

NEW CAR ASSESSMENT PROGRAM
SIDE IMPACT TESTING
PASSENGER CARS

1997 SUBARU LEGACY AWD
4-DOOR SEDAN

NHTSA NO: MV5500

MGA PROVING GROUNDS
5000 WARREN ROAD
BURLINGTON, WI 53105



Test Date: February 18, 1997

Report Date: March 10, 1997

FINAL REPORT

Prepared For:

U.S. DEPARTMENT OF TRANSPORTATION
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ROOM 5313, NPS-10
400 SEVENTH STREET, SW
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Prepared By: *Hans Hauschild*
Hans Hauschild, Project Engineer

Approved By: *John Fleck*
John Fleck, Facility Director

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FINAL REPORT ACCEPTED BY (OCWS):

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15. Supplementary Notes															
16. Abstract A 90° Moving Deformable Barrier NCAP side impact was conducted on the subject 1997 Subaru Legacy AWD 4-Door to obtain new car assessment and research data indicant of FMVSS No. 214D performance. The test was conducted at MGA Research Corporation in Burlington, Wisconsin, on February 18, 1997. The impact velocity of the Moving Deformable Barrier (MDB) was 61.6 kph, and the ambient temperature at the struck side (driver's) of the target vehicle at the time of impact was 22 °C. The target vehicle post test maximum crush was 415 mm at level 3. No valid passenger dummy response data were available. The test vehicle's performance follows: <u>DRIVER</u> <table border="0"> <tr> <td>Left Upper Rib (LUR) Accel., g</td> <td>84.5</td> </tr> <tr> <td>Left Lower Rib (LLR) Accel., g</td> <td>81.2</td> </tr> <tr> <td>Lower Spine (T₁₂) Accel., g</td> <td>92.2</td> </tr> <tr> <td>Thoracic Trauma Index (TTI)</td> <td>88.4</td> </tr> <tr> <td>Pelvis (PEV) Accel., g</td> <td>130.8</td> </tr> </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.						Left Upper Rib (LUR) Accel., g	84.5	Left Lower Rib (LLR) Accel., g	81.2	Lower Spine (T ₁₂) Accel., g	92.2	Thoracic Trauma Index (TTI)	88.4	Pelvis (PEV) Accel., g	130.8
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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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TABLE OF CONTENTS

<u>Section</u>		<u>Page No.</u>
1	PURPOSE AND TEST PROCEDURE	1-1
2	SUMMARY OF SIDE IMPACT TEST	2-1
3	SIDE IMPACT DUMMY (SID) AND VEHICLE TEST DATA	3-1
4	OCCUPANT AND VEHICLE INFORMATION	4-1
APPENDIX A	PHOTOGRAPHS	
APPENDIX B	VEHICLE AND SID RESPONSE DATA	
APPENDIX C	SID CONFIGURATION AND PERFORMANCE VERIFICATION	
APPENDIX D	TEST EQUIPMENT LIST AND CALIBRATION INFORMATION	

SECTION 1
PURPOSE AND TEST PROCEDURE

This side impact test is part of the FY97 NCAP Side Impact Program, sponsored by the National Highway Traffic Safety Administration (NHTSA), under Contract No. DTNH22-93-C-02047. The purpose of this test was to evaluate side impact protection of a 1997 Subaru Legacy AWD 4-Door.

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

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

SECTION 2

SUMMARY OF SIDE IMPACT TEST

A 1997 Subaru Legacy AWD 4-Door was impacted on the left or driver's side by a Moving Deformable Barrier (MDB) which was moving forward in a 27° crabbed position to the tow road guidance system at a velocity of 38.3 mph (61.6 kph). The target vehicle was stationary and was positioned at an angle of 63° to the line of forward motion. The side impact test was conducted by MGA Research Corporation in Burlington, Wisconsin, on February 18, 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)

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)	88.4	No valid data
Pelvis (g)	130.8	No valid data

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

DATA SHEET NO. 1
GENERAL VEHICLE TEST PARAMETER DATA

TEST VEHICLE INFORMATION:

Year/Make/Model/Body Style: 1997/Subaru/Legacy/AWD/4-Door
Vehicle NHTSA No.: MV5500 VIN: 4S3BD435XV7211264
Vehicle Body Color: White Build Date: 12/96
Engine Data: 4 Cylinders; CID; 2.2 Liter; cc
Placement X Longitudinal; Lateral
Transmission: 4 Speed; Manual; X Automatic; Overdrive
Final Drive: Rear Wheel Drive; Frt. Wheel Drive; X Four Wheel Drive

Odometer Reading 100 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): 32 Psi FRONT
30 Psi REAR
Recommended Tire Size: P185/70/R14
Tires on Test Vehicle: P185/70/R14 Manufacturer: Bridgestone

Vehicle Capacity Data:

Number of Occupants: 2 Front; 3 Rear; 3rd Seat, 5 Total
Type of Front Seats: X Bucket; Bench; Split Bench
Type of Front Seat Back: Fixed; X Adjustable with X Lever
Vehicle Maximum Capacity Loading = 385.5 kg (A)
No. of Occupants x 68.04 kg. = 340.2 kg (B)
Cargo Capacity (A-B) = 45.3 kg

GENERAL VEHICLE TEST PARAMETER DATA (Cont'd)

WEIGHT OF TEST VEHICLE WITH MAXIMUM FLUIDS:

Right Front	=	<u>372.3</u> kg	Right Rear	=	<u>293.9</u> kg
Left Front	=	<u>385.5</u> kg	Left Rear	=	<u>303.4</u> kg
TOTAL FRONT	=	<u>757.8</u> kg	TOTAL REAR	=	<u>597.3</u> kg
% of Total Vehicle Weight	=	<u>55.9</u> %;	% of Total Weight	=	<u>44.1</u> %
TOTAL WEIGHT	=	<u>1355.1</u> kg			

GENERAL VEHICLE TEST PARAMETER DATA (Cont'd)

Year/Make/Model/Body Style: 1997/Subaru/Legacy/AWD/4-Door

Vehicle NHTSA No.: MV5500 Test Date: February 18, 1997

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Total Test Vehicle Delivered Weight with Maximum Fluids	= <u>1355.1</u> kg
Cargo Carrying Capacity of Test Vehicle	= <u>45.3</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>1561.8</u> kg

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

Right Front	= <u>380.5</u> kg	Right Rear	= <u>347.4</u> kg
Left Front	= <u>437.6</u> kg	Left Rear	= <u>396.3</u> kg
TOTAL FRONT	= <u>818.1</u> kg	TOTAL REAR	= <u>743.7</u> kg
% of Total Weight	= <u>52.4</u> %	% of Total Weight	= <u>47.6</u> %
TOTAL TEST WEIGHT	= <u>1561.8</u> kg		

TEST VEHICLE ATTITUDE:

CURB WEIGHT ATTITUDE:

Right Front 672 mm Left Front 676 mm Right Rear 667 mm Left Rear 660 mm

FULLY LOADED WEIGHT ATTITUDE:

Right Front 661 mm Left Front 656 mm Right Rear 638 mm Left Rear 621 mm

TEST ATTITUDE:

Right Front 655 mm Left Front 657 mm Right Rear 647 mm Left Rear 629 mm

GENERAL VEHICLE TEST PARAMETER DATA (Cont'd)

Test Vehicle Wheelbase: 2632 mm

C.G.(as tested) = 1205 mm rearward of front wheel centerline

TOTAL VEHICLE LENGTH:

Right Side = 4330 mm

Centerline = 4578 mm

Left Side = 4330 mm

GENERAL VEHICLE TEST PARAMETER DATA (Cont'd)

Year/Make/Model/Body Style: 1997/Subaru/Legacy/AWD/4-Door

Vehicle NHTSA No.: MV5500 Test Date: February 18, 1997

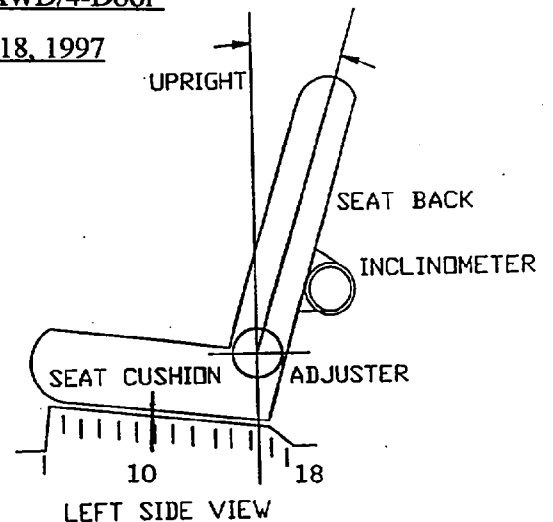
FRONT SEAT CUSHION PLACEMENT:

Total Length of Adjustment Travel: 230 mm

Test Position: 10th notch of 18 total

FRONT SEAT BACK ADJUSTMENT POSITION:

Seat Back Angle = 4th locking position



SECOND POSITION SEAT:

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

Seat Back Adjustment Position: Non-adjustable

ADJUSTABLE STEERING COLUMN POSITION: Mid

<u>WINDOW POSITIONS:</u>	Left Front	<u>Closed</u>	Left Rear	<u>Closed</u>
	Right Front	<u>Open</u>	Right Rear	<u>Open</u>

AMOUNT OF STODDARD SOLVENT IN FUEL TANK:

Fuel system usable capacity = 15.9 gallons

Test Volume: 14.75 gallons 93 % of capacity

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

Wheelbase: = 2632 mm

Impact Point is 376 mm rearward of front axle centerline

DATA SHEET NO. 2
TEST VEHICLE SUMMARY OF RESULTS

Year/Make/Model/Body Style: 1997/Subaru/Legacy/AWD/4-Door
Vehicle NHTSA No.: MV5500 Test Date: February 18, 1997
Overall Length = 4578 mm; Overall Width = 1690 mm

TEST WEIGHT:

Right Front = 398.6 kg Right Rear = 346.5 kg
Left Front = 443.5 kg Left Rear = 364.6 kg
TOTAL FRONT = 842.1 kg TOTAL REAR = 711.1 kg
% of Total Weight = 54.2 % % of Total Weight = 45.8 %
TOTAL VEHICLE WEIGHT = 1553.2 kg
Wheelbase = 2632 mm
Longitudinal C.G. from Center of Front Axle = 1205 mm
Impact Angle with Respect to Impactor = 90° degrees

MAXIMUM EXTERIOR STATIC CRUSH:

1. LEVEL 1 (240 mm above ground) = 198 mm
 2. LEVEL 2 (457 mm above ground) = 409 mm
 3. LEVEL 3 (560 mm above ground) = 415 mm
 4. LEVEL 4 (870 mm above ground) = 291 mm
 5. LEVEL 5 (1301 mm above ground) = 141 mm
- Maximum Post-Test Intrusion = 415 mm

OCCUPANTS:

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

TEST VEHICLE SUMMARY OF RESULTS (Cont'd)

INSTRUMENTATION:

Number of Vehicle Data Channels:	=	<u>59</u>
Number of Cameras: Onboard Vehicle	=	<u>3</u>
Offboard Vehicle	=	<u>4</u>
Deformable Barrier	=	<u>2</u>
TOTAL	=	<u>9</u>

DATA SHEET NO. 3

MOVING DEFORMABLE BARRIER (MDB) SUMMARY OF RESULTS

Year/Make/Model/Body Style: 1997/Subaru/Legacy/AWD/4-Door

Vehicle NHTSA No.: MV5500 Test Date: February 18, 1997

POSITION OF IMPACT (MDB) ON MONORAIL:

Crabbed 27° to left

MDB DETAILS:

Overall Width of Framework Carriage	=	<u>1252 mm</u>
Overall Length of MDB (incl. honeycomb impact face)	=	<u>4115 mm</u>
Wheelbase of Framework Carriage	=	<u>2591 mm</u>
Tread of Framework Carriage (Front & Rear)	=	<u>1880 mm</u>
C.G. Location Rearward of Front Axle	=	<u>1102 mm</u>
C.G. Location From Center Line	=	<u>-23 mm</u>
C.G. Location Above Ground Level	=	<u>508 mm</u>

MDB WEIGHT:

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

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

Impact Speed = Primary: 38.3 mph (61.6 kph) Secondary: 38.2 mph (61.5 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>169</u> mm |
| 2. | Row B Mid Stack (686 mm) | = <u>109</u> mm |
| 3. | Row C Top of Bumper (533 mm) | = <u>83</u> mm |
| 4. | Row D Center of Bumper (432 mm) | = <u>172</u> mm |

INSTRUMENTATION:

Number of MDB Data Channels = 5

DATA SHEET NO. 4
POST-TEST OBSERVATIONS

Year/Make/Model/Body Style: 1997/Subaru/Legacy/AWD/4-Door

Vehicle NHTSA No.: MV5500 Test Date: February 18, 1997

VISIBLE DUMMY CONTACT POINTS:

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

DOOR OPENING:

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

MDB DISTANCE FROM TARGET IMPACT POINT:

Horizontal: 7 mm rearward Vertical: 8 mm high

ARM REST LOCATIONS:

Front: 250 mm from bottom of window
Rear: 258 mm from bottom of window

POST-TEST OBSERVATIONS (Cont'd)

SEAT CRUSH:

Front Seat Back: 175 mm Front Seat Cushion: 157 mm
Left Rear Seat Back: 198 mm Rear Seat Cushion: 240 mm

GLAZING DAMAGE:

Front and rear left side door glass, left rear quarter window, and windshield cracked

PILLAR PERFORMANCE:

None noted

SILL SEPARATION:

None noted

OTHER NOTABLE IMPACT EFFECTS:

Trunk opened. Front airbags did not deploy.

SECTION 4
OCCUPANT AND VEHICLE INFORMATION

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

Year/Make/Model/Body Style: 1997/Subaru/Legacy/AWD/4-Door

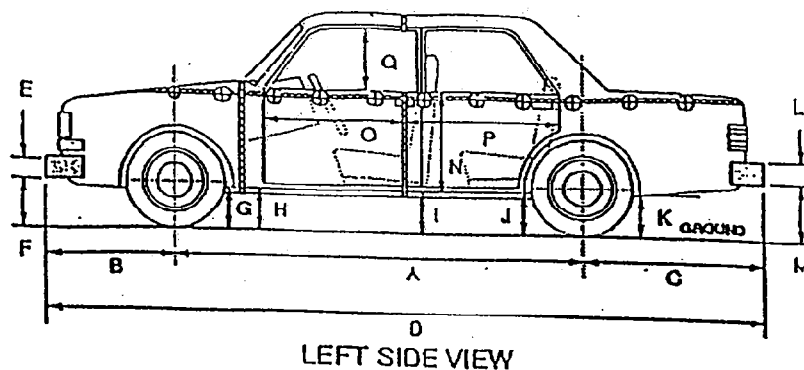
Vehicle NHTSA No.: MV5500 Test Date: February 18, 1997

Front Dummy ID # 274				Rear Dummy ID # 275			
Pos. Direct.		Neg. Direct		Pos. Direct.		Neg. Direct	
Max (g)	Time (msec)	Max (g)	Time (msec)	Max (g)	Time (msec)	Max (g)	Time (msec)
RIB ACCELERATIONS							
Left Upper Rib (LUR) Y	84.5	28	-27.4	74	*	*	*
Left Lower Rib (LLR) Y	81.2	28	-19.4	73	*	*	*
SPINE ACCELERATIONS							
Lower Lateral Y	92.2	31	-37.2	64	*	*	*
PELVIS ACCELERATIONS							
Lateral Y	130.8	29	-25.3	64	*	*	*

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

* No Valid Data Recorded

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



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

J1 = To Pinch Weld
J2 = To Sill

ALL MEASUREMENTS IN (mm)

	PRE-TEST	POST-TEST	Δ CHANGE
A	2632	2597	35
B	940	940	0
C	1006	982	24
D	4578	4519	59
E	155	155	0
F	387	396	-9
G	156	174	-18
H	161	180	-19
I	152	167	-15
J1/J2	152/152	153/158	-1/-6
K	221	214	7
L	200	200	0
M	351	347	4
N	640	560	80
O	743	681	62
P	1148	1023	125
Q	425	415	10
R	4330	4350	-20
S	4330	4275	55
T	1690	1404	286

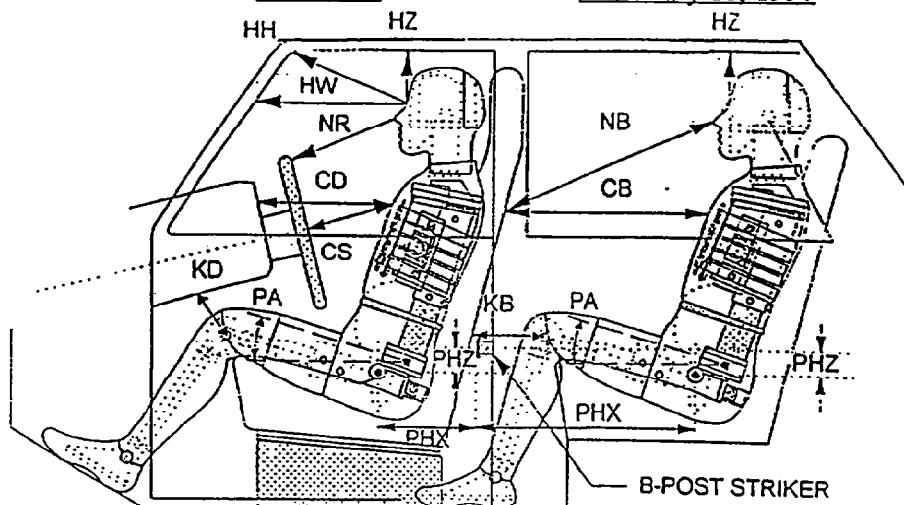
DATA SHEET NO. 7

SIDE IMPACT DUMMY (SID) LONGITUDINAL CLEARANCE DIMENSIONS

Year/Make/Model/Body Style: 1997/Subaru/Legacy/AWD/4-Door

NHTSA NO.: MV5500

Test Date: February 18, 1997



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

	DRIVER SID ID # 274		LEFT REAR PASSENGER SID ID # 275
HH	369	HZ	158
HW	594	NB	645
HZ	178	CB	542
NR	460	KBL (KBA)	231 (0°)
CD	522	KBR (KBA)	238 (0°)
CS	338	PA°	24.9°
KDL(KDA°)	197 (20.5°)	PHX	243
KDR(KDA°)	203 (21.8°)	PHZ	281
PA°	23.8°		
PHX	184		
PHZ	111		

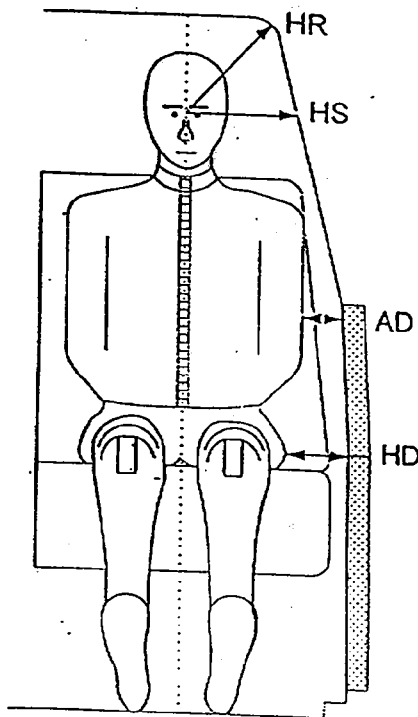
NOTE: 2-door vehicle shown. Rear dummy PHX & PHZ measurements for 4-door vehicle would use the C-post striker as reference point.

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

Year/Make/Model/Body Style: 1997/Subaru/Legacy/AWD/4-Door

NHTSA NO.: MV5500

Test Date: February 18, 1997



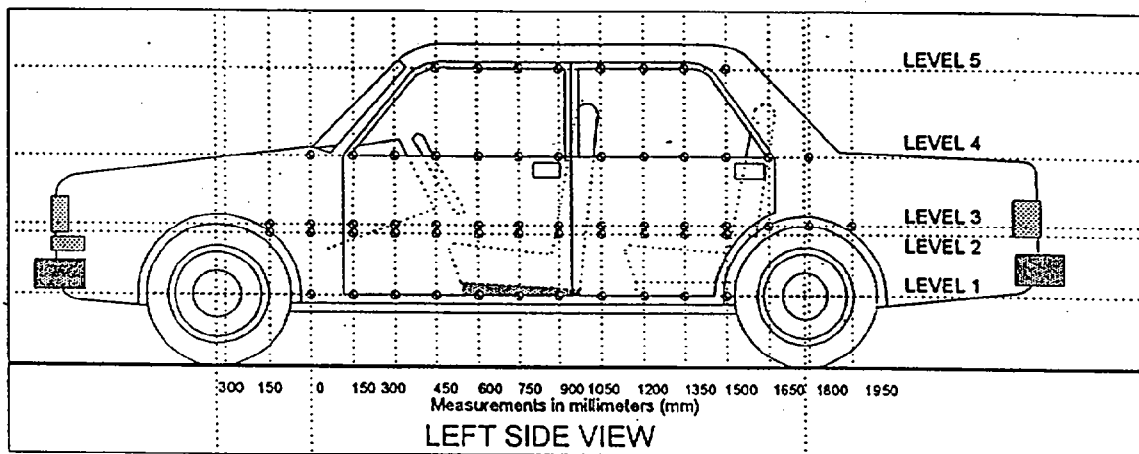
NOTE: All dimensions are in mm

	DRIVER SID ID # 274	LEFT REAR PASSENGER SID ID # 275
HR	217	227
HS	288	324
AD	99	123
HD	176	196

DATA SHEET NO. 9
VEHICLE SIDE MEASUREMENTS

Year/Make/Model/Body Style: 1997/Subaru/Legacy/AWD/4-Door

NHTSA NO.: MV5500 Test Date: February 18, 1997



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

MEASUREMENTS ALONG THE VERTICAL 750 mm. LINE SHOWN ABOVE

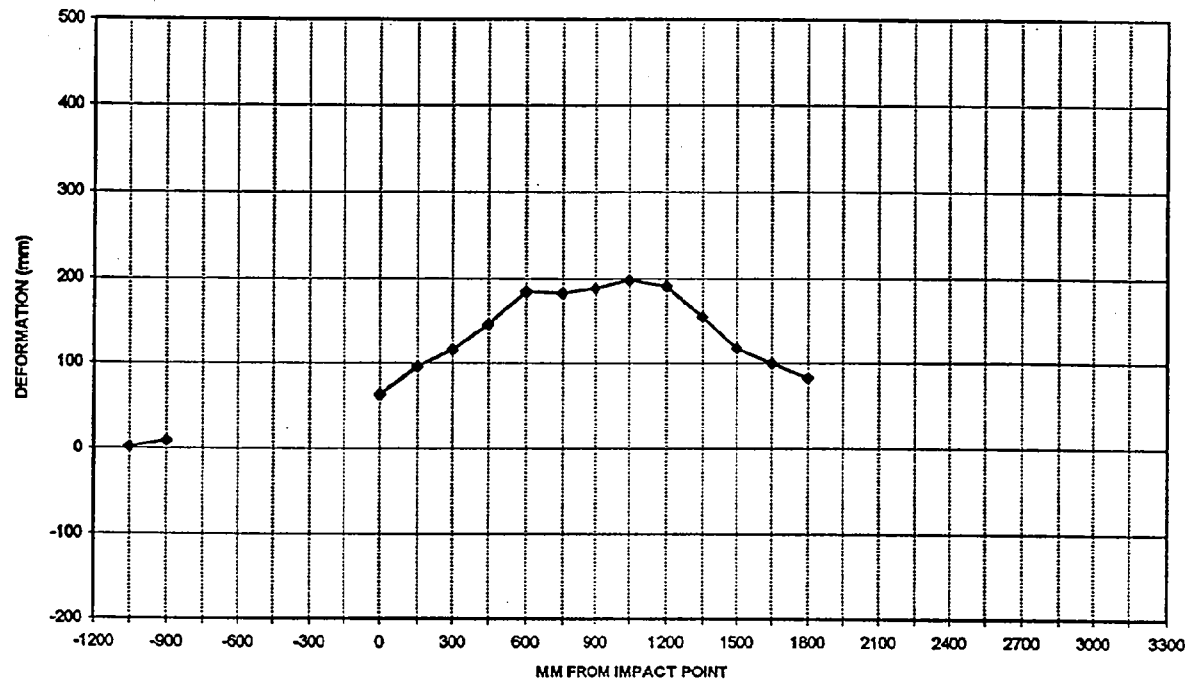
Level 1 @ Axle Centerline Height (or Sill Top Height)	= <u>240</u> mm
Level 2 @ Occupant H-Point	= <u>457</u> mm
Level 3 @ Mid Door	= <u>560</u> mm
Level 4 @ Window Sill	= <u>870</u> mm
Level 5 @ Window Top	= <u>1301</u> mm

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES

Longitudinal Distance (mm)	Level 1 - Axle Centerline		
	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
-1050	724	726	2
-900	656	665	9
-750			
-600			
-450			
-300			
-150			
0 (impact point)	594	657	63
150	630	726	96
300	634	750	116
450	634	780	146
600	634	819	185
750	634	817	183
900	635	824	189
1050	635	833	198
1200	634	825	191
1350	634	789	155
1500	633	751	118
1650	631	731	100
1800	624	707	83
1950			
2100			
2250			
2400			
2550			
2700			
2850			
3000			

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

VEHICLE EXTERIOR STATIC CRUSH



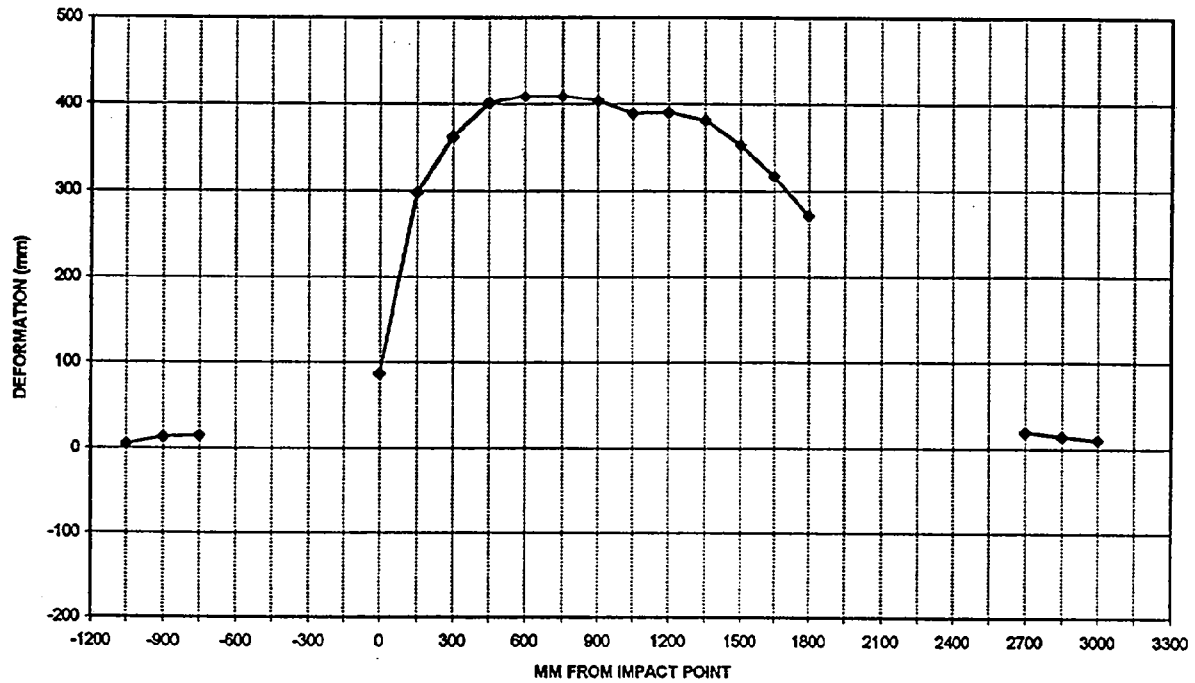
LEVEL 1 - AXLE CENTERLINE

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)
-1050	643	648	5
-900	614	627	13
-750	599	614	15
-600			
-450			
-300			
-150			
0 (impact point)	593	680	87
150	597	895	298
300	596	958	362
450	596	997	401
600	595	1004	409
750	595	1004	409
900	595	999	404
1050	594	983	389
1200	592	982	390
1350	592	973	381
1500	592	945	353
1650	592	909	317
1800	592	864	272
1950			
2100			
2250			
2400			
2550			
2700	605	624	19
2850	617	631	14
3000	632	642	10

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

VEHICLE EXTERIOR STATIC CRUSH



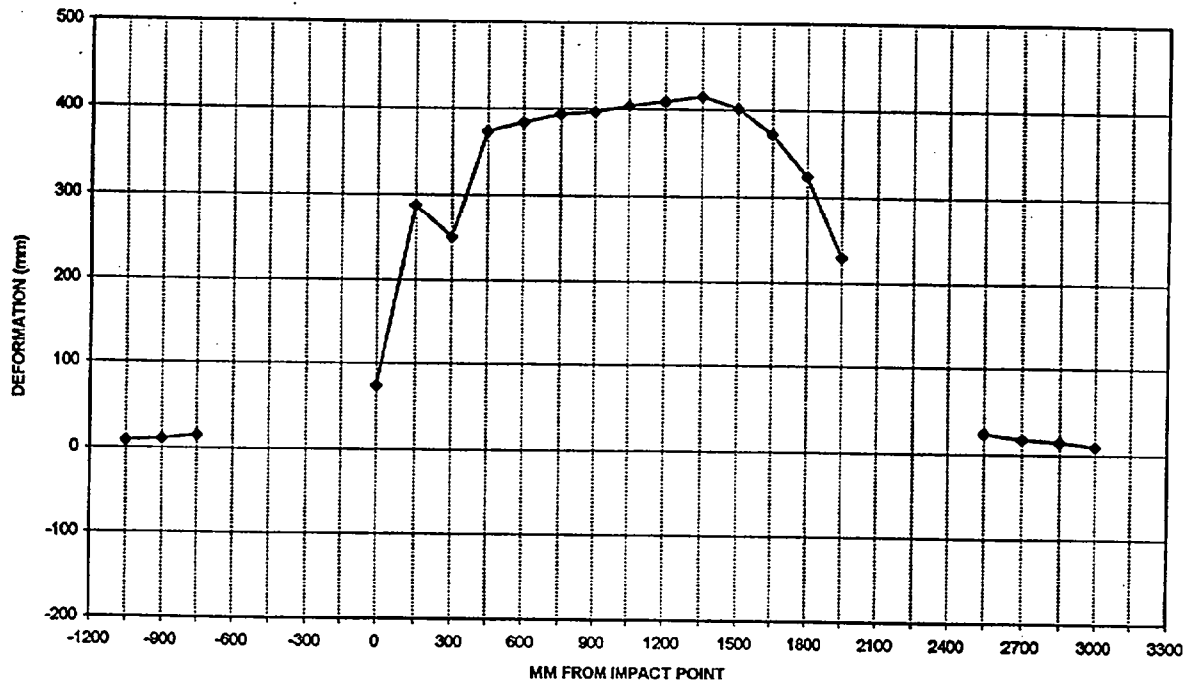
LEVEL 2 - OCCUPANT H-POINT

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES

Longitudinal Distance (mm)	Level 3 - Mid Door		
	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
-1050	659	668	9
-900	623	634	11
-750	597	612	15
-600			
-450			
-300			
-150			
0 (impact point)	590	664	74
150	593	880	287
300	593	843	250
450	593	967	374
600	593	977	384
750	592	986	394
900	592	989	397
1050	590	994	404
1200	589	998	409
1350	589	1004	415
1500	589	991	402
1650	589	961	372
1800	589	913	324
1950	584	813	229
2100			
2250			
2400			
2550	589	613	24
2700	610	628	18
2850	632	647	15
3000	659	669	10

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

VEHICLE EXTERIOR STATIC CRUSH



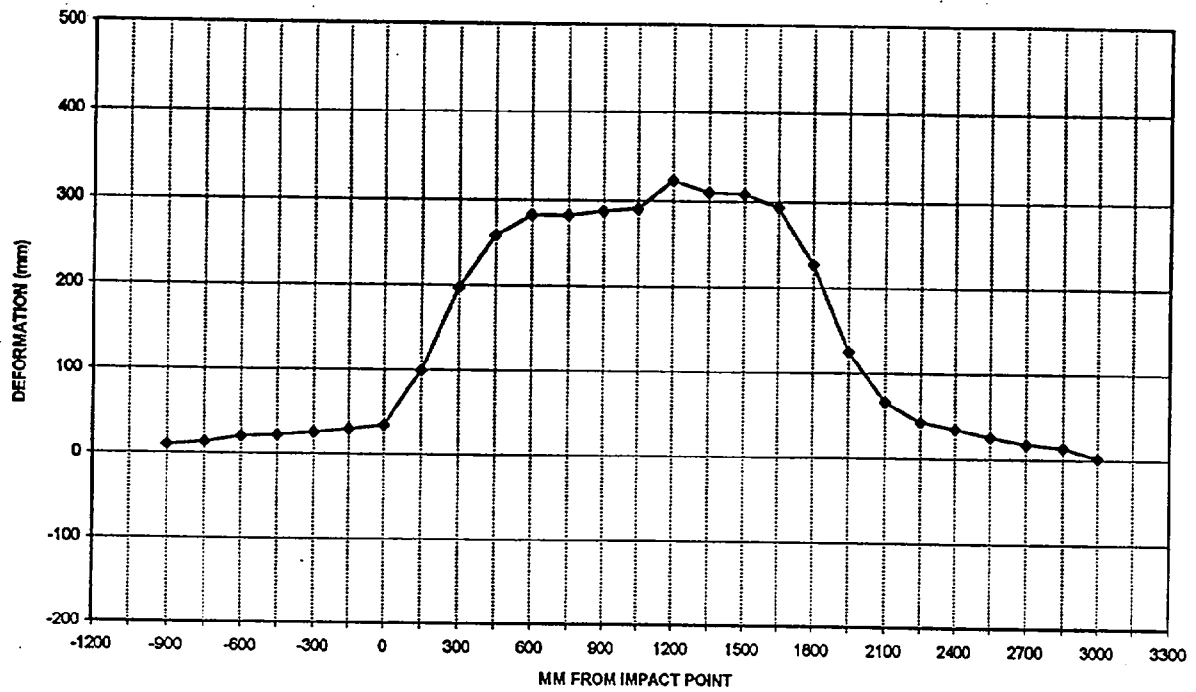
LEVEL 3 - MID DOOR

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES

Longitudinal Distance (mm)	Level 4 - Window Sill		
	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
-1050			
-900	688	698	10
-750	674	687	13
-600	663	683	20
-450	657	679	22
-300	653	678	25
-150	650	679	29
0 (impact point)	647	681	34
150	646	745	99
300	645	842	197
450	645	904	259
600	645	928	283
750	645	928	283
900	645	933	288
1050	648	939	291
1200	647	970	323
1350	649	959	310
1500	648	956	308
1650	648	942	294
1800	650	877	227
1950	650	776	126
2100	653	719	66
2250	655	698	43
2400	657	692	35
2550	667	693	26
2700	680	698	18
2850	694	708	14
3000	715	717	2

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

VEHICLE EXTERIOR STATIC CRUSH



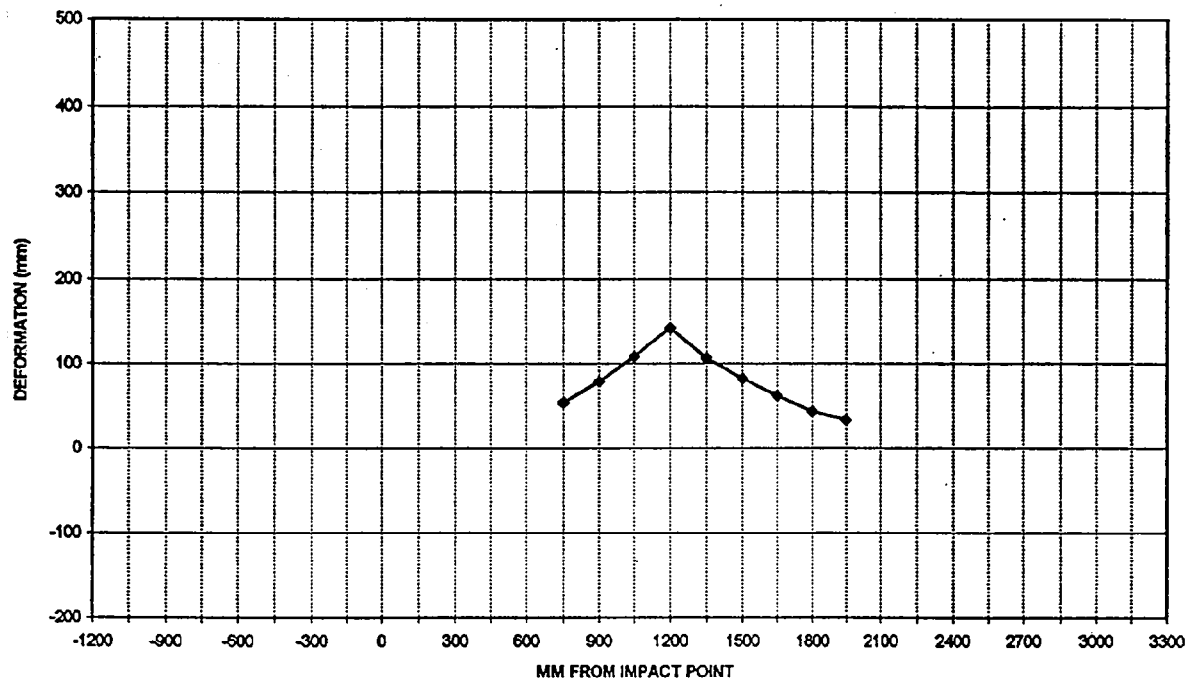
LEVEL 4 - WINDOW SILL

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES

Longitudinal Distance (mm)	Level 5 - Window Top		
	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
-1050			
-900			
-750			
-600			
-450			
-300			
-150			
0 (impact point)			
150			
300			
450			
600			
750	870	924	54
900	864	943	79
1050	867	975	108
1200	868	1009	141
1350	871	977	106
1500	871	953	82
1650	872	934	62
1800	873	917	44
1950	880	914	34
2100			
2250			
2400			
2550			
2700			
2850			
3000			

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

VEHICLE EXTERIOR STATIC CRUSH



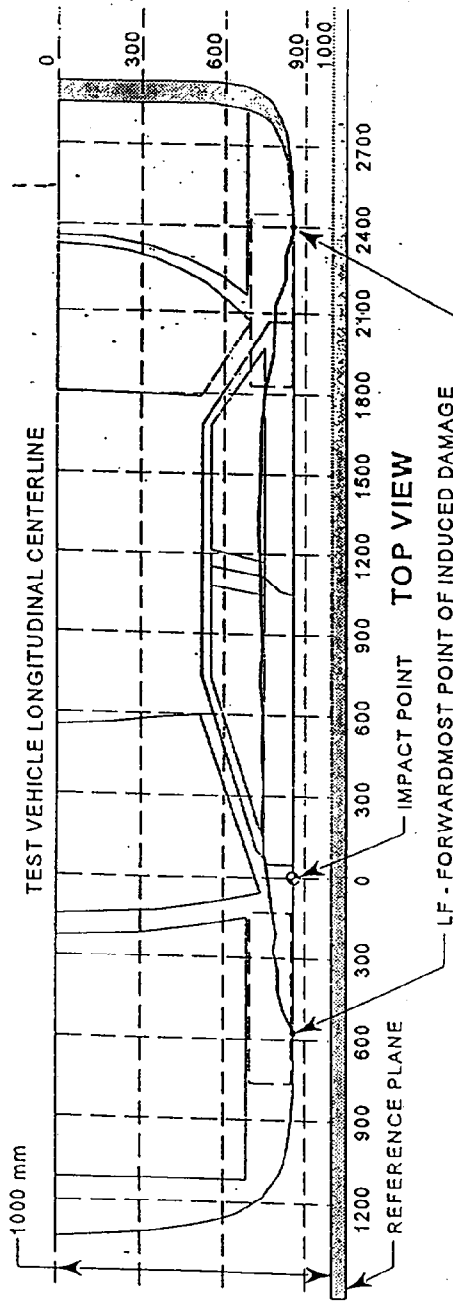
LEVEL 5 - WINDOW TOP

DATA SHEET NO. 11

VEHICLE DAMAGE PROFILE DISTANCES

Year/Make/Model/Body Style: 1997/Subaru/Legacy/AWD/4-Door

NHTSA NO.: MV5500 Test Date: February 18, 1997



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

DPD MEASUREMENTS	POST-TEST (mm)	PRE-TEST (mm)	STATIC CRUSH (mm)
1. (LF = -1050 mm)	648	643	5
2. -251 mm	687	651	36
3. 549 mm	1003	595	408
4. 1311 mm	1006	589	417
5. 2213 mm	708	654	54
6. (LR = 3000 mm)	642	632	10

DATA SHEET NO. 12

EXTERIOR STATIC CRUSH FOR SIDE IMPACTOR

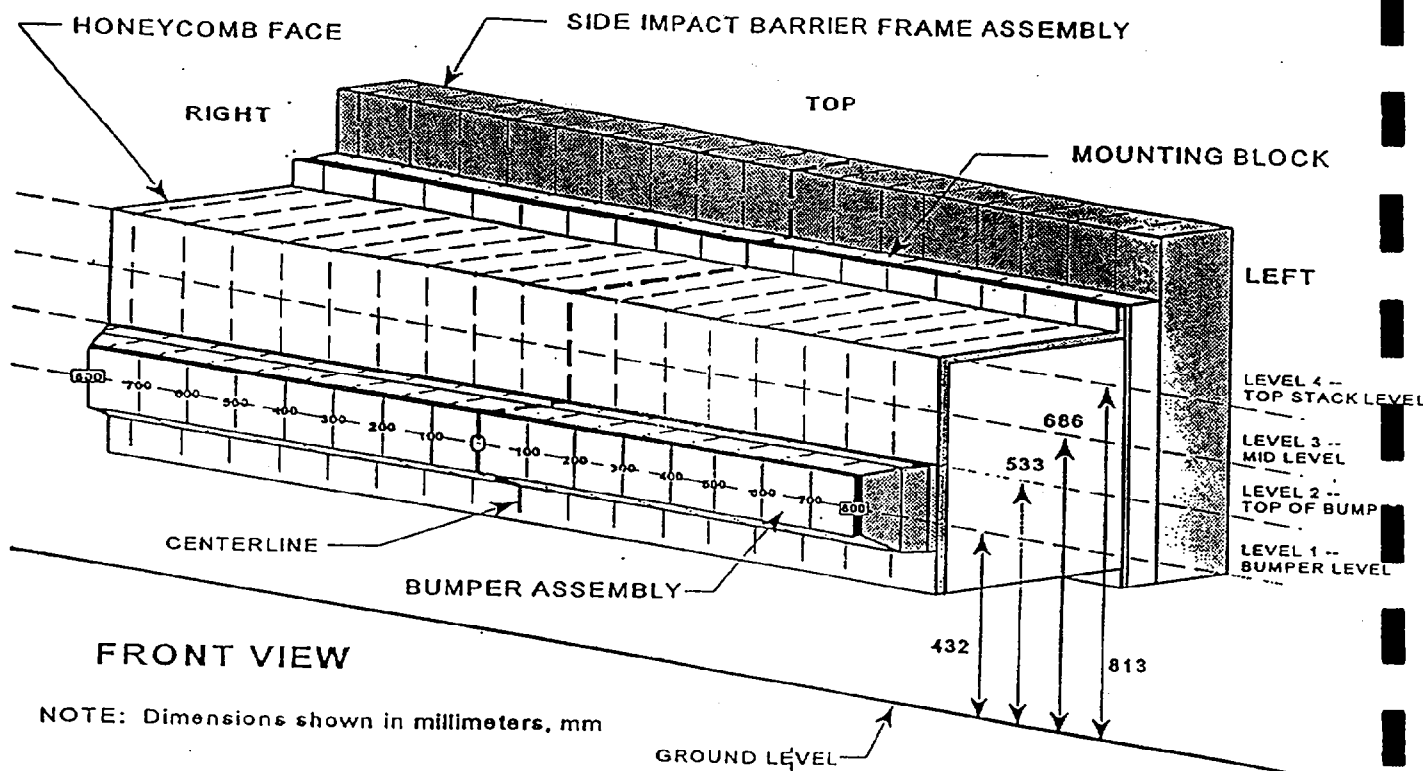
Year/Make/Model/Body Style: 1997/Subaru/Legacy/AWD/4-Door

Vehicle NHTSA No.: MV5500 Test Date: February 18, 1997

Location	Height at CL	Distance Right of Center (mm)									Distance Left of Center (mm)							
		800	700	600	500	400	300	200	100	0	100	200	300	400	500	600	700	800
Top Stack Level 4	813 mm	89	21	-1	-1	-1	-2	-1	1	4	5	8	5	13	14	29	73	169
Mid Level Level 3	686 mm	109	40	11	5	3	2	1	1	8	8	2	-2	-1	0	2	18	41
Top Bumper Level 2	533 mm	56	40	22	21	18	17	15	15	15	17	21	20	21	27	43	67	83
Mid Bumper Level 1	432 mm	90	63	44	41	42	43	45	46	51	58	70	72	71	86	115	149	172

See next page for Barrier Face Graphic

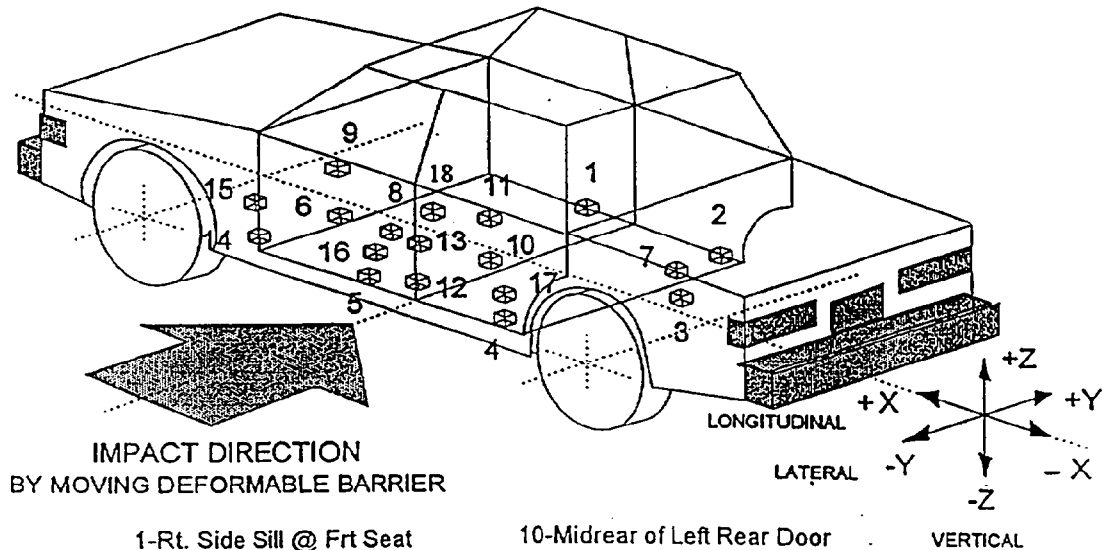
DATA SHEET NO. 12 (Cont'd)



DATA SHEET 13
TEST VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

Year/Make/Model/Body Style: 1997/Subaru/Legacy/AWD/4-Door

Vehicle NHTSA No.: MV5500 Test Date: February 18, 1997



- | | |
|--------------------------------|---------------------------------|
| 1-Rt. Side Sill @ Frt Seat | 10-Midrear of Left Rear Door |
| 2-Rt. Side Sill @ Rr. Seat | 11-Left Rear Door Upper Ctrline |
| 3-Rr. Floorpan Above Axle | 12-Left Lower B-Post |
| 4-Left Side Sill @ Rr. Seat | 13-Left Middle B-Post |
| 5-Left Side Sill @ Frt. Seat | 14-Left Lower A-Post |
| 6-Left Frt. Door On Centerline | 15-Left Middle A-Post |
| 7-Rt. Rr. Occ Compartment | 16-Front Seat Track |
| 8-Midrear of Left Frt. Door | 17-Rear Seat Track |
| 9-Left Frt. Door Upper Ctrline | 18-Vehicle C.G. |

DATA SHEET NO. 13

TEST VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

Year/Make/Model/Body Style: 1997/Subaru/Legacy/AWD/4-Door

Vehicle NHTSA No.: MV5500 Test Date: February 18, 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	2637	687	183	4.3	-3.0	29.2	-3.0	3.4	-6.2	29.4
2	Rt. Side Sill @ Rear Seat	1718	688	185	4.0	-5.6	30.2	-2.8	4.1	-2.9	30.7
3	Rr. Floorpan Above Axle	910	5	426	1.9	-5.9	21.6	-2.7	7.6	-8.4	21.9
4	Left Side Sill @ Rr. Seat	1736	688	187	---	---	59.1	-23.4	---	---	---
5	Left Side Sill @ Frt. Seat**	2636	687	184	---	---	78.0**	-20.4**	---	---	---
6	Left Front Door Centerline	2708	728	597	---	---	209.8	-197.4	---	---	---
7	Right Rear Occupant Compartment	1795	320	342	---	---	26.0	-2.7	---	---	---
9	Left Front Door Upper Centerline	2703	703	786	---	---	217.7	134.5	---	---	---
10	Left Rear Door Mid Rear	1764	715	577	---	---	262.2	-152.6	---	---	---
11	Left Rear Door Upper Centerline	1777	720	810	---	---	212.1	-146.6	---	---	---
12	Left Lower B-Post	2073	685	370	---	---	177.1	-38.7	---	---	---
13	Left Mid B-Post	2085	675	972	---	---	135.6	-31.9	---	---	---
14	Left Lower A-Post	3151	732	382	---	---	130.0	-20.4	---	---	---
15	Left Mid A-Post	3139	743	824	---	---	41.2	-8.3	---	---	---
16	Driver Left Seat Track	2249	535	328	---	---	97.7	-81.6	---	---	---
18	Vehicle CG	2415	0	450	4.0	-7.5	27.1	-2.4	8.4	-7.0	27.8

*Reference: X - Rear Bumper (+ Forward) ** Data valid till 35 msec.

Y - Vehicle Centerline (+ To right)

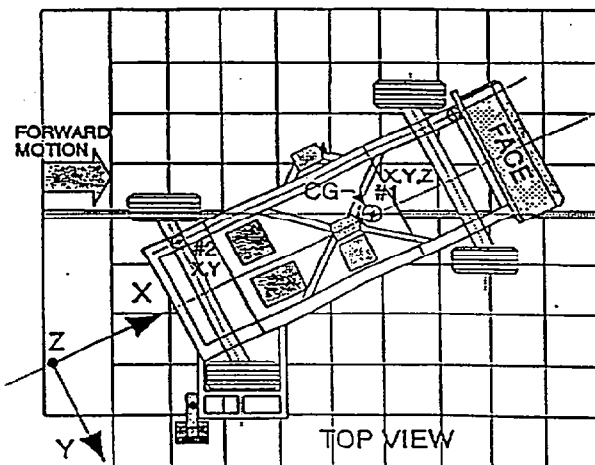
Z - Ground Level (+ Up)

DATA SHEET NO. 14

MOVING DEFORMABLE BARRIER (MDB) ACCELEROMETER LOCATIONS AND DATA SUMMARY

Year/Make/Model/Body Style: 1997/Subaru/Legacy/AWD/4-Door

Vehicle NHTSA No.: MV5500 Test Date: February 18, 1997



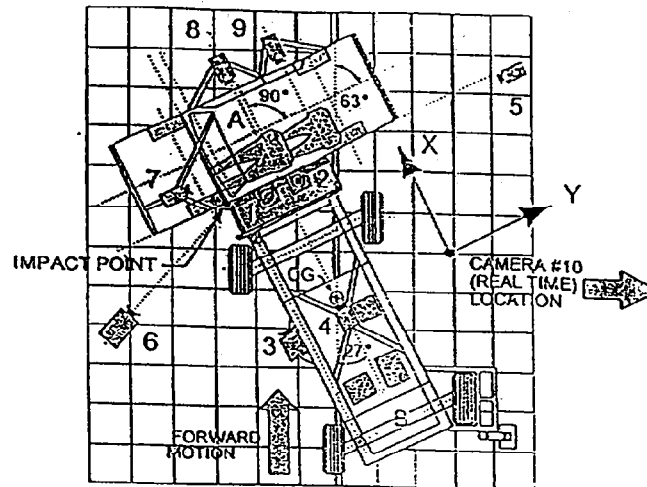
Accel. No.	Description	Coordinates (mm)*			(+) Positive		(-) Negative	
		X	Y	Z	Max. (g)	Time (msec)	Max. (g)	Time (msec)
1	MDB Center of Gravity	-1092	0	483				
	Longitudinal (X)	---	---	---	1.2	166	-16.3	31
	Lateral (Y)	---	---	---	1.0	66	-6.8	35
	Vertical (Z)	---	---	---	16.8	18	-16.1	23
	Resultant (R)	---	---	---	22.5	36	---	---
2	Rear Frame Member	-2591	-625	622				
	Longitudinal (X)	---	---	---	2.4	199	-21.7	31
	Lateral (Y)	---	---	---	3.5	29	-2.1	69

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

DATA SHEET NO. 15
HIGH SPEED CAMERA LOCATIONS AND DATA

Year/Make/Model/Body Style: 1997/Subaru/Legacy/AWD/4-Door

Vehicle NHTSA No.: MV5500 Test Date: February 18, 1997



Camera No.	View	Coordinates (mm)*			Angle	Lens (mm)	Film Speed (fps)
		X	Y	Z			
	Real Time						
6	Left Impact	-1020	-2320	1680		13	1020
8	Onboard Driver					8	855
9	Onboard Passenger					8	1053
7	Onboard Hood					13	1015
5	Right Impact	-700	-10450	1660		25	980
1	Top Overall	-300	-50	5000		8	1031
2	Top Impact	-295	1260	5000		13	810
4	Cart Overall					13	1020
3	Cart Pointer					35	1026

* Reference: (from point of impact)

+X = Forward

+Y = To Right

+Z = Upward

DATA SHEET 16
FUEL SYSTEM INTEGRITY POST IMPACT TEST DATA

Vehicle Year/Make/Model/Body Style: 1997/Subaru/Legacy/AWD/4-Door

Vehicle NHTSA No.: MV5500

Test Date: February 18, 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 38.3 mph (61.6 kph)

FUEL SPILLAGE MEASUREMENT:

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

FUEL SPILLAGE LOCATION(S): None

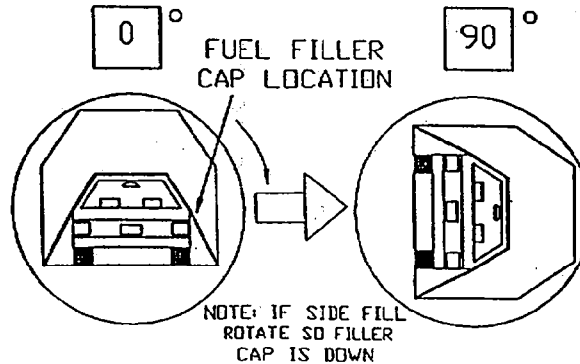
DATA SHEET 16

FMVSS 301 STATIC ROLLOVER TEST DATA

Vehicle Year/Make/Model/Body Style: 1997/Subaru/Legacy/AWD/4-Door

Vehicle NHTSA No.: MV5500 Test Date: February 18, 1997

TEST PHASE: 0° - 90°



DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time = 2 minutes 44 seconds

(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time = 5 minutes 0 seconds

TOTAL TIME = 7 minutes 44 seconds

Next Whole Minute Interval = 8 minutes

FUEL SPILLAGE MEASUREMENT:

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

FUEL SPILLAGE LOCATIONS(S): None

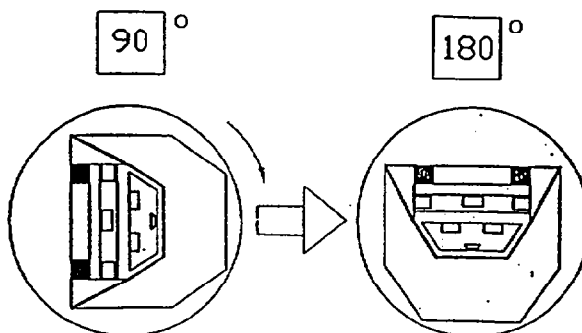
DATA SHEET 16

FMVSS 301 STATIC ROLLOVER TEST DATA (Cont'd)

Vehicle Year/Make/Model/Body Style: 1997/Subaru/Legacy/AWD/4-Door

Vehicle NHTSA No.: MV5500 Test Date: February 18, 1997

TEST PHASE: 90° - 180°



DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time = 2 minutes 29 seconds

(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time = 5 minutes 0 seconds

TOTAL TIME = 7 minutes 29 seconds

Next Whole Minute Interval = 8 minutes

FUEL SPILLAGE MEASUREMENT:

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

FUEL SPILLAGE LOCATIONS(S): None

DATA SHEET 16

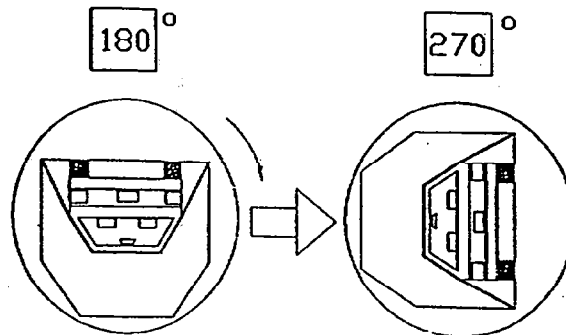
FMVSS 301 STATIC ROLLOVER TEST DATA (Cont'd)

Vehicle Year/Make/Model/Body Style: 1997/Subaru/Legacy/AWD/4-Door

Vehicle NHTSA No.: MV5500

Test Date: February 18, 1997

TEST PHASE: 180° - 270°



DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time = 2 minutes 17 seconds

(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time = 5 minutes 0 seconds

TOTAL TIME = 7 minutes 17 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

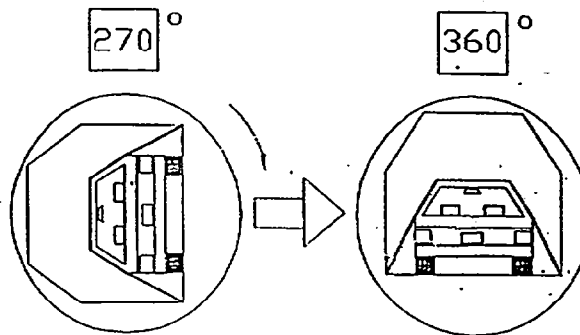
DATA SHEET 16

FMVSS 301 STATIC ROLLOVER TEST DATA

Vehicle Year/Make/Model/Body Style: 1997/Subaru/Legacy/AWD/4-Door

Vehicle NHTSA No.: MV5500 Test Date: February 18, 1997

TEST PHASE: 270° - 360°



DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time = 2 minutes 45 seconds

(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time = 5 minutes 0 seconds

TOTAL TIME = 7 minutes 45 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

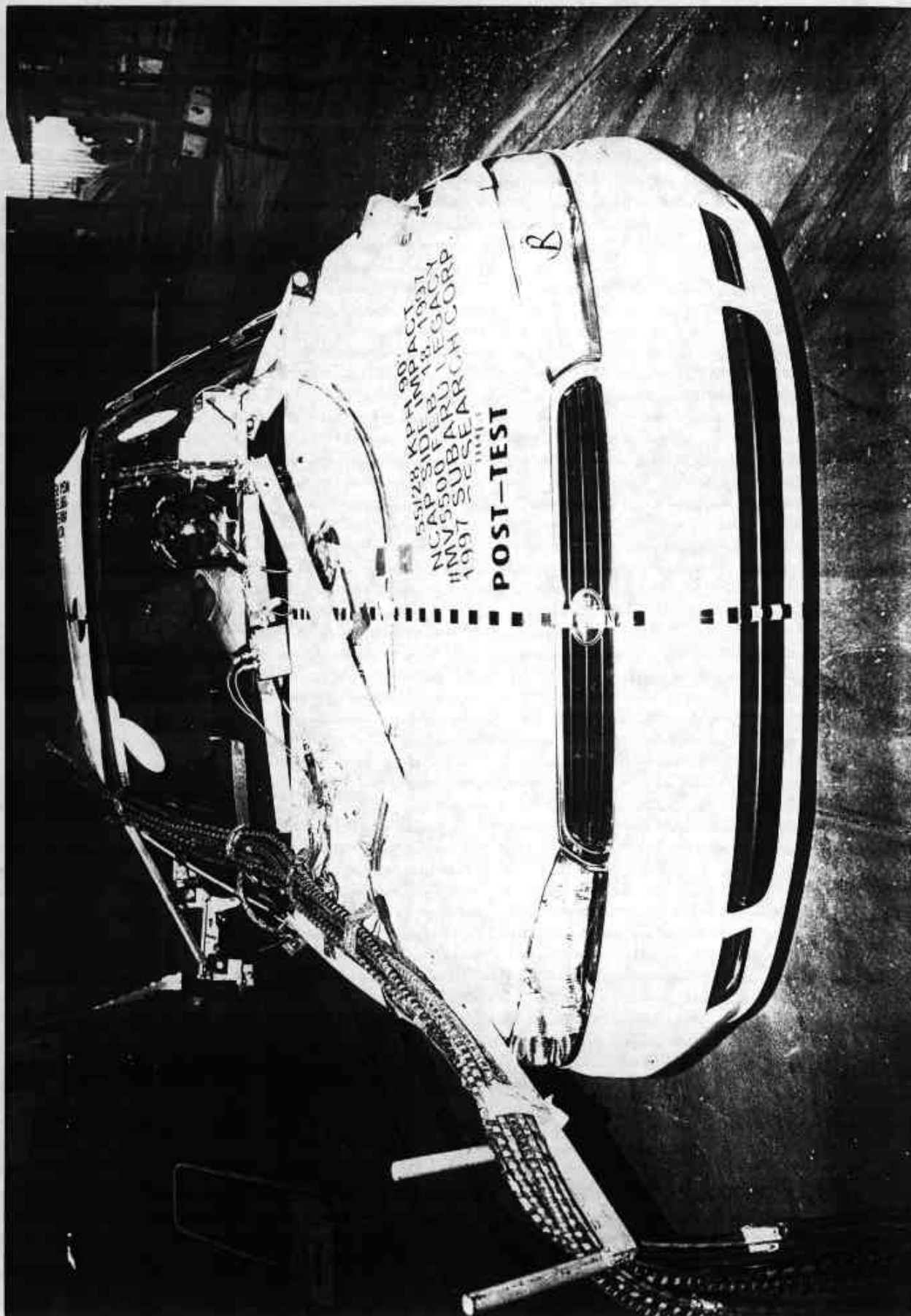
APPENDIX A - PHOTOGRAPHS

TABLE OF PHOTOGRAPHS

	<u>Page No.</u>
Photo No. A-1 - Pre-Test Front View of Test Vehicle	A-1
Photo No. A-2 - Post-Test Front View of Test Vehicle	A-2
Photo No. A-3 - Pre-Test Rear View of Test Vehicle	A-3
Photo No. A-4 - Post-Test Rear View of Test Vehicle	A-4
Photo No. A-5 - Pre-Test Left Side View of Test Vehicle	A-5
Photo No. A-6 - Post-Test Left Side View of Test Vehicle	A-6
Photo No. A-7 - Pre-Test MDB Positioned Against Vehicle (left side)	A-7
Photo No. A-8 - Pre-Test MDB Positioned Against Vehicle (right side)	A-8
Photo No. A-9 - Pre-Test MDB Positioned Against Vehicle Overhead View	A-9
Photo No. A-10 - Post-Test MDB Positioned Against Vehicle (left side)	A-10
Photo No. A-11 - Post-Test MDB Positioned Against Vehicle (right side)	A-11
Photo No. A-12 - Post-Test MDB Positioned Against Vehicle Overhead View	A-12
Photo No. A-13 - Pre-Test MDB Top View	A-13
Photo No. A-14 - Post-Test MDB Top View	A-14
Photo No. A-15 - Pre-Test MDB Front View	A-15
Photo No. A-16 - Post-Test MDB Front View	A-16
Photo No. A-17 - Pre-Test MDB Right Side View	A-17
Photo No. A-18 - Post-Test MDB Right Side View	A-18
Photo No. A-19 - Pre-Test MDB Left Side View	A-19
Photo No. A-20 - Post-Test MDB Left Side View	A-20
Photo No. A-21 - Pre-Test Driver Dummy Right Side View	A-21
Photo No. A-22 - Post-Test Driver Dummy Right Side View	A-22
Photo No. A-23 - Pre-Test Driver Dummy Left Side View	A-23
Photo No. A-24 - Post-Test Driver Dummy Left Side View	A-24
Photo No. A-25 - Pre-Test Driver Dummy Left Side View (Door Open)	A-25
Photo No. A-26 - Pre-Test Driver Dummy Shoulder and Door Top View	A-26
Photo No. A-27 - Post-Test Driver Dummy Shoulder and Door Top View	A-27
Photo No. A-28 - Post-Test Driver Dummy Contact	A-28

TABLE OF PHOTOGRAPHS

	<u>Page No.</u>
Photo No. A-29 - Post-Test Driver Dummy Head Contact	A-29
Photo No. A-30 - Pre-Test Passenger Dummy Right Side View	A-30
Photo No. A-31 - Post-Test Passenger Dummy Right Side View	A-31
Photo No. A-32 - Pre-Test Passenger Dummy Left Side View	A-32
Photo No. A-33 - Post-Test Passenger Dummy Left Side View	A-33
Photo No. A-34 - Pre-Test Passenger Dummy Left Side View (Door Open)	A-34
Photo No. A-35 - Pre-Test Passenger Dummy Shoulder and Door Top View	A-35
Photo No. A-36 - Post-Test Passenger Dummy Shoulder and Door Top View	A-36
Photo No. A-37 - Post-Test Passenger Dummy Contact	A-37
Photo No. A-38 - Pre-Test Left Front Impact Point on Vehicle	A-38
Photo No. A-39 - Post-Test Left Front Impact Point on Vehicle	A-39
Photo No. A-40 - Vehicle Certification Label	A-40
Photo No. A-41 - Tire Placard	A-41
Photo No. A-42 - Rollover 90°	A-42
Photo No. A-43 - Rollover 180°	A-43
Photo No. A-44 - Rollover 270°	A-44
Photo No. A-45 - Rollover 360°	A-45
Photo No. A-46 - Left Front Attitude Point	A-46
Photo No. A-47 - Right Front Attitude Point	A-47
Photo No. A-48 - Left Rear Attitude Point	A-48
Photo No. A-49 - Right Rear Attitude Point	A-49



A-2

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



A-3

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

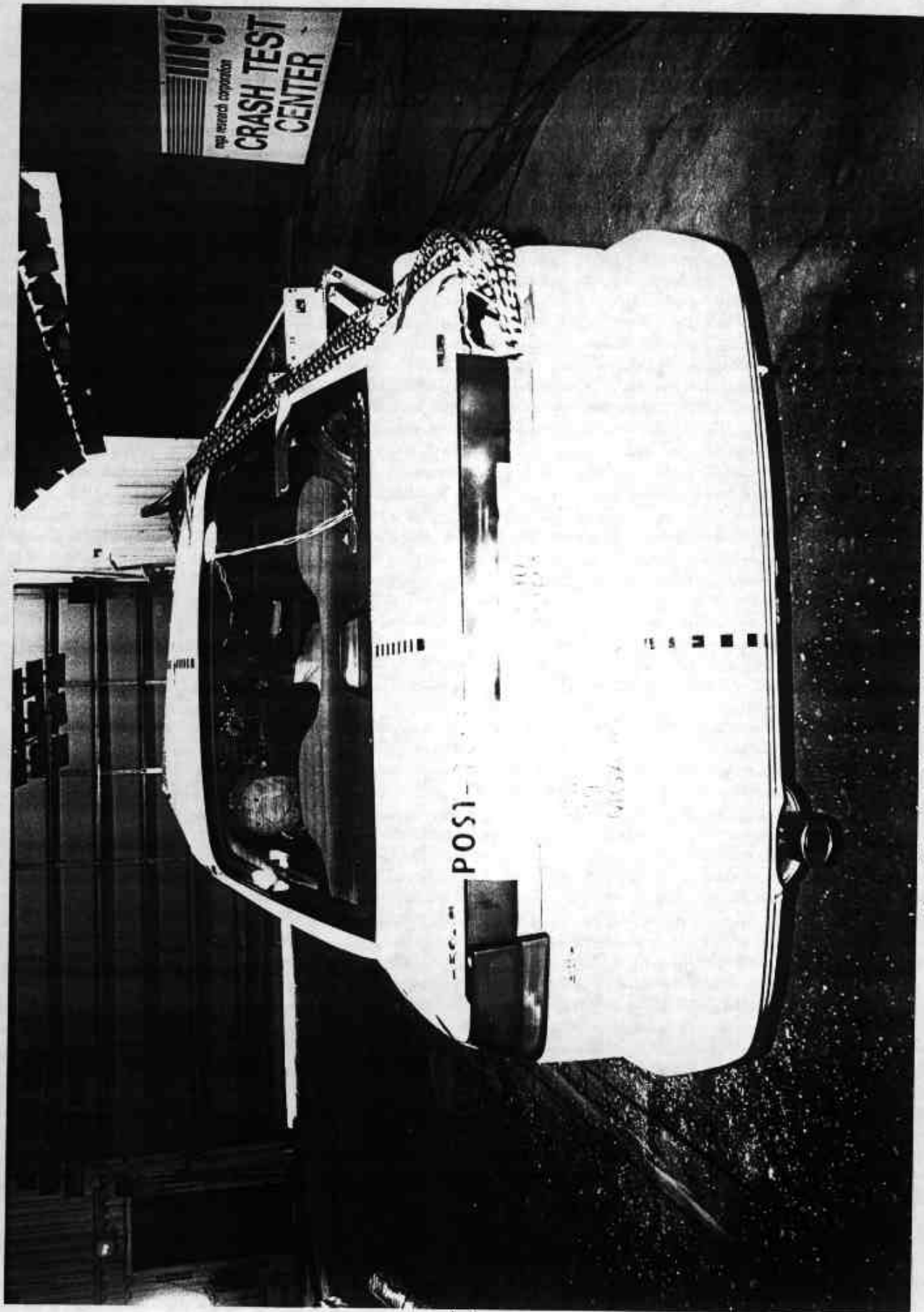
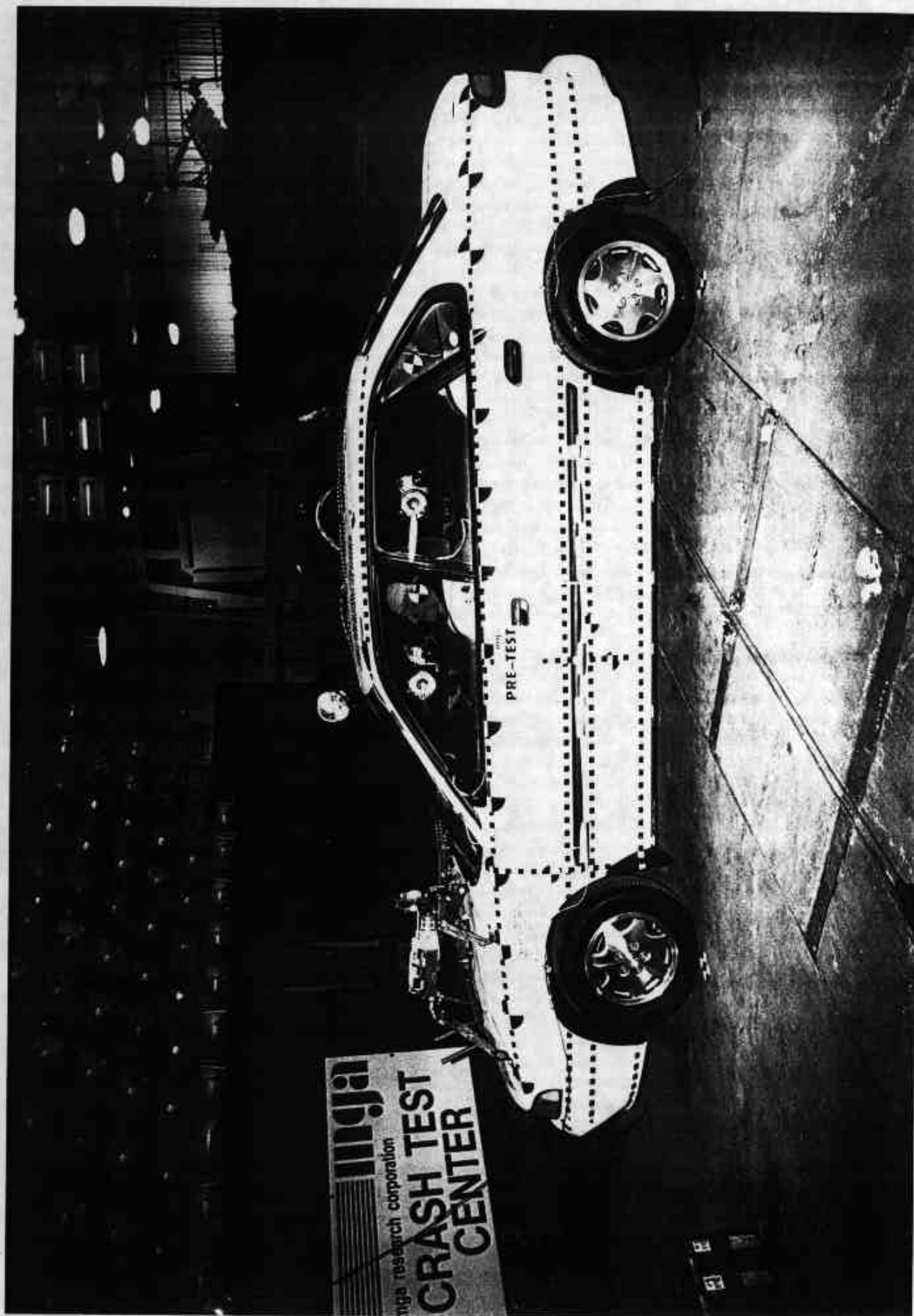


Photo No. A-4 - Post-Test Rear View of Test Vehicle



A-5

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

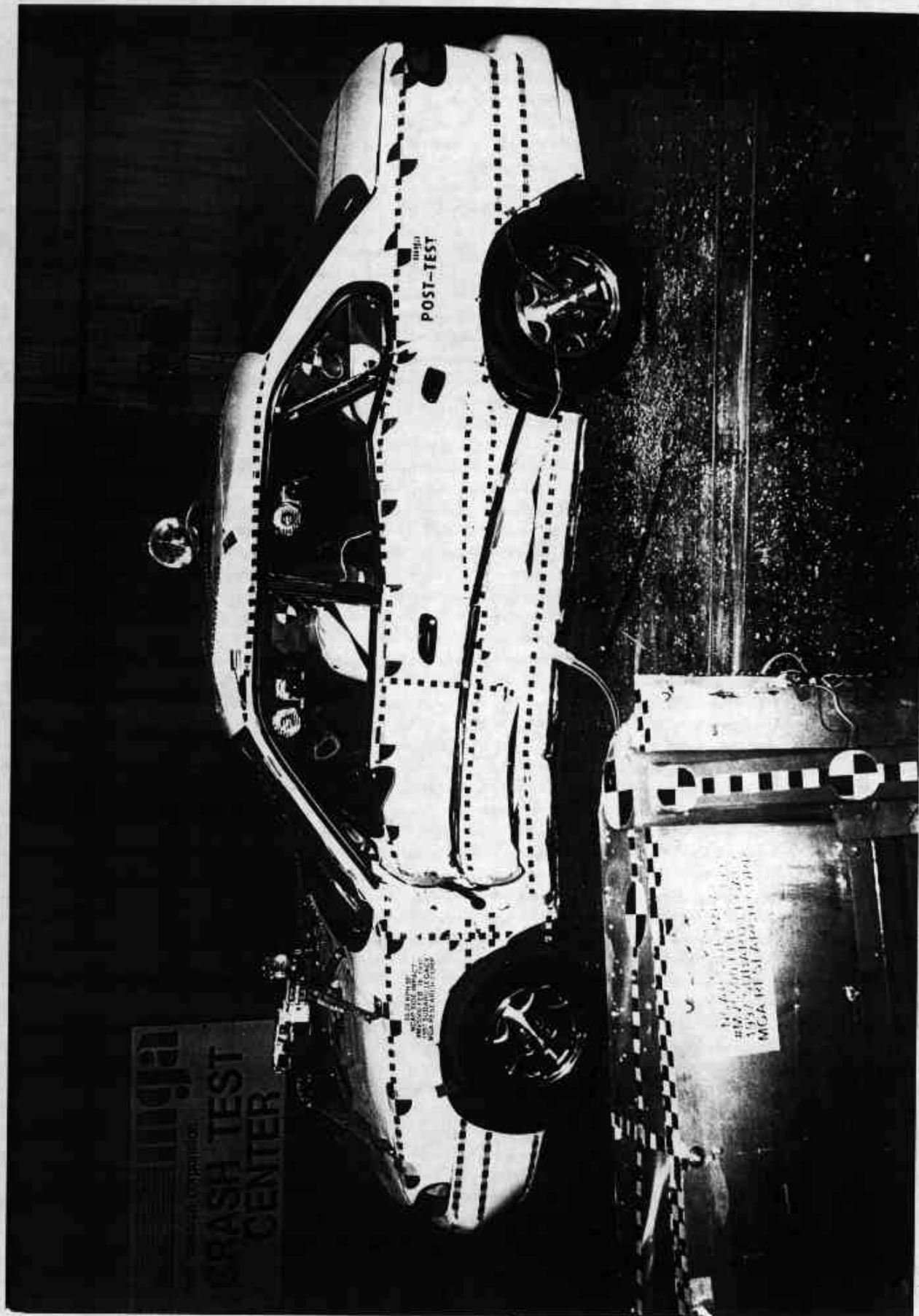


Photo No. A-6 - Post-Test Left Side View of Test Vehicle

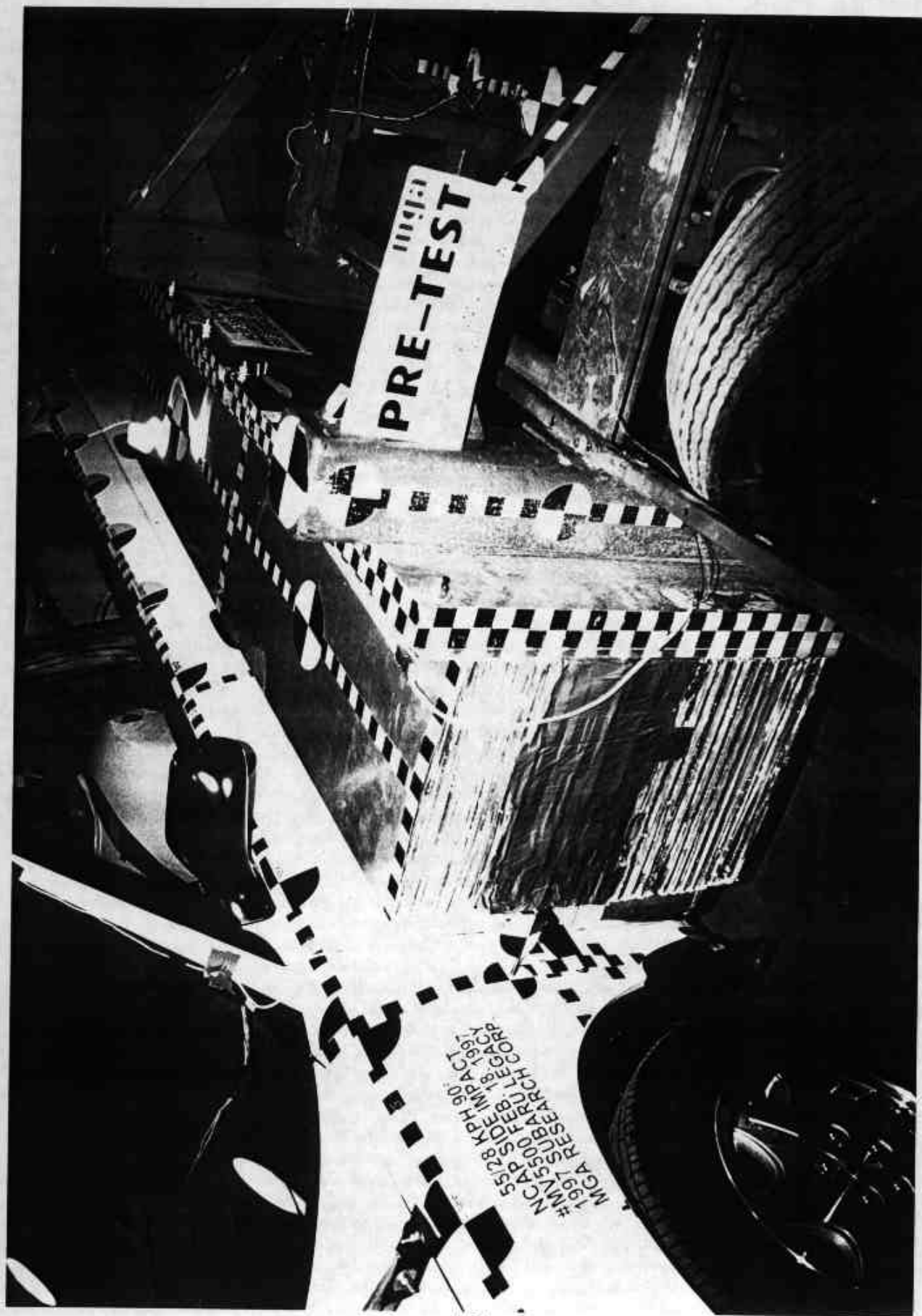


Photo No. A-7 - Pre-Test MDB Positioned Against Vehicle (left side)

A-7



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

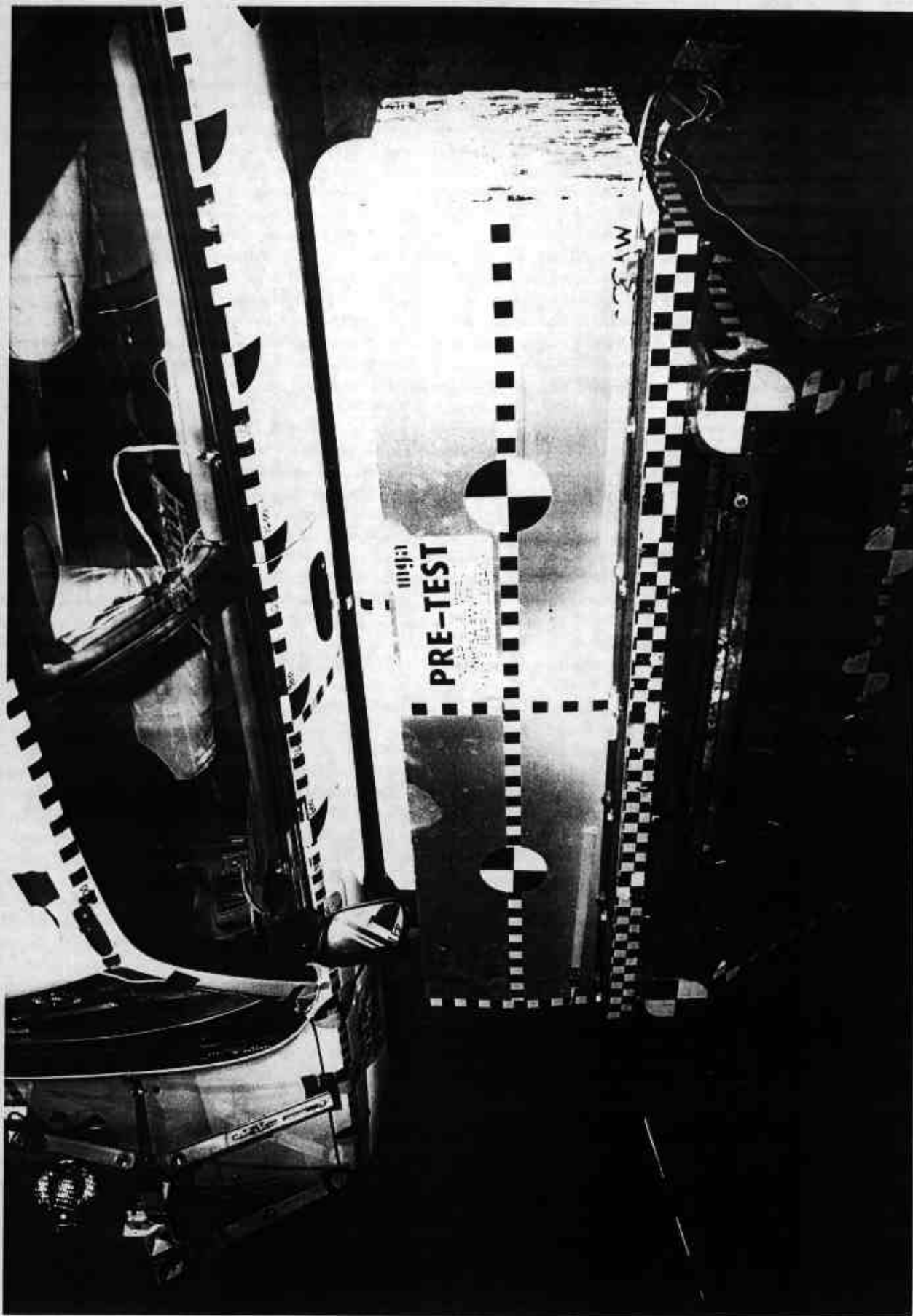


Photo No. A-9 - Pre-Test MDB Positioned Against Vehicle Overhead View

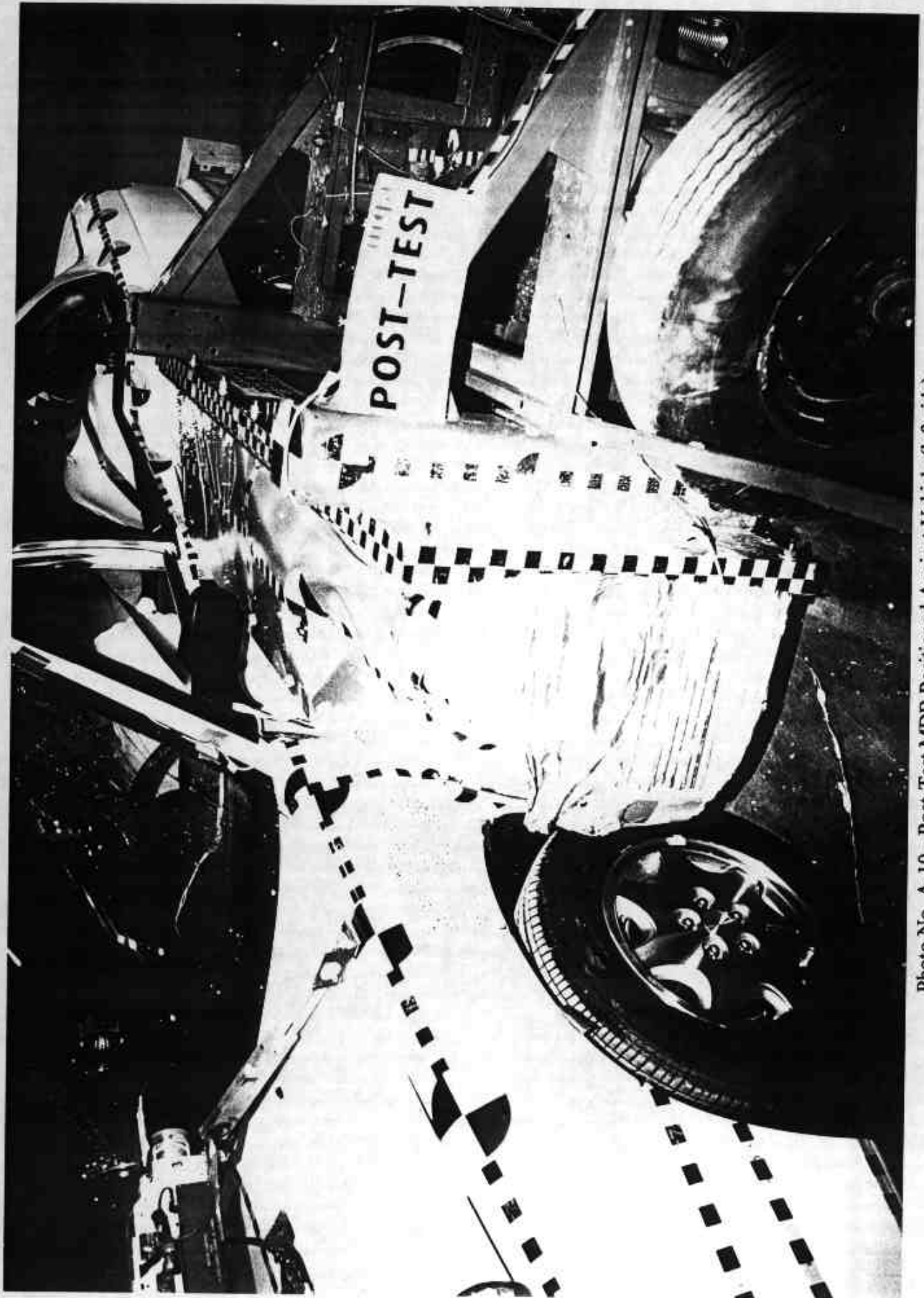
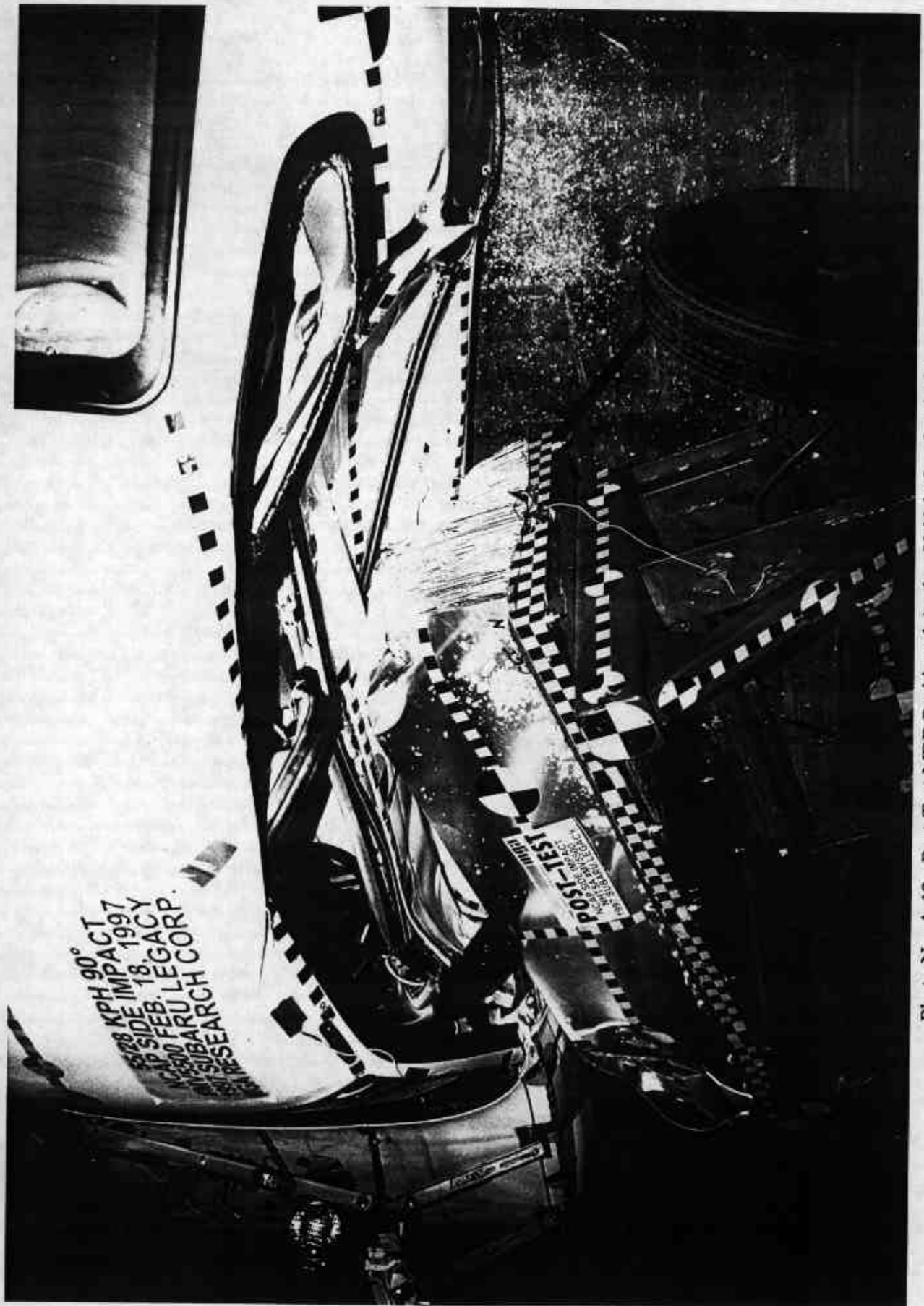


Photo No. A-10 - Post-Test MDB Positioned Against Vehicle (left side)

A-10



1500 KPH 90°
IMPACT
SIDE 18.1997
LEGACY
FEB. 18.1997
FRU. LEGACY
SUBARCH CORP.

TEST-100
1000 KPH 90°
IMPACT
SIDE 18.1997
LEGACY
FEB. 18.1997
FRU. LEGACY
SUBARCH CORP.

A-12

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

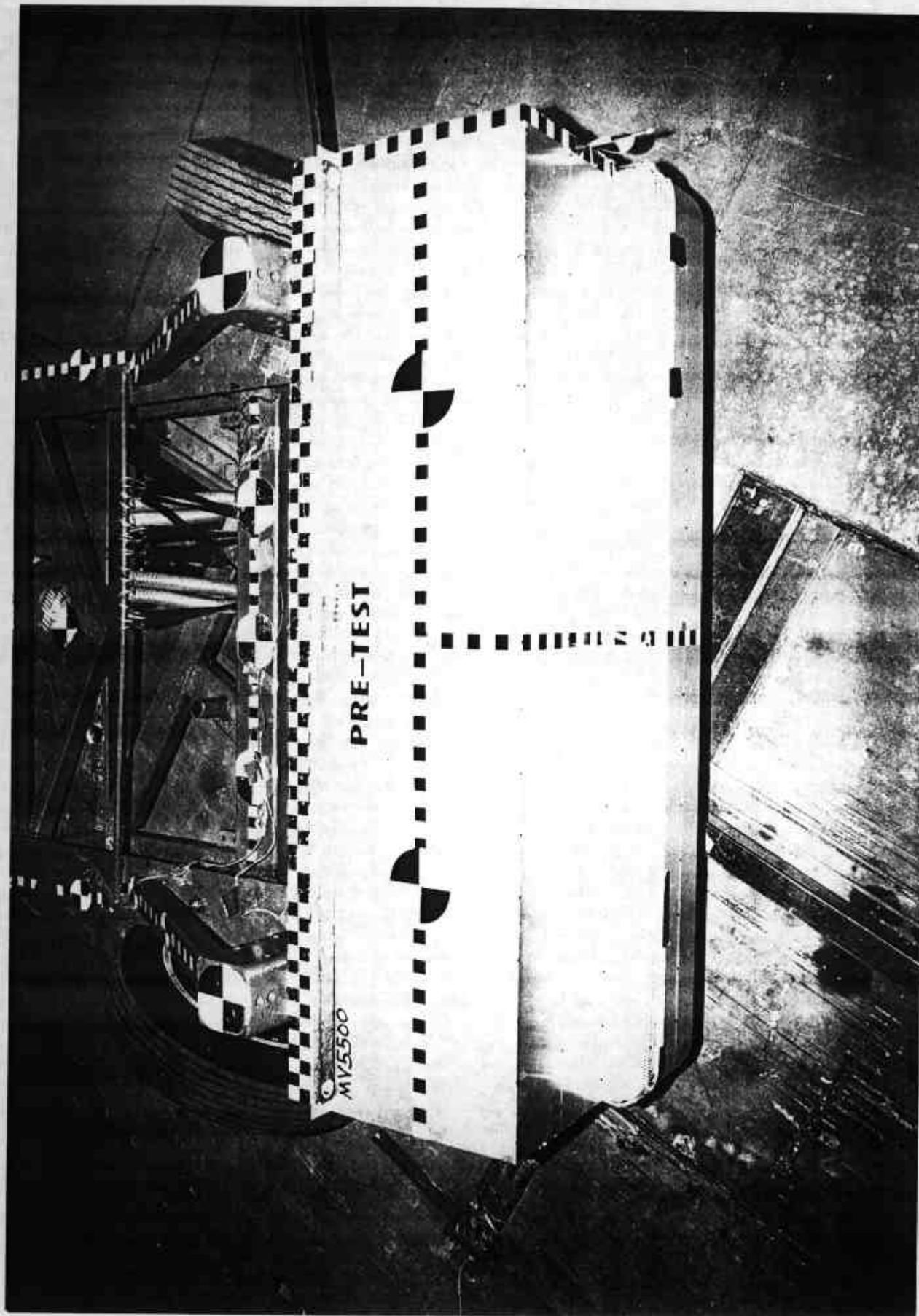
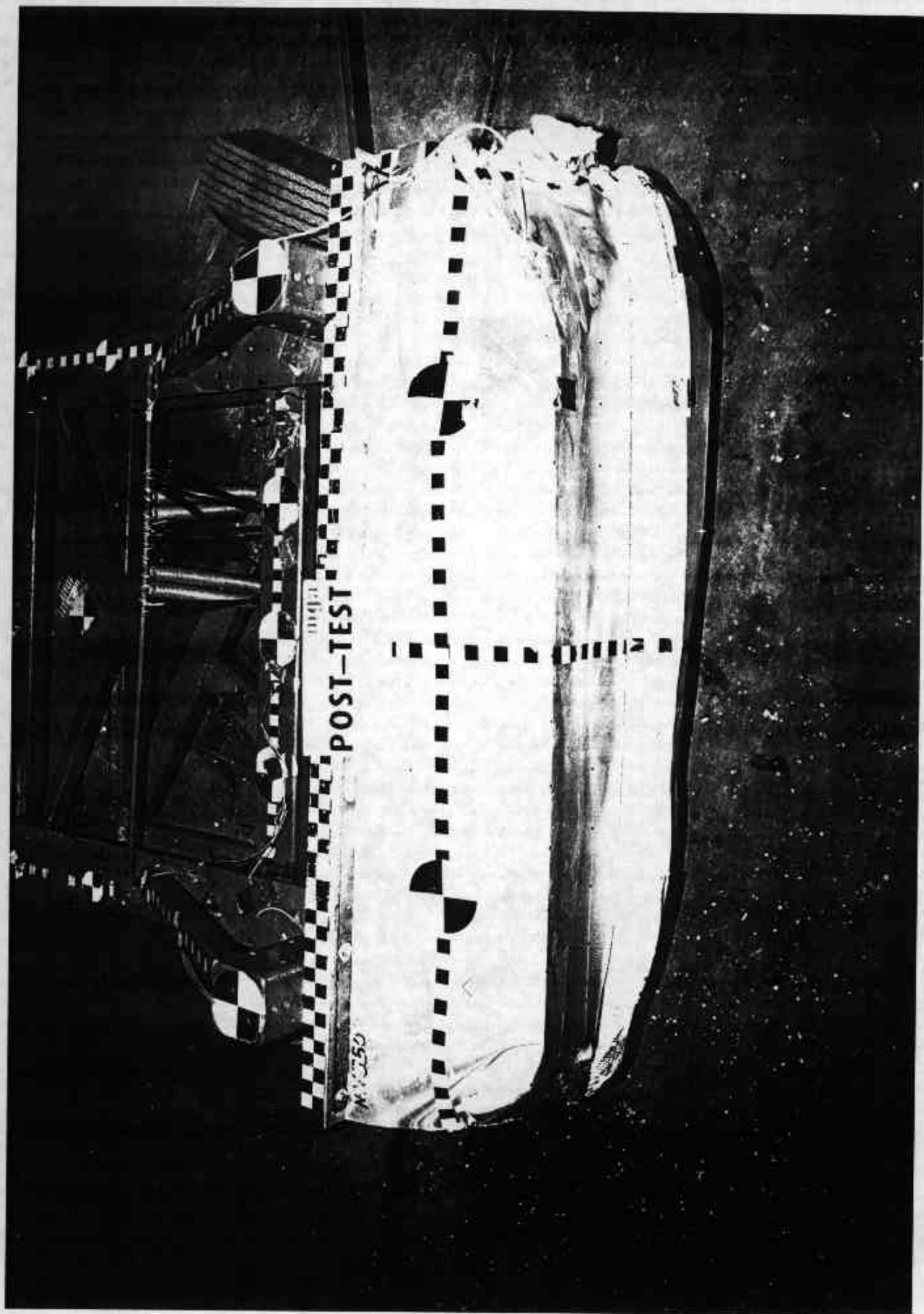


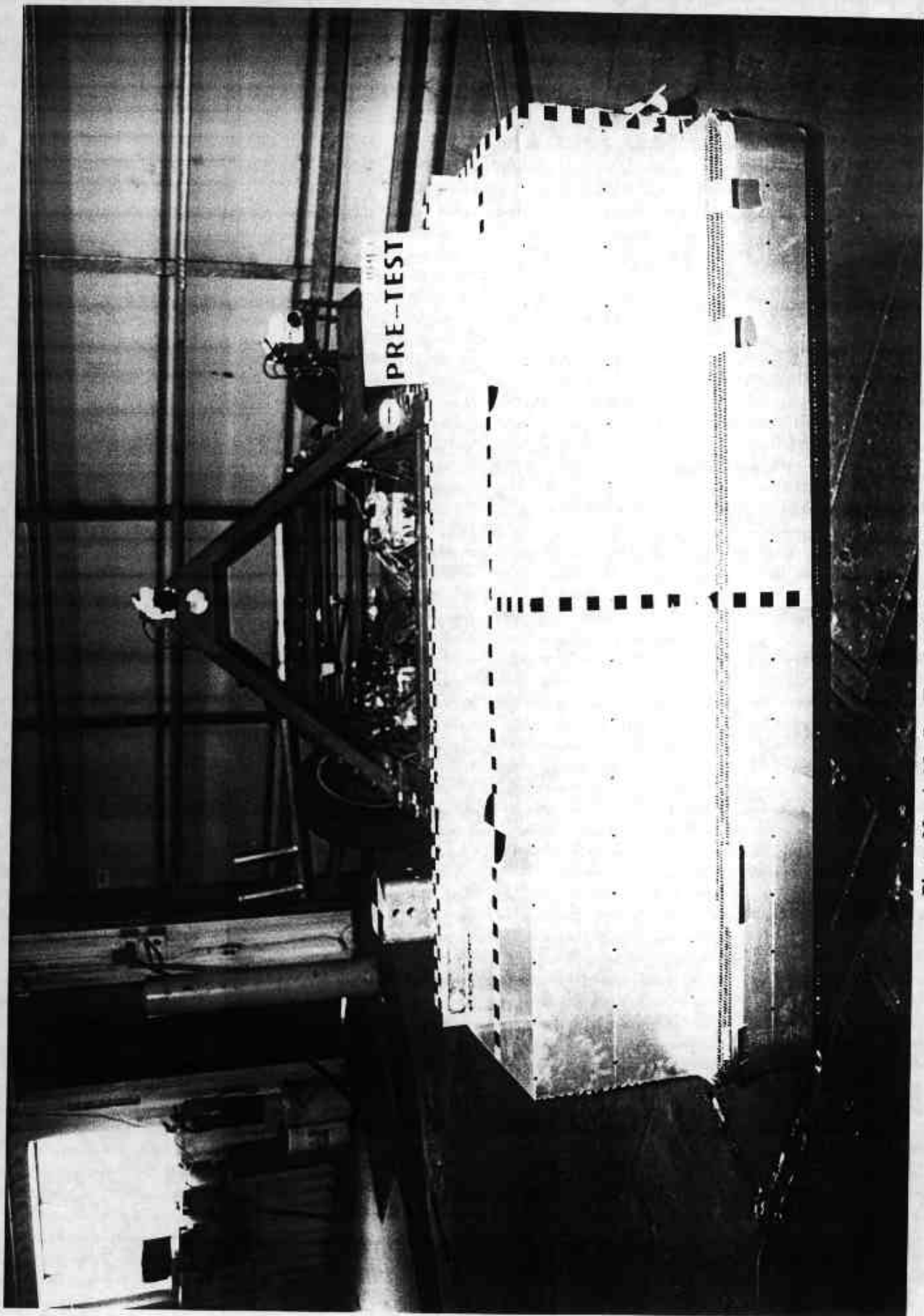
Photo No. A-13 - Pre-Test MDB Top View

A-13



A-14

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



A-15

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

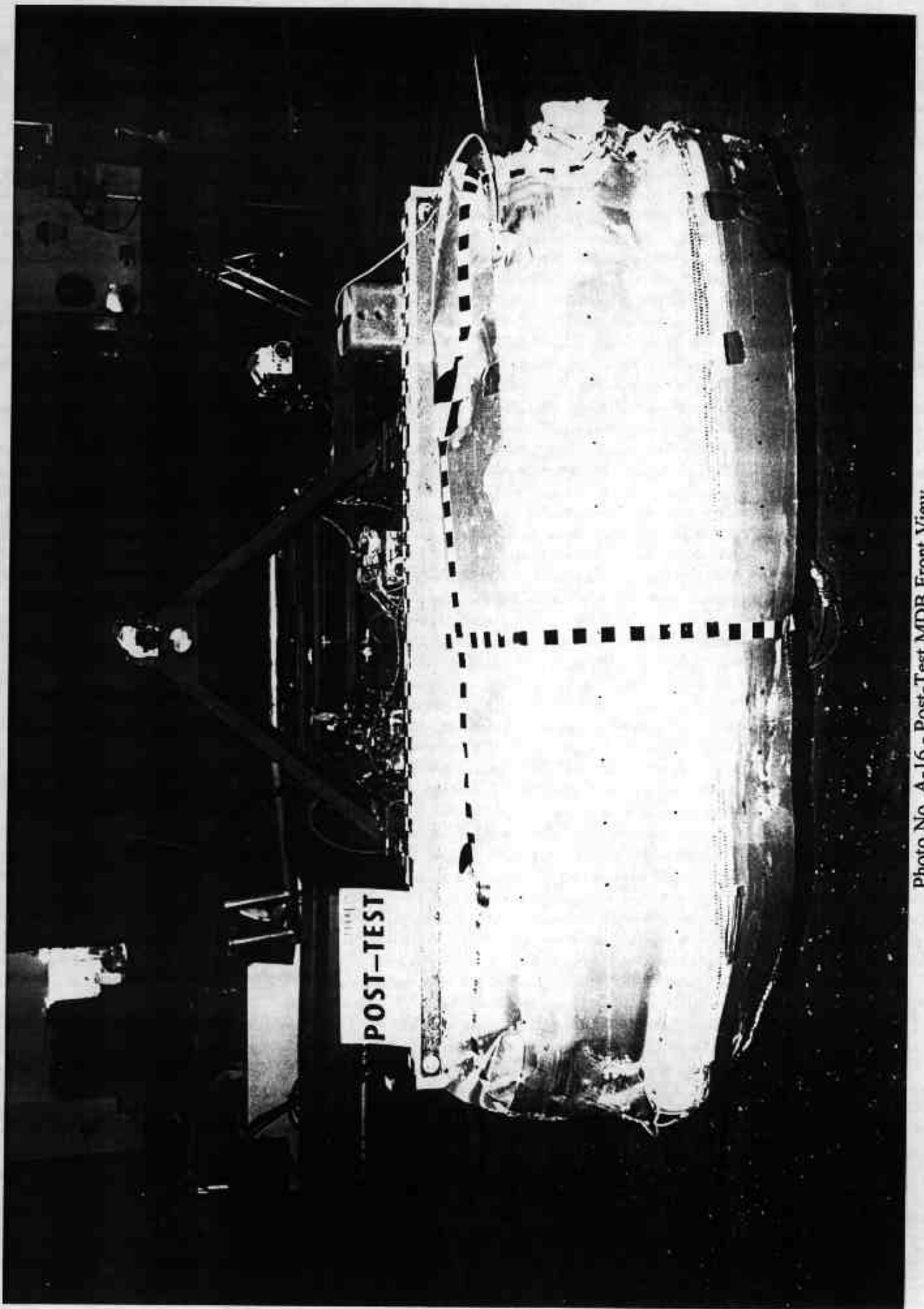


Photo No. A-16 - Post-Test MDB Front View

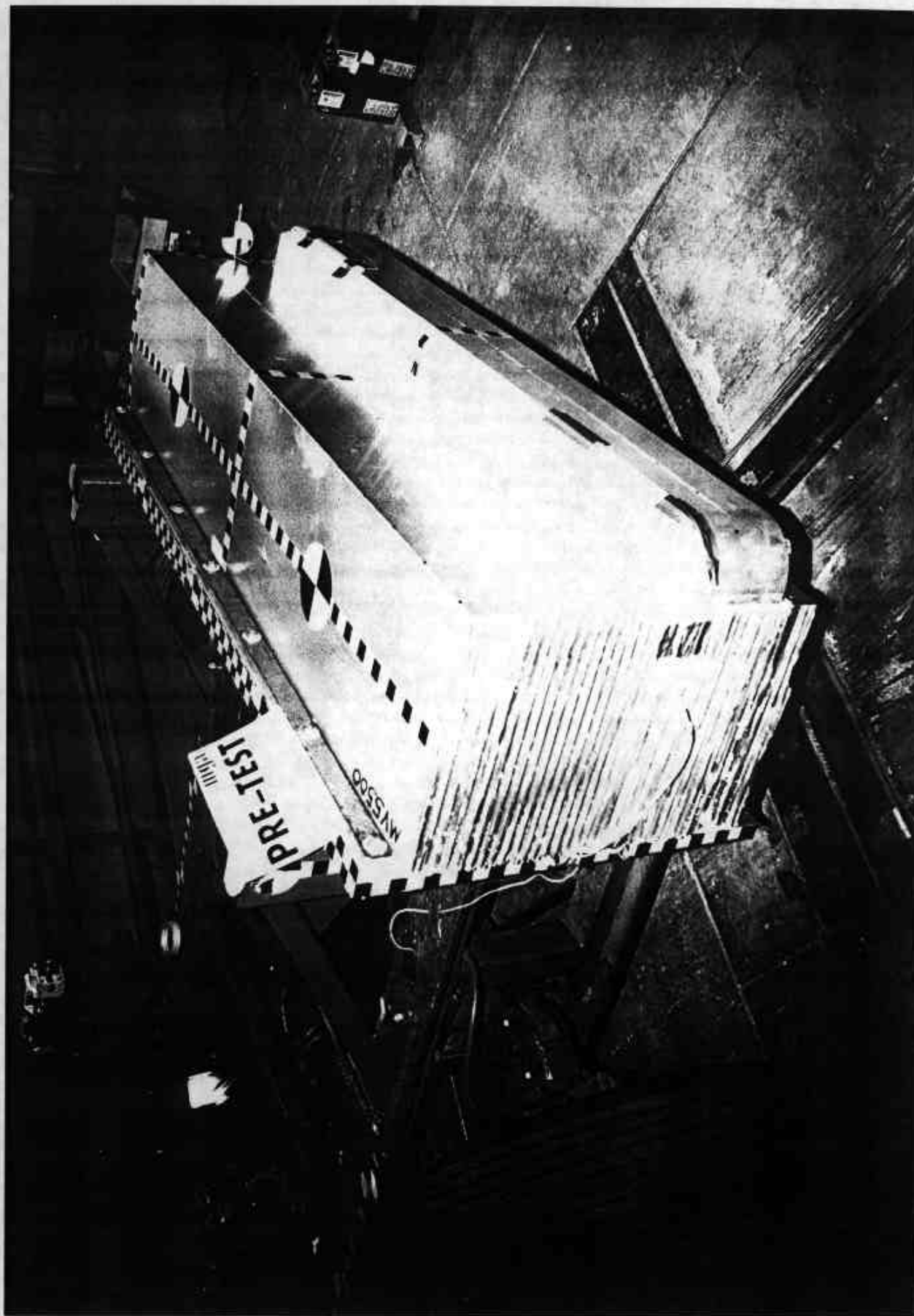


Photo No. A-17 - Pre-Test MDB Right Side View

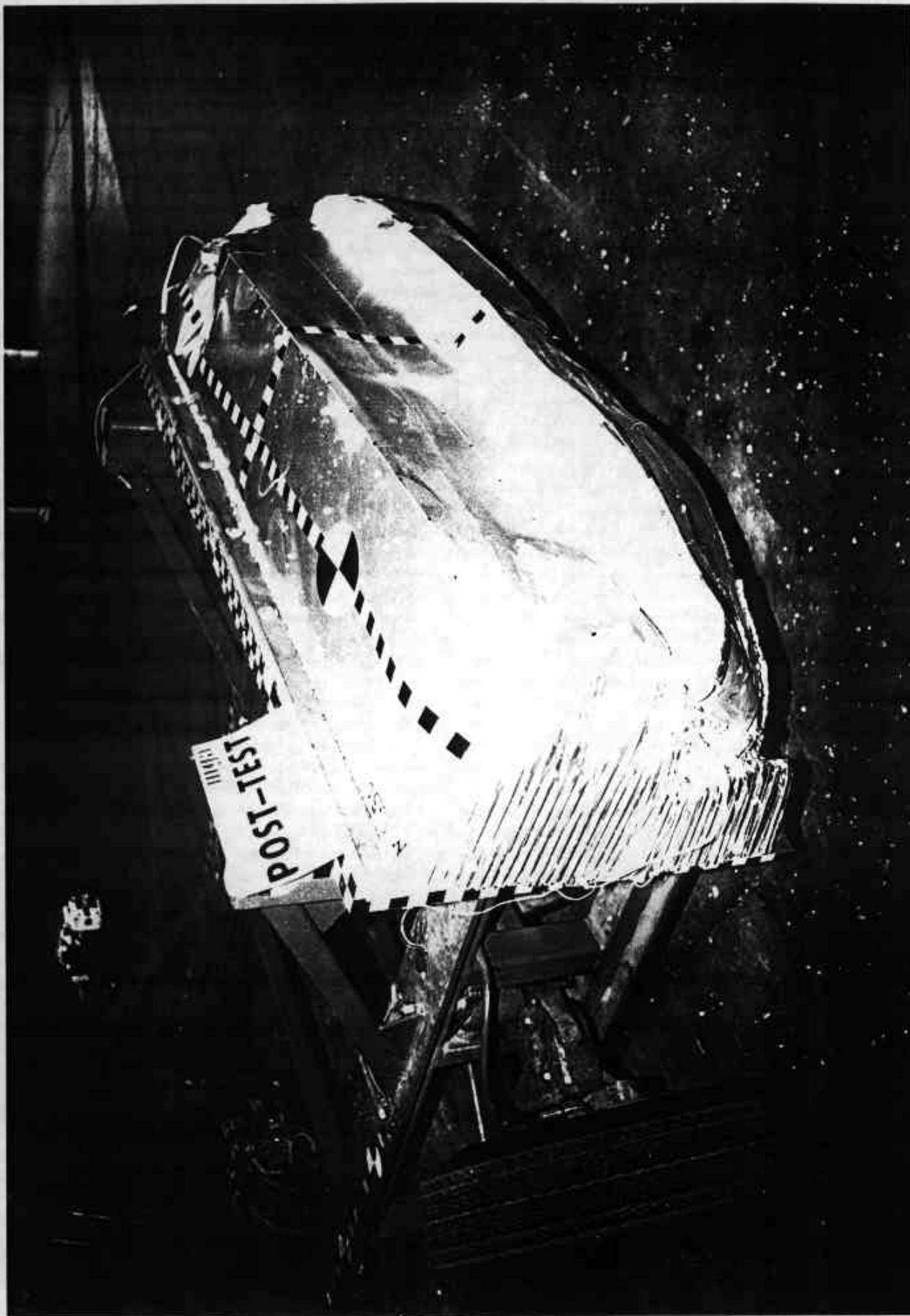


Photo No. A-18 - Post-Test MDB Right Side View

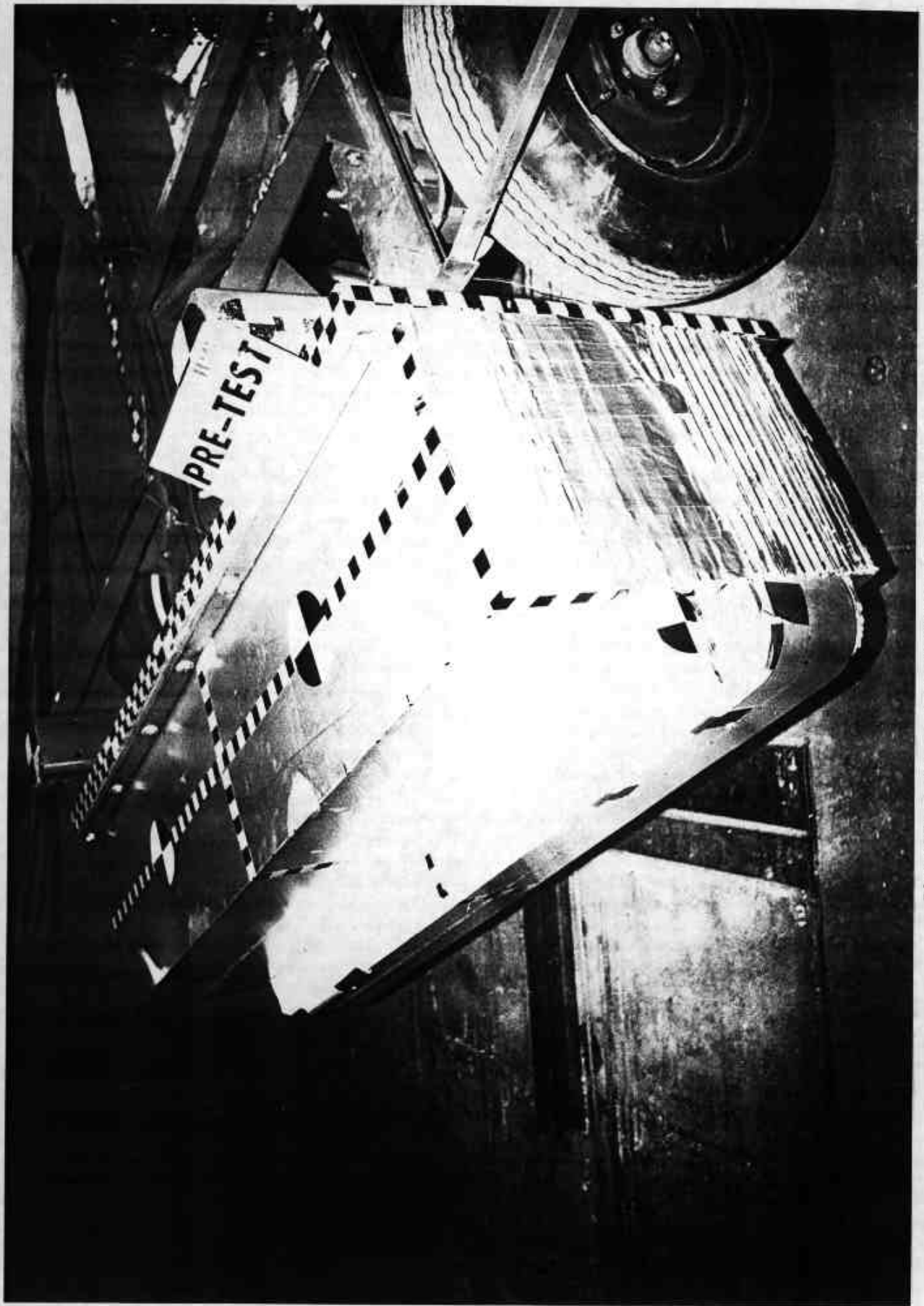


Photo No. A-19 - Pre-Test MDB Left Side View

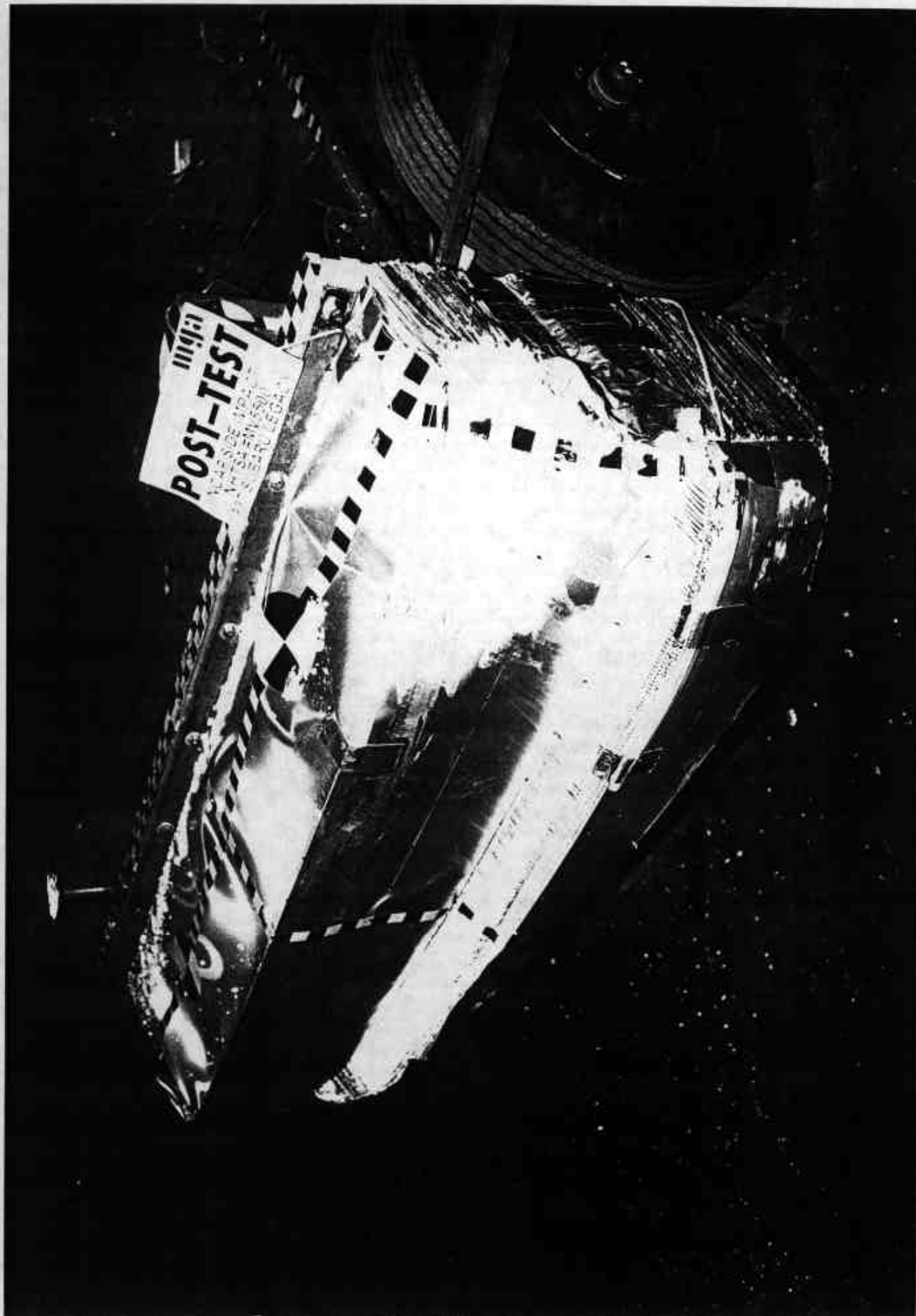


Photo No. A-20 - Post-Test MDB Left Side View

A-20

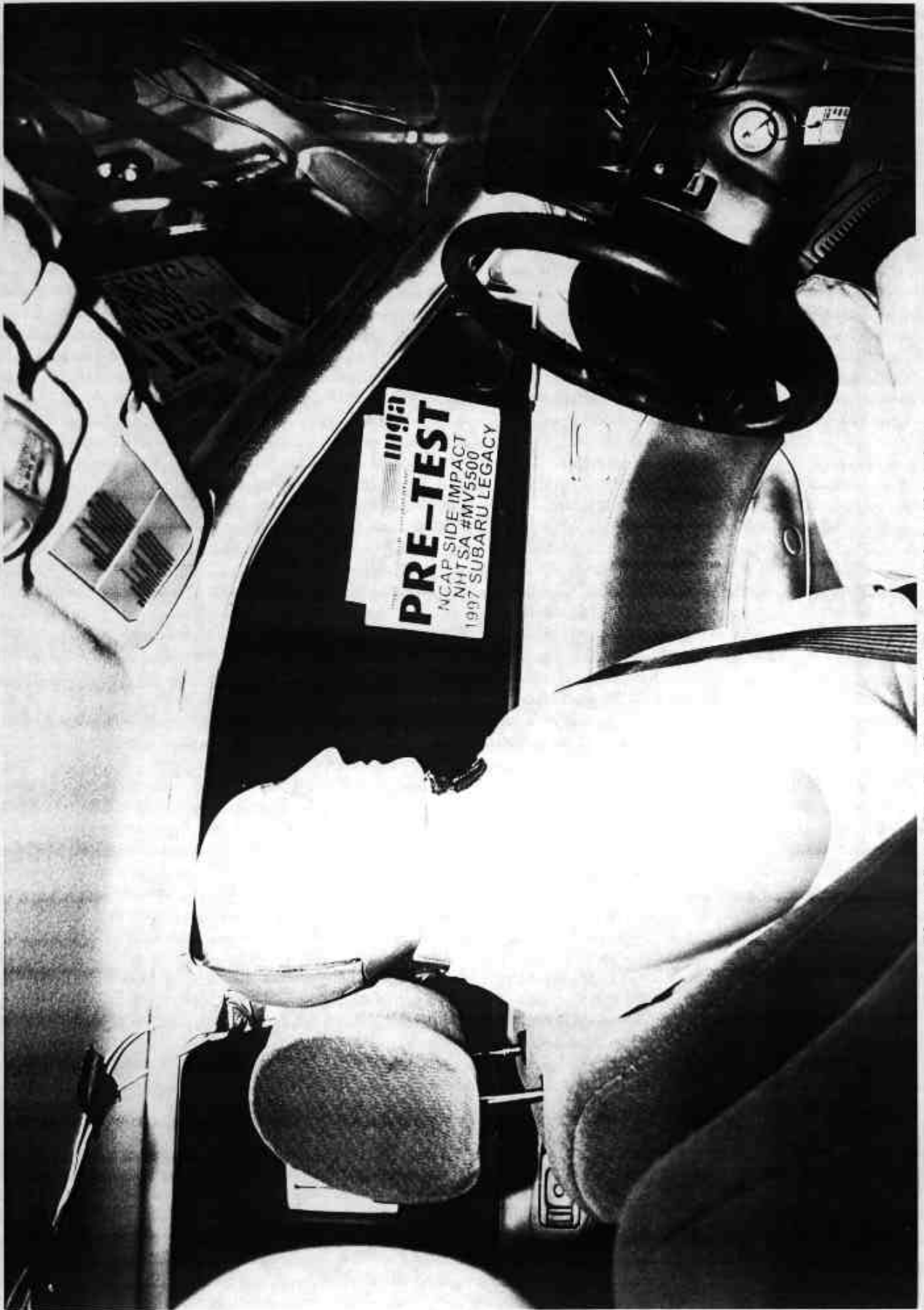


Photo No. A-21 - Pre-Test Driver Dummy Right Side View



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

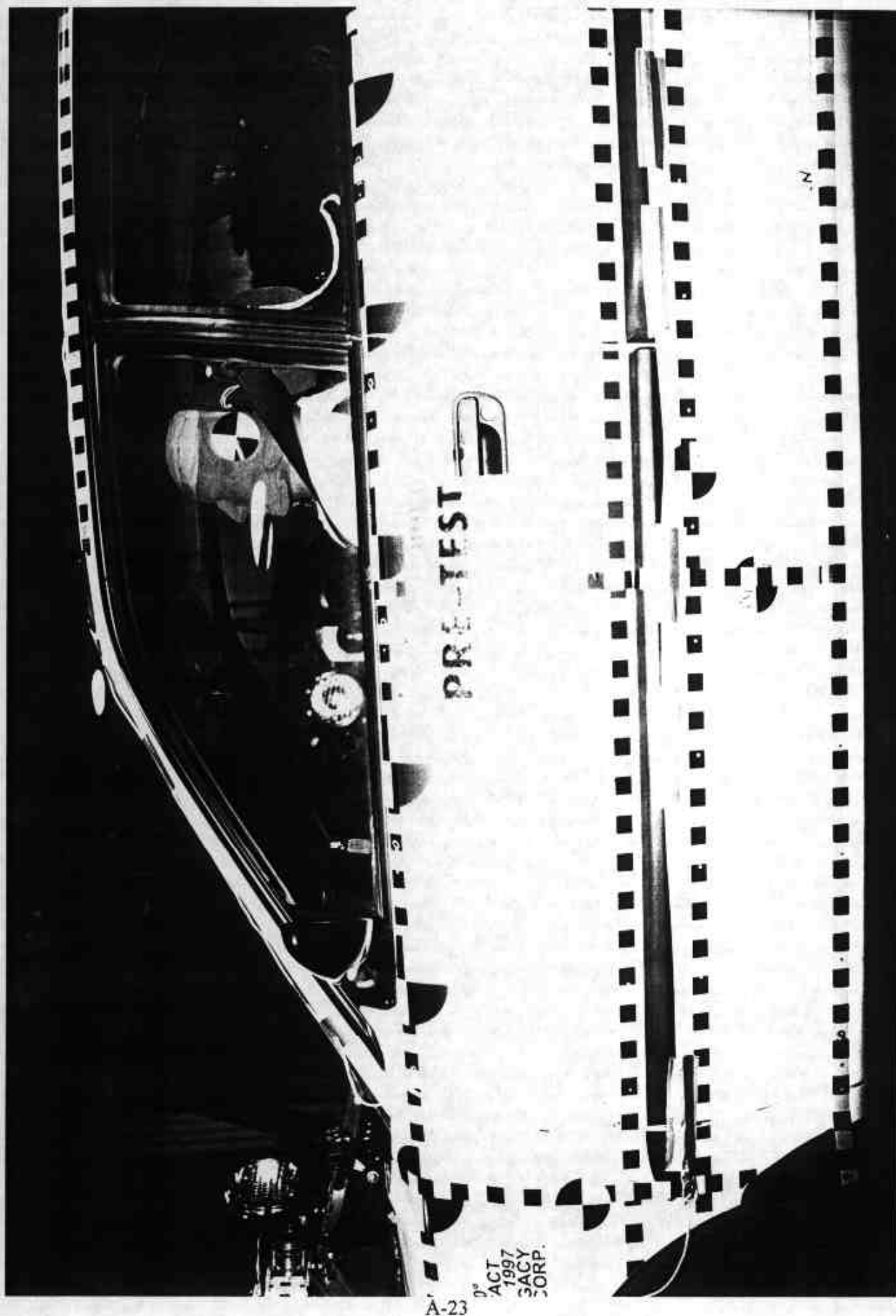
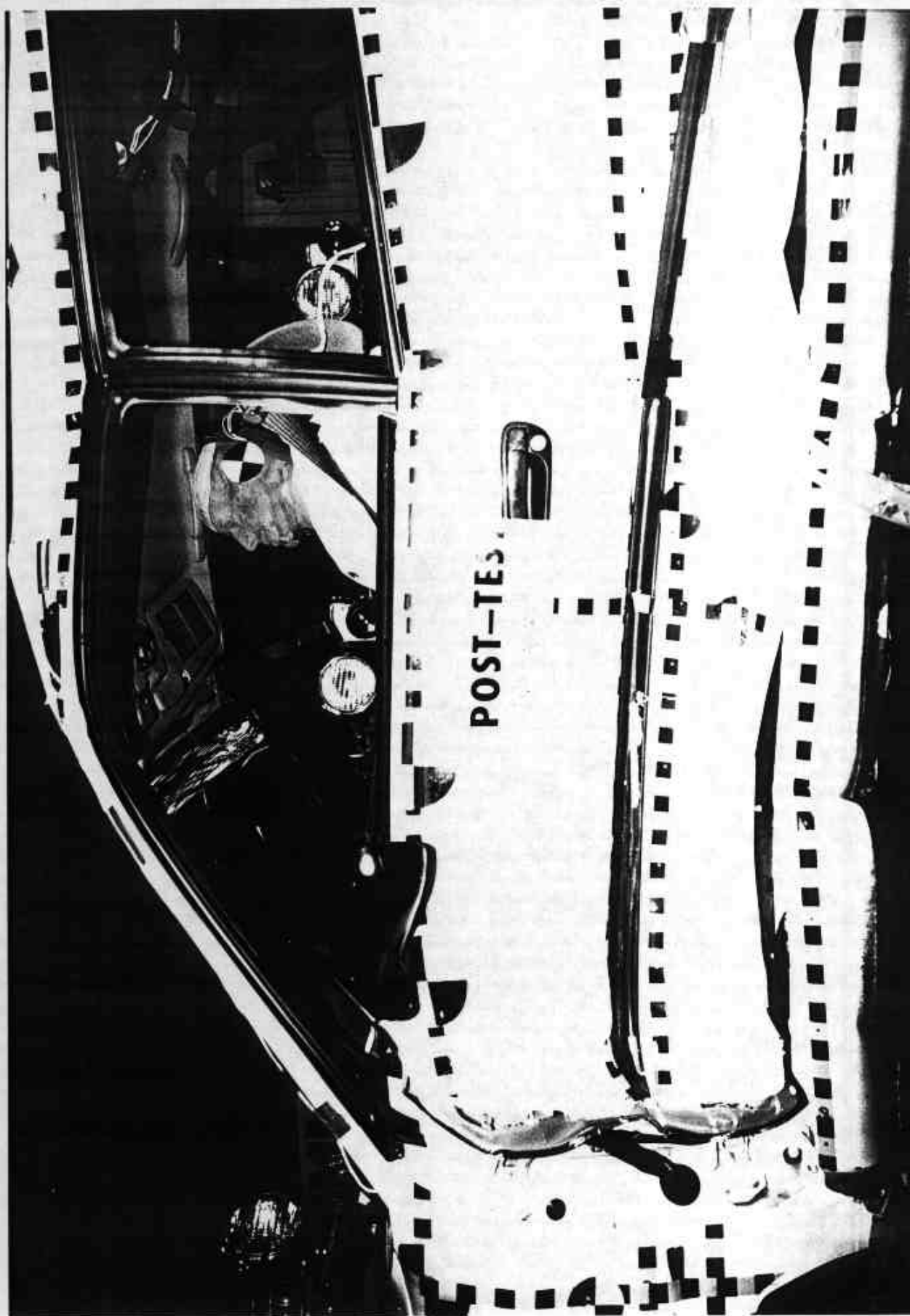


Photo No. A-23 - Pre-Test Driver Dummy Left Side View



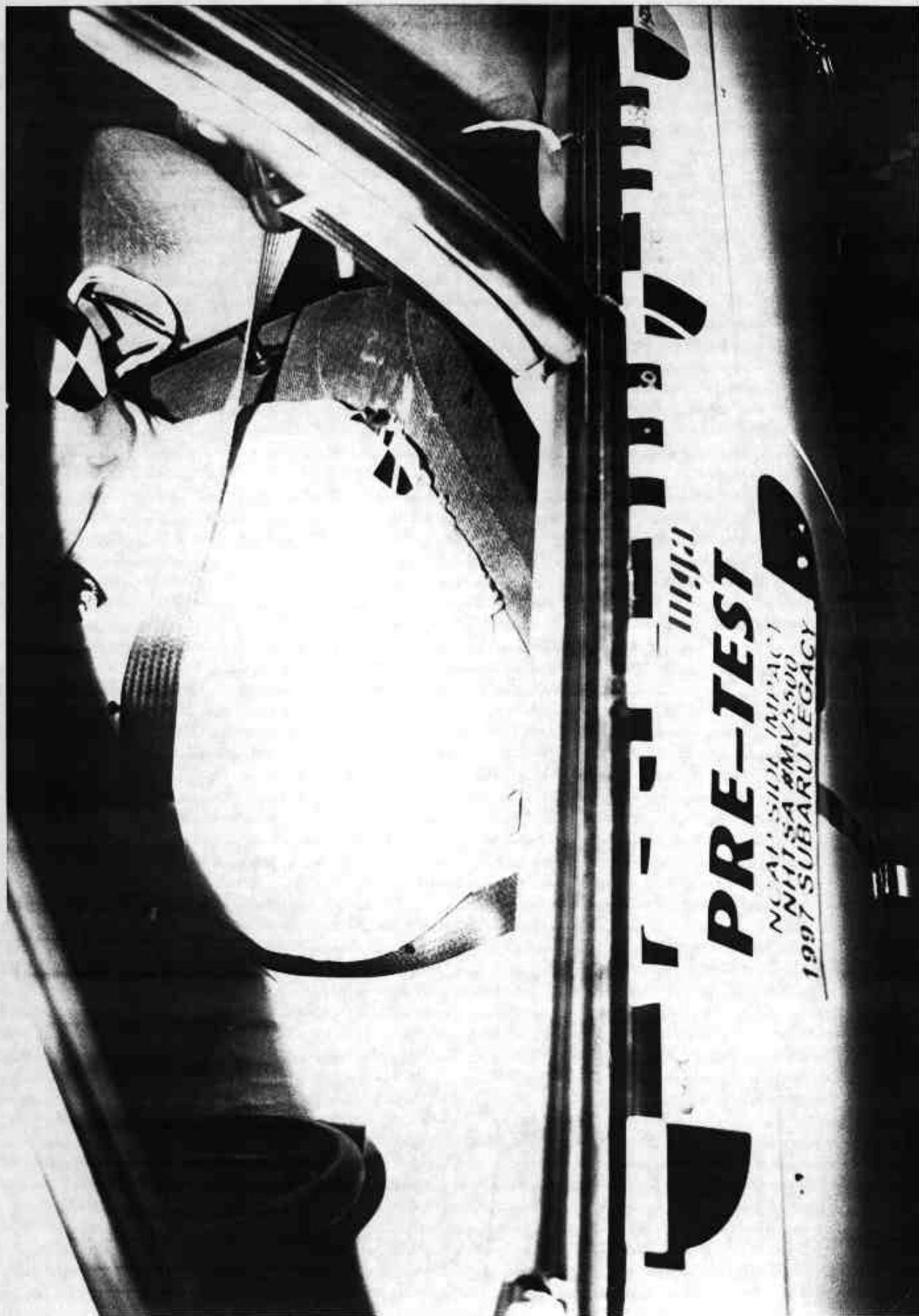
A-24

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



A-25

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



A-26

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

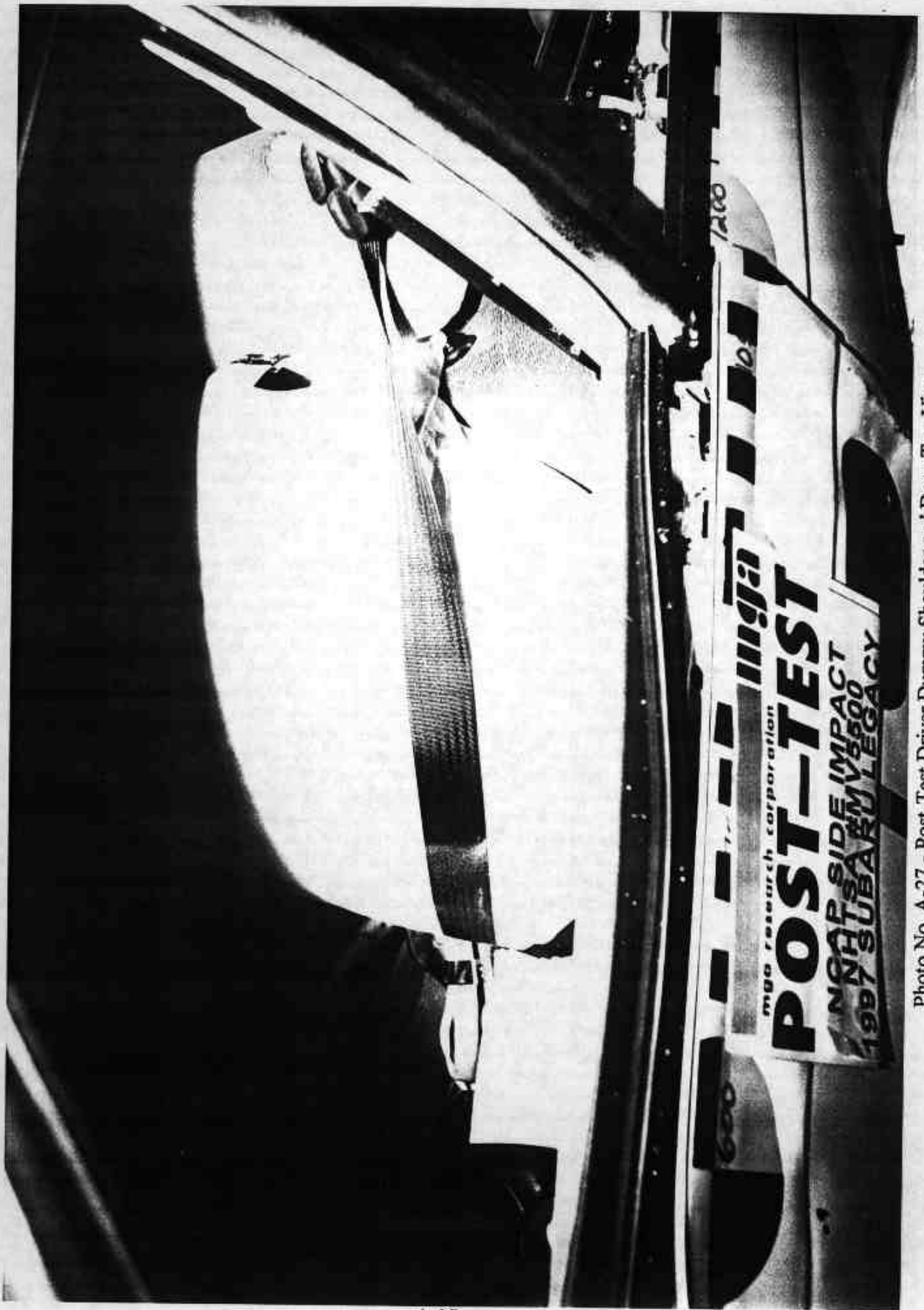
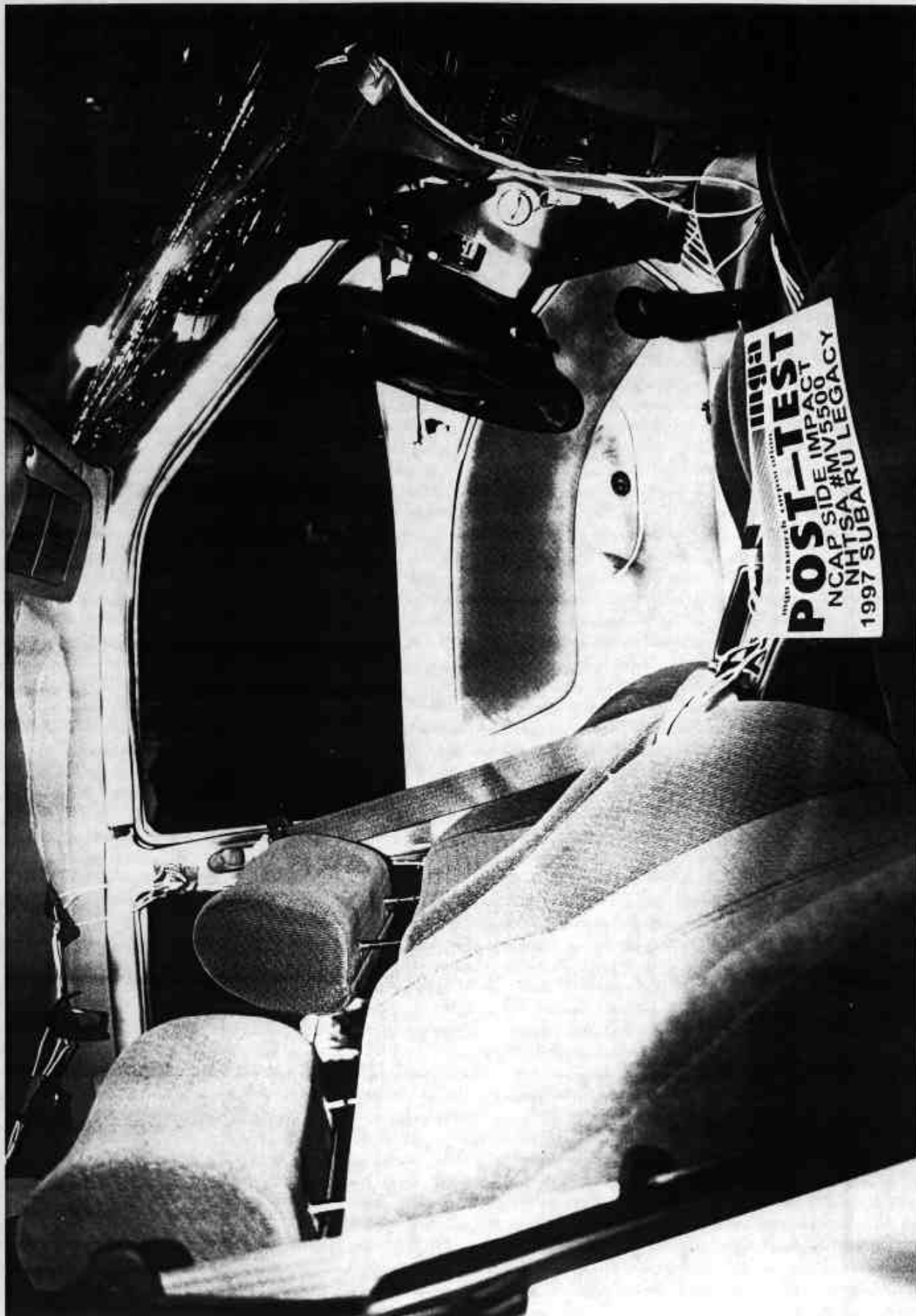


Photo No. A-27 - Post-Test Driver Dummy Shoulder and Door Top View

A-27



A-28

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



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

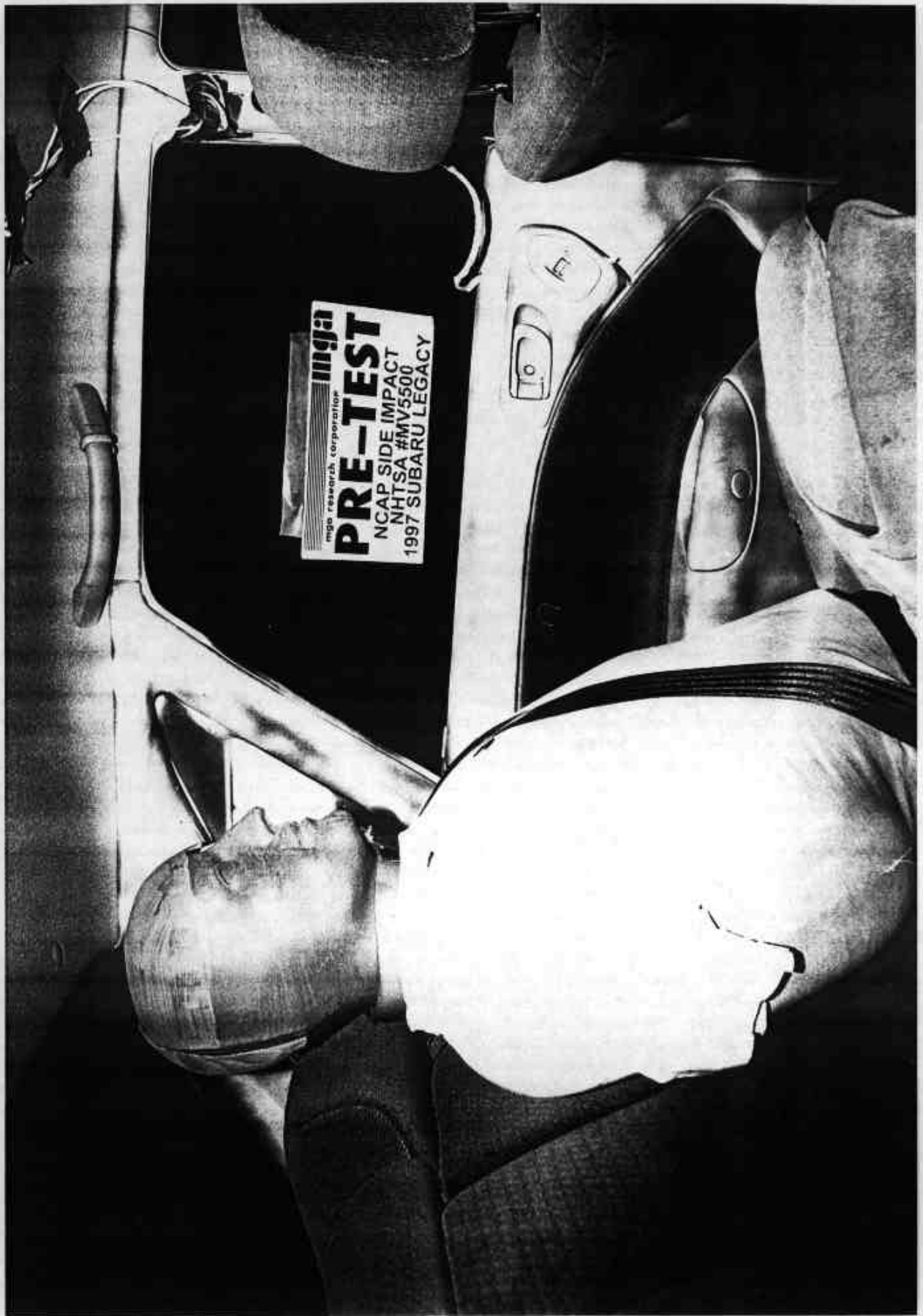


Photo No. A-30 - Pre-Test Passenger Dummy Right Side View

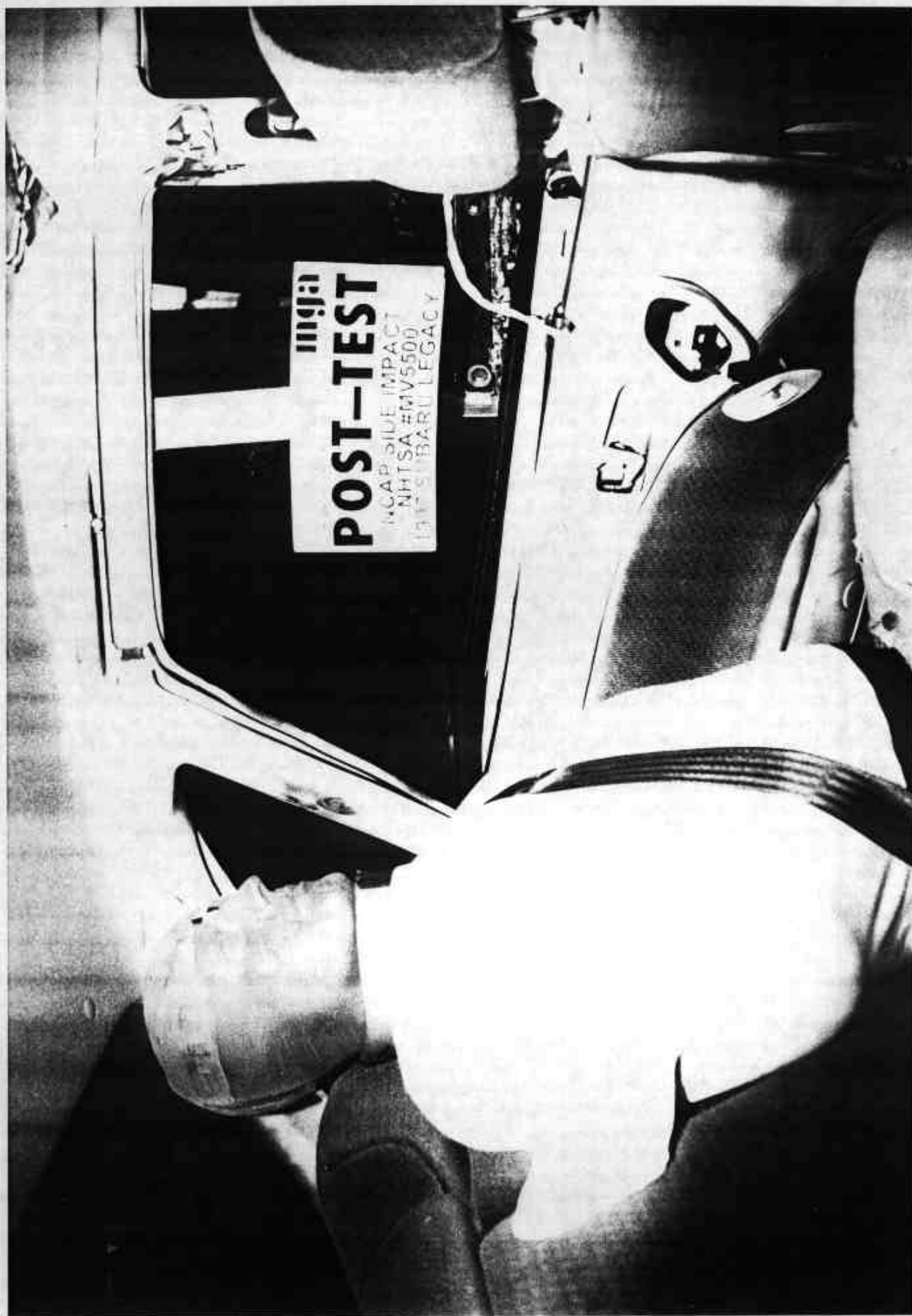
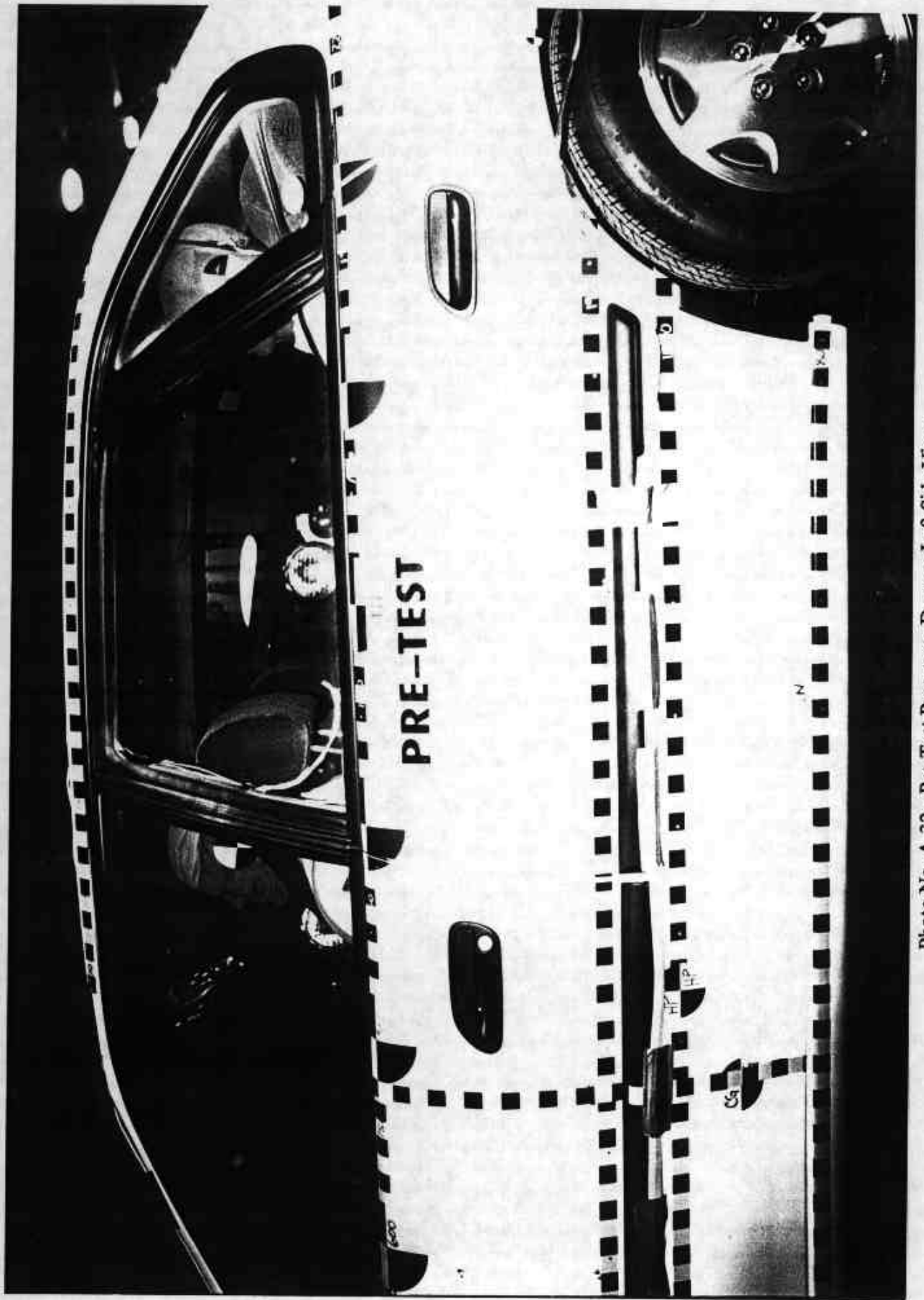
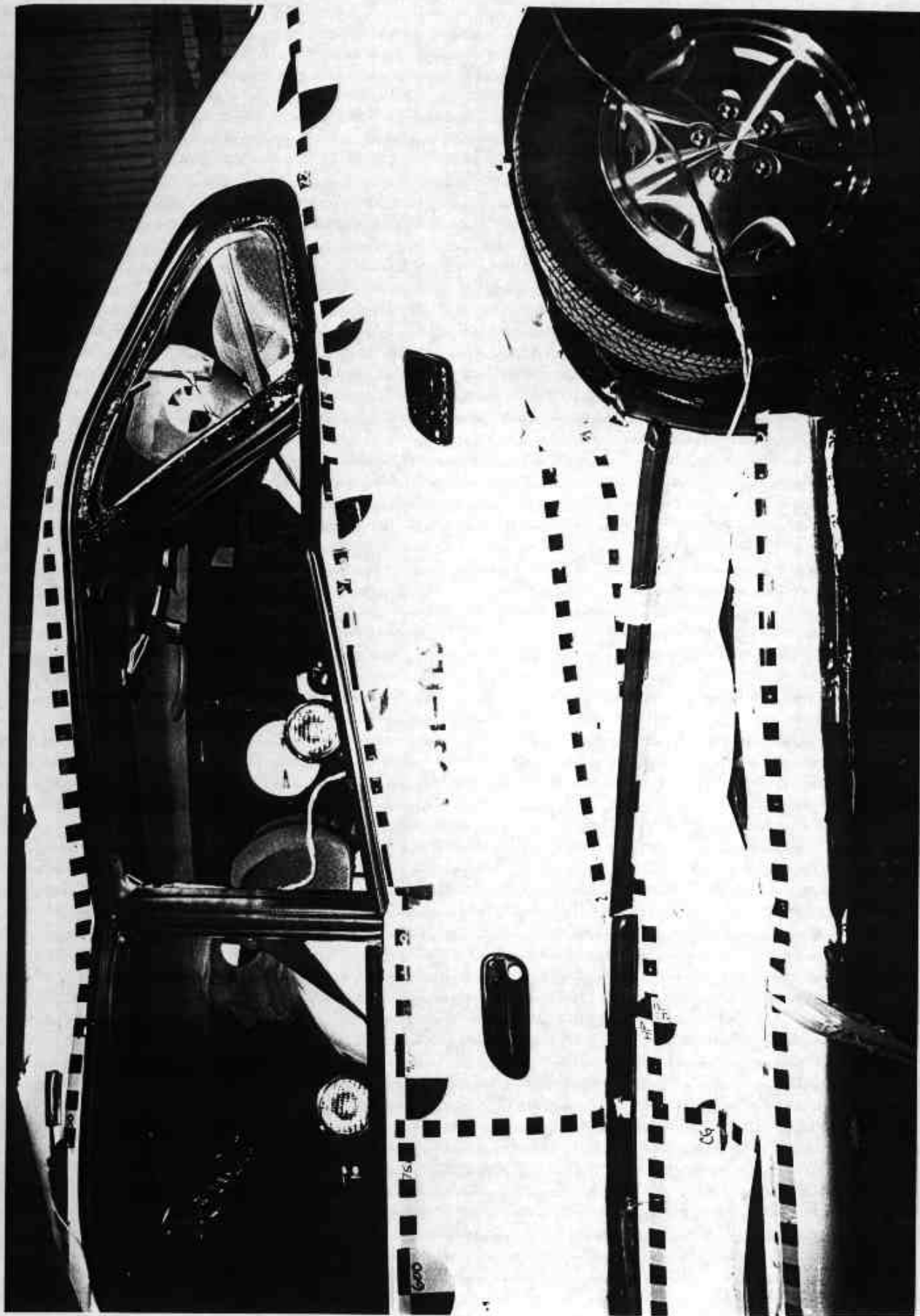


Photo No. A-31 - Post-Test Passenger Dummy Right Side View



A-32

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



A-33

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

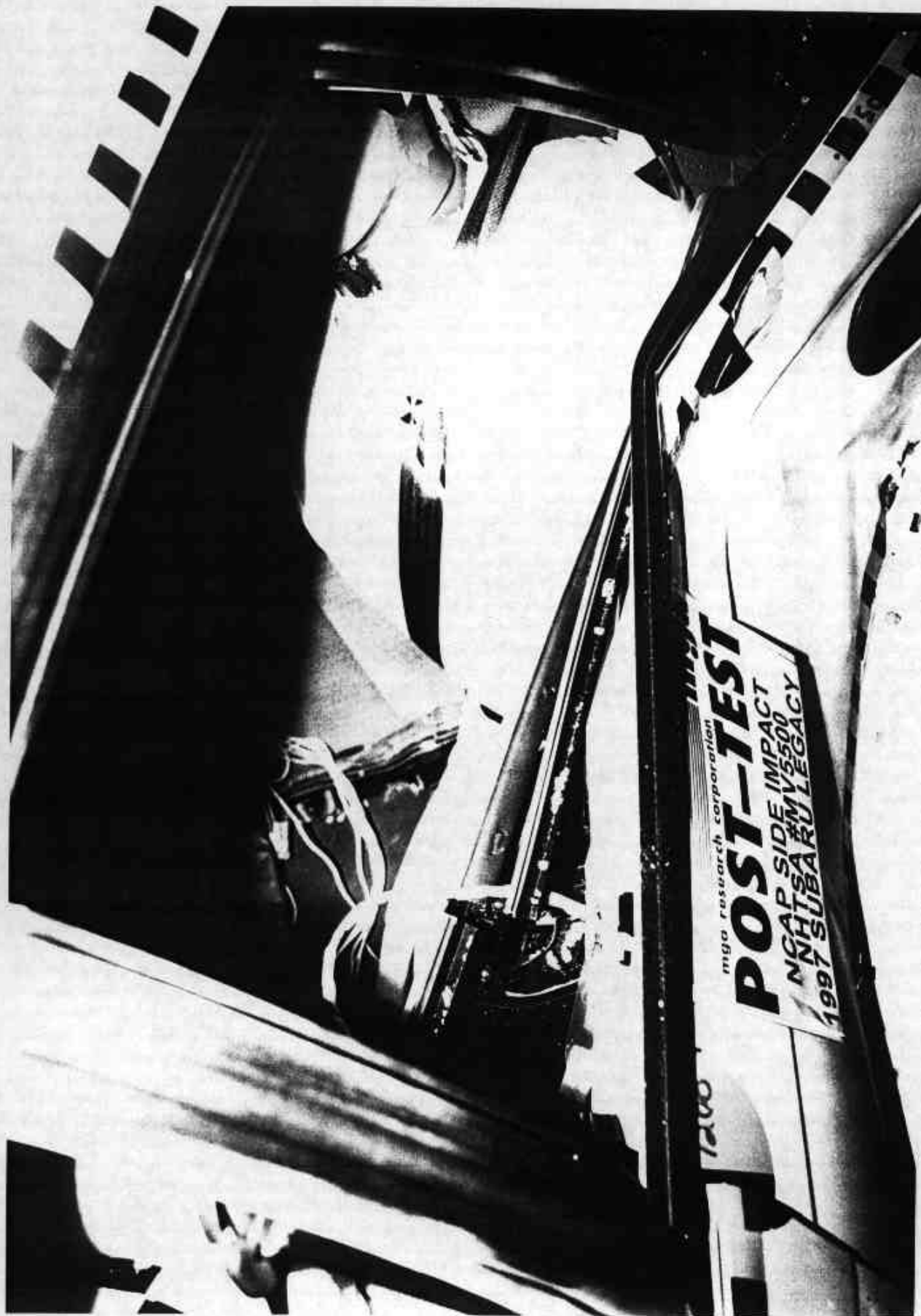


A-34

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

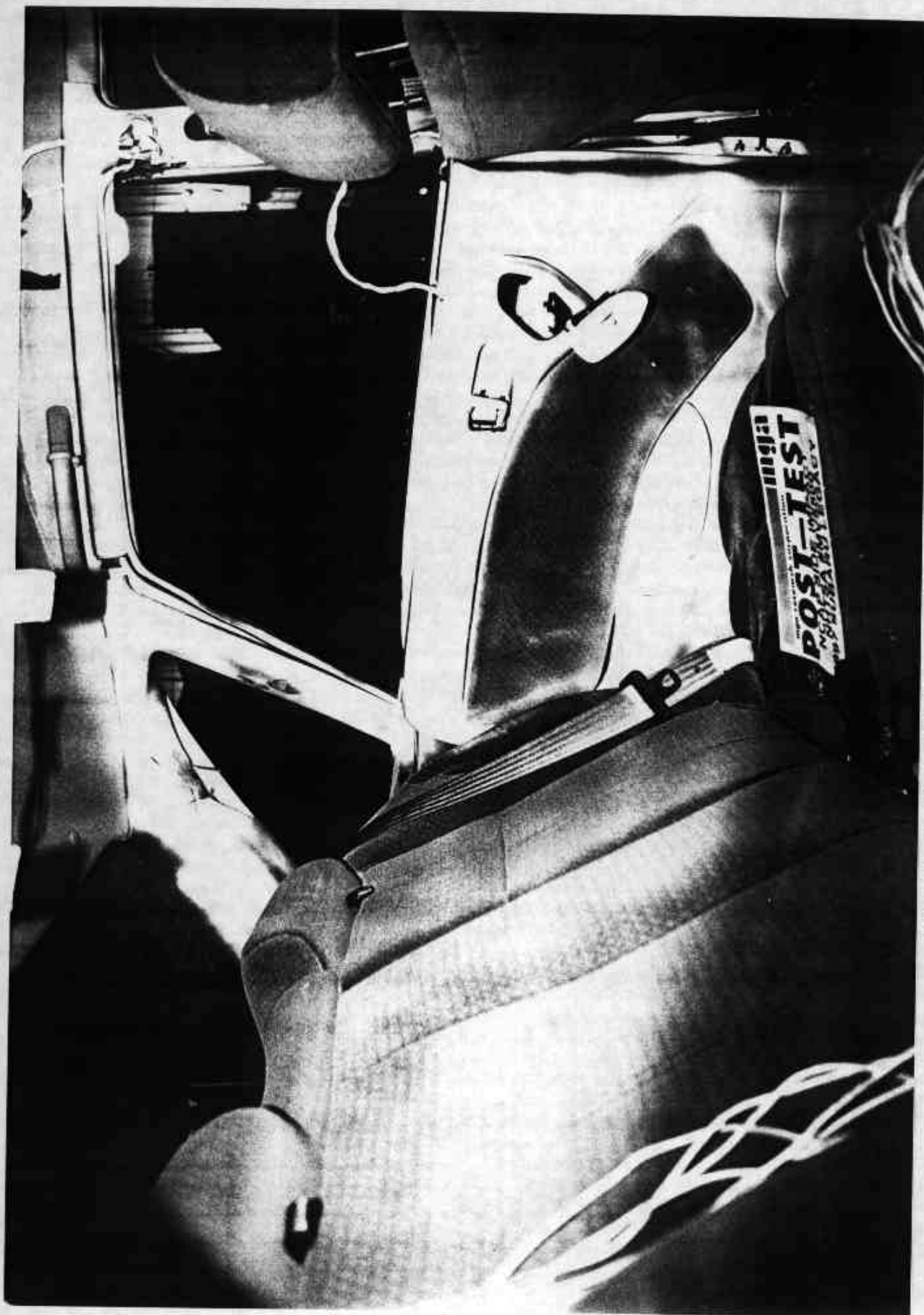


A-35



A-36

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



A-37

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



A-38

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

55/28 KPH 90°
NCAP SIDE IMPACT
#MV5500 FEB. 18, 1997
1997 SUBARU LEGACY

mga

mga research corporation

POST-TEST

NCAP SIDE IMPACT
NHTSA #MV5500
1997 SUBARU LEGACY



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

DATE: 12/96
SUBARU MOTOR CO., LTD.
2095LB(950KG) R 2015LB(914KG)
GAWR: F 2095LB(950KG) GAWR: F 2095LB(914KG)
THIS VEHICLE CONFORMS TO ALL APPLICABLE FEDERAL MOTOR VEHICLE
SAFETY, BUMPER, AND THEFT PREVENTION STANDARDS IN EFFECT ON
THE DATE OF MANUFACTURE SHOWN ABOVE.

TYPE: PASSENGER CAR
VIN: 4S3BD435XV7211264



ASSEMBLED BY SUBARU - ISUZU AUTOMOTIVE INC. MADE IN U.S.A.

SUBARU

WEIGHT CAPACITY WEIGHT:
850LB(383KG)

NUMBER OF OCCUPANTS:

TOTAL 5 (FRONT 2/REAR 3)

**RECOMMENDED TIRE INFLATION
PRESSURE** psi(kgf/cm²)

TIRE SIZE	FRONT	REAR
P185/70R14 87S	32(2.2)	30(2.1)
TEMPORARY SPARE TIRE		
FWD	T125/70D15	60(4.2)
4WD	T135/70D16	

SEDAN NO

Photo No. A-41 - Tire Placard

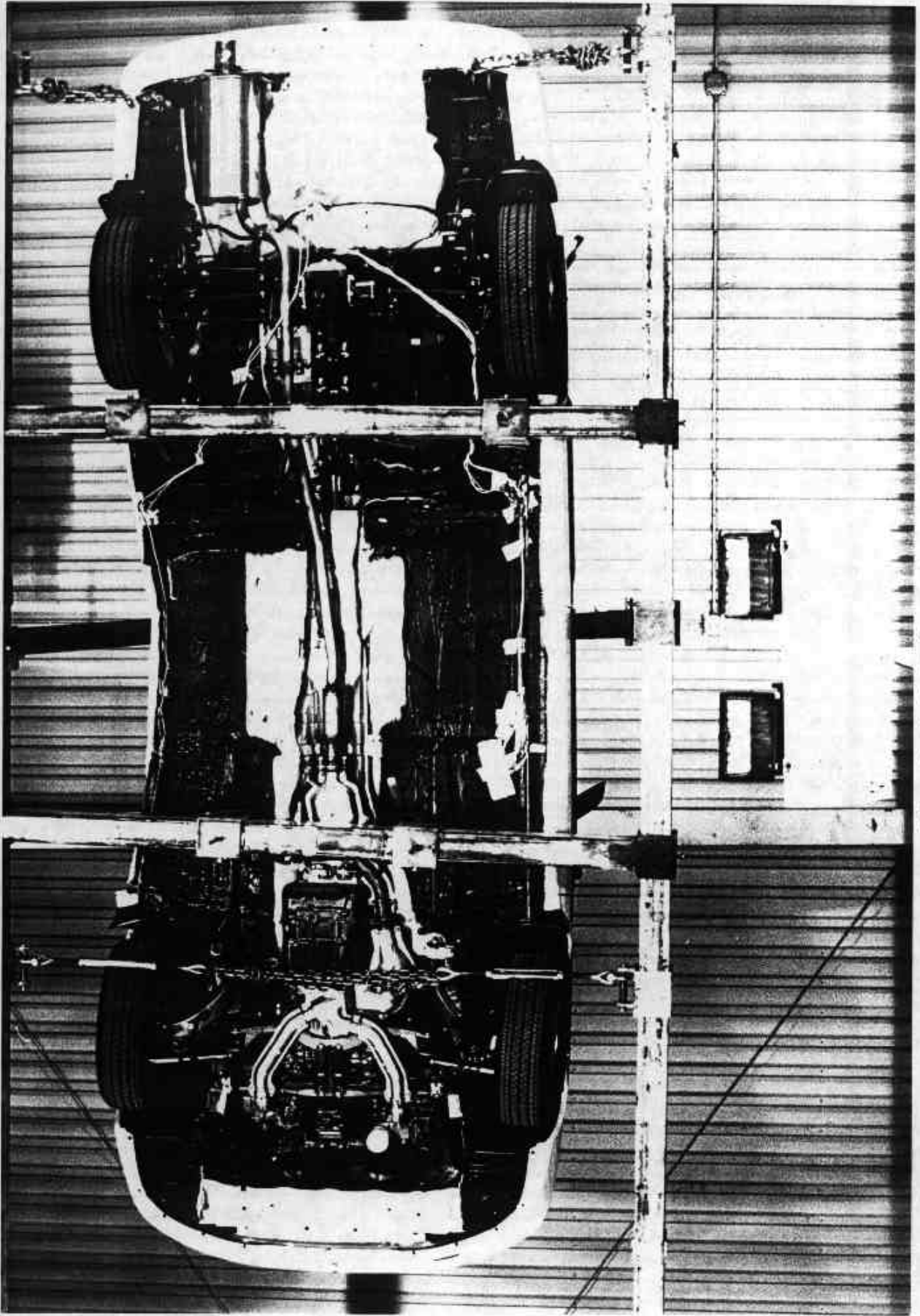
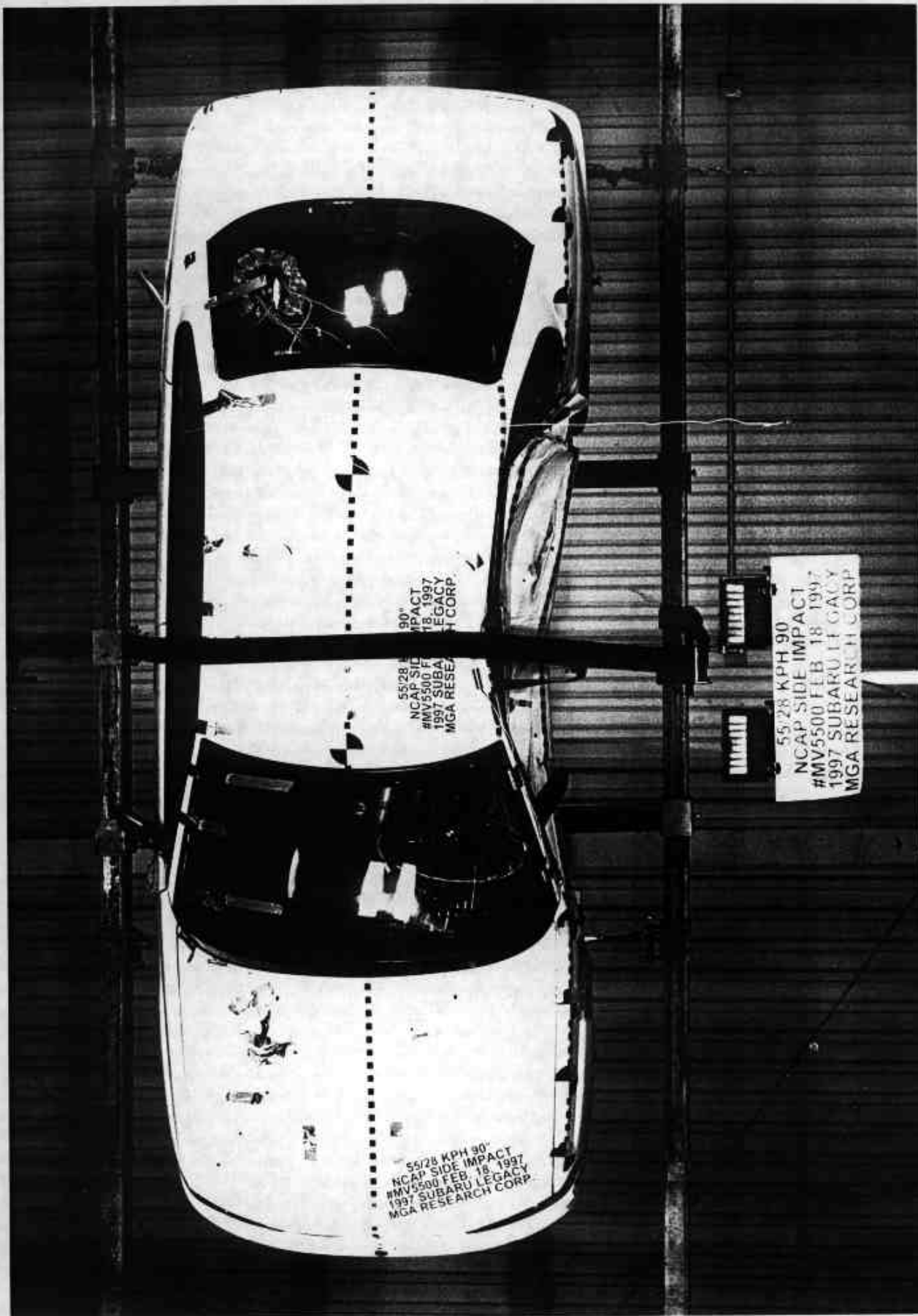


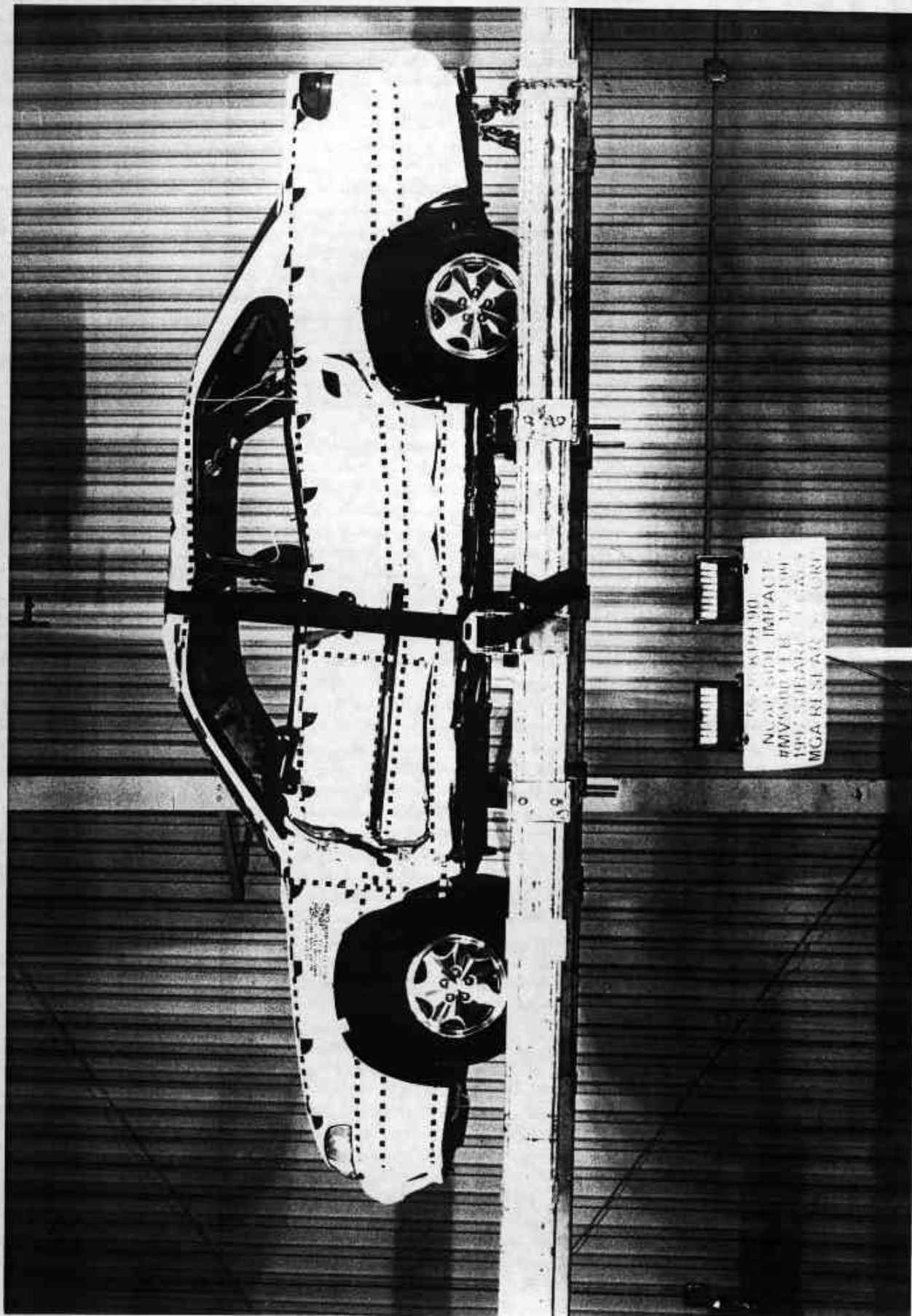
Photo No. A-42 - Rollover 90°

A-42



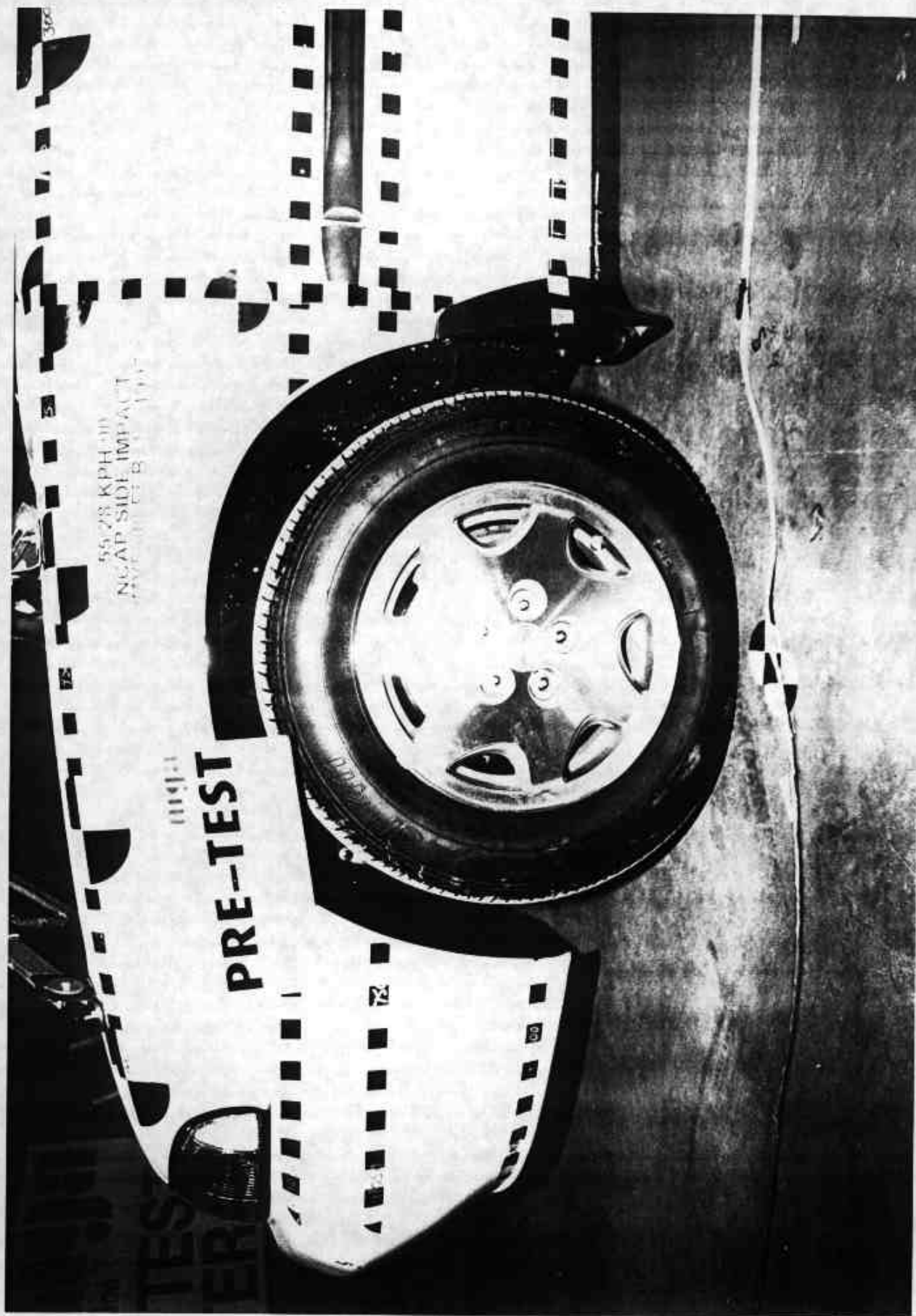
A-44

Photo No. A-44 - Rollover 270°



A-45

Photo No. A-45 - Rollover 360°



A-46

Photo No. A-46 - Left Front Attitude Point

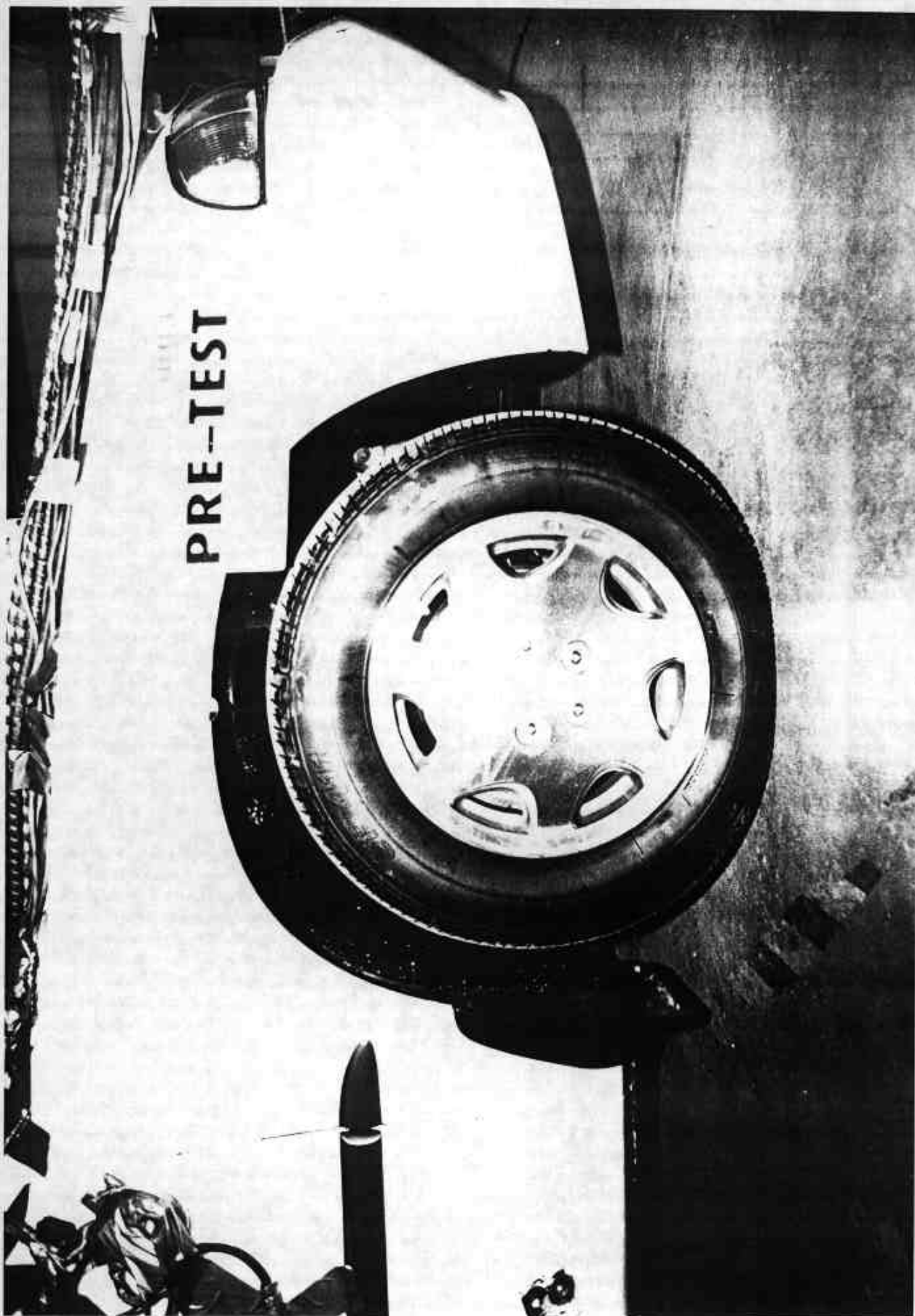


Photo No. A-47 - Right Front Attitude Point

A-47

ingja

PRE-TEST



A-48

Photo No. A-48 - Left Rear Attitude Point



PRE-TES

A-49

Photo No. A-49 - Right Rear Attitude Point

APPENDIX B - VEHICLE AND SID RESPONSE DATA

Table of Data Plots

<u>Occupant:</u>	<u>Page No.</u>
Figure B-1 - Driver Head X Acceleration vs. Time	B-1
Figure B-2 - Driver Head Y Acceleration vs. Time	B-2
Figure B-3 - Driver Head Z Acceleration vs. Time	B-3
Figure B-4 - Driver Head Resultant vs. Time	B-4
Figure B-5 - Driver Upper Rib Y Acceleration vs. Time	B-5
Figure B-6 - Driver Upper Rib Y Velocity vs. Time	B-6
Figure B-7 - Driver Lower Rib Y Acceleration vs. Time	B-7
Figure B-8 - Driver Lower Rib Y Velocity vs. Time	B-8
Figure B-9 - Driver Lower Spine Y Acceleration vs. Time	B-9
Figure B-10 - Driver Lower Spine Y Velocity vs. Time	B-10
Figure B-11 - Driver Pelvis Y Acceleration vs. Time	B-11
Figure B-12 - Driver Pelvis Y Velocity vs. Time	B-12
 <u>Vehicle:</u>	
Figure B-13 - Left Side Sill at Front Seat Y Acceleration vs. Time	B-13
Figure B-14 - Left Side Sill at Front Seat Y Velocity vs. Time	B-14
Figure B-15 - Left Side Sill at Rear Seat Y Acceleration vs. Time	B-15
Figure B-16 - Left Side Sill at Rear Seat Y Velocity vs. Time	B-16
Figure B-17 - Right Side Sill at Front Seat X Acceleration vs. Time	B-17
Figure B-18 - Right Side Sill at Front Seat X Velocity vs. Time	B-18
Figure B-19 - Right Side Sill at Front Seat Y Acceleration vs. Time	B-19
Figure B-20 - Right Side Sill at Front Seat Y Velocity vs. Time	B-20
Figure B-21 - Right Side Sill at Front Seat Z Acceleration vs. Time	B-21
Figure B-22 - Right Side Sill at Front Seat Z Velocity vs. Time	B-22
Figure B-23 - Right Side Sill at Front Seat Resultant Acceleration vs. Time	B-23
Figure B-24 - Right Side Sill at Rear Seat X Acceleration vs. Time	B-24
Figure B-25 - Right Side Sill at Rear Seat X Velocity vs. Time	B-25

Table of Data Plots

<u>Vehicle (Cont'd):</u>	<u>Page No.</u>
Figure B-26 - Right Side Sill at Rear Seat Y Acceleration vs. Time	B-26
Figure B-27 - Right Side Sill at Rear Seat Y Velocity vs. Time	B-27
Figure B-28 - Right Side Sill at Rear Seat Z Acceleration vs. Time	B-28
Figure B-29 - Right Side Sill at Rear Seat Z Velocity vs. Time	B-29
Figure B-30 - Right Side Sill at Rear Seat Resultant Acceleration vs. Time	B-30
Figure B-31 - Left Driver Seat Track Y Acceleration vs. Time	B-31
Figure B-32 - Left Driver Seat Track Y Velocity vs. Time	B-32
Figure B-33 - Rear Floorpan above Axle X Acceleration vs. Time	B-33
Figure B-34 - Rear Floorpan above Axle X Velocity vs. Time	B-34
Figure B-35 - Rear Floorpan above Axle Y Acceleration vs. Time	B-35
Figure B-36 - Rear Floorpan above Axle Y Velocity vs. Time	B-36
Figure B-37 - Rear Floorpan above Axle Z Acceleration vs. Time	B-37
Figure B-38 - Rear Floorpan above Axle Z Velocity vs. Time	B-38
Figure B-39 - Rear Floorpan above Axle Resultant Acceleration vs. Time	B-39
Figure B-40 - Right Rear Occupant Compartment Y Acceleration vs. Time	B-40
Figure B-41 - Right Rear Occupant Compartment Y Velocity vs. Time	B-41
Figure B-42 - Left Lower A-Post Y Acceleration vs. Time	B-42
Figure B-43 - Left Lower A-Post Y Velocity vs. Time	B-43
Figure B-44 - Left Mid A-Post Y Acceleration vs. Time	B-44
Figure B-45 - Left Mid A-Post Y Velocity vs. Time	B-45
Figure B-46 - Left Lower B-Post Y Acceleration vs. Time	B-46
Figure B-47 - Left Lower B-Post Y Velocity vs. Time	B-47
Figure B-48 - Left Mid B-Post Y Acceleration vs. Time	B-48
Figure B-49 - Left Mid B-Post Y Velocity vs. Time	B-49
Figure B-50 - Vehicle Center of Gravity X Acceleration vs. Time	B-50
Figure B-51 - Vehicle Center of Gravity X Velocity vs. Time	B-51
Figure B-52 - Vehicle Center of Gravity Y Acceleration vs. Time	B-52
Figure B-53 - Vehicle Center of Gravity Y Velocity vs. Time	B-53

Table of Data Plots

Vehicle (Cont'd):

	<u>Page No.</u>
Figure B-54 - Vehicle Center of Gravity Z Acceleration vs. Time	B-54
Figure B-55 - Vehicle Center of Gravity Z Velocity vs. Time	B-55
Figure B-56 - Vehicle Center of Gravity Resultant Acceleration vs. Time	B-56
Figure B-57 - Left Front Door Centerline Y Acceleration vs. Time	B-57
Figure B-58 - Left Front Door Centerline Y Velocity vs. Time	B-58
Figure B-59 - Left Front Door Upper Centerline Y Acceleration vs. Time	B-59
Figure B-60 - Left Front Door Upper Centerline Y Velocity vs. Time	B-60
Figure B-61 - Left Rear Door Midrear Y Acceleration vs. Time	B-61
Figure B-62 - Left Rear Door Midrear Y Velocity vs. Time	B-62
Figure B-63 - Left Rear Door Upper Centerline Y Acceleration vs. Time	B-63
Figure B-64 - Left Rear Door Upper Centerline Y Velocity vs. Time	B-64

Barrier:

Figure B-65 - Moving Barrier Center of Gravity X Acceleration vs. Time	B-65
Figure B-66 - Moving Barrier Center of Gravity X Velocity vs. Time	B-66
Figure B-67 - Moving Barrier Center of Gravity Y Acceleration vs. Time	B-67
Figure B-68 - Moving Barrier Center of Gravity Y Velocity vs. Time	B-68
Figure B-69 - Moving Barrier Center of Gravity Z Acceleration vs. Time	B-69
Figure B-70 - Moving Barrier Center of Gravity Z Velocity vs. Time	B-70
Figure B-71 - Moving Barrier Center of Gravity Resultant Acceleration vs. Time	B-71
Figure B-72 - Moving Barrier Rear Axle X Acceleration vs. Time	B-72
Figure B-73 - Moving Barrier Rear Axle X Velocity vs. Time	B-73
Figure B-74 - Moving Barrier Rear Axle Y Acceleration vs. Time	B-74
Figure B-75 - Moving Barrier Rear Axle Y Velocity vs. Time	B-75
Figure B-76 - Left Barrier Contact	B-76
Figure B-77 - Right Barrier Contact	B-77

Table of Data Plots

Redundant:

	<u>Page No.</u>
Figure B-78 - Driver Upper Rib Y Redundant Acceleration vs. Time	B-78
Figure B-79 - Driver Upper Rib Y Redundant Velocity vs. Time	B-79
Figure B-80 - Driver Lower Rib Y Redundant Acceleration vs. Time	B-80
Figure B-81 - Driver Lower Rib Y Redundant Velocity vs. Time	B-81
Figure B-82 - Driver Lower Spine Y Redundant Acceleration vs. Time	B-82
Figure B-83 - Driver Lower Spine Y Redundant Velocity vs. Time	B-83
Figure B-84 - Driver Pelvis Y Redundant Acceleration vs. Time	B-84
Figure B-85 - Driver Pelvis Y Redundant Velocity vs. Time	B-85

FIR Filtered

Figure B-86 - Driver Upper Rib Y Acceleration vs. Time	B-86
Figure B-87 - Driver Upper Rib Y Redundant Acceleration vs. Time	B-87
Figure B-88 - Driver Lower Rib Y Acceleration vs. Time	B-88
Figure B-89 - Driver Lower Rib Y Redundant Acceleration vs. Time	B-89
Figure B-90 - Driver Lower Spine Y Acceleration vs. Time	B-90
Figure B-91 - Driver Lower Spine Y Redundant Acceleration vs. Time	B-91
Figure B-92 - Driver Pelvis Y Acceleration vs. Time	B-92
Figure B-93 - Driver Pelvis Y Redundant Acceleration vs. Time	B-93

TEST: NCAP HIGH SPEED LATERAL IMPACT

TEST DATE: 02-18-1997

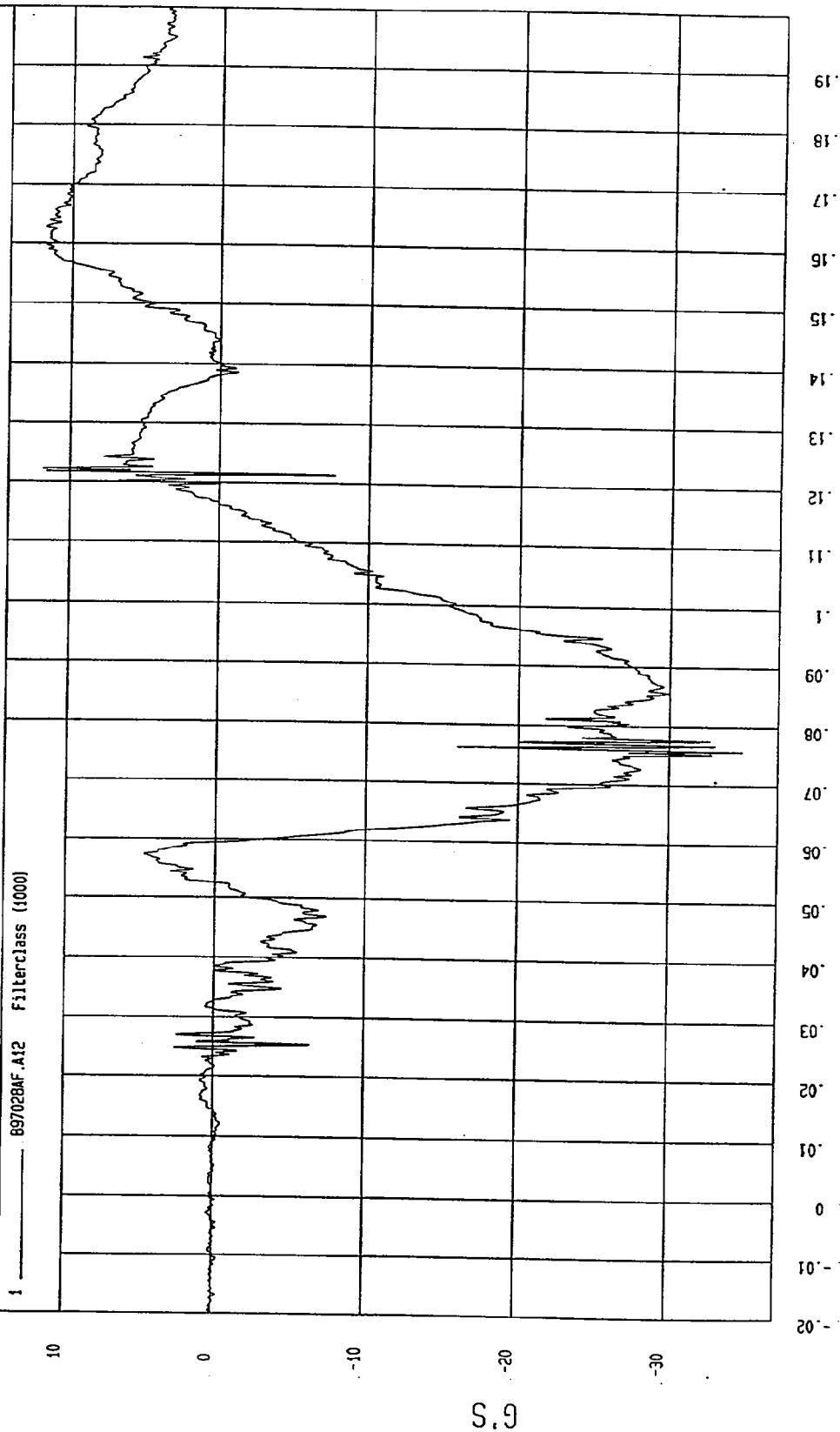
COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = -34.65 G'S at 76 msec

Maximum = 11.76 G'S at 122 msec

DRIVER HEAD X ACCELERATION

1 — 89702BAF.A12 Filterclass (1000)



MCA Research
02-18-1997 15:53

TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 02-18-1997

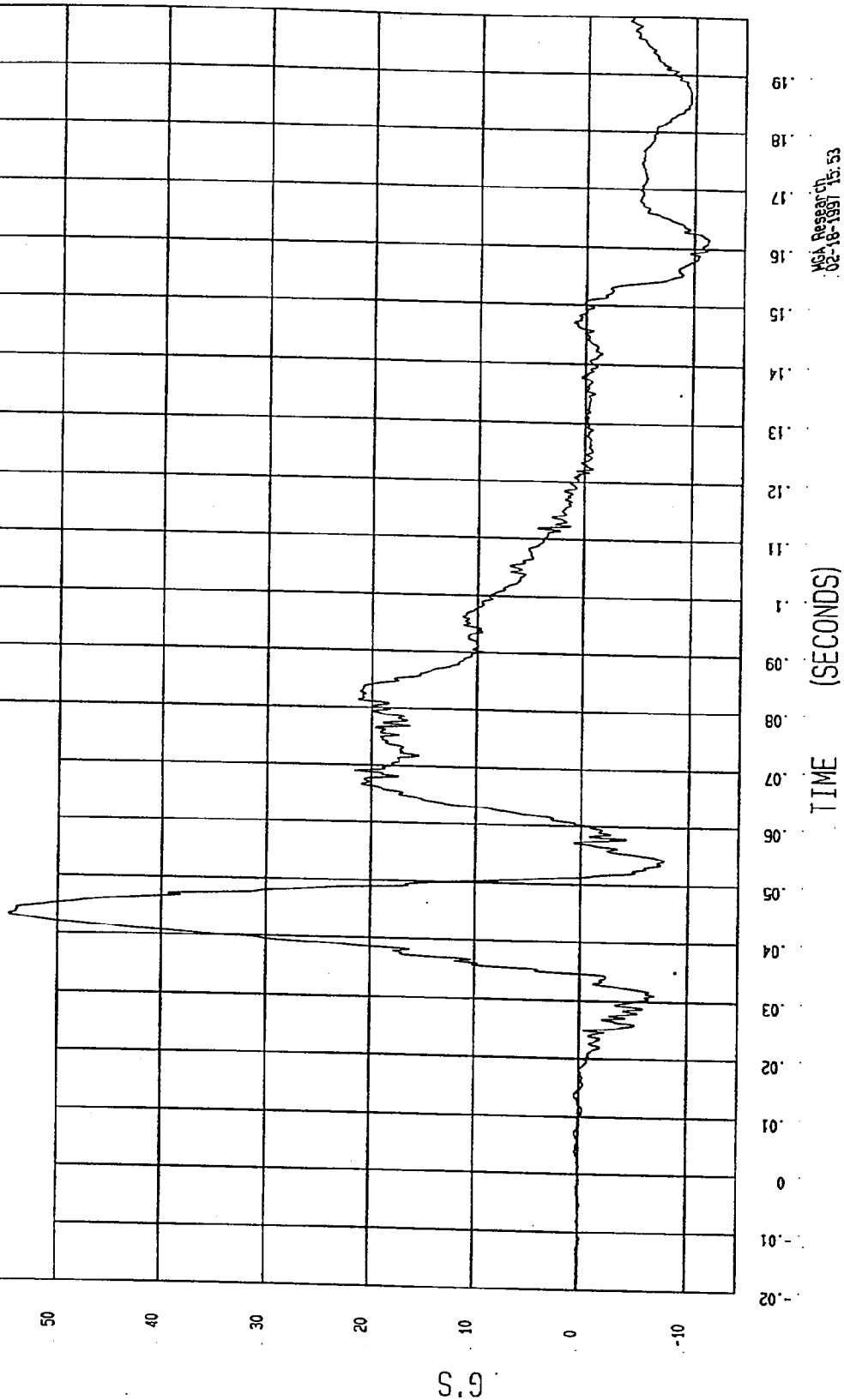
COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = -11.37 G'S at 162 msec

Maximum = 54.80 G'S at 43 msec

DRIVER HEAD Y ACCELERATION

1 897028AF.A13 Filterclass (1000)



NSA Research
02-18-1997 13:53

TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 02-18-1997

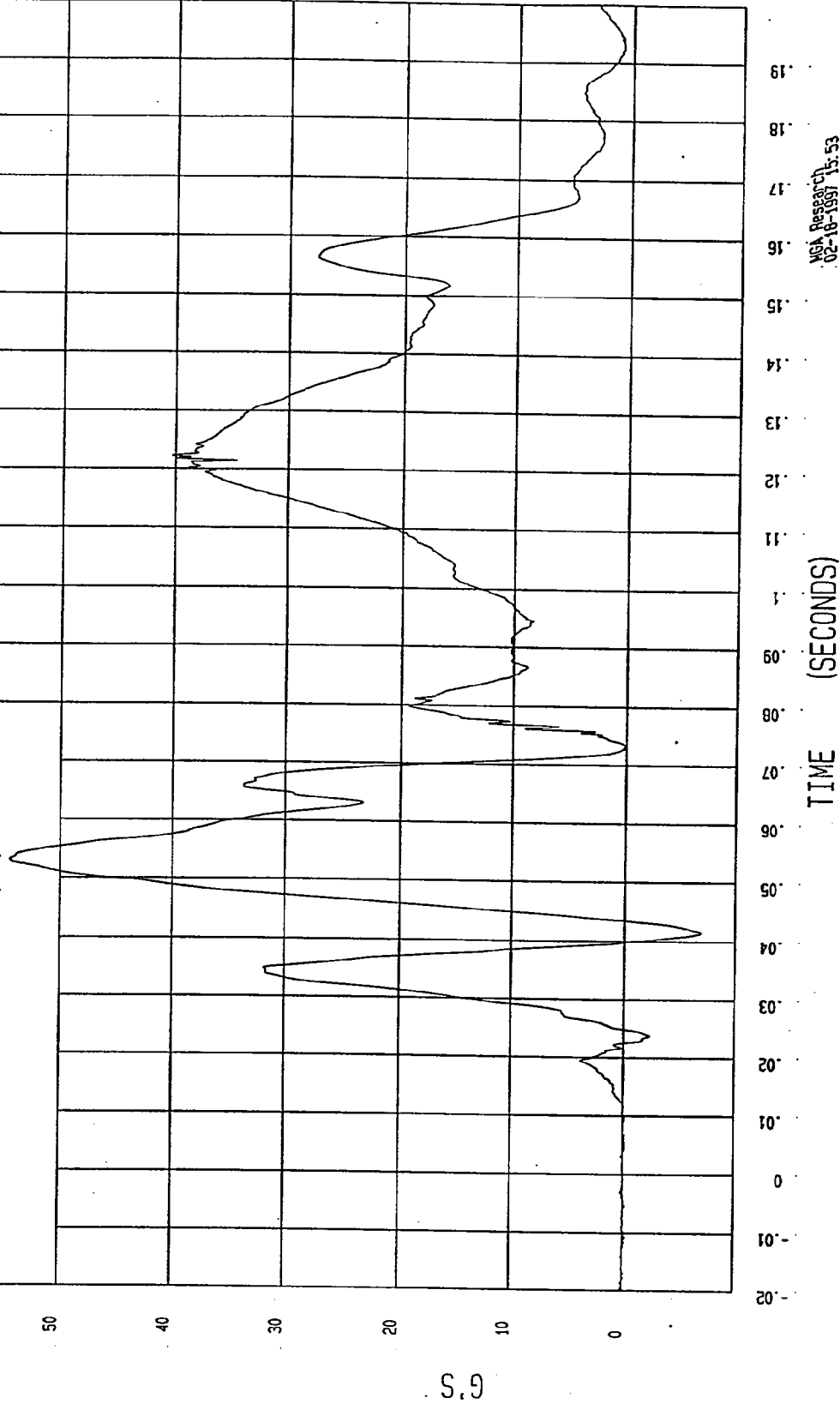
COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = -6.48 G'S at 42 msec

Maximum = 54.35 G'S at 53 msec

DRIVER HEAD Z ACCELERATION

1 .B9702BAF.A14 FilterClass (1000)



WCA Research
02-18-1997 15:53

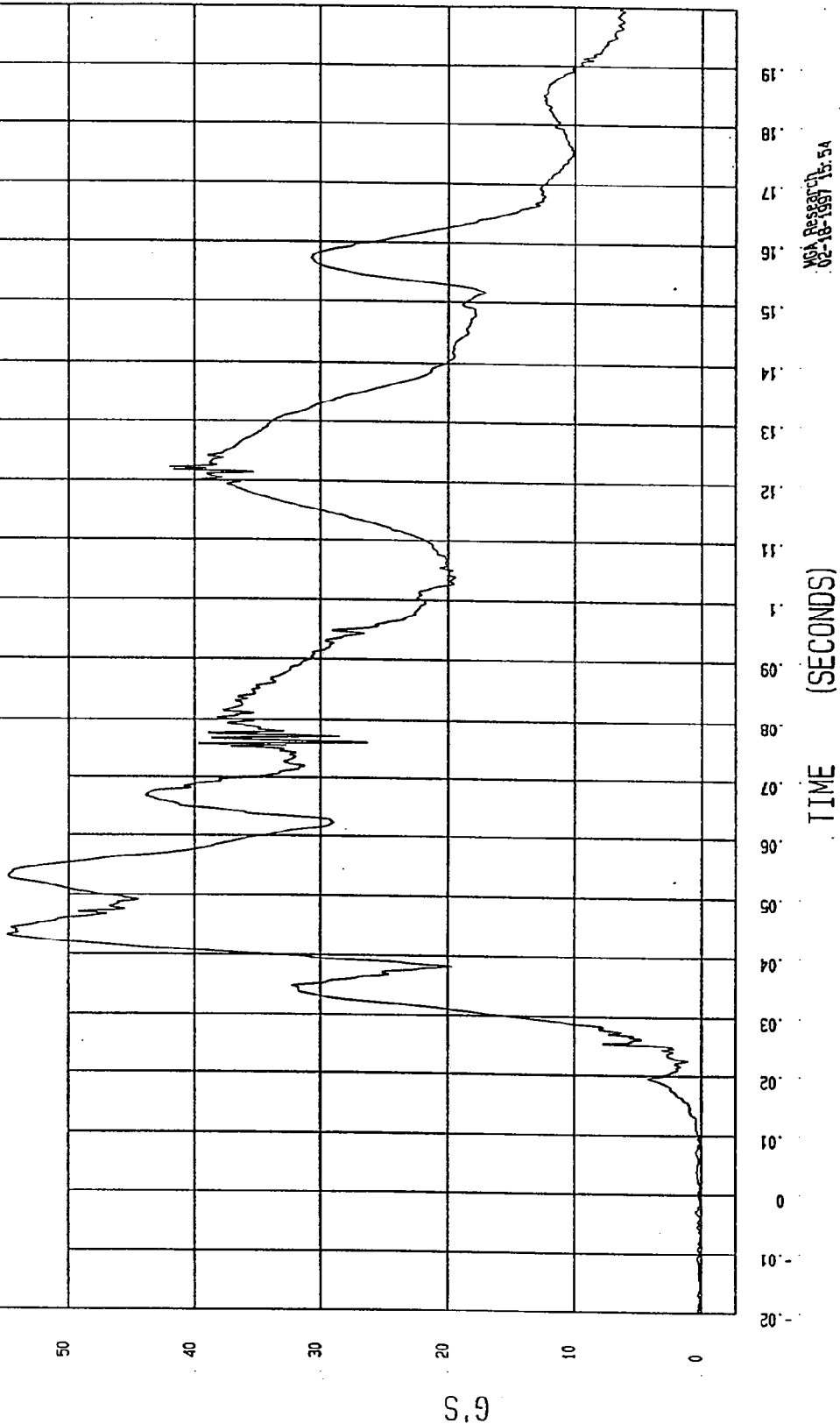
TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 02-18-1997

COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

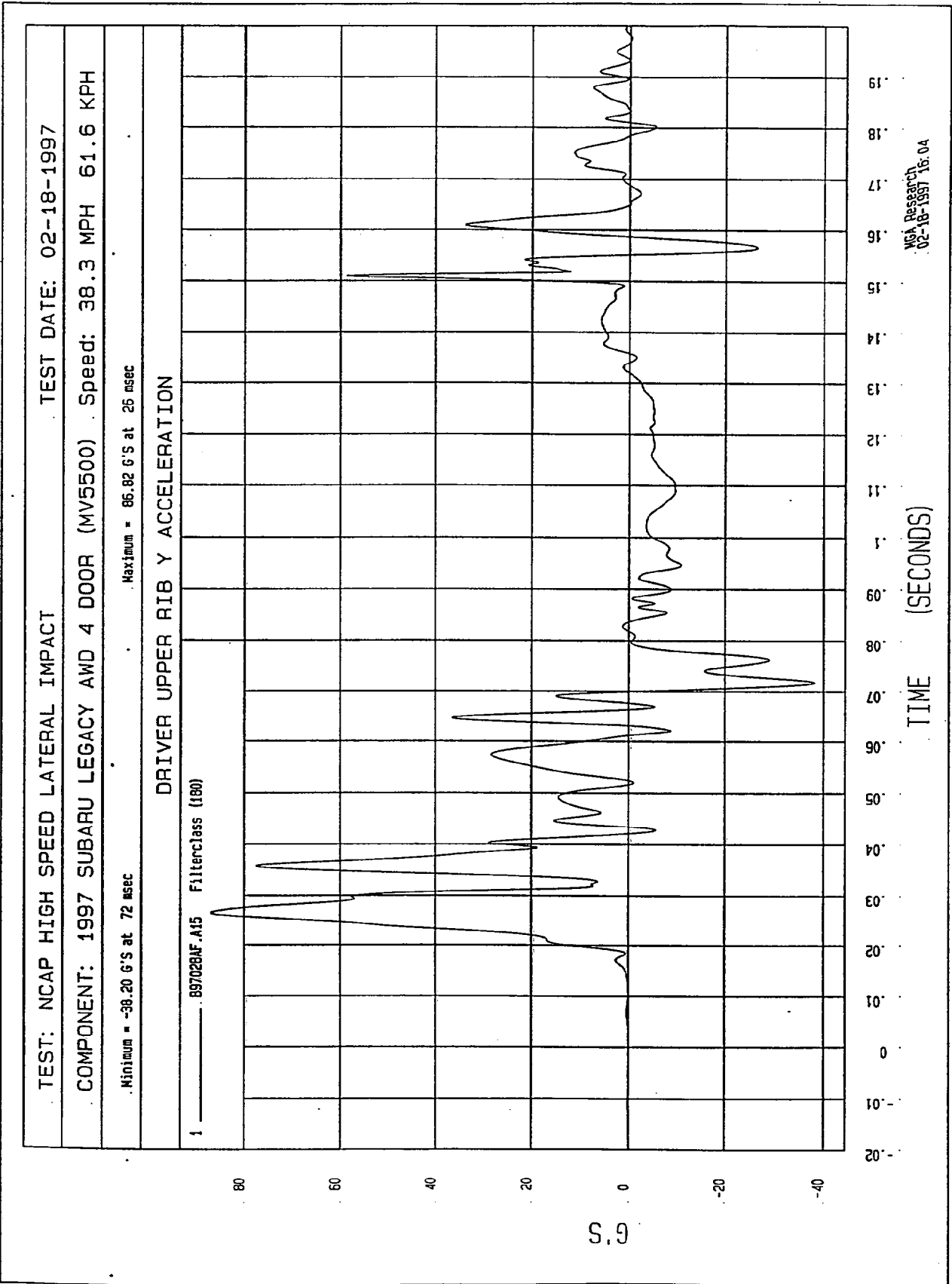
Minimum = 2.85E-02 G'S at -18 msec Maximum = 54.78 G'S at .43 msec

DRIVER HEAD RESULTANT

1 ——— B97028V.A12 Filterclass (1000)



MOA Research
02-18-1997 15:54



TEST: NCAP HIGH SPEED LATERAL IMPACT

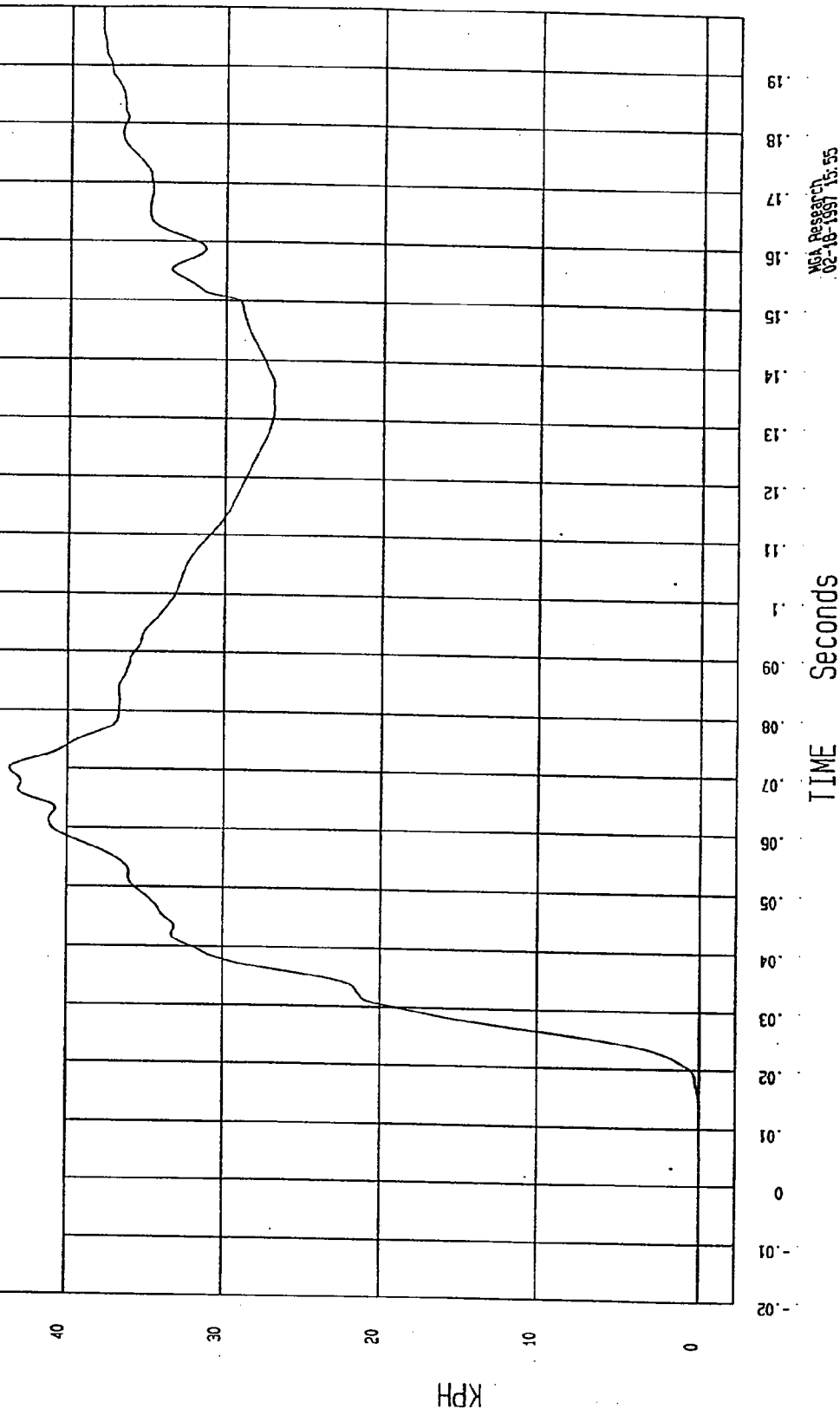
TEST DATE: 02-18-1997

COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = -1.85E-02 KPH at 4 msec Maximum = 43.65 KPH at 70 msec

DRIVER UPPER RIB Y VELOCITY

1 _____ 897028A1.VI5 Filterclass (180)



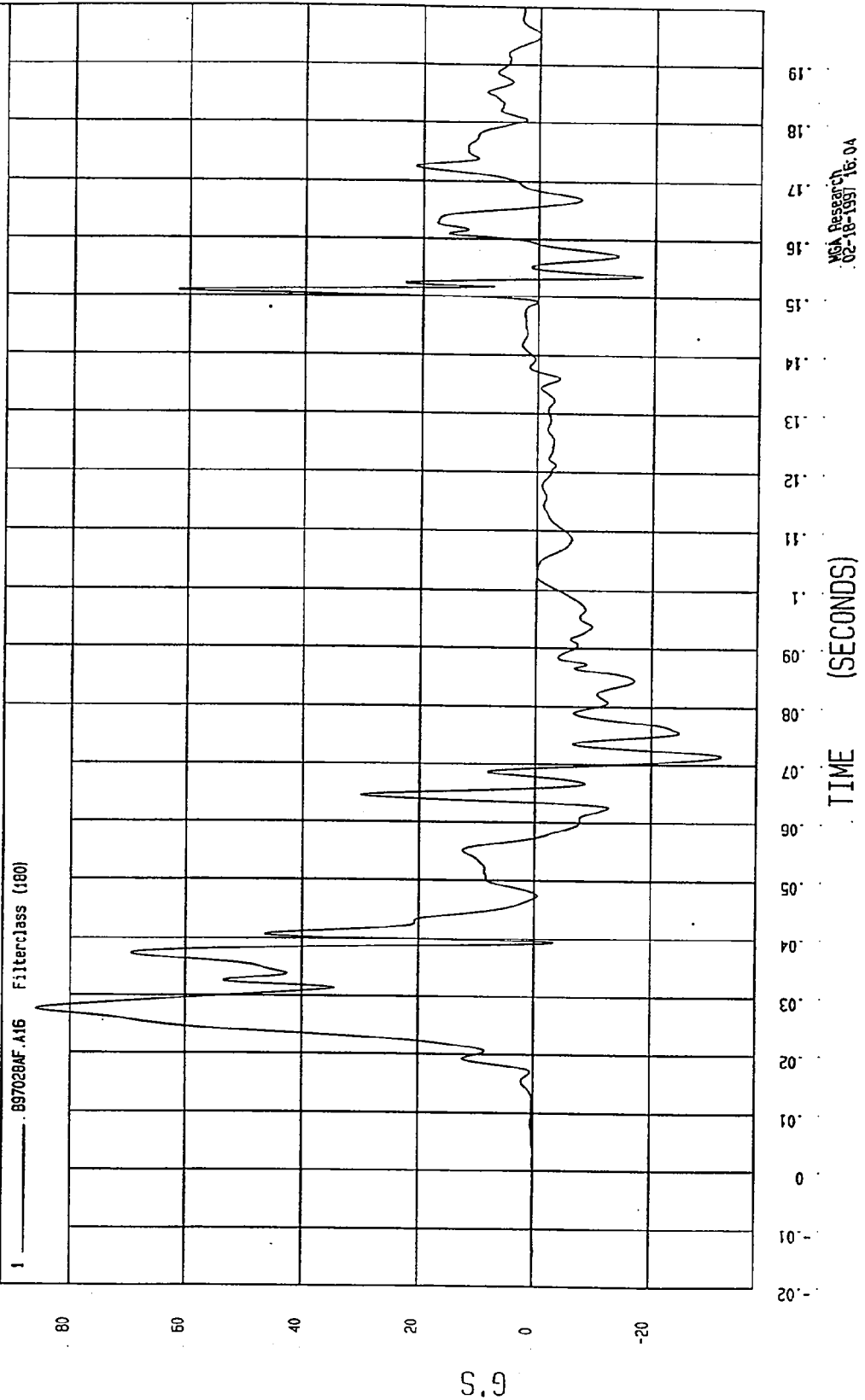
NSA Research
02-18-1997 15:55

TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 02-18-1997

COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = -31.53 G'S at 72 msec Maximum = 85.79 G'S at 28 msec

DRIVER LOWER RIB Y ACCELERATION

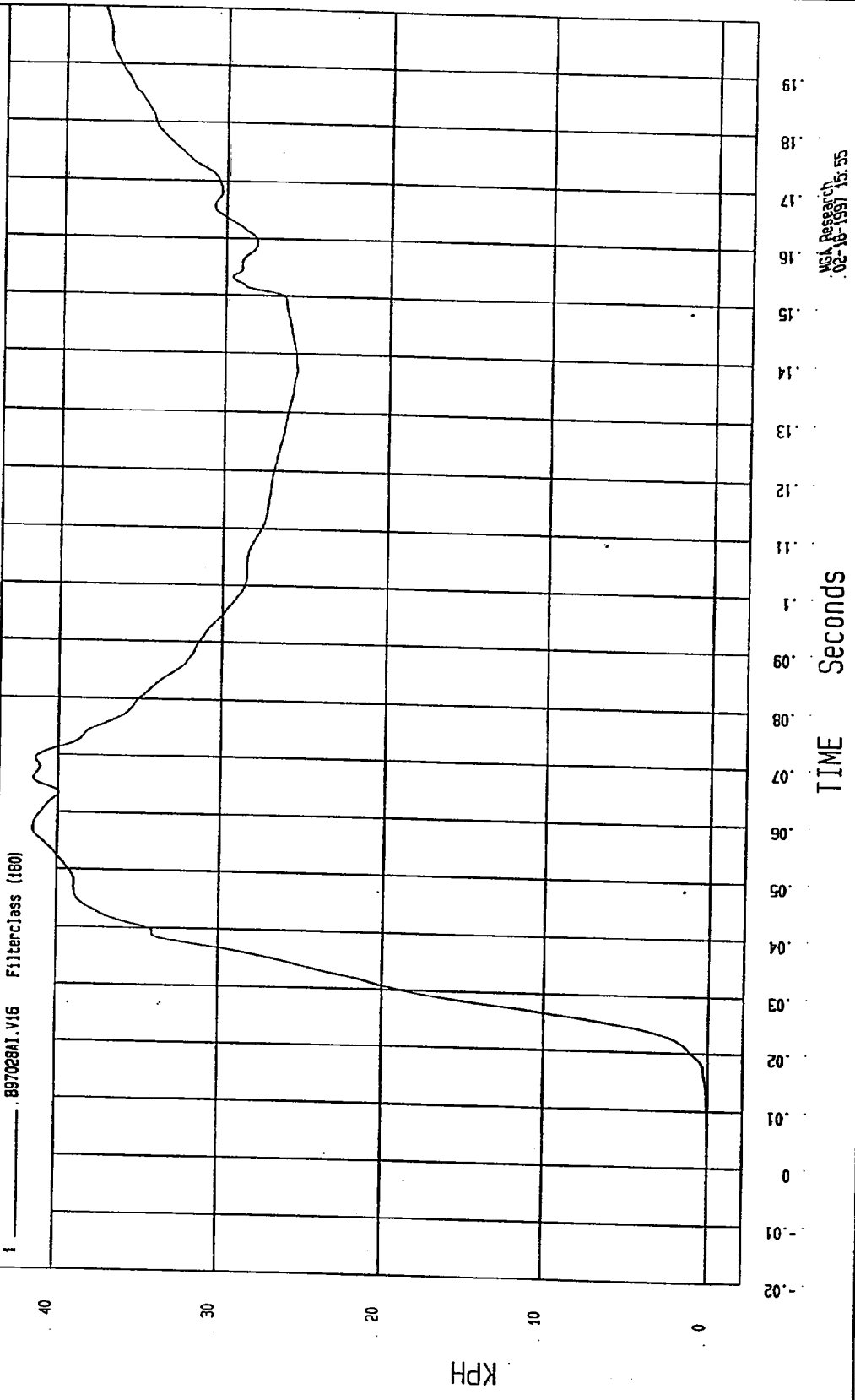


TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 02-18-1997

COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = -8.33E-03 KPH at -13 msec Maximum = 41.50 KPH at 57 msec

DRIVER LOWER RIB Y VELOCITY



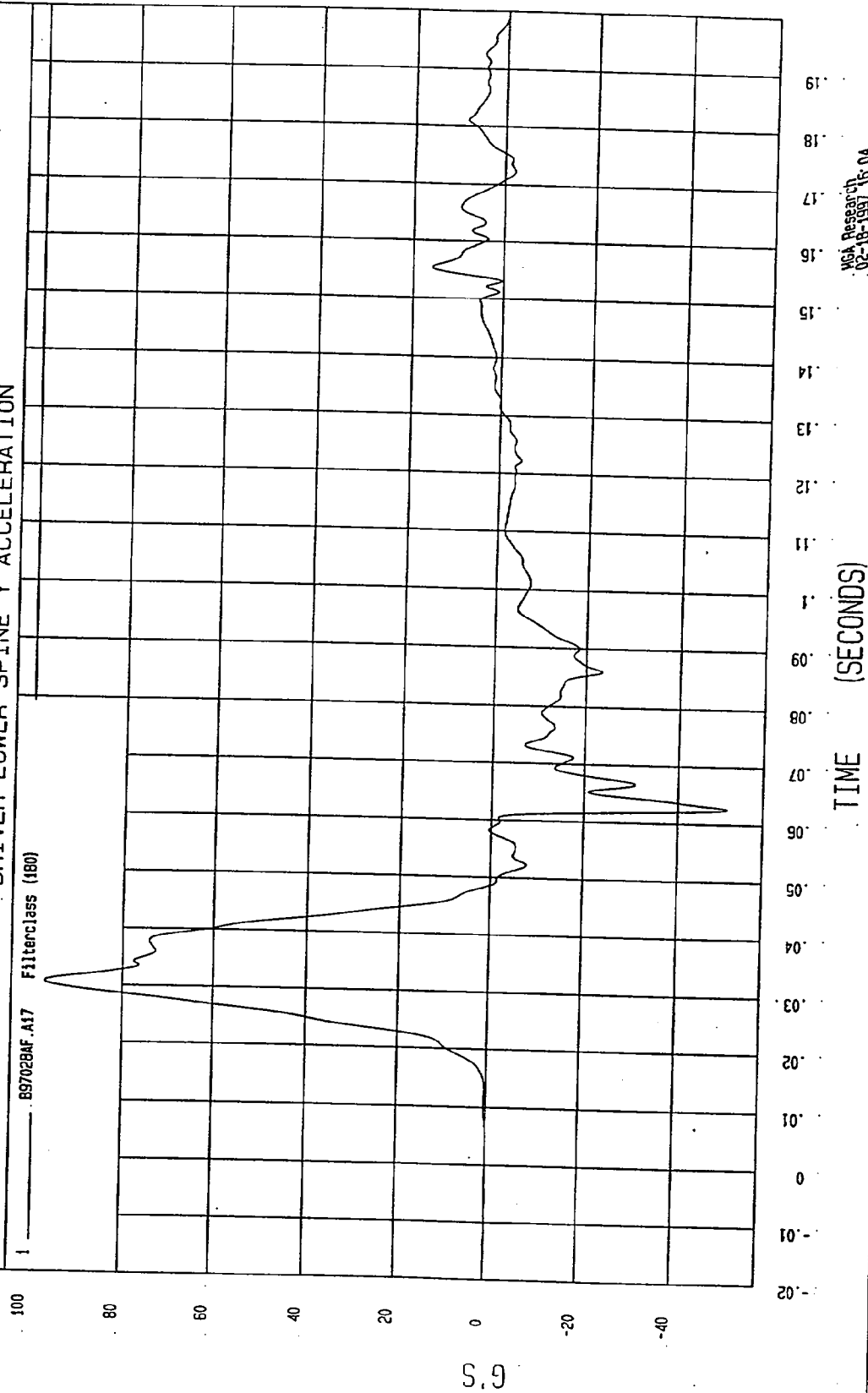
TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 02-18-1997

COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = -50.52 G'S at 63 msec Maximum = 96.73 G'S at 31 msec

DRIVER LOWER SPINE Y ACCELERATION

1 .89702BAF.A17 Filterclass (180)



NGA Research
02-18-1997 15:04

TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 02-18-1997

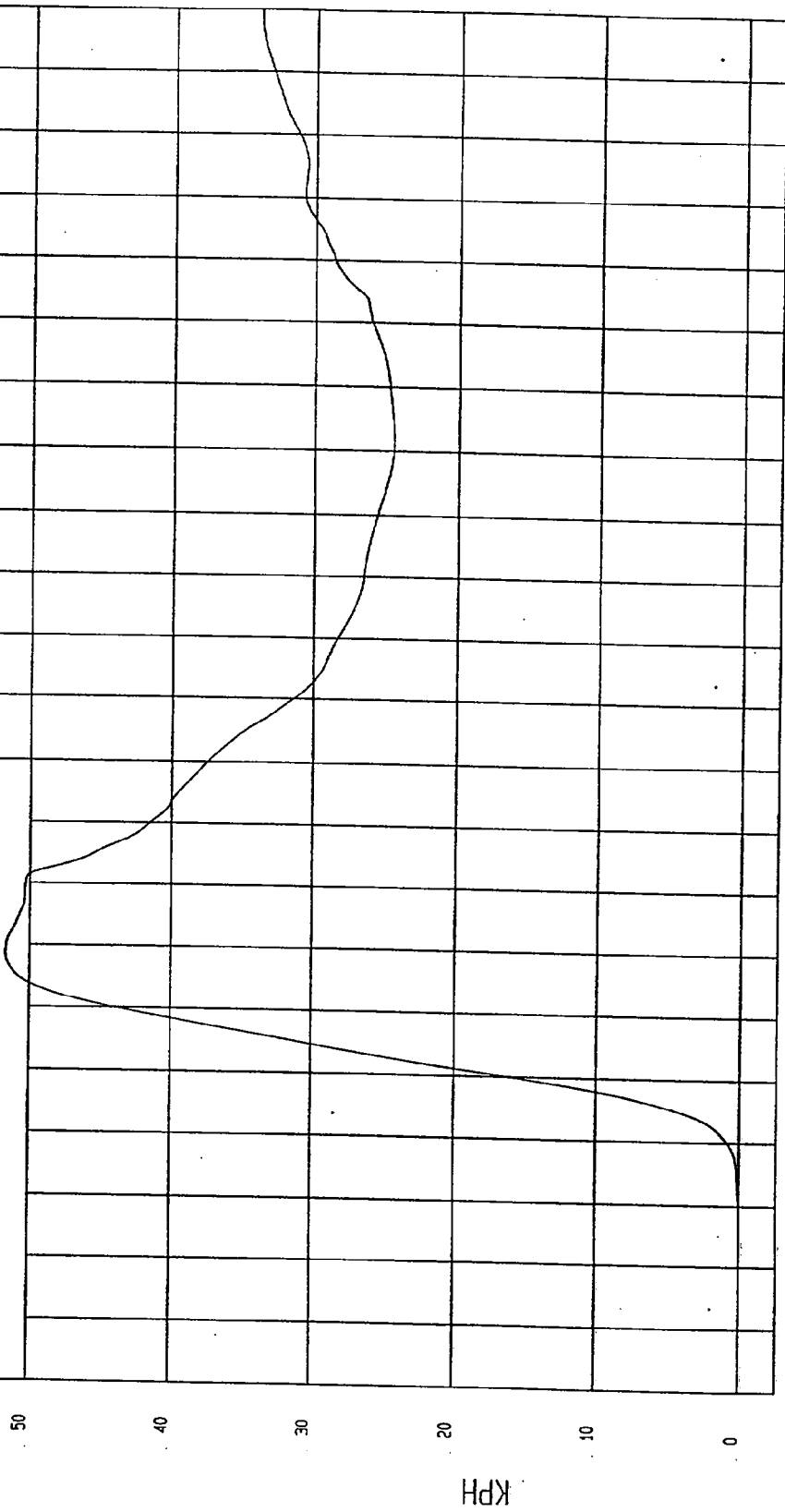
COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = -4.05E-03 KPH at -5 msec

Maximum = 51.63 KPH at 49 msec

DRIVER LOWER SPINE Y VELOCITY

1 897028A1.V17 Filterclass (180)



TIME Seconds

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

NGA Research
02-18-1997 15:55

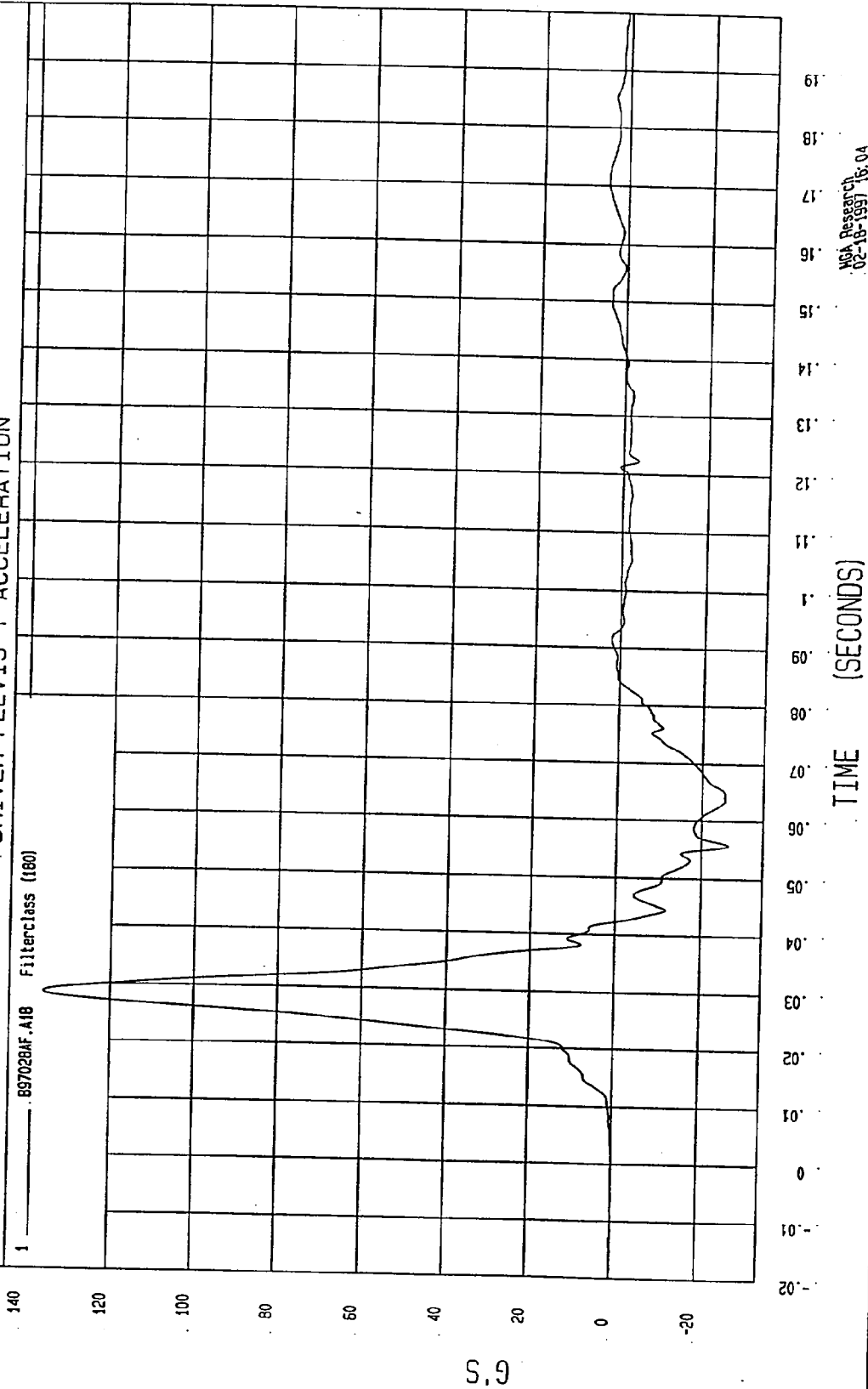
TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 02-18-1997

COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

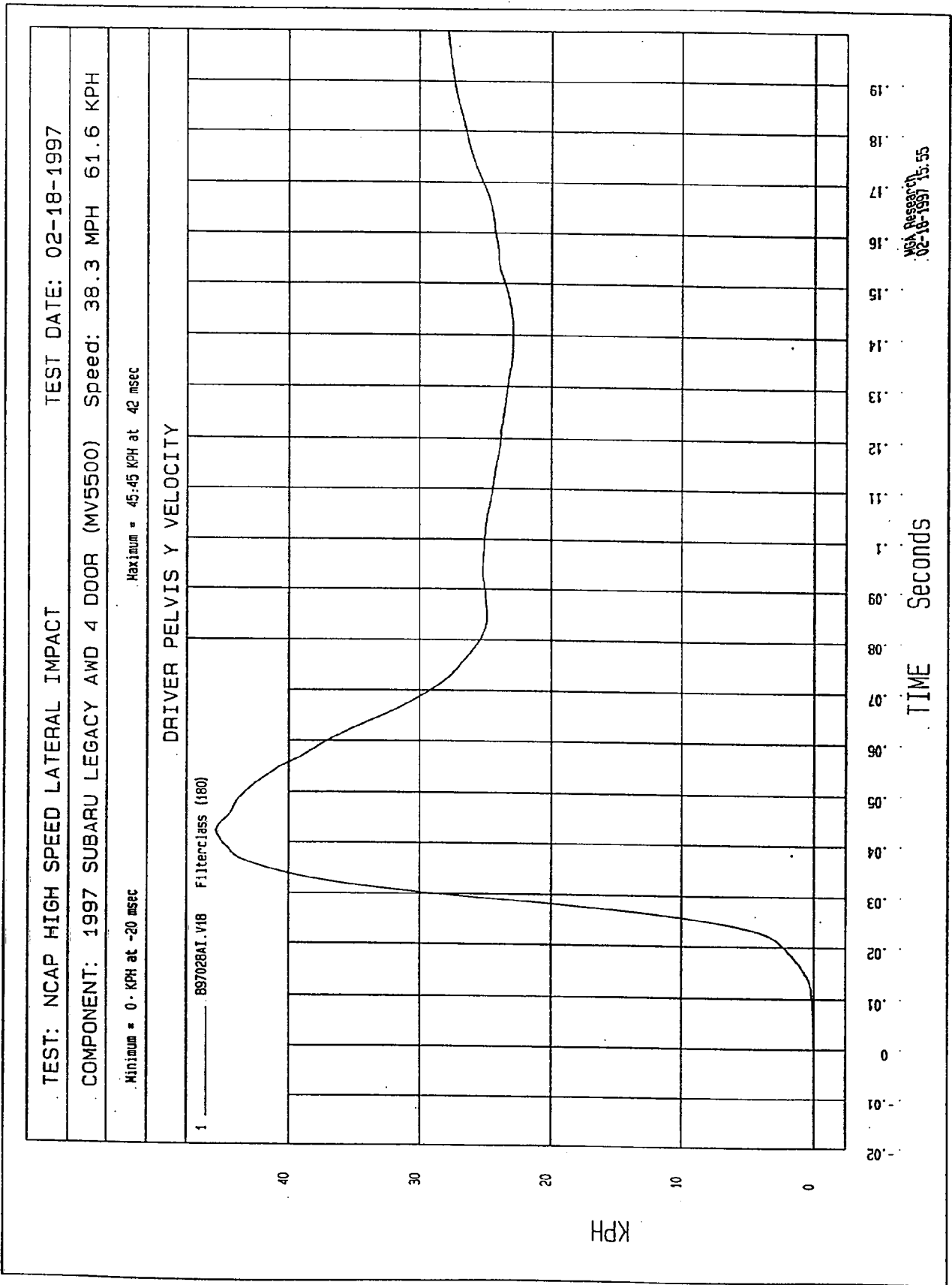
Minimum = -26.33 G'S at 56 msec Maximum = 135.64 G'S at 28 msec

DRIVER PELVIS Y ACCELERATION

1 B97028AF.A18 Filterclass (180)



NSA Research
02-18-1997 16:04



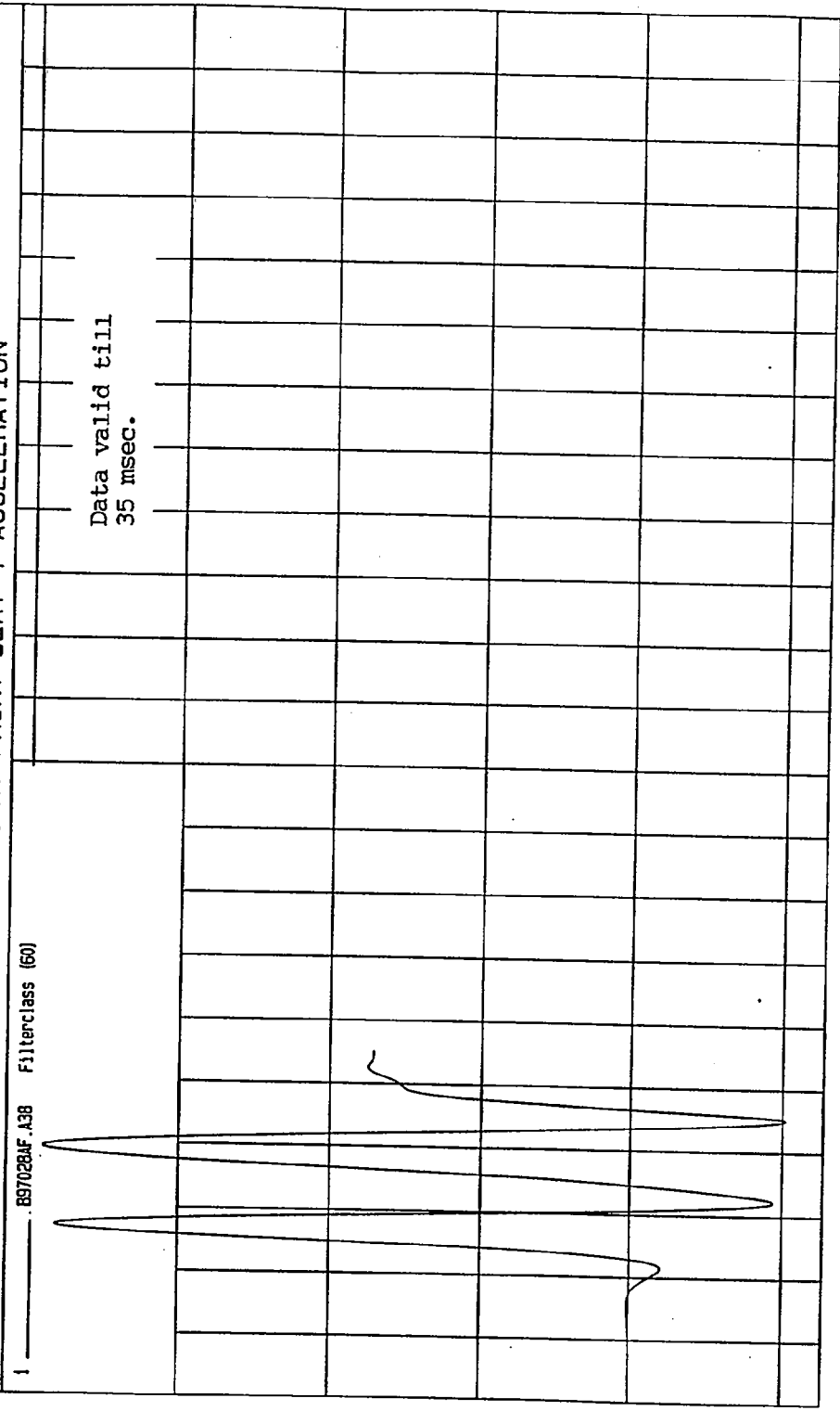
TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 02-18-1997

COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = -20.40 G'S at 25 msec Maximum = 77.96 G'S at 19 msec

LEFT SIDE SILL AT FRONT SEAT Y ACCELERATION

1 B97028AF.A38 Filterclass (60)



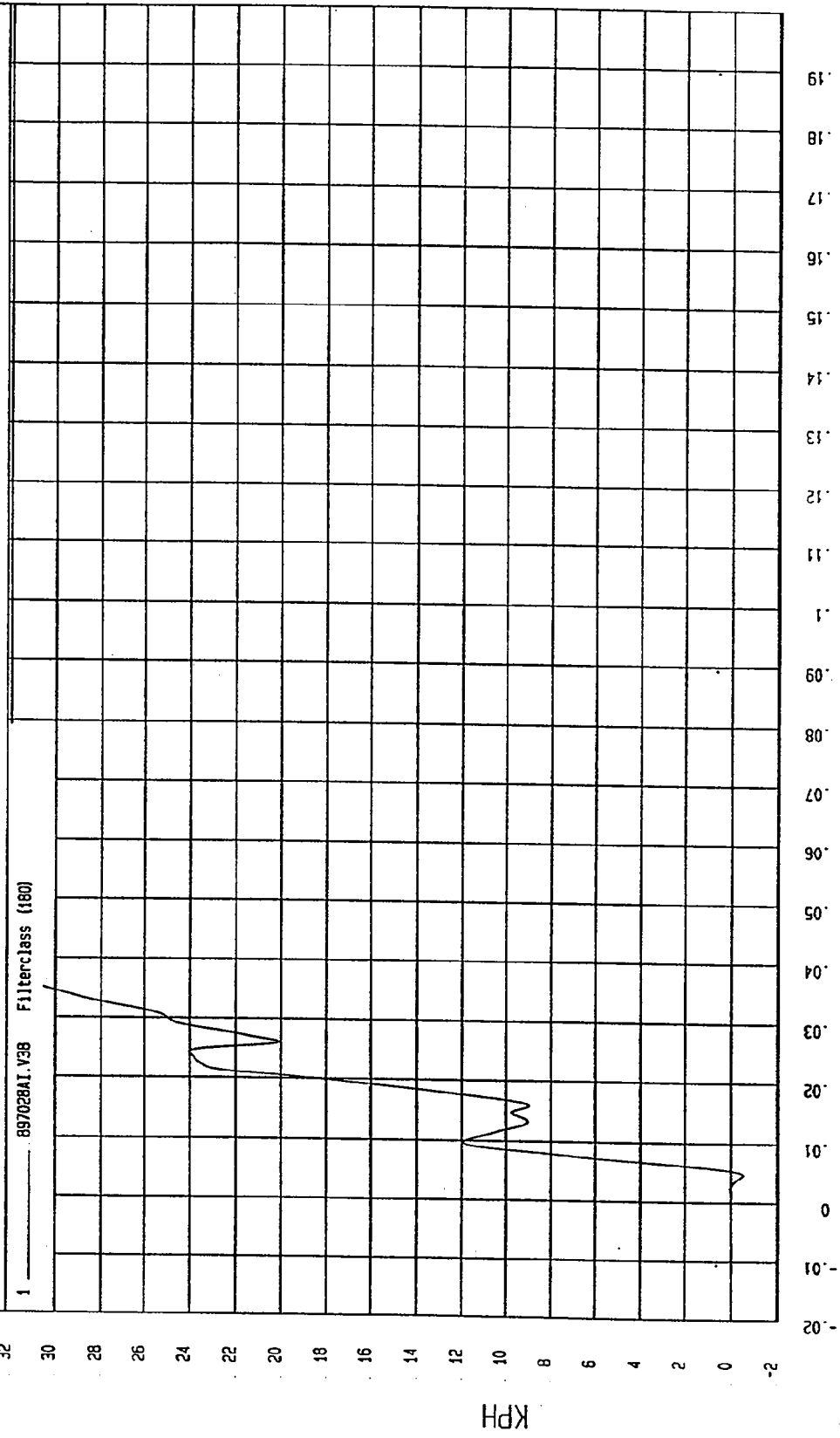
MSA Research
02-28-1997 14:05

TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 02-18-1997

COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = -52 KPH at 5 msec Maximum = 30.62 KPH at 35 msec

LEFT SIDE SILL AT FRONT SEAT Y VELOCITY



MSA Research
02-28-1997 14:06

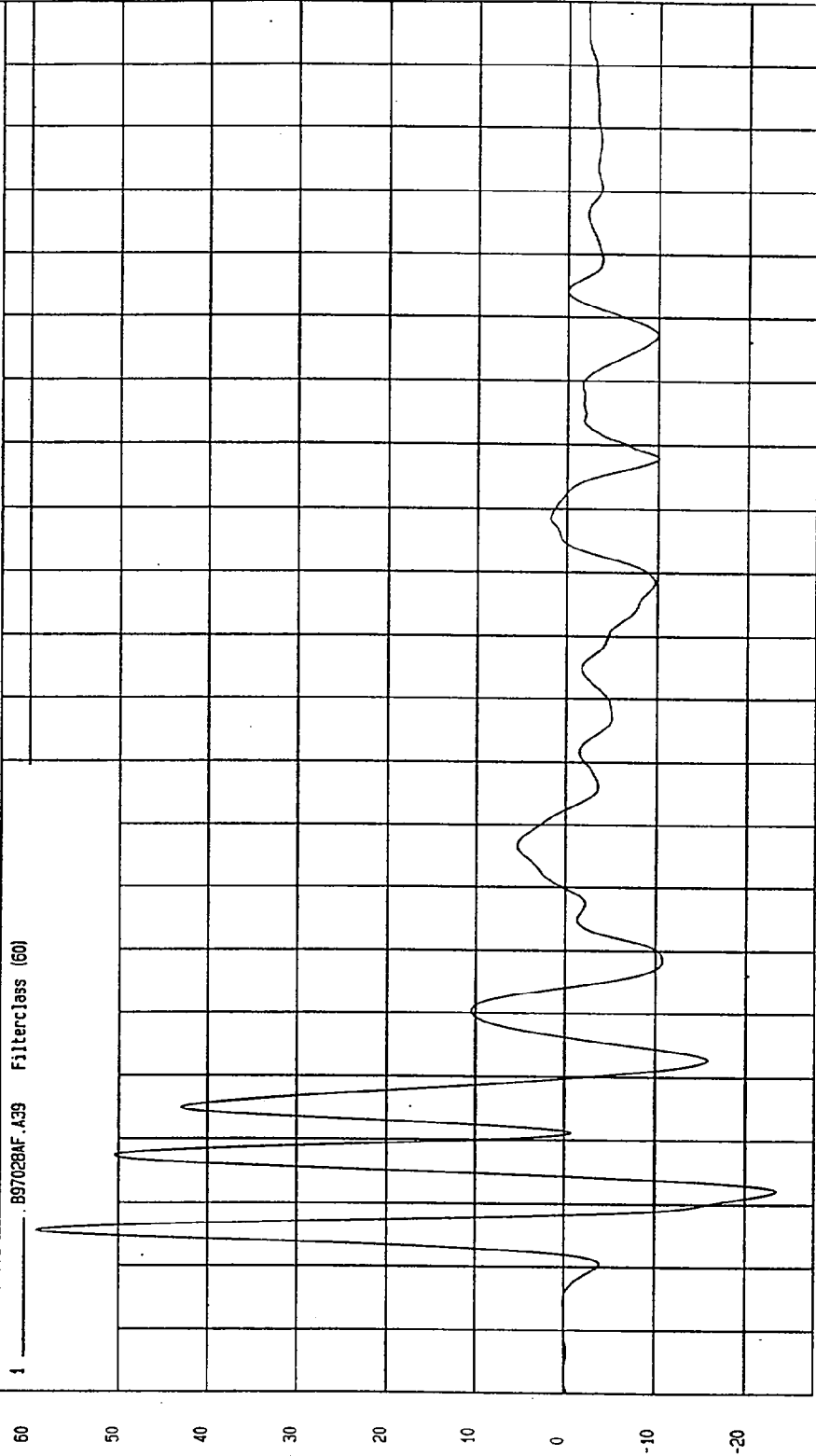
TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 02-18-1997

COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = -23.35 G's at 12 msec Maximum = 59.12 G's at 6 msec

LEFT SIDE SILL AT REAR SEAT Y ACCELERATION

1 ——— B97028AF.A39 Filterclass (60)



TIME (SECONDS)

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

60
50
40
30
20
10
0
-10
-20

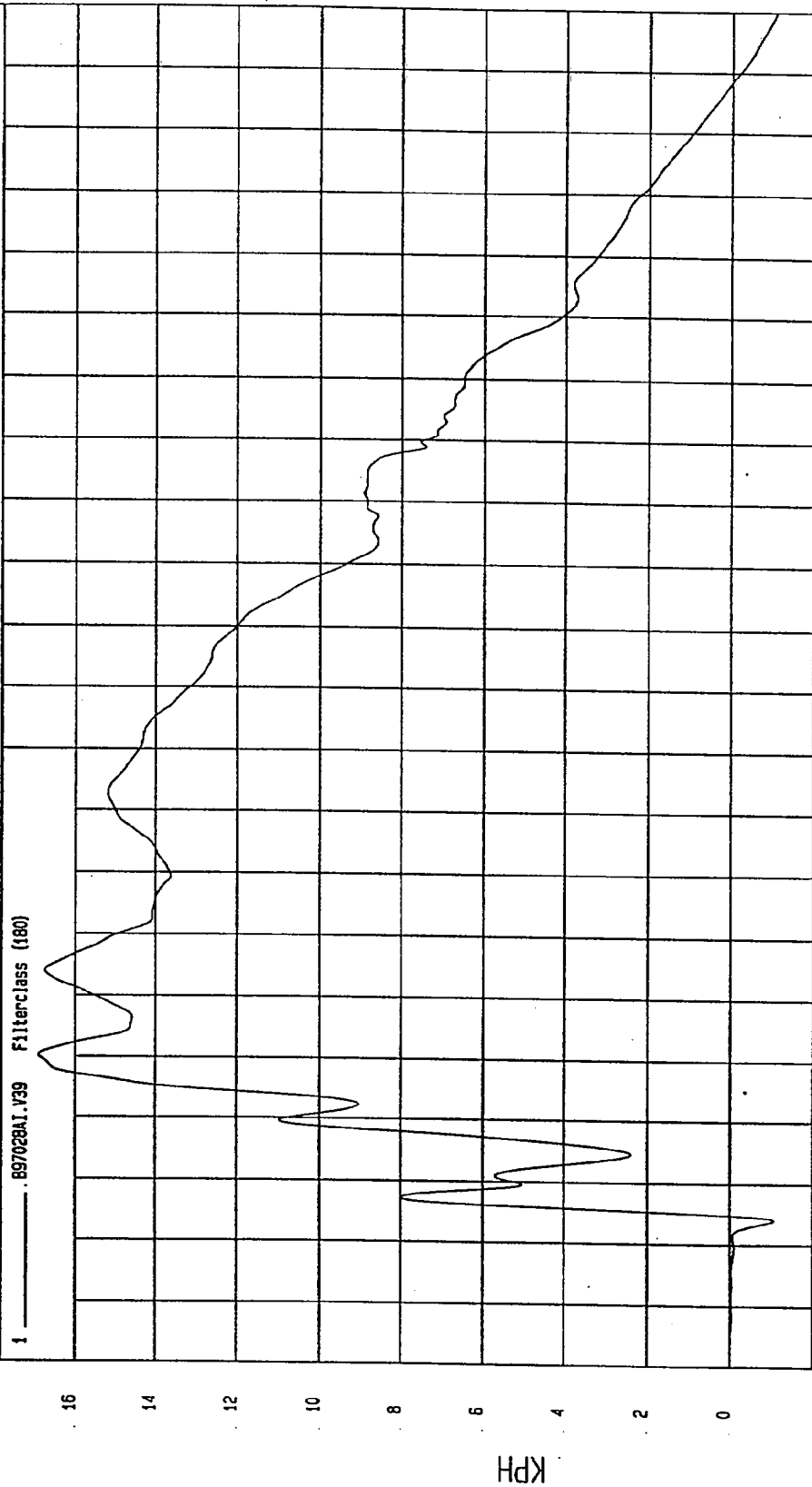
NGA Research
02-18-1997 15:57

TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 02-18-1997

COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = -1.02 KPH at 200 msec Maximum = 16.89 KPH at 30 msec

LEFT SIDE SILL AT REAR SEAT Y VELOCITY



MSA Research
02-18-1997 15:57

TEST: NCAP HIGH SPEED LATERAL IMPACT

TEST DATE: 02-18-1997

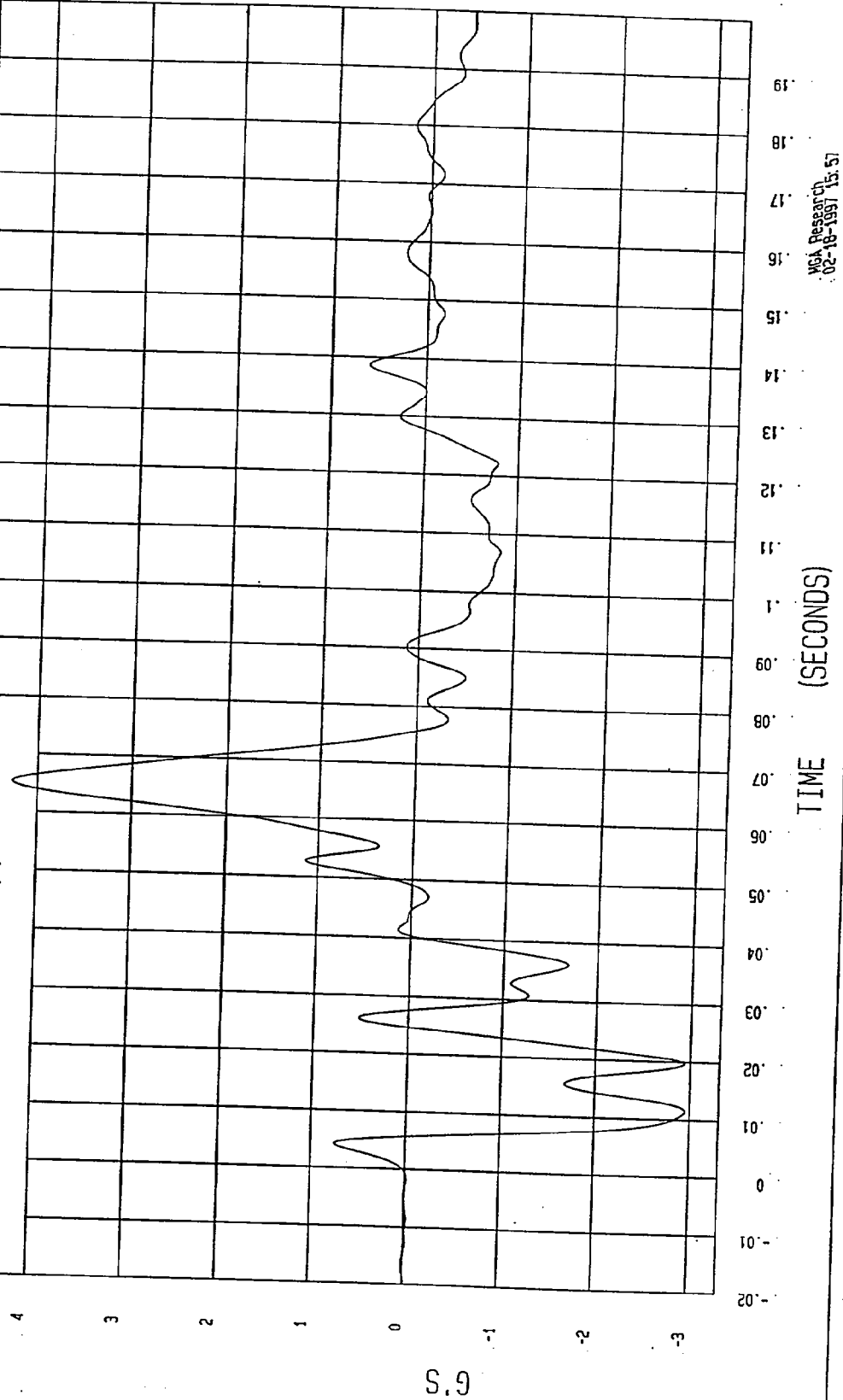
COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = -2.95 G'S at 11 msec

Maximum = 4.25 G'S at 65 msec

RIGHT SIDE SILL AT FRONT SEAT X ACCELERATION

1 897028AF.A32 Filterclass (60)

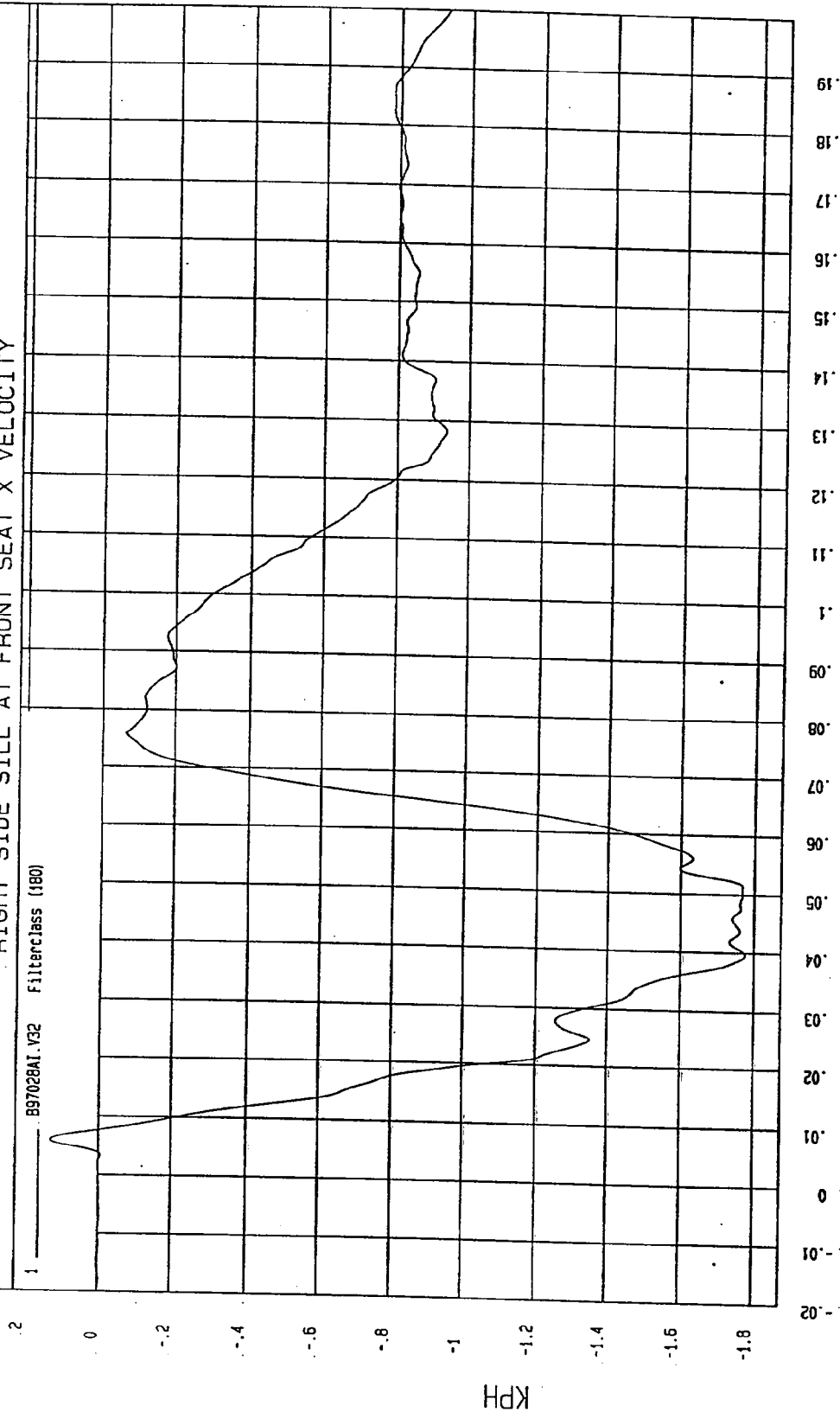


MGA Research
02-18-1997 15:57

TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 02-18-1997
COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH
Minimum = -1.77 KPH at 40 msec Maximum = .12 KPH at 6 msec

RIGHT SIDE SILL AT FRONT SEAT X VELOCITY

1 B97028AI.V32 Filterclass (180)



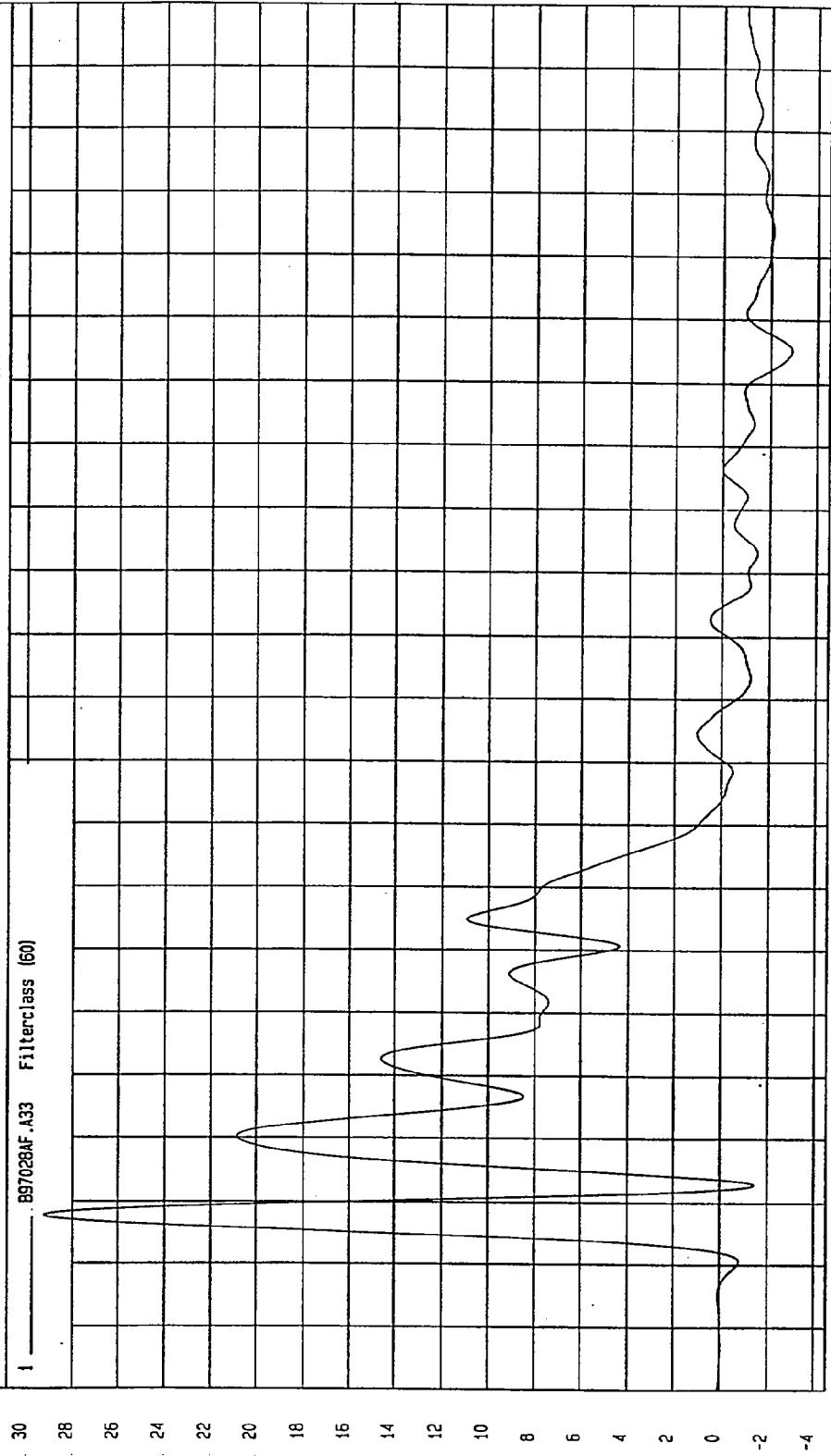
NSA Research
02-18-1997 15:57

TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 02-18-1997

COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = -2.90 G'S at 145 msec Maximum = 29.21 G'S at 8 msec

RIGHT SIDE SILL AT FRONT SEAT Y ACCELERATION



TIME (SECONDS)

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

0.19
0.18
0.17
0.16
0.15
0.14
0.13
0.12
0.11
0.10
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
-0.01
-0.02

AGA Research
02-18-1997 15:57

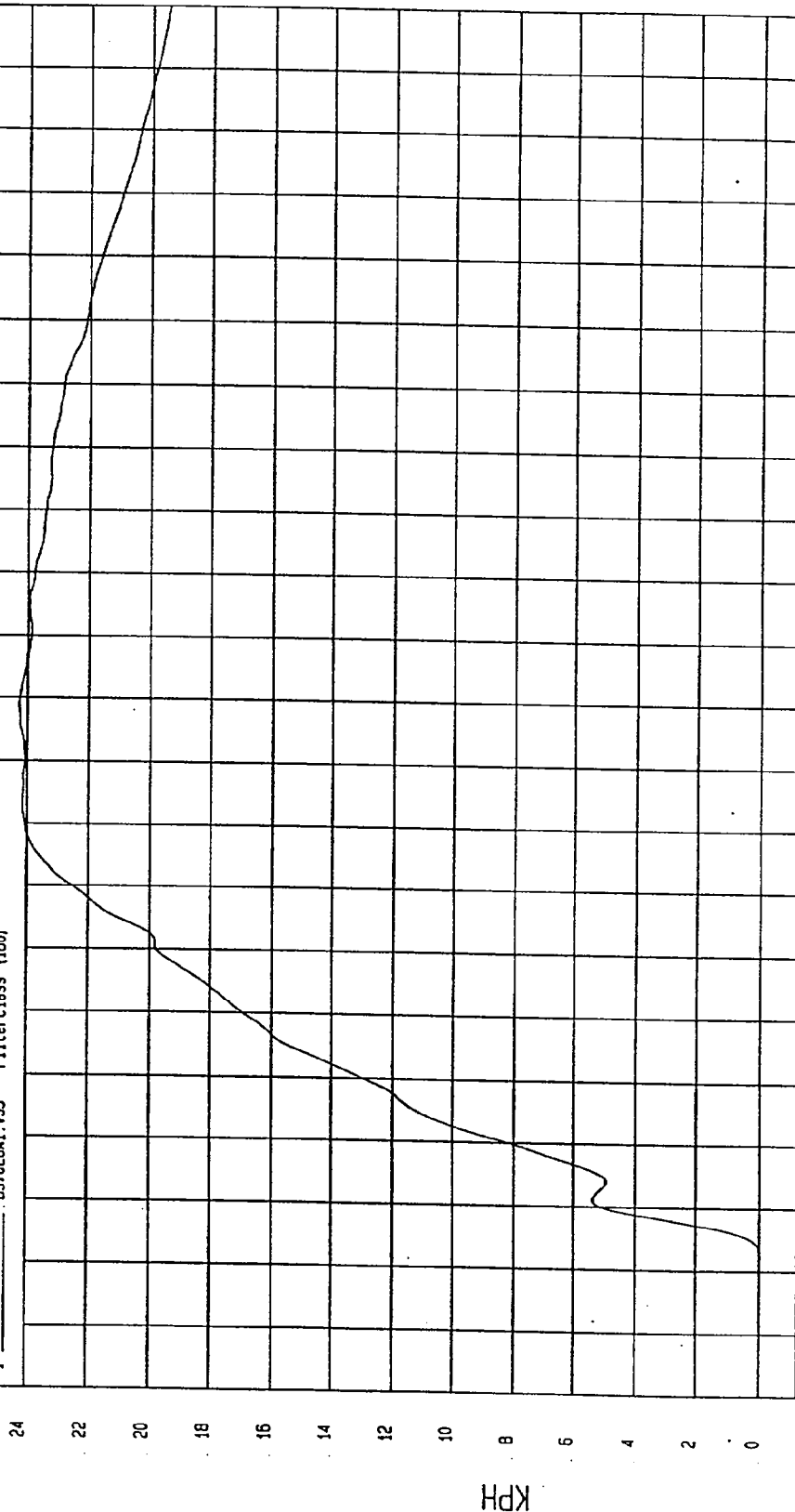
TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 02-18-1997

COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = -2.06E-03 KPH at -11 msec Maximum = 24.26 KPH at 89 msec

RIGHT SIDE SILL AT FRONT SEAT Y VELOCITY

1 897028A1.V33 Filterclass (180)



MOA Research
02-18-1997 15:58

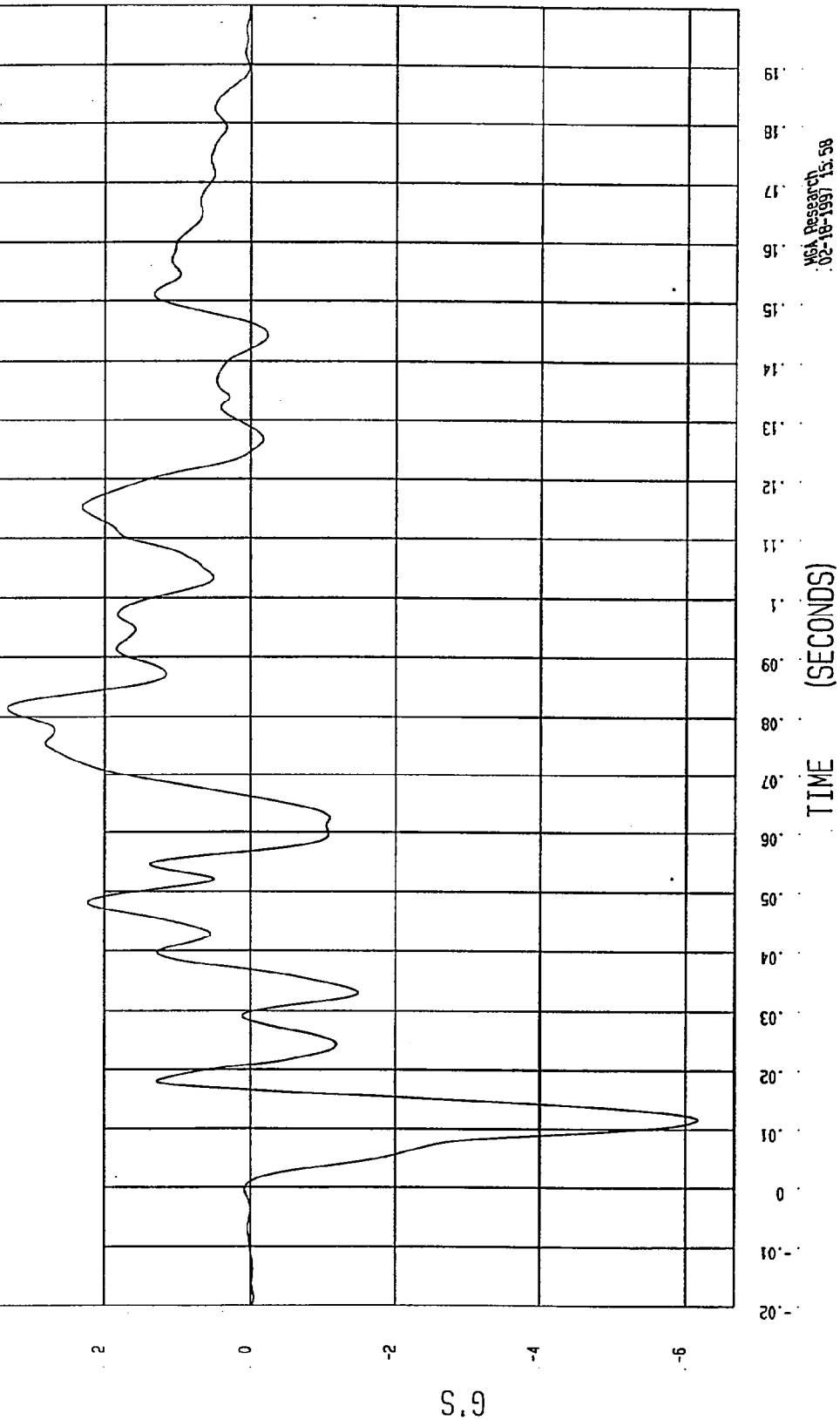
TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 02-18-1997

COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = -6.16 G'S at .12 msec Maximum = 3.36 G'S at 82 msec

RIGHT SIDE SILL AT FRONT SEAT Z ACCELERATION

1 B97028AF.A34 Filterclass (60)



TEST: NCAP HIGH SPEED LATERAL IMPACT

TEST DATE: 02-18-1997

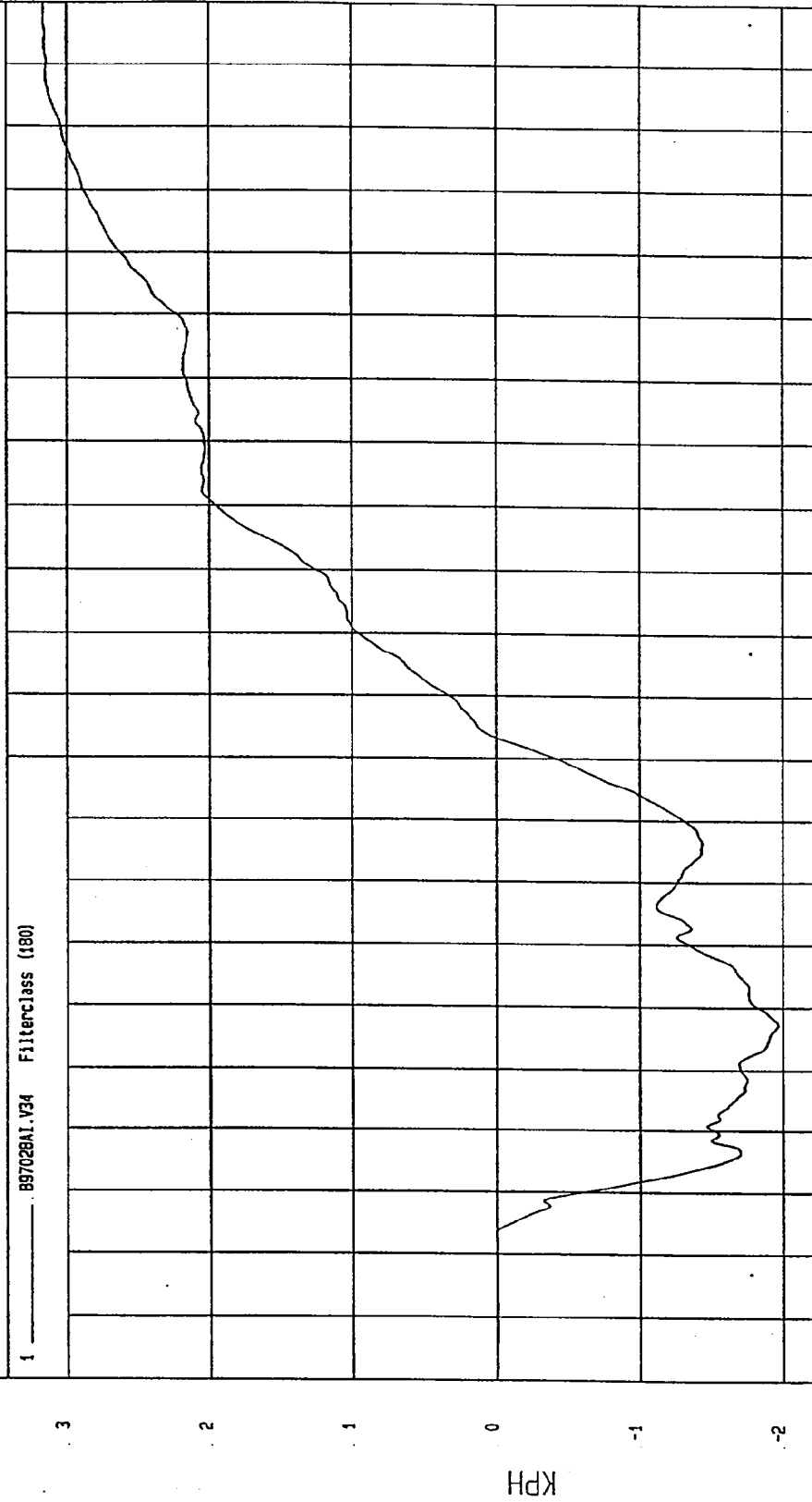
COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = -1.96 KPH at 37 msec

Maximum = 3.16 KPH at 197 msec

RIGHT SIDE SILL AT FRONT SEAT Z VELOCITY

1 ——— B97028A1.V34 Filterclass (180)



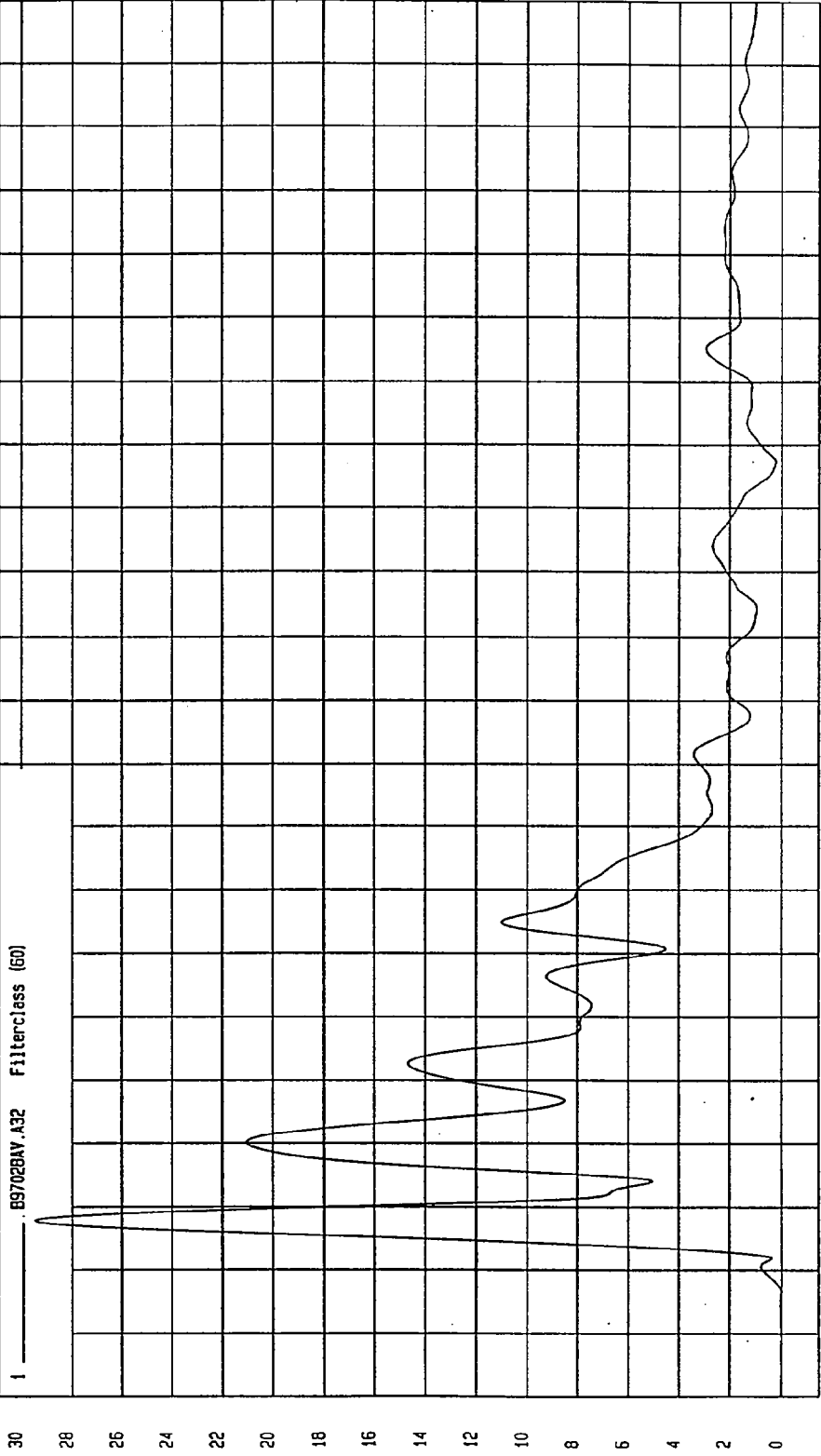
MCA Research
02-18-1997 15:58

TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 02-18-1997

COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

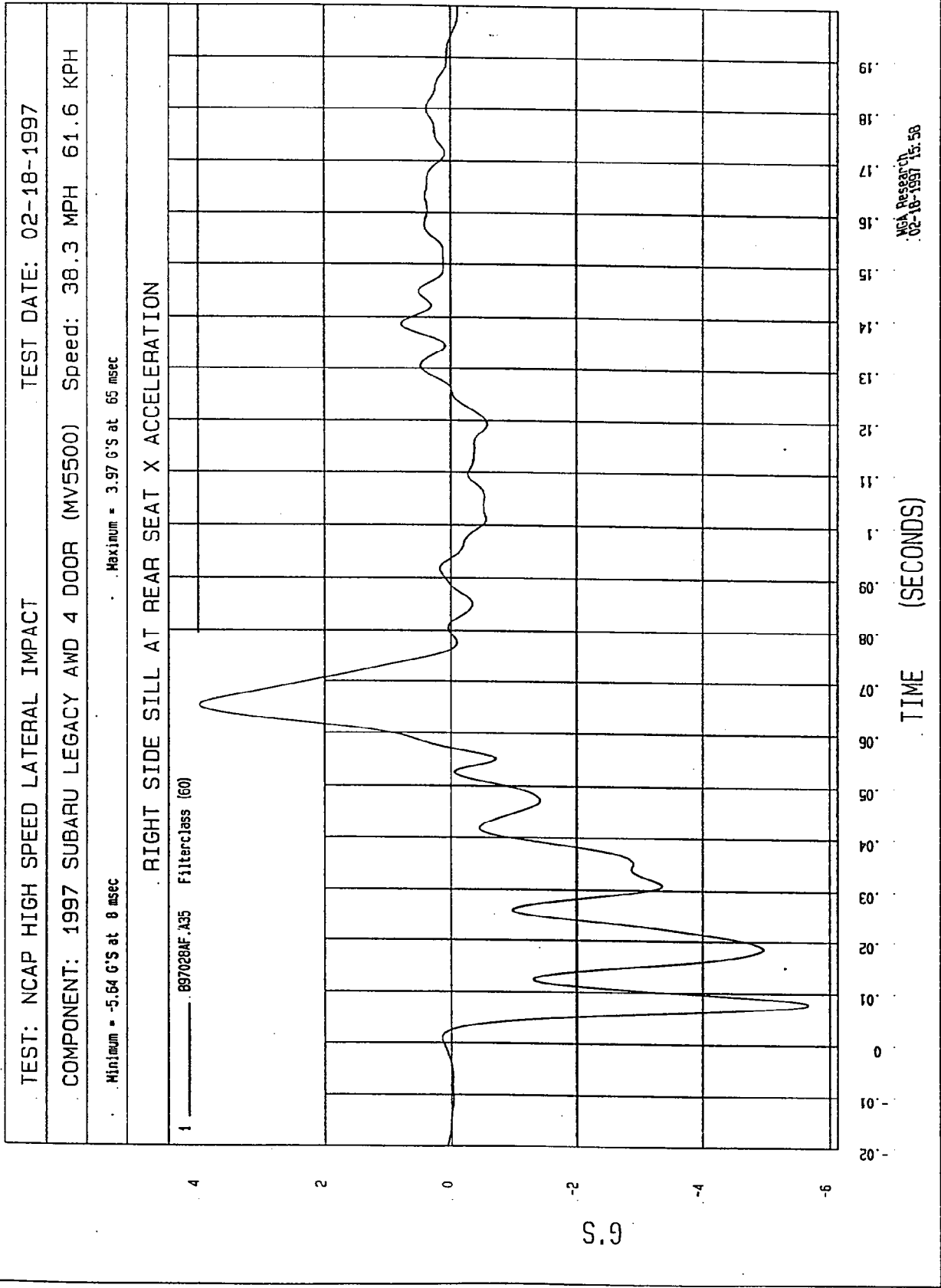
Minimum = 5.67E-03 G'S at -3 msec Maximum = 29.42 G'S at 8 msec

RIGHT SIDE SILL AT FRONT SEAT RESULTANT ACCELERATION



TIME (SECONDS)

WCA Research
02-18-1997 16:03

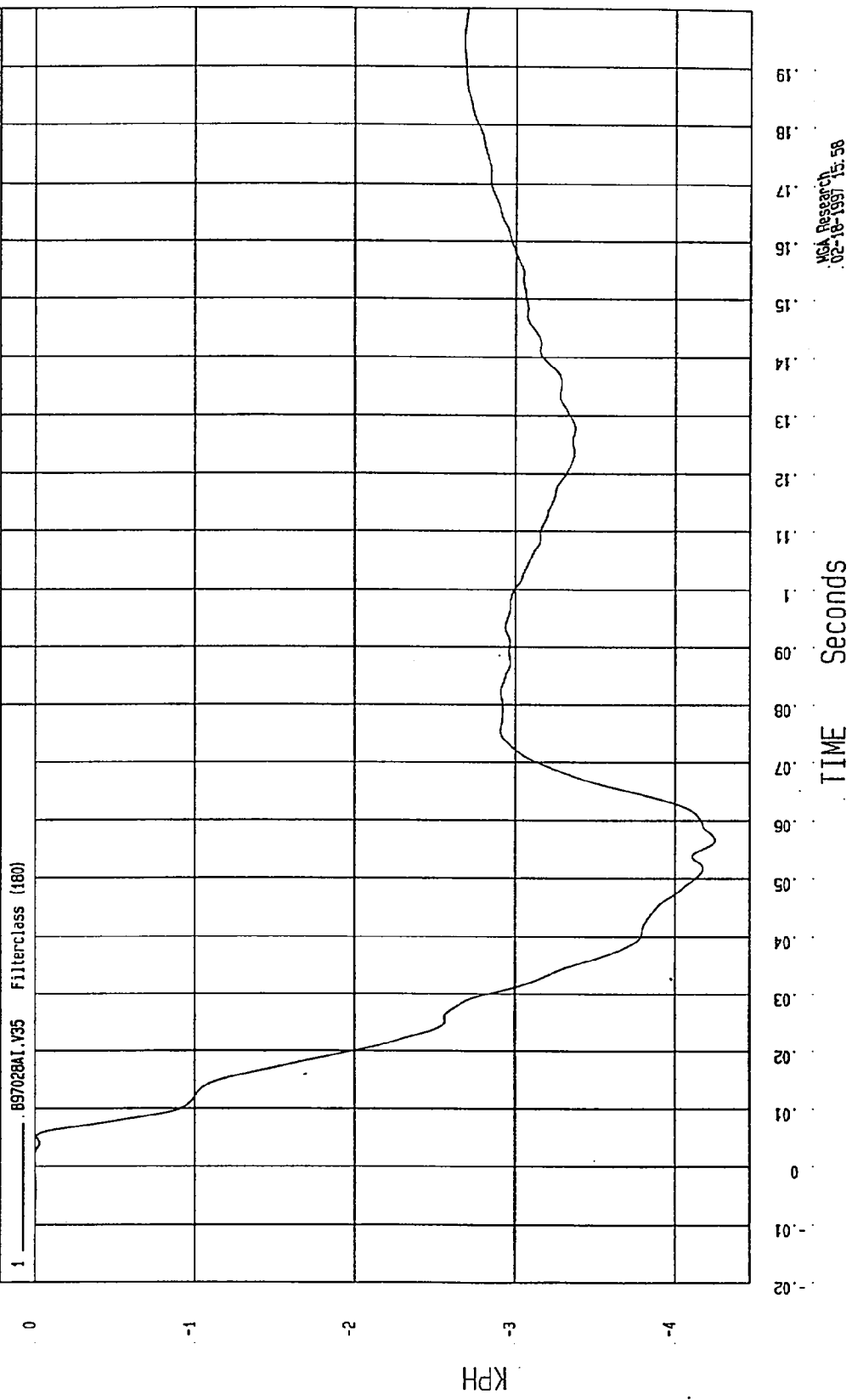


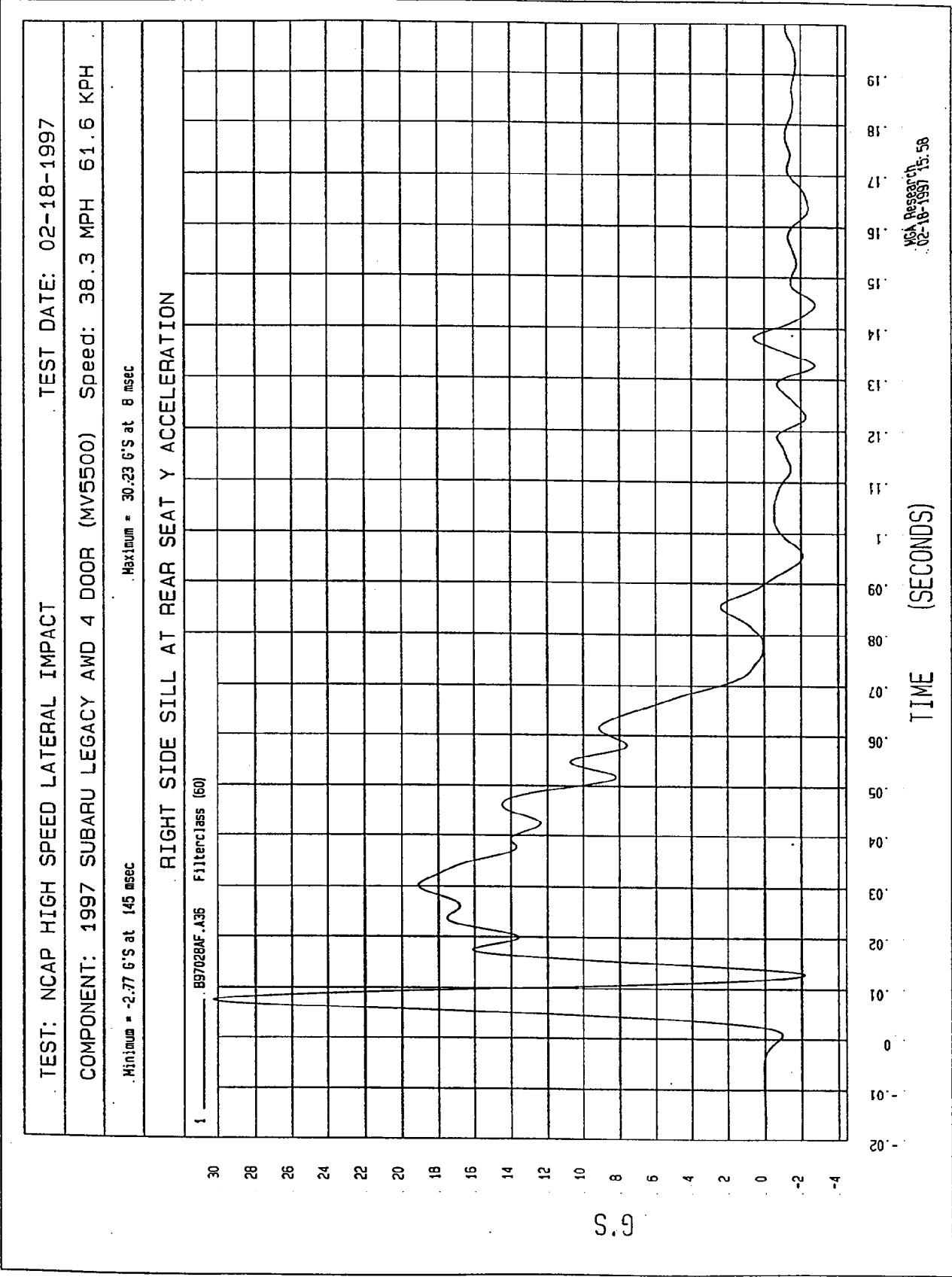
TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 02-18-1997

COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = -4.24 KPH at 56 msec Maximum = 4.20E-03 KPH at -14 msec

RIGHT SIDE SILL AT REAR SEAT X VELOCITY



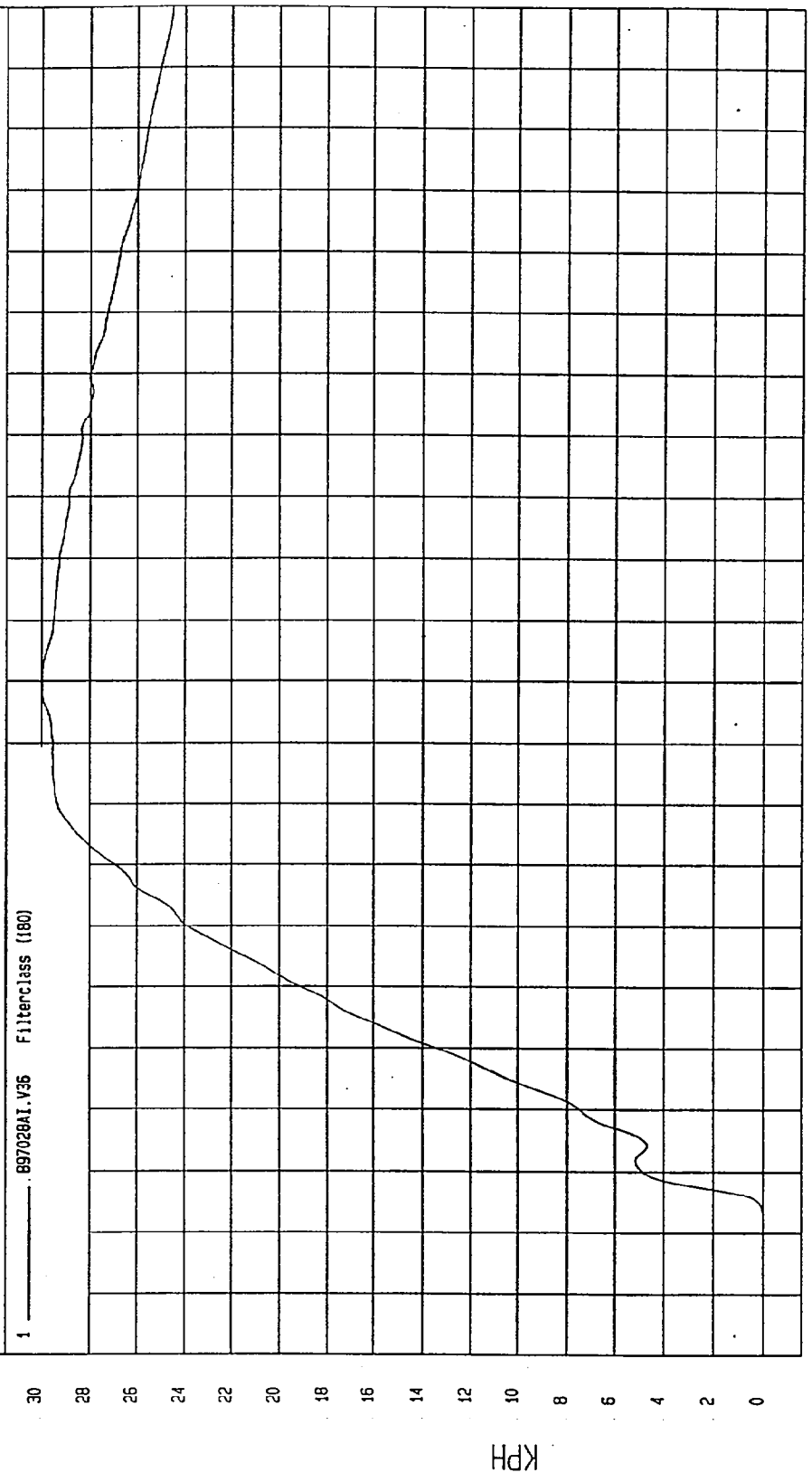


TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 02-18-1997

COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = -5.15E-03 KPH at -12 msec Maximum = 29.97 KPH at 88 msec

RIGHT SIDE SILL AT REAR SEAT Y VELOCITY



TIME Seconds

WSA Research
02-18-1997 15:58

TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 02-18-1997

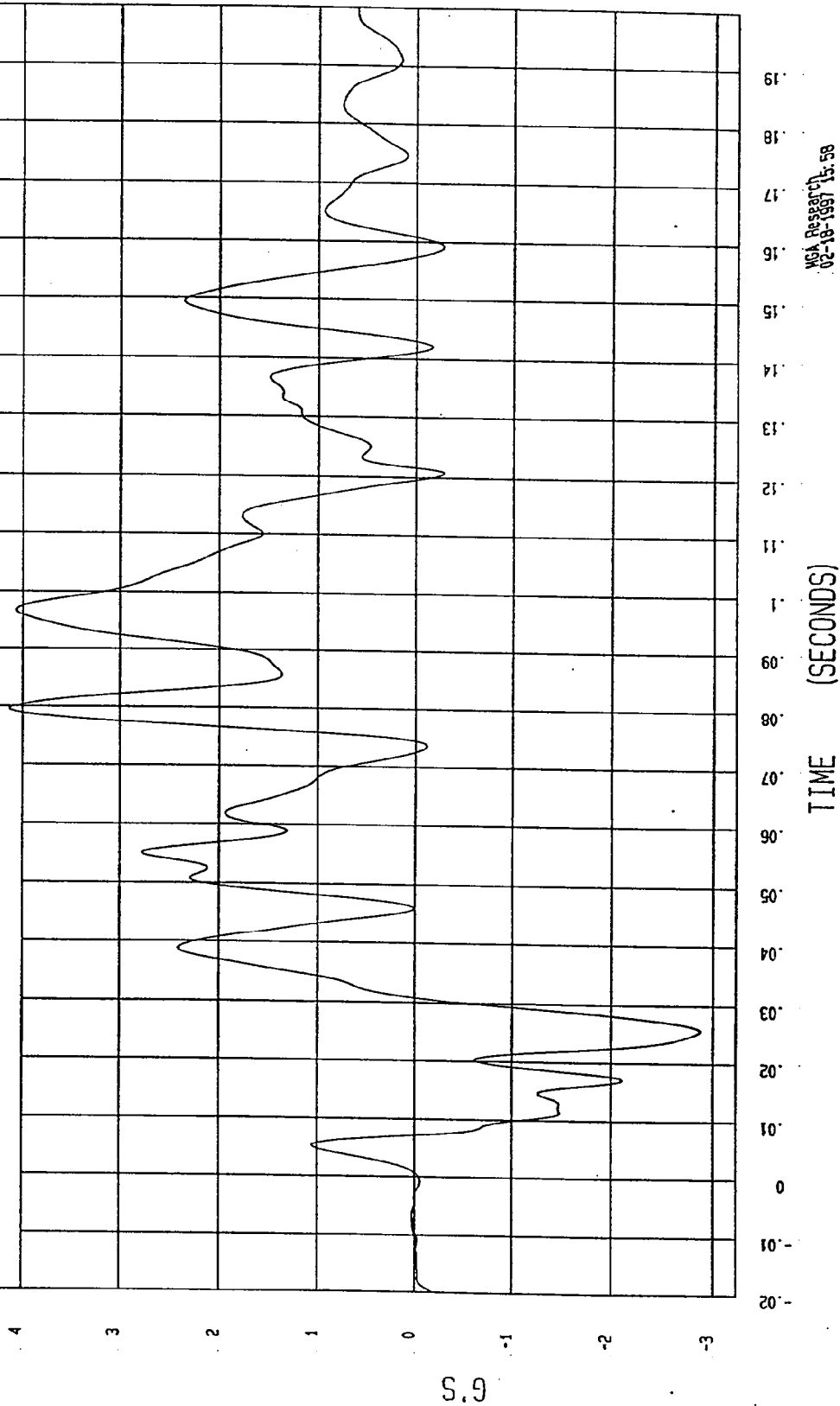
COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = -2.87 G'S at 26 msec.

Maximum = 4.13 G'S at 80 msec

RIGHT SIDE SILL AT REAR SEAT Z ACCELERATION

1 B970284F.A37 Filterclass (60)



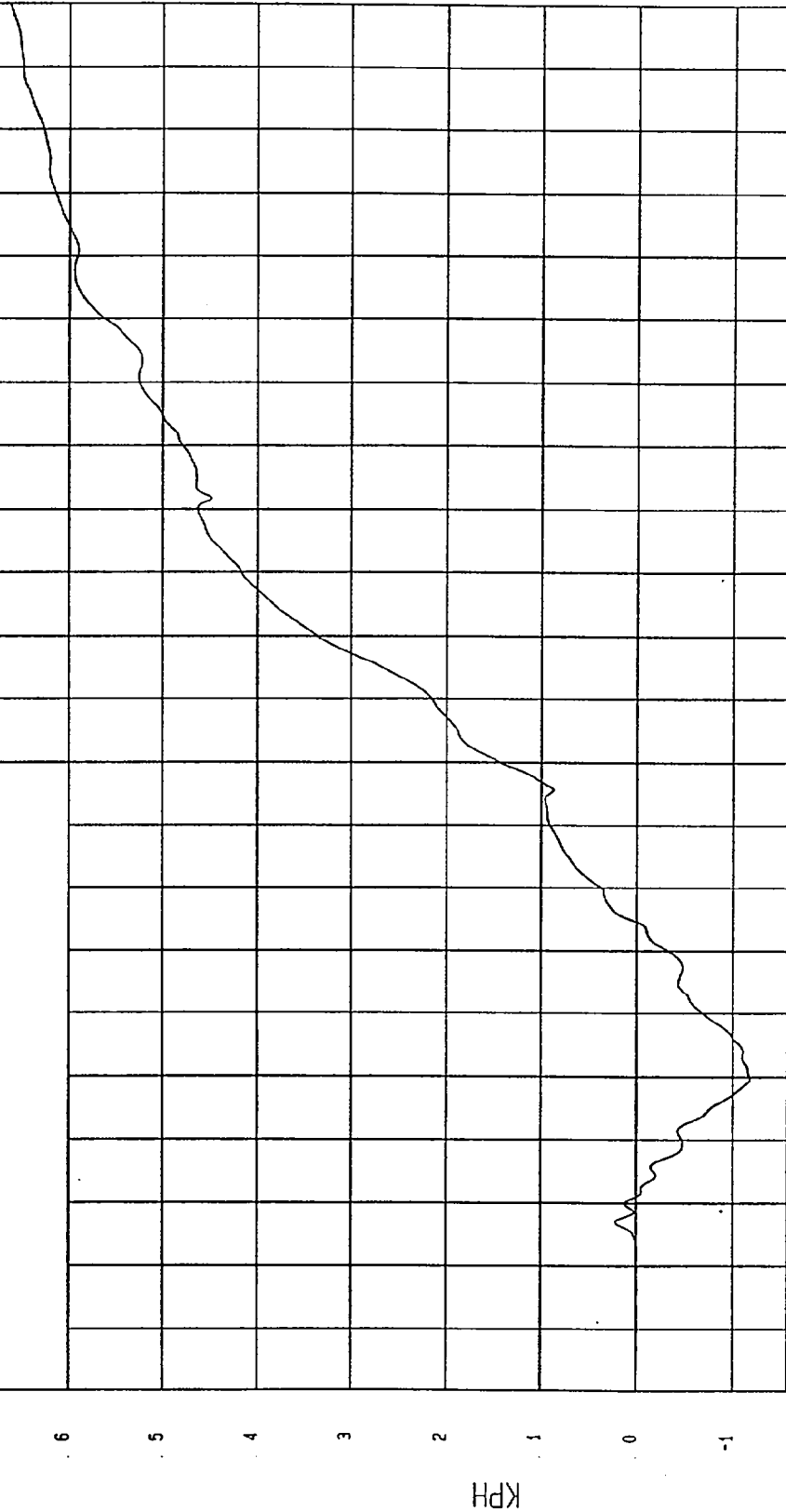
TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 02-18-1997

COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = -1.17 KPH at 30 msec Maximum = 6.61 KPH at 200 msec

RIGHT SIDE SILL AT REAR SEAT Z VELOCITY

1 997028A1.V37 Filterclass (180)



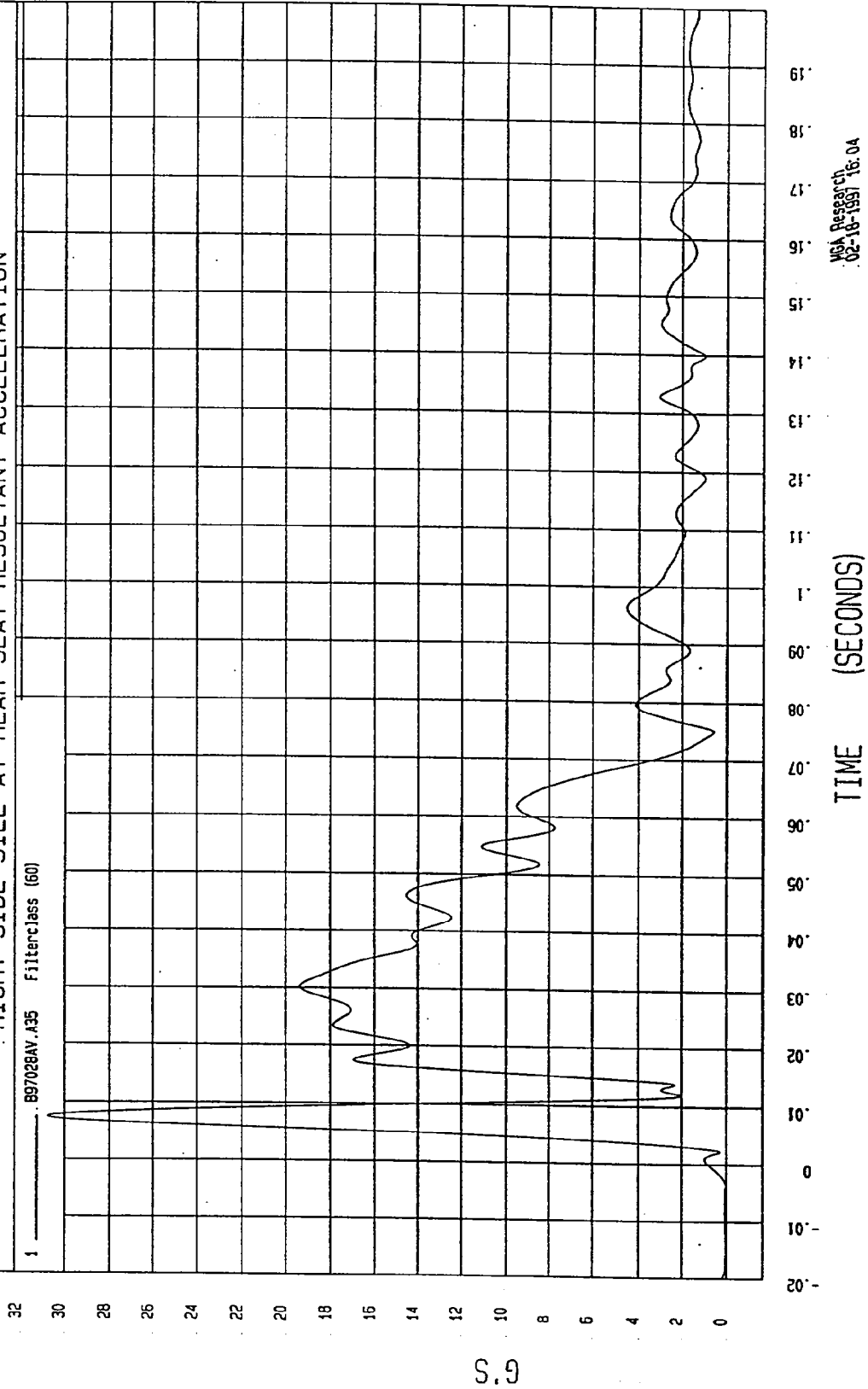
TIME Seconds
NCA Research
02-18-1997 13:59

TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 02-18-1997

COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = .01 G's at ~4 msec Maximum = 30.74 G's at 8 msec

RIGHT SIDE SILL AT REAR SEAT RESULTANT ACCELERATION

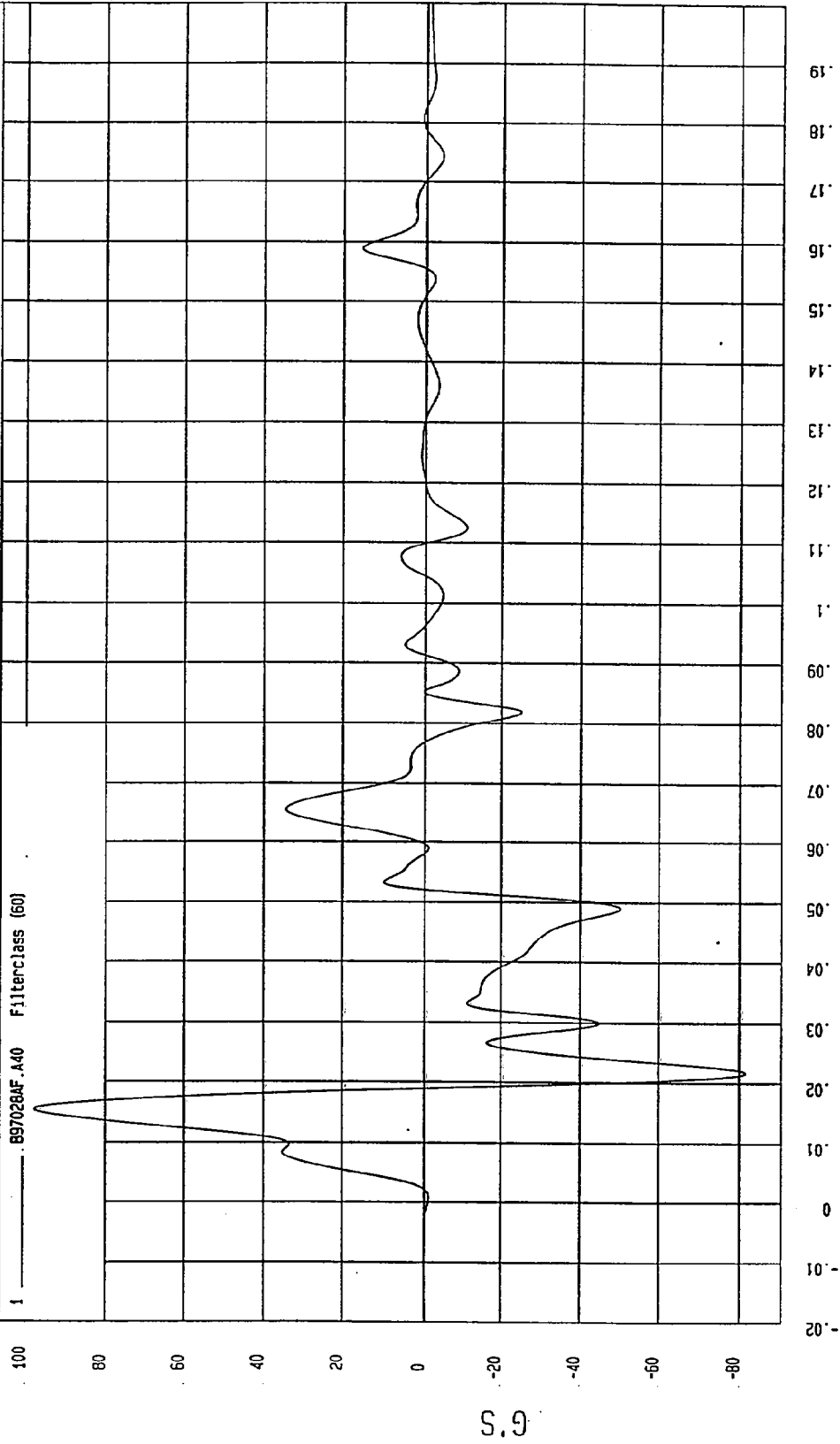


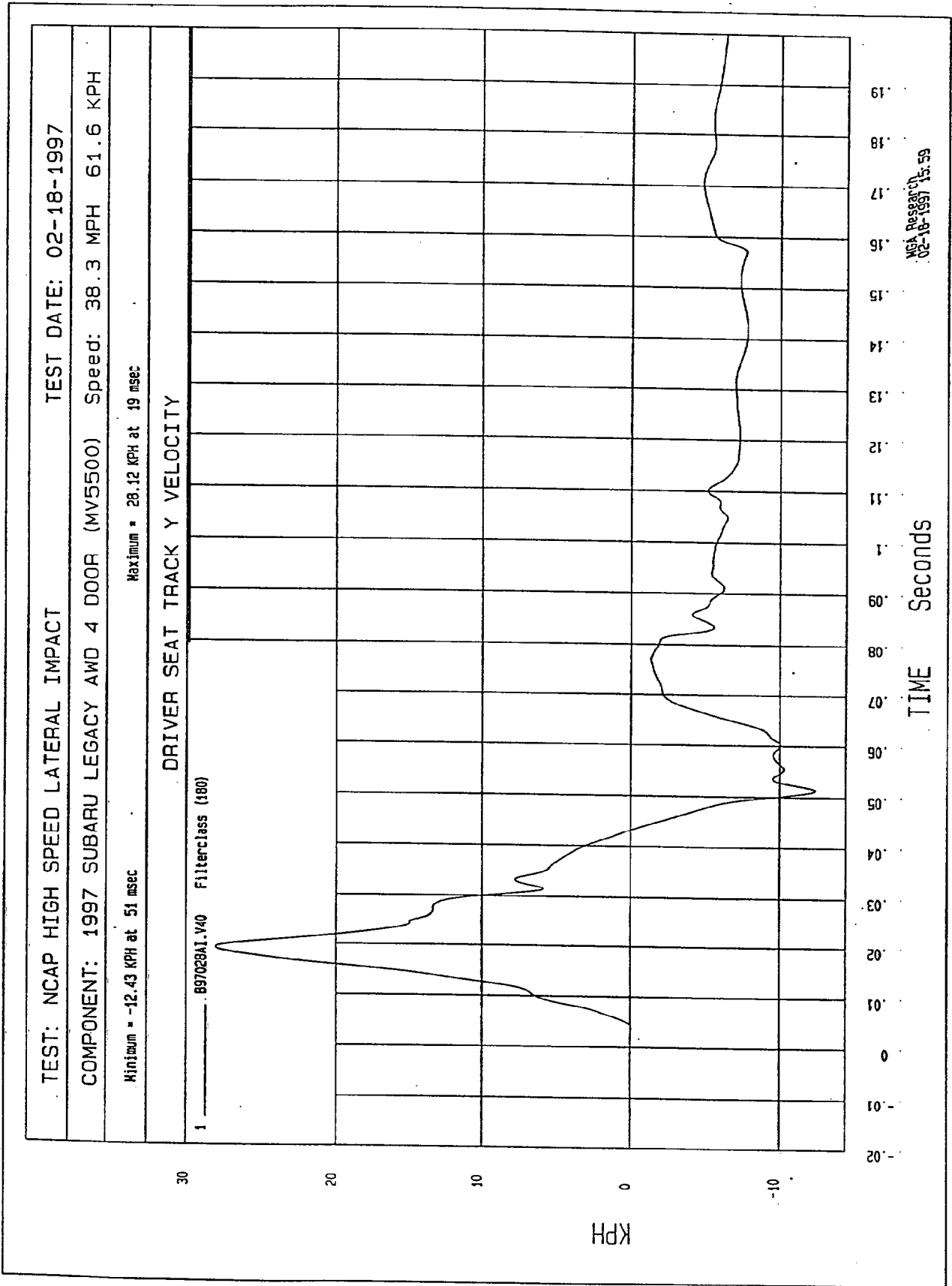
TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 02-18-1997

COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = -81.55 G'S at 22 msec Maximum = 97.69 G'S at 15 msec

DRIVER SEAT TRACK Y ACCELERATION





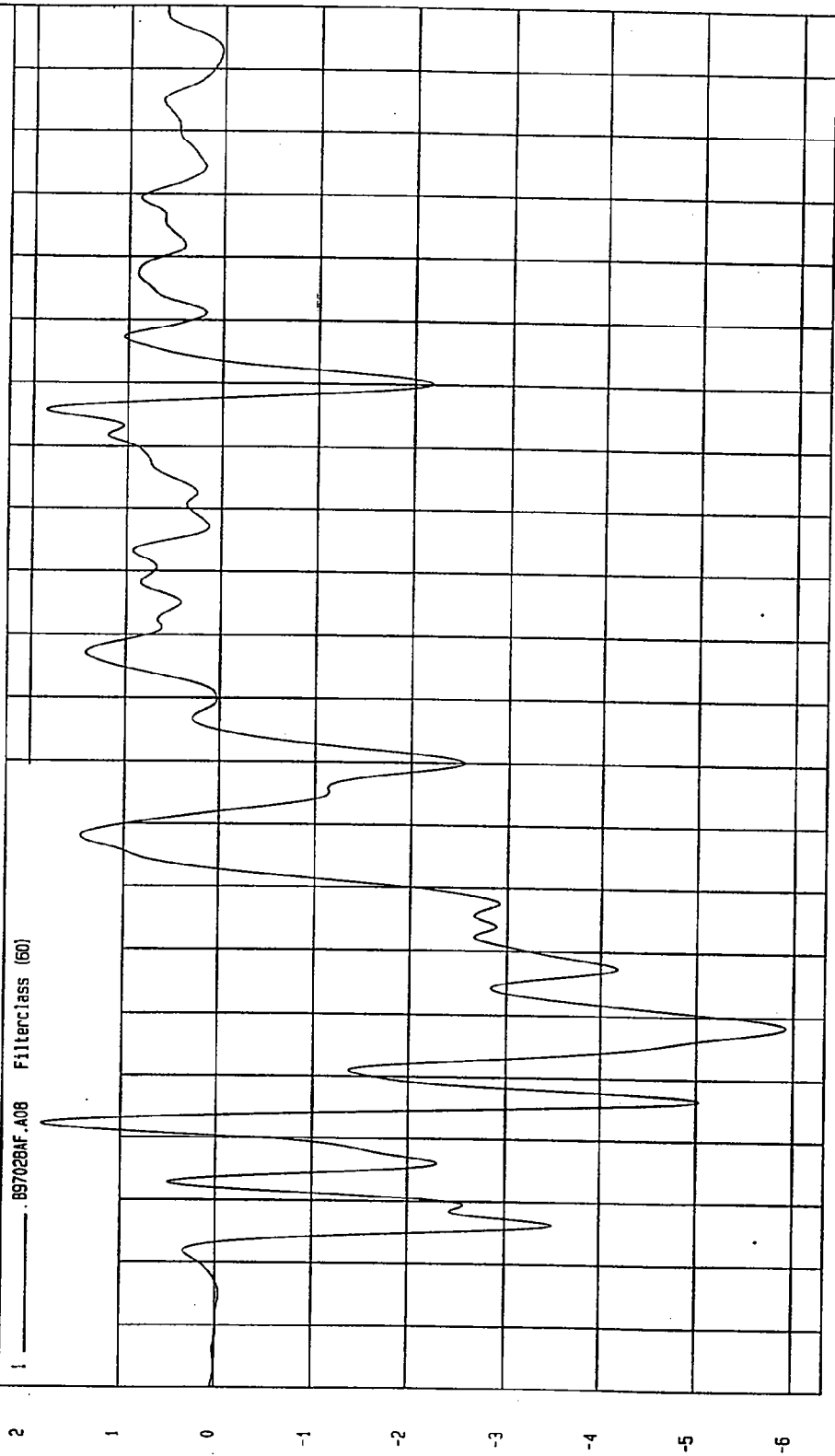
TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 02-18-1997

COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = -5.92 G's at 38 msec Maximum = 1.86 G's at 136 msec

REAR FLOORPAN ABOVE AXLE X ACCELERATION

1 — .897028AF.A08 FilterClass (60)



WCA Research
02-18-1997 15:59

TEST: NCAP HIGH SPEED LATERAL IMPACT

TEST DATE: 02-18-1997

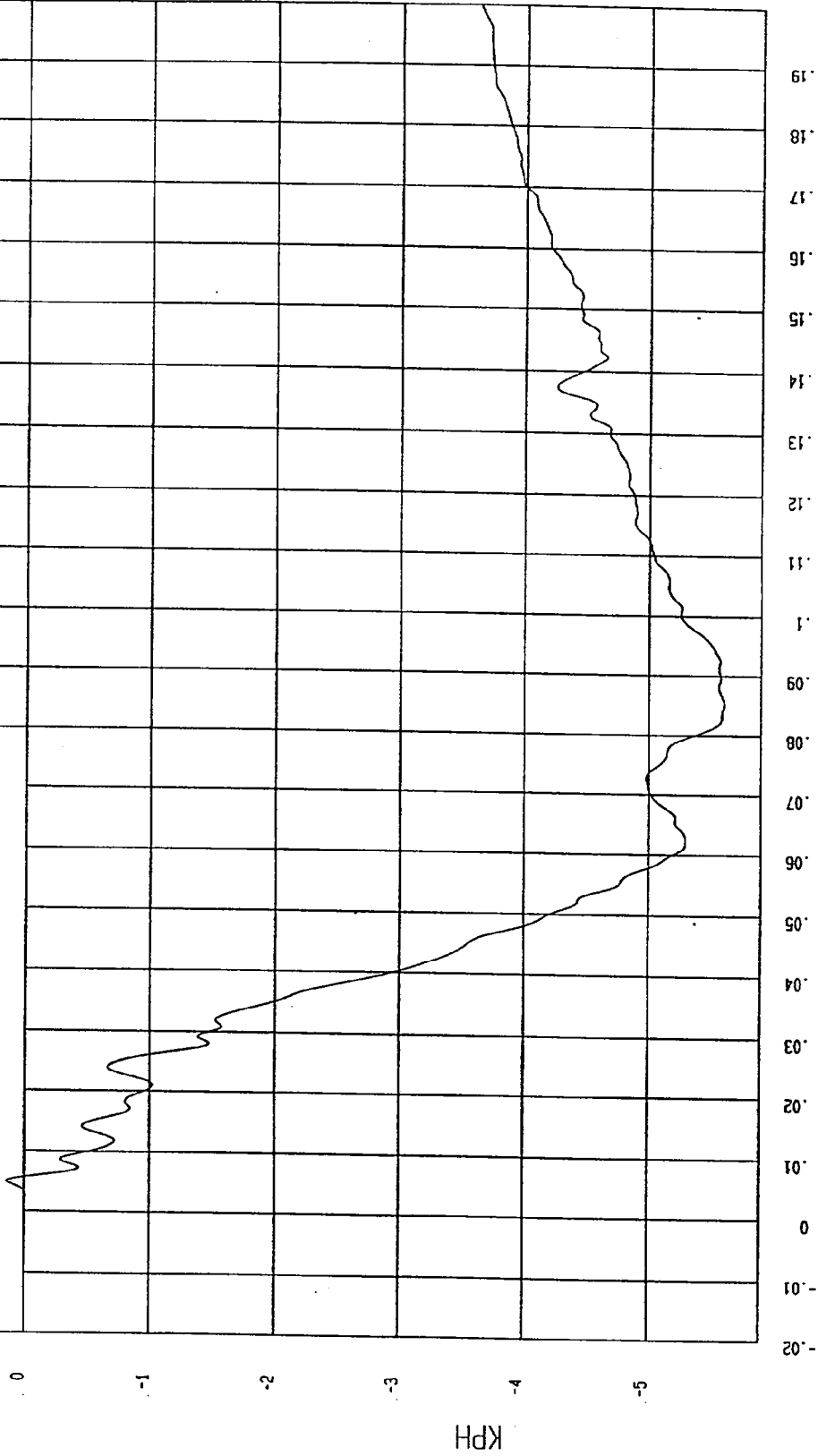
COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = -5.58 KPH at 85 msec

Maximum = .13 KPH at 5 msec

REAR FLOORPAN ABOVE AXLE X VELOCITY

1 B97028A1.V08 Filterclass (180)



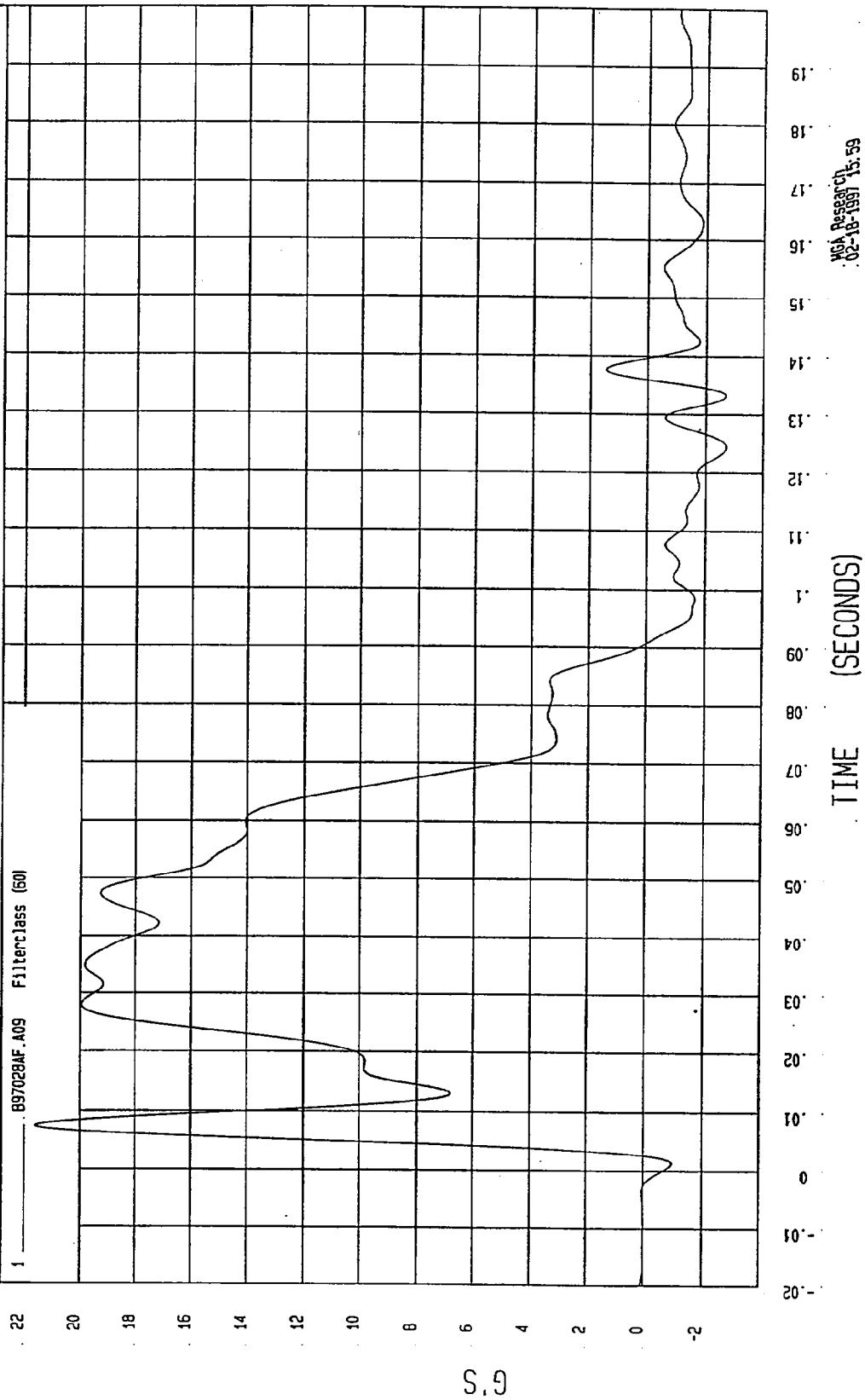
MCA Research
02-18-1997 15:59

TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 02-18-1997

COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = -2.69 G'S at 124 msec Maximum = 21.58 G'S at 7 msec

REAR FLOORPAN ABOVE AXLE Y ACCELERATION

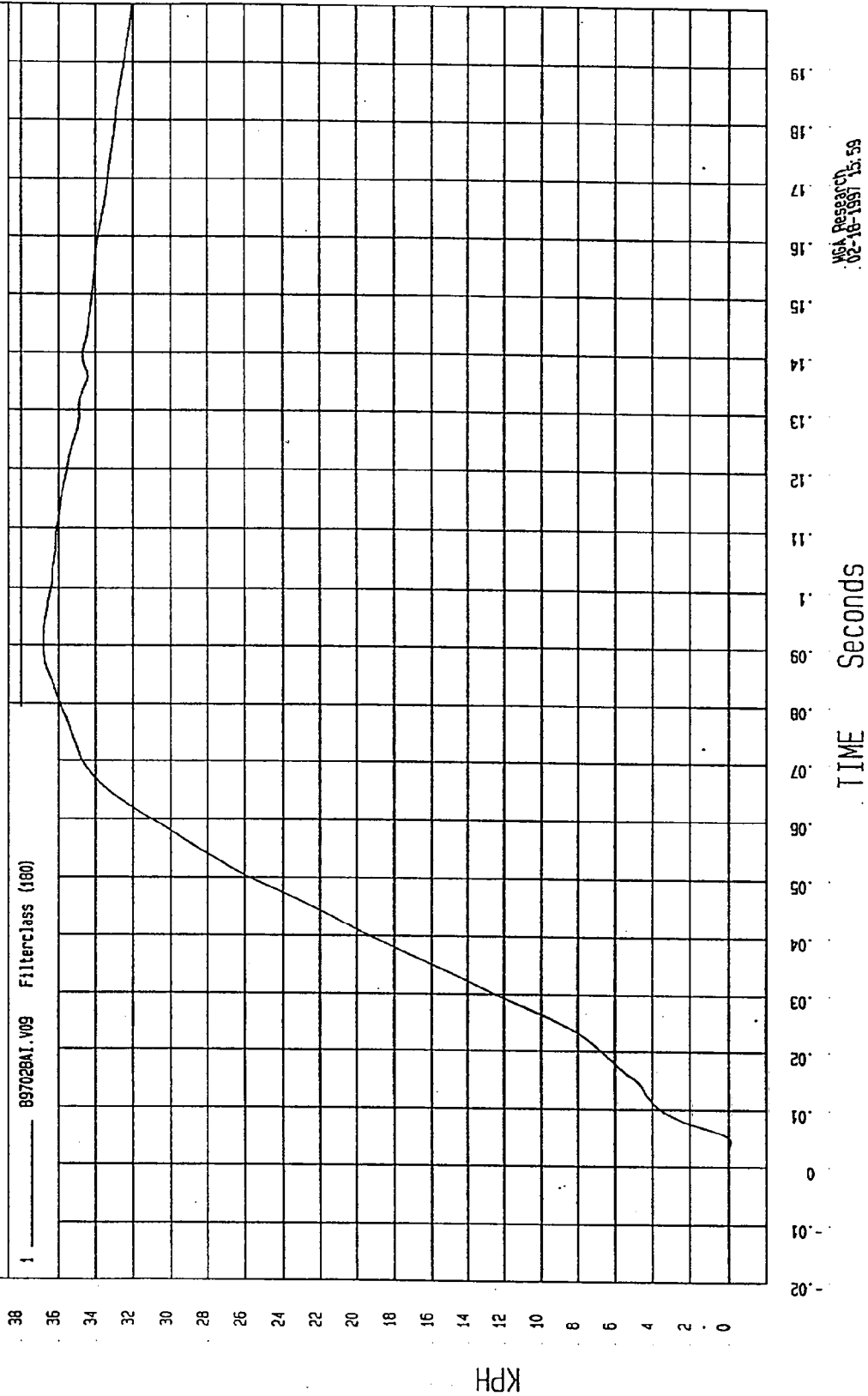


TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 02-18-1997

COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = -10 KPH at 4 msec Maximum = 36.81 KPH at 90 msec

REAR FLOORPAN ABOVE AXLE Y VELOCITY

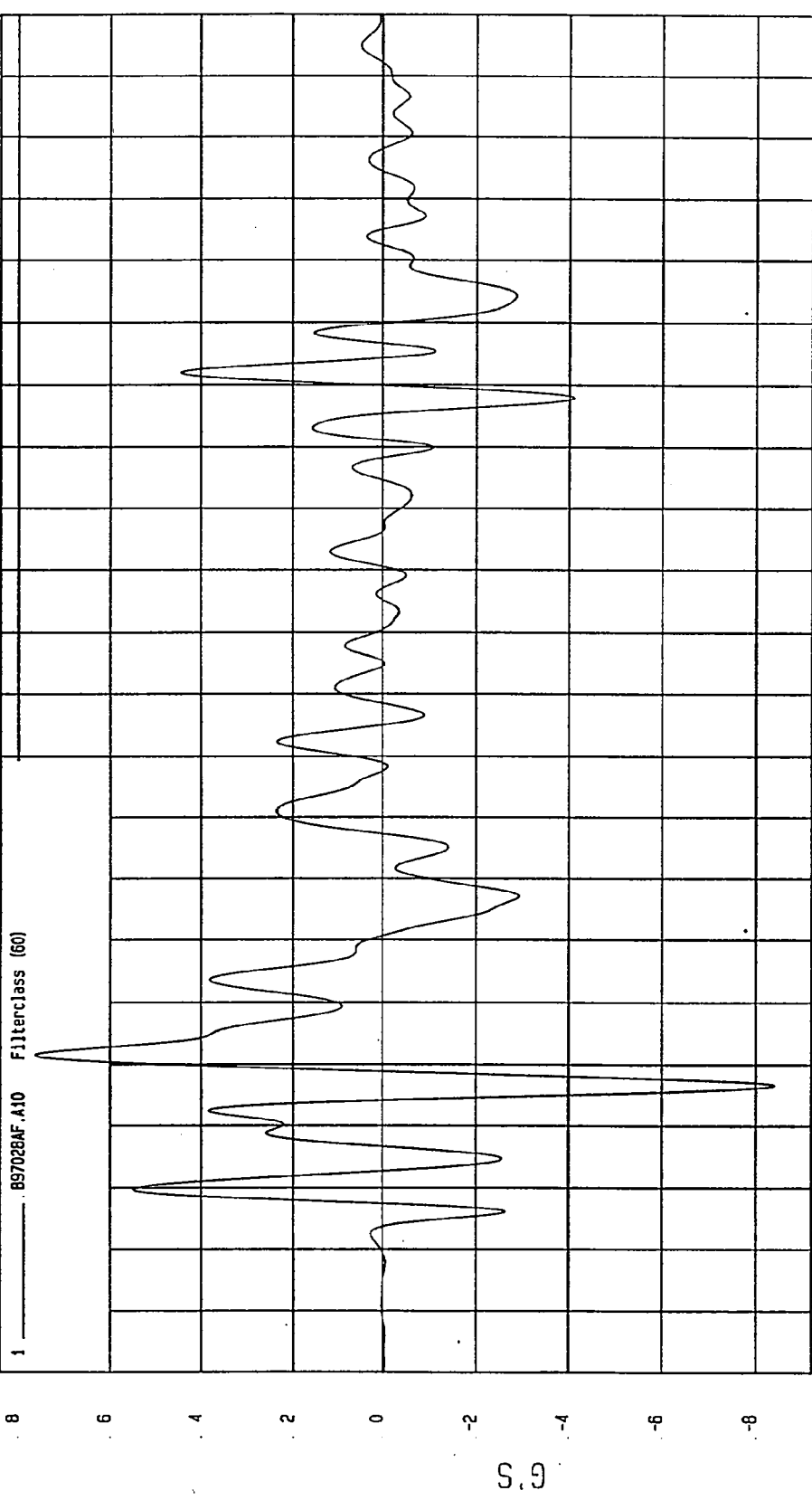


TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 02-18-1997

COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = -8.38 G'S at .27 msec Maximum = 7.61 G'S at .32 msec

REAR FLOORPAN ABOVE AXLE Z ACCELERATION



MSA Research
02-18-1997 15:59

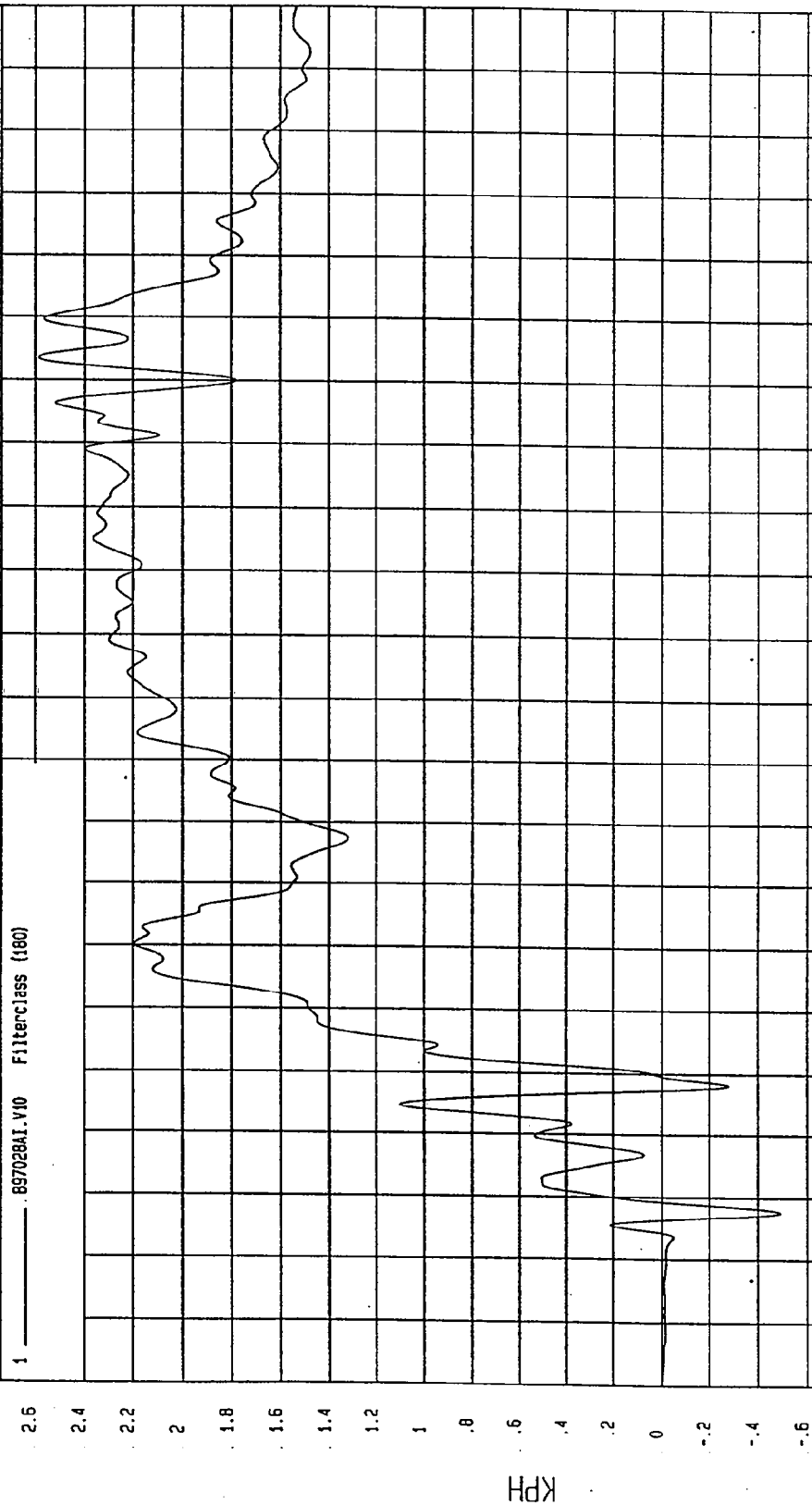
TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 02-18-1997

COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = -.49 KPH at 8 msec Maximum = 2.58 KPH at 144 msec

REAR FLOORPAN ABOVE AXLE Z VELOCITY

1 ——— .897028A1.V10 Filterclass (180)



MOA Research
02-18-1997 15:59

TEST: NCAP HIGH SPEED LATERAL IMPACT

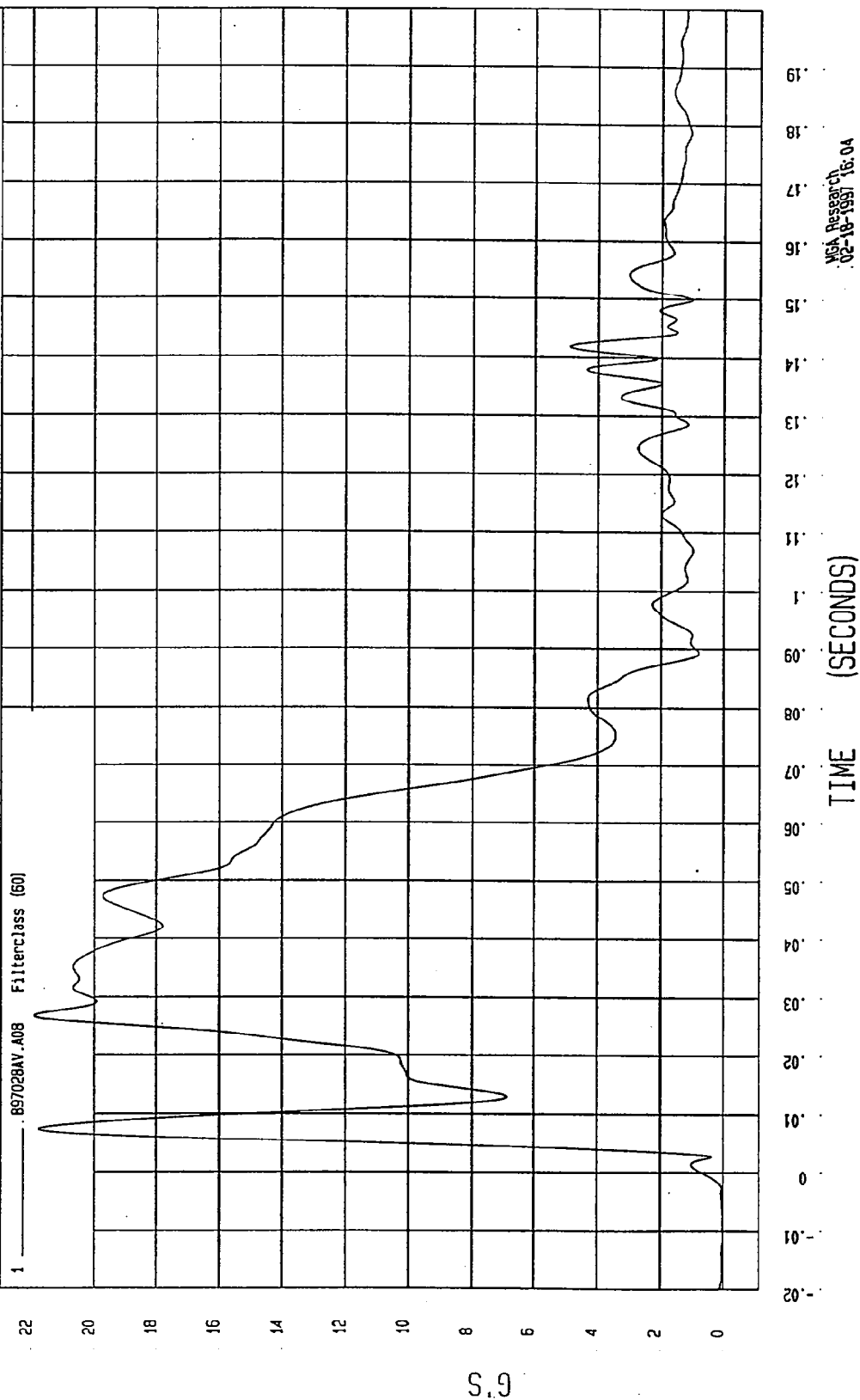
TEST DATE: 02-18-1997

COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = 6.18E-03 G'S at -11 msec

Maximum = 21.90 G'S at .27 msec

REAR FLOORPAN ABOVE AXLE RESULTANT ACCELERATION



TEST: NCAP HIGH SPEED LATERAL IMPACT

TEST DATE: 02-18-1997

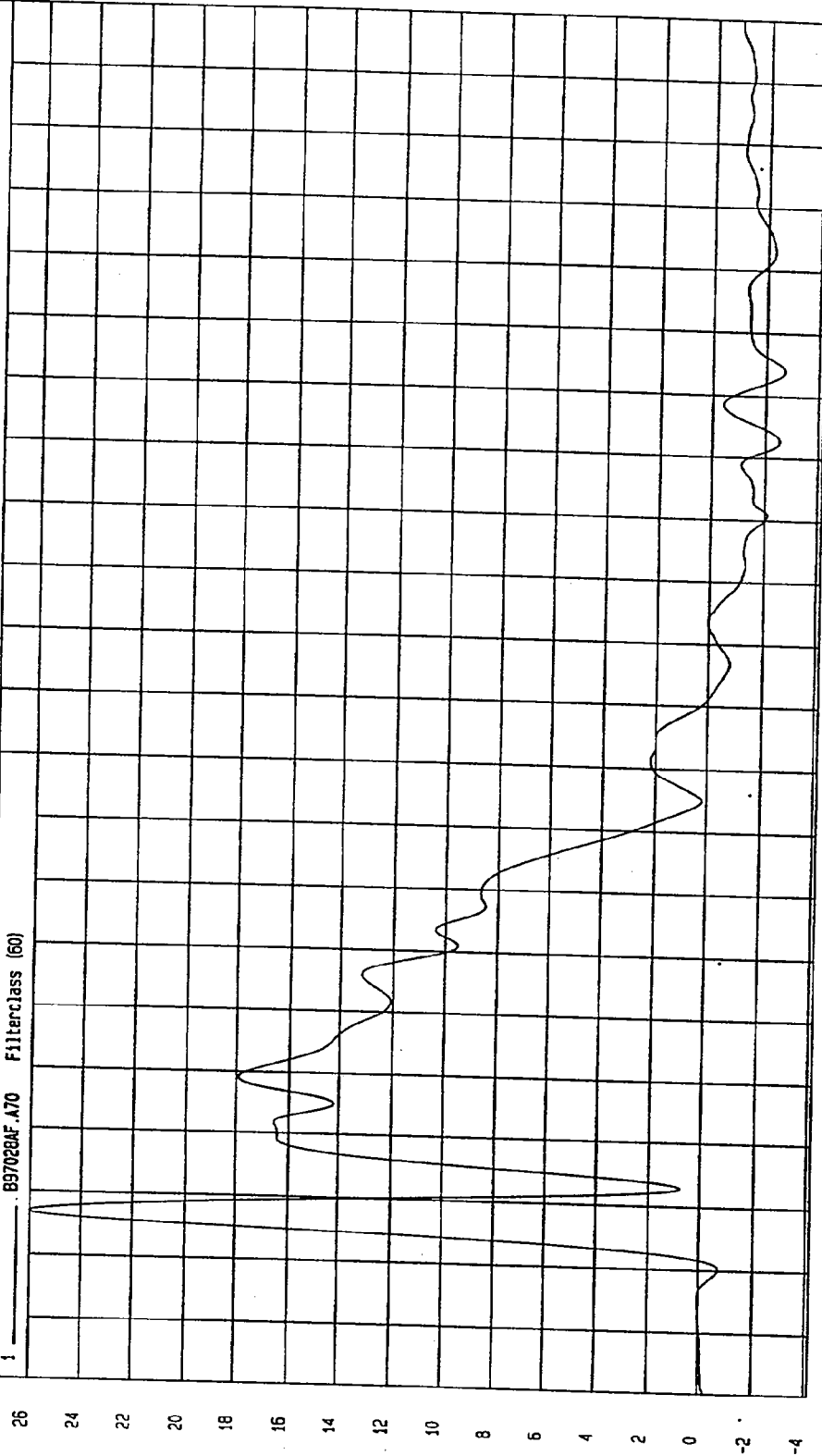
COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = -2.71 G'S at 144 msec

Maximum = 26.03 G'S at 7 msec

RIGHT REAR OCCUPANT COMPARTMENT Y ACCELERATION

1 B97020AF.A70 Filterclass (50)



TIME (SECONDS)

19
18
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-1
-2
-3
-4

NGA Research
02-18-1997 16:00

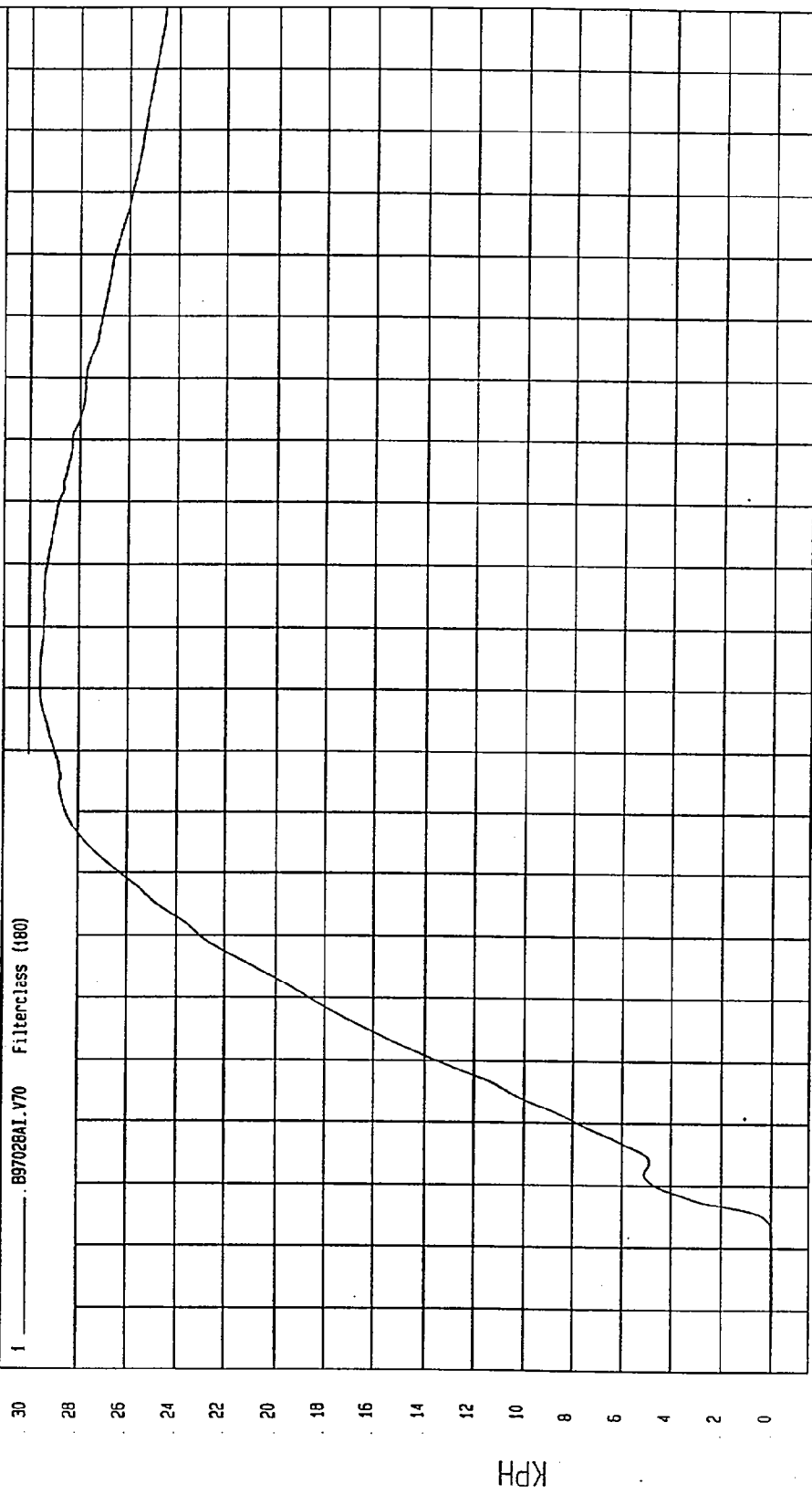
S.9

TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 02-18-1997

COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = -3.24E-02 KPH at -10 msec Maximum = 29.55 KPH at 90 msec

RIGHT REAR OCCUPANT COMPARTMENT Y VELOCITY



TIME Seconds

WCA Research
02-18-1997 15:00

TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 02-18-1997

COMPONENT: 1997 SUBARU LEGACY AWD 4 D00R (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = -20.37 G'S at 24 msec Maximum = 130.00 G'S at 3 msec

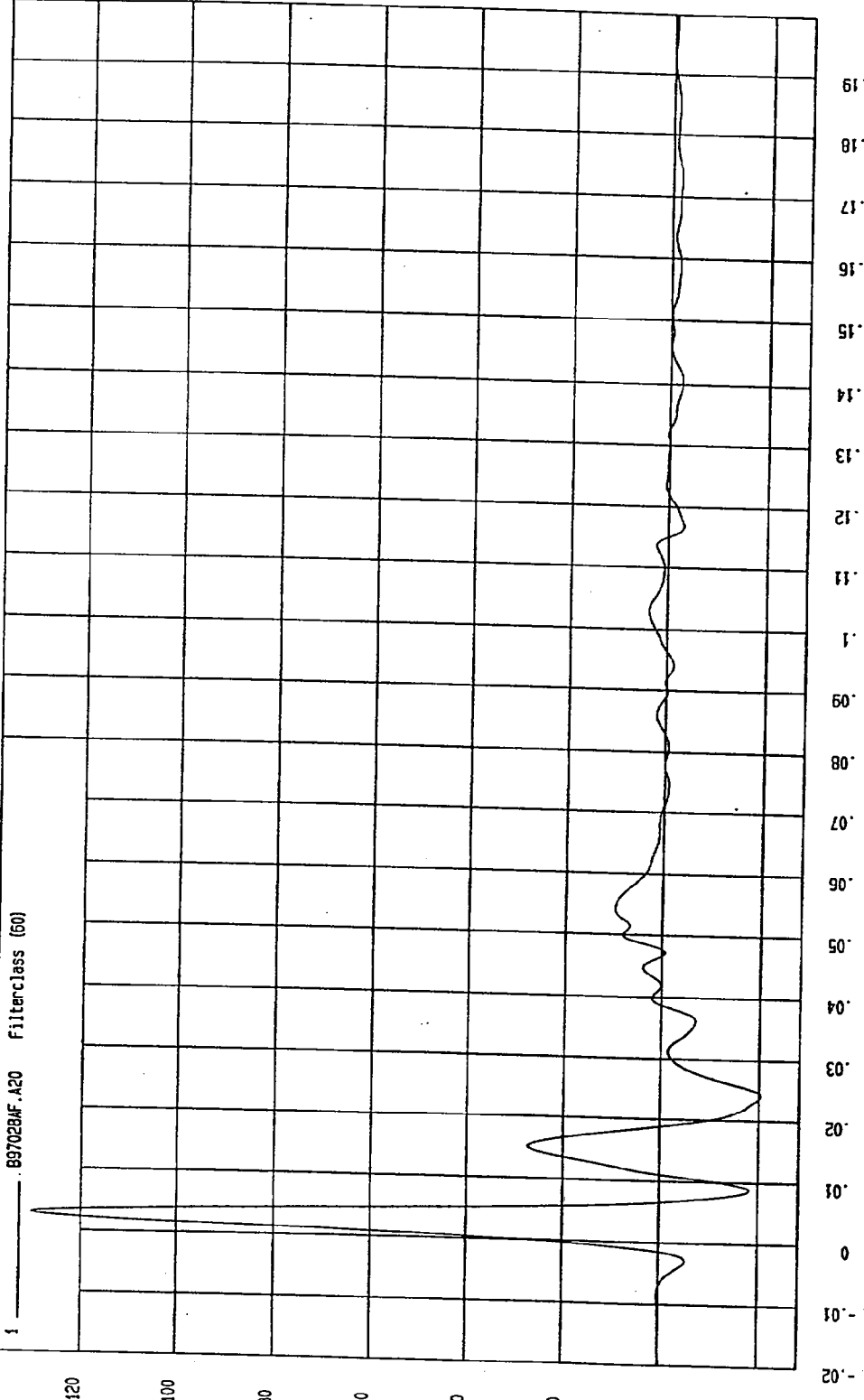
LEFT LOWER A-POST Y ACCELERATION

1 .897029AF.A20 Filterclass (50)

G.S

NSA Research
02-18-1997 16:00

TIME (SECONDS)



TEST: NCAP HIGH SPEED LATERAL IMPACT

TEST DATE: 02-18-1997

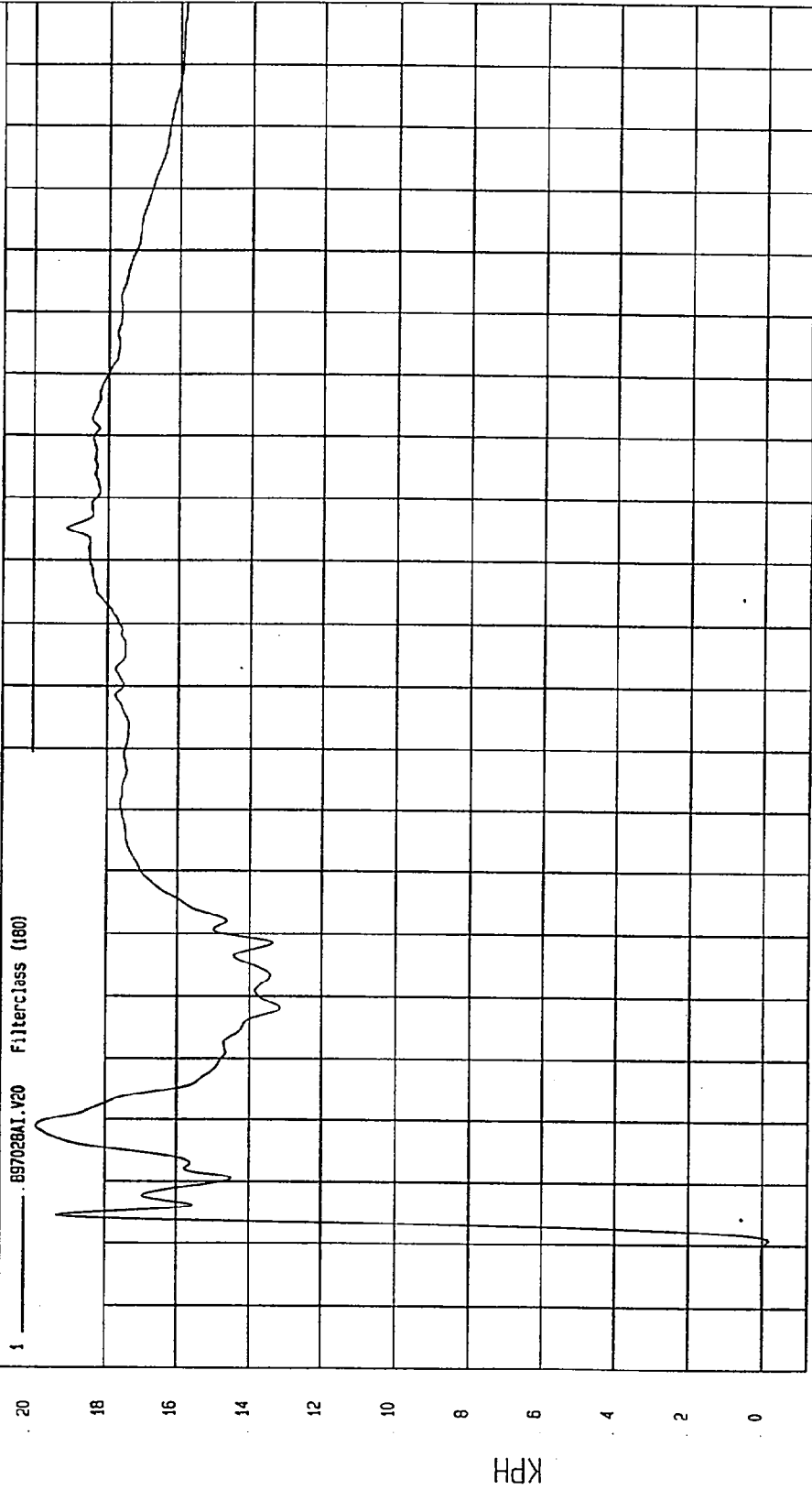
COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = -.17 KPH at 1 msec

Maximum = 19.86 KPH at 19 msec

LEFT LOWER A-POST Y VELOCITY

1 ——— .B97028A1.V20 Filterclass (180)



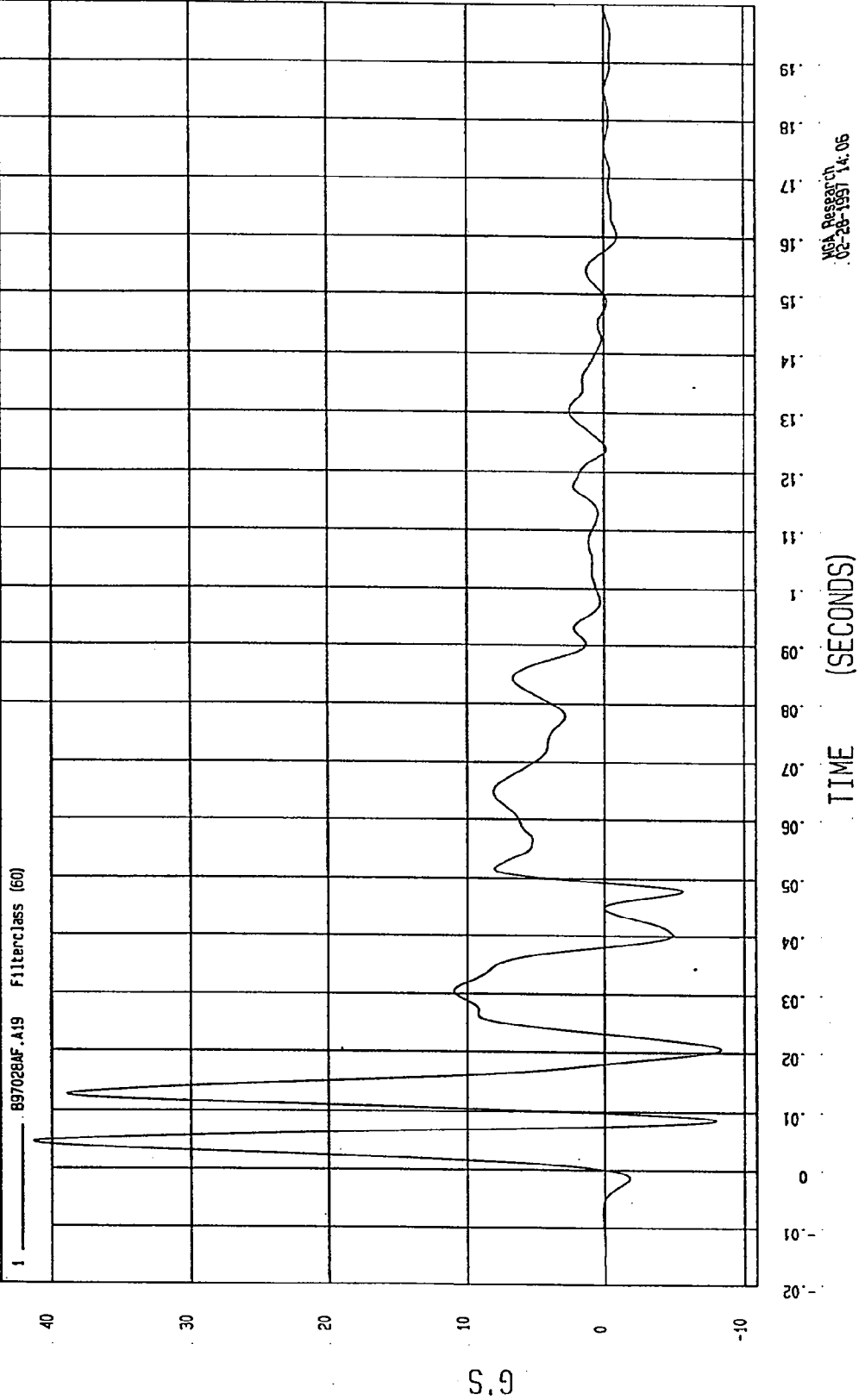
NSA Research
02-18-1997 16:00

TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 02-18-1997

COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = -8.33 G'S at 21 msec Maximum = 41.23 G'S at 5 msec

LEFT MID A-POST Y ACCELERATION



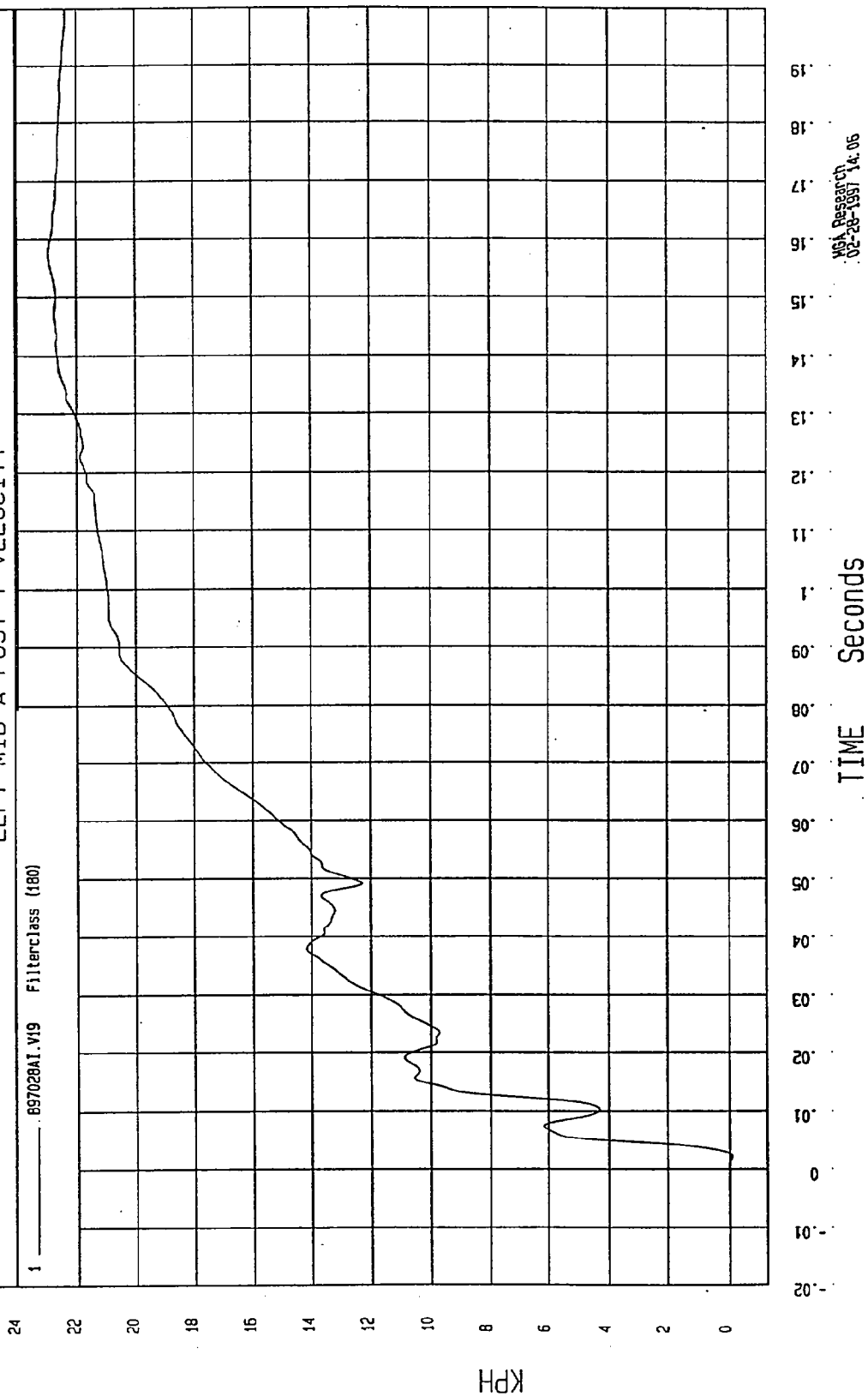
TEST: NCAP HIGH SPEED LATERAL IMPACT

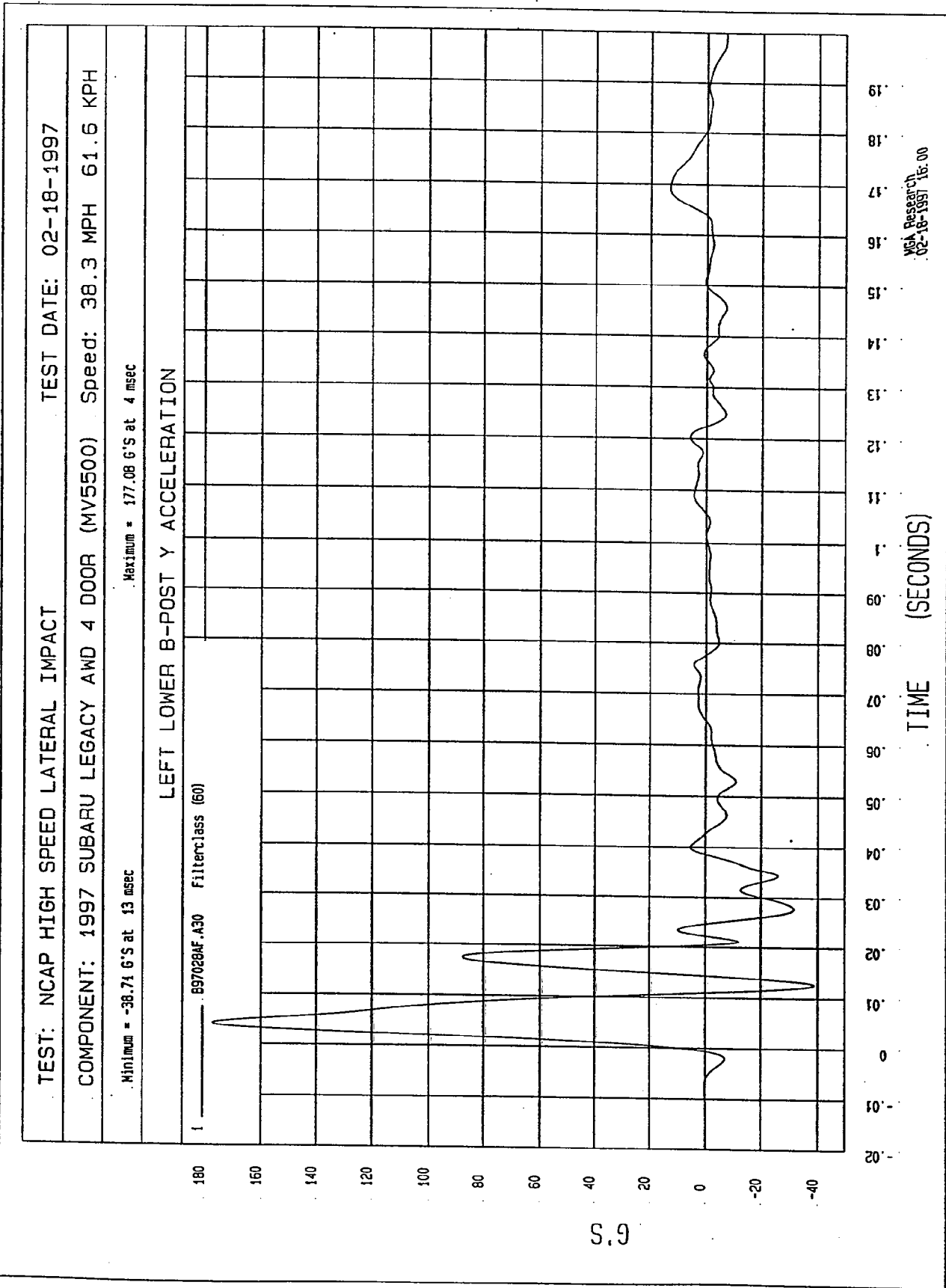
TEST DATE: 02-18-1997

COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = -.08 KPH at 2 msec Maximum = 22.92 KPH at 158 msec

LEFT MID A-POST Y VELOCITY





TEST: NCAP HIGH SPEED LATERAL IMPACT

TEST DATE: 02-18-1997

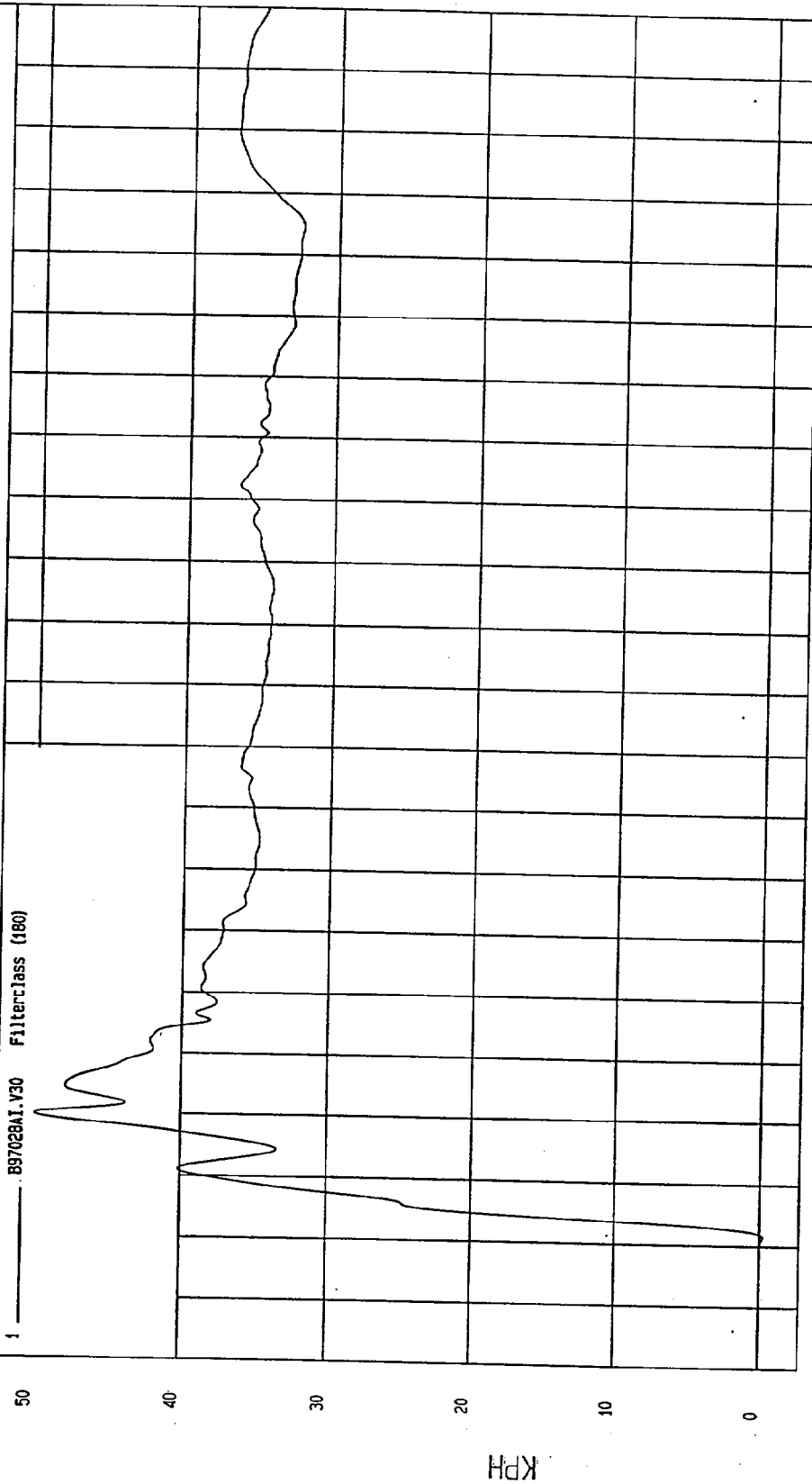
COMPONENT: 1997 SUBARU LEGACY AND 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = -.22 KPH at 1 msec

Maximum = 49.99 KPH at 20 msec

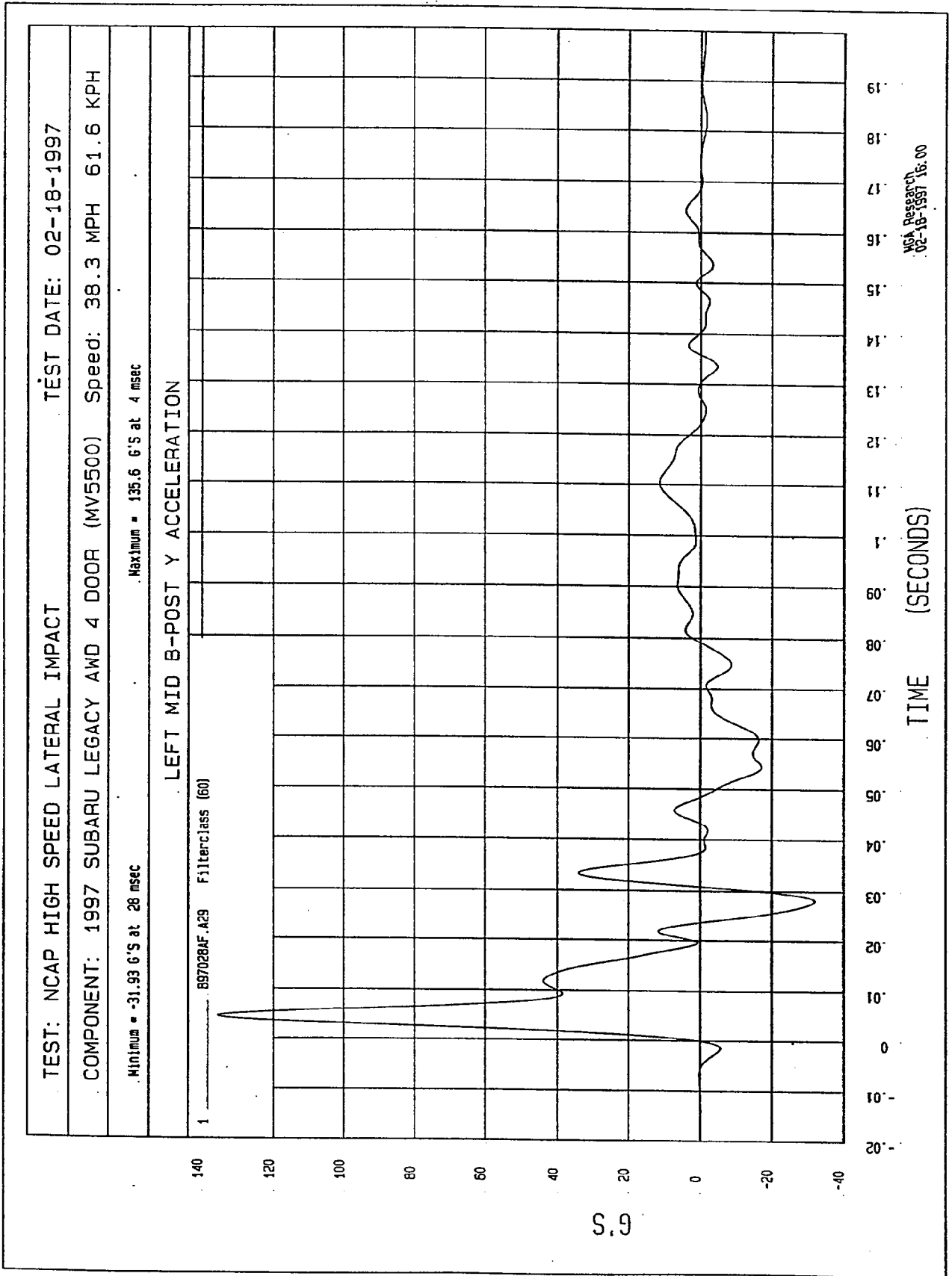
LEFT LOWER B-POST Y VELOCITY

1 B97028A1.V30 Filterclass (180)



TIME Seconds

MCA Research
02-18-1997 16:00



TEST: NCAP HIGH SPEED LATERAL IMPACT

TEST DATE: 02-18-1997

COMPONENT: 1997 SUBARU LEGACY AWD 4 D00R (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = -.39 KPH at 2 msec

Maximum = 35.21 KPH at 24 msec

LEFT MID B-POST Y VELOCITY

1 897028A1.V29 Filterclass (180)

KPH

TIME Seconds

MGA Research
02-18-1997 16:01

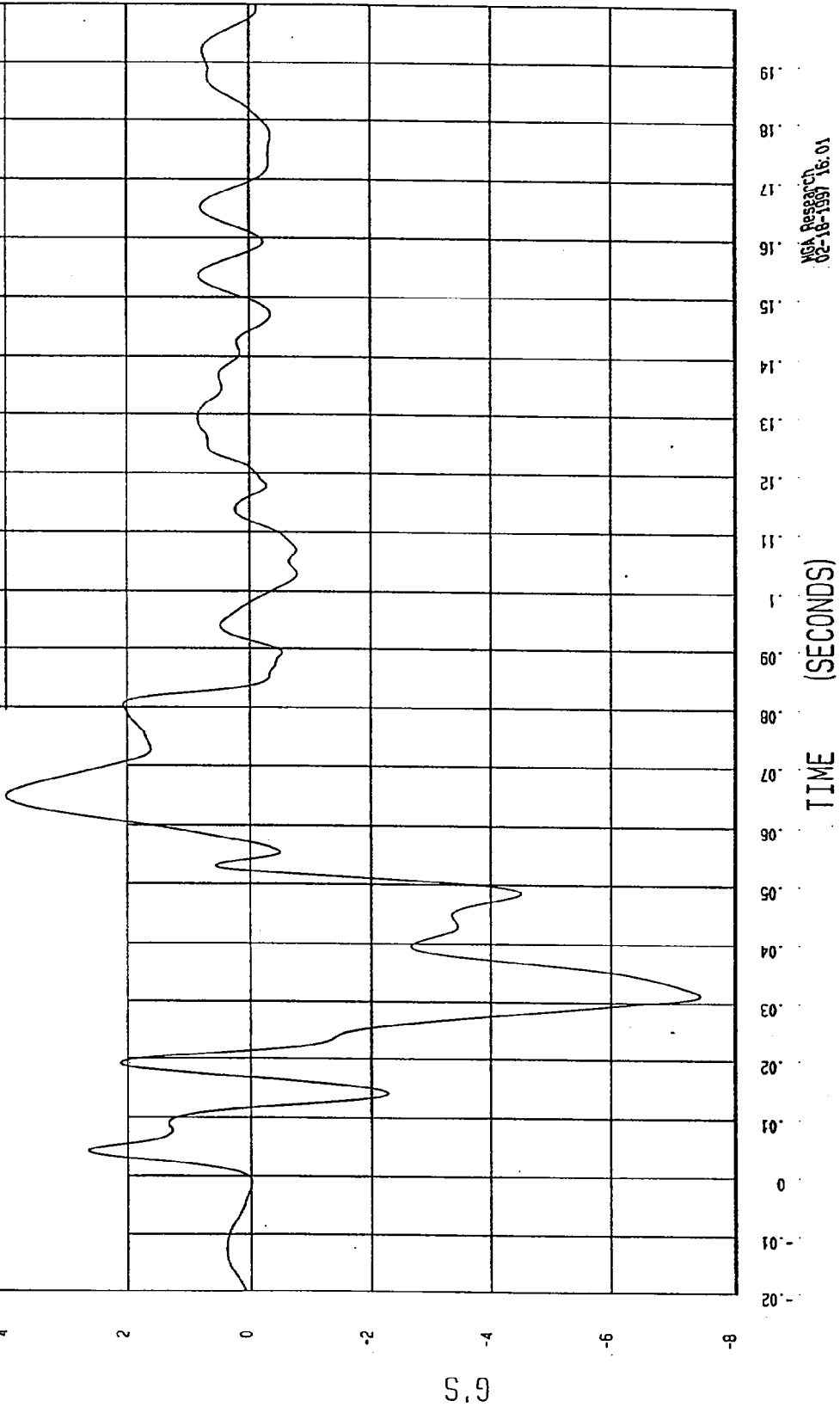
TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 02-18-1997

COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = -7.45 G'S at 31 msec Maximum = 3.99 G'S at 65 msec

VEHICLE CG X ACCELERATION

1 B97028AF.A58 Filterclass (60)



NSA Research
02-18-1997 16.01

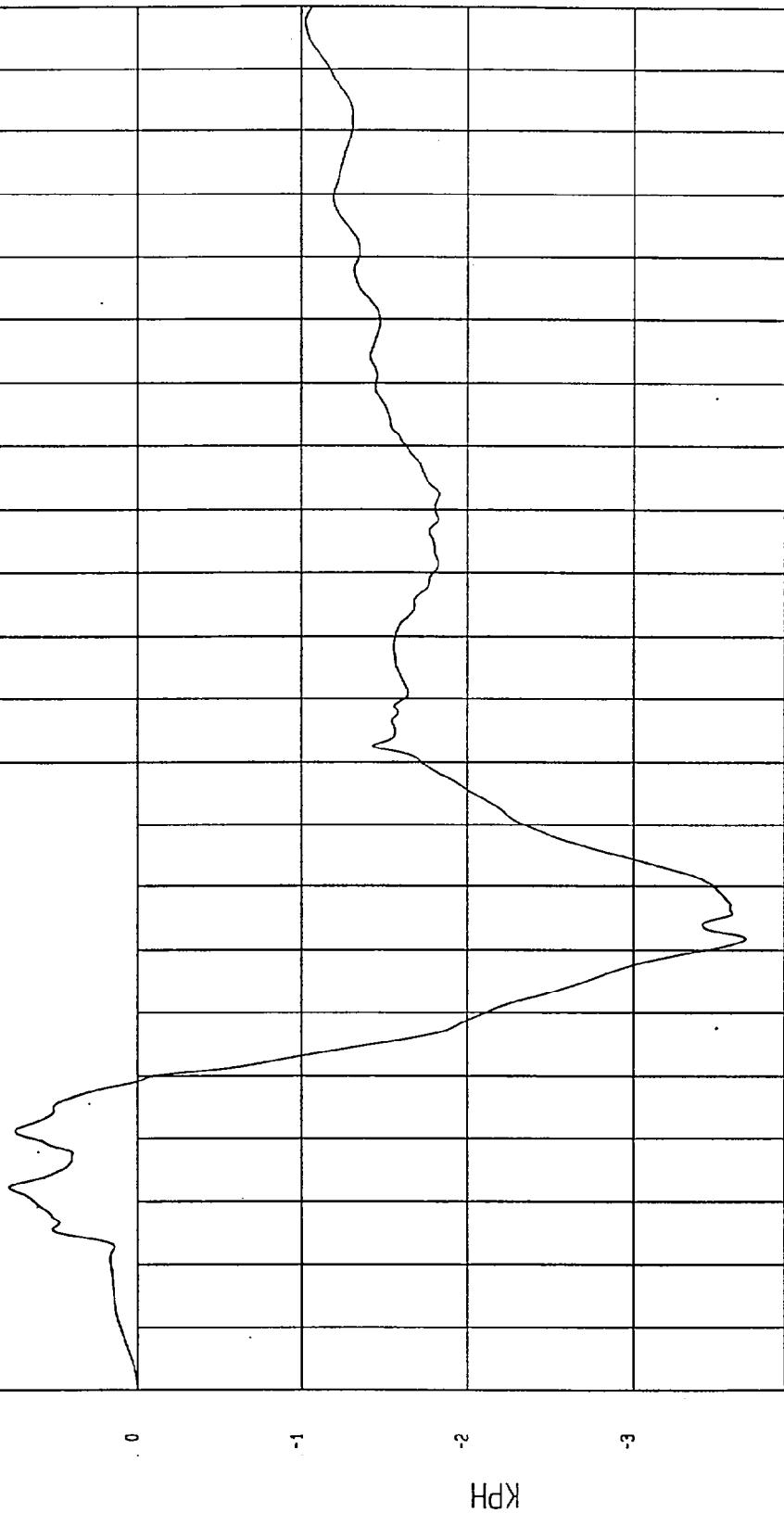
TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 02-18-1997

COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = -3.65 KPH at 52 msec Maximum = .78 KPH at 12 msec

VEHICLE CG X VELOCITY

1 ——— 897028A1.V58 Filterclass (180)



TIME Seconds

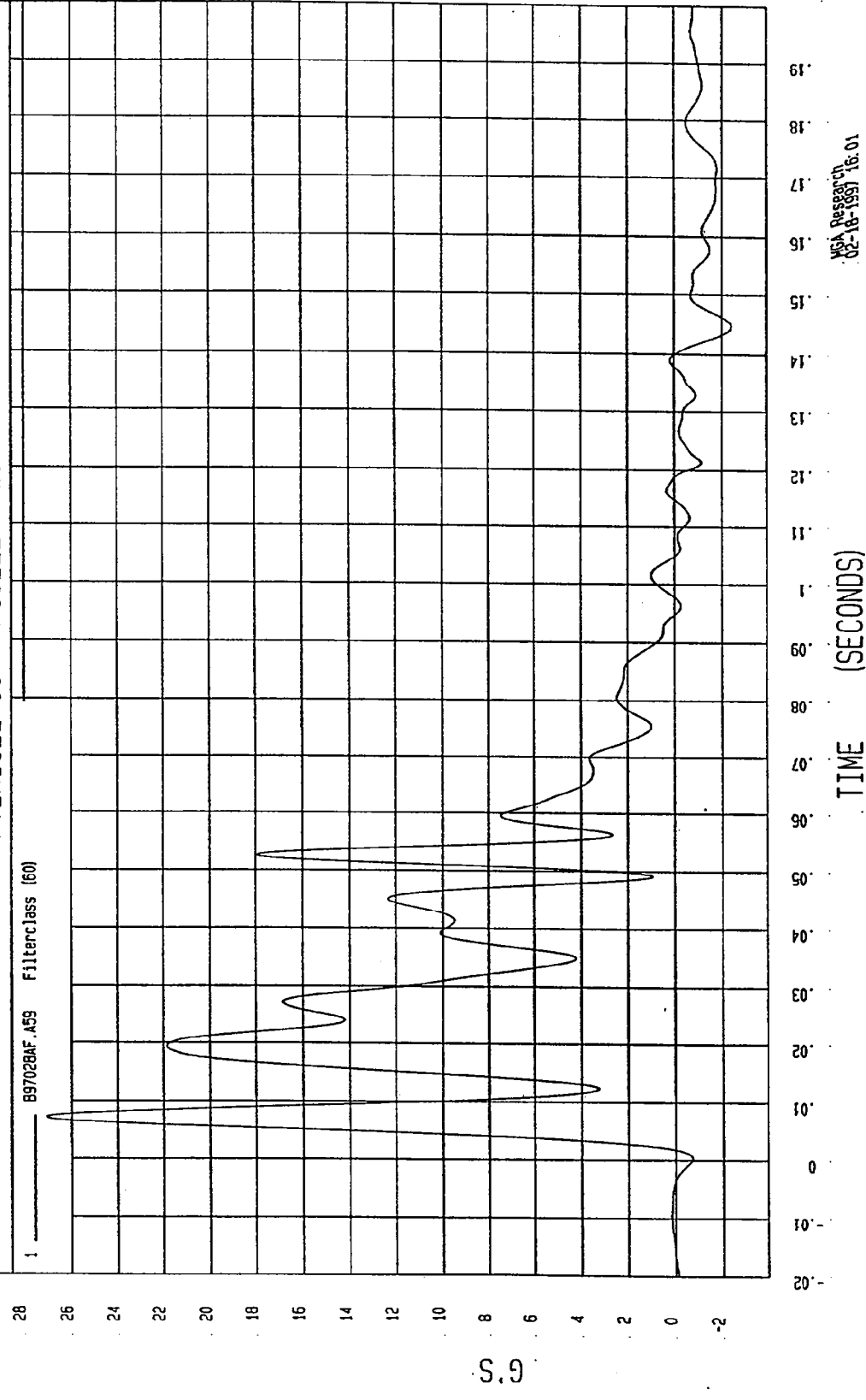
NSA Research
02-18-1997 18:01

TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 02-18-1997

COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = -2.40 G'S at 145 msec Maximum = 27.05 G'S at 7 msec

VEHICLE CG Y ACCELERATION



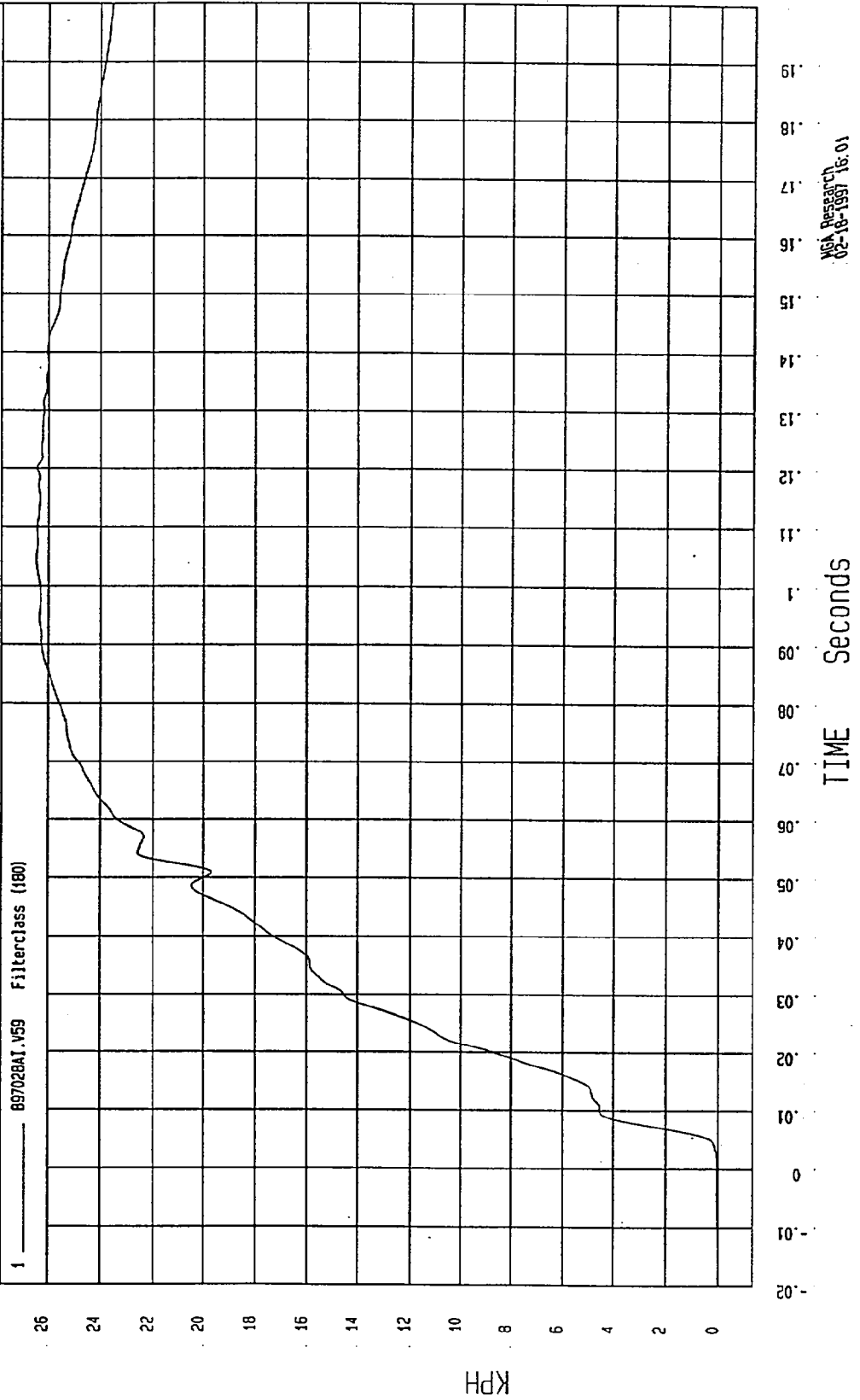
NSA Research
02-18-1997 16:01

TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 02-18-1997

COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = -7.09E-03 KPH at -17 msec Maximum = 26.46 KPH at 105 msec

VEHICLE CG Y VELOCITY

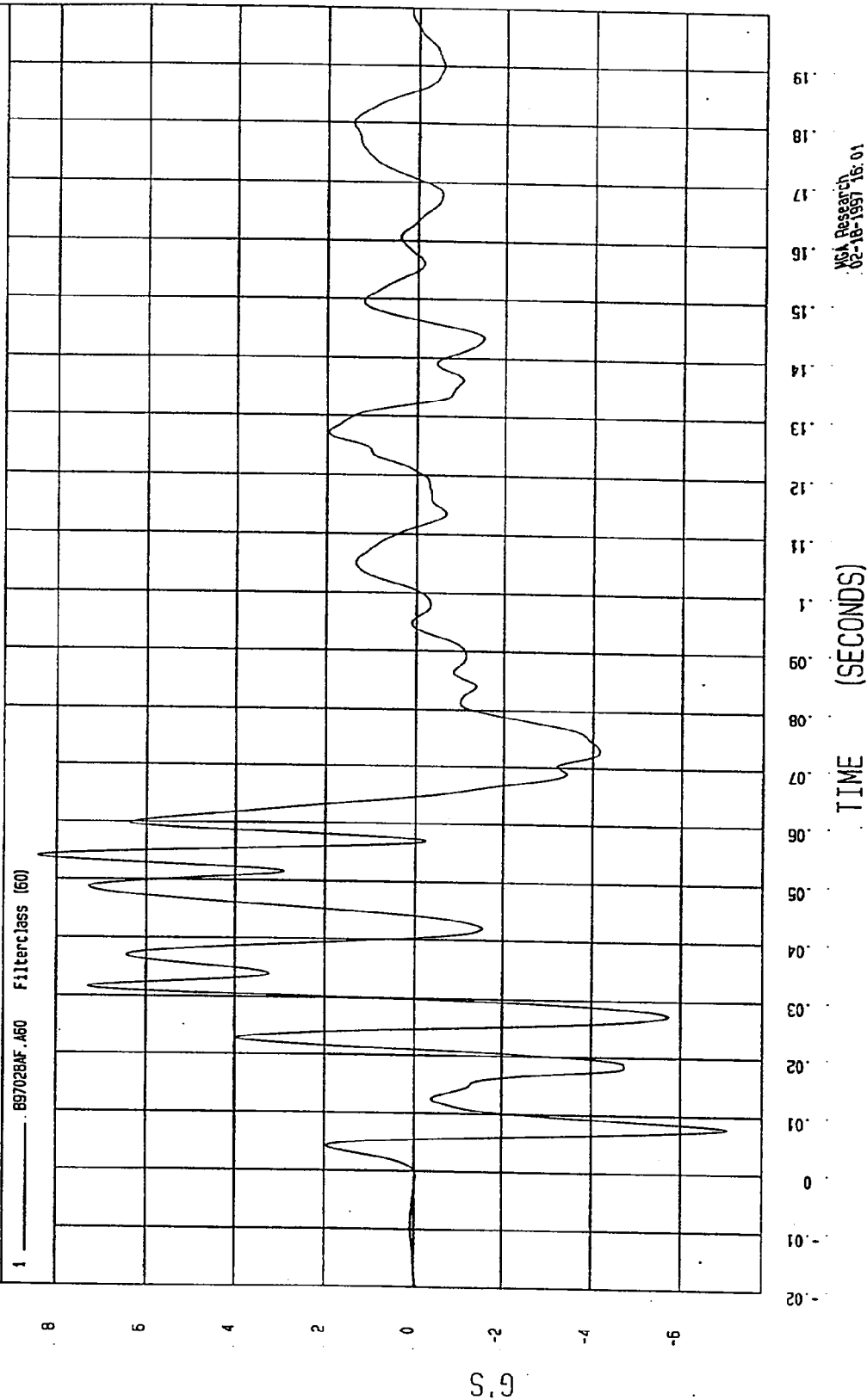


TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 02-18-1997

COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = -7.02 G'S at 8 msec Maximum = 8.41 G'S at 54 msec

VEHICLE CG Z ACCELERATION



TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 02-18-1997

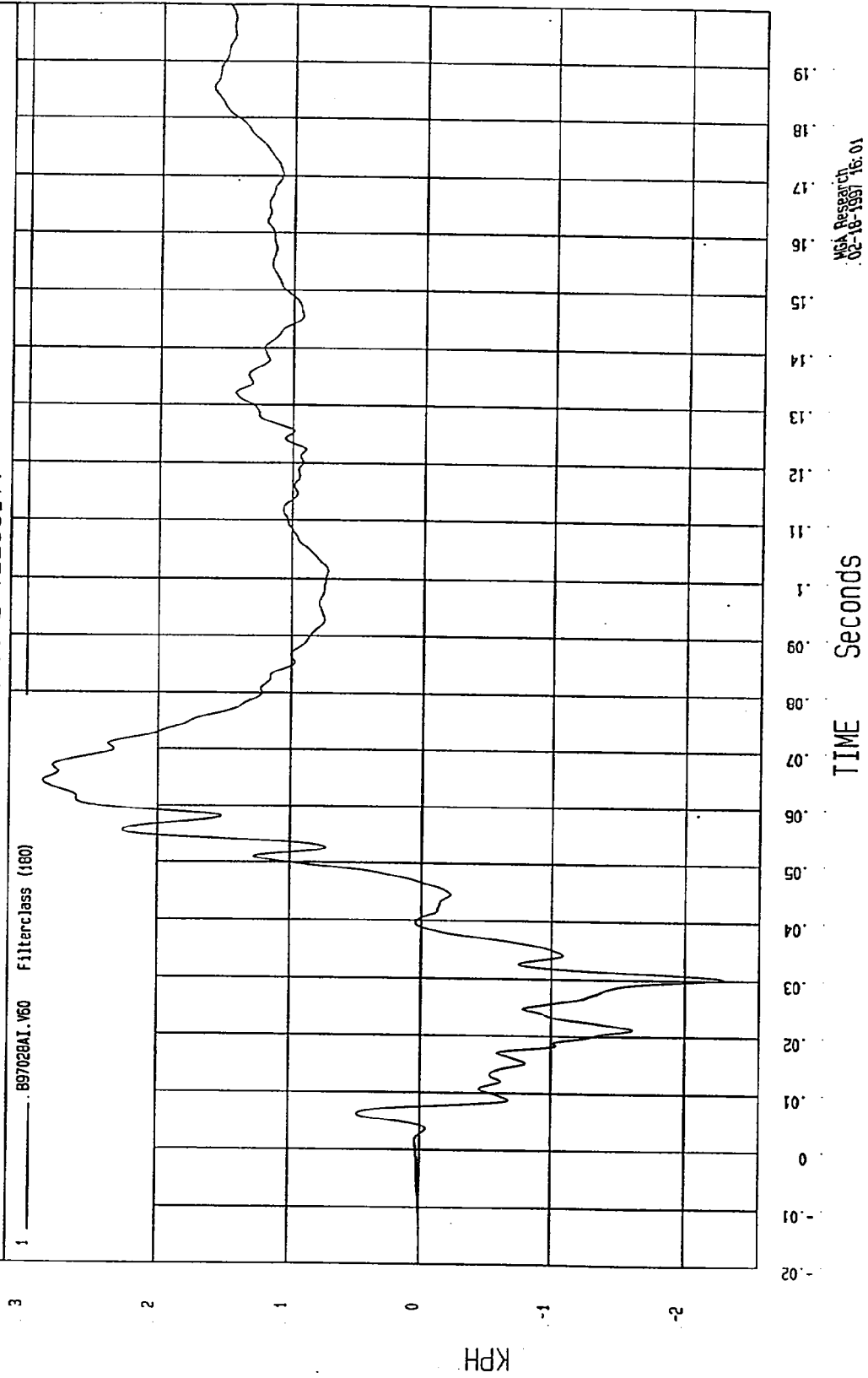
COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 51.6 KPH

Minimum = -2.28 KPH at 30 msec

Maximum = 2.87 KPH at 64 msec

VEHICLE CG Z VELOCITY

1 ——— 89702BA1.V60 FilterClass (160)



WGA Research
02-18-1997 16:01

TEST: NCAP HIGH SPEED LATERAL IMPACT

TEST DATE: 02-18-1997

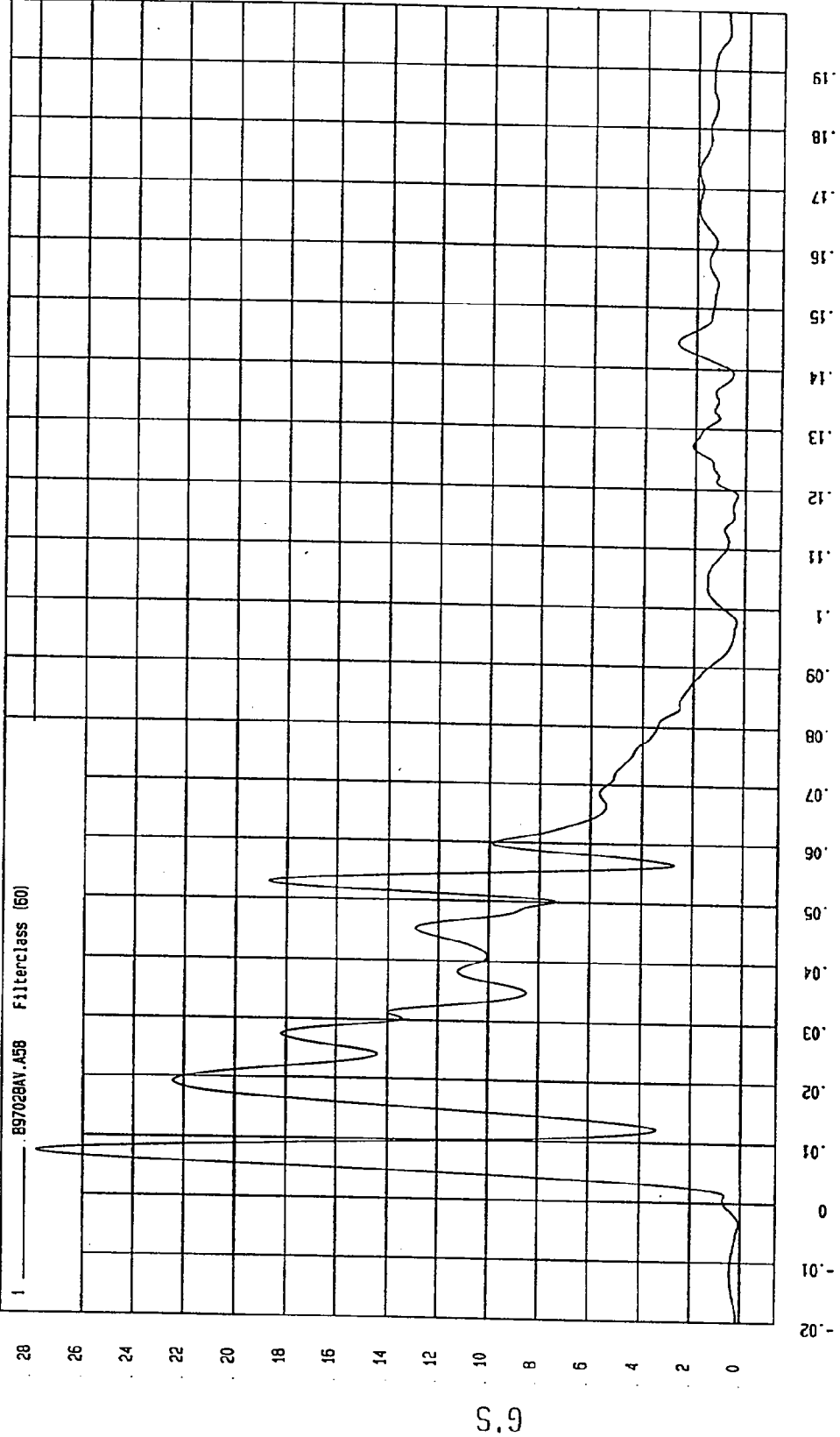
COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = 6.07E-02 G's at -3 msec

Maximum = 27.80 G's at 7 msec

VEHICLE CG RESULTANT ACCELERATION

1 ——— 897028AV.A58 Filterclass (60)



MOA Research
02-18-1997 16:04

TEST: NCAP HIGH SPEED LATERAL IMPACT

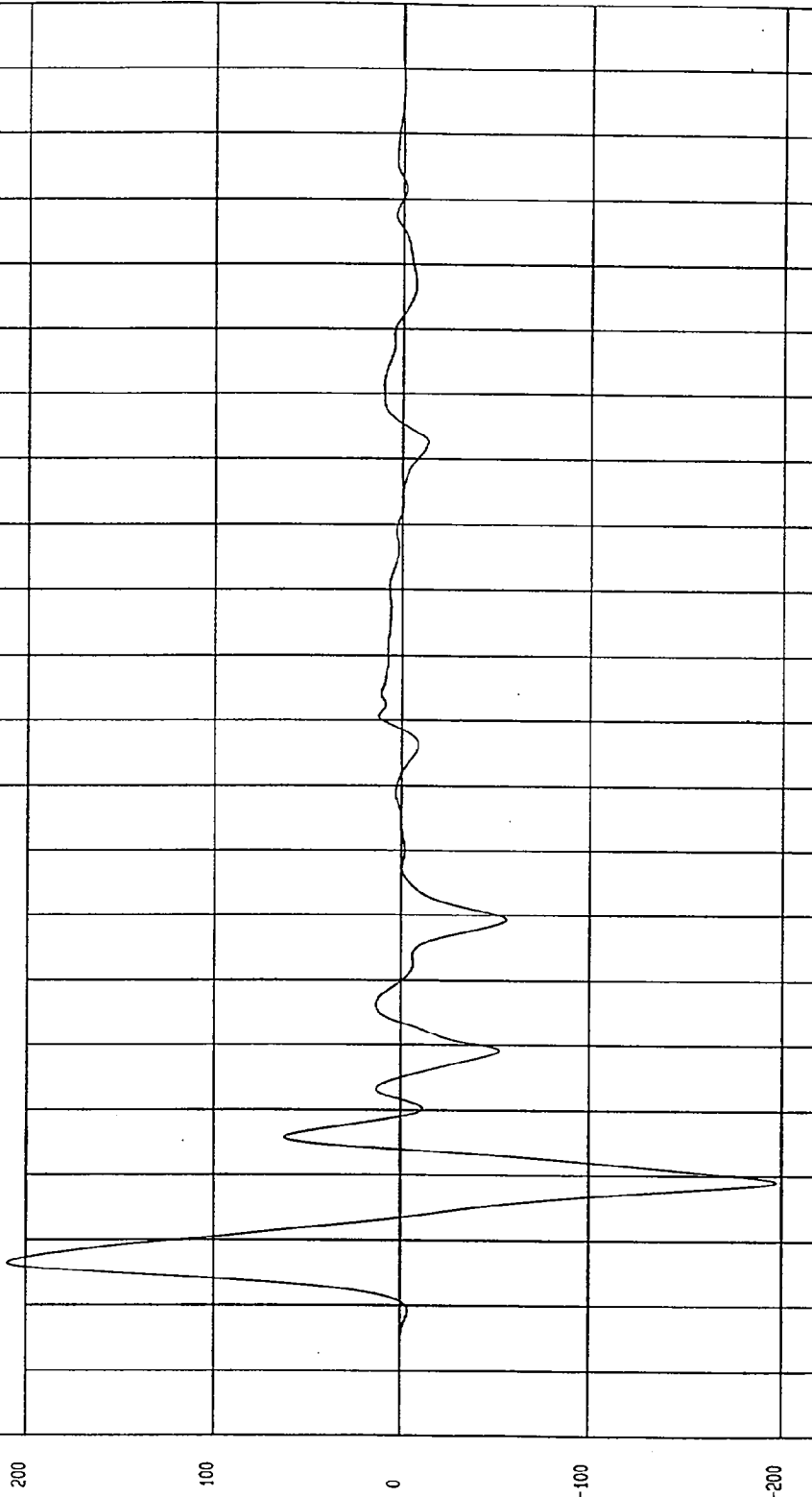
TEST DATE: 02-18-1997

COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = -197.37 G's at 19 msec Maximum = 209.75 G's at 6 msec

LEFT FRONT DOOR CENTERLINE Y ACCELERATION

1 897028AF.A75 Filterclass (60)



TIME (SECONDS)

MSA Research
02-18-1997 16:02

TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 02-18-1997
COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH
Minimum = -1.59 KPH at 89 msec Maximum = 47.34 KPH at 13 msec

LEFT FRONT DOOR CENTERLINE Y VELOCITY

1 ——— B97028A1.V75 Filterclass (180)



MOA Research
02-18-1997 15:02

TEST: NCAP HIGH SPEED LATERAL IMPACT

TEST DATE: 02-18-1997

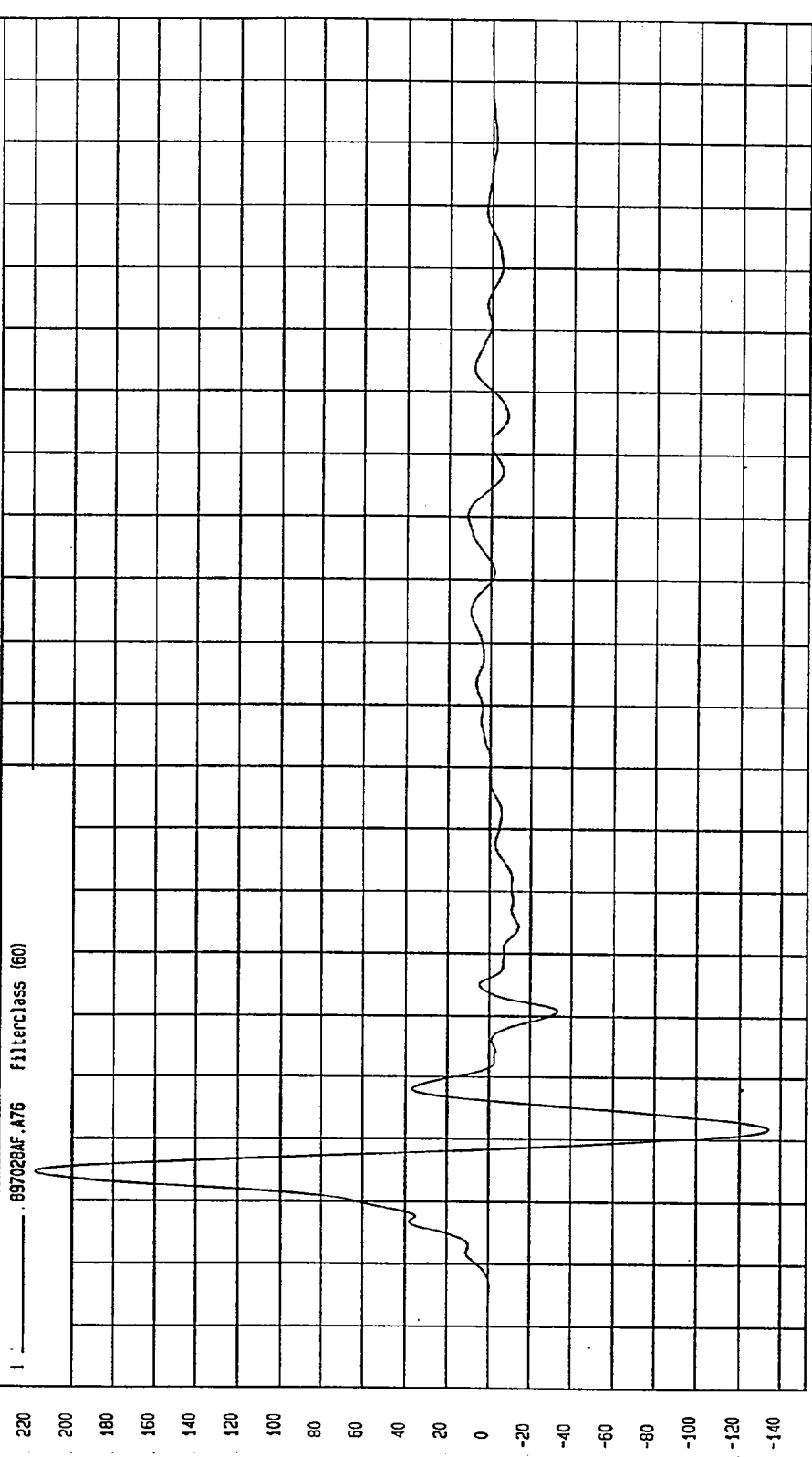
COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = -134.46 G's at 22 msec

Maximum = 217.72 G's at 15 msec

LEFT FRONT DOOR UPPER CENTERLINE Y ACCELERATION

1 897028AF.A76 filterclass (60)



NSA Research
02-28-1997 13:43

TEST: NCAP HIGH SPEED LATERAL IMPACT

TEST DATE: 02-18-1997

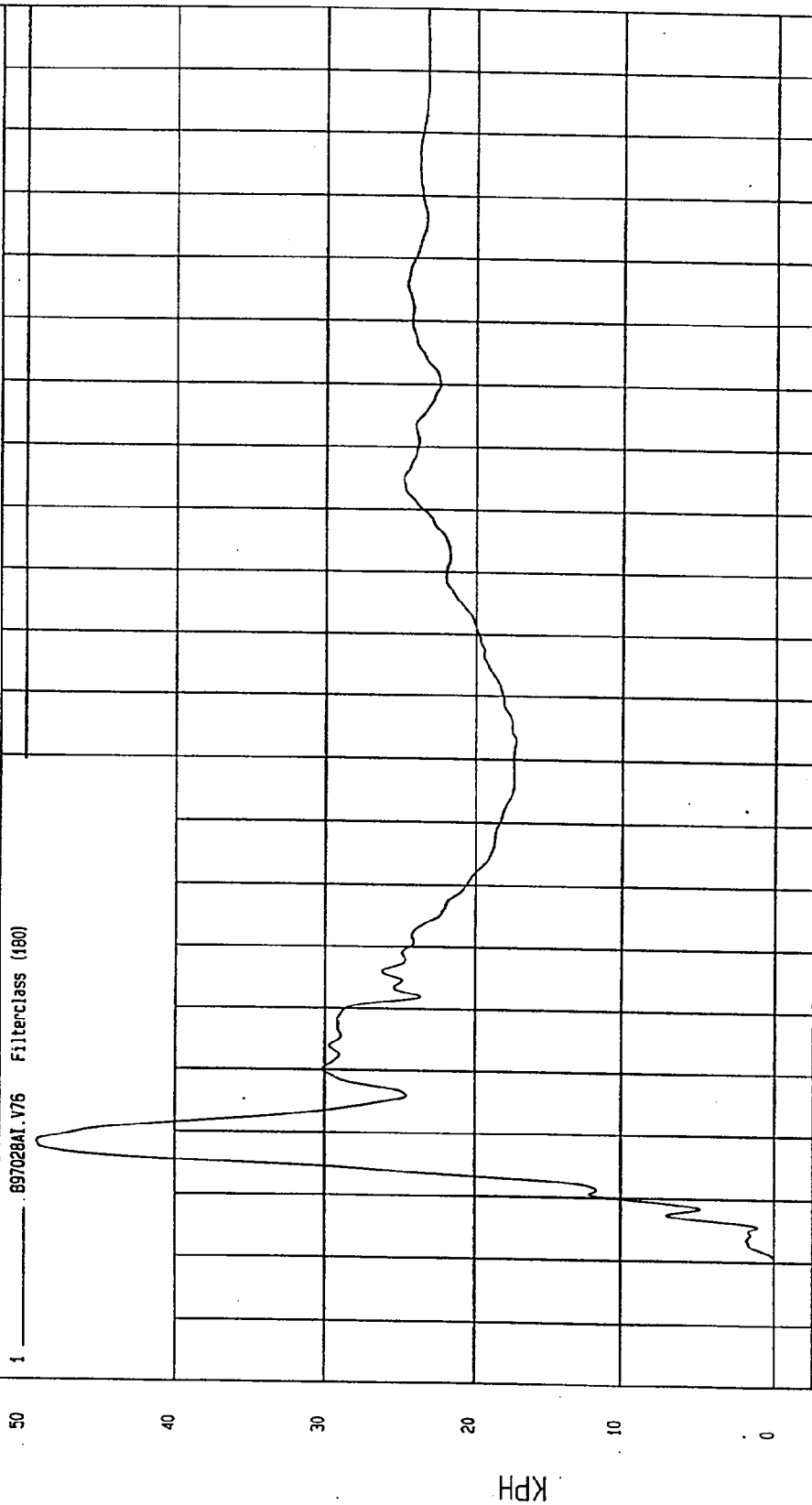
COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = -.01 KPH at -13 msec

Maximum = 49.20 KPH at 18 msec

LEFT FRONT DOOR UPPER CENTERLINE Y VELOCITY

1 _____ B97028A1.V76 Filterclass (180)



MOA Research
02-28-1997 13:43

TIME Seconds

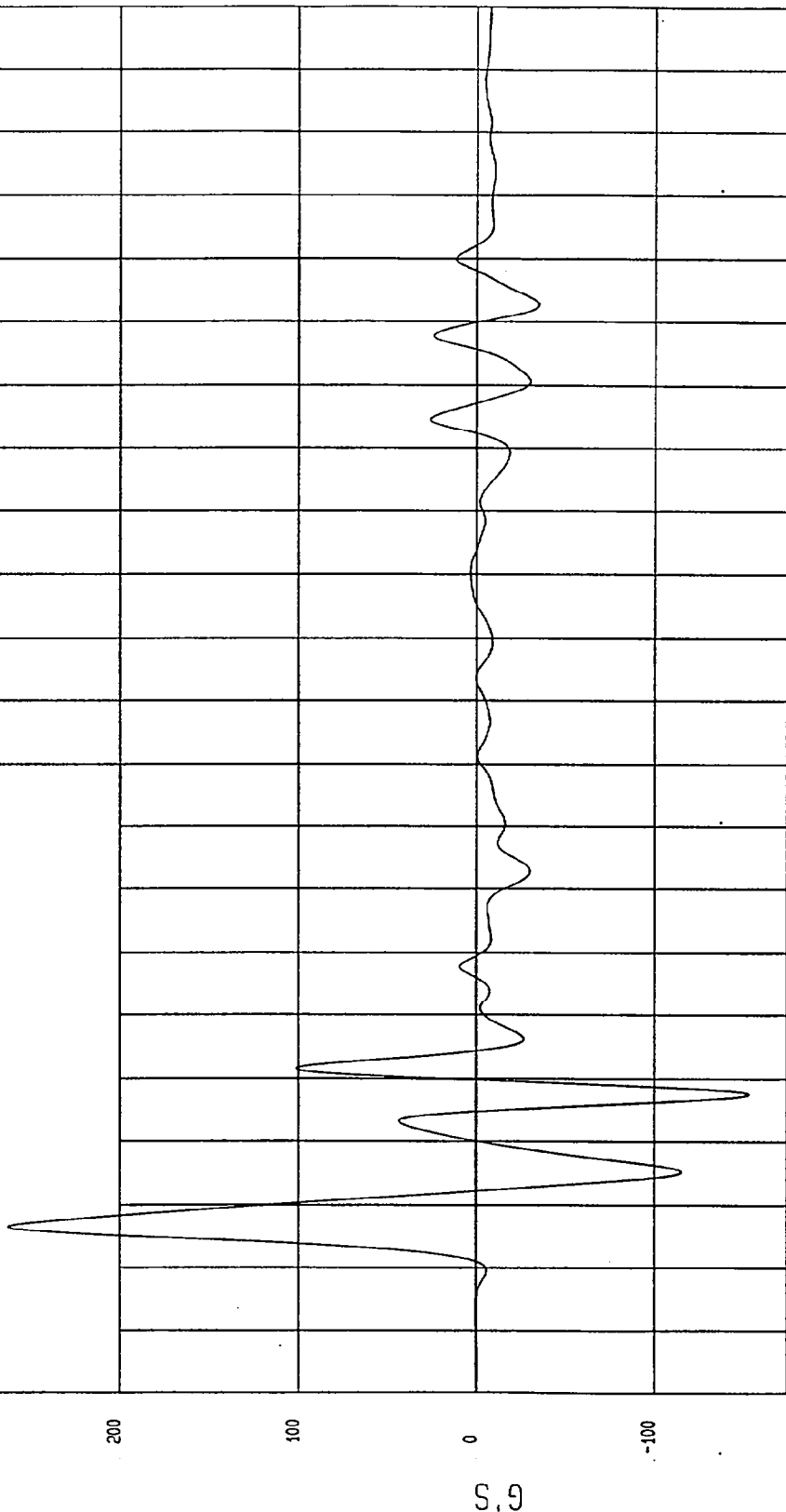
TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 02-18-1997

COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = -152.64 G's at 28 msec Maximum = 262.17 G's at 6 msec

LEFT REAR DOOR MIDREAR Y ACCELERATION

1 897028AF.A77 Filterclass (60)



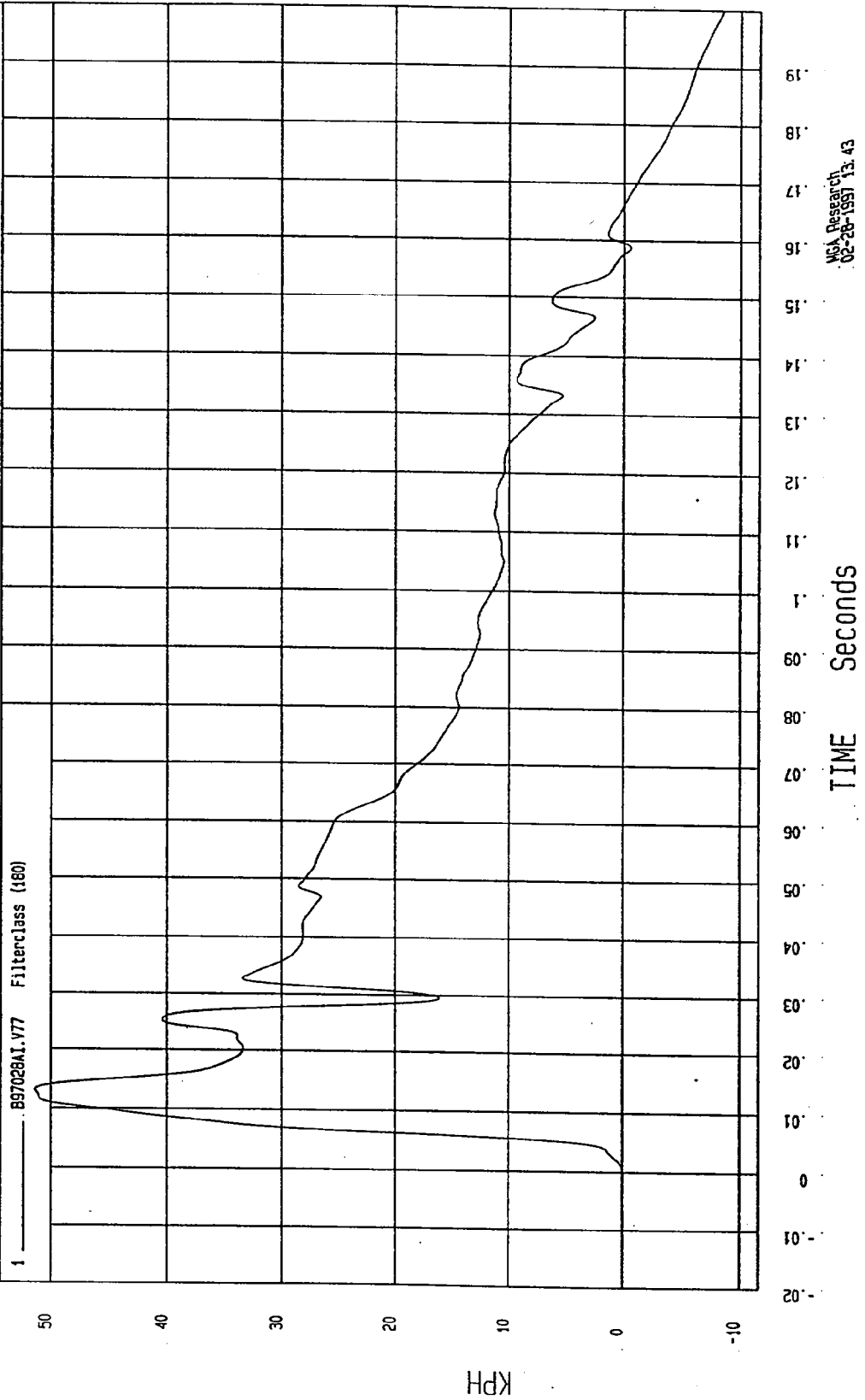
NGA Research
02-28-1997 13.43

TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 02-18-1997

COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = -8.59 KPH at 200 msec Maximum = 51.36 KPH at 13 msec

LEFT REAR DOOR MIDREAR Y VELOCITY



TEST: NCAP HIGH SPEED LATERAL IMPACT

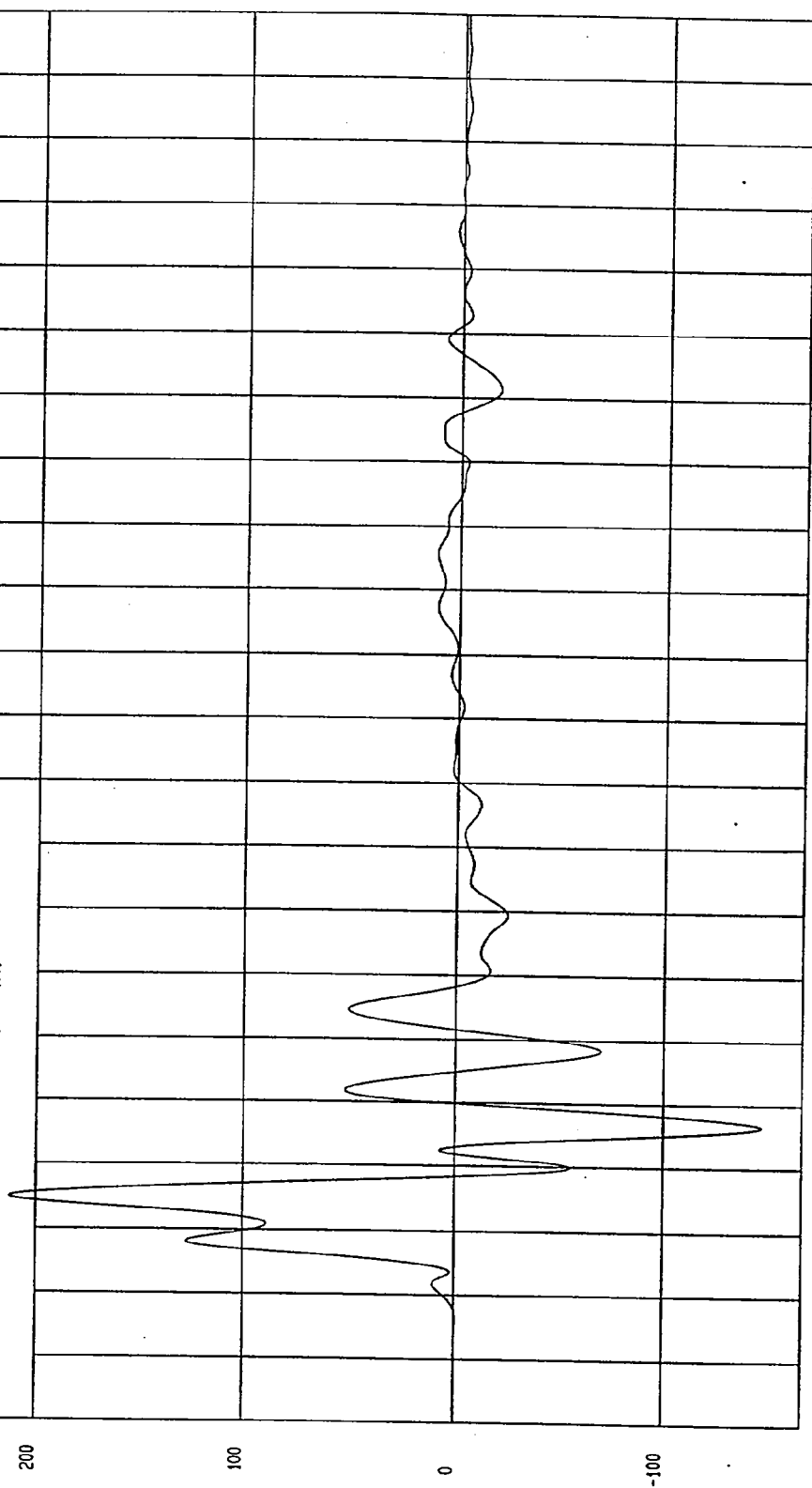
TEST DATE: 02-18-1997

COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = -146.55 G's at 26 msec Maximum = 212.07 G's at 15 msec

LEFT REAR DOOR UPPER CENTERLINE Y ACCELERATION

1 B97028AF.A78 Filterclass (60)



WSA Research
02-28-1997 13:43

TEST: NCAP HIGH SPEED LATERAL IMPACT

TEST DATE: 02-18-1997

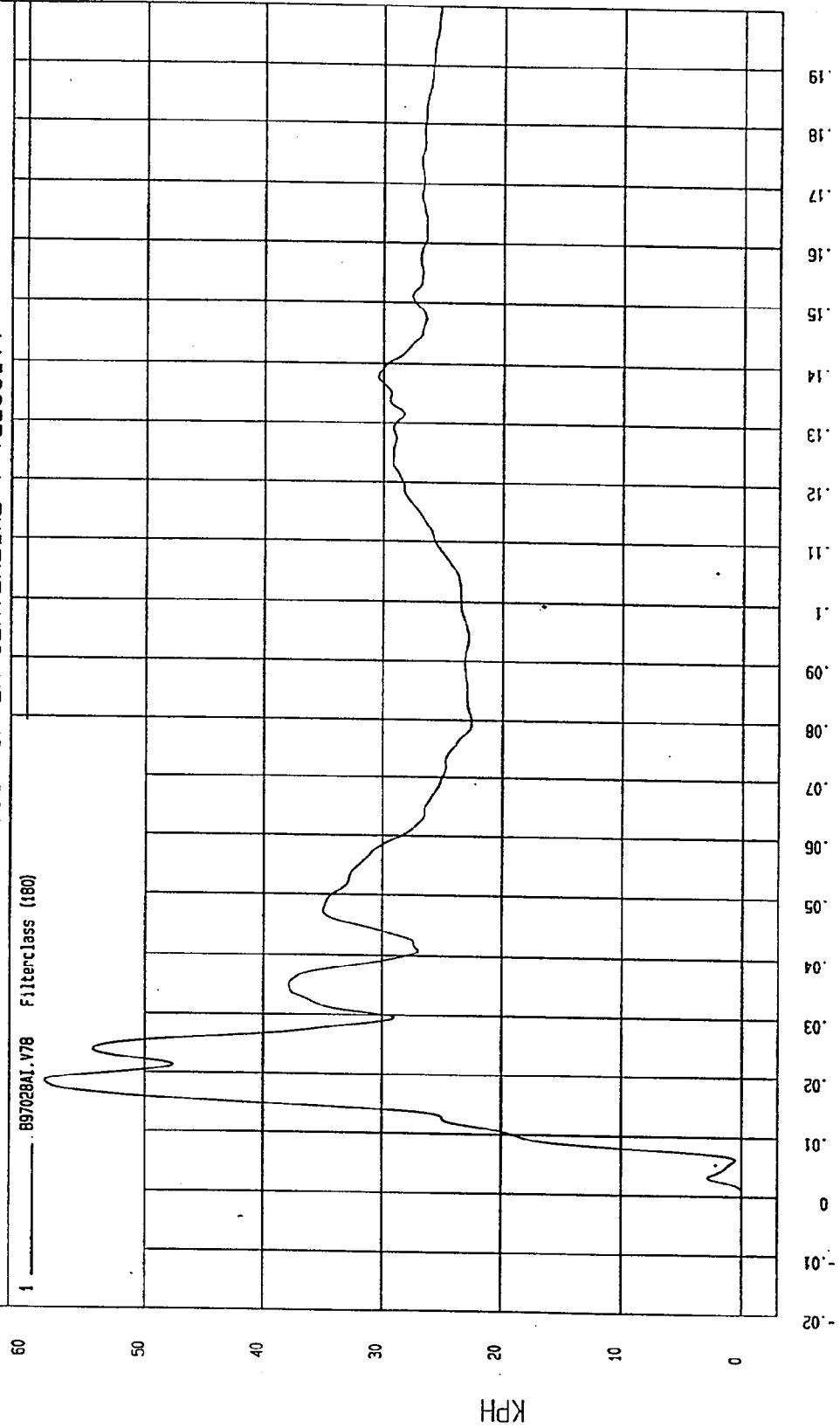
COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = -.01 KPH at 0 msec

Maximum = 58.42 KPH at 18 msec

LEFT REAR DOOR UPPER CENTERLINE Y VELOCITY

1 ——— .897028A1.V78 Filterclass (180)



MCA Research
02-28-1997 13:43

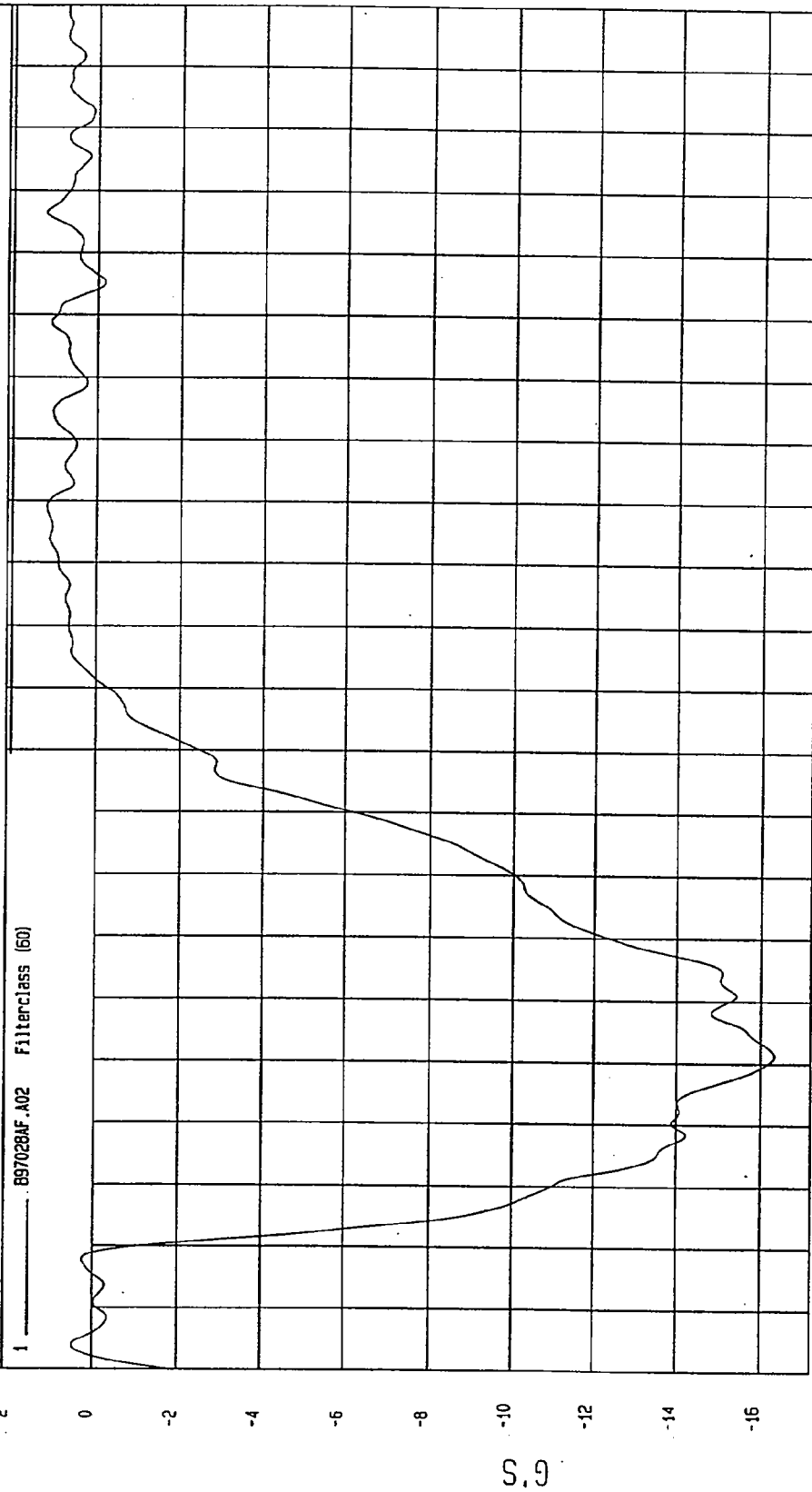
TIME Seconds

TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 02-18-1997

COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = -16.34 G'S at 31 msec Maximum = 1.24 G'S at 166 msec

MOVING BARRIER CG X ACCELERATION



TIME (SECONDS)

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

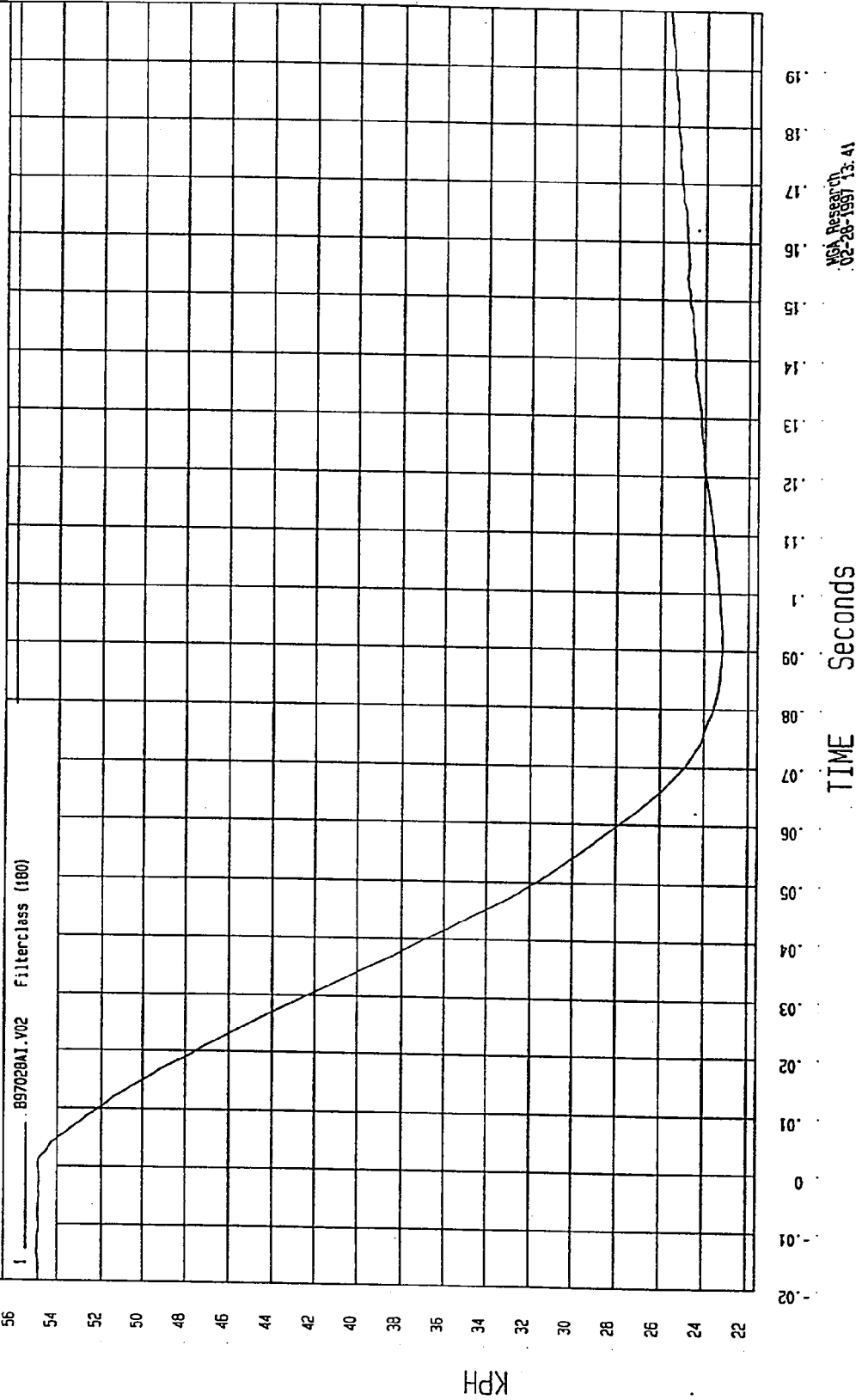
USA Research
02-18-1997 15:02

TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 02-18-1997

COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = 23.15 KPH at 90 msec Maximum = 54.94 KPH at ~15 msec

MOVING BARRIER CG X VELOCITY



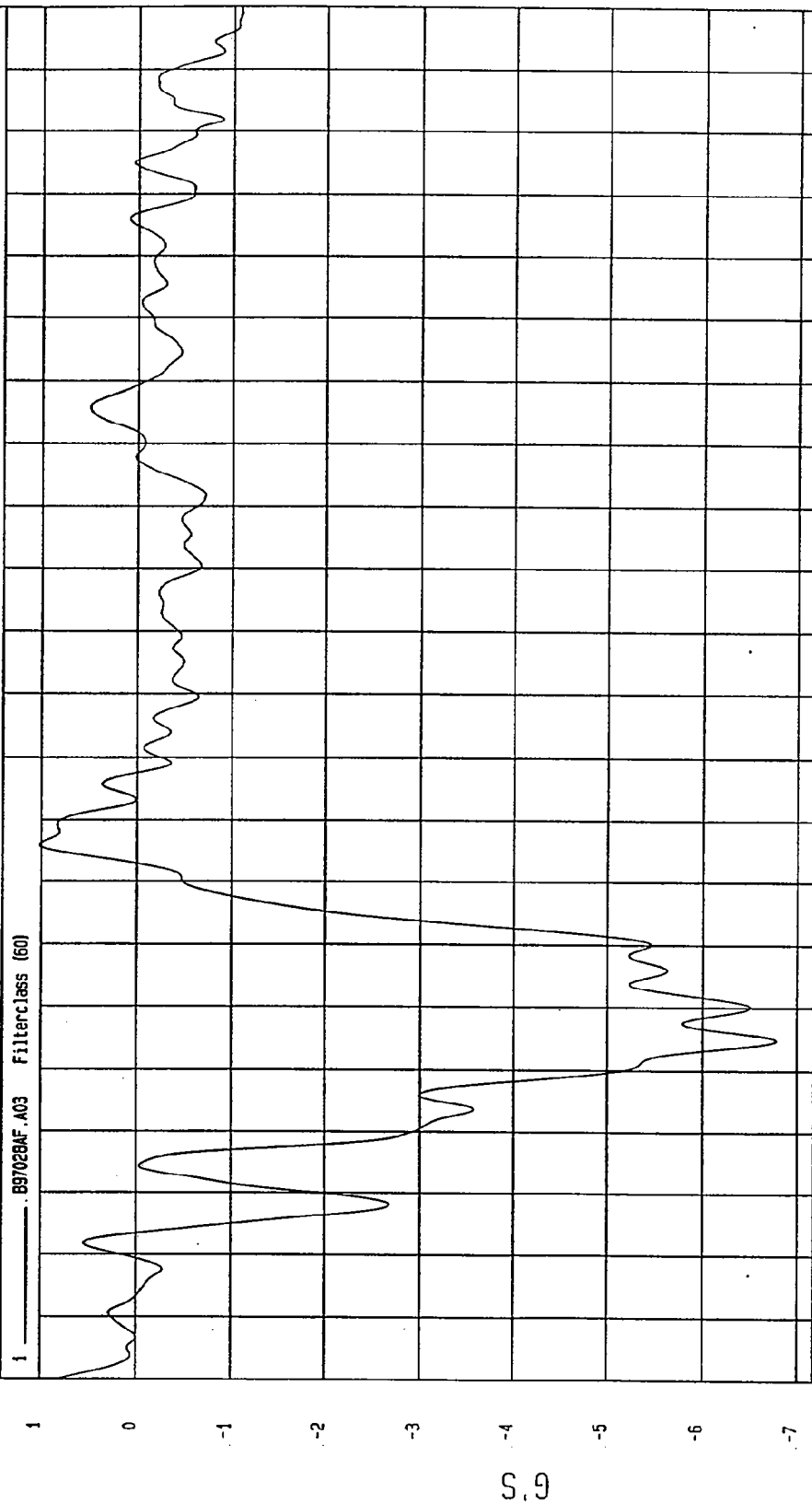
TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 02-18-1997

COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = -6.77 G'S at 35 msec Maximum = 1.02 G'S at 66 msec

MOVING BARRIER CG Y ACCELERATION

1 ——— B97028AF.A03 Filterclass (60)



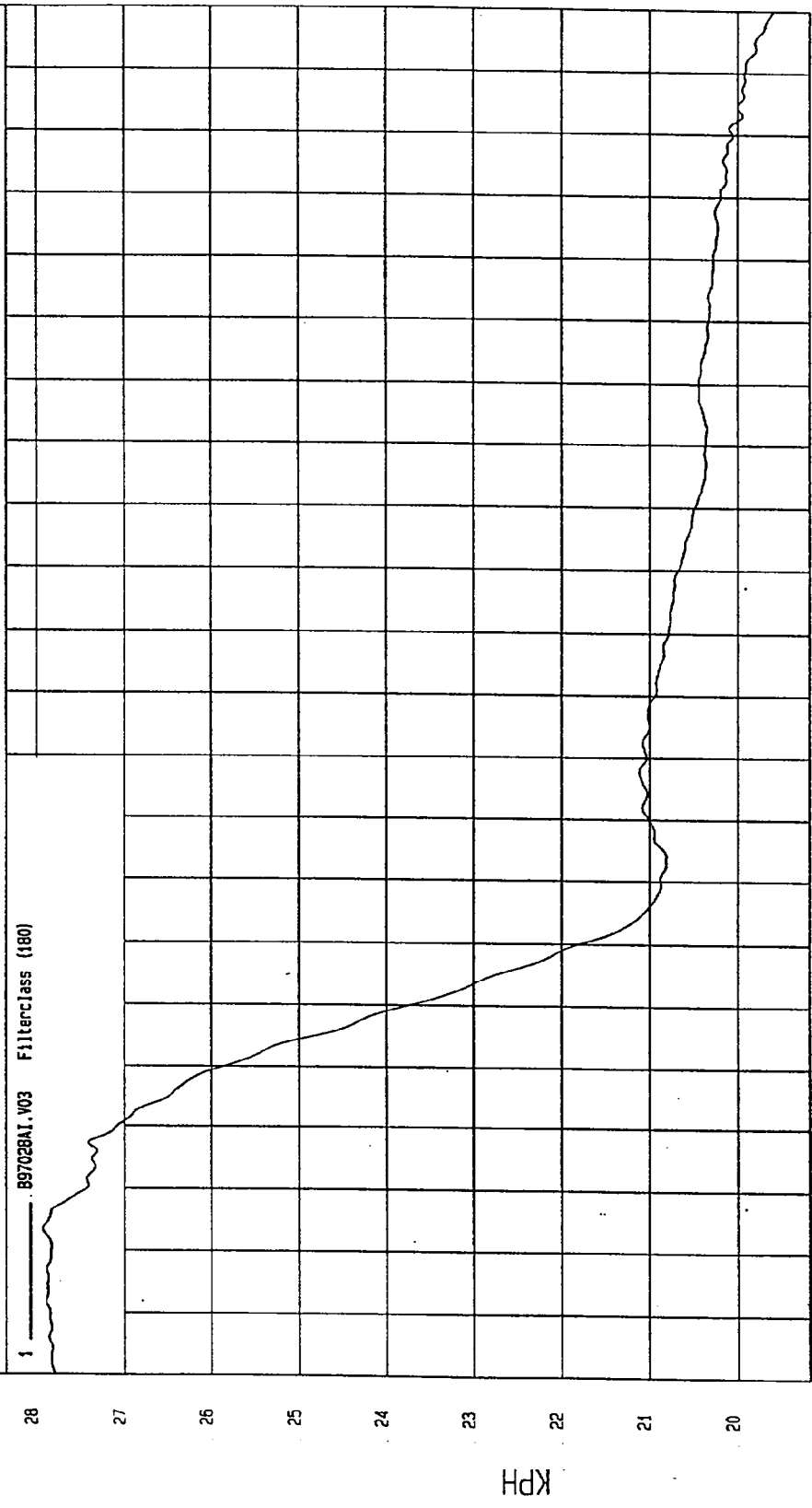
W&A Research
02-18-1997 16:03

TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 02-18-1997

COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum • 19.60 KPH at 200 msec Maximum • 27.93 KPH at 3 msec

MOVING BARRIER CG Y VELOCITY



TIME Seconds

02-28-1997 13:41

NSI Research

TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 02-18-1997

COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

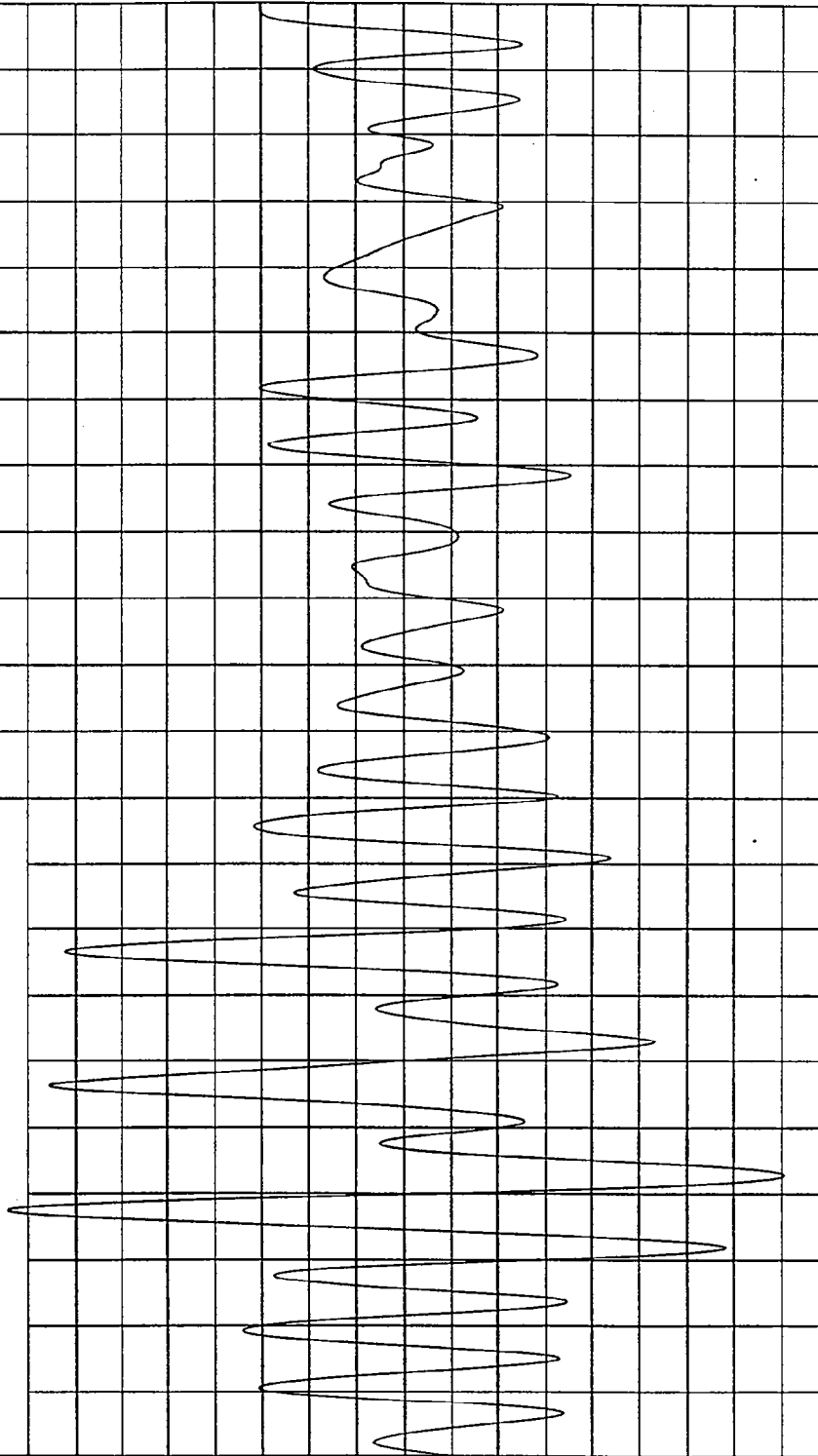
Minimum = -16.12 G'S at 23 msec Maximum = 16.87 G'S at 18 msec

MOVING BARRIER CG Z ACCELERATION

1 _____ BS702BAF.A04 Filterclass (60)

18
16
14
12
10
8
6
4
2
0
-2
-4
-6
-8
-10
-12
-14
-16

G



TIME (SECONDS)

HGA Research
02-18-1997 16:03

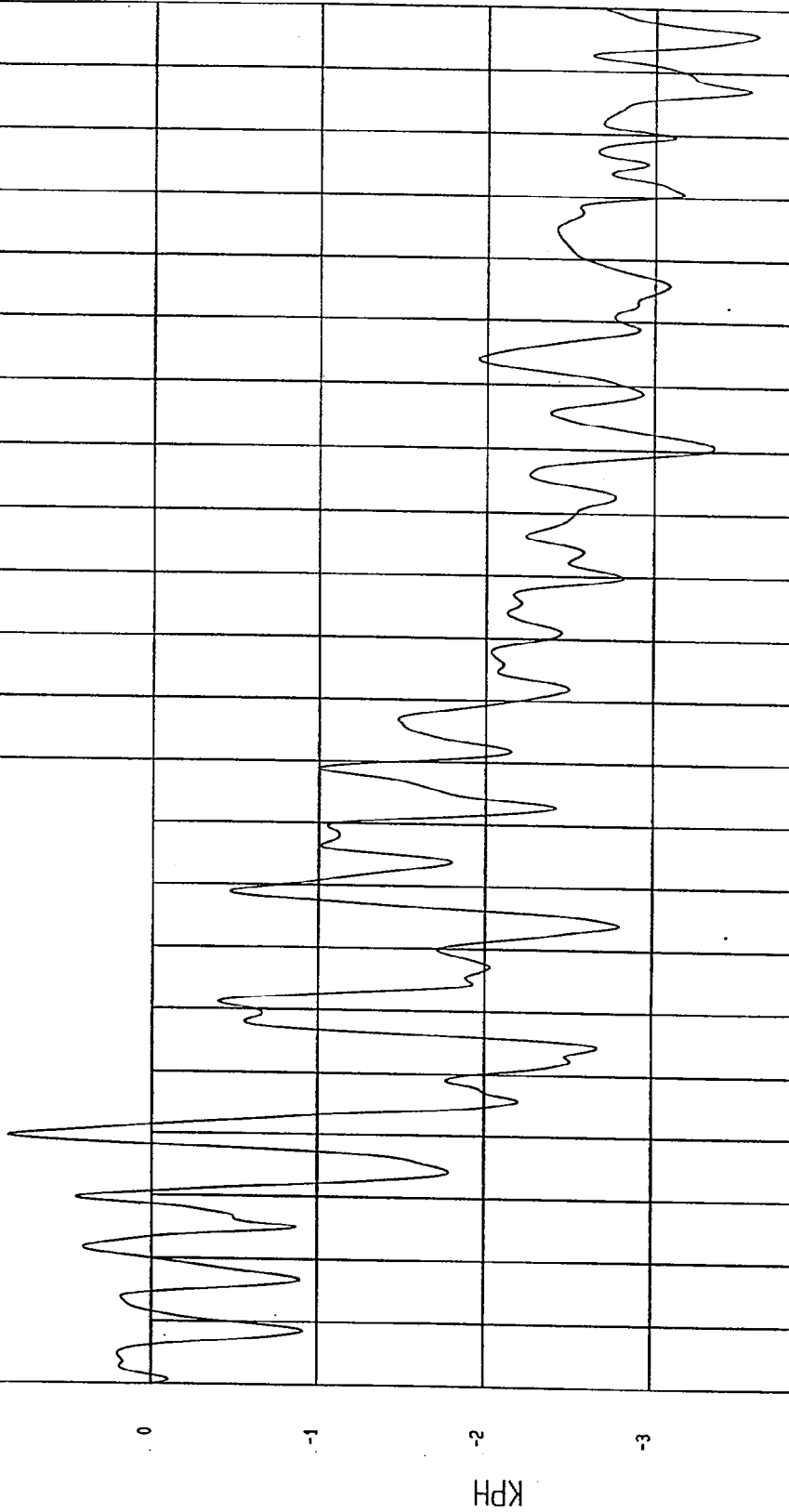
TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 02-18-1997

COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = -3.60 KPH at .196 msec Maximum = .86 KPH at 20 msec

MOVING BARRIER CG Z VELOCITY

1 B97028A1.V04 Filterclass (180)



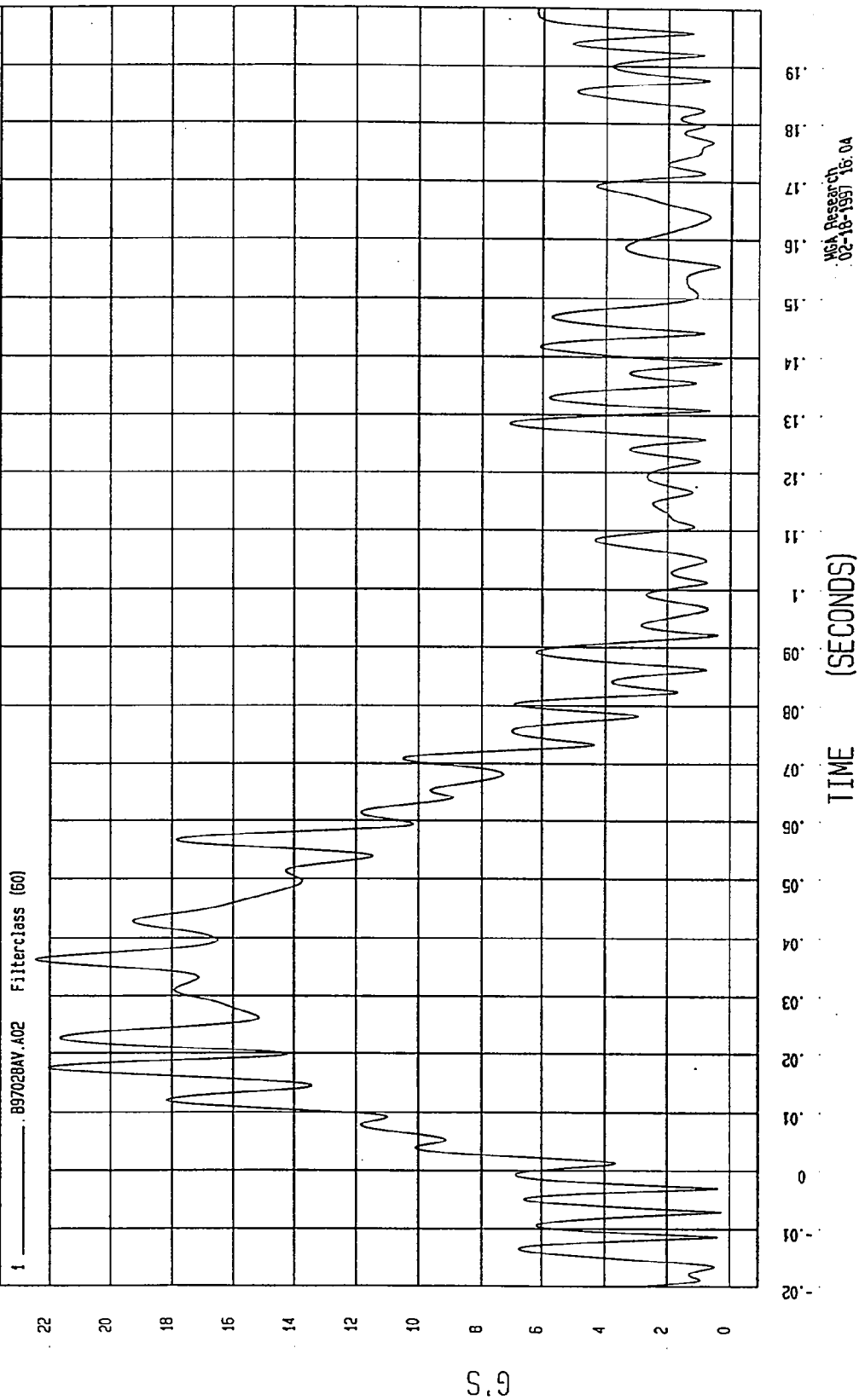
MOA Research
02-28-1997 13:41

TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 02-18-1997

COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = .25 G's at -7 msec Maximum = 22.46 G's at 36 msec

MOVING BARRIER CG RESULTANT ACCELERATION



TEST: NCAP HIGH SPEED LATERAL IMPACT

TEST DATE: 02-18-1997

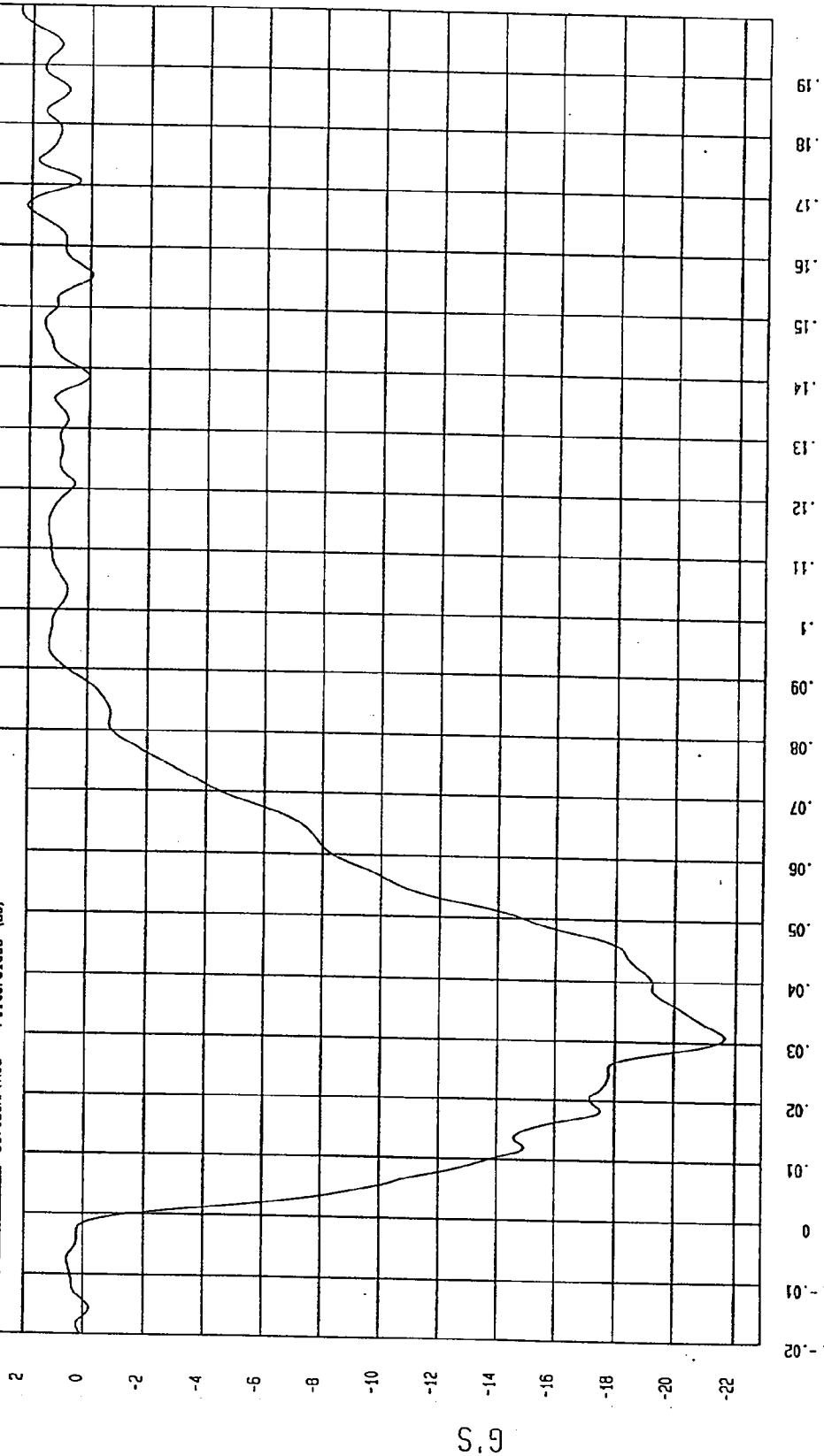
COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = -21.65 G'S at 31 msec

Maximum = 2.37 G'S at 199 msec

MOVING BARRIER REAR AXLE X ACCELERATION

1 — 897028AF.A05 Filterclass (60)



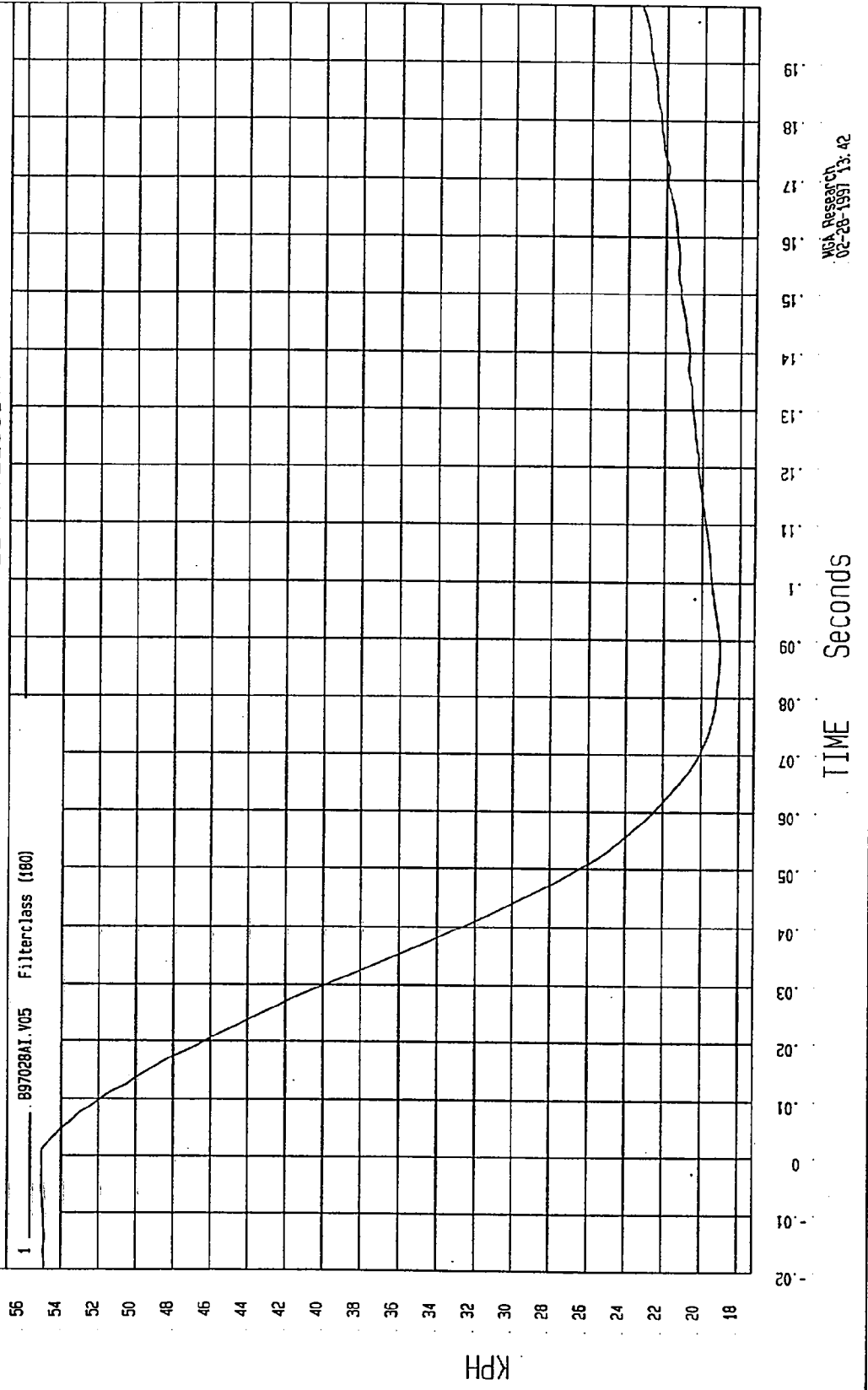
NGA Research
02-18-1997 16:03

TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 02-18-1997

COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = 19.01 KPH at 88 msec Maximum = 55.04 KPH at -6 msec

MOVING BARRIER REAR AXLE X VELOCITY



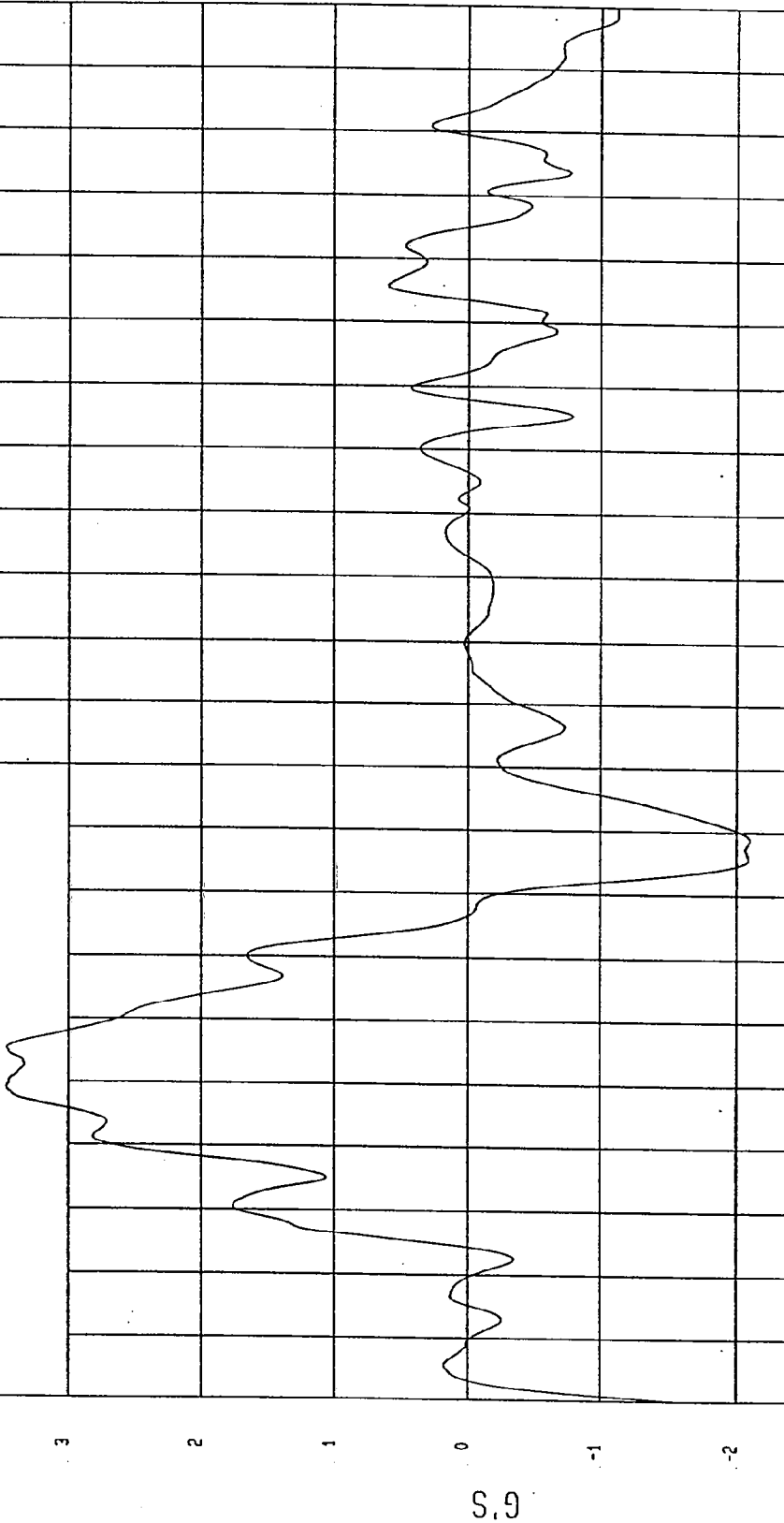
TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 02-18-1997

COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = -2.09 G'S at 69 msec Maximum = 3.46 G'S at 29 msec

MOVING BARRIER REAR AXLE Y ACCELERATION

1 ——— .B97028AF.A06 Filterclass (60)



MOA Research
02-18-1997 16:03

TEST: NCAP HIGH SPEED LATERAL IMPACT

TEST DATE: 02-18-1997

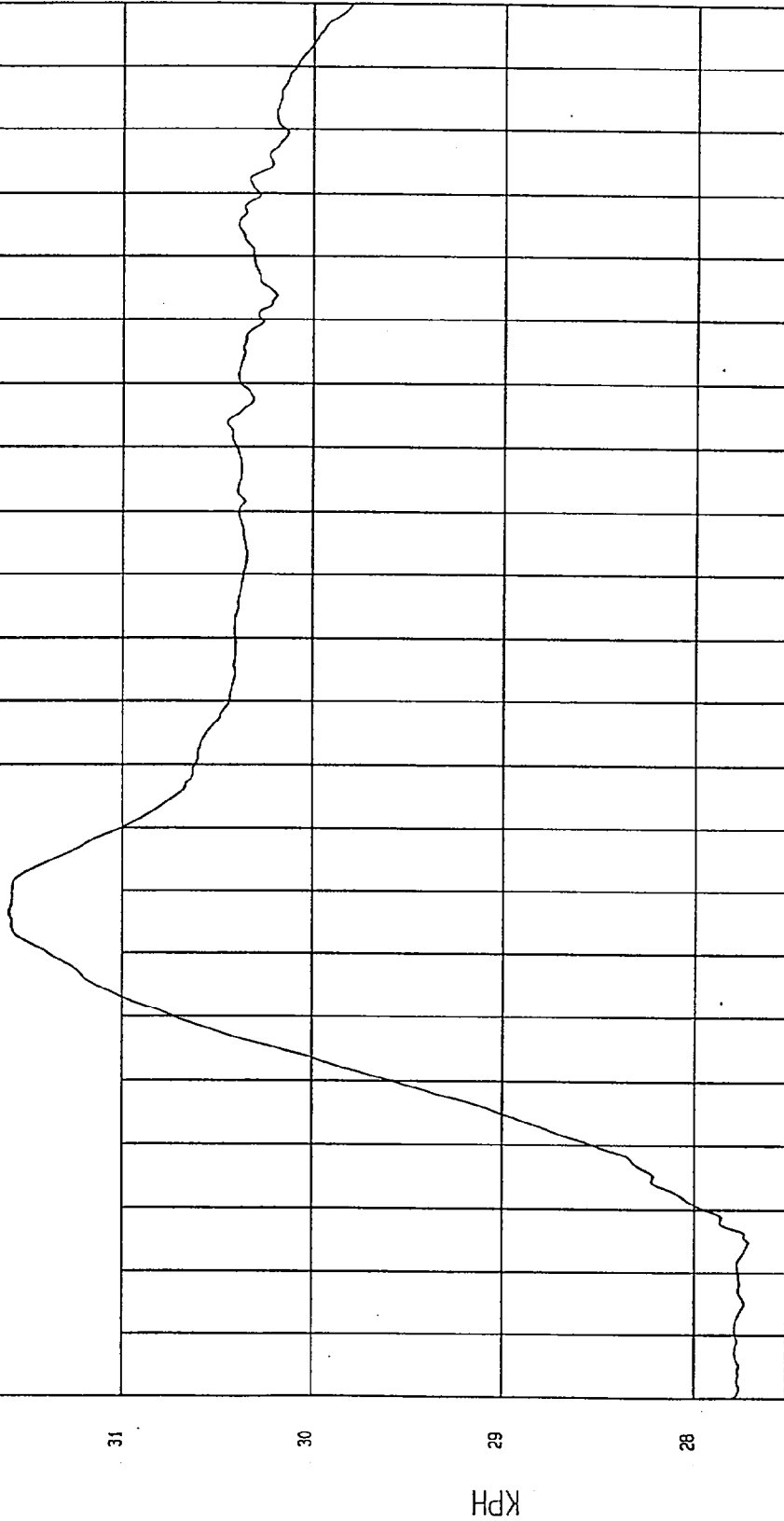
COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = 27.71 KPH at 5 msec

Maximum = 31.59 KPH at 56 msec

MOVING BARRIER REAR AXLE Y VELOCITY

1 B9702BA1.V06 Filterclass (180)



TIME Seconds

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

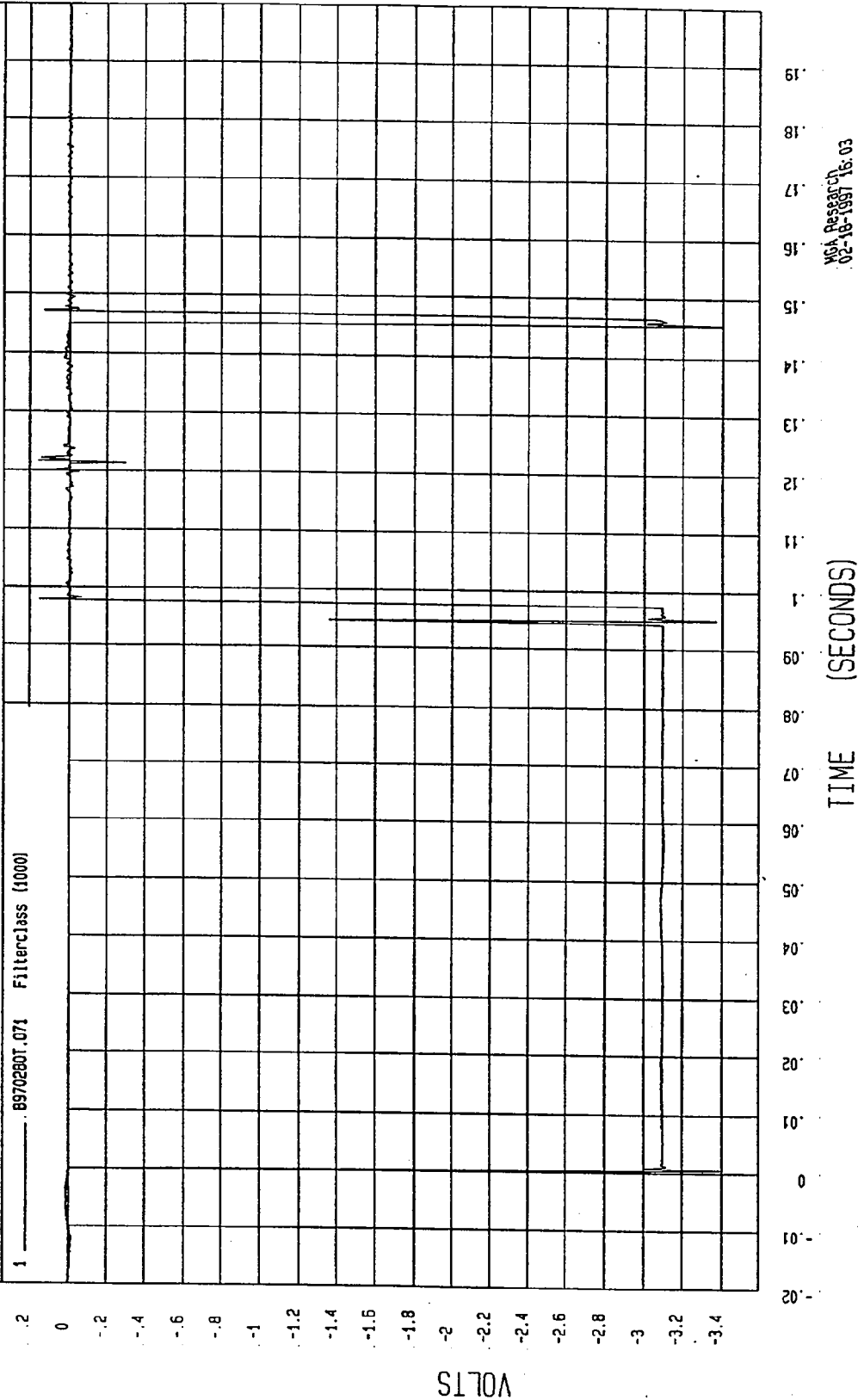
NCAP Research
02-28-1997 13:42

TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 02-18-1997

COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = -3.40 VOLTS at 146 msec Maximum = .15 VOLTS at 122 msec

LEFT BARRIER CONTACT



TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 02-18-1997

COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = -4.02 VOLTS at 1 msec

Maximum = .19 VOLTS at 113 msec

RIGHT BARRIER CONTACT

1 89702601.072 FilterClass (1000)

0 -1 -2 -3 -4

VOLTS

TIME (SECONDS) 0.00 0.01 0.02 0.03 0.04 0.05 0.06 0.07 0.08 0.09 0.10 0.11 0.12 0.13 0.14 0.15 0.16 0.17 0.18 0.19

MGA Research
02-18-1997 16:03

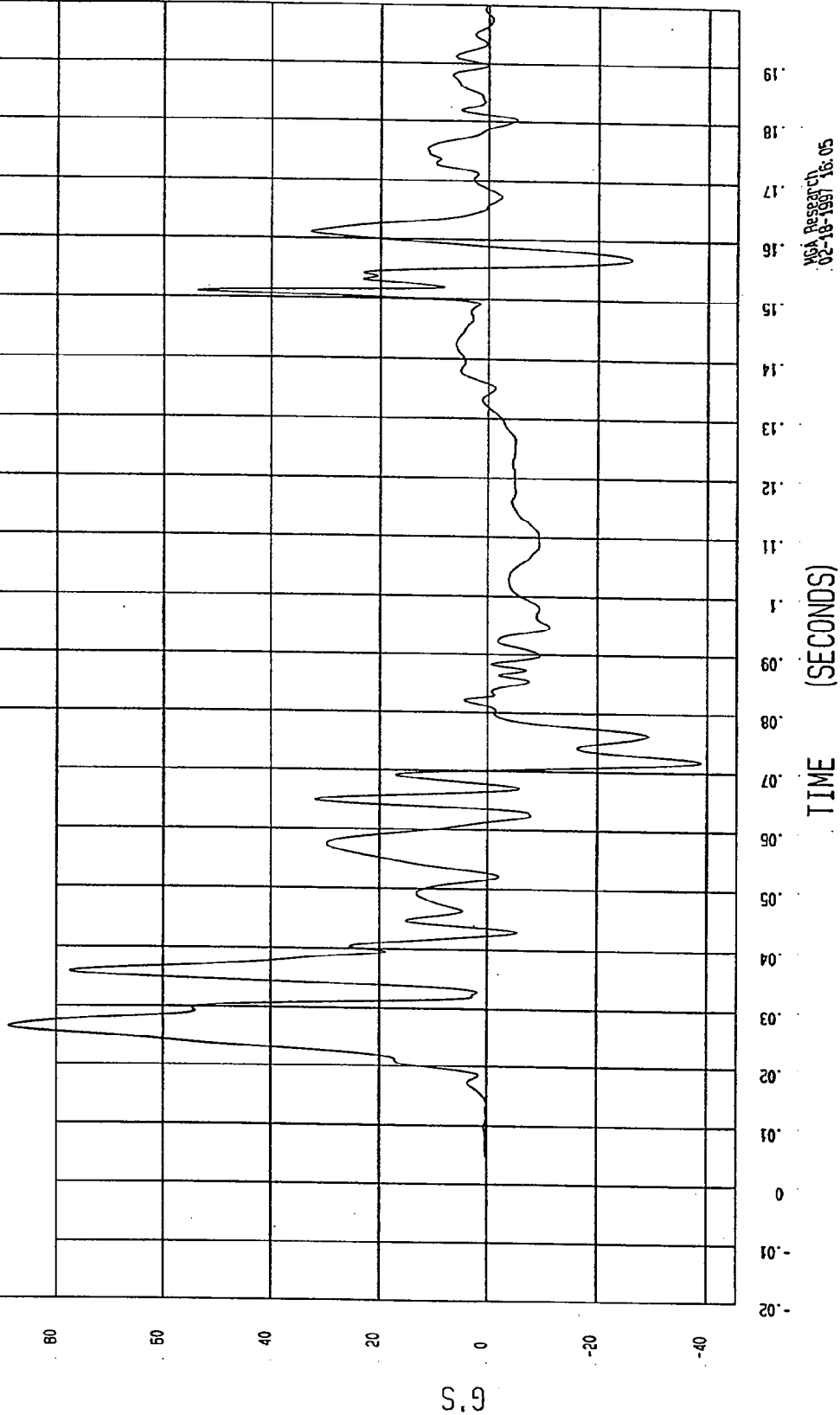
TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 02-18-1997

COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = -38.85 G'S at 72 msec Maximum = 88.85 G'S at 26 msec

DRIVER UPPER RIB Y REDUNDANT ACCELERATION

1 ——— .897028AF.A61 Filterclass (160)



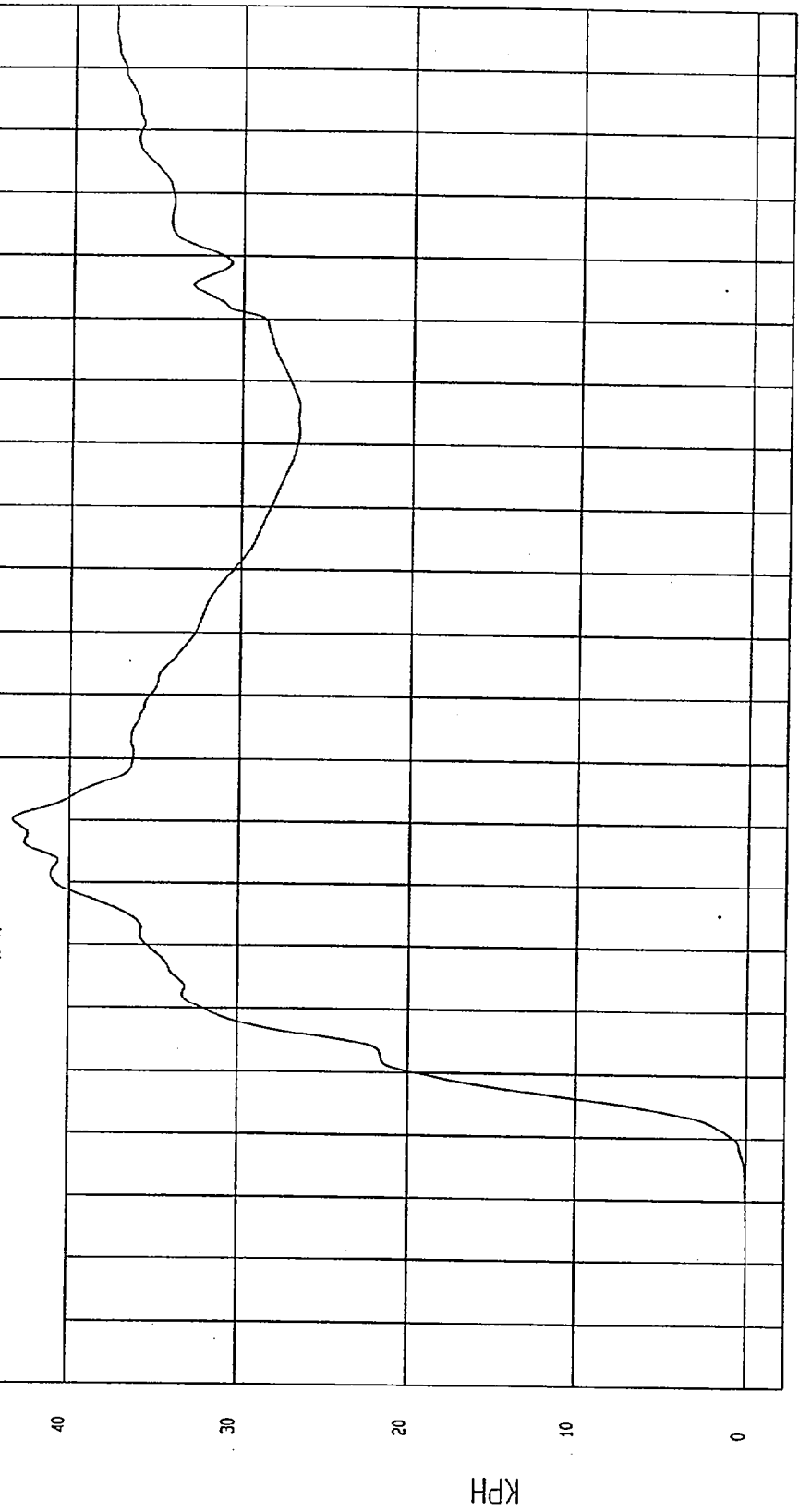
TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 02-18-1997

COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = -2.55E-03 KPH at -19 msec Maximum = 43.31 KPH at 70 msec

DRIVER UPPER RIB Y REDUNDANT VELOCITY

1 ——— B97028A1.V61 Filterclass (180)



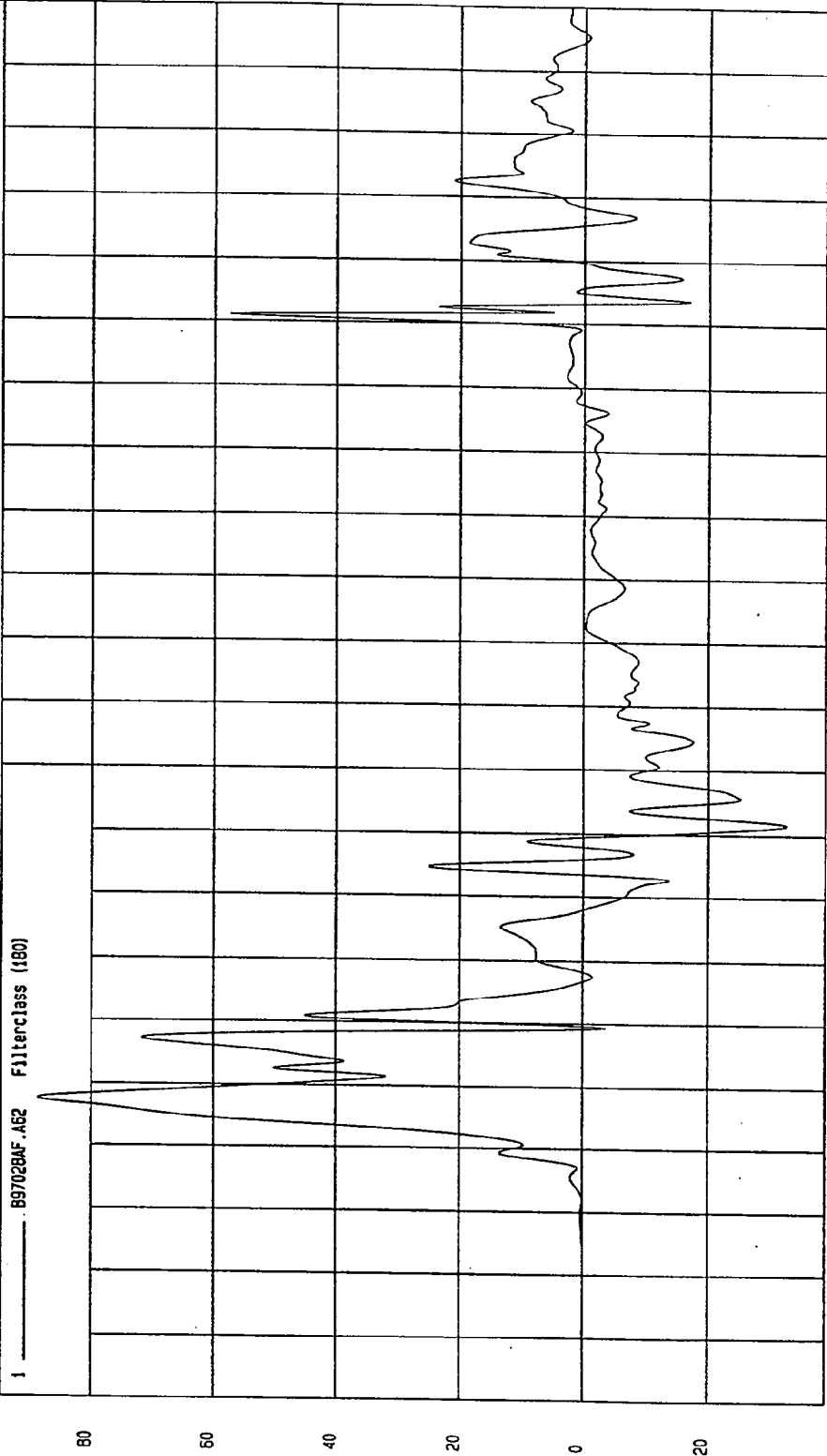
KPH

TIME Seconds

NCA Research
02-18-1997 15:56

TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 02-18-1997
COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH
Minimum = -32.43 G's at 72 msec Maximum = 88.28 G's at 28 msec

DRIVER LOWER RIB Y REDUNDANT ACCELERATION



MSA Research
02-18-1997 16:05

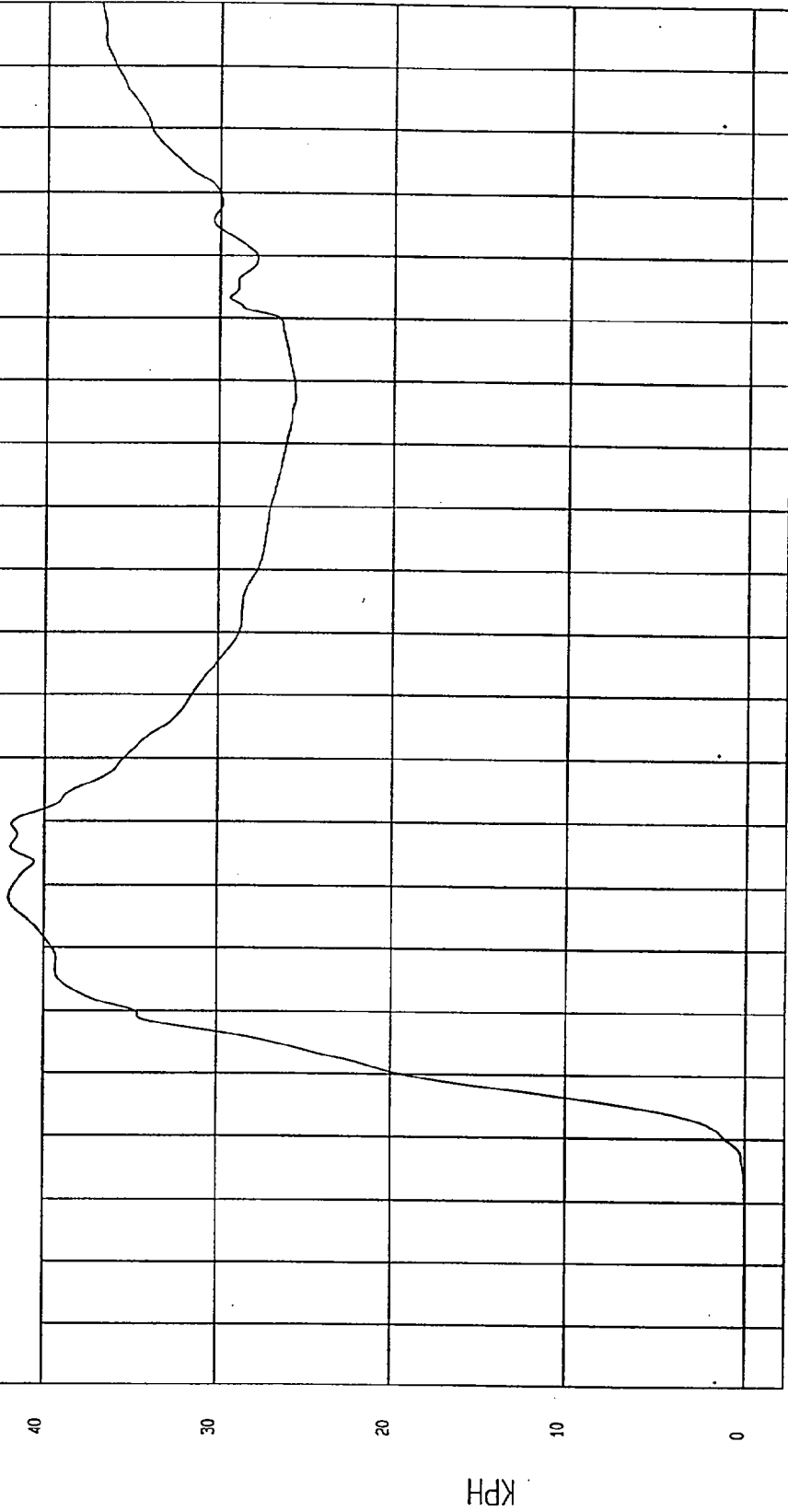
TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 02-18-1997

COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = -.03 KPH at 4 msec Maximum = 41.94 KPH at 58 msec

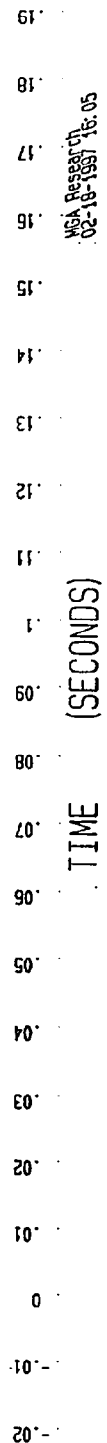
DRIVER LOWER RIB Y REDUNDANT VELOCITY

1 89702BA1.V62 Filterclass (180)



W&A Research
02-18-1997 15:56

TIME Seconds



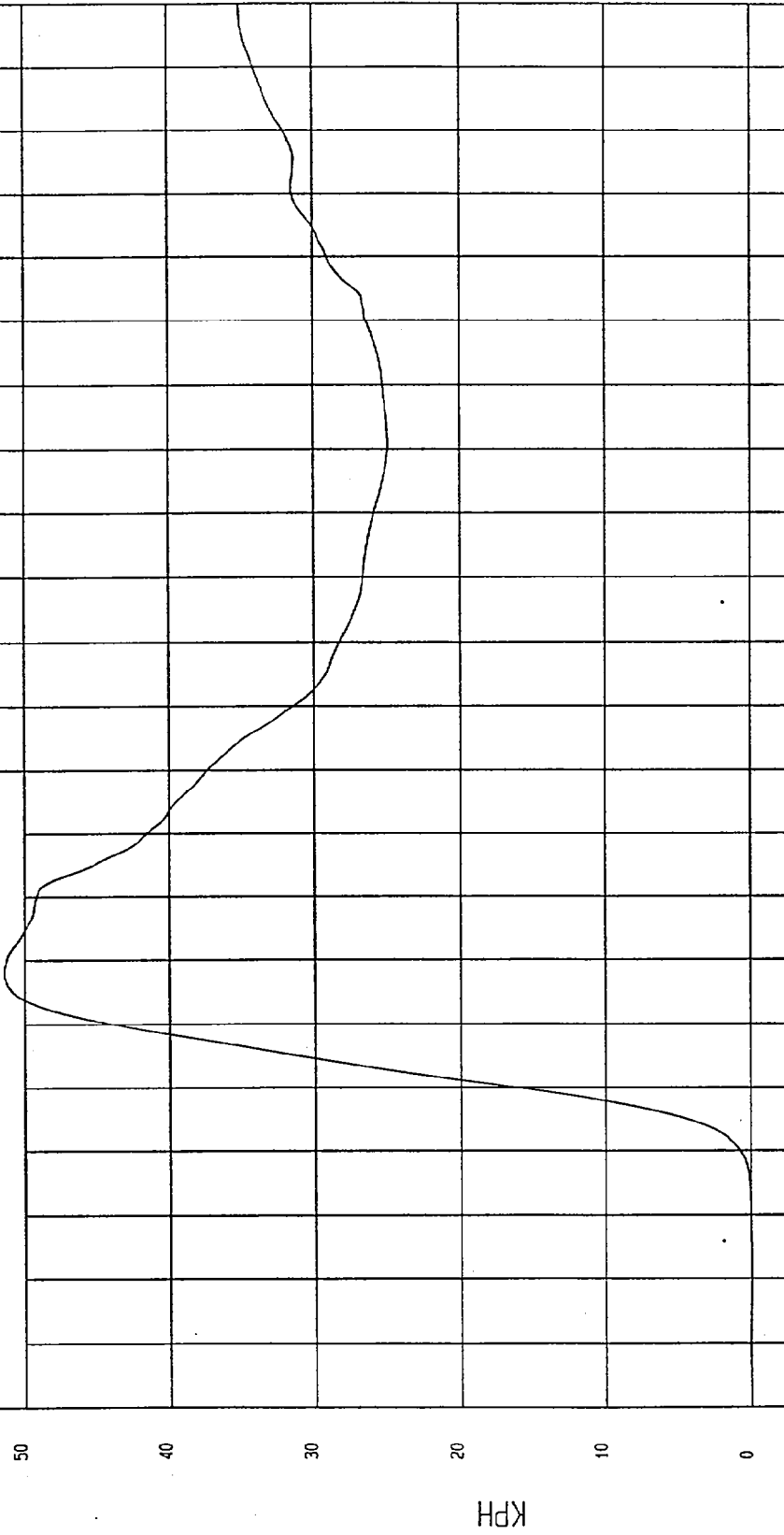
TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 02-18-1997

COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = -6.21E-02 KPH at 1 msec Maximum = 51.40 KPH at 48 msec

DRIVER LOWER SPINE Y REDUNDANT VELOCITY

1 B9702BA1.V53 Filterclass (160)



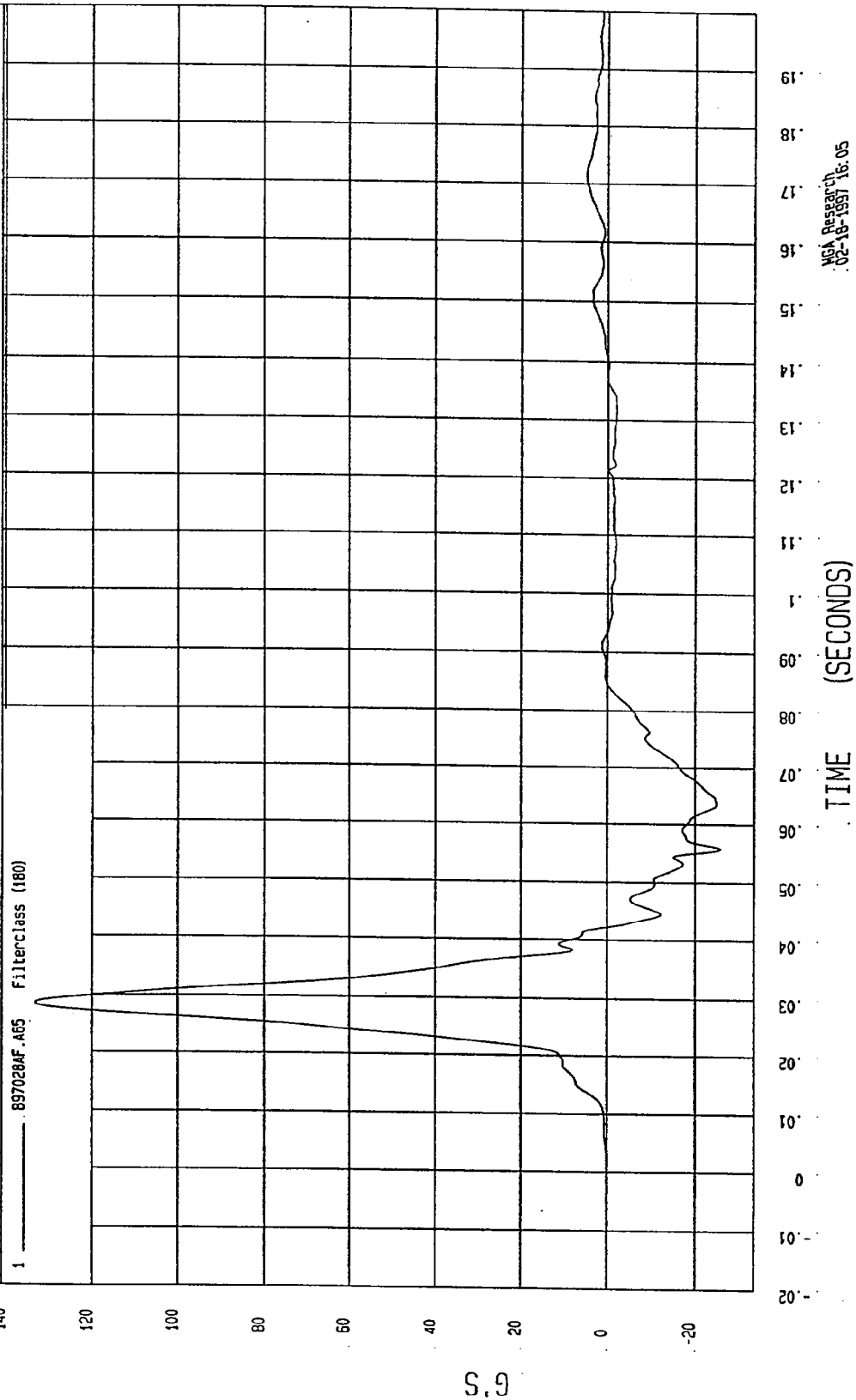
MGA Research
02-18-1997 15:56

TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 02-18-1997

COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = -25.79 G's at 56 msec Maximum = 132.91 G's at 28 msec

DRIVER PELVIS Y REDUNDANT ACCELERATION



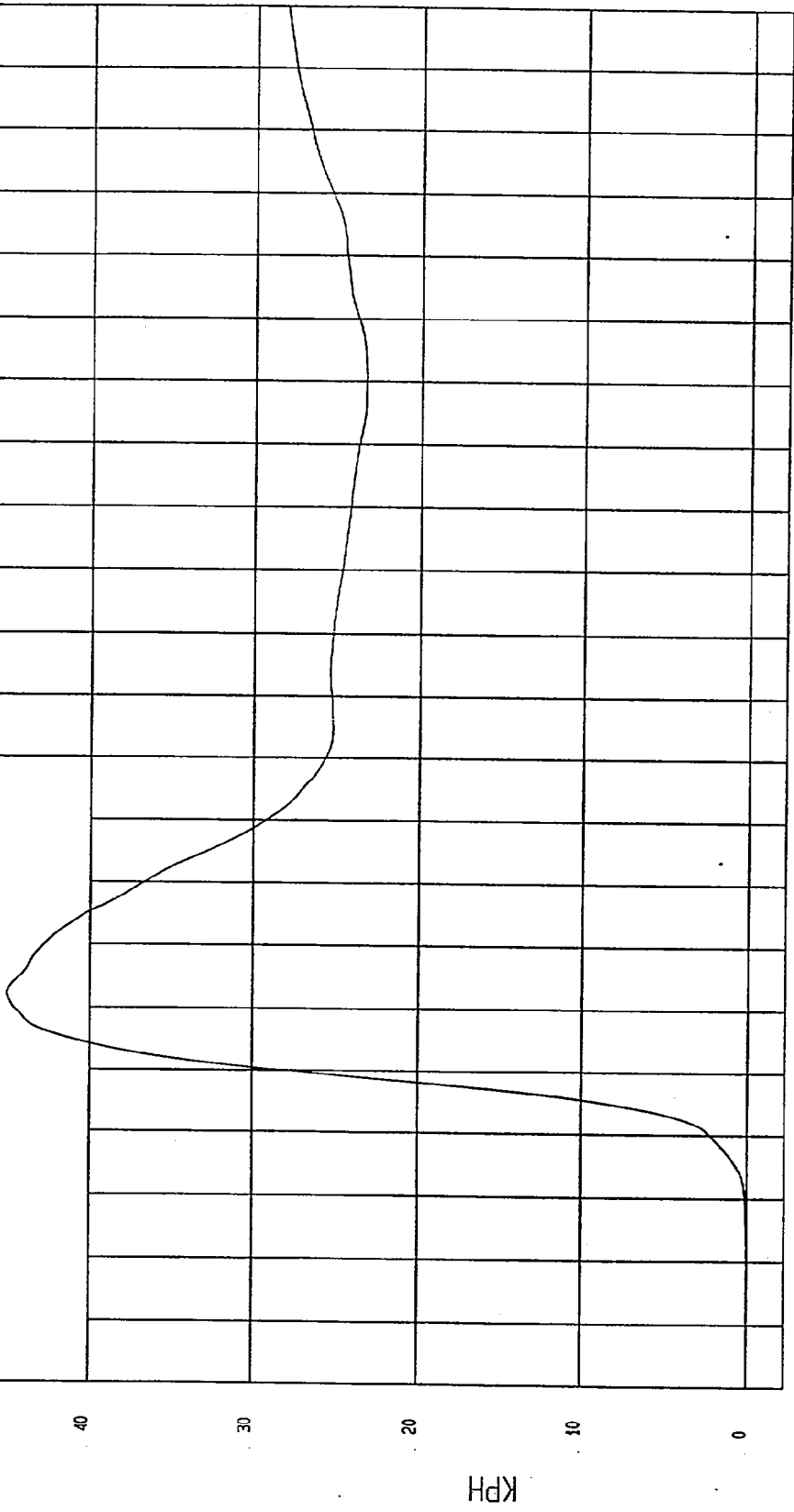
TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 02-18-1997

COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = -1.39E-04 KPH at -20 msec Maximum = 45.03 KPH at 42 msec

DRIVER PELVIS Y REDUNDANT VELOCITY

1 ——— B9702BA1.V65 Filterclass (180)



W&A Research
02-28-1997 13:42

FINITE IMPULSE RESPONSE (FIR) FILTERED DATA

TEST: NCAP HIGH SPEED LATERAL IMPACT

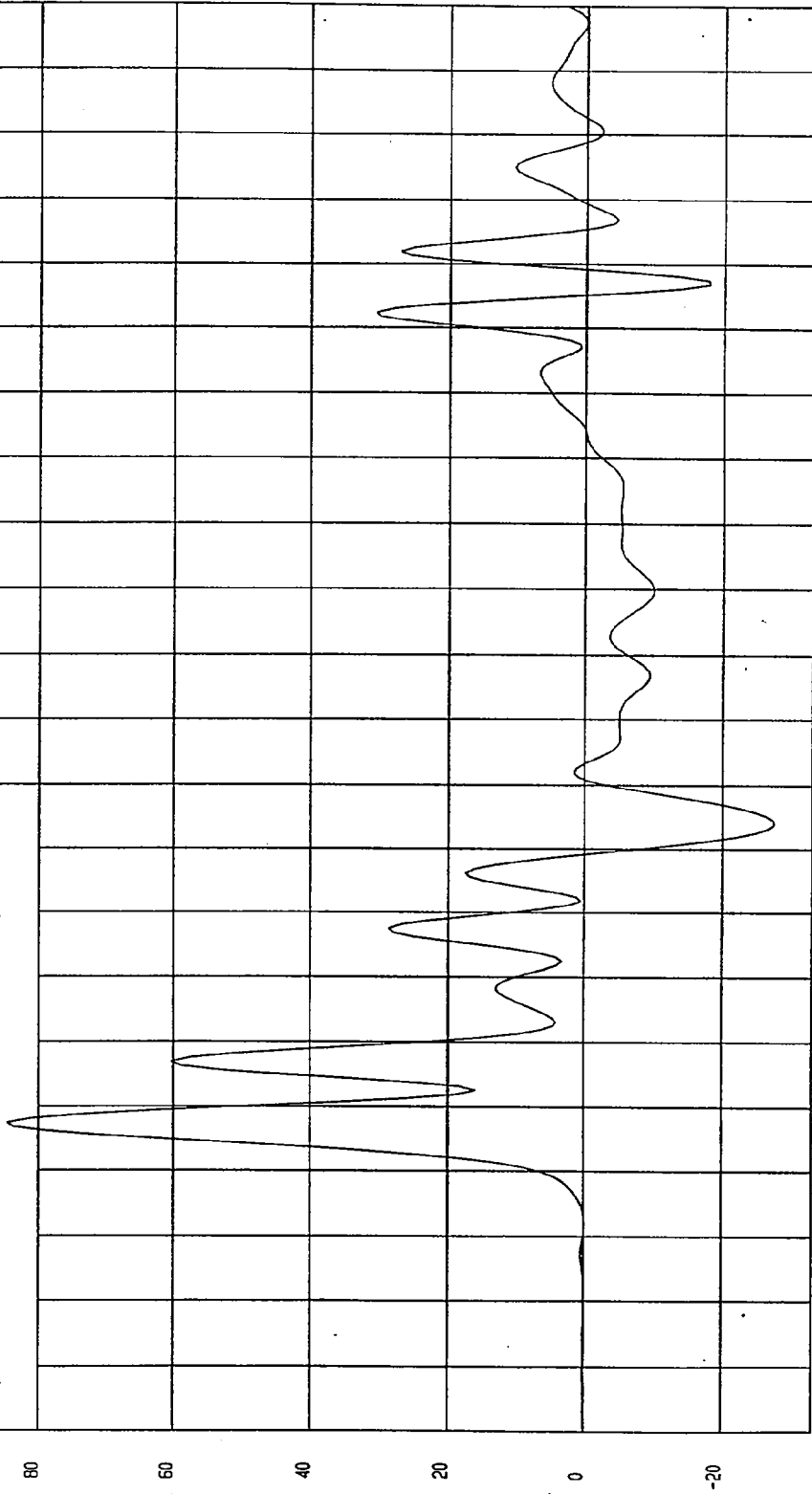
TEST DATE: 02-18-1997

COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = -27.43 G'S at 74 msec Maximum = 84.47 G'S at 28 msec

DRIVER UPPER RIB Y ACCELERATION

1 .B97028F1.R15 Filterclass (FIR Filtered)



TIME (SECONDS)

W&A Research
02-18-1997 15:52

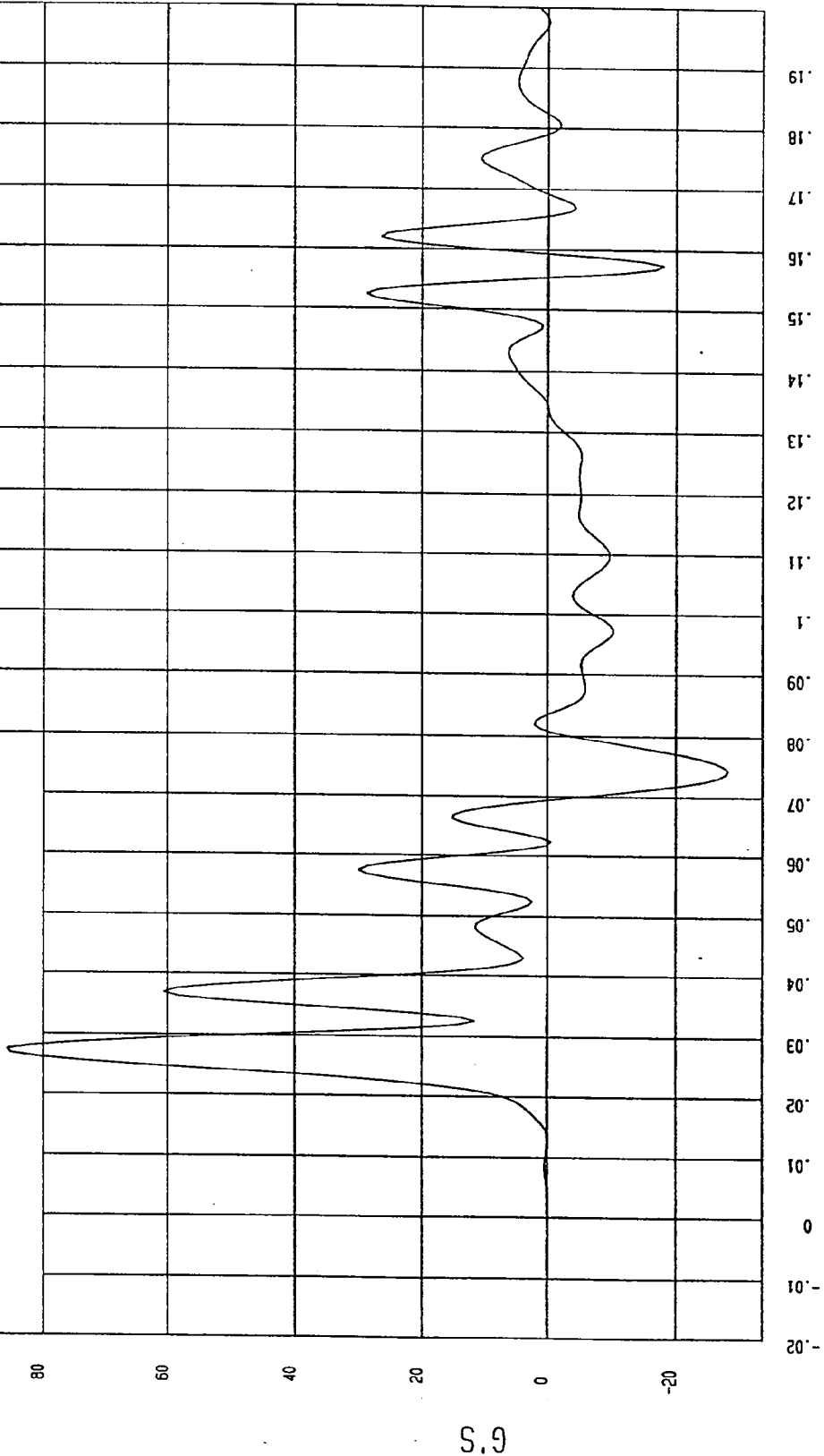
TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 02-18-1997

COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = -27.98 G'S at 74 msec Maximum = 85.57 G'S at 28 msec

DRIVER UPPER RIB Y REDUNDANT ACCELERATION

1 897028F1.R61 Filterclass (FIR Filtered)



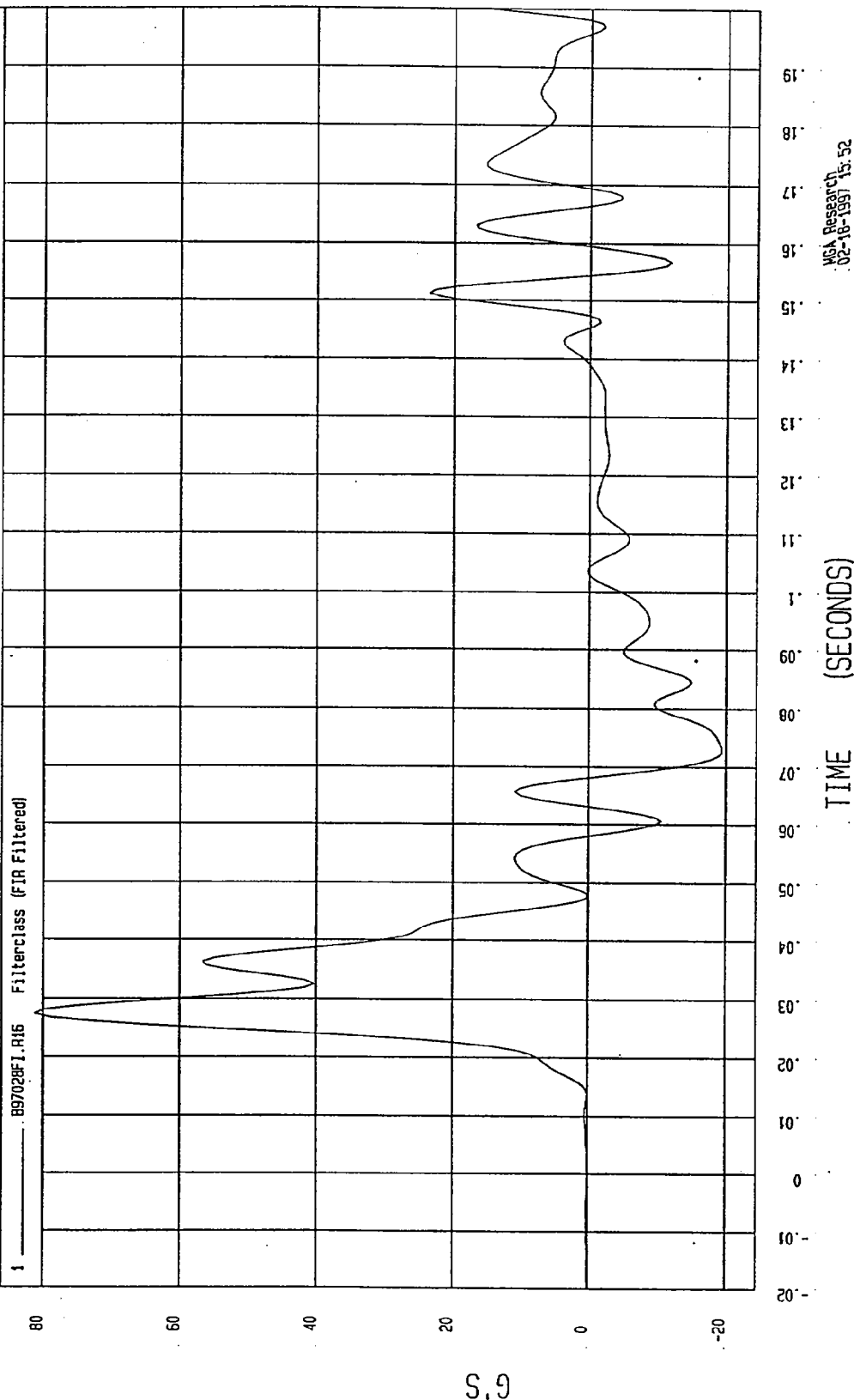
MCA Research
02-18-1997 15:52

TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 02-18-1997

COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = -19.41 G'S at 73 msec Maximum = 81.15 G'S at 28 msec

DRIVER LOWER RIB Y ACCELERATION



TEST: NCAP HIGH SPEED LATERAL IMPACT

TEST DATE: 02-18-1997

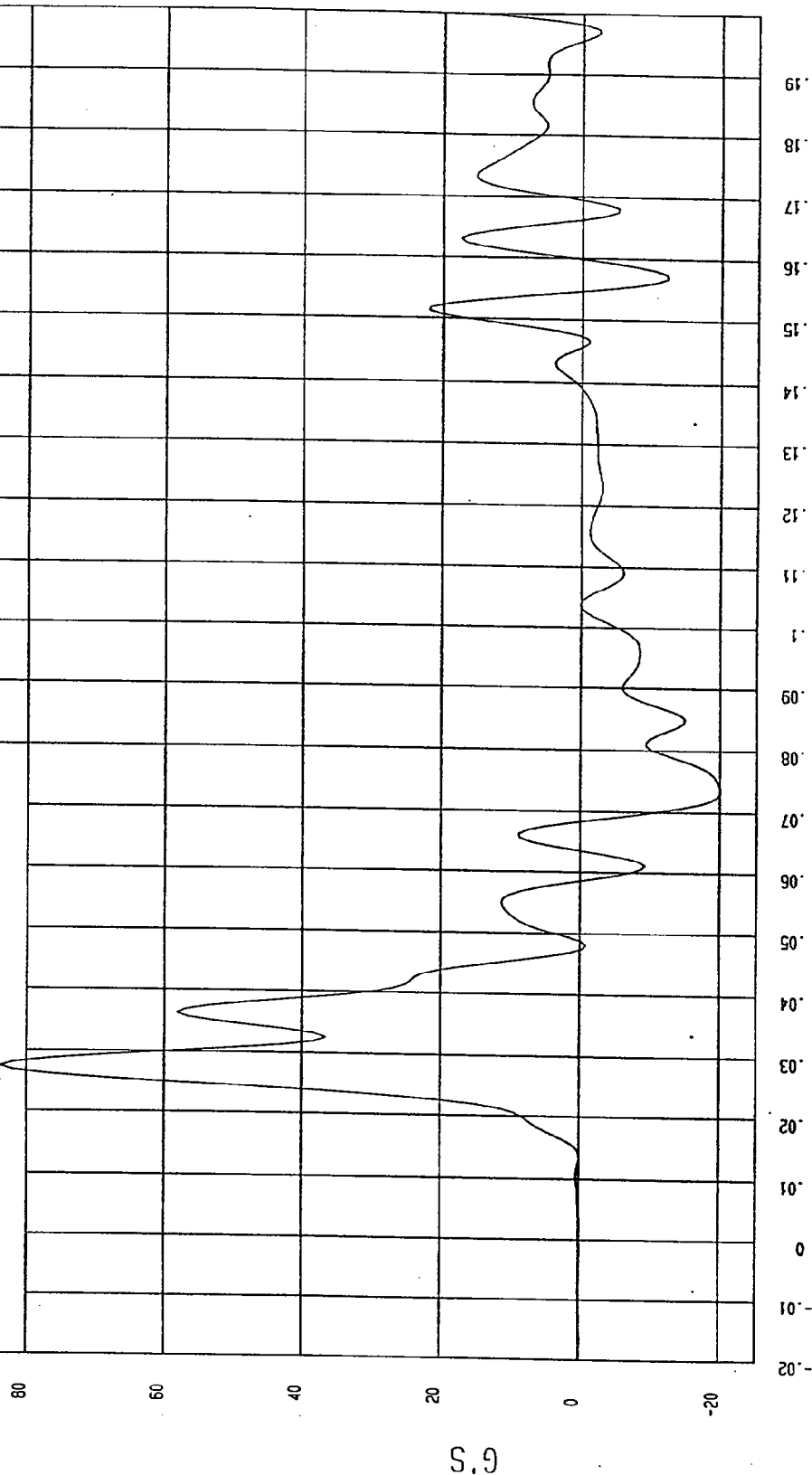
COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = -20.08 G'S at 73 msec

Maximum = 83.64 G'S at 28 msec

DRIVER LOWER RIB Y REDUNDANT ACCELERATION

1 ——— .B97028F1.R62 Filterclass (FIR Filtered)



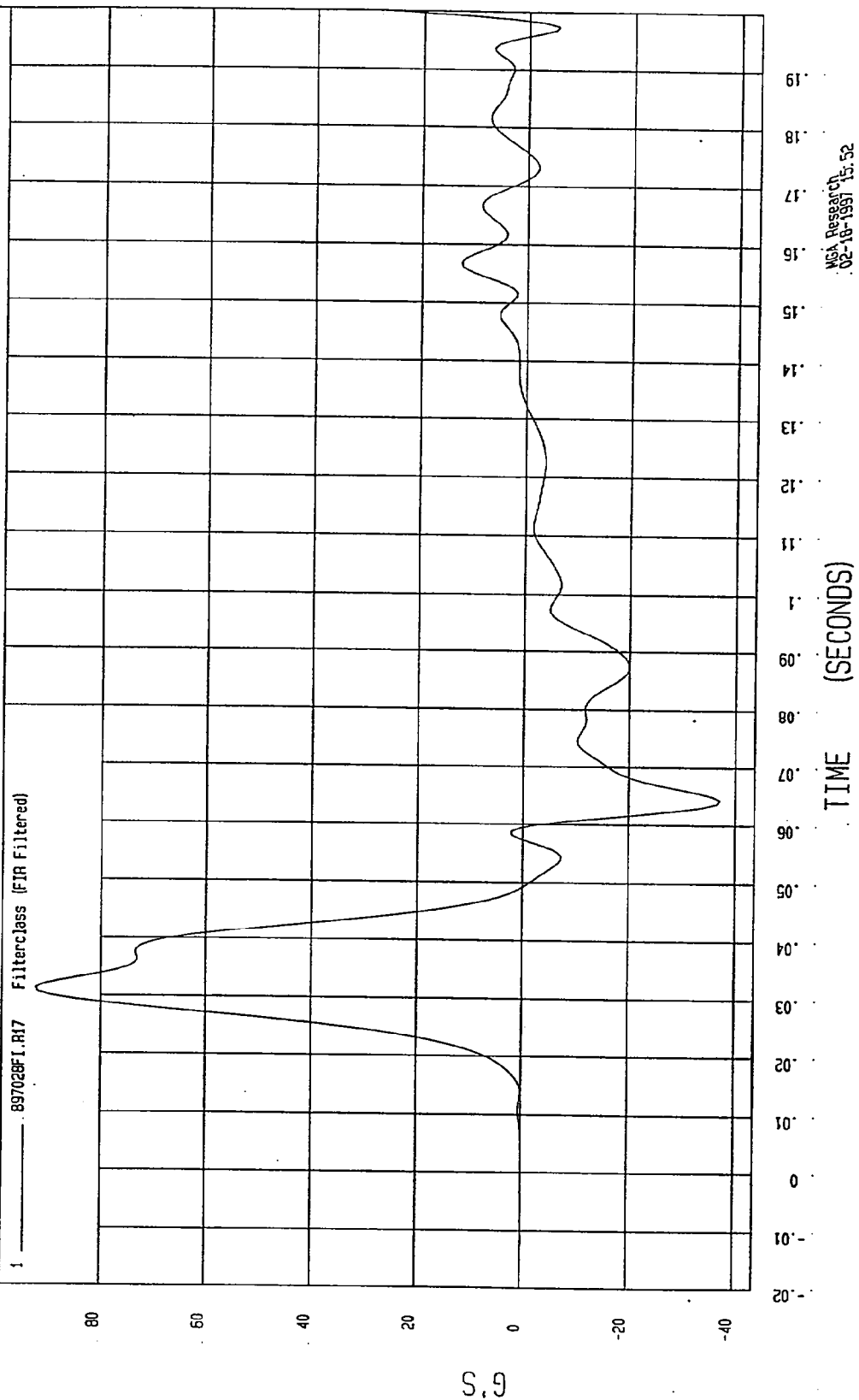
MCA Research
02-18-1997 15:52

TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 02-18-1997

COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = -37.17 G'S at 64 msec Maximum = 92.16 G'S at 31 msec

DRIVER LOWER SPINE Y ACCELERATION



TEST: NCAP HIGH SPEED LATERAL IMPACT

TEST DATE: 02-18-1997

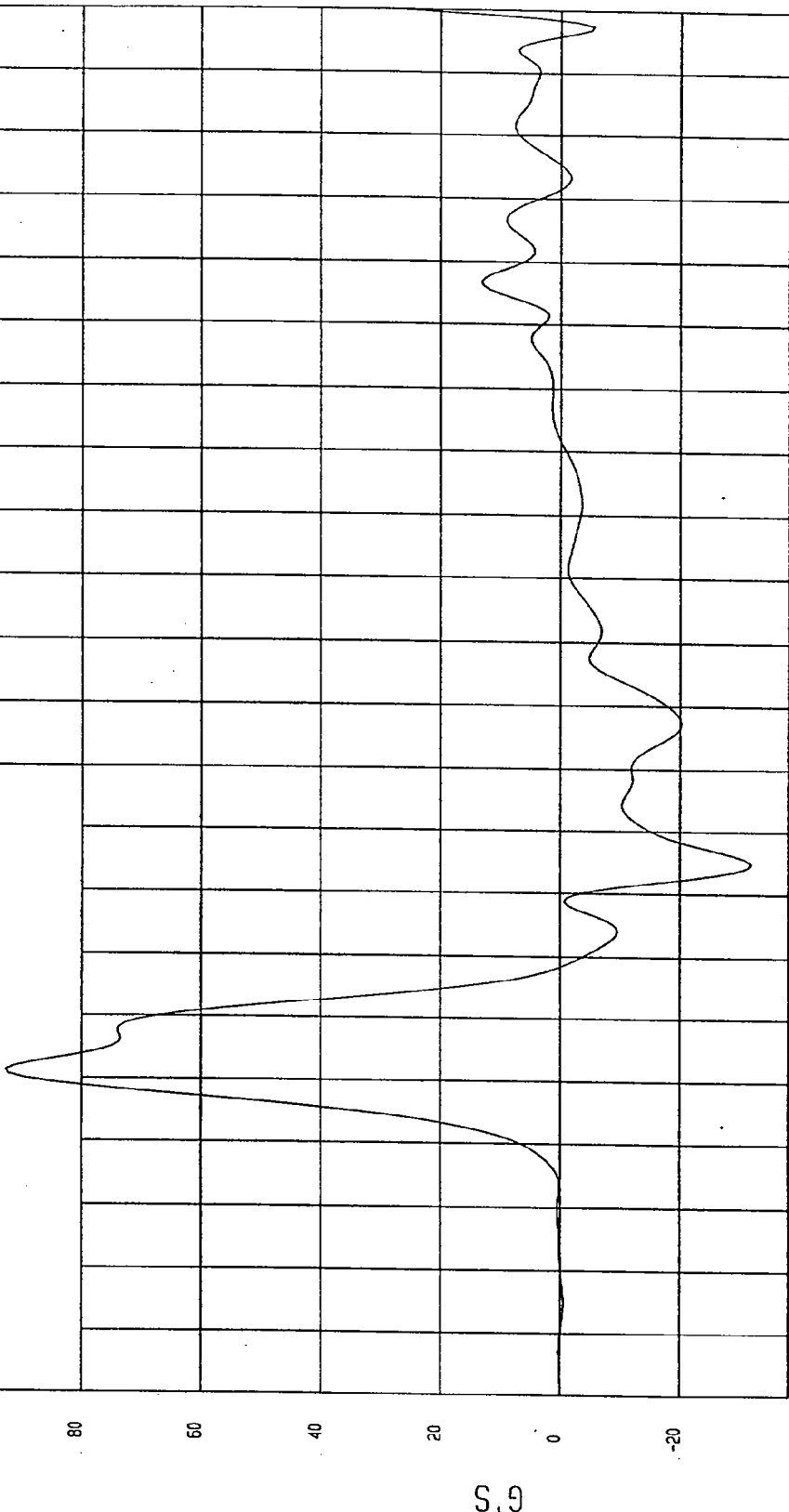
COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = -31.66 G'S at 65 msec

Maximum = 92.56 G'S at 31 msec

DRIVER LOWER SPINE Y REDUNDANT ACCELERATION

1 897028F1.R63 Filterclass (FIR Filtered)



MCA Research
02-18-1997 15:52

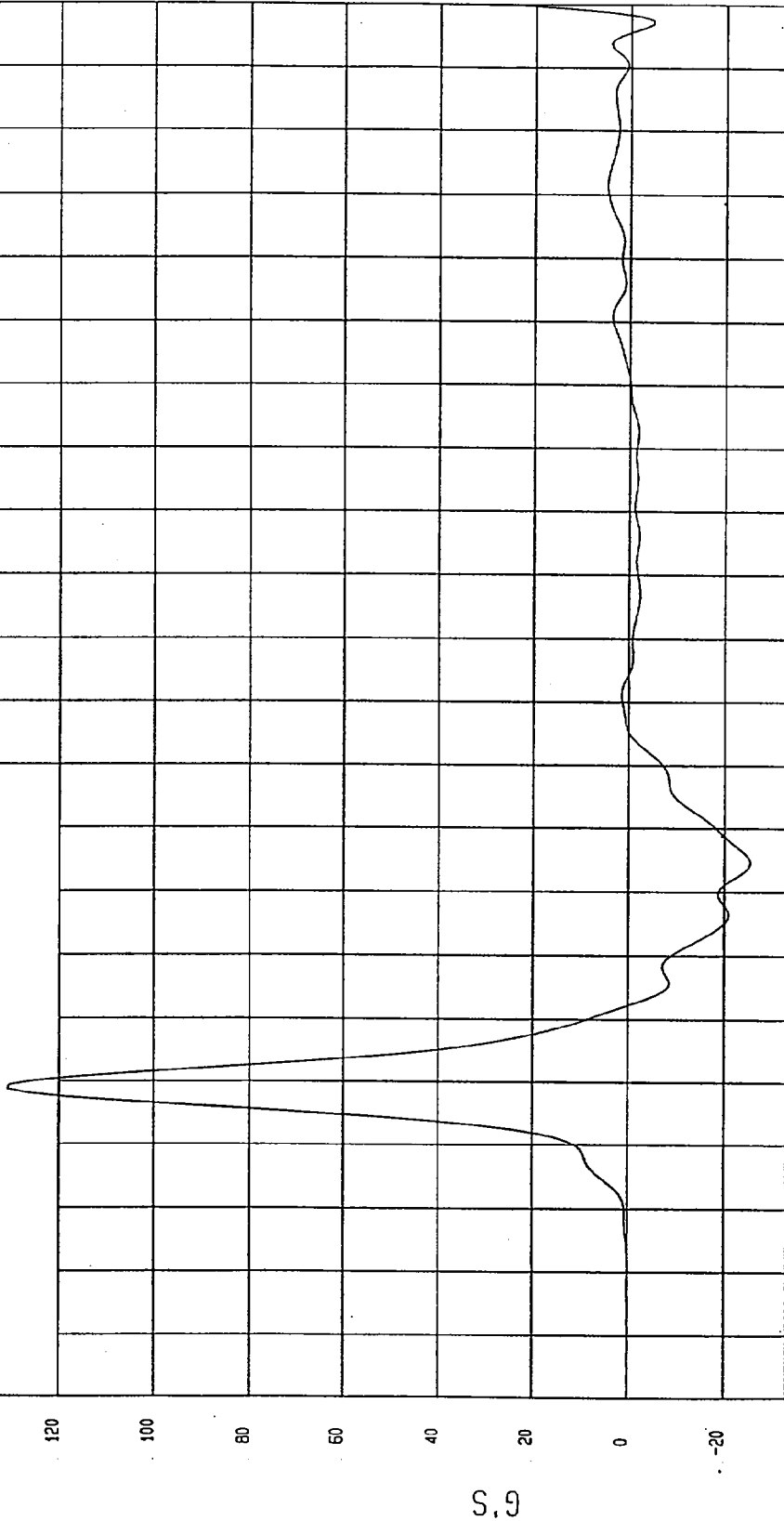
TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 02-18-1997

COMPONENT: 1997 SUBARU LEGACY AND 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = -25.33 G'S at 64 msec Maximum = 130.77 G'S at 29 msec

DRIVER PELVIS Y ACCELERATION

1 — 897028F1.R18 Filterclass (FIR Filtered)



TIME (SECONDS)

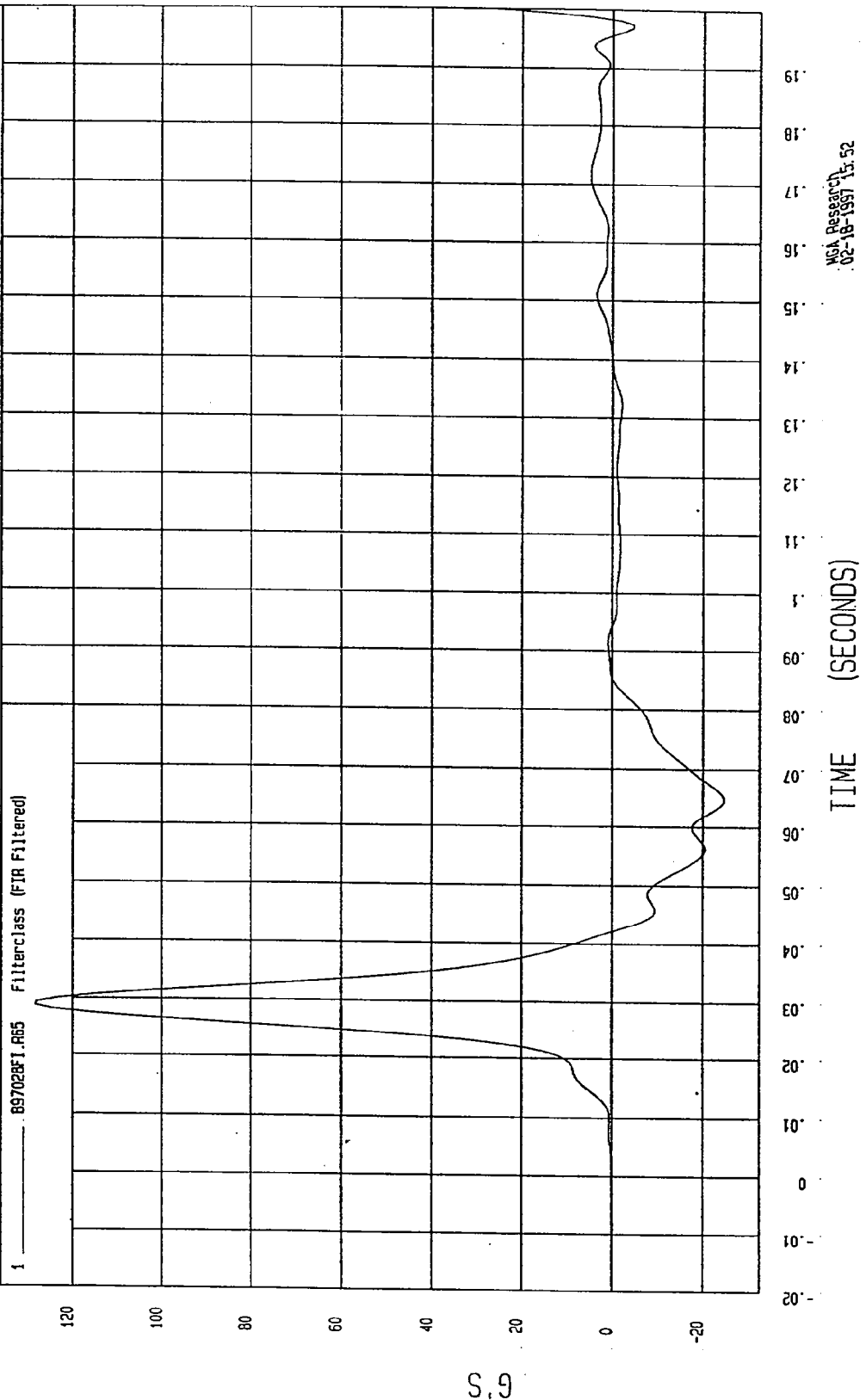
MOA Research
02-18-1997 15:52

TEST: NCAP HIGH SPEED LATERAL IMPACT TEST DATE: 02-18-1997

COMPONENT: 1997 SUBARU LEGACY AWD 4 DOOR (MV5500) Speed: 38.3 MPH 61.6 KPH

Minimum = -24.53 G'S at 65 msec Maximum = 128.22 G'S at 29 msec

DRIVER PELVIS Y REDUNDANT ACCELERATION



APPENDIX C

SID CONFIGURATION AND PERFORMANCE VERIFICATION

REPORT NO. MGA-97-DC20

DUMMY PERFORMANCE CALIBRATIONS

NEW CAR ASSESSMENT PROGRAM
SIDE IMPACT TEST

1997 SUBARU LEGACY AWD
4-DOOR SEDAN

NHTSA NO. MV5301

MGA PROVING GROUNDS
5000 WARREN ROAD
BURLINGTON, WI 53105



Test Date: February 18, 1997

Report Date: March 10, 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

TABLE OF CONTENTS

		<u>Page No.</u>
DUMMY S/N: 274	PRE-TEST CERTIFICATION DATA	1-1
DUMMY S/N: 275	PRE-TEST CERTIFICATION DATA	2-1
DUMMY S/N: 274	POST-TEST CERTIFICATION DATA	3-1
DUMMY S/N: 275	POST-TEST CERTIFICATION DATA	4-1
DUMMY S/N: 274	POST-TEST INSPECTION CHECKLIST	5-1
DUMMY S/N: 275	POST-TEST INSPECTION CHECKLIST	6-1
	VEHICLE AND DUMMY TEMPERATURE	7-1

PRE-TEST CERTIFICATION DATA

Front Dummy Serial Number: 274

Calibration Test Results Summary

Dummy Serial Number: 274

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.: 274

DATE OF VERIFICATION: February 14, 1997

DESCRIPTION	SPECIFICATION	TEST RESULTS
SH - Seated Height	35.0" - 35.8"	35.4
RH - Rib Height	19.75" - 20.50"	20.25
HP - Hip Pivot Height	3.9" ref.	3.9
RD - Rib From Back Line	9.0" to 9.5"	9.1
KV - Knee Pivot From Back Line	20.1" - 20.7"	20.5
SW - Knee Pivot to Floor	19.3" - 19.9"	19.6
HW - Hip Width	14.0" - 15.4"	14.6

MEASUREMENTS BY: Tim Hall

APPROVED BY: Gene Trabake

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

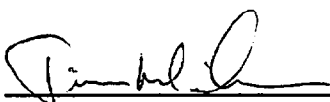
DATE: February 11, 1997

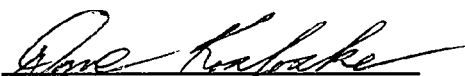
DUMMY NUMBER: 274

TEST NUMBER: D9743678

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		66 - 78° F	70°
RELATIVE HUMIDITY		10 - 70%	15%
VELOCITY 10 ft/s	FORCE (lb.)	188 - 253	246
	DISPLACEMENT (in.)	1.18 - 1.38	1.20
VELOCITY 14 ft/s	FORCE (lb.)	389 - 472	396
	DISPLACEMENT (in.)	1.26 - 1.47	1.32
VELOCITY 20 ft/s	FORCE (lb.)	841 - 1000	932
	DISPLACEMENT (in.)	1.30 - 1.57	1.35

TEST MEETS SPECIFICATIONS

TECHNICIAN 

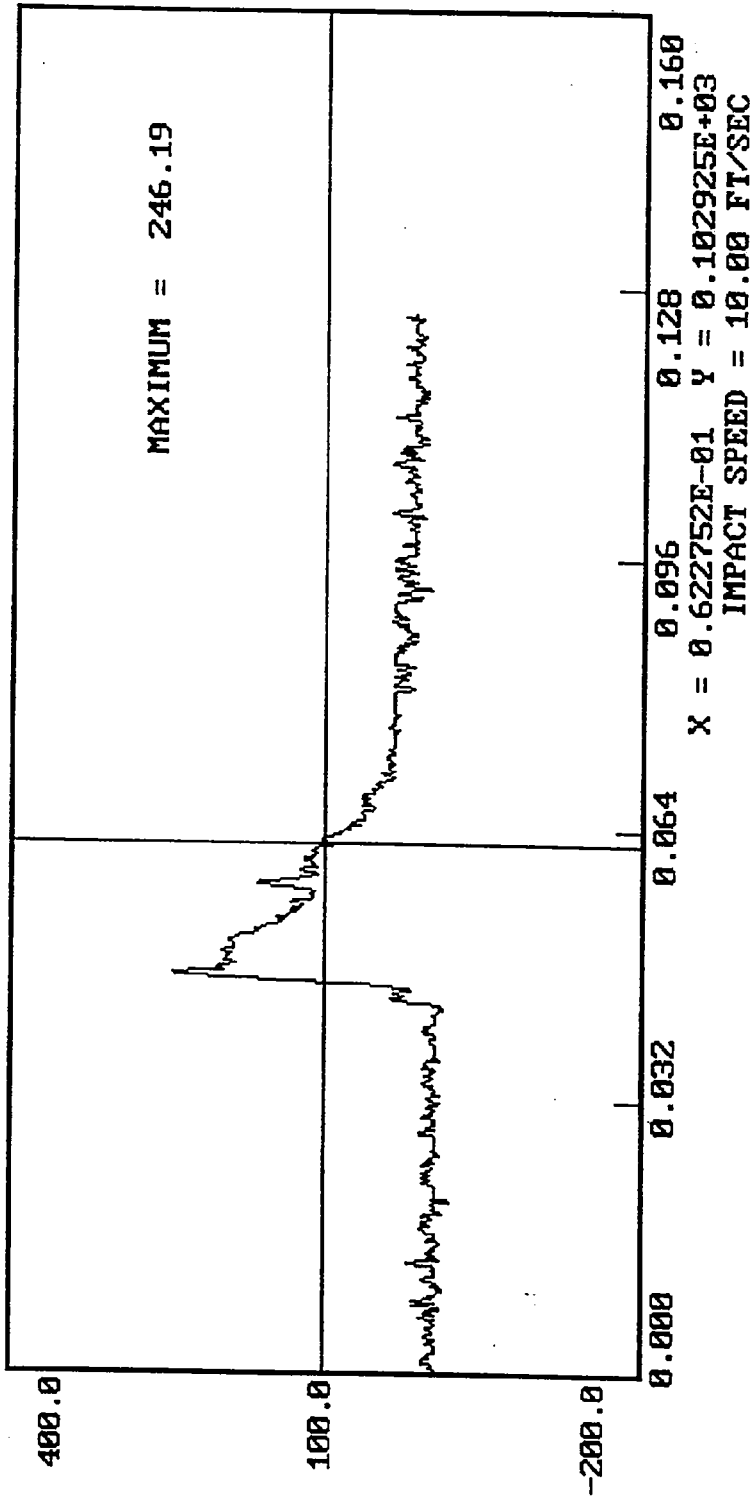
APPROVED BY 

DUMMY CALIBRATION - DAMPENER BENCH TEST

DUMMY # 274

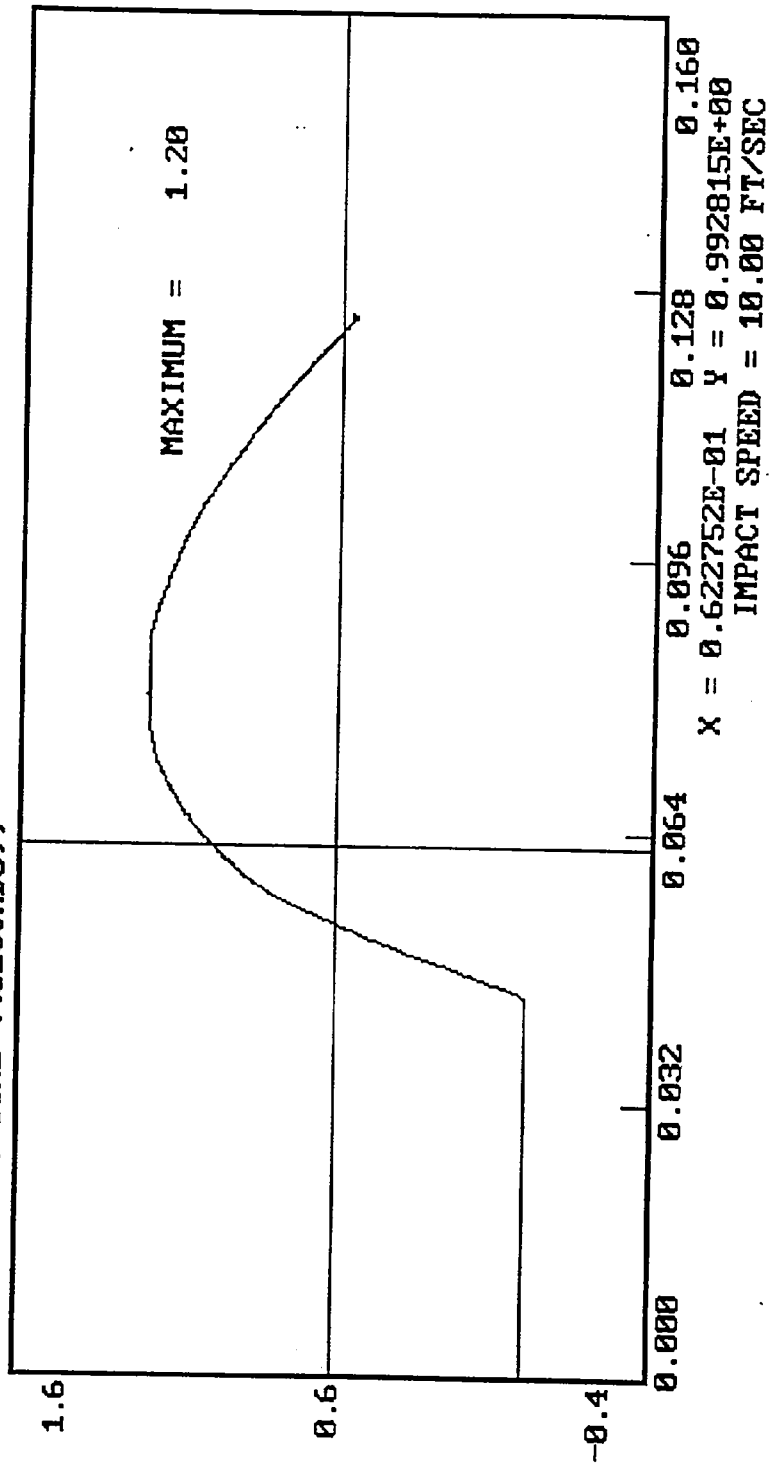
FORCE (LBS) VS. TIME ((SECONDS))

02-11-1997 11:49



DUMMY CALIBRATION - DAMPENER BENCH TEST
 DUMMY # 274
 DISPLACEMENT (IN) VS. TIME ((SECONDS))

02-11-1997 11:49

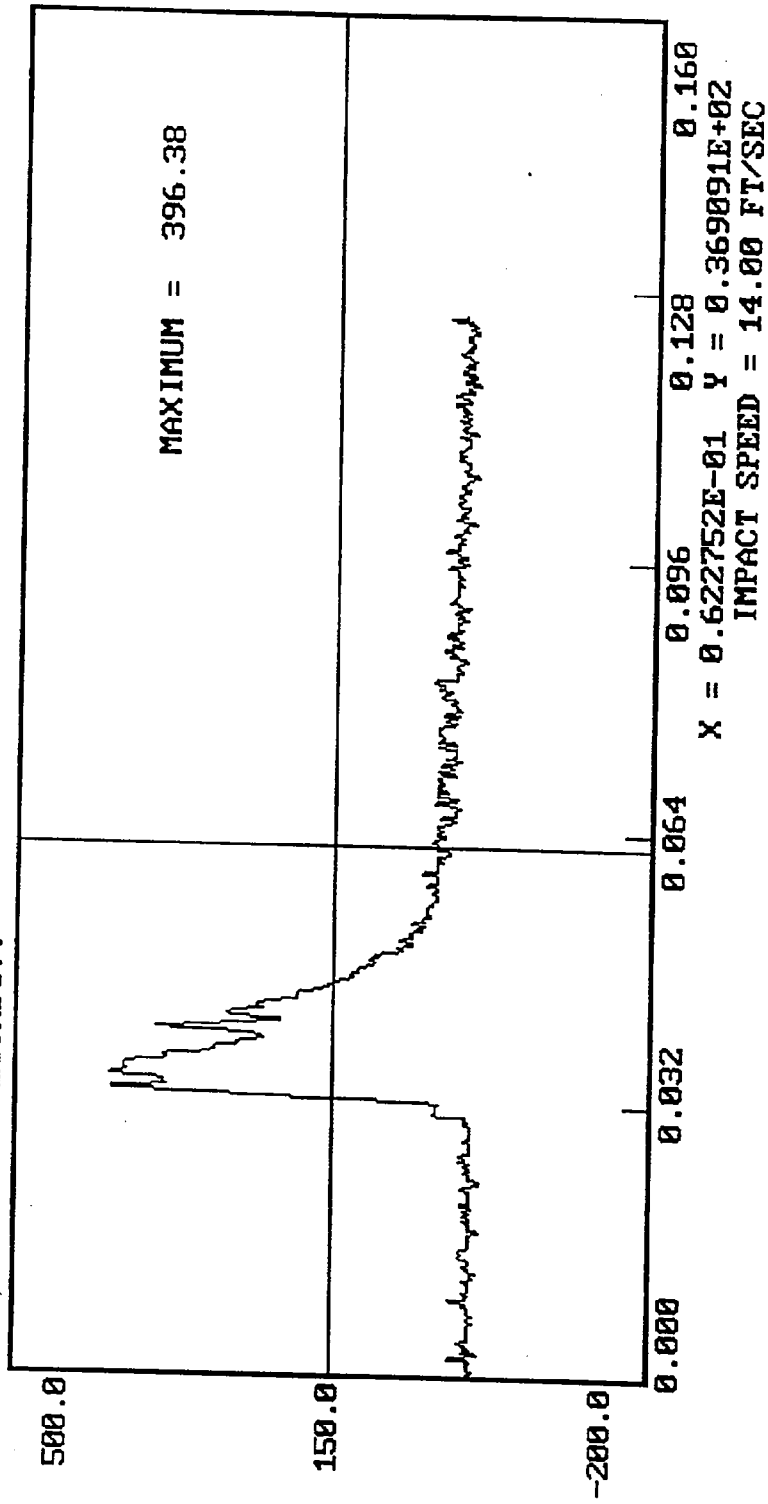


DUMMY CALIBRATION - DAMPENER BENCH TEST

DUMMY # 274

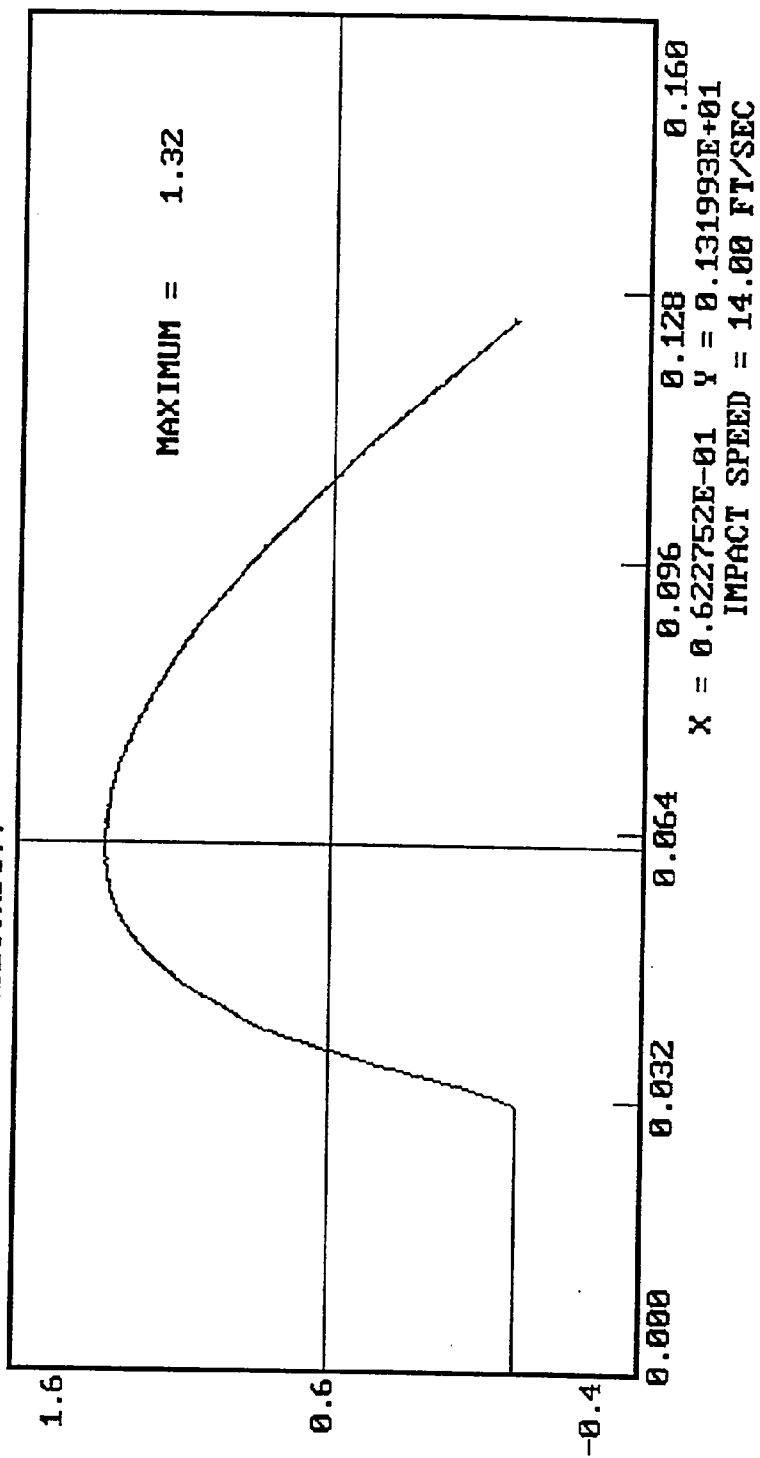
FORCE (LBS) VS. TIME ((SECONDS))

02-11-1997 11:45



DUMMY CALIBRATION - DAMPENER BENCH TEST
 DUMMY # 274
 DISPLACEMENT (IN) VS. TIME ((SECONDS))

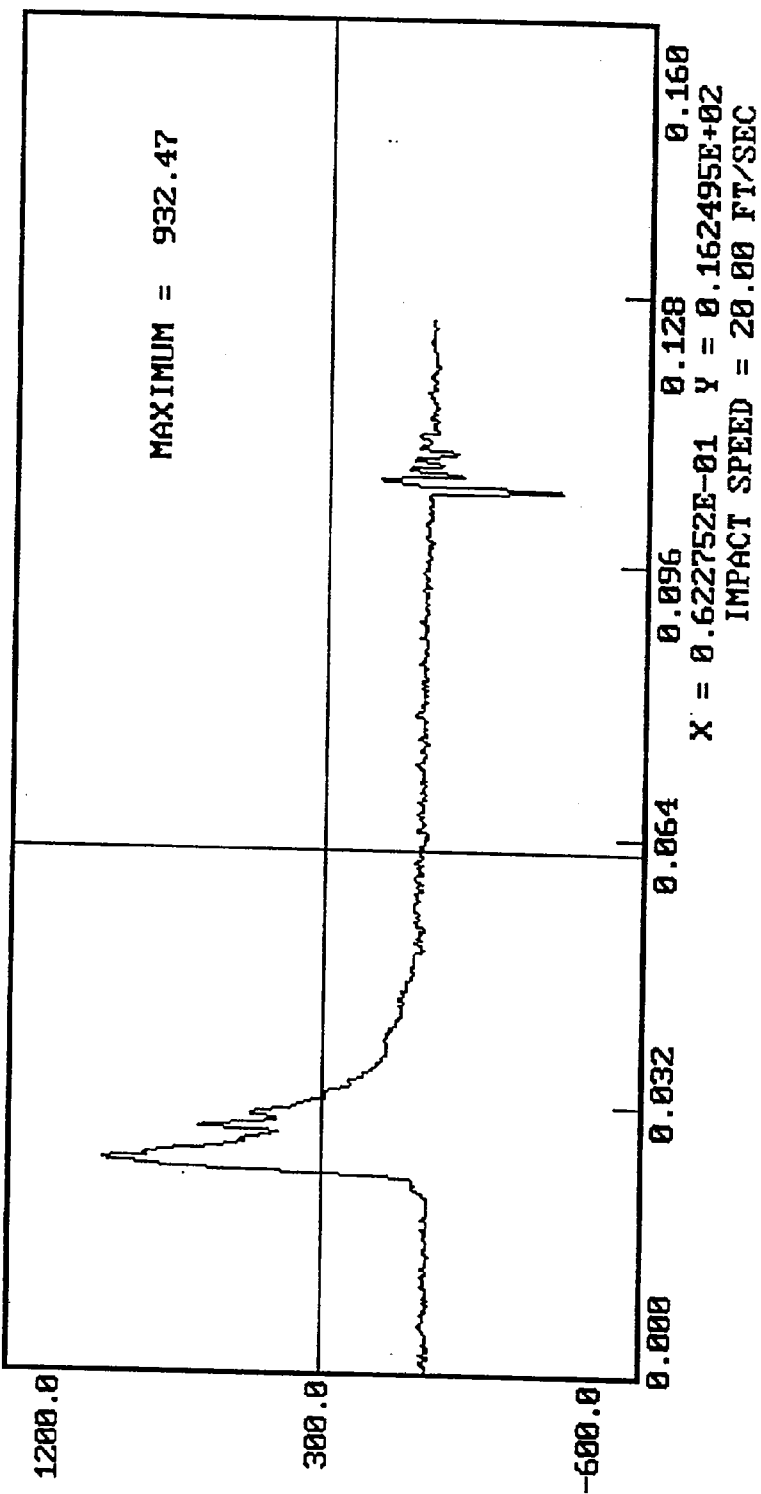
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DUMMY CALIBRATION - DAMPENER BENCH TEST
DUMMY # 274

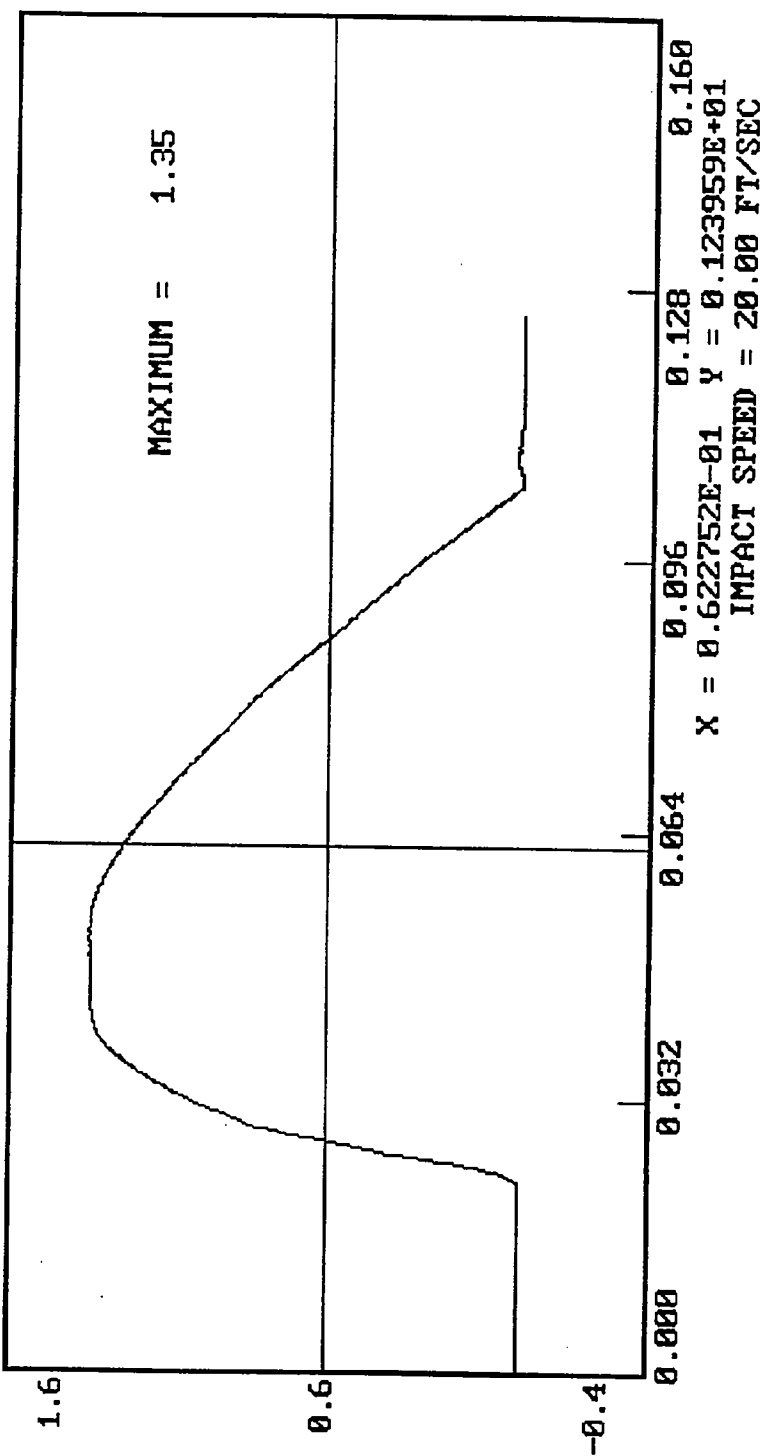
02-11-1997 11:42

FORCE (LBS) VS. TIME ((SECONDS))



DUMMY CALIBRATION - DAMPENER BENCH TEST
 DUMMY # 274
 DISPLACEMENT (IN) VS. TIME ((SECONDS))

02-11-1997 11:42



MGA RESEARCH CORPORATION

THORAX IMPACT TEST

SIDE IMPACT DUMMY (SID)

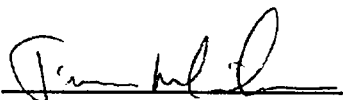
DATE: February 14, 1997

DUMMY NUMBER: 274

TEST NUMBER: D97432

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	15%
PROBE SPEED	13.8 - 14.2 fps	14.0
UPPER RIB	37 - 46 g's	39
LOWER RIB	37 - 46 g's	37
LOWER SPINE	15 - 22 g's	19

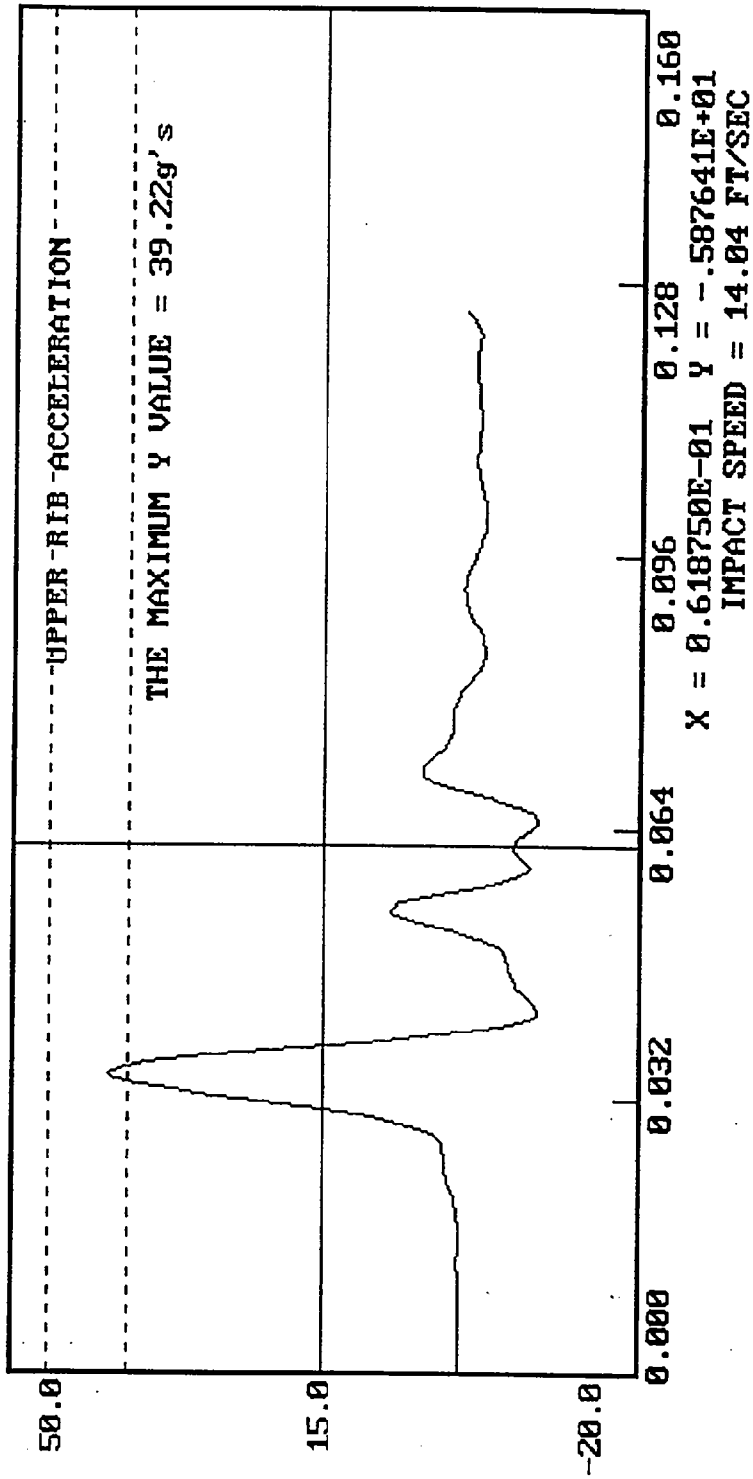
TEST MEETS SPECIFICATIONS

TECHNICIAN 

APPROVED BY 

DUMMY CALIBRATION - THORAX IMPACT
 DUMMY # 274
 ACCELERATION (G'S) VS. TIME ((SECONDS))

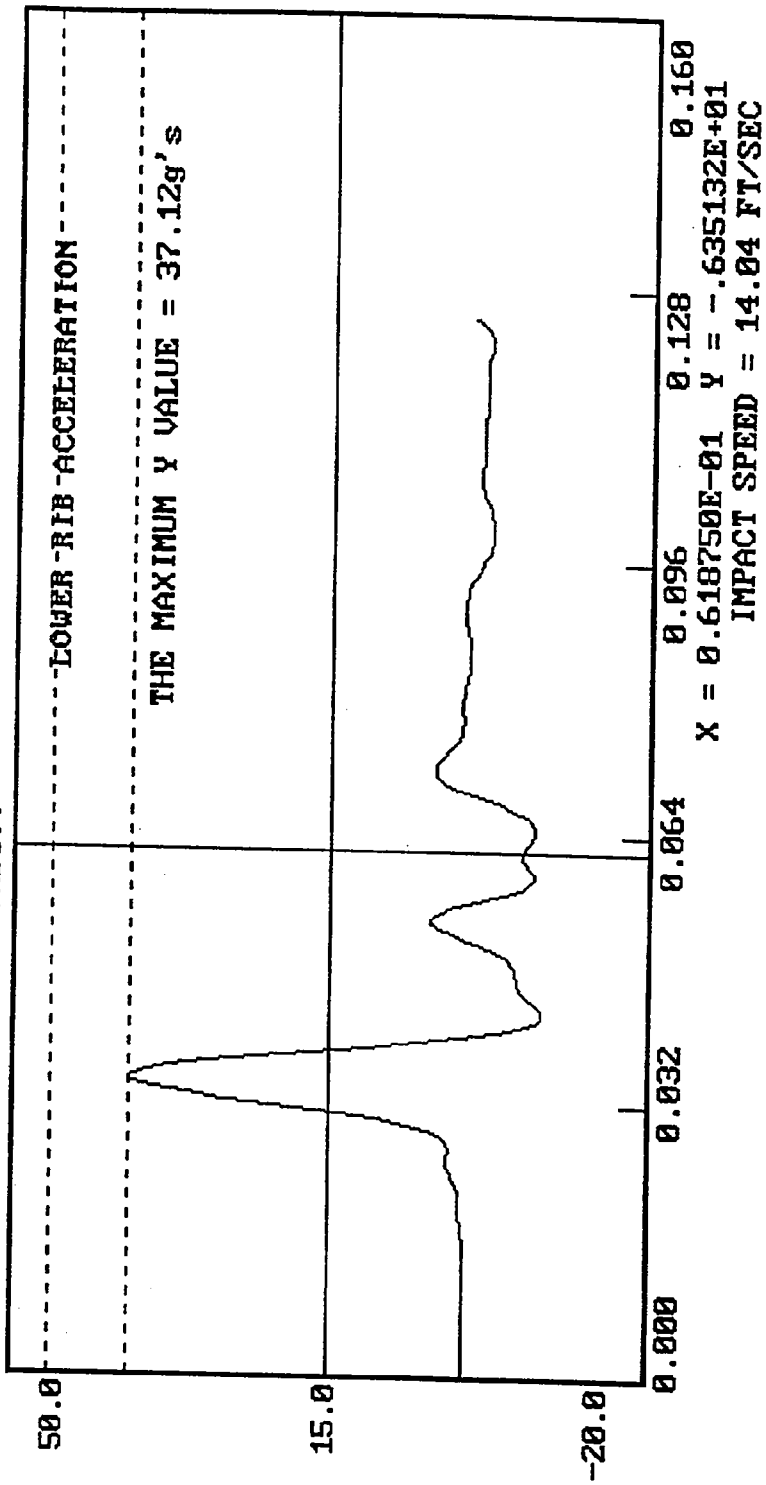
02-14-1997 15:10



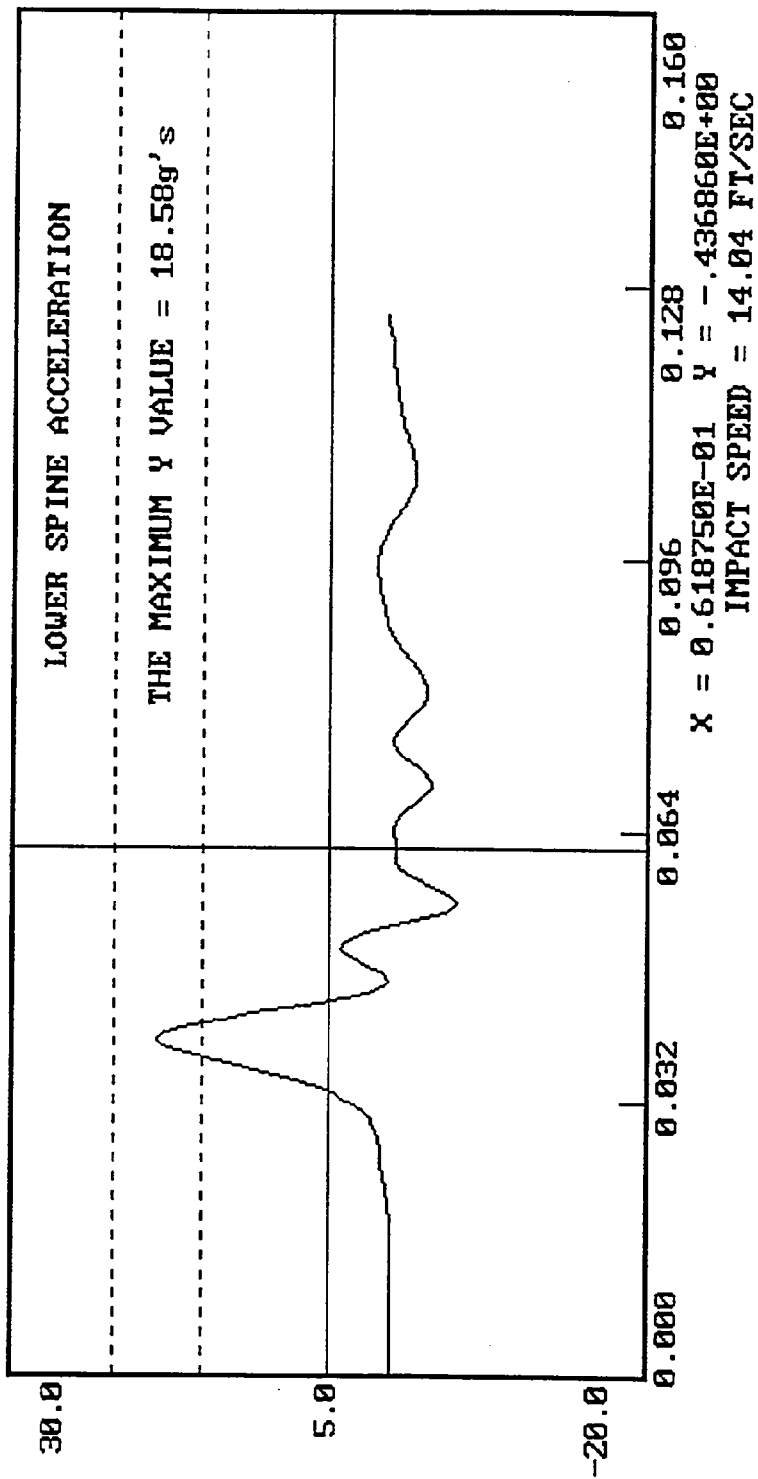
DUMMY CALIBRATION - THORAX IMPACT
DUMMY # 274

02-14-1997 15:10

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



DUMMY CALIBRATION - THORAX IMPACT
 DUMMY # 274
 02-14-1997 15:13
 ACCELERATION (G'S) VS. TIME ((SECONDS))



MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: February 14, 1997

DUMMY NUMBER: 274

TEST NUMBER: D97433

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	15%
PROBE SPEED	13.8 - 14.2 f/s	14.1
PELVIS ACCELERATION	40 - 60 g's	44

TEST MEETS SPECIFICATIONS

TECHNICIAN

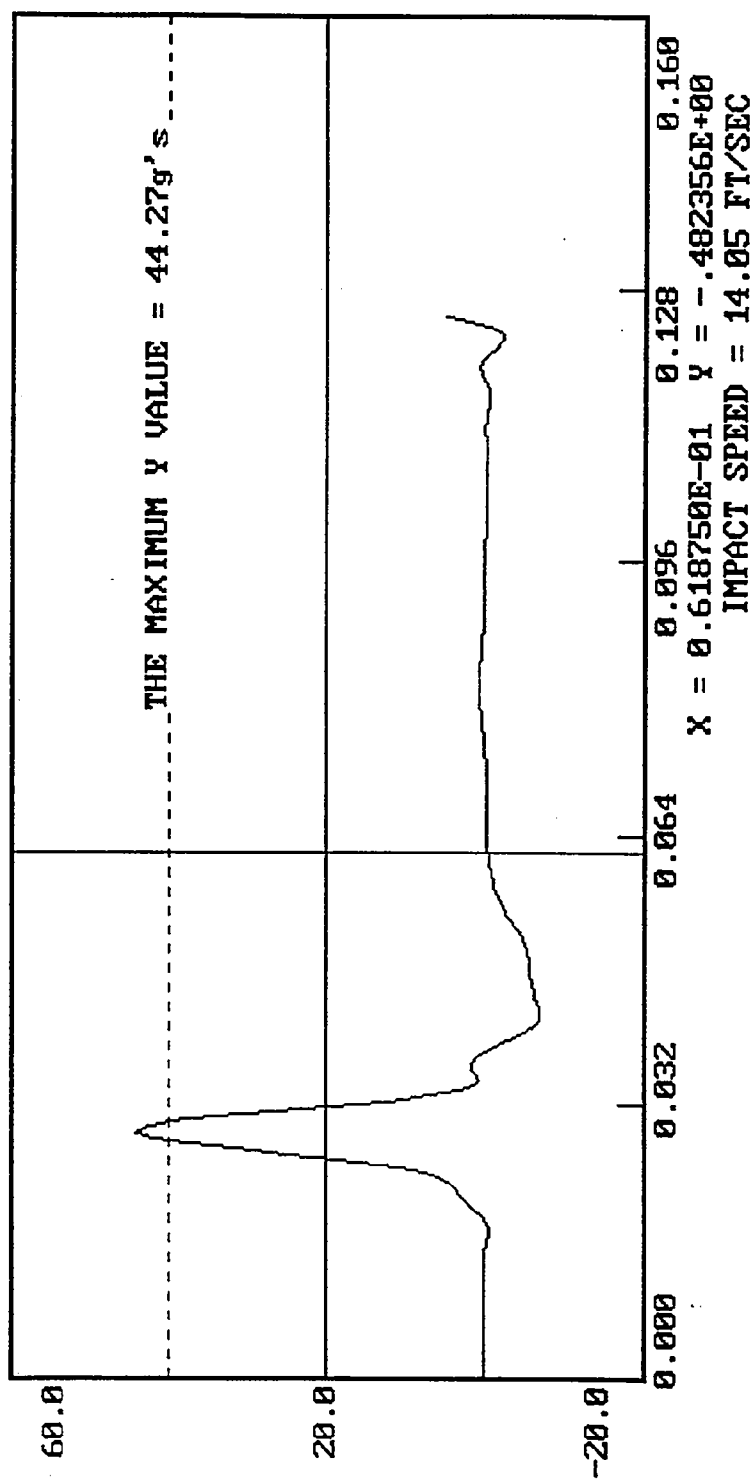
Tim McLean

APPROVED BY

Bob Kishaka

02-14-1997 15:27

DUMMY CALIBRATION - PELVIS IMPACT
DUMMY # 274
ACCELERATION (G'S) VS. TIME ((SECONDS))



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

DATE: February 14, 1997

DUMMY NUMBER: 274

TEST NUMBER: D97434

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	15%
FORCE @ 0.5 in	23.3 - 36.5 lbs	29.8
FORCE @ 0.75 in	36.7 - 49.8 lbs	42.2
FORCE @ 1.0 in	50 - 63 lbs	57
FORCE @ 1.3 in	73 - 88 lbs	77

TEST MEETS SPECIFICATIONS

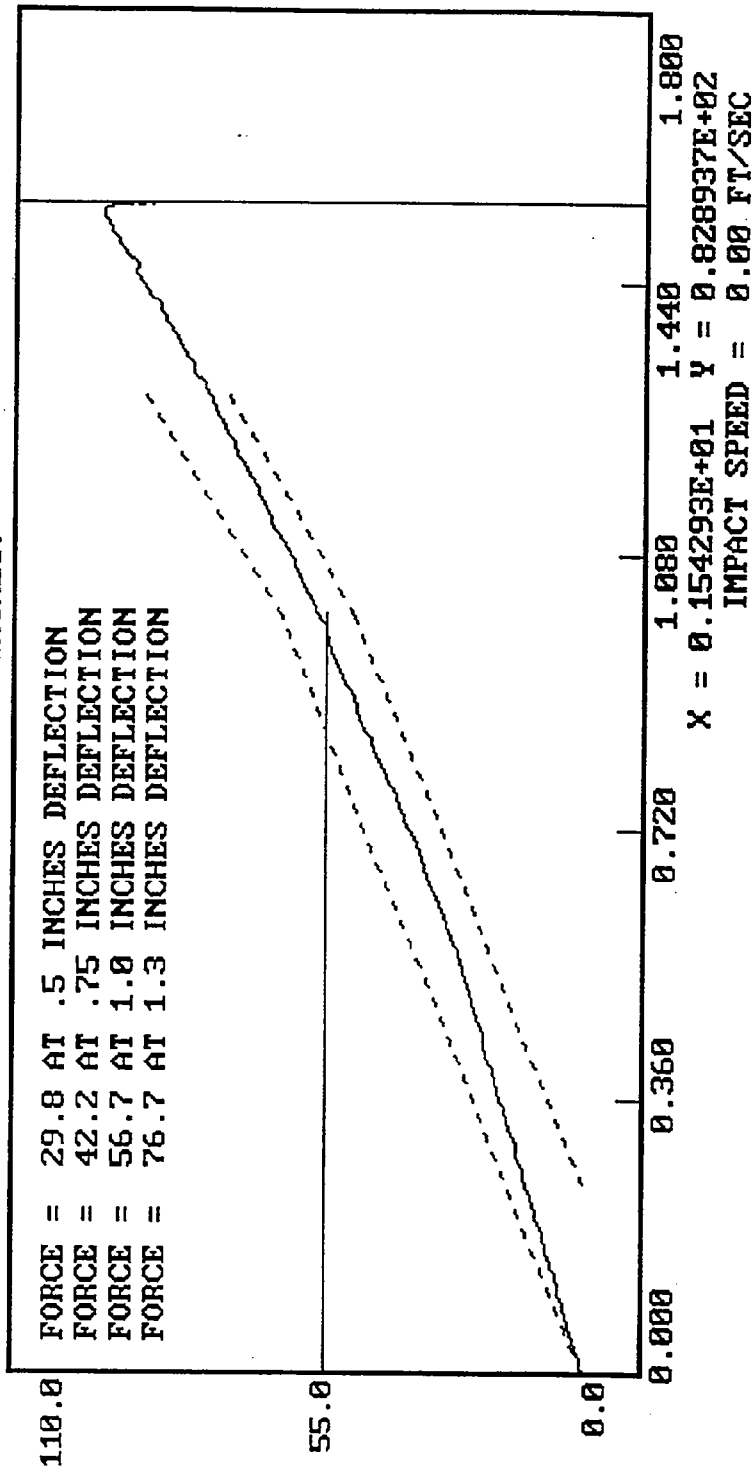
TECHNICIAN Jim White

APPROVED BY Dave Kishabe

DUMMY CALIBRATION - ABDOMEN COMPRESSION
 DUMMY # 274

02-14-1997 10:07

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



MGA RESEARCH CORPORATION

LUMBAR FLEXION TEST

SIDE IMPACT DUMMY (SID)

DATE: February 14, 1997

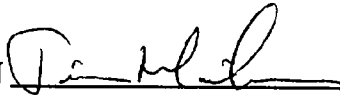
DUMMY NUMBER: 274

TEST NUMBER: D97435

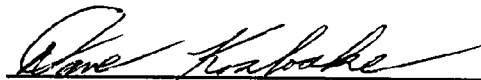
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	15%
FORCE @ 0°	0 - 6 lbs	0
FORCE @ 20°	22 - 34 lbs	22
FORCE @ 30°	34 - 46 lbs	35
FORCE @ 40°	46 - 58 lbs	47
RETURN ANGLE	12° maximum	1°

TEST MEETS SPECIFICATIONS

TECHNICIAN

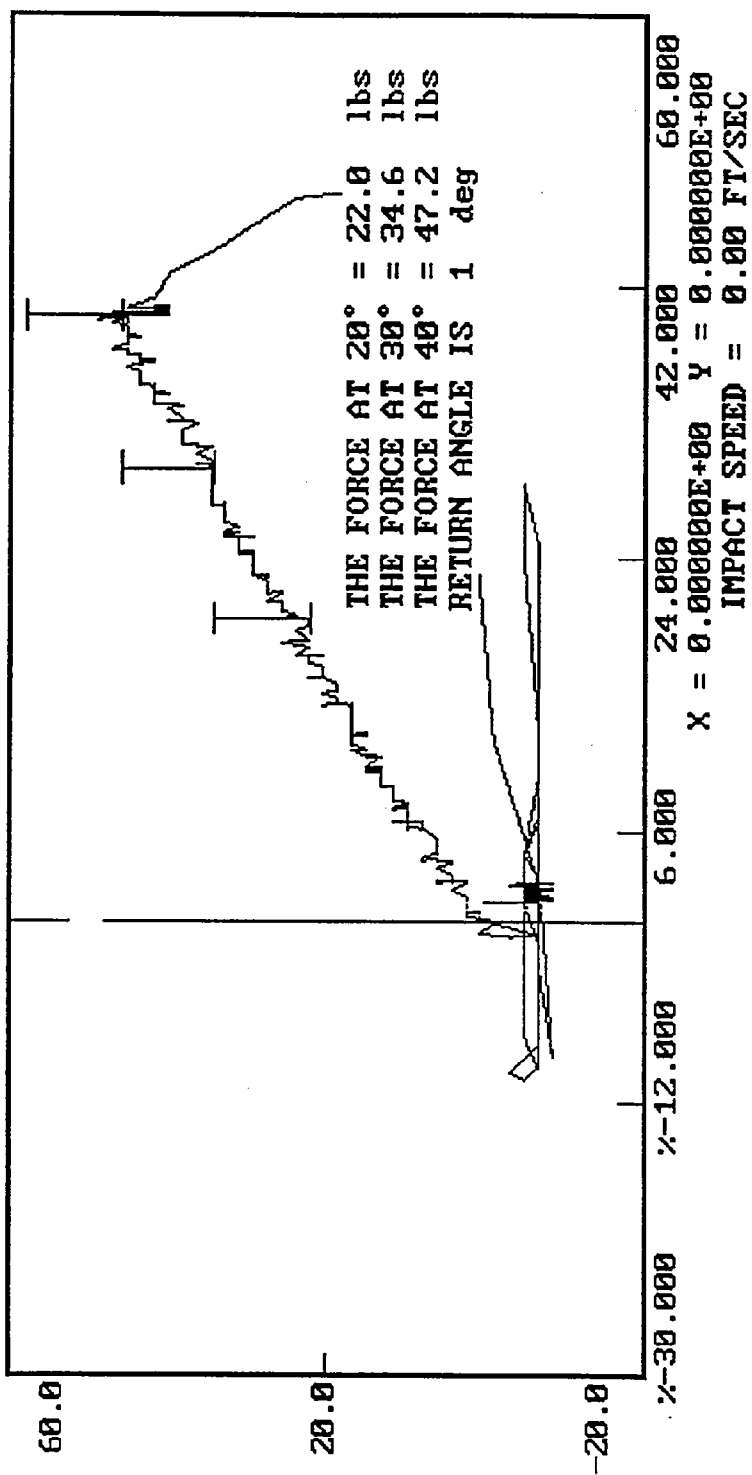


APPROVED BY



02-14-1997 11:06

DUMMY CALIBRATION - LUMBAR FLEXION
DUMMY # 274
FORCE (LBS) VS. TORSO ROTATION (DEGREES)



PRE-TEST CERTIFICATION DATA

Rear Dummy Serial Number: 275

Calibration Test Results Summary

Dummy Serial Number: 275

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.: 275

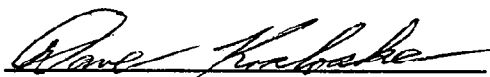
DATE OF VERIFICATION: February 17, 1997

DESCRIPTION	SPECIFICATION	TEST RESULTS
SH - Seated Height	35.0" - 35.8"	35.3
RH - Rib Height	19.75" - 20.50"	20.00
HP - Hip Pivot Height	3.9" ref.	3.9
RD - Rib From Back Line	9.0" to 9.5"	9.1
KV - Knee Pivot From Back Line	20.1" - 20.7"	20.5
SW - Knee Pivot to Floor	19.3" - 19.9"	19.4
HW - Hip Width	14.0" - 15.4"	14.5

MEASUREMENTS BY:



APPROVED BY:



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

DATE: February 11, 1997

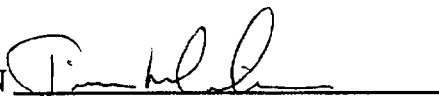
DUMMY NUMBER: 275

TEST NUMBER: D9744678

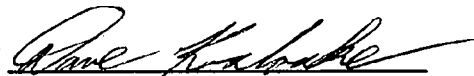
TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		66 - 78° F	70°
RELATIVE HUMIDITY		10 - 70%	15%
VELOCITY 10 ft/s	FORCE (lb.)	188 - 253	204
	DISPLACEMENT (in.)	1.18 - 1.38	1.34
VELOCITY 14 ft/s	FORCE (lb.)	389 - 472	429
	DISPLACEMENT (in.)	1.26 - 1.47	1.46
VELOCITY 20 ft/s	FORCE (lb.)	841 - 1000	858
	DISPLACEMENT (in.)	1.30 - 1.57	1.51

TEST MEETS SPECIFICATIONS

TECHNICIAN

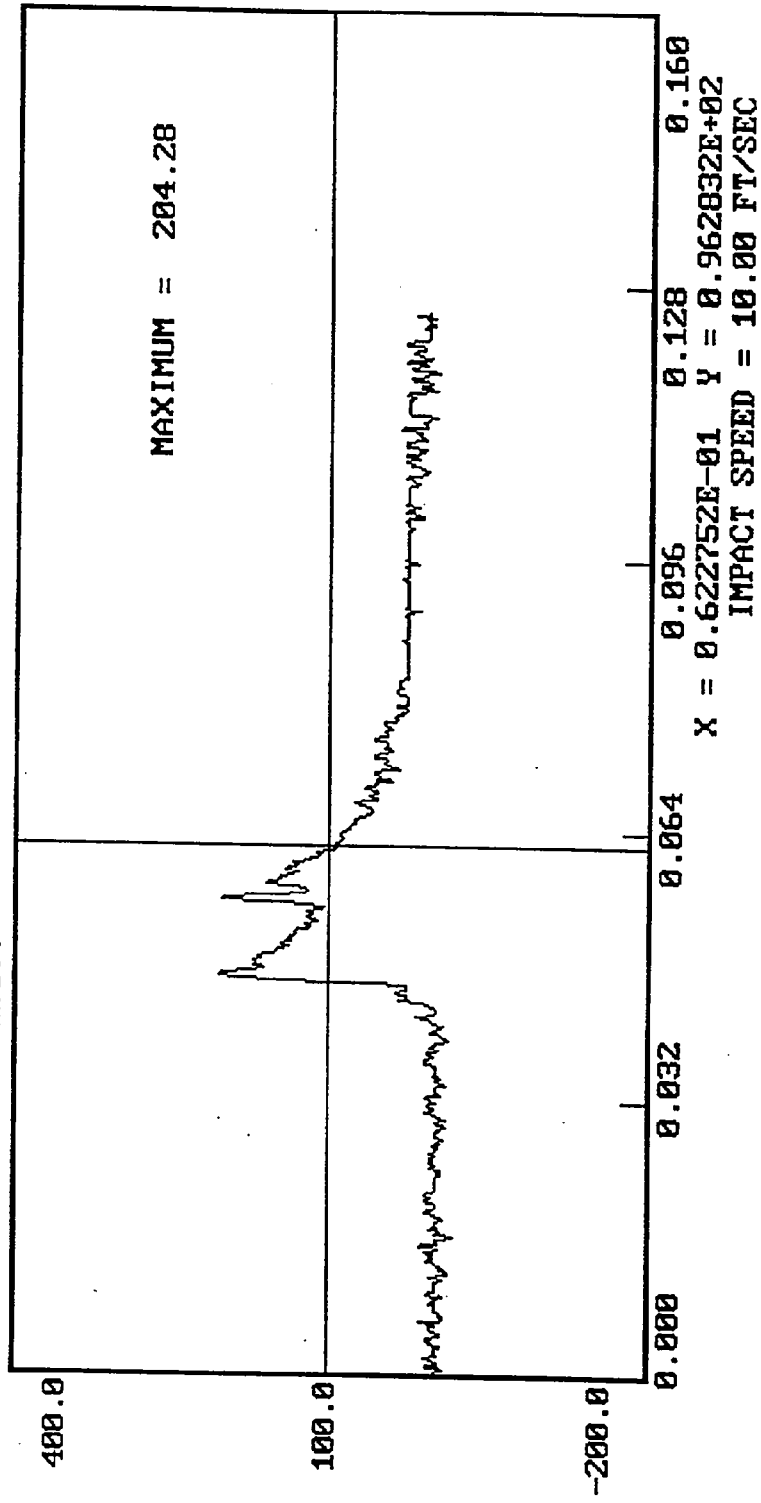


APPROVED BY

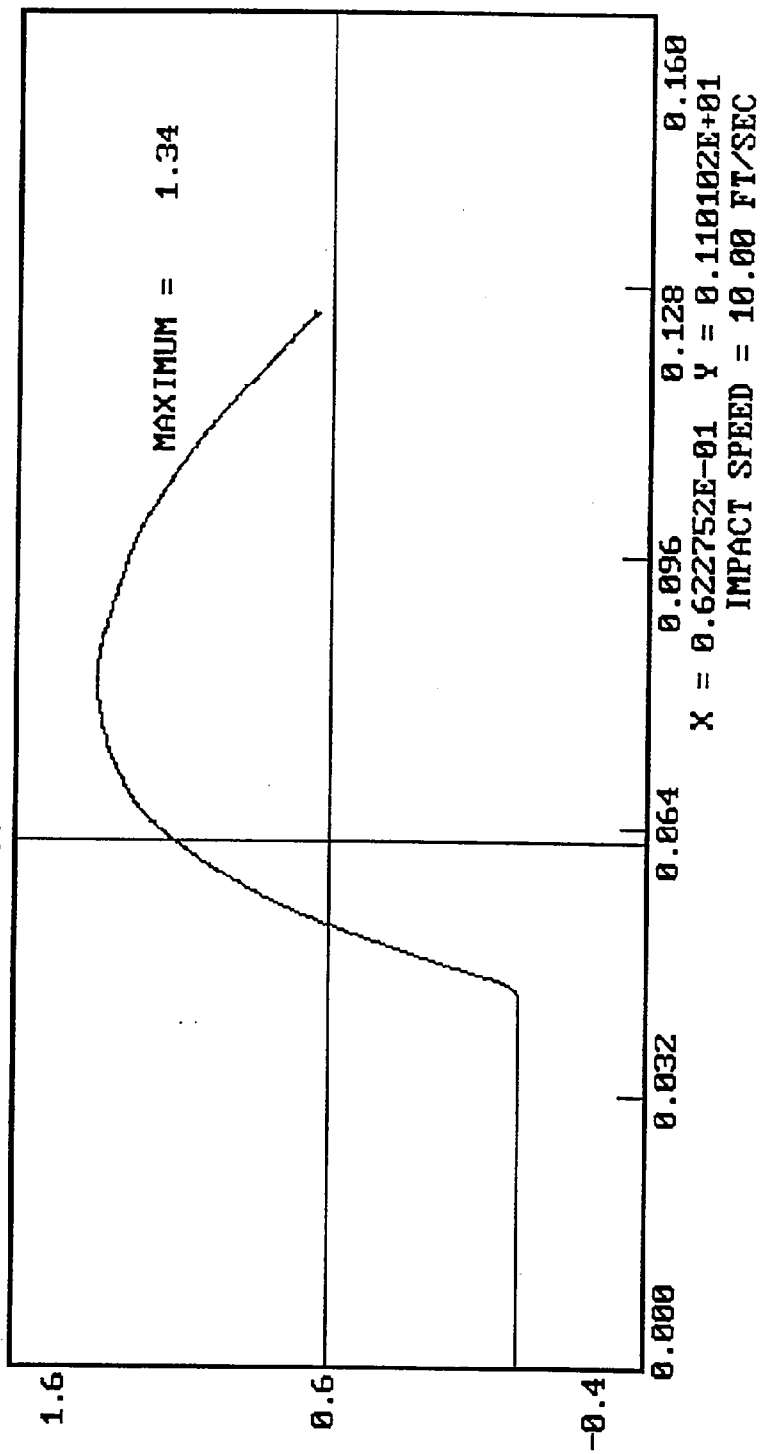


DUMMY CALIBRATION - DAMPENER BENCH TEST
 DUMMY # 275
 FORCE (LBS) VS. TIME ((SECONDS))

02-11-1997 13:53

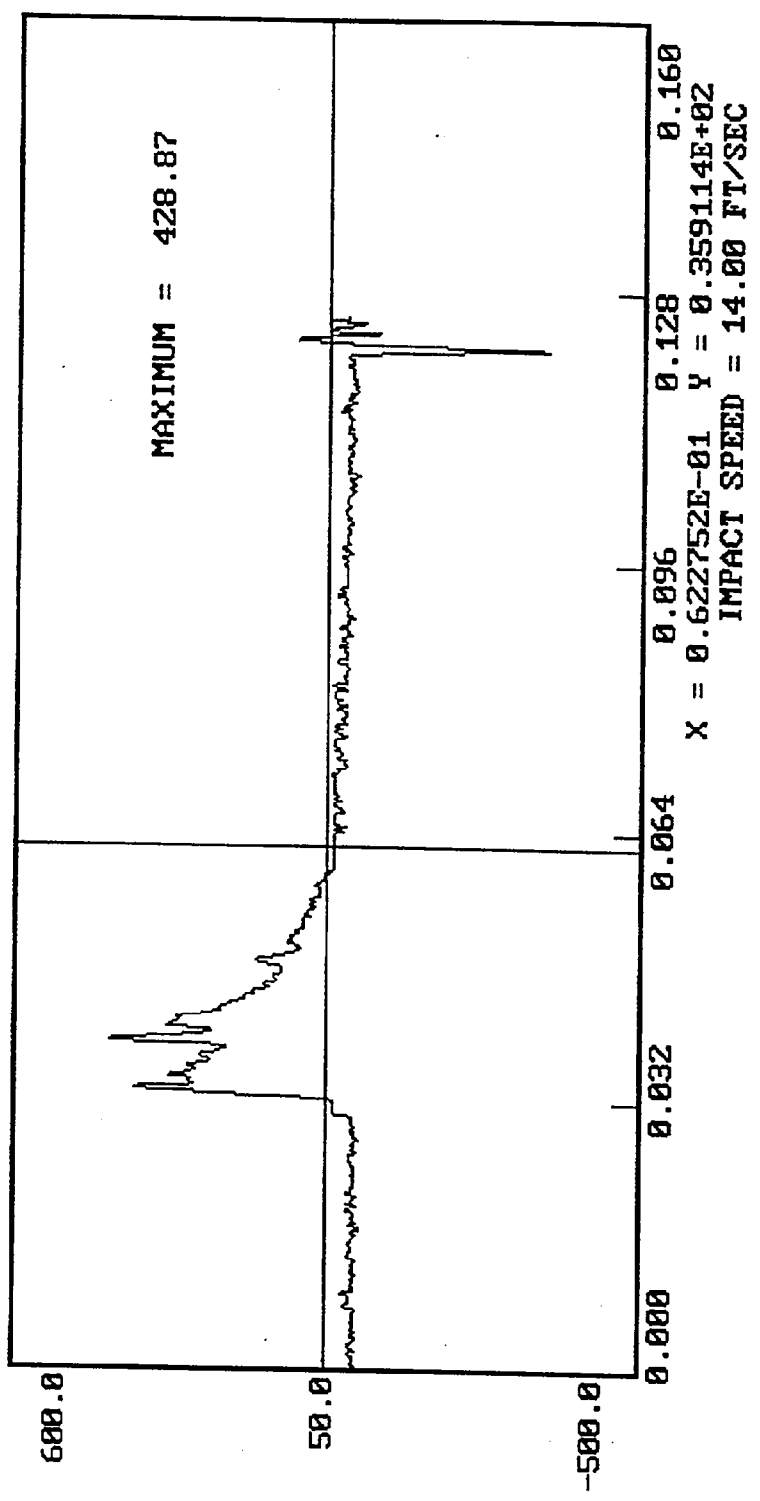


DUMMY CALIBRATION - DAMPENER BENCH TEST
 DUMMY # 275
 02-11-1997 13:53
 DISPLACEMENT (IN) VS. TIME ((SECONDS))



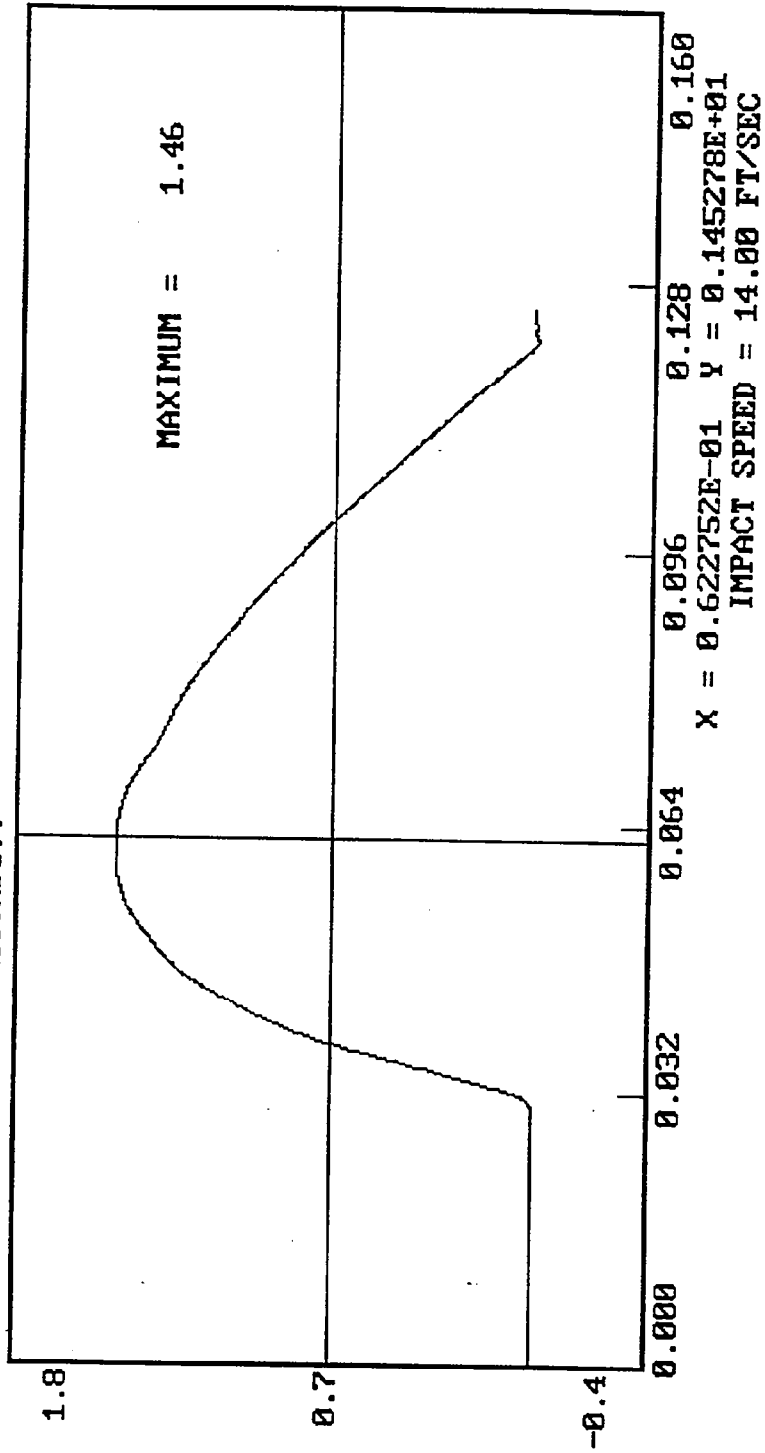
DUMMY CALIBRATION - DAMPENER BENCH TEST
DUMMY # 275
FORCE (LBS) VS. TIME ((SECONDS))

02-11-1997 14:01



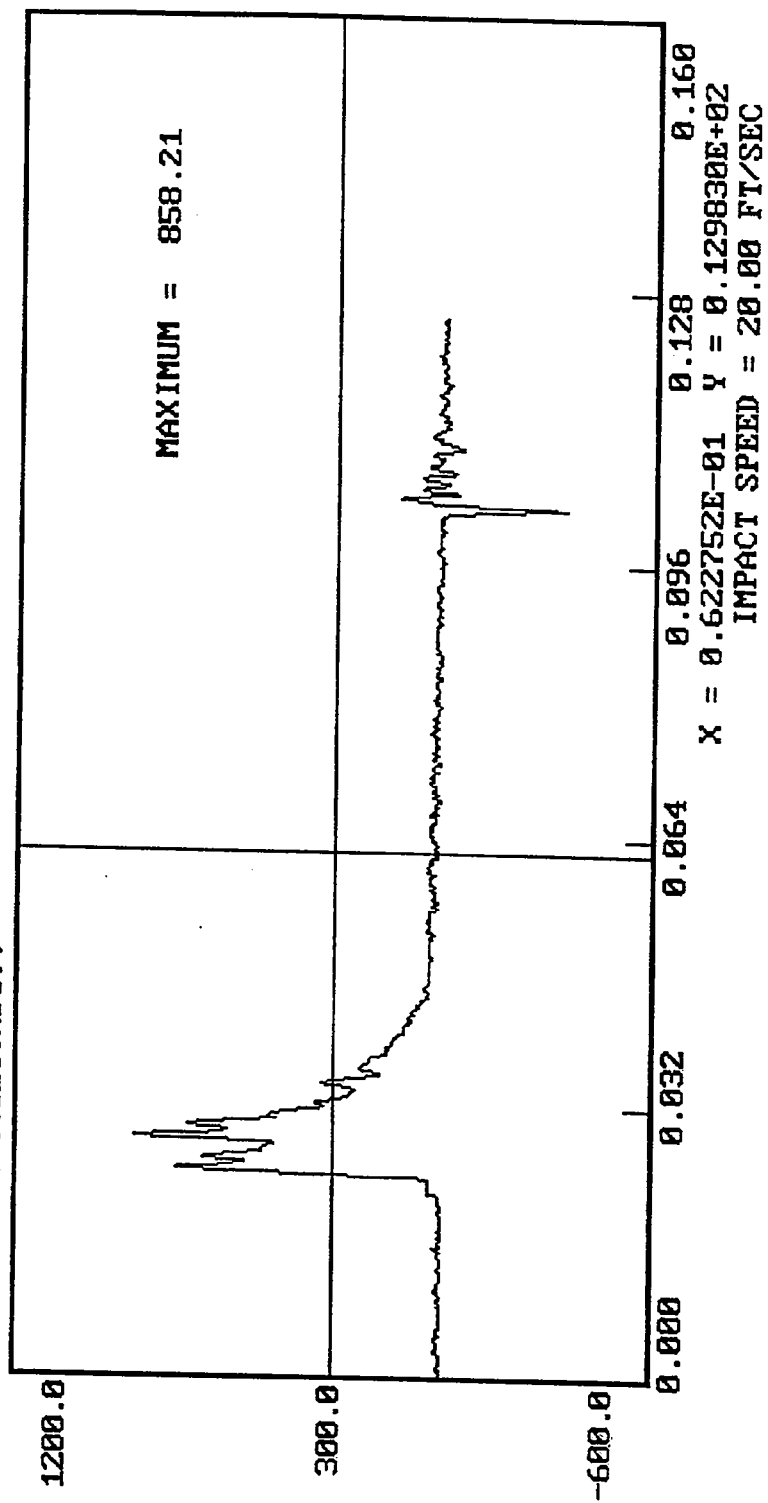
DUMMY CALIBRATION - DAMPENER BENCH TEST
 DUMMY # 275
 DISPLACEMENT (IN) VS. TIME ((SECONDS))

02-11-1997 14:01



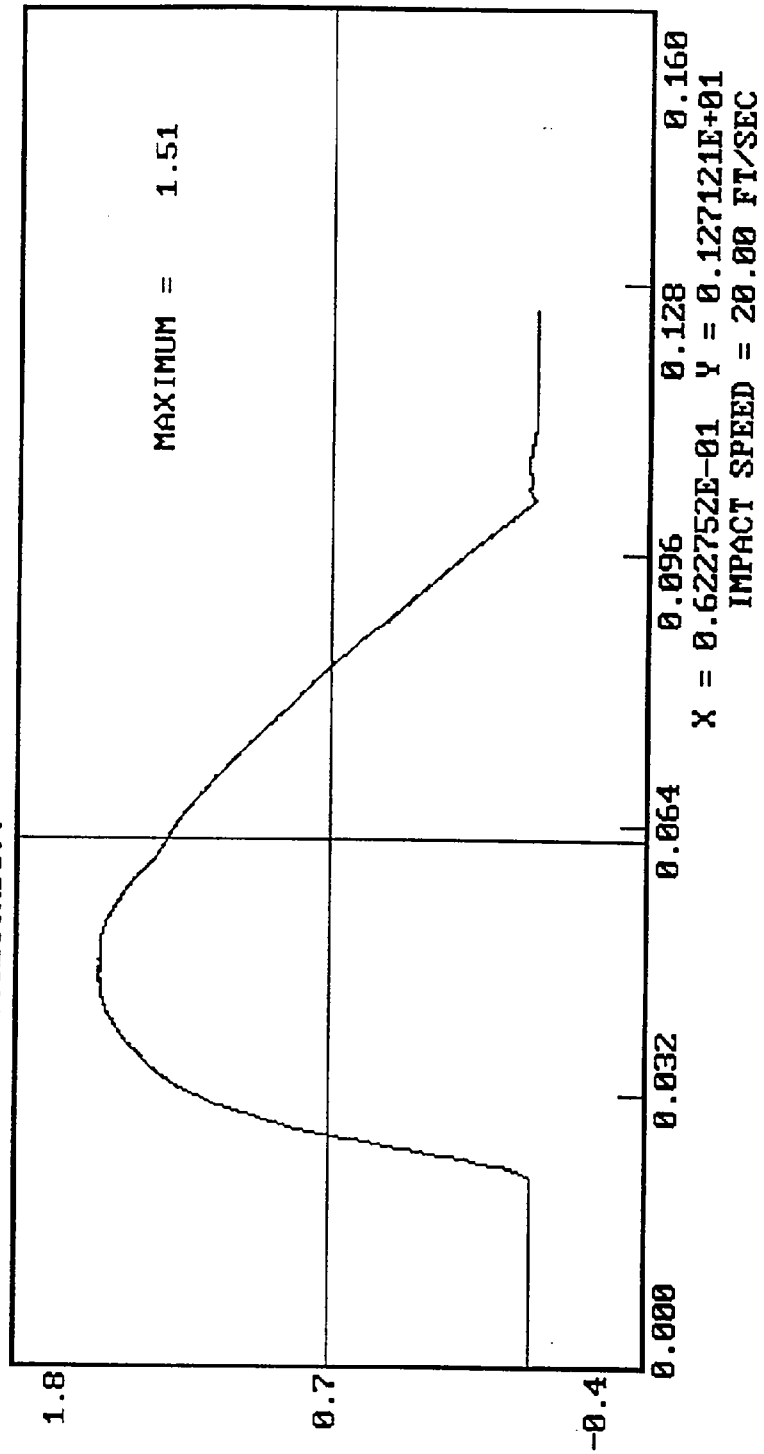
DUMMY CALIBRATION - DAMPENER BENCH TEST
DUMMY # 275
FORCE (LBS) VS. TIME ((SECONDS))

02-11-1997 14:20



DUMMY CALIBRATION - DAMPENER BENCH TEST
DUMMY # 275
DISPLACEMENT (IN) VS. TIME ((SECONDS))

02-11-1997 14:20



MGA RESEARCH CORPORATION

THORAX IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: February 17, 1997

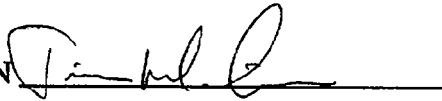
DUMMY NUMBER: 275

TEST NUMBER: D97442

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	11%
PROBE SPEED	13.8 - 14.2 fps	14.2
UPPER RIB	37 - 46 g's	39
LOWER RIB	37 - 46 g's	37
LOWER SPINE	15 - 22 g's	17

TEST MEETS SPECIFICATIONS

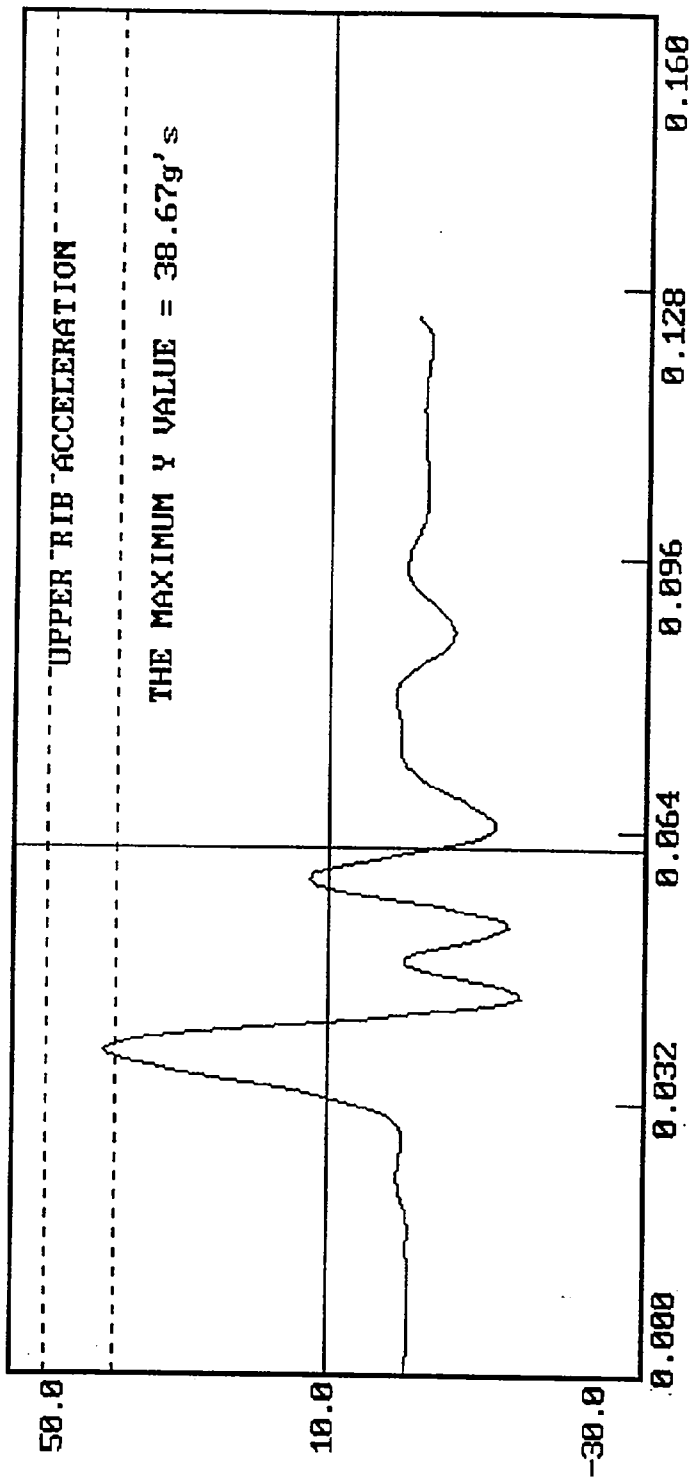
TECHNICIAN



APPROVED BY



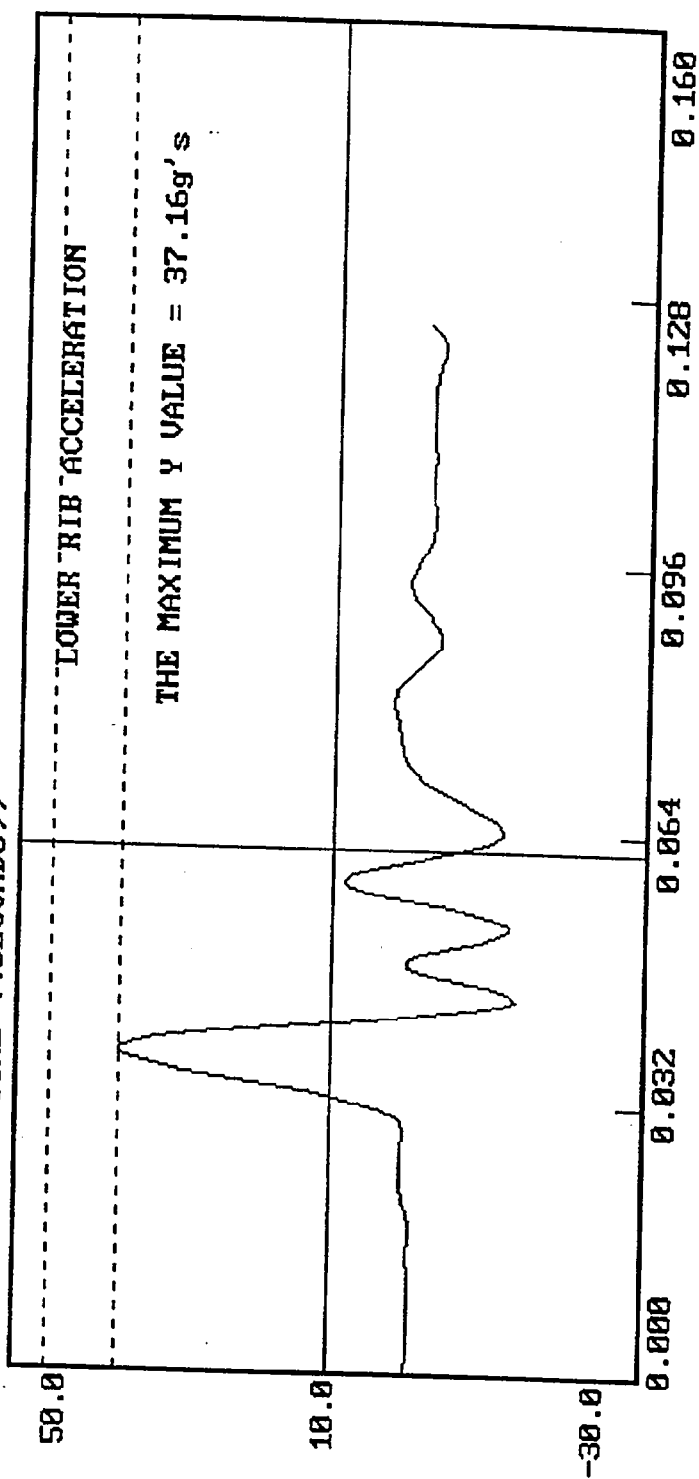
DUMMY CALIBRATION - THORAX IMPACT
DUMMY # 275
02-17-1997 09:36
ACCELERATION (G'S) VS. TIME ((SECONDS))



IMPACT SPEED = 14.16 FT/SEC

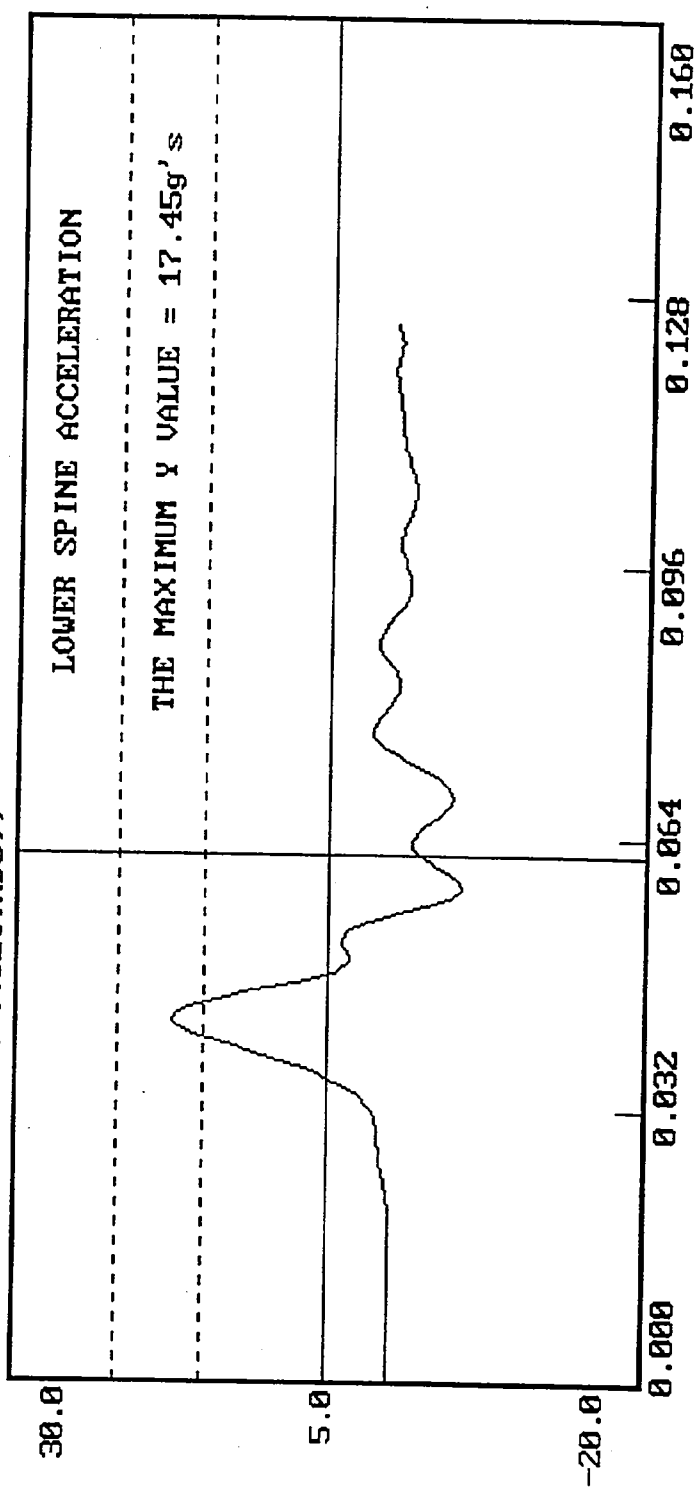
DUMMY CALIBRATION - THORAX IMPACT
DUMMY # 275
02-17-1997 09:36

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



IMPACT SPEED = 14.16 FT/SEC

DUMMY CALIBRATION - THORAX IMPACT
DUMMY # 275
02-17-1997 09:37
ACCELERATION (G'S) VS. TIME ((SECONDS))



IMPACT SPEED = 14.16 FT/SEC

MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: February 17, 1997

DUMMY NUMBER: 275

TEST NUMBER: D97443

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	11%
PROBE SPEED	13.8 - 14.2 f/s	14.1
PELVIS ACCELERATION	40 - 60 g's	50

TEST MEETS SPECIFICATIONS

TECHNICIAN



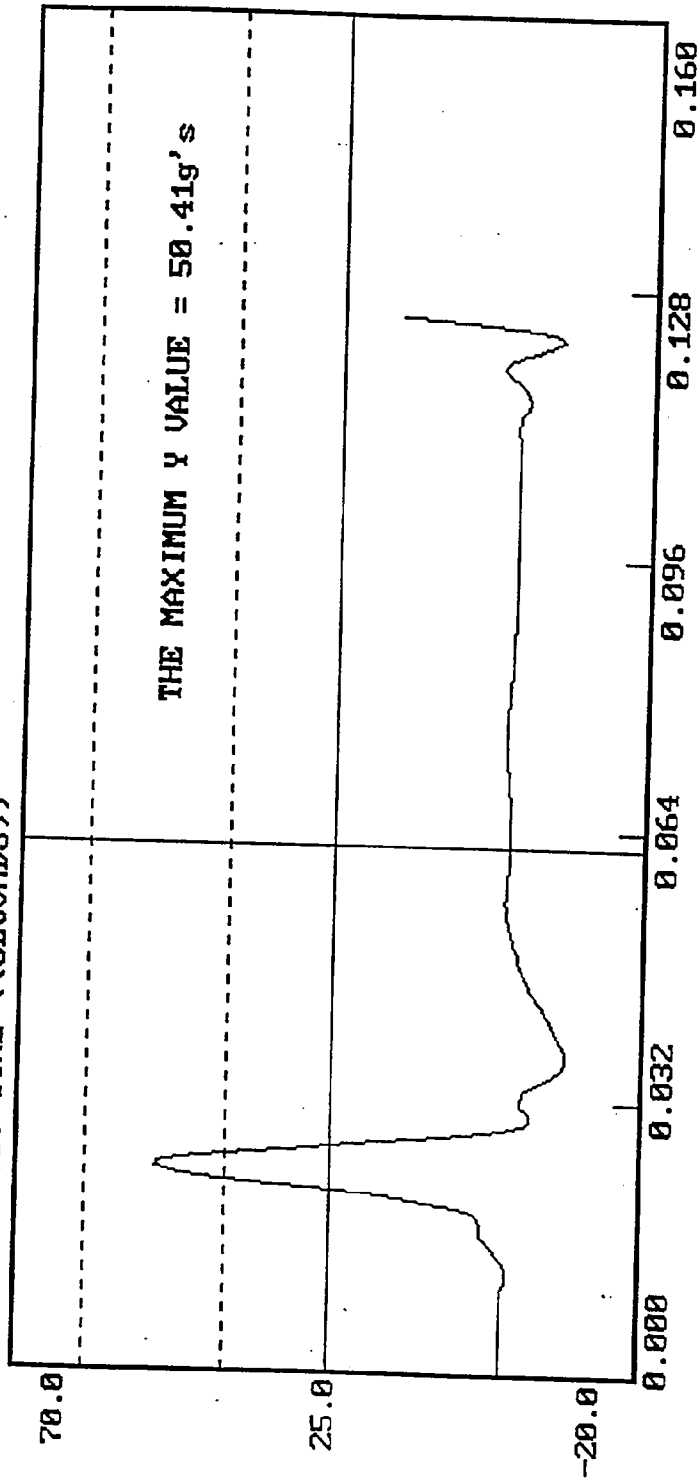
APPROVED BY



DUMMY CALIBRATION - PELVIS IMPACT
DUMMY # 275

02-17-1997 10:04

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



IMPACT SPEED = 14.14 FT/SEC

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

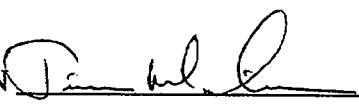
DATE: February 14, 1997

DUMMY NUMBER: 275

TEST NUMBER: D97444

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	15%
FORCE @ 0.5 in	23.3 - 36.5 lbs	32.5
FORCE @ 0.75 in	36.7 - 49.8 lbs	45.9
FORCE @ 1.0 in	50 - 63 lbs	61
FORCE @ 1.3 in	73 - 88 lbs	83

TEST MEETS SPECIFICATIONS

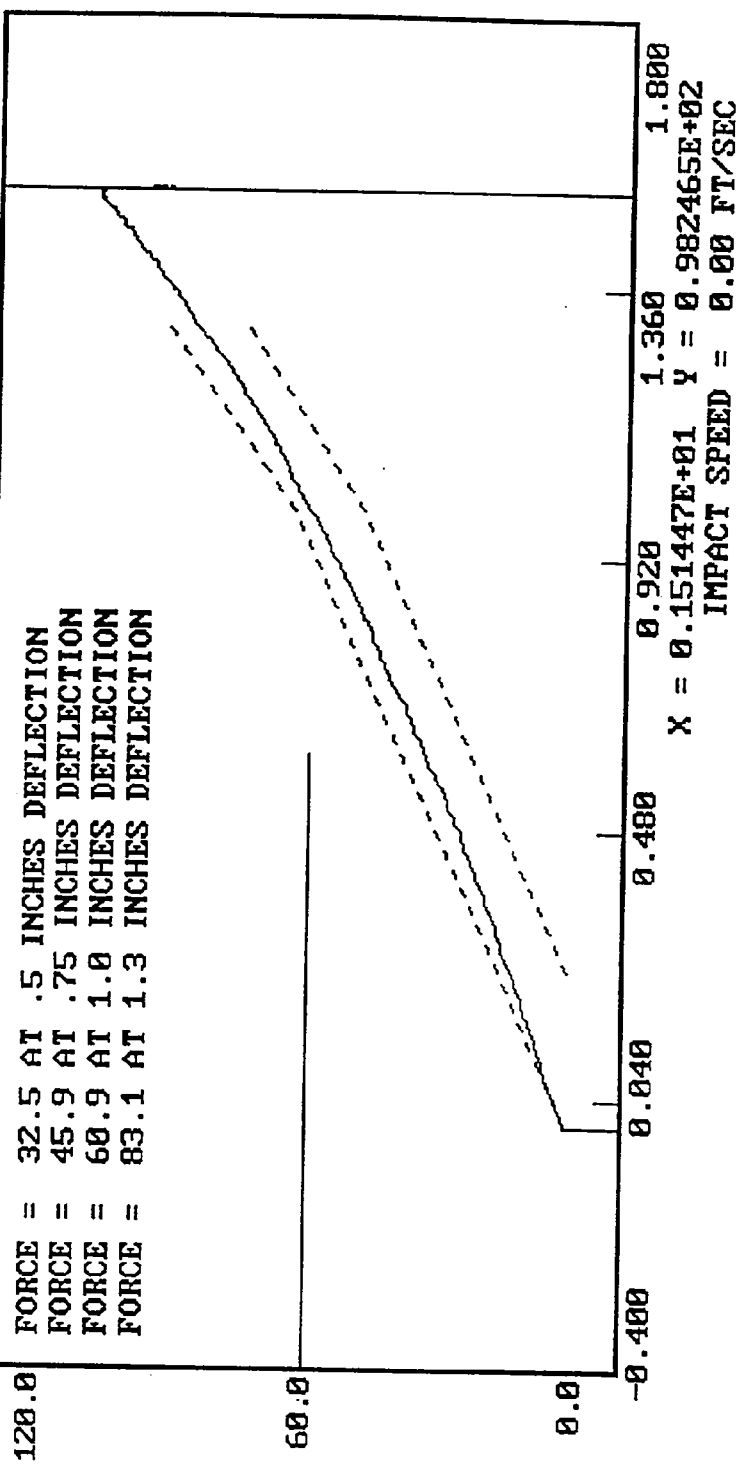
TECHNICIAN 

APPROVED BY 

DUMMY CALIBRATION - ABDOMEN COMPRESSION
 DUMMY # 275

02-14-1997 10:23

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



MGA RESEARCH CORPORATION

LUMBAR FLEXION TEST

SIDE IMPACT DUMMY (SID)

DATE: February 14, 1997

DUMMY NUMBER: 275

TEST NUMBER: D97445

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	15%
FORCE @ 0°	0 - 6 lbs	0
FORCE @ 20°	22 - 34 lbs	30
FORCE @ 30°	34 - 46 lbs	43
FORCE @ 40°	46 - 58 lbs	53
RETURN ANGLE	12° maximum	1°

TEST MEETS SPECIFICATIONS

TECHNICIAN

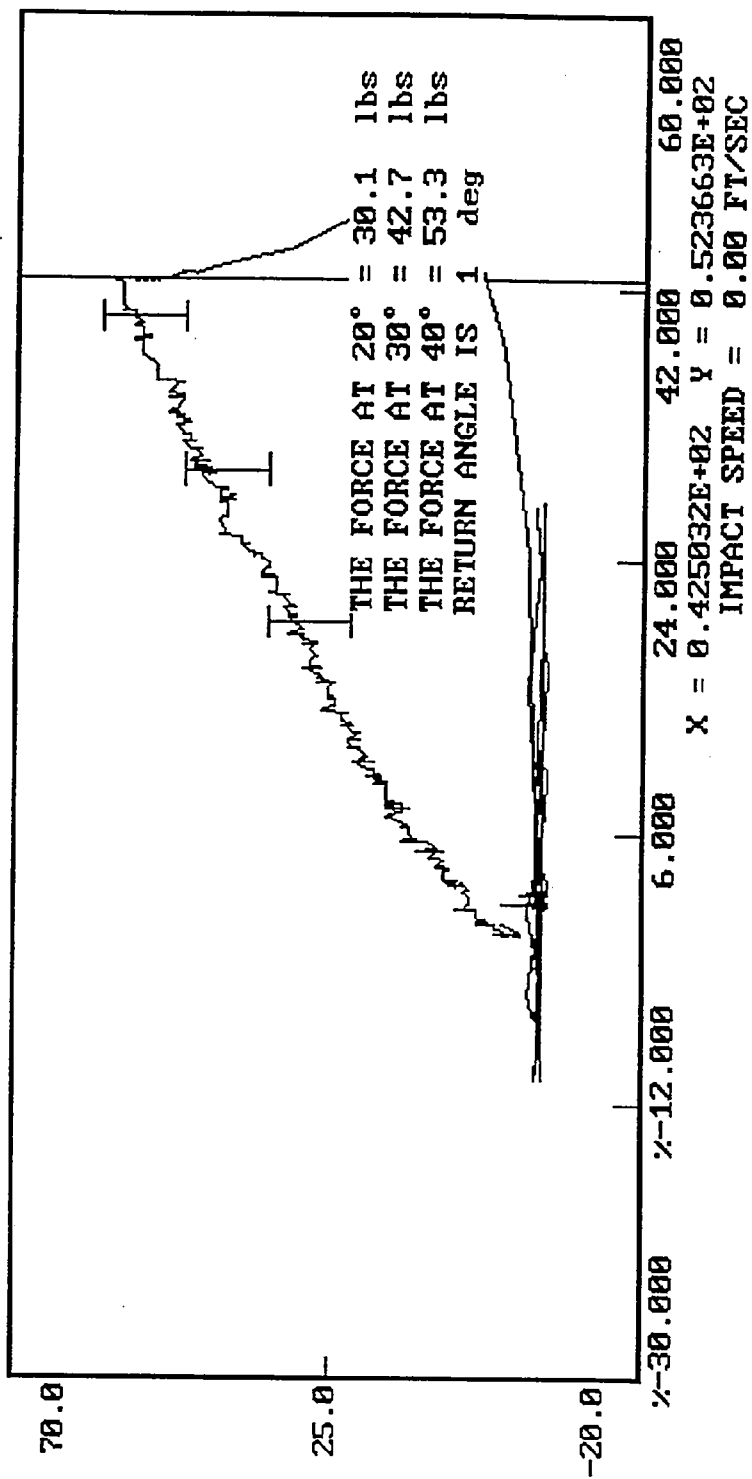
Tim M. L.

APPROVED BY

Rene K. K.

DUMMY CALIBRATION - LUMBAR FLEXION
 DUMMY # 275
 FORCE (LBS) VS. TORSO ROTATION (DEGREES)

02-14-1997 12:42



POST-TEST CERTIFICATION DATA

Front Dummy Serial Number: 274

Calibration Test Results Summary

Dummy Serial Number: 274

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.: 274

DATE OF VERIFICATION: March 3, 1997

DESCRIPTION	SPECIFICATION	TEST RESULTS
SH - Seated Height	35.0" - 35.8"	35.4
RH - Rib Height	19.75" - 20.50"	20.25
HP - Hip Pivot Height	3.9" ref.	3.9
RD - Rib From Back Line	9.0" to 9.5"	9.1
KV - Knee Pivot From Back Line	20.1" - 20.7"	20.5
SW - Knee Pivot to Floor	19.3" - 19.9"	19.6
HW - Hip Width	14.0" - 15.4"	14.6

MEASUREMENTS BY:



APPROVED BY:



MGA RESEARCH CORPORATION

THORAX IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: February 27, 1997

DUMMY NUMBER: 274

TEST NUMBER: D97552

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	25%
PROBE SPEED	13.8 - 14.2 fps	14.0
UPPER RIB	37 - 46 g's	45
LOWER RIB	37 - 46 g's	41
LOWER SPINE	15 - 22 g's	21

TEST MEETS SPECIFICATIONS

TECHNICIAN



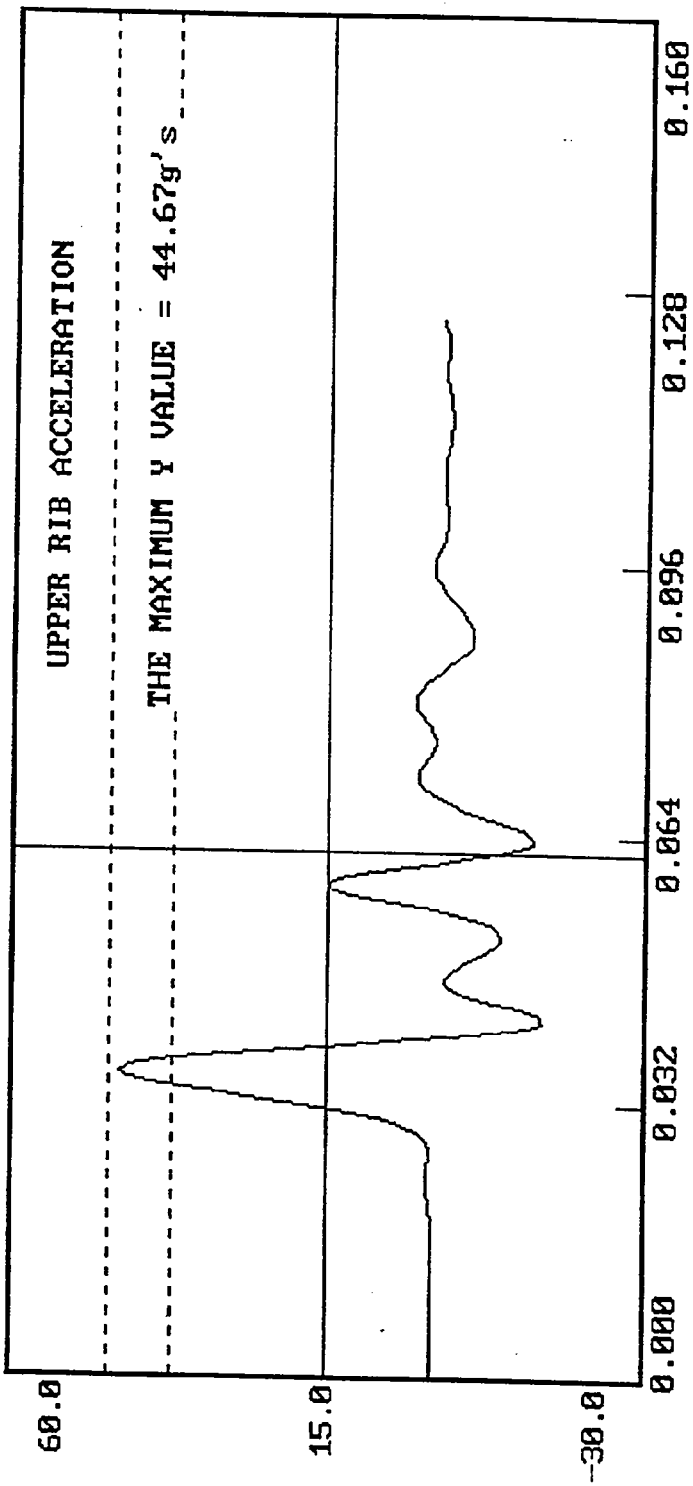
APPROVED BY



DUMMY CALIBRATION - THORAX IMPACT
DUMMY # 274

02-27-1997 16:49

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

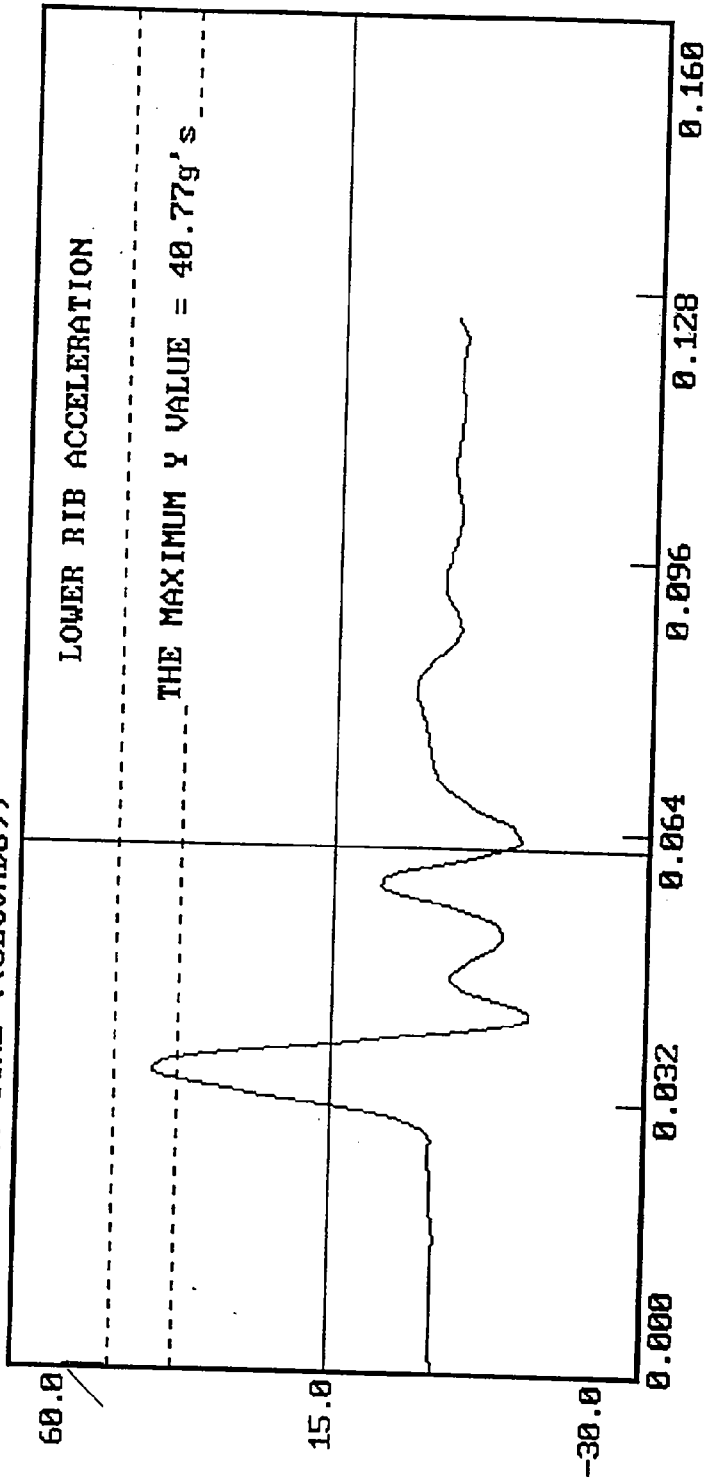


IMPACT SPEED = 14.01 FT/SEC

DUMMY CALIBRATION - THORAX IMPACT
DUMMY # 274

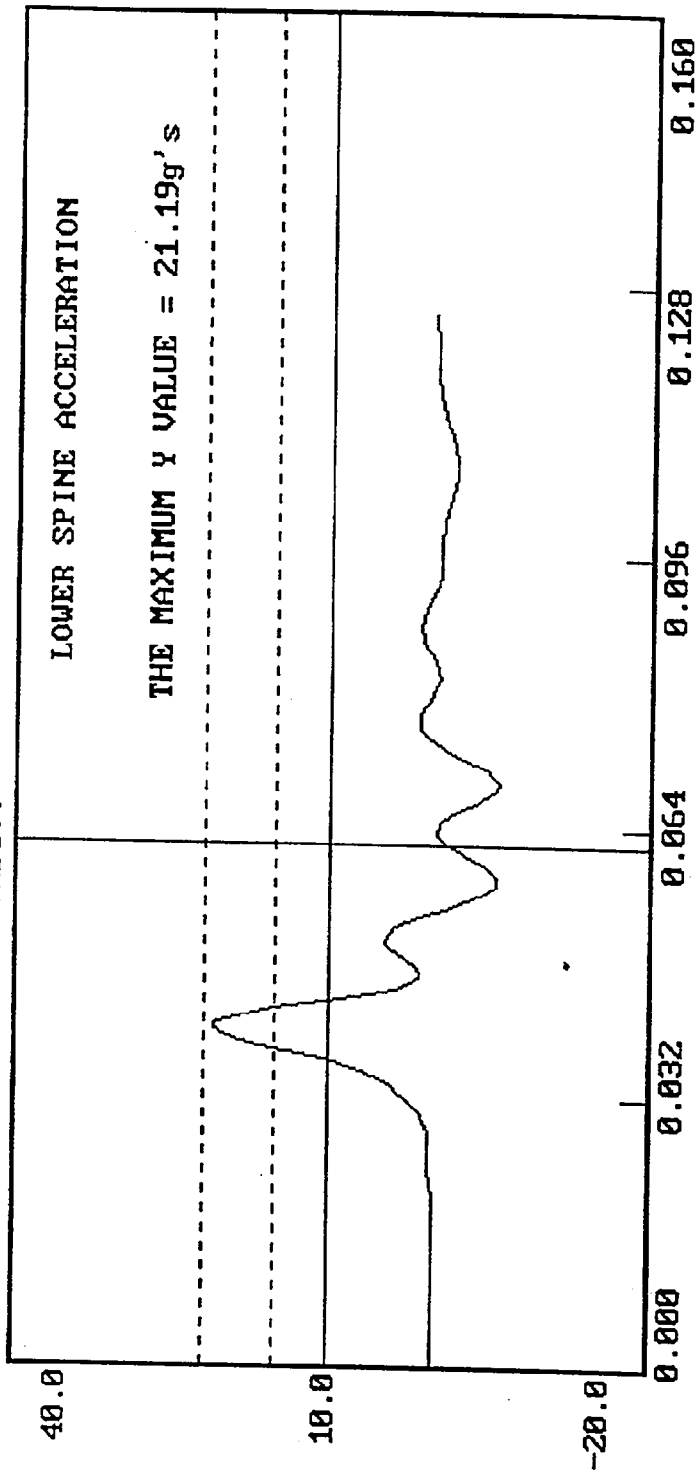
02-27-1997 16:49

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



IMPACT SPEED = 14.01 FT/SEC

DUMMY CALIBRATION - THORAX IMPACT
DUMMY # 274
ACCELERATION (G'S) VS. TIME ((SECONDS))
02-27-1997 16:49



IMPACT SPEED = 14.01 FT/SEC

MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: February 28, 1997

DUMMY NUMBER: 274

TEST NUMBER: D97553

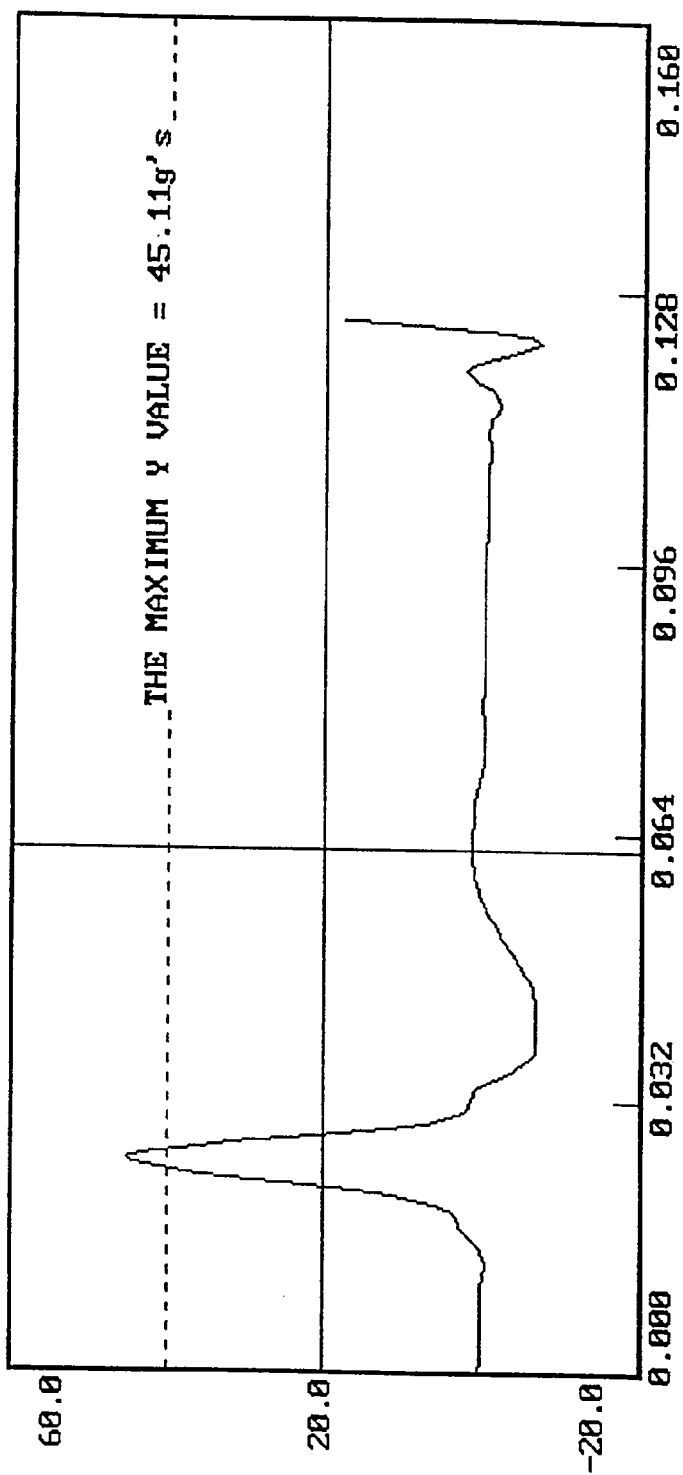
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	20%
PROBE SPEED	13.8 - 14.2 f/s	14.1
PELVIS ACCELERATION	40 - 60 g's	45

TEST MEETS SPECIFICATIONS

TECHNICIAN Jim Blatch

APPROVED BY Rene Kachake

DUMMY CALIBRATION - PELVIS IMPACT
DUMMY # 274
02-28-1997 14:23
ACCELERATION (G'S) VS. TIME ((SECONDS))



IMPACT SPEED = 14.13 FT/SEC

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

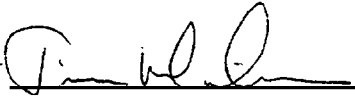
DATE: March 3, 1997

DUMMY NUMBER: 274

TEST NUMBER: D97554

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	20%
FORCE @ 0.5 in	23.3 - 36.5 lbs	30.5
FORCE @ 0.75 in	36.7 - 49.8 lbs	43.0
FORCE @ 1.0 in	50 - 63 lbs	58
FORCE @ 1.3 in	73 - 88 lbs	78

TEST MEETS SPECIFICATIONS

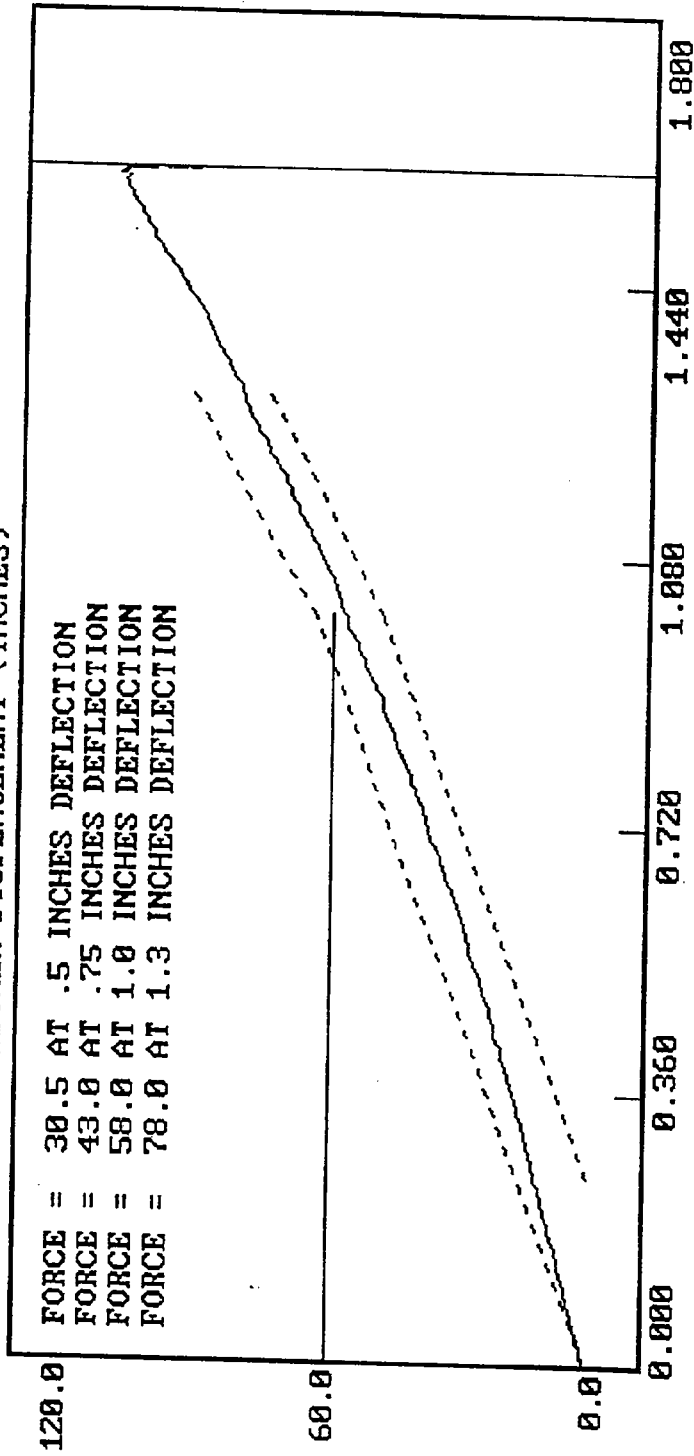
TECHNICIAN 

APPROVED BY 

DUMMY CALIBRATION - ABDOMEN COMPRESSION
DUMMY # 274

03-03-1997 10:42

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



IMPACT SPEED = 0.00 FT/SEC

MGA RESEARCH CORPORATION

LUMBAR FLEXION TEST

SIDE IMPACT DUMMY (SID)

DATE: March 3, 1997

DUMMY NUMBER: 274

TEST NUMBER: D97555

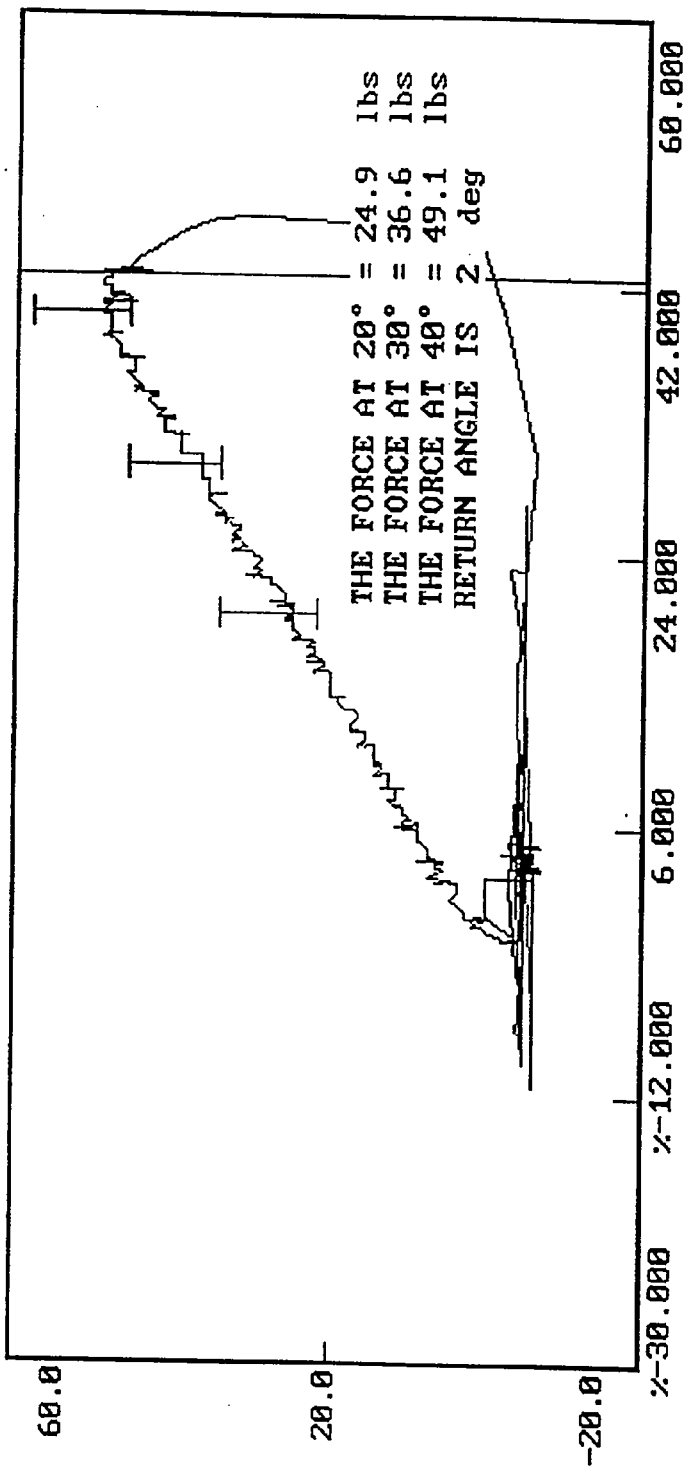
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	16%
FORCE @ 0°	0 - 6 lbs	0
FORCE @ 20°	22 - 34 lbs	25
FORCE @ 30°	34 - 46 lbs	37
FORCE @ 40°	46 - 58 lbs	49
RETURN ANGLE	12° maximum	2°

TEST MEETS SPECIFICATIONS

TECHNICIAN Jim H. H.

APPROVED BY Steve Kishaka

DUMMY CALIBRATION - LUMBAR FLEXION
 DUMMY # 274
 03-03-1997 08:44
 FORCE (LBS) VS. TORSO ROTATION (DEGREES)



IMPACT SPEED = 0.00 FT/SEC

POST-TEST CERTIFICATION DATA

Rear Dummy Serial Number: 275

Calibration Test Results Summary

Dummy Serial Number: 275

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.: 275

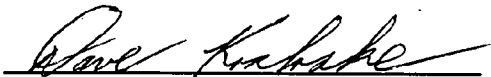
DATE OF VERIFICATION: March 3, 1997

DESCRIPTION	SPECIFICATION	TEST RESULTS
SH - Seated Height	35.0" - 35.8"	35.3
RH - Rib Height	19.75" - 20.50"	20.00
HP - Hip Pivot Height	3.9" ref.	3.9
RD - Rib From Back Line	9.0" to 9.5"	9.1
KV - Knee Pivot From Back Line	20.1" - 20.7"	20.5
SW - Knee Pivot to Floor	19.3" - 19.9"	19.4
HW - Hip Width	14.0" - 15.4"	14.5

MEASUREMENTS BY:



APPROVED BY:



MGA RESEARCH CORPORATION

THORAX IMPACT TEST

SIDE IMPACT DUMMY (SID)

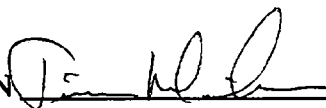
DATE: February 28, 1997

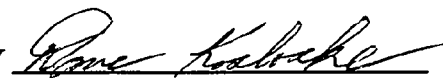
DUMMY NUMBER: 275

TEST NUMBER: D97562

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	20%
PROBE SPEED	13.8 - 14.2 fps	14.2
UPPER RIB	37 - 46 g's	40
LOWER RIB	37 - 46 g's	41
LOWER SPINE	15 - 22 g's	19

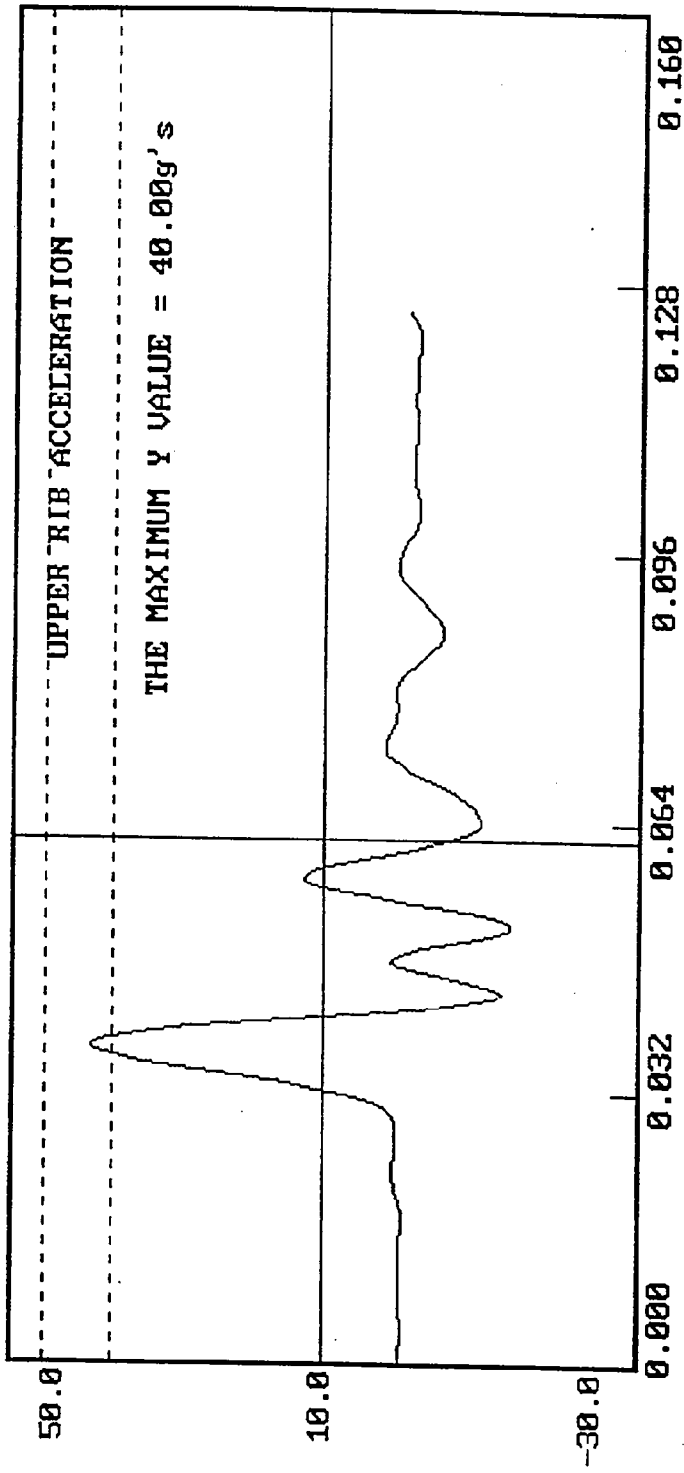
TEST MEETS SPECIFICATIONS

TECHNICIAN 

APPROVED BY 

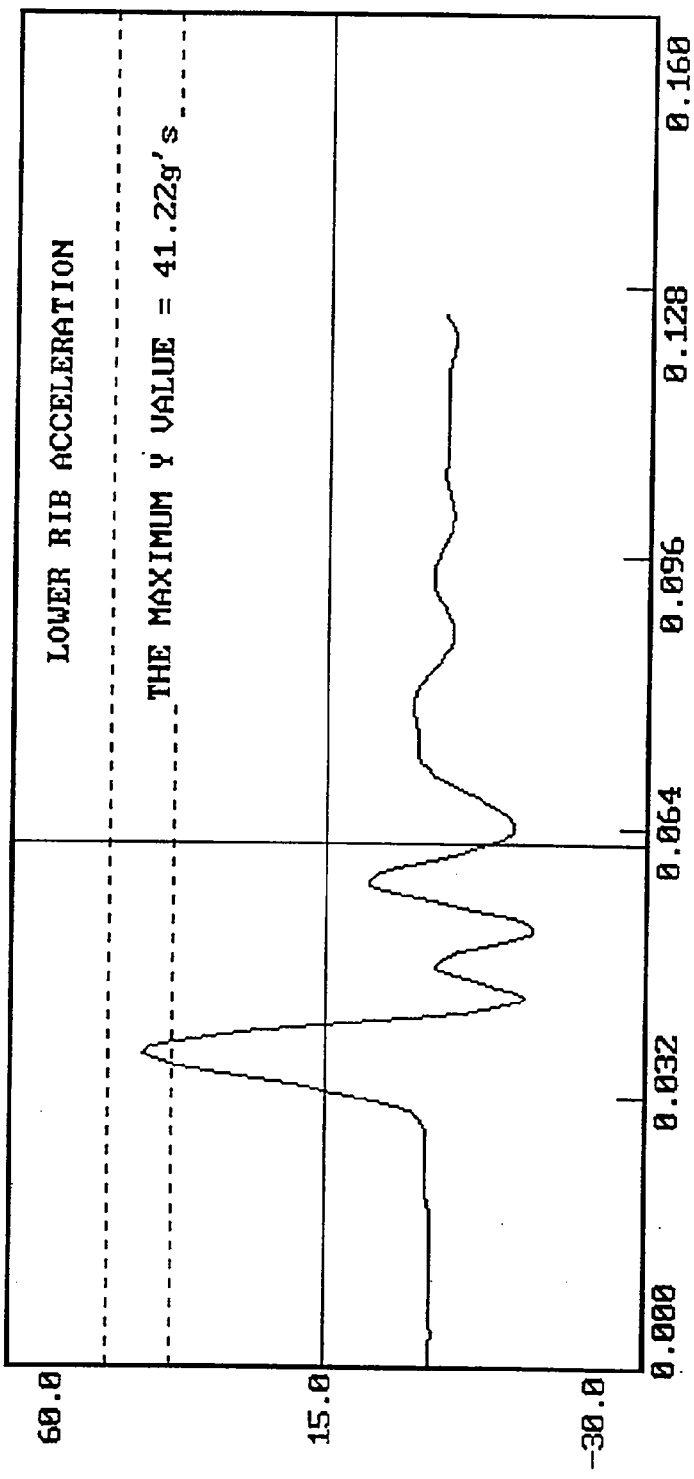
DUMMY CALIBRATION - THORAX IMPACT
DUMMY # 275
02-28-1997 11:11

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



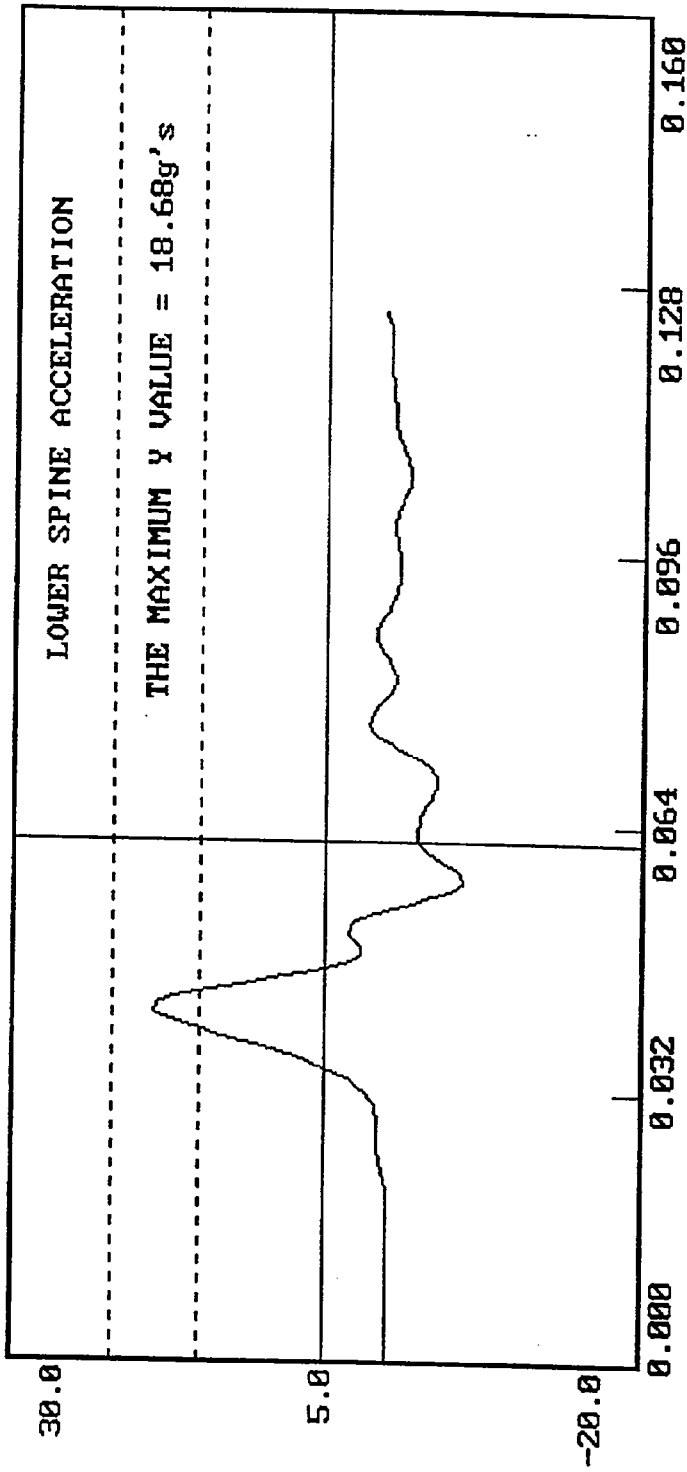
IMPACT SPEED = 14.18 FT/SEC

DUMMY CALIBRATION - THORAX IMPACT
 DUMMY # 275
 02-28-1997 11:11
 ACCELERATION (G'S) VS. TIME ((SECONDS))



IMPACT SPEED = 14.18 FT/SEC

DUMMY CALIBRATION - THORAX IMPACT
DUMMY # 275
02-28-1997 11:52
ACCELERATION (G'S) VS. TIME ((SECONDS))



IMPACT SPEED = 14.18 FT/SEC

MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: February 28, 1997

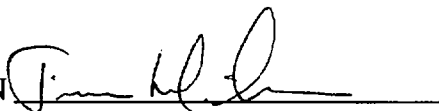
DUMMY NUMBER: 275

TEST NUMBER: D97563

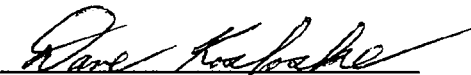
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	20%
PROBE SPEED	13.8 - 14.2 f/s	14.2
PELVIS ACCELERATION	40 - 60 g's	53

TEST MEETS SPECIFICATIONS

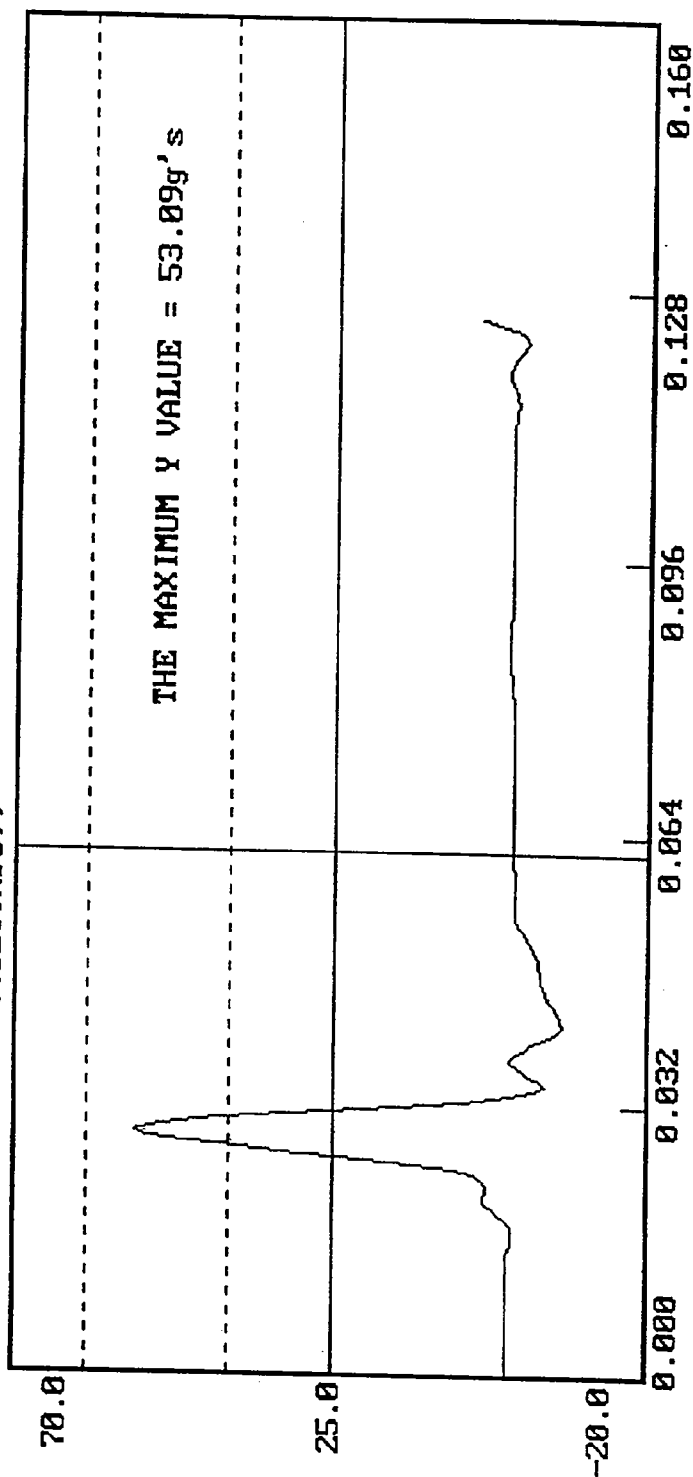
TECHNICIAN



APPROVED BY



DUMMY CALIBRATION - PELVIS IMPACT
DUMMY # 275
02-28-1997 13:05
ACCELERATION (G'S) VS. TIME ((SECONDS))



IMPACT SPEED = 14.19 FT/SEC

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

DATE: March 3, 1997

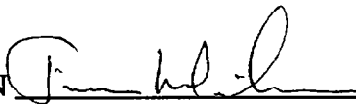
DUMMY NUMBER: 275

TEST NUMBER: D97564

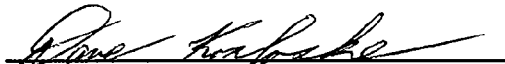
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	20%
FORCE @ 0.5 in	23.3 - 36.5 lbs	30.6
FORCE @ 0.75 in	36.7 - 49.8 lbs	42.6
FORCE @ 1.0 in	50 - 63 lbs	56
FORCE @ 1.3 in	73 - 88 lbs	76

TEST MEETS SPECIFICATIONS

TECHNICIAN



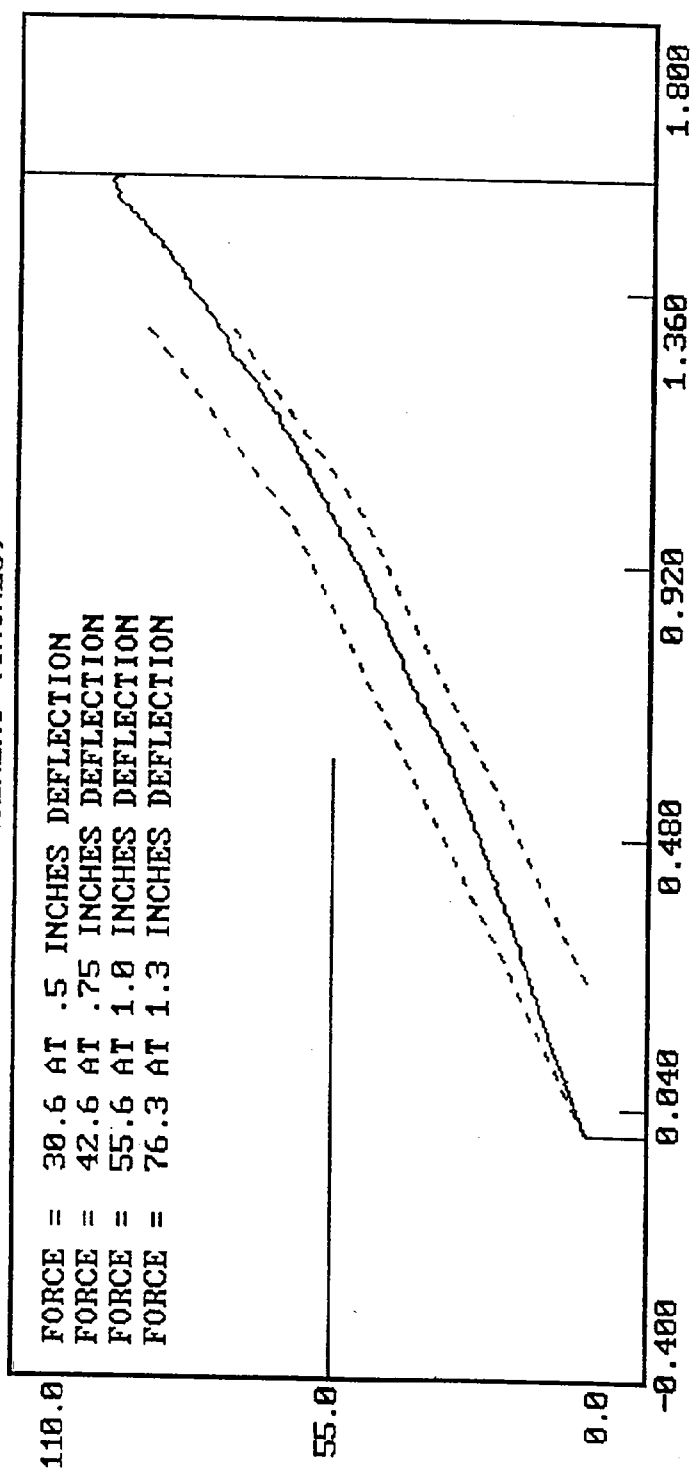
APPROVED BY



DUMMY CALIBRATION - ABDOMEN COMPRESSION
 DUMMY # 275

03-03-1997 11:06

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



IMPACT SPEED = 0.00 FT/SEC

MGA RESEARCH CORPORATION

LUMBAR FLEXION TEST

SIDE IMPACT DUMMY (SID)

DATE: March 3, 1997

DUMMY NUMBER: 275

TEST NUMBER: D97565

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	16%
FORCE @ 0°	0 - 6 lbs	0
FORCE @ 20°	22 - 34 lbs	27
FORCE @ 30°	34 - 46 lbs	36
FORCE @ 40°	46 - 58 lbs	52
RETURN ANGLE	12° maximum	3°

TEST MEETS SPECIFICATIONS

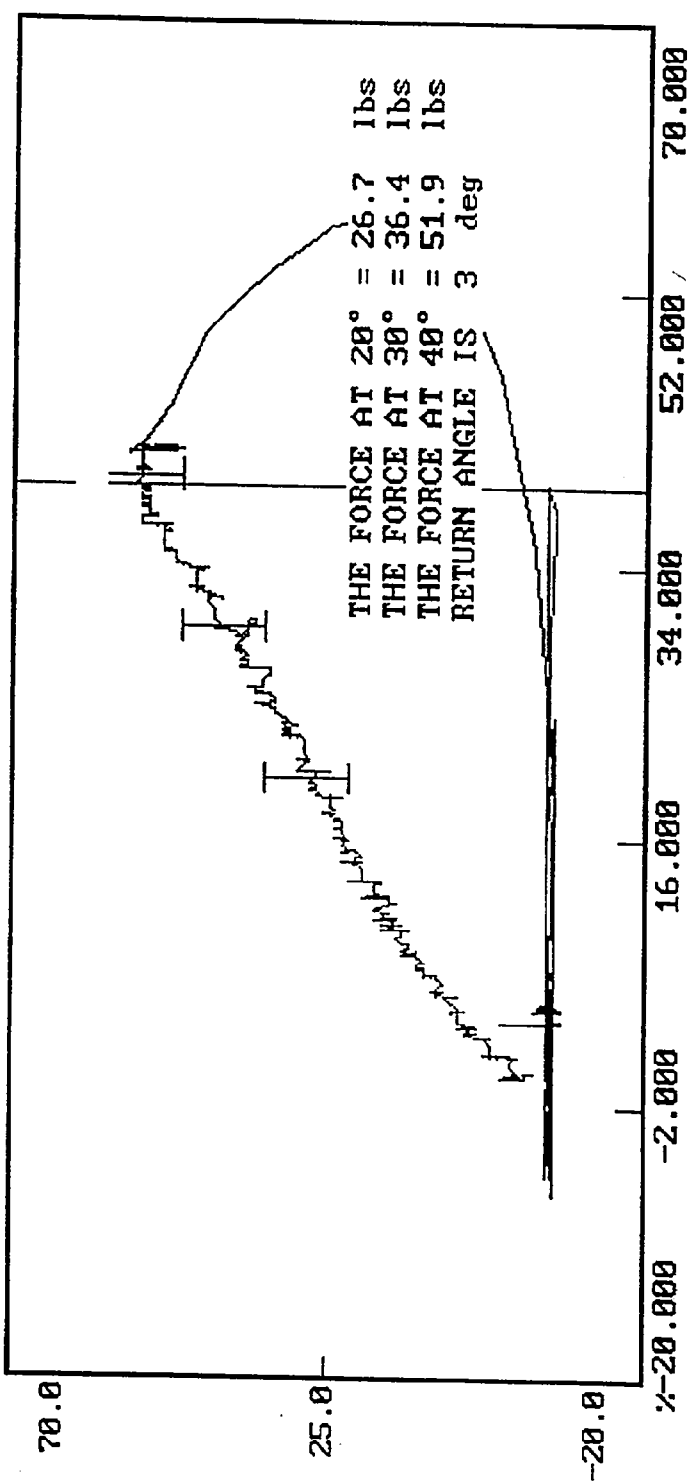
TECHNICIAN

Jim M. L.

APPROVED BY

Paul K. K.

DUMMY CALIBRATION - LUMBAR FLEXION
 DUMMY # 275
 03-03-1997 08:12
 FORCE (LBS) VS. TORSO ROTATION (DEGREES)



IMPACT SPEED = 0.00 FT/SEC

POST-TEST DRIVER DUMMY INSPECTION CHECKLIST

Type: Side Impact Dummy

Serial Number: 274

Inspected By: Tim Michnay

Date: March 3, 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: 275

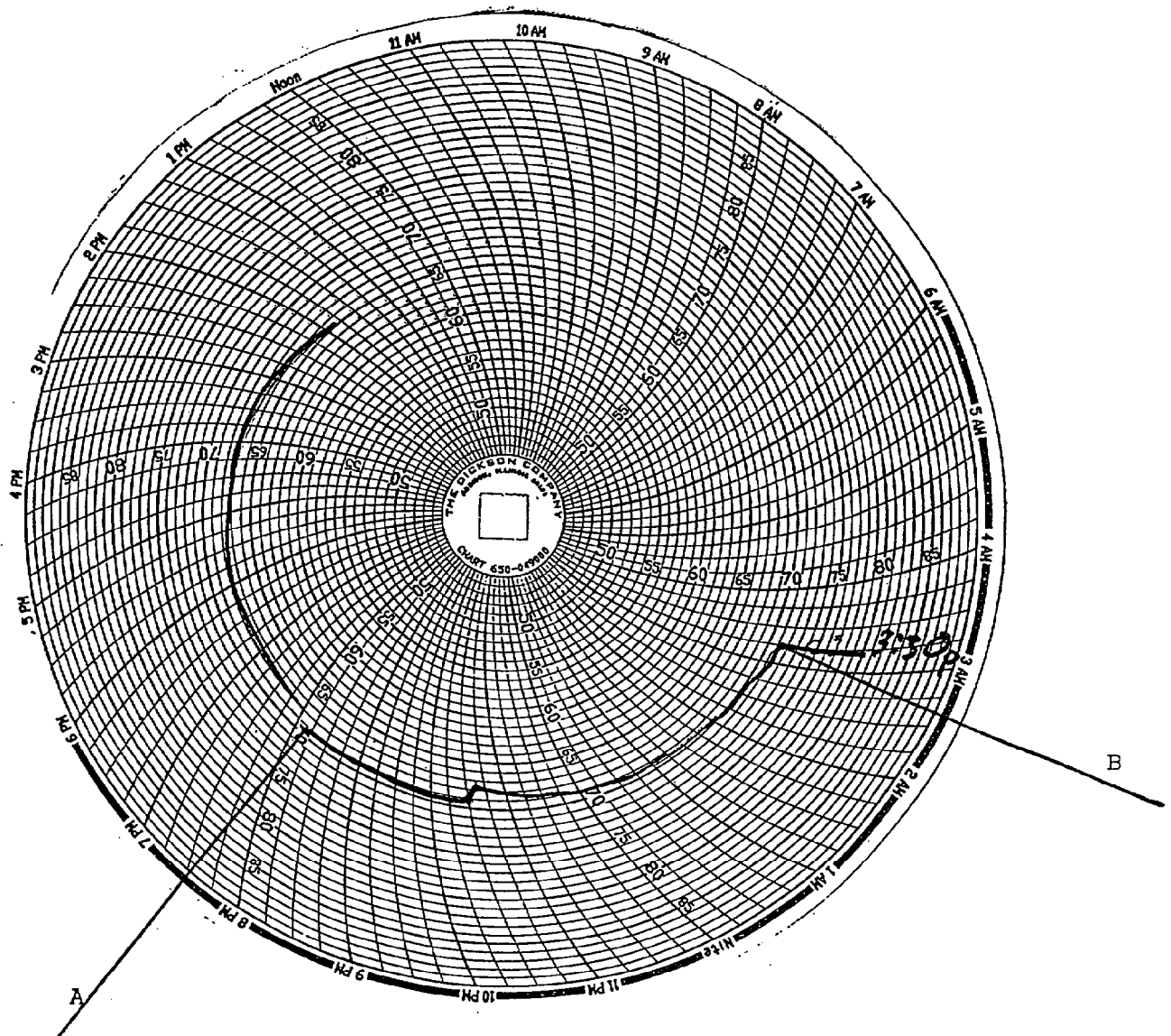
Inspected By: Tim Michnay

Date: March 3, 1997

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

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

VEHICLE AND DUMMY TEMPERATURE



A = dummies installed in vehicle
B = test conducted

a.m. and p.m. wrong on chart

APPENDIX D
TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

DUMMY AND VEHICLE CALIBRATION DATA
INSTRUMENTS FOR DRIVER DUMMY NO. 274

	DRIVER		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Upper Rib Y	AN8L6	Endevco	1/02/97
Lower Rib Y	J12465	Endevco	1/02/97
Lower Spine Y	J12450	Endevco	1/02/97
Pelvis Y	AGTP7	Endevco	1/02/97
Upper Rib Redundant Y	APY13	Endevco	1/02/97
Lower Rib Redundant Y	J11361	Endevco	1/02/97
Lower Spine Redundant Y	J12461	Endevco	1/02/97
Pelvis Redundant Y	AGR04	Endevco	1/02/97

INSTRUMENTS FOR PASSENGER DUMMY NO. 275

	LEFT REAR PASSENGER		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Upper Rib Y	AHRP6	Endevco	1/02/97
Lower Rib Y	J11630	Endevco	1/02/97
Lower Spine Y	AHT20	Endevco	1/02/97
Pelvis Y	AJ417	Endevco	1/02/97
Upper Rib Redundant Y	AJ412	Endevco	1/02/97
Lower Rib Redundant Y	J11166	Endevco	1/02/97
Lower Spine Redundant Y	AH0N9	Endevco	1/02/97
Pelvis Redundant Y	AGP20	Endevco	1/02/97

VEHICLE INSTRUMENT CALIBRATION

	VEHICLE ACCELEROMETERS		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Moving Barrier CG X	C25-A04	Entran	1/06/97
Moving Barrier CG Y	C25-A06	Entran	1/07/97
Moving Barrier CG Z	B13-Z02	Entran	7/11/96
Moving Barrier Rear Axle X	D05-R19	Entran	1/02/97
Moving Barrier Rear Axle Y	D05-R20	Entran	1/02/97
Left Mid A-Post Y	H16-X15	Entran	1/08/97
Left Lower A-Post Y	A10-G05	Entran	1/03/97
Left Mid B-Post Y	J23-E06	Entran	1/03/97
Left Lower B-Post Y	D05-R12	Entran	1/03/97
Rear Floorpan Above Axle X	A09-G05	Entran	12/03/96
Rear Floorpan Above Axle Y	L18-E02	Entran	1/03/97
Rear Floorpan Above Axle Z	J10-E03	Entran	1/07/97
Driver Seat Track Y	C25-A22	Entran	1/08/97
Right Side Sill at Front Seat X	L14-D10	Entran	1/07/97
Right Side Sill at Front Seat Y	A10-G07	Entran	1/03/97
Right Side Sill at Front Seat Z	C25-A17	Entran	1/02/97
Right Side Sill at Rear Seat X	C20-J10	Entran	1/02/97
Right Side Sill at Rear Seat Y	D06-A09	Entran	1/02/97
Right Side Sill at Rear Seat Z	MGA095	Entran	1/907/97
Left Side Sill at Front Seat Y	B14-R04	Entran	12/04/96

VEHICLE INSTRUMENT CALIBRATION

	VEHICLE ACCELEROMETERS		
	SERIAL NO	MANUFACTURER	CALIBRATION DATE
Left Side Sill at Rear Seat Y	MGA125	Entran	1/06/97
Right Rear Occupant Compartment Y	A09-G06	Entran	2/07/97
Vehicle CG X	A09-G07	Entran	1/02/97
Vehicle CG Y	E24-G08	Entran	1/06/97
Vehicle CG Z	L18-G02	Entran	1/02/97
Left Front Door on Centerline	J10-E13	Entran	1/07/97
Left Front Door Upper Centerline	J10-E08	Entran	1/03/97
Rear Left Door Mid Rear	L14-D07	Entran	1/06/97
Rear Left Door Upper Centerline	E25-G07	Entran	1/03/97

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