

NEW CAR ASSESSMENT PROGRAM
SIDE IMPACT TESTING
PASSENGER CARS

1997 CHEVROLET LUMINA
4-DOOR SEDAN
NHTSA NO: MV0114

MGA PROVING GROUNDS
5000 WARREN ROAD
BURLINGTON, WI 53105



Test Date: February 19, 1997

Report Date: March 11, 1997

FINAL REPORT

Prepared For:

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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 side impact was conducted on the subject 1997 Chevrolet Lumina 4-Door 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 February 19, 1997. The impact velocity of the Moving Deformable Barrier (MDB) was 61.2 kph, and the ambient temperature at the struck side (driver's) of the target vehicle at the time of impact was 22°C. The target vehicle post test maximum crush was 401 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>55</td> <td>68</td> </tr> <tr> <td>Left Lower Rib (LLR) Accel., g</td> <td>61</td> <td>83</td> </tr> <tr> <td>Lower Spine (T₁₂) Accel., g</td> <td>61</td> <td>76</td> </tr> <tr> <td>Thoracic Trauma Index (TTI)</td> <td>61</td> <td>79</td> </tr> <tr> <td>Pelvis (PEV) Accel., g</td> <td>70</td> <td>125</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	55	68	Left Lower Rib (LLR) Accel., g	61	83	Lower Spine (T ₁₂) Accel., g	61	76	Thoracic Trauma Index (TTI)	61	79	Pelvis (PEV) Accel., g	70	125
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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 Telephone No. 202-366-4946 Attn: Robert Hornickle																			
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SECTION 1
PURPOSE AND TEST PROCEDURE

This side impact test is part of the FY97 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 1997 Chevrolet Lumina 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 1997 Chevrolet Lumina 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 February 19, 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.

The following table summarizes the results of the test:

Injury Criteria	Front SID	Rear SID
TTI (g)	61	79
Pelvis (g)	70	125

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: 1997/Chevrolet/Lumina/4-Door
Vehicle NHTSA No.: MV0114 VIN: 2G1WL52M7V9127655
Vehicle Body Color: Lichen Green Build Date: 8/96
Engine Data: 6 Cylinders; CID; 3.1 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 37 miles
Options: X A/C; X Pwr. Steering; X Pwr. Brakes; X Pwr. Windows;
X Cruise Control; X Tilt Wheel; X Power Door Locks;

DATA FROM TIRE PLACARD:

Tire Pressure (at capacity): 30 Psi FRONT
30 Psi REAR
Recommended Tire Size: P205/70R/15
Tires on Test Vehicle: P205/70R/15 Manufacturer: B.F. Goodrich

Vehicle Capacity Data:

Number of Occupants: 3 Front; 3 Rear; 3rd Seat, 6 Total
Type of Front Seats: Bucket; Bench; X Split Bench
Type of Front Seat Back: Fixed; X Adjustable with X Lever
Vehicle Maximum Capacity Loading = 480.0 kg (A)
No. of Occupants x 68.04 kg. = 408.2 kg (B)
Cargo Capacity (A-B) = 71.8 kg

GENERAL VEHICLE TEST PARAMETER DATA (Cont'd)

WEIGHT OF TEST VEHICLE WITH MAXIMUM FLUIDS:

Right Front	=	<u>481.2</u> kg	Right Rear	=	<u>268.5</u> kg
Left Front	=	<u>493.1</u> kg	Left Rear	=	<u>281.7</u> kg
TOTAL FRONT	=	<u>974.3</u> kg	TOTAL REAR	=	<u>550.2</u> kg
% of Total Vehicle Weight	=	<u>63.9</u> %;	% of Total Weight	=	<u>36.1</u> %
TOTAL WEIGHT	=	<u>1524.5</u> kg			

GENERAL VEHICLE TEST PARAMETER DATA (Cont'd)

Year/Make/Model/Body Style: 1997/Chevrolet/Lumina/4-Door

Vehicle NHTSA No.: MV0114 Test Date: February 19, 1997

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Total Test Vehicle Delivered Weight with Maximum Fluids	=	<u>1524.5</u> kg
Cargo Carrying Capacity of Test Vehicle	=	<u>71.8</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>1757.7</u> kg

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

Right Front	=	<u>486.2</u> kg	Right Rear	=	<u>337.5</u> kg
Left Front	=	<u>550.7</u> kg	Left Rear	=	<u>383.3</u> kg
TOTAL FRONT	=	<u>1036.9</u> kg	TOTAL REAR	=	<u>720.8</u> kg
% of Total Weight	=	<u>59.0</u> %	% of Total Weight	=	<u>41.0</u> %
TOTAL TEST WEIGHT	=	<u>1757.7</u> kg			

TEST VEHICLE ATTITUDE:

CURB WEIGHT ATTITUDE:

Right Front 718 mm Left Front 720 mm Right Rear 734 mm Left Rear 719 mm

FULLY LOADED WEIGHT ATTITUDE:

Right Front 714 mm Left Front 705 mm Right Rear 700 mm Left Rear 703 mm

TEST ATTITUDE:

Right Front 708 mm Left Front 708 mm Right Rear 700 mm Left Rear 685 mm

GENERAL VEHICLE TEST PARAMETER DATA (Cont'd)

Test Vehicle Wheelbase: 2734 mm

C.G. = 1081 mm rearward of front wheel centerline

TOTAL VEHICLE LENGTH:

Right Side = 4738 mm

Centerline = 5082 mm

Left Side = 4738 mm

GENERAL VEHICLE TEST PARAMETER DATA (Cont'd)

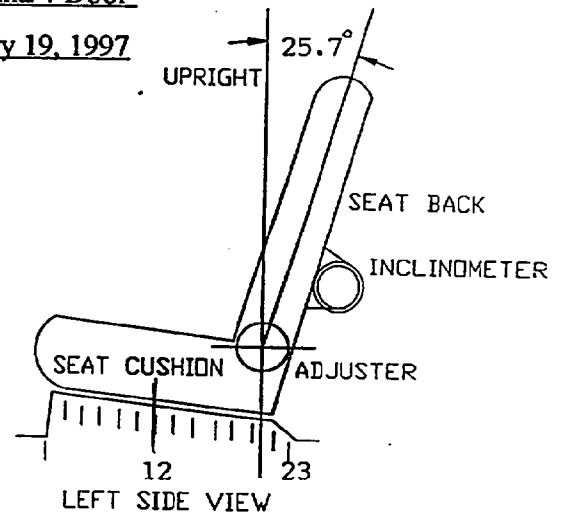
Year/Make/Model/Body Style: 1997/Chevrolet/Lumina/4-Door

Vehicle NHTSA No.: MV0114 Test Date: February 19, 1997

FRONT SEAT CUSHION PLACEMENT:

Total Length of Adjustment Travel: 220 mm

Test Position: 12th detent of 23 total



FRONT SEAT BACK ADJUSTMENT POSITION:

Seat Back Angle = 25.7°

SECOND POSITION SEAT:

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

Seat Back Adjustment Position: Non-adjustable

ADJUSTABLE STEERING COLUMN POSITION: 3rd notch of 5

WINDOW POSITIONS: Left Front Up Left Rear Up
 Right Front Down Right Rear Removed

AMOUNT OF STODDARD SOLVENT IN FUEL TANK:

Fuel system usable capacity = 16.1 gallons

Test Volume: 15.0 gallons 93 % of capacity

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

Wheelbase: = 2734 mm

Impact Point is 427 mm rearward of front axle centerline

DATA SHEET NO. 2
TEST VEHICLE SUMMARY OF RESULTS

Year/Make/Model/Body Style: 1997/Chevrolet/Lumina/4-Door
Vehicle NHTSA No.: MV0114 Test Date: February 19, 1997
Overall Length = 5082 mm; Overall Width = 1808 mm

TEST WEIGHT:

Right Front = 512.5 kg Right Rear = 333.9 kg
Left Front = 545.7 kg Left Rear = 357.9 kg
TOTAL FRONT = 1058.2 kg TOTAL REAR = 691.8 kg
% of Total Weight = 60.5 % % of Total Weight = 39.5 %
TOTAL VEHICLE WEIGHT = 1750.0 kg
Wheelbase = 2734 mm
Longitudinal C.G. from Center of Front Axle = 1081 mm
Impact Angle with Respect to Impactor = 90° degrees

MAXIMUM EXTERIOR STATIC CRUSH:

1. LEVEL 1 (280 mm above ground) = 245 mm
 2. LEVEL 2 (512 mm above ground) = 398 mm
 3. LEVEL 3 (593 mm above ground) = 374 mm
 4. LEVEL 4 (878 mm above ground) = 332 mm
 5. LEVEL 5 (1328 mm above ground) = 109 mm
- Maximum Post-Test Intrusion = 401 mm

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: 1997/Chevrolet/Lumina/4-Door

Vehicle NHTSA No.: MV0114 Test Date: February 19, 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>1102 mm</u>
C.G. Location From Center Line	= <u>-23 mm</u>
C.G. Location Above Ground Level	= <u>508 mm</u>

MDB WEIGHT:

Left Front	= <u>396.1 kg</u>	Left Rear	= <u>284.4 kg</u>
Right Front	= <u>383.4 kg</u>	Right Rear	= <u>293.8 kg</u>
TOTAL FRONT	= <u>779.5 kg</u>	TOTAL REAR	= <u>578.2 kg</u>
TOTAL MDB WEIGHT = <u>1357.7 kg</u>			

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

Impact Speed = Primary: 38.0 mph (61.2 kph) Secondary: 38.1 mph (61.3 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>162</u> mm |
| 2. | Row B Mid Stack (686 mm) | = <u>151</u> mm |
| 3. | Row C Top of Bumper (533 mm) | = <u>139</u> mm |
| 4. | Row D Center of Bumper (432 mm) | = <u>158</u> mm |

INSTRUMENTATION:

Number of MDB Data Channels = 7

DATA SHEET NO. 4
POST-TEST OBSERVATIONS

Year/Make/Model/Body Style: 1997/Chevrolet/Lumina/4-Door

Vehicle NHTSA No.: MV0114 Test Date: February 19, 1997

VISIBLE DUMMY CONTACT POINTS:

	<u>LEFT FRONT SID</u>	<u>LEFT REAR SID</u>
Head	<u>to left shoulder</u>	<u>to C-post</u>
Arm	<u>to door panel</u>	<u>to door panel</u>
Pelvis	<u>to armrest</u>	<u>to armrest</u>
Left Knee	<u>to door panel</u>	<u>to door panel</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: 0 mm

ARM REST LOCATIONS:

Front: 202 mm from bottom of window
Rear: 244 mm from bottom of window

POST-TEST OBSERVATIONS (Cont'd)

SEAT CRUSH:

Front Seat Back: 39 mm Front Seat Cushion: 51 mm

Left Rear Seat Back: 77 mm Rear Seat Cushion: 145 mm

GLAZING DAMAGE:

Left side front and rear door glass broken, windshield cracked

PILLAR PERFORMANCE:

No failure noted

SILL SEPARATION:

None noted

OTHER NOTABLE IMPACT EFFECTS:

Airbags did not deploy

SECTION 4
OCCUPANT AND VEHICLE INFORMATION

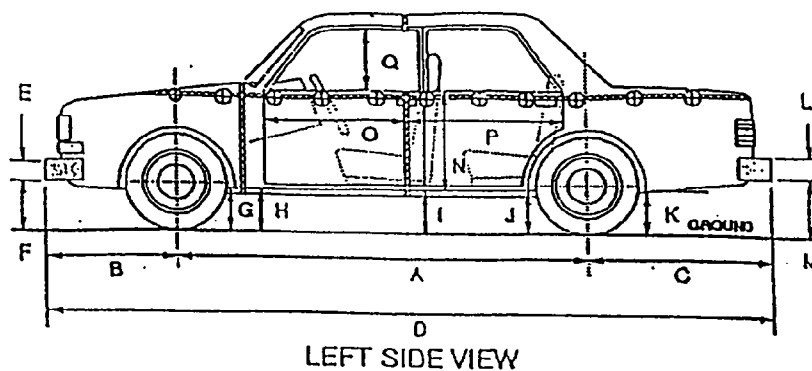
DATA SHEET NO. 5
SIDE IMPACT DUMMY (SID) INSTRUMENTATION DATA

Year/Make/Model/Body Style: 1997/Chevrolet/Lumina/4-Door
Vehicle NHTSA No.: MV0114 Test Date: February 19, 1997

	Front Dummy ID # 270				Rear Dummy ID # 269			
	Pos. Direct.		Neg. Direct		Pos. Direct.		Neg. Direct	
	Max (g)	Time (msec)	Max (g)	Time (msec)	Max (g)	Time (msec)	Max (g)	Time (msec)
RIB ACCELERATIONS								
Left Upper Rib (LUR) Y	55	36	-20	81	68	42	-9	71
Left Lower Rib (LLR) Y	61	37	-15	80	83	41	-24	70
SPINE ACCELERATIONS								
Lower Lateral Y	61	32	-18	83	76	42	-20	62
PELVIS ACCELERATIONS								
Lateral Y	70	32	-9	106	125	36	-16	78

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	2734	2692	42
B	1174	1168	6
C	1174	1174	0
D	5082	5034	48
E	200	200	0
F	361	382	21
G	210	203	7
H	210	203	7
I	203	183	20
J1/J2	208/199	196/165	12/34
K	241	242	1
L	255	255	0
M	343	364	21
N	640	573	67
O	834	750	84
P	1189	1092	97
Q	456	435	21
R	4738	4780	42
S	4738	4665	73
T	1808	1546	262

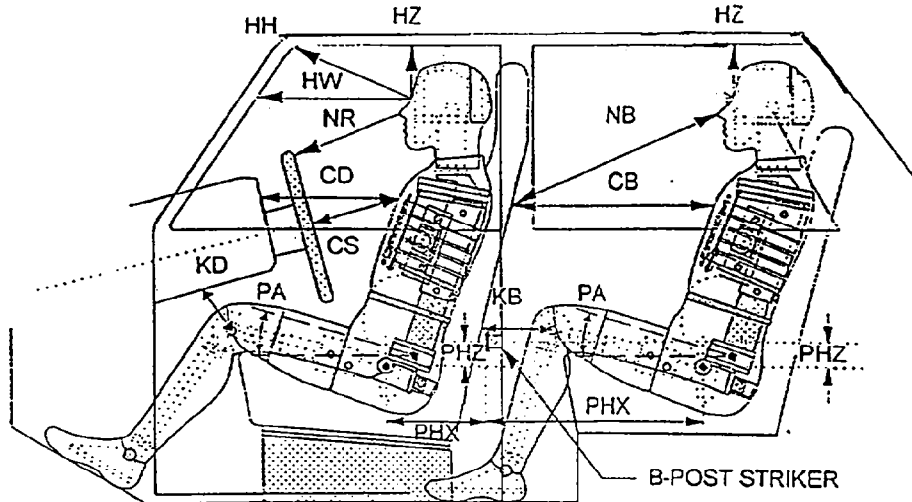
DATA SHEET NO. 7

SIDE IMPACT DUMMY (SID) LONGITUDINAL CLEARANCE DIMENSIONS

Year/Make/Model/Body Style: 1997/Chevrolet/Lumina/4-Door

NHTSA NO.: MV0114

Test Date: February 19, 1997



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

	DRIVER SID ID # 270		LEFT REAR PASSENGER SID ID # 269
HH	374	HZ	134
HW	559	NB	668
HZ	131	CB	592
NR	411	KBL (KBA)	253 (0°)
CD	502	KBR (KBA)	288 (0°)
CS	289	PA°	23.3°
KDL(KDA°)	146 (40.3°)	PHX	161
KDR(KDA°)	184 (41.3°)	PHZ	219
PA°	24.1°		
PHX	204		
PHZ	126		

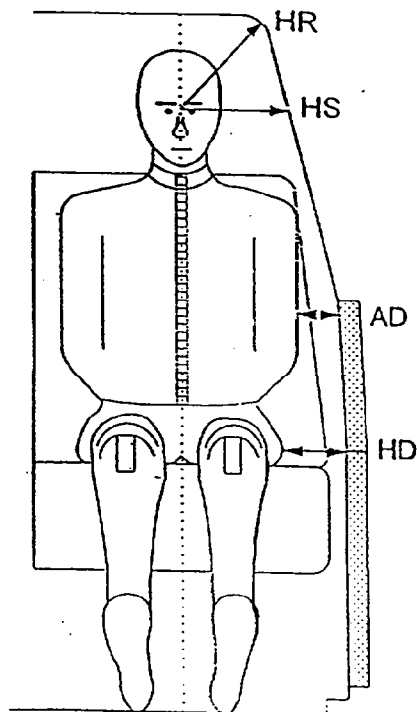
NOTE: 2-door vehicle shown. Rear dummy PHX & PHZ measurements for 4-door vehicle would use the C-post striker as reference point.

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

Year/Make/Model/Body Style: 1997/Chevrolet/Lumina/4-Door

NHTSA NO.: MV0114

Test Date: February 19, 1997



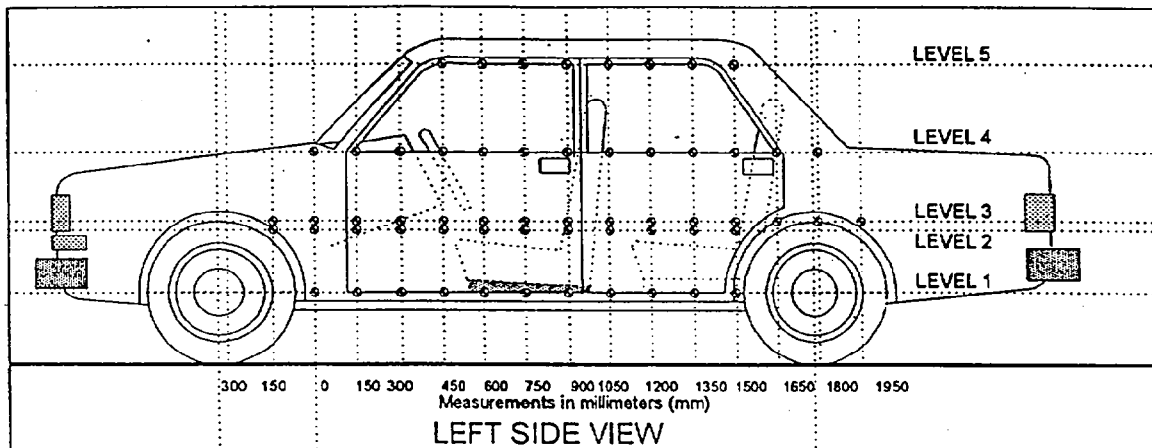
NOTE: All dimensions are in mm

	DRIVER SID ID # 270	LEFT REAR PASSENGER SID ID # 269
HR	205	187
HS	354	337
AD	160	126
HD	174	193

DATA SHEET NO. 9
VEHICLE SIDE MEASUREMENTS

Year/Make/Model/Body Style: 1997/Chevrolet/Lumina/4-Door

NHTSA NO.: MV0114 Test Date: February 19, 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)	= <u>280</u> mm
Level 2 @ Occupant H-Point	= <u>512</u> mm
Level 3 @ Mid Door	= <u>593</u> mm
Level 4 @ Window Sill	= <u>878</u> mm
Level 5 @ Window Top	= <u>1328</u> 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)
-1050			
-900			
-750			
-600			
-450			
-300			
-150			
0 (impact point)	603	664	61
150	607	722	115
300	608	758	150
450	609	786	177
600	610	803	193
750	609	817	208
900	609	828	219
1050	607	839	232
1200	609	854	245
1350	608	848	240
1500	607	841	234
1650	605	815	210
1800	604	769	165
1950			
2100			

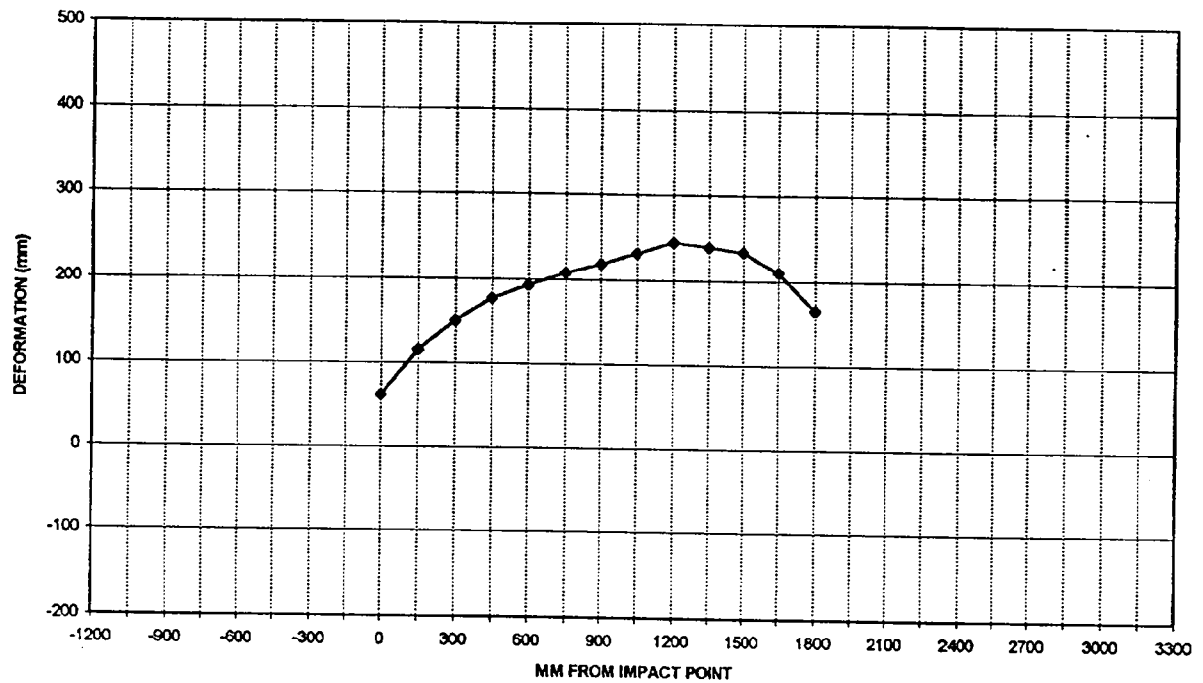
Reference plane is parallel to test vehicle longitudinal centerline.
 Given dimensions = Reference plane to car body

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES

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

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)
-1200	637	648	11
-1050	610	627	17
-900	592	616	24
-750			
-600			
-450			
-300			
-150			
0 (impact point)	552	622	70
150	552	765	213
300	549	849	300
450	547	878	331
600	545	897	352
750	543	922	379
900	541	935	394
1050	540	938	398
1200	543	928	385
1350	543	941	398
1500	543	937	394
1650	546	922	376
1800	550	882	332
1950	554	746	192
2100			

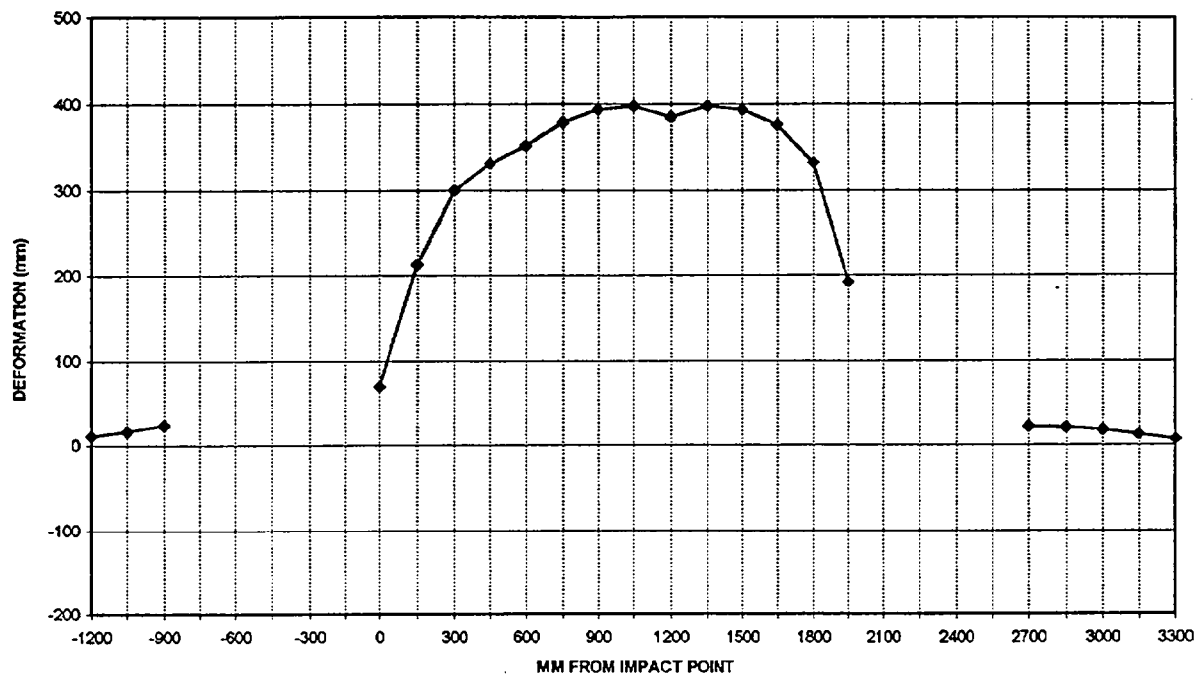
Reference plane is parallel to test vehicle longitudinal centerline.
 Given dimensions = Reference plane to car body

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)
2250			
2400			
2550			
2700	591	613	22
2850	604	625	21
3000	623	641	18
3150	649	662	13
3300	692	699	7

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)
-1200			
-1050	623	643	20
-900	597	621	24
-750	578	607	29
-600			
-450			
-300			
-150			
0 (impact point)	541	610	69
150	542	752	210
300	537	827	290
450	536	833	297
600	534	859	325
750	533	868	335
900	530	874	344
1050	530	881	351
1200	532	898	366
1350	532	897	365
1500	533	907	374
1650	536	903	367
1800	540	876	336
1950	544	761	217
2100			

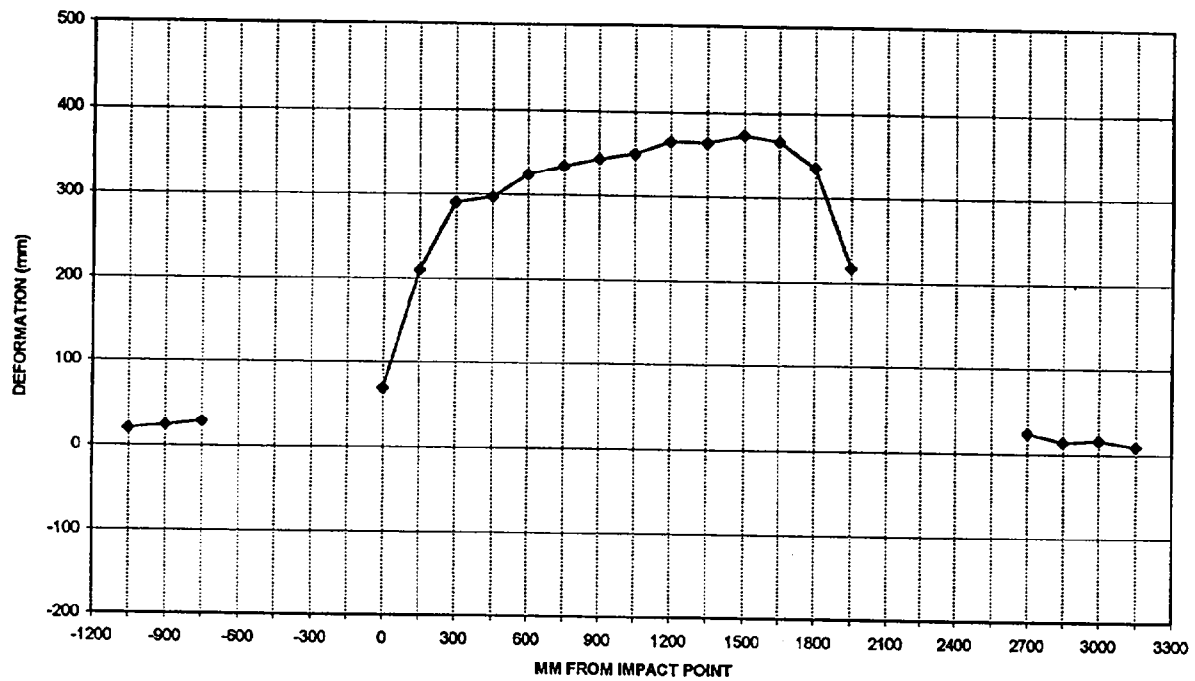
Reference plane is parallel to test vehicle longitudinal centerline.
Given dimensions = Reference plane to car body

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES

	Level 3 - Mid Door		
Longitudinal Distance (mm)	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
2250			
2400			
2550			
2700	589	613	24
2850	608	622	14
3000	633	649	16
3150	665	674	9
3300			

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)
-1200	716	731	15
-1050	685	704	19
-900	660	684	24
-750	644	670	26
-600	628	663	35
-450	615	655	40
-300	606	651	45
-150	599	651	52
0 (impact point)	594	648	54
150	590	714	124
300	588	752	164
450	586	773	187
600	586	799	213
750	585	821	236
900	583	848	265
1050	583	870	287
1200	583	905	322
1350	583	915	332
1500	580	889	309
1650	583	845	262
1800	587	799	212
1950	592	699	107
2100	598	628	30

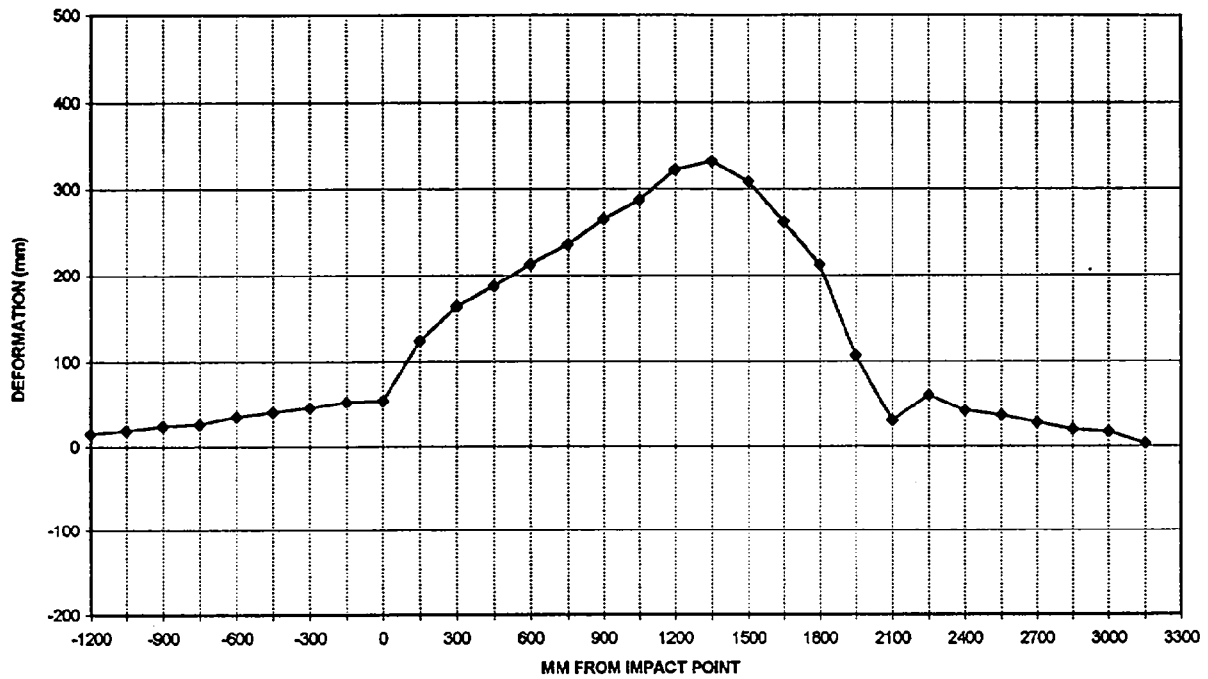
Reference plane is parallel to test vehicle longitudinal centerline.
Given dimensions = Reference plane to car body

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES

	Level 4 - Window Sill		
Longitudinal Distance (mm)	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
2250	608	668	60
2400	617	659	42
2550	627	663	36
2700	639	667	28
2850	657	677	20
3000	677	694	17
3150	709	712	3
3300			

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

Longitudinal Distance (mm)	Level 5 - Window Top		
	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
-1200			
-1050			
-900			
-750			
-600			
-450			
-300			
-150			
0 (impact point)			
150			
300			
450			
600			
750	835	865	30
900	834	887	53
1050	836	920	84
1200	840	949	109
1350	842	940	98
1500	846	881	35
1650	852	822	-30
1800	863	774	-89
1950	881	932	51
2100			

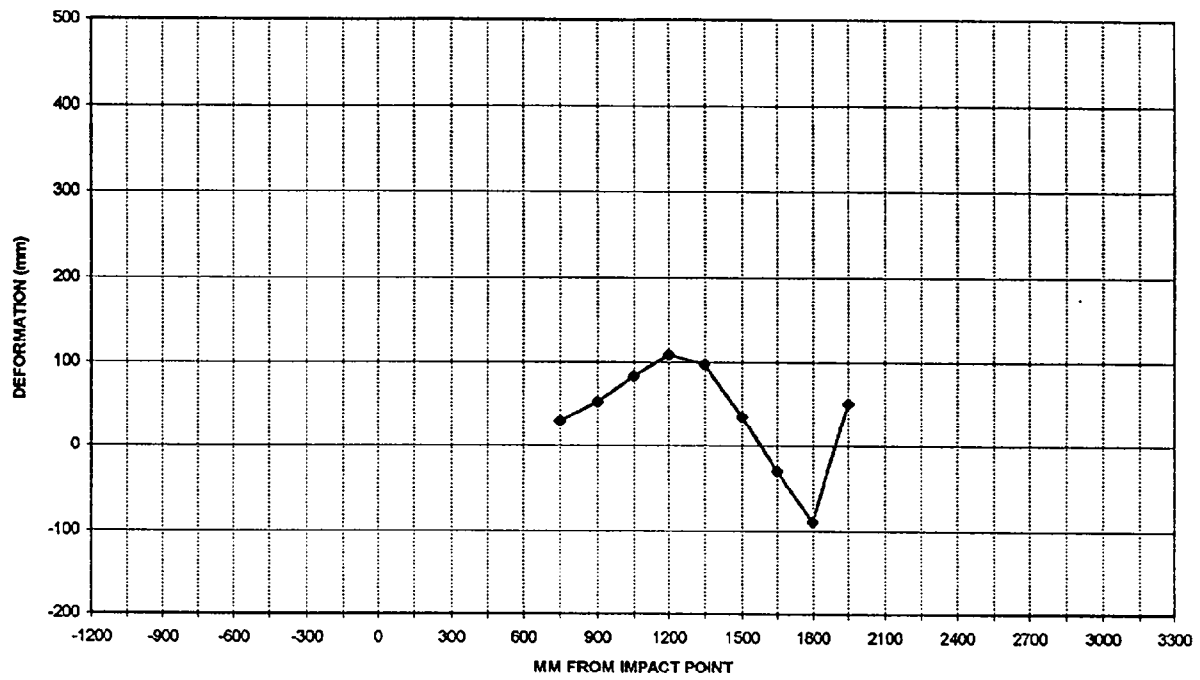
Reference plane is parallel to test vehicle longitudinal centerline.
 Given dimensions = Reference plane to car body

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES

	Level 5 - Window Top		
Longitudinal Distance (mm)	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
2250			
2400			
2550			
2700			
2850			
3000			
3150			
3300			

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

VEHICLE EXTERIOR STATIC CRUSH



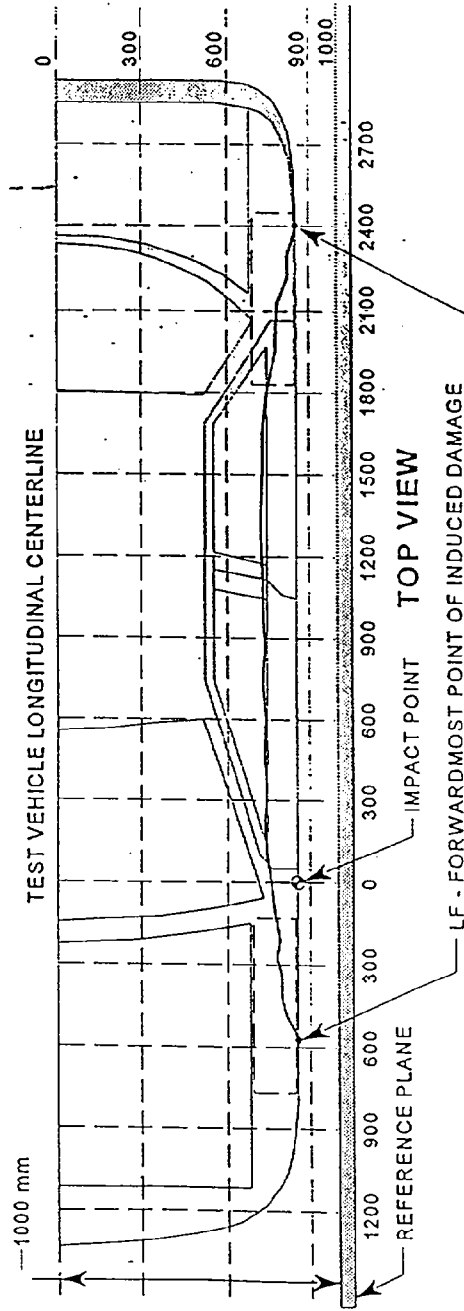
LEVEL 5 - WINDOW TOP

DATA SHEET NO. 11

VEHICLE DAMAGE PROFILE DISTANCES

Year/Make/Model/Body Style: 1997/Chevrolet/Lumina/4-Door

NHTSA NO.: MV0114 Test Date: February 19, 1997



MEASUREMENT CONVENTIONS: LR - REARWARDMOST POINT OF INDUCED DAMAGE
Forward of the impact point (towards front of vehicle) is considered negative (-).
Rearward of the impact point (toward rear of vehicle) is considered positive (+).

DPD MEASUREMENTS	POST-TEST (mm)	PRE-TEST (mm)	STATIC CRUSH (mm)
1. (LF = -1200 mm)	648	637	11
2. -314 mm	652	606	46
3. 525 mm	901	546	355
4. 1446 mm	944	543	401
5. 2437 mm	658	619	39
6. (LR = 3300 mm)	699	692	7

DATA SHEET NO. 12

EXTERIOR STATIC CRUSH FOR SIDE IMPACTOR

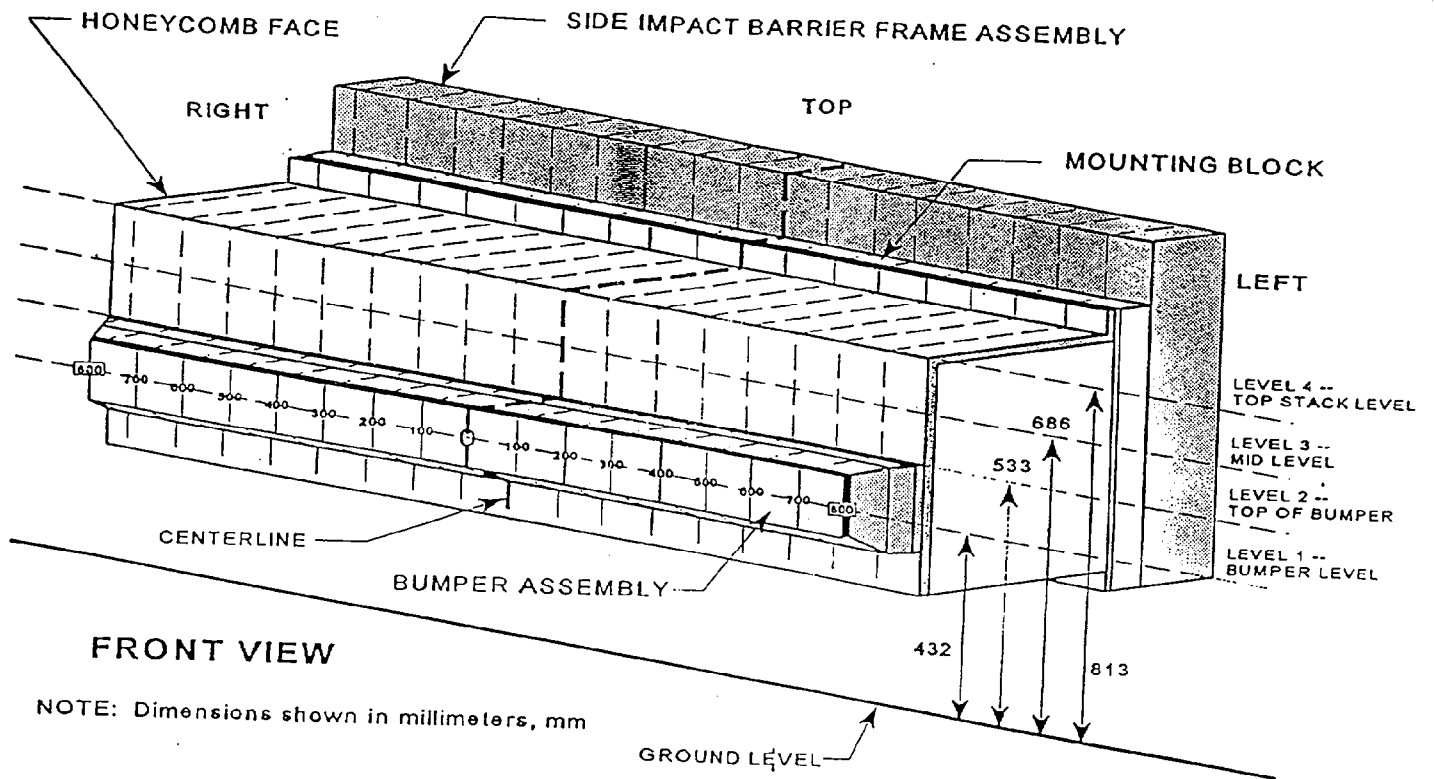
Year/Make/Model/Body Style: 1997/Chevrolet/Lumina/4-Door

Vehicle NHTSA No.: MV0114 Test Date: February 19, 1997

Location	Height at CL	Distance Right of Center (mm)									Distance Left of Center (mm)							
		800	700	600	500	400	300	200	100	0	100	200	300	400	500	600	700	800
Top Stack Level 4	813 mm	102	49	7	7	7	11	14	18	21	25	33	47	61	76	92	107	162
Mid Level Level 3	686 mm	78	37	17	10	6	9	11	17	15	17	19	22	29	38	60	72	151
Top Bumper Level 2	533 mm	63	49	38	32	38	40	43	48	48	51	55	59	66	69	78	96	139
Mid Bumper Level 1	432 mm	107	88	70	61	61	67	69	68	67	72	73	77	80	85	97	123	158

See next page for Barrier Face Graphic

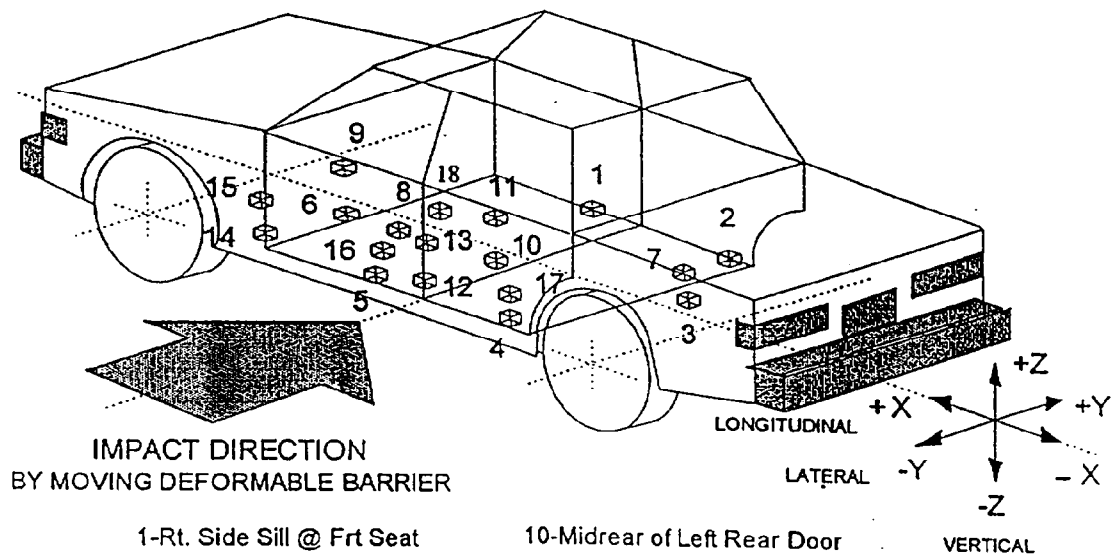
DATA SHEET NO. 12 (Cont'd)



DATA SHEET 13
TEST VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

Year/Make/Model/Body Style: 1997/Chevrolet/Lumina/4-Door

Vehicle NHTSA No.: MV0114 Test Date: February 19, 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
- 8-Midrear of Left Frt. Door
- 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
- 17-Rear Seat Track
- 18-Vehicle C.G.

DATA SHEET NO. 13

TEST VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

Year/Make/Model/Body Style: 1997/Chevrolet/Lumina/4-Door

Vehicle NHTSA No.: MV0114 Test Date: February 19, 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	2962	690	236	3	-3	24	-3	5	-9	24
2	Rt. Side Sill @ Rear Seat	1715	705	234	5	-2	25	-3	5	-8	26
3	Rr. Floorpan Above Axle	1310	0	476	2	-8	21	-2	15	-24	30
4	Left Side Sill @ Rr. Seat	1719	-716	232	---	---	52	-26	---	---	---
5	Left Side Sill @ Frt. Seat	2958	-698	235	---	---	45	-19	---	---	---
6	Left Front Door Centerline	3287	-802	556	---	---	137***	-33***	---	---	---
7	Right Rear Occupant Compartment	2133	300	328	---	---	27	-11	---	---	---
8	Mid Rear of Left Front Door	2565	-798	588	---	---	219	-53	---	---	---
9	Left Front Door Upper Centerline	2923	-764	847	---	---	144	-88	---	---	---
10	Left Rear Door Mid Rear	2252	-782	587	---	---	175	-119	---	---	---
11	Left Rear Door Upper Centerline	1882	-780	820	---	---	75	-132	---	---	---
12	Left Lower B-Post	2331	-698	318	---	---	80	-8	---	---	---
13	Left Mid B-Post	2337	-716	977	---	---	107	-34	---	---	---
14	Left Lower A-Post	3377	-746	320	---	---	48	-12	---	---	---
15	Left Mid A-Post	3431	-778	905	---	---	17	-1	---	---	---
16	Driver Left Seat Track	2609	-518	325	---	---	48	-10	---	---	---
18	Vehicle CG	2903	0	447	6**	-7**	21	-2	13	-14	22

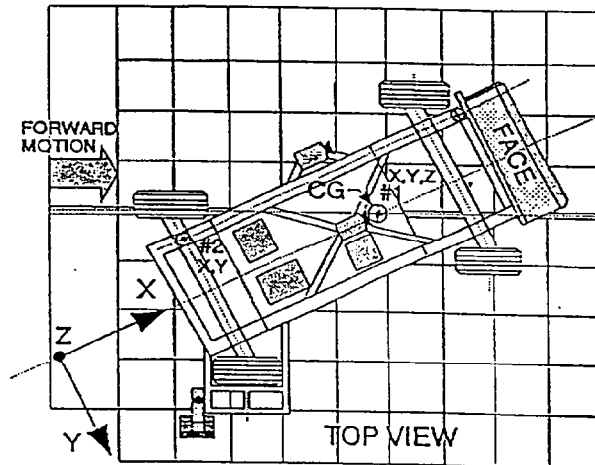
*Reference: X - Rear Bumper (+ Forward) ** Data not valid after approximately 83 msec.
Y - Vehicle Centerline (+ To right) *** Data not valid after approximately 43 msec.
Z - Ground Level (+ Up)

DATA SHEET NO. 14

MOVING DEFORMABLE BARRIER (MDB) ACCELEROMETER LOCATIONS AND DATA SUMMARY

Year/Make/Model/Body Style: 1997/Chevrolet/Lumina/4-Door

Vehicle NHTSA No.: MV0114 Test Date: February 19, 1997



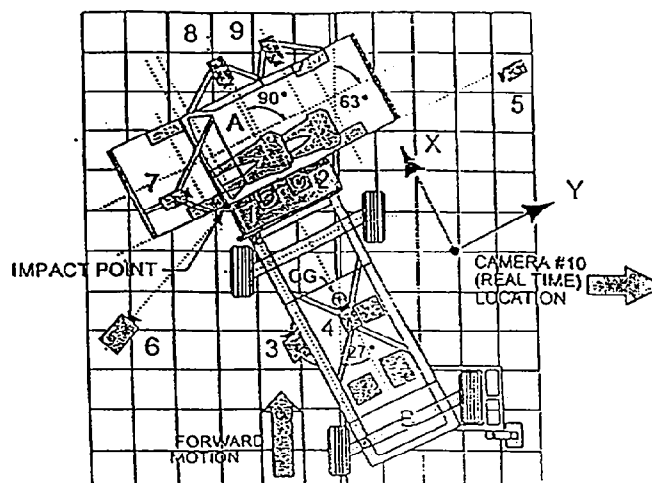
Accel. No.	Description	Coordinates (mm)*			(+) Positive		(-) Negative	
		X	Y	Z	Max. (g)	Time (msec)	Max. (g)	Time (msec)
1	MDB Center of Gravity	-1092	0	483				
	Longitudinal (X)	---	---	---	1	114	-18	41
	Lateral (Y)	---	---	---	1	56	-6	28
	Vertical (Z)	---	---	---	18	36	-16	21
	Resultant (R)	---	---	---	24	36	---	---
2	Rear Frame Member	-2591	-625	622				
	Longitudinal (X)	---	---	---	2	199	-22	34
	Lateral (Y)	---	---	---	6	38	-1	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: 1997/Chevrolet/Lumina/4-Door

Vehicle NHTSA No.: MV0114 Test Date: February 19, 1997



Camera No.	View	Coordinates (mm)*			Angle	Lens (mm)	Film Speed (fps)
		X	Y	Z			
	Real Time						
6	Left Impact	-1020	-2320	1680		13	1015
8	Onboard Driver					8	851
9	Onboard Passenger					8	1026
7	Onboard Hood					13	1010
5	Right Impact	-700	10450	1660		25	948
1	Top Overall	-300	-50	5000		8	1053
2	Top Impact	-295	1260	5000		13	913
4	Cart Overall					13	1020
3	Cart Pointer					35	1026

* 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: 1997/Chevrolet/Lumina/4-Door

Vehicle NHTSA No.: MV0114 Test Date: February 19, 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

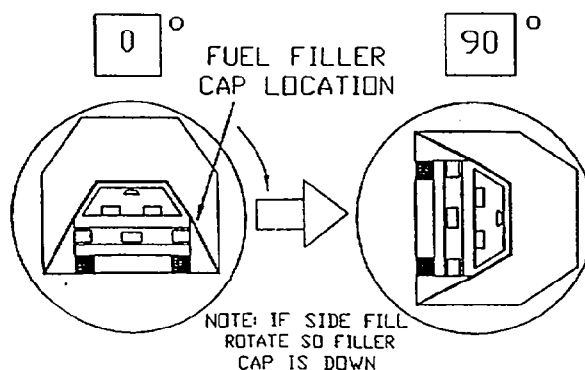
DATA SHEET 16

FMVSS 301 STATIC ROLLOVER TEST DATA

Vehicle Year/Make/Model/Body Style: 1997/Chevrolet/Lumina/4-Door

Vehicle NHTSA No.: MV0114 Test Date: February 19, 1997

TEST PHASE: 0° - 90°



DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time = 2 minutes 46 seconds

(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time = 5 minutes 0 seconds

TOTAL TIME = 7 minutes 46 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

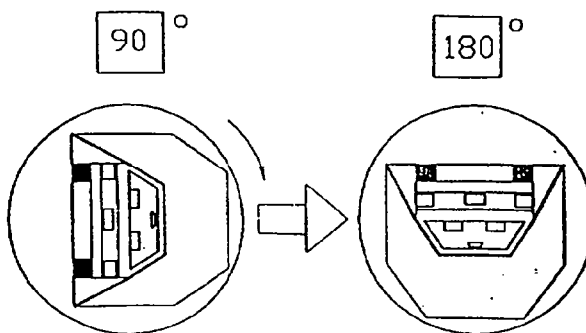
DATA SHEET 16

FMVSS 301 STATIC ROLLOVER TEST DATA (Cont'd)

Vehicle Year/Make/Model/Body Style: 1997/Chevrolet/Lumina/4-Door

Vehicle NHTSA No.: MV0114 Test Date: February 19, 1997

TEST PHASE: 90° - 180°



DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time = 2 minutes 34 seconds

(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time = 5 minutes 0 seconds

TOTAL TIME = 7 minutes 34 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

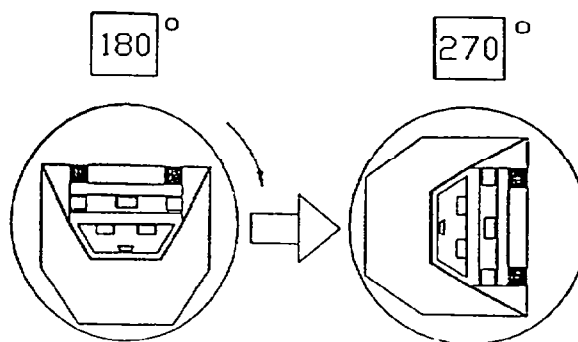
DATA SHEET 16

FMVSS 301 STATIC ROLLOVER TEST DATA (Cont'd)

Vehicle Year/Make/Model/Body Style: 1997/Chevrolet/Lumina/4-Door

Vehicle NHTSA No.: MV0114 Test Date: February 19, 1997

TEST PHASE: 180° - 270°



DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time = 2 minutes 15 seconds

(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time = 5 minutes 0 seconds

TOTAL TIME = 7 minutes 15 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	4.66 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): Fuel line on left side of engine compartment.

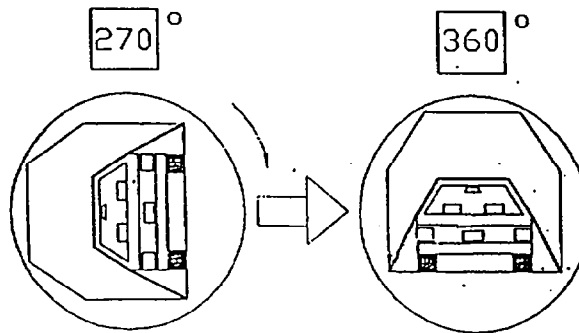
DATA SHEET 16

FMVSS 301 STATIC ROLLOVER TEST DATA

Vehicle Year/Make/Model/Body Style: 1997/Chevrolet/Lumina/4-Door

Vehicle NHTSA No.: MV0114 Test Date: February 19, 1997

TEST PHASE: 270° - 360°



DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time = 2 minutes 49 seconds

(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time = 5 minutes 0 seconds

TOTAL TIME = 7 minutes 49 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	0.19 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): Fuel line on left side of engine compartment.

APPENDIX A - PHOTOGRAPHS

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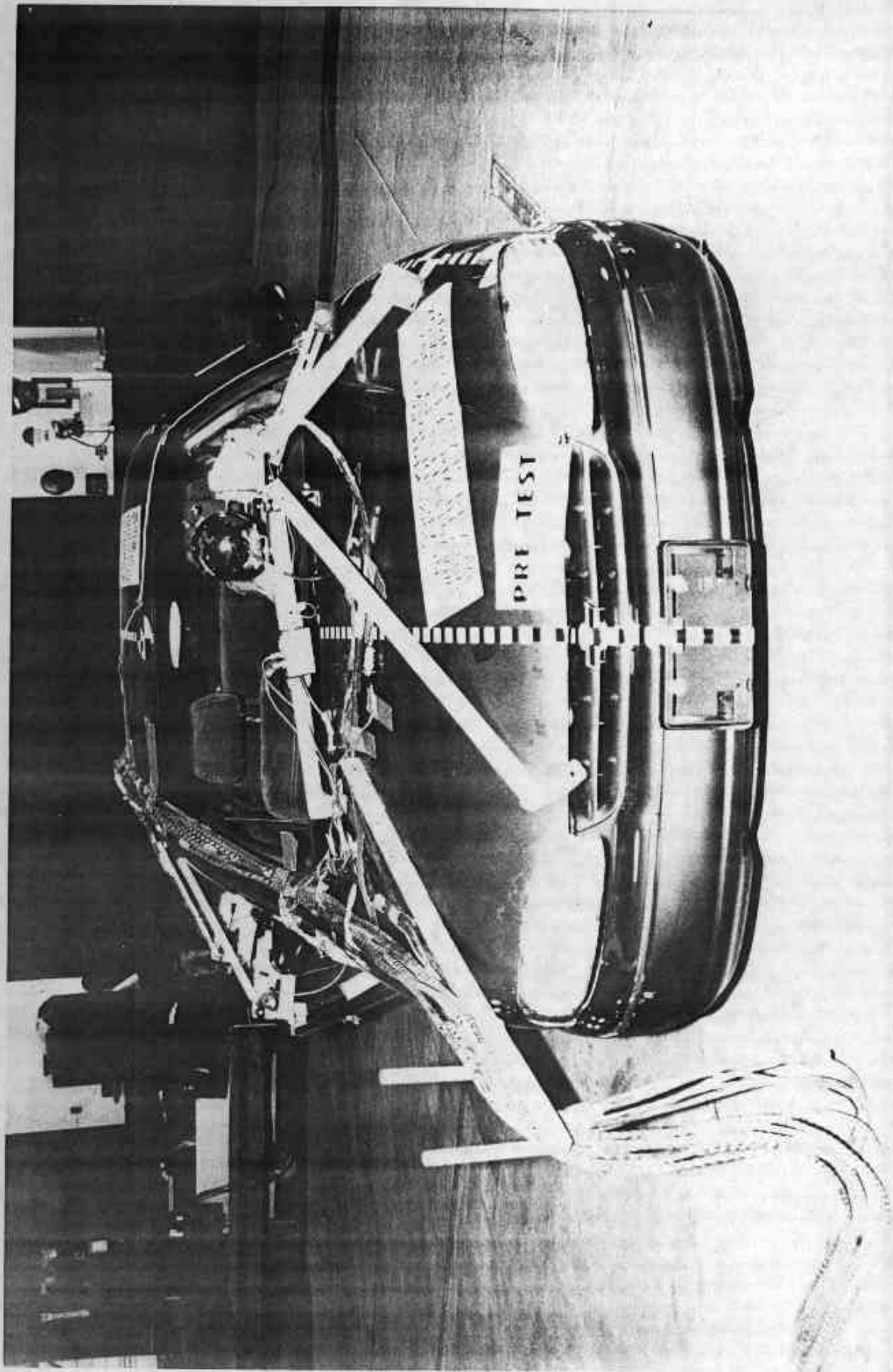


Photo No. A-1 - Pre-Test Front View of Test Vehicle

A-1

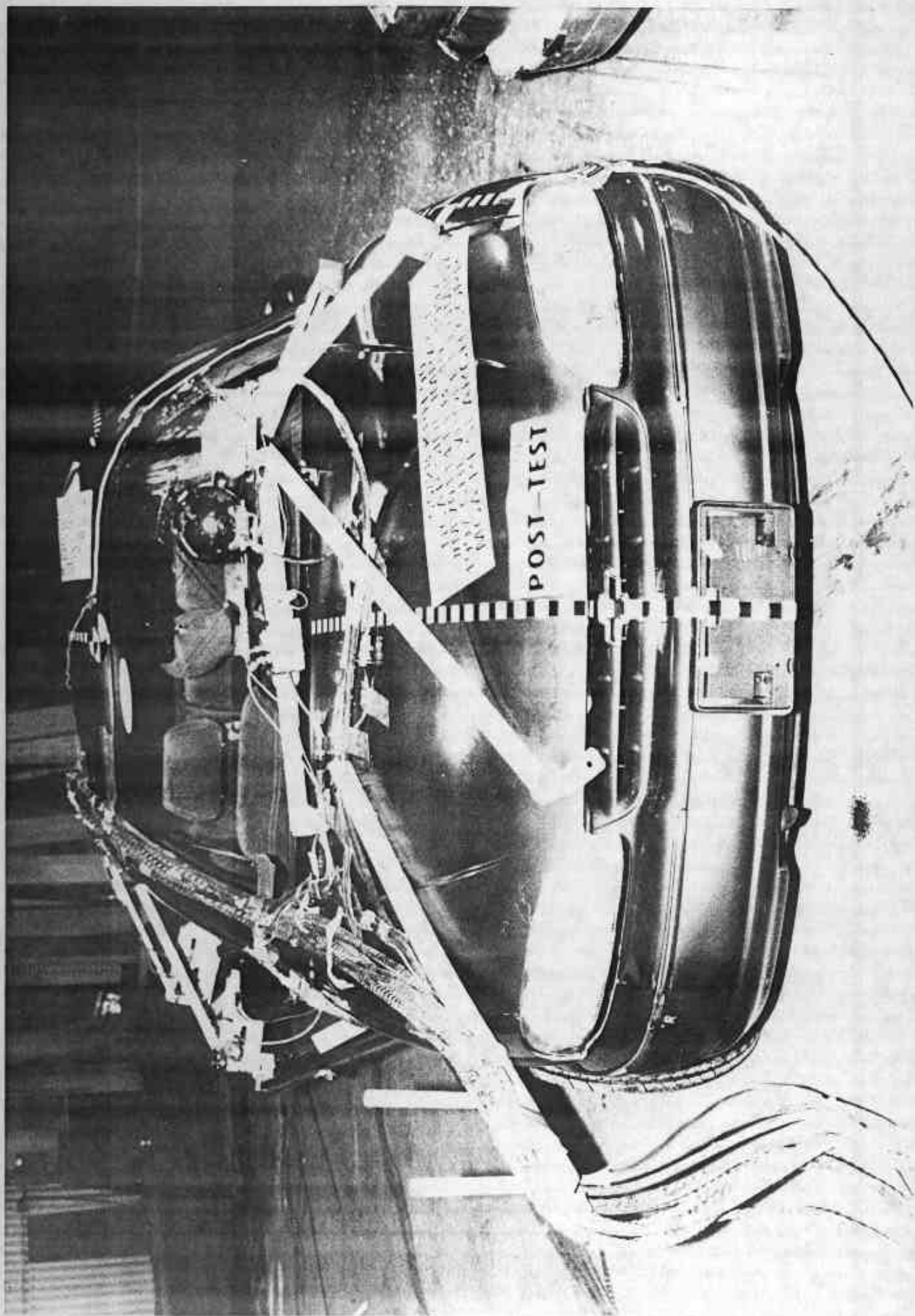


Photo No. A-2 - Post-Test Front View of Test Vehicle

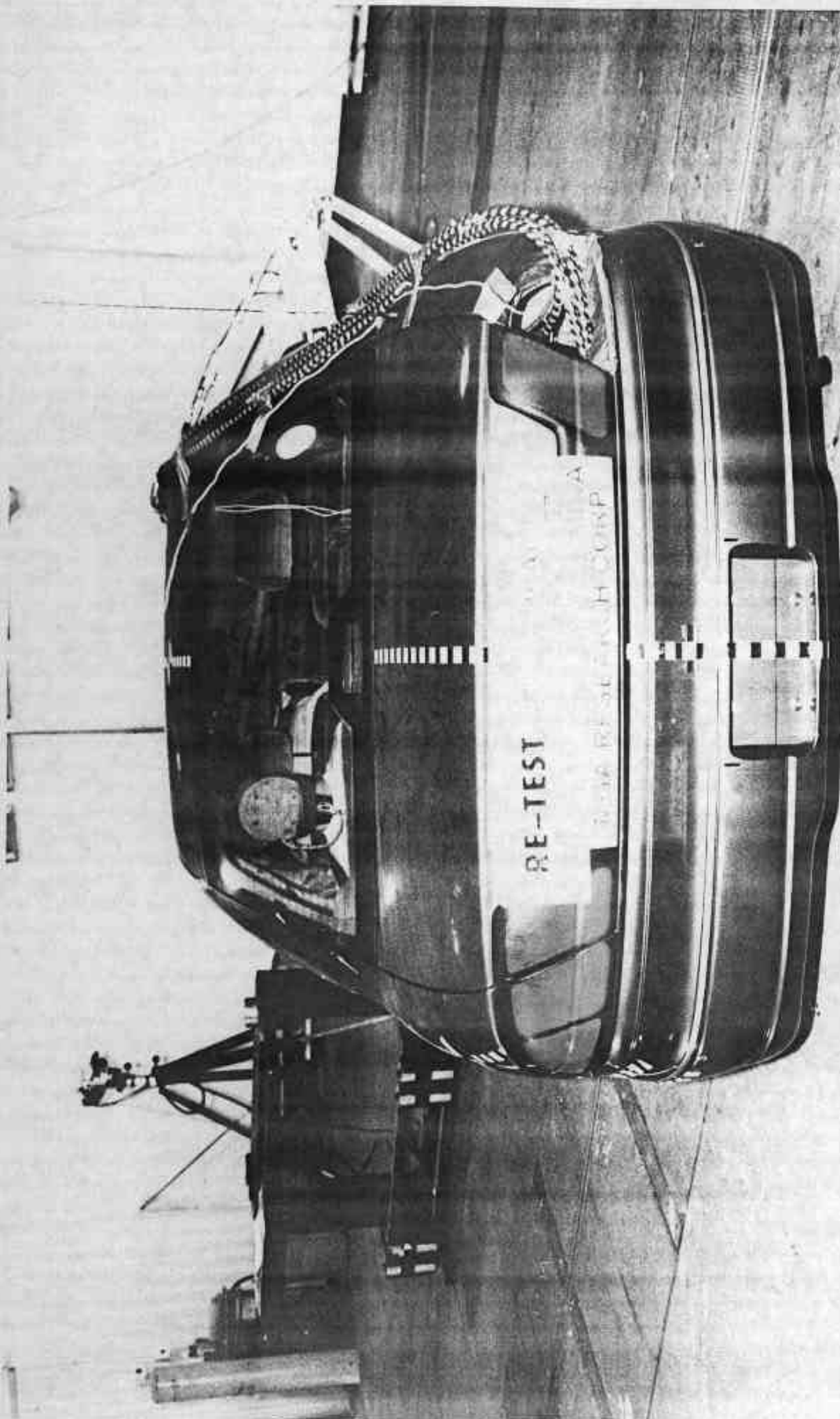


Photo No. A-3 - Pre-Test Rear View of Test Vehicle

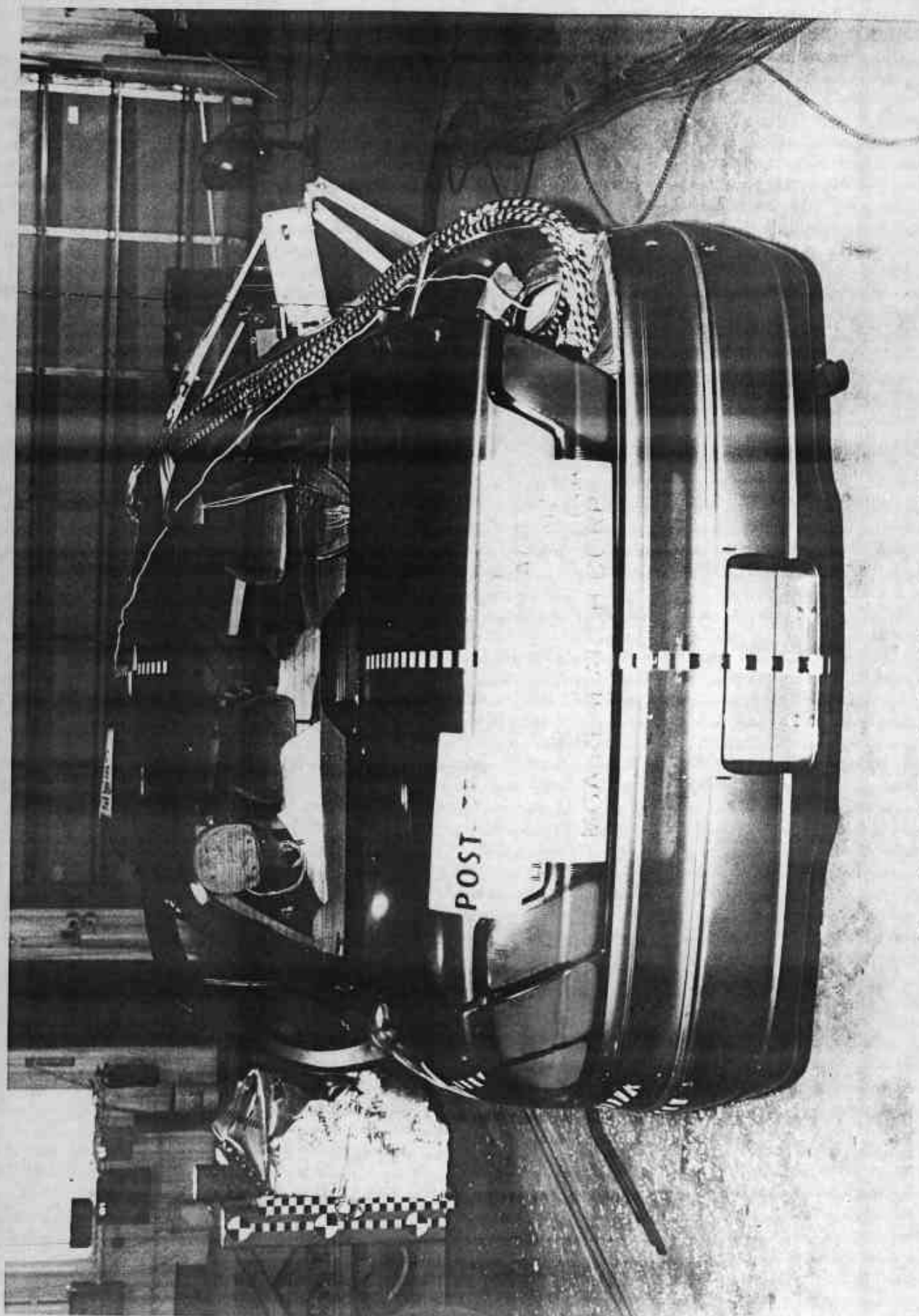
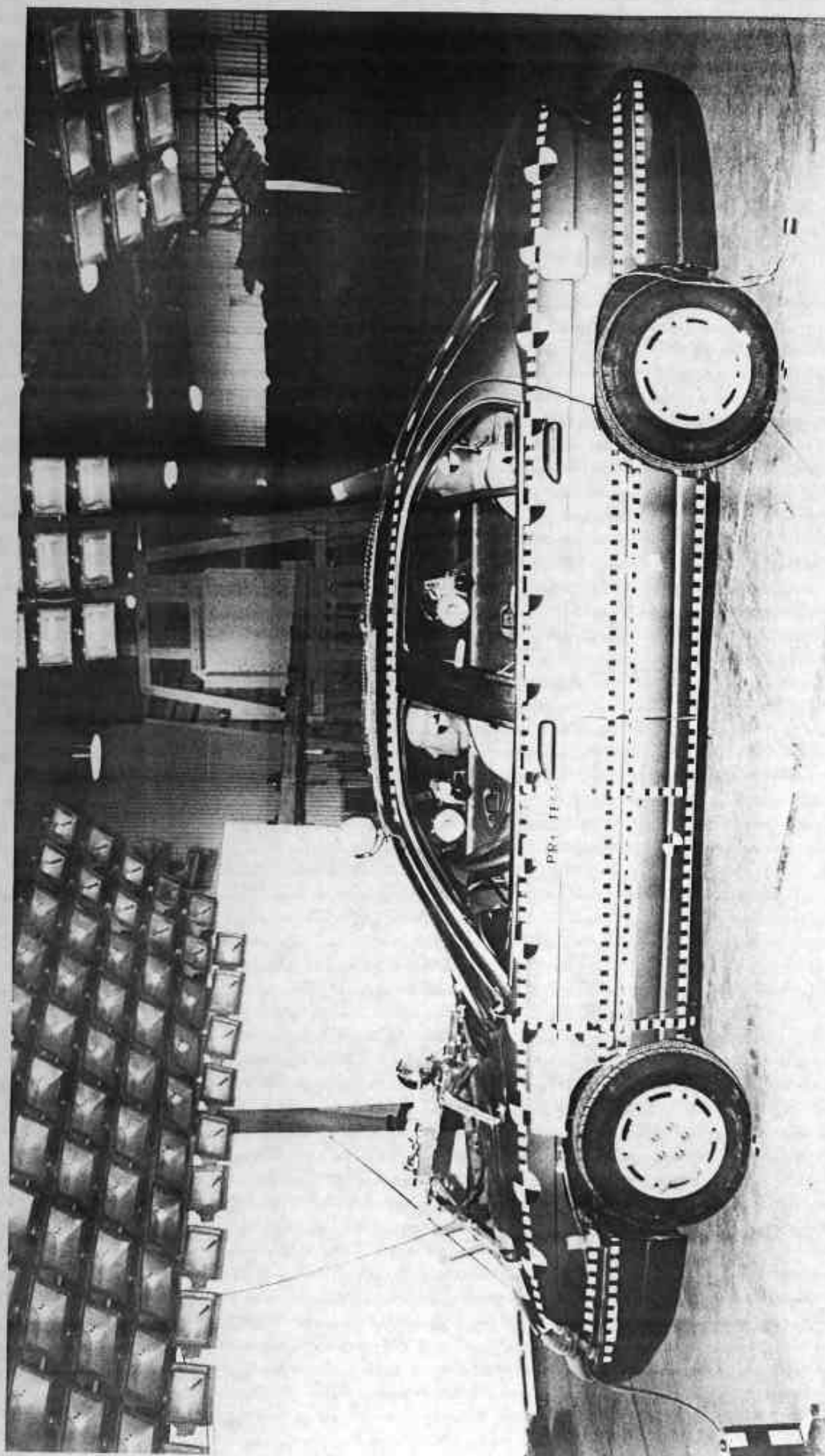


Photo No. A-4 - Post-Test Rear View of Test Vehicle



A-5

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

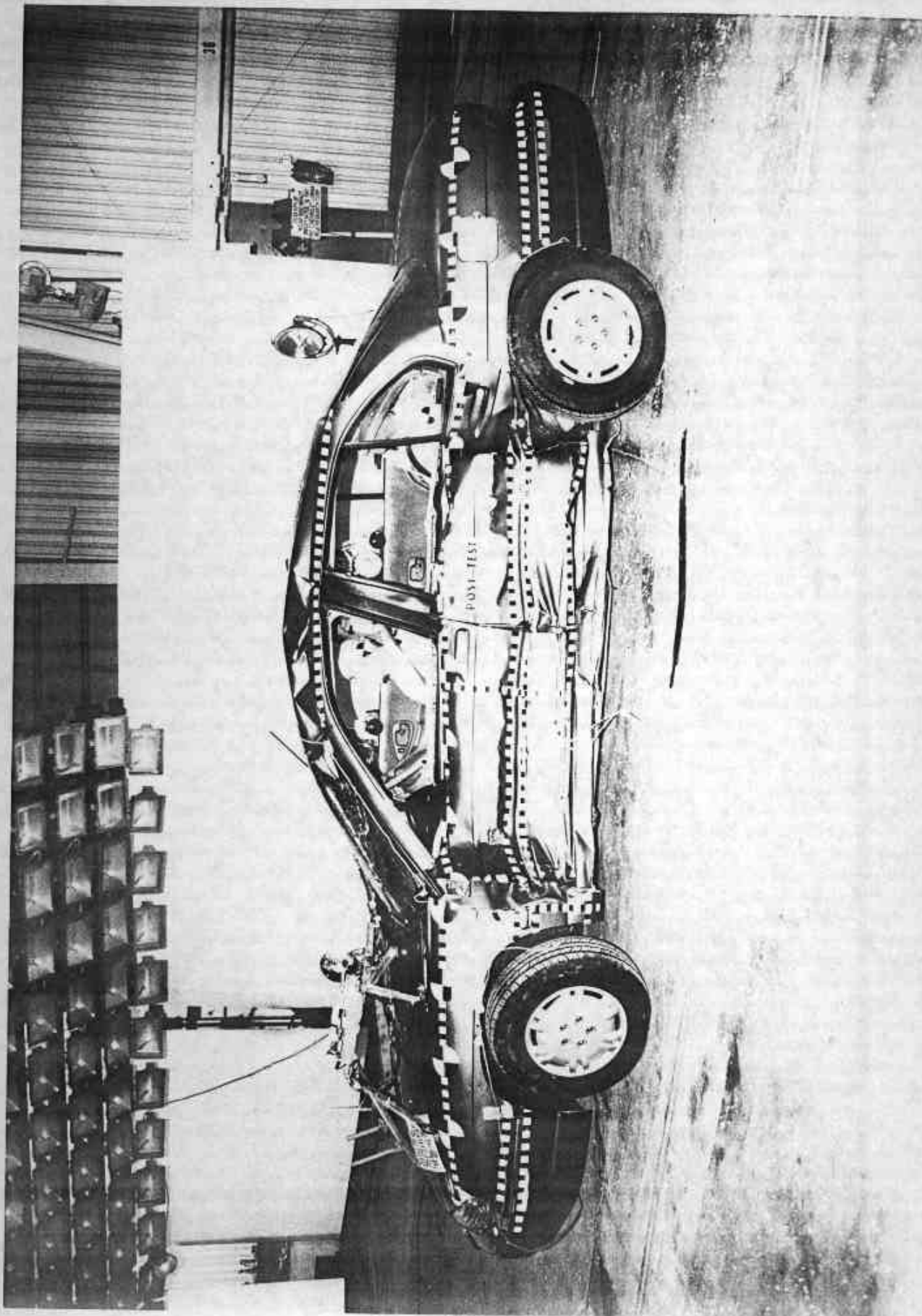


Photo No. A-6 - Post-Test Left Side View of Test Vehicle

A-6

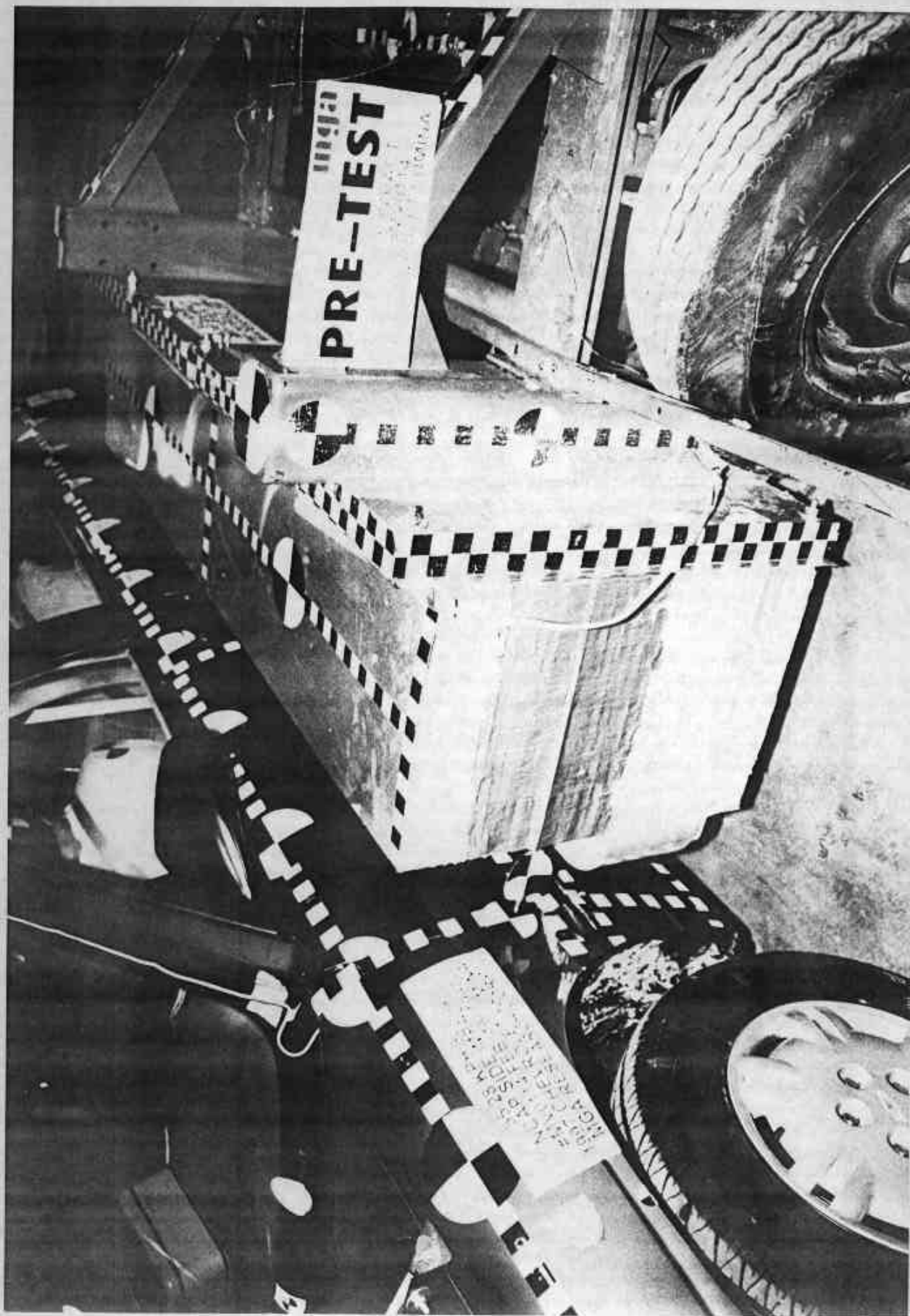


Photo No. A-7 - Pre-Test MDB Positioned Against Vehicle (left side)

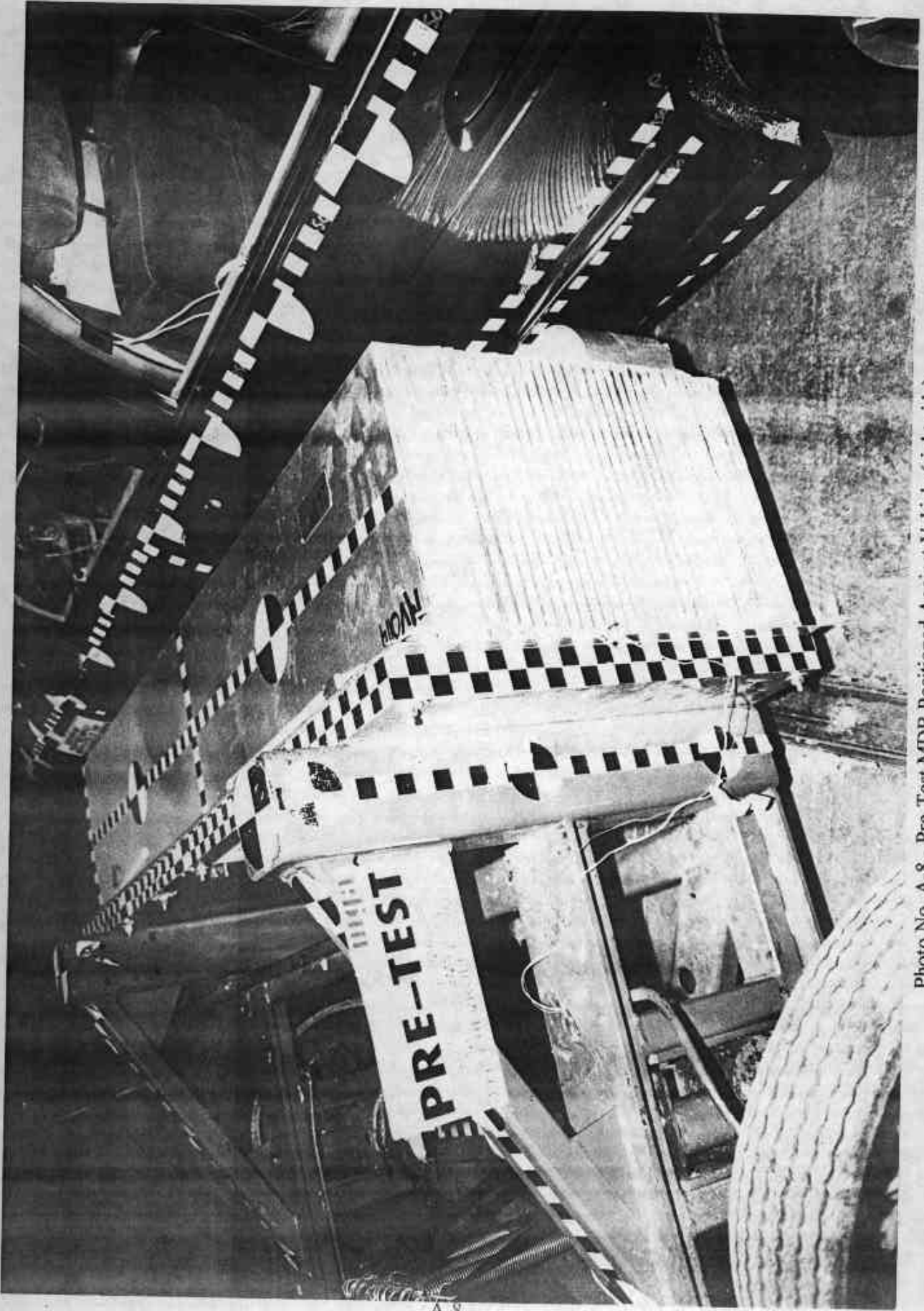


Photo No. A-8 - Pre-Test MDB Positioned Against Vehicle (right side)

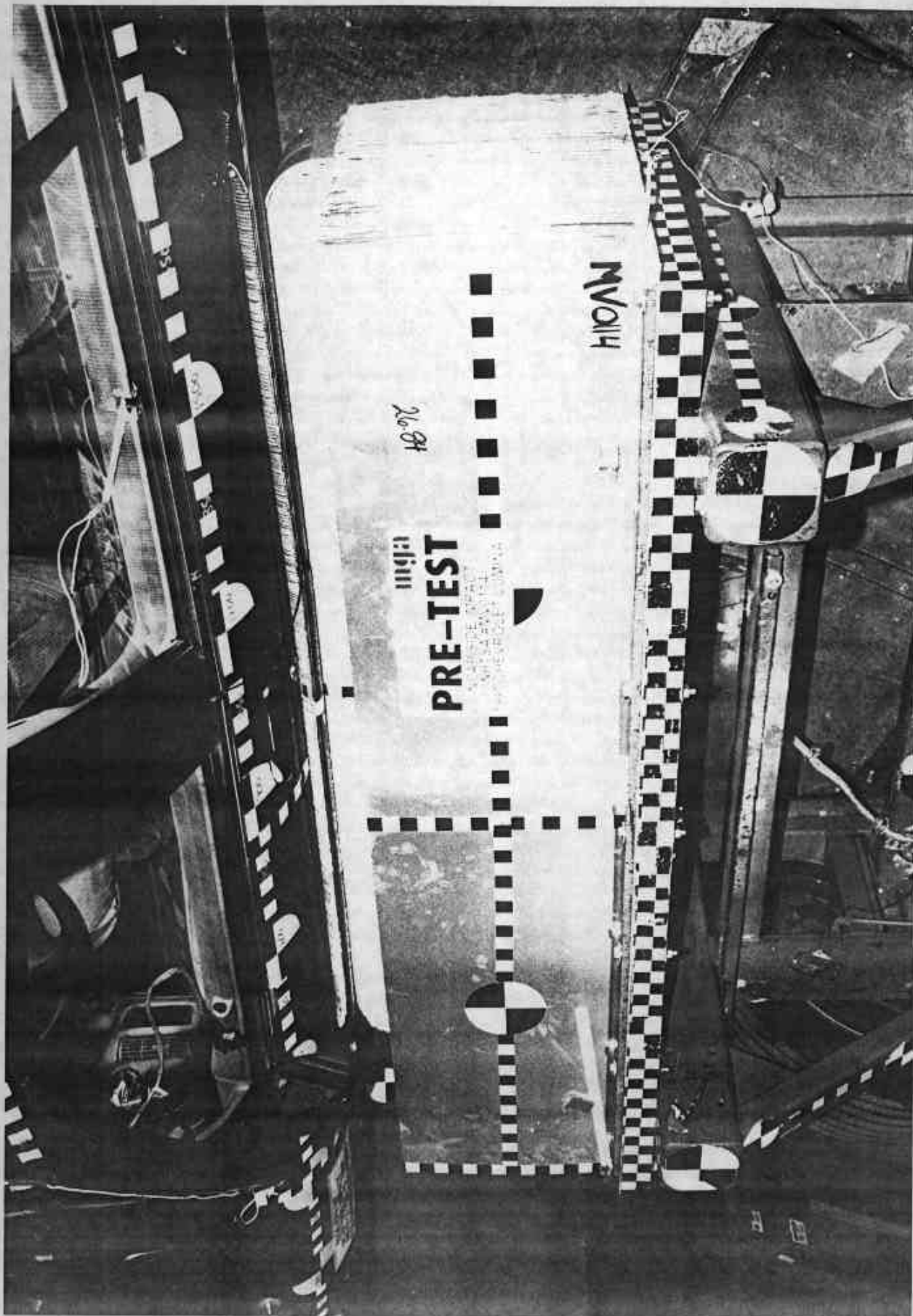


Photo No. A-9 - Pre-Test MDB Positioned Against Vehicle Overhead View

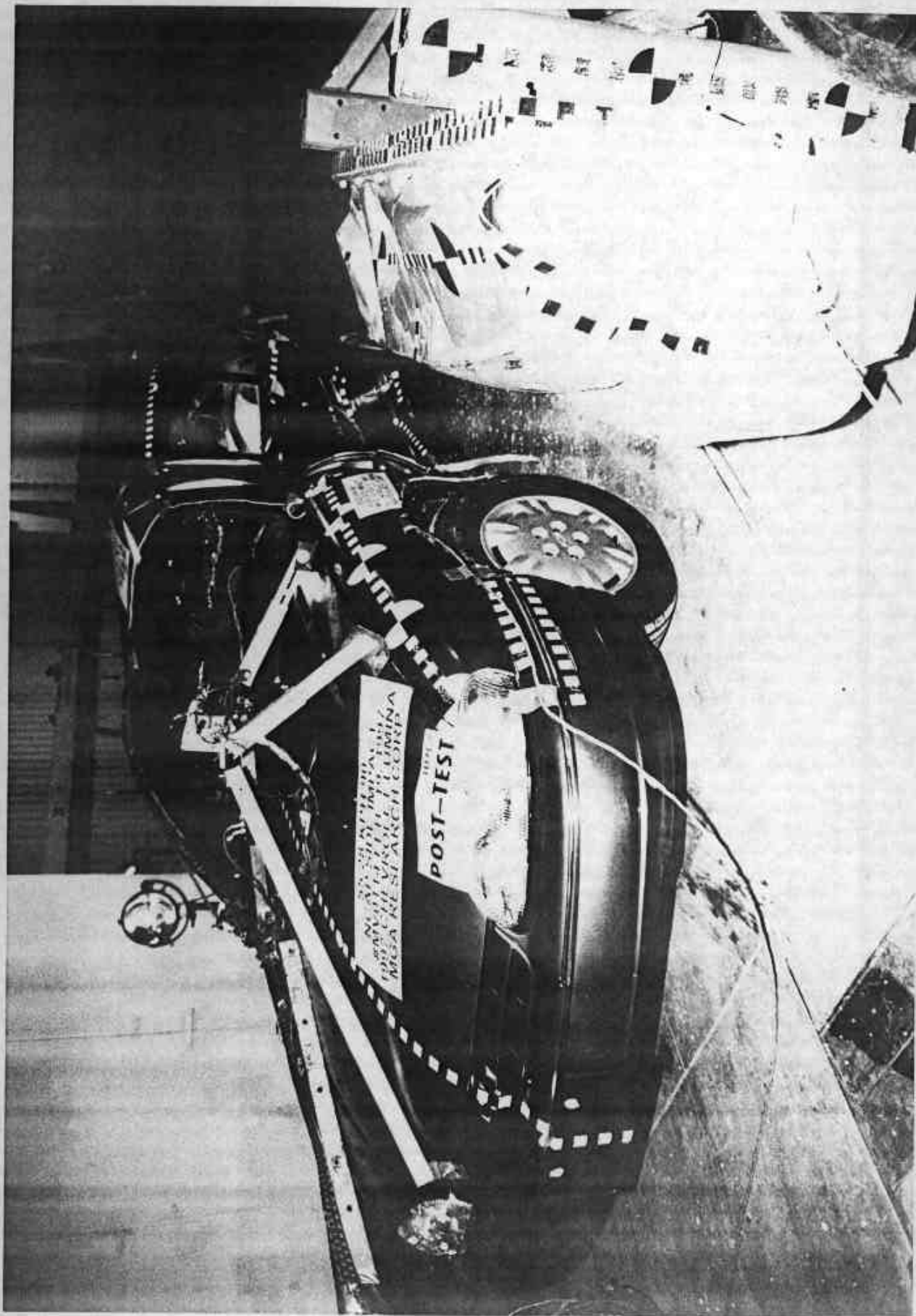


Photo No. A-10 - Post-Test MDB Positioned Against Vehicle (left side)

A-10

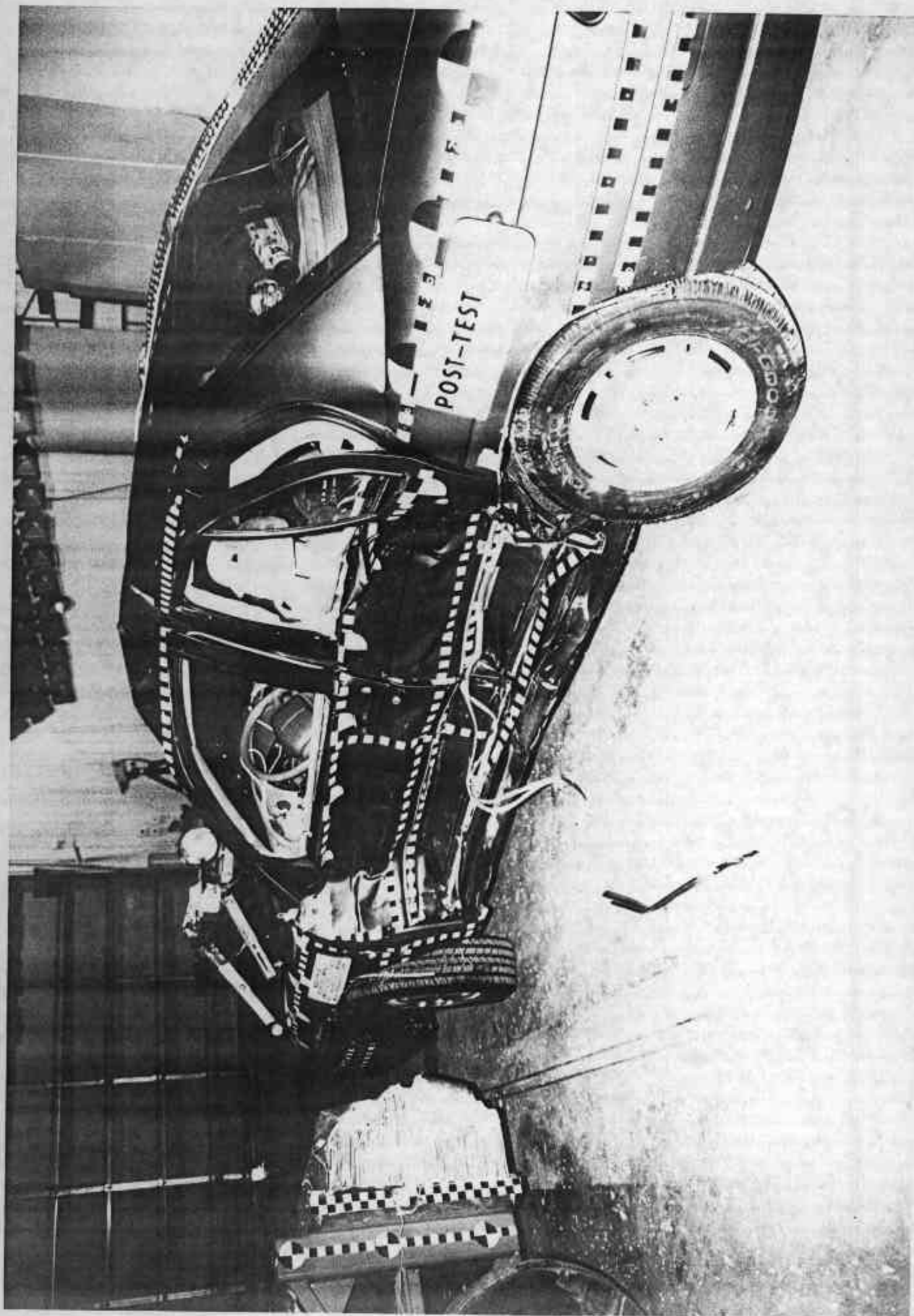


Photo No. A-11 - Post-Test MDB Positioned Against Vehicle (right side)

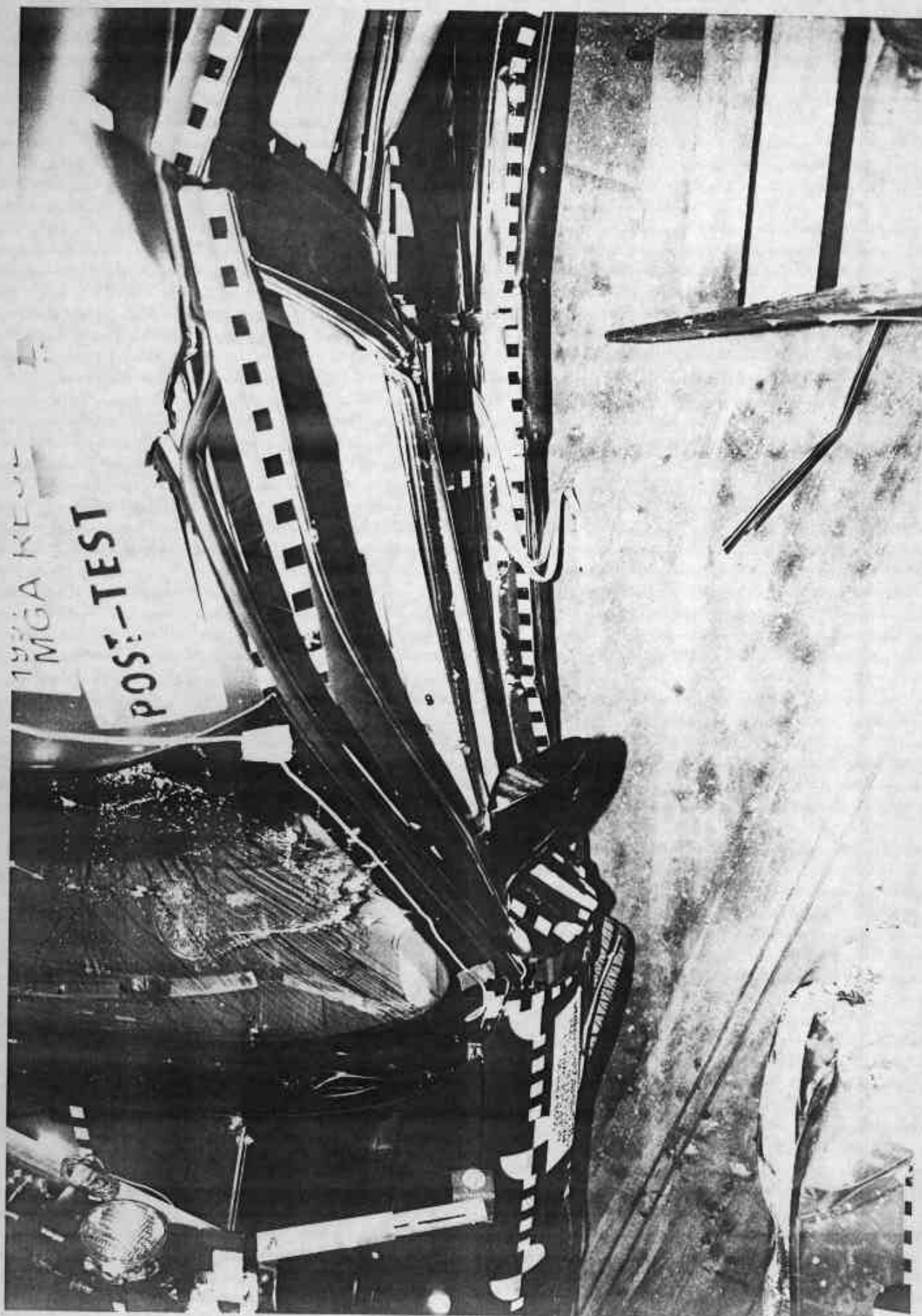


Photo No. A-12 - Post-Test MDB Positioned Against Vehicle Overhead View

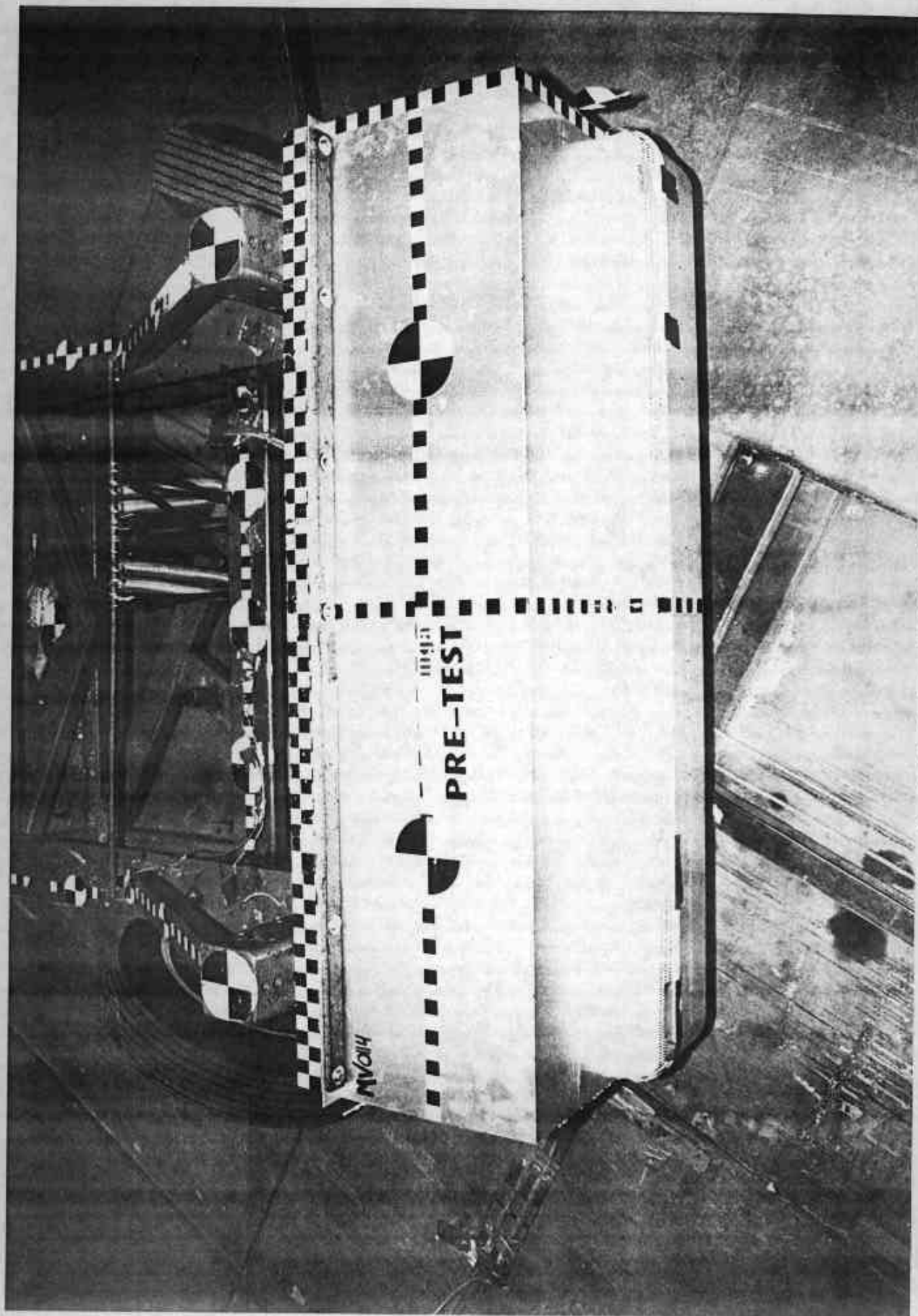


Photo No. A-13 - Pre-Test MDB Top View

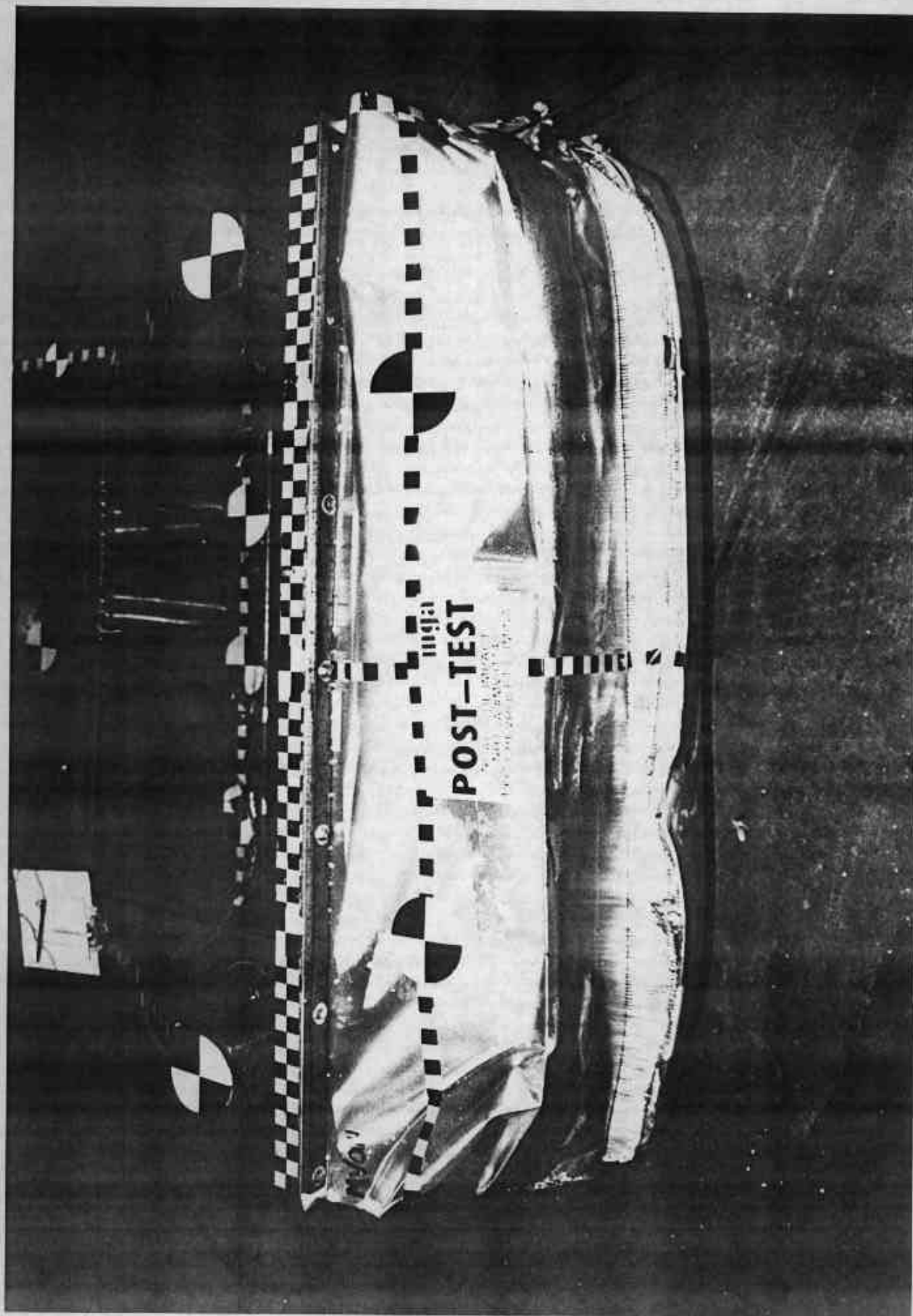


Photo No. A-14 - Post-Test MDB Top View

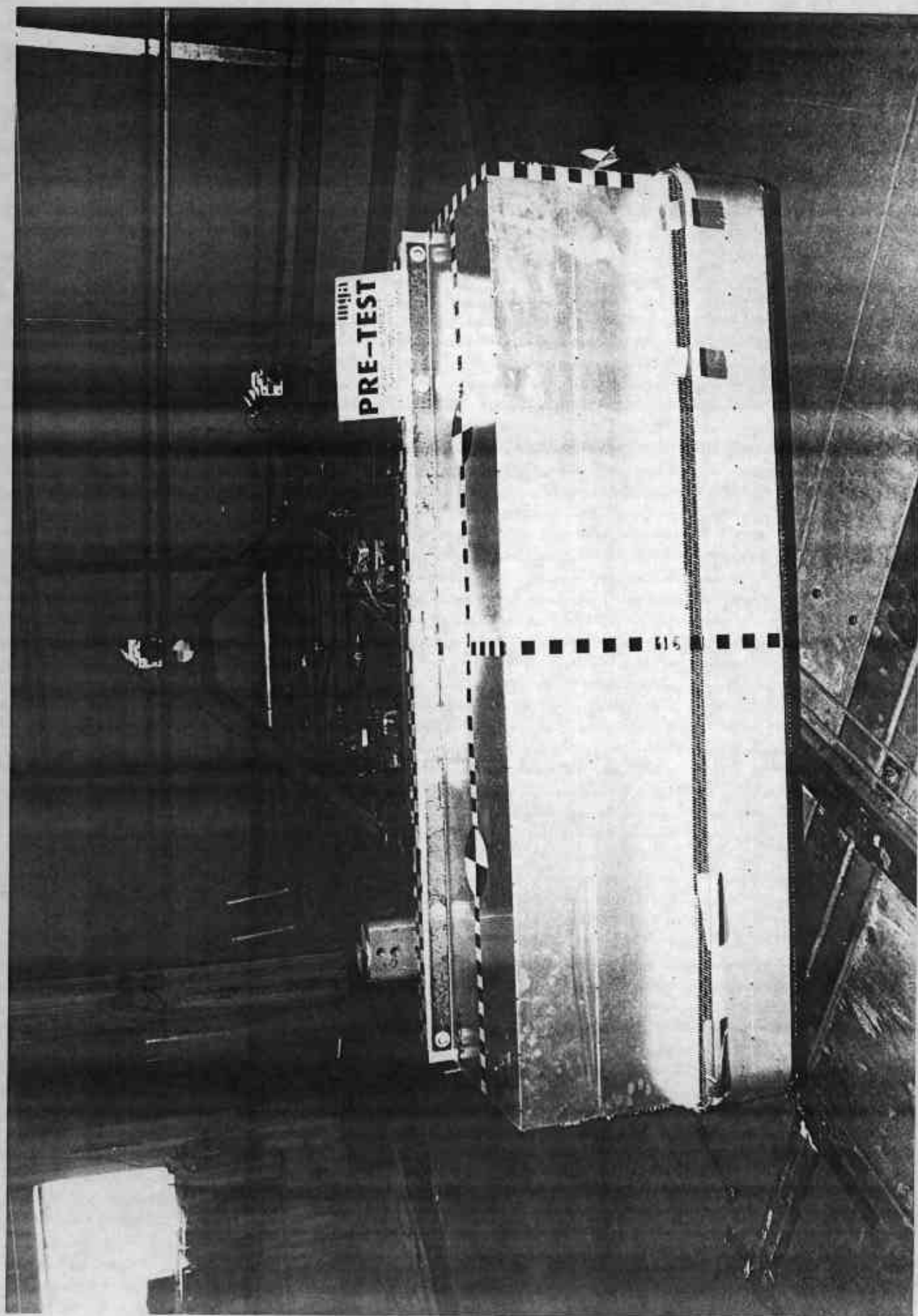


Photo No. A-15 - Pre-Test MDB Front View

A-15

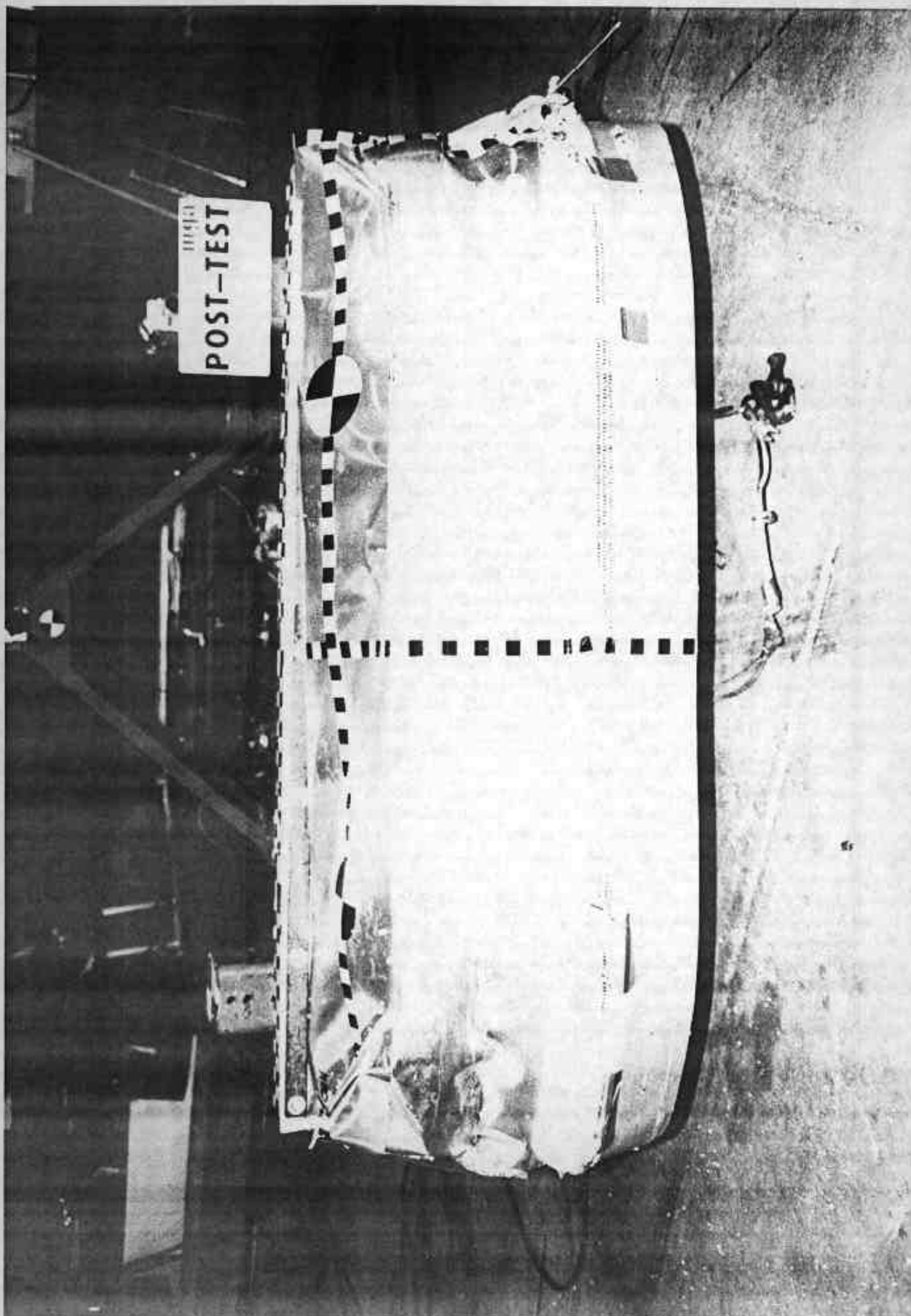
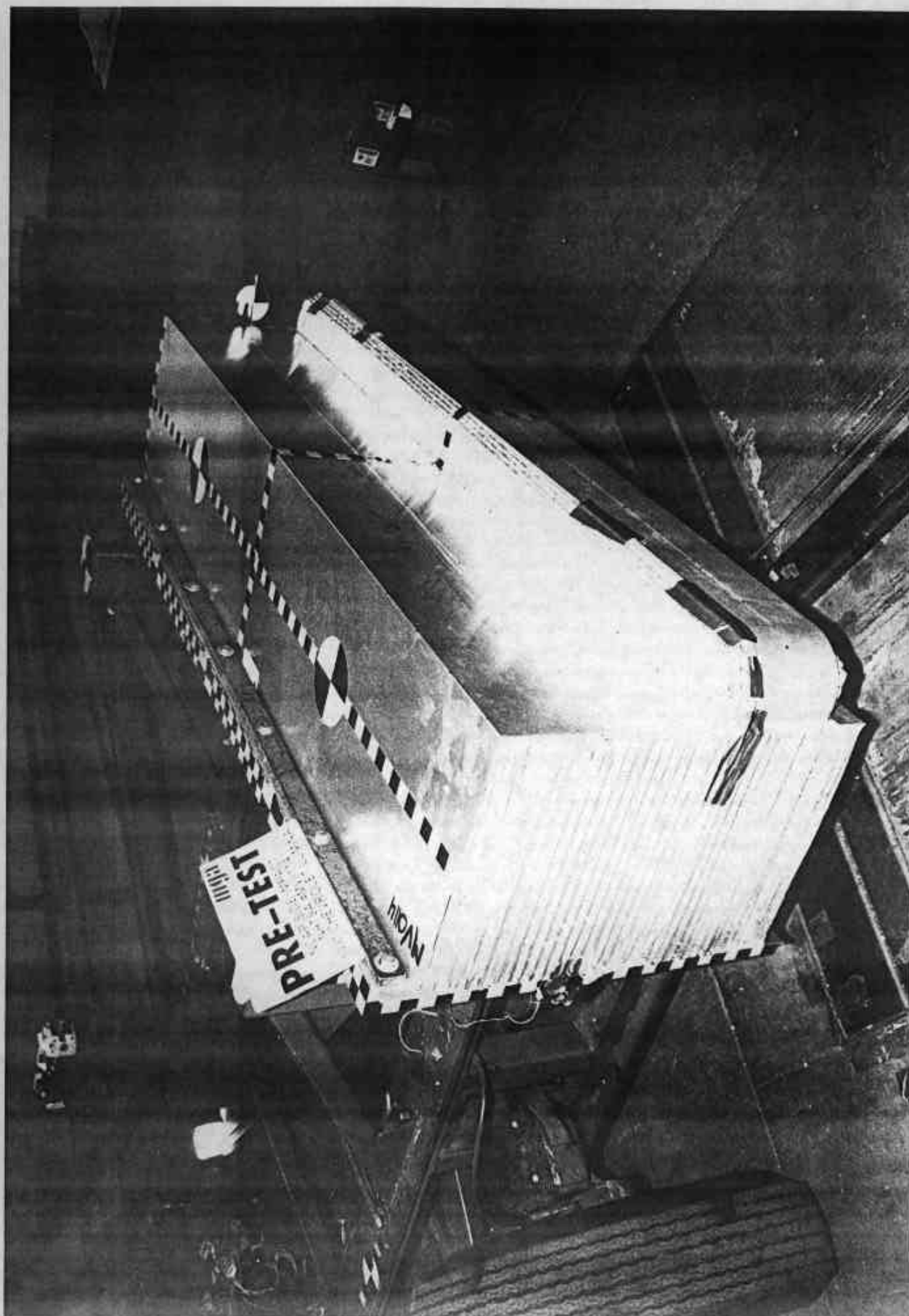


Photo No. A-16 - Post-Test MDB Front View

A-16



A-17

Photo No. A-17 - Pre-Test MDB Right Side View



Photo No. A-18 - Post-Test MDB Right Side View

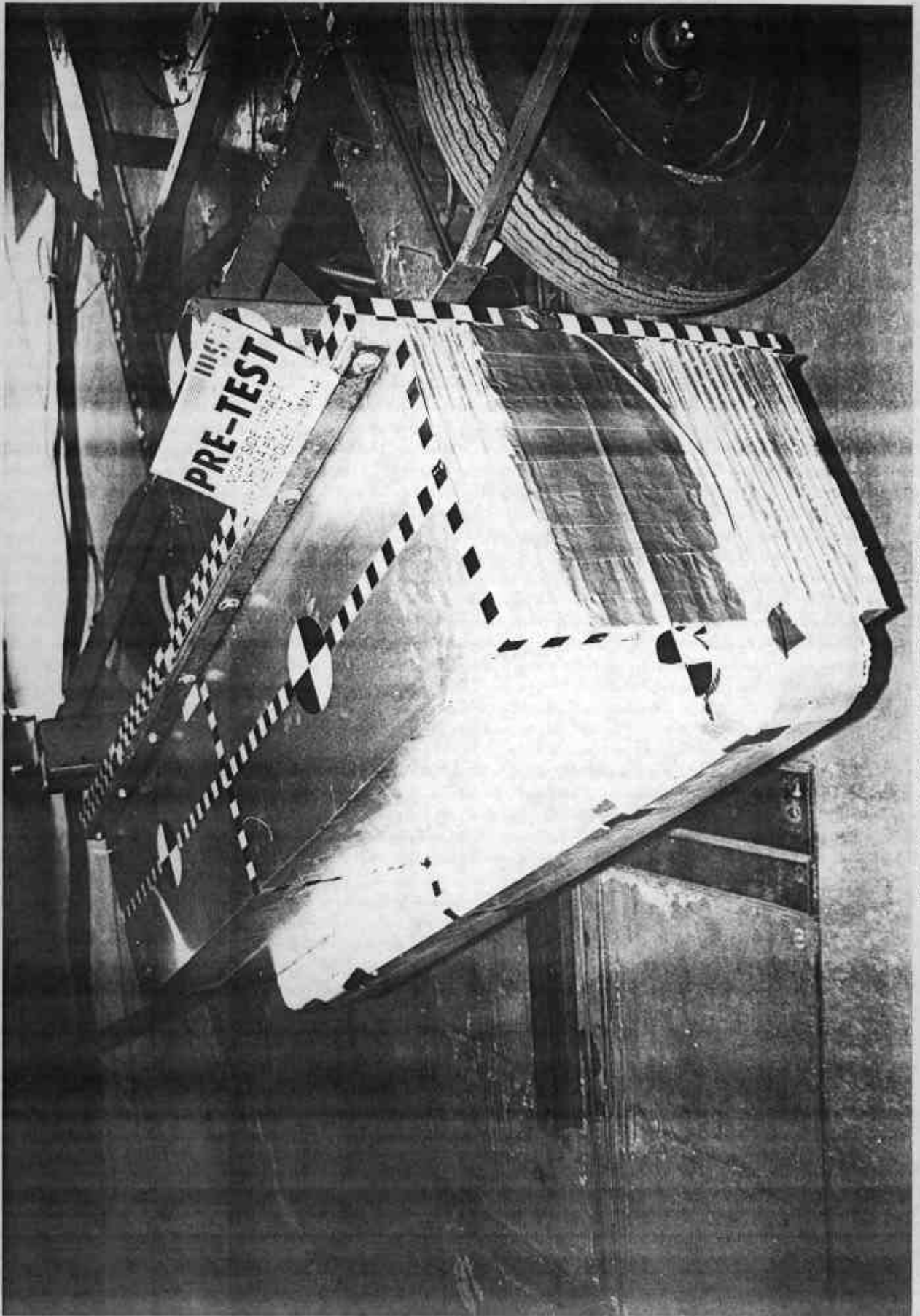


Photo No. A-19 - Pre-Test MDB Left Side View



A-21

Photo No. A-21 - Pre-Test Driver Dummy Right Side View



Photo No. A-22 - Post-Test Driver Dummy Right Side View

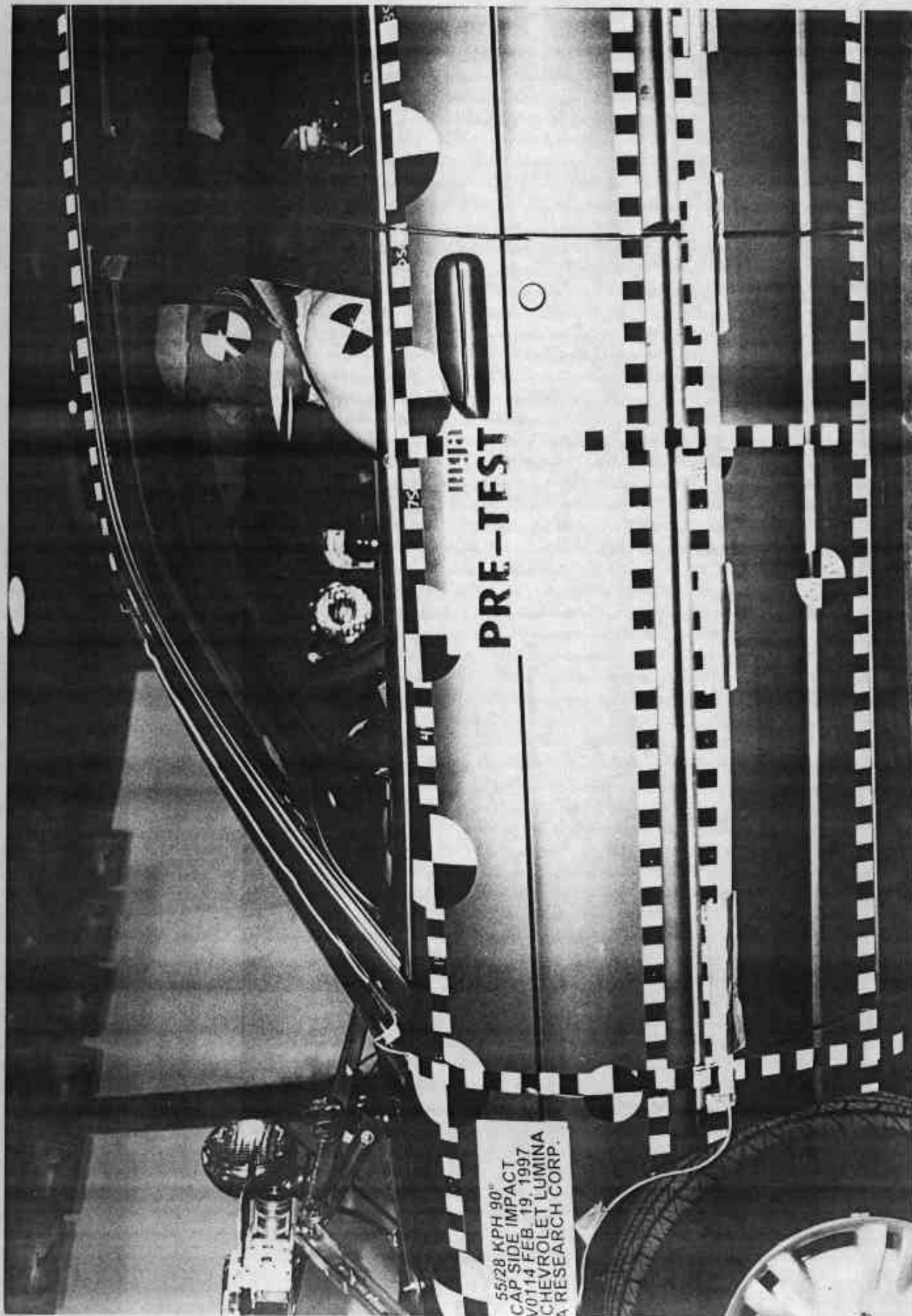


Photo No. A-23 - Pre-Test Driver Dummy Left Side View

A-23

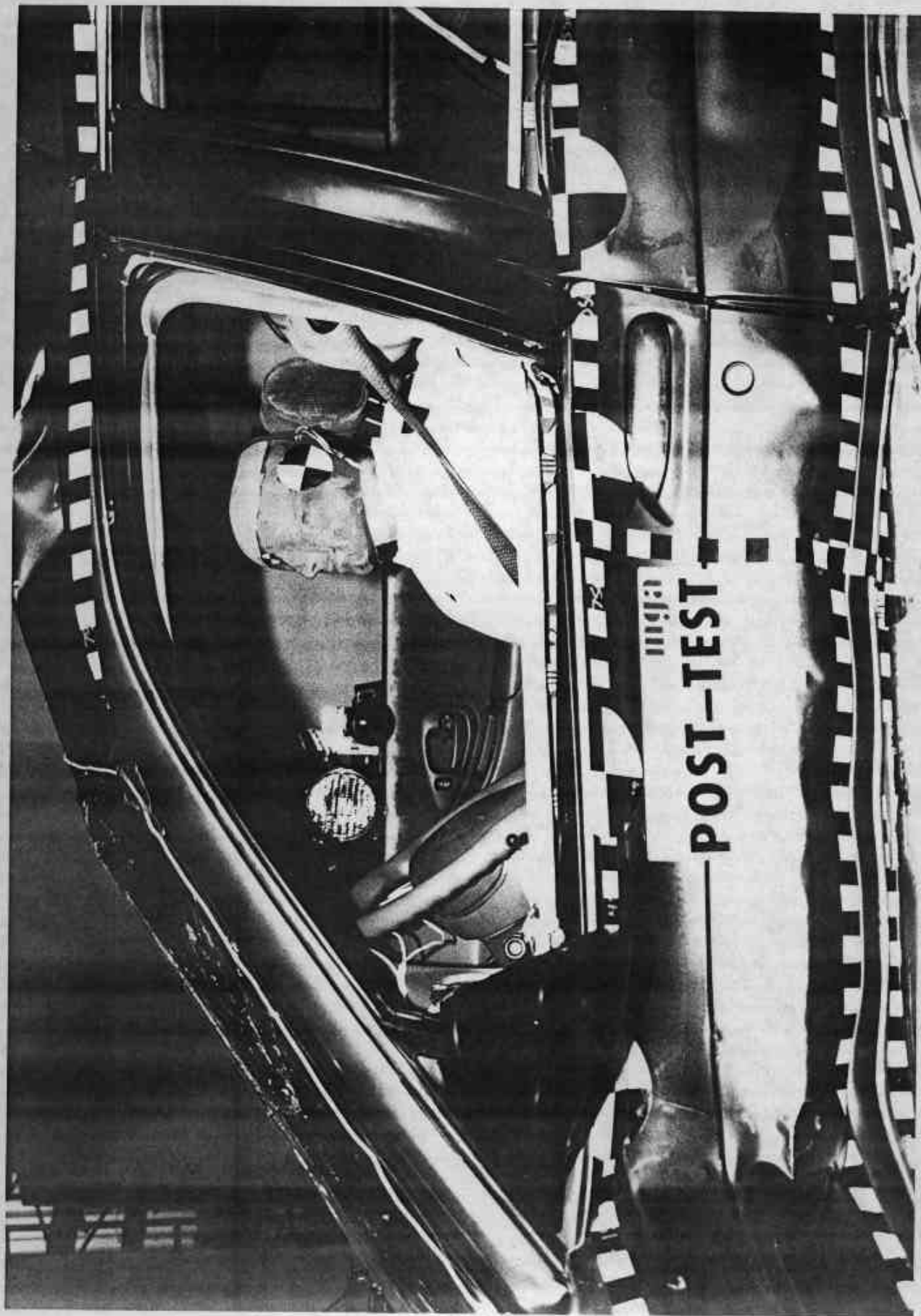


Photo No. A-24 - Post-Test Driver Dummy Left Side View

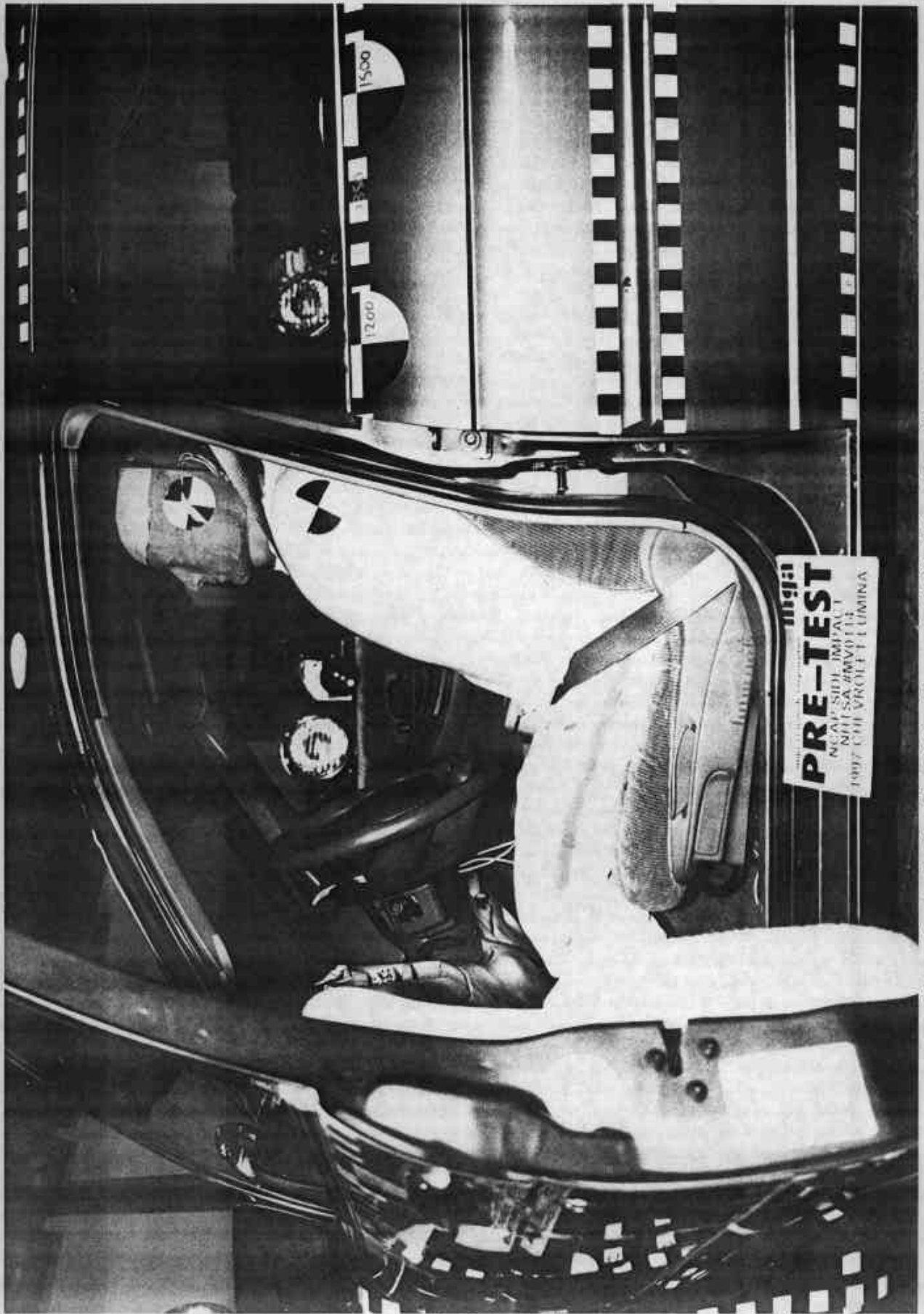
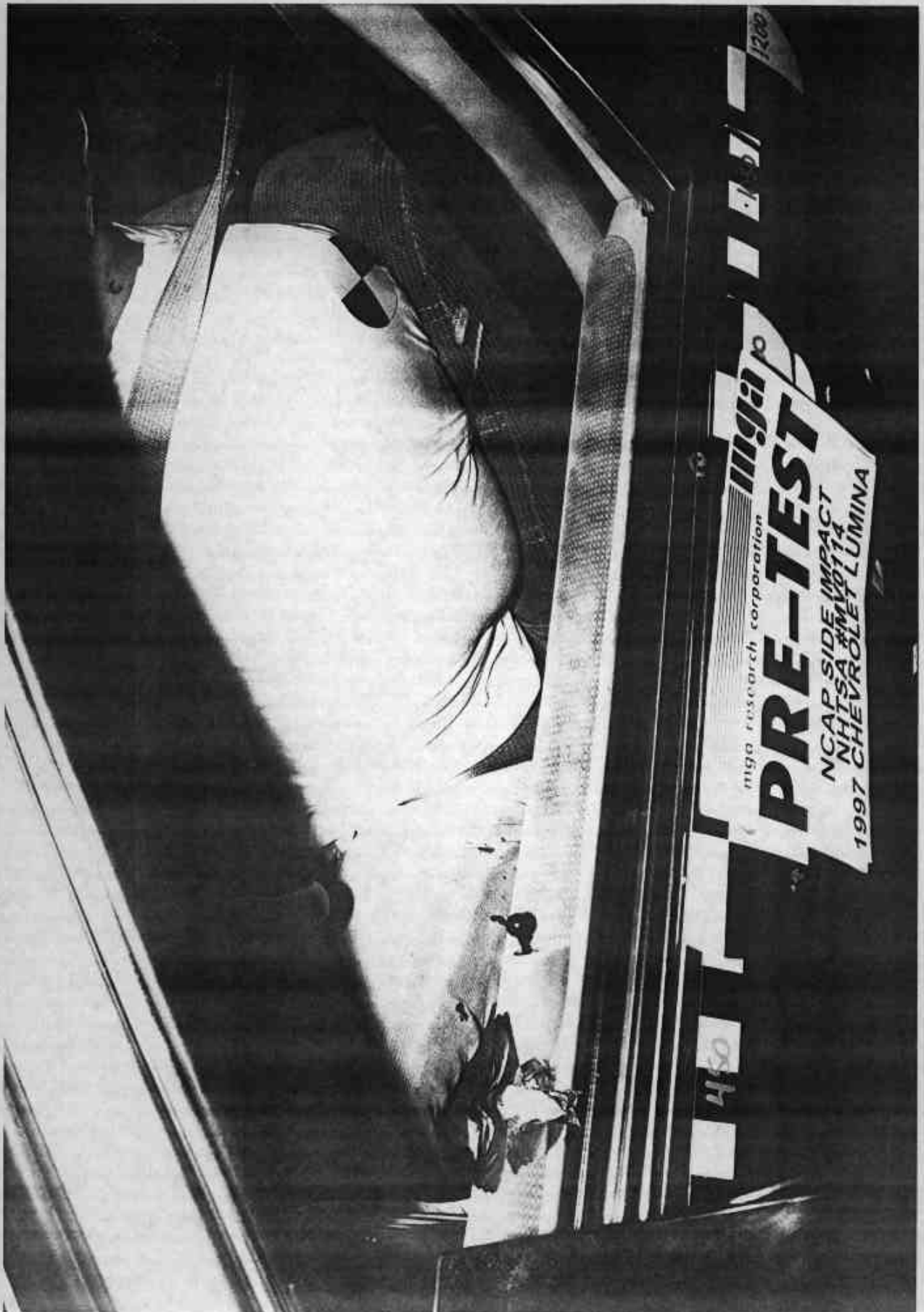


Photo No. A-25 - Pre-Test Driver Dummy Left Side View (Door Open)

A-25



A-26

Photo No. A-26 - Pre-Test Driver Dummy Shoulder and Door Top View



A-27

Photo No. A-27 - Post-Test Driver Dummy Shoulder and Door Top View



mga 11/1/97

PRE-TEST

NCAP SIDE IMPACT

NHTSA #MV0114

1997 CHEVROLET LUMINA

Photo No. A-28 - Pre-Test Driver Seat Position View



Photo No. A-29 - Post-Test Driver Dummy Contact



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

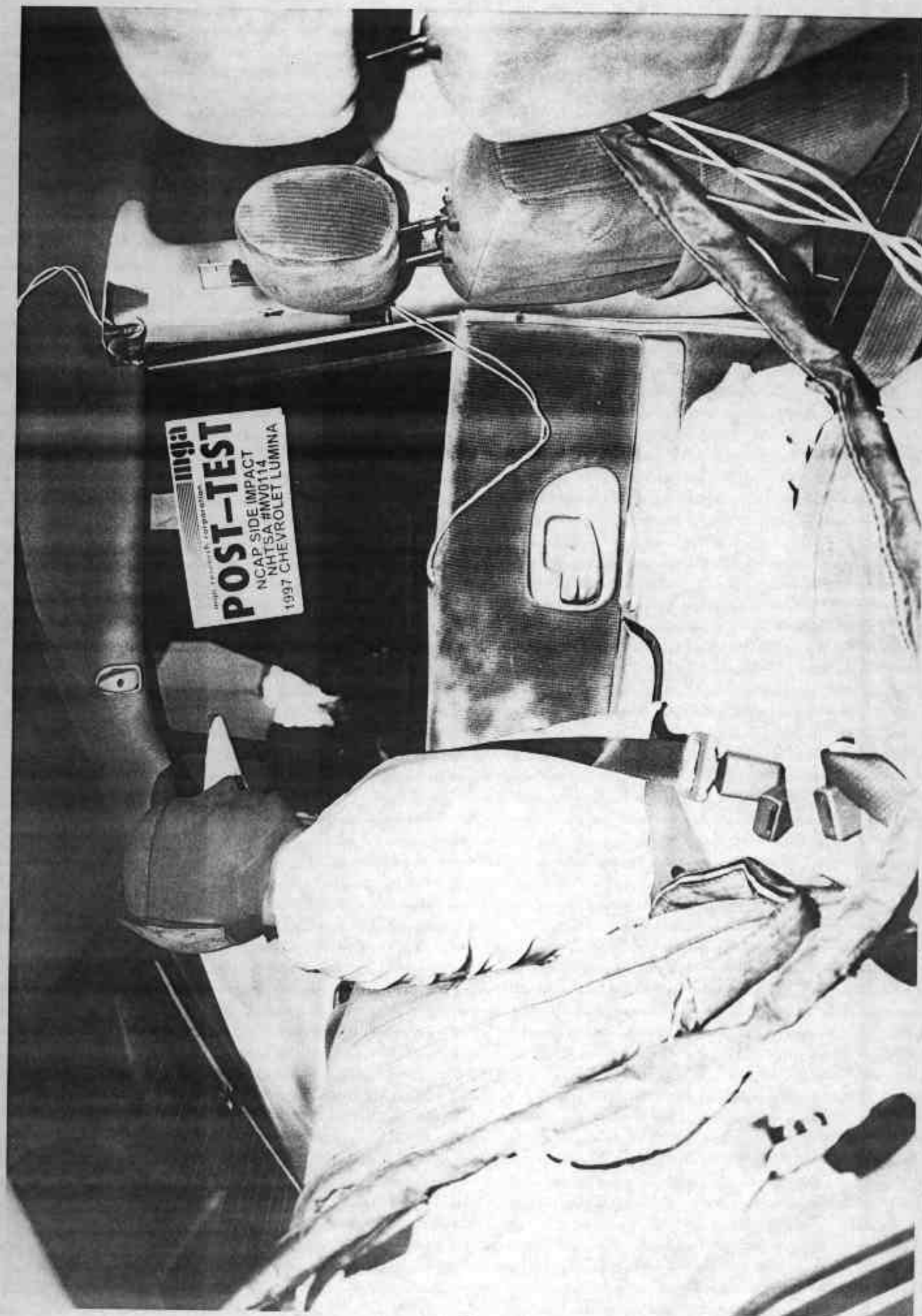


Photo No. A-31 - Post-Test Passenger Dummy Right Side View

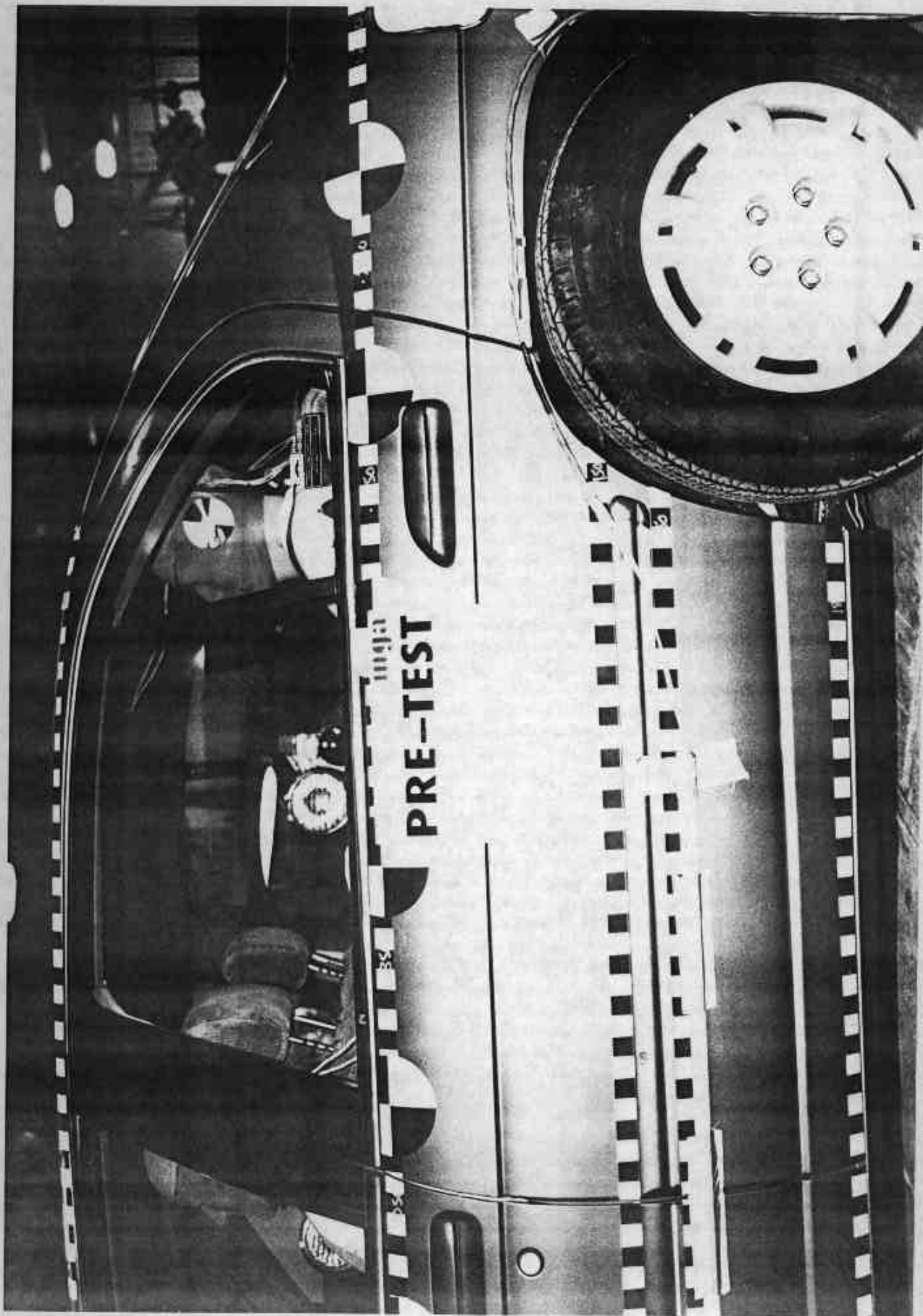
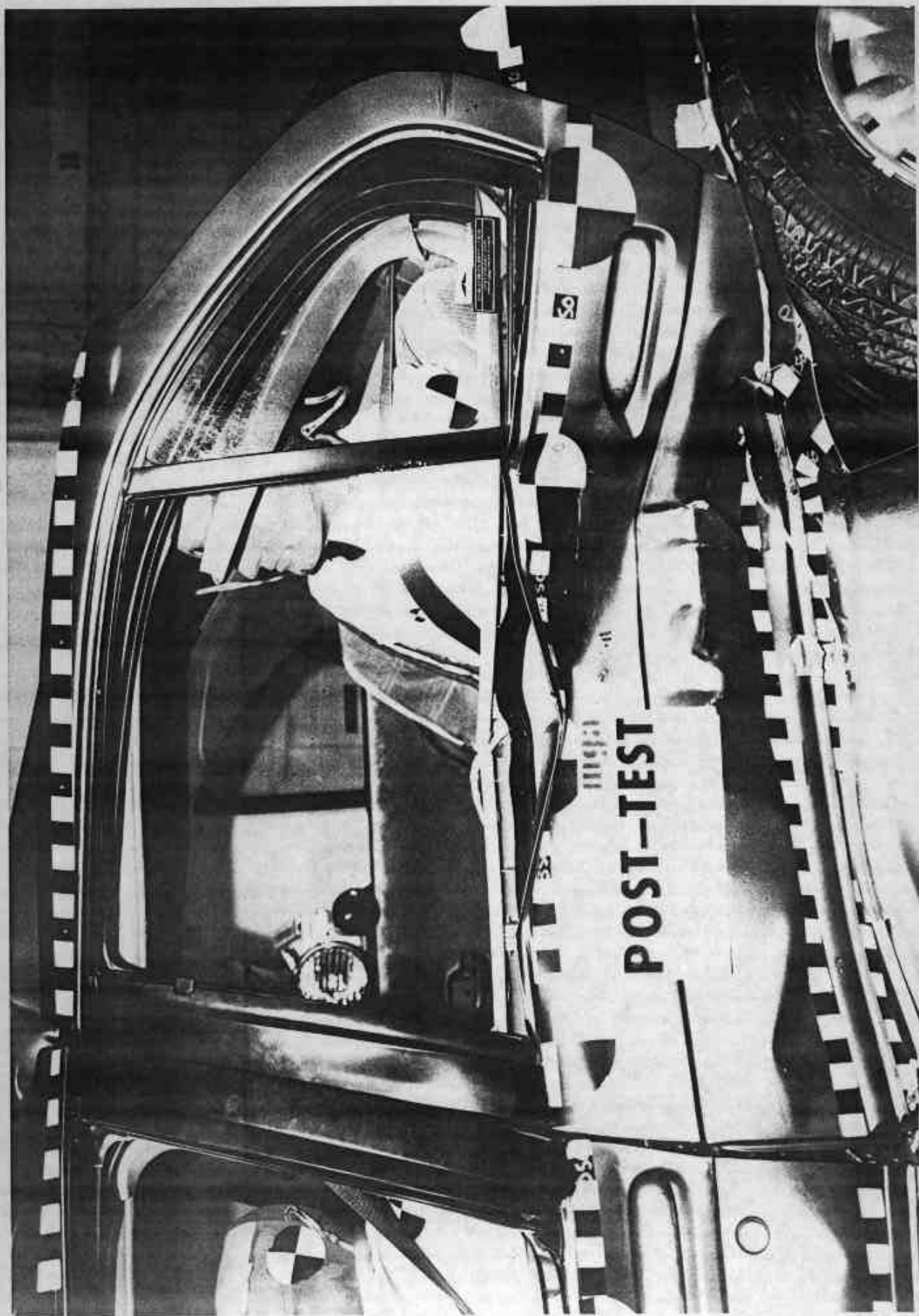


Photo No. A-32 - Pre-Test Passenger Dummy Left Side View

A-32



A-33

Photo No. A-33 - Post-Test Passenger Dummy Left Side View

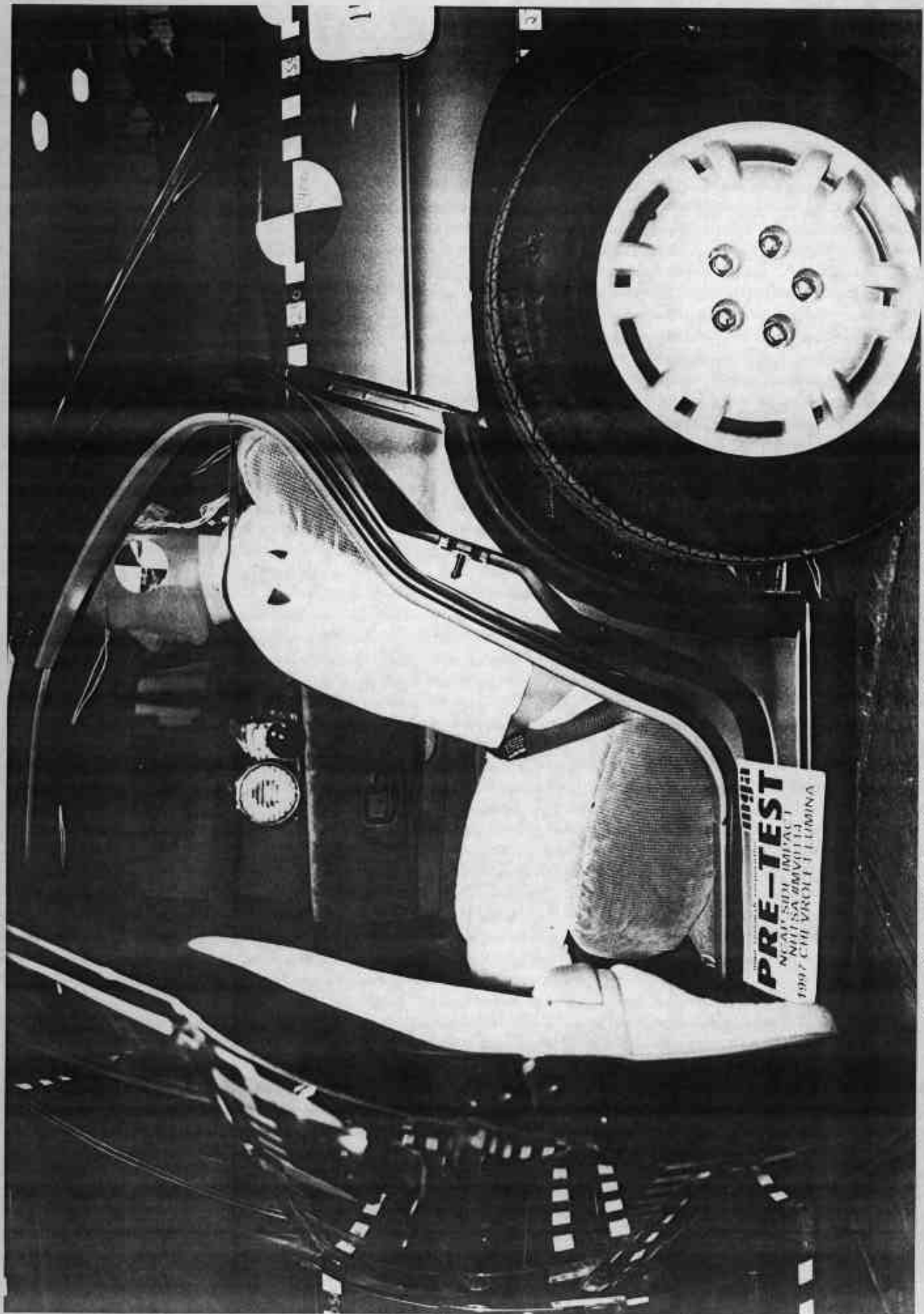


Photo No. A-34 - Pre-Test Passenger Dummy Left Side View (Door Open)

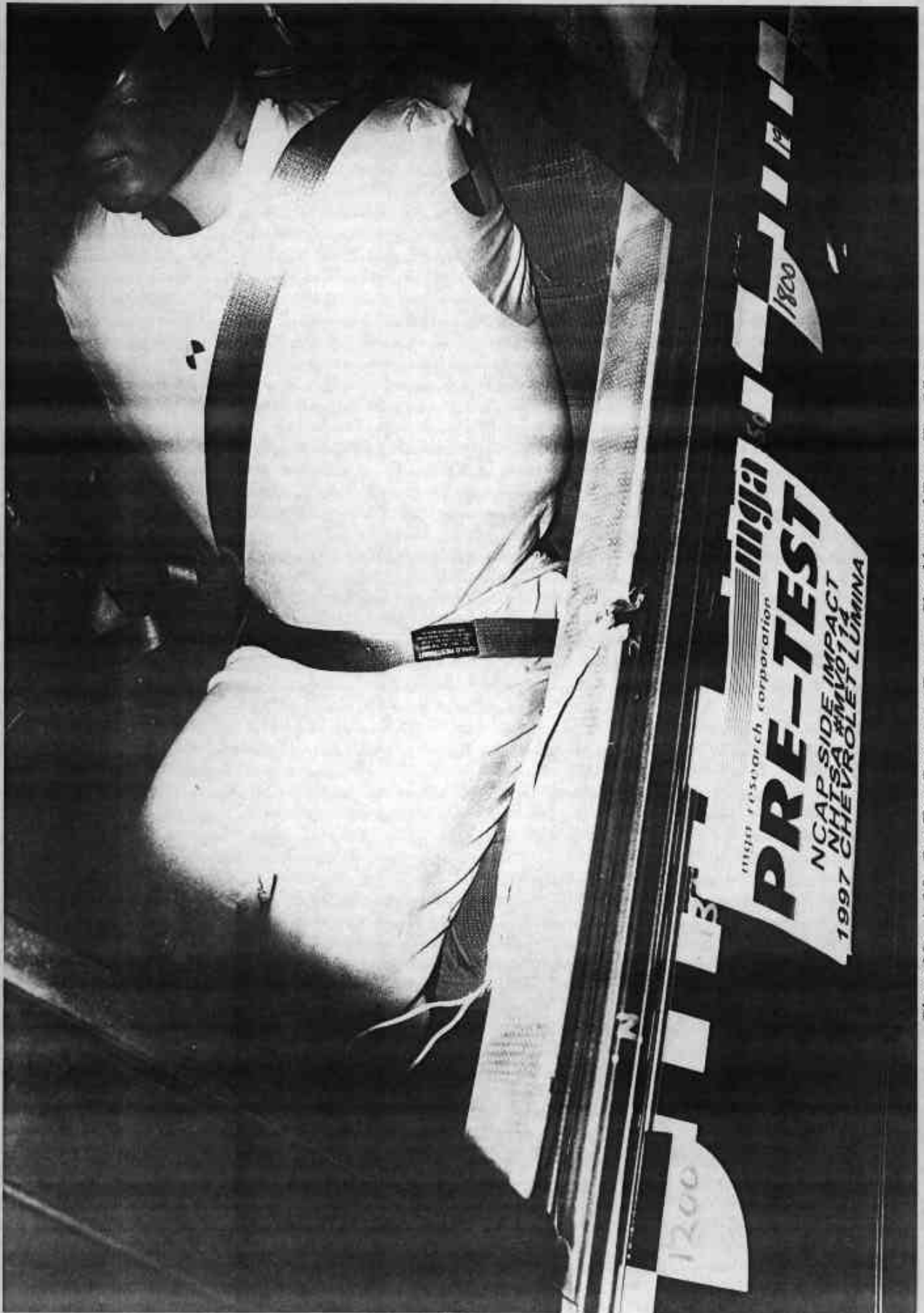


Photo No. A-35 - Pre-Test Passenger Dummy Shoulder and Door Top View

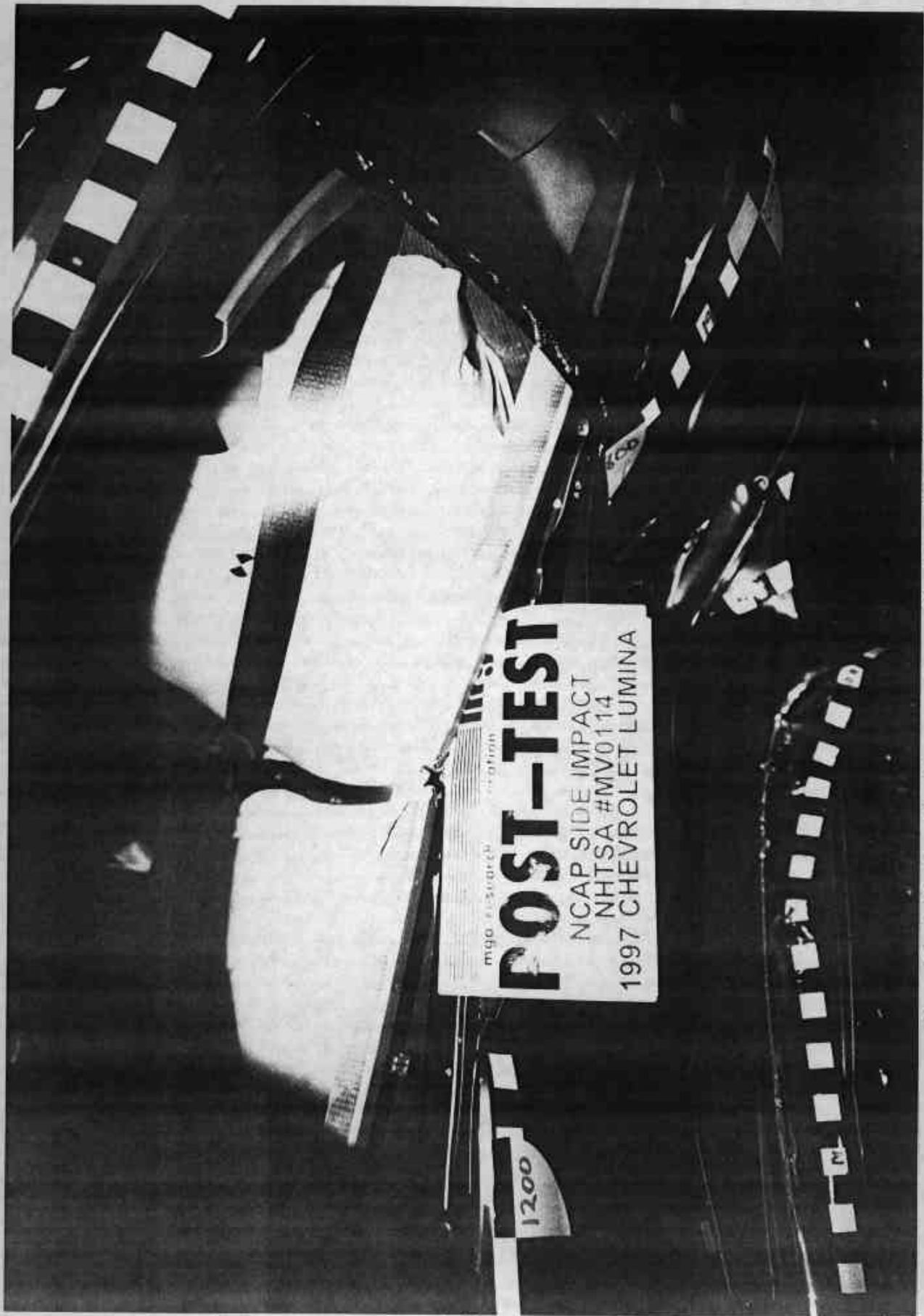


Photo No. A-36 - Post-Test Passenger Dummy Shoulder and Door Top View



Photo No. A-37 - Post-Test Passenger Dummy Contact

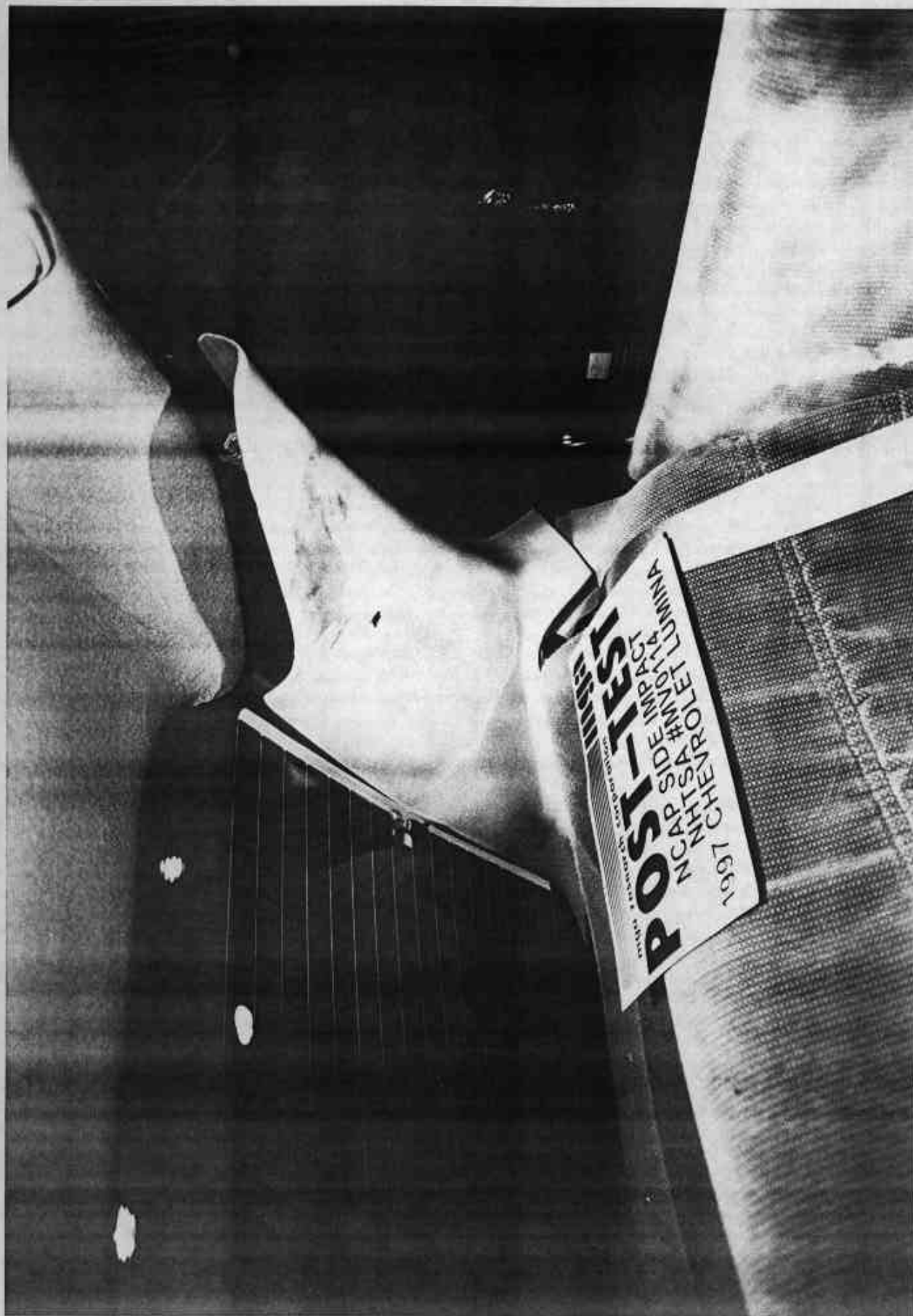


Photo No. A-38 - Post-Test Passenger Dummy Head Contact



PRE-TEST

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NCAP SIDE IMPACT
NHTSA #MV0114
CHEVROLET LUMINA

NC
#MV 1997 CHEVROLET LUMINA
1997 CHEVROLET LUMINA
MGA RESEARCH CORP.

Photo No. A-39 - Pre-Test Left Front Impact Point on Vehicle



Photo No. A-40 - Post-Test Left Front Impact Point on Vehicle

A-40

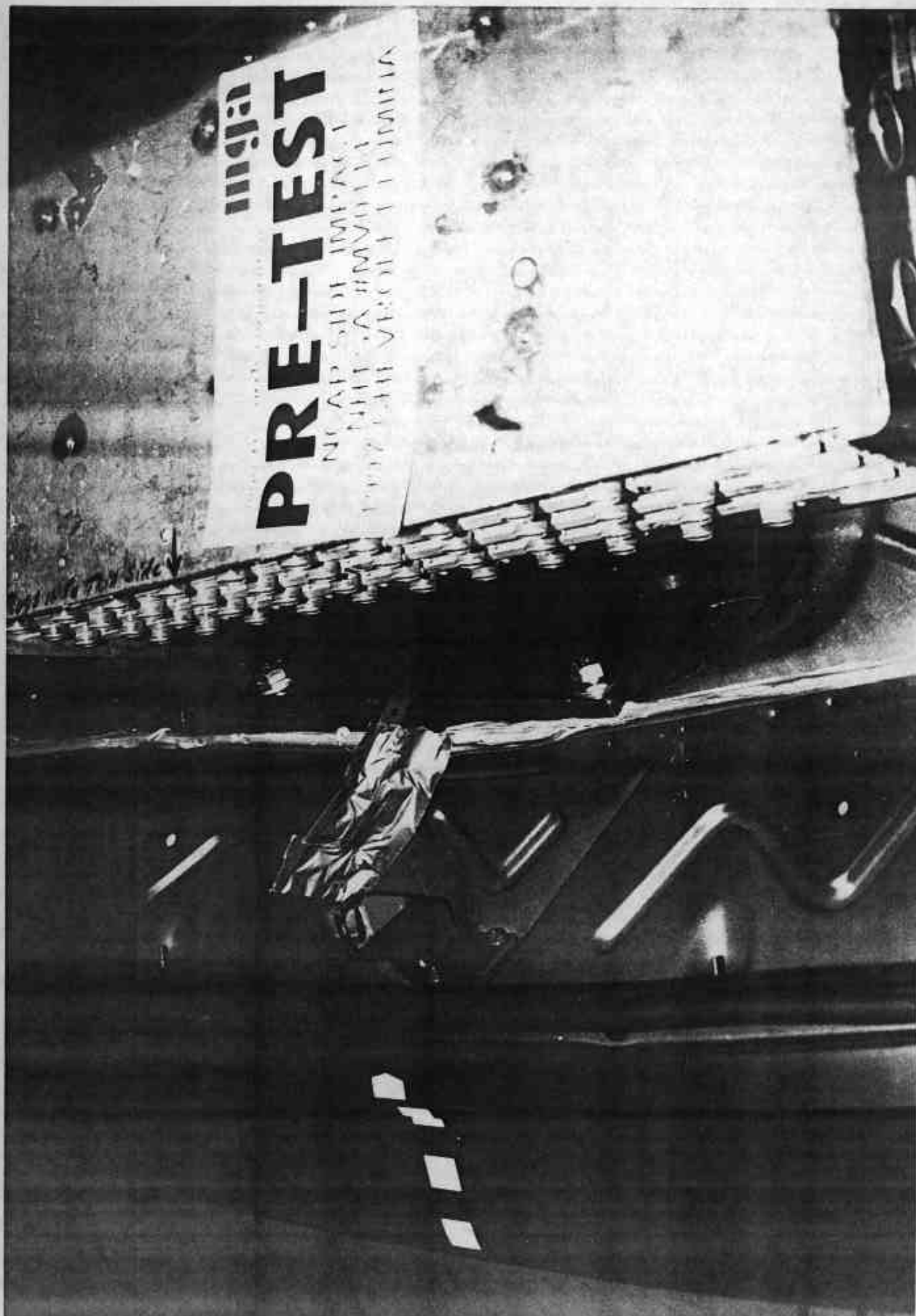


Photo No. A-41 - Added Ballast Weight in Trunk Area

A-41

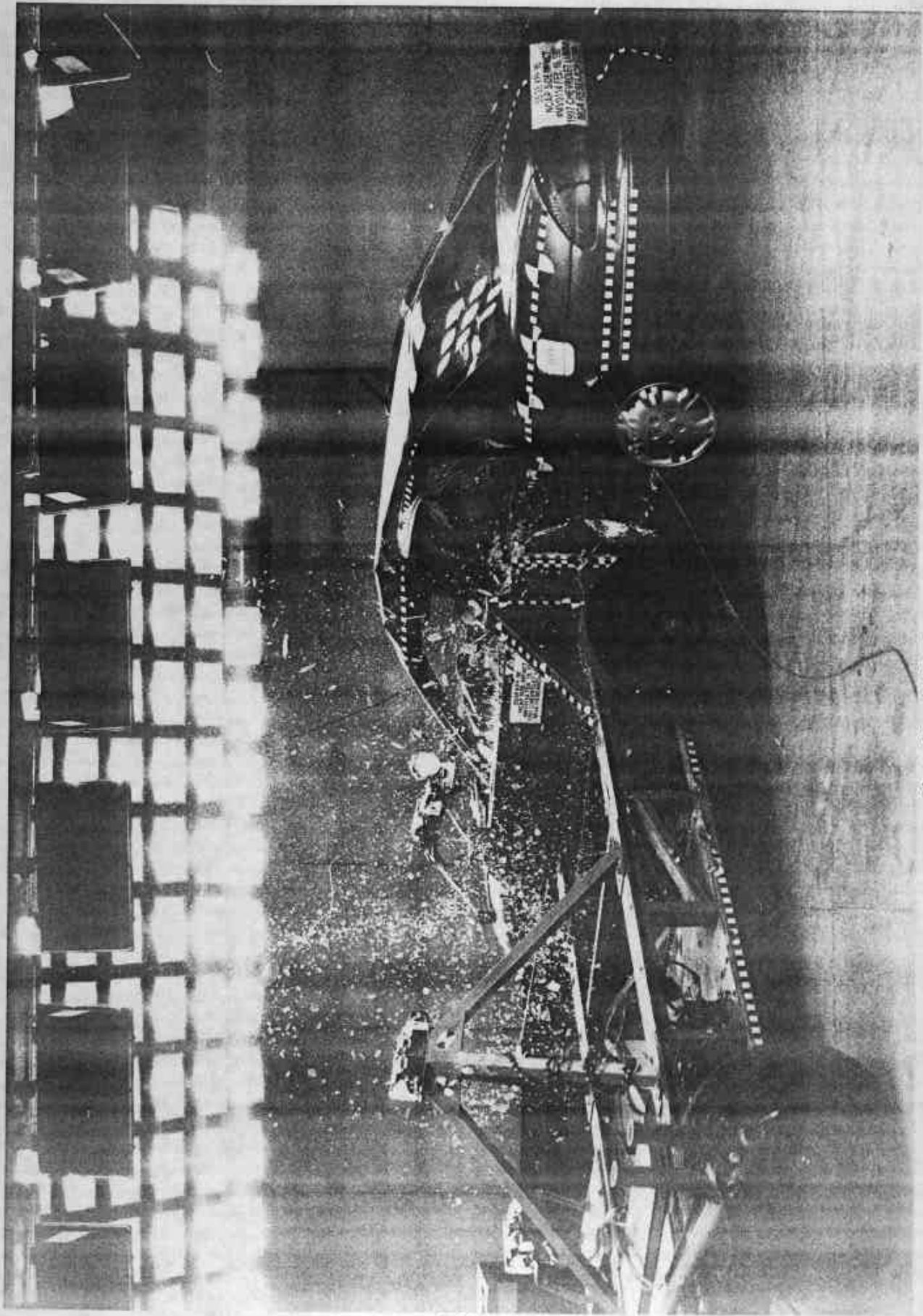


Photo No. A-42 - Impact

A-42



MFD BY GENERAL MOTORS OF CANADA LTD.

DATE	GVWR	GAWR FRT	GAWR RR
08/96	4460 LB	2465 LB	1995 LB
	2023 KG	1118 KG	905 KG

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.

2G1WL52M7V9127655 TYPE: PASS CAR



TIRE - LOADING INFORMATION

OCCUPANTS		VEHICLE CAP. WT.			
FRT.	CTR.	RR.	TOTAL	LBS	KG
3	0	3	6	1058	480

MAX. LOADING @ GVWR SAME AS VEHICLE CAPACITY WEIGHT.
2G1WL52M7V9127655

MODEL: WM69 WAG

TIRE SIZE	SPEED RTG	COLD TIRE PRESSURE
FRT P205/70R15	S	30/210 PSI/KPA
RR P205/70R15	S	30/210 PSI/KPA
SPA T125/70D16	M	60/420 PSI/KPA

IF TIRES ARE HOT, ADD 4 PSI / 28 KPA
SEE OWNER'S MANUAL FOR MORE INFORMATION

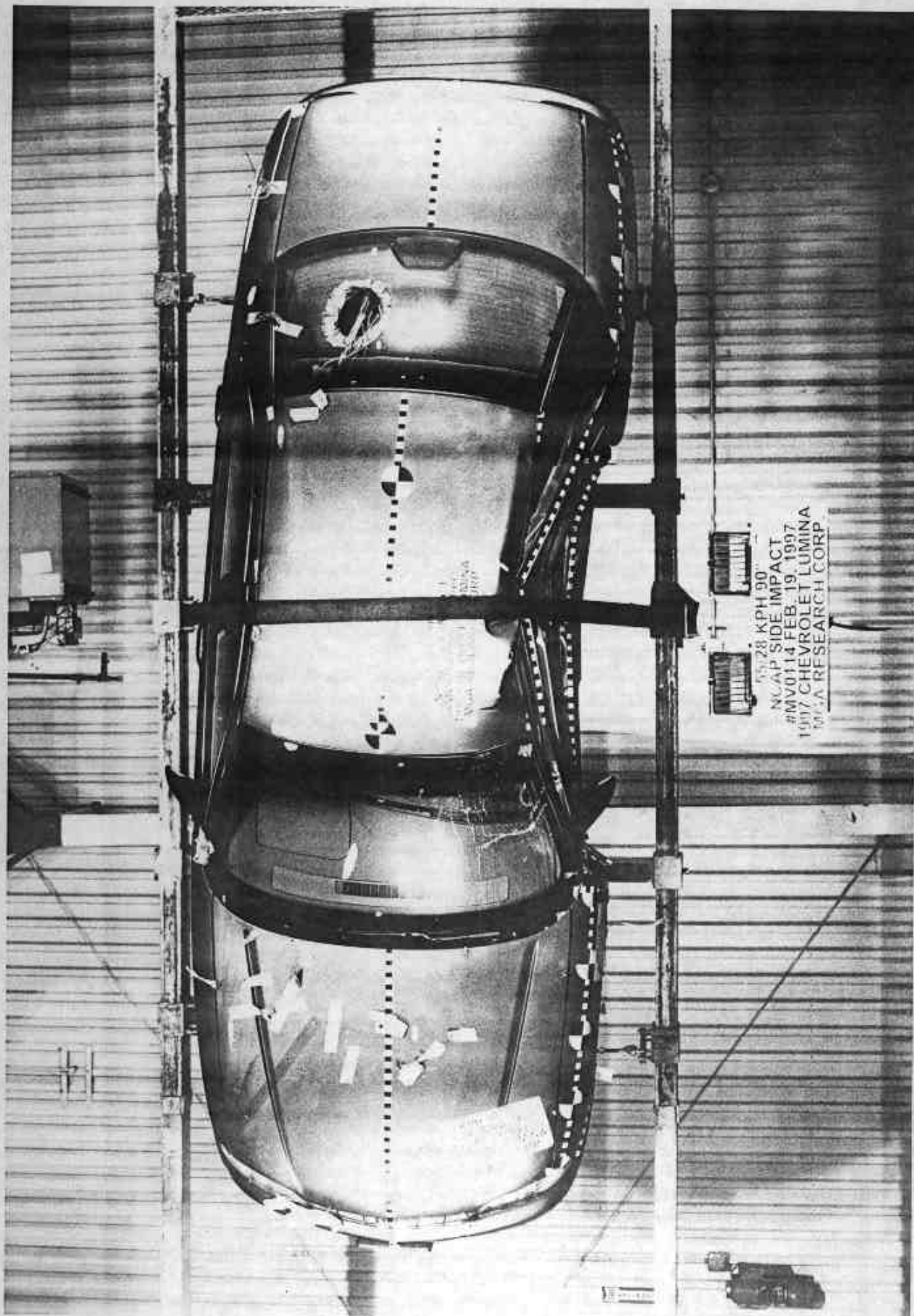
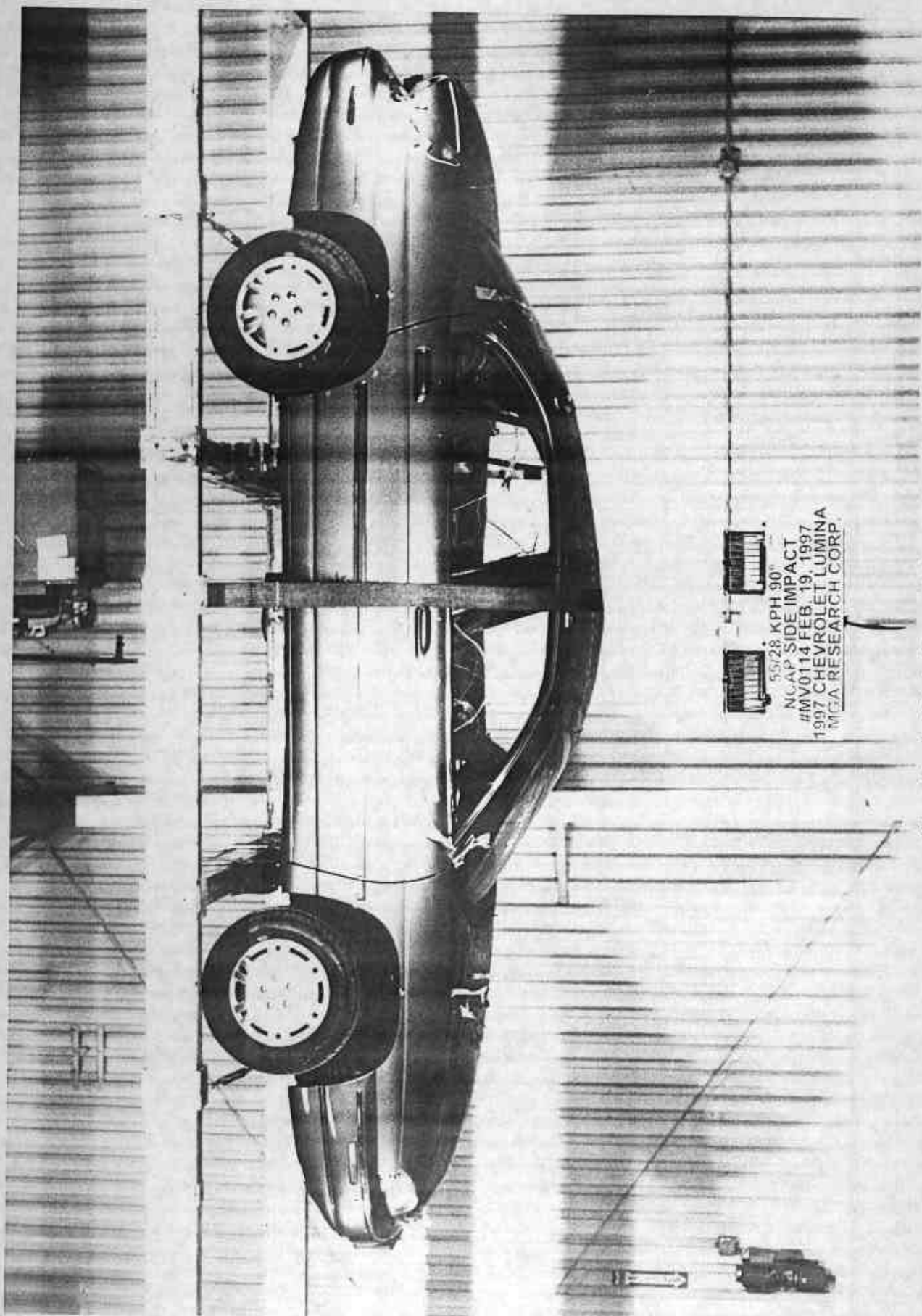


Photo No. A-45 - Rollover 90°



55/28 KPH 90°
NCAP SIDE IMPACT
#MV0114 FEB. 19, 1997
1997 CHEVROLET LUMINA
MGA RESEARCH CORP.

A-46

Photo No. A-46 - Rollover 180°

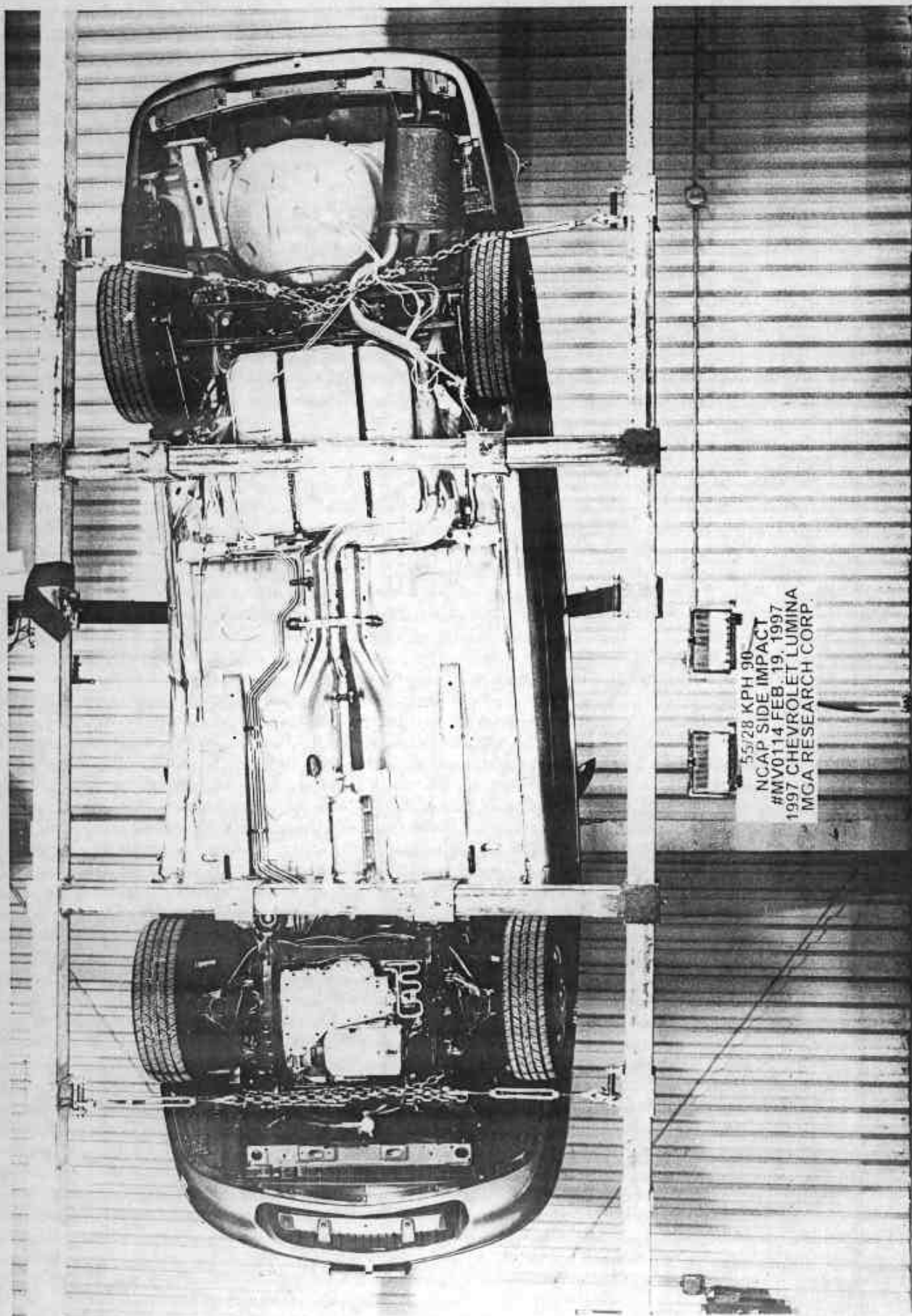
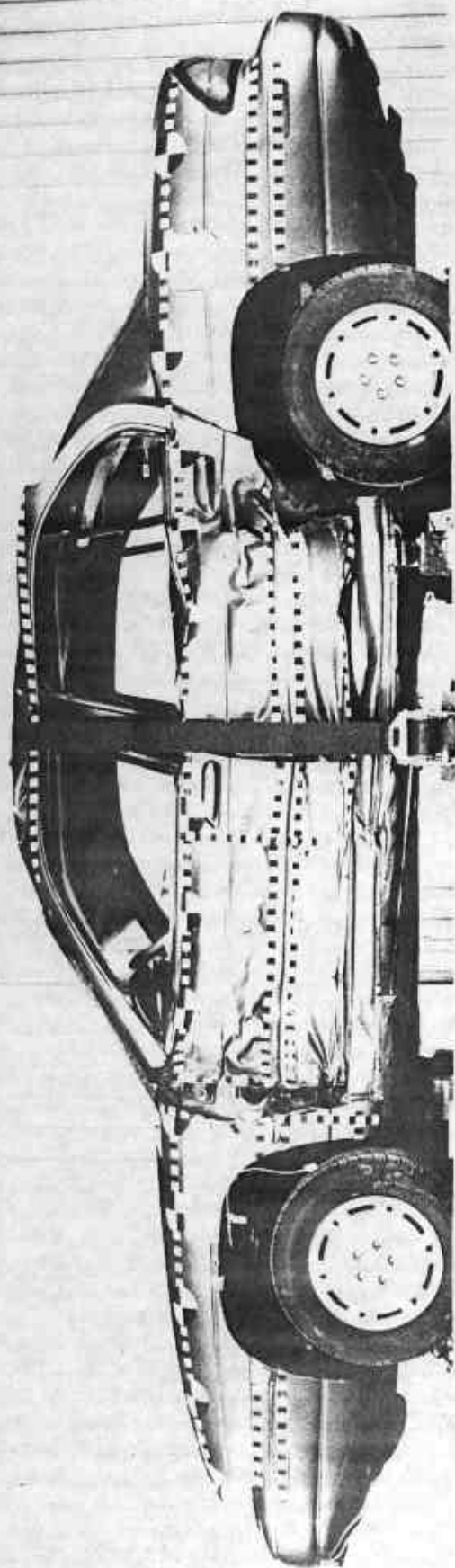


Photo No. A-47 - Rollover 270°

A-47



35-28 KPH 90°
NCAP SIDE IMPACT
#000113 FEB 19 1997
1997 CHEVROLET LUMINA
SAFARI RESEARCH CORP

A-48

Photo No. A-48 - Rollover 360°

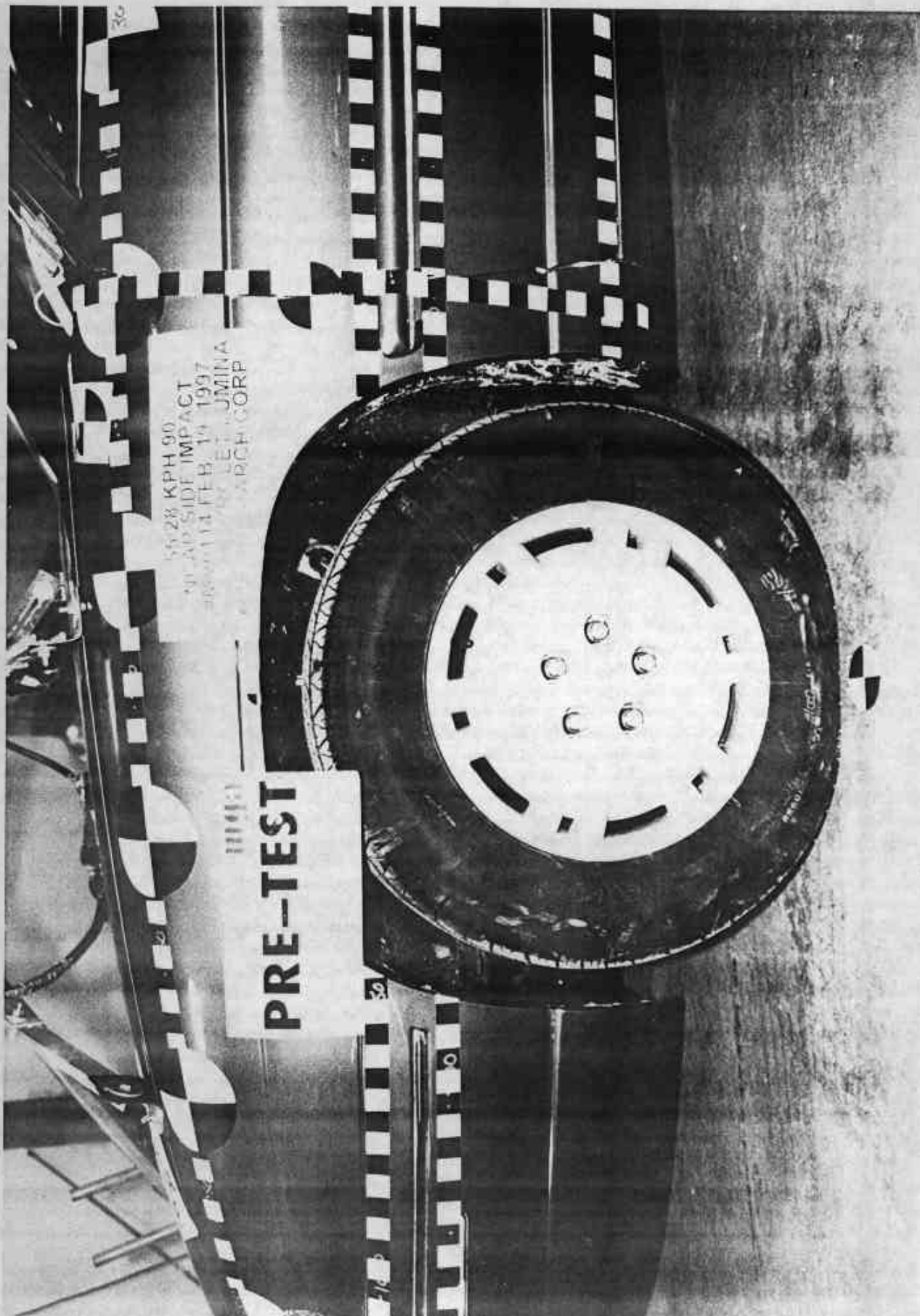


Photo No. A-49 - Left Front Attitude Point

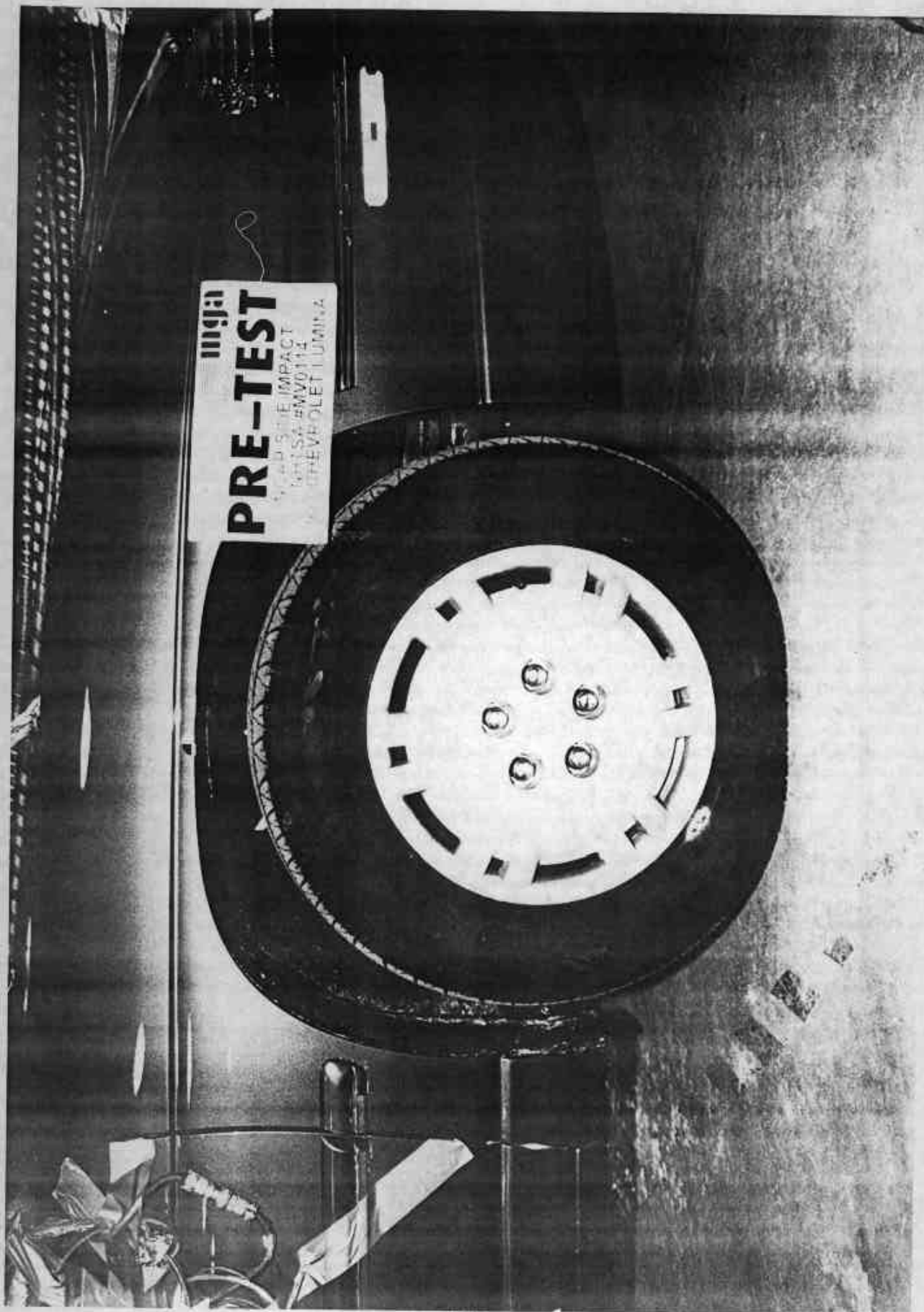


Photo No. A-50 - Right Front Attitude Point

A-50

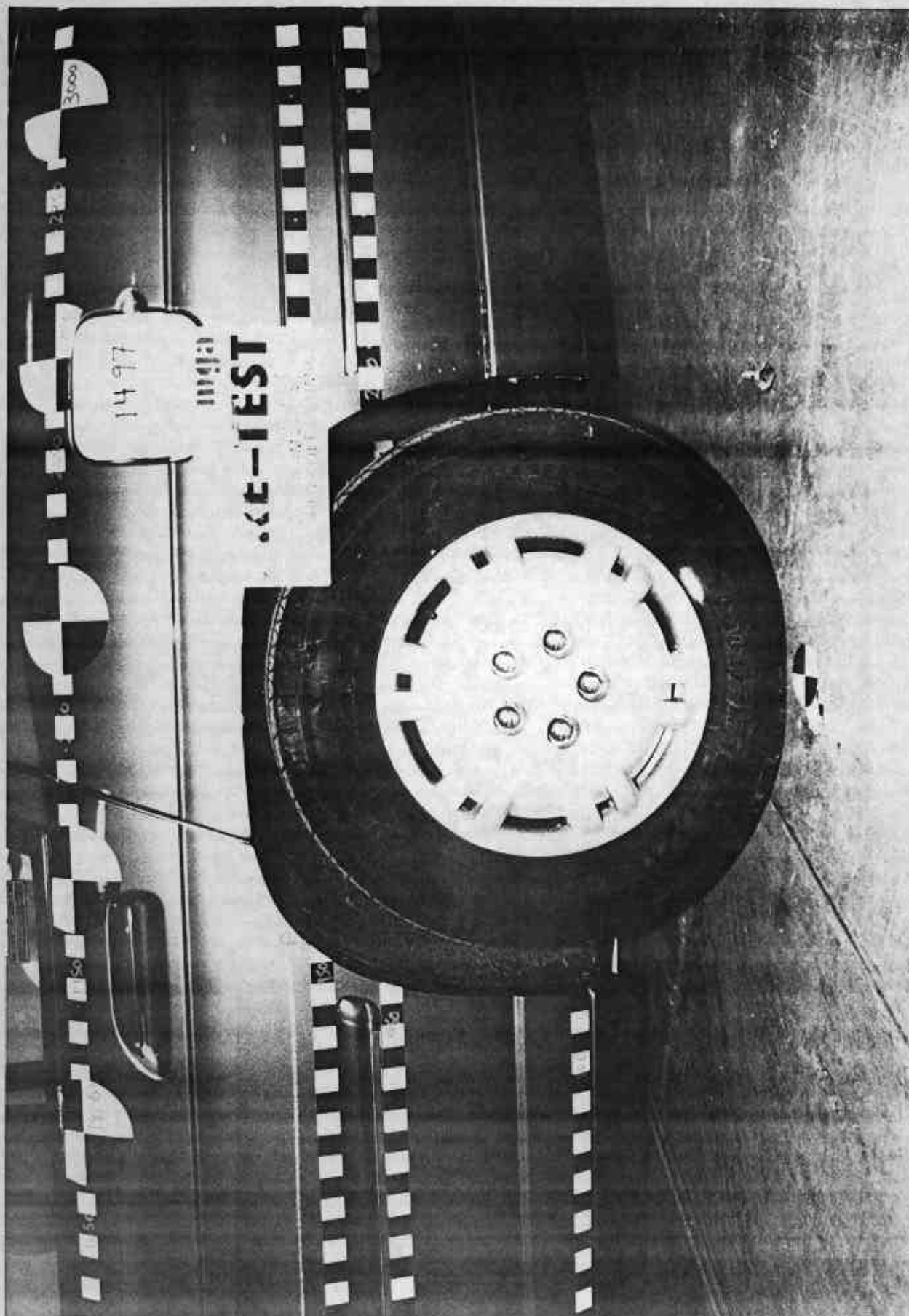


Photo No. A-51 - Left Rear Altitude Point

A-51

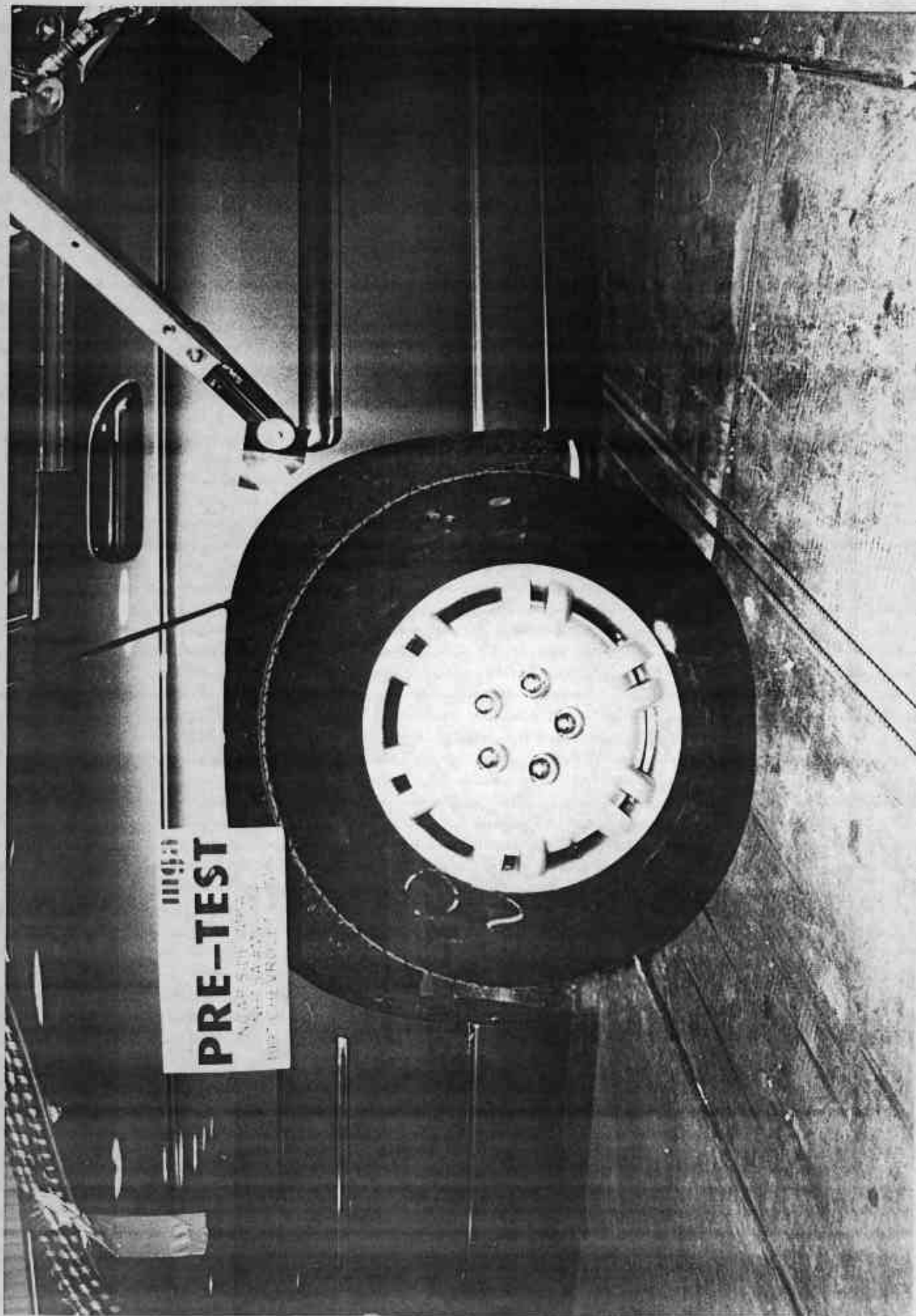


Photo No. A-52 - Right Rear Attitude Point

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* Data not valid after approximately 83 msec.

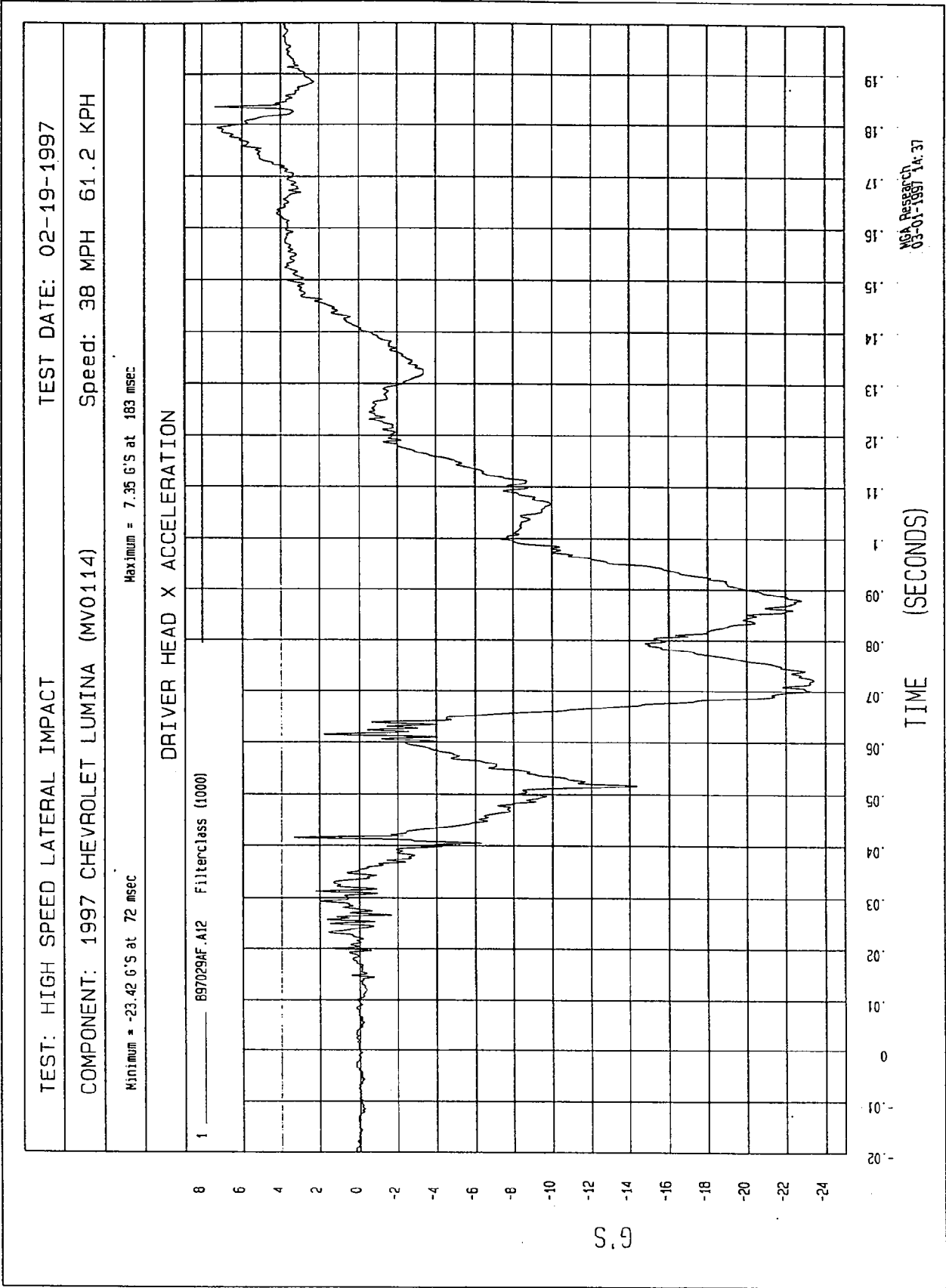
** Data not valid after approximately 43 msec.

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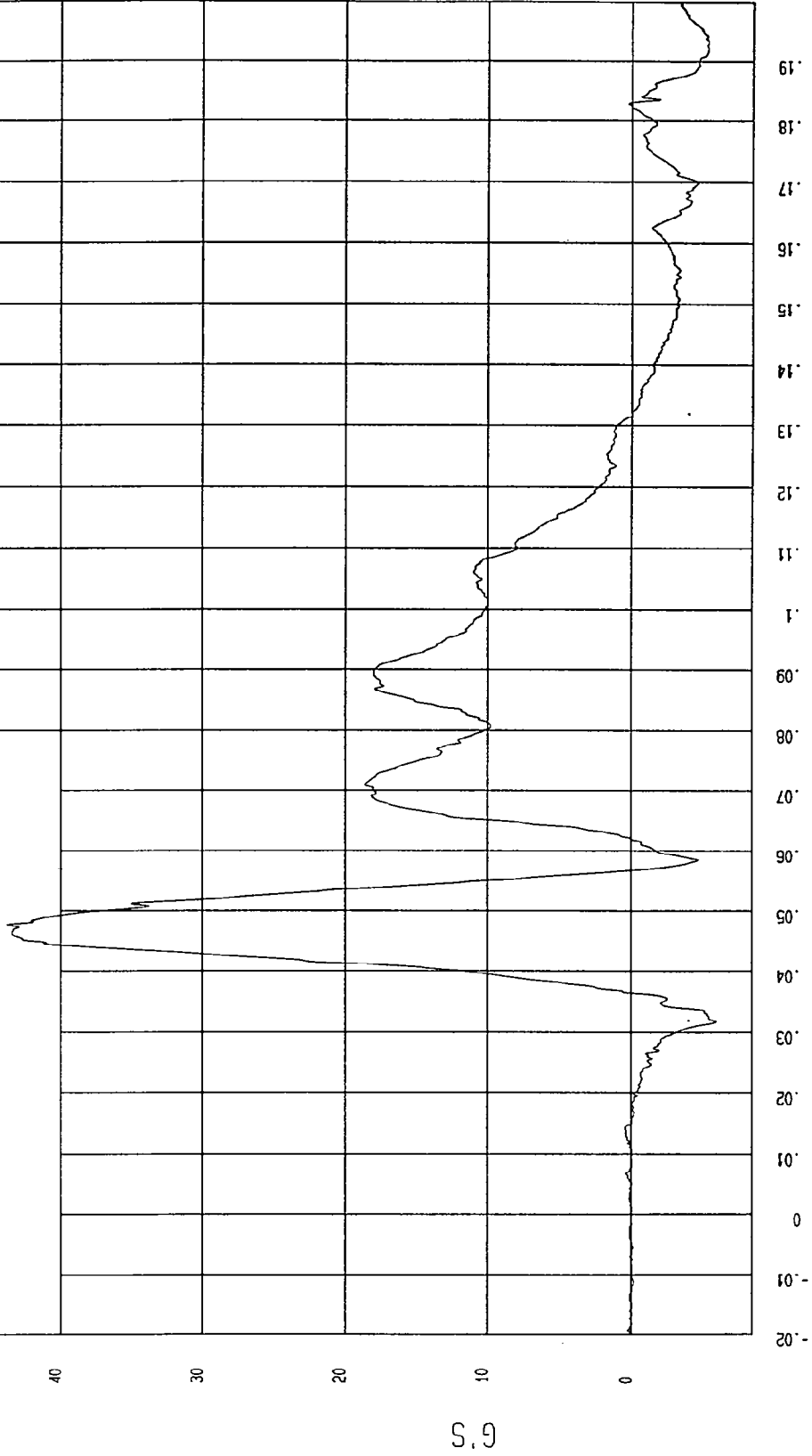
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 02-19-1997

COMPONENT: 1997 CHEVROLET LUMINA (MV0114) Speed: 38 MPH 61.2 KPH

Minimum = -5.75 G'S at 32 msec
Maximum = 43.74 G'S at 48 msec

DRIVER HEAD Y ACCELERATION

1 ——— 897029MF.M13 Filterclass (1000)



WCA Research
03-01-1997 14:37

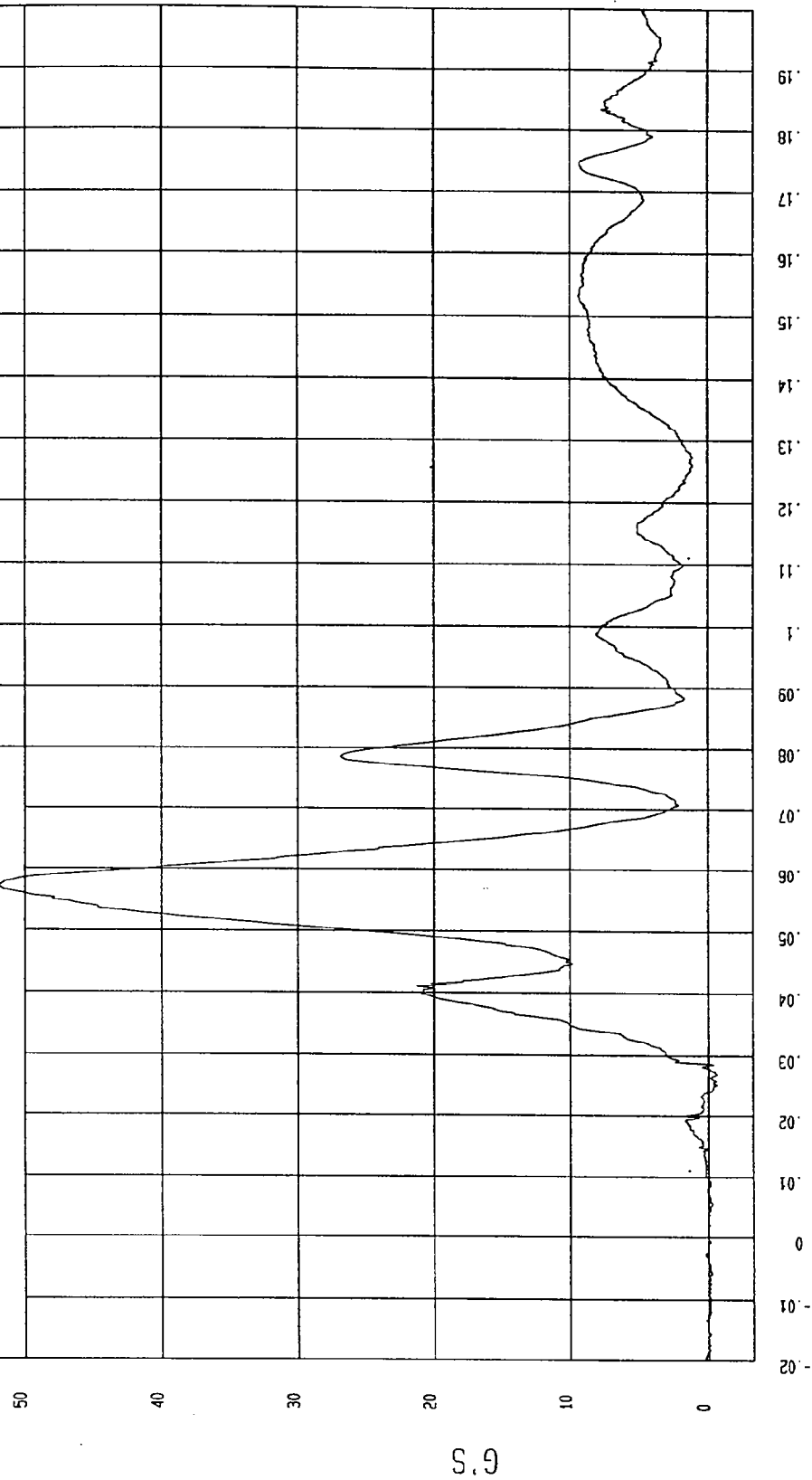
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 02-19-1997

COMPONENT: 1997 CHEVROLET LUMINA (MV0114) Speed: 38 MPH 61.2 KPH

Minimum = -.61 G'S at 27 msec Maximum = 51.88 G'S at 57 msec

DRIVER HEAD Z ACCELERATION

1 ——— B97029AF.A14 Filterclass (1000)



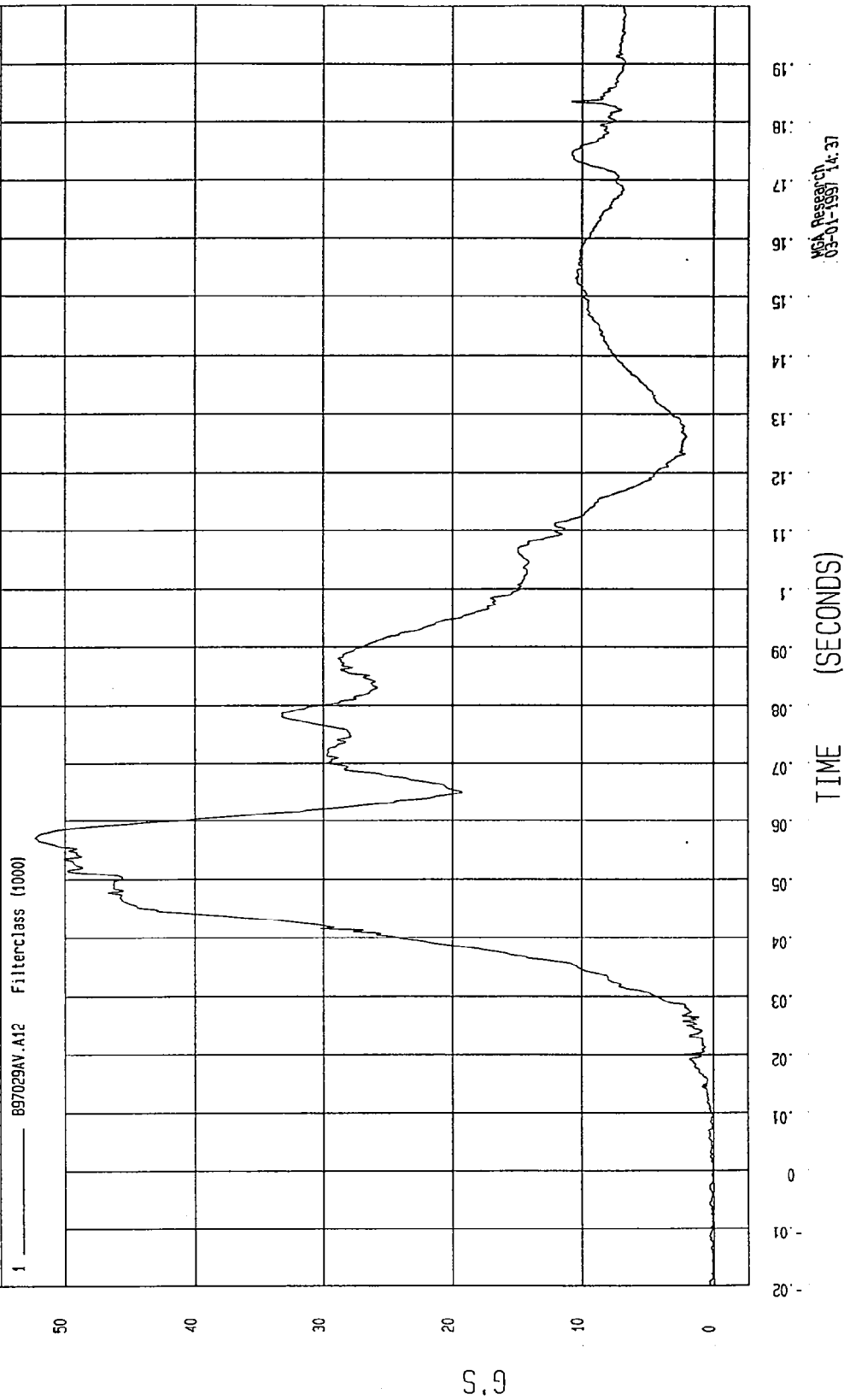
WCA Research
03-01-1997 14:37

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 02-19-1997

COMPONENT: 1997 CHEVROLET LUMINA (MVO114) Speed: 38 MPH 61.2 KPH

Minimum = 1.57E-02 G'S at 10 msec Maximum = 52.15 G'S at 57 msec

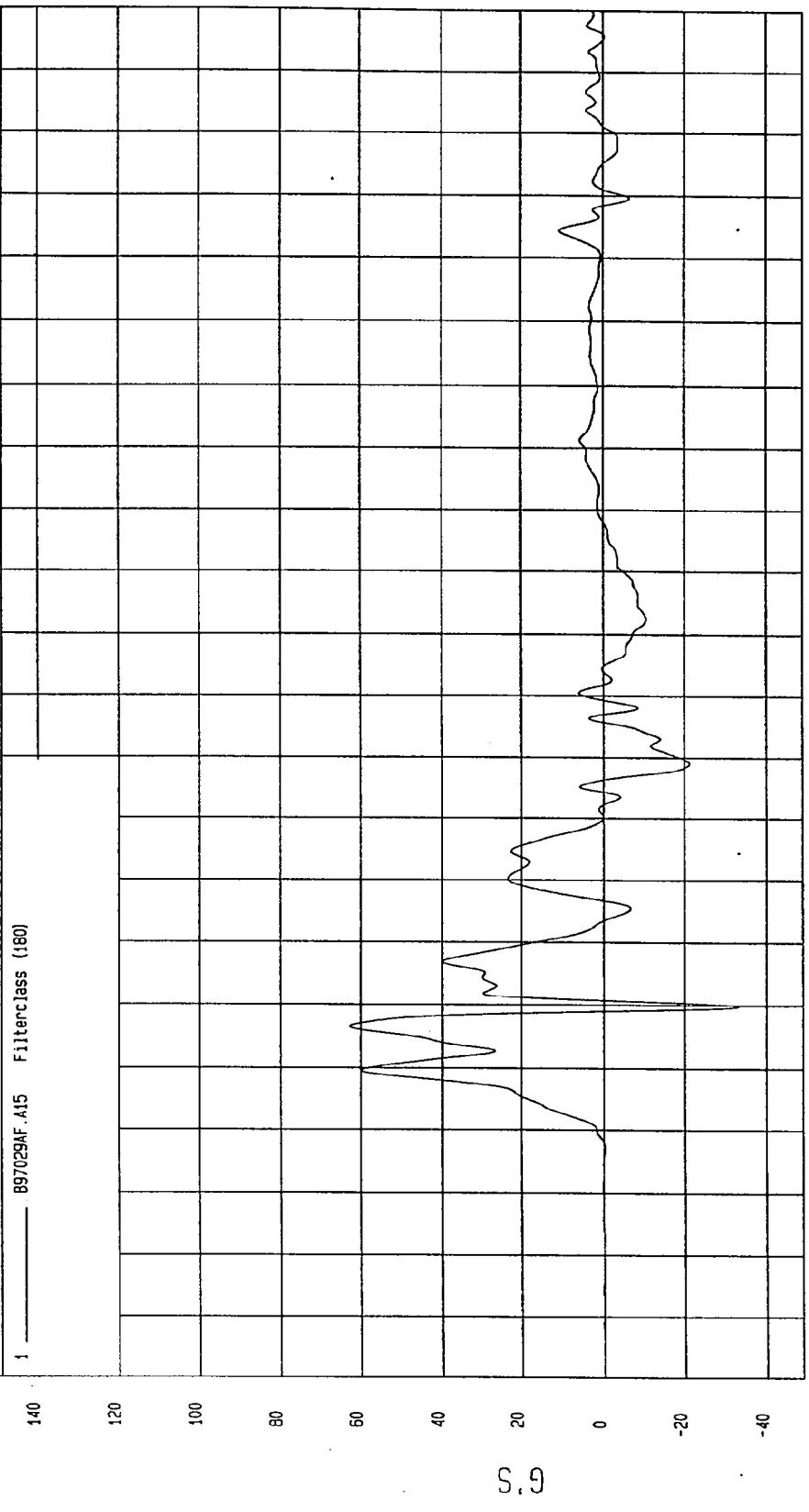
DRIVER HEAD RESULTANT



TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 02-19-1997
COMPONENT: 1997 CHEVROLET LUMINA (MVO114) Speed: 38 MPH 61.2 KPH

Minimum = -33.22 G'S at 40 msec Maximum = 62.71 G'S at 36 msec

DRIVER UPPER RIB Y ACCELERATION



TIME (SECONDS)

MOA Research
03-01-1997 14: 37

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 02-19-1997

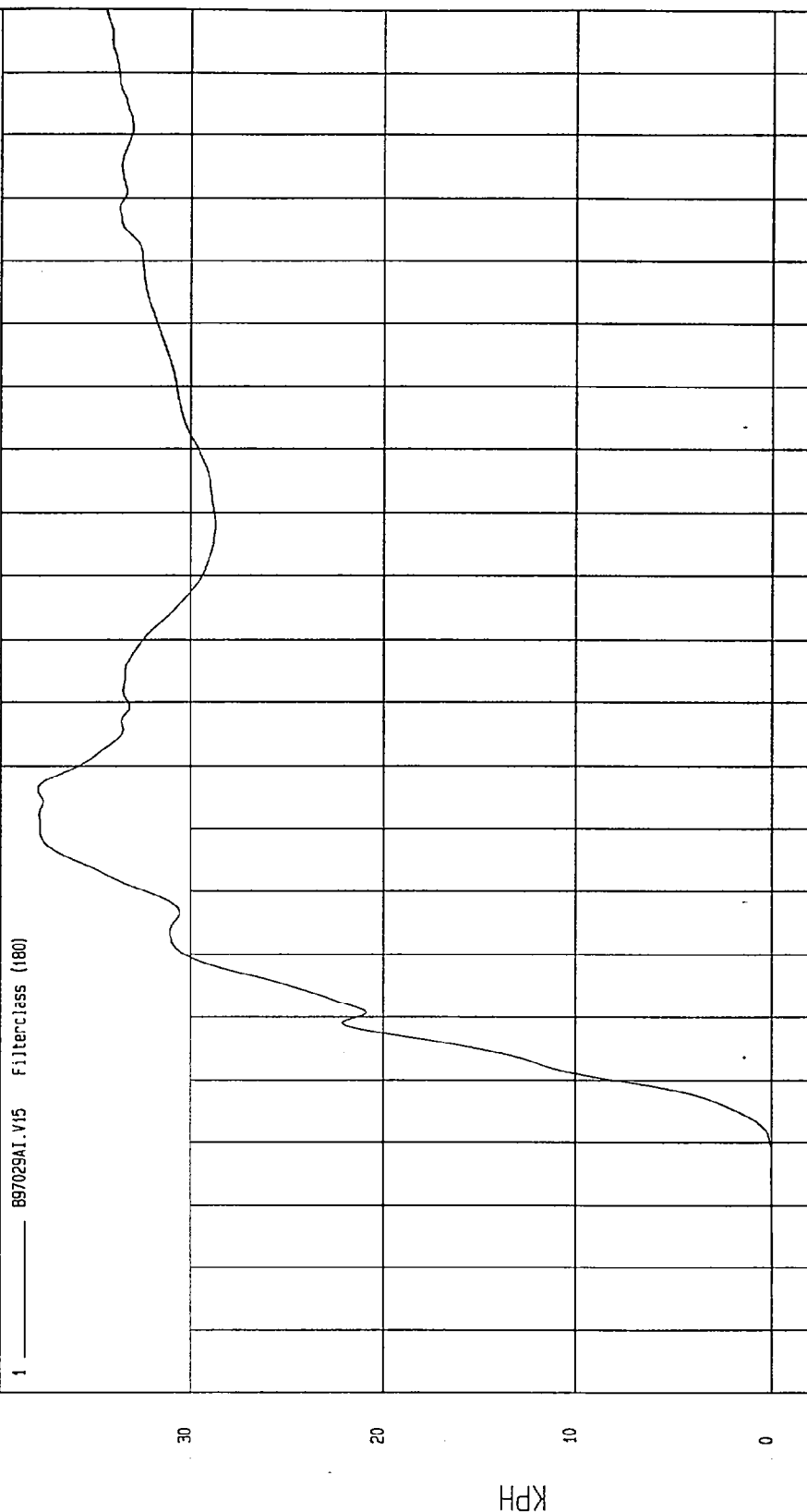
COMPONENT: 1997 CHEVROLET LUMINA (MV0114) Speed: 38 MPH 61.2 KPH

Minimum = -1.98E-02 KPH at 4 msec

Maximum = 37.80 KPH at 76 msec

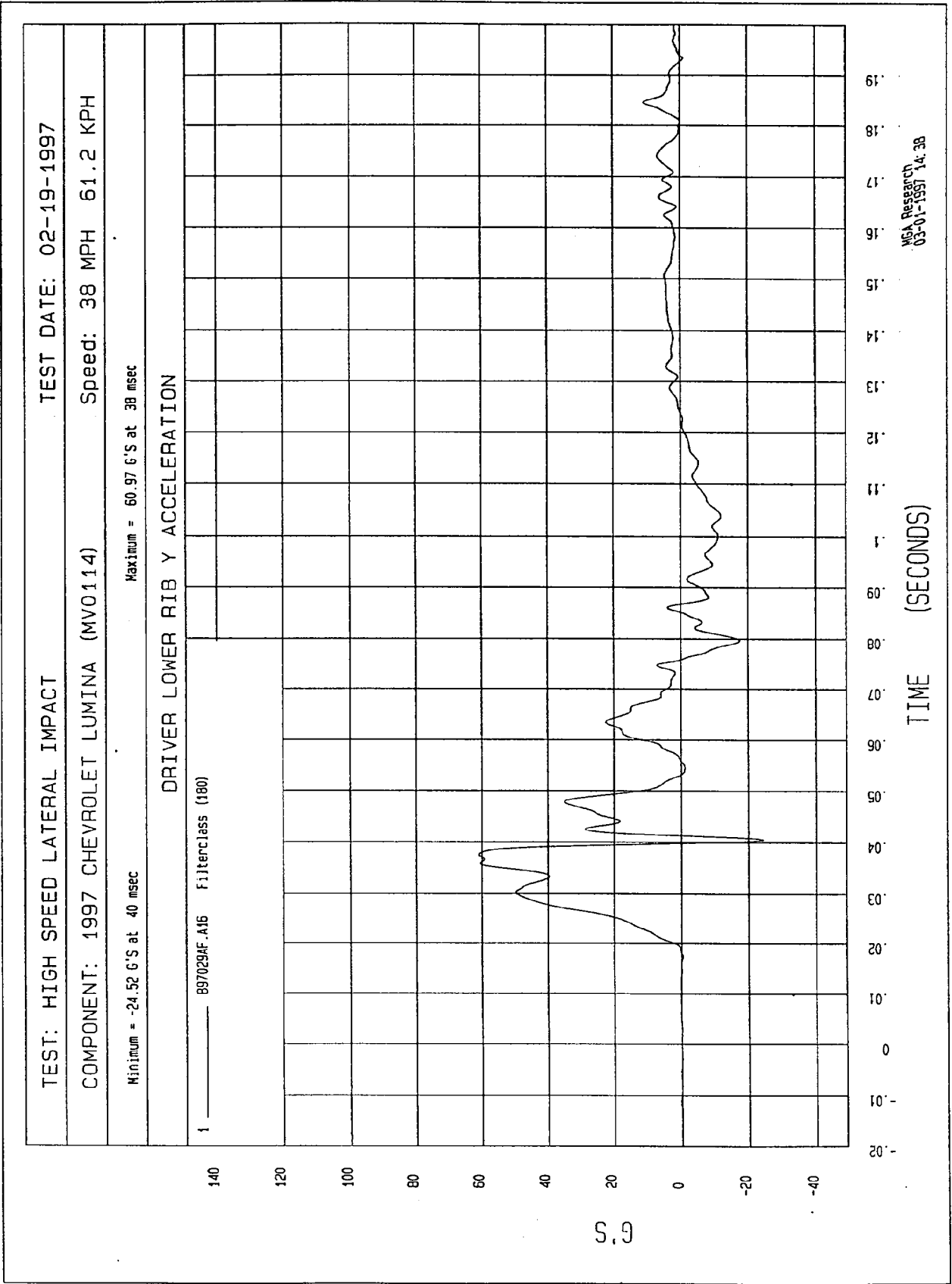
DRIVER UPPER RIB Y VELOCITY

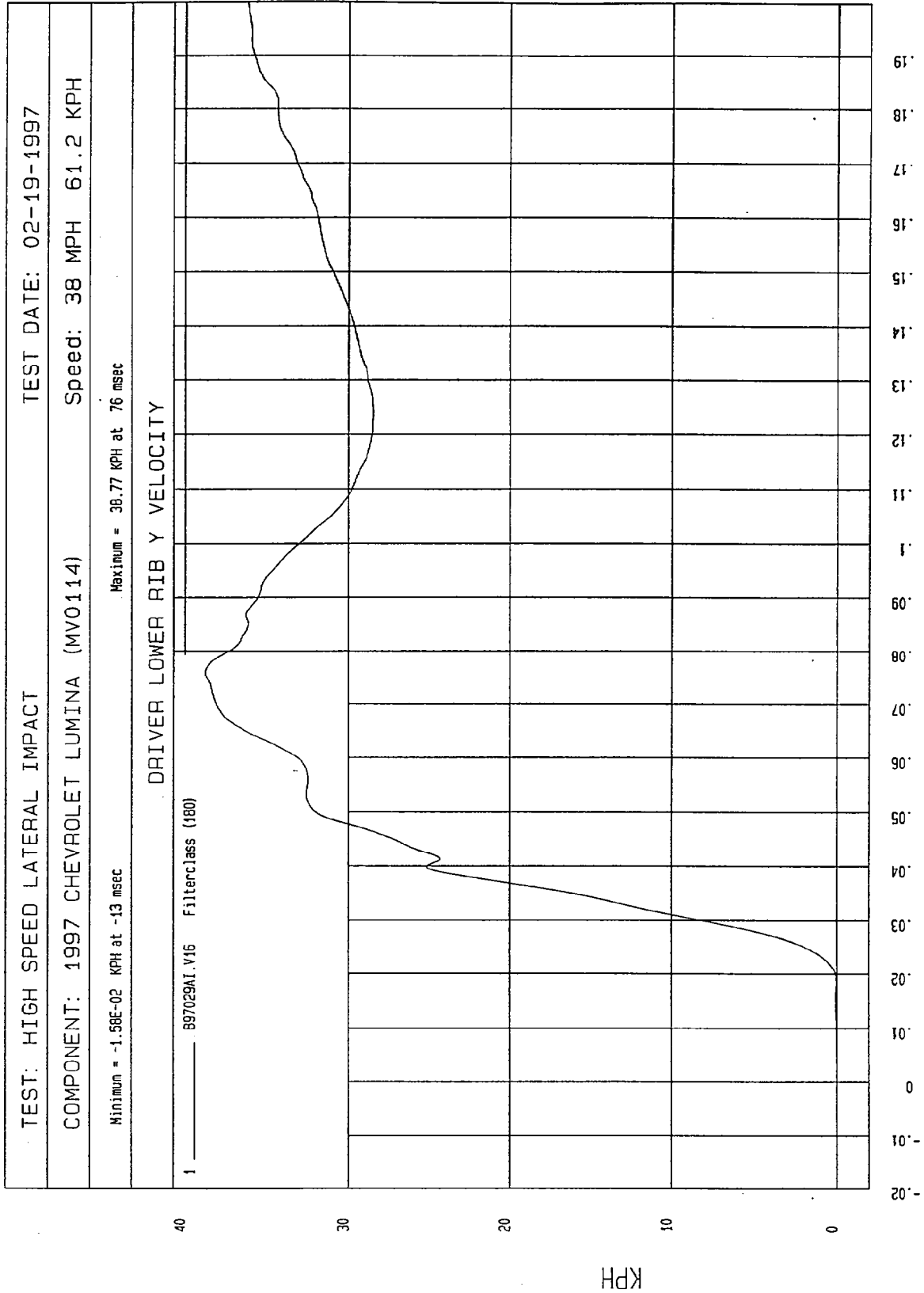
1 ——— B97029A1.V15 Filterclass (180)



MOA Research
03-01-1997 15:09

TIME Seconds





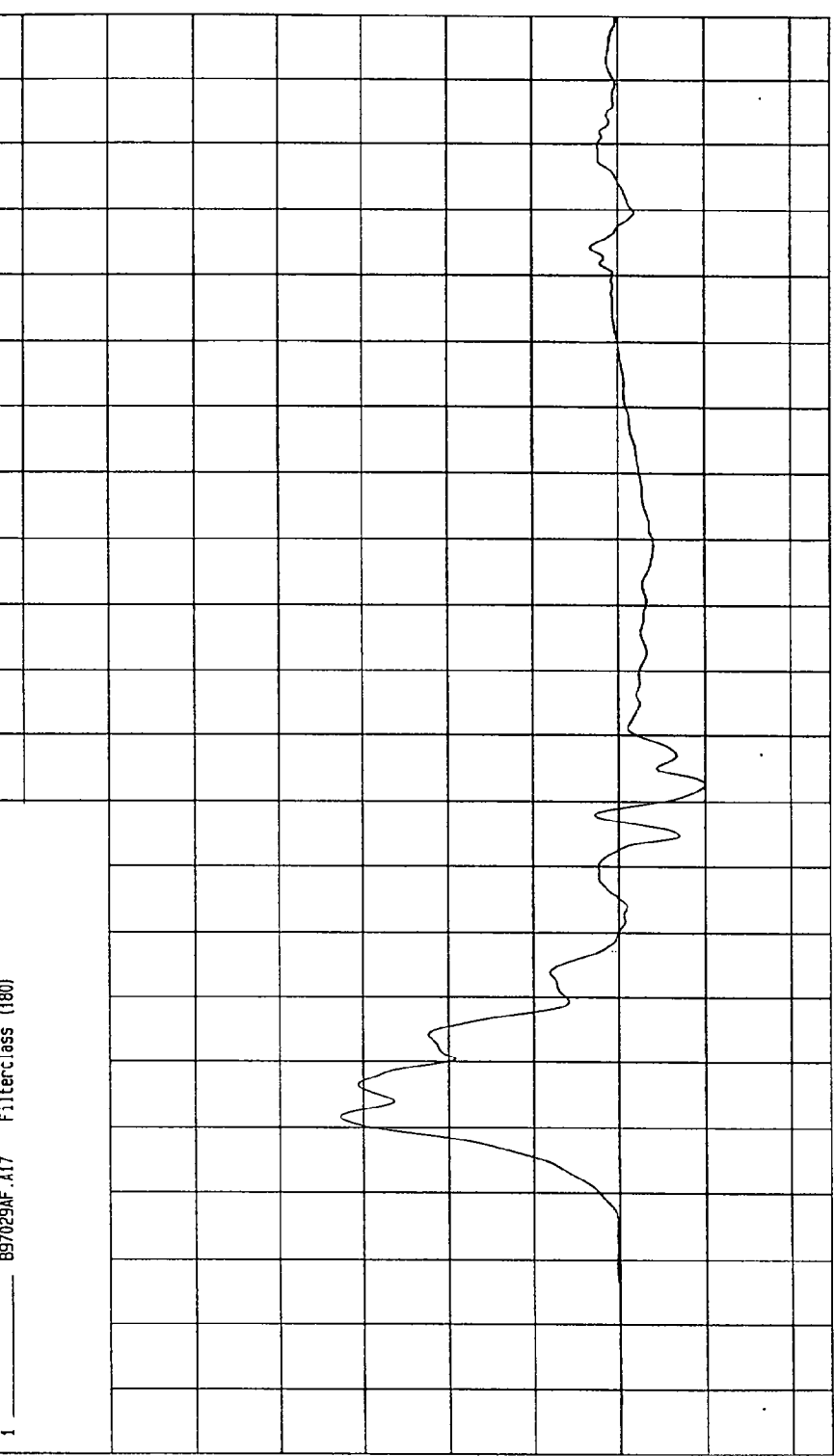
MCA Research
03-01-1997 15:09

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 02-19-1997
COMPONENT: 1997 CHEVROLET LUMINA (MV0114) Speed: 38 MPH 61.2 KPH
Minimum = -20.02 G'S at 83 msec Maximum = 65.61 G'S at 32 msec

DRIVER LOWER SPINE Y ACCELERATION

1 _____ B97029AF.A17 Filterclass (180)

G.S



TIME (SECONDS)

NSA Research
03-01-1997 14:38

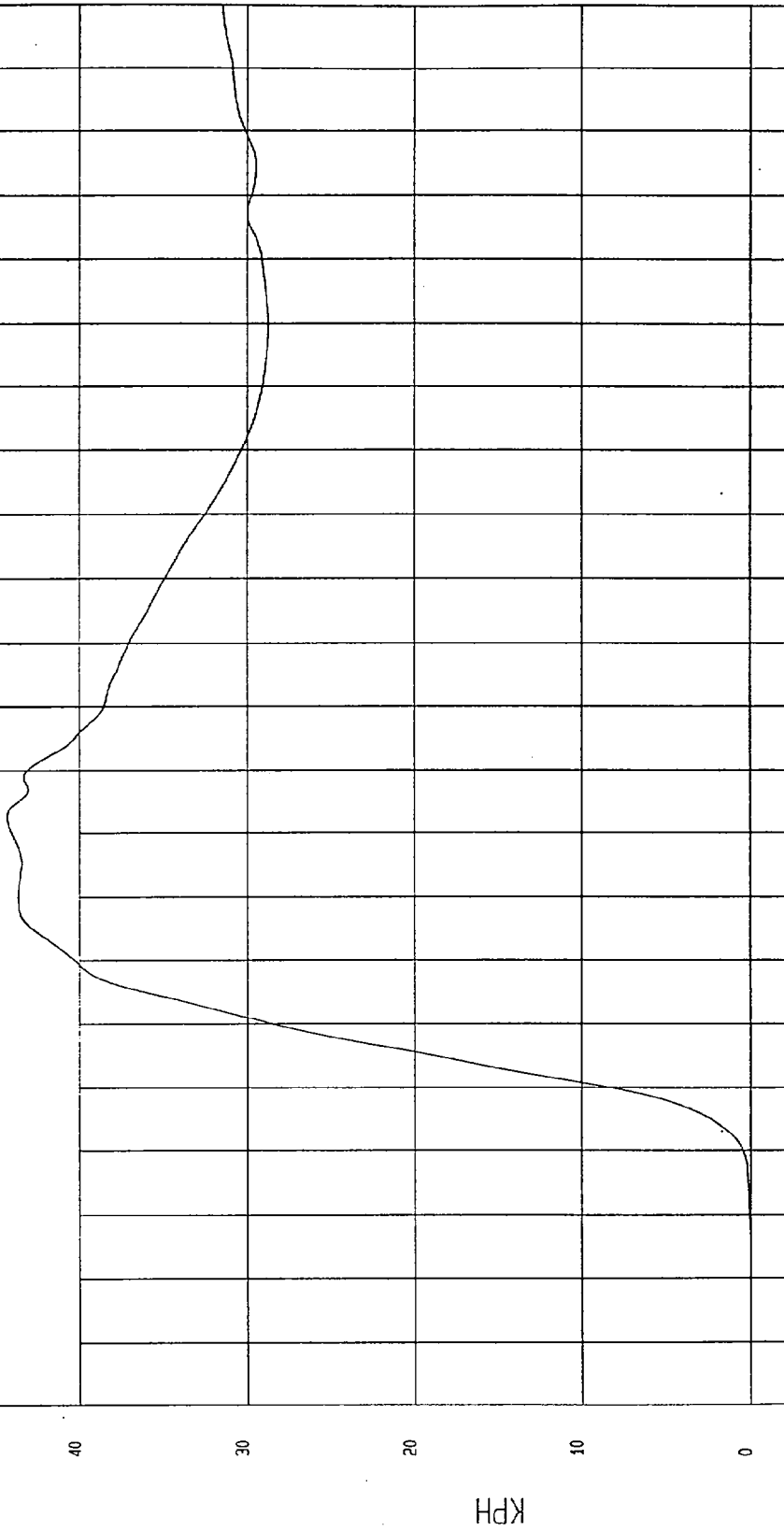
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 02-19-1997

COMPONENT: 1997 CHEVROLET LUMINA (MV0114) Speed: 38 MPH 61.2 KPH

Minimum = -1.67E-02 KPH at -4 msec Maximum = 44.31 KPH at 72 msec

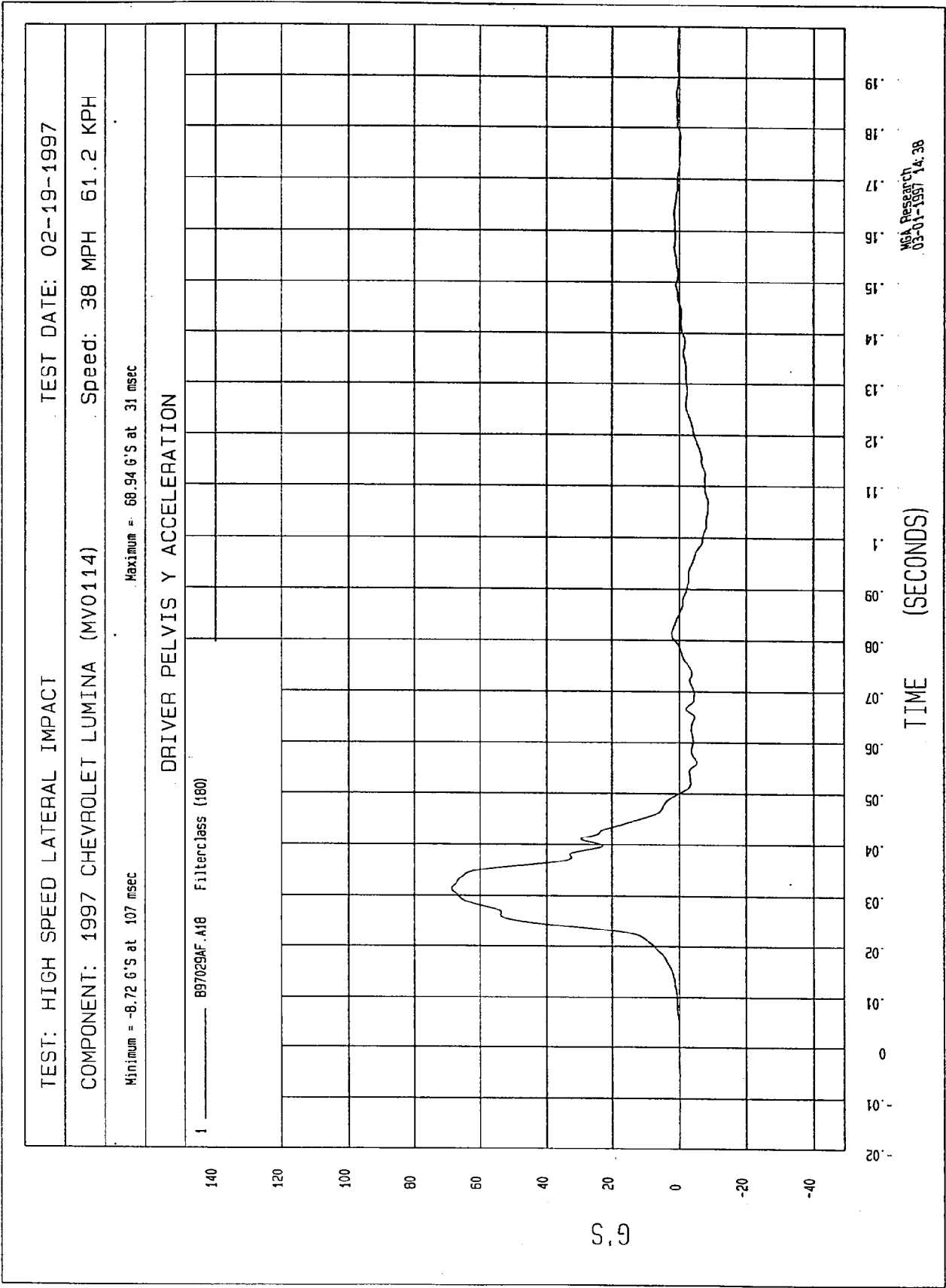
DRIVER LOWER SPINE Y VELOCITY

1 ——— 897029A1.V17 Filterclass (180)



TIME Seconds

NGA Research
03-01-1997 15.09



TEST: HIGH SPEED LATERAL IMPACT

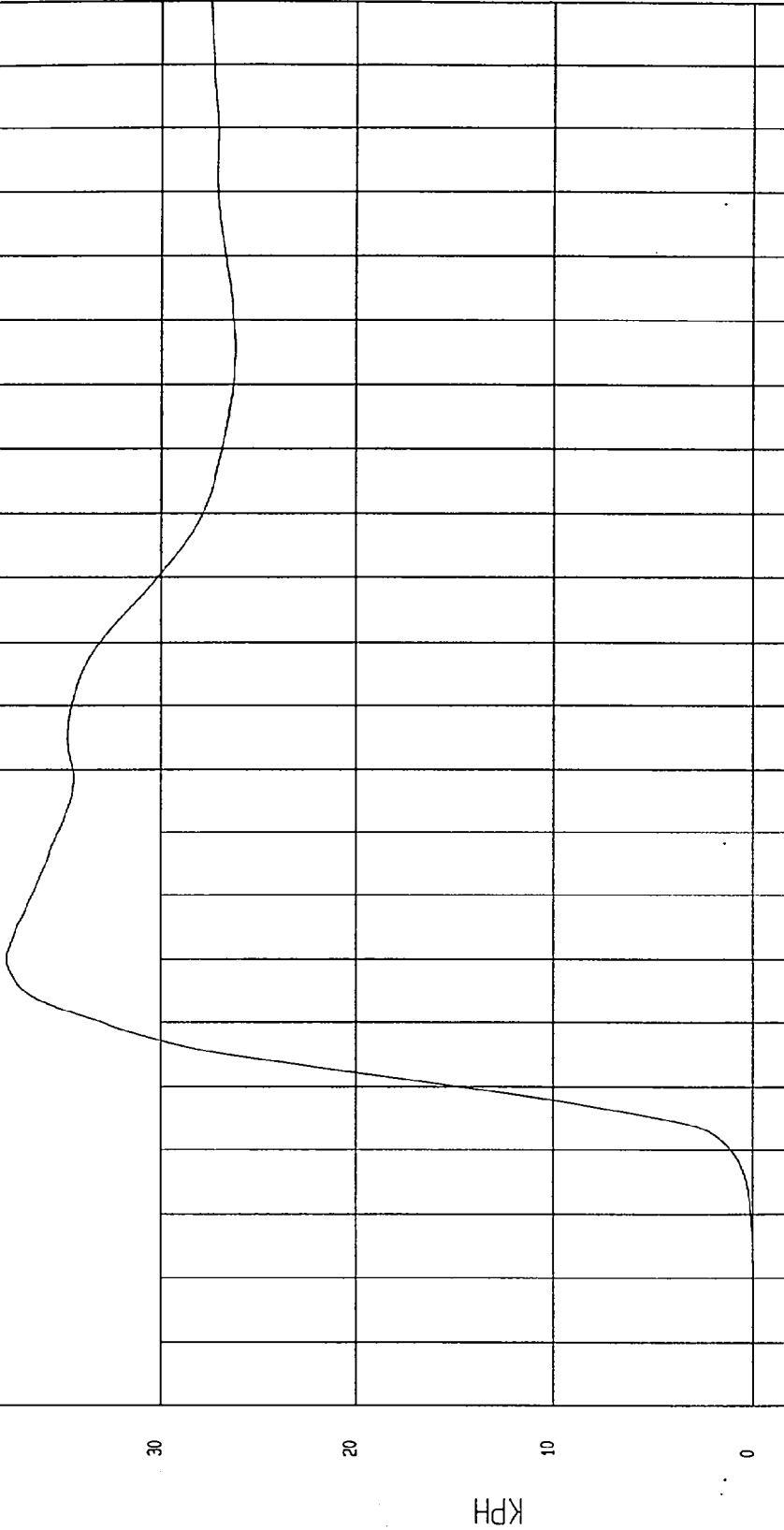
TEST DATE: 02-19-1997

COMPONENT: 1997 CHEVROLET LUMINA (MV0114) Speed: 38 MPH 61.2 KPH

Minimum = -1.42E-02 KPH at -4 msec Maximum = 37.77 KPH at 50 msec

DRIVER PELVIS Y VELOCITY

1 ——— B97029A1.V18 Filterclass (180)



TIME Seconds
MGA Research
03-01-1997 15:09

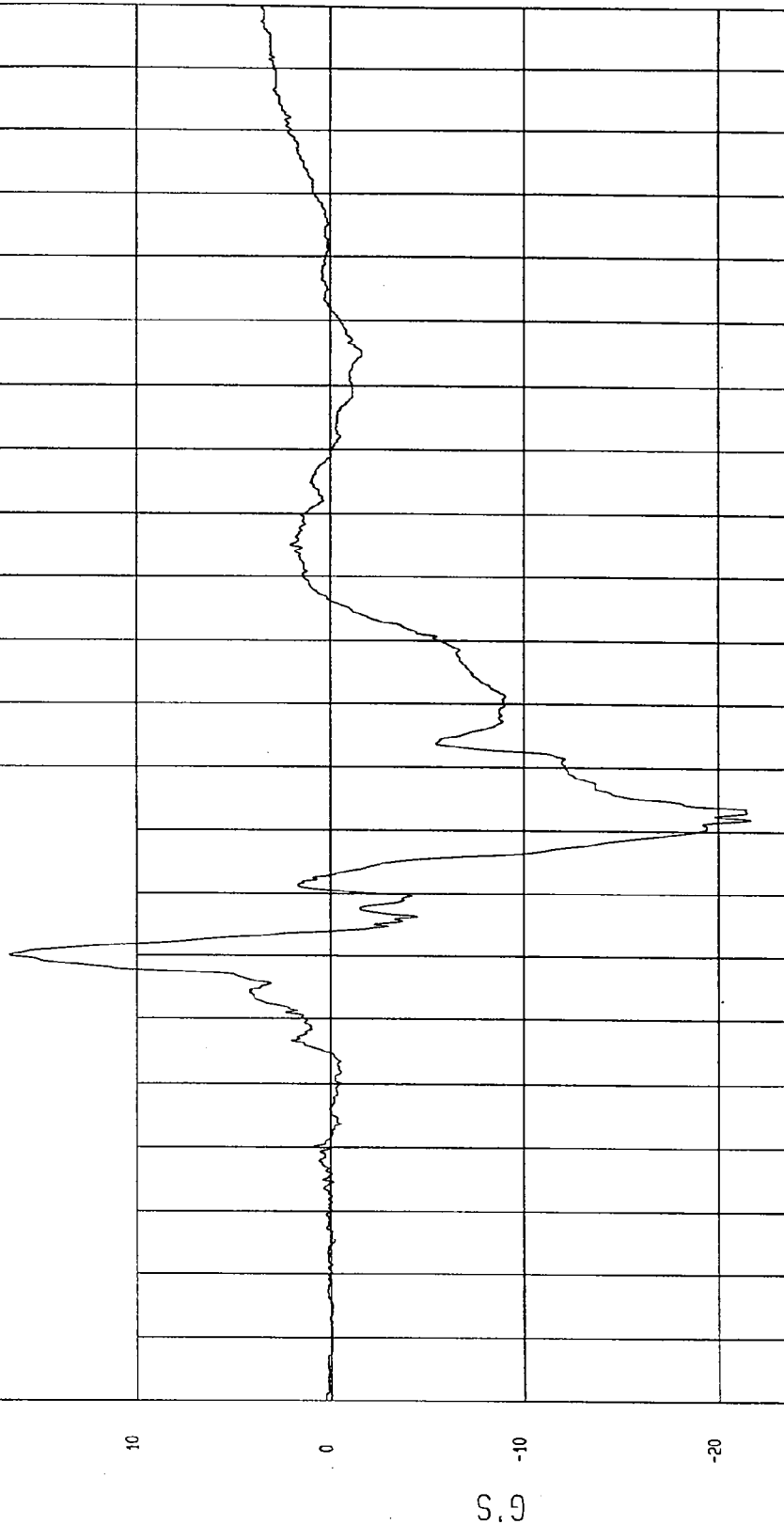
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 02-19-1997

COMPONENT: 1997 CHEVROLET LUMINA (MV0114) Speed: 38 MPH 61.2 KPH

Minimum = -21.65 G'S at 72 msec Maximum = 16.61 G'S at 50 msec

REAR PASSENGER HEAD X ACCELERATION

1 897029AF.A22 Filterclass (1000)



TIME (SECONDS)

MOA Research
03-01-1997 14:37

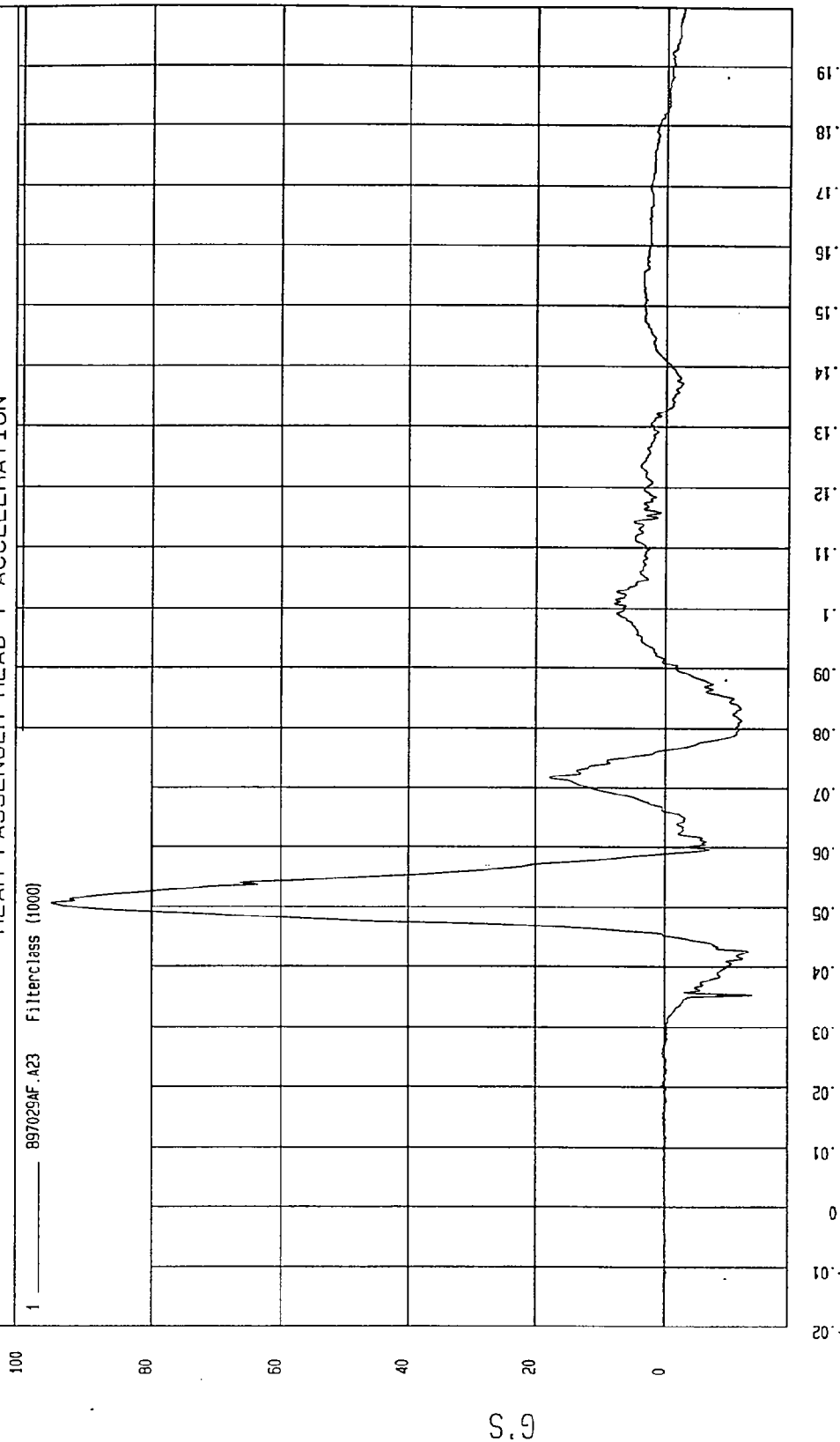
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 02-19-1997

COMPONENT: 1997 CHEVROLET LUMINA (MV0114) Speed: 38 MPH 61.2 KPH

Minimum = -13.35 G's at 35 msec
Maximum = 95.65 G's at 51 msec

REAR PASSENGER HEAD Y ACCELERATION

1 897029AF.A23 Filterclass (1000)



MCA Research
03-01-1997 14:37

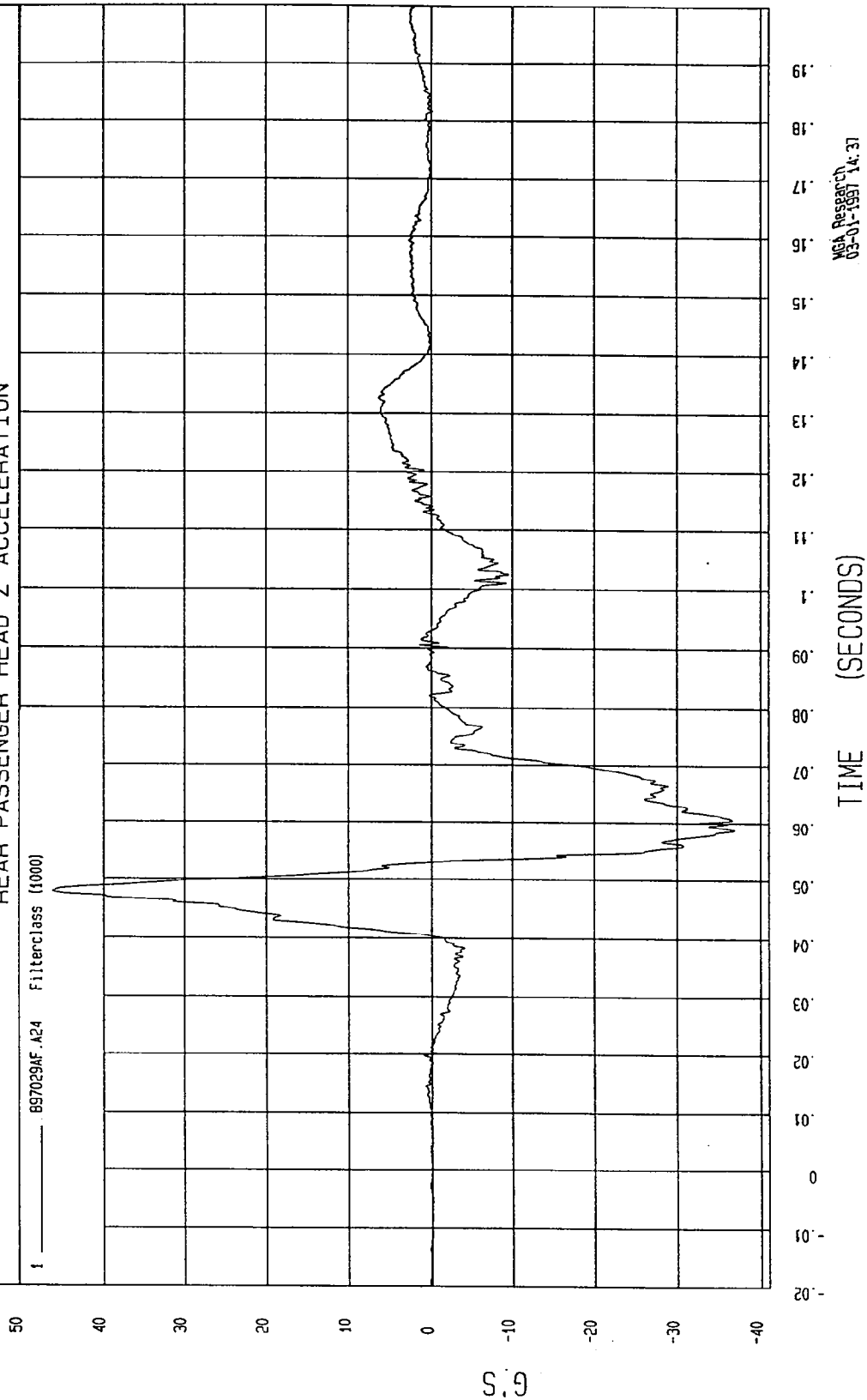
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 02-19-1997

COMPONENT: 1997 CHEVROLET LUMINA (MV0114) Speed: 38 MPH 61.2 KPH

Minimum = -36.85 G'S at 59 msec Maximum = 46.05 G'S at 48 msec

REAR PASSENGER HEAD Z ACCELERATION

1 ——— 897029AF.A24 Filterclass (1000)



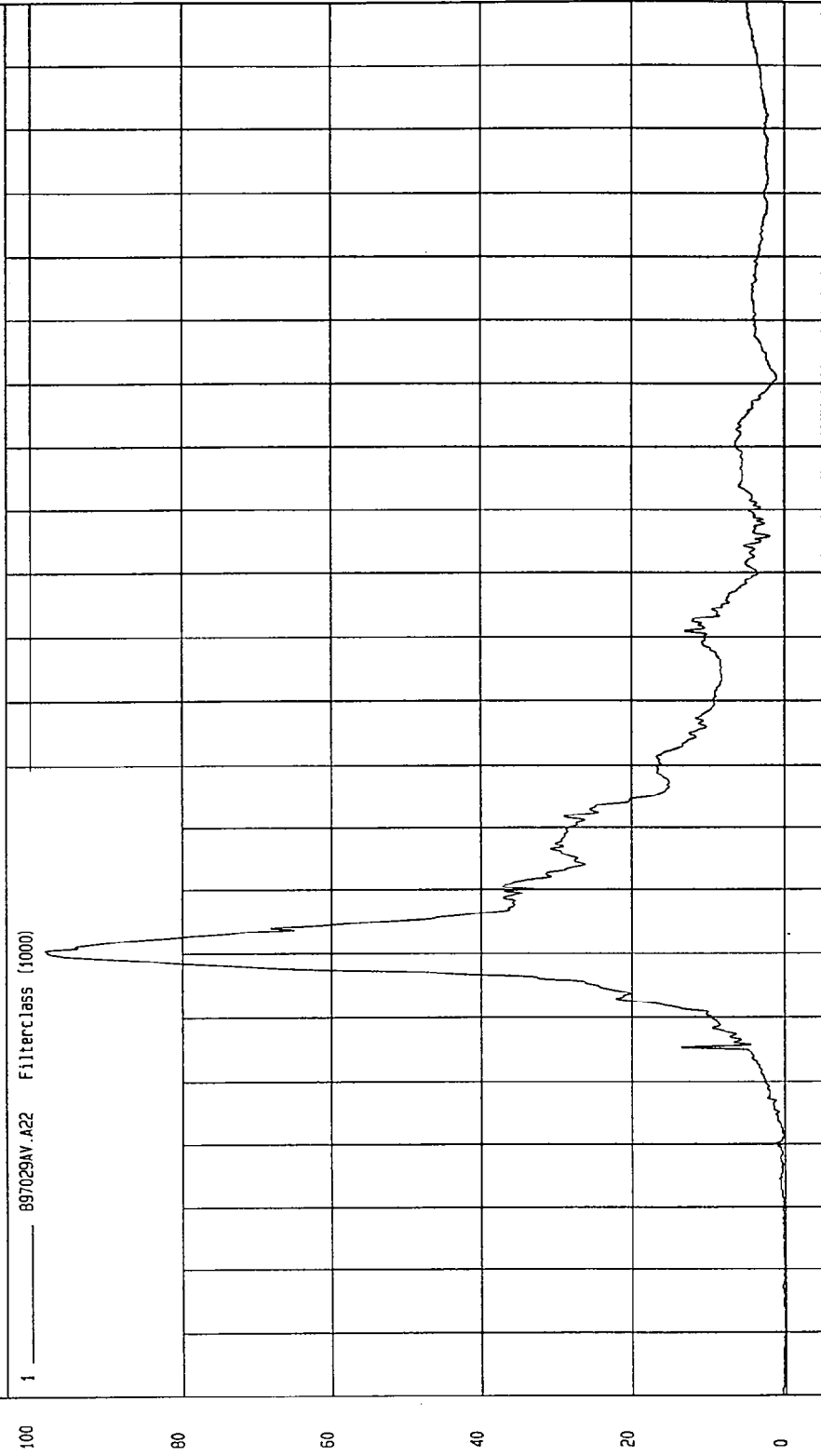
MCA Research
03-01-1997 14:37

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 02-19-1997

COMPONENT: 1997 CHEVROLET LUMINA (MV0114) Speed: 38 MPH 61.2 KPH

Minimum = 1.26E-02 G'S at -4 msec Maximum = 98.25 G'S at 51 msec

REAR PASSENGER HEAD RESULTANT



MGA Research
03-01-1997 1A: 37

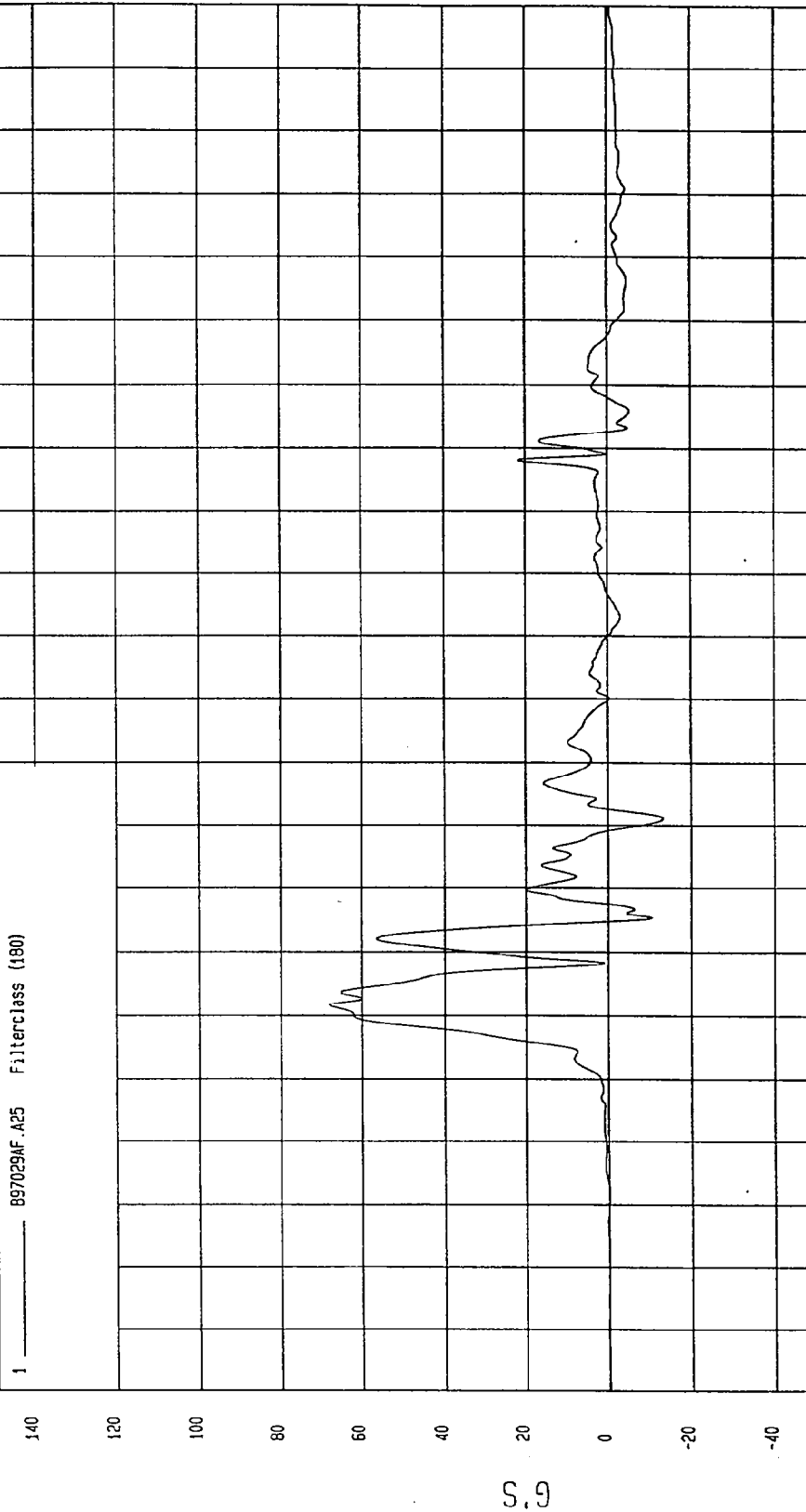
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 02-19-1997

COMPONENT: 1997 CHEVROLET LUMINA (MV0114) Speed: 38 MPH 61.2 KPH

Minimum = -13.22 G'S at 71 msec Maximum = 68.23 G'S at 42 msec

REAR PASSENGER UPPER RIB Y ACCELERATION

1 ——— B97029AF.A25 Filterclass (180)



TIME (SECONDS)

MOA Research
03-01-1997 14:36

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 02-19-1997

Speed: 38 MPH 61.2 KPH

COMPONENT: 1997 CHEVROLET LUMINA (MVO1114)

Maximum = 42.50 KPH at 148 msec

Minimum = -3.55E-02 KPH at 13 msec

REAR PASSENGER UPPER RIB Y VELOCITY

1 897029A1 V25 Filterclass (180)



TIME Seconds

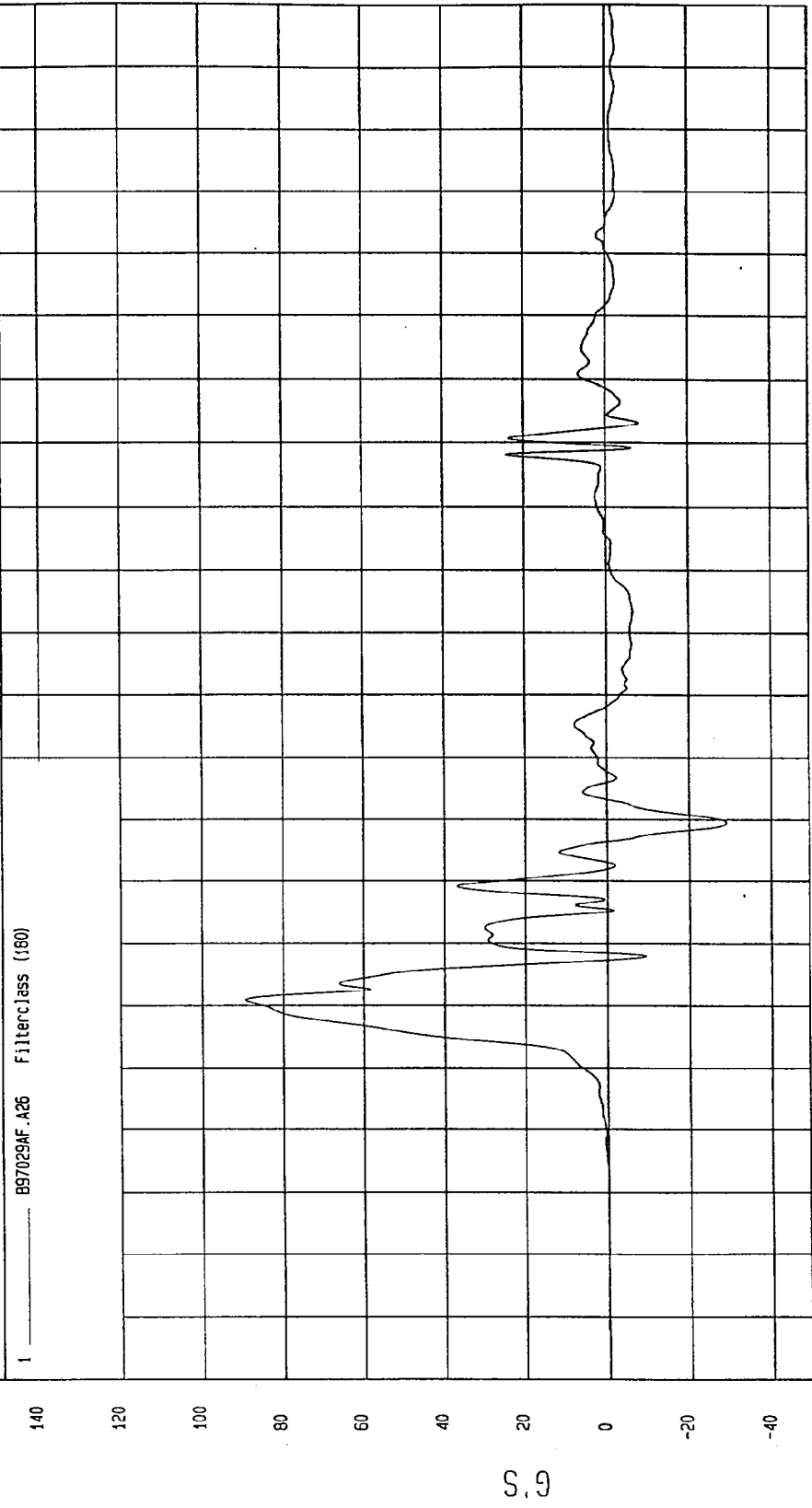
NCA Research
03-01-1997 15.09

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 02-19-1997

COMPONENT: 1997 CHEVROLET LUMINA (MV0114) Speed: 38 MPH 61.2 KPH

Minimum = -28.97 G'S at 70 msec Maximum = 89.36 G'S at 41 msec

REAR PASSENGER LOWER RIB Y ACCELERATION



MCA Research
03-01-1997 14:38

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 02-19-1997

COMPONENT: 1997 CHEVROLET LUMINA (MV01114) Speed: 38 MPH 61.2 KPH

Minimum = -4.04E-02 KPH at 5 msec
Maximum = 40.21 KPH at 66 msec

REAR PASSENGER LOWER RIB Y VELOCITY

1 ——— B97029A1.V25 Filterclass (180)

40

30

20

10

0

KPH

.19

.18

.17

.16

.15

.14

.13

.12

.11

.1

.09

.08

.07

.06

.05

.04

.03

.02

.01

0

-.01

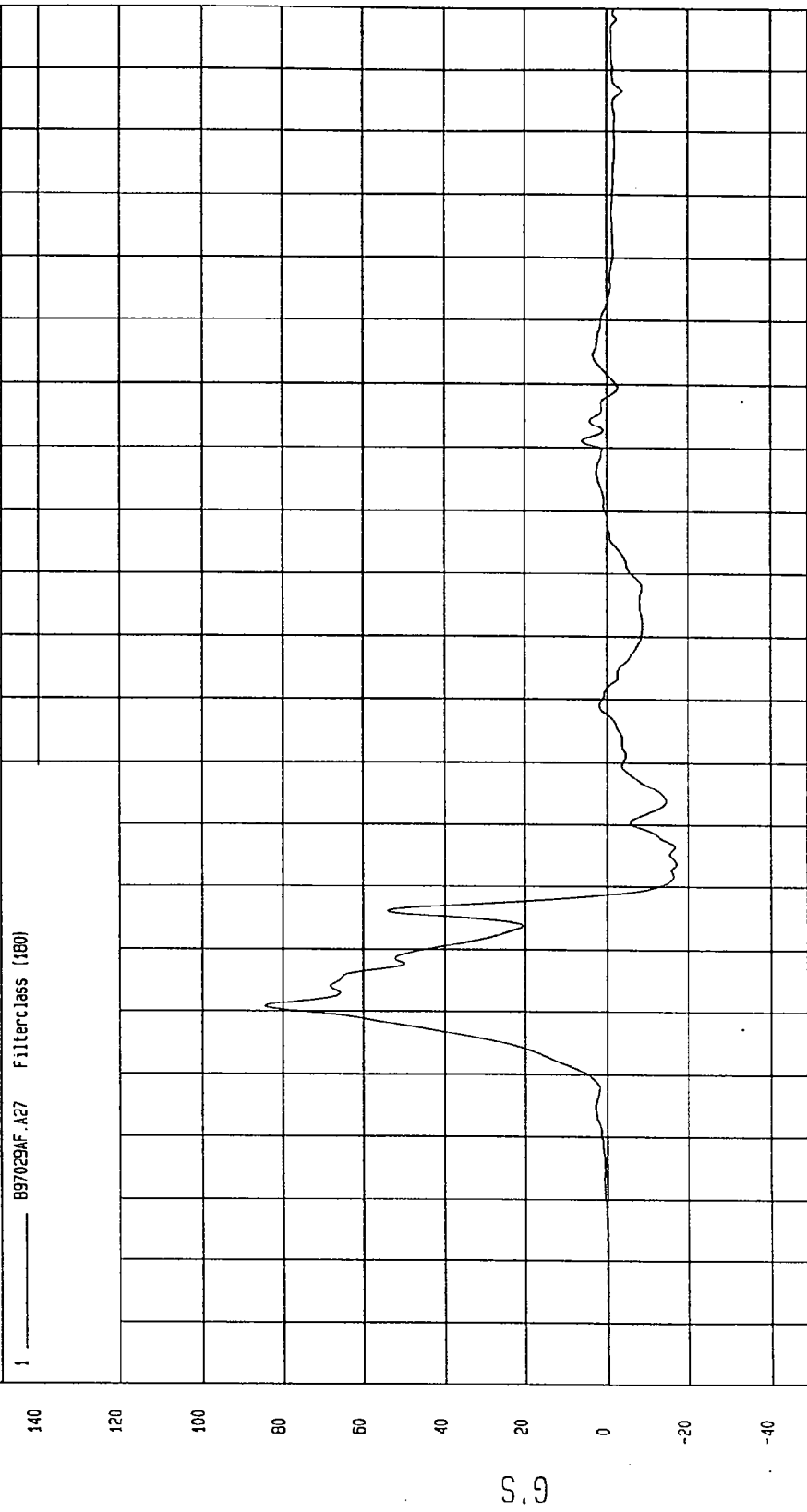
-.02

TIME Seconds

NCI Research
03-01-1997 13:09

TEST: HIGH SPEED LATERAL IMPACT	TEST DATE: 02-19-1997
COMPONENT: 1997 CHEVROLET LUMINA (MV0114)	Speed: 38 MPH 61.2 KPH
Minimum = -17.08 G'S at 64 msec	Maximum = 84.30 G'S at 41 msec

REAR PASSENGER LOWER SPINE Y ACCELERATION



MSA Research
03-01-1997 14:38

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 02-19-1997

Speed: 38 MPH 61.2 KPH

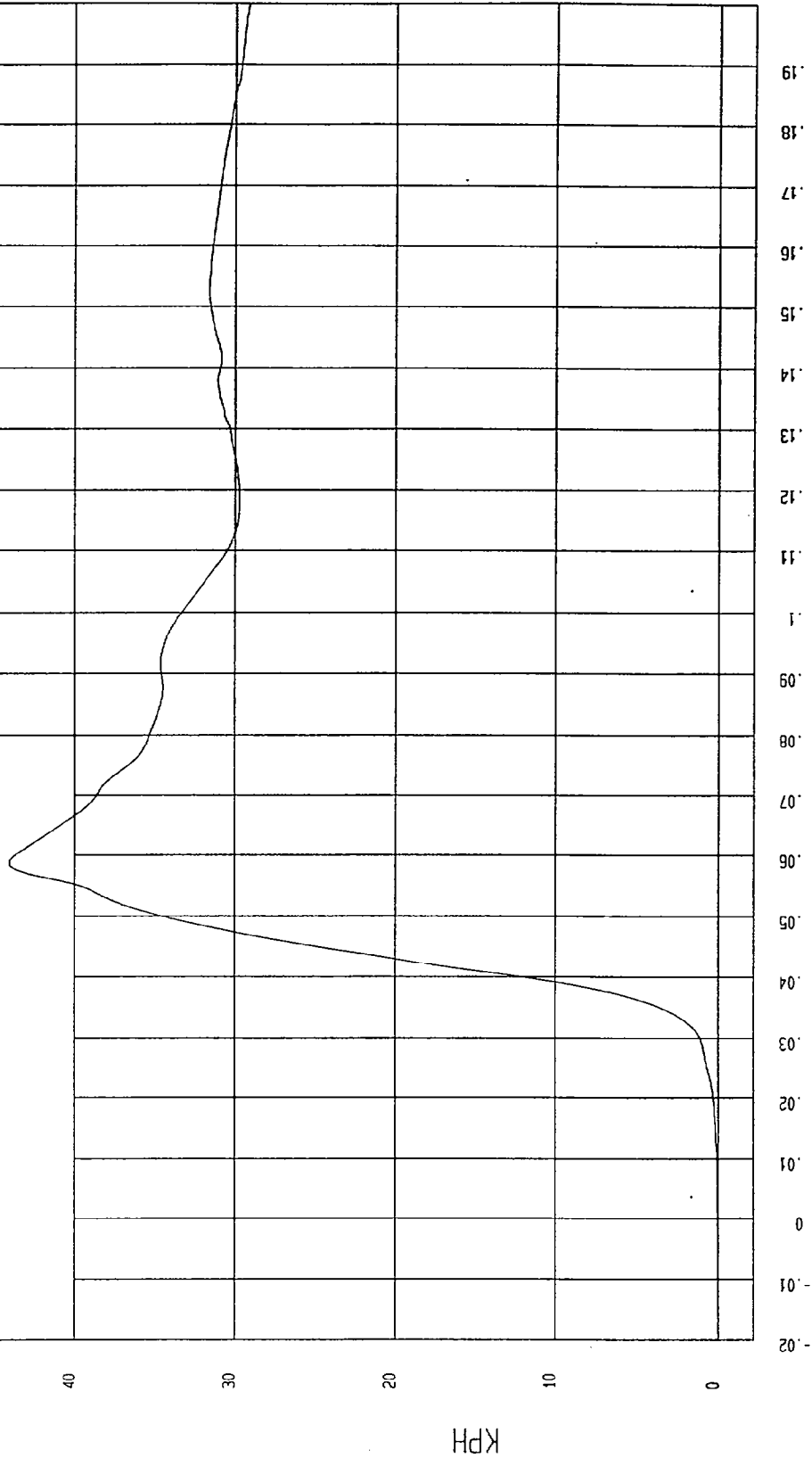
COMPONENT: 1997 CHEVROLET LUMINA (MV0114)

Maximum = 44.12 KPH at 59 msec

Minimum = 0 KPH at -20 msec

REAR PASSENGER LOWER SPINE Y VELOCITY

1 897029A1.V27 Filterclass (180)



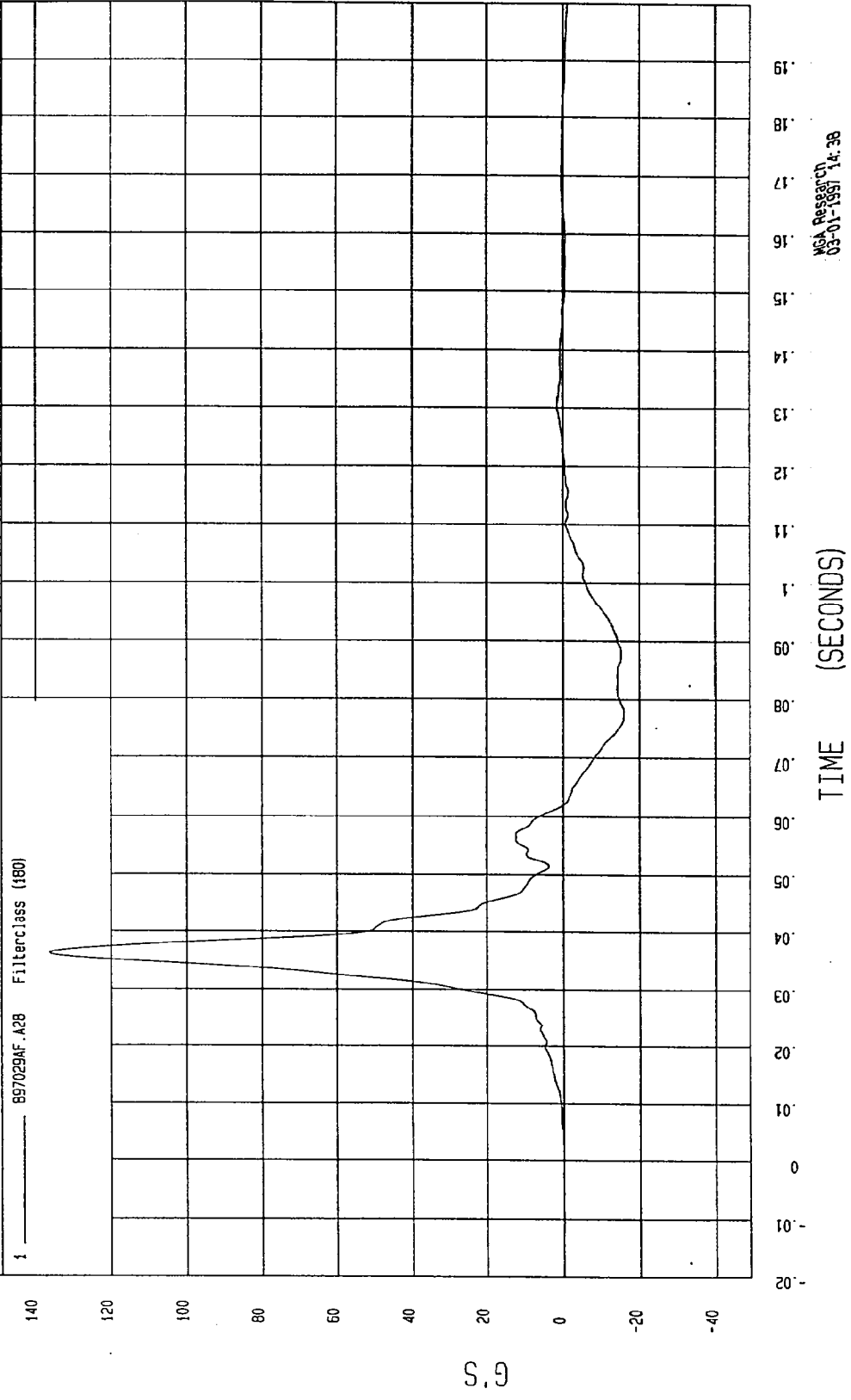
MSA Research
02-01-1997 15:09

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 02-19-1997

COMPONENT: 1997 CHEVROLET LUMINA (MV0114) Speed: 38 MPH 61.2 KPH

Minimum = -15.95 G'S at 78 msec Maximum = 136.28 G'S at 36 msec

REAR PASSENGER PELVIS Y ACCELERATION



TEST: HIGH SPEED LATERAL IMPACT

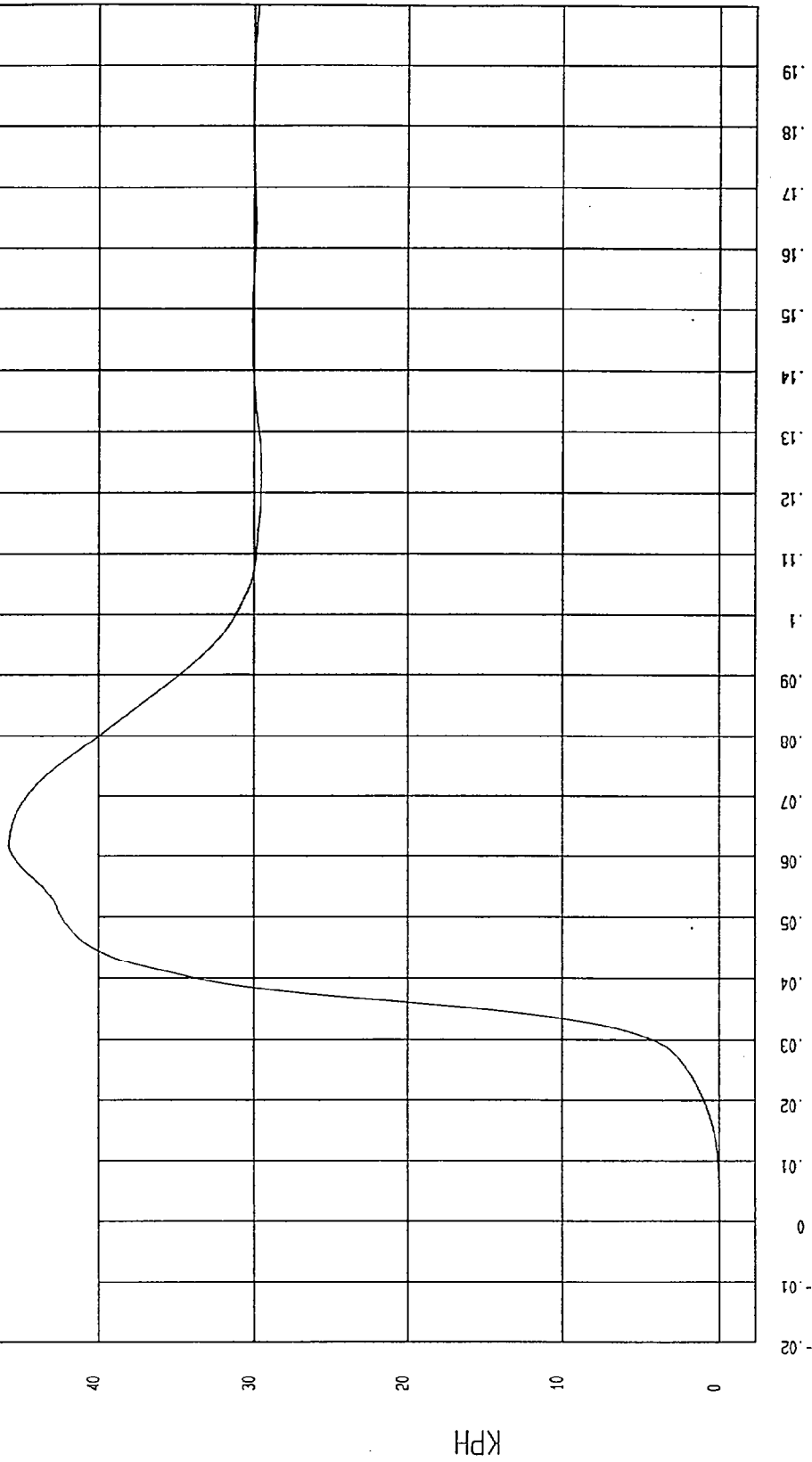
TEST DATE: 02-19-1997

COMPONENT: 1997 CHEVROLET LUMINA (MV0114) Speed: 38 MPH 61.2 KPH

Minimum = -1.52E-02 KPH at -4 msec Maximum = 45.83 KPH at 62 msec

REAR PASSENGER PELVIS Y VELOCITY

1 897029A1.V28 Filterclass (180)



MCA Research
02-01-1997 15:09

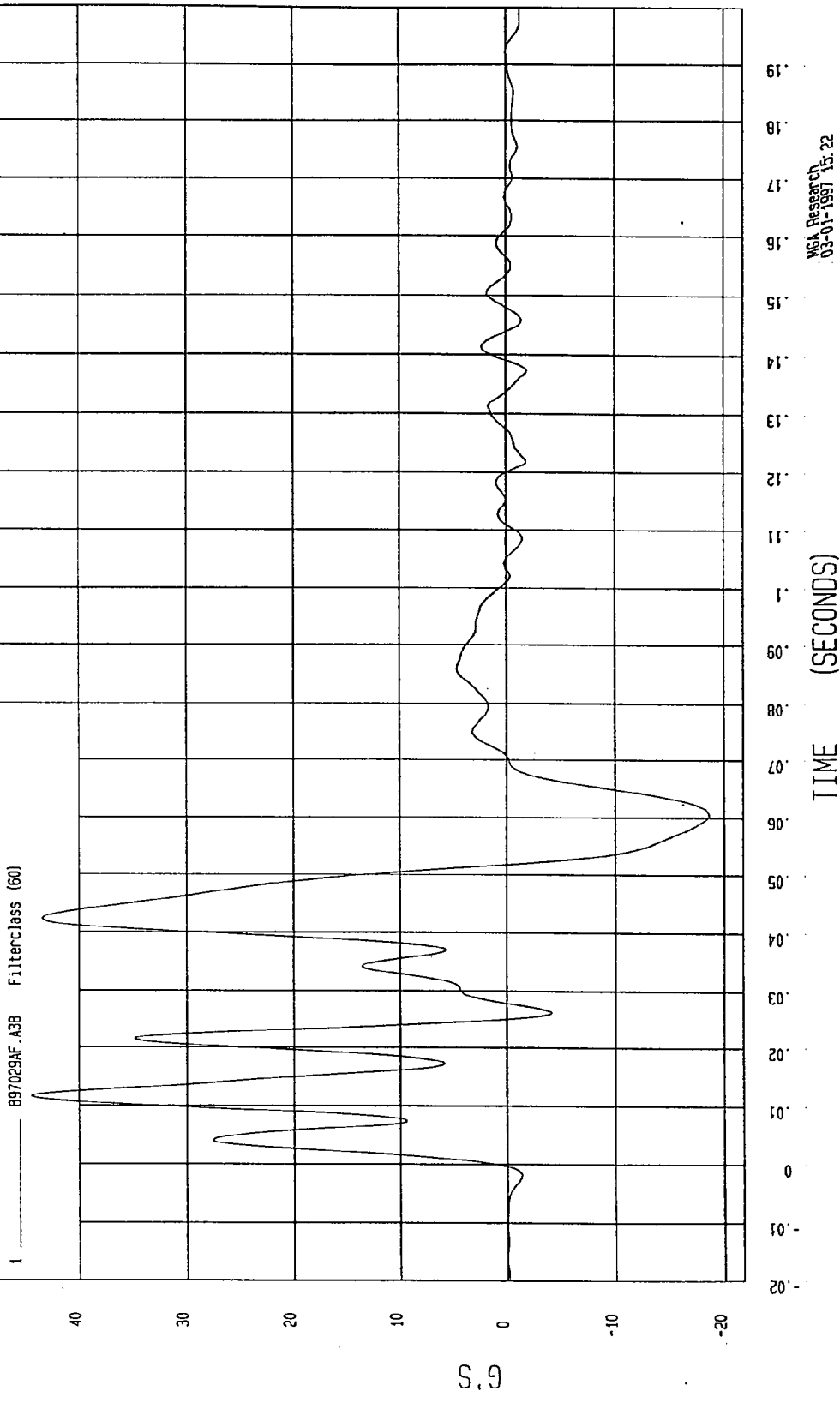
TIME Seconds

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 02-19-1997

COMPONENT: 1997 CHEVROLET LUMINA (MV0114) Speed: 38 MPH 61.2 KPH

Minimum = -18.59 G'S at 60 msec Maximum = 44.53 G'S at 12 msec

LEFT SIDE SILL AT FRONT SEAT Y ACCELERATION



TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 02-19-1997

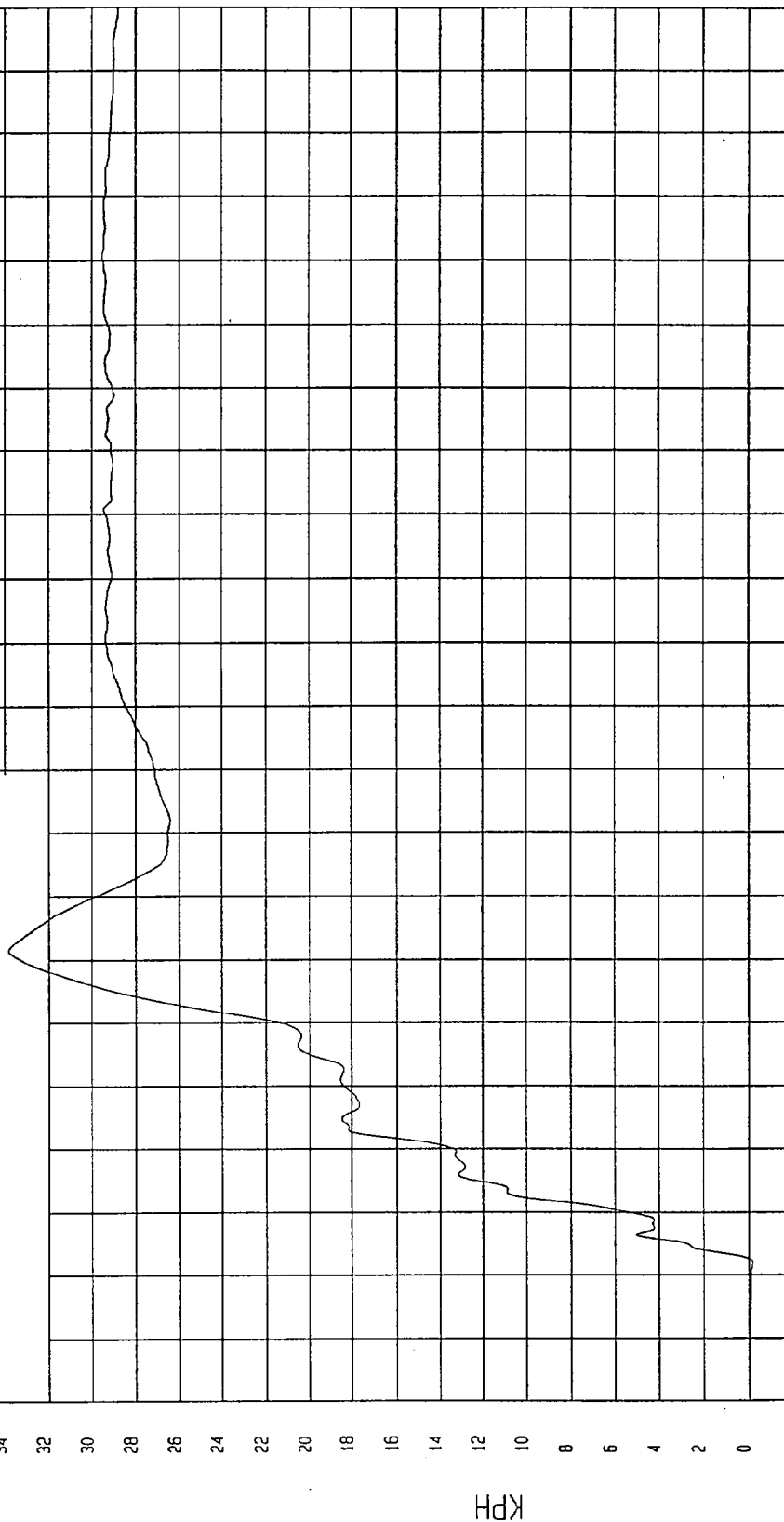
COMPONENT: 1997 CHEVROLET LUMINA (MV0114) Speed: 38 MPH 61.2 KPH

Minimum = -17 KPH at 2 msec Maximum = 33.84 KPH at 52 msec

LEFT SIDE SILL AT FRONT SEAT Y VELOCITY

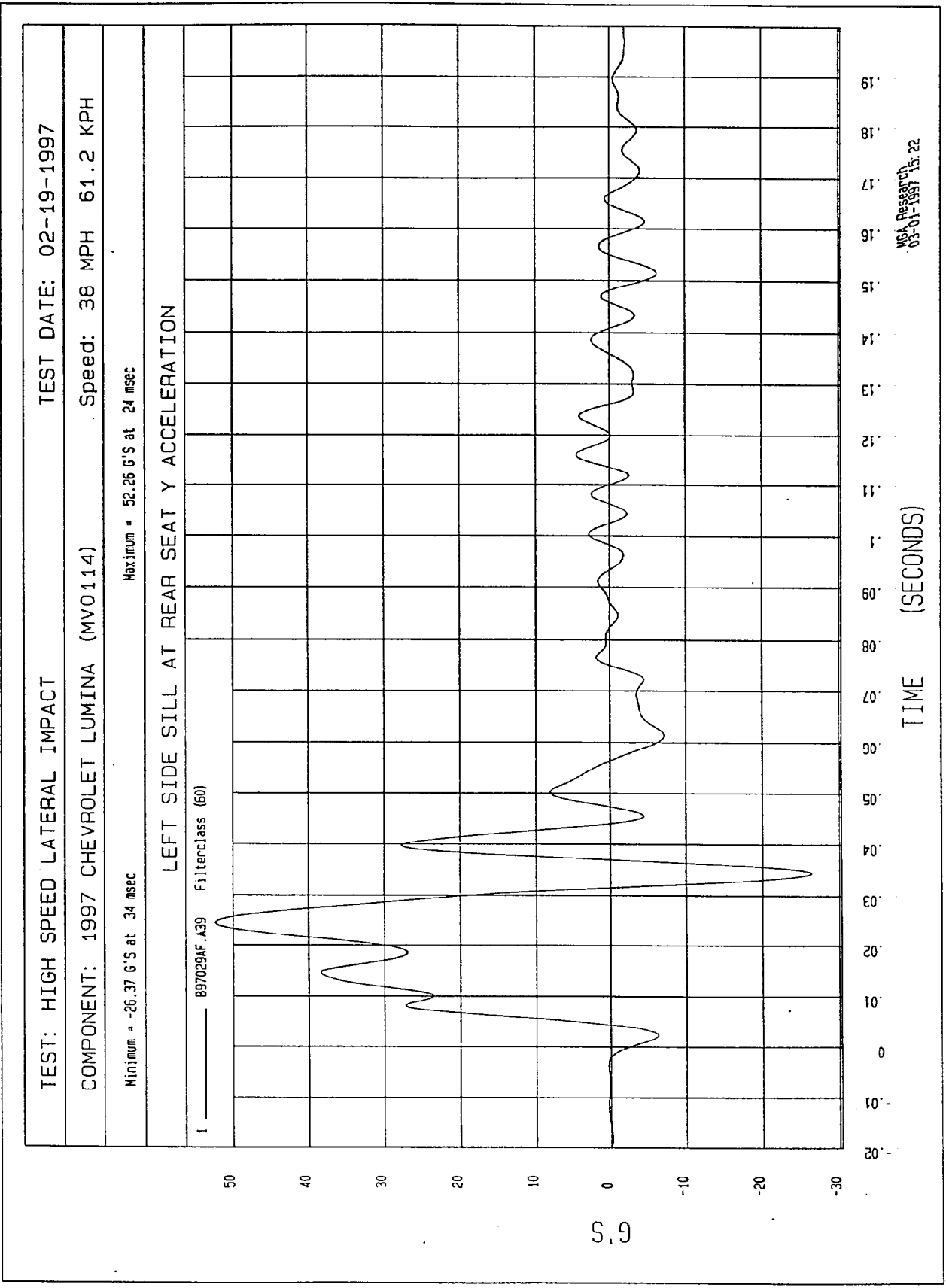
1 — B97029A1.V38 Filterclass (180)

KPH



NSA Research
03-01-1997 13:19

TIME Seconds

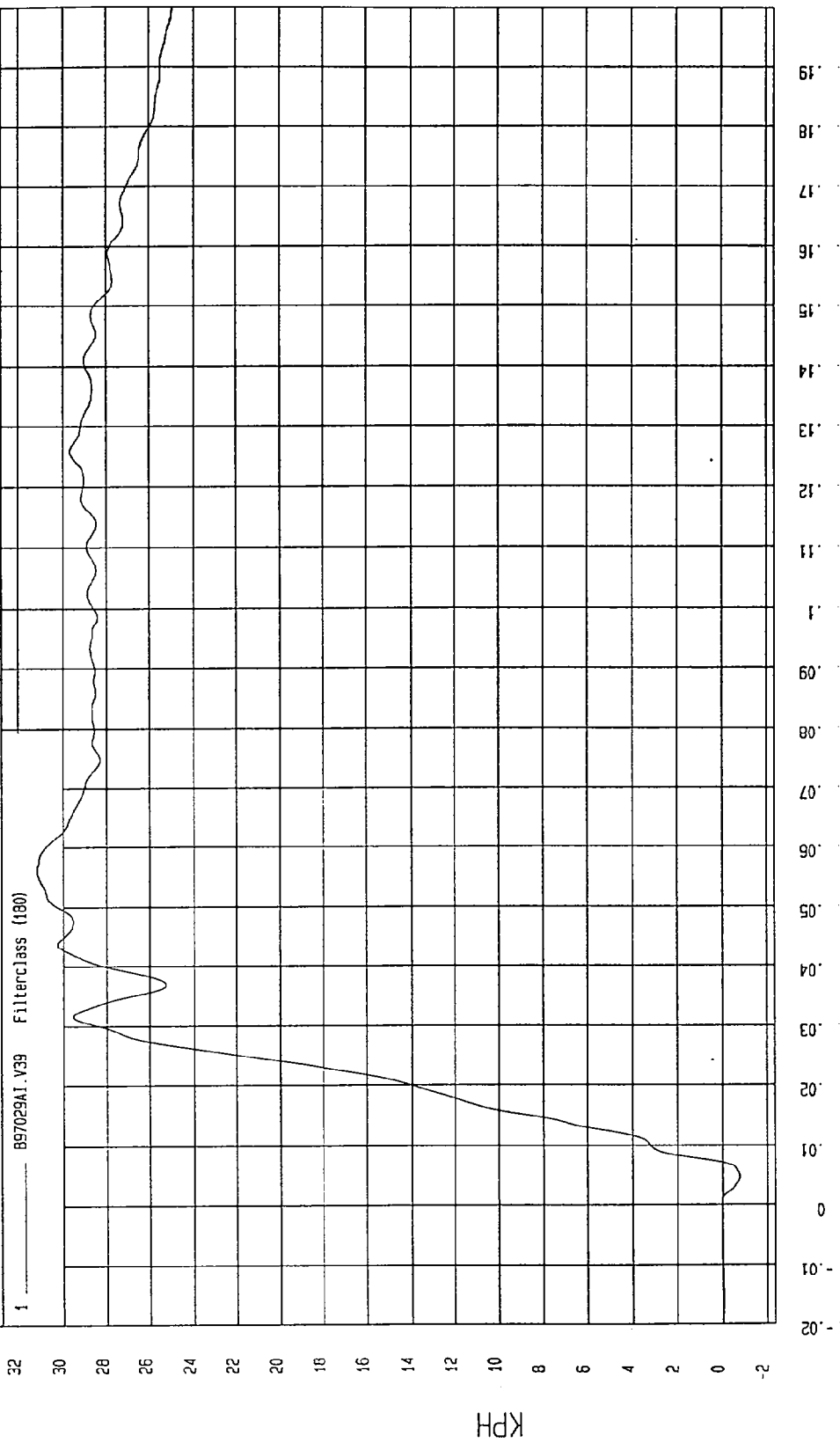


TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 02-19-1997

COMPONENT: 1997 CHEVROLET LUMINA (MV0114) Speed: 38 MPH 61.2 KPH

Minimum = -76 KPH at 5 msec Maximum = 31.17 KPH at 56 msec

LEFT SIDE SILL AT REAR SEAT Y VELOCITY



MGA Research
03-01-1997 15:19

TIME Seconds

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 02-19-1997

Speed: 38 MPH 61.2 KPH

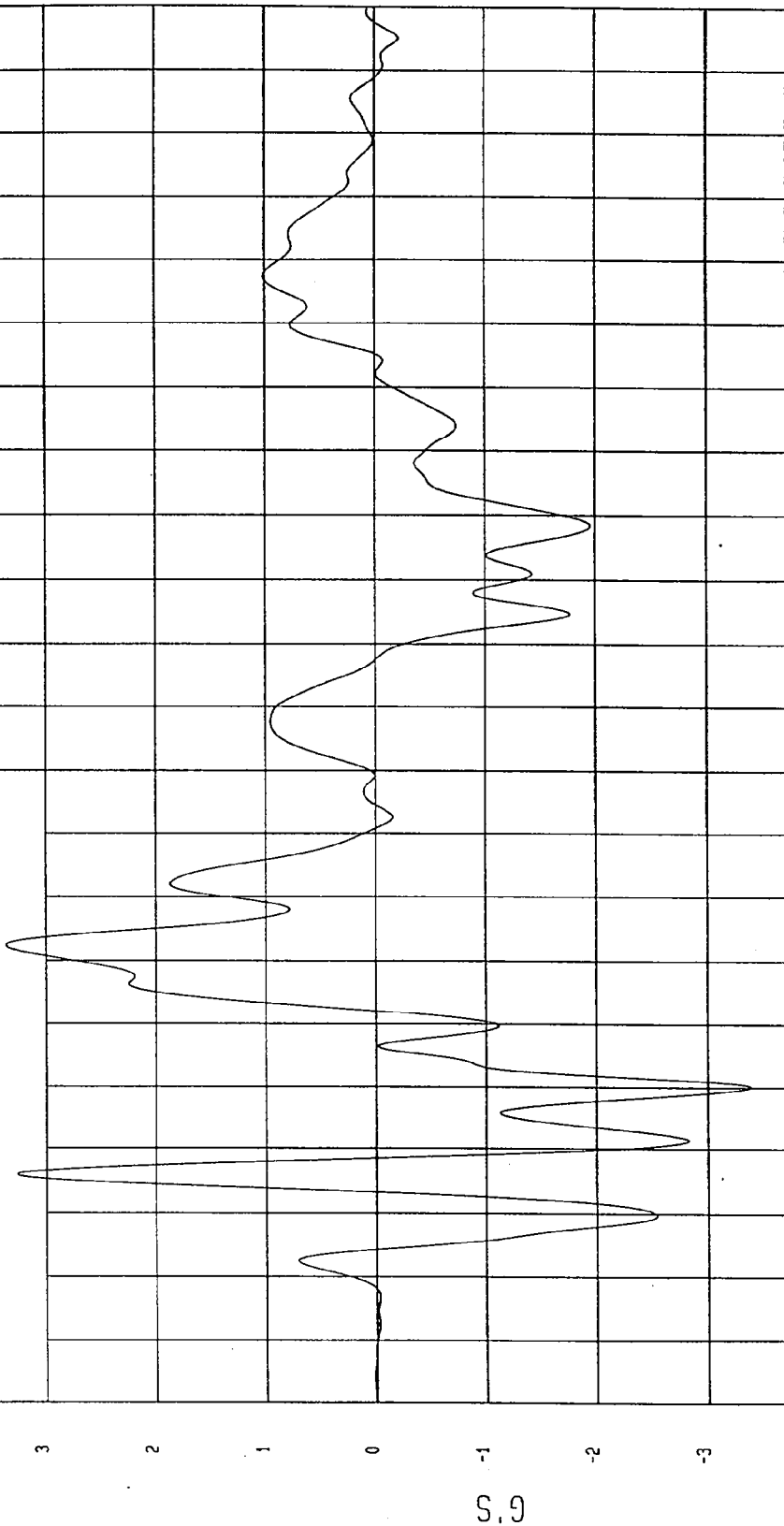
COMPONENT: 1997 CHEVROLET LUMINA (MV0114)

Maximum = 3.35 G'S at 52 msec

Minimum = -3.37 G'S at 30 msec

RIGHT SIDE SILL AT FRONT SEAT X ACCELERATION

1 ——— 897029AF.A32 Filterclass (60)



NCA Research
03-01-1997 15:22

TIME (SECONDS)

G.S

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 02-19-1997

Speed: 38 MPH 61.2 KPH

COMPONENT: 1997 CHEVROLET LUMINA (MVO1114)

Maximum = .66 KPH at 97 msec

Minimum = -1.34 KPH at 42 msec

RIGHT SIDE SILL AT FRONT SEAT X VELOCITY

1 B97029A1.V32 Filterclass (180)

KPH

TIME Seconds

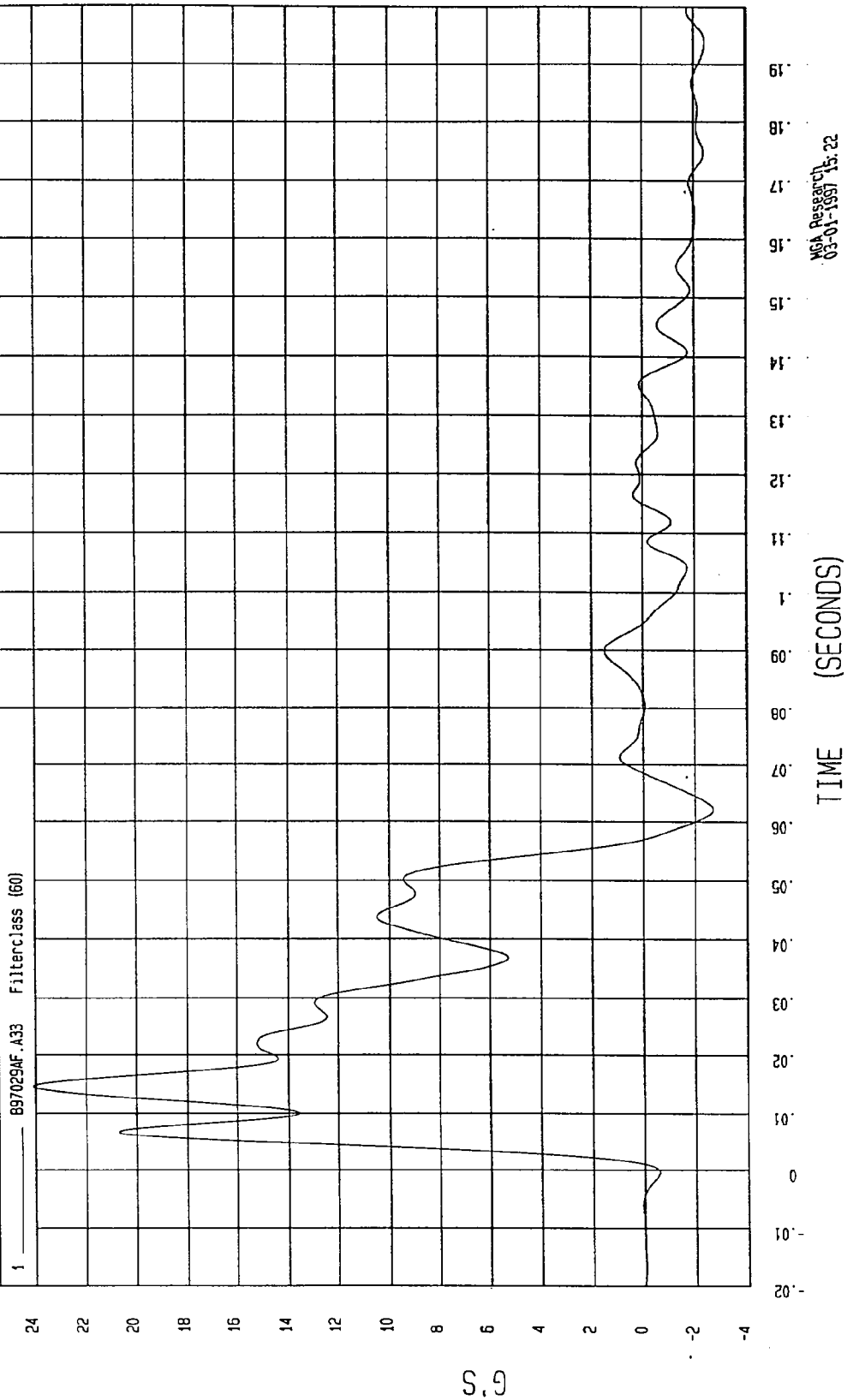
NCA Research
03-01-1997 15:19

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 02-19-1997

COMPONENT: 1997 CHEVROLET LUMINA (MV0114) Speed: 38 MPH 61.2 KPH

Minimum = -2.70 G'S at 62 msec Maximum = 24.08 G'S at 15 msec

RIGHT SIDE SILL AT FRONT SEAT Y ACCELERATION



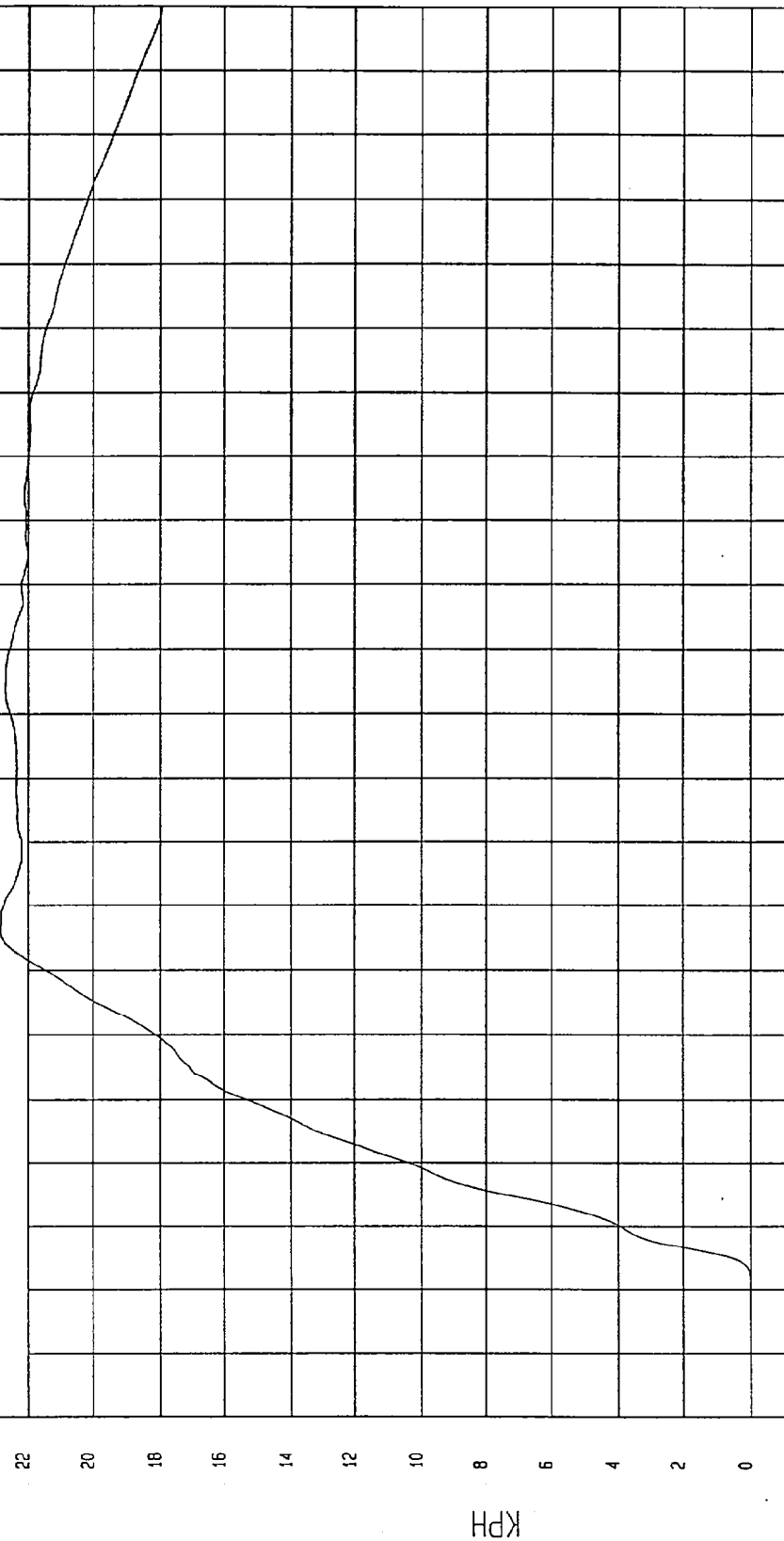
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 02-19-1997

COMPONENT: 1997 CHEVROLET LUMINA (MV0114) Speed: 38 MPH 61.2 KPH

Minimum = -4.91E-03 KPH at -12 msec Maximum = 22.85 KPH at 56 msec

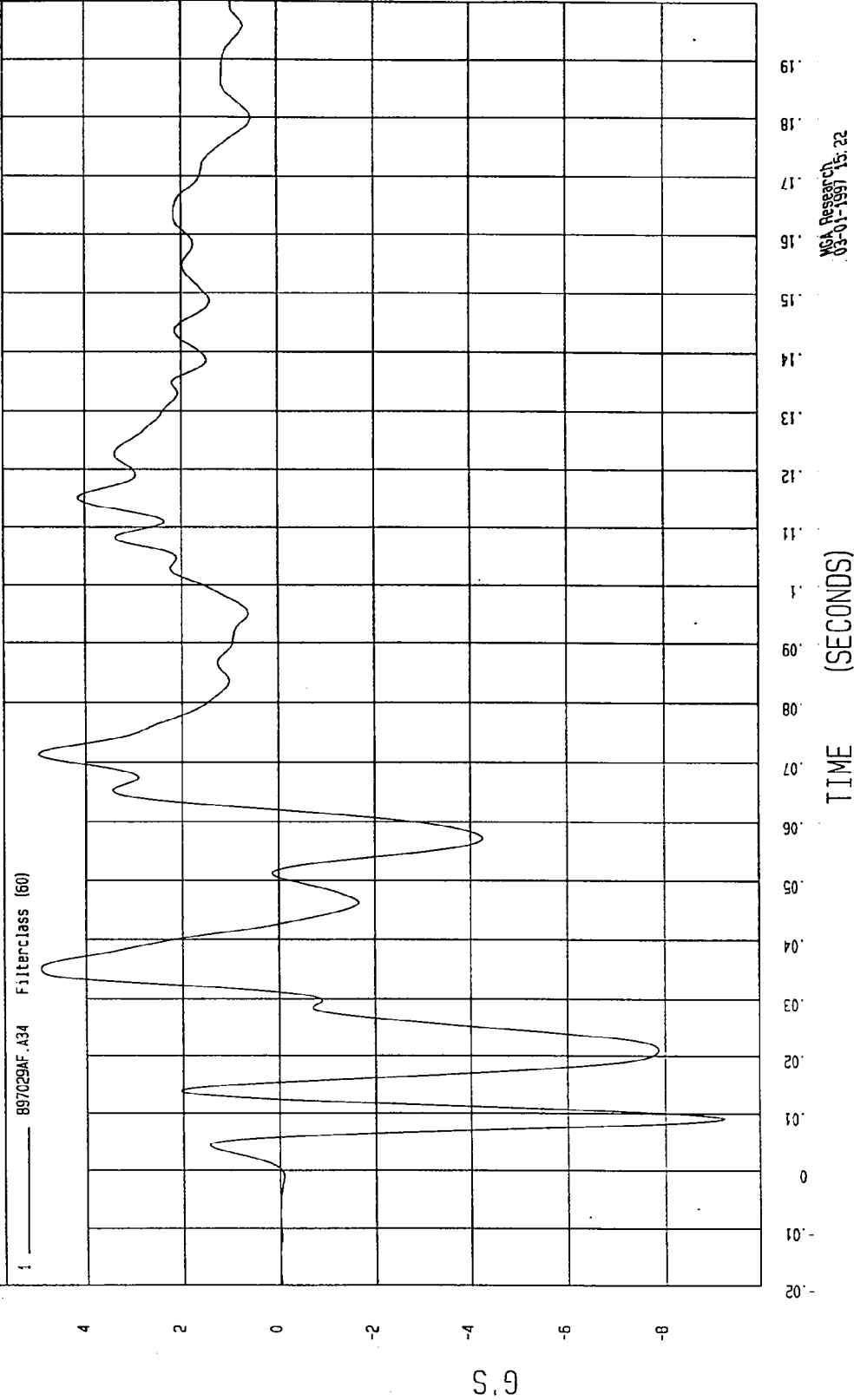
RIGHT SIDE SILL AT FRONT SEAT Y VELOCITY

1 897029A1.V33 Filterclass (180)



NGA Research
03-01-1997 15.19

TEST: HIGH SPEED LATERAL IMPACT	TEST DATE: 02-19-1997
COMPONENT: 1997 CHEVROLET LUMINA (MV0114)	Speed: 38 MPH 61.2 KPH
Minimum = -9.22 G'S at 9 msec	
Maximum = 4.95 G'S at 71 msec	
RIGHT SIDE SILL AT FRONT SEAT Z ACCELERATION	



TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 02-19-1997

COMPONENT: 1997 CHEVROLET LUMINA (MVO1114)

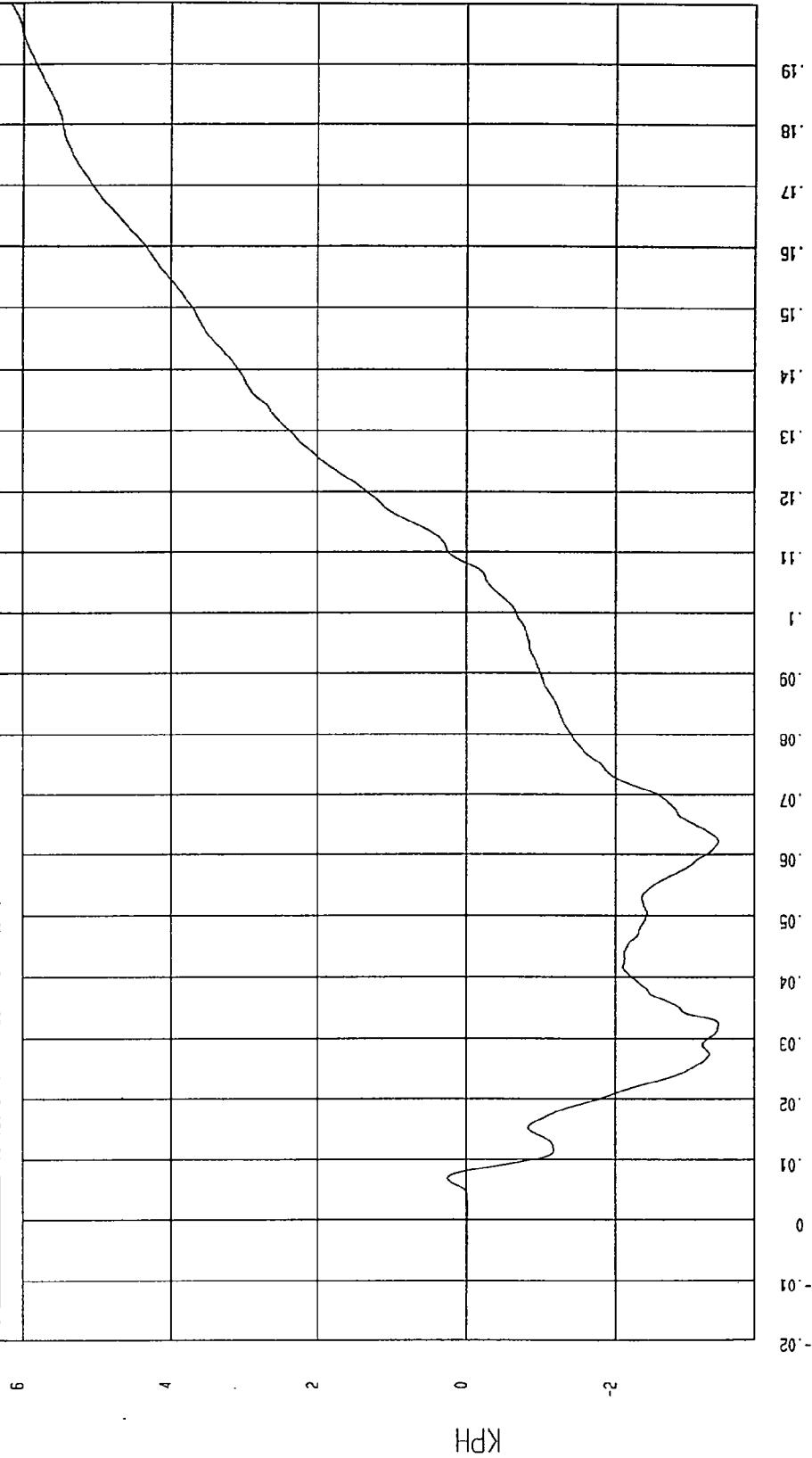
Speed: 38 MPH 61.2 KPH

Minimum = -3.37 KPH at 32 msec

Maximum = 6.15 KPH at 200 msec

RIGHT SIDE SILL AT FRONT SEAT Z VELOCITY

1 897029A1.V34 Filterclass (180)



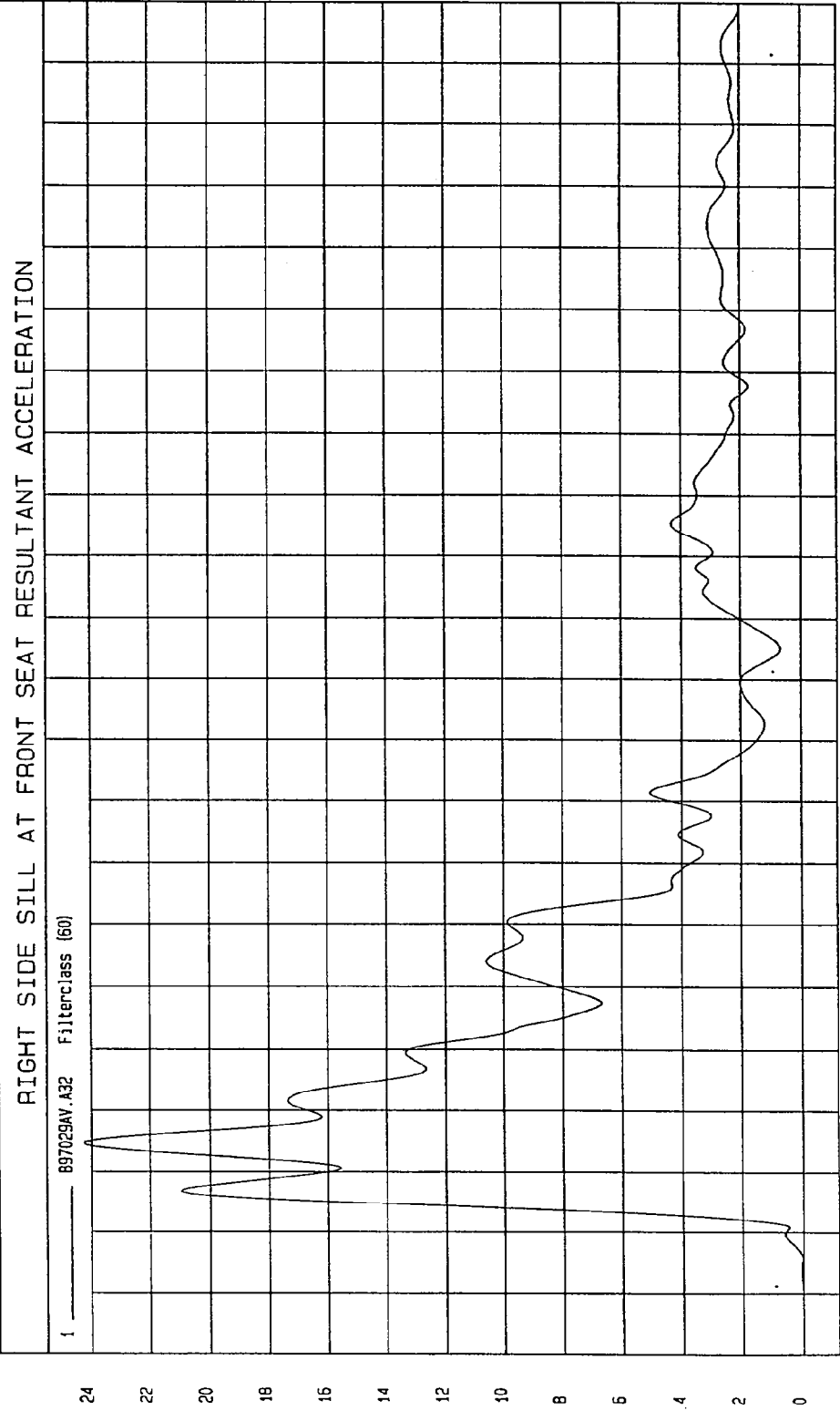
MCA Research
03-01-1997 15:19

TIME Seconds

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 02-19-1997

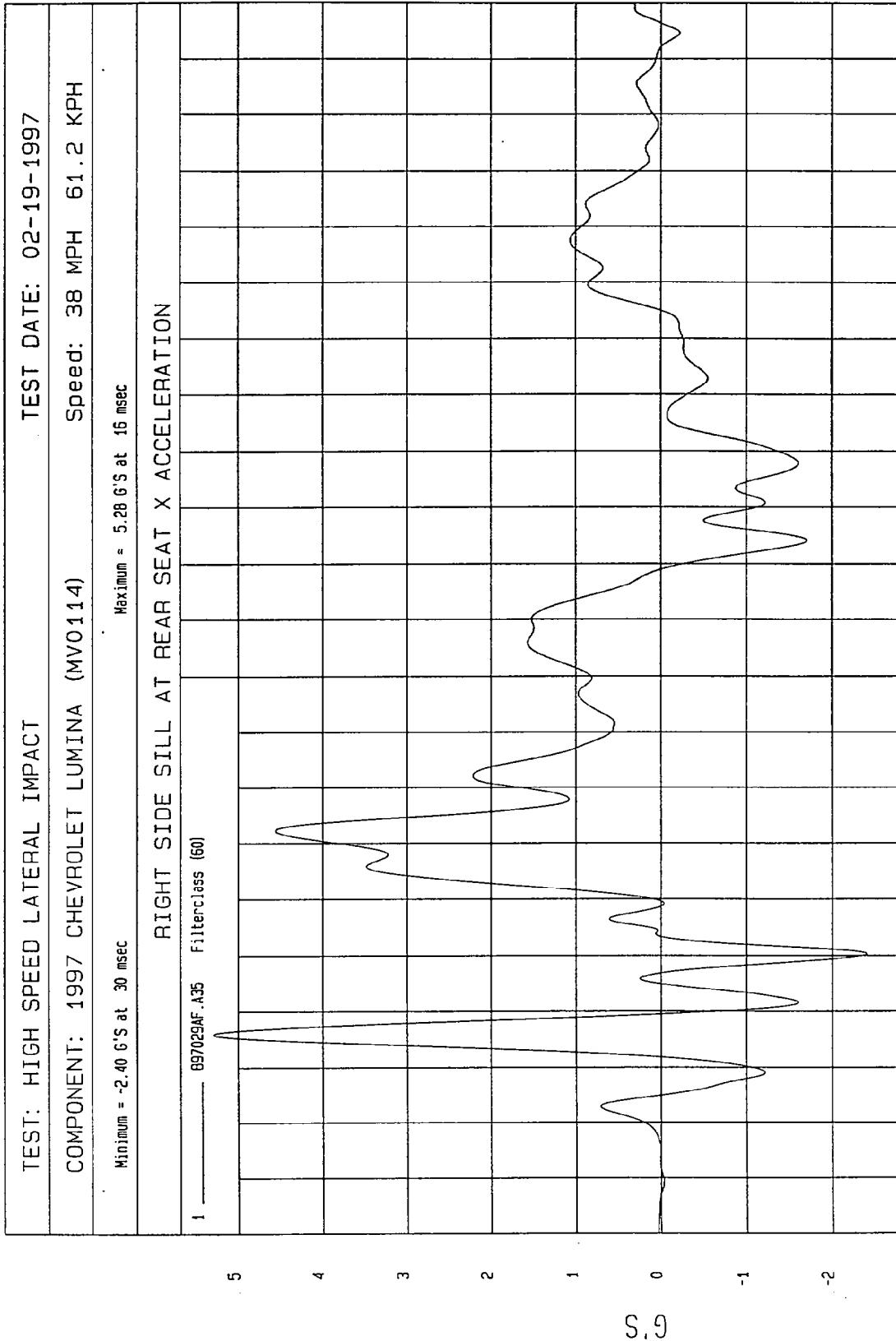
COMPONENT: 1997 CHEVROLET LUMINA (MV0114) Speed: 38 MPH 61.2 KPH

Minimum = 8.56E-03 G'S at -14 msec Maximum = 24.23 G'S at 15 msec



TIME (SECONDS)

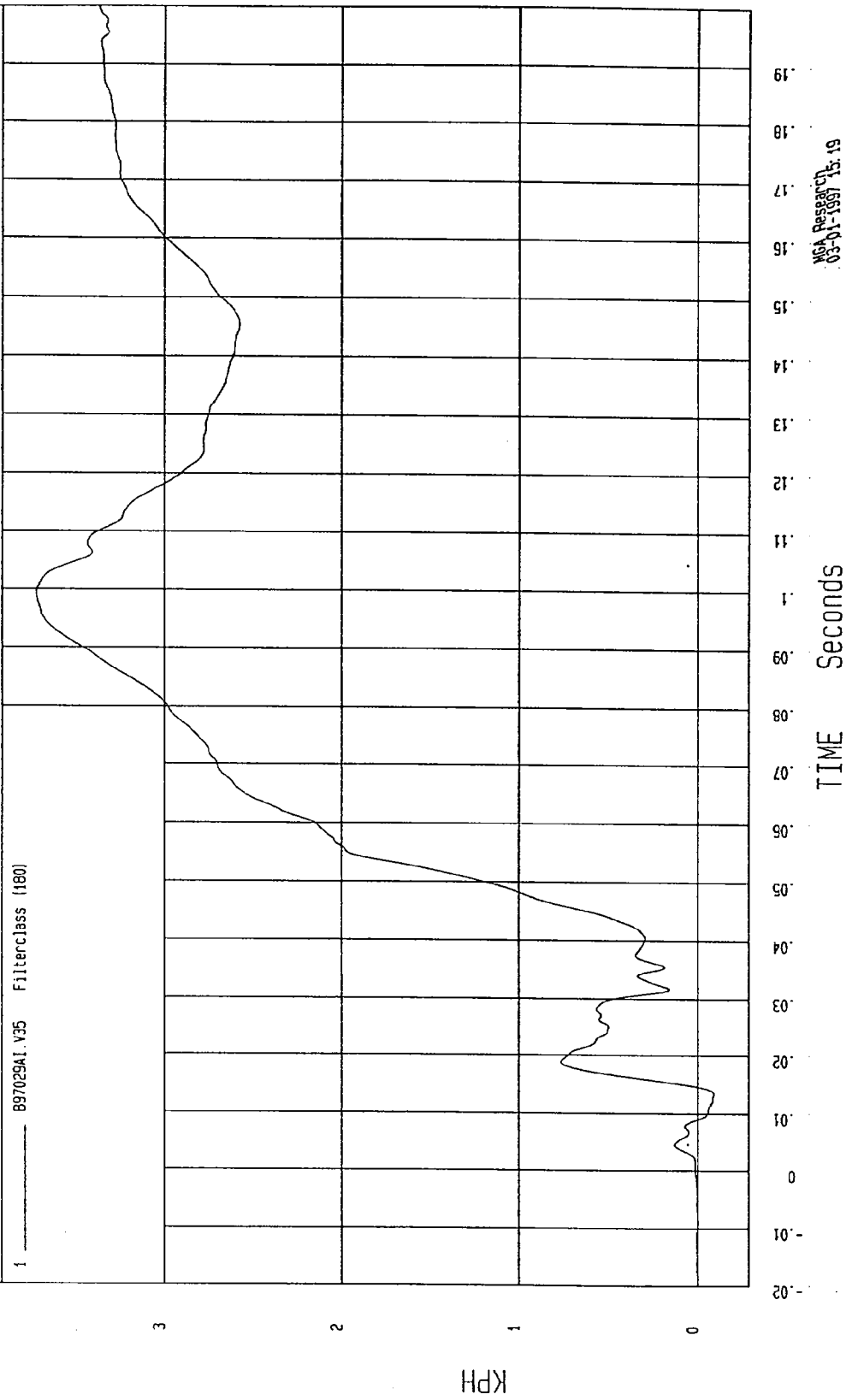
MSA Research
03-01-1997 15:26



NSA Research
03-01-1997 15:23

TEST: HIGH SPEED LATERAL IMPACT	TEST DATE: 02-19-1997
COMPONENT: 1997 CHEVROLET LUMINA (MVO114)	Speed: 38 MPH 61.2 KPH
Minimum = -8.73E-02 KPH at 13 msec	Maximum = 3.71 KPH at 99 msec

RIGHT SIDE SILL AT REAR SEAT X VELOCITY



TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 02-19-1997

Speed: 38 MPH 61.2 KPH

COMPONENT: 1997 CHEVROLET LUMINA (MV0114)

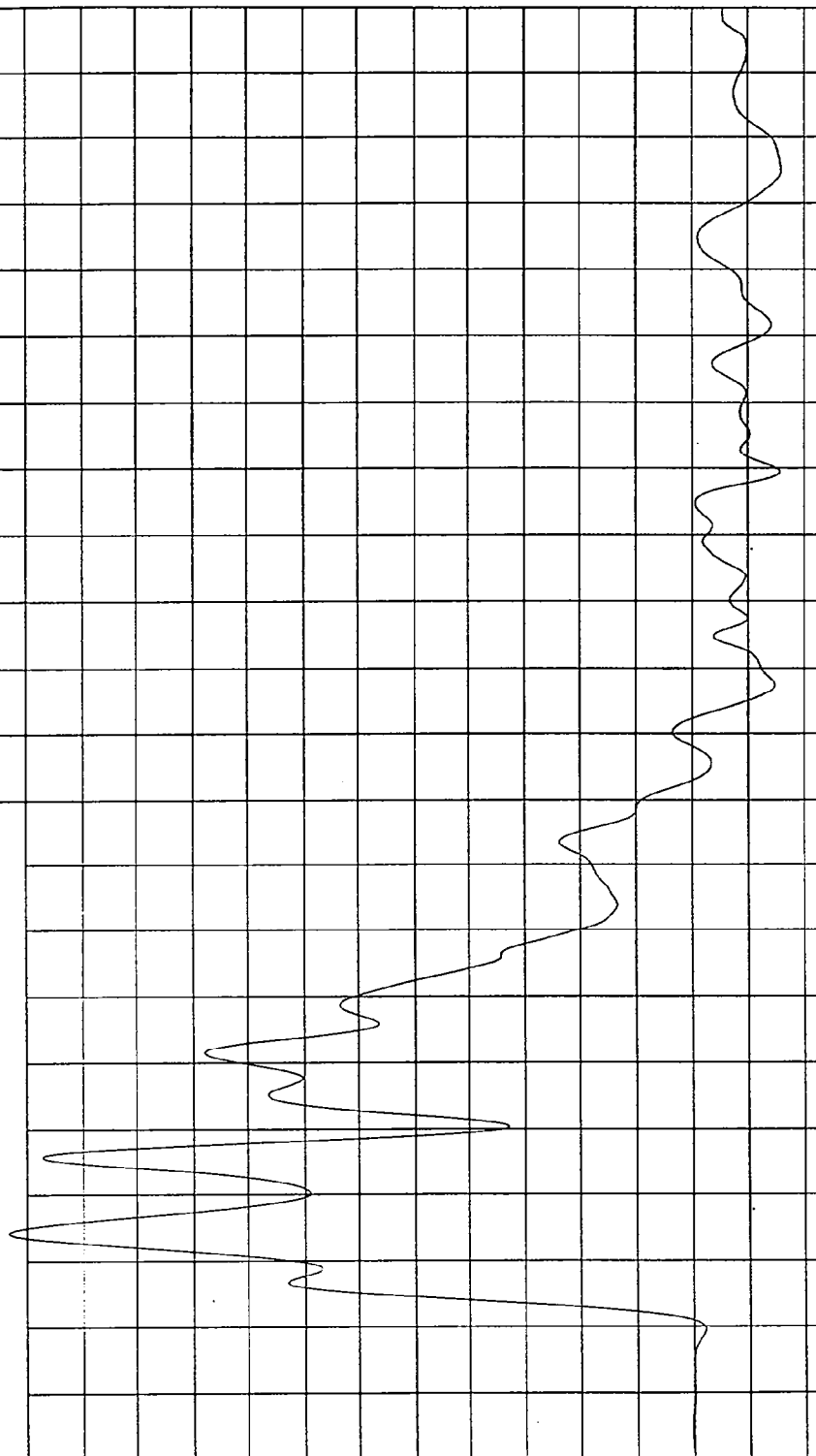
Maximum = 24.64 G'S at 14 msec

Minimum = -3.17 G'S at 175 msec

RIGHT SIDE SILL AT REAR SEAT Y ACCELERATION

26
24
22
20
18
16
14
12
10
8
6
4
2
0
-2
-4

1 ——— B97029AF.A36 FilterClass (60)



MSA Research
03-01-1997 15:23

TIME (SECONDS)

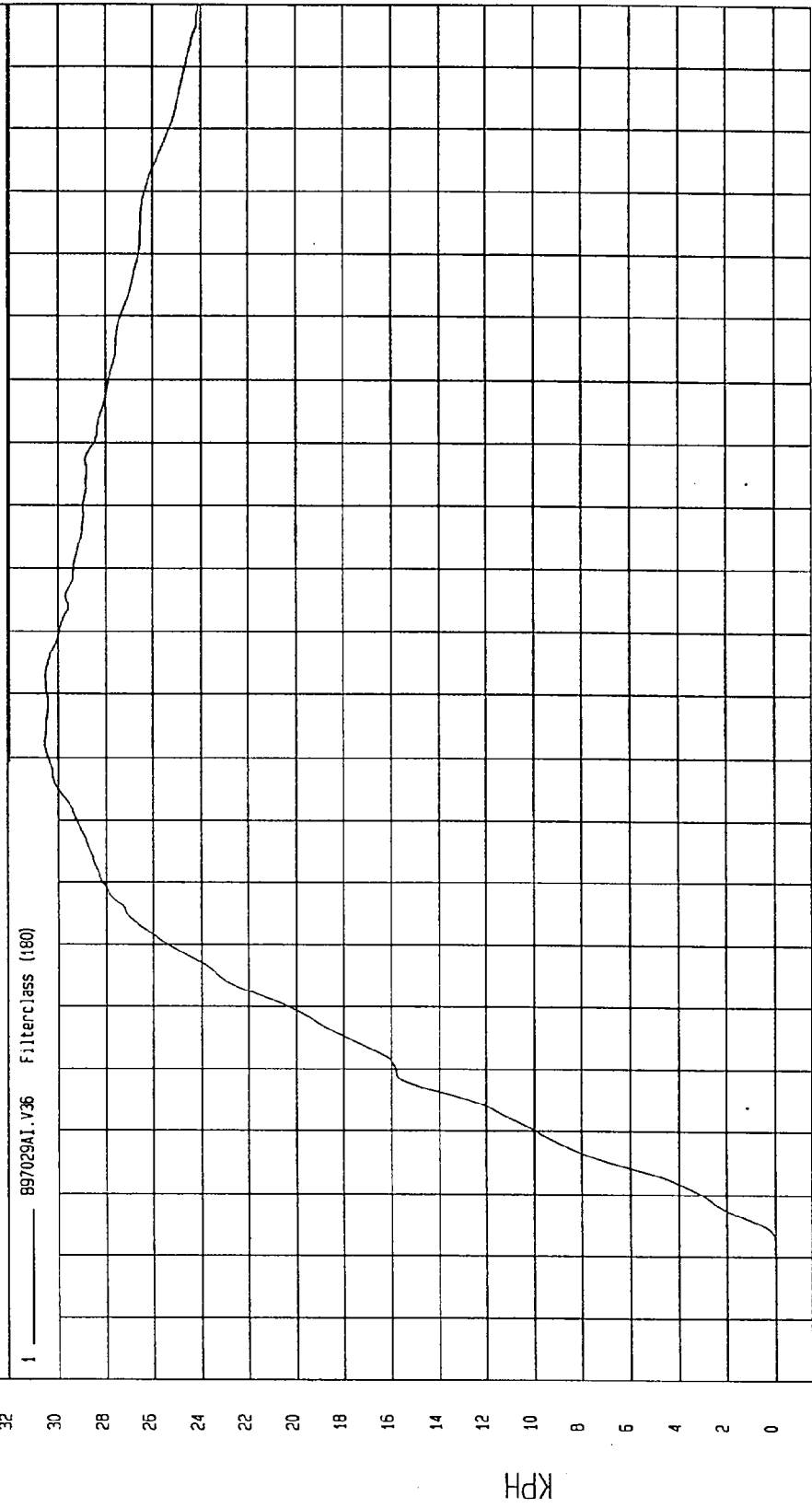
G's

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 02-19-1997

COMPONENT: 1997 CHEVROLET LUMINA (MV0114) Speed: 38 MPH 61.2 KPH

Minimum = -3.36E-05 KPH at -20 msec Maximum = 30.54 KPH at 82 msec

RIGHT SIDE SILL AT REAR SEAT Y VELOCITY



TIME Seconds

NGA Research
03-01-1997 15:20

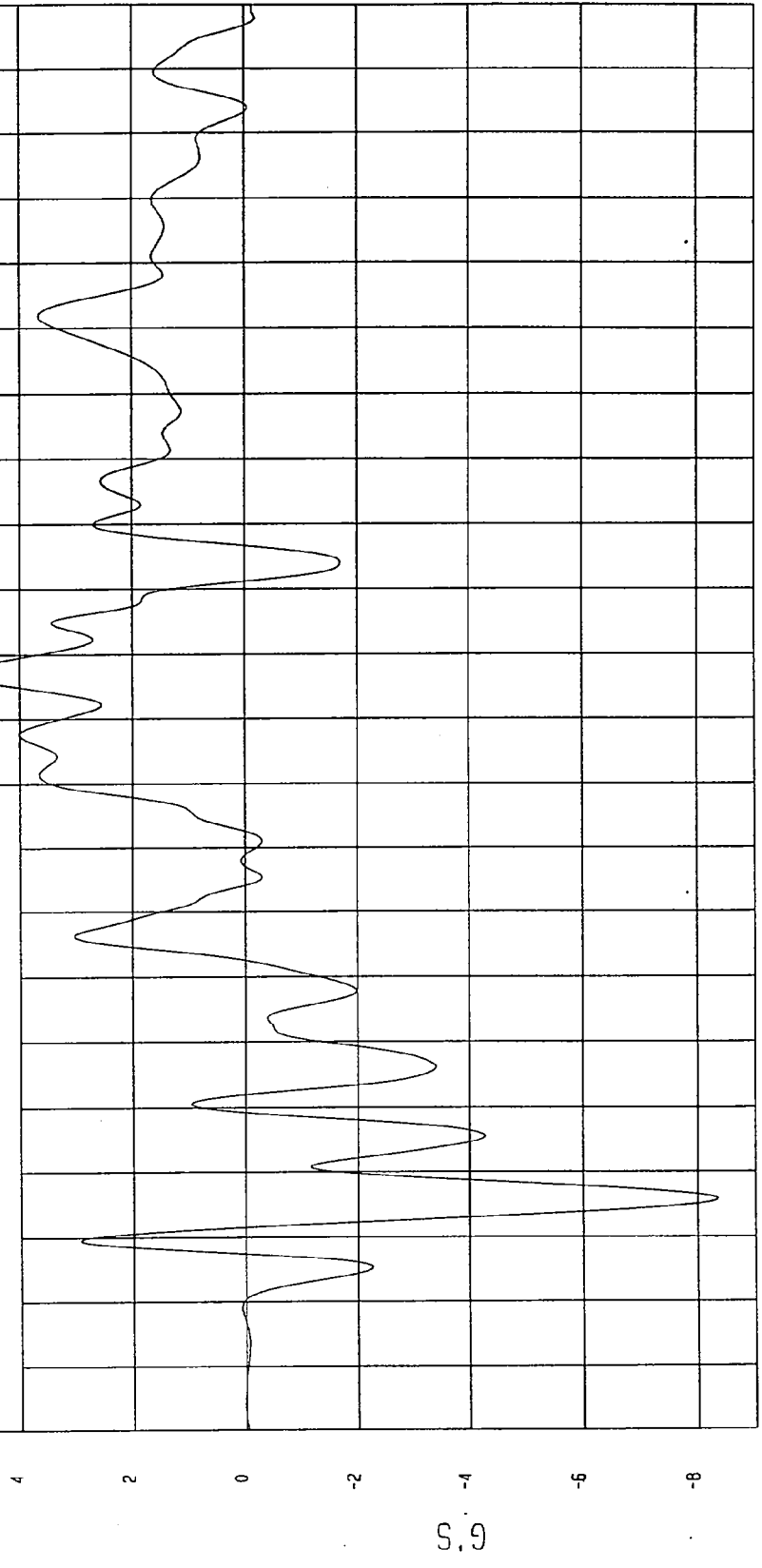
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 02-19-1997

COMPONENT: 1997 CHEVROLET LUMINA (MV0114) Speed: 38 MPH 61.2 KPH

Minimum = -8.34 G's at 16 msec Maximum = 5.07 G's at 97 msec

RIGHT SIDE SILL AT REAR SEAT Z ACCELERATION

1 _____ B97029AF.A37 Filterclass (60)



MCA Research
03-01-1997 15:23

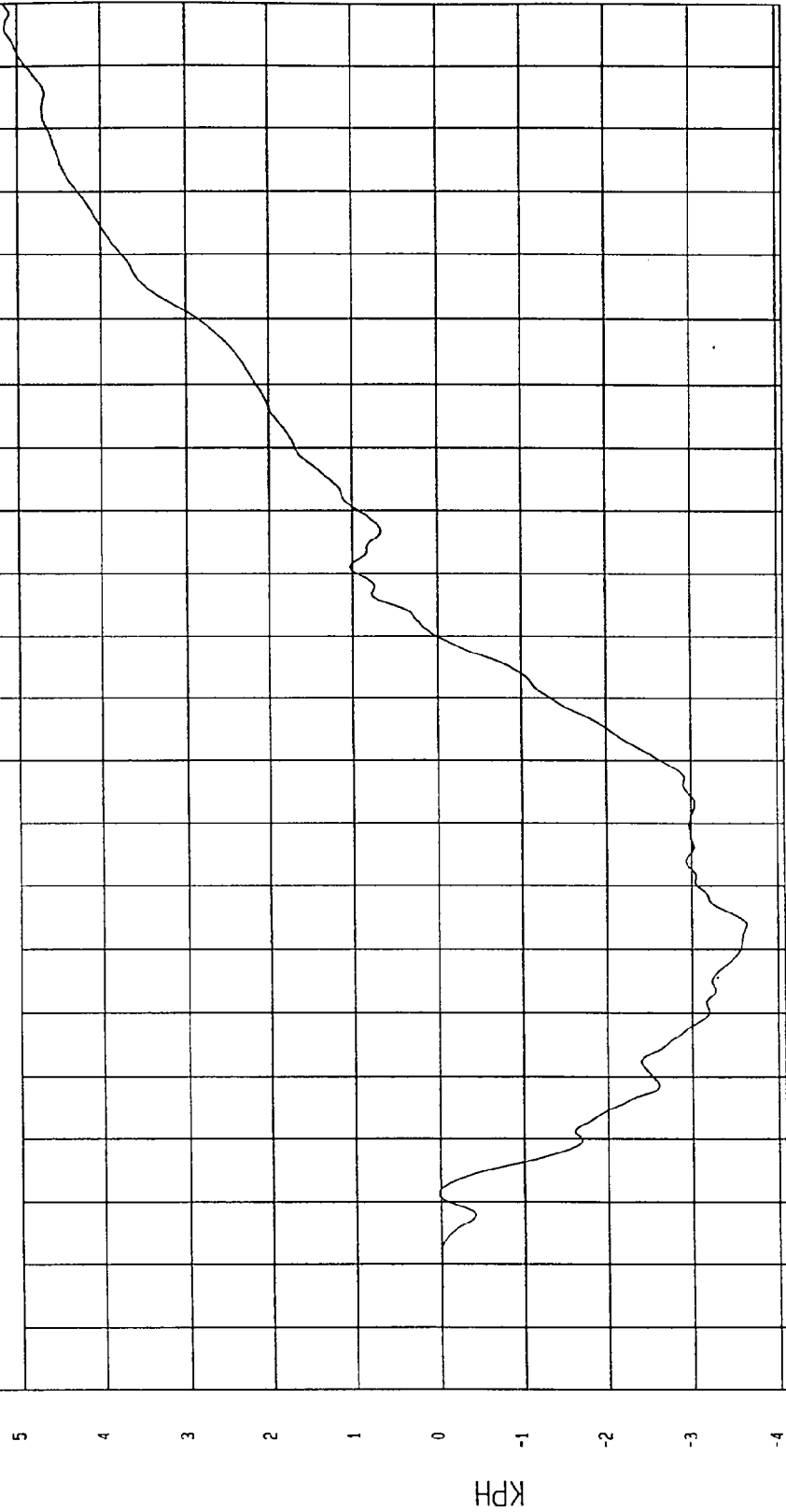
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 02-19-1997

COMPONENT: 1997 CHEVROLET LUMINA (MV0114) Speed: 38 MPH 61.2 KPH

Minimum = -3.63 KPH at 54 msec Maximum = 5.16 KPH at 200 msec

RIGHT SIDE SILL AT REAR SEAT Z VELOCITY

1 ——— B97029A1.V37 Filterclass (180)

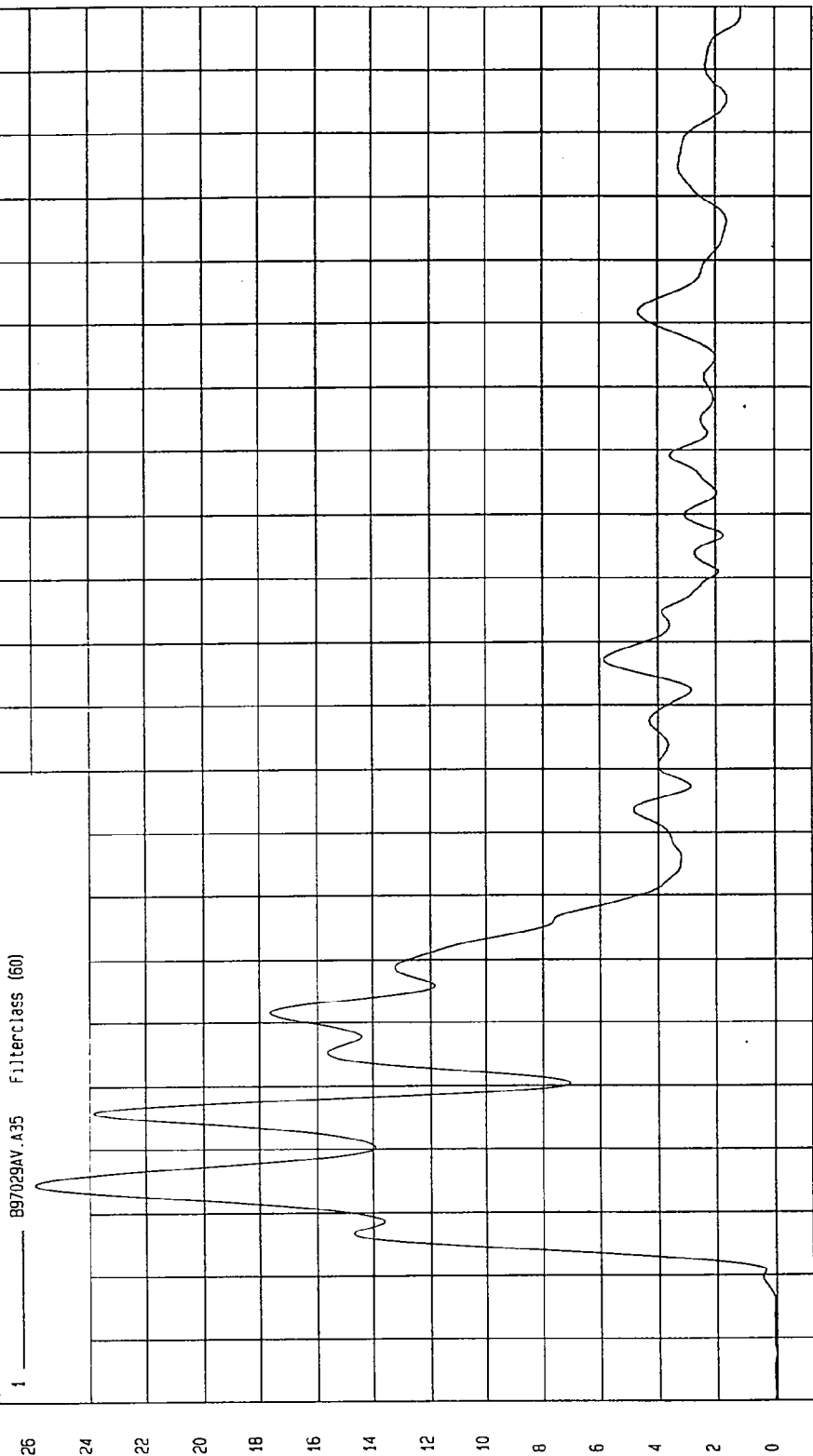


TIME Seconds

MCA Research
03-01-1997 15:20

TEST: HIGH SPEED LATERAL IMPACT	TEST DATE: 02-19-1997
COMPONENT: 1997 CHEVROLET LUMINA (MV0114)	Speed: 38 MPH 61.2 KPH
Minimum = 9.86E-03 G'S at -13 msec	Maximum = 25.90 G'S at 14 msec

RIGHT SIDE SILL AT REAR SEAT RESULTANT ACCELERATION



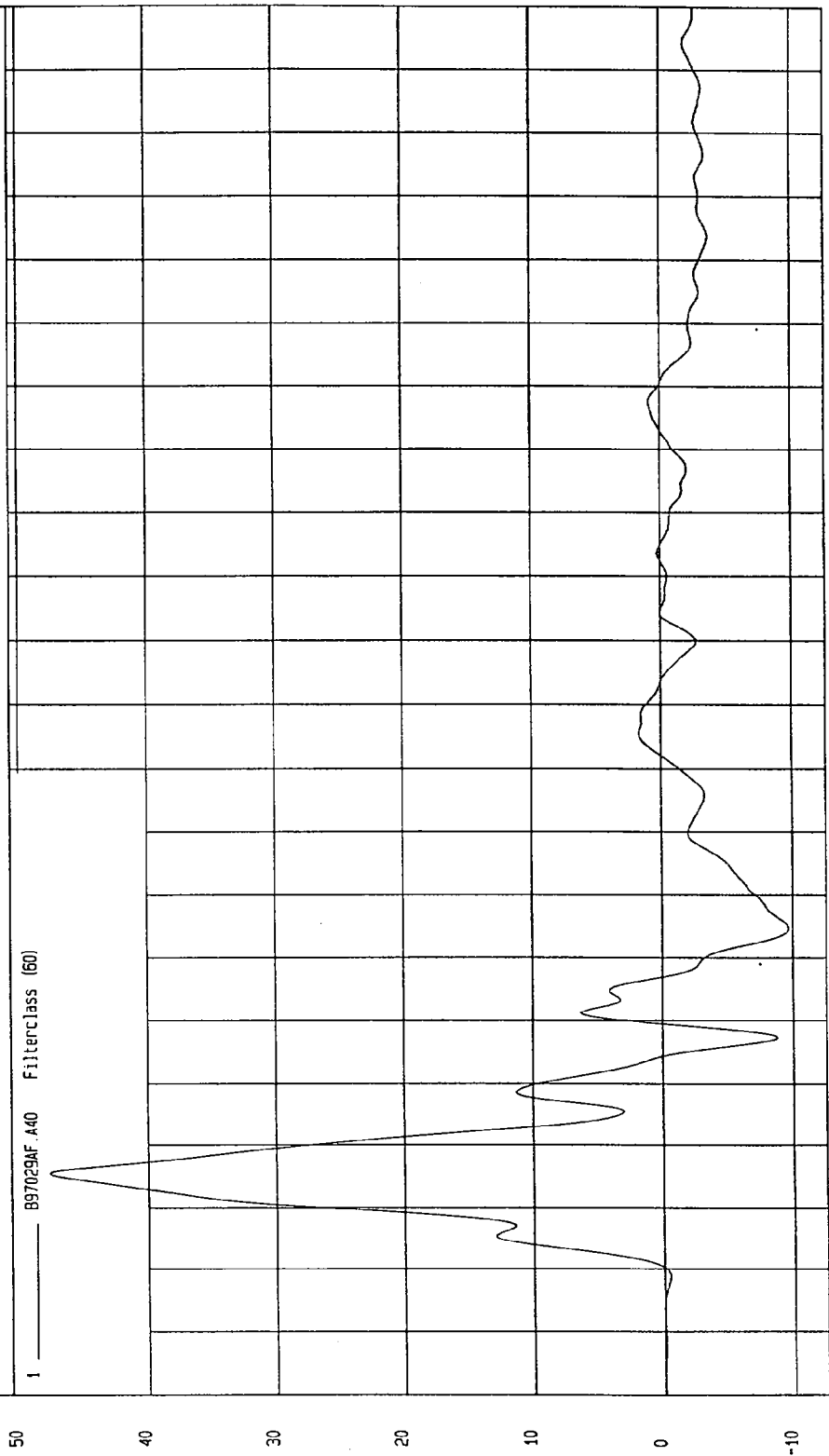
MCA Research
03-01-1997 15:26

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 02-19-1997

COMPONENT: 1997 CHEVROLET LUMINA (MV0114) Speed: 38 MPH 61.2 KPH

Minimum = -9.67 G'S at 55 msec Maximum = 47.75 G'S at 15 msec

LEFT DRIVER SEAT TRACK Y ACCELERATION



TIME (SECONDS)

NSA Research
03-01-1997 15:23

TEST: HIGH SPEED LATERAL IMPACT

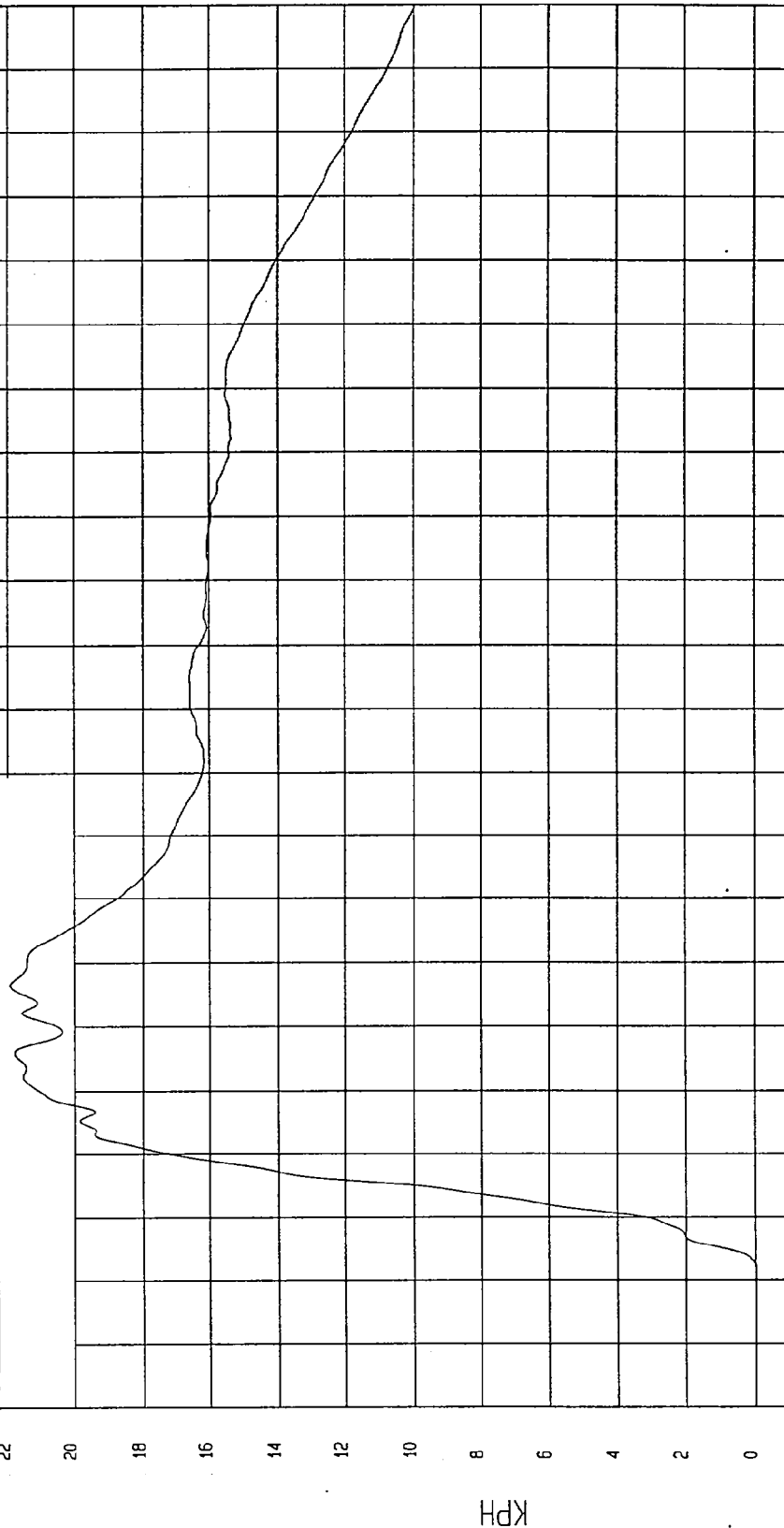
TEST DATE: 02-19-1997

COMPONENT: 1997 CHEVROLET LUMINA (MV0114) Speed: 38 MPH 61.2 KPH

Minimum = -2.98E-02 KPH at 2 msec Maximum = 21.93 KPH at 46 msec

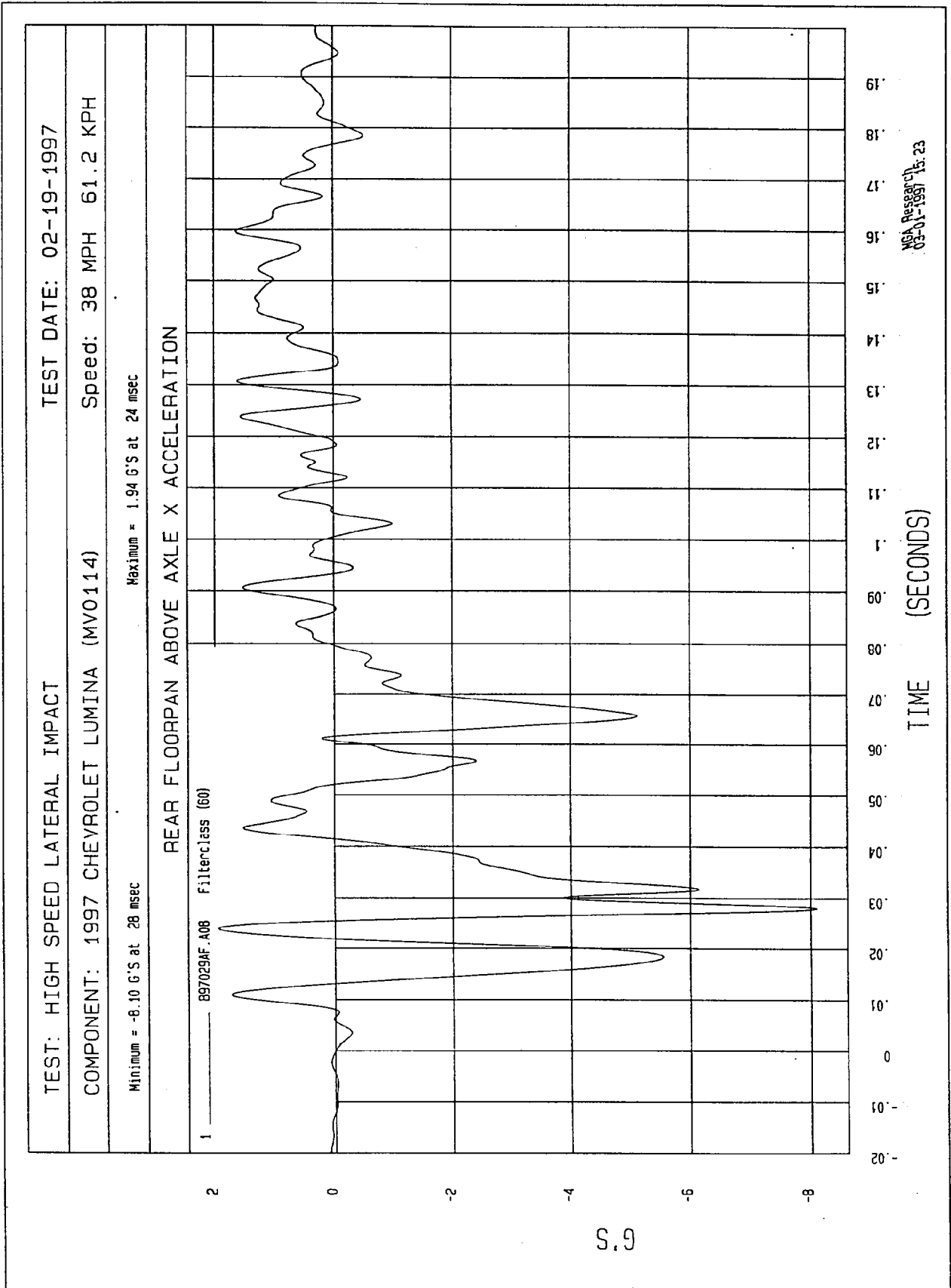
LEFT DRIVER SEAT TRACK Y VELOCITY

1 — B97029A1.V40 Filterclass (180)



TIME Seconds

MCA Research
03-01-1997 15:20

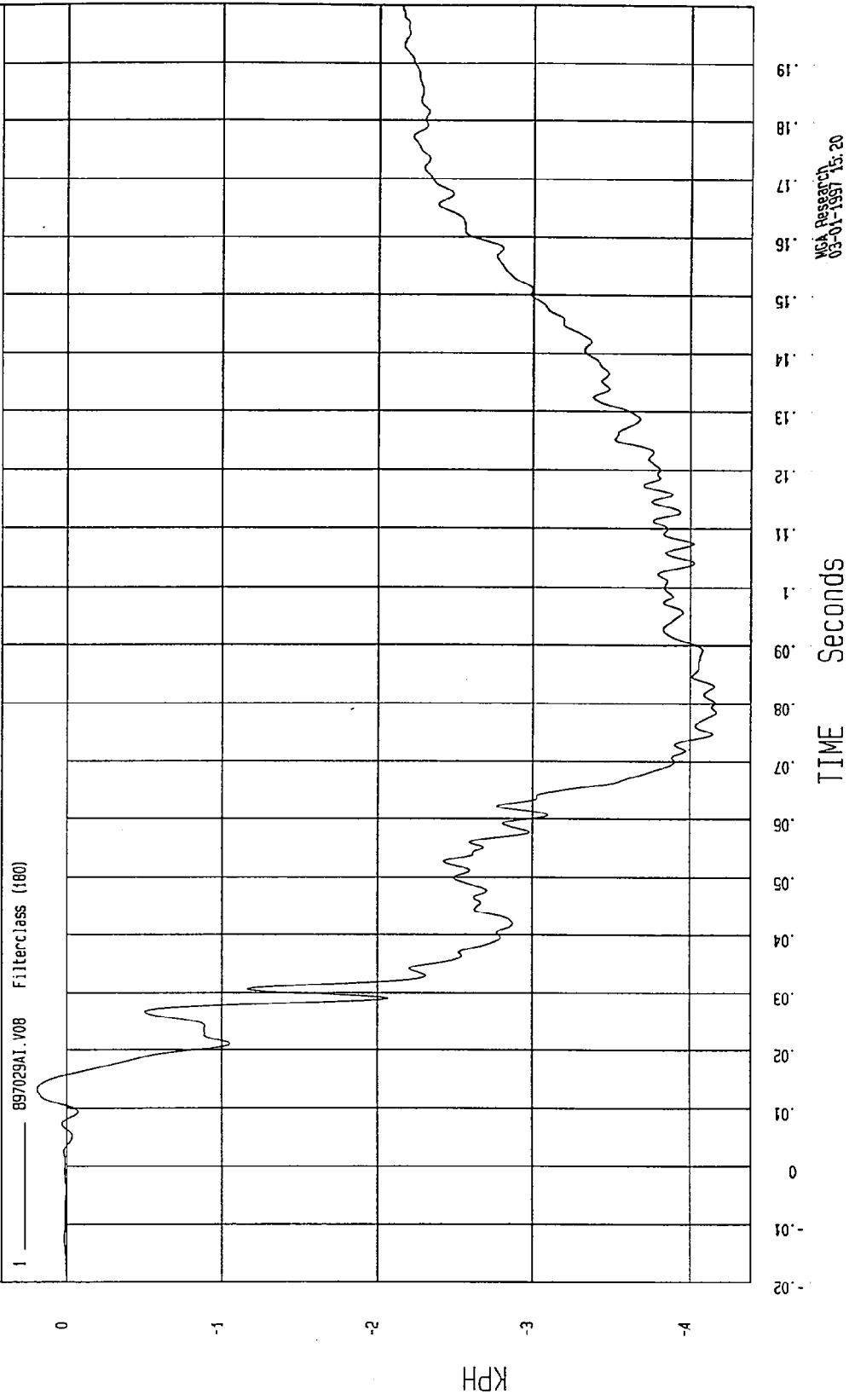


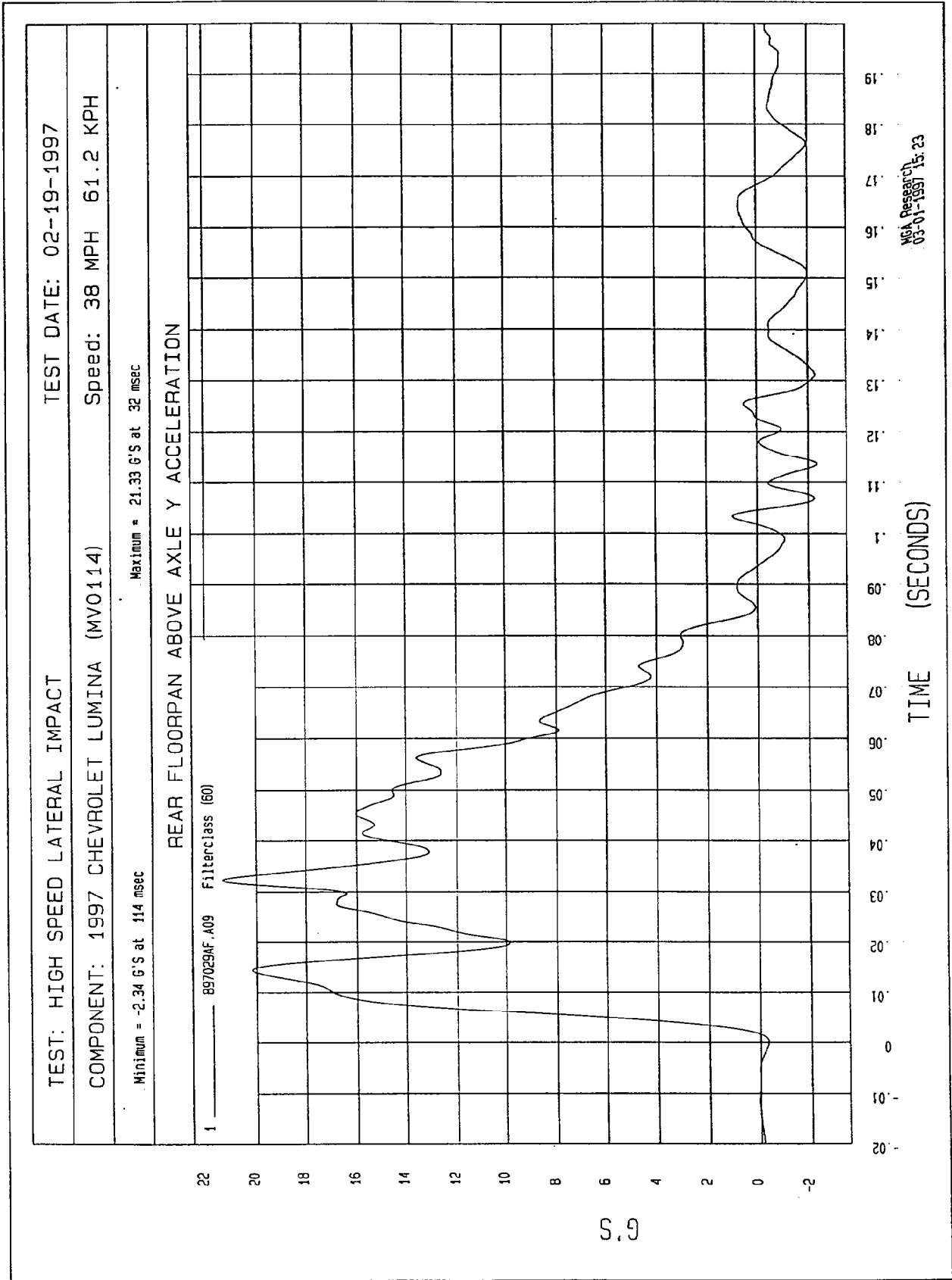
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 02-19-1997

COMPONENT: 1997 CHEVROLET LUMINA (MVO114) Speed: 38 MPH 61.2 KPH

Minimum = -4.16 KPH at 78 msec Maximum = .19 KPH at 13 msec

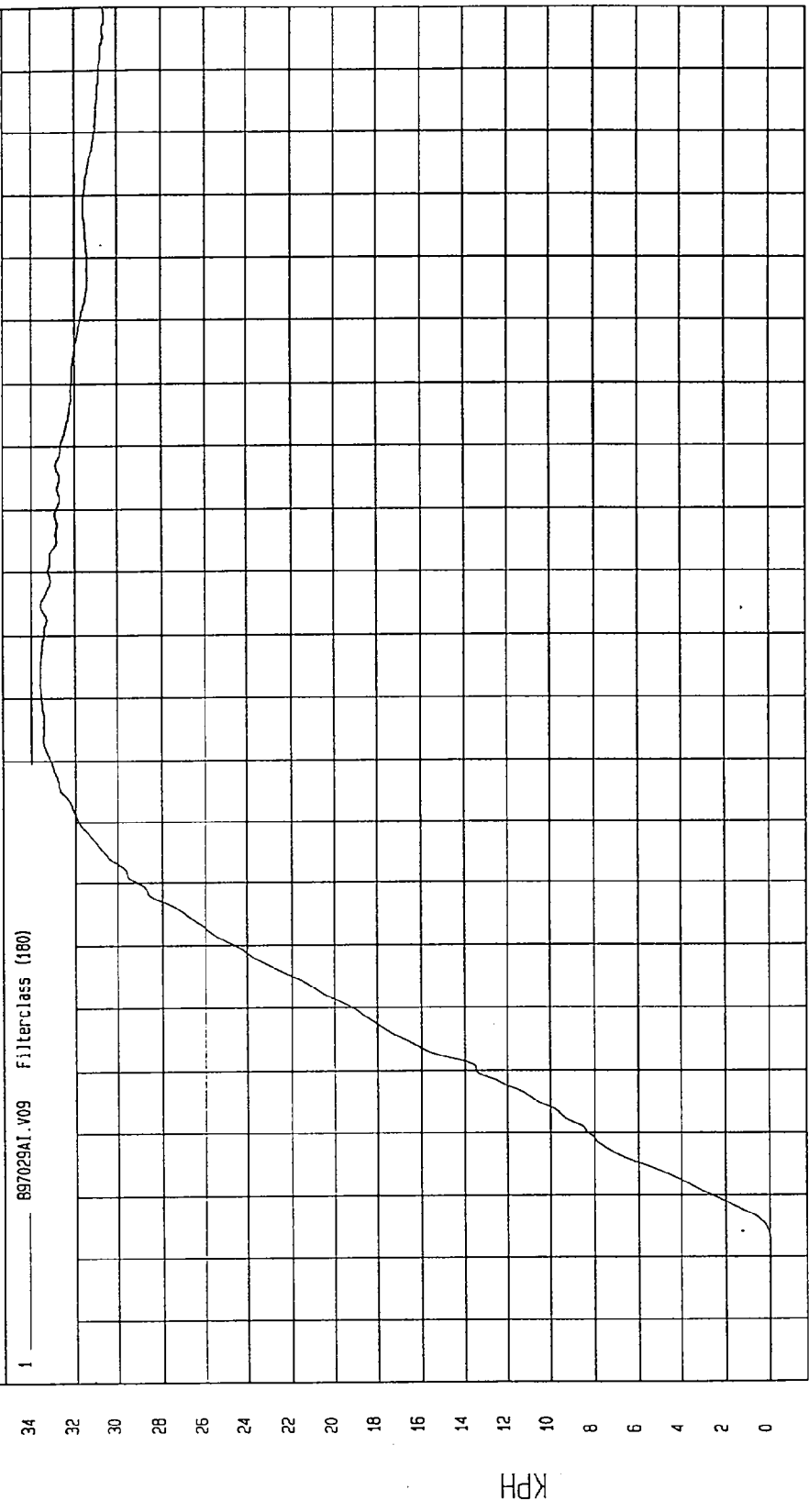
REAR FLOORPAN ABOVE AXLE X VELOCITY





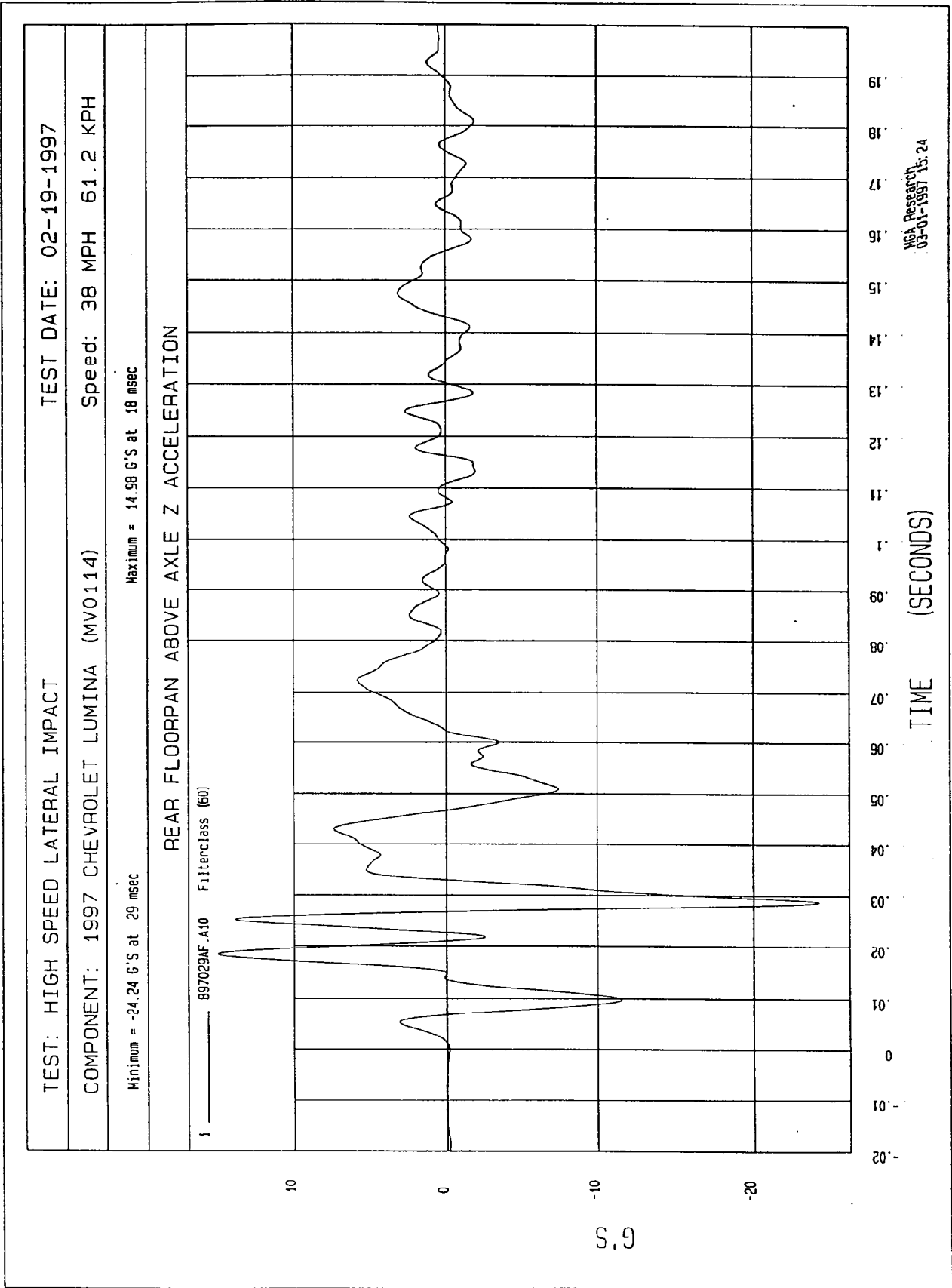
TEST: HIGH SPEED LATERAL IMPACT	TEST DATE: 02-19-1997
COMPONENT: 1997 CHEVROLET LUMINA (MV0114)	Speed: 38 MPH 61.2 KPH
Minimum = -2.38E-02 KPH at 2 msec	Maximum = 33.60 KPH at 92 msec

REAR FLOORPAN ABOVE AXLE Y VELOCITY



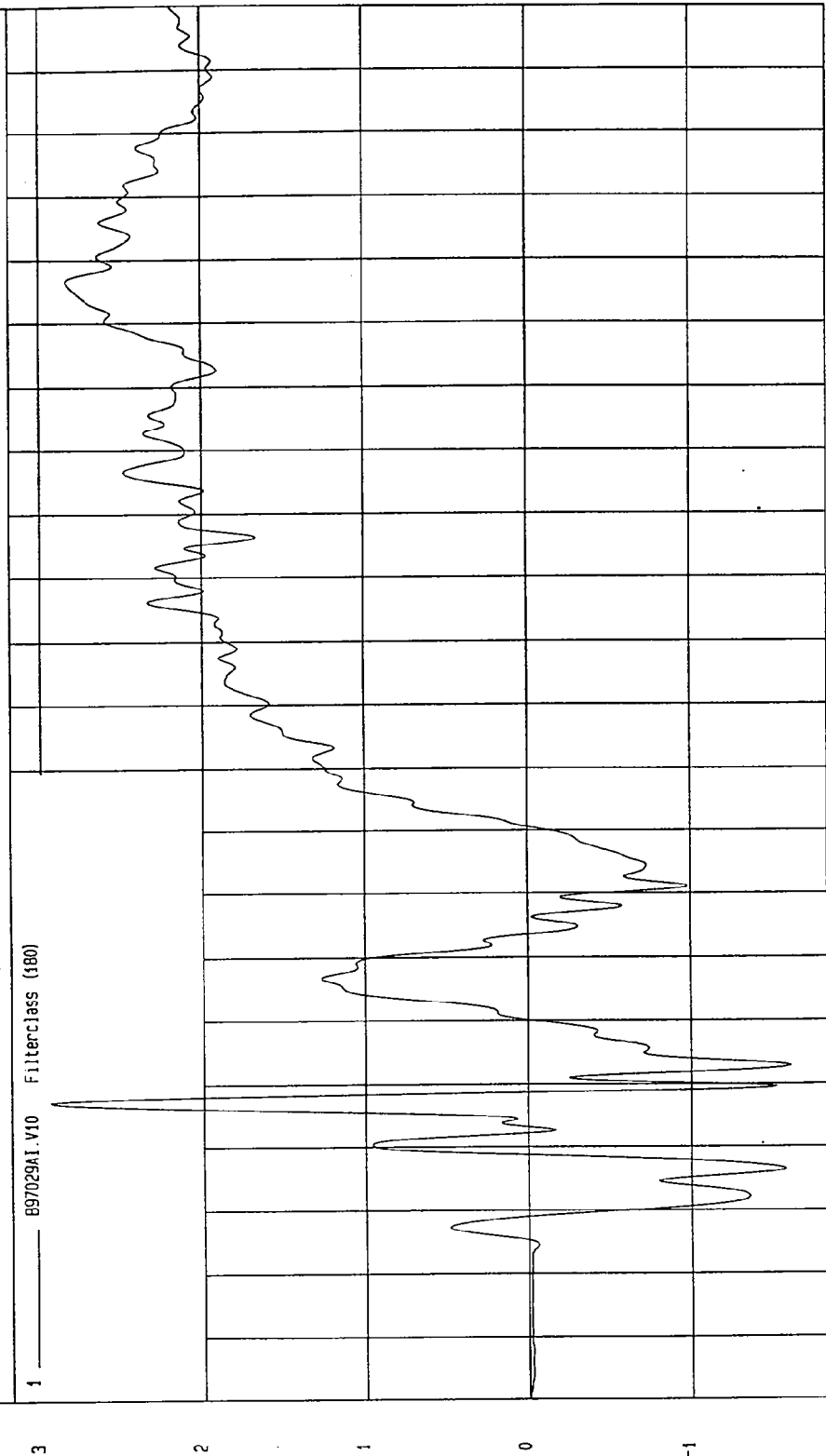
TIME Seconds

NSA Research
03-01-1997 15:20



TEST: HIGH SPEED LATERAL IMPACT	TEST DATE: 02-19-1997
COMPONENT: 1997 CHEVROLET LUMINA (MVO114)	Speed: 38 MPH 61.2 KPH
Minimum = -1.60 KPH at 33 msec	Maximum = 2.95 KPH at 27 msec

REAR FLOORPAN ABOVE AXLE Z VELOCITY



TIME Seconds

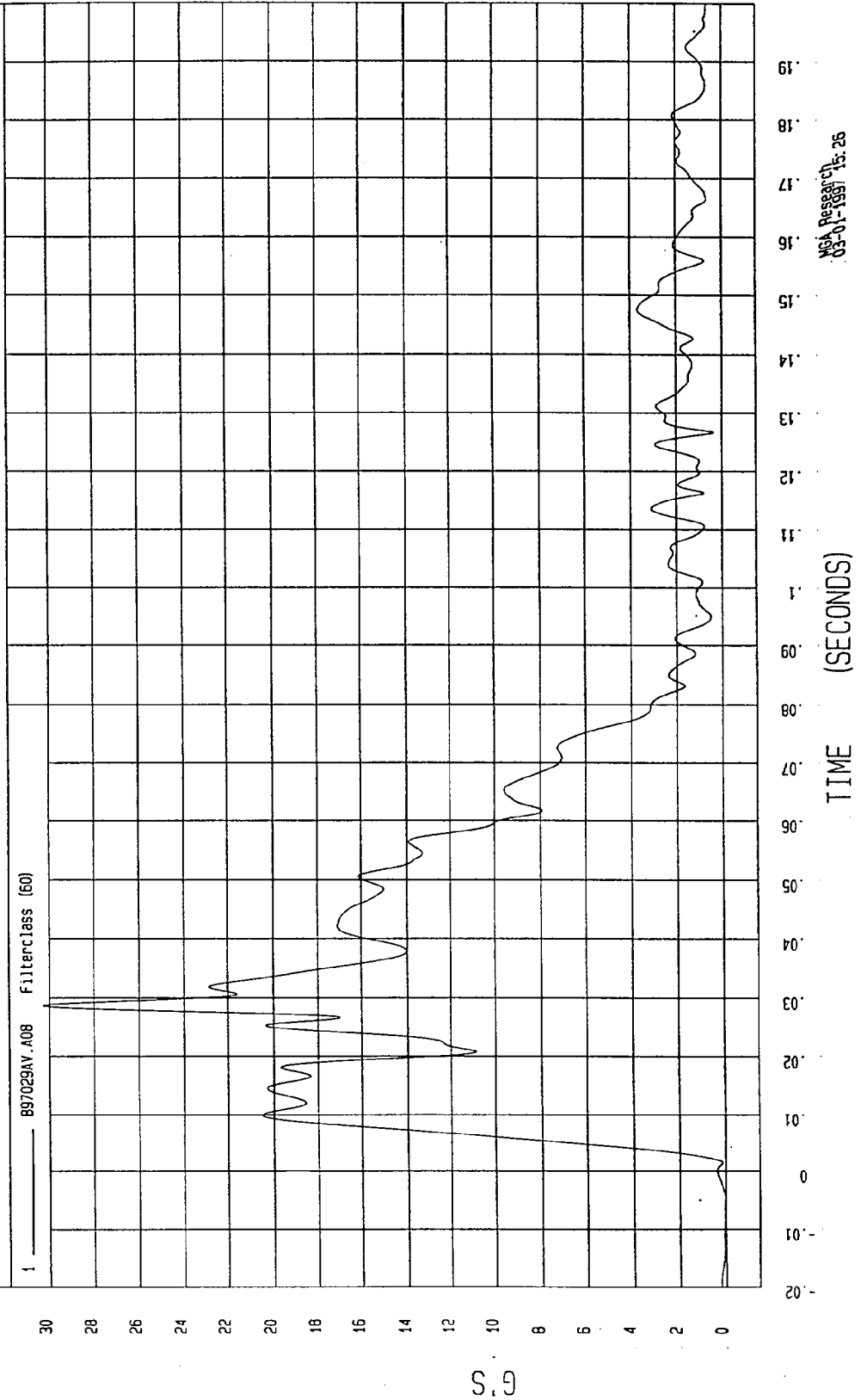
MCA Research
03-01-1997 15:20

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 02-19-1997

COMPONENT: 1997 CHEVROLET LUMINA (MV0114) Speed: 38 MPH 61.2 KPH

Minimum = 7.94E-03 G'S at -5 msec Maximum = 30.26 G'S at 29 msec

REAR FLOORPAN ABOVE AXLE RESULTANT ACCELERATION



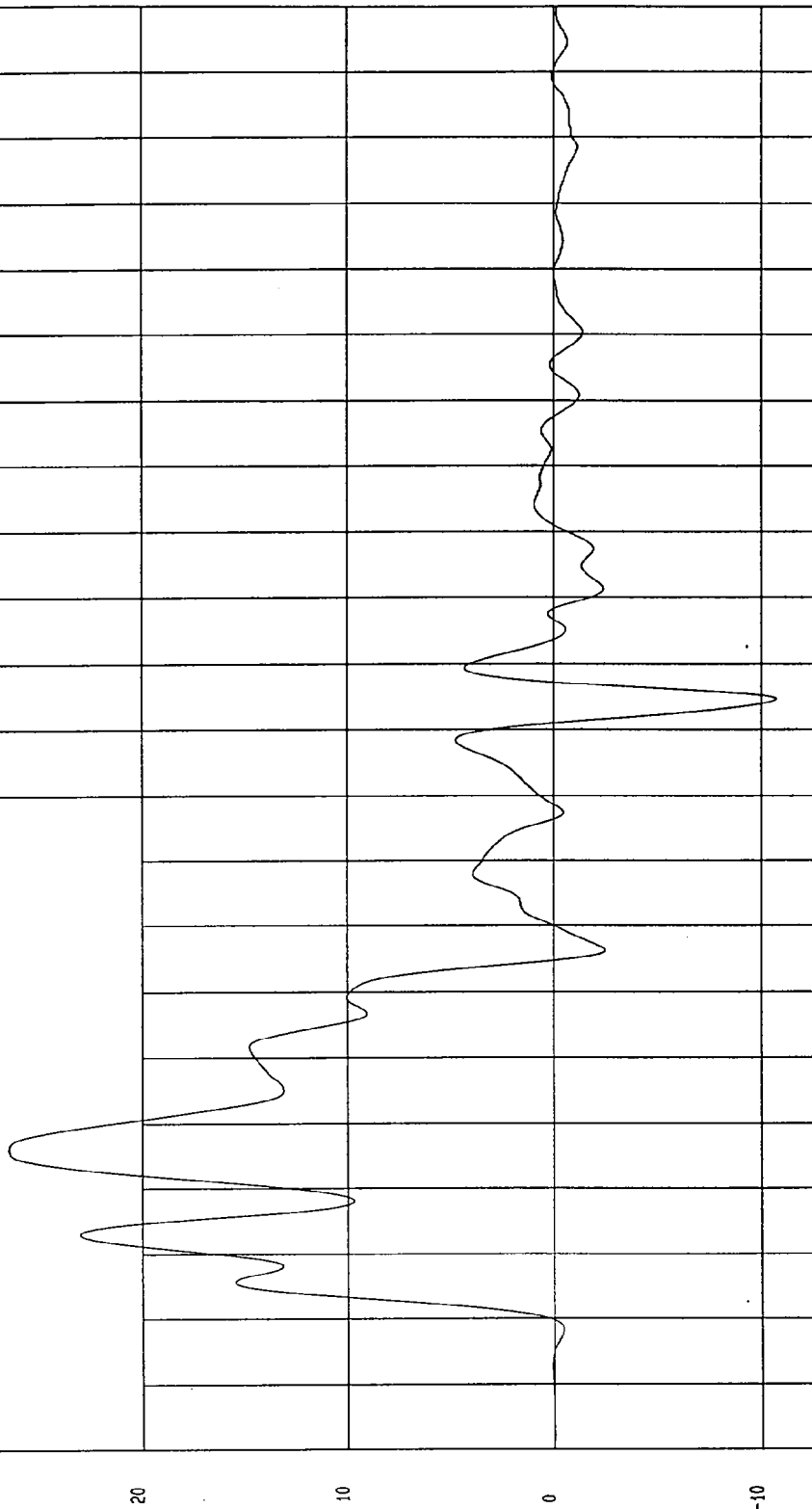
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 02-19-1997

COMPONENT: 1997 CHEVROLET LUMINA (MVO114) Speed: 38 MPH 61.2 KPH

Minimum = -10.71 G'S at 95 msec
Maximum = 26.52 G'S at 26 msec

RIGHT REAR OCCUPANT COMPARTMENT Y ACCELERATION

1 ——— 897029AF A70 Filterclass (60)



TIME (SECONDS)

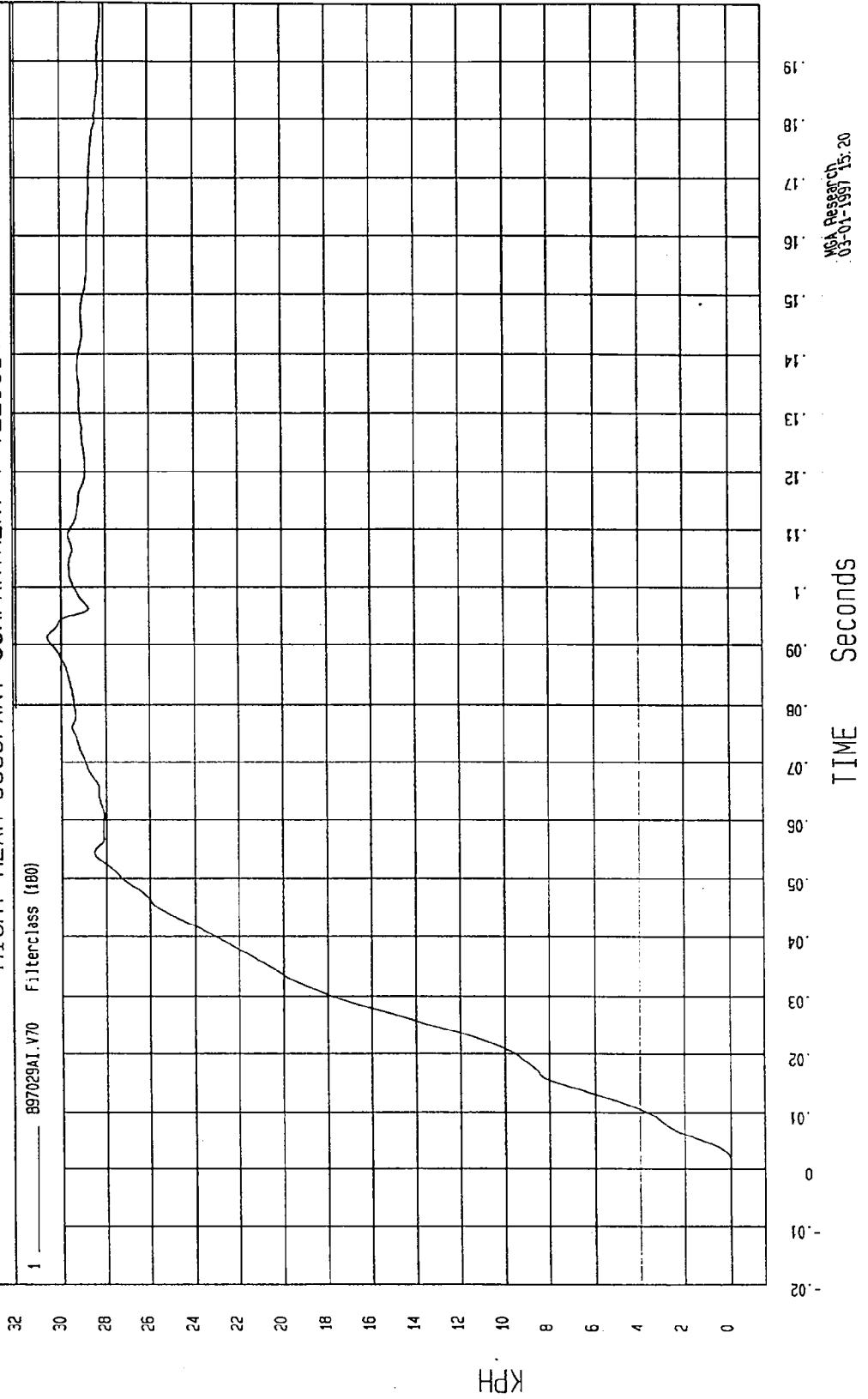
NSA Research
03-01-1997 15:24

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 02-19-1997

COMPONENT: 1997 CHEVROLET LUMINA (MV0114) Speed: 38 MPH 61.2 KPH

Minimum = -7.02E-03 KPH at -17 msec Maximum = 30.60 KPH at 91 msec

RIGHT REAR OCCUPANT COMPARTMENT Y VELOCITY

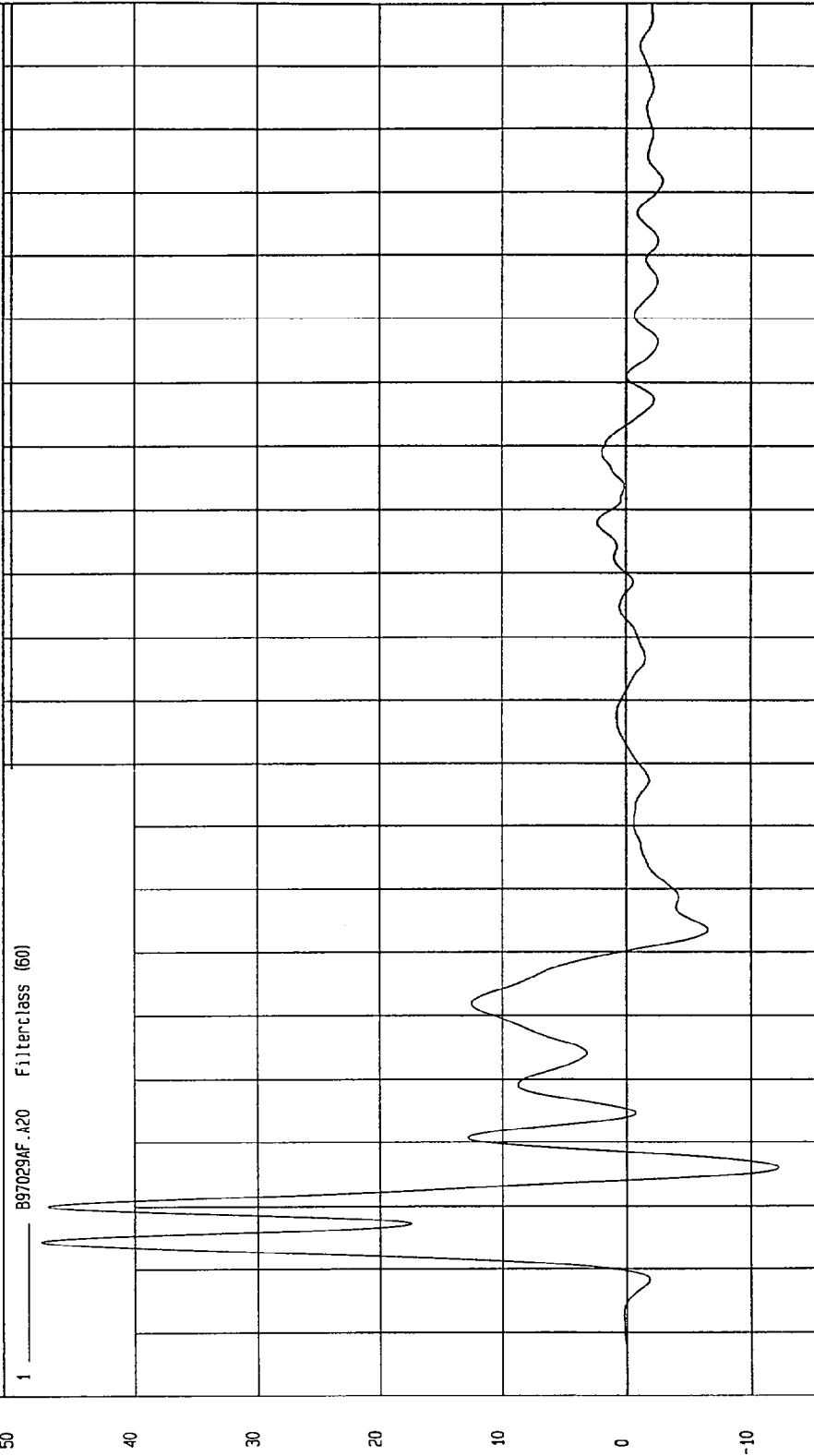


TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 02-19-1997

COMPONENT: 1997 CHEVROLET LUMINA (MV0114) Speed: 38 MPH 61.2 KPH

Minimum = -12.23 G'S at 16 msec Maximum = 47.67 G'S at 4 msec

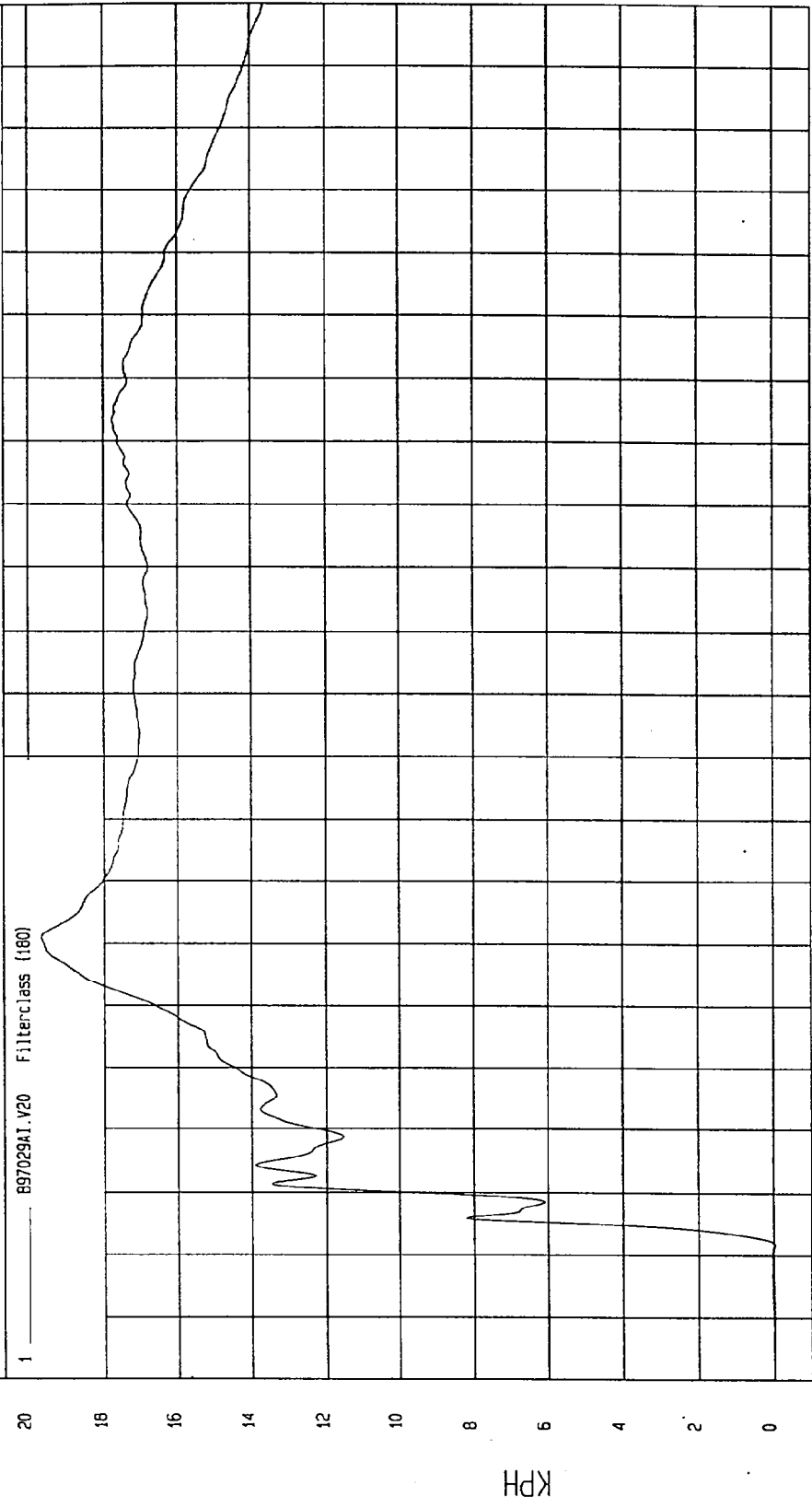
LEFT LOWER A-POST Y ACCELERATION



MSA Research
03-01-1997 15:24

TEST: HIGH SPEED LATERAL IMPACT	TEST DATE: 02-19-1997
COMPONENT: 1997 CHEVROLET LUMINA (MV0114)	Speed: 38 MPH 61.2 KPH
Minimum = -2.37E-02 KPH at 2 msec	Maximum = 19.65 KPH at 51 msec

LEFT LOWER A-POST Y VELOCITY



TIME Seconds

NCA Research
03-01-1997 15:20

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 02-19-1997

Speed: 38 MPH 61.2 KPH

COMPONENT: 1997 CHEVROLET LUMINA (MV0114)

Maximum = 16.86 G'S at 4 msec

Minimum = -.99 G'S at -1 msec

LEFT MID A-POST Y ACCELERATION

1 897029AF.A19 Filterclass (60)

16

14

12

10

8

6

4

2

0

G.S

19

18

17

16

15

14

13

12

11

10

09

08

07

06

05

04

03

02

01

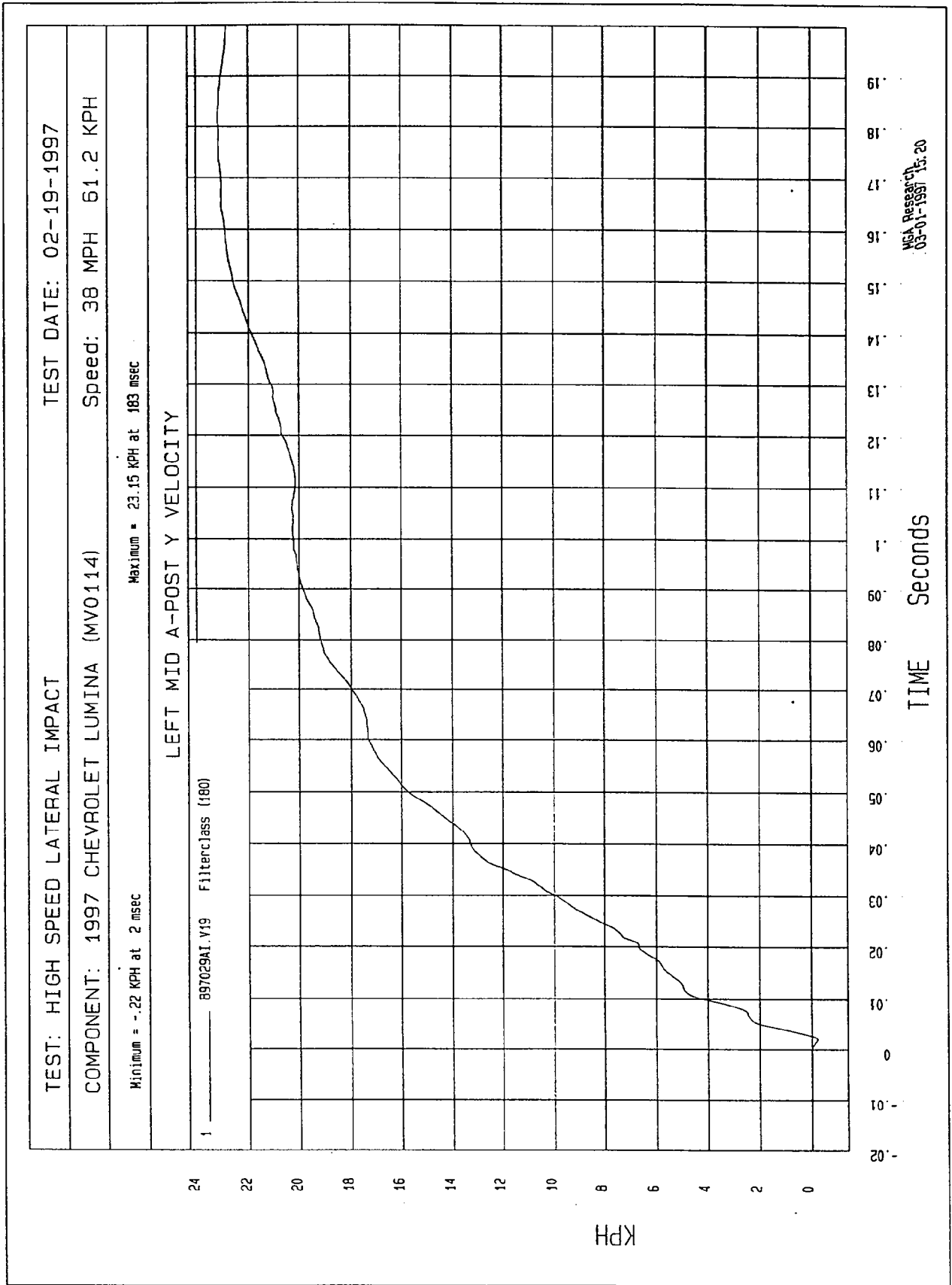
0

-01

-02

TIME (SECONDS)

MGA Research
03-01-1997 15:24

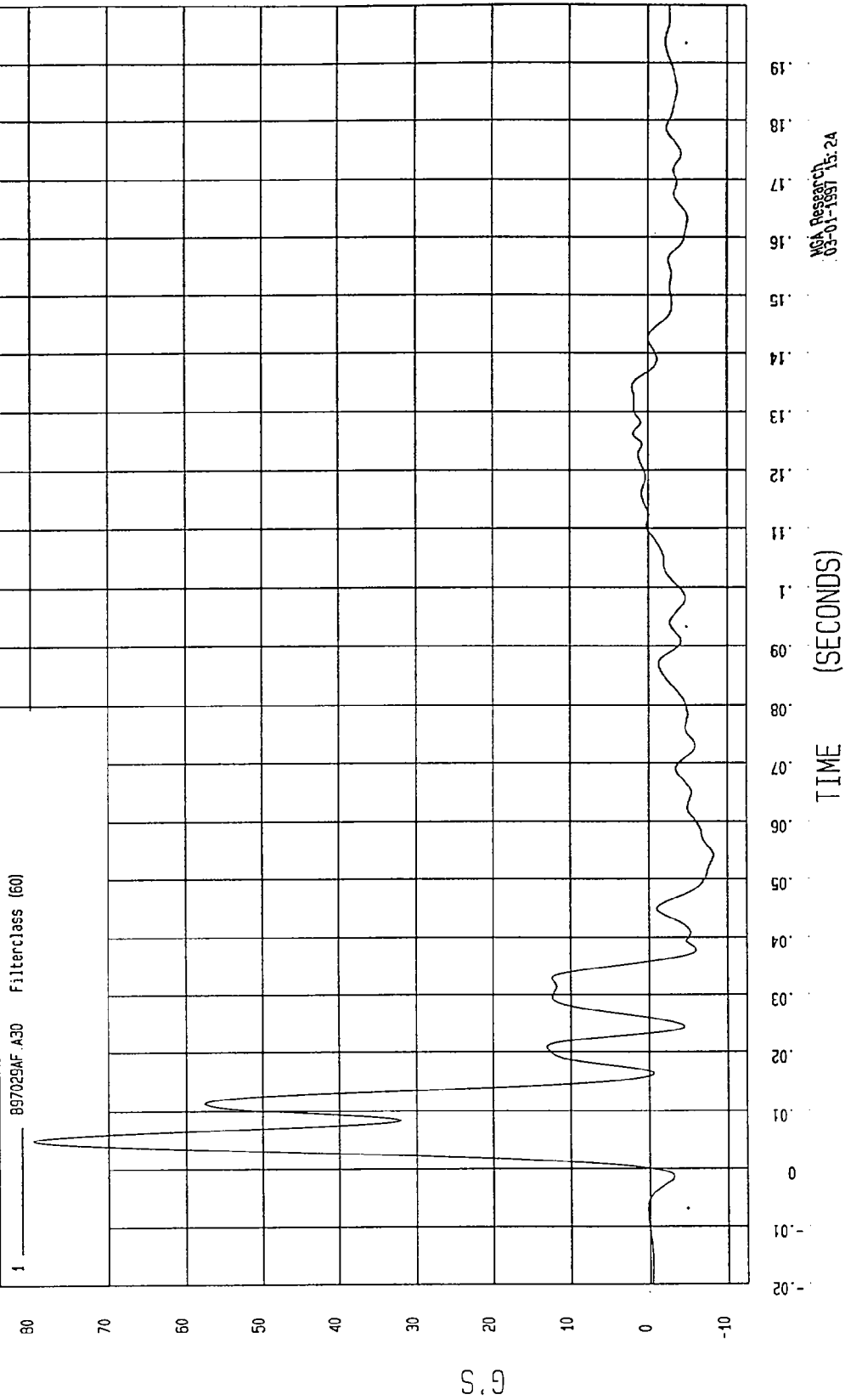


TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 02-19-1997

COMPONENT: 1997 CHEVROLET LUMINA (MV0114) Speed: 38 MPH 61.2 KPH

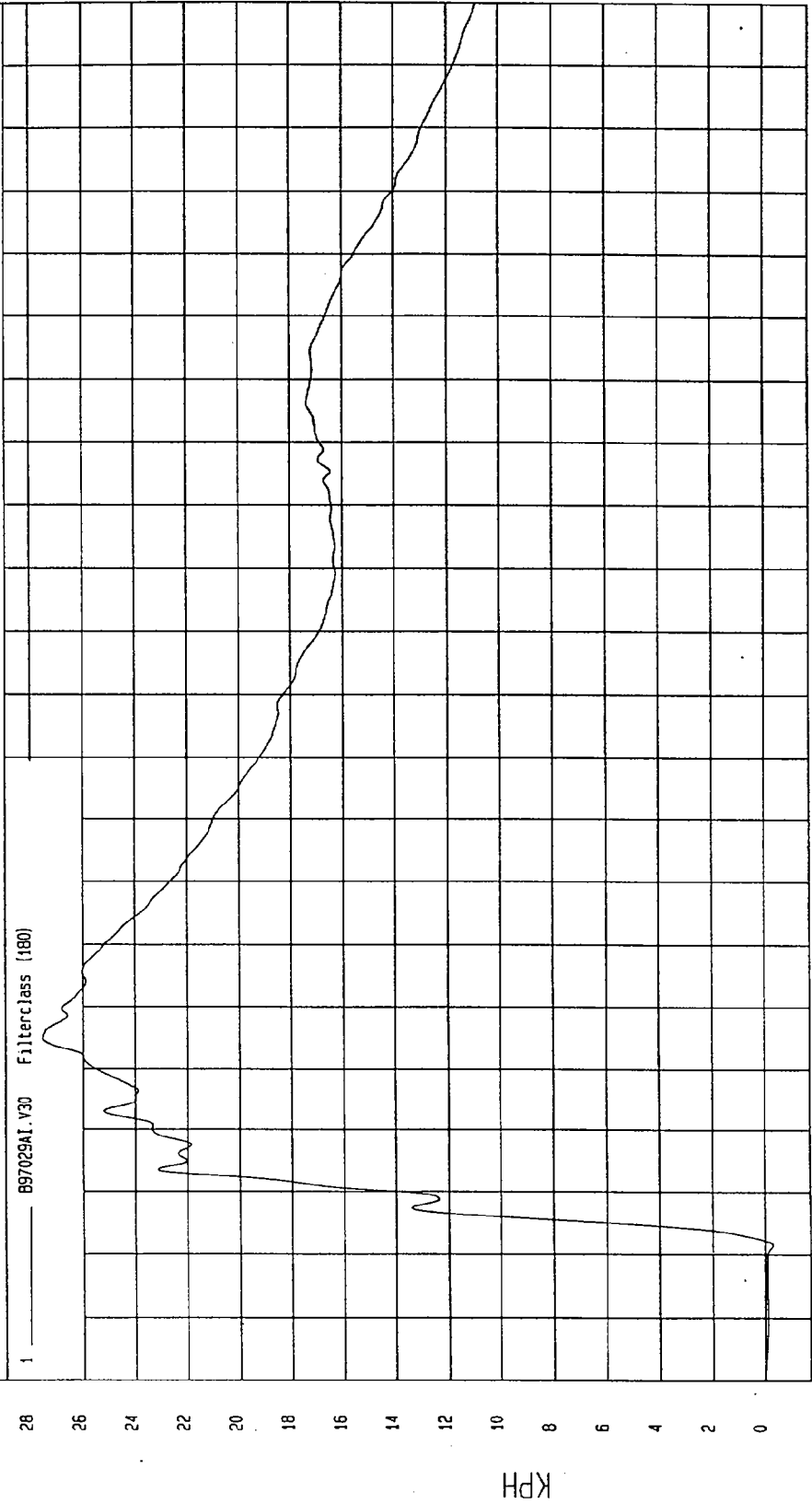
Minimum = -8.12 G's at 54 msec Maximum = 79.73 G's at 5 msec

LEFT LOWER B-POST Y ACCELERATION



TEST: HIGH SPEED LATERAL IMPACT	TEST DATE: 02-19-1997
COMPONENT: 1997 CHEVROLET LUMINA (MV0114)	Speed: 38 MPH 61.2 KPH
Minimum = -.28 KPH at 2 msec	Maximum = 27.54 KPH at 35 msec

LEFT LOWER B-POST Y VELOCITY



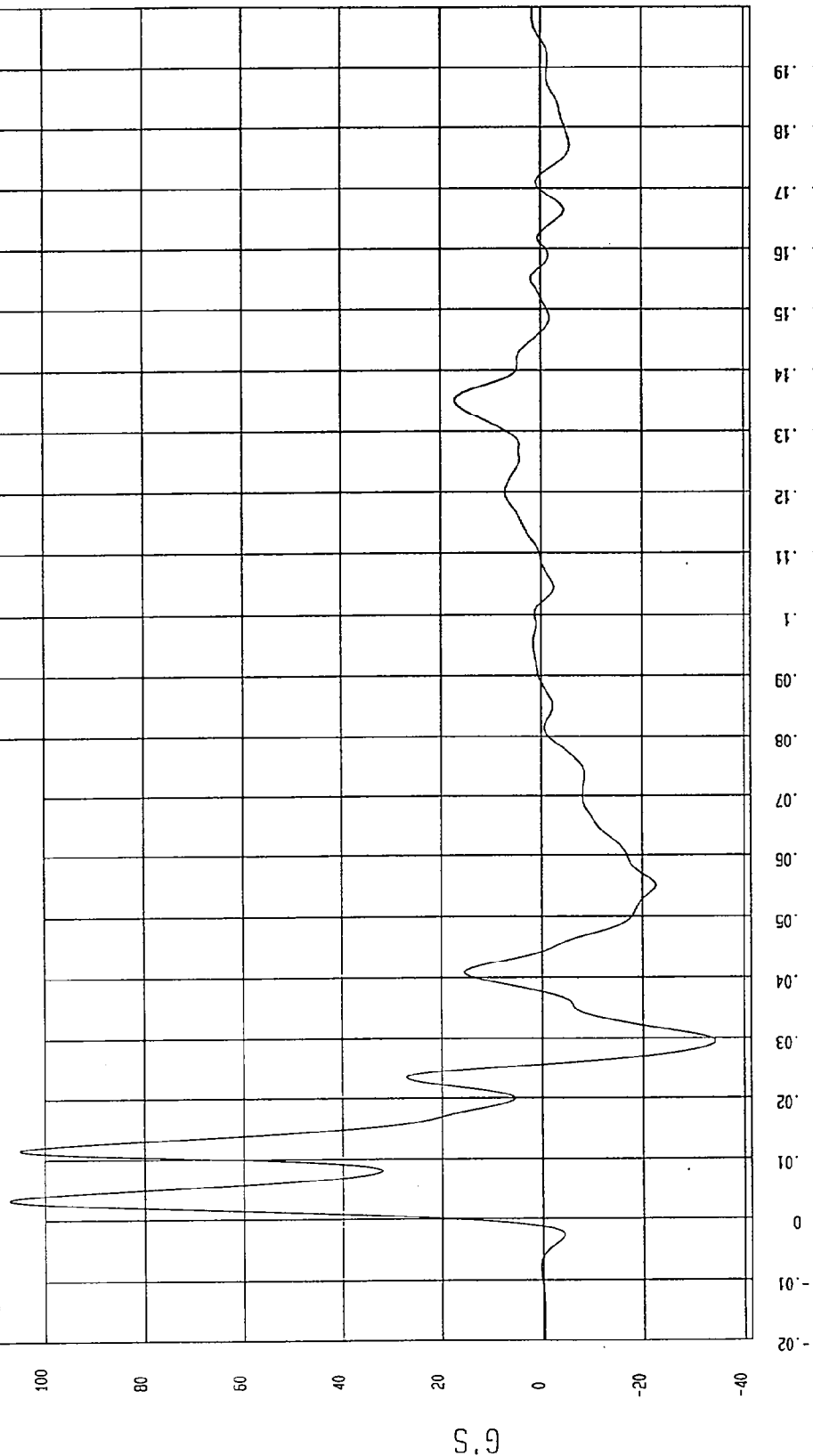
TIME Seconds

MCA Research
03-01-1997 15:20

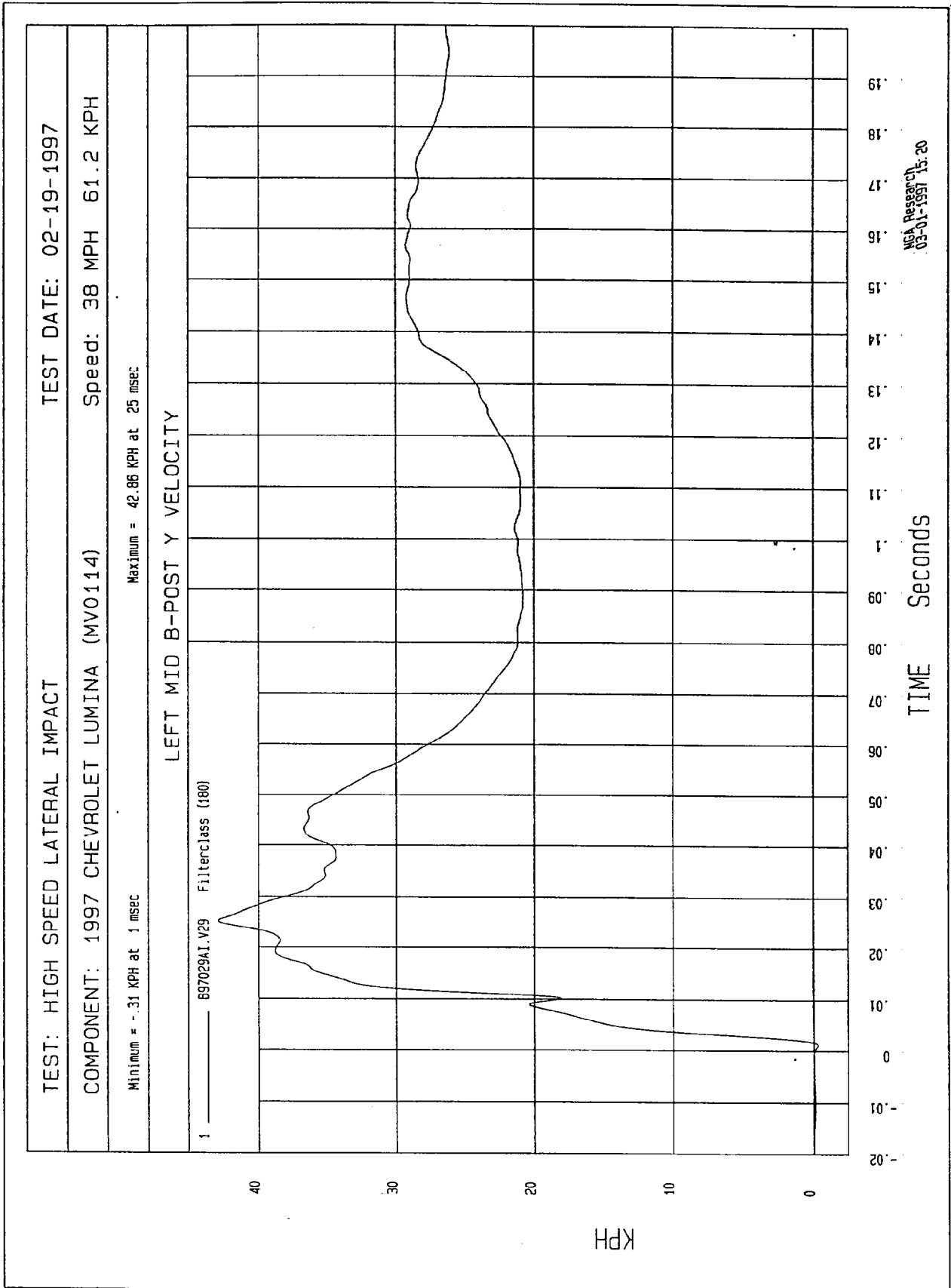
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 02-19-1997
COMPONENT: 1997 CHEVROLET LUMINA (MV0114) Speed: 38 MPH 61.2 KPH
Minimum = -34.19 G'S at 30 msec Maximum = 107.08 G'S at 3 msec

LEFT MID B-POST Y ACCELERATION

1 _____ B97029AF.A29 FilterClass (60)



MCA Research
02-01-1997 15:24

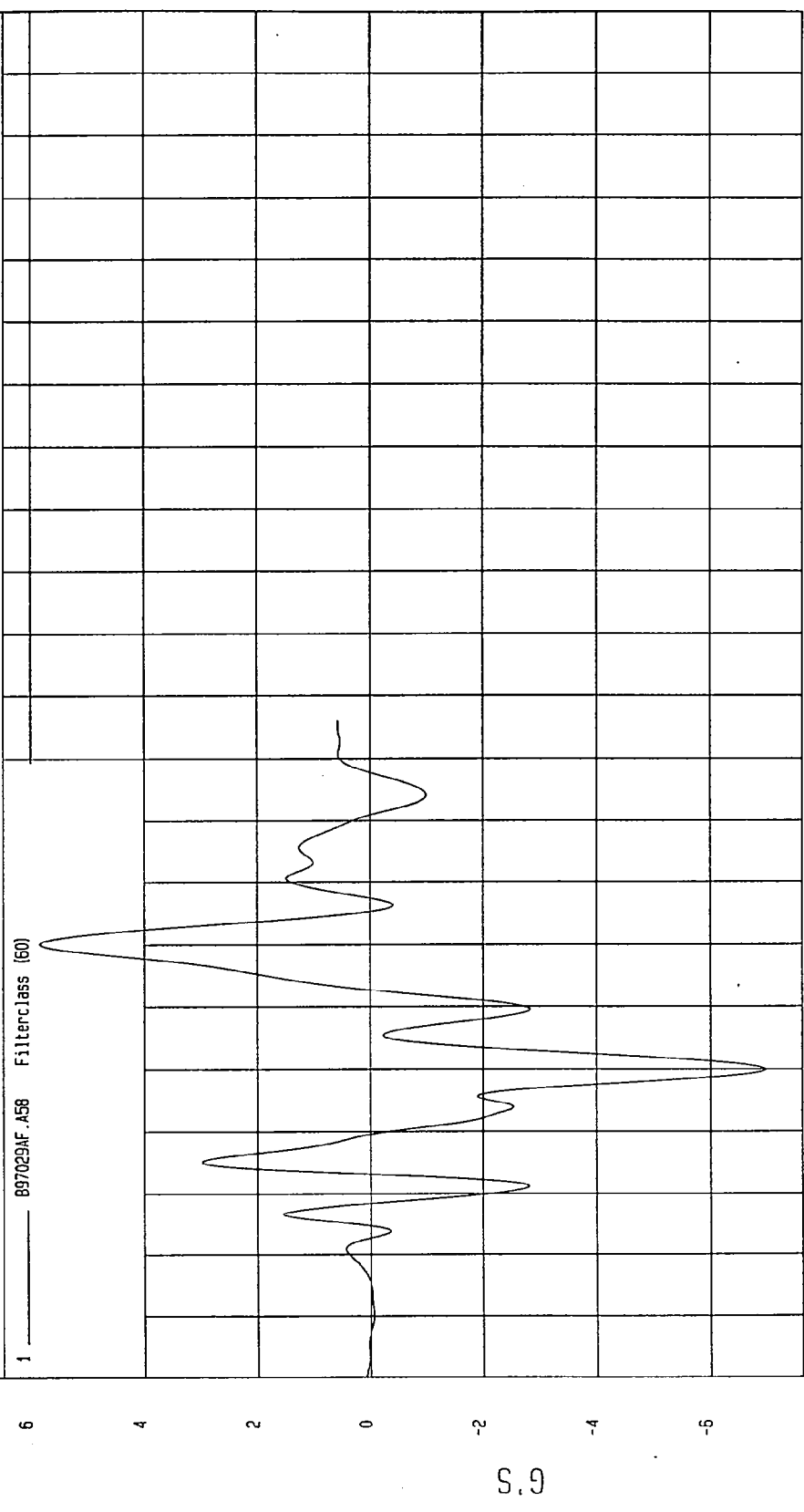


TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 02-19-1997

COMPONENT: 1997 CHEVROLET LUMINA (MV0114) Speed: 38 MPH 61.2 KPH

Minimum = -6.96 G'S at 30 msec
Maximum = 5.83 G'S at 50 msec

VEHICLE CG X ACCELERATION



TIME (SECONDS)

MCA Research
03-01-1997 15: 47

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 02-19-1997

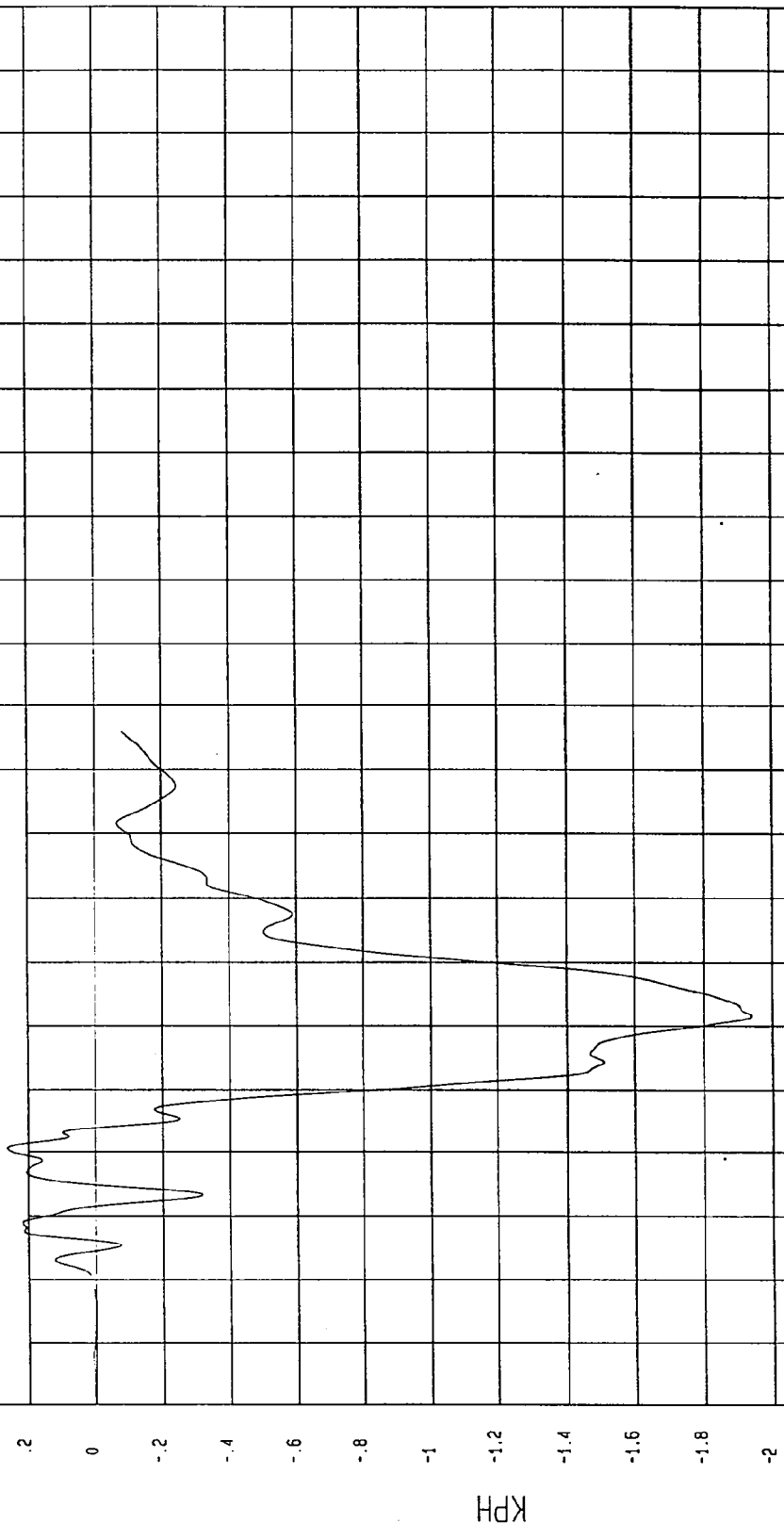
COMPONENT: 1997 CHEVROLET LUMINA (MVO114) Speed: 38 MPH 61.2 KPH

Minimum = -1.94 KPH at 42 msec

Maximum = .25 KPH at 20 msec

VEHICLE CG X VELOCITY

1 B97029A1.V58 Filterclass (180)



TIME Seconds

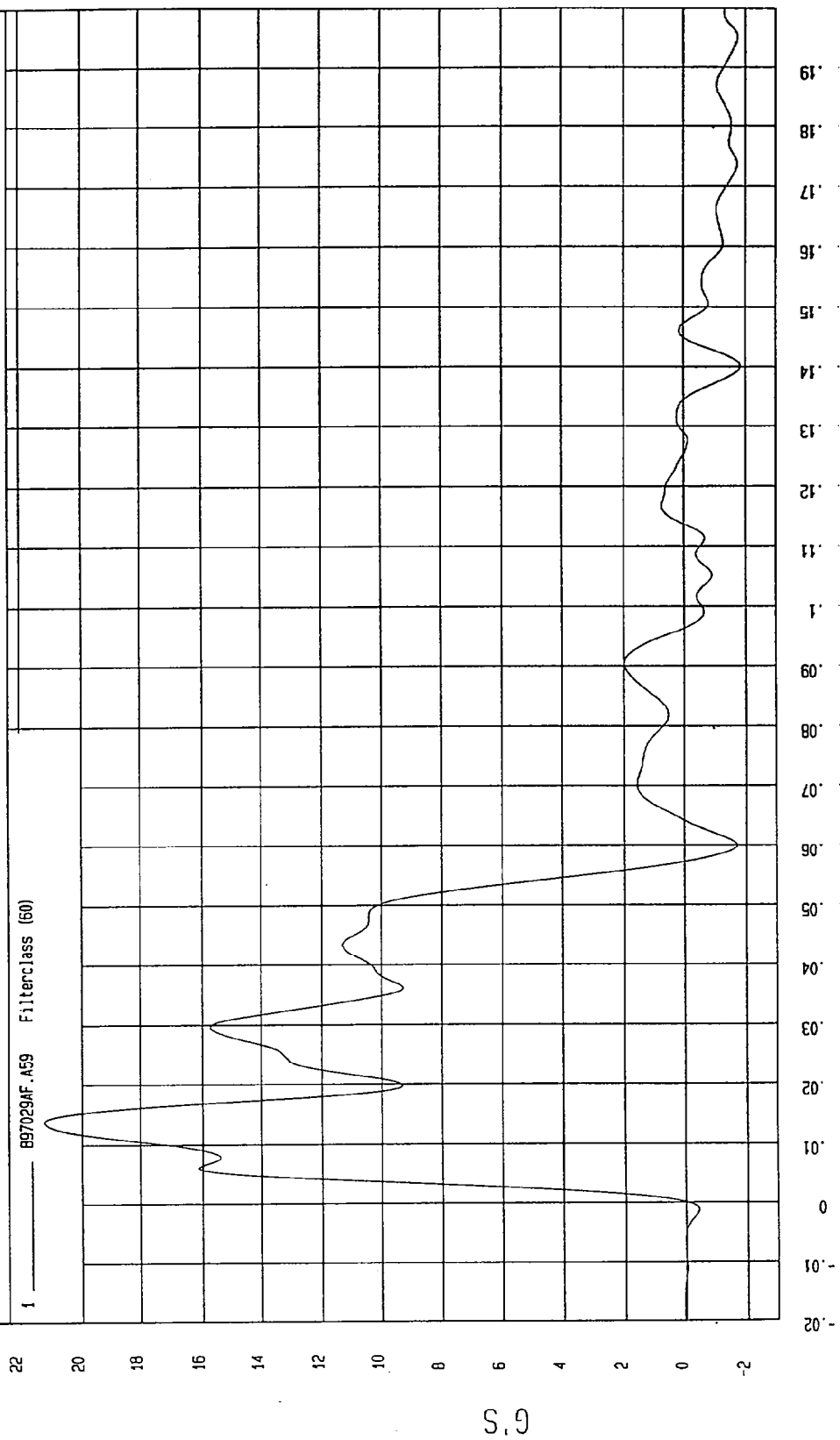
MCA Research
03-01-1997 15:53

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 02-19-1997
COMPONENT: 1997 CHEVROLET LUMINA (MV0114) Speed: 38 MPH 61.2 KPH

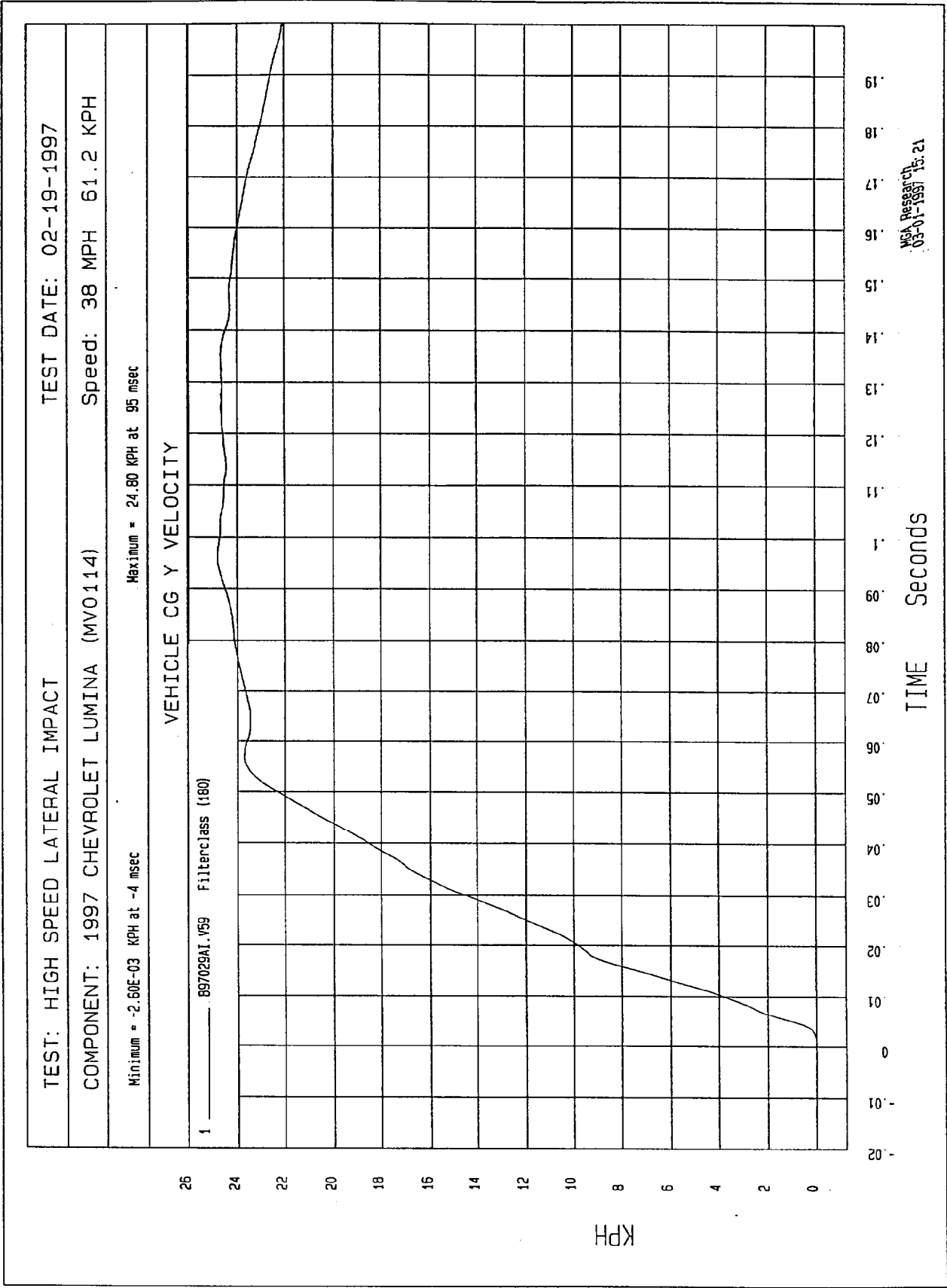
Minimum = -1.82 G'S at 140 msec Maximum = 21.22 G'S at 14 msec

VEHICLE CG Y ACCELERATION

1 ——— B97029AF.A59 Filterclass (60)



MCA Research
02-19-1997 15:24

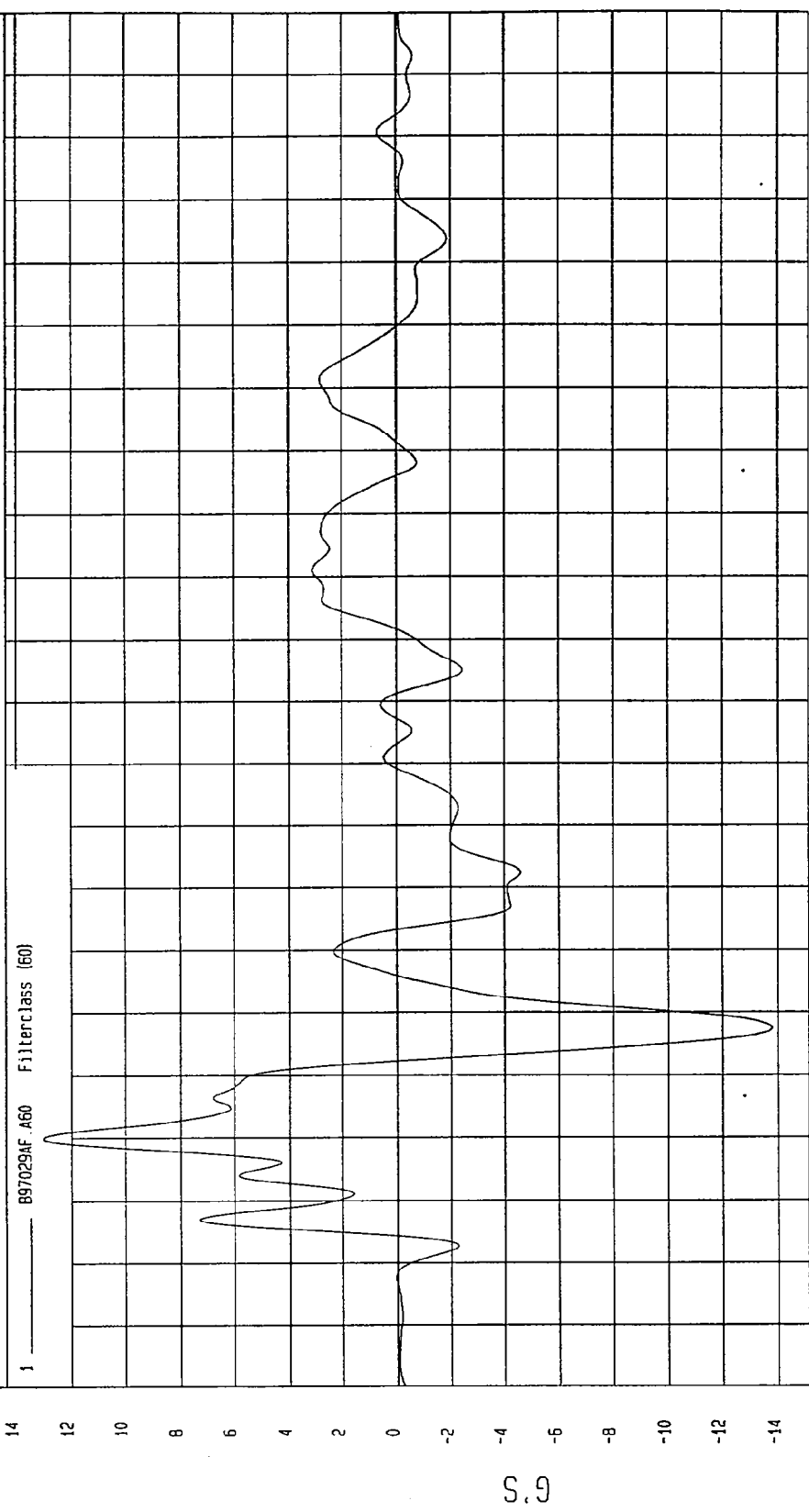


TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 02-19-1997

COMPONENT: 1997 CHEVROLET LUMINA (MV0114) Speed: 38 MPH 61.2 KPH

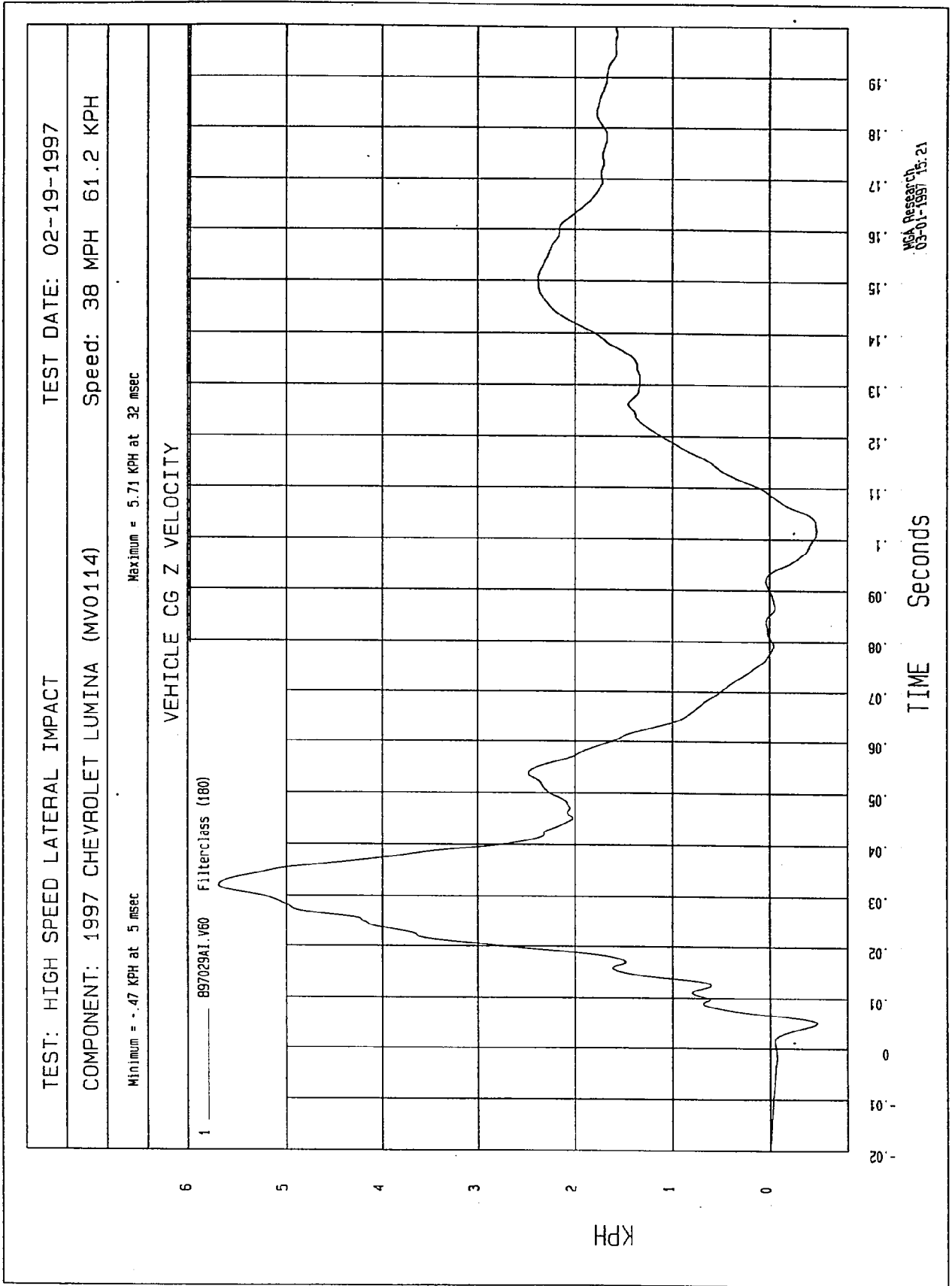
Minimum = -13.78 G'S at 38 msec Maximum = 13.03 G'S at 20 msec

VEHICLE CG Z ACCELERATION



TIME (SECONDS)

MOA Research
03-01-1997 15:24



TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 02-19-1997

COMPONENT: 1997 CHEVROLET LUMINA (MV0114) Speed: 38 MPH 61.2 KPH

Minimum = 7.51E-02 G'S at -4 msec Maximum = 22.08 G'S at 14 msec

VEHICLE CG RESULTANT ACCELERATION

1 897029AV.A58 Filterclass (60)

22

20

18

16

14

12

10

8

6

4

2

0

G'S

-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

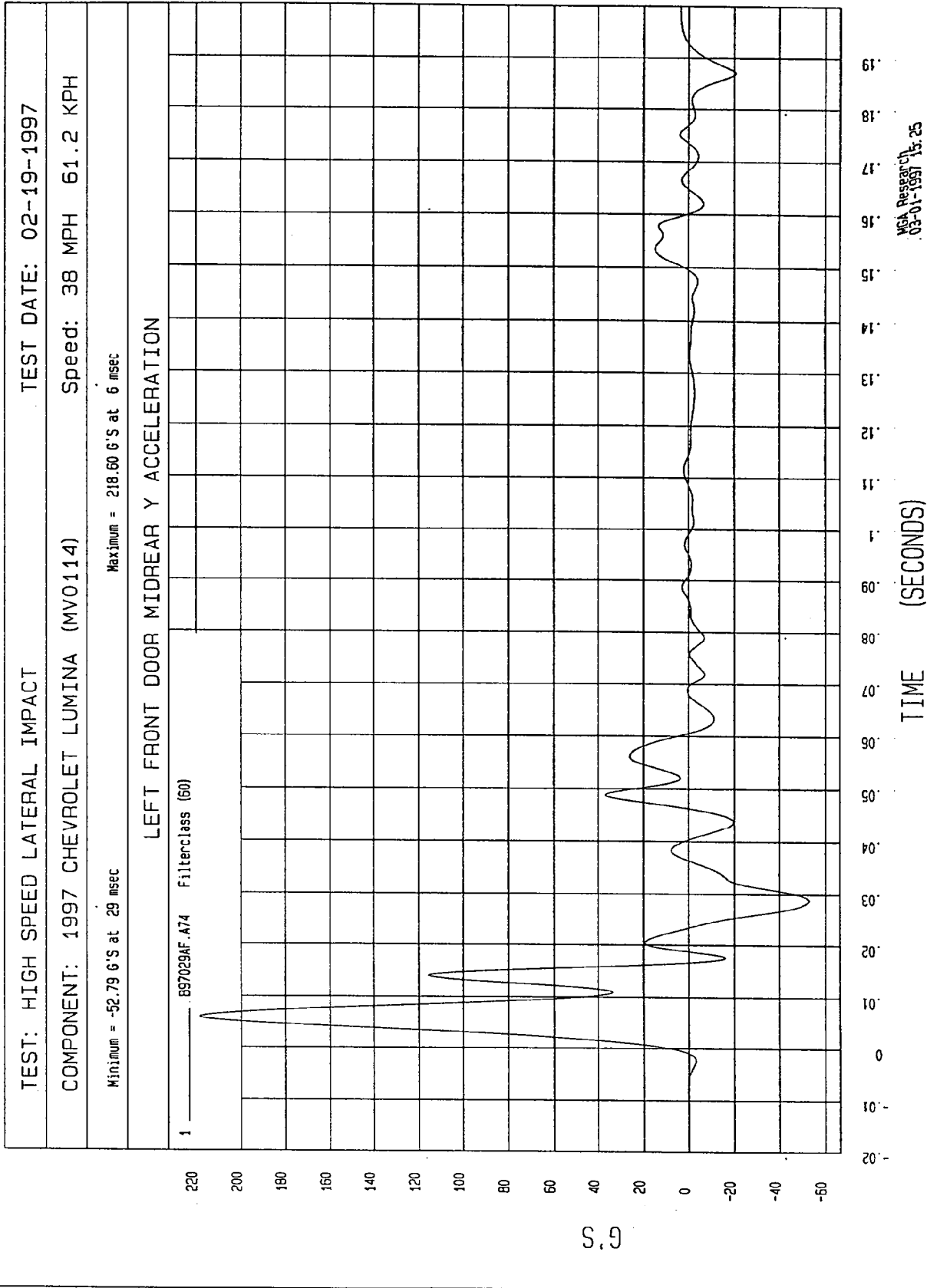
0.17

0.18

0.19

TIME (SECONDS)

MCA Research
03-01-1997 15: 47



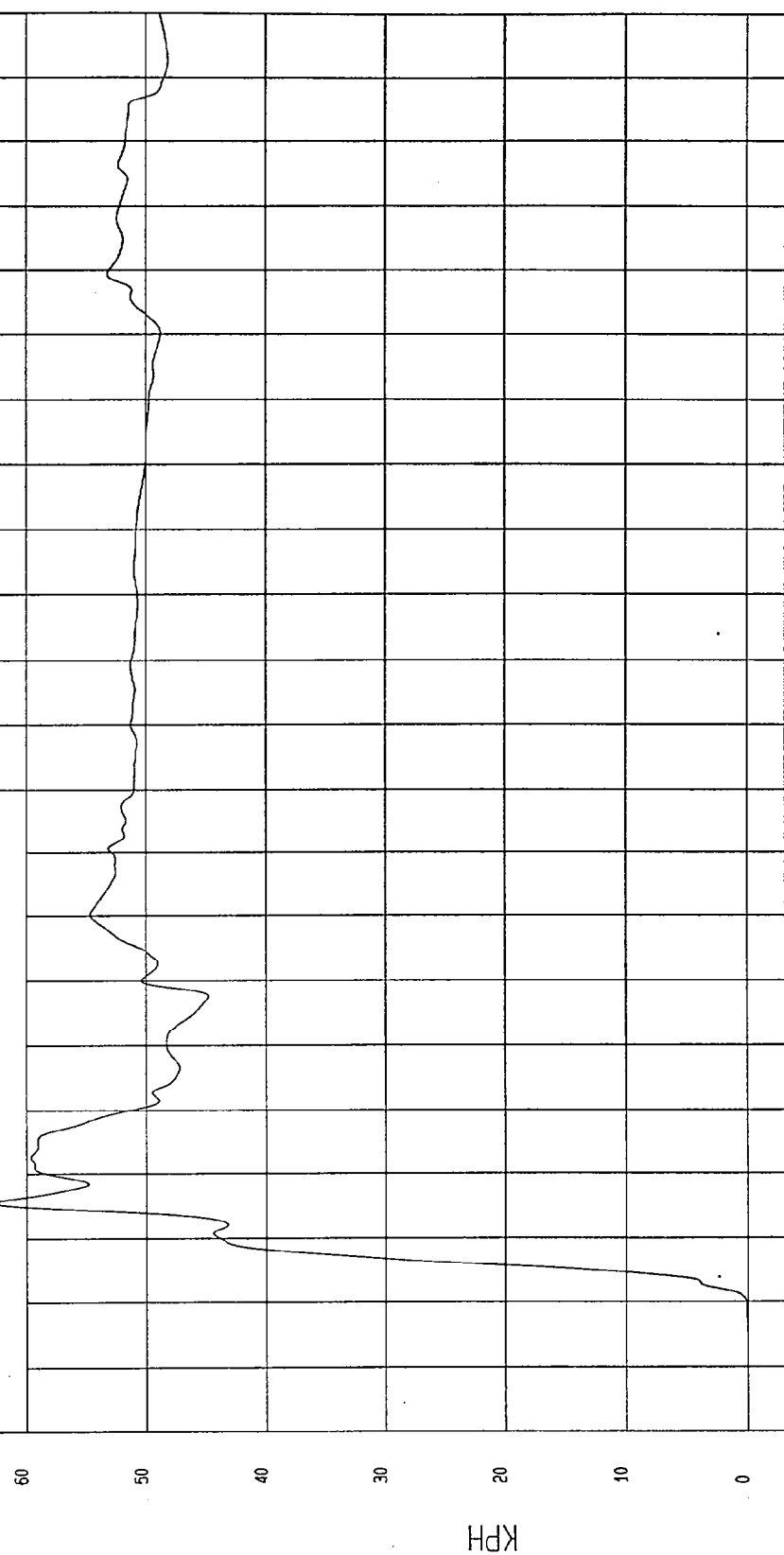
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 02-19-1997

COMPONENT: 1997 CHEVROLET LUMINA (MV01114) Speed: 38 MPH 61.2 KPH

Minimum = -9.21E-03 KPH at -18 msec
Maximum = 62.62 KPH at 16 msec

LEFT FRONT DOOR MIDREAR Y VELOCITY

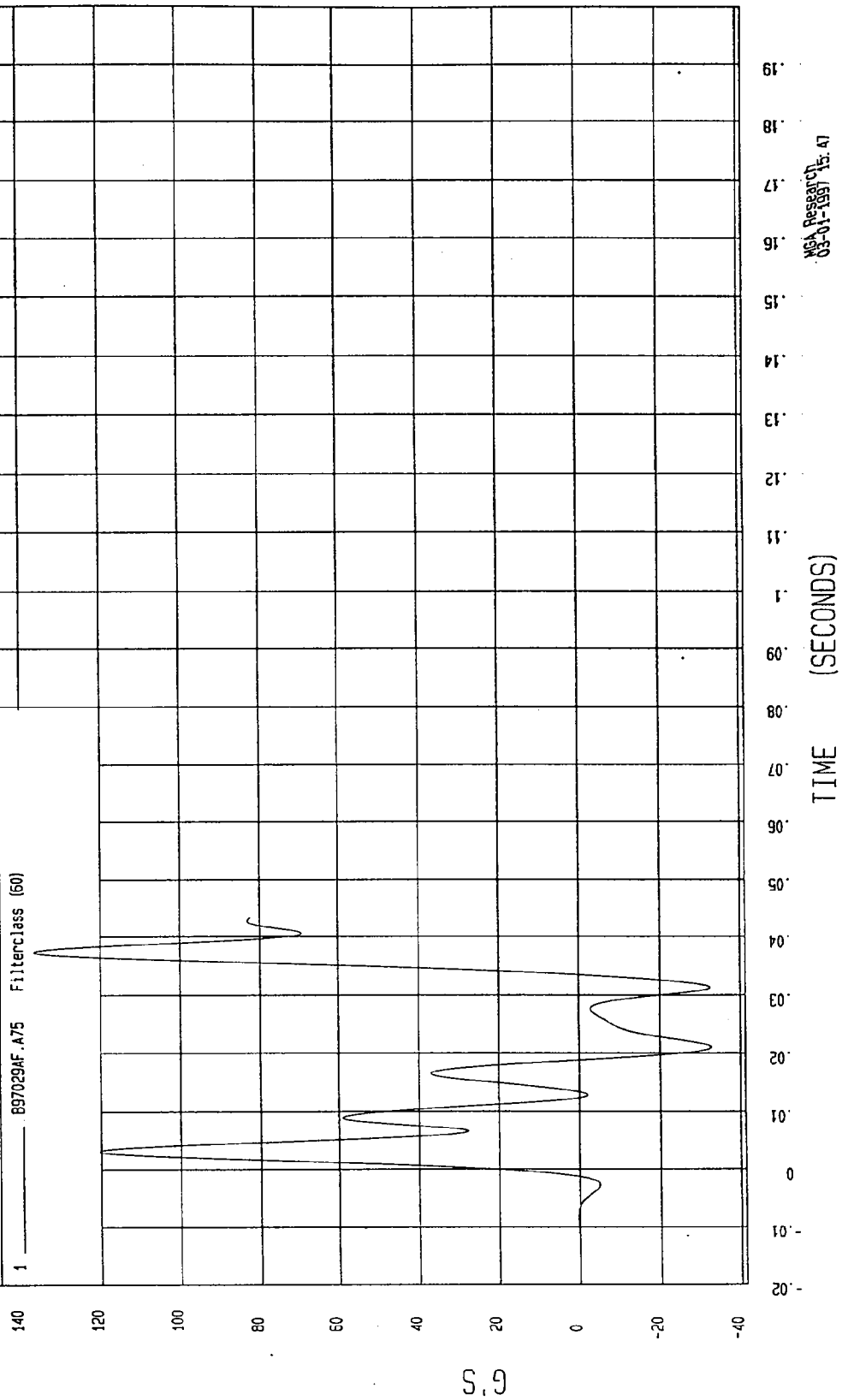
1 B97029A1.V74 Filterclass (180)



MEV Research
03-01-1997 15:21

TEST: HIGH SPEED LATERAL IMPACT	TEST DATE: 02-19-1997
COMPONENT: 1997 CHEVROLET LUMINA (MV0114)	Speed: 38 MPH 61.2 KPH
Minimum = -32.80 G'S at 21 msec	Maximum = 136.60 G'S at 37 msec

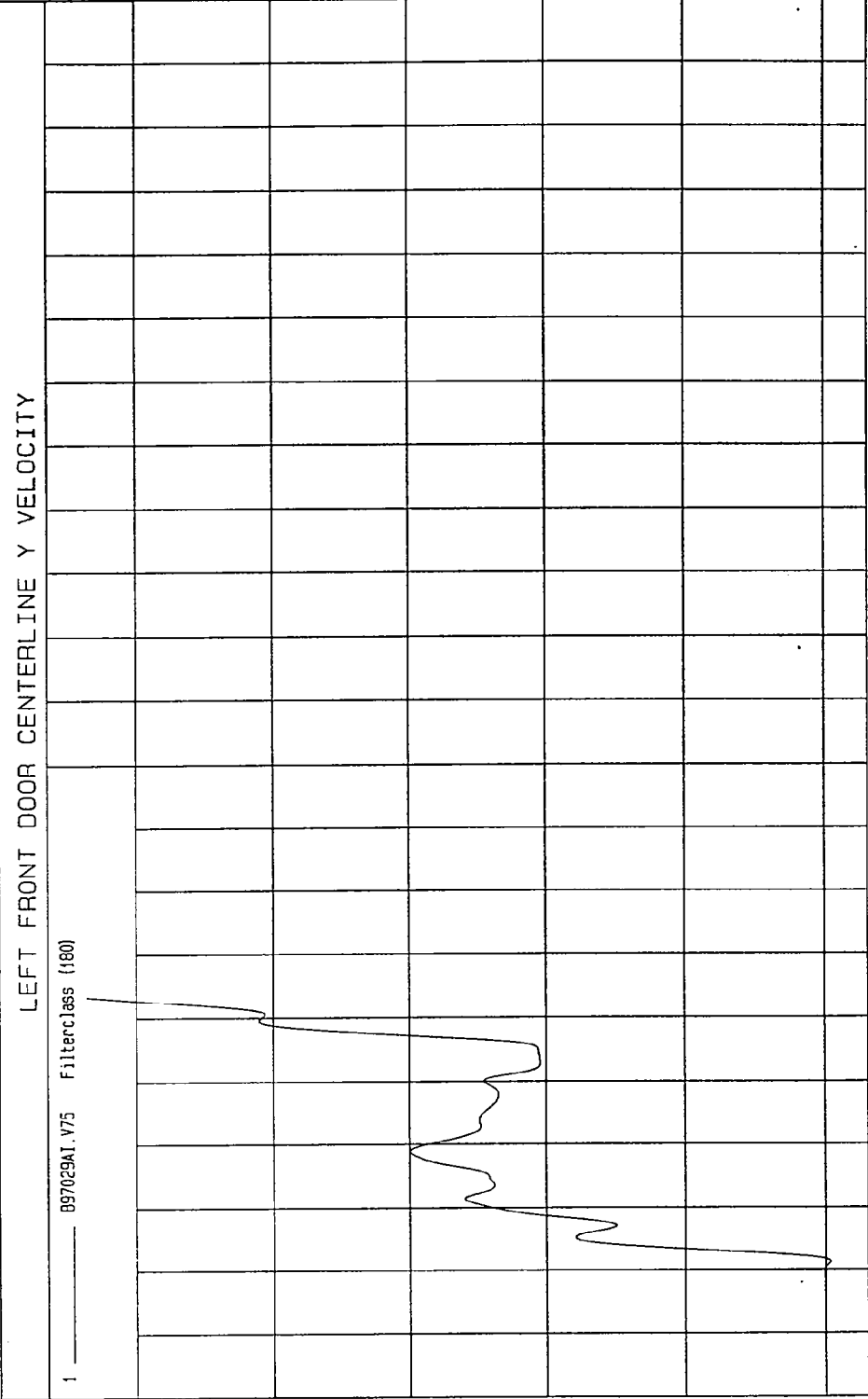
LEFT FRONT DOOR CENTERLINE Y ACCELERATION



TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 02-19-1997

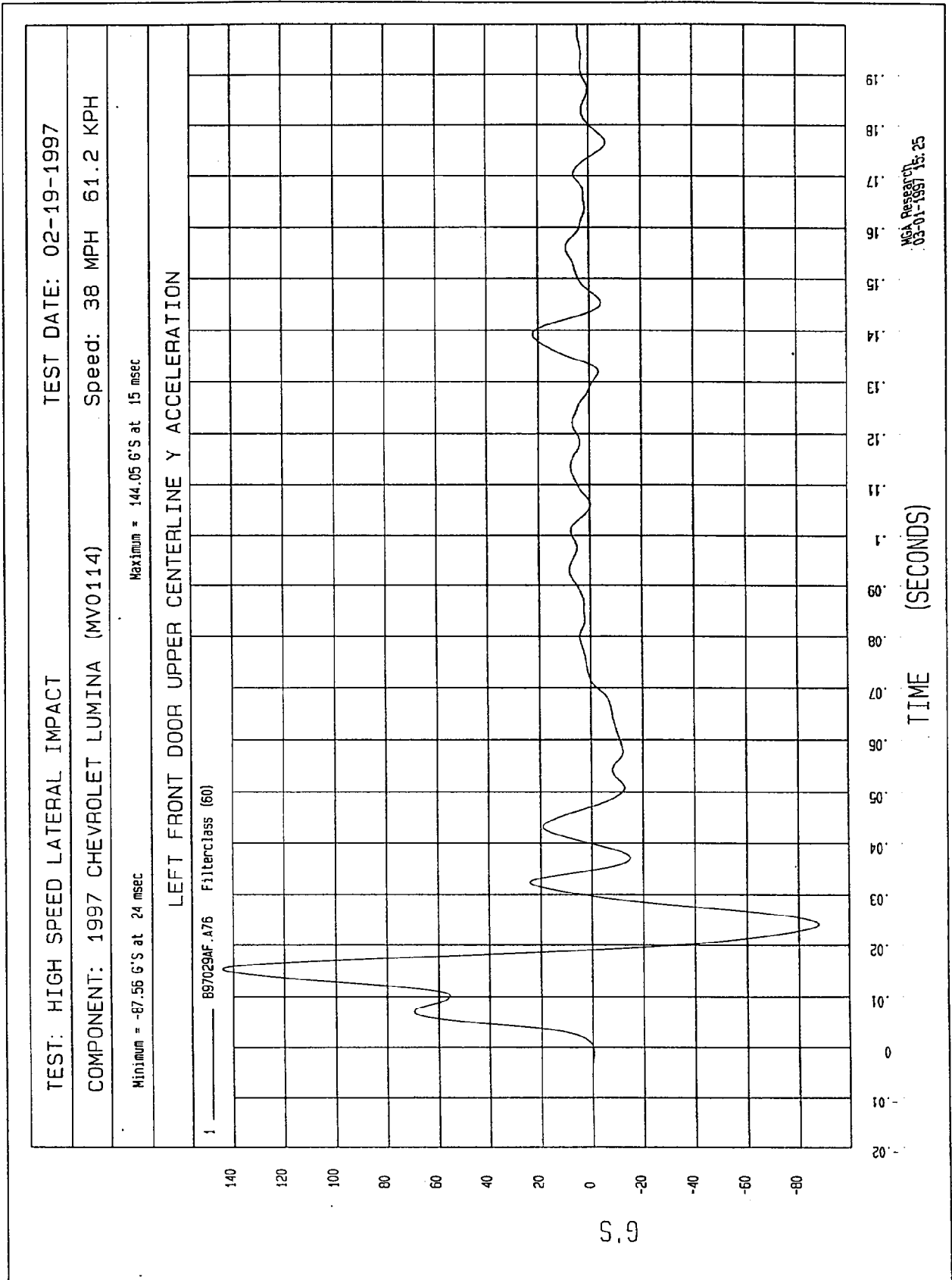
COMPONENT: 1997 CHEVROLET LUMINA (MV0114) Speed: 38 MPH 61.2 KPH

Minimum = -.34 KPH at 1 msec Maximum = 53.59 KPH at 43 msec



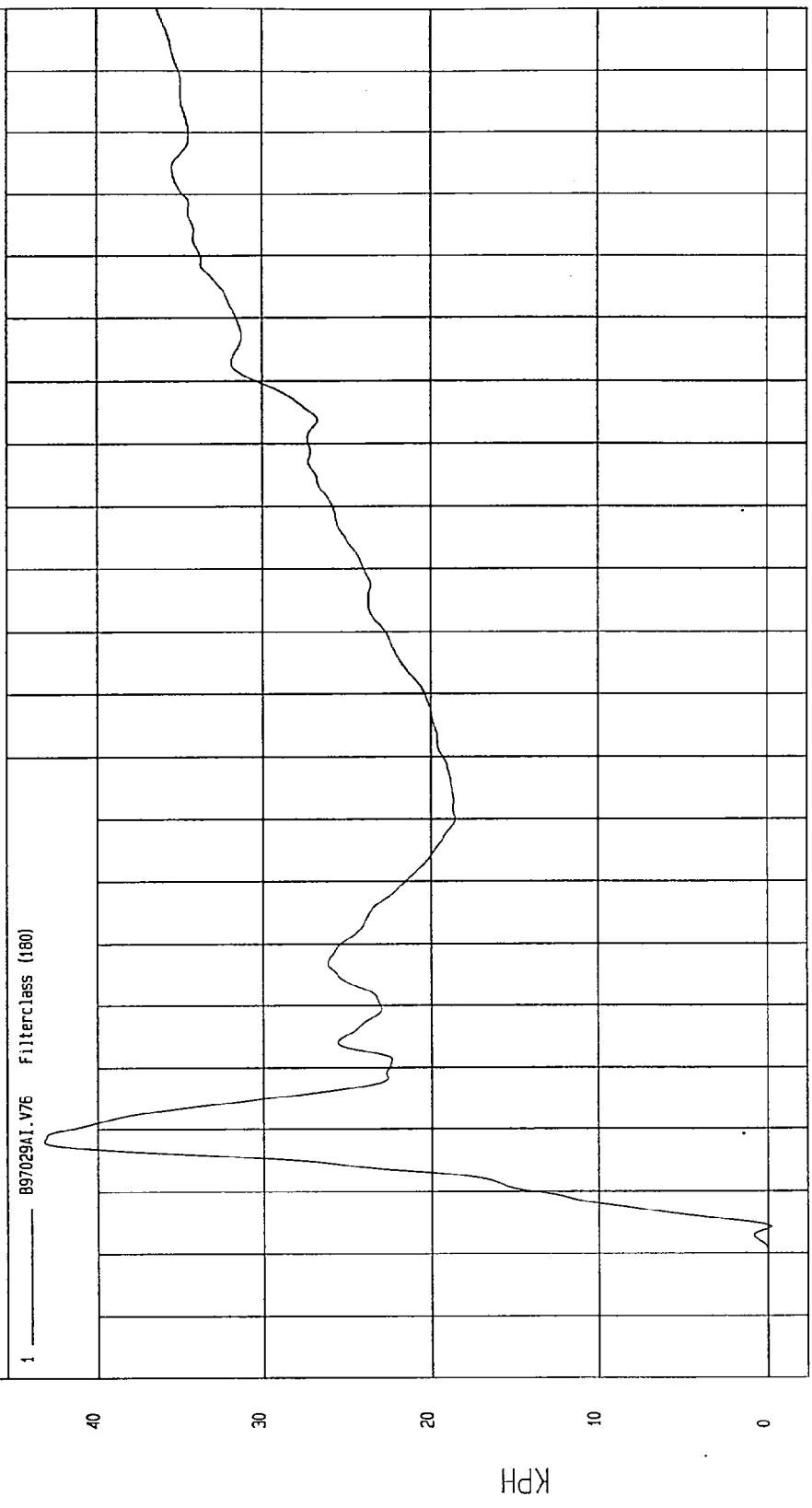
TIME Seconds

NSA Research
03-01-1997 15:47



TEST: HIGH SPEED LATERAL IMPACT	TEST DATE: 02-19-1997
COMPONENT: 1997 CHEVROLET LUMINA (MV0114)	Speed: 38 MPH 61.2 KPH
Minimum = -19 KPH at 4 msec	Maximum = 43.15 KPH at 18 msec

LEFT FRONT DOOR UPPER CENTERLINE Y VELOCITY



TIME Seconds

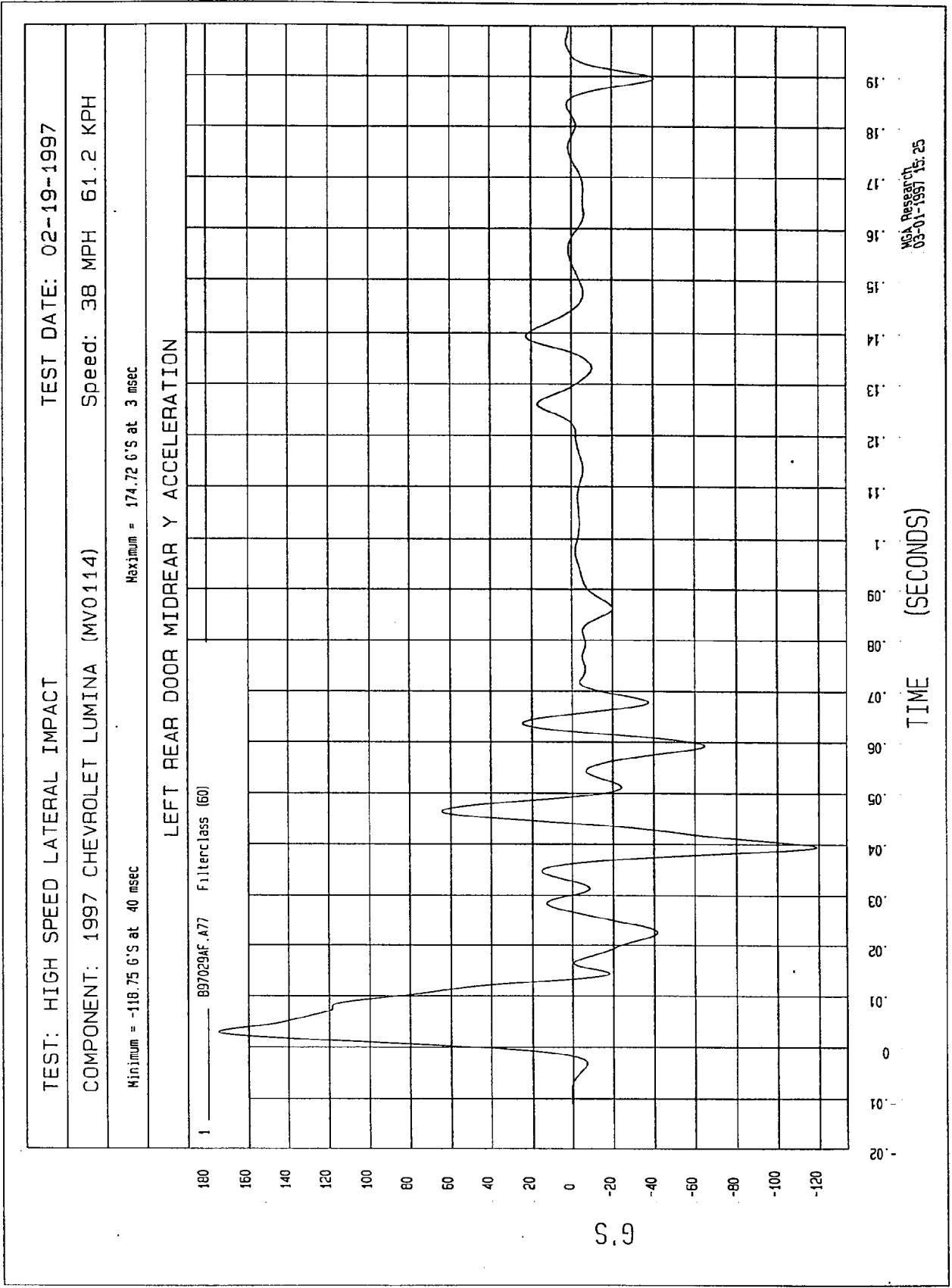
19
18
17
16
15
14
13
12
11
10
09
08
07
06
05
04
03
02
01
0
-01
-02

KPH

40
30
20
10
0

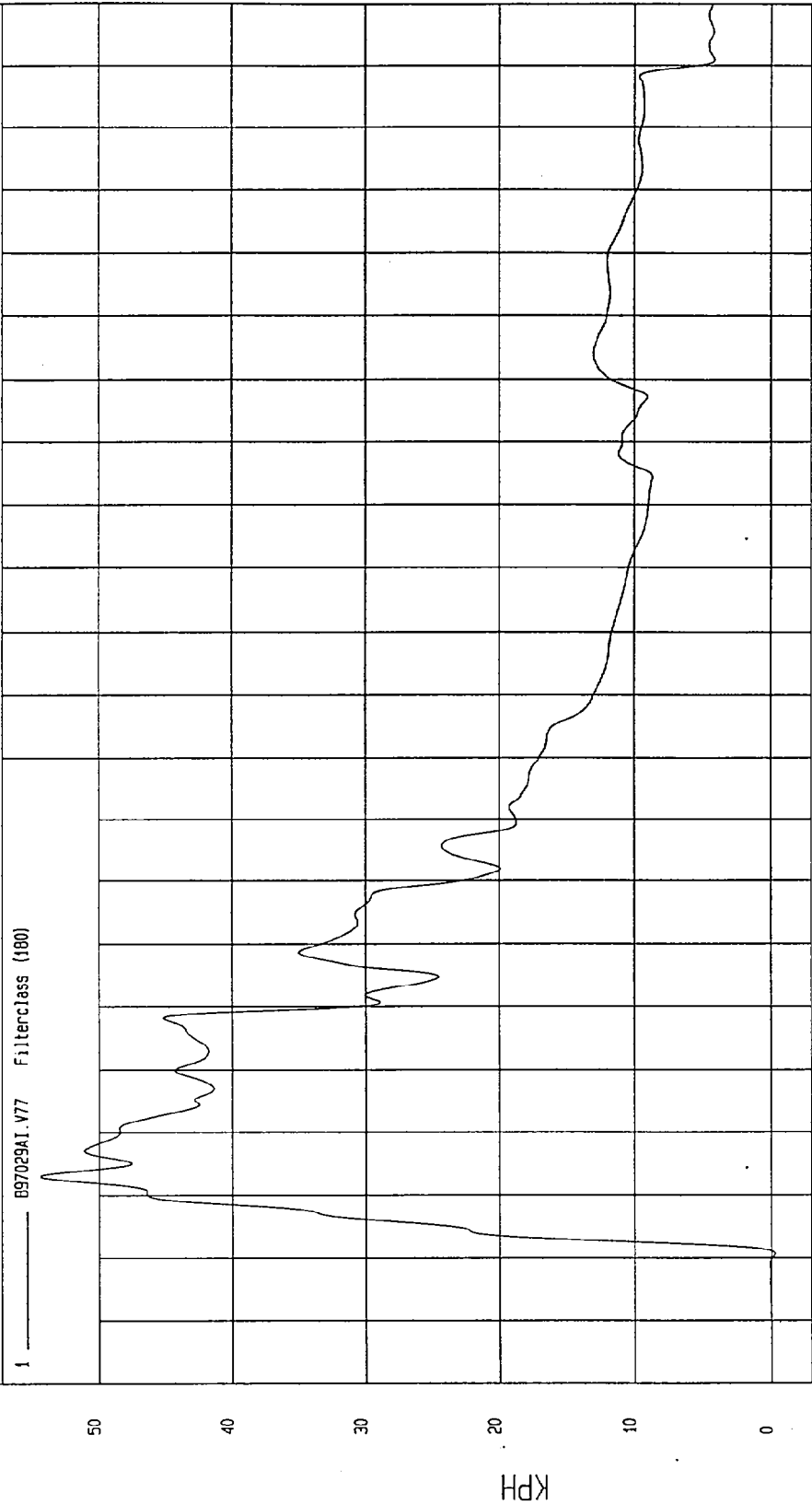
1 — B97029A1.V76 Filterclass (180)

MSA Research
03-01-1997 13:21



TEST: HIGH SPEED LATERAL IMPACT	TEST DATE: 02-19-1997
COMPONENT: 1997 CHEVROLET LUMINA (MV0114)	Speed: 38 MPH 61.2 KPH
Minimum = -28 KPH at 1 msec	Maximum = 54.41 KPH at 13 msec

LEFT REAR DOOR MIDREAR Y VELOCITY



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

MSA Research
03-01-1997 15:21

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 02-19-1997

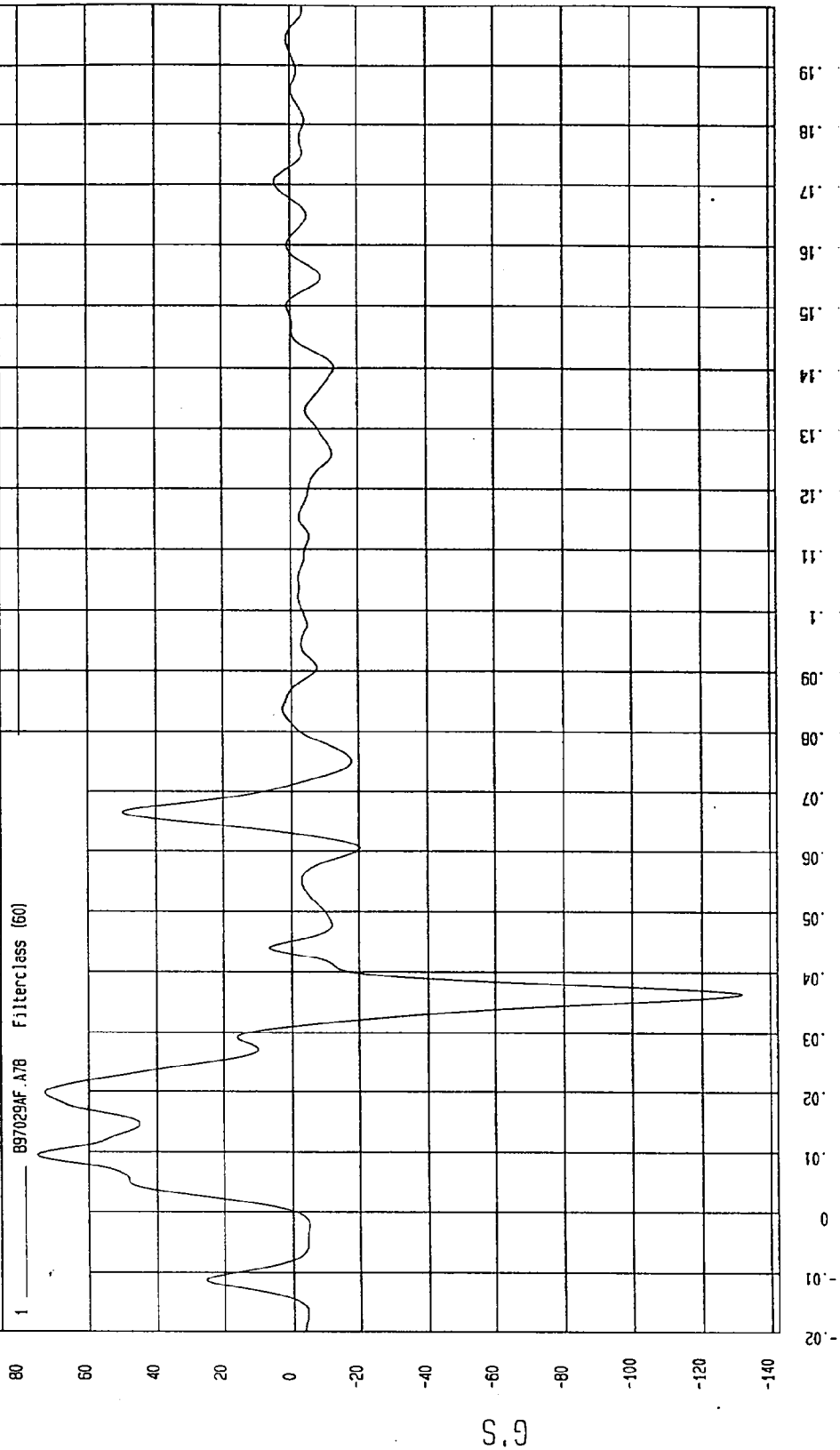
Speed: 38 MPH 61.2 KPH

COMPONENT: 1997 CHEVROLET LUMINA (MV0114)

Maximum = 75.04 G'S at 9 msec

Minimum = -131.65 G'S at 36 msec

LEFT REAR DOOR UPPER CENTERLINE Y ACCELERATION



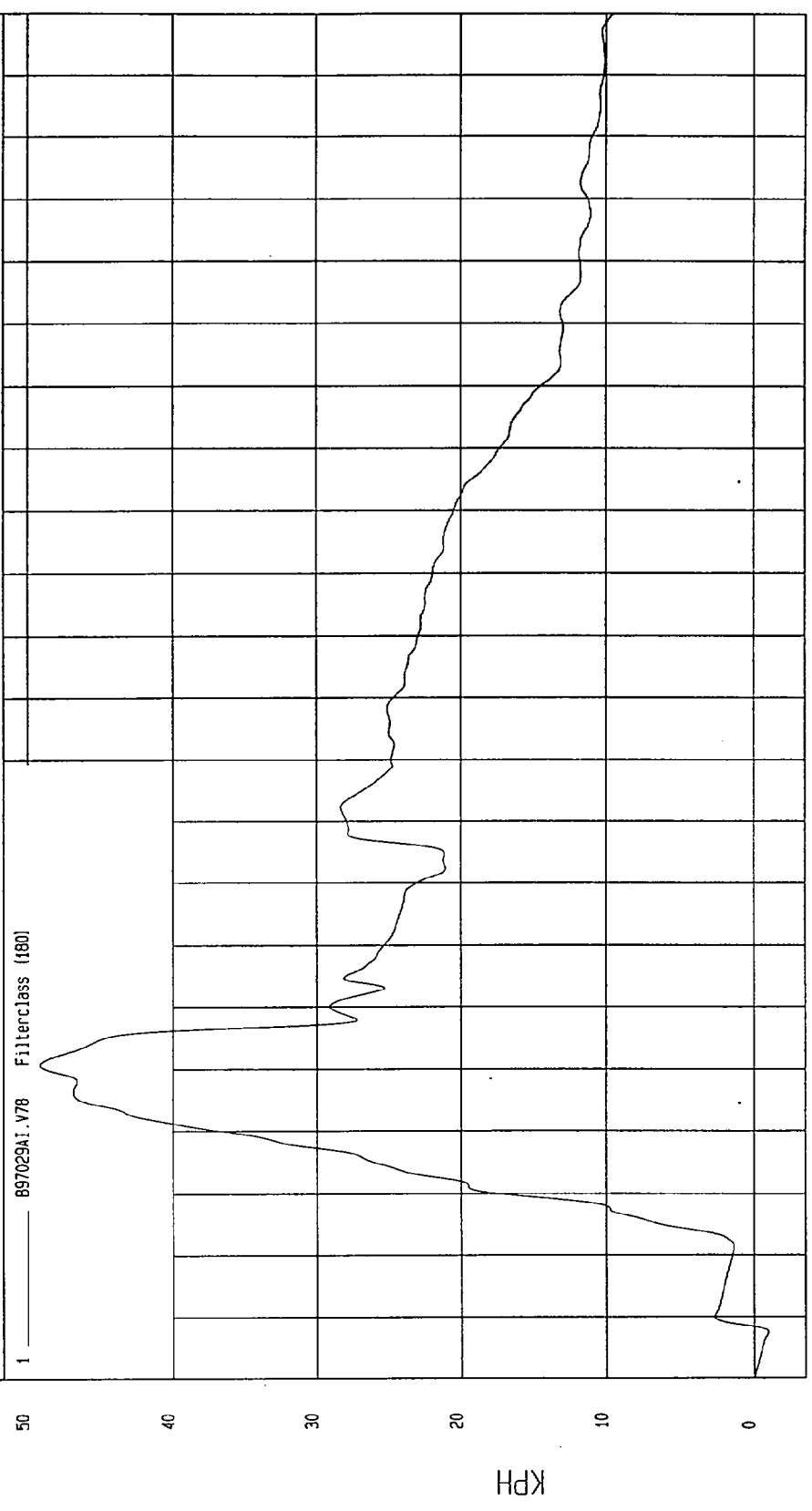
MGA Research
03-01-1997 15:25

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 02-19-1997

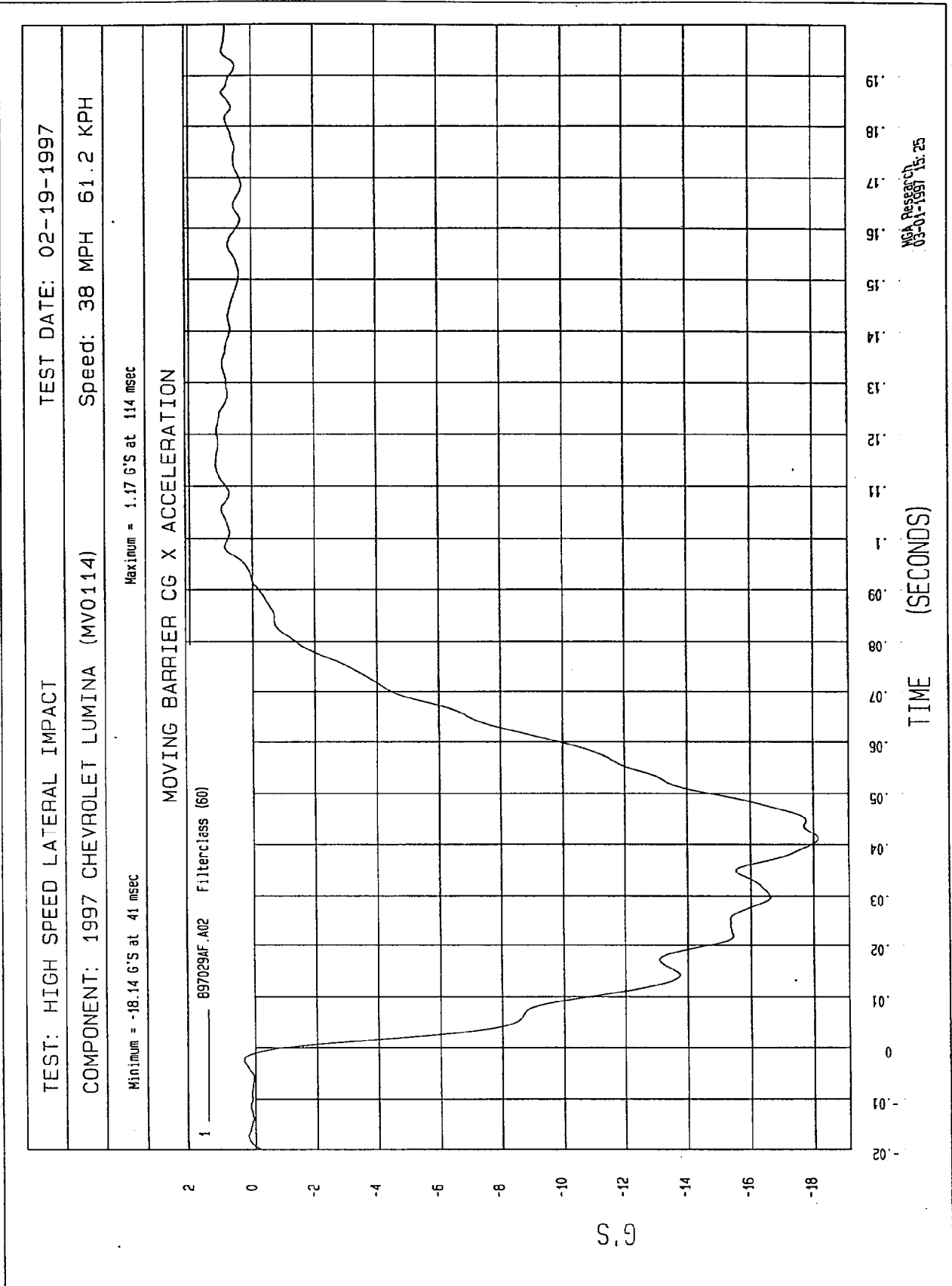
COMPONENT: 1997 CHEVROLET LUMINA (MV0114) Speed: 38 MPH 61.2 KPH

Minimum = -93 KPH at -13 msec Maximum = 49.17 KPH at 31 msec

LEFT REAR DOOR UPPER CENTERLINE Y VELOCITY



TIME Seconds
NGA Research
02-01-1997 15:21



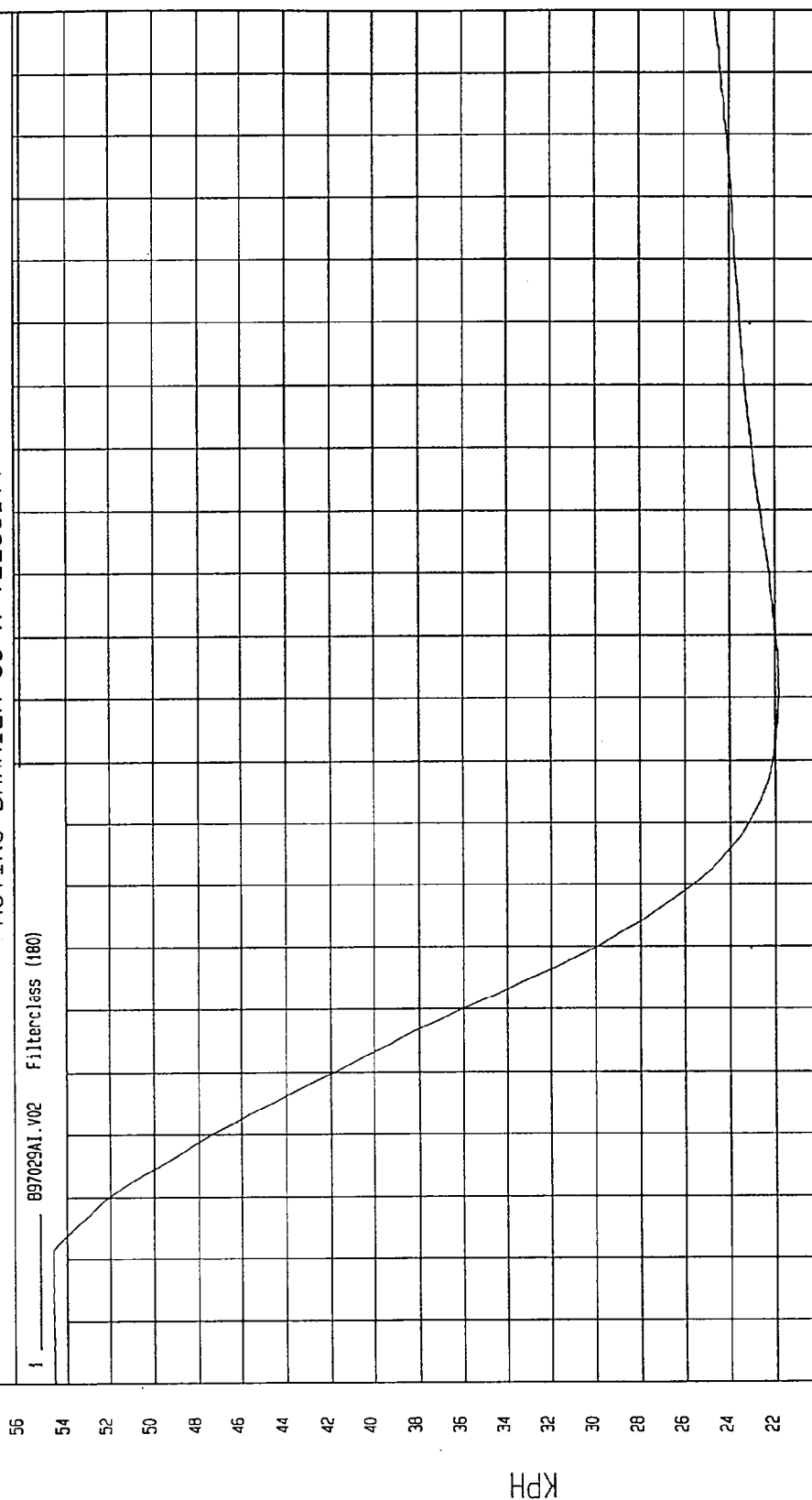
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 02-19-1997

COMPONENT: 1997 CHEVROLET LUMINA (MV01114) Speed: 38 MPH 61.2 KPH

Minimum = 21.84 KPH at 91 msec Maximum = 54.62 KPH at 1 msec

MOVING BARRIER CG X VELOCITY

1 897029A1.V02 Filterclass (180)



MCA Research
03-01-1997 15:21

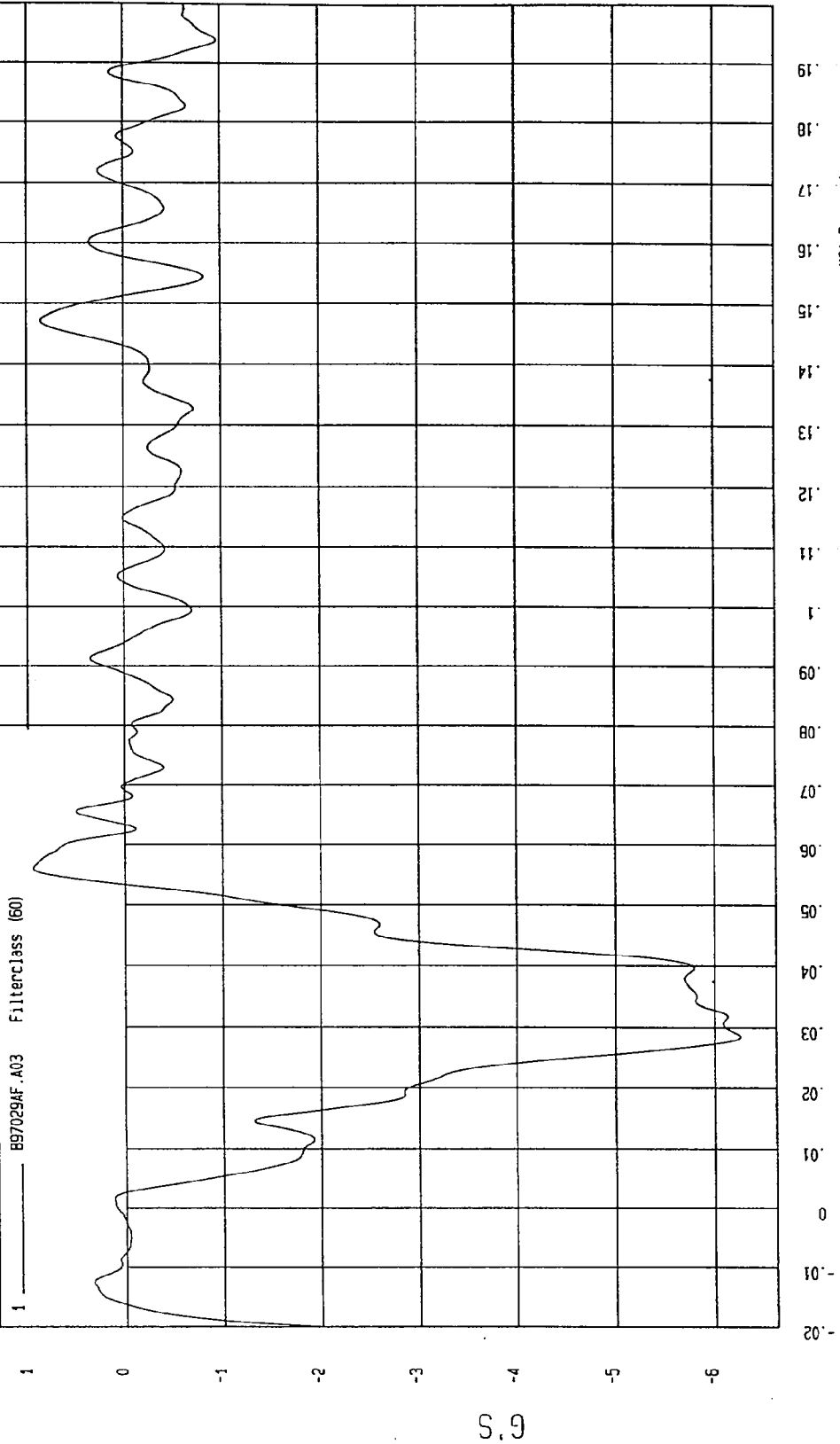
TIME Seconds

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 02-19-1997

COMPONENT: 1997 CHEVROLET LUMINA (MV0114) Speed: 38 MPH 61.2 KPH

Minimum = -6.24 G'S at 28 msec Maximum = .95 G'S at 56 msec

MOVING BARRIER CG Y ACCELERATION



MCA Research
03-01-1997 15:25

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 02-19-1997

Speed: 38 MPH 61.2 KPH

COMPONENT: 1997 CHEVROLET LUMINA (MV0114)

Maximum = 27.02 KPH at 3 msec

Minimum = 21.01 KPH at 200 msec

MOVING BARRIER CG Y VELOCITY

1 ——— B97029A1.V03 Filterclass (180)

28

27

26

25

24

23

22

21

KPH

61

18

17

16

15

14

13

12

11

10

09

08

07

06

05

04

03

02

01

0

-01

-02

TIME Seconds

NCA Research
03-01-1997 15:21

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 02-19-1997

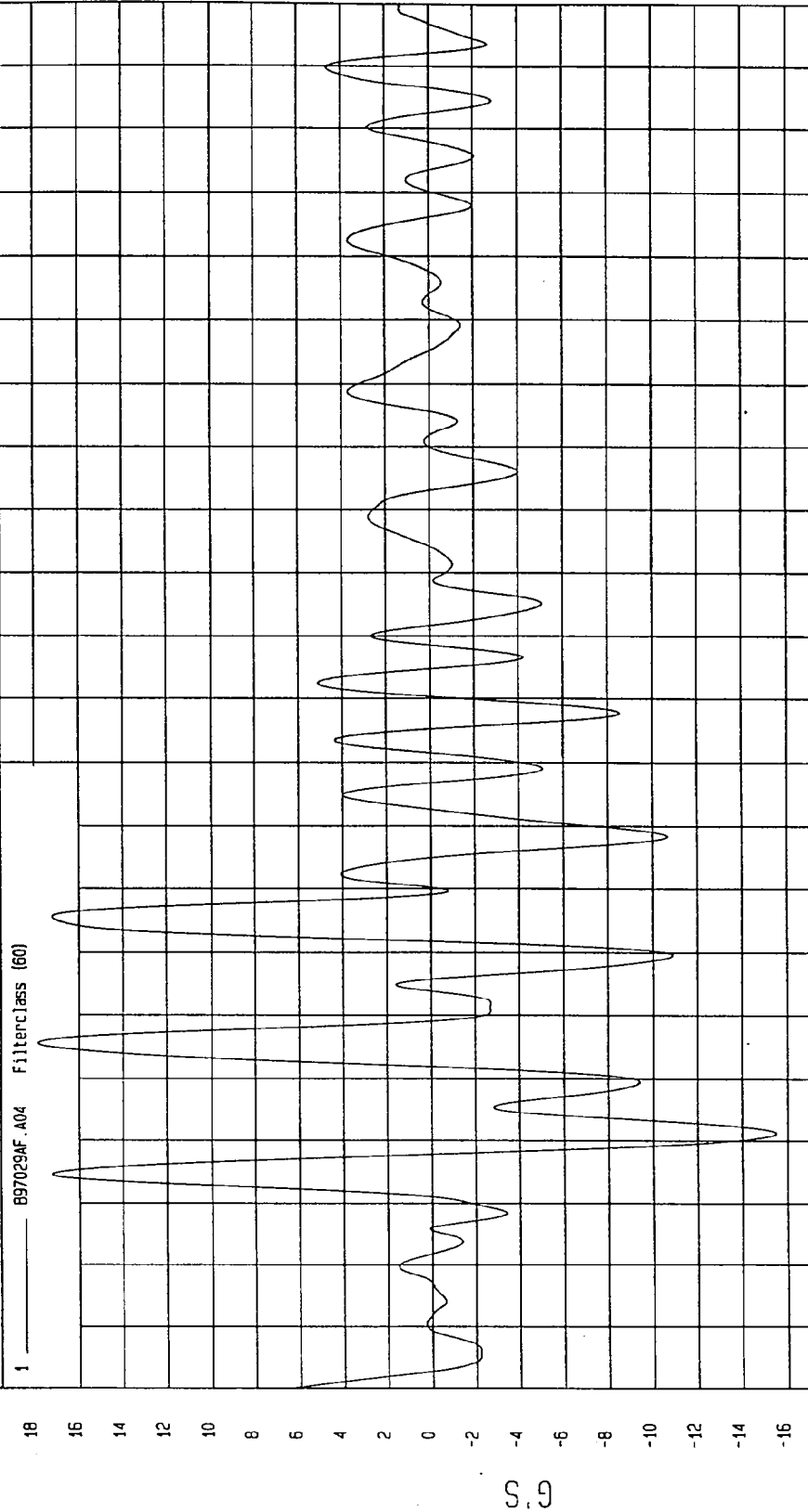
COMPONENT: 1997 CHEVROLET LUMINA (MV0114) Speed: 38 MPH 61.2 KPH

Minimum = -15.52 G'S at 21 msec

Maximum = 17.83 G'S at 36 msec

MOVING BARRIER CG Z ACCELERATION

1 897029AF.A04 FilterClass (60)



MGA Research
03-01-1997 15:25

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 02-19-1997

Speed: 38 MPH 61.2 KPH

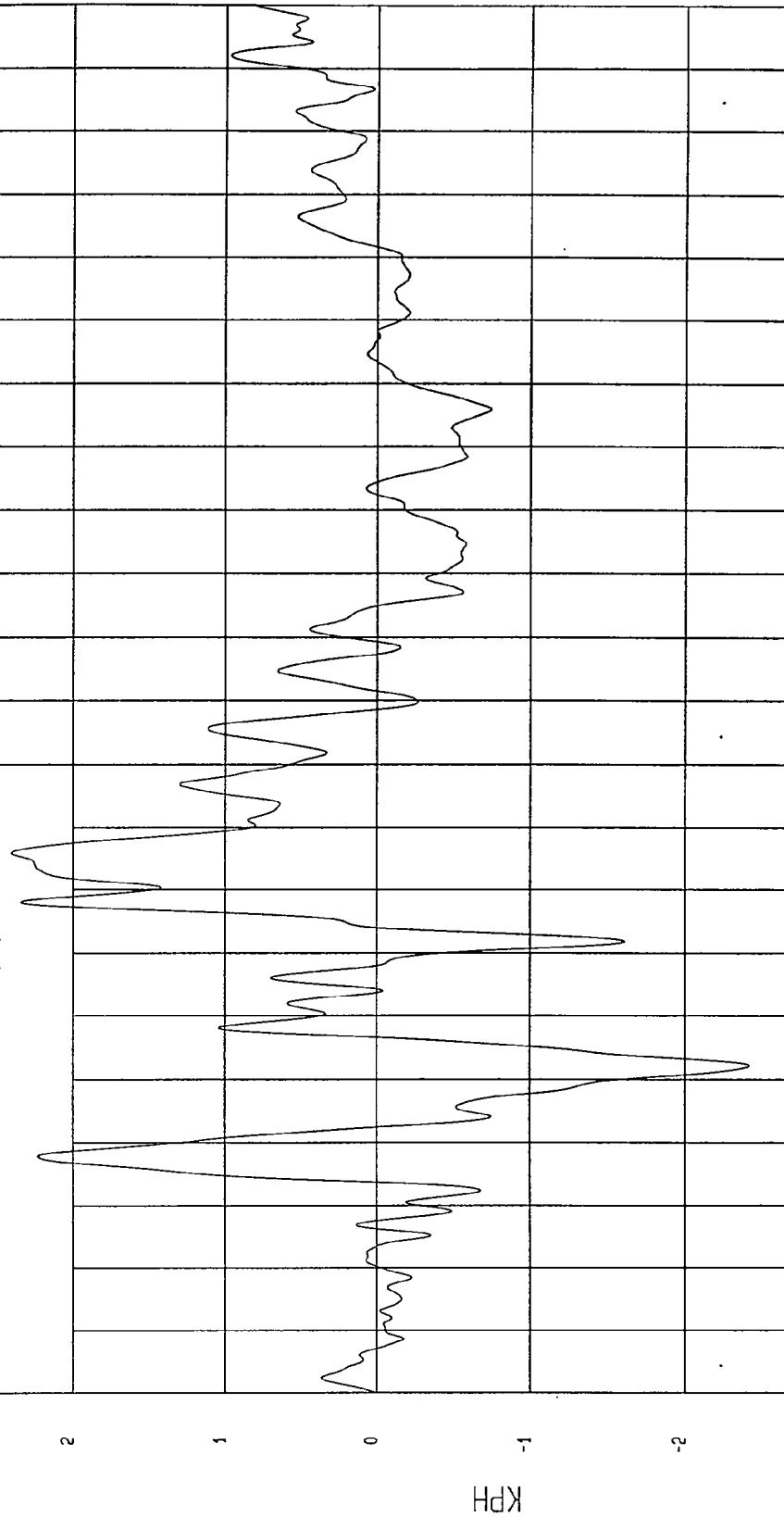
COMPONENT: 1997 CHEVROLET LUMINA (MV0114)

Minimum = -2.41 KPH at 32 msec

Maximum = 2.40 KPH at 66 msec

MOVING BARRIER CG Z VELOCITY

1 ——— B97029A1.V04 FilterClass (180)



TIME Seconds

MGA Research
03-01-1997 15:21

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 02-19-1997

Speed: 38 MPH 61.2 KPH

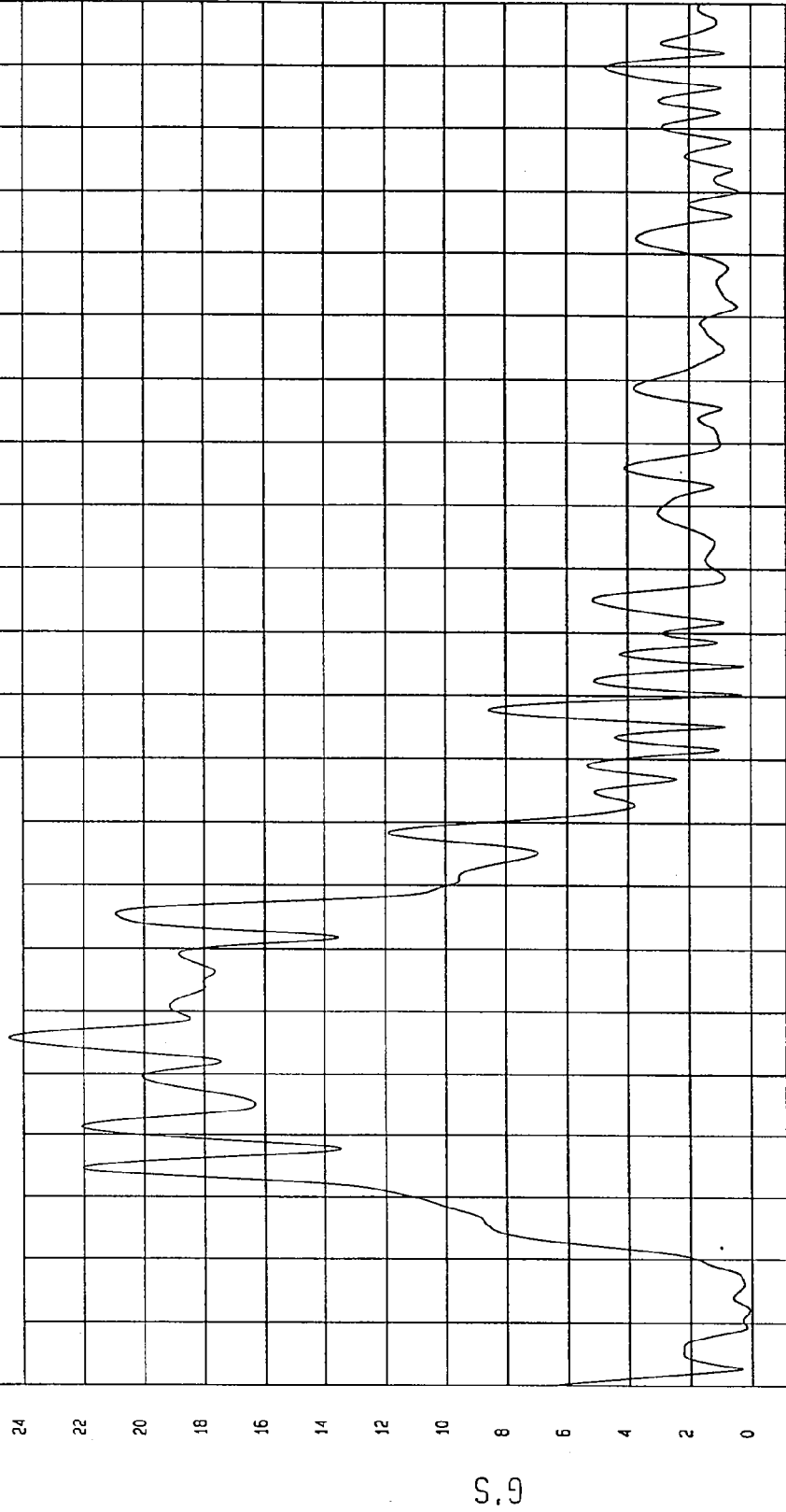
COMPONENT: 1997 CHEVROLET LUMINA (MV0114)

Maximum = 24.47 G'S at 36 msec

Minimum = 8.86E-02 G'S at -8 msec

MOVING BARRIER CG RESULTANT ACCELERATION

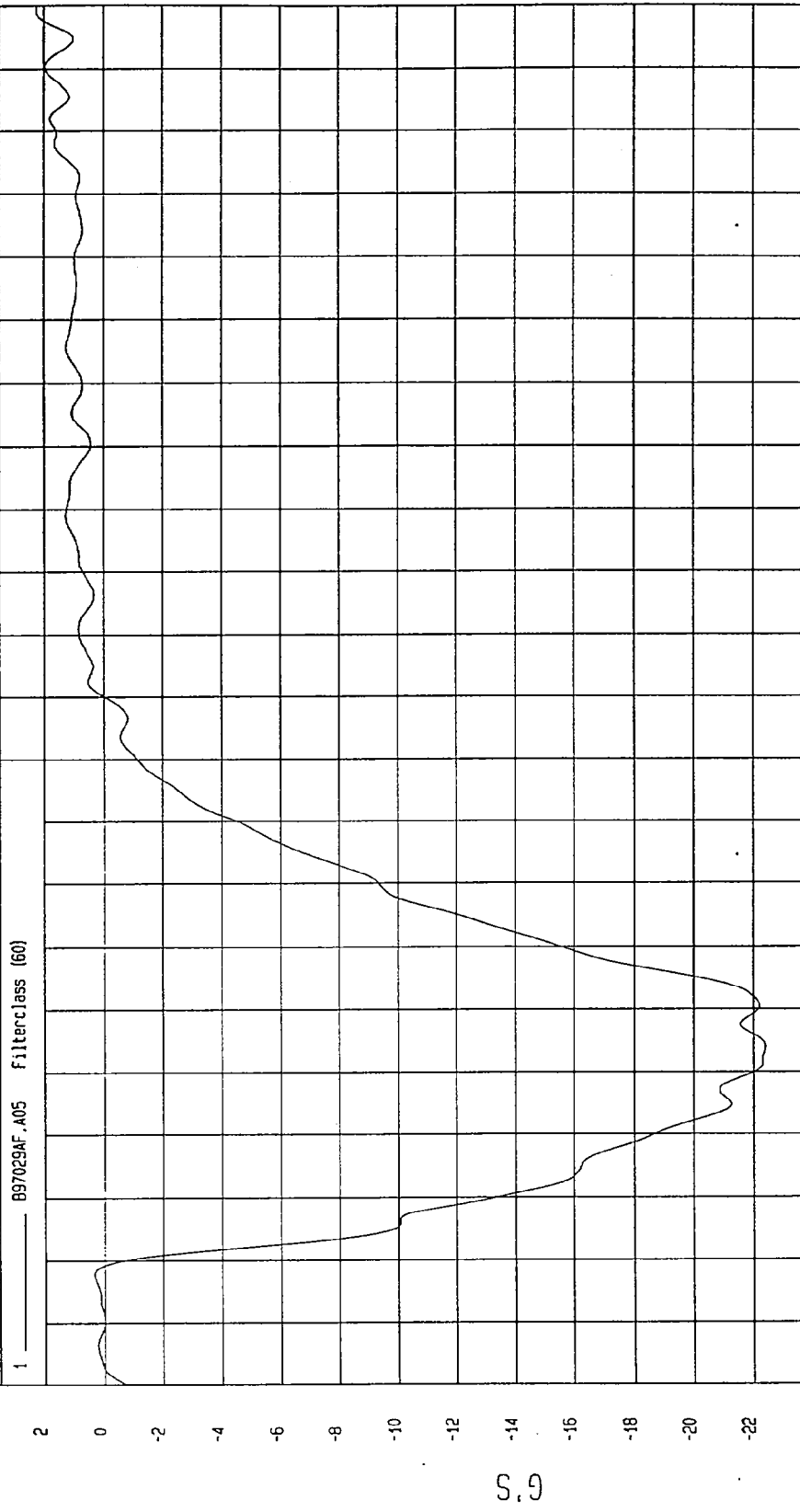
1 ——— B97029AV A02 Filterclass (60)



MCA Research
03-01-1997 15:27

TEST: HIGH SPEED LATERAL IMPACT	TEST DATE: 02-19-1997
COMPONENT: 1997 CHEVROLET LUMINA (MV0114)	Speed: 38 MPH 61.2 KPH
Minimum = -22.36 G's at 34 msec	Maximum = 2.25 G's at 199 msec

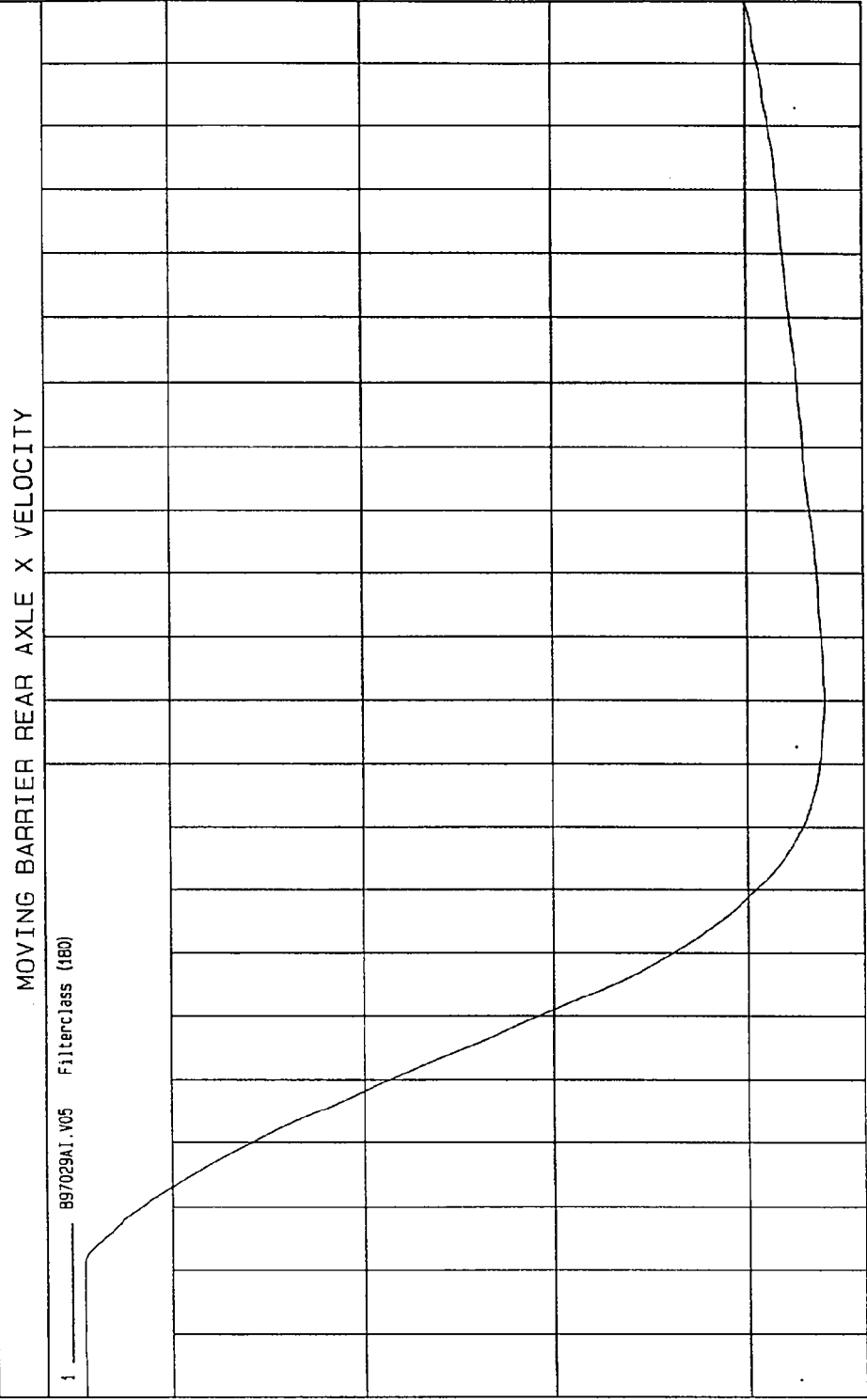
MOVING BARRIER REAR AXLE X ACCELERATION



TIME (SECONDS)

MSA Research
03-01-1997 15:25

TEST: HIGH SPEED LATERAL IMPACT	TEST DATE: 02-19-1997
COMPONENT: 1997 CHEVROLET LUMINA (MV0114)	Speed: 38 MPH 61.2 KPH
Minimum = 15.98 KPH at 90 msec	Maximum = 54.58 KPH at 1 msec



TIME Seconds

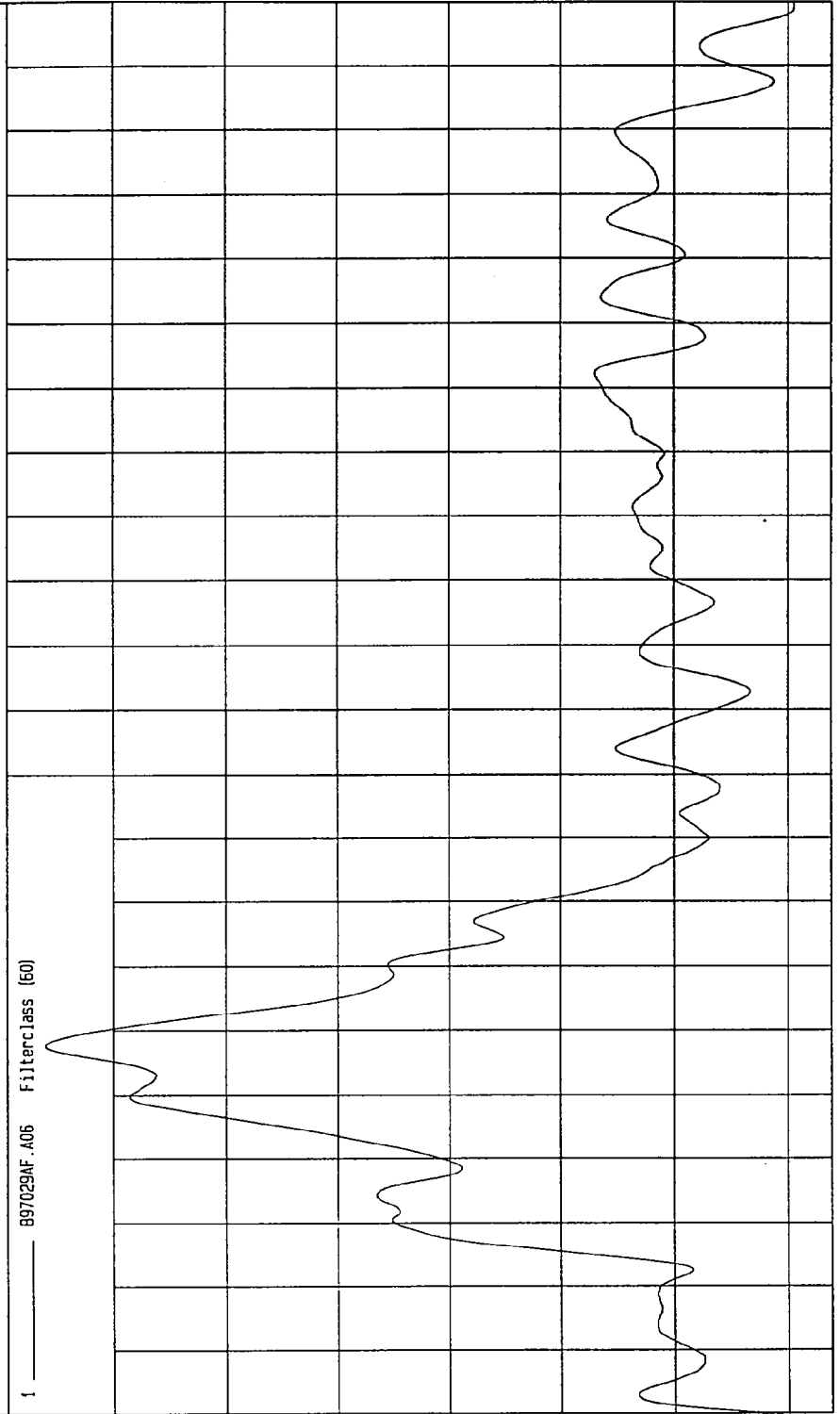
MSA Research
03-01-1997 15:22

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 02-19-1997

COMPONENT: 1997 CHEVROLET LUMINA (MV0114) Speed: 38 MPH 61.2 KPH

Minimum = -1.04 G'S at 199 msec Maximum = 5.60 G'S at 38 msec

MOVING BARRIER REAR AXLE Y ACCELERATION



TIME (SECONDS)

MCA Research
03-01-1997 15:26

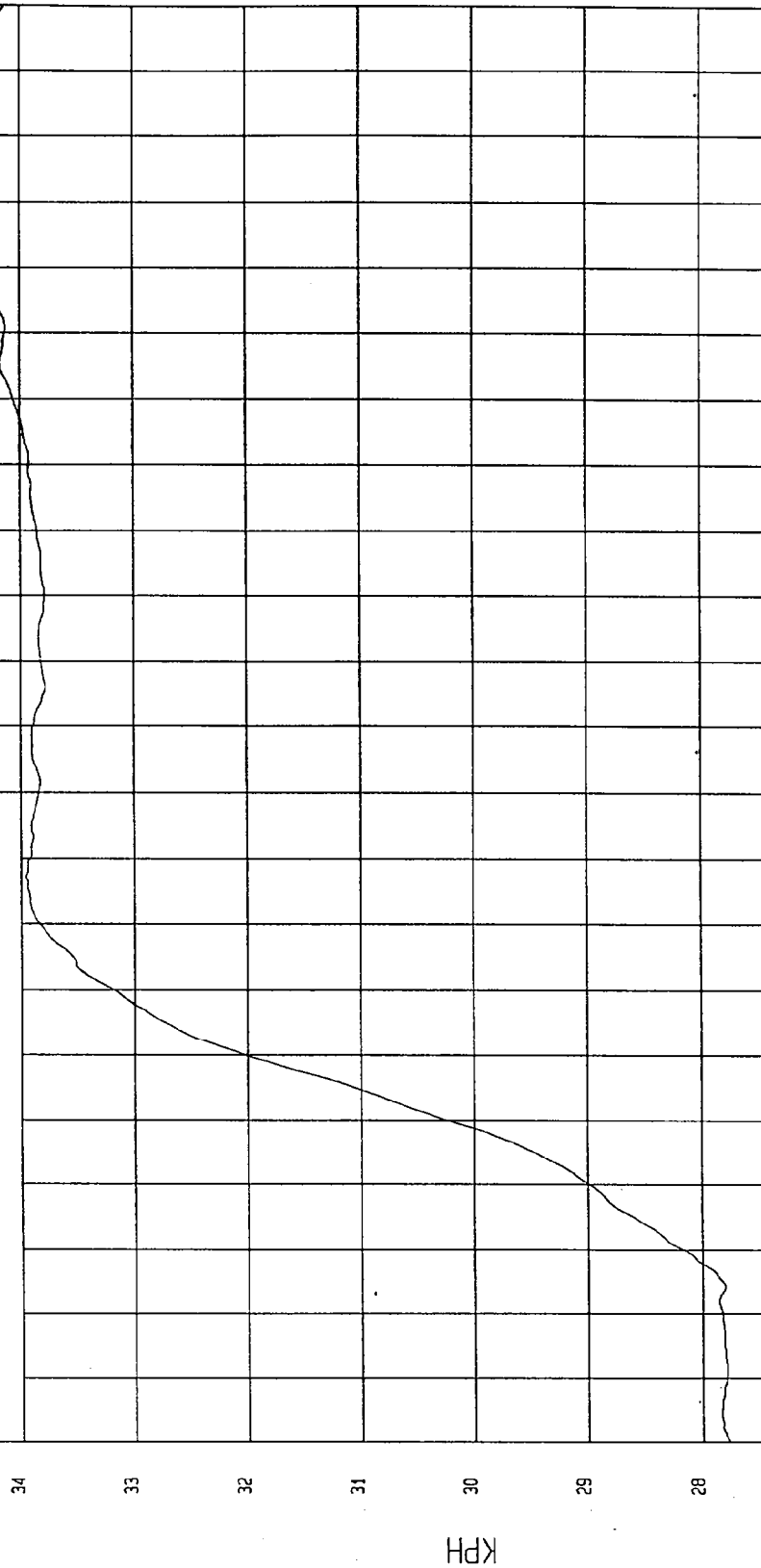
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 02-19-1997

COMPONENT: 1997 CHEVROLET LUMINA (MV0114) Speed: 38 MPH 61.2 KPH

Minimum = 27.77 KPH at -20 msec Maximum = 34.50 KPH at 184 msec

MOVING BARRIER REAR AXLE Y VELOCITY

1 ——— B97029A1.V06 Filterclass (180)



TIME Seconds
NGA Research
03-01-1997 13:22

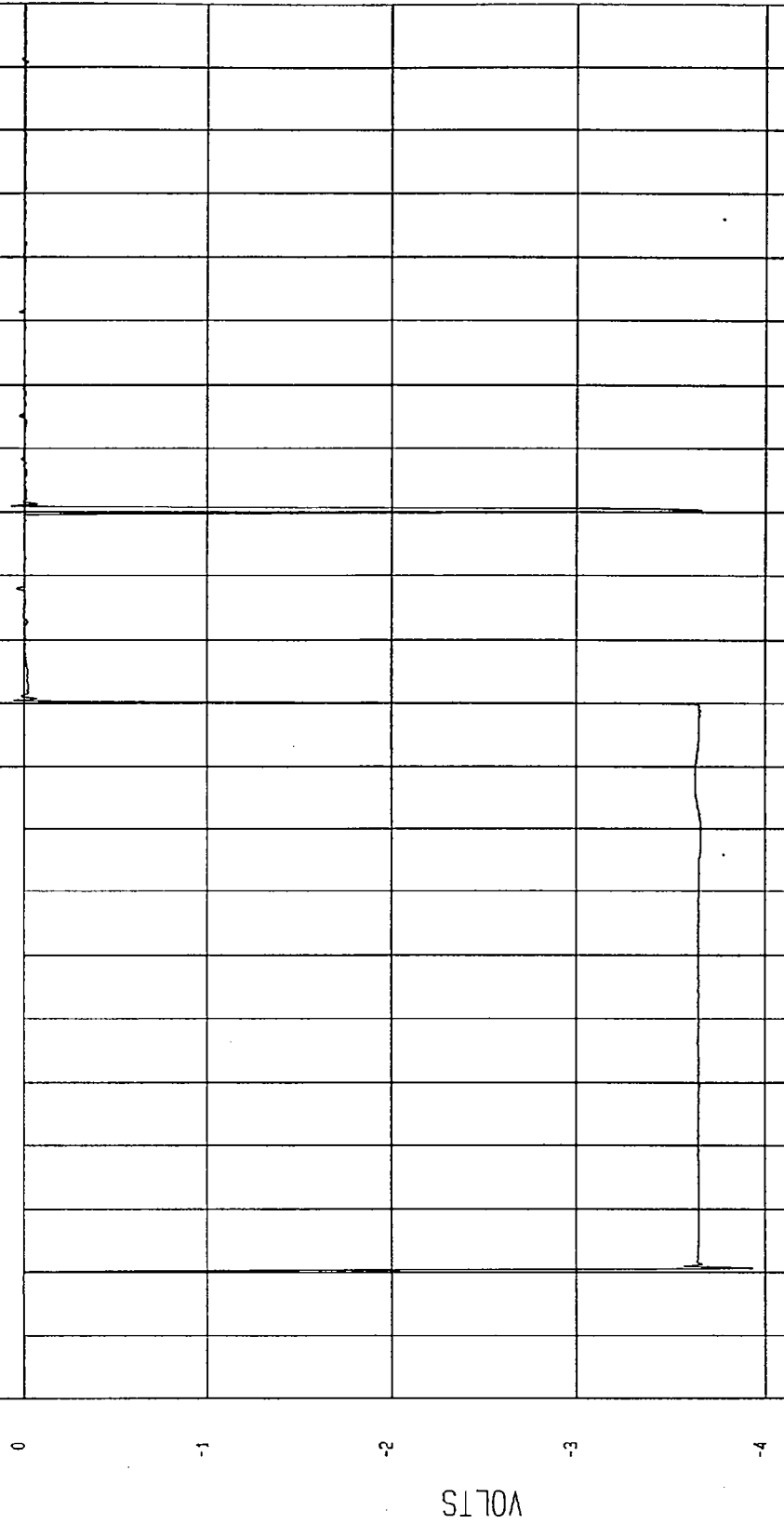
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 02-19-1997

COMPONENT: 1997 CHEVROLET LUMINA (MVO1114) Speed: 38 MPH 61.2 KPH

Minimum = -3.93 VOLTS at 1 msec Maximum = 7.19E-02 VOLTS at 121 msec

LEFT BARRIER CONTACT

1 8970290T.071 Filterclass (1000)



TIME (SECONDS)

MCA Research
03-01-1997 15:26

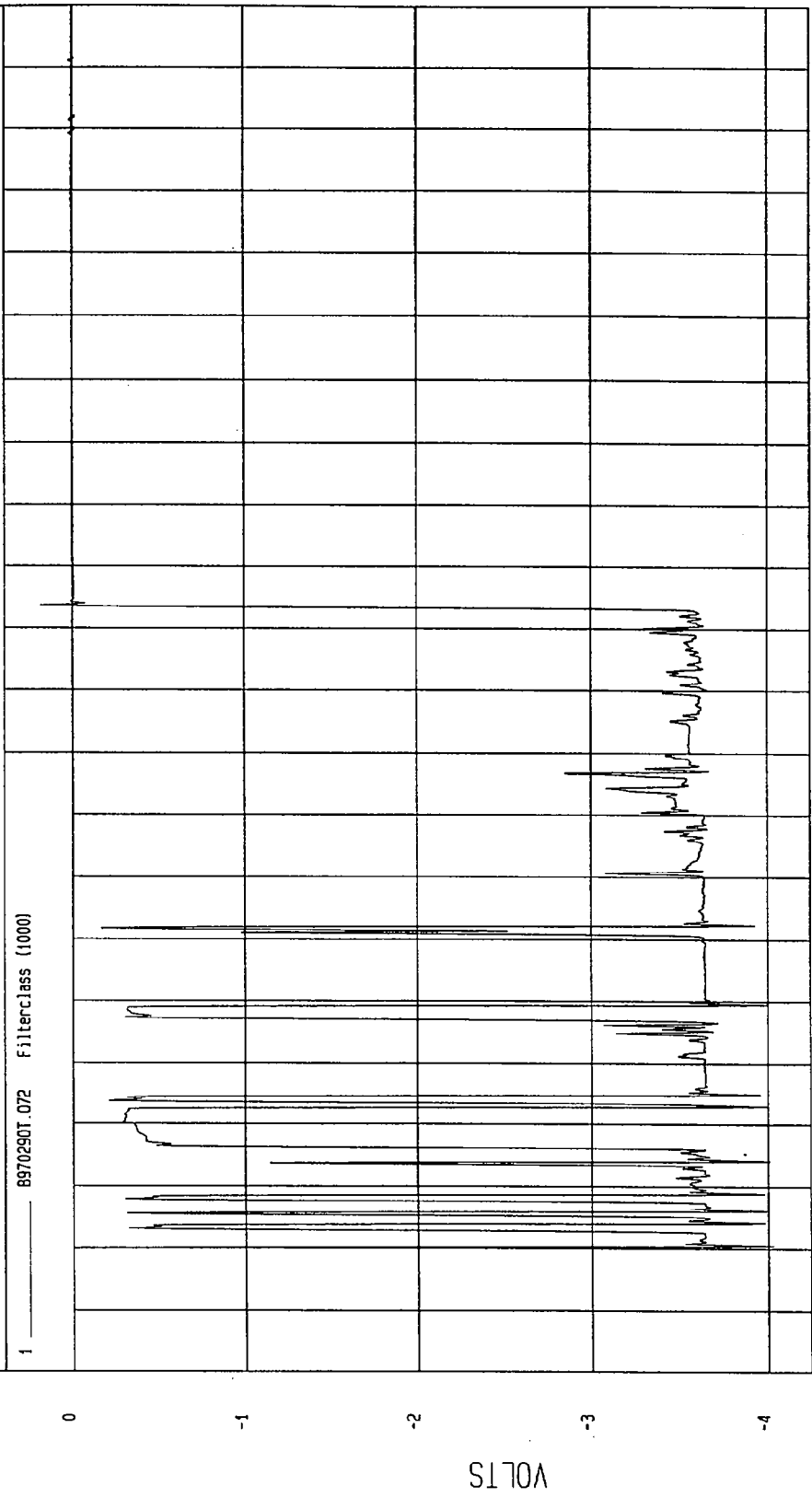
TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 02-19-1997

COMPONENT: 1997 CHEVROLET LUMINA (MV0114) Speed: 38 MPH 61.2 KPH

Minimum = -4.02 VOLTS at 0 msec Maximum = .18 VOLTS at 104 msec

RIGHT BARRIER CONTACT



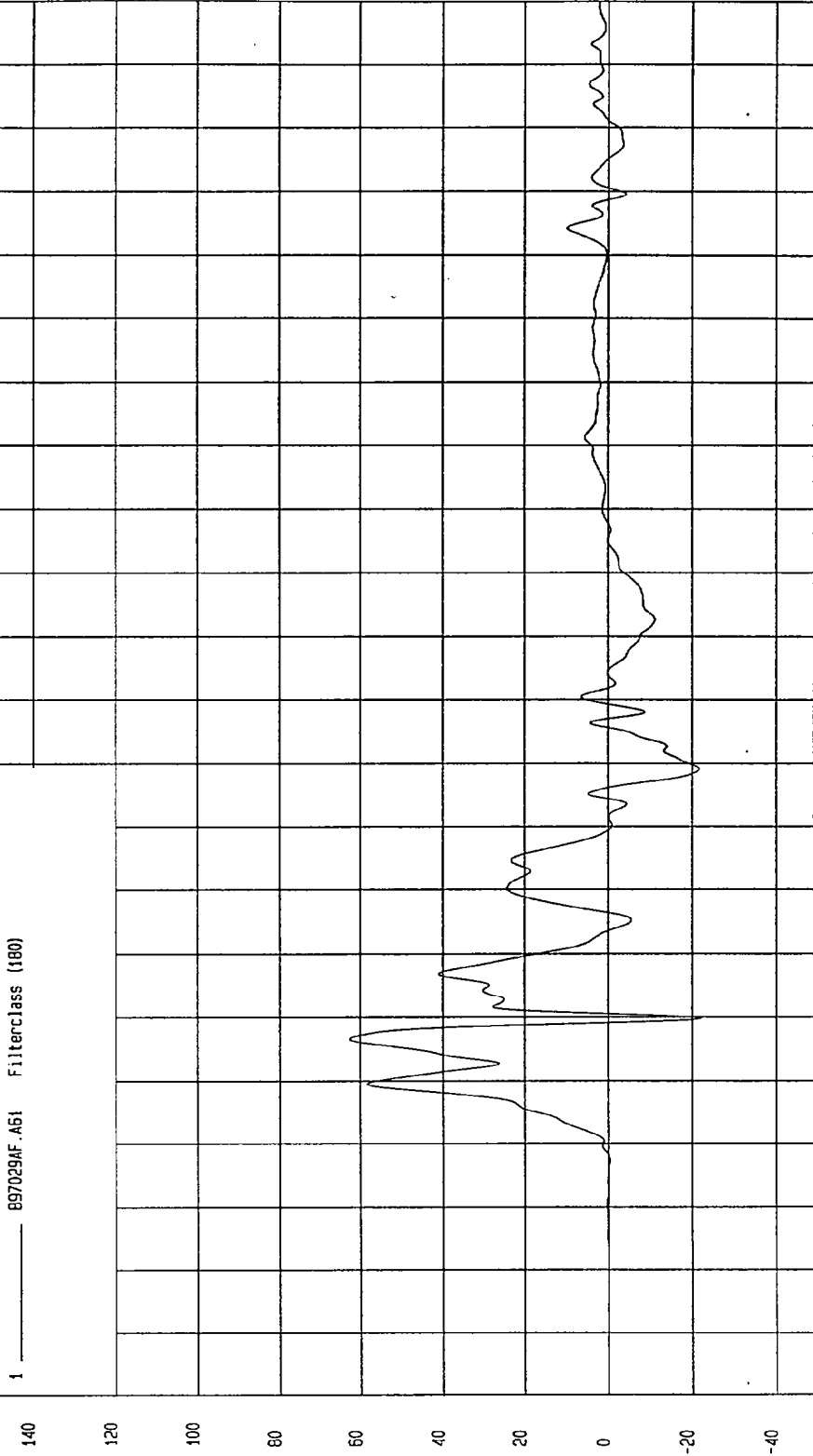
MCA Research
03-01-1997 15:26

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 02-19-1997

COMPONENT: 1997 CHEVROLET LUMINA (MV0114) Speed: 38 MPH 61.2 KPH

Minimum = -22.08 G'S at 40 msec Maximum = 62.61 G'S at 37 msec

DRIVER UPPER RIB Y REDUNDANT ACCELERATION



TIME (SECONDS)

MSA Research
03-01-1997 14:39

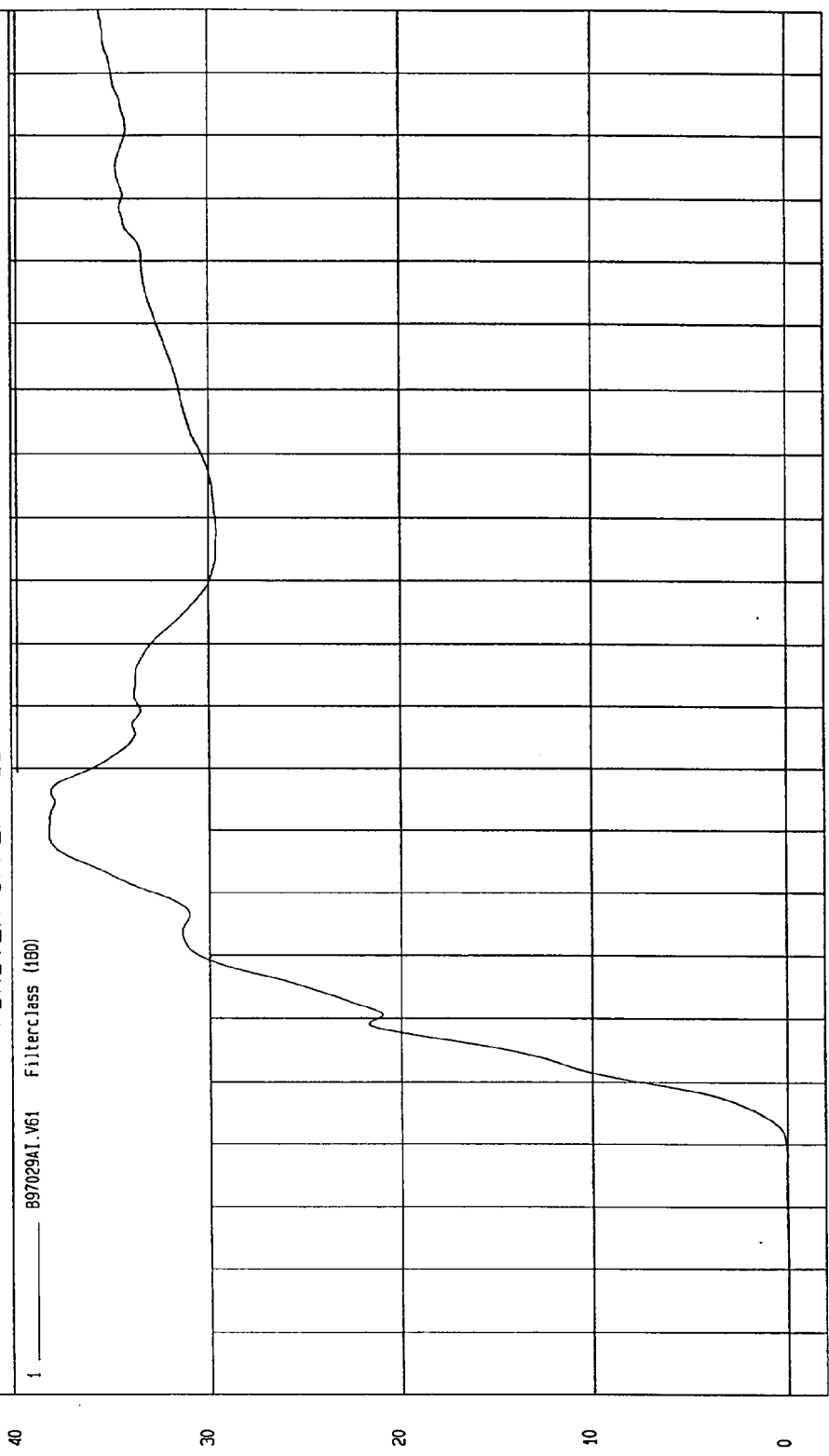
TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 02-19-1997

COMPONENT: 1997 CHEVROLET LUMINA (MV0114) Speed: 38 MPH 61.2 KPH

Minimum = -9.11E-03 KPH at -13 msec Maximum = 38.38 KPH at 69 msec

DRIVER UPPER RIB Y REDUNDANT VELOCITY



TIME Seconds

NSA Research
03-01-1997 15:09

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 02-19-1997

Speed: 38 MPH 61.2 KPH

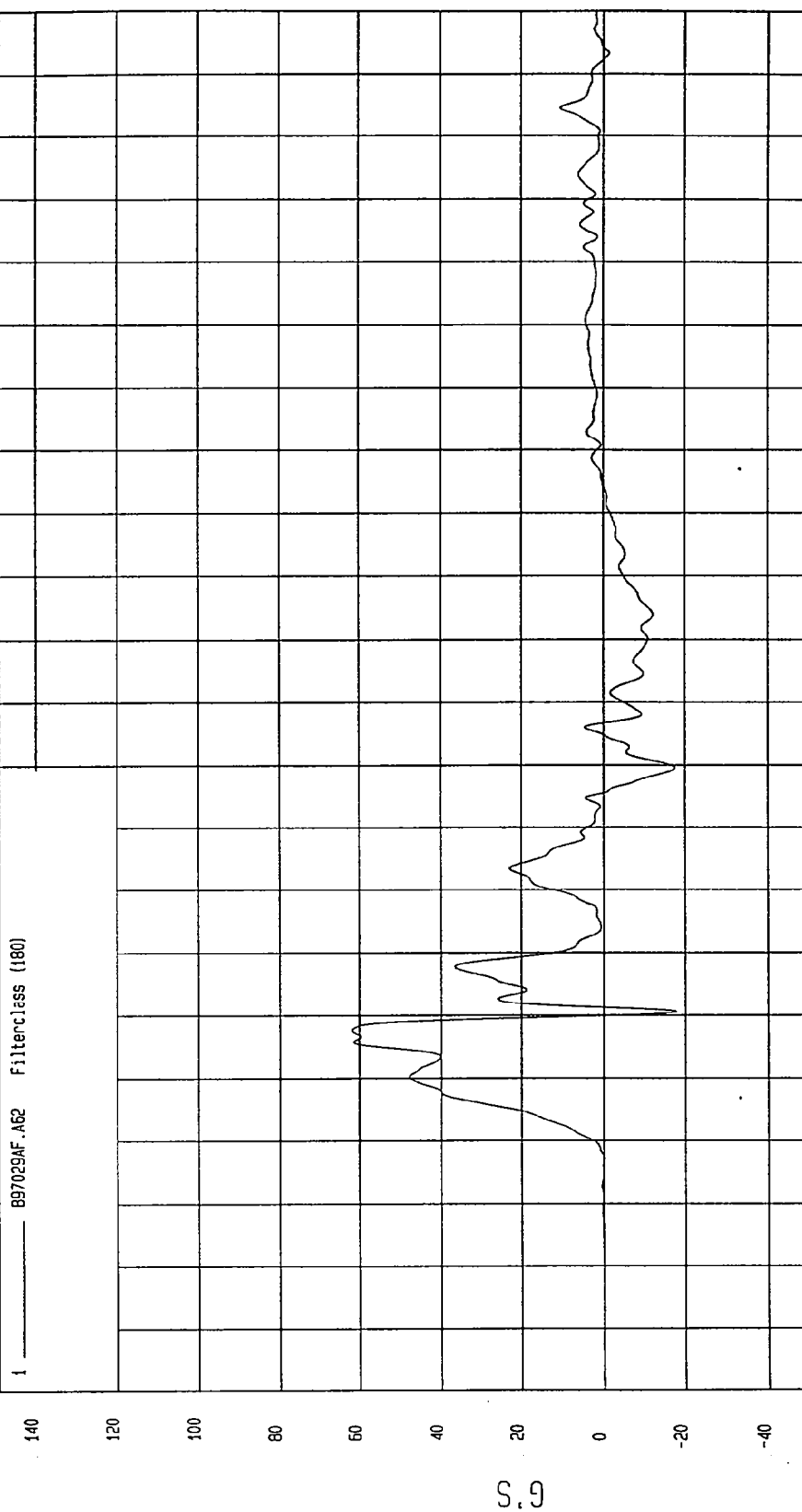
COMPONENT: 1997 CHEVROLET LUMINA (MV0114)

Maximum = 61.77 G'S at 38 msec

Minimum = -17.77 G'S at 40 msec

DRIVER LOWER RIB Y REDUNDANT ACCELERATION

1 ——— B97029AF-A62 Filterclass (180)



MSA Research
03-01-1997 14:39

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 02-19-1997

COMPONENT: 1997 CHEVROLET LUMINA (MV0114) Speed: 38 MPH 61.2 KPH

Minimum = -1.97E-02 KPH at 4 msec Maximum = 39.02 KPH at 75 msec

DRIVER LOWER RIB Y REDUNDANT VELOCITY

1 B97029A1.V62 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

TIME Seconds

NGA Research
02-01-1997 15:10

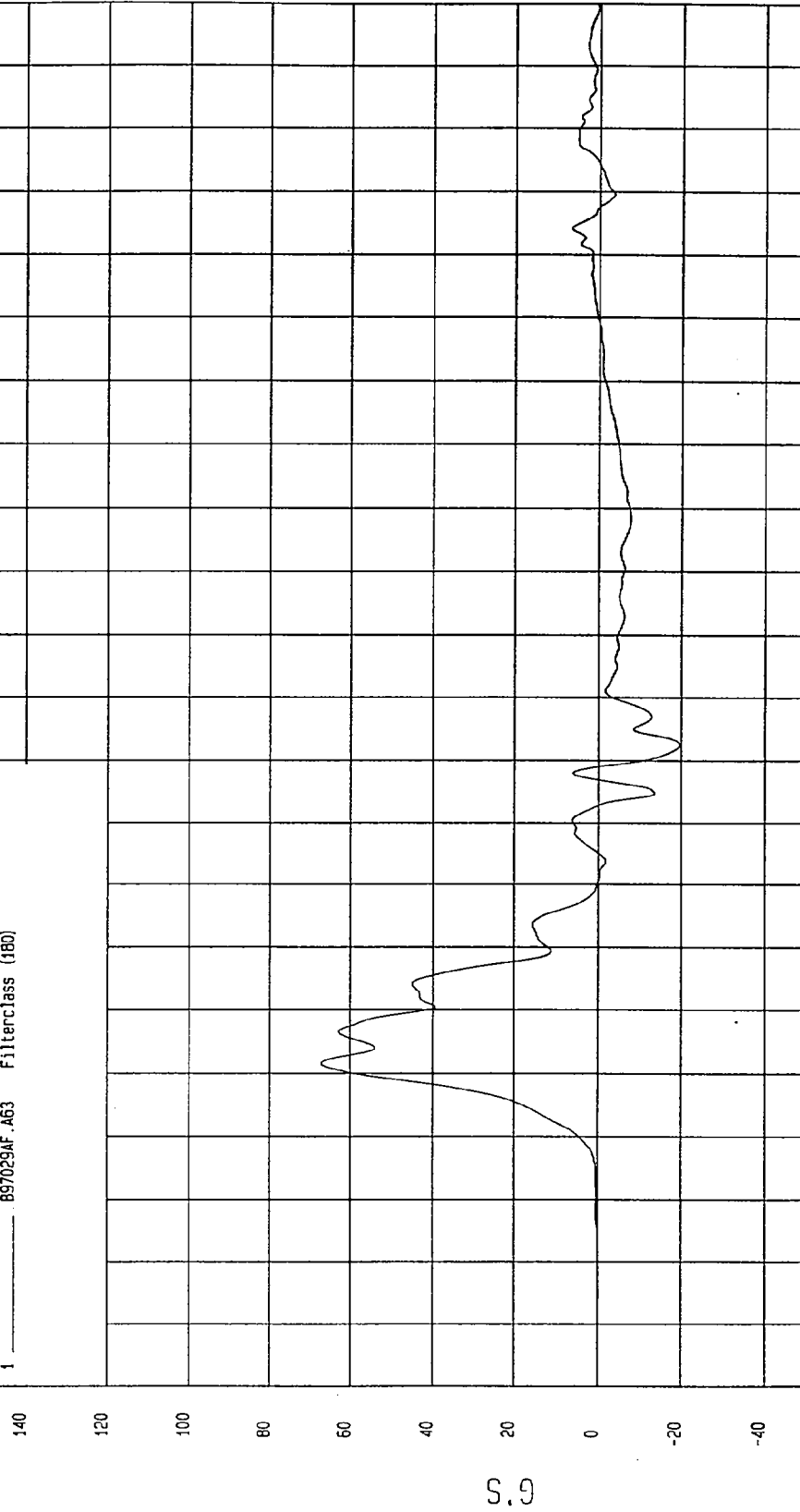
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 02-19-1997

COMPONENT: 1997 CHEVROLET LUMINA (MVO114) Speed: 38 MPH 61.2 KPH

Minimum = -19.73 G'S at 83 msec
Maximum = 67.29 G'S at 32 msec

DRIVER LOWER SPINE Y REDUNDANT ACCELERATION

1 _____ B97029AF.AG3 FilterClass (180)



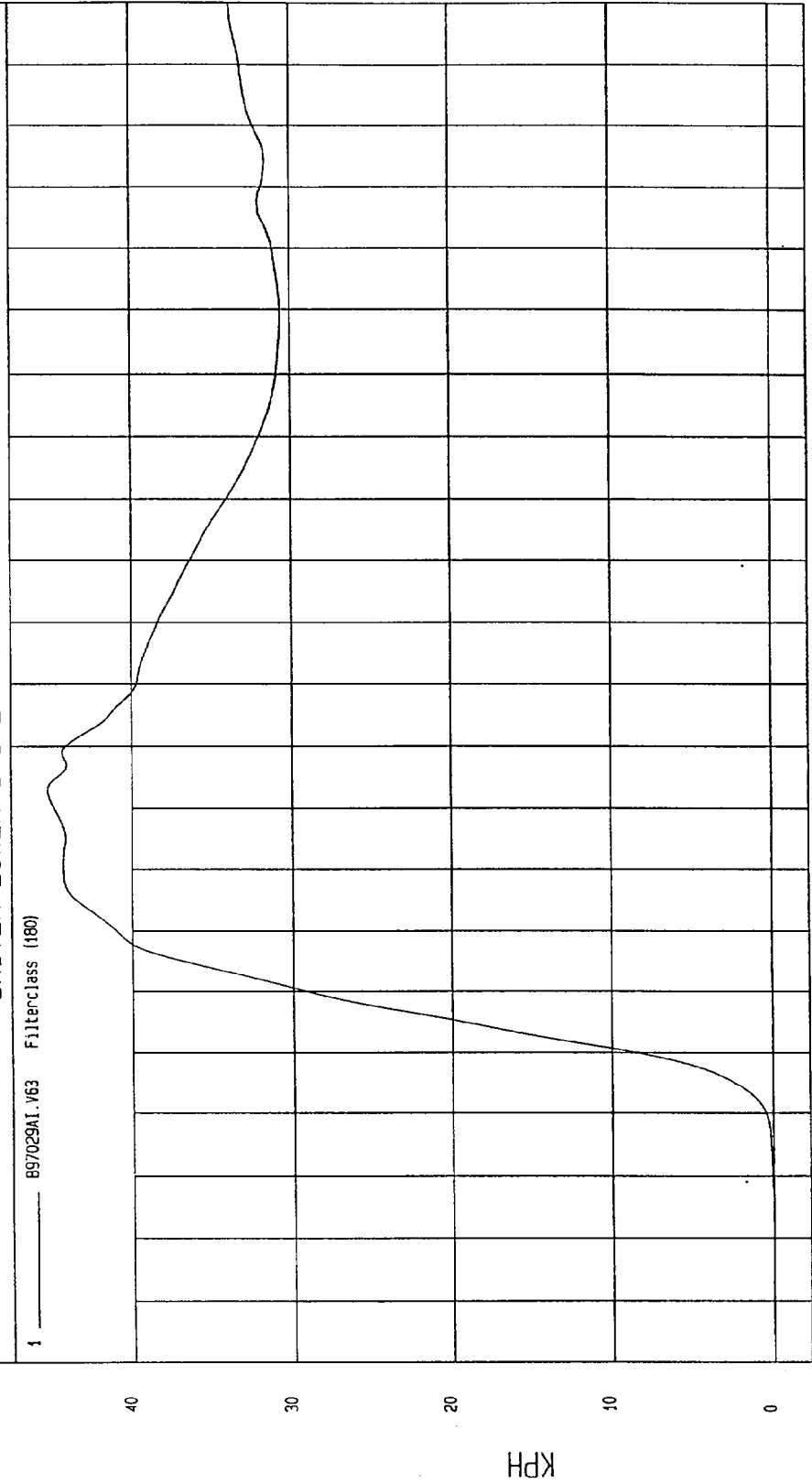
MGA Research
03-01-1997 14:39

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 02-19-1997

COMPONENT: 1997 CHEVROLET LUMINA (MV0114) Speed: 38 MPH 61.2 KPH

Minimum = -1.50E-03 KPH at 3 msec Maximum = 45.31 KPH at 73 msec

DRIVER LOWER SPINE Y REDUNDANT VELOCITY



TIME Seconds

NGA Research
03-01-1997 15.10

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 02-19-1997

Speed: 38 MPH 61.2 KPH

COMPONENT: 1997 CHEVROLET LUMINA (MV0114)

Minimum = -8.45 G'S at 104 msec
Maximum = 70.21 G'S at 31 msec

DRIVER PELVIS Y REDUNDANT ACCELERATION

1 ——— 897029AF.A65 Filterclass (180)

140

120

100

80

60

40

20

0

-20

-40

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)

MSA Research
03-01-1997 14:39

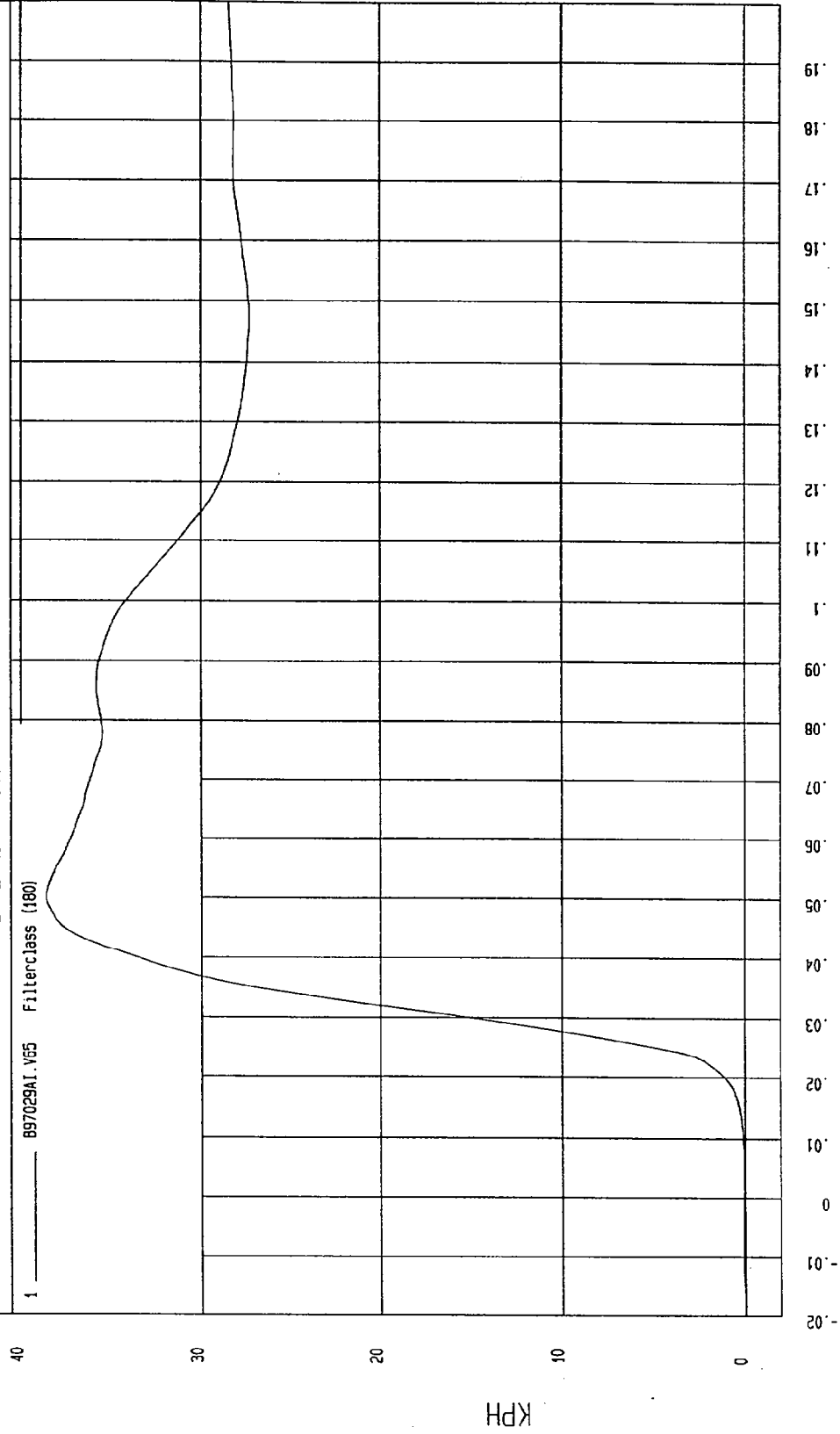
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 02-19-1997

COMPONENT: 1997 CHEVROLET LUMINA (MV0114) Speed: 38 MPH 61.2 KPH

Minimum = -8.40E-03 KPH at -18 msec
Maximum = 38.62 KPH at 50 msec

DRIVER PELVIS Y REDUNDANT VELOCITY

1 ——— B97029A1.V65 Filterclass (180)



MEA Research
03-01-1997 15.10

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 02-19-1997

Speed: 38 MPH 61.2 KPH

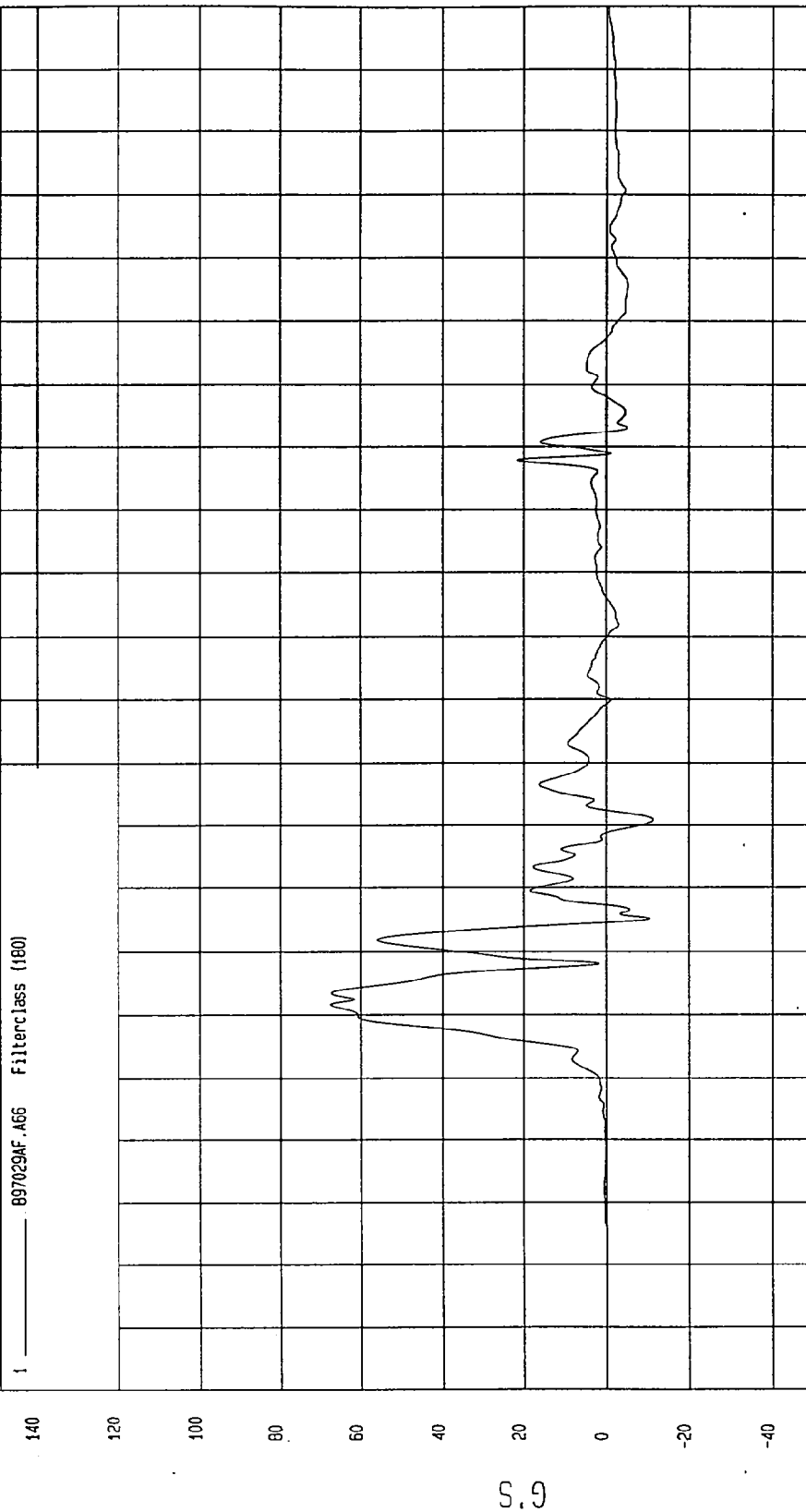
COMPONENT: 1997 CHEVROLET LUMINA (MVO1114)

Maximum = 67.71 G's at 42 msec

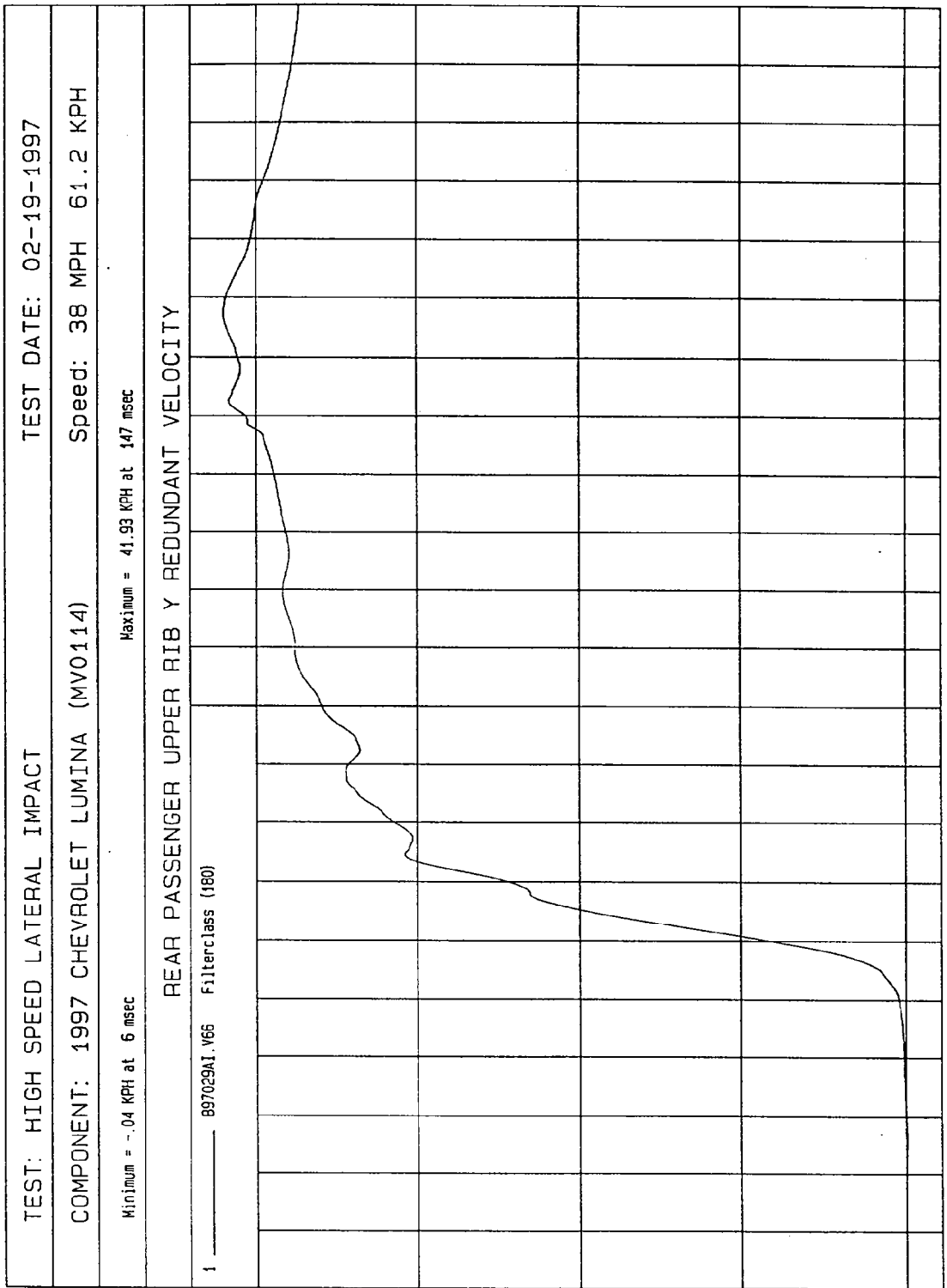
Minimum = -11.25 G's at 71 msec

REAR PASSENGER UPPER RIB Y REDUNDANT ACCELERATION

1 897029AF.A66 Filterclass (180)



NGA Research
03-01-1997 14:39



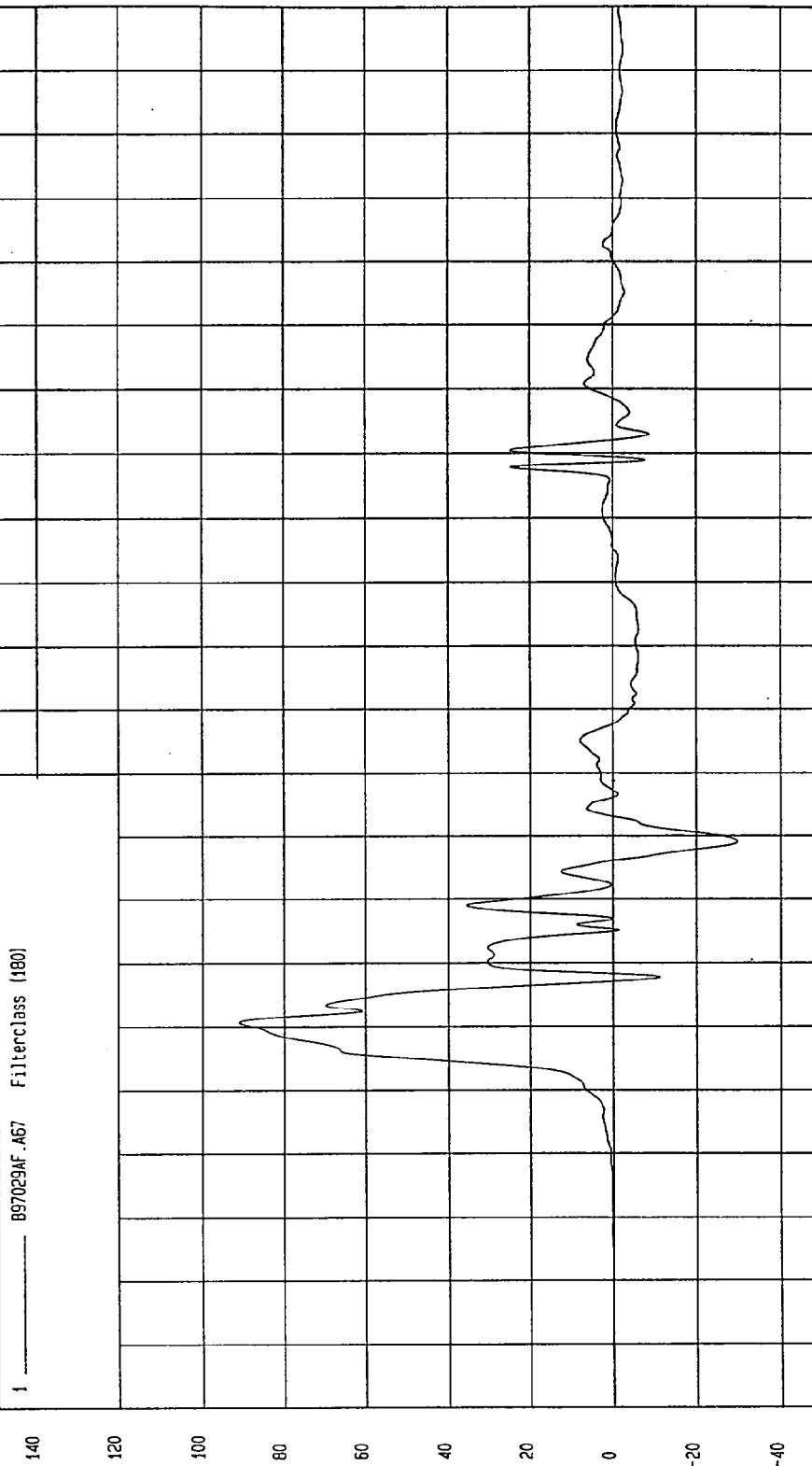
TIME Seconds

MSA Research
03-01-1997 15:10

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 02-19-1997
COMPONENT: 1997 CHEVROLET LUMINA (MVO114) Speed: 38 MPH 61.2 KPH
Minimum = -29.82 G'S at 69 msec Maximum = 90.85 G'S at 41 msec

REAR PASSENGER LOWER RIB Y REDUNDANT ACCELERATION

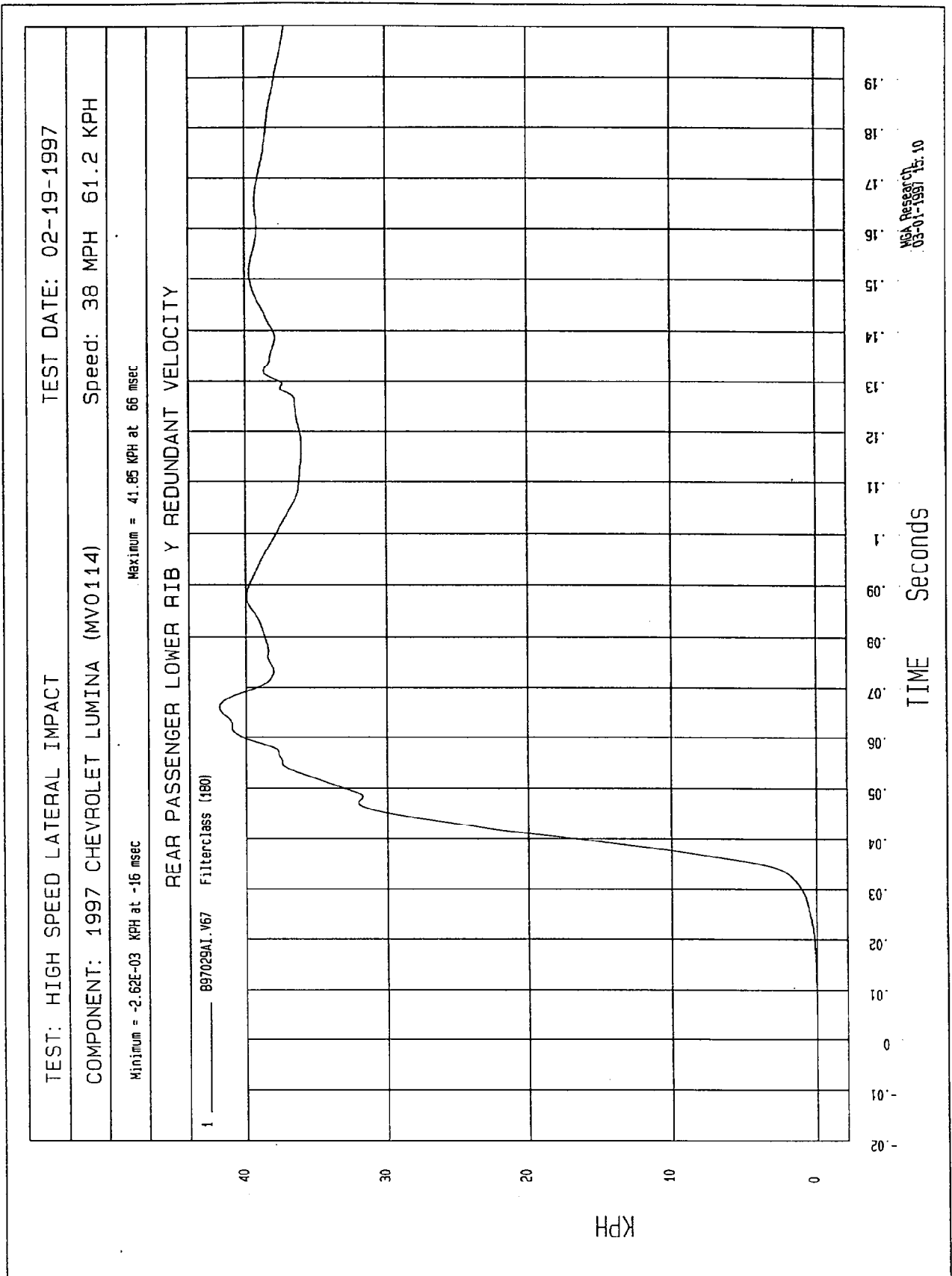
1 _____ 897029AF.A67 FilterClass (180)



TIME (SECONDS)

61
18
17
16
15
14
13
12
11
1
0
-10
-20

NGA Research
03-01-1997 15.04



TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 02-19-1997

Speed: 38 MPH 61.2 KPH

COMPONENT: 1997 CHEVROLET LUMINA (MV0114)

Maximum = 87.00 G'S at 41 msec

Minimum = -16.02 G'S at 67 msec

REAR PASSENGER LOWER SPINE Y REDUNDANT ACCELERATION

1 897029AF.A68 Filterclass (180)

140

120

100

80

60

40

20

0

-20

-40

G

19

18

17

16

15

14

13

12

11

10

09

08

07

06

05

04

03

02

01

0

-01

-02

TIME (SECONDS)

NSA Research
03-01-1997 14:39

TEST: HIGH SPEED LATERAL IMPACT

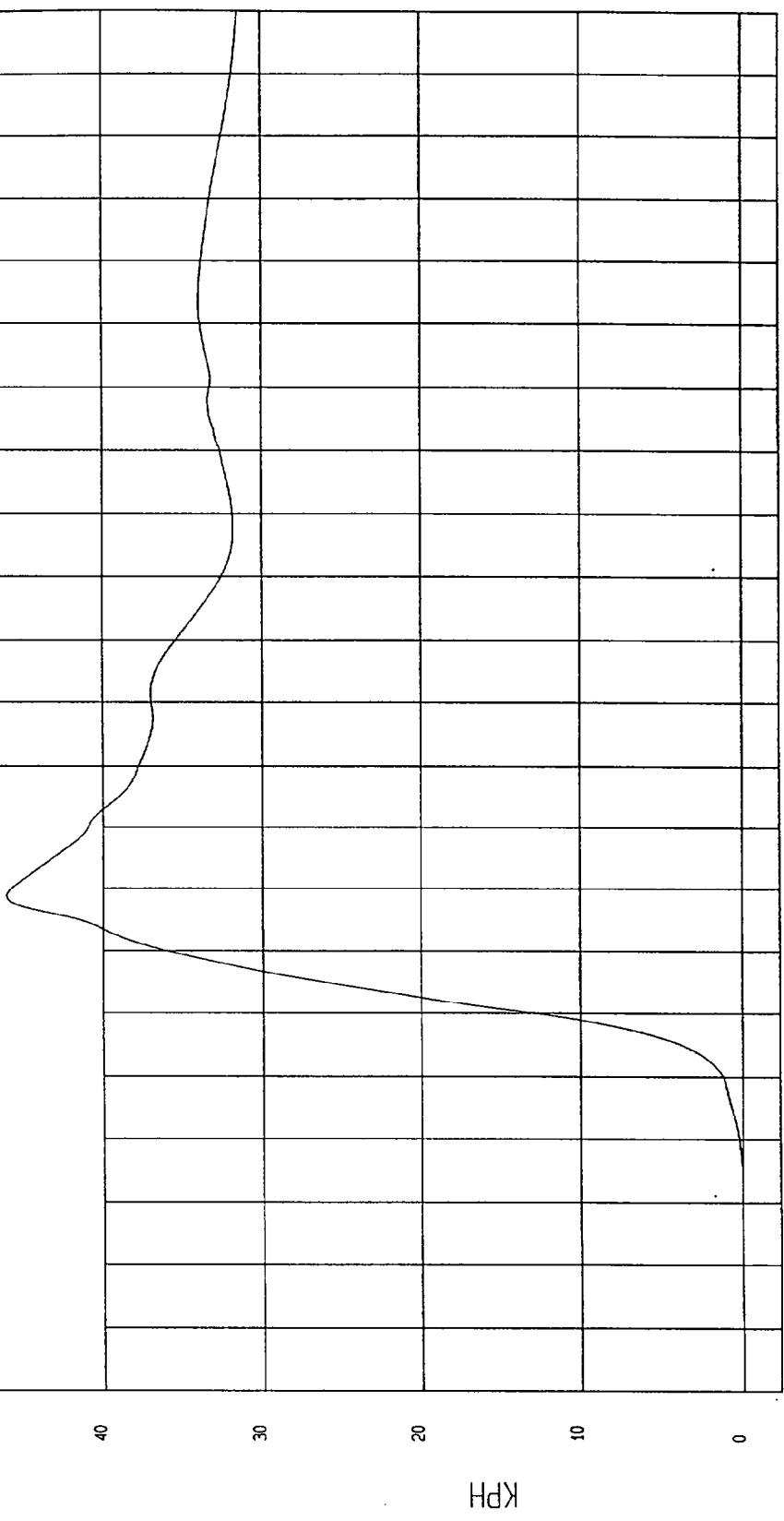
TEST DATE: 02-19-1997

COMPONENT: 1997 CHEVROLET LUMINA (MV0114) Speed: 38 MPH 61.2 KPH

Minimum = -3.73E-03 KPH at -16 msec Maximum = 46.12 KPH at 59 msec

REAR PASSENGER LOWER SPINE Y REDUNDANT VELOCITY

1 ——— B97029A1.V68 Filterclass (180)



TIME Seconds

MCA Research
02-01-1997 15:10

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 02-19-1997

COMPONENT: 1997 CHEVROLET LUMINA (MVO114)

Speed: 38 MPH 61.2 KPH

Minimum = -15.26 G'S at 78 msec

Maximum = 135.33 G'S at 36 msec

REAR PASSENGER PELVIS Y REDUNDANT ACCELERATION

1 ——— B97029AF .A69 Filterclass (180)

140

120

100

80

60

40

20

0

-20

-40

G.S

-20

-10

0

10

20

30

40

50

60

70

80

90

100

110

120

130

140

150

160

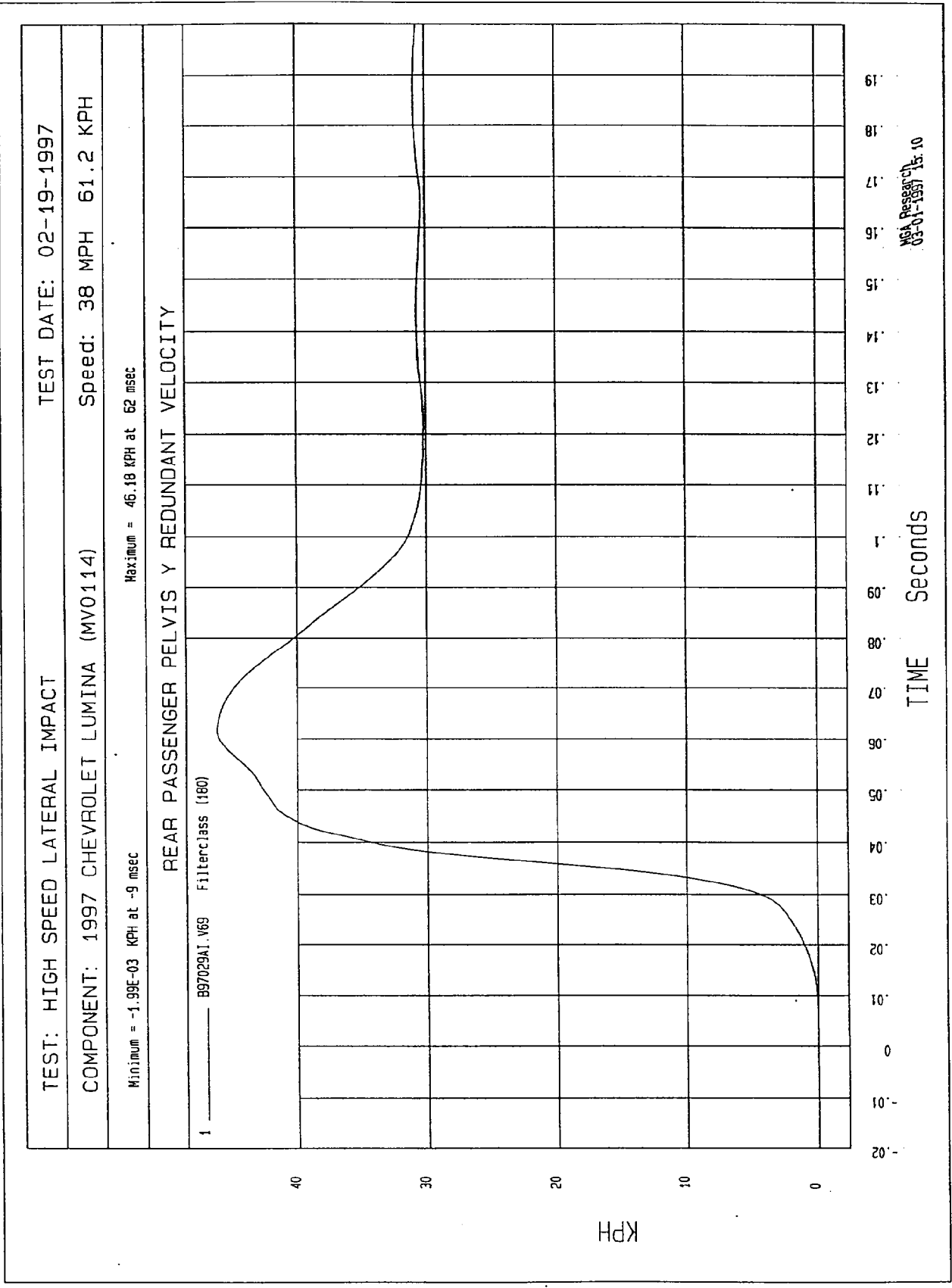
170

180

190

TIME (SECONDS)

MGA Research
03-01-1997 14:39



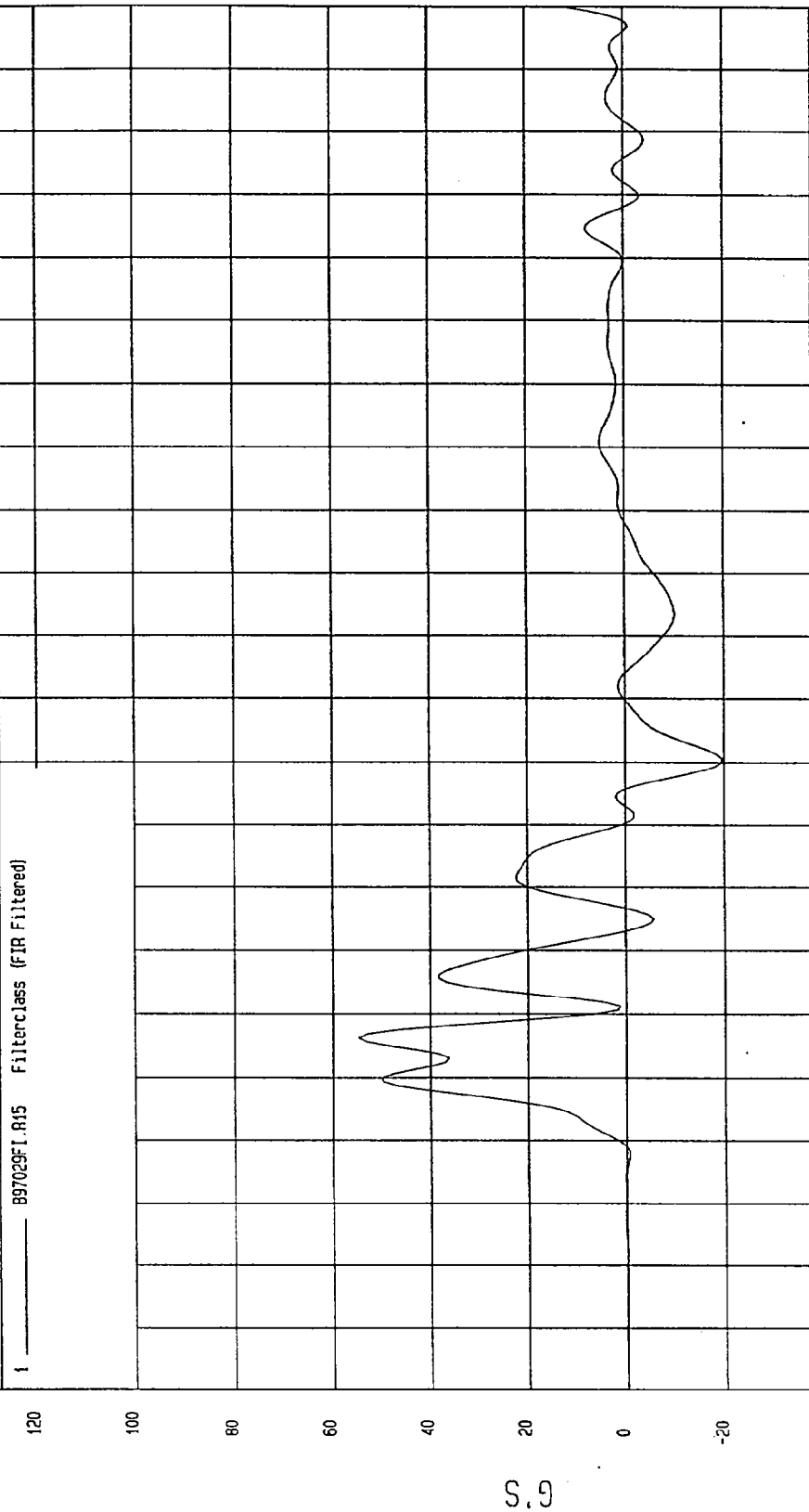
FINITE IMPULSE RESPONSE (FIR) FILTERED DATA

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 02-19-1997

COMPONENT: 1997 CHEVROLET LUMINA (MV0114) Speed: 38 MPH 61.2 KPH

Minimum = -19.58 G'S at 81 msec Maximum = 54.53 G'S at 36 msec

DRIVER UPPER RIB Y ACCELERATION



MCA Research
03-01-1997 14:35

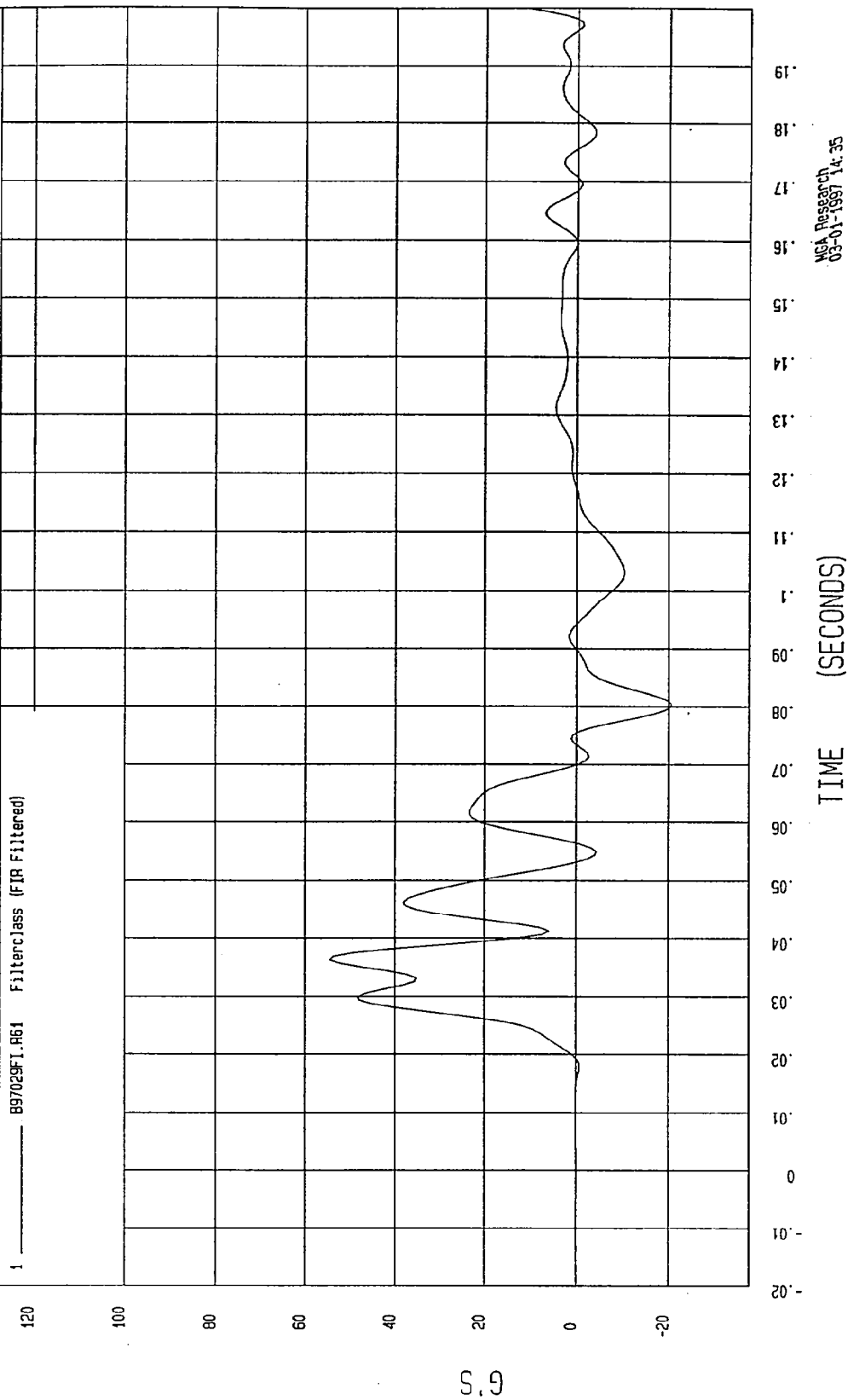
TIME (SECONDS)

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 02-19-1997

COMPONENT: 1997 CHEVROLET LUMINA (MV0114) Speed: 38 MPH 61.2 KPH

Minimum = -20.59 G'S at 81 msec Maximum = 54.50 G'S at 36 msec

DRIVER UPPER RIB Y REDUNDANT ACCELERATION

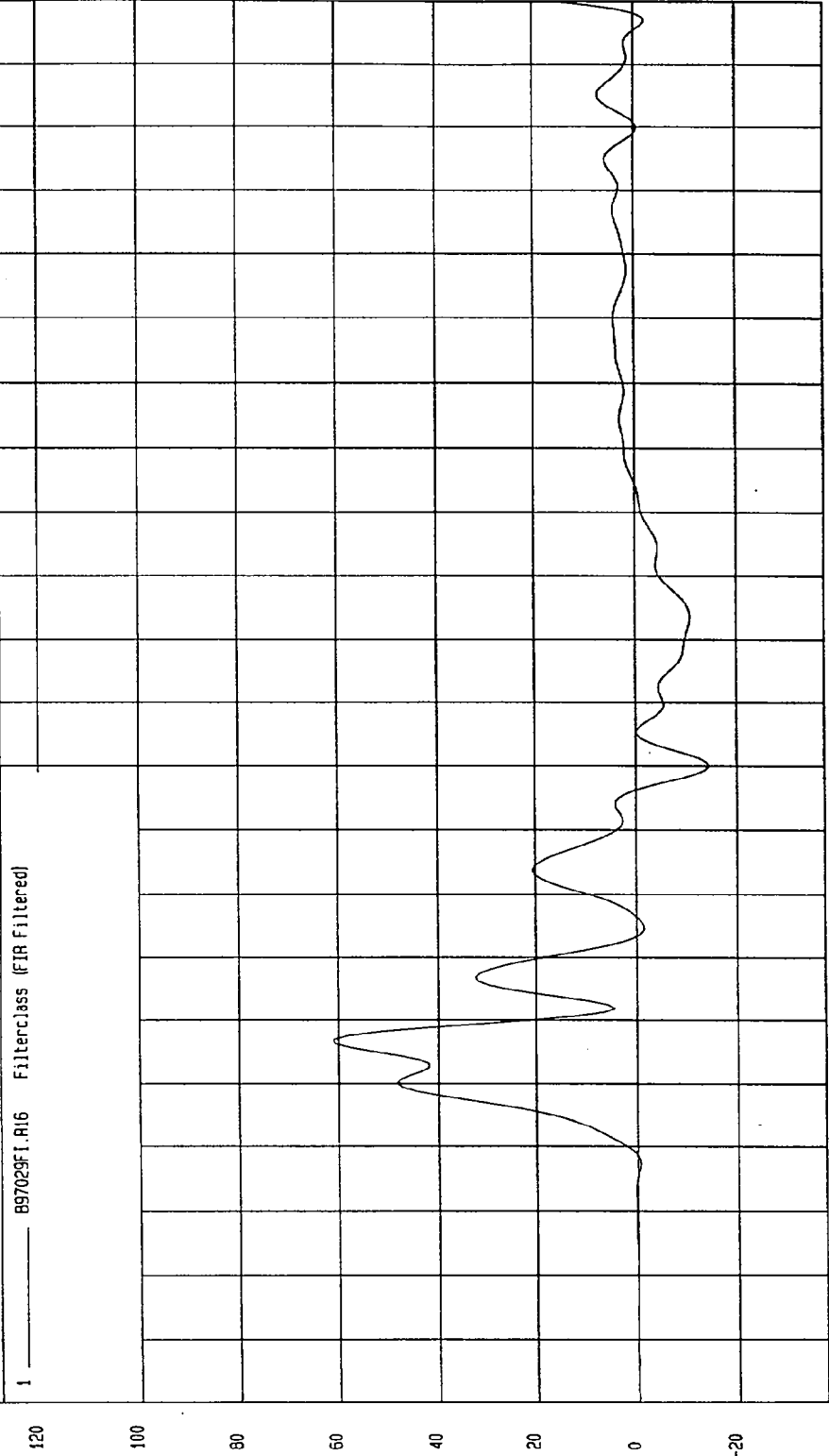


TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 02-19-1997

COMPONENT: 1997 CHEVROLET LUMINA (MV0114) Speed: 38 MPH 61.2 KPH

Minimum = -14.50 G'S at 80 msec Maximum = 61.10 G'S at 37 msec

DRIVER LOWER RIB Y ACCELERATION



TIME (SECONDS)

NSA Research
03-01-1997 14:35

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 02-19-1997

SPEED: 38 MPH 61.2 KPH

COMPONENT: 1997 CHEVROLET LUMINA (MV0114)

Maximum = 62.37 G'S at 37 msec

Minimum = -14.86 G'S at 80 msec

DRIVER LOWER RIB Y REDUNDANT ACCELERATION

1 B97029F1.R62 Filterclass (FIR Filtered)

120

100

80

60

40

20

0

-20

G'S

TIME (SECONDS)

MECA Research
03-01-1997 14:35

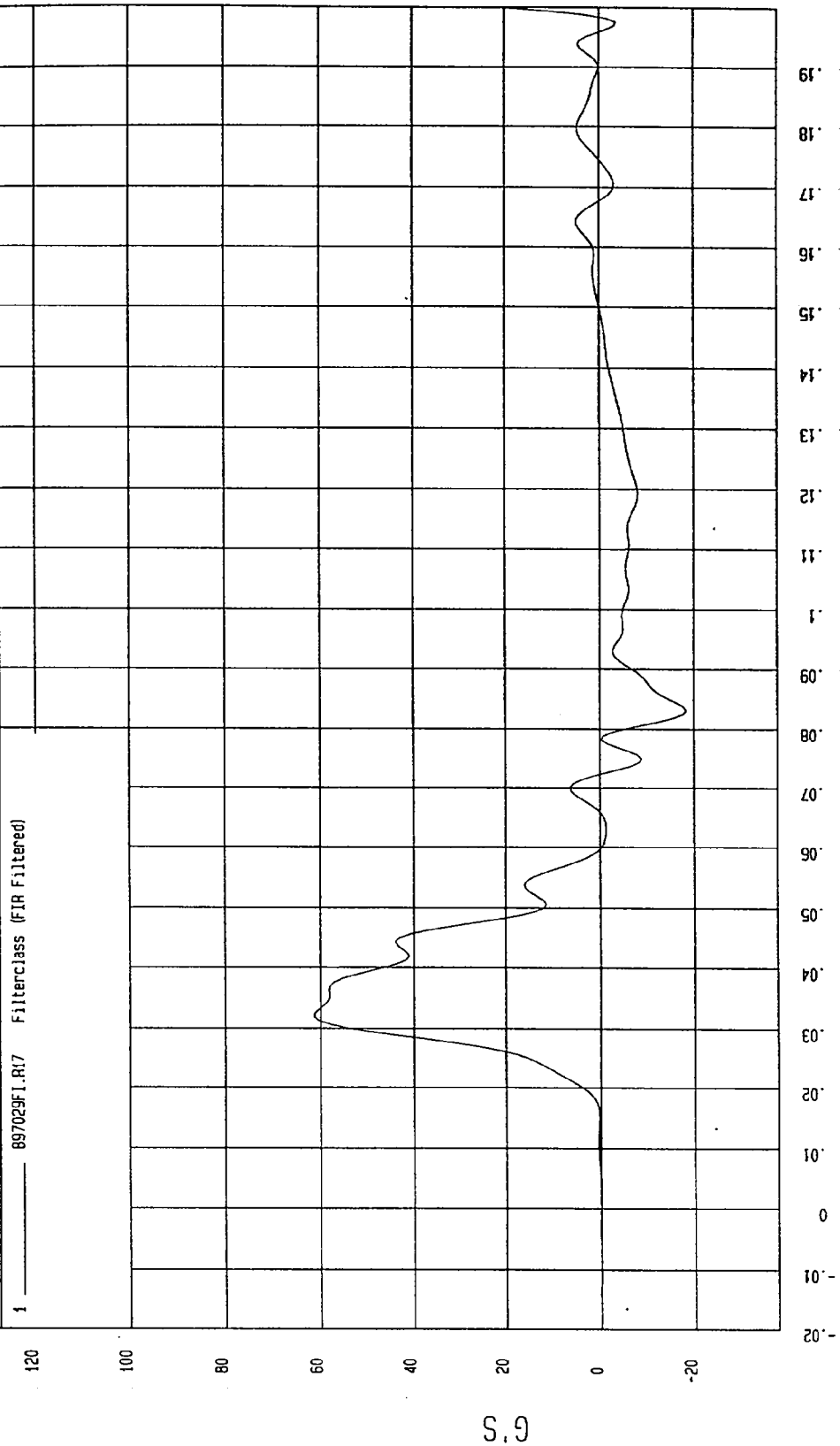
TEST DATE: 02-19-1997

Speed: 38 MPH 61.2 KPH

Maximum = 61.37 G'S at 32 msec

DRIVER LOWER SPINE Y ACCELERATION

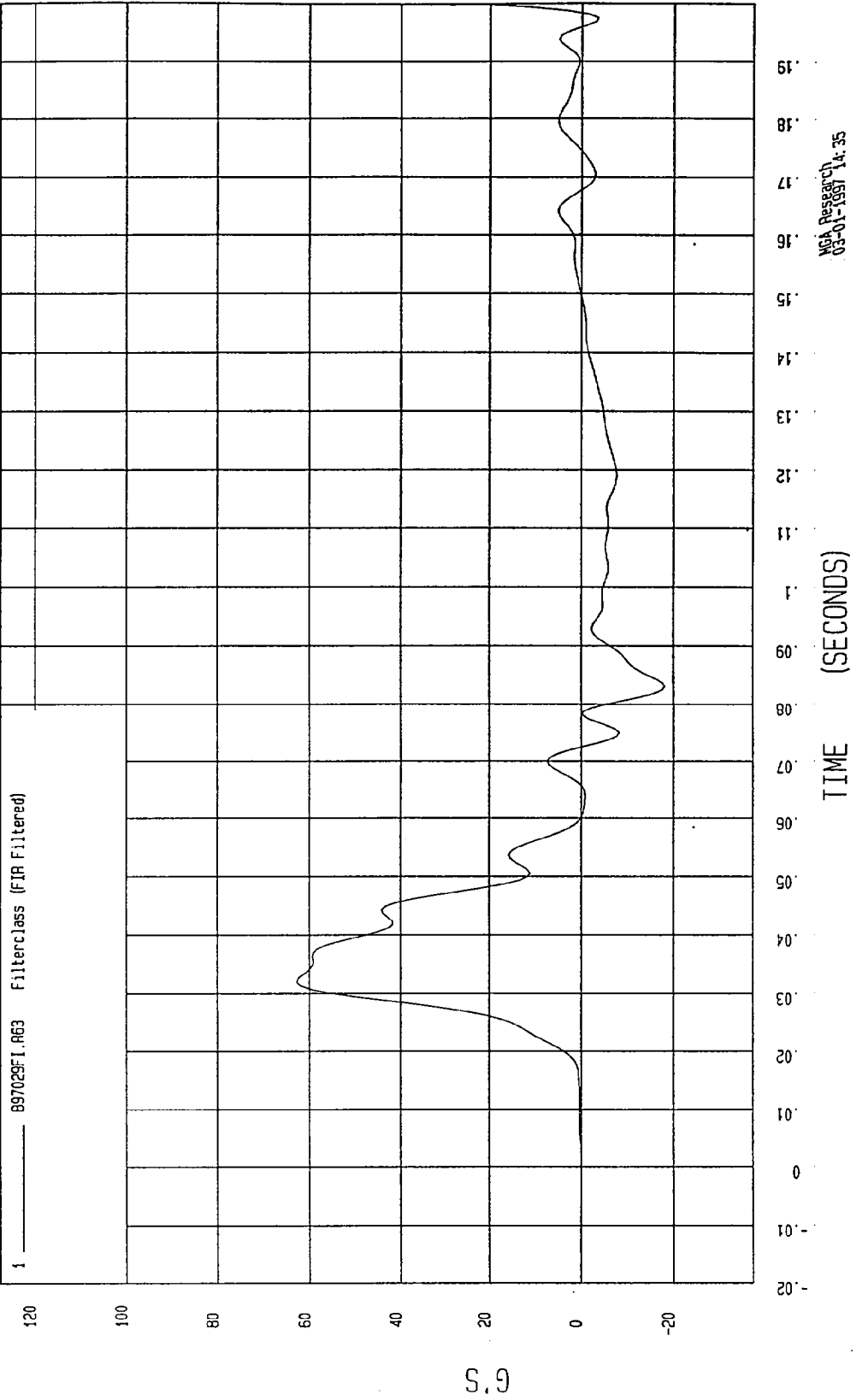
1	897029FI.R17	Filterclass (FIR Filtered)
1		



MGA Research
03-01-1997 14:35

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 02-19-1997
COMPONENT: 1997 CHEVROLET LUMINA (MV0114) Speed: 38 MPH 61.2 KPH
Minimum = -18.14 G'S at 83 msec Maximum = 62.93 G'S at 32 msec

DRIVER LOWER SPINE Y REDUNDANT ACCELERATION



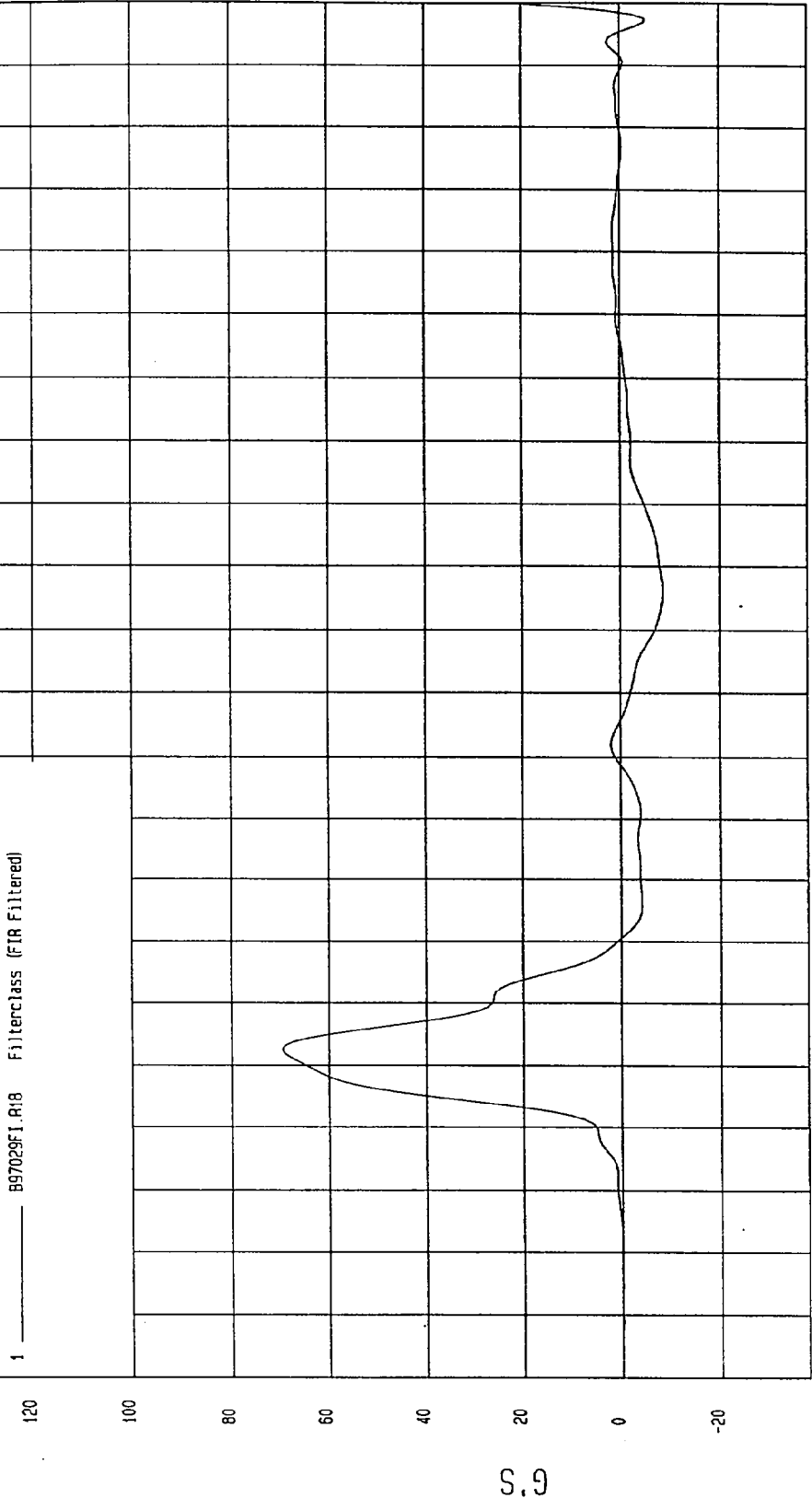
TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 02-19-1997

COMPONENT: 1997 CHEVROLET LUMINA (MV0114) Speed: 38 MPH 61.2 KPH

Minimum = -8.53 G'S at 106 msec Maximum = 69.51 G'S at 32 msec

DRIVER PELVIS Y ACCELERATION



MCA Research
02-01-1997 14:35

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 02-19-1997

COMPONENT: 1997 CHEVROLET LUMINA (MV0114)

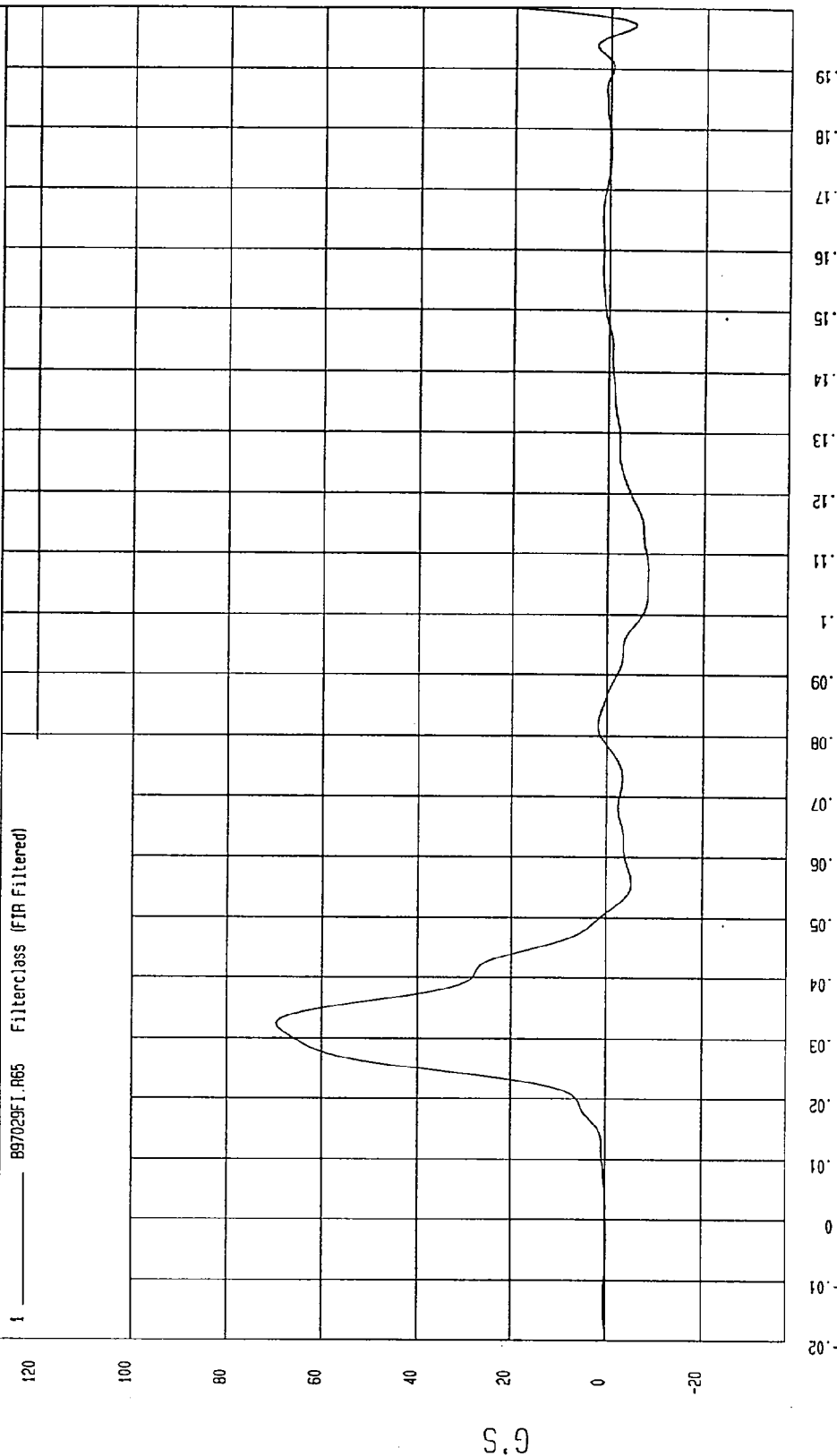
Speed: 38 MPH 61.2 KPH

Minimum = -8.37 G'S at 107 msec

Maximum = 69.64 G'S at 32 msec

DRIVER PELVIS Y REDUNDANT ACCELERATION

1 ——— B97029F1.R65 Filterclass (FIR Filtered)



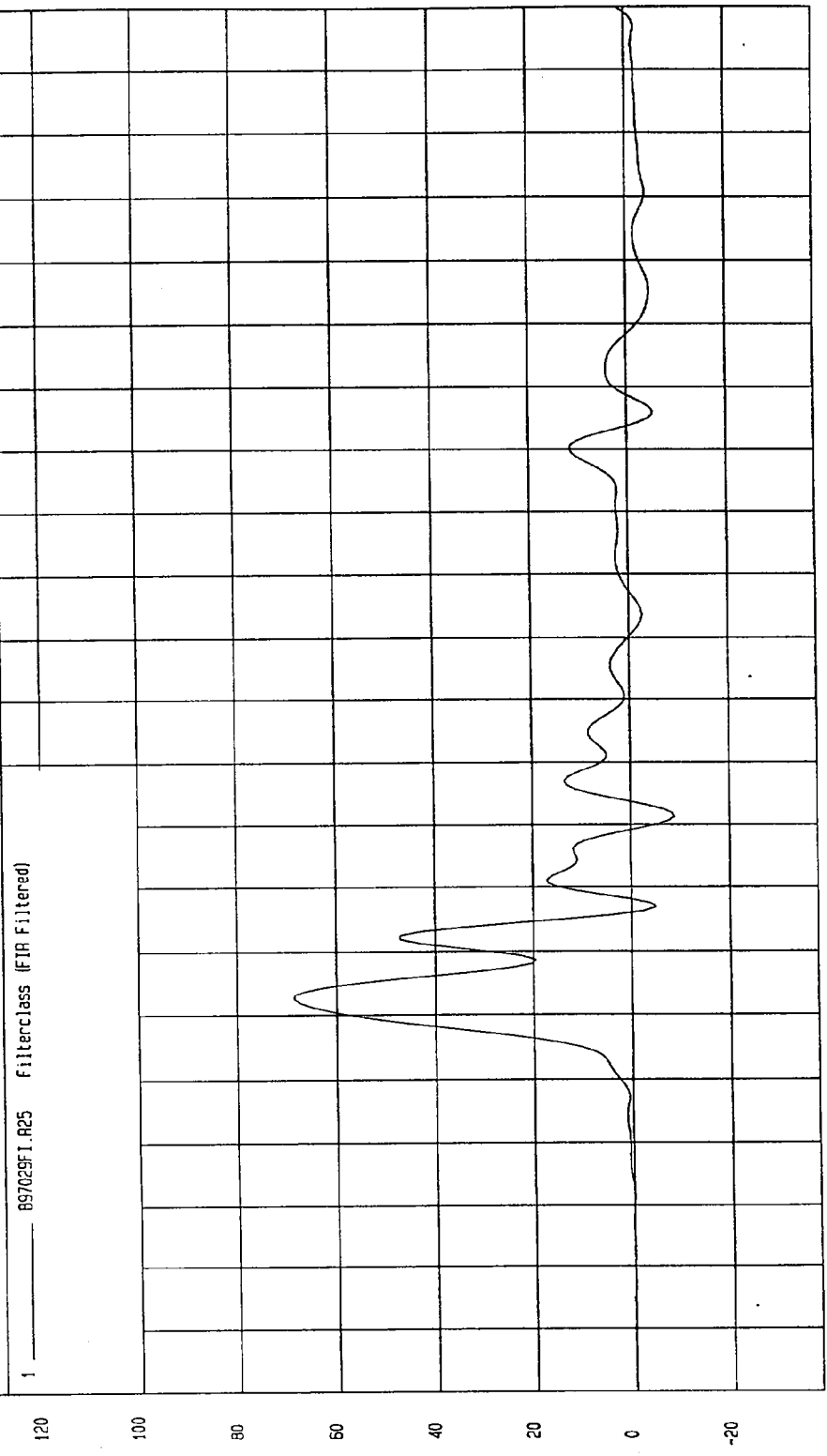
NSA Research
03-01-1997 14:35

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 02-19-1997

COMPONENT: 1997 CHEVROLET LUMINA (MV0114) Speed: 38 MPH 61.2 KPH

Minimum = -8.73 G'S at 71 msec Maximum = 68.41 G'S at 42 msec

REAR PASSENGER UPPER RIB Y ACCELERATION



TIME (SECONDS)

0.02 0.01 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19

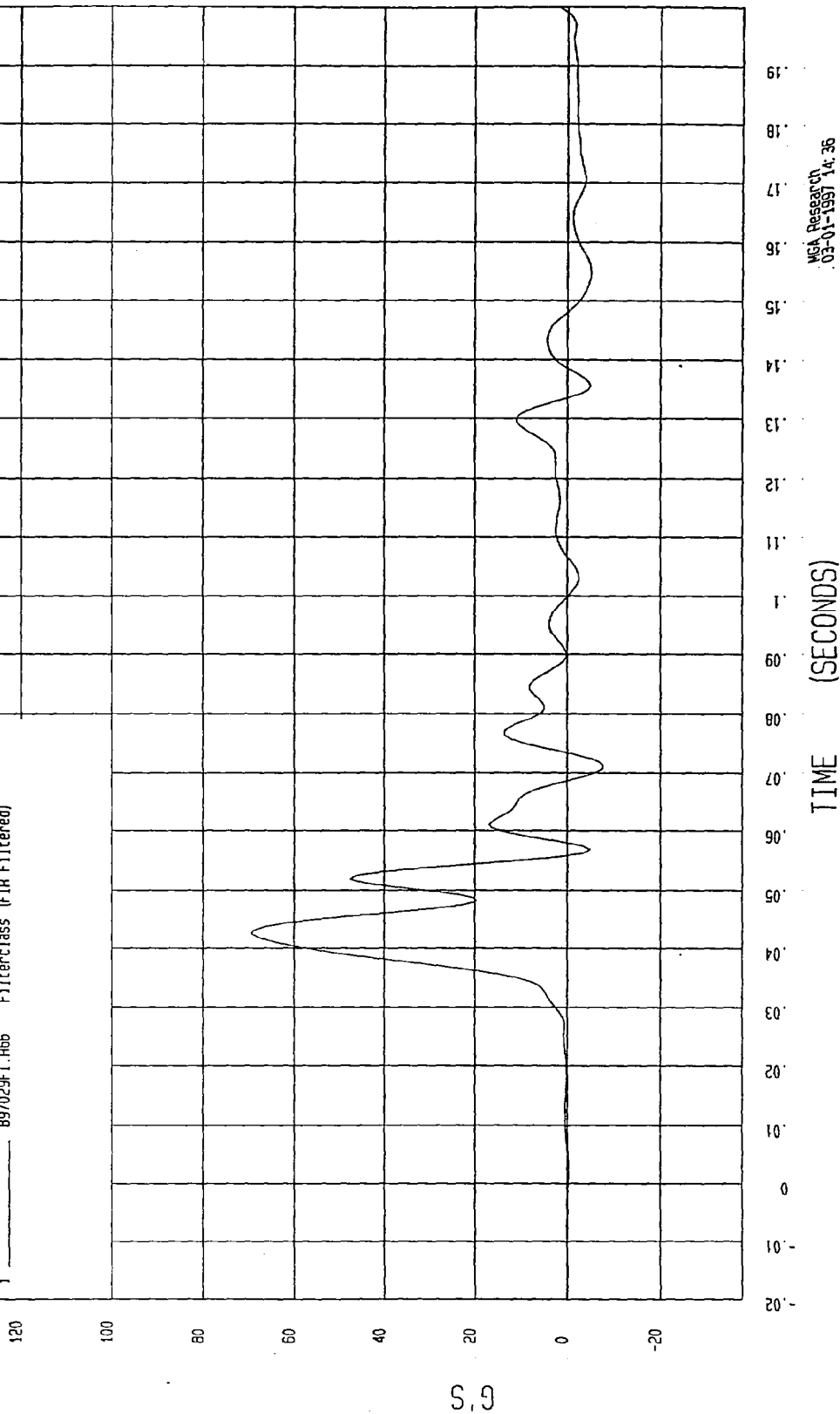
MGA Research
03-01-1997 14:36

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 02-19-1997
COMPONENT: 1997 CHEVROLET LUMINA (MV0114) Speed: 38 MPH 61.2 KPH

Minimum = -7.76 G'S at 71 msec Maximum = 69.25 G'S at 42 msec

REAR PASSENGER UPPER RIB Y REDUNDANT ACCELERATION

1 897029F1.R66 Filterclass (FIR Filtered)



MSA Research
03-01-1997 14: 36

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 02-19-1997

COMPONENT: 1997 CHEVROLET LUMINA (MV0114) Speed: 38 MPH 61.2 KPH

Minimum = -24.21 G'S at 70 msec Maximum = 82.87 G'S at 41 msec

REAR PASSENGER LOWER RIB Y ACCELERATION

1 _____ 897029T.R26 Filterclass (FIR Filtered)

120

100

80

60

40

20

0

-20

G.S

19

18

17

16

15

14

13

12

11

10

09

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06

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03

02

01

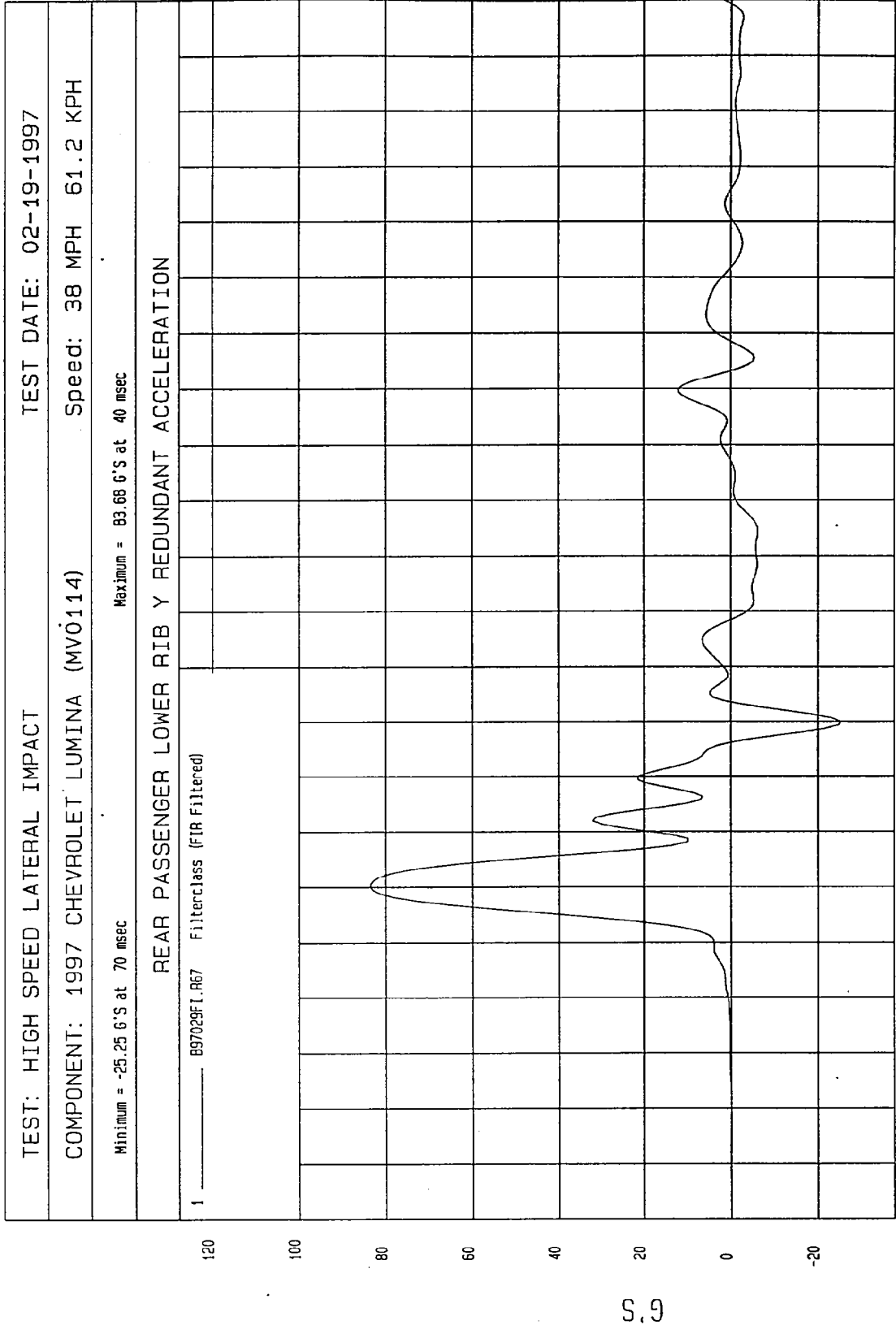
0

-01

-02

TIME (SECONDS)

NSA Research
03-01-1997 14:35



MCA Research
03-01-1997 15:04

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 02-19-1997

Speed: 38 MPH 61.2 KPH

COMPONENT: 1997 CHEVROLET LUMINA (MV0114)

Maximum = 75.88 G'S at 42 msec

Minimum = -19.76 G'S at 62 msec

REAR PASSENGER LOWER SPINE Y ACCELERATION

1 B97029FI.R27 Filterclass (FIR Filtered)

120

100

80

60

40

20

0

-20

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)

MSA Research
03-01-1997 14:36

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 02-19-1997

Speed: 38 MPH 61.2 KPH

COMPONENT: 1997 CHEVROLET LUMINA (MV0114)

Maximum = 70.33 G's at 42 msec

Minimum = -17.99 G's at 62 msec

REAR PASSENGER LOWER SPINE Y REDUNDANT ACCELERATION

1 _____ 897029FI.R68 Filterclass (FIR Filtered)

120

100

80

60

40

20

0

-20

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)

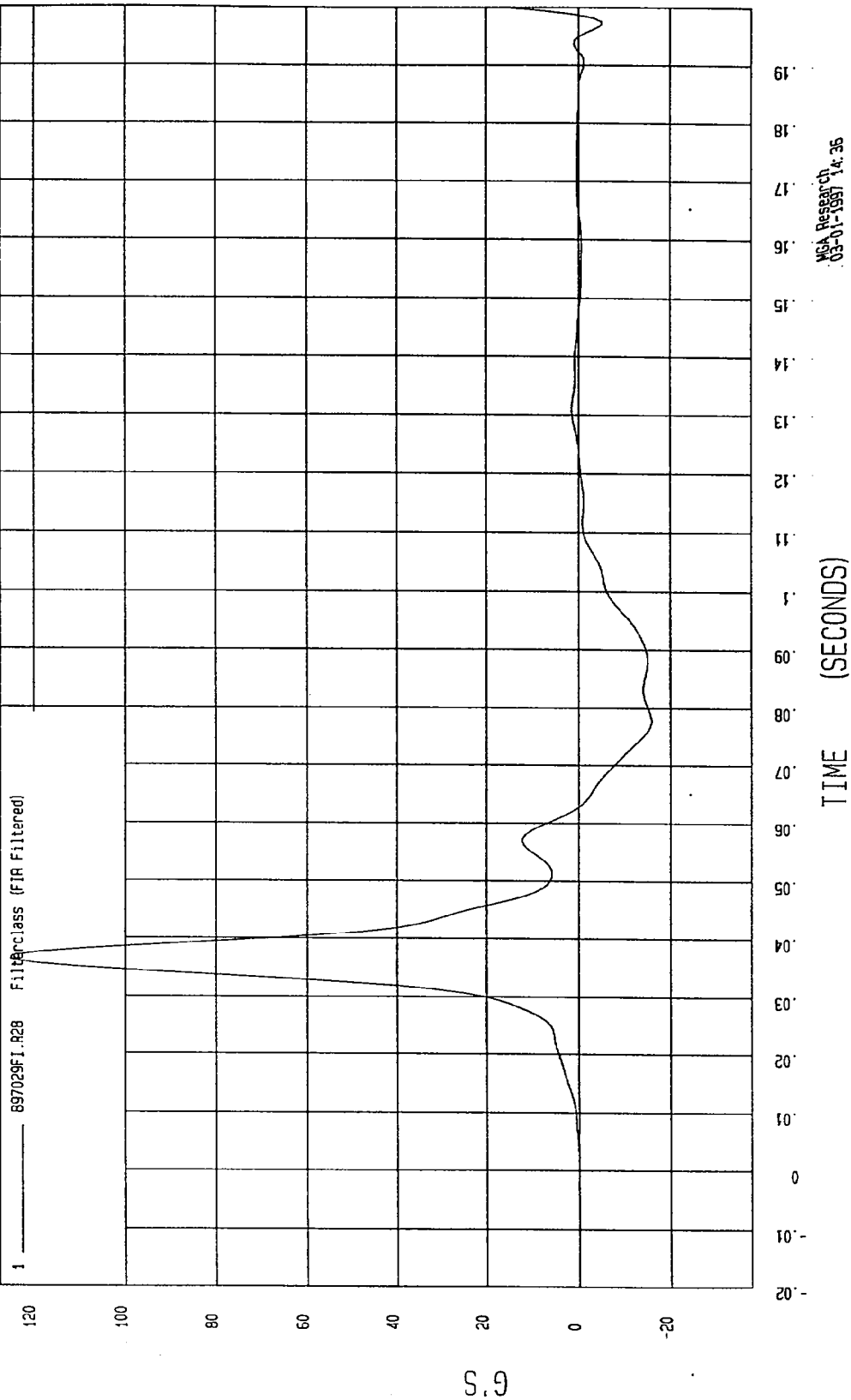
NSA Research
03-01-1997 14:36

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 02-19-1997

COMPONENT: 1997 CHEVROLET LUMINA (MV0114) Speed: 38 MPH 61.2 KPH

Minimum = -15.87 G'S at 78 msec Maximum = 125.16 G'S at 36 msec

REAR PASSENGER PELVIS Y ACCELERATION



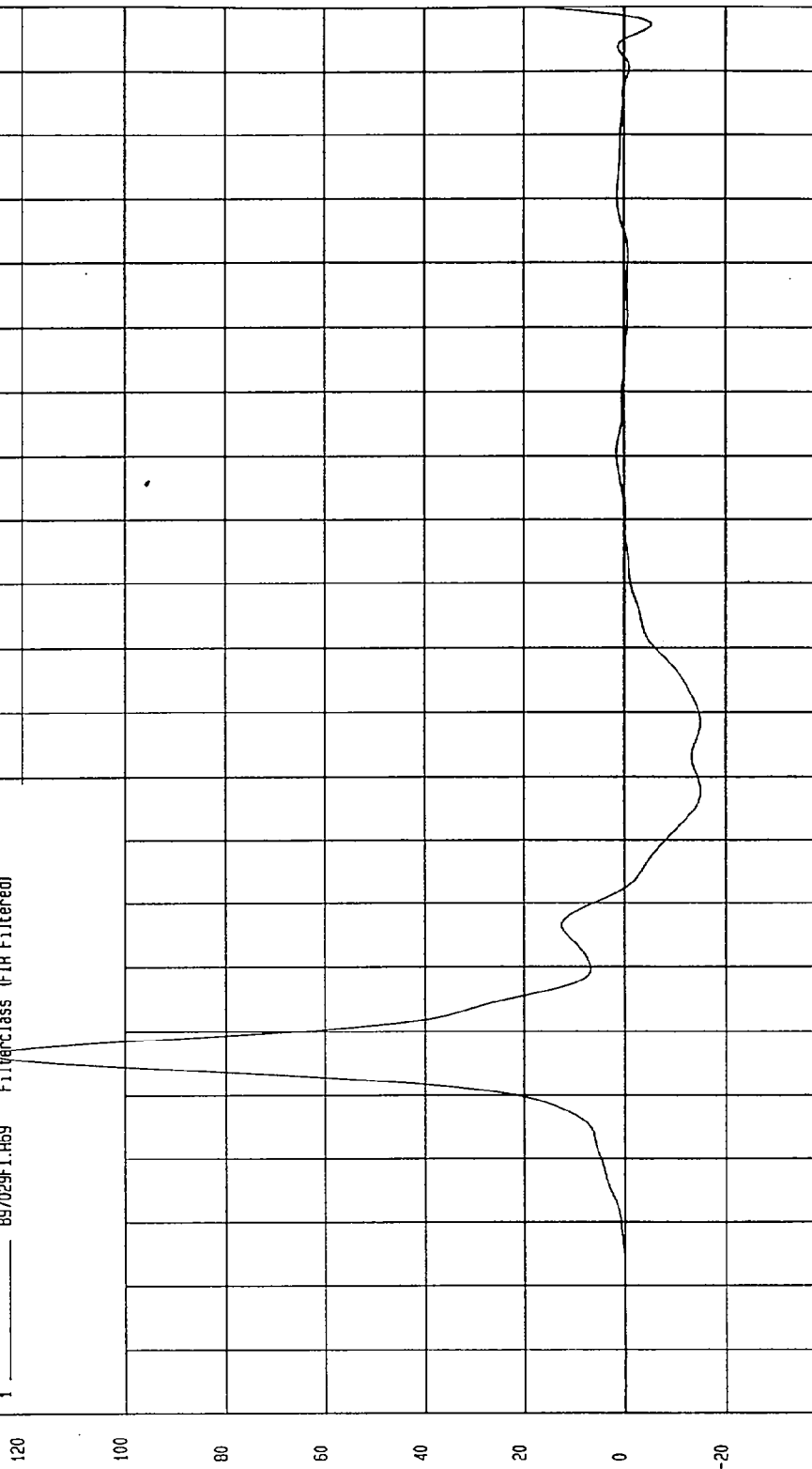
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 02-19-1997

COMPONENT: 1997 CHEVROLET LUMINA (MV0114) Speed: 38 MPH 61.2 KPH

Minimum = -15.14 G'S at 78 msec Maximum = 126.37 G'S at 36 msec

REAR PASSENGER PELVIS Y REDUNDANT ACCELERATION

1 — 897029FI.R69 Filterclass (FIR Filtered)



MGA Research
03-01-1997 14:35

APPENDIX C
SID CONFIGURATION AND PERFORMANCE VERIFICATION

REPORT NO. MGA-97-DC21

DUMMY PERFORMANCE CALIBRATIONS

NEW CAR ASSESSMENT PROGRAM
SIDE IMPACT TEST

1997 CHEVROLET LUMINA 4-DOOR
NHTSA NO. MV0114

MGA PROVING GROUNDS
5000 WARREN ROAD
BURLINGTON, WI 53105



Test Date: February 19, 1997

Report Date: March 11, 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: 269	PRE-TEST CERTIFICATION DATA	2-1
DUMMY S/N: 270	POST-TEST CERTIFICATION DATA	3-1
DUMMY S/N: 269	POST-TEST CERTIFICATION DATA	4-1
DUMMY S/N: 270	POST-TEST INSPECTION CHECKLIST	5-1
DUMMY S/N: 269	POST-TEST INSPECTION CHECKLIST	6-1
	VEHICLE AND DUMMY TEMPERATURE	7-1

PRE-TEST CERTIFICATION DATA

Front Dummy Serial Number: 270

Calibration Test Results Summary

Dummy Serial Number: 270

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.: 270

DATE OF VERIFICATION: February 17, 1997

DESCRIPTION	SPECIFICATION	TEST RESULTS
SH - Seated Height	35.0" - 35.8"	35.2
RH - Rib Height	19.75" - 20.50"	20.50
HP - Hip Pivot Height	3.9" ref.	3.9
RD - Rib From Back Line	9.0" to 9.5"	9.5
KV - Knee Pivot From Back Line	20.1" - 20.7"	20.6
SW - Knee Pivot to Floor	19.3" - 19.9"	19.5
HW - Hip Width	14.0" - 15.4"	15.0

MEASUREMENTS BY: Tim White

APPROVED BY: Steve Koehnke

MGA RESEARCH CORPORATION

THORAX IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: February 17, 1997

DUMMY NUMBER: 270

TEST NUMBER: D97462

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	16%
PROBE SPEED	13.8 - 14.2 fps	14.2
UPPER RIB	37 - 46 g's	43
LOWER RIB	37 - 46 g's	41
LOWER SPINE	15 - 22 g's	22

TEST MEETS SPECIFICATIONS

TECHNICIAN Jim White

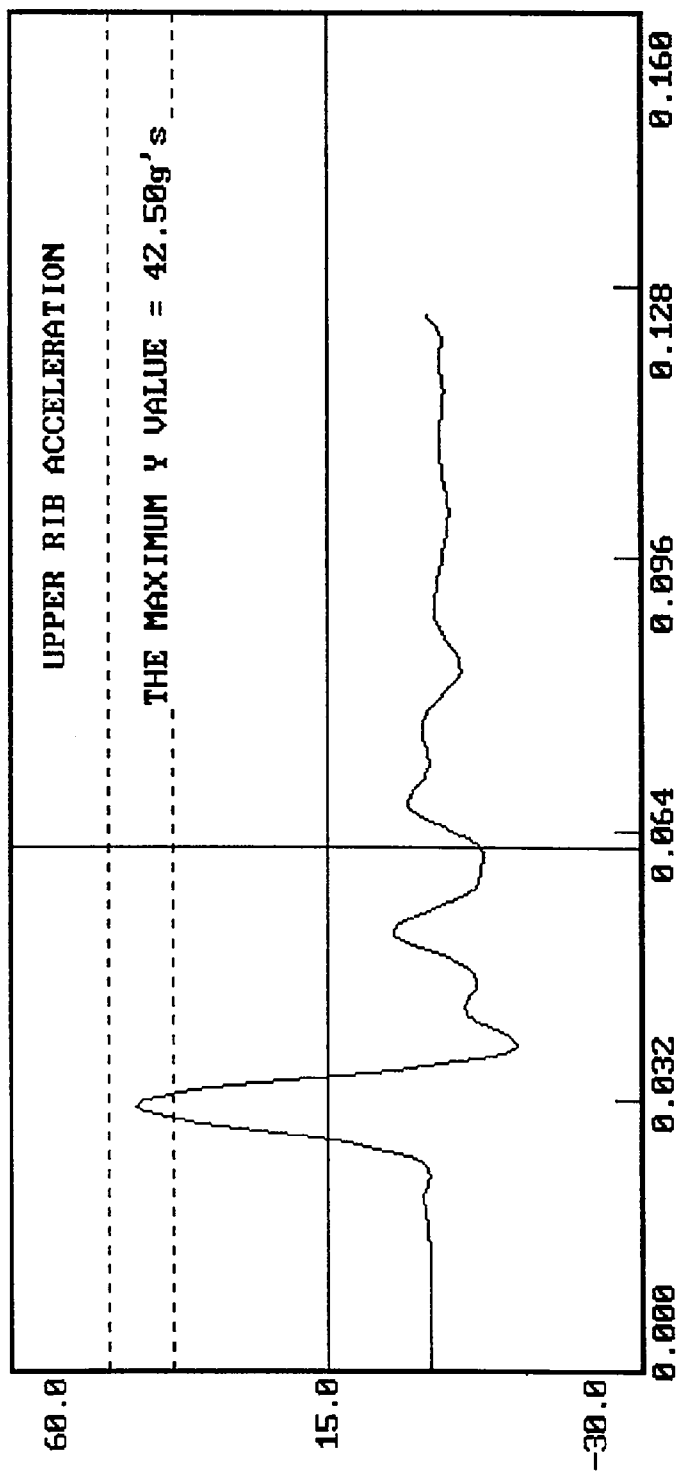
APPROVED BY Dave Kralchke

02-17-1997 13:34

DUMMY CALIBRATION - THORAX IMPACT

DUMMY # 270

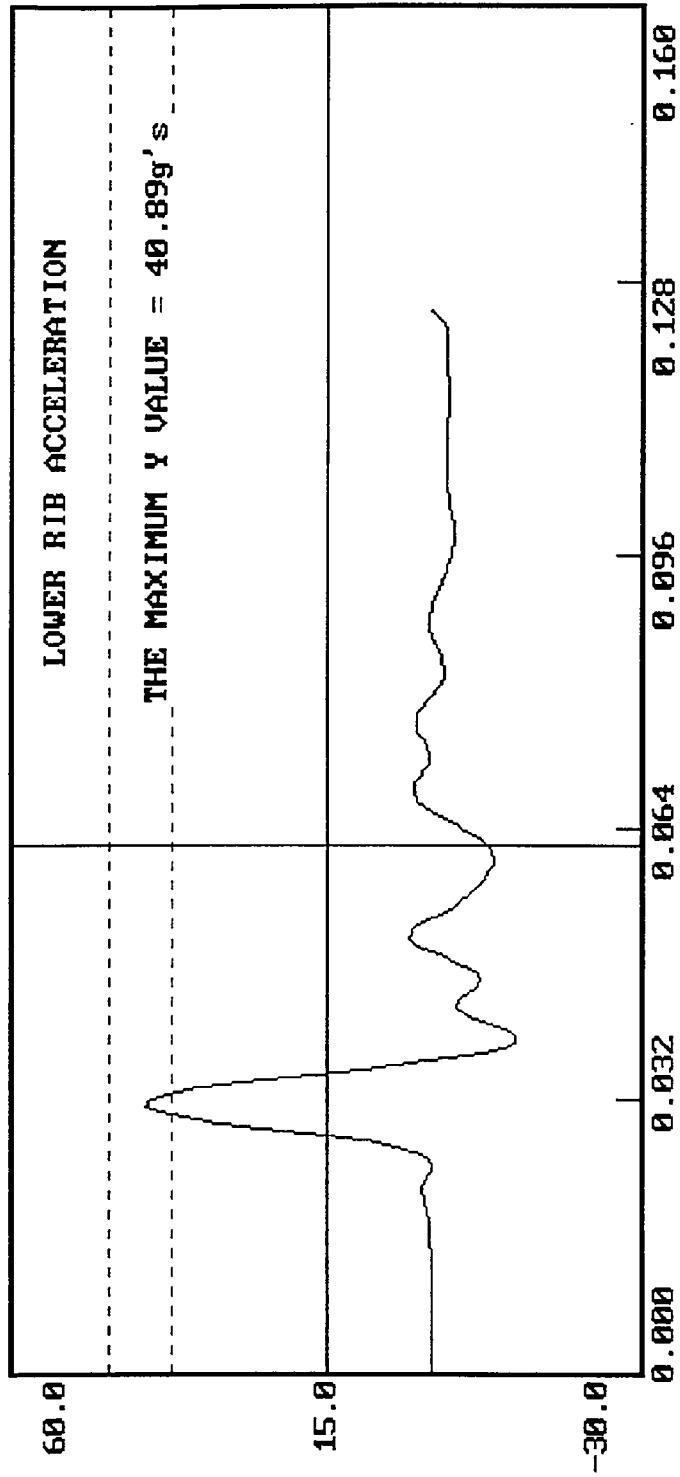
ACCELERATION (G'S) VS. TIME ((SECONDS))



IMPACT SPEED = 14.20 FT/SEC

02-17-1997 13:34

DUMMY CALIBRATION - THORAX IMPACT
DUMMY # 270
ACCELERATION (G'S) VS. TIME ((SECONDS))



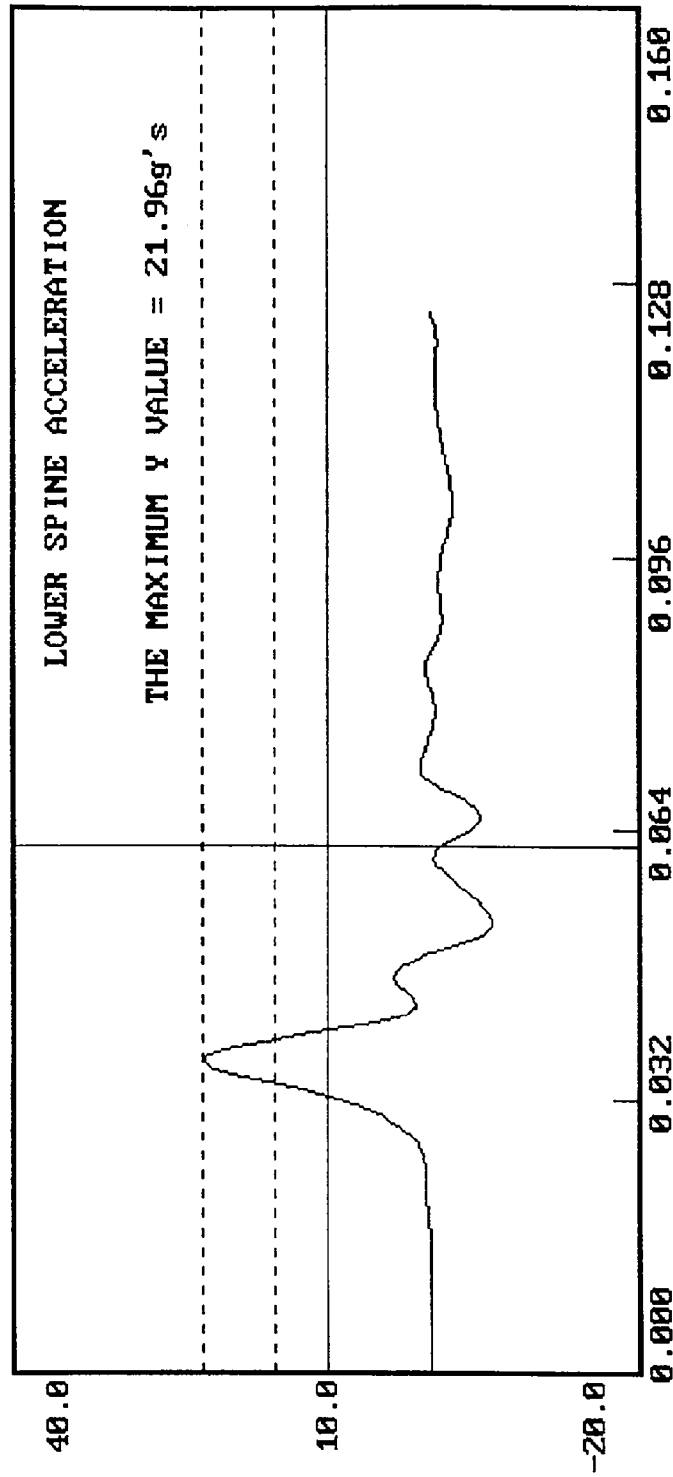
IMPACT SPEED = 14.20 FT/SEC

DUMY CALIBRATION - THORAX IMPACT

DUMY # 270

ACCELERATION (G'S) VS. TIME ((SECONDS))

02-17-1997 13:34



IMPACT SPEED = 14.20 FT/SEC

MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: February 17, 1997

DUMMY NUMBER: 270

TEST NUMBER: D97463

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	16%
PROBE SPEED	13.8 - 14.2 f/s	14.0
PELVIS ACCELERATION	40 - 60 g's	53

TEST MEETS SPECIFICATIONS

TECHNICIAN

Tim White

APPROVED BY

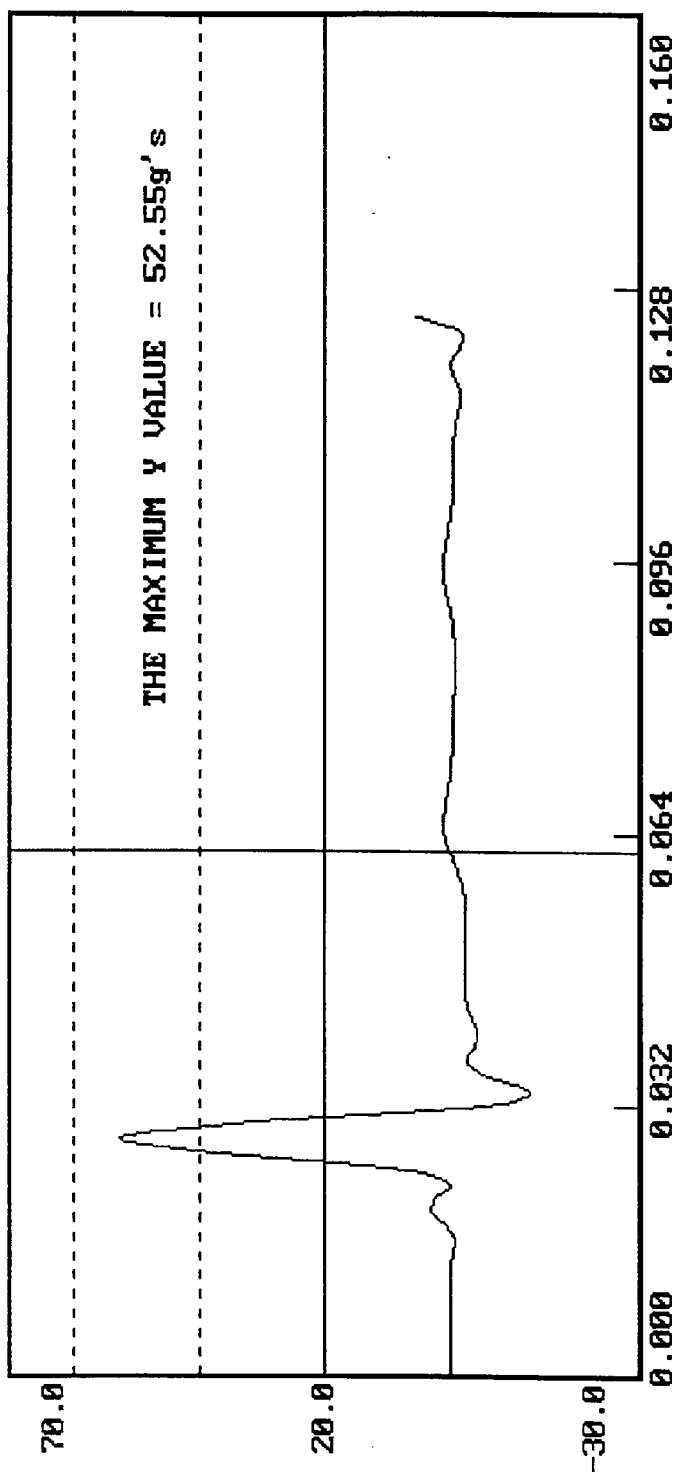
Don Libske

02-17-1997 13:47

DUMMY CALIBRATION - PELVIS IMPACT

DUMMY # 270

ACCELERATION (G'S) VS. TIME ((SECONDS))



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

DATE: February 14, 1997

DUMMY NUMBER: 270

TEST NUMBER: D97464

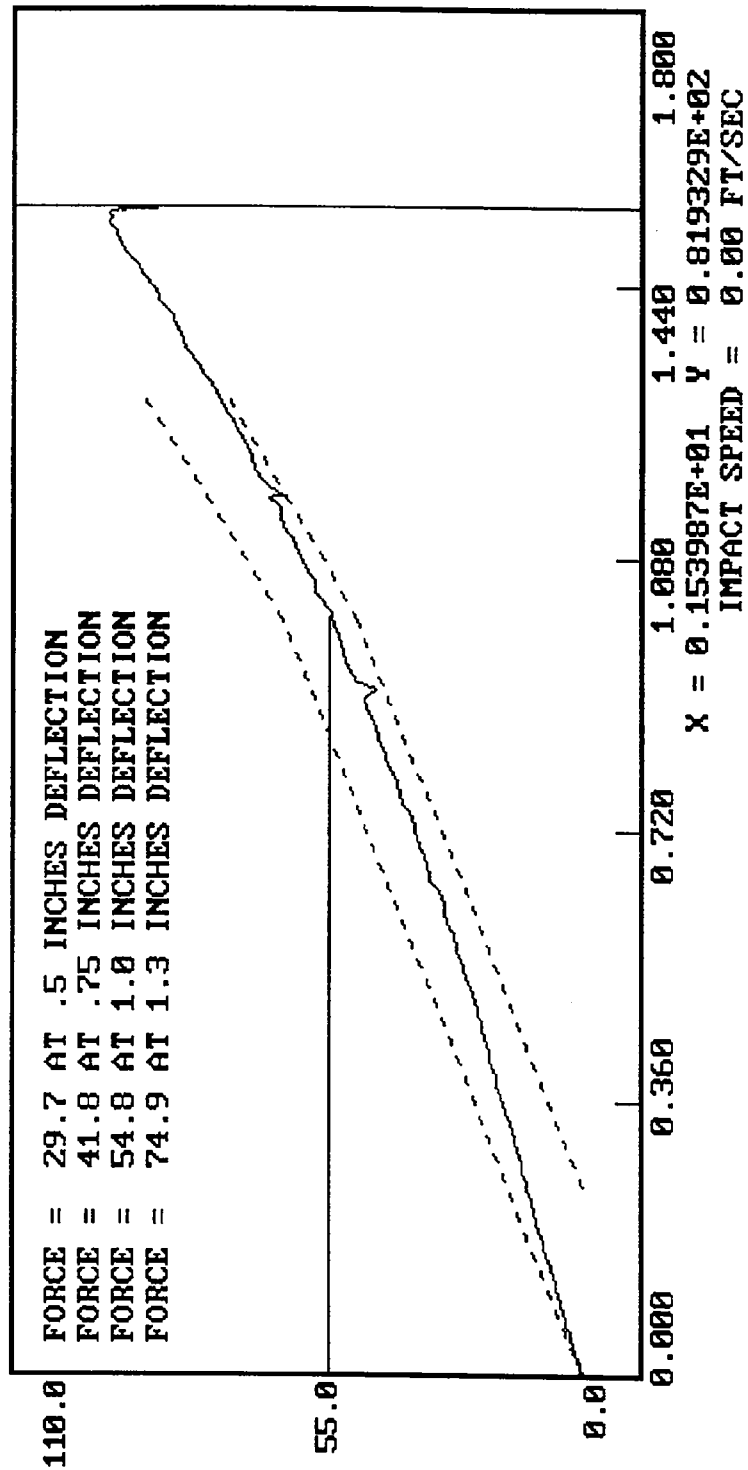
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	15%
FORCE @ 0.5 in	23.3 - 36.5 lbs	29.7
FORCE @ 0.75 in	36.7 - 49.8 lbs	41.8
FORCE @ 1.0 in	50 - 63 lbs	55
FORCE @ 1.3 in	73 - 88 lbs	75

TEST MEETS SPECIFICATIONS

TECHNICIAN Jim White

APPROVED BY David Kalbala

DUMMY CALIBRATION - ABDOMEN COMPRESSION
 DUMMY # 270
 02-14-1997 10:32
 ABDOMEN FORCE (LBS) VS. ABDOMEN DISPLACEMENT (INCHES)



MGA RESEARCH CORPORATION

LUMBAR FLEXION TEST

SIDE IMPACT DUMMY (SID)

DATE: February 14, 1997

DUMMY NUMBER: 270

TEST NUMBER: D97465

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	15%
FORCE @ 0°	0 - 6 lbs	0
FORCE @ 20°	22 - 34 lbs	24
FORCE @ 30°	34 - 46 lbs	39
FORCE @ 40°	46 - 58 lbs	51
RETURN ANGLE	12° maximum	1°

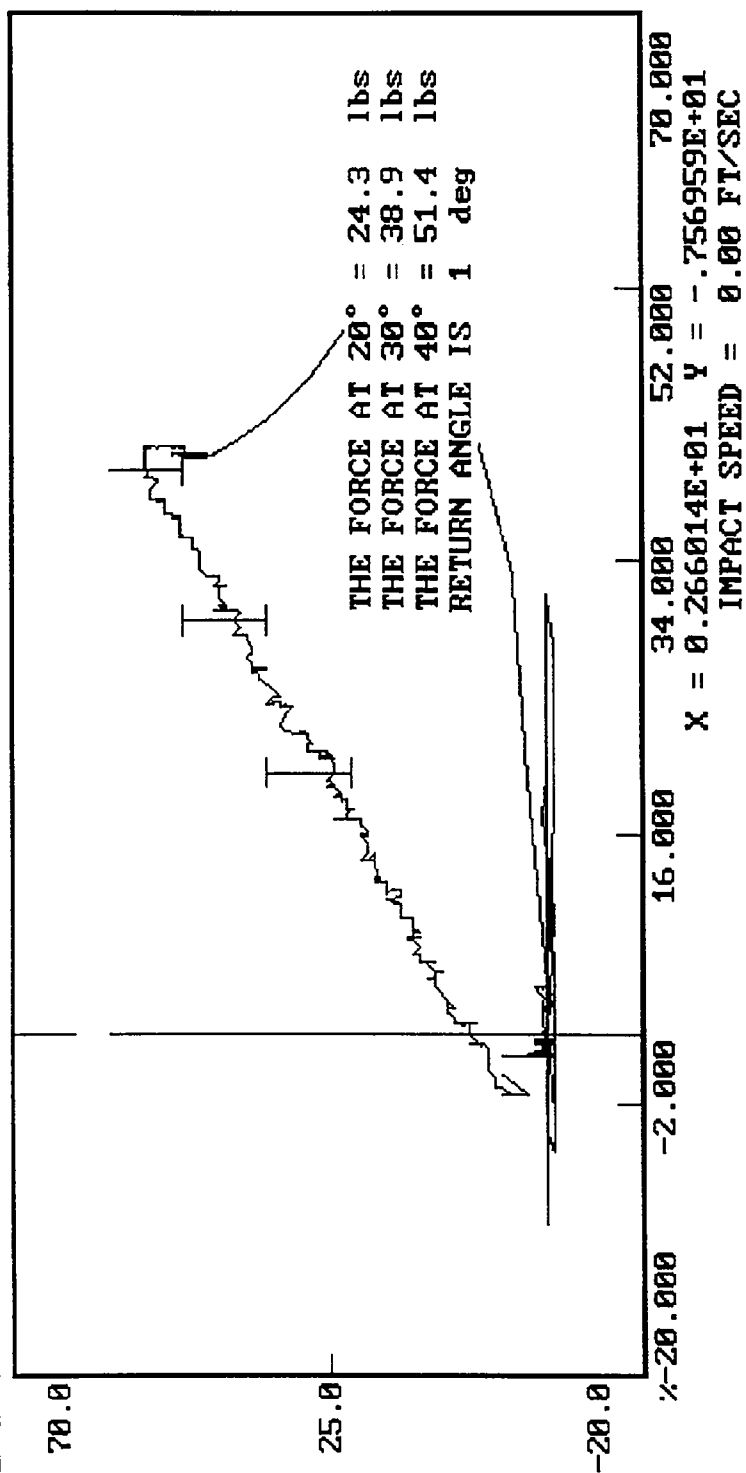
TEST MEETS SPECIFICATIONS

TECHNICIAN Tim H. [Signature]

APPROVED BY [Signature]

02-14-1997 13:57

DUMMY CALIBRATION - LUMBAR FLEXION
DUMMY # 270
FORCE (LBS) VS. TORSO ROTATION (DEGREES)



PRE-TEST CERTIFICATION DATA

Rear Dummy Serial Number: 269

Calibration Test Results Summary

Dummy Serial Number: 269

Pre-Test Calibration

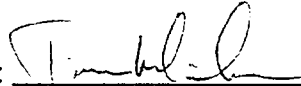
External Dimensions:	The dummy passed all external dimension requirements.
Thorax Impact Test:	The thorax passed all impact test requirements.
Pelvic Impact Test:	The pelvis passed all impact test requirements.
Abdominal Compression Test:	The abdomen passed all compression test requirements.
Lumbar Flexion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

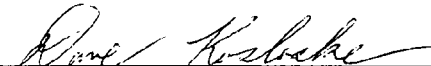
SIDE IMPACT DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

DUMMY NO.: 269

DATE OF VERIFICATION: February 17, 1997

DESCRIPTION	SPECIFICATION	TEST RESULTS
SH - Seated Height	35.0" - 35.8"	35.1
RH - Rib Height	19.75" - 20.50"	20.00
HP - Hip Pivot Height	3.9" ref.	3.9
RD - Rib From Back Line	9.0" to 9.5"	9.3
KV - Knee Pivot From Back Line	20.1" - 20.7"	20.4
SW - Knee Pivot to Floor	19.3" - 19.9"	19.4
HW - Hip Width	14.0" - 15.4"	15.1

MEASUREMENTS BY: 

APPROVED BY: 

MGA RESEARCH CORPORATION

THORAX IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: February 17, 1997

DUMMY NUMBER: 269

TEST NUMBER: D97452

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	14%
PROBE SPEED	13.8 - 14.2 fps	14.0
UPPER RIB	37 - 46 g's	43
LOWER RIB	37 - 46 g's	44
LOWER SPINE	15 - 22 g's	21

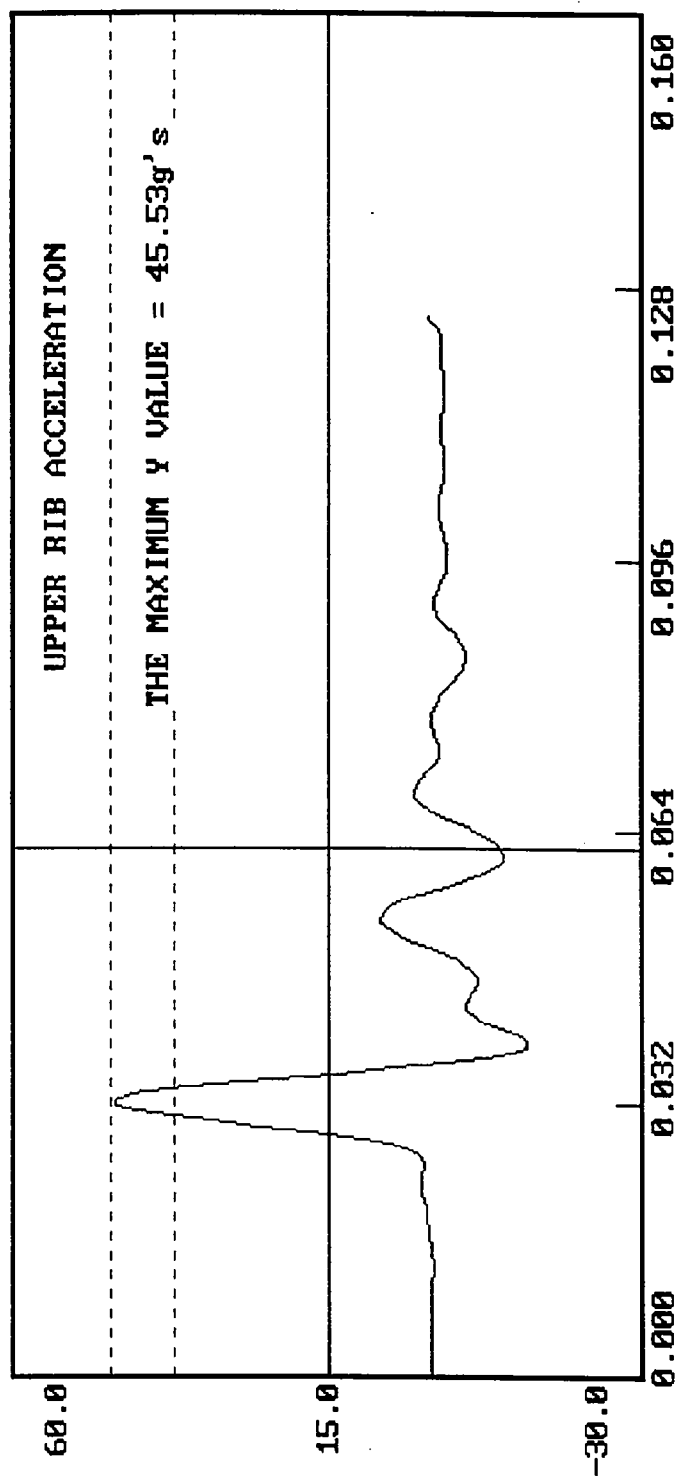
TEST MEETS SPECIFICATIONS

TECHNICIAN Tim Stiles

APPROVED BY Paul Korbake

DUMMY CALIBRATION - THORAX IMPACT
DUMMY # 269
ACCELERATION (G'S) VS. TIME ((SECONDS))

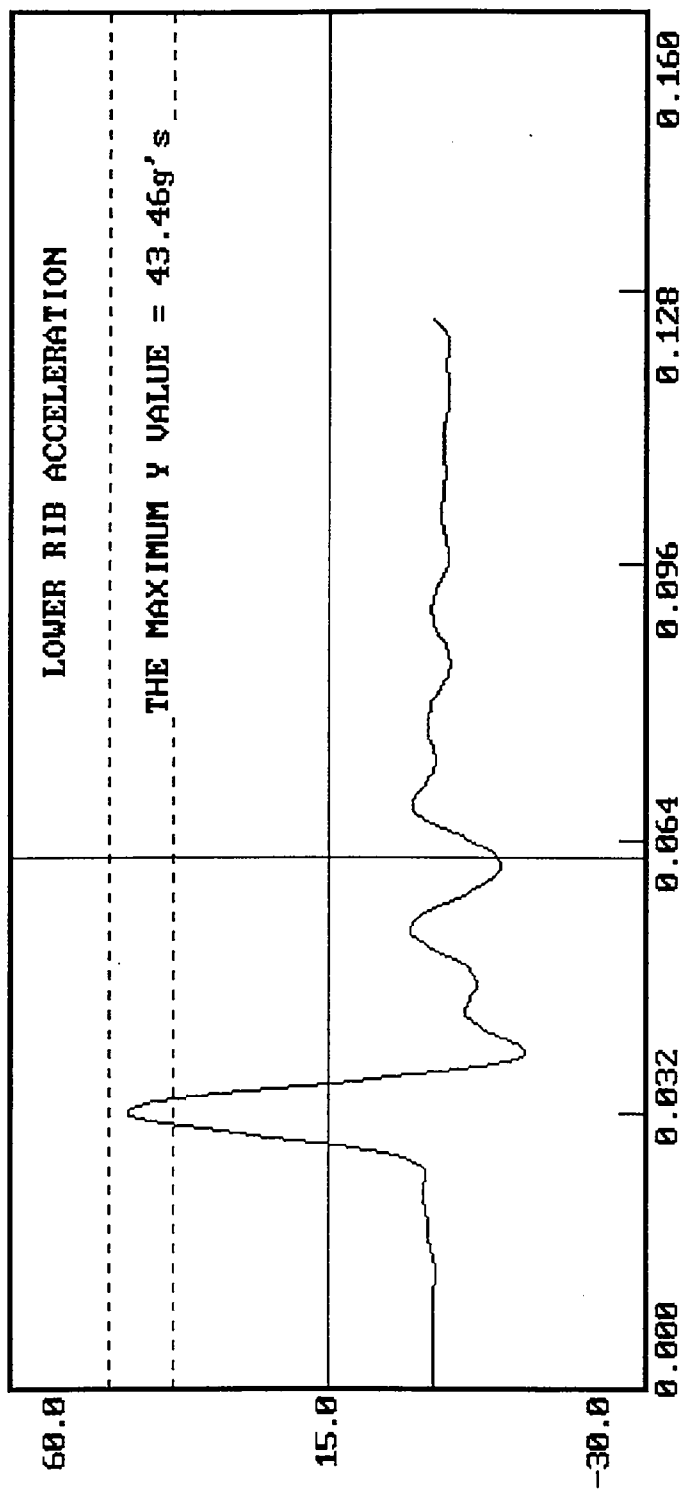
02-17-1997 10:53



IMPACT SPEED = 14.01 FT/SEC

02-17-1997 10:53

DUMMY CALIBRATION - THORAX IMPACT
DUMMY # 269
ACCELERATION (G'S) VS. TIME ((SECONDS))



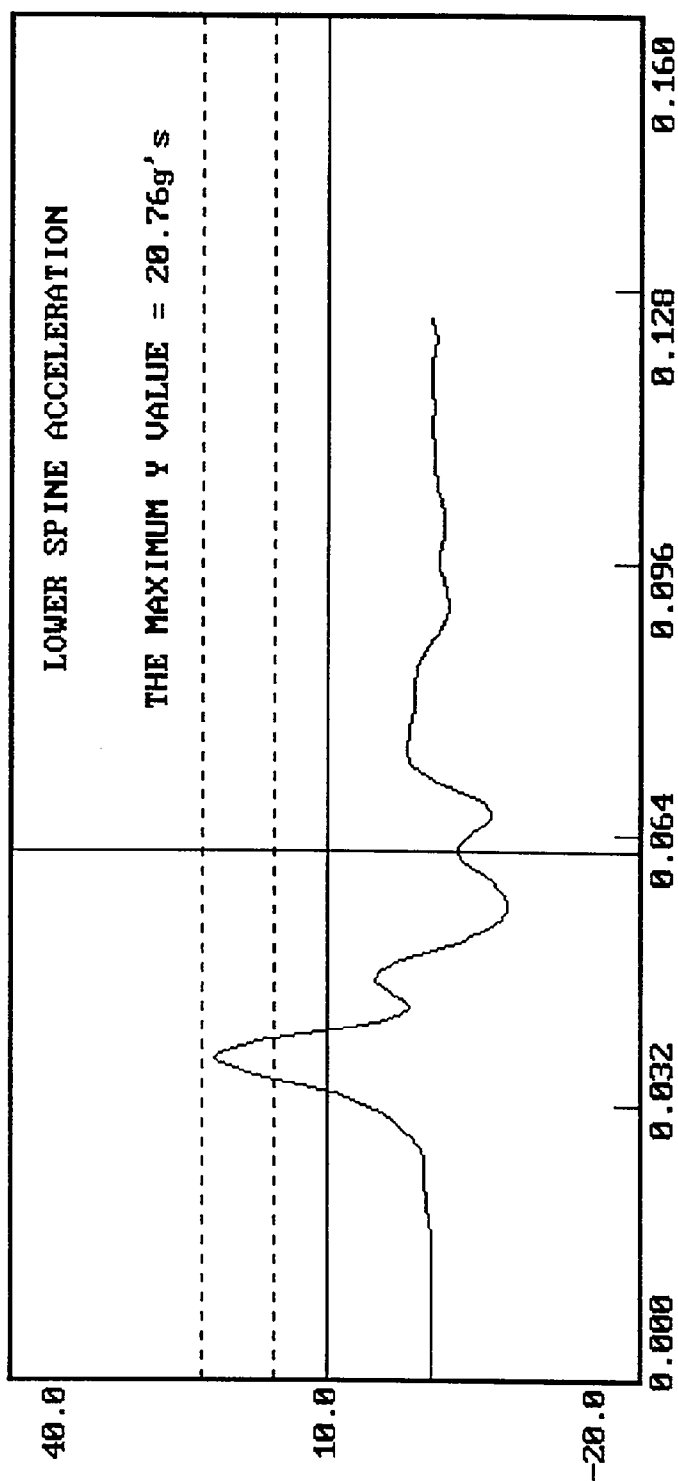
IMPACT SPEED = 14.01 FT/SEC

DUMMY CALIBRATION - THORAX IMPACT

DUMMY # 269

ACCELERATION (G'S) VS. TIME ((SECONDS))

02-17-1997 10:54



IMPACT SPEED = 14.01 FT/SEC

MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: February 17, 1997

DUMMY NUMBER: 269

TEST NUMBER: D97453

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	14%
PROBE SPEED	13.8 - 14.2 f/s	13.9
PELVIS ACCELERATION	40 - 60 g's	57

TEST MEETS SPECIFICATIONS

TECHNICIAN

Jim H. H. H.

APPROVED BY

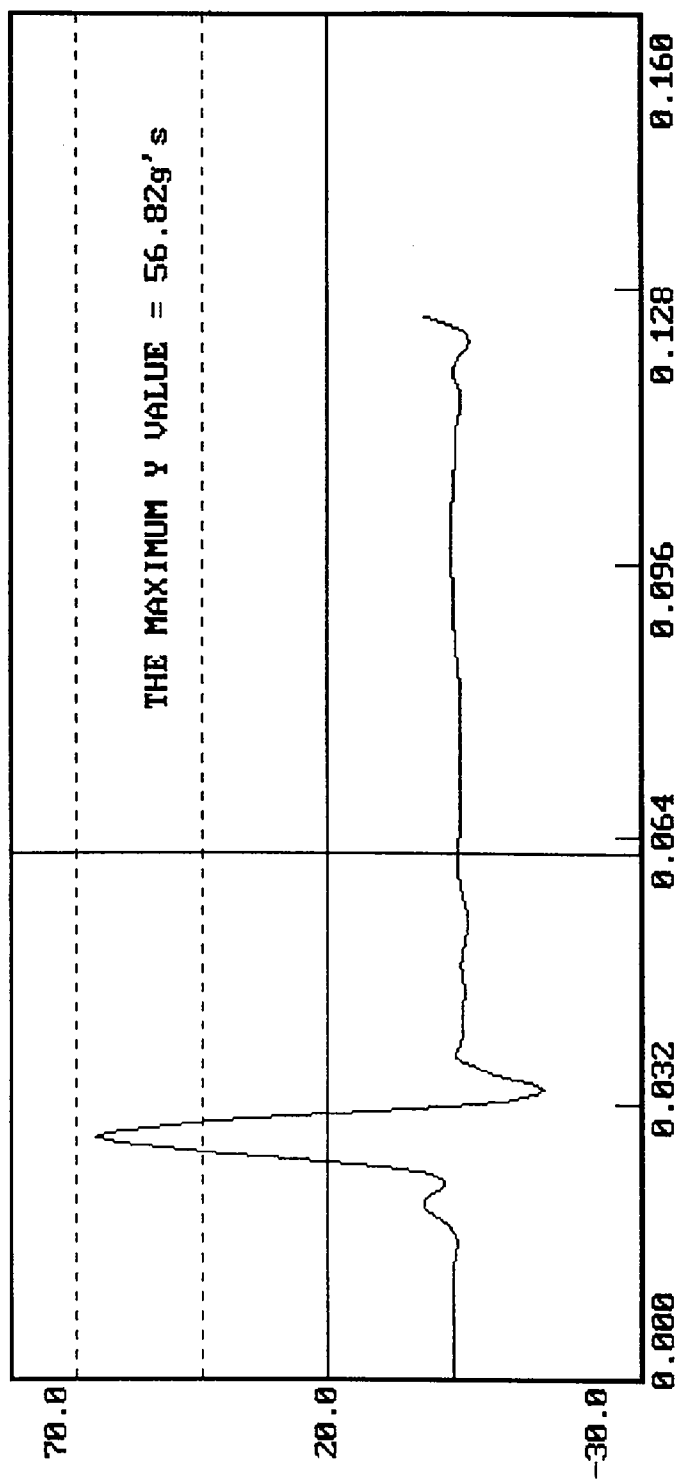
Dave H. H. H.

DUMMY CALIBRATION - PELVIS IMPACT

DUMMY # 269

ACCELERATION (G'S) VS. TIME ((SECONDS))

02-17-1997 11:16



IMPACT SPEED = 13.94 FT/SEC

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

DATE: February 14, 1997

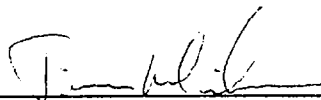
DUMMY NUMBER: 269

TEST NUMBER: D97454

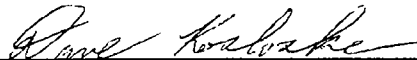
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	15%
FORCE @ 0.5 in	23.3 - 36.5 lbs	33.6
FORCE @ 0.75 in	36.7 - 49.8 lbs	45.9
FORCE @ 1.0 in	50 - 63 lbs	59
FORCE @ 1.3 in	73 - 88 lbs	78

TEST MEETS SPECIFICATIONS

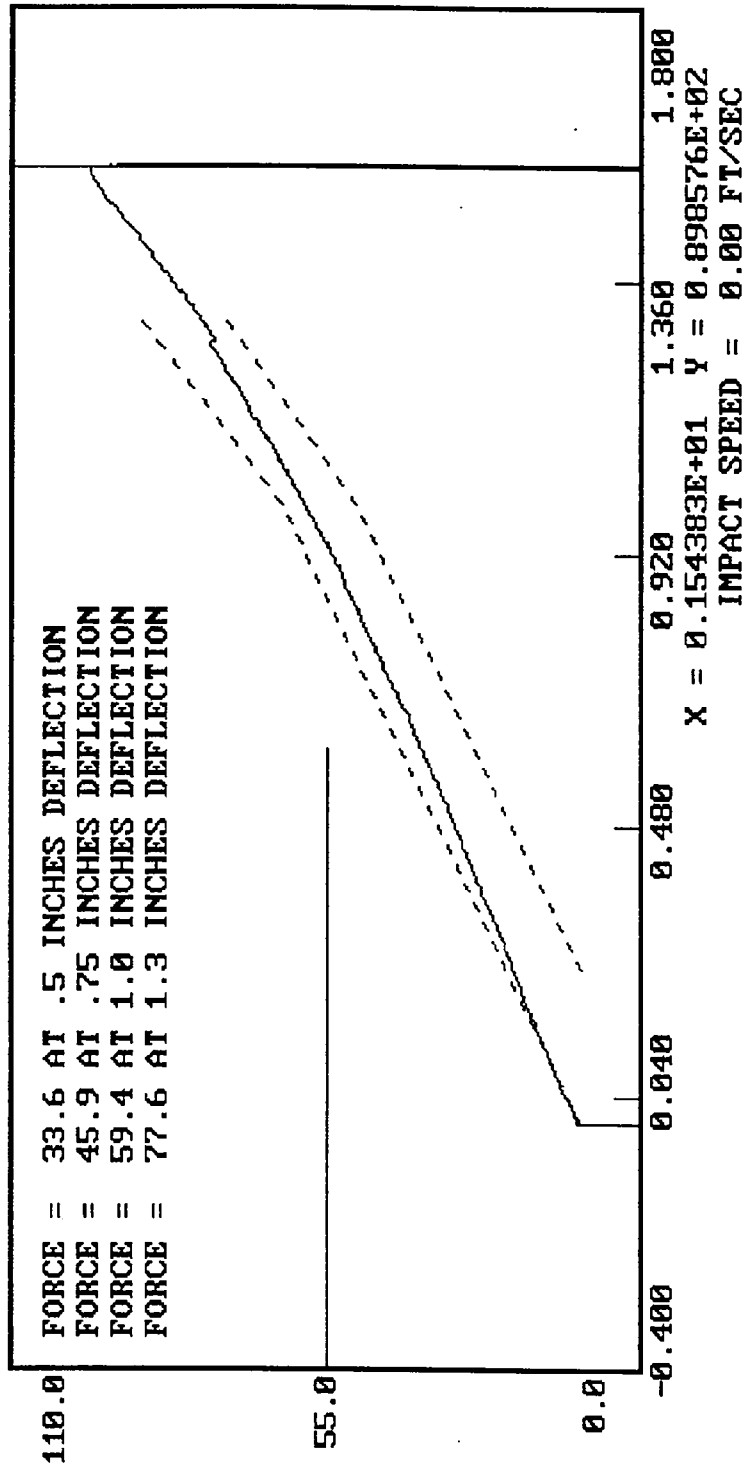
TECHNICIAN



APPROVED BY



DUMMY CALIBRATION - ABDOMEN COMPRESSION
 DUMMY # 269
 02-14-1997 10:28
 ABDOMEN FORCE (LBS) VS. ABDOMEN DISPLACEMENT (INCHES)



MGA RESEARCH CORPORATION

LUMBAR FLEXION TEST

SIDE IMPACT DUMMY (SID)

DATE: February 14, 1997

DUMMY NUMBER: 269

TEST NUMBER: D97455

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	15%
FORCE @ 0°	0 - 6 lbs	0
FORCE @ 20°	22 - 34 lbs	27
FORCE @ 30°	34 - 46 lbs	41
FORCE @ 40°	46 - 58 lbs	52
RETURN ANGLE	12° maximum	3°

TEST MEETS SPECIFICATIONS

TECHNICIAN

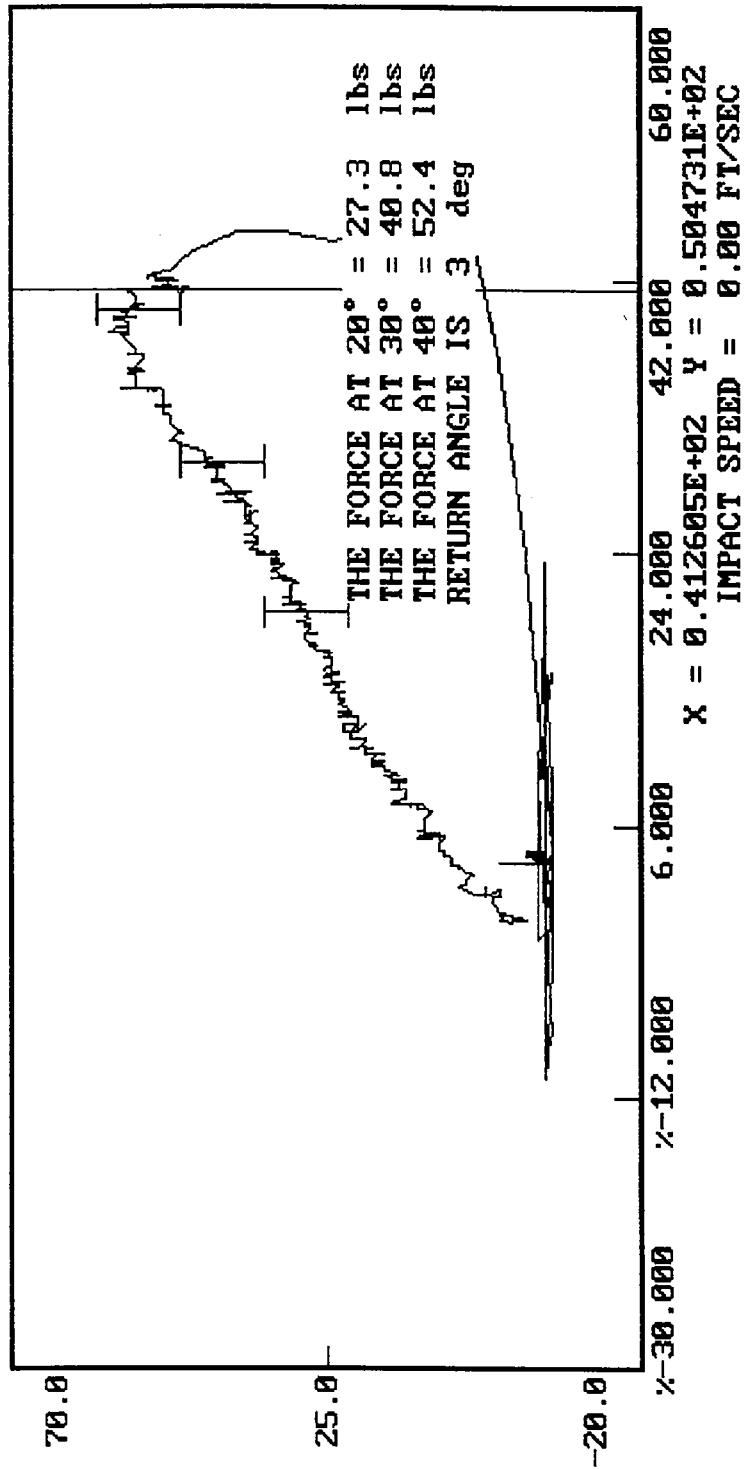
Jim Hill

APPROVED BY

Steve Kibbe

02-14-1997 12:54

DUMMY CALIBRATION - LUMBAR FLEXION
DUMMY # 269
FORCE (LBS) VS. TORSO ROTATION (DEGREES)



POST-TEST CERTIFICATION DATA

Front Dummy Serial Number: 270

Calibration Test Results Summary

Dummy Serial Number: 270

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 did not pass all impact test requirements.
Abdominal Compression Test:	The abdomen passed all compression test requirements.
Lumbar Flexion Test:	The lumbar passed all flexion test requirements.

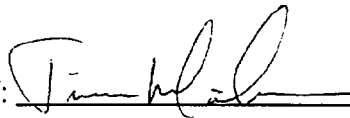
SIDE IMPACT DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

DUMMY NO.: 270

DATE OF VERIFICATION: March 3, 1997

DESCRIPTION	SPECIFICATION	TEST RESULTS
SH - Seated Height	35.0" - 35.8"	35.2
RH - Rib Height	19.75" - 20.50"	20.50
HP - Hip Pivot Height	3.9" ref.	3.9
RD - Rib From Back Line	9.0" to 9.5"	9.5
KV - Knee Pivot From Back Line	20.1" - 20.7"	20.6
SW - Knee Pivot to Floor	19.3" - 19.9"	19.5
HW - Hip Width	14.0" - 15.4"	15.0

MEASUREMENTS BY:



APPROVED BY:



MGA RESEARCH CORPORATION

THORAX IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: February 25, 1997

DUMMY NUMBER: 270

TEST NUMBER: D97522

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	15%
PROBE SPEED	13.8 - 14.2 fps	14.1
UPPER RIB	37 - 46 g's	44
LOWER RIB	37 - 46 g's	42
LOWER SPINE	15 - 22 g's	22

TEST MEETS SPECIFICATIONS

TECHNICIAN

Tim White

APPROVED BY

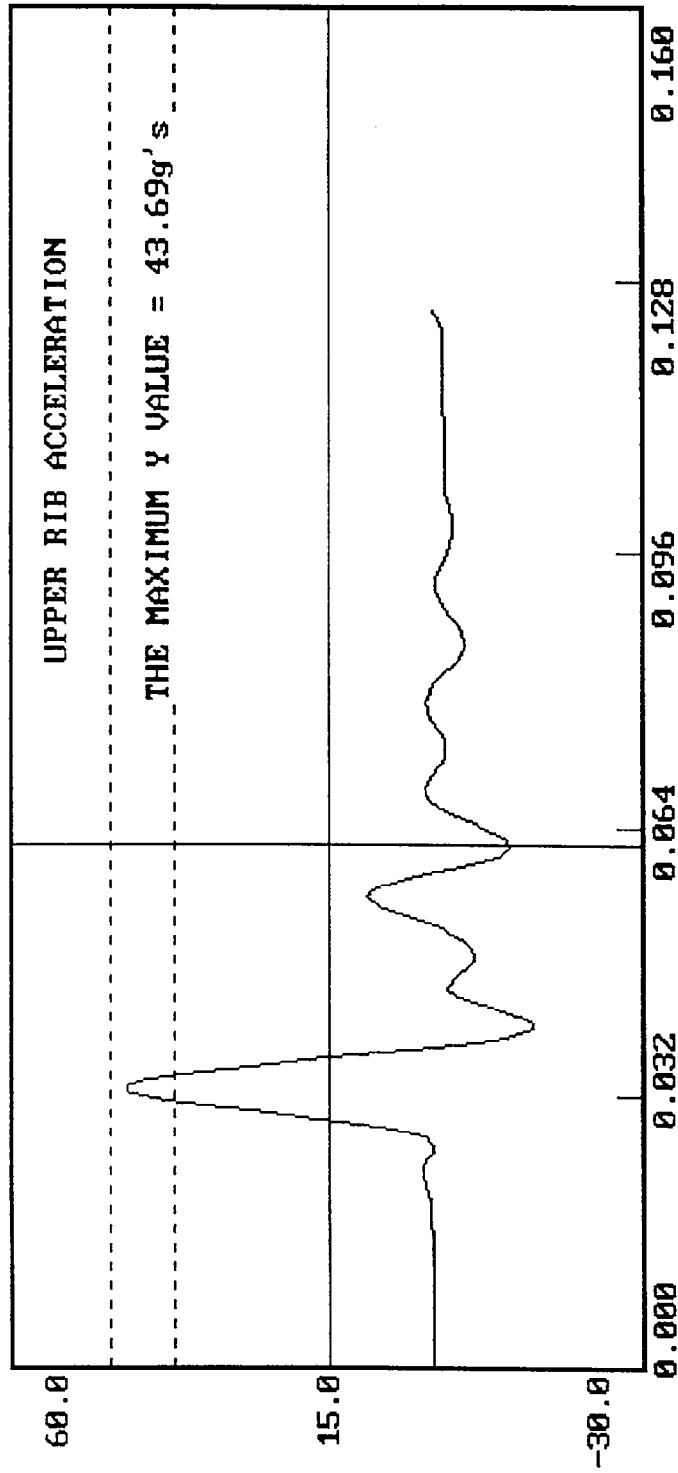
Rene Kralovich

02-25-1997 12:32

DUMMY CALIBRATION - THORAX IMPACT

DUMMY # 270

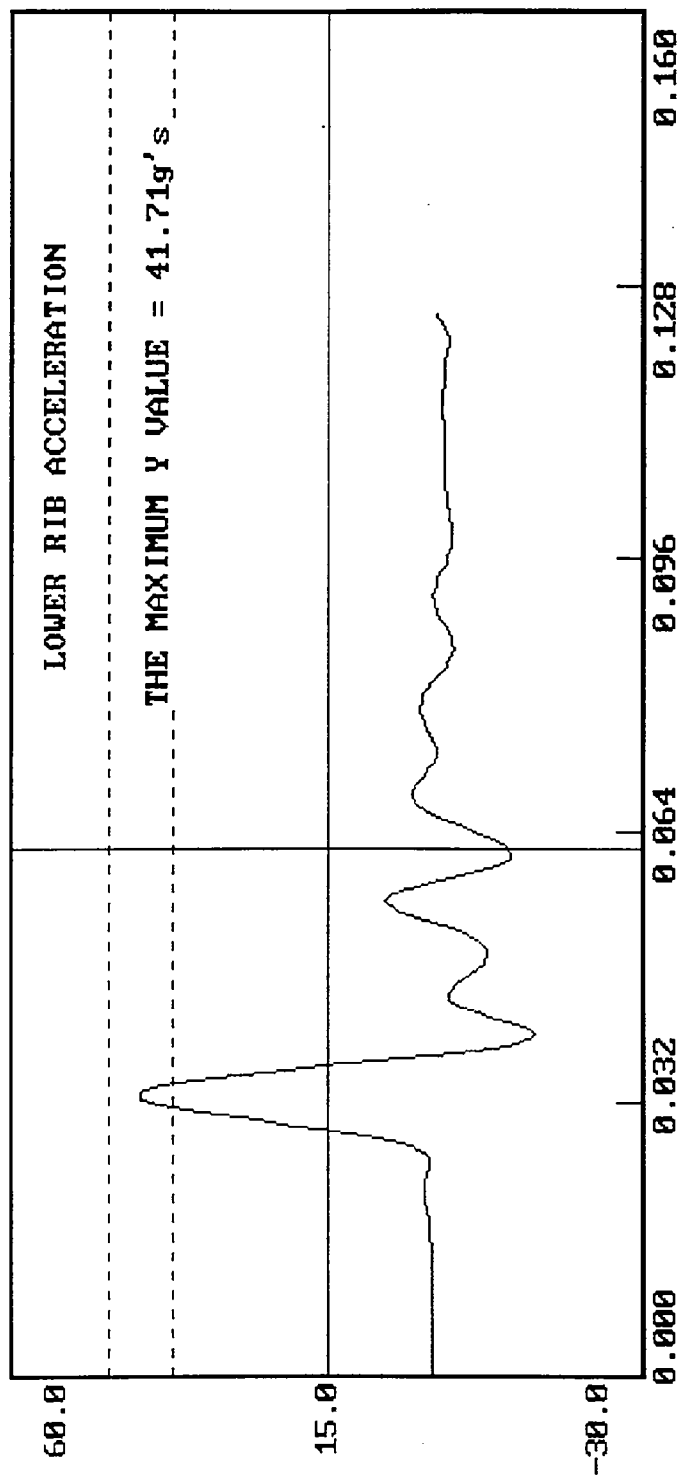
ACCELERATION (G'S) VS. TIME ((SECONDS))



IMPACT SPEED = 14.05 FT/SEC

02-25-1997 12:33

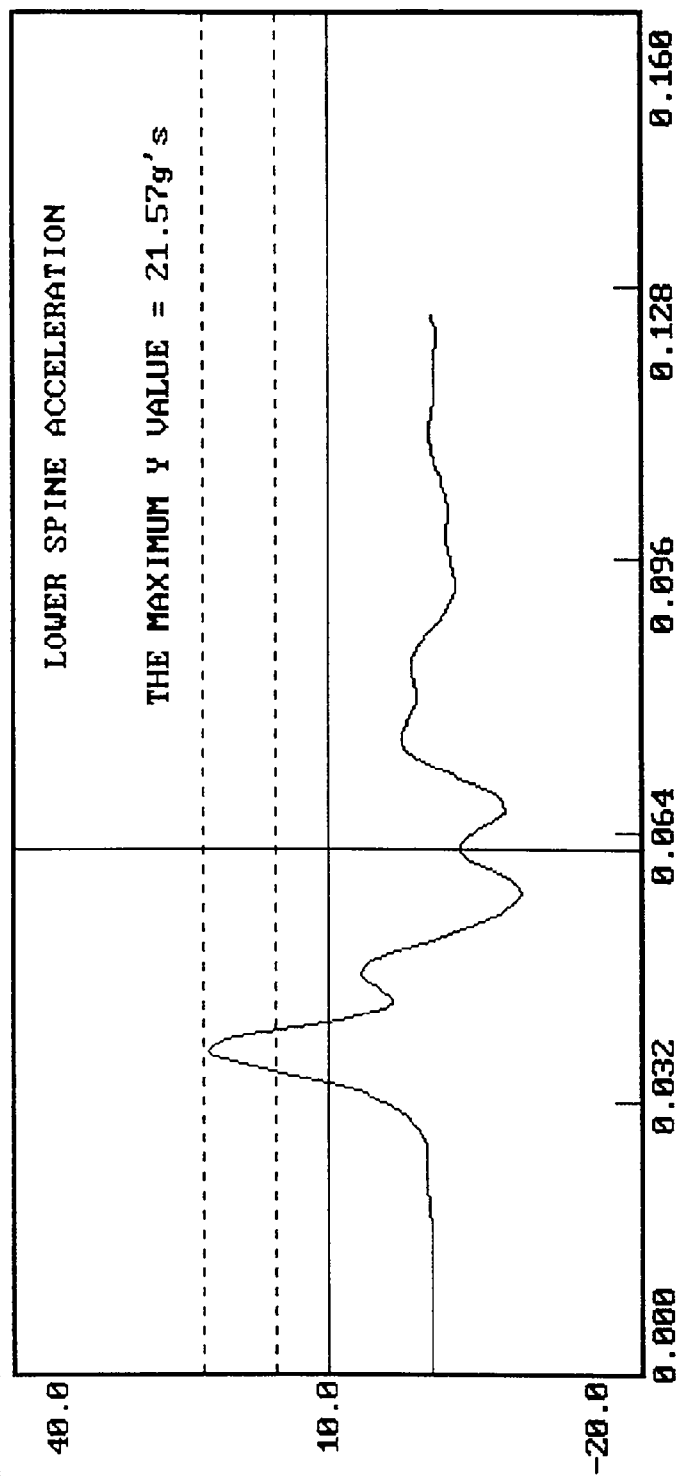
DUMMY CALIBRATION - THORAX IMPACT
DUMMY # 270
ACCELERATION (G'S) VS. TIME ((SECONDS))



IMPACT SPEED = 14.05 FT/SEC

02-25-1997 12:33

DUMMY CALIBRATION - THORAX IMPACT
DUMMY # 270
ACCELERATION (G'S) VS. TIME ((SECONDS))



IMPACT SPEED = 14.05 FT/SEC

MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: February 25, 1997

DUMMY NUMBER: 270

TEST NUMBER: D97523

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	15%
PROBE SPEED	13.8 - 14.2 f/s	14.0
PELVIS ACCELERATION	40 - 60 g's	64*

* TEST DID NOT MEET SPECIFICATIONS

TECHNICIAN

Jim Wilson

APPROVED BY

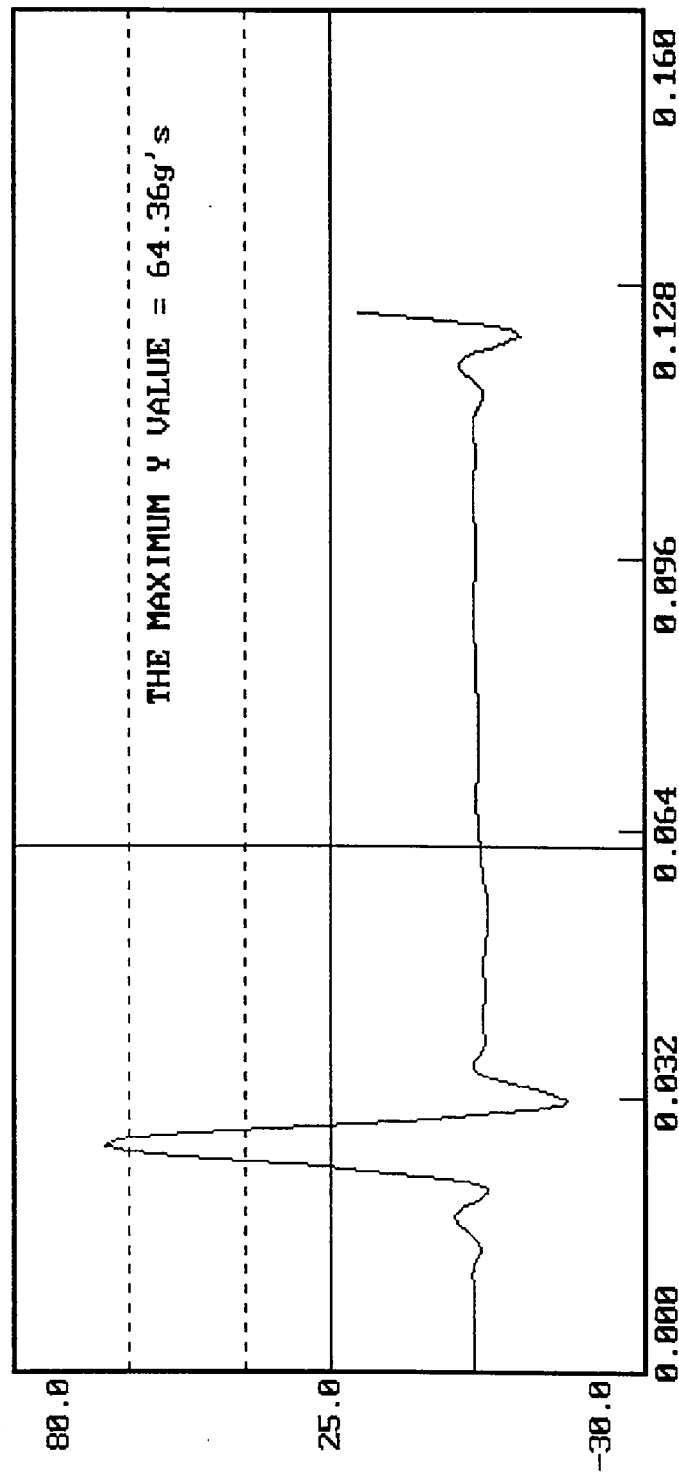
Rene Kabeke

02-25-1997 12:40

DUMMY CALIBRATION - PELVIS IMPACT

DUMMY # 270

ACCELERATION (G'S) VS. TIME ((SECONDS))



IMPACT SPEED = 13.98 FT/SEC

MGA RESEARCH CORPORATION

ABDOMINAL COMPRESSION TEST
(PRELOAD = 10 LBS)

SIDE IMPACT DUMMY (SID)

DATE: March 3, 1997

DUMMY NUMBER: 270

TEST NUMBER: D97524

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	20%
FORCE @ 0.5 in	23.3 - 36.5 lbs	30.3
FORCE @ 0.75 in	36.7 - 49.8 lbs	41.7
FORCE @ 1.0 in	50 - 63 lbs	55
FORCE @ 1.3 in	73 - 88 lbs	75

TEST MEETS SPECIFICATIONS

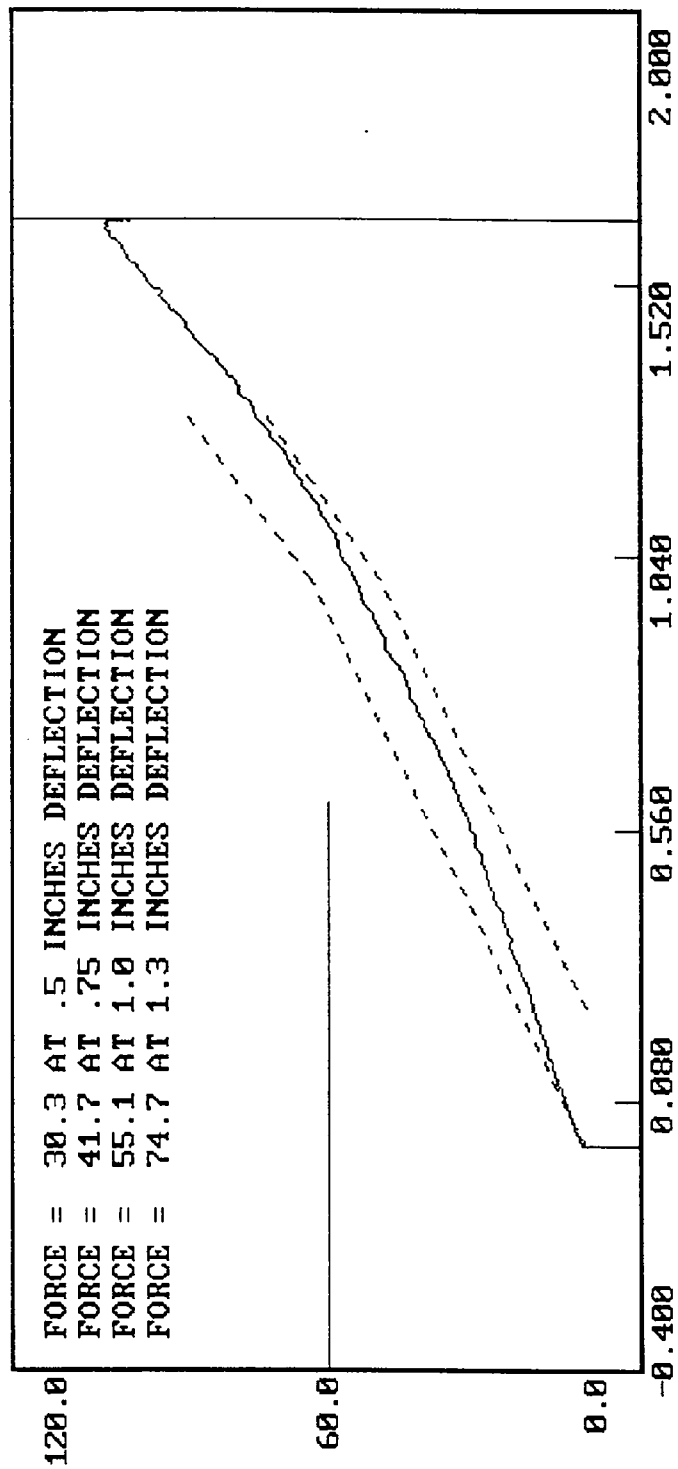
TECHNICIAN Tim [Signature]

APPROVED BY [Signature]

DUMMY CALIBRATION - ABDOMEN COMPRESSION

DUMMY # 270

ABDOMEN FORCE (LBS) VS. ABDOMEN DISPLACEMENT (INCHES)



IMPACT SPEED = 0.00 FT/SEC

MGA RESEARCH CORPORATION

LUMBAR FLEXION TEST

SIDE IMPACT DUMMY (SID)

DATE: February 28, 1997

DUMMY NUMBER: 270

TEST NUMBER: D97525

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	20%
FORCE @ 0°	0 - 6 lbs	0
FORCE @ 20°	22 - 34 lbs	24
FORCE @ 30°	34 - 46 lbs	37
FORCE @ 40°	46 - 58 lbs	52
RETURN ANGLE	12° maximum	1°

TEST MEETS SPECIFICATIONS

TECHNICIAN

Tim [Signature]

APPROVED BY

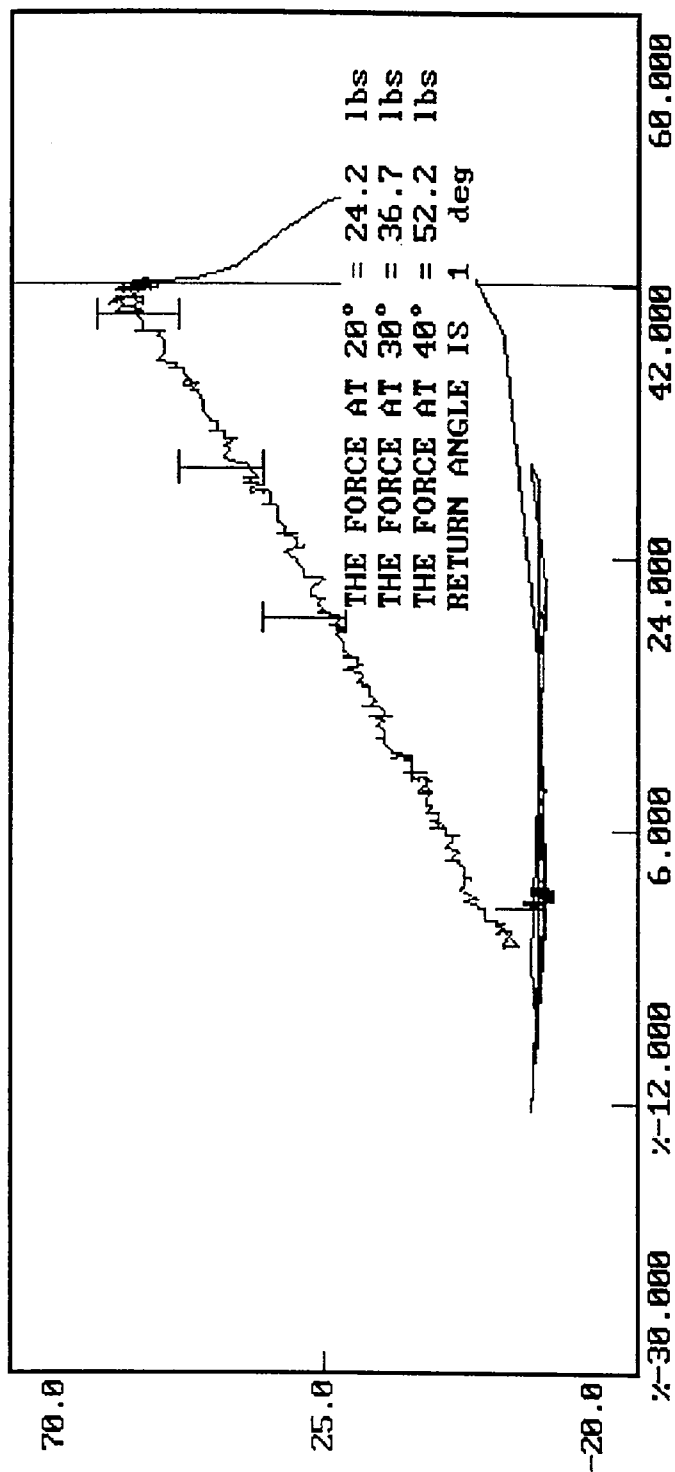
Rene Kishaker

02-28-1997 15:48

DUMMY CALIBRATION - LUMBAR FLEXION

DUMMY # 270

FORCE (LBS) VS. TORSO ROTATION (DEGREES)



IMPACT SPEED = 0.00 FT/SEC

POST-TEST CERTIFICATION DATA

Rear Dummy Serial Number: 269

Calibration Test Results Summary

Dummy Serial Number: 269

Post-Test Calibration

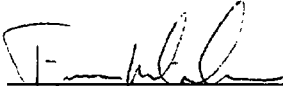
External Dimensions:	The dummy passed all external dimension requirements.
Thorax Impact Test:	The thorax did not pass all impact test requirements.
Pelvic Impact Test:	The pelvis did not pass all impact test requirements.
Abdominal Compression Test:	The abdomen passed all compression test requirements.
Lumbar Flexion Test:	The lumbar passed all flexion test requirements.

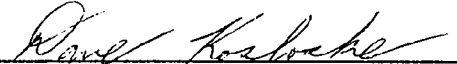
SIDE IMPACT DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

DUMMY NO.: 269

DATE OF VERIFICATION: March 3, 1997

DESCRIPTION	SPECIFICATION	TEST RESULTS
SH - Seated Height	35.0" - 35.8"	35.1
RH - Rib Height	19.75" - 20.50"	20.00
HP - Hip Pivot Height	3.9" ref.	3.9
RD - Rib From Back Line	9.0" to 9.5"	9.3
KV - Knee Pivot From Back Line	20.1" - 20.7"	20.4
SW - Knee Pivot to Floor	19.3" - 19.9"	19.4
HW - Hip Width	14.0" - 15.4"	15.1

MEASUREMENTS BY: 

APPROVED BY: 

MGA RESEARCH CORPORATION

THORAX IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: February 24, 1997

DUMMY NUMBER: 269

TEST NUMBER: D97512

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	16%
PROBE SPEED	13.8 - 14.2 fps	14.1
UPPER RIB	37 - 46 g's	50*
LOWER RIB	37 - 46 g's	43
LOWER SPINE	15 - 22 g's	21

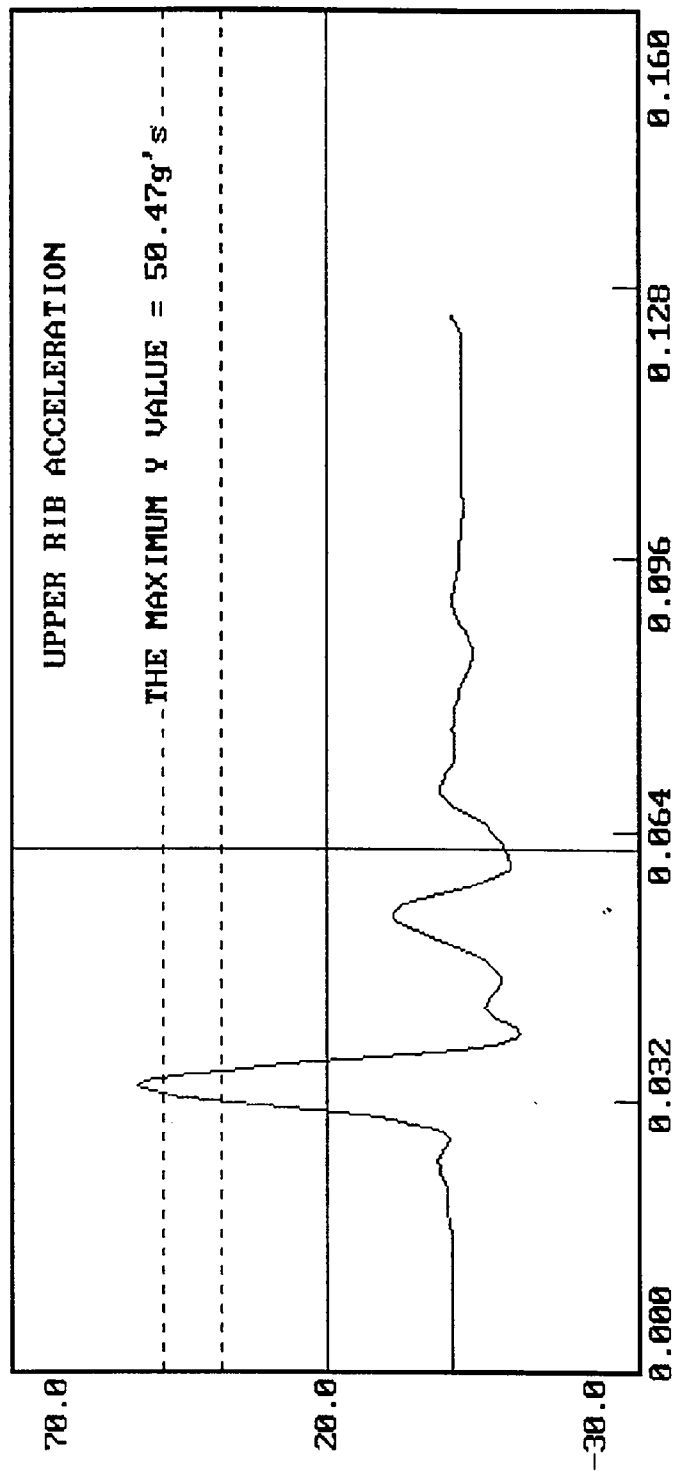
TEST DOES NOT MEET SPECIFICATIONS

TECHNICIAN Jim H. [Signature]

APPROVED BY [Signature]

DUMMY CALIBRATION - THORAX IMPACT
DUMMY # 269
ACCELERATION (G'S) VS. TIME ((SECONDS))

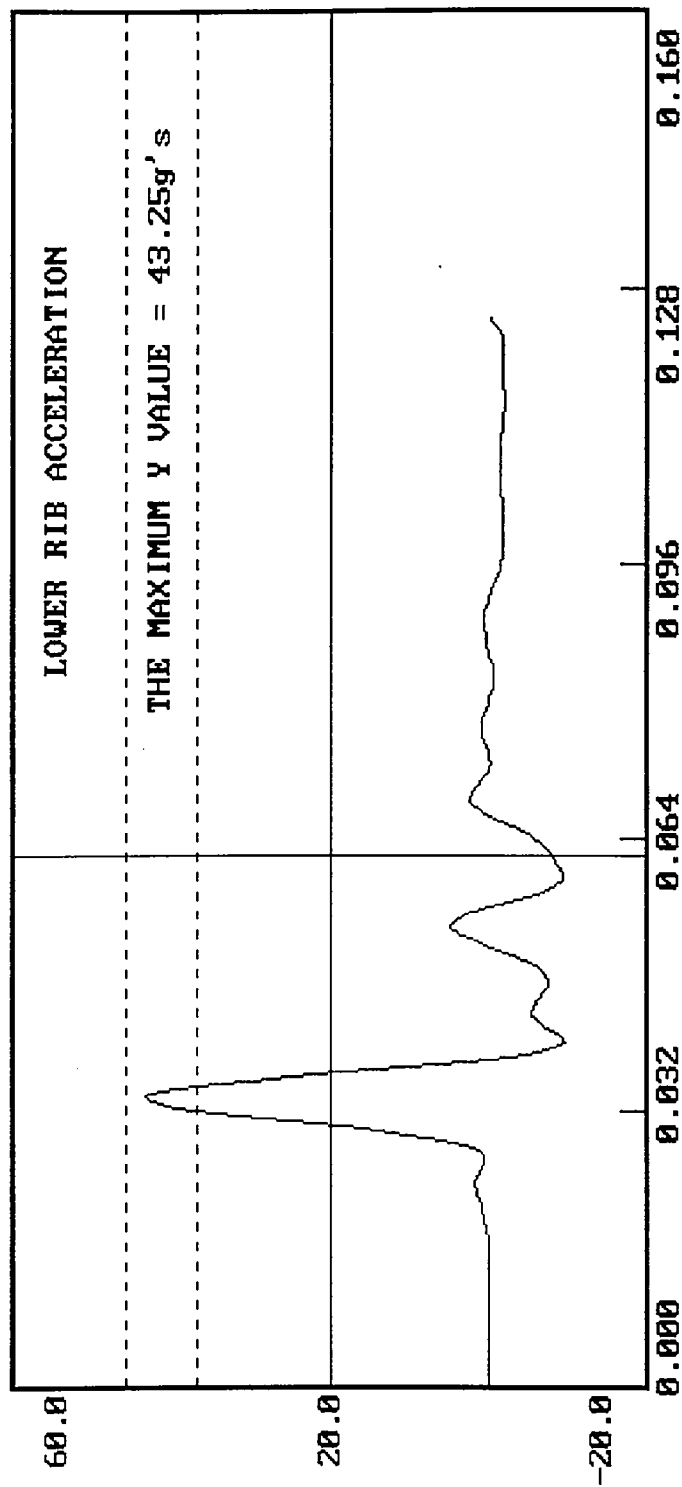
02-24-1997 15:49



IMPACT SPEED = 14.06 FT/SEC

02-24-1997 15:49

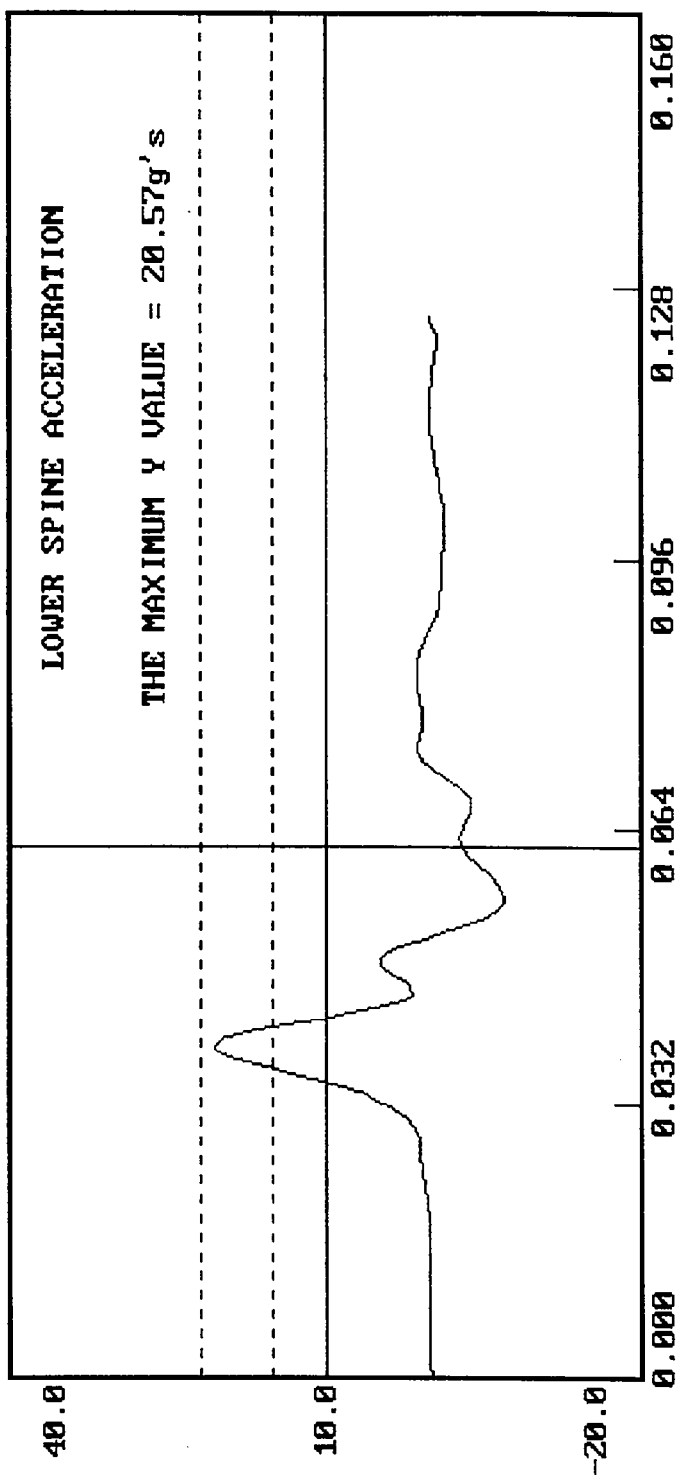
DUMMY CALIBRATION - THORAX IMPACT
DUMMY # 269
ACCELERATION (G'S) VS. TIME ((SECONDS))



IMPACT SPEED = 14.06 FT/SEC

02-24-1997 16:05

DUMMY CALIBRATION - THORAX IMPACT
DUMMY # 269
ACCELERATION (G'S) VS. TIME ((SECONDS))



IMPACT SPEED = 14.06 FT/SEC

MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: February 25, 1997

DUMMY NUMBER: 269

TEST NUMBER: D97513

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	16%
PROBE SPEED	13.8 - 14.2 f/s	14.0
PELVIS ACCELERATION	40 - 60 g's	68*

* TEST DID NOT MEET SPECIFICATIONS

TECHNICIAN

Jim Mellich

APPROVED BY

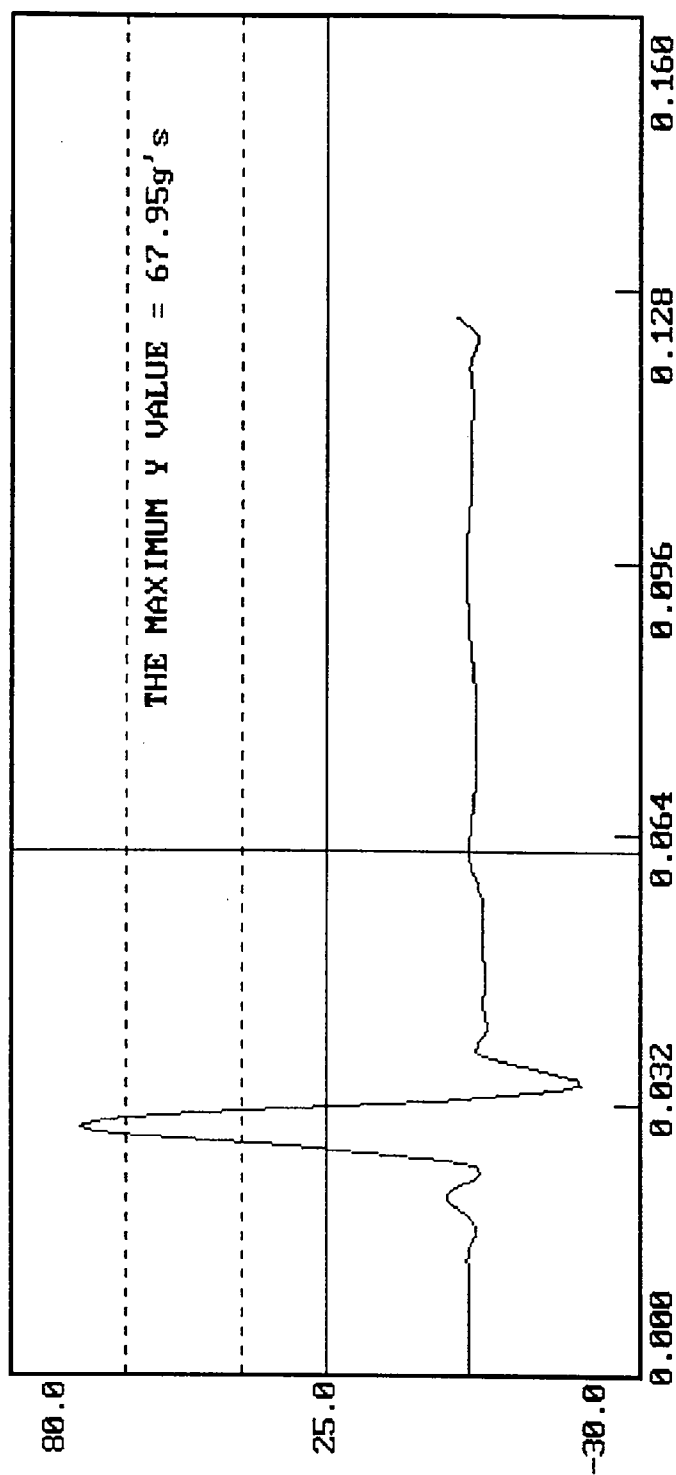
Paul Kucharske

02-25-1997 11:58

DUMMY CALIBRATION - PELVIS IMPACT

DUMMY # 269

ACCELERATION (G'S) VS. TIME ((SECONDS))



IMPACT SPEED = 14.04 FT/SEC

MGA RESEARCH CORPORATION

ABDOMINAL COMPRESSION TEST
(PRELOAD = 10 LBS)

SIDE IMPACT DUMMY (SID)

DATE: March 3, 1997

DUMMY NUMBER: 269

TEST NUMBER: D97514

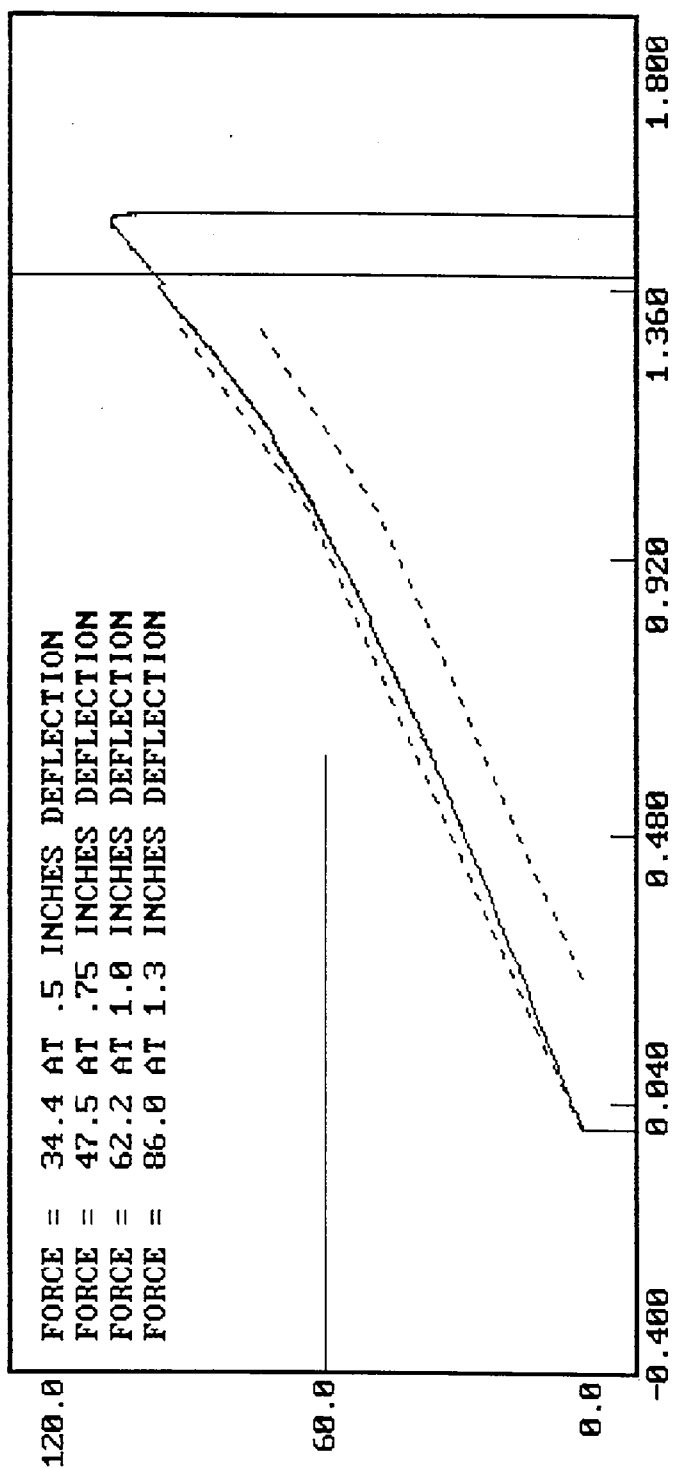
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	20%
FORCE @ 0.5 in	23.3 - 36.5 lbs	34.4
FORCE @ 0.75 in	36.7 - 49.8 lbs	47.5
FORCE @ 1.0 in	50 - 63 lbs	62
FORCE @ 1.3 in	73 - 88 lbs	86

TEST MEETS SPECIFICATIONS

TECHNICIAN Tim H. L.

APPROVED BY Dave Kralchak

DUMMY CALIBRATION - ABDOMEN COMPRESSION
 DUMMY # 269
 03-03-1997 11:48
 ABDOMEN FORCE (LBS) VS. ABDOMEN DISPLACEMENT (INCHES)



MGA RESEARCH CORPORATION

LUMBAR FLEXION TEST

SIDE IMPACT DUMMY (SID)

DATE: February 28, 1997

DUMMY NUMBER: 269

TEST NUMBER: D97515

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	20%
FORCE @ 0°	0 - 6 lbs	0
FORCE @ 20°	22 - 34 lbs	32
FORCE @ 30°	34 - 46 lbs	41
FORCE @ 40°	46 - 58 lbs	46
RETURN ANGLE	12° maximum	3°

TEST MEETS SPECIFICATIONS

TECHNICIAN

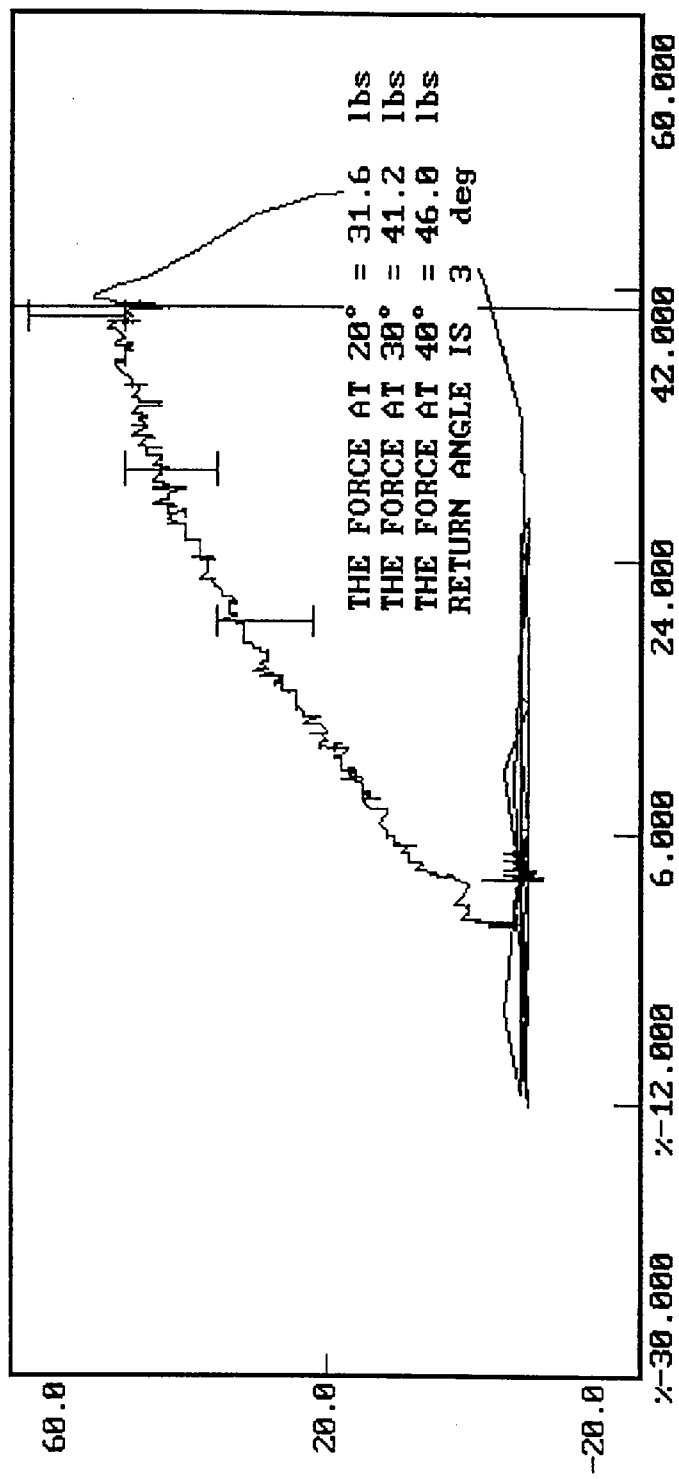
Tim M. H. H.

APPROVED BY

Steve Kraloska

02-28-1997 15:34

DUMMY CALIBRATION - LUMBAR FLEXION
DUMMY # 269
FORCE (LBS) VS. TORSO ROTATION (DEGREES)



IMPACT SPEED = 0.00 FT/SEC

POST-TEST DRIVER DUMMY INSPECTION CHECKLIST

Type: Side Impact Dummy

Serial Number: 270

Inspected By: Tim Michnay

Date: February 25, 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	Pelvis failed impact test--Replaced.	

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

POST-TEST PASSENGER DUMMY INSPECTION CHECKLIST

Type: Side Impact Dummy

Serial Number: 269

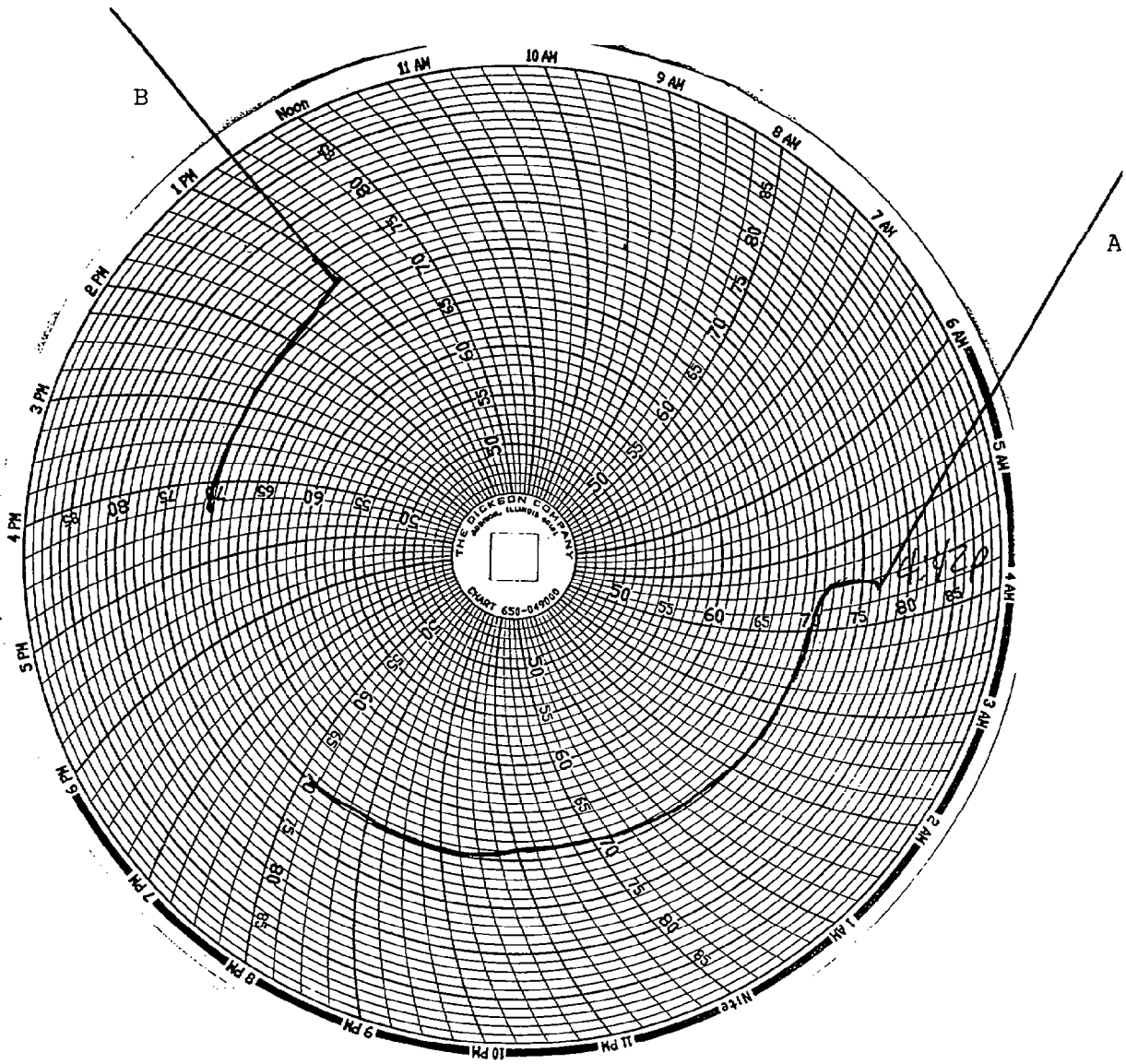
Inspected By: Tim Michnay

Date: February 24, 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	Arm foam damaged on impact side--Replaced. Pelvis failed impact test--Replaced.	

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. 270

	DRIVER		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Upper Rib Y	AP1H2	Endevco	9/10/96
Lower Rib Y	AJ9C2	Endevco	9/09/96
Lower Spine Y	AP2D7	Endevco	9/10/96
Pelvis Y	ALCH7	Endevco	9/09/96
Upper Rib Redundant Y	AH0B0	Endevco	9/10/96
Lower Rib Redundant Y	AHTT2	Endevco	9/09/96
Lower Spine Redundant Y	AP1T8	Endevco	9/10/96
Pelvis Redundant Y	AJ420	Endevco	9/09/96
Head CG X	AC913	Endevco	9/09/96
Head CG Y	AH0M0	Endevco	9/09/96
Head CG Z	AH0D1	Endevco	9/06/96

INSTRUMENTS FOR PASSENGER DUMMY NO. 269

LEFT REAR PASSENGER		
	SERIAL NO.	CALIBRATION DATE
Upper Rib Y	AGTM2	Endevco 9/10/96
Lower Rib Y	ALEC1	Endevco 9/16/96
Lower Spine Y	AH1G2	Endevco 9/11/96
Pelvis Y	ALCN9	Endevco 9/10/96
Upper Rib Redundant Y	AGTB5	Endevco 9/10/96
Lower Rib Redundant Y	J10411	Endevco 9/16/96
Lower Spine Redundant Y	AM751	Endevco 9/11/96
Pelvis Redundant Y	AKAF3	Endevco 9/10/96
Head CG X	AH0C3	Endevco 9/11/96
Head CG Y	AHTN3	Endevco 9/11/96
Head CG Z	AHT12	Endevco 9/11/96

VEHICLE INSTRUMENT CALIBRATION

VEHICLE ACCELEROMETERS		
	SERIAL NO.	CALIBRATION DATE
Moving Barrier CG X	C25-A04	1/06/97
Moving Barrier CG Y	C25-A06	1/07/97
Moving Barrier CG Z	B13-Z02	7/11/96
Moving Barrier Rear Axle X	D05-R19	1/02/97
Moving Barrier Rear Axle Y	D05-R20	1/02/97
Left Mid A-Post Y	A10-G04	1/02/97
Left Lower A-Post Y	H16-X11	12/04/96
Left Mid B-Post Y	L14-D16	12/03/96
Left Lower B-Post Y	L18-E13	1/03/97
Rear Floorpan Above Axle X	L25-J11	1/09/97
Rear Floorpan Above Axle Y	F11-G02	1/09/97
Rear Floorpan Above Axle Z	G08-B02	1/09/97
Driver Seat Track Y	H07-A25	1/02/97
Right Side Sill at Front Seat X	L14-D14	1/06/97
Right Side Sill at Front Seat Y	E24-G06	1/07/97
Right Side Sill at Front Seat Z	D05-R09	1/02/97
Right Side Sill at Rear Seat X	D05-R10	1/09/97
Right Side Sill at Rear Seat Y	F12-G06	1/09/97
Right Side Sill at Rear Seat Z	F12-G04	1/09/97
Left Side Sill at Front Seat Y	F10-D04	1/07/97

VEHICLE INSTRUMENT CALIBRATION

	VEHICLE ACCELEROMETERS		
	SERIAL NO	MANUFACTURER	CALIBRATION DATE
Left Side Sill at Rear Seat Y	E10-F12	Entran	1/09/97
Right Rear Occupant Compartment Y	F11-G06	Entran	1/09/97
Vehicle CG X	E23-R11	Entran	1/09/97
Vehicle CG Y	G08-B07	Entran	1/09/97
Vehicle CG Z	E10-F19	Entran	1/09/97
Left Front Door on Centerline Y	H07-A05	Entran	1/03/97
Midrear of Left Front Door Y	L14-D08	Entran	7/03/96
Left Front Door Upper Centerline Y	E25-G11	Entran	1/08/97
Midrear of Left Rear Door Y	L18-E18	Entran	1/08/97
Left Rear Door Upper Centerline Y	J06-D17	Entran	1/03/97

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