

NEW CAR ASSESSMENT PROGRAM
SIDE IMPACT TESTING
PASSENGER CARS

1998 BUICK CENTURY
4-DOOR SEDAN
NHTSA NO: MW0112

MGA PROVING GROUNDS
5000 WARREN ROAD
BURLINGTON, WI 53105



Test Date: September 17, 1997

Report Date: September 30, 1997

FINAL REPORT

Prepared For:

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NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
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16. Abstract A 90° Moving Deformable Barrier NCAP side impact was conducted on the subject 1998 Buick Century to obtain new car assessment and research data indicant of FMVSS No. 214D performance. The test was conducted at MGA Research Corporation in Burlington, Wisconsin, on September 17, 1997. The impact velocity of the Moving Deformable Barrier (MDB) was 61.3 kph, and the ambient temperature at the struck side (driver's) of the target vehicle at the time of impact was 23 °C. The target vehicle post test maximum crush was 510 mm at level 2. The test vehicle's performance follows: <table border="0"> <thead> <tr> <th></th> <th><u>DRIVER</u></th> <th><u>PASS.</u></th> </tr> </thead> <tbody> <tr> <td>Left Upper Rib (LUR) Accel., g</td> <td>76</td> <td>82</td> </tr> <tr> <td>Left Lower Rib (LLR) Accel., g</td> <td>77</td> <td>86</td> </tr> <tr> <td>Lower Spine (T₁₂) Accel., g</td> <td>87</td> <td>88</td> </tr> <tr> <td>Thoracic Trauma Index (TTI)</td> <td>82</td> <td>87</td> </tr> <tr> <td>Pelvis (PEV) Accel., g</td> <td>129</td> <td>92</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.							<u>DRIVER</u>	<u>PASS.</u>	Left Upper Rib (LUR) Accel., g	76	82	Left Lower Rib (LLR) Accel., g	77	86	Lower Spine (T ₁₂) Accel., g	87	88	Thoracic Trauma Index (TTI)	82	87	Pelvis (PEV) Accel., g	129	92
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17. Key Words New Car Assessment Program (NCAP) FMVSS No. 214D Side Impact Dummy (SID) Occupant Side Impact Protection				18. Distribution Statement Copies of this report are available from: National Highway Traffic Safety Adm. Technical Ref. Division, Room 5108 (NAD-52) 400 Seventh Street, S.W. Washington, D.C. 20590																			
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SECTION 1
PURPOSE AND TEST PROCEDURE

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

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

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

SECTION 2

SUMMARY OF SIDE IMPACT TEST

A 1998 Buick Century 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 38.1 mph (61.3 kph). The target vehicle was stationary and was positioned at an angle of 63° to the line of forward motion. The side impact test was conducted by MGA Research Corporation in Burlington, Wisconsin, on September 17, 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)	82	87
Pelvis (g)	129	92

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

DATA SHEET NO. 1

GENERAL VEHICLE TEST PARAMETER DATA

TEST VEHICLE INFORMATION:

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

Vehicle NHTSA No.: MW0112 VIN: 2G4WS52M0W1406354

Vehicle Body Color: Green Build Date: 8-97

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 109 miles

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

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

DATA FROM TIRE PLACARD:

Tire Pressure (at capacity): 30 Psi FRONT

30 Psi REAR

Recommended Tire Size: P205/70/R15

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

Vehicle Capacity Data:

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

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

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

Vehicle Maximum Capacity Loading = 488.1 kg (A)

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

Cargo Capacity (A-B) = 79.9 kg

GENERAL VEHICLE TEST PARAMETER DATA (Cont'd)

WEIGHT OF TEST VEHICLE WITH MAXIMUM FLUIDS:

Right Front = 485.4 kg

Right Rear = 284.9 kg

Left Front = 491.2 kg

Left Rear = 271.6 kg

TOTAL FRONT = 976.6 kg

TOTAL REAR = 556.5 kg

% of Total Vehicle Weight = 64%;

% of Total Weight = 36%

TOTAL WEIGHT = 1533.1 kg

GENERAL VEHICLE TEST PARAMETER DATA (Cont'd)

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

Vehicle NHTSA No.: MW0112 Test Date: September 17, 1997

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Total Test Vehicle Delivered Weight with Maximum Fluids	=	<u>1533.1</u> kg
Cargo Carrying Capacity of Test Vehicle	=	<u>79.9</u> kg
Weight of 2 Side Impact Dummies (2 x <u>80.7</u> kg.)	=	<u>161.4</u> kg
TEST VEHICLE TARGET WEIGHT	=	<u>1774.3</u> kg

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

Right Front	=	<u>516.6</u> kg	Right Rear	=	<u>353.8</u> kg
Left Front	=	<u>528.9</u> kg	Left Rear	=	<u>367.0</u> kg
TOTAL FRONT	=	<u>1045.5</u> kg	TOTAL REAR	=	<u>720.8</u> kg
% of Total Weight	=	<u>59</u> %	% of Total Weight	=	<u>41</u> %
TOTAL TEST WEIGHT	=	<u>1766.3</u> kg			

TEST VEHICLE ATTITUDE:

CURB WEIGHT ATTITUDE:

Right Front 706 mm Left Front 712 mm Right Rear 712 mm Left Rear 712 mm

FULLY LOADED WEIGHT ATTITUDE:

Right Front 702 mm Left Front 693 mm Right Rear 681 mm Left Rear 666 mm

TEST ATTITUDE:

Right Front 695 mm Left Front 704 mm Right Rear 678 mm Left Rear 671 mm

GENERAL VEHICLE TEST PARAMETER DATA (Cont'd)

Test Vehicle Wheelbase: 2770 mm

C.G. = 1130 mm rearward of front wheel centerline

TOTAL VEHICLE LENGTH:

Right Side = 4560 mm

Centerline = 4878 mm

Left Side = 4560 mm

GENERAL VEHICLE TEST PARAMETER DATA (Cont'd)

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

Vehicle NHTSA No.: MW0112 Test Date: September 17, 1997

FRONT SEAT CUSHION PLACEMENT:

Total Length of Adjustment Travel: 240 mm

Test Position: mid position

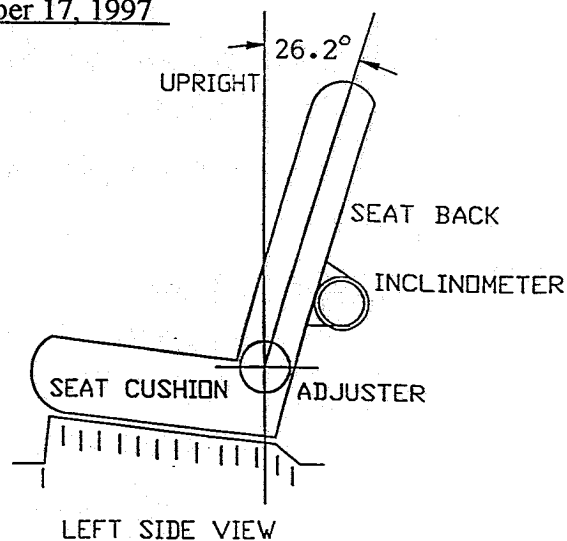
FRONT SEAT BACK ADJUSTMENT POSITION:

Seat Back Angle = 26.2°

SECOND POSITION SEAT:

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

Seat Back Adjustment Position: Non-adjustable



ADJUSTABLE STEERING COLUMN POSITION: 21.1° (mid position)

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 = 17.5 gallons

Test Volume: 16.3 gallons 93 % of capacity

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

Wheelbase: = 2770 mm

Impact Point is 445 mm rearward of front axle centerline

DATA SHEET NO. 2

TEST VEHICLE SUMMARY OF RESULTS

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

Vehicle NHTSA No.: MW0112 Test Date: September 17, 1997

Overall Length = 4878 mm; Overall Width = 1782 mm

TEST WEIGHT:

Right Front = 516.6 kg Right Rear = 353.8 kg

Left Front = 528.9 kg Left Rear = 367.0 kg

TOTAL FRONT = 1045.5 kg TOTAL REAR = 720.8 kg

% of Total Weight = 59 % % of Total Weight = 41 %

TOTAL VEHICLE WEIGHT = 1766.3 kg

Wheelbase = 2770 mm

Longitudinal C.G. from Center of Front Axle = 1130 mm

Impact Angle with Respect to Impactor = 90 ° degrees

MAXIMUM EXTERIOR STATIC CRUSH:

1. LEVEL 1 (280 mm above ground) = 355 mm

2. LEVEL 2 (492 mm above ground) = 510 mm

3. LEVEL 3 (572 mm above ground) = 418 mm

4. LEVEL 4 (915 mm above ground) = 353 mm

5. LEVEL 5 (1332 mm above ground) = 251 mm

Maximum Post-Test Intrusion = 510 mm

OCCUPANTS:

Left Front Passenger Left Rear Passenger

Type of Dummy

SID

SID

Restraints Used

type II belt

type II belt

and frontal airbag

TEST VEHICLE SUMMARY OF RESULTS (Cont'd)

INSTRUMENTATION:

Number of Vehicle Data Channels:	=	<u>24</u>
Number of Cameras: Onboard Vehicle	=	<u>3</u>
Offboard Vehicle	=	<u>4</u>
Deformable Barrier	=	<u>2</u>
TOTAL	=	<u>9</u>

DATA SHEET NO. 3

MOVING DEFORMABLE BARRIER (MDB) SUMMARY OF RESULTS

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

Vehicle NHTSA No.: MW0112 Test Date: September 17, 1997

POSITION OF IMPACT (MDB) ON MONORAIL:

Crabbed 27° to left

MDB DETAILS:

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

MDB WEIGHT:

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

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

Impact Speed = Primary: 38.1 mph (61.3 kph) Secondary: 38.4 mph (61.7 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>163</u> | mm |
| 2. | Row B Mid Stack (686 mm) | = | <u>94</u> | mm |
| 3. | Row C Top of Bumper (533 mm) | = | <u>40</u> | mm |
| 4. | Row D Center of Bumper (432 mm) | = | <u>73</u> | mm |

INSTRUMENTATION:

Number of MDB Data Channels = 7

DATA SHEET NO. 4
POST-TEST OBSERVATIONS

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

Vehicle NHTSA No.: MW0112 Test Date: September 17, 1997

VISIBLE DUMMY CONTACT POINTS:

	<u>LEFT FRONT SID</u>	<u>LEFT REAR SID</u>
Head	<u>to door panel, headrest, and</u> <u>front passenger seat back</u>	<u>to C-pillar</u> <u>to C-pillar</u>
Arm	<u>to door panel</u>	<u>to door panel</u>
Pelvis	<u>to door panel and armrest</u>	<u>to door panel and armrest</u>
Left Knee	<u>to door panel and armrest</u>	<u>to door panel and armrest</u>
Right Knee	<u>to left knee</u>	<u>to left knee</u>

DOOR OPENING:

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

MDB DISTANCE FROM TARGET IMPACT POINT:

Horizontal: 2 mm forward Vertical: 1 mm high

ARM REST LOCATIONS:

Front: 240 mm from bottom of window
Rear: 265 mm from bottom of window

POST-TEST OBSERVATIONS (Cont'd)

SEAT CRUSH:

Front Seat Back: 185 mm Front Seat Cushion: 152 mm
Left Rear Seat Back: 297 mm Rear Seat Cushion: 243 mm

GLAZING DAMAGE:

Windshield cracked, front and rear left side door glass broken

PILLAR PERFORMANCE:

No failure noted

SILL SEPARATION:

None noted

AIRBAG DEPLOYMENT STATUS:

	<u>DRIVER</u>	<u>REAR PASSENGER</u>
Frontal:	<u>No</u>	<u>No</u>
Side:	<u>None</u>	<u>None</u>

OTHER NOTABLE IMPACT EFFECTS:

Frontal airbags did not deploy

SECTION 4
OCCUPANT AND VEHICLE INFORMATION

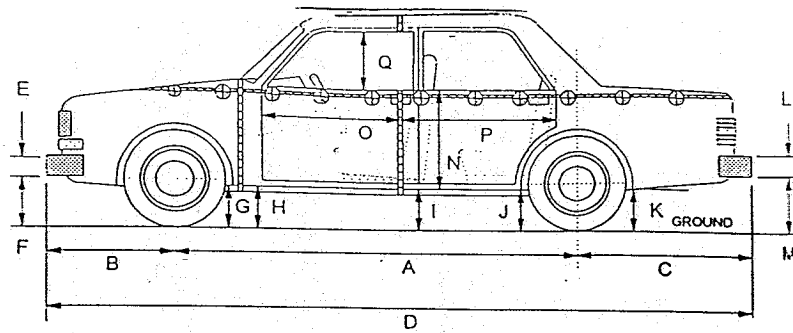
DATA SHEET NO. 5
SIDE IMPACT DUMMY (SID) INSTRUMENTATION DATA

Year/Make/Model/Body Style: 1998/Buick/Century/4-Door
Vehicle NHTSA No.: MW0112 Test Date: September 17, 1997

	Front Dummy ID # 269			Rear Dummy ID # 270		
	Pos. Direct.		Neg. Direct	Pos. Direct.		Neg. Direct
	Max (g)	Time (msec)	Max (g)	Max (g)	Time (msec)	Max (g)
RIB ACCELERATIONS						
Left Upper Rib (LUR) Y	76	40	-23	82	42	-8
Left Lower Rib (LLR) Y	77	40	-25	86	42	-30
SPINE ACCELERATIONS						
Lower Lateral Y	87	39	-28	88	42	-56
PELVIS ACCELERATIONS						
Lateral Y	129	33	-21	92	37	-31

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

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



LEFT SIDE VIEW

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)

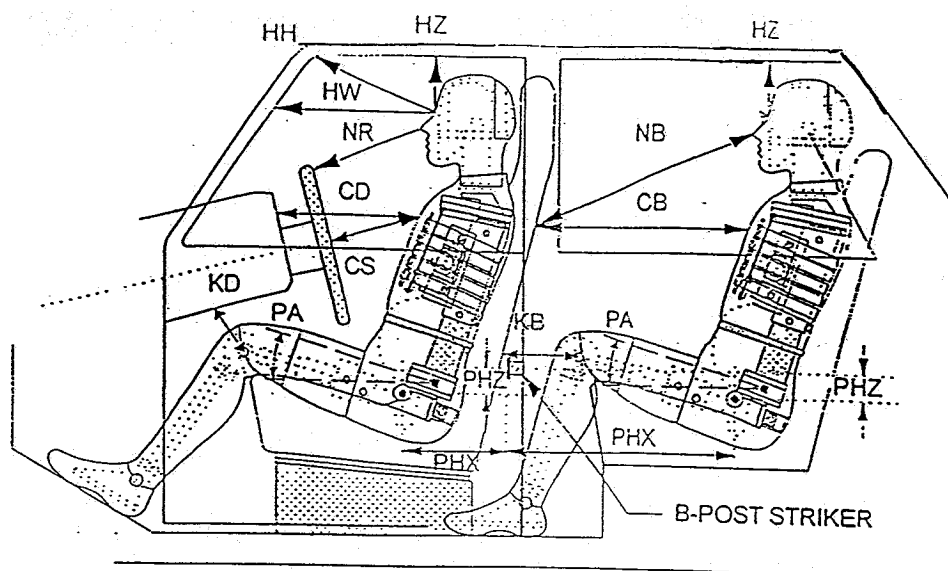
	PRE-TEST	POST-TEST	Δ CHANGE
A	2770	2700	-70
B	1056	1060	4
C	1052	1085	33
D	4878	4845	-33
E	155	155	0
F	372	400	28
G	170	154	-16
H	164	208	44
I	160	200	40
J1/J2	150/152	160/164	10/12
K	214	227	13
L	220	220	0
M	382	390	8
N	648	600	-48
O	806	780	-26
P	1158	1093	-65
Q	442	425	-17
R	4560	4558	-2
S	4560	4485	-75
T	1782	1484	-298

DATA SHEET NO. 7

SIDE IMPACT DUMMY (SID) LONGITUDINAL CLEARANCE DIMENSIONS

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

NHTSA NO.: MW0112 Test Date: September 17, 1997



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

	DRIVER SID ID #269
HH	403
HW	708
HZ	182
NR	446
CD	544
CS	330
KDL(KDA°)	155 (25.7°)
KDR(KDA°)	160 (28.7°)
PA°	23.8°
PHX	152
PHZ	122

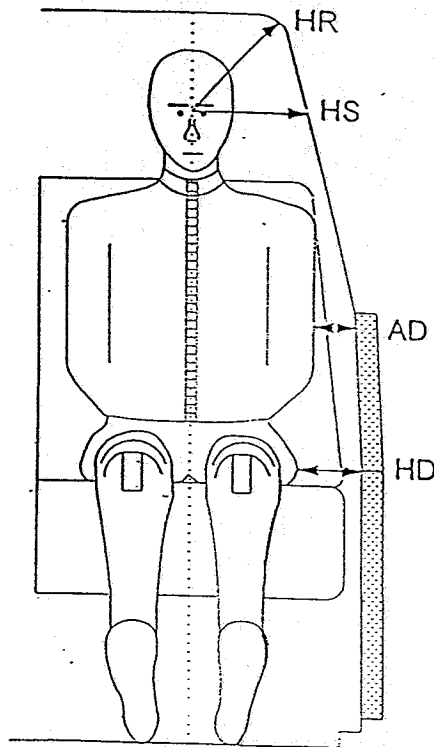
	LEFT REAR PASSENGER SID ID #270
HZ	155
NB	611
CB	522
KBL (KBA)	211 (0.0°)
KBR (KBA)	205 (0.0°)
PA°	24.5°
PHX	249
PHZ	324

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

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

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

NHTSA NO.: MW0112 Test Date: September 17, 1997



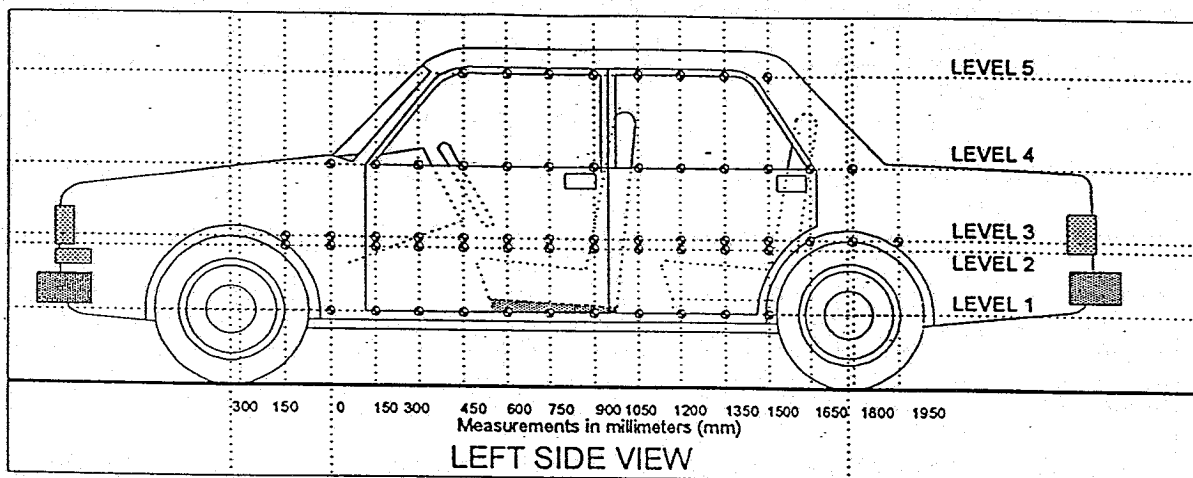
NOTE: All dimensions are in mm

	DRIVER SID ID #269	LEFT REAR PASSENGER SID ID #270
HR	211	214
HS	323	341
AD	125	123
HD	154	160

DATA SHEET NO. 9
VEHICLE SIDE MEASUREMENTS

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

NHTSA NO.: MW0112 Test Date: September 17, 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>492</u> mm
Level 3 @ Mid Door	= <u>572</u> mm
Level 4 @ Window Sill	= <u>915</u> mm
Level 5 @ Window Top	= <u>1332</u> mm

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES

Longitudinal Distance (mm)	Level 1 - Axle Centerline		
	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
-1800			
-1650			
-1500			
-1350			
-1200			
-1050			
-900			
-750			
-600			
-450			
-300			
-150			
0 (impact point)	722	805	83
150	720	965	245
300	717	1020	303
450	710	1058	348
600	715	1052	337
750	714	1050	336
900	710	1048	338
1050	708	1050	342
1200	708	1063	355
1350	708	1060	352
1500	705	1032	327
1650	705	1002	297
1800	705	1035	330

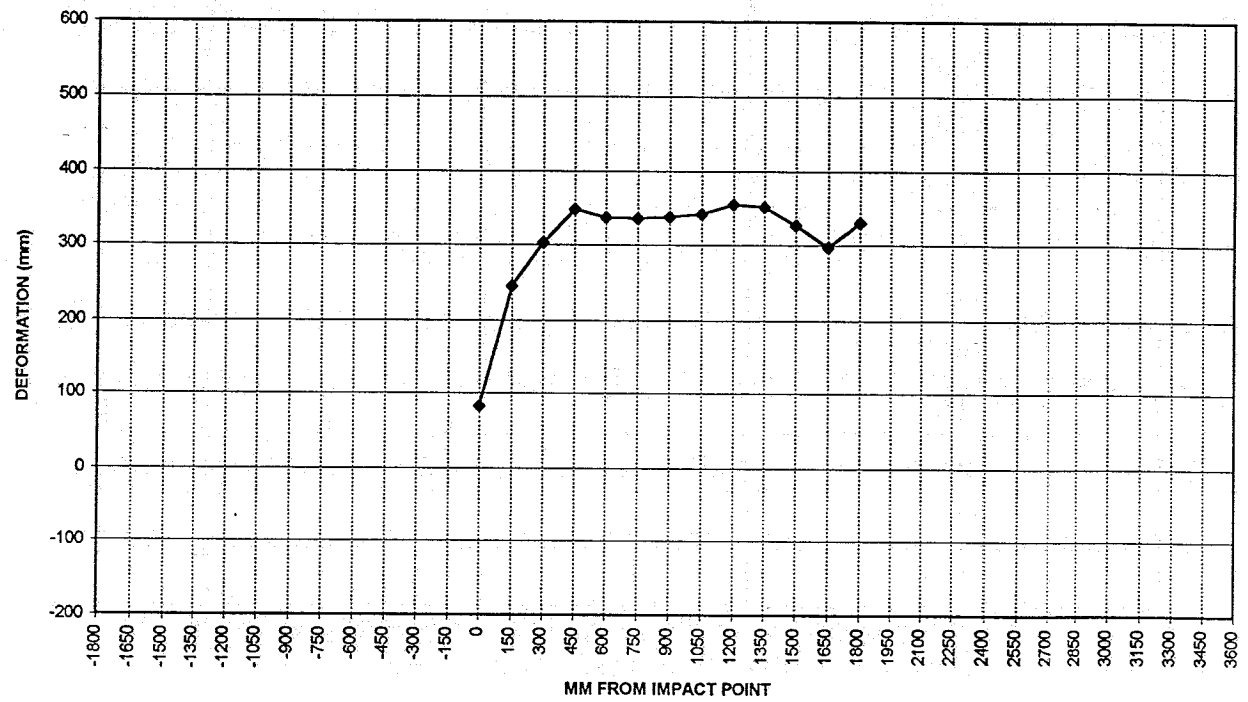
Reference plane is parallel to test vehicle longitudinal centerline.
Given dimensions = Reference plane to car body

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES

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

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

VEHICLE EXTERIOR STATIC CRUSH



LEVEL 1 - AXLE CENTERLINE

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES

Longitudinal Distance (mm)	Level 2 - Occupant H-Point		
	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
-1800			
-1650			
-1500			
-1350			
-1200	725	744	19
-1050	685	708	23
-900	661	691	30
-750			
-600			
-450			
-300			
-150			
0 (impact point)	640	730	90
150	643	1022	379
300	643	1082	439
450	644	1115	471
600	644	1123	479
750	643	1128	485
900	643	1133	490
1050	642	1125	483
1200	638	1138	500
1350	638	1148	510
1500	635	1138	503
1650	632	1116	484
1800	630	1073	443

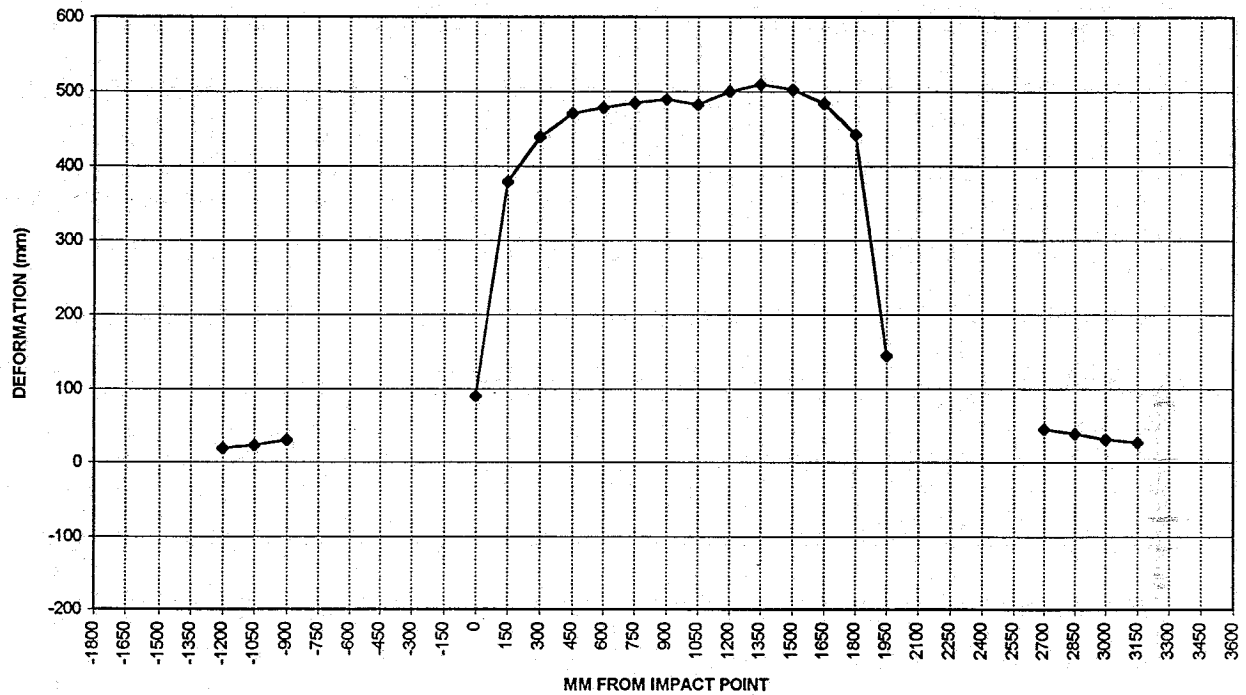
Reference plane is parallel to test vehicle longitudinal centerline.
Given dimensions = Reference plane to car body

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES

	Level 2 - Occupant H-Point		
Longitudinal Distance (mm)	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
1950	625	769	144
2100			
2250			
2400			
2550			
2700	660	705	45
2850	680	719	39
3000	705	736	31
3150	737	764	27
3300			
3450			
3600			

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

VEHICLE EXTERIOR STATIC CRUSH



LEVEL 2 - OCCUPANT H-POINT

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES

	Level 3 - Mid-Door		
Longitudinal Distance (mm)	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
-1800			
-1650			
-1500			
-1350			
-1200	731	745	14
-1050	687	698	11
-900	656	678	22
-750			
-600			
-450			
-300			
-150			
0 (impact point)	626	715	89
150	630	965	335
300	630	1000	370
450	631	1027	396
600	632	1033	401
750	632	1043	411
900	632	1047	415
1050	630	1048	418
1200	628	*	
1350	625	*	
1500	622	*	
1650	620	*	
1800	618	*	

Reference plane is parallel to test vehicle longitudinal centerline.

Given dimensions = Reference plane to car body

* Trim fell off during impact.

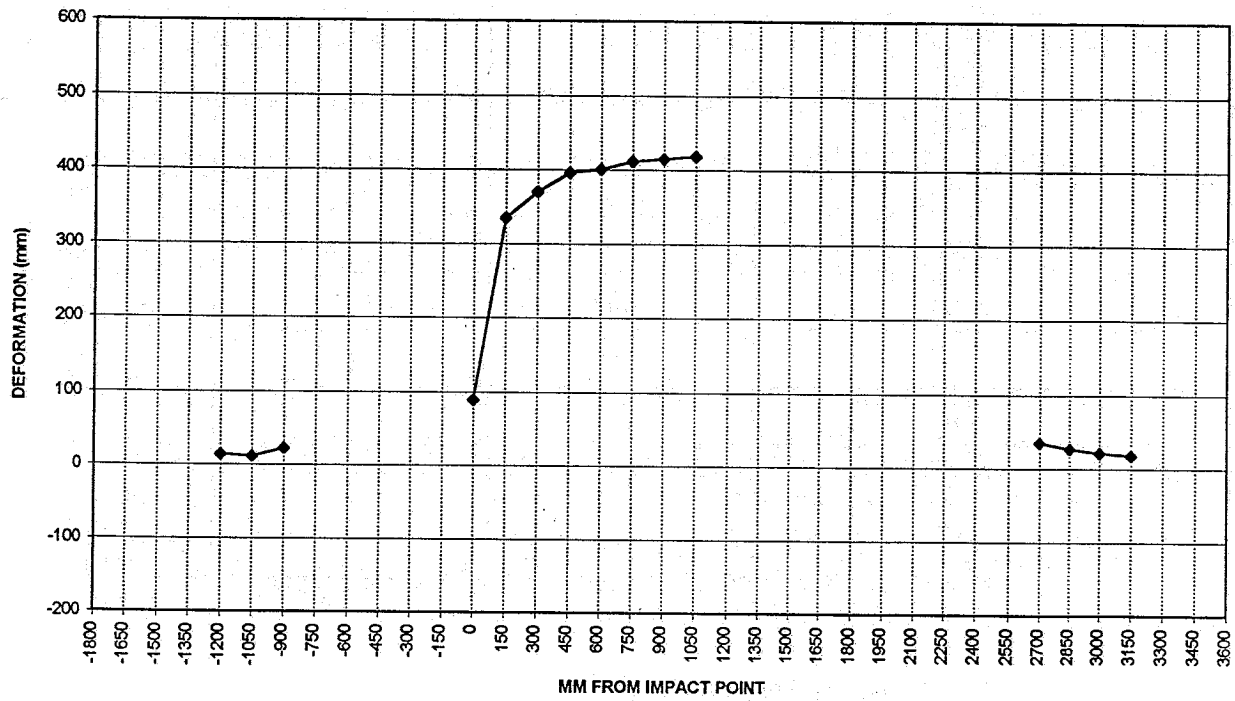
DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES

	Level 3 - Mid-Door		
Longitudinal Distance (mm)	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
1950	616	*	
2100			
2250			
2400			
2550			
2700	651	686	35
2850	677	704	27
3000	704	725	21
3150	737	755	18
3300			
3450			
3600			

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

* Trim fell off during impact.

VEHICLE EXTERIOR STATIC CRUSH



LEVEL 3 - MID-DOOR

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES

	Level 4 - Window Sill		
Longitudinal Distance (mm)	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
-1800			
-1650			
-1500			
-1350			
-1200			
-1050	764	770	6
-900	748	758	10
-750	734	756	22
-600	730	752	22
-450	722	752	30
-300	717	753	36
-150	709	753	44
0 (impact point)	710	758	48
150	708	833	125
300	708	905	197
450	705	968	263
600	707	1000	293
750	705	1009	304
900	704	1017	313
1050	702	1025	323
1200	701	1053	352
1350	700	1053	353
1500	700	1035	335
1650	700	1002	302
1800	701	972	271

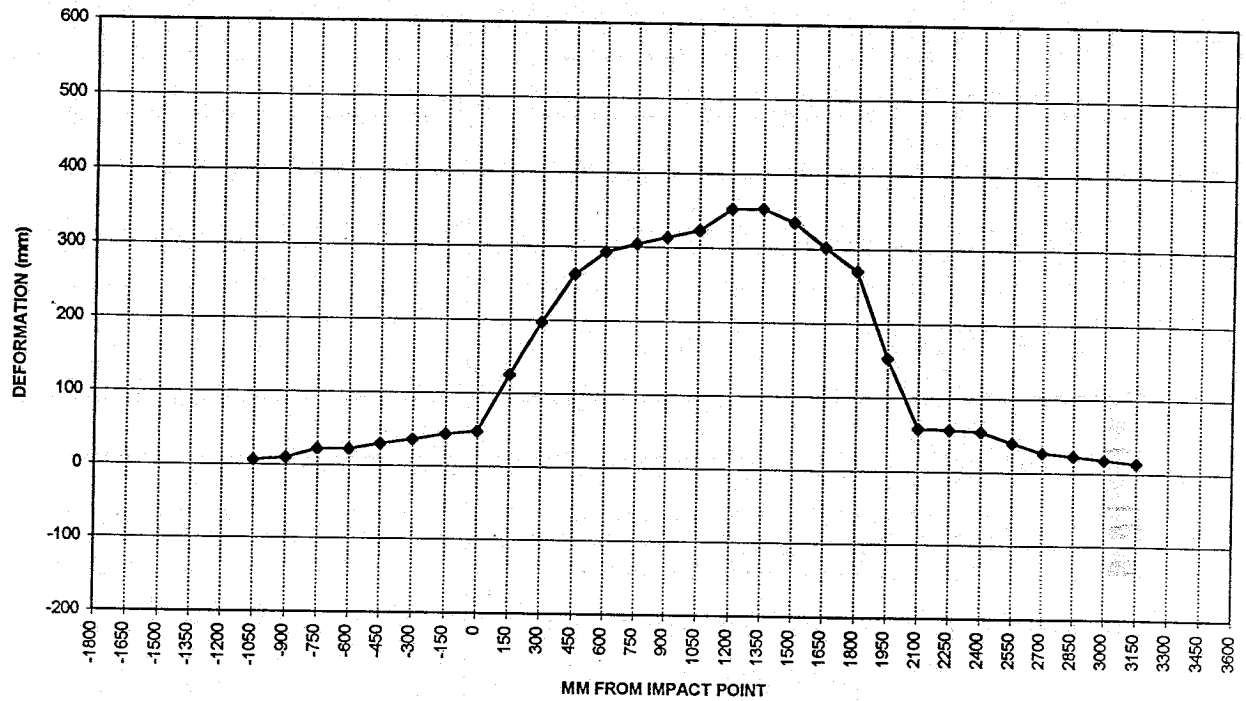
Reference plane is parallel to test vehicle longitudinal centerline.
Given dimensions = Reference plane to car body

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES

	Level 4 - Window Sill		
Longitudinal Distance (mm)	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
1950	704	857	153
2100	706	764	58
2250	710	767	57
2400	720	775	55
2550	730	770	40
2700	746	773	27
2850	767	790	23
3000	792	810	18
3150	823	837	14
3300			
3450			
3600			

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

VEHICLE EXTERIOR STATIC CRUSH



LEVEL 4 - WINDOW SILL

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES

	Level 5 - Window Top		
Longitudinal Distance (mm)	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
-1800			
-1650			
-1500			
-1350			
-1200			
-1050			
-900			
-750			
-600			
-450			
-300			
-150			
0 (impact point)			
150			
300			
450			
600			
750	960	1048	88
900	964	1072	108
1050	968	1107	139
1200	972	1223	251
1350	977	1097	120
1500	974	1069	95
1650	972	1045	73
1800	970	1033	63

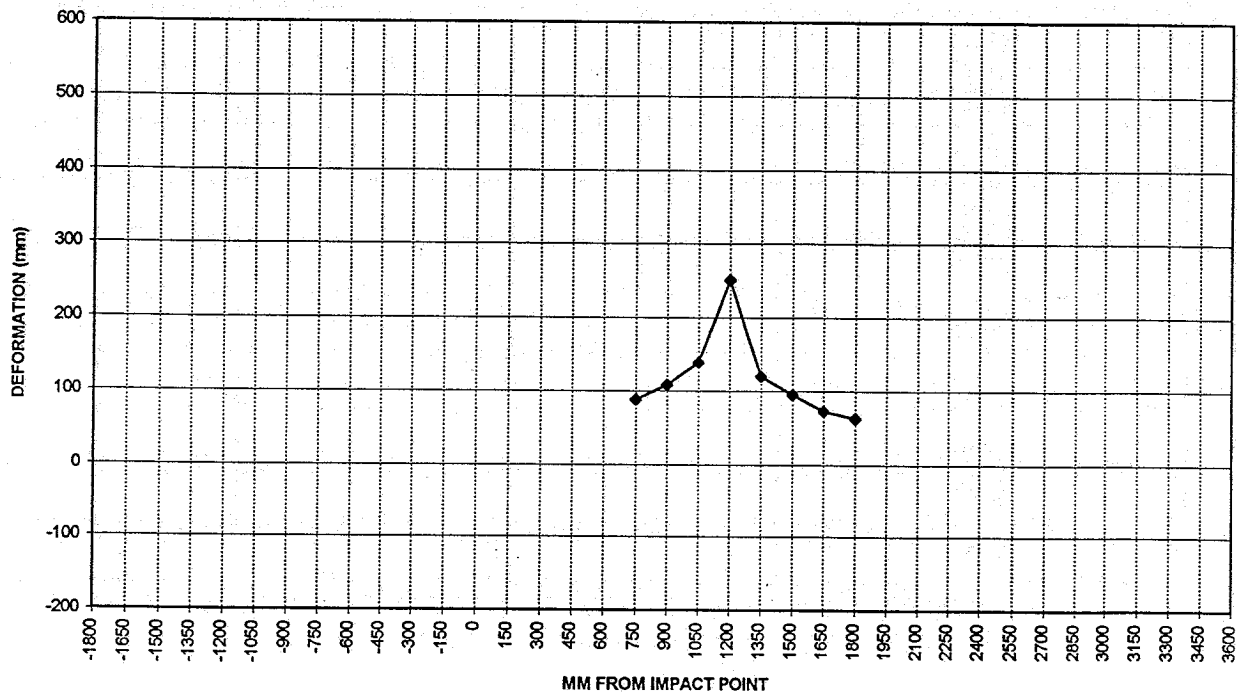
Reference plane is parallel to test vehicle longitudinal centerline.
 Given dimensions = Reference plane to car body

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES

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

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

VEHICLE EXTERIOR STATIC CRUSH



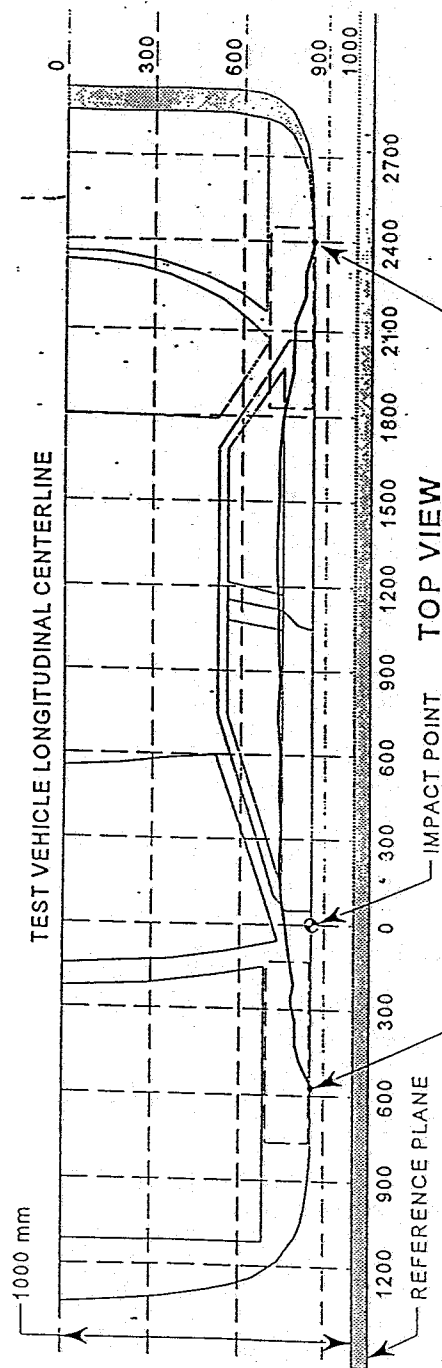
LEVEL 5 - WINDOW TOP

DATA SHEET NO. 11

VEHICLE DAMAGE PROFILE DISTANCES

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

NHTSA NO.: MW0112 Test Date: September 17, 1997



MEASUREMENT CONVENTIONS:
 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 = <u>-1200</u> mm)	744	725	19
2. 0 mm	724	640	84
3. 540 mm	1111	644	467
4. 1410 mm	1140	637	503
5. 1950 mm	758	625	133
6. (LR = <u>3150</u> mm)	750	737	13

DATA SHEET NO. 12

EXTERIOR STATIC CRUSH FOR SIDE IMPACTOR

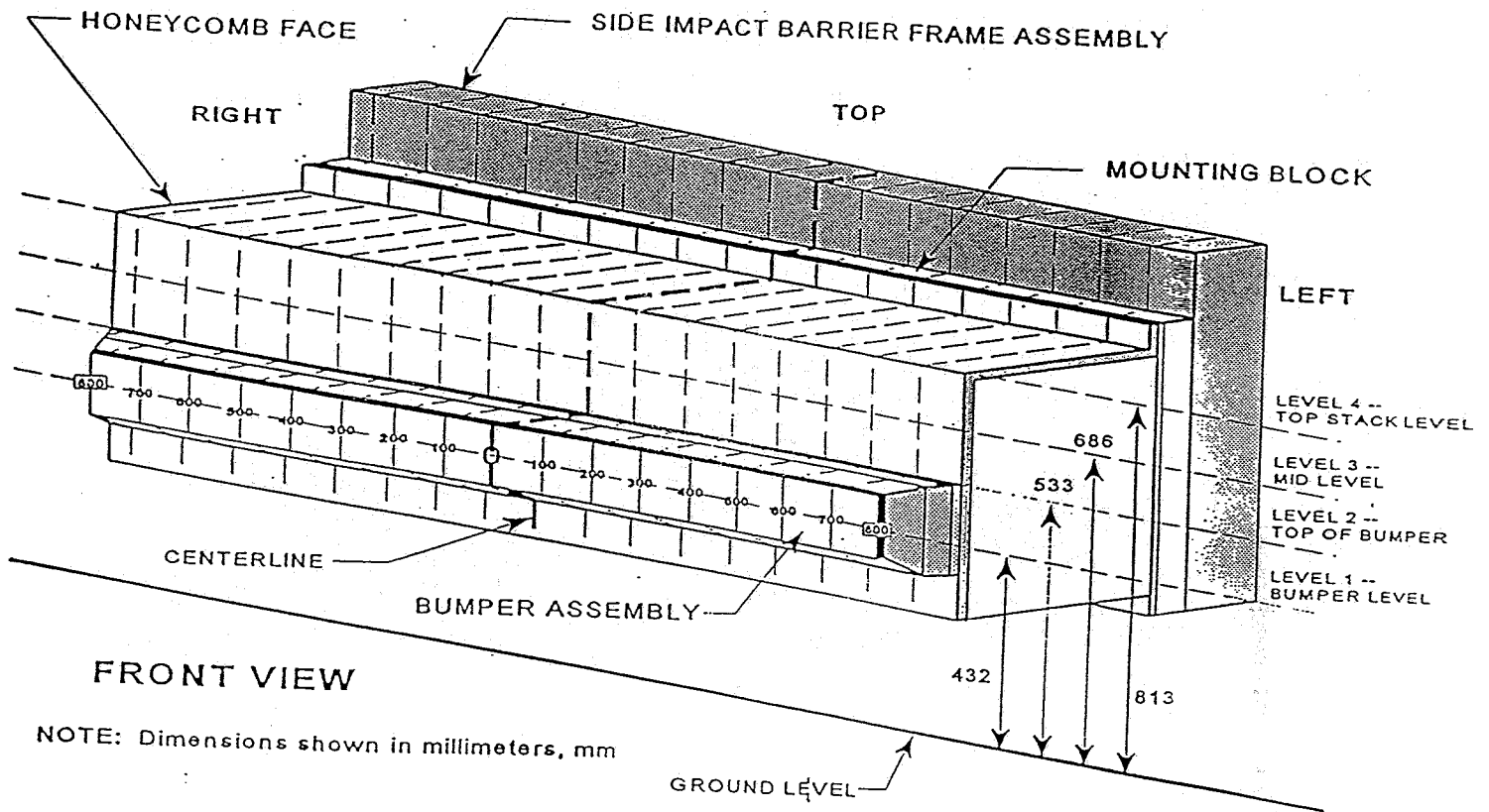
Year/Make/Model/Body Style: 1998/Buick/Century/4-Door

Vehicle NHTSA No.: MW0112 Test Date: September 17, 1997

		Distance Right of Center (mm)										Distance Left of Center (mm)							
Location	Height at CL	800	700	600	500	400	300	200	100	0	100	200	300	400	500	600	700	800	
Top Stack Level 4	813 mm	89	46	19	0	-1	1	3	10	9	9	9	11	13	25	60	106	163	
Mid Level Level 3	686 mm	46	13	-2	-3	-3	-2	-2	6	3	-2	-2	-2	1	2	6	34	94	
Top Bumper Level 2	533 mm	37	19	2	-1	2	3	4	1	-3	2	4	5	7	7	10	22	40	
Mid Bumper Level 1	432 mm	48	30	14	5	7	17	18	19	11	6	6	9	11	12	18	41	73	

See next page for Barrier Face Graphic

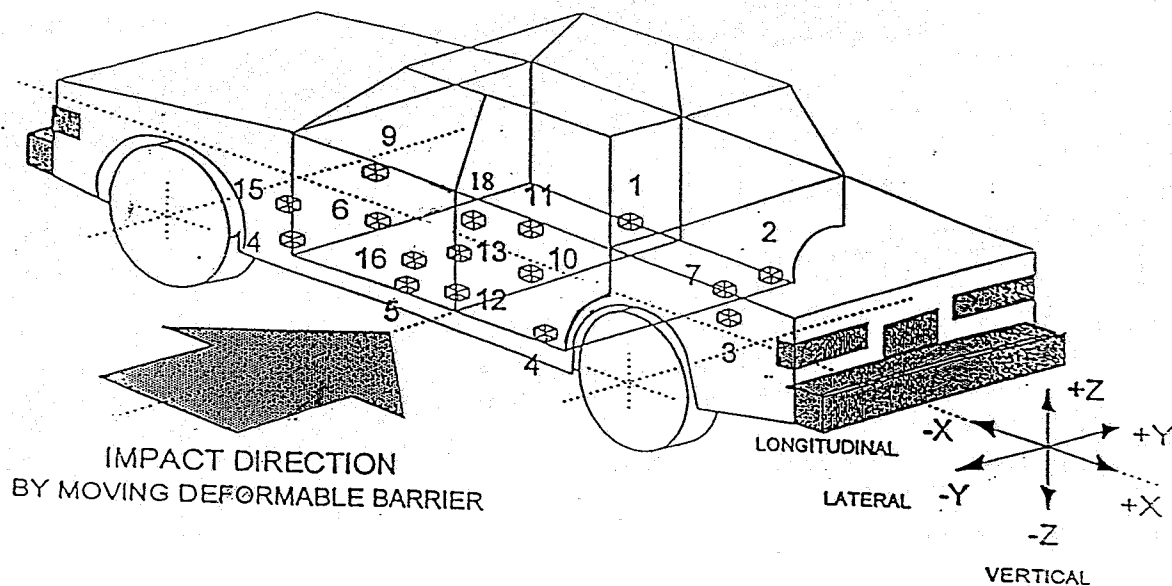
DATA SHEET NO. 12 (Cont'd)



DATA SHEET 13
TEST VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

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

Vehicle NHTSA No.: MW0112 Test Date: September 17, 1997



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

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

DATA SHEET NO. 13

TEST VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

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

Vehicle NHTSA No.: MW0112 Test Date: September 17, 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	2511	724	181	3	-4	19	-3	4	-4	19
2	Rt. Side Sill @ Rear Seat	1619	722	188	3	-4	22	-5	4	-9	22
3	Rear Floorpan Above Axle	1200	0	478	4	-6	15	-2	12	-8	17
4	Left Side Sill @ Rr. Seat	1602	-722	195	---	---	44	-17	---	---	---
5	Left Side Sill @ Frt. Seat	2512	-725	190	---	---	43	-10	---	---	---
6	Left Front Door on Centerline	2718	-760	495	---	---	489	-245	---	---	---
7	Right Rear Occupant Compartment	1982	355	308	---	---	17	-3	---	---	---
9	Left Front Door Upper Centerline	2739	-751	860	---	---	149	-125	---	---	---
10	Midrear of Left Rear Door	1920	-762	560	---	---	326	-257	---	---	---
11	Left Rear Door Upper Centerline	1847	-733	947	---	---	99	-46	---	---	---
12	Left Lower B-Post	2302	-709	338	---	---	151	-35	---	---	---
13	Left Mid B-Post	2257	-723	798	---	---	189	-21	---	---	---
14	Left Lower A-Post	3352	-717	335	---	---	100	-25	---	---	---
15	Left Mid A-Post	3341	-753	850	---	---	41	-3	---	---	---
16	Driver Left Seat Track	2422	-620	220	---	---	48	-18	---	---	---
18	Vehicle CG	2732	0	320	2	-6	20	-3	9	-7	20

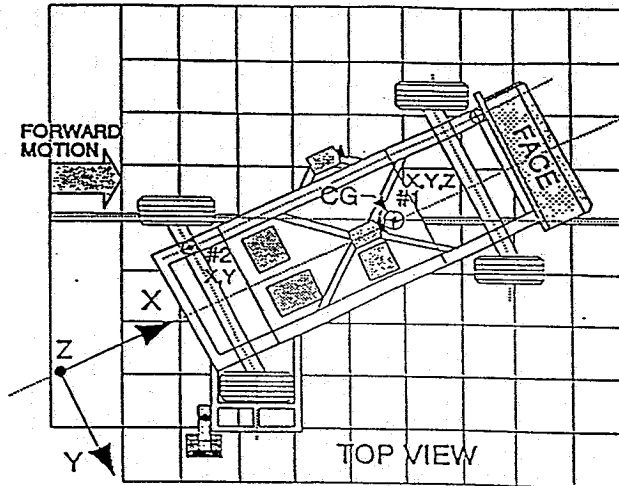
*Reference: X - Rear Bumper (+ Forward)
Y - Vehicle Centerline (+ To right)
Z - Ground Level (+ Up)

DATA SHEET NO. 14

MOVING DEFORMABLE BARRIER (MDB) ACCELEROMETER LOCATIONS AND DATA SUMMARY

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

Vehicle NHTSA No.: MW0112 Test Date: September 17, 1997

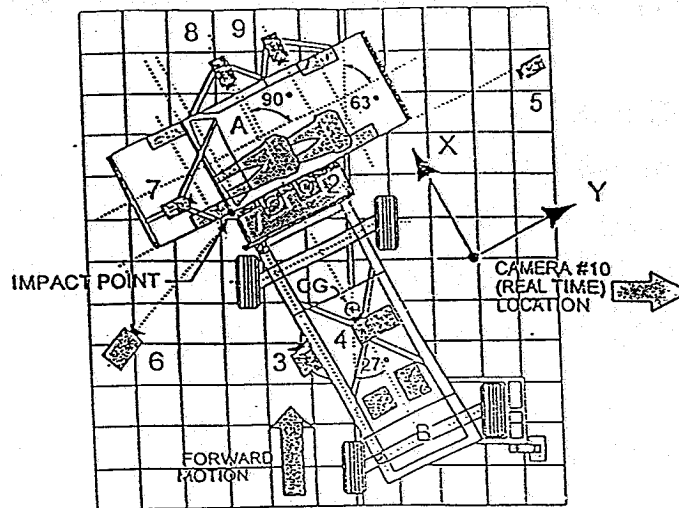


Accel. No.	Description	Coordinates (mm)*			(+) Positive		(-) Negative	
		X	Y	Z	Max. (g)	Time (msec)	Max. (g)	Time (msec)
1	MDB Center of Gravity	-1092	0	483				
	Longitudinal (X)	---	---	---	2	167	-17	34
	Lateral (Y)	---	---	---	4	59	-7	27
	Vertical (Z)	---	---	---	19	61	-17	27
	Resultant (R)	---	---	---	23	36	---	---
2	Rear Frame Member	-2591	-625	622				
	Longitudinal (X)	---	---	---	2	148	-21	32
	Lateral (Y)	---	---	---	4	27	-1	180

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

DATA SHEET NO. 15
HIGH SPEED CAMERA LOCATIONS AND DATA

Year/Make/Model/Body Style: 1998/Buick/Century/4-Door
 Vehicle NHTSA No.: MW0112 Test Date: September 17, 1997



Camera No.	View	Coordinates (mm)*			Angle	Lens (mm)	Film Speed (fps)
		X	Y	Z			
	Real Time						
6	Left Impact	-460	-2670	1640		13	1005
8	Onboard Hood					13	1010
9	Onboard Front Occupant					8	905
7	Onboard Rear Occupant					8	1070
5	Right Impact	-840	10270	1680		25	1020
1	Top Overall	0	-1330	5000		8	1042
2	Top Impact	-290	30	5000		13	939
4	Cart Overall					13	913
3	Cart Impact					35	1005

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

DATA SHEET 16
FUEL SYSTEM INTEGRITY POST IMPACT TEST DATA

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

Vehicle NHTSA No.: MW0112 Test Date: September 17, 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 38.1 mph (61.3 kph)

FUEL SPILLAGE MEASUREMENT:

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

FUEL SPILLAGE LOCATION(S): None

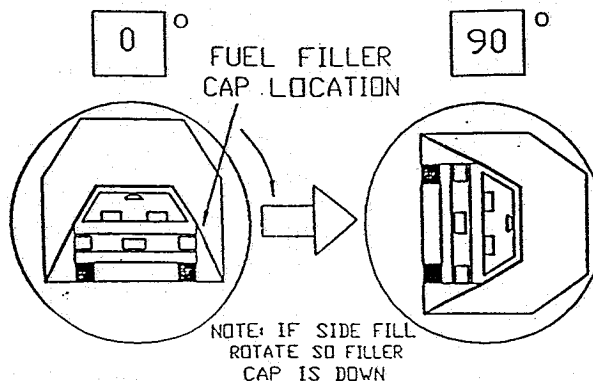
DATA SHEET 16

FMVSS 301 STATIC ROLLOVER TEST DATA

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

Vehicle NHTSA No.: MW0112 Test Date: September 17, 1997

TEST PHASE: 0° - 90°



DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time = 2 minutes 36 seconds
(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time = 5 minutes 0 seconds

TOTAL TIME = 7 minutes 36 seconds

Next Whole Minute Interval = 8 minutes

FUEL SPILLAGE MEASUREMENT:

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

FUEL SPILLAGE LOCATIONS(S): None

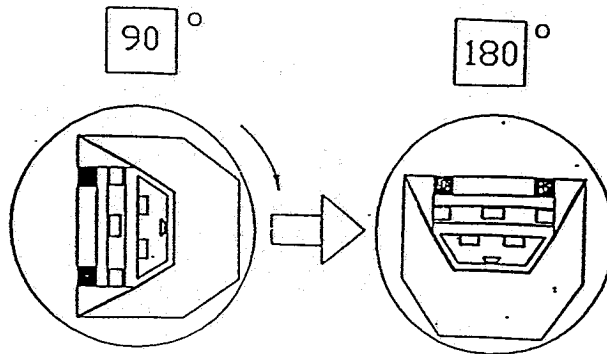
DATA SHEET 16

FMVSS 301 STATIC ROLLOVER TEST DATA (Cont'd)

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

Vehicle NHTSA No.: MW0112 Test Date: September 17, 1997

TEST PHASE: 90° - 180°



DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time = 2 minutes 33 seconds

(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time = 5 minutes 0 seconds

TOTAL TIME = 7 minutes 33 seconds

Next Whole Minute Interval = 8 minutes

FUEL SPILLAGE MEASUREMENT:

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

FUEL SPILLAGE LOCATIONS(S): None

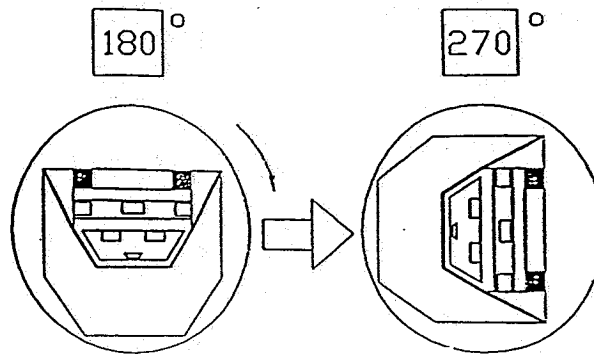
DATA SHEET 16

FMVSS 301 STATIC ROLLOVER TEST DATA (Cont'd)

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

Vehicle NHTSA No.: MW0112 Test Date: September 17, 1997

TEST PHASE: 180° - 270°



DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time = 2 minutes 14 seconds

(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time = 5 minutes 0 seconds

TOTAL TIME = 7 minutes 14 seconds

Next Whole Minute Interval = 8 minutes

FUEL SPILLAGE MEASUREMENT:

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

FUEL SPILLAGE LOCATIONS(S): None

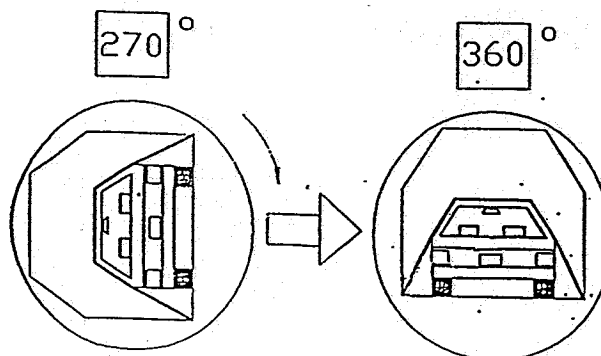
DATA SHEET 16

FMVSS 301 STATIC ROLLOVER TEST DATA

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

Vehicle NHTSA No.: MW0112 Test Date: September 17, 1997

TEST PHASE: 270° - 360°



DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time = 2 minutes 39 seconds

(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time = 5 minutes 0 seconds

TOTAL TIME = 7 minutes 39 seconds

Next Whole Minute Interval = 8 minutes

FUEL SPILLAGE MEASUREMENT:

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

FUEL SPILLAGE LOCATIONS(S): None

APPENDIX A - PHOTOGRAPHS

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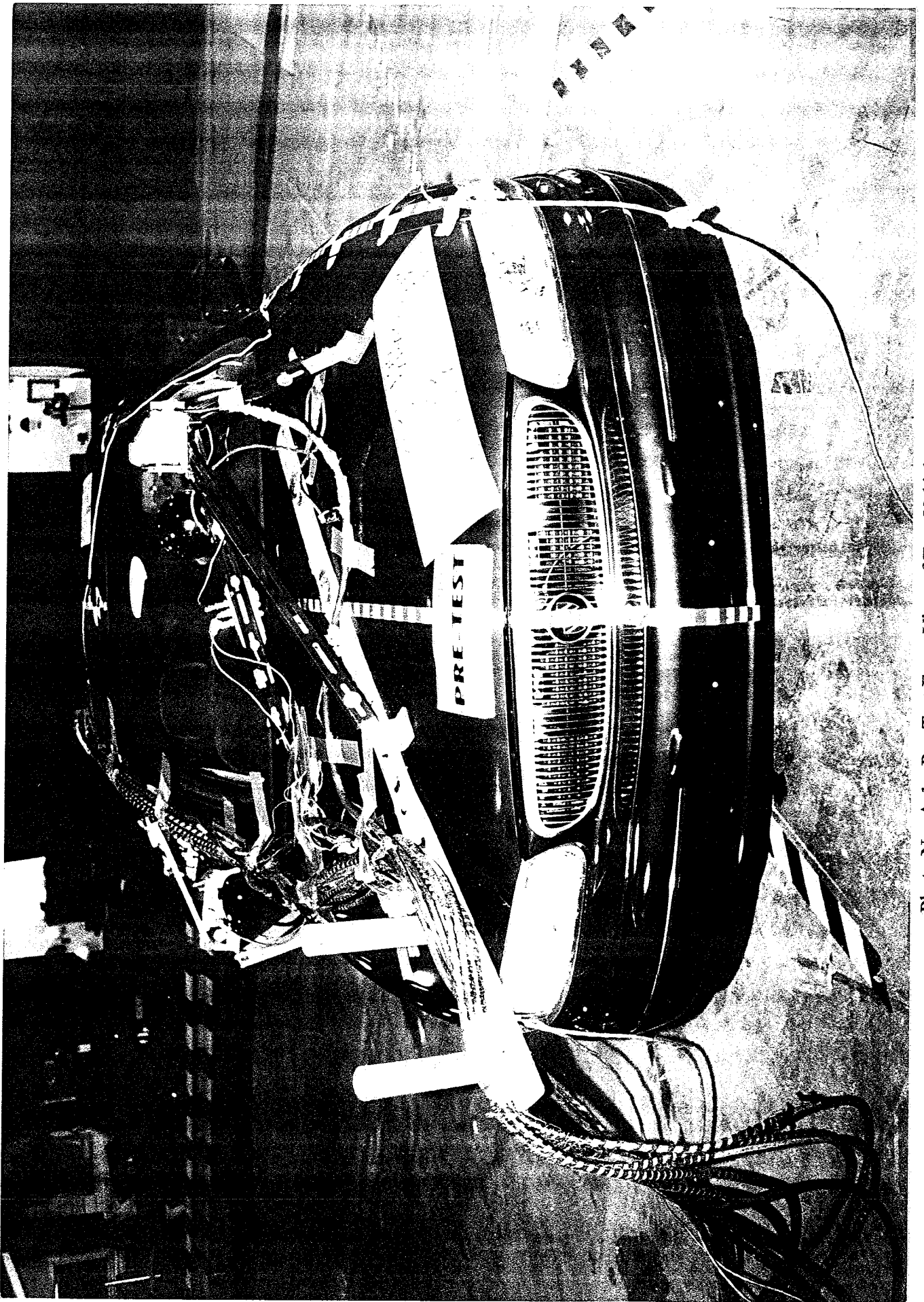


Photo No. A-1 - Pre-Test Front View of Test Vehicle

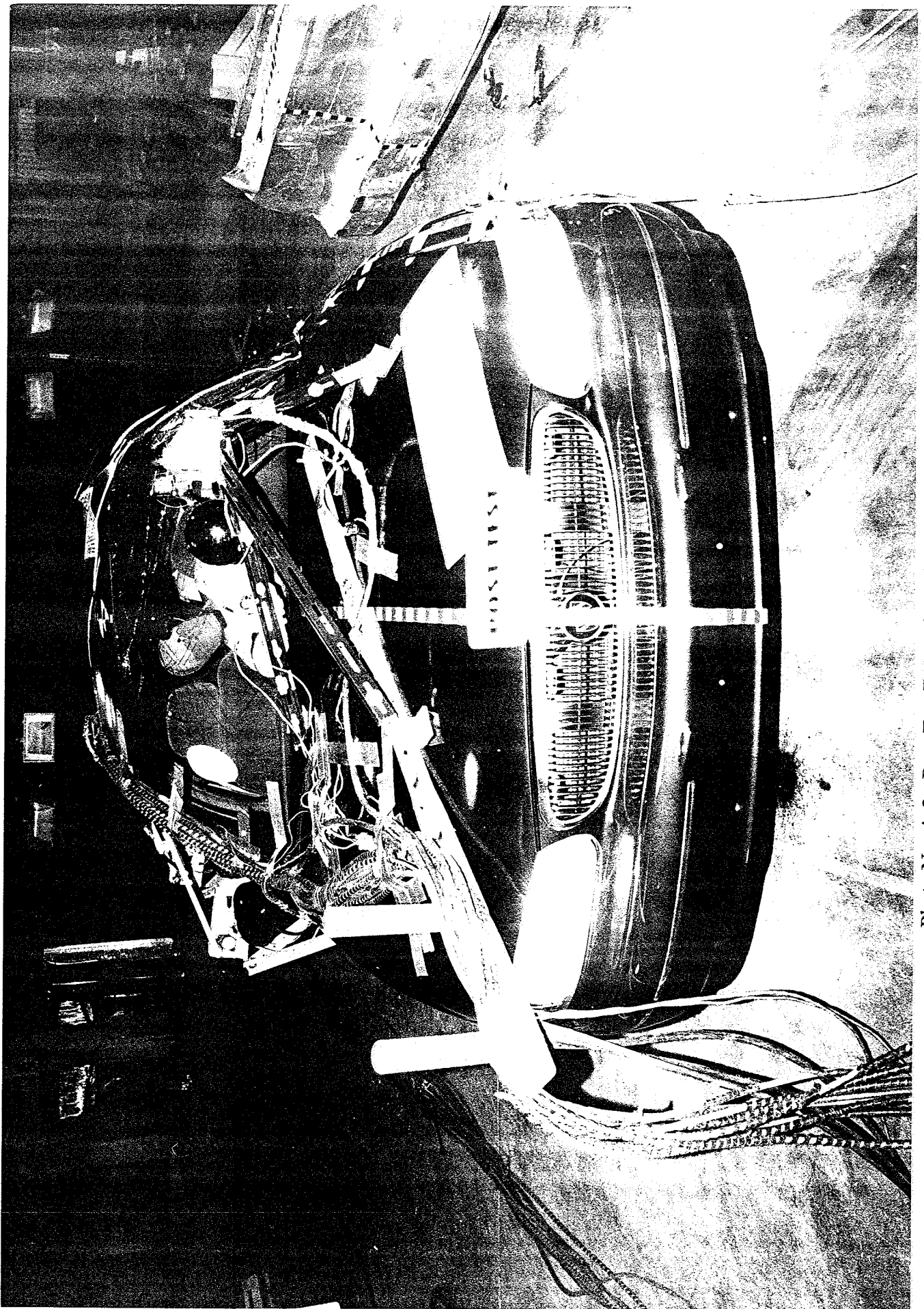


Photo No. A-2 - Post-Test Front View of Test Vehicle

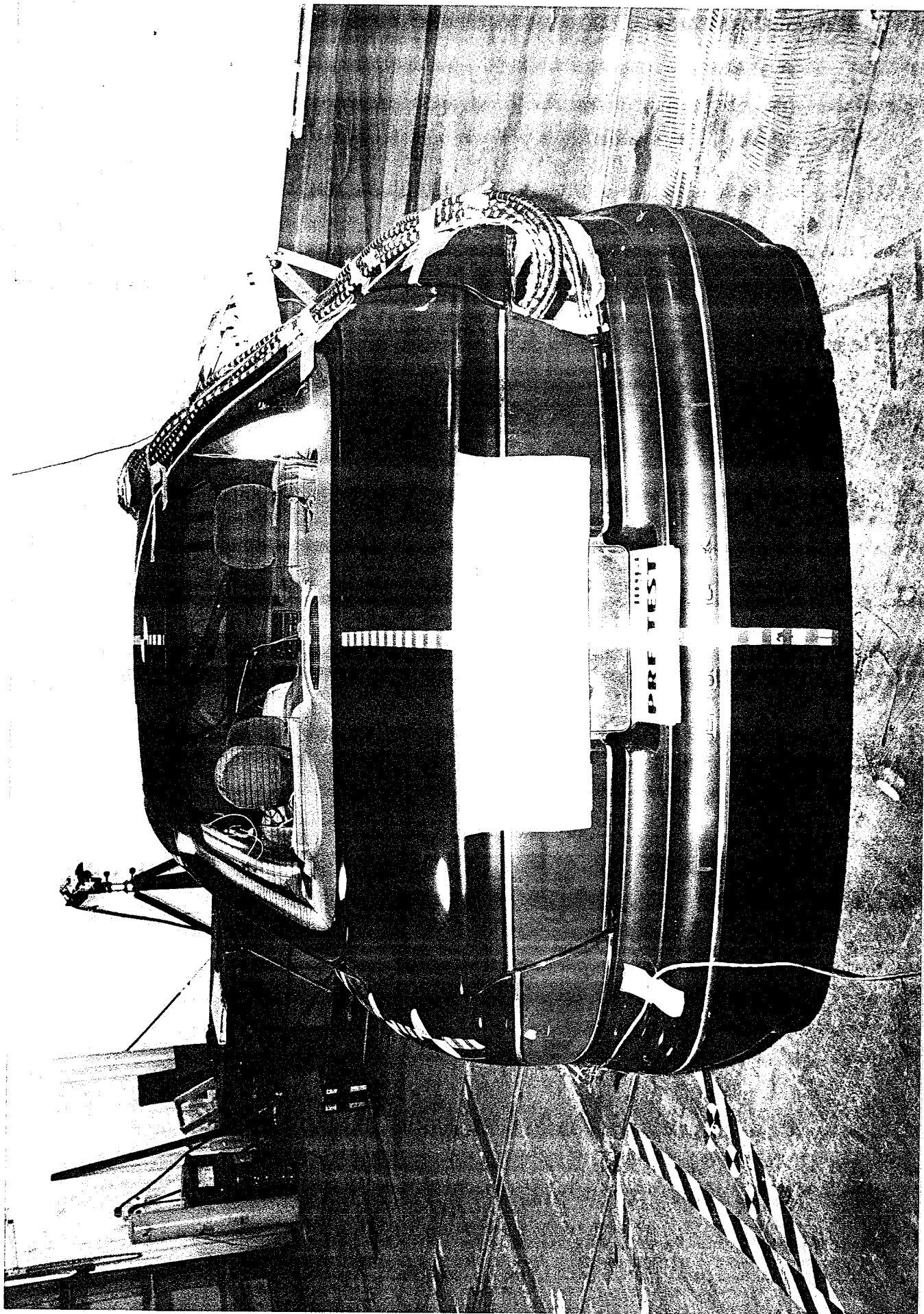


Photo No. A-3 - Pre-Test Rear View of Test Vehicle

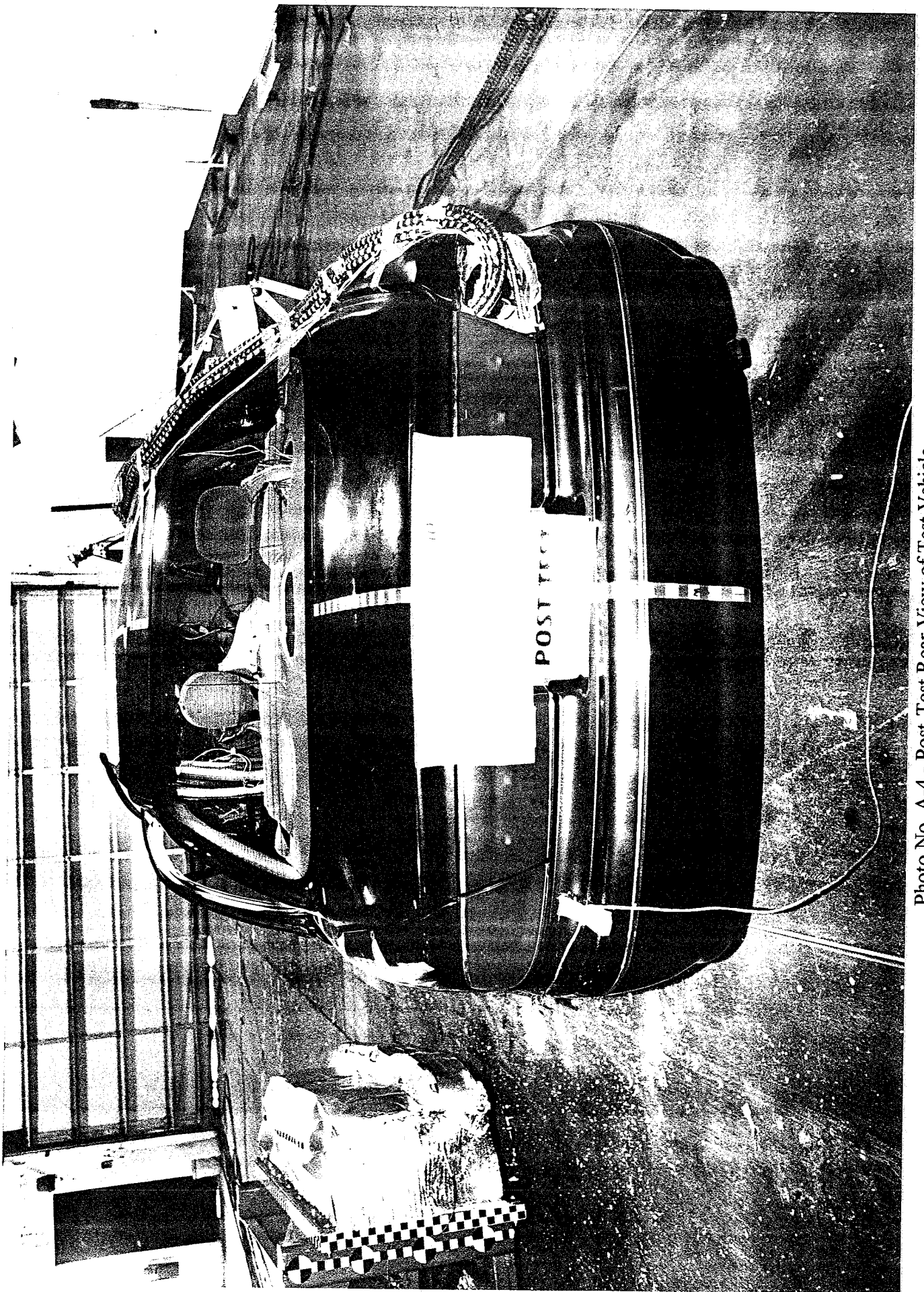
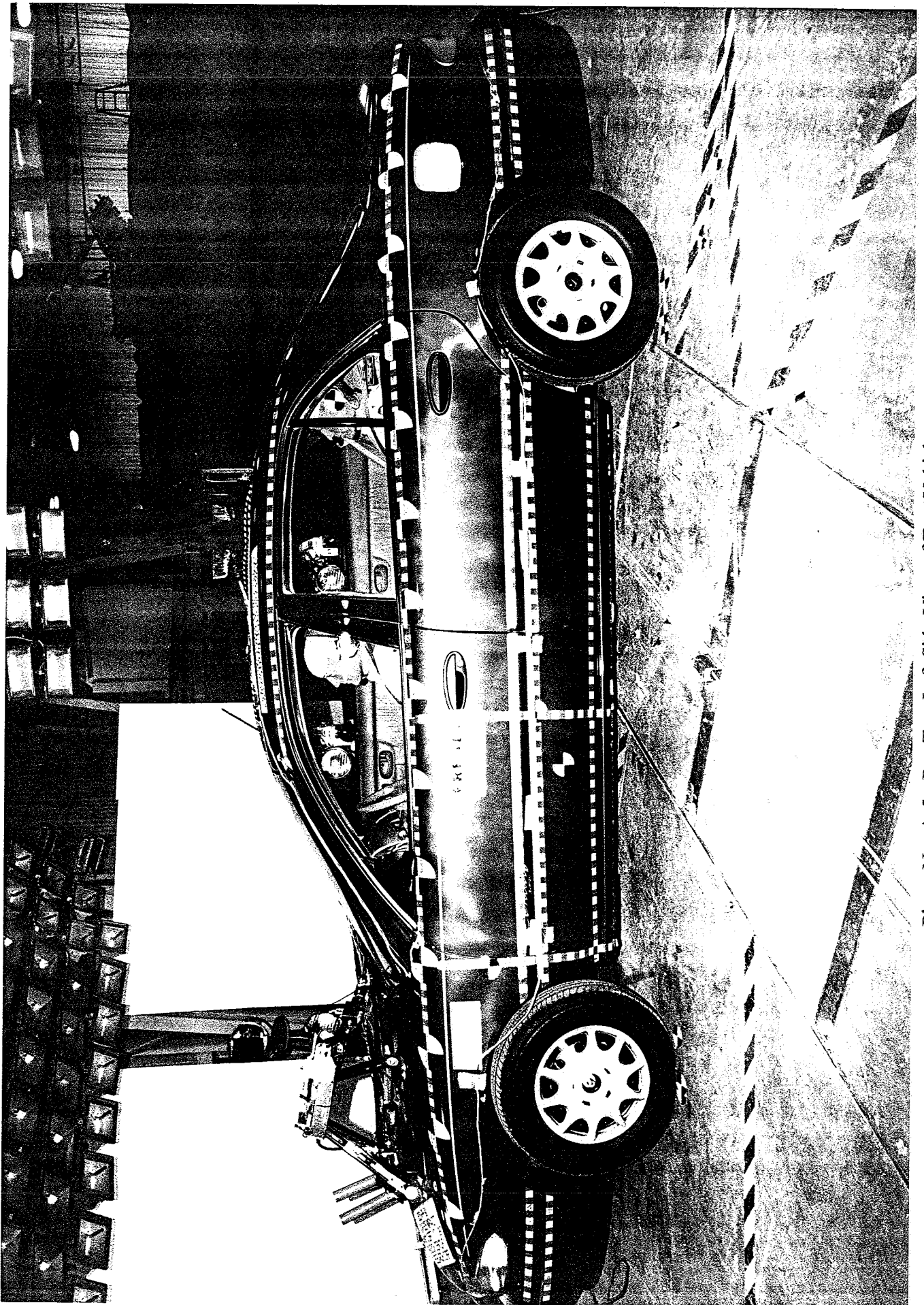


Photo No. A-4 - Post-Test Rear View of Test Vehicle



A-5

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

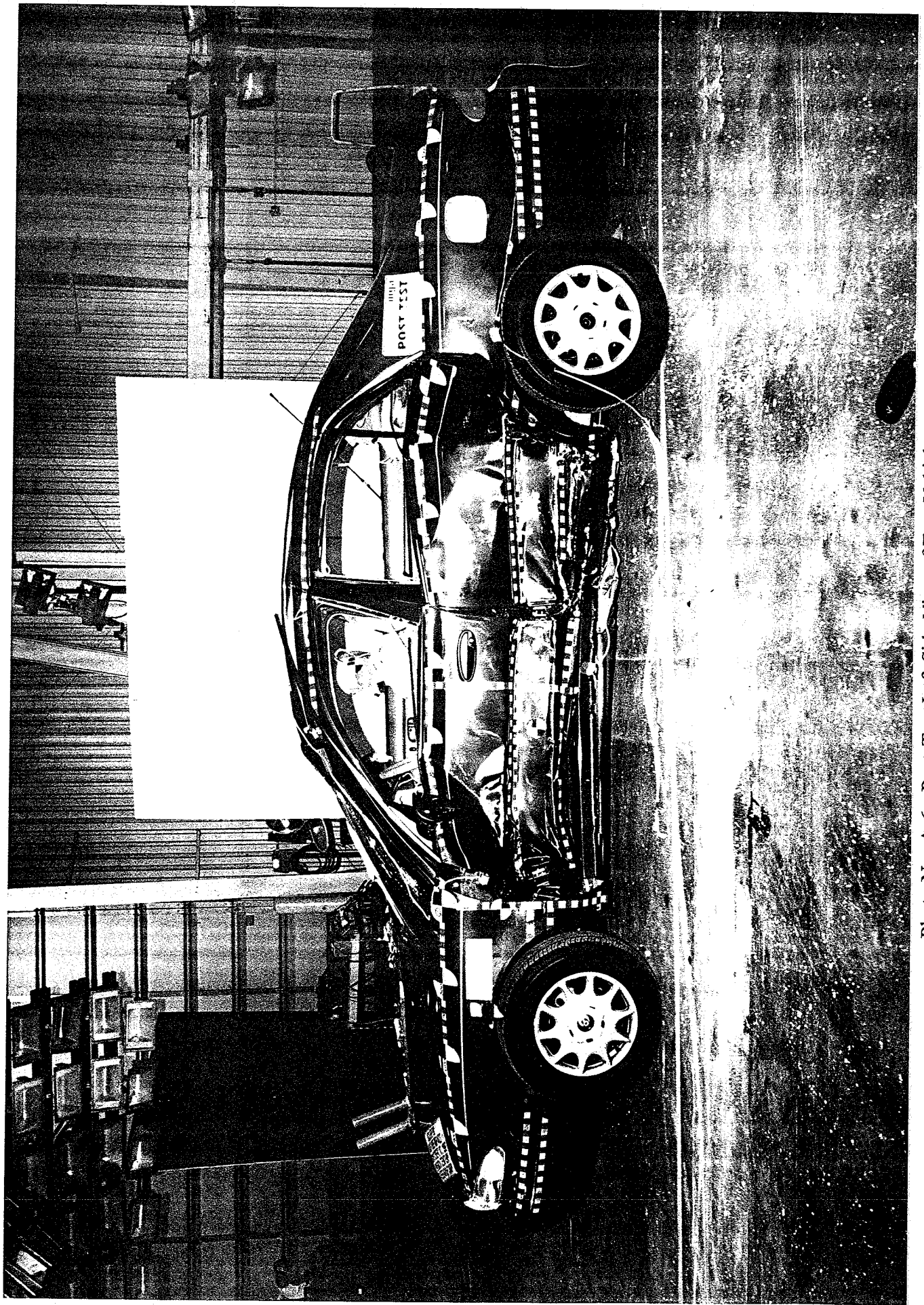


Photo No. A-6 - Post-Test Left Side View of Test Vehicle

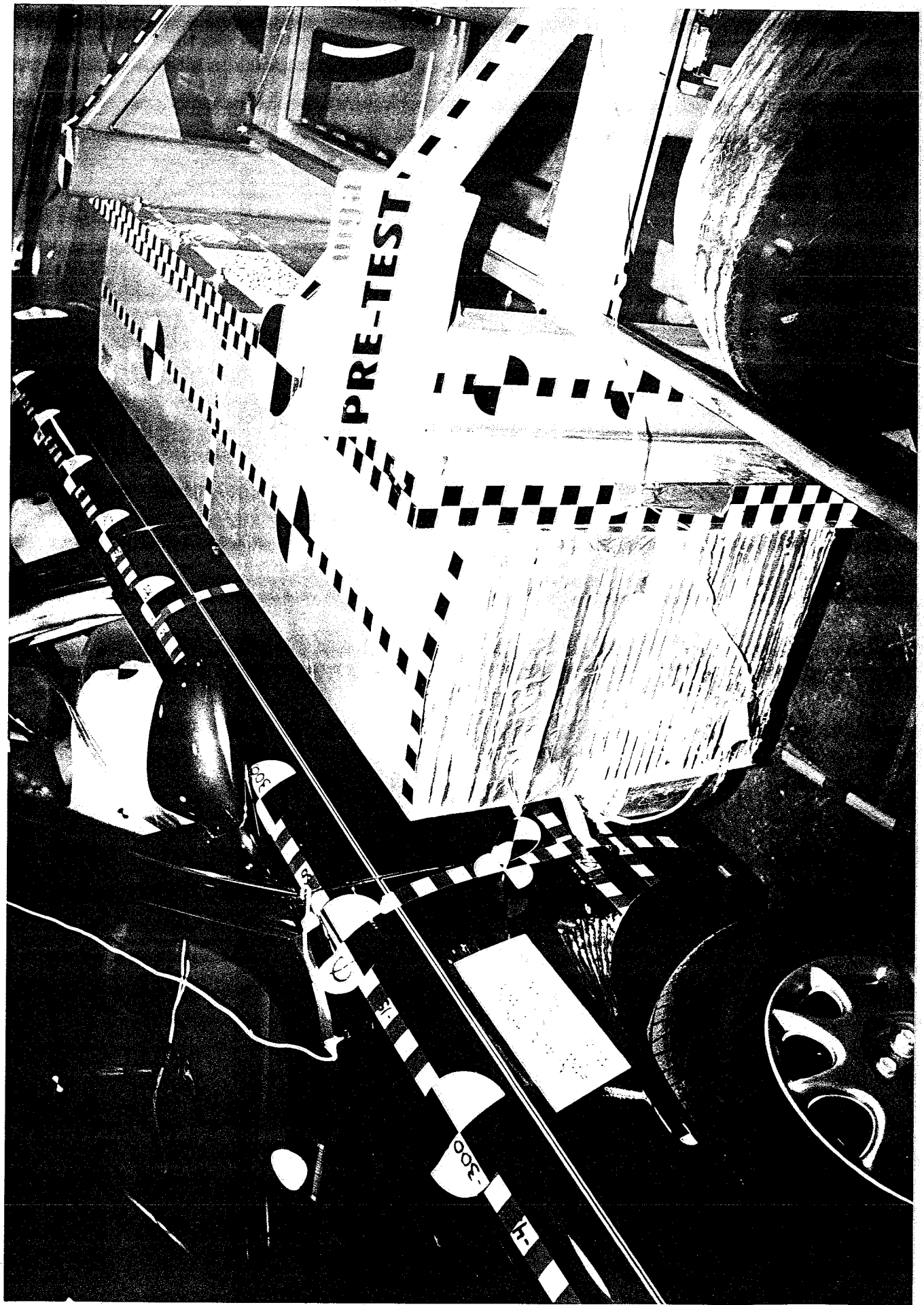


Photo No. A-7 - Pre-Test MDB Positioned Against Vehicle (left side)

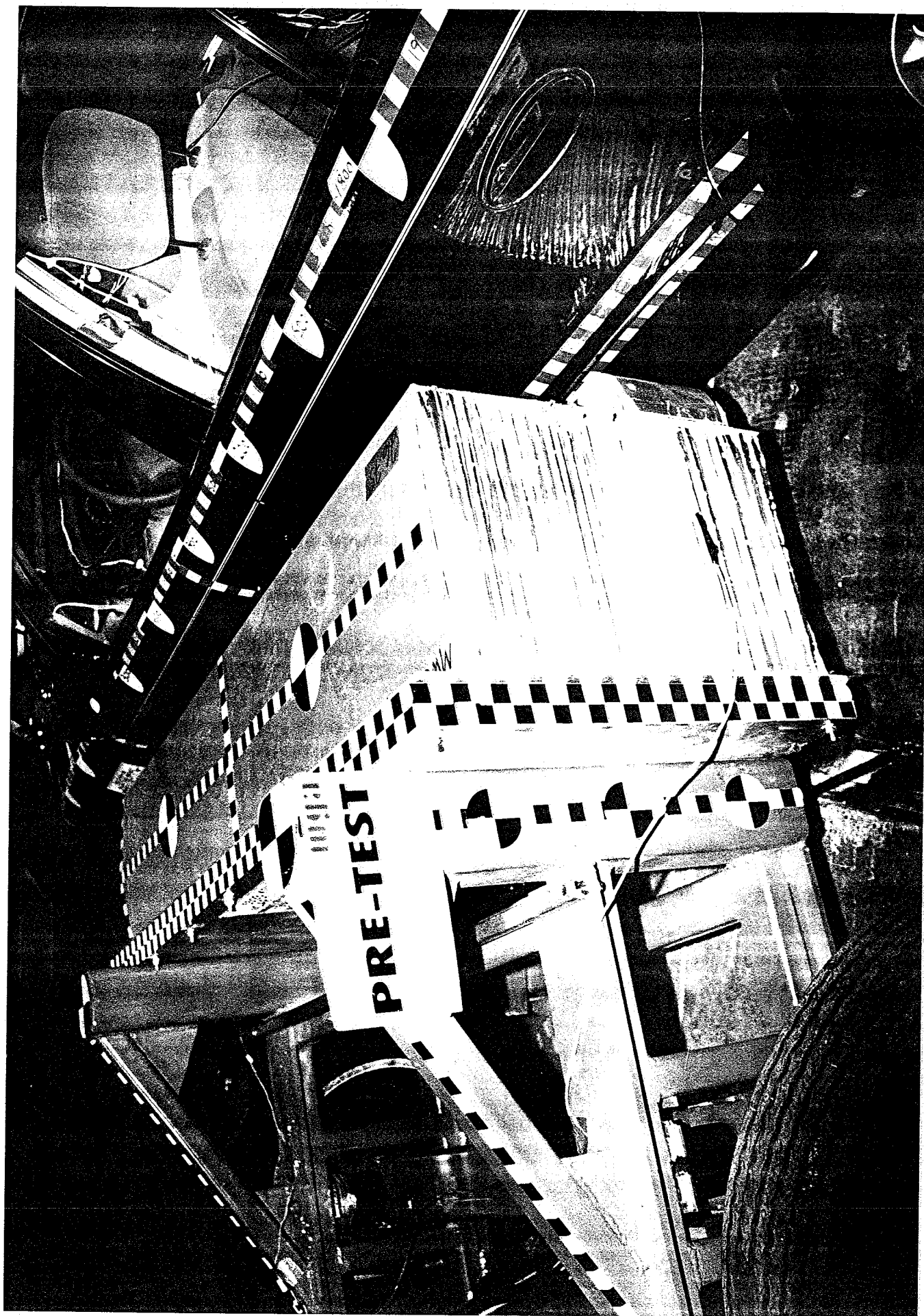


Photo No. A-8 - Pre-Test MDB Positioned Against Vehicle (right side)

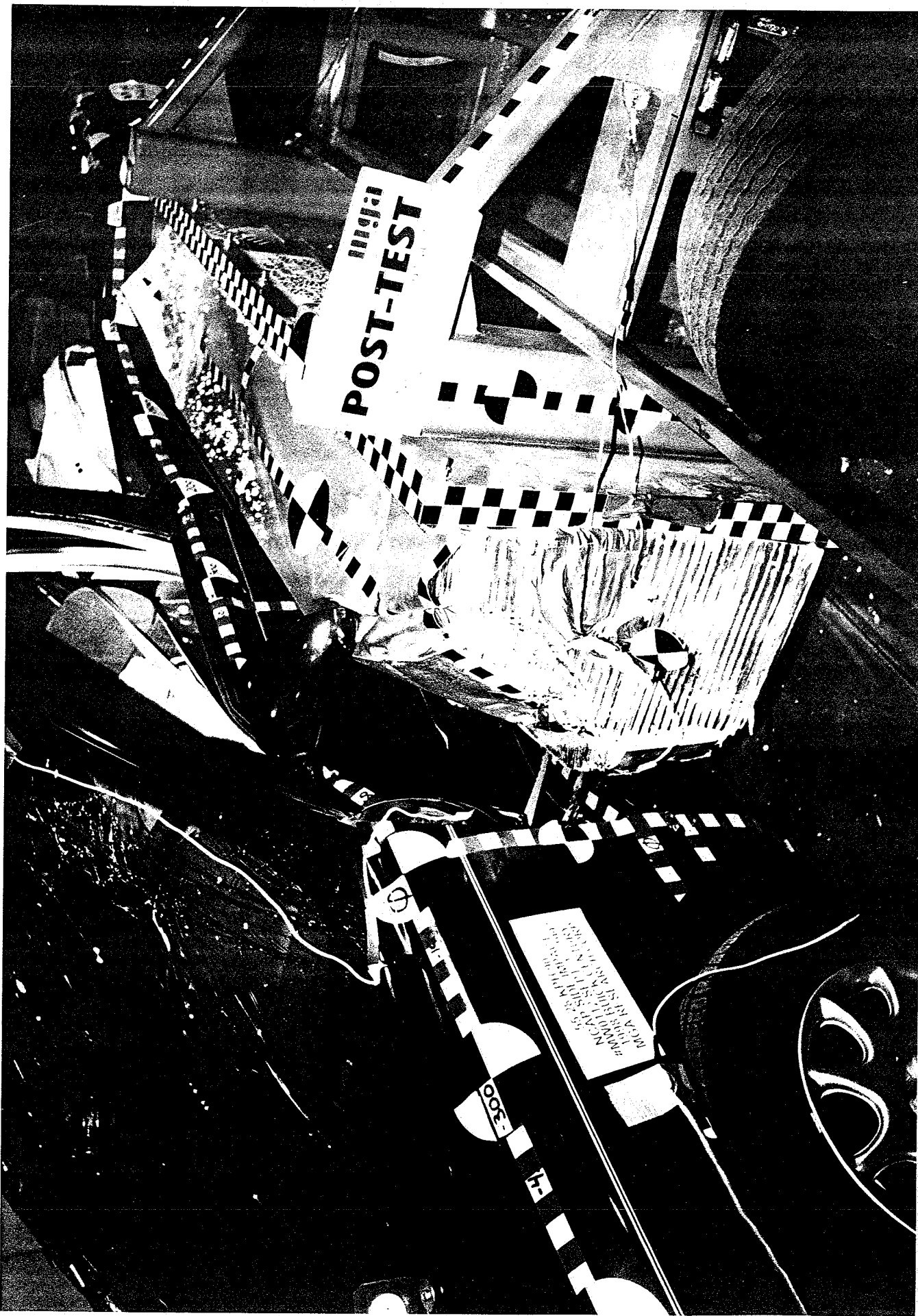


Photo No. A-10 - Post-Test MDB Positioned Against Vehicle (left side)

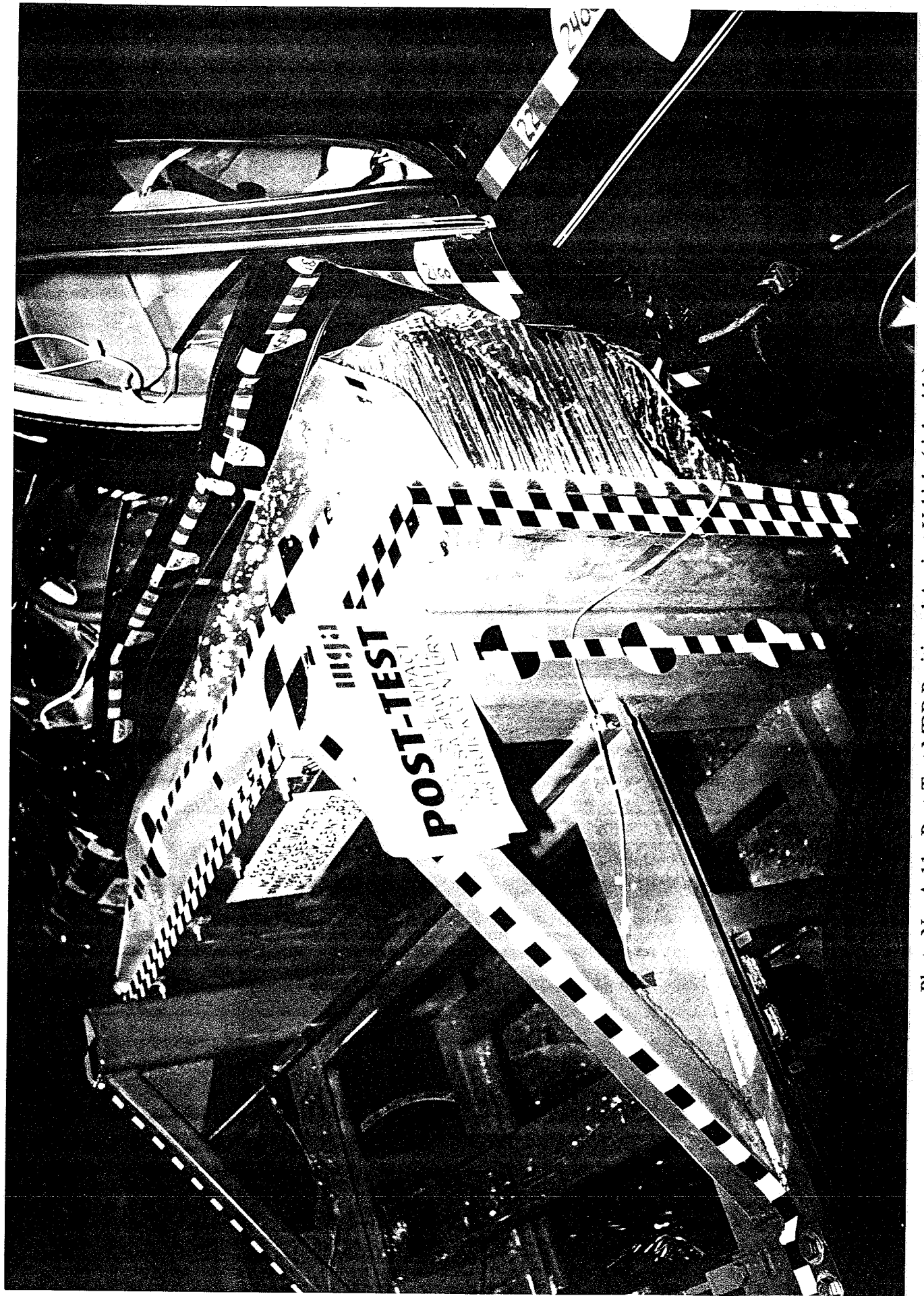


Photo No. A-11 - Post-Test MDB Positioned Against Vehicle (right side)

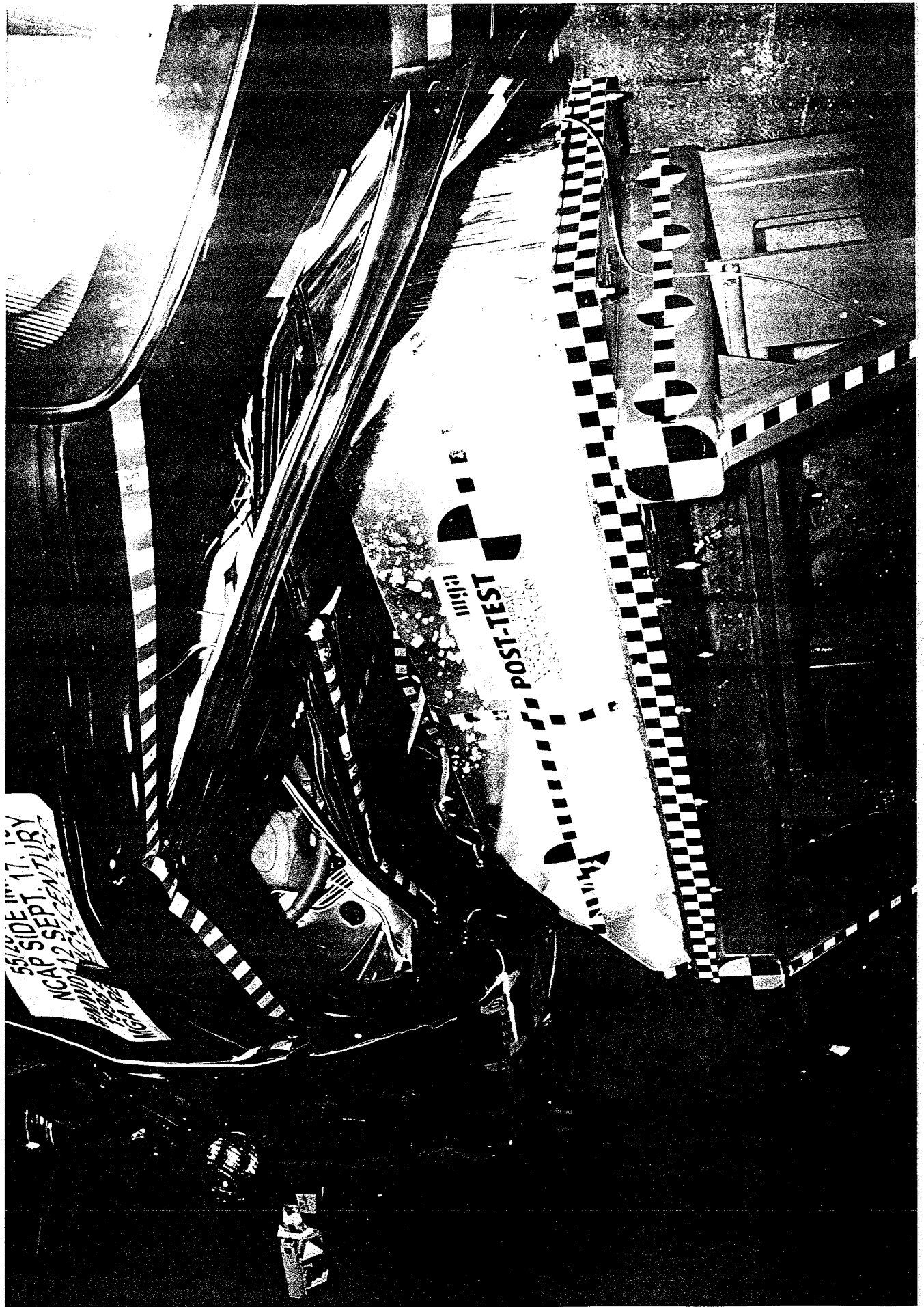


Photo No. A-12 - Post-Test MDB Positioned Against Vehicle Overhead View

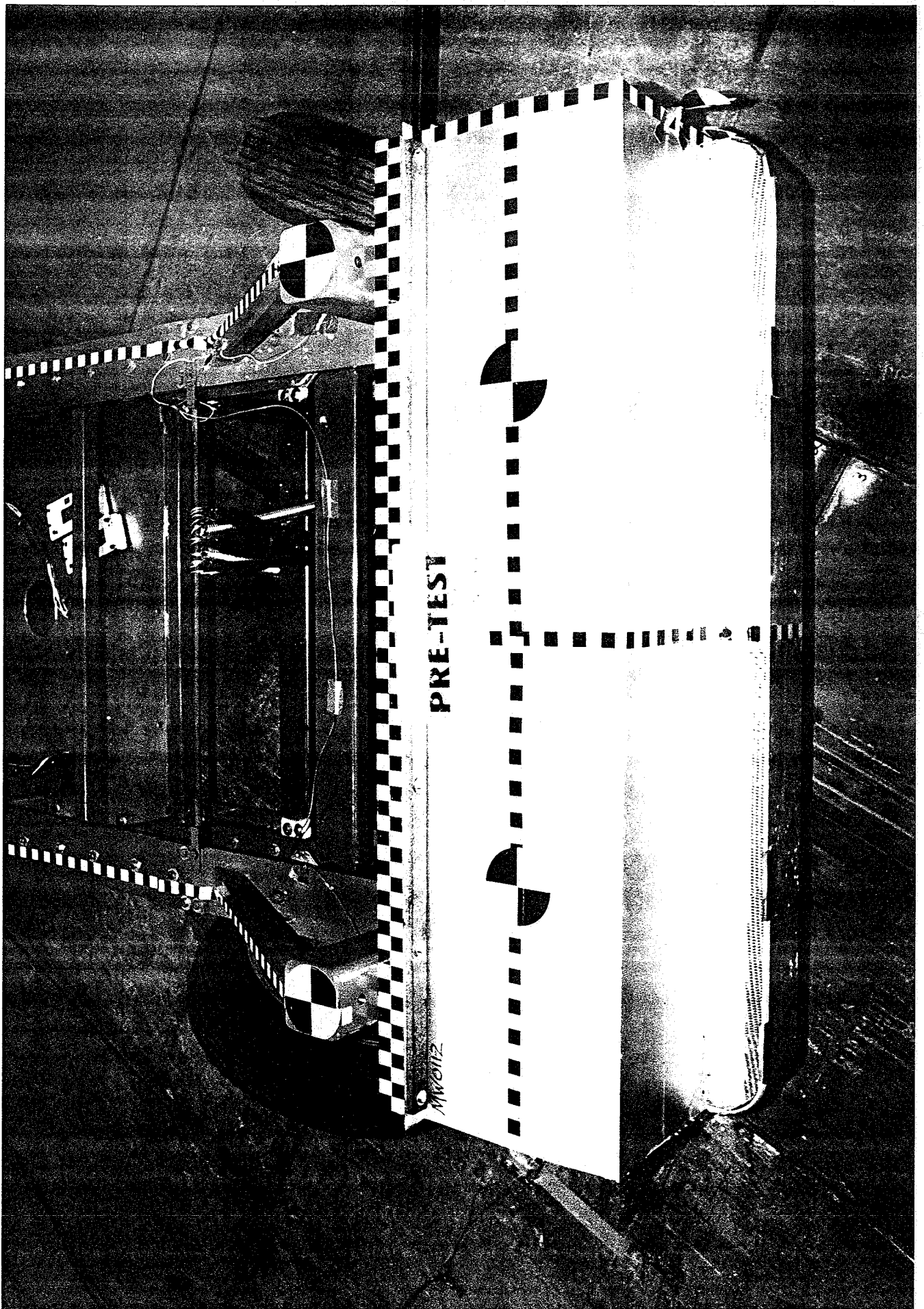


Photo No. A-13 - Pre-Test MDB Top View

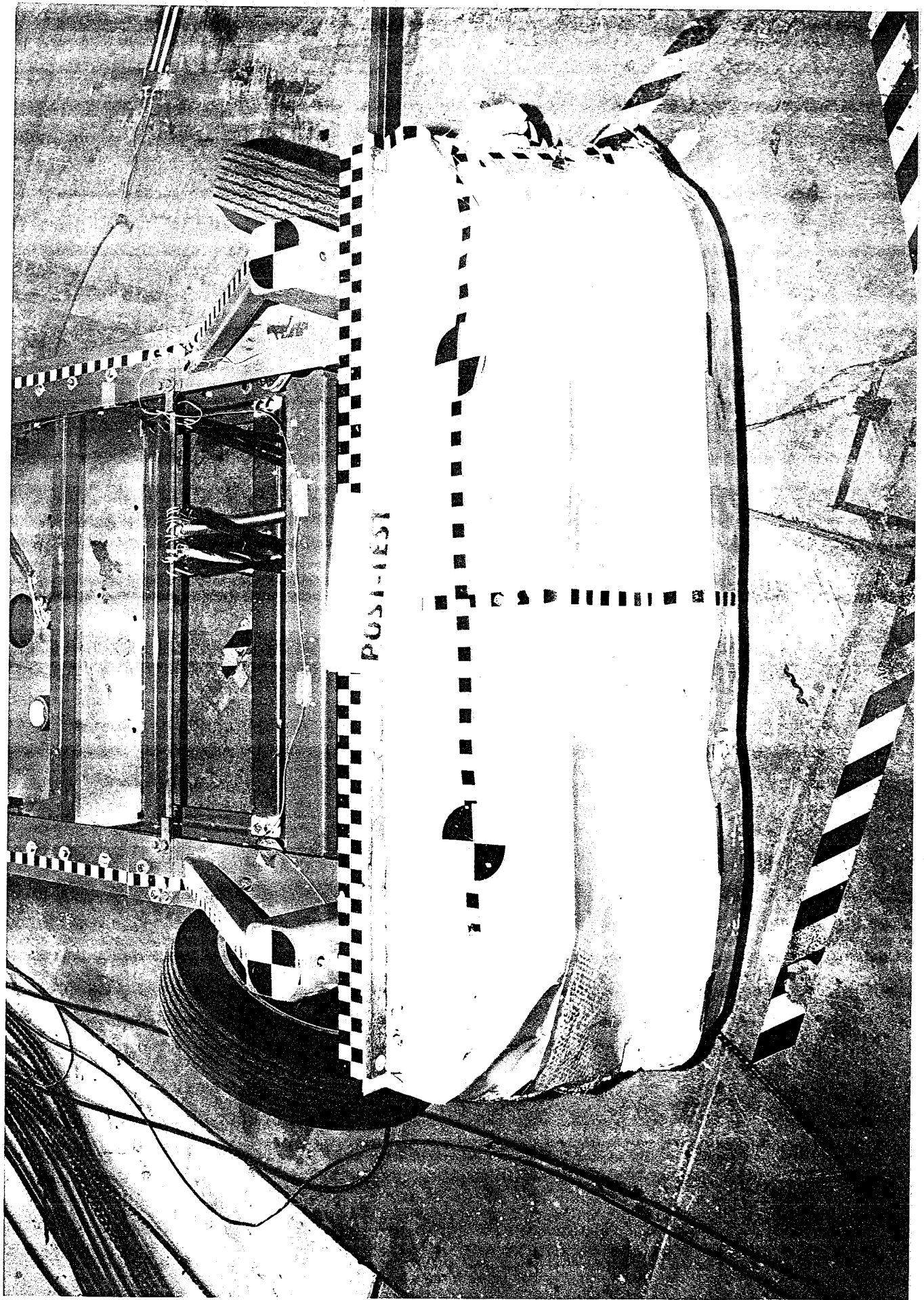


Photo No. A-14 - Post-Test MDB Top View

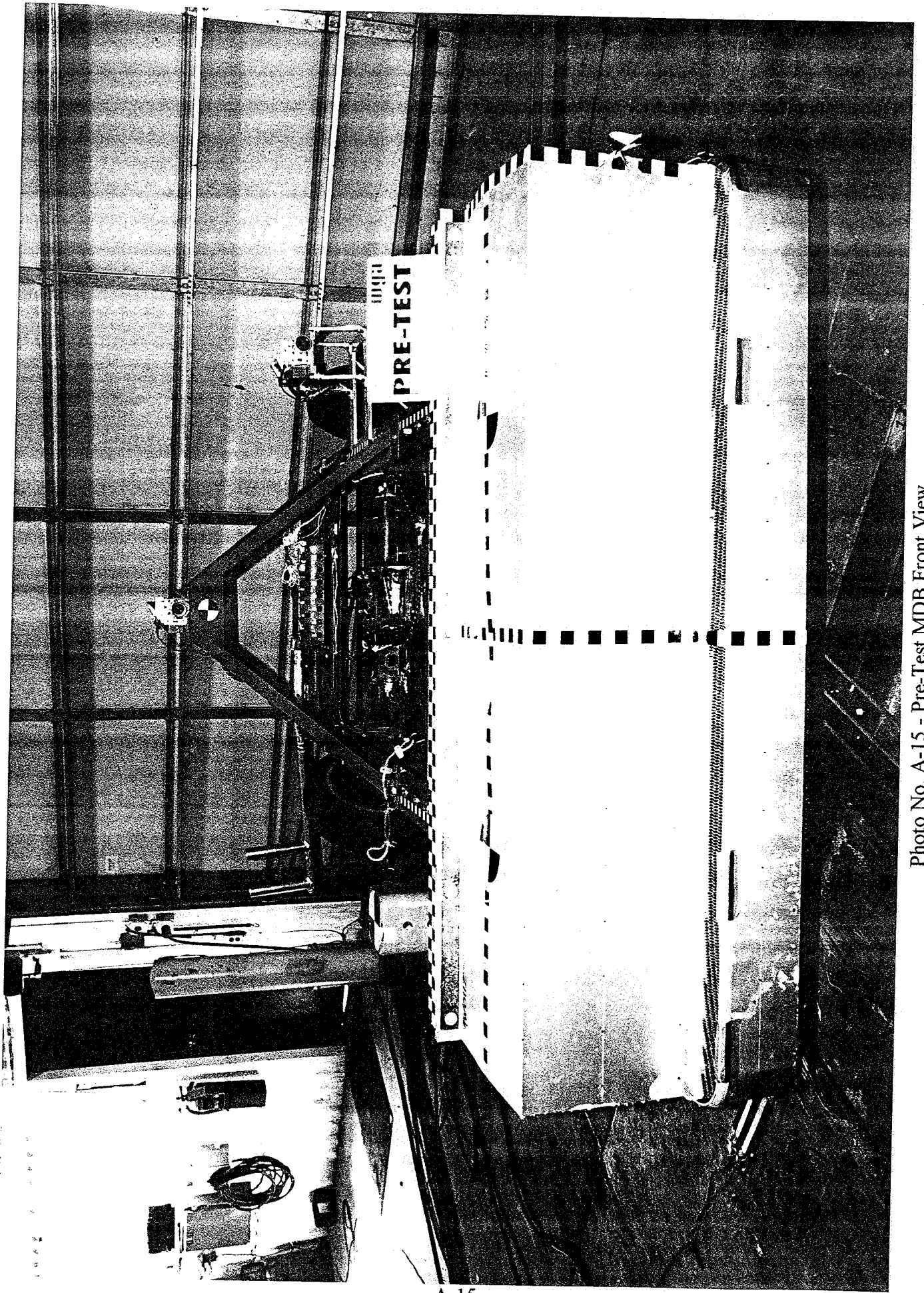


Photo No. A-15 - Pre-Test MDB Front View

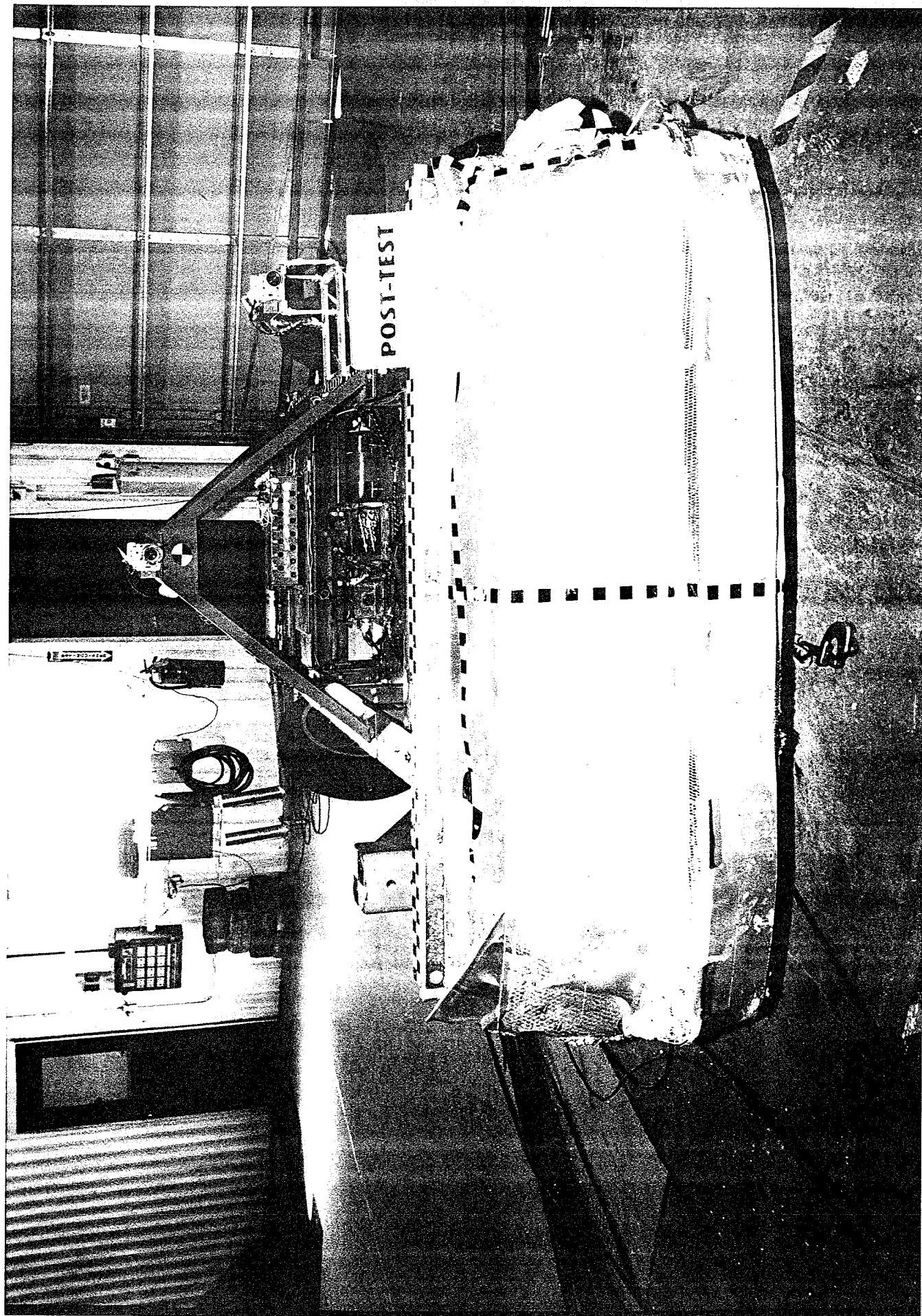


Photo No. A-16 - Post-Test MDB Front View

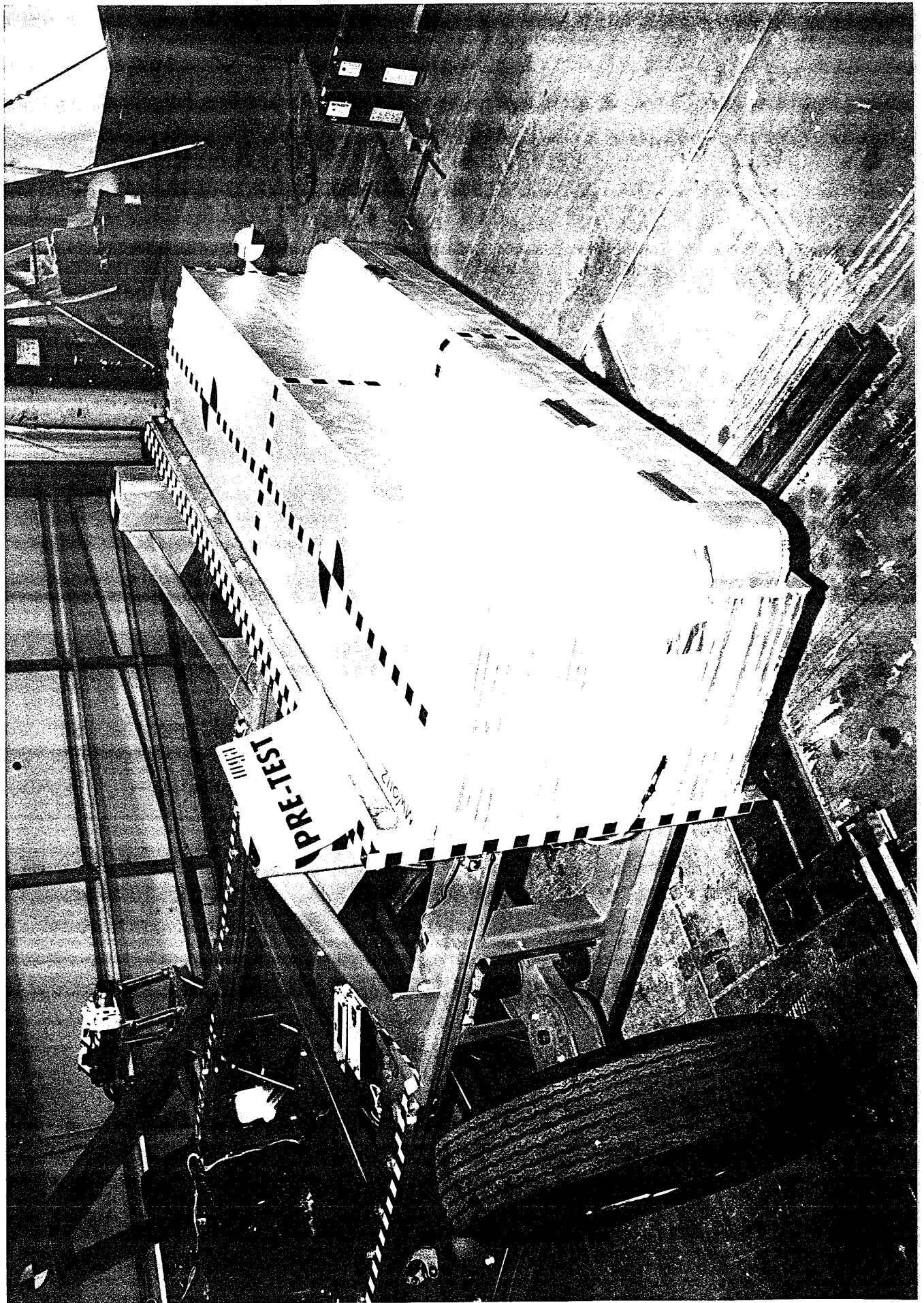


Photo No. A-17 - Pre-Test MDB Right Side View

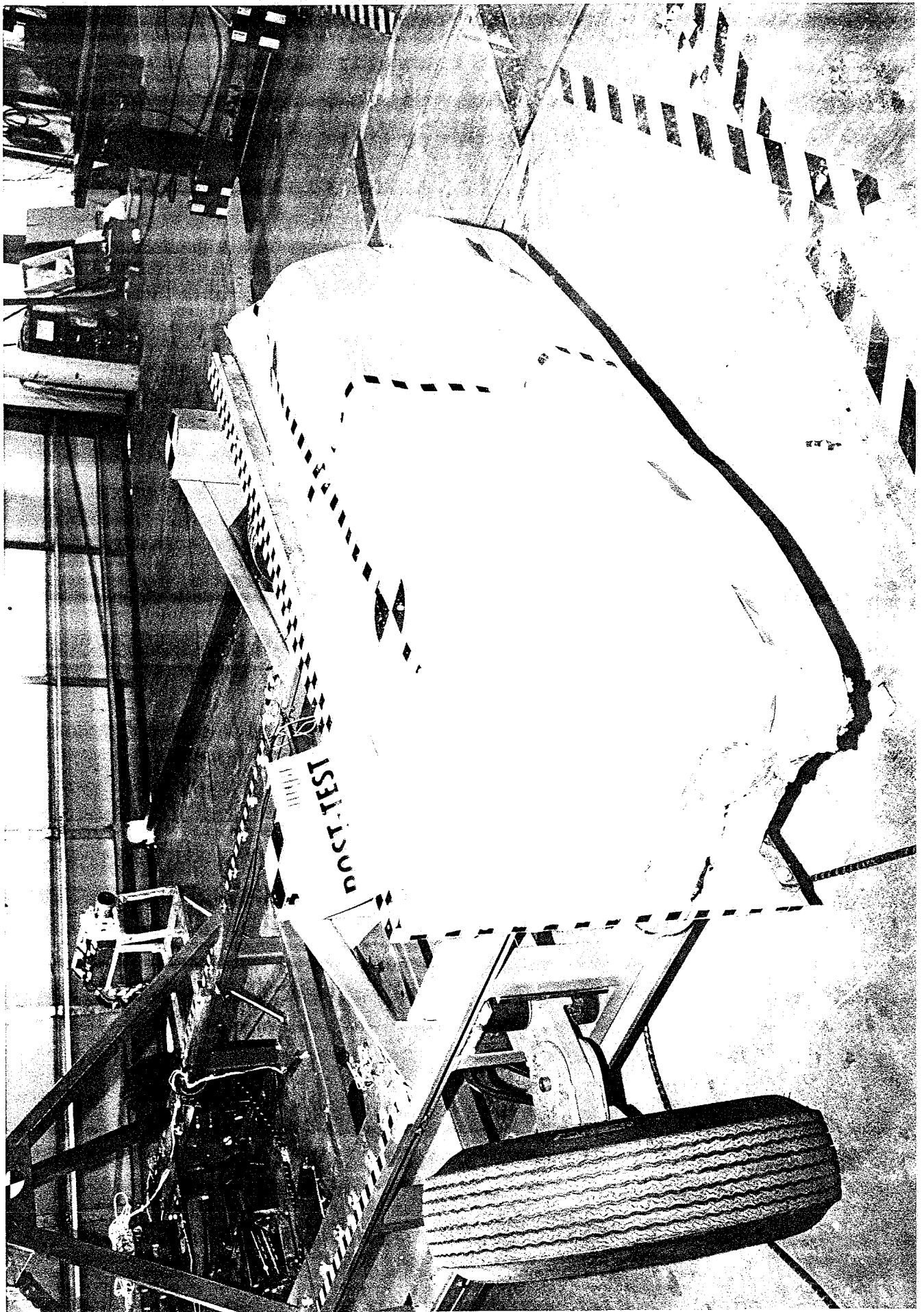


Photo No. A-18 - Post-Test MDB Right Side View

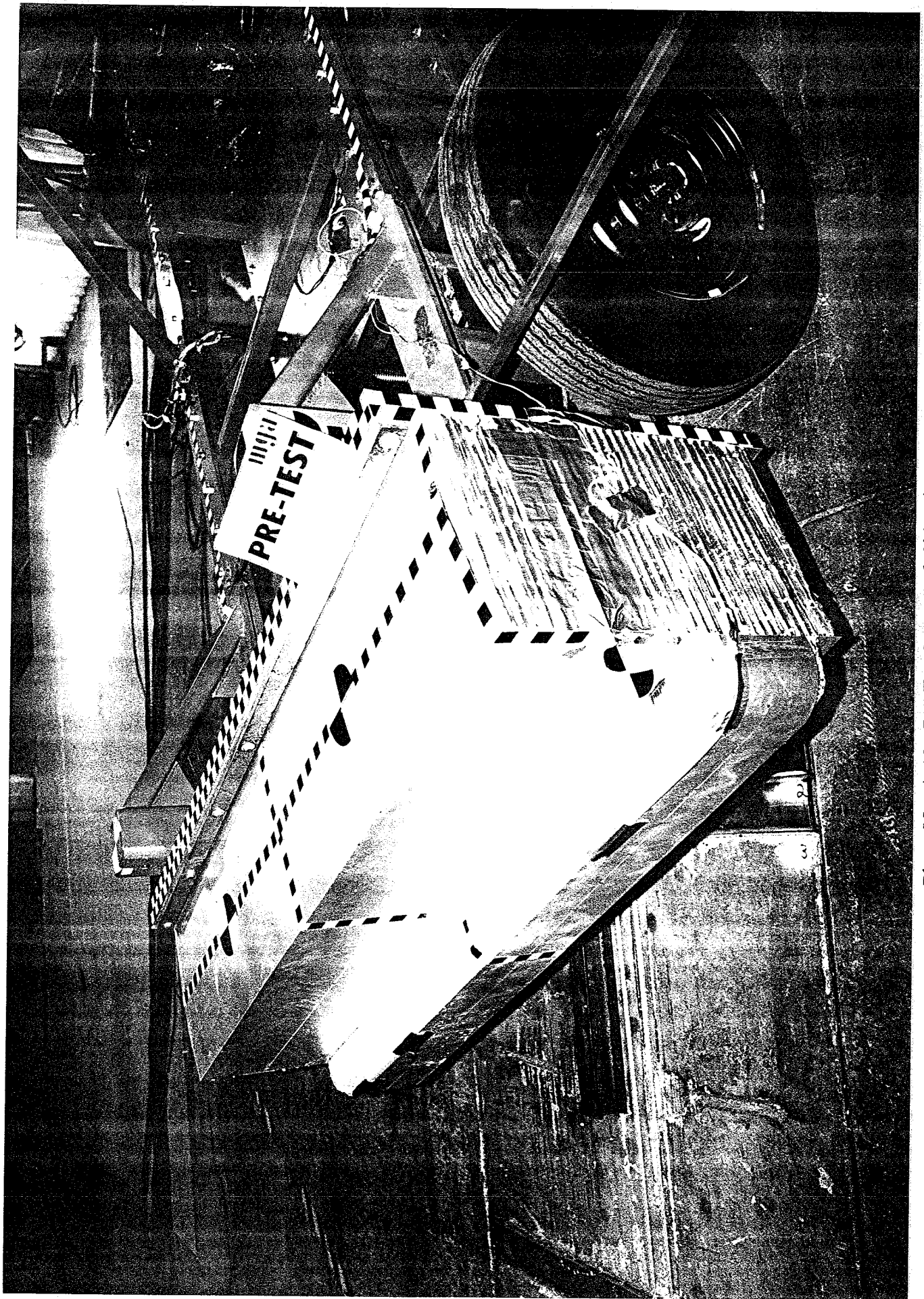


Photo No. A-19 - Pre-Test MDB Left Side View



Photo No. A-20 - Post-Test MDB Left Side View

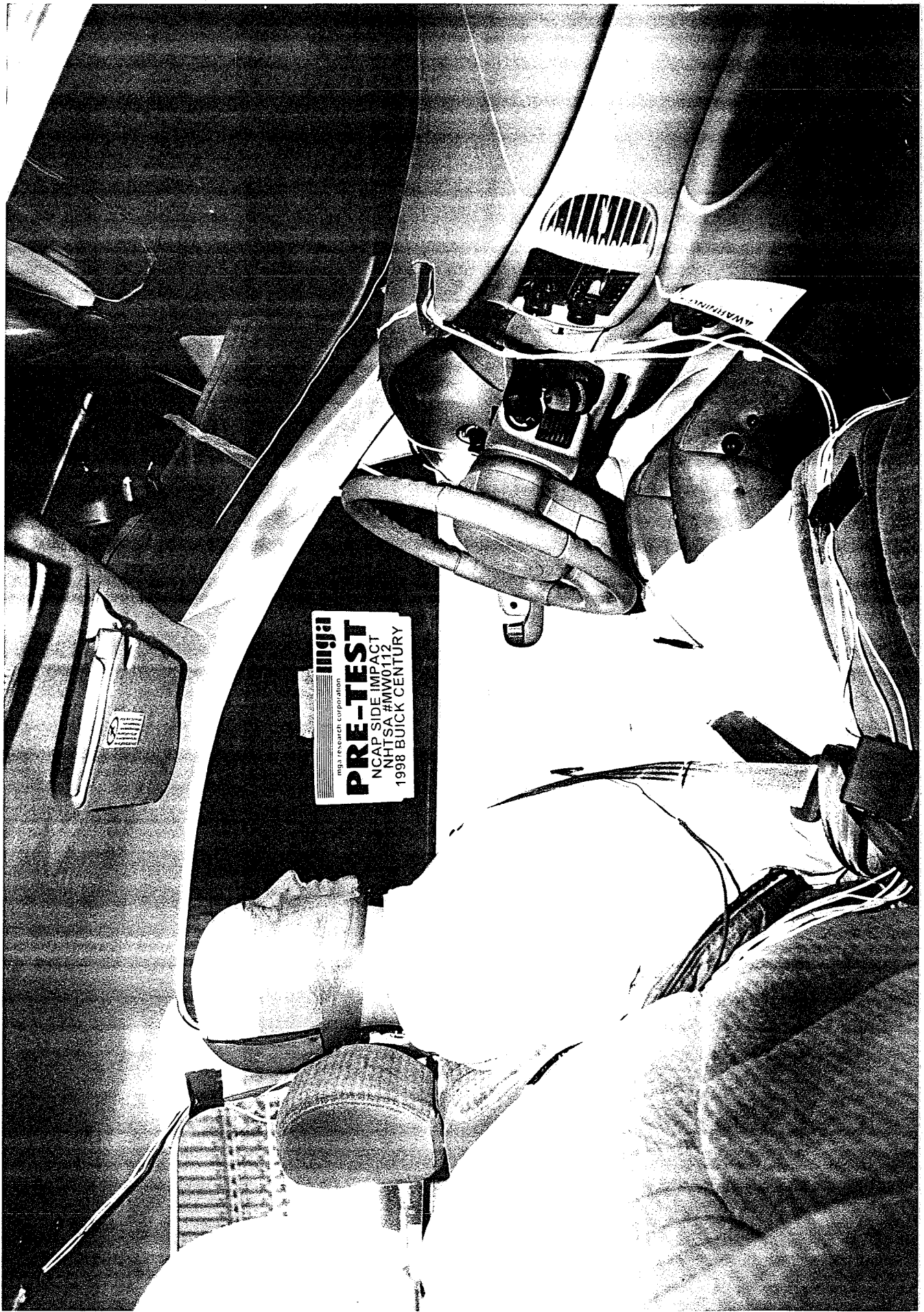


Photo No. A-21 - Pre-Test Driver Dummy Right Side View

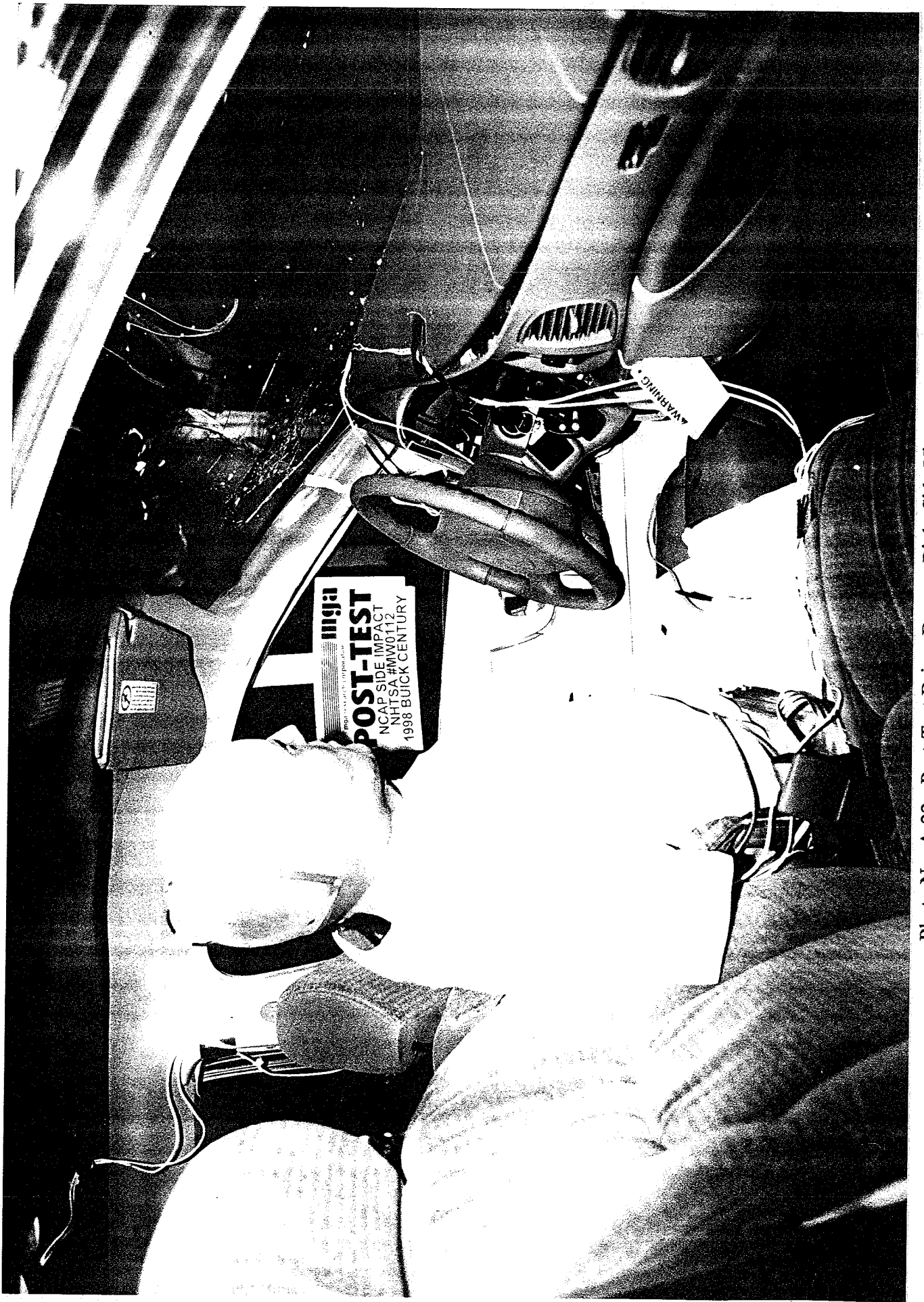
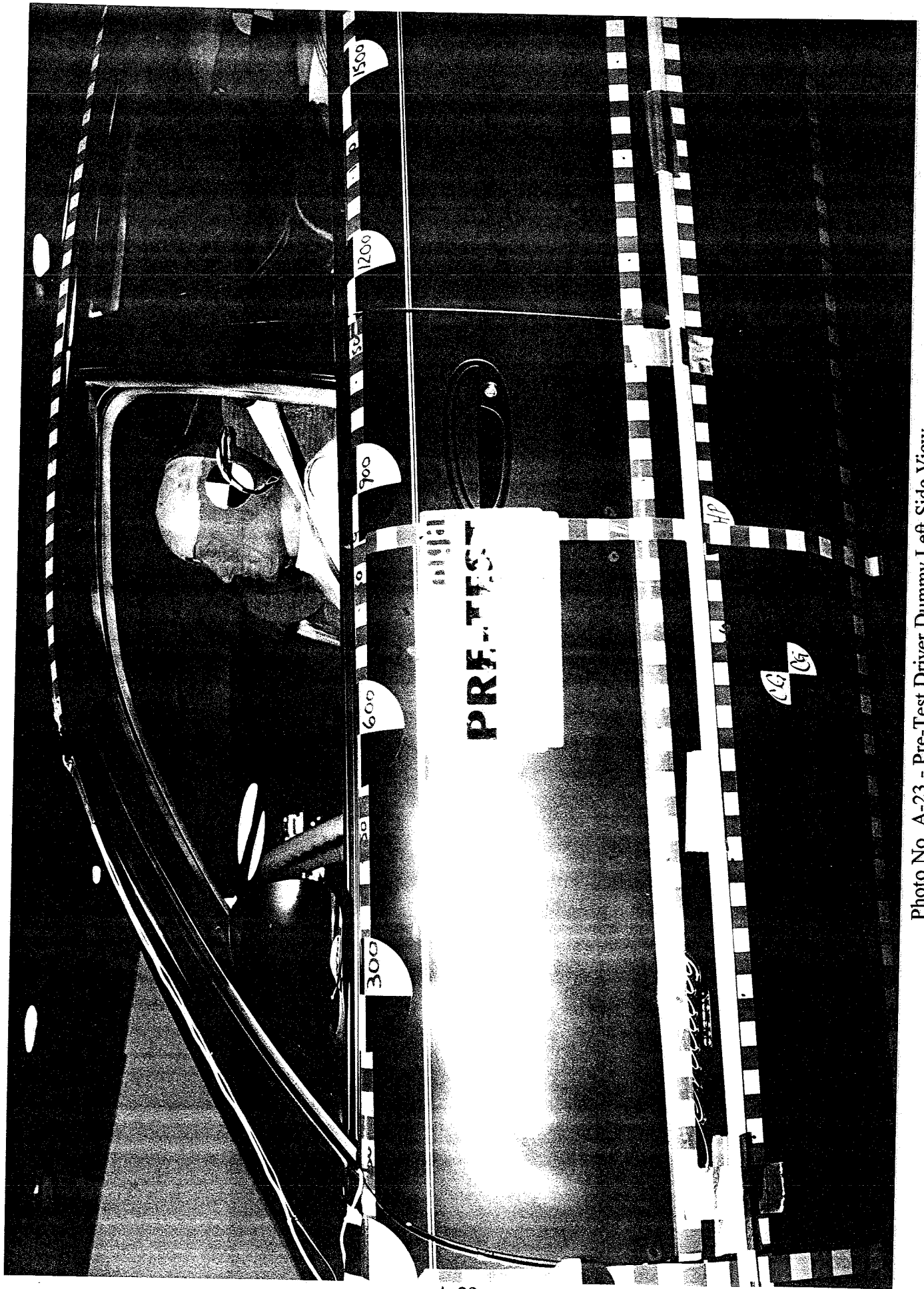


Photo No. A-22 - Post-Test Driver Dummy Right Side View



A-23

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

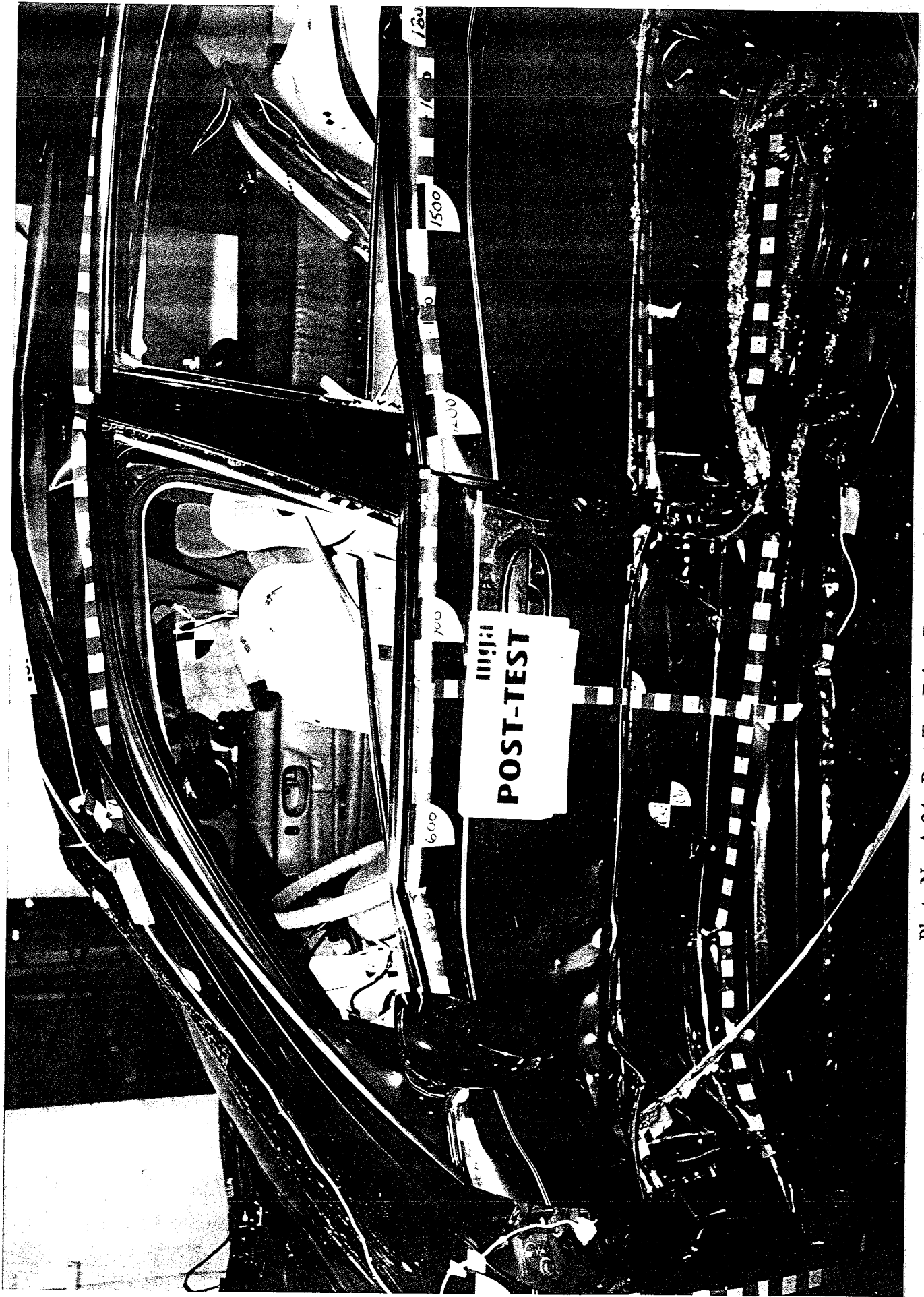


Photo No. A-24 - Post-Test Driver Dummy Left Side View

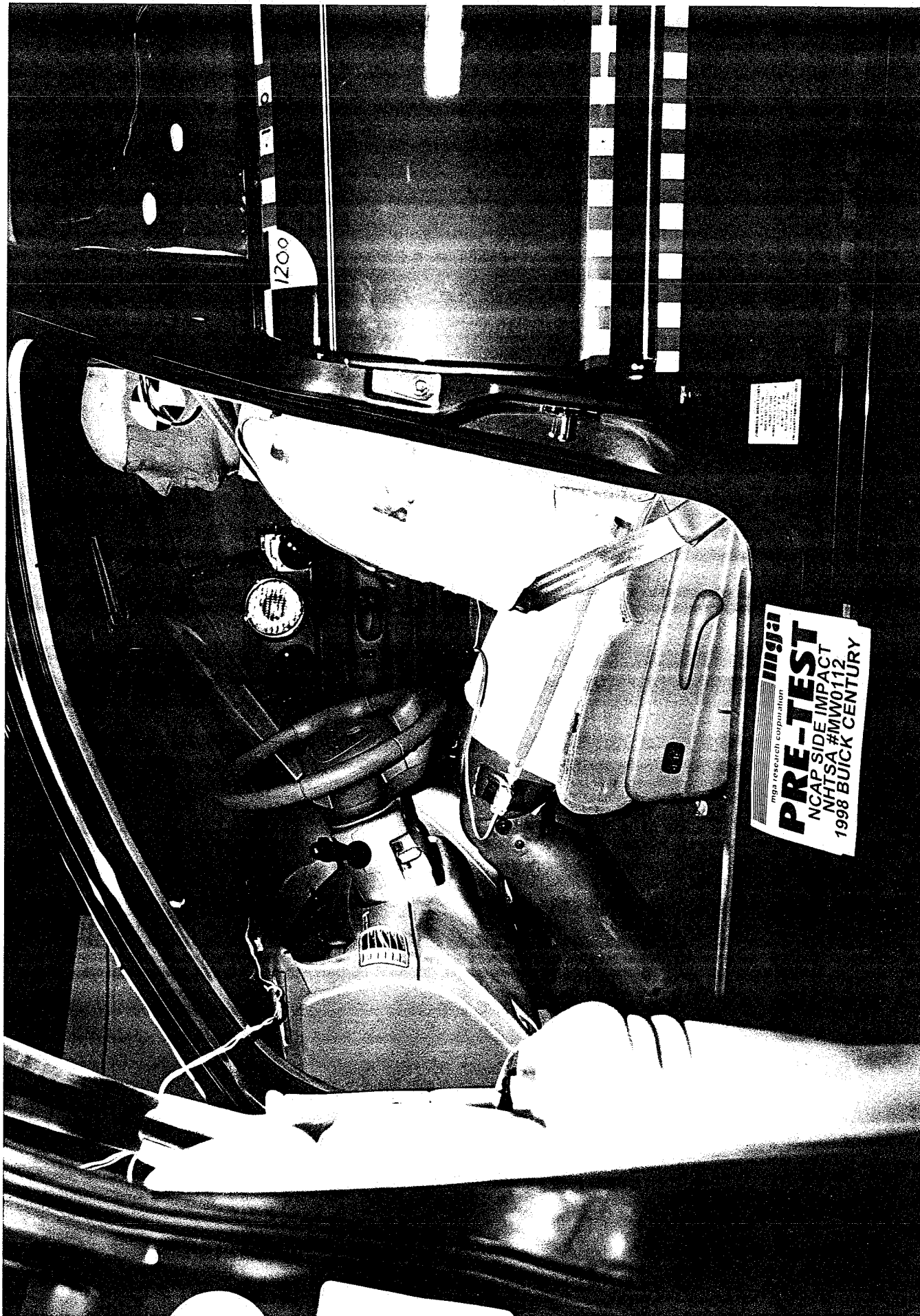


Photo No. A-25 - Pre-Test Driver Dummy Left Side View (Door Open)



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



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



Photo No. A-28 - Post-Test Driver Dummy Contact



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

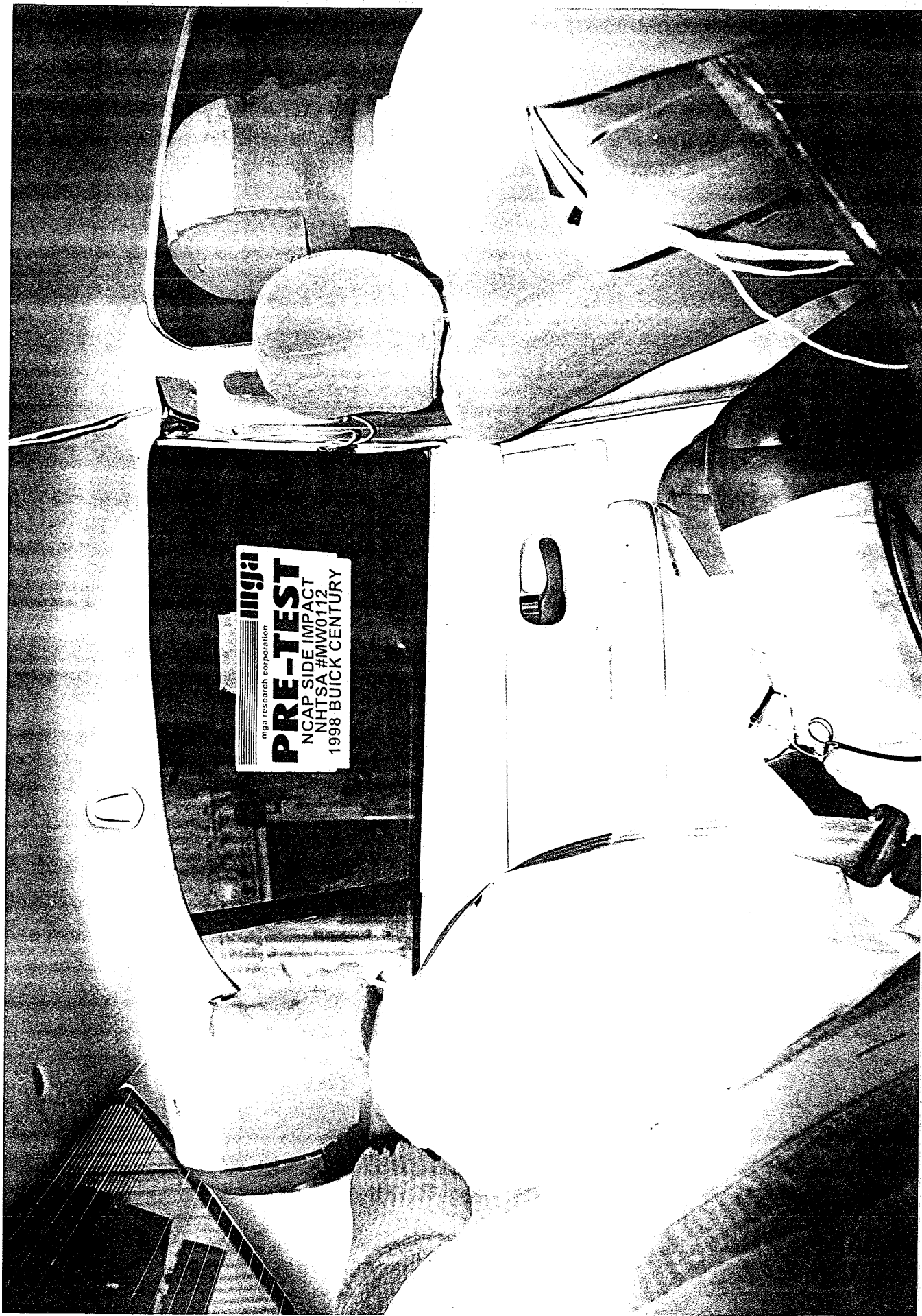


Photo No. A-30 - Pre-Test Passenger Dummy Right Side View

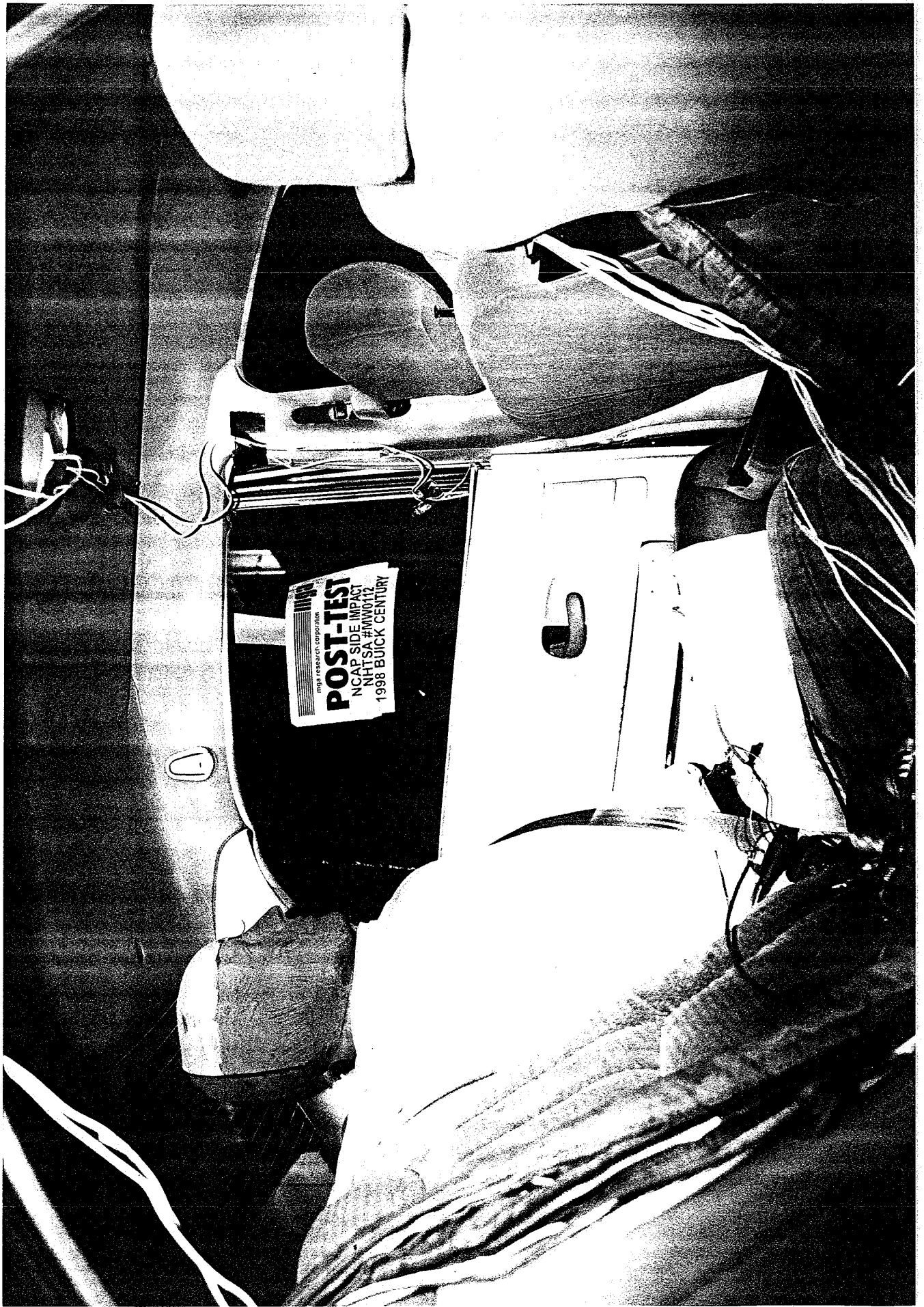


Photo No. A-31 - Post-Test Passenger Dummy Right Side View

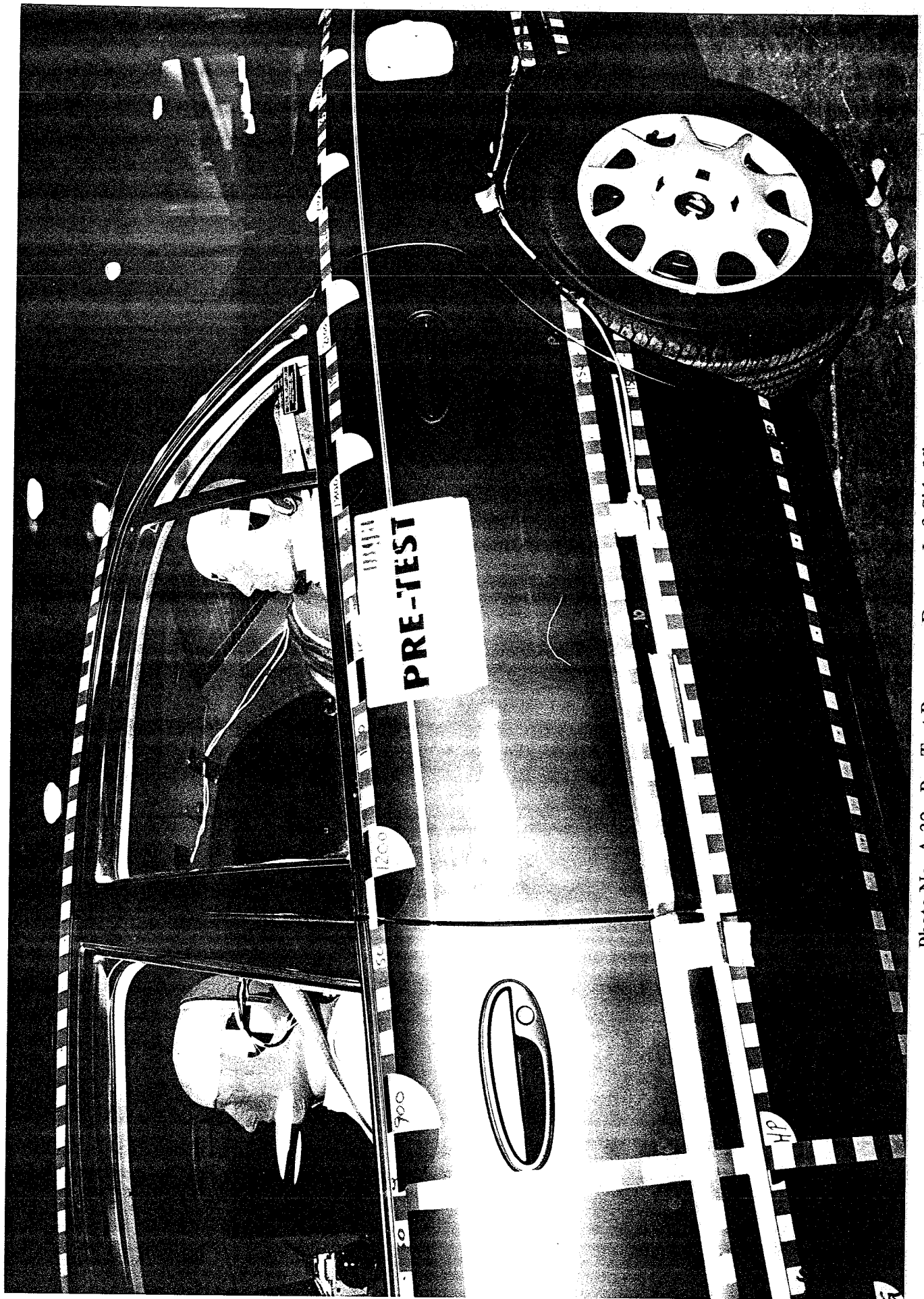


Photo No. A-32 - Pre-Test Passenger Dummy Left Side View

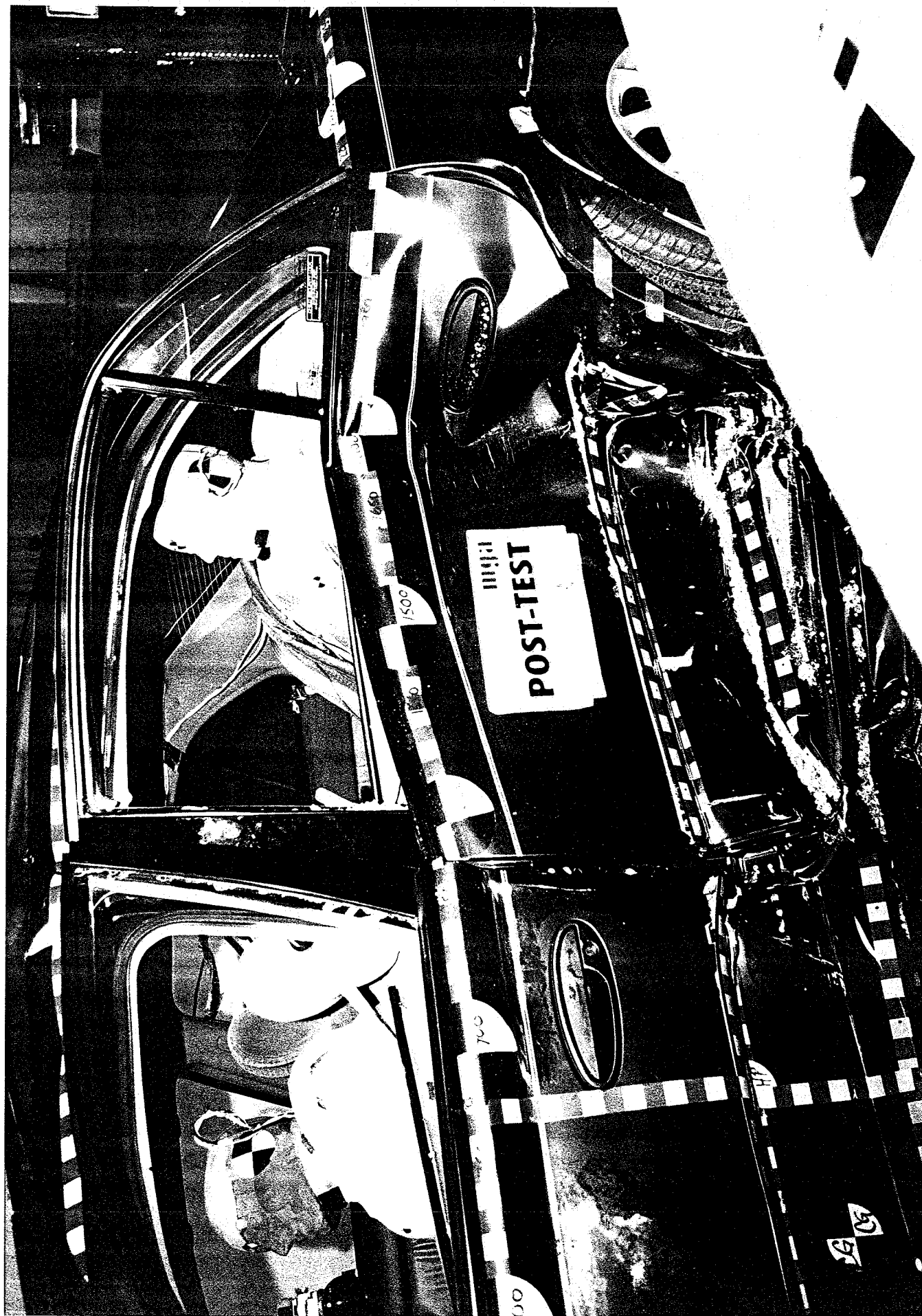


Photo No. A-33 - Post-Test Passenger Dummy Left Side View

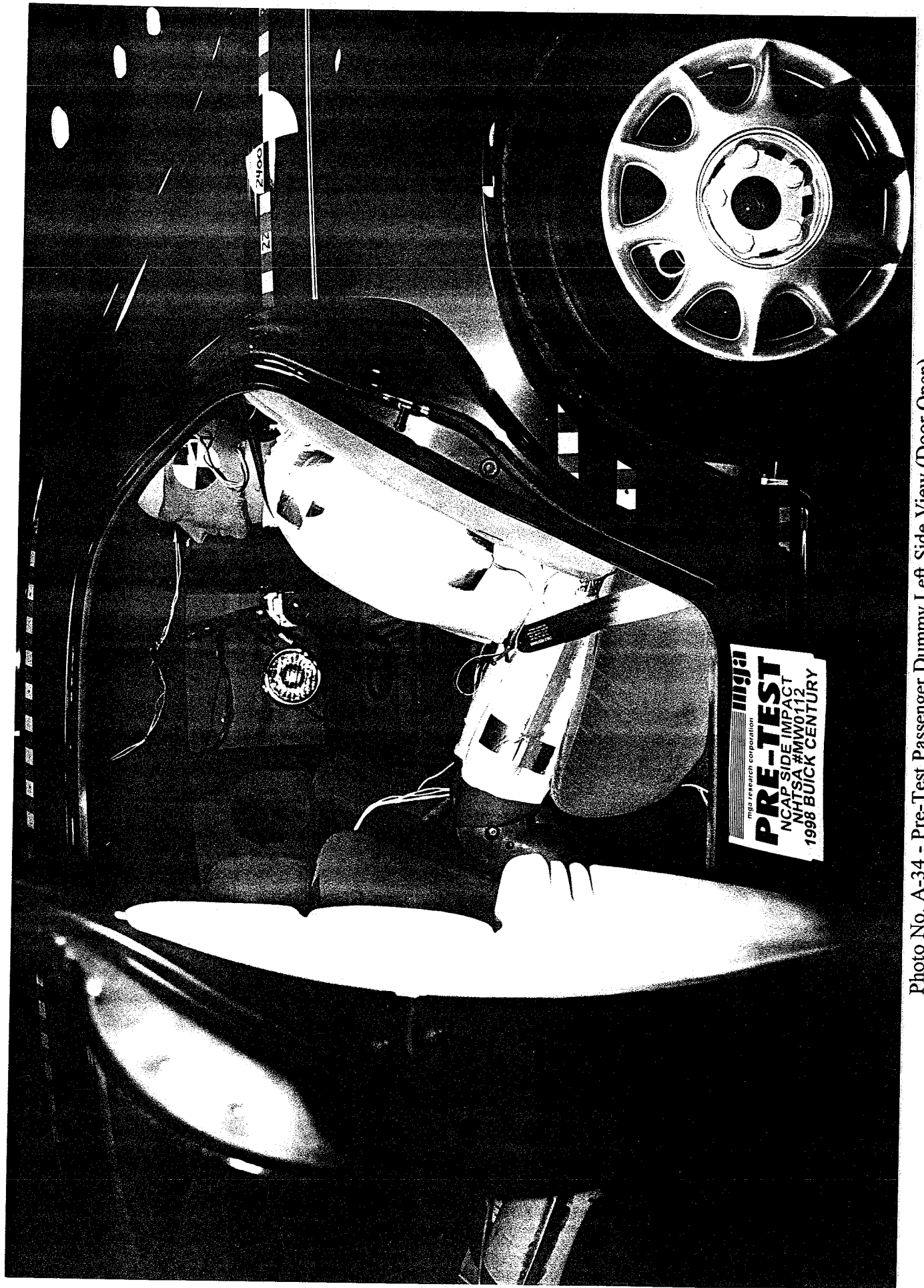


Photo No. A-34 - Pre-Test Passenger Dummy Left Side View (Door Open)

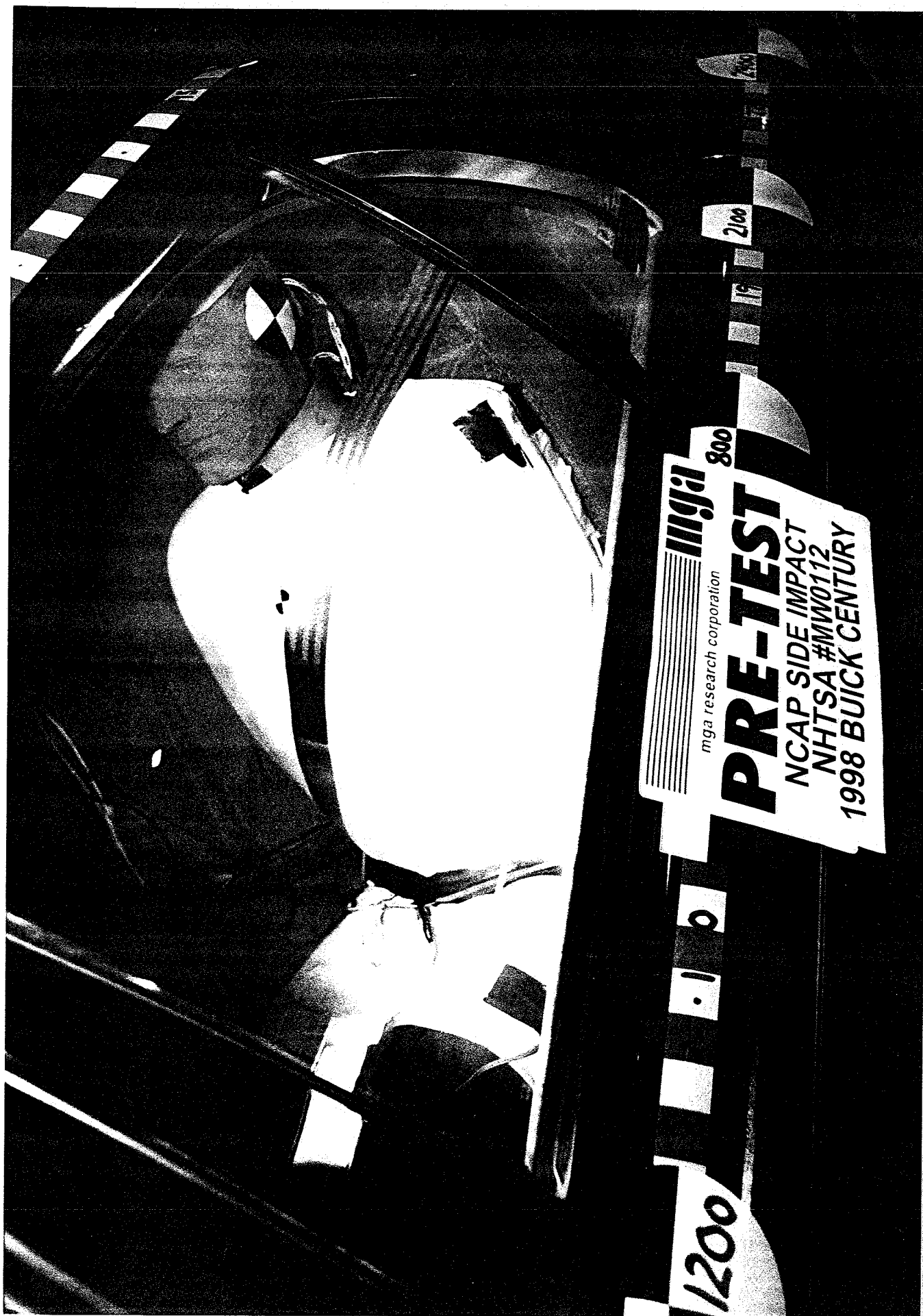


Photo No. A-35 - Pre-Test Passenger Dummy Shoulder and Door Top View

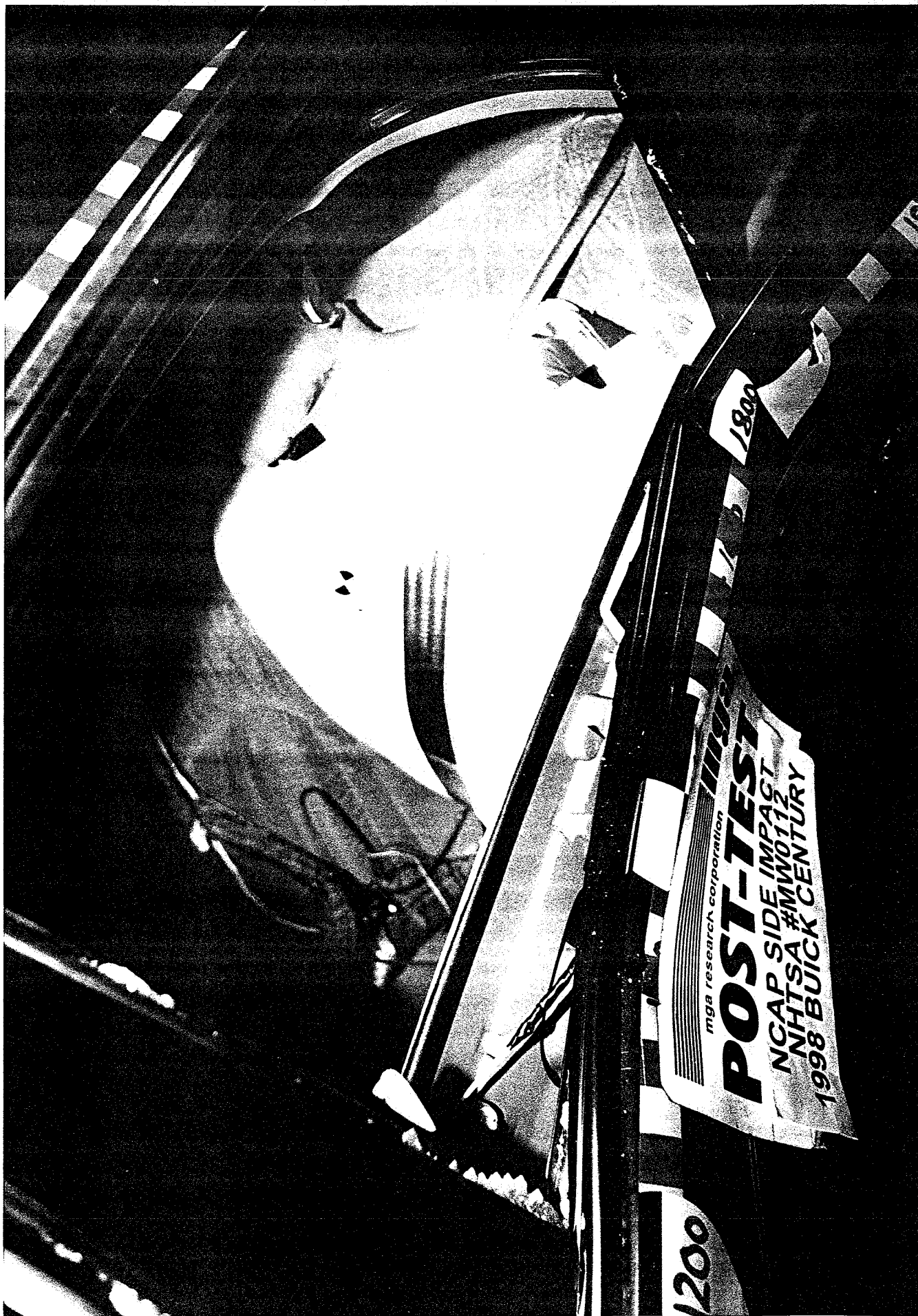


Photo No. A-36 - Post-Test Passenger Dummy Shoulder and Door Top View

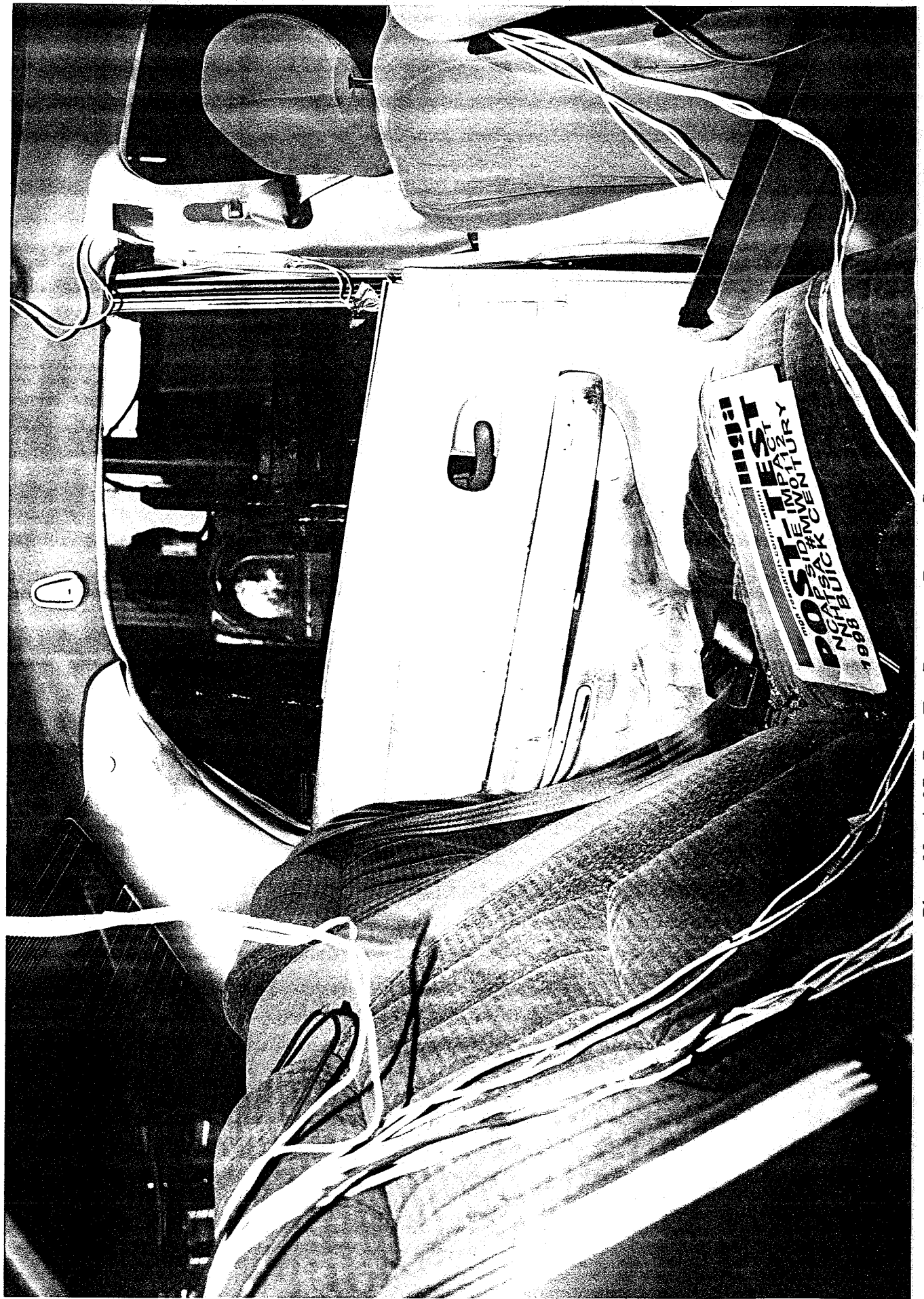


Photo No. A-37 - Post-Test Passenger Dummy Contact



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



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



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

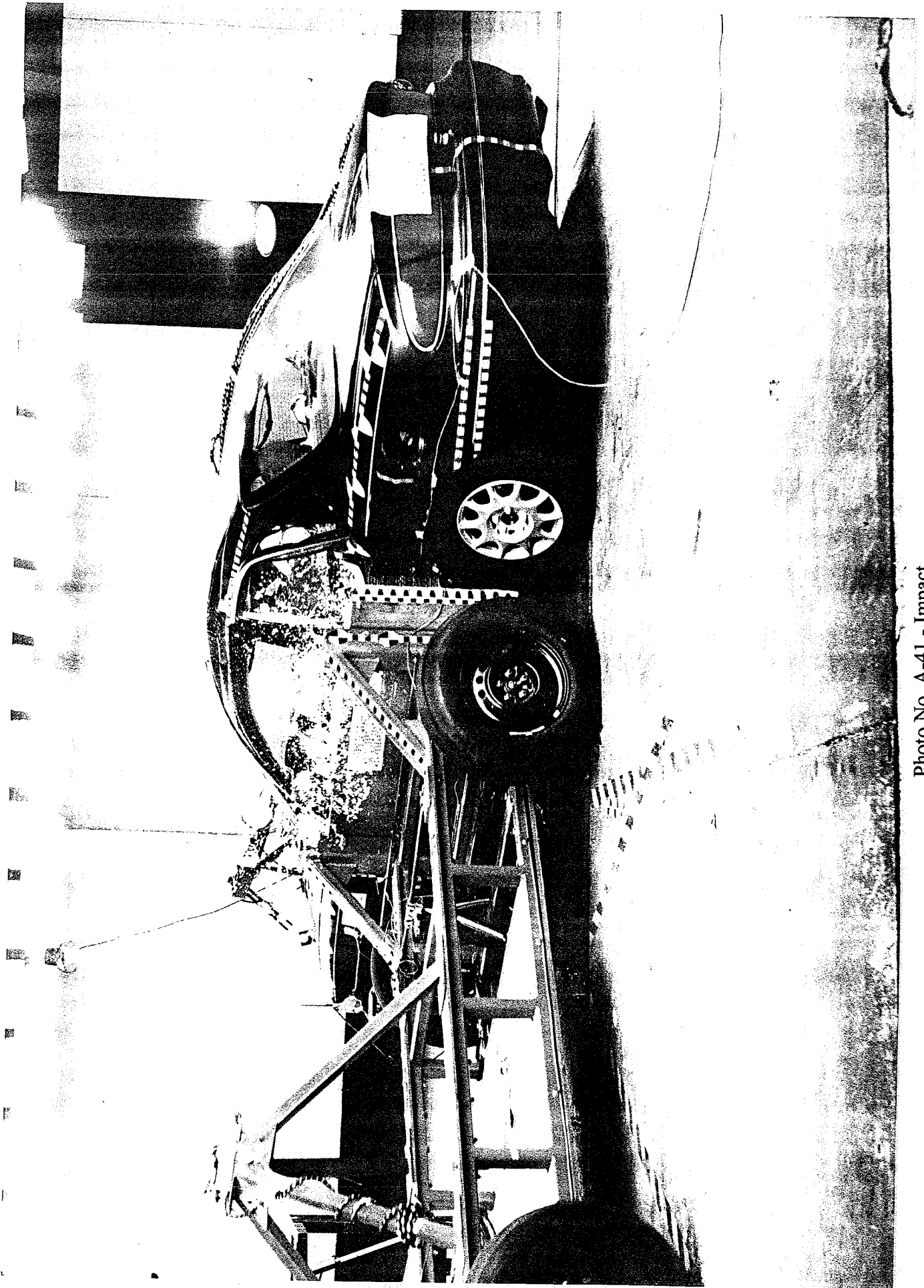


Photo No. A-41 - Impact



 MFD BY GENERAL MOTORS OF CANADA LTD.

DATE	GVWR	GAWR FRT	GAWR RR
08/97	2028 KG	1113 KG	915 KG
	4473 LB	2455 LB	2018 LB

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

2G4WS52M0W1406354 TYPE: PASS CAR

Photo No. A-42 - Vehicle Certification Label

SERVICE PARTS IDENTIFICATION DO NOT REMOVE

2G4WS52MOW1406354 4WS69

AG1 AK5 AM6 AP9 B34 B35 CJ3 DC4 DE5 DL5 DB5
FE1 FE9 FR9 IQB JM4 K34 K68 L82 MX0 M13 NF2
NK5 OST PC1 QGY UN6 UX7 UZE U77 VHS VK3 VM3
V73 1SC 1SZ 14A 52B 521 56U 6JY 8HD 9HD

BC/CC U 329D 52B



TIRE - LOADING INFORMATION
OCCUPANTS VEHICLE CAP. WT.
FRT. CTR. RR. TOTAL KG LBS
3 0 3 6 488 1076

MAX. LOADING @ GVWR SAME AS VEHICLE CAPACITY WEIGHT.
2G4WS52MOW1406354

MODEL: WS69 WAC
TIRE SIZE SPEED RTG COLD TIRE PRESSURE
FRT P205/70R15 S 210KPA(30PSI)
RR P205/70R15 S 210KPA(30PSI)
SPA T125/70D15 M 420KPA(60PSI)

IF TIRES ARE HOT, ADD 28KPA(4LBS)
SEE OWNER'S MANUAL FOR MORE INFORMATION

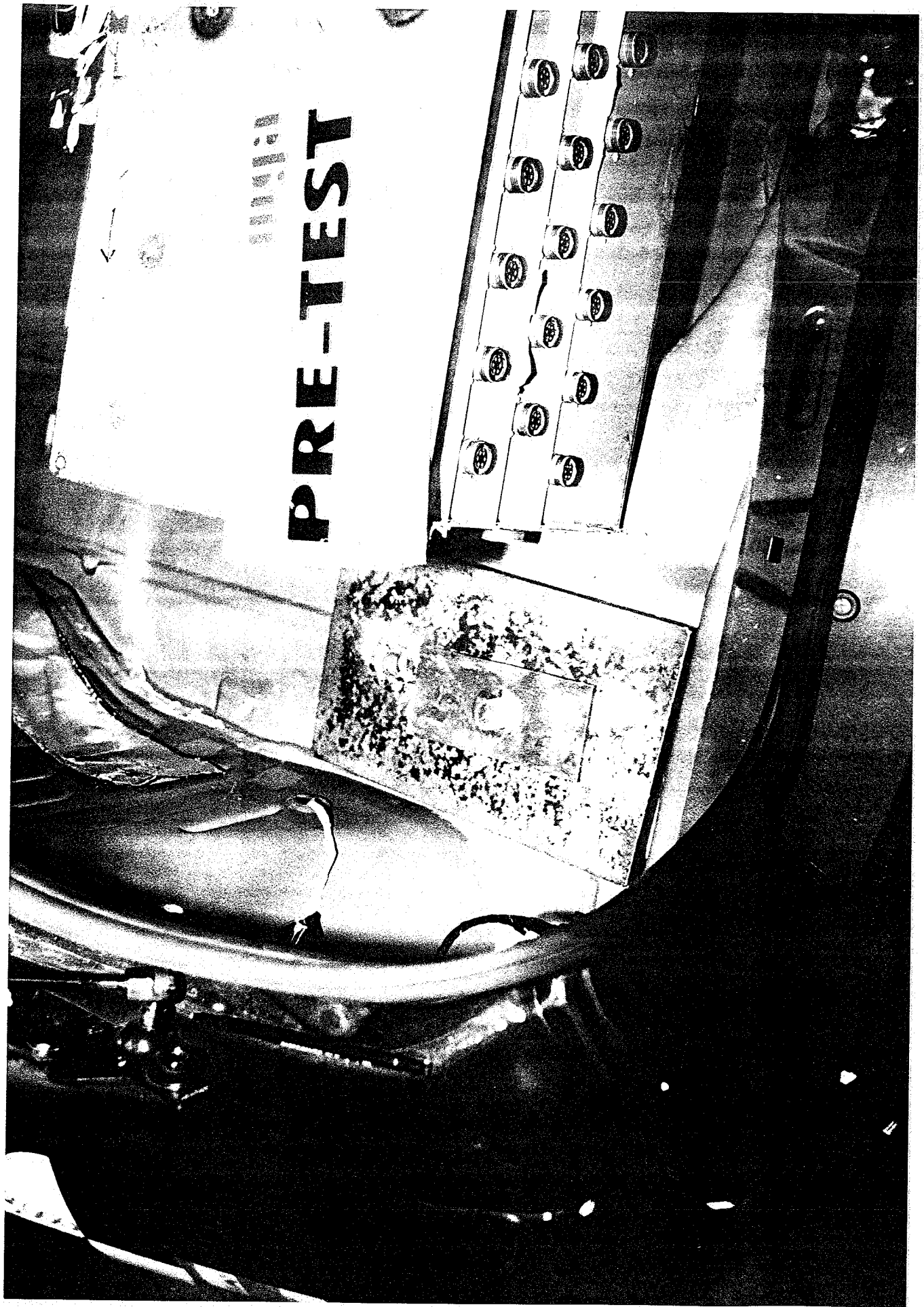


Photo No. A-44 - Added Vehicle Ballast Weight



A-45

Photo No. A-45 - Added Vehicle Ballast Weight

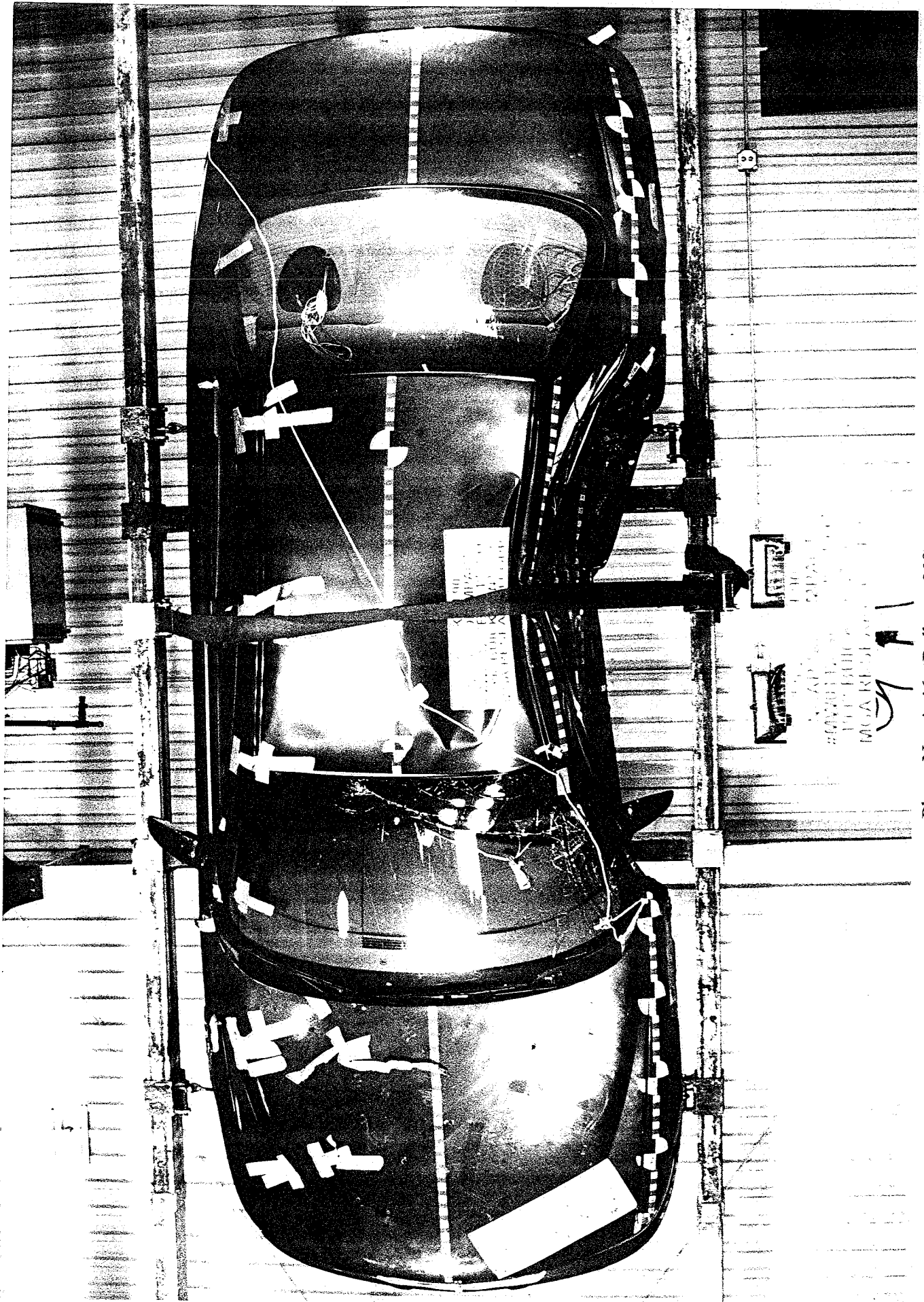
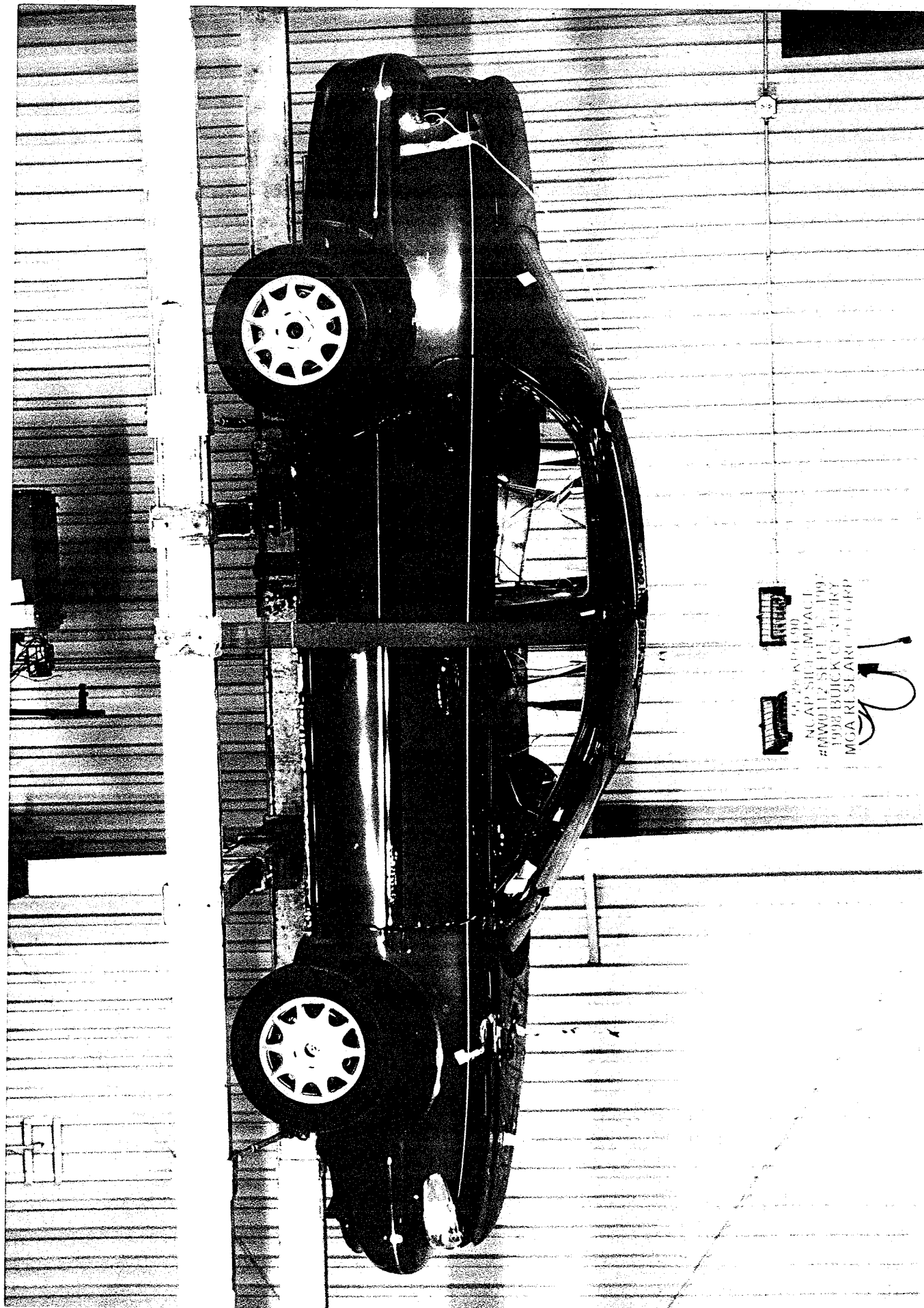


Photo No. A-46 - Rollover 90°

A-46



6/29/93 K. D. L. 100
NCAI SUE IMPACT
#FW0112 SEPT. 1, 1997
1993 BUICK CENTURY
MGA RL SLAR - 1000P

[Handwritten signature]

A-47

Photo No. A-47 - Rollover 180°

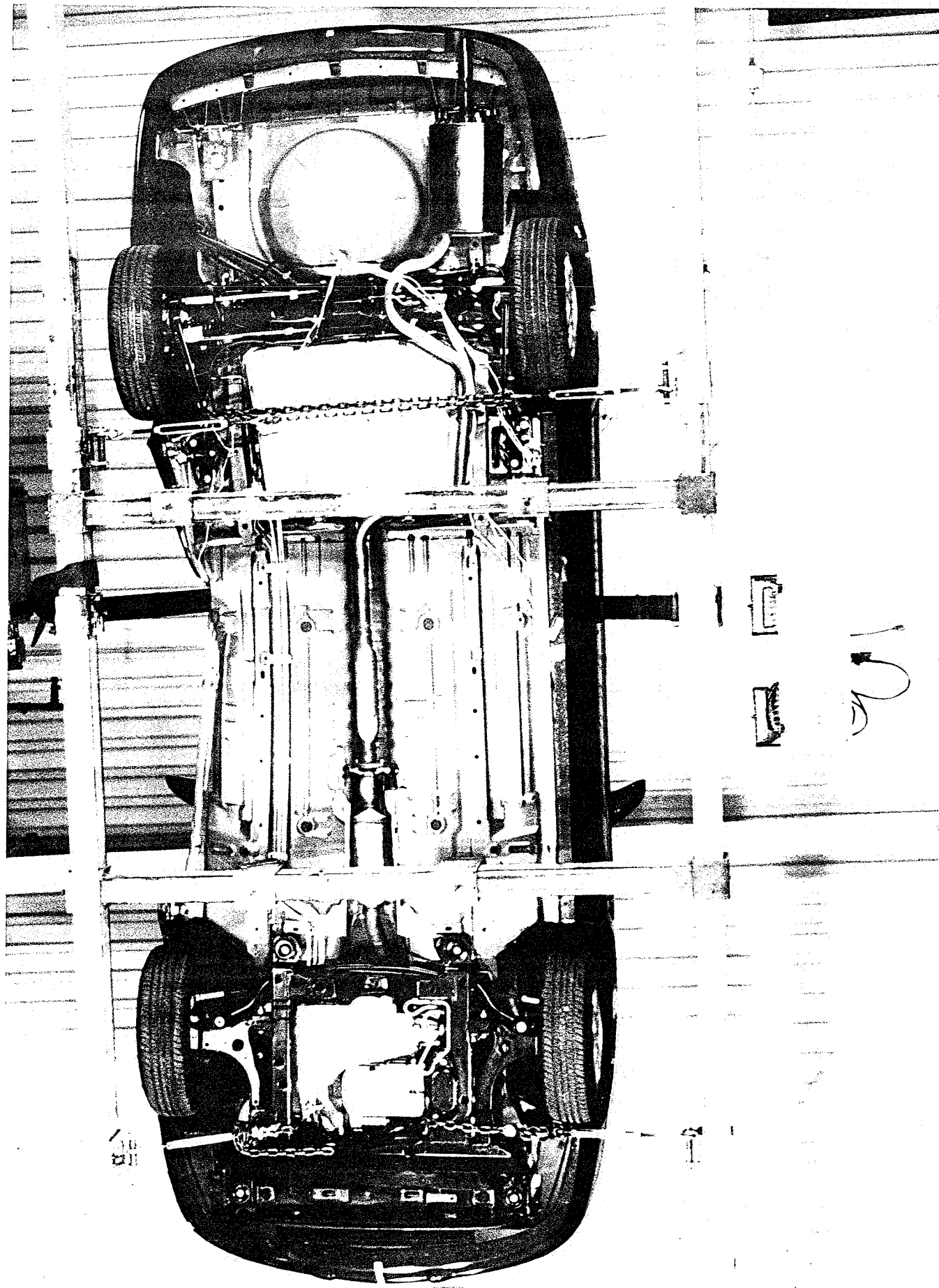
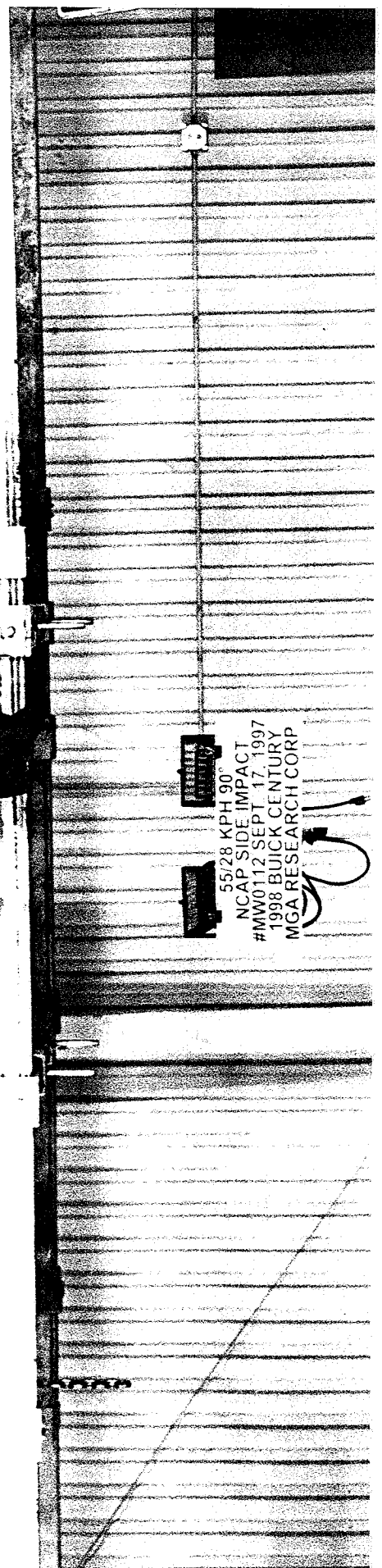
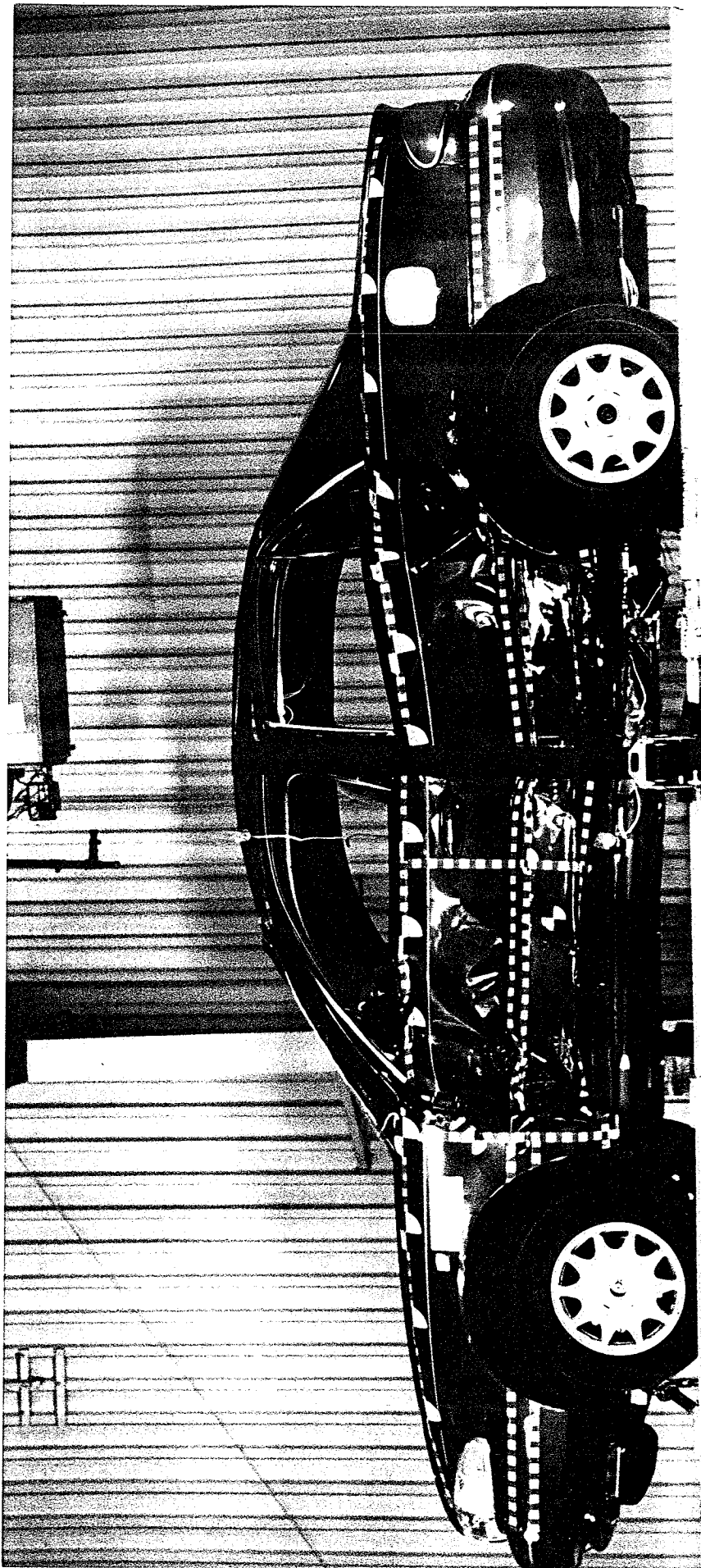


Photo No. A-48 - Rollover 270°



55/28 KPH 90°
NCAP SIDE IMPACT
#MW0112 SEPT. 17, 1997
1998 BUICK CENTURY
MGA RESEARCH CORP

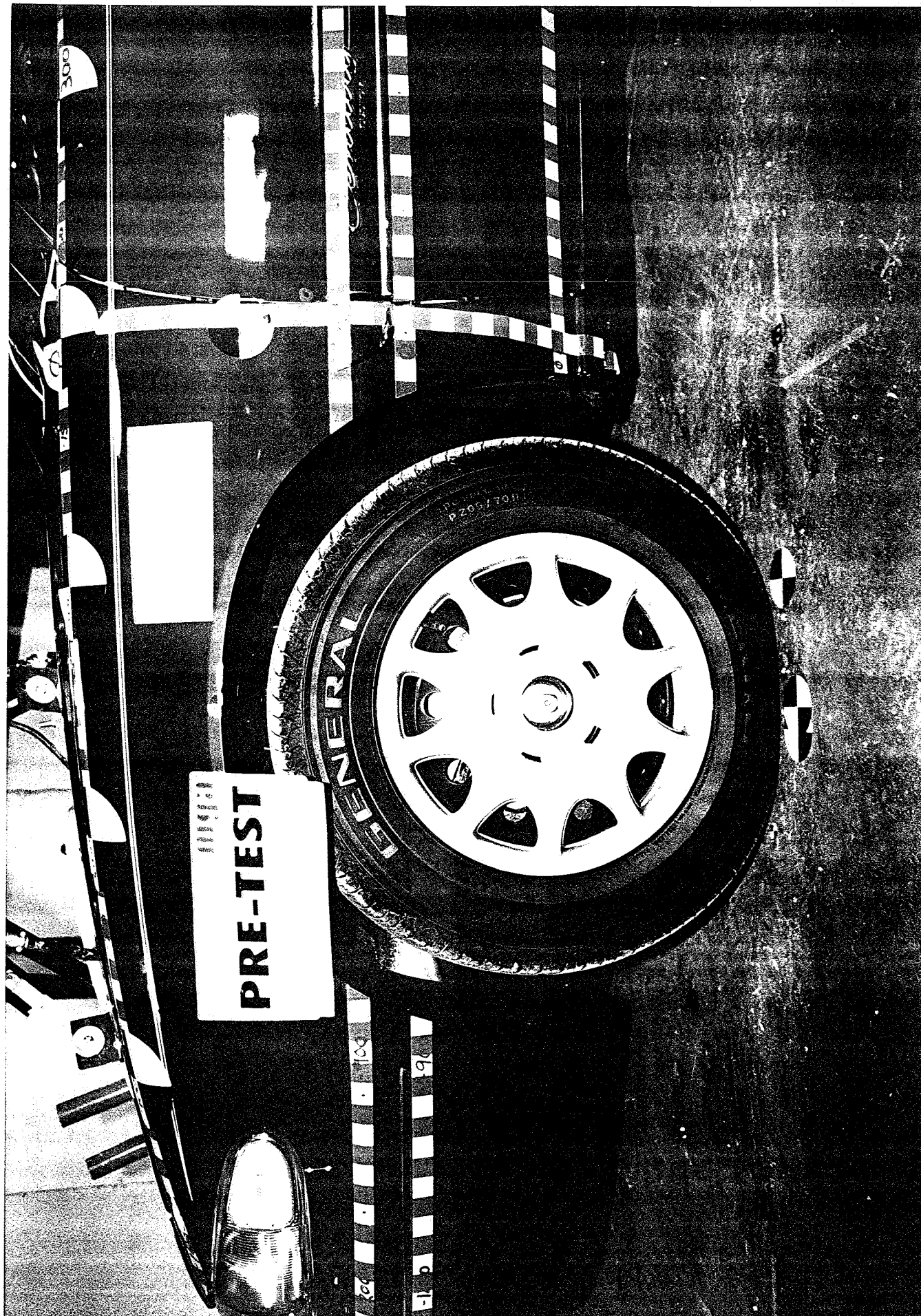


Photo No. A-50 - Left Front Attitude Point

A-50



Photo No. A-51 - Right Front Attitude Point

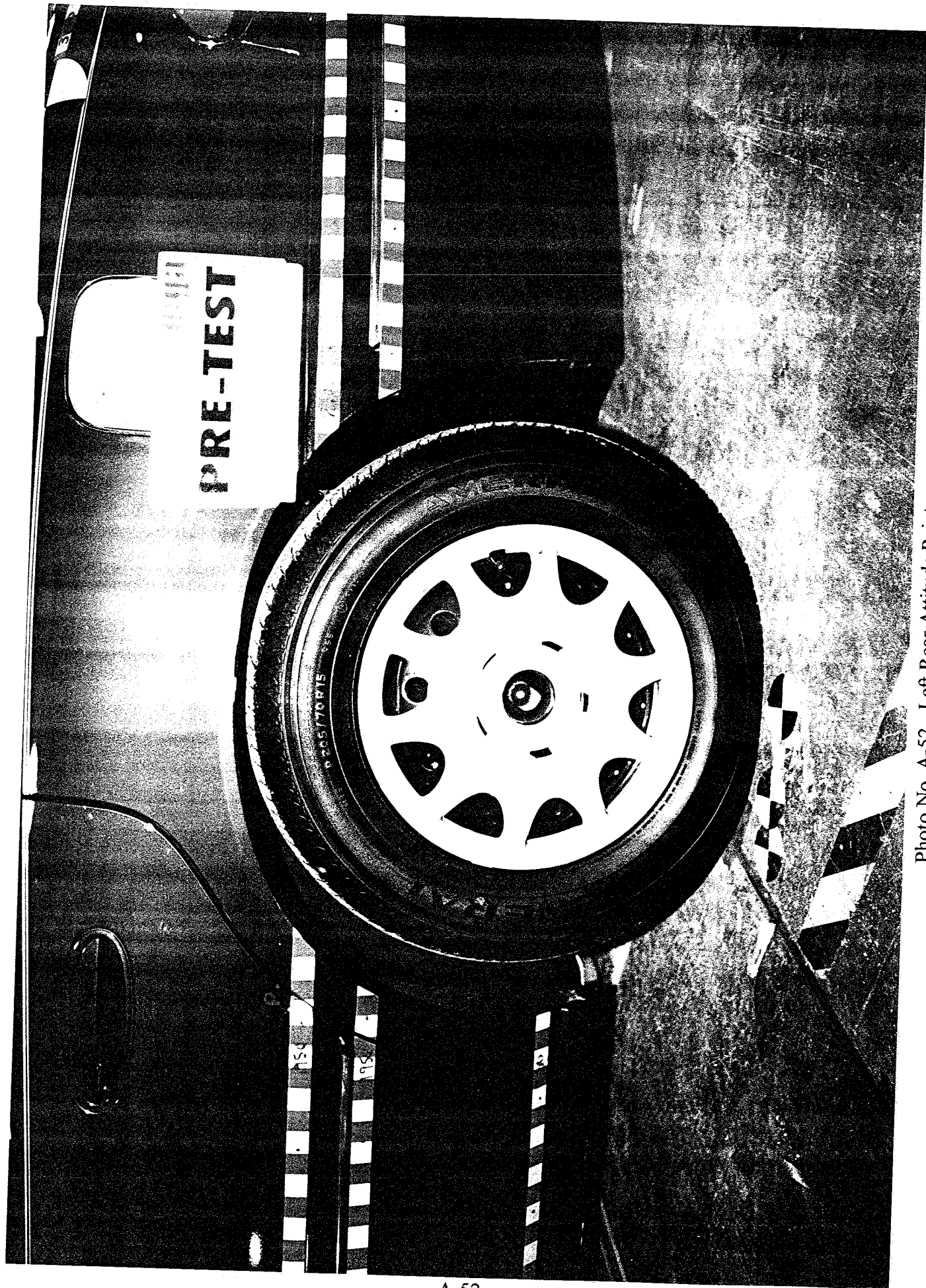


Photo No. A-52 - Left Rear Attitude Point



Photo No. A-53 - Right Rear Attitude Point

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FIR Filtered

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TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

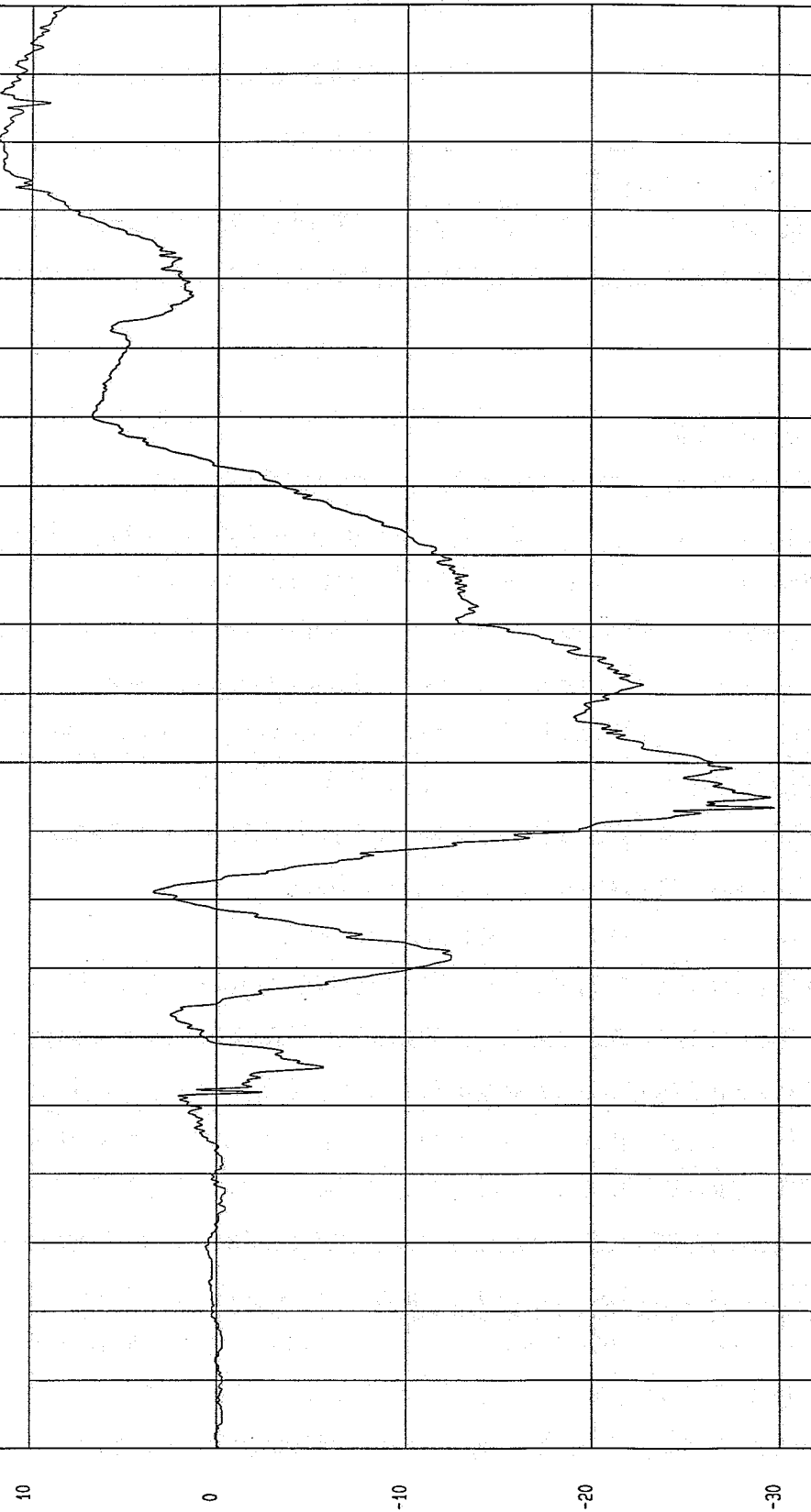
Speed: 38.1 MPH 61.3 KPH

Minimum = -29.75 G'S at 73 msec

Maximum = 11.89 G'S at 170 msec

DRIVER HEAD X ACCELERATION

1 _____ 89710BAF.A12 Filterclass (1000)



MGA Research
09-21-1997 17.44

TIME (SECONDS)

G.S

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

Speed: 38.1 MPH 61.3 KPH

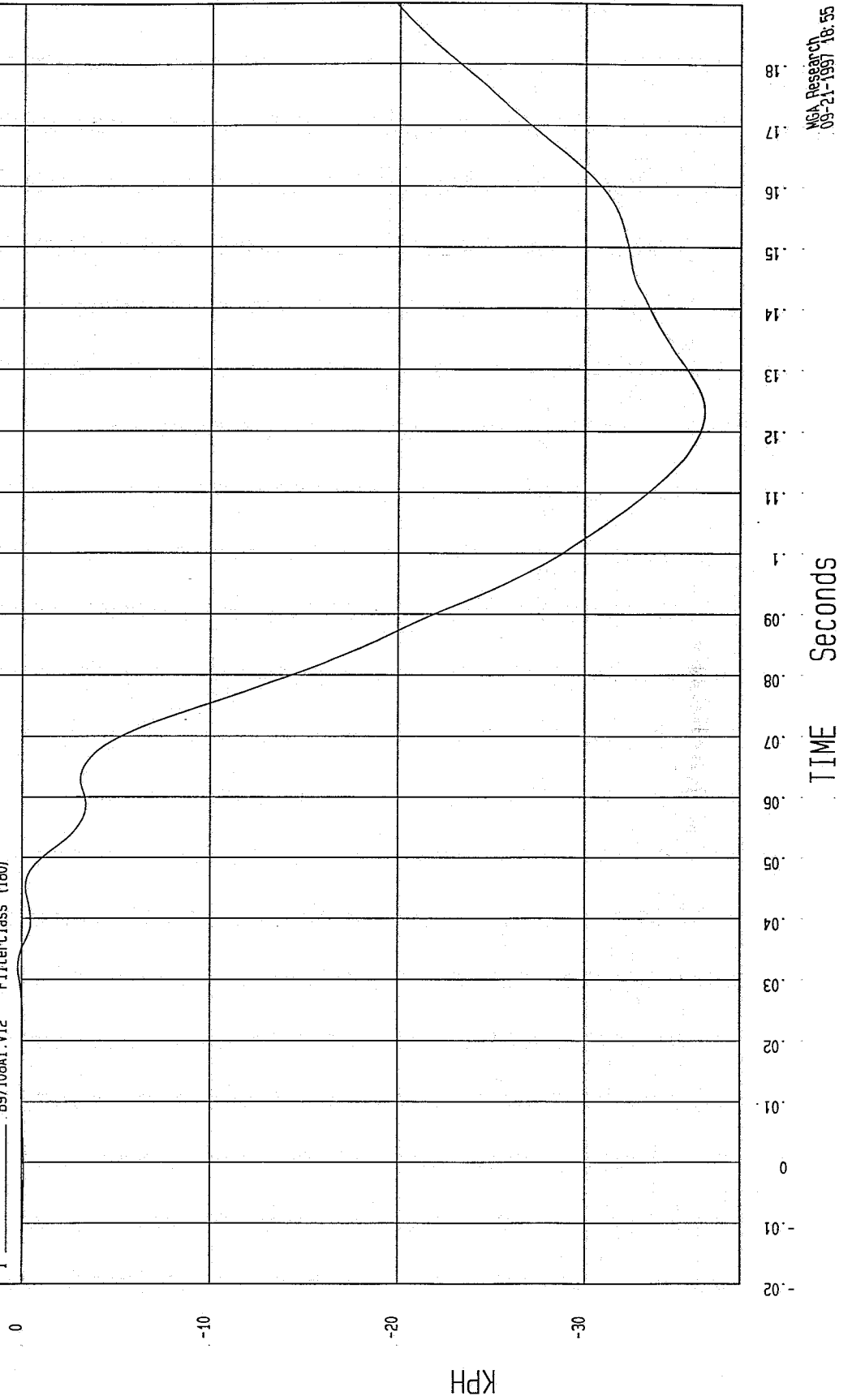
COMPONENT: 1998 BUICK CENTURY (MW0112)

Minimum = -36.42 KPH at 123 msec

Maximum = .21 KPH at 32 msec

DRIVER HEAD X VELOCITY

1 _____ B97108AI.V12 Filterclass (180)



MGA Research
09-21-1997 18:55

TIME Seconds

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

Speed: 38.1 MPH 61.3 KPH

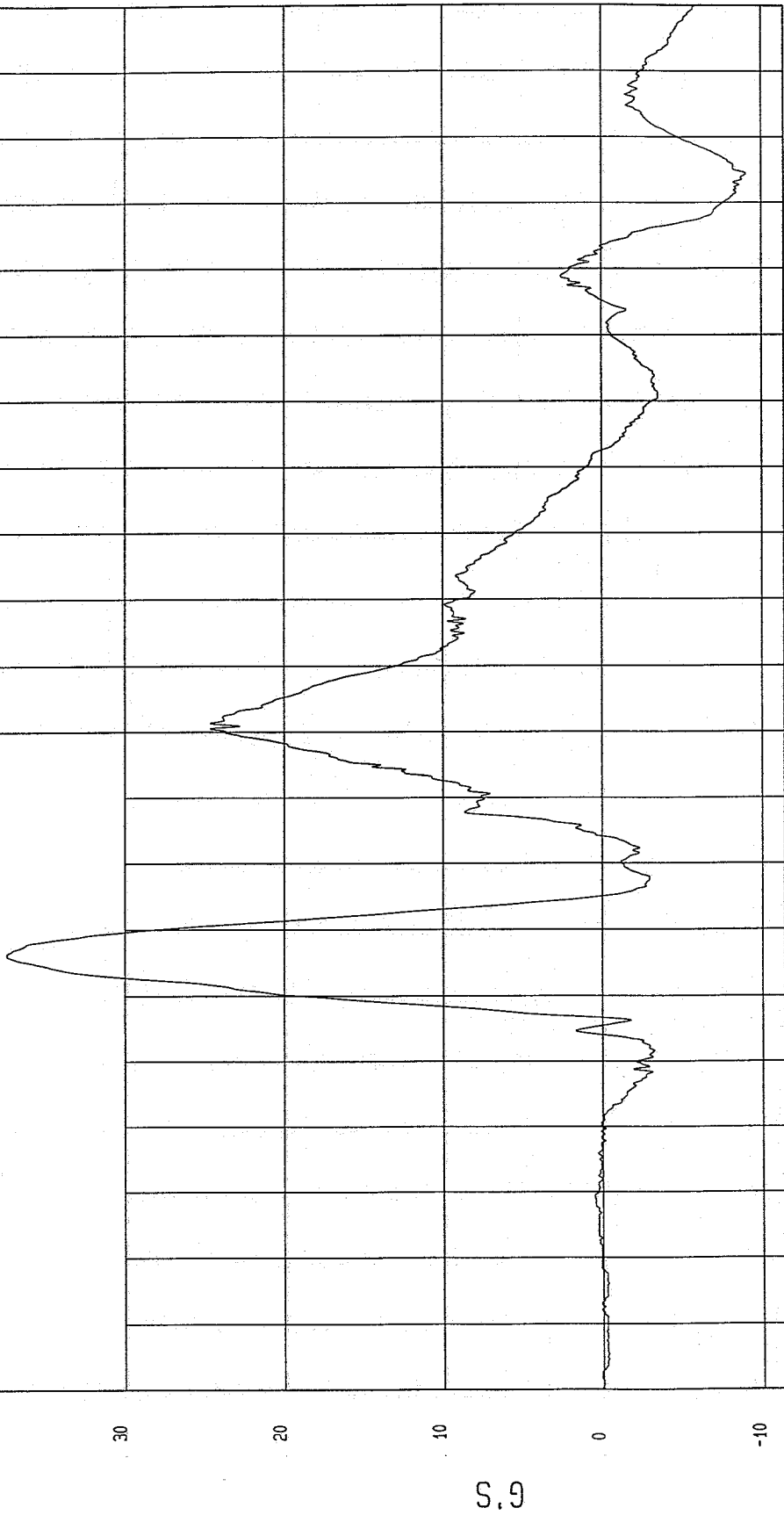
COMPONENT: 1998 BUICK CENTURY (MW0112)

Maximum = 37.33 G'S at 46 msec

Minimum = -9.05 G'S at 164 msec

DRIVER HEAD Y ACCELERATION

1 _____ B97108AF.A13 Filterclass (1000)



MCA Research
09-21-1997 17.44

TIME (SECONDS)

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

Speed: 38.1 MPH 61.3 KPH

Minimum = -.79 KPH at 34 msec

Maximum = 33.91 KPH at 122 msec

DRIVER HEAD Y VELOCITY

1 _____ B97108AI.V13 Filterclass (180)

34

32

30

28

26

24

22

20

18

16

14

12

10

8

6

4

2

0

-2

KPH

-20

-10

0

10

20

30

40

50

60

70

80

90

100

110

120

130

140

150

160

170

180

TIME Seconds

MCA Research
09-21-1997 18:55

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

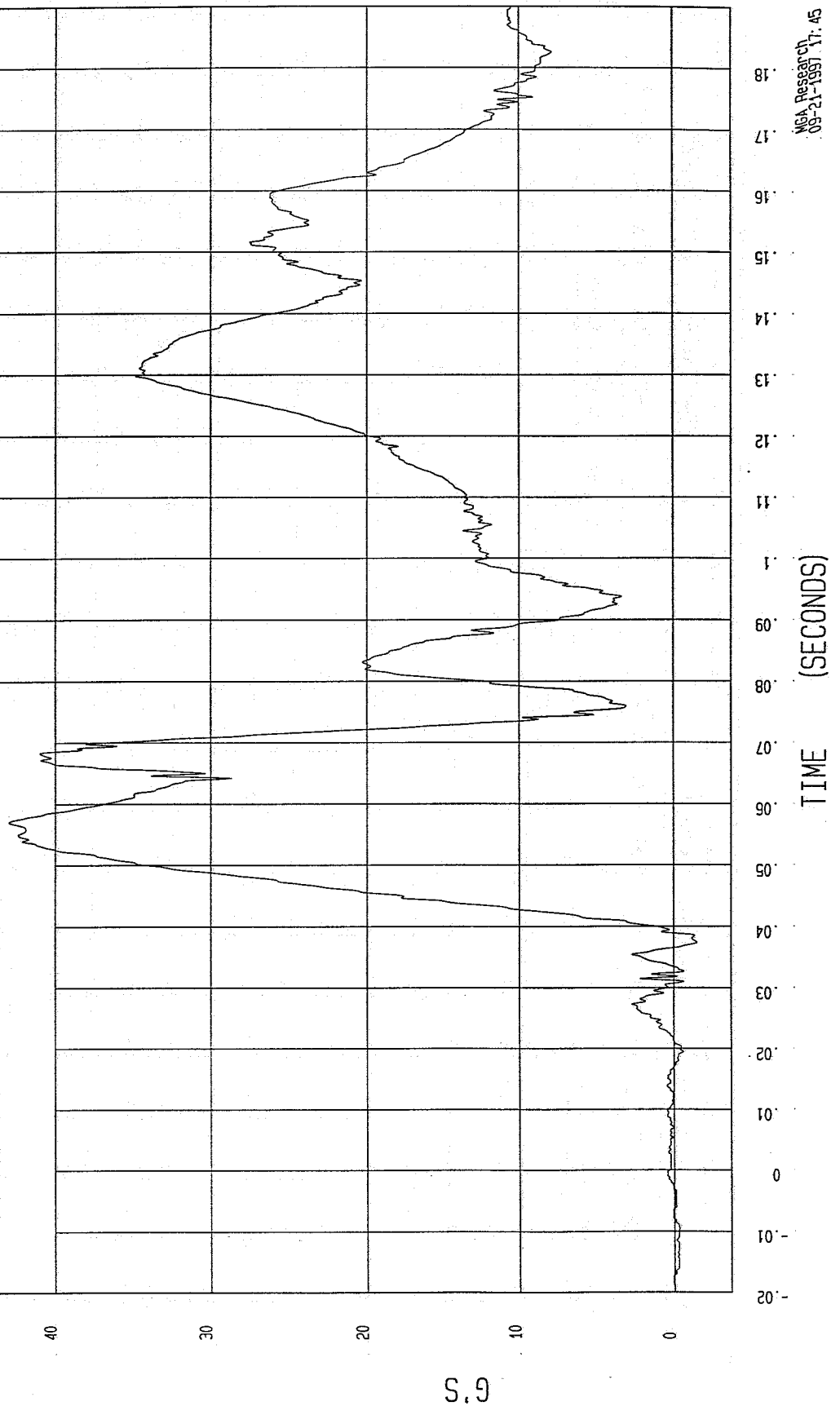
Speed: 38.1 MPH 61.3 KPH

Minimum = -1.53 G'S at 37 msec

Maximum = 43.02 G'S at 57 msec

DRIVER HEAD Z ACCELERATION

1 B97109AF.A14 Filterclass (1000)



NGA Research
09-21-1997 17:45

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

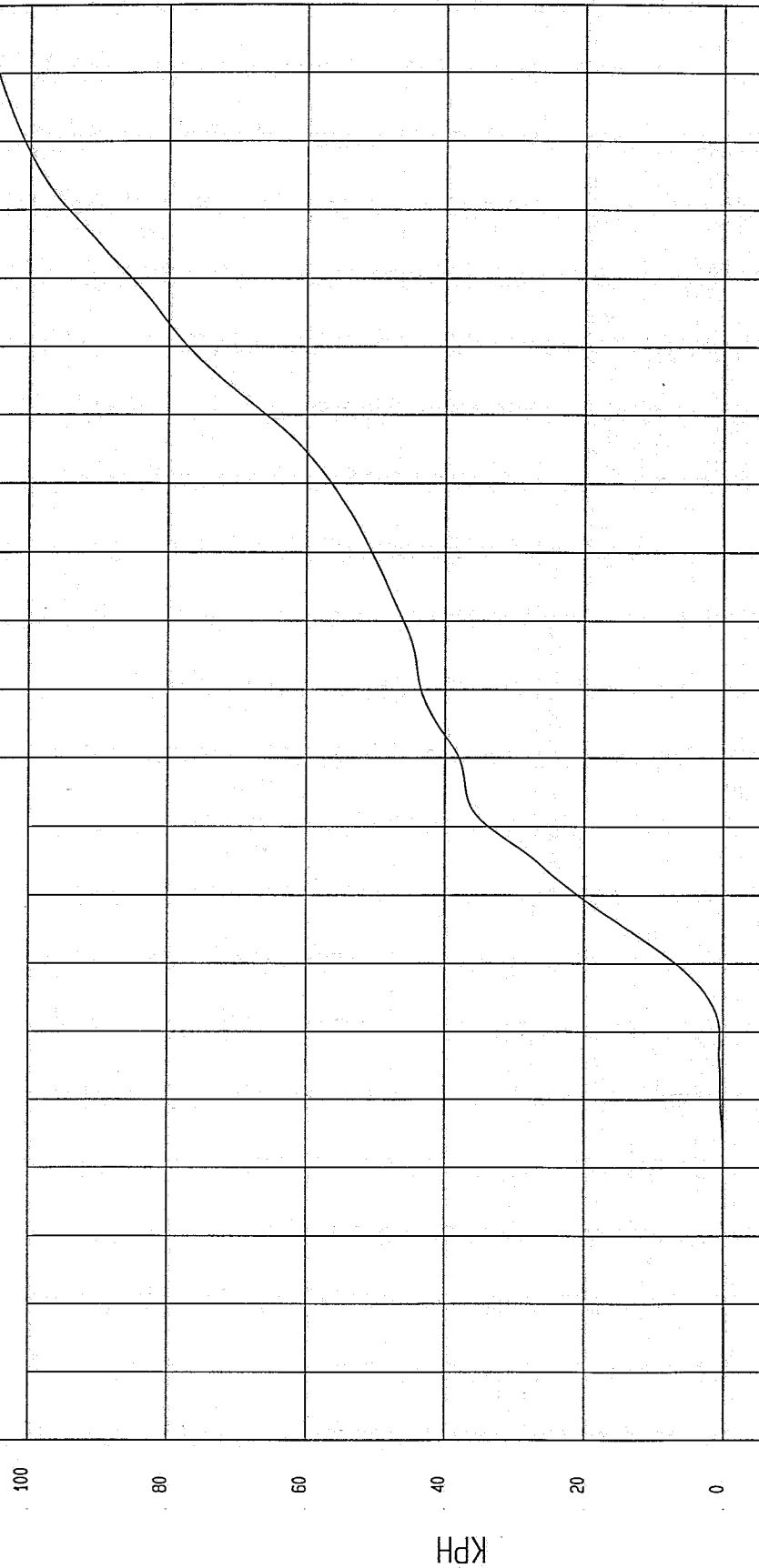
Speed: 38.1 MPH 61.3 KPH

Minimum = -.09 KPH at -3 msec

Maximum = 110.96 KPH at 200 msec

DRIVER HEAD Z VELOCITY

1 B97108A1.V14 Filterclass (180)



MGA Research
09-21-1997 18:55

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

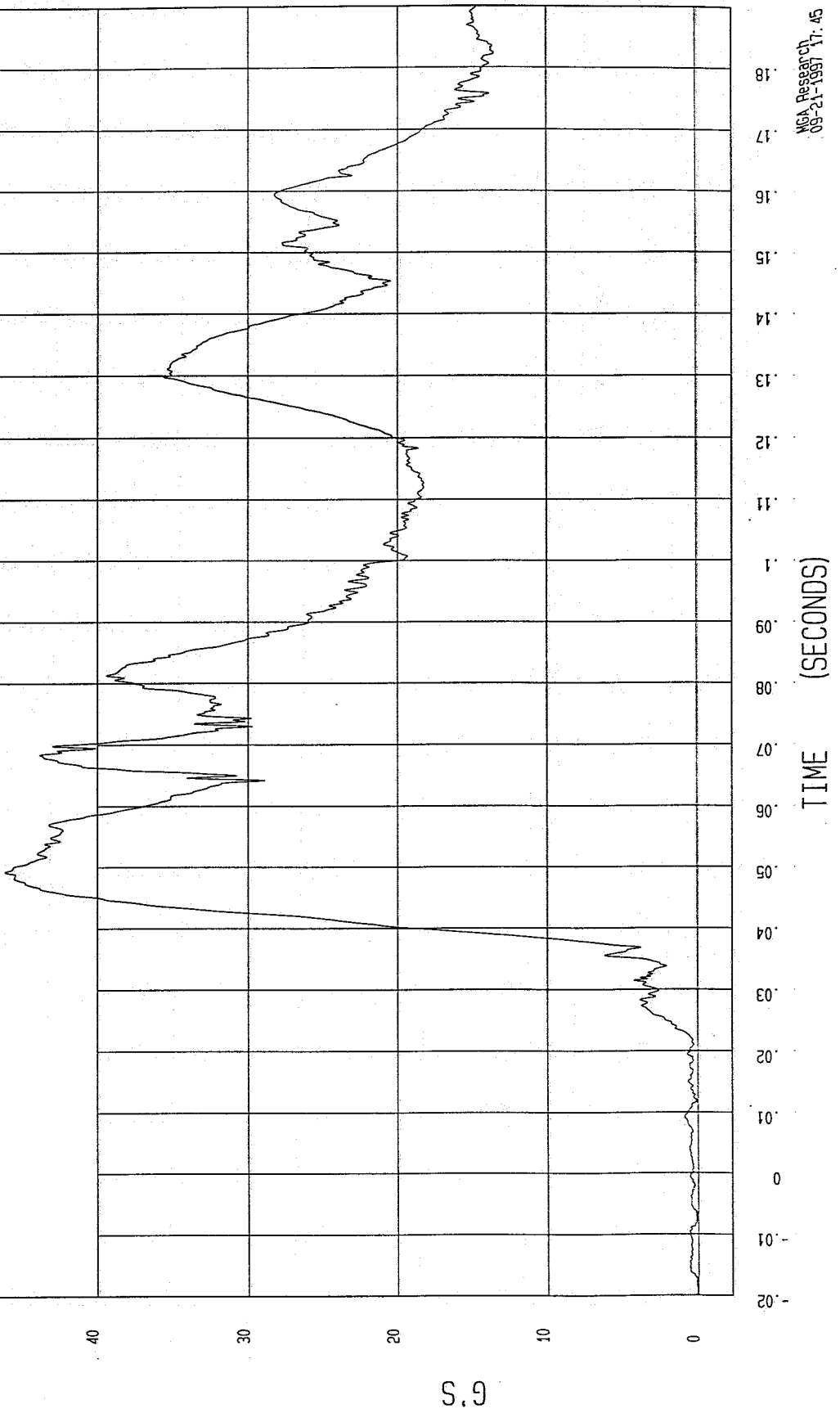
Speed: 38.1 MPH 61.3 KPH

Minimum = 4.23E-02 G'S at -19 msec

Maximum = 46.10 G'S at 49 msec

DRIVER HEAD RESULTANT

1 _____ 897108AV.A12 Filterclass (1000)



NCA Research
09-21-1997 17:45

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

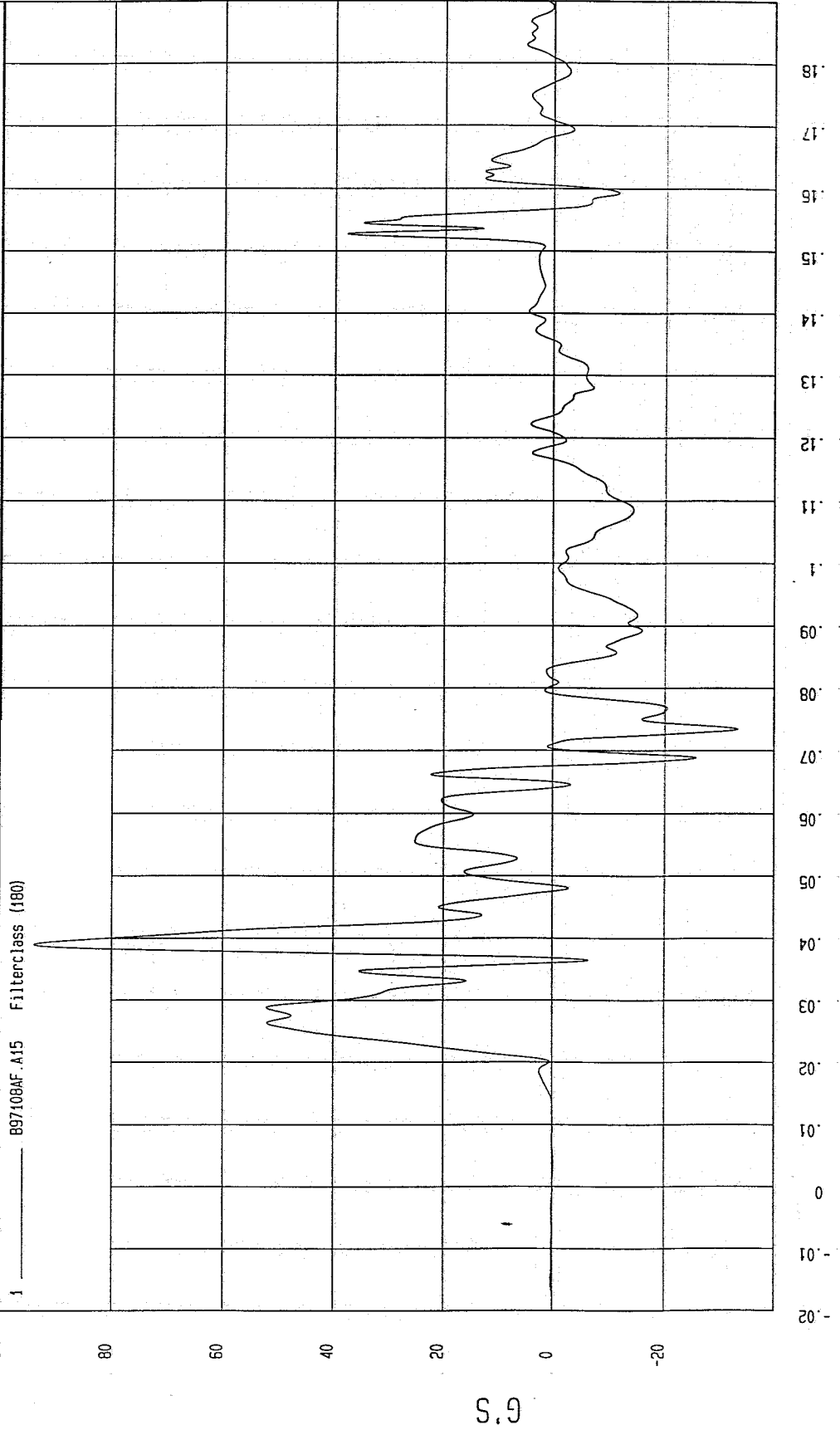
COMPONENT: 1998 BUICK CENTURY (MW0112)

Speed: 38.1 MPH 61.3 KPH

Minimum = -33.27 G'S at 73 msec

Maximum = 93.89 G'S at 39 msec

DRIVER UPPER RIB Y ACCELERATION



WGA Research
09-21-1997 17:45

TIME (SECONDS)

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

Speed: 38.1 MPH 61.3 KPH

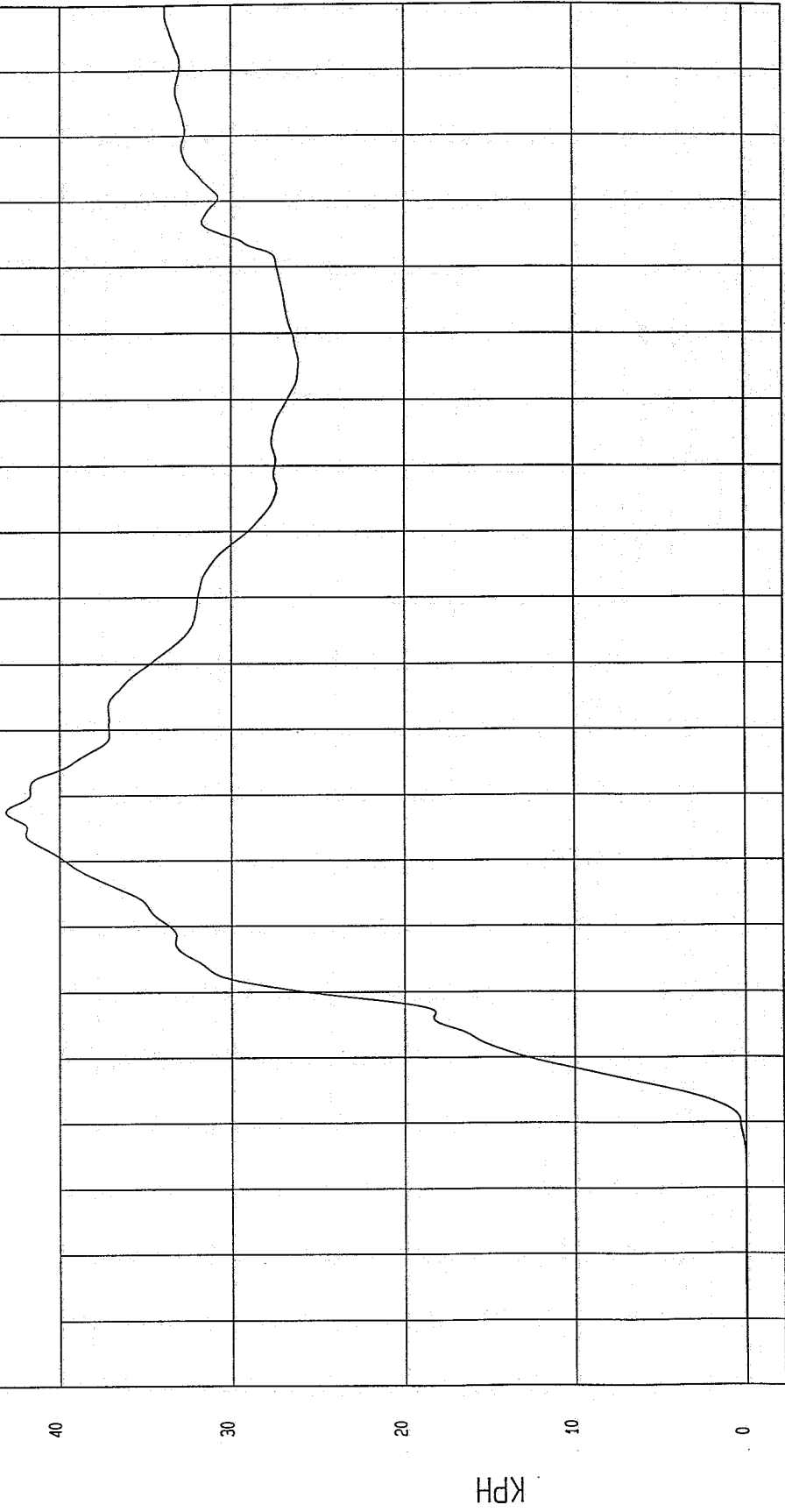
COMPONENT: 1998 BUICK CENTURY (MW0112)

Minimum = -2.18E-03 KPH at -18 msec

Maximum = 43.08 KPH at 68 msec

DRIVER UPPER RIB Y VELOCITY

1 897108A1.V15 Filterclass (180)



TIME Seconds
WCA Research
09-21-1997 10:56

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

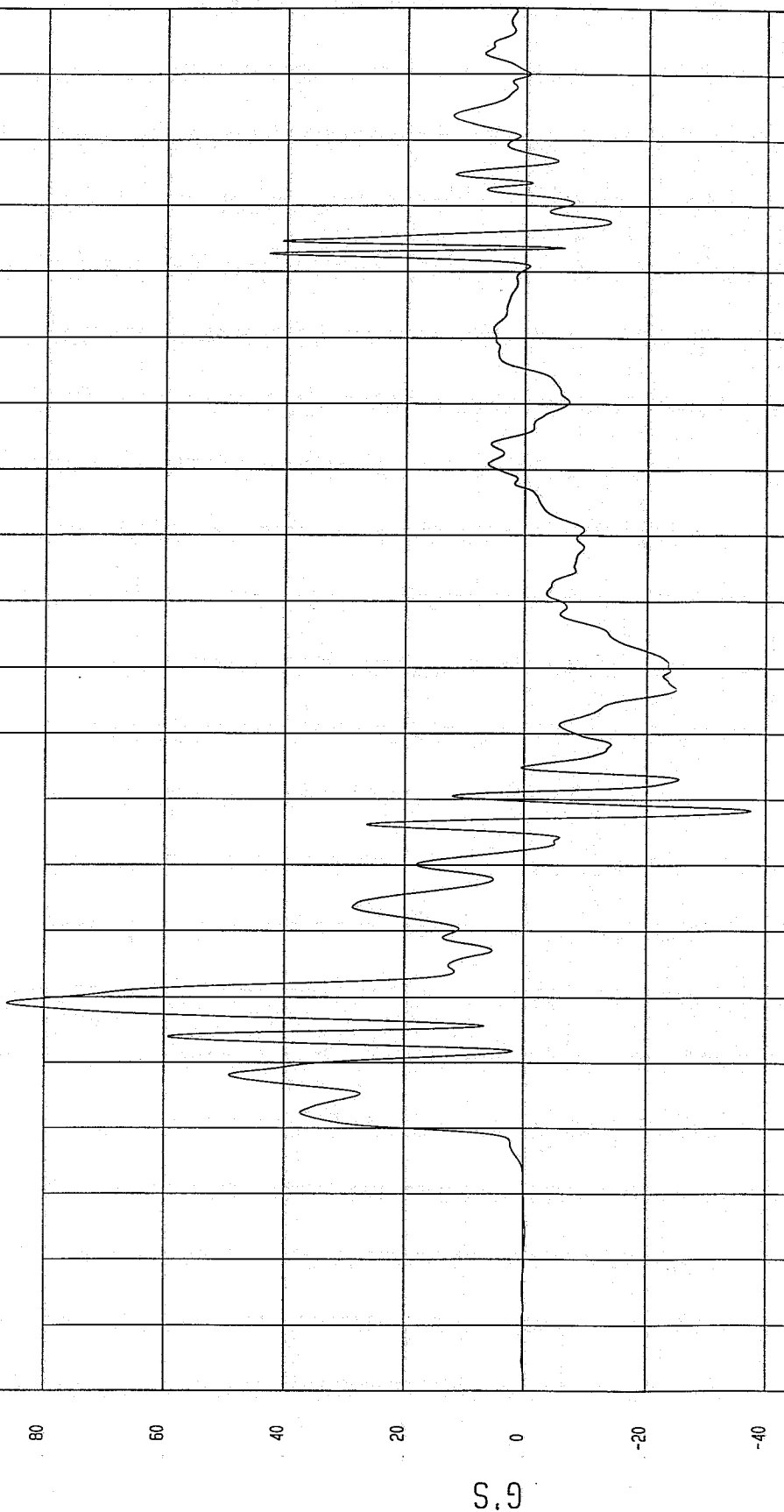
Speed: 38.1 MPH 61.3 KPH

Minimum = -37.66 G'S at 68 msec

Maximum = 86.09 G'S at 39 msec

DRIVER LOWER RIB Y ACCELERATION

1 897100AF.A16 Filterclass (180)



TIME (SECONDS)

NCA Research
09-21-1997 17.45

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

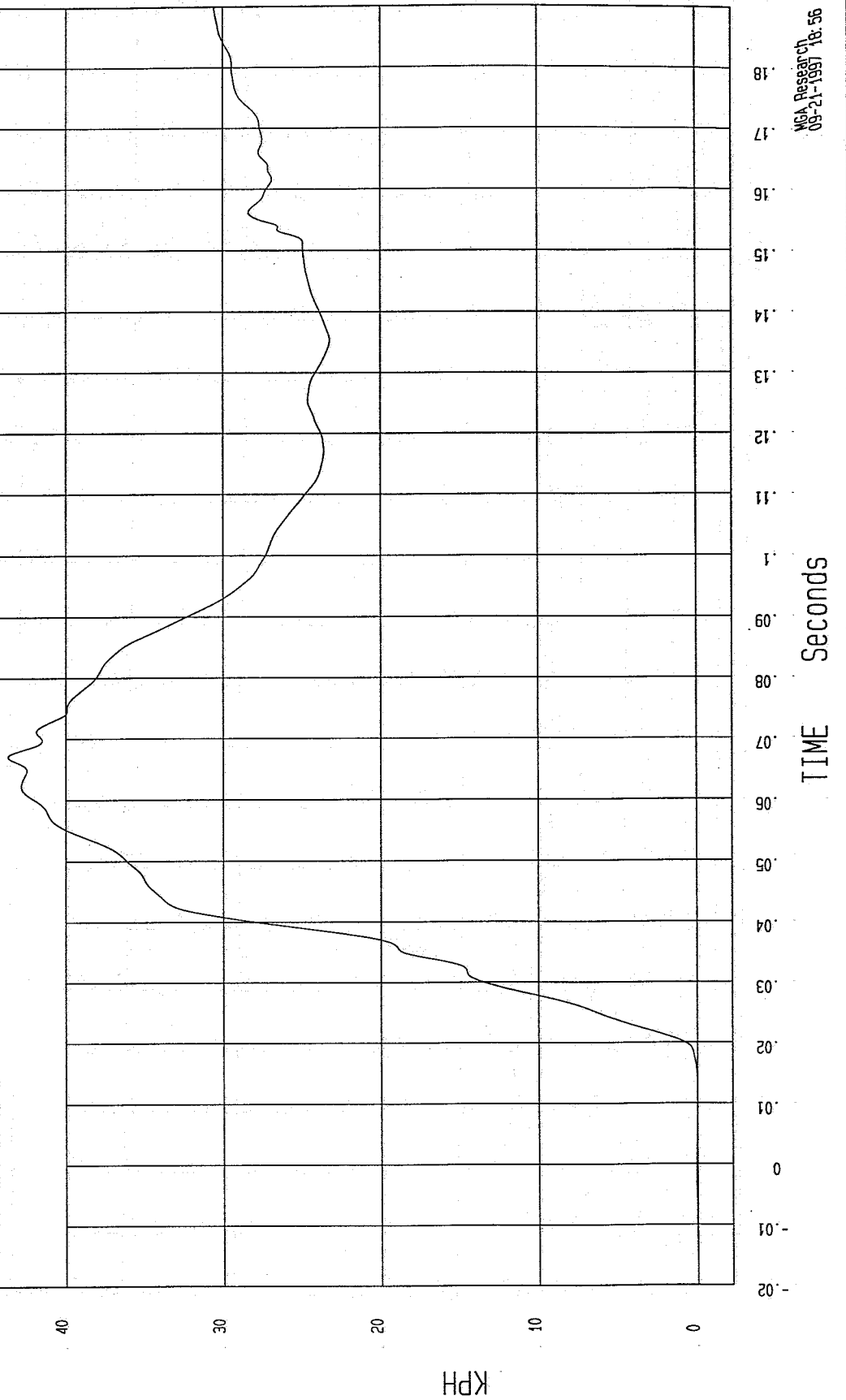
Speed: 38.1 MPH 61.3 KPH

Minimum = -6.27E-03 KPH at -17 msec

Maximum = 43.70 KPH at 67 msec

DRIVER LOWER RIB Y VELOCITY

1 ——— B97108A1.V16 Filterclass (180)



NGA Research
09-21-1997 18:56

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

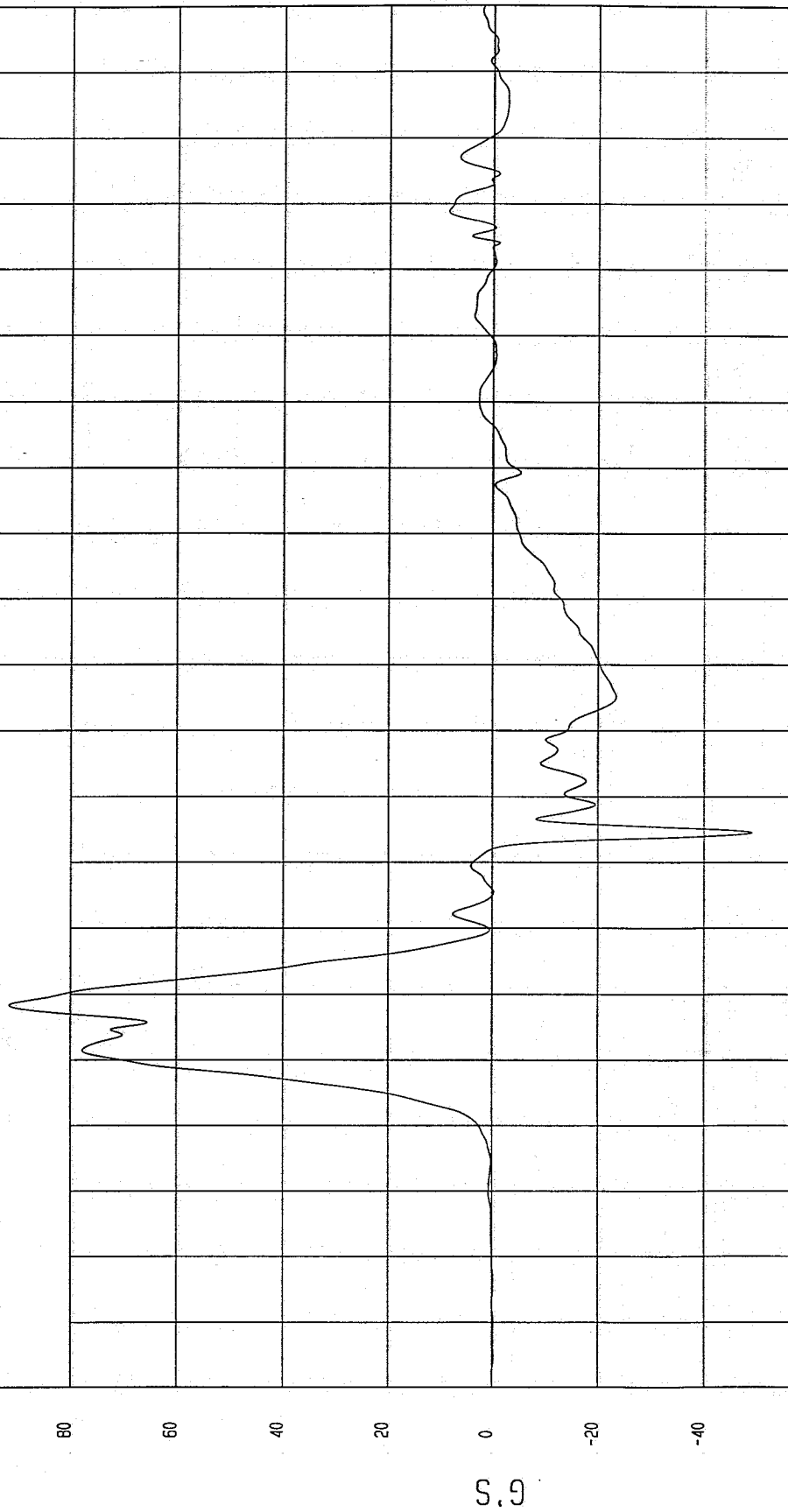
Speed: 38.1 MPH 61.3 KPH

Minimum = -49.02 G'S at 64 msec

Maximum = 91.62 G'S at 38 msec

DRIVER LOWER SPINE Y ACCELERATION

1 ——— B97108AF.A17 Filterclass (180)



TIME (SECONDS)

NCA Research
09-21-1997 17:45

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

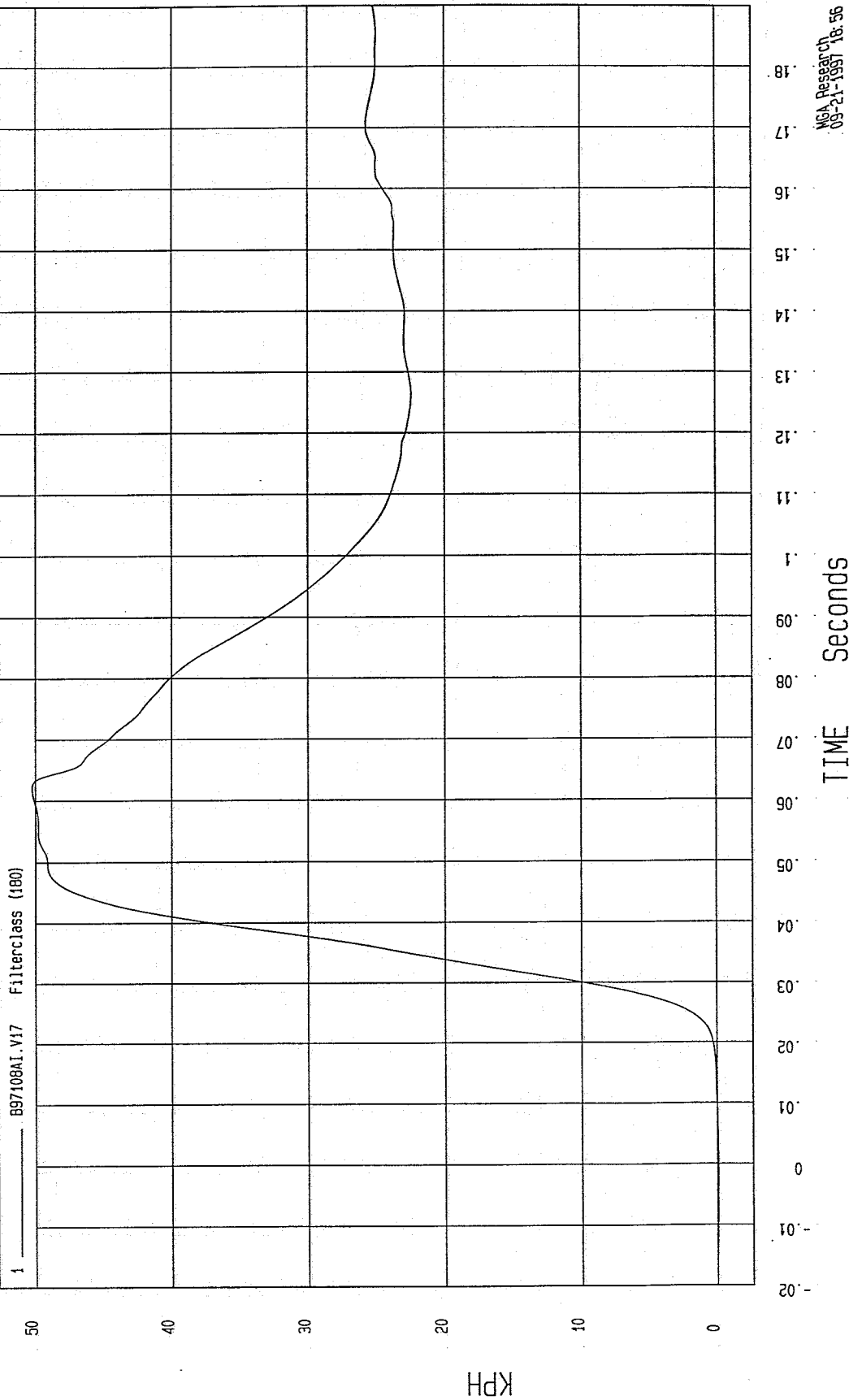
COMPONENT: 1998 BUICK CENTURY (MW0112)

Speed: 38.1 MPH 61.3 KPH

Minimum = -7.78E-02 KPH at -2 msec

Maximum = 50.24 KPH at 62 msec

DRIVER LOWER SPINE Y VELOCITY



TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

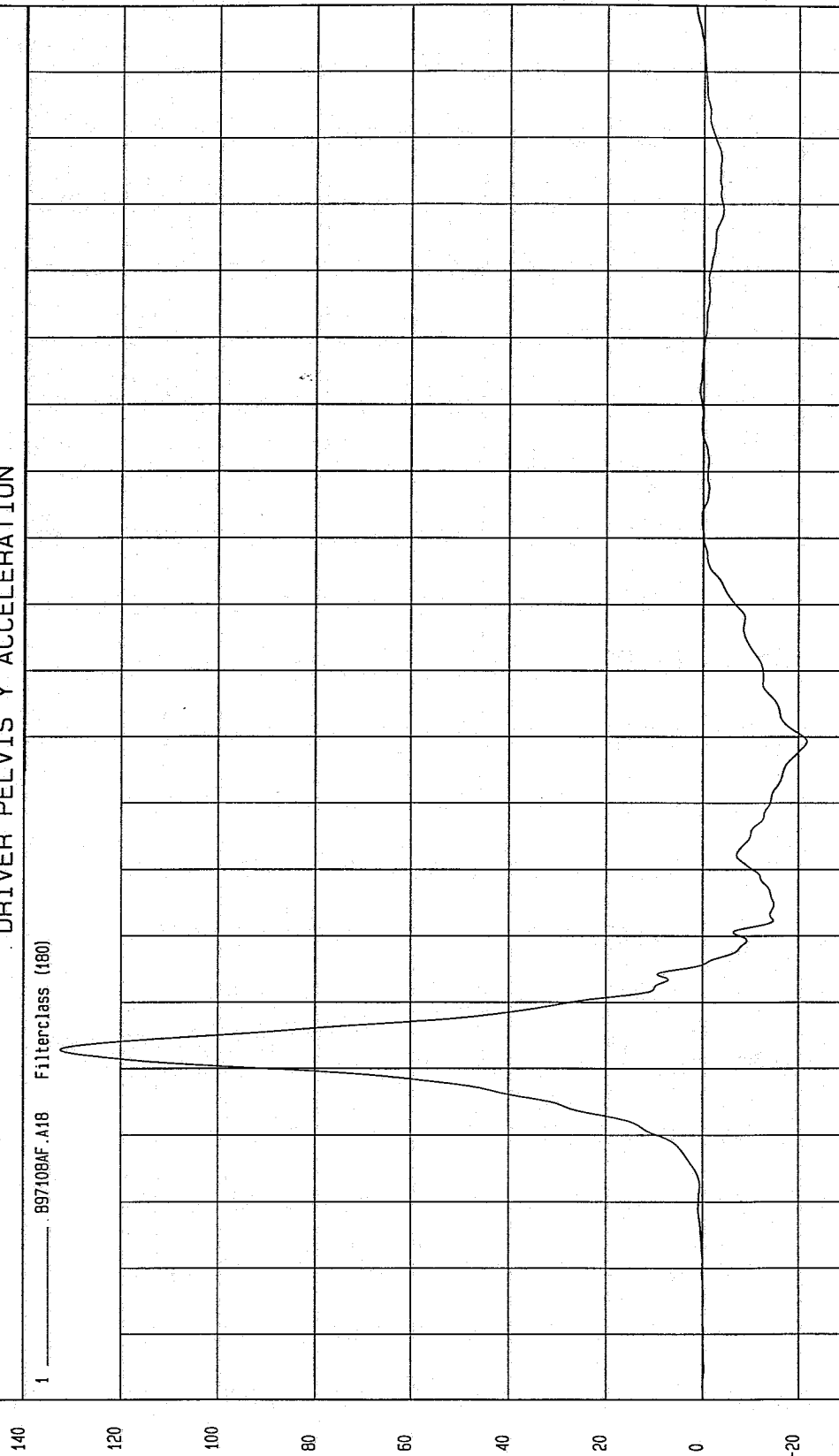
Speed: 38.1 MPH 61.3 KPH

Minimum = -21.74 G'S at 79 msec

Maximum = 132.53 G'S at 33 msec

DRIVER PELVIS Y ACCELERATION

1 _____ 897108AF.A18 Filterclass (180)



MCA Research
09-21-1997 17:46

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

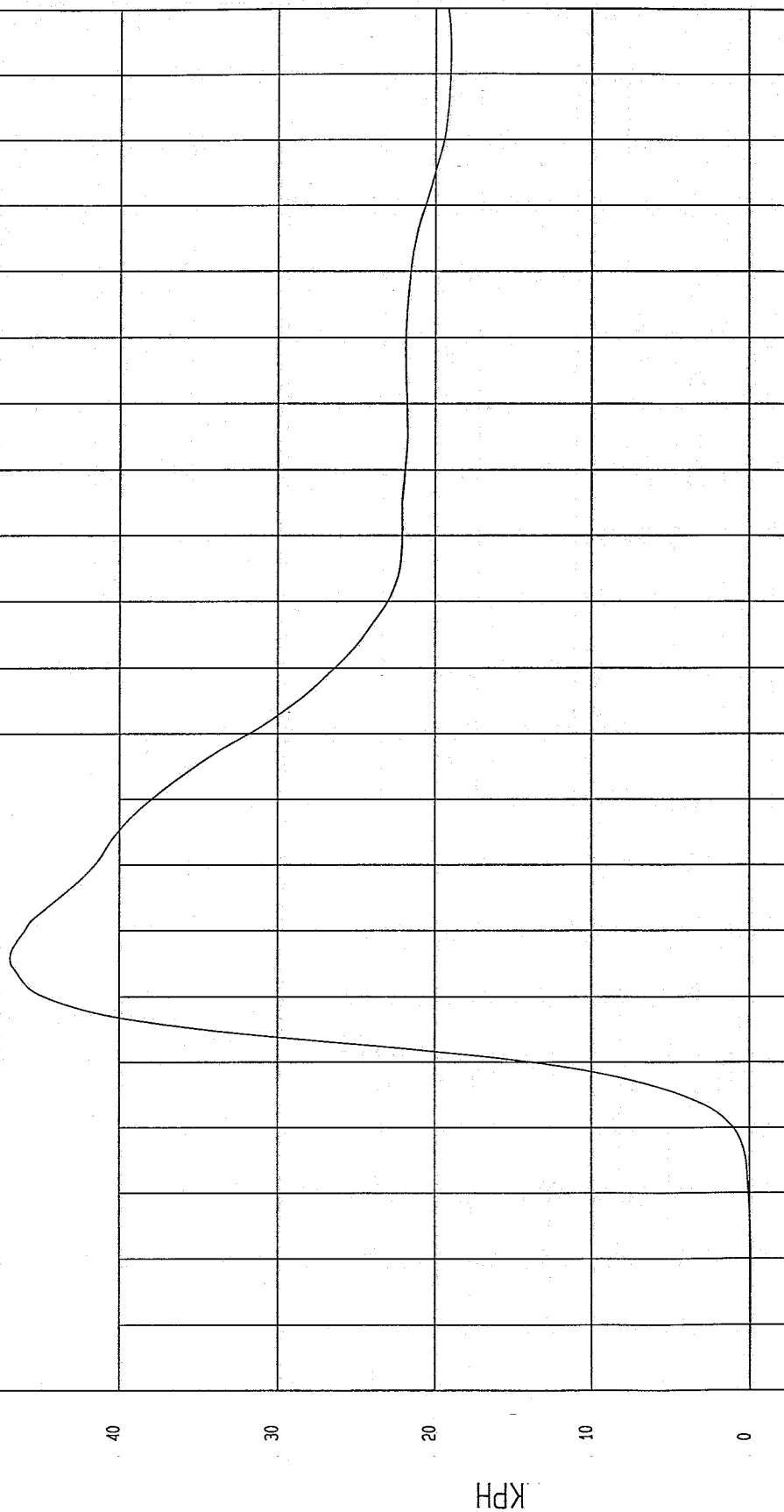
Speed: 38.1 MPH 61.3 KPH

Minimum = -6.56E-02 KPH at -2 msec

Maximum = 46.98 KPH at 46 msec

DRIVER PELVIS Y VELOCITY

1 _____ .B97108A1.V18 Filterclass (180)



TIME Seconds

MECA Research
09-21-1997 18:56

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112) Speed: 38.1 MPH 61.3 KPH

Minimum = -20.33 G'S at 77 msec
Maximum = 14.41 G'S at 176 msec

REAR PASSENGER HEAD X ACCELERATION

1 B97109AF.A22 Filterclass (1000)

16

14

12

10

8

6

4

2

0

-2

-4

-6

-8

-10

-12

-14

-16

-18

-20

-22

G'S

18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
-1
-2
-3
-4
-5
-6
-7
-8
-9
-10
-11
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-16
-17
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-19
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-21
-22

TIME (SECONDS)

NCA Research
09-21-1997 17:45

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

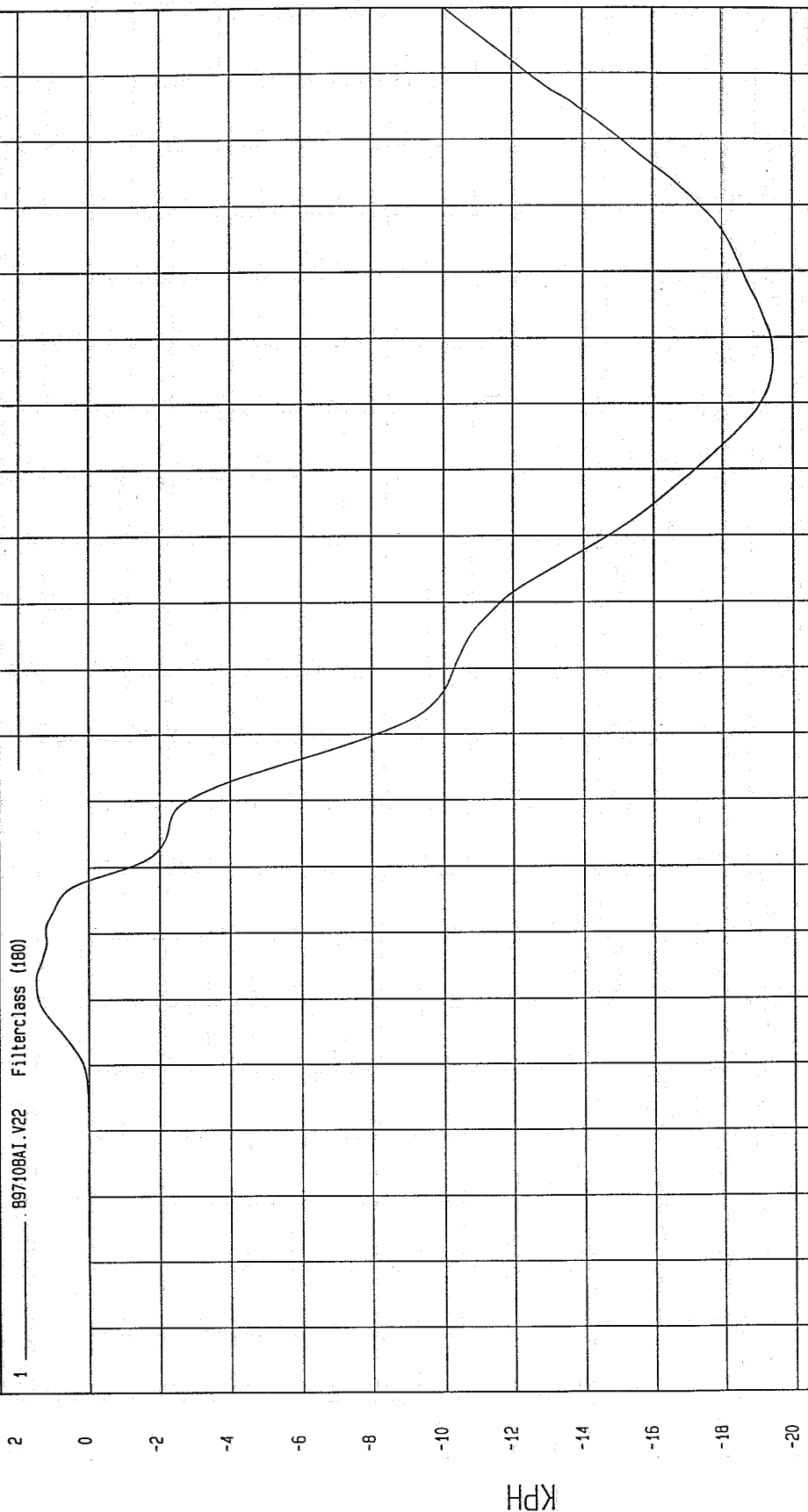
Speed: 38.1 MPH 61.3 KPH

Minimum = -19.45 KPH at 137 msec

Maximum = 1.50 KPH at 43 msec

REAR PASSENGER HEAD X VELOCITY

1 _____ .897108A1.V22 Filterclass (180)



MGA Research
09-21-1997 18:55

TIME Seconds

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-17-1997

SPEED: 38.1 MPH 61.3 KPH

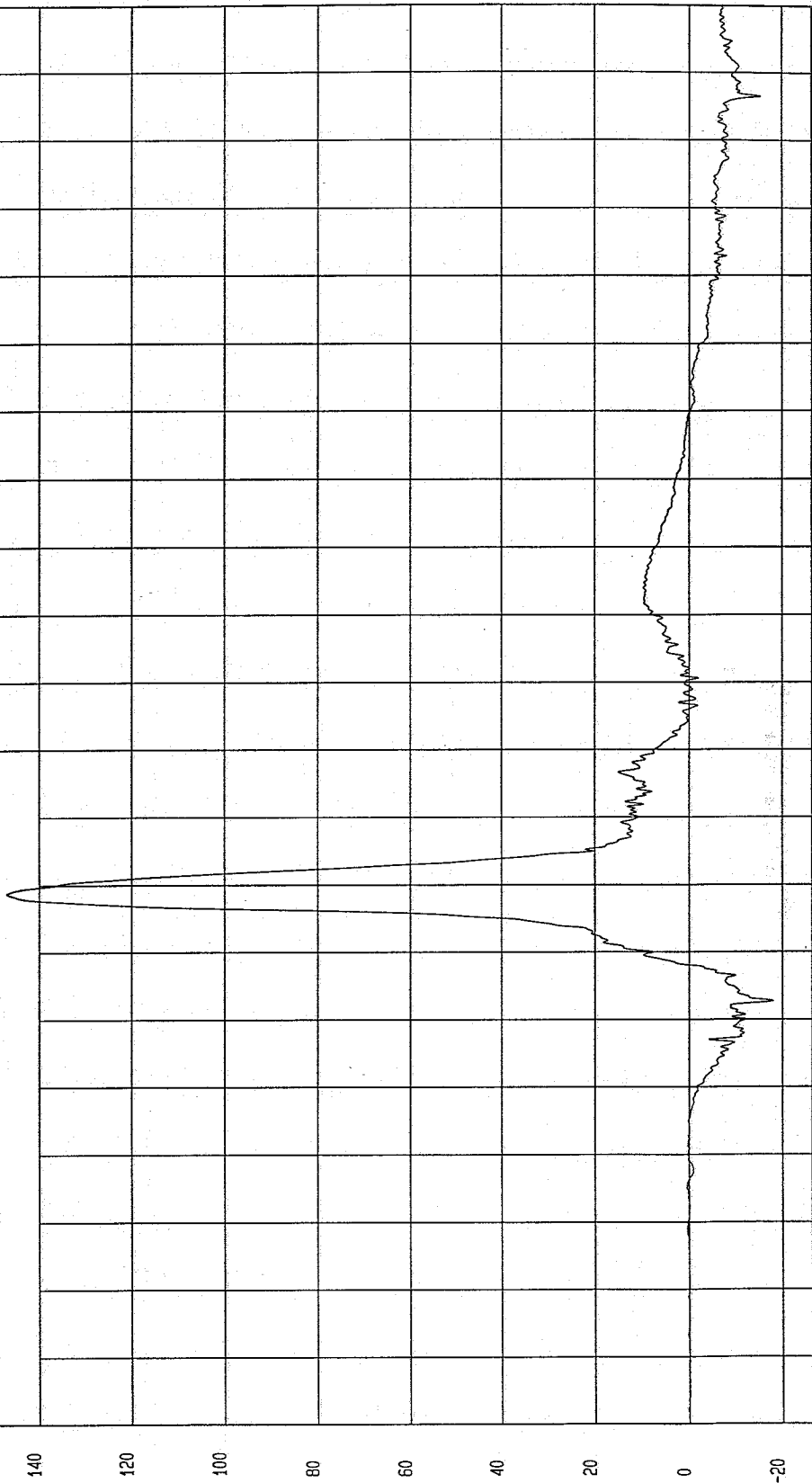
COMPONENT: 1998 BUICK CENTURY (MW0112)

Maximum = 146.99 G'S at 59 msec

Minimum = -18.08 G'S at 43 msec

REAR PASSENGER HEAD Y ACCELERATION

1 B97108AF.A23 Filterclass (1000)



MGA Research
09-21-1997 17:45

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

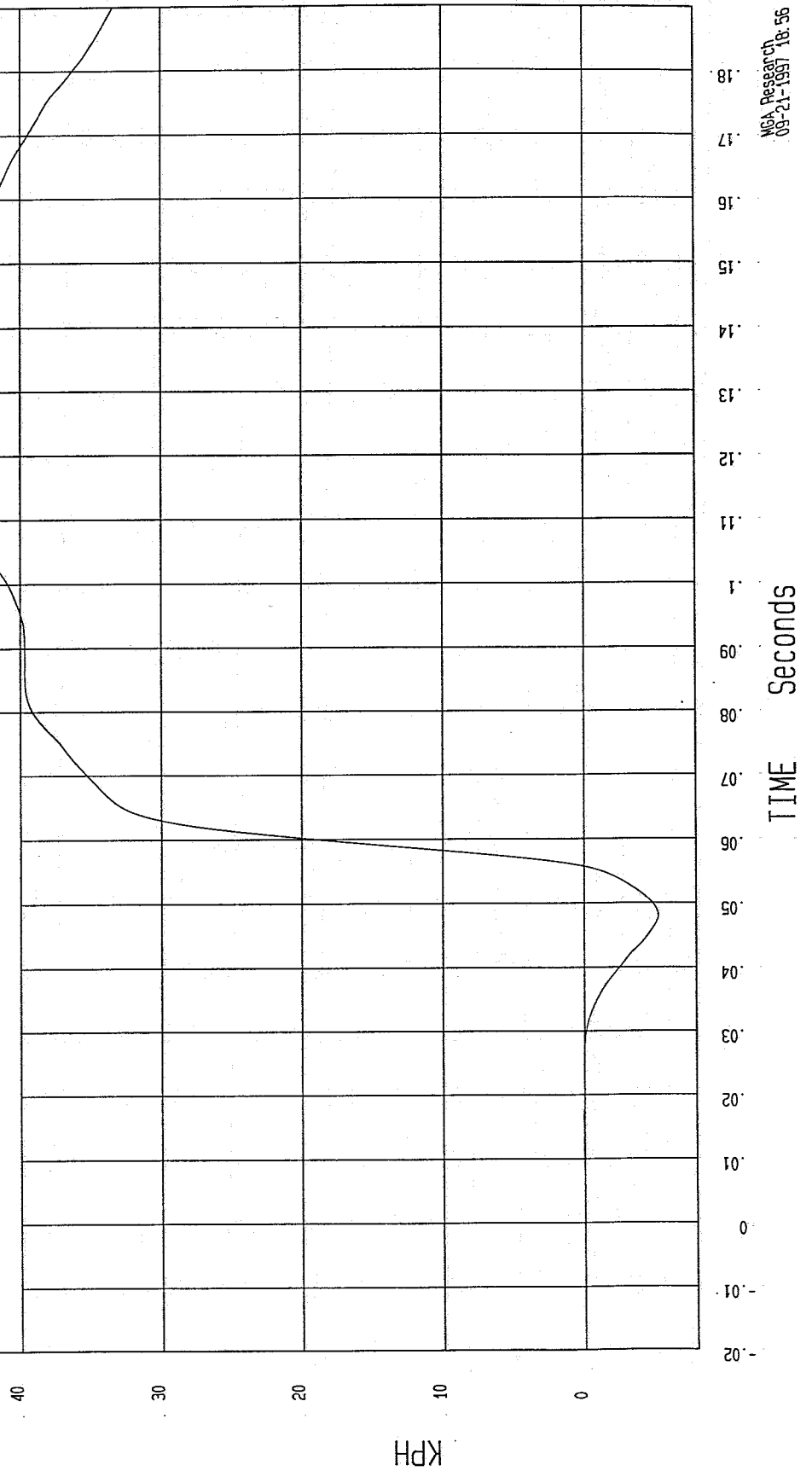
Speed: 38.1 MPH 61.3 KPH

Minimum = -5.36 KPH at 48 msec

Maximum = 46.05 KPH at 130 msec

REAR PASSENGER HEAD Y VELOCITY

1 ——— .B97108A1.V23 Filterclass (180)



WGA Research
09-21-1997 18:56

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

Speed: 38.1 MPH 61.3 KPH

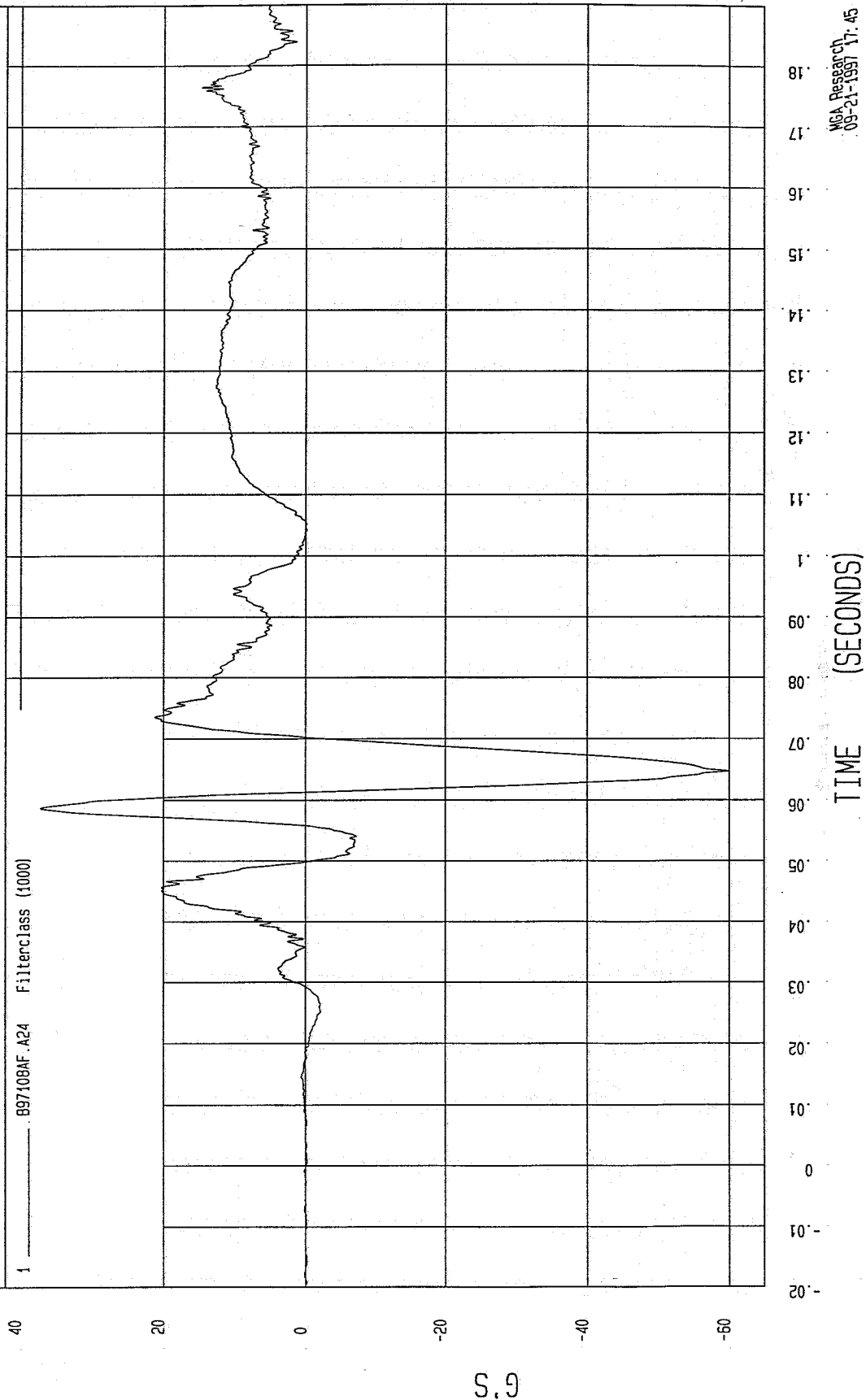
COMPONENT: 1998 BUICK CENTURY (MW0112)

Maximum = 37.24 G'S at 59 msec

Minimum = -59.91 G'S at 65 msec

REAR PASSENGER HEAD Z ACCELERATION

1 _____ 897108AF.A24 Filterclass (1000)



WGA Research
09-21-1997 17:45

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

Speed: 38.1 MPH 61.3 KPH

Minimum = -2.83 KPH at 70 msec

Maximum = 35.39 KPH at 200 msec

REAR PASSENGER HEAD Z VELOCITY

1 _____ B97108A1.V24 Filterclass (180)



WGA Research
09-21-1997 16:56

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

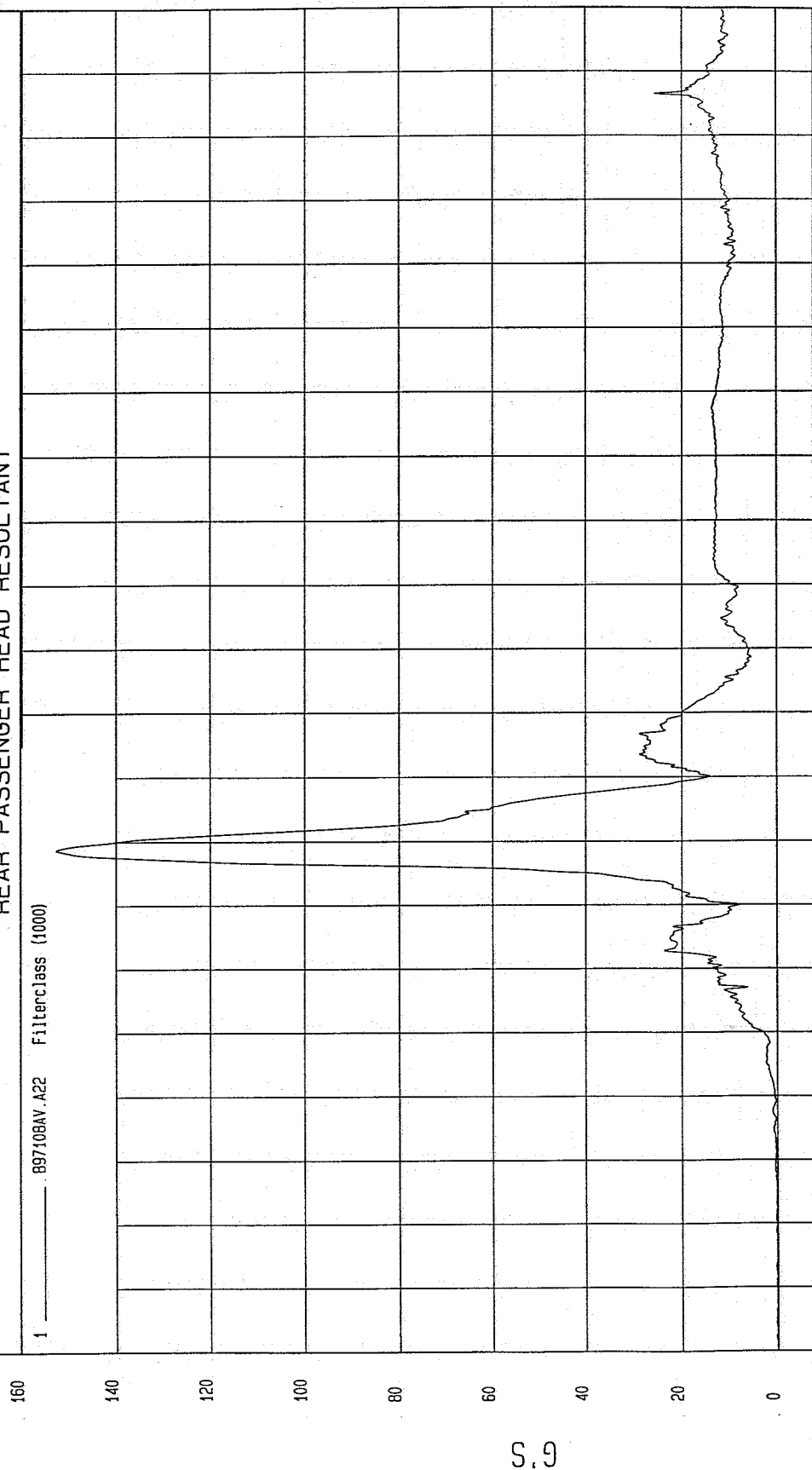
Speed: 38.1 MPH 61.3 KPH

Minimum = 2.50E-02 G's at -11 msec

Maximum = 152.65 G's at 59 msec

REAR PASSENGER HEAD RESULTANT

1 _____ 897108AV.A22 Filterclass (1000)



NCA Research
09-21-1997 17:45

TIME (SECONDS)

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

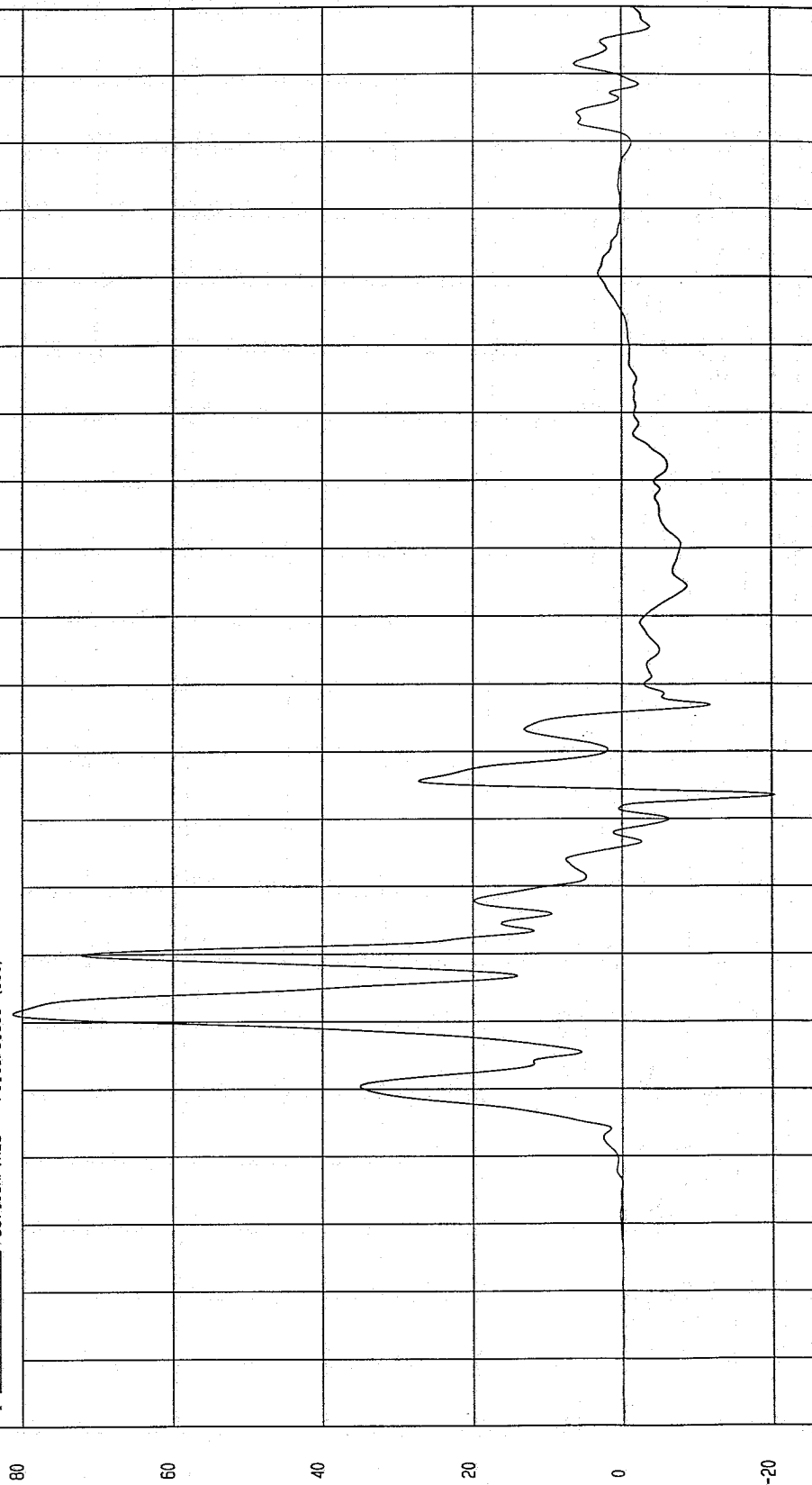
Speed: 38.1 MPH 61.3 KPH

Minimum = -20.35 G'S at 74 msec

Maximum = 81.20 G'S at 41 msec

REAR PASSENGER UPPER RIB Y ACCELERATION

1 ——— B97108AF.A25 Filterclass (180)



MSA Research
09-21-1997 11:46

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

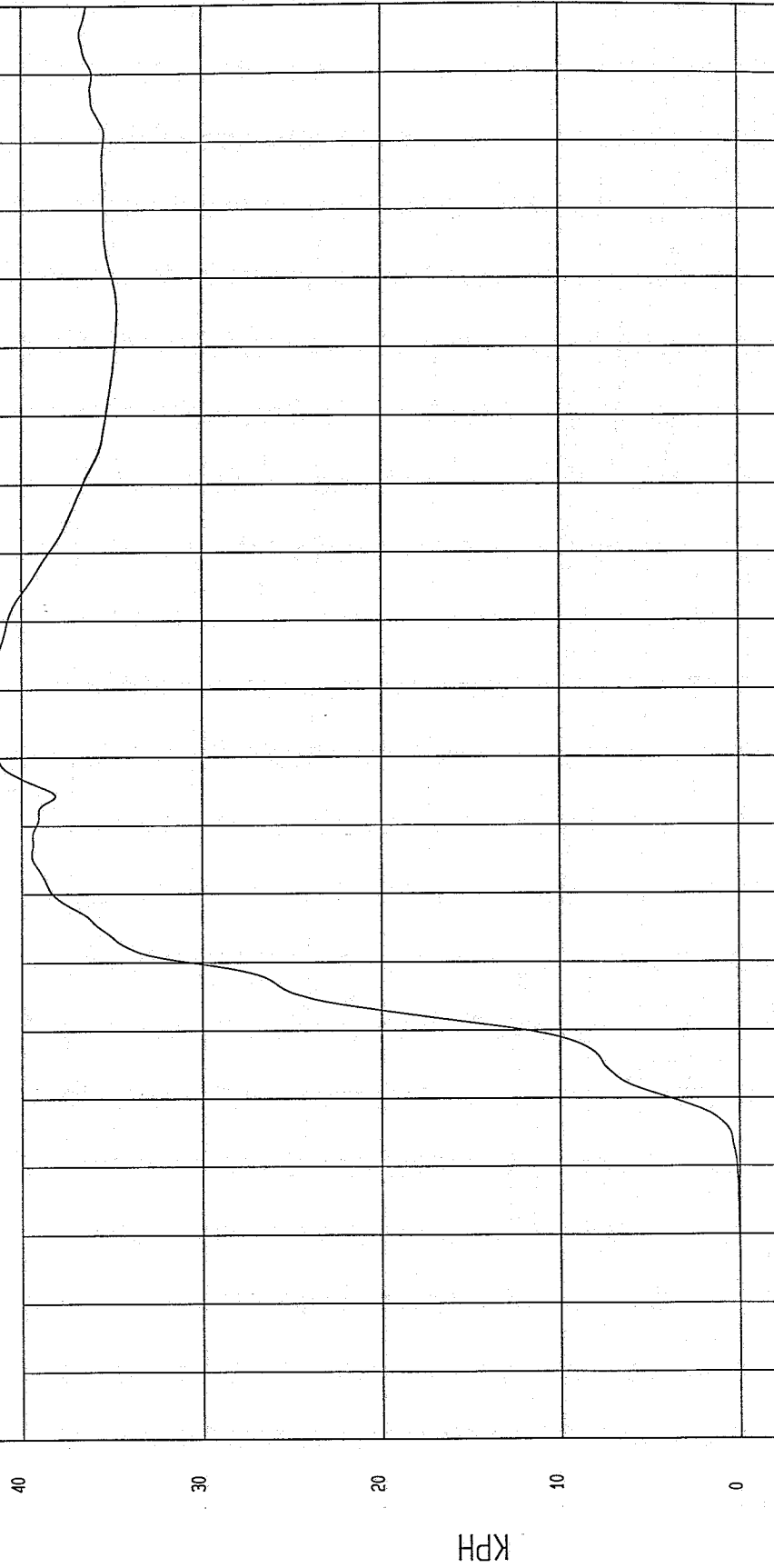
Speed: 38.1 MPH 61.3 KPH

Minimum = -5.92E-03 KPH at -16 msec

Maximum = 42.93 KPH at 86 msec

REAR PASSENGER UPPER RIB Y VELOCITY

1 _____ 897108A1.V25 Filterclass (100)



TIME Seconds

NCA Research
09-21-1997 18:56

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

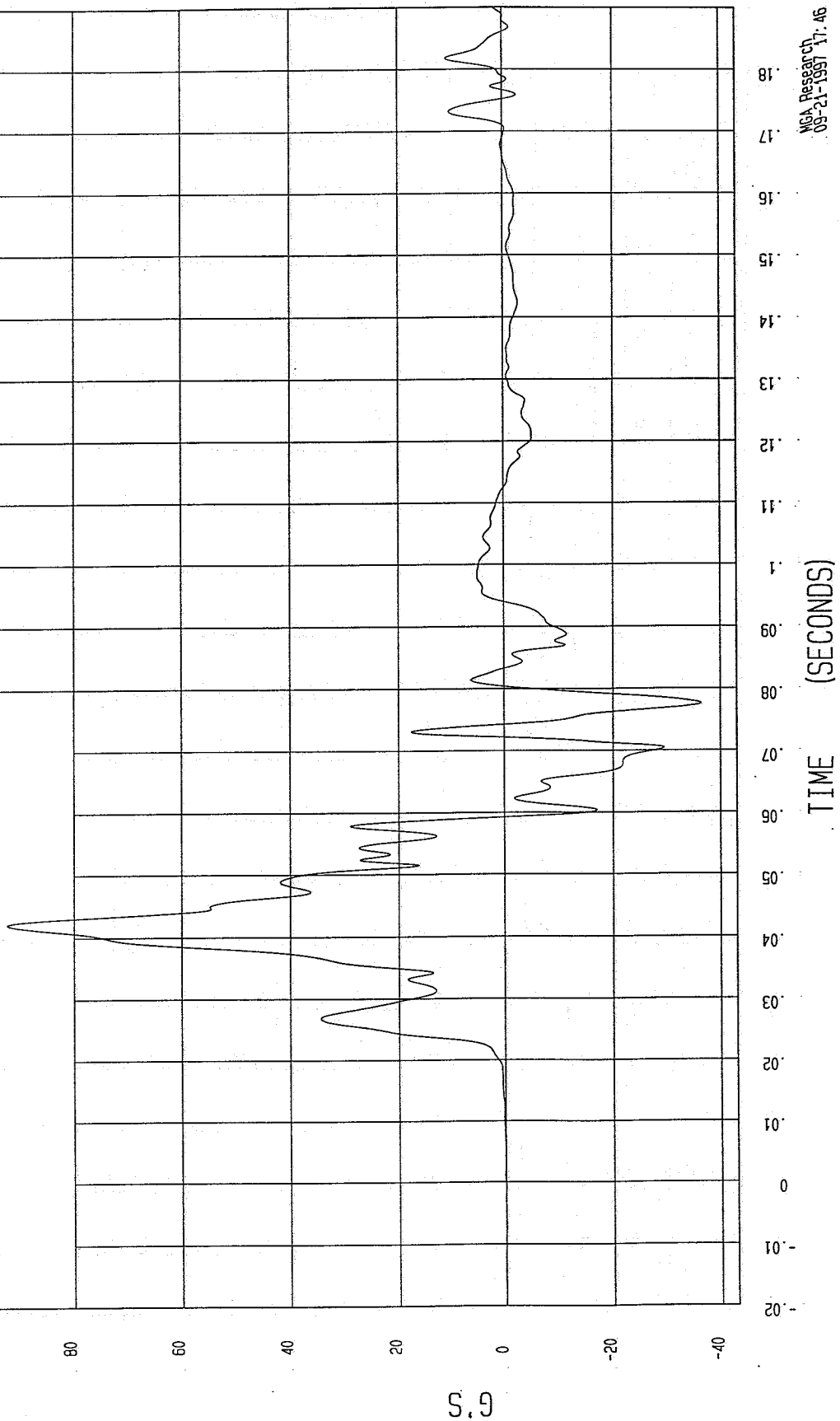
Speed: 38.1 MPH 61.3 KPH

Minimum = -36.52 G'S at 78 msec

Maximum = 92.50 G'S at 42 msec

REAR PASSENGER LOWER RIB Y ACCELERATION

1 B97109AF.A26 FilterClass (180)



NCA Research
09-21-1997 17:46

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

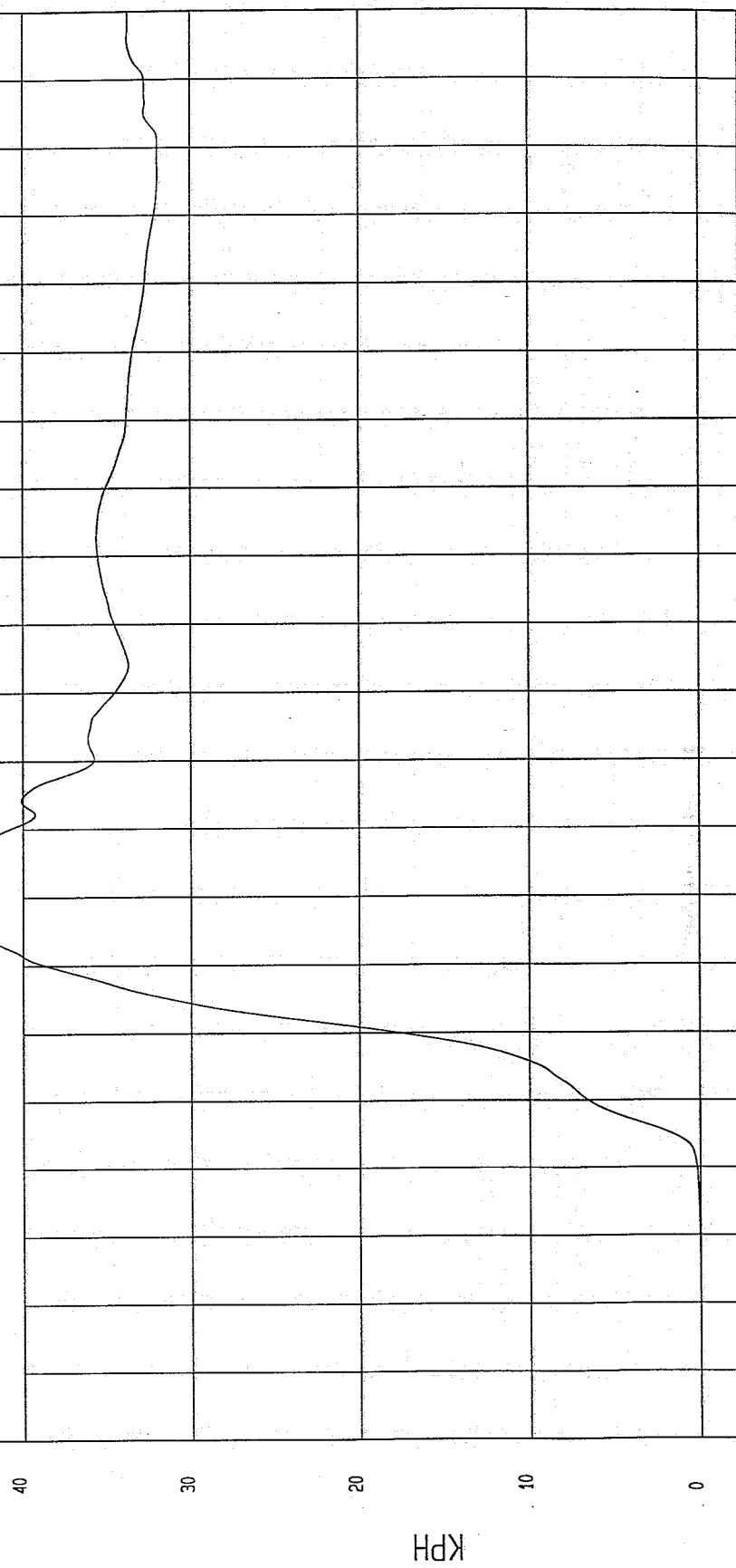
Speed: 38.1 MPH 61.3 KPH

Minimum = -3.20E-04 KPH at -16 msec

Maximum = 45.85 KPH at 59 msec

REAR PASSENGER LOWER RIB Y VELOCITY

1 B97108A1.V26 Filterclass (180)



NCA Research
09-21-1997 18:56

TIME Seconds

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

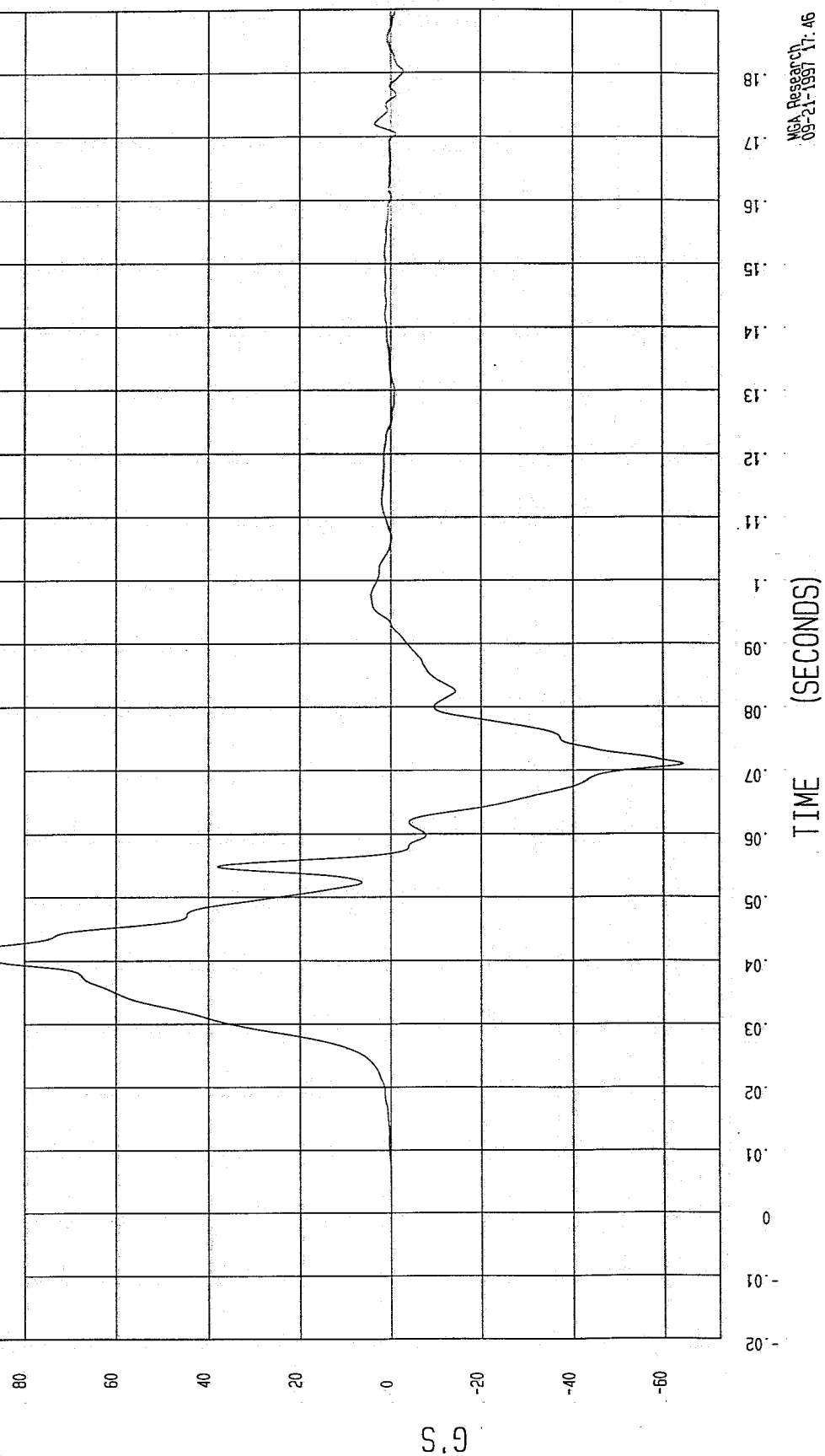
Speed: 38.1 MPH 61.3 KPH

Minimum = -64.15 G'S at 71 msec

Maximum = 91.72 G'S at 42 msec

REAR PASSENGER LOWER SPINE Y ACCELERATION

1 ——— B97108AF.A27 Filterclass (180)



NGA Research
09-21-1997 17:46

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

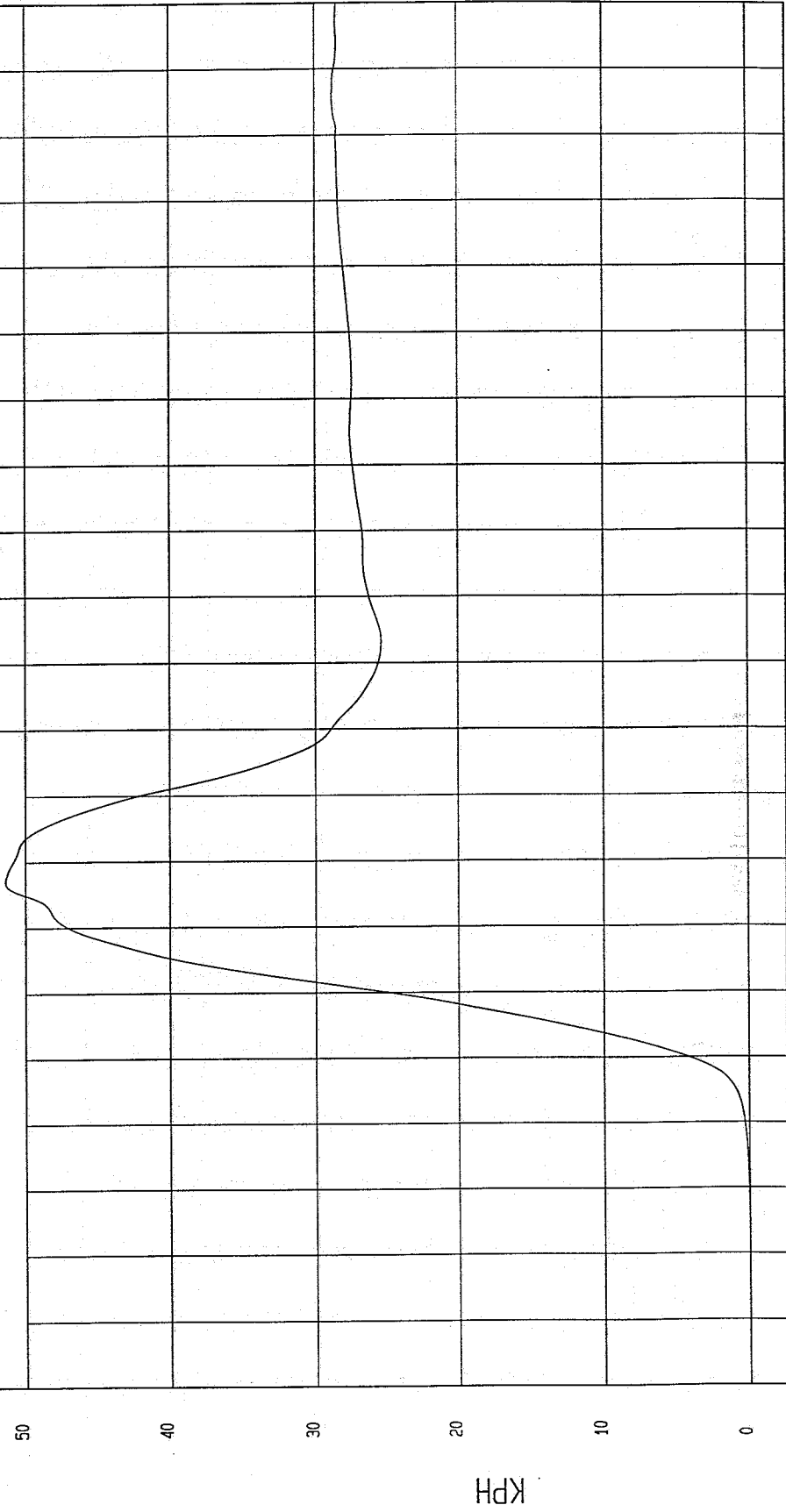
Speed: 38.1 MPH 61.3 KPH

Minimum = 0 KPH at -20 msec

Maximum = 51.39 KPH at 57 msec

REAR PASSENGER LOWER SPINE Y VELOCITY

1 B9710BA1.V27 Filterclass (f80)



NCA Research
09-21-1997 18:56

TIME Seconds

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

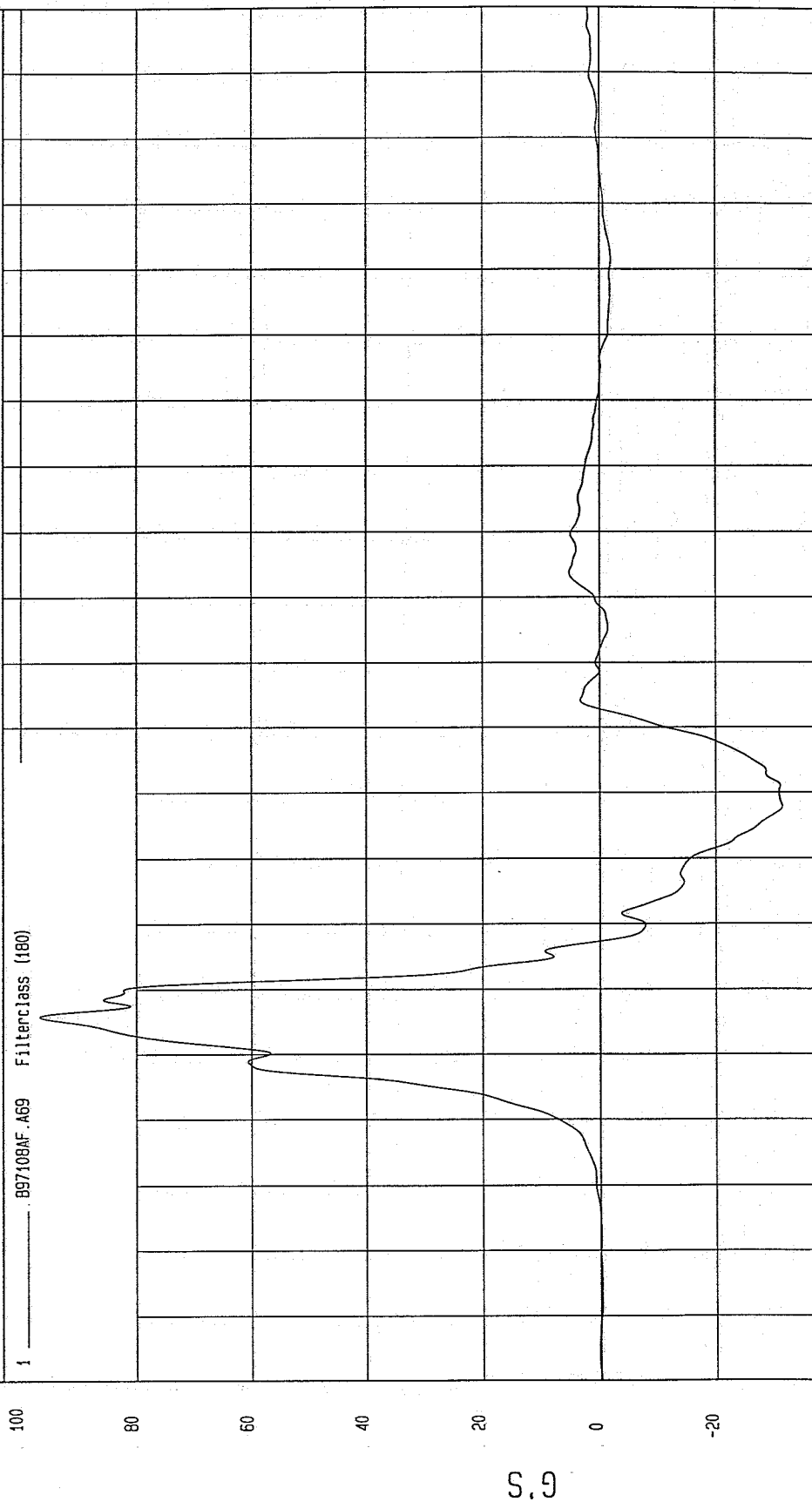
Speed: 38.1 MPH 61.3 KPH

Minimum = -31.32 G'S at 68 msec

Maximum = 96.67 G'S at 36 msec

REAR PASSENGER PELVIS Y ACCELERATION

1 _____ B97108AF.A69 Filterclass (180)



WCA Research
09-21-1997 18.13

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

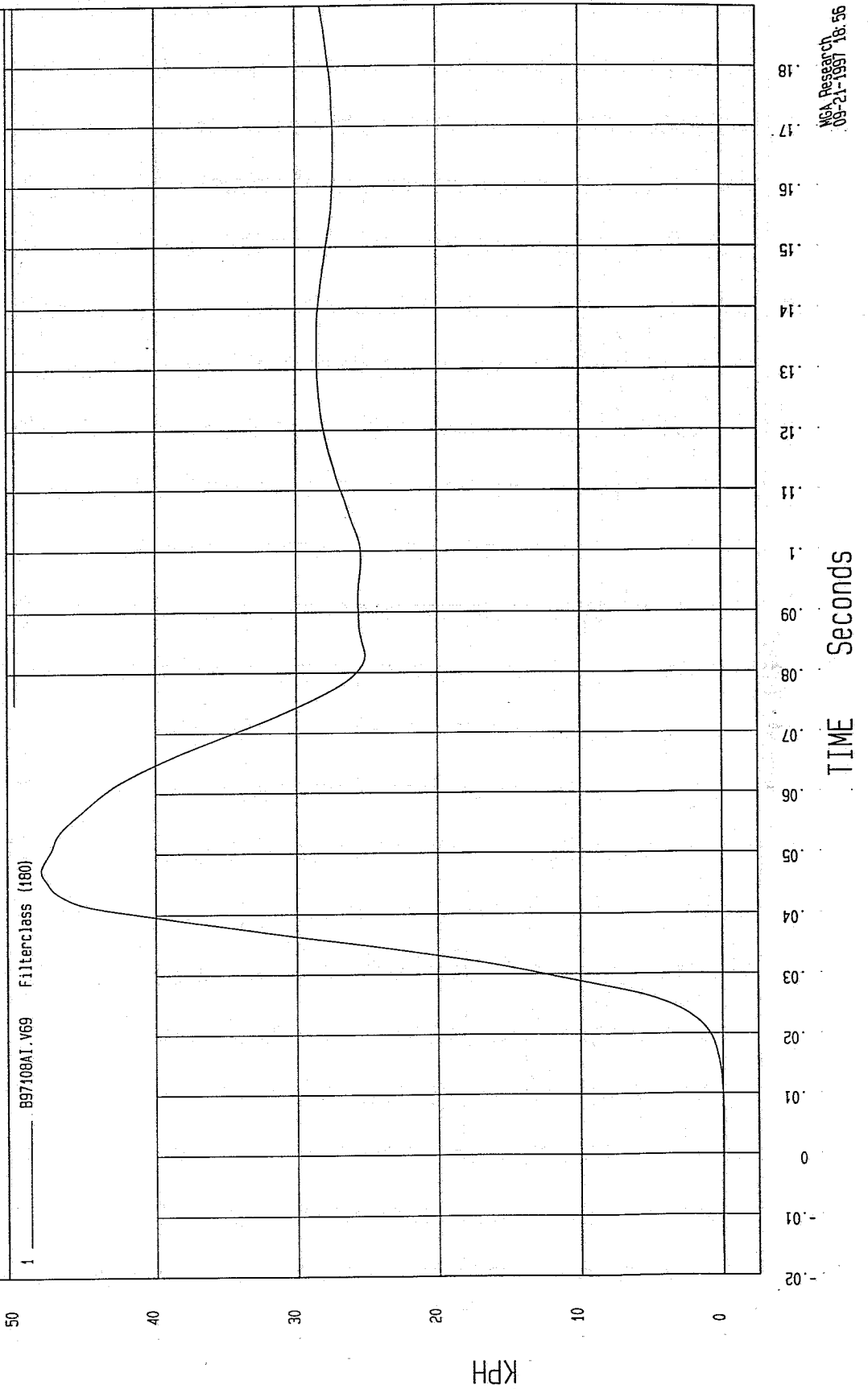
COMPONENT: 1998 BUICK CENTURY (MW0112)

Speed: 38.1 MPH 61.3 KPH

Minimum = -6.72E-02 KPH at 6 msec

Maximum = 48.10 KPH at 47 msec

REAR PASSENGER PELVIS Y VELOCITY



TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

Speed: 38.1 MPH 61.3 KPH

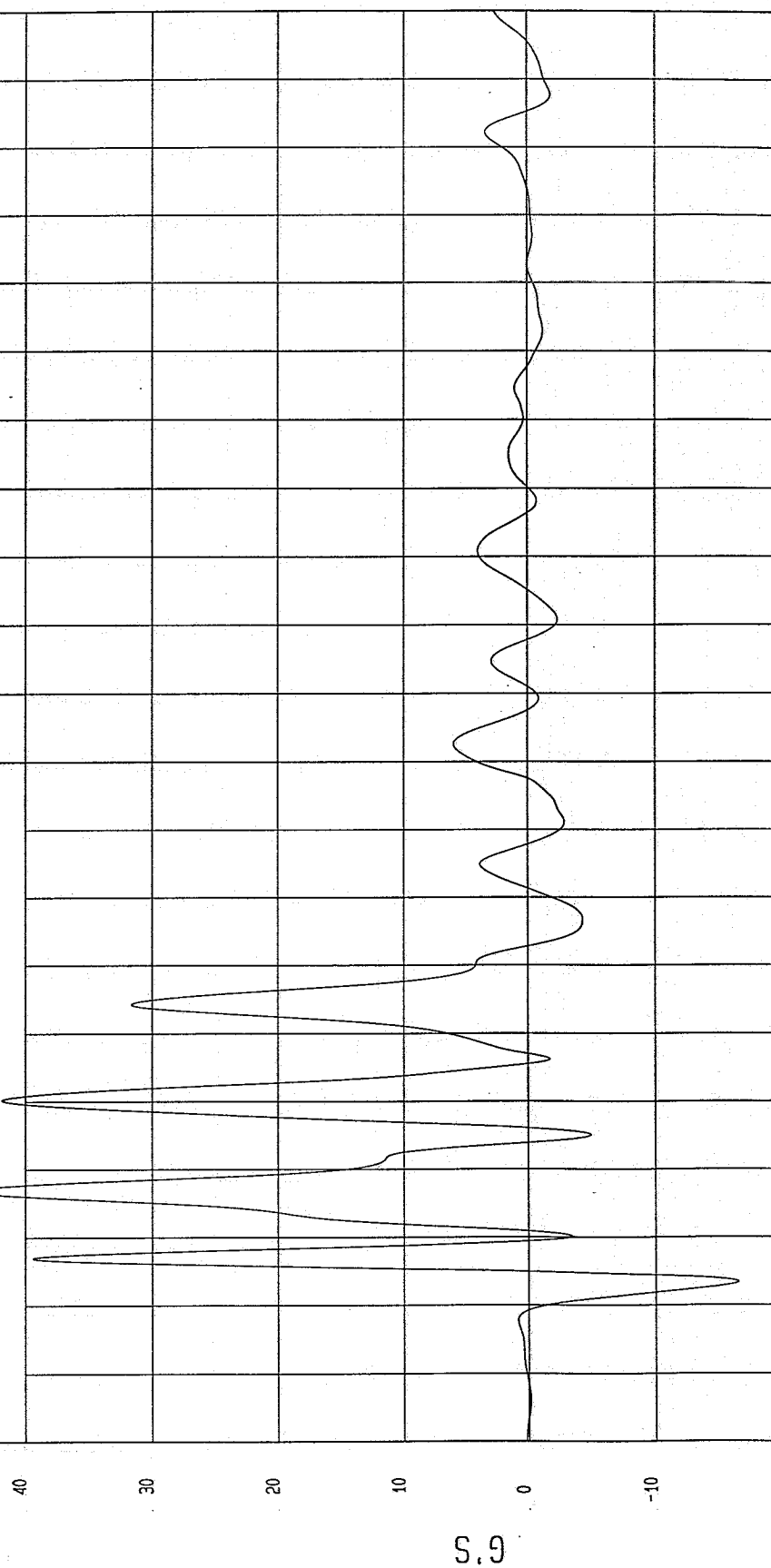
COMPONENT: 1998 BUICK CENTURY (MW0112)

Maximum = 44.48 G'S at 17 msec

Minimum = -16.59 G'S at 3 msec

LEFT SIDE SILL AT REAR SEAT Y ACCELERATION

1 B9710BAF.A39 Filterclass (60)



MCA Research
09-28-1997 21:45

TIME (SECONDS)

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

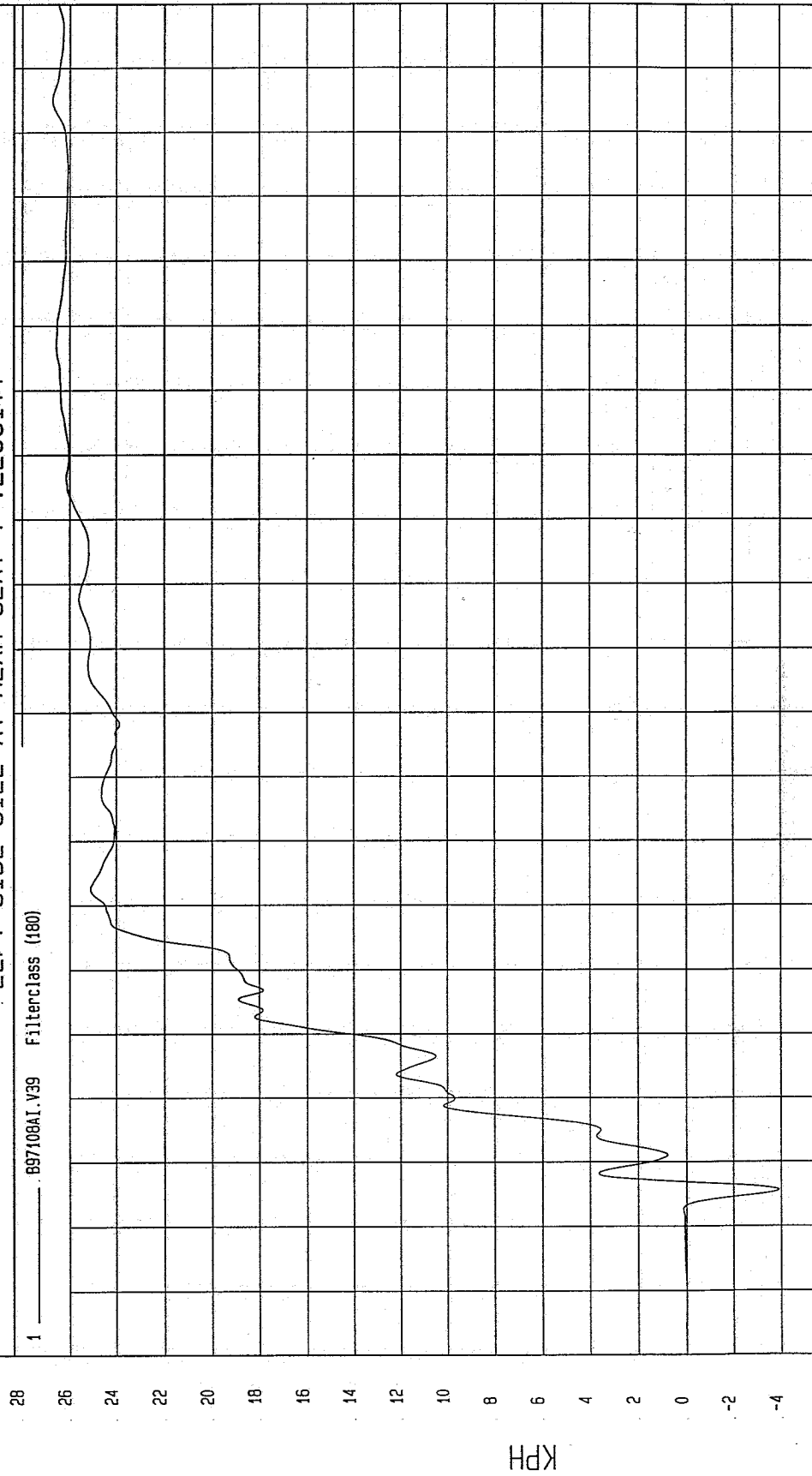
COMPONENT: 1998 BUICK CENTURY (MW0112)

Speed: 38.1 MPH 61.3 KPH

Minimum = -3.90 KPH at 6 msec

Maximum = 26.81 KPH at 194 msec

LEFT SIDE SILL AT REAR SEAT Y VELOCITY



TIME Seconds

WGA Research
09-28-1997 21:44

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

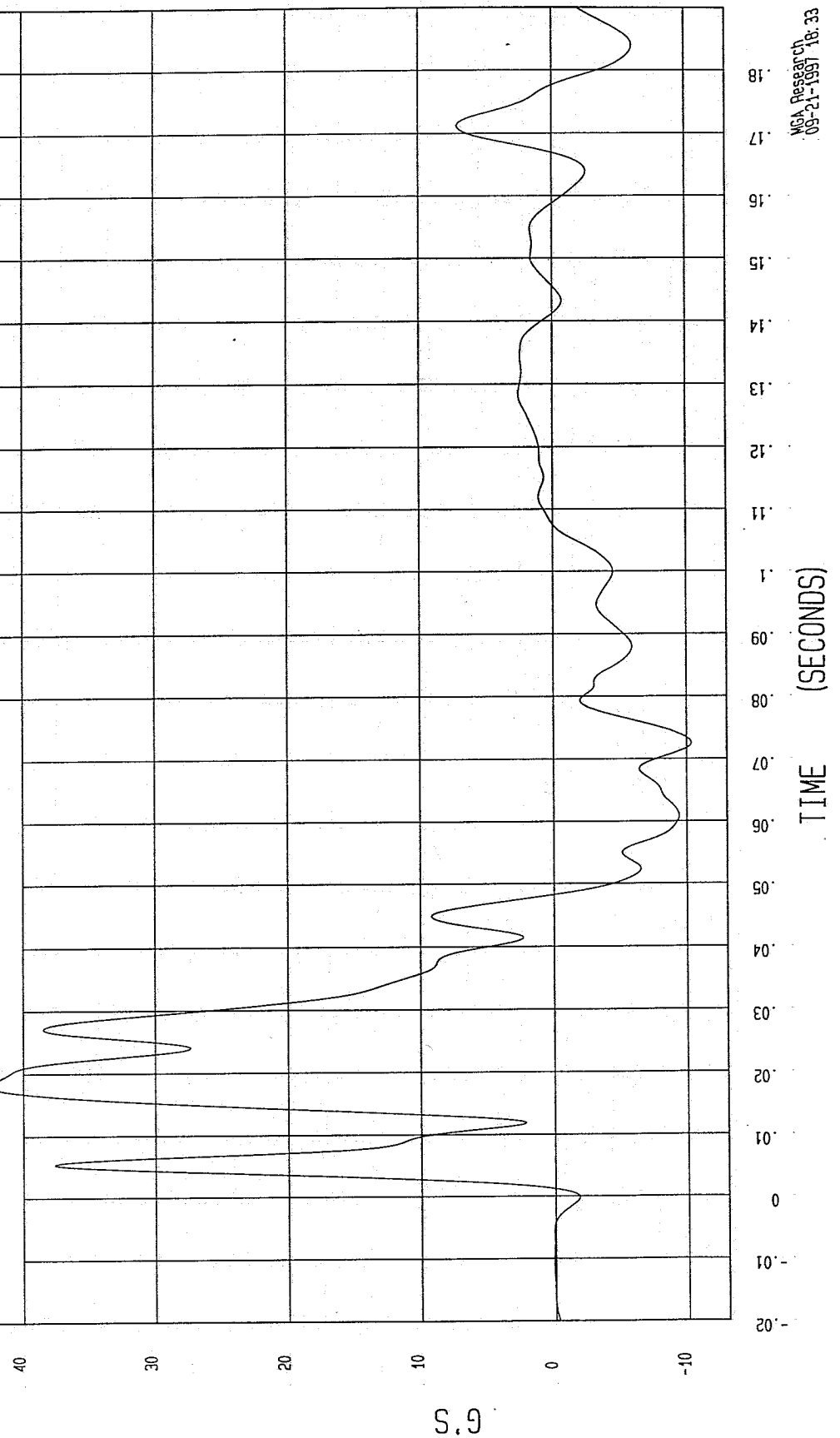
Speed: 38.1 MPH 61.3 KPH

Minimum = -10.36 G'S at 72 msec

Maximum = 42.59 G'S at 18 msec

LEFT SIDE SILL AT FRONT SEAT Y ACCELERATION

1 B97109AF.A38 Filterclass (60)



NCA Research
09-21-1997 18:33

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

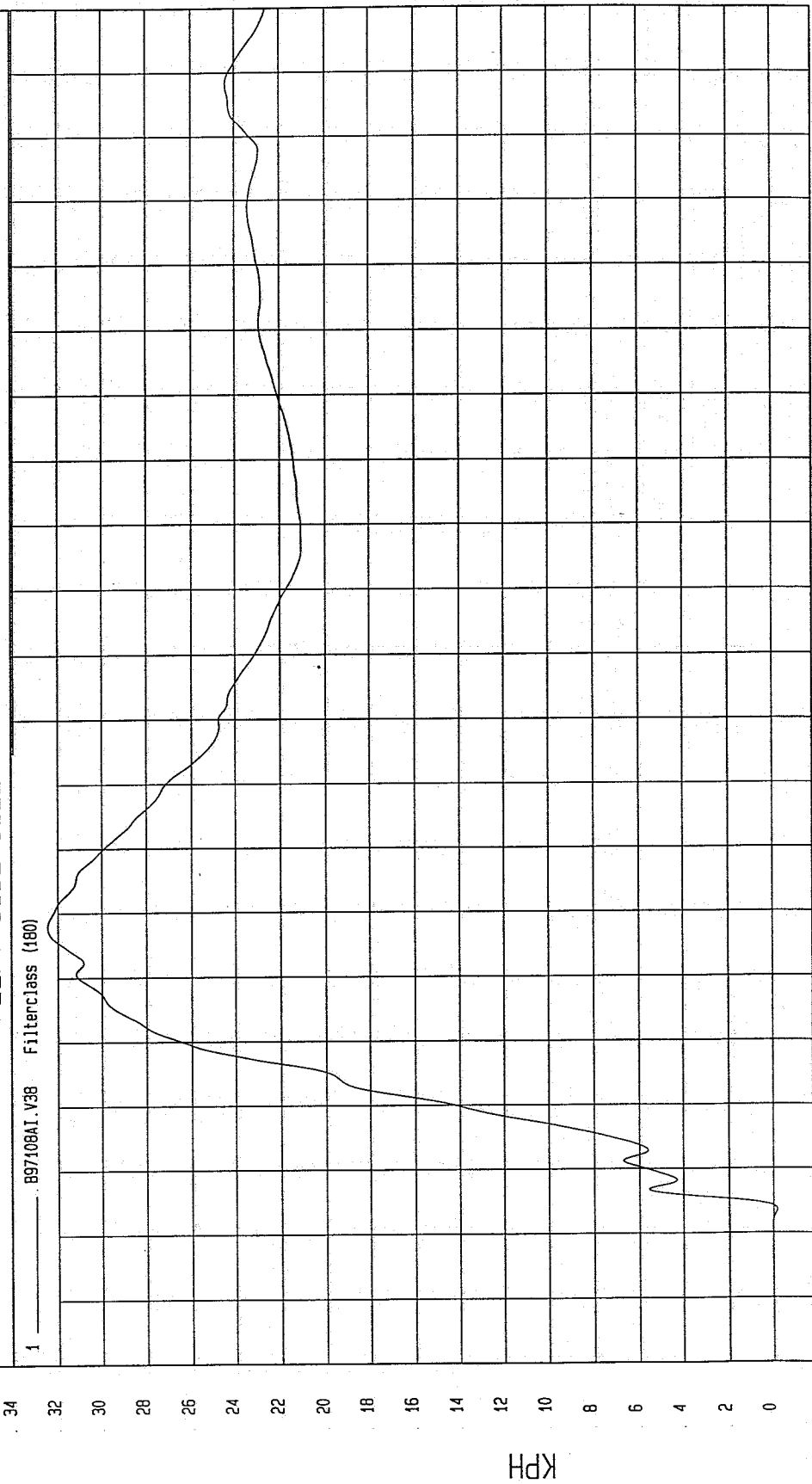
COMPONENT: 1998 BUICK CENTURY (MW0112)

Speed: 38.1 MPH 61.3 KPH

Minimum = -17 KPH at 4 msec

Maximum = 32.45 KPH at 48 msec

LEFT SIDE SILL AT FRONT SEAT Y VELOCITY



TIME Seconds

NCA Research
09-21-1997 19:14

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

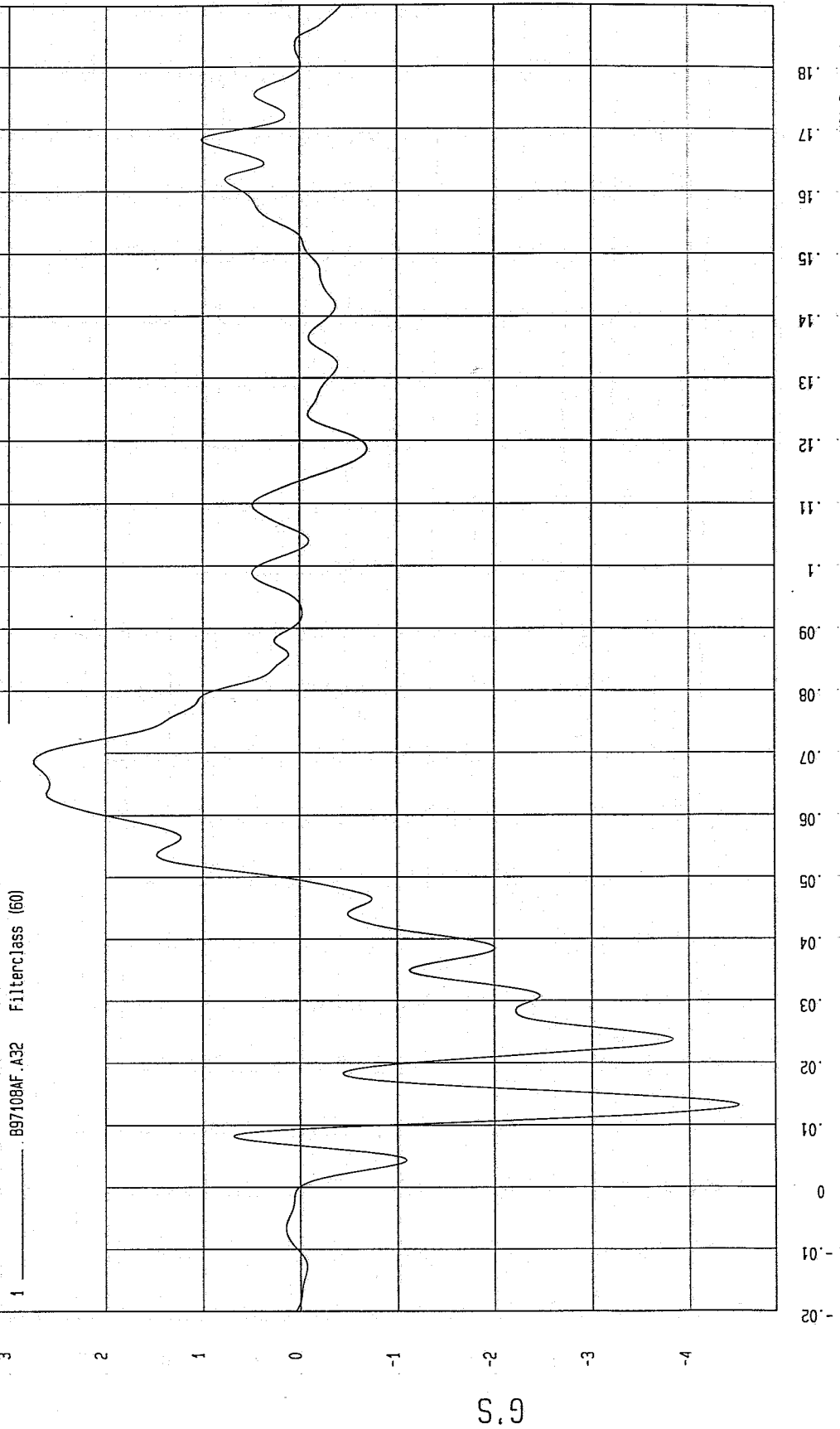
COMPONENT: 1998 BUICK CENTURY (MW0112)

Speed: 38.1 MPH 61.3 KPH

Minimum = -4.49 G'S at 13 msec

Maximum = 2.75 G'S at 69 msec

RIGHT SIDE SILL AT FRONT SEAT X ACCELERATION



TIME (SECONDS)

MGA Research
09-21-1997 18:33

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

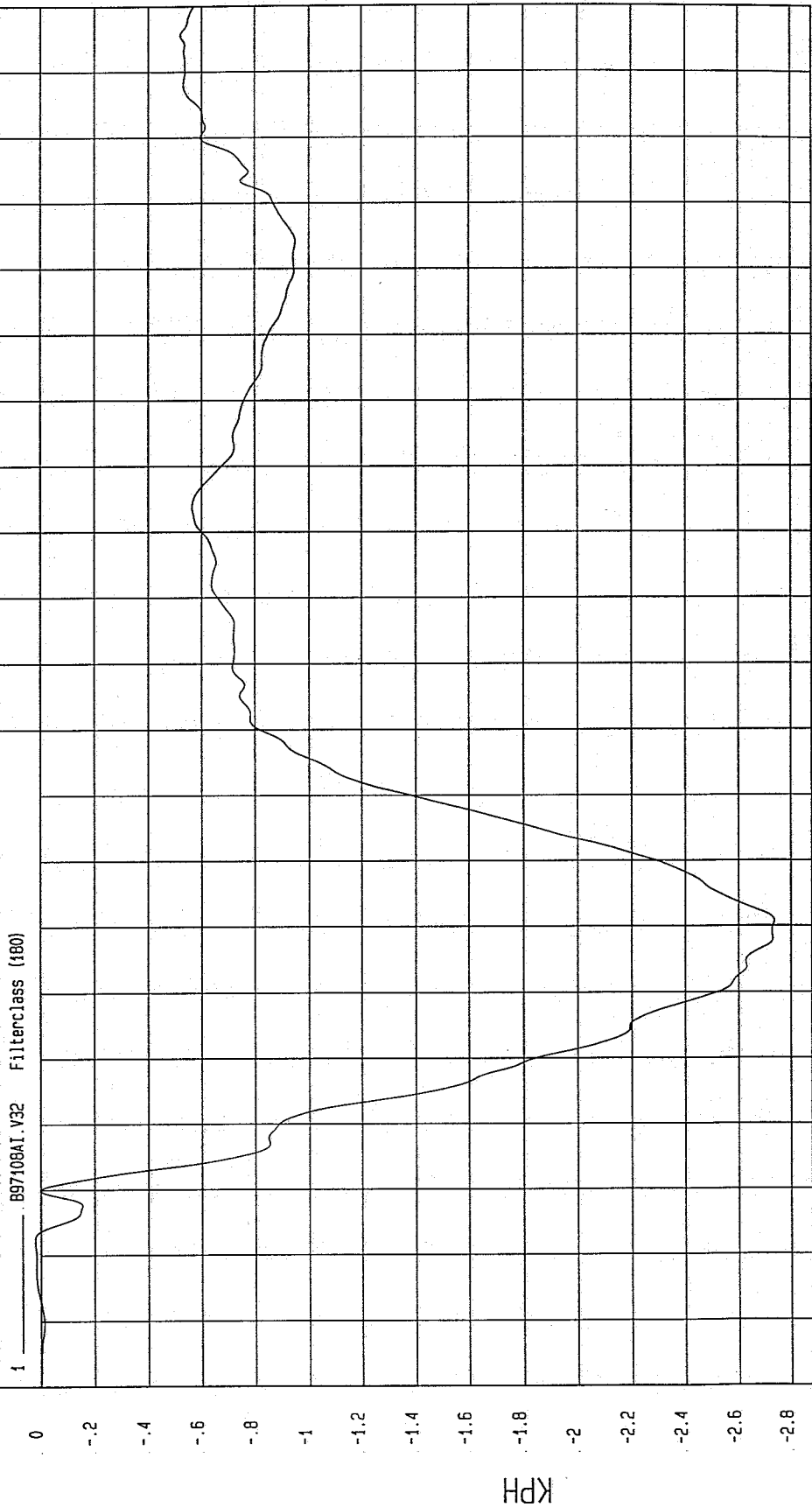
COMPONENT: 1998 BUICK CENTURY (MW0112)

Speed: 38.1 MPH 61.3 KPH

Minimum = -2.73 KPH at 51 msec

Maximum = 2.14E-02 KPH at 2 msec

RIGHT SIDE SILL AT FRONT SEAT X VELOCITY



WCA Research
09-21-1997 19:14

TIME Seconds

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

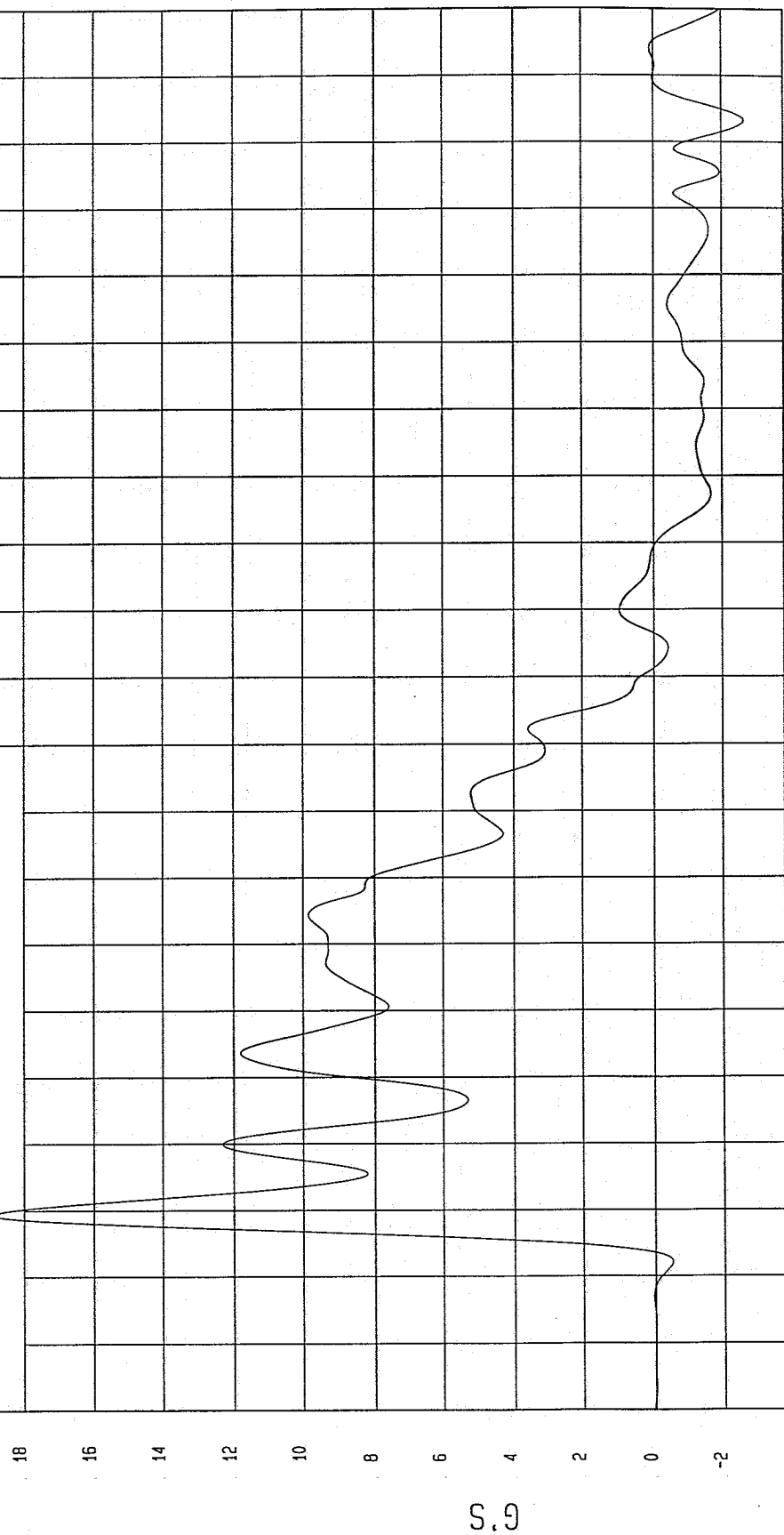
Speed: 38.1 MPH 61.3 KPH

Minimum = -2.63 G's at 173 msec

Maximum = 18.88 G's at 9 msec

RIGHT SIDE SILL AT FRONT SEAT Y ACCELERATION

1 897109AF.A33 Filterclass (60)



MCA Research
09-21-1997 10:33

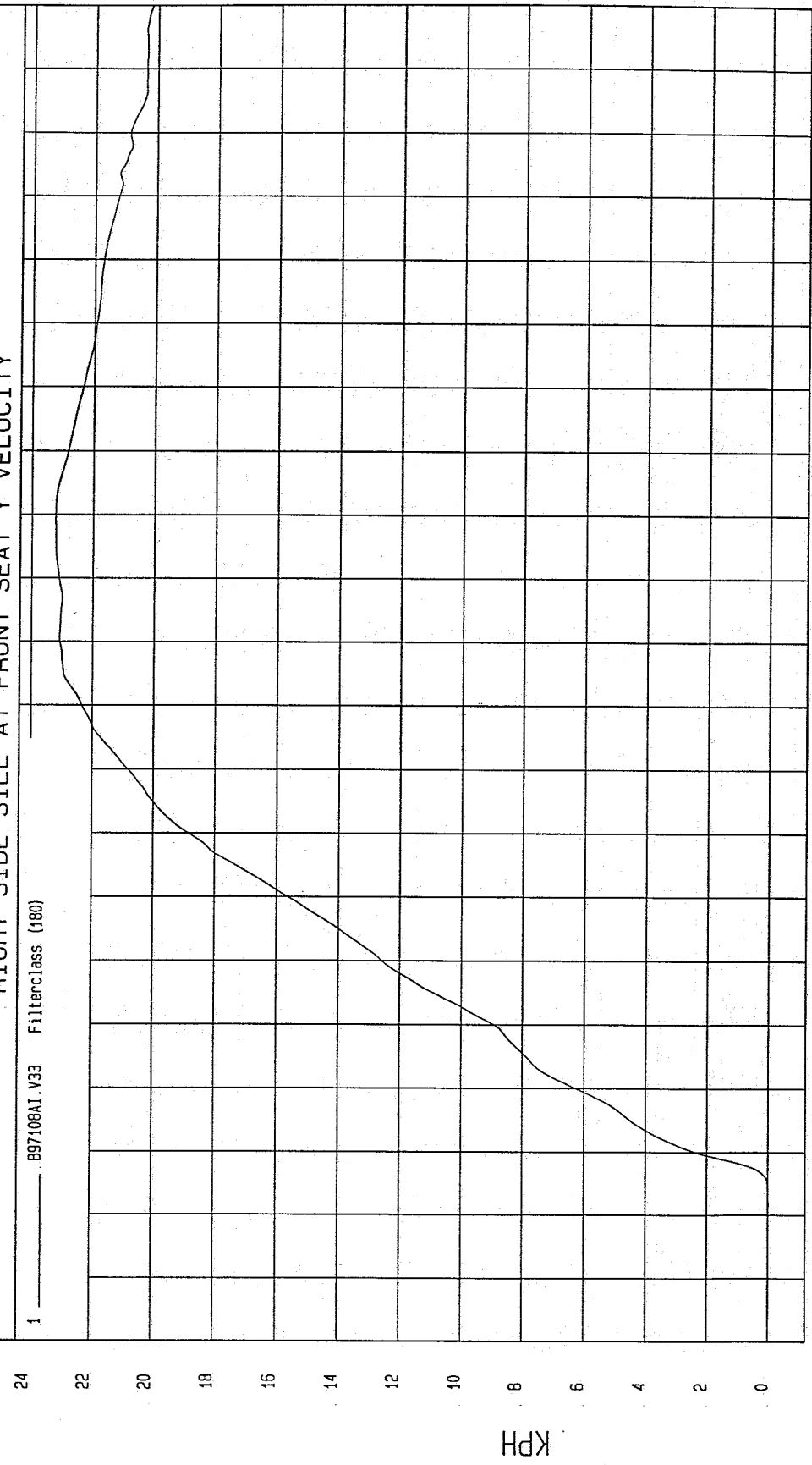
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112) Speed: 38.1 MPH 61.3 KPH

Minimum = -8.50E-03 KPH at -6 msec
Maximum = 23.22 KPH at 109 msec

RIGHT SIDE SILL AT FRONT SEAT Y VELOCITY

1 _____ B97109A1.V33 Filterclass (180)



NSA Research
09-21-1997 19:15

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

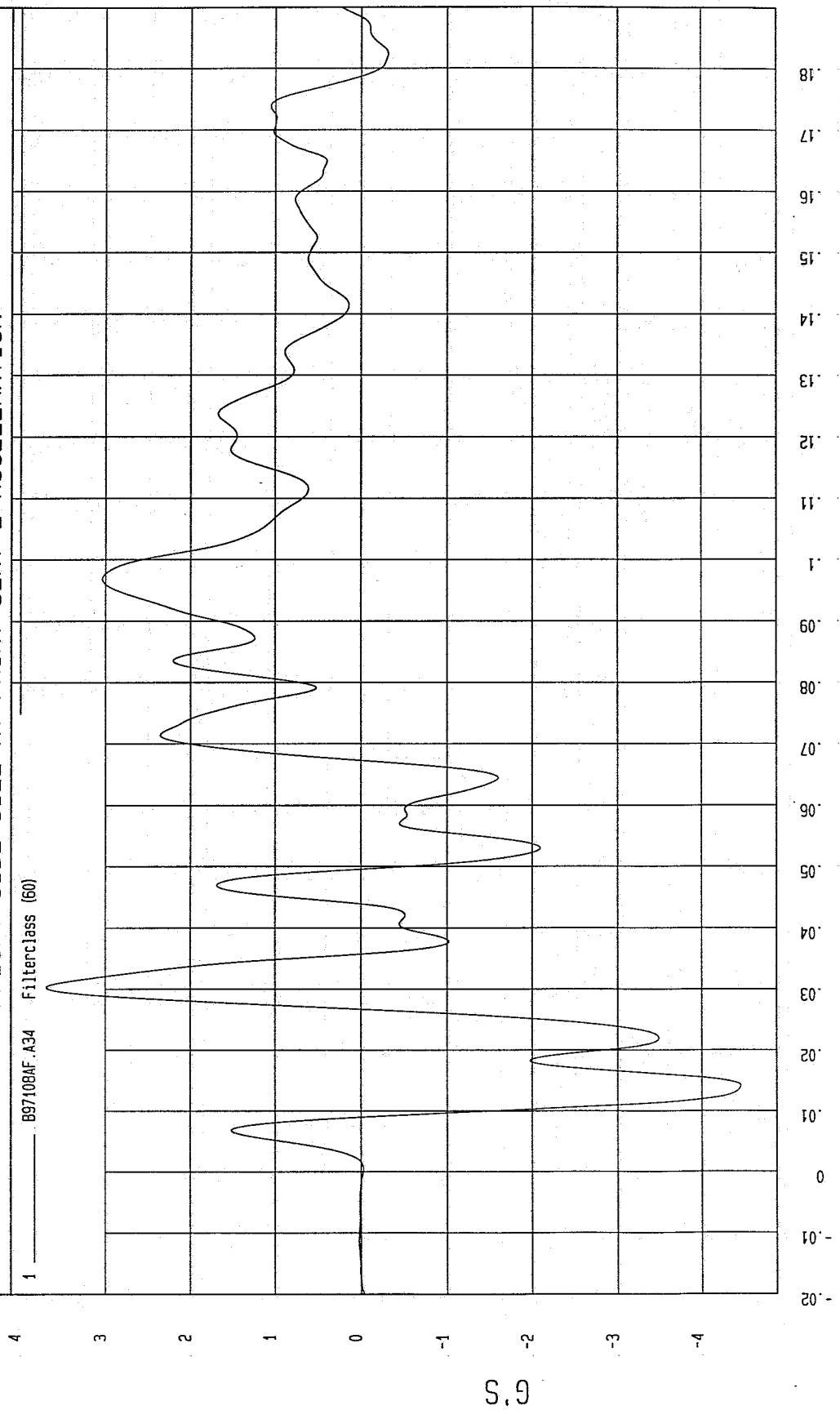
Speed: 38.1 MPH 61.3 KPH

Minimum = -4.44 G's at 14 msec

Maximum = 3.69 G's at 30 msec

RIGHT SIDE SILL AT FRONT SEAT Z ACCELERATION

1 B97108AF.A34 Filterclass (60)



TIME (SECONDS)

NCA Research
09-21-1997 18:33

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

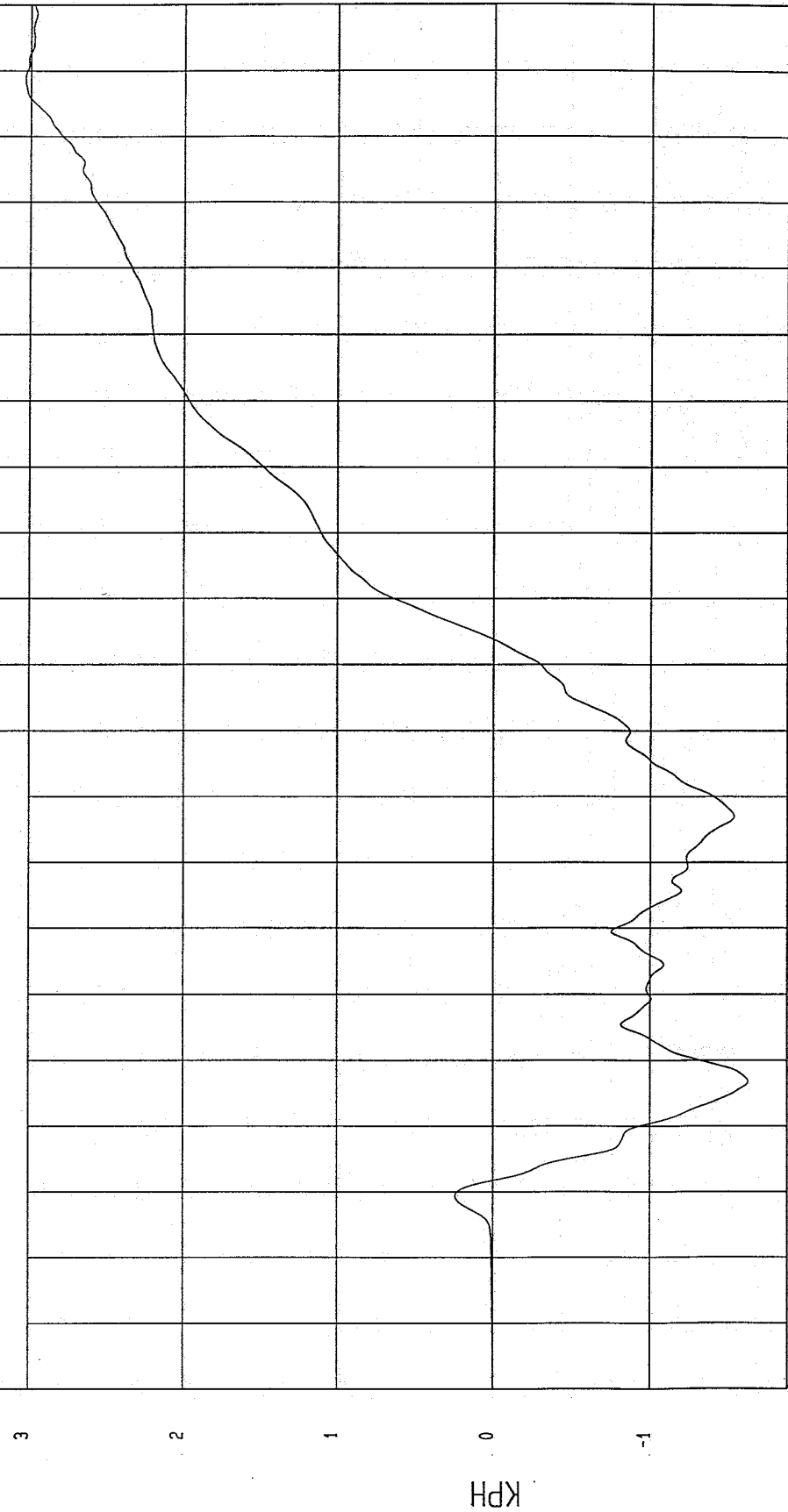
Speed: 38.1 MPH 61.3 KPH

Minimum = -1.63 KPH at 27 msec

Maximum = 3.15 KPH at 199 msec

RIGHT SIDE SILL AT FRONT SEAT Z VELOCITY

1 ——— B97108A1.V34 Filterclass (180)



WCA Research
09-21-1997 19:15

TIME Seconds

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

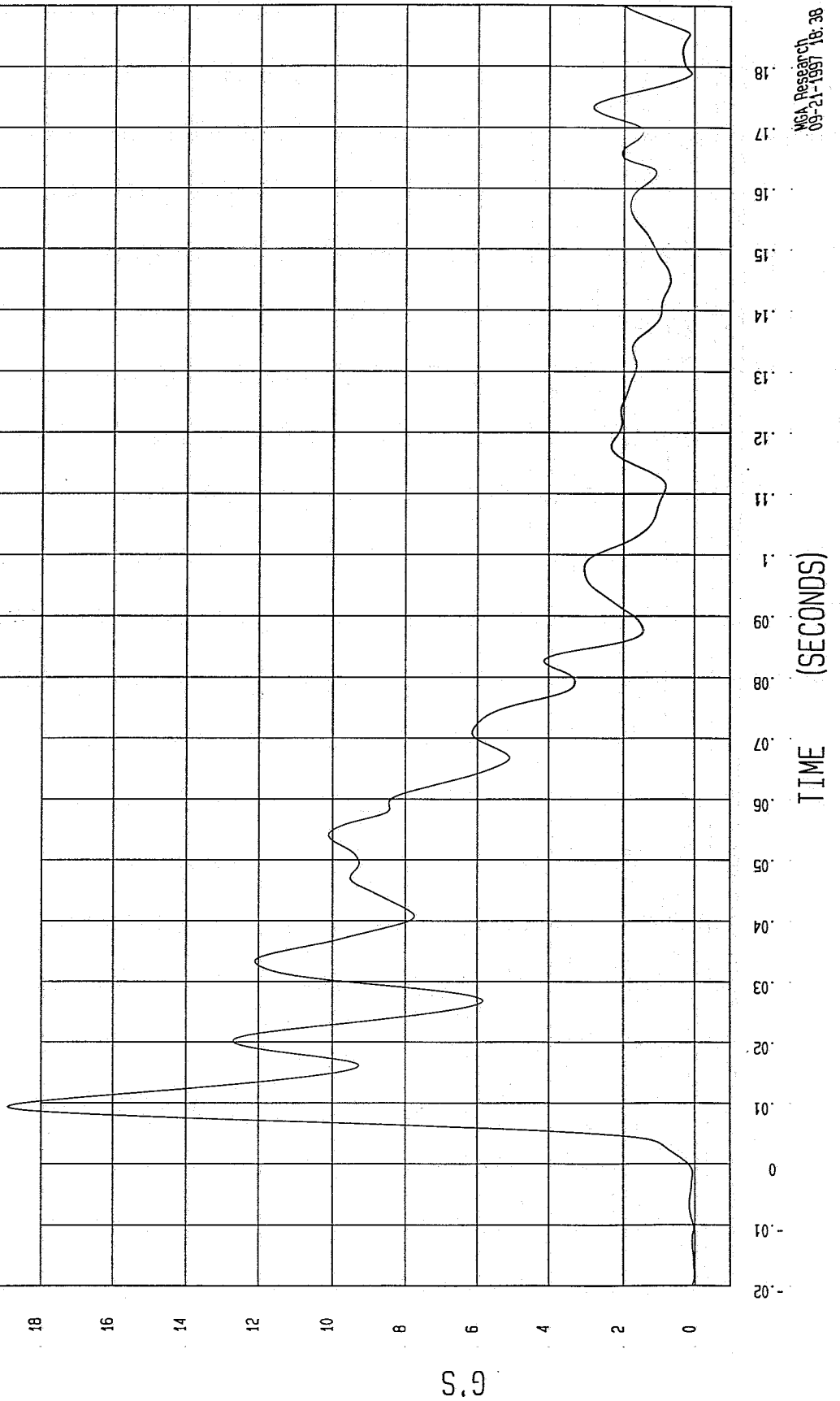
Speed: 38.1 MPH 61.3 KPH

Minimum = 9.62E-03 G'S at -18 msec

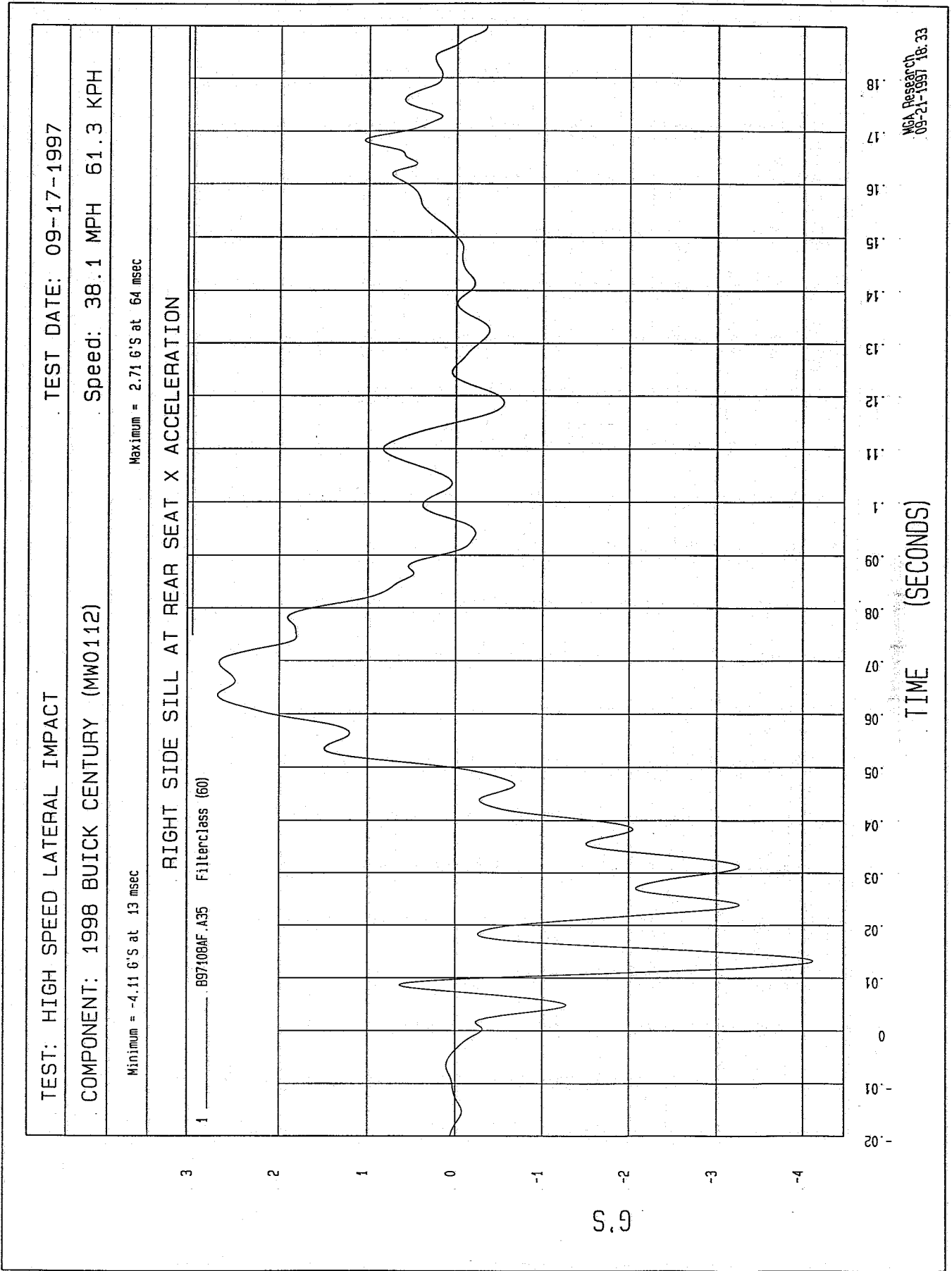
Maximum = 18.89 G'S at 9 msec

RIGHT SIDE SILL AT FRONT SEAT RESULTANT ACCELERATION

1 ——— B97108AV.A32 Filterclass (60)



MGA Research
09-21-1997 18:38



TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

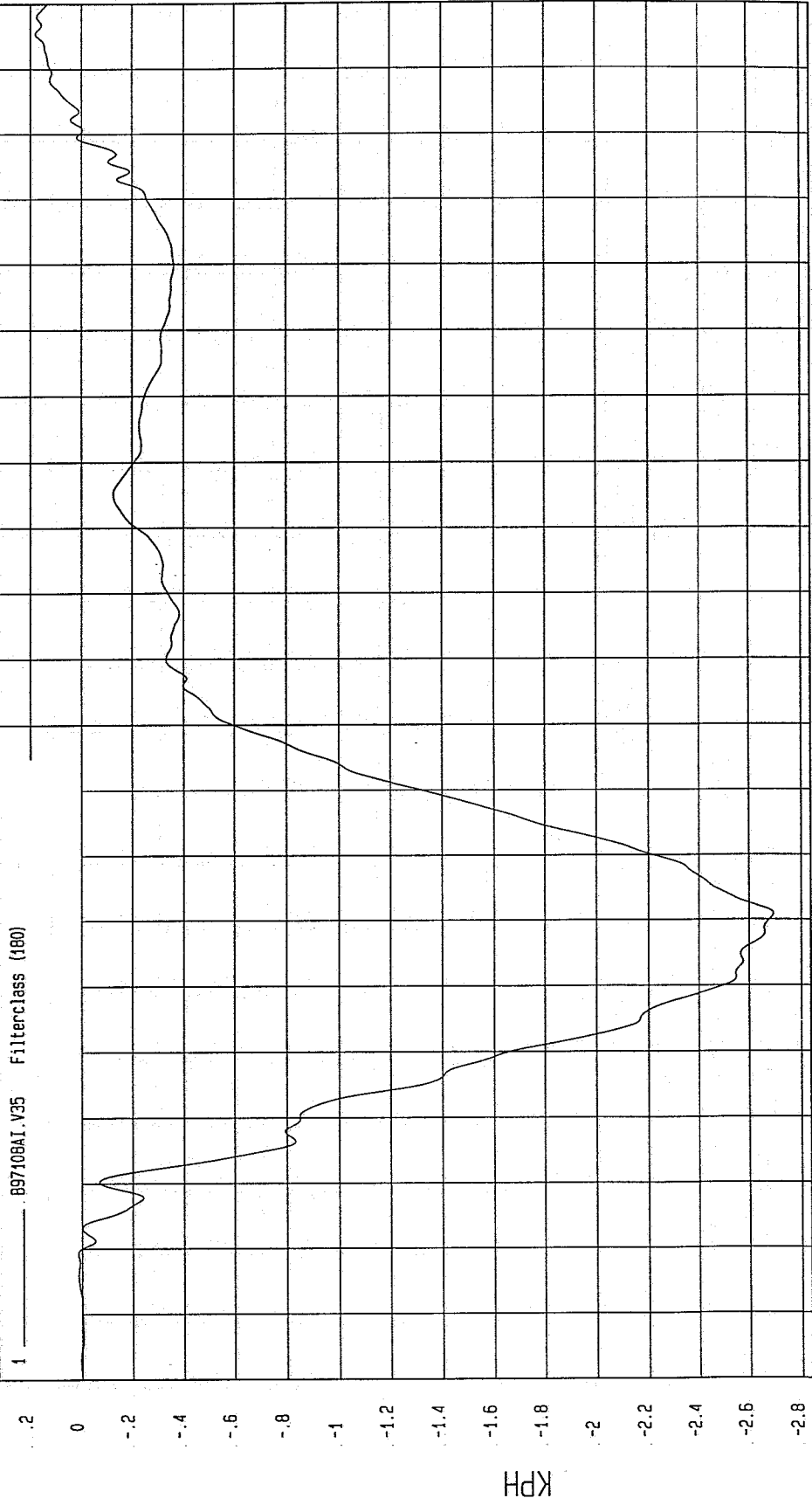
Speed: 38.1 MPH 61.3 KPH

Minimum = -2.69 KPH at 51 msec

Maximum = .19 KPH at 185 msec

RIGHT SIDE SILL AT REAR SEAT X VELOCITY

1 — .B97108A1.V35 Filterclass (180)



TIME Seconds

MGA Research
09-21-1997 19:15

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

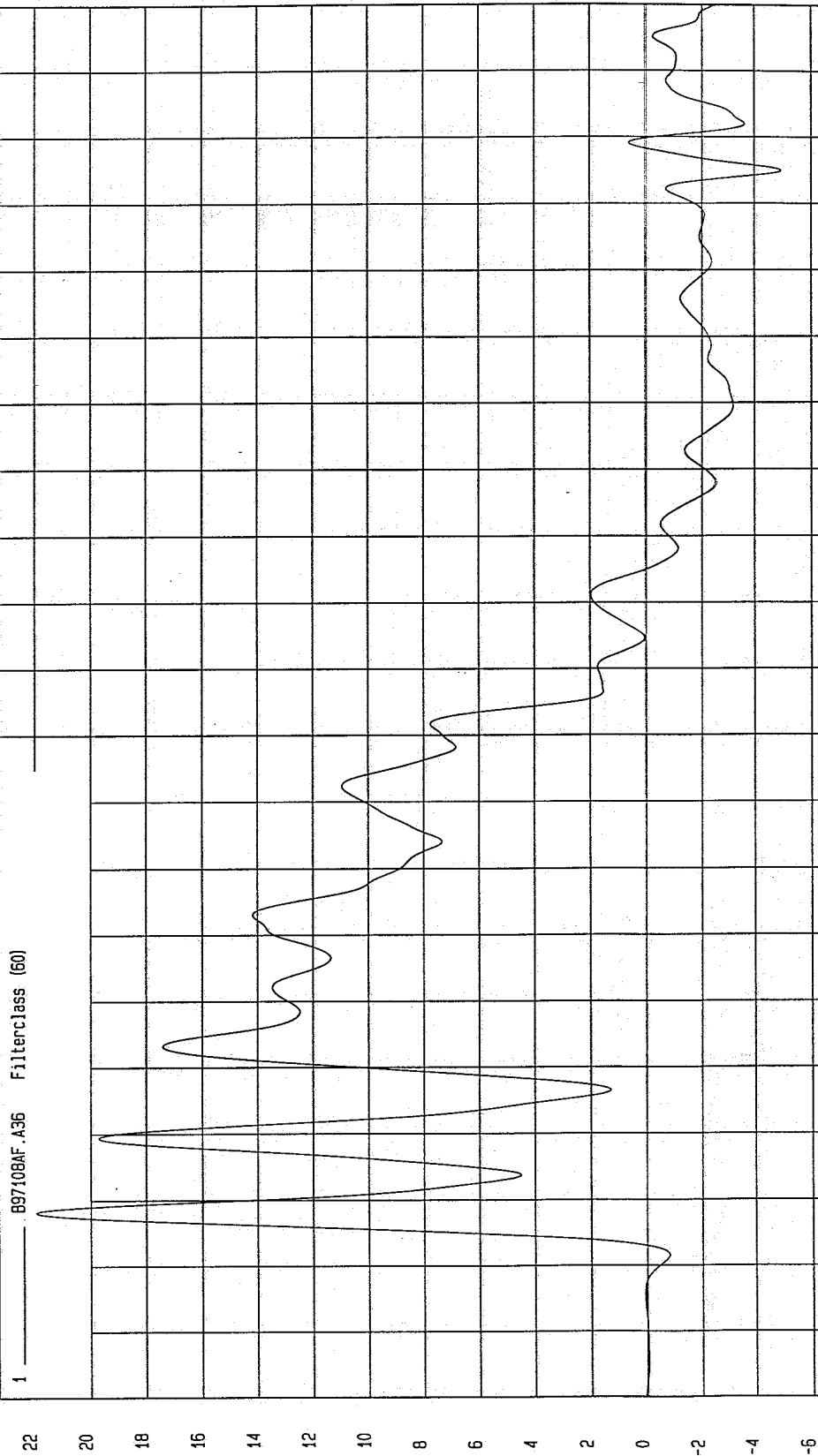
Speed: 38.1 MPH 61.3 KPH

Minimum = -4.95 G'S at 165 msec

Maximum = 21.94 G'S at 8 msec

RIGHT SIDE SILL AT REAR SEAT Y ACCELERATION

1 B97108AF.A36 Filterclass (60)



MCA Research
09-21-1997 18:34

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

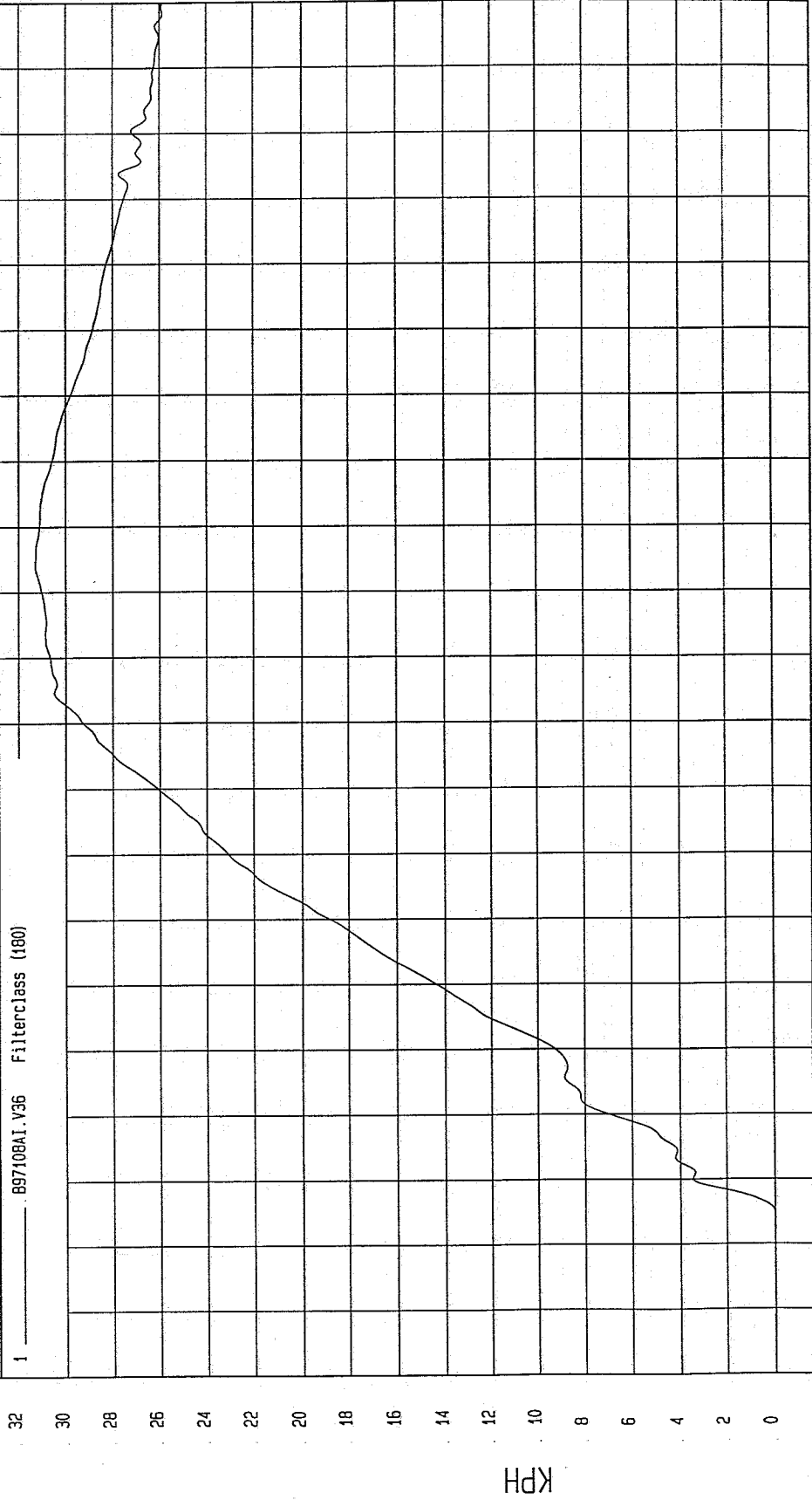
Speed: 38.1 MPH 61.3 KPH

Minimum = -1.39E-02 KPH at 4 msec

Maximum = 31.27 KPH at 104 msec

RIGHT SIDE SILL AT REAR SEAT Y VELOCITY

1 B97108A1.V36 Filterclass (180)



TIME Seconds

MGA Research
09-21-1997 19:15

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

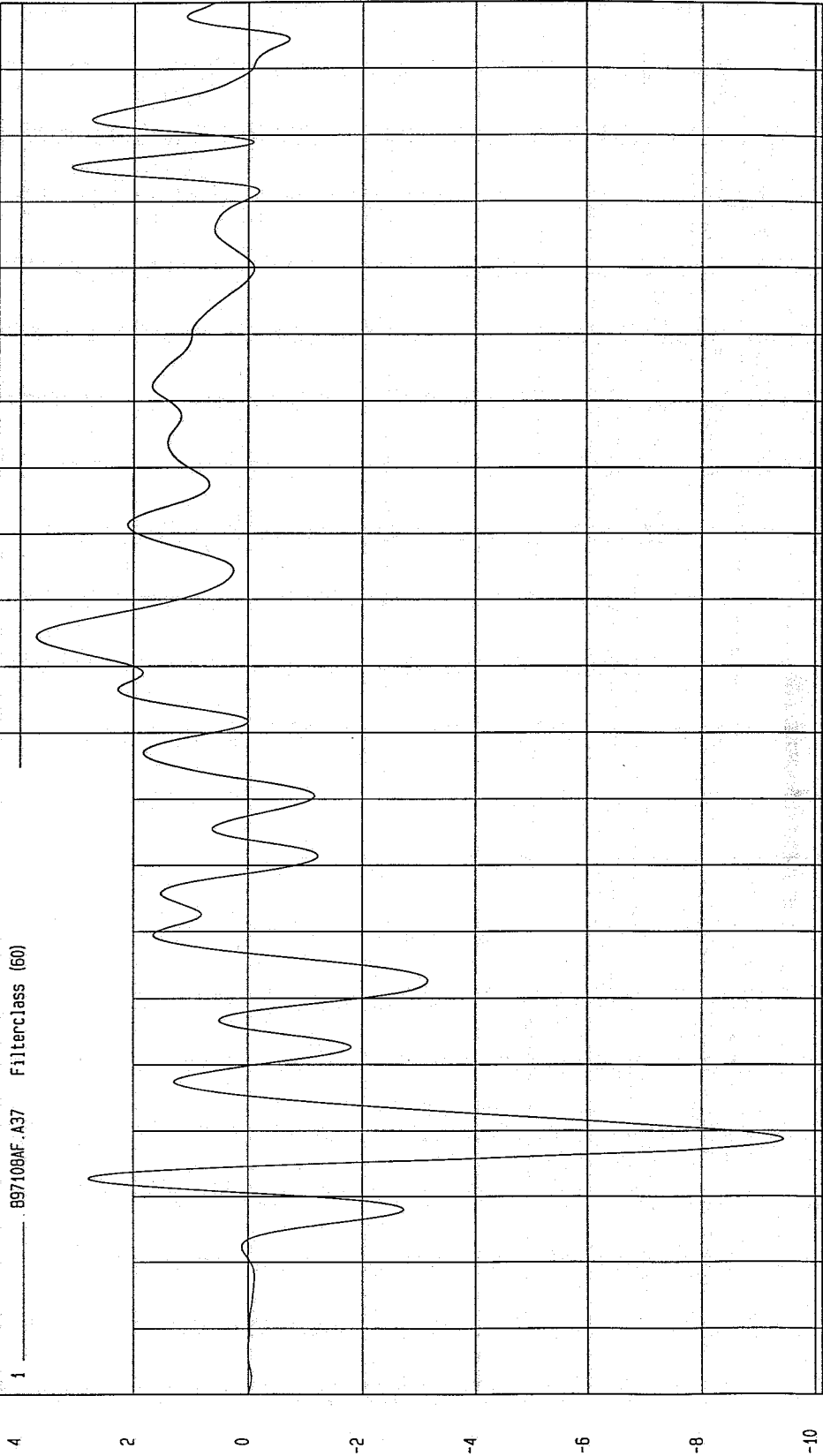
COMPONENT: 1998 BUICK CENTURY (MW0112)

Speed: 38.1 MPH 61.3 KPH

Minimum = -9.45 G'S at 19 msec

Maximum = 3.71 G'S at 94 msec

RIGHT SIDE SILL AT REAR SEAT Z ACCELERATION



TIME (SECONDS)

MGA Research
09-21-1997 18:34

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

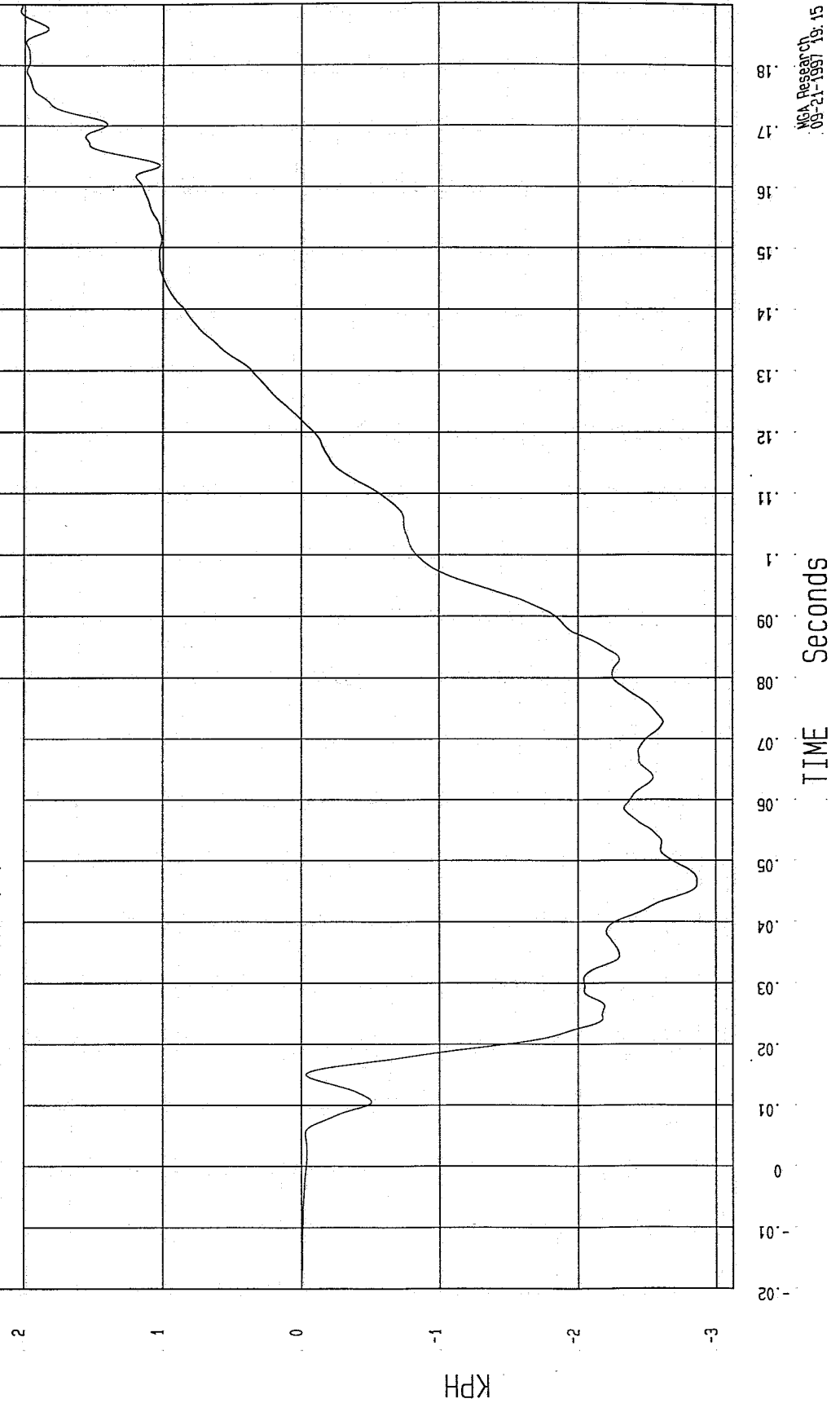
Speed: 38.1 MPH 61.3 KPH

Minimum = -2.86 KPH at 47 msec

Maximum = 2.09 KPH at 195 msec

RIGHT SIDE SILL AT REAR SEAT Z VELOCITY

1 B97108AI.V37 Filterclass (180)



MCA Research
09-21-1997 19:15

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

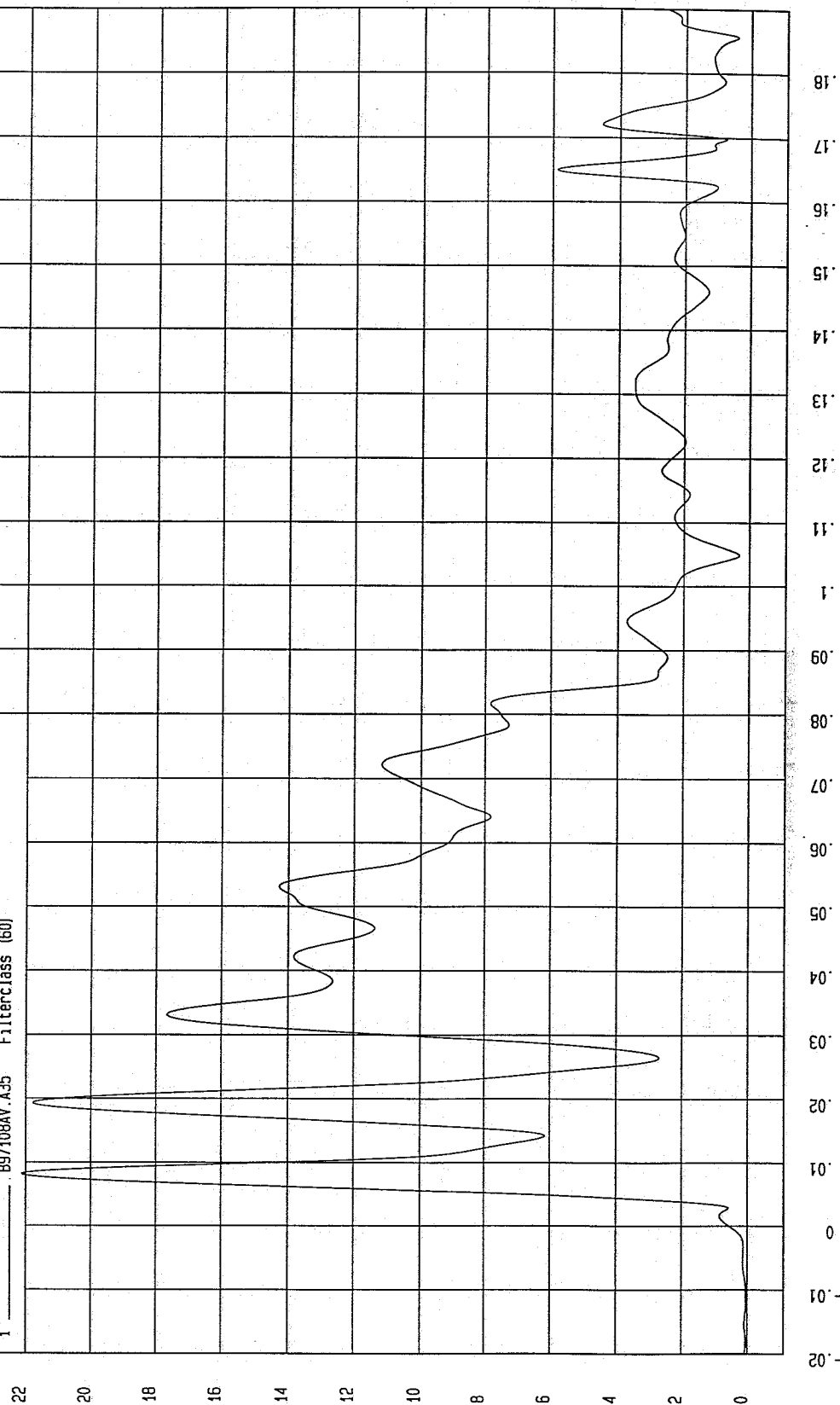
Speed: 38.1 MPH 61.3 KPH

Minimum = 3.73E-02 G's at -12 msec

Maximum = 22.11 G's at 8 msec

RIGHT SIDE SILL AT REAR SEAT RESULTANT ACCELERATION

1 897108AV.A35 Filterclass (60)



MCA Research
09-21-1997 18:38

TIME (SECONDS)

G's

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

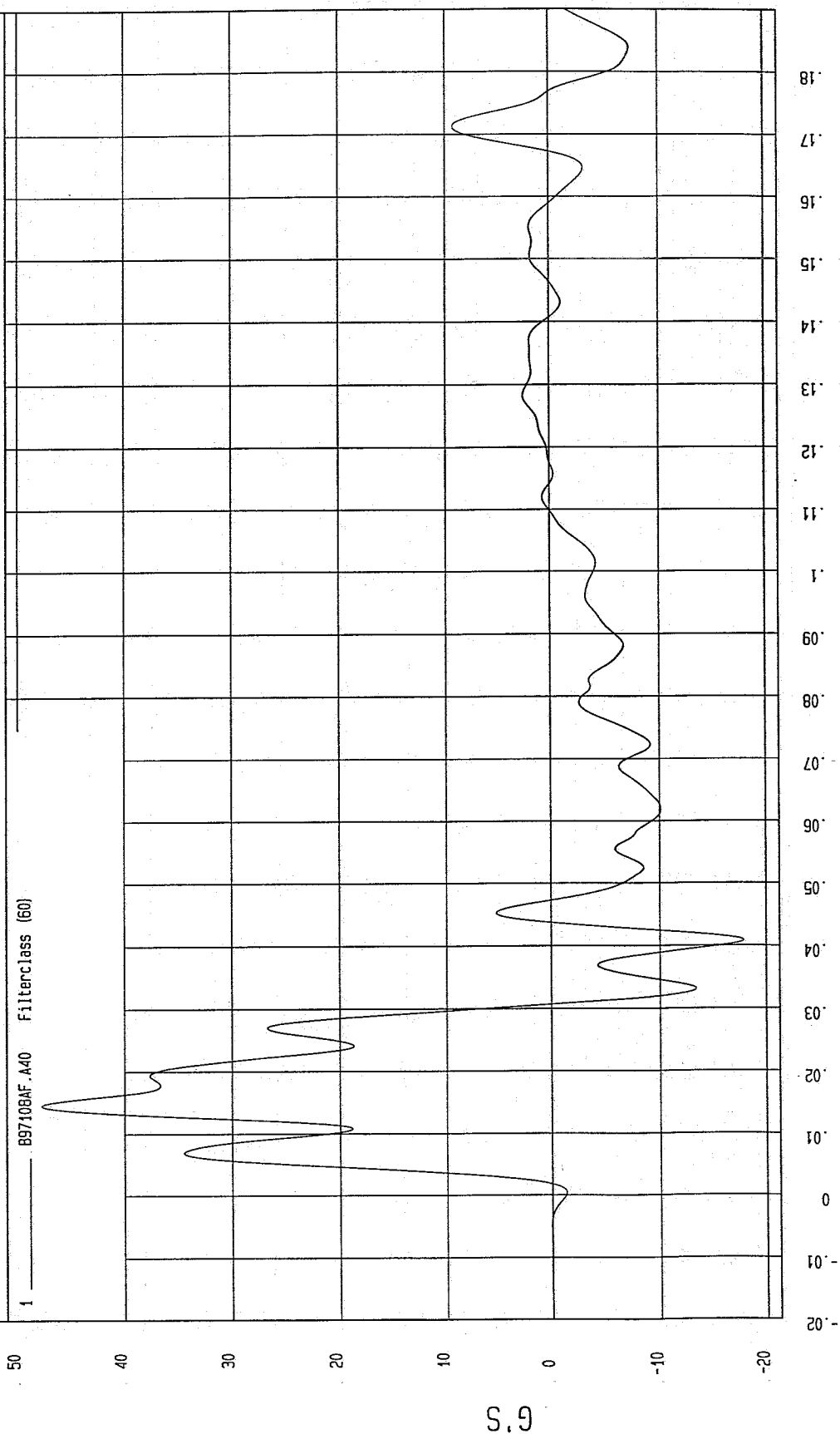
Speed: 38.1 MPH 61.3 KPH

Minimum = -17.95 G'S at 41 msec

Maximum = 47.77 G'S at 15 msec

LEFT FRONT SEAT TRACK Y ACCELERATION

1 B97108AF.A40 Filterclass (60)



MCA Research
09-21-1997 18:34

TIME (SECONDS)

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

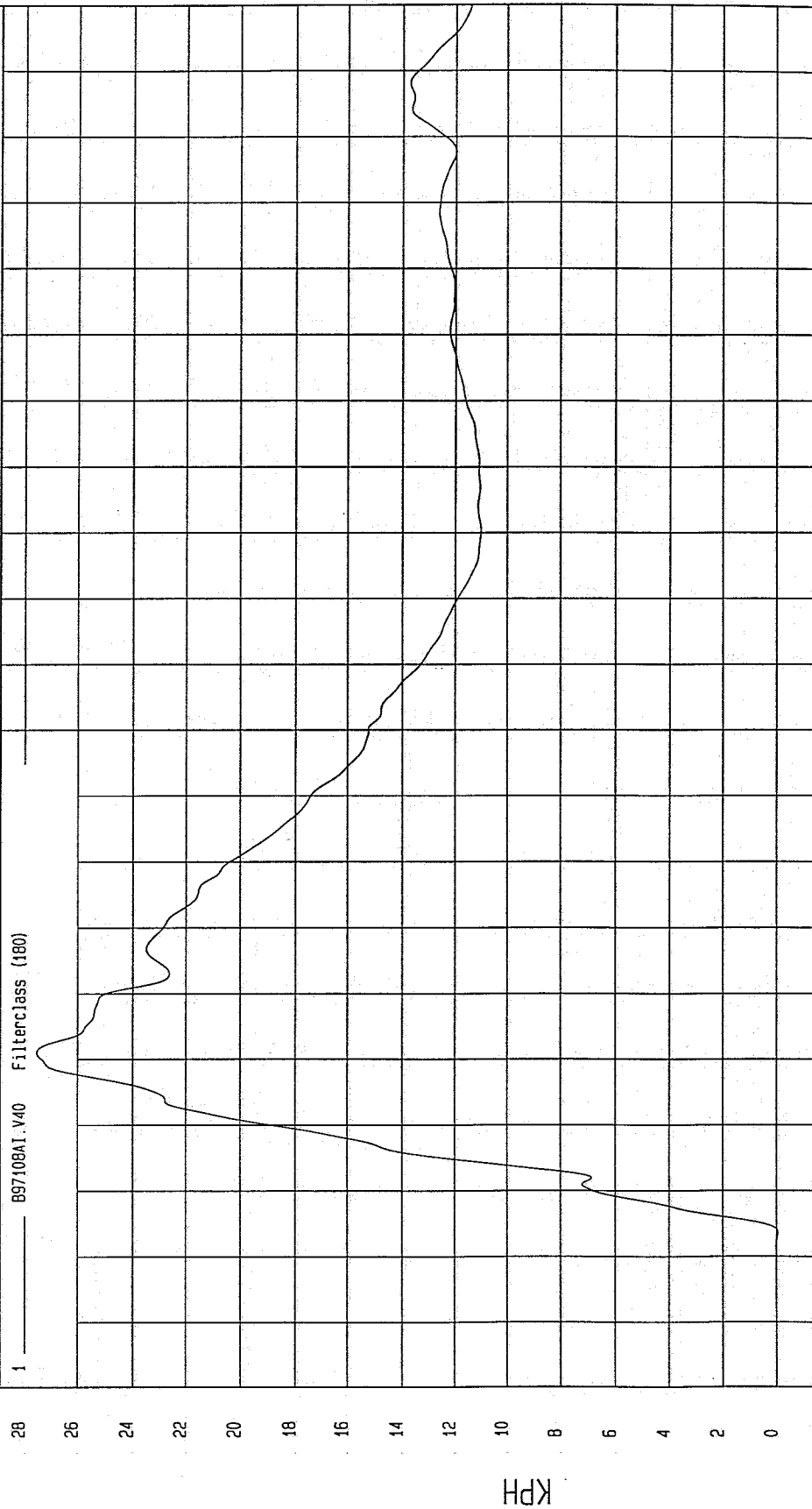
COMPONENT: 1998 BUICK CENTURY (MW0112)

Speed: 38.1 MPH 61.3 KPH

Minimum = -5.32E-02 KPH at 4 msec

Maximum = 27.54 KPH at 31 msec

LEFT FRONT SEAT TRACK Y VELOCITY



MCA Research
09-21-1997 19:15

TIME Seconds

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

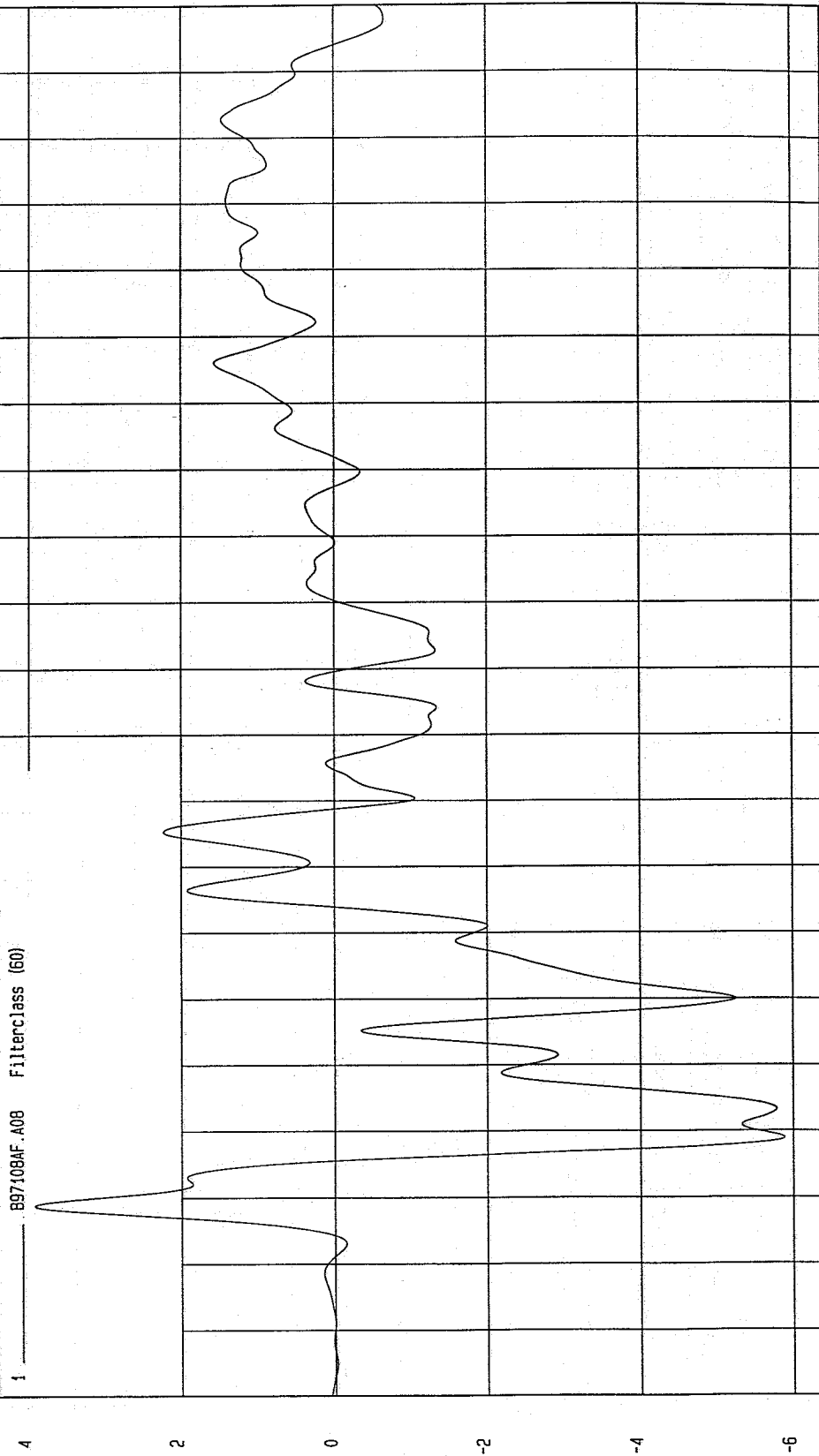
Speed: 38.1 MPH 61.3 KPH

Minimum = -5.88 G'S at 19 msec

Maximum = 3.92 G'S at 9 msec

REAR FLOORPAN ABOVE AXLE X ACCELERATION

1 B97108AF.A08 Filterclass (60)



TIME (SECONDS)

MGA Research
09-21-1997 18:34

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

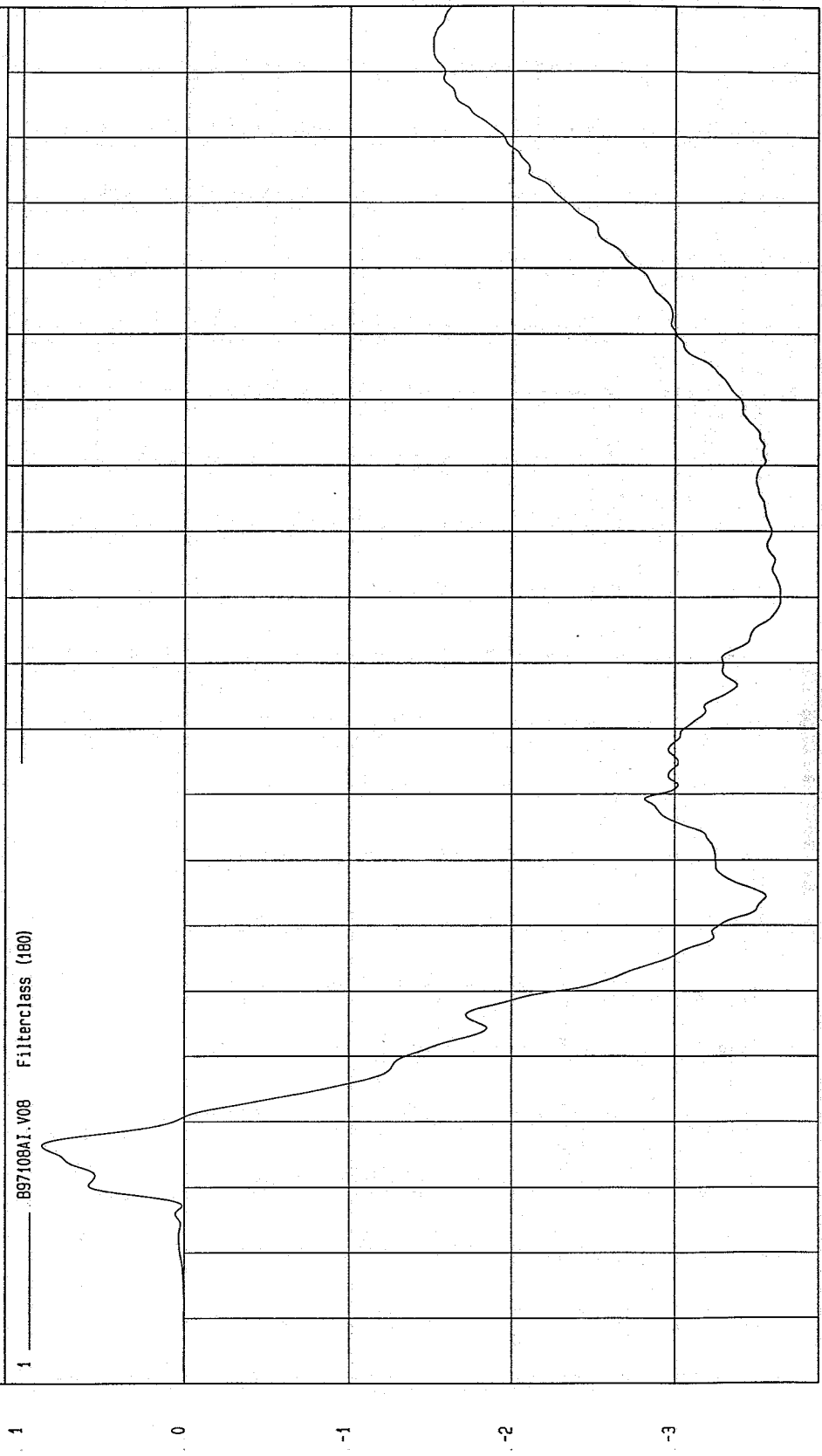
COMPONENT: 1998 BUICK CENTURY (MW0112)

Speed: 38.1 MPH 61.3 KPH

Minimum = -3.64 KPH at 100 msec

Maximum = .87 KPH at 16 msec

REAR FLOORPAN ABOVE AXLE X VELOCITY



WCA Research
09-21-1997 19:15

TIME Seconds

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

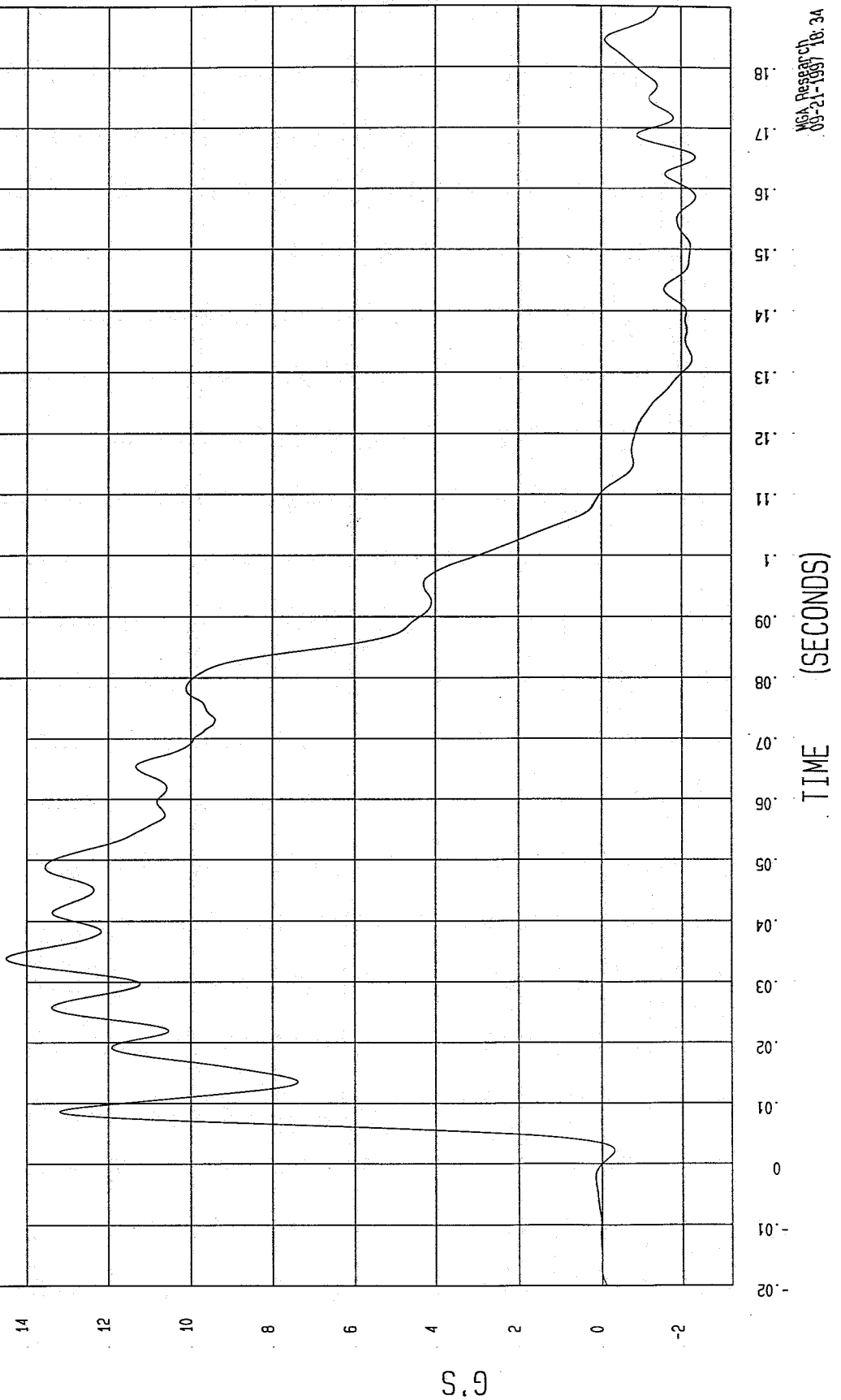
Speed: 38.1 MPH 61.3 KPH

Minimum = -2.33 G'S at 159 msec

Maximum = 14.50 G'S at 34 msec

REAR FLOORPAN ABOVE AXLE Y ACCELERATION

1 ——— B97100AF.A09 Filterclass (60)



MGA Research
09-21-1997 10:34

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

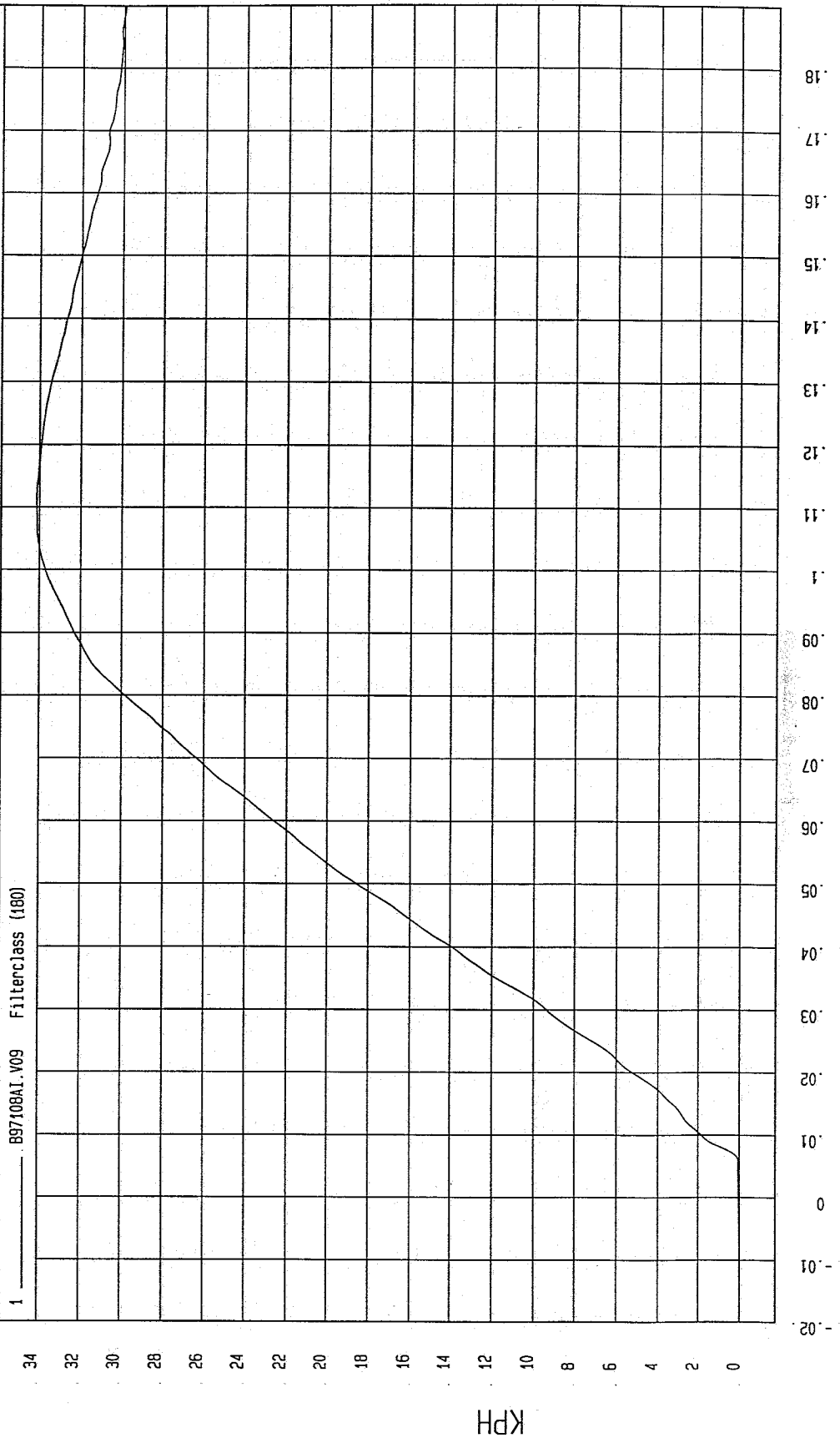
COMPONENT: 1998 BUICK CENTURY (MW0112)

Speed: 38.1 MPH 61.3 KPH

Minimum = -1.96E-03 KPH at -19 msec

Maximum = 34.13 KPH at 112 msec

REAR FLOORPAN ABOVE AXLE Y VELOCITY



MGA Research
09-21-1997 19:15

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

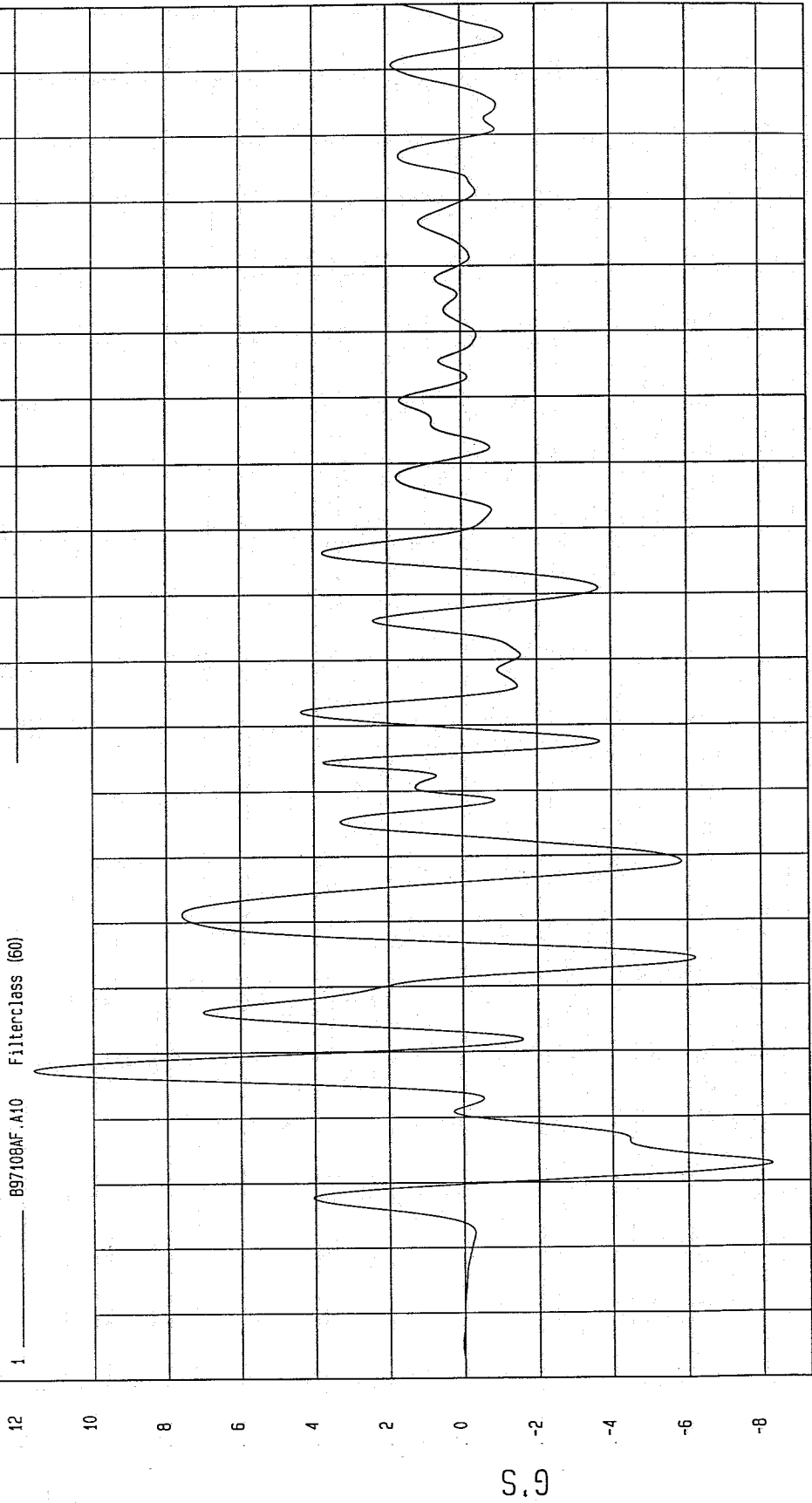
COMPONENT: 1998 BUICK CENTURY (MW0112)

Speed: 38.1 MPH 61.3 KPH

Minimum = -8.24 G'S at 13 msec

Maximum = 11.58 G'S at 28 msec

REAR FLOORPAN ABOVE AXLE Z ACCELERATION



NGA Research
09-21-1997 16:34

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

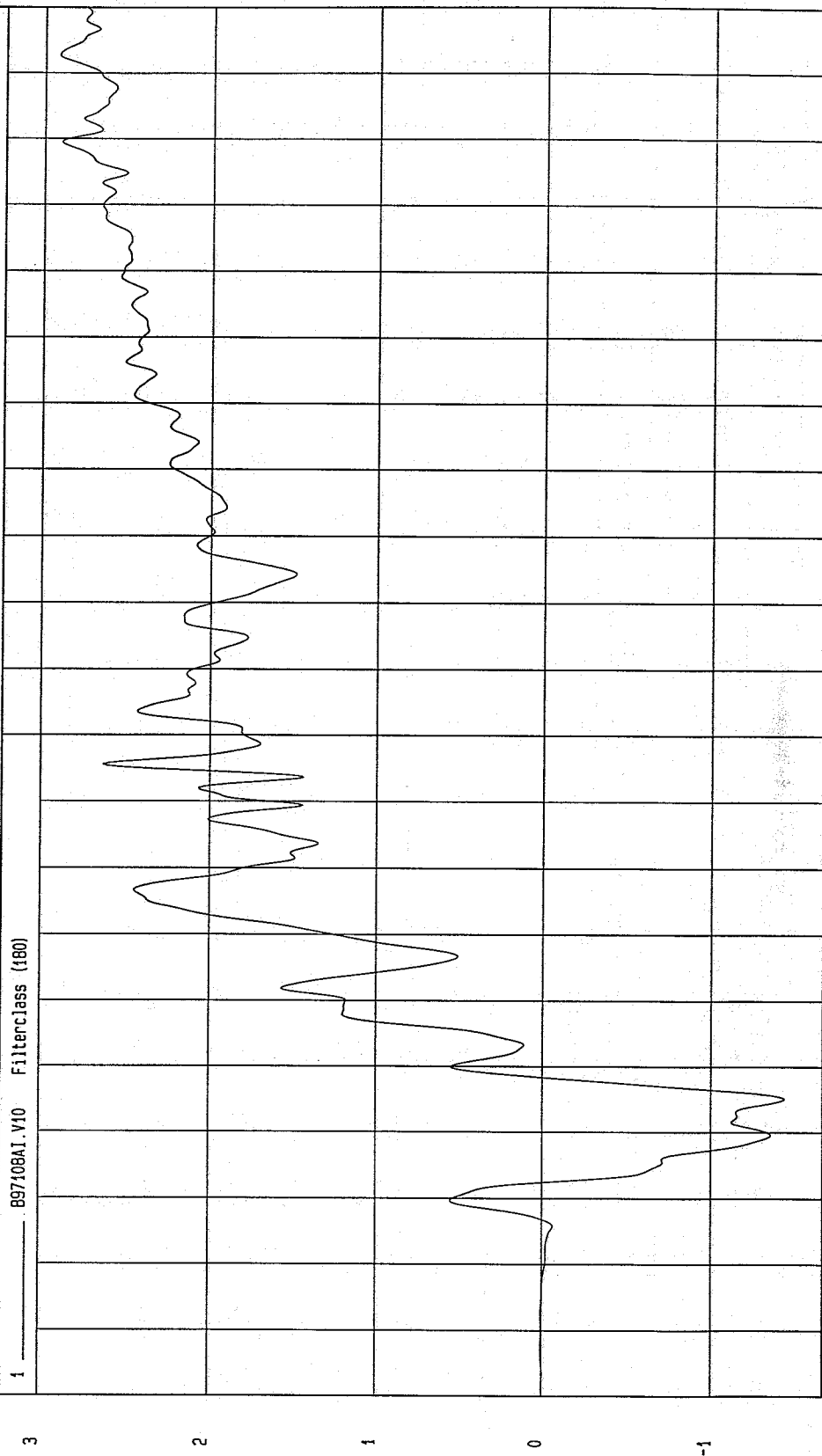
COMPONENT: 1998 BUICK CENTURY (MW0112)

Speed: 38.1 MPH 61.3 KPH

Minimum = -1.43 KPH at 25 msec

Maximum = 3.00 KPH at 193 msec

REAR FLOORPAN ABOVE AXLE Z VELOCITY



TIME Seconds

MCA Research
09-21-1997 19:45

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

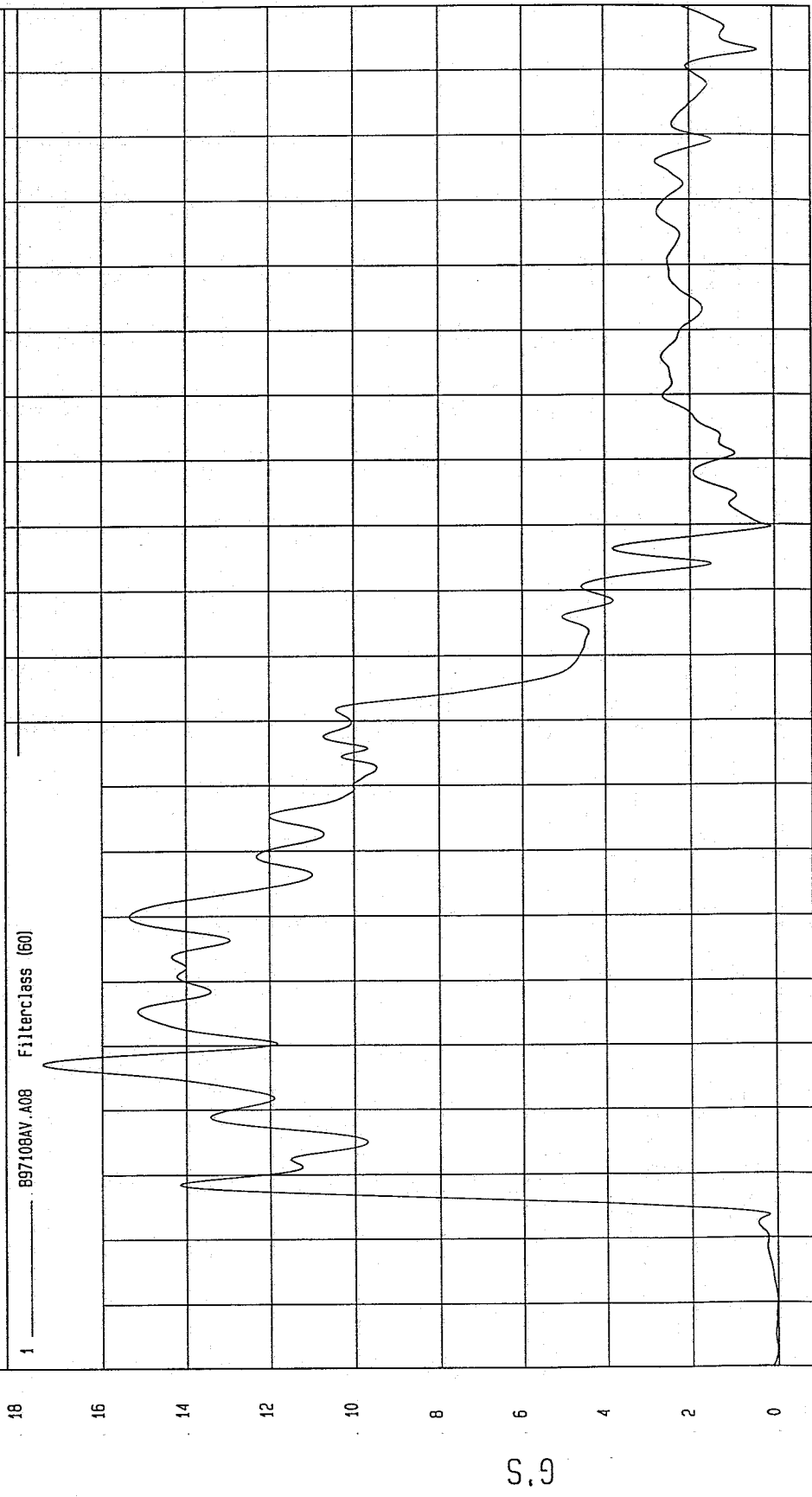
Speed: 38.1 MPH 61.3 KPH

Minimum = .01 G'S at -17 msec

Maximum = 17.43 G'S at 27 msec

REAR FLOORPAN ABOVE AXLE RESULTANT ACCELERATION

1 B97108AV.A08 Filterclass (60)



MCA Research
09-21-1997 18:38

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

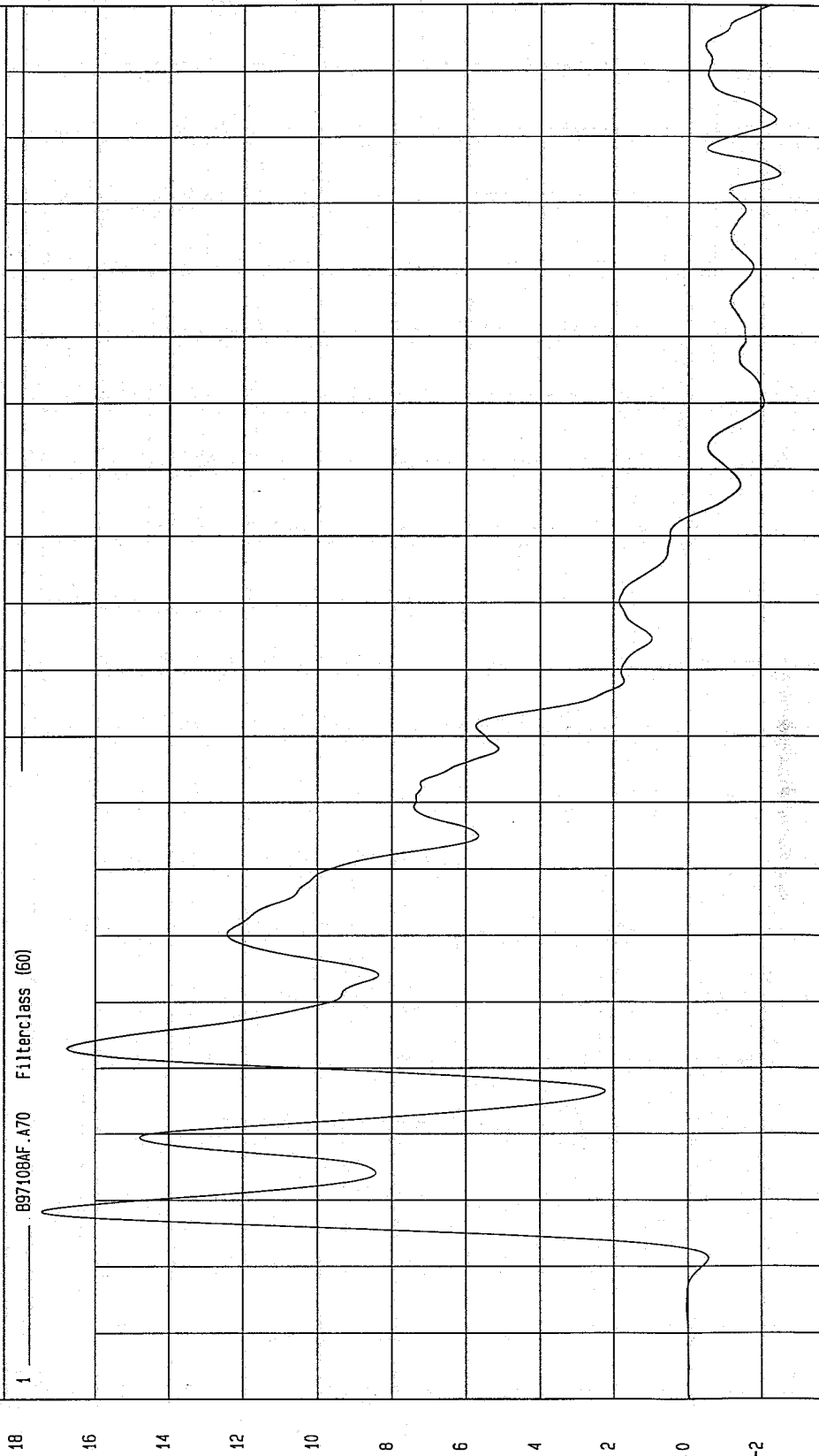
COMPONENT: 1998 BUICK CENTURY (MW0112)

Speed: 38.1 MPH 61.3 KPH

Minimum = -2.70 G'S at 192 msec

Maximum = 17.45 G'S at 8 msec

RIGHT REAR OCCUPANT COMPARTMENT Y ACCELERATION



WCA Research
09-21-1997 18:35

TIME (SECONDS)

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

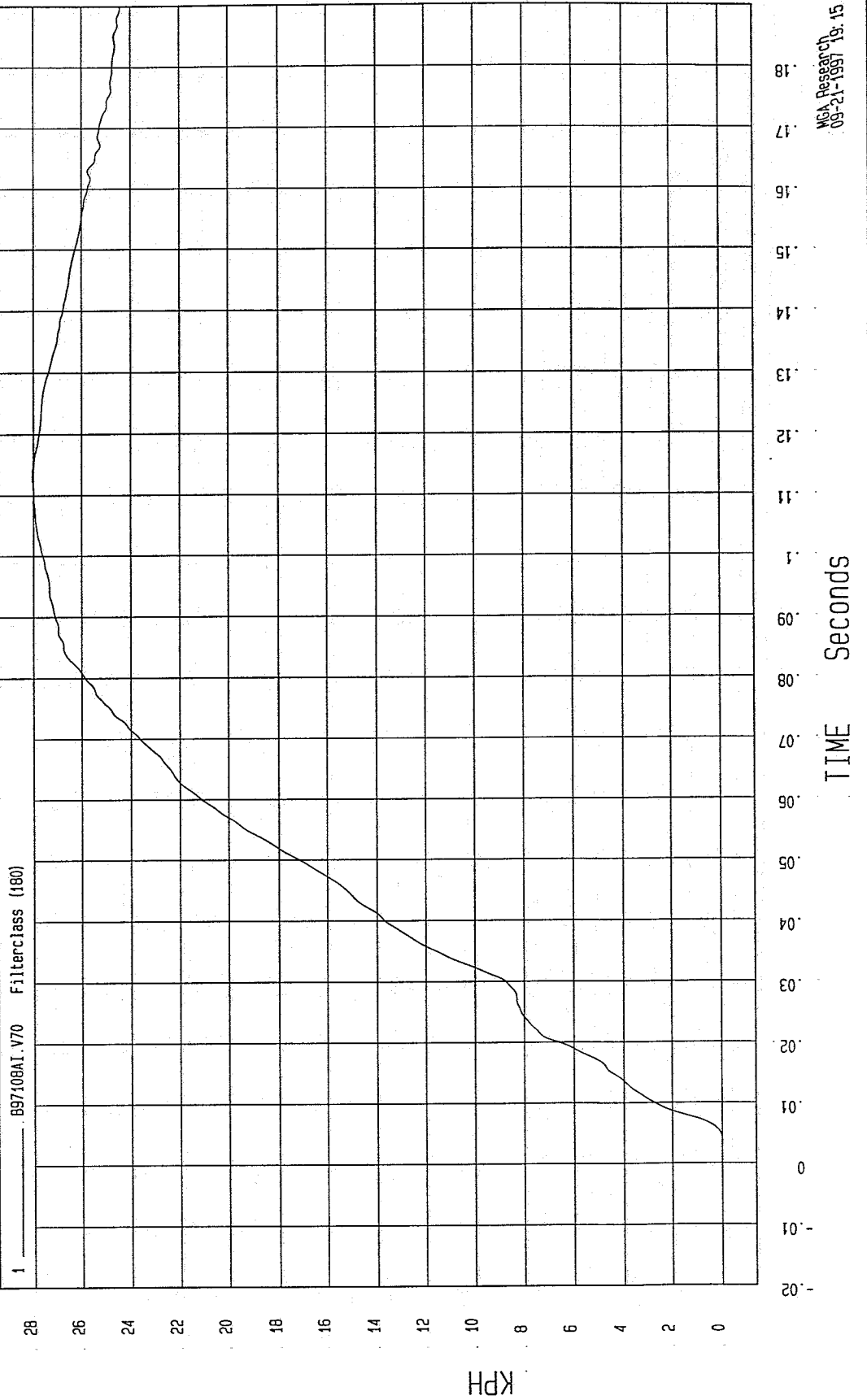
COMPONENT: 1998 BUICK CENTURY (MW0112)

Speed: 38.1 MPH 61.3 KPH

Minimum = -9.34E-04 KPH at -13 msec

Maximum = 28.04 KPH at 113 msec

RIGHT REAR OCCUPANT COMPARTMENT Y VELOCITY



TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

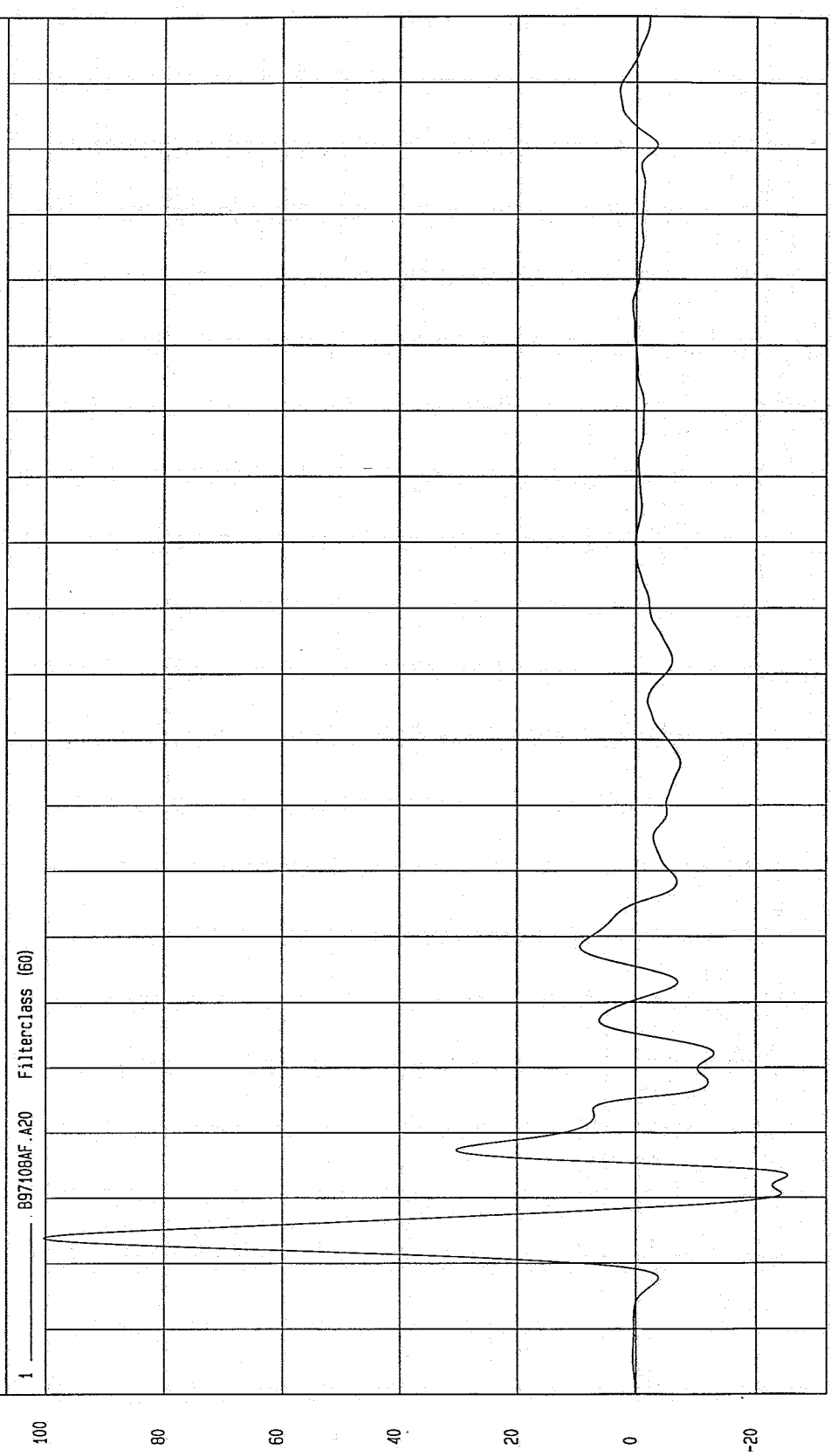
Speed: 38.1 MPH 61.3 KPH

Minimum = -25.36 G'S at 13 msec

Maximum = 100.35 G'S at 4 msec

LEFT LOWER A-POST Y ACCELERATION

1 B97108AF.A20 Filterclass (60)



TIME (SECONDS)

WGA Research
09-21-1997 18:35

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

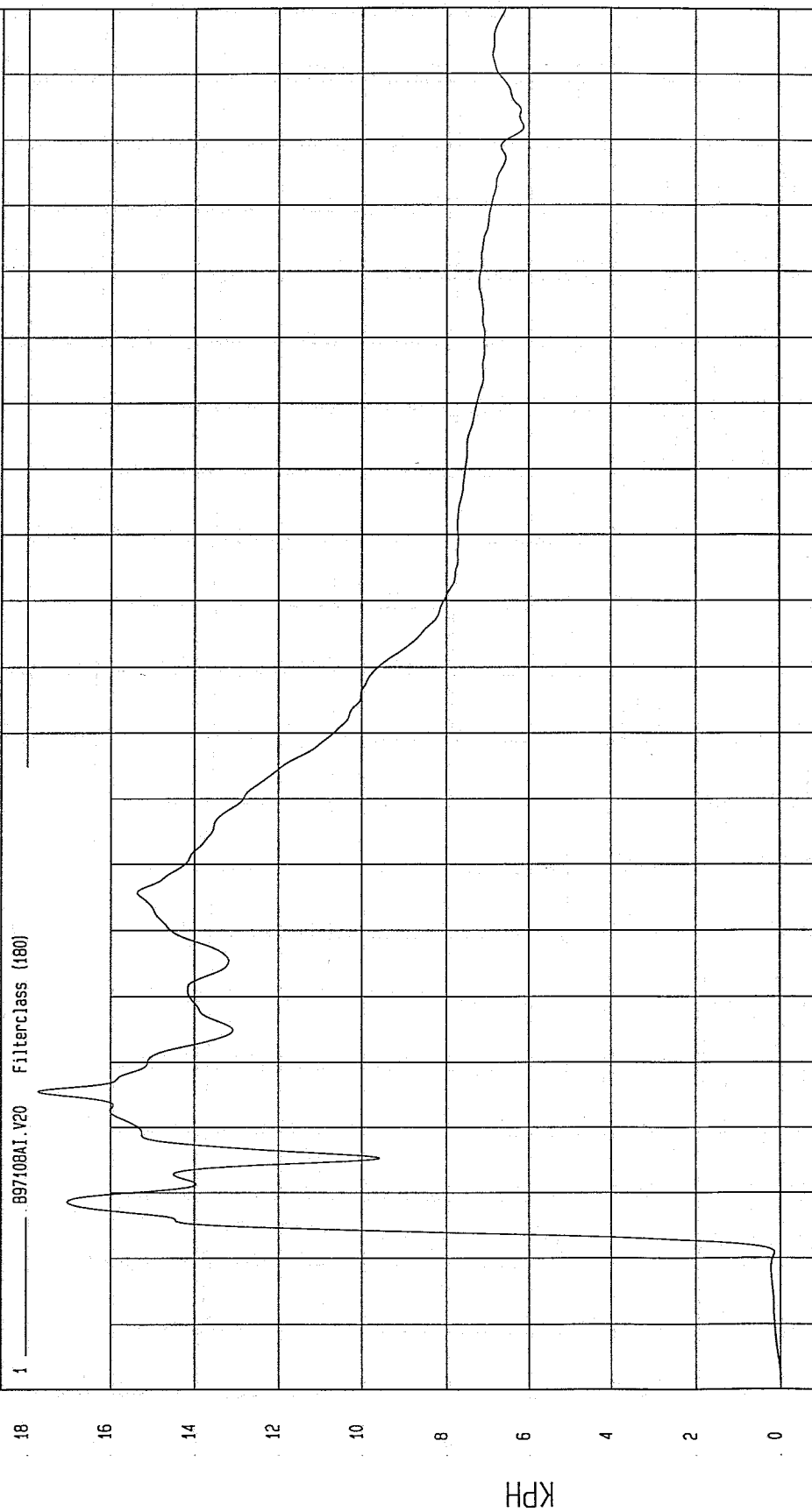
Speed: 38.1 MPH 61.3 KPH

Minimum = 0 KPH at -20 msec

Maximum = 17.74 KPH at 26 msec

LEFT LOWER A-POST Y VELOCITY

1 B97108A1.V20 FilterClass (180)



TIME Seconds

MCA Research
09-21-1997 19:16

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

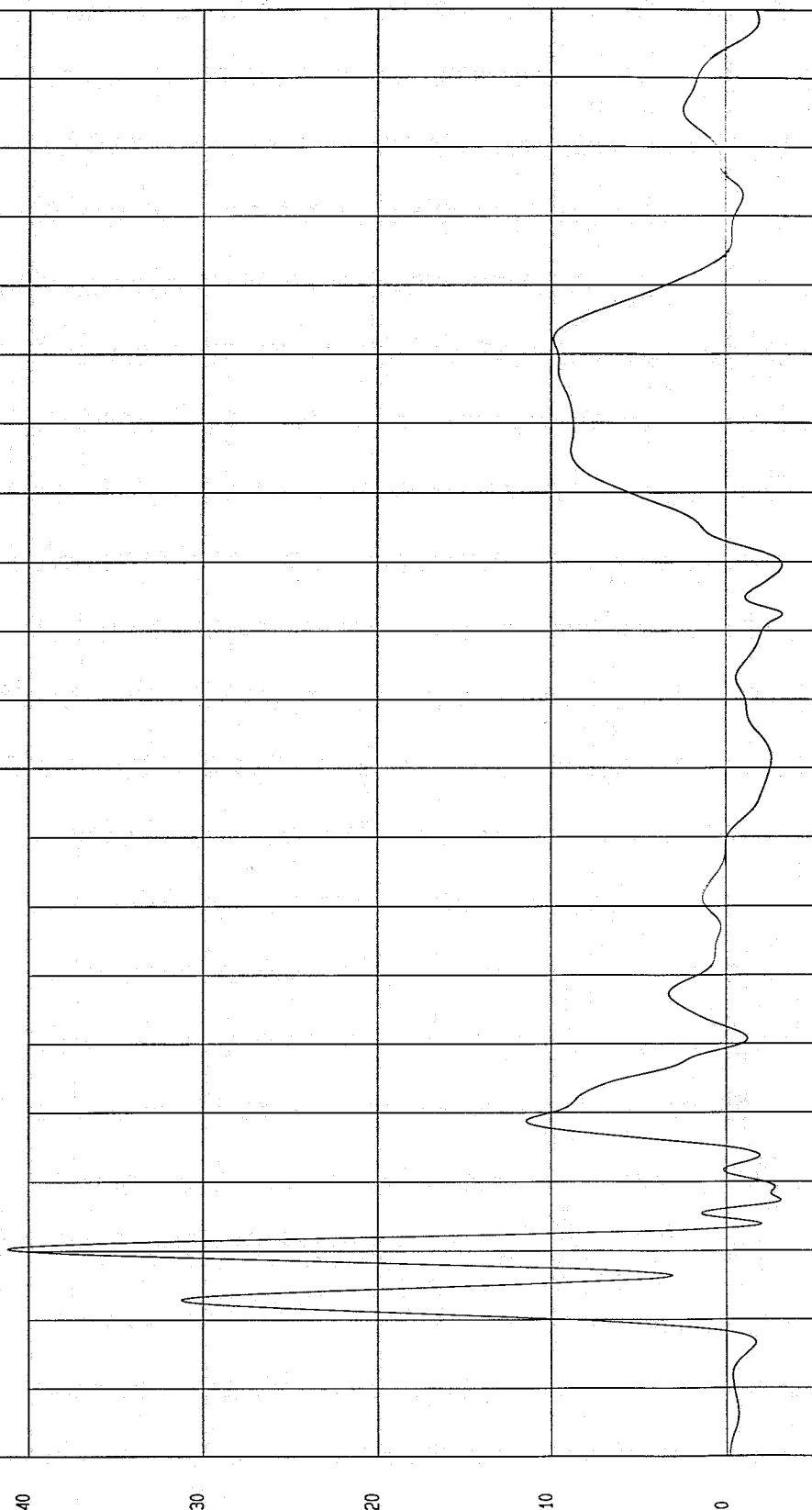
Speed: 38.1 MPH 61.3 KPH

Minimum = -3.20 G'S at 102 msec

Maximum = 41.19 G'S at 10 msec

LEFT MID A-POST Y ACCELERATION

1 B97108AF.A19 Filterclass (60)



NGA Research
09-21-1997 18:35

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

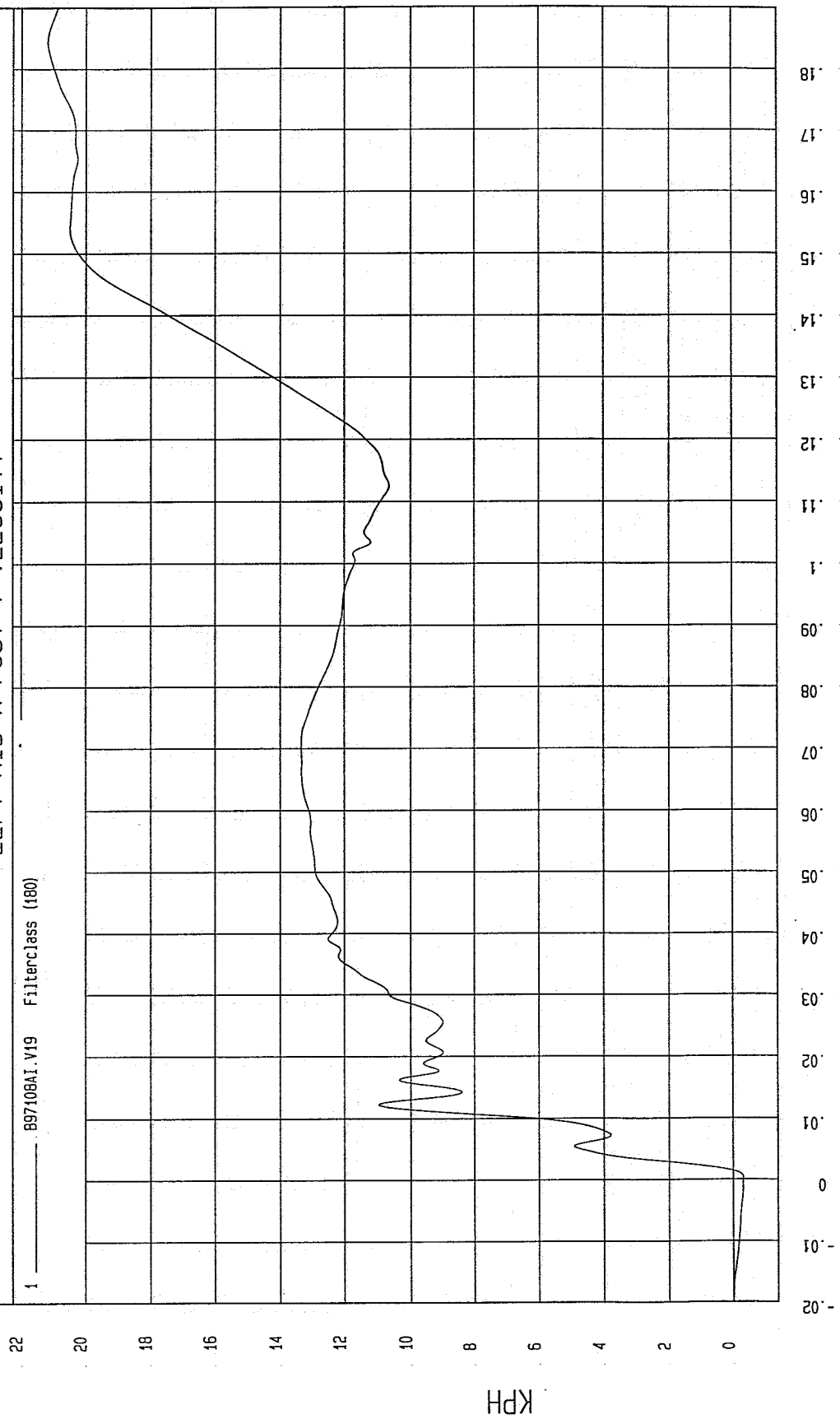
COMPONENT: 1998 BUICK CENTURY (MW0112)

Speed: 38.1 MPH 61.3 KPH

Minimum = -.30 KPH at 0 msec

Maximum = 21.18 KPH at 184 msec

LEFT MID A-POST Y VELOCITY



MGA Research
09-21-1997 19:16

TIME Seconds

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

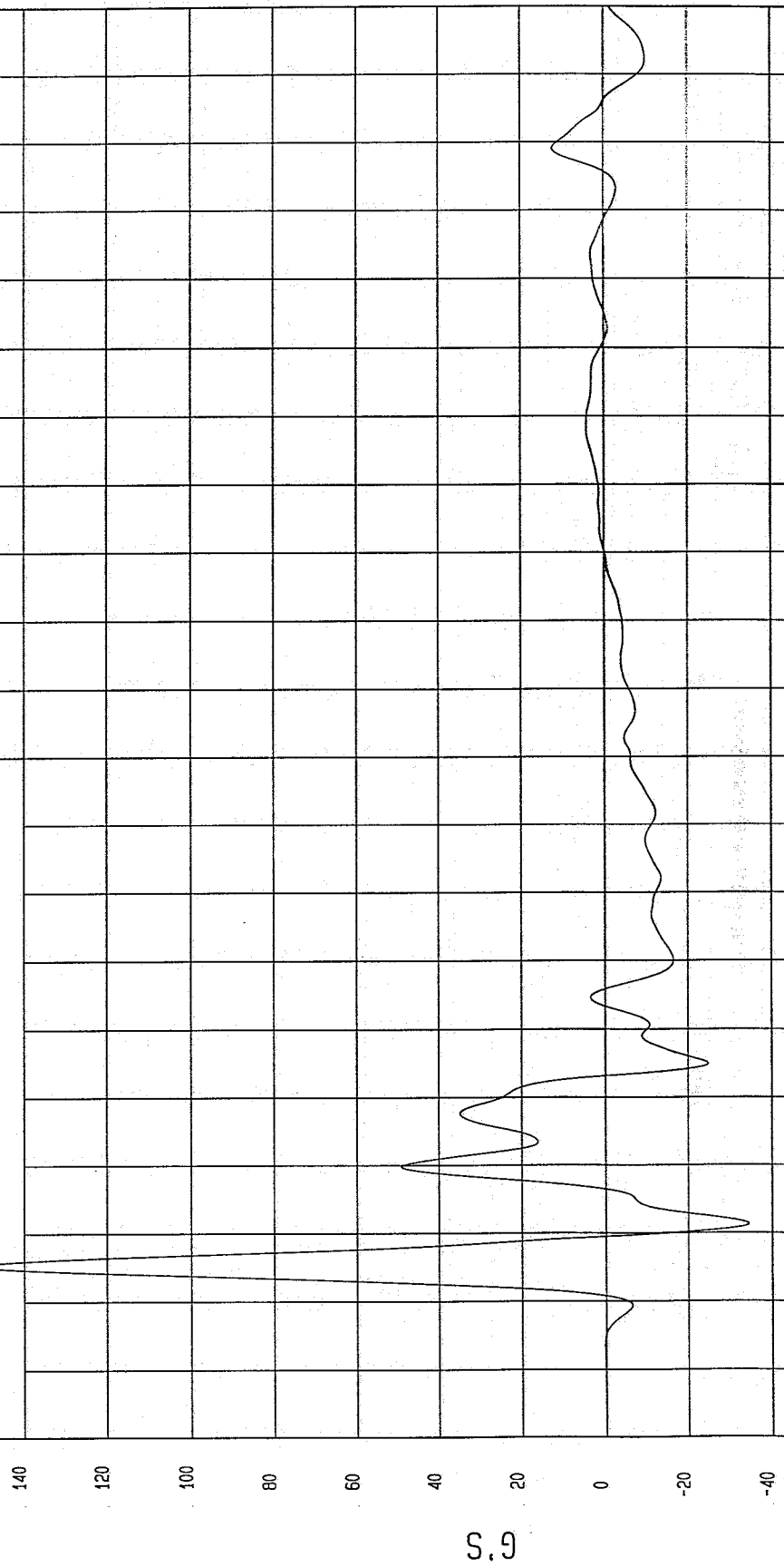
Speed: 38.1 MPH 61.3 KPH

Minimum = -34.59 G'S at 11 msec

Maximum = 150.54 G'S at 5 msec

LEFT LOWER B-POST Y ACCELERATION

1 B97109AF.A30 Filterclass (60)



NGA Research
09-21-1997 19:19

TIME (SECONDS)

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

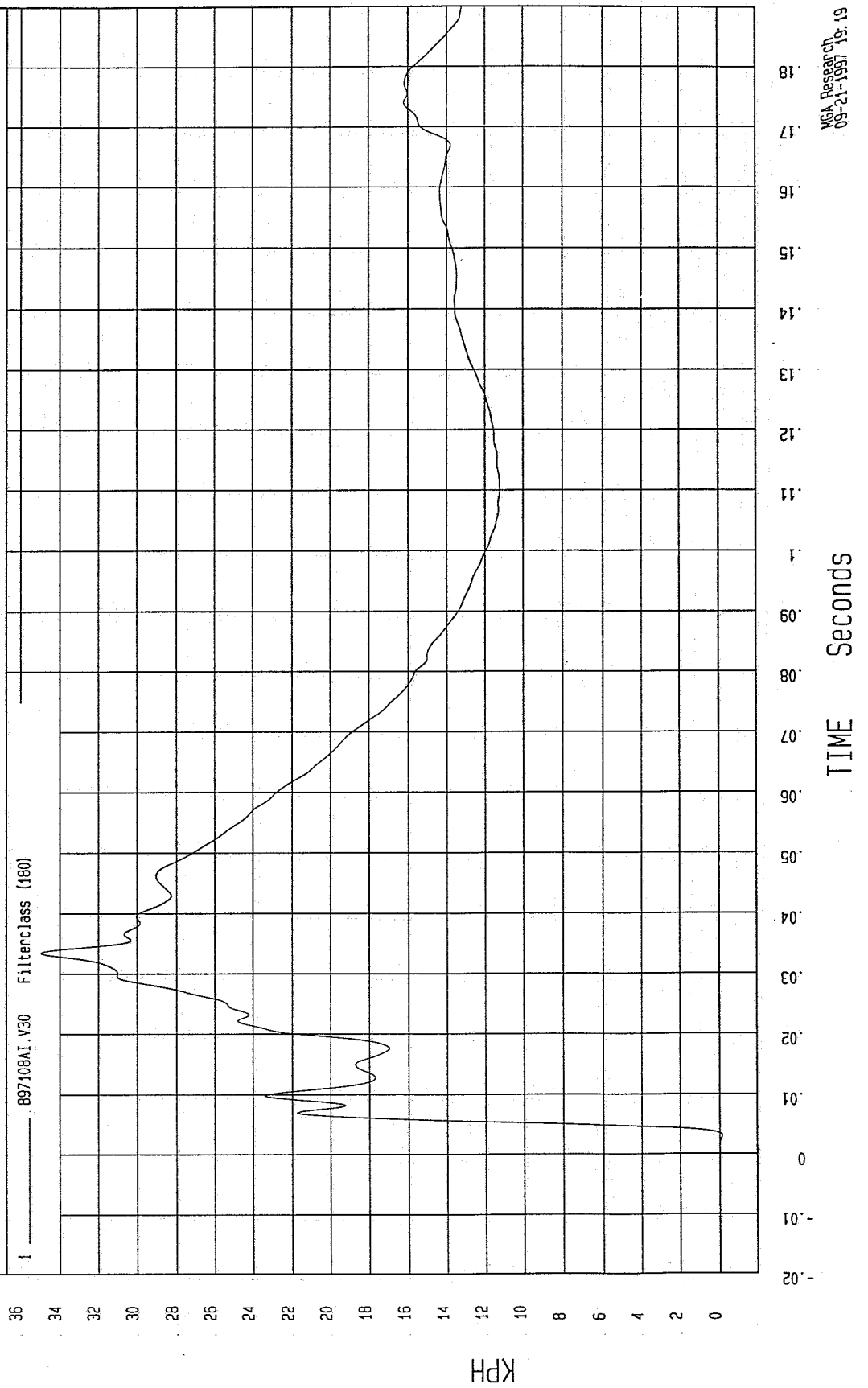
COMPONENT: 1998 BUICK CENTURY (MW0112)

Speed: 38.1 MPH 61.3 KPH

Minimum = - .13 KPH at 3 msec

Maximum = 34.96 KPH at 34 msec

LEFT LOWER B-POST Y VELOCITY



TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

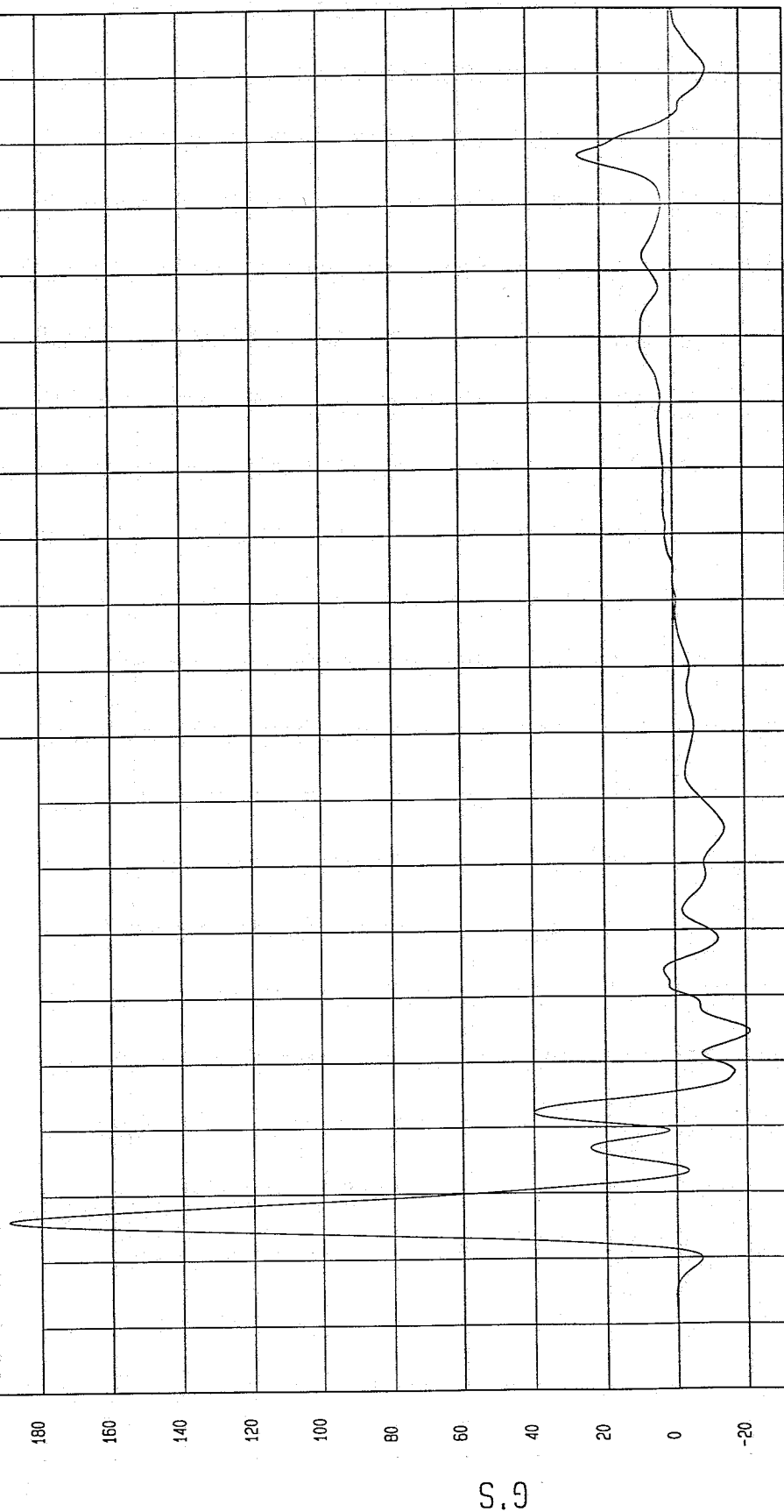
Speed: 38.1 MPH 61.3 KPH

Minimum = -21.08 G'S at 34 msec

Maximum = 189.03 G'S at 6 msec

LEFT MID B-POST Y ACCELERATION

1 B97108AF.A29 Filterclass (60)



MGA Research
09-21-1997 18:35

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

Speed: 38.1 MPH 61.3 KPH

Minimum = -.16 KPH at 3 msec

Maximum = 43.11 KPH at 25 msec

LEFT MID B-POST Y VELOCITY

1 _____ B97108A1.V29 Filterclass (180)



TIME Seconds

MCA Research
09-21-1997 19:16

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

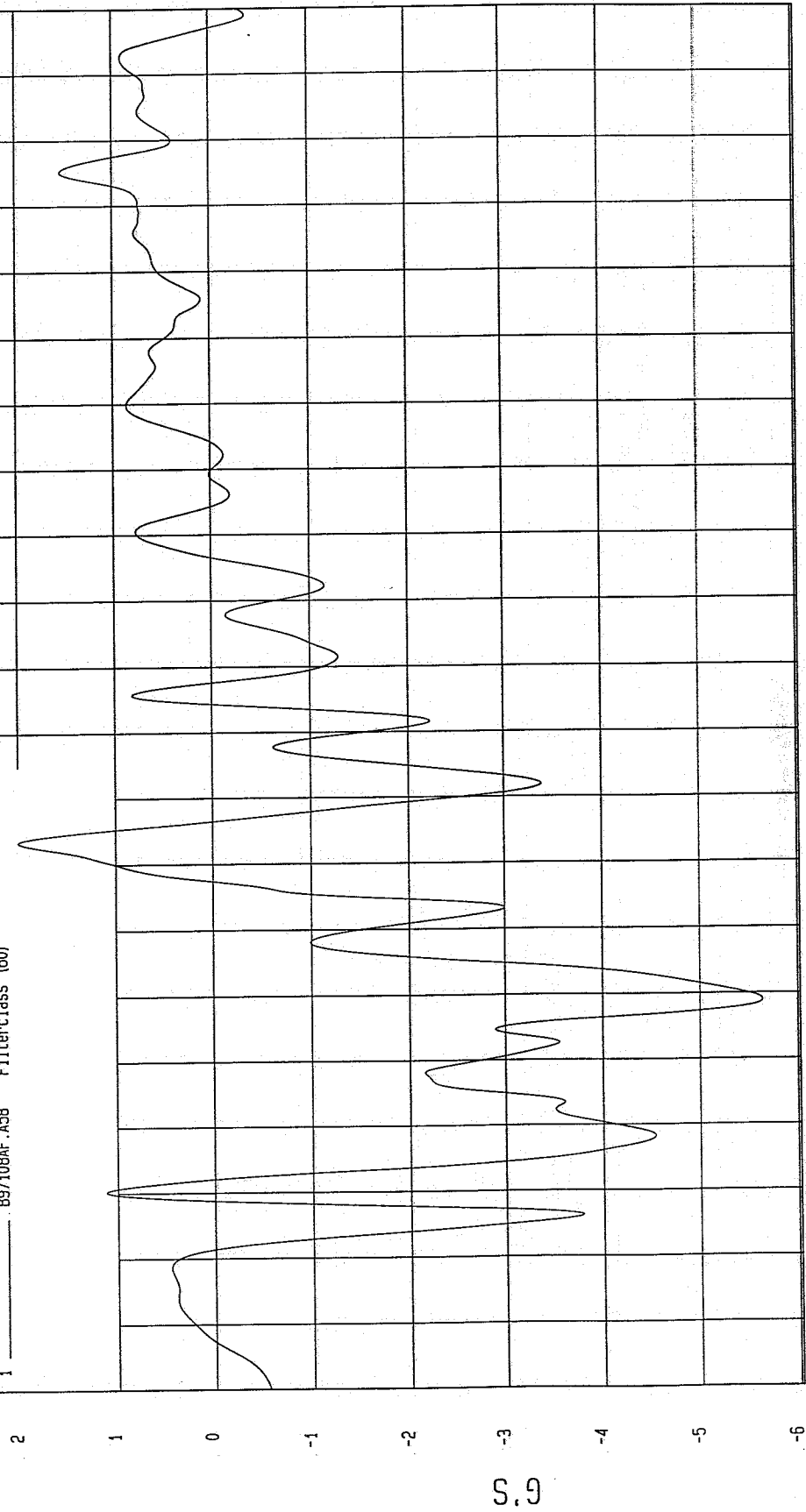
Speed: 38.1 MPH 61.3 KPH

Minimum = -5.64 G'S at 39 msec

Maximum = 1.99 G'S at 63 msec

VEHICLE CG X ACCELERATION

1 897108AF.A58 Filterclass (60)



MCA Research
09-21-1997 18:35

TIME (SECONDS)

G'S

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

Speed: 38.1 MPH 61.3 KPH

Minimum = -6.47 KPH at 106 msec

Maximum = 6.76E-02 KPH at 2 msec

VEHICLE CG X VELOCITY

1 .897109AI.V58 FilterClass (480)



MCA Research
09-21-1997 19:16

TIME Seconds

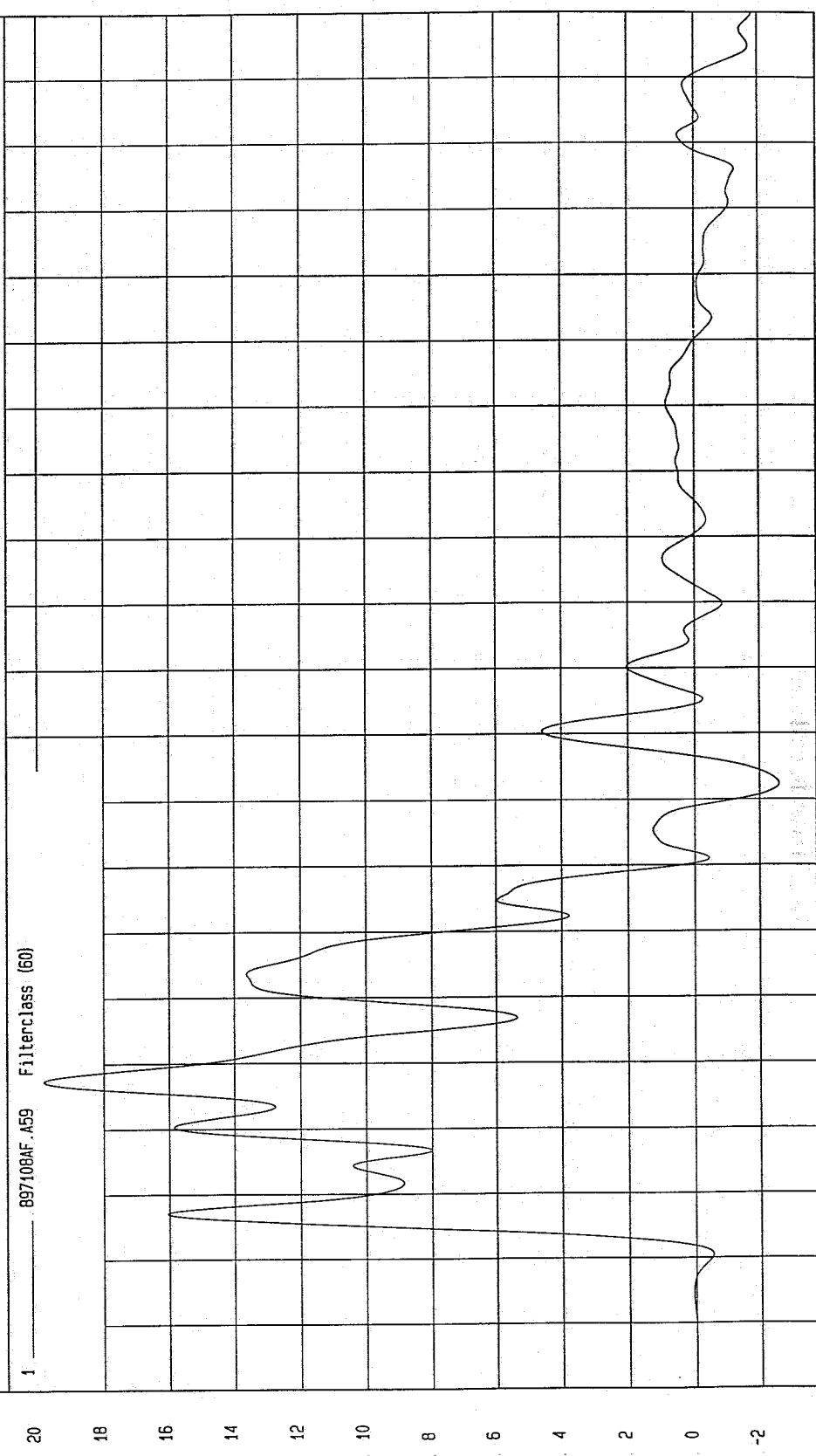
TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112) Speed: 38.1 MPH 61.3 KPH

Minimum = -2.60 G's at 72 msec Maximum = 19.80 G's at 27 msec

VEHICLE CG Y ACCELERATION



TIME (SECONDS)

MCA Research
09-21-1997 18:35

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

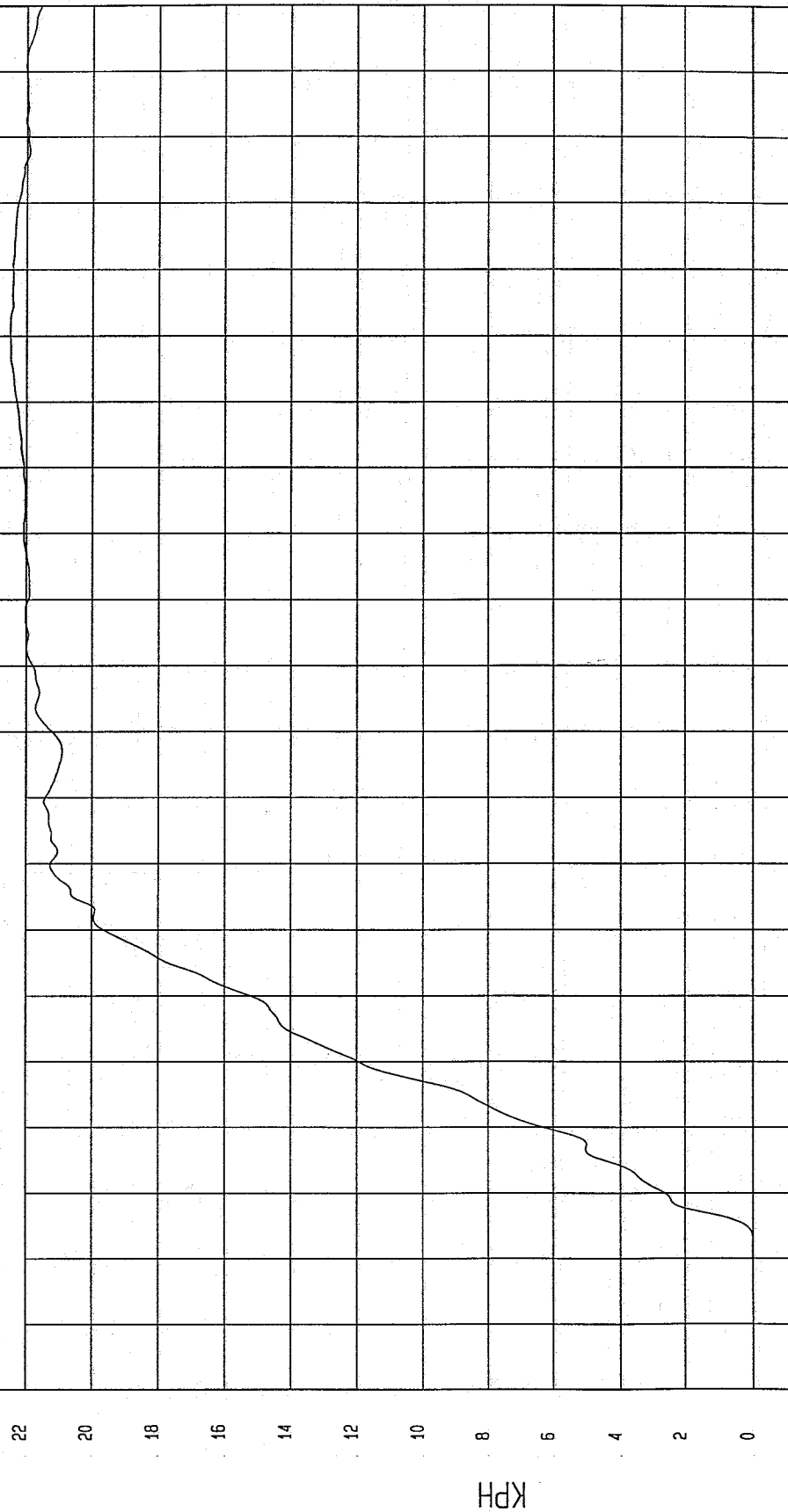
Speed: 38.1 MPH 61.3 KPH

Minimum = -5.66E-03 KPH at -8 msec

Maximum = 22.49 KPH at 140 msec

VEHICLE CG Y VELOCITY

1 ----- B97106A1.V59 Filterclass (180)



TIME Seconds

MGA Research
09-21-1997 19:16

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

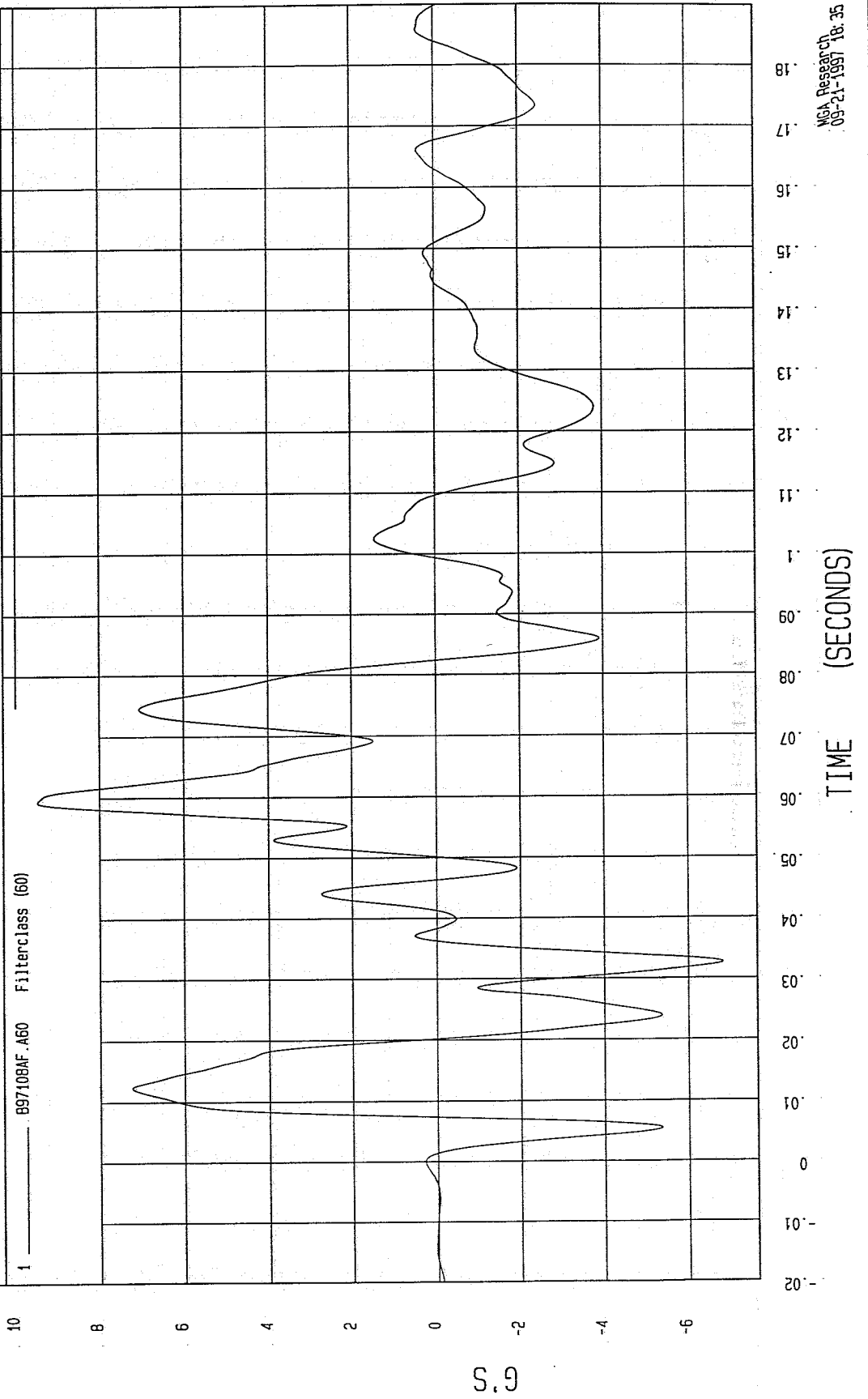
COMPONENT: 1998 BUICK CENTURY (MW0112)

Speed: 38.1 MPH 61.3 KPH

Minimum = -6.83 G'S at 33 msec

Maximum = 9.47 G'S at 59 msec

VEHICLE CG Z ACCELERATION



NCA Research
09-21-1997 18:35

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

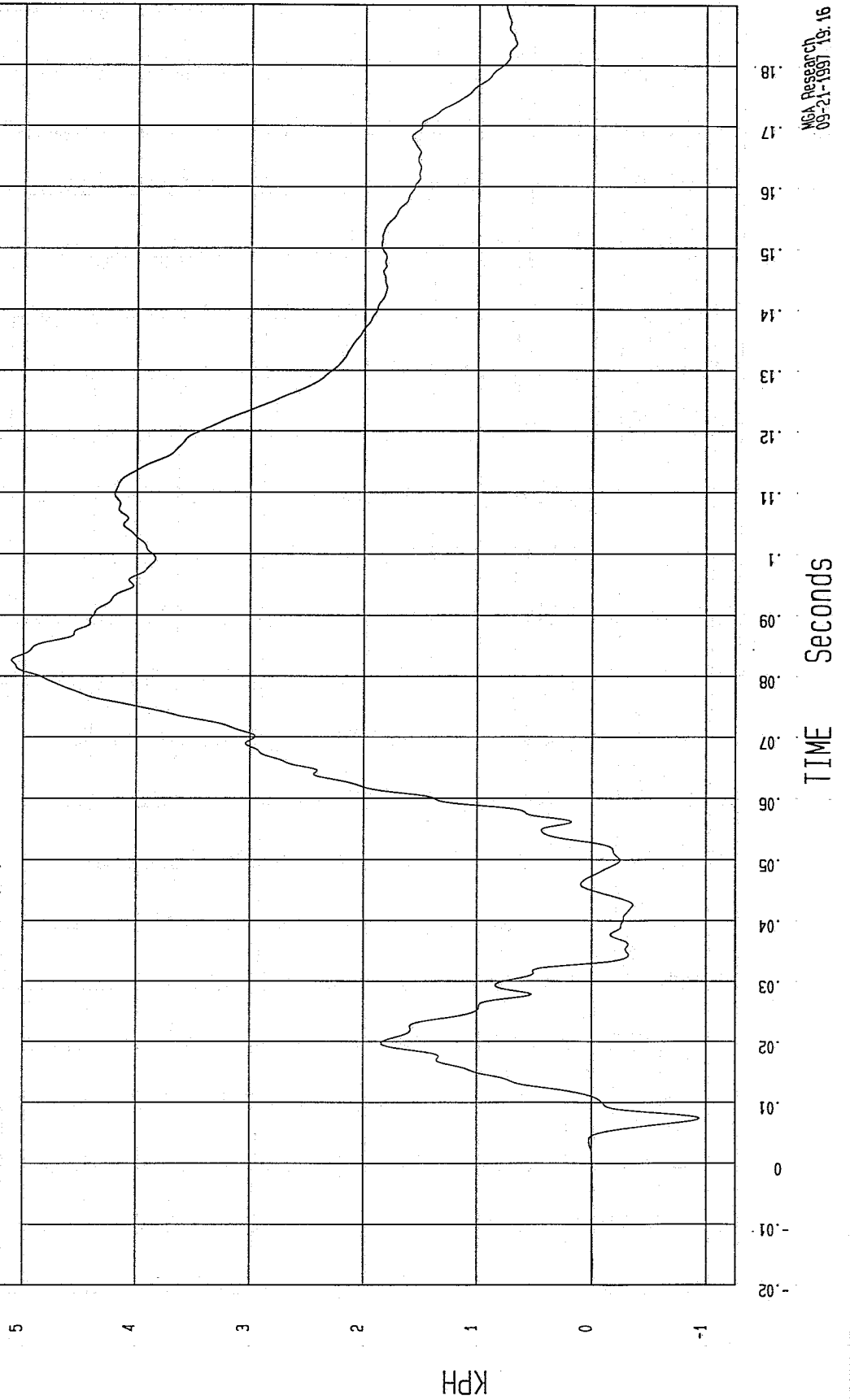
Speed: 38.1 MPH 61.3 KPH

Minimum = -.94 KPH at 7 msec

Maximum = 5.10 KPH at 83 msec

VEHICLE CG Z VELOCITY

1 _____ B97108A1.V60 Filterclass (180)



MGA Research
09-21-1997 19:16

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

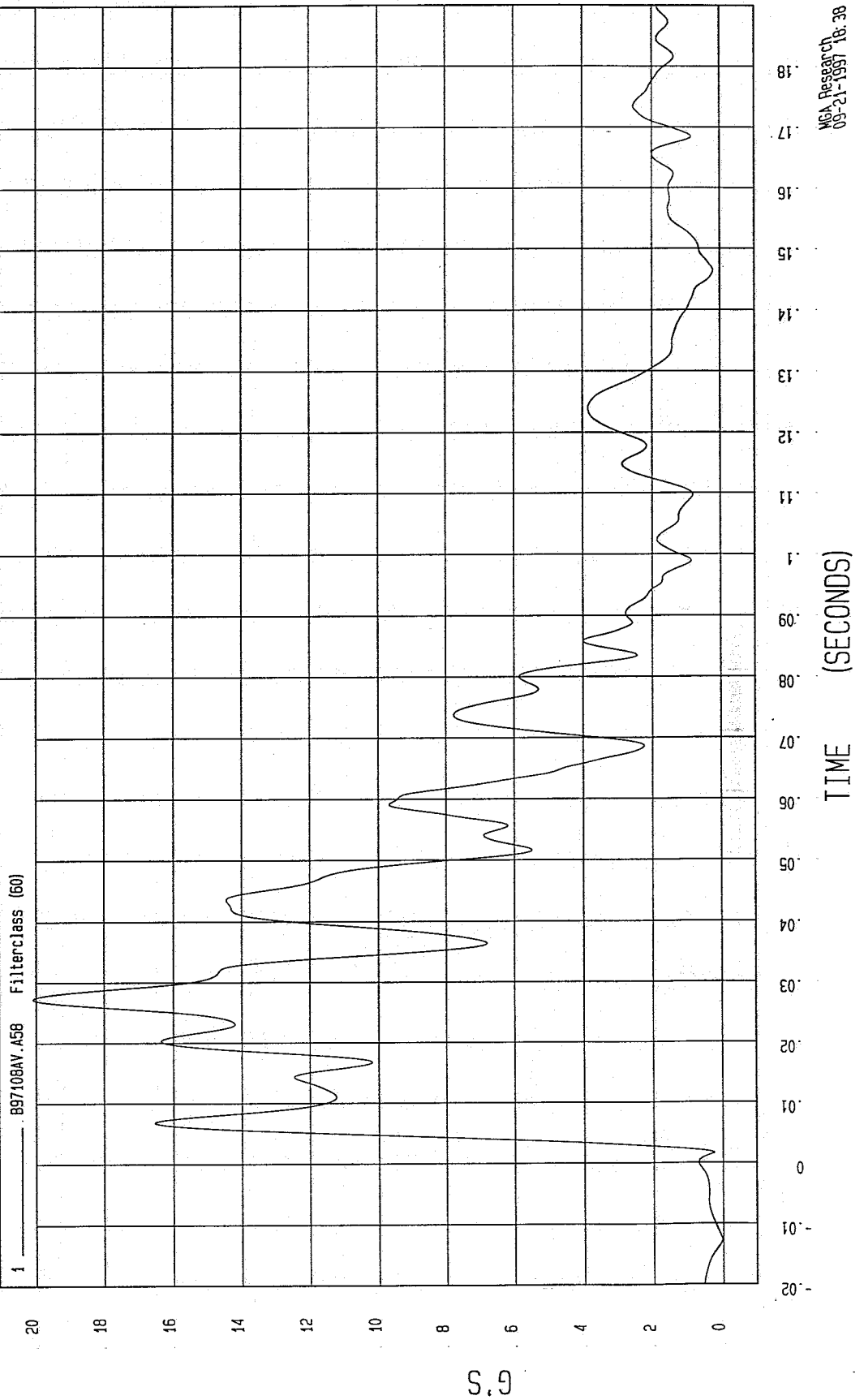
COMPONENT: 1998 BUICK CENTURY (MW0112)

Speed: 38.1 MPH 61.3 KPH

Minimum = 3.10E-02 G'S at -13 msec

Maximum = 20.08 G'S at 27 msec

VEHICLE CG RESULTANT ACCELERATION



TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

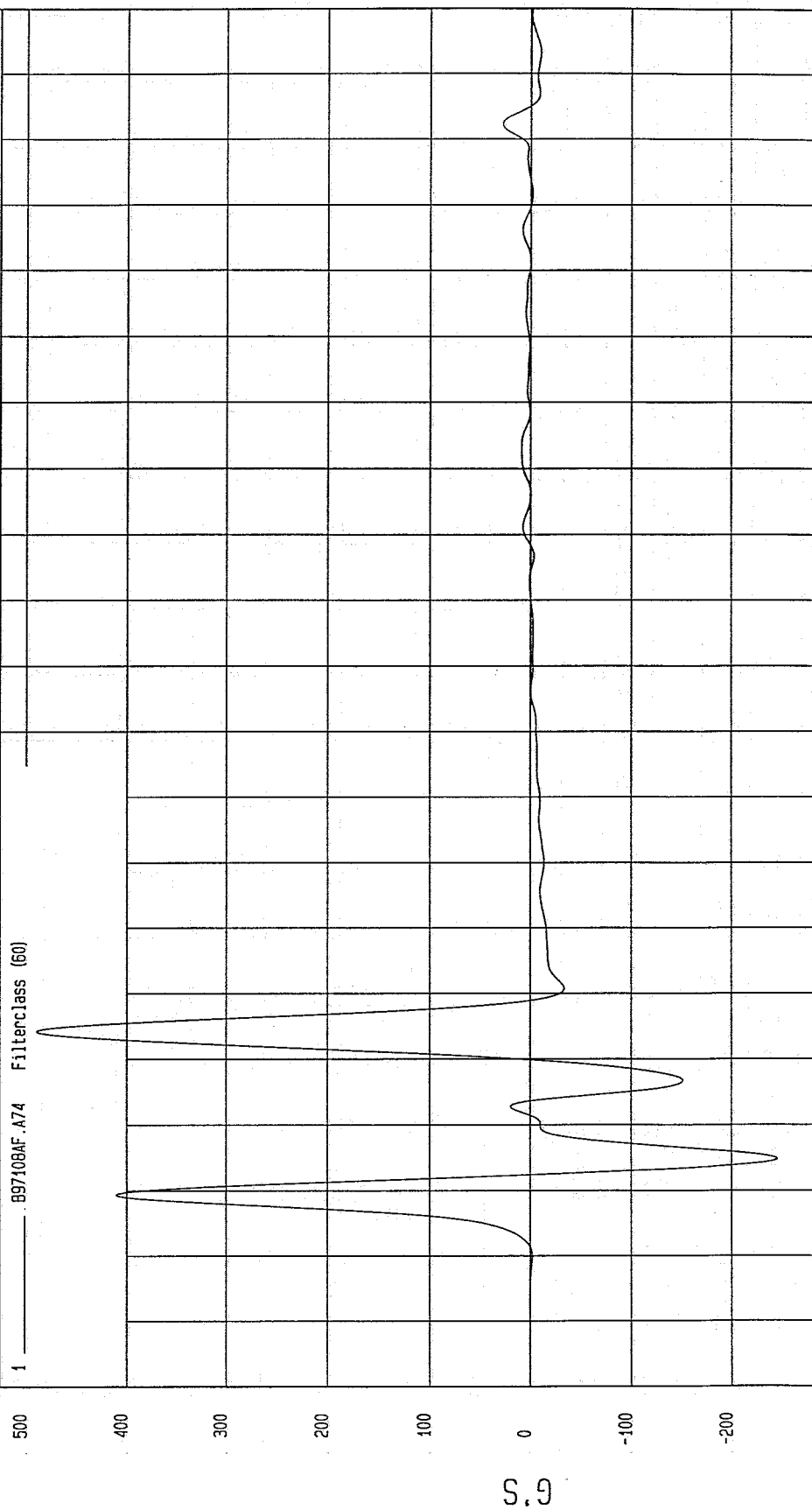
Speed: 38.1 MPH 61.3 KPH

Minimum = -244.94 G'S at 15 msec

Maximum = 489.41 G'S at 34 msec

LEFT FRONT DOOR ON CENTERLINE Y ACCELERATION

1 897108AF.A74 Filterclass (50)



TIME (SECONDS)

MGA Research
09-21-1997 18:35

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

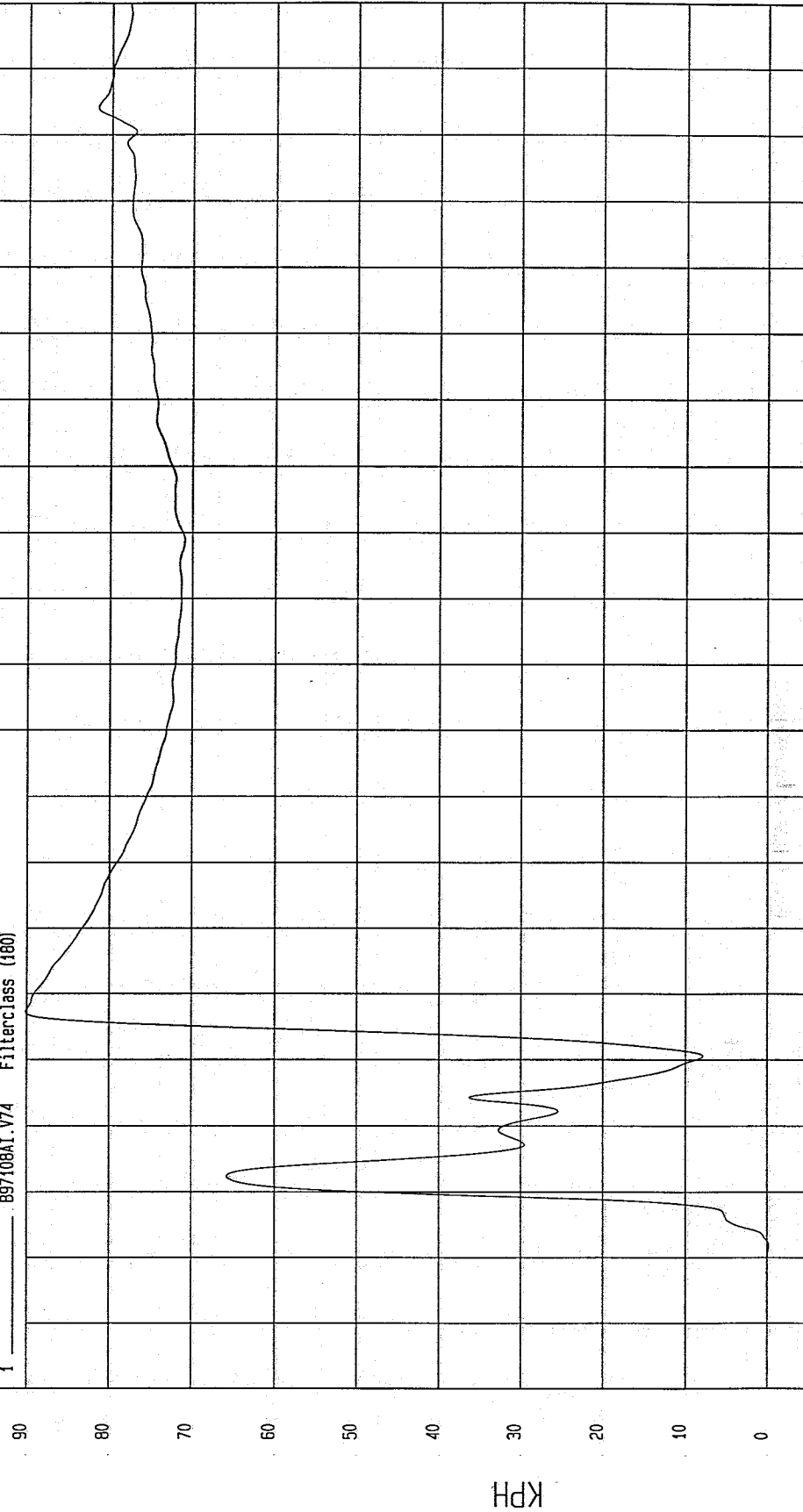
Speed: 38.1 MPH 61.3 KPH

Minimum = -.20 KPH at 2 msec

Maximum = 90.13 KPH at 37 msec

LEFT FRONT DOOR ON CENTERLINE Y VELOCITY

1 B97108A1.V74 Filterclass (180)



NGA Research
09-21-1997 19:16

TIME Seconds

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

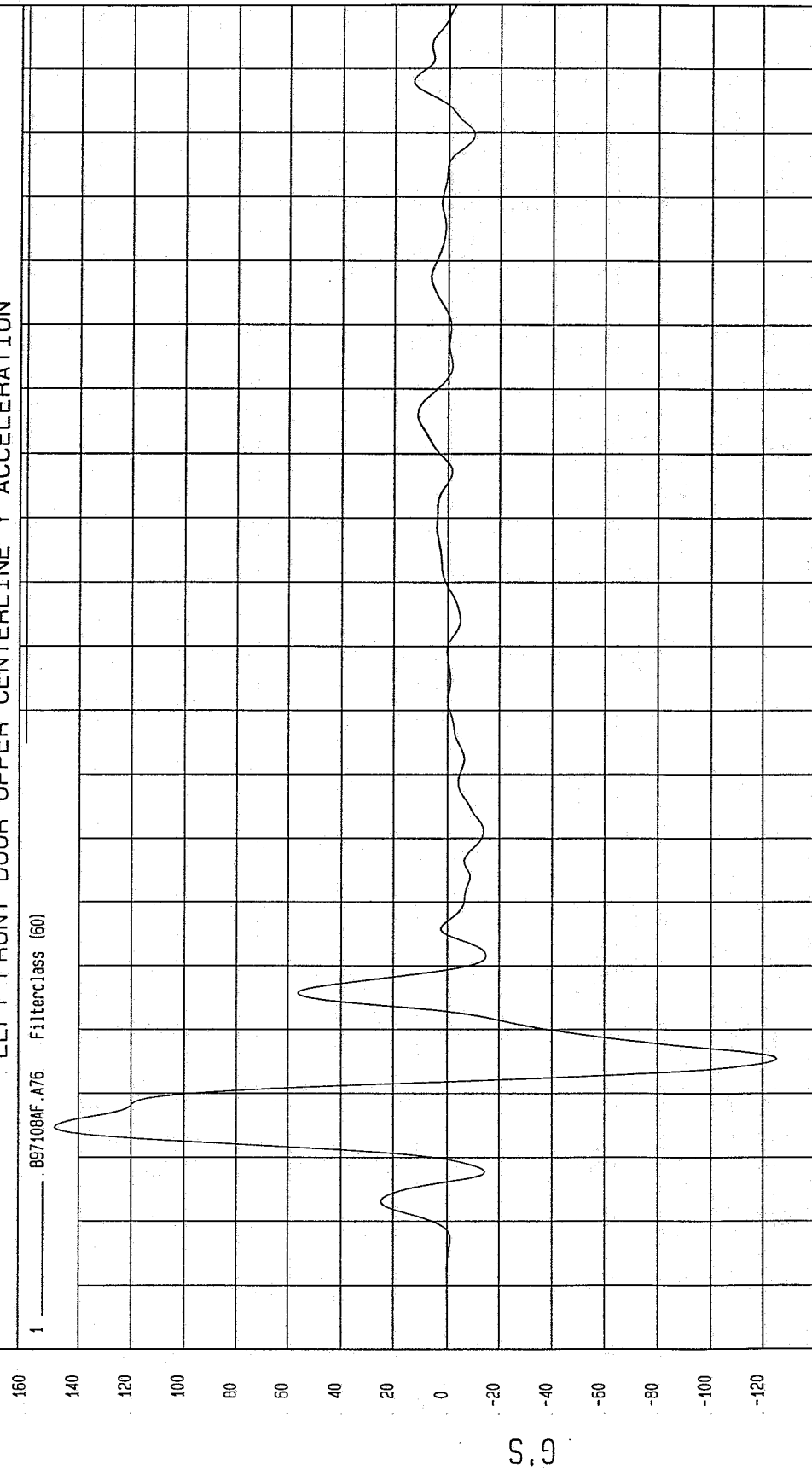
Speed: 38.1 MPH 61.3 KPH

Minimum = -125.23 G'S at 26 msec

Maximum = 149.03 G'S at 15 msec

LEFT FRONT DOOR UPPER CENTERLINE Y ACCELERATION

1 ——— B97108AF.A76 Filterclass (60)



TIME (SECONDS)

MGA Research
09-21-1997 18:36

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

Speed: 38.1 MPH 61.3 KPH

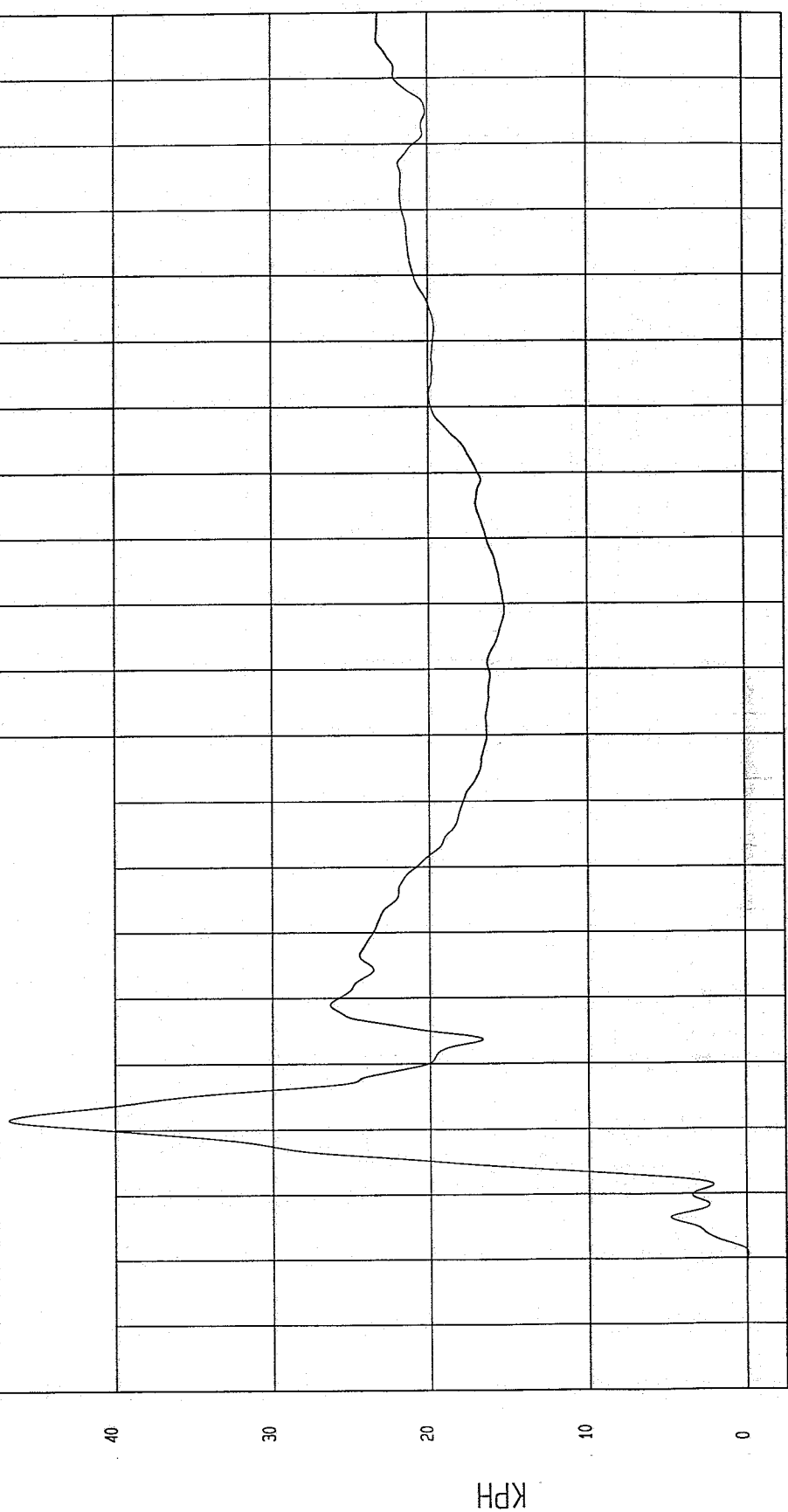
COMPONENT: 1998 BUICK CENTURY (MW0112)

Minimum = -8.29E-02 KPH at 1 msec

Maximum = 46.73 KPH at 22 msec

LEFT FRONT DOOR UPPER CENTERLINE Y VELOCITY

1 B97108A1.V76 Filterclass (180)



MCA Research
09-21-1997 19:16

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

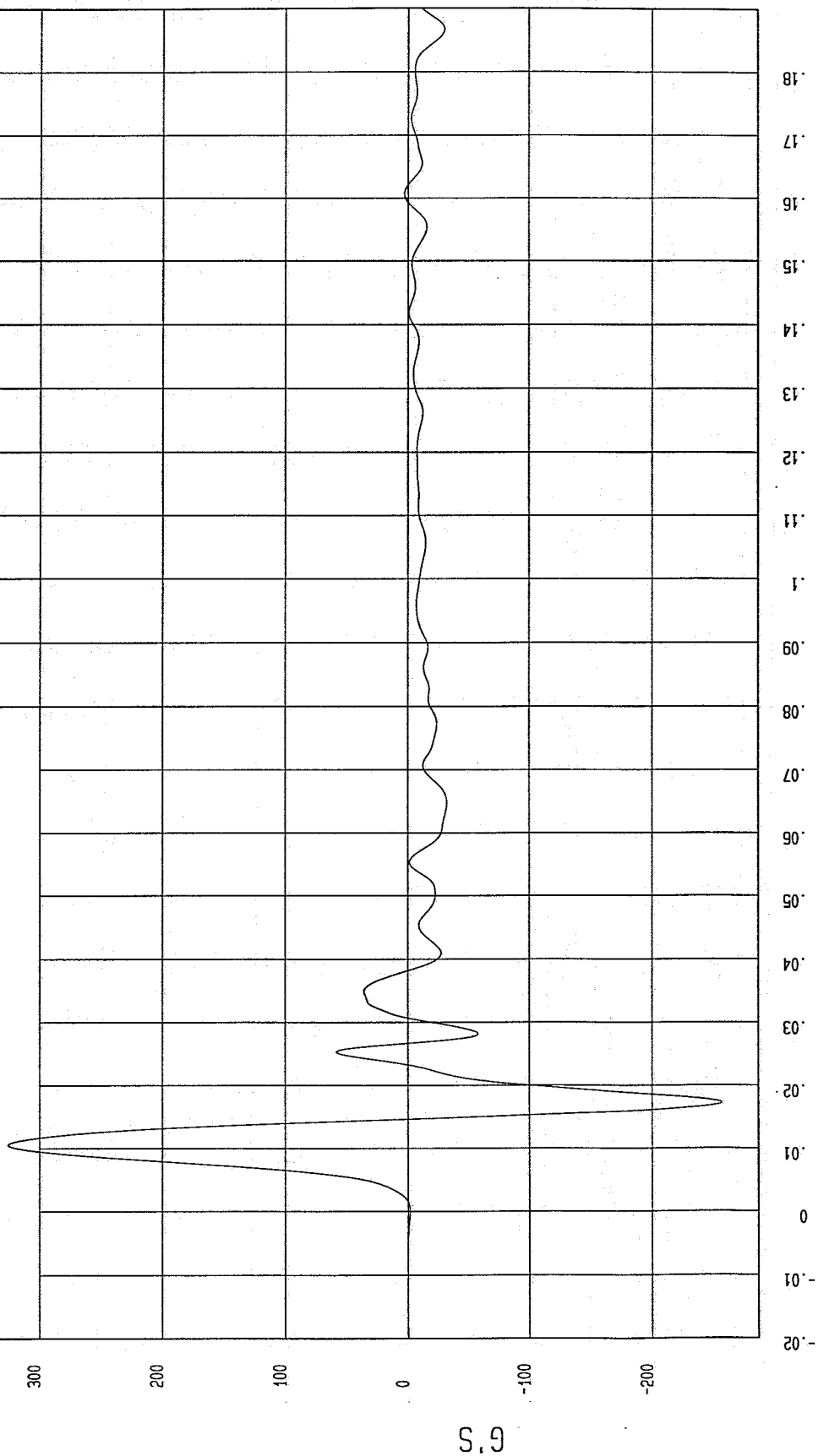
Speed: 38.1 MPH 61.3 KPH

Minimum = -256.88 G'S at 17 msec

Maximum = 325.98 G'S at 11 msec

MIDREAR OF LEFT REAR DOOR Y ACCELERATION

1 ——— B97108AF.A77 Filterclass (60)



TIME (SECONDS)

MGA Research
09-21-1997 18:36

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

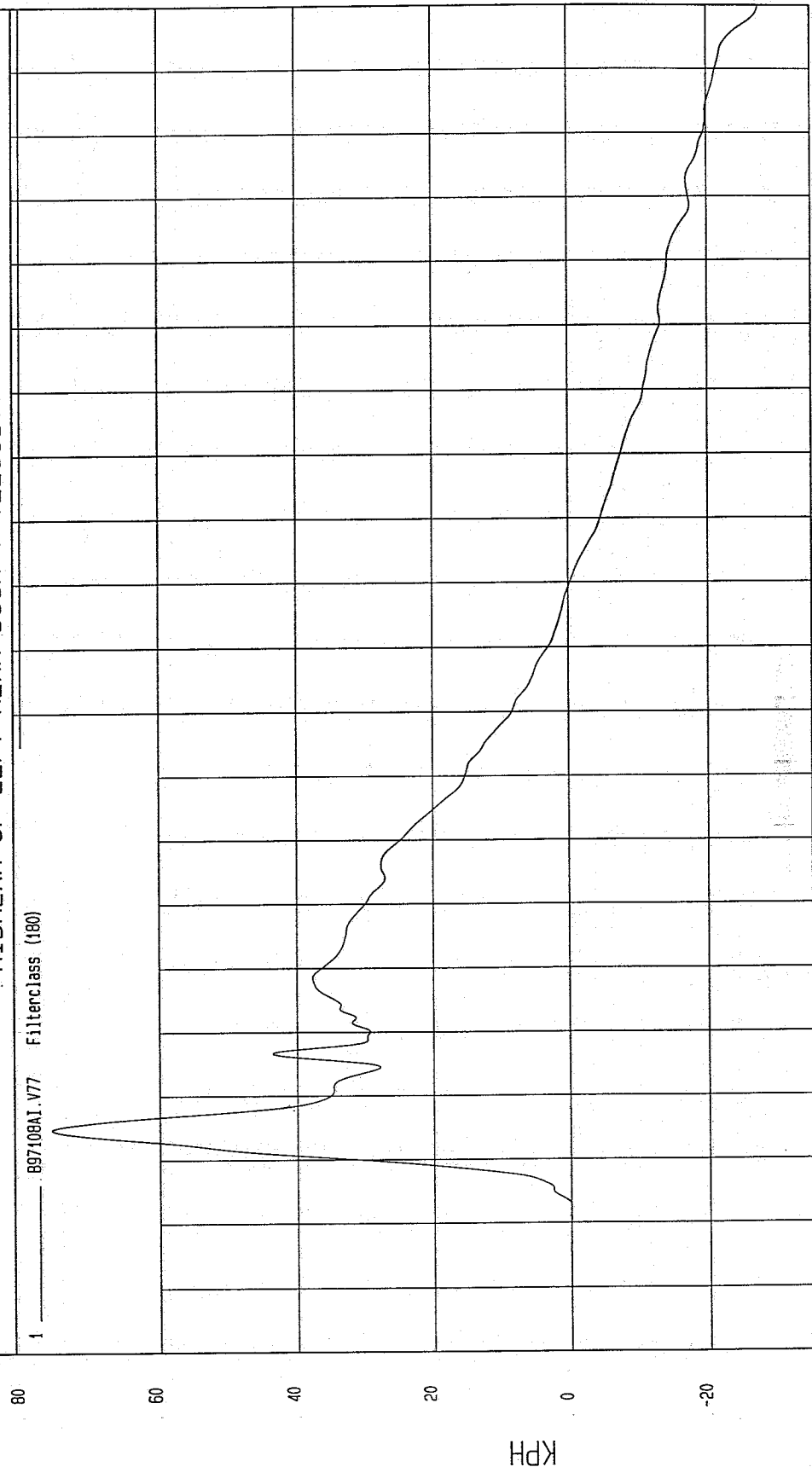
COMPONENT: 1998 BUICK CENTURY (MW0112)

Speed: 38.1 MPH 61.3 KPH

Minimum = -29.64 KPH at 200 msec

Maximum = 75.74 KPH at 15 msec

MIDREAR OF LEFT REAR DOOR Y VELOCITY



MCA Research
09-21-1997 13:16

TIME Seconds

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-17-1997

SPEED: 38.1 MPH 61.3 KPH

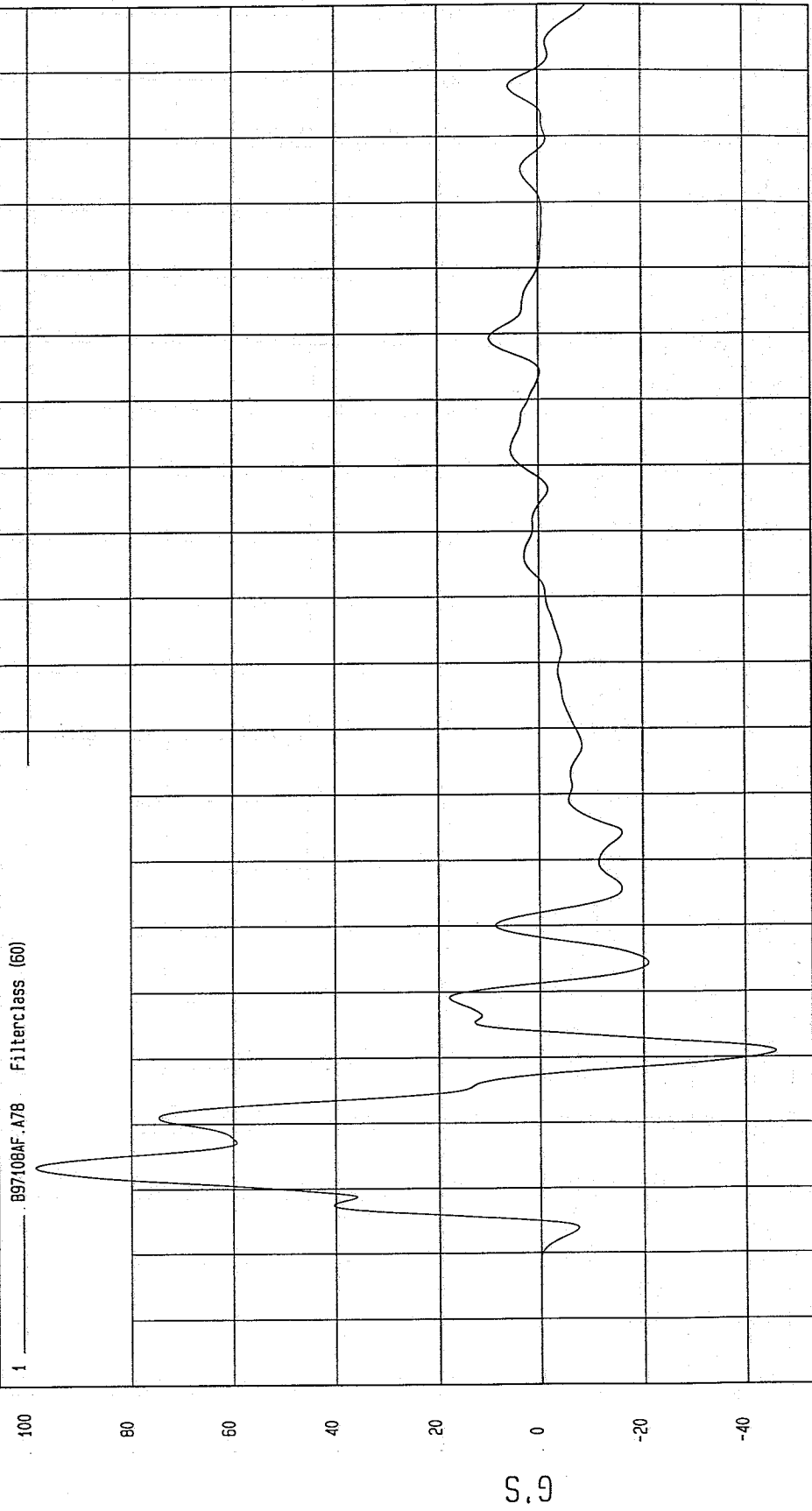
COMPONENT: 1998 BUICK CENTURY (MW0112)

Maximum = 98.67 G'S at 14 msec

Minimum = -45.91 G'S at 31 msec

LEFT REAR DOOR UPPER CENTERLINE Y ACCELERATION

1 897108AF.A78 Filterclass (50)



NCA Research
09-21-1997 18:35

TIME (SECONDS)

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

Speed: 38.1 MPH 61.3 KPH

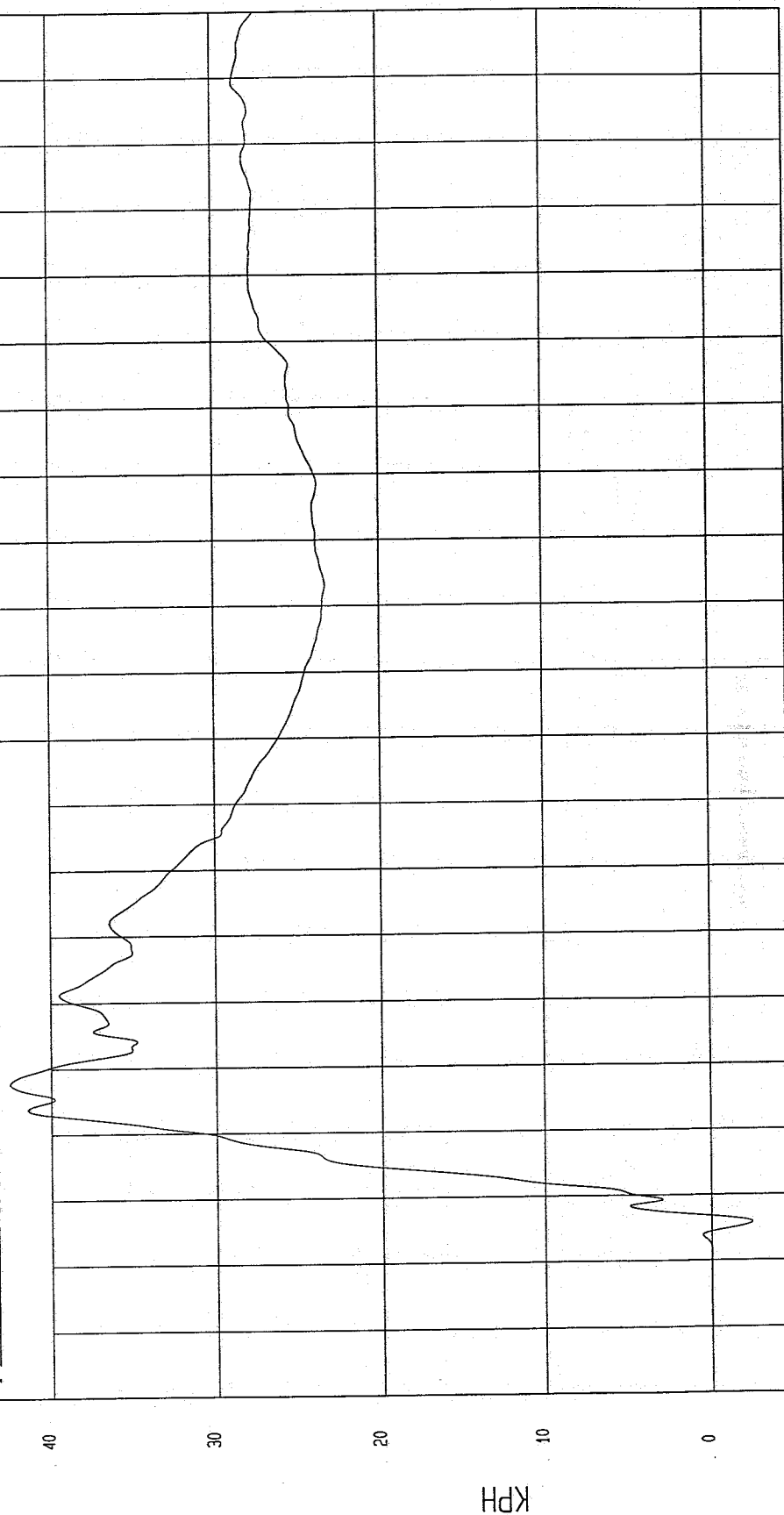
COMPONENT: 1998 BUICK CENTURY (MW0112)

Maximum = 42.50 KPH at 28 msec

Minimum = -2.47 KPH at 5 msec

LEFT REAR DOOR UPPER CENTERLINE Y VELOCITY

1 B97108A1.V78 FilterClass (180)



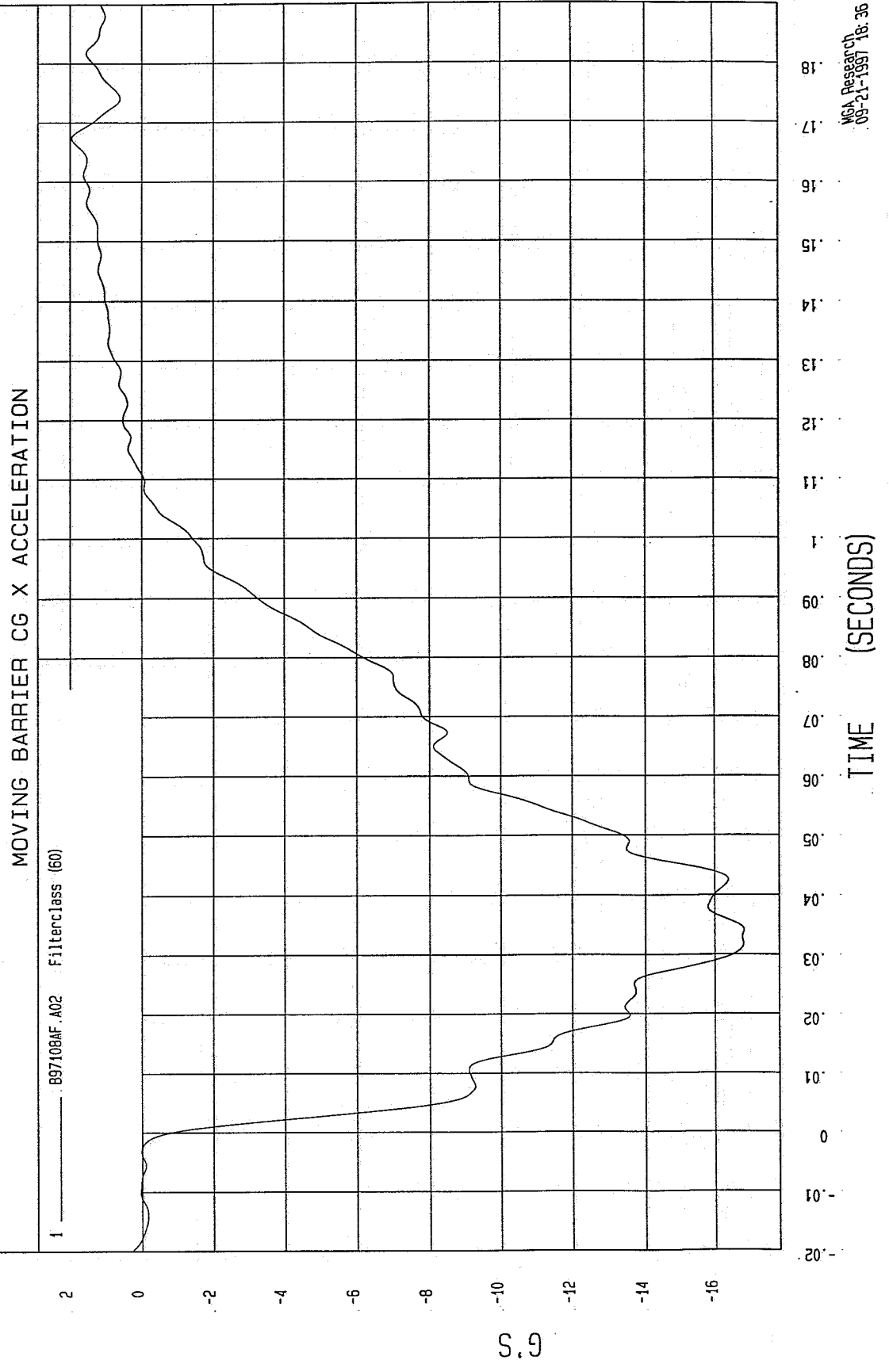
MCA Research
09-21-1997 19:16

TIME Seconds

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112) Speed: 38.1 MPH 61.3 KPH

Minimum = -16.81 G'S at 34 msec Maximum = 1.96 G'S at 167 msec



TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

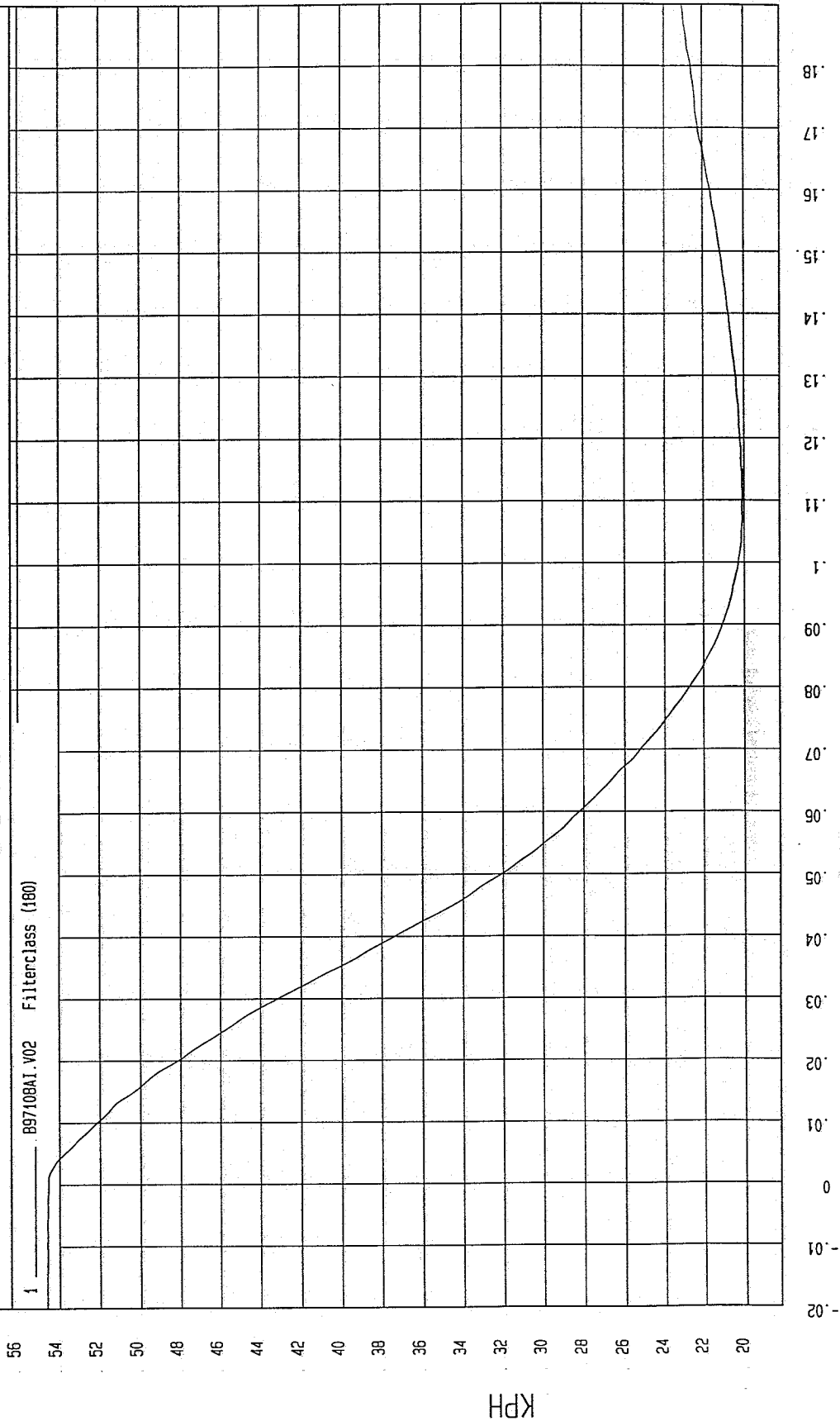
COMPONENT: 1998 BUICK CENTURY (MW0112)

Speed: 38.1 MPH 61.3 KPH

Minimum = 20.08 KPH at 111 msec

Maximum = 54.62 KPH at -20 msec

MOVING BARRIER CG X VELOCITY



NSA Research
09-21-1997 19:17

TIME Seconds

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

Speed: 38.1 MPH 61.3 KPH

COMPONENT: 1998 BUICK CENTURY (MW0112)

Maximum = 3.50 G'S at 59 msec

Minimum = -6.50 G'S at 27 msec

MOVING BARRIER CG Y ACCELERATION

1 ——— B97108AF.A03 Filterclass (60)

4

2

0

-2

-4

-6

G'S

.18

.17

.16

.15

.14

.13

.12

.11

.1

.09

.08

.07

.06

.05

.04

.03

.02

.01

0

-.01

-.02

TIME (SECONDS)

MCA Research
09-21-1997 18:36

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112) Speed: 38.1 MPH 61.3 KPH

Minimum = -33.87 KPH at 200 msec Maximum = -27.81 KPH at -18 msec

MOVING BARRIER CG Y VELOCITY

1 ——— 897108A1.V03 Filterclass (180)



TIME Seconds

MCA Research
09-21-1997 19:17

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

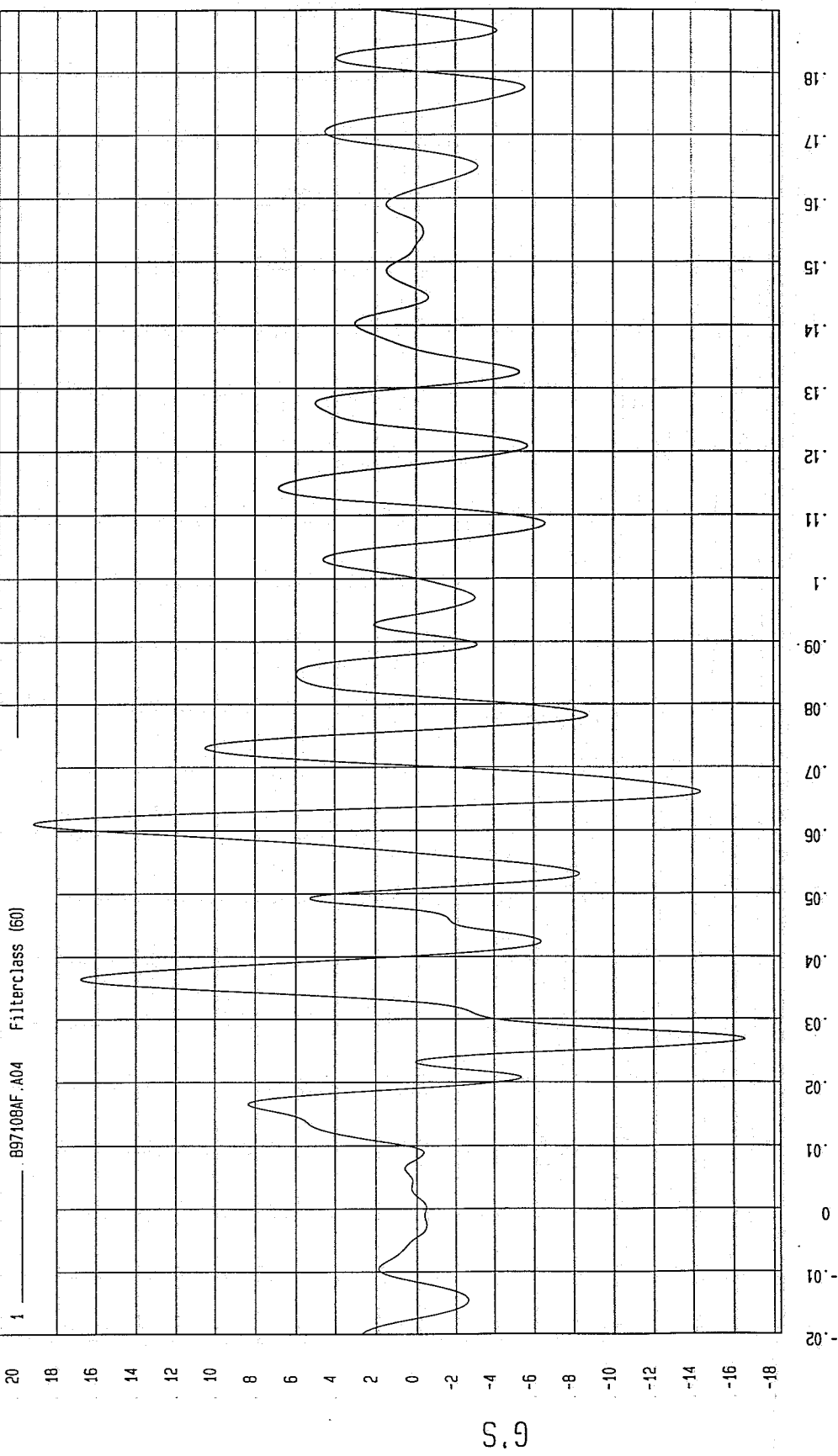
COMPONENT: 1998 BUICK CENTURY (MW0112)

Speed: 38.1 MPH 61.3 KPH

Minimum = -16.53 G'S at 27 msec

Maximum = 19.16 G'S at 61 msec

MOVING BARRIER CG Z ACCELERATION



MGA Research
09-21-1997 18:36

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

Speed: 38.1 MPH 61.3 KPH

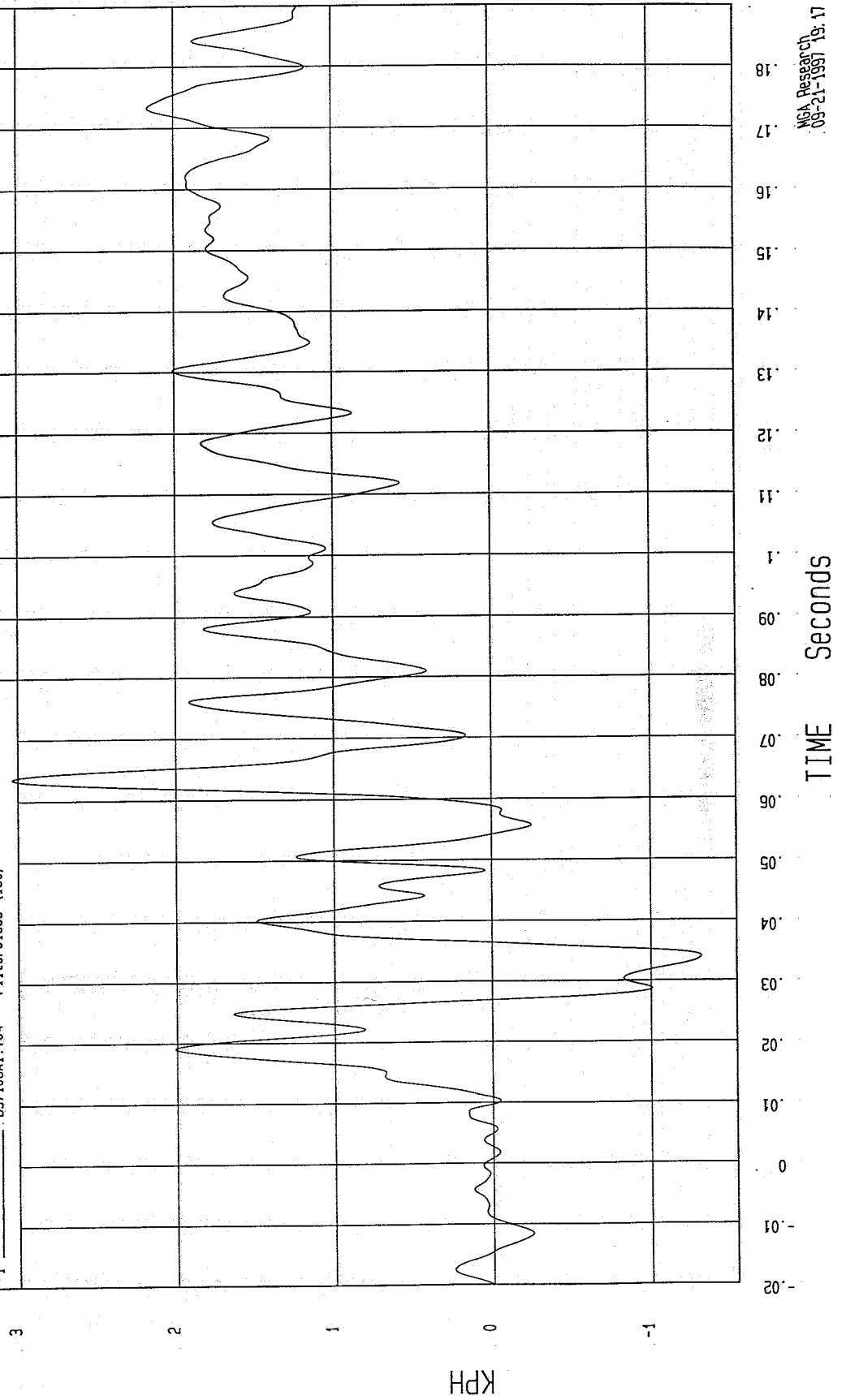
COMPONENT: 1998 BUICK CENTURY (MW0112)

Maximum = 3.03 KPH at 64 msec

Minimum = -1.32 KPH at 34 msec

MOVING BARRIER CG Z VELOCITY

1 B97108A1.V04 Filterclass (180)



NCA Research
09-21-1997 19:17

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

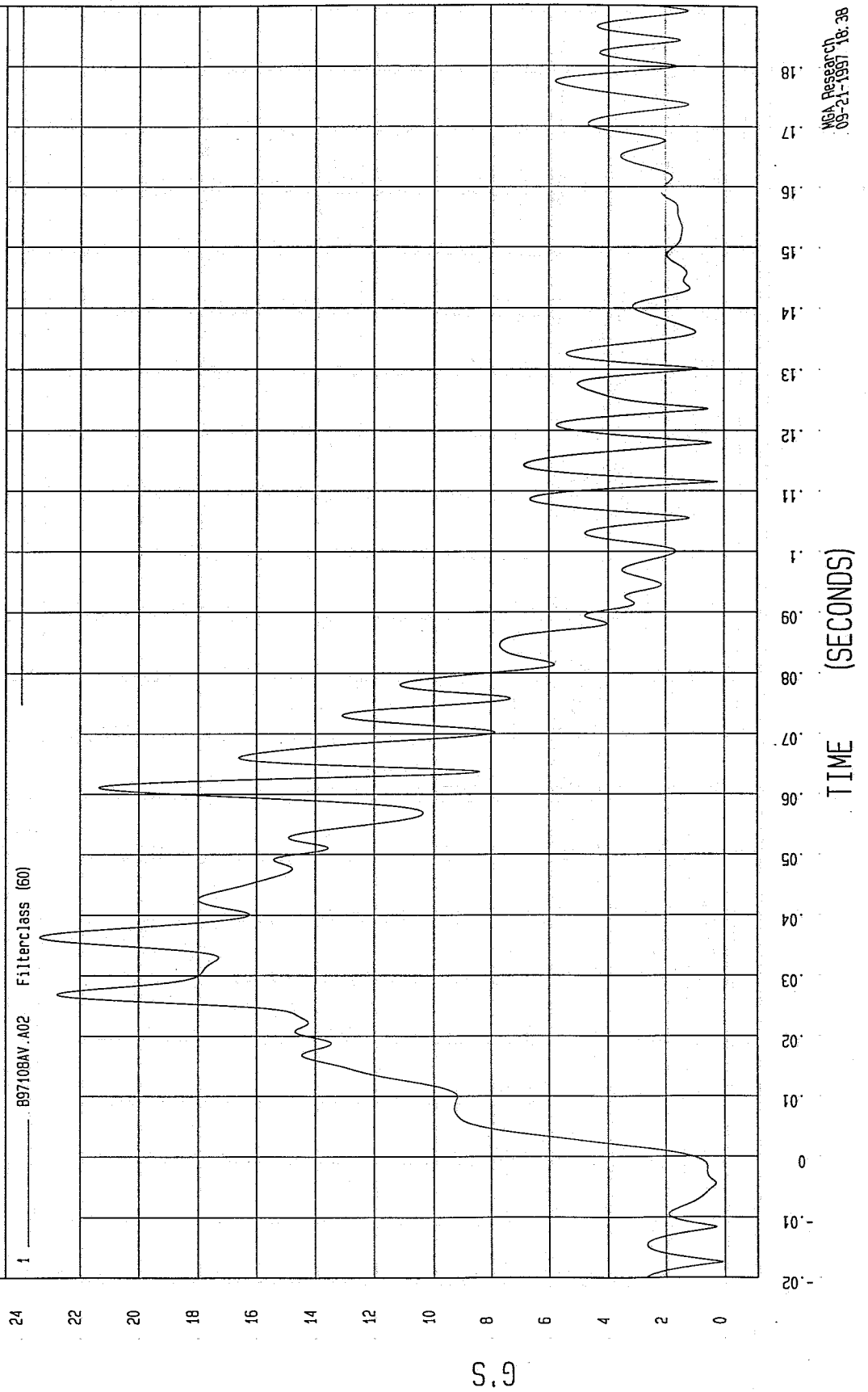
COMPONENT: 1998 BUICK CENTURY (MW0112)

Speed: 38.1 MPH 61.3 KPH

Minimum = 8.39E-02 G'S at -17 msec

Maximum = 23.37 G'S at 36 msec

MOVING BARRIER CG RESULTANT ACCELERATION



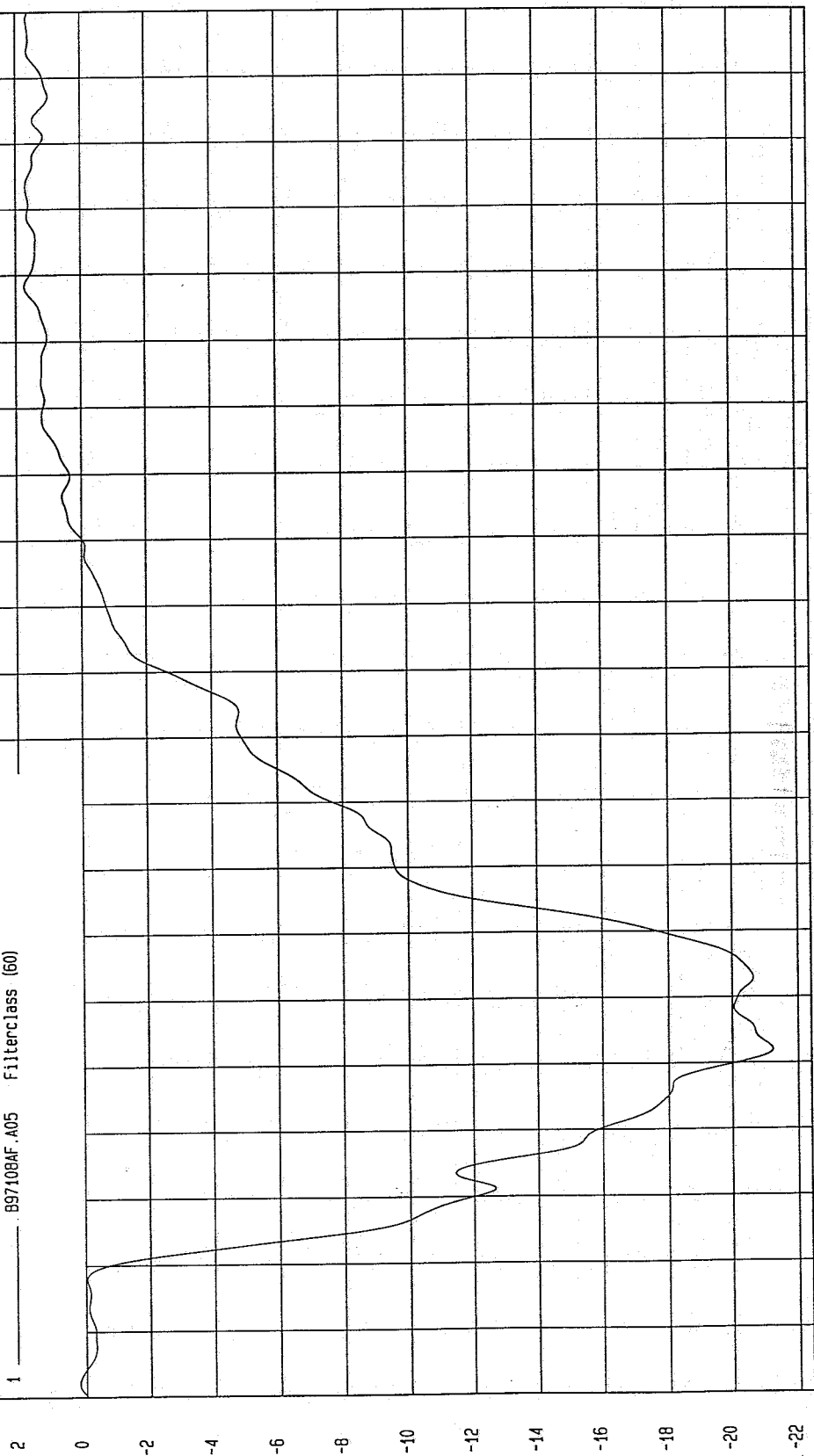
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112) Speed: 38.1 MPH 61.3 KPH

Minimum = -21.25 G'S at 32 msec Maximum = 1.73 G'S at 148 msec

MOVING BARRIER REAR AXLE X ACCELERATION

1 _____ B97108AF.A05 Filterclass (60)



MCA Research
09-21-1997 18:37

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

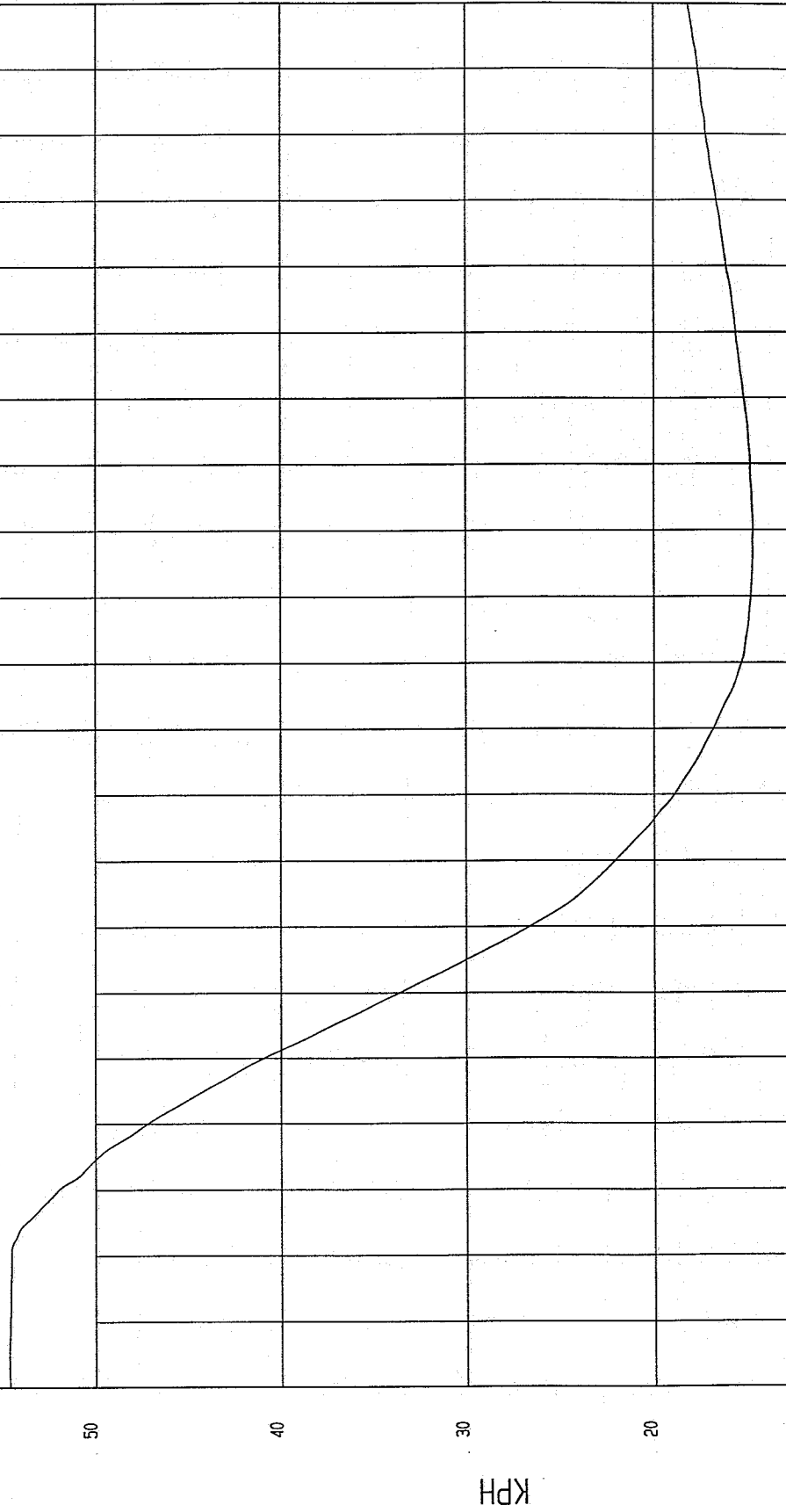
Speed: 38.1 MPH 61.3 KPH

Minimum = 14.61 KPH at 111 msec

Maximum = 54.65 KPH at -15 msec

MOVING BARRIER REAR AXLE X VELOCITY

1 — 897108AI.V05 Filterclass (180)



TIME Seconds

MSA Research
09-21-1997 19.17

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

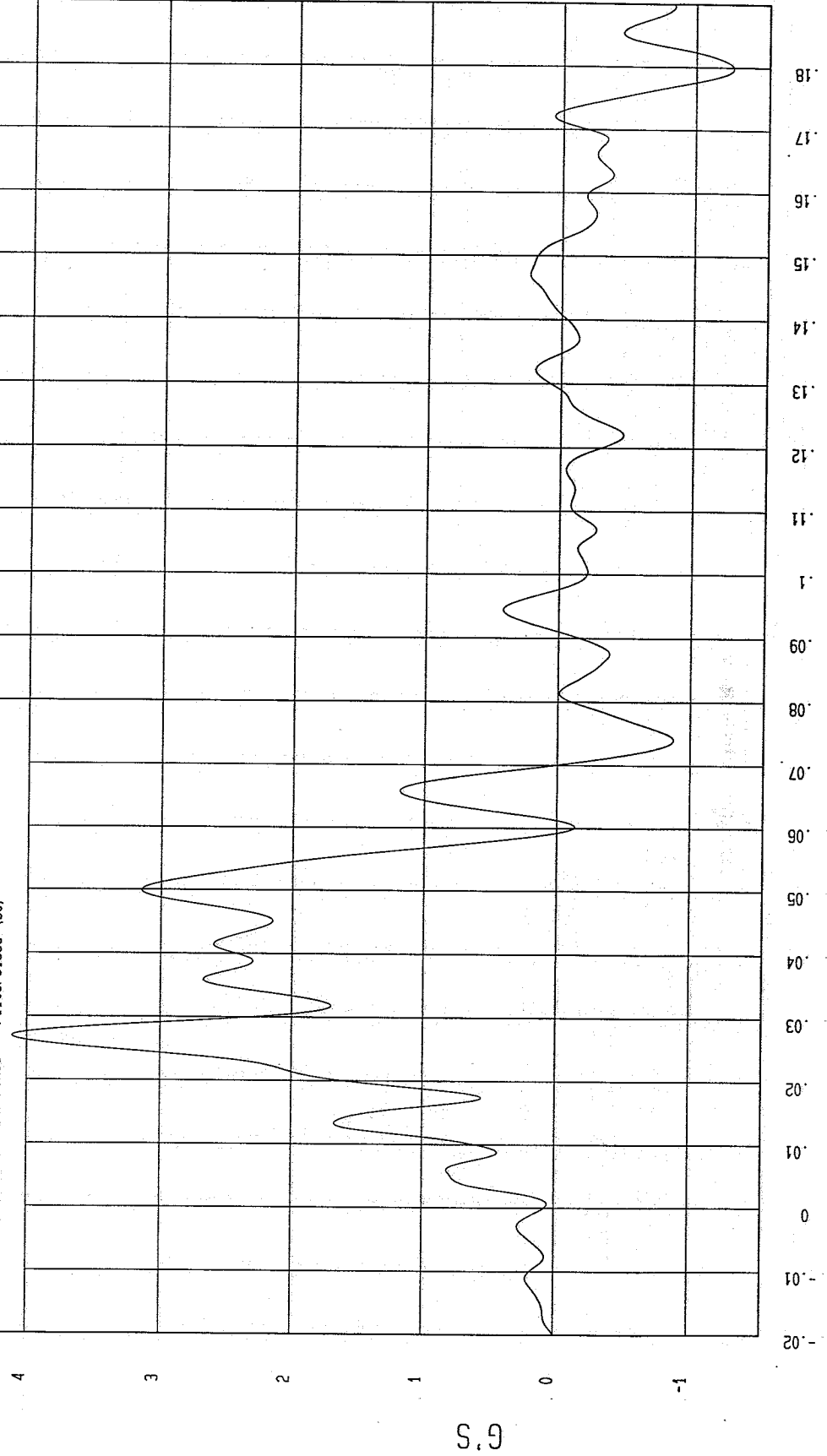
Speed: 38.1 MPH 61.3 KPH

Minimum = -1.28 G'S at 180 msec

Maximum = 4.11 G'S at 27 msec

MOVING BARRIER REAR AXLE Y ACCELERATION

1 _____ B9710BAF.A06 Filterclass (60)



MCA Research
09-21-1997 18:37

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

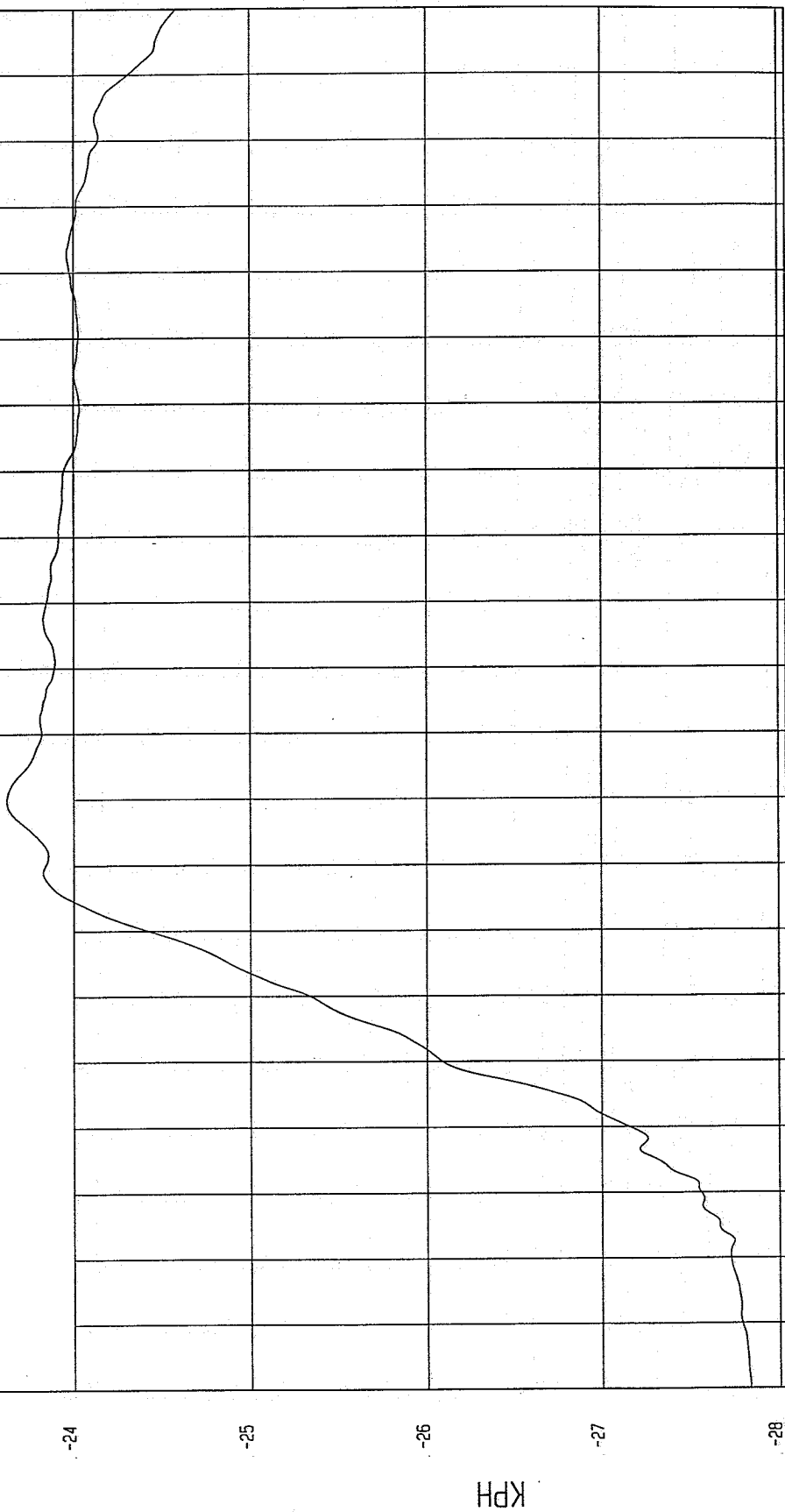
Speed: 38.1 MPH 61.3 KPH

Minimum = -27.83 KPH at -19 msec

Maximum = -23.61 KPH at 70 msec

MOVING BARRIER REAR AXLE Y VELOCITY

1 B97108AI.V06 Filterclass (180)



TIME Seconds

MCA Research
09-21-1997 19:17

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

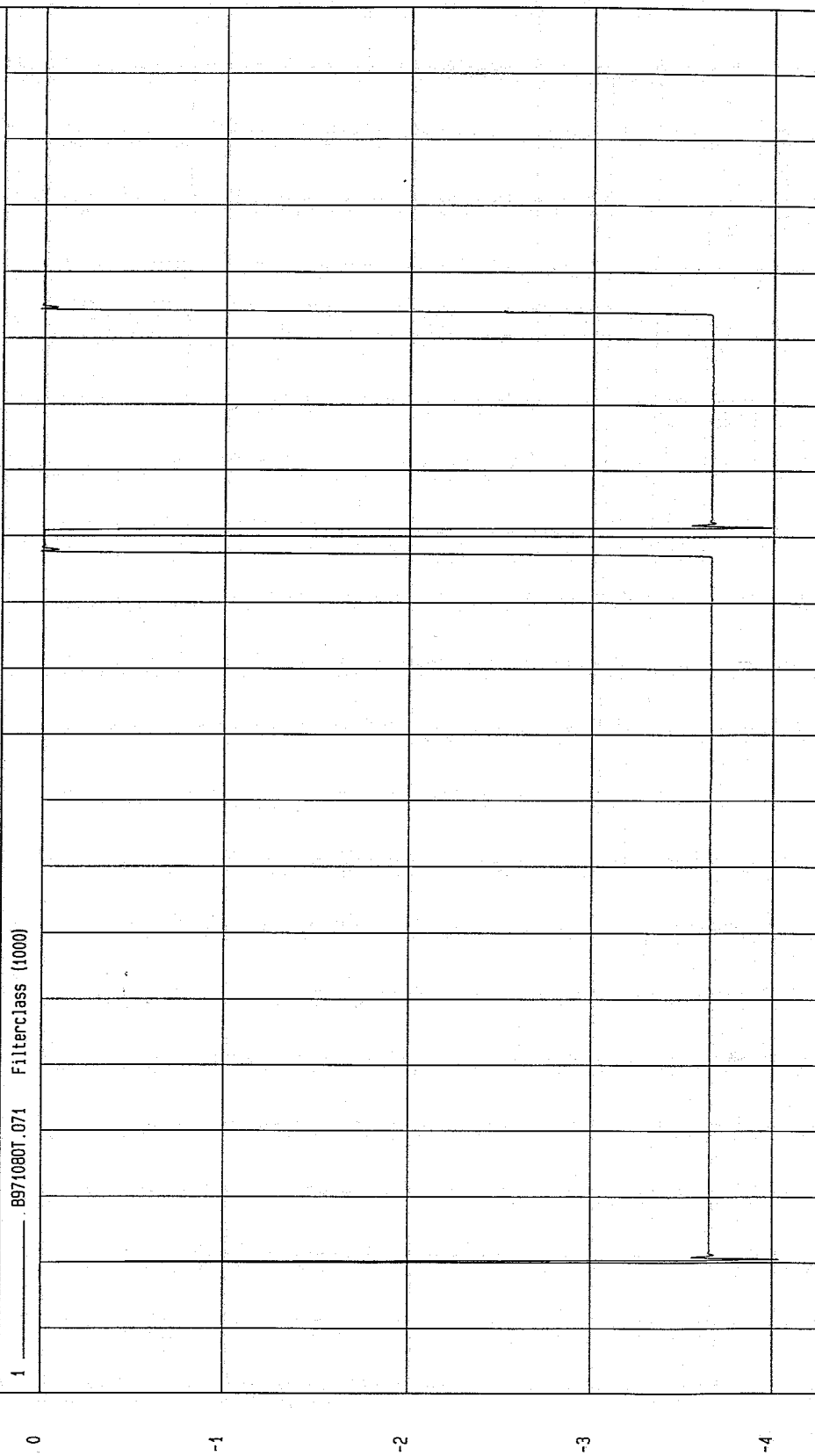
COMPONENT: 1998 BUICK CENTURY (MW0112)

Speed: 38.1 MPH 61.3 KPH

Minimum = -4.03 VOLTS at 0 msec

Maximum = 2.16E-02 VOLTS at 144 msec

LEFT BARRIER CONTACT



MCA Research
09-21-1997 18:37

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

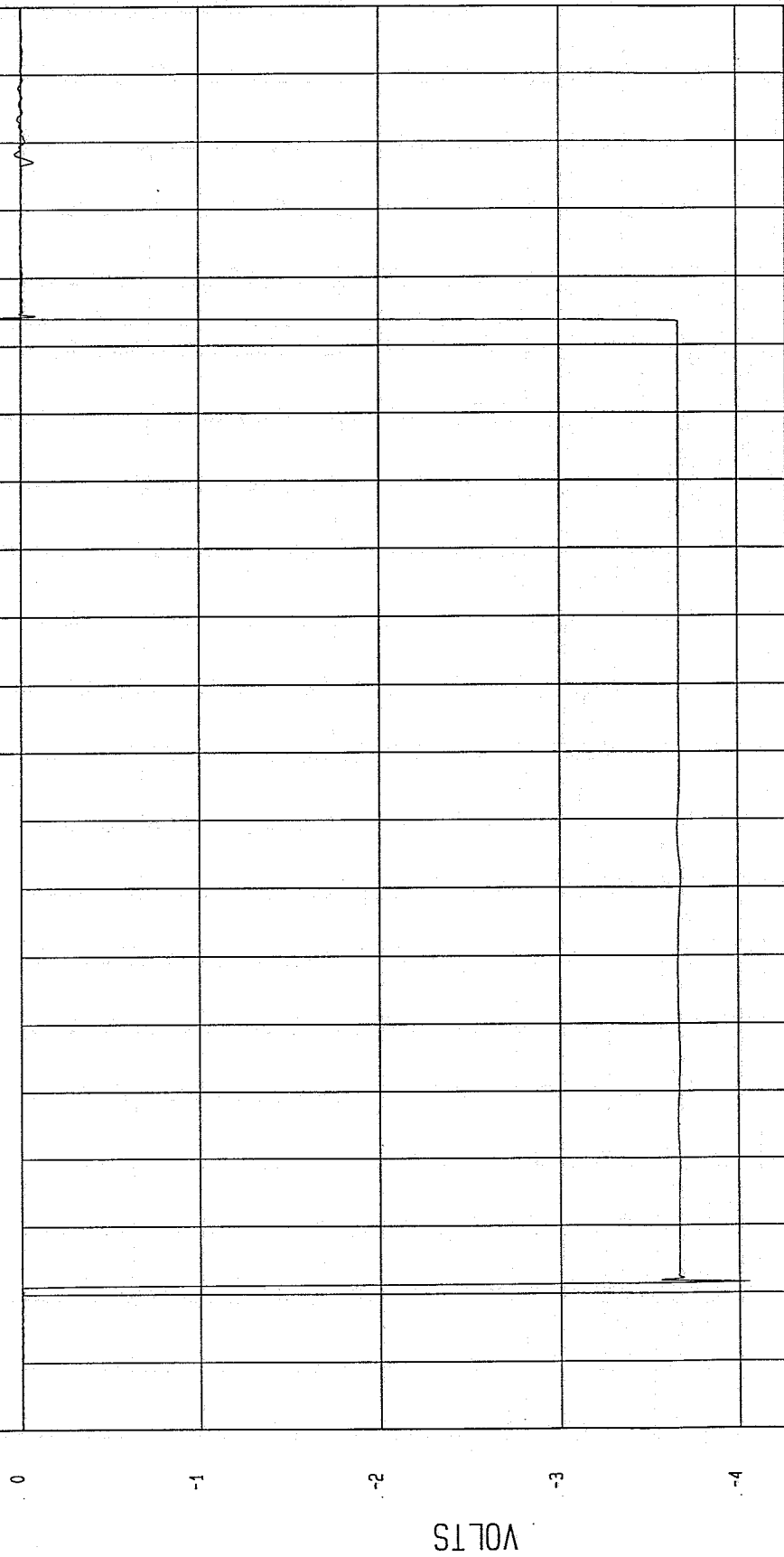
Speed: 38.1 MPH 61.3 KPH

Minimum = -4.05 VOLTS at 2 msec

Maximum = .20 VOLTS at 144 msec

RIGHT BARRIER CONTACT

1 _____ 8971080T.072 Filterclass (1000)



NCA Research
09-21-1997 18:37

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

Speed: 38.1 MPH 61.3 KPH

Minimum = -33.14 G'S at 74 msec

Maximum = 94.69 G'S at 39 msec

DRIVER UPPER RIB Y REDUNDANT ACCELERATION

1 B97100AF.A61 Filterclass (180)

100

80

60

40

20

0

-20

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

TIME (SECONDS)

NCA Research
09-21-1997 17.46

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

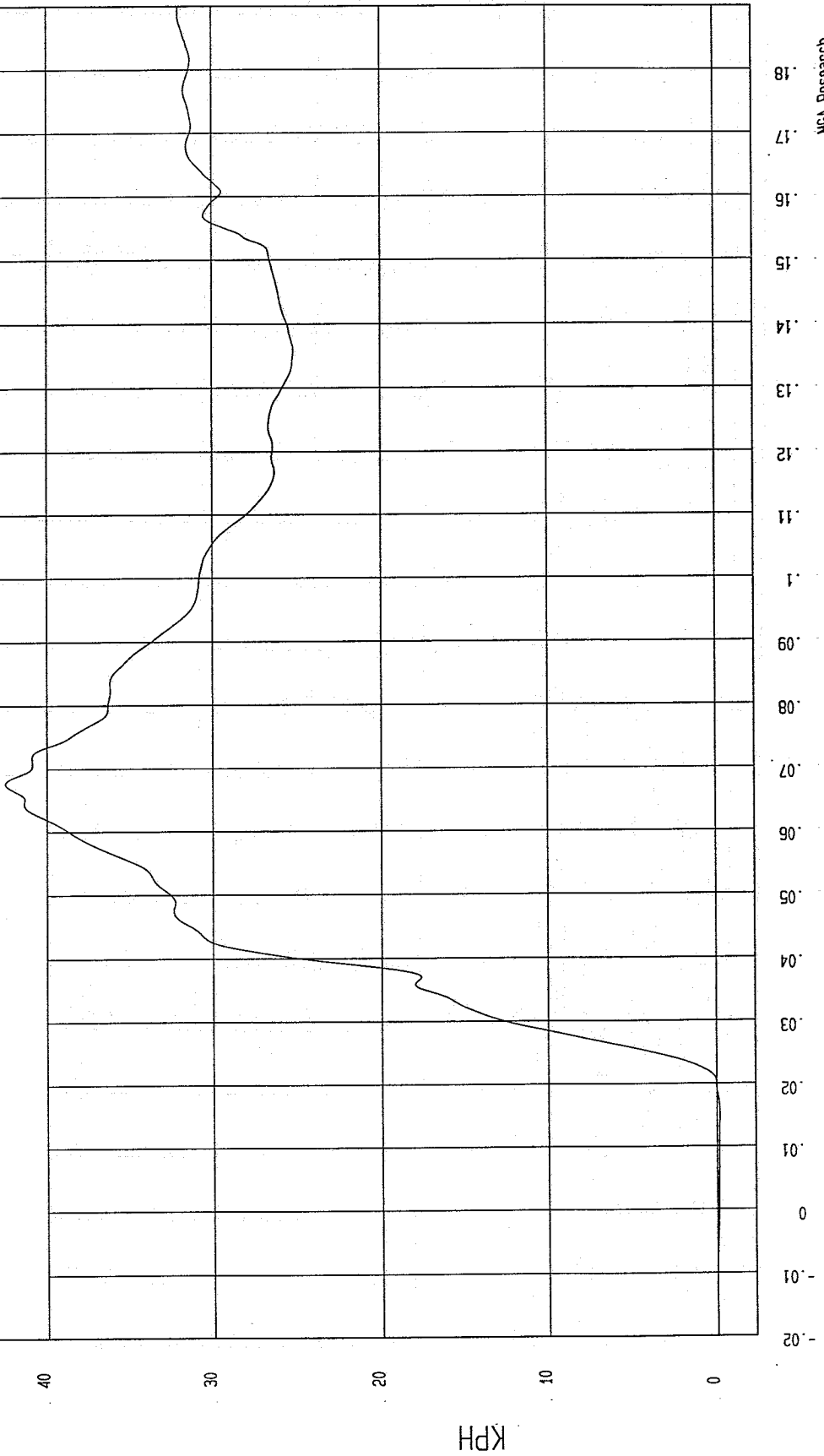
Speed: 38.1 MPH 61.3 KPH

Minimum = -.16 KPH at 15 msec

Maximum = 42.45 KPH at 68 msec

DRIVER UPPER RIB Y REDUNDANT VELOCITY

1 ——— B97108A1.V61 Filterclass (180)



TIME Seconds

MCA Research
09-21-1997 18:56

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

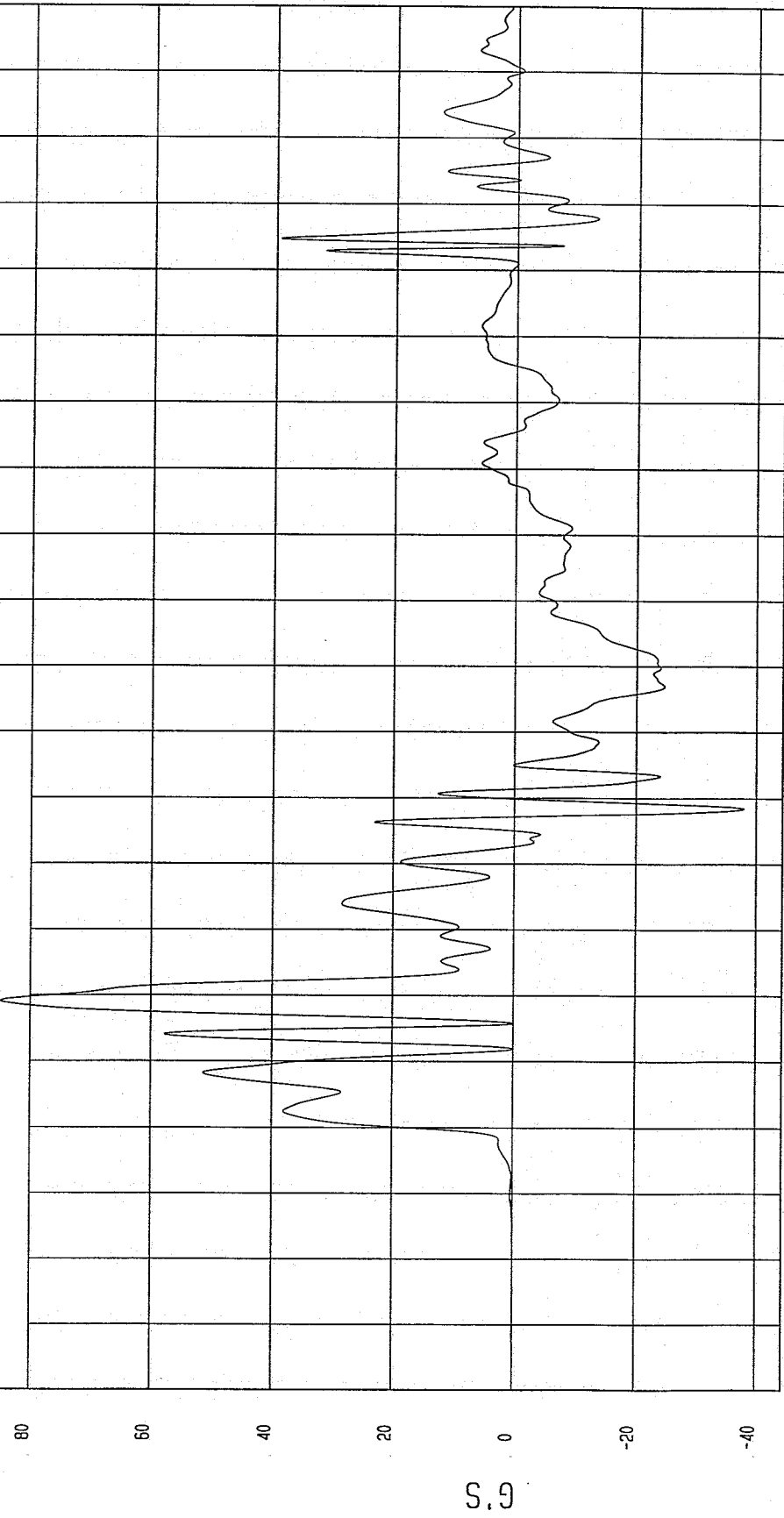
Speed: 38.1 MPH 61.3 KPH

Minimum = -38.07 G'S at 68 msec

Maximum = 84.82 G'S at 39 msec

DRIVER LOWER RIB Y REDUNDANT ACCELERATION

1 B97108AF.A62 Filterclass (480)



MGA Research
09-21-1997 11:46

TIME (SECONDS)

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

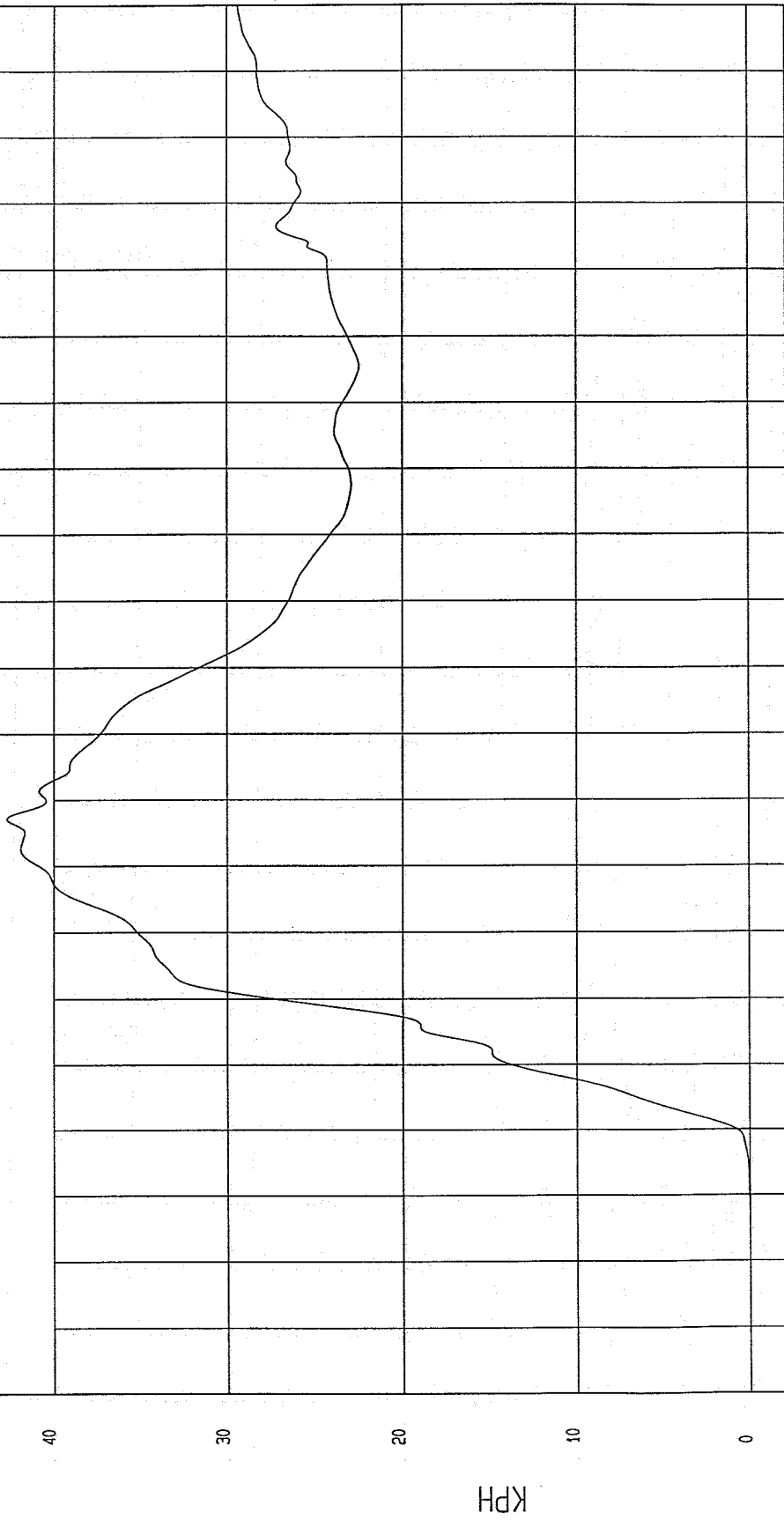
Speed: 38.1 MPH 61.3 KPH

Minimum = -2.82E-03 KPH at -14 msec

Maximum = 42.70 KPH at 67 msec

DRIVER LOWER RIB Y REDUNDANT VELOCITY

1 ——— B97108A1.V62 Filterclass (180)



WGA Research
09-21-1997 18:57

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

Speed: 38.1 MPH 61.3 KPH

Minimum = -49.44 G'S at 65 msec

Maximum = 90.60 G'S at 38 msec

DRIVER LOWER SPINE Y REDUNDANT ACCELERATION

1 B9710BAF.A63 Filterclass (180)



MSA Research
09-21-1997 17:47

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

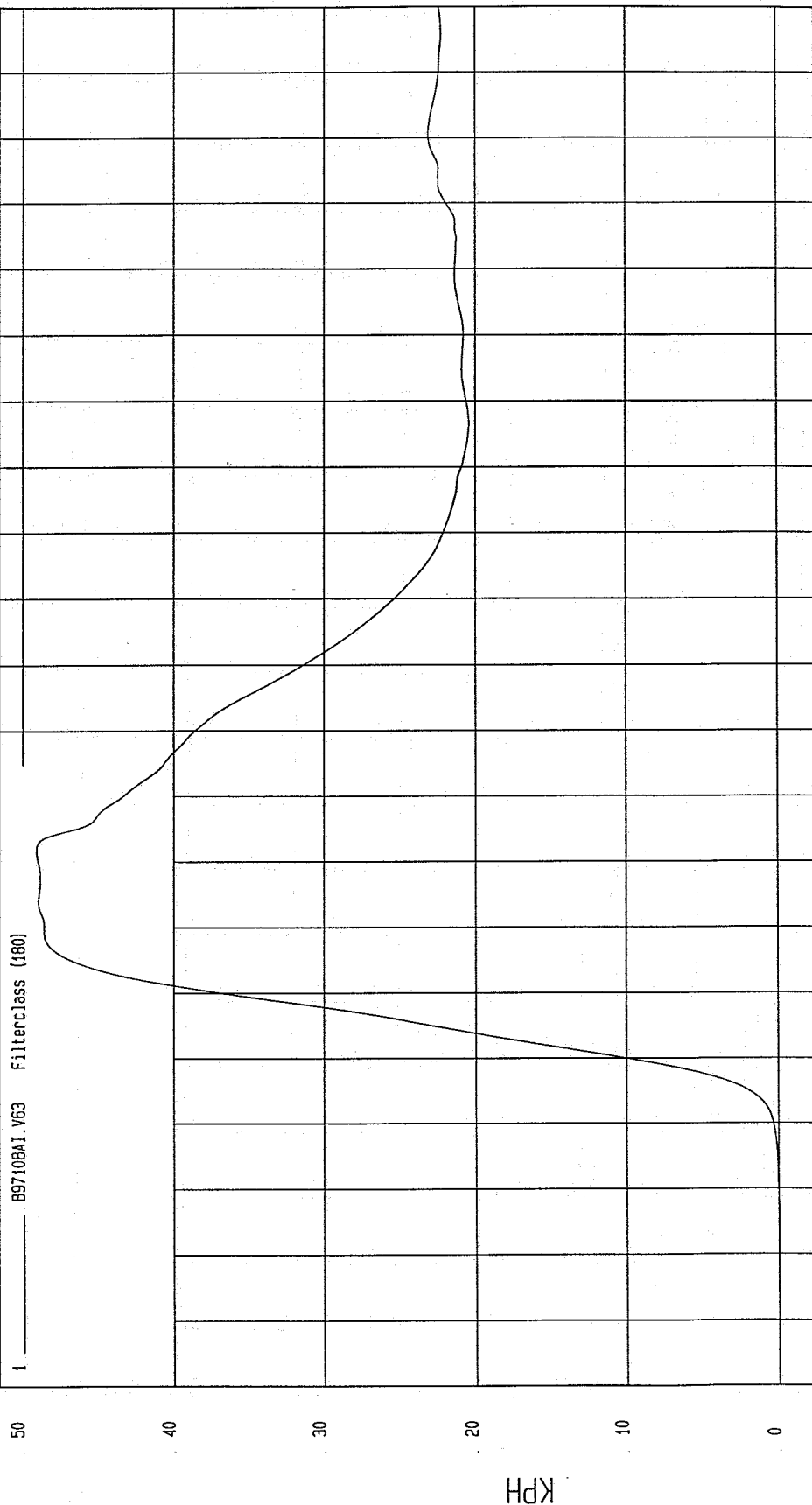
Speed: 38.1 MPH 61.3 KPH

Minimum = -1.49E-02 KPH at 4 msec

Maximum = 49.10 KPH at 62 msec

DRIVER LOWER SPINE Y REDUNDANT VELOCITY

1 ——— B97108A1.V63 Filterclass (180)



NGA Research
09-21-1997 18:57

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

Speed: 38.1 MPH 61.3 KPH

Minimum = -21.76 G's at 80 msec

Maximum = 132.81 G's at 33 msec

DRIVER PELVIS Y REDUNDANT ACCELERATION

1 B97108AF.A65 Filterclass (180)

140

120

100

80

60

40

20

0

-20

G.S

-02

-01

0

.01

.02

.03

.04

.05

.06

.07

.08

.09

.1

.11

.12

.13

.14

.15

.16

.17

.18

TIME (SECONDS)

MGA Research
09-21-1997 17:47

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

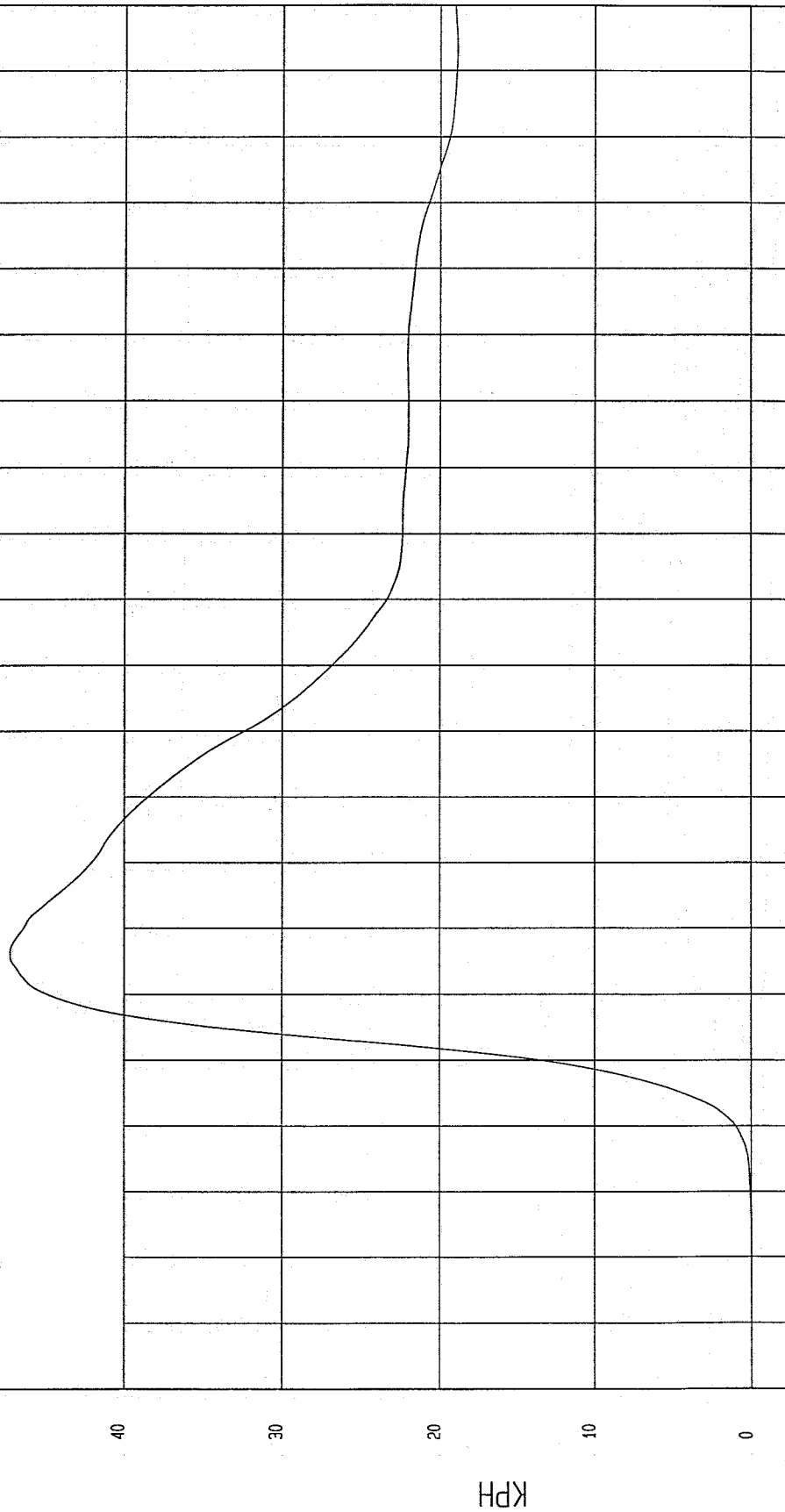
Speed: 38.1 MPH 61.3 KPH

Minimum = -3.21E-03 KPH at -17 msec

Maximum = 47.25 KPH at 46 msec

DRIVER PELVIS Y REDUNDANT VELOCITY

1 ——— 897108A1.V65 Filterclass (180)



TIME Seconds

MCA Research
09-21-1997 18:57

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

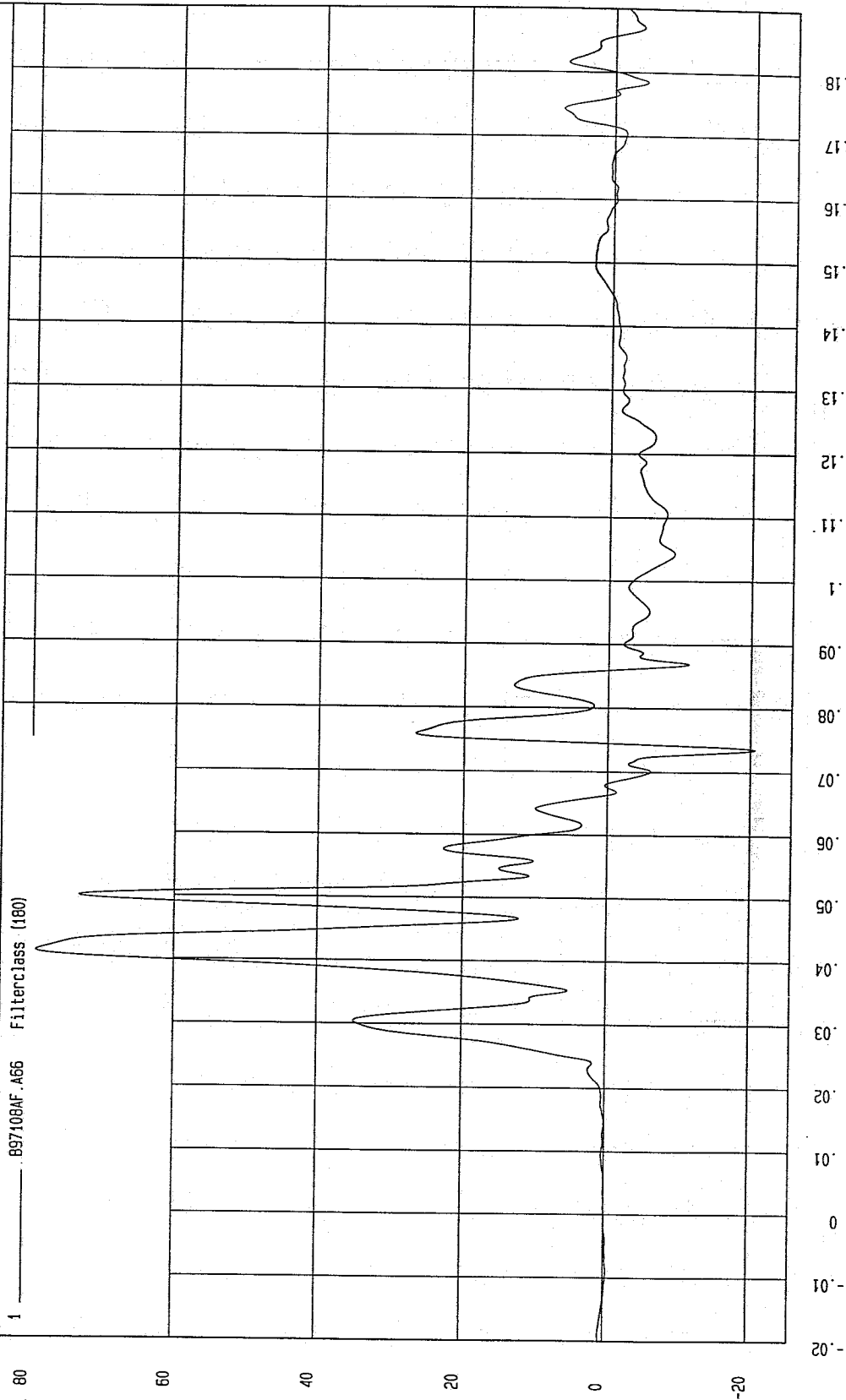
COMPONENT: 1998 BUICK CENTURY (MW0112)

Speed: 38.1 MPH 61.3 KPH

Minimum = -20.56 G'S at 74 msec

Maximum = 79.28 G'S at 41 msec

REAR PASSENGER UPPER RIB Y REDUNDANT ACCELERATION



TIME (SECONDS)

MCA Research
09-21-1997 17.47

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

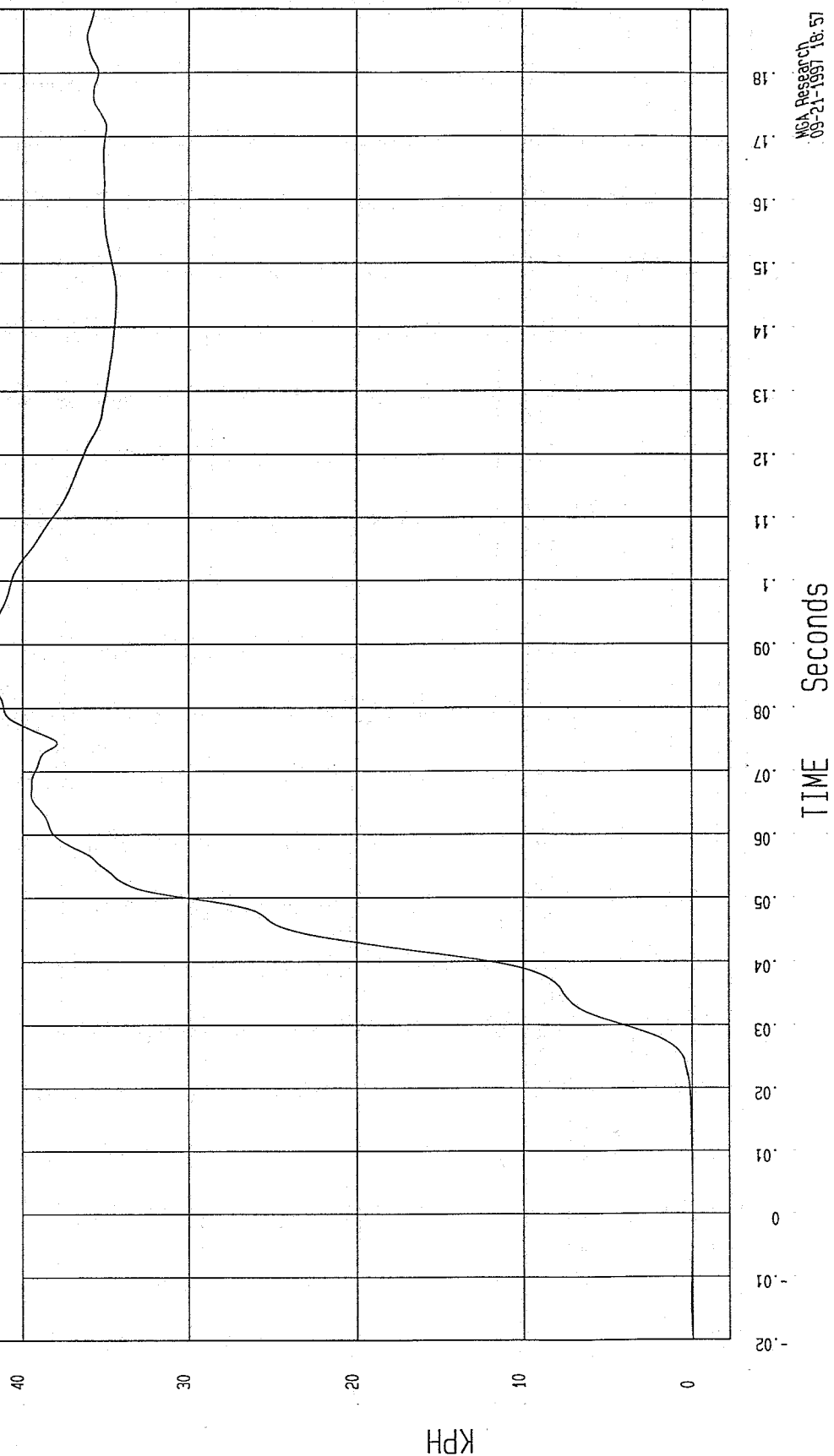
Speed: 38.1 MPH 61.3 KPH

Minimum = 0 KPH at -20 msec

Maximum = 42.78 KPH at 86 msec

REAR PASSENGER UPPER RIB Y REDUNDANT VELOCITY

1 _____ B97108A1.V66 Filterclass (180)



WCA Research
09-21-1997 18:57

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

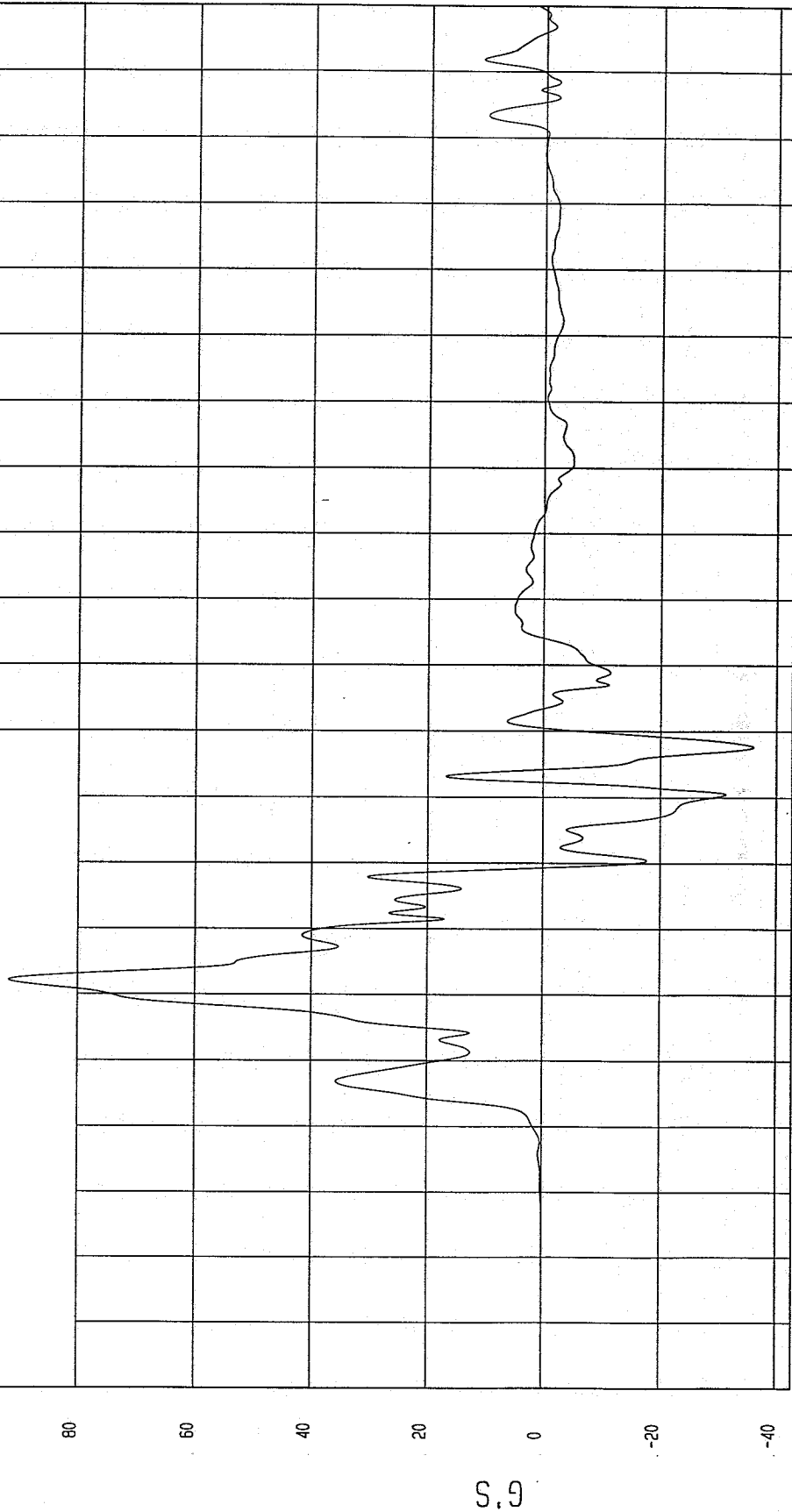
Speed: 38.1 MPH 61.3 KPH

Minimum = -36.18 G'S at 78 msec

Maximum = 91.88 G'S at 42 msec

REAR PASSENGER LOWER RIB Y REDUNDANT ACCELERATION

1 ——— B97108AF.A67 Filterclass (180)



NSA Research
09-21-1997 17.47

TIME (SECONDS)

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

Speed: 38.1 MPH 61.3 KPH

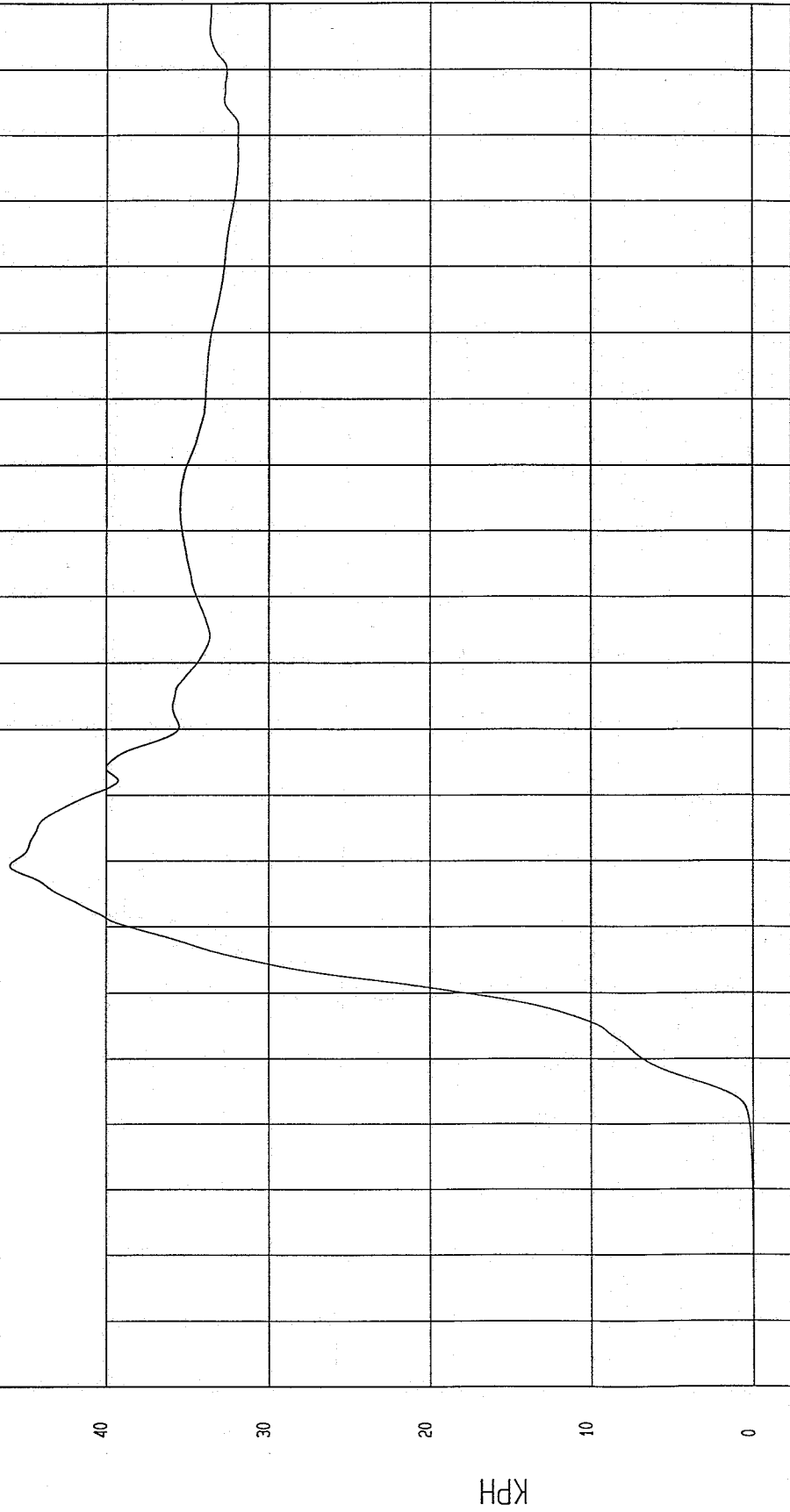
COMPONENT: 1998 BUICK CENTURY (MW0112)

Minimum = -6.70E-04 KPH at -19 msec

Maximum = 45.94 KPH at 59 msec

REAR PASSENGER LOWER RIB Y REDUNDANT VELOCITY

1 897108AI.V67 Filterclass (f80)



NCA Research
09-21-1997 18:57

TIME Seconds

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

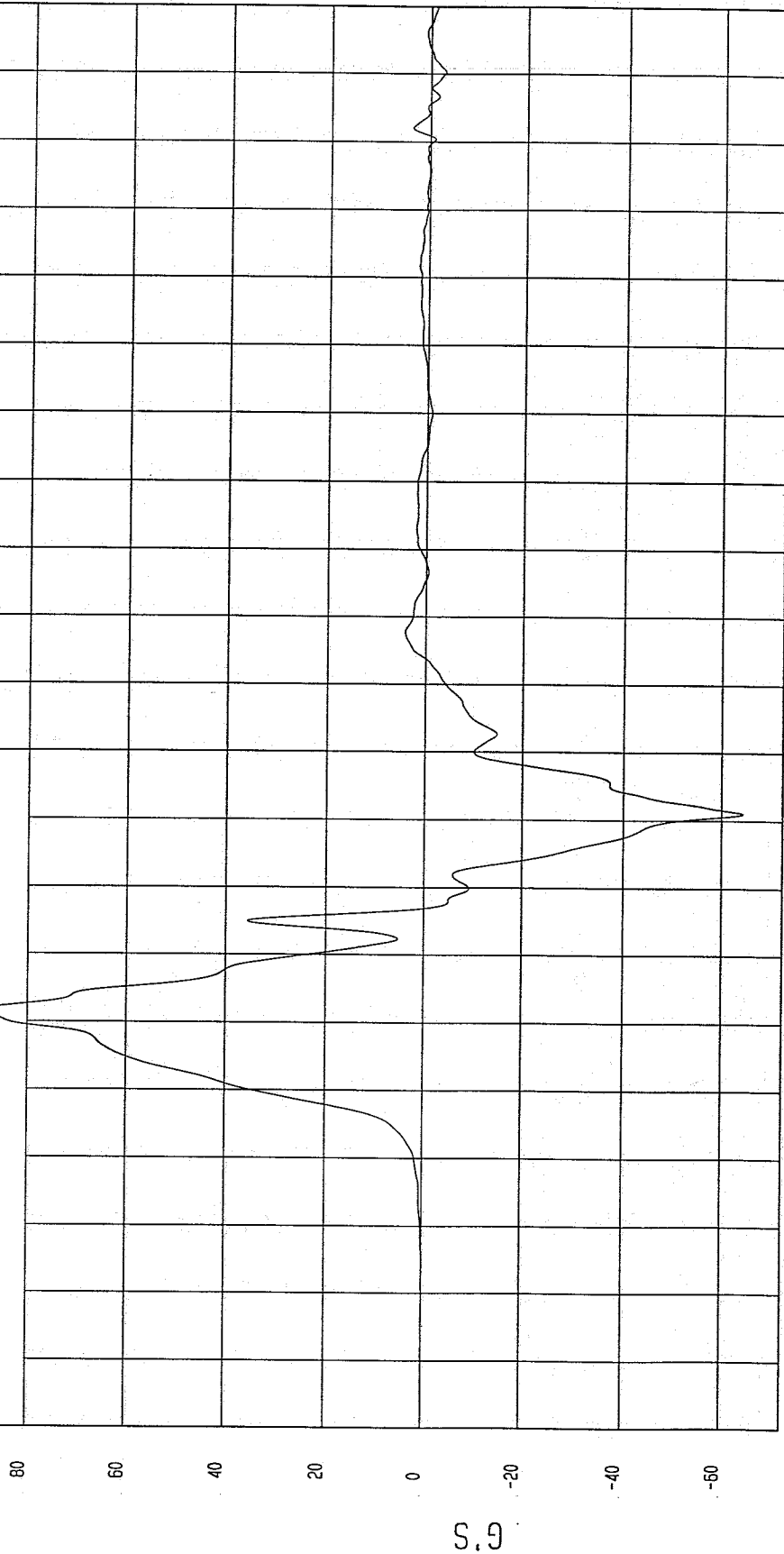
Speed: 38.1 MPH 61.3 KPH

Minimum = -64.23 G'S at 71 msec

Maximum = 89.87 G'S at 42 msec

REAR PASSENGER LOWER SPINE Y REDUNDANT ACCELERATION

1 ——— 897108AF.A68 Filterclass (180)



TIME (SECONDS)

MCA Research
09-21-1997 17: 47

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

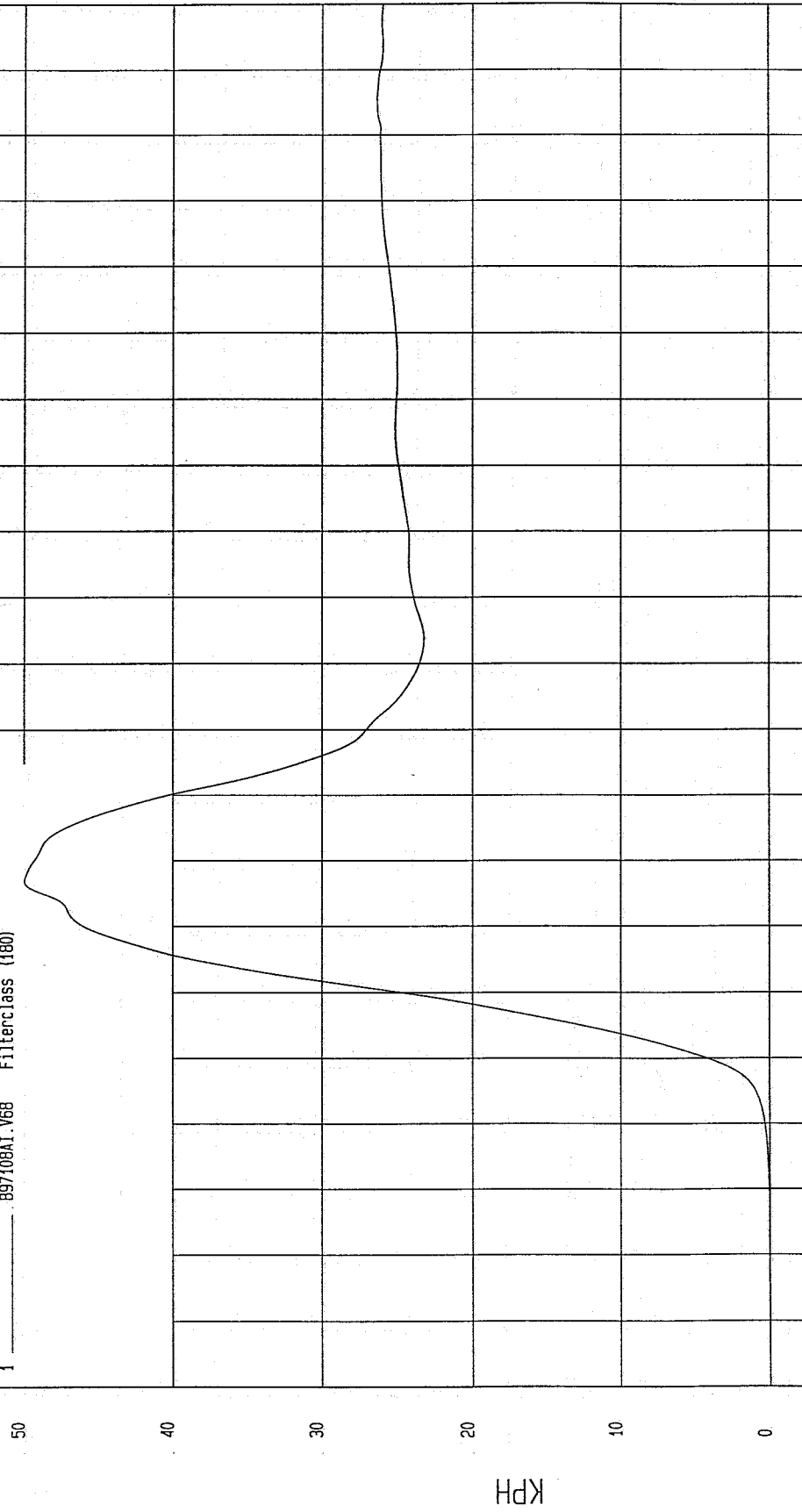
Speed: 38.1 MPH 61.3 KPH

Minimum = -6.07E-04 KPH at -16 msec

Maximum = 49.97 KPH at 57 msec

REAR PASSENGER LOWER SPINE Y REDUNDANT VELOCITY

1 ——— .B97108A1.V68 Filterclass (180)



TIME Seconds

WCA Research
09-21-1997 18:57

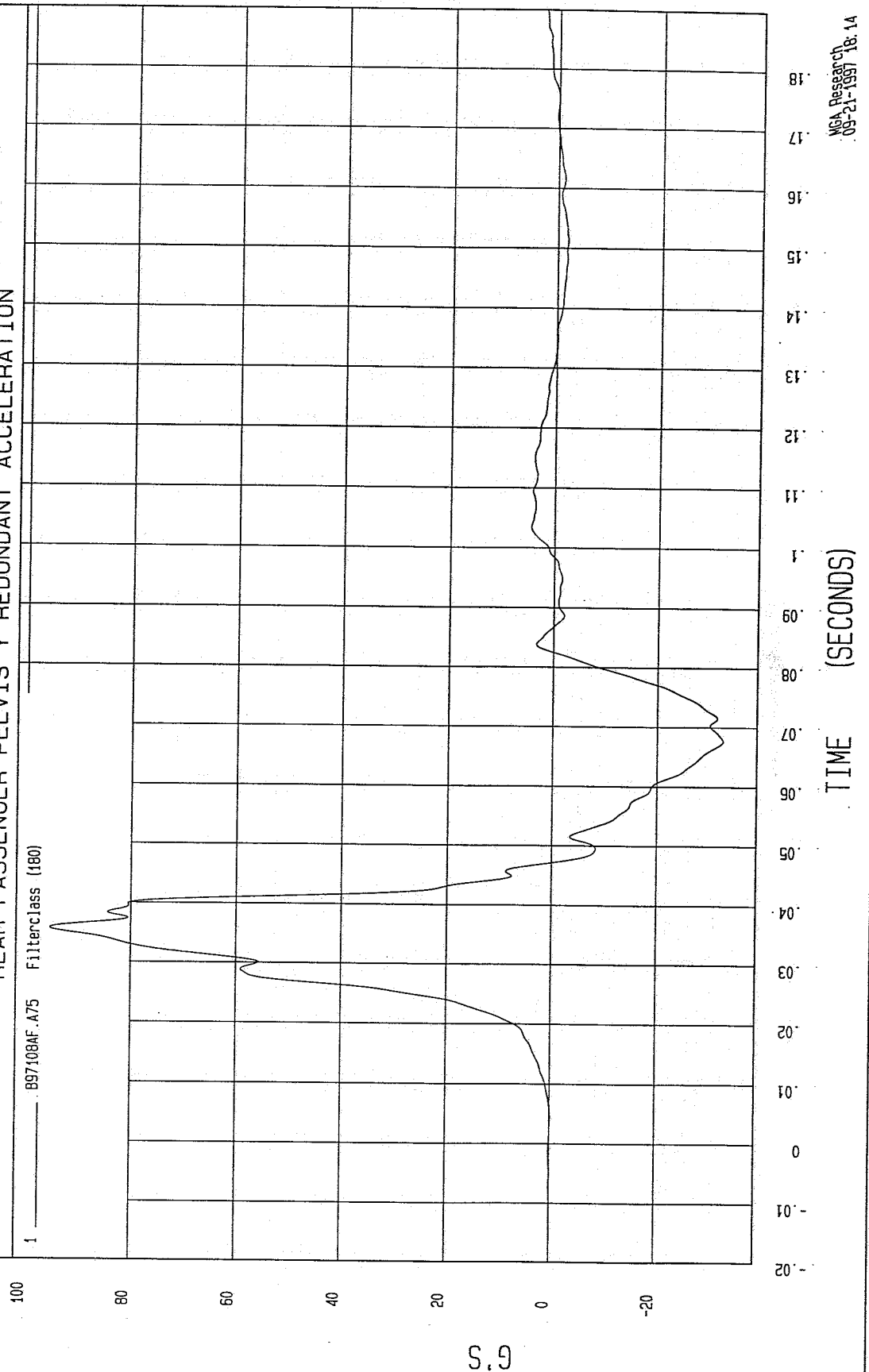
TEST DATE: 09-17-1997

Speed: 38.1 MPH 61.3 KPH

. Maximum = 95.48 G'S at 36 msec

REAR PASSENGER PELVIS Y REDUNDANT ACCELERATION

1	B97108AF.A75	Filterclass (180)



TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

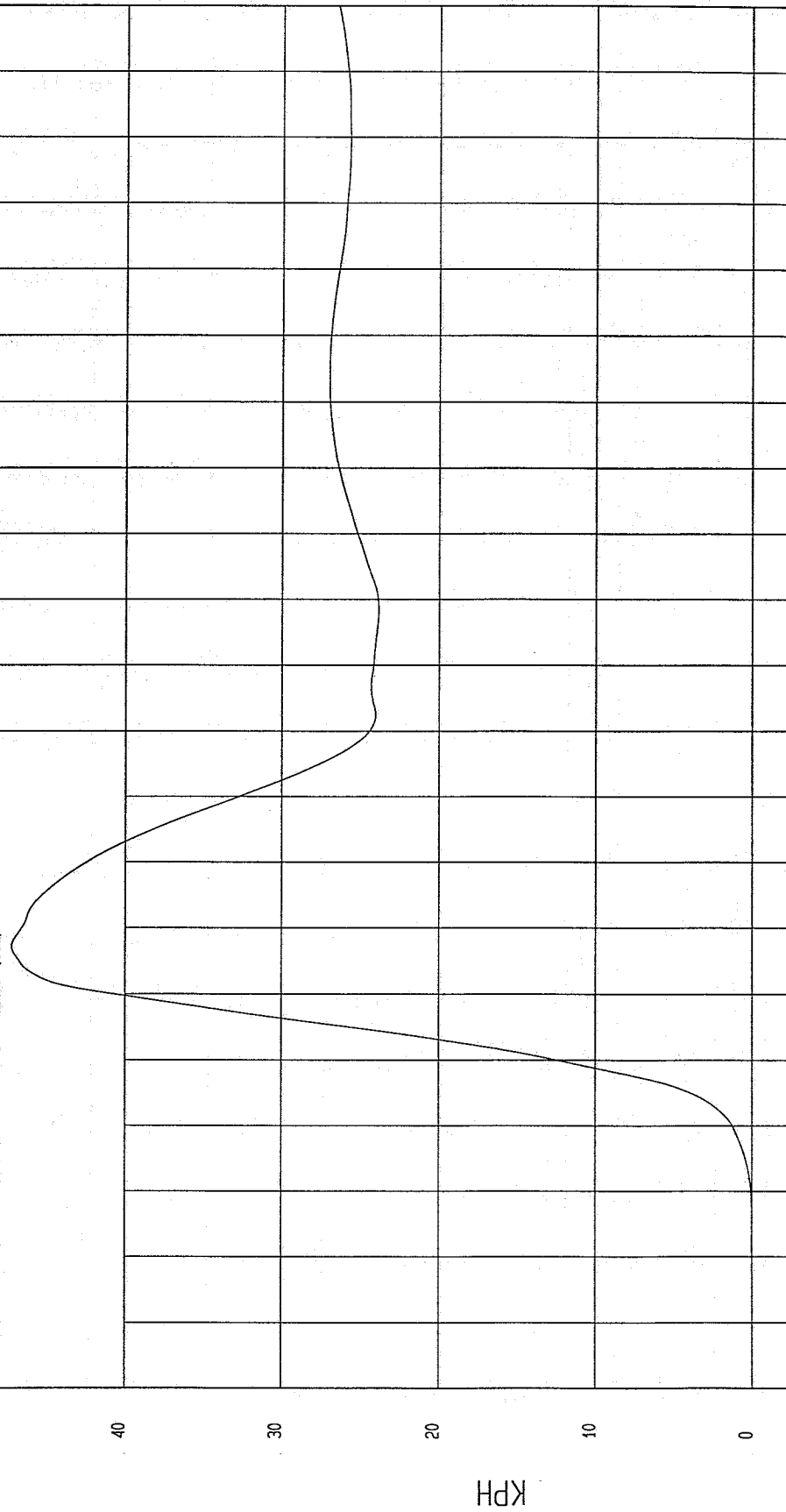
Speed: 38.1 MPH 61.3 KPH

Minimum = -3.89E-03 KPH at -13 msec

Maximum = 47.18 KPH at 47 msec

REAR PASSENGER PELVIS Y REDUNDANT VELOCITY

1 ——— .B97108A1.V75 Filterclass (180)



TIME Seconds

MCA Research
09-21-1997 18:57

FINITE IMPULSE RESPONSE (FIR) FILTERED DATA

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

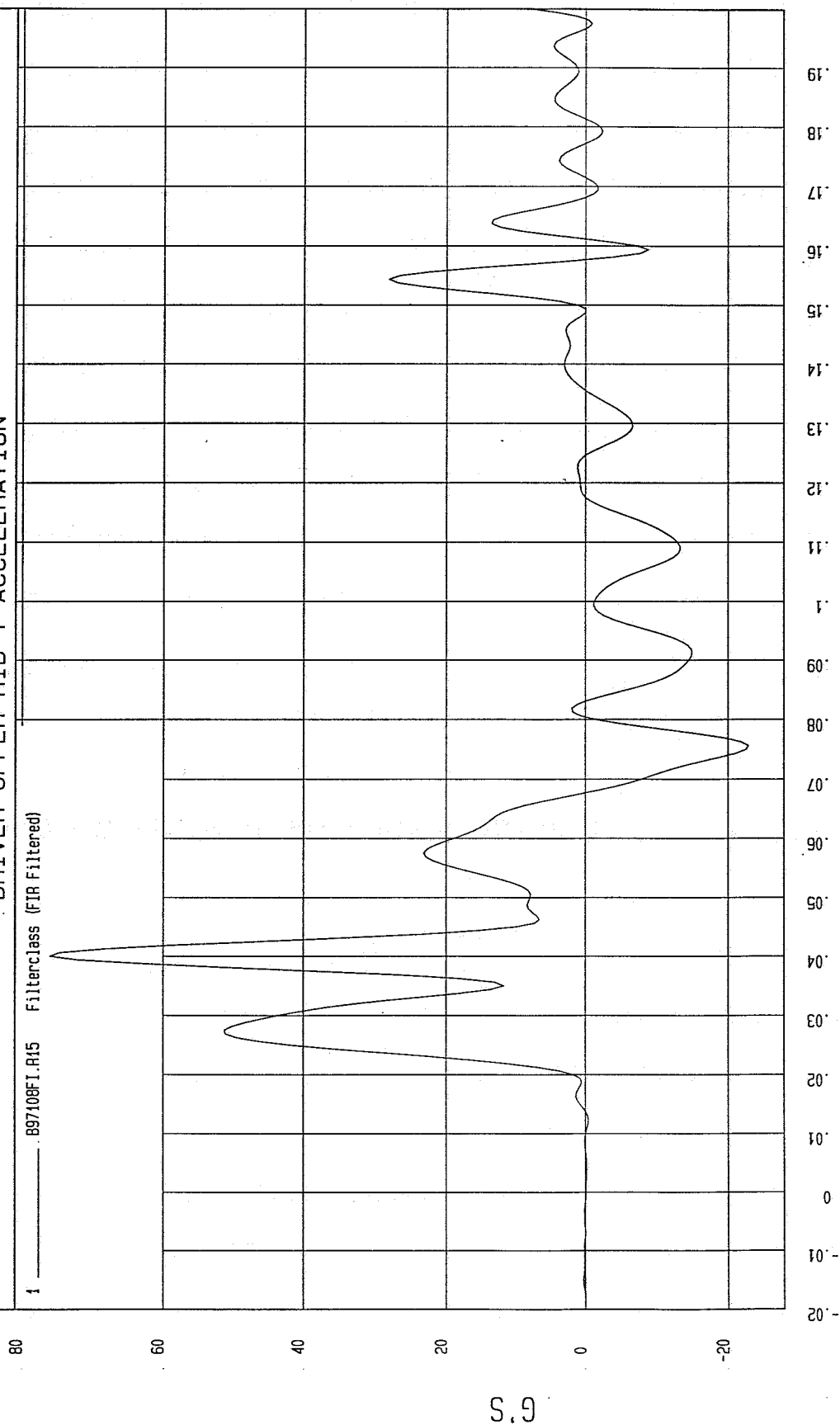
COMPONENT: 1998 BUICK CENTURY (MW0112)

Speed: 38.1 MPH 61.3 KPH

Minimum = -22.79 G'S at 76 msec

Maximum = 76.00 G'S at 40 msec

DRIVER UPPER RIB Y ACCELERATION



MCA Research
09-18-1997 14:54

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112) Speed: 38.1 MPH 61.3 KPH

Minimum = -22.72 G'S at 76 msec
Maximum = 75.59 G'S at 40 msec

DRIVER UPPER RIB Y REDUNDANT ACCELERATION

1 ——— B97108FI.R61 FilterClass (FIR Filtered)

80

60

40

20

0

-20

G'S

-02

-01

0

.01

.02

.03

.04

.05

.06

.07

.08

.09

.1

.11

.12

.13

.14

.15

.16

.17

.18

.19

TIME (SECONDS)

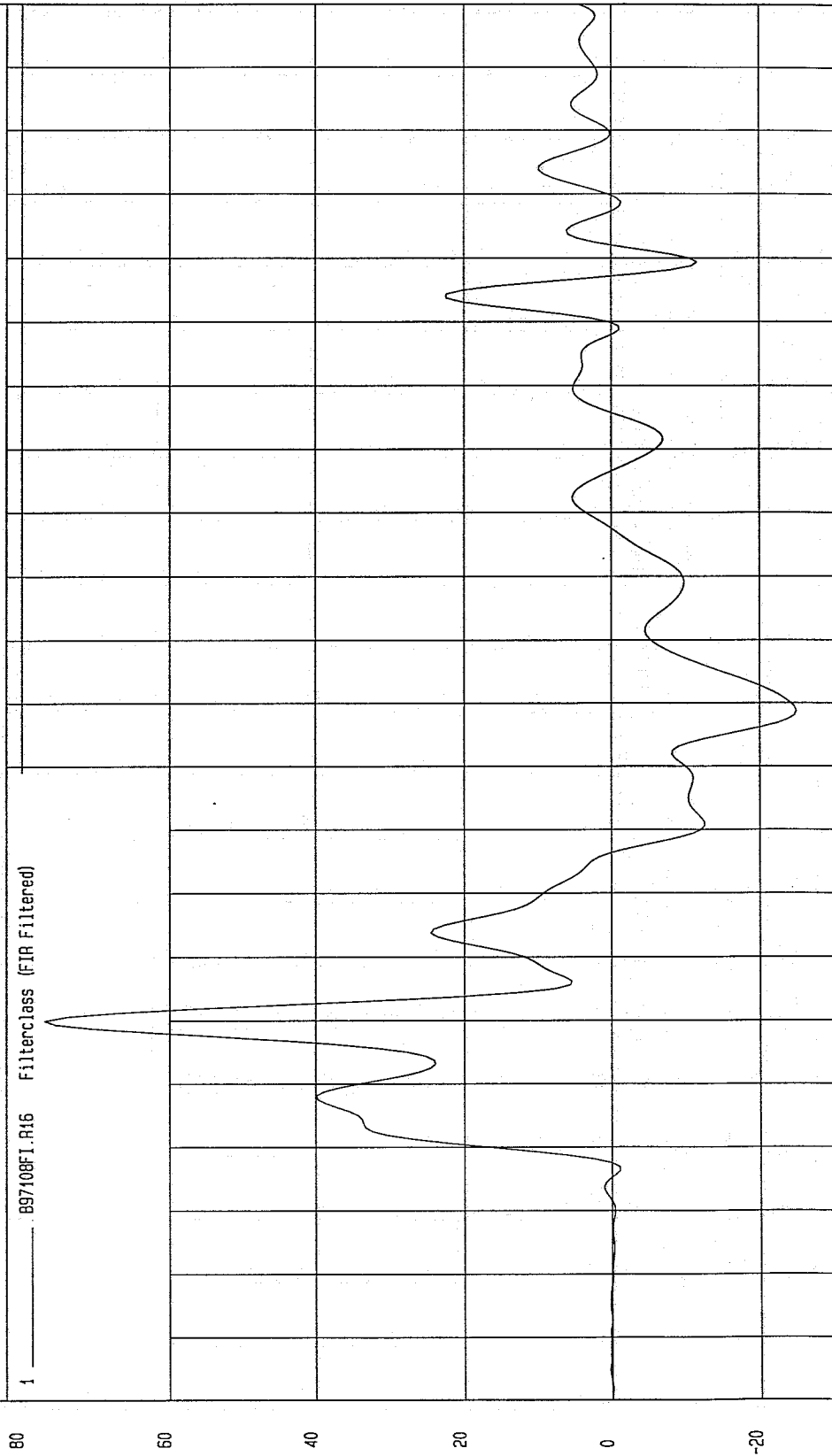
NGA Research
09-18-1997 14:54

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112) Speed: 38.1 MPH 61.3 KPH

Minimum = -24.80 G'S at 89 msec Maximum = 76.96 G'S at 40 msec

DRIVER LOWER RIB Y ACCELERATION



MGA Research
09-18-1997 1A: 5A

TIME (SECONDS)

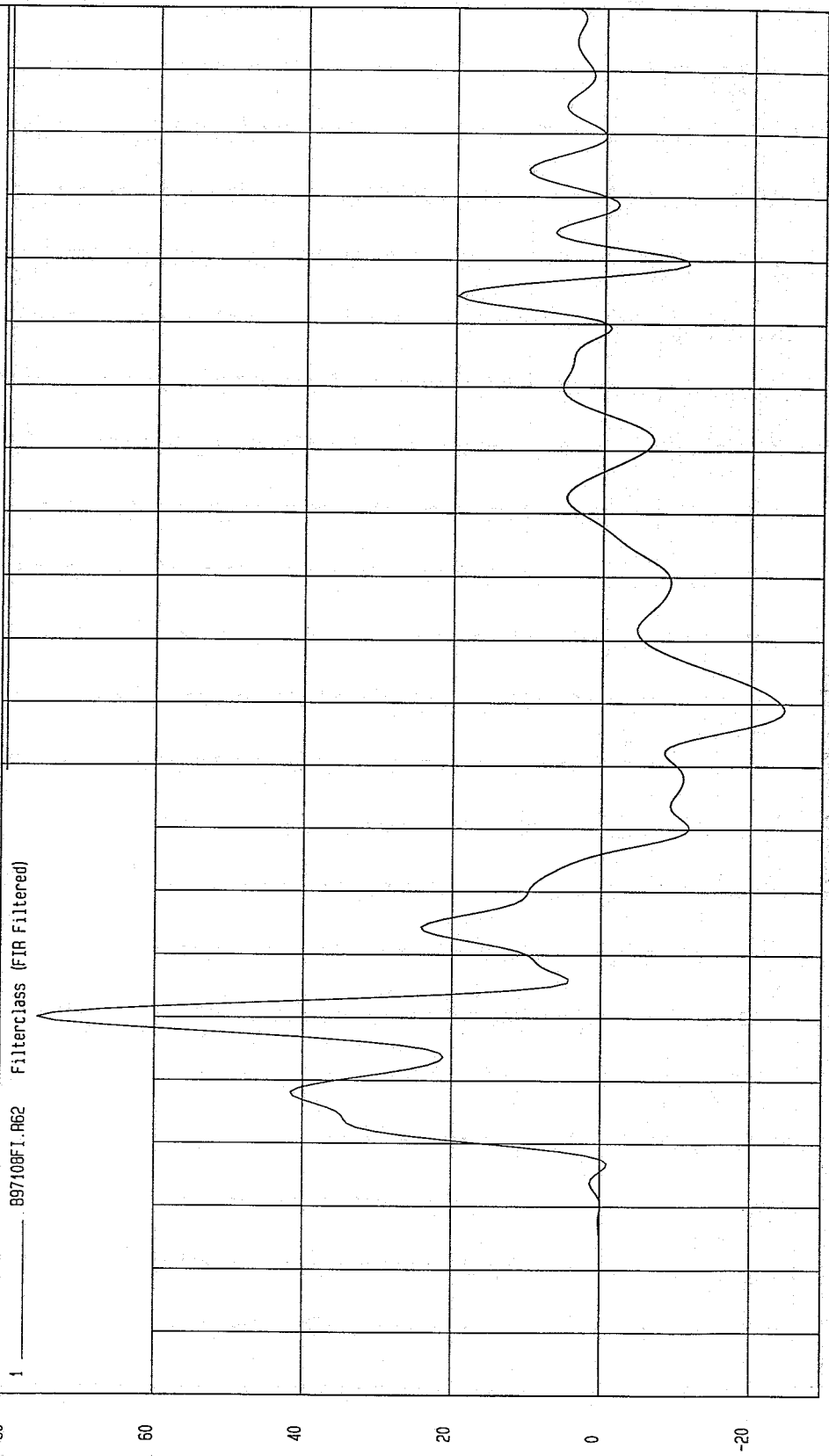
G.S

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112) Speed: 38.1 MPH 61.3 KPH

Minimum = -24.50 G'S at 89 msec
Maximum = 75.73 G'S at 40 msec

DRIVER LOWER RIB Y REDUNDANT ACCELERATION



WCA Research
09-18-1997 14:54

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

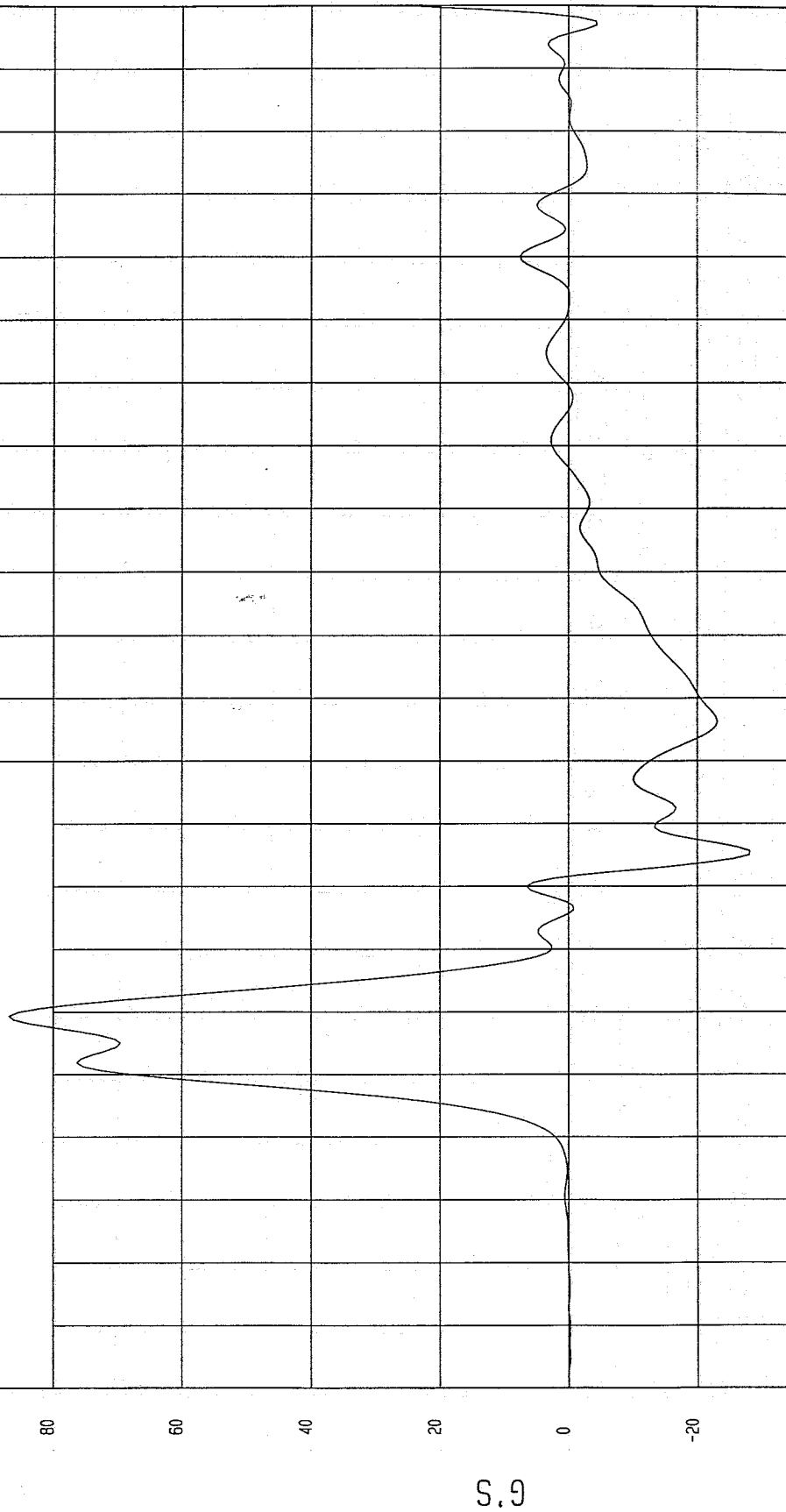
Speed: 38.1 MPH 61.3 KPH

Minimum = -28.09 G'S at 66 msec

Maximum = 86.76 G'S at 39 msec

DRIVER LOWER SPINE Y ACCELERATION

1 _____ B97108F1.R17 Filterclass (FIR Filtered)



WCA Research
09-18-1997 14:54

TIME (SECONDS)

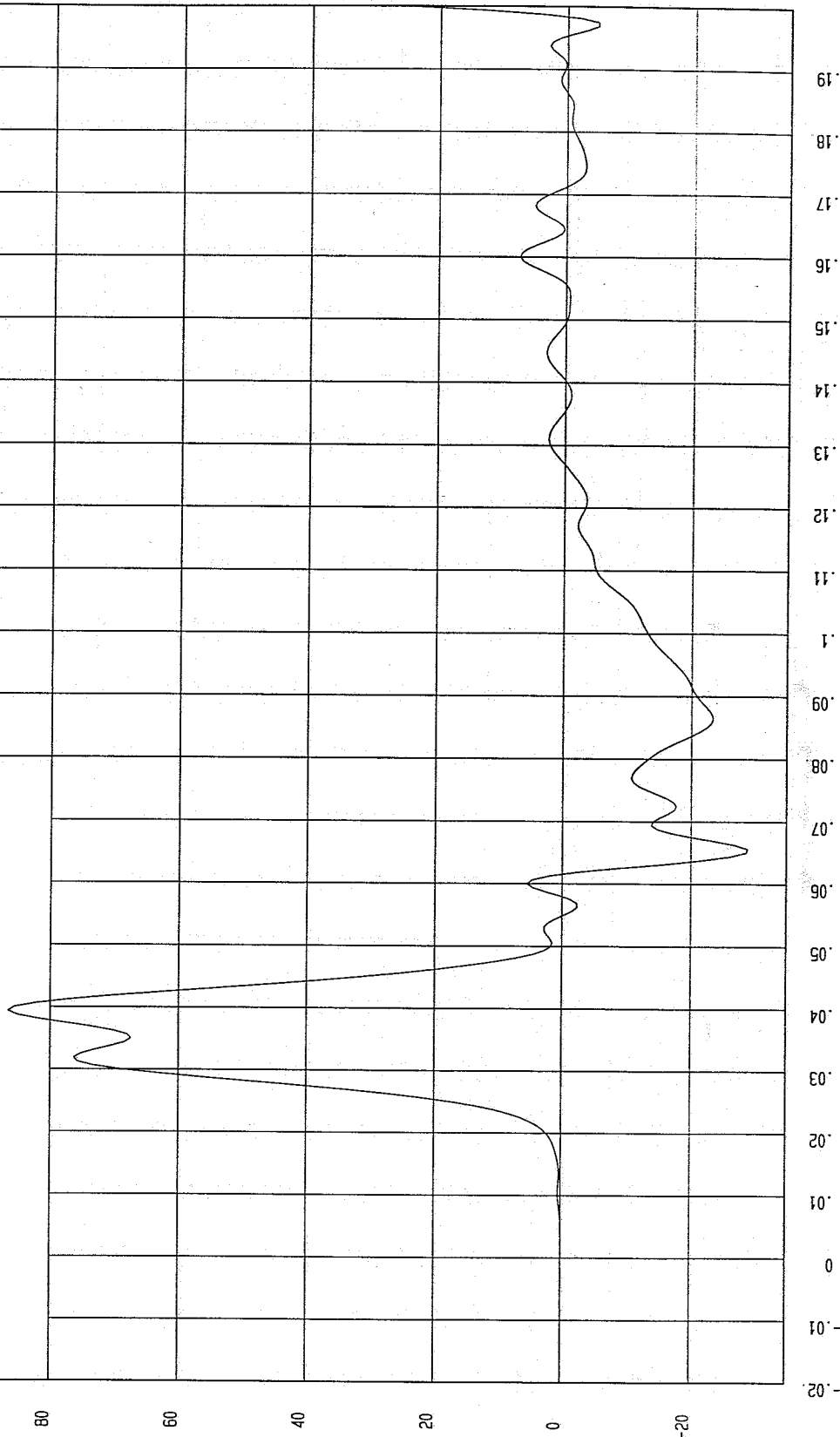
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112) Speed: 38.1 MPH 61.3 KPH

Minimum = -28.75 G'S at 66 msec Maximum = 86.35 G'S at 39 msec

DRIVER LOWER SPINE Y REDUNDANT ACCELERATION

1 897108F1.R63 Filterclass (FIR Filtered)



MOA Research
09-18-1997 14:54

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

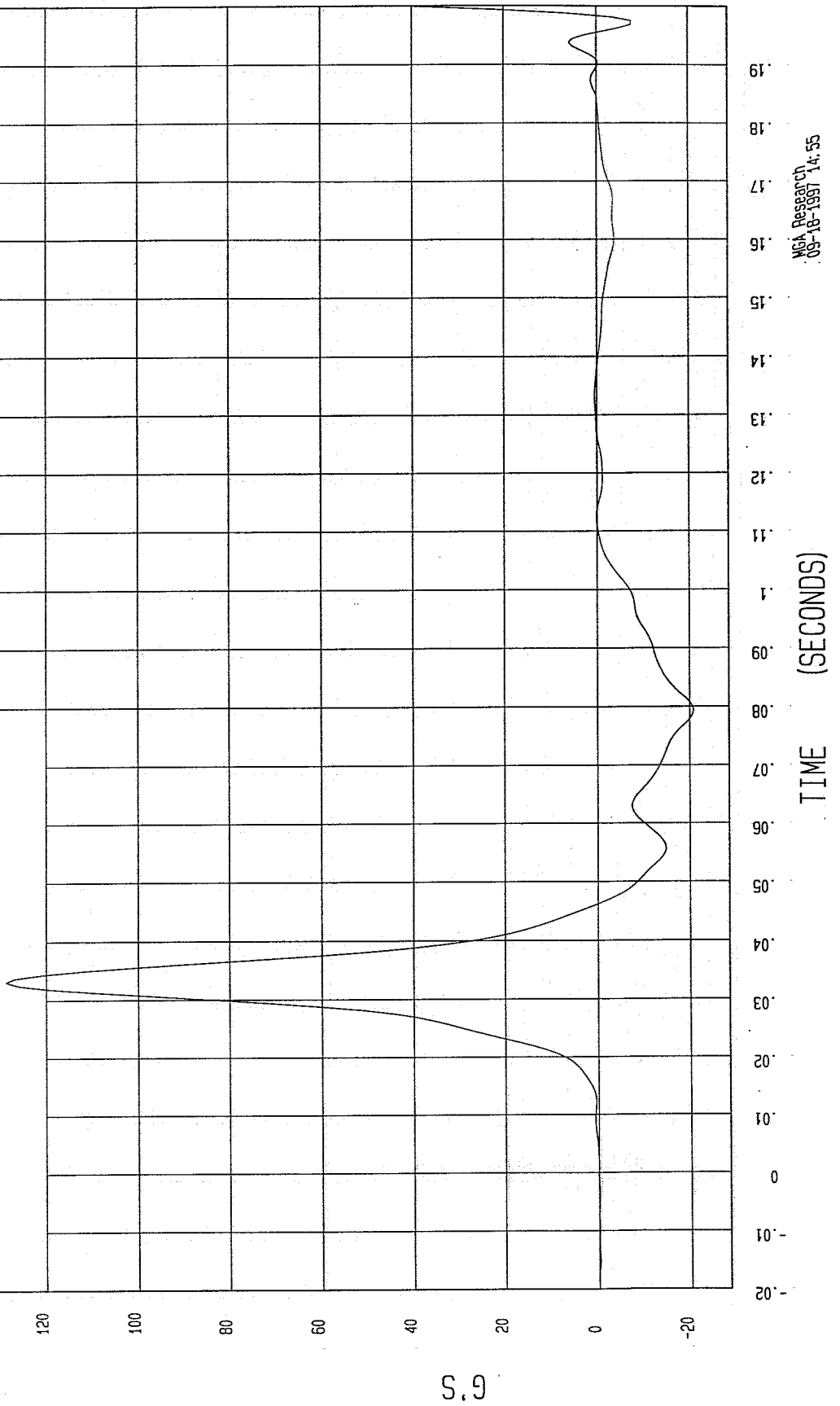
Speed: 38.1 MPH 61.3 KPH

Minimum = -20.81 G'S at 79 msec

Maximum = 128.81 G'S at 33 msec

DRIVER PELVIS Y ACCELERATION

1 _____ B97108FI.R18 Filterclass (FIR Filtered)



WGA Research
09-18-1997 14:55

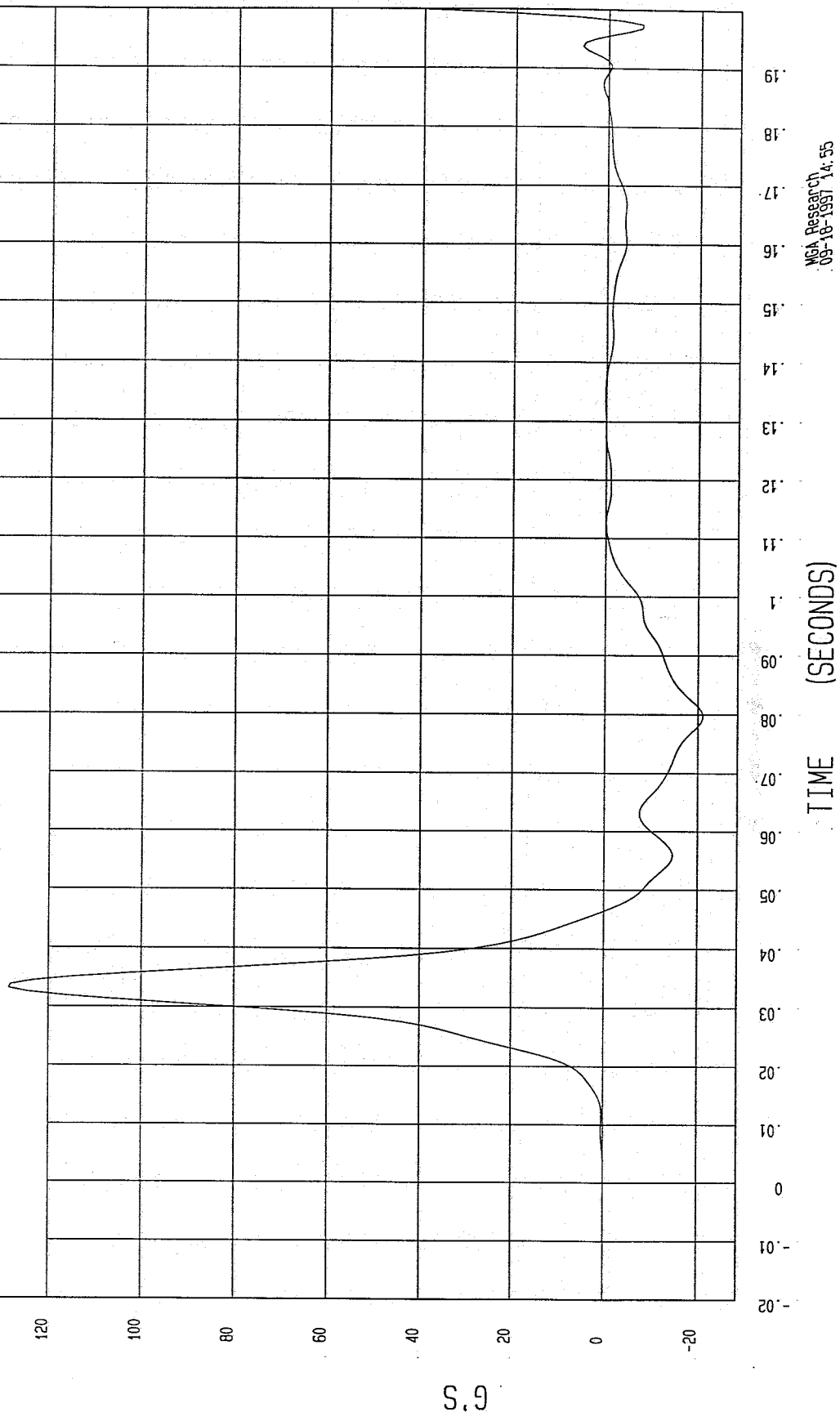
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112) Speed: 38.1 MPH 61.3 KPH

Minimum = -21.02 G'S at 79 msec Maximum = 120.70 G'S at 33 msec

DRIVER PELVIS Y REDUNDANT ACCELERATION

1 ——— 897108F1.R65 Filterclass (FIR Filtered)



MGA Research
09-16-1997 14:55

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

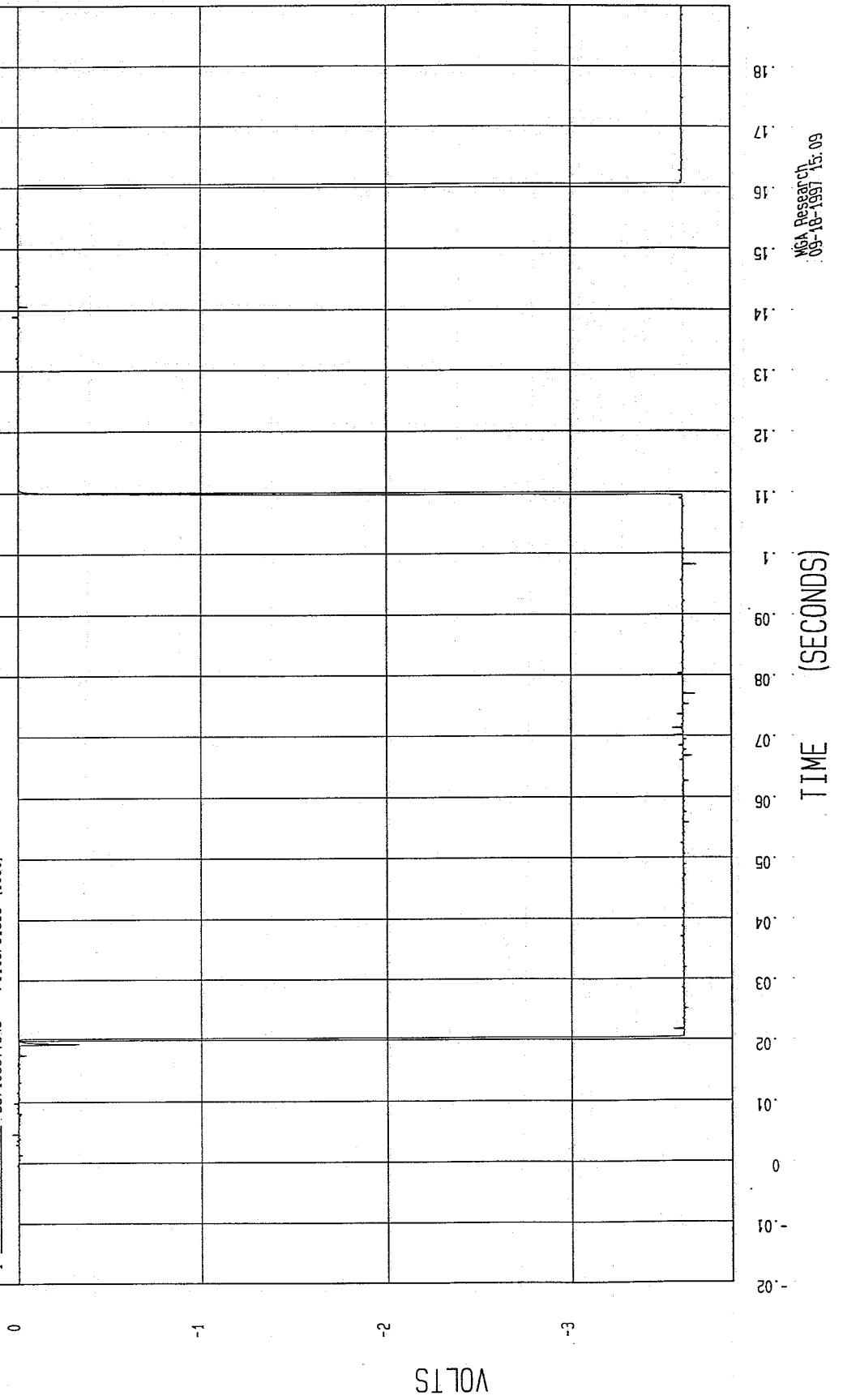
Speed: 38.1 MPH 61.3 KPH

Minimum = -3.68 VOLTS at 98 msec

Maximum = 3.52E-02 VOLTS at 5 msec

DRIVER LEG CONTACT

1 8971080T.043 Filterclass (1000)



MGA Research
09-18-1997 15:09

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

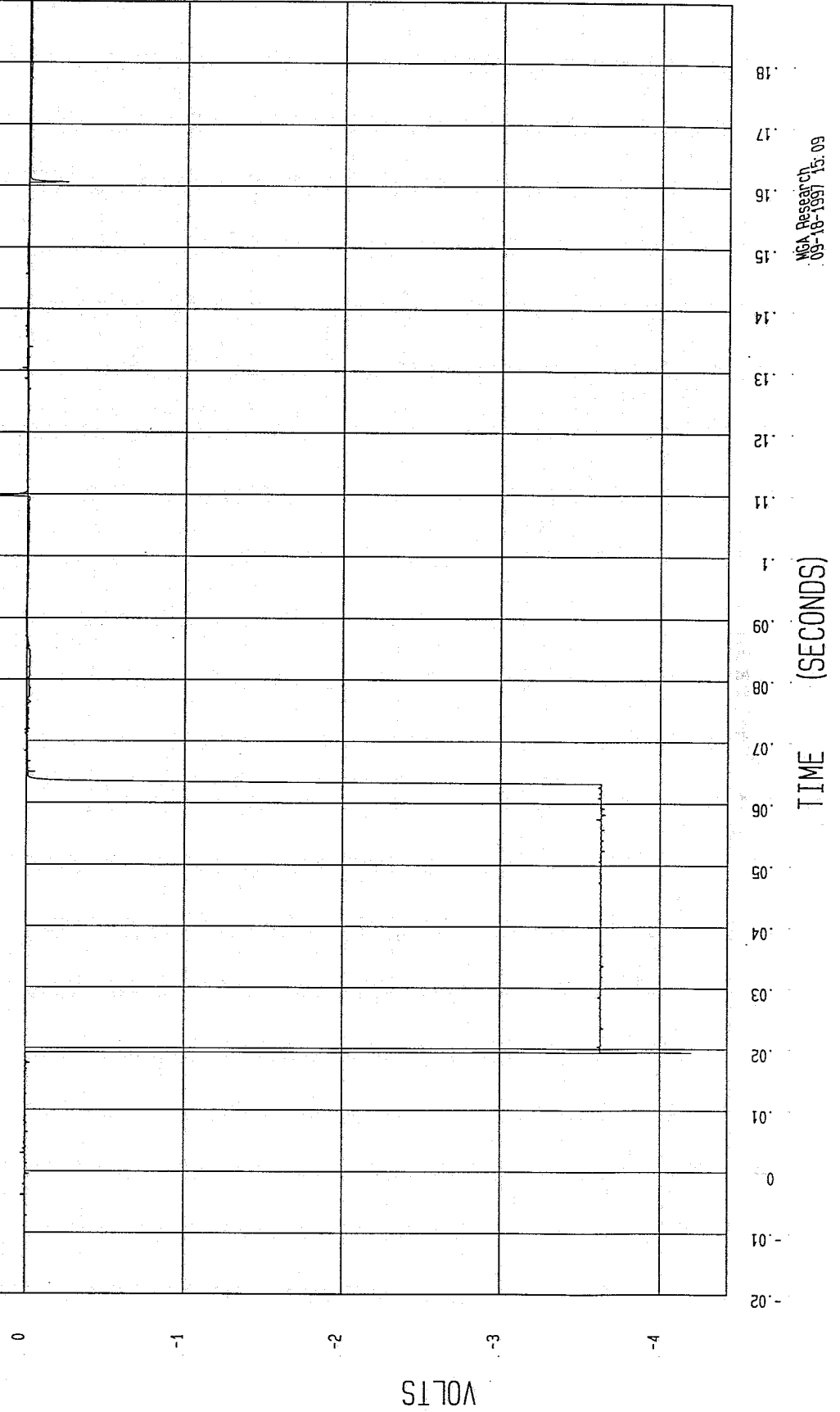
Speed: 38.1 MPH 61.3 KPH

Minimum = -4.19 VOLTS at 19 msec

Maximum = .17 VOLTS at 110 msec

DRIVER SHOULDER CONTACT

1 _____ B971080T.044 Filterclass (1000)



MGA Research
09-18-1997 15.09

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-17-1997

SPEED: 38.1 MPH 61.3 KPH

COMPONENT: 1998 BUICK CENTURY (MW0112)

Maximum = 82.06 G'S at 42 msec

Minimum = -8.37 G'S at 72 msec

REAR PASSENGER UPPER RIB Y ACCELERATION

1 897108FI.R25 Filterclass (FIR Filtered)



NGA Research
09-18-1997 14:55

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

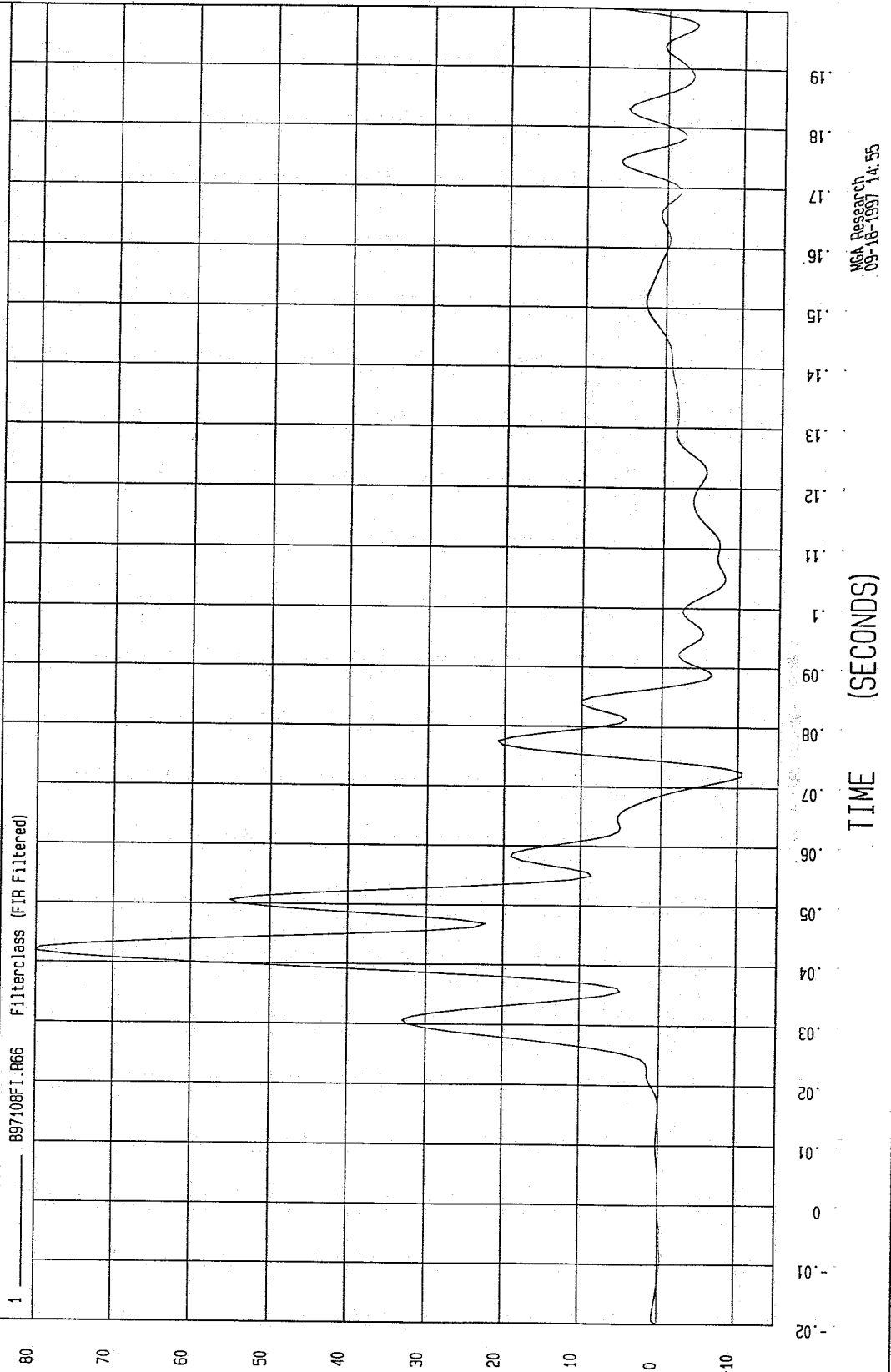
COMPONENT: 1998 BUICK CENTURY (MW0112)

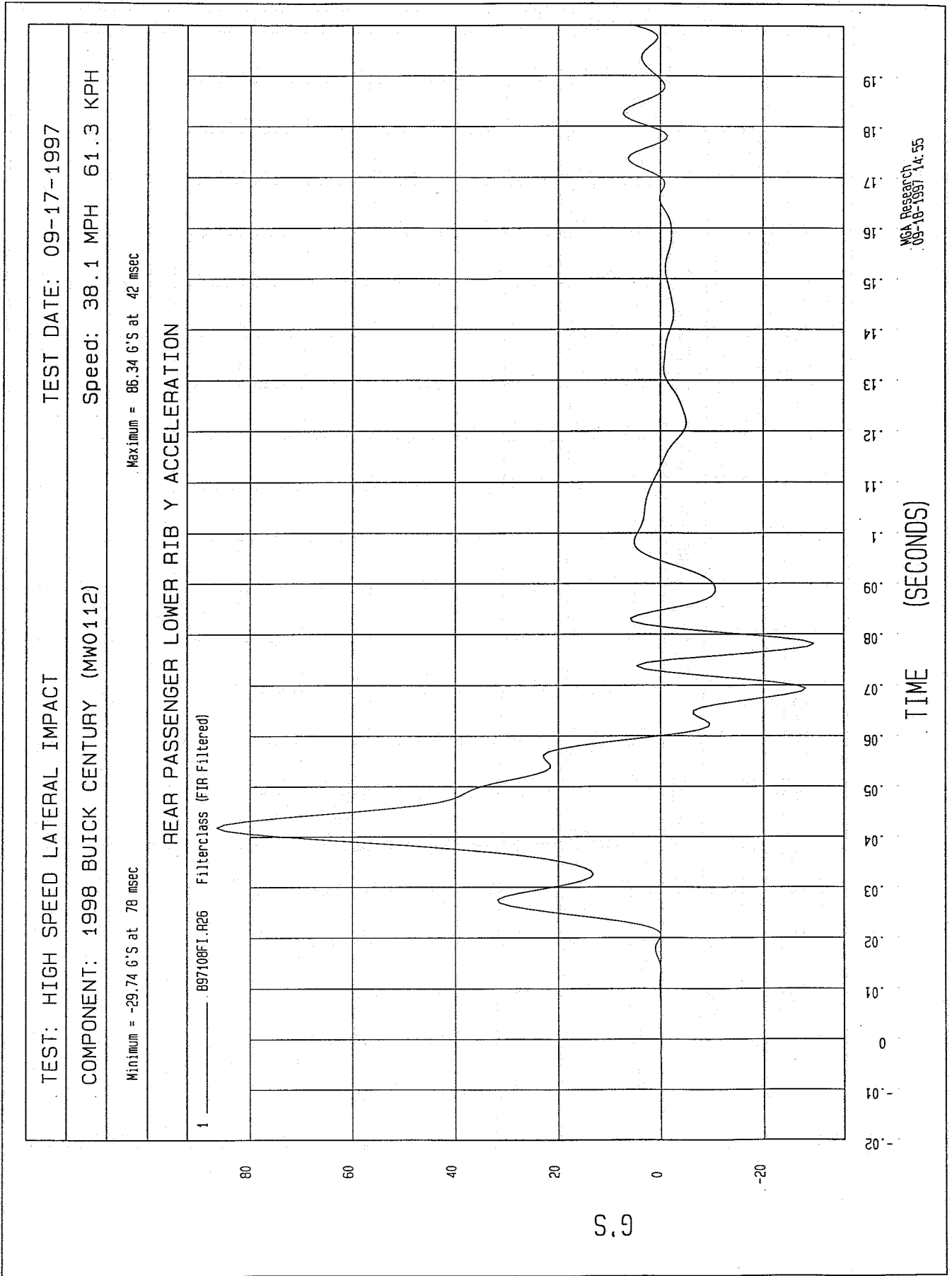
Speed: 38.1 MPH 61.3 KPH

Minimum = -10.50 G'S at 72 msec

Maximum = 80.09 G'S at 42 msec

REAR PASSENGER UPPER RIB Y REDUNDANT ACCELERATION





MCA Research
09-18-1997 14:55

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

Speed: 38.1 MPH 61.3 KPH

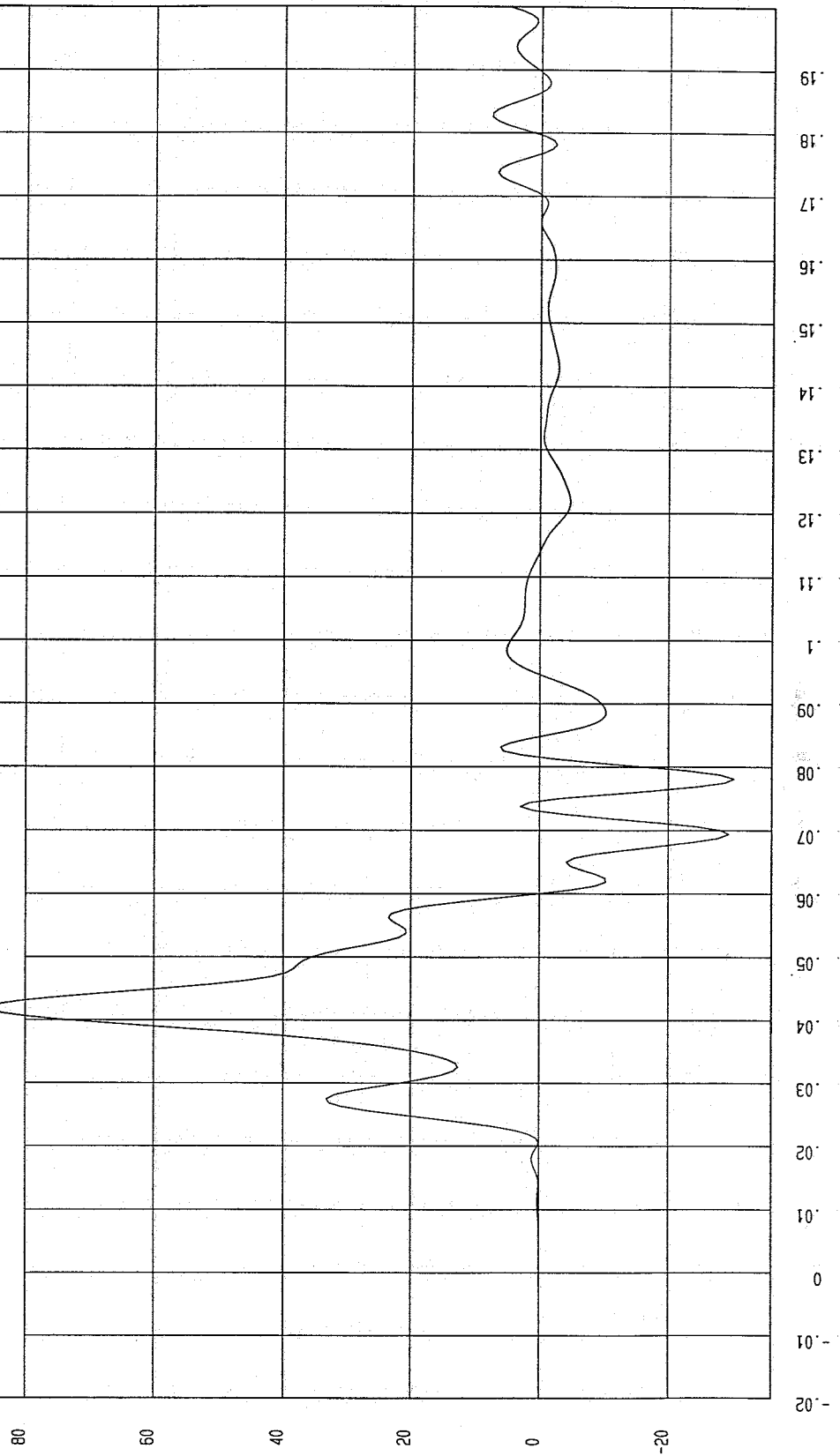
COMPONENT: 1998 BUICK CENTURY (MW0112)

Maximum = 85.95 G's at 42 msec

Minimum = -30.13 G's at 78 msec

REAR PASSENGER LOWER RIB Y REDUNDANT ACCELERATION

1 _____ B97106FI.R67 Filterclass (FIR Filtered)



NGA Research
09-18-1997 14:55

TIME (SECONDS)

G's

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 09-17-1997

SPEED: 38.1 MPH 61.3 KPH

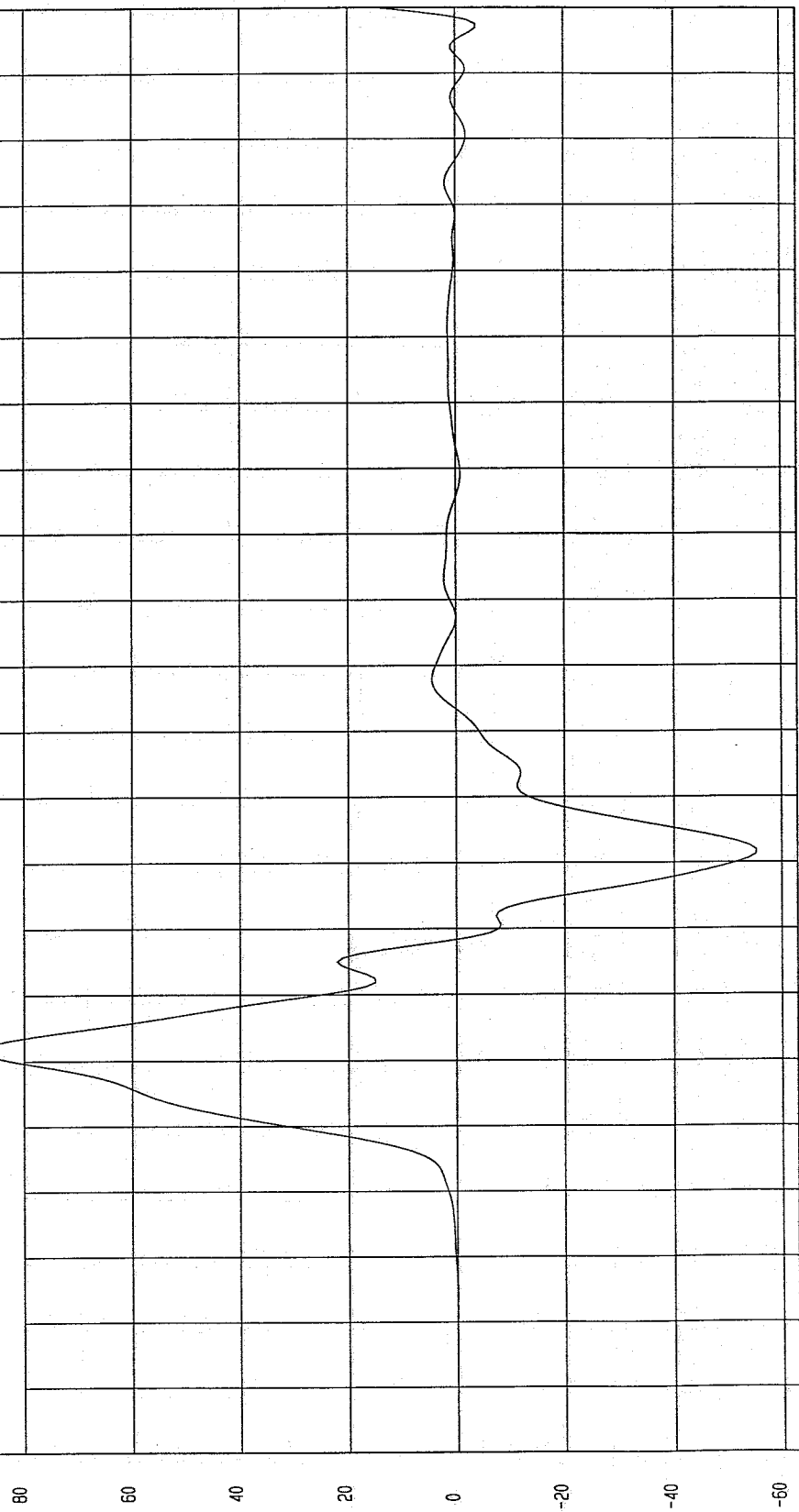
COMPONENT: 1998 BUICK CENTURY (MW0112)

Maximum = 88.02 G'S at 42 msec

Minimum = -55.51 G'S at 72 msec

REAR PASSENGER LOWER SPINE Y ACCELERATION

1 897108FI.R27 Filterclass (FIR Filtered)



NGA Research
09-18-1997 14:55

TIME (SECONDS)

G.S

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

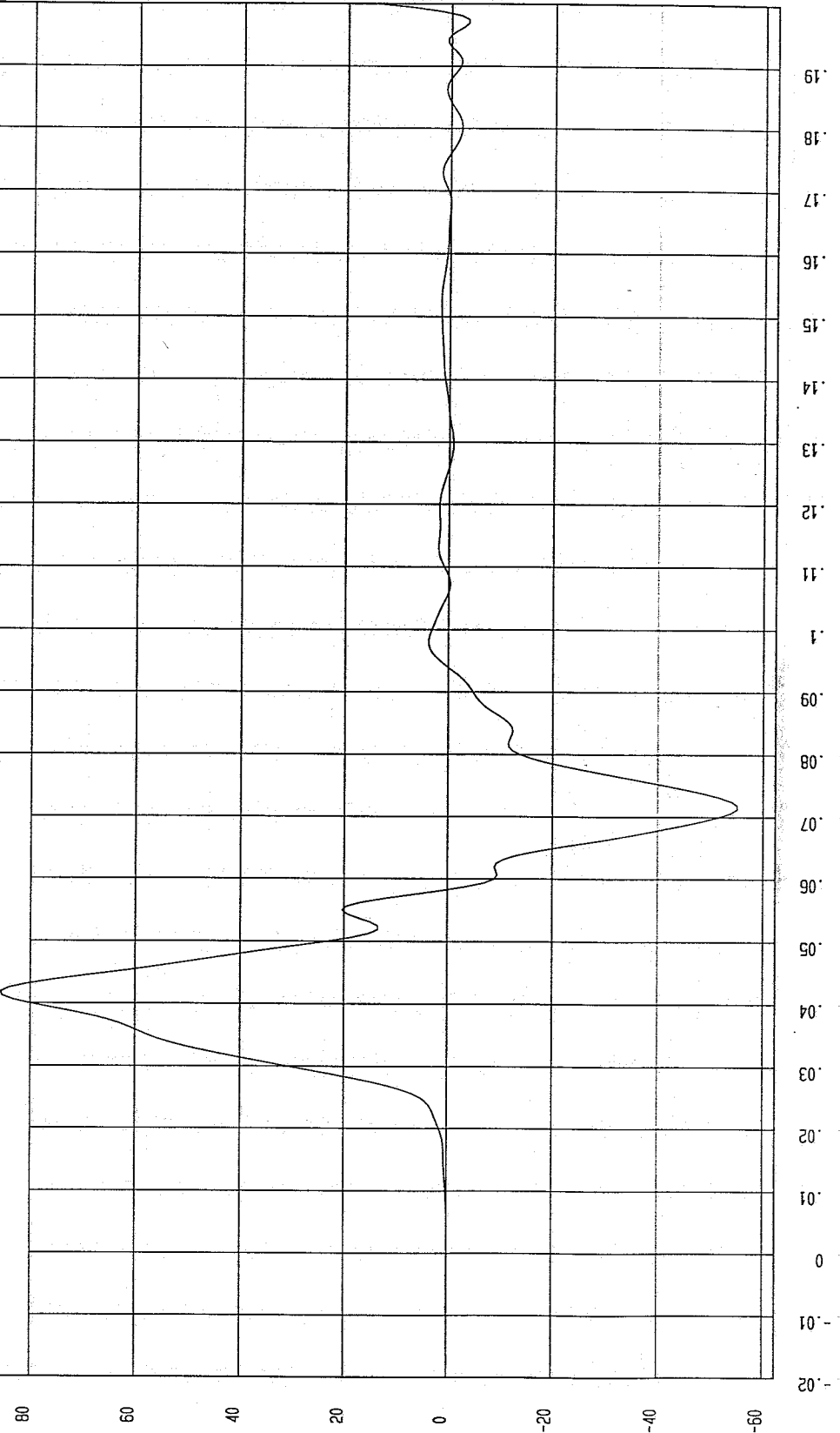
Speed: 38.1 MPH 61.3 KPH

Minimum = -55.16 G'S at 72 msec

Maximum = 85.67 G'S at 42 msec

REAR PASSENGER LOWER SPINE Y REDUNDANT ACCELERATION

1 897108F1.R68 Filterclass (FIR Filtered)



MSA Research
09-18-1997 14:55

TIME (SECONDS)

G'S

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

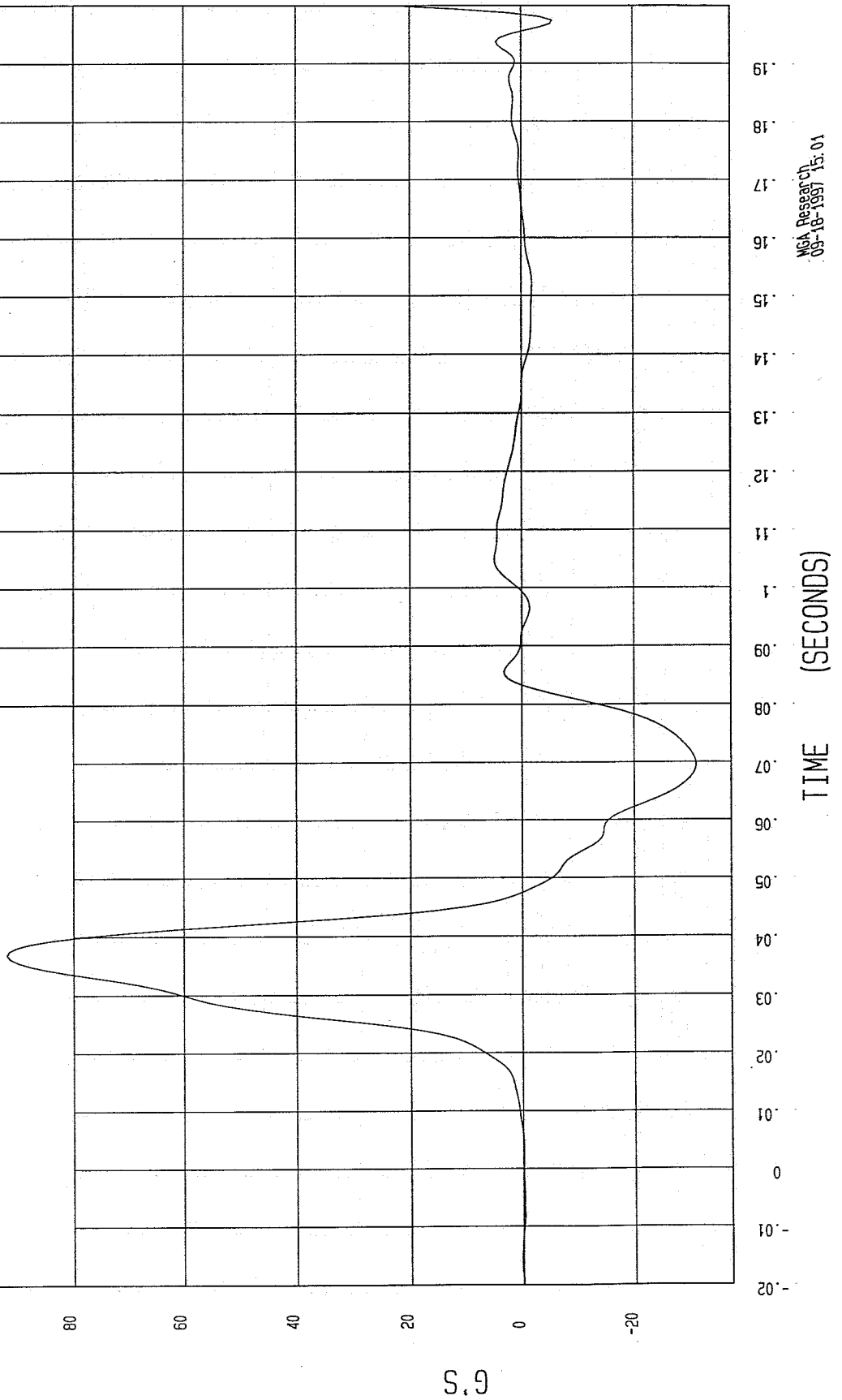
Speed: 38.1 MPH 61.3 KPH

Minimum = -31.14 G's at 69 msec

Maximum = 92.00 G's at 37 msec

REAR PASSENGER PELVIS Y ACCELERATION

1 _____ B97108F1.R69 Filterclass (FIR Filtered)



MGA Research
09-18-1997 15:01

TEST: HIGH SPEED LATERAL IMPACT

COMPONENT: 1998 BUICK CENTURY (MW0112)

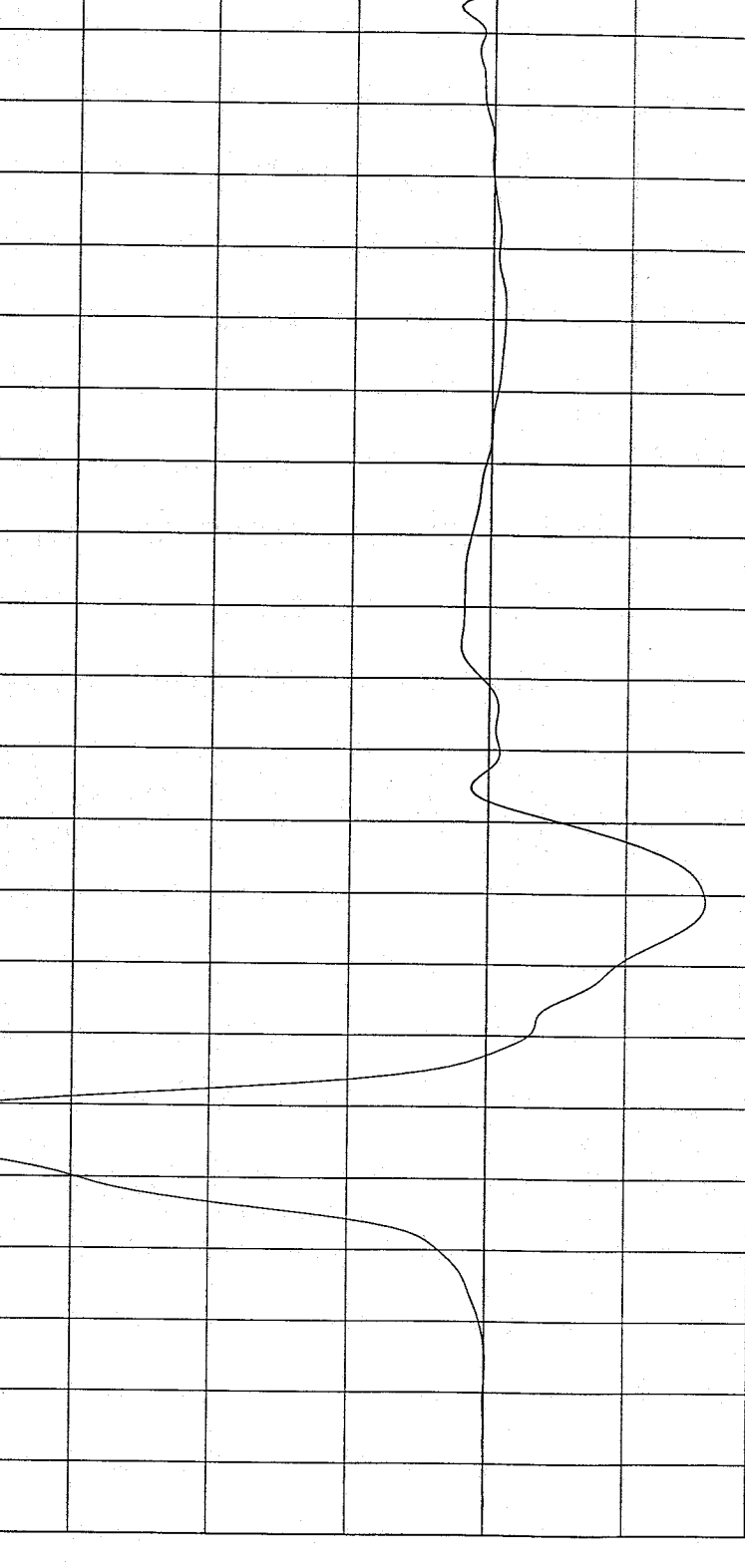
Speed: 38.1 MPH 61.3 KPH

Minimum = -31.55 G'S at 69 msec

Maximum = 91.07 G'S at 37 msec

REAR PASSENGER PELVIS Y REDUNDANT ACCELERATION

1 - 897108F1.R75 Filterclass (FIR Filtered)



TIME (SECONDS)

MGA Research
09-18-1997 15:01

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

Speed: 38.1 MPH 61.3 KPH

Minimum = -3.78 VOLTS at 76 msec

Maximum = .20 VOLTS at 85 msec

REAR PASSENGER LEG CONTACT

1 ——— B971080T.047 Filterclass (1000)

0

-1

-2

-3

VOLTS

-0.02

-0.01

0

.01

.02

.03

.04

.05

.06

.07

.08

.09

.1

.11

.12

.13

.14

.15

.16

.17

.18

TIME (SECONDS)

NGA Research
09-18-1997 15: 11

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 09-17-1997

COMPONENT: 1998 BUICK CENTURY (MW0112)

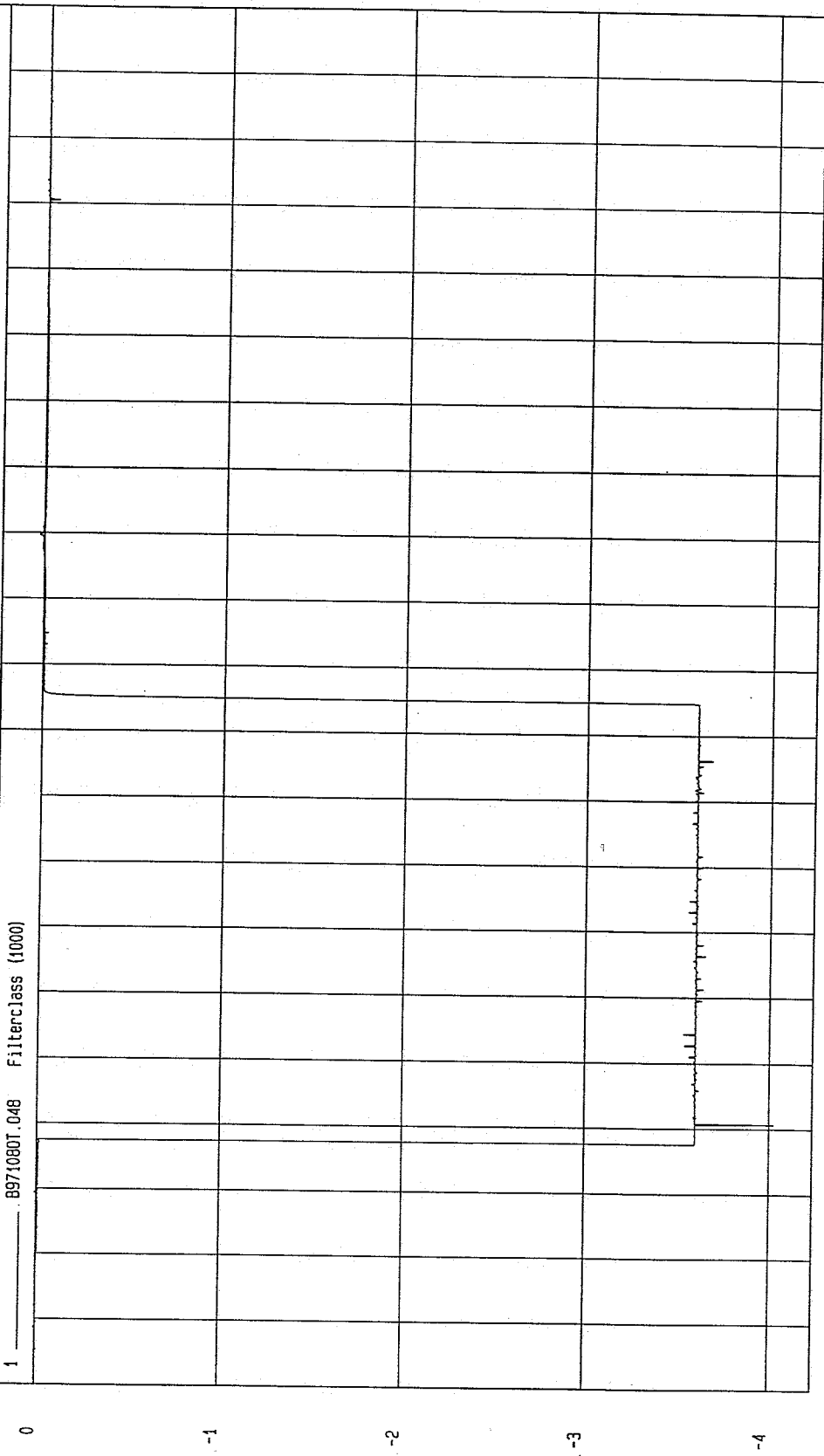
Speed: 38.1 MPH 61.3 KPH

Minimum = -4.02 VOLTS at 21 msec

Maximum = 2.42E-02 VOLTS at 110 msec

REAR PASSENGER SHOULDER CONTACT

1 _____ 8971080T.048 FilterClass (1000)



TIME (SECONDS)

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

NGA Research
09-18-1997 15:11

APPENDIX C
SID CONFIGURATION AND PERFORMANCE VERIFICATION

REPORT NO. MGA-97-DC02

DUMMY PERFORMANCE CALIBRATIONS

NEW CAR ASSESSMENT PROGRAM
SIDE IMPACT TEST

1997 BUICK CENTURY 4-DOOR
NHTSA NO. MW0112

MGA PROVING GROUNDS
5000 WARREN ROAD
BURLINGTON, WI 53105



Test Date: September 17, 1997

Report Date: September 30, 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	1-1
DUMMY S/N: 270	PRE-TEST CERTIFICATION DATA	2-1
DUMMY S/N: 269	POST-TEST CERTIFICATION DATA	3-1
DUMMY S/N: 270	POST-TEST CERTIFICATION DATA	4-1
DUMMY S/N: 269	POST-TEST INSPECTION CHECKLIST	5-1
DUMMY S/N: 270	POST-TEST INSPECTION CHECKLIST	6-1
	VEHICLE AND DUMMY TEMPERATURE	7-1

PRE-TEST CERTIFICATION DATA

Front 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.

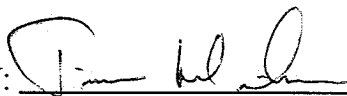
SIDE IMPACT DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

DUMMY NO.: 269

DATE OF VERIFICATION: September 16, 1997

DESCRIPTION	SPECIFICATION	TEST RESULTS
SH - Seated Height	35.0" - 35.8"	35.2
RH - Rib Height	19.75" - 20.50"	20.20
HP - Hip Pivot Height	3.9" ref.	3.9
RD - Rib From Back Line	9.0" to 9.5"	9.3
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
THORACIC SHOCK ABSORBER TEST
SIDE IMPACT DUMMY (SID)

DATE: September 15, 1997

DUMMY NUMBER: 269

TEST NUMBER: D97155678

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		66 - 78° F	70°
RELATIVE HUMIDITY		10 - 70%	47%
VELOCITY 10 ft/s	FORCE (lb.)	188 - 253	209
	DISPLACEMENT (in.)	1.18 - 1.38	1.32
VELOCITY 14 ft/s	FORCE (lb.)	389 - 472	406
	DISPLACEMENT (in.)	1.26 - 1.47	1.42
VELOCITY 20 ft/s	FORCE (lb.)	841 - 1000	934
	DISPLACEMENT (in.)	1.30 - 1.57	1.47

TEST MEETS SPECIFICATIONS

TECHNICIAN Tim W. L.

APPROVED BY Dave Kosloske

TEST: DUMMY CALIBRATION - DAMPENER BENCH TEST TEST DATE: 09-15-1997 - 13:47

COMPONENT: DUMMY # 269 Velocity: 10 FT/SEC 3.05 M/SEC

Minimum = -12.71 LBS at 18.8 msec

Maximum = 208.65 LBS at 27.8 msec

PEAK FORCE

1 _____ D97556FF.F04 Filterclass (1000)

400

300

200

100

0

-100

LBS

0

10

20

30

40

50

60

70

80

90

1

11

12

TIME (SECONDS)

MCA Research
09-15-1997 14:09

TEST: DUMMY CALIBRATION - DAMPENER BENCH TEST TEST DATE: 09-15-1997 - 13:47

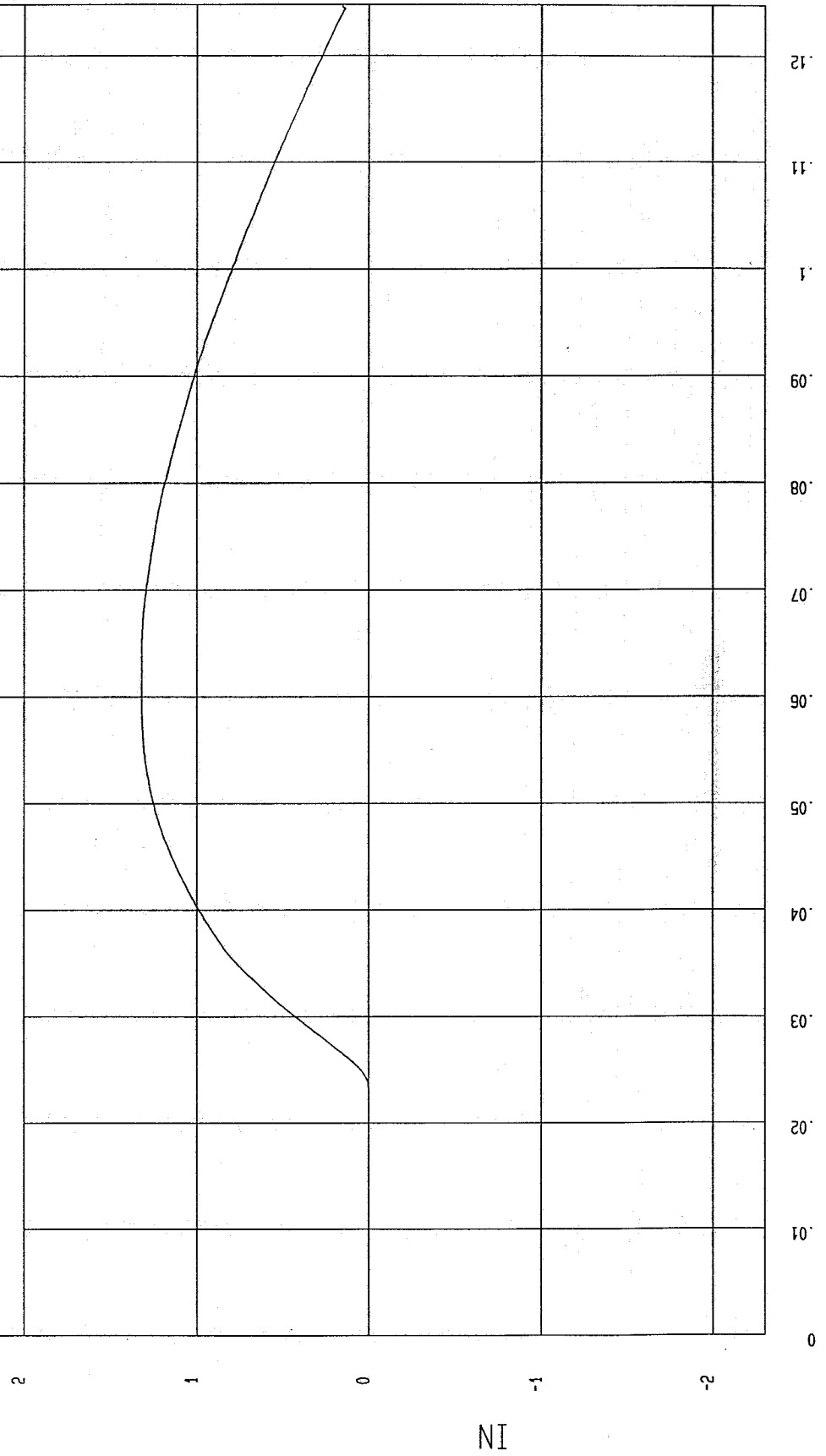
COMPONENT: DUMMY # 269 Velocity: 10 FT/SEC 3.05 M/SEC

Minimum = -9.45E-04 IN at .62 msec

Maximum = 1.32 IN at 62.0 msec

PEAK DISPLACEMENT

1 _____ 0975560F.D05 Filterclass (1000)



WCA Research
09-15-1997 14:09

TEST: DUMMY CALIBRATION - DAMPENER BENCH TEST TEST DATE: 09-15-1997 - 14:04

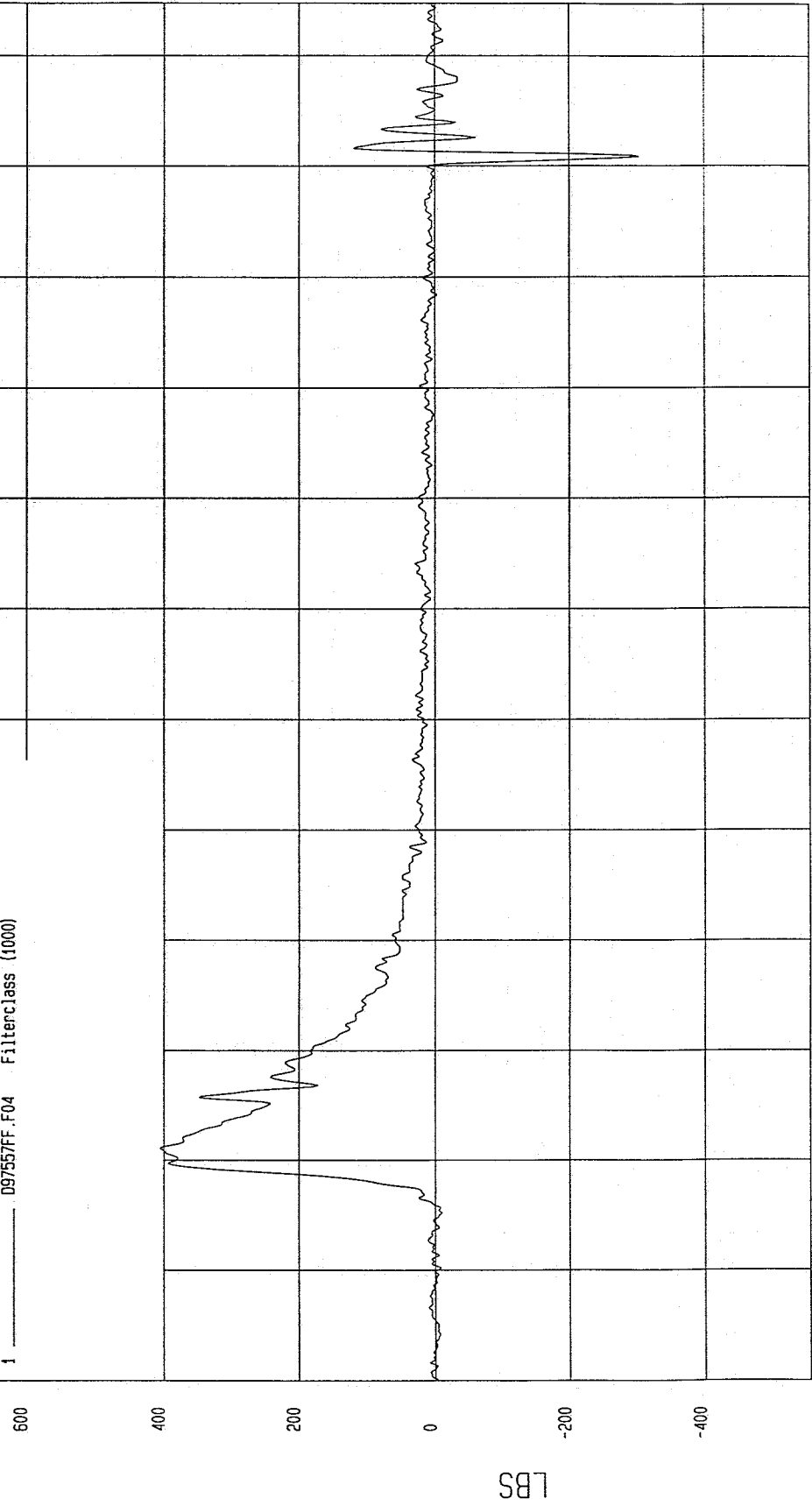
COMPONENT: DUMMY # 269 Velocity: 14 FT/SEC 4.27 M/SEC

Minimum = -301.85 LBS at 110. msec

Maximum = 405.73 LBS at 21.0 msec

PEAK FORCE

1 ——— D97557FF.F04 Filterclass (1000)



MCA Research
09-15-1997 14:09

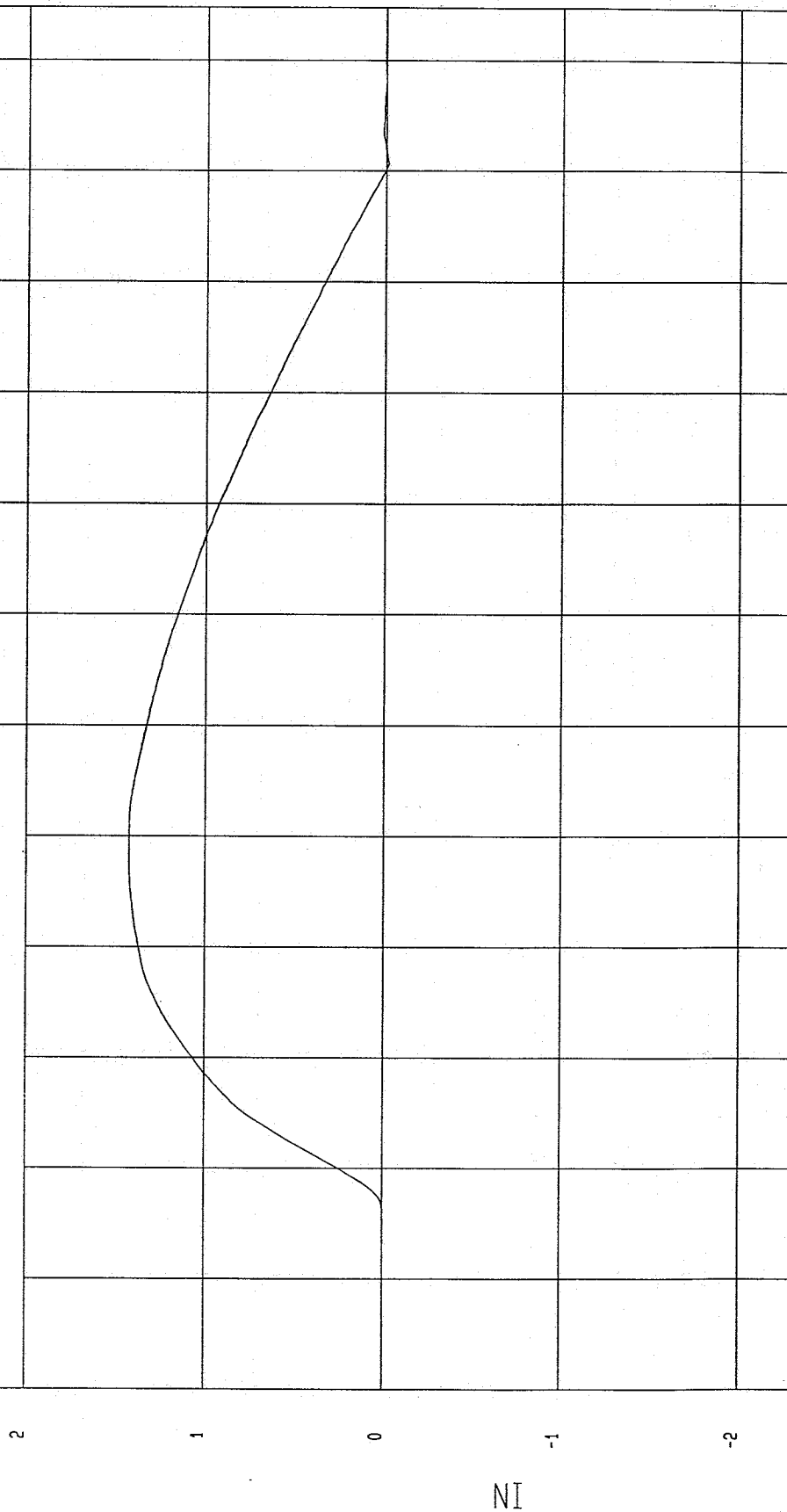
TEST: DUMMY CALIBRATION - DAMPENER BENCH TEST TEST DATE: 09-15-1997 - 14:04

COMPONENT: DUMMY # 269 Velocity: 14 FT/SEC 4.27 M/SEC

Minimum = -1.21E-02 IN at 110. msec Maximum = 1.42 IN at 49.6 msec

PEAK DISPLACEMENT

1 _____ 0975570F.005 Filterclass (1000)



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

TIME (SECONDS)

MGA Research
09-15-1997 14:09

TEST: DUMMY CALIBRATION - DAMPENER BENCH TEST TEST DATE: 09-15-1997 - 14:08

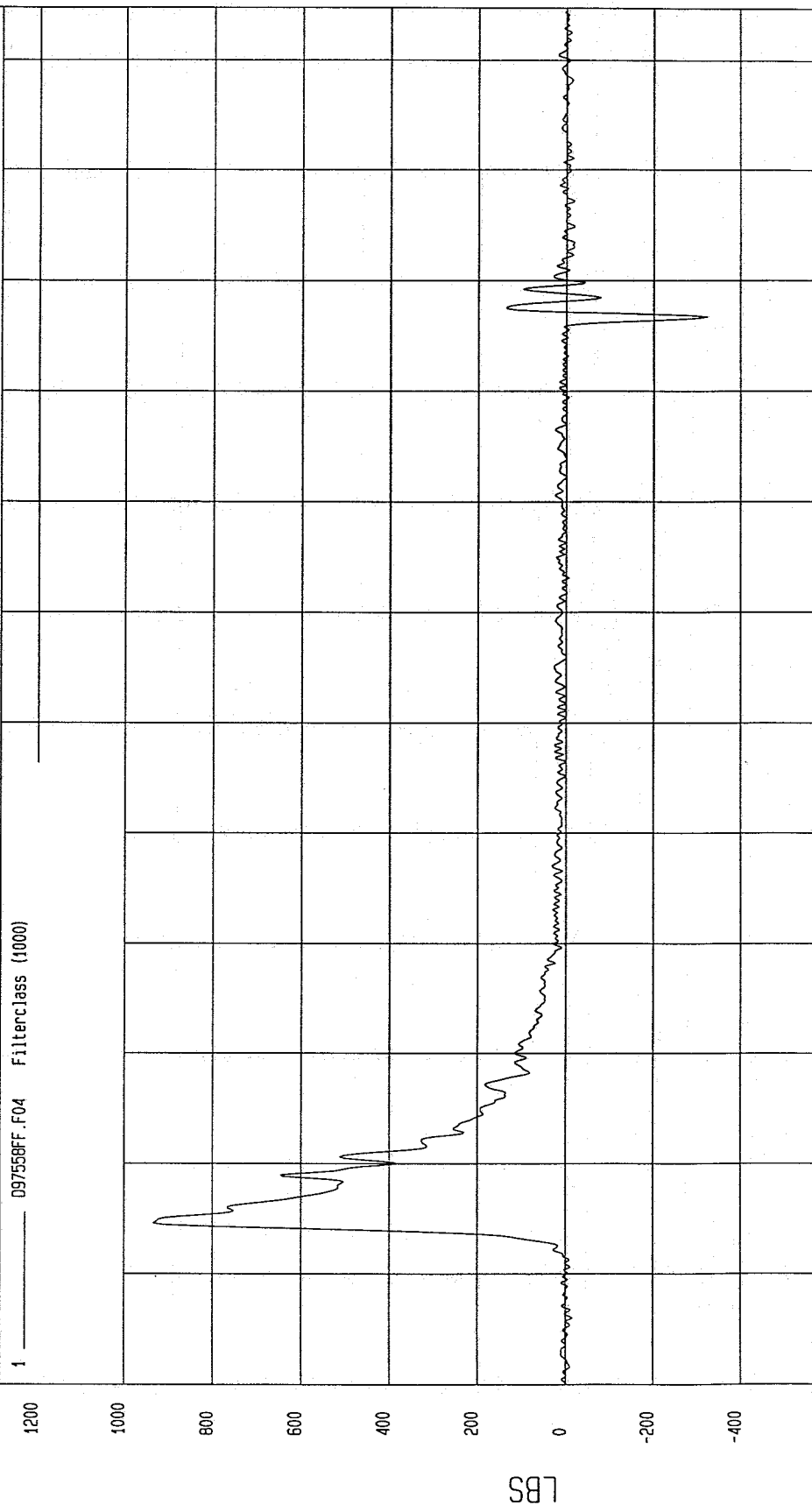
COMPONENT: DUMMY # 269 Velocity: 20 FT/SEC 6.1 M/SEC

Minimum = -322.18 LBS at 96.7 msec

Maximum = 933.92 LBS at 14.6 msec

PEAK FORCE

1 ——— D97558FF.F04 Filterclass (1000)



0 200 400 600 800 1000 1200 LBS

TIME (SECONDS)

NCA Research
09-15-1997 14:13

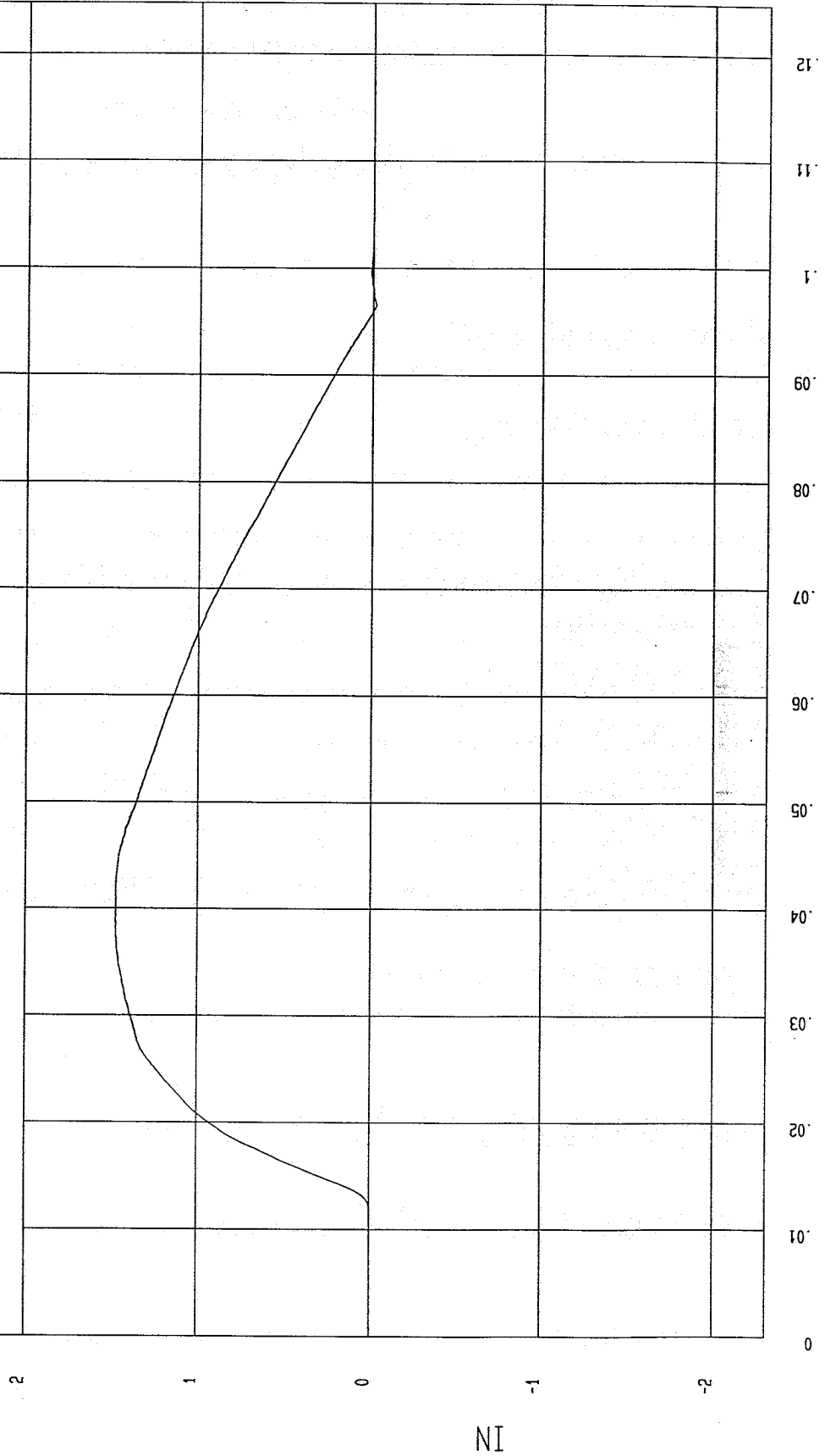
TEST: DUMMY CALIBRATION - DAMPENER BENCH TEST TEST DATE: 09-15-1997 - 14:08

COMPONENT: DUMMY # 269 Velocity: 20 FT/SEC 6.1 M/SEC

Minimum = -1.71E-02 IN at 96.6 msec Maximum = 1.47 IN at 30.9 msec

PEAK DISPLACEMENT

1 _____ 0975580F.D05 Filterclass (1000)



WCA Research
09-15-1997 14:13

MGA RESEARCH CORPORATION

THORAX IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: September 16, 1997

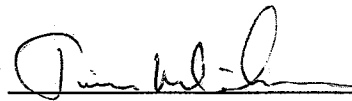
DUMMY NUMBER: 269

TEST NUMBER: D971552

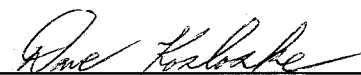
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	50%
PROBE SPEED	14.0 - 14.2 fps	14.0
UPPER RIB	37 - 46 g's	41
LOWER RIB	37 - 46 g's	43
LOWER SPINE	15 - 22 g's	20

TEST MEETS SPECIFICATIONS

TECHNICIAN



APPROVED BY



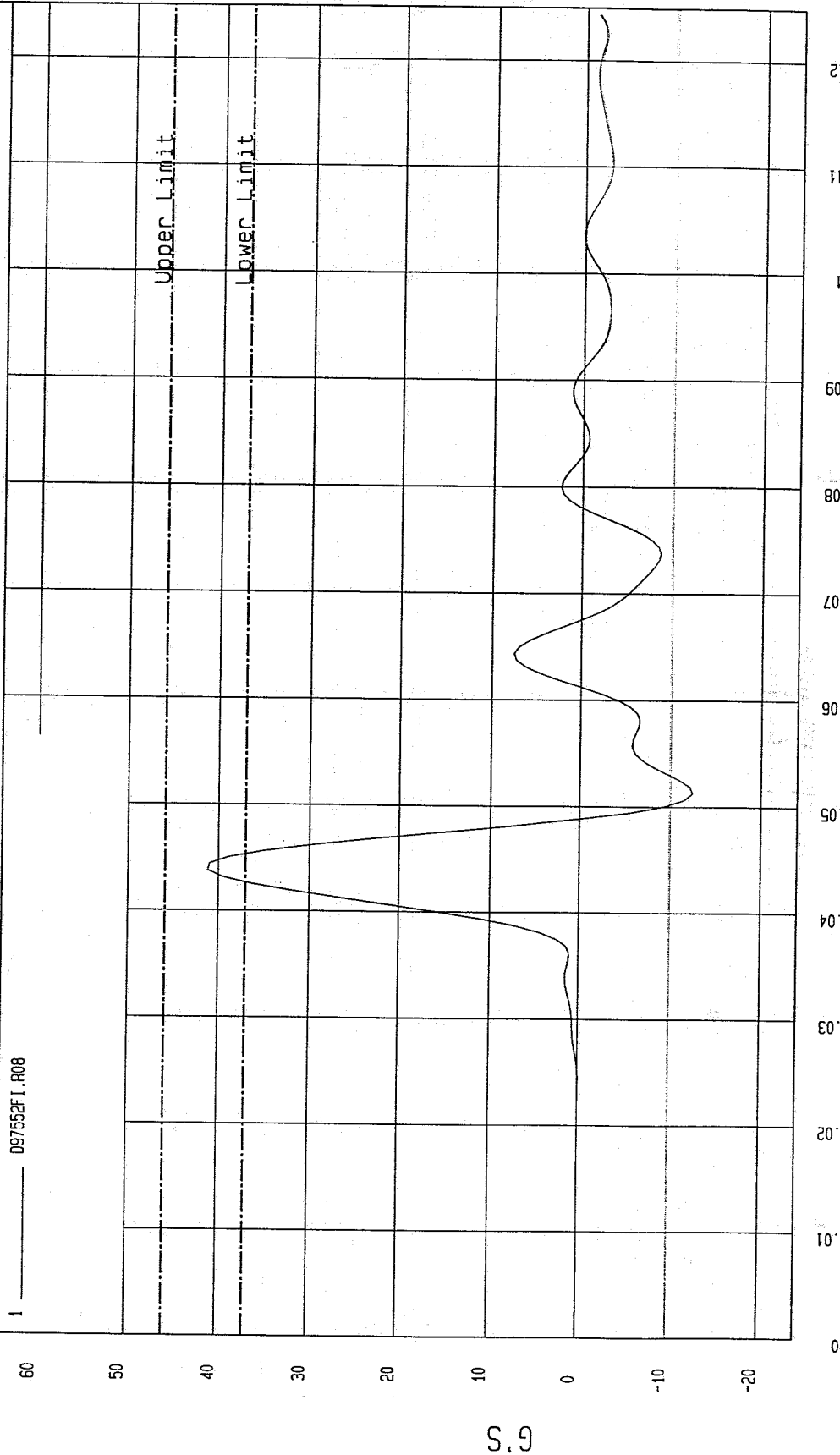
TEST: DUMMY CALIBRATION - THORAX IMPACT TEST DATE: 09-16-1997 - 23:09

COMPONENT: DUMMY # 269 Velocity: 14.047 FT/SEC 4.28 M/SEC

Minimum = -12.59 G'S at 51.2 msec

Maximum = 41.22 G'S at 43.7 msec

UPPER RIB ACCELERATION



NCA Research
09-16-1997 23:17

TEST: DUMMY CALIBRATION - THORAX IMPACT TEST DATE: 09-16-1997 - 23:09

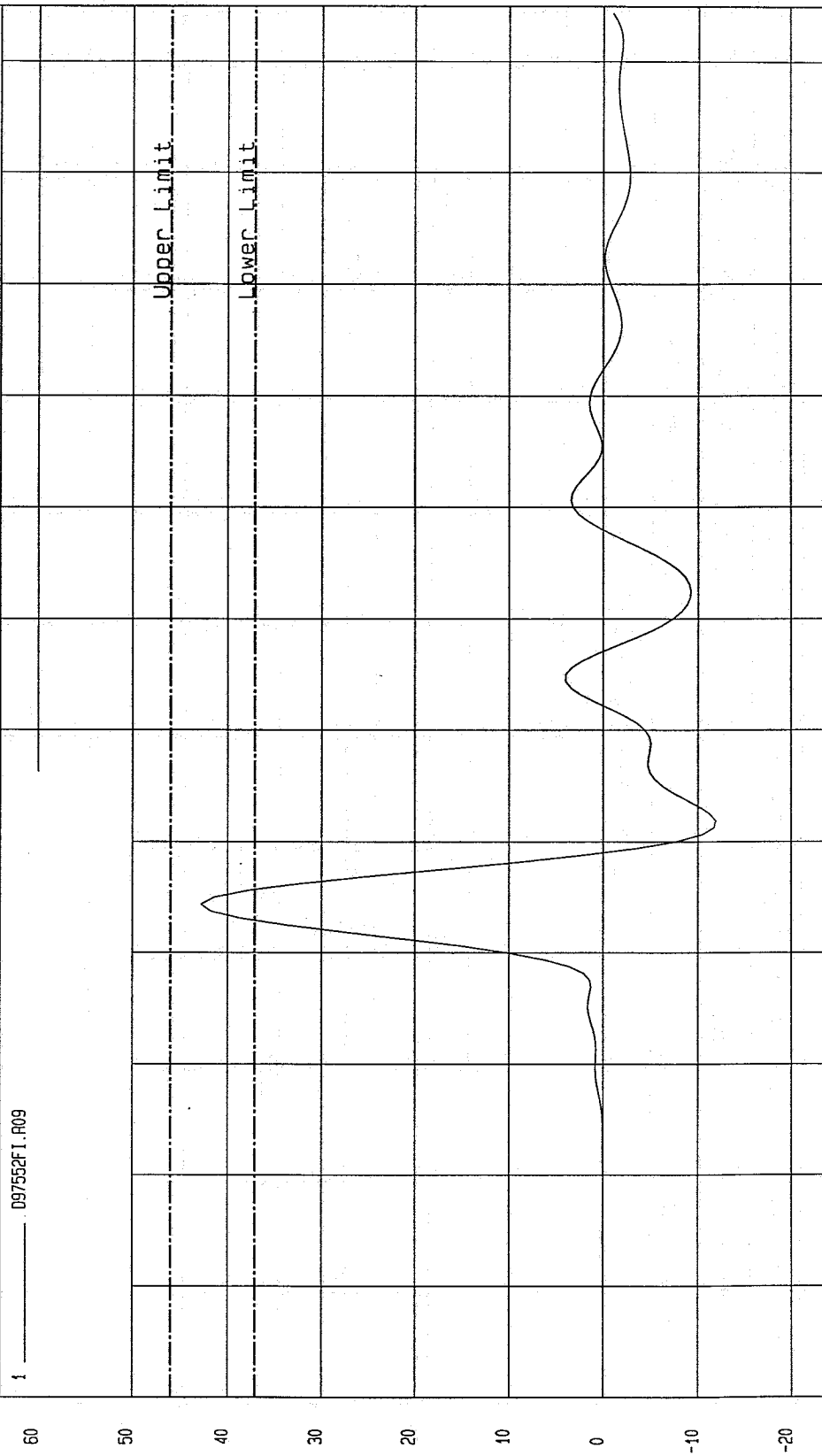
COMPONENT: DUMMY # 269 Velocity: 14.047 FT/SEC 4.28 M/SEC

Minimum = -11.97 G'S at 51.8 msec

Maximum = 42.85 G'S at 44.3 msec

LOWER RIB ACCELERATION

1 _____ 097552F1.R09



MGA Research
09-16-1997 23:17

TEST: DUMMY CALIBRATION - THORAX IMPACT TEST DATE: 09-16-1997 - 23:09

COMPONENT: DUMMY # 269 Velocity: 14.047 FT/SEC 4.28 M/SEC

Minimum = -5.42 G'S at 58.1 msec

LOWER SPINE ACCELERATION

1 _____ 097552F1.R10

Upper Limit

Lower Limit

30

20

10

0

-10

-20

G.S

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

TIME (SECONDS)

WCA Research
09-16-1997 23:18

MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: September 16, 1996

DUMMY NUMBER: 269

TEST NUMBER: D971553

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	50%
PROBE SPEED	14.0 - 14.2 f/s	14.0
PELVIS ACCELERATION	40 - 60 g's	47

TEST MEETS SPECIFICATIONS

TECHNICIAN

Tim W. L.

APPROVED BY

Rene K. K.

TEST: DUMMY CALIBRATION - PELVIS IMPACT TEST DATE: 09-16-1997 - 23:17:11
COMPONENT: DUMMY # 269 Velocity: 14.012 FT/SEC 4.27 M/SEC

Minimum = -8.18 G'S at 55 msec Maximum = 46.95 G'S at 41.8 msec

PELVIS ACCELERATION

1 _____ 097553F1.R11

80

60

40

20

0

-20

G.S

Upper Limit

Lower Limit

0 .01 .02 .03 .04 .05 .06 .07 .08 .09 .1 .11 .12

TIME (SECONDS)

WCA Research
09-16-1997 23:18

MGA RESEARCH CORPORATION
ABDOMINAL COMPRESSION TEST
(PRELOAD = 10 LBS)

SIDE IMPACT DUMMY (SID)

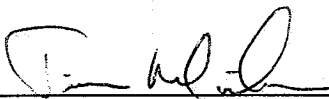
DATE: May 2, 1997

DUMMY NUMBER: 269

TEST NUMBER: D971554

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	22%
FORCE @ 0.5 in	23.3 - 36.5 lbs	35.2
FORCE @ 0.75 in	36.7 - 49.8 lbs	47.6
FORCE @ 1.0 in	50 - 63 lbs	61
FORCE @ 1.3 in	73 - 88 lbs	84

TEST MEETS SPECIFICATIONS

TECHNICIAN 

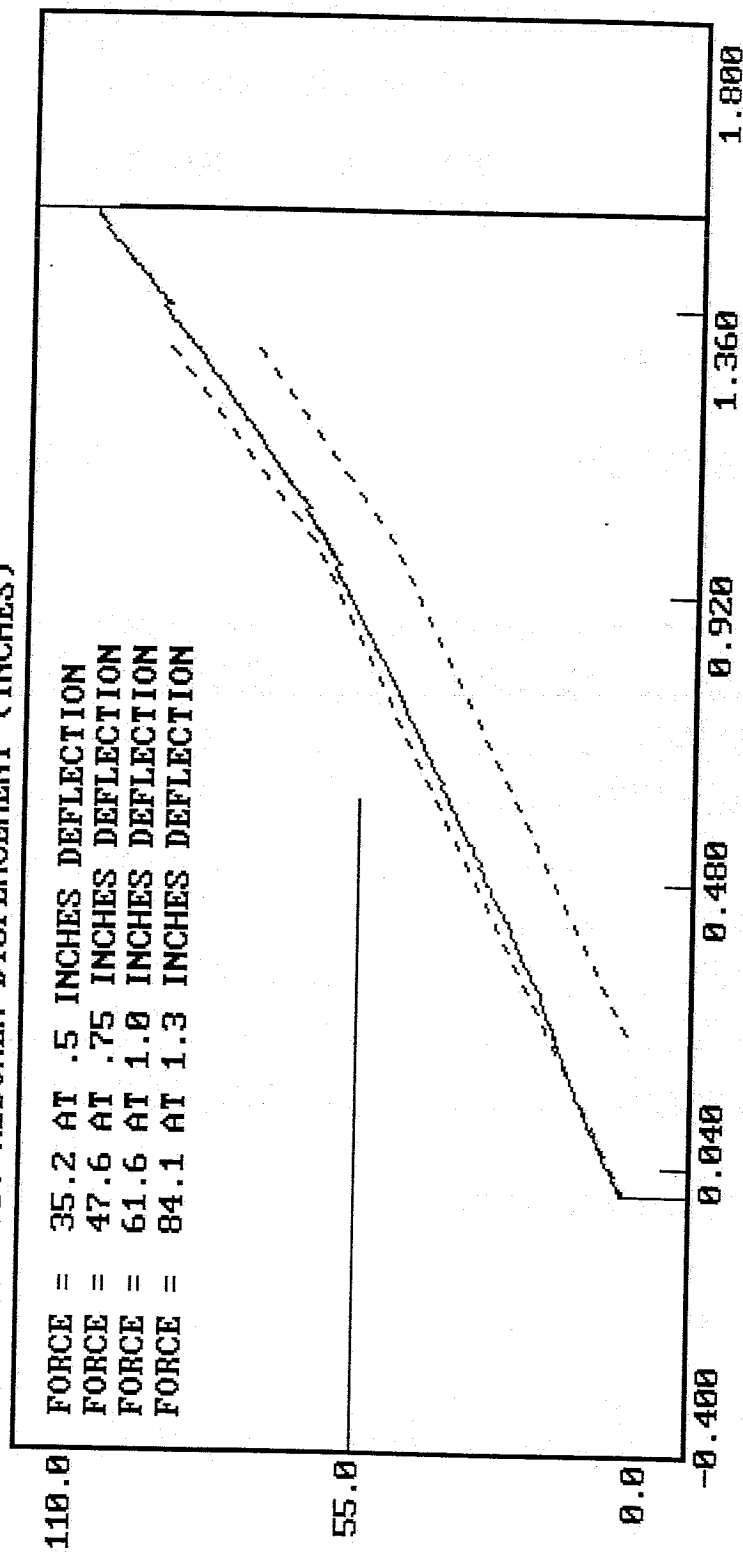
APPROVED BY 

DUMMY CALIBRATION - ABDOMEN COMPRESSION

DUMMY # 269

05-02-1997 11:14

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



IMPACT SPEED = 0.00 FT/SEC

MGA RESEARCH CORPORATION

LUMBAR FLEXION TEST

SIDE IMPACT DUMMY (SID)

DATE: April 24, 1997

DUMMY NUMBER: 269

TEST NUMBER: D971555

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	22%
FORCE @ 0°	0 - 6 lbs	0
FORCE @ 20°	22 - 34 lbs	31
FORCE @ 30°	34 - 46 lbs	41
FORCE @ 40°	46 - 58 lbs	56
RETURN ANGLE	12° maximum	5°

TEST MEETS SPECIFICATIONS

TECHNICIAN _____

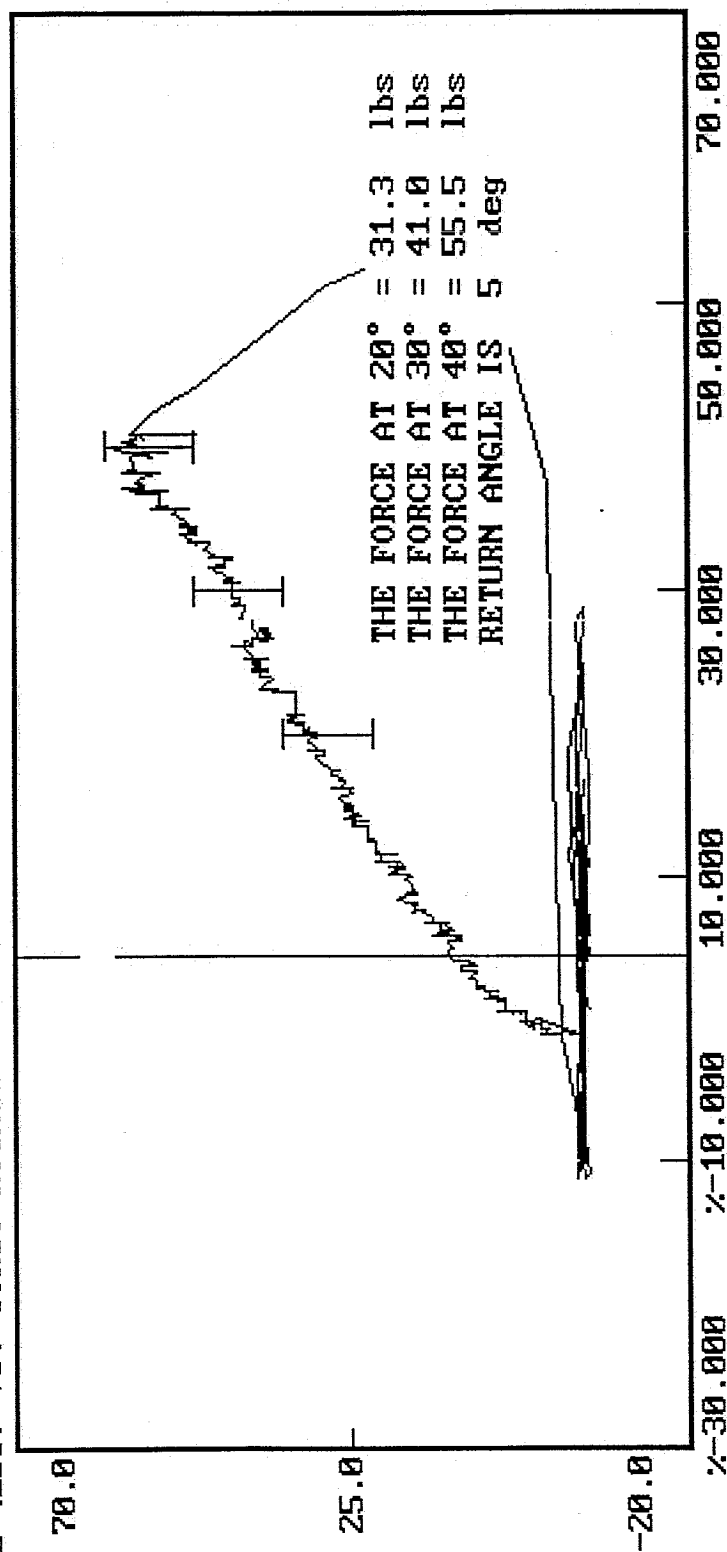
APPROVED BY 

04-24-1997 11:11

DUMMY CALIBRATION - LUMBAR FLEXION

DUMMY # 269

FORCE (LBS) VS. TORSO ROTATION (DEGREES)



IMPACT SPEED = 0.00 FT/SEC

PRE-TEST CERTIFICATION DATA

Rear 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: September 16, 1997

DESCRIPTION	SPECIFICATION	TEST RESULTS
SH - Seated Height	35.0" - 35.8"	35.4
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"	9.4
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:

Jim Welch

APPROVED BY:

Dave Kobake

MGA RESEARCH CORPORATION
THORACIC SHOCK ABSORBER TEST
SIDE IMPACT DUMMY (SID)

DATE: September 15, 1997

DUMMY NUMBER: 270

TEST NUMBER: D97156678

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		66 - 78° F	70°
RELATIVE HUMIDITY		10 - 70%	47%
VELOCITY 10 ft/s	FORCE (lb.)	188 - 253	204
	DISPLACEMENT (in.)	1.18 - 1.38	1.36
VELOCITY 14 ft/s	FORCE (lb.)	389 - 472	394
	DISPLACEMENT (in.)	1.26 - 1.47	1.45
VELOCITY 20 ft/s	FORCE (lb.)	841 - 1000	892
	DISPLACEMENT (in.)	1.30 - 1.57	1.52

TEST MEETS SPECIFICATIONS

TECHNICIAN Tim Walsh

APPROVED BY Rene Korbake

TEST: DUMMY CALIBRATION - DAMPENER BENCH TEST TEST DATE: 09-15-1997 - 12:08

COMPONENT: DUMMY # 270 Velocity: 10 FT/SEC 3.05 M/SEC

Minimum = -13.67 LBS at 13.4 msec

Maximum = 204.45 LBS at 28.0 msec

PEAK FORCE

1 ——— D97566FF.F04 Filterclass (1000)

400

300

200

100

LBS

0

-100

12

11

10

09

08

07

06

05

04

03

02

01

0

TIME (SECONDS)

WGA Research
09-15-1997 12:33

TEST: DUMMY CALIBRATION - DAMPENER BENCH TEST TEST DATE: 09-15-1997 - 12:08

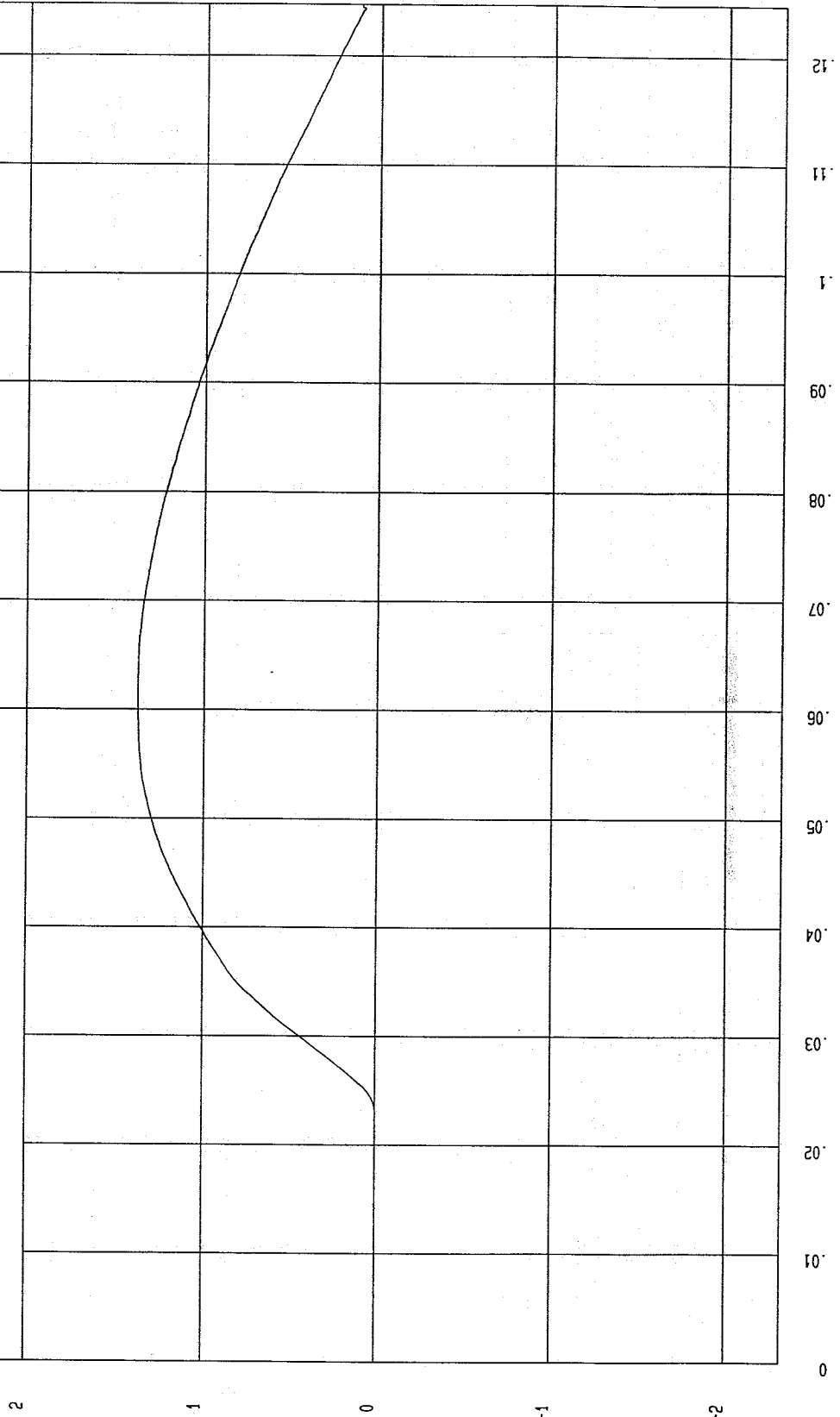
COMPONENT: DUMMY # 270 Velocity: 10 FT/SEC 3.05 M/SEC

Minimum = -8.34E-04 IN at 1.87 msec

Maximum = 1.36 IN at 63.0 msec

PEAK DISPLACEMENT

1 ——— .097566DF.D05 Filterclass (1000)



MCA Research
09-15-1997 12:33

TEST: DUMMY CALIBRATION - DAMPENER BENCH TEST TEST DATE: 09-15-1997 - 12:09

COMPONENT: DUMMY # 270 Velocity: 14 FT/SEC 4.27 M/SEC

Minimum = -371.55 LBS at 111. msec

Maximum = 394.44 LBS at 20.8 msec

PEAK FORCE

1 ——— D97567FF.F04 Filterclass (1000)

600

400

200

0

-200

-400

LBS

0

.01

.02

.03

.04

.05

.06

.07

.08

.09

.1

.11

.12

TIME (SECONDS)

MCA Research
09-15-1997 12:33

TEST: DUMMY CALIBRATION - DAMPENER BENCH TEST TEST DATE: 09-15-1997 - 12: 10

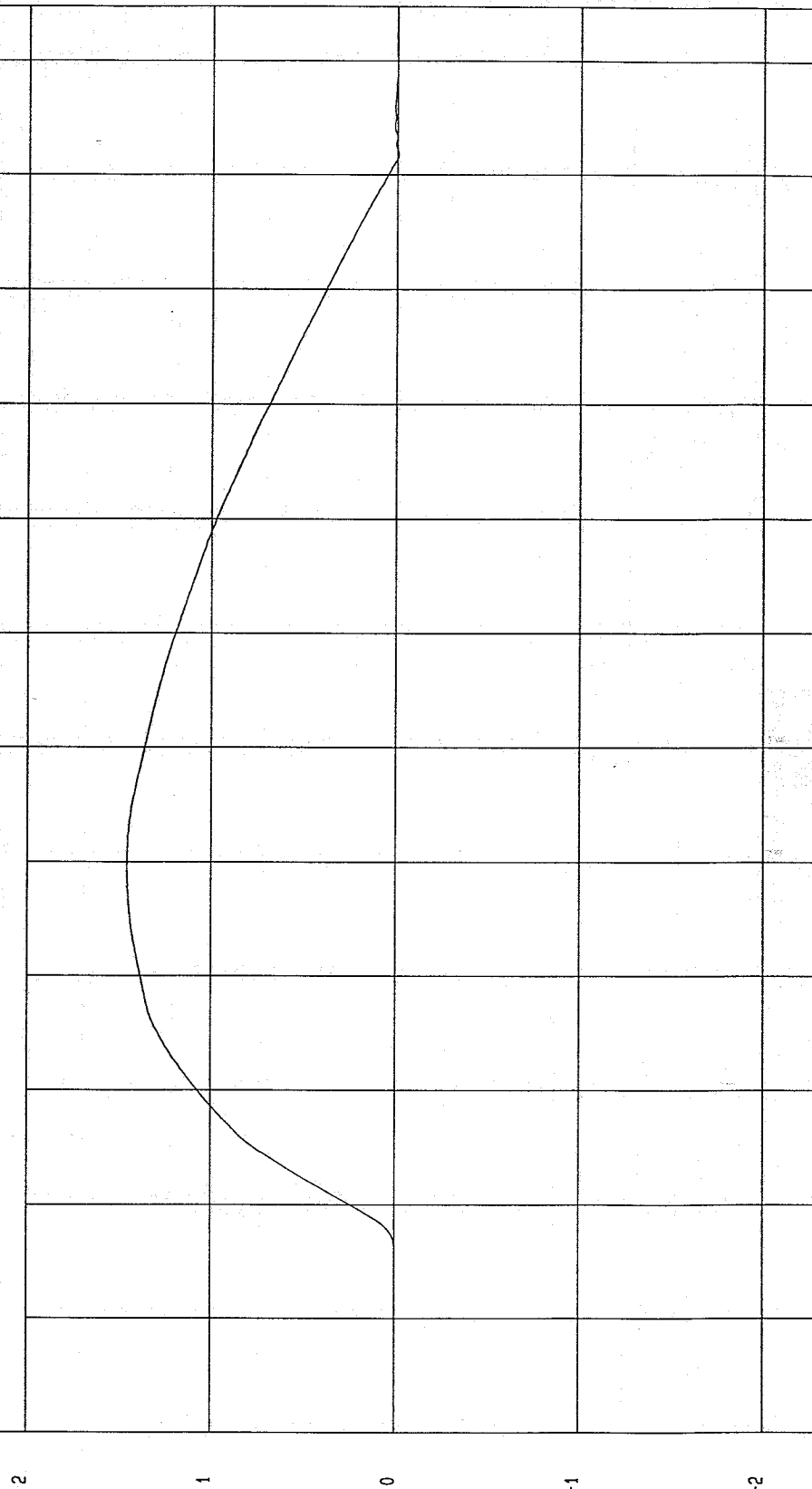
COMPONENT: DUMMY # 270 Velocity: 14 FT/SEC 4.27 M/SEC

Minimum = -6.10E-03 IN at 111. msec

Maximum = 1.45 IN at 49.3 msec

PEAK DISPLACEMENT

1 ——— 0975670F.005 Filterclass (1000)



0 1 2 3 4 5 6 7 8 9 10 11 12

MCA Research
09-15-1997 12:34

TIME (SECONDS)

NI

TEST: DUMMY CALIBRATION - DAMPENER BENCH TEST TEST DATE: 09-15-1997 - 12:30

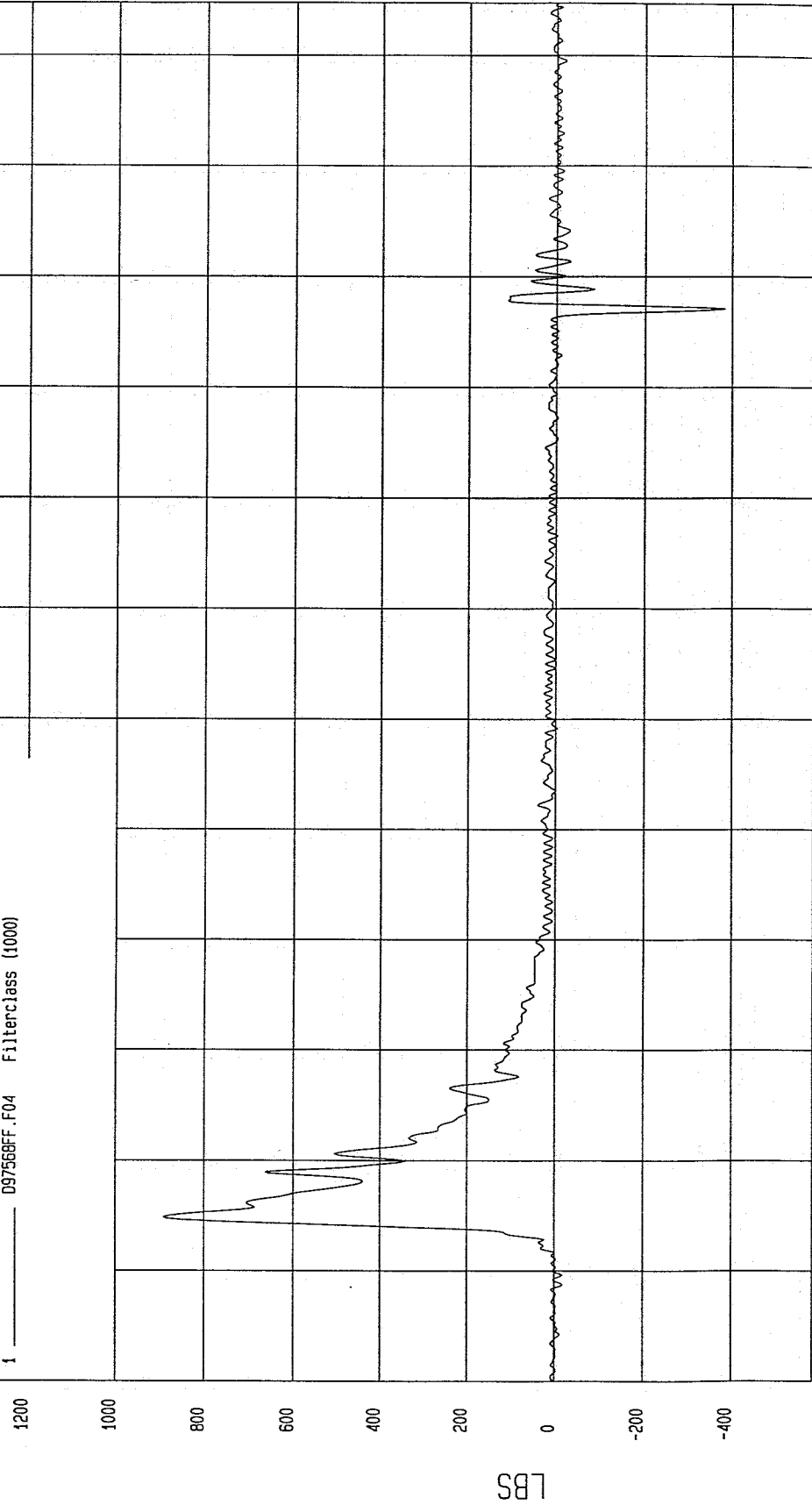
COMPONENT: DUMMY # 270 Velocity: 20 FT/SEC 6.1 M/SEC

Minimum = -383.63 LBS at 97.0 msec

Maximum = 892.42 LBS at 14.8 msec

PEAK FORCE

1 ——— D97568FF.F04 Filterclass (1000)



MGA Research
09-15-1997 12:34

TEST: DUMMY CALIBRATION - DAMPENER BENCH TEST TEST DATE: 09-15-1997 - 12:30

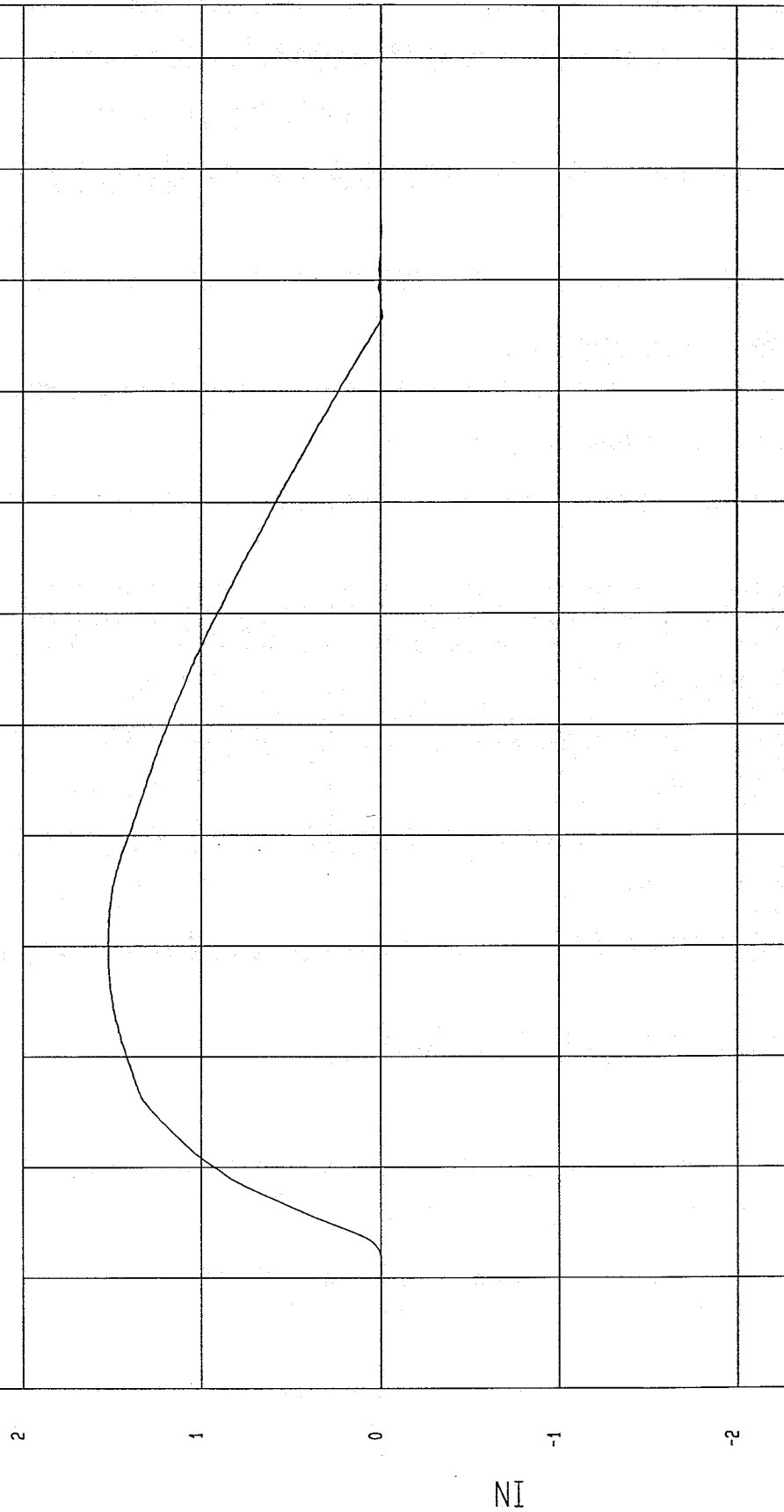
COMPONENT: DUMMY # 270 Velocity: 20 FT/SEC 6.1 M/SEC

Minimum = -9.64E-03 IN at 96.7 msec

Maximum = 1.52 IN at 40.1 msec

PEAK DISPLACEMENT

1 ——— 0975680F.D05 Filterclass (1000)



0 10 20 30 40 50 60 70 80 90 100 110 120

MCA Research
09-15-1997 12:34

TIME (SECONDS)

MGA RESEARCH CORPORATION

THORAX IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: September 16, 1997

DUMMY NUMBER: 270

TEST NUMBER: D971562

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	50%
PROBE SPEED	14.0 - 14.2 fps	14.2
UPPER RIB	37 - 46 g's	38
LOWER RIB	37 - 46 g's	39
LOWER SPINE	15 - 22 g's	21

TEST MEETS SPECIFICATIONS

TECHNICIAN Jim Melch

APPROVED BY Gene Koschake

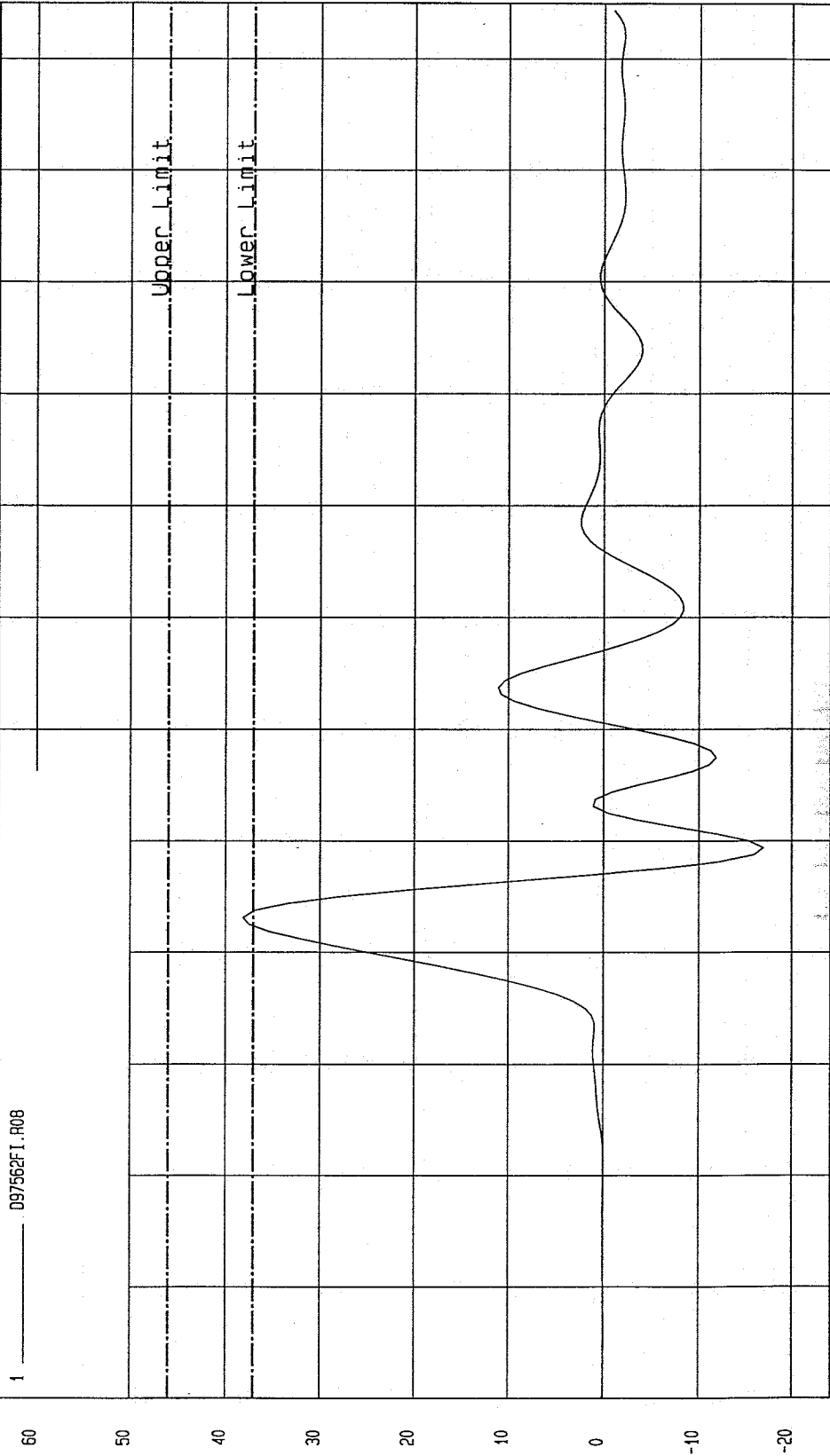
TEST: DUMMY CALIBRATION - THORAX IMPACT TEST DATE: 09-16-1997 - 23:34

COMPONENT: DUMMY # 270 Velocity: 14.186 FT/SEC 4.32 M/SEC

Minimum = -17.01 G'S at 49.3 msec

UPPER RIB ACCELERATION

1 ——— 097562FI.R08



NGA Research
09-16-1997 23:52

TEST: DUMMY CALIBRATION - THORAX IMPACT TEST DATE: 09-16-1997 - 23:34

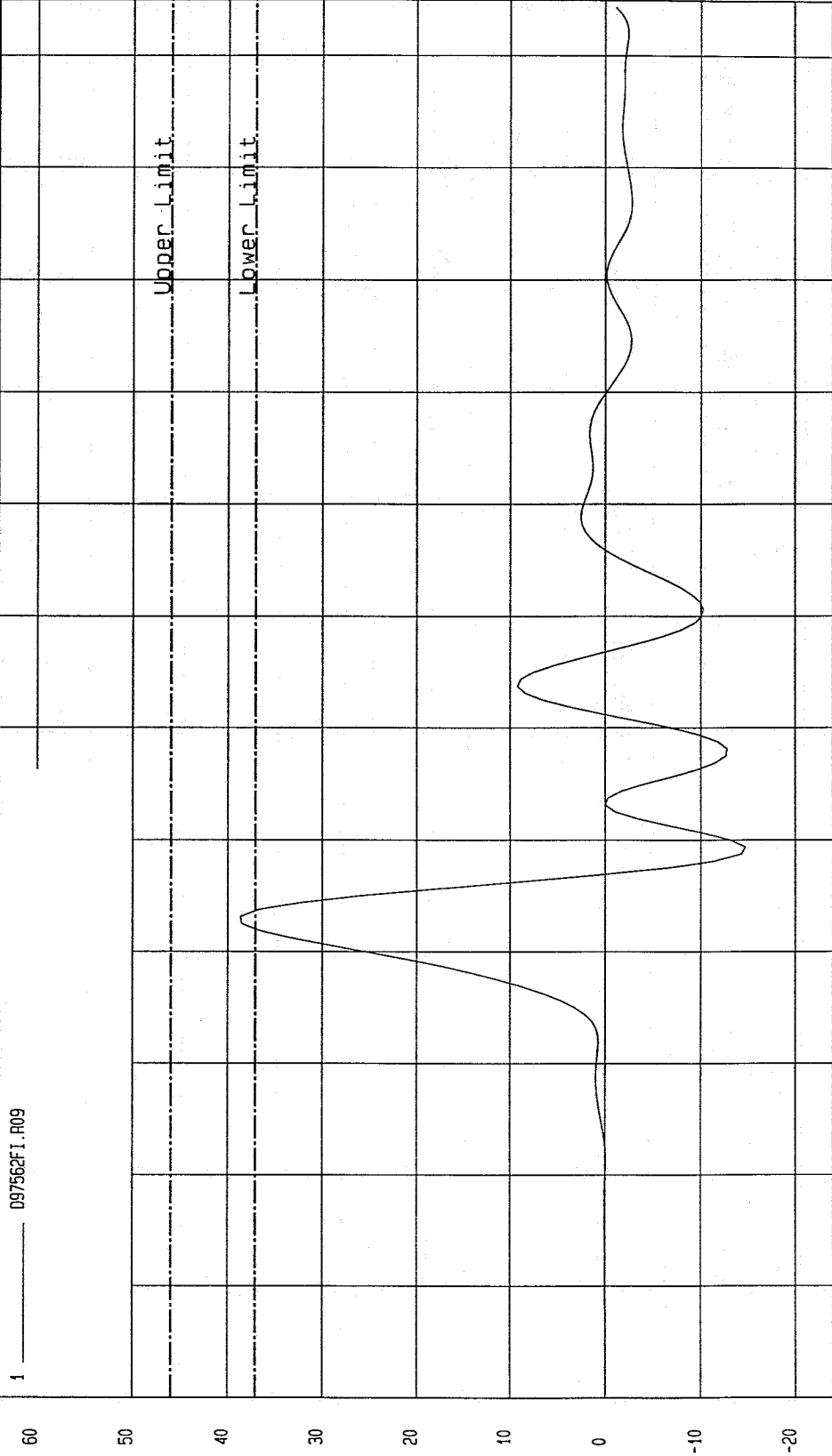
COMPONENT: DUMMY # 270 Velocity: 14.186 FT/SEC 4.32 M/SEC

Minimum = -14.89 G'S at 49.3 msec

Maximum = 38.62 G'S at 43.1 msec

1 _____ D97562F1.R09

LOWER RIB ACCELERATION



MCA Research
09-16-1997 23:53

TEST: DUMMY CALIBRATION - THORAX IMPACT TEST DATE: 09-16-1997 - 23:34

COMPONENT: DUMMY # 270 Velocity: 14.186 FT/SEC 4.32 M/SEC

Minimum = -5.62 G'S at 64.3 msec

Maximum = 21.33 G'S at 47.5 msec

LOWER SPINE ACCELERATION

1 _____ 097562F1.R10

30

20

10

0

-10

-20

G'S

Upper Limit

Lower Limit

.12

.11

.1

.09

.08

.07

.06

.05

.04

.03

.02

.01

0

TIME (SECONDS)

MGA Research
09-16-1997 23:53

MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: September 16, 1997

DUMMY NUMBER: 270

TEST NUMBER: D971563

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	50%
PROBE SPEED	14.0 - 14.2 f/s	14.1
PELVIS ACCELERATION	40 - 60 g's	42

TEST MEETS SPECIFICATIONS

TECHNICIAN Timothy L.

APPROVED BY Paul Korbake

TEST: DUMMY CALIBRATION - PELVIS IMPACT TEST DATE: 09-16-1997 - 23:52

COMPONENT: DUMMY # 270 Velocity: 14.111 FT/SEC 4.3 M/SEC

Minimum = -11.25 G'S at 48.7 msec Maximum = 42.38 G'S at 35.6 msec

PELVIS ACCELERATION

1 _____ 097563FI.R11

80

60

40

20

0

-20

G.S

Upper Limit

Lower Limit

TIME (SECONDS)

.12

.11

.1

.09

.08

.07

.06

.05

.04

.03

.02

.01

0

MGA Research
09-16-1997 23:53

MGA RESEARCH CORPORATION

ABDOMINAL COMPRESSION TEST
(PRELOAD = 10 LBS)

SIDE IMPACT DUMMY (SID)

DATE: May 2, 1997

DUMMY NUMBER: 270

TEST NUMBER: D971564

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	22%
FORCE @ 0.5 in	23.3 - 36.5 lbs	30.6
FORCE @ 0.75 in	36.7 - 49.8 lbs	42.4
FORCE @ 1.0 in	50 - 63 lbs	56
FORCE @ 1.3 in	73 - 88 lbs	70

TEST MEETS SPECIFICATIONS

TECHNICIAN Tim White

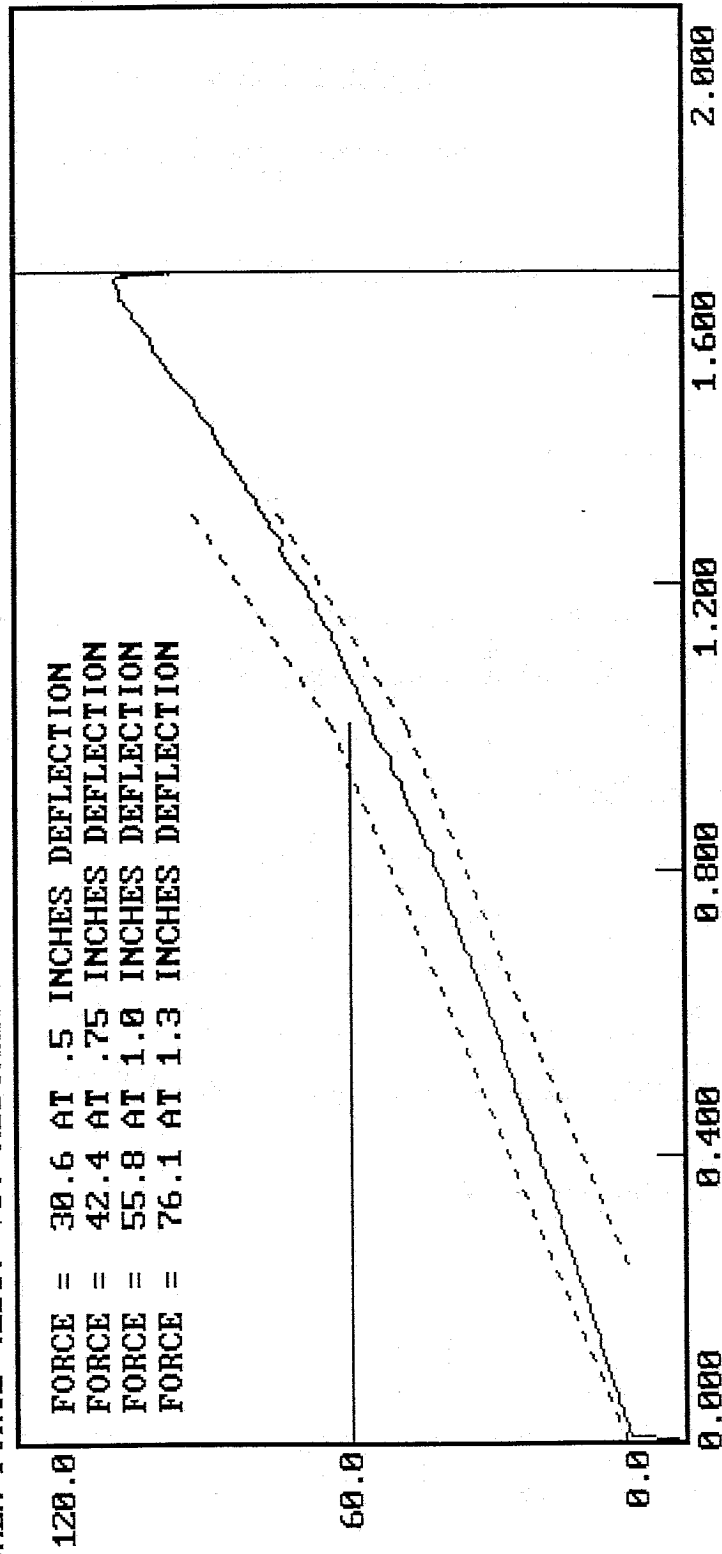
APPROVED BY Dave Korbake

05-02-1997 11:09

DUMMY CALIBRATION - ABDOMEN COMPRESSION

DUMMY # 270

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



MGA RESEARCH CORPORATION

LUMBAR FLEXION TEST

SIDE IMPACT DUMMY (SID)

DATE: April 24, 1997

DUMMY NUMBER: 270

TEST NUMBER: D971565

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	22%
FORCE @ 0°	0 - 6 lbs	0
FORCE @ 20°	22 - 34 lbs	28
FORCE @ 30°	34 - 46 lbs	41
FORCE @ 40°	46 - 58 lbs	55
RETURN ANGLE	12° maximum	1°

TEST MEETS SPECIFICATIONS

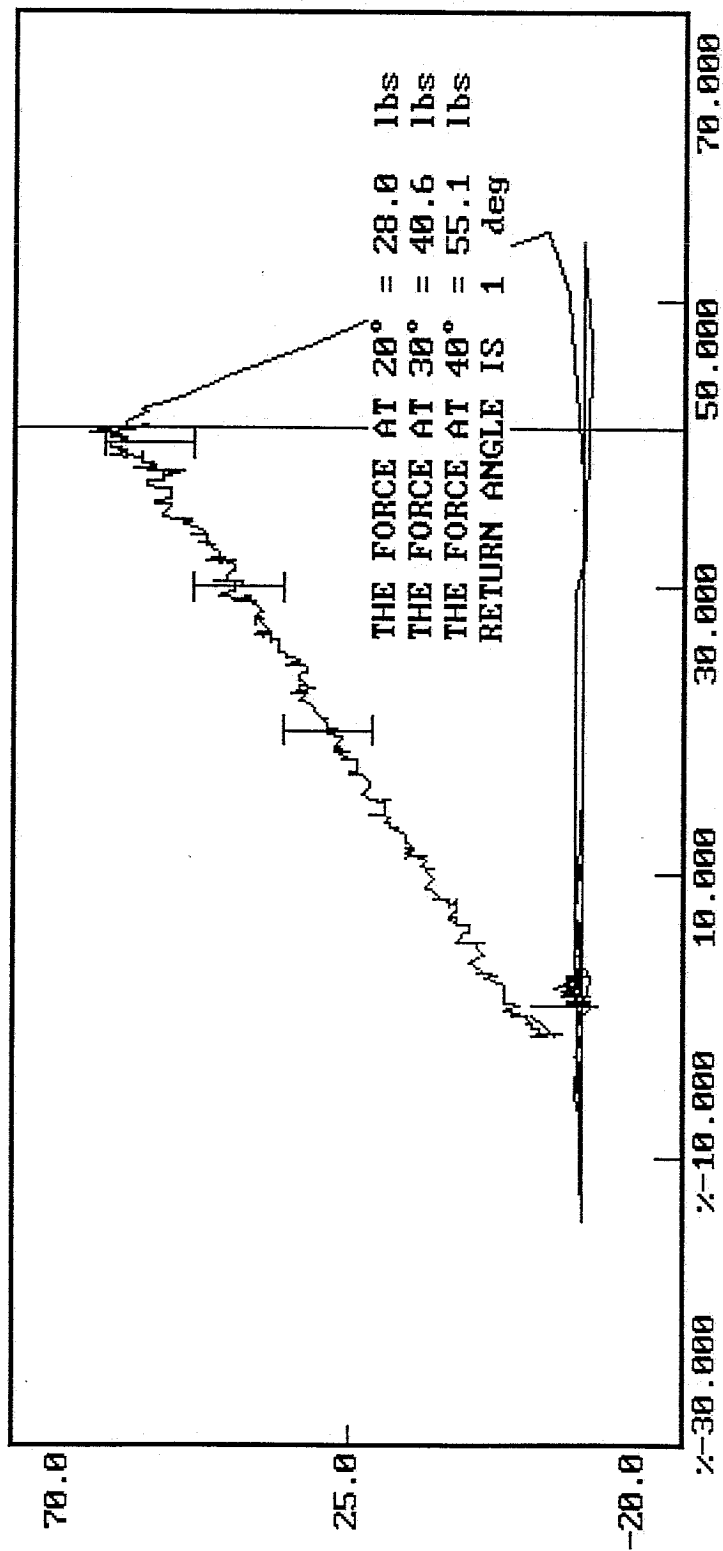
TECHNICIAN

Tim White

APPROVED BY

Paul Koabake

DUMMY CALIBRATION - LUMBAR FLEXION
 DUMMY # 270
 04-24-1997 10:54
 FORCE (LBS) VS. TORSO ROTATION (DEGREES)



IMPACT SPEED = 0.00 FT/SEC

1- 10-10-10-10-10-10

POST-TEST CERTIFICATION DATA

Front 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 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.

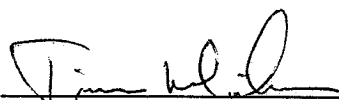
SIDE IMPACT DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

DUMMY NO.: 269

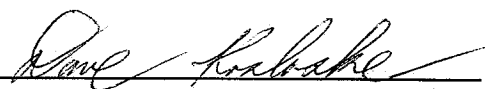
DATE OF VERIFICATION: September 30, 1997

DESCRIPTION	SPECIFICATION	TEST RESULTS
SH - Seated Height	35.0" - 35.8"	35.2
RH - Rib Height	19.75" - 20.50"	20.20
HP - Hip Pivot Height	3.9" ref.	3.9
RD - Rib From Back Line	9.0" to 9.5"	9.3
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: September 30, 1997

DUMMY NUMBER: 269

TEST NUMBER: D971662

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	38%
PROBE SPEED	14.0 - 14.2 fps	14.1
UPPER RIB	37 - 46 g's	45
LOWER RIB	37 - 46 g's	45
LOWER SPINE	15 - 22 g's	22

TEST MEETS SPECIFICATIONS

TECHNICIAN

Tim H. L.

APPROVED BY

Gene Kralak

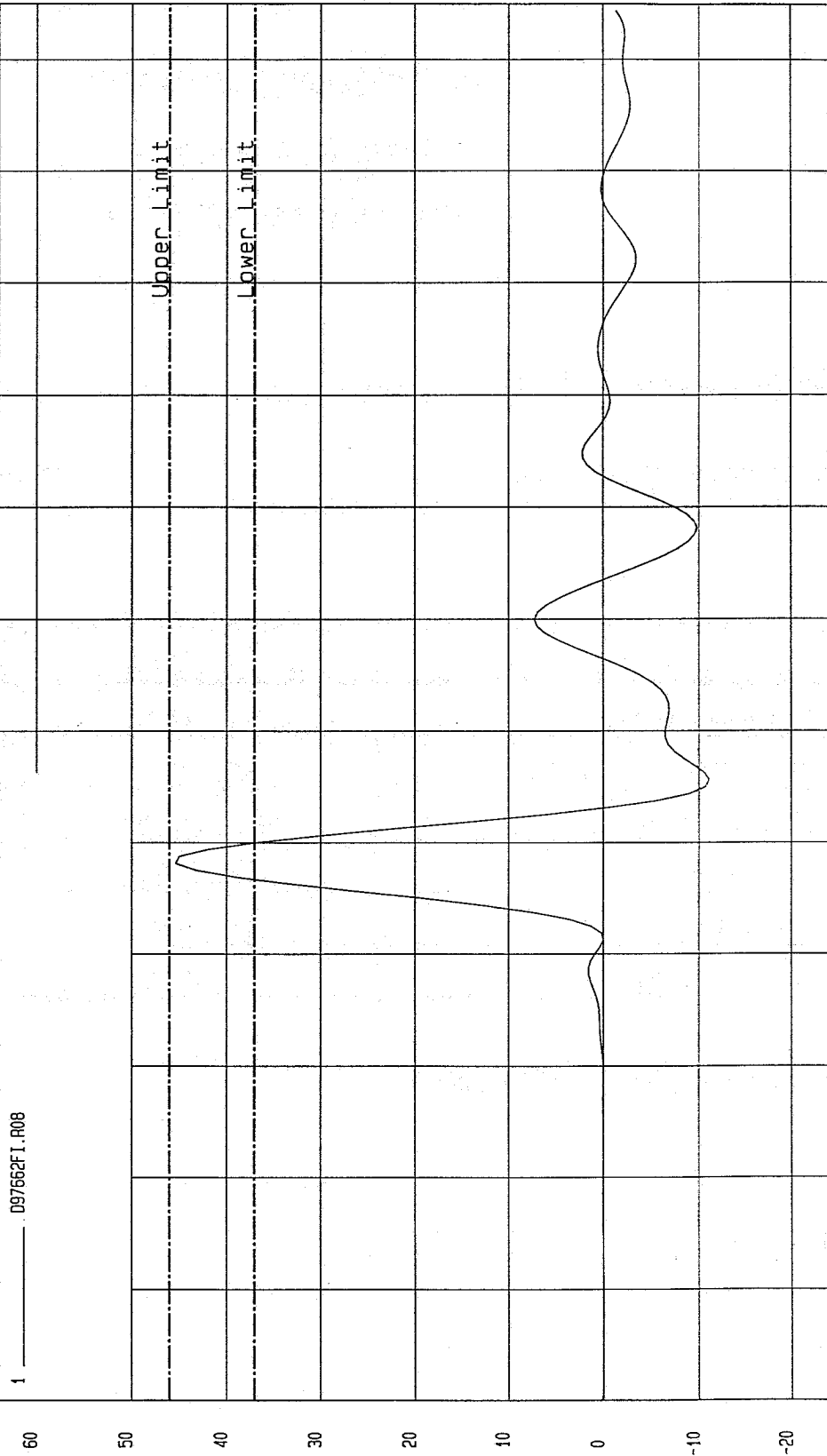
TEST: DUMMY CALIBRATION - THORAX IMPACT TEST DATE: 09-30-1997 - 22:22

COMPONENT: DUMMY # 269 Velocity: 14.115 FT/SEC 4.3 M/SEC

Minimum = -11.18 G'S at 55.6 msec Maximum = 45.35 G'S at 48.1 msec

UPPER RIB ACCELERATION

1 ——— D97662FI.R08



MCA Research
09-30-1997 22:35

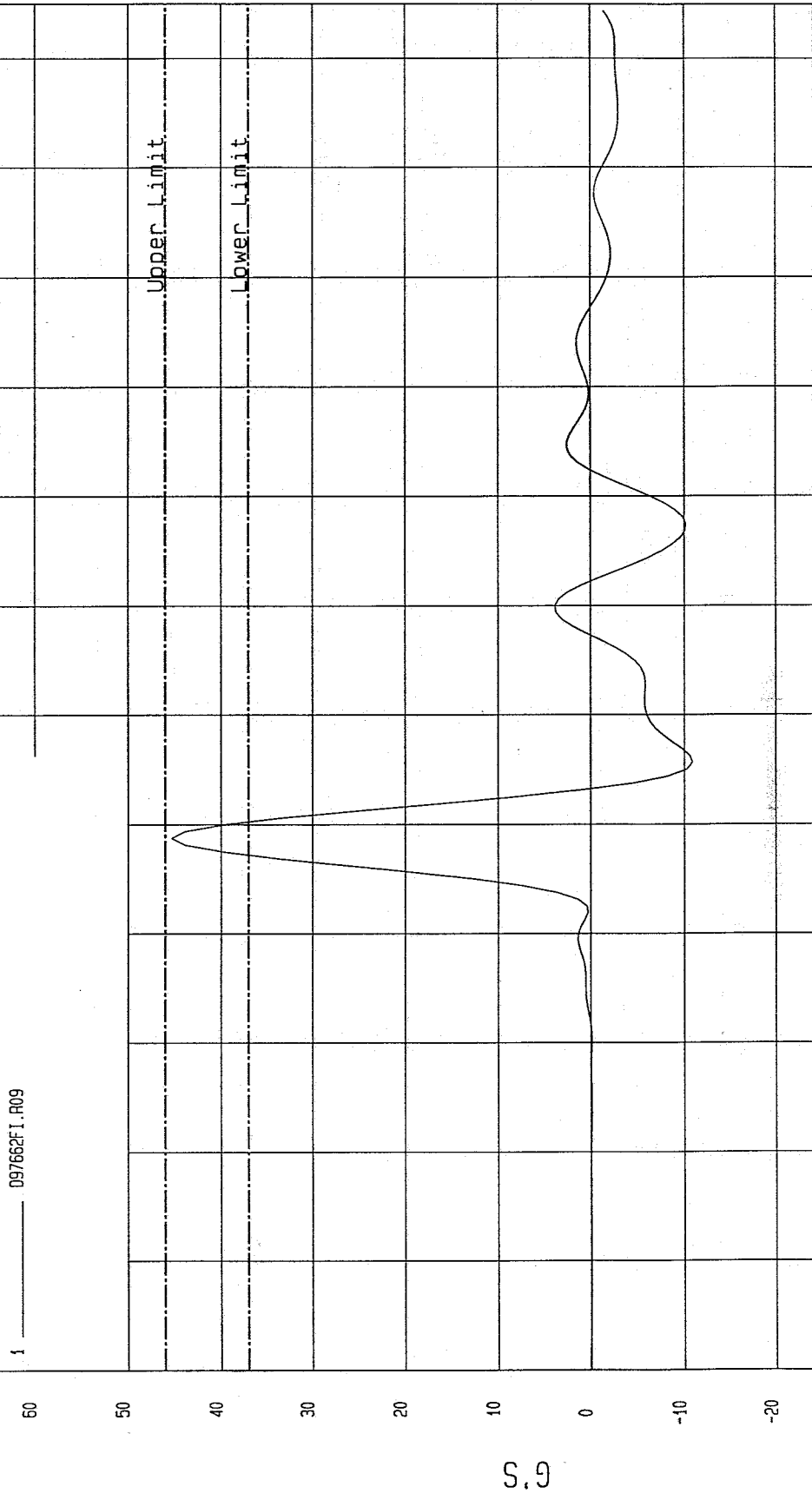
TIME (SECONDS)

TEST: DUMMY CALIBRATION - THORAX IMPACT TEST DATE: 09-30-1997 - 22:22

COMPONENT: DUMMY # 269 Velocity: 14.115 FT/SEC 4.3 M/SEC

Minimum = -10.93 G'S at 55.6 msec Maximum = 45.33 G'S at 48.7 msec

LOWER RIB ACCELERATION



TIME (SECONDS)

MGA Research
09-30-1997 22:36

TEST: DUMMY CALIBRATION - THORAX IMPACT TEST DATE: 09-30-1997 - 22:22

COMPONENT: DUMMY # 269

Velocity: 14.115 FT/SEC 4.3 M/SEC

Minimum = -6.11 G'S at 83.1 msec

Maximum = 21.78 G'S at 53.7 msec

LOWER SPINE ACCELERATION

1 _____ D97662F1.R10

30

20

10

0

-10

-20

G.S

Upper Limit

Lower Limit

TIME (SECONDS)

NSA Research
09-30-1997 22:36

MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: September 30, 1997

DUMMY NUMBER: 269

TEST NUMBER: D971663

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	38%
PROBE SPEED	14.0 - 14.2 f/s	14.1
PELVIS ACCELERATION	40 - 60 g's	45

TEST MEETS SPECIFICATIONS

TECHNICIAN Tim Kell

APPROVED BY Rene Korbake

TEST: DUMMY CALIBRATION - PELVIS IMPACT TEST DATE: 09-30-1997 - 22:35:27

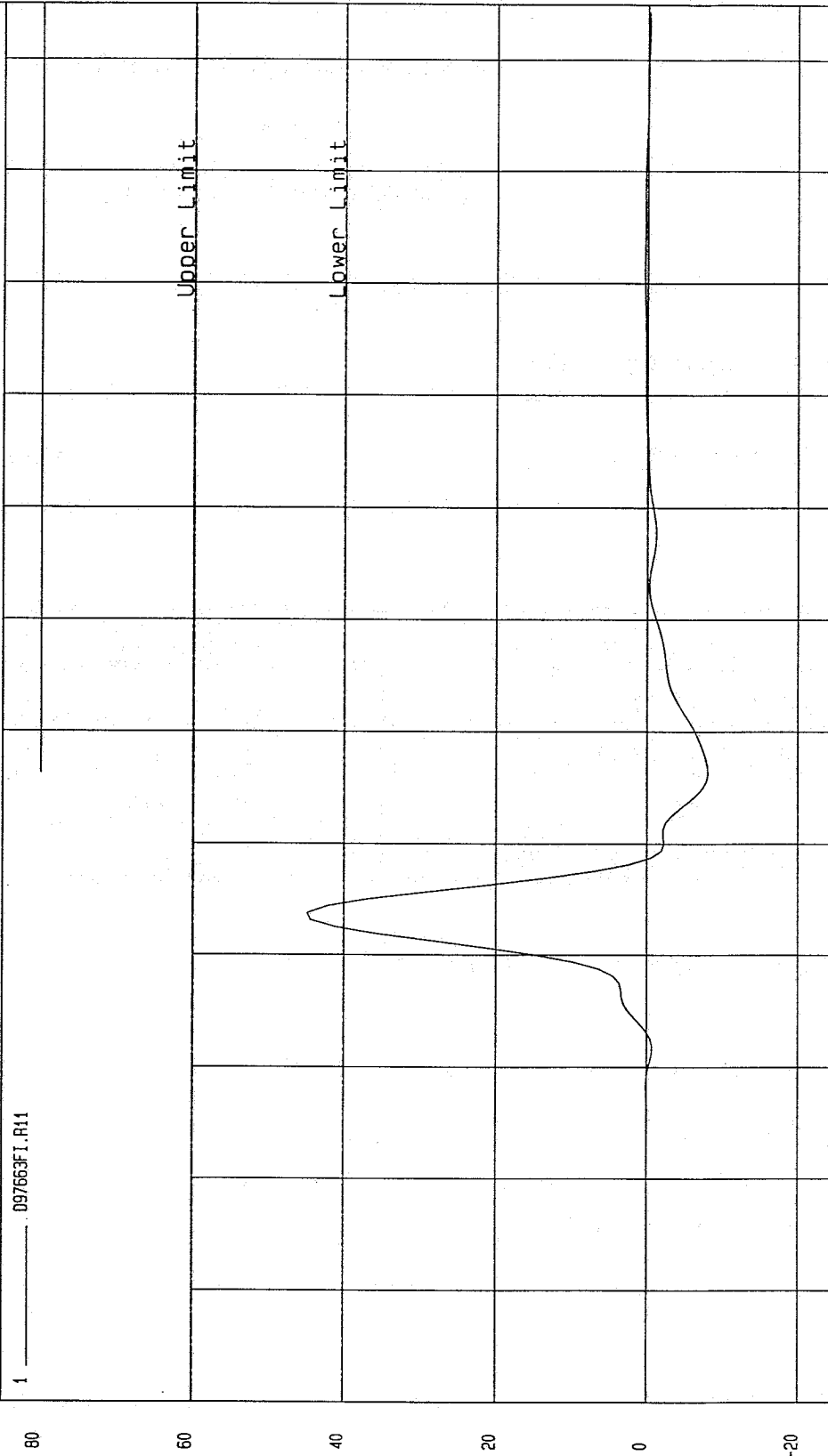
COMPONENT: DUMMY # 269 Velocity: 14.09 FT/SEC 4.29 M/SEC

Minimum = -8.10 G'S at 56.2 msec

Maximum = 44.96 G'S at 43.7 msec

PELVIS ACCELERATION

1 ——— .09763FI.R11



TIME (SECONDS)

NCA Research
09-30-1997 22:36

MGA RESEARCH CORPORATION

ABDOMINAL COMPRESSION TEST
(PRELOAD = 10 LBS)

SIDE IMPACT DUMMY (SID)

DATE: September 30, 1997

DUMMY NUMBER: 269

TEST NUMBER: D971664

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	36%
FORCE @ 0.5 in	23.3 - 36.5 lbs	34.6
FORCE @ 0.75 in	36.7 - 49.8 lbs	47.6
FORCE @ 1.0 in	50 - 63 lbs	62
FORCE @ 1.3 in	73 - 88 lbs	83

TEST MEETS SPECIFICATIONS

TECHNICIAN

Jim Helton

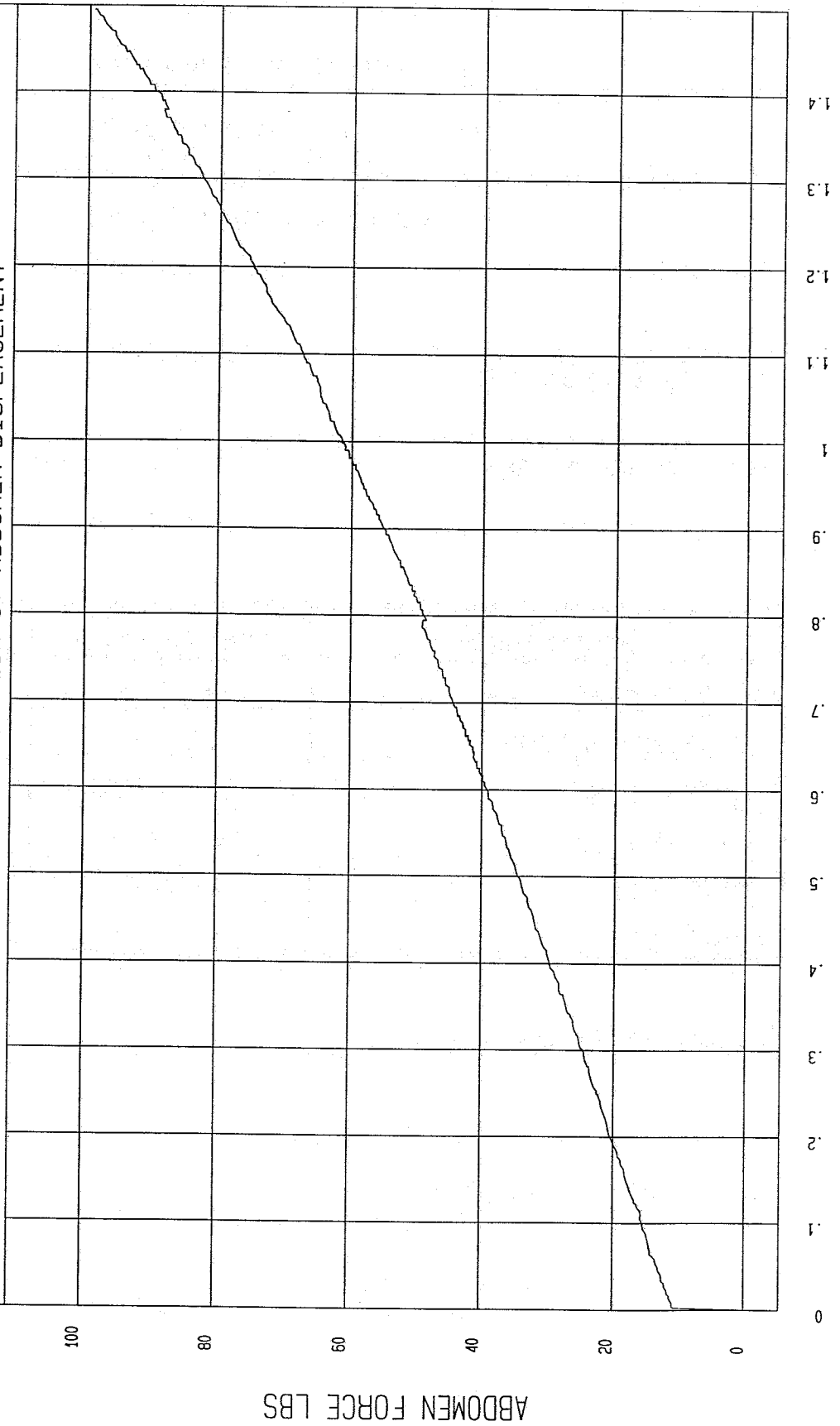
APPROVED BY

Don Koelke

TEST: DUMMY CALIBRATION - ABDOMEN COMPRESSION TEST DATE: 09-30-1997 - 14:28

COMPONENT: DUMMY # 269

ABDOMEN FORCE as a function of ABDOMEN DISPLACEMENT



NSA Research
09-30-1997 14:45

ABDOMEN DISPLACEMENT INCHES

MGA RESEARCH CORPORATION

LUMBAR FLEXION TEST

SIDE IMPACT DUMMY (SID)

DATE: September 30, 1997

DUMMY NUMBER: 269

TEST NUMBER: D971665

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	36%
FORCE @ 0°	0 - 6 lbs	0
FORCE @ 20°	22 - 34 lbs	23
FORCE @ 30°	34 - 46 lbs	36
FORCE @ 40°	46 - 58 lbs	52
RETURN ANGLE	12° maximum	6°

TEST MEETS SPECIFICATIONS

TECHNICIAN

Tim W. L.

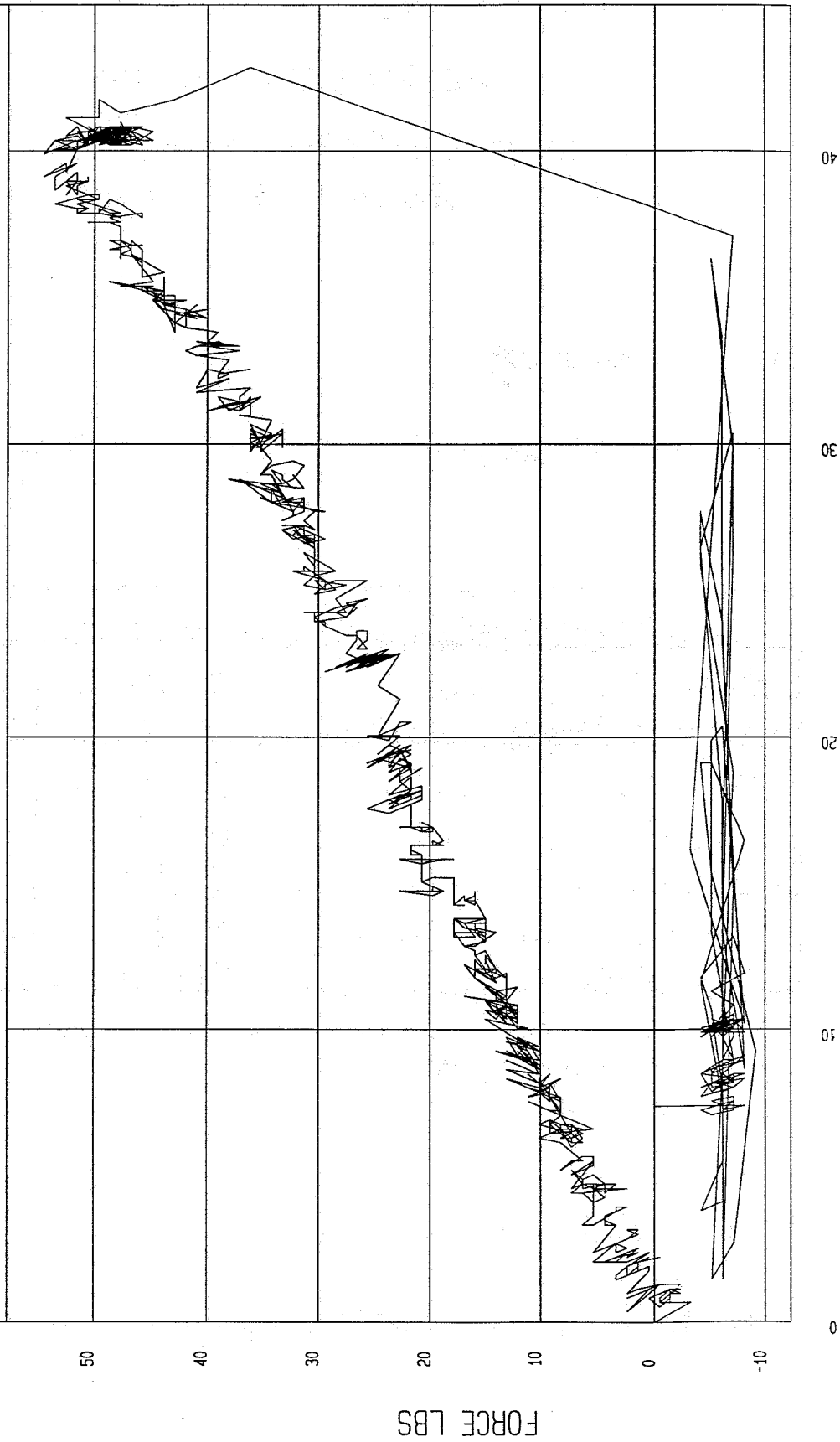
APPROVED BY

Dave Kabeke

TEST: DUMMY CALIBRATION - LUMBAR FLEXION TEST DATE: 09-30-1997 - 15:00

COMPONENT: DUMMY # 269

FORCE as a function of TORSO ROTATION



MGA Research
09-30-1997 15:19

TORSO ROTATION DEGREES

POST-TEST CERTIFICATION DATA

Rear 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 did not pass 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: September 30, 1997

DESCRIPTION	SPECIFICATION	TEST RESULTS
SH - Seated Height	35.0" - 35.8"	35.4
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"	9.4
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 W. L.

APPROVED BY: Dave Korbke

MGA RESEARCH CORPORATION

THORAX IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: September 30, 1997

DUMMY NUMBER: 270

TEST NUMBER: D971672

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	38%
PROBE SPEED	14.0 - 14.2 fps	14.0
UPPER RIB	37 - 46 g's	36*
LOWER RIB	37 - 46 g's	35*
LOWER SPINE	15 - 22 g's	19

* Failed-Does not meet specifications

TEST MEETS SPECIFICATIONS

TECHNICIAN Tim Hill

APPROVED BY Paul Korbake

TEST: DUMMY CALIBRATION - THORAX IMPACT TEST DATE: 09-30-1997 - 22:50

COMPONENT: DUMMY # 270 Velocity: 14.049 FT/SEC 4.28 M/SEC

Minimum = -10.44 G'S at 58.1 msec

UPPER RIB ACCELERATION

1 _____ D97672F1.R08

60

50

40

30

20

10

0

-10

-20

G.S

Upper Limit

Lower Limit

12

11

10

09

08

07

06

05

04

03

02

01

0

TIME (SECONDS)

NCA Research
09-30-1997 23:18

TEST: DUMMY CALIBRATION - THORAX IMPACT TEST DATE: 09-30-1997 - 22:50

COMPONENT: DUMMY # 270

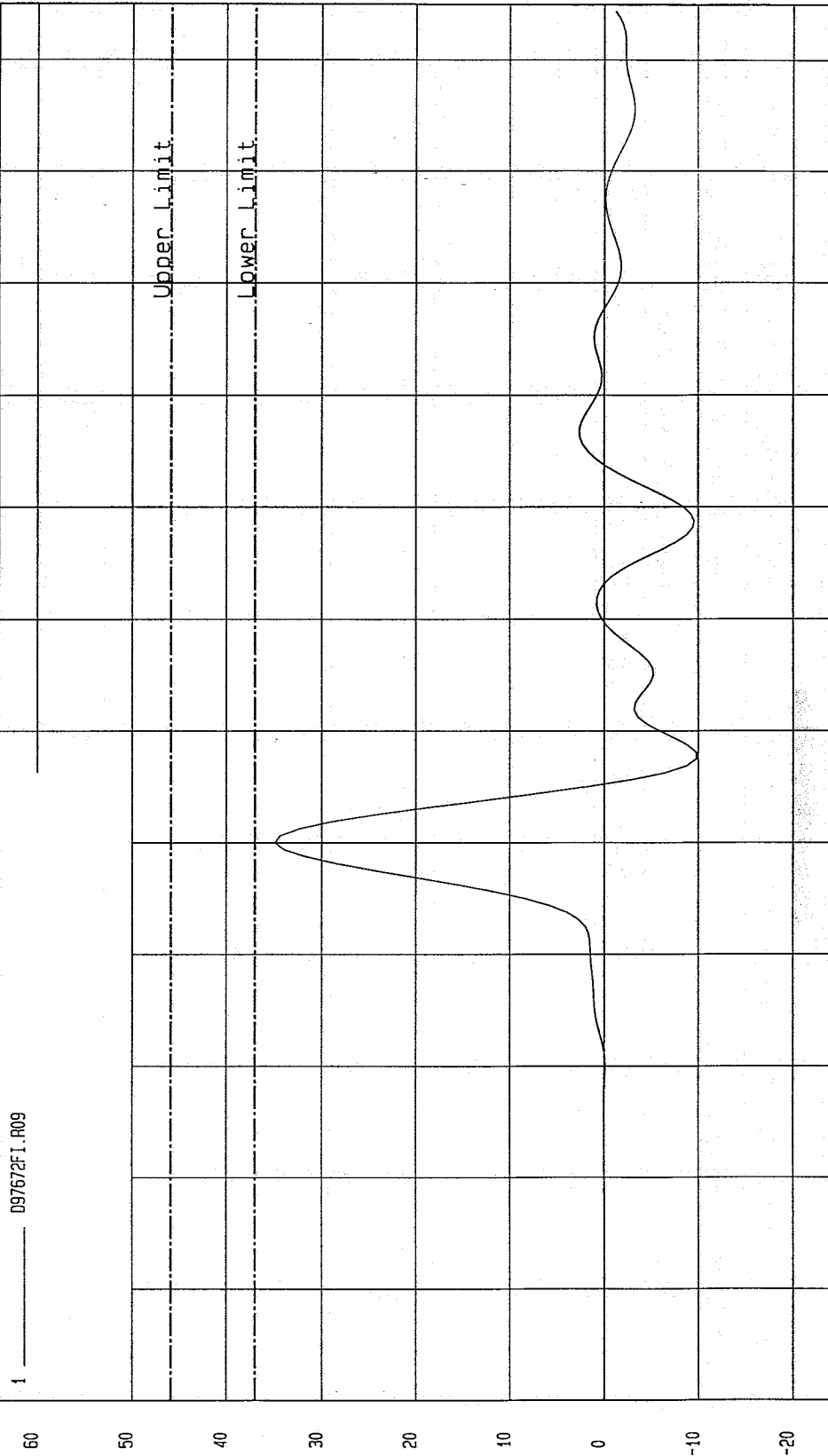
Velocity: 14.049 FT/SEC 4.28 M/SEC

Minimum = -9.80 G'S at 57.5 msec

Maximum = 34.97 G'S at 50 msec

LOWER RIB ACCELERATION

1 _____ D97672FI.R09



TIME (SECONDS)

MSA Research
09-30-1997 23:18

TEST: DUMMY CALIBRATION - THORAX IMPACT TEST DATE: 09-30-1997 - 22:50

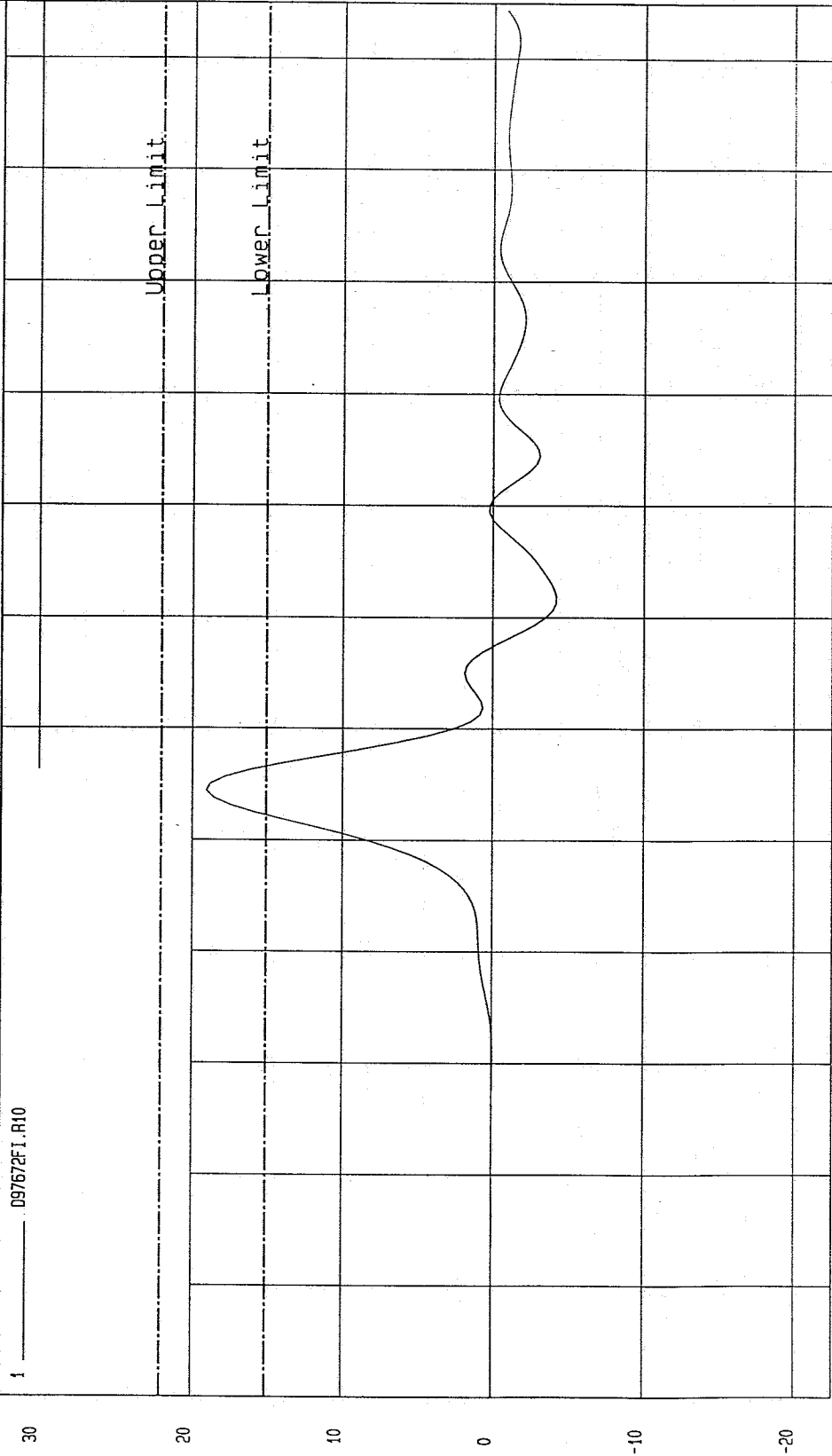
COMPONENT: DUMMY # 270 Velocity: 14.049 FT/SEC 4.28 M/SEC

Minimum = -4.31 G'S at 71.8 msec

Maximum = 19.06 G'S at 54.3 msec

1 _____ D97672F1.R10

LOWER SPINE ACCELERATION



MGA Research
09-30-1997 23:18

MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: September 30, 1997

DUMMY NUMBER: 270

TEST NUMBER: D971673

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	38%
PROBE SPEED	14.0 - 14.2 f/s	14.1
PELVIS ACCELERATION	40 - 60 g's	45

TEST MEETS SPECIFICATIONS

TECHNICIAN Tim White

APPROVED BY Rene Kozloske

TEST: DUMMY CALIBRATION - PELVIS IMPACT TEST DATE: 09-30-1997 - 23:17

COMPONENT: DUMMY # 270 Velocity: 14.069 FT/SEC 4.29 M/SEC

Minimum = -9.22 G'S at 51.2 msec
Maximum = 44.58 G'S at 38.7 msec

PELVIS ACCELERATION

1 _____ 097673F1.R11

80

60

Upper Limit

40

Lower Limit

20

G.S

0

-20

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

TIME (SECONDS)

MGA Research
09-30-1997 23:18

MGA RESEARCH CORPORATION

ABDOMINAL COMPRESSION TEST
(PRELOAD = 10 LBS)

SIDE IMPACT DUMMY (SID)

DATE: September 30, 1997

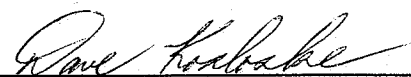
DUMMY NUMBER: 270

TEST NUMBER: D971674

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	36%
FORCE @ 0.5 in	23.3 - 36.5 lbs	30.7
FORCE @ 0.75 in	36.7 - 49.8 lbs	42.8
FORCE @ 1.0 in	50 - 63 lbs	56
FORCE @ 1.3 in	73 - 88 lbs	75

TEST MEETS SPECIFICATIONS

TECHNICIAN 

APPROVED BY 

TEST: DUMMY CALIBRATION - ABDOMEN COMPRESSION TEST DATE: 09-30-1997 ~ 14:43

COMPONENT: DUMMY # 270

ABDOMEN FORCE as a function of ABDOMEN DISPLACEMENT

80

ABDOMEN FORCE LBS

60

40

20

0

1.4

1.3

1.2

1.1

1.0

0.9

0.8

0.7

0.6

0.5

0.4

0.3

0.2

0.1

0

ABDOMEN DISPLACEMENT INCHES

MGA Research
09-30-1997 14:45

MGA RESEARCH CORPORATION

LUMBAR FLEXION TEST

SIDE IMPACT DUMMY (SID)

DATE: September 30, 1997

DUMMY NUMBER: 270

TEST NUMBER: D971675

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	36%
FORCE @ 0°	0 - 6 lbs	0
FORCE @ 20°	22 - 34 lbs	24
FORCE @ 30°	34 - 46 lbs	39
FORCE @ 40°	46 - 58 lbs	48
RETURN ANGLE	12° maximum	2°

TEST MEETS SPECIFICATIONS

TECHNICIAN

Tim Wilson

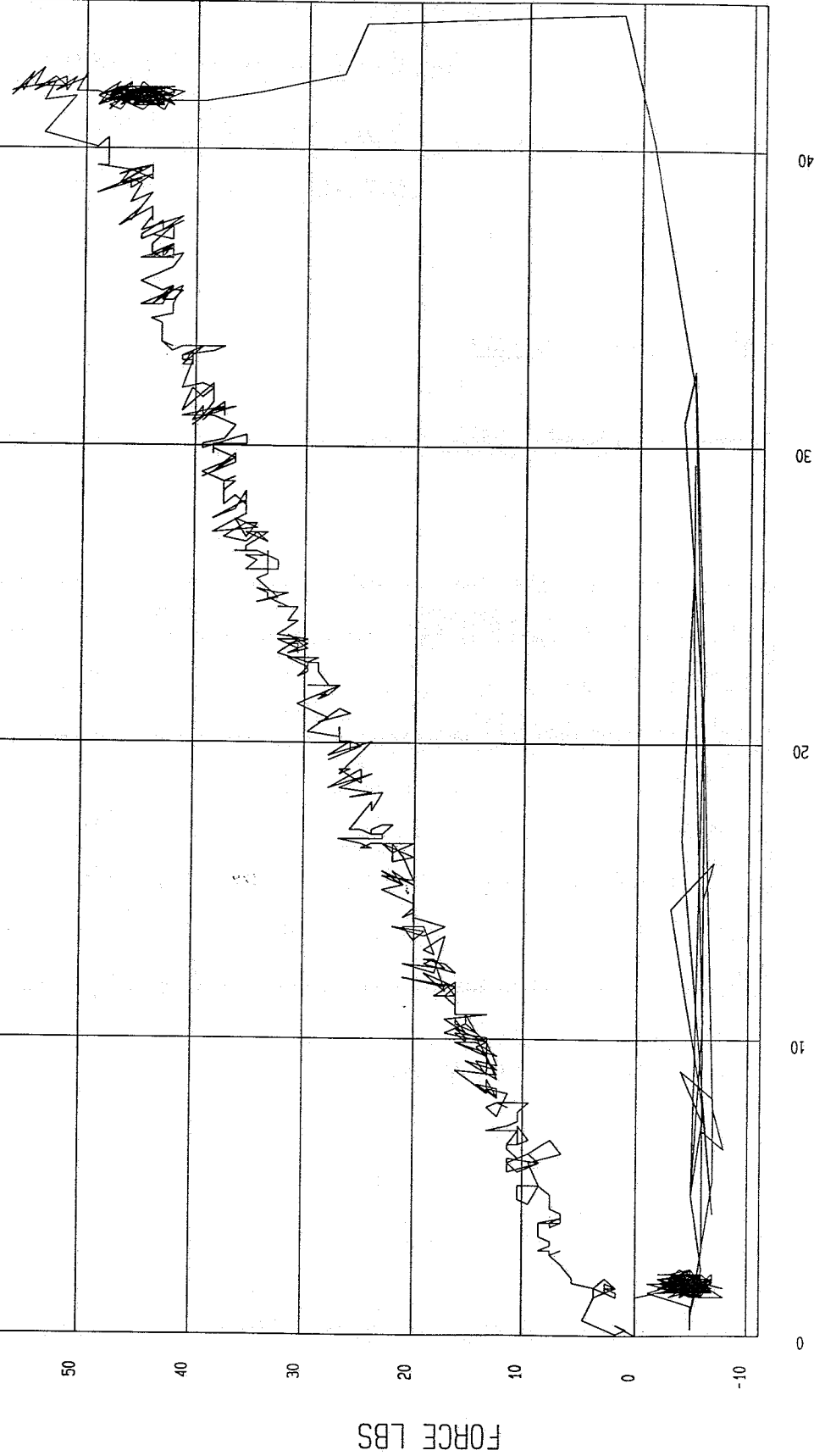
APPROVED BY

Dave Kosloske

TEST: DUMMY CALIBRATION - LUMBAR FLEXION TEST DATE: 09-30-1997 - 15:17

COMPONENT: DUMMY # 270

FORCE as a function of TORSO ROTATION



MGA Research
09-30-1997 15:19

TORSO ROTATION DEGREES

POST-TEST DRIVER DUMMY INSPECTION CHECKLIST

Type: Side Impact Dummy

Serial Number: 269

Inspected By: Tim Michnay

Date: September 30, 1997

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

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

POST-TEST PASSENGER DUMMY INSPECTION CHECKLIST

Type: Side Impact Dummy

Serial Number: 270

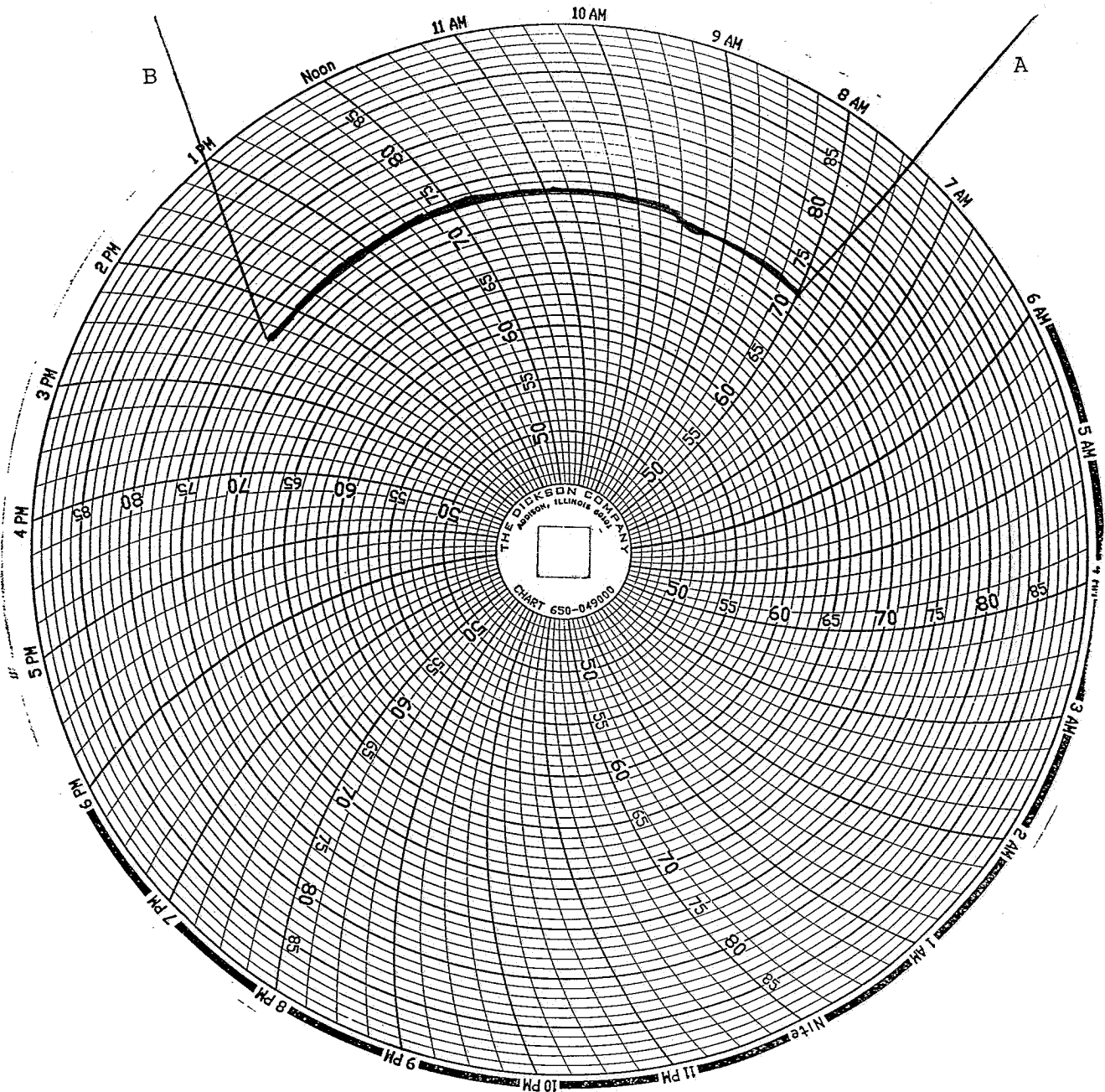
Inspected By: Tim Michnay

Date: September 30, 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	Foam torn from rivets on rib wrap on non-impact side. -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. 269

	DRIVER		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Upper Rib Y	AKAC4	Endevco	August 6, 1997
Lower Rib Y	J10431	Endevco	August 5, 1997
Lower Spine Y	AGP28	Endevco	September 15, 1997
Pelvis Y	AJ9P7	Endevco	August 6, 1997
Upper Rib Redundant Y	J13642	Endevco	August 6, 1997
Lower Rib Redundant Y	AN9E3	Endevco	August 5, 1997
Lower Spine Redundant Y	AJ8T5	Endevco	September 15, 1997
Pelvis Redundant Y	AJ462	Endevco	August 6, 1997
Head X	AJ9E5	Endevco	August 5, 1997
Head Y	ALFA7	Endevco	August 5, 1997
Head Z	AHTT3	Endevco	August 5, 1997

INSTRUMENTS FOR PASSENGER DUMMY NO. 270

LEFT REAR PASSENGER			
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Upper Rib Y	AKAF3	Endevco	September 16, 1997
Lower Rib Y	ALEC1	Endevco	September 15, 1997
Lower Spine Y	ALCH7	Endevco	September 16, 1997
Pelvis Y	AJ9P6	Endevco	September 11, 1997
Upper Rib Redundant Y	ALCN9	Endevco	September 16, 1997
Lower Rib Redundant Y	J10411	Endevco	September 15, 1997
Lower Spine Redundant Y	AJ420	Endevco	September 16, 1997
Pelvis Redundant Y	AJ9A7	Endevco	September 11, 1997
Head X	AN8R0	Endevco	September 11, 1997
Head Y	AN8P8	Endevco	September 11, 1997
Head Z	AN8M5	Endevco	September 11, 1997

VEHICLE INSTRUMENT CALIBRATION

	VEHICLE ACCELEROMETERS		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Moving Barrier CG X	J04-F10	Entran	August 7, 1997
Moving Barrier CG Y	F11-G04	Entran	August 7, 1997
Moving Barrier CG Z	J04-F12	Entran	August 7, 1997
Moving Barrier Rear Axle X	G13-B07	Entran	August 6, 1997
Moving Barrier Rear Axle Y	L14-D04	Entran	August 4, 1997
Left Mid A-Post Y	F20-G07	Entran	August 7, 1997
Left Lower A-Post Y	G13-B15	Entran	August 5, 1997
Left Mid B-Post Y	B14-R01	Entran	August 1, 1997
Left Lower B-Post Y	B13-Z05	Entran	August 1, 1997
Rear Floorpan Above Axle X	J23-E13	Entran	August 1, 1997
Rear Floorpan Above Axle Y	E24-G10	Entran	July 2, 1997
Rear Floorpan Above Axle Z	H07-A05	Entran	August 1, 1997
Driver Seat Track Y	F11-G01	Entran	July 11, 1997
Right Side Sill at Front Seat X	I25-J16	Entran	August 7, 1997
Right Side Sill at Front Seat Y	E10-F07	Entran	August 6, 1997
Right Side Sill at Front Seat Z	F20-G09	Entran	August 7, 1997
Right Side Sill at Rear Seat X	F12-G06	Entran	July 14, 1997
Right Side Sill at Rear Seat Y	F12-G04	Entran	July 14, 1997
Right Side Sill at Rear Seat Z	D05-R10	Entran	July 14, 1997
Left Side Sill at Front Seat Y	C25-A06	Entran	July 2, 1997

VEHICLE INSTRUMENT CALIBRATION

	VEHICLE ACCELEROMETERS		
	SERIAL NO	MANUFACTURER	CALIBRATION DATE
Left Side Sill at Rear Seat Y	L14-D05	Entran	July 2, 1997
Right Rear Occupant Compartment Y	G19-G08	Entran	August 4, 1997
Vehicle CG X	H02-J05	Entran	August 6, 1997
Vehicle CG Y	L18-E02	Entran	August 6, 1997
Vehicle CG Z	H02-J02	Entran	August 6, 1997
Left Front Door on Centerline	G19-G12	Entran	August 1, 1997
Left Front Door Upper Centerline	D05-R08	Entran	August 1, 1997
Midrear of Left Rear Door	MGA095	Entran	June 12, 1997
Left Rear Door Upper Centerline	J23-E16	Entran	August 4, 1997

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