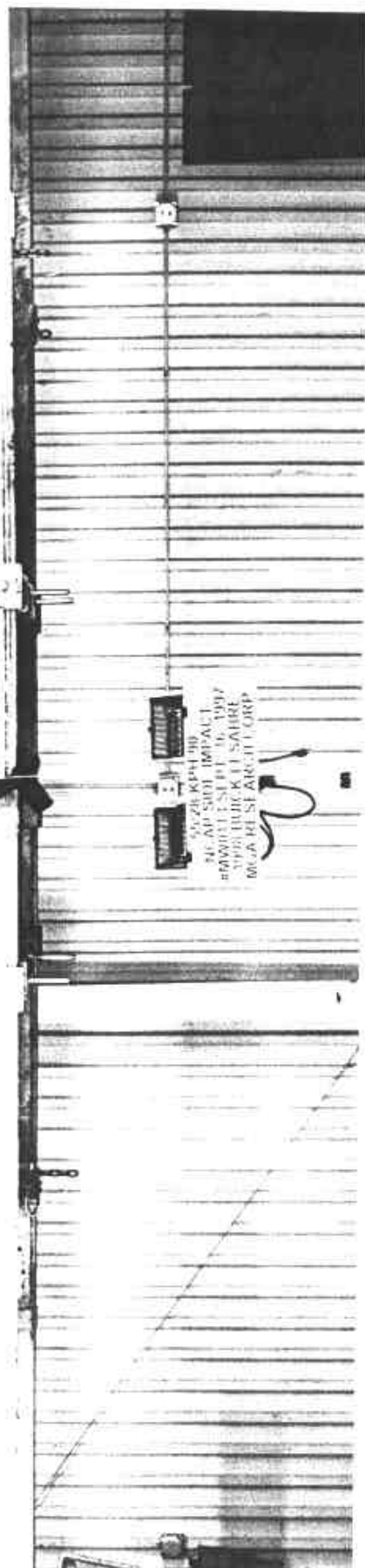
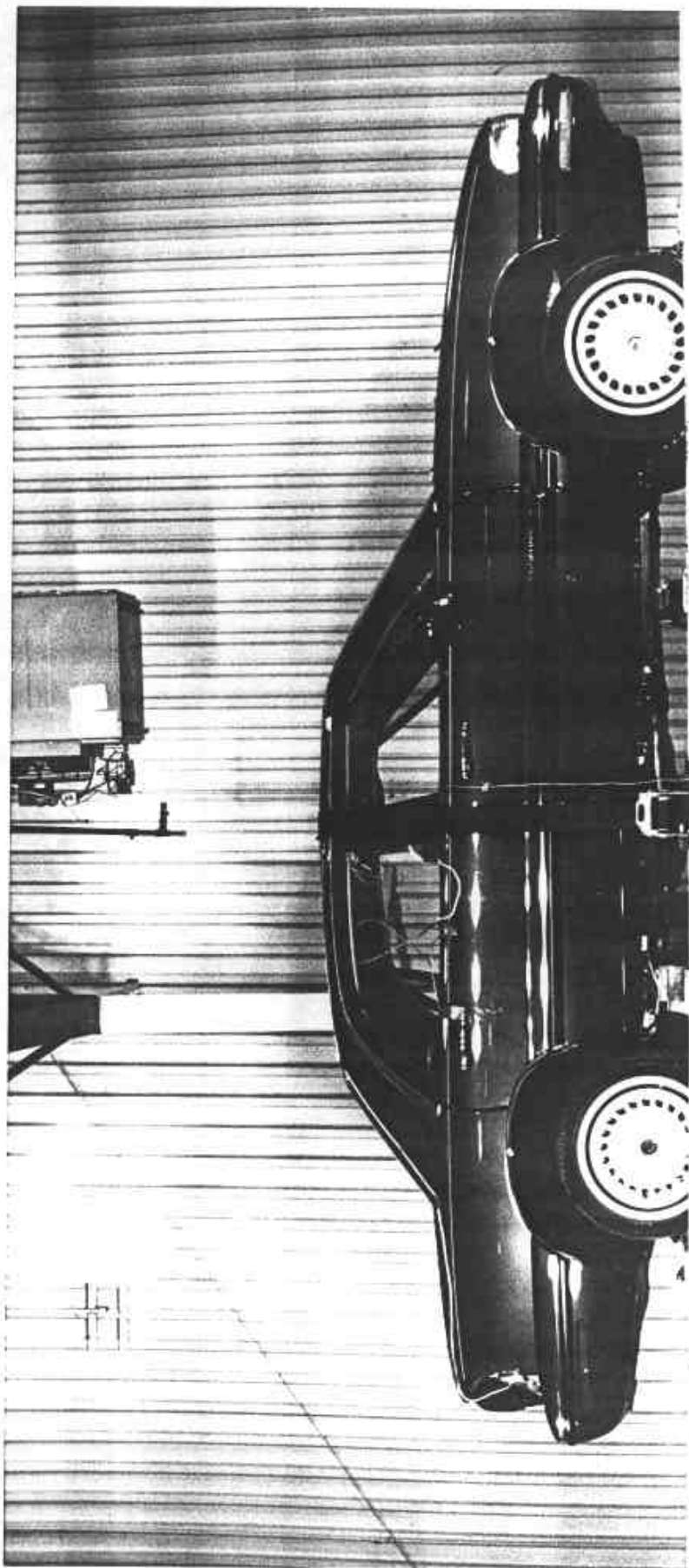
A-43

Photo No. A-43 - Rollover 180°



A-44

Photo No. A-44 - Rollover 270°



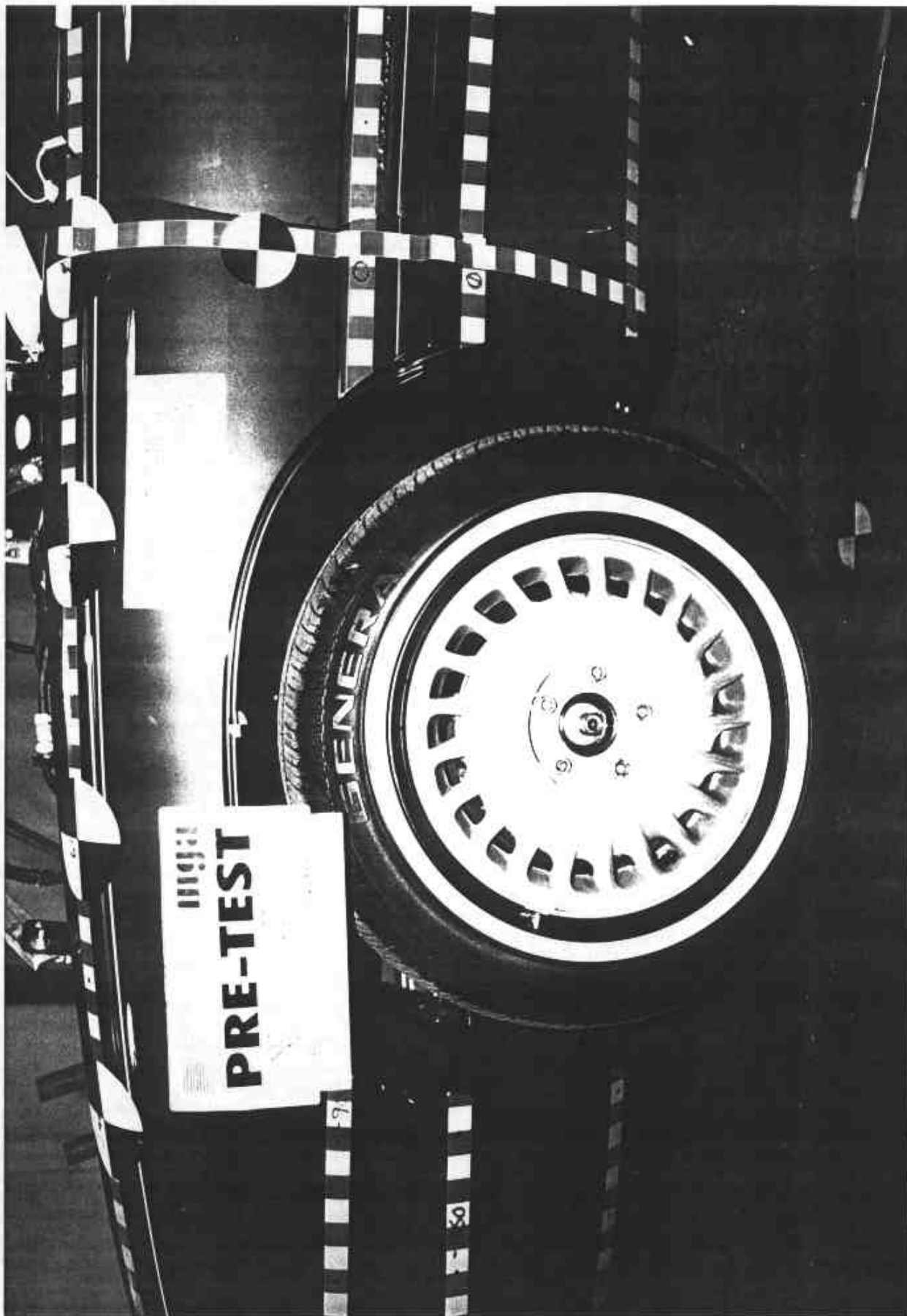


Photo No. A-46 - Left Front Attitude Point

A-46



Photo No. A-47 - Right Front Attitude Point

A-47

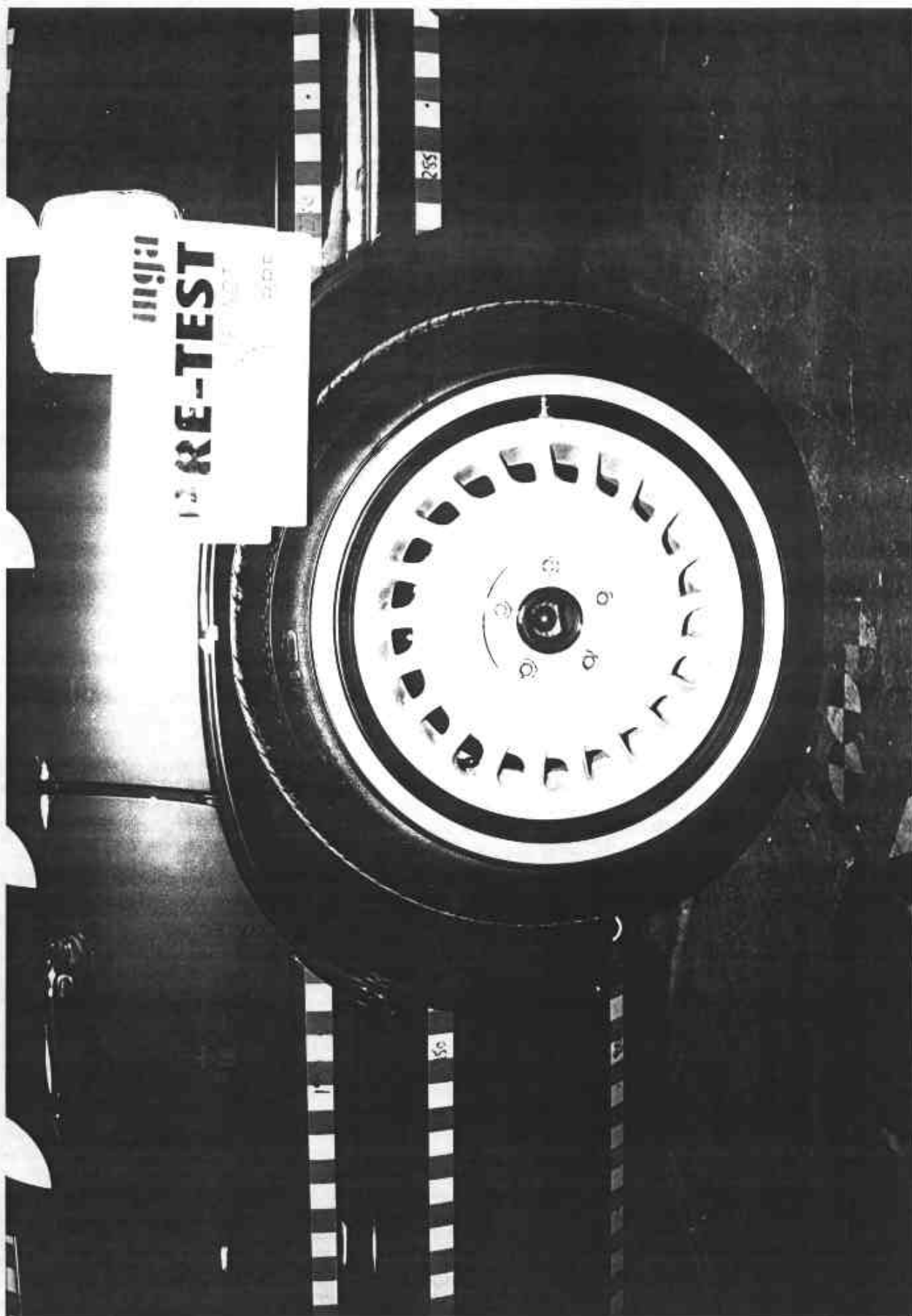


Photo No. A-48 - Left Rear Attitude Point

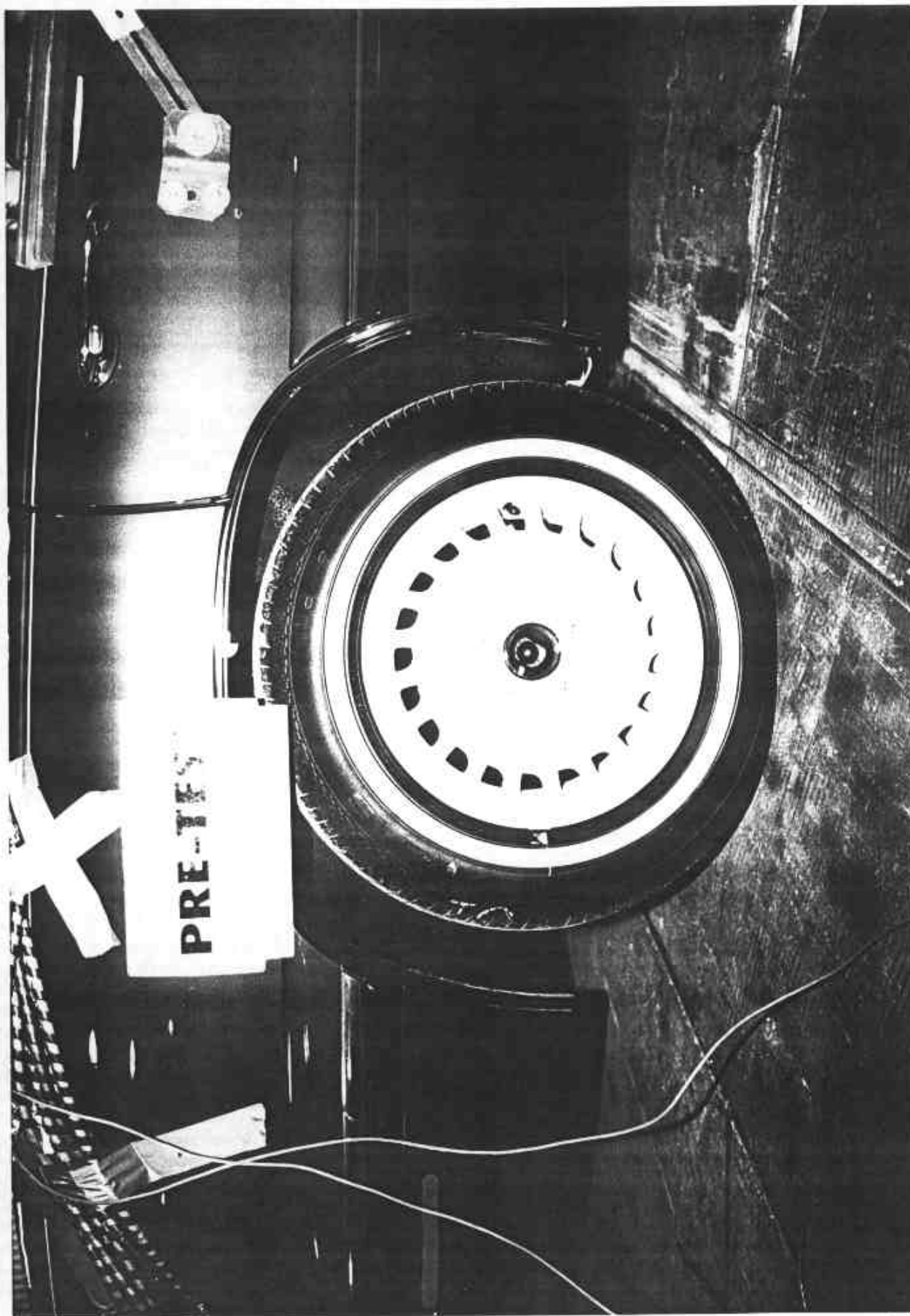
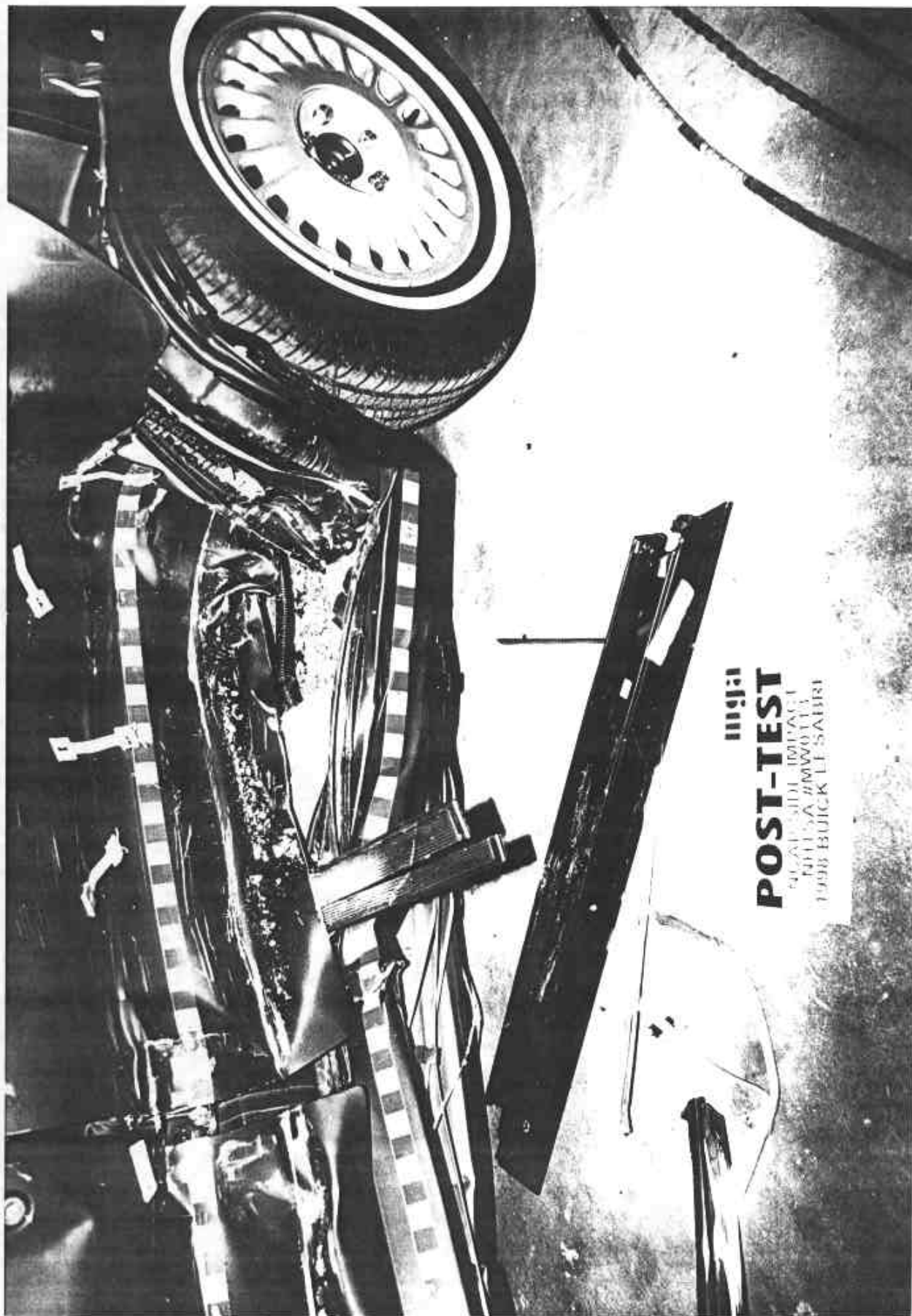


Photo No. A-49 - Right Rear Attitude Point

A-49



ingia
POST-TEST
LOCAL SIDE IMPACT
TEST SA #MV0711
1998 BUICK LESABRE

Photo No. A-50 - Door Sill and Rocker Separation

A-50

APPENDIX B - VEHICLE AND SID RESPONSE DATA

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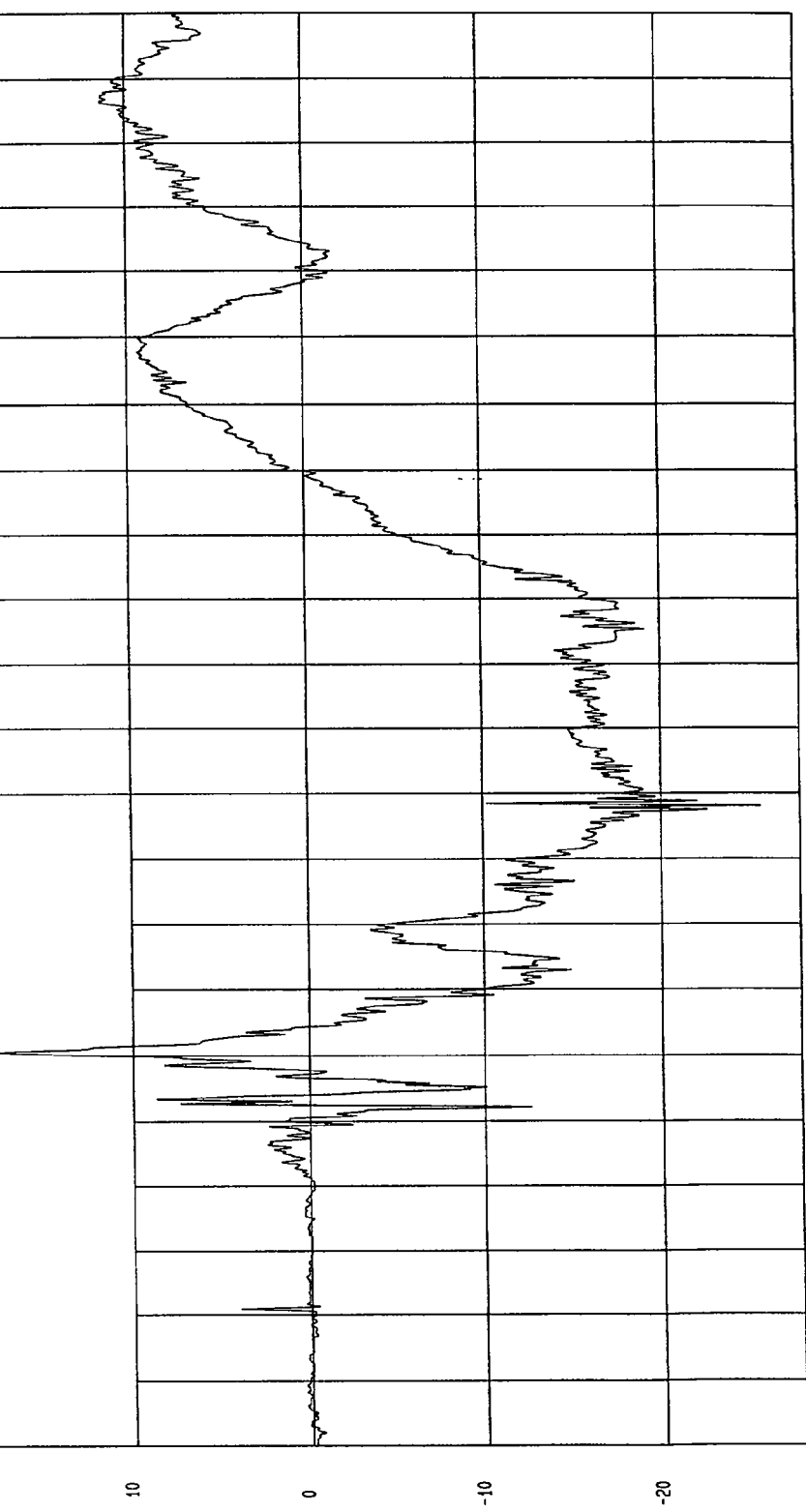
TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -25.70 G'S at 78 msec Maximum = 17.63 G'S at 41 msec

DRIVER HEAD X ACCELERATION

1 897107AF.A12 Filterclass (1000)



MOA Research
09-15-1997 15:45

TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

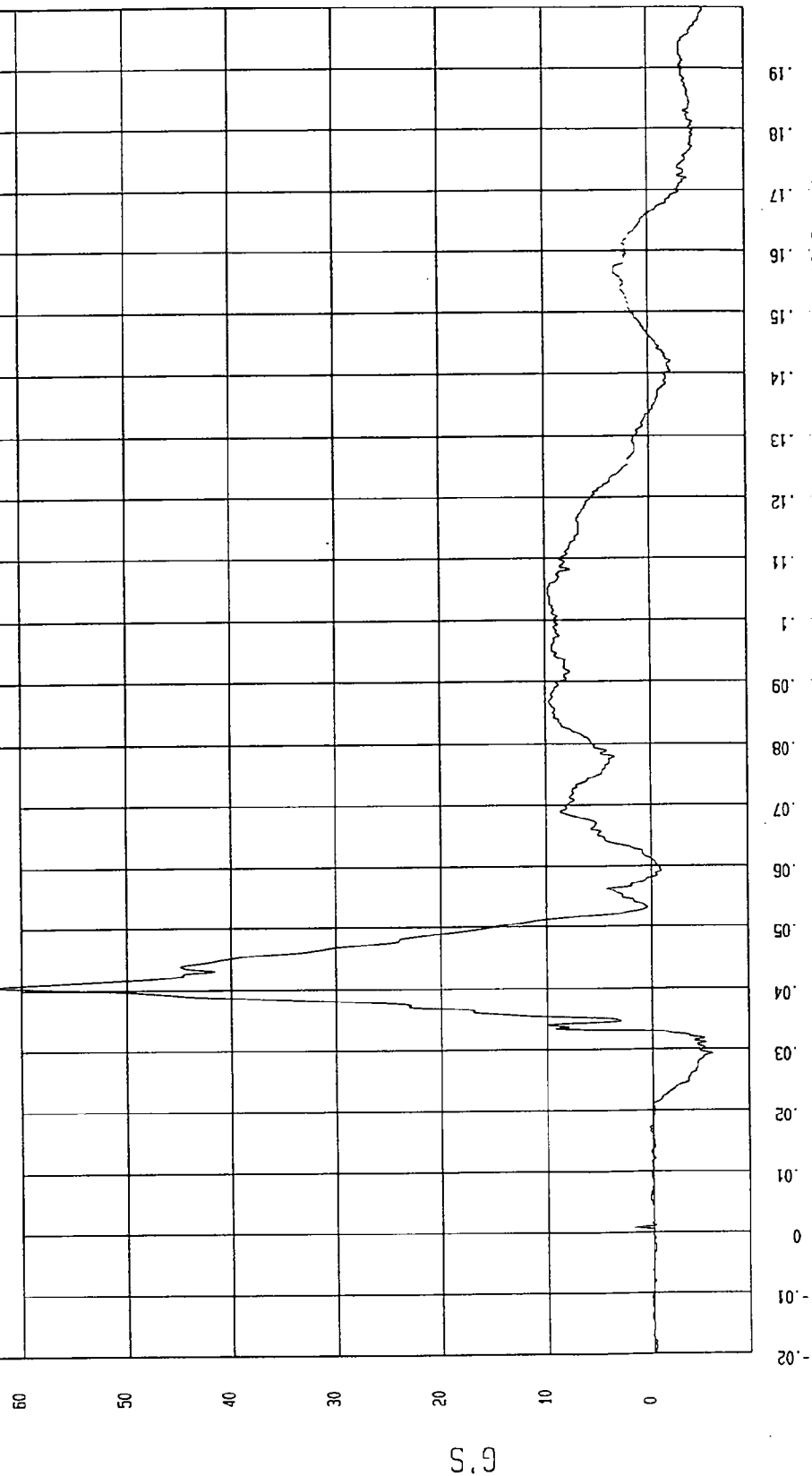
COMPONENT: 1998 BUICK LESABRE 4 DOOR (MWO113) Speed: 38 MPH 61.2 KPH

Minimum = -5.53 G'S at 29 msec

Maximum = 62.46 G'S at 41 msec

DRIVER HEAD Y ACCELERATION

1 ——— B97107AF.A13 FilterClass (1000)



VCA Research
09-15-1997 15.45

TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

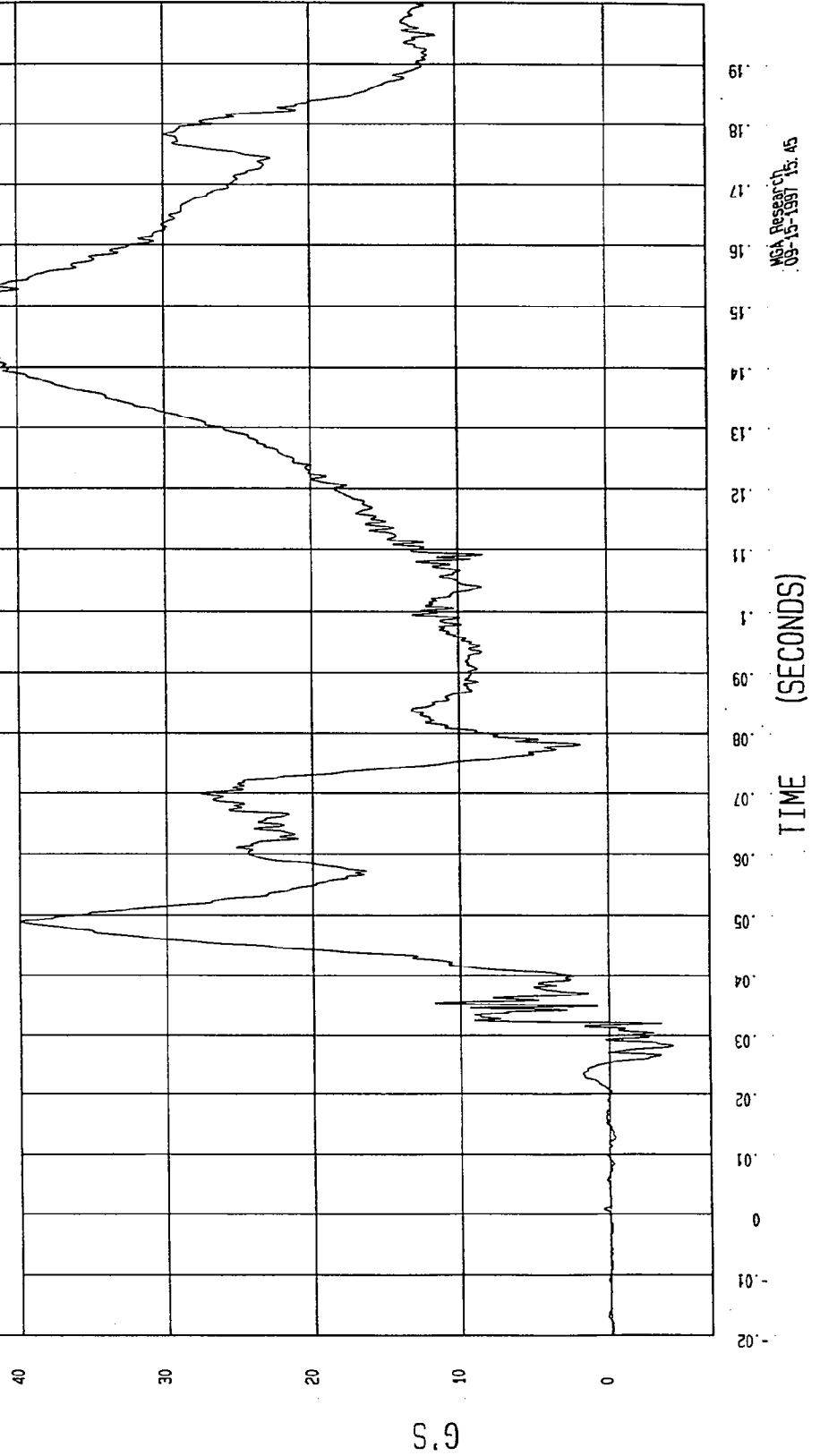
COMPONENT: 1998 BUICK LeSABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -4.35 G'S at 28 msec

Maximum = 44.01 G'S at 148 msec

DRIVER HEAD Z ACCELERATION

1 897107AF.A14 Filterclass (1000)



MGA Research
09-15-1997 15:45

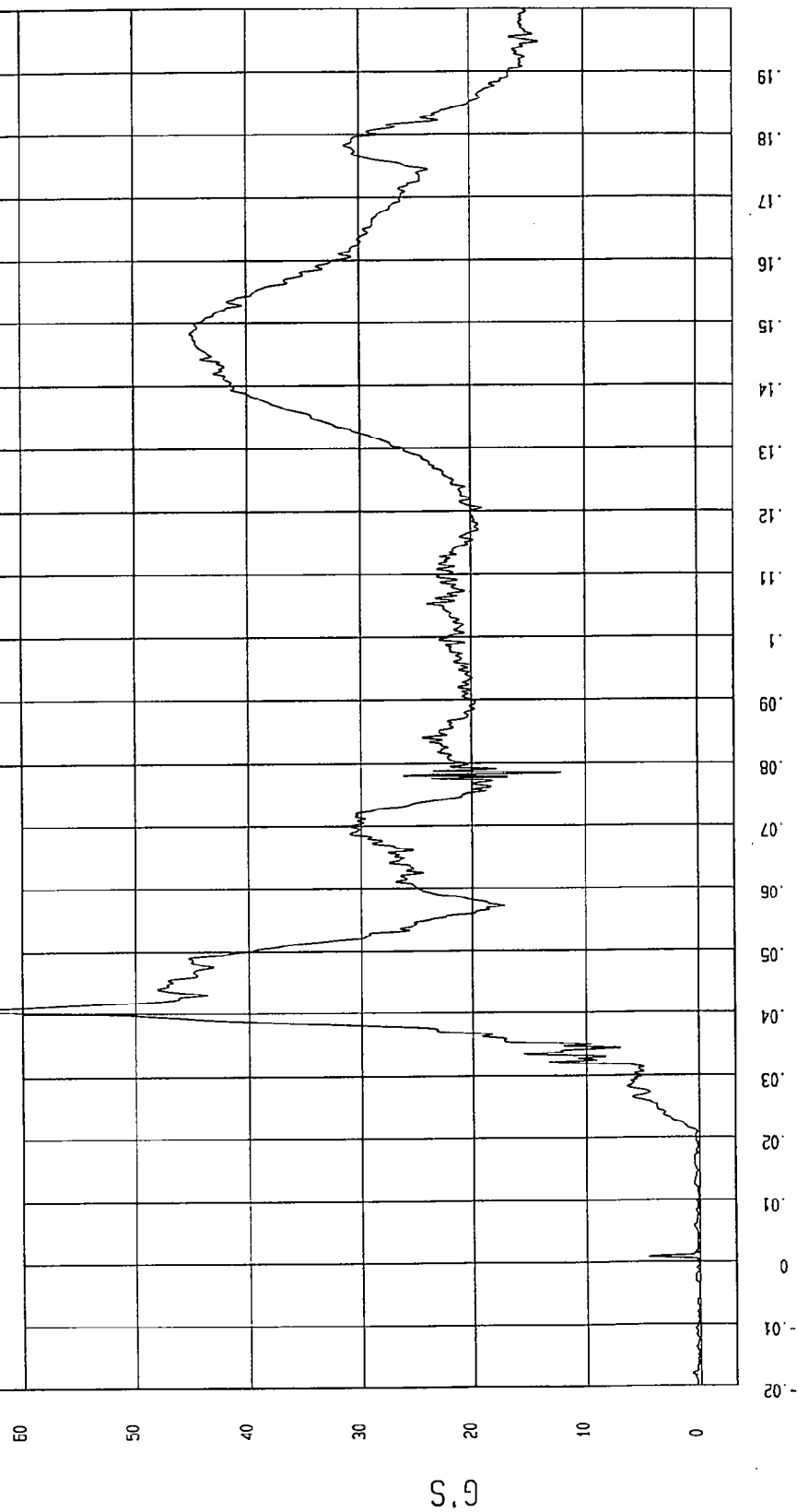
TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MWO113) Speed: 38 MPH 61.2 KPH

Minimum = 3.59E-02 G'S at 11 msec Maximum = 65.04 G'S at 41 msec

DRIVER HEAD RESULTANT

1 B97107AV.A12 Filterclass (1000)



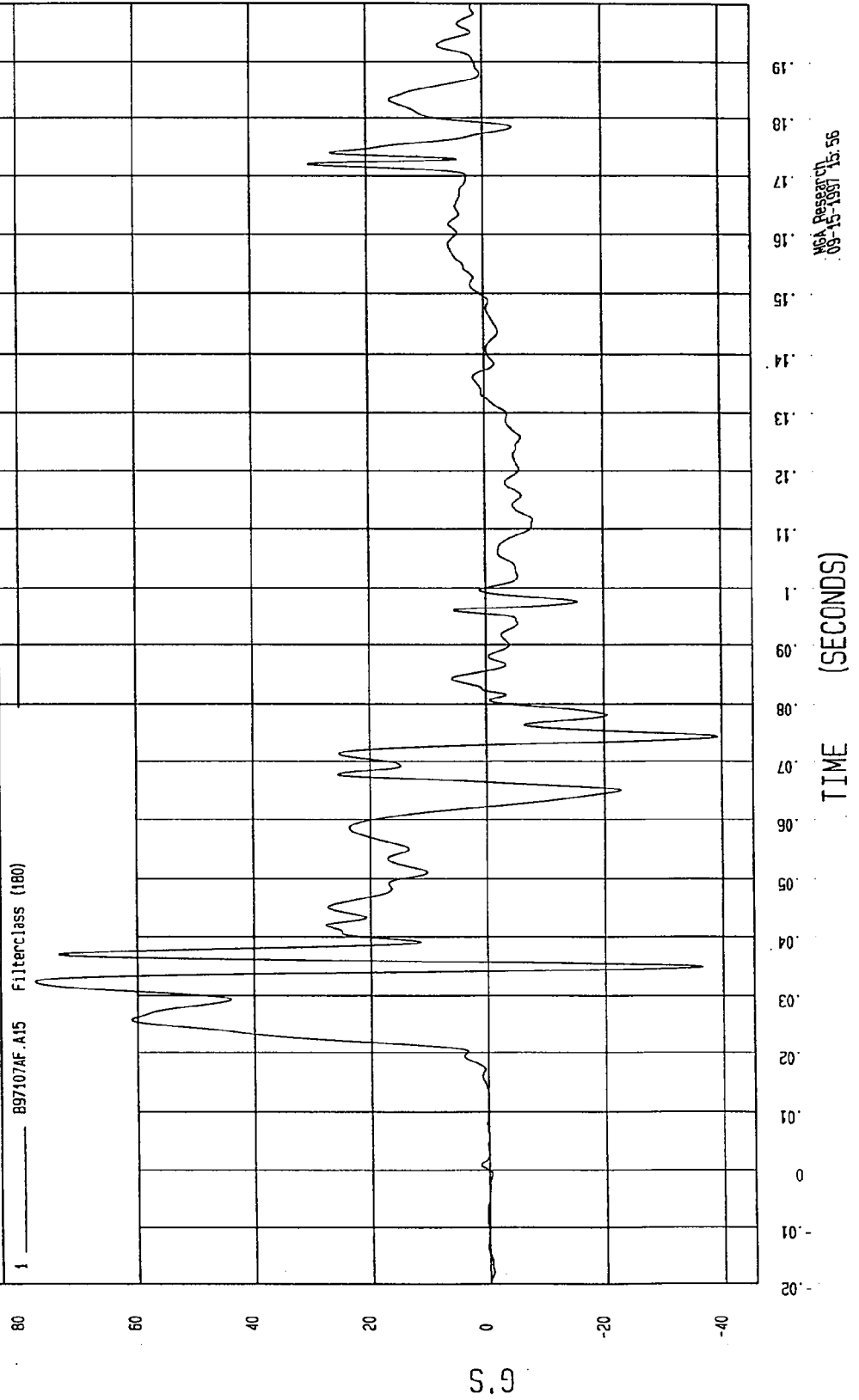
WCA Research
09-15-1997 15:46

TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -39.36 G'S at 74 msec Maximum = 77.49 G'S at 32 msec

DRIVER UPPER RIB Y ACCELERATION



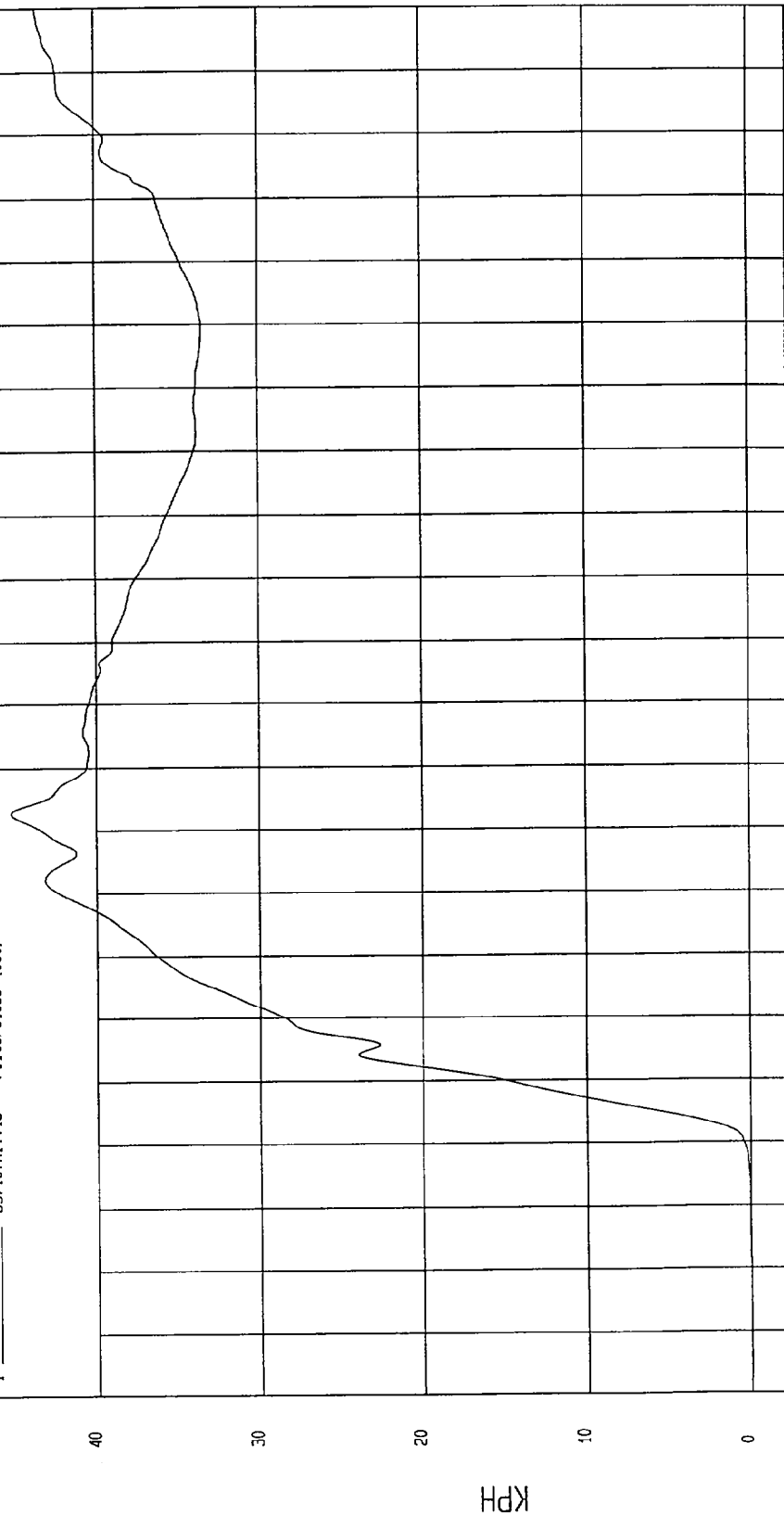
TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LeSABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -6.24E-02 KPH at -15 msec Maximum = 45.26 KPH at 73 msec

DRIVER UPPER RIB Y VELOCITY

1 ——— B97107A1.V15 Filterclass (180)



MCA Research
09-15-1997 15:47

TIME Seconds

0.19

0.18

0.17

0.16

0.15

0.14

0.13

0.12

0.11

0.10

0.09

0.08

0.07

0.06

0.05

0.04

0.03

0.02

0.01

0

-0.01

-0.02

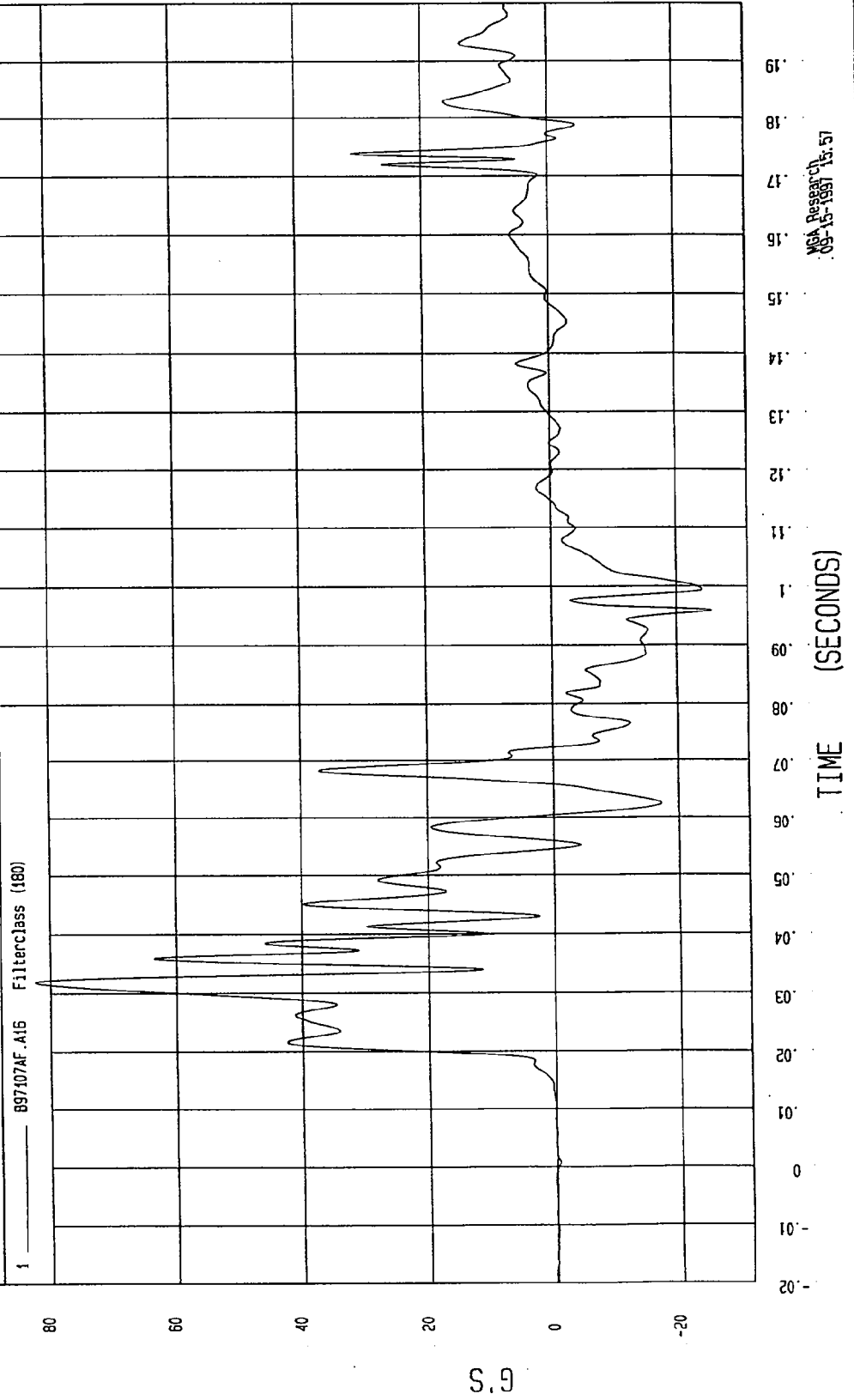
KPH

TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -25.40 G'S at 96 msec Maximum = 82.33 G'S at 32 msec

DRIVER LOWER RIB Y ACCELERATION



TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

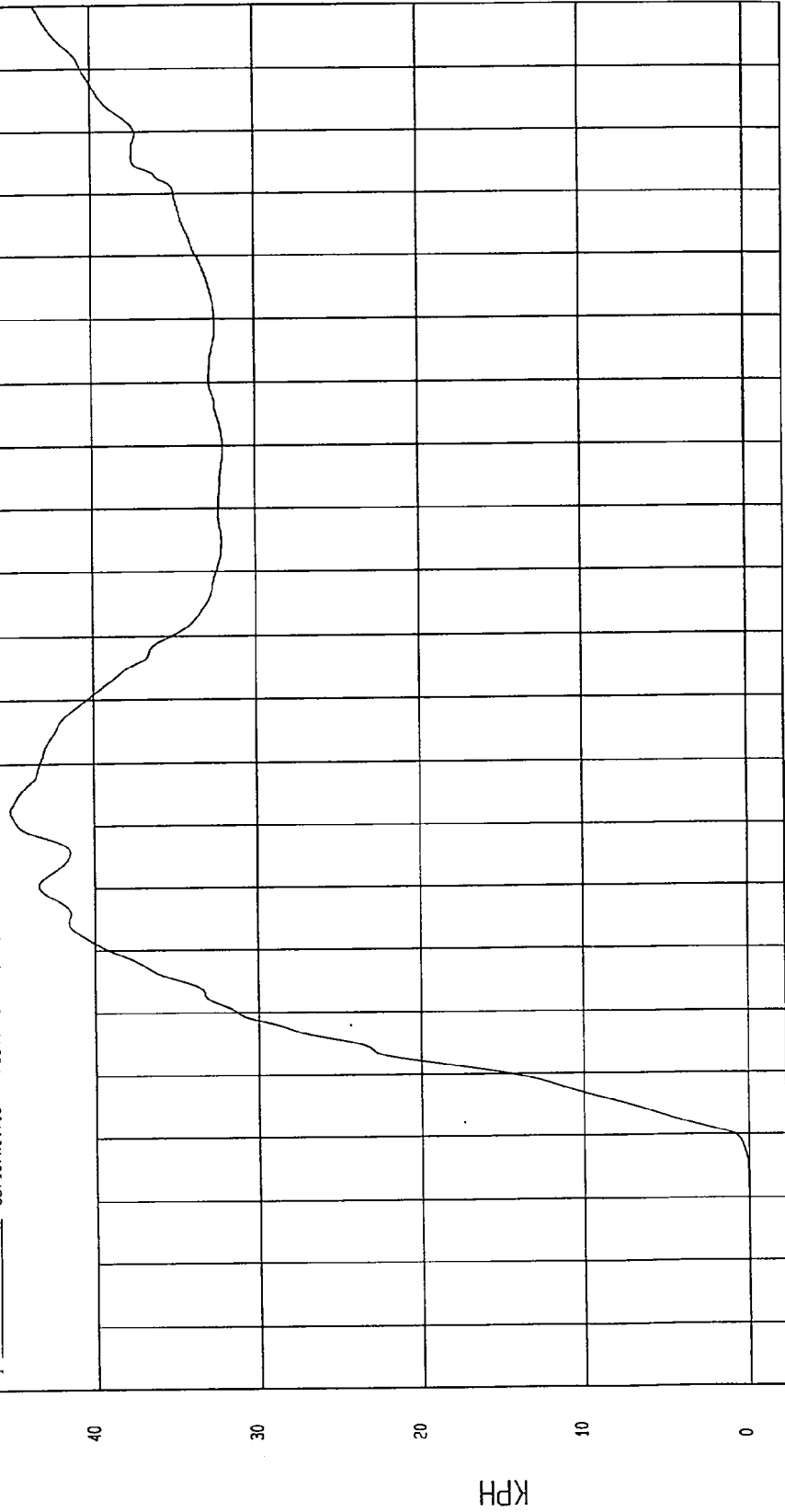
COMPONENT: 1998 BUICK LeSABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -1.06E-02 KPH at 6 msec

Maximum = 45.19 KPH at 72 msec

DRIVER LOWER RIB Y VELOCITY

1 — 897107A1.V16 Filterclass (180)



TIME Seconds

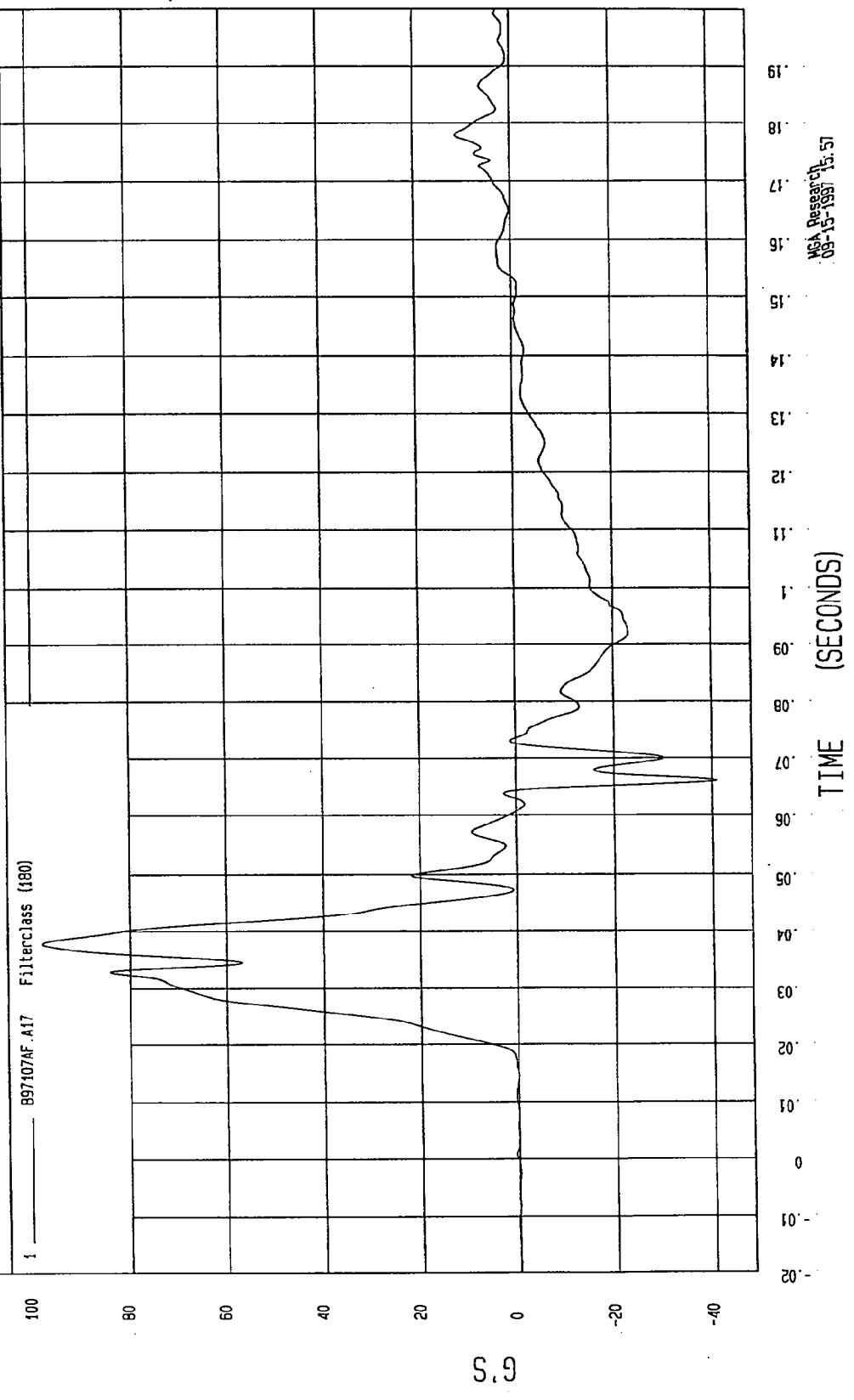
NSA Research
09-15-1997 15: 47

TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -40.98 G'S at 66 msec Maximum = 98.00 G'S at 38 msec

DRIVER LOWER SPINE Y ACCELERATION

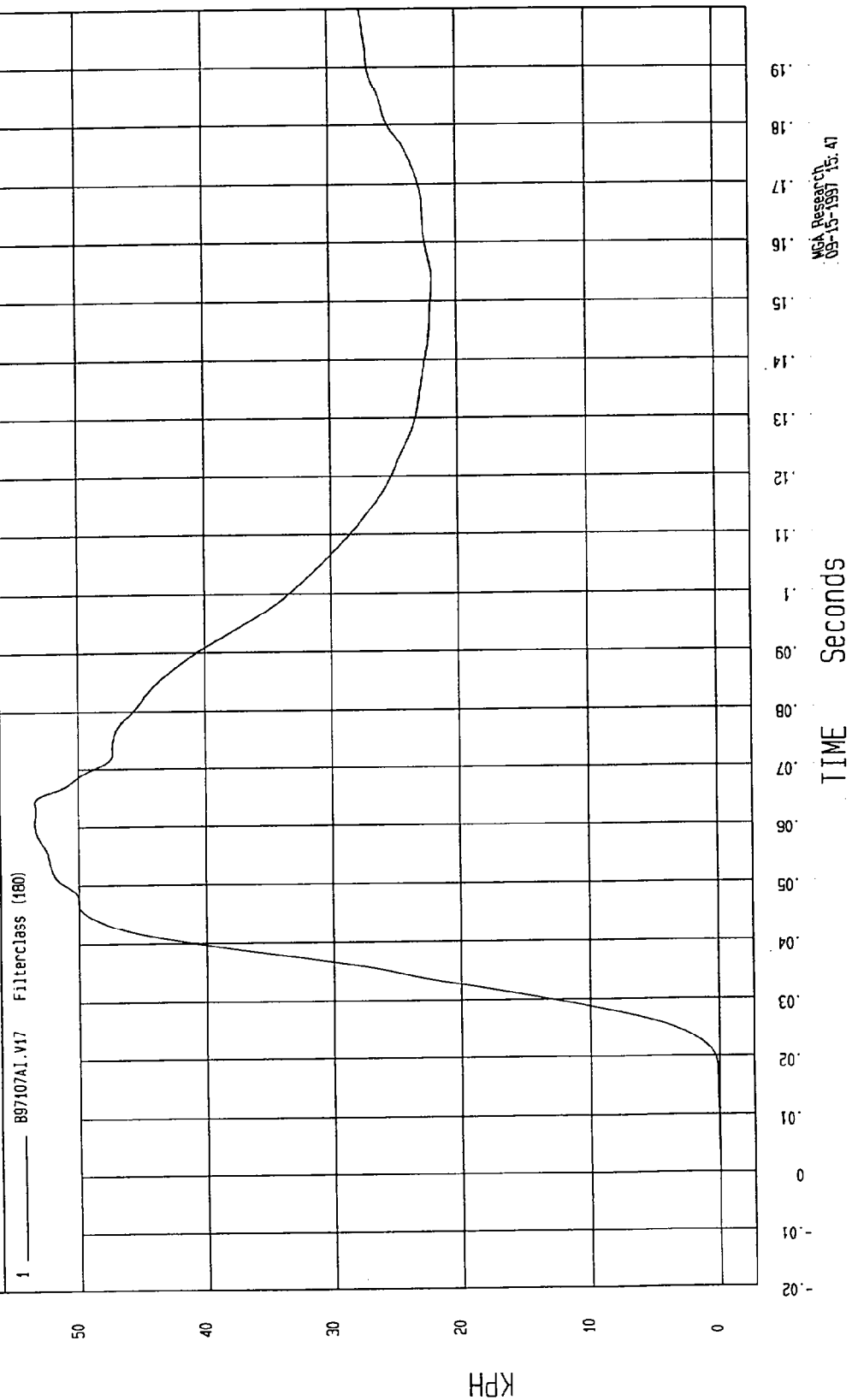


TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LeSABRE 4 DOOR (MW01113) Speed: 38 MPH 61.2 KPH

Minimum = -1.28E-02 KPH at -17 msec Maximum = 53.44 KPH at 61 msec

DRIVER LOWER SPINE Y VELOCITY

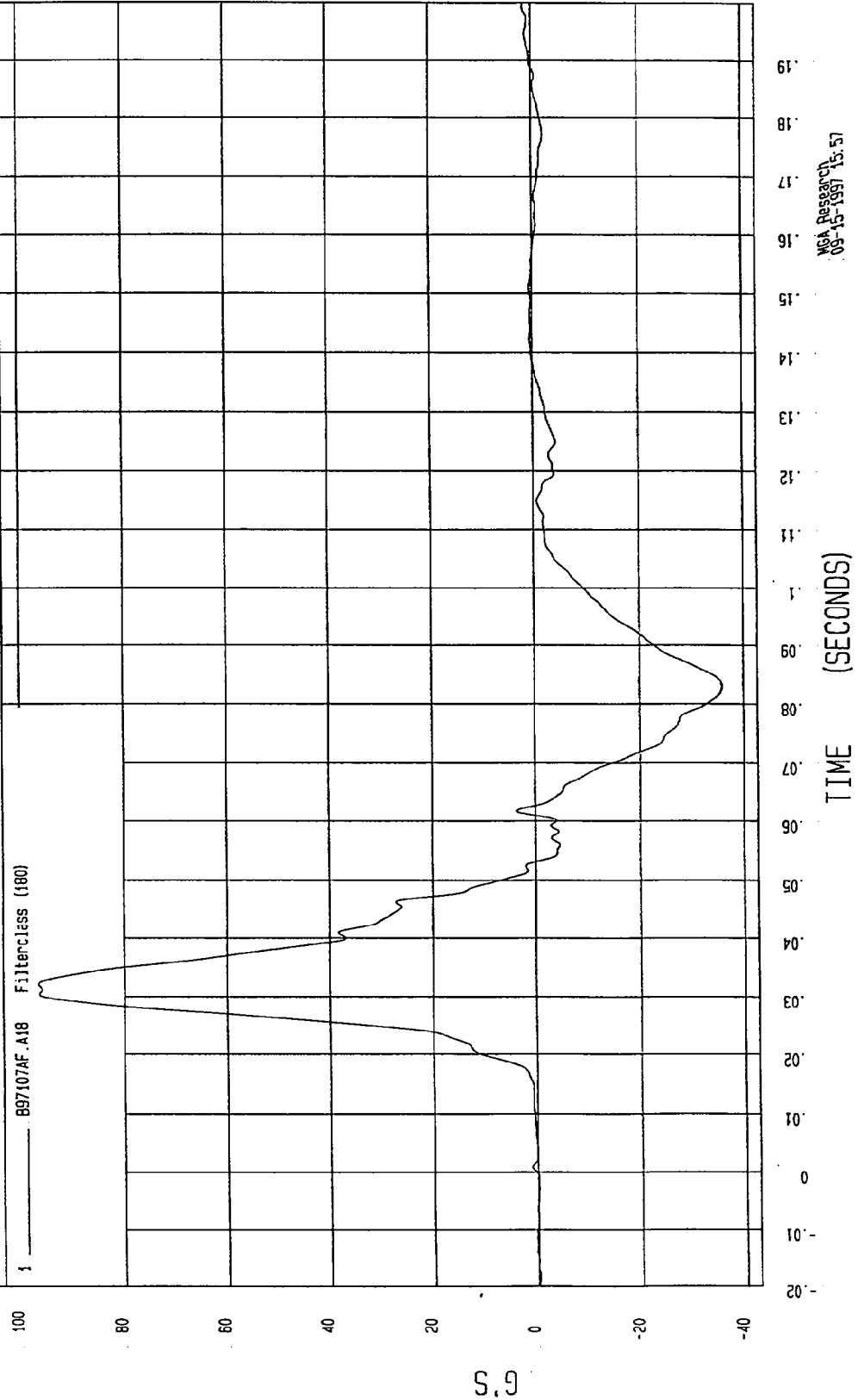


TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -35.98 G'S at 83 msec Maximum = 96.57 G'S at 32 msec

DRIVER PELVIS Y ACCELERATION



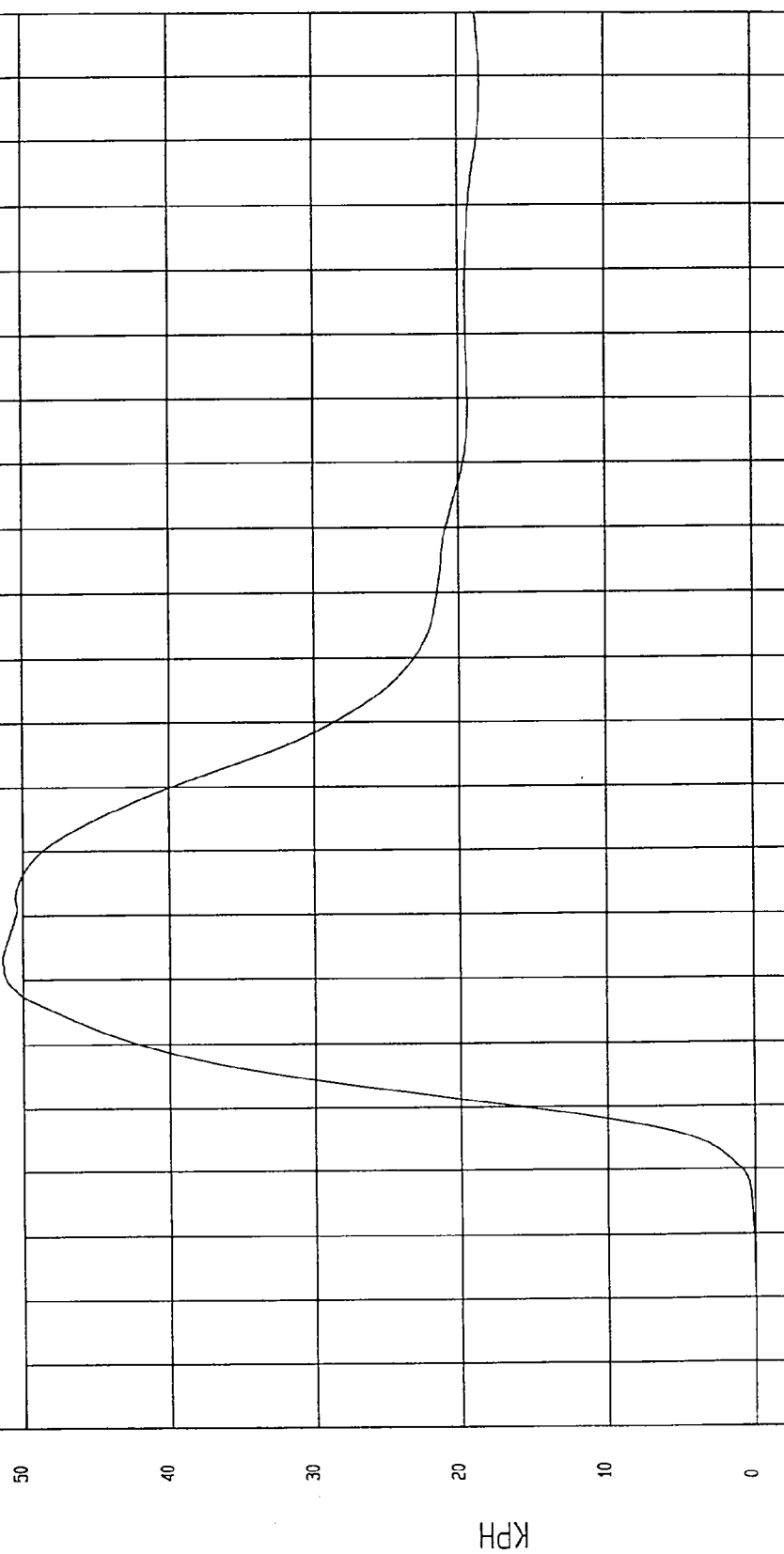
TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -2.62E-02 KPH at -15 msec Maximum = 51.38 KPH at 53 msec

DRIVER PELVIS Y VELOCITY

1 ——— B97107A1.V18 Filterclass (180)



TIME Seconds

MGA Research
09-15-1997 15:47

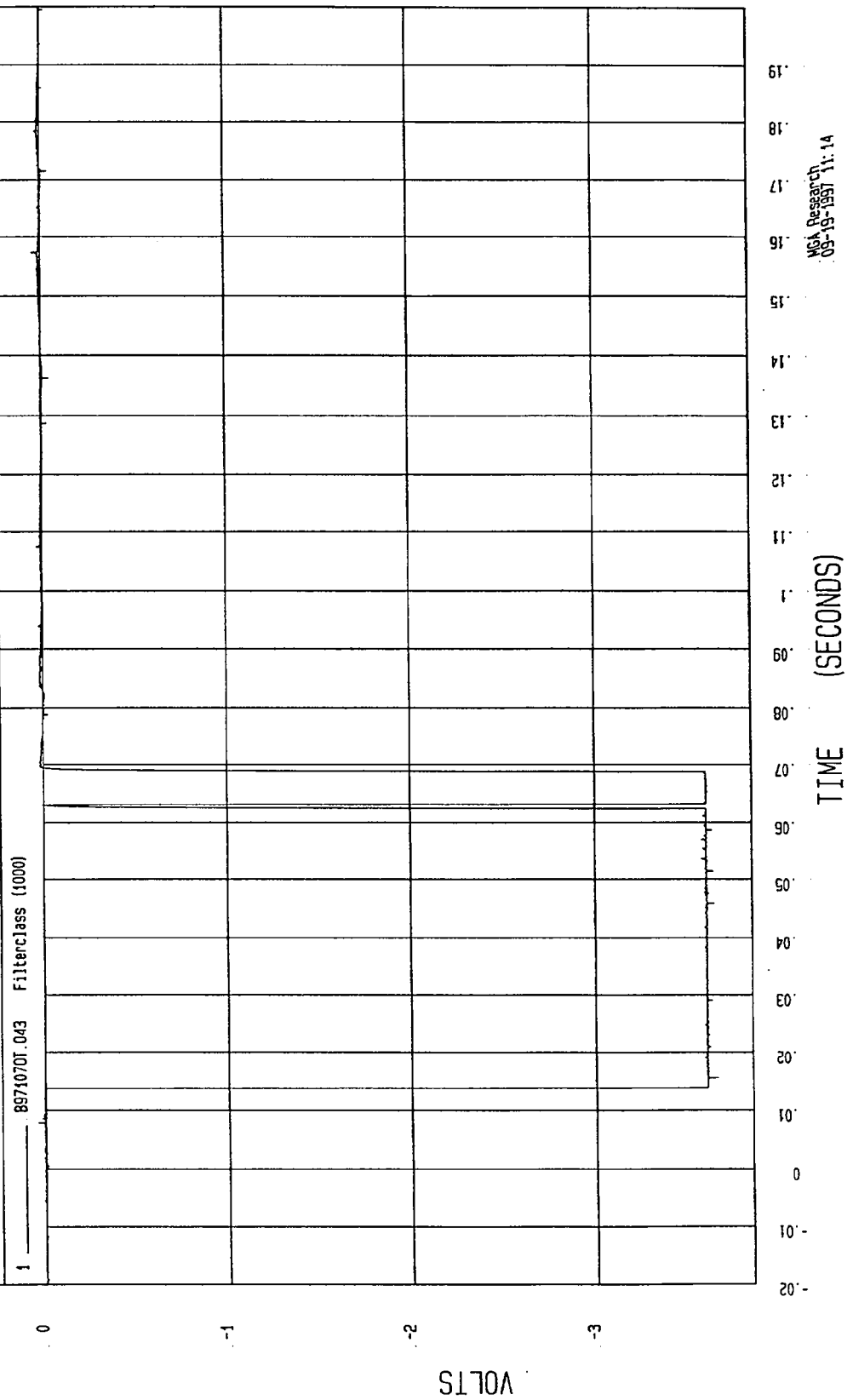
TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -3.66 VOLTS at 16 msec

Maximum = 4.53E-02 VOLTS at 157 msec

DRIVER SHOULDER CONTACT



TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

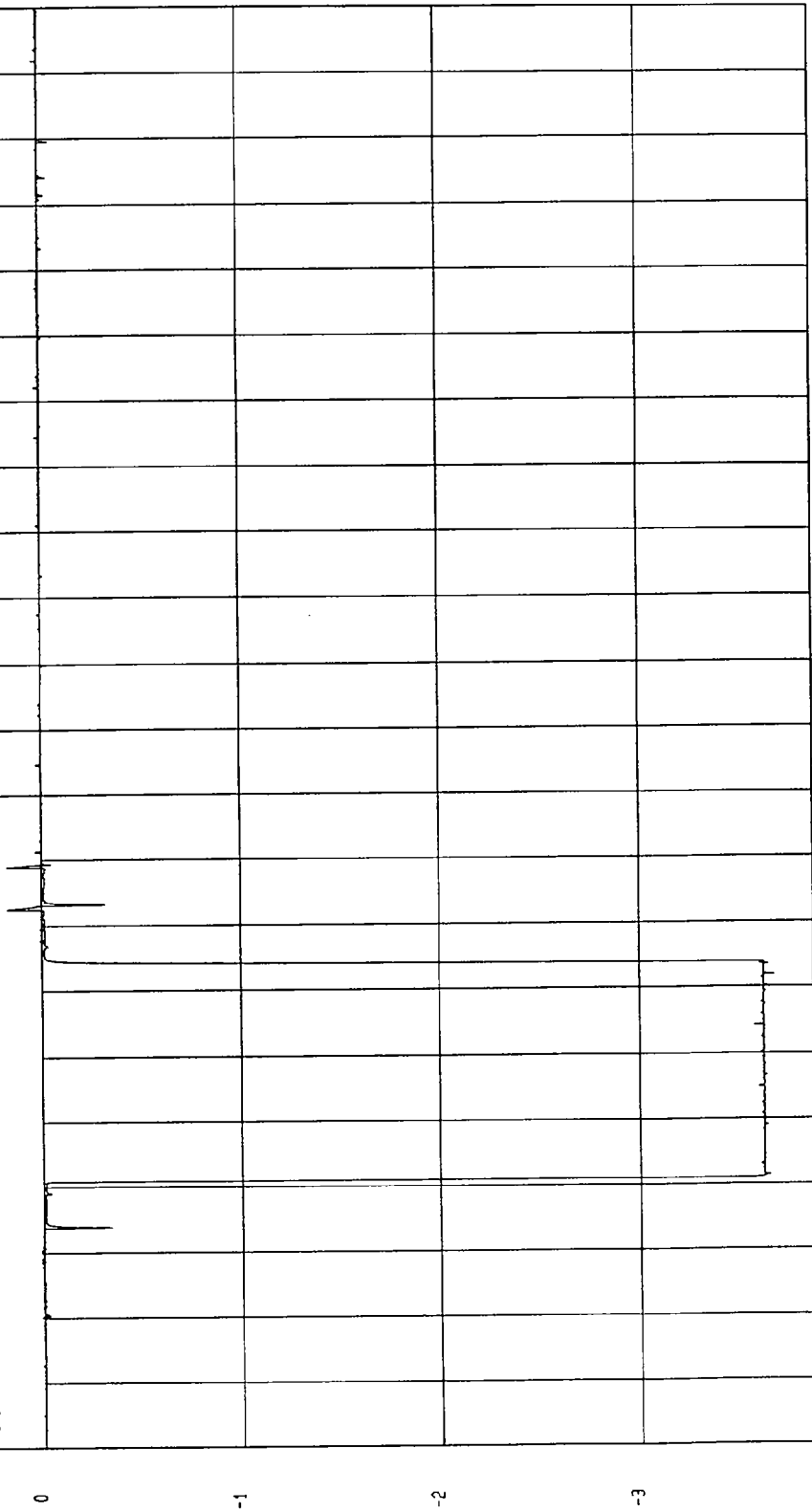
COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -3.67 VOLTS at 52 msec

Maximum = .17 VOLTS at 62 msec

DRIVER LEG CONTACT

1 89710701.044 Filterclass (1000)



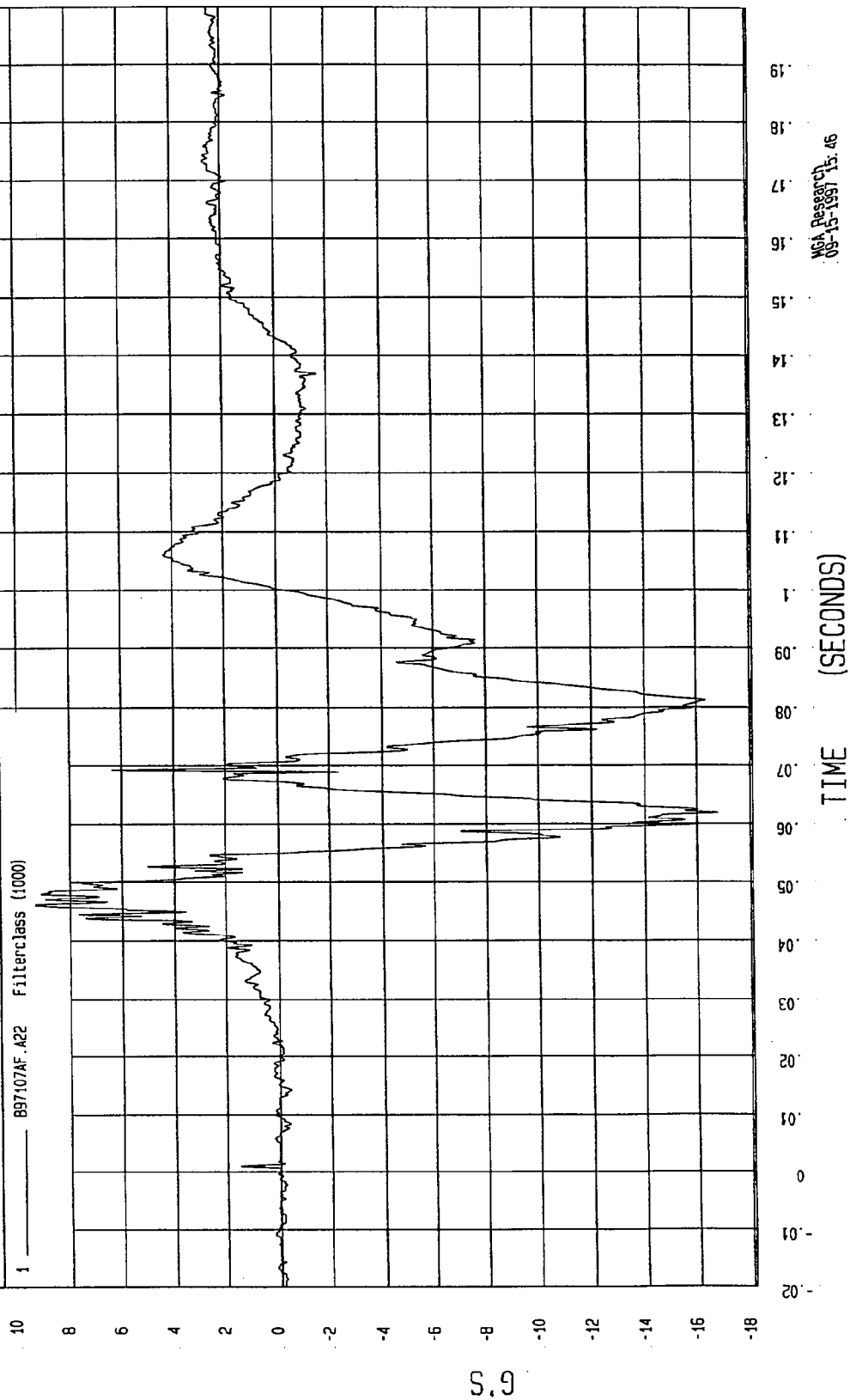
NGA Research
09-19-1997 11.14

TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -16.78 G'S at 62 msec Maximum = 9.32 G'S at 46 msec

REAR PASSENGER HEAD X ACCELERATION



TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

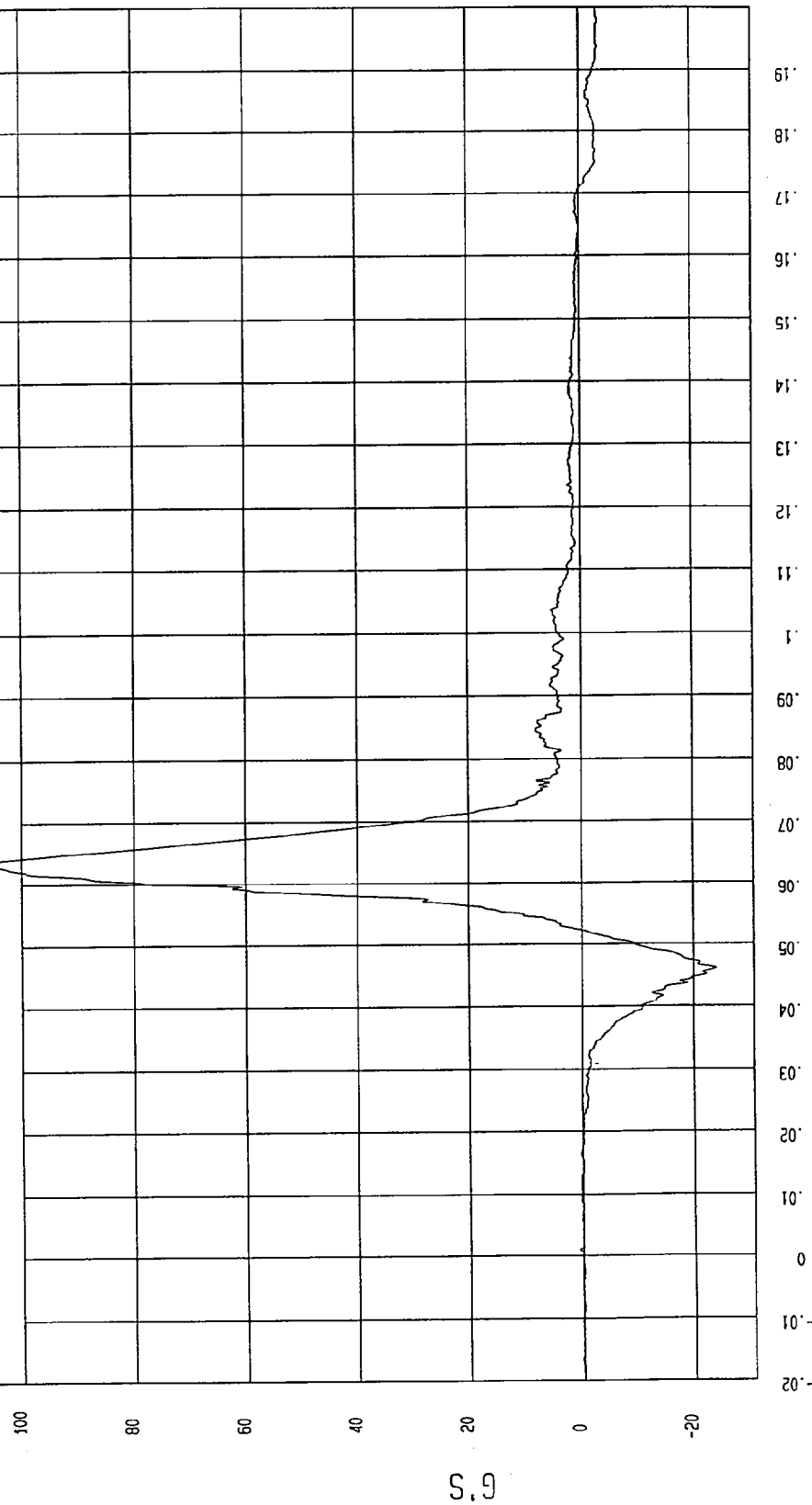
COMPONENT: 1998 BUICK LeSABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -23.82 G'S at 46 msec

Maximum = 105.43 G'S at 63 msec

REAR PASSENGER HEAD Y ACCELERATION

1 B97107AF.A23 Filterclass (1000)



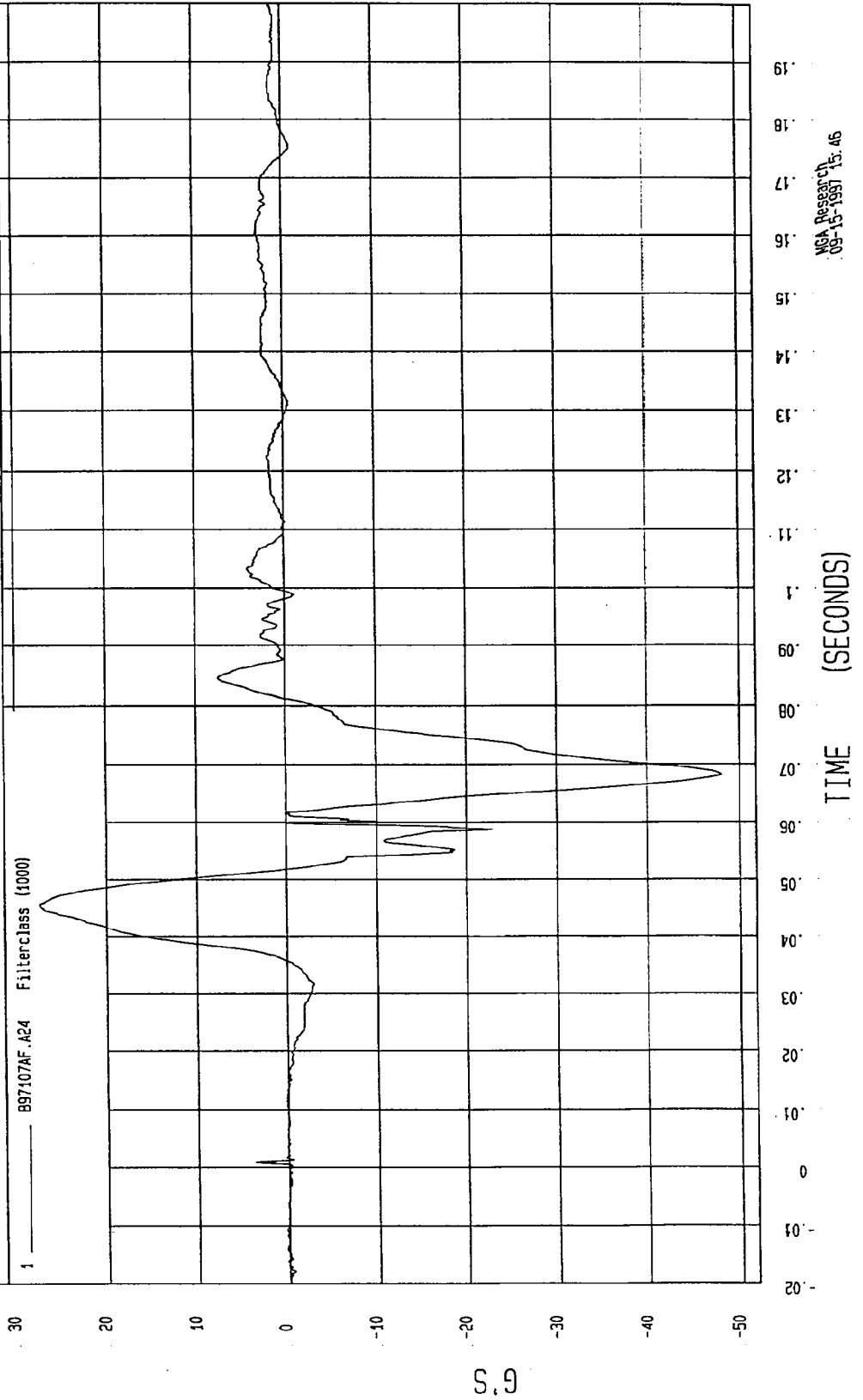
MCA Research
09-15-1997 15.46

TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -48.02 G'S at 68 msec Maximum = 27.40 G'S at 46 msec

REAR PASSENGER HEAD Z ACCELERATION



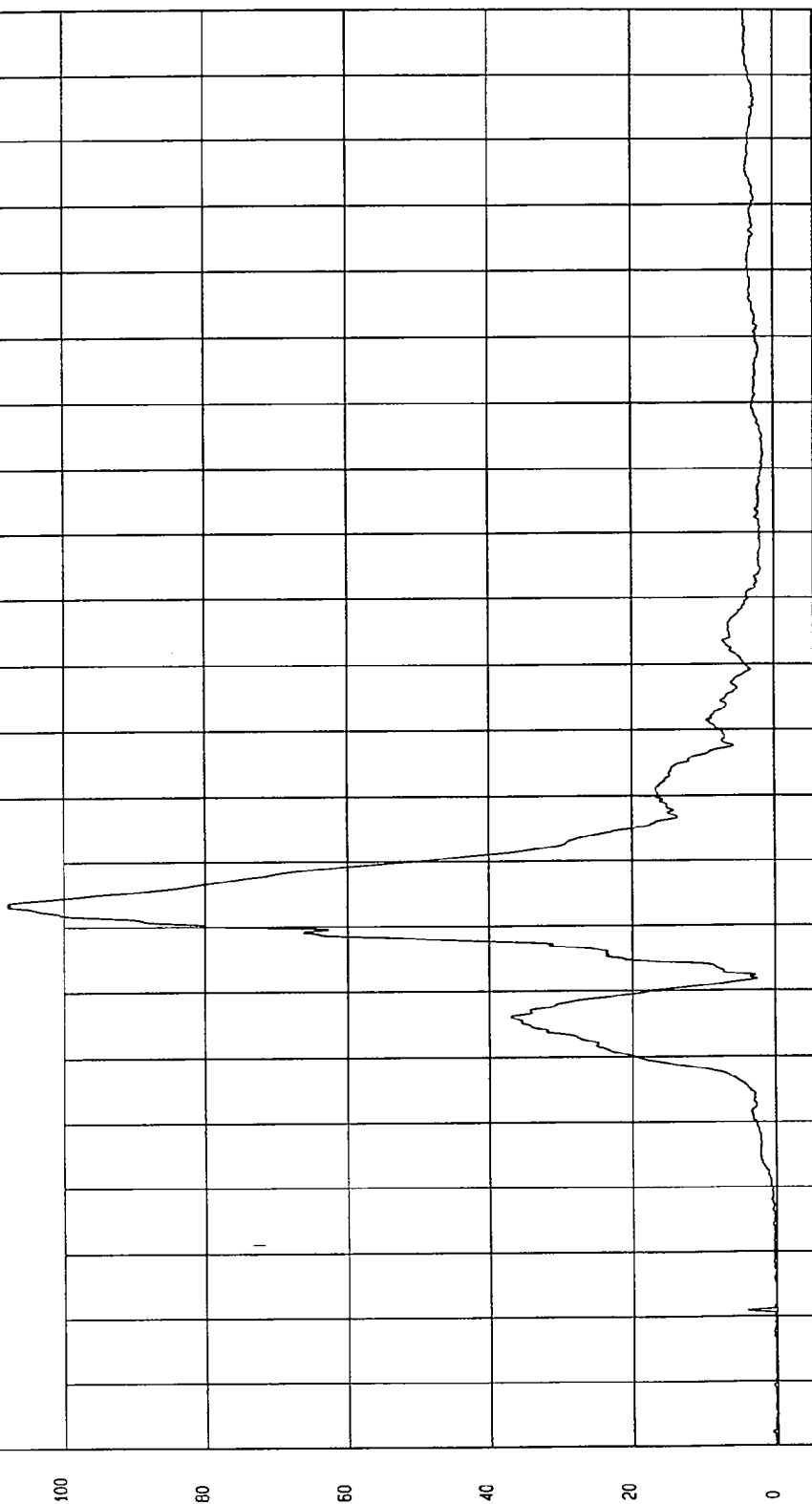
TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = 3.17E-02 G'S at 2 msec Maximum = 107.83 G'S at 64 msec

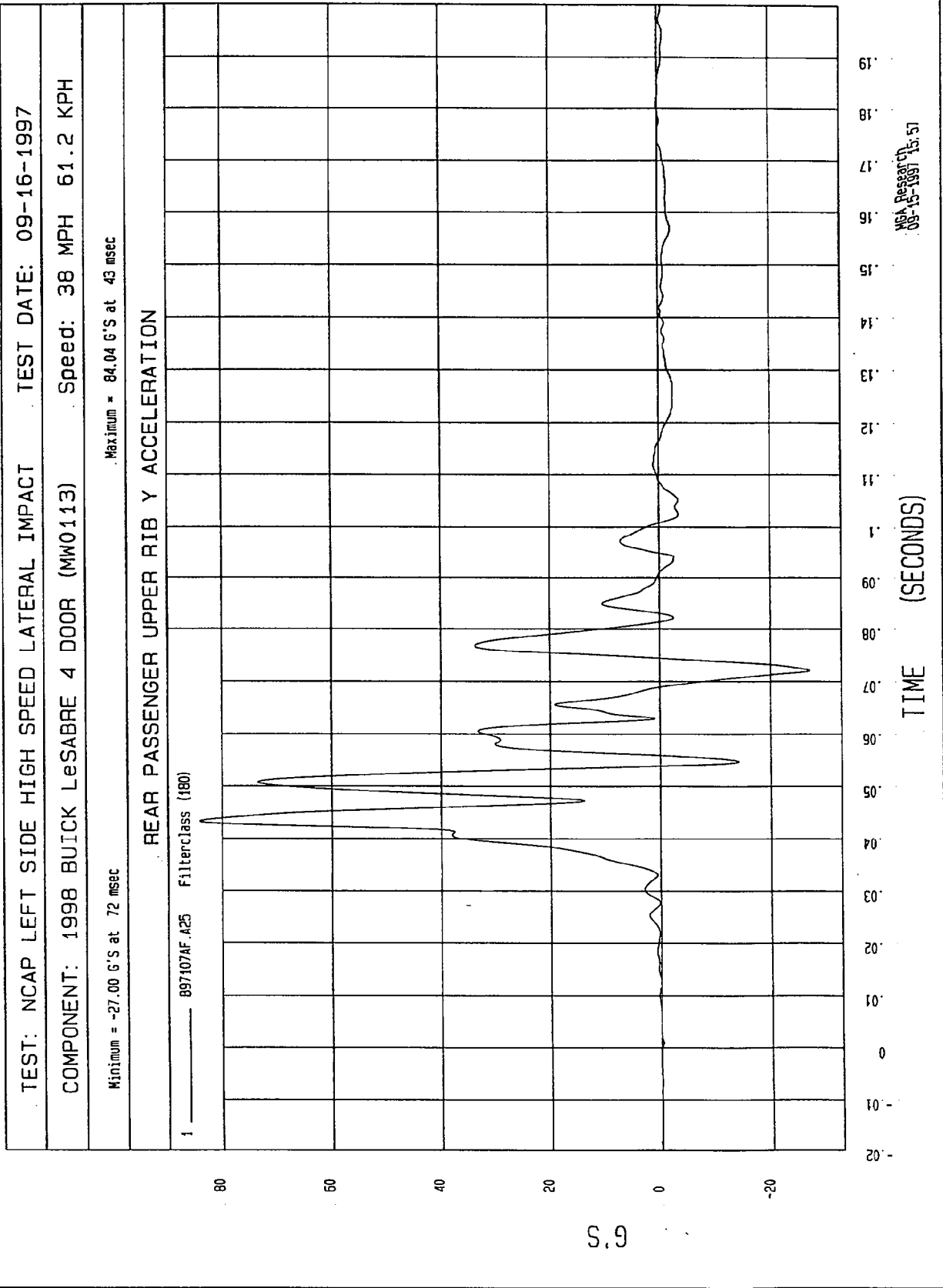
REAR PASSENGER HEAD RESULTANT

1 B97107AV.A22 Filterclass (1000)



TIME (SECONDS)

MSA Research
09-15-1997 15.46



TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LeSABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -1.08E-02 KPH at 2 msec Maximum = 39.54 KPH at 101 msec

REAR PASSENGER UPPER RIB Y VELOCITY

B97107A1.V25 Filterclass (180)

40

30

20

10

0

KPH

19

18

17

16

15

14

13

12

11

10

09

08

07

06

05

04

03

02

01

0

-01

-02

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09-15-1997 15:47

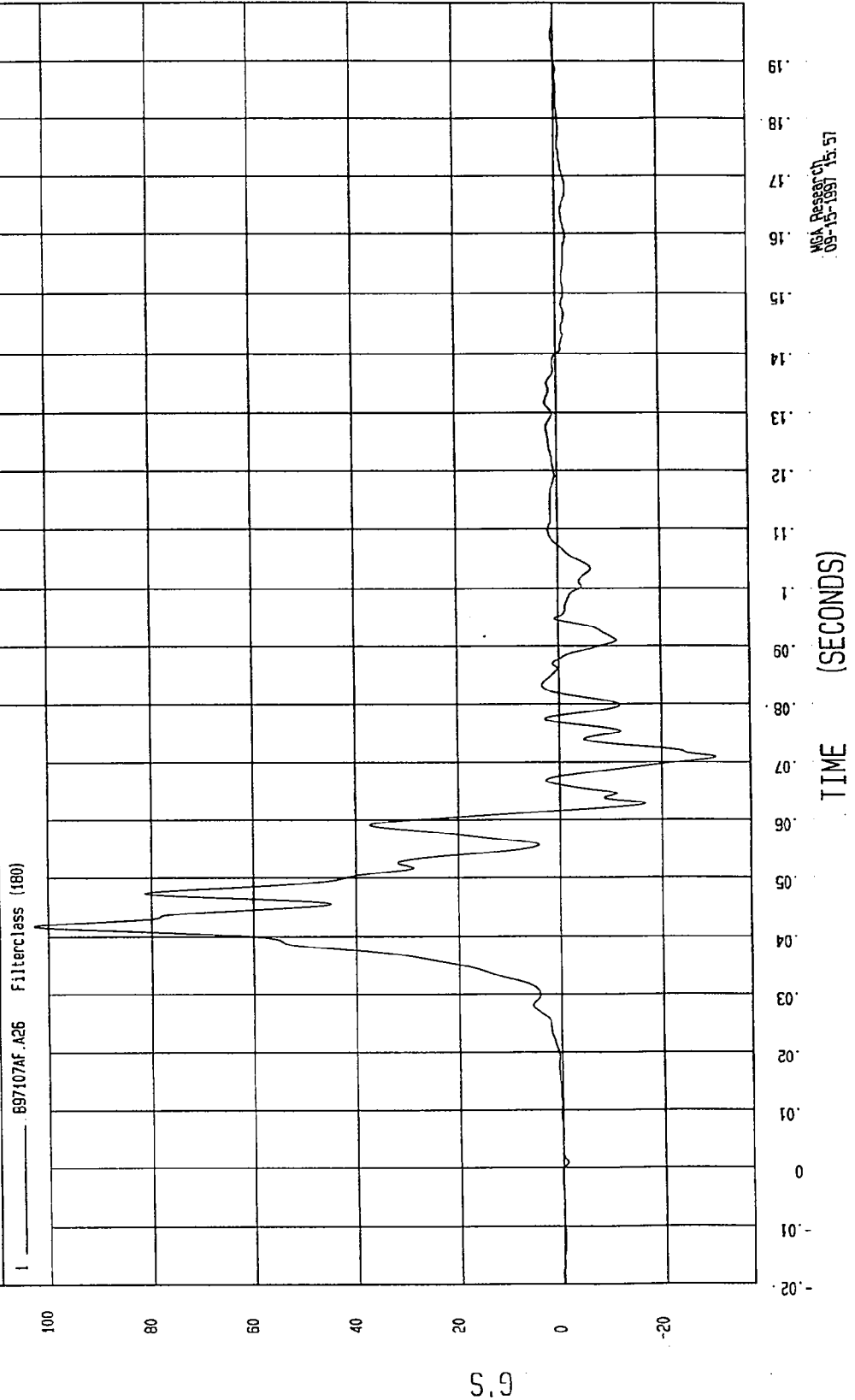
TIME Seconds

TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -30.23 G'S at 71 msec Maximum = 102.82 G'S at 42 msec

REAR PASSENGER LOWER RIB Y ACCELERATION



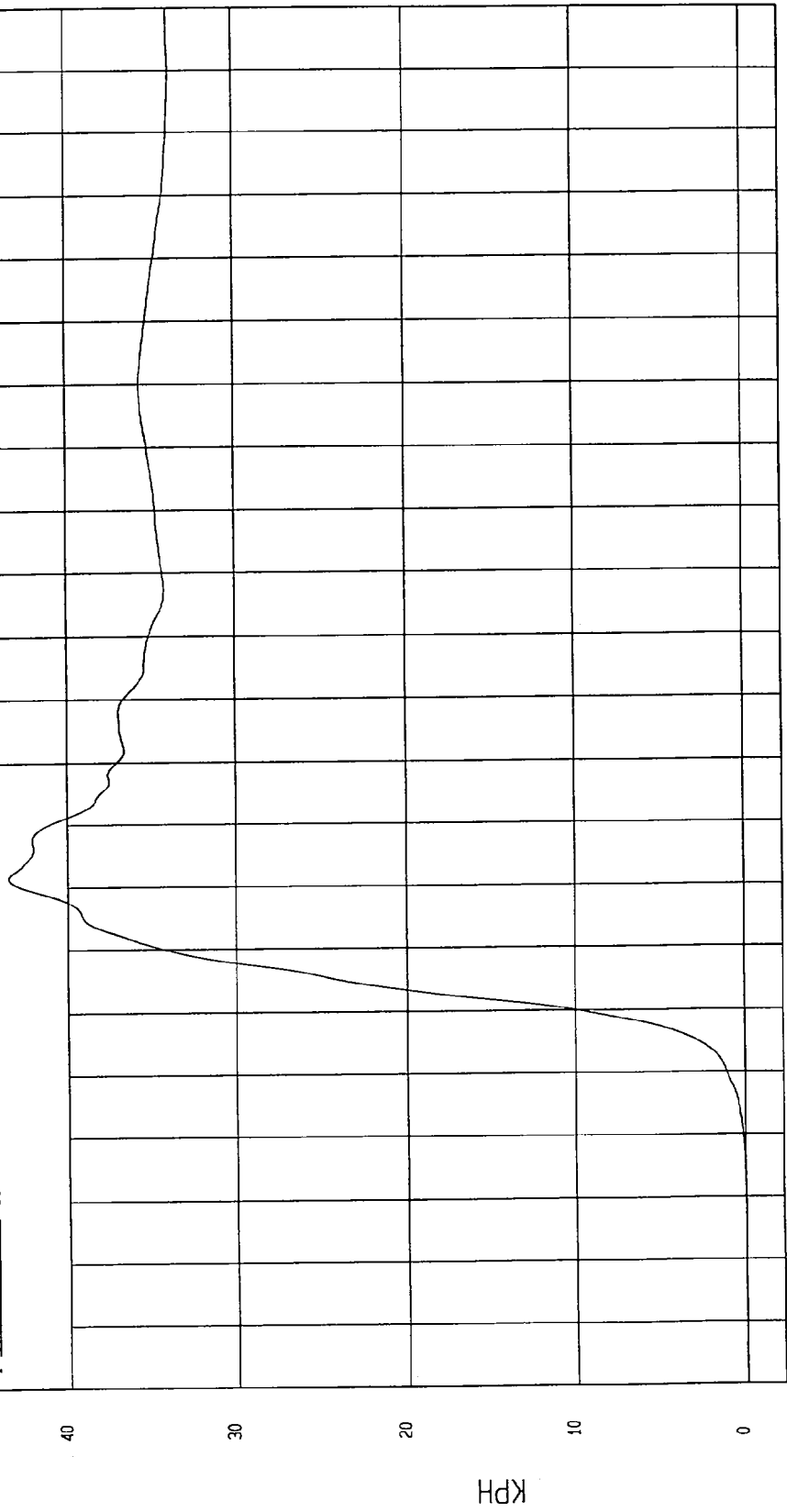
TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -3.48E-02 KPH at 7 msec Maximum = 43.46 KPH at 62 msec

REAR PASSENGER LOWER RIB Y VELOCITY

1 B97107A1.V26 Filterclass (180)



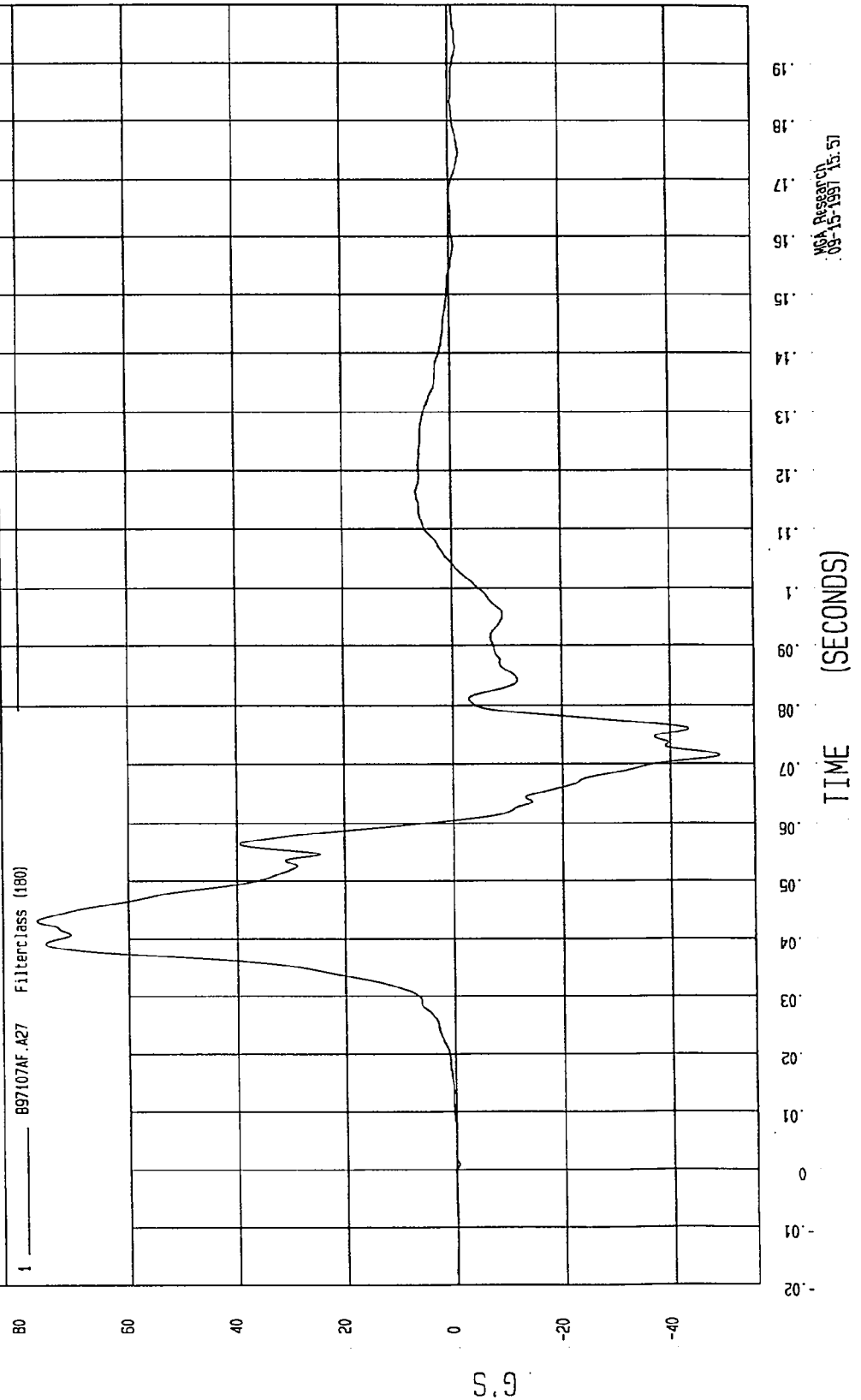
TIME Seconds
NGA Research
09-15-1997 15.47

TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -48.84 G'S at 71 msec Maximum = 76.86 G'S at 43 msec

REAR PASSENGER LOWER SPINE Y ACCELERATION



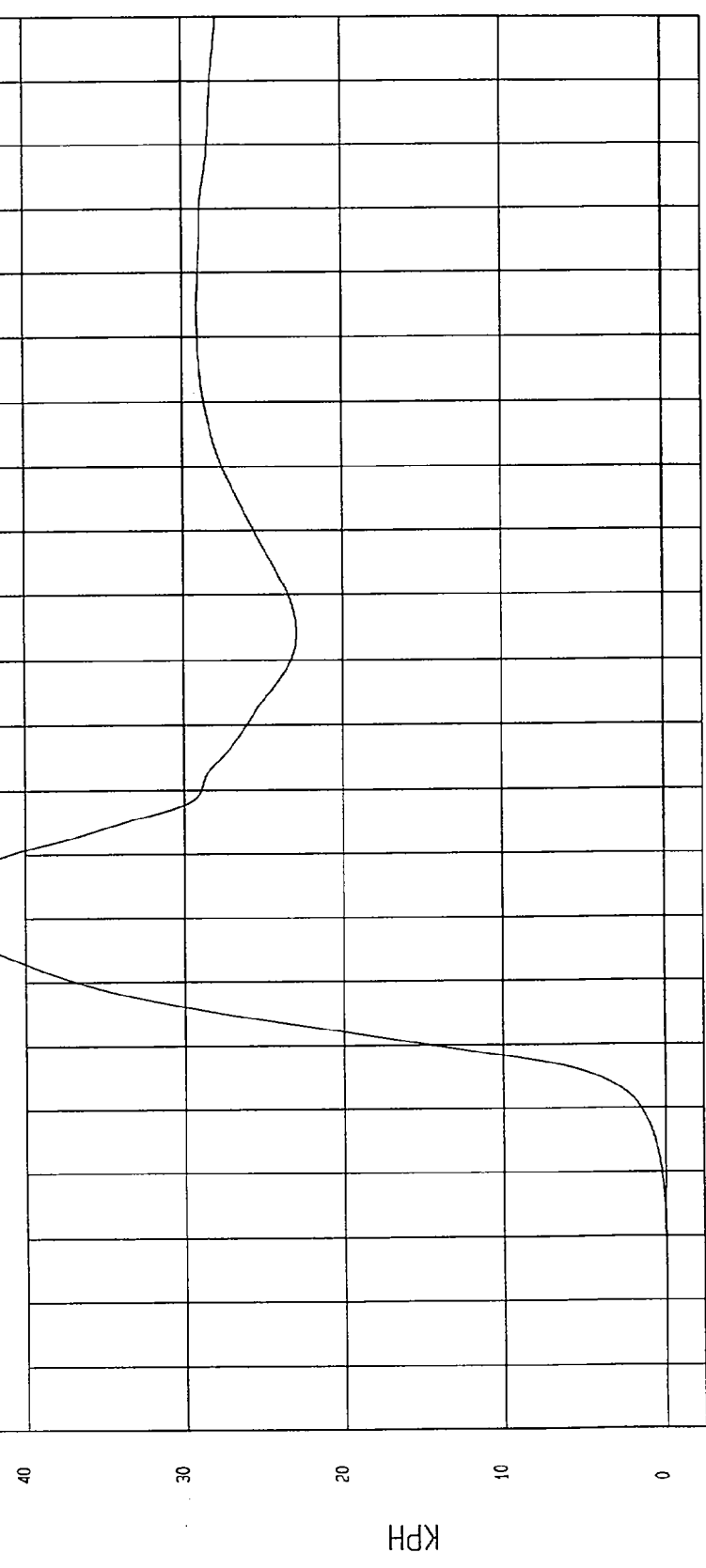
TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -1.10E-02 KPH at 2 msec Maximum = 47.14 KPH at 60 msec

REAR PASSENGER LOWER SPINE Y VELOCITY

1 B97107A1.V27 Filterclass (180)



TIME Seconds

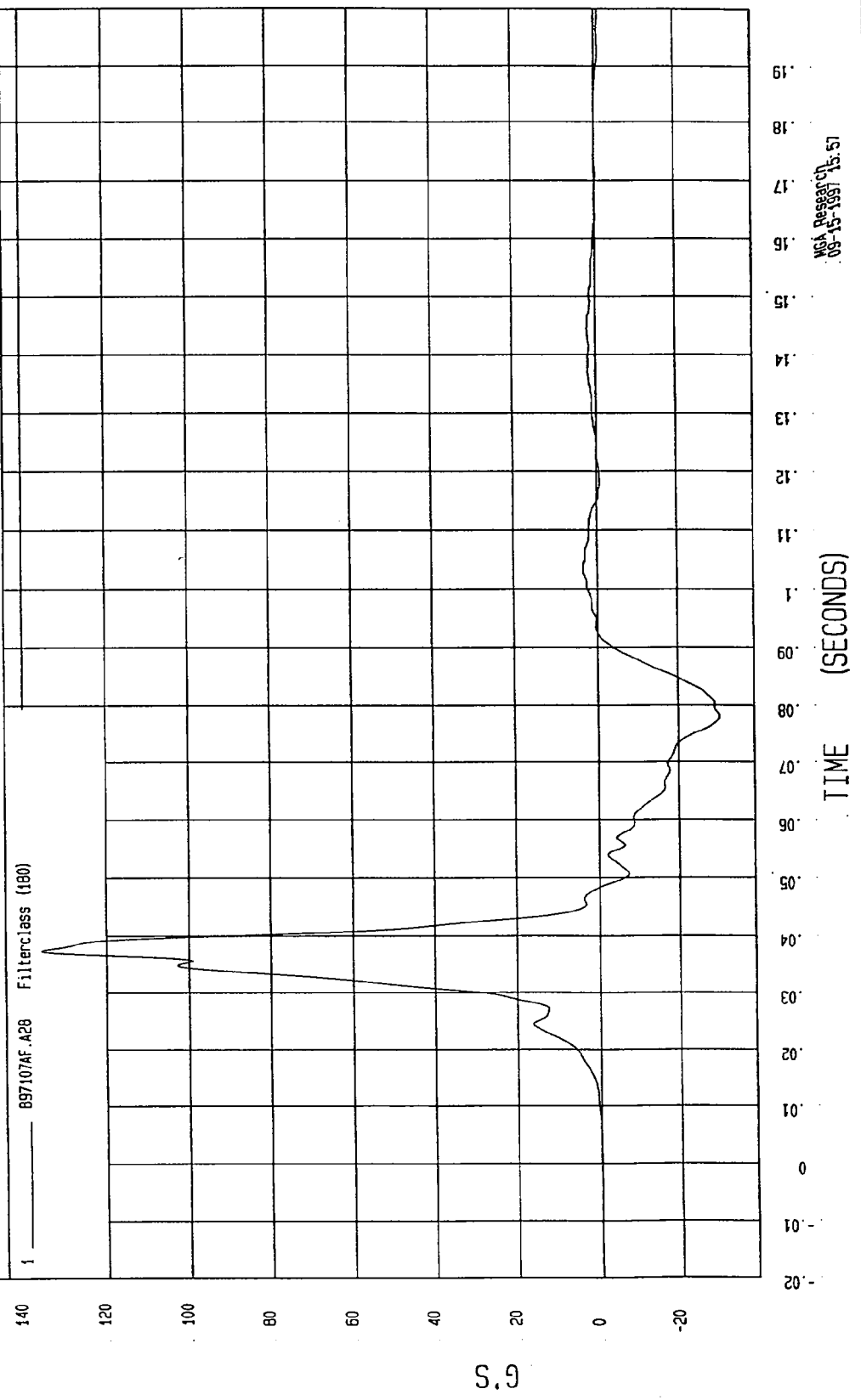
MSA Research
09-15-1997 15:47

TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -29.59 G'S at 78 msec Maximum = 135.88 G'S at 37 msec

REAR PASSENGER PELVIS Y ACCELERATION



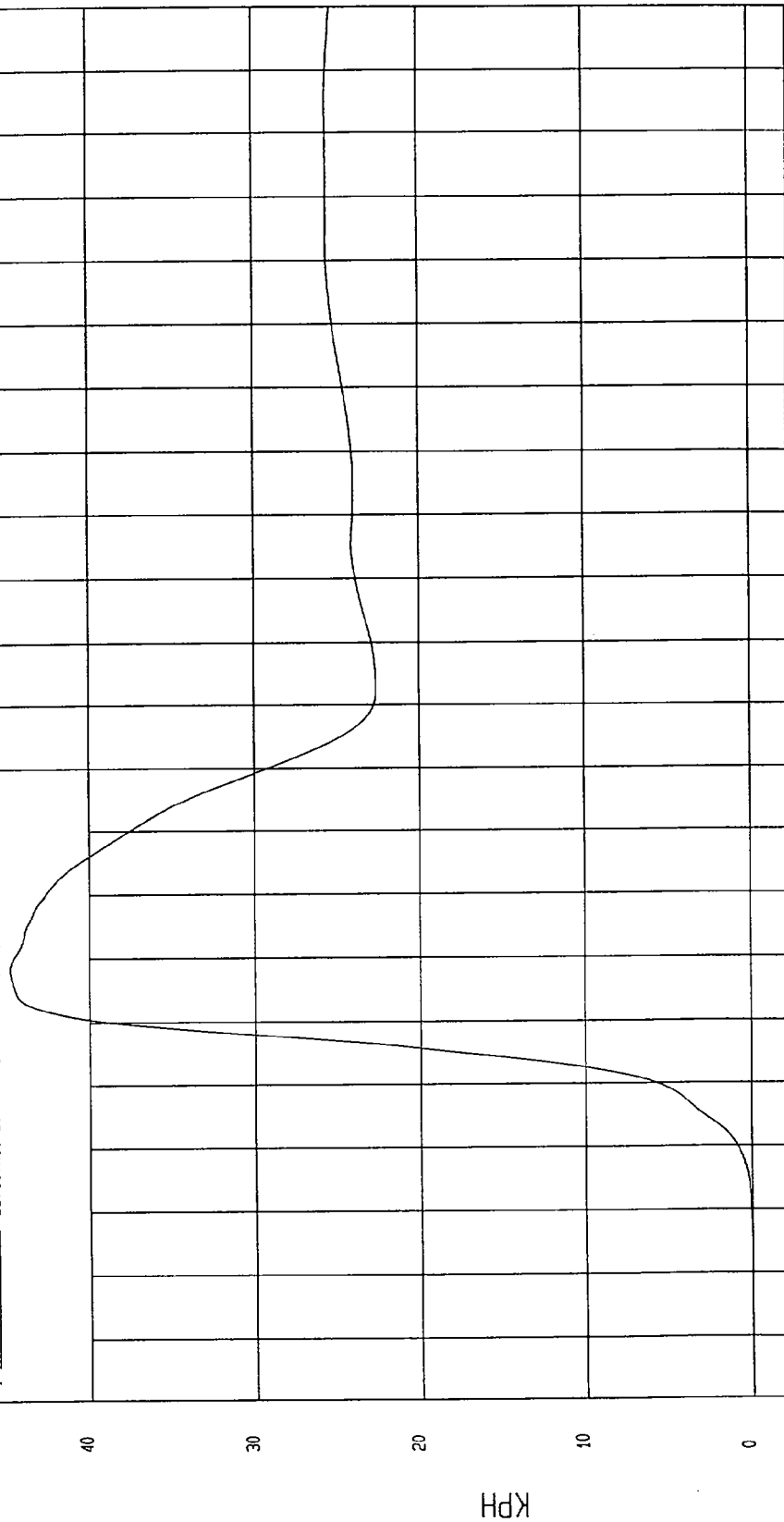
TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -8.49E-03 KPH at -2 msec Maximum = 44.80 KPH at 48 msec

REAR PASSENGER PELVIS Y VELOCITY

1 B97107A1.V28 Filterclass (180)



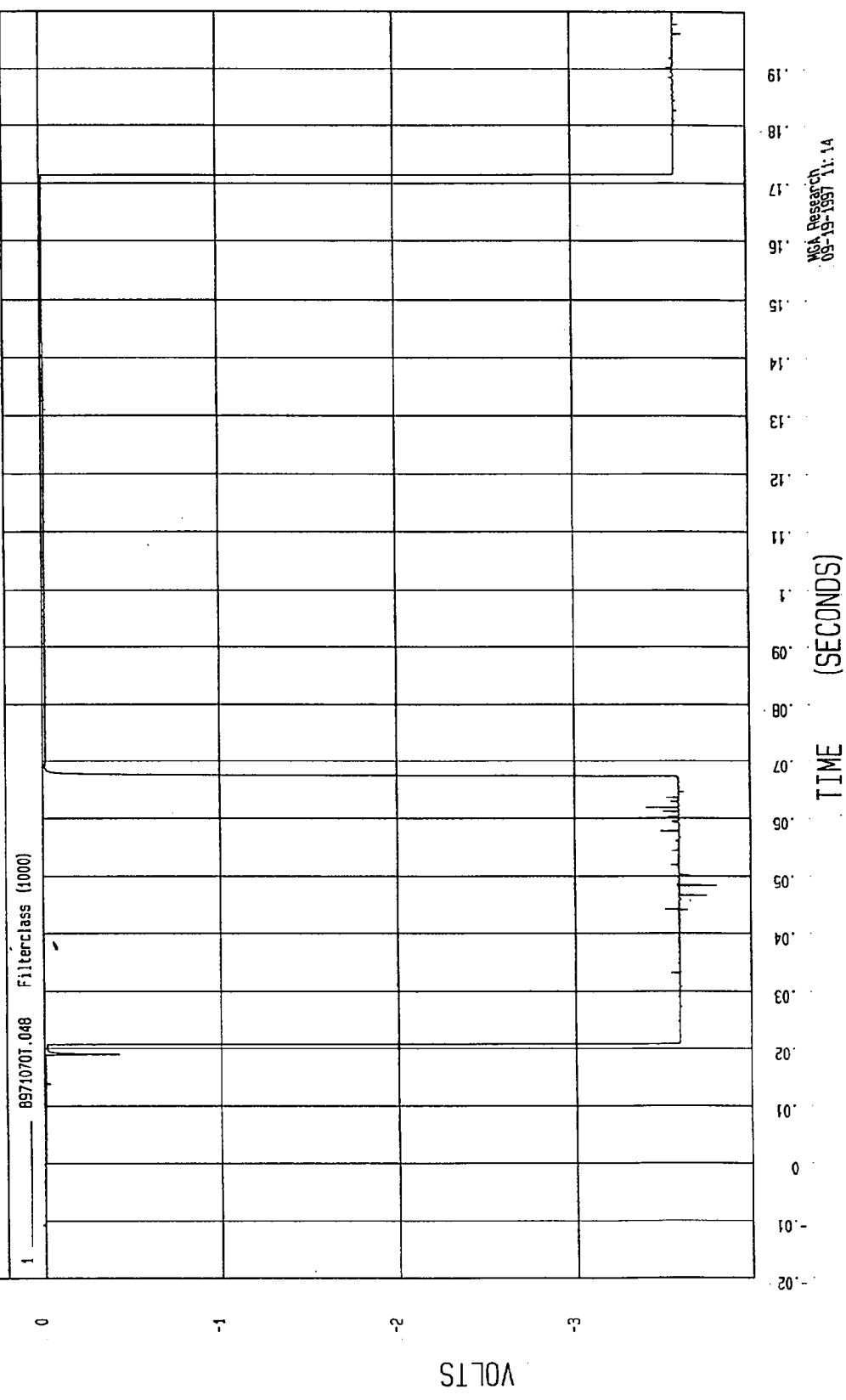
NCA Research
09-15-1997 13: 47

TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -3.79 VOLTS at 48 msec Maximum = 1.56E-02 VOLTS at -11 msec

REAR PASSENGER LEG CONTACT



MCA Research
09-19-1997 11:14

TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

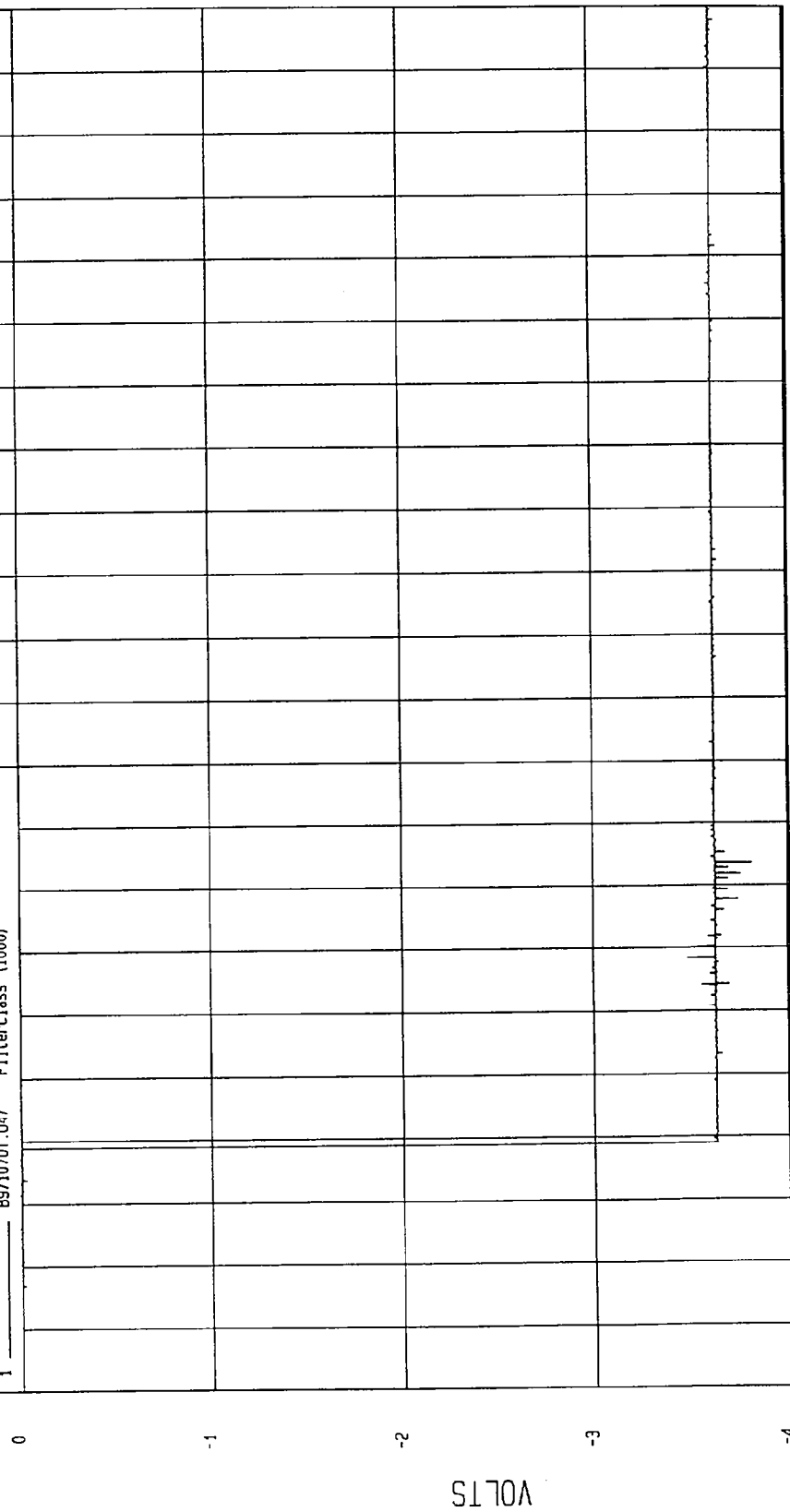
COMPONENT: 1998 BUICK LeSABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -3.81 VOLTS at 64 msec

Maximum = 7.47E-03 VOLTS at 4 msec

REAR PASSENGER SHOULDER CONTACT

1 8971070T.047 FilterClass (1000)



MGA Research
09-19-1997 11:14

TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -12.12 G'S at 57 msec Maximum = 84.00 G'S at 21 msec

LEFT SIDE SILL AT FRONT SEAT Y ACCELERATION

1 897107AF.A38 Filterclass (60)

80

60

40

20

0

G.S

19

18

17

16

15

14

13

12

11

10

09

08

07

06

05

04

03

02

01

0

-01

-02

TIME (SECONDS)

MCA Research
09-15-1997 15:49

TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

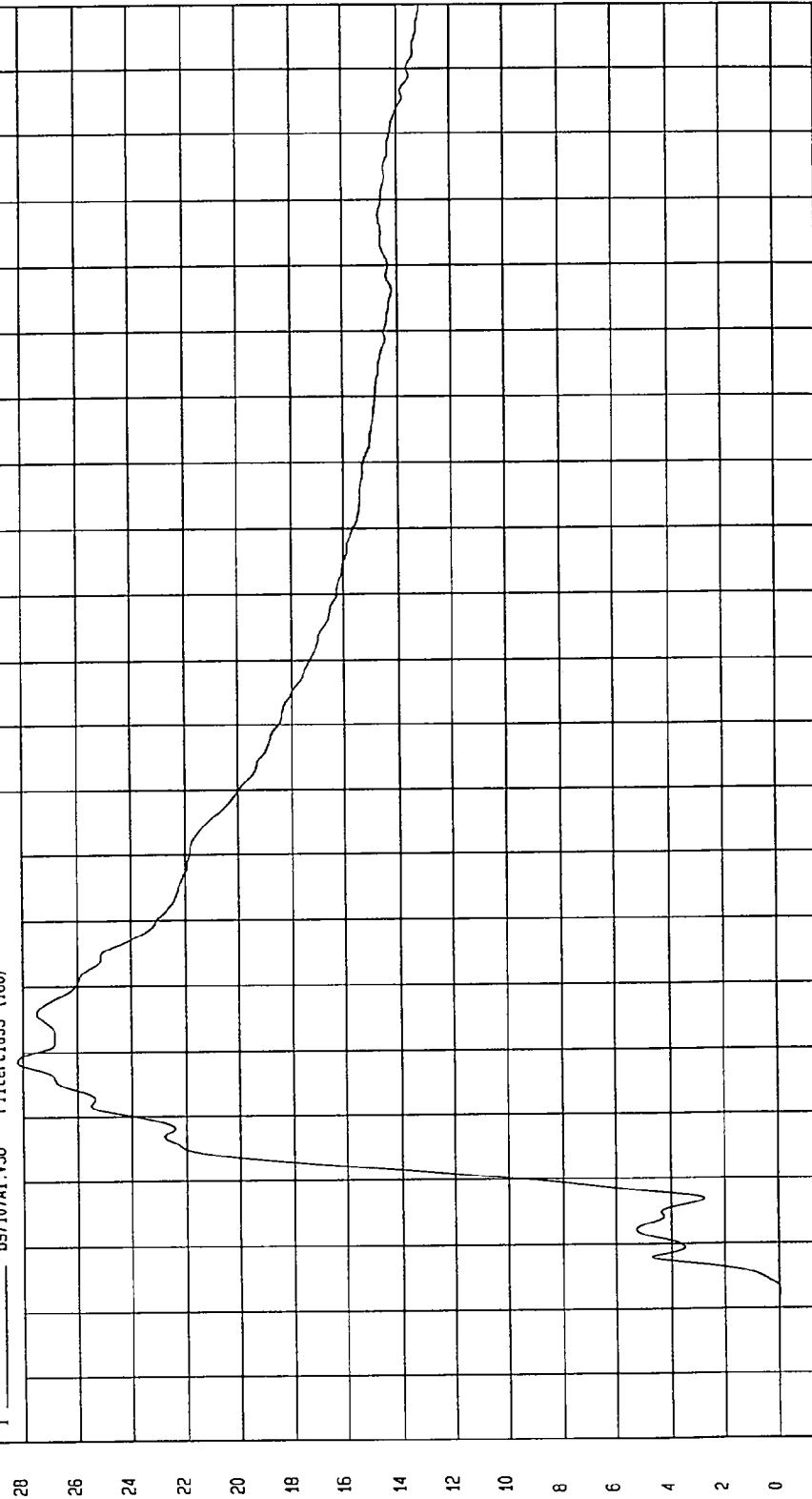
COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -6.32E-02 KPH at 3 msec Maximum = 28.21 KPH at 38 msec

LEFT SIDE SILL AT FRONT SEAT Y VELOCITY

1 B97107A1.V38 Filterclass (180)

KPH



MSA Research
09-15-1997 15:49

TIME Seconds

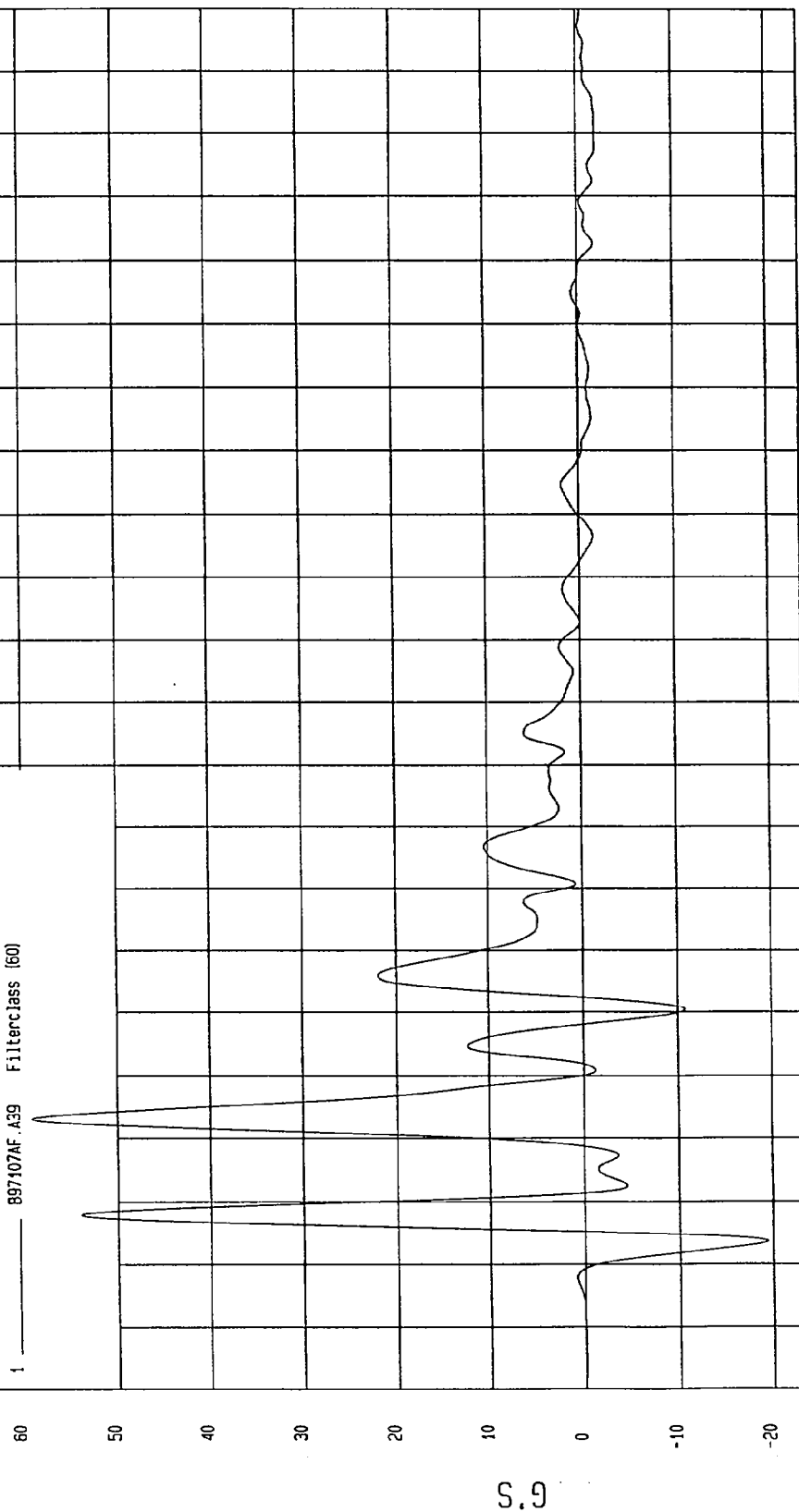
TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -19.41 G'S at 4 msec Maximum = 59.07 G'S at 23 msec

LEFT SIDE SILL AT REAR SEAT Y ACCELERATION

1 897107AF.A39 Filterclass (60)



WGA Research
09-15-1997 15:49

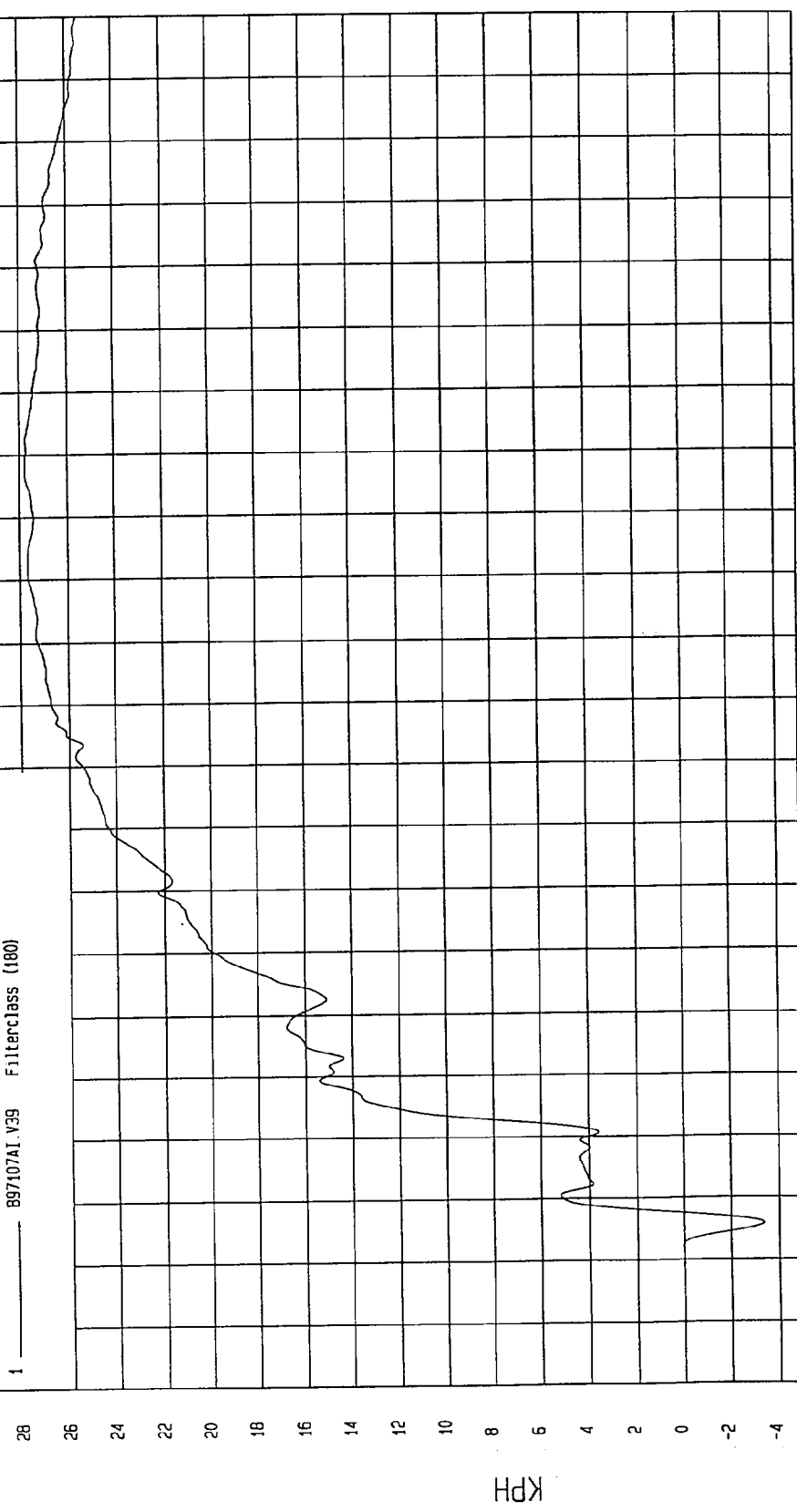
TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -3.37 KPH at 6 msec Maximum = 27.79 KPH at 129 msec

LEFT SIDE SILL AT REAR SEAT Y VELOCITY

1 897107AI.V39 Filterclass (180)



MCA Research
09-15-1997 15.49

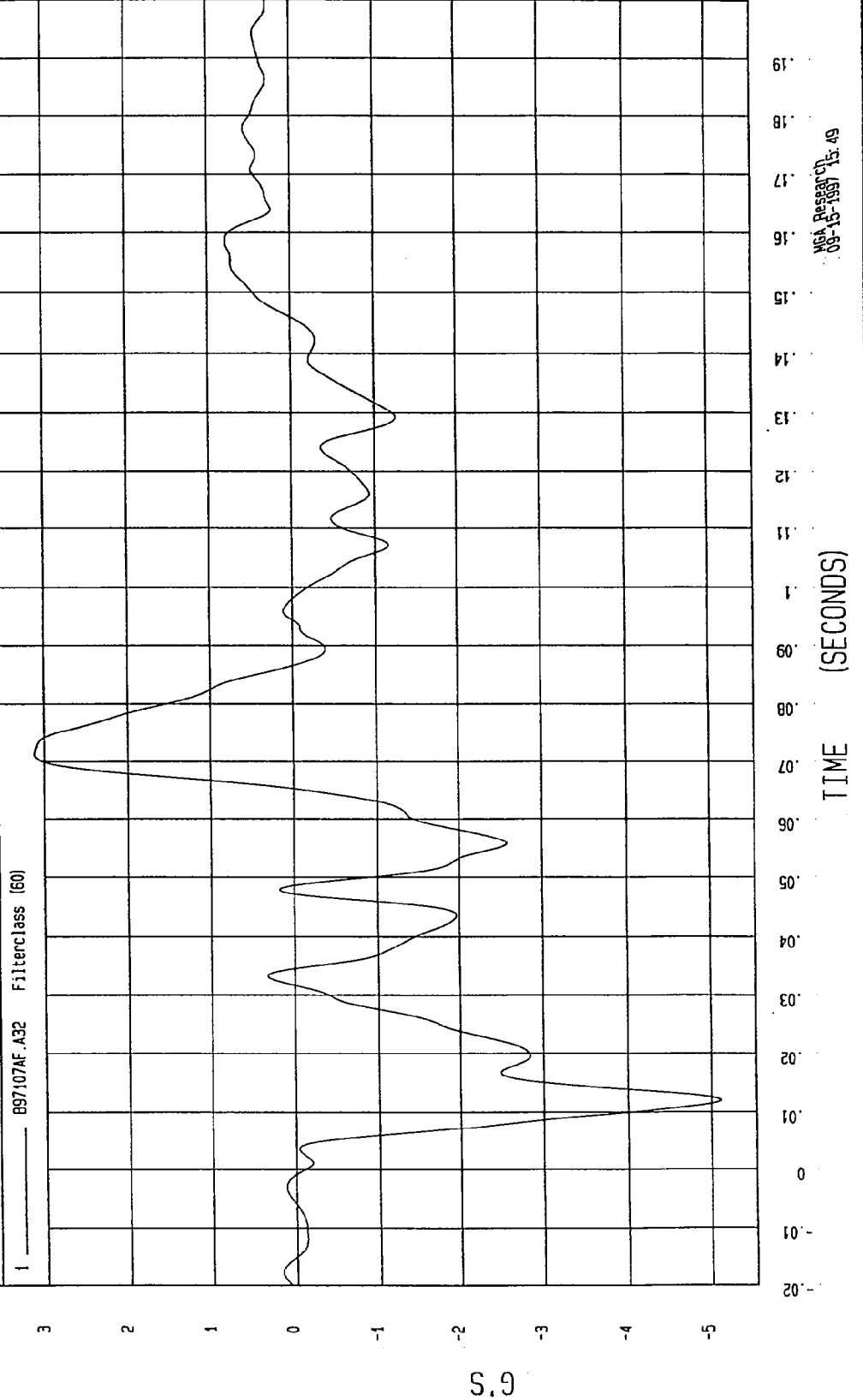
TIME Seconds

TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -5.10 G'S at 12 msec Maximum = 3.11 G'S at 71 msec

RIGHT SIDE SILL AT FRONT SEAT X ACCELERATION

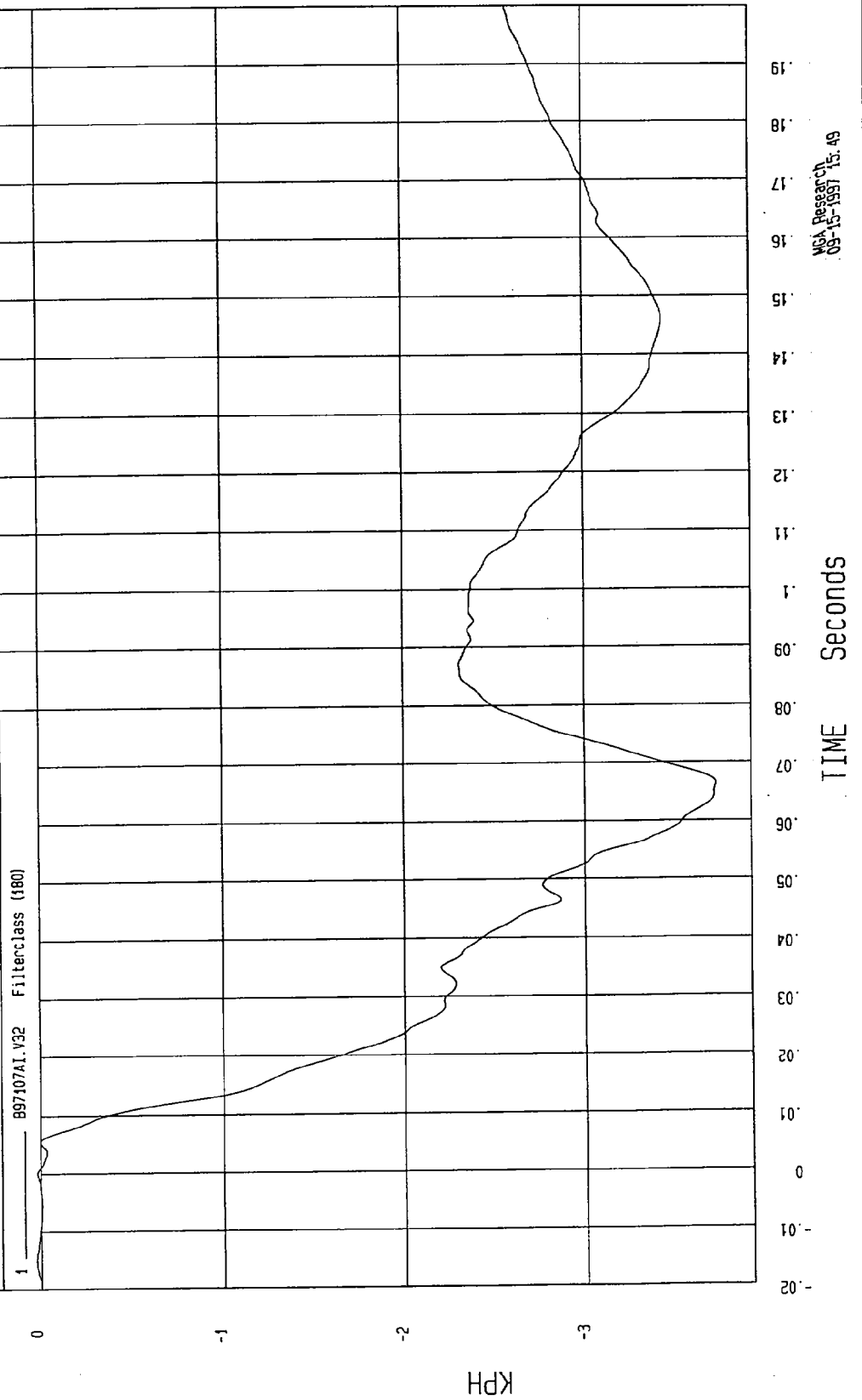


TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -3.71 KPH at 56 msec Maximum = 2.67E-02 KPH at -15 msec

RIGHT SIDE SILL AT FRONT SEAT X VELOCITY



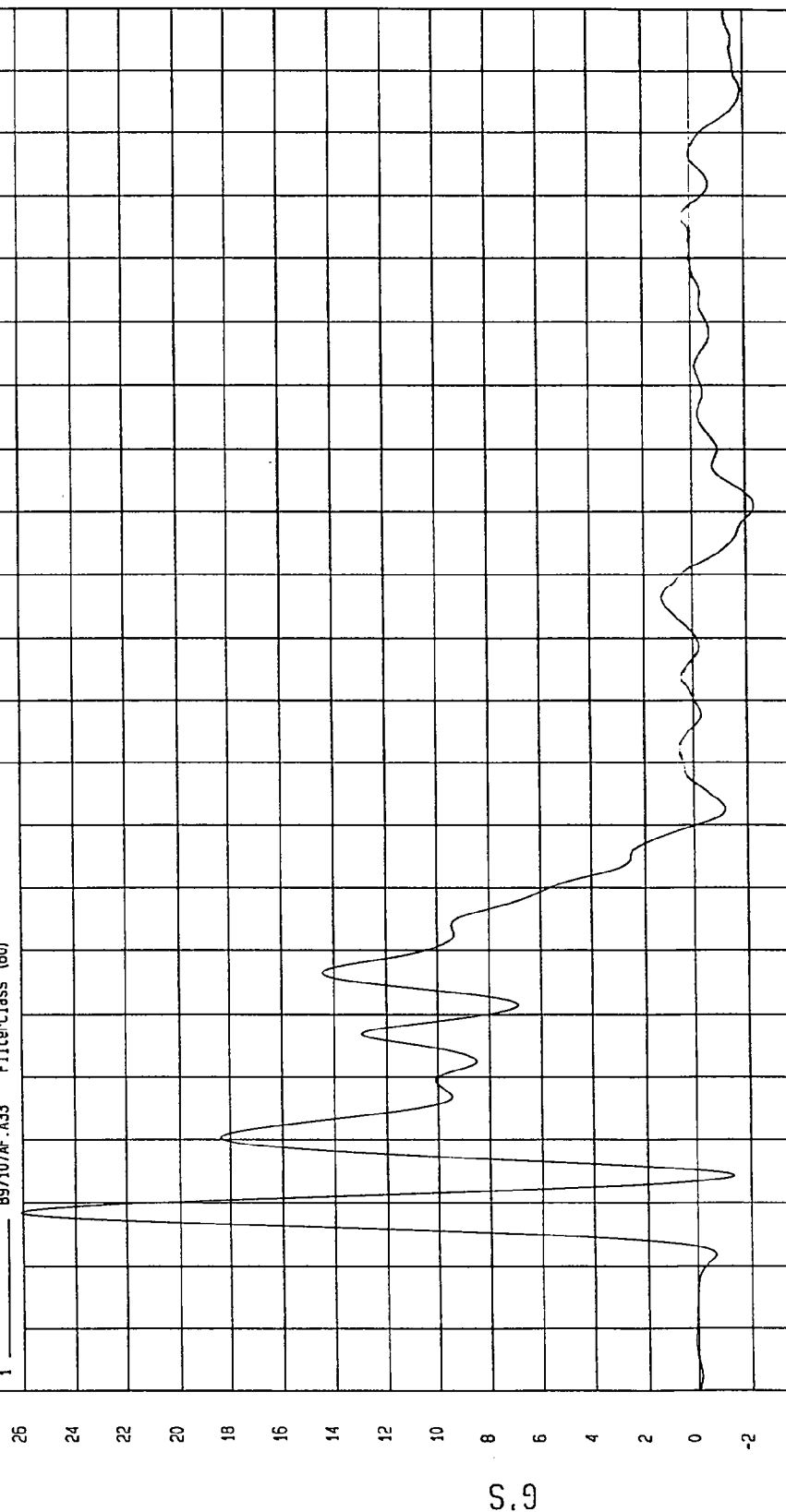
TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -2.29 G'S at 121 msec Maximum = 26.07 G'S at 8 msec

RIGHT SIDE SILL AT FRONT SEAT Y ACCELERATION

1 897107AF.A33 Filterclass (60)



NSA Research
09-15-1997 15:49

TIME (SECONDS)

G.S

TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

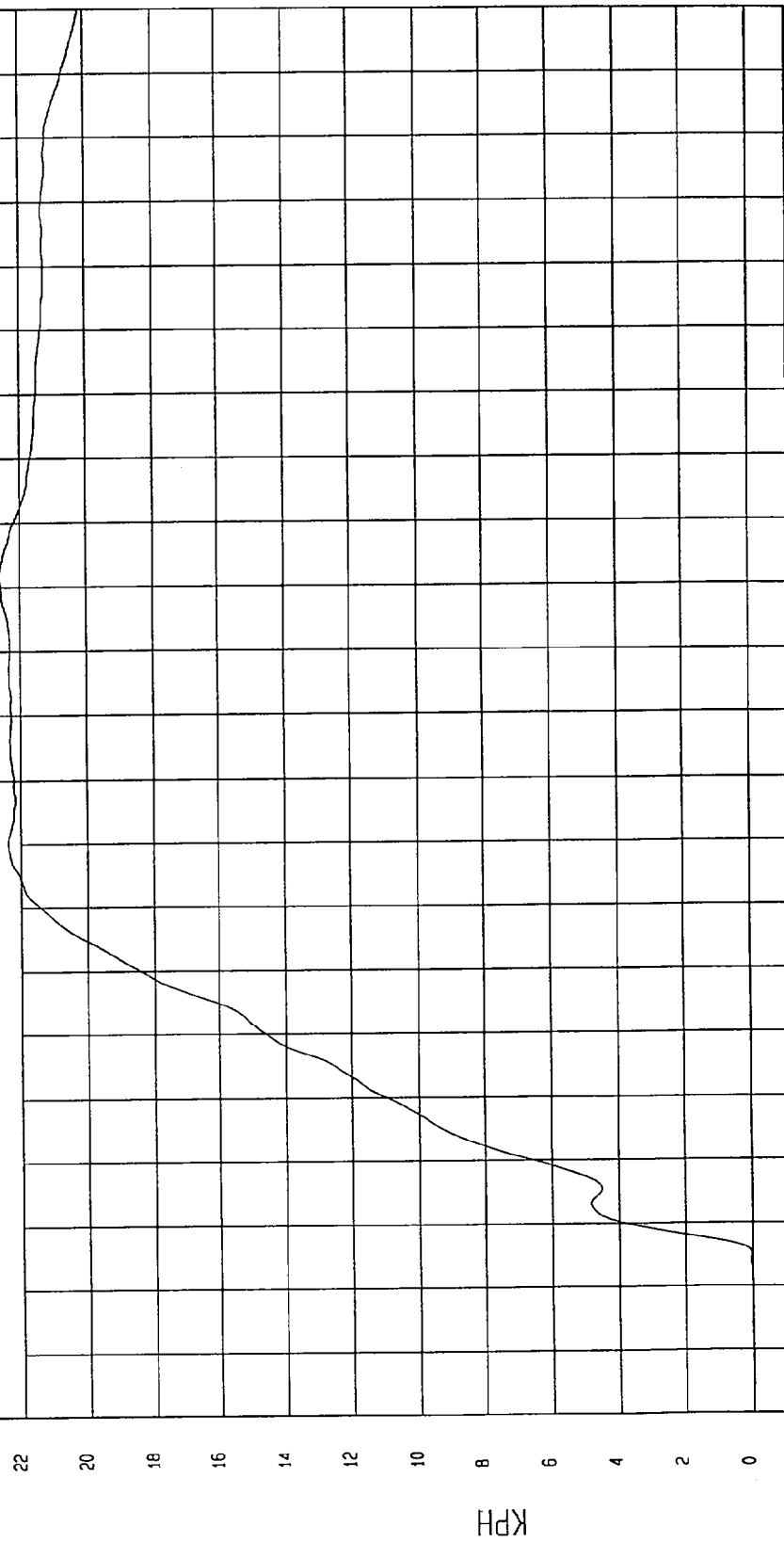
COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -2.04E-02 KPH at -15 msec

Maximum = 22.61 KPH at 112 msec

RIGHT SIDE SILL AT FRONT SEAT Y VELOCITY

1 ——— B97107A1.V33 FilterClass (180)



MGA Research
09-15-1997 15:50

TIME Seconds

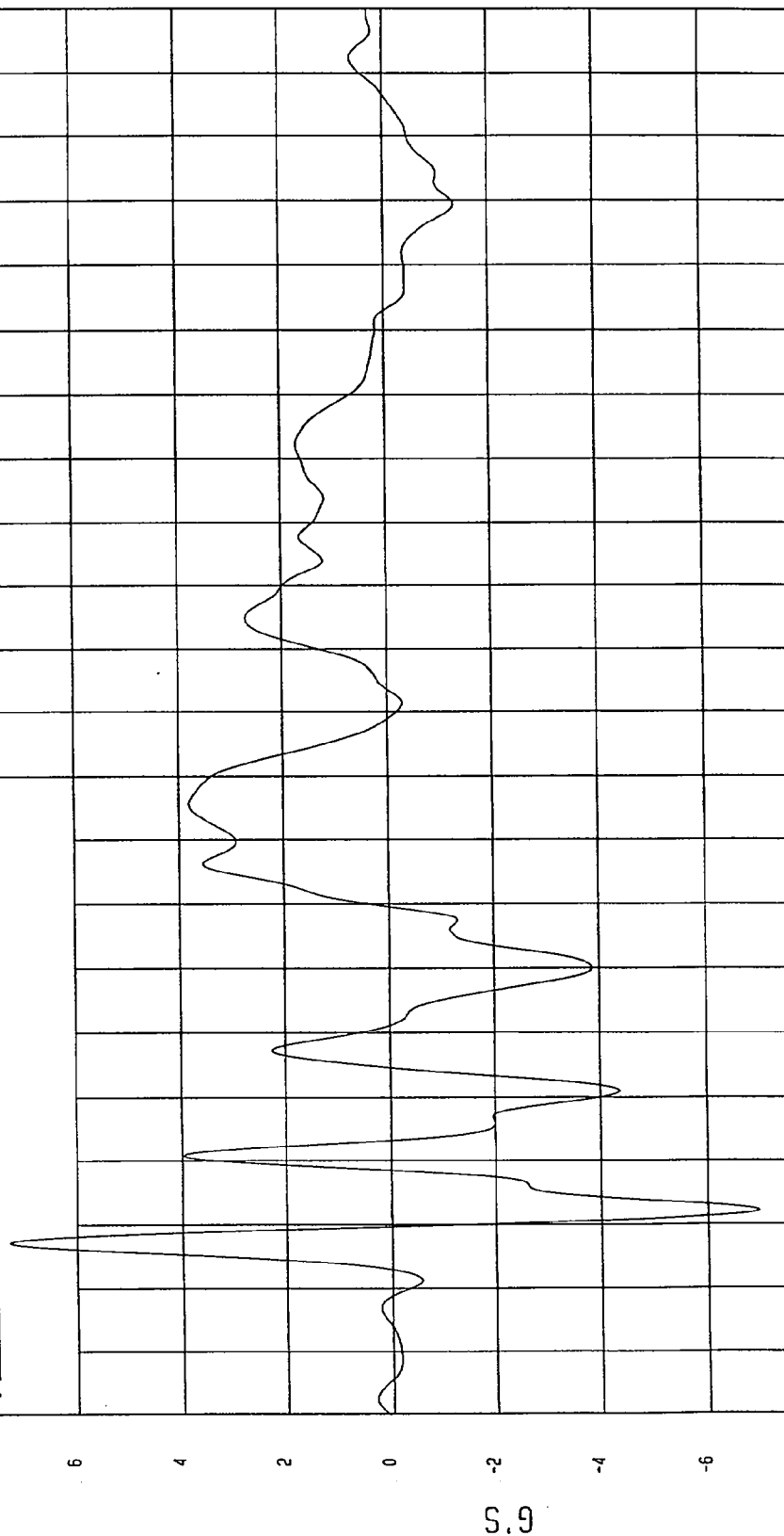
TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -6.95 G'S at 12 msec Maximum = 7.26 G'S at 7 msec

RIGHT SIDE SILL AT FRONT SEAT Z ACCELERATION

1 897107AF.A34 Filterclass (60)



MCA Research
09-15-1997 15:50

TIME (SECONDS)

G's

TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -1.73 KPH at 59 msec Maximum = 3.45 KPH at 153 msec

RIGHT SIDE SILL AT FRONT SEAT Z VELOCITY

1 ——— 897107A1.V34 Filterclass (180)

3

2

1

KPH

-1

-0.02 -0.01 0 0.01 0.02 0.03 0.04 0.05 0.06 0.07 0.08 0.09 0.1 0.11 0.12 0.13 0.14 0.15 0.16 0.17 0.18 0.19

TIME Seconds

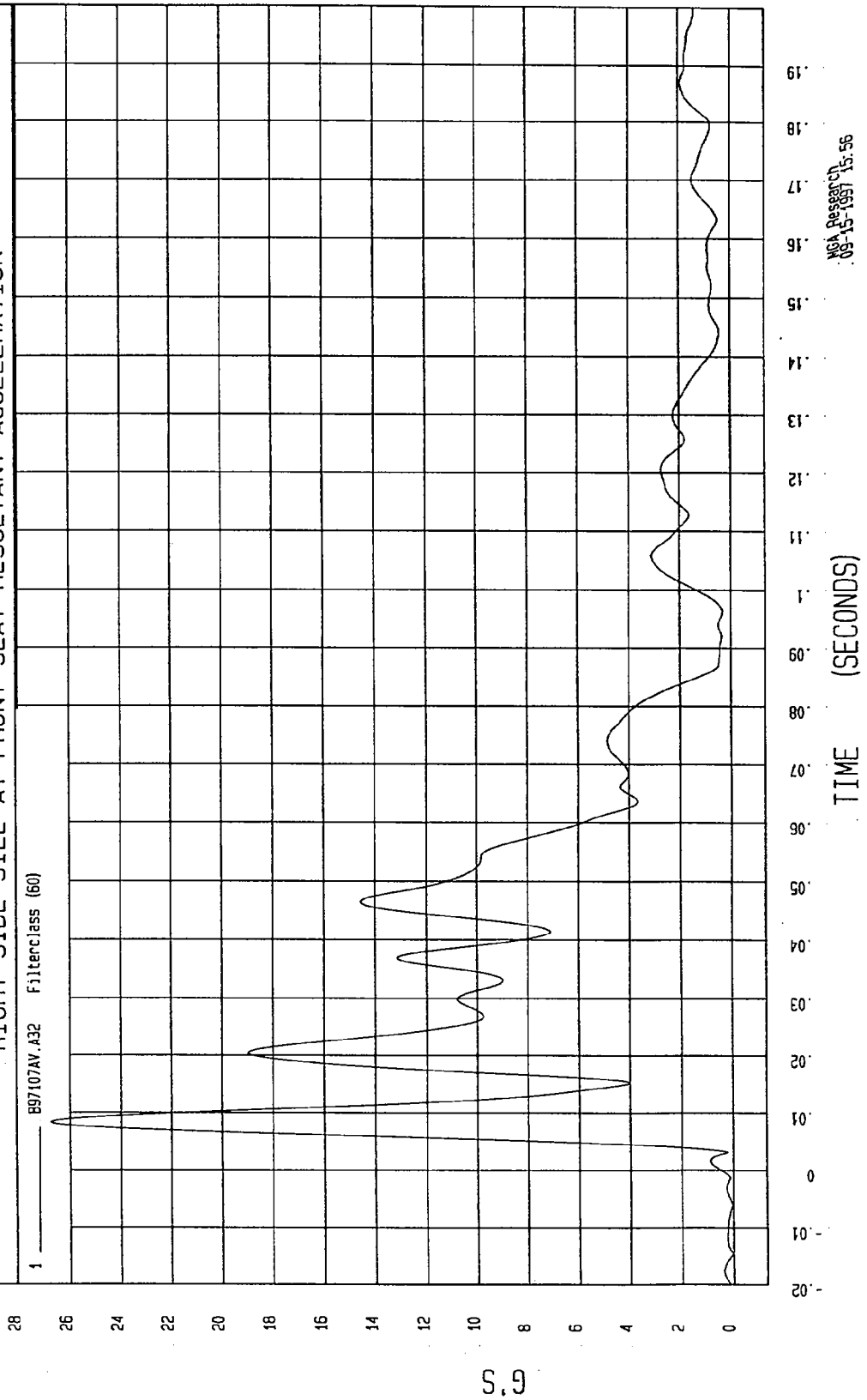
WCA Research
09-15-1997 15:50

TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = $3.41E-02$ G's at -6 msec Maximum = 26.74 G's at 8 msec

RIGHT SIDE SILL AT FRONT SEAT RESULTANT ACCELERATION



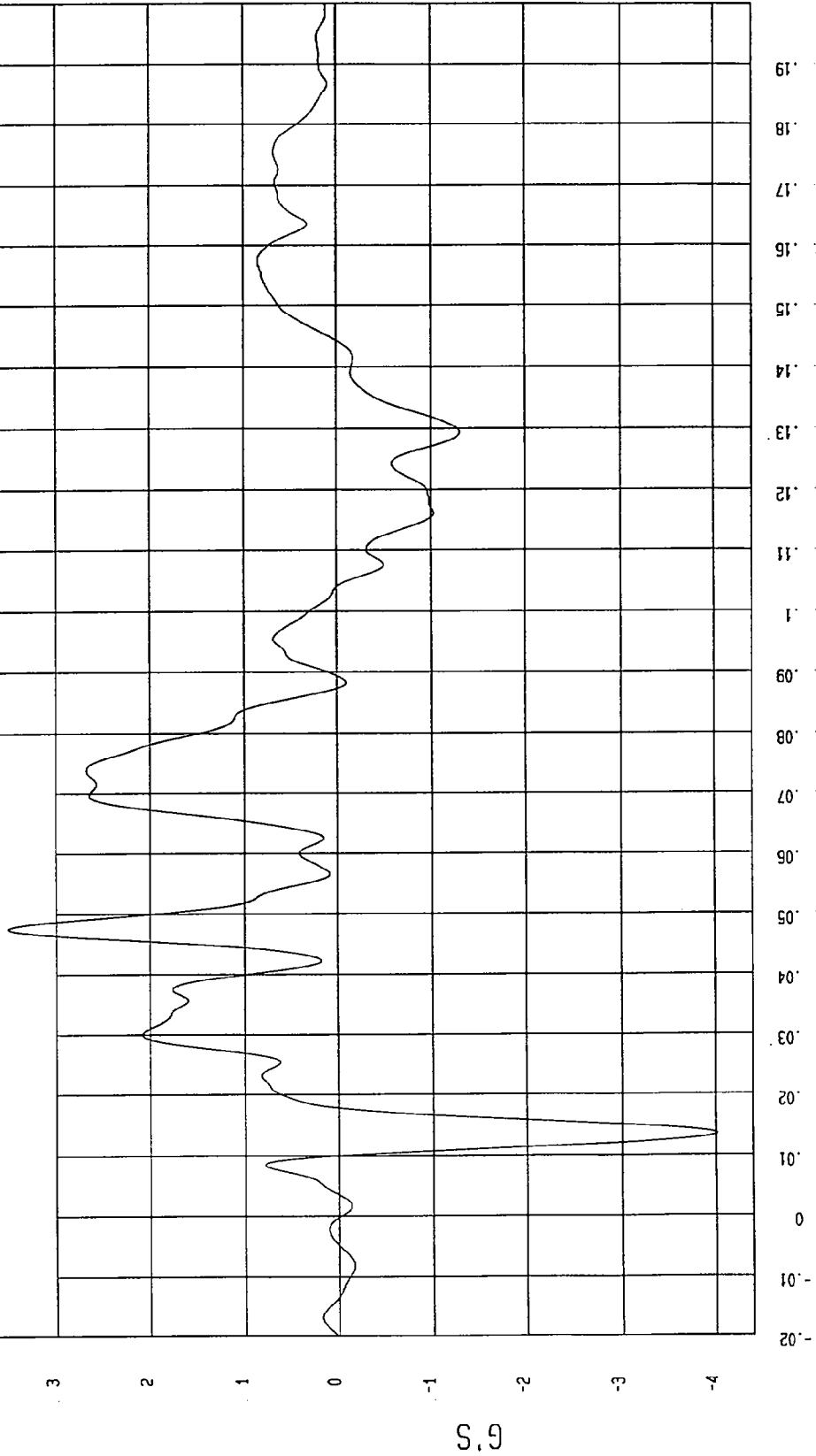
TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -4.01 G'S at 14 msec Maximum = 3.51 G'S at 48 msec

RIGHT SIDE SILL AT REAR SEAT X ACCELERATION

1 B97107AF.A35 Filterclass (60)



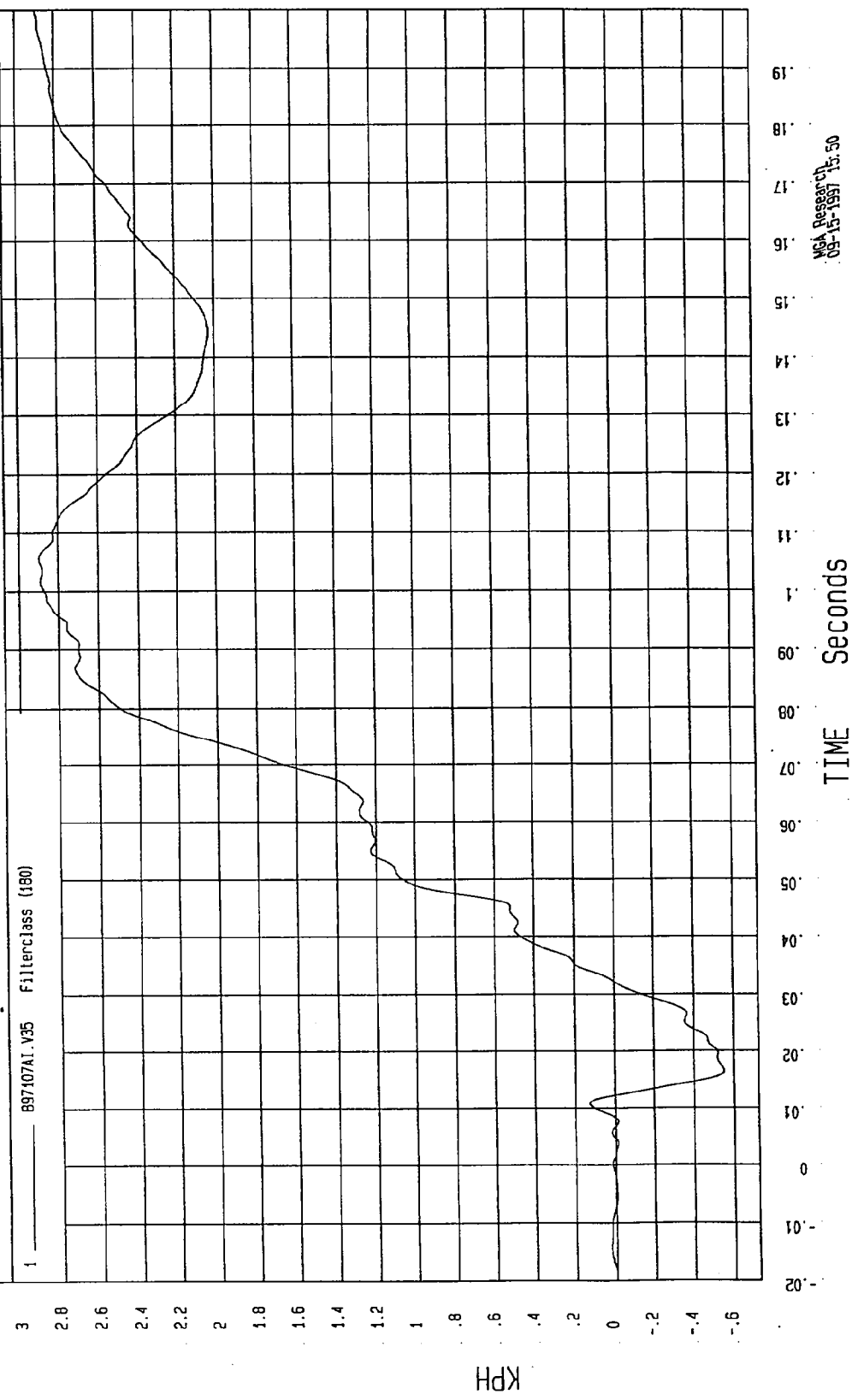
MGA Research
09-15-1997 15:50

TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -.55 KPH at 16 msec Maximum = 2.90 KPH at 106 msec

RIGHT SIDE SILL AT REAR SEAT X VELOCITY



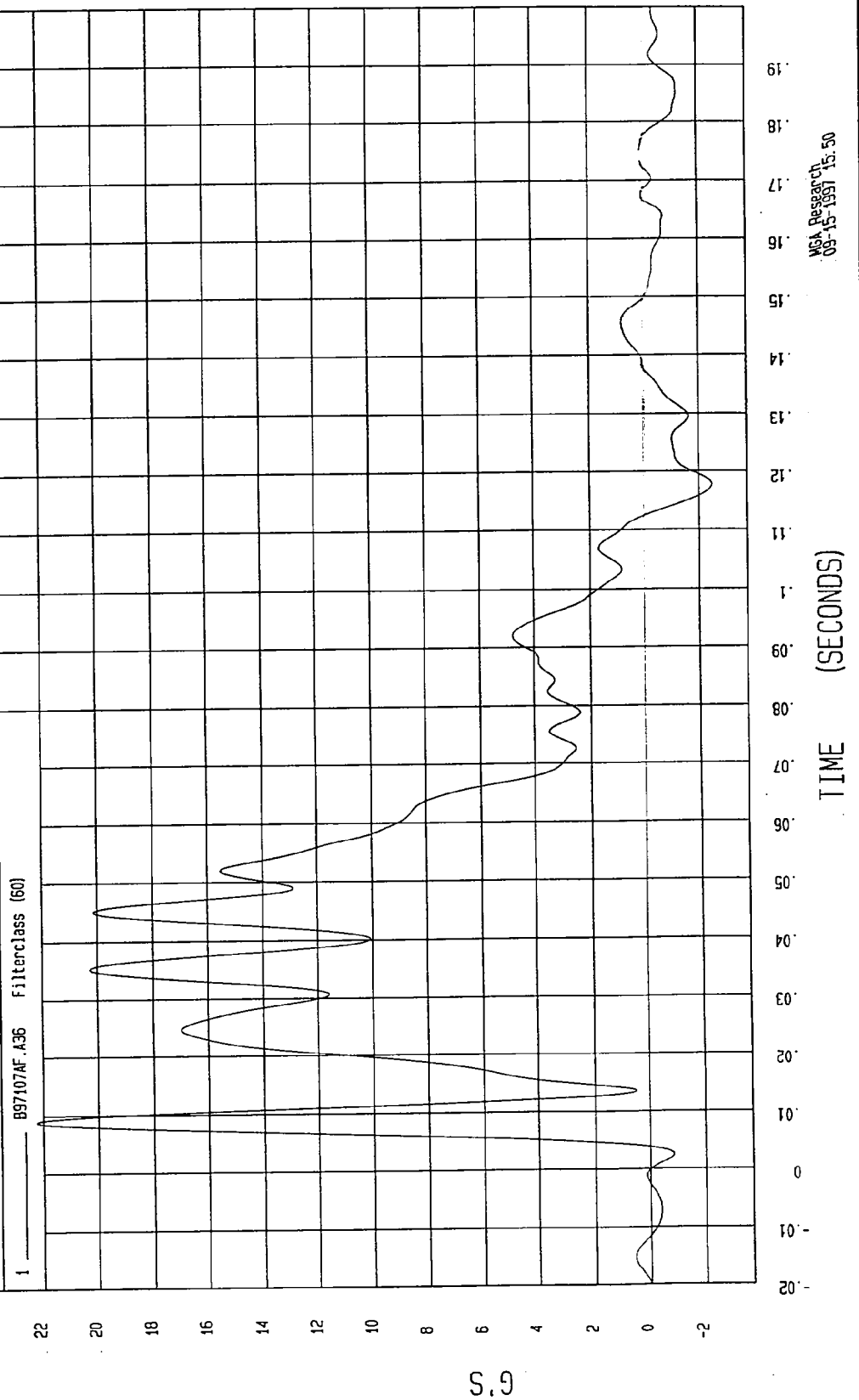
MCA Research
09-15-1997 15:50

TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -2.45 G'S at 118 msec Maximum = 22.23 G'S at 9 msec

RIGHT SIDE SILL AT REAR SEAT Y ACCELERATION



TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

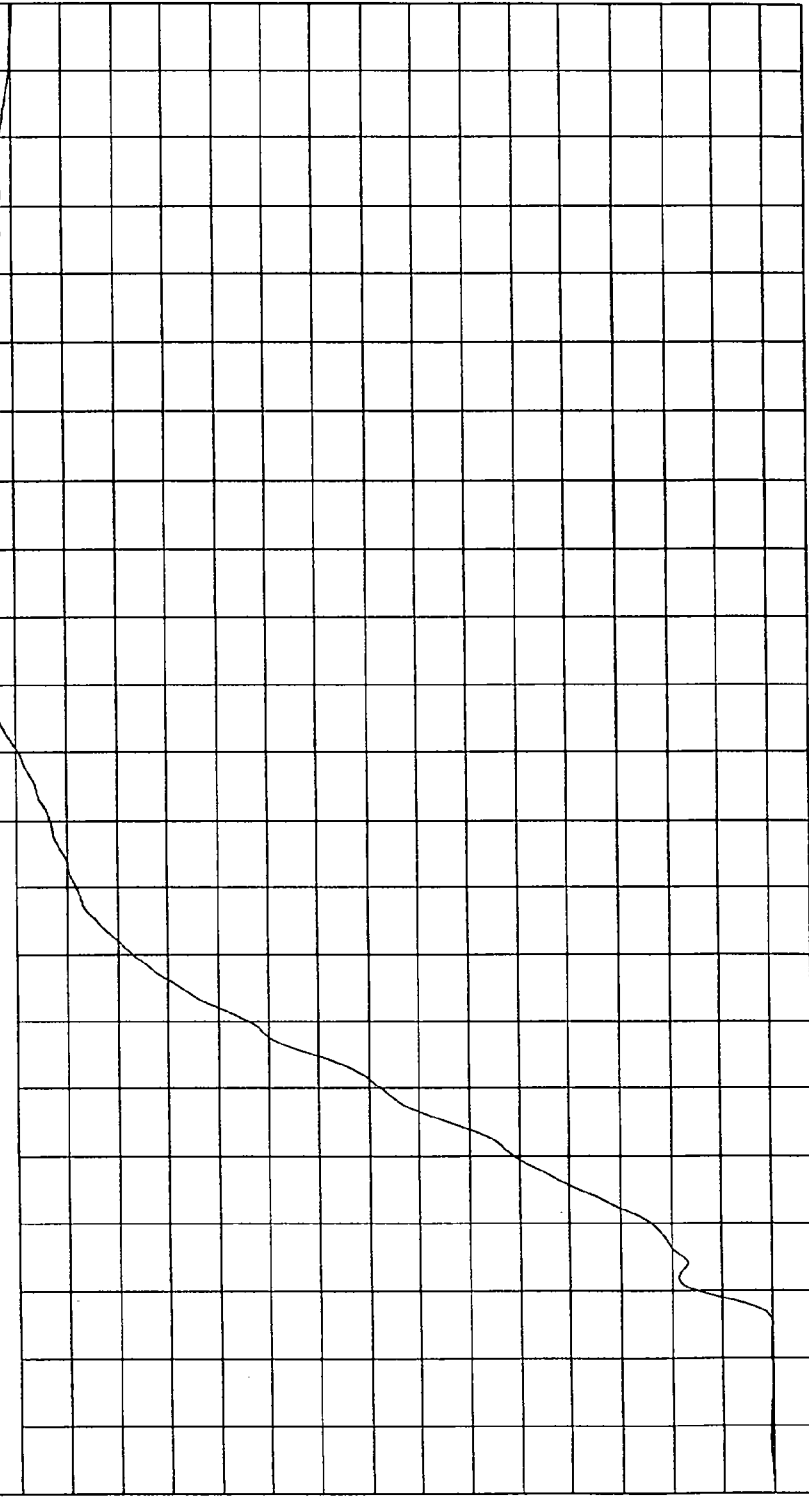
Minimum = -3.72E-03 KPH at 5 msec Maximum = 31.69 KPH at 113 msec

RIGHT SIDE SILL AT REAR SEAT Y VELOCITY

1 B97107A1.V36 Filterclass (180)

KPH

32
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0



TIME Seconds

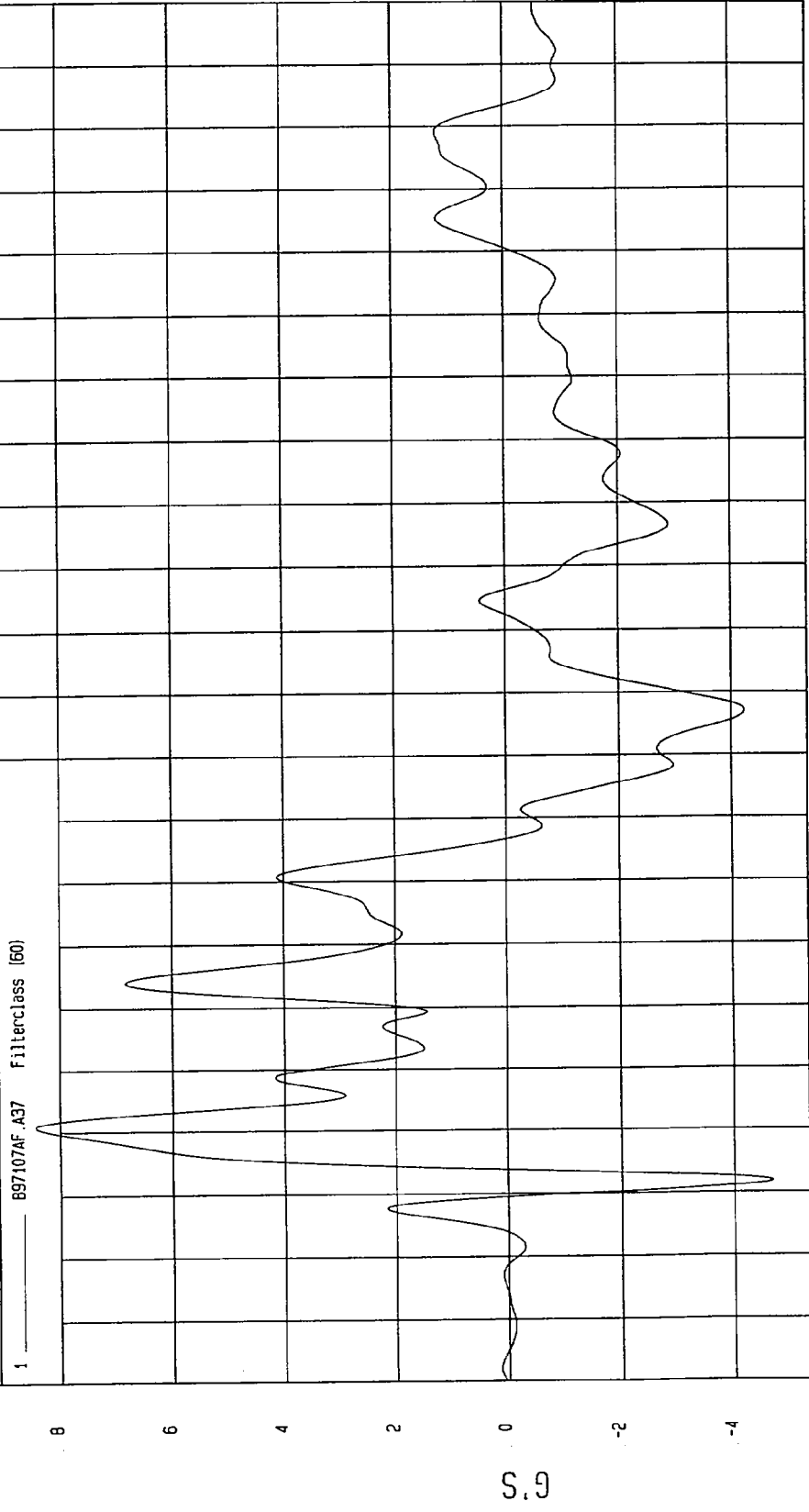
MGA Research
09-16-1997 15:50

TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -4.67 G'S at 12 msec Maximum = 8.43 G'S at 21 msec

RIGHT SIDE SILL AT REAR SEAT Z ACCELERATION



TIME (SECONDS)

0.19
0.18
0.17
0.16
0.15
0.14
0.13
0.12
0.11
0.1
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
-0.01
-0.02

NBA Research
09-15-1997 15:51

TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MWO113) Speed: 38 MPH 61.2 KPH

Minimum = -.42 KPH at 13 msec Maximum = 6.55 KPH at 67 msec

RIGHT SIDE SILL AT REAR SEAT Z VELOCITY

1 897107A1.V37 Filterclass (180)



TIME Seconds

MCA Research
09-15-1997 15:51

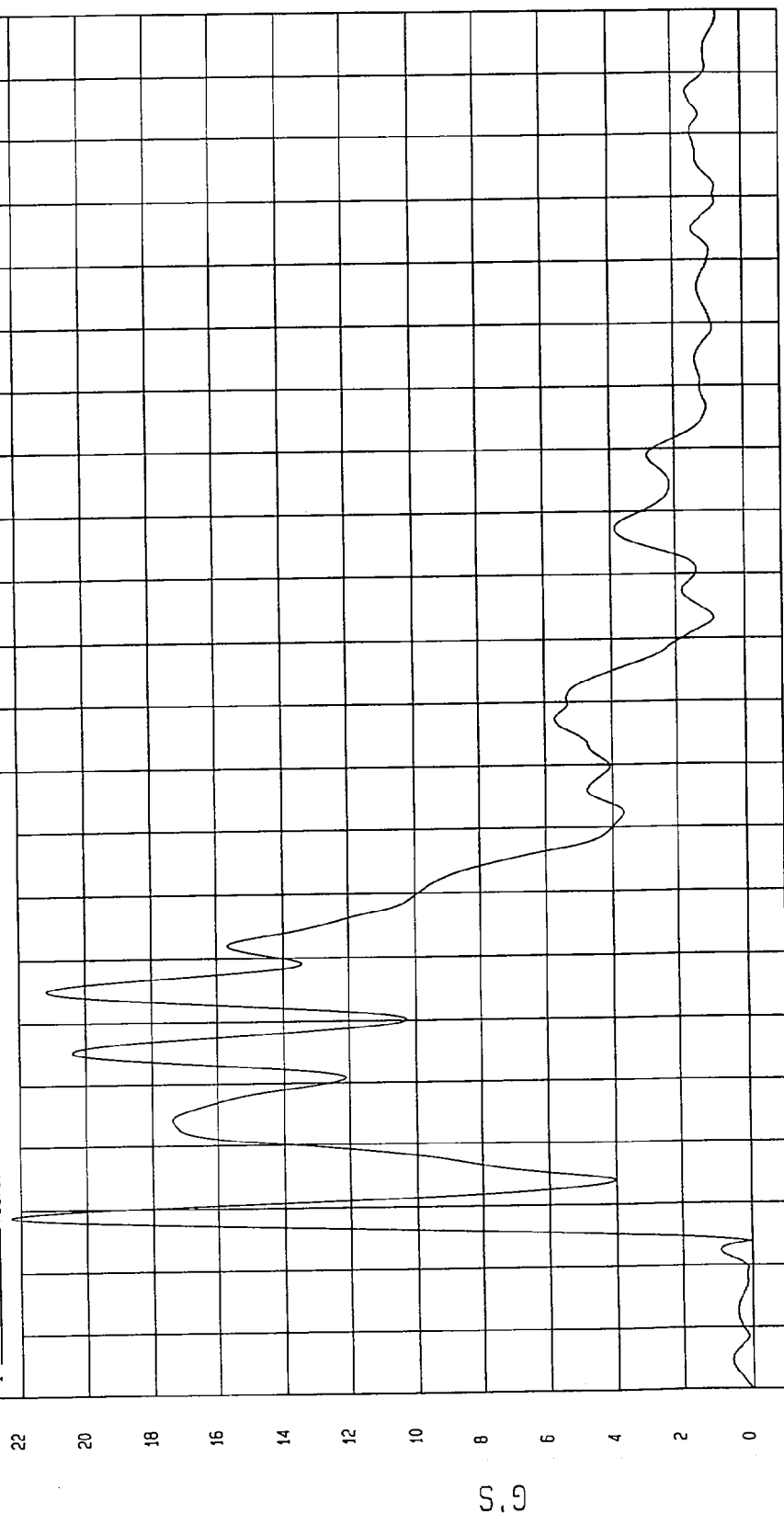
TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = .03 G'S at 4 msec Maximum = 22.28 G'S at 9 msec

RIGHT SIDE SILL AT REAR SEAT RESULTANT ACCELERATION

1 ——— B97107AV A35 Filterclass (60)



NCI Research
09-15-1997 15:56

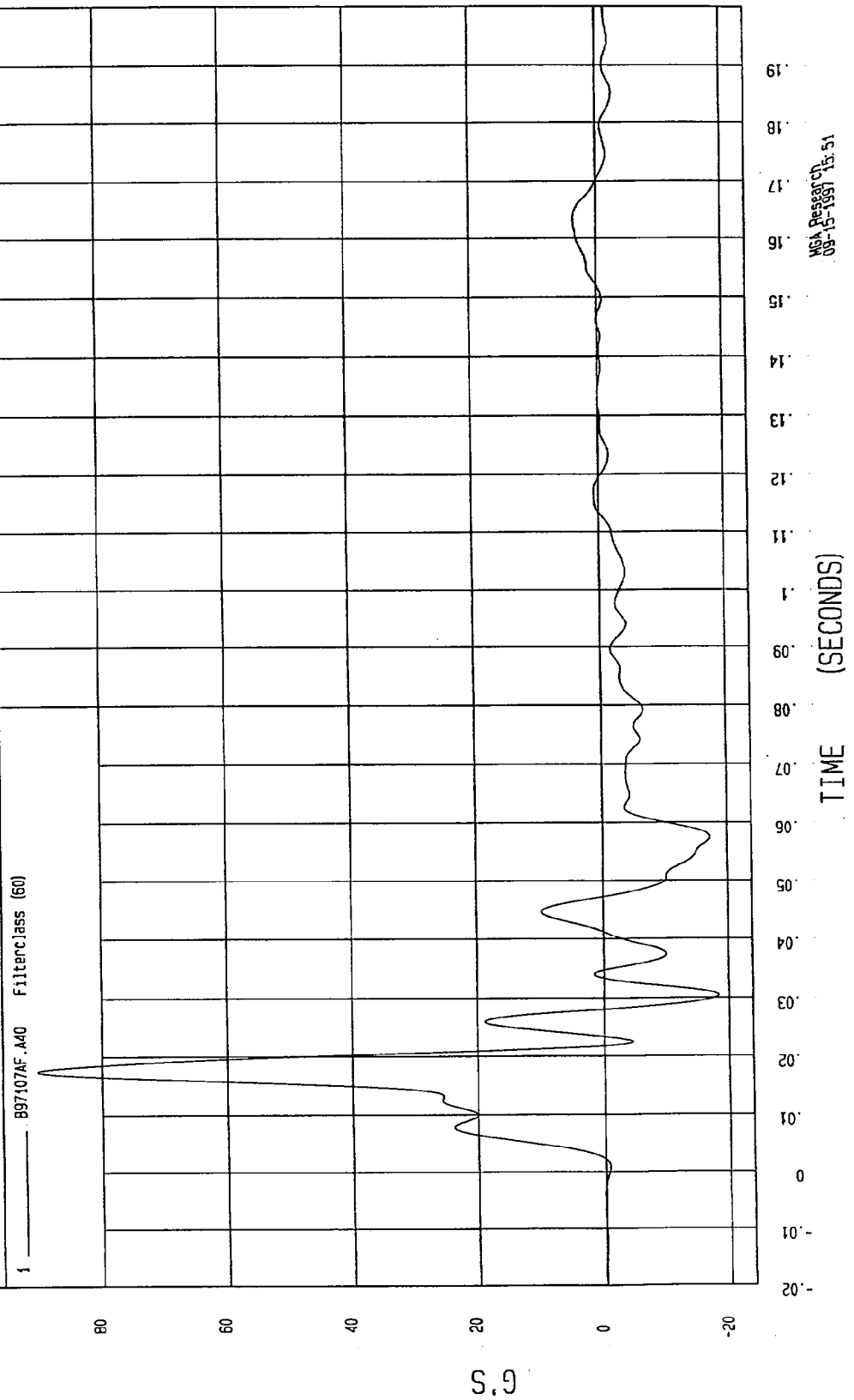
TIME (SECONDS)

TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -18.38 G'S at 30 msec Maximum = 90.30 G'S at 18 msec

DRIVER SEAT TRACK Y ACCELERATION



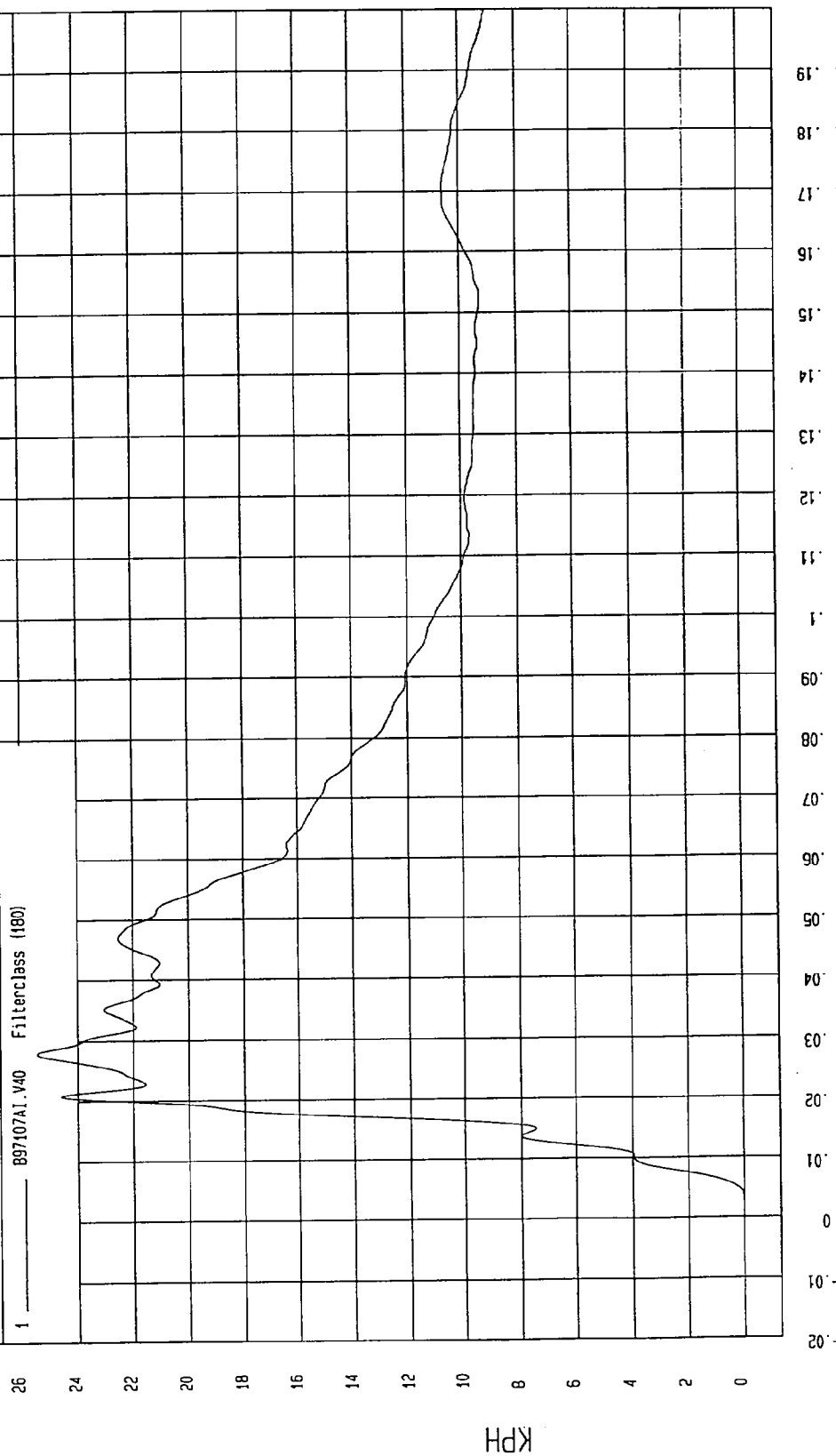
TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MWO113) Speed: 38 MPH 61.2 KPH

Minimum = -5.62E-03 KPH at -10 msec

Maximum = 25.45 KPH at 28 msec

DRIVER SEAT TRACK Y VELOCITY



MCA Research
09-15-1997 15:51

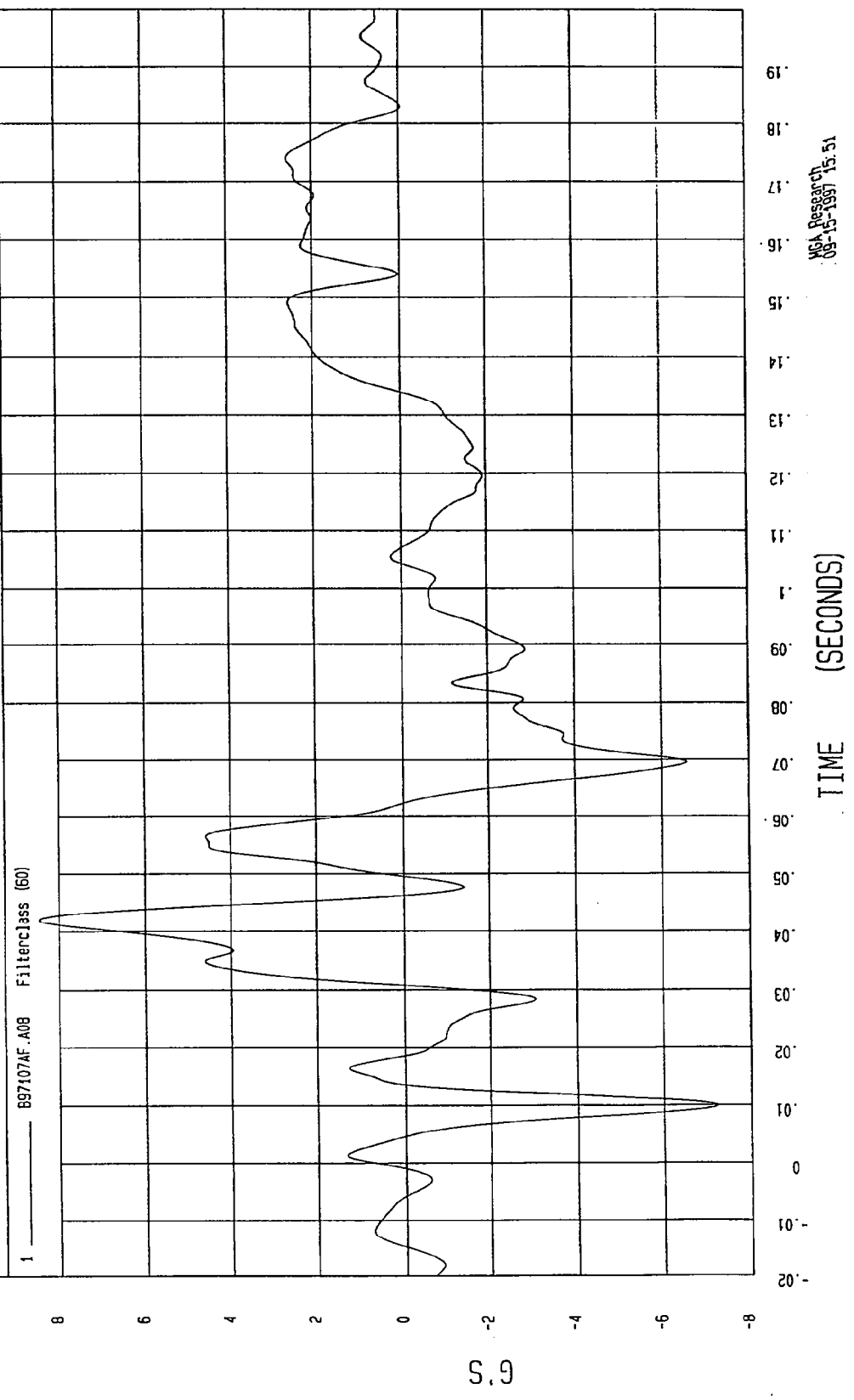
TIME Seconds

TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LeSABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -7.21 G'S at 10 msec Maximum = 8.46 G'S at 42 msec

REAR FLOORPAN ABOVE AXLE X ACCELERATION



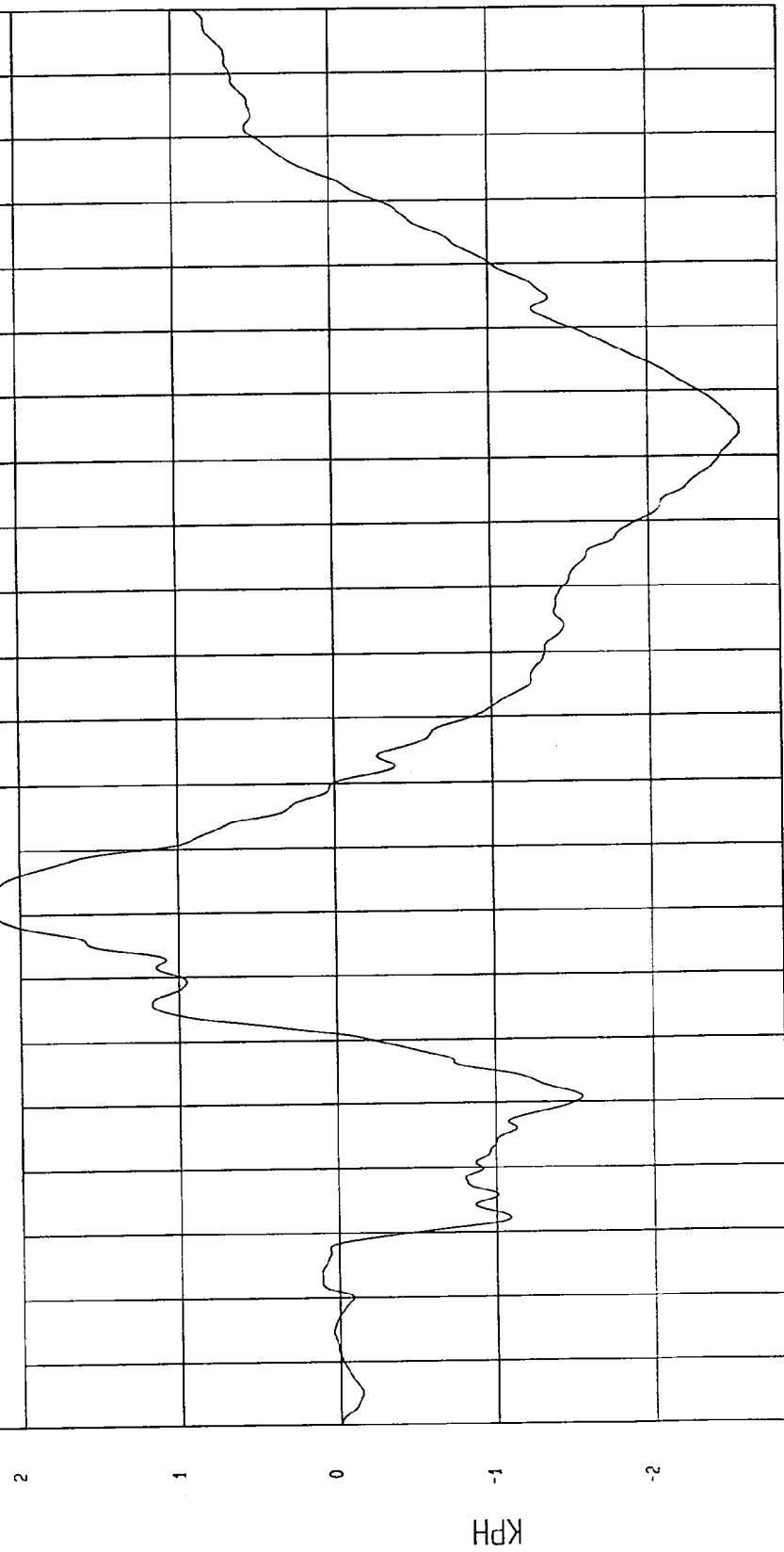
TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -2.58 KPH at 134 msec Maximum = 2.17 KPH at 63 msec

REAR FLOORPAN ABOVE AXLE X VELOCITY

1 B97107A1.V08 Filterclass (H80)



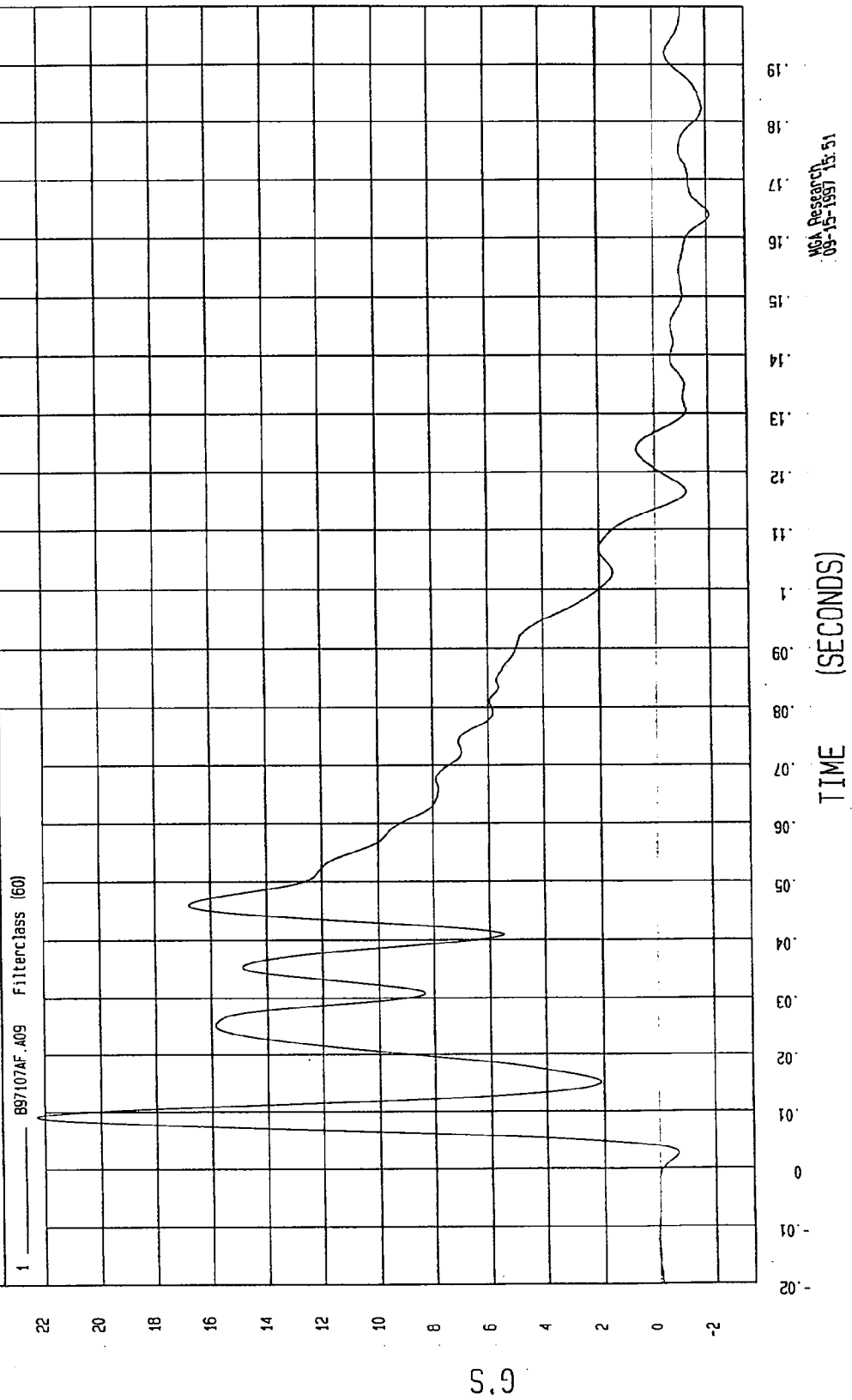
MCA Research
08-15-1997 15:51

TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -2.10 G'S at 164 msec Maximum = 22.28 G'S at 9 msec

REAR FLOORPAN ABOVE AXLE Y ACCELERATION



TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

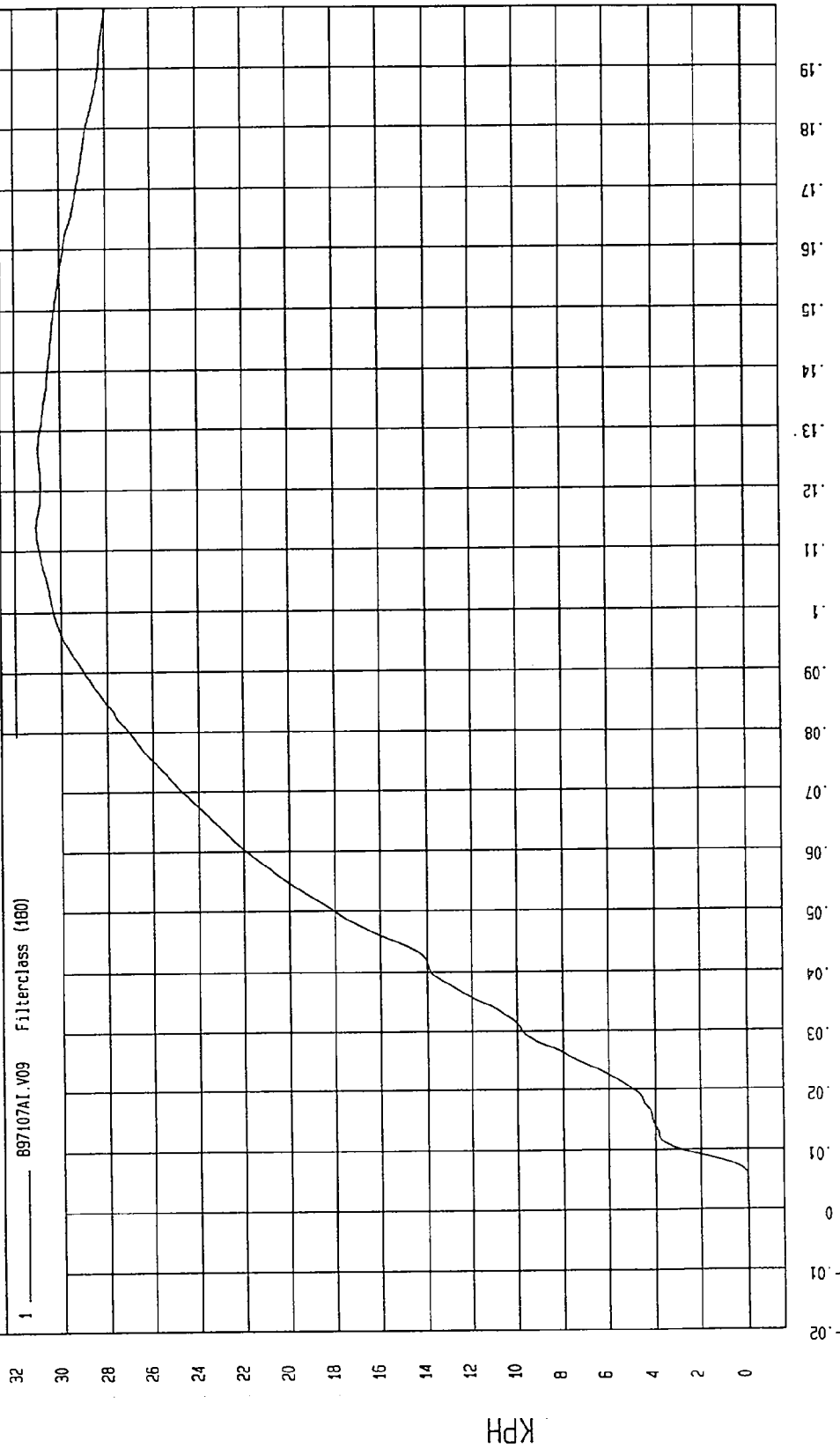
COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -9.16E-03 KPH at -17 msec

Maximum = 31.08 KPH at 114 msec

REAR FLOORPAN ABOVE AXLE Y VELOCITY

1 ——— B97107A1.V09 Filterclass (100)



MCA Research
09-15-1997 15:51

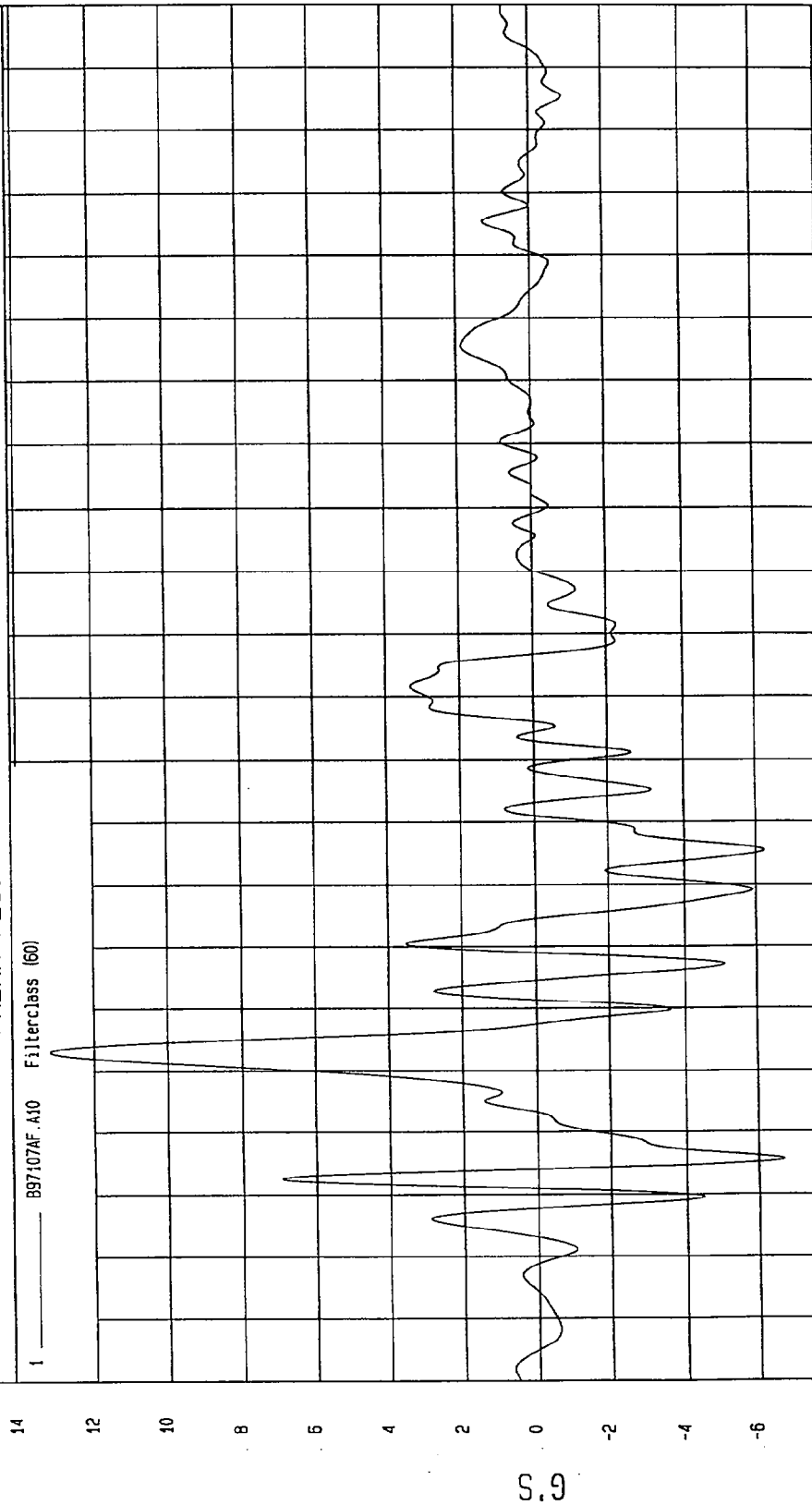
TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -6.66 G'S at 16 msec Maximum = 13.15 G'S at 33 msec

REAR FLOORPAN ABOVE AXLE Z ACCELERATION

1 B97107AF.A10 Filterclass (60)



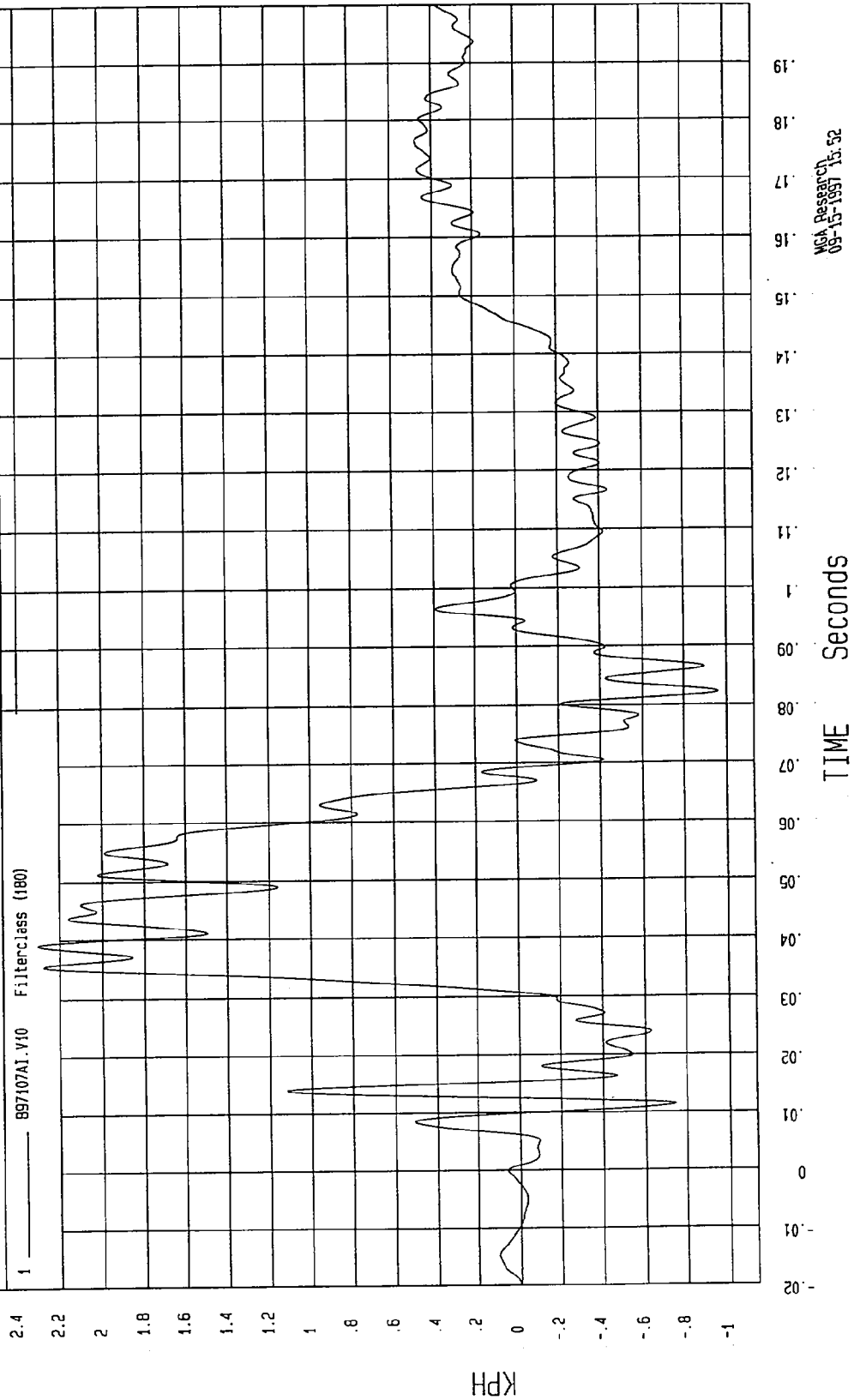
NCA Research
09-15-1997 15:51

TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LeSABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -.96 KPH at 82 msec Maximum = 2.30 KPH at 39 msec

REAR FLOORPAN ABOVE AXLE Z VELOCITY

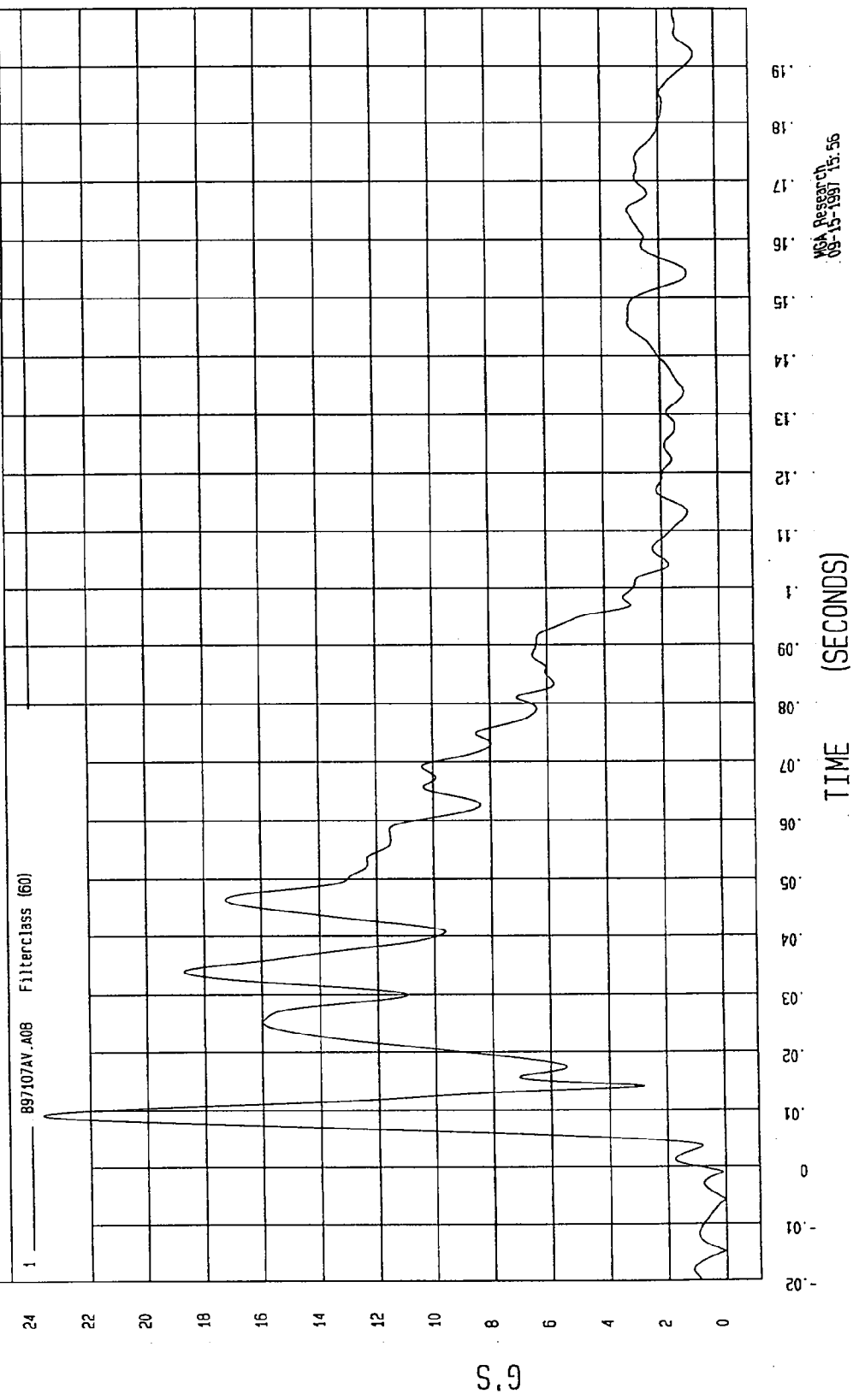


TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = 1.43E-02 G's at -6 msec Maximum = 23.60 G's at 9 msec

REAR FLOORPAN ABOVE AXLE RESULTANT ACCELERATION



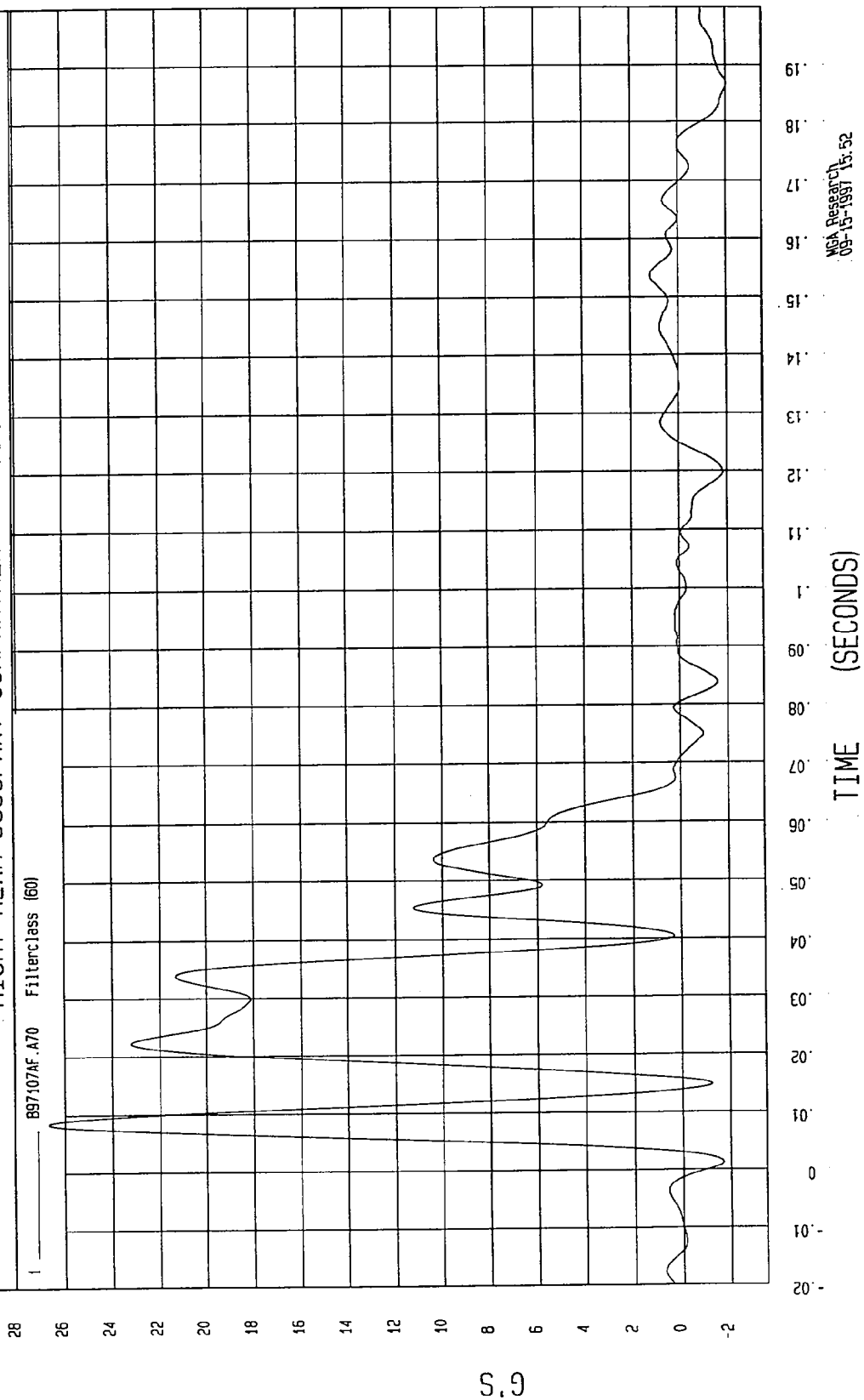
MCA Research
09-15-1997 15:56

TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LeSABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -2.03 G'S at 187 msec Maximum = 26.67 G'S at 8 msec

RIGHT REAR OCCUPANT COMPARTMENT Y ACCELERATION



TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

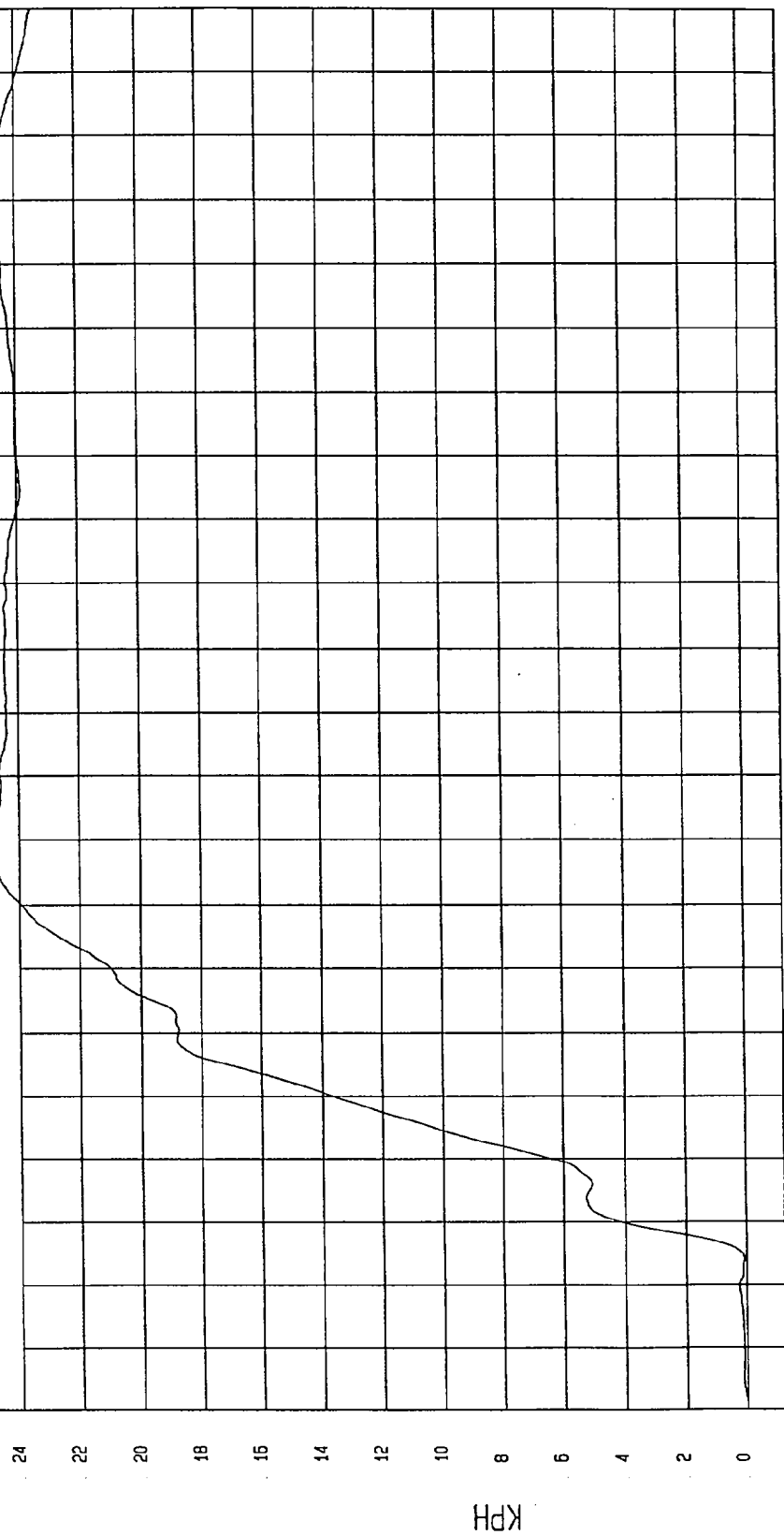
COMPONENT: 1998 BUICK LeSABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = 0 KPH at -20 msec

Maximum = 24.75 KPH at 72 msec

RIGHT REAR OCCUPANT COMPARTMENT Y VELOCITY

1 897107A1.V70 Filterclass (180)



NGA Research
09-15-1997 15:52

TIME Seconds

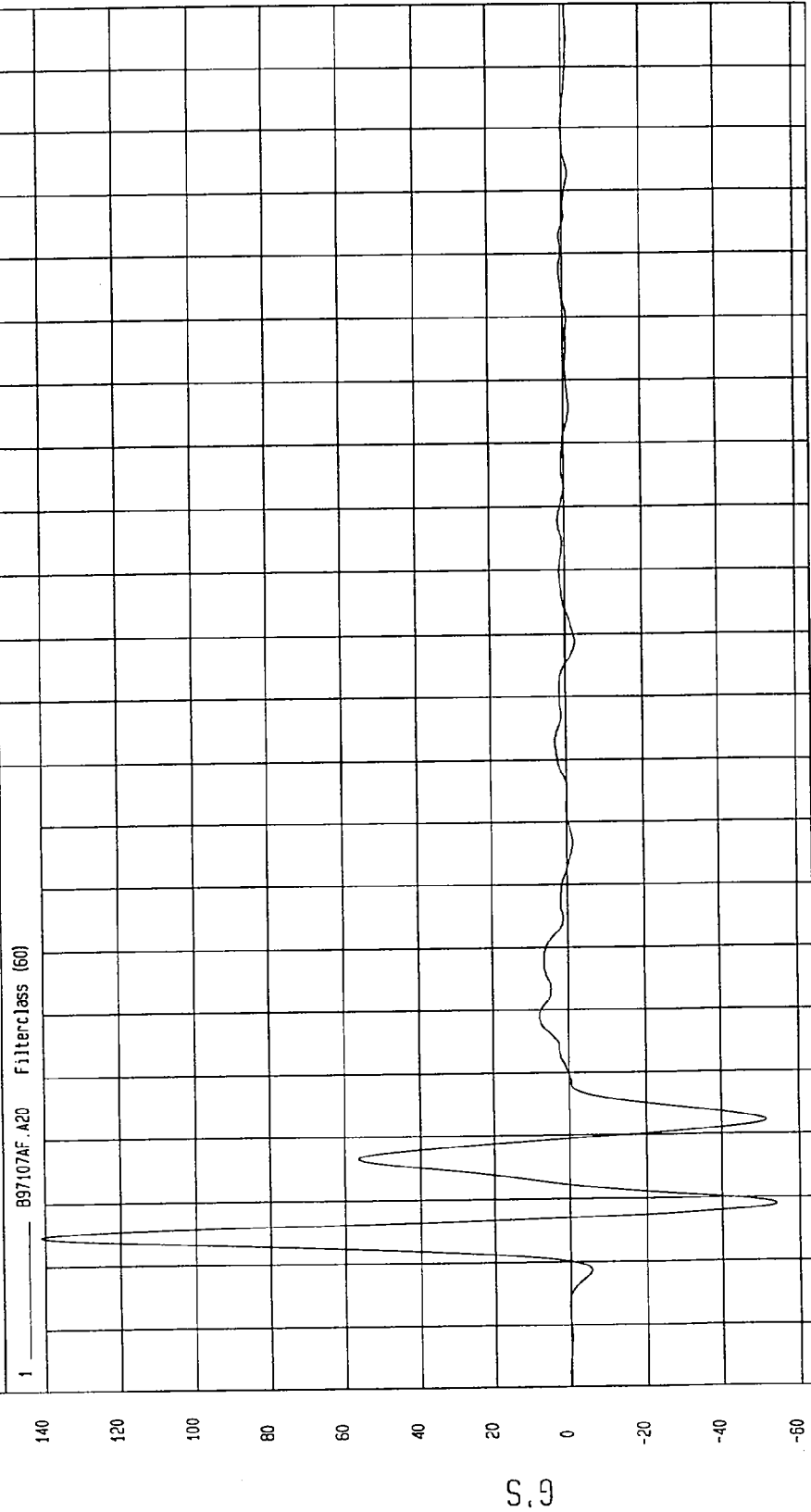
KPH

TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

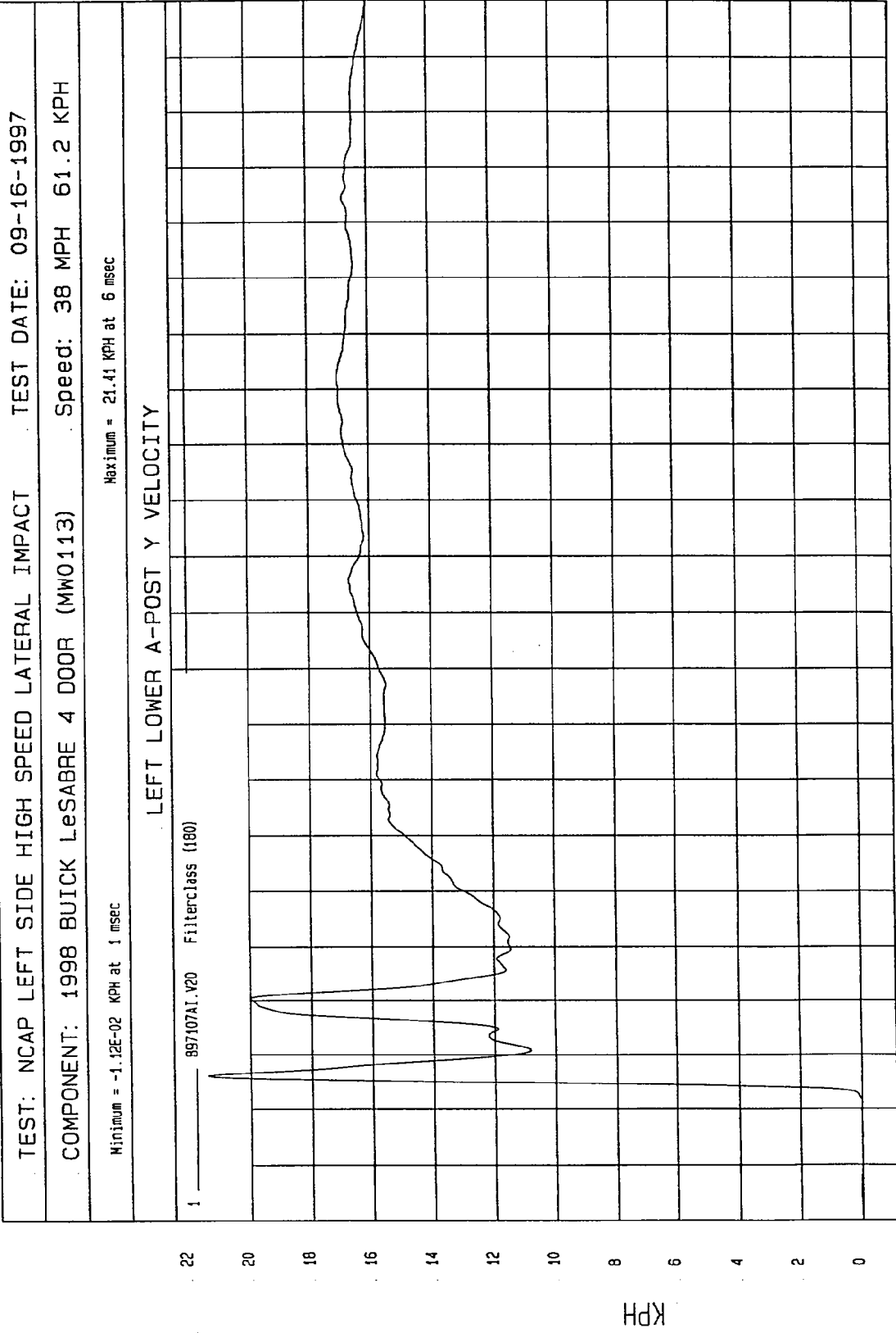
Minimum = -54.14 G'S at 9 msec Maximum = 140.97 G'S at 4 msec

LEFT LOWER A-POST Y ACCELERATION



TIME (SECONDS)

NCI Research
09-15-1997 15:52



MCA Research
09-15-1997 15:52

TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -7.91 G'S at 21 msec Maximum = 32.99 G'S at 12 msec

LEFT MID A-POST Y ACCELERATION

1 ——— B97107AF.M19 FilterClass (60)

30

20

10

0

G.S

-02 -01 0 10 20 30

TIME (SECONDS)

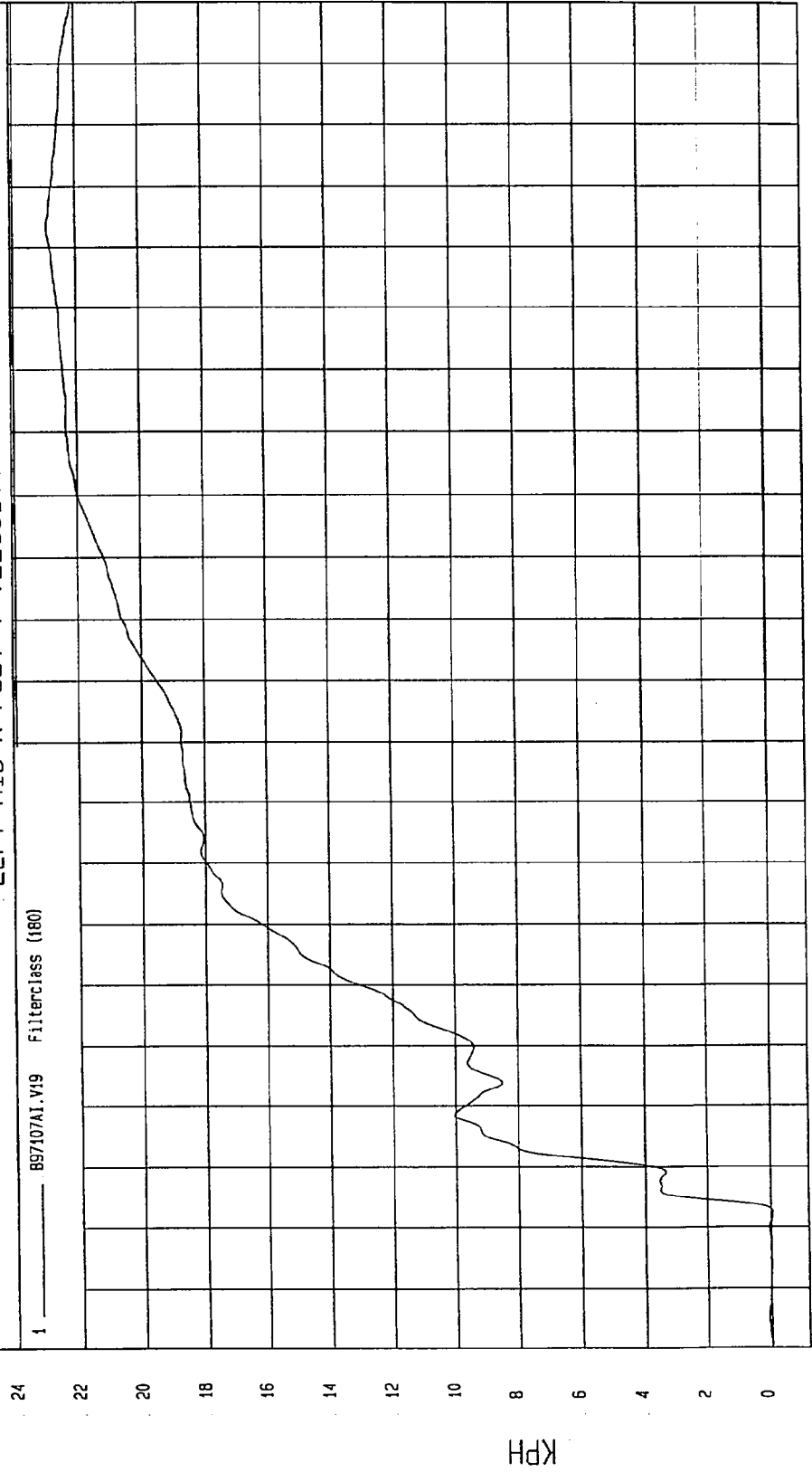
MGA Research
09-15-1997 15:52

TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -5.30E-02 KPH at 2 msec Maximum = 22.93 KPH at 163 msec

LEFT MID A-POST Y VELOCITY



1 B97107A1.V19 Filterclass (180)

TIME Seconds

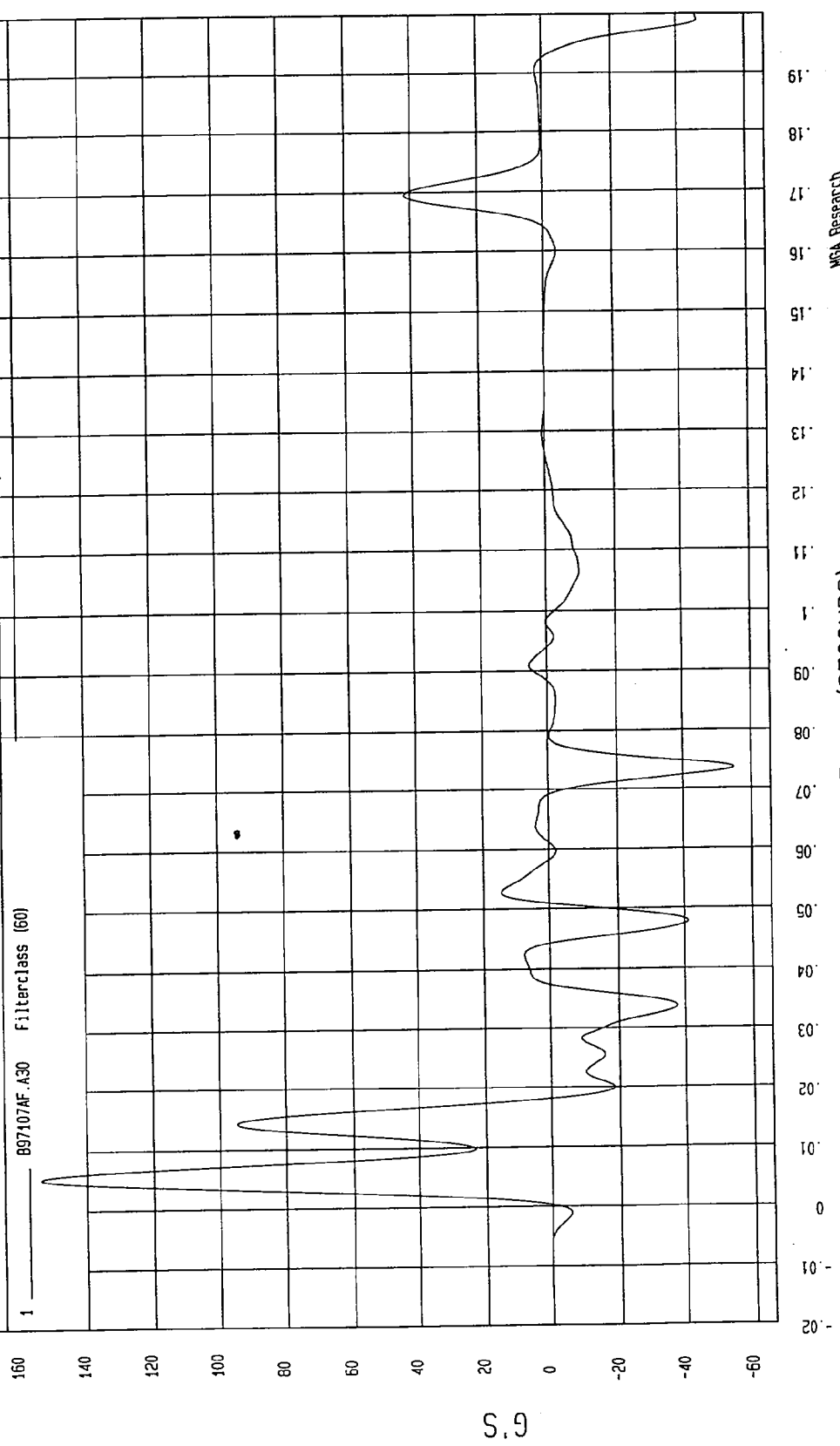
MGA Research
09-15-1997 15:52

TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -55.09 G'S at 74 msec Maximum = 153.96 G'S at 5 msec

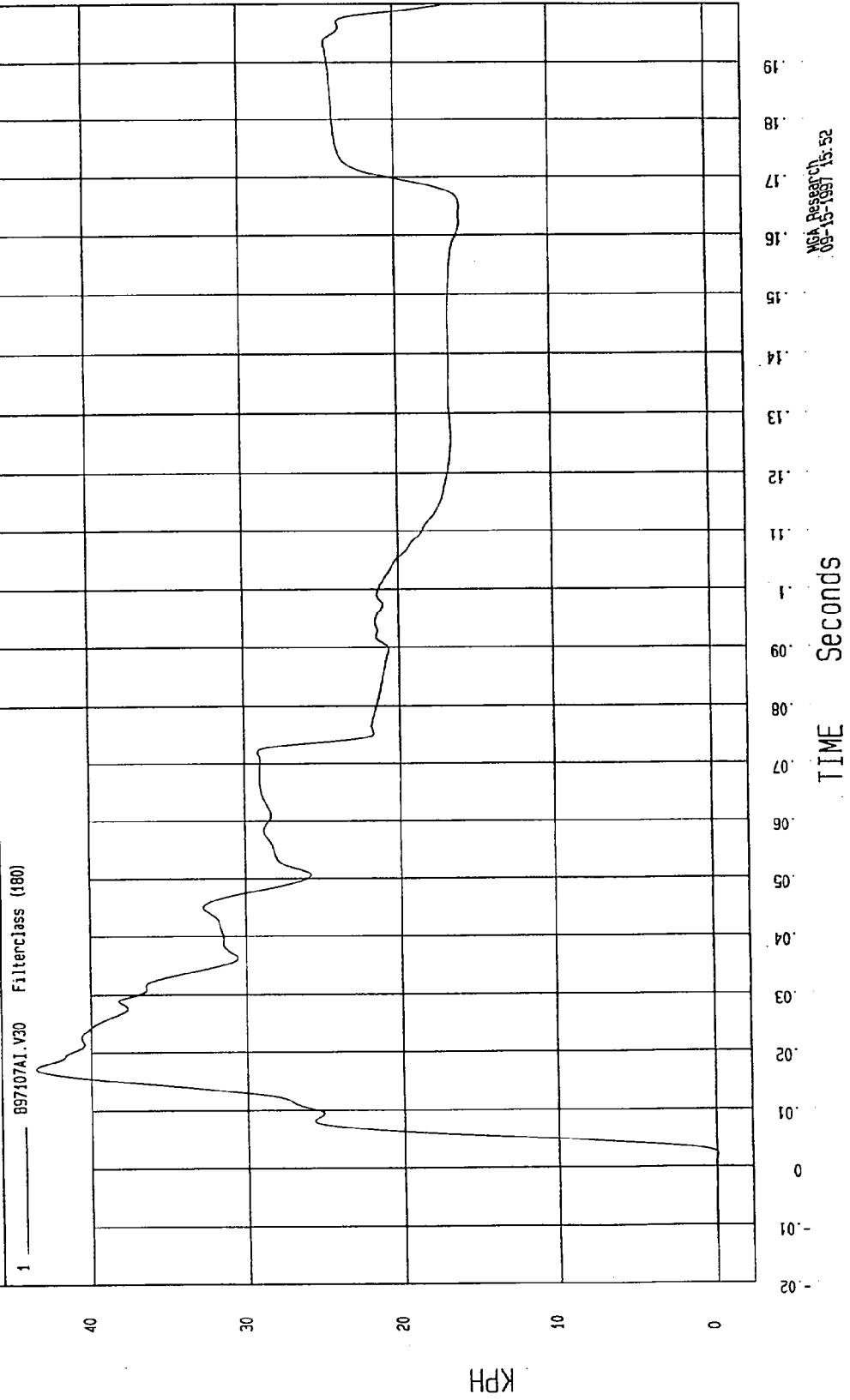
LEFT LOWER B-POST Y ACCELERATION



MCA Research
09-15-1997 15:52

TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997
COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH
Minimum = -9.21E-02 KPH at 2 msec Maximum = 43.53 KPH at 17 msec

LEFT LOWER B-POST Y VELOCITY



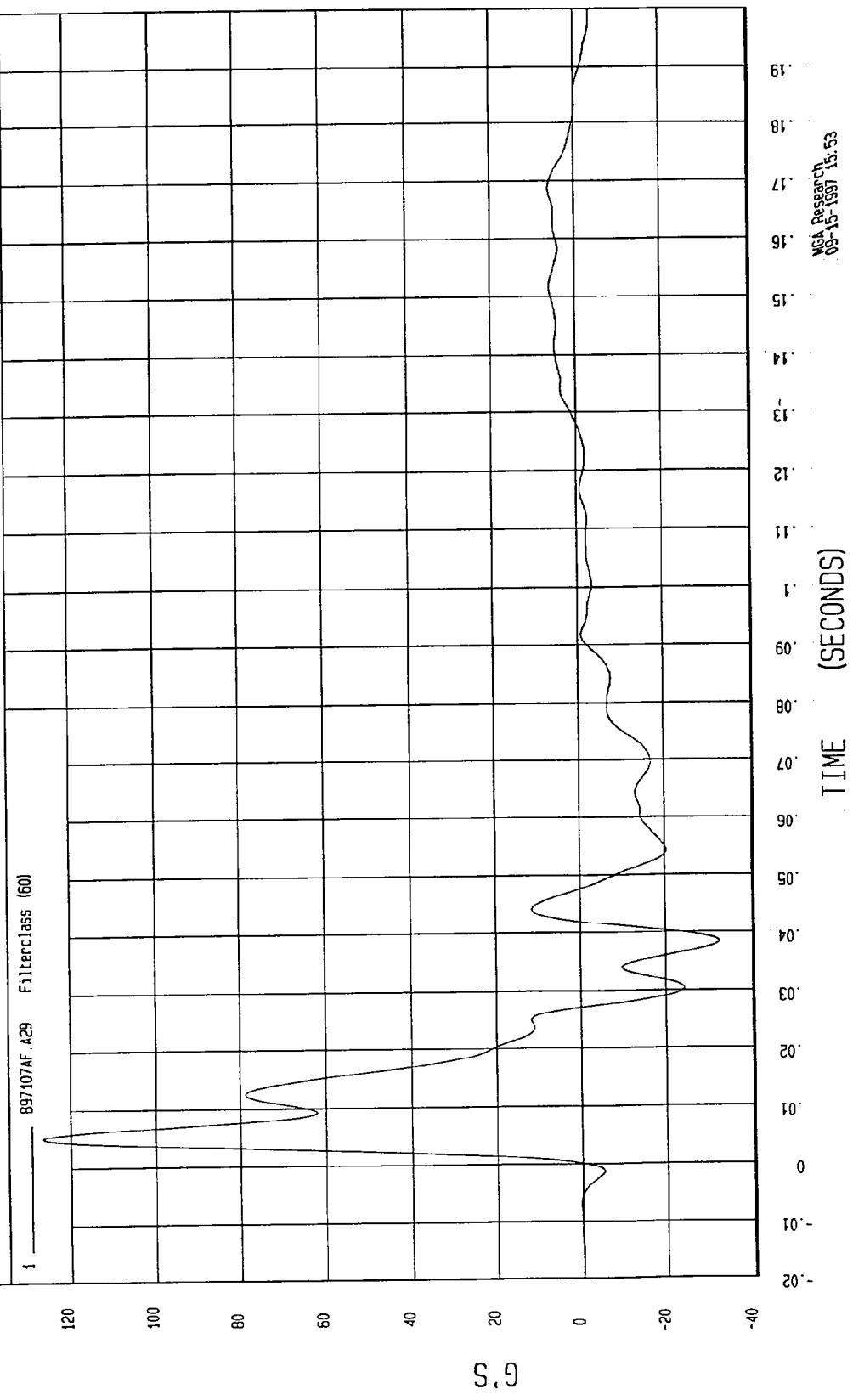
TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LeSABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -32.42 G'S at 38 msec

Maximum = 126.32 G'S at 5 msec

LEFT MID B-POST Y ACCELERATION



MCA Research
09-15-1997 15:53

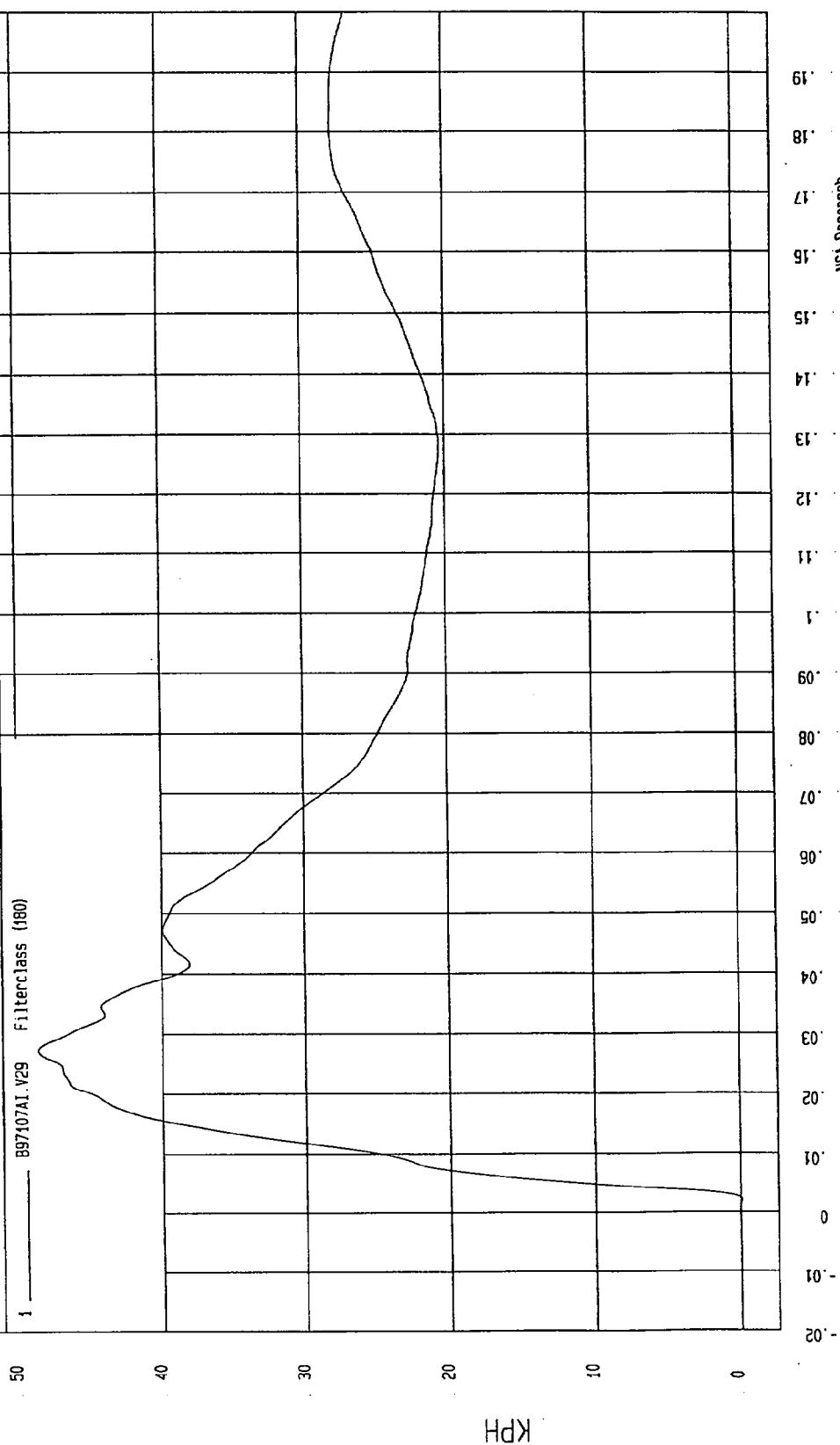
TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -10 KPH at 2 msec Maximum = 48.61 KPH at 27 msec

LEFT MID B-POST Y VELOCITY

1 897107AI.V29 Filterclass (180)



NGA Research
09-15-1997 15:53

TIME Seconds

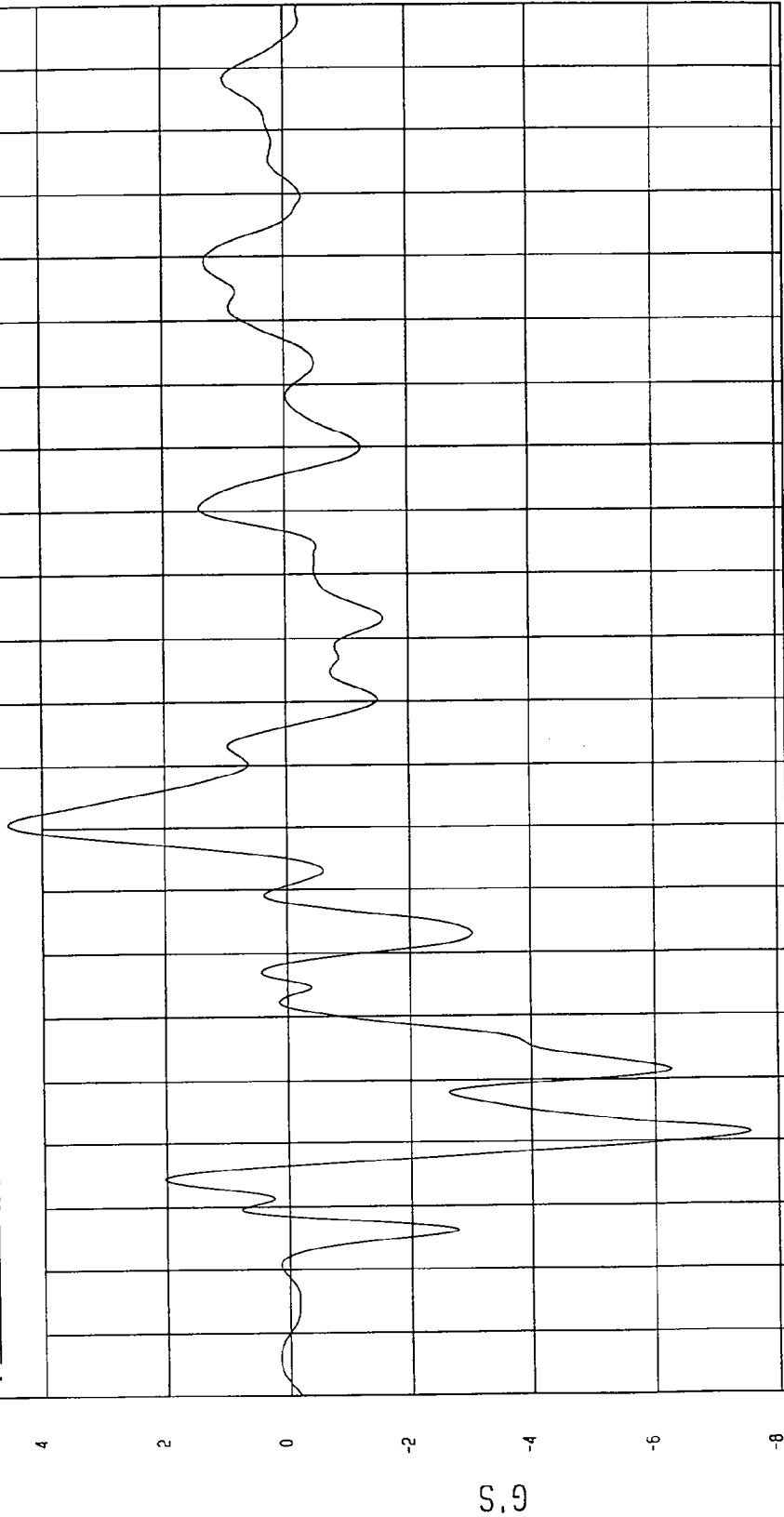
TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -7.54 G'S at 21 msec Maximum = 4.55 G'S at 71 msec

VEHICLE CG X ACCELERATION

1 897107AF.A58 FilterClass (60)



MCA Research
09-15-1997 15:53

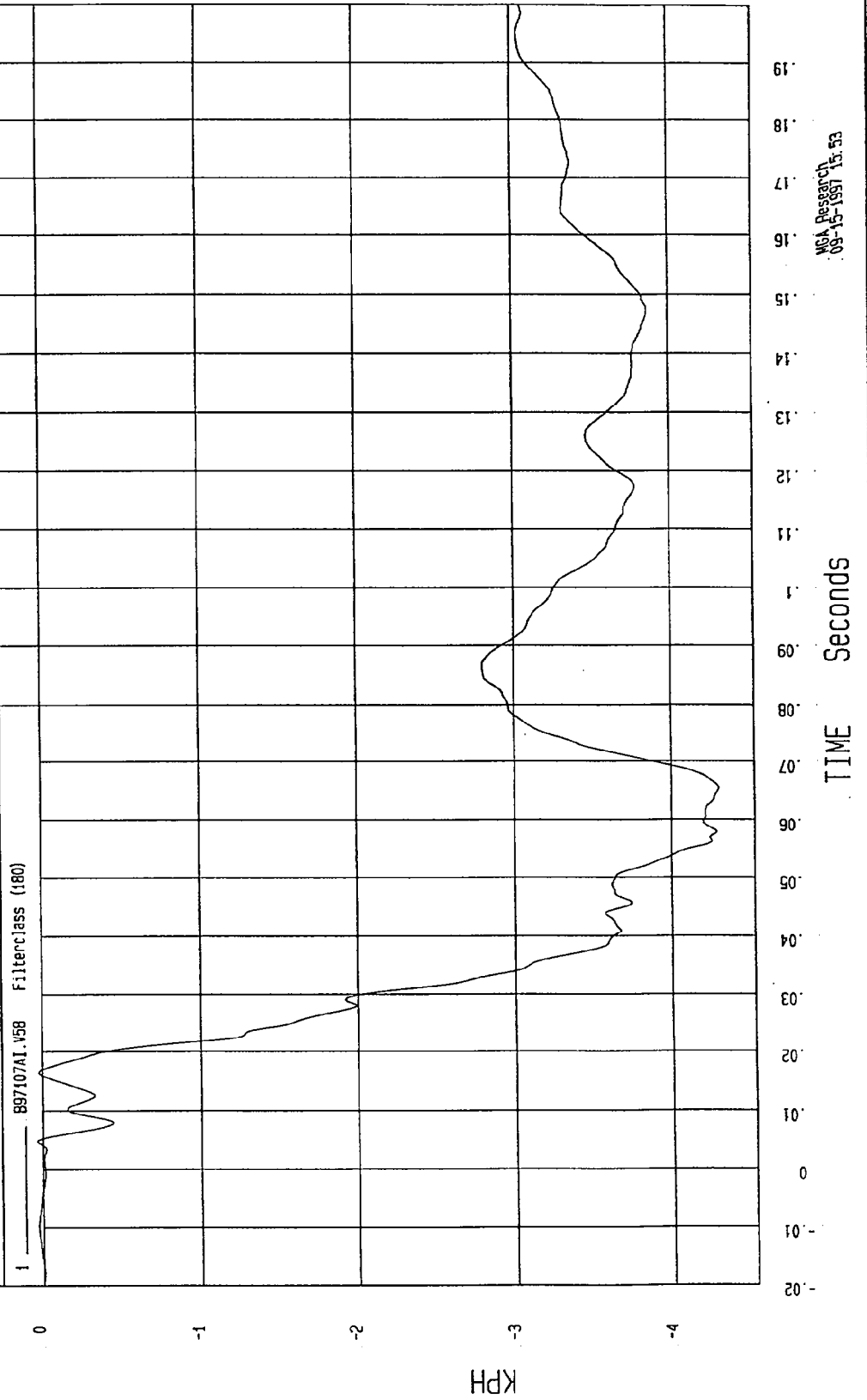
TIME (SECONDS)

TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -4.28 KPH at 66 msec Maximum = .03 KPH at 5 msec

VEHICLE CG X VELOCITY

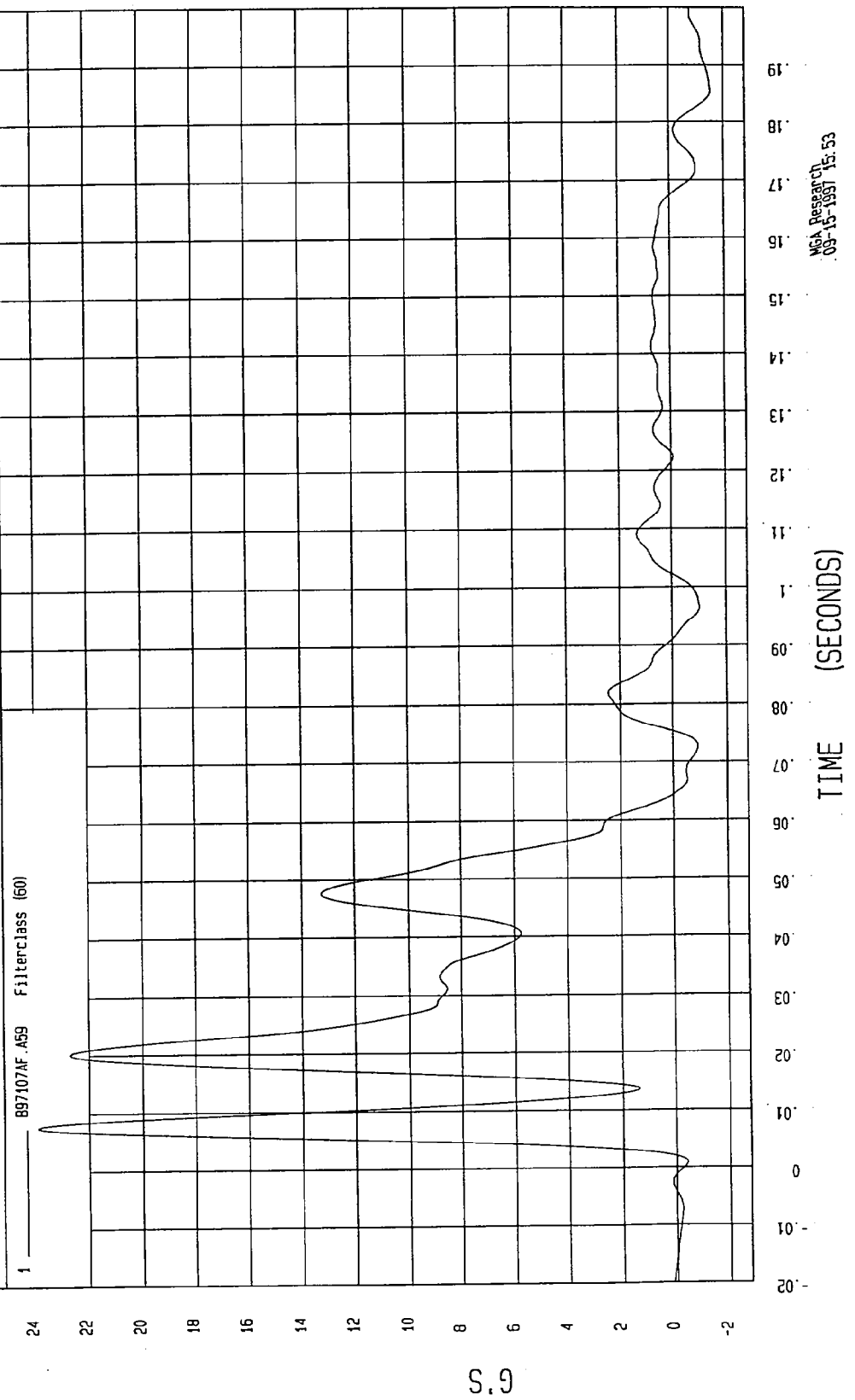


TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -1.50 G'S at 186 msec Maximum = 23.91 G'S at 8 msec

VEHICLE CG Y ACCELERATION



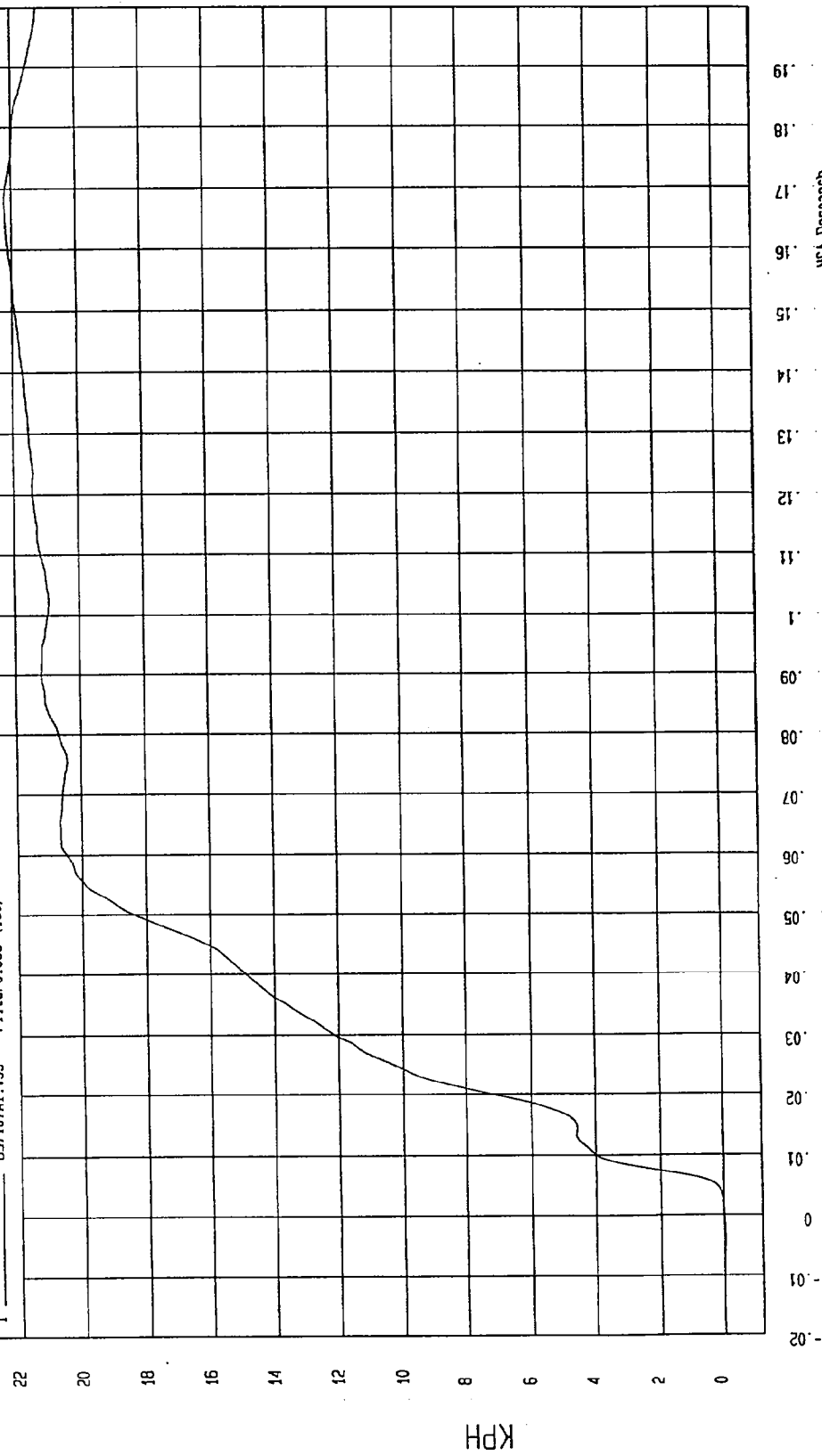
TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -.04 KPH at -4 msec Maximum = 22.21 KPH at 168 msec

VEHICLE CG Y VELOCITY

1 897107AI.V59 Filterclass (180)



NGA Research
09-15-1997 15:53

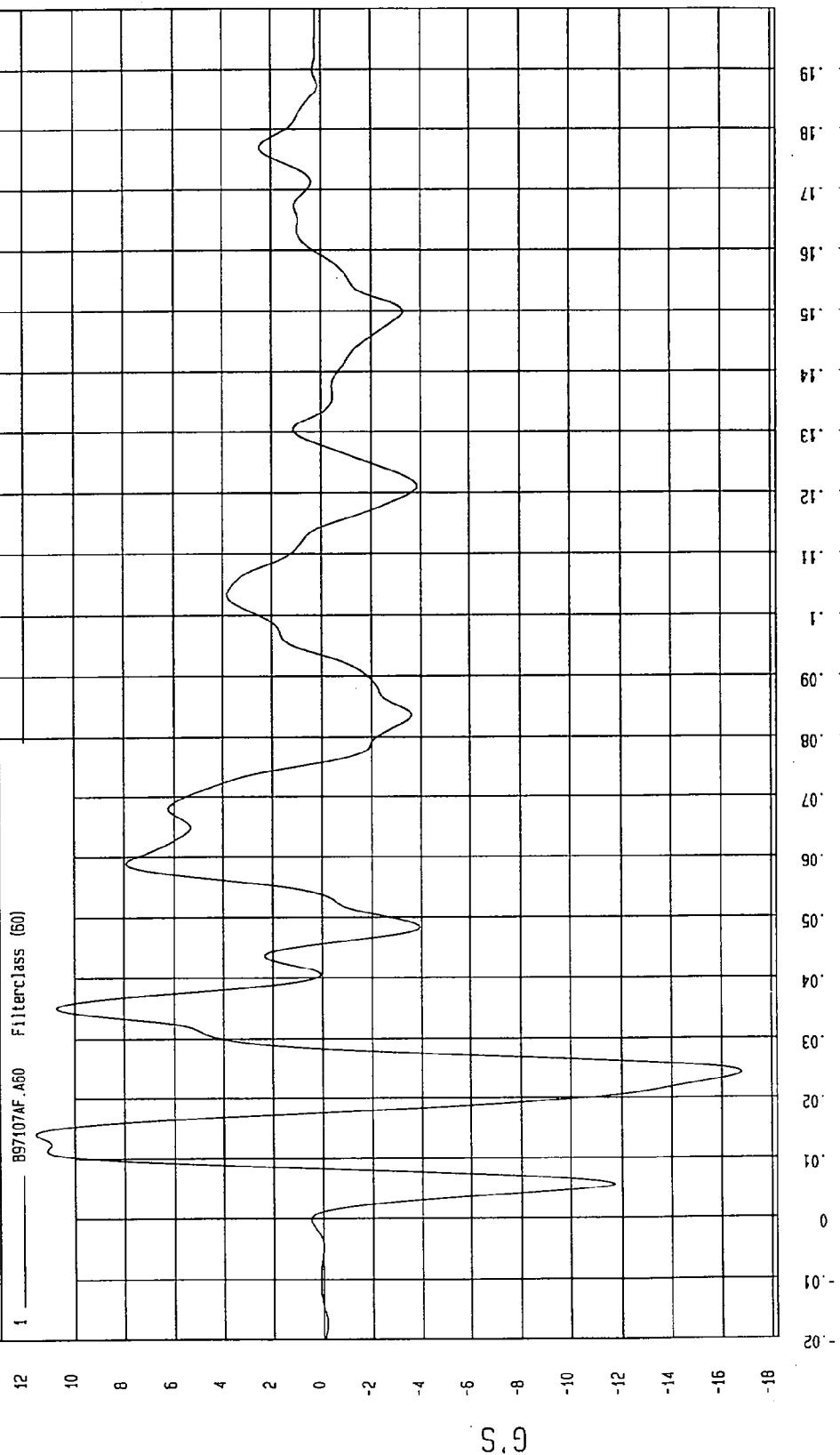
TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -16.79 G'S at 24 msec Maximum = 11.53 G'S at 14 msec

VEHICLE CG Z ACCELERATION

1 897107AF.A60 FilterClass (60)



MCA Research
09-15-1997 15:53

TIME (SECONDS)

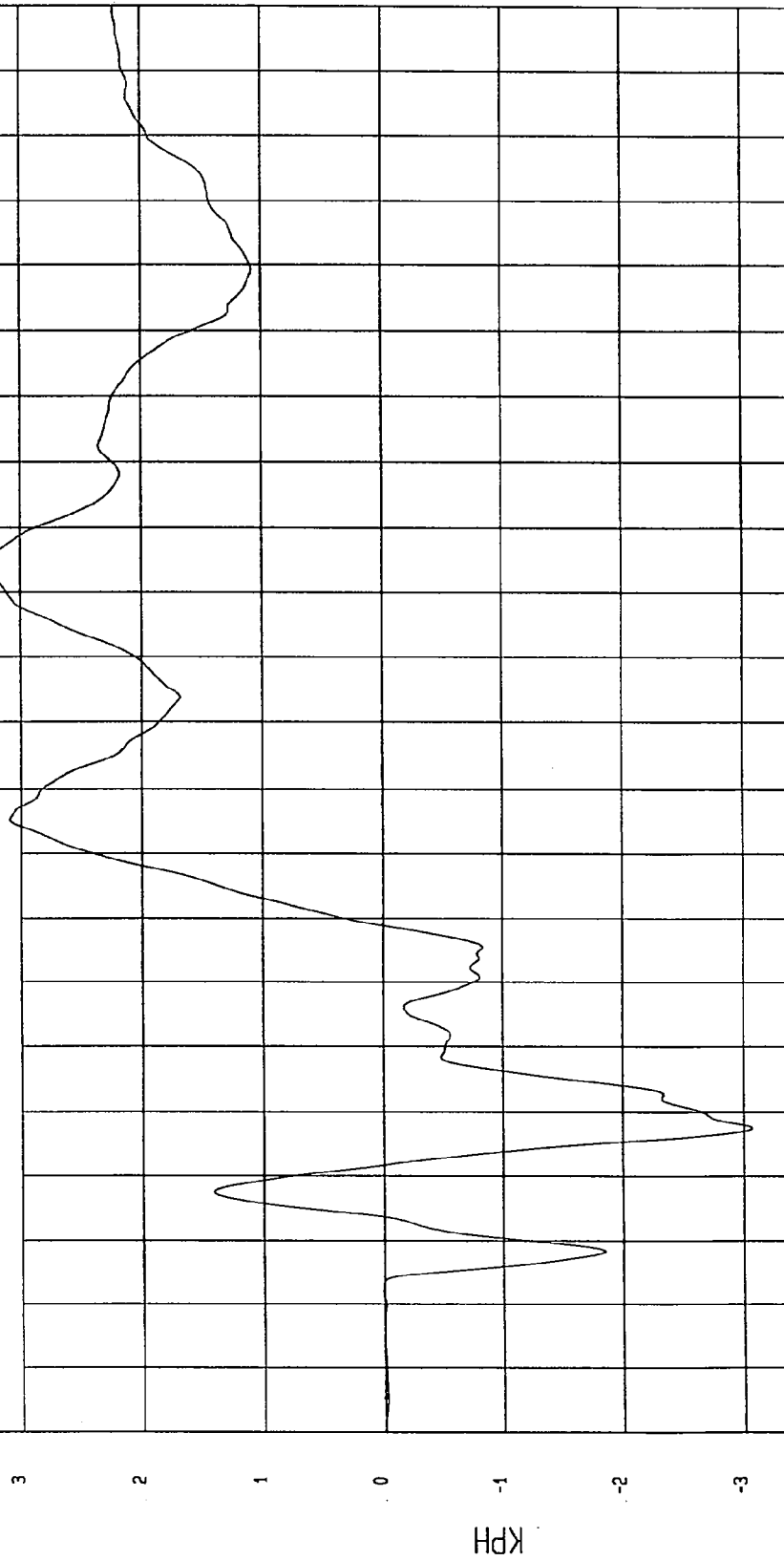
TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -3.07 KPH at 28 msec Maximum = 3.25 KPH at 115 msec

VEHICLE CG Z VELOCITY

1 ——— B97107AI.V60 Filterclass (160)



MCA Research
09-15-1997 15:53

TIME Seconds

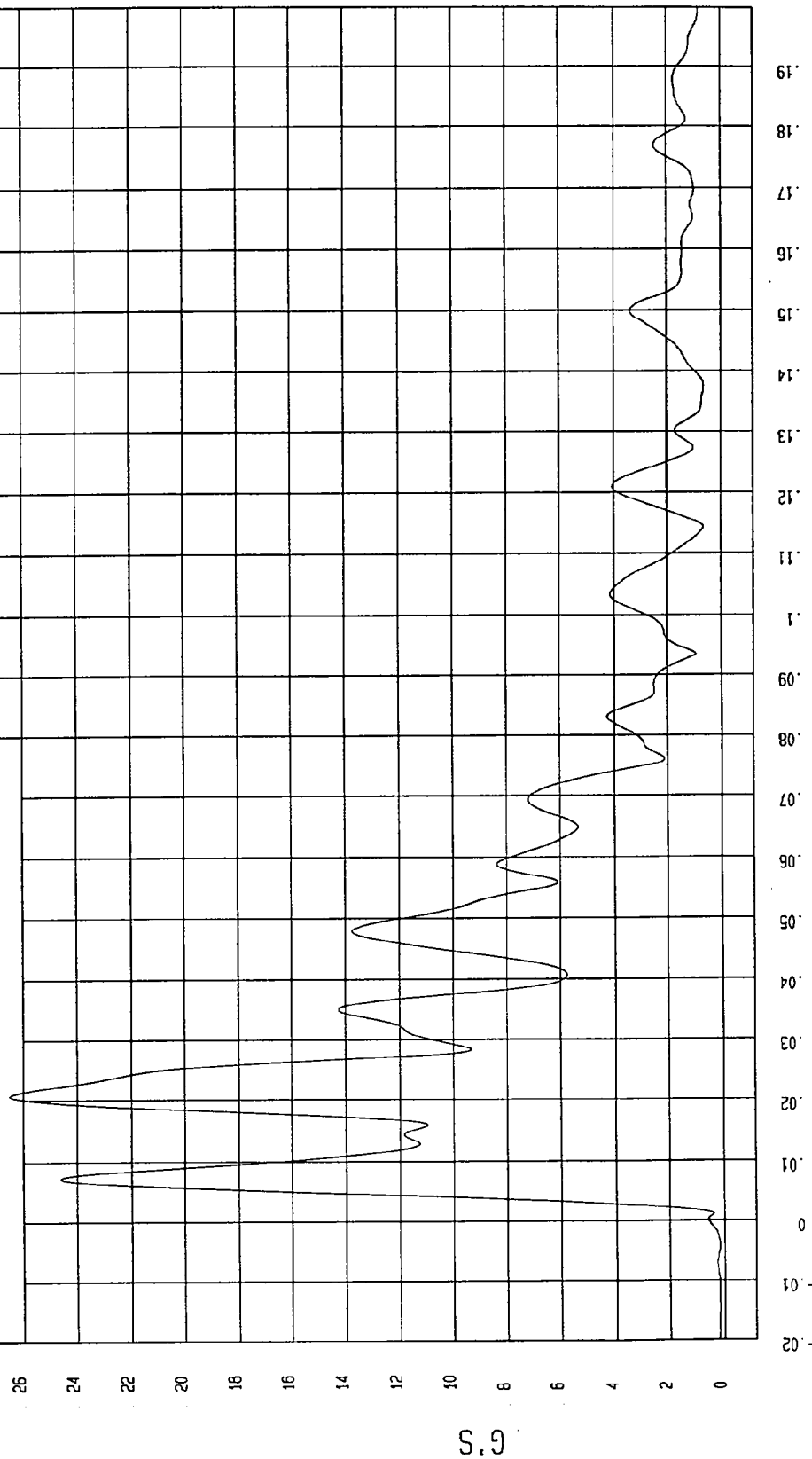
TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = .15 G'S at -15 msec Maximum = 26.51 G'S at 21 msec

VEHICLE CG RESULTANT ACCELERATION

1 _____ B97107AV.A58 Filterclass (60)



WGA Research, Inc.
09-15-1997 15:56

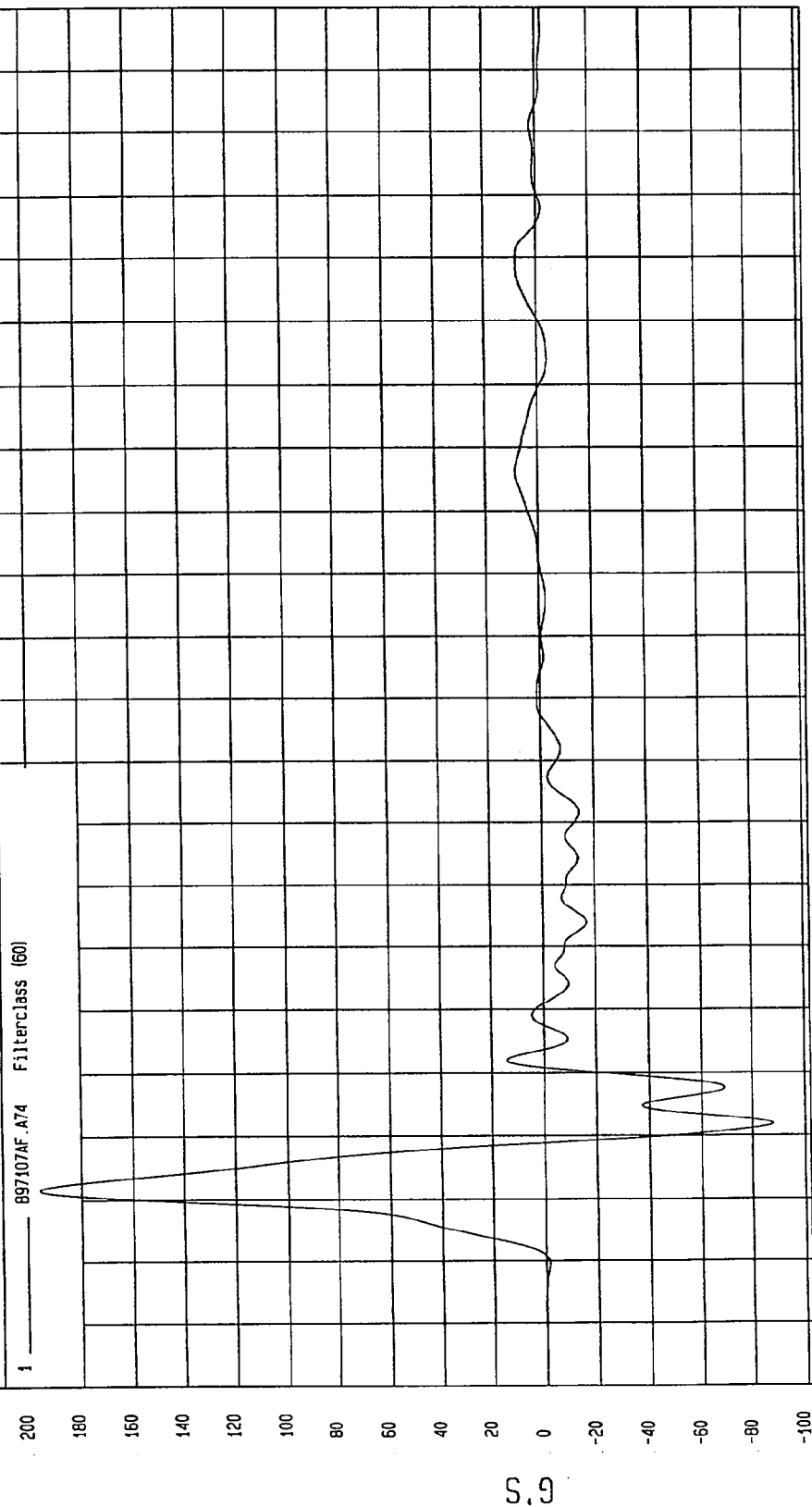
TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -87.93 G'S at 22 msec Maximum = 196.05 G'S at 12 msec

LEFT FRONT DOOR MIDREAR Y ACCELERATION

1 897107AF.A74 Filterclass (60)



MCA Research
09-15-1997 15:53

TIME (SECONDS)

G.S

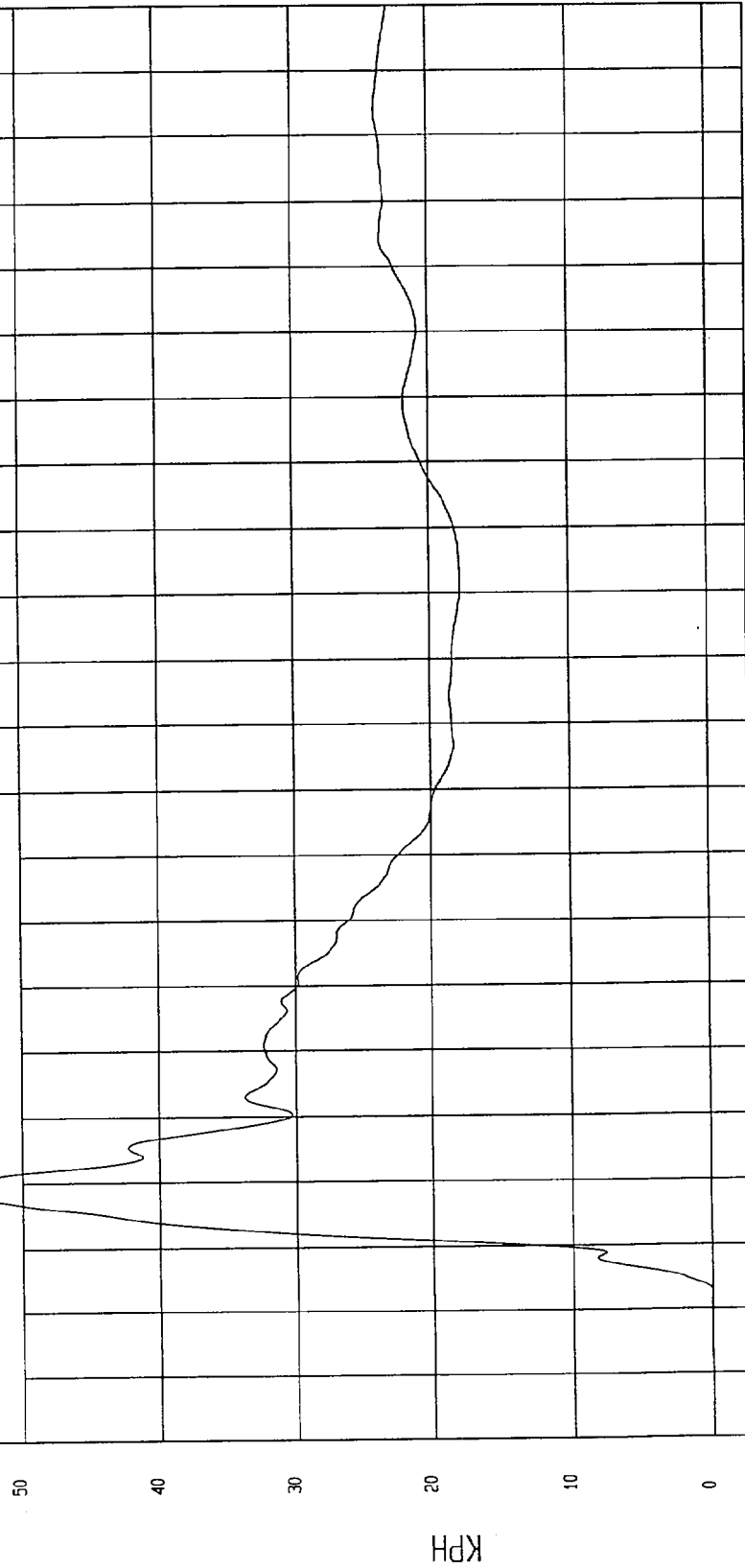
TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LeSABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -1.39E-04 KPH at -20 msec Maximum = 55.31 KPH at 19 msec

LEFT FRONT DOOR MIDREAR Y VELOCITY

1 897107A1.V74 Filterclass (180)



MCA Research
09-15-1997 15:54

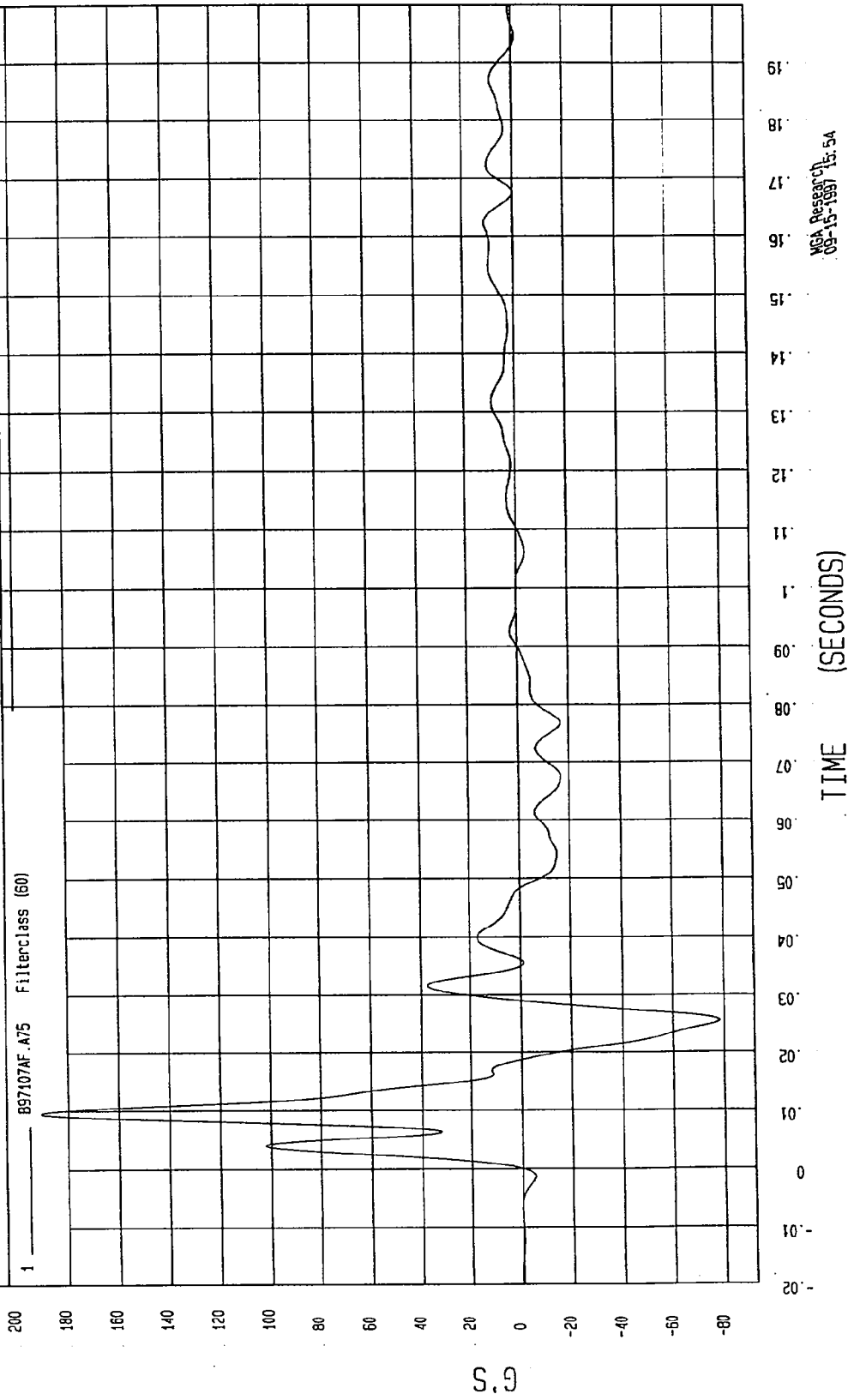
TIME Seconds

TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LeSABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -78.28 G'S at 26 msec Maximum = 190.59 G'S at 10 msec

LEFT FRONT DOOR CENTERLINE Y ACCELERATION



TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

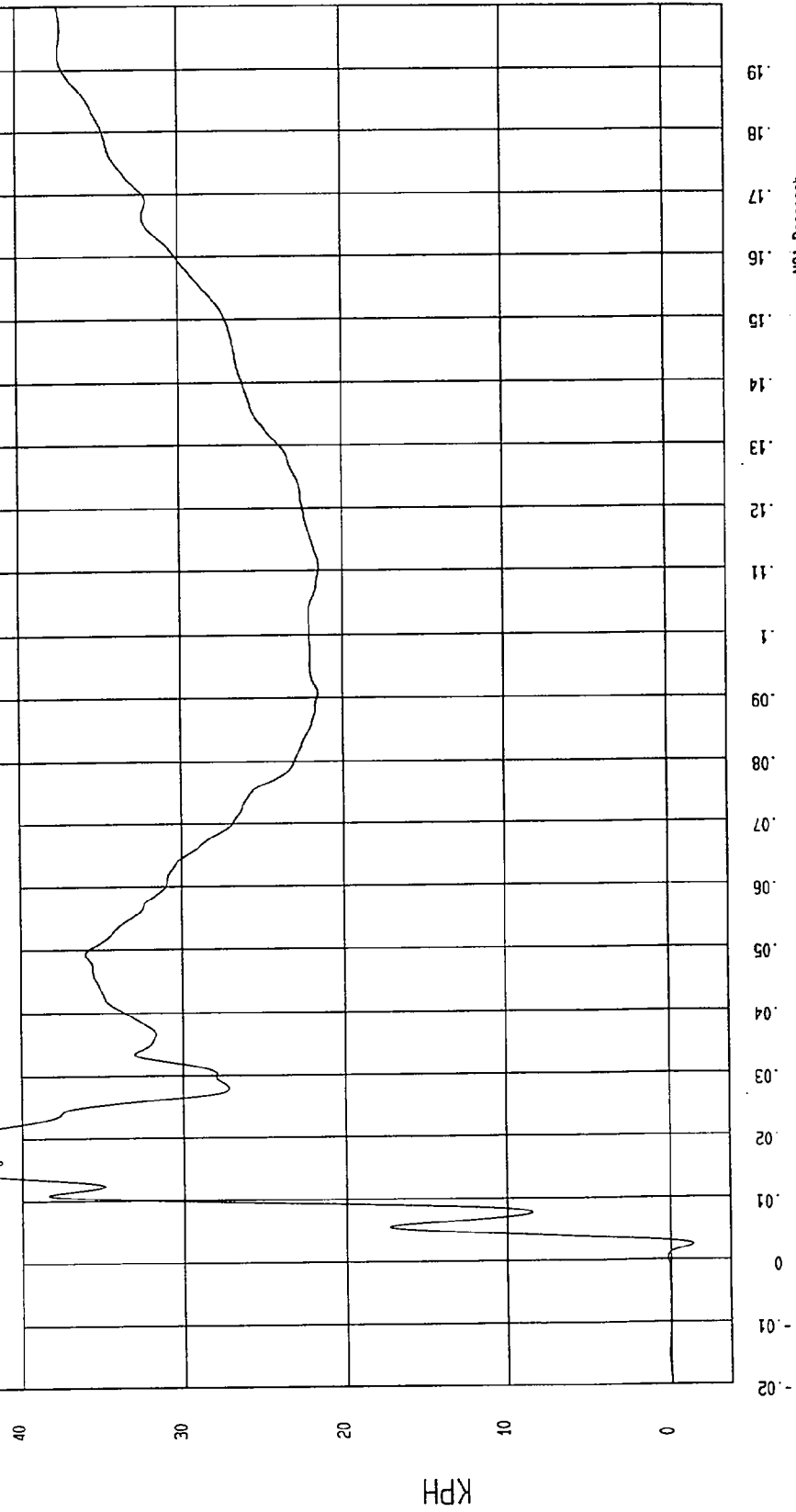
COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -1.39 KPH at 2 msec

Maximum = 44.09 KPH at 18 msec

LEFT FRONT DOOR CENTERLINE Y VELOCITY

1 ——— 897107A1.V75 FilterClass (180)



MGA Research
09-15-1997 15:54

TIME Seconds

TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -2.27E-02 KPH at 2 msec Maximum = 95.54 KPH at 200 msec

LEFT FRONT DOOR UPPER CENTERLINE Y VELOCITY

1 B97107A1.V76 Filterclass (180)

100

80

60

40

20

0

KPH

-0.02 -0.01 0 .01 .02 .03 .04 .05 .06 .07 .08 .09 .1 .11 .12 .13 .14 .15 .16 .17 .18 .19

TIME Seconds

NGA Research
09-15-1997 15.54

TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

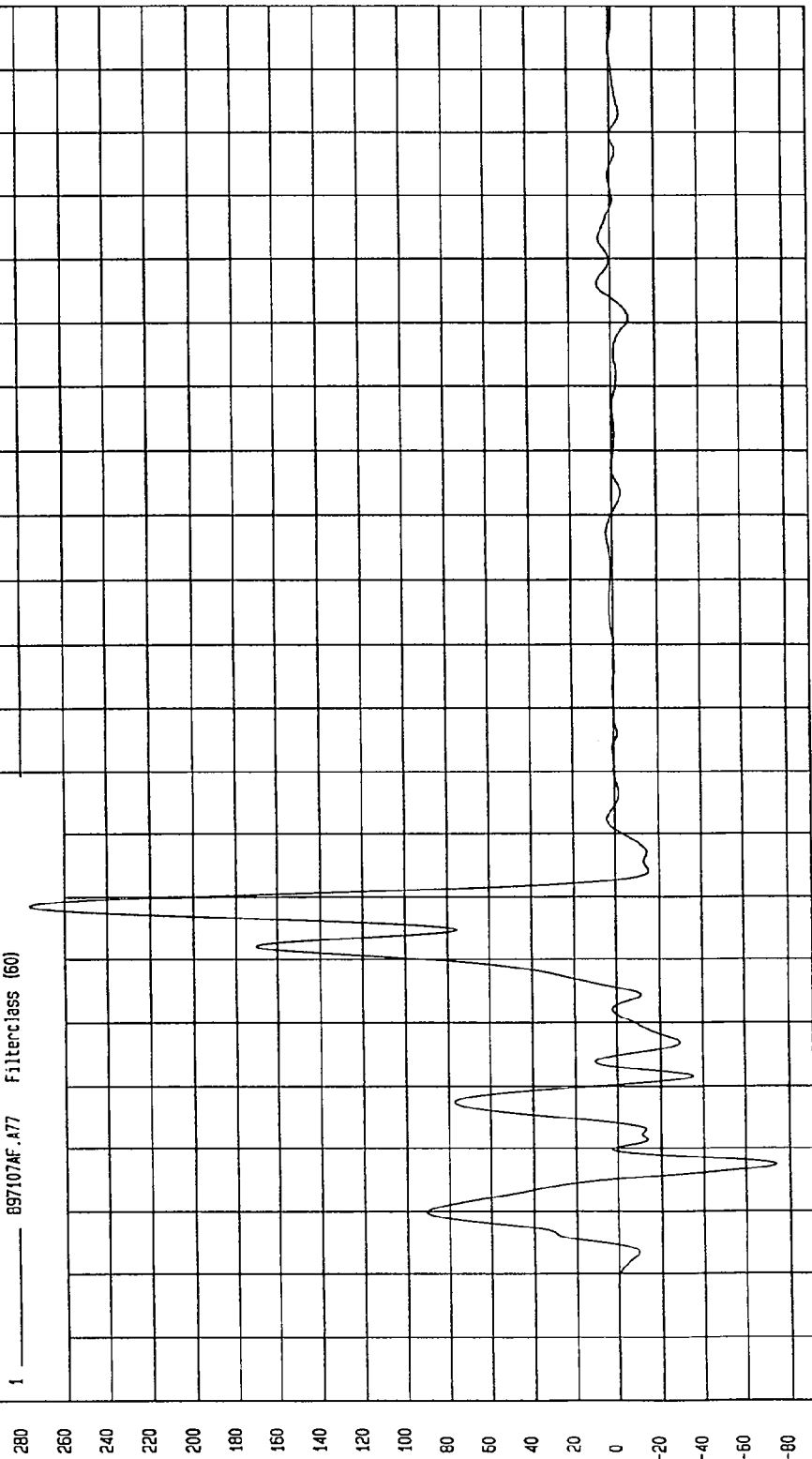
COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -73.58 G'S at 17 msec Maximum = 276.39 G'S at 58 msec

LEFT REAR DOOR MIDREAR Y ACCELERATION

1 897107AF.A77 Filterclass (60)

G.S



MCA Research
09-15-1997 15:54

TIME (SECONDS)

TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -3.57 KPH at 5 msec Maximum = 90.17 KPH at 61 msec

LEFT REAR DOOR MIDREAR Y VELOCITY

1 ——— 897107A1.V77 Filterclass (180)

80

60

40

20

0

KPH

-0.02 -0.01 0 .01 .02 .03 .04 .05 .06 .07 .08 .09 .1 .11 .12 .13 .14 .15 .16 .17 .18 .19

TIME Seconds

MOA Research
09-15-1997 15:54

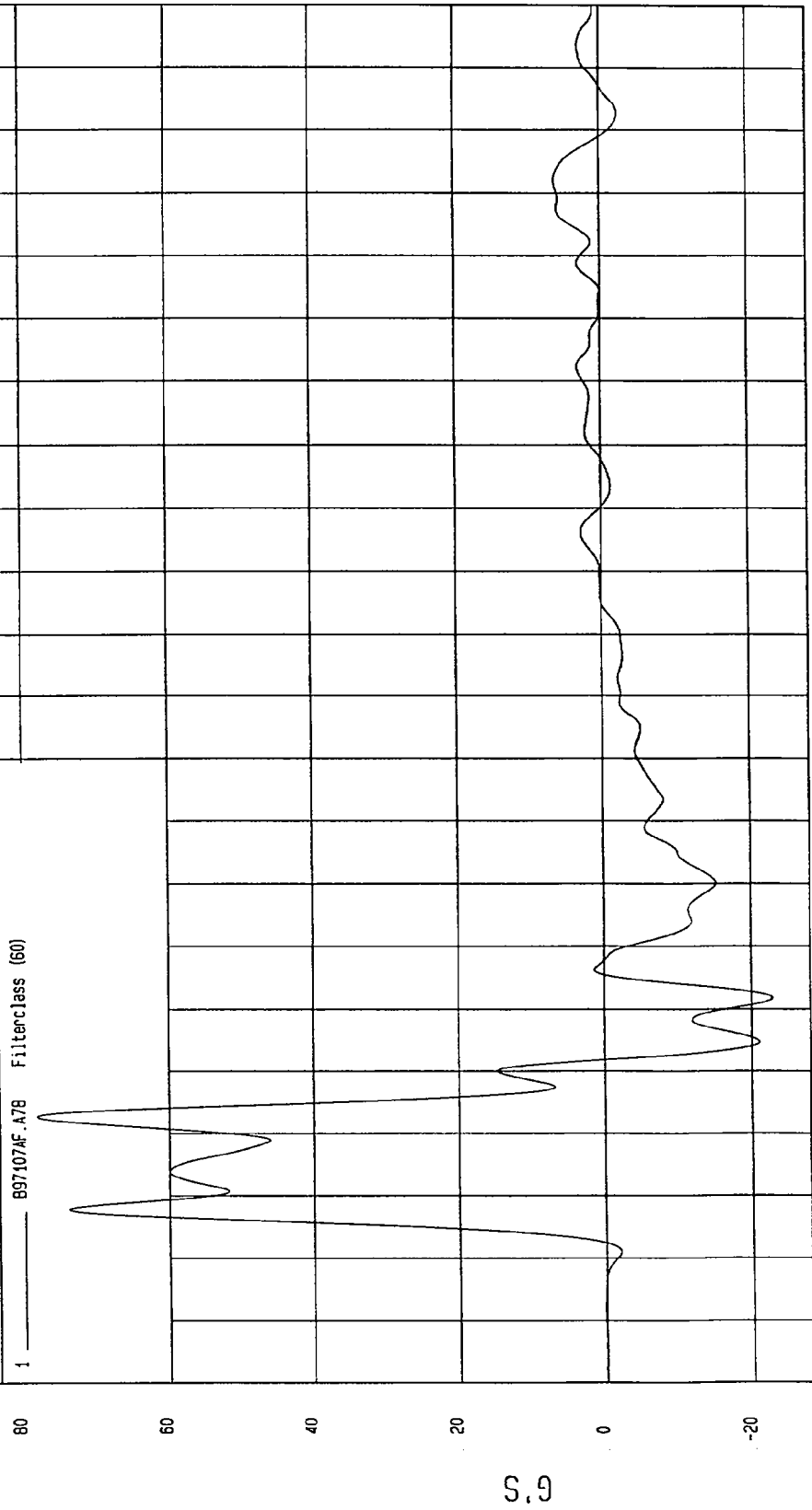
TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -22.77 G'S at 42 msec Maximum = 78.13 G'S at 23 msec

LEFT REAR DOOR UPPER CENTERLINE Y ACCELERATION

1 B97107AF.A78 Filterclass (60)



TIME (SECONDS)

NGA Research
09-15-1997 15:55

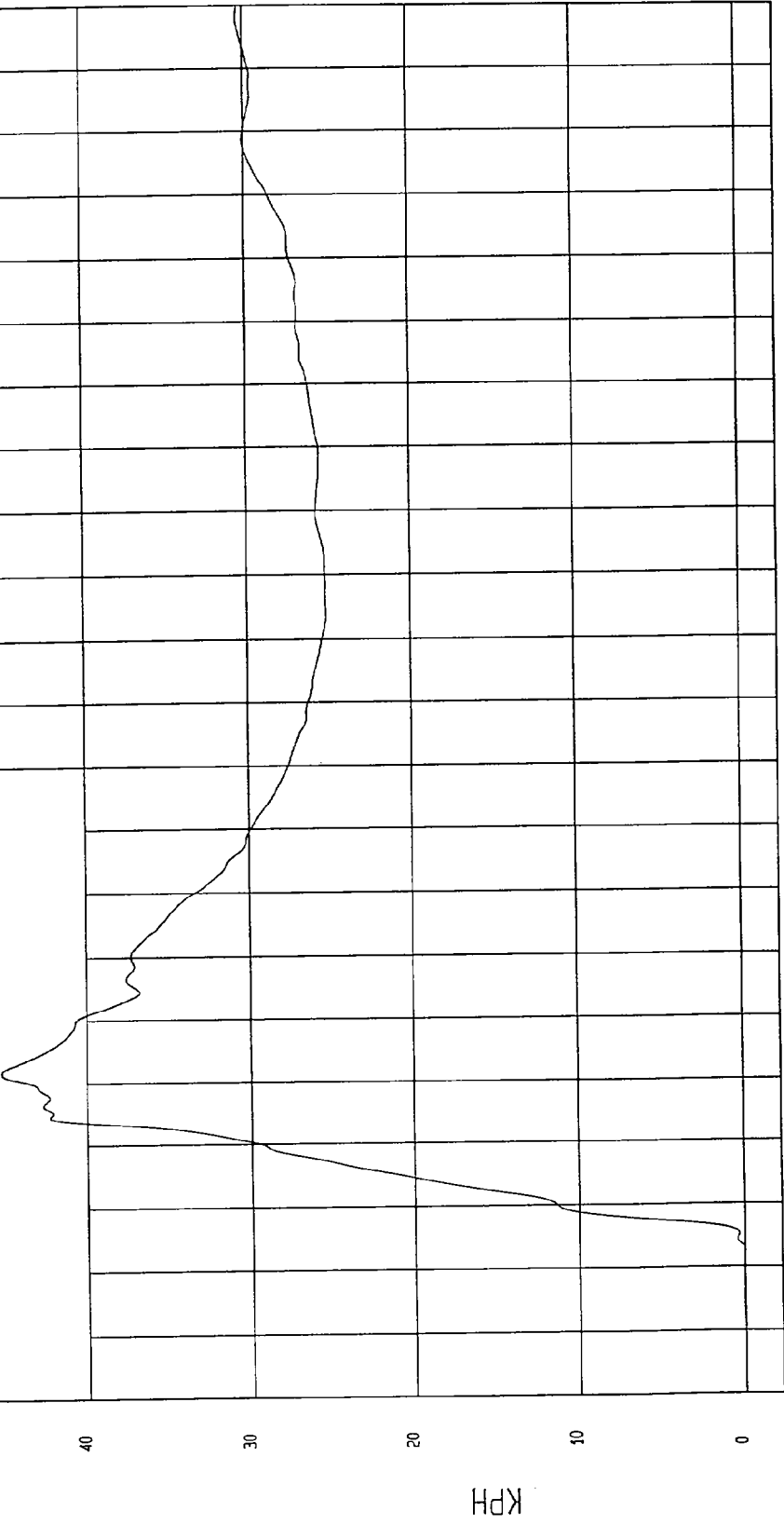
TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -.01 KPH at 3 msec Maximum = 45.22 KPH at 32 msec

LEFT REAR DOOR UPPER CENTERLINE Y VELOCITY

1 ——— B97107A1.V78 Filterclass (180)



TIME Seconds

MCA Research
09-15-1997 15:35

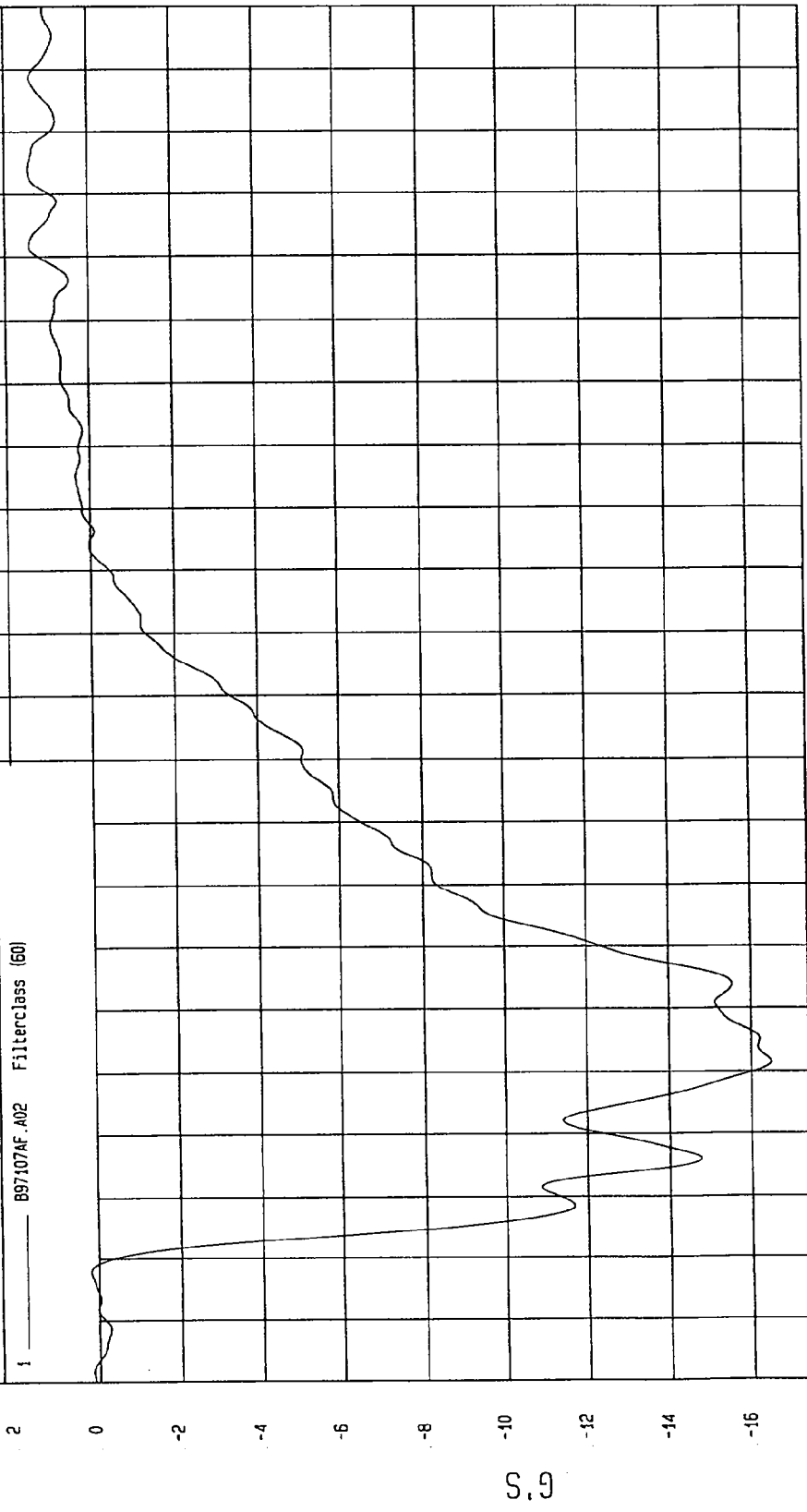
TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -16.47 G'S at 32 msec Maximum = 1.43 G'S at 174 msec

MOVING BARRIER CG X ACCELERATION

1 B97107AF.A02 FilterClass (60)



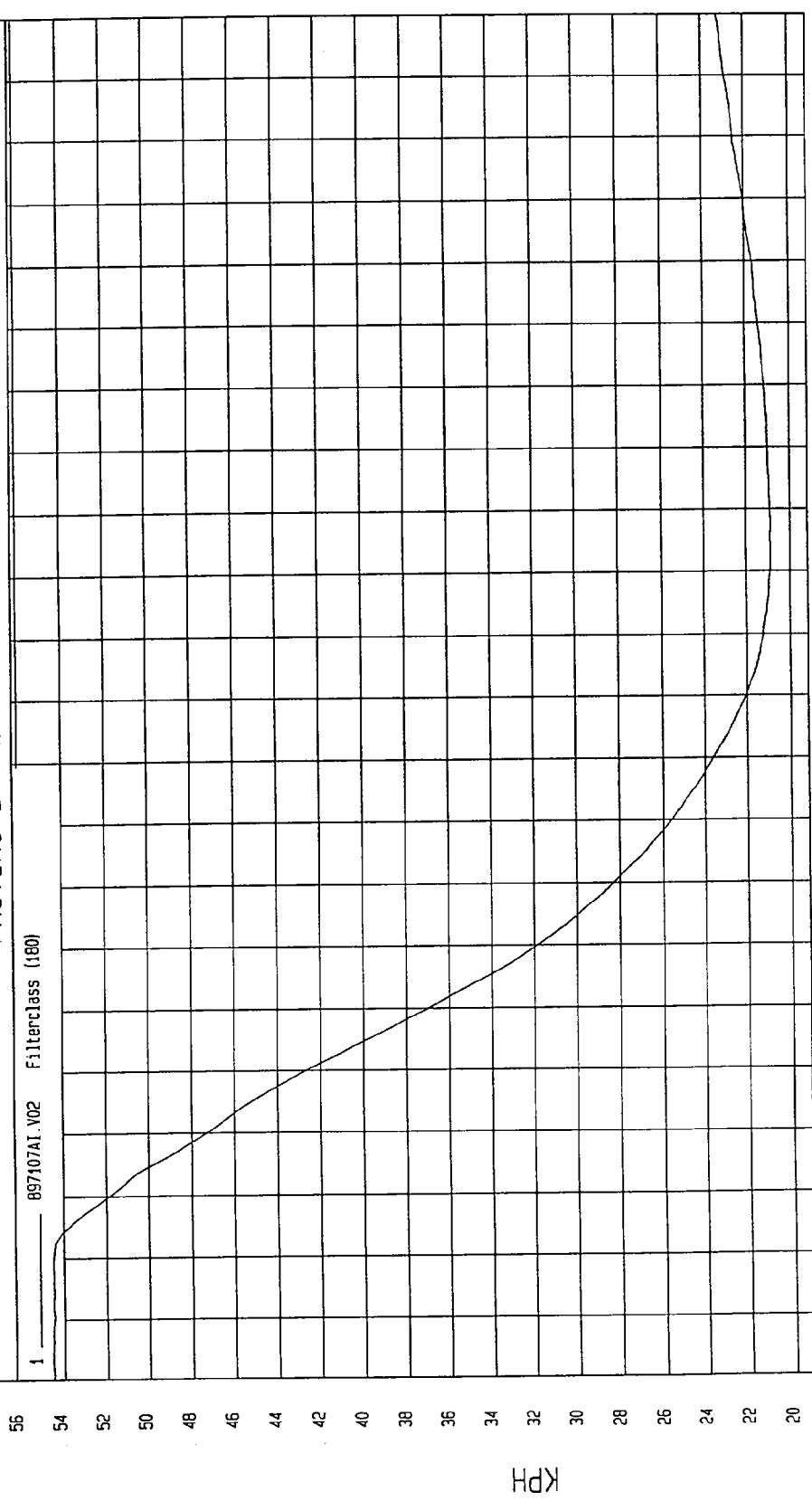
MCA Research
09-15-1997 15:55

TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = 20.88 KPH at 118 msec Maximum = 54.52 KPH at -17 msec

MOVING BARRIER CG X VELOCITY



MCA Research
09-15-1997 15.46

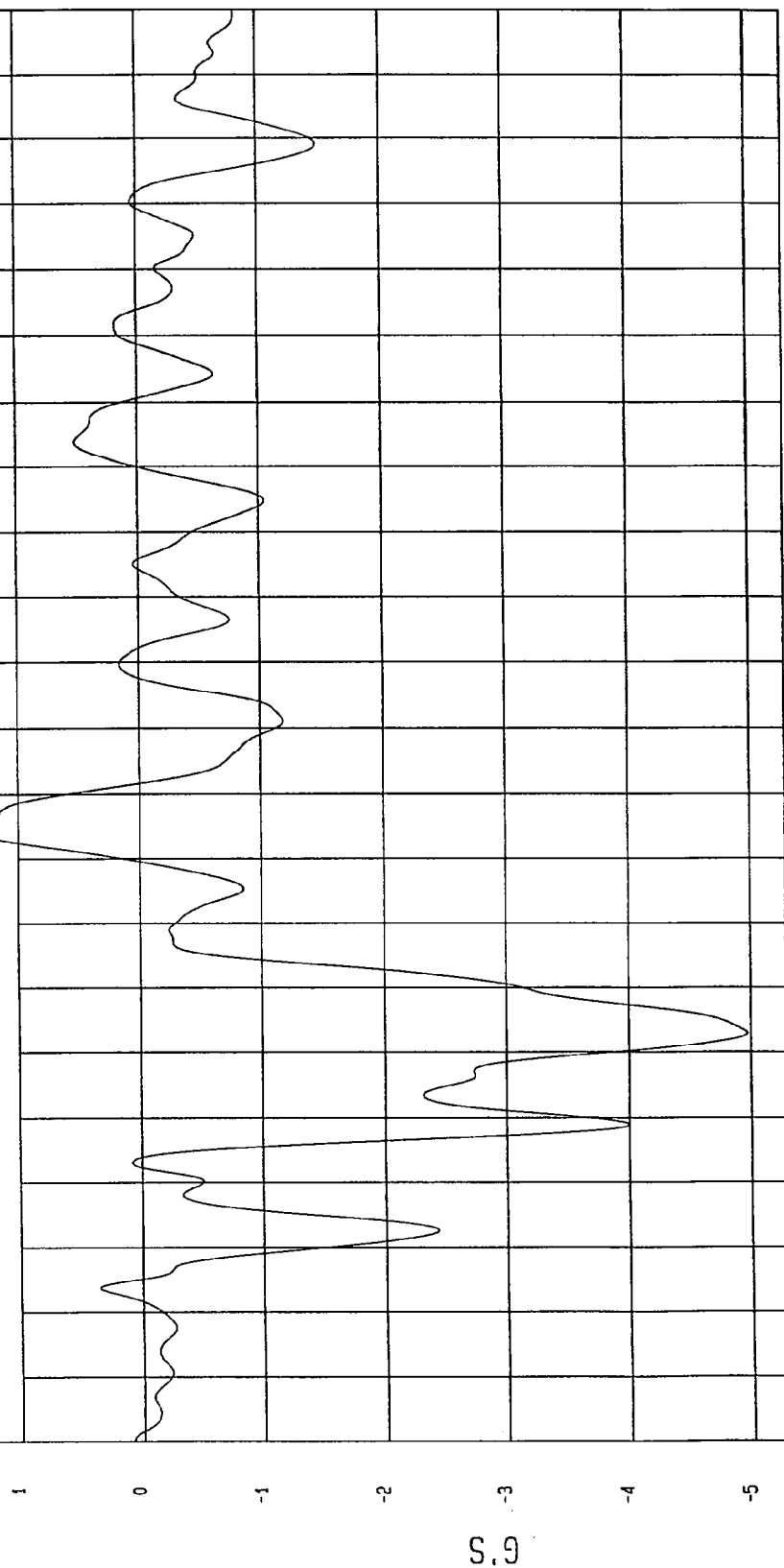
TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -4.96 G'S at 43 msec Maximum = 1.30 G'S at 74 msec

MOVING BARRIER CG Y ACCELERATION

1 ——— B97107AF.A03 Filterclass (60)



TIME (SECONDS)

MSA Research
09-15-1997 15:55

TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

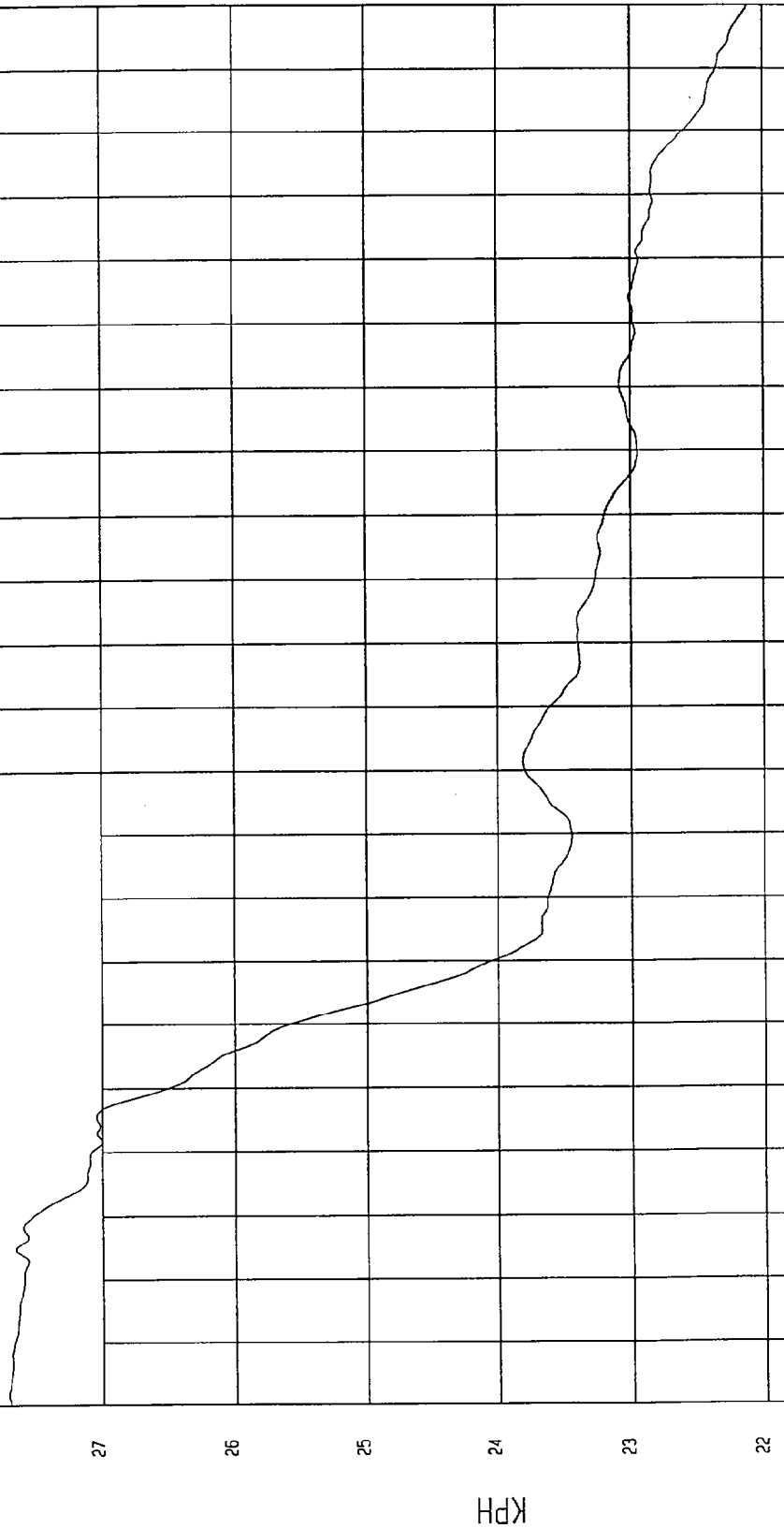
COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = 22.10 KPH at 200 msec

Maximum = 27.71 KPH at -18 msec

MOVING BARRIER CG Y VELOCITY

1 897107A1.V03 Filterclass (180)



NCI Research
09-15-1997 15:46

TIME Seconds

TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MWO113) Speed: 38 MPH 61.2 KPH

Minimum = -27.27 G'S at 43 msec Maximum = 26.41 G'S at 49 msec

MOVING BARRIER CG Z ACCELERATION

1 897107AF.A04 Filterclass (60)

20

10

0

-10

-20

G.S

TIME (SECONDS)

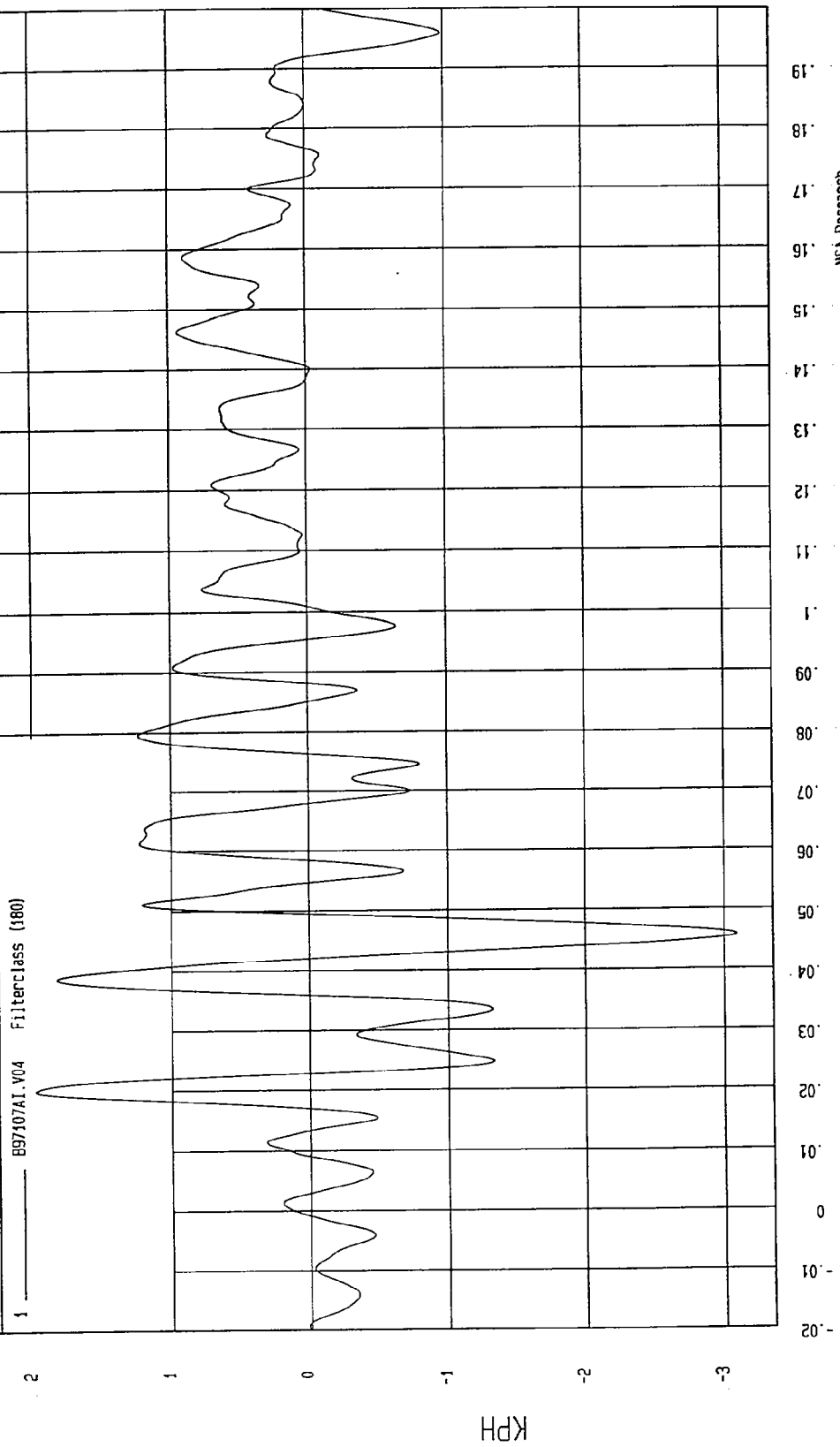
MSA Research
09-15-1997 15:55

TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -3.09 KPH at 46 msec Maximum = 1.98 KPH at 20 msec

MOVING BARRIER CG Z VELOCITY



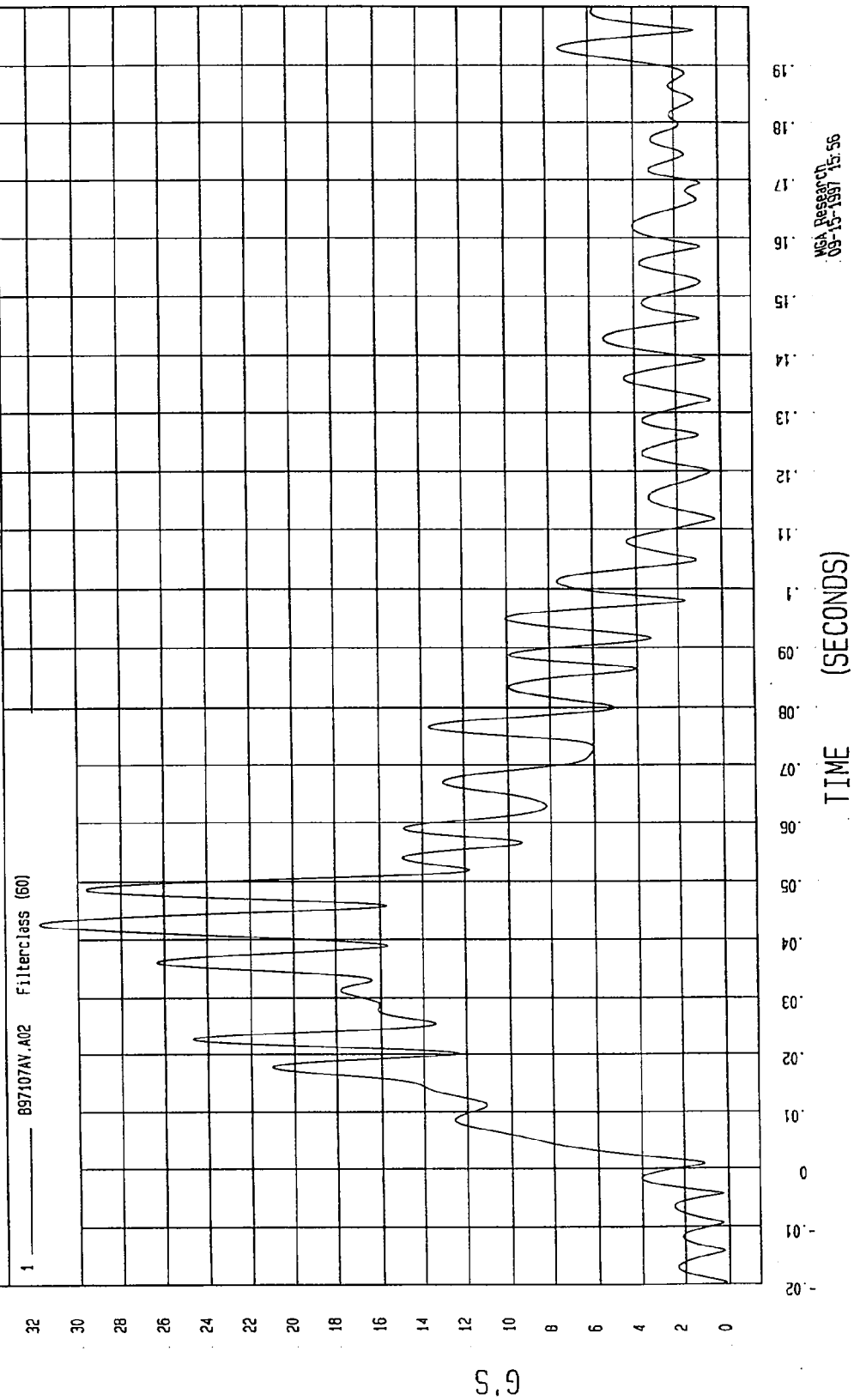
MGA Research
09-15-1997 15.46

TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MWO113) Speed: 38 MPH 61.2 KPH

Minimum = .15 G'S at -20 msec Maximum = 31.73 G'S at 43 msec

MOVING BARRIER CG RESULTANT ACCELERATION



TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

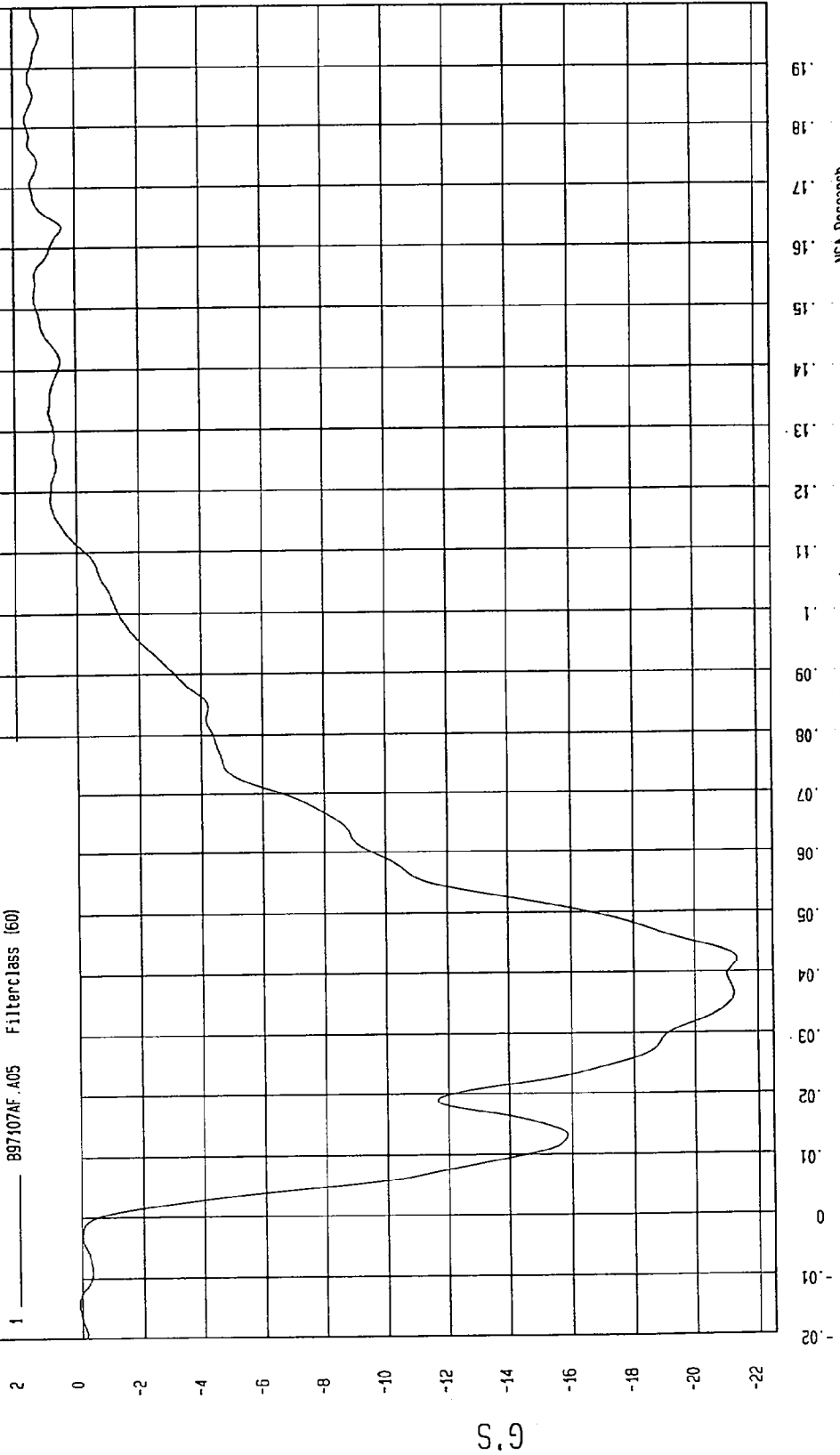
COMPONENT: 1998 BUICK LeSABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -21.34 G'S at 42 msec

Maximum = 1.63 G'S at 181 msec

MOVING BARRIER REAR AXLE X ACCELERATION

1 897107AF A05 Filterclass (60)



NCA Research
09-15-1997 15:55

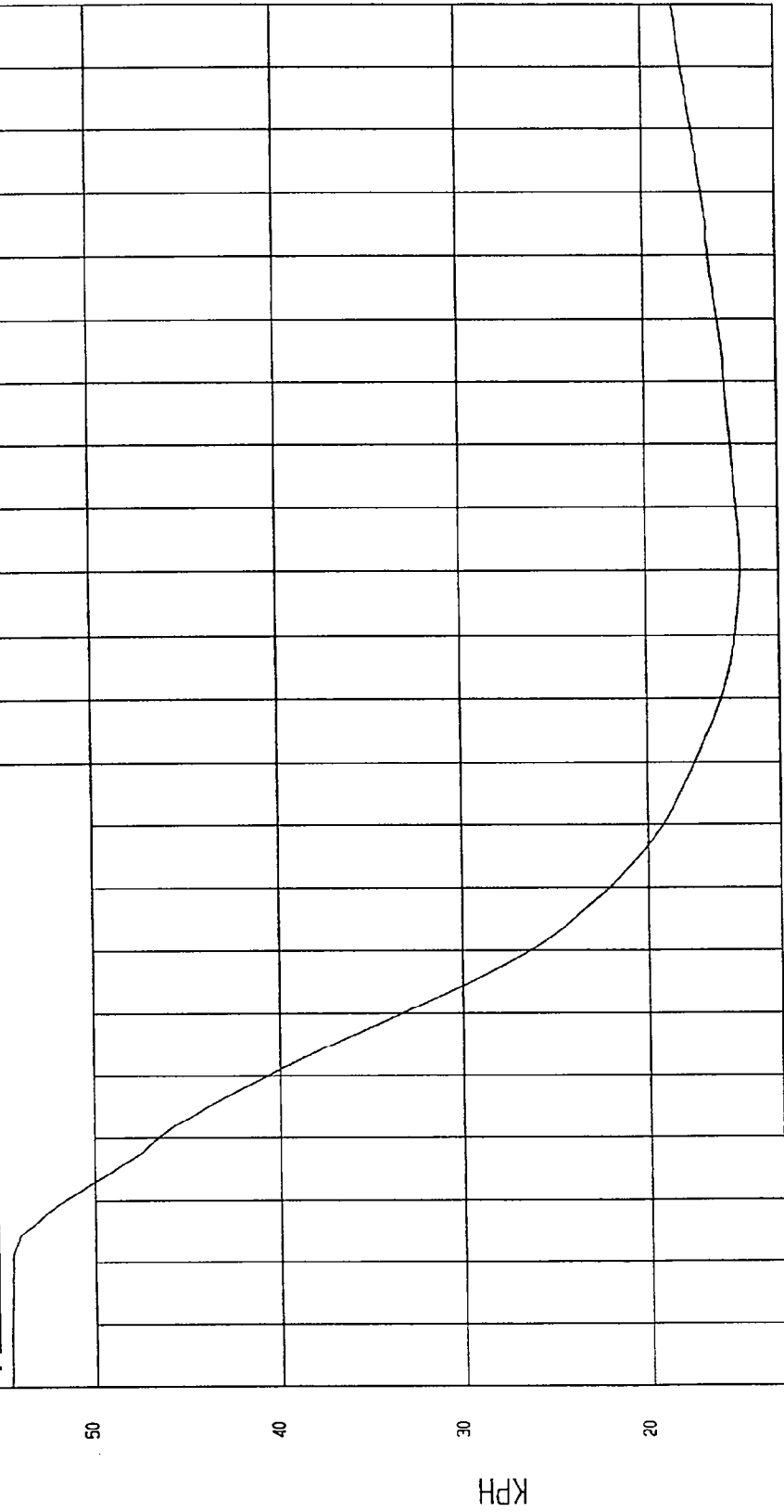
TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = 14.90 KPH at 110 msec Maximum = 54.5 KPH at -20 msec

MOVING BARRIER REAR AXLE X VELOCITY

1 ——— B97107AI.V05 Filterclass (180)



MOA Research
09-15-1997 13.46

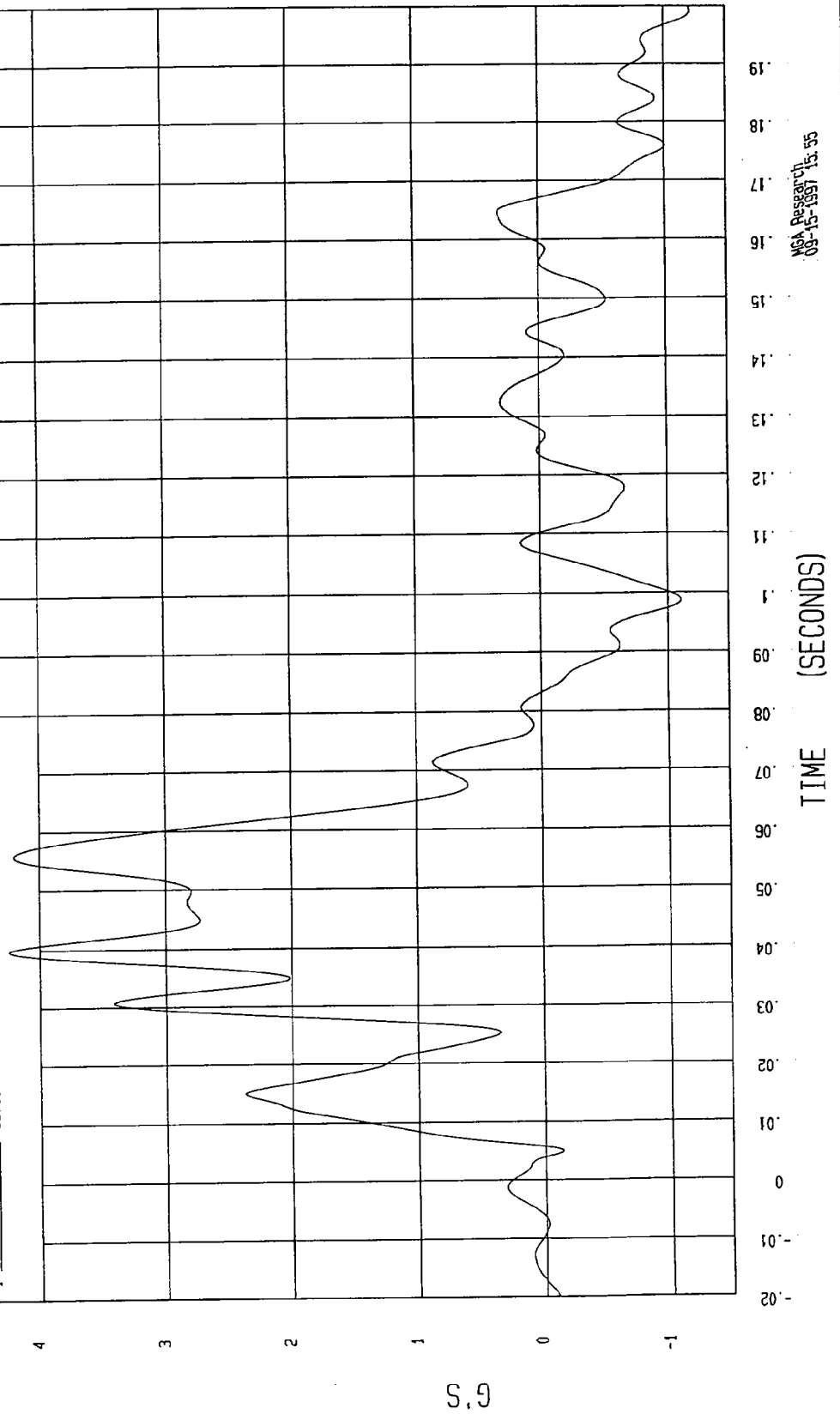
TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -1.19 G'S at 199 msec Maximum = 4.24 G'S at 40 msec

MOVING BARRIER REAR AXLE Y ACCELERATION

1 B97107AF.A06 Filterclass (50)



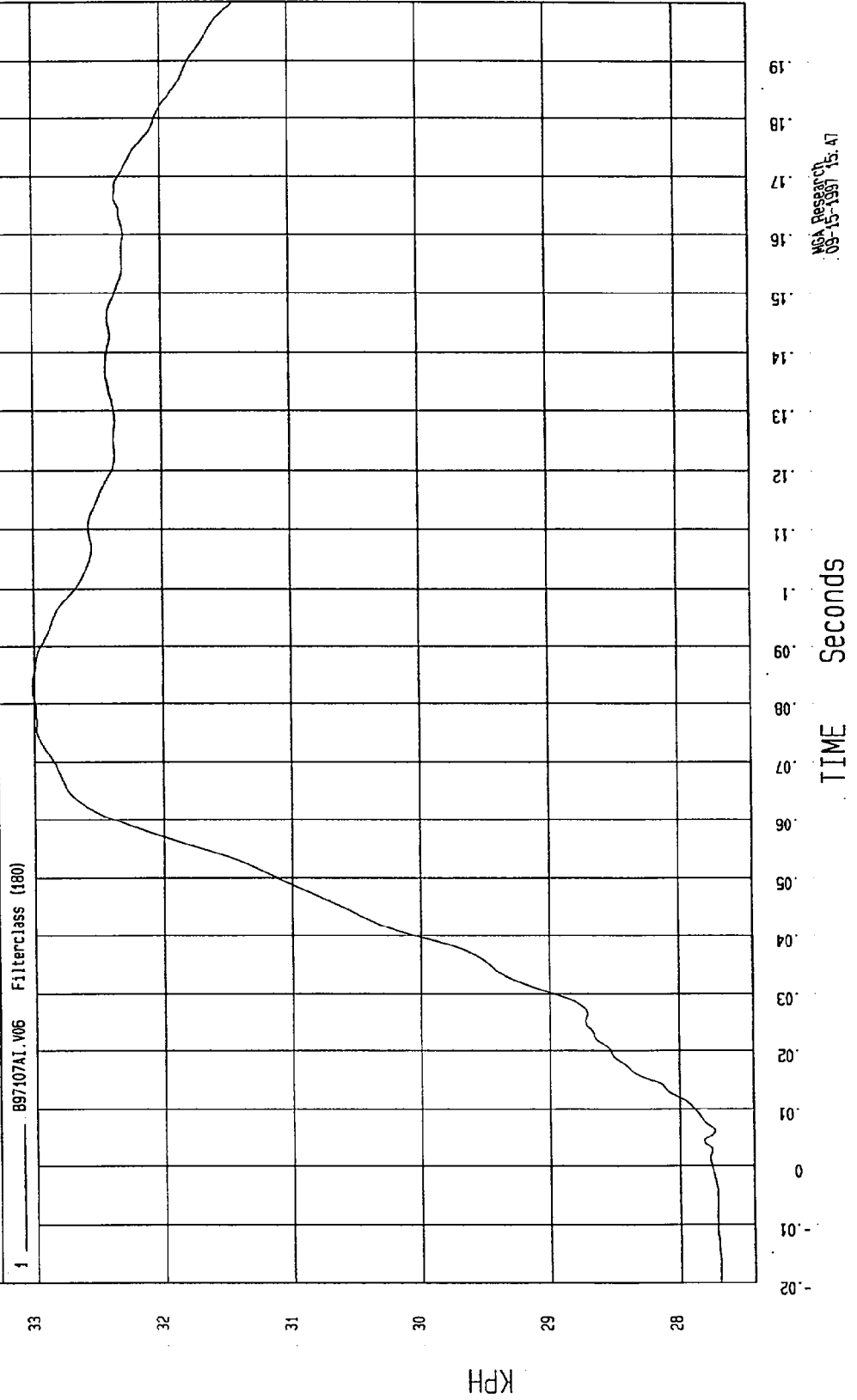
NCAP Report
09-15-1997 15:55

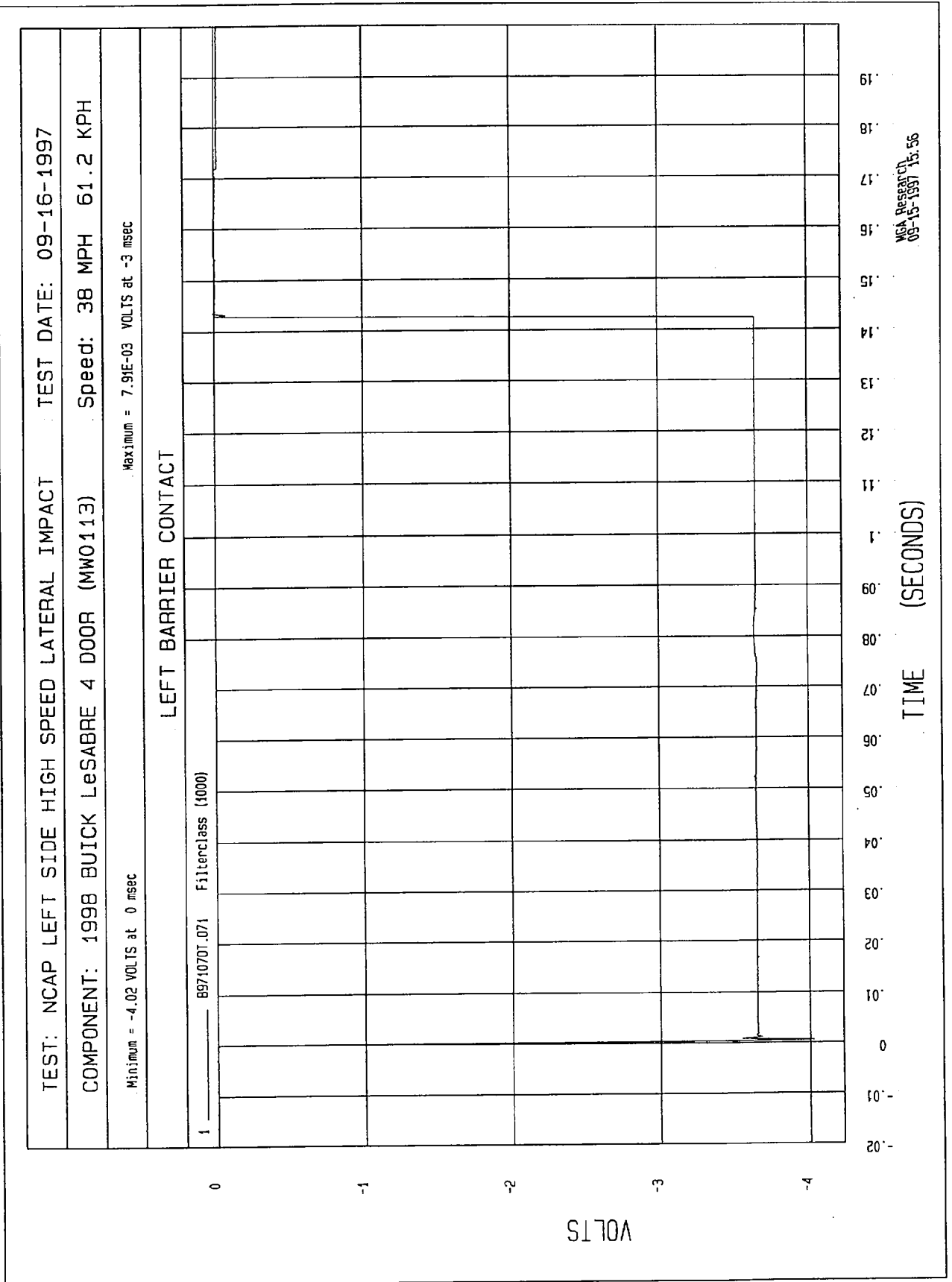
TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = 27.69 KPH at -18 msec Maximum = 33.01 KPH at 84 msec

MOVING BARRIER REAR AXLE Y VELOCITY





TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

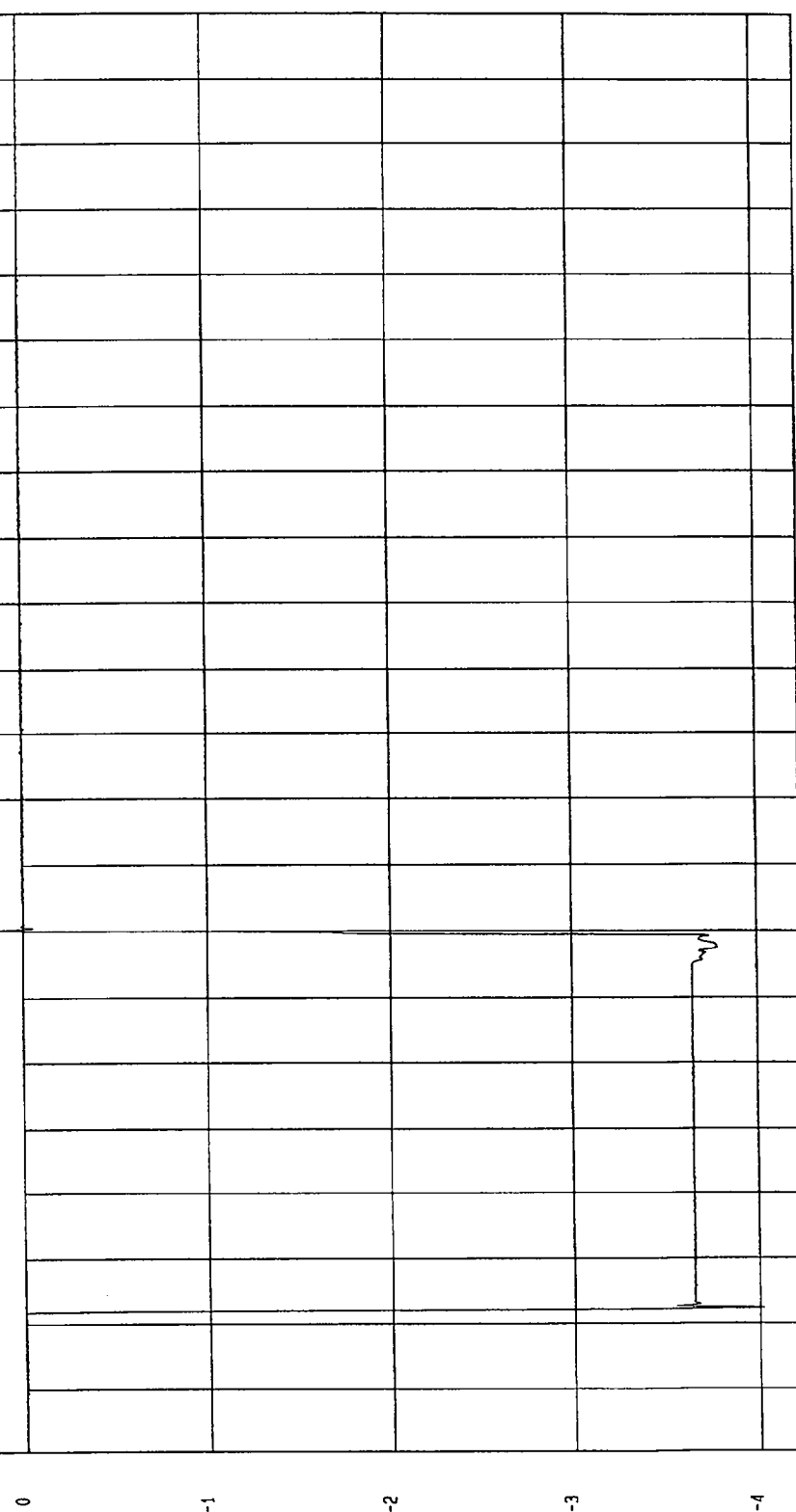
COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -4.01 VOLTS at 2 msec Maximum = .16 VOLTS at 60 msec

RIGHT BARRIER CONTACT

1 8971070T.072 Filterclass (1000)

VOLTS



NBA Research
09-15-1997 15:56

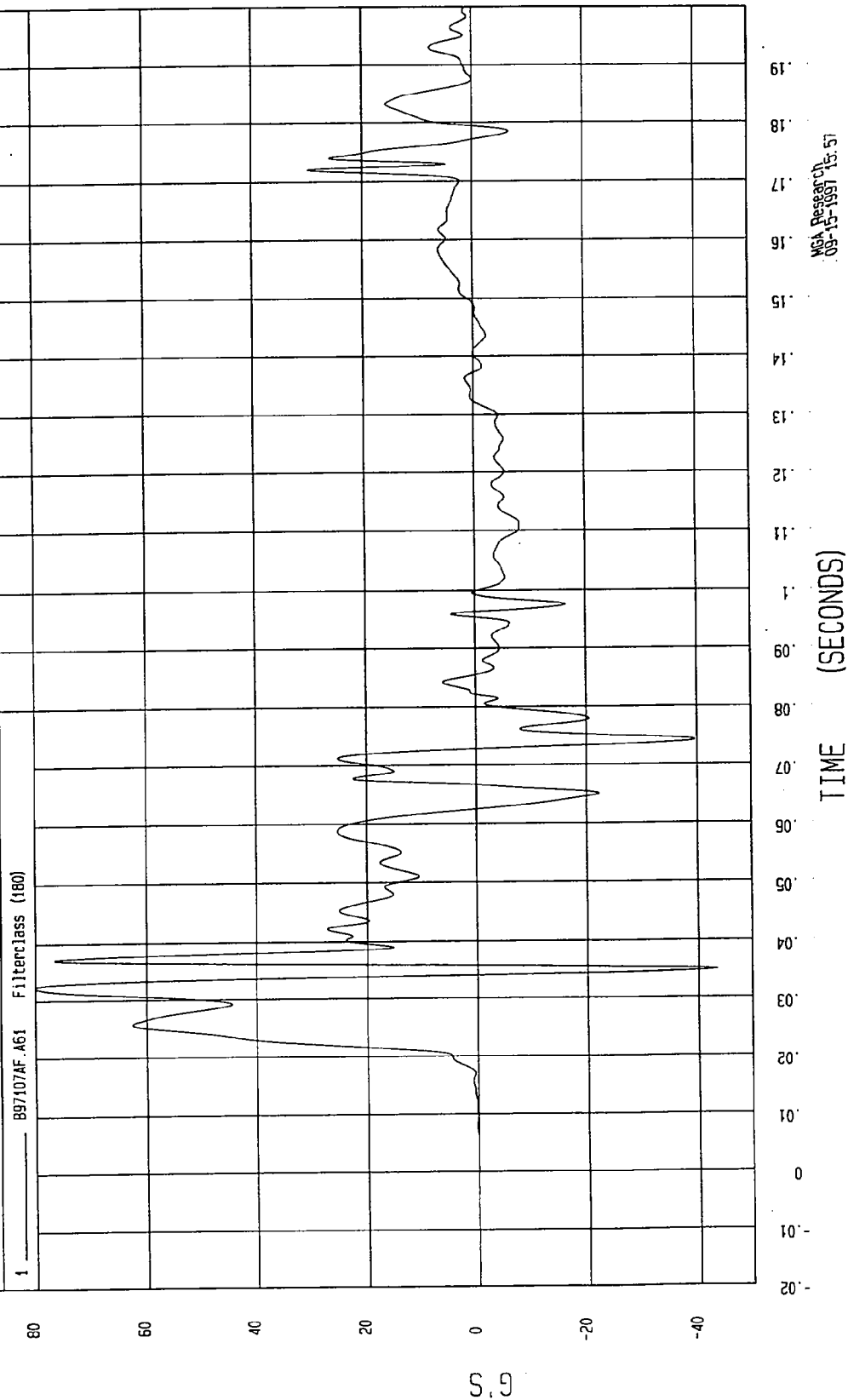
TIME (SECONDS)

TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -43.36 G'S at 35 msec Maximum = 80.05 G'S at 32 msec

DRIVER UPPER RIB Y REDUNDANT ACCELERATION



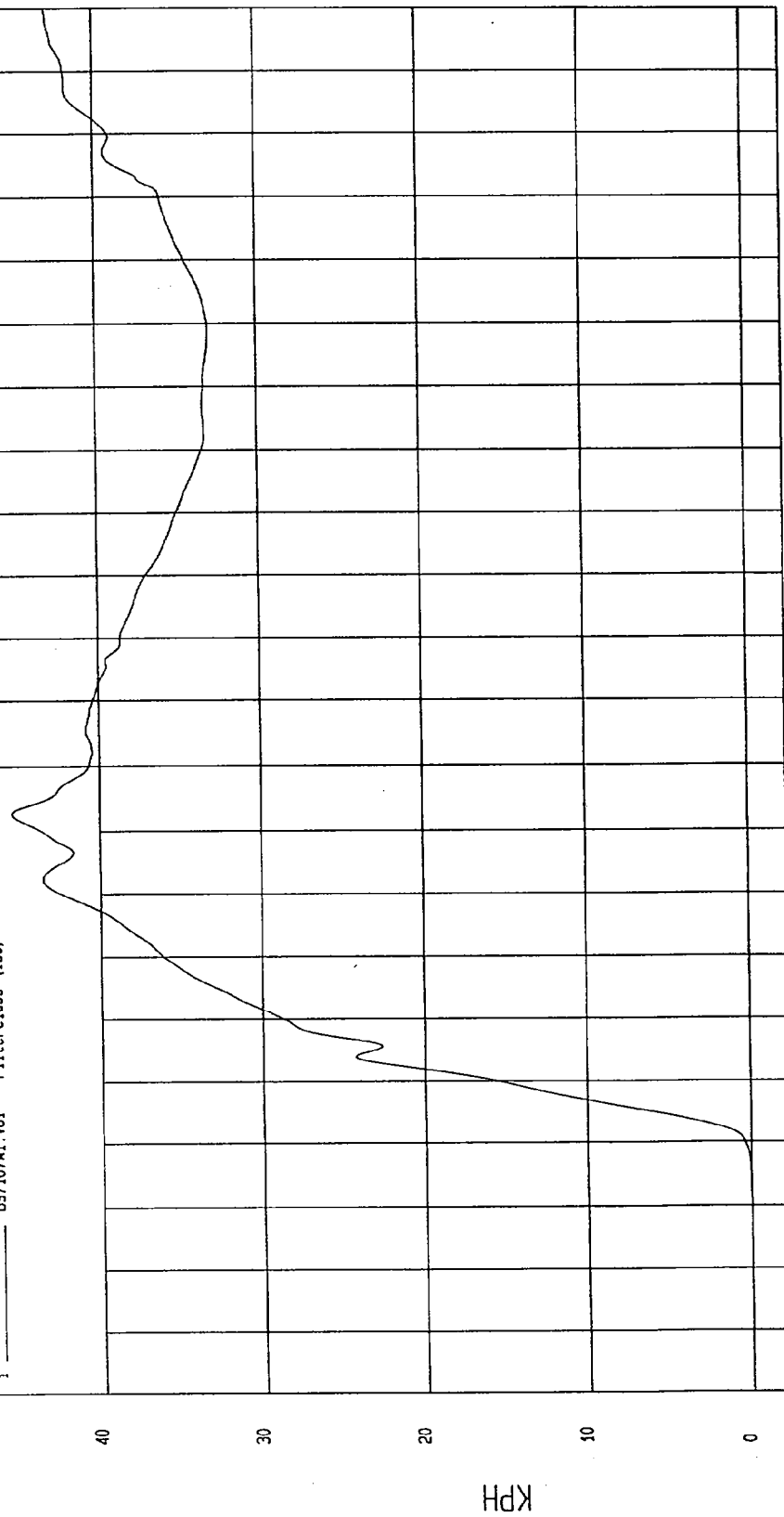
TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -3.73E-02 KPH at 5 msec Maximum = 45.43 KPH at 73 msec

DRIVER UPPER RIB Y REDUNDANT VELOCITY

1 ——— B97107A1.V61 FilterClass (180)



TIME Seconds

MCA Research
09-15-1997 15:47

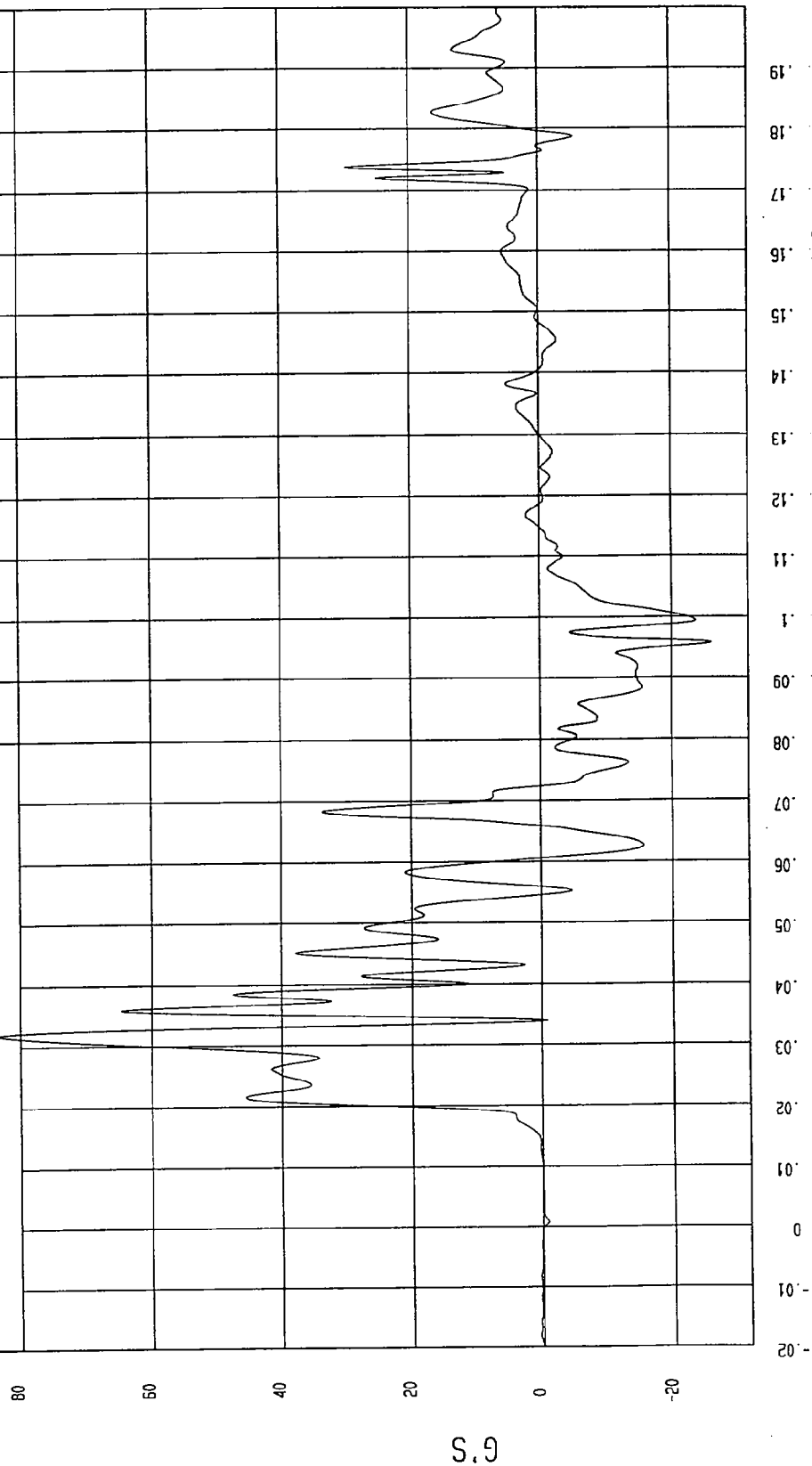
TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MWO113) Speed: 38 MPH 61.2 KPH

Minimum = -25.79 G'S at 96 msec Maximum = 83.20 G'S at 32 msec

DRIVER LOWER RIB Y REDUNDANT ACCELERATION

1 B97107AF.A62 Filterclass (180)



MCA Research
09-15-1997 15:58

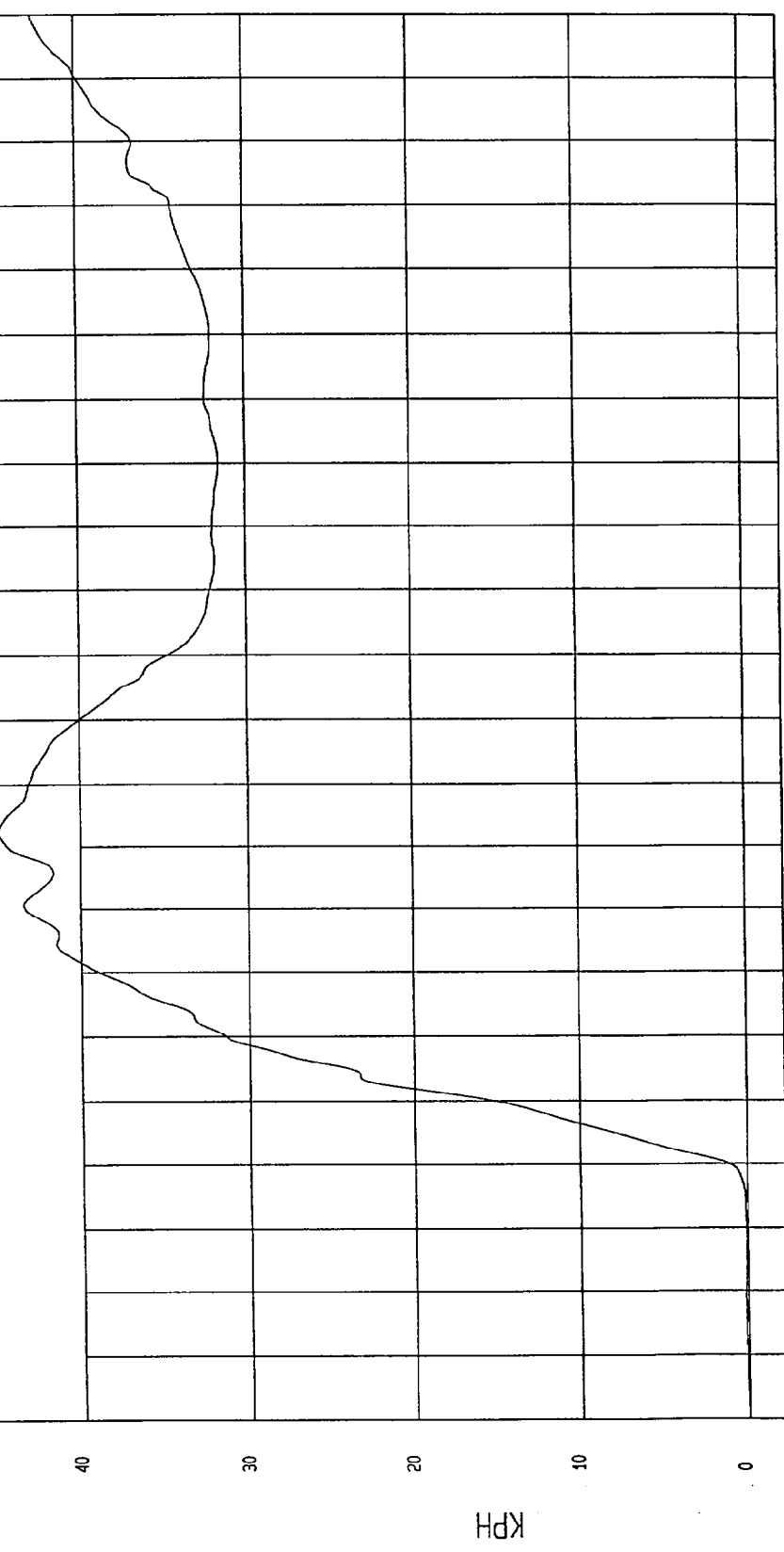
TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = 0 KPH at -20 msec Maximum = 45.04 KPH at 72 msec

DRIVER LOWER RIB Y REDUNDANT VELOCITY

1 B97107AI.V62 Filterclass (180)



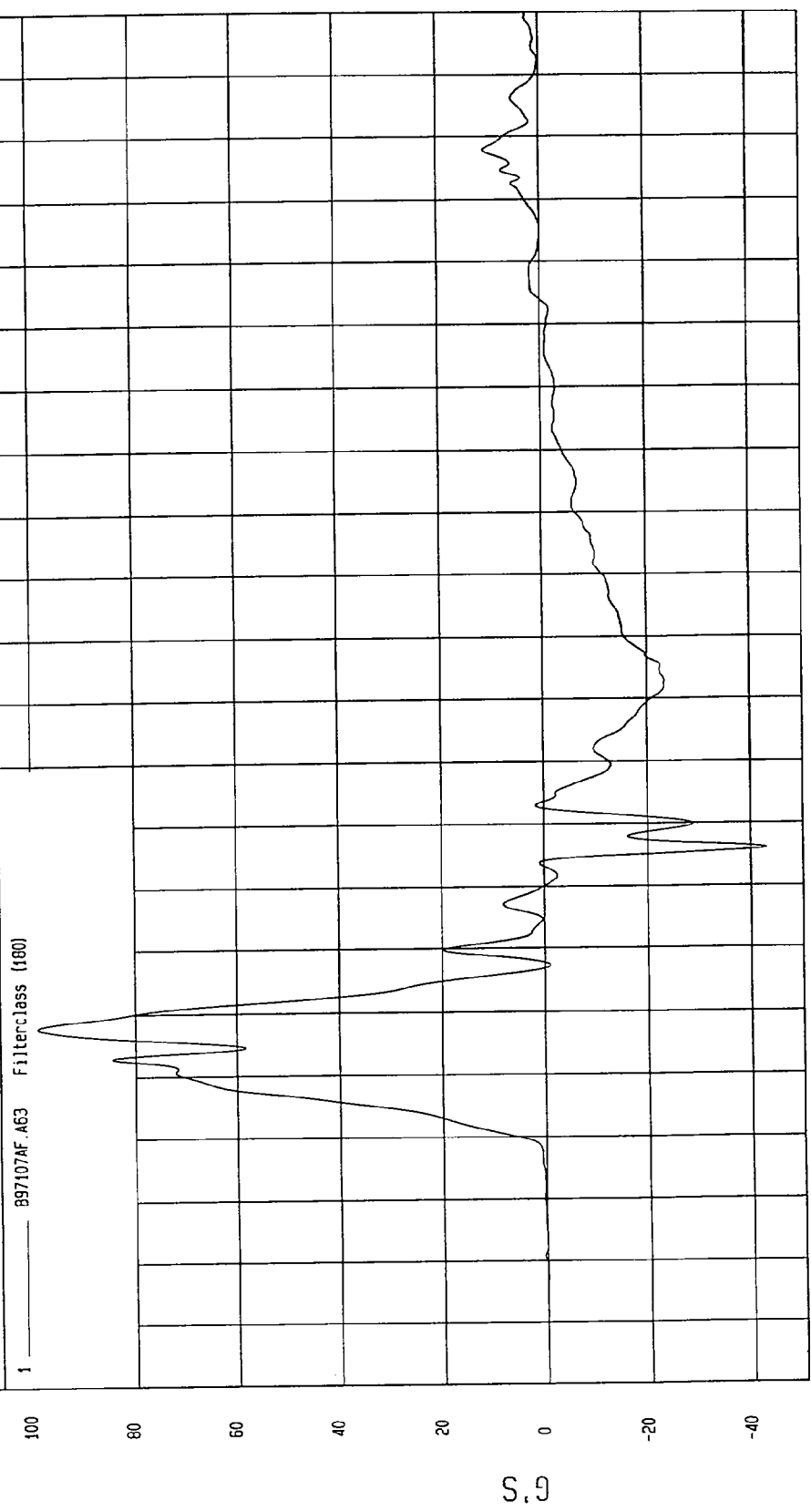
MGA Research
09-15-1997 15:48

TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -42.95 G'S at 66 msec Maximum = 98.97 G'S at 38 msec

DRIVER LOWER SPINE Y REDUNDANT ACCELERATION



TIME (SECONDS)

MCA Research
09-15-1997 15:58

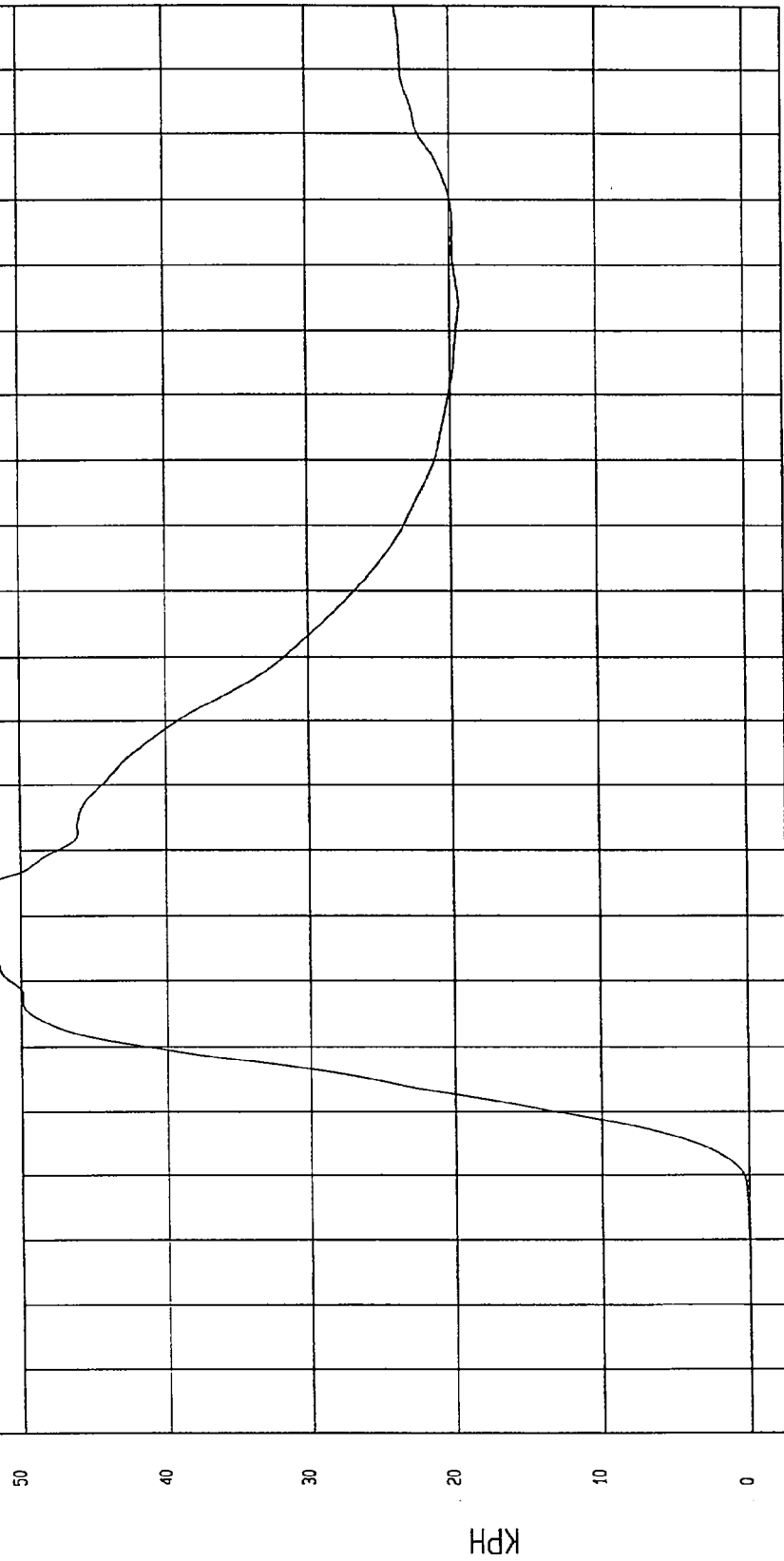
TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -2.68E-02 KPH at 0 msec Maximum = 52.41 KPH at 50 msec

DRIVER LOWER SPINE Y REDUNDANT VELOCITY

1 897107A1.V63 FilterClass (480)



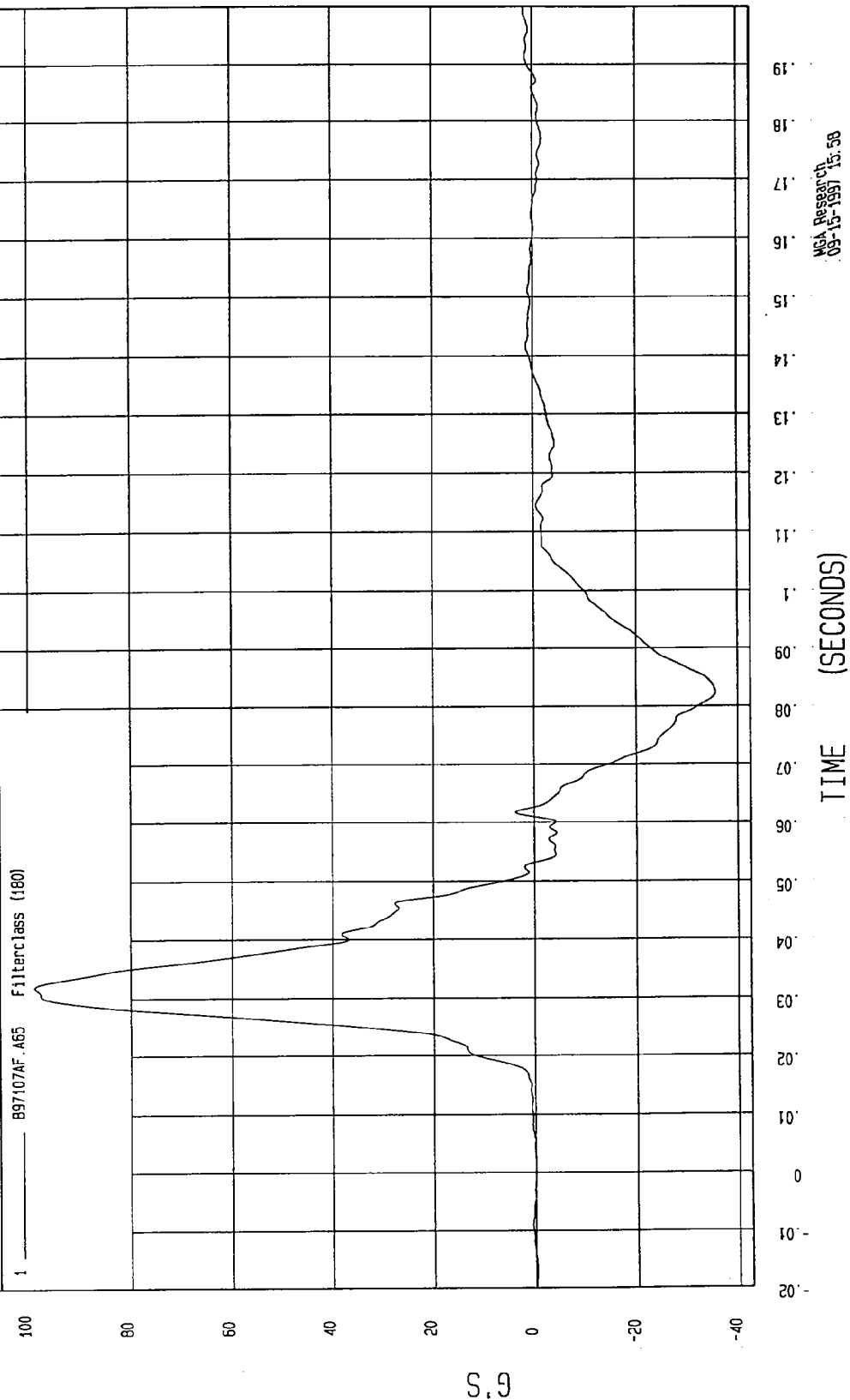
NGA Research
09-15-1997 15.48

TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LeSABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -35.68 G's at 82 msec Maximum = 98.77 G's at 32 msec

DRIVER PELVIS Y REDUNDANT ACCELERATION



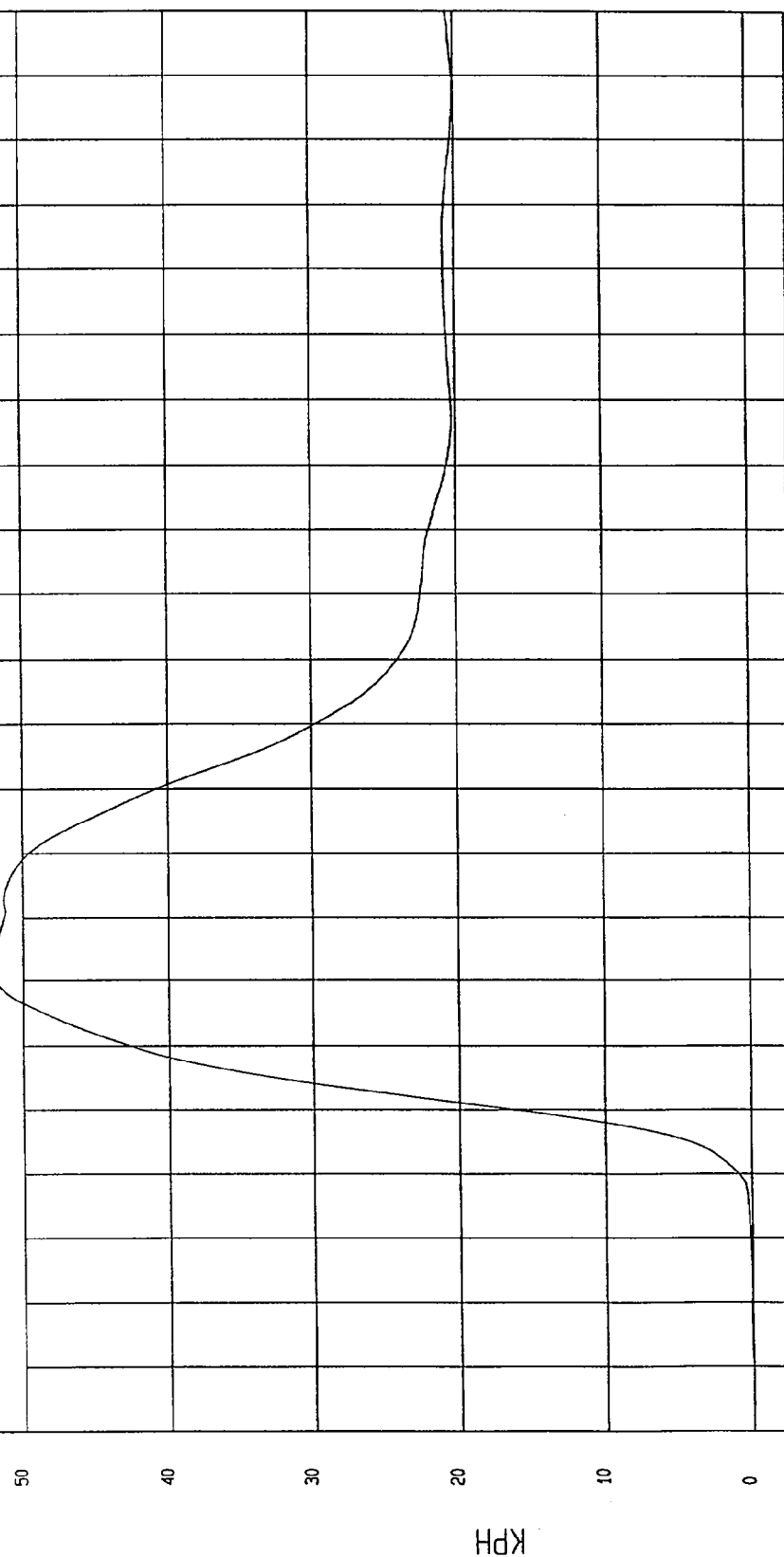
TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -3.70E-02 KPH at -14 msec Maximum = 52.18 KPH at 53 msec

DRIVER PELVIS Y REDUNDANT VELOCITY

1 — 897107A1.V65 Filterclass (180)



NCAP Research
09-15-1997 15:48

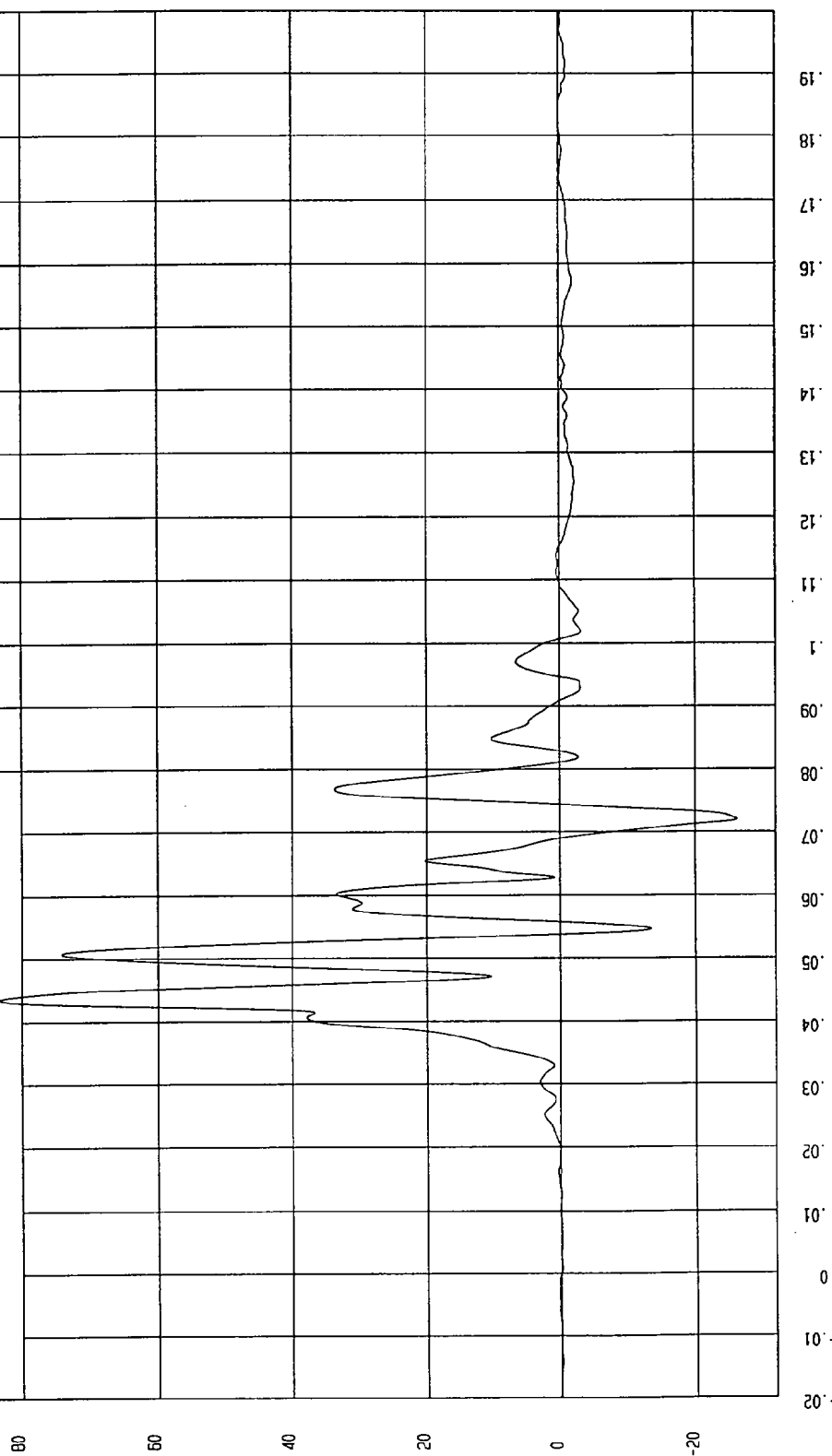
TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -26.07 G'S at 72 msec Maximum = 83.25 G'S at 44 msec

REAR PASSENGER UPPER RIB Y REDUNDANT ACCELERATION

1 B97107AF.A66 Filterclass (180)



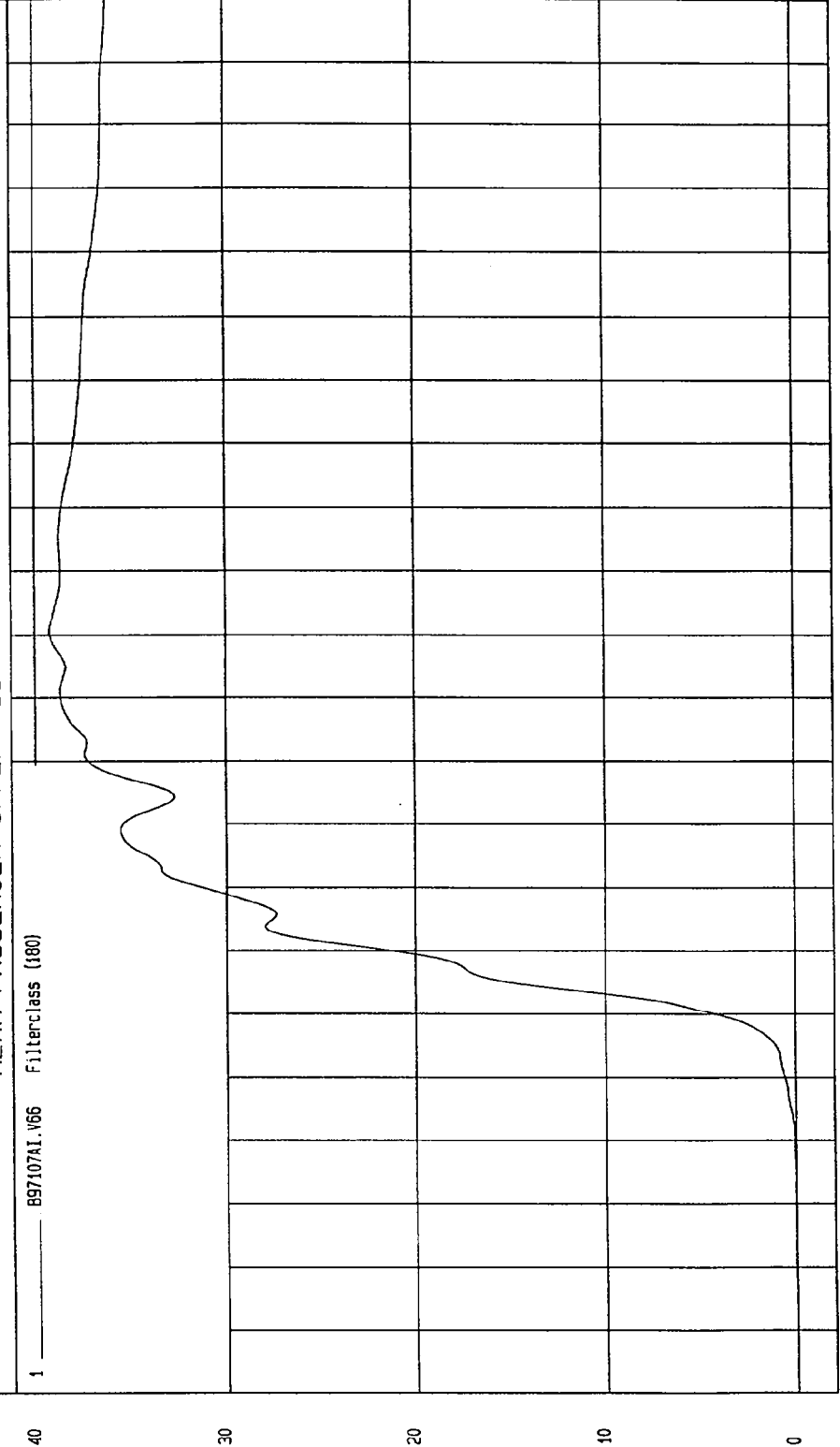
MSA Research
09-15-1997 15:58

TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -1.05E-02 KPH at -9 msec Maximum = 39.24 KPH at 101 msec

REAR PASSENGER UPPER RIB Y REDUNDANT VELOCITY



TIME Seconds

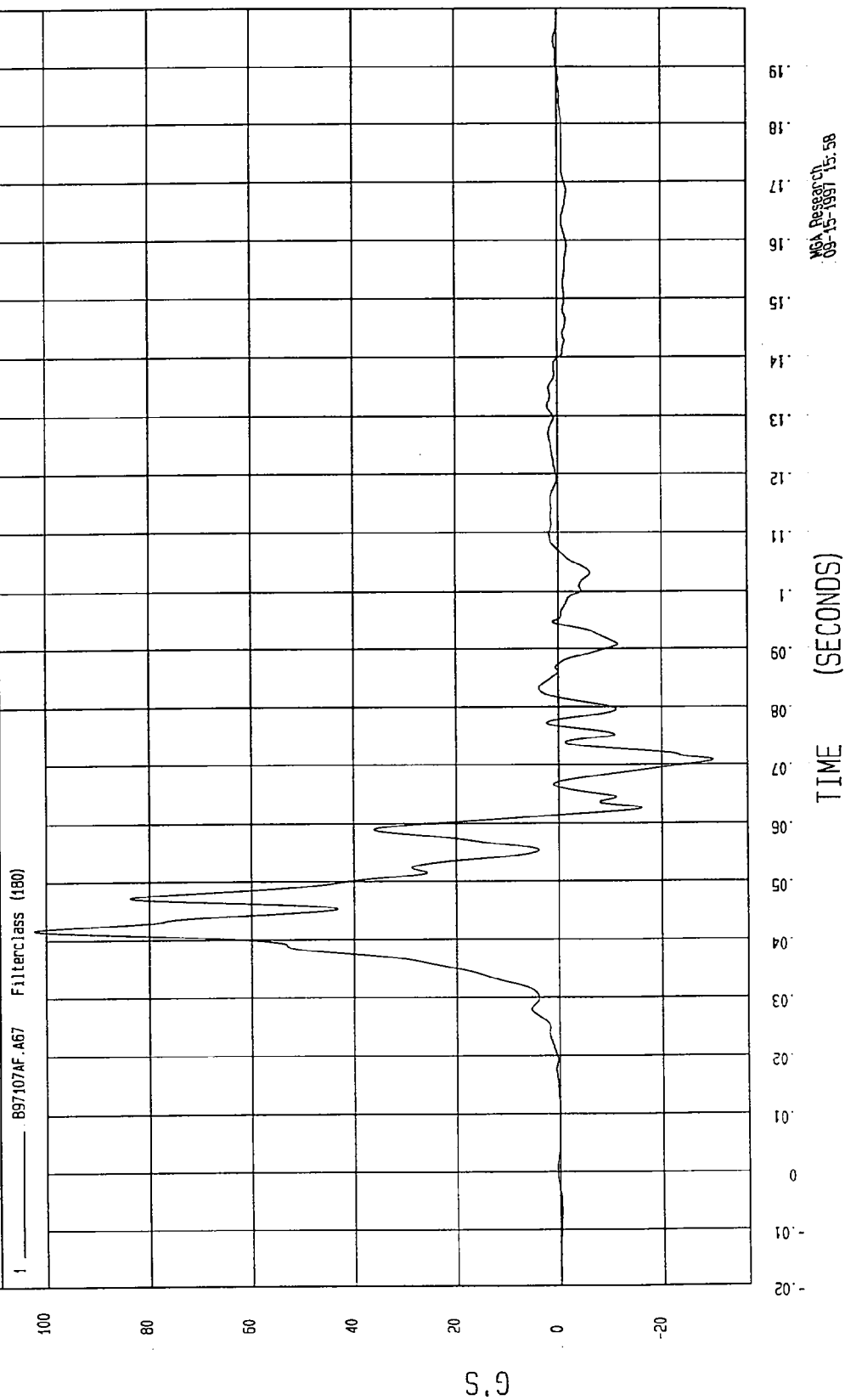
MPA Research
09-15-1997 15.48

TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -29.89 G'S at 71 msec Maximum = 102.31 G'S at 42 msec

REAR PASSENGER LOWER RIB Y REDUNDANT ACCELERATION



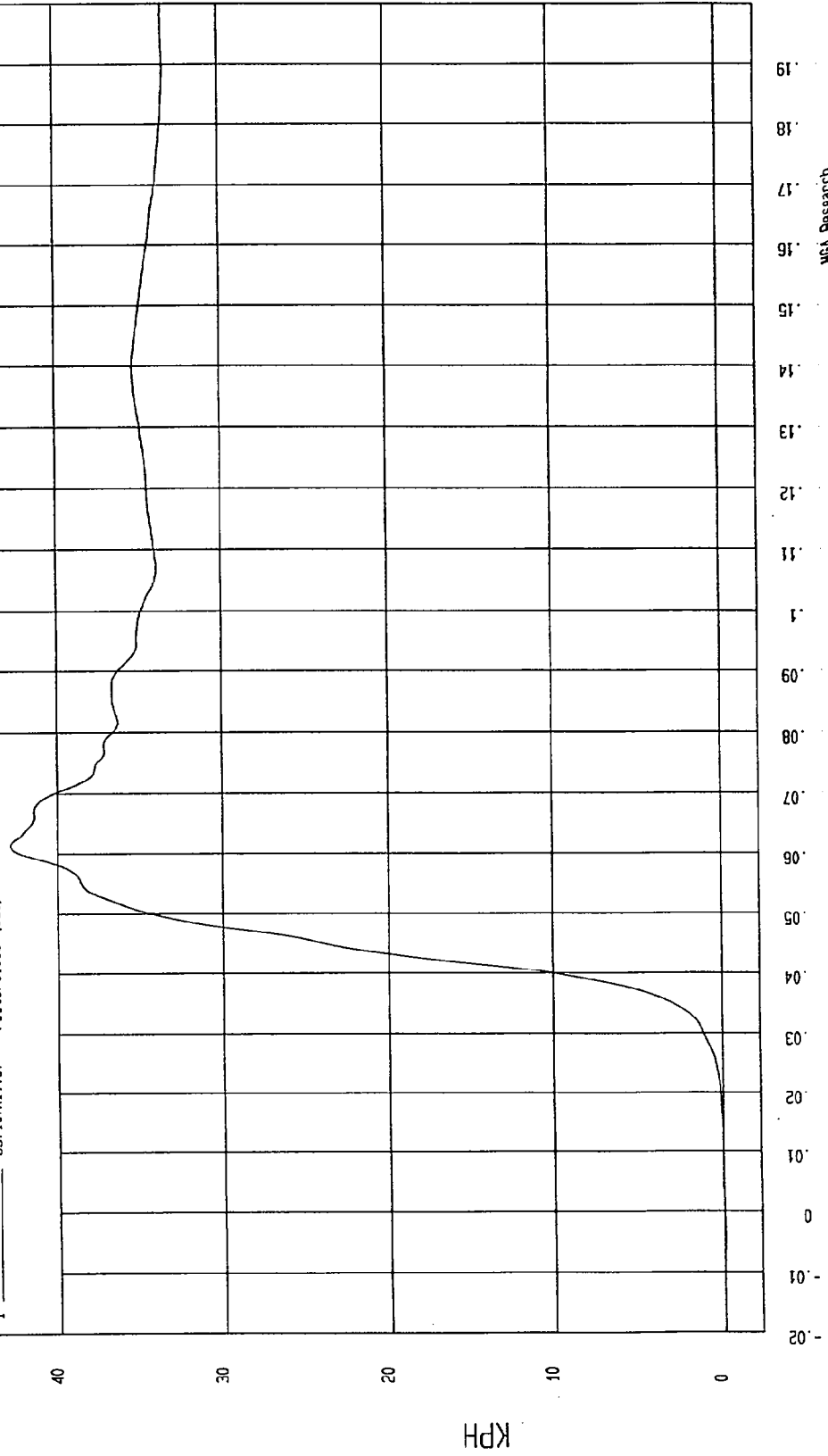
TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -6.49E-02 KPH at -3 msec Maximum = 42.81 KPH at 61 msec

REAR PASSENGER LOWER RIB Y REDUNDANT VELOCITY

1 _____ 897107A1.V67 Filterclass (180)



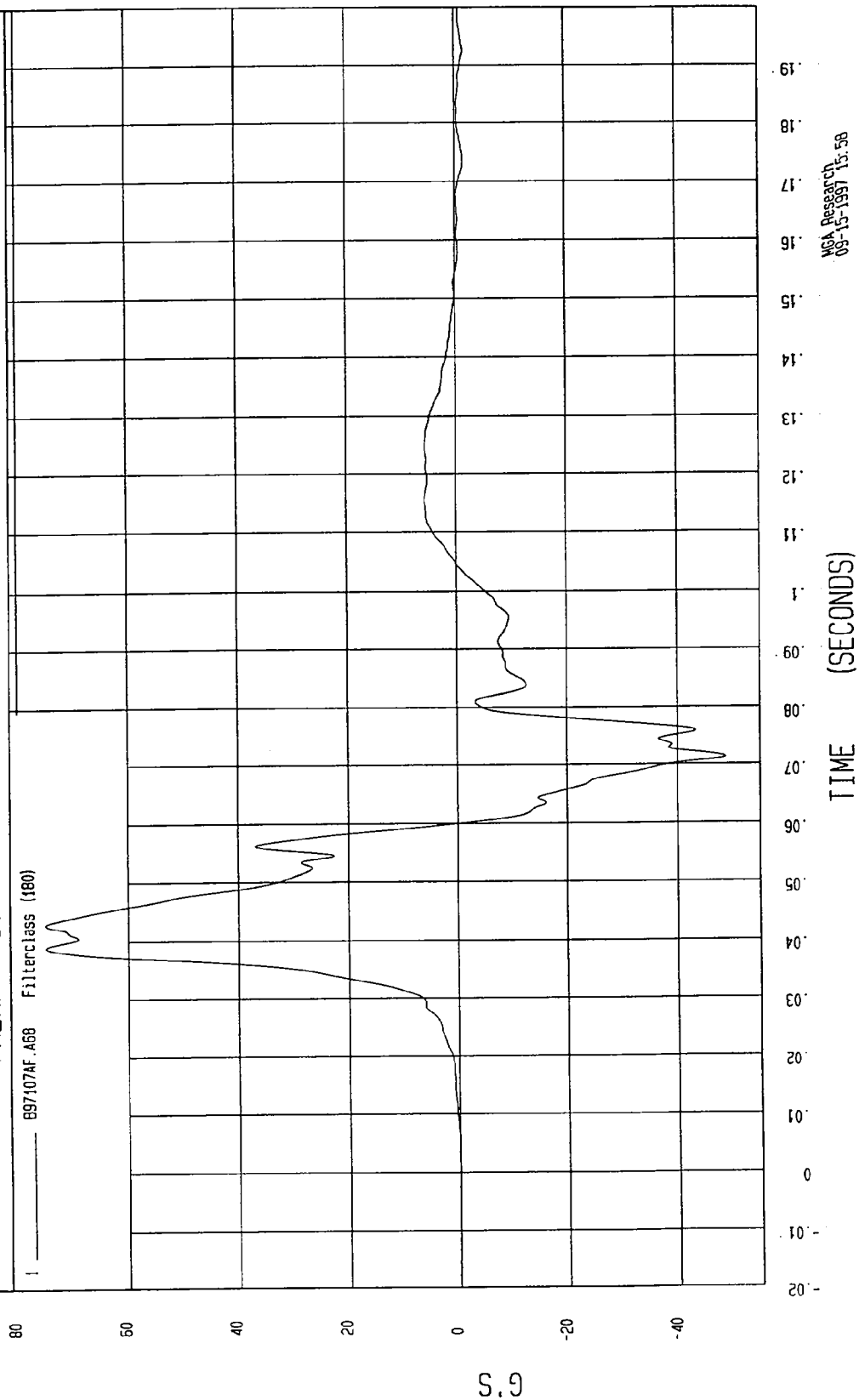
MGA Research
09-16-1997 15:48

TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LeSABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -48.53 G'S at 71 msec Maximum = 75.13 G'S at 43 msec

REAR PASSENGER LOWER SPINE Y REDUNDANT ACCELERATION



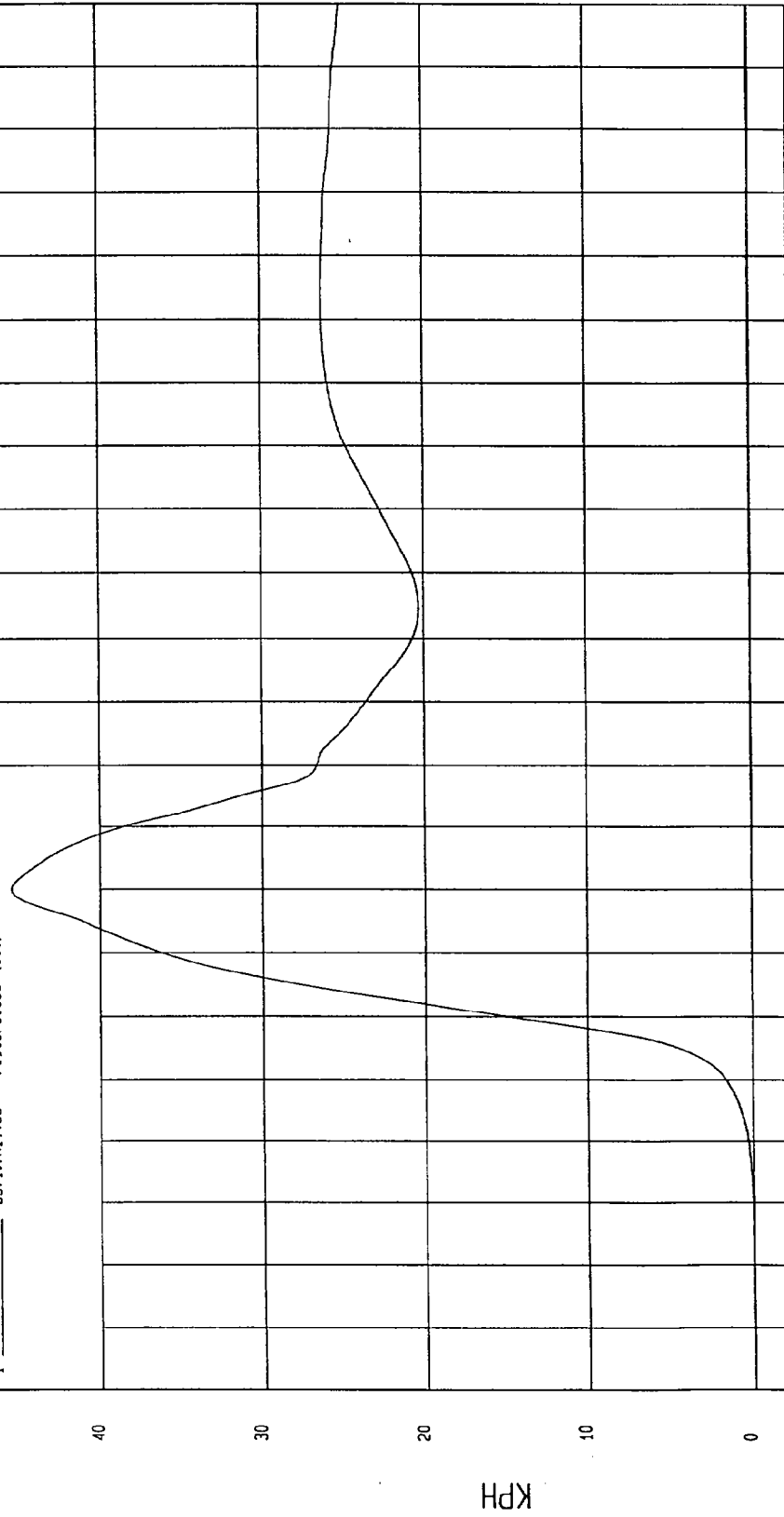
TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -4.10E-03 KPH at -10 msec Maximum = 45.39 KPH at 60 msec

REAR PASSENGER LOWER SPINE Y REDUNDANT VELOCITY

1 ——— B97107A1.V68 Filterclass (180)



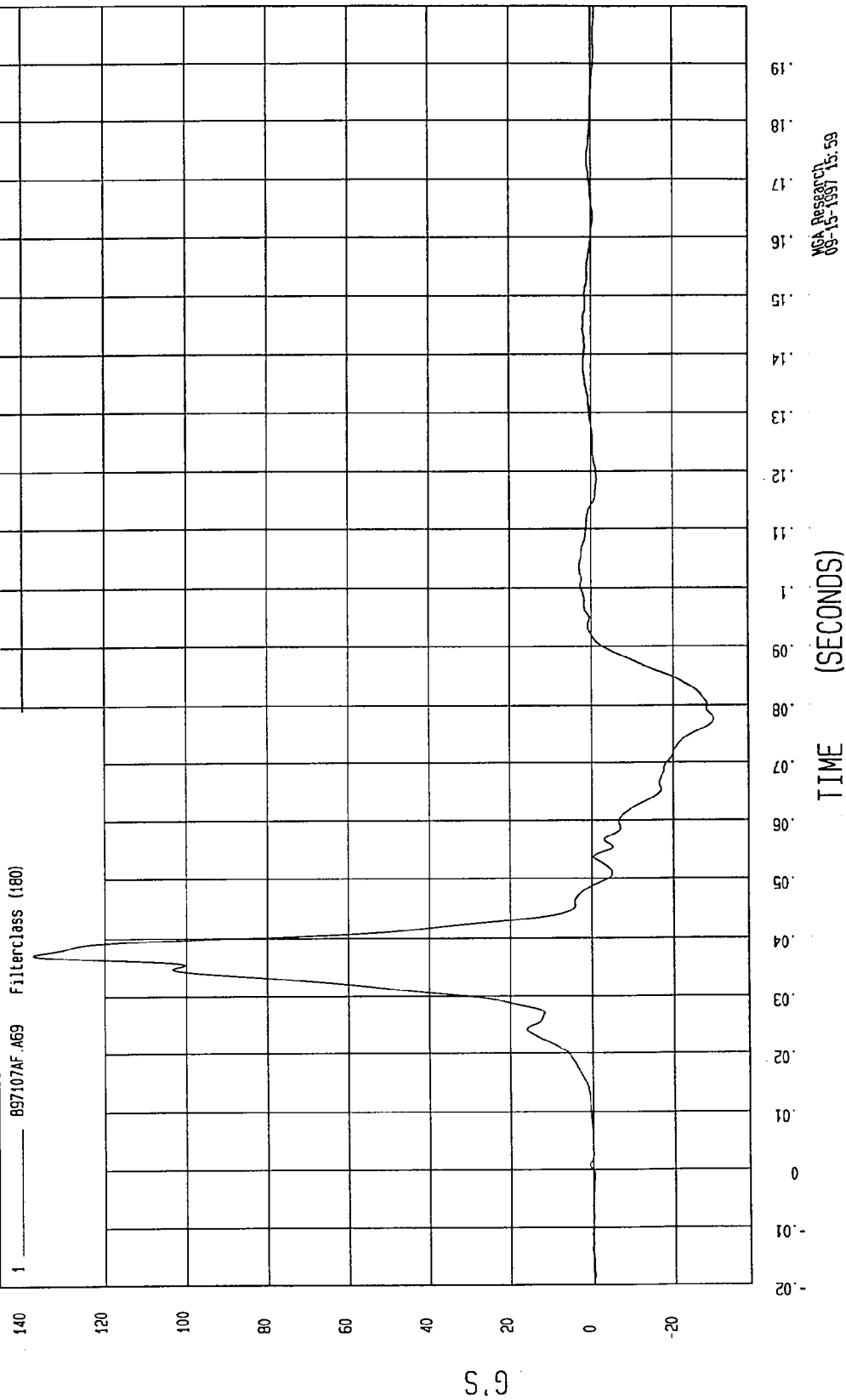
MGA Research
09-15-1997 15.48

TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -29.83 G's at 78 msec Maximum = 137.49 G's at 37 msec

REAR PASSENGER PELVIS Y REDUNDANT ACCELERATION



TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

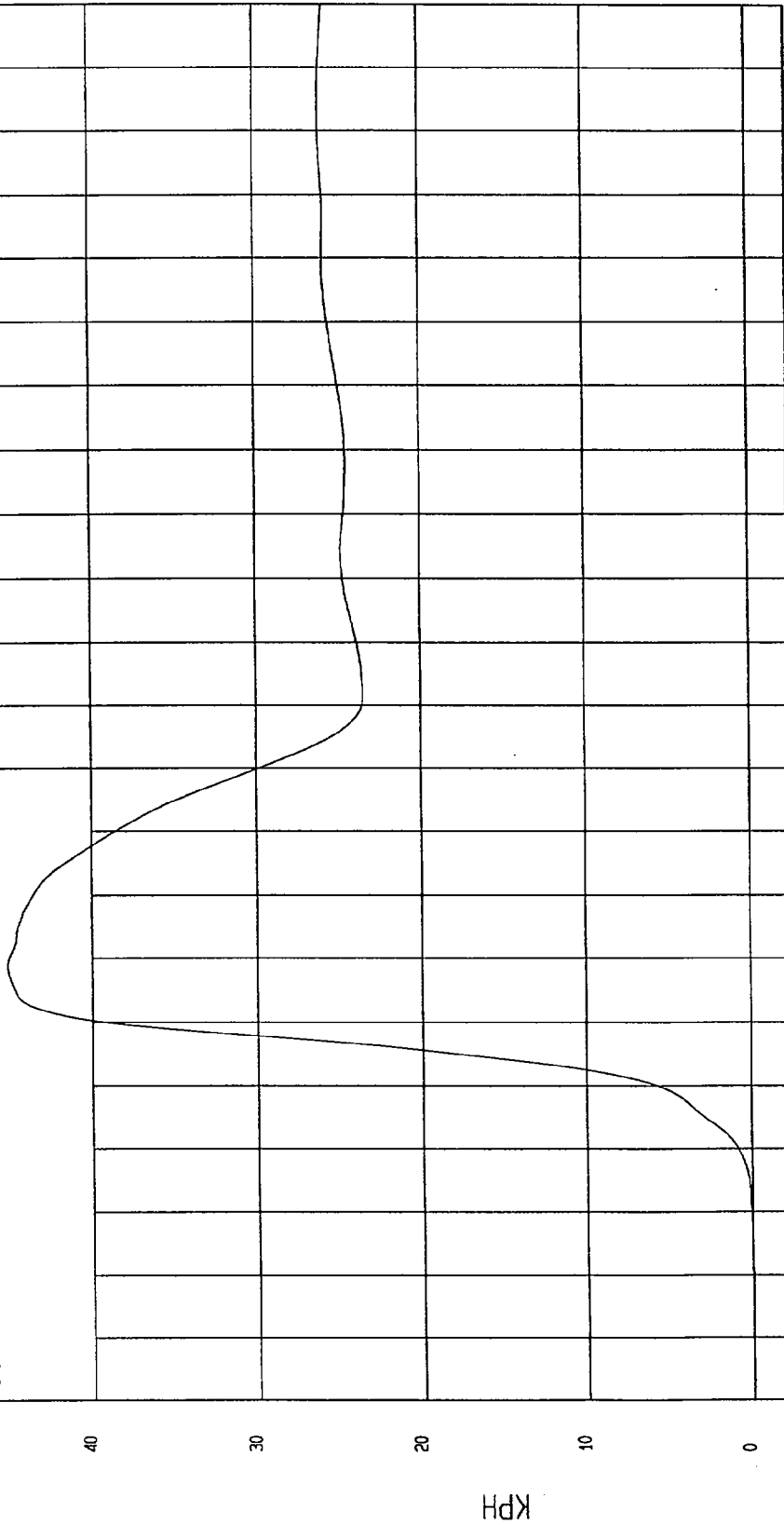
COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -.03 KPH at 0 msec

Maximum = 45.07 KPH at 49 msec

REAR PASSENGER PELVIS Y REDUNDANT VELOCITY

1 897107A1.V69 Filterclass (180)



MSA Research
09-15-1997 15:48

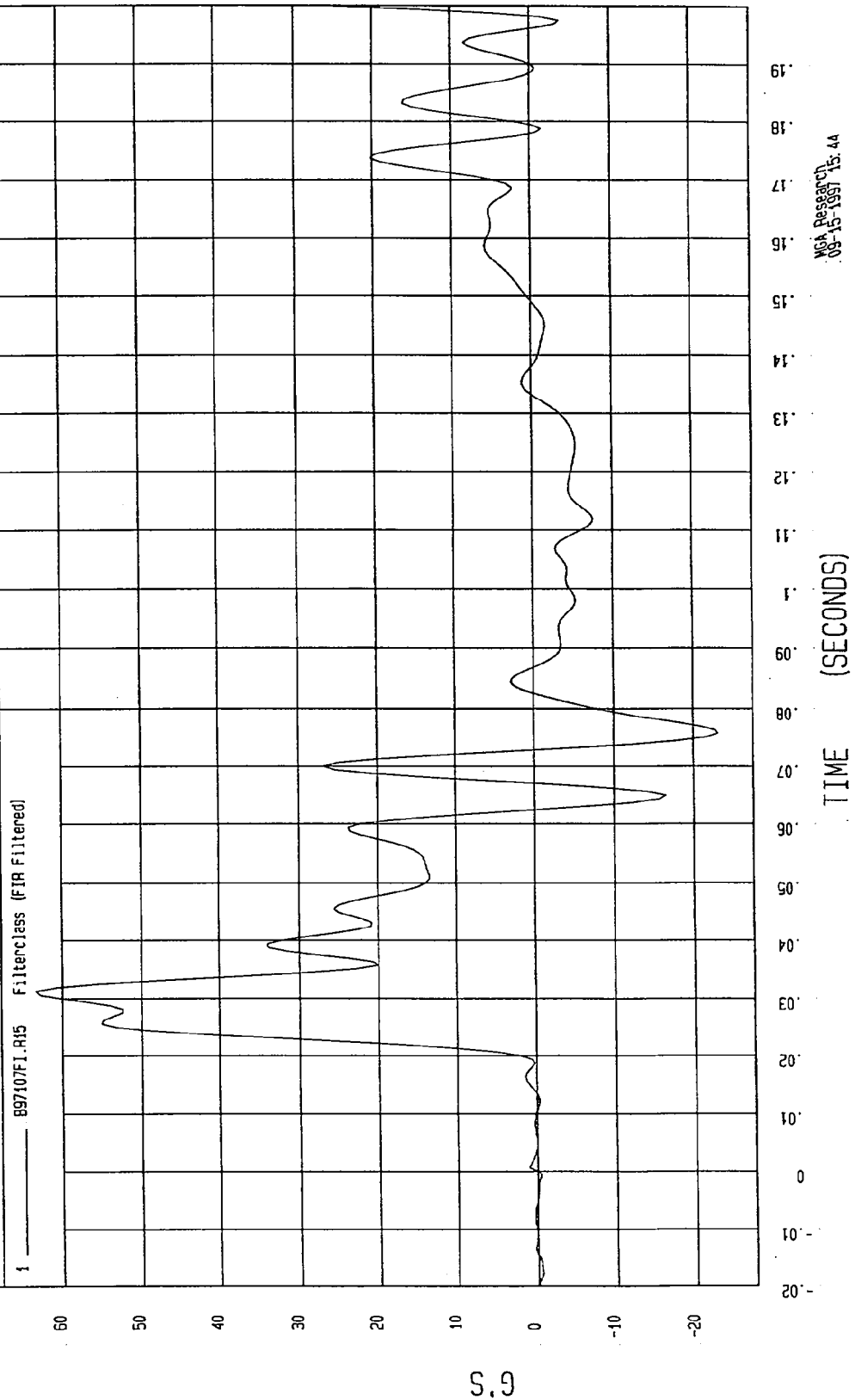
FINITE IMPULSE RESPONSE (FIR) FILTERED DATA

TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -23.11 G'S at 76 msec Maximum = 63.29 G'S at 31 msec

DRIVER UPPER RIB Y ACCELERATION



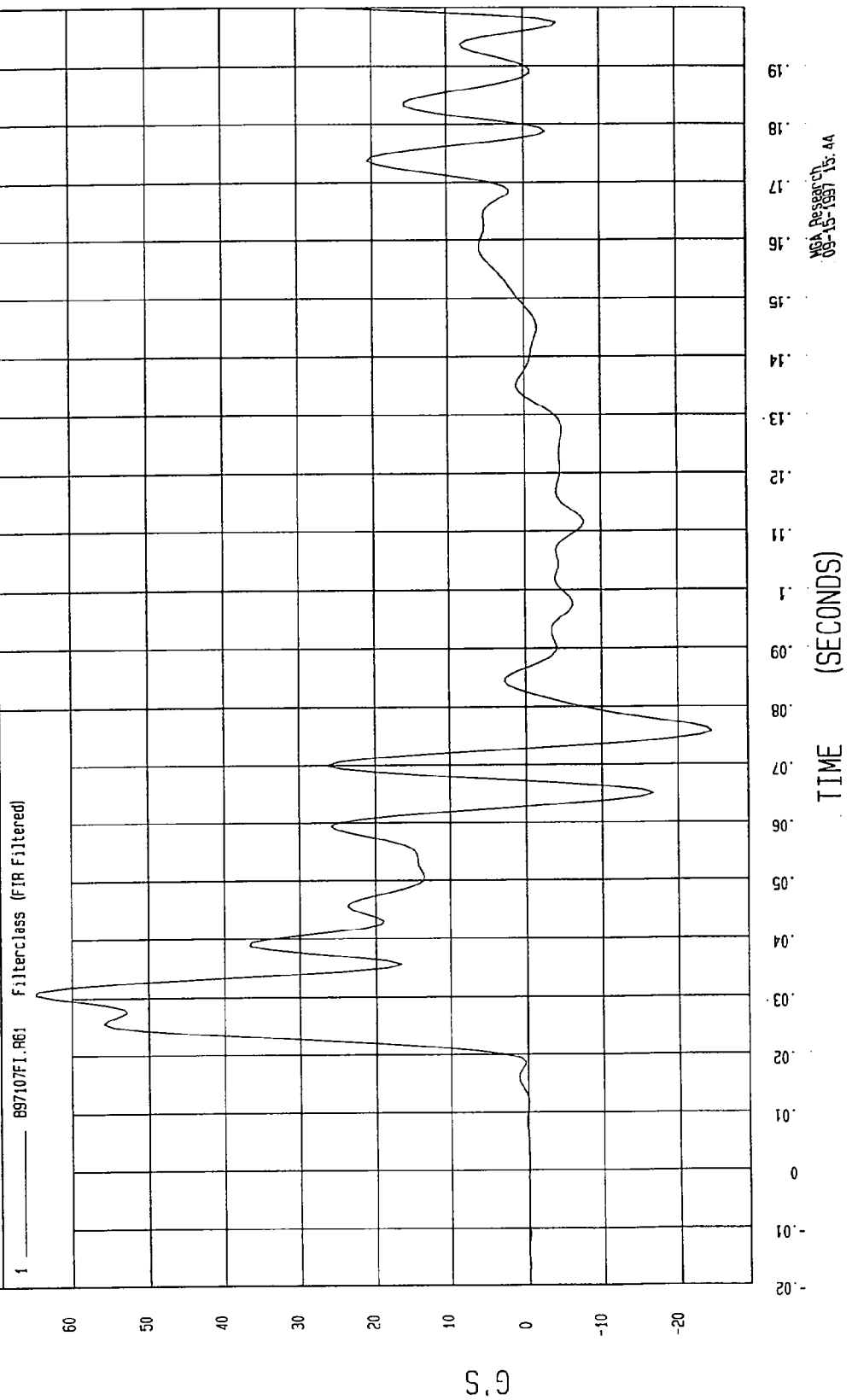
MCA Research
09-15-1997 15:44

TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -24.39 G'S at 76 msec Maximum = 64.75 G'S at 31 msec

DRIVER UPPER RIB Y REDUNDANT ACCELERATION



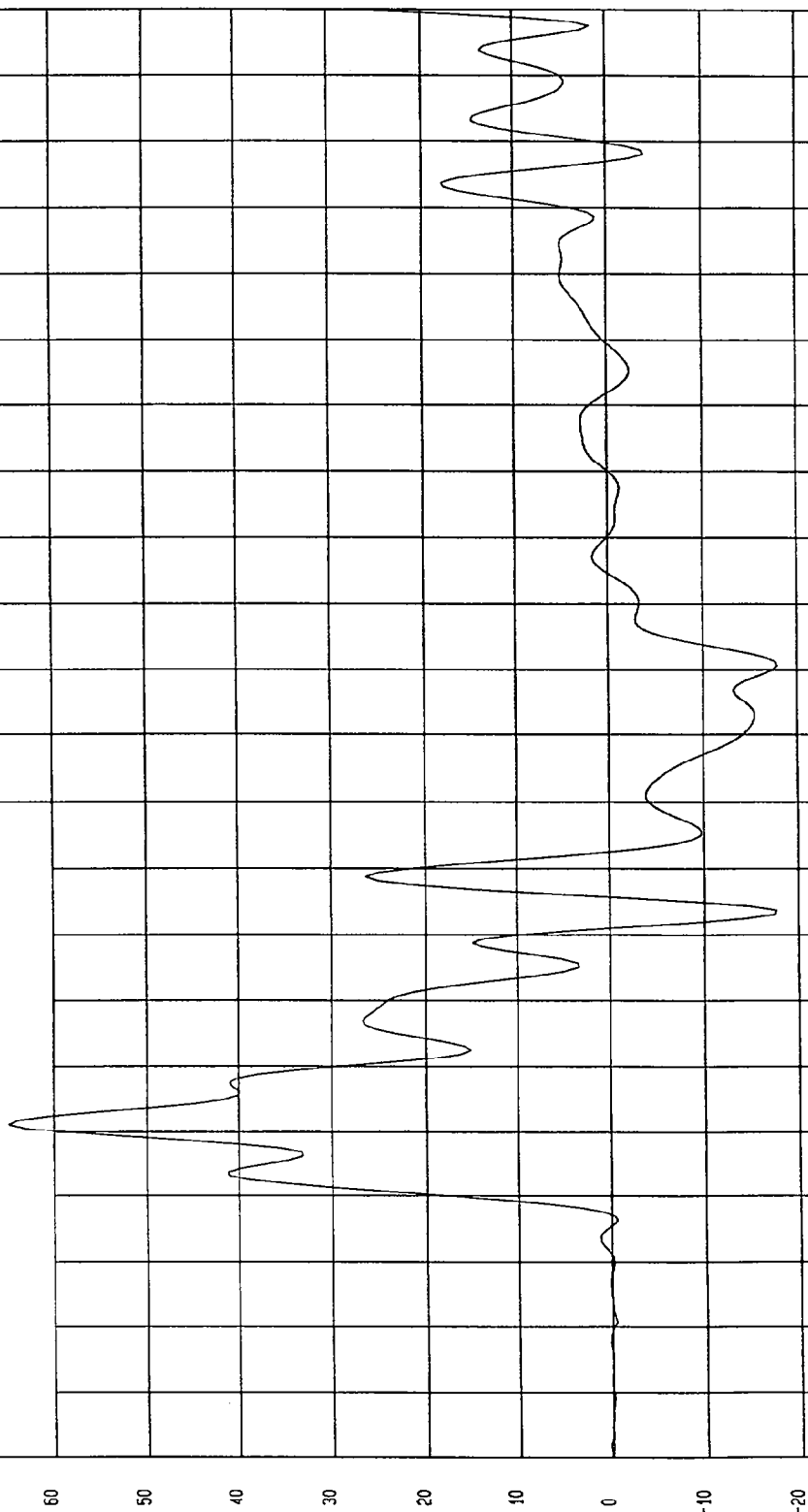
TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -17.90 G'S at 101 msec Maximum = 64.78 G'S at 31 msec

DRIVER LOWER RIB Y ACCELERATION

1 897107F1.RM6 FilterClass (FIR Filtered)



MSA Research
09-13-1997 15:44

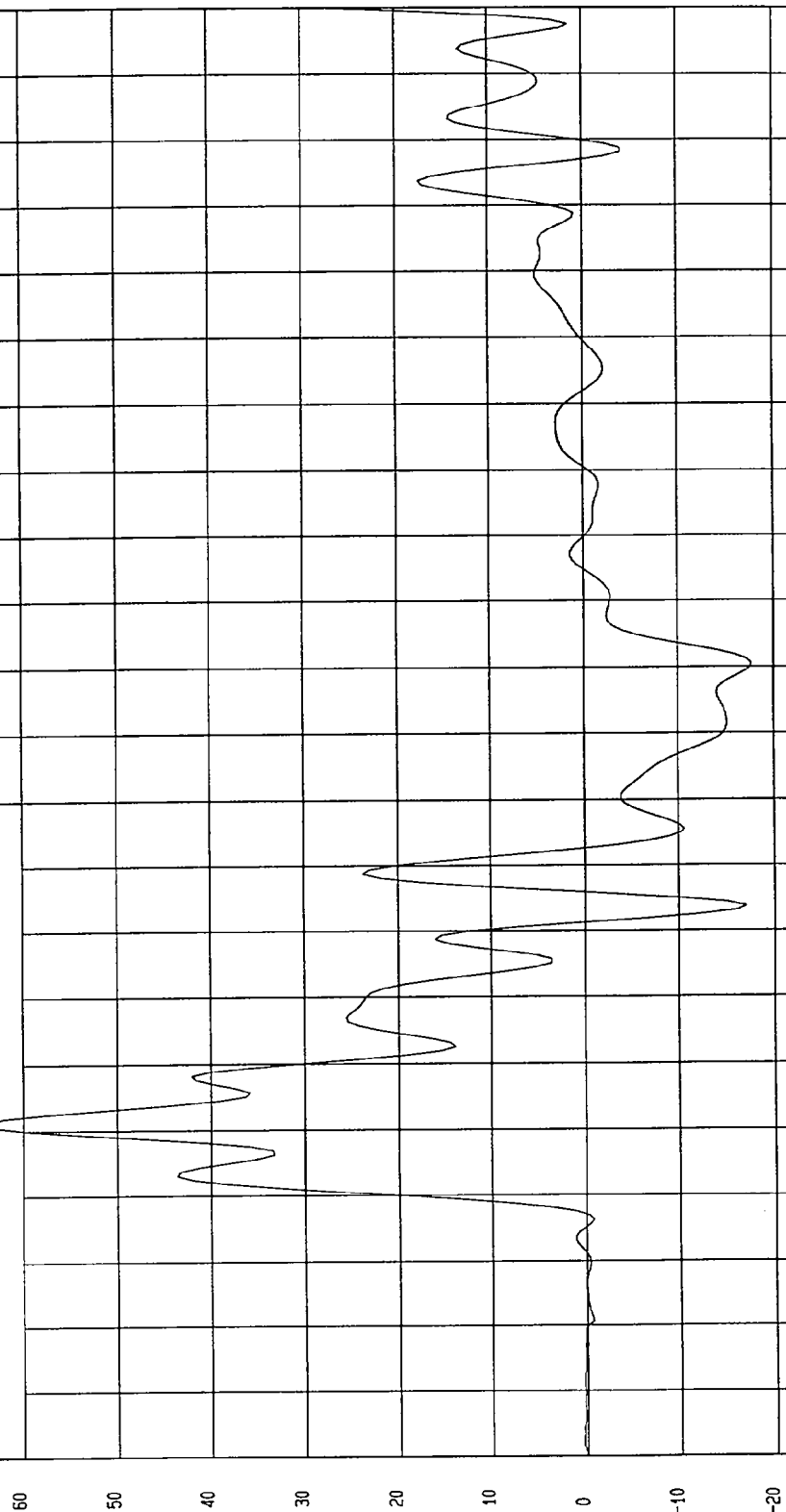
TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LeSABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -17.65 G'S at 101 msec Maximum = 64.37 G'S at 31 msec

DRIVER LOWER RIB Y REDUNDANT ACCELERATION

1 B97107F1.R62 Filterclass (FIR Filtered)



WGA, Research Corp.
09-16-1997 15:44

TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -28.27 G'S at 69 msec Maximum = 93.18 G'S at 39 msec

DRIVER LOWER SPINE Y ACCELERATION

1 B97107FL.R17 FilterClass (FIR Filtered)



TIME (SECONDS) 0.19 0.18 0.17 0.16 0.15 0.14 0.13 0.12 0.11 0.1 0.09 0.08 0.07 0.06 0.05 0.04 0.03 0.02 0.01 0 -0.01 -0.02

MGA Research Corp
09-15-1997 15:44

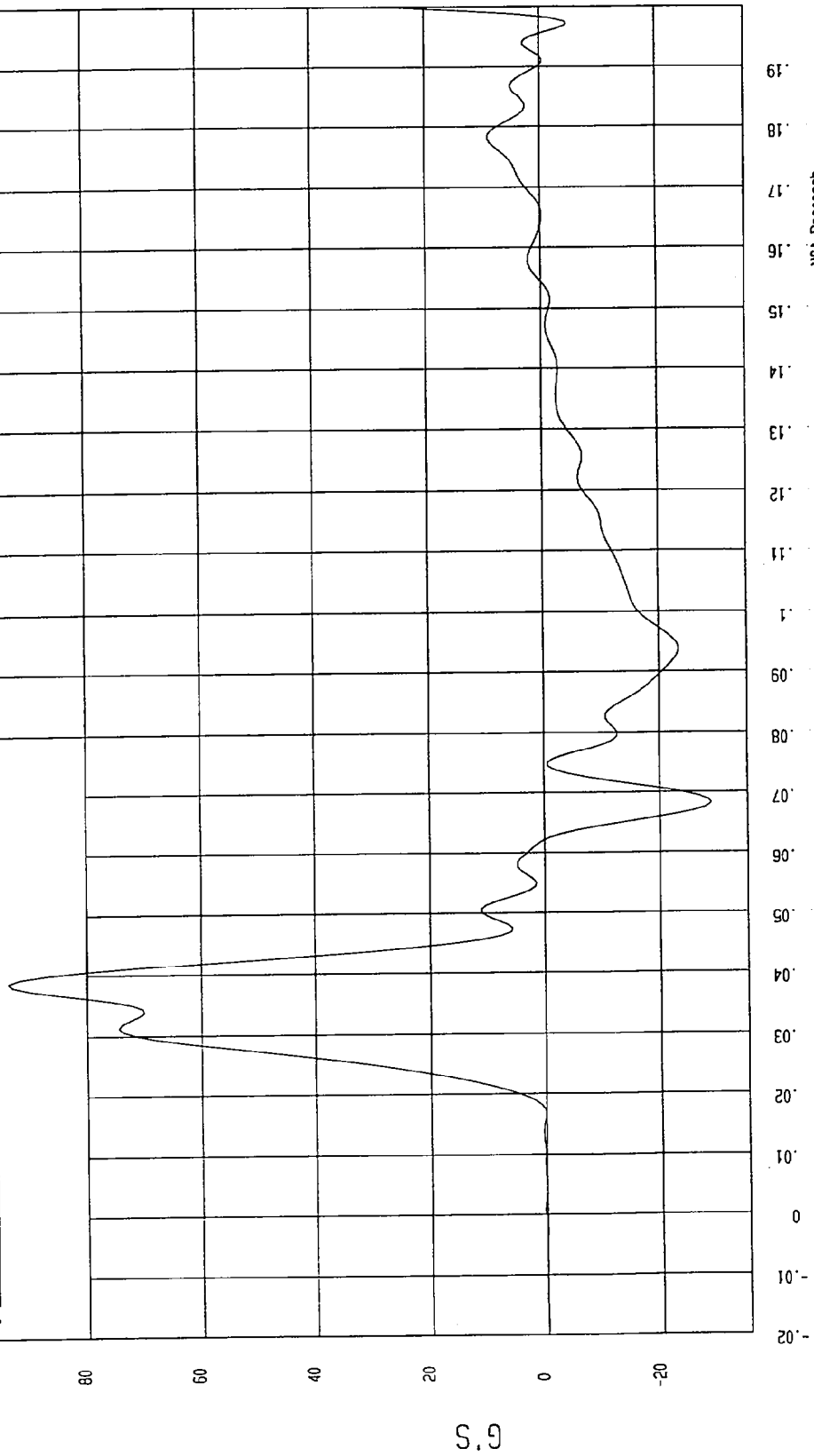
TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -28.93 G'S at 68 msec Maximum = 93.61 G'S at 39 msec

DRIVER LOWER SPINE Y REDUNDANT ACCELERATION

1 897107FI.R63 Filterclass (FIA Filtered)



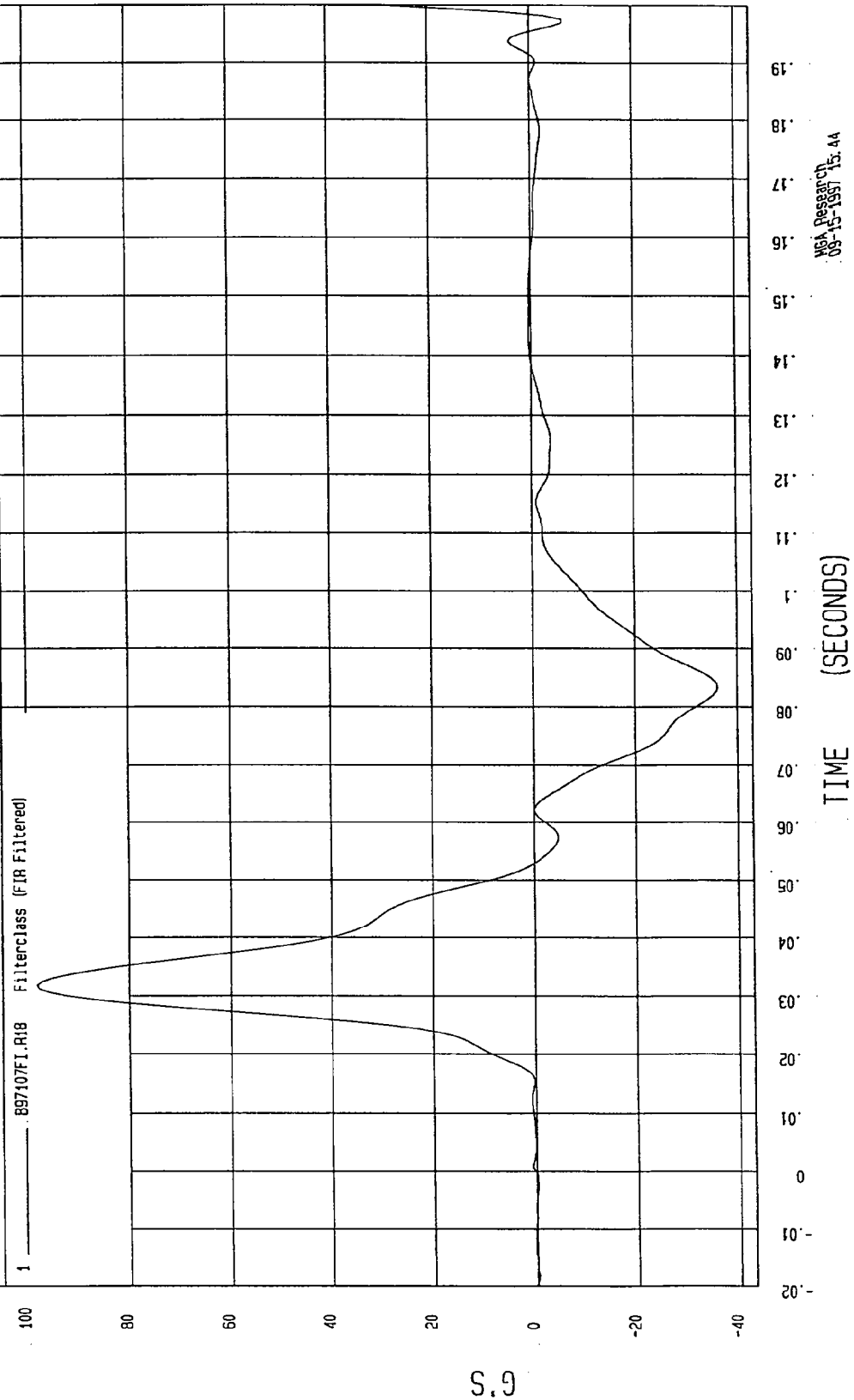
MCA Research
09-15-1997 15:44

TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -36.16 G'S at 83 msec Maximum = 98.13 G'S at 32 msec

DRIVER PELVIS Y ACCELERATION

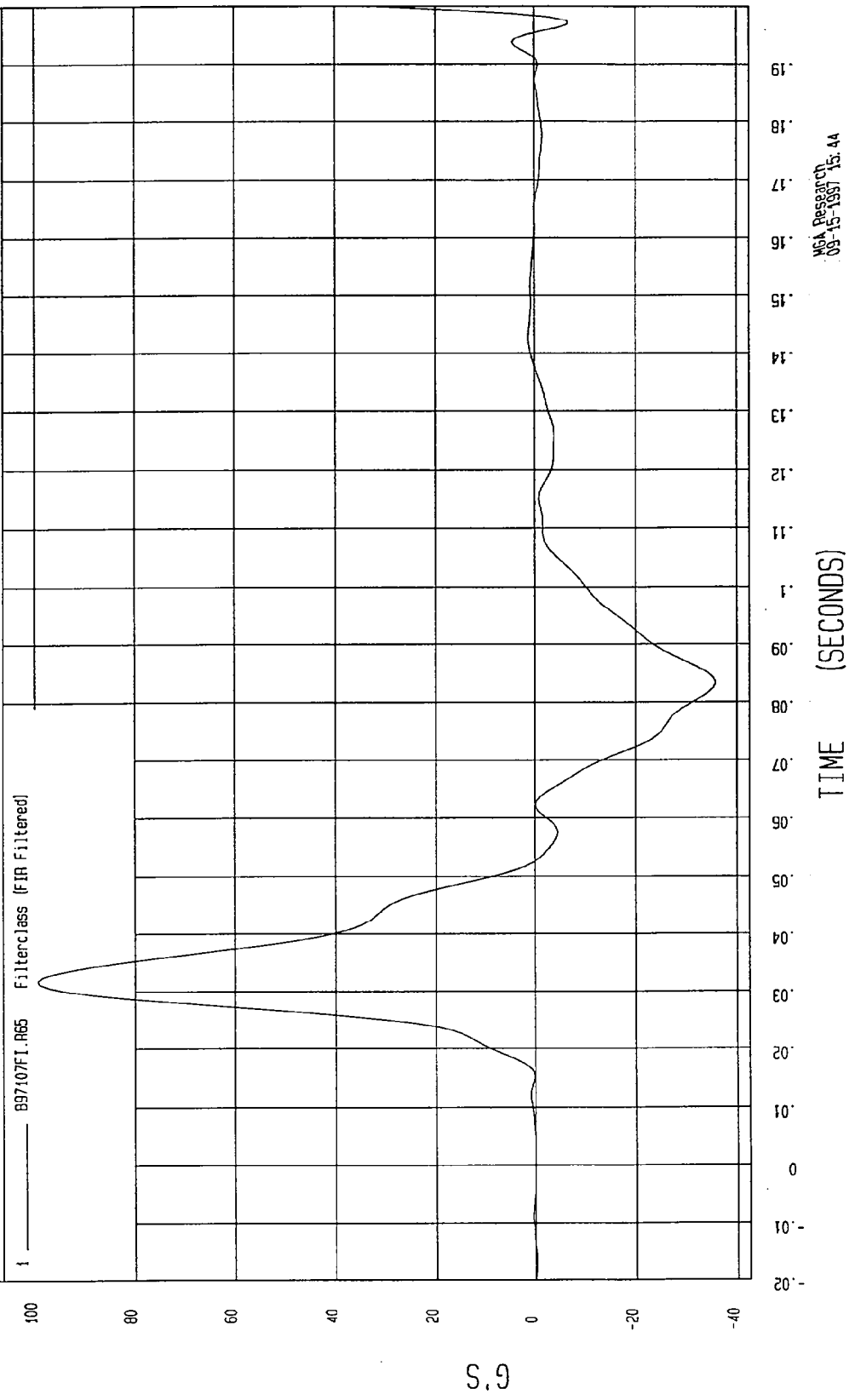


TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -35.70 G'S at 83 msec Maximum = 99.48 G'S at 32 msec

DRIVER PELVIS Y REDUNDANT ACCELERATION



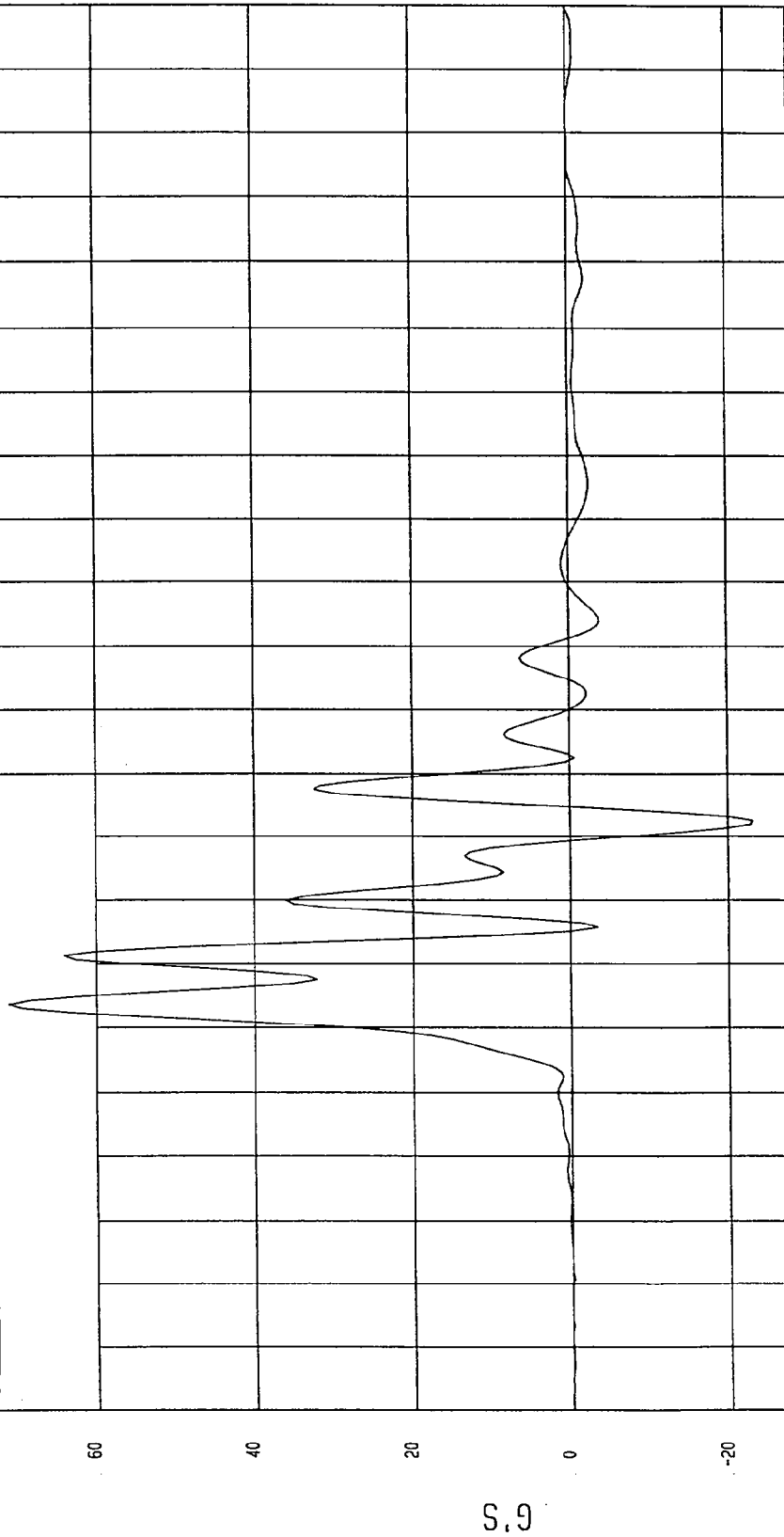
TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -23.13 G'S at 72 msec Maximum = 71.12 G'S at 44 msec

REAR PASSENGER UPPER RIB Y ACCELERATION

1 897107/1.R25 Filterclass (FIR Filtered)



TIME (SECONDS)

MGA Research
09-15-1997 15:44

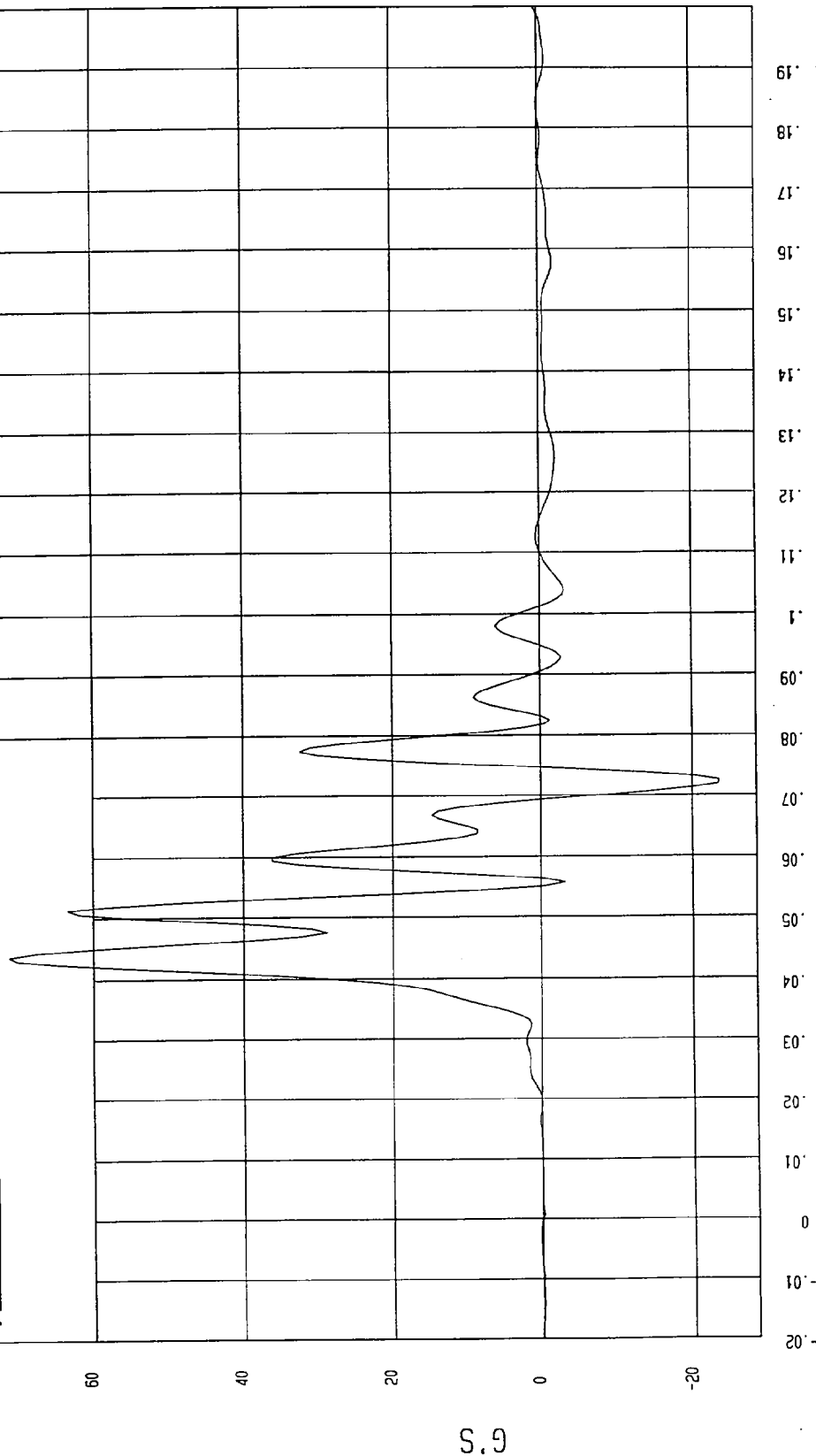
TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -23.46 G'S at 72 msec Maximum = 71.16 G'S at 44 msec

REAR PASSENGER UPPER RIB Y REDUNDANT ACCELERATION

1 897107F1.R66 Filterclass (FIR Filtered)



MCA Research
09-15-1997 15:44

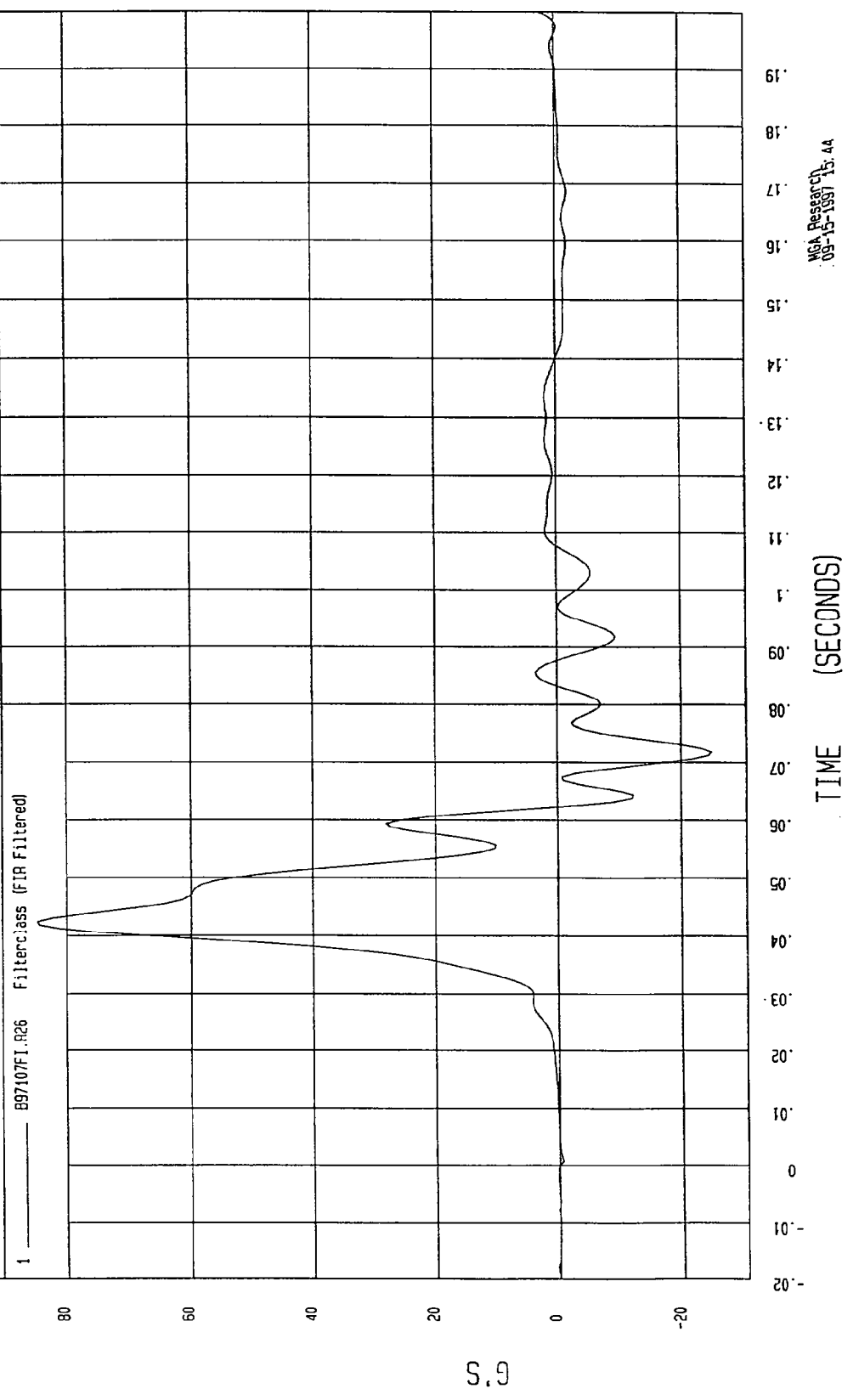
TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -24.81 G'S at 72 msec

Maximum = 84.62 G'S at 42 msec

REAR PASSENGER LOWER RIB Y ACCELERATION

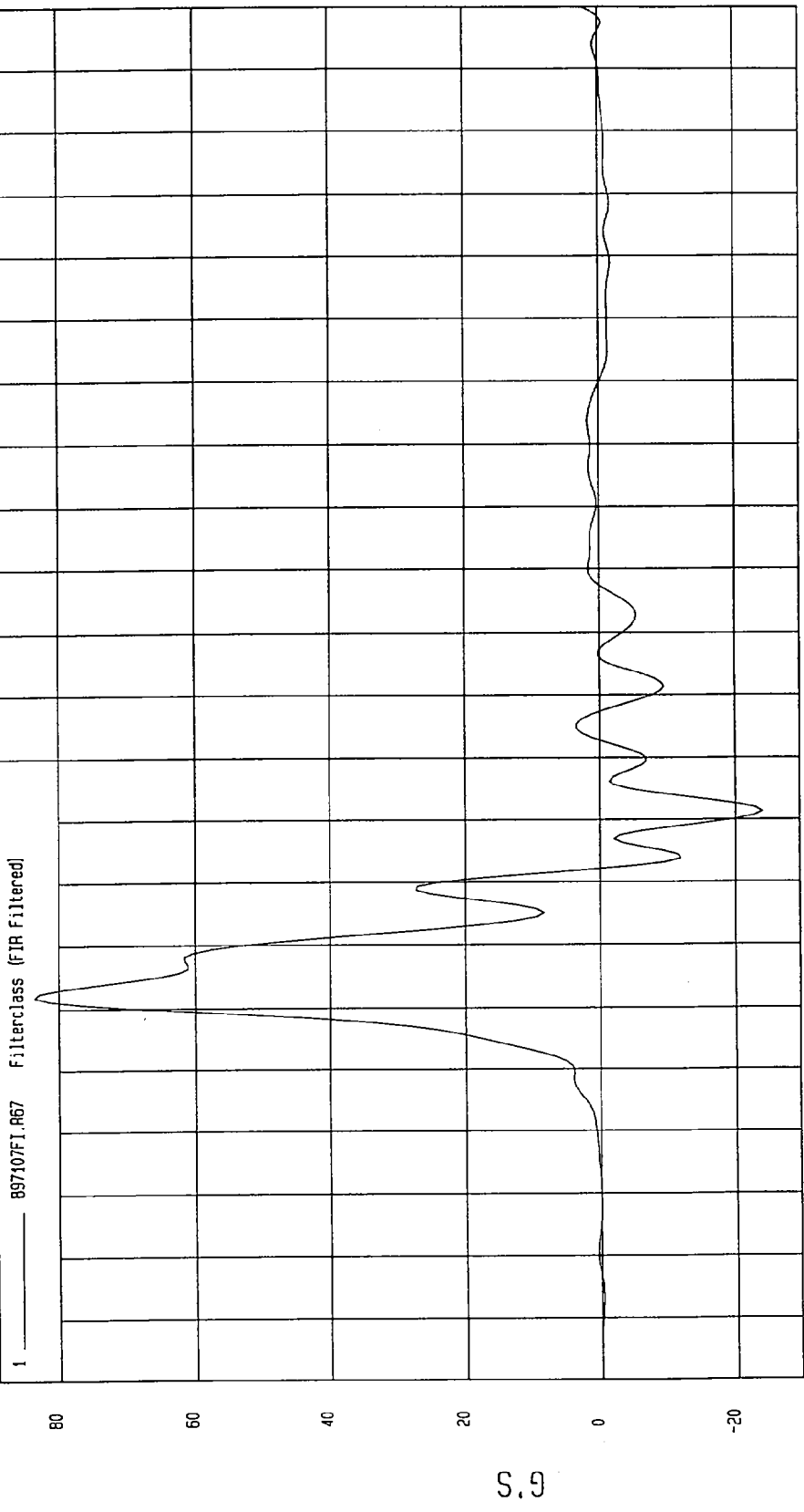


TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -23.84 G'S at 71 msec Maximum = 83.56 G'S at 42 msec

REAR PASSENGER LOWER RIB Y REDUNDANT ACCELERATION



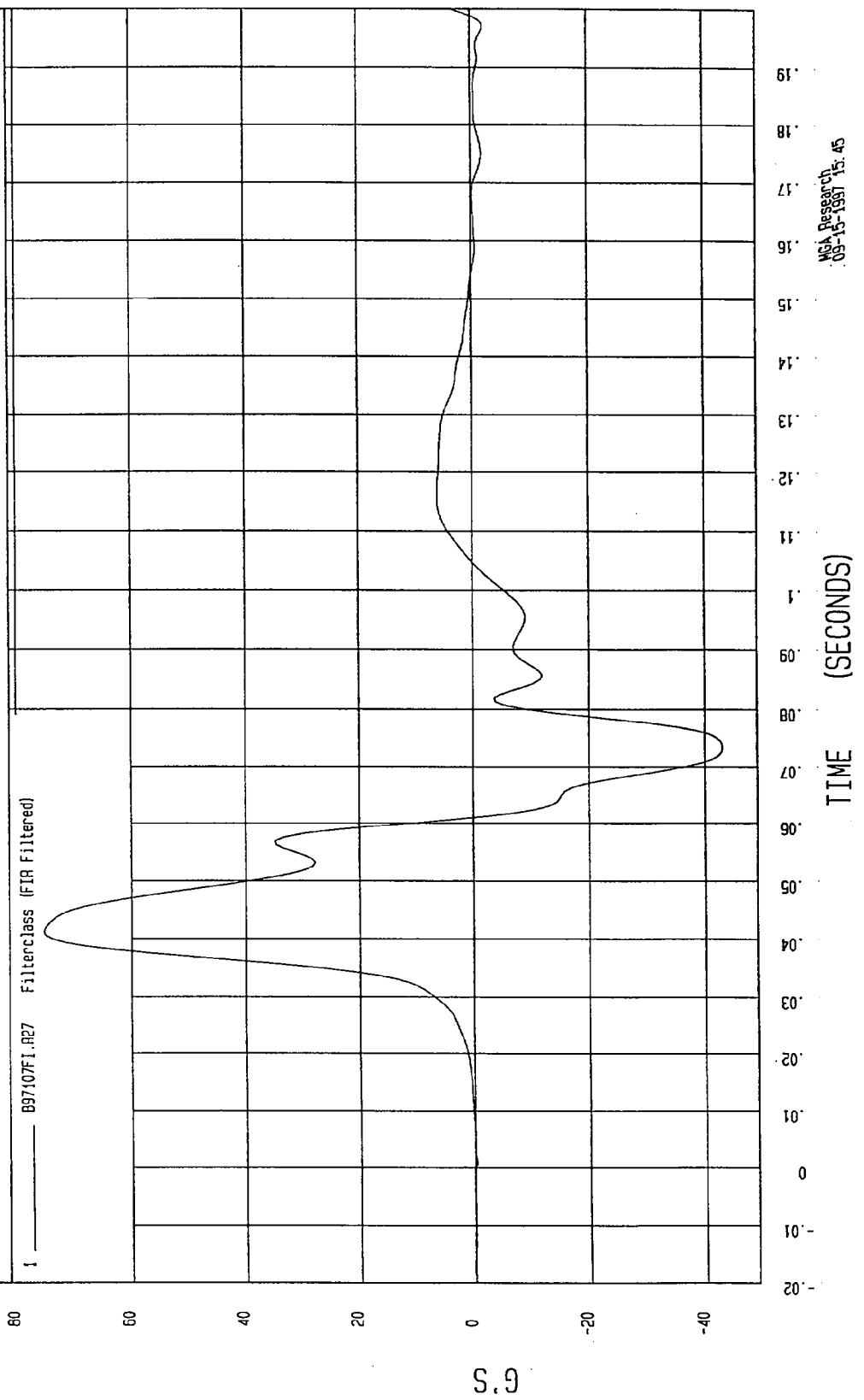
WCA Research
09-15-1997 15:45

TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -42.99 G'S at 73 msec Maximum = 75.29 G'S at 41 msec

REAR PASSENGER LOWER SPINE Y ACCELERATION



TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -42.35 G'S at 73 msec Maximum = 74.28 G'S at 41 msec

REAR PASSENGER LOWER SPINE Y REDUNDANT ACCELERATION

80

1 ——— 897107.F1.R68 Filterclass (FIR Filtered)

60

40

20

0

-20

-40

G.S

TIME (SECONDS)

MCA Research
09-15-1997 15:45

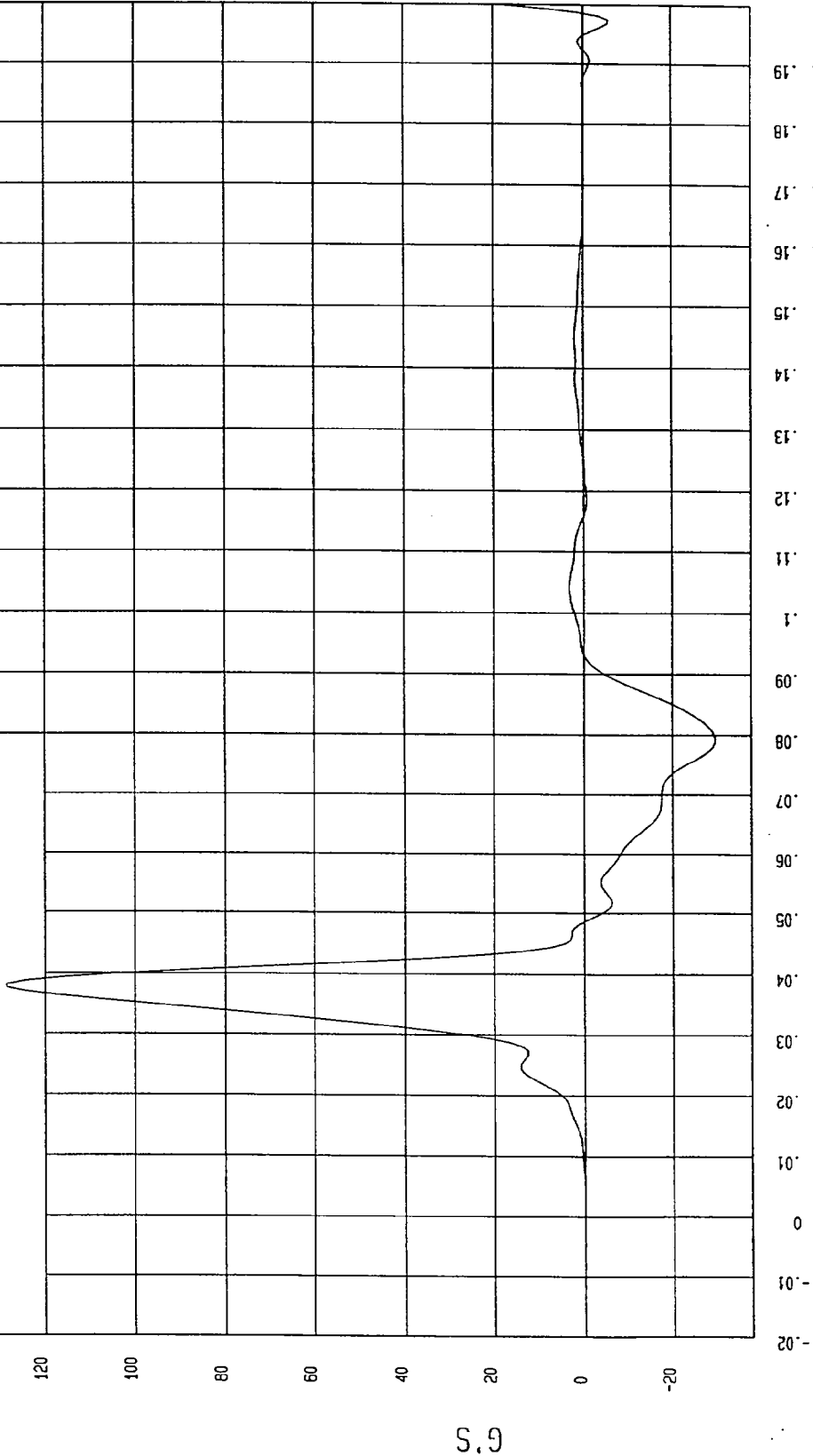
TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -29.41 G'S at 79 msec Maximum = 128.50 G'S at 38 msec

REAR PASSENGER PELVIS Y ACCELERATION

1 ——— B97107F1.R28 Filterclass (FIR Filtered)



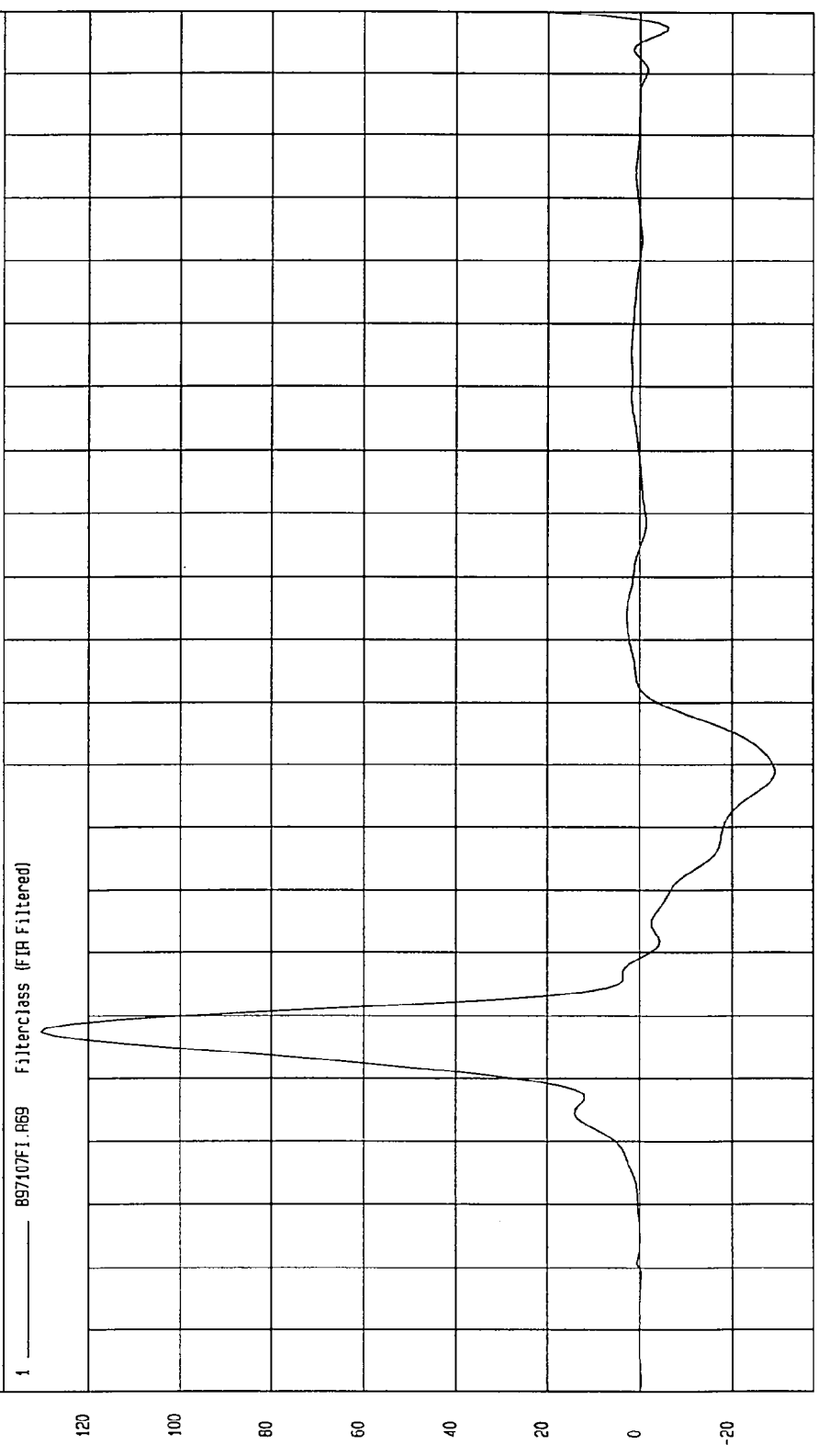
MSA Research
09-15-1997 15:45

TEST: NCAP LEFT SIDE HIGH SPEED LATERAL IMPACT TEST DATE: 09-16-1997

COMPONENT: 1998 BUICK LESABRE 4 DOOR (MW0113) Speed: 38 MPH 61.2 KPH

Minimum = -29.30 G'S at 79 msec Maximum = 130.22 G'S at 38 msec

REAR PASSENGER PELVIS Y REDUNDANT ACCELERATION



MOA Research
09-15-1997 13:45

APPENDIX C
SID CONFIGURATION AND PERFORMANCE VERIFICATION

REPORT NO. MGA-97-DC01

DUMMY PERFORMANCE CALIBRATIONS

NEW CAR ASSESSMENT PROGRAM
SIDE IMPACT TEST

1997 BUICK LESABRE 4-DOOR
NHTSA NO. MW0113

MGA PROVING GROUNDS
5000 WARREN ROAD
BURLINGTON, WI 53105



Test Date: September 16, 1997

Report Date: September 22, 1997

FINAL REPORT

Prepared For:

U. S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
OFFICE OF CRASHWORTHINESS STANDARDS
ROOM 5313, NPS-10
400 SEVENTH STREET, S.W.
Washington, D.C. 20590

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DUMMY S/N: 271	POST-TEST CERTIFICATION DATA	3-1
DUMMY S/N: 272	POST-TEST CERTIFICATION DATA	4-1
DUMMY S/N: 271	POST-TEST INSPECTION CHECKLIST	5-1
DUMMY S/N: 272	POST-TEST INSPECTION CHECKLIST	6-1
	VEHICLE AND DUMMY TEMPERATURE	7-1

PRE-TEST CERTIFICATION DATA

Front Dummy Serial Number: 271

Calibration Test Results Summary

Dummy Serial Number: 271

Pre-Test Calibration

External Dimensions:	The dummy passed all external dimension requirements.
Thorax Impact Test:	The thorax passed all impact test requirements.
Pelvic Impact Test:	The pelvis passed all impact test requirements.
Abdominal Compression Test:	The abdomen passed all compression test requirements.
Lumbar Flexion Test:	The lumbar passed all flexion test requirements.

SIDE IMPACT DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

DUMMY NO.: 271

DATE OF VERIFICATION: September 12, 1997

DESCRIPTION	SPECIFICATION	TEST RESULTS
SH - Seated Height	35.0" - 35.8"	35.6
RH - Rib Height	19.75" - 20.50"	20.40
HP - Hip Pivot Height	3.9" ref.	3.9
RD - Rib From Back Line	9.0" to 9.5"	9.4
KV - Knee Pivot From Back Line	20.1" - 20.7"	20.4
SW - Knee Pivot to Floor	19.3" - 19.9"	19.5
HW - Hip Width	14.0" - 15.4"	15.1

MEASUREMENTS BY: Jim Walsh

APPROVED BY: Dave Klaback

MGA RESEARCH CORPORATION

THORAX IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: September 12, 1997

DUMMY NUMBER: 271

TEST NUMBER: D971532

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	41%
PROBE SPEED	14.0 - 14.2 fps	14.0
UPPER RIB	37 - 46 g's	43
LOWER RIB	37 - 46 g's	41
LOWER SPINE	15 - 22 g's	20

TEST MEETS SPECIFICATIONS

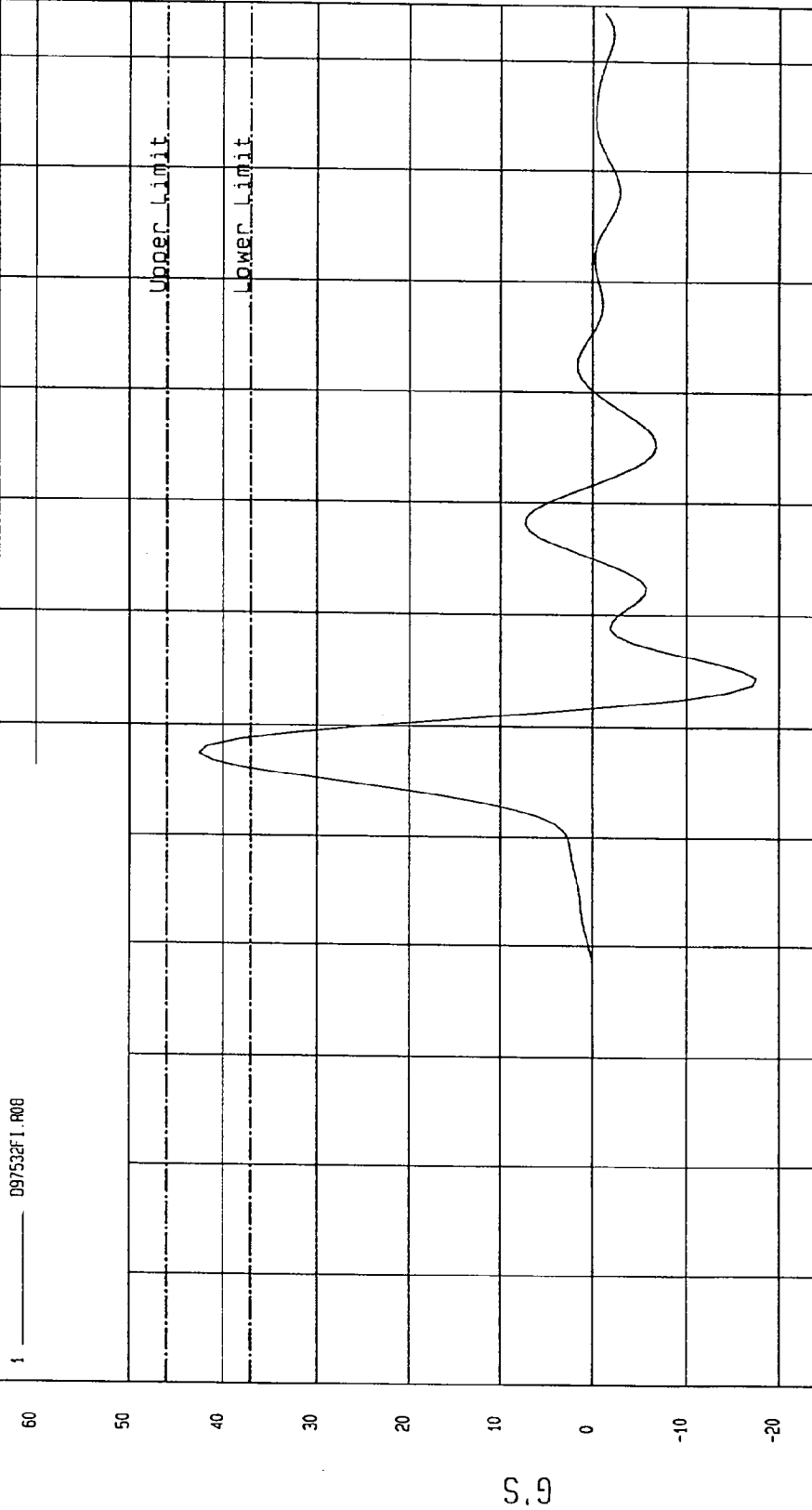
TECHNICIAN Tim White

APPROVED BY Paul Kabeke

TEST: DUMMY CALIBRATION - THORAX IMPACT TEST DATE: 09-12-1997 - 12:31
COMPONENT: DUMMY # 271 Velocity: 14.03 FT/SEC 4.28 M/SEC

Minimum = -17.58 G'S at 64.3 msec Maximum = 42.66 G'S at 57.5 msec

UPPER RIB ACCELERATION



TIME (SECONDS)

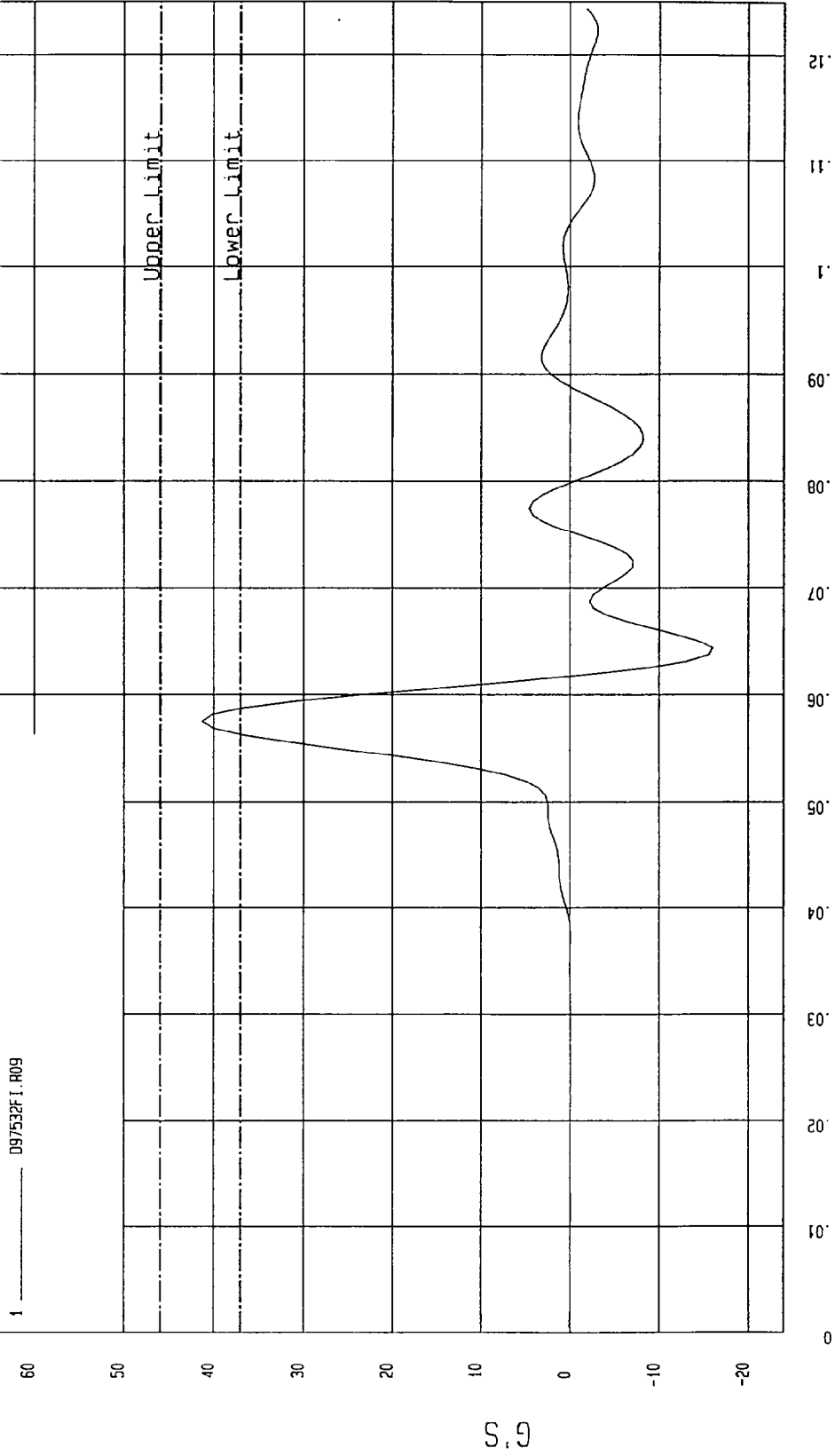
NCA Research
09-12-1997 12:37

TEST: DUMMY CALIBRATION - THORAX IMPACT TEST DATE: 09-12-1997 - 12:31

COMPONENT: DUMMY # 271 Velocity: 14.03 FT/SEC 4.28 M/SEC

Minimum = -16.07 G'S at 64.3 msec Maximum = 41.34 G'S at 57.5 msec

LOWER RIB ACCELERATION



MCA Research
09-12-1997 12:31

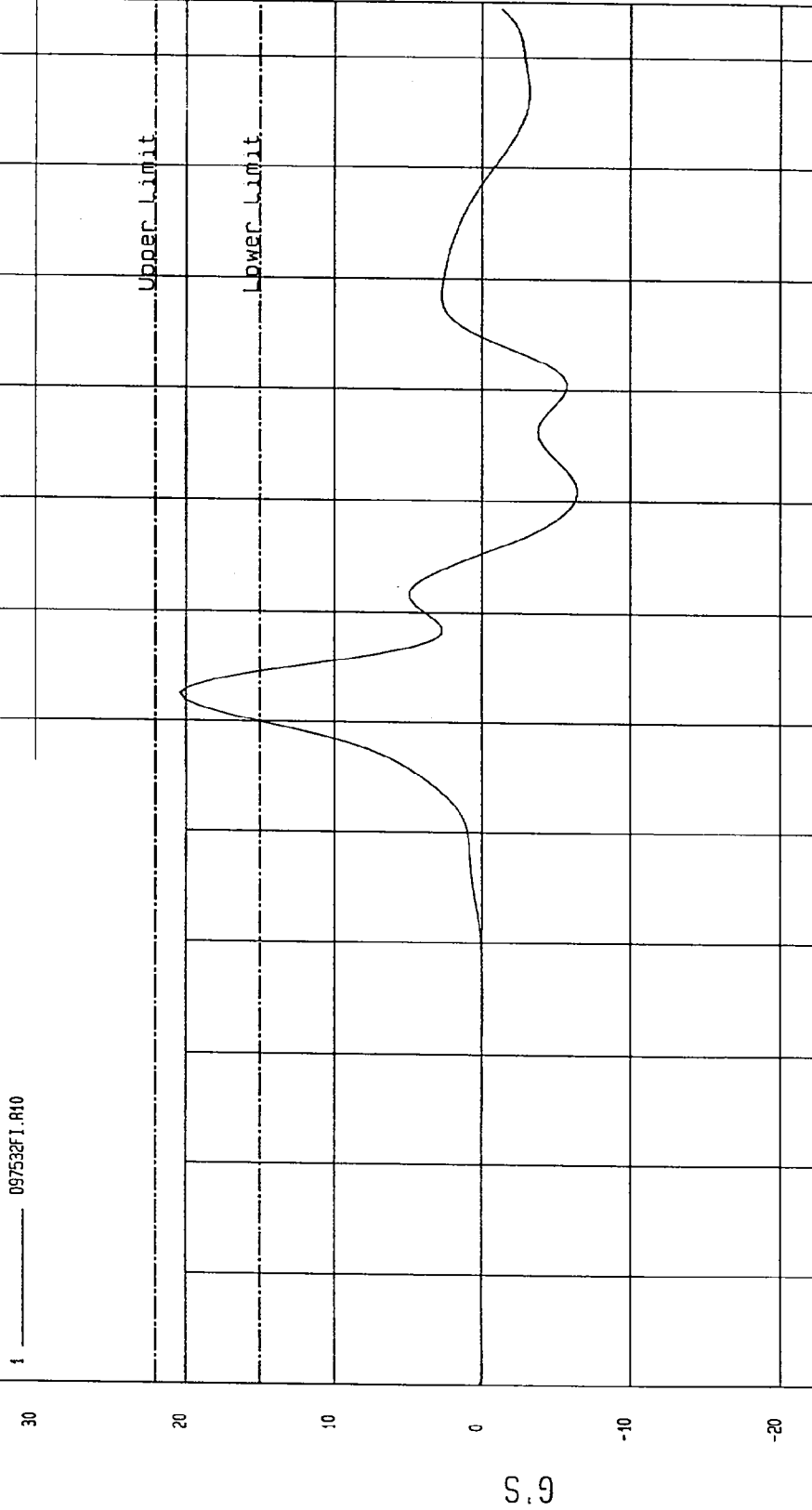
TEST: DUMMY CALIBRATION - THORAX IMPACT TEST DATE: 09-12-1997 - 12:31

COMPONENT: DUMMY # 271 Velocity: 14.03 FT/SEC 4.28 M/SEC

Minimum = -6.38 G'S at 80.6 msec

Maximum = 20.37 G'S at 62.5 msec

LOWER SPINE ACCELERATION



TIME (SECONDS)

MSA Research
09-12-1997 12:40

MGA RESEARCH CORPORATION

LUMBAR FLEXION TEST

SIDE IMPACT DUMMY (SID)

DATE: July 22, 1997

DUMMY NUMBER: 271

TEST NUMBER: D971535

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	52%
FORCE @ 0°	0 - 6 lbs	0
FORCE @ 20°	22 - 34 lbs	29
FORCE @ 30°	34 - 46 lbs	39
FORCE @ 40°	46 - 58 lbs	50
RETURN ANGLE	12° maximum	3°

TEST MEETS SPECIFICATIONS

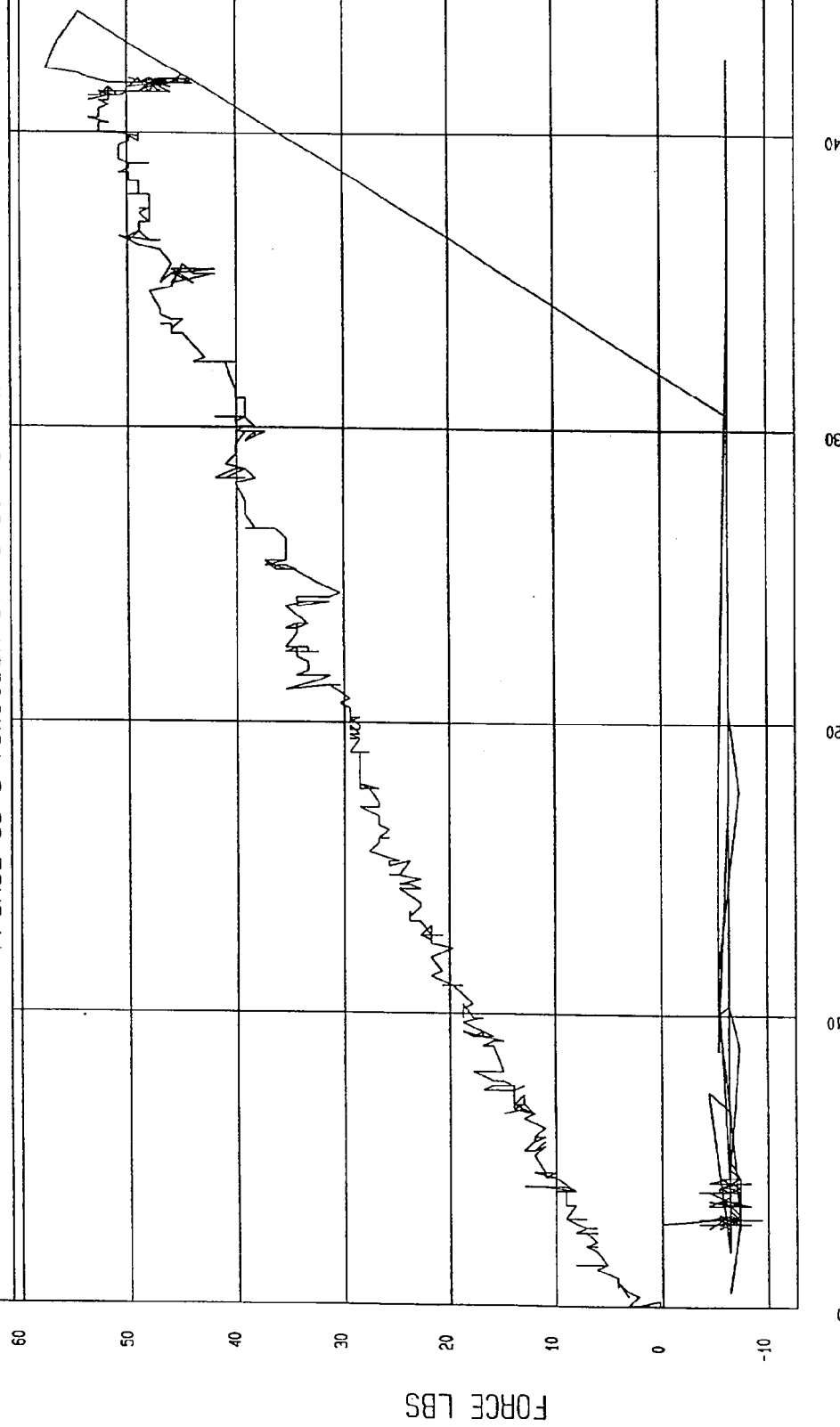
TECHNICIAN Jim White

APPROVED BY Gene Korbake

TEST: DUMMY CALIBRATION - LUMBAR FLEXION TEST DATE: 07-22-1997 - 12:57

COMPONENT: DUMMY # 271

FORCE as a function of TORSO ROTATION



NCA Research
07-22-1997 13:28

PRE-TEST CERTIFICATION DATA

Rear Dummy Serial Number: 272

Calibration Test Results Summary

Dummy Serial Number: 272

Pre-Test Calibration

External Dimensions:	The dummy passed all external dimension requirements.
Thorax Impact Test:	The thorax passed all impact test requirements.
Pelvic Impact Test:	The pelvis passed all impact test requirements.
Abdominal Compression Test:	The abdomen passed all compression test requirements.
Lumbar Flexion Test:	The lumbar passed all flexion test requirements.

SIDE IMPACT DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

DUMMY NO.: 272

DATE OF VERIFICATION: September 12, 1997

DESCRIPTION	SPECIFICATION	TEST RESULTS
SH - Seated Height	35.0" - 35.8"	35.2
RH - Rib Height	19.75" - 20.50"	20.20
HP - Hip Pivot Height	3.9" ref.	3.9
RD - Rib From Back Line	9.0" to 9.5"	9.4
KV - Knee Pivot From Back Line	20.1" - 20.7"	20.7
SW - Knee Pivot to Floor	19.3" - 19.9"	9.6
HW - Hip Width	14.0" - 15.4"	15.0

MEASUREMENTS BY:

Tim W. G.

APPROVED BY:

Dave Kalske

MGA RESEARCH CORPORATION

THORAX IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: September 12, 1997

DUMMY NUMBER: 272

TEST NUMBER: D971542

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	40%
PROBE SPEED	14.0 - 14.2 fps	14.0
UPPER RIB	37 - 46 g's	37
LOWER RIB	37 - 46 g's	39
LOWER SPINE	15 - 22 g's	18

TEST MEETS SPECIFICATIONS

TECHNICIAN

Jim M. [Signature]

APPROVED BY

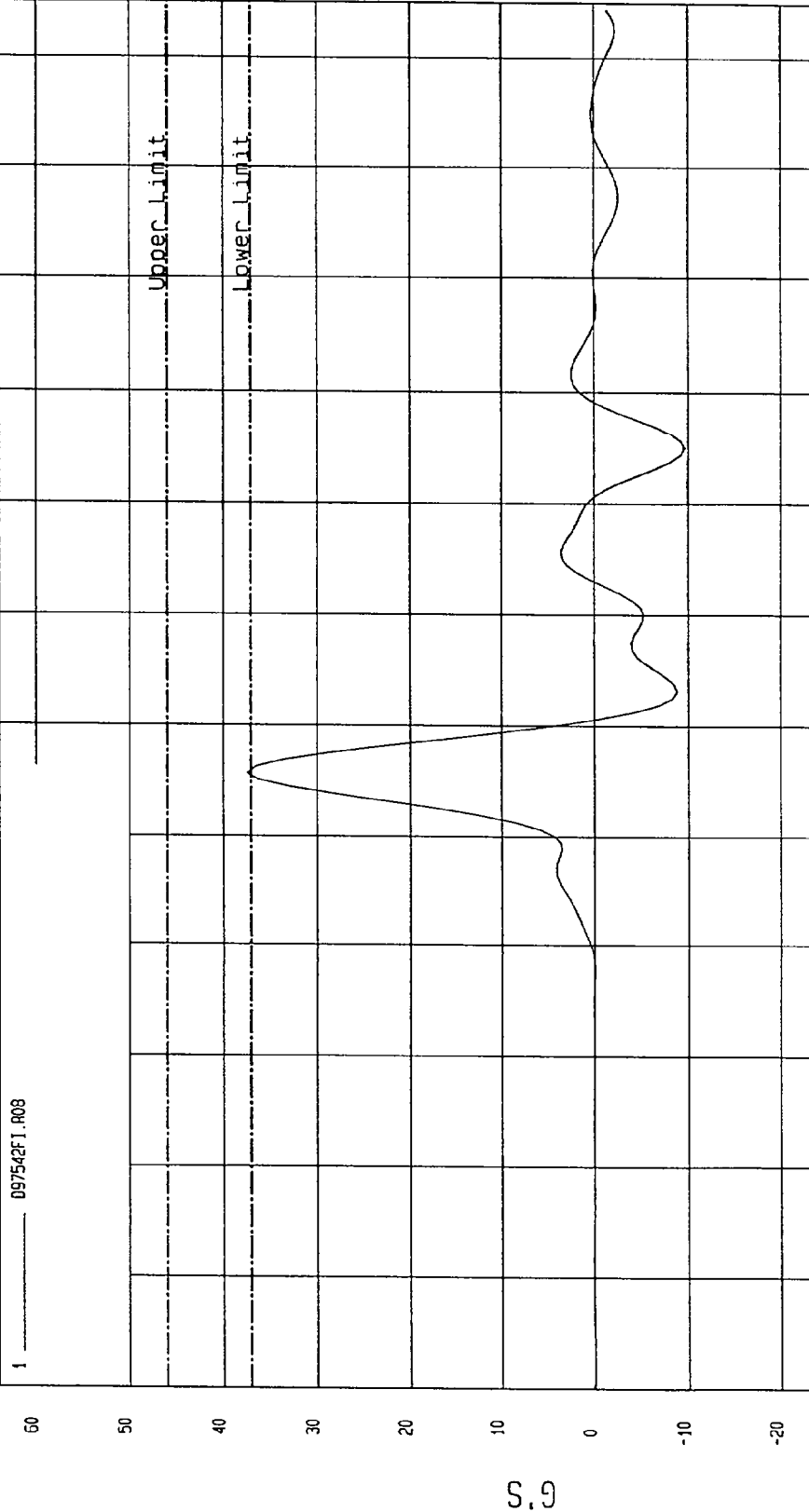
Paul Kobabe [Signature]

TEST: DUMMY CALIBRATION - THORAX IMPACT TEST DATE: 09-12-1997 - 14:32

COMPONENT: DUMMY # 272 Velocity: 14.029 FT/SEC 4.28 M/SEC

Minimum = -9.63 G'S at 85 msec Maximum = 37.41 G'S at 55.6 msec

UPPER RIB ACCELERATION



TIME (SECONDS)

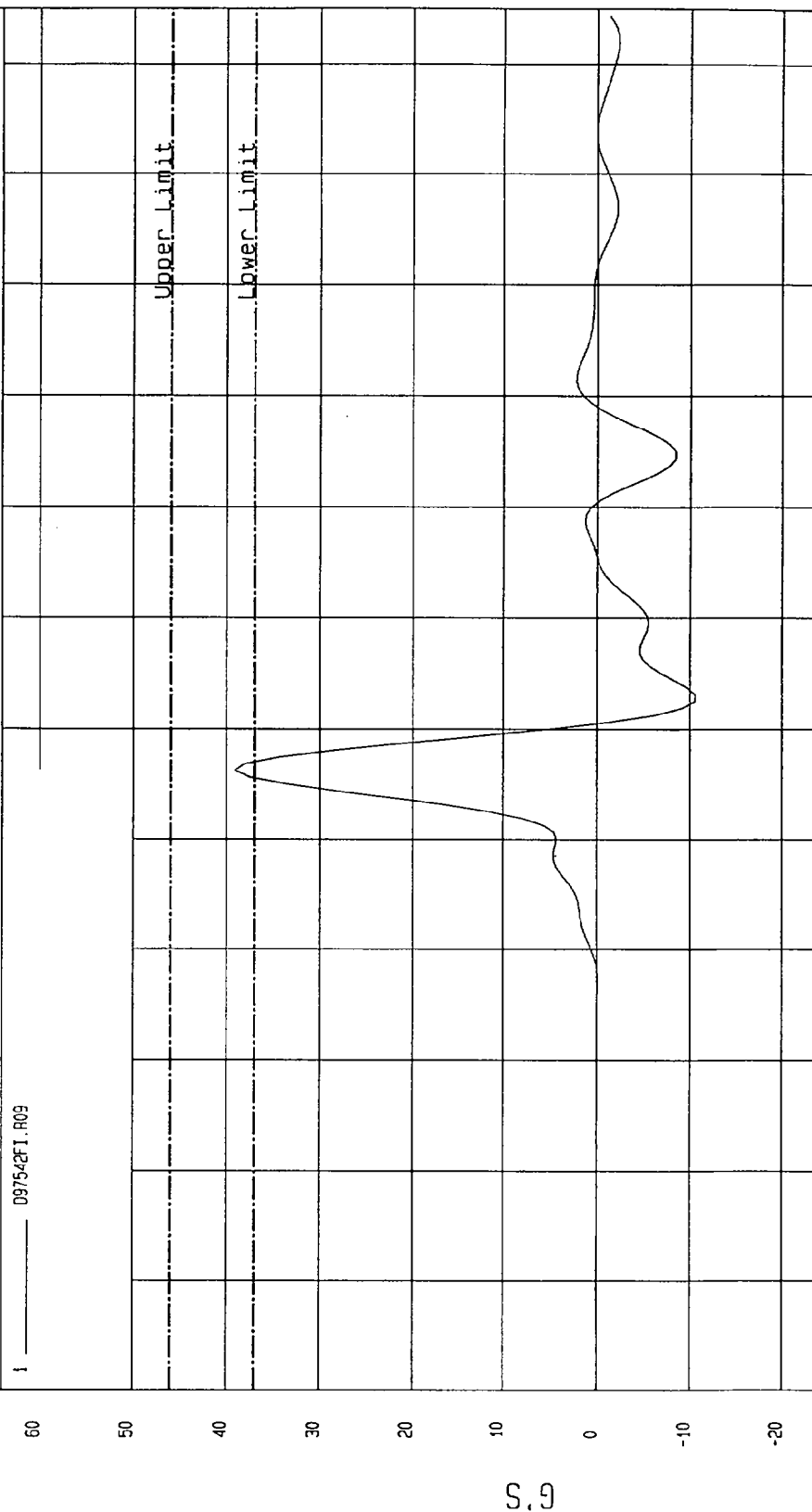
MSA Research
09-12-1997 14:56

TEST: DUMMY CALIBRATION - THORAX IMPACT TEST DATE: 09-12-1997 - 14:32

COMPONENT: DUMMY # 272 Velocity: 14.029 FT/SEC 4.28 M/SEC

Minimum = -10.53 G'S at 63.1 msec
Maximum = 39.15 G'S at 56.2 msec

LOWER RIB ACCELERATION



TIME (SECONDS)

0.12
0.11
0.1
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0

MCA Research
09-12-1997 14:56

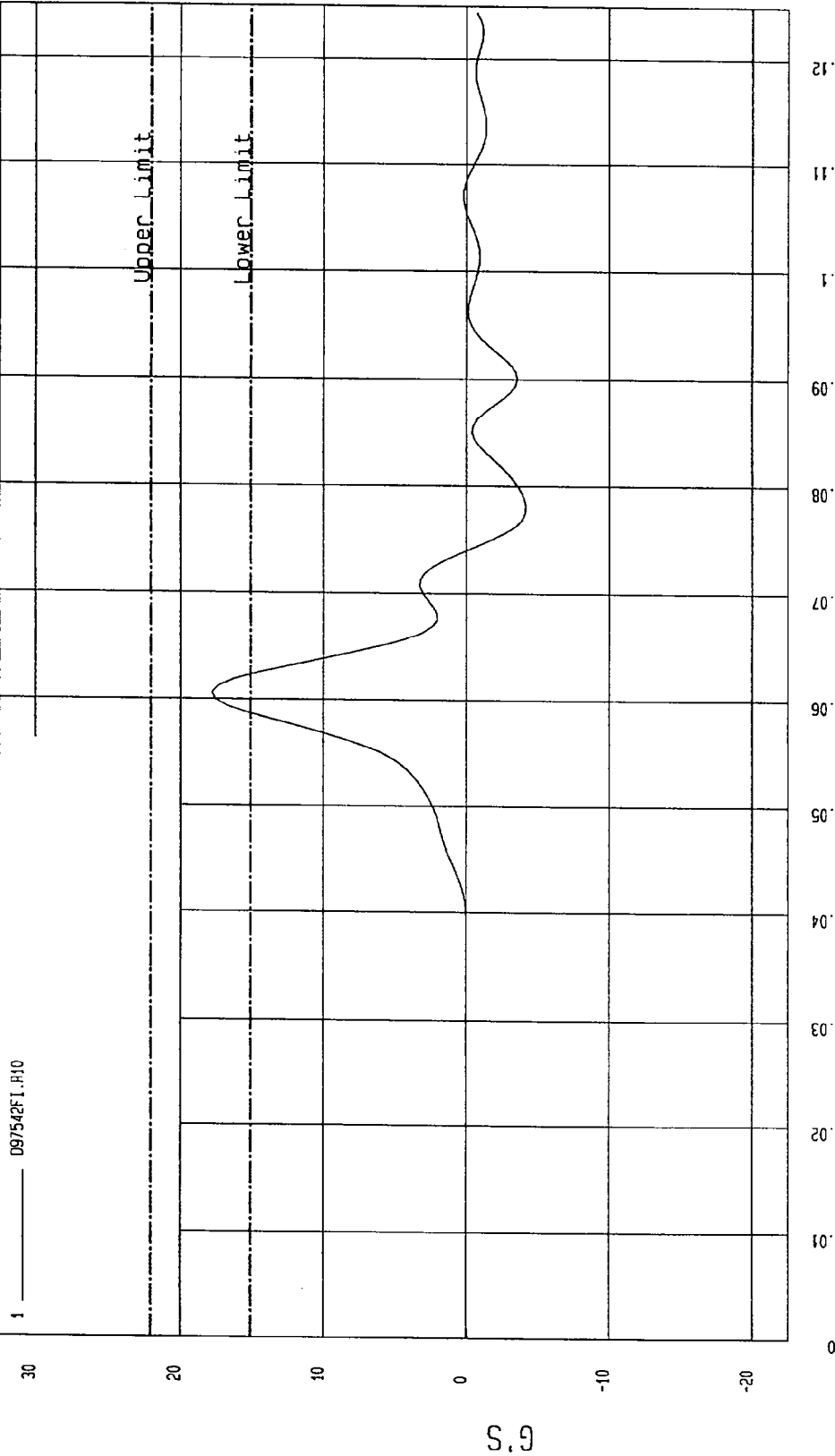
TEST: DUMMY CALIBRATION - THORAX IMPACT TEST DATE: 09-12-1997 - 14:33:35

COMPONENT: DUMMY # 272 Velocity: 14.029 FT/SEC 4.28 M/SEC

Minimum = -4.15 G'S at 78.1 msec

Maximum = 17.73 G'S at 50.6 msec

LOWER SPINE ACCELERATION



MGA Research
09-12-1997 14:57

MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: September 12, 1997

DUMMY NUMBER: 272

TEST NUMBER: D971543

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	38%
PROBE SPEED	14.0 - 14.2 f/s	14.1
PELVIS ACCELERATION	40 - 60 g's	57

TEST MEETS SPECIFICATIONS

TECHNICIAN Tim White

APPROVED BY Dave Kubeke

TEST: DUMMY CALIBRATION - PELVIS IMPACT TEST DATE: 09-12-1997 - 14:56

COMPONENT: DUMMY # 272 Velocity: 14.065 FT/SEC 4.29 M/SEC

Minimum = -10.86 G'S at 48.7 msec

Maximum = 57.46 G'S at 43.1 msec

1 _____ 097543F1.R11

PELVIS ACCELERATION

80

60

40

20

0

-20

G'S

Upper Limit

Lower Limit

12

11

10

09

08

07

06

05

04

03

02

01

0

MCA Research
09-12-1997 14:57

TIME (SECONDS)

MGA RESEARCH CORPORATION
ABDOMINAL COMPRESSION TEST
(PRELOAD = 10 LBS)
SIDE IMPACT DUMMY (SID)

DATE: July 22, 1997

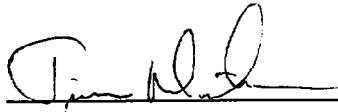
DUMMY NUMBER: 272

TEST NUMBER: D971544

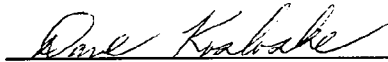
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	52%
FORCE @ 0.5 in	23.3 - 36.5 lbs	32.1
FORCE @ 0.75 in	36.7 - 49.8 lbs	43.5
FORCE @ 1.0 in	50 - 63 lbs	57
FORCE @ 1.3 in	73 - 88 lbs	78

TEST MEETS SPECIFICATIONS

TECHNICIAN



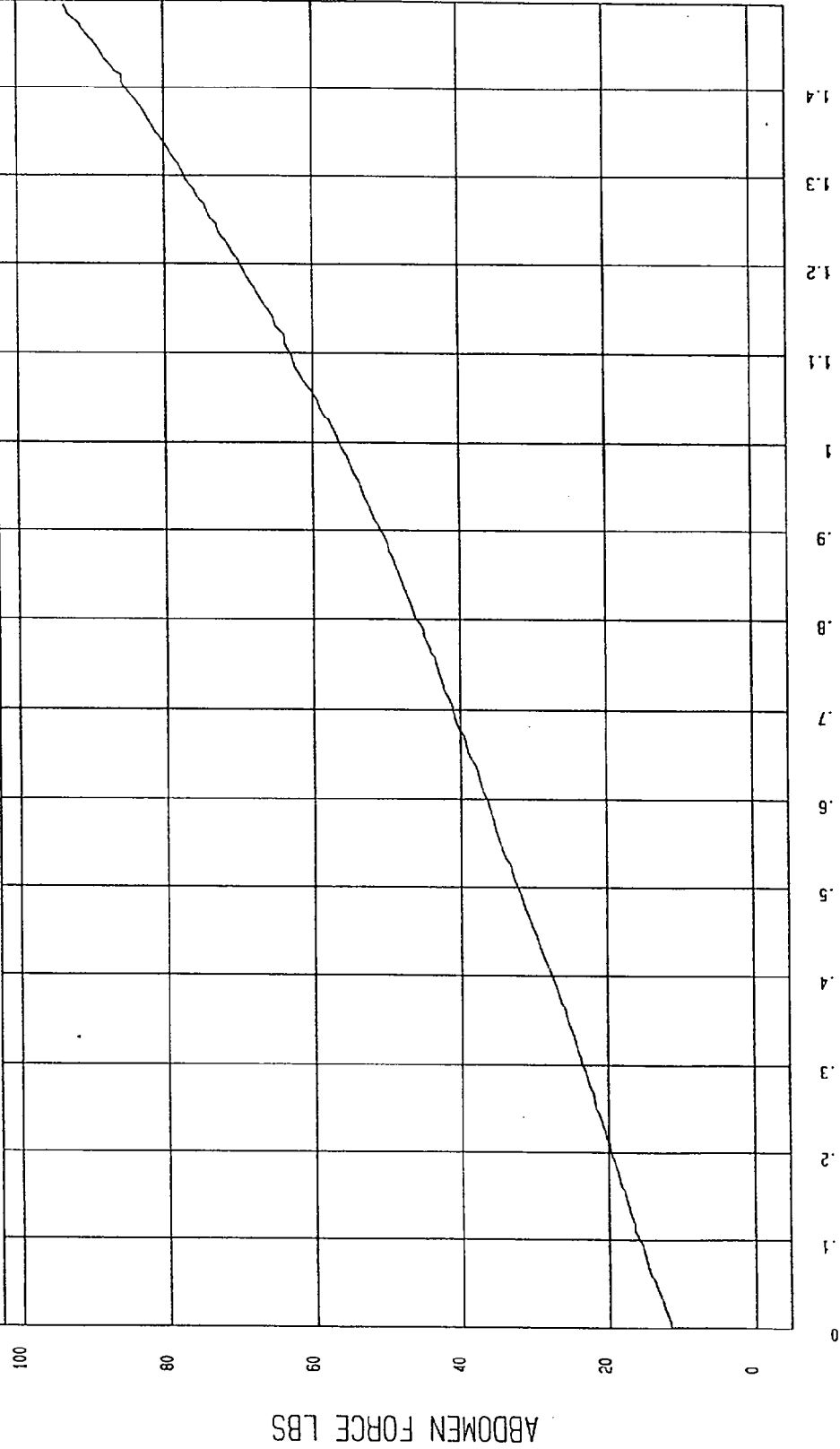
APPROVED BY



TEST: DUMMY CALIBRATION - ABDOMEN COMPRESSION TEST DATE: 07-22-1997 - 13:19

COMPONENT: DUMMY # 272

ABDOMEN FORCE as a function of ABDOMEN DISPLACEMENT



WCA Research
07-22-1997 13:27

ABDOMEN DISPLACEMENT INCHES

ABDOMEN FORCE LBS

MGA RESEARCH CORPORATION

LUMBAR FLEXION TEST

SIDE IMPACT DUMMY (SID)

DATE: July 22, 1997

DUMMY NUMBER: 272

TEST NUMBER: D971545

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	52%
FORCE @ 0°	0 - 6 lbs	0
FORCE @ 20°	22 - 34 lbs	24
FORCE @ 30°	34 - 46 lbs	37
FORCE @ 40°	46 - 58 lbs	54
RETURN ANGLE	12° maximum	6°

TEST MEETS SPECIFICATIONS

TECHNICIAN

Jim M. Smith

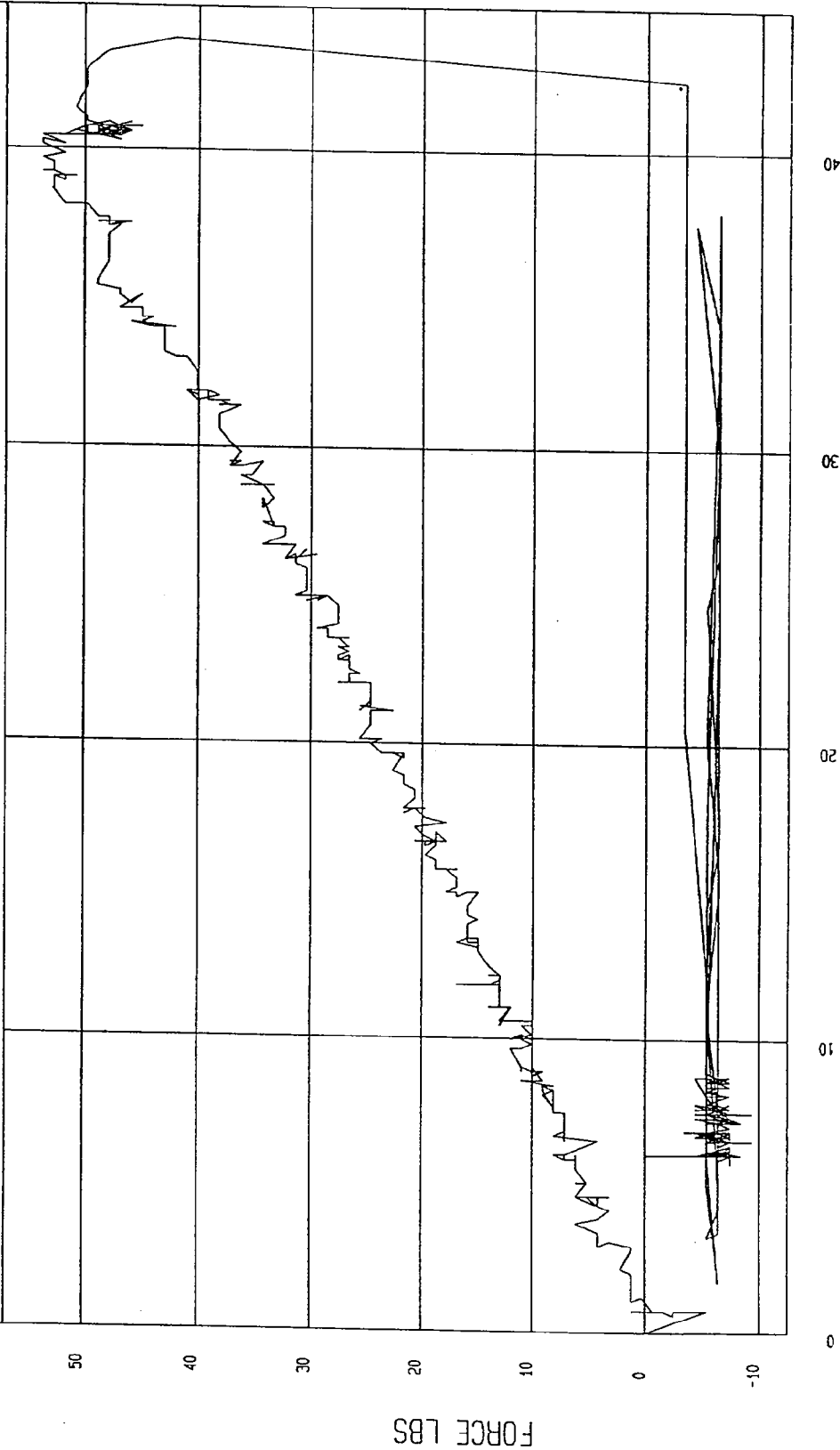
APPROVED BY

Gene K. Korb

TEST: DUMMY CALIBRATION - LUMBAR FLEXION TEST DATE: 07-22-1997 - 13:08

COMPONENT: DUMMY # 272

FORCE as a function of TORSO ROTATION



MGA Research
07-22-1997 13:28

POST-TEST CERTIFICATION DATA

Front Dummy Serial Number: 271

Calibration Test Results Summary

Dummy Serial Number: 271

Post-Test Calibration

External Dimensions:	The dummy passed all external dimension requirements.
Thorax Impact Test:	The thorax passed all impact test requirements.
Pelvic Impact Test:	The pelvis passed all impact test requirements.
Abdominal Compression Test:	The abdomen passed all compression test requirements.
Lumbar Flexion Test:	The lumbar passed all flexion test requirements.

SIDE IMPACT DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

DUMMY NO.: 271

DATE OF VERIFICATION: September 26, 1997

DESCRIPTION	SPECIFICATION	TEST RESULTS
SH - Seated Height	35.0" - 35.8"	35.6
RH - Rib Height	19.75" - 20.50"	20.40
HP - Hip Pivot Height	3.9" ref.	3.9
RD - Rib From Back Line	9.0" to 9.5"	9.4
KV - Knee Pivot From Back Line	20.1" - 20.7"	20.4
SW - Knee Pivot to Floor	19.3" - 19.9"	19.5
HW - Hip Width	14.0" - 15.4"	15.1

MEASUREMENTS BY:

Jim White

APPROVED BY:

Dave Katsake

MGA RESEARCH CORPORATION

THORAX IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: September 26, 1997

DUMMY NUMBER: 271

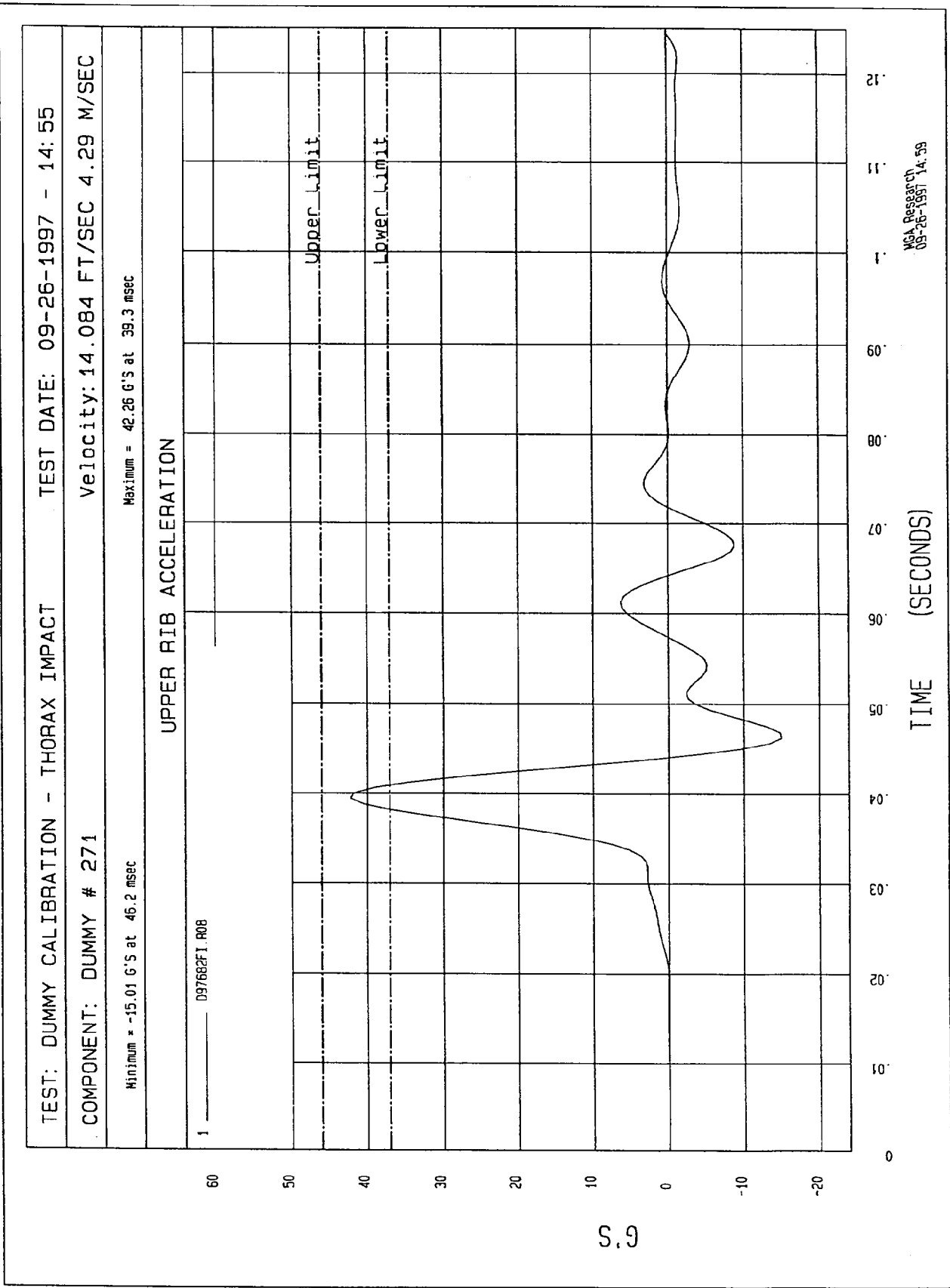
TEST NUMBER: D971682

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	40%
PROBE SPEED	14.0 - 14.2 fps	14.1
UPPER RIB	37 - 46 g's	42
LOWER RIB	37 - 46 g's	41
LOWER SPINE	15 - 22 g's	19

TEST MEETS SPECIFICATIONS

TECHNICIAN Jim Walsh

APPROVED BY Dave Kusake



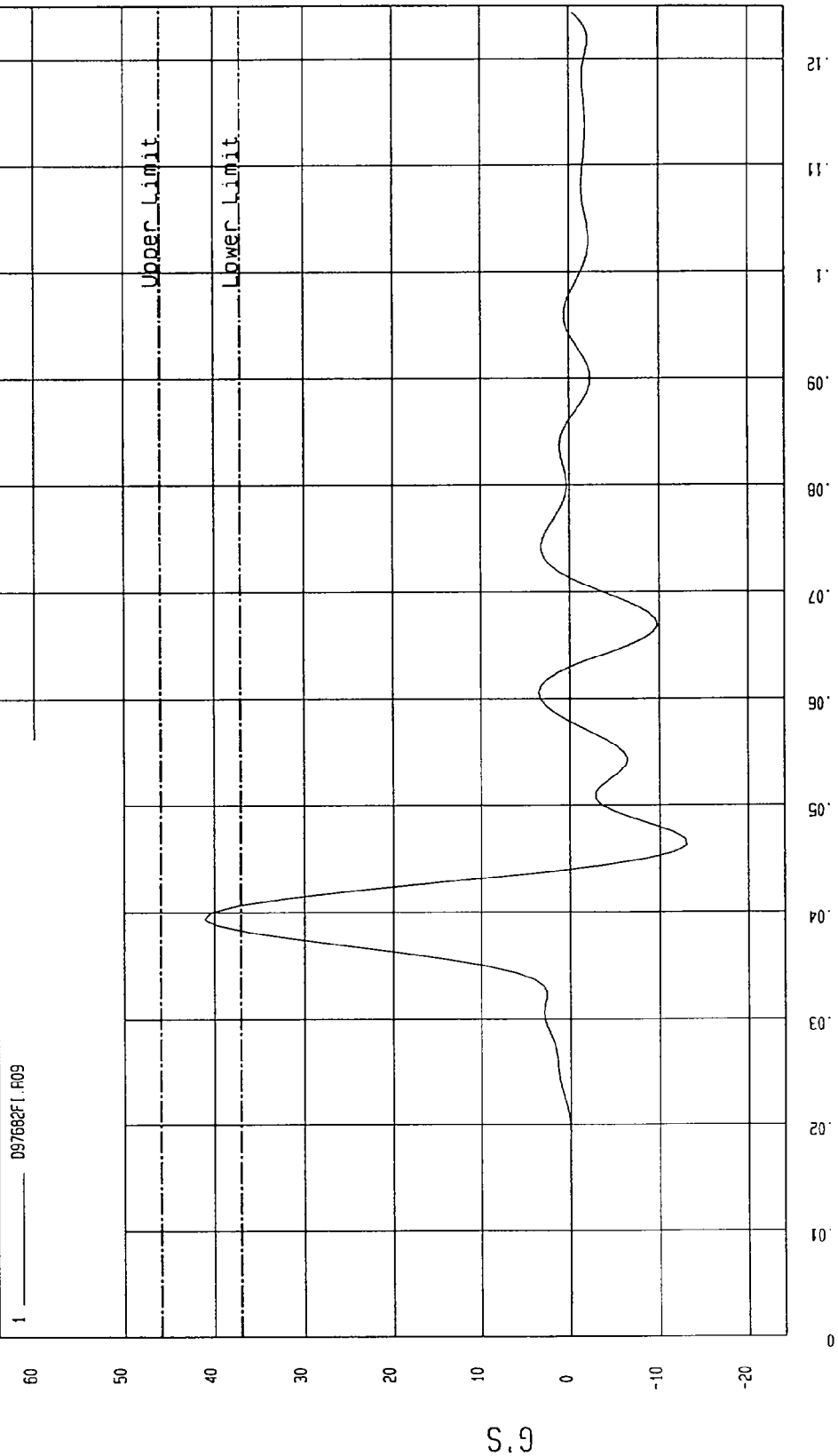
TEST: DUMMY CALIBRATION - THORAX IMPACT TEST DATE: 09-26-1997 - 14:55

COMPONENT: DUMMY # 271 Velocity: 14.084 FT/SEC 4.29 M/SEC

Minimum = -13.07 G'S at 46.2 msec

Maximum = 41.10 G'S at 39.3 msec

LOWER RIB ACCELERATION



MCA Research
09-26-1997 15:00

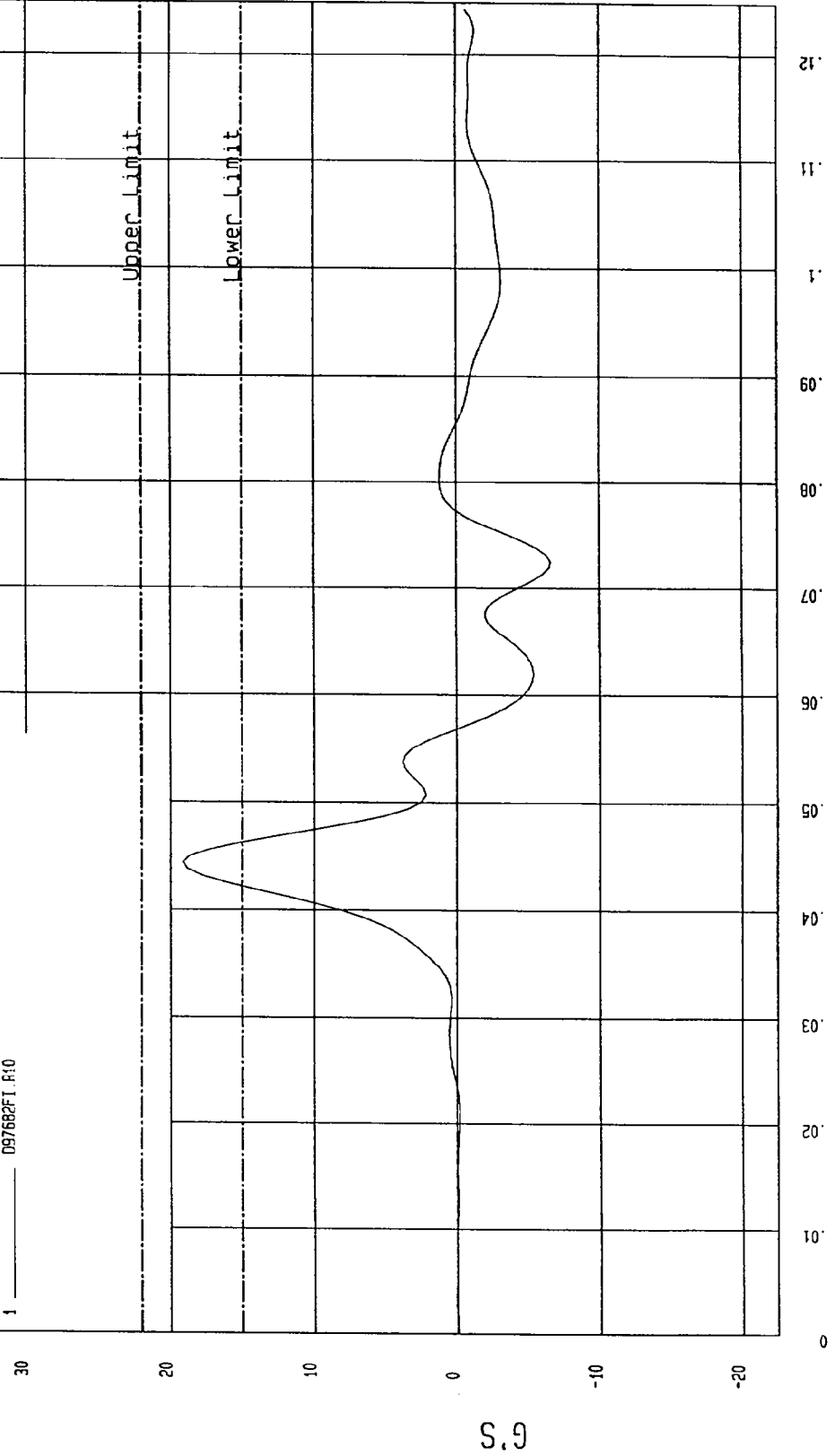
TEST: DUMMY CALIBRATION - THORAX IMPACT TEST DATE: 09-26-1997 - 14:55

COMPONENT: DUMMY # 271 Velocity: 14.084 FT/SEC 4.29 M/SEC

Minimum = -6.64 G'S at 72.5 msec

LOWER SPINE ACCELERATION

1 ——— 097682FT.R10



MCA Research
09-26-1997 15:00

MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

SIDE IMPACT DUMMY (SID)

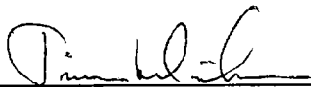
DATE: September 26, 1997

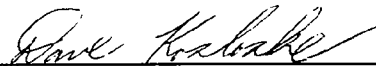
DUMMY NUMBER: 271

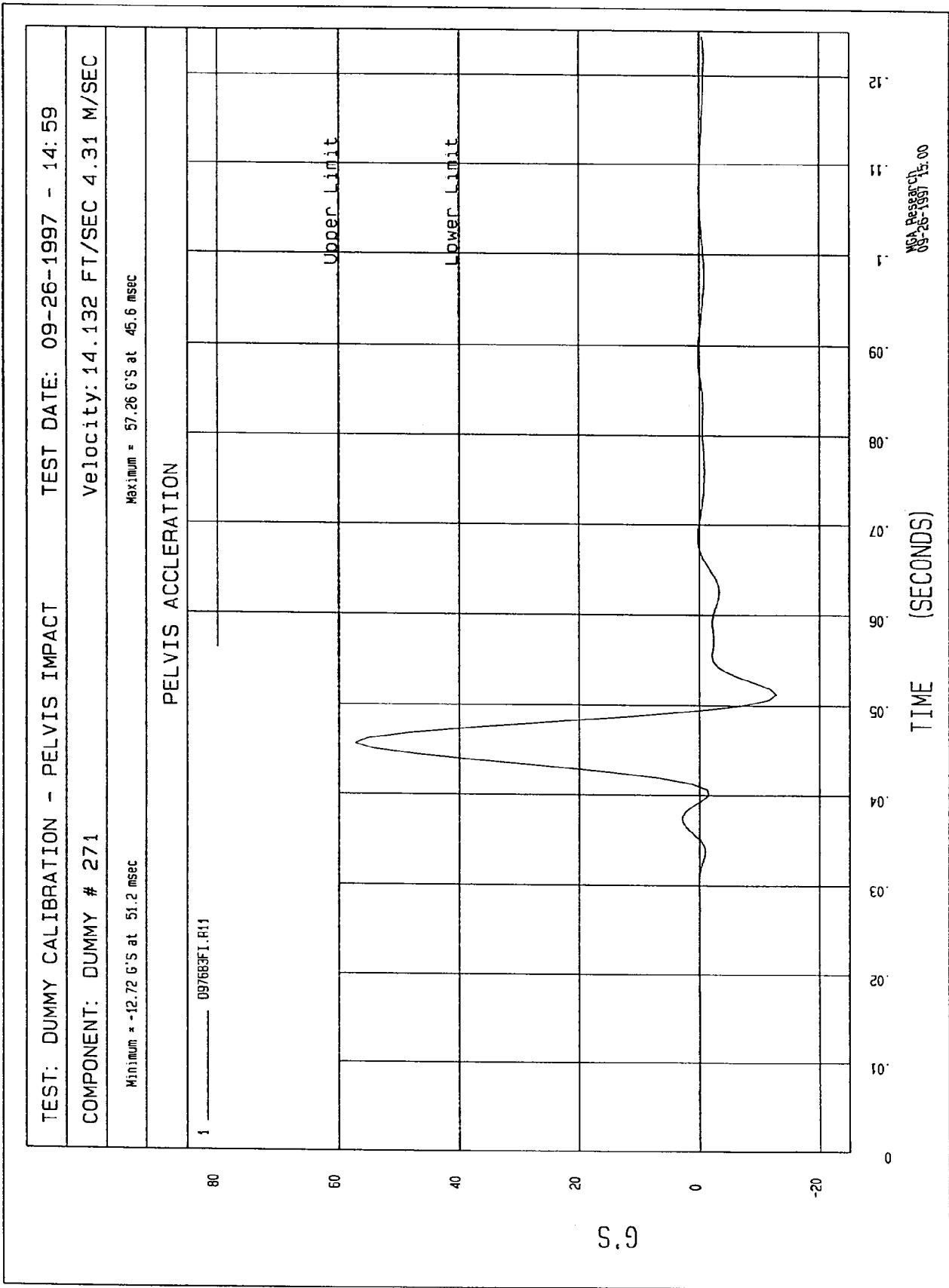
TEST NUMBER: D971683

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	40%
PROBE SPEED	14.0 - 14.2 f/s	14.1
PELVIS ACCELERATION	40 - 60 g's	57

TEST MEETS SPECIFICATIONS

TECHNICIAN 

APPROVED BY 



MGA RESEARCH CORPORATION

ABDOMINAL COMPRESSION TEST
(PRELOAD = 10 LBS)

SIDE IMPACT DUMMY (SID)

DATE: September 26, 1997

DUMMY NUMBER: 271

TEST NUMBER: D971684

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	40%
FORCE @ 0.5 in	23.3 - 36.5 lbs	33.0
FORCE @ 0.75 in	36.7 - 49.8 lbs	44.8
FORCE @ 1.0 in	50 - 63 lbs	59
FORCE @ 1.3 in	73 - 88 lbs	80

TEST MEETS SPECIFICATIONS

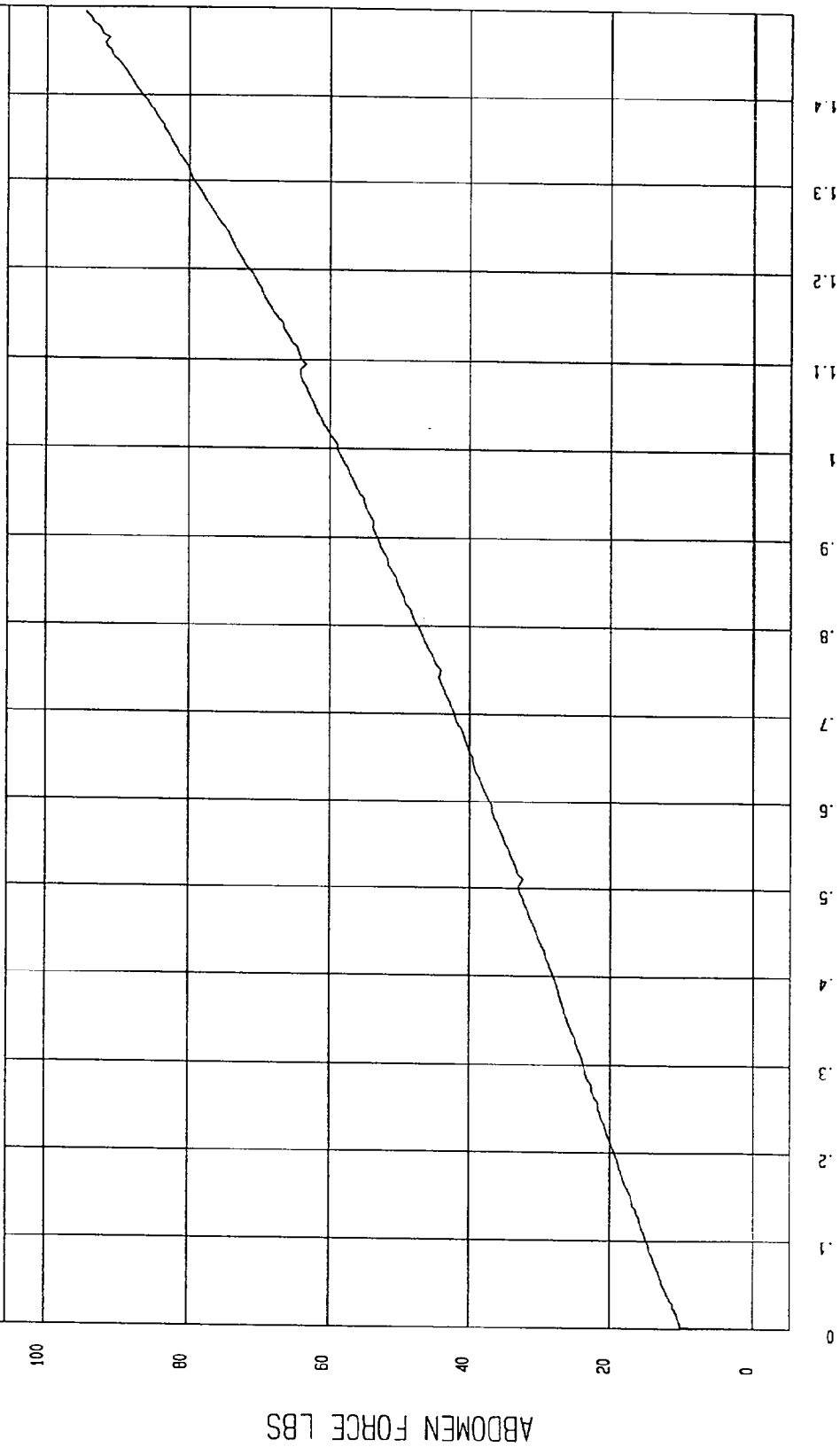
TECHNICIAN Jim Wilch

APPROVED BY Rene Korbake

TEST: DUMMY CALIBRATION - ABDOMEN COMPRESSION TEST DATE: 09-26-1997 - 14:20

COMPONENT: DUMMY # 271

ABDOMEN FORCE as a function of ABDOMEN DISPLACEMENT



NSA Research
09-26-1997 14:25

MGA RESEARCH CORPORATION

LUMBAR FLEXION TEST

SIDE IMPACT DUMMY (SID)

DATE: September 26, 1997

DUMMY NUMBER: 271

TEST NUMBER: D971685

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	40%
FORCE @ 0°	0 - 6 lbs	0
FORCE @ 20°	22 - 34 lbs	27
FORCE @ 30°	34 - 46 lbs	40
FORCE @ 40°	46 - 58 lbs	53
RETURN ANGLE	12° maximum	5°

TEST MEETS SPECIFICATIONS

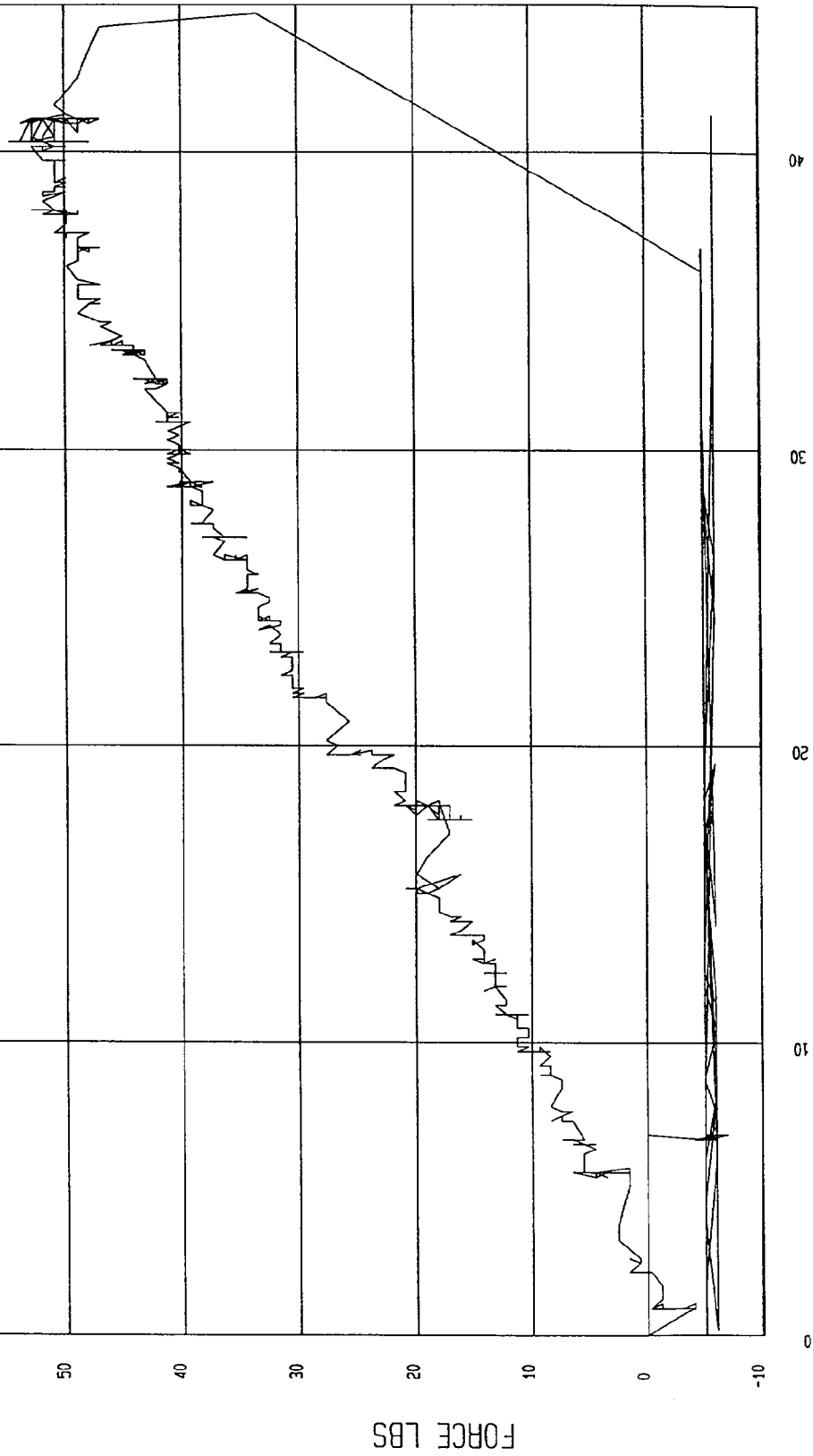
TECHNICIAN Tim Wilkin

APPROVED BY Paul Korbake

TEST: DUMMY CALIBRATION - LUMBAR FLEXION TEST DATE: 09-26-1997 - 13:50

COMPONENT: DUMMY # 271

FORCE as a function of TORSO ROTATION



MCA Research
09-26-1997 14:02

POST-TEST CERTIFICATION DATA

Rear Dummy Serial Number: 272

Calibration Test Results Summary

Dummy Serial Number: 272

Post-Test Calibration

External Dimensions:	The dummy passed all external dimension requirements.
Thorax Impact Test:	The thorax passed all impact test requirements.
Pelvic Impact Test:	The pelvis passed all impact test requirements.
Abdominal Compression Test:	The abdomen passed all compression test requirements.
Lumbar Flexion Test:	The lumbar passed all flexion test requirements.

SIDE IMPACT DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

DUMMY NO.: 272

DATE OF VERIFICATION: September 26, 1997

DESCRIPTION	SPECIFICATION	TEST RESULTS
SH - Seated Height	35.0" - 35.8"	35.2
RH - Rib Height	19.75" - 20.50"	20.20
HP - Hip Pivot Height	3.9" ref.	3.9
RD - Rib From Back Line	9.0" to 9.5"	9.4
KV - Knee Pivot From Back Line	20.1" - 20.7"	20.7
SW - Knee Pivot to Floor	19.3" - 19.9"	9.6
HW - Hip Width	14.0" - 15.4"	15.0

MEASUREMENTS BY:

Tim M. L.

APPROVED BY:

Rene K. Kabeke

MGA RESEARCH CORPORATION

THORAX IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: September 26, 1997

DUMMY NUMBER: 272

TEST NUMBER: D971692

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	40%
PROBE SPEED	14.0 - 14.2 fps	14.1
UPPER RIB	37 - 46 g's	37
LOWER RIB	37 - 46 g's	37
LOWER SPINE	15 - 22 g's	18

TEST MEETS SPECIFICATIONS

TECHNICIAN Tim H. H.

APPROVED BY Dave K. K.

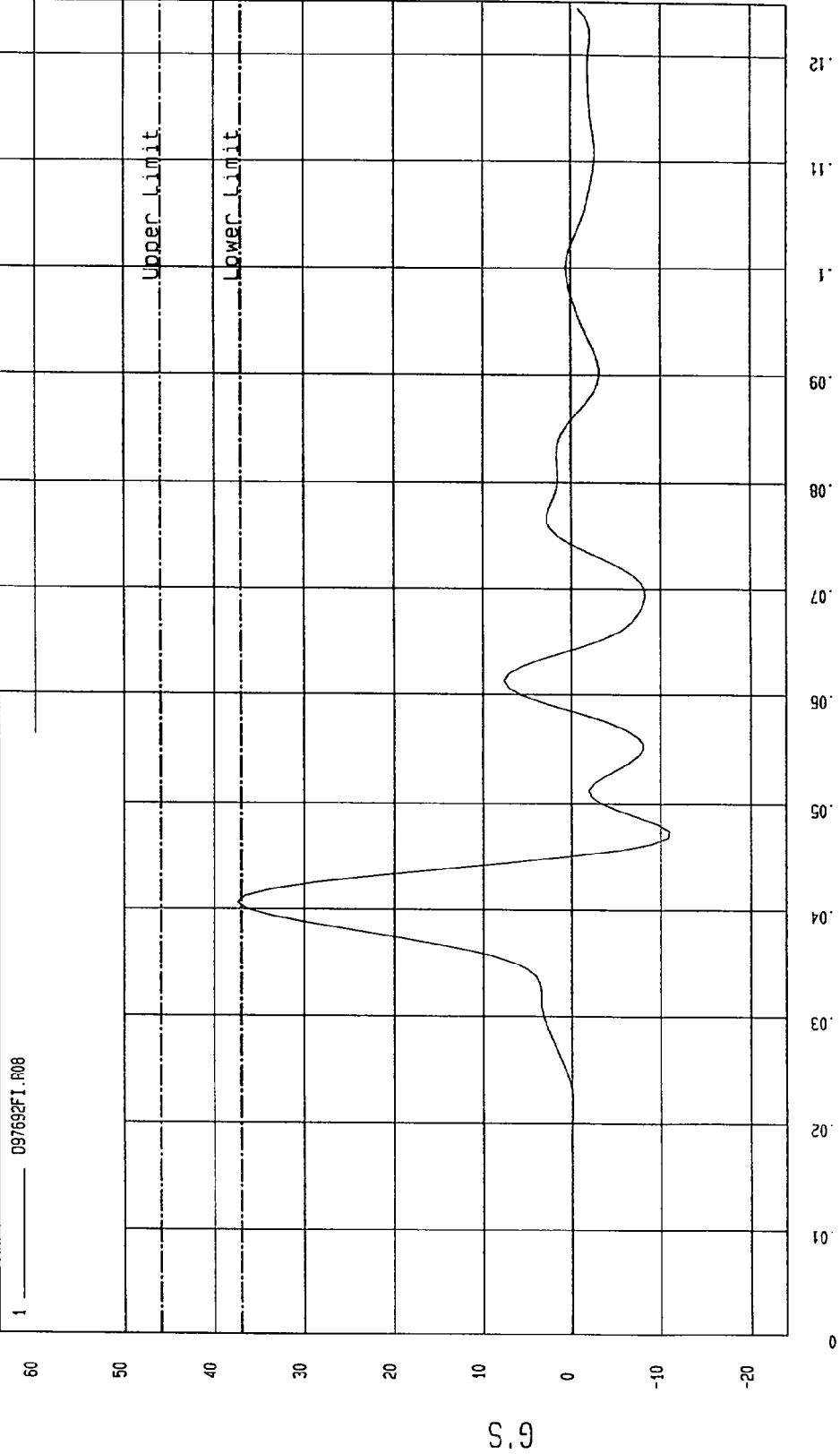
TEST: DUMMY CALIBRATION - THORAX IMPACT TEST DATE: 09-26-1997 - 15:45:49

COMPONENT: DUMMY # 272 Velocity: 14.149 FT/SEC 4.31 M/SEC

Minimum = -10.92 G'S at 47.5 msec

Maximum = 37.39 G'S at 40.6 msec

UPPER RIB ACCELERATION



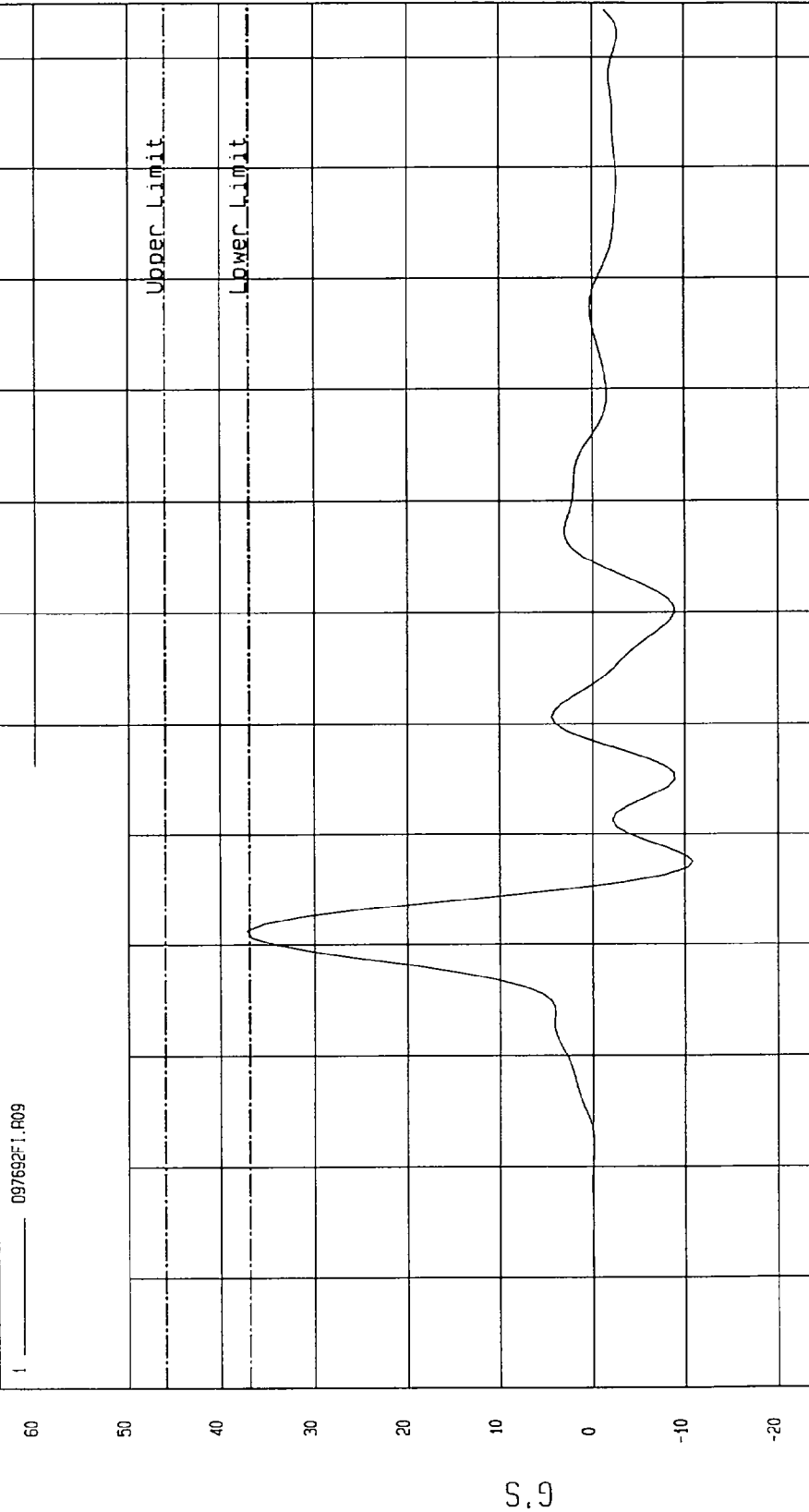
MOA Research
09-26-1997 15:52

TEST: DUMMY CALIBRATION - THORAX IMPACT TEST DATE: 09-26-1997 - 15:47:01

COMPONENT: DUMMY # 272 Velocity: 14.149 FT/SEC 4.31 M/SEC

Minimum = -10.83 G'S at 47.5 msec Maximum = 37.24 G'S at 41.2 msec

LOWER RIB ACCELERATION



TIME (SECONDS)

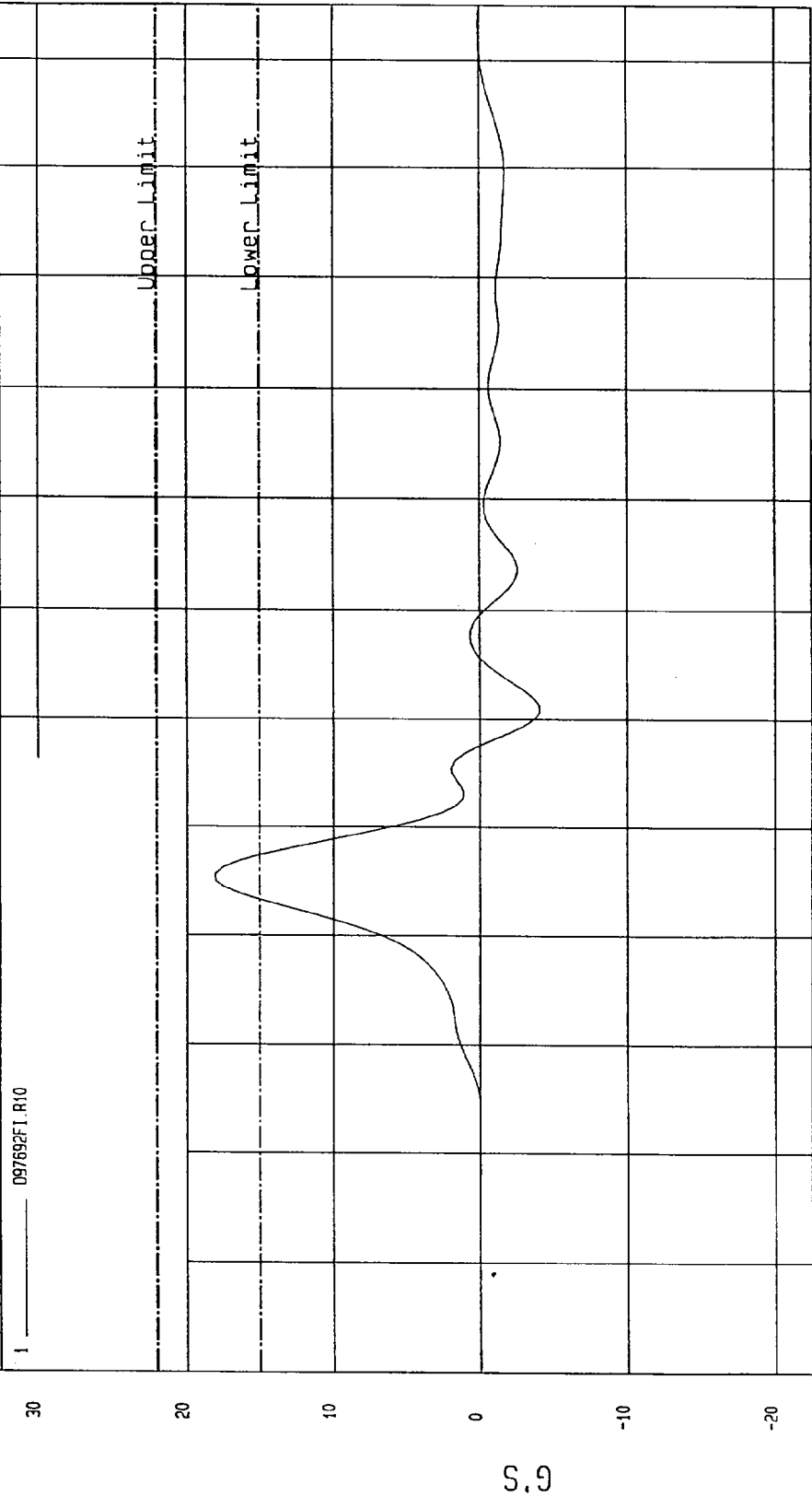
MCA Research
09-26-1997 15:53

TEST: DUMMY CALIBRATION - THORAX IMPACT TEST DATE: 09-26-1997 - 15:47:25

COMPONENT: DUMMY # 272 Velocity: 14.149 FT/SEC 4.31 M/SEC

Minimum = -4.05 G'S at 60.6 msec Maximum = 18.07 G'S at 45.6 msec

LOWER SPINE ACCELERATION



WCA Research
09-26-1997 15:53

MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: September 26, 1997

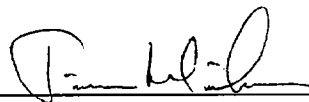
DUMMY NUMBER: 272

TEST NUMBER: D971693

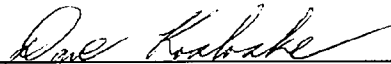
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	40%
PROBE SPEED	14.0 - 14.2 f/s	14.1
PELVIS ACCELERATION	40 - 60 g's	43

TEST MEETS SPECIFICATIONS

TECHNICIAN



APPROVED BY



TEST: DUMMY CALIBRATION - PELVIS IMPACT TEST DATE: 09-26-1997 - 15:55:43

COMPONENT: DUMMY # 272 Velocity: 14.055 FT/SEC 4.28 M/SEC

Minimum = -5.02 G'S at 63.7 msec

Maximum = 42.89 G'S at 46.2 msec

PELVIS ACCELERATION

1 _____ 097693FI.R11

80

60

40

20

0

-20

G.S

Upper Limit

Lower Limit

12

11

10

09

08

07

06

05

04

03

02

01

0

TIME (SECONDS)

MGA Research
09-26-1997 15:56

MGA RESEARCH CORPORATION

ABDOMINAL COMPRESSION TEST
(PRELOAD = 10 LBS)

SIDE IMPACT DUMMY (SID)

DATE: September 26, 1997

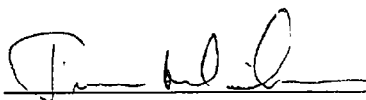
DUMMY NUMBER: 272

TEST NUMBER: D971694

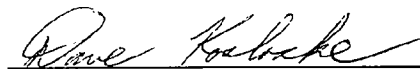
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	40%
FORCE @ 0.5 in	23.3 - 36.5 lbs	30.2
FORCE @ 0.75 in	36.7 - 49.8 lbs	40.2
FORCE @ 1.0 in	50 - 63 lbs	54
FORCE @ 1.3 in	73 - 88 lbs	73

TEST MEETS SPECIFICATIONS

TECHNICIAN



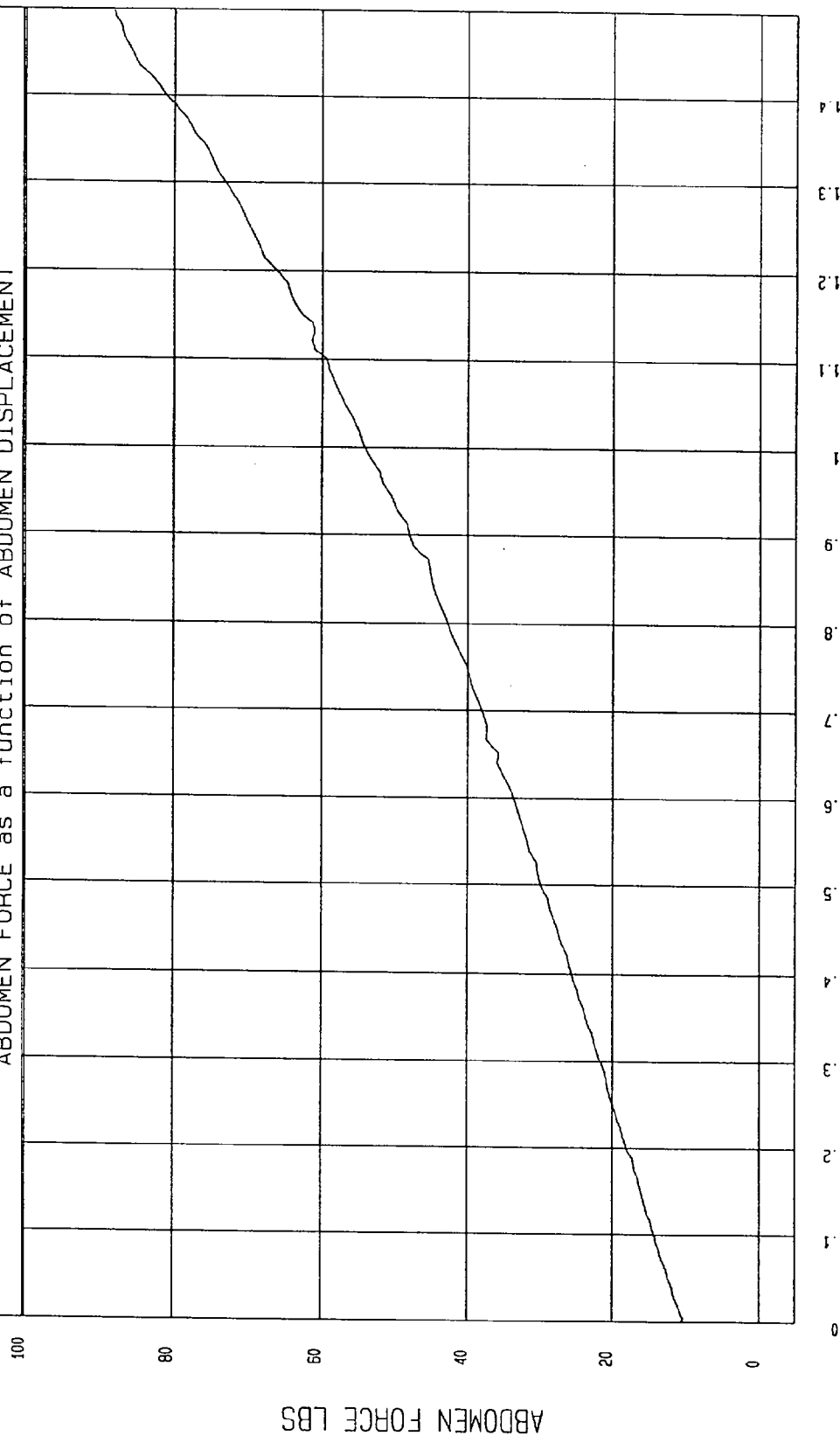
APPROVED BY



TEST: DUMMY CALIBRATION - ABDOMEN COMPRESSION TEST DATE: 09-26-1997 - 14:23

COMPONENT: DUMMY # 272

ABDOMEN FORCE as a function of ABDOMEN DISPLACEMENT



MCA Research
09-26-1997 14:46

ABDOMEN DISPLACEMENT INCHES

ABDOMEN FORCE LBS

MGA RESEARCH CORPORATION

LUMBAR FLEXION TEST

SIDE IMPACT DUMMY (SID)

DATE: September 26, 1997

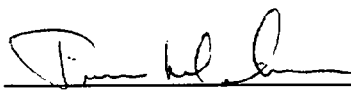
DUMMY NUMBER: 272

TEST NUMBER: D971695

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	40%
FORCE @ 0°	0 - 6 lbs	0
FORCE @ 20°	22 - 34 lbs	23
FORCE @ 30°	34 - 46 lbs	37
FORCE @ 40°	46 - 58 lbs	55
RETURN ANGLE	12° maximum	6°

TEST MEETS SPECIFICATIONS

TECHNICIAN

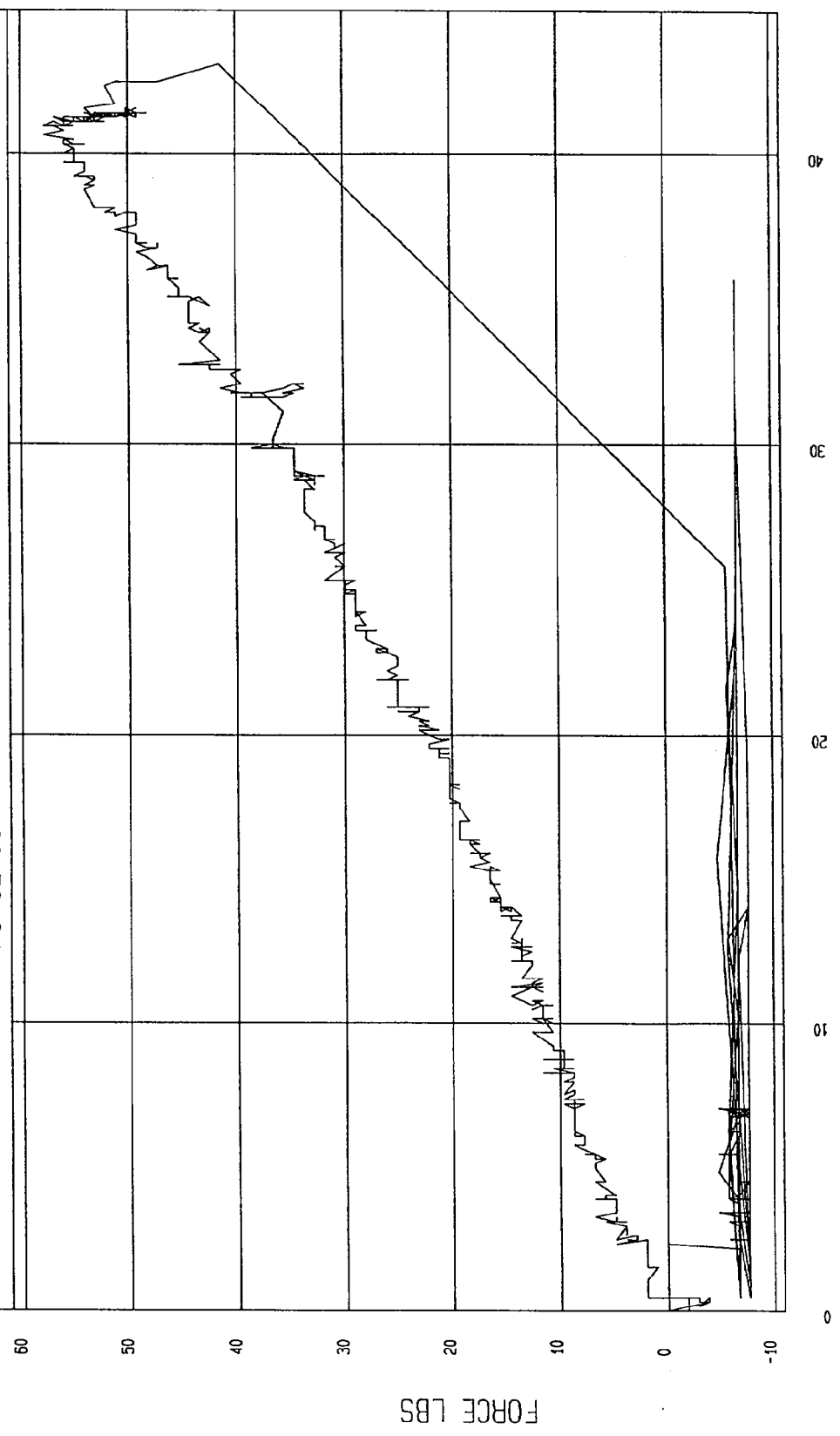


APPROVED BY



TEST: DUMMY CALIBRATION - LUMBAR FLEXION TEST DATE: 09-26-1997 - 14:00
COMPONENT: DUMMY # 272

FORCE as a function of TORSO ROTATION



NCA Research
09-26-1997 14:03

POST-TEST DRIVER DUMMY INSPECTION CHECKLIST

Type: Side Impact Dummy

Serial Number: 271

Inspected By: Tim Michnay

Date: September 26, 1997

<u>Part</u>	<u>Items Checked</u>	<u>Comments</u>
Skin	visual inspection	OK
Head	visual, ballast, accelerometer mount	OK
Neck	visual	OK
Spine box	visual, ballast, weldment, accelerometer mount	OK
Rib cage	visual, measure	OK
Sternum	visual	OK
Lumbar spine	visual	OK
Abdomen	visual	OK
Pelvis	visual, palpate, accelerometer mount	OK
Upper legs	visual	OK
Knees	visual	OK
Lower legs	visual, range of motion	OK
Ankles	visual, range of motion	OK
Feet	visual, range of motion	OK
Joints	1 to 2 g range	OK
Other		

NOTES: (include component/problem/action/reason):

POST-TEST PASSENGER DUMMY INSPECTION CHECKLIST

Type: Side Impact Dummy

Serial Number: 272

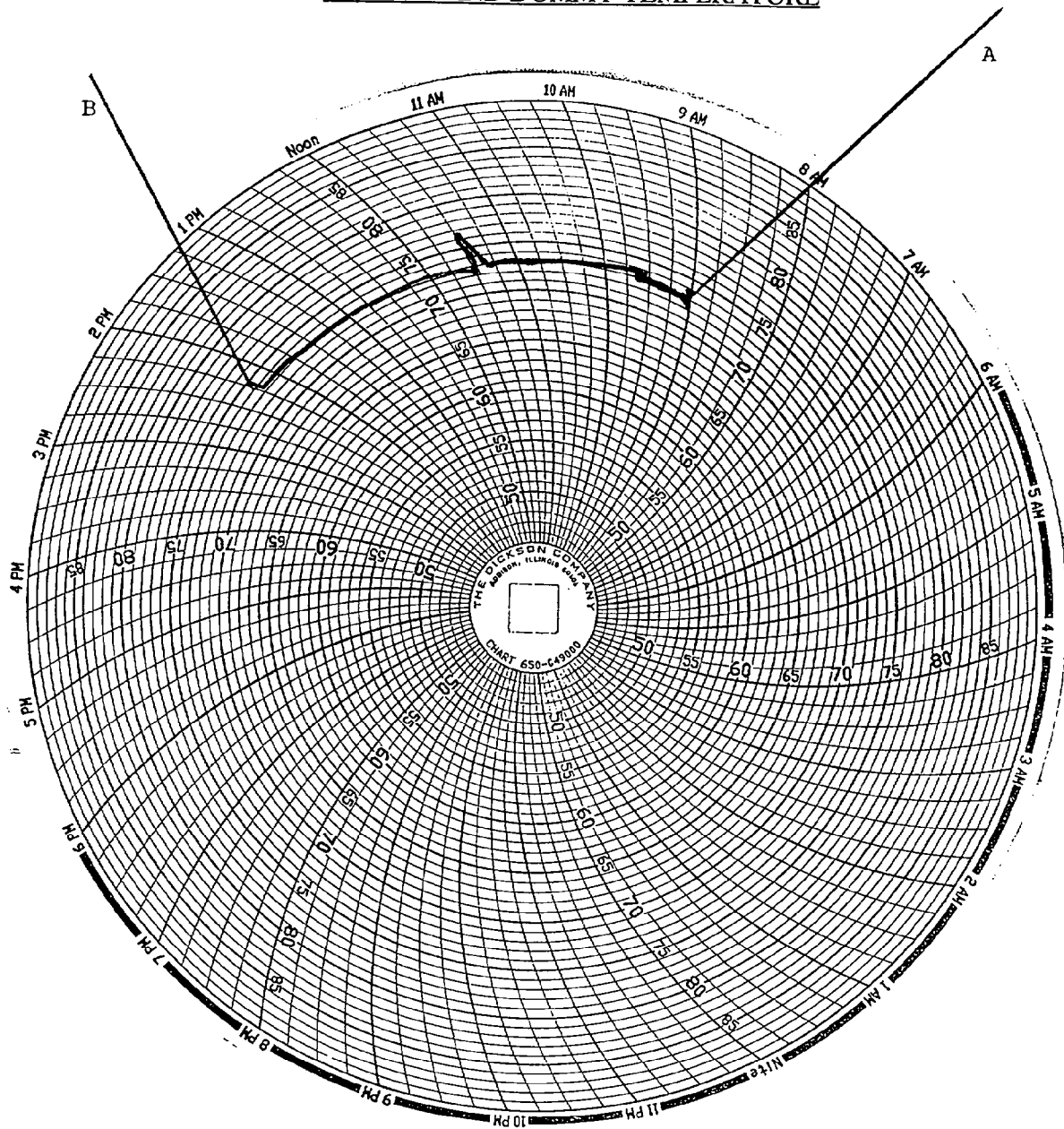
Inspected By: Tim Michnay

Date: September 26, 1997

<u>Part</u>	<u>Items Checked</u>	<u>Comments</u>
Skin	visual inspection	OK
Head	visual, ballast, accelerometer mount	OK
Neck	visual	OK
Spine box	visual, ballast, weldment, accelerometer mount	OK
Rib cage	visual, measure	OK
Sternum	visual	OK
Lumbar spine	visual	OK
Abdomen	visual	OK
Pelvis	visual, palpate, accelerometer mount	OK
Upper legs	visual	OK
Knees	visual	OK
Lower legs	visual, range of motion	OK
Ankles	visual, range of motion	OK
Feet	visual, range of motion	OK
Joints	1 to 2 g range	OK
Other		

NOTES: (include component/problem/action/reason):

VEHICLE AND DUMMY TEMPERATURE



A = dummies installed in vehicle
B = test conducted

APPENDIX D
TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

DUMMY AND VEHICLE CALIBRATION DATA
INSTRUMENTS FOR DRIVER DUMMY NO. 271

	DRIVER		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Upper Rib Y	AP2A4	Endevco	September 11, 1997
Lower Rib Y	AP1B3	Endevco	September 11, 1997
Lower Spine Y	ANAP1	Endevco	September 11, 1997
Pelvis Y	AHTC3	Endevco	September 11, 1997
Upper Rib Redundant Y	AP208	Endevco	September 11, 1997
Lower Rib Redundant Y	AP1C6	Endevco	September 11, 1997
Lower Spine Redundant Y	ANAT6	Endevco	September 11, 1997
Pelvis Redundant Y	AGP53	Endevco	September 11, 1997

INSTRUMENTS FOR PASSENGER DUMMY NO. 272

	LEFT REAR PASSENGER		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Upper Rib Y	ALFJ7	Endevco	September 11, 1997
Lower Rib Y	APYNO	Endevco	September 11, 1997
Lower Spine Y	APOG2	Endevco	September 11, 1997
Pelvis Y	APY15	Endevco	September 11, 1997
Upper Rib Redundant Y	ALDD6	Endevco	September 11, 1997
Lower Rib Redundant Y	APYN3	Endevco	September 11, 1997
Lower Spine Redundant Y	AP138	Endevco	September 11, 1997
Pelvis Redundant Y	APY16	Endevco	September 11, 1997

VEHICLE INSTRUMENT CALIBRATION

	VEHICLE ACCELEROMETERS		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Moving Barrier CG X	J04-F10	Entran	August 7, 1997
Moving Barrier CG Y	F11-G04	Entran	August 7, 1997
Moving Barrier CG Z	J04-F12	Entran	August 7, 1997
Moving Barrier Rear Axle X	G13-B07	Entran	August 6, 1997
Moving Barrier Rear Axle Y	L14-D04	Entran	August 4, 1997
Left Mid A-Post Y	B14-R14	Entran	June 12, 1997
Left Lower A-Post Y	F07-A19	Entran	August 1, 1997
Left Mid B-Post Y	D05-R19	Entran	July 7, 1997
Left Lower B-Post Y	B17-R11	Entran	August 1, 1997
Rear Floorpan Above Axle X	E10-F10	Entran	August 7, 1997
Rear Floorpan Above Axle Y	F11-G02	Entran	July 14, 1997
Rear Floorpan Above Axle Z	B13-Z02	Entran	August 1, 1997
Driver Seat Track Y	J10-E17	Entran	April 23, 1997
Right Side Sill at Front Seat X	G01-J06	Entran	August 5, 1997
Right Side Sill at Front Seat Y	C14-Z05	Entran	August 1, 1997
Right Side Sill at Front Seat Z	F20-G03	Entran	August 7, 1997
Right Side Sill at Rear Seat X	A15-Z16	Entran	August 4, 1997
Right Side Sill at Rear Seat Y	C25-A04	Entran	July 7, 1997
Right Side Sill at Rear Seat Z	G01-J18	Entran	August 7, 1997
Left Side Sill at Front Seat Y	F10-D04	Entran	August 4, 1997

VEHICLE INSTRUMENT CALIBRATION

	VEHICLE ACCELEROMETERS		
	SERIAL NO	MANUFACTURER	CALIBRATION DATE
Left Side Sill at Rear Seat Y	D05-R05	Entran	July 2, 1997
Right Rear Occupant Compartment Y	H02-J03	Entran	August 6, 1997
Vehicle CG X	G01-J07	Entran	July 14, 1997
Vehicle CG Y	I25-J14	Entran	August 7, 1997
Vehicle CG Z	J13-F16	Entran	August 6, 1997
Left Front Door on Centerline	C05-Z10	Entran	April 23, 1997
Mid Rear of Left Front Door	J10-E14	Entran	July 14, 1997
Left Front Door Upper Centerline	F10-D02	Entran	July 14, 1997
Mid Rear of Left Rear Door	B14-R03	Entran	August 4, 1997
Left Rear Door Upper Centerline	F12-G08	Entran	August 1, 1997

Note: All Endevco accelerometers are Model No. 7264-2000 All Entran accelerometers are Model No. EGE-72