

REPORT NO.: 214D-MGA-98-017

V2753

2079

NEW CAR ASSESSMENT PROGRAM
SIDE IMPACT TESTING
PASSENGER CARS

1998 OLDSMOBILE INTRIGUE
4-DOOR SEDAN
NHTSA NO: MW0115

MGA PROVING GROUNDS
5000 WARREN ROAD
BURLINGTON, WI 53105



Test Date: December 17, 1997

Report Date: January 20, 1998

FINAL REPORT

Prepared For:

U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
SAFETY PERFORMANCE STANDARDS
OFFICE OF CRASHWORTHINESS STANDARDS
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WASHINGTON, D.C. 20590

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FINAL REPORT ACCEPTED BY (OCWS):

Accepted By: _____
Contract Technical Manager

Acceptance Date: _____

TECHNICAL REPORT STANDARD TITLE PAGE

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				6. Performing Organization Code MGA																			
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				14. Sponsoring Agency Code NPS-10																			
15. Supplementary Notes																							
16. Abstract A 90° Moving Deformable Barrier NCAP side impact was conducted on the subject 1998 Oldsmobile Intrigue 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 December 17, 1997. The impact velocity of the Moving Deformable Barrier (MDB) was 61.2 kph, and the ambient temperature at the struck side (driver's) of the target vehicle at the time of impact was 23 °C. The target vehicle post test maximum crush was 439 mm at level 2. The test vehicle's performance follows: <table border="0" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th style="text-align: center;"><u>DRIVER</u></th> <th style="text-align: center;"><u>PASS.</u></th> </tr> </thead> <tbody> <tr> <td>Left Upper Rib (LUR) Accel., g</td> <td style="text-align: center;">79</td> <td style="text-align: center;">114</td> </tr> <tr> <td>Left Lower Rib (LLR) Accel., g</td> <td style="text-align: center;">60</td> <td style="text-align: center;">125</td> </tr> <tr> <td>Lower Spine (T₁₂) Accel., g</td> <td style="text-align: center;">90</td> <td style="text-align: center;">100</td> </tr> <tr> <td>Thoracic Trauma Index (TTI)</td> <td style="text-align: center;">85</td> <td style="text-align: center;">113</td> </tr> <tr> <td>Pelvis (PEV) Accel., g</td> <td style="text-align: center;">98</td> <td style="text-align: center;">73</td> </tr> </tbody> </table> The doors on the struck side of the vehicle did not separate from the body at the hinges or latches and the opposite doors did not open during the side impact event.							<u>DRIVER</u>	<u>PASS.</u>	Left Upper Rib (LUR) Accel., g	79	114	Left Lower Rib (LLR) Accel., g	60	125	Lower Spine (T ₁₂) Accel., g	90	100	Thoracic Trauma Index (TTI)	85	113	Pelvis (PEV) Accel., g	98	73
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17. Key Words New Car Assessment Program (NCAP) FMVSS No. 214D Side Impact Dummy (SID) Occupant Side Impact Protection				18. Distribution Statement Copies of this report are available from: National Highway Traffic Safety Adm. Technical Ref. Division, Room 5108 (NAD-52) 400 Seventh Street, S.W. Washington, D.C. 20590																			
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SECTION 1
PURPOSE AND TEST PROCEDURE

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

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

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

SECTION 2
SUMMARY OF SIDE IMPACT TEST

A 1998 Oldsmobile Intrigue 4-Door was impacted on the left or driver's side by a Moving Deformable Barrier (MDB) which was moving forward in a 27° crabbed position to the tow road guidance system at a velocity of 38.0 mph (61.2 kph). The target vehicle was stationary and was positioned at an angle of 63° to the line of forward motion. The side impact test was conducted by MGA Research Corporation in Burlington, Wisconsin, on December 17, 1997. Pre- and post-test photographs of the test vehicle, the MDB and the side impact dummies (SIDs) are included in Appendix A.

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

The SIDs were instrumented with the following accelerometers.

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

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

The following table summarizes the results of the test:

Injury Criteria	Front SID	Rear SID
TTI (g)	85	113
Pelvis (g)	98	73

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

DATA SHEET NO. 1
GENERAL VEHICLE TEST PARAMETER DATA

TEST VEHICLE INFORMATION:

Year/Make/Model/Body Style: 1998/Oldsmobile/Intrigue/4-Door
Vehicle NHTSA No.: MW0115 VIN: 1G3WH52K7WF318556
Vehicle Body Color: Gold Build Date: 8/97
Engine Data: 6 Cylinders; CID; 3.8 Liter; cc
Placement Longitudinal; X Lateral
Transmission: 4 Speed; Manual; X Automatic; X Overdrive
Final Drive: Rear Wheel Drive; X Frt. Wheel Drive; Four Wheel Drive

Odometer Reading 50 miles
Options: X A/C; X Pwr. Steering; X Pwr. Brakes; X Pwr. Windows;
 X Cruise Control; X Tilt Wheel; X Power Door Locks;

DATA FROM TIRE PLACARD:

Tire Pressure (at capacity): 30 Psi FRONT
30 Psi REAR
Recommended Tire Size: P225/60R/16
Tires on Test Vehicle: P225/60R/16 Manufacturer: Goodyear

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 = 416.0 kg (A)
No. of Occupants x 68.04 kg. = 340.2 kg (B)
Cargo Capacity (A-B) = 75.8 kg

GENERAL VEHICLE TEST PARAMETER DATA (Cont'd)

WEIGHT OF TEST VEHICLE WITH MAXIMUM FLUIDS:

Right Front	=	<u>510.3</u>	kg	Right Rear	=	<u>280.3</u>	kg
Left Front	=	<u>492.2</u>	kg	Left Rear	=	<u>289.4</u>	kg
TOTAL FRONT	=	<u>1002.5</u>	kg	TOTAL REAR	=	<u>569.7</u>	kg
% of Total Vehicle Weight	=	<u>63.8</u>	%;	% of Total Weight	=	<u>36.2</u>	%
TOTAL WEIGHT	=	<u>1572.2</u>	kg				

GENERAL VEHICLE TEST PARAMETER DATA (Cont'd)

Year/Make/Model/Body Style: 1998/Oldsmobile/Intrigue/4-Door

Vehicle NHTSA No.: MW0115 Test Date: December 17, 1997

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Total Test Vehicle Delivered Weight with Maximum Fluids = 1572.2 kg
Cargo Carrying Capacity of Test Vehicle = 75.8 kg
Weight of 2 Side Impact Dummies (2 x 80.7 kg.) = 161.4 kg
TEST VEHICLE TARGET WEIGHT = 1809.4 kg

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

Right Front = 518.5 kg Right Rear = 349.3 kg
Left Front = 547.5 kg Left Rear = 393.7 kg
TOTAL FRONT = 1066.0 kg TOTAL REAR = 743.0 kg
% of Total Weight = 58.9% % of Total Weight = 41.1%
TOTAL TEST WEIGHT = 1809.0 kg

TEST VEHICLE ATTITUDE:

CURB WEIGHT ATTITUDE:

Right Front 706 mm Left Front 710 mm Right Rear 730 mm Left Rear 725 mm

FULLY LOADED WEIGHT ATTITUDE:

Right Front 702 mm Left Front 694 mm Right Rear 700 mm Left Rear 681 mm

TEST ATTITUDE:

Right Front 698 mm Left Front 695 mm Right Rear 701 mm Left Rear 687 mm

GENERAL VEHICLE TEST PARAMETER DATA (Cont'd)

Test Vehicle Wheelbase: 2770 mm

C.G. = 1114 mm rearward of front wheel centerline

TOTAL VEHICLE LENGTH:

Right Side = 4620 mm

Centerline = 4900 mm

Left Side = 4620 mm

GENERAL VEHICLE TEST PARAMETER DATA (Cont'd)

Year/Make/Model/Body Style: 1998/Oldsmobile/Intrigue/4-Door

Vehicle NHTSA No.: MW0115 Test Date: December 17, 1997

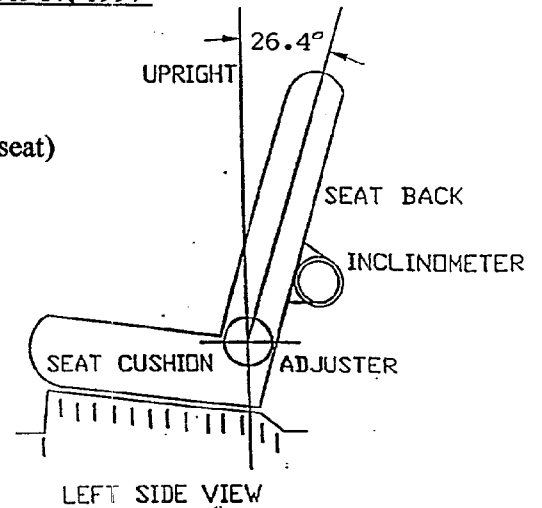
FRONT SEAT CUSHION PLACEMENT:

Total Length of Adjustment Travel: 240 mm (Power seat)

Test Position: Mid position (120 mm)

FRONT SEAT BACK ADJUSTMENT POSITION:

Seat Back Angle = 26.4° measured 1/3 the distance
up from pivot point.



SECOND POSITION SEAT:

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

Seat Back Adjustment Position: Non-adjustable

"D" RING POSITION: 3rd position down from full up.

ADJUSTABLE STEERING COLUMN POSITION: 4th position down from full up

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

AMOUNT OF STODDARD SOLVENT IN FUEL TANK:

Fuel system usable capacity = 18.0 gallons

Test Volume: 16.8 gallons 93 % of capacity

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

Wheelbase: = 2770 mm

Impact Point is 445 mm rearward of front axle centerline

DATA SHEET NO. 2

TEST VEHICLE SUMMARY OF RESULTS

Year/Make/Model/Body Style: 1998/Oldsmobile/Intrigue/4-Door

Vehicle NHTSA No.: MW0115 Test Date: December 17, 1997

Overall Length = 4900 mm; Overall Width = 1816 mm

TEST WEIGHT:

Right Front = 533.9 kg Right Rear = 354.3 kg
Left Front = 543.9 kg Left Rear = 371.0 kg
TOTAL FRONT = 1077.8 kg TOTAL REAR = 725.3 kg
% of Total Weight = 59.8 % % of Total Weight = 40.2 %
TOTAL VEHICLE WEIGHT = 1803.1 kg
Wheelbase = 2770 mm
Longitudinal C.G. from Center of Front Axle = 1114 mm
Impact Angle with Respect to Impactor = 90 ° degrees

MAXIMUM EXTERIOR STATIC CRUSH:

1. LEVEL 1 (278 mm above ground) = 268 mm
 2. LEVEL 2 (515 mm above ground) = 439 mm
 3. LEVEL 3 (620 mm above ground) = 390 mm
 4. LEVEL 4 (910 mm above ground) = 336 mm
 5. LEVEL 5 (1350 mm above ground) = 154 mm
- Maximum Post-Test Intrusion = 439 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>24</u>
Number of Cameras: Onboard Vehicle	=	<u>3</u>
Offboard Vehicle	=	<u>4</u>
Deformable Barrier	=	<u>2</u>
TOTAL	=	<u>9</u>

DATA SHEET NO. 3

MOVING DEFORMABLE BARRIER (MDB) SUMMARY OF RESULTS

Year/Make/Model/Body Style: 1998/Oldsmobile/Intrigue/4-Door

Vehicle NHTSA No.: MW0115 Test Date: December 17, 1997

POSITION OF IMPACT (MDB) ON MONORAIL:

Crabbed 27° to left

MDB DETAILS:

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

MDB WEIGHT:

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

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

Impact Speed = Primary: 37.97 mph (61.1 kph) Secondary: 38.04 mph (61.2 kph)

CRASH TEST SUMMARY FOR SIDE IMPACTOR (Cont'd)

MAXIMUM STATIC CRUSH OF HONEYCOMB IMPACT FACE:

1. Row A Top of Stack (813 mm) = 177 mm
2. Row B Mid Stack (686 mm) = 98 mm
3. Row C Top of Bumper (533 mm) = 70 mm
4. Row D Center of Bumper (432 mm) = 432 mm

INSTRUMENTATION:

Number of MDB Data Channels = 7

DATA SHEET NO. 4
POST-TEST OBSERVATIONS

Year/Make/Model/Body Style: 1998/Oldsmobile/Intrigue/4-Door

Vehicle NHTSA No.: MW0115 Test Date: December 17, 1997

VISIBLE DUMMY CONTACT POINTS:

	<u>LEFT FRONT SID</u>	<u>LEFT REAR SID</u>
Head	<u>to shoulder and headrest</u>	<u>to C-post and window frame</u>
Arm	<u>to door trim panel</u>	<u>to rear door trim panel</u>
Pelvis	<u>to door trim panel armrest</u>	<u>to rear door trim panel armrest</u>
Left Knee	<u>to door trim panel</u>	<u>to rear 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: 22 mm rearward Vertical: 0 mm

ARM REST LOCATIONS:

Front: 243 mm from bottom of window

Rear: 264 mm from bottom of window

POST-TEST OBSERVATIONS (Cont'd)

SEAT CRUSH:

Front Seat Back: 152 mm Front Seat Cushion: 144 mm
Left Rear Seat Back: 240 mm Rear Seat Cushion: 185 mm

GLAZING DAMAGE:

Both impact side door glass shattered and windshield cracked

PILLAR PERFORMANCE:

No separation noted

SILL SEPARATION:

No separation noted

OTHER NOTABLE IMPACT EFFECTS:

None

AIRBAG DEPLOYMENT STATUS:

	<u>DRIVER</u>	<u>PASSENGER</u>
Frontal	<u>No</u>	<u>No</u>
Side	<u>N/A</u>	<u>N/A</u>

SECTION 4
OCCUPANT AND VEHICLE INFORMATION

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

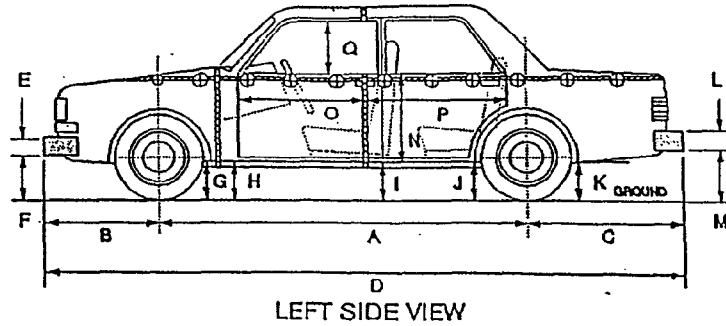
Year/Make/Model/Body Style: 1998/Oldsmobile/Intrigue/4-Door

Vehicle NHTSA No.: MW0115 Test Date: December 17, 1997

	Front Dummy ID #270				Rear Dummy ID #271			
	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	79.1	28	-21.3	75	114.3	38	-17.6	66
Left Lower Rib (LLR) Y	59.9	28	-17.7	84	125.3	38	-32.2	66
SPINE ACCELERATIONS								
Lower Lateral Y	90.4	32	-30.1	68	100.0	42	-32.7	69
PELVIS ACCELERATIONS								
Lateral Y	98.2	34	-20.9	66	72.6	34	-28.5	71

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

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



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

J1 = To Pinch Weld
J2 = To Sill

ALL MEASUREMENTS IN (mm)

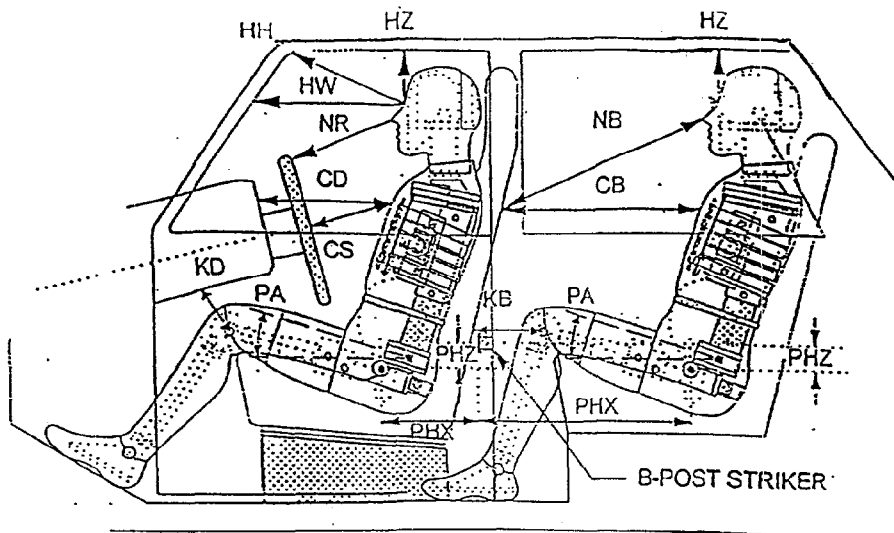
	PRE-TEST	POST-TEST	Δ CHANGE
A	2770	2721	49
B	1052	1090	38
C	1078	1070	8
D	4900	4881	19
E	147	147	0
F	380	412	32
G	172	190	18
H	169	194	25
I	172	189	17
J1/J2	168/169	155/164	13/5
K	245	250	5
L	300	300	0
M	330	325	5
N	710	604	106
O	815	785	30
P	1204	1075	129
Q	460	438	22
R	4620	4642	22
S	4620	4540	80
T	1816	1450	366

DATA SHEET NO. 7

SIDE IMPACT DUMMY (SID) LONGITUDINAL CLEARANCE DIMENSIONS

Year/Make/Model/Body Style: 1998/Oldsmobile/Intrigue/4-Door

NHTSA NO.: MW0115 Test Date: December 15, 1997



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

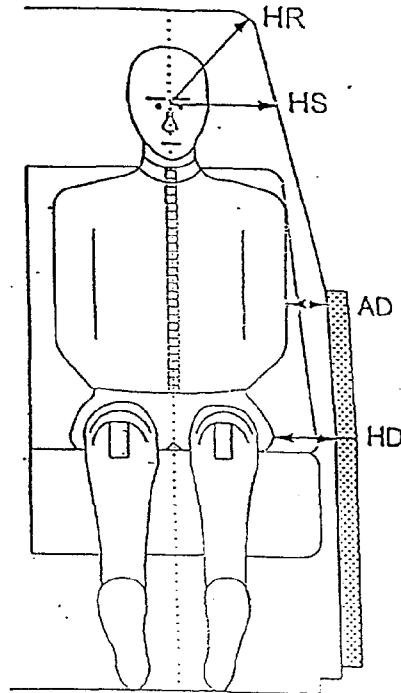
	DRIVER SID ID #270		LEFT REAR PASSENGER SID ID #271
HH	385	HZ	142
HW	677	NB	572
HZ	172	CB	491
NR	420	KBL (KBA)	196 (0.0°)
CD	550	KBR (KBA)	199 (0.0°)
CS	330	PA°	24.2°
KDL(KDA°)	165 (24.0°)	PHX	273
KDR(KDA°)	162 (28.1°)	PHZ	288
PA°	24.5°		
PHX	165		
PHZ	130		

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

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

Year/Make/Model/Body Style: 1998/Oldsmobile/Intrigue/4-Door

NHTSA NO.: MW0115 Test Date: December 15, 1997



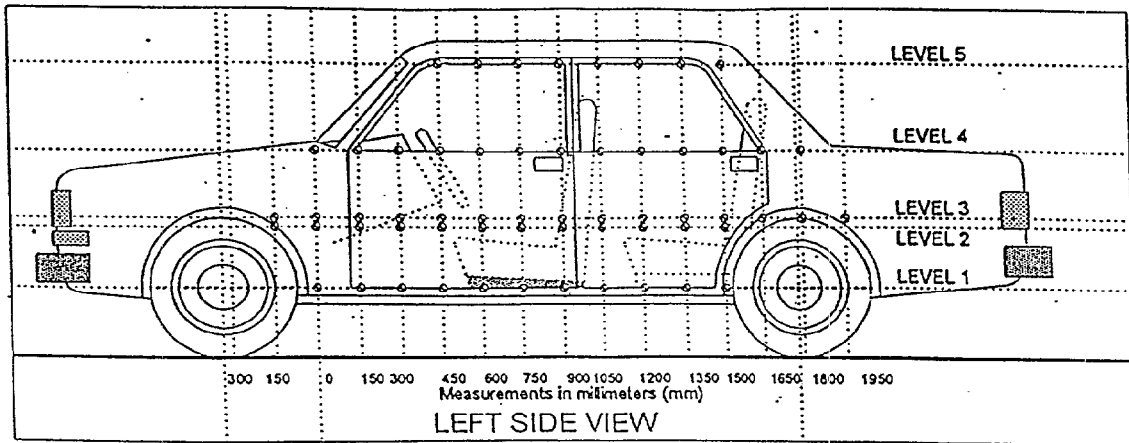
NOTE: All dimensions are in mm

	DRIVER SID ID #270	LEFT REAR PASSENGER SID ID #271
HR	195	205
HS	300	318
AD	70	80
HD	144	160

DATA SHEET NO. 9
VEHICLE SIDE MEASUREMENTS

Year/Make/Model/Body Style: 1998/Oldsmobile/Intrigue/4-Door

NHTSA NO.: MW0115 Test Date: December 15, 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>278</u> mm
Level 2 @ Occupant H-Point	=	<u>515</u> mm
Level 3 @ Mid Door	=	<u>620</u> mm
Level 4 @ Window Sill	=	<u>910</u> mm
Level 5 @ Window Top	=	<u>1350</u> mm

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES

	Level 1 - Axle Centerline		
Longitudinal Distance (mm)	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
-1800			
-1650			
-1500			
-1350			
-1200			
-1050			
-900			
-750			
-600			
-450			
-300			
-150			
0 (impact point)	861	967	106
150	863	1070	207
300	875	1115	240
450	880	1126	246
600	883	1131	248
750	884	1137	253
900	883	1151	268
1050	877	1142	265
1200	875	1130	255
1350	872	1102	230
1500	868	1073	205
1650	868	1040	172
1800	867	973	106

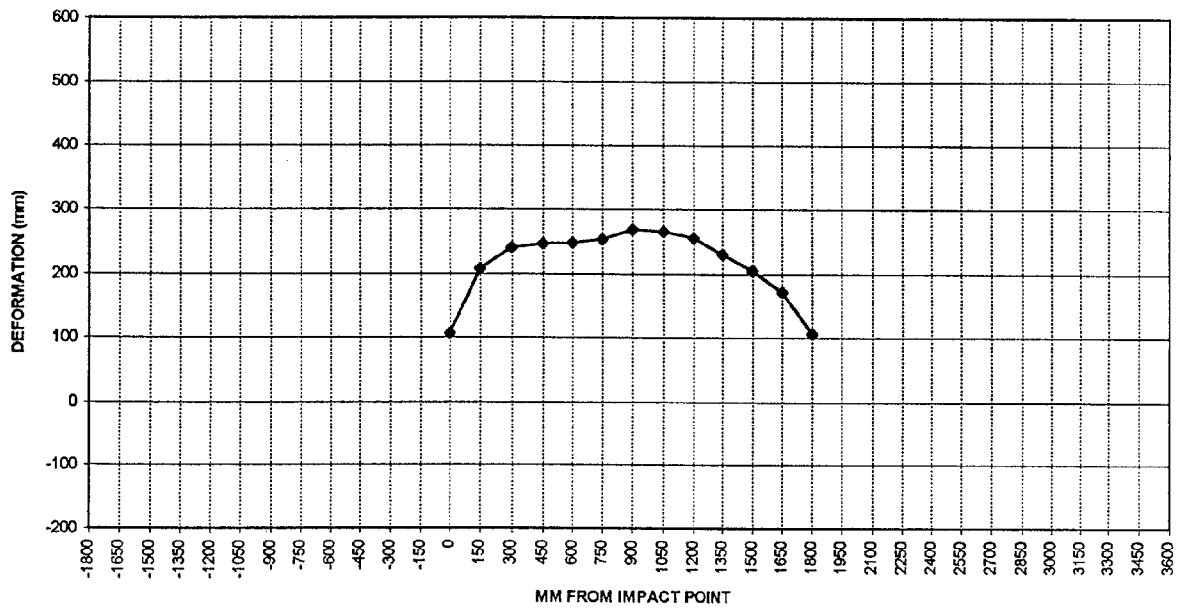
Reference plane is parallel to test vehicle longitudinal centerline.
 Given dimensions = Reference plane to car body

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES

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

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

VEHICLE EXTERIOR STATIC CRUSH



LEVEL 1 - AXLE CENTERLINE

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES

Longitudinal Distance (mm)	Level 2 - Occupant H-Point		
	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
-1800			
-1650			
-1500			
-1350			
-1200			
-1050			
-900			
-750			
-600			
-450			
-300			
-150			
0 (impact point)	792	974	182
150	798	1112	314
300	800	1191	391
450	800	1210	410
600	800	1212	412
750	800	1225	425
900	800	1228	428
1050	800	1239	439
1200	800	1225	425
1350	799	1224	425
1500	799	1210	411
1650	797	1182	385
1800	790	1125	335

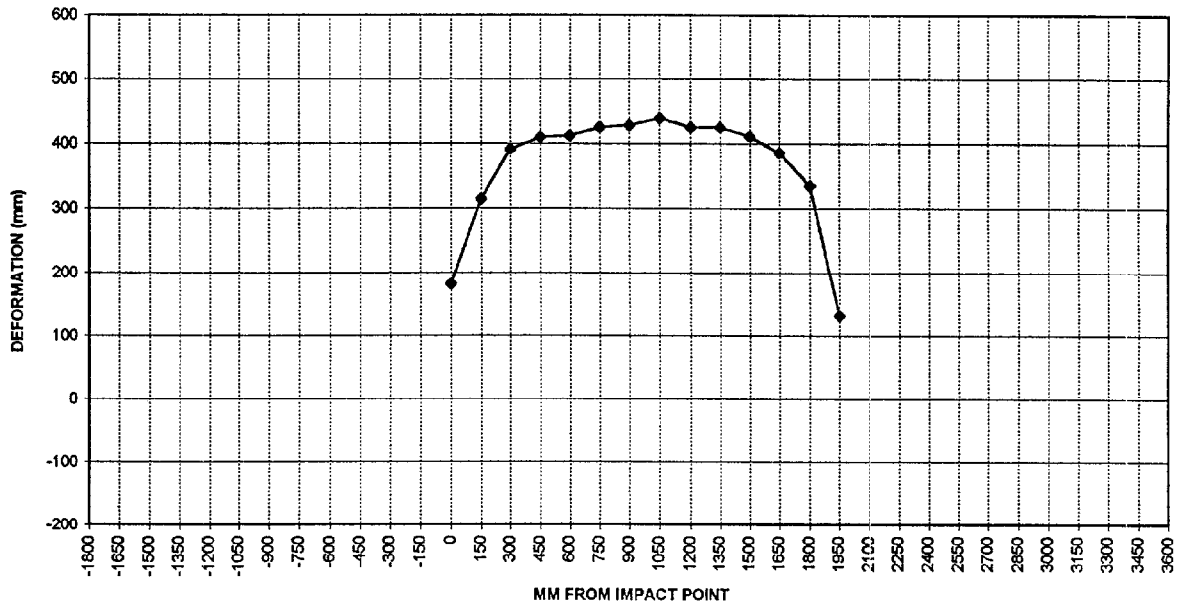
Reference plane is parallel to test vehicle longitudinal centerline.
 Given dimensions = Reference plane to car body

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES

	Level 2 - Occupant H-Point		
Longitudinal Distance (mm)	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
1950	785	918	133
2100			
2250			
2400			
2550			
2700			
2850			
3000			
3150			
3300			
3450			
3600			

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

VEHICLE EXTERIOR STATIC CRUSH



LEVEL 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)
-1800			
-1650			
-1500			
-1350			
-1200			
-1050			
-900	814	840	26
-750	790	820	30
-600			
-450			
-300			
-150	777	882	105
0 (impact point)	787	927	140
150	793	1065	272
300	794	1100	306
450	795	1123	328
600	795	1134	339
750	793	1145	352
900	793	1155	362
1050	793	1172	379
1200	793	1183	390
1350	793	1166	373
1500	792	1165	373
1650	788	1138	350
1800	781	1108	327

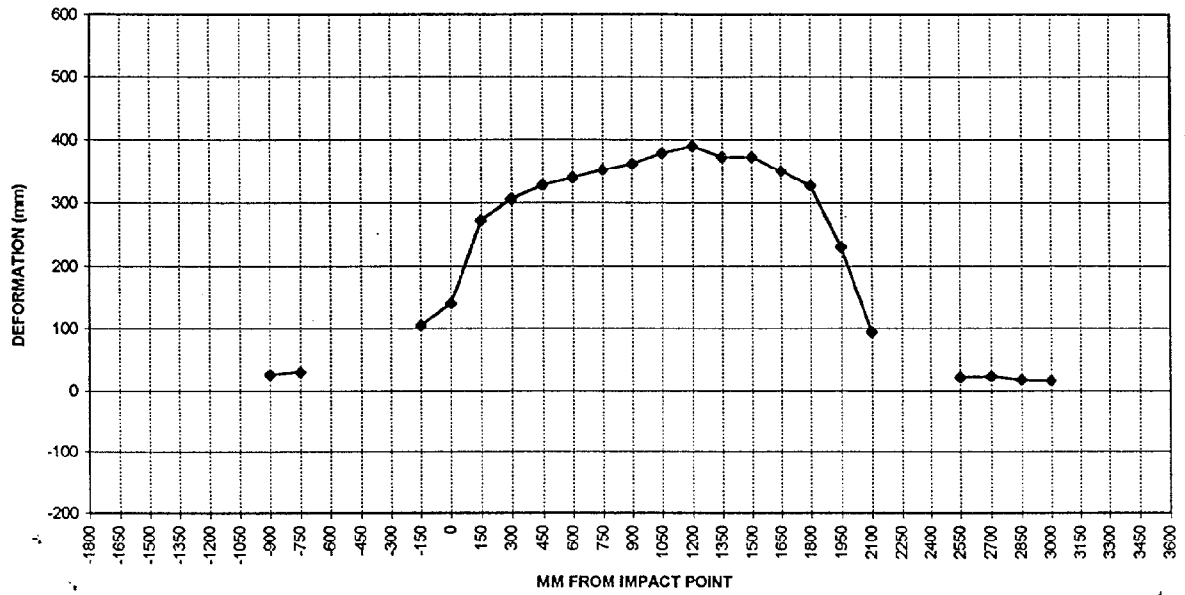
Reference plane is parallel to test vehicle longitudinal centerline.
 Given dimensions = Reference plane to car body

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES

	Level 3 - Mid-Door		
Longitudinal Distance (mm)	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
1950	771	1001	230
2100	764	858	94
2250			
2400			
2550	779	800	21
2700	785	808	23
2850	807	824	17
3000	841	857	16
3150			
3300			
3450			
3600			

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

VEHICLE EXTERIOR STATIC CRUSH



LEVEL 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)
-1800			
-1650			
-1500			
-1350			
-1200	956	960	4
-1050	927	938	11
-900	904	920	16
-750	888	912	24
-600	877	904	27
-450	868	900	32
-300	866	904	38
-150	860	906	46
0 (impact point)	861	912	51
150	855	958	103
300	855	1030	175
450	855	1110	255
600	855	1144	289
750	852	1146	294
900	851	1151	300
1050	850	1165	315
1200	850	1186	336
1350	848	1180	332
1500	852	1172	320
1650	854	1169	315
1800	856	1109	253

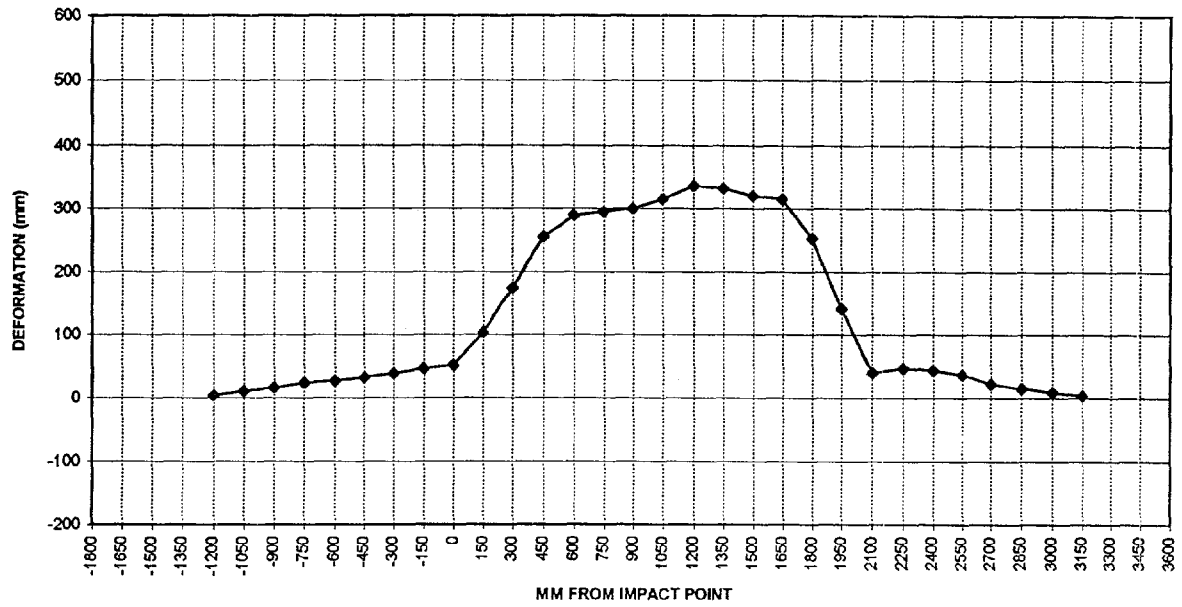
Reference plane is parallel to test vehicle longitudinal centerline.
 Given dimensions = Reference plane to car body

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES

	Level 4 - Window Sill		
Longitudinal Distance (mm)	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
1950	854	995	141
2100	852	892	40
2250	857	904	47
2400	860	904	44
2550	863	900	37
2700	871	893	22
2850	880	895	15
3000	894	903	9
3150	911	915	4
3300			
3450			
3600			

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

VEHICLE EXTERIOR STATIC CRUSH



LEVEL 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)
-1800			
-1650			
-1500			
-1350			
-1200			
-1050			
-900			
-750			
-600			
-450			
-300			
-150			
0 (impact point)			
150			
300			
450			
600			
750	1122	1200	78
900	1123	1221	98
1050	1124	1251	127
1200	1129	1283	154
1350	1128	1262	134
1500	1128	1237	109
1650	1130	1213	83
1800	1130	1199	69

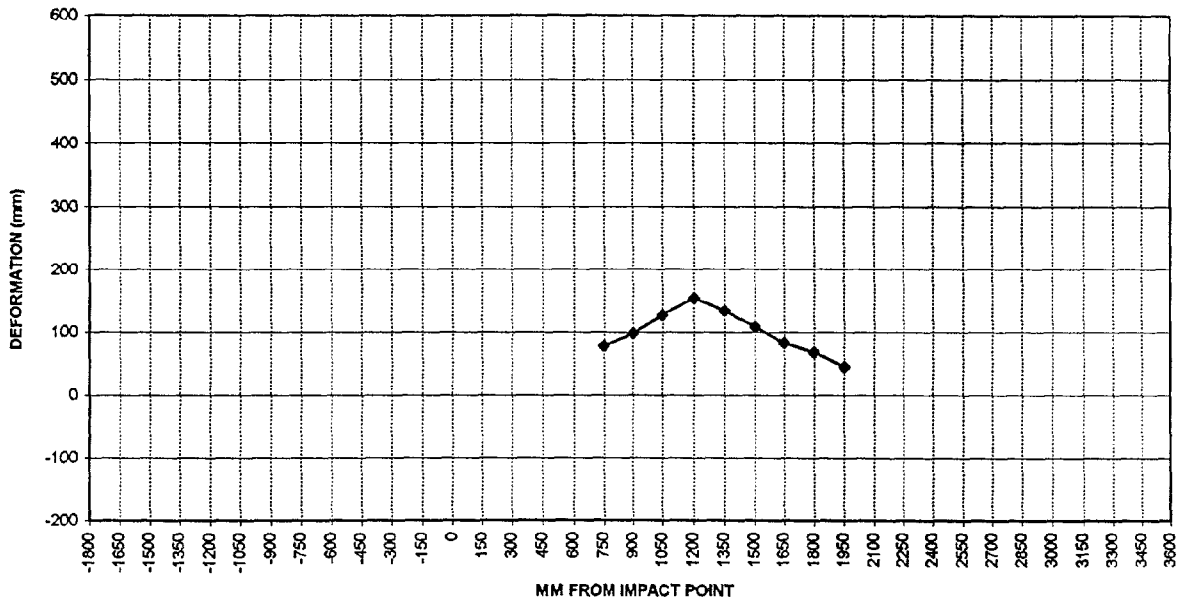
Reference plane is parallel to test vehicle longitudinal centerline.
 Given dimensions = Reference plane to car body

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES

	Level 5 - Window Top		
Longitudinal Distance (mm)	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
1950	1144	1190	46
2100			
2250			
2400			
2550			
2700			
2850			
3000			
3150			
3300			
3450			
3600			

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

VEHICLE EXTERIOR STATIC CRUSH



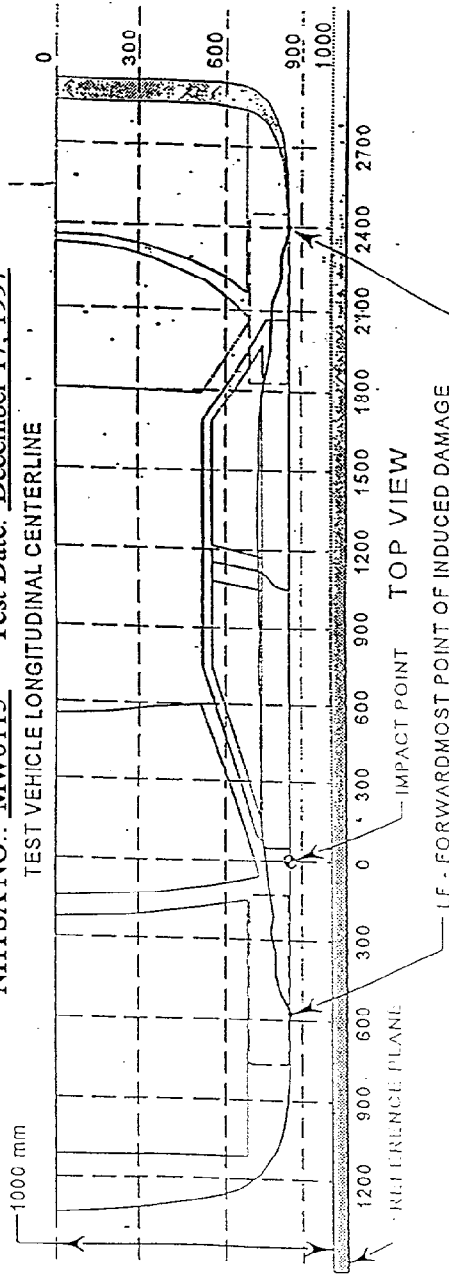
LEVEL 5 - WINDOW TOP

DATA SHEET NO. 11

VEHICLE DAMAGE PROFILE DISTANCES

Year/Make/Model/Body Style: 1998/Oldsmobile/Intrigue/4-Door

NHTSA NO.: MW0115 Test Date: December 17, 1997



MEASUREMENT CONVENTIONS:
 Forward of the impact point (towards front of vehicle) is considered negative (-).
 Rearward of the impact point (toward rear of vehicle) is considered positive (+).

Maximum Crush Level: 515 mm Location: 1050 Deformation: 439 mm

DPD MEASUREMENTS	POST-TEST (mm)	PRE-TEST (mm)	STATIC CRUSH (mm)
1. (LF = <u>-1200</u> mm)	960	956	4
2. -300 mm	904	866	38
3. 600 mm	1212	800	412
4. 1500 mm	1210	799	411
5. 2400 mm	904	860	44
6. (LR = <u>3150</u> mm)	915	911	4

DATA SHEET NO. 12

EXTERIOR STATIC CRUSH FOR SIDE IMPACTOR

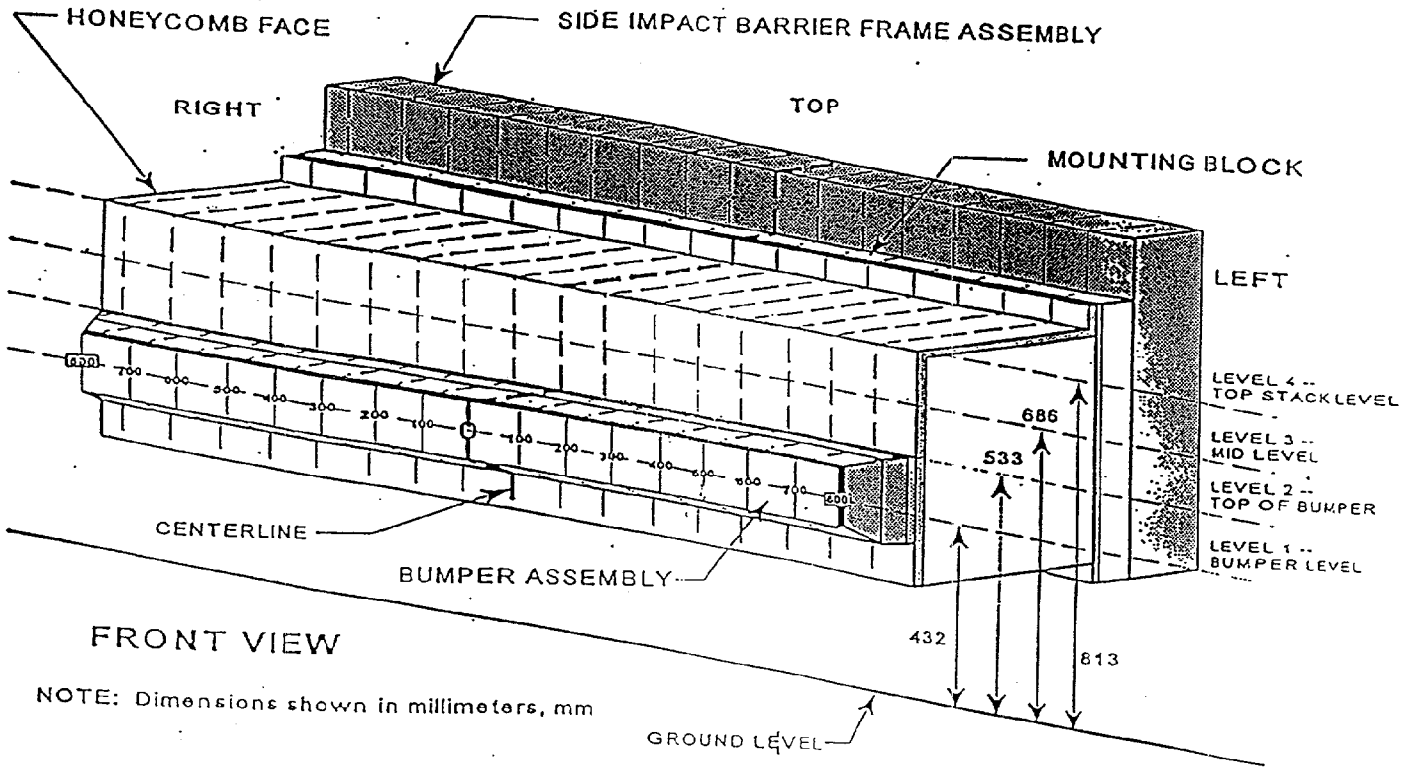
Year/Make/Model/Body Style: 1998/Oldsobile/Intrigue/4-Door

Vehicle NHTSA No.: MW0115 Test Date: December 17, 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	91	34	9	1	0	3	5	9	12	13	12	14	16	22	69	123	177
Mid Level Level 3	686 mm	58	30	3	-1	-2	0	1	8	7	2	4	7	9	11	19	49	98
Top Bumper Level 2	533 mm	70	53	35	21	18	18	16	11	10	14	14	15	18	19	23	34	49
Mid Bumper Level 1	432 mm	111	90	71	54	44	46	43	37	32	31	33	33	35	36	41	58	86

See next page for Barrier Face Graphic

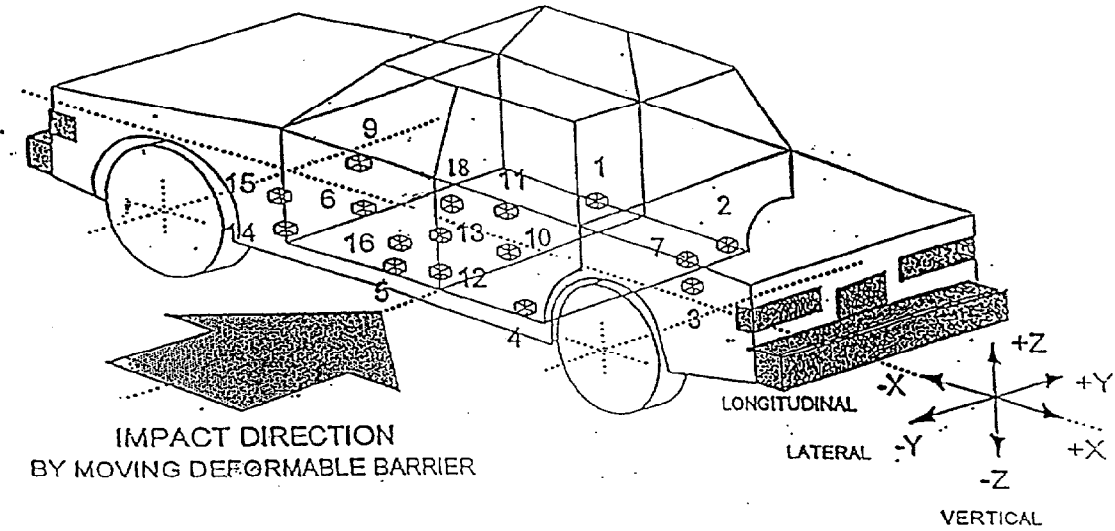
DATA SHEET NO. 12 (Cont'd)



DATA SHEET 13
TEST VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

Year/Make/Model/Body Style: 1998/Oldsmobile/Intrigue/4-Door

Vehicle NHTSA No.: MW0115 Test Date: December 17, 1997



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

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

DATA SHEET NO. 13

TEST VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

Year/Make/Model/Body Style: 1998/Oldsmobile/Intrigue/4-Door

Vehicle NHTSA No.: MW0115 Test Date: December 17, 1997

Accel. No.	Description	Coordinates (mm)*			Long. (X) Maximums (g's)		Lat. (Y) Maximums (g's)		Vert. (Z) Maximums (g's)		Resultant (g's)
		X	Y	Z	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	
1	Rt. Side Sill @ Front Seat	2604	703	200	4.3	-5.5	19.6	-4.1	4.0	-5.3	19.6
2	Rt. Side Sill @ Rear Seat	1480	715	200	5.5	-5.1	21.4	-6.7	4.7	-4.7	21.4
3	Rr. Floorpan Above Axle	1000	0	500	2.3	-9.2	16.6	-3.3	7.3	-5.8	17.9
4	Left Side Sill @ Rr. Seat	1442	-715	200	---	---	(1)	(1)	---	---	---
5	Left Side Sill @ Frt. Seat	2524	-703	200	---	---	36.0	-17.9	---	---	---
6	Left Front Door Centerline (3)	2752	-776	715	---	---	106.9	-5.0	---	---	---
7	Right Rear Occupant Compartment	1955	385	300	---	---	17.0	-6.7	---	---	---
9	Left Front Door Upper Centerline	2755	-770	875	---	---	242.2	-93.4	---	---	---
10	Left Rear Door Mid Rear	1716	-763	750	---	---	164.8	-180.6	---	---	---
11	Left Rear Door Upper Centerline	1720	-754	905	---	---	113.5	-70.5	---	---	---
12	Left Lower B-Post	2200	-688	290	---	---	156.5	-54.0	---	---	---
13	Left Mid B-Post	2230	-741	862	---	---	161.8	-34.5	---	---	---
14	Left Lower A-Post (2)	3300	-720	270	---	---	72.5	-23.5	---	---	---
15	Left Mid A-Post	3238	-780	920	---	---	48.0	-25.9	---	---	---
16	Driver Left Seat Track	2330	-633	230	---	---	72.0	-16.5	---	---	---
18	Vehicle CG	2495	0	380	3.6	-8.9	43.6	-15.8	20.1	-14.7	43.6

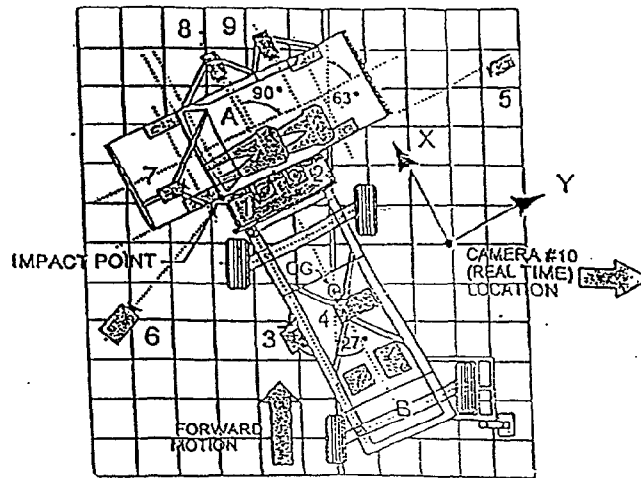
*Reference: X - Rear Bumper (+ Forward)
 Y - Vehicle Centerline (+ To right)
 Z - Ground Level (+ Up)

(1) No valid data collected
 (2) Wire cut after 100 msec.
 (3) Wire cut after 26 msec.

DATA SHEET NO. 14

MOVING DEFORMABLE BARRIER (MDB) ACCELEROMETER LOCATIONS AND DATA SUMMARY

Year/Make/Model/Body Style: 1998/Oldsmobile/Intrigue/4-Door
 Vehicle NHTSA No.: MW0115 Test Date: December 17, 1997

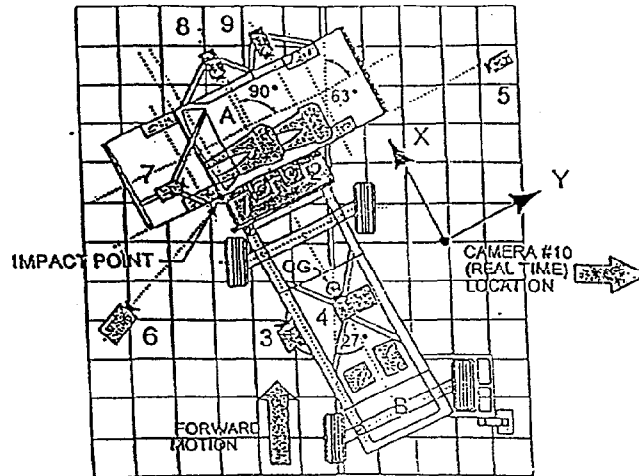


Accel. No.	Description	Coordinates (mm)*			(+) Positive		(-) Negative	
		X	Y	Z	Max. (g)	Time (msec)	Max. (g)	Time (msec)
1	MDB Center of Gravity	-1092	0	483				
	Longitudinal (X)	---	---	---	2.1	166	-15.9	31
	Lateral (Y)	---	---	---	3.3	59	-7.9	26
	Vertical (Z)	---	---	---	14.8	56	-9.3	195
	Resultant (R)	---	---	---	18.8	27	---	---
2	Rear Frame Member	-2591	-625	622				
	Longitudinal (X)	---	---	---	1.1	127	-23.8	44
	Lateral (Y)	---	---	---	4.3	27	-1.3	199

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

DATA SHEET NO. 15
HIGH SPEED CAMERA LOCATIONS AND DATA

Year/Make/Model/Body Style: 1998/Oldsmobile/Intrigue/4-Door
 Vehicle NHTSA No.: MW0115 Test Date: December 17, 1997



Camera No.	View	Coordinates (mm)*			Angle	Lens (mm)	Film Speed (fps)
		X	Y	Z			
	Real Time						
6	Left Impact	-540	-2210	1650		13	957
8	Onboard Driver					8	948
9	Onboard Passenger					8	1099
7	Onboard Hood					13	1020
5	Right Impact	-790	10290	1675		25	1010
1	Top Overall	-60	1280	5000		8	1000
2	Top Impact	-380	-50	5000		13	976
4	Cart Overall					13	1020
3	Cart Pointer					35	1015

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

DATA SHEET 16
FUEL SYSTEM INTEGRITY POST IMPACT TEST DATA

Vehicle Year/Make/Model/Body Style: 1998/Oldsmobile/Intrigue/4-Door

Vehicle NHTSA No.: MW0115 Test Date: December 17, 1997

TEST REQUIREMENTS:

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

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

FUEL SPILLAGE MEASUREMENT:

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

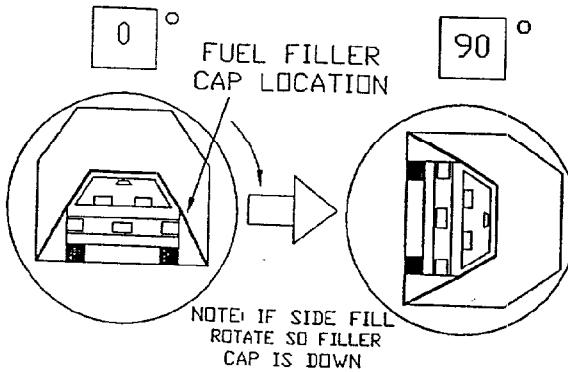
FUEL SPILLAGE LOCATION(S): None

DATA SHEET 16
FMVSS 301 STATIC ROLLOVER TEST DATA

Vehicle Year/Make/Model/Body Style: 1998/Oldsmobile/Intrigue/4-Door

Vehicle NHTSA No.: MW0115 Test Date: December 17, 1997

TEST PHASE: 0° - 90°



DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time = 2 minutes 54 seconds

(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time = 5 minutes 0 seconds

TOTAL TIME = 7 minutes 54 seconds

Next Whole Minute Interval = 8 minutes

FUEL SPILLAGE MEASUREMENT:

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

FUEL SPILLAGE LOCATIONS(S): None

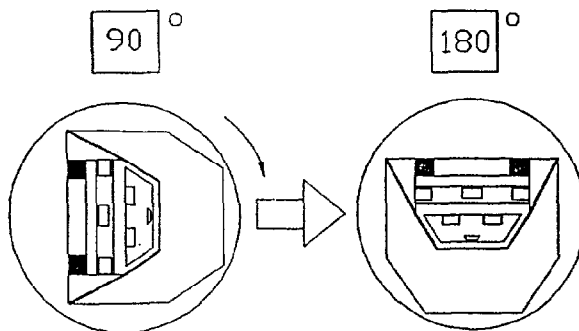
DATA SHEET 16

FMVSS 301 STATIC ROLLOVER TEST DATA (Cont'd)

Vehicle Year/Make/Model/Body Style: 1998/Oldsmobile/Intrigue/4-Door

Vehicle NHTSA No.: MW0115 Test Date: December 17, 1997

TEST PHASE: 90° - 180°



DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time = 2 minutes 32 seconds

(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time = 5 minutes 0 seconds

TOTAL TIME = 7 minutes 32 seconds

Next Whole Minute Interval = 8 minutes

FUEL SPILLAGE MEASUREMENT:

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

FUEL SPILLAGE LOCATIONS(S): None

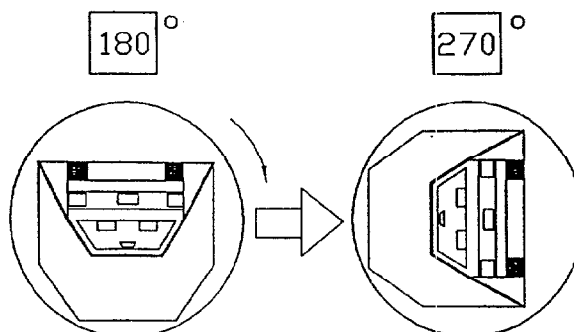
DATA SHEET 16

FMVSS 301 STATIC ROLLOVER TEST DATA (Cont'd)

Vehicle Year/Make/Model/Body Style: 1998/Oldsmobile/Intrigue/4-Door

Vehicle NHTSA No.: MW0115 Test Date: December 17, 1997

TEST PHASE: 180° - 270°



DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time = 2 minutes 12 seconds

(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time = 5 minutes 0 seconds

TOTAL TIME = 7 minutes 12 seconds

Next Whole Minute Interval = 8 minutes

FUEL SPILLAGE MEASUREMENT:

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

FUEL SPILLAGE LOCATIONS(S): None

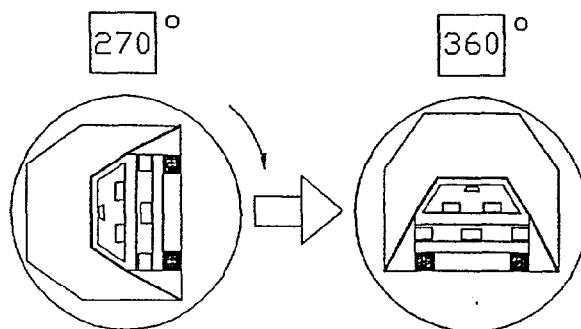
DATA SHEET 16

FMVSS 301 STATIC ROLLOVER TEST DATA

Vehicle Year/Make/Model/Body Style: 1998/Oldsmobile/Intrigue/4-Door

Vehicle NHTSA No.: MW0115 Test Date: December 17, 1997

TEST PHASE: 270° - 360°



DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time = 2 minutes 41 seconds

(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time = 5 minutes 0 seconds

TOTAL TIME = 7 minutes 41 seconds

Next Whole Minute Interval = 8 minutes

FUEL SPILLAGE MEASUREMENT:

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

FUEL SPILLAGE LOCATIONS(S): None

APPENDIX A - PHOTOGRAPHS

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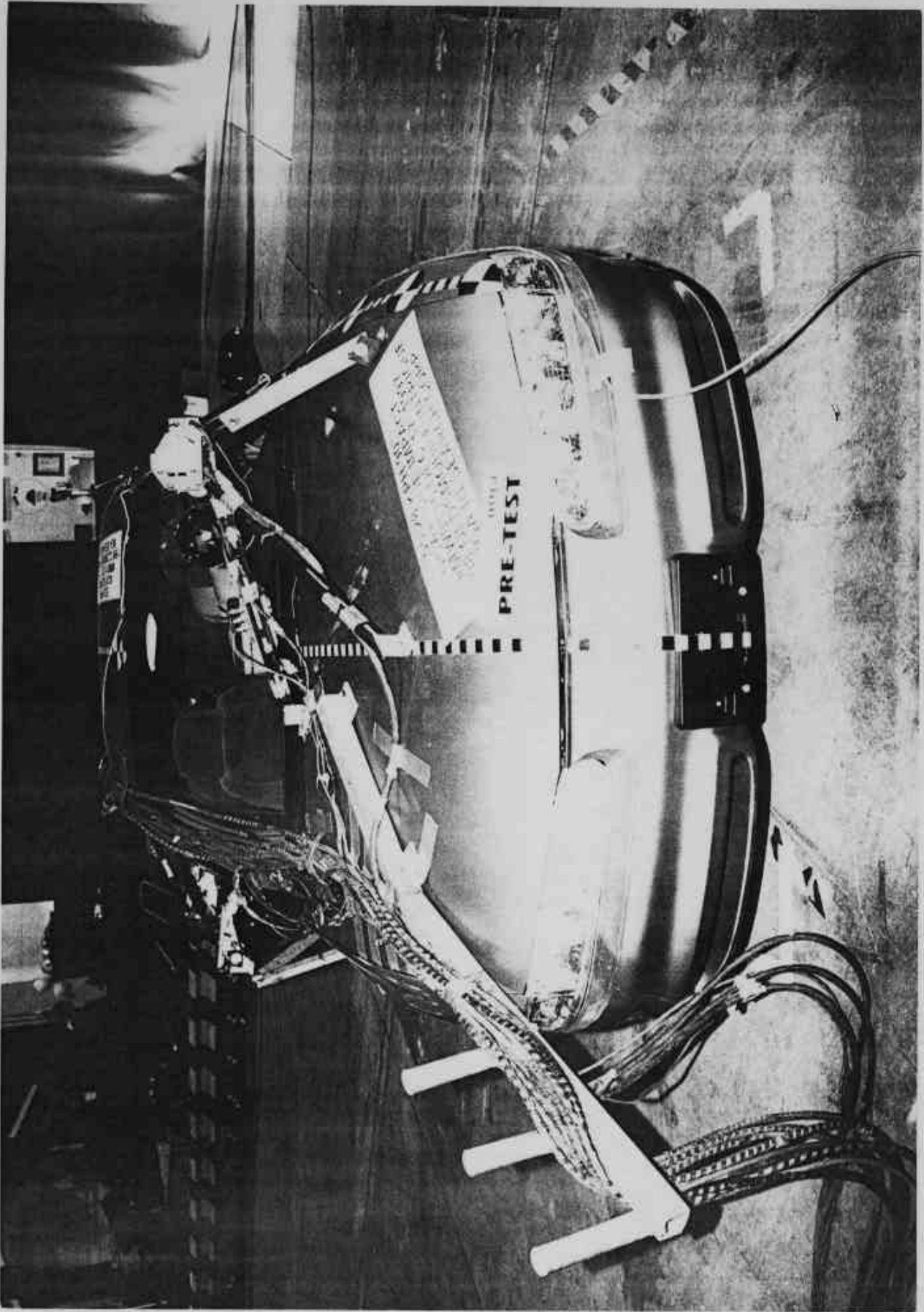


Photo No. A-1 - Pre-Test Front View of Test Vehicle

A-1

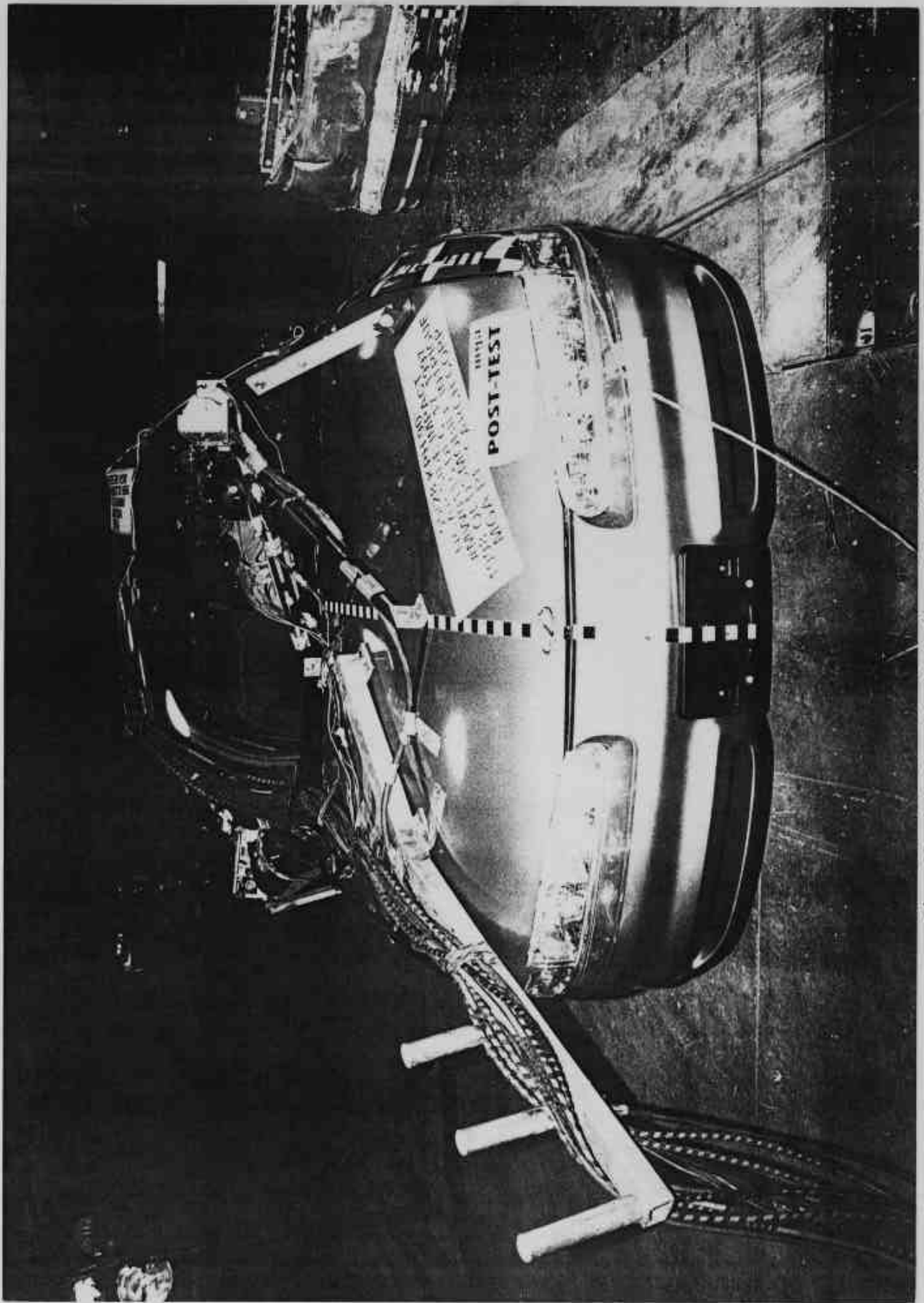


Photo No. A-2 - Post-Test Front View of Test Vehicle

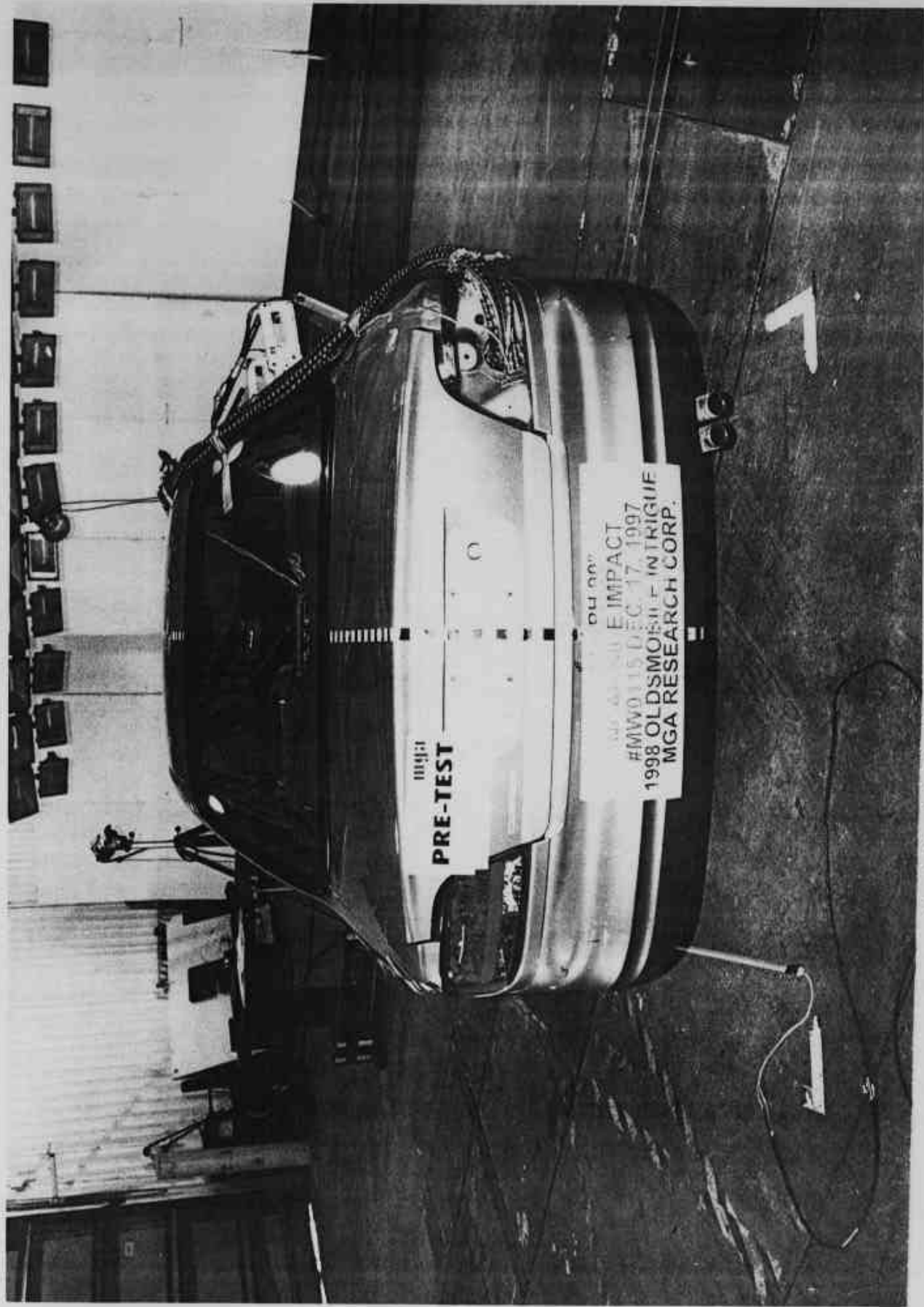


Photo No. A-3 - Pre-Test Rear View of Test Vehicle

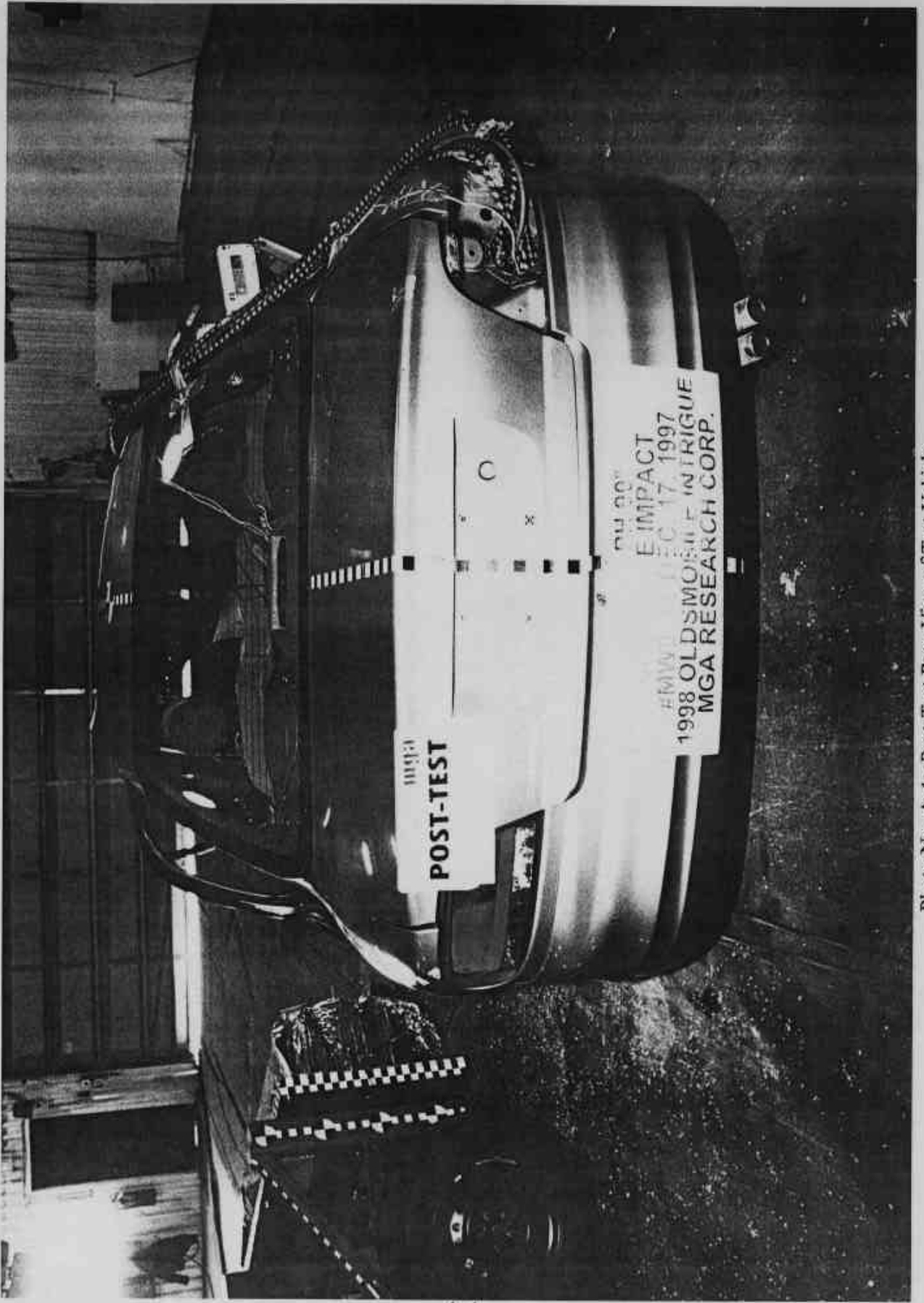
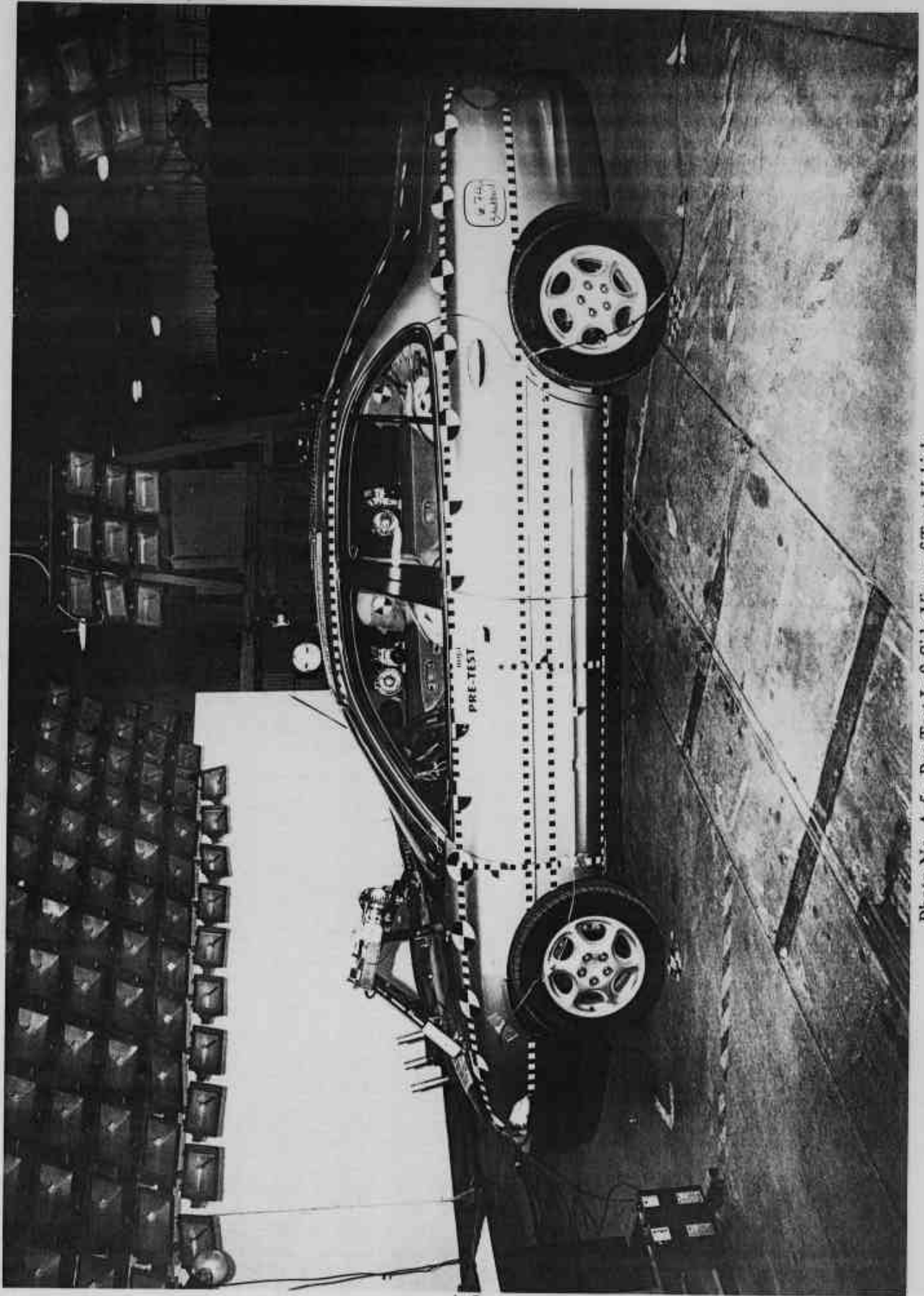


Photo No. A-4 - Post-Test Rear View of Test Vehicle



A-5

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

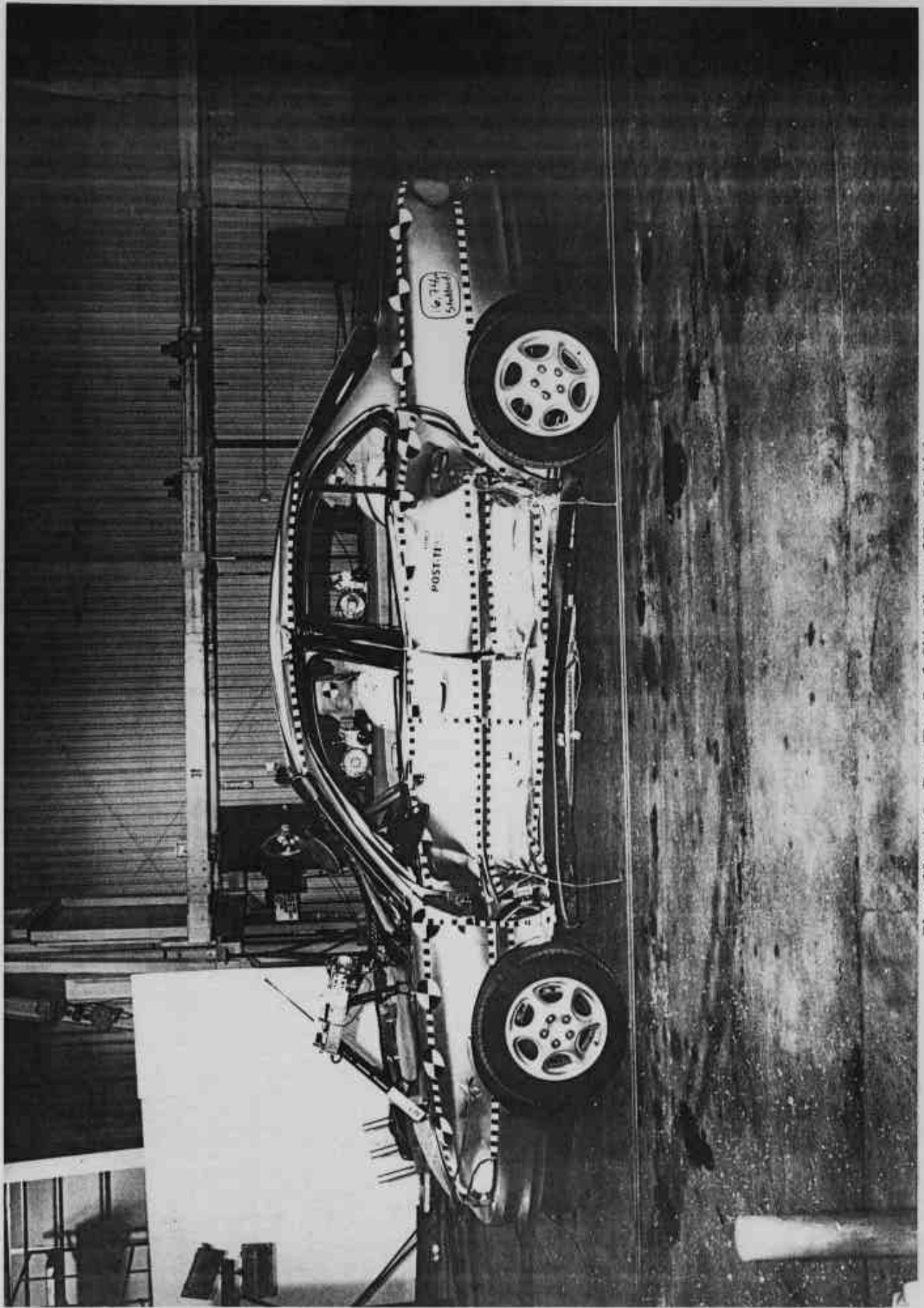


Photo No. A-6 - Post-Test Left Side View of Test Vehicle

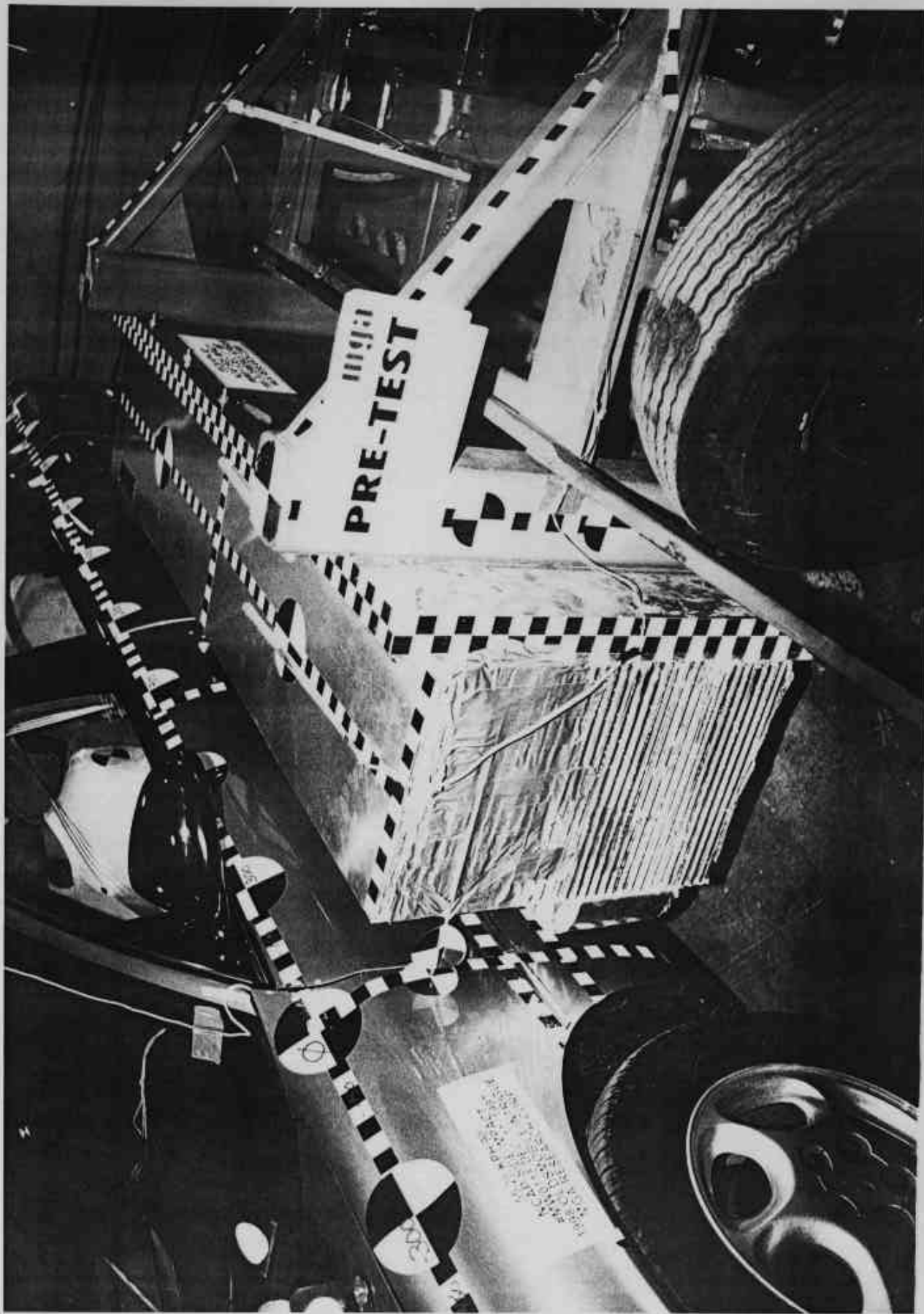


Photo No. A-7 - Pre-Test MDB Positioned Against Vehicle (left side)

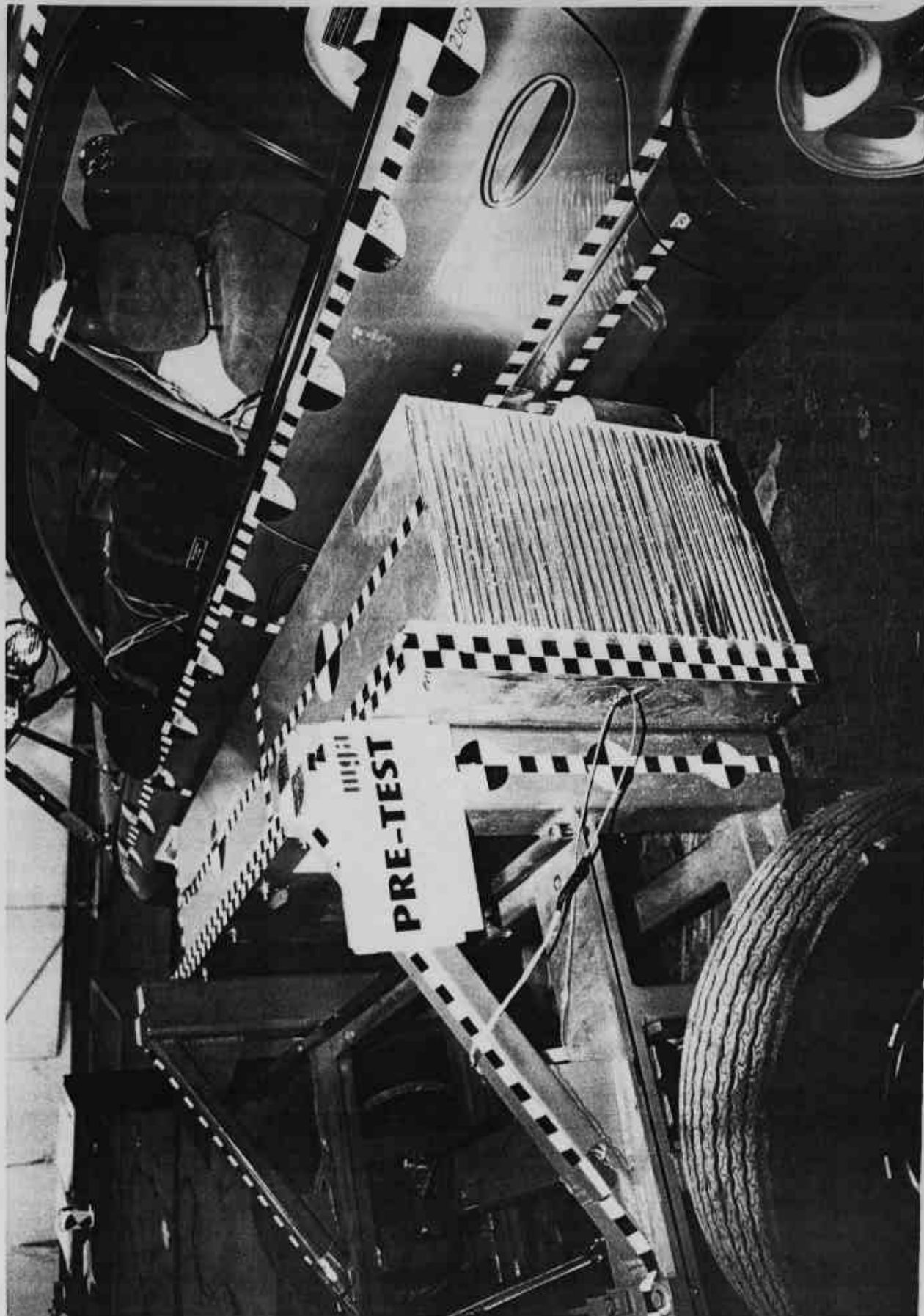


Photo No. A-8 - Pre-Test MDB Positioned Against Vehicle (right side)

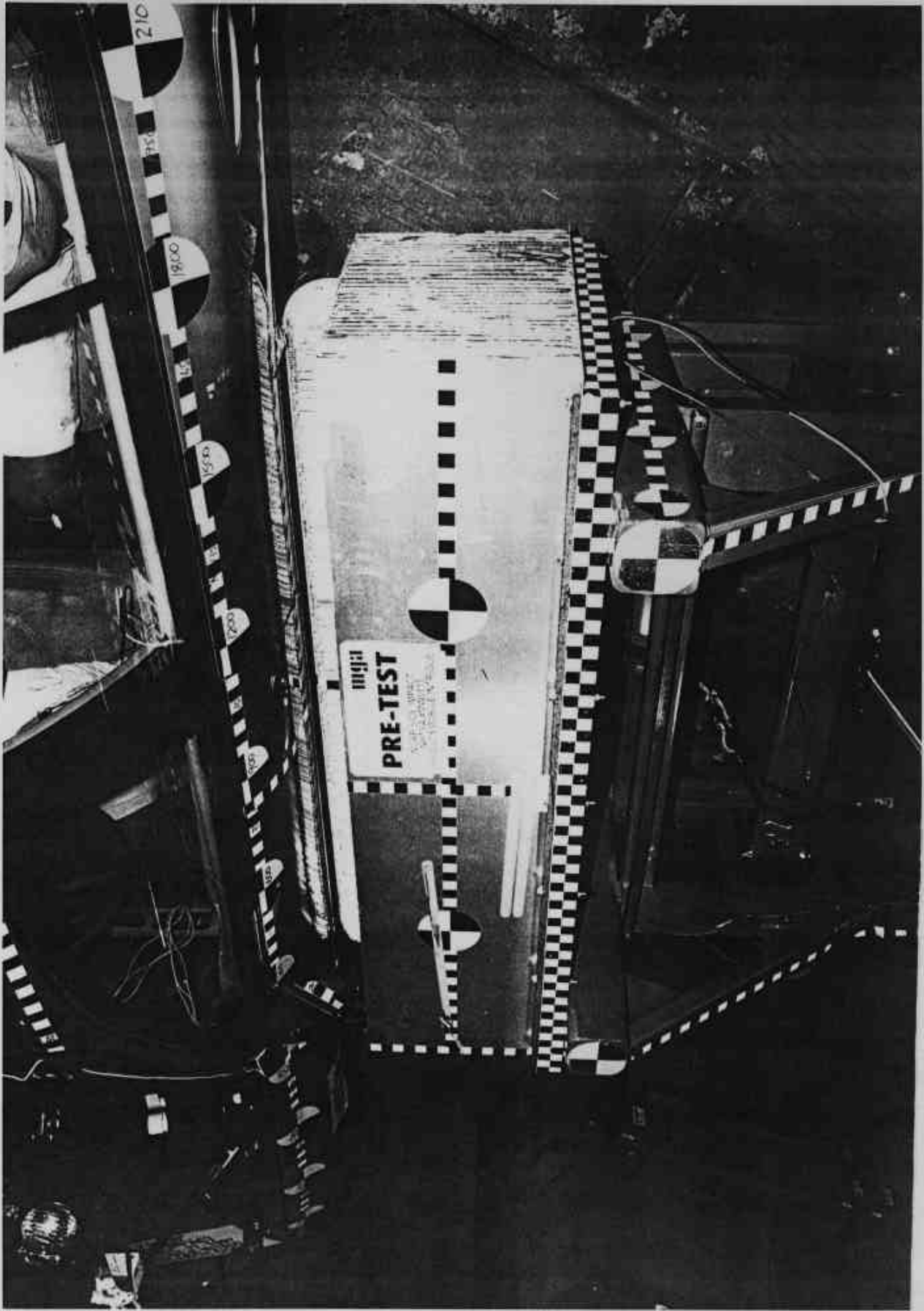


Photo No. A-9 - Pre-Test MDB Positioned Against Vehicle Overhead View

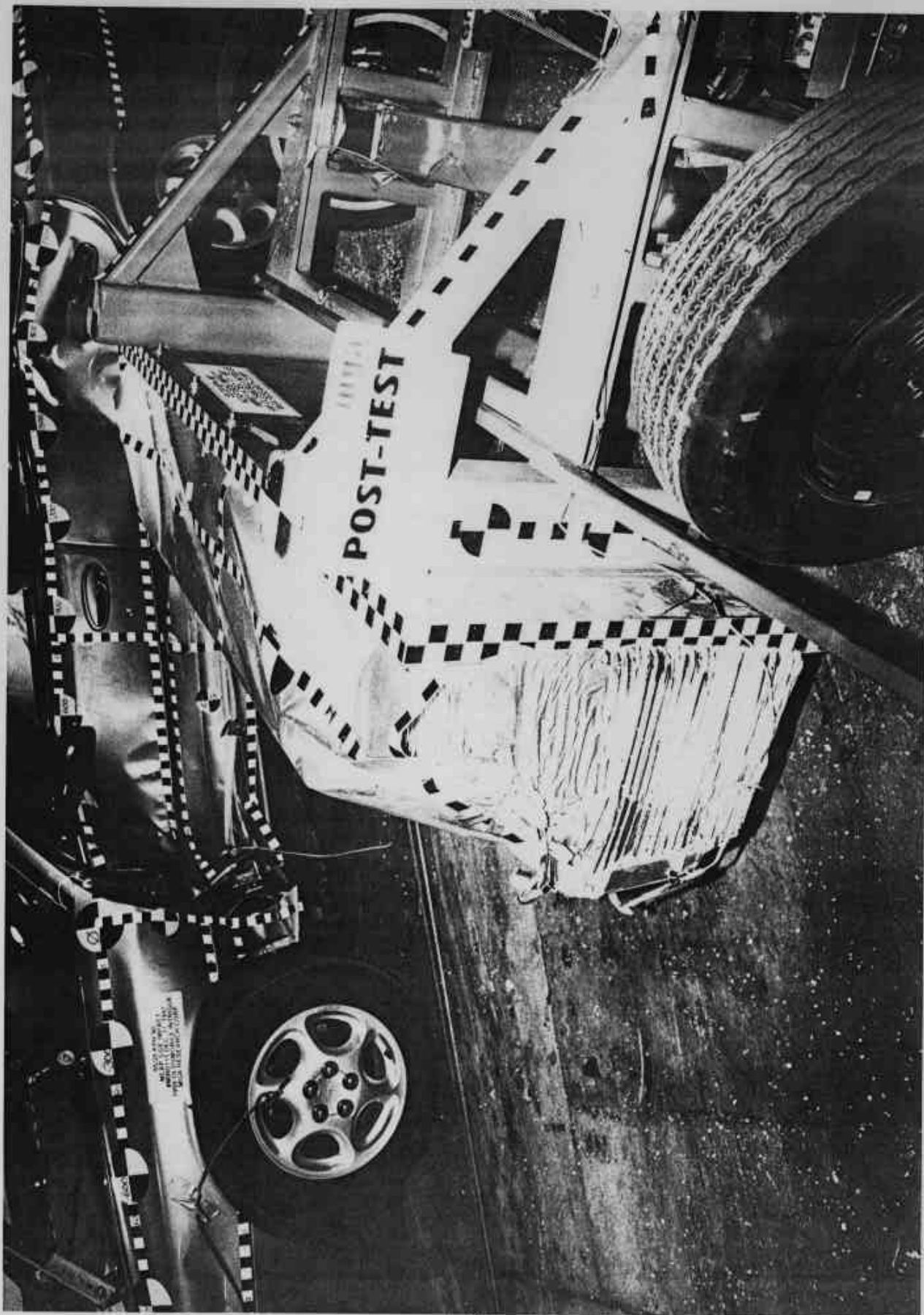


Photo No. A-10 - Post-Test MDB Positioned Against Vehicle (left side)

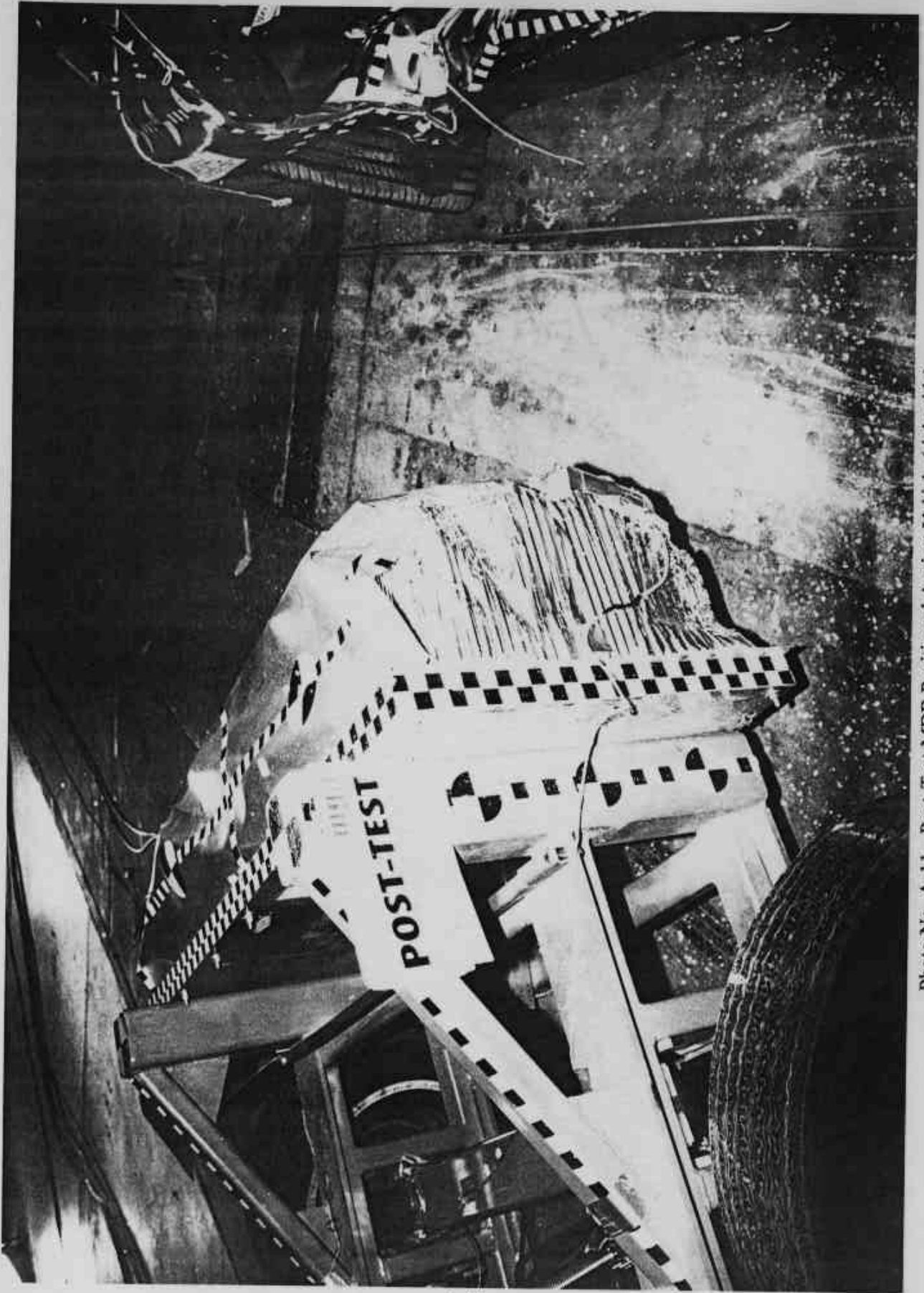


Photo No. A-11 - Post-Test MDB Positioned Against Vehicle (right side)

A-11



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

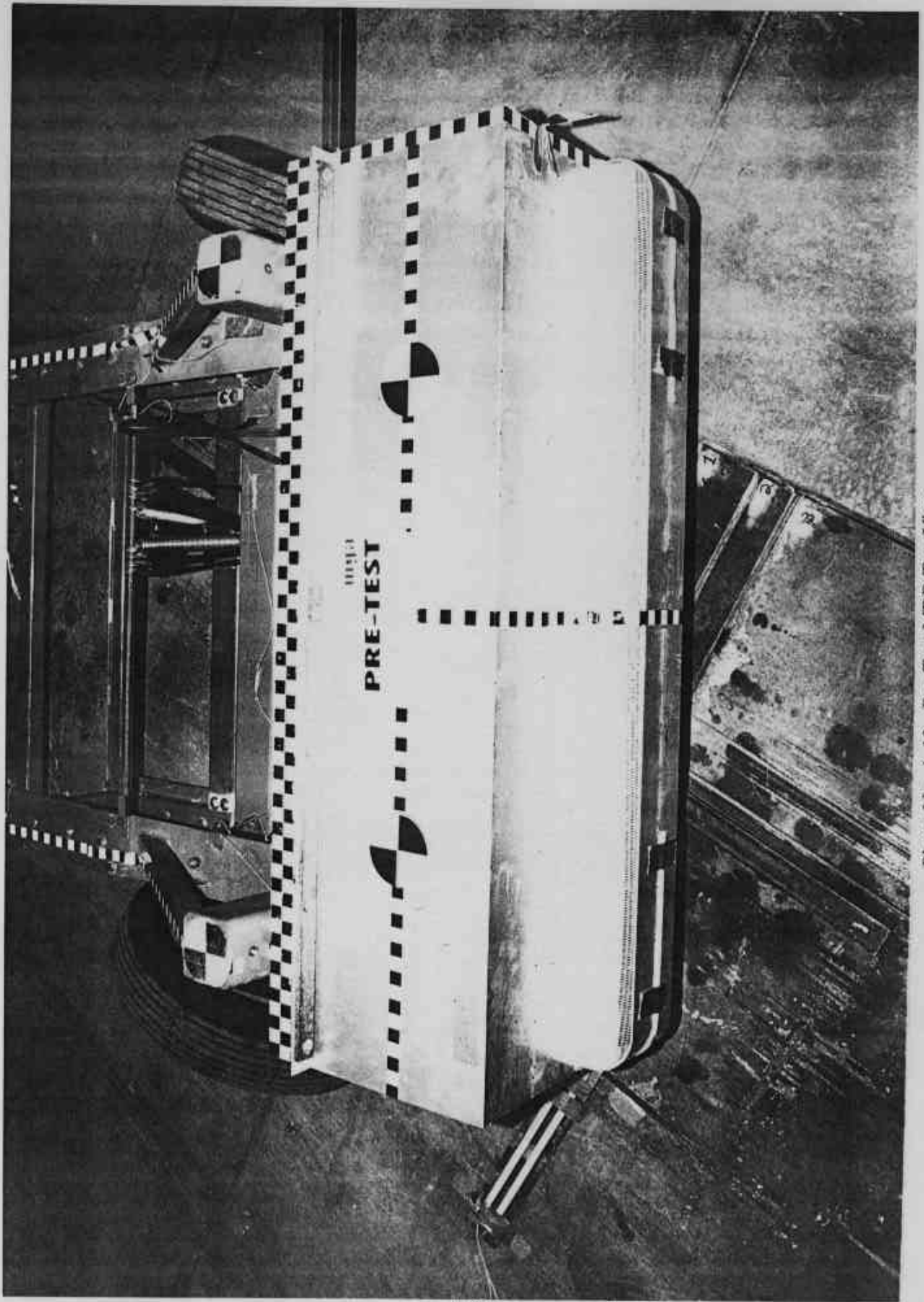


Photo No. A-13 - Pre-Test MDB Top View

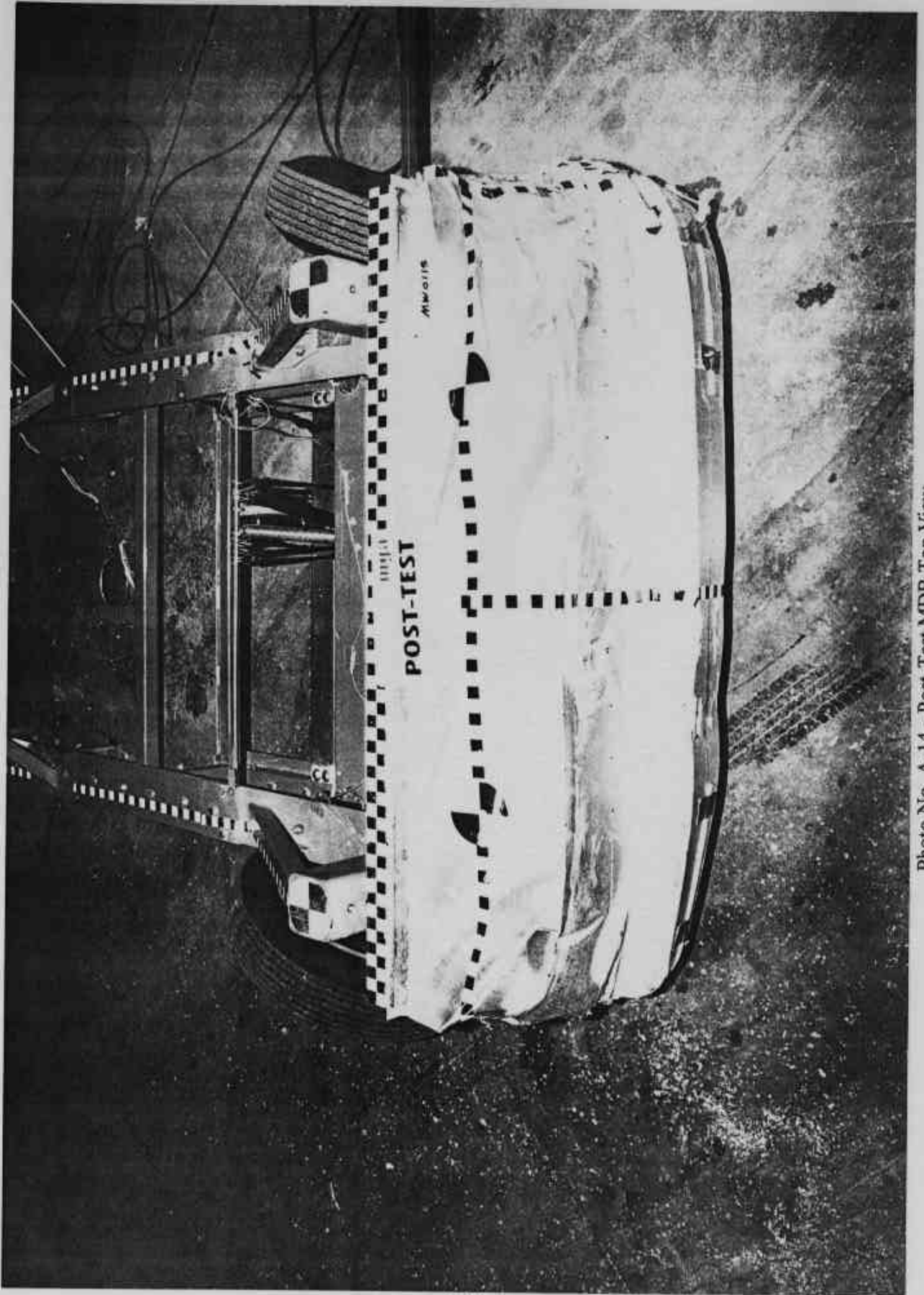
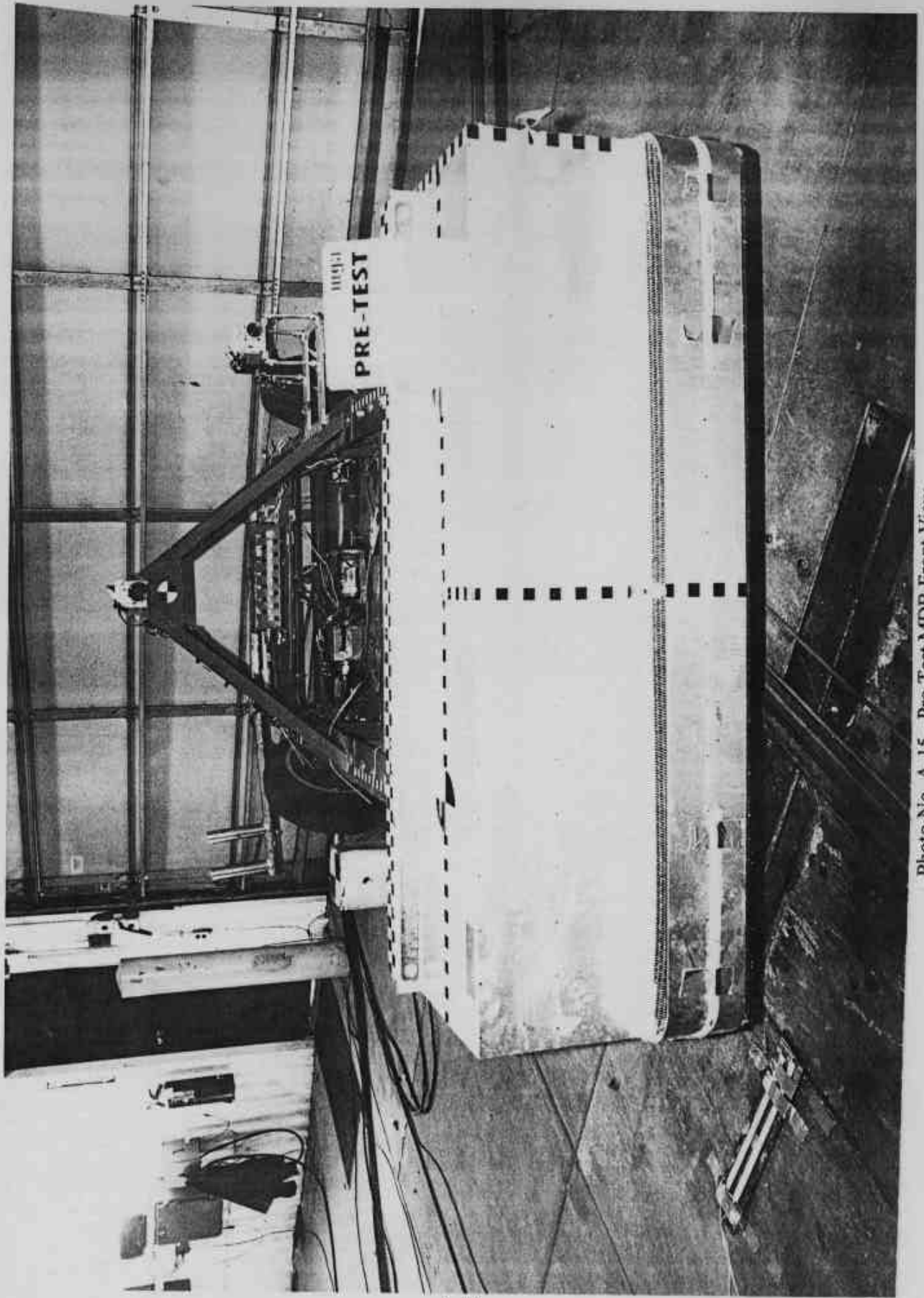
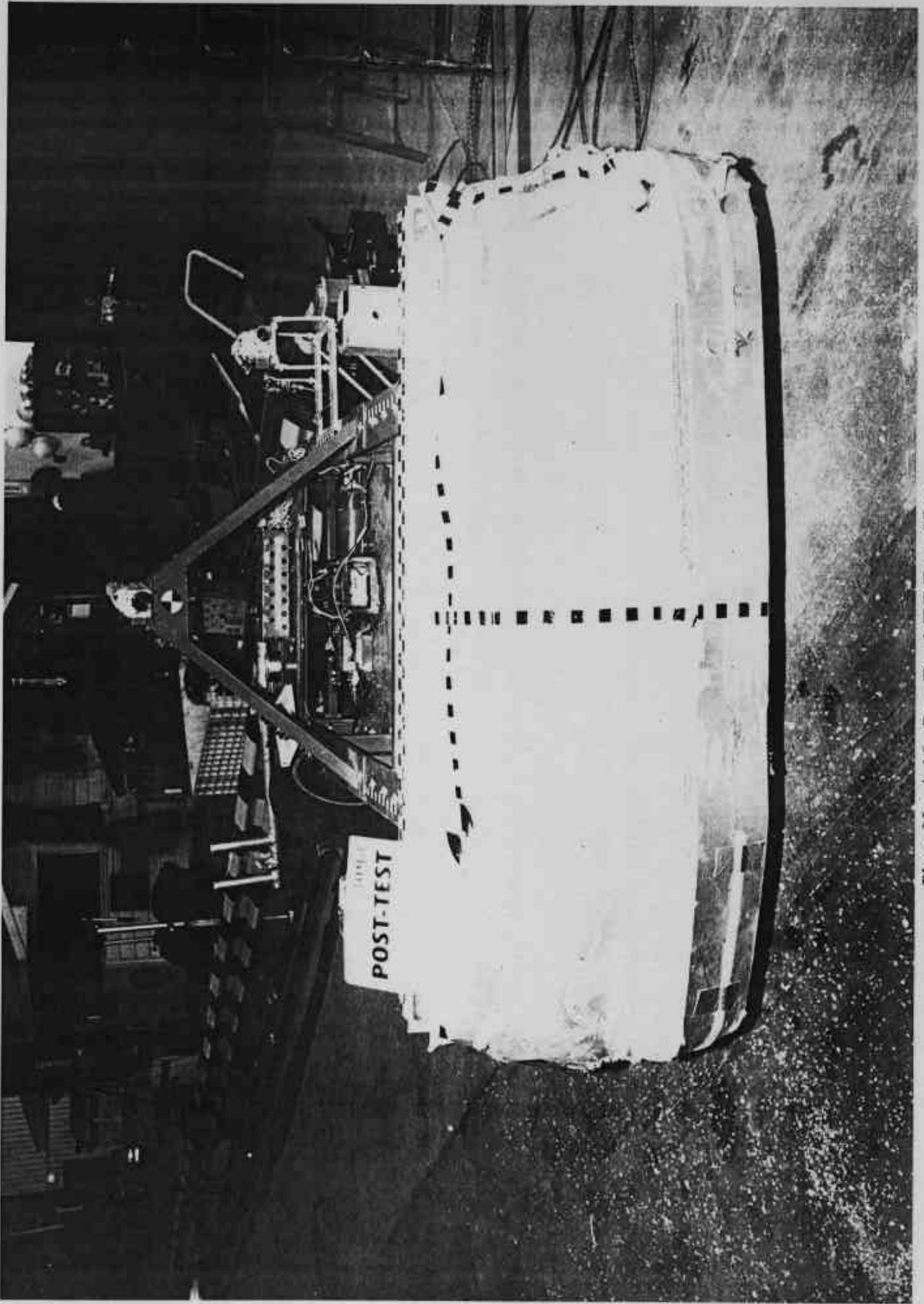


Photo No. A-14 - Post-Test MDB Top View



A-15

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



A-16

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

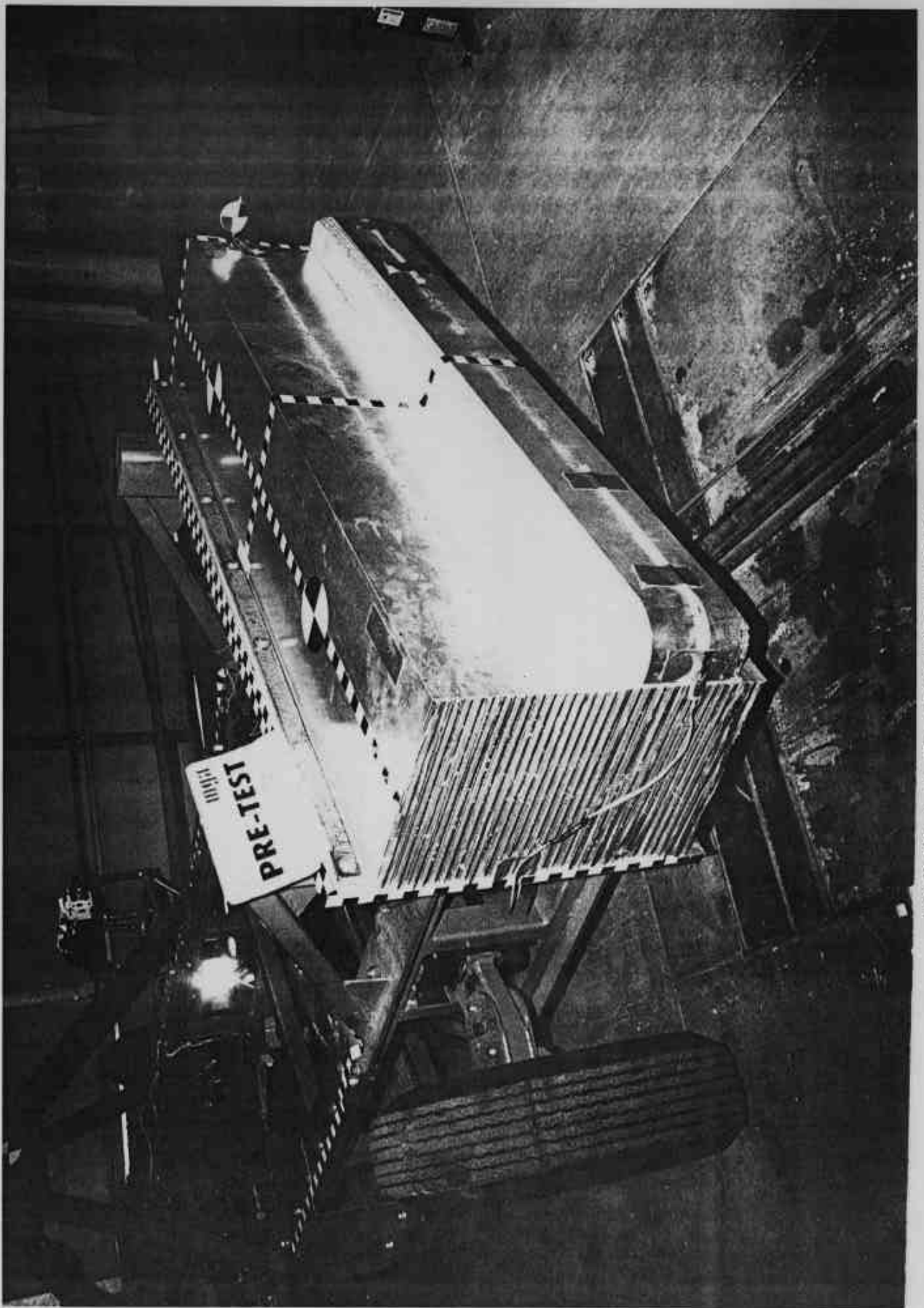


Photo No. A-17 - Pre-Test MDB Right Side View

A-17

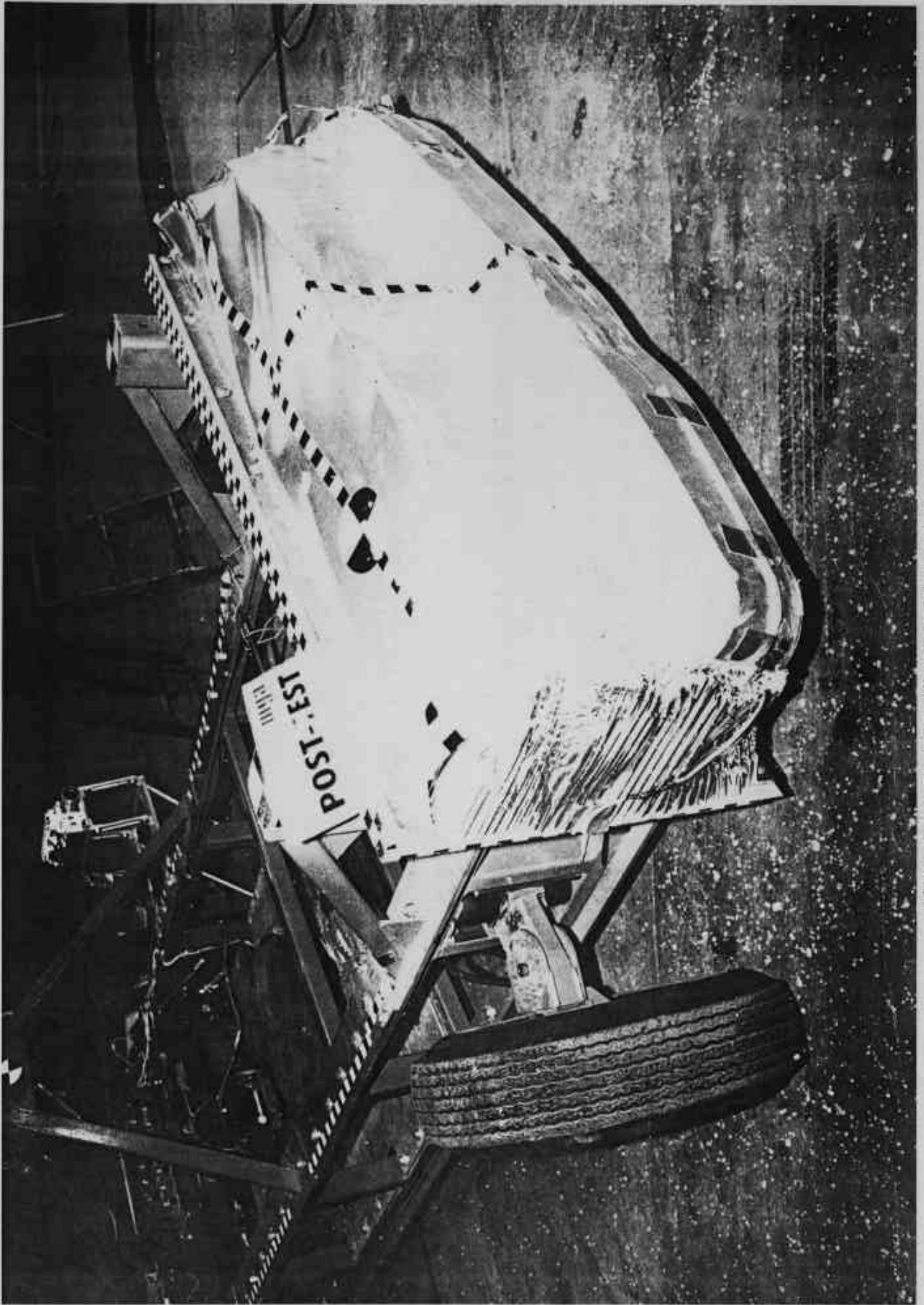


Photo No. A-18 - Post-Test MDB Right Side View

A-18

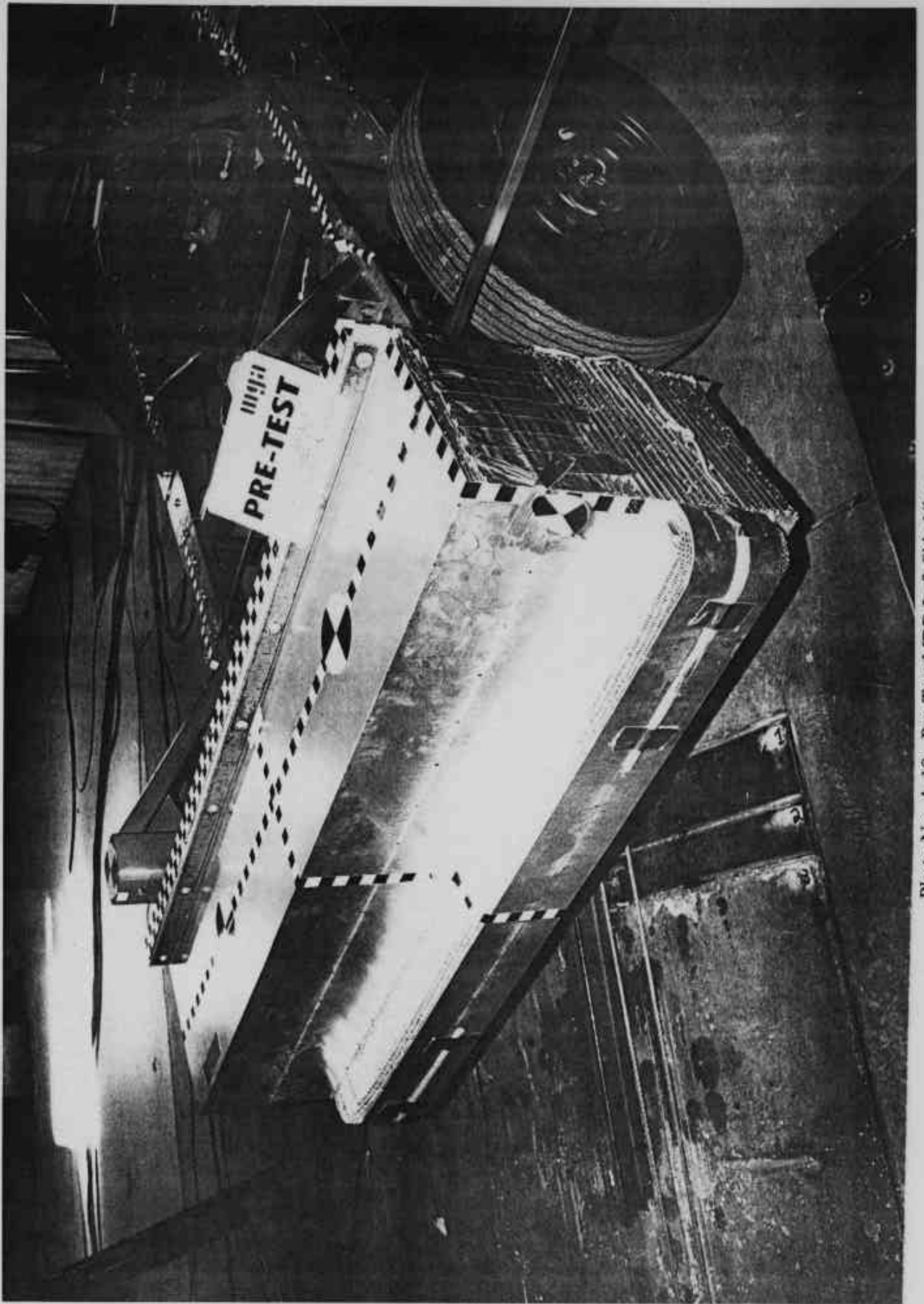


Photo No. A-19 - Pre-Test MDB Left Side View

A-19

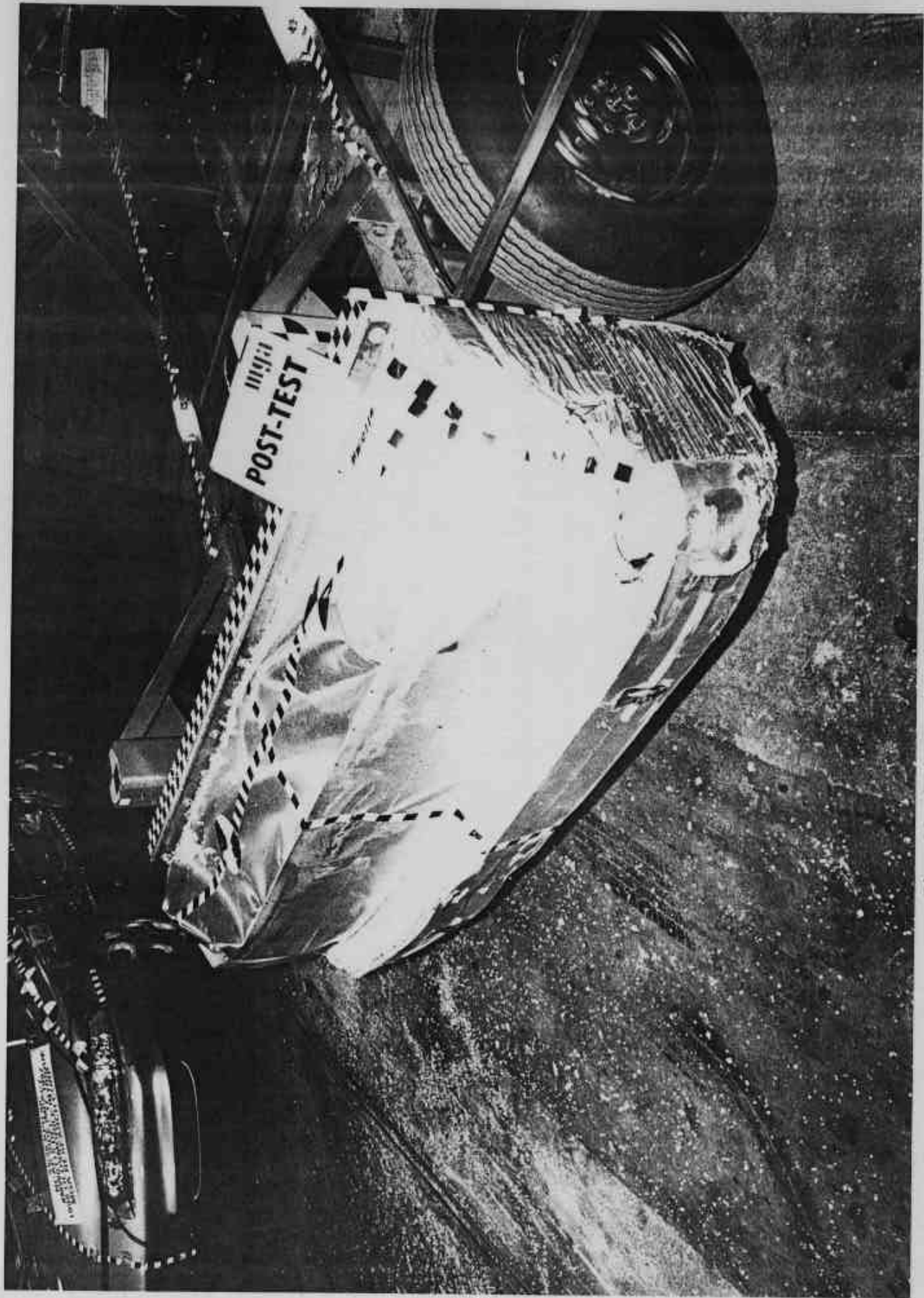


Photo No. A-20 - Post-Test MDB Left Side View

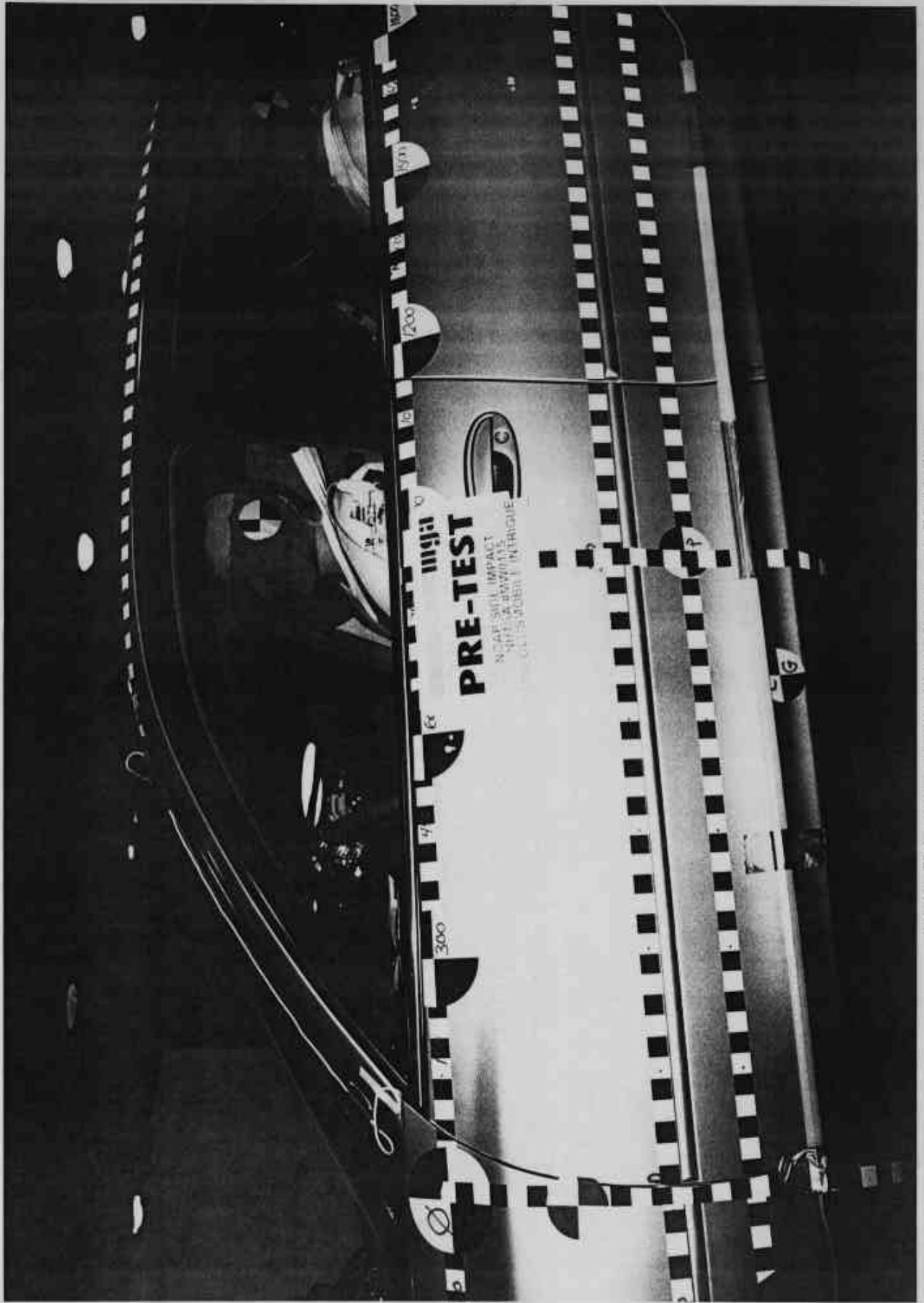
A-20



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



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



A-23

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

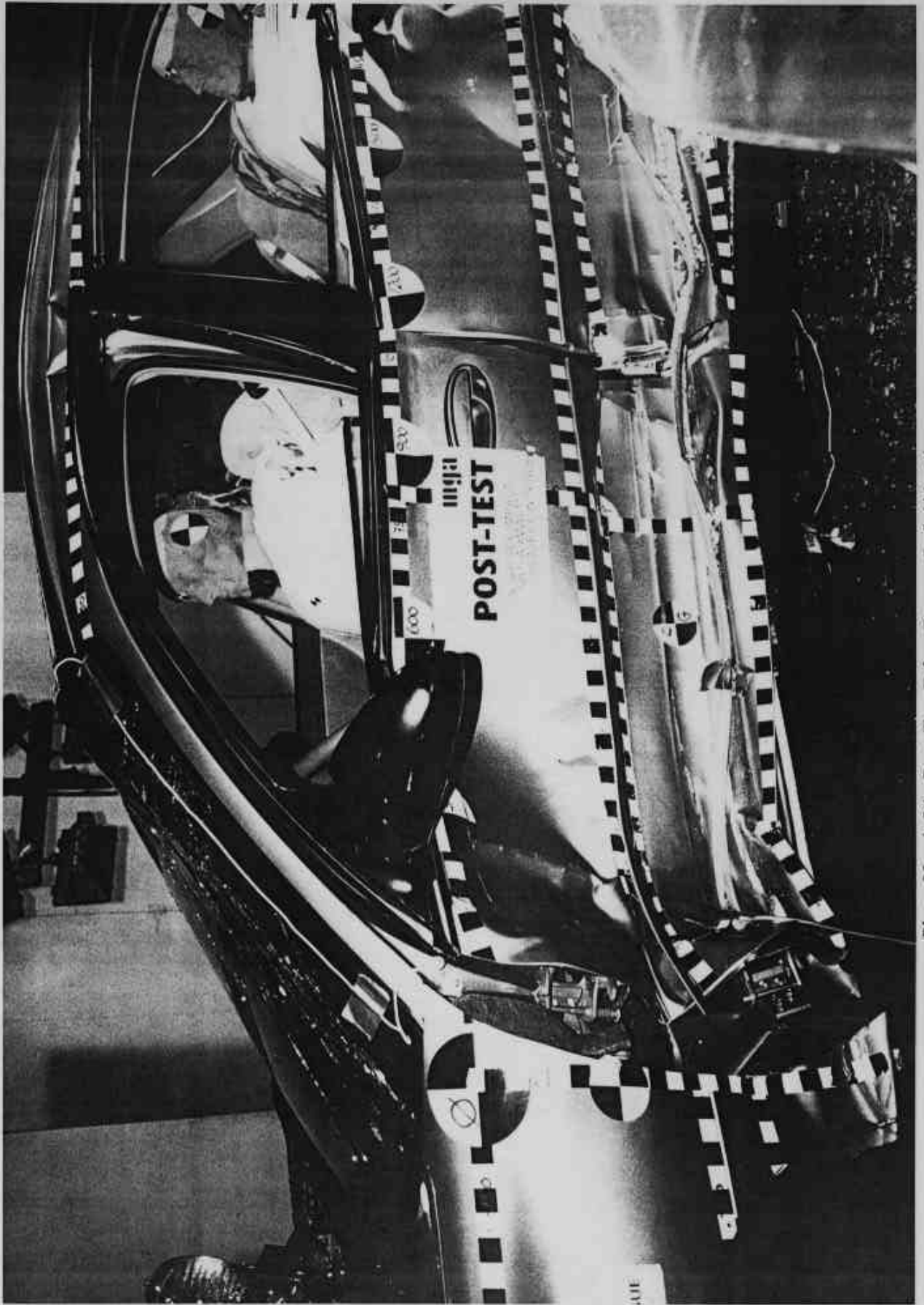


Photo No. A-24 - Post-Test Driver Dummy Left Side View

A-24



A-25

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

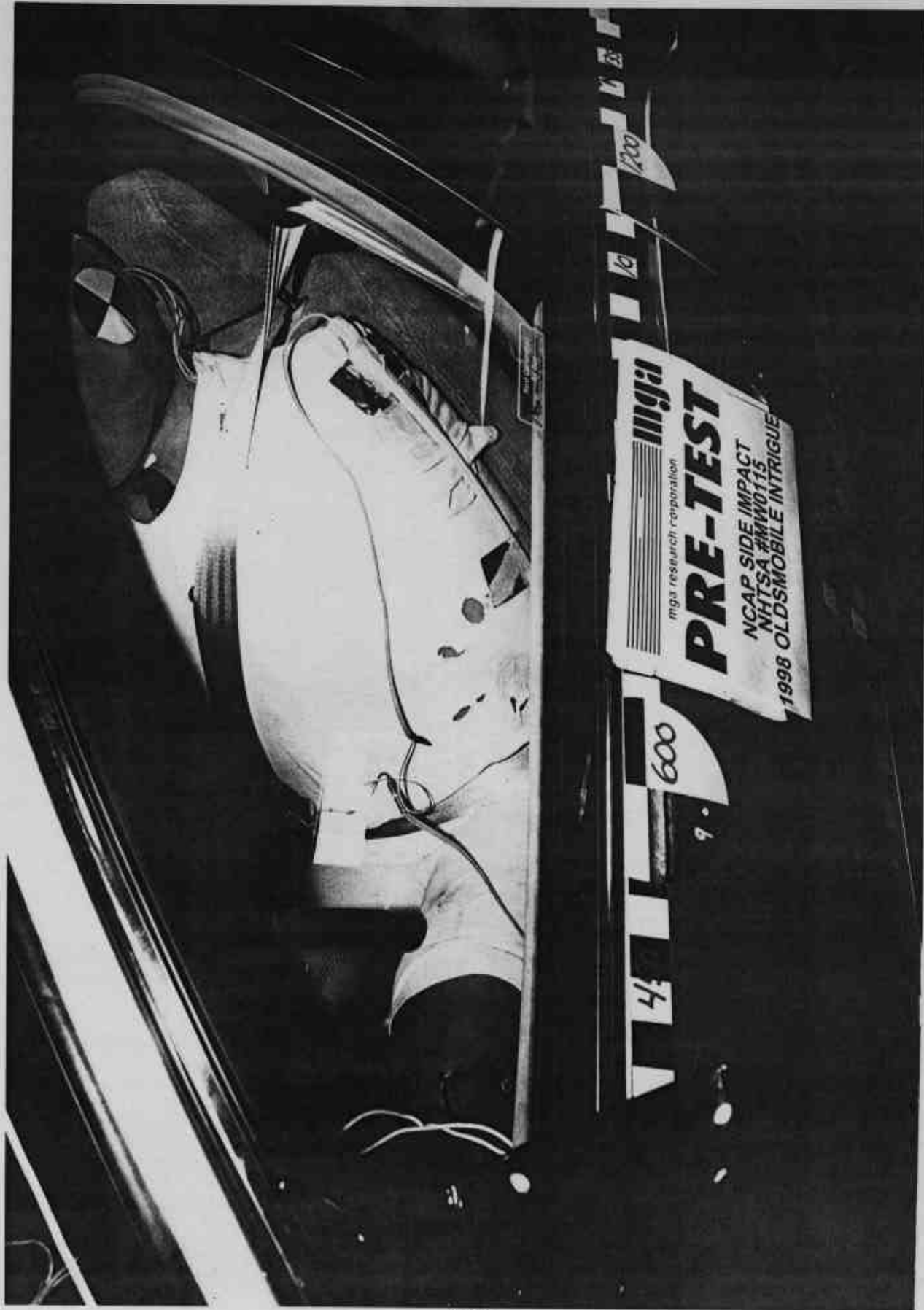


Photo No. A-26 - Pre-Test Driver Dummy Shoulder and Door Top View



A-27

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

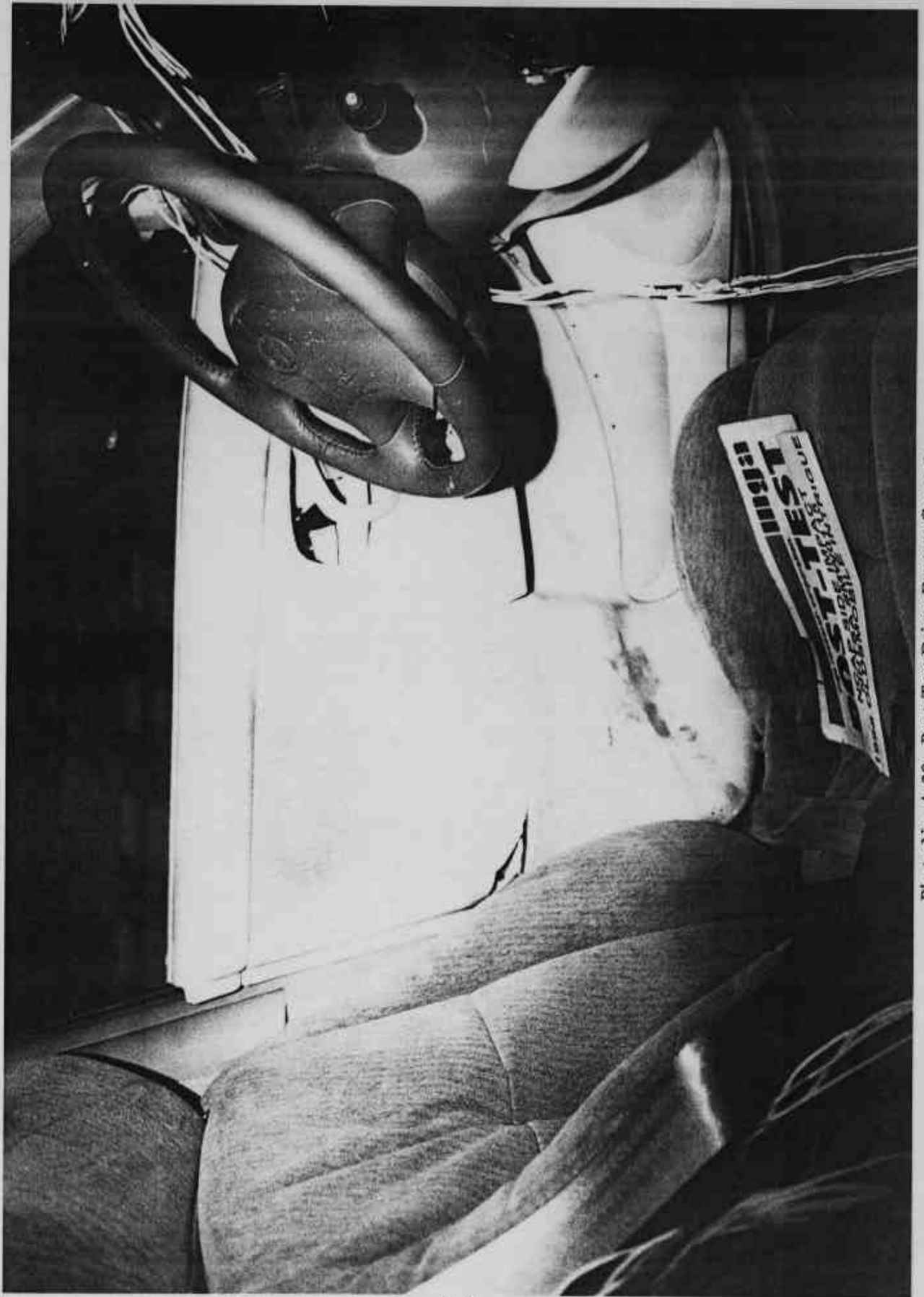


Photo No. A-28 - Post-Test Driver Dummy Contact



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

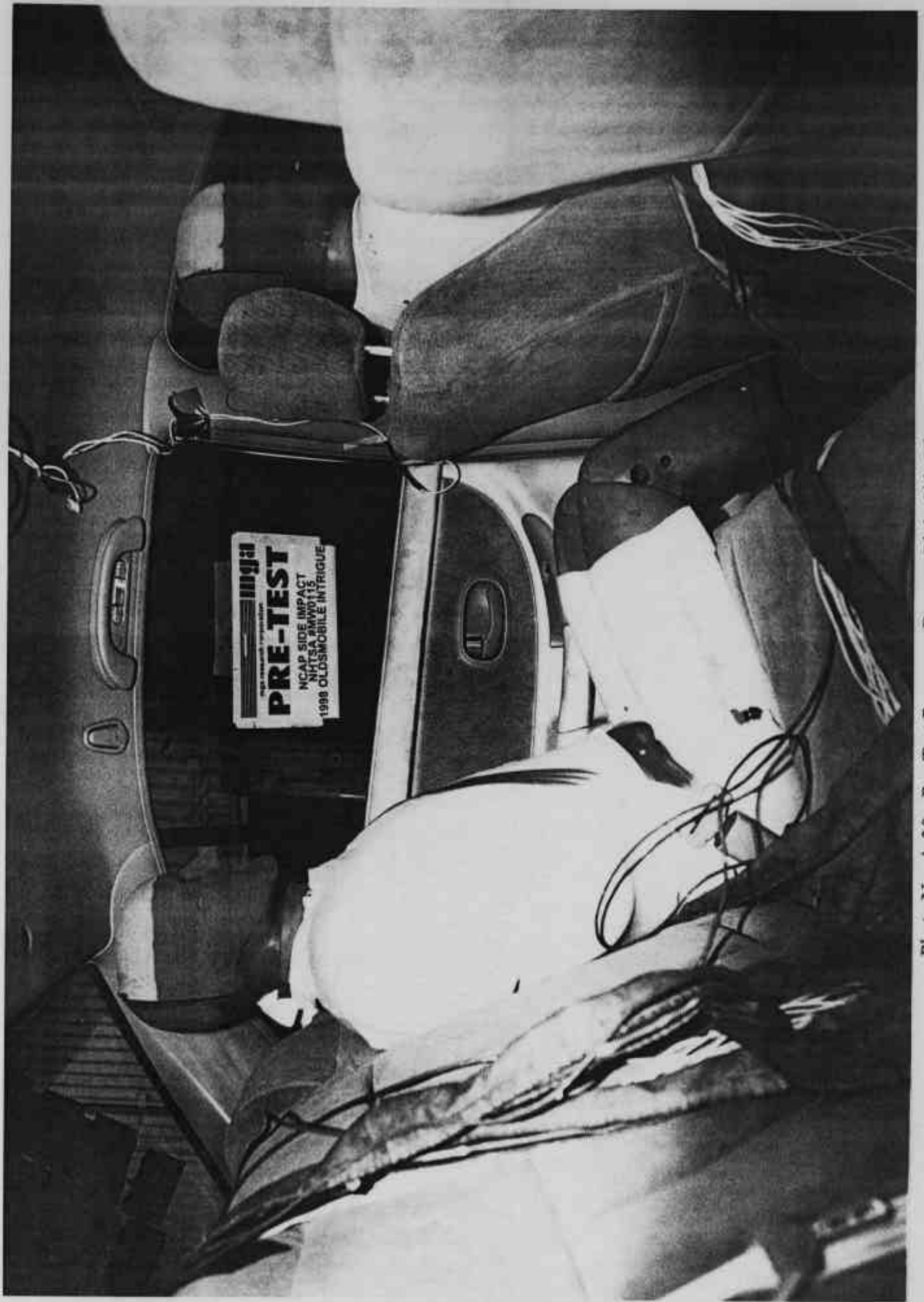
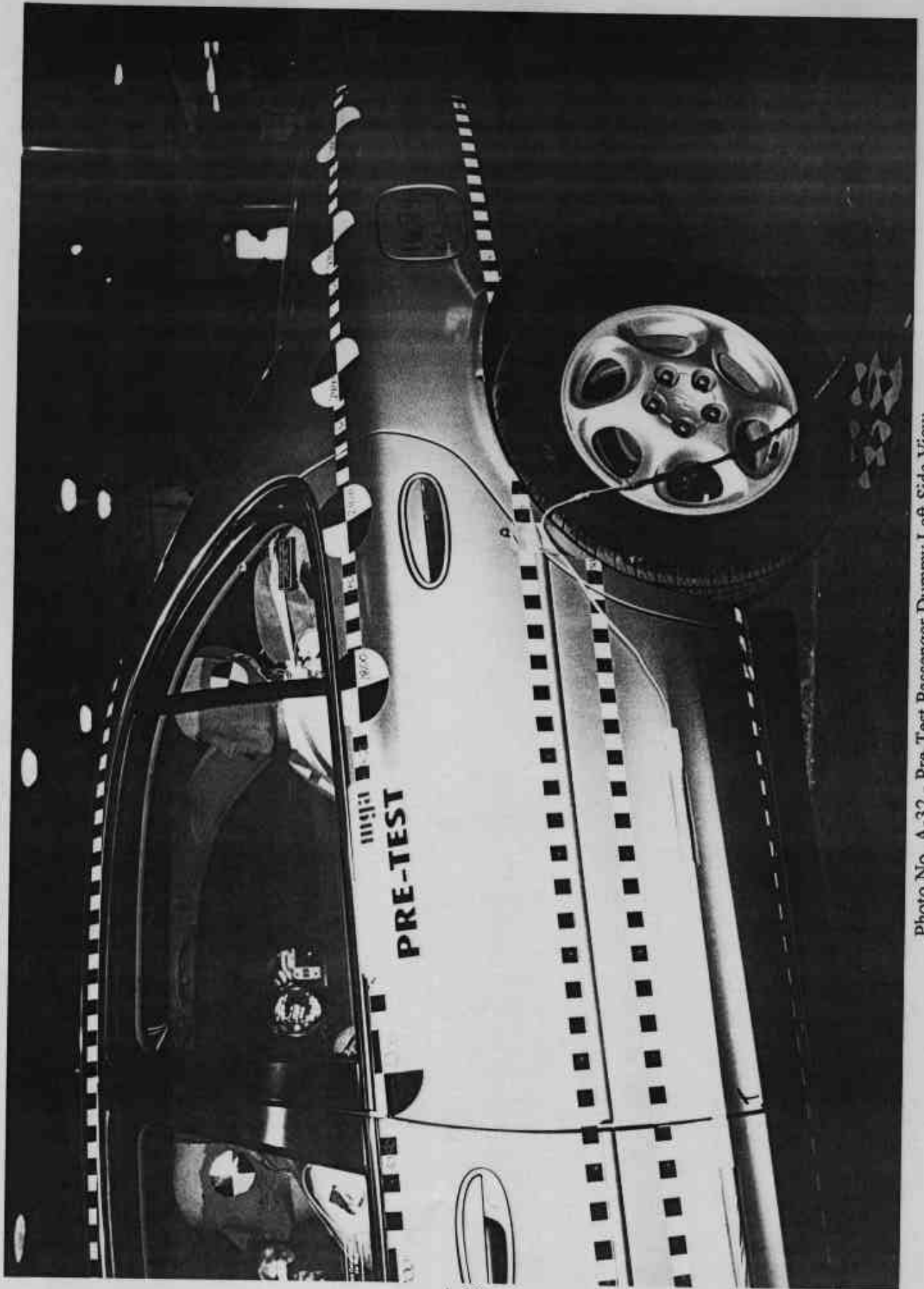


Photo No. A-30 - Pre-Test Passenger Dummy Right Side View



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



A-32

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

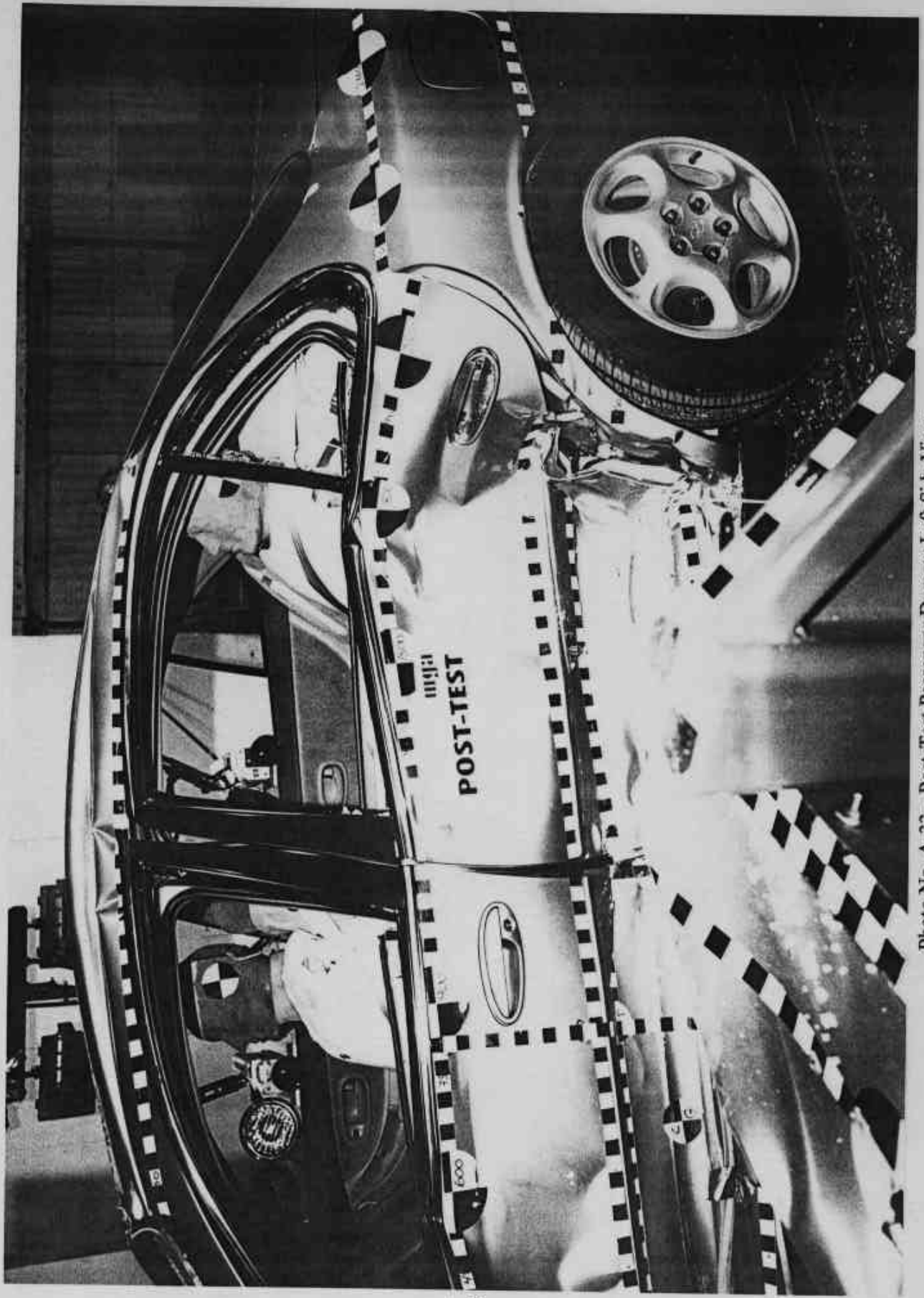


Photo No. A-33 - Post-Test Passenger Dummy Left Side View

A-33

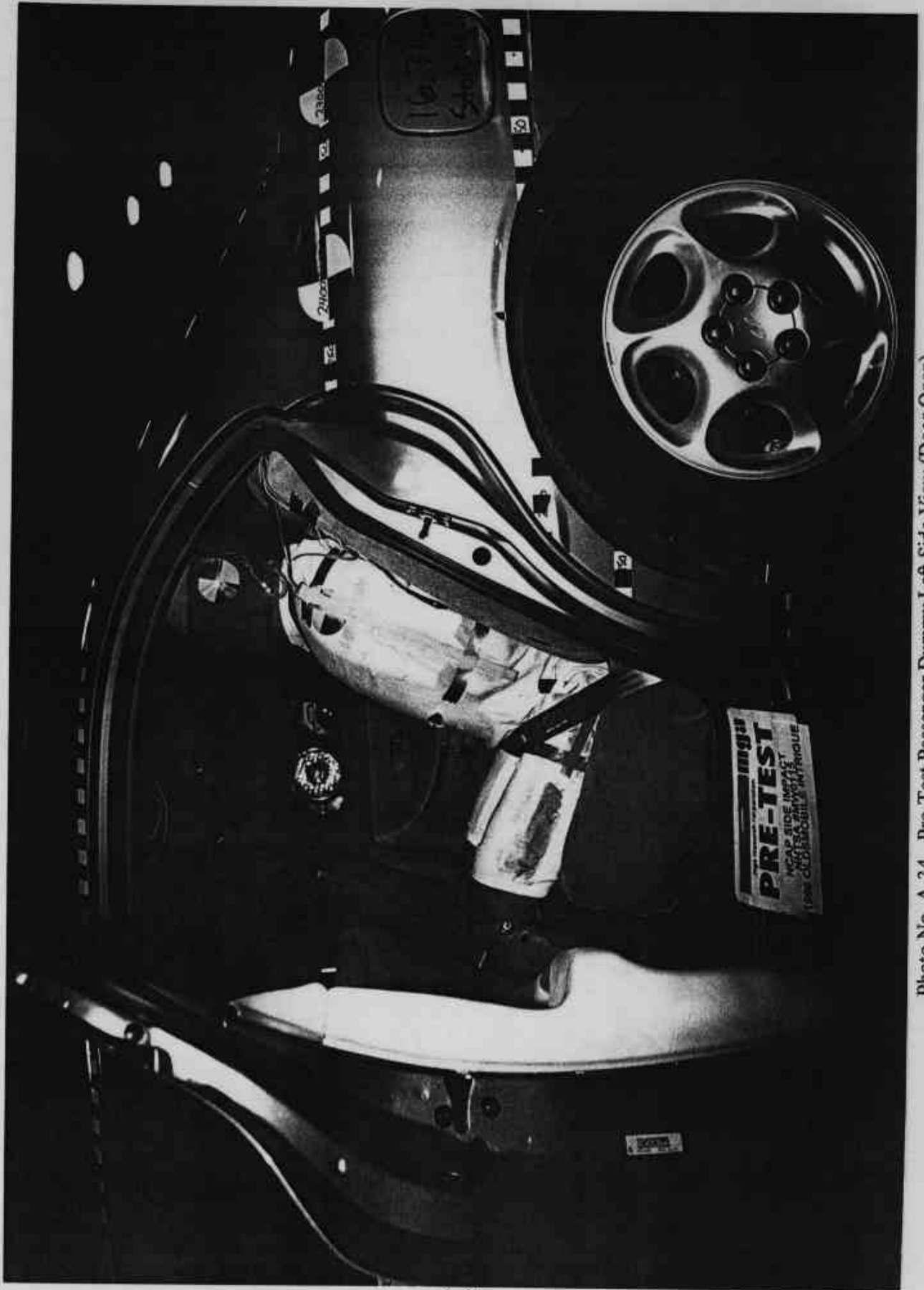


Photo No. A-34 - Pre-Test Passenger Dummy Left Side View (Door Open)

A-34



A-35

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



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



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



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



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



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



A-41

Photo No. A-41 - Impact

 **TIRE - LOADING INFORMATION**

OCCUPANTS		VEHICLE CAP. WT.			
FR.	CTR.	RR.	TOTAL	KG	LBS
2	0	3	5	416	917

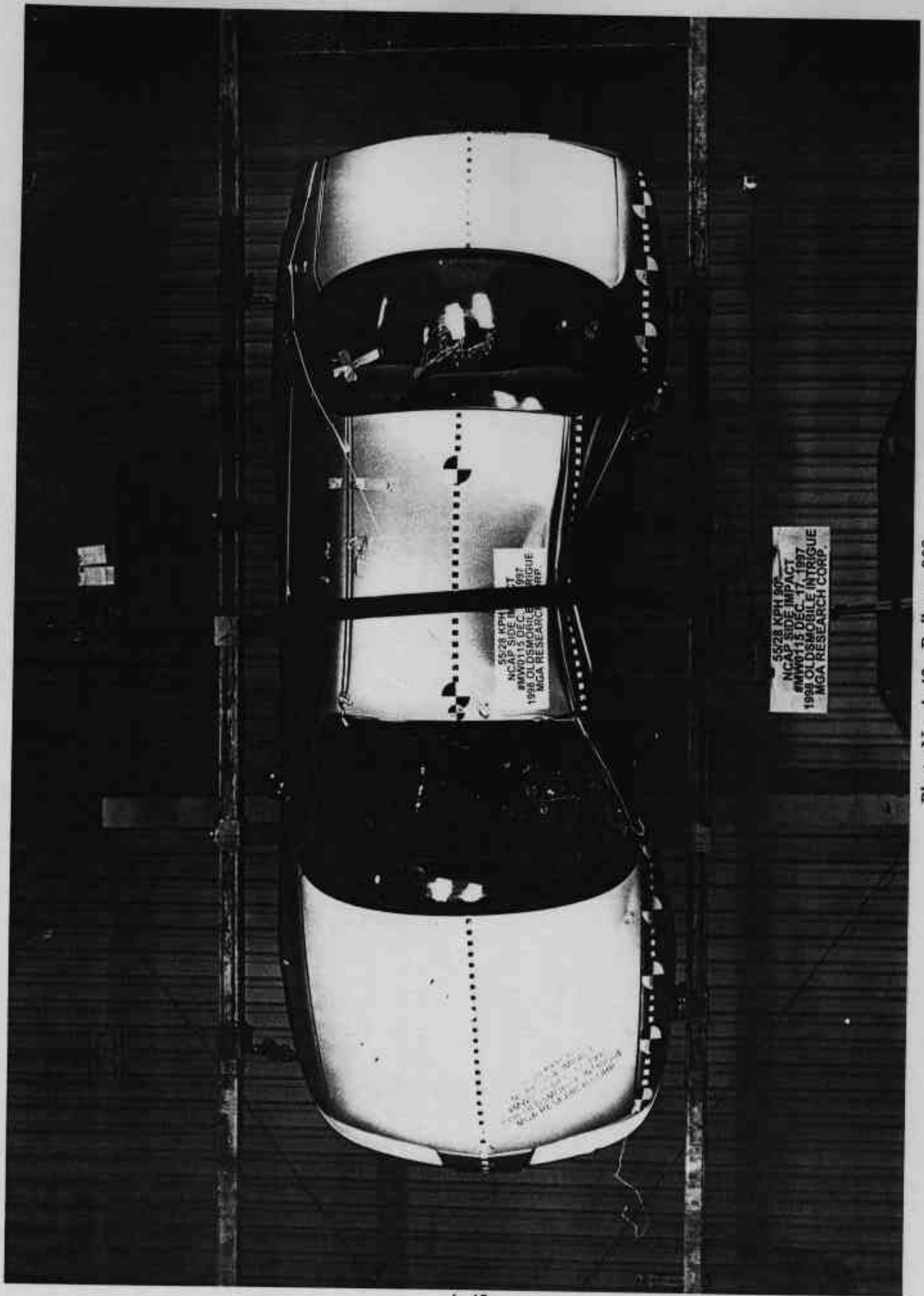
MAX. LOADING @ GVWR SAME AS VEHICLE CAPACITY WEIGHT.
1G3WH52K7WF318556
 MODEL: WH69 WAN

TIRE SIZE	SPEED RTG	COLD TIRE PRESSURE
FRT P225/60R16	S	210KPA(30PSI)
RR P225/60R16	S	210KPA(30PSI)
SPA T125/70D15	M	420KPA(60PSI)

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



Photo No. A-42 - Vehicle Certification Label and Tire Placard

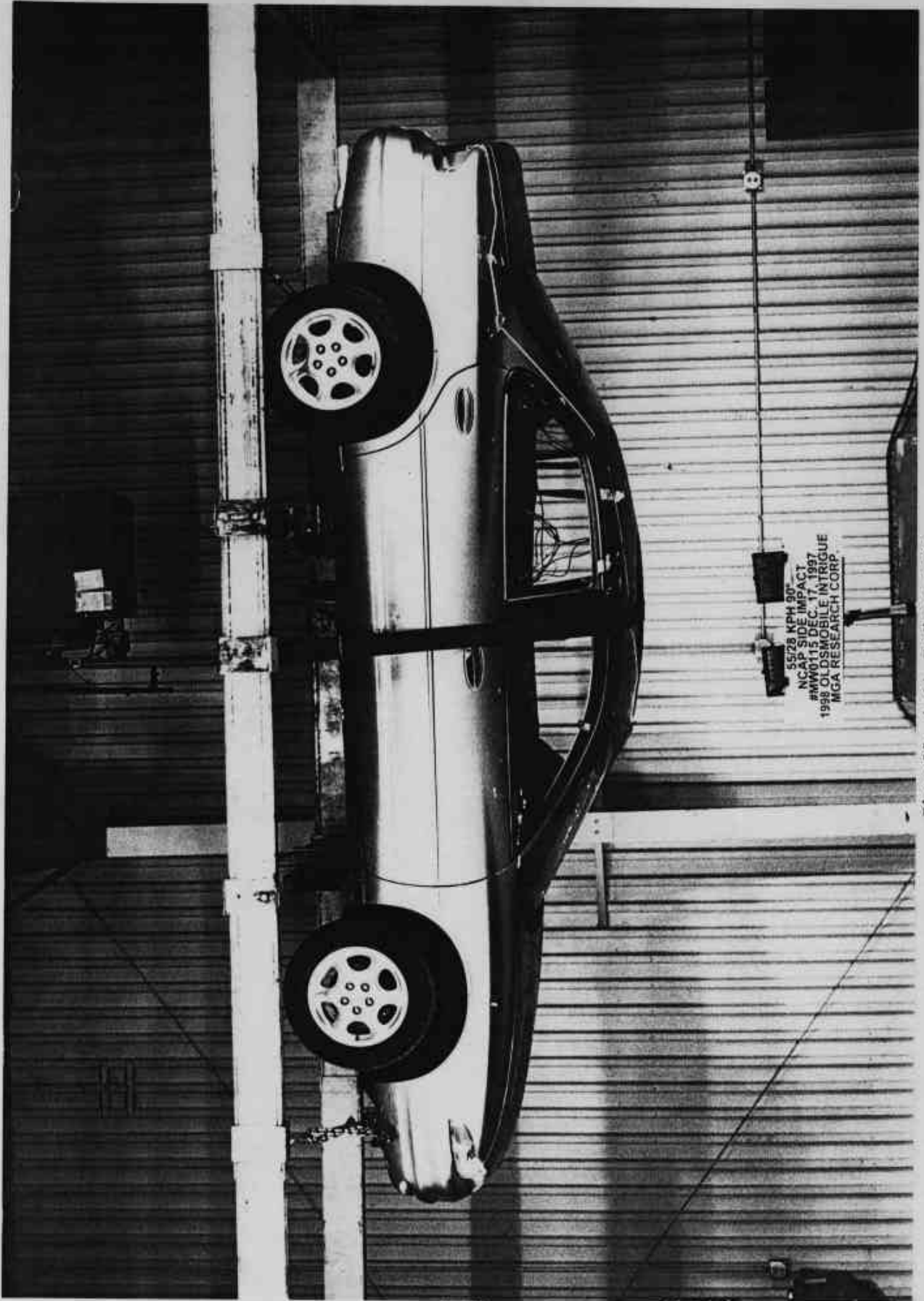


55/28 MPH
NCAP SIDE IMPACT
#MVD15 DEC 11 1997
1996 OLDSMOBILE
INTRIGUE
MGA RESEARCH
RFP

55/28 MPH 90°
NCAP SIDE IMPACT
#MVD15 DEC 11 1997
1996 OLDSMOBILE
INTRIGUE
MGA RESEARCH CORP.

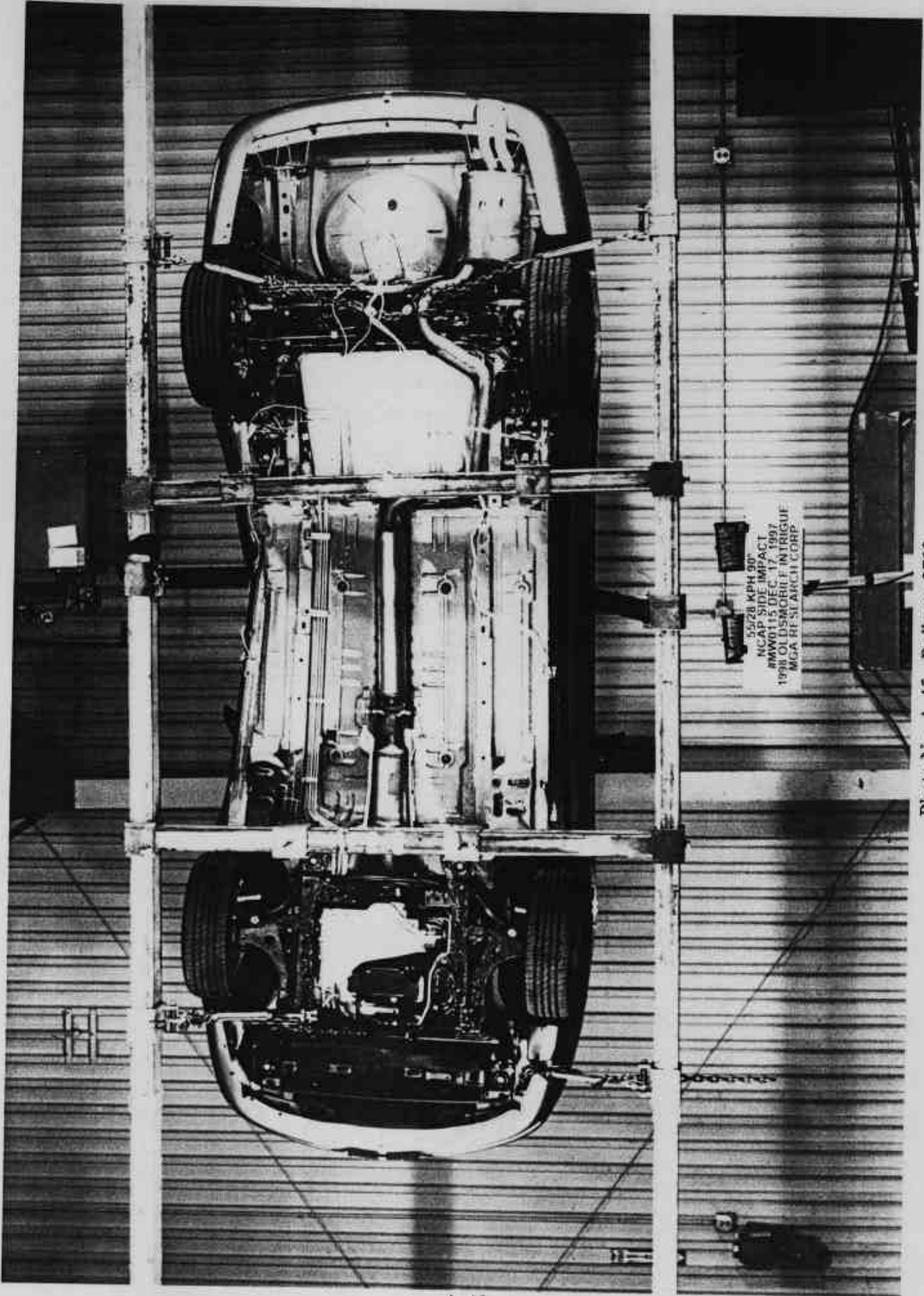
A-43

Photo No. A-43 - Rollover 90°



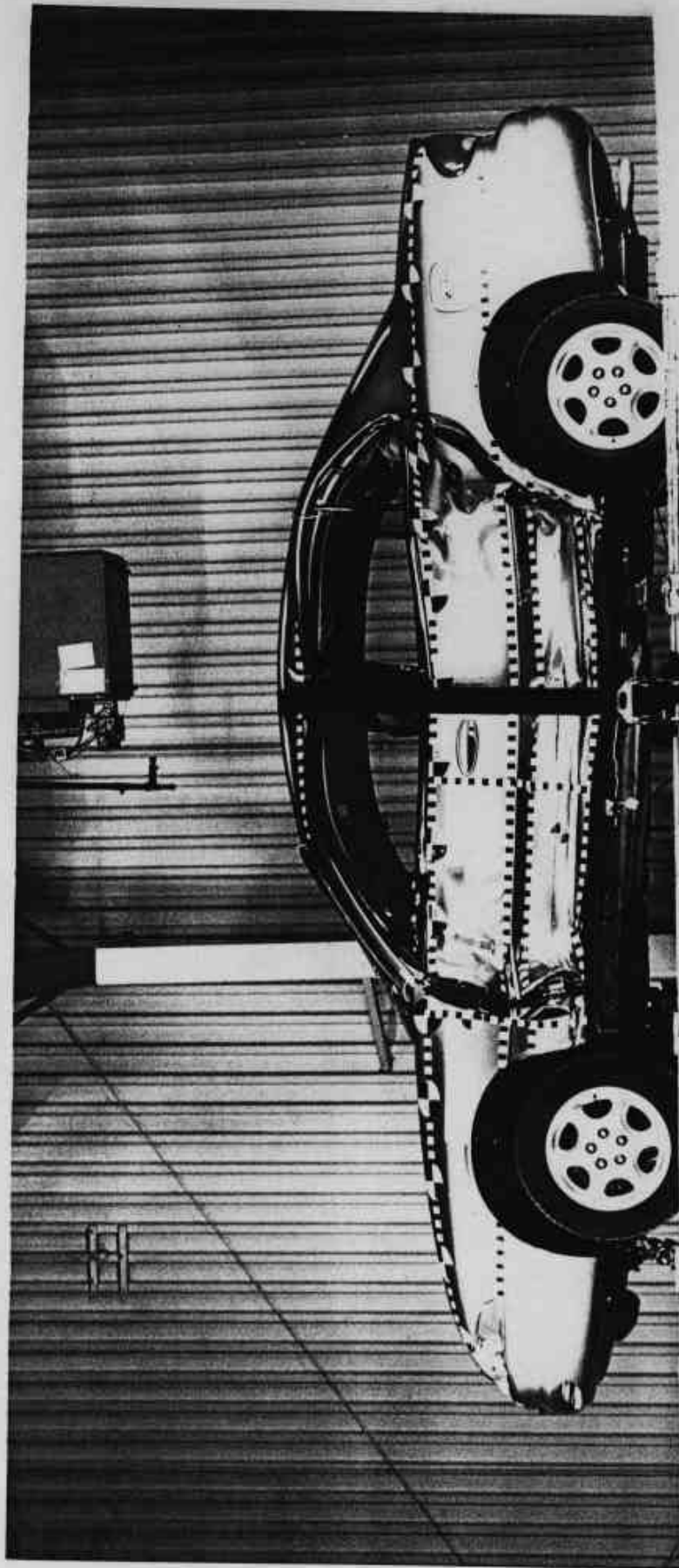
A-44

Photo No. A-44 - Rollover 180°



A-45

Photo No. A-45 - Rollover 270°



A-46



55/28 MPH 90°
NC 30 SIDE IMPACT
#111115 DEC 17 1997
1998 OLDSMOBILE INTRIGUE
MGA RESEARCH CORP.

Photo No. A-46 - Rollover 360°

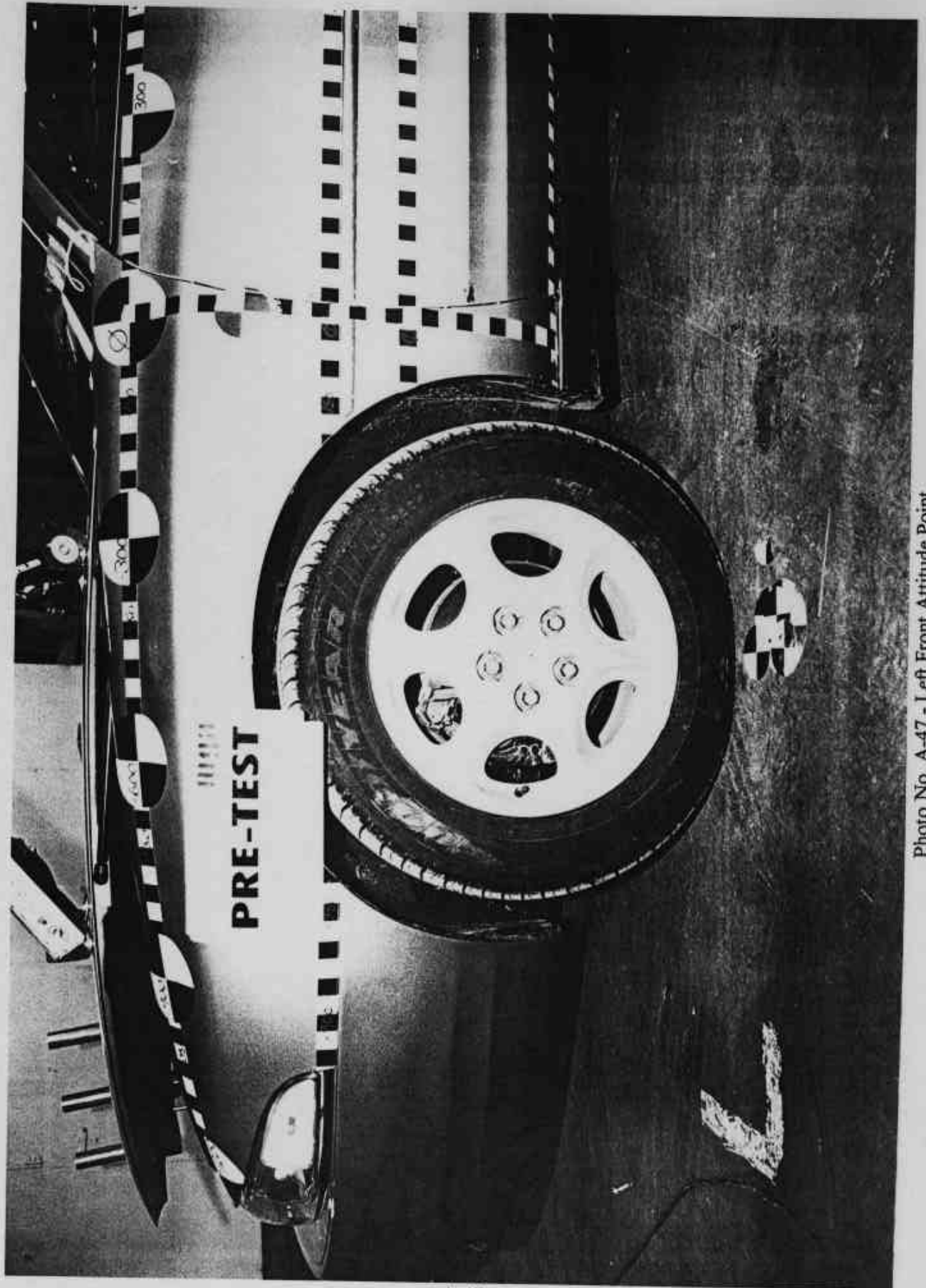


Photo No. A-47 - Left Front Attitude Point

A-47



Photo No. A-48 - Right Front Attitude Point

A-48

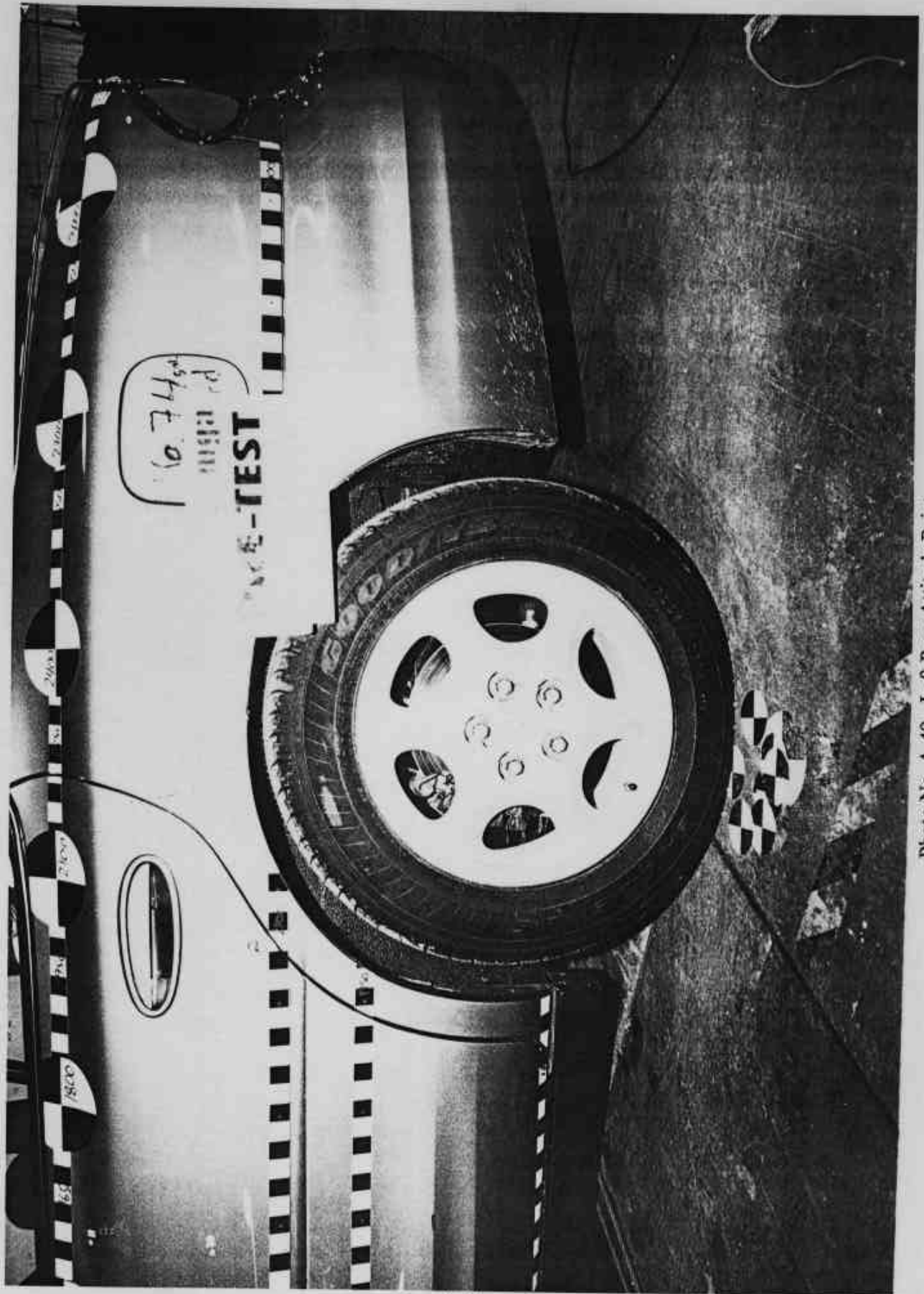


Photo No. A-49 - Left Rear Attitude Point

A-49



Photo No. A-50 - Right Rear Attitude Point

A-50

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* No valid data collected

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* Data not valid after approximately 102 msec.

** Data not valid after approximately 27 msec.

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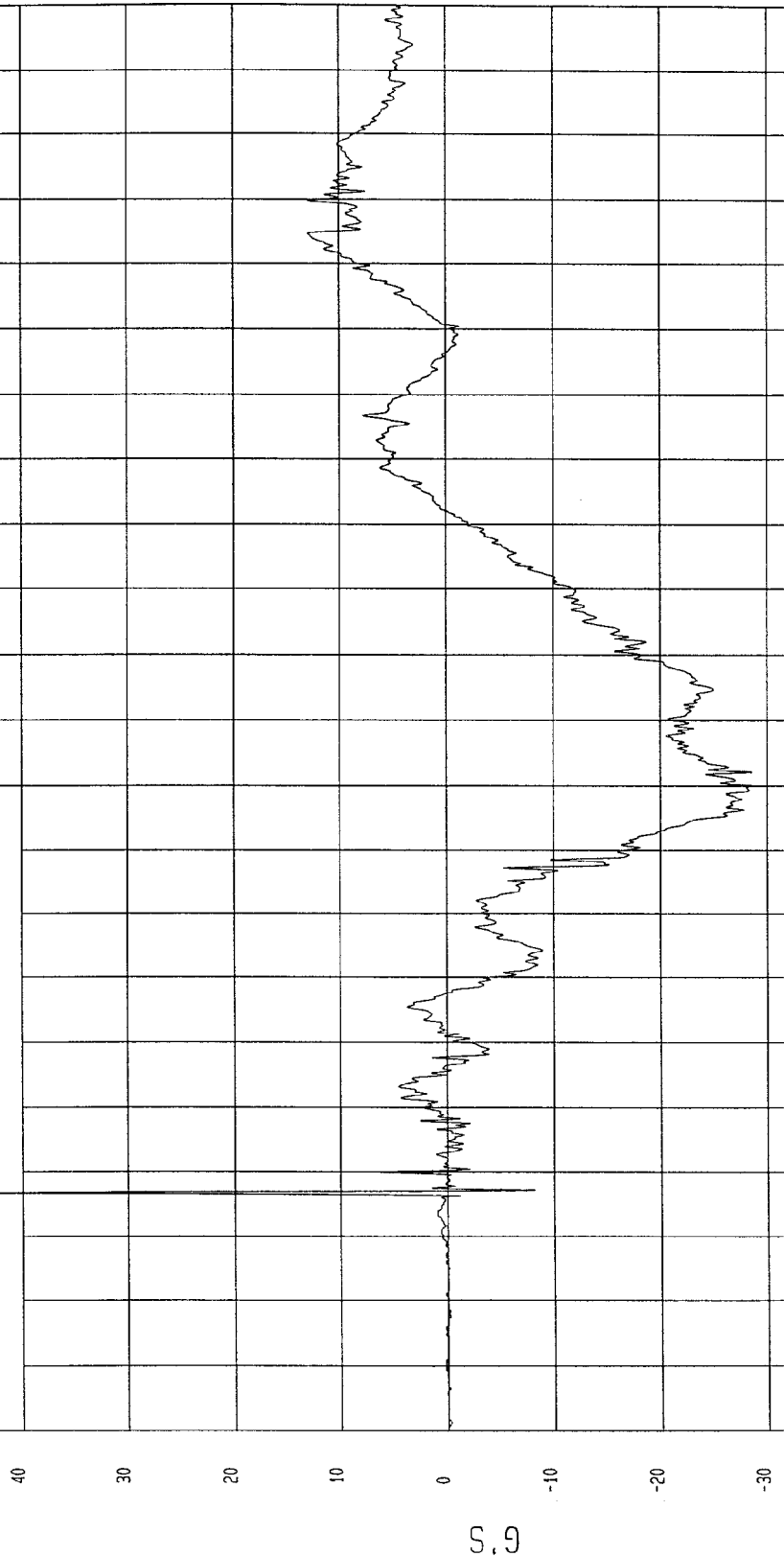
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -28.61 G'S at 80 msec
Maximum = 43.76 G'S at 17 msec

DRIVER HEAD X ACCELERATION

1 ——— B971514F.A12 Filterclass (1000)



NSA, Research
12-22-1997 15:29

TIME (SECONDS)

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115)

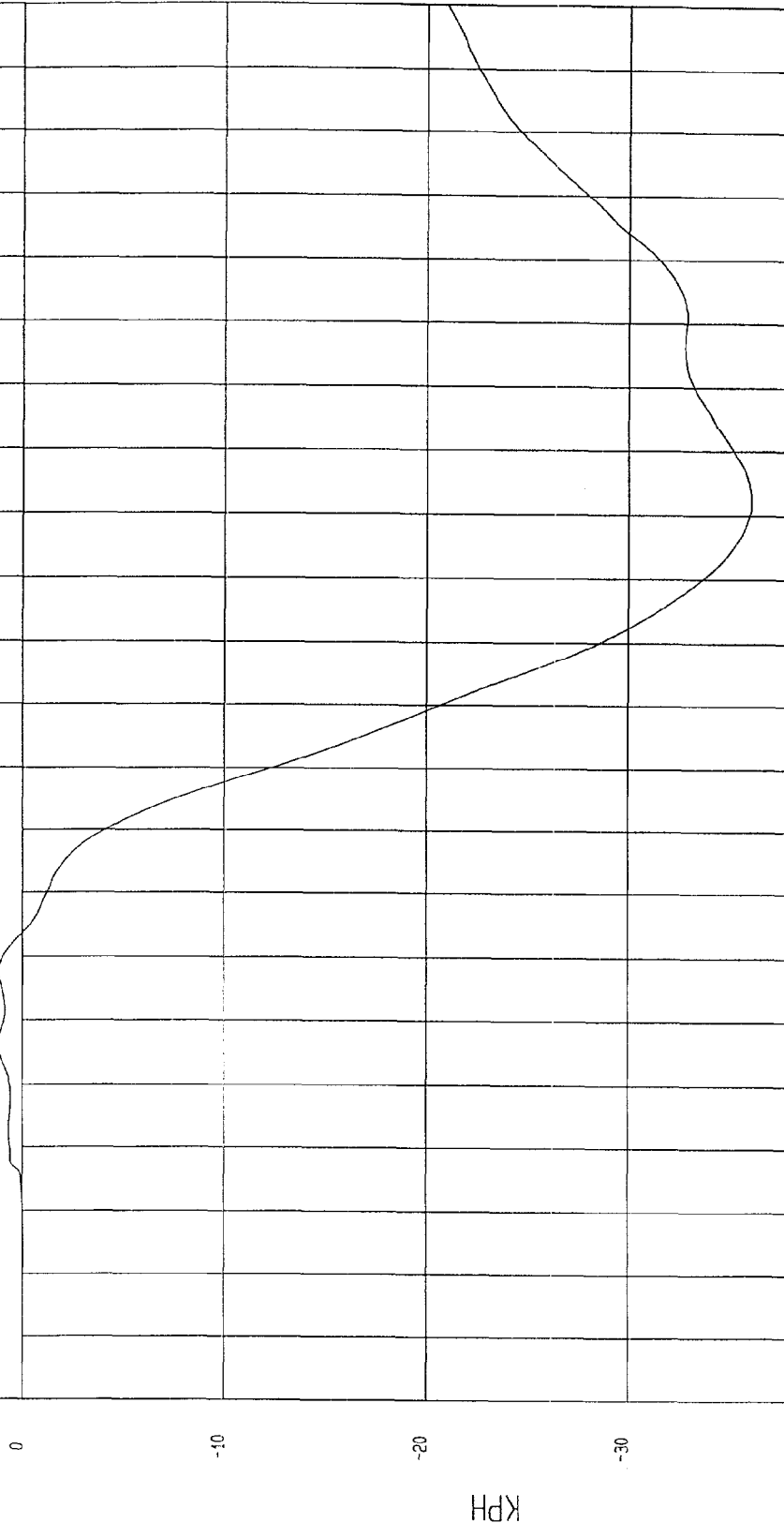
Speed: 38 MPH 61.2 KPH

Minimum = -36.07 KPH at 122 msec

Maximum = 1.18 KPH at 48 msec

DRIVER HEAD X VELOCITY

1 ——— 897151A1.V12 Filterclass (180)



MGA Research
12-22-1997 15:41

TIME Seconds

KPH

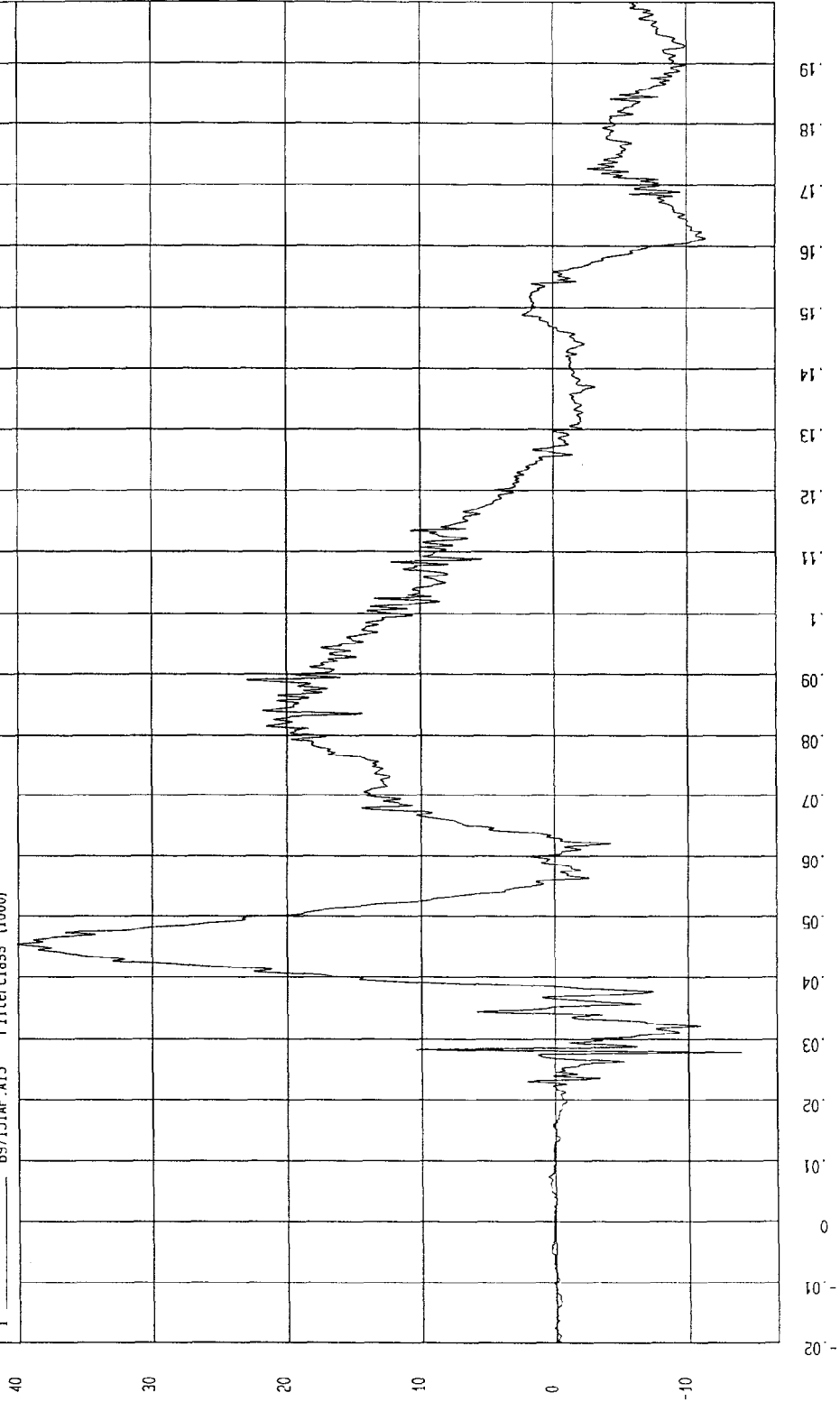
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -13.83 G'S at 28 msec Maximum = 40.15 G'S at 45 msec

DRIVER HEAD Y ACCELERATION

1 897151AF.A13 Filterclass (1000)



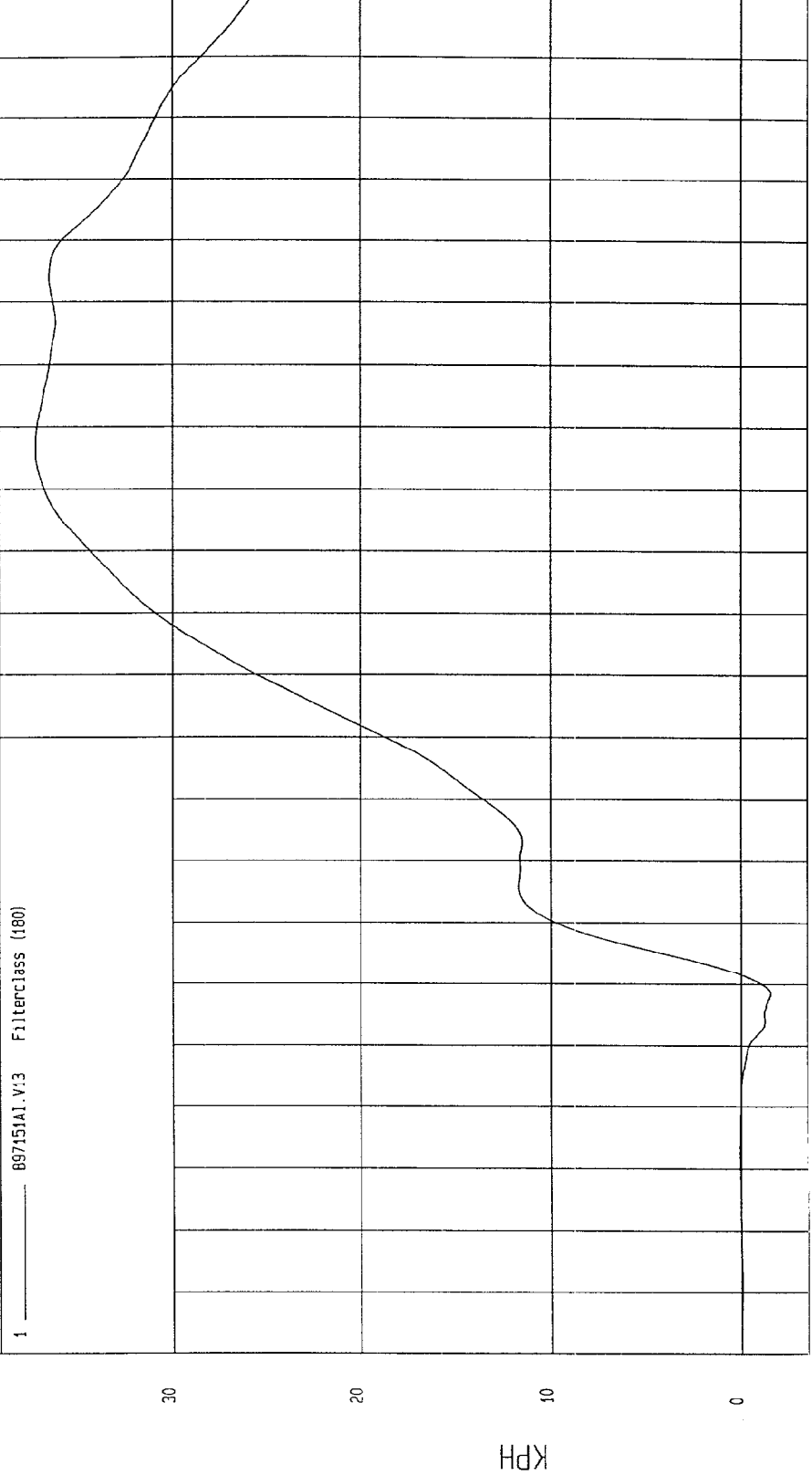
MCA Research
12-22-1997 13:29

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -1.55 KPH at 38 msec Maximum = 37.23 KPH at 127 msec

DRIVER HEAD Y VELOCITY



TIME Seconds

NCA Research
12-22-1997 15: 41

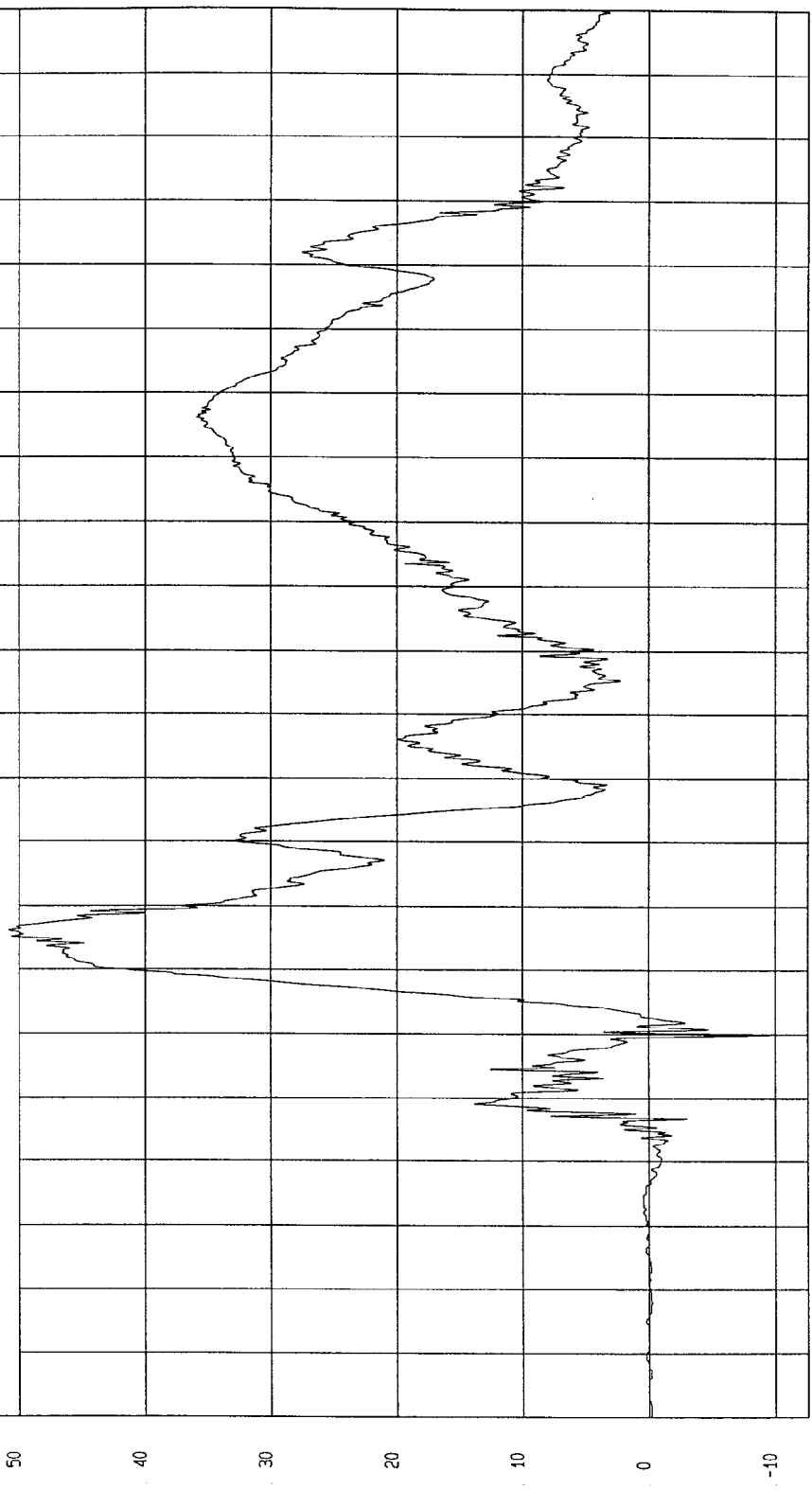
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -9.53 G'S at 40 msec Maximum = 50.79 G'S at 56 msec

DRIVER HEAD Z ACCELERATION

1 897151AF.A14 Filterclass (1000)



NSA Research
12-22-1997 15:29

TIME (SECONDS)

G.S

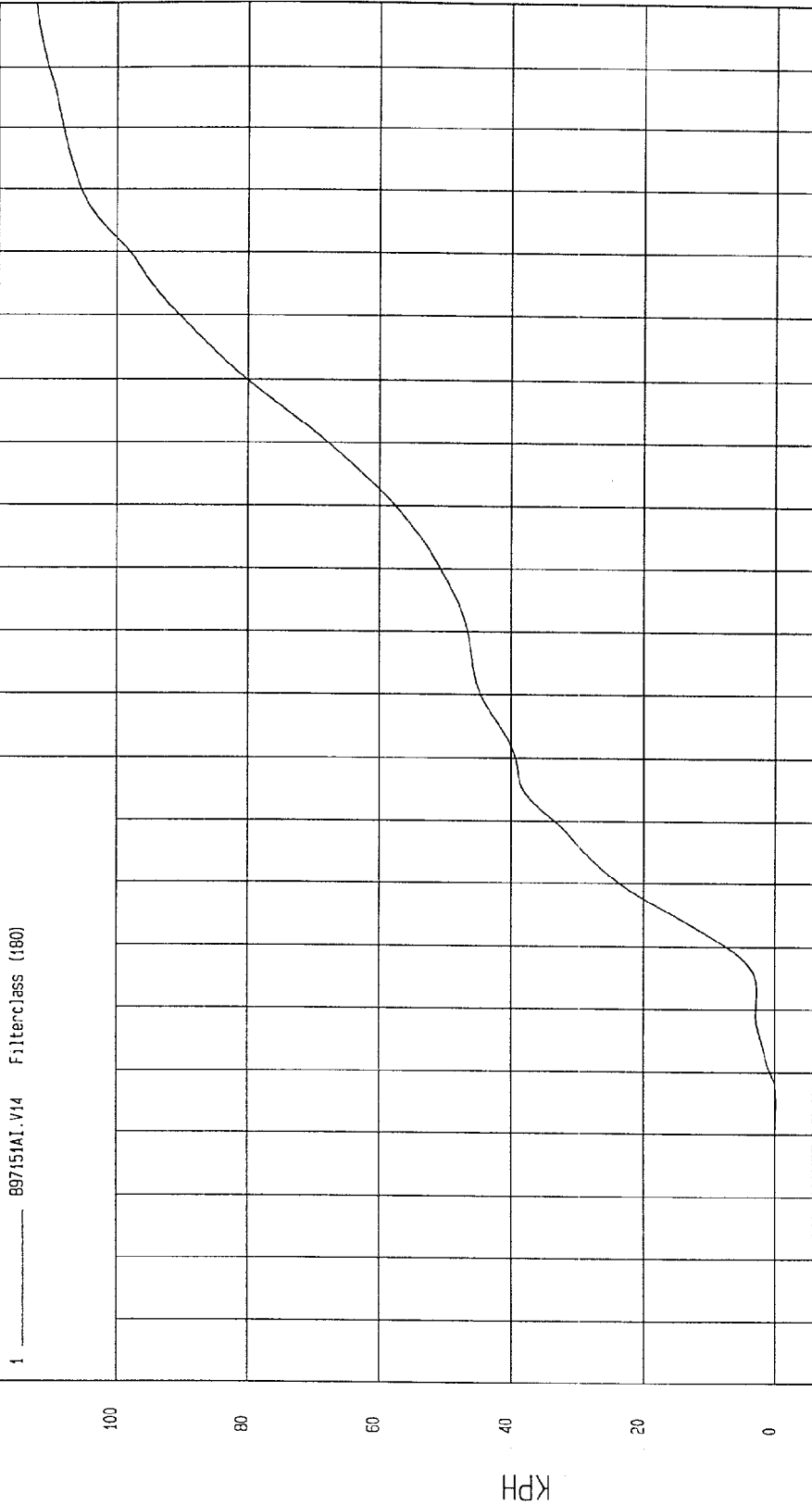
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -.17 KPH at 25 msec
Maximum = 112.19 KPH at 200 msec

DRIVER HEAD Z VELOCITY

1 897151A1.V14 Filterclass (180)



NGA Report
12-22-1997 15: 41

TIME Seconds

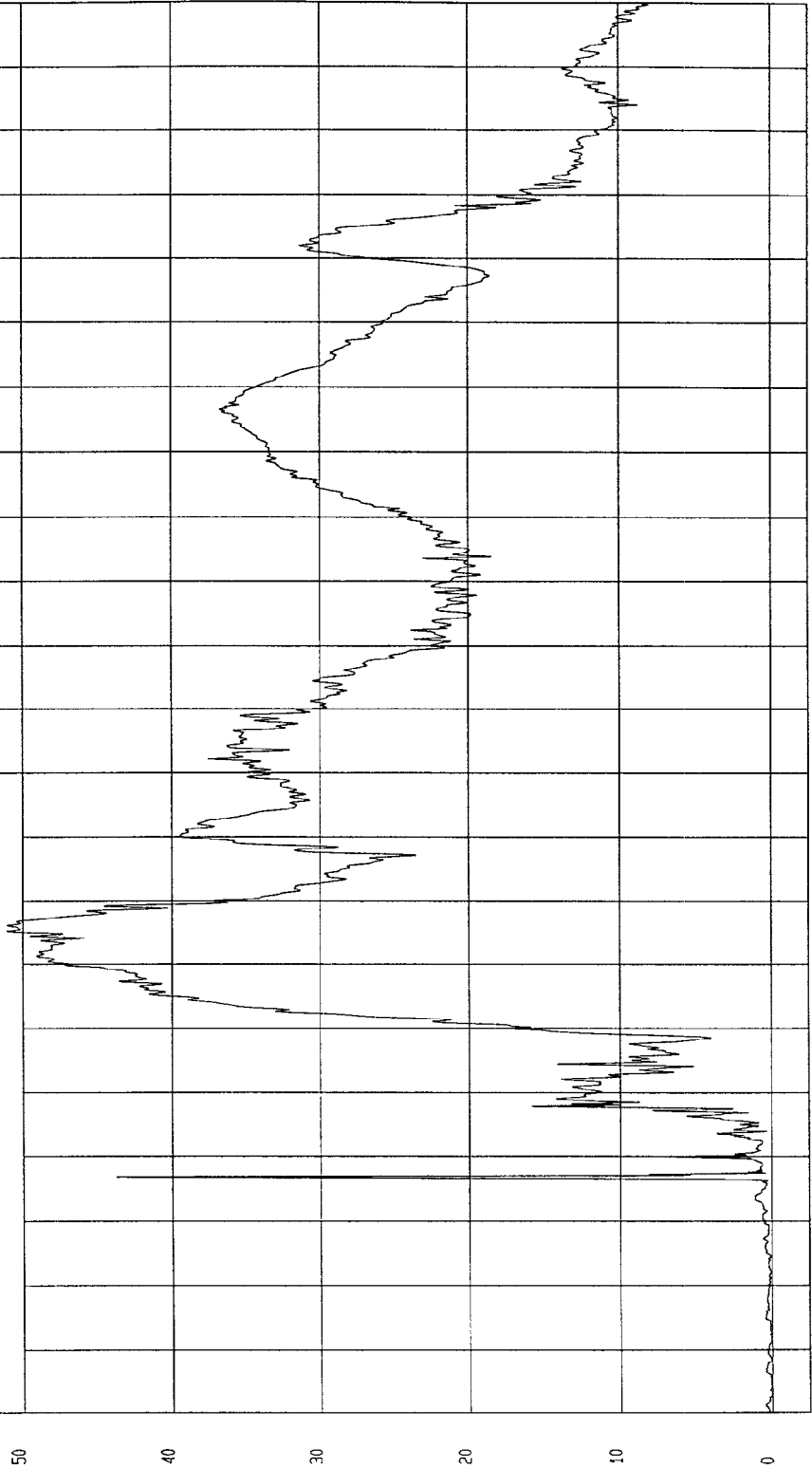
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = 3.05E-02 G'S at -16 msec
Maximum = 51.06 G'S at 55 msec

DRIVER HEAD RESULTANT

1 ——— B97151AY.A12 Filterclass (4000)



MOA, Rescorla
12-22-1997 15:29

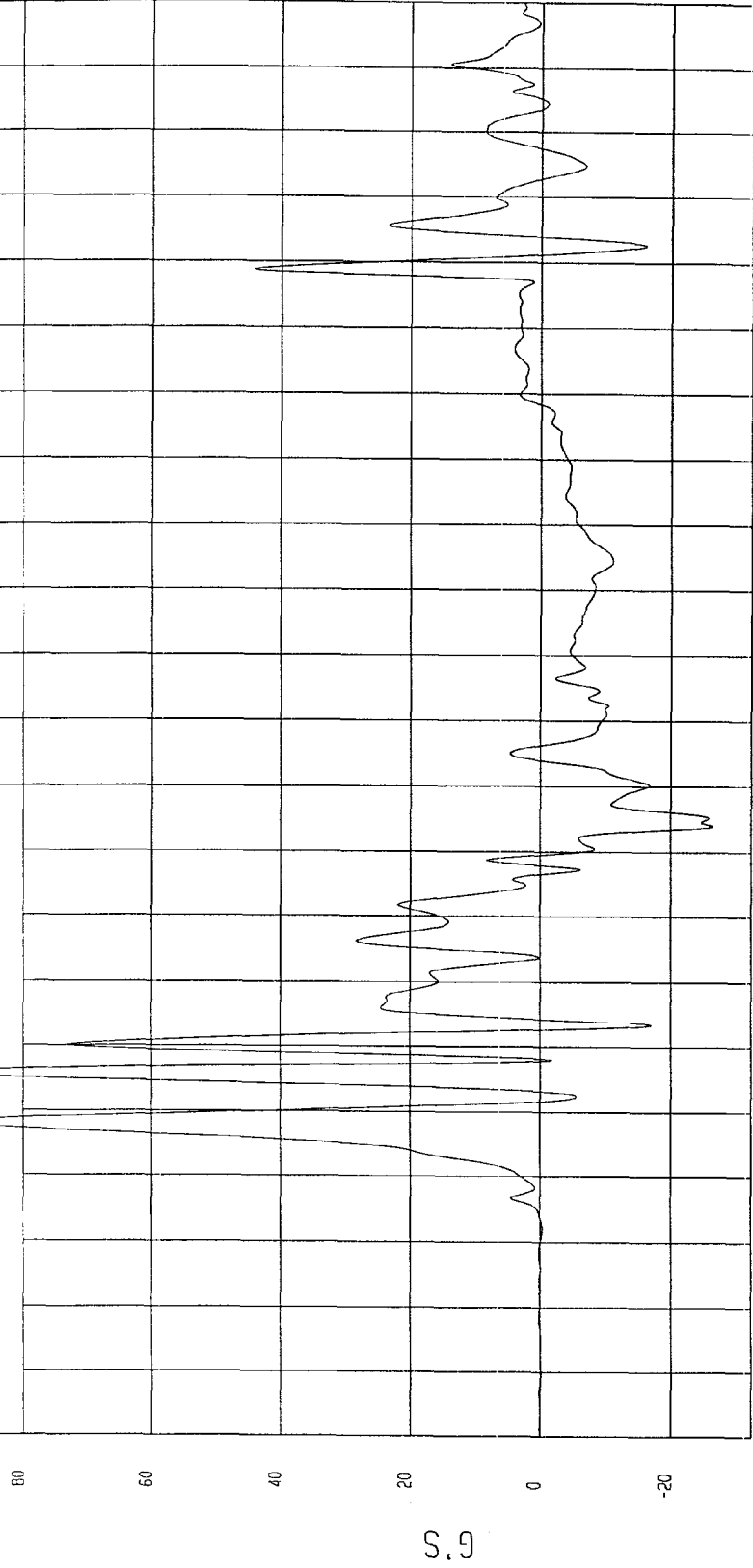
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -26.24 G'S at 74 msec
Maximum = 93.09 G'S at 36 msec

DRIVER UPPER RIB Y ACCELERATION

1 ——— 897151AF.A15 Filterclass (180)



TIME (SECONDS)
MSA Research
12-22-1997 15:30

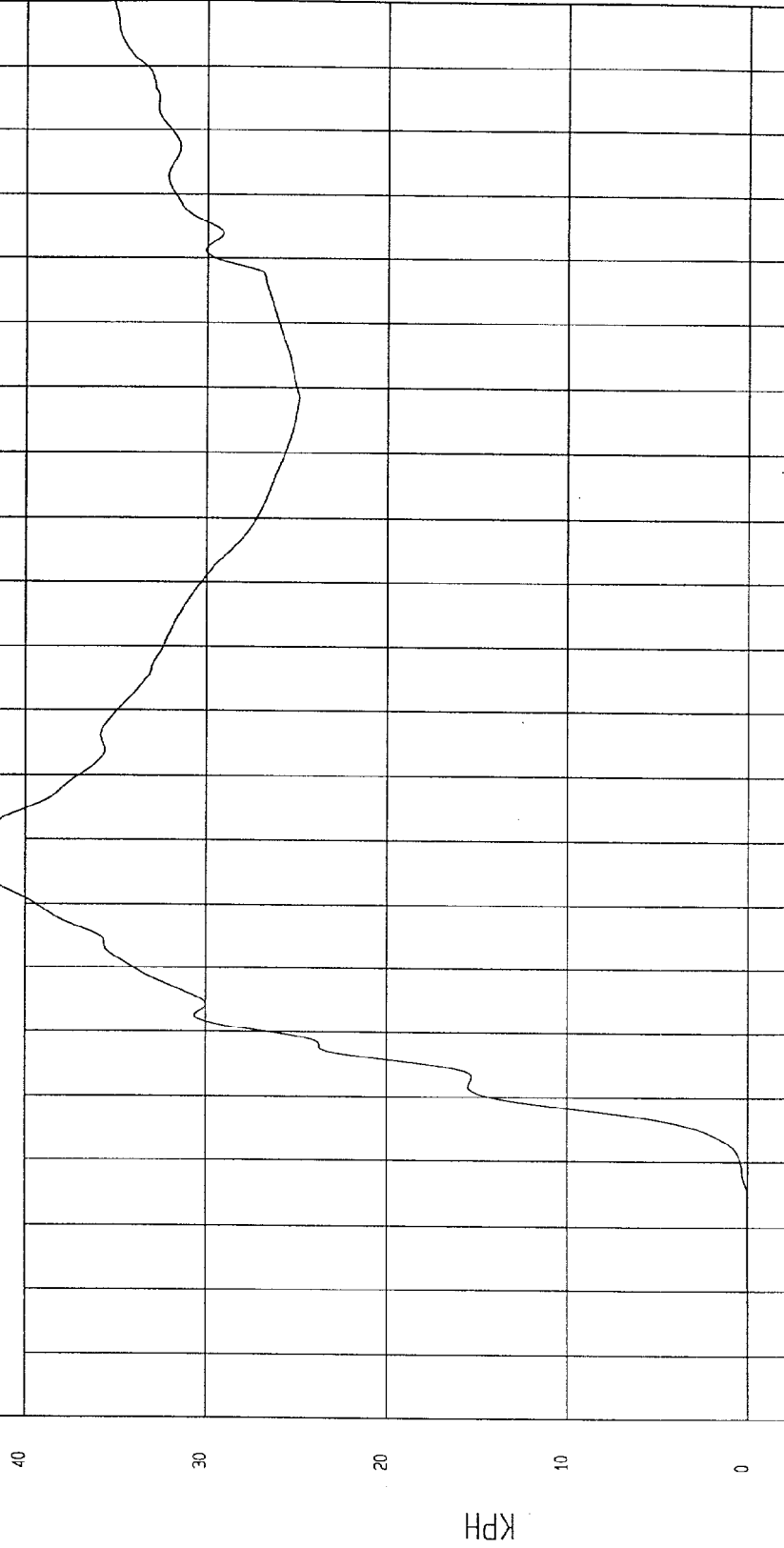
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = 0 KPH at -20 msec Maximum = 42.18 KPH at 70 msec

DRIVER UPPER RIB Y VELOCITY

1 897151A1.V15 Filterclass (180)



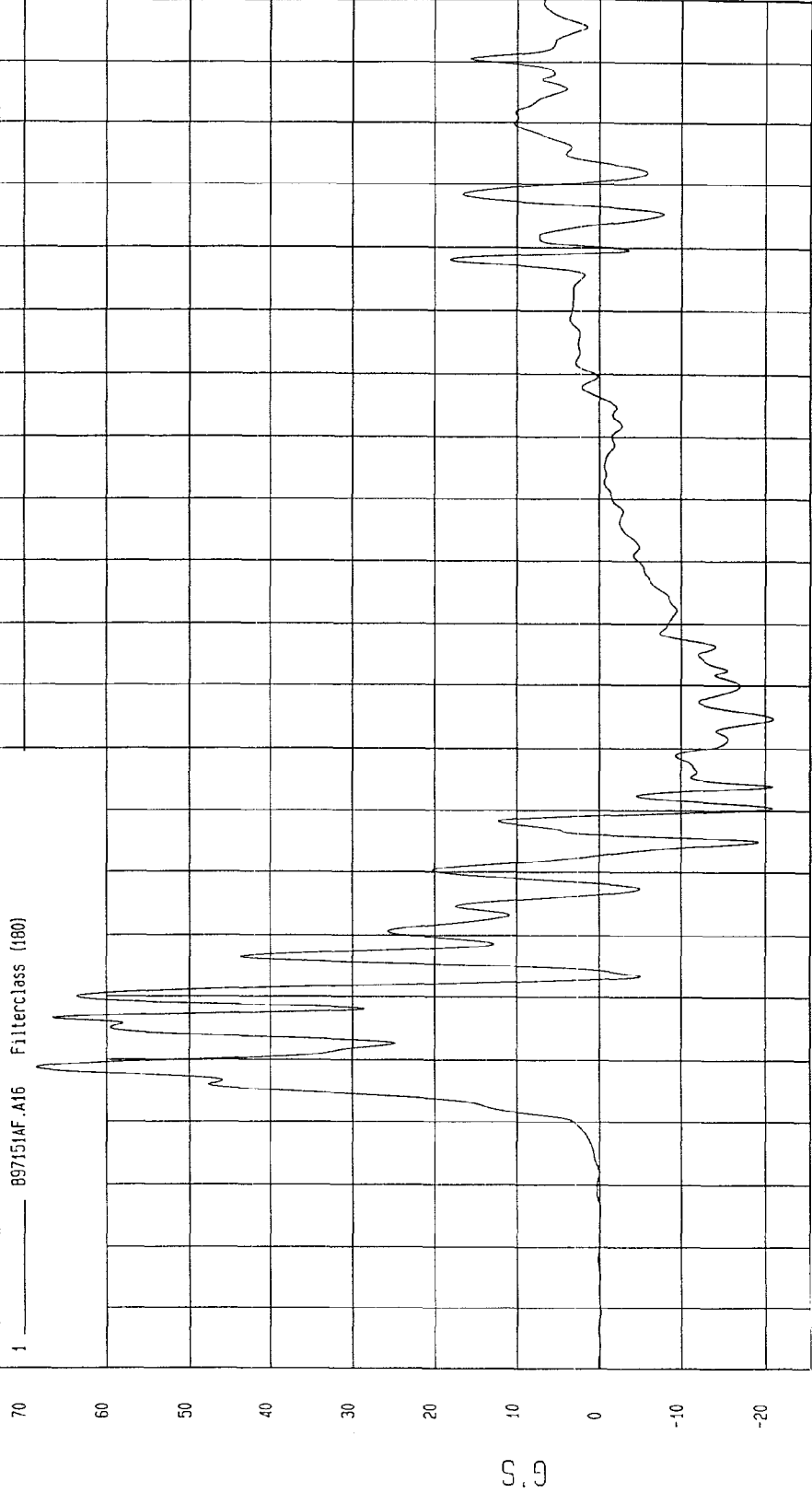
MGA Research
12-22-1997 15:42

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -20.98 G'S at 85 msec Maximum = 66.51 G'S at 29 msec

DRIVER LOWER RIB Y ACCELERATION



MSA Research
12-22-1997 15:30

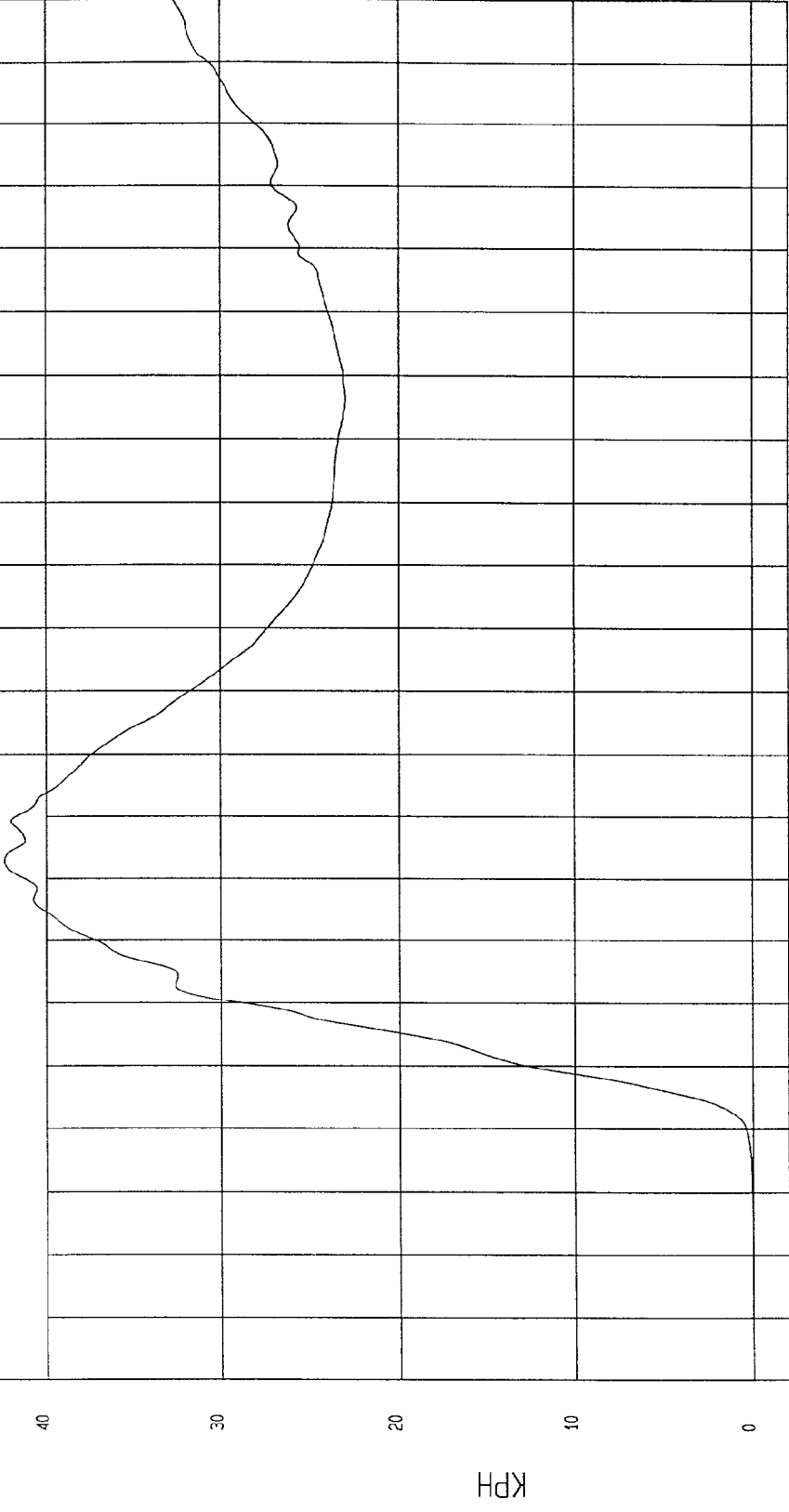
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = 0 KPH at -20 msec Maximum = 42.33 KPH at 63 msec

DRIVER LOWER RIB Y VELOCITY

1 897151A1.V16 Filterclass (180)



TIME Seconds
MCA Research
12-22-1997 15:42

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 12-17-1997

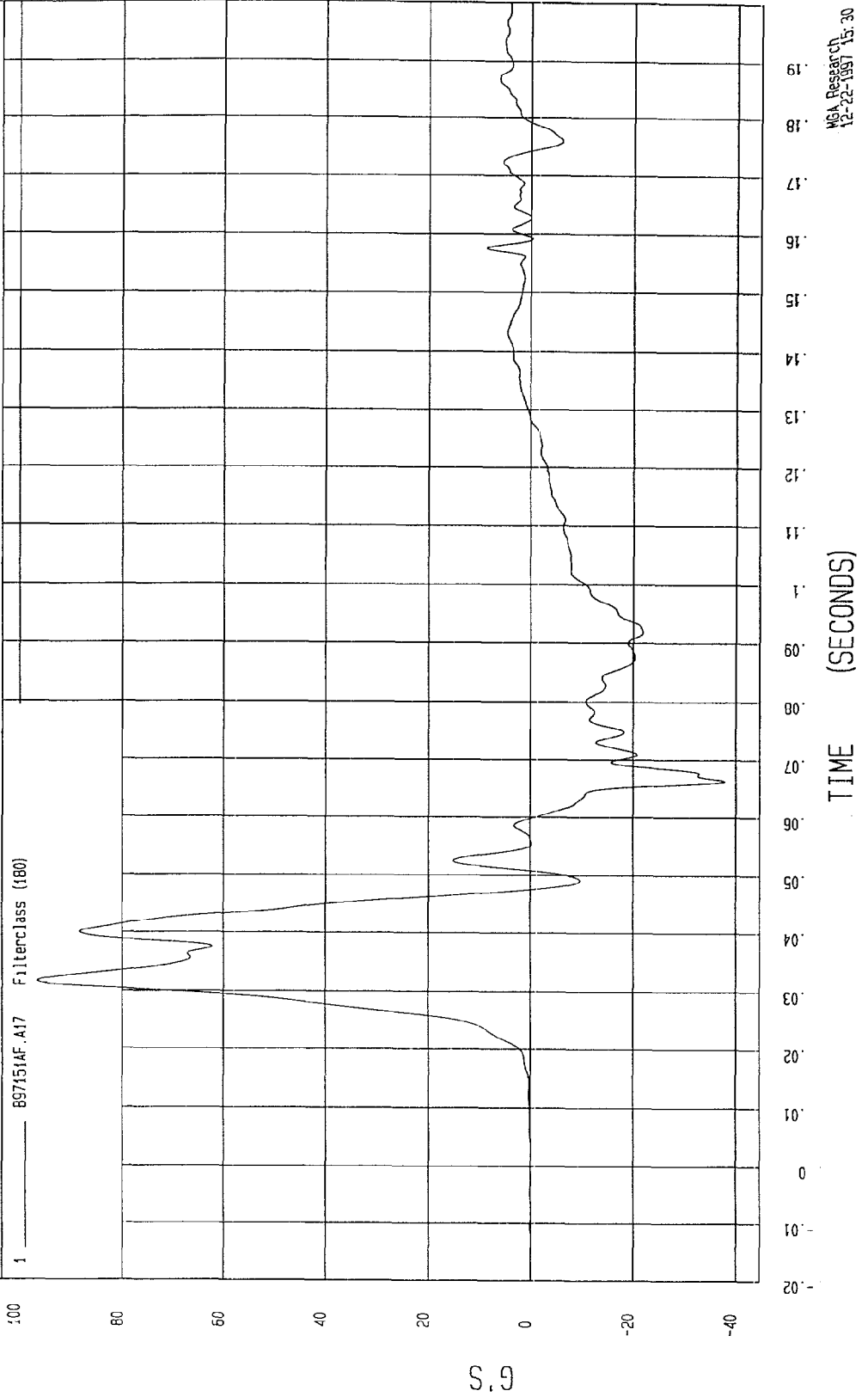
COMPONENT: 1998 OLDSMOBILE INTRIGUE (MWO115)

Speed: 38 MPH 61.2 KPH

Minimum = -37.83 G'S at 66 msec

Maximum = 96.60 G'S at 32 msec

DRIVER LOWER SPINE Y ACCELERATION

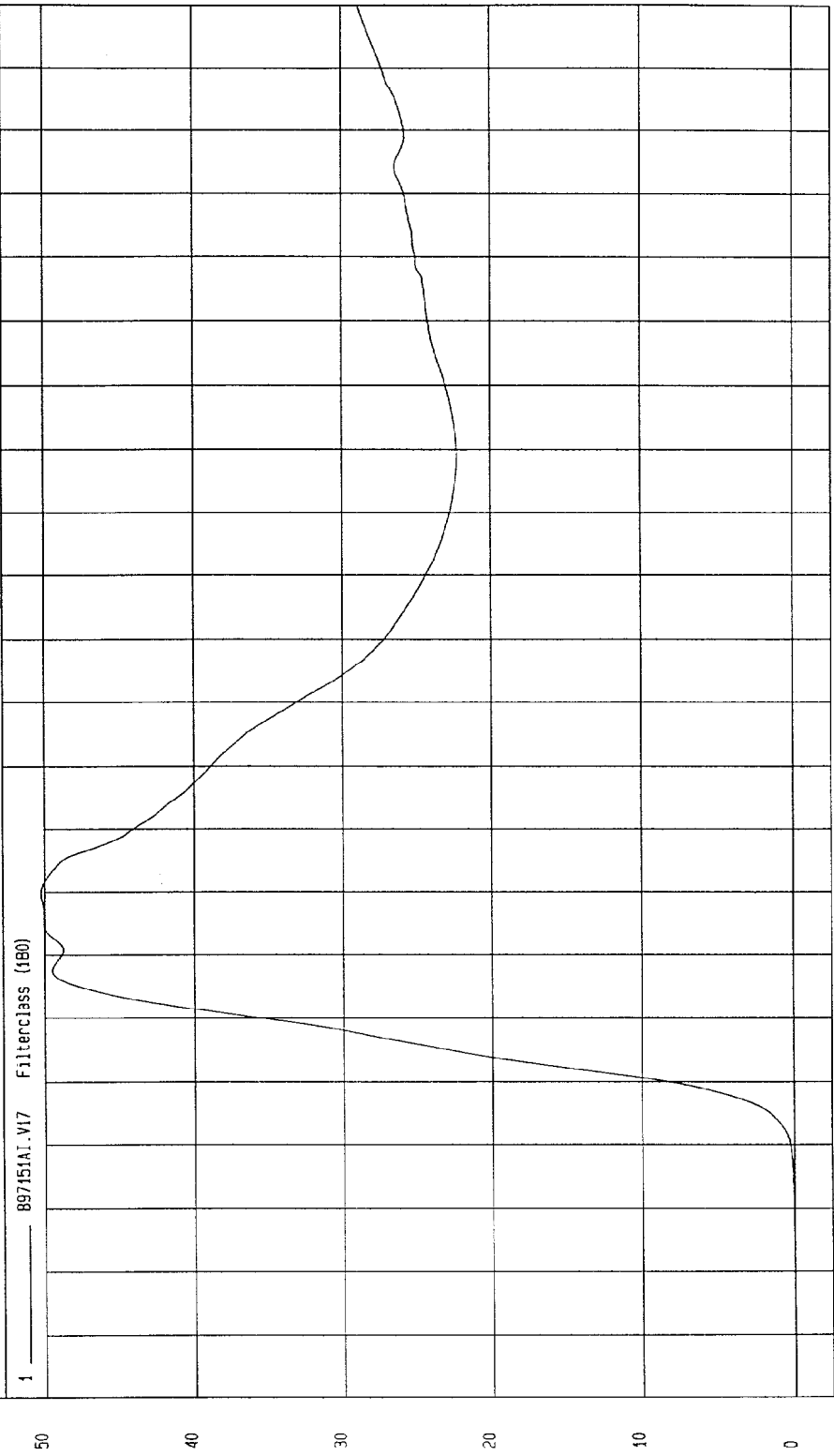


TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -1.72E-02 KPH at -12 msec Maximum = 50.23 KPH at 60 msec

DRIVER LOWER SPINE Y VELOCITY



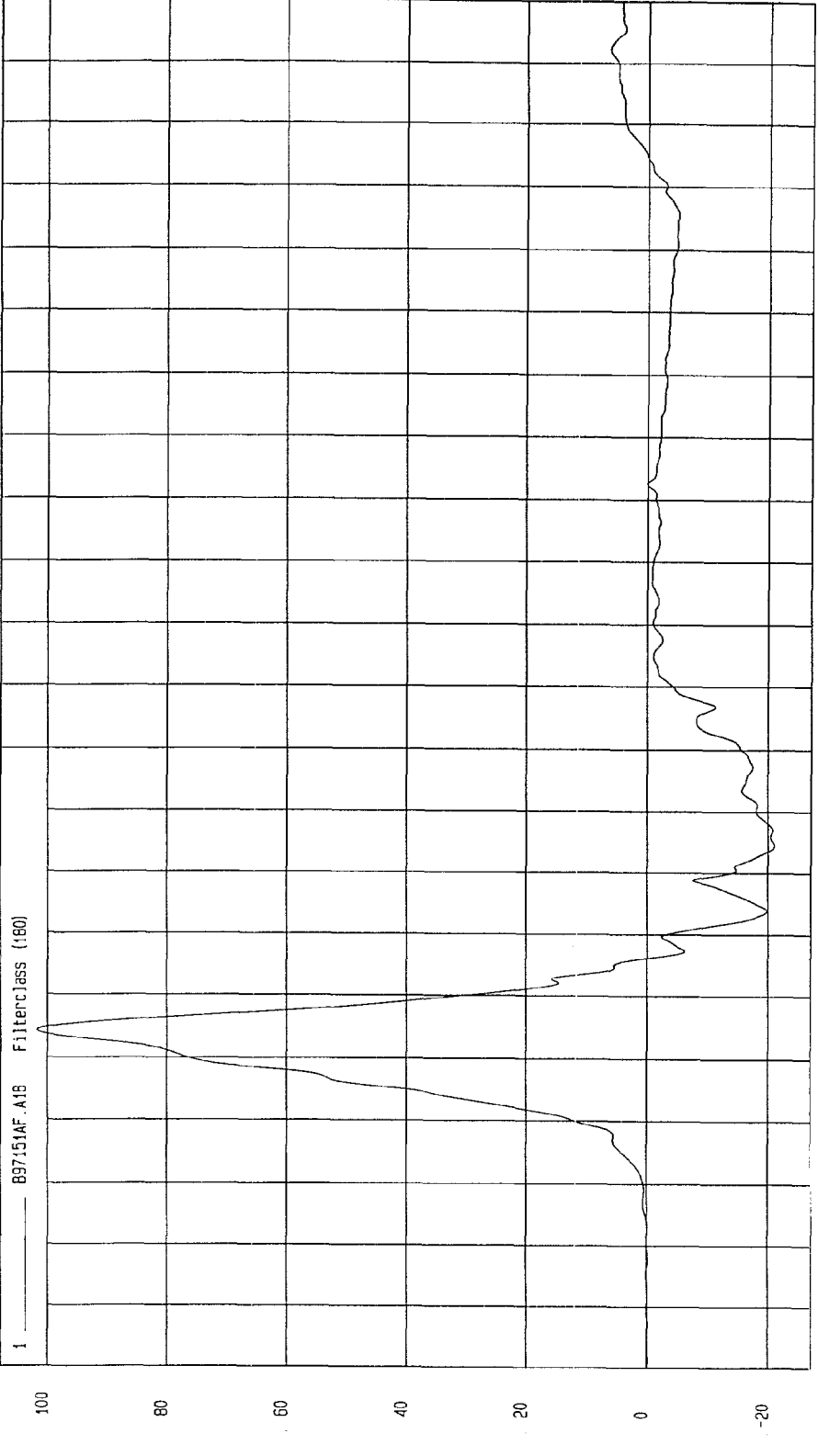
TIME Seconds
MGA Research
12-22-1997 15:42

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -21.00 G'S at 65 msec Maximum = 101.74 G'S at 34 msec

DRIVER PELVIS Y ACCELERATION



TIME (SECONDS) MGA Research 12-22-1997 15:30

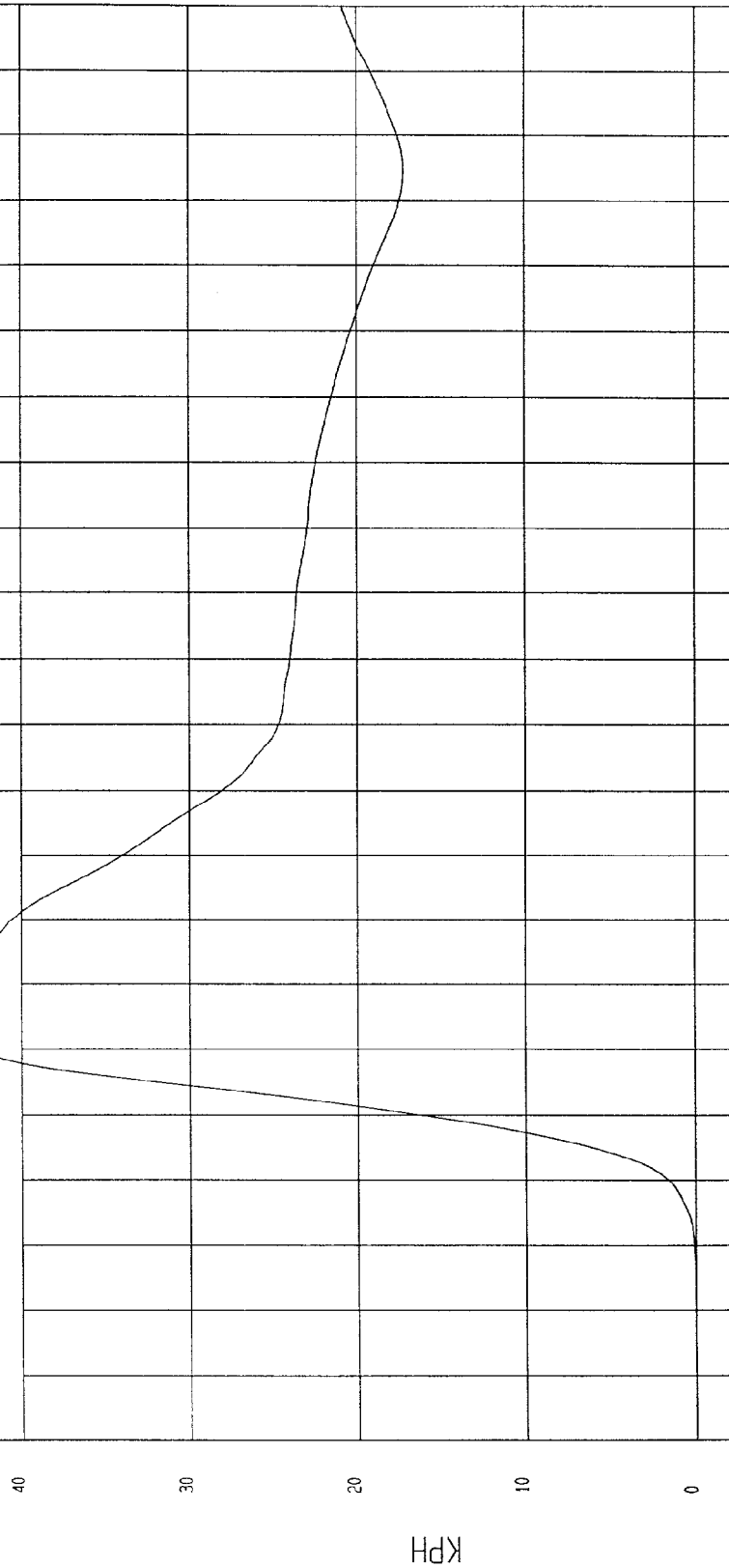
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -.01 KPH at -12 msec
Maximum = 45.93 KPH at 46 msec

DRIVER PELVIS Y VELOCITY

1 897151A1.VIB Filterclass (180)



TIME Seconds
MGA Research
12-22-1997 15:42

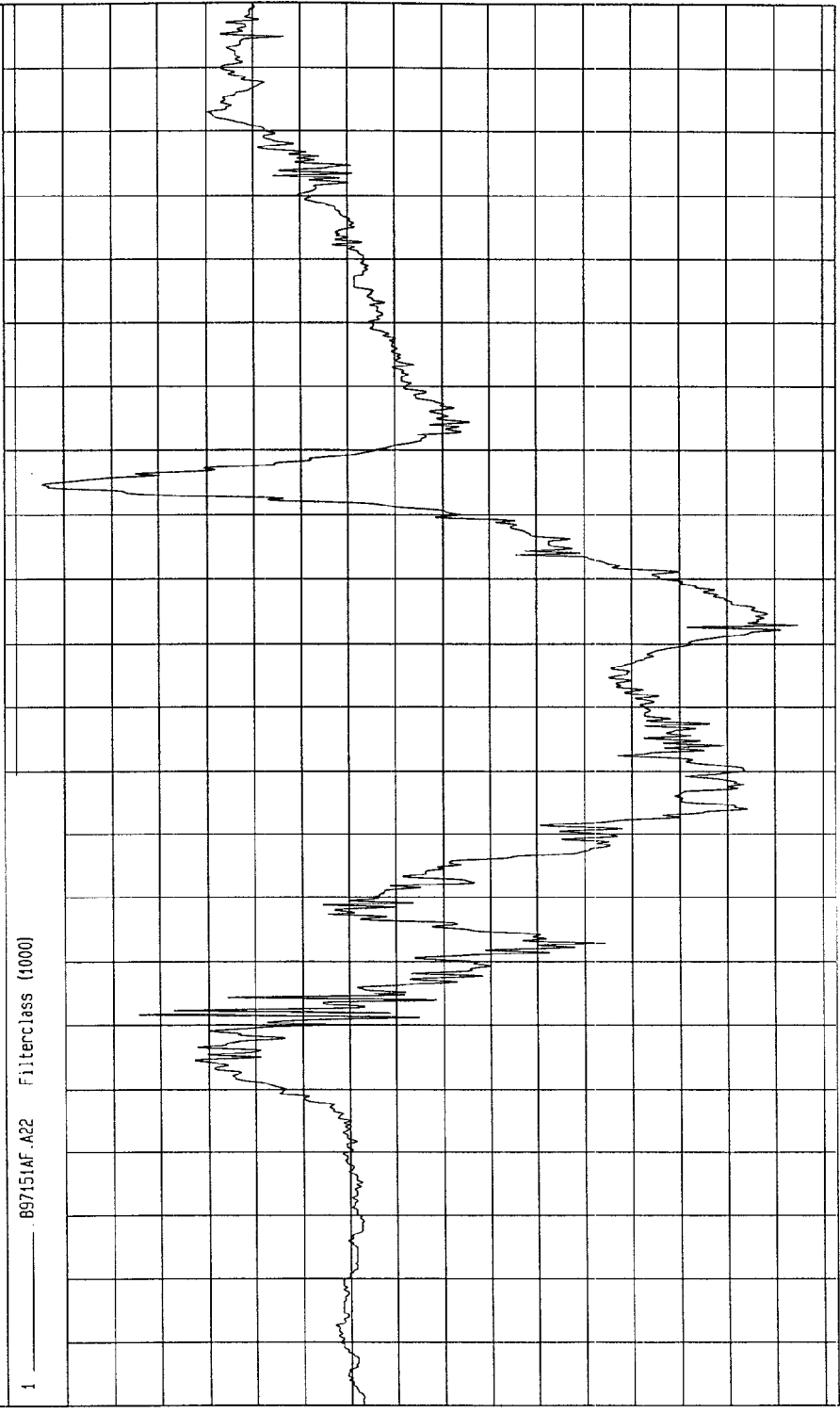
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MWO115) Speed: 38 MPH 61.2 KPH

Minimum = -18.94 G'S at 103 msec

REAR PASSENGER HEAD X ACCELERATION

1 _____ .897151AF.A22 Filterclass (1000)



MECA Research
12-22-1997 13:29

TIME (SECONDS)

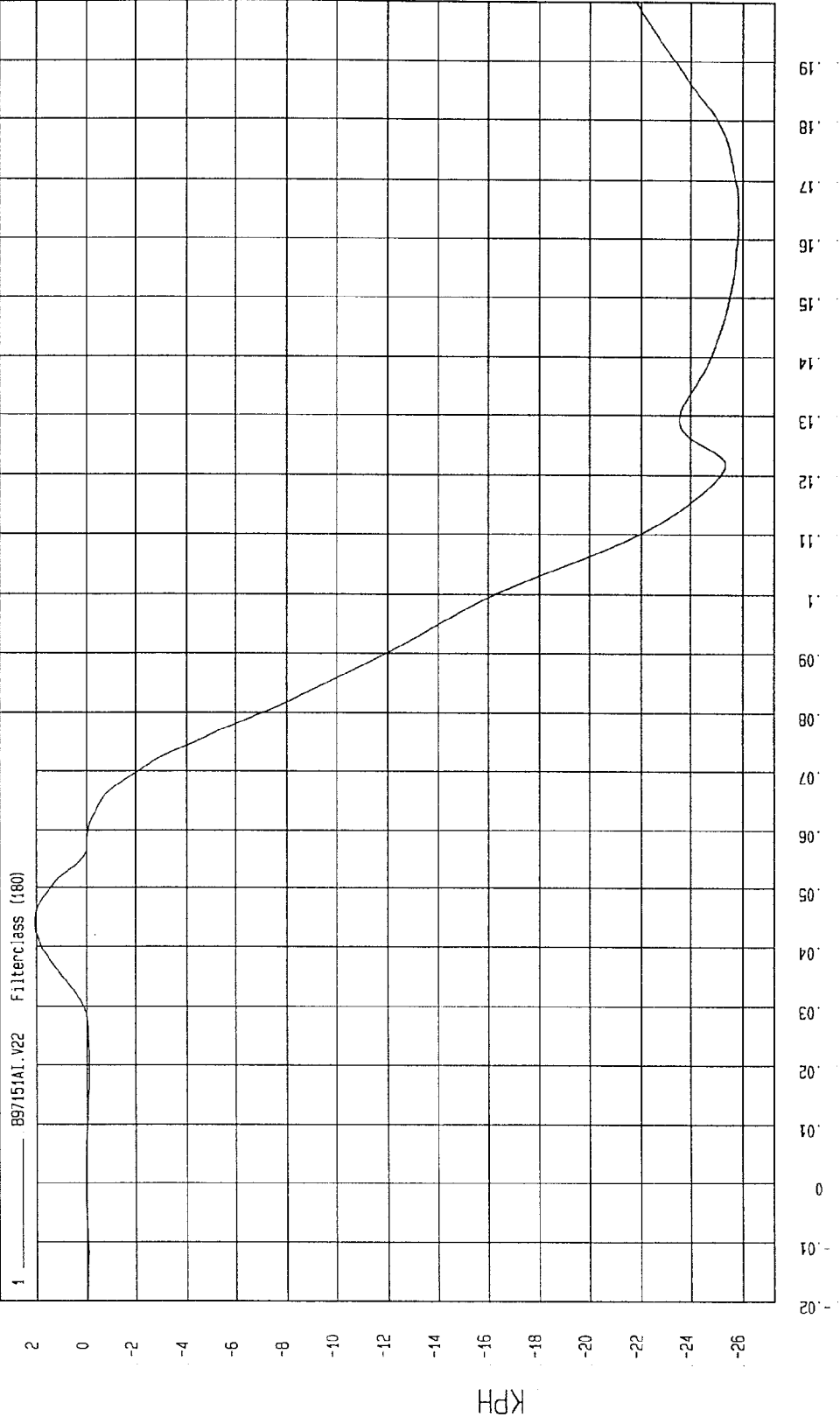
G's

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -25.84 KPH at 162 msec
Maximum = 2.06 KPH at 44 msec

REAR PASSENGER HEAD X VELOCITY



MGA Research
12-22-1997 15:41

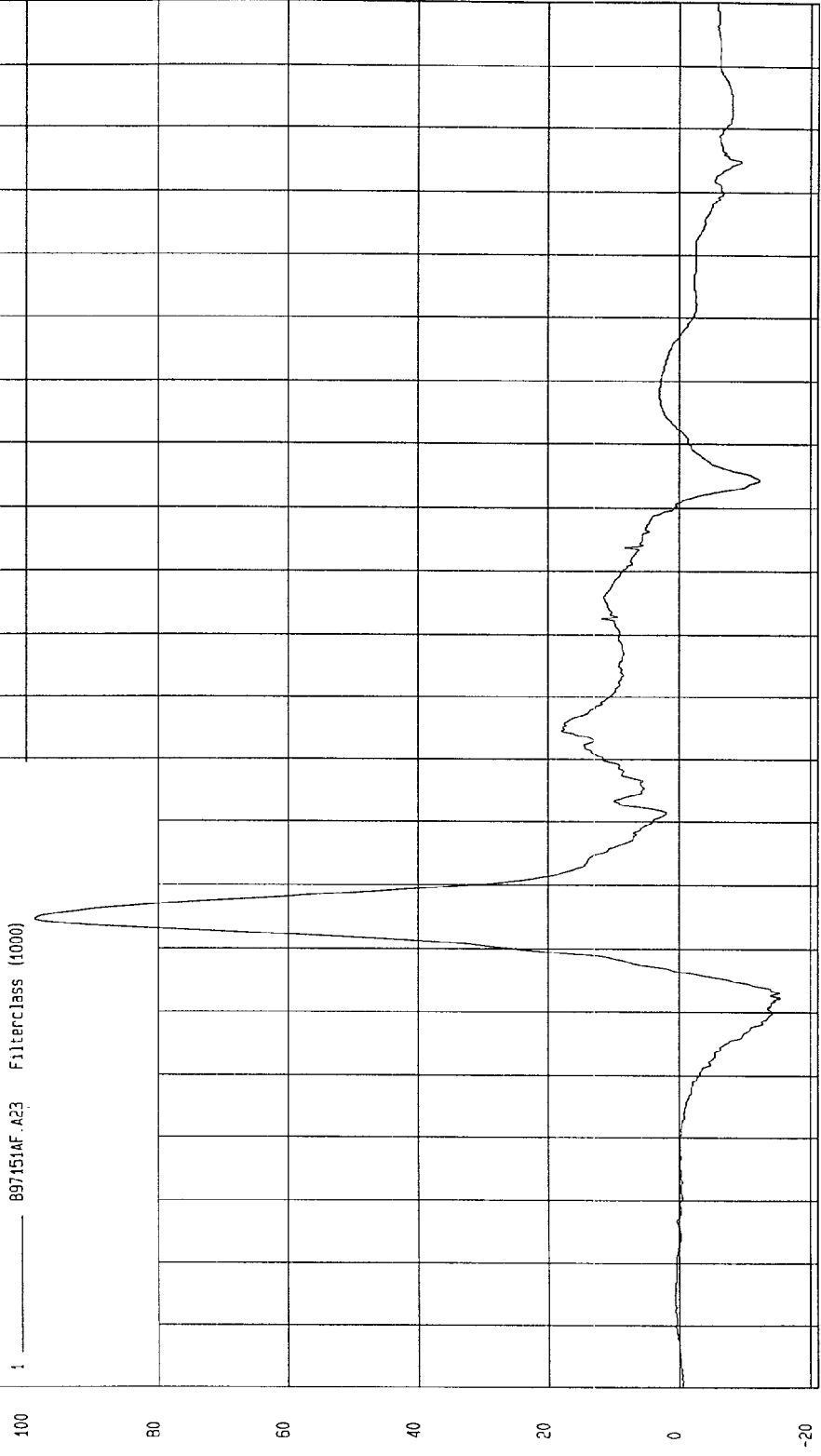
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -15.36 G'S at 42 msec
Maximum = 98.71 G'S at 55 msec

REAR PASSENGER HEAD Y ACCELERATION

1 ——— 8971514F.A23 Filterclass (4000)



MSA Research
12-22-1997 15:29

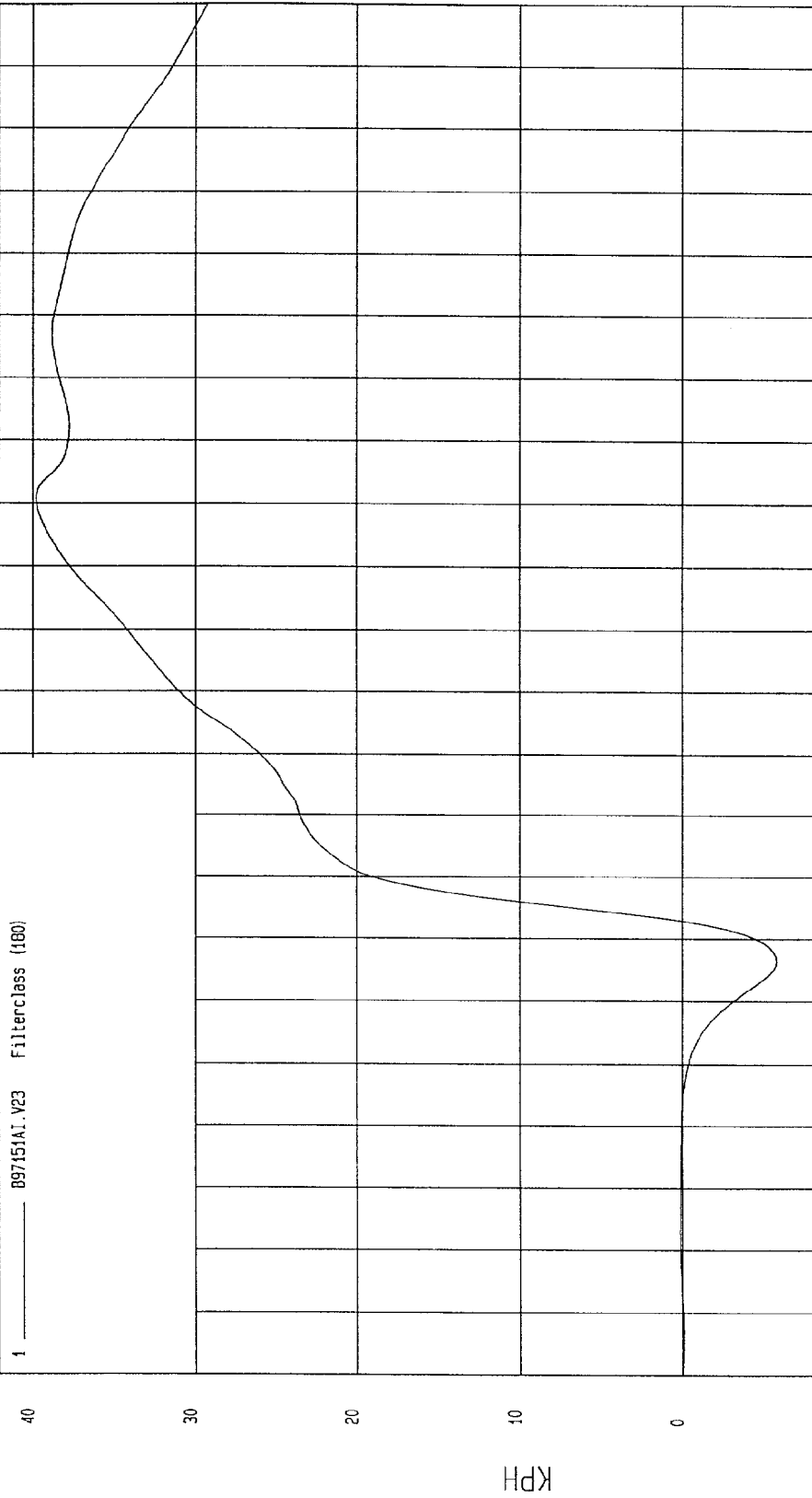
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -5.77 KPH at 46 msec
Maximum = 39.80 KPH at 121 msec

REAR PASSENGER HEAD Y VELOCITY

1 ——— 097151A1.V23 Filterclass (100)



MCA Research
12-22-1997 15:41

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

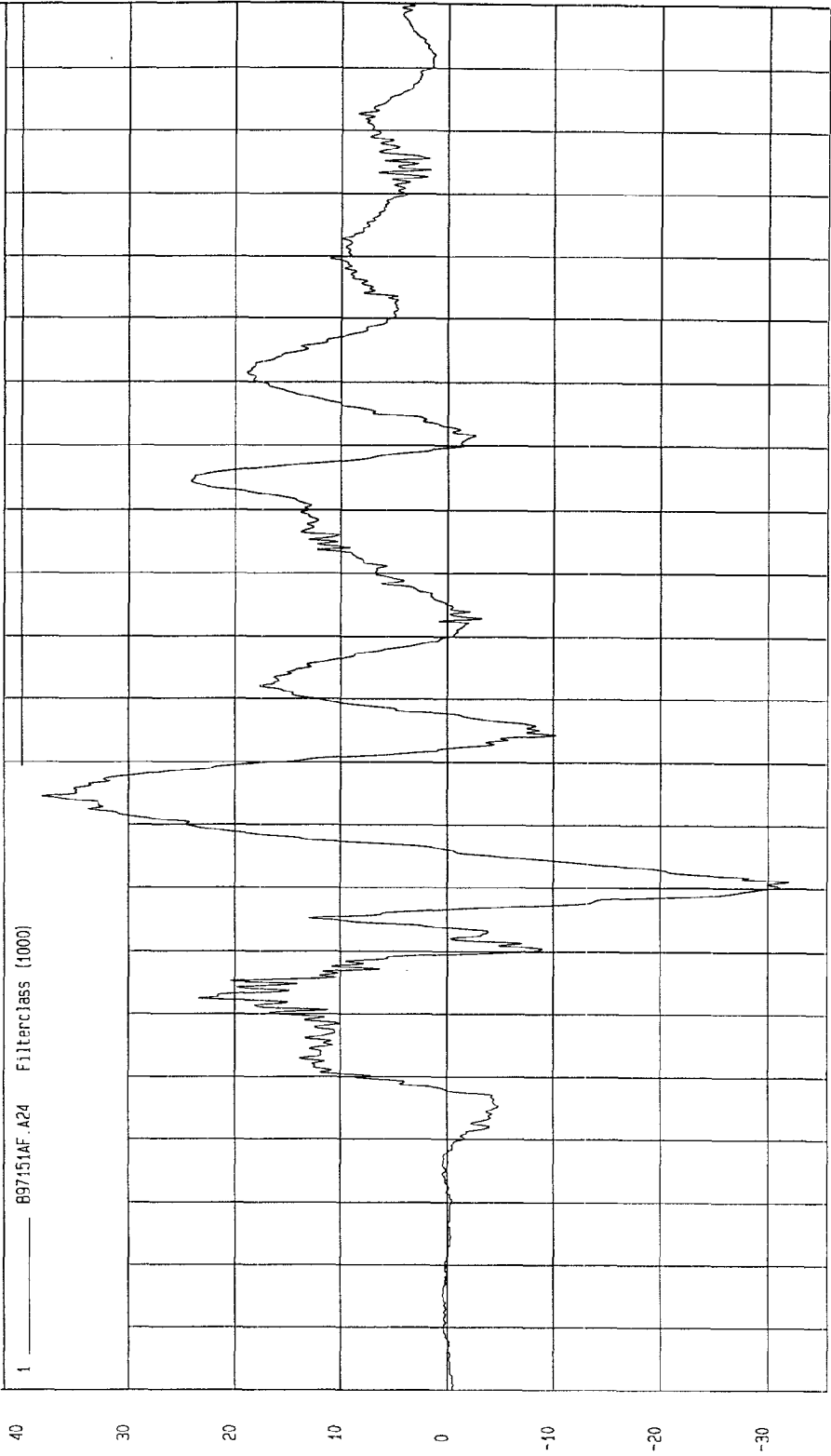
COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -31.98 G'S at 61 msec

Maximum = 38.14 G'S at 74 msec

REAR PASSENGER HEAD Z ACCELERATION

1 ——— B97451AF.A24 Filterclass (1000)



M&A Research
12-22-1997 15:29

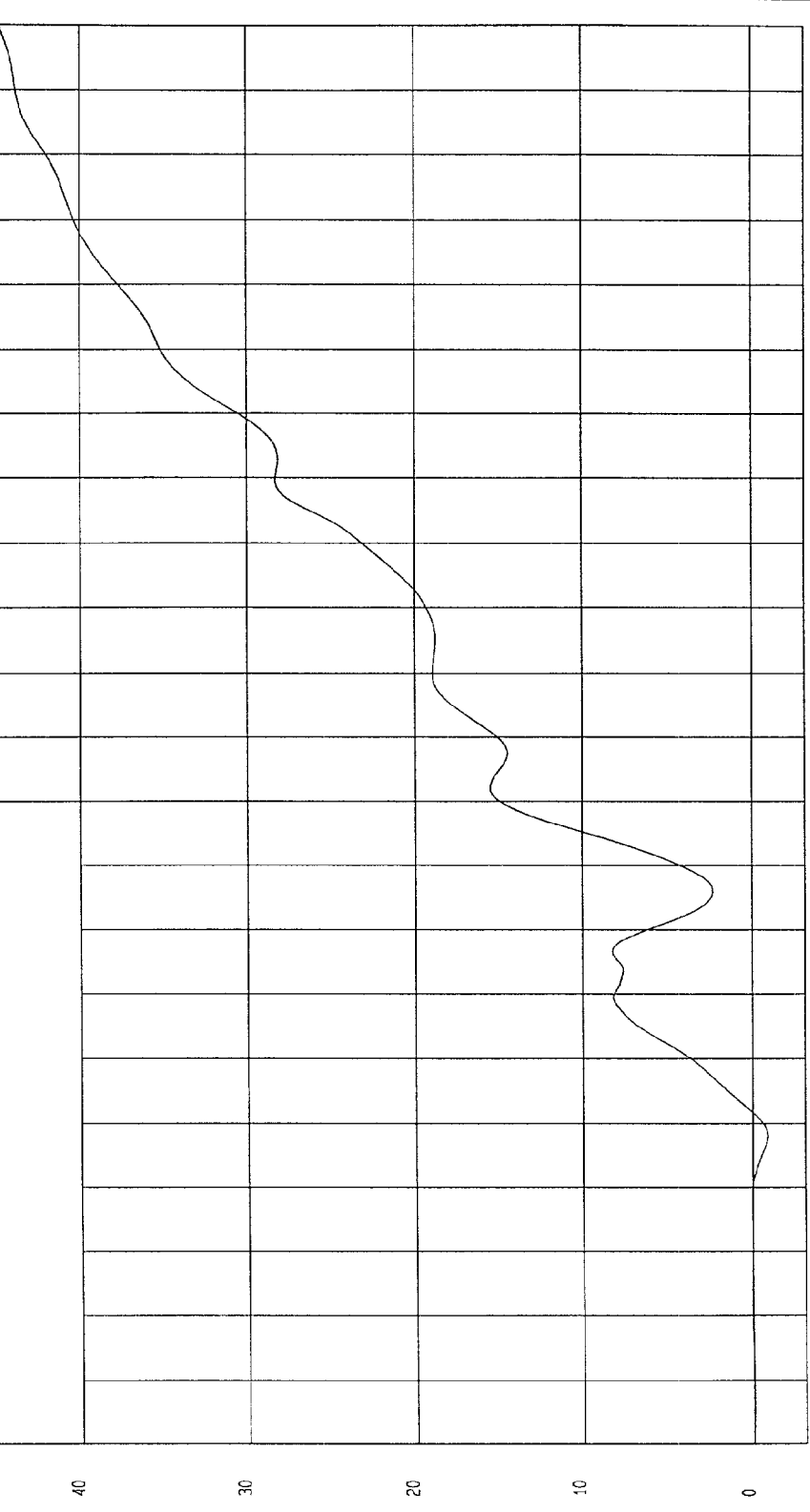
TIME (SECONDS)

G'S

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997
COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -.92 KPH at 28 msec Maximum = 44.75 KPH at 200 msec

REAR PASSENGER HEAD Z VELOCITY
1 — 897451A1.V24 Filterclass (180)



TIME Seconds
MGA, RESISTOR CT
12-22-1997 15:42

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

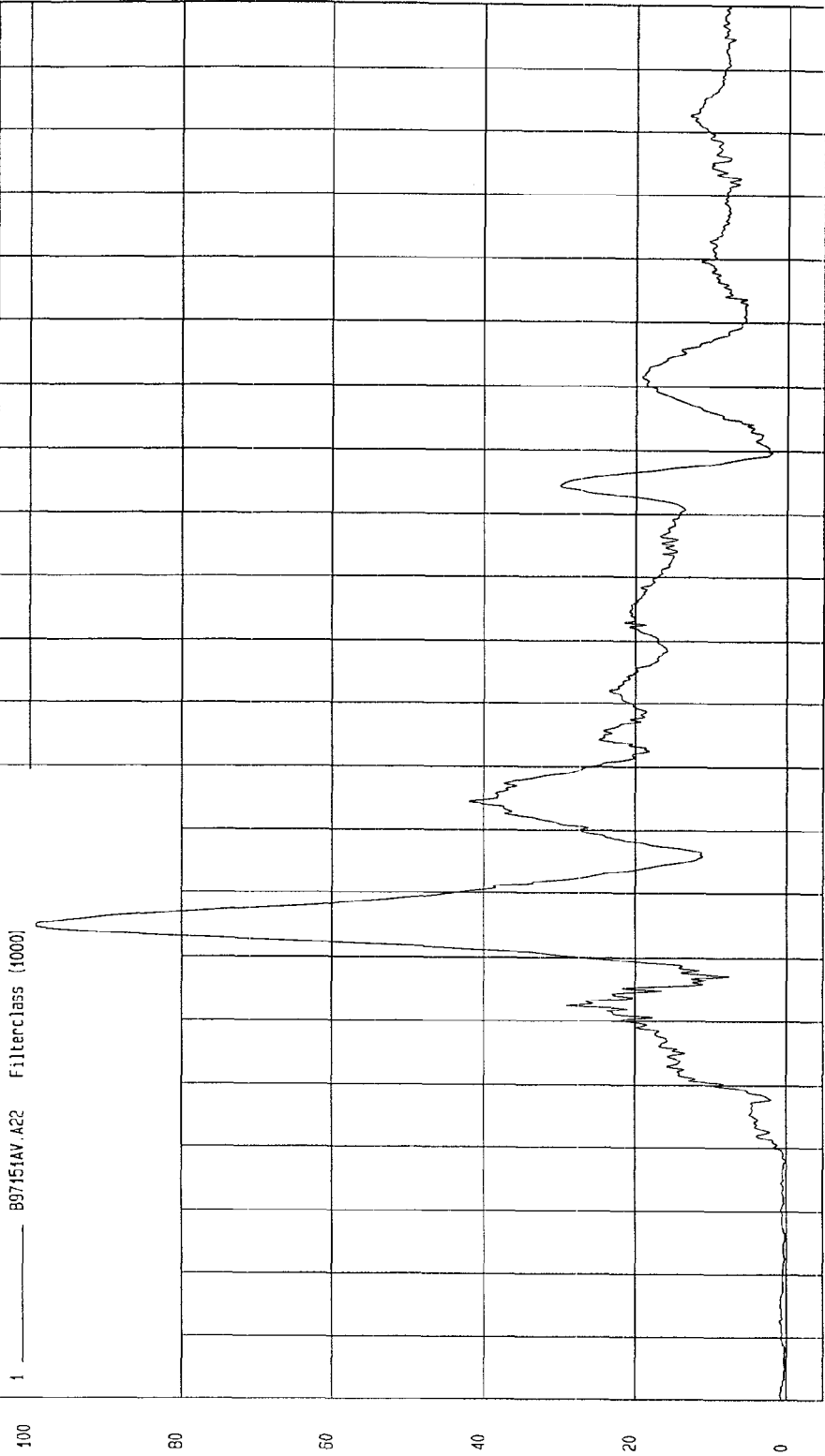
COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = .14 G'S at 10 msec

Maximum = 99.25 G'S at 55 msec

REAR PASSENGER HEAD RESULTANT

1 897151AV.A22 Filterclass (1000)



MCA Research
12-22-1997 15:29

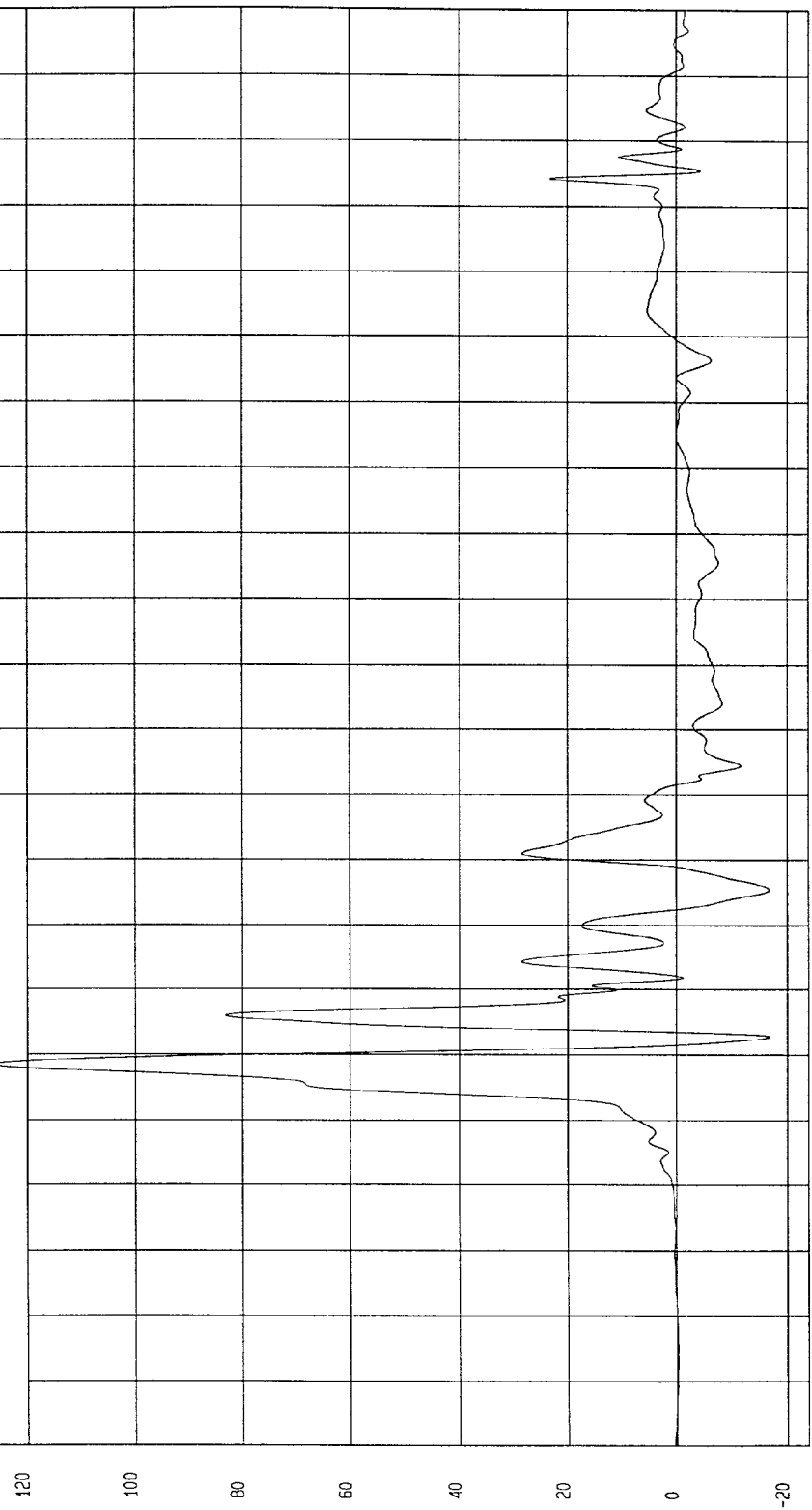
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -16.76 G'S at 43 msec Maximum = 126.10 G'S at 38 msec

REAR PASSENGER UPPER RIB Y ACCELERATION

1 _____ B97151AF.A25 Filter: class (180)



MSA Research
12-22-1997 15.30

TIME (SECONDS)

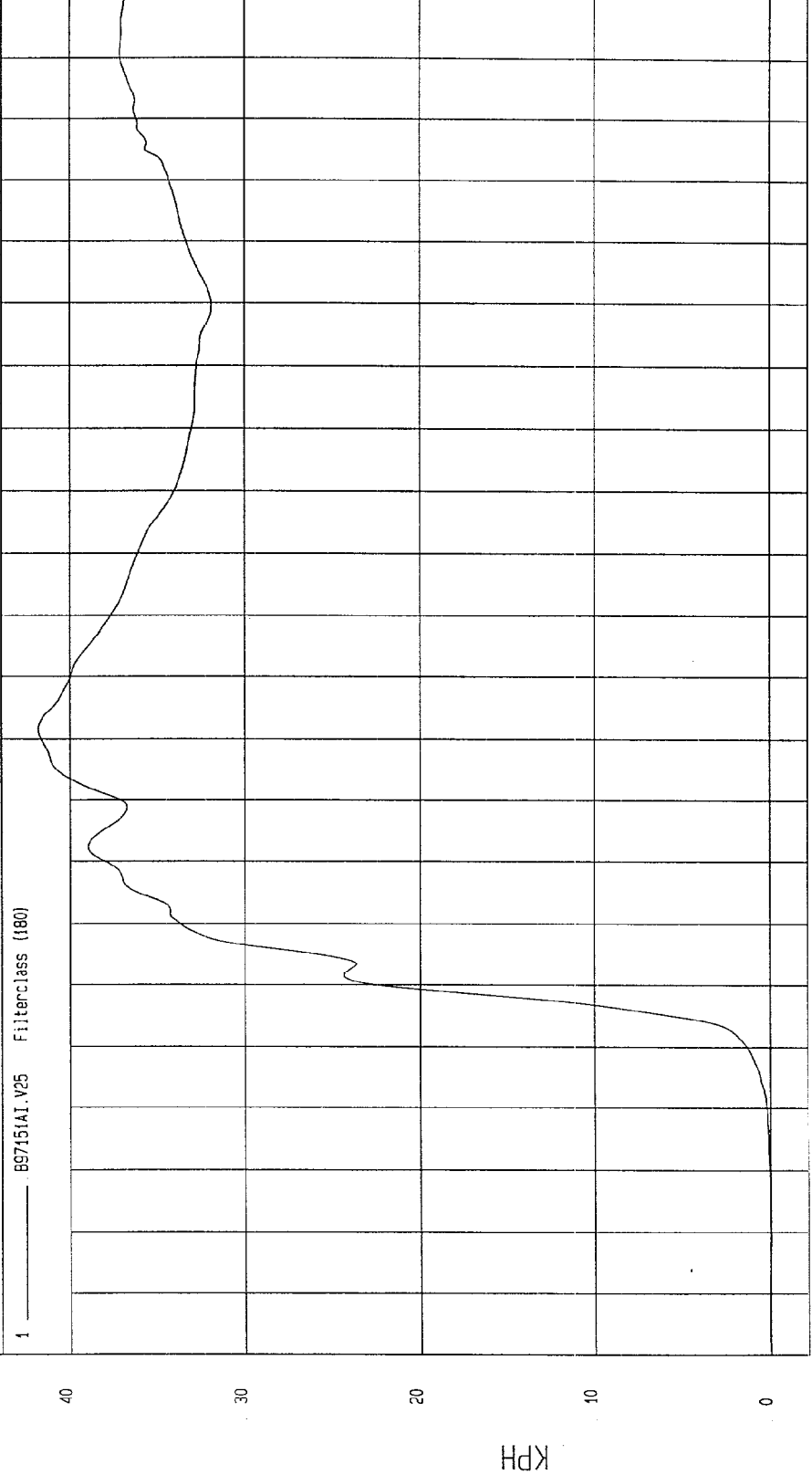
G.S

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -3.87E-02 KPH at 0 msec Maximum = 41.79 KPH at 82 msec

REAR PASSENGER UPPER RIB Y VELOCITY



TIME Seconds

NCA Research
12-22-1997 15.42

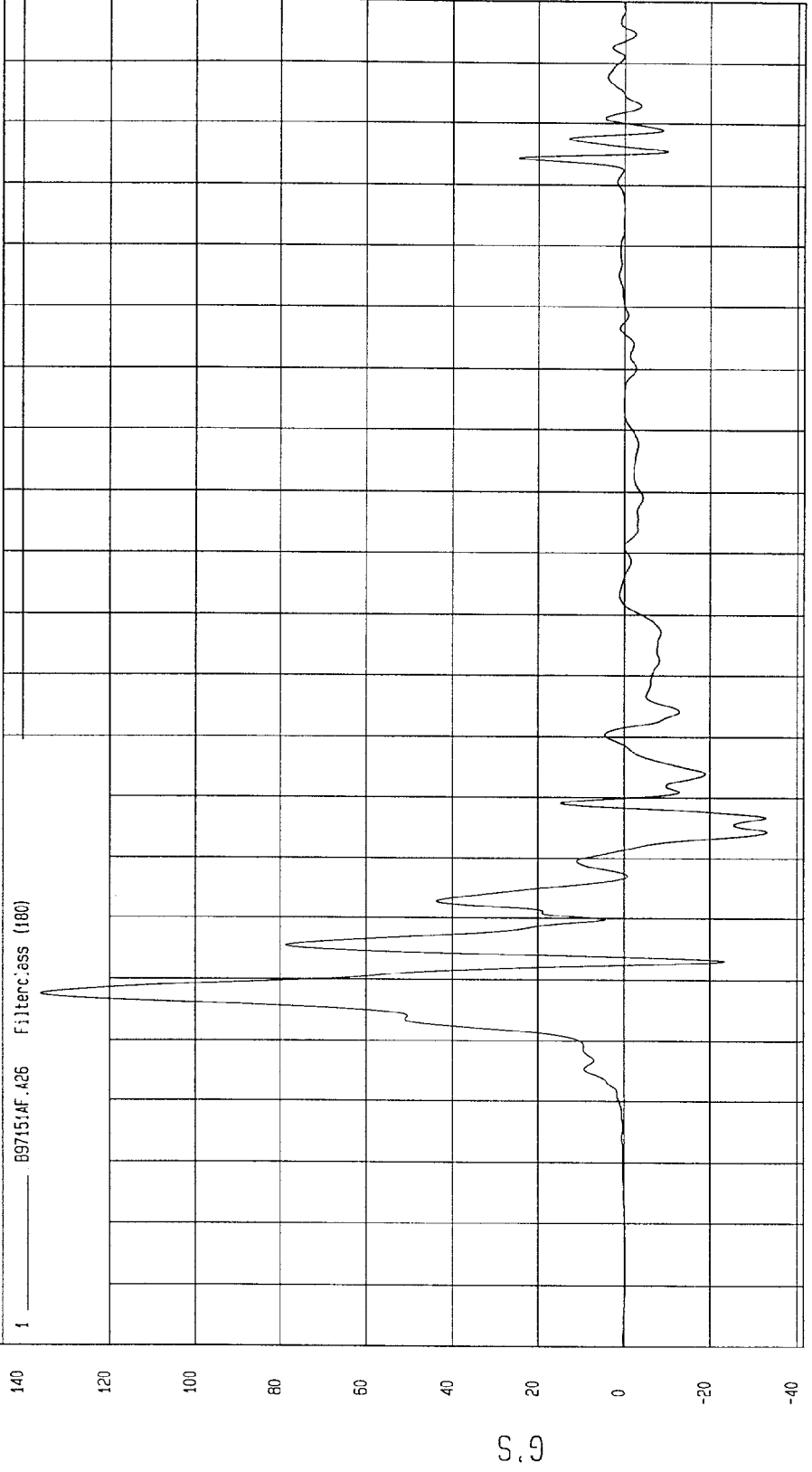
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -33.02 G'S at 64 msec
Maximum = 136.10 G'S at 38 msec

REAR PASSENGER LOWER RIB Y ACCELERATION

1 _____ B97151AF.A26 Filterc.ess (180)



MSA Research
12-22-1997 15:30

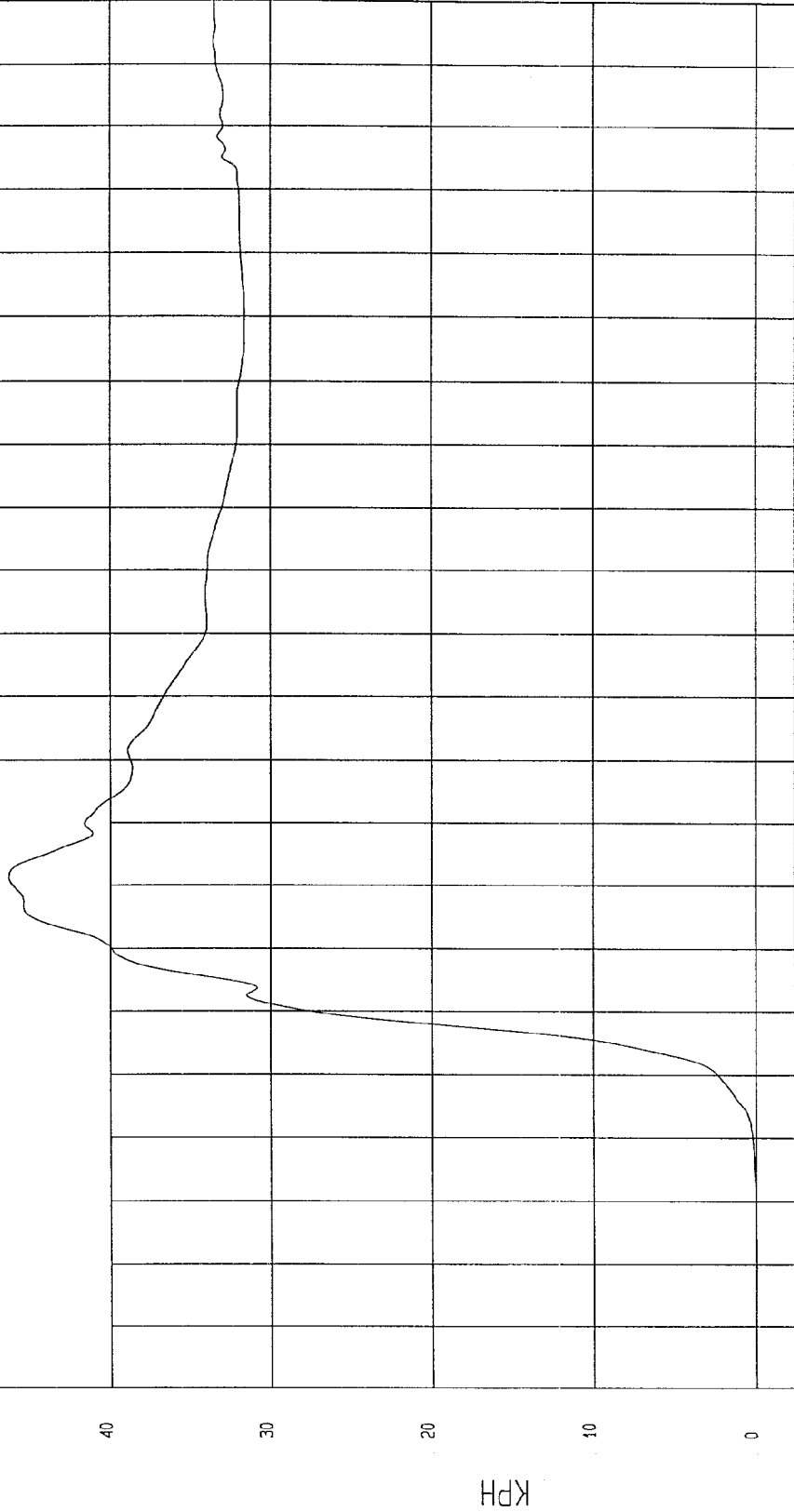
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -3.07E-02 KPH at 1 mSec
Maximum = 46.26 KPH at 61 msec

REAR PASSENGER LOWER RIB Y VELOCITY

1 ——— 897151A1 V26 Filterclass (180)



MSA Research
12-22-1997 15.42

TIME Seconds

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

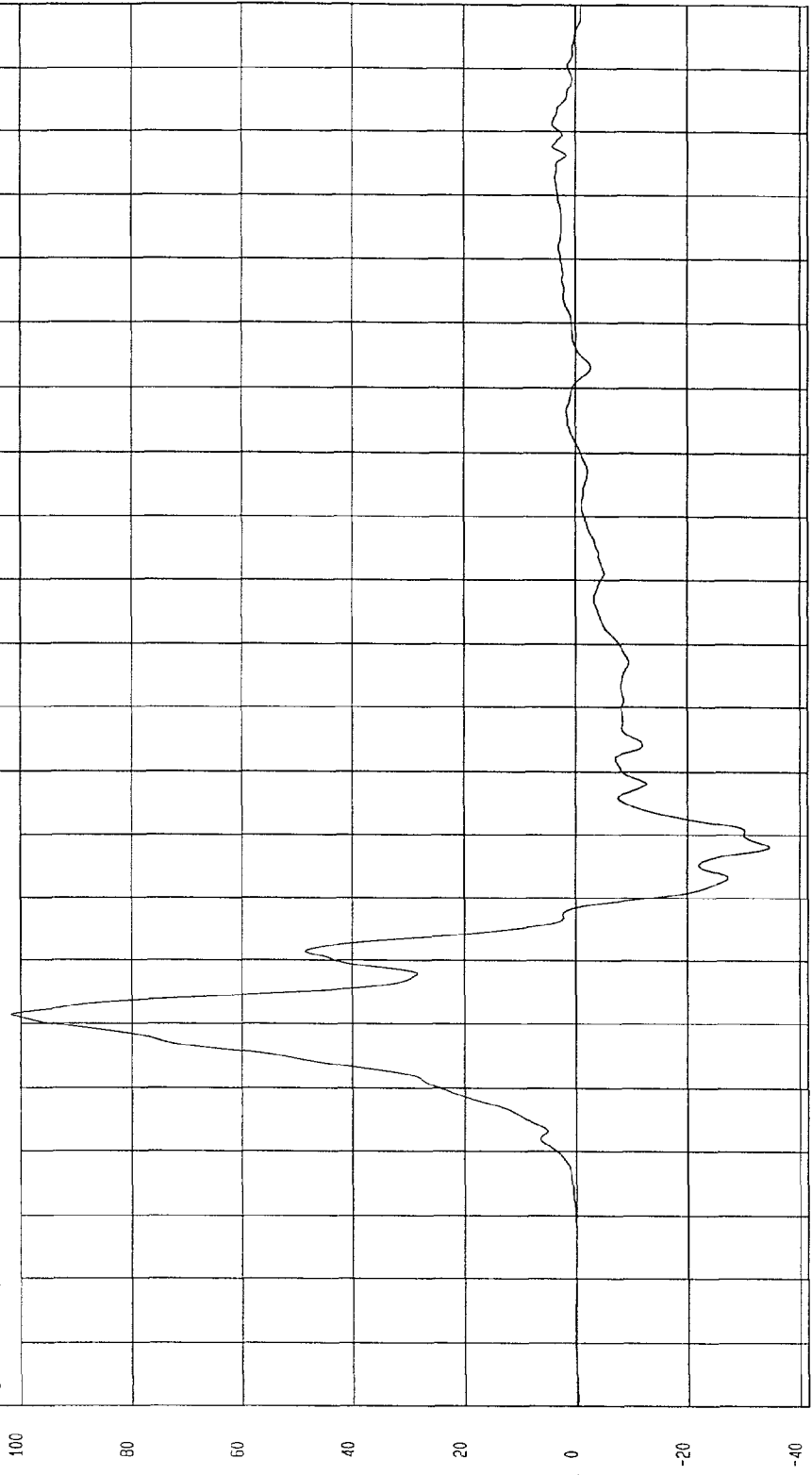
COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -34.58 G'S at 68 msec

Maximum = 101.71 G'S at 42 msec

REAR PASSENGER LOWER SPINE Y ACCELERATION

1 897151AF.A27 Filterclass (180)



NSA Research
12-22-1997 13:30

TIME (SECONDS)

G.S

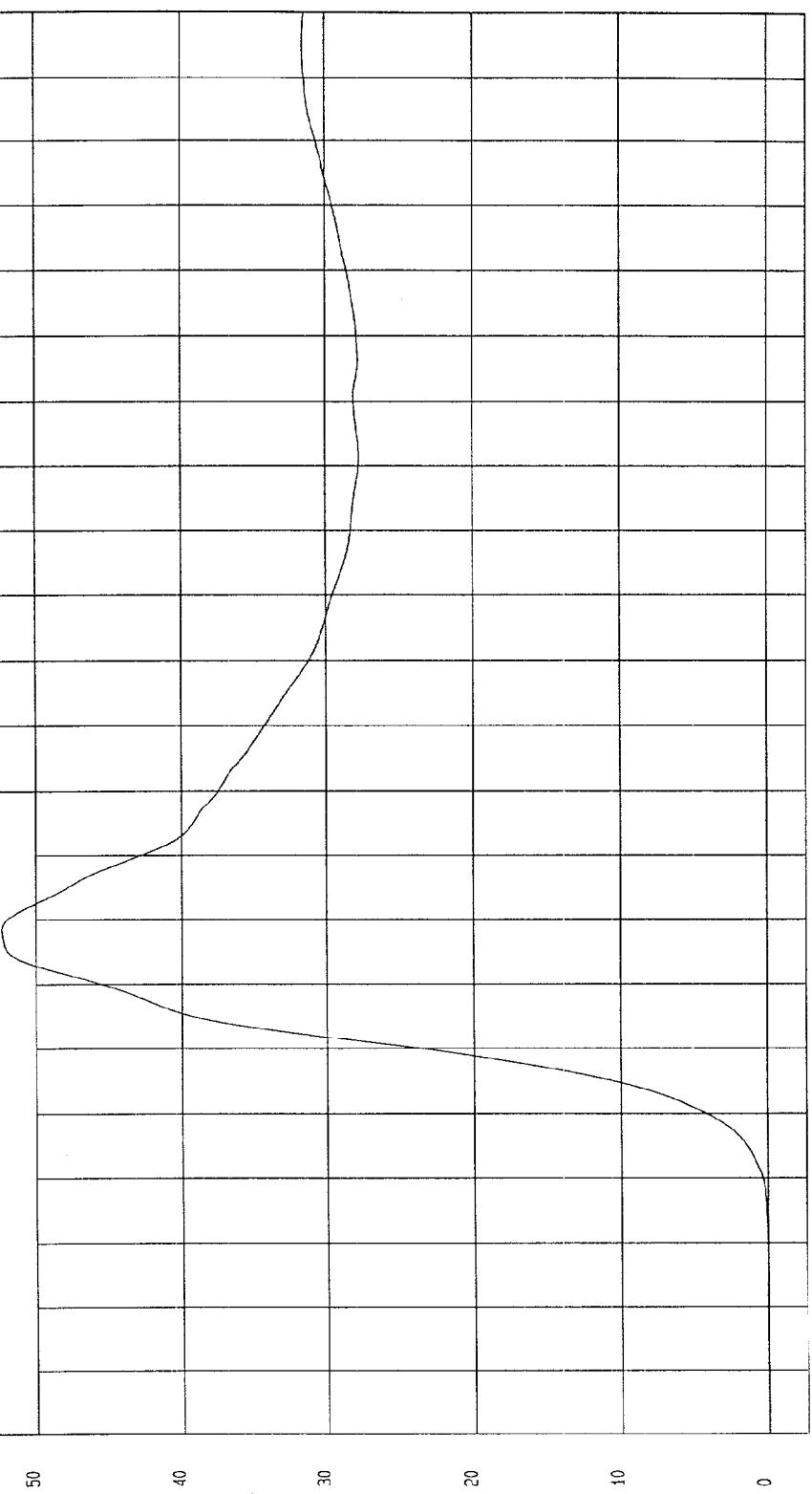
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -2.96E-02 KPH at -13 msec
Maximum = 52.29 KPH at 58 msec

REAR PASSENGER LOWER SPINE Y VELOCITY

1 ——— 897151A1.V27 Filterclass (180)



MECA Research
12-22-1997 15:42

TIME Seconds

KPH

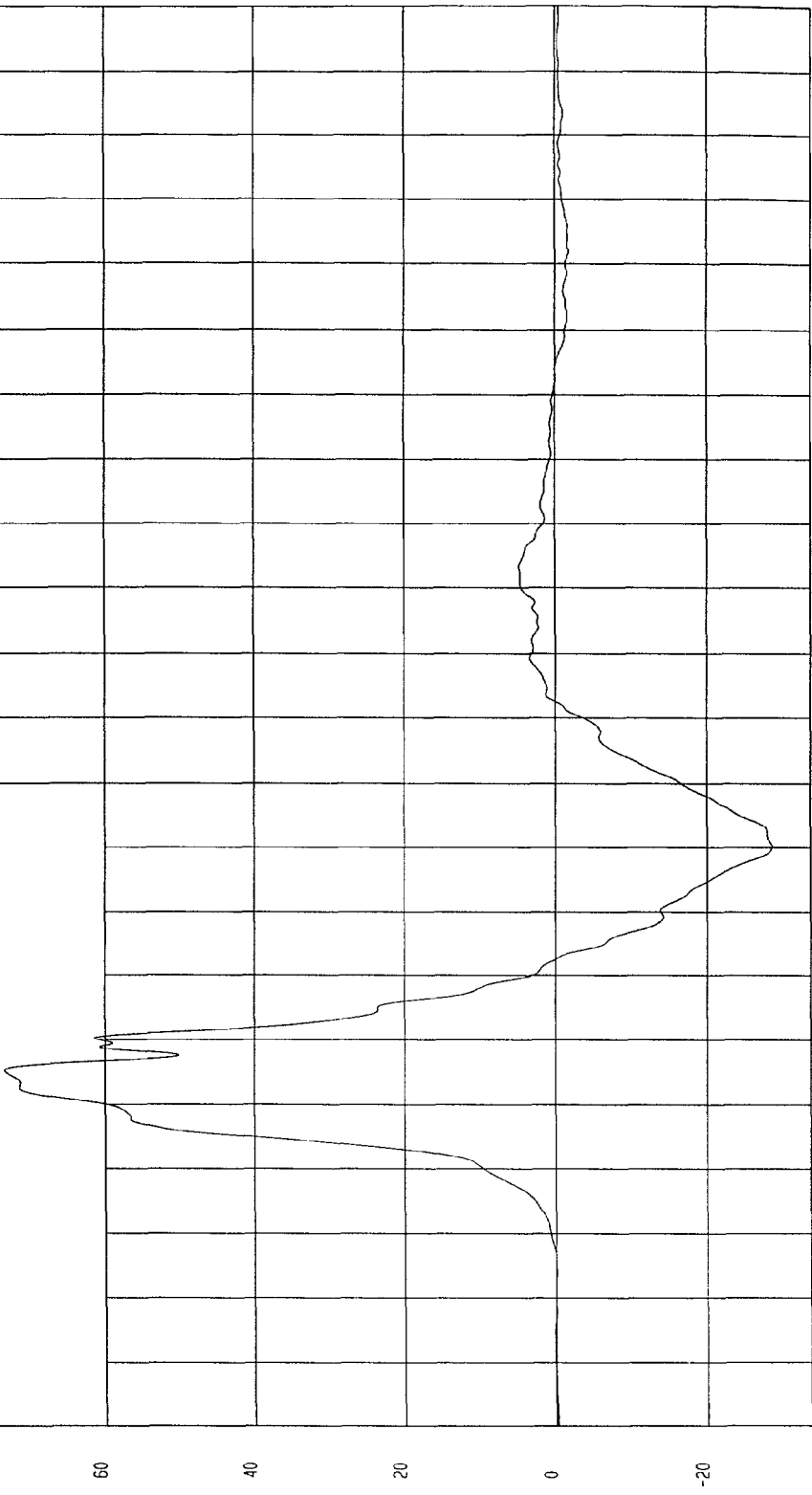
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -28.53 G'S at 70 msec Maximum = 73.24 G'S at 35 msec

REAR PASSENGER PELVIS Y ACCELERATION

1 897151AF.A28 Filterclass (180)



MCA Research
12-22-1997 15:30

TIME (SECONDS)

G.S

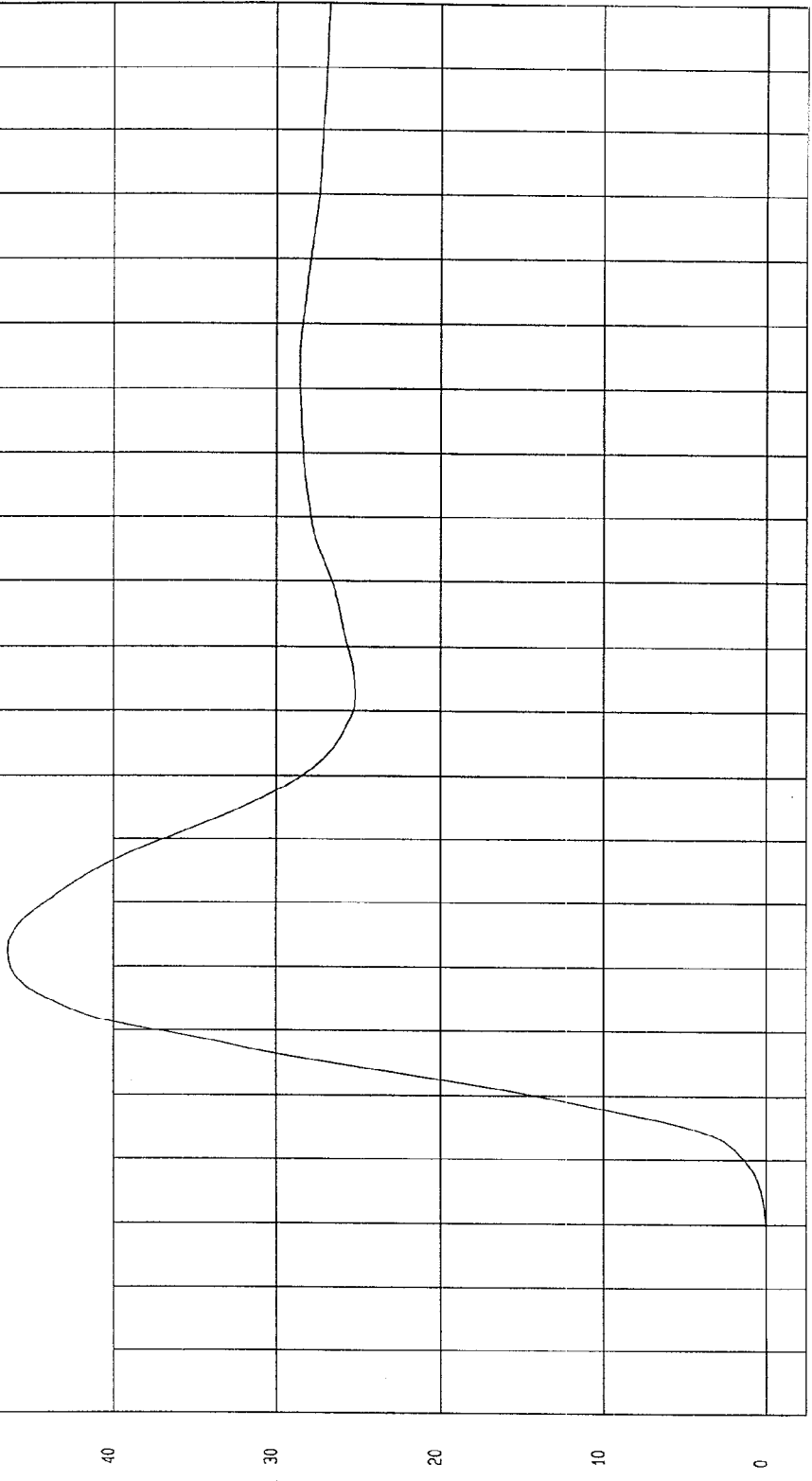
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -3.21E-02 KPH at -12 msec
Maximum = 45.48 KPH at 52 msec

REAR PASSENGER PELVIS Y VELOCITY

1 897151A1.V28 Filterclass (180)



MCA Research
12-22-1997 15: 42

TIME Seconds

KPH

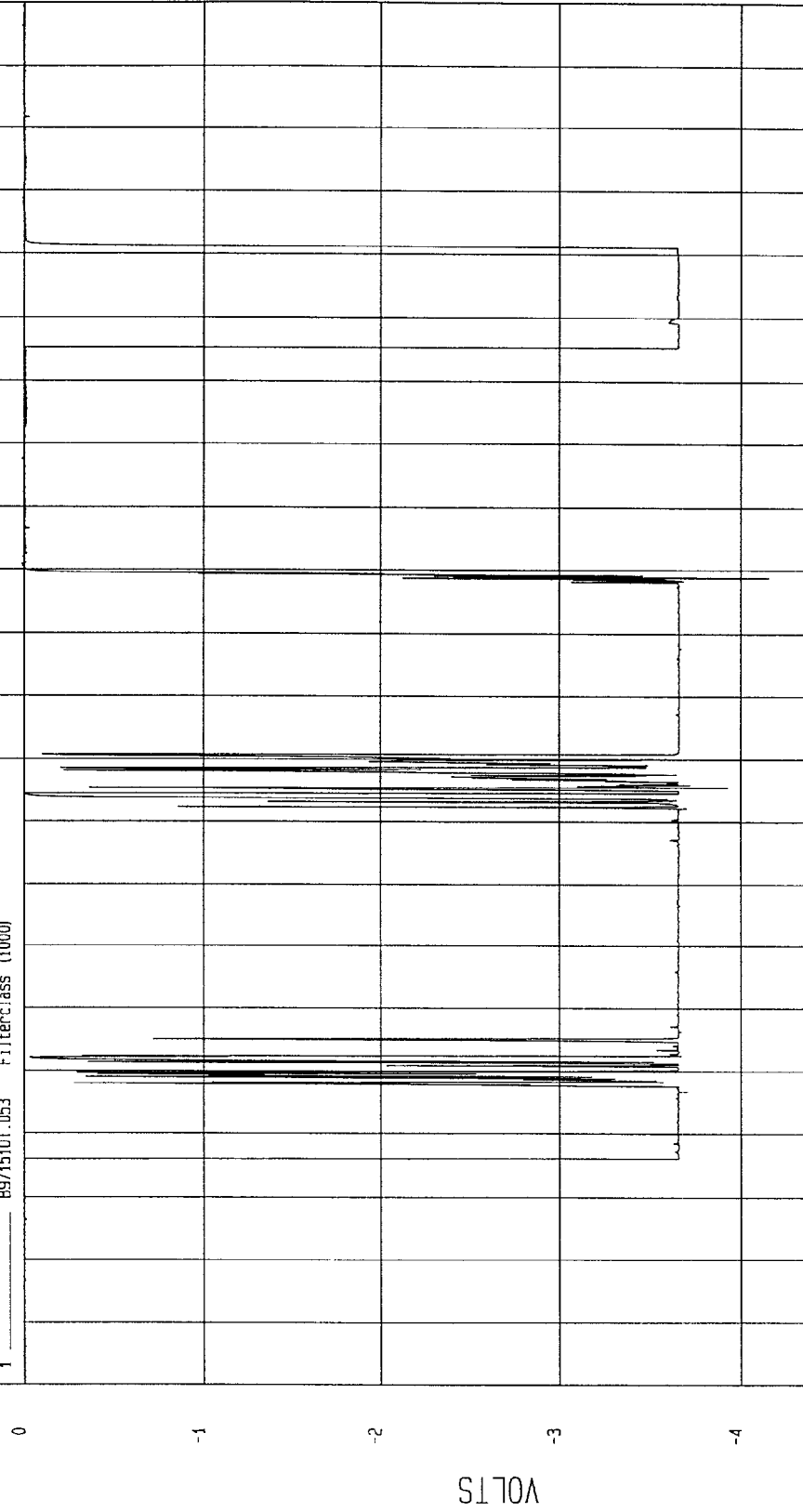
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -4.45 VOLTS at 109 msec
Maximum = 1.17E-02 VOLTS at 128 msec

REAR PASSENGER SHOULDER CONTACT

1 B971510T.053 Filterclass (1000)



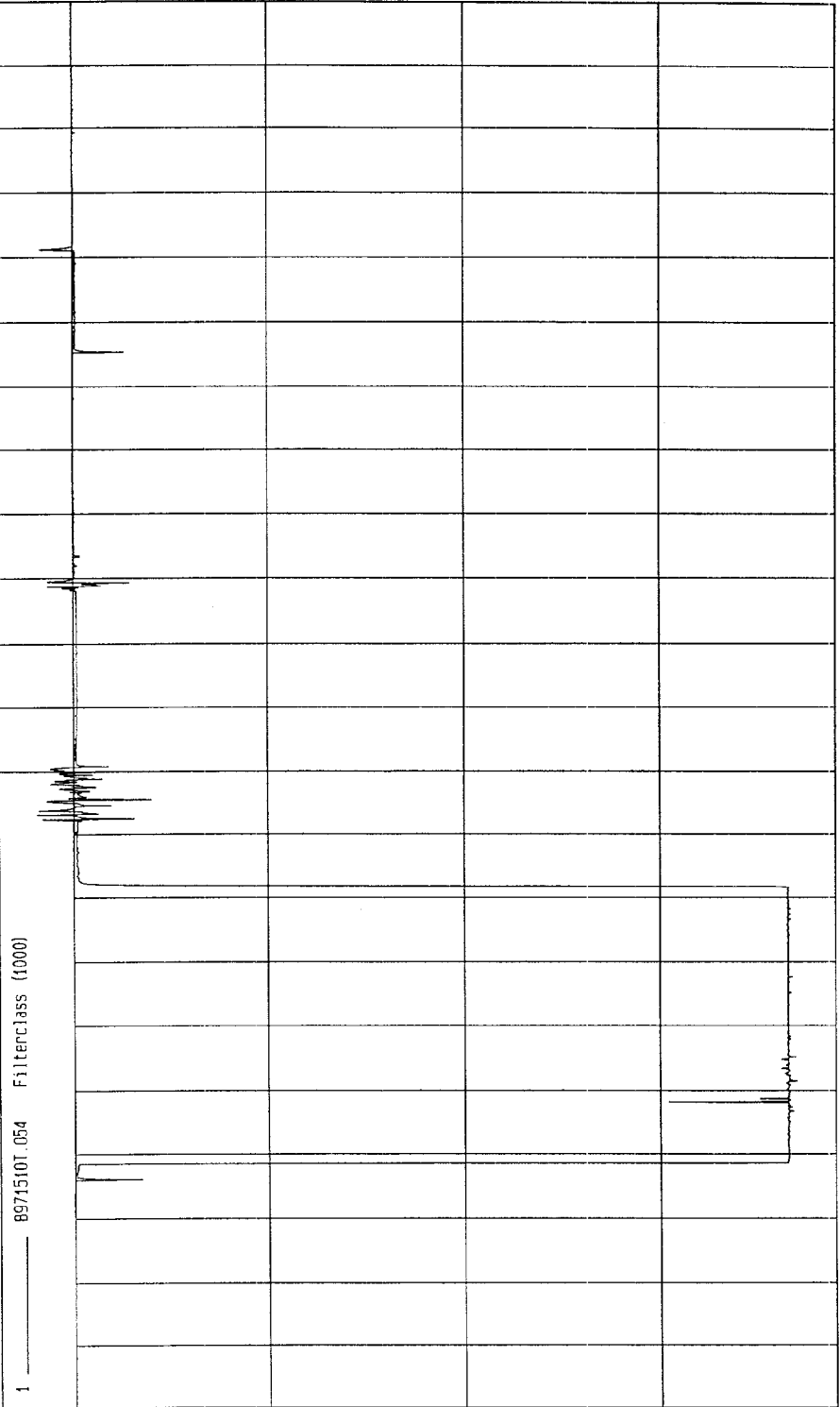
MCA Research
12-22-1997 15:41

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -3.69 VOLTS at 32 msec Maximum = .18 VOLTS at 73 msec

REAR PASSENGER LEG CONTACT



TIME (SECONDS) MGA Research 12-22-1997 15: 41

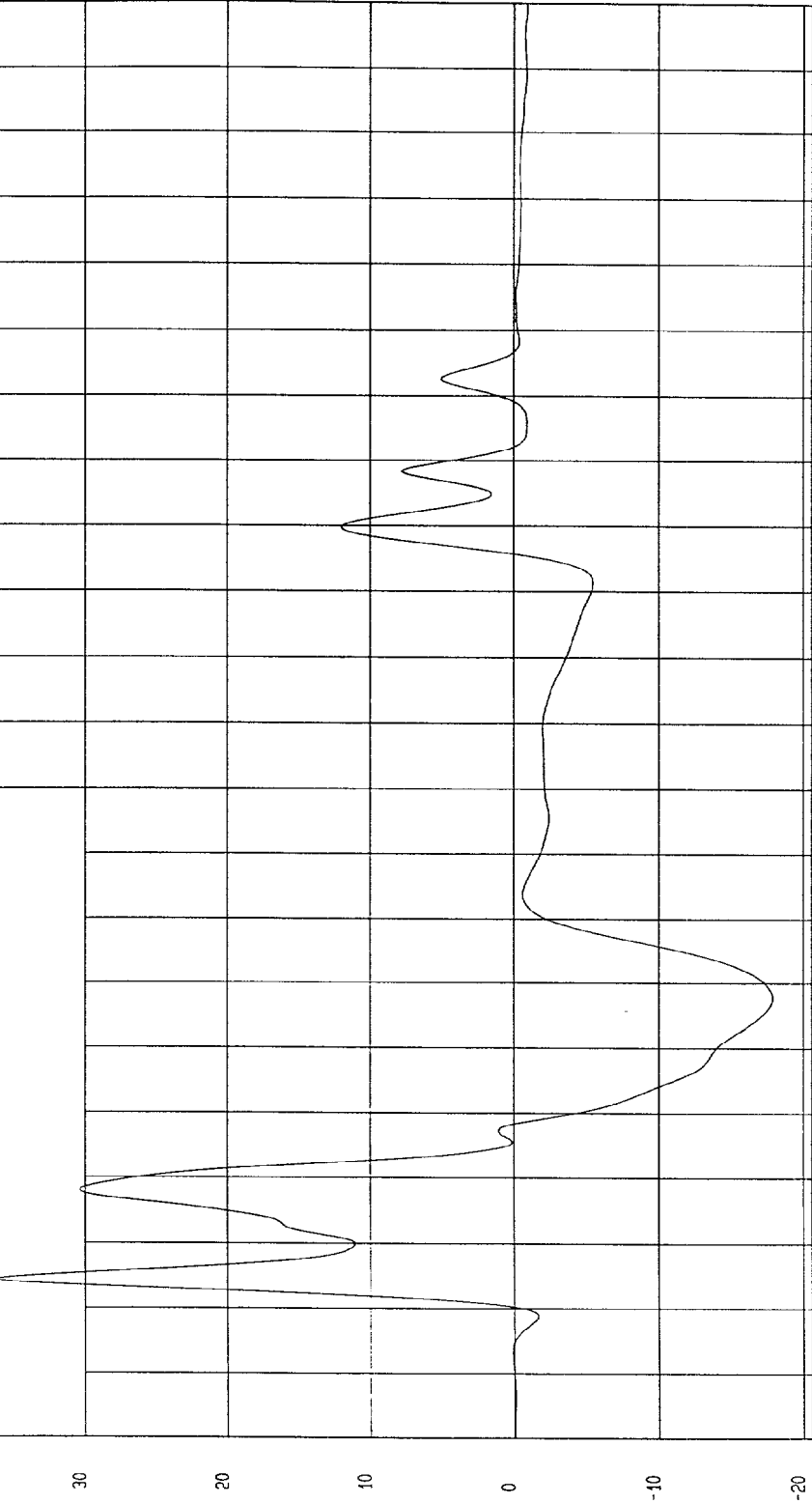
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -17.88 G'S at 48 msec
Maximum = 36.04 G'S at 4 msec

LEFT SIDE SILL AT FRONT SEAT Y ACCELERATION

1 ——— B97151AF.A38 Filterclass (50)



MOA Research, Inc.
12-22-1997 15:46

TIME (SECONDS)

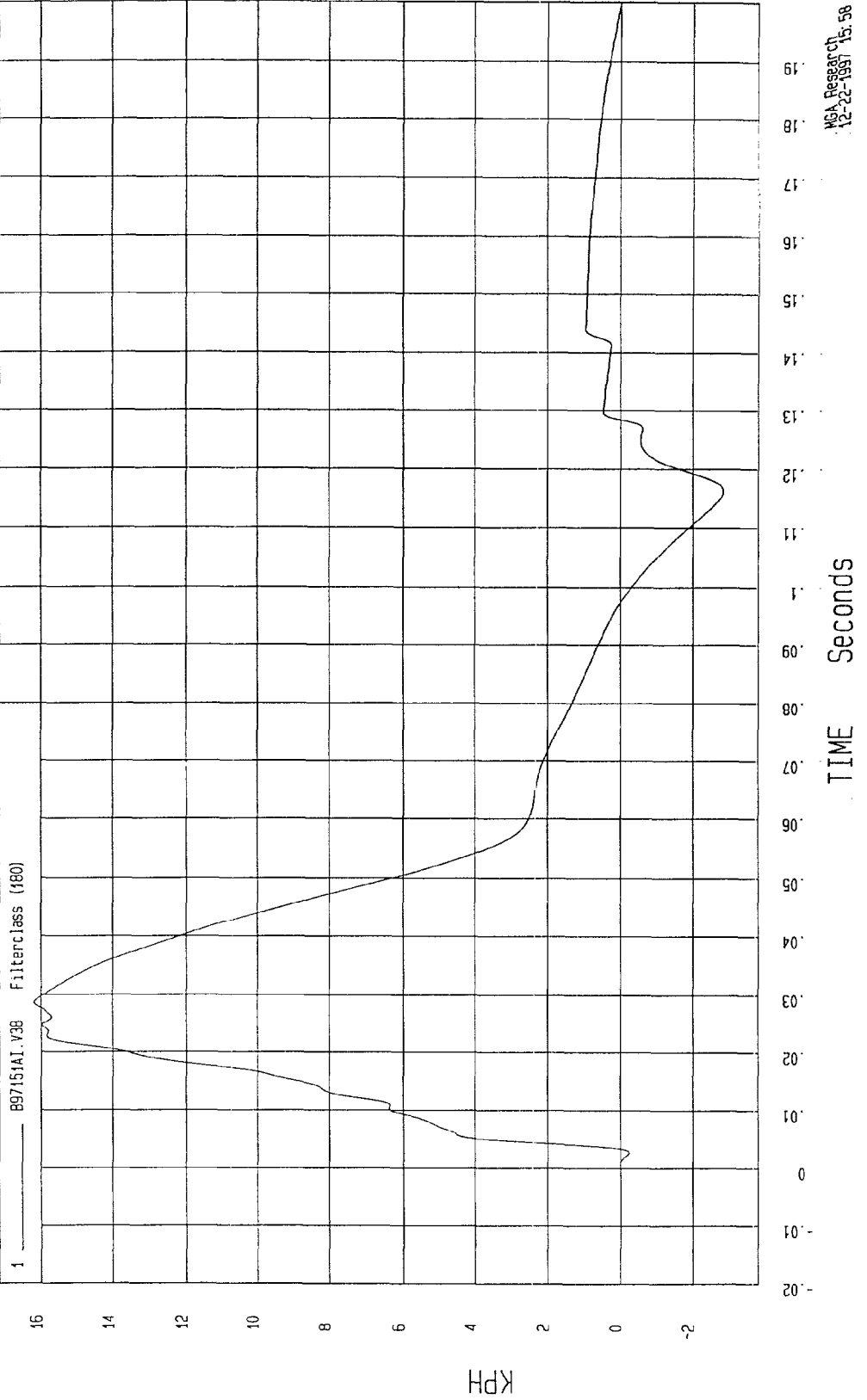
G.S

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -2.83 KPH at 116 msec
Maximum = 16.19 KPH at 29 msec

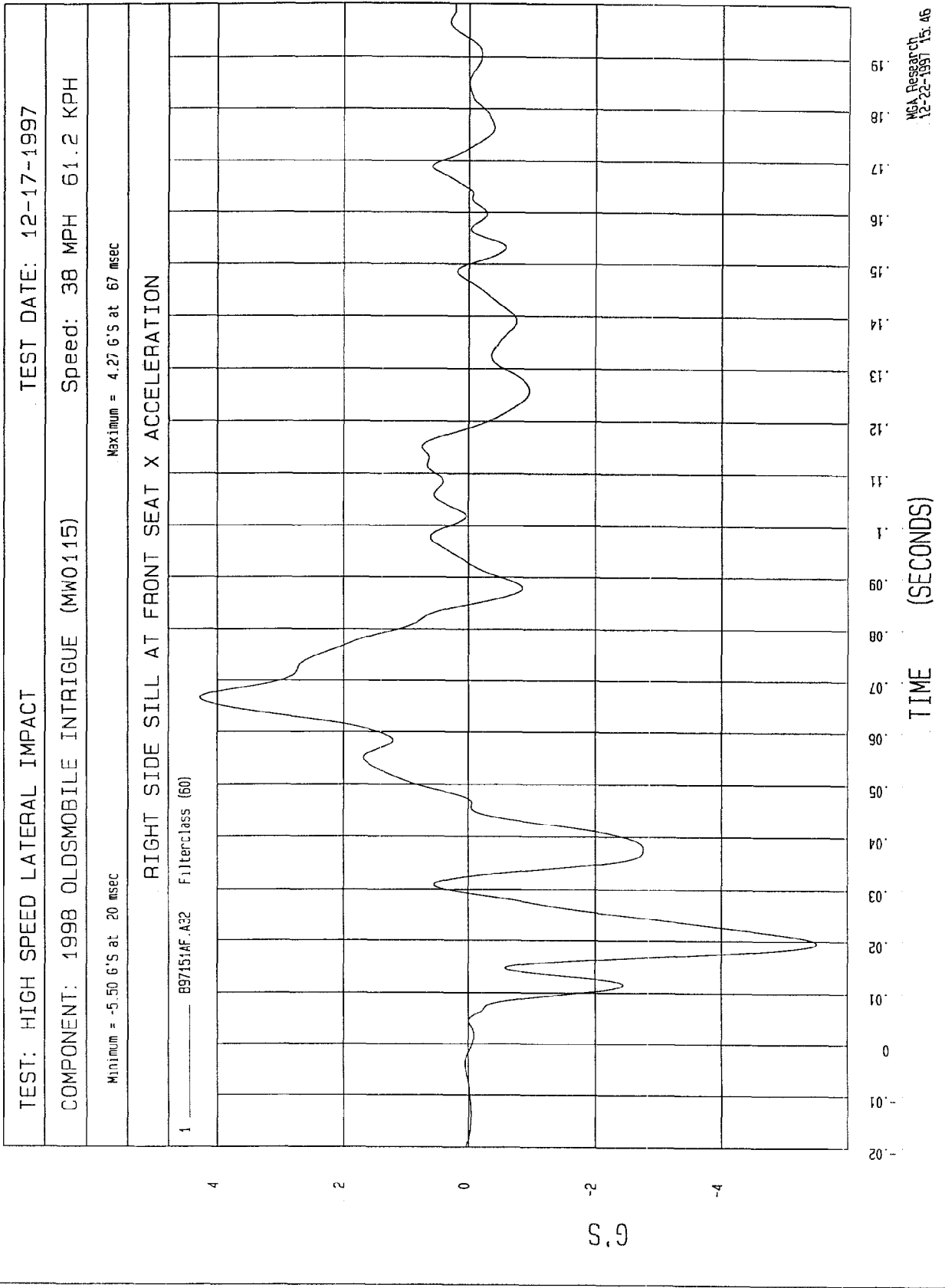
LEFT SIDE SILL AT FRONT SEAT Y VELOCITY



MSA Research
12-22-1997 15:58

LEFT SIDE SILL AT REAR SEAT Y ACCELERATION VS. TIME

NO VALID DATA COLLECTED



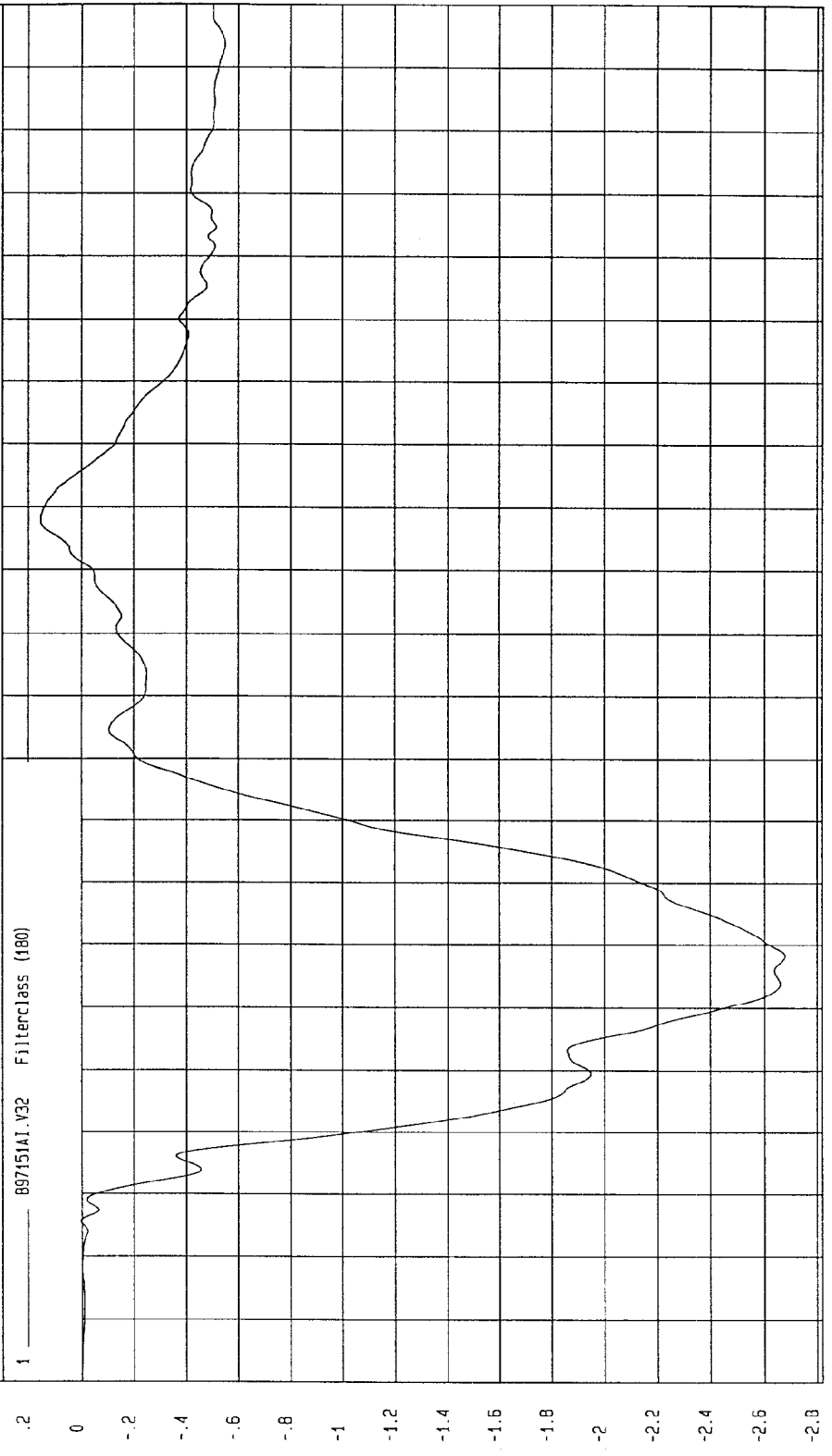
MGA Research
12-22-1997 15.46

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997
COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -2.67 KPH at 48 msec Maximum = .15 KPH at 118 msec

RIGHT SIDE SILL AT FRONT SEAT X VELOCITY

1 897451A1.V32 Filterclass (180)



TIME Seconds
MCA Research
12-22-1997 15:58

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

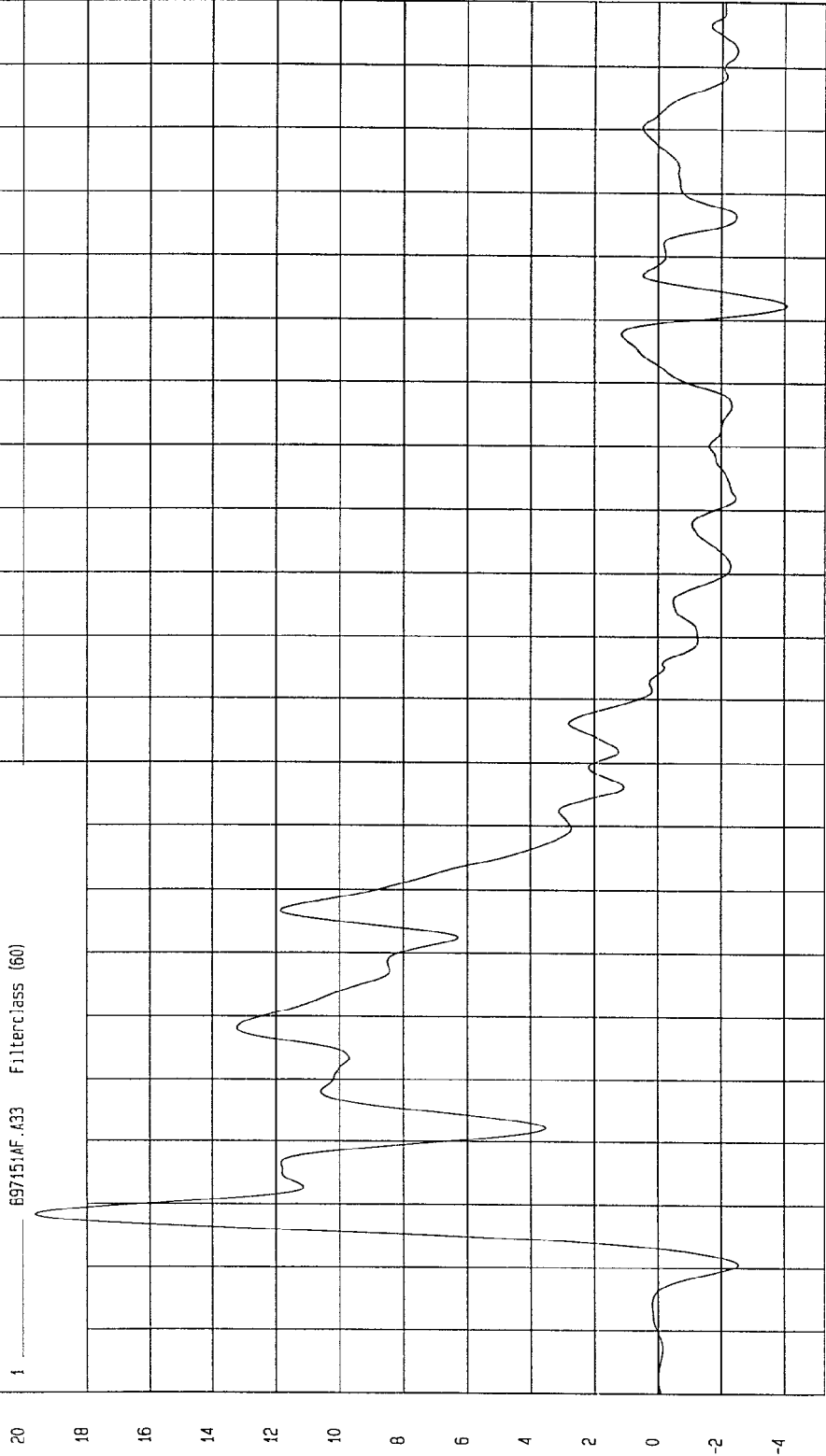
COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -4.07 G's at 152 msec

Maximum = 19.62 G's at 8 msec

RIGHT SIDE SILL AT FRONT SEAT Y ACCELERATION

1 697151AF.A33 Filterclass (60)



MSA Research
12-22-1997 15:46

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

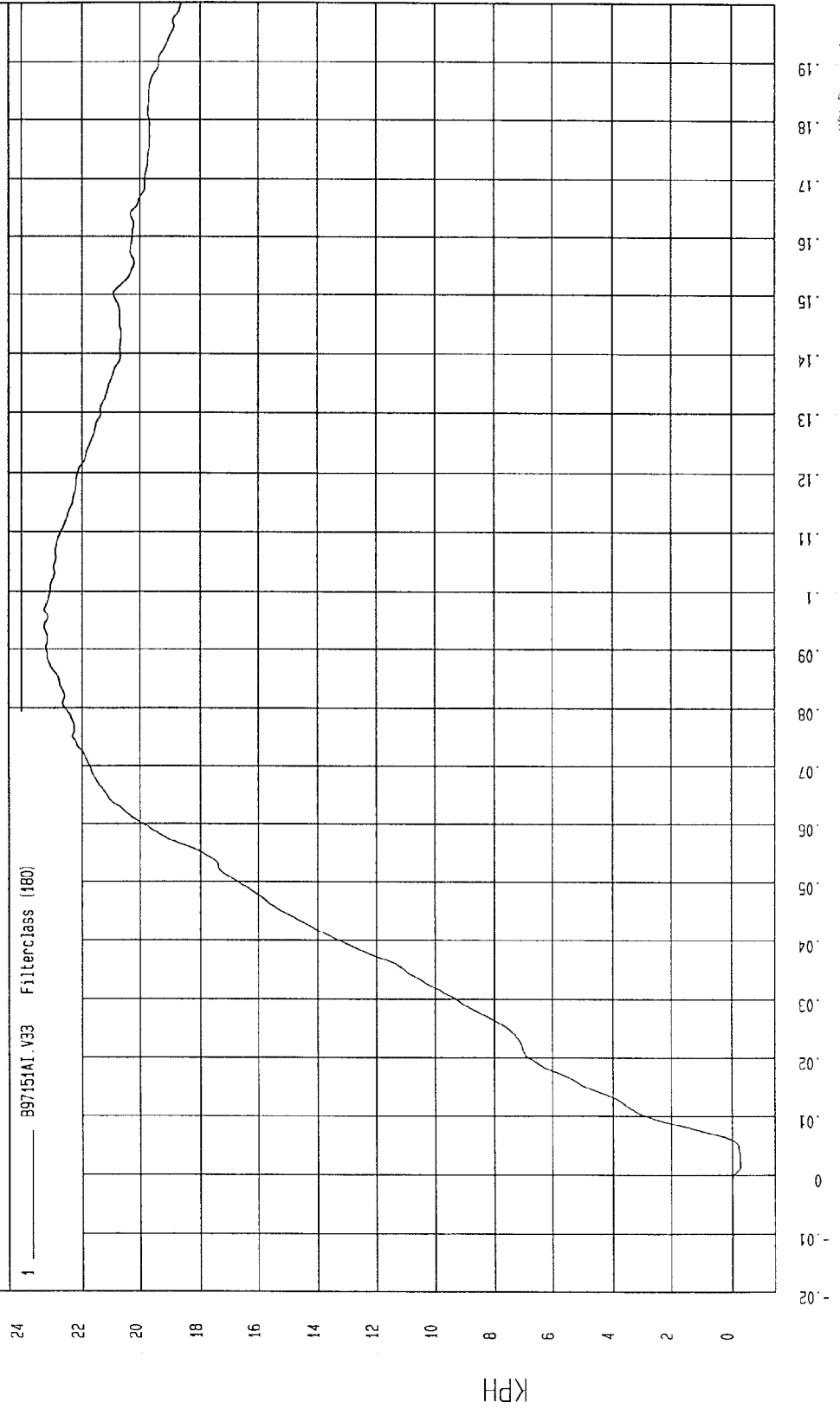
COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -27 KPH at 2 msec

Maximum = 23.25 KPH at 94 msec

RIGHT SIDE SILL AT FRONT SEAT Y VELOCITY

1 B97151A1.V33 Filterclass (480)



MGA Research
12-22-1997 15:58

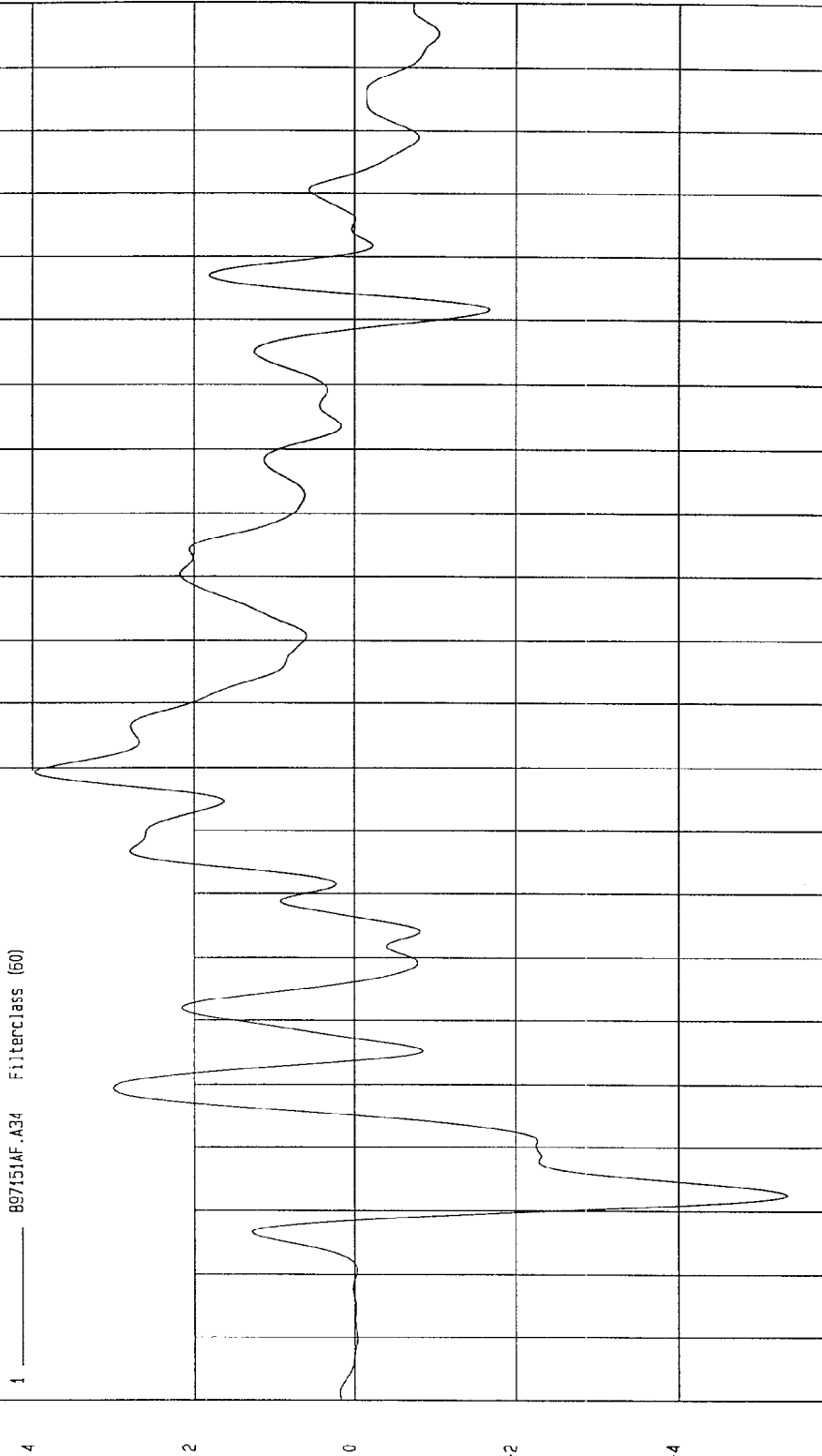
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -5.31 G'S at 12 msec Maximum = 3.97 G'S at 79 msec

RIGHT SIDE SILL AT FRONT SEAT Z ACCELERATION

1 ——— 897151AF.A34 Filterclass (50)



NSA Research
12-22-1997 15:46

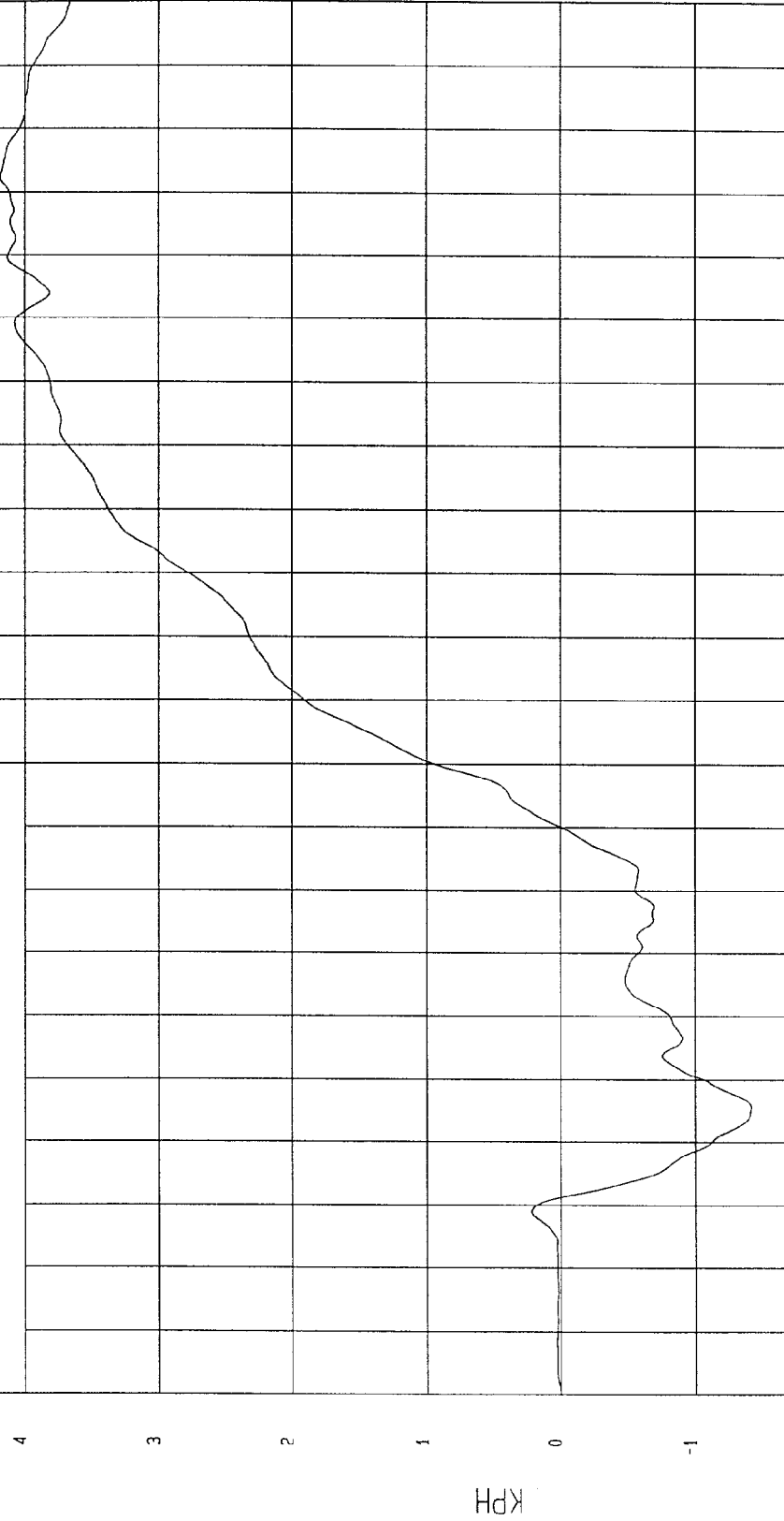
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -1.42 KPH at 26 msec
Maximum = 4.18 KPH at 172 msec

RIGHT SIDE SILL AT FRONT SEAT Z VELOCITY

1 897151A1.V34 Filterclass (160)



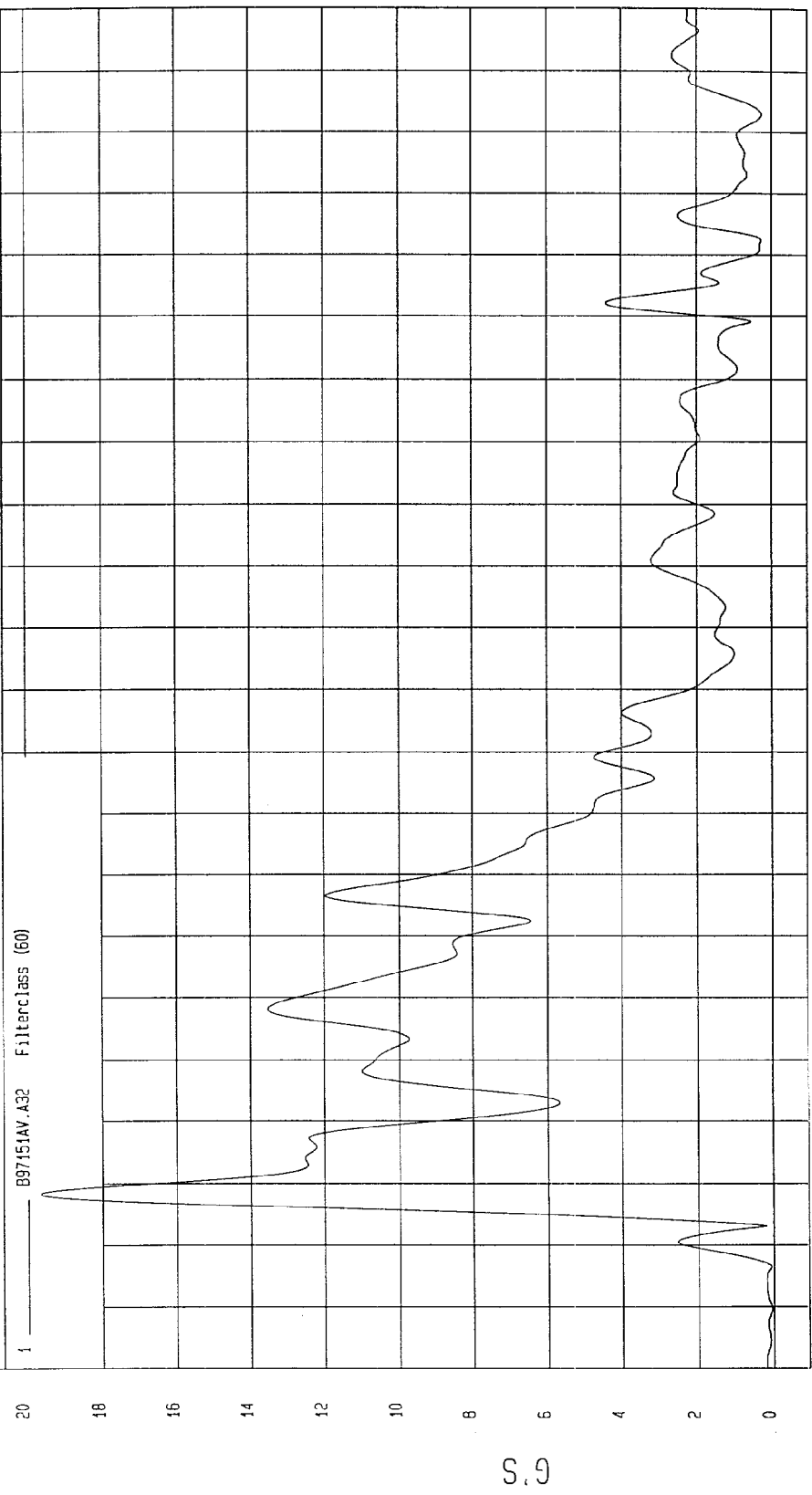
MGA Research
12-22-1997 15:58

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = 4.27E-02 G'S at -10 msec Maximum = 19.63 G'S at 8 msec

RIGHT SIDE SILL AT FRONT SEAT RESULTANT ACCELERATION



TIME (SECONDS)

MCA Research
12-22-1997 15.50

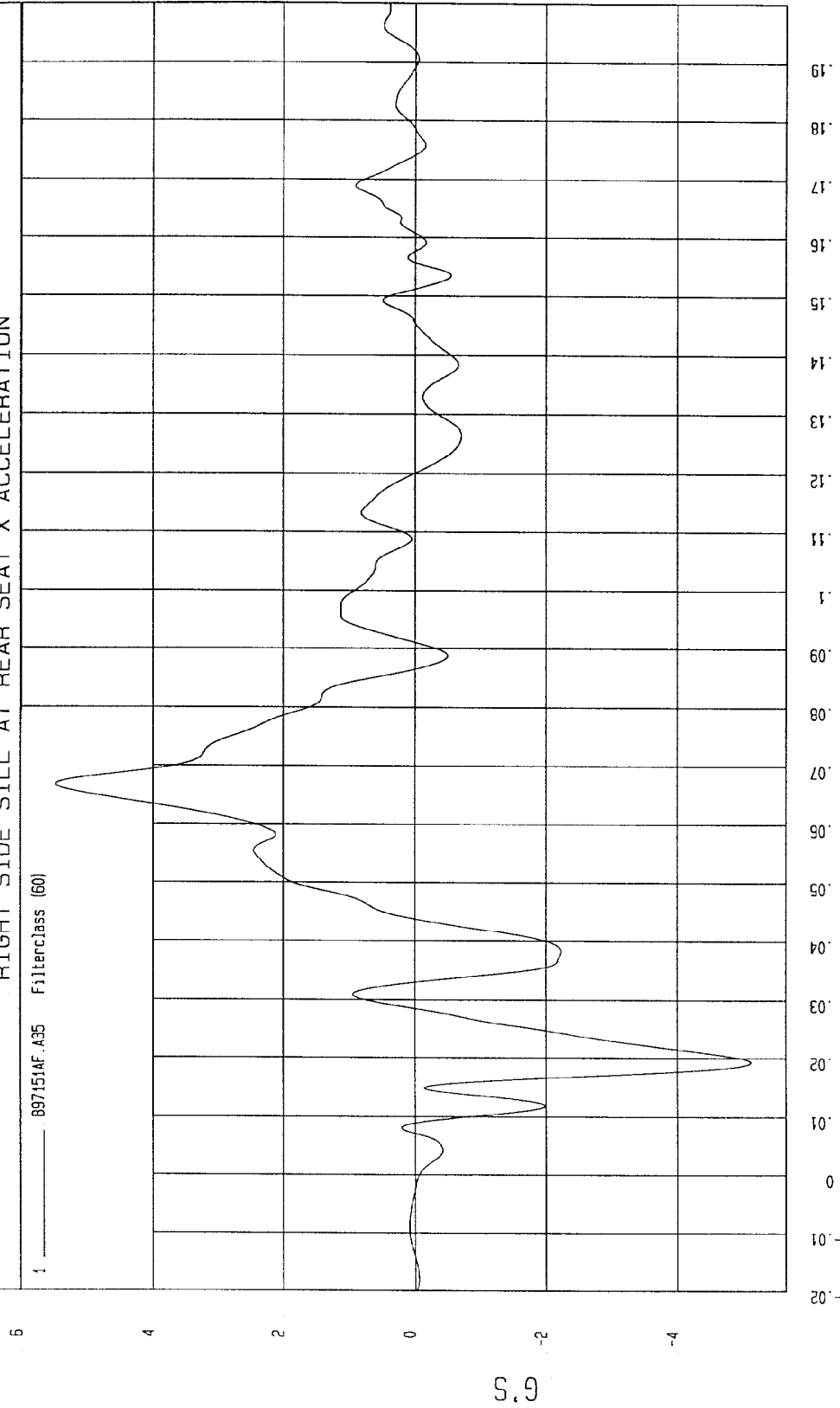
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -5.10 G'S at 19 msec
Maximum = 5.48 G'S at 67 msec

RIGHT SIDE SILL AT REAR SEAT X ACCELERATION

1 ——— B971514F.A35 Filterclass (60)



MCA Research
12-22-1997 15:46

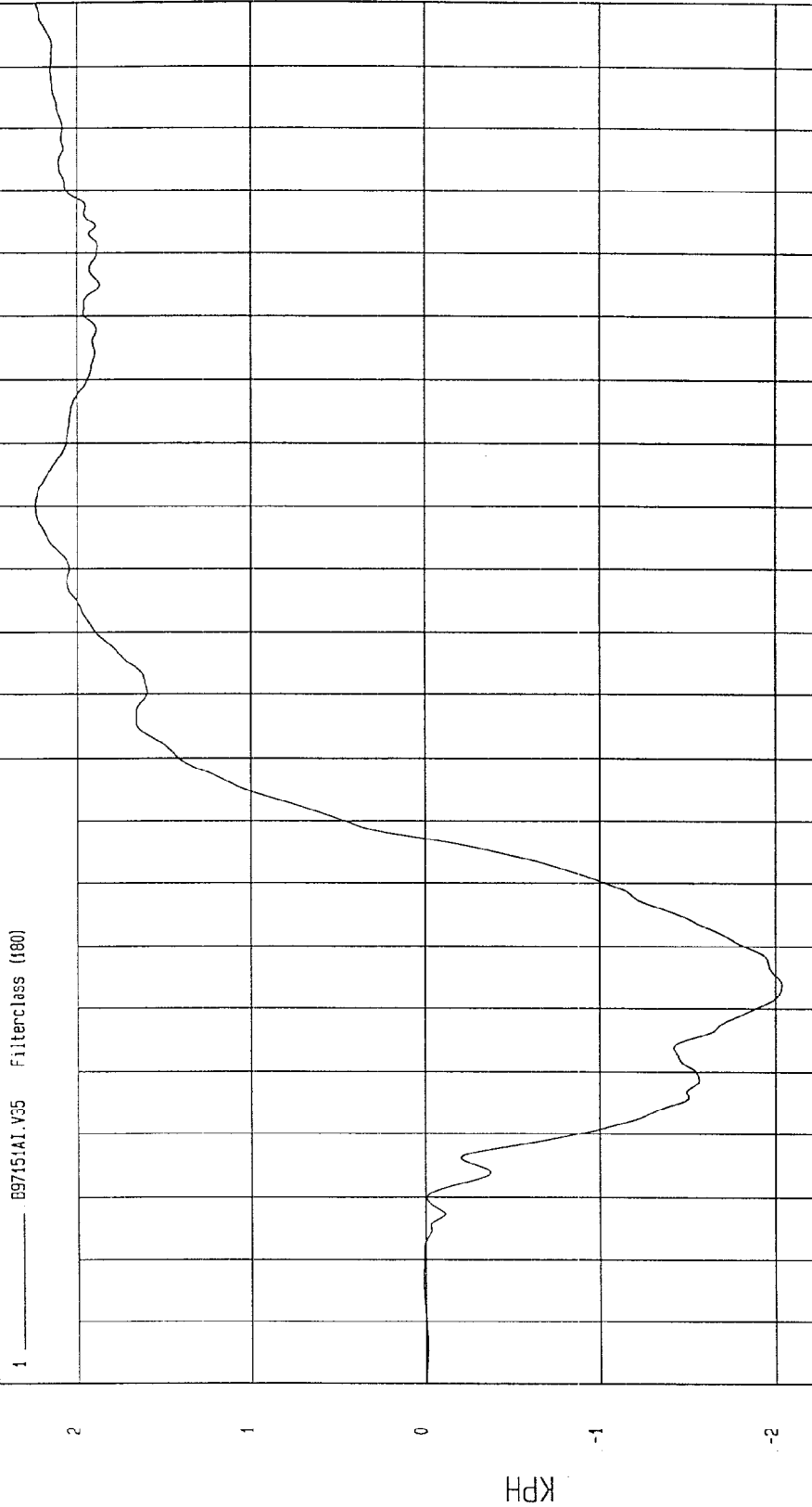
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MWO115) Speed: 38 MPH 61.2 KPH

Minimum = -2.03 KPH at 44 msec
Maximum = 2.24 KPH at 120 msec

RIGHT SIDE SILL AT REAR SEAT X VELOCITY

1 ——— 097151A1.V35 Filterclass (180)



NSA Research
12-22-1997 15:58

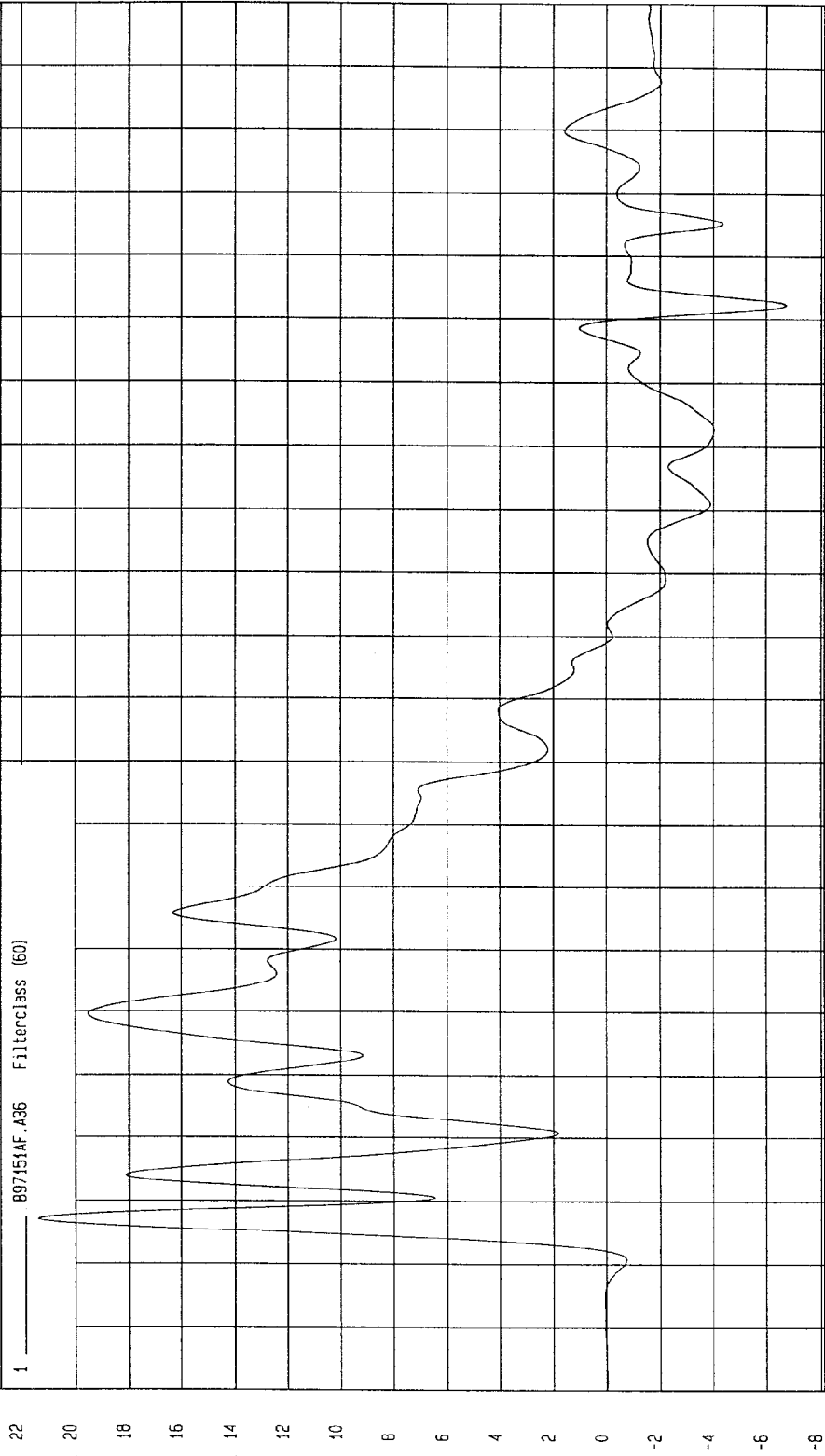
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -6.72 G'S at 152 msec

Maximum = 21.38 G'S at 7 msec

RIGHT SIDE SILL AT REAR SEAT Y ACCELERATION

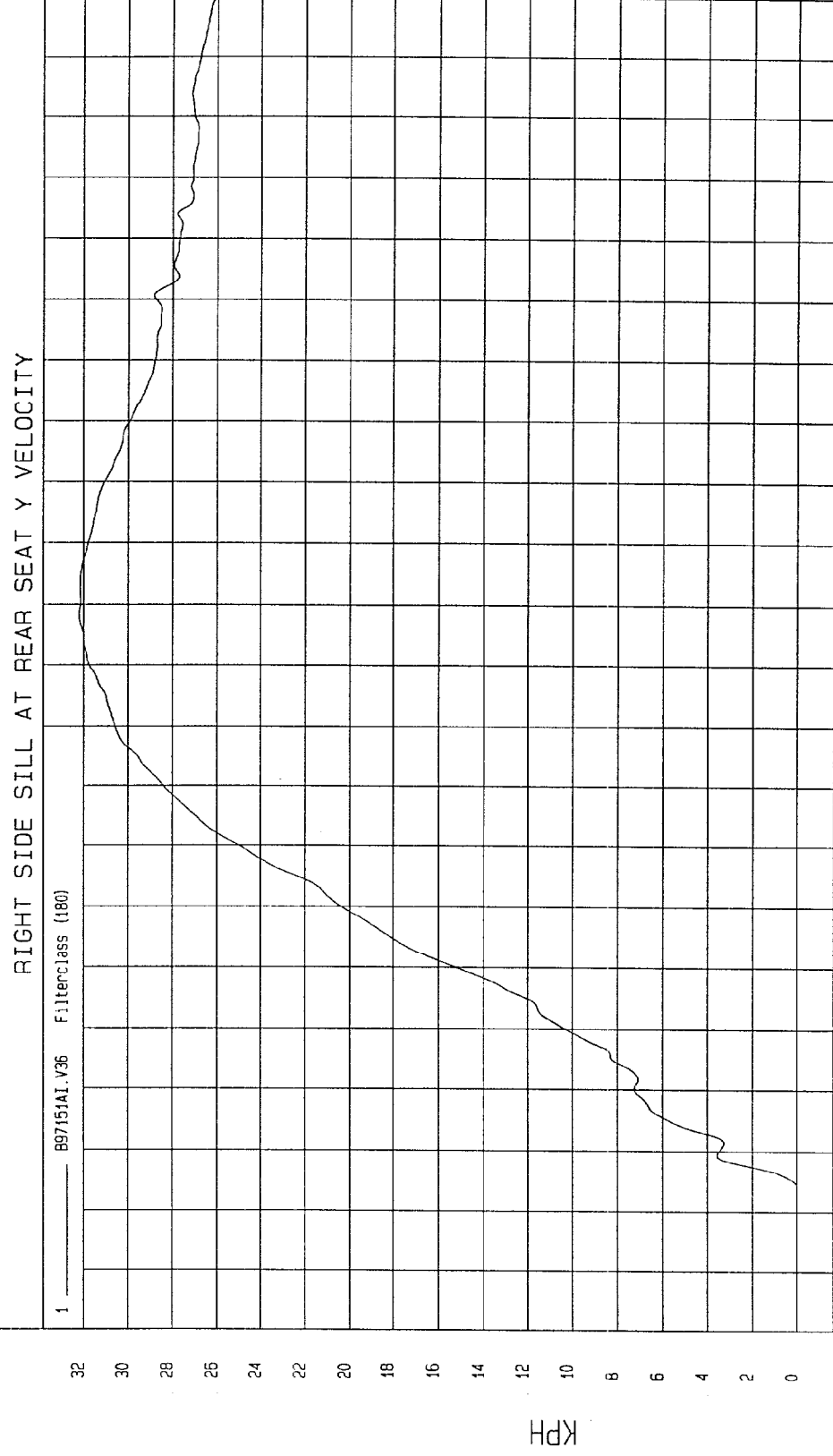


MCA Research
12-22-1997 15:47

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -9.85E-03 KPH at 4 msec Maximum = 32.18 KPH at 98 msec



1 B97151A1.V36 Filterclass (180)

TIME Seconds

NCA Research
12-22-1997 15:59

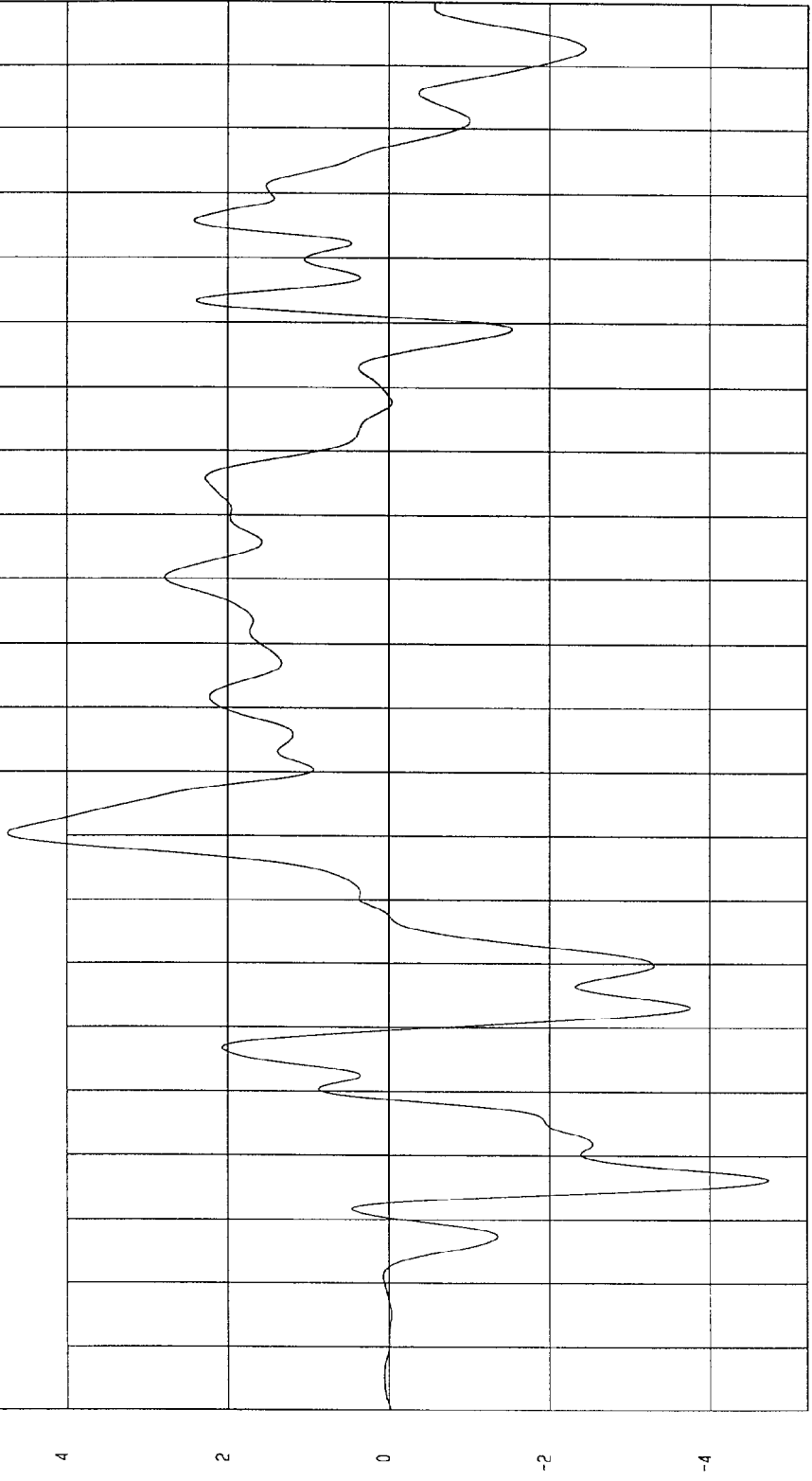
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -4.71 G'S at 16 msec
Maximum = 4.73 G'S at 70 msec

RIGHT SIDE SILL AT REAR SEAT Z ACCELERATION

1 B97151AF.A37 FilterClass (60)



M&A Research
12-22-1997 15:47

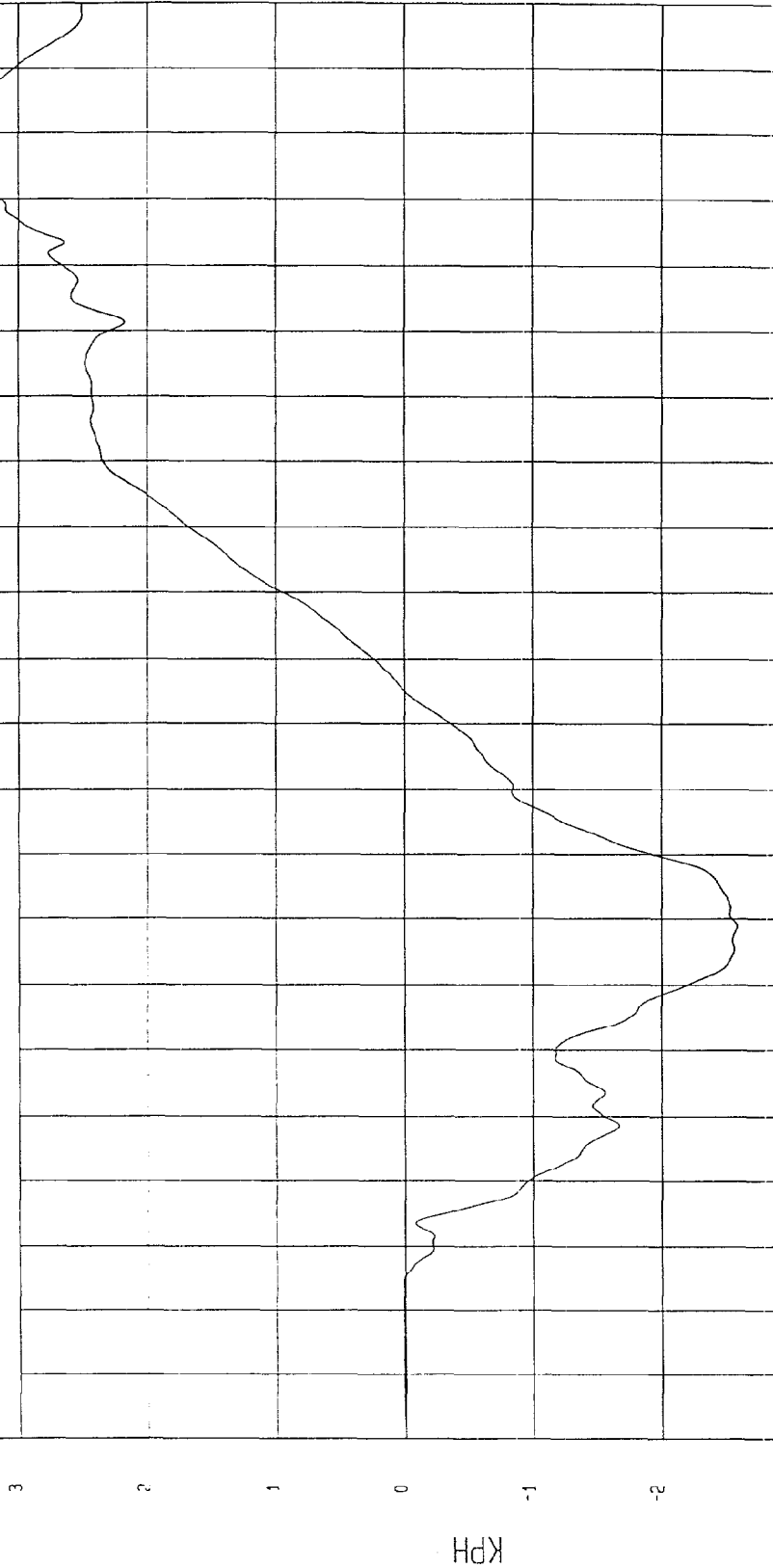
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -2.57 KPH at 59 msec
Maximum = 3.40 KPH at 178 msec

RIGHT SIDE SILL AT REAR SEAT Z VELOCITY

1 ——— B97151A1.V37 Filterclass (180)



NSA Research
12-22-1997 15:59

TIME Seconds

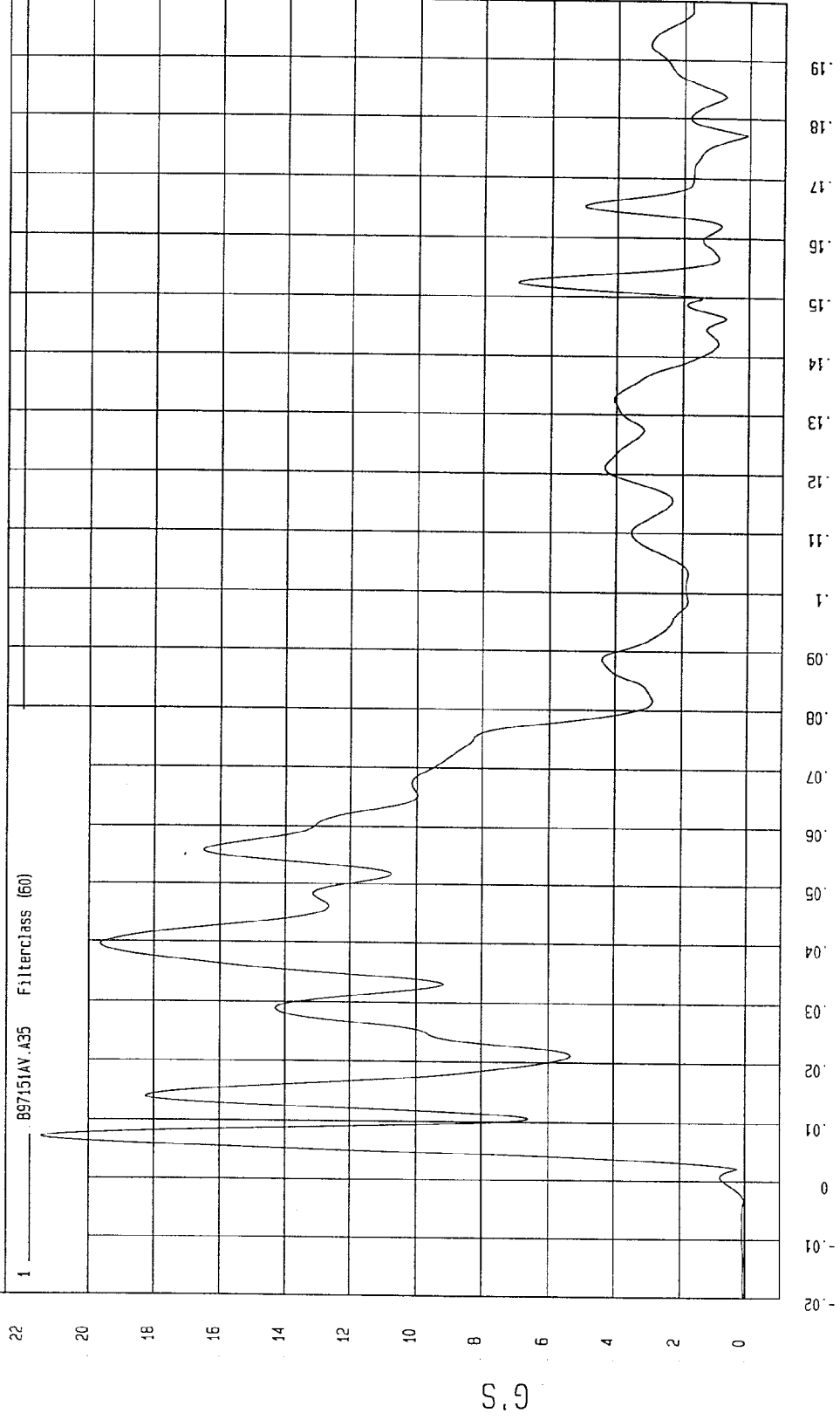
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = 2.13E-02 G'S at -3 msec Maximum = 21.42 G'S at 7 msec

RIGHT SIDE SILL AT REAR SEAT RESULTANT ACCELERATION

1 897151AV.A35 Filterclass (60)



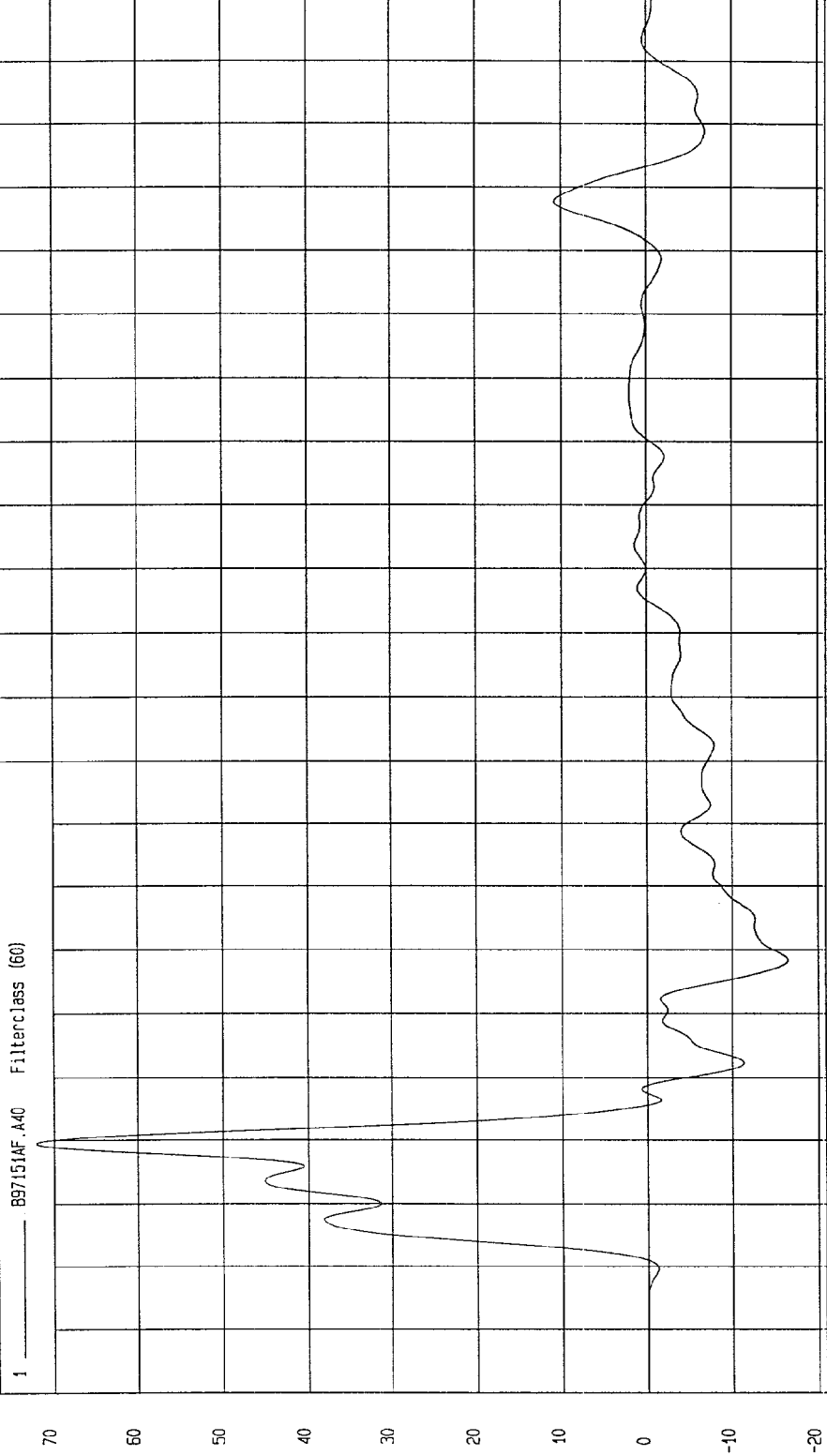
MGA Research
12-22-1997 15.50

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -16.46 G'S at 48 msec Maximum = 72.03 G'S at 20 msec

LEFT FRONT SEAT TRACK Y ACCELERATION



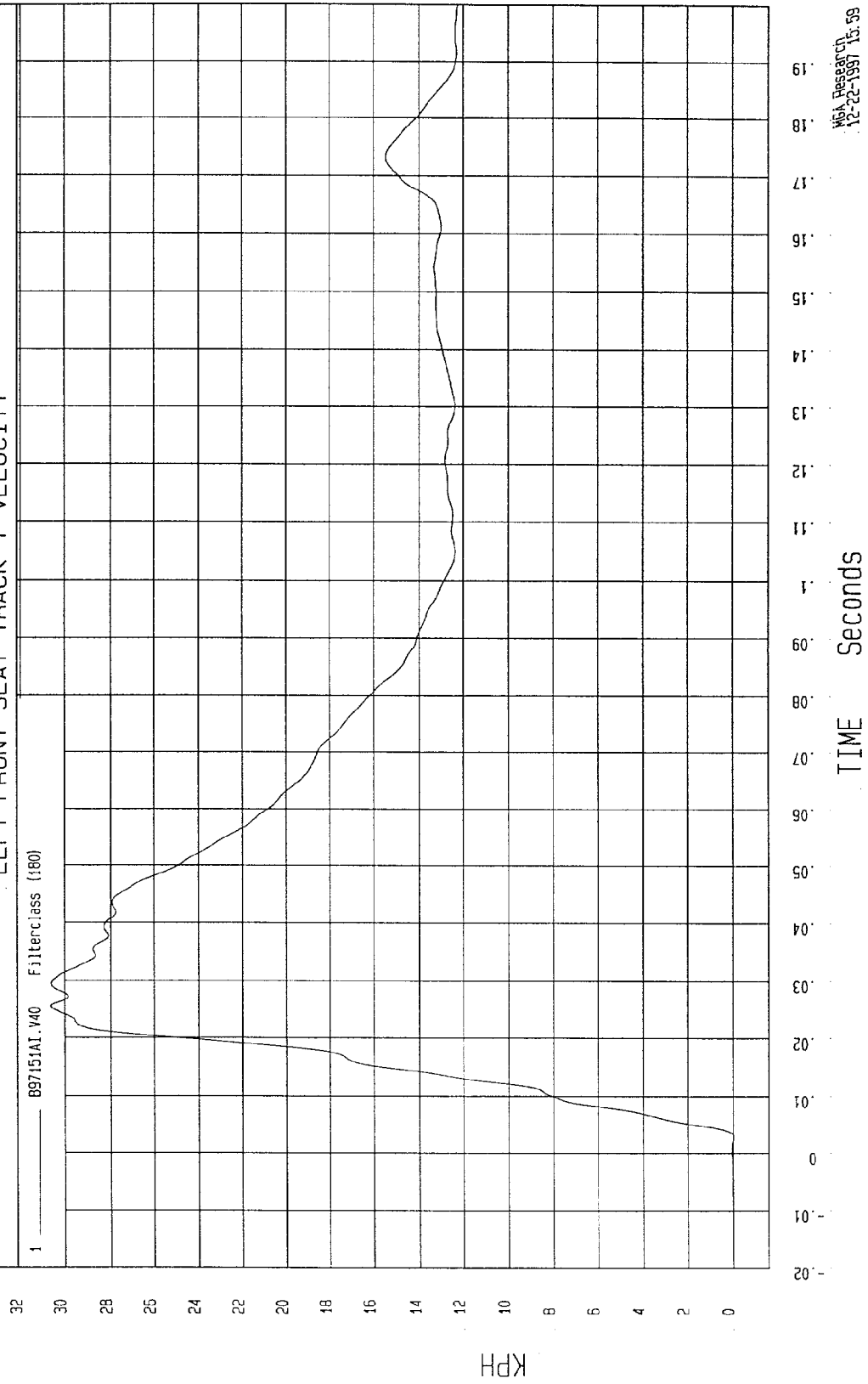
MOA Research, Inc.
12-22-1997 13: 47

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -4.22E-02 KPH at 3 msec Maximum = 30.51 KPH at 26 msec

LEFT FRONT SEAT TRACK Y VELOCITY



WGA Research
12-22-1997 15:59

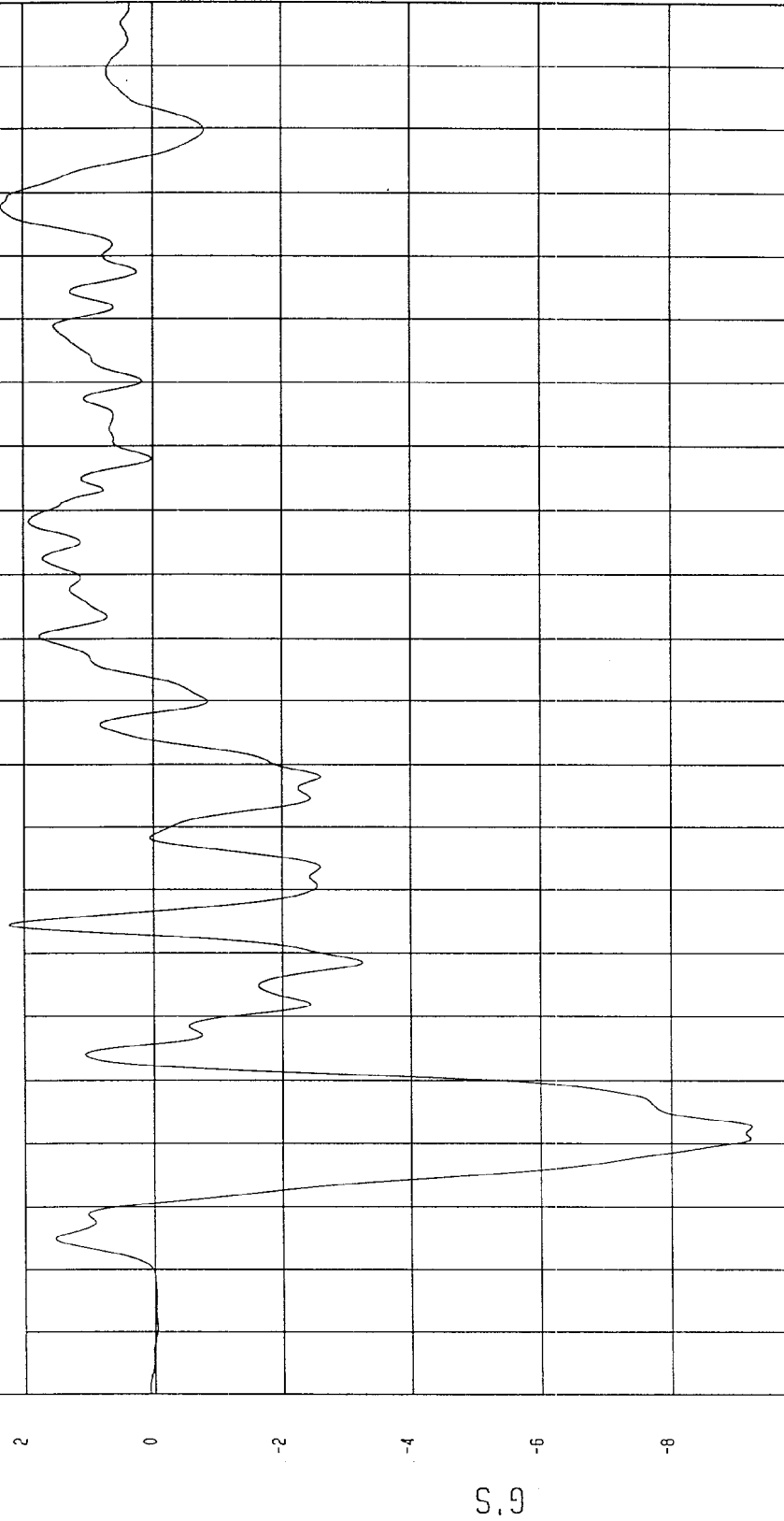
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -9.23 G'S at 23 msec
Maximum = 2.33 G'S at 168 msec

REAR FLOORPAN ABOVE AXLE X ACCELERATION

1 897151AF.A08 Filterclass (60)



MGA Research
12-22-1997 15.47

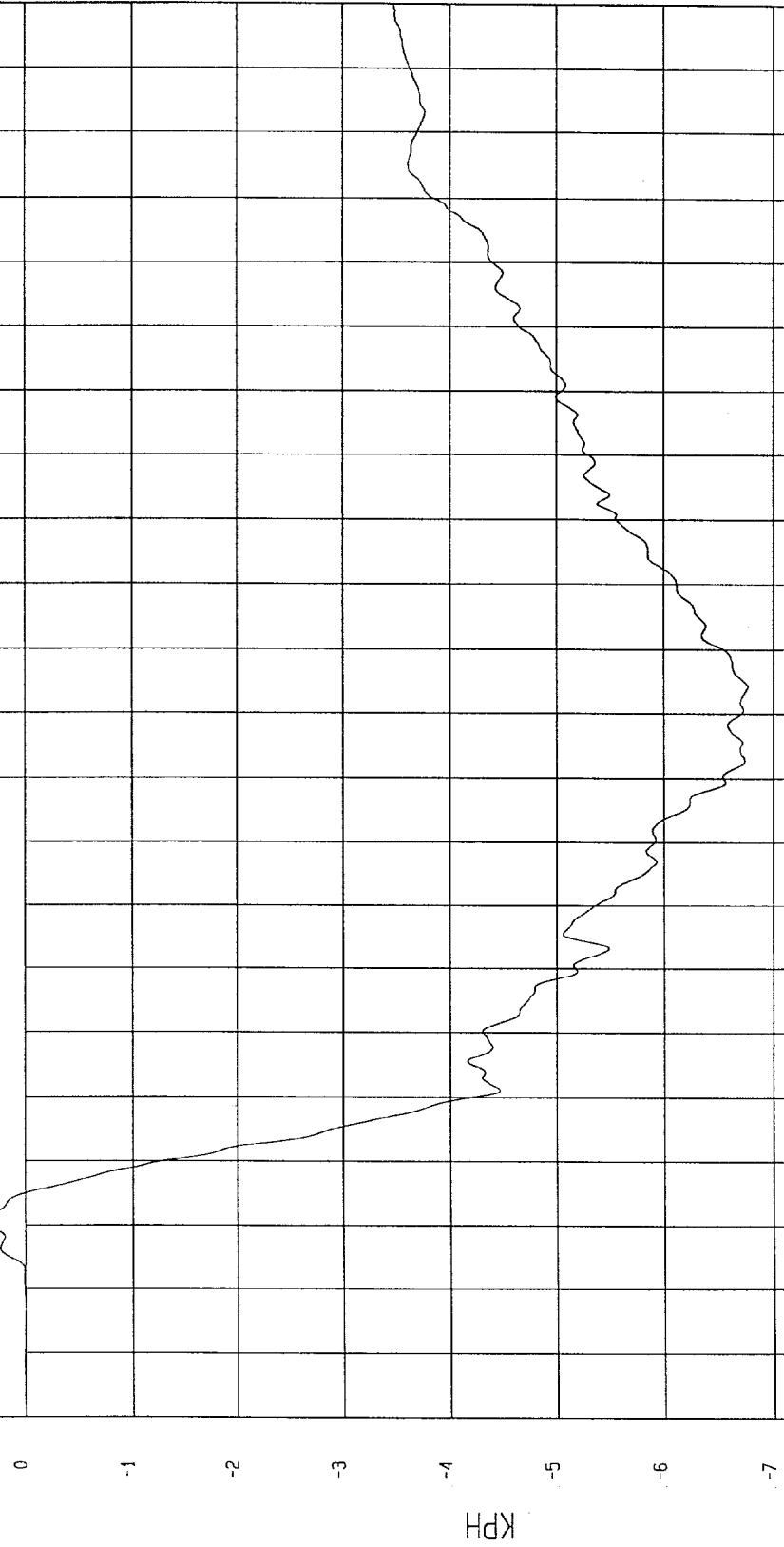
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -6.75 KPH at 94 msec Maximum = .37 KPH at 10 msec

REAR FLOORPAN ABOVE AXLE X VELOCITY

1 B97151AI.V08 Filterc.ass (180)



TIME Seconds
MCA Research
12-22-1997 15:59

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MWO115)

Speed: 38 MPH 61.2 KPH

Minimum = -3.34 G'S at 134 msec

Maximum = 16.58 G'S at 29 msec

REAR FLOORPAN ABOVE AXLE Y ACCELERATION

1 — 897151AF.A09 Filterclass (60)



MGA Research
12-22-1997 15:47

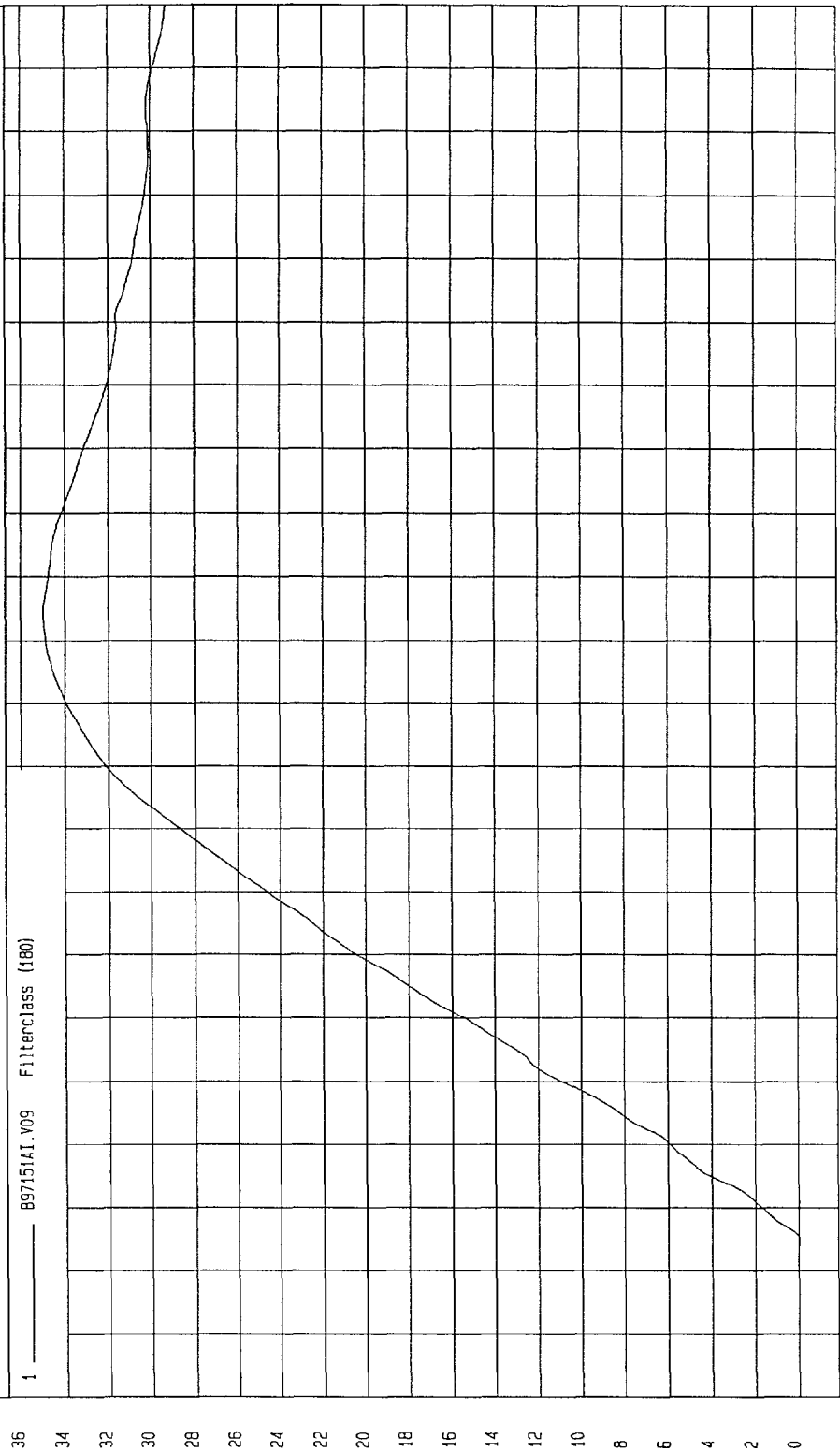
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -3.93E-02 KPH at 5 msec Maximum = 34.95 KPH at 104 msec

REAR FLOORPAN ABOVE AXLE Y VELOCITY

1 ——— B97151A1.V09 Filterclass (180)



MECA Research
12-22-1997 15:59

TIME Seconds

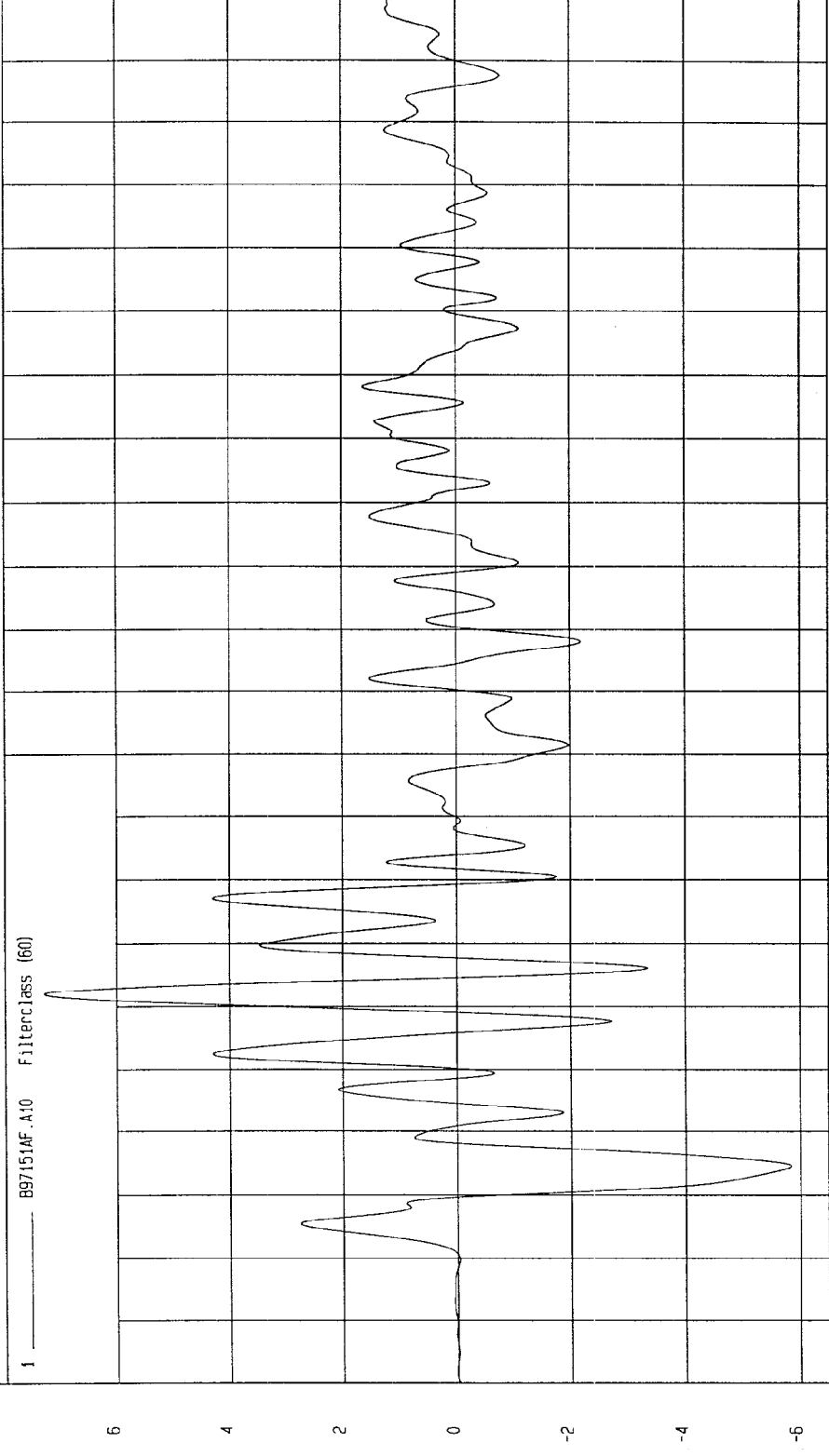
KPH

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -5.83 G'S at 15 msec Maximum = 7.28 G'S at 42 msec

REAR FLOORPAN ABOVE AXLE Z ACCELERATION



TIME (SECONDS)

MCA Research
12-22-1997 15: 47

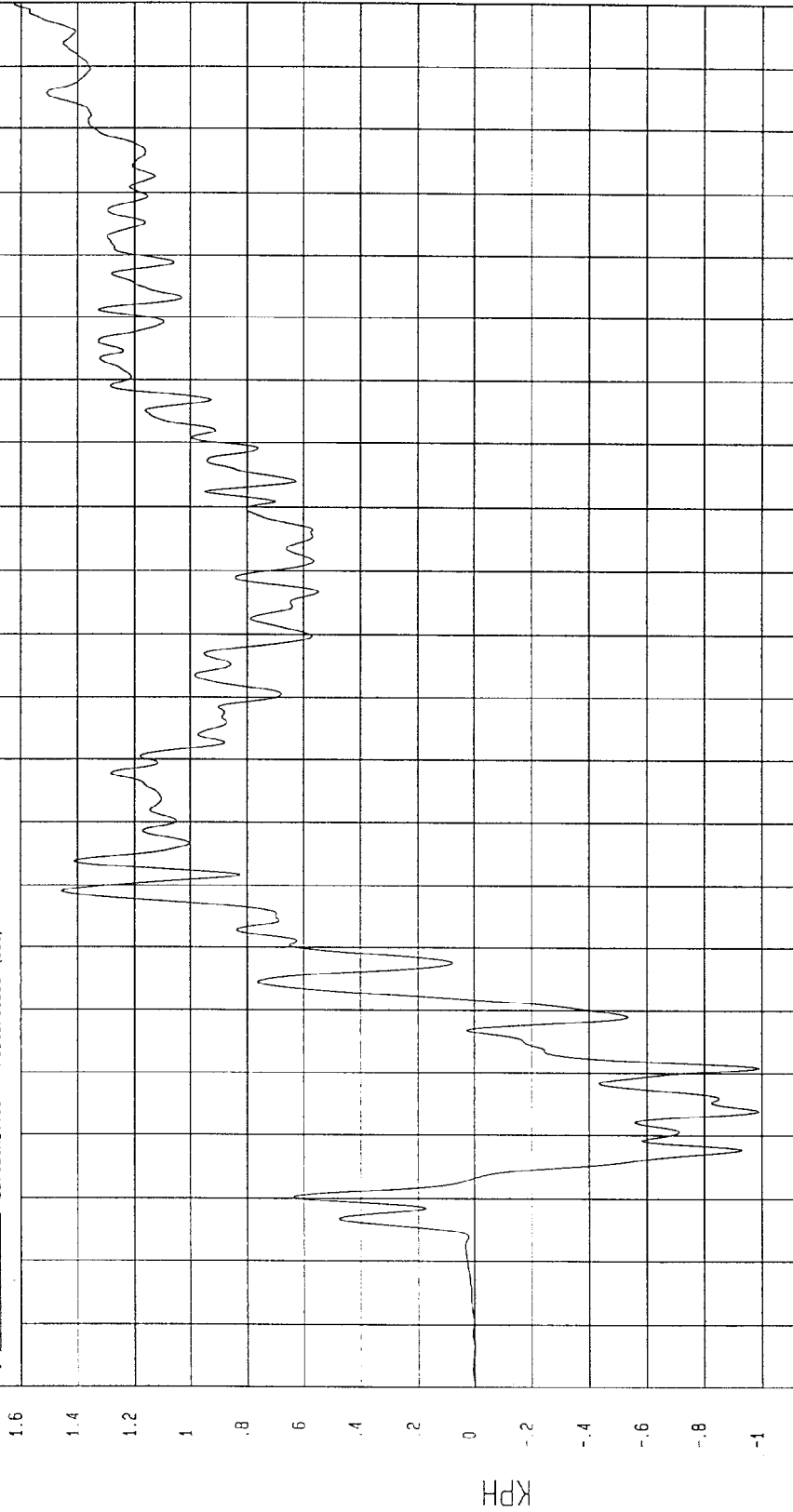
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -.99 KPH at .31 msec Maximum = 1.62 KPH at .200 msec

REAR FLOORPAN ABOVE AXLE Z VELOCITY

1 B97151A1.V10 Filterclass (160)



M&A Research
12-22-1997 15:59

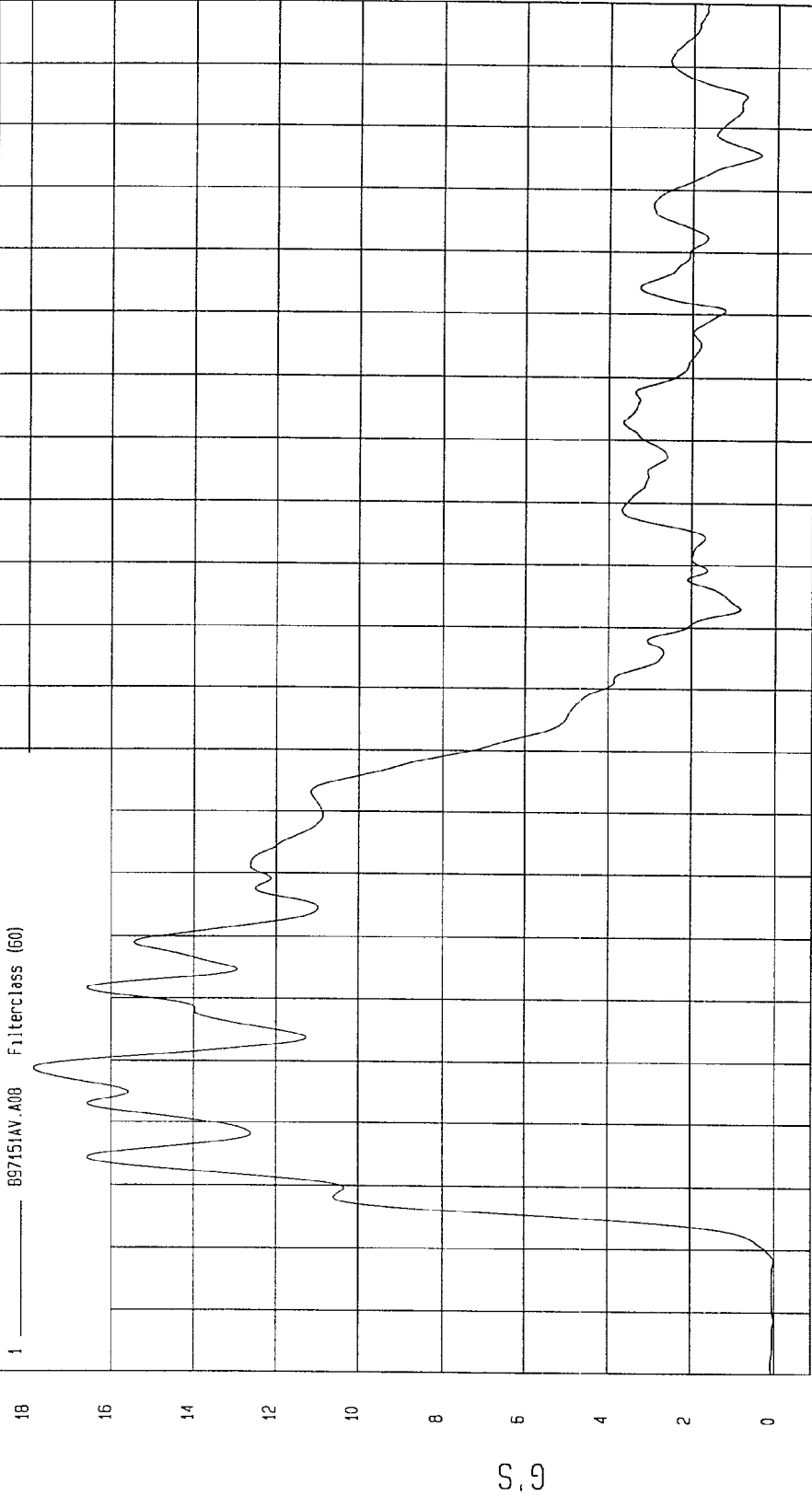
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = 1.03E-02 G'S at -2 msec
Maximum = 17.68 G'S at 29 msec

REAR FLOORPAN ABOVE AXLE RESULTANT ACCELERATION

1 ——— 897151AV.A08 Filterclass (60)



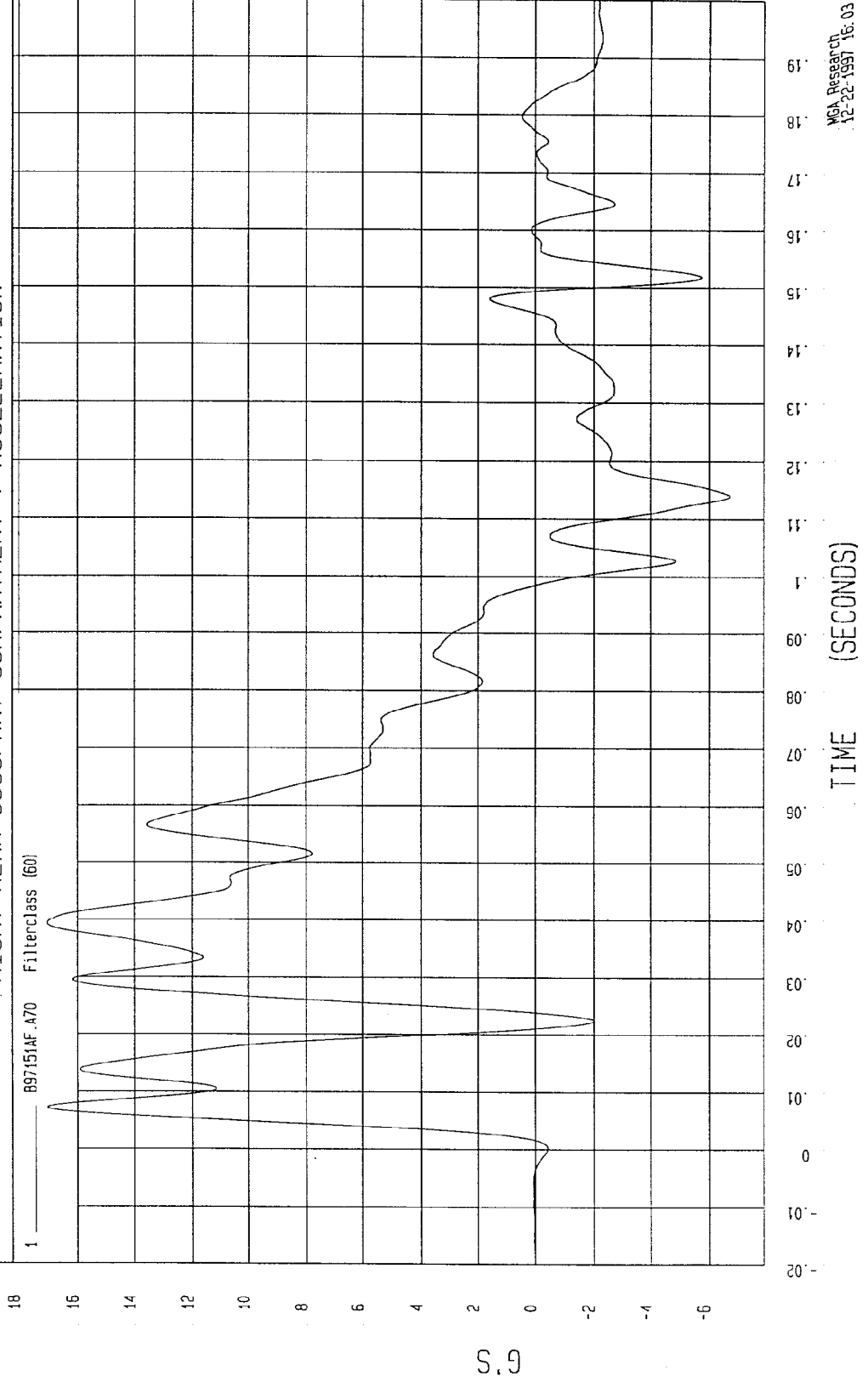
MCA Research
12-22-1997 15:50

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -6.71 G'S at 114 msec
Maximum = 17.03 G'S at 7 msec

RIGHT REAR OCCUPANT COMPARTMENT Y ACCELERATION



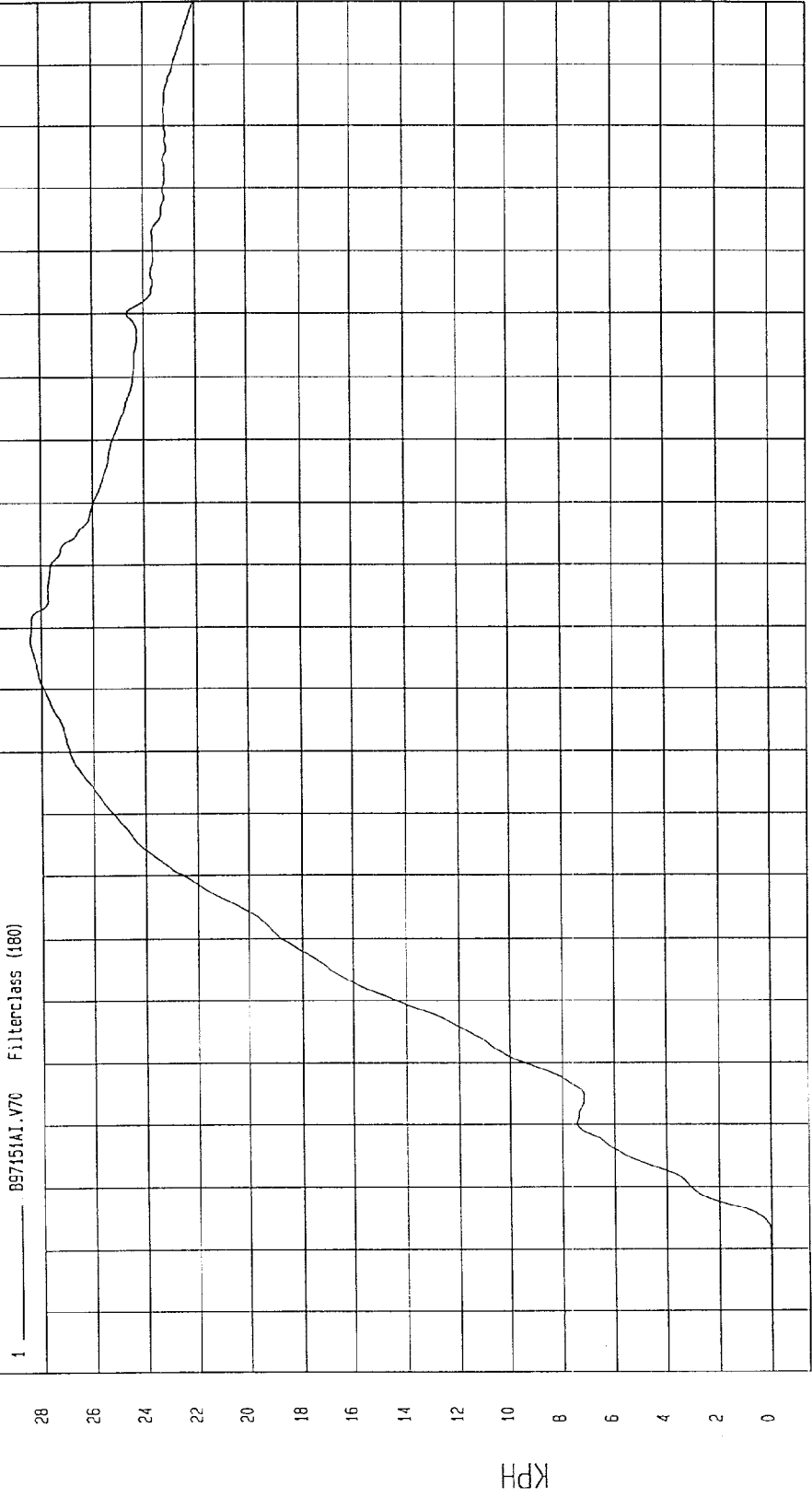
MCA Research
12-22-1997 16:03

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -1.20E-03 KPH at -17 msec
Maximum = 28.41 KPH at 98 msec

RIGHT REAR OCCUPANT COMPARTMENT Y VELOCITY



MGA Research
12-22-1997 15:59

TIME Seconds

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

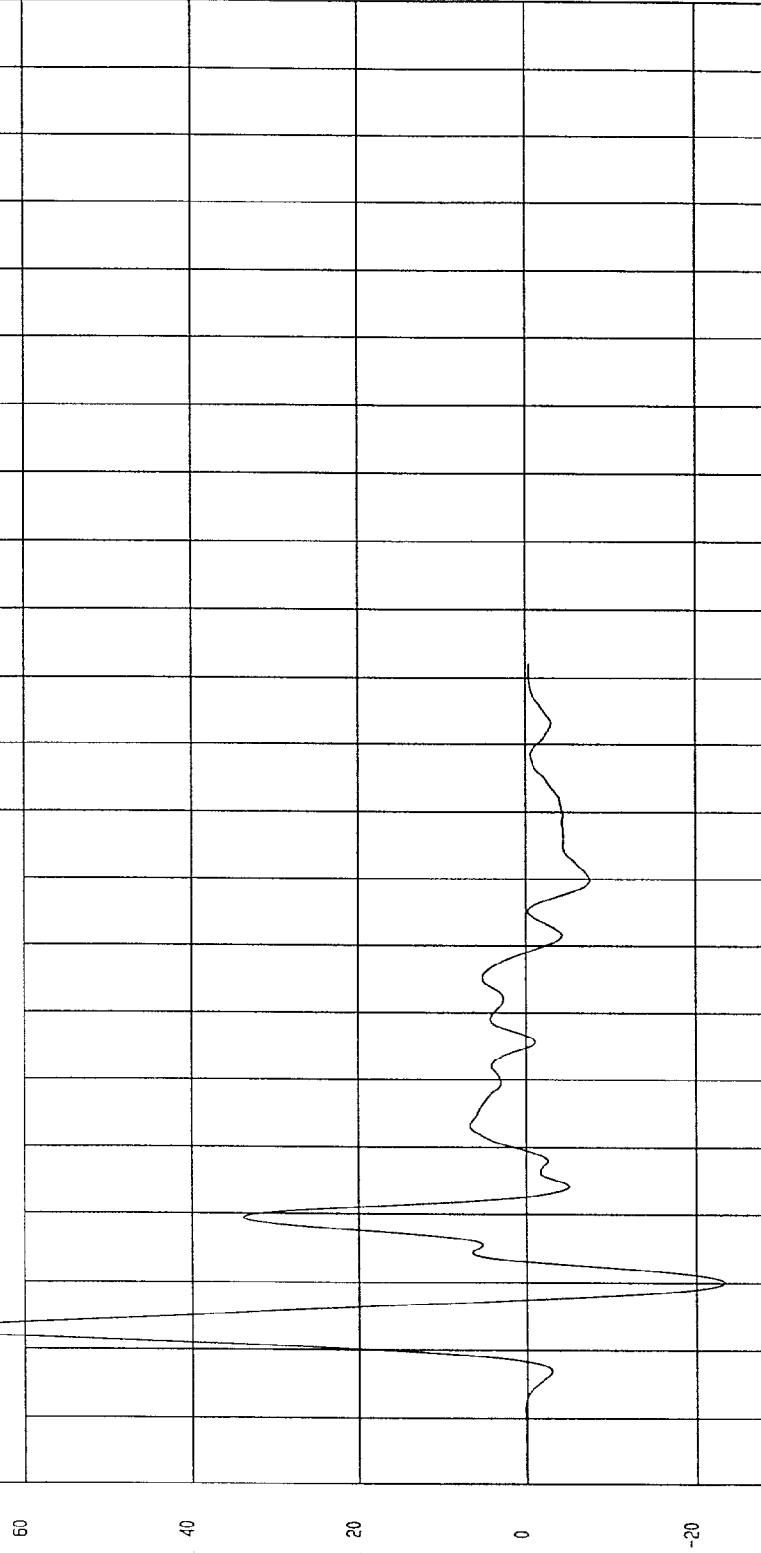
COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -23.39 G'S at 10 msec Maximum = 72.51 G'S at 3 msec

LEFT LOWER A-POST Y ACCELERATION

1 B97151AF.A20 Filterclass (60)

Data not valid after approx. 102 msec.



MSA Research
12-22-1997 16: 13

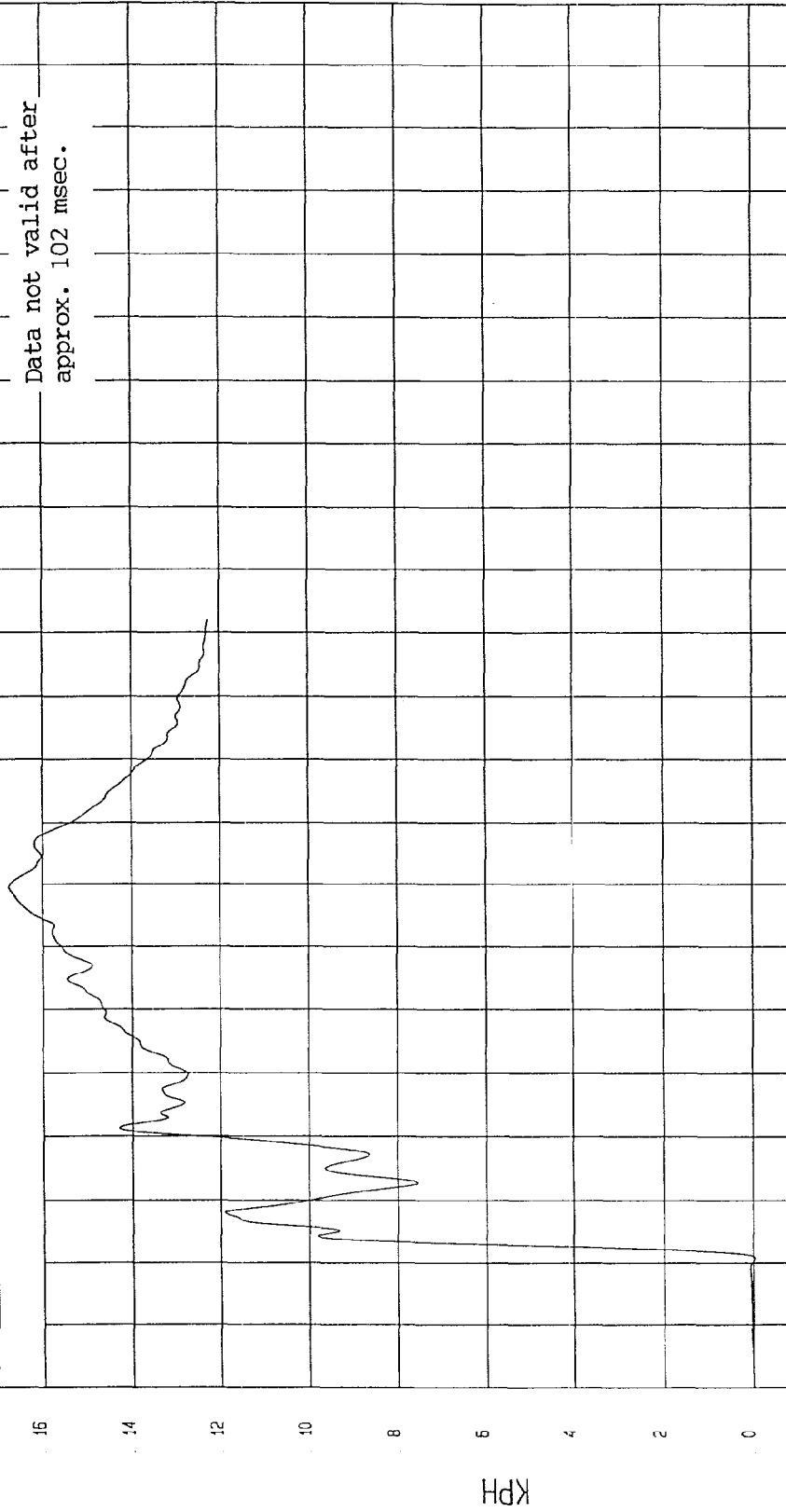
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW01115) Speed: 38 MPH 61.2 KPH

Minimum = -4.61E-02 KPH at 1 msec
Maximum = 16.74 KPH at 60 msec

LEFT LOWER A-POST Y VELOCITY

1 _____ 897151A1.V20 Filterclass (160)



Data not valid after
approx. 102 msec.

NSA Research
12-22-1997 16:13

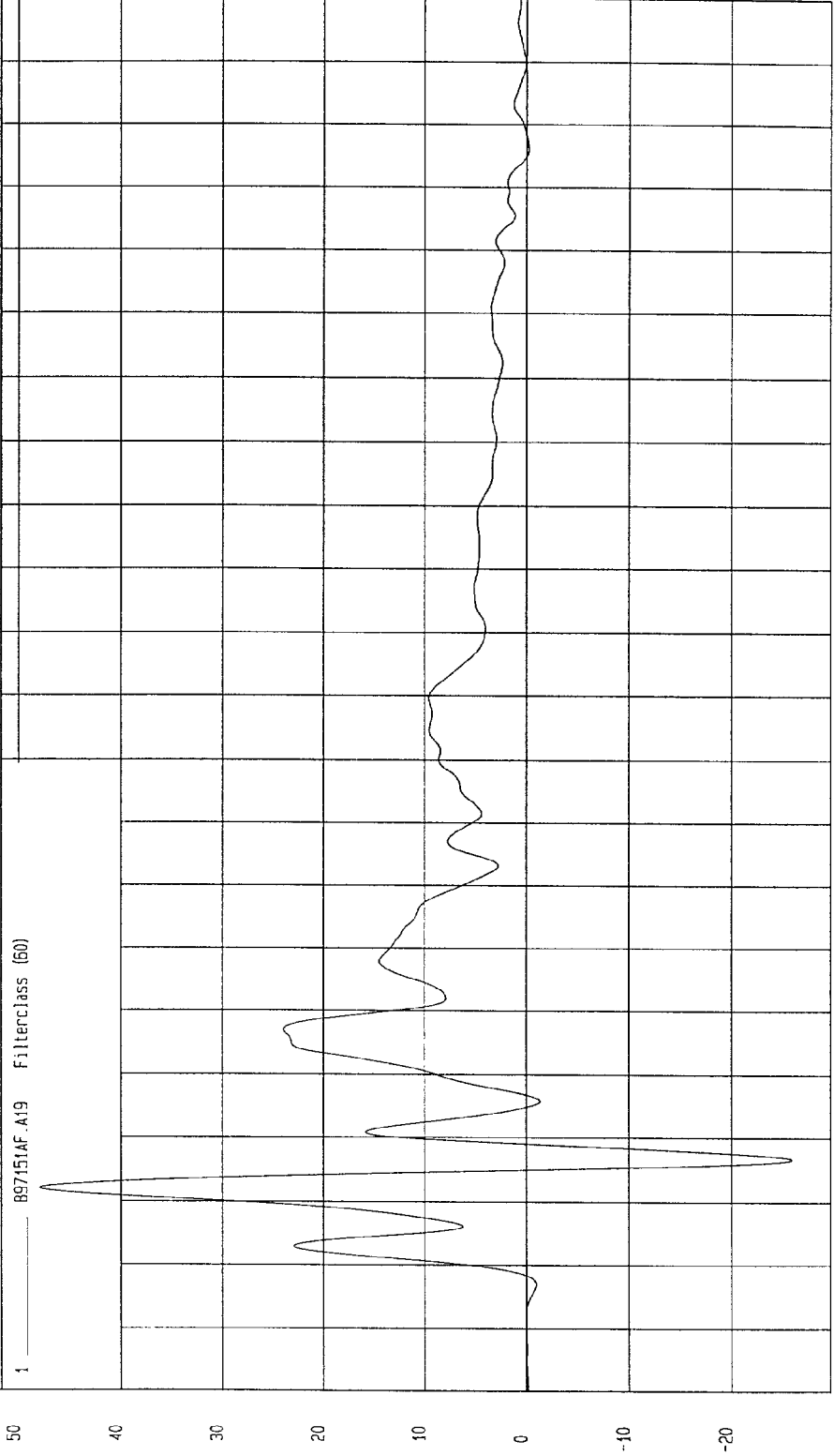
TIME Seconds

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -25.88 G'S at 17 msec Maximum = 48.01 G'S at 12 msec

LEFT MID A-POST Y ACCELERATION



TIME (SECONDS)

MGA Research
12-22-1997 15:48

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

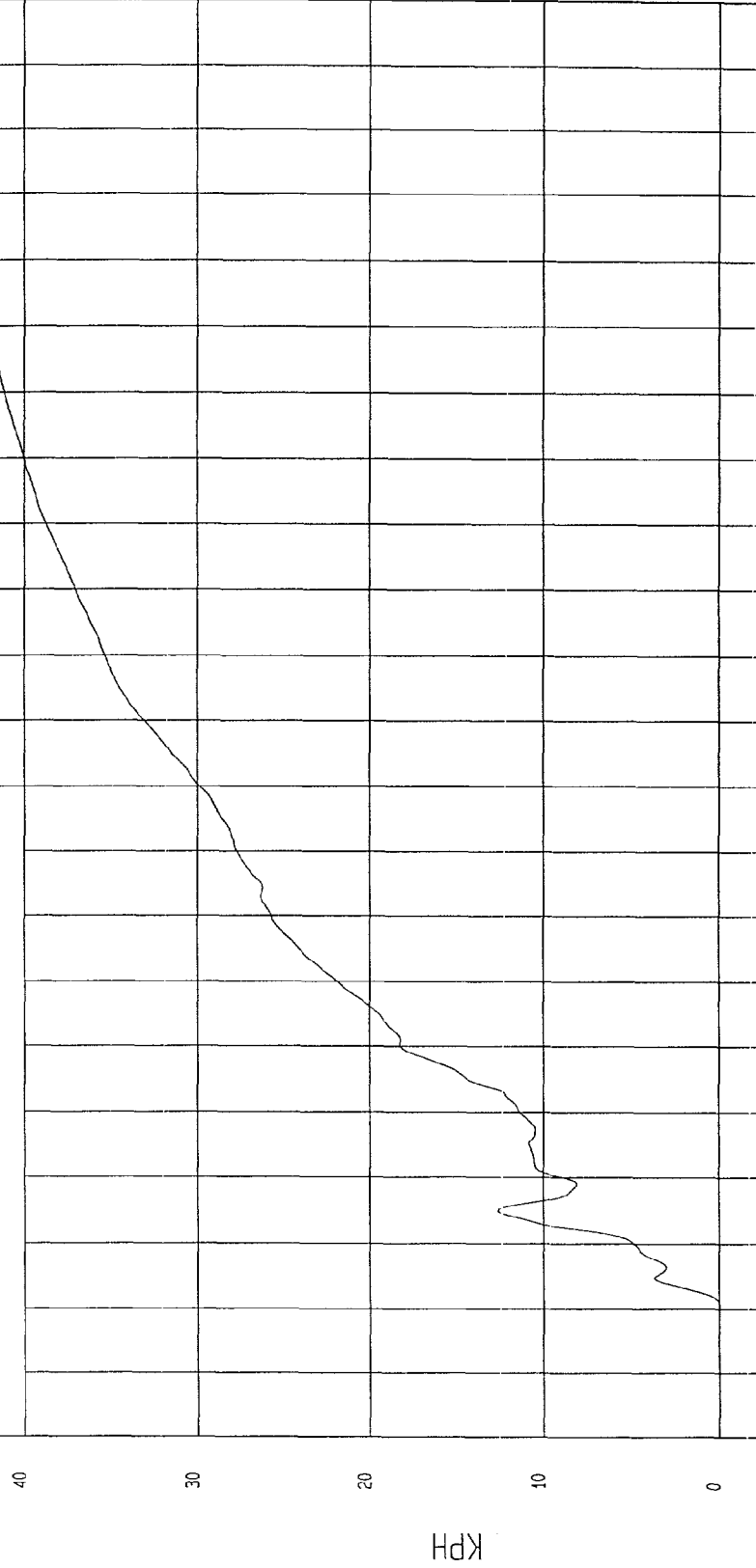
COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -4.29E-02 KPH at 0 msec

Maximum = 44.55 KPH at 199 msec

LEFT MID A-POST Y VELOCITY

1 ——— 897151A1.V19 Filterclass (180)



NSA Research
12-22-1997 15:59

TIME Seconds

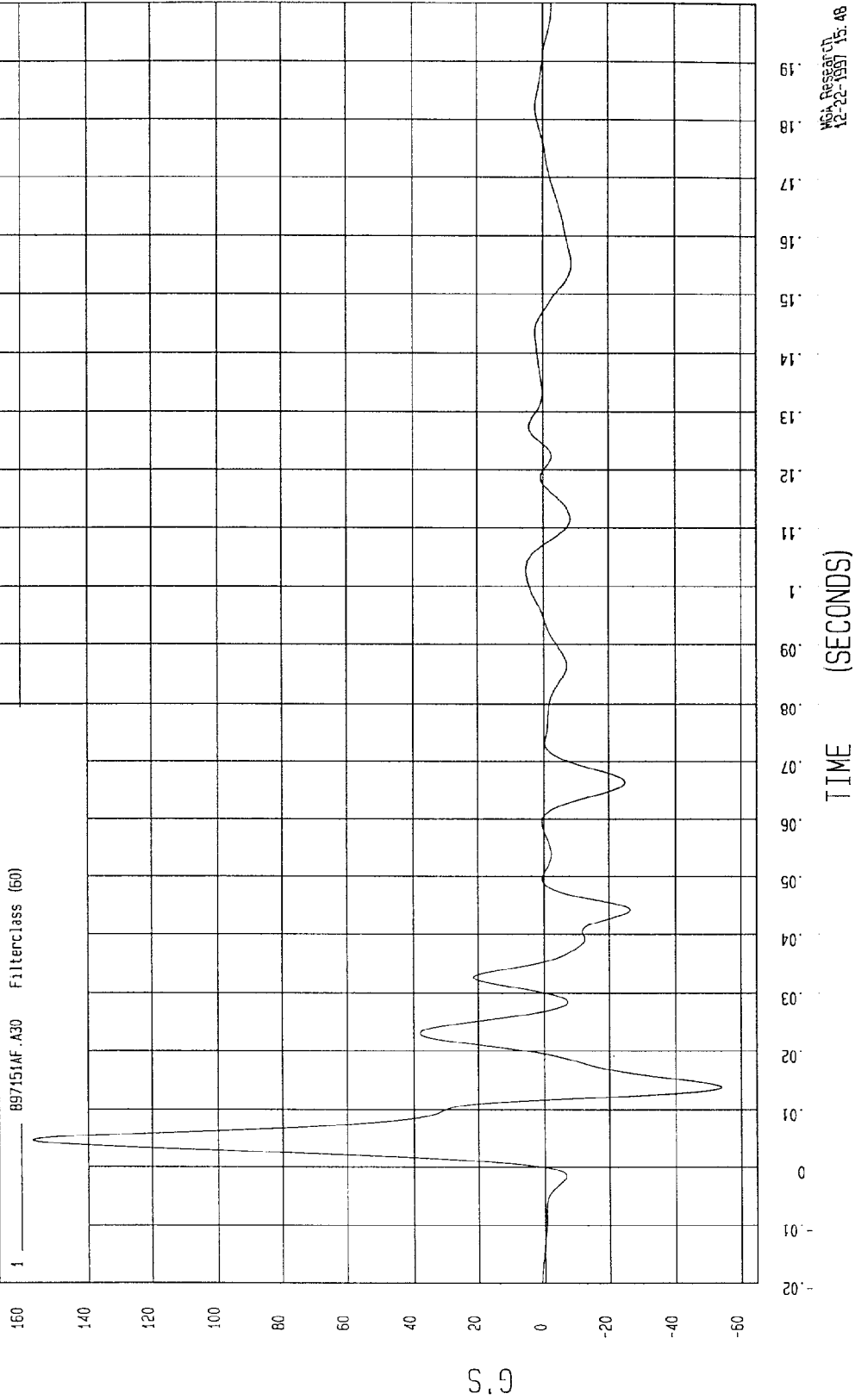
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -54.04 G'S at 14 msec

Maximum = 156.48 G'S at 5 msec

LEFT LOWER B-POST Y ACCELERATION

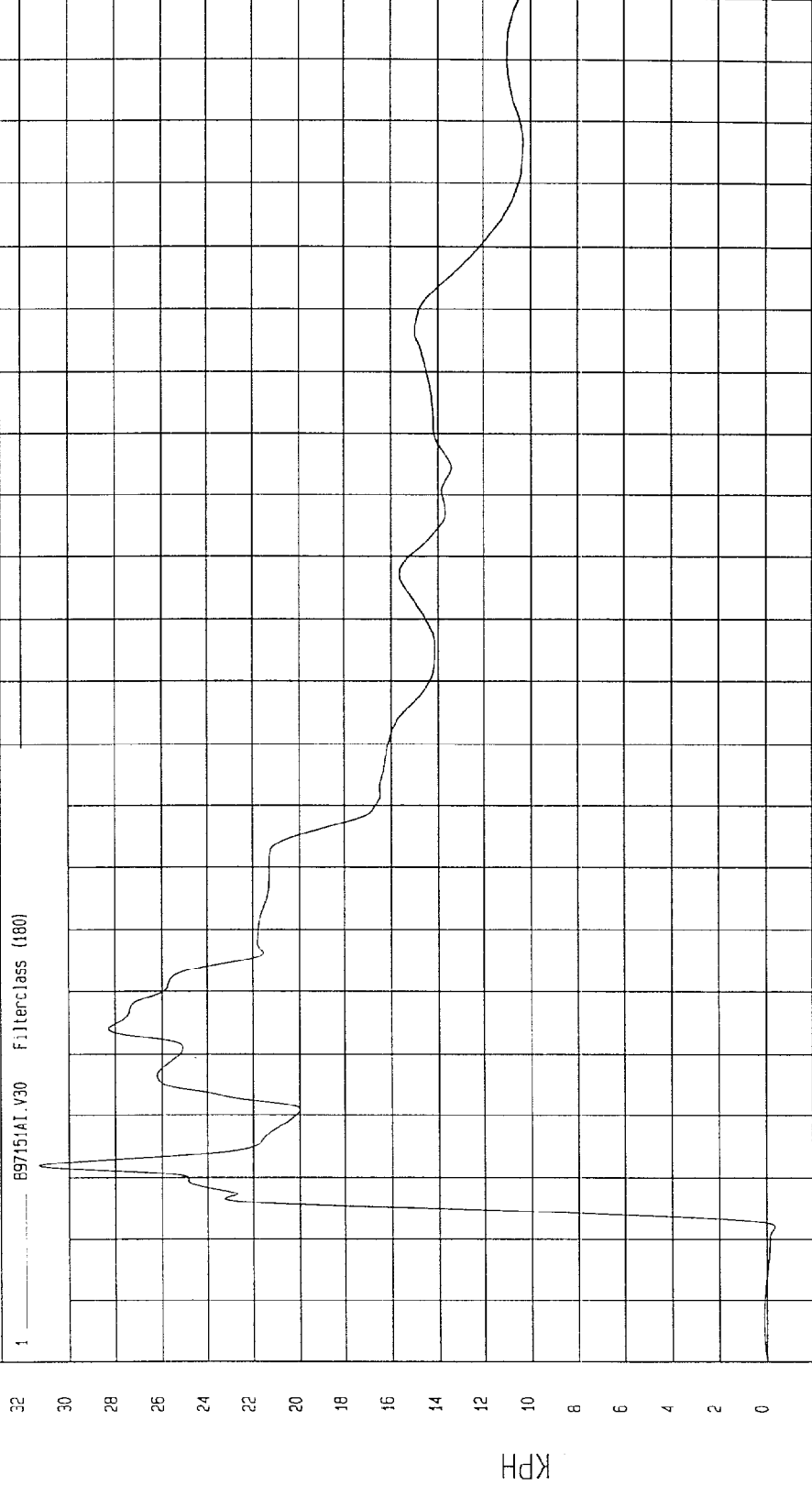


MGA Press Oct
12-22-1997 15:48

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997
COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -33 KPH at 2 msec
Maximum = 31.30 KPH at 12 msec

LEFT LOWER B-POST Y VELOCITY



TIME Seconds
MCA Research
12-22-1997 15:59

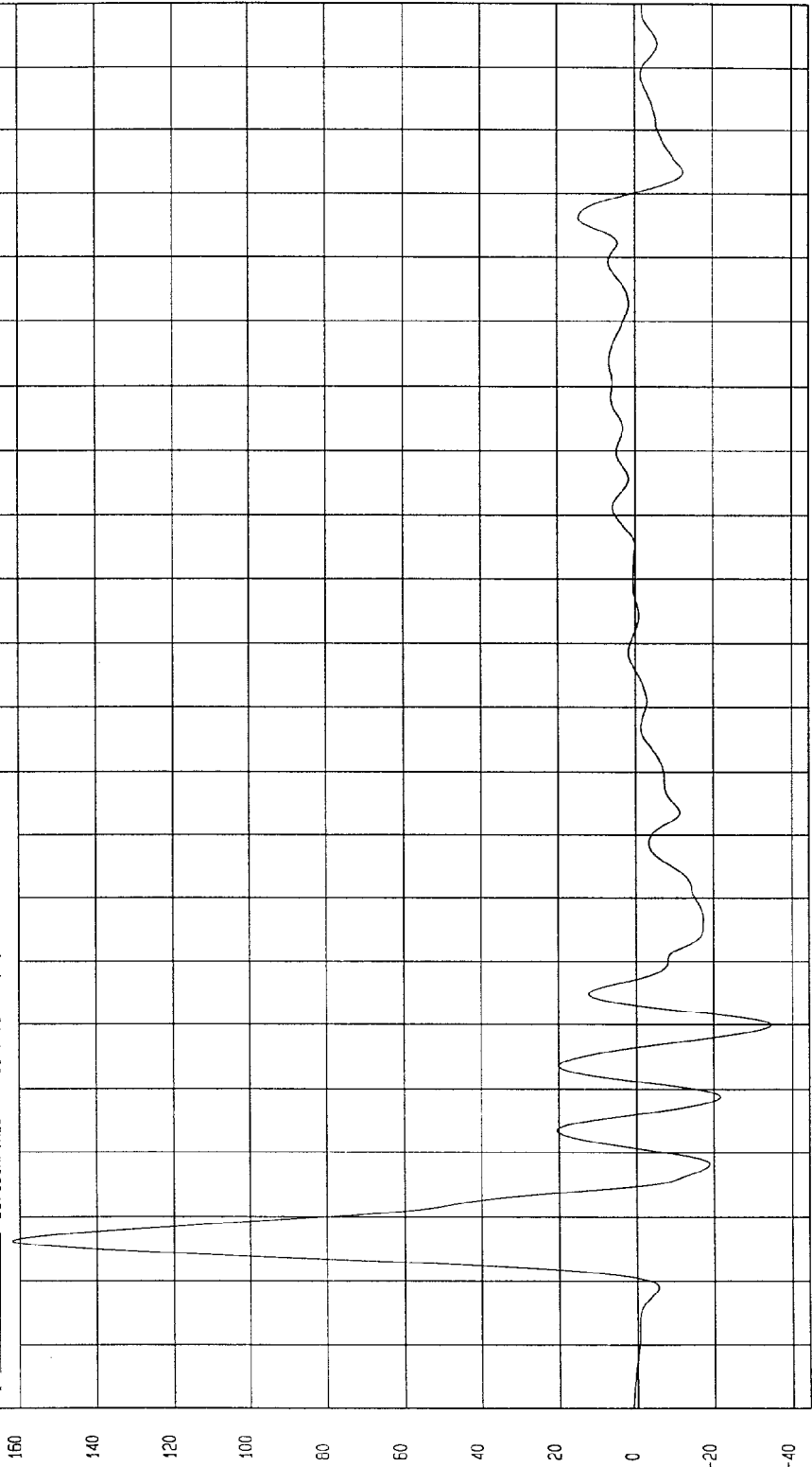
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -34.46 G'S at 40 msec
Maximum = 161.02 G'S at 6 msec

LEFT MID B-POST Y ACCELERATION

1 B97151AF.A29 Filterclass (60)



MOA, Present c/l
12-22-1997 15.48

TIME (SECONDS)

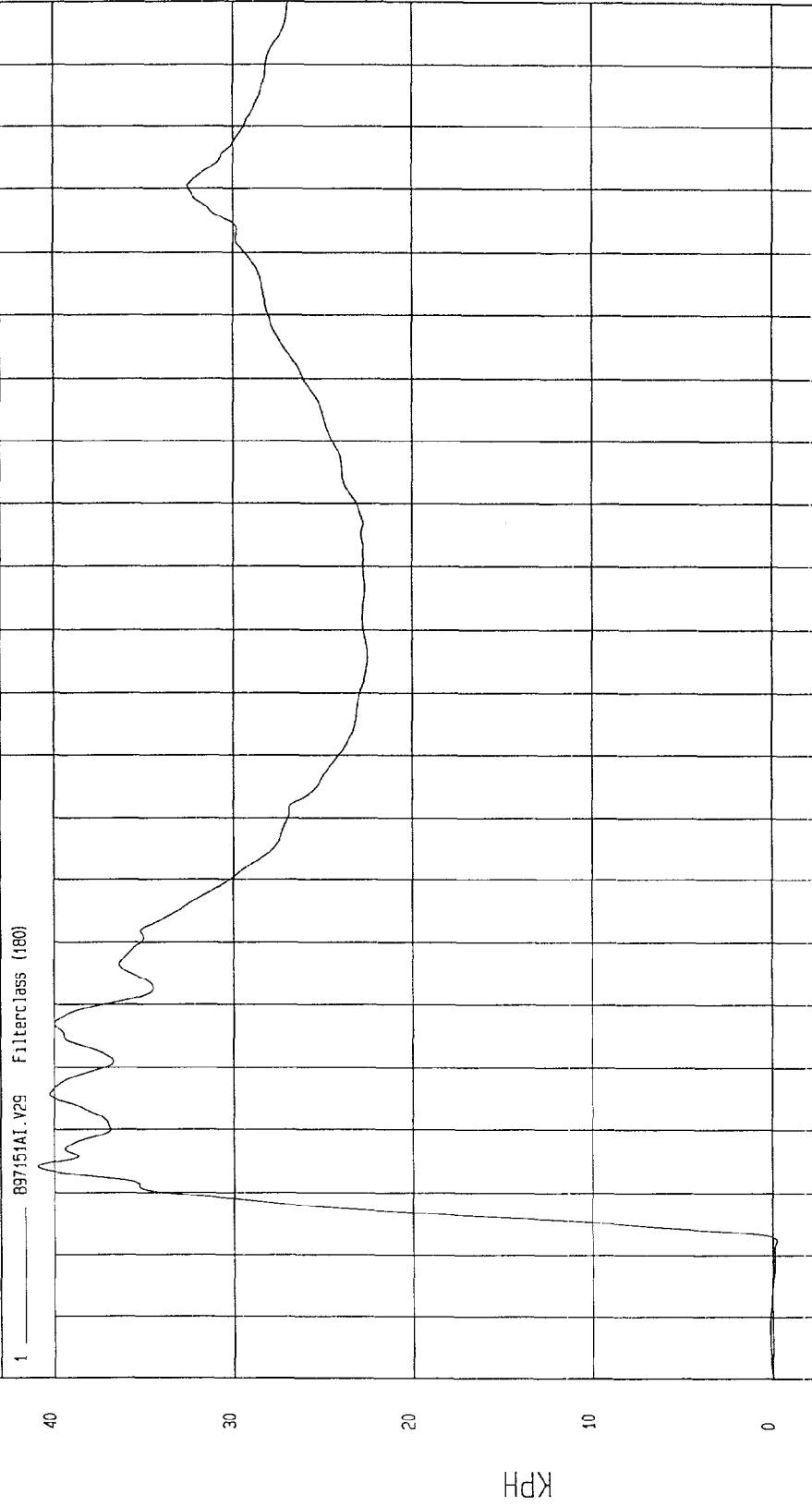
G.S

TEST: HIGH SPEED LATEFAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -23 KPH at 2 msec Maximum = 40.91 KPH at 14 msec

LEFT MID B-POST Y VELOCITY



MCA Research
12-22-1997 16:00

TIME Seconds

KPH

TEST DATE: 12-17-1997

TEST: HIGH SPEED LATERAL IMPACT

Speed: 38 MPH 61.2 KPH

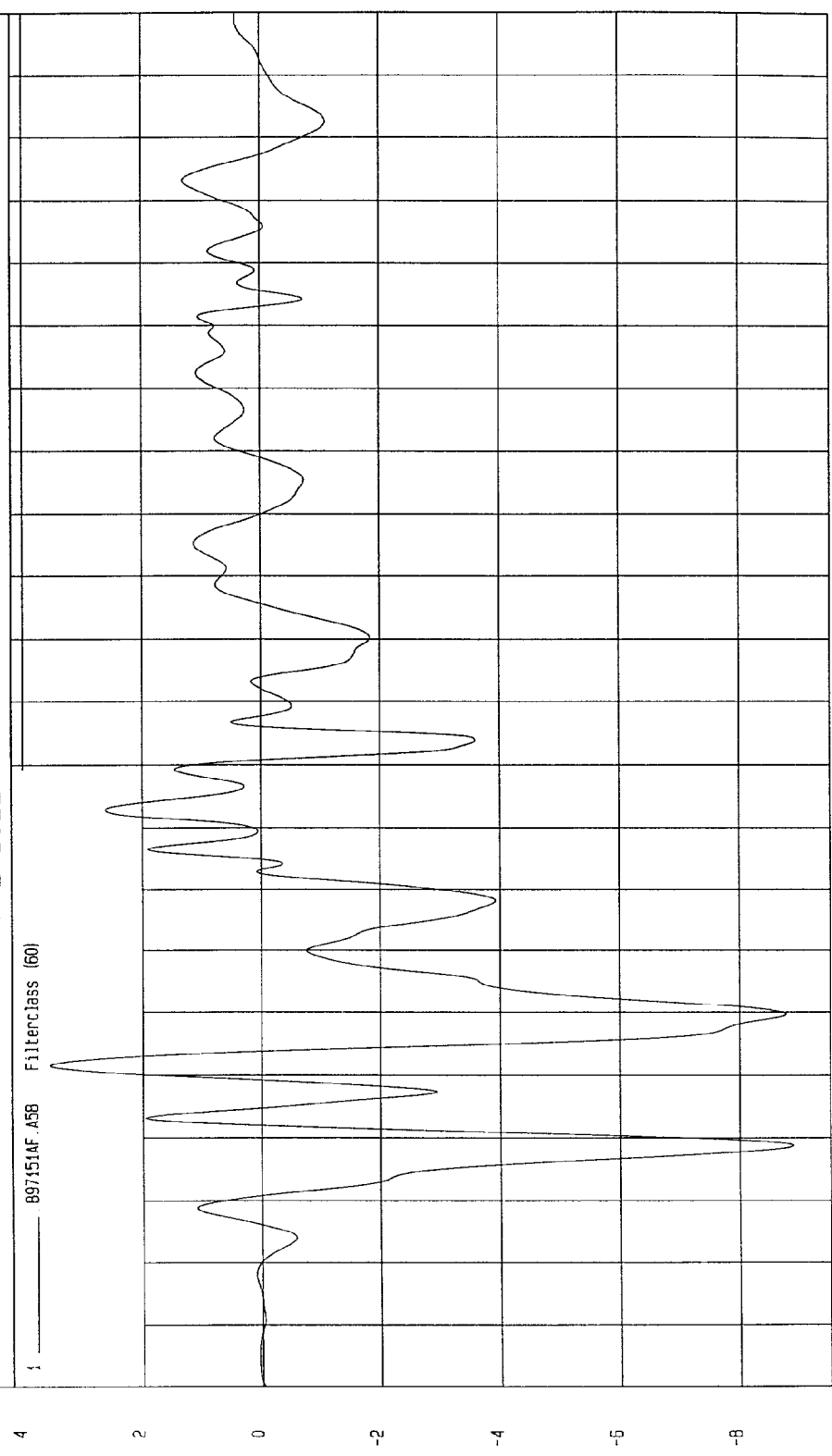
COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115)

Maximum = 3.56 G'S at 32 msec

Minimum = -8.87 G'S at 19 msec

VEHICLE CG X ACCELERATION

1 8971514F.A5B Filterclass (60)



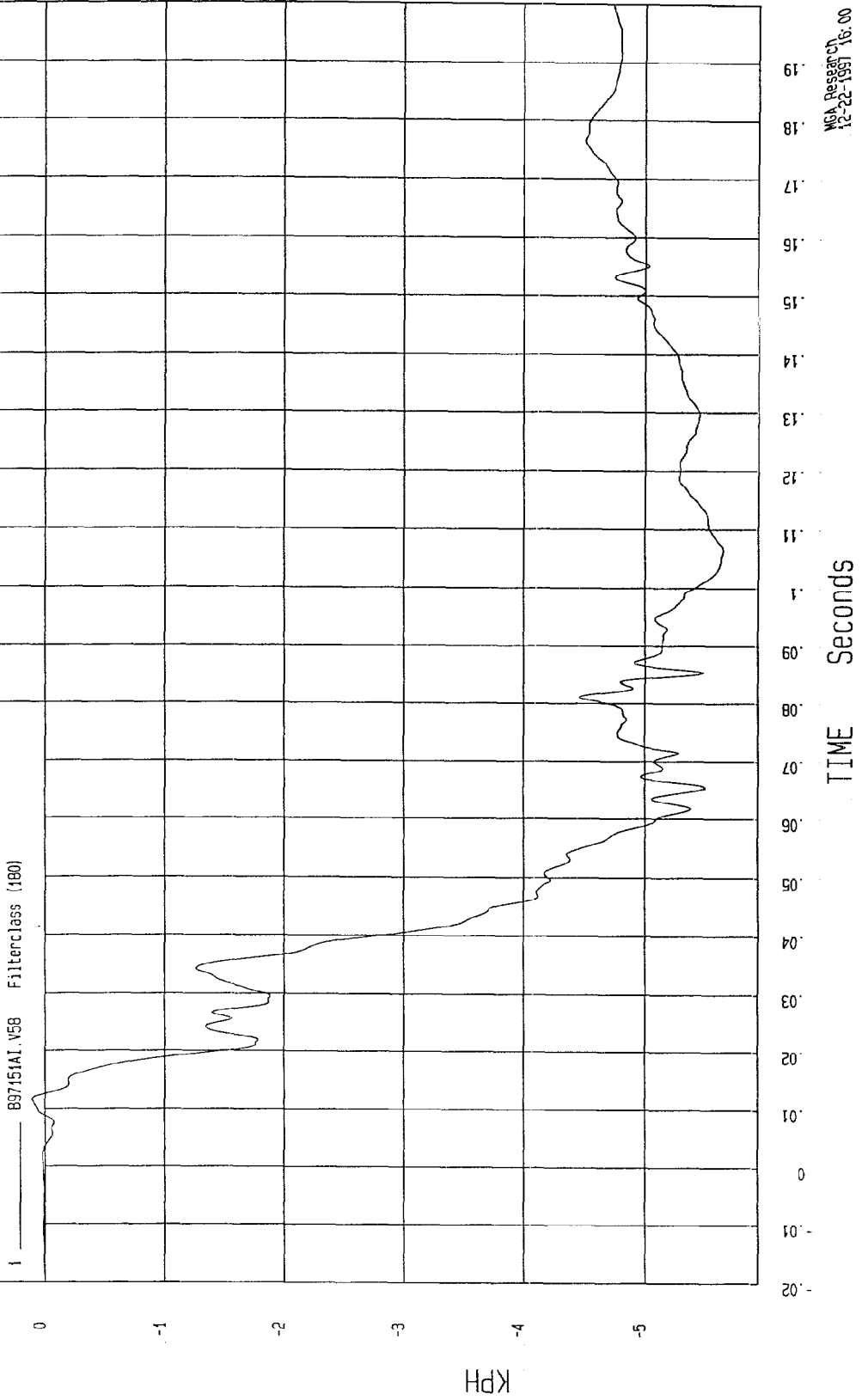
MVA Research
12-22-1997 15:46

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -5.64 KPH at 106 msec
Maximum = .10 KPH at 12 msec

VEHICLE CG X VELOCITY



MCA Research
12-22-1997 16.00

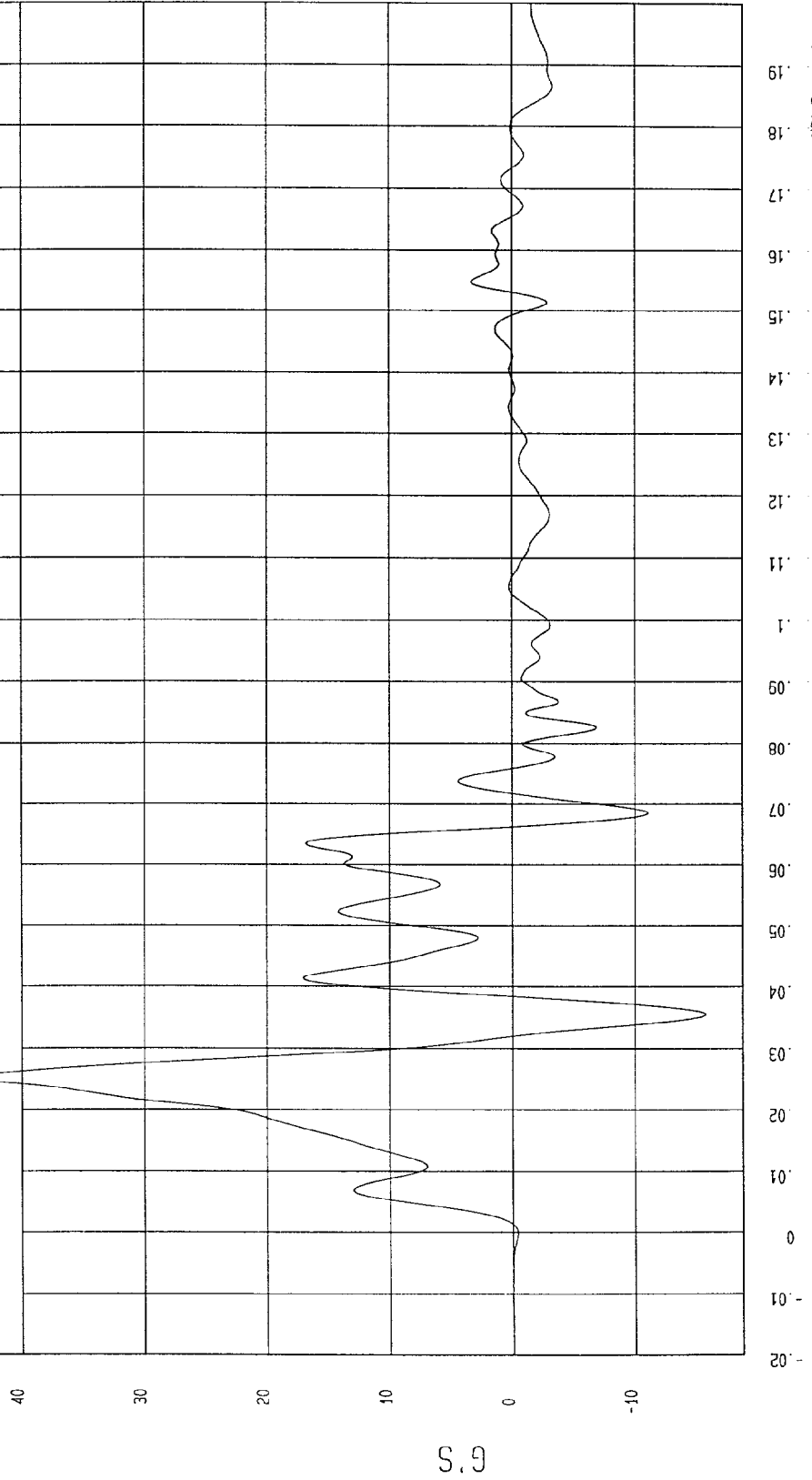
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -15.78 G'S at 36 msec
Maximum = 43.55 G'S at 25 msec

VEHICLE CG Y ACCELERATION

1 897151AF.A59 Filterclass (50)



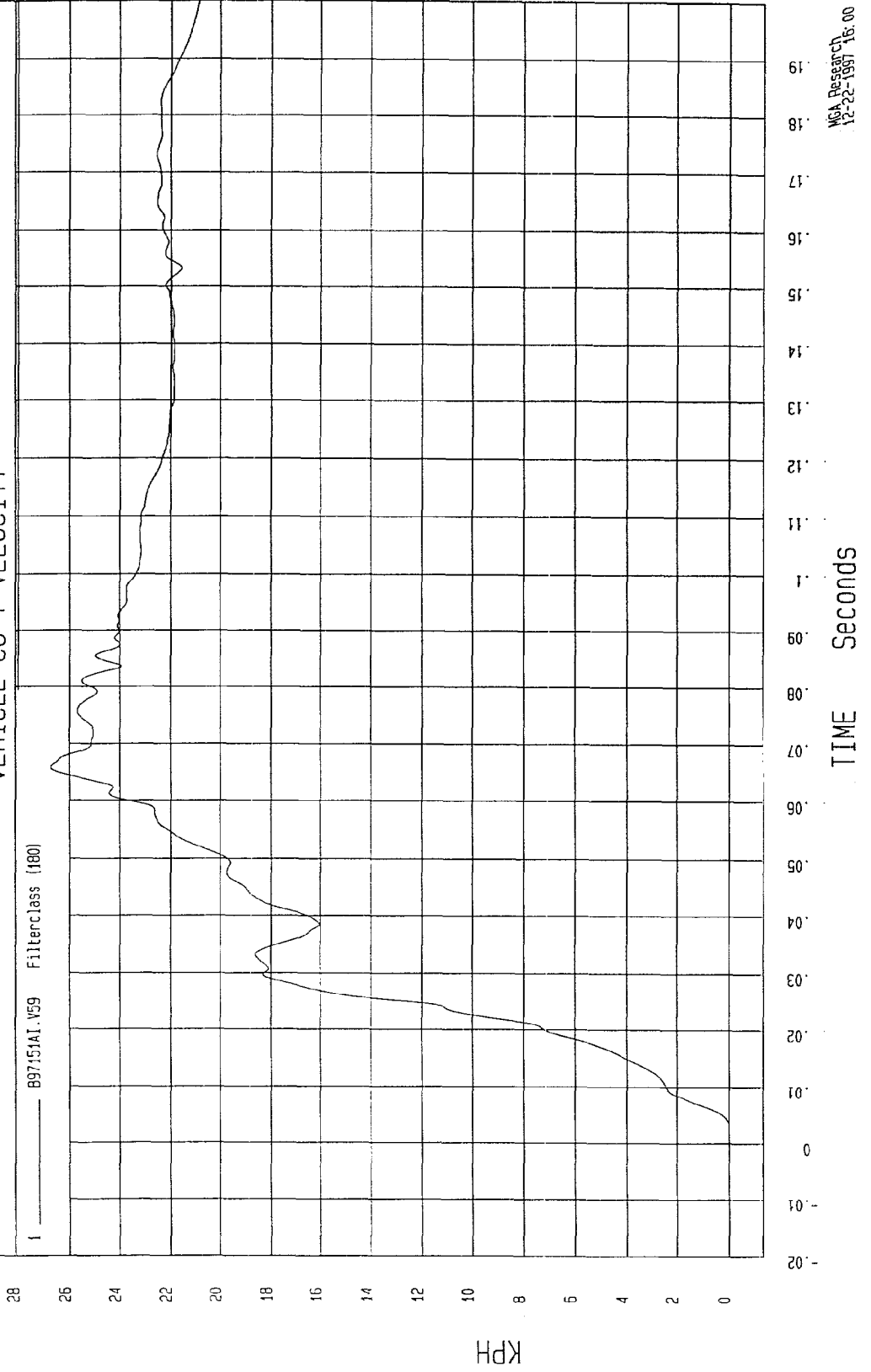
MCA Research
12-22-1997 15:48

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -1.14E-02 KPH at -1 msec
Maximum = 26.75 KPH at 66 msec

VEHICLE CG Y VELOCITY



MGA Research
12-22-1997 16:00

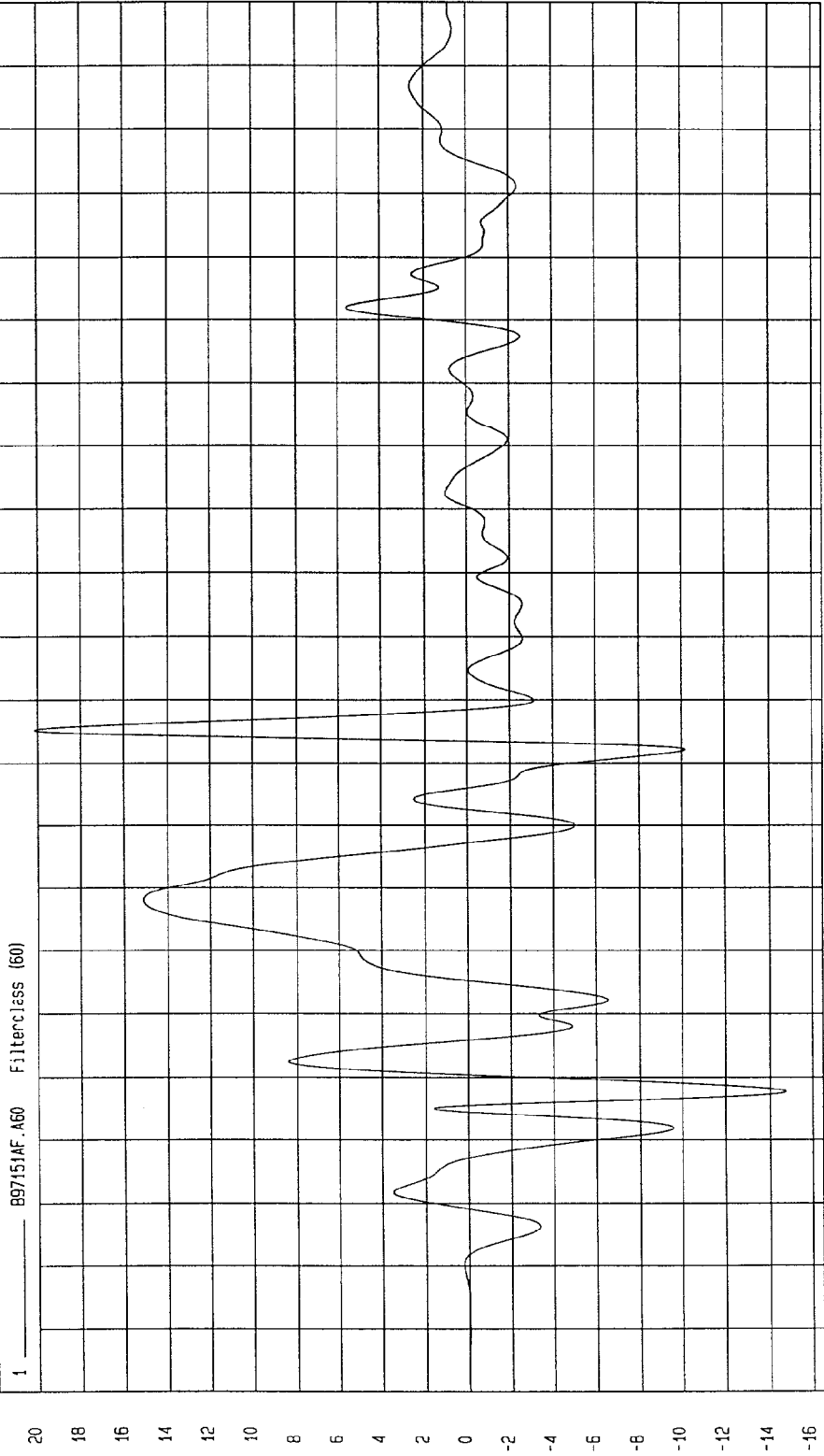
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -14.74 G'S at 28 msec

Maximum = 20.14 G'S at 85 msec

VEHICLE CG Z ACCELERATION

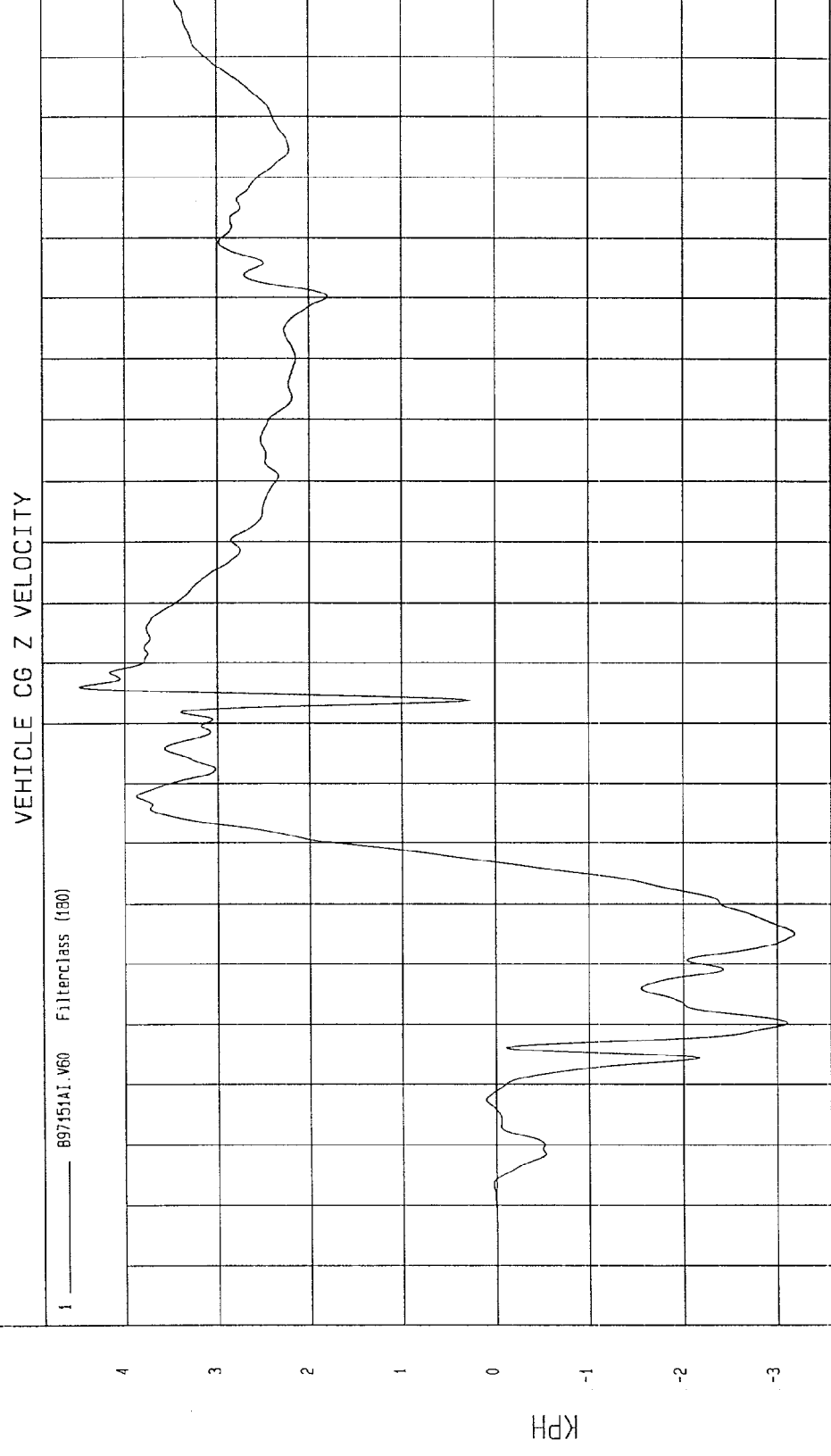


MCA Research
12-22-1997 15:48

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -3.48 KPH at 45 msec Maximum = 4.48 KPH at 86 msec



TIME Seconds

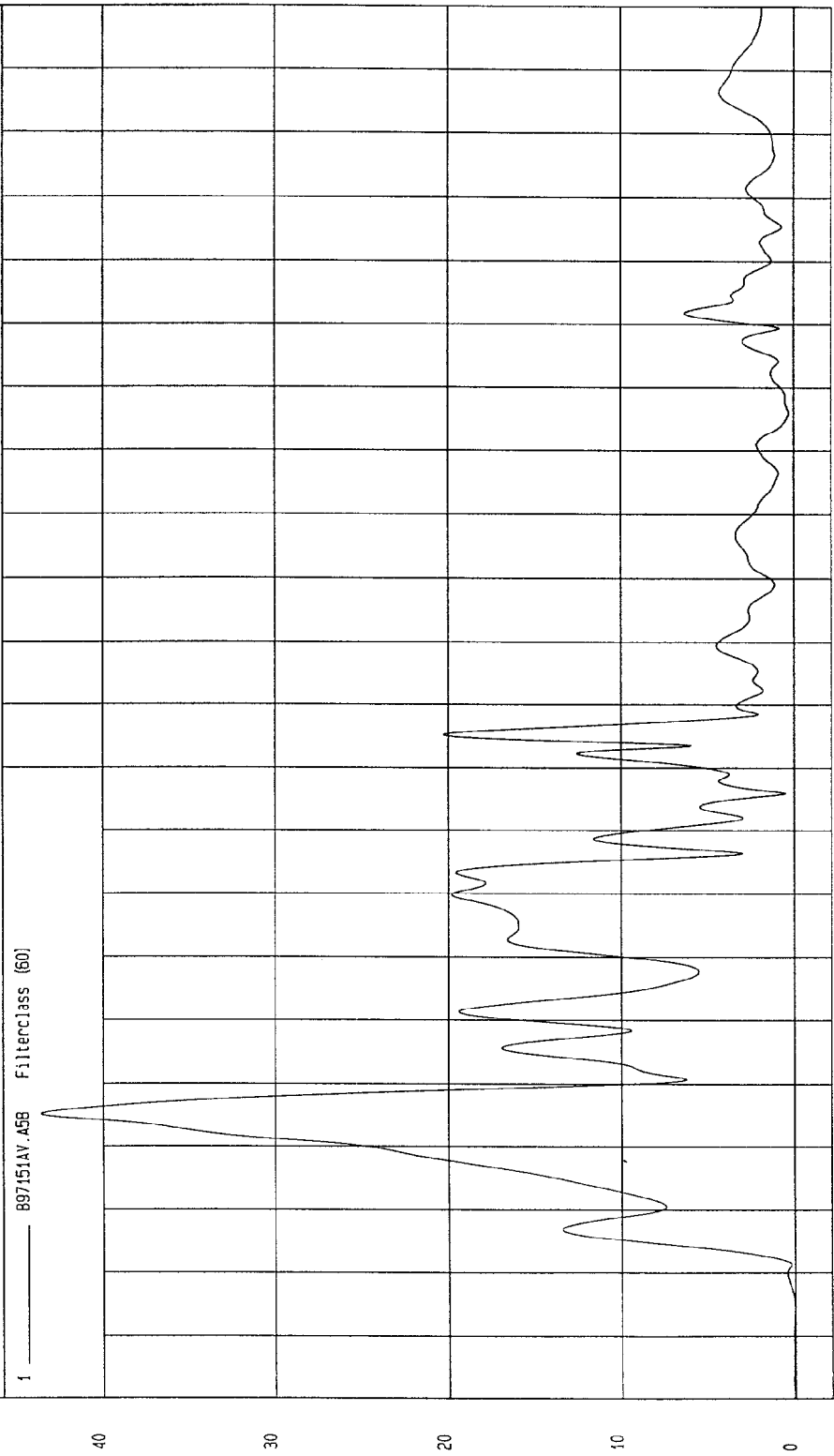
MGA Research
12-22-1997 16:00

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = 1.15E-02 G's at -5 msec Maximum = 43.58 G's at 25 msec

VEHICLE CG RESULTANT ACCELERATION



TIME (SECONDS)

MCA Research
12-22-1997 15:50

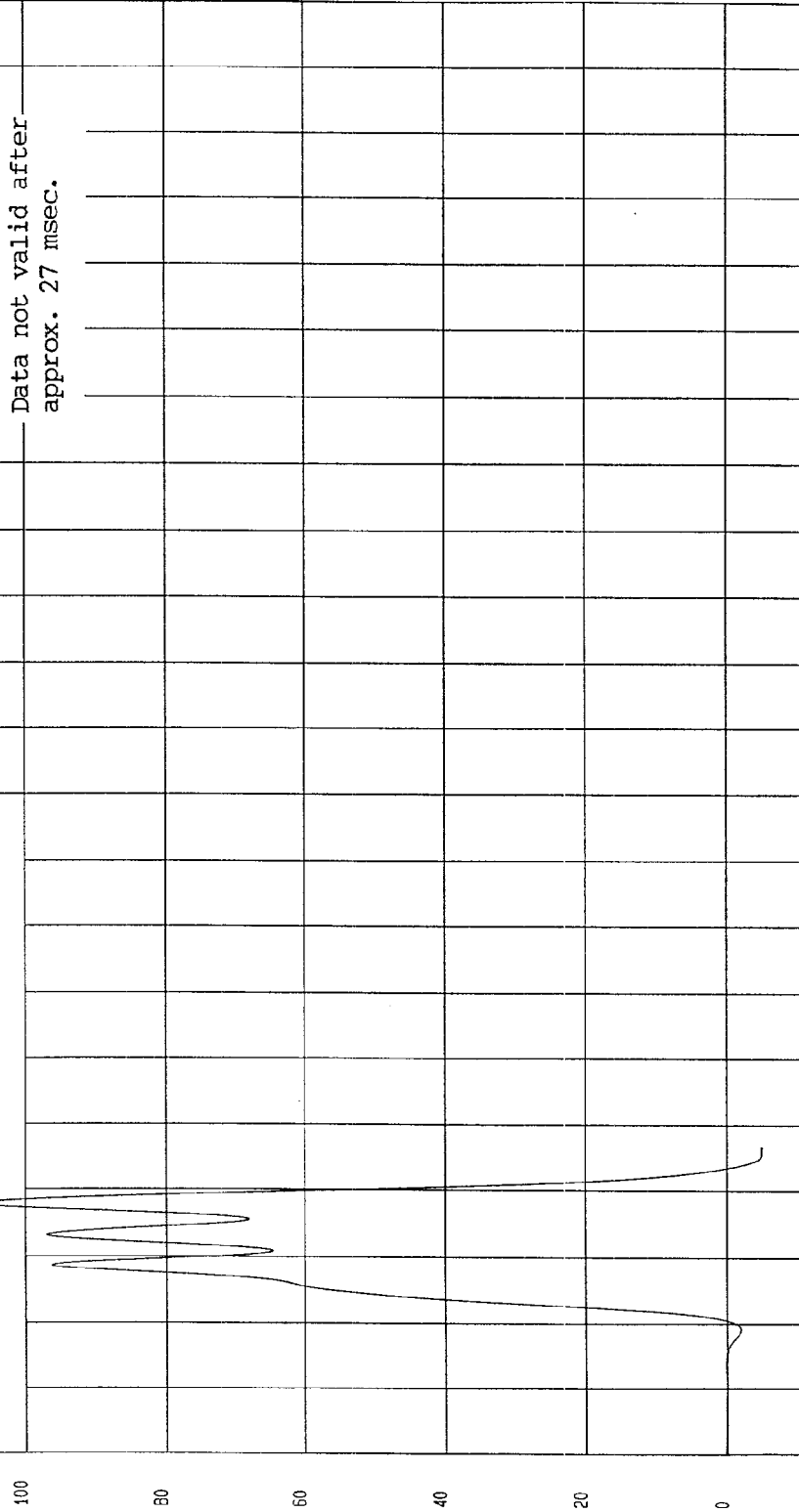
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -4.97 G'S at 26 msec
Maximum = 106.89 G'S at 18 msec

LEFT FRONT DOOR ON CENTERLINE Y ACCELERATION

1 897151AF.A74 Filterclass (50)



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

TIME (SECONDS)

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

106
80
60
40
20
0

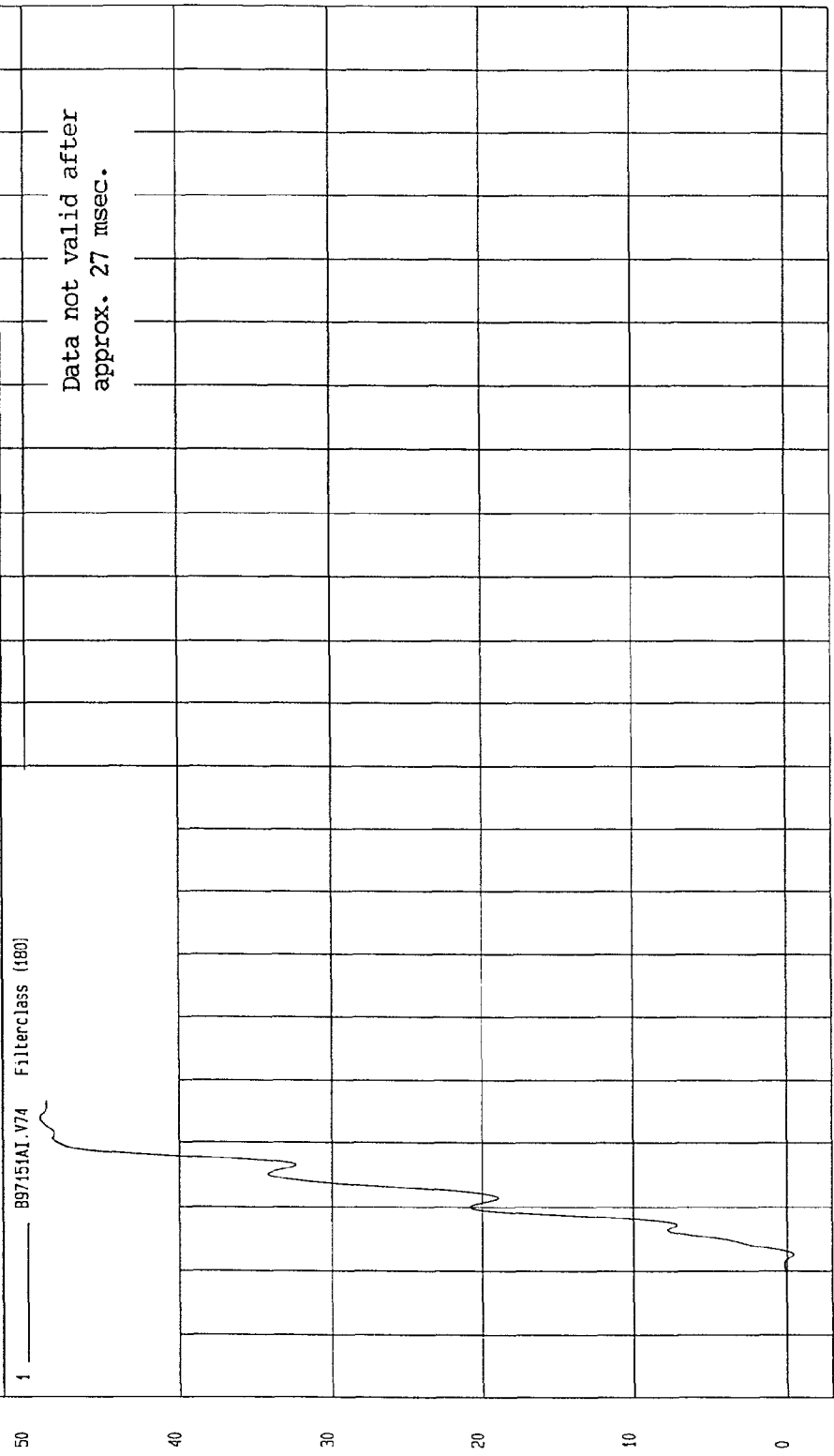
G

MCA Research
12-22-1997 16.15

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997
COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -41 KPH at 3 msec Maximum = 49.07 KPH at 24 msec

LEFT FRONT DOOR ON CENTERLINE Y VELOCITY



TIME Seconds

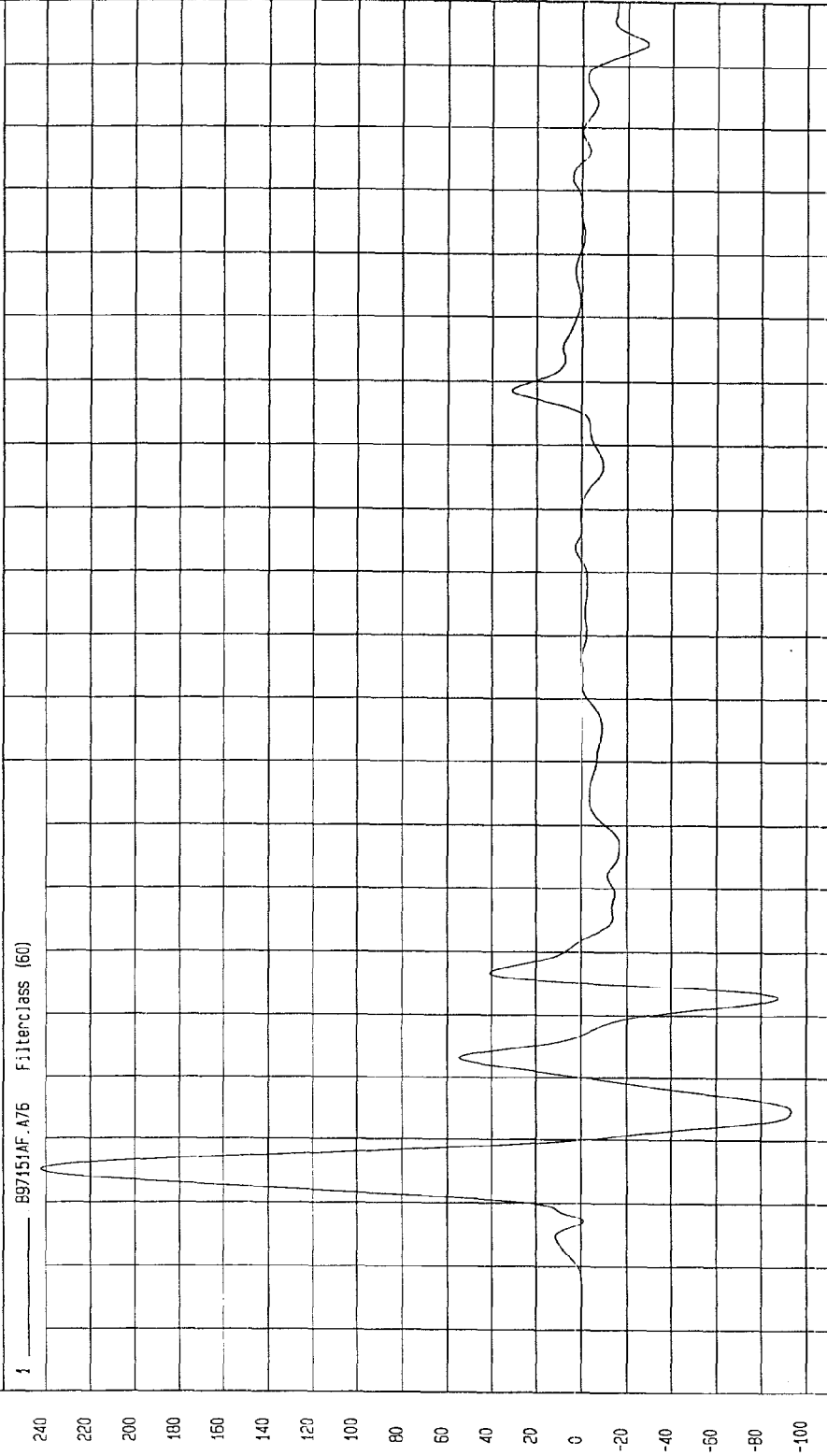
MSA Research
12-22-1997 16:15

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -93.42 G'S at 25 msec

Maximum = 242.22 G'S at 15 msec



MGA Research
12-22-1997 15: 49

TIME (SECONDS)

G.S

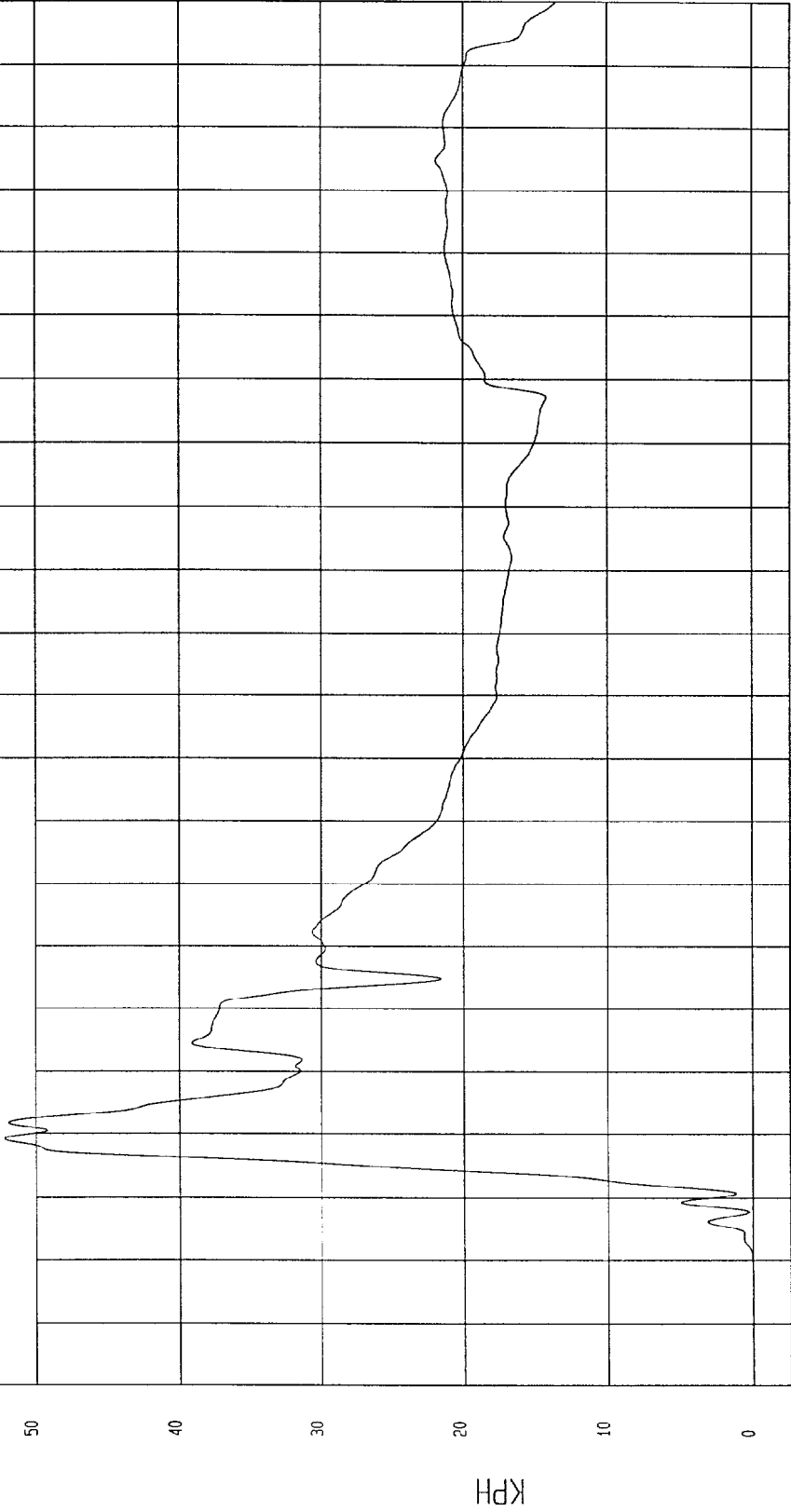
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -7.15E-05 KPH at -20 msec
Maximum = 52.18 KPH at 19 msec

LEFT FRONT DOOR UPPER CENTERLINE Y VELOCITY

1 ——— 897151A1.V76 Filterclass (180)



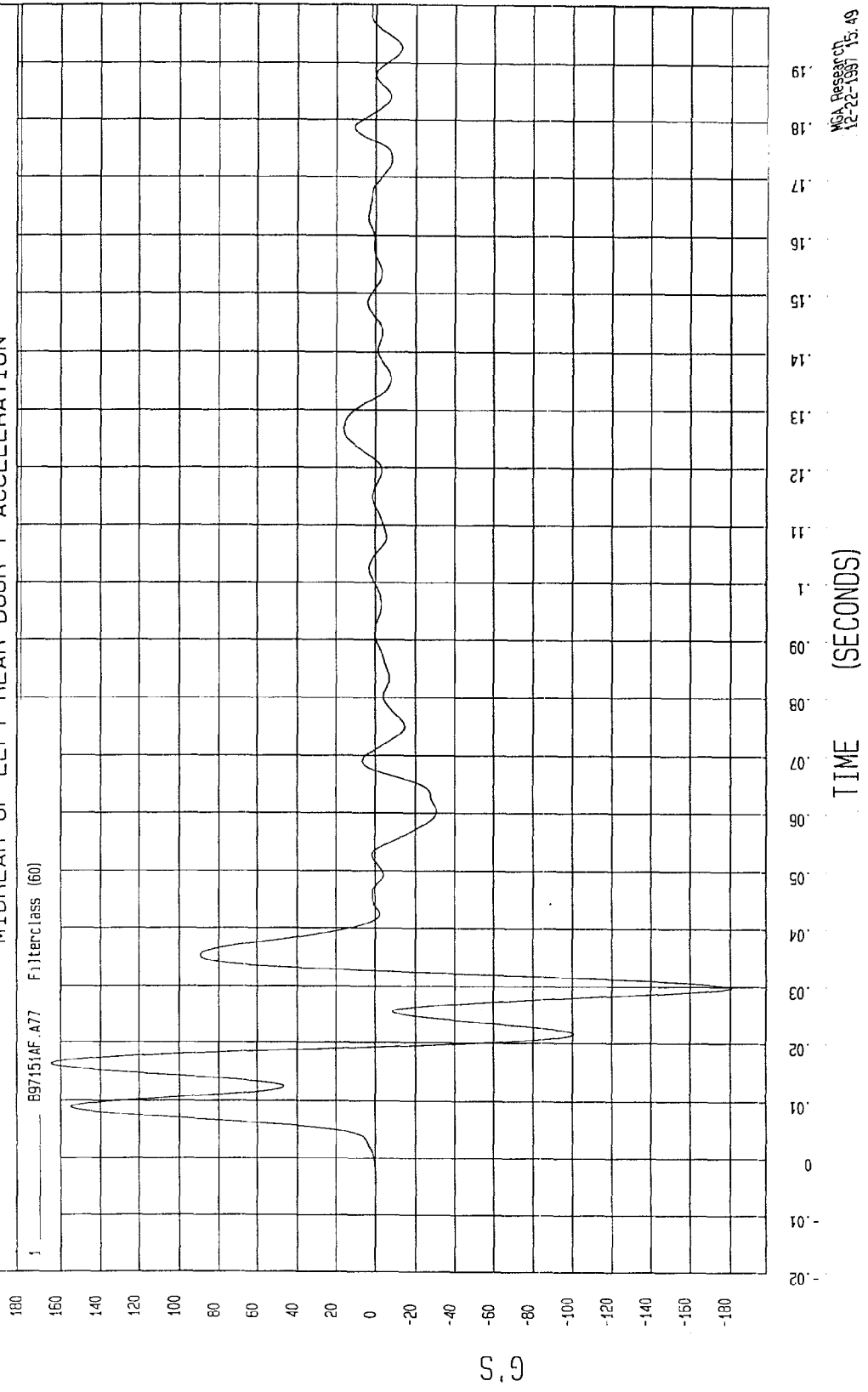
USA Research
12-22-1997 16:00

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -180.57 G'S at 30 msec Maximum = 164.82 G'S at 16 msec

MIDREAR OF LEFT REAR DOOR Y ACCELERATION



TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

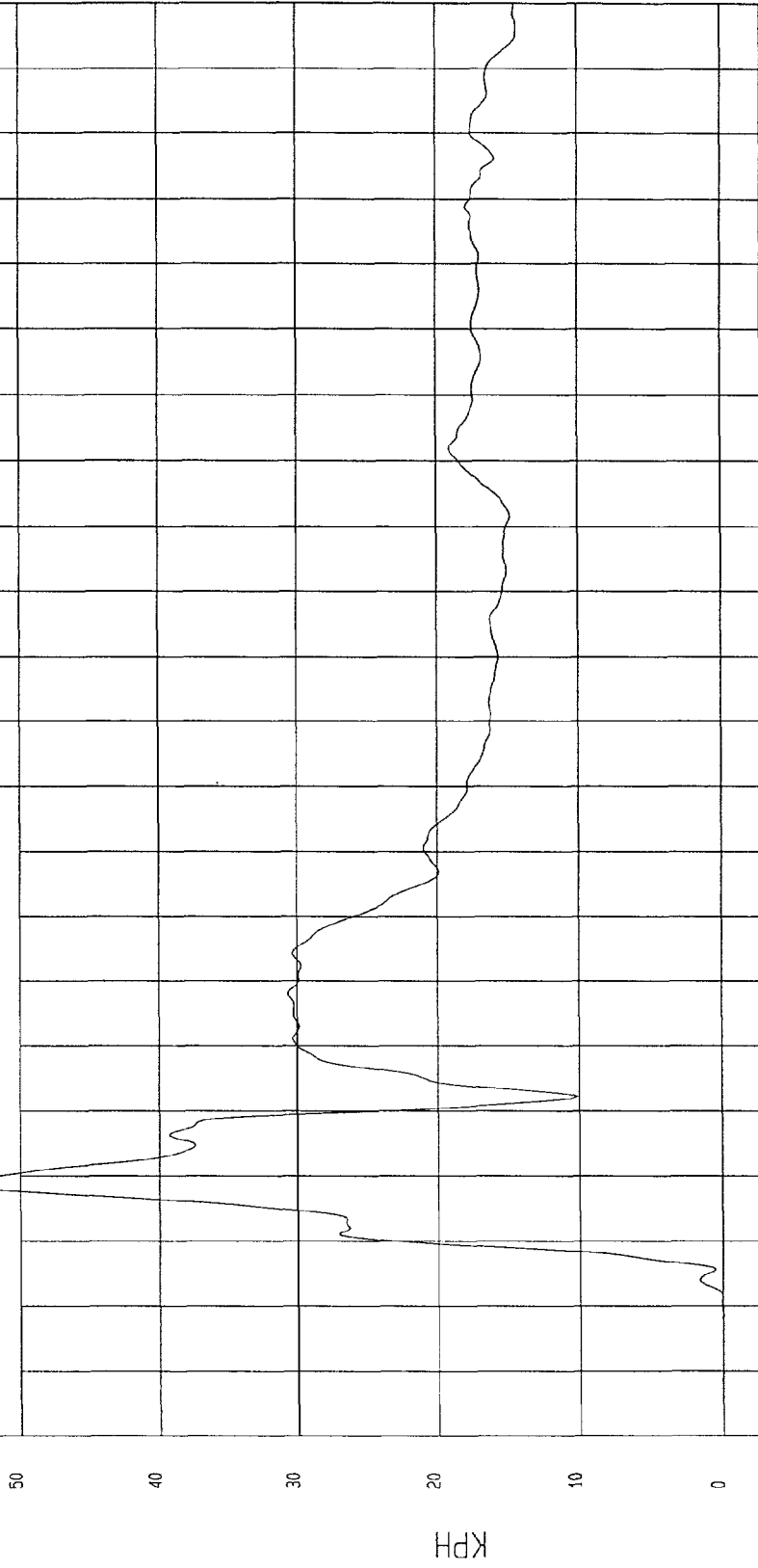
COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -1.31E-03 KPH at -20 msec

Maximum = 55.19 KPH at 19 msec

MIDREAR OF LEFT REAR DOOR Y VELOCITY

1 897451A1.V77 FilterClass (480)



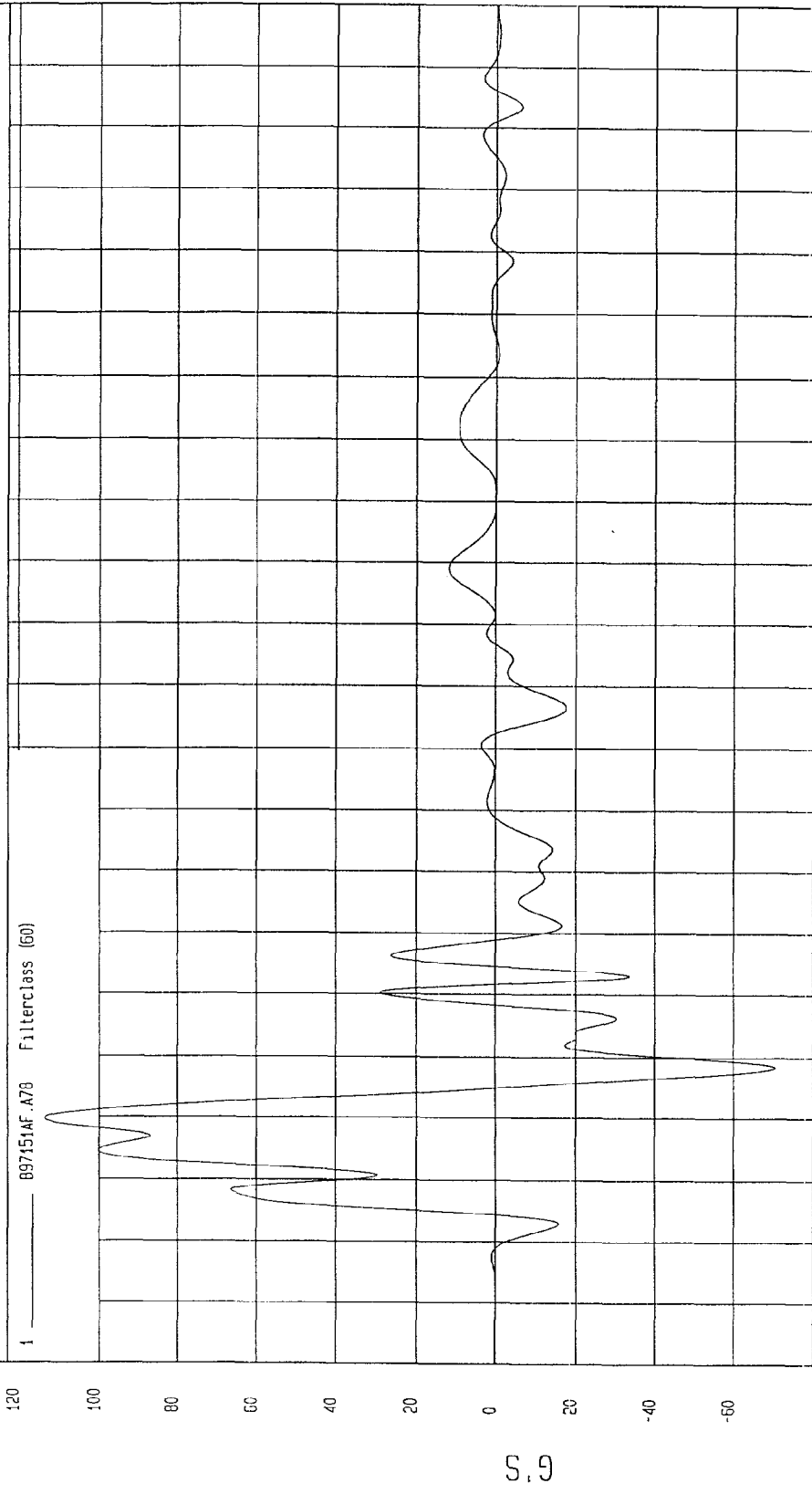
MCA Research
12-22-1997 15:00

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -70.51 G'S at 28 msec Maximum = 113.47 G'S at 20 msec

LEFT REAR DOOR UPPER CENTERLINE Y ACCELERATION



MSA Research
12-22-1997 15:49

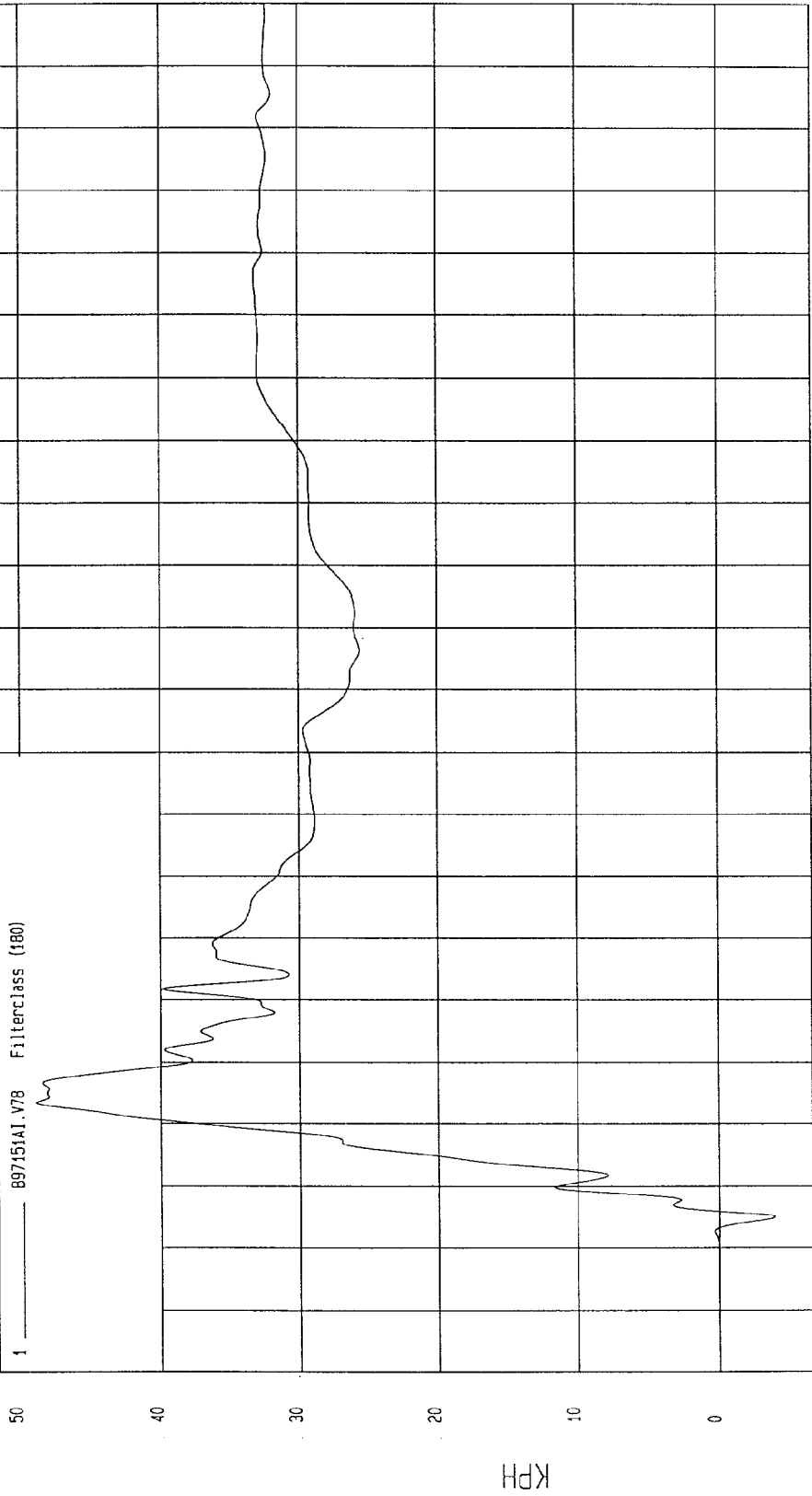
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -3.97 KPH at 5 msec
Maximum = 48.90 KPH at 23 msec

LEFT REAR DOOR UPPER CENTERLINE Y VELOCITY

1 897151A1.V78 FilterClass (480)



TIME Seconds
MCA Research
12-22-1997 16:00

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

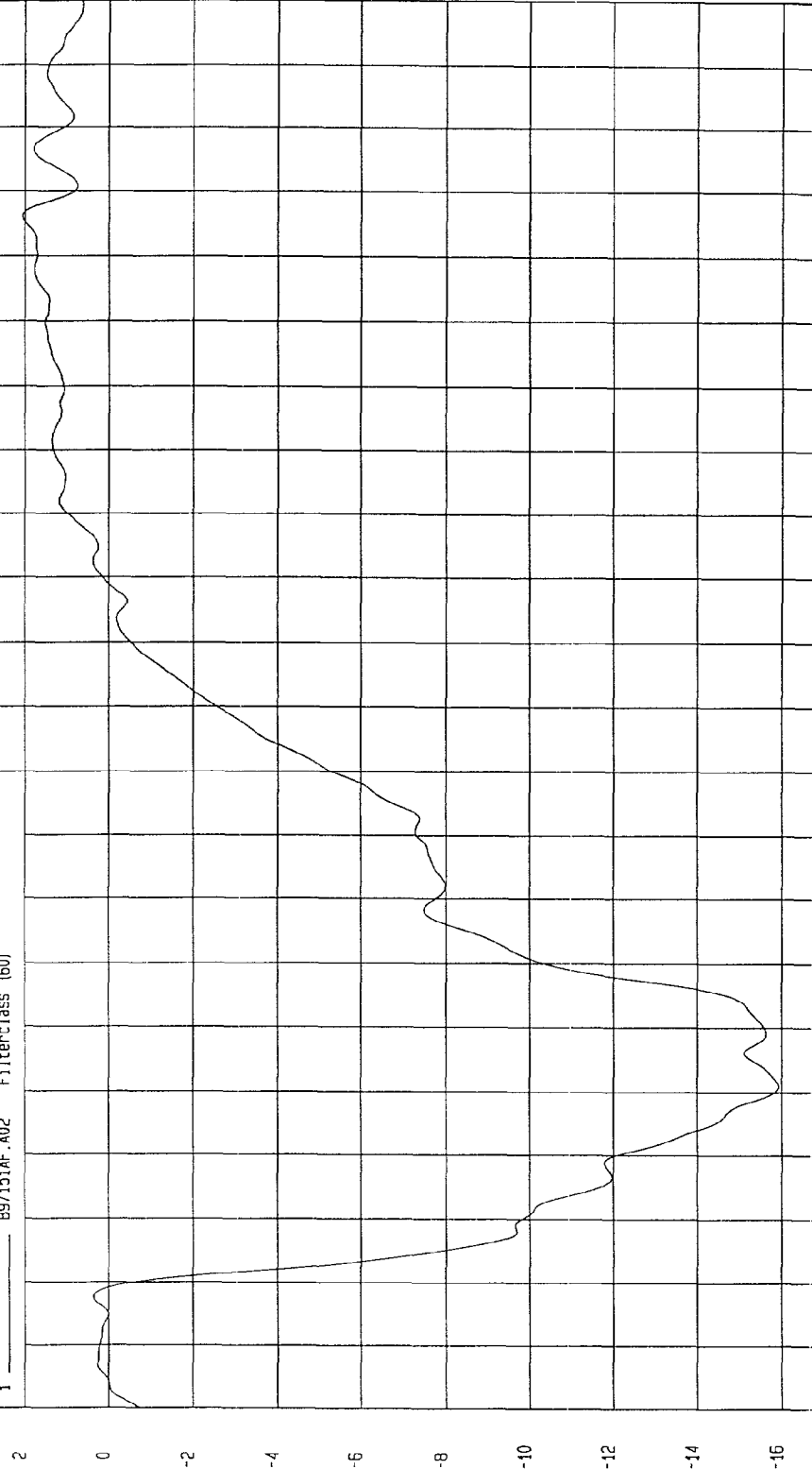
COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -15.93 G'S at 31 msec

Maximum = 2.06 G'S at 166 msec

MOVING BARRIER CG X ACCELERATION

1 897151AF.A02 Filterclass (60)



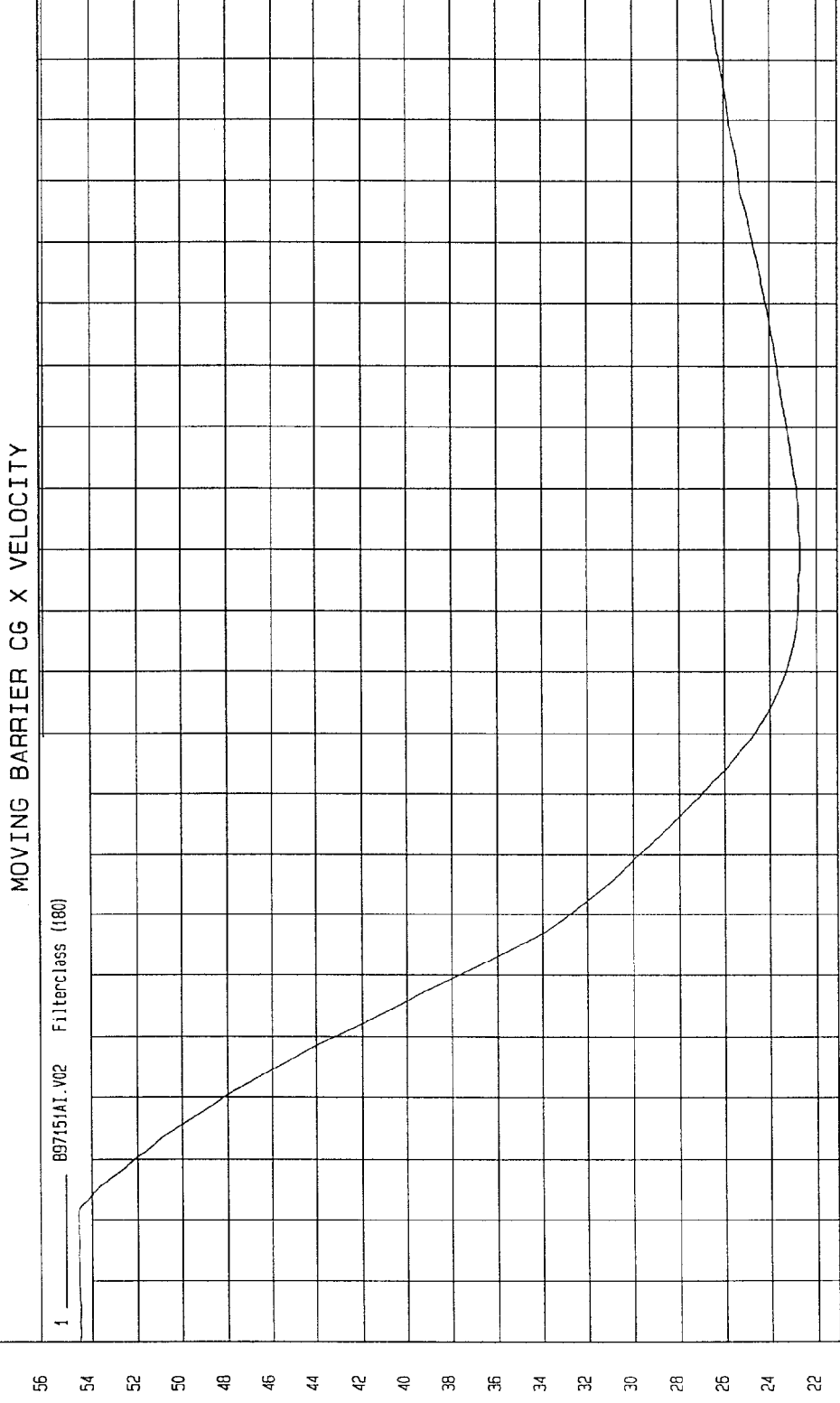
MSA Research
12-22-1998 15:49

TIME (SECONDS)

G.S

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997
 COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = 22.69 KPH at 108 msec Maximum = 54.57 KPH at 1 msec



89715/1A1.V02 Filterclass (180)

MCA Research
 12-22-1997 16.00

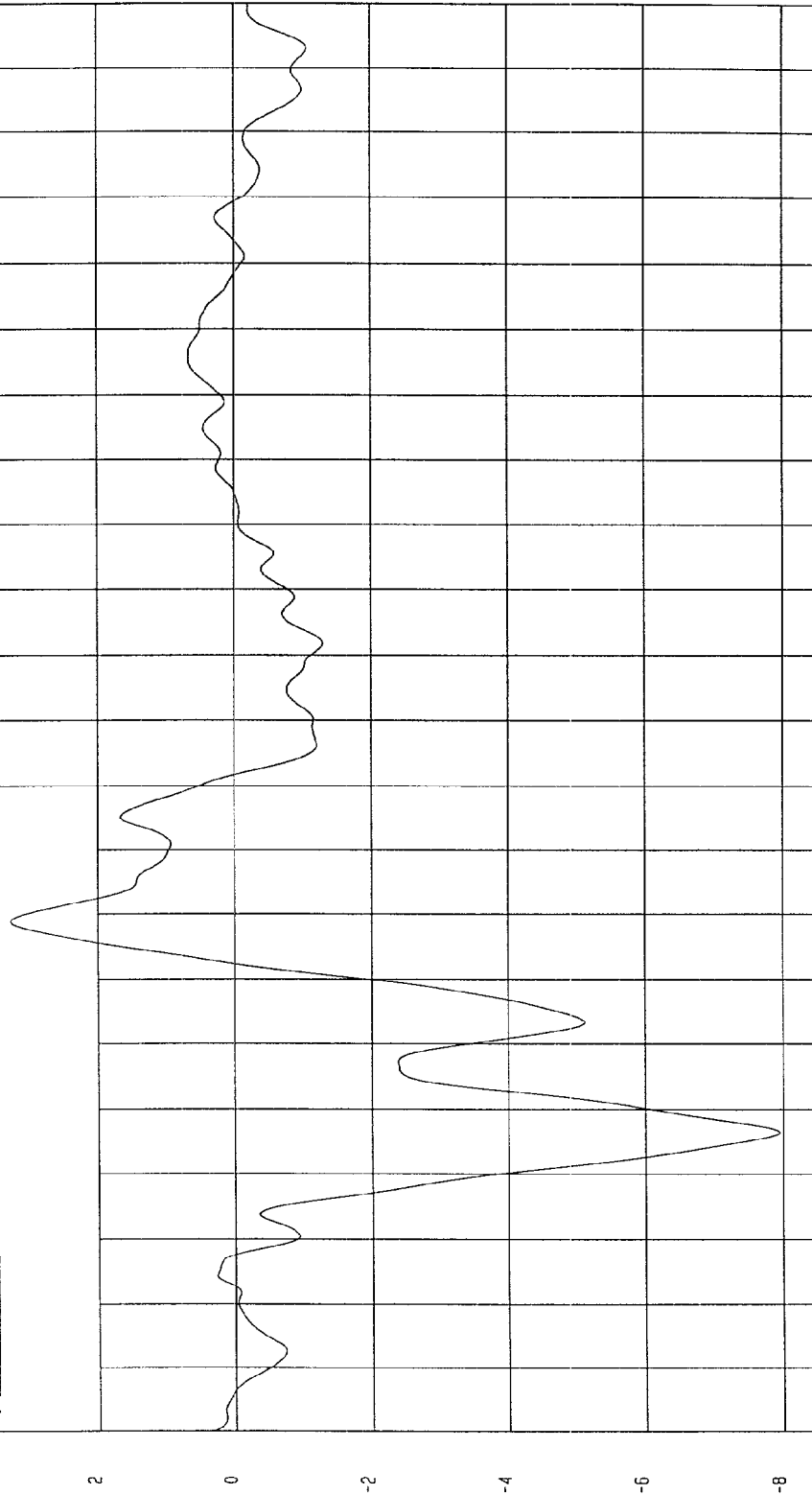
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -7.94 G'S at 26 msec Maximum = 3.27 G'S at 59 msec

MOVING BARRIER CG Y ACCELERATION

1 897151AF.A03 FilterClass (60)



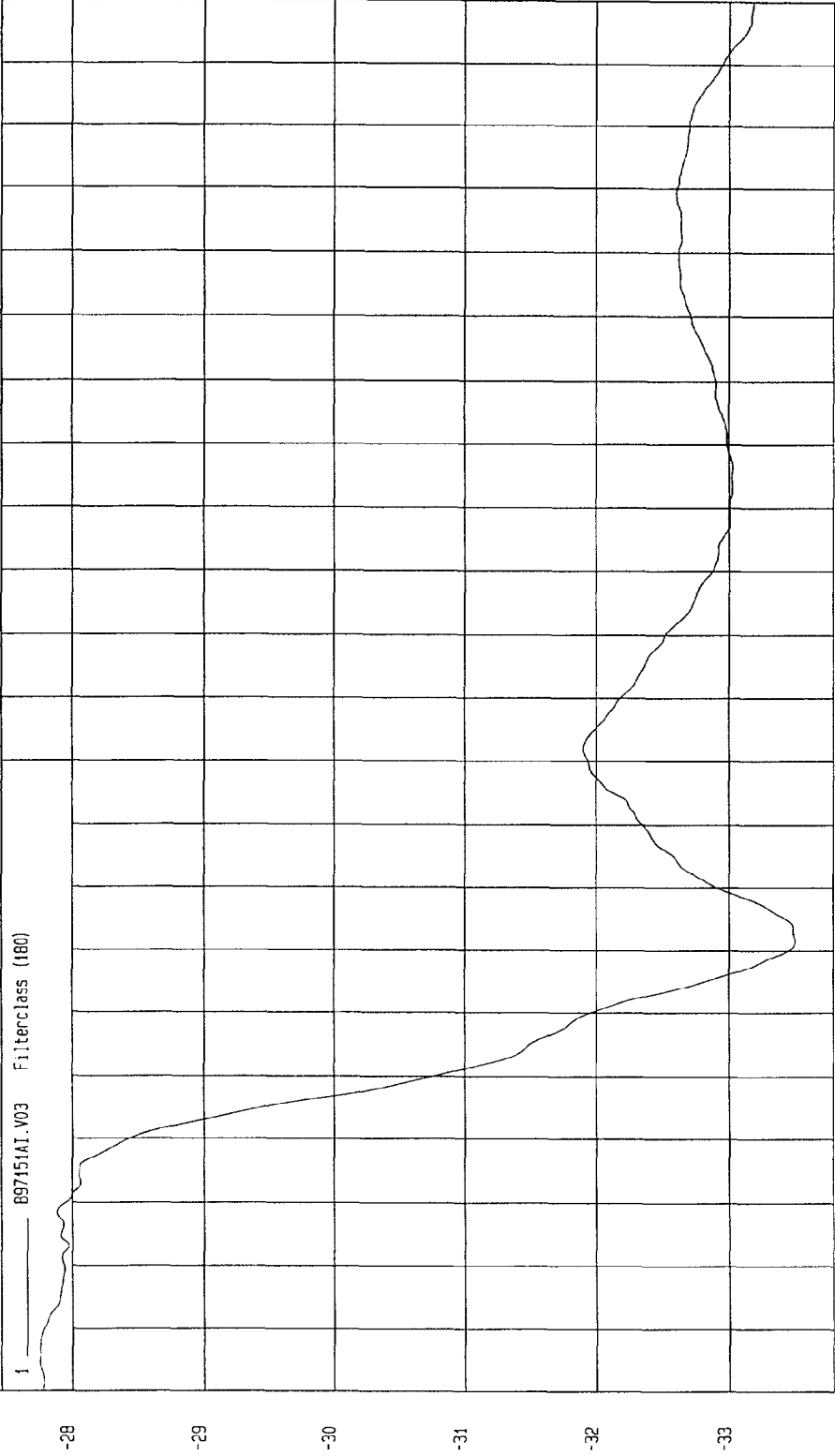
TIME (SECONDS)

NSA Research
12-22-1997 15:49

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997
 COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -33.48 KPH at 52 msec Maximum = -27.76 KPH at -12 msec

MOVING BARRIER CG Y VELOCITY



MSA Research
 12-22-1997 16:00

TIME Seconds

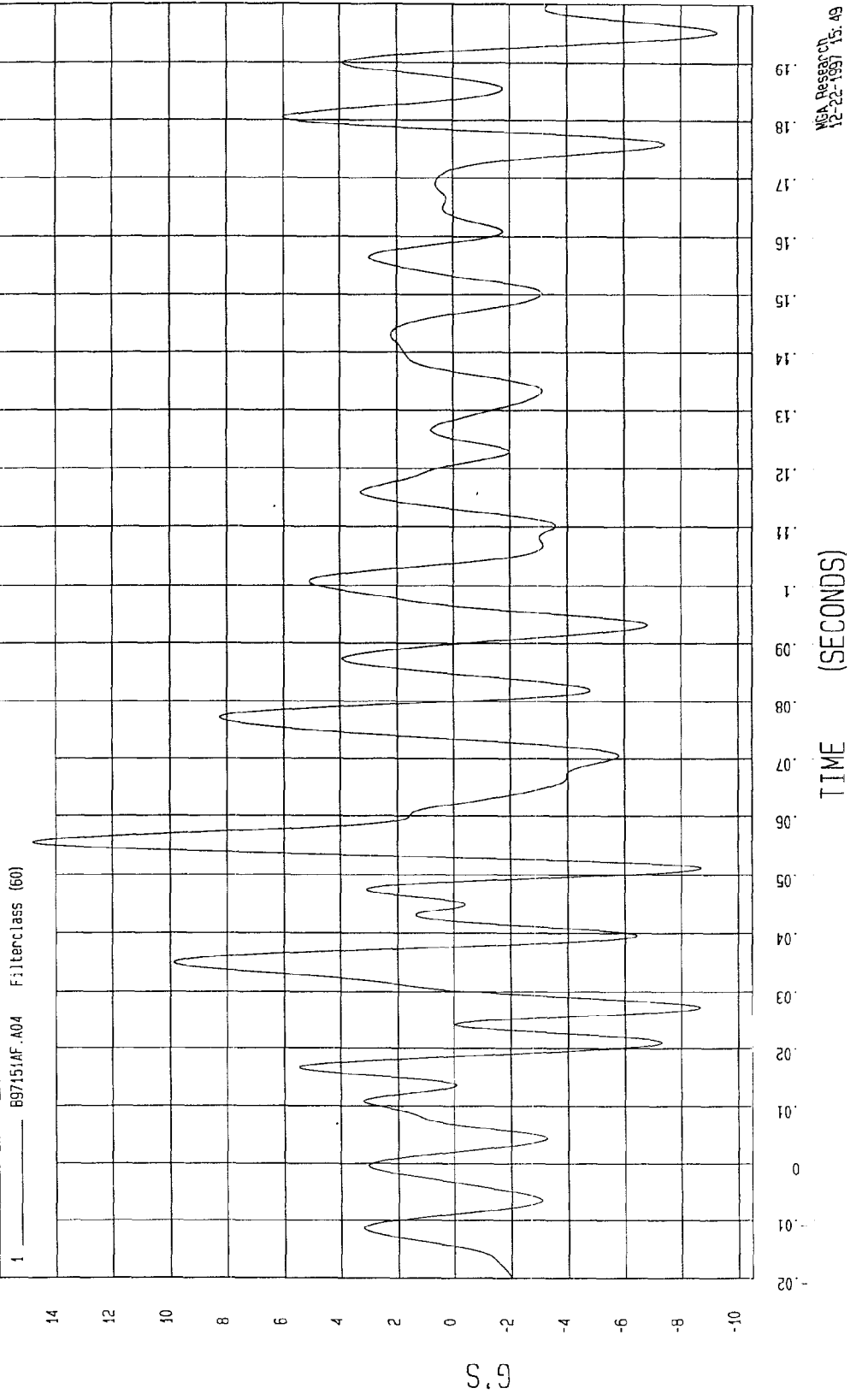
KPH

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -9.27 G'S at 195 msec Maximum = 14.79 G'S at 56 msec

MOVING BARRIER CG Z ACCELERATION



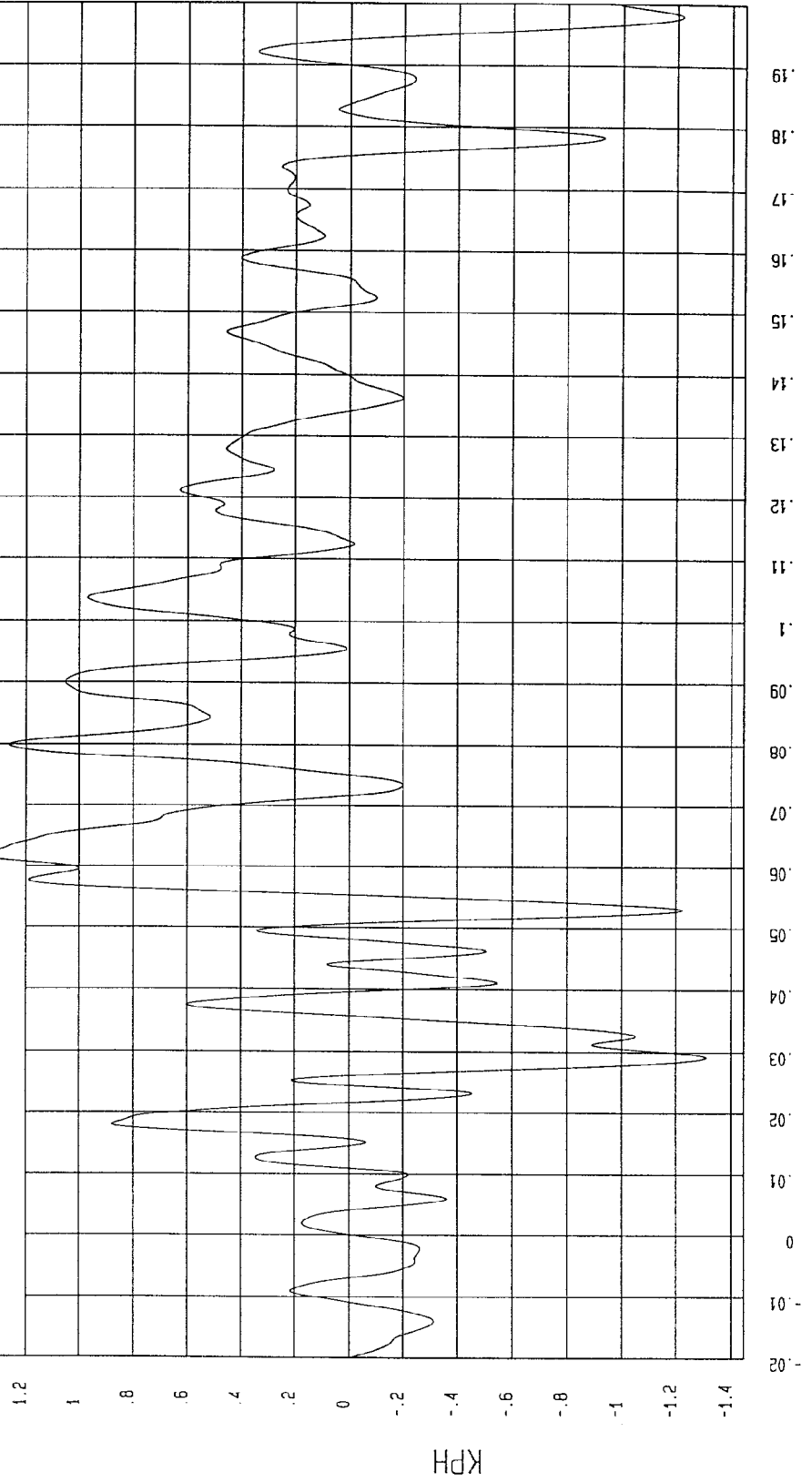
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -1.31 KPH at 29 msec
Maximum = 1.36 KPH at 62 msec

MOVING BARRIER CG Z VELOCITY

1 ——— 897151A1.V04 Filterclass (180)



MCA Research
12-22-1997 16.00

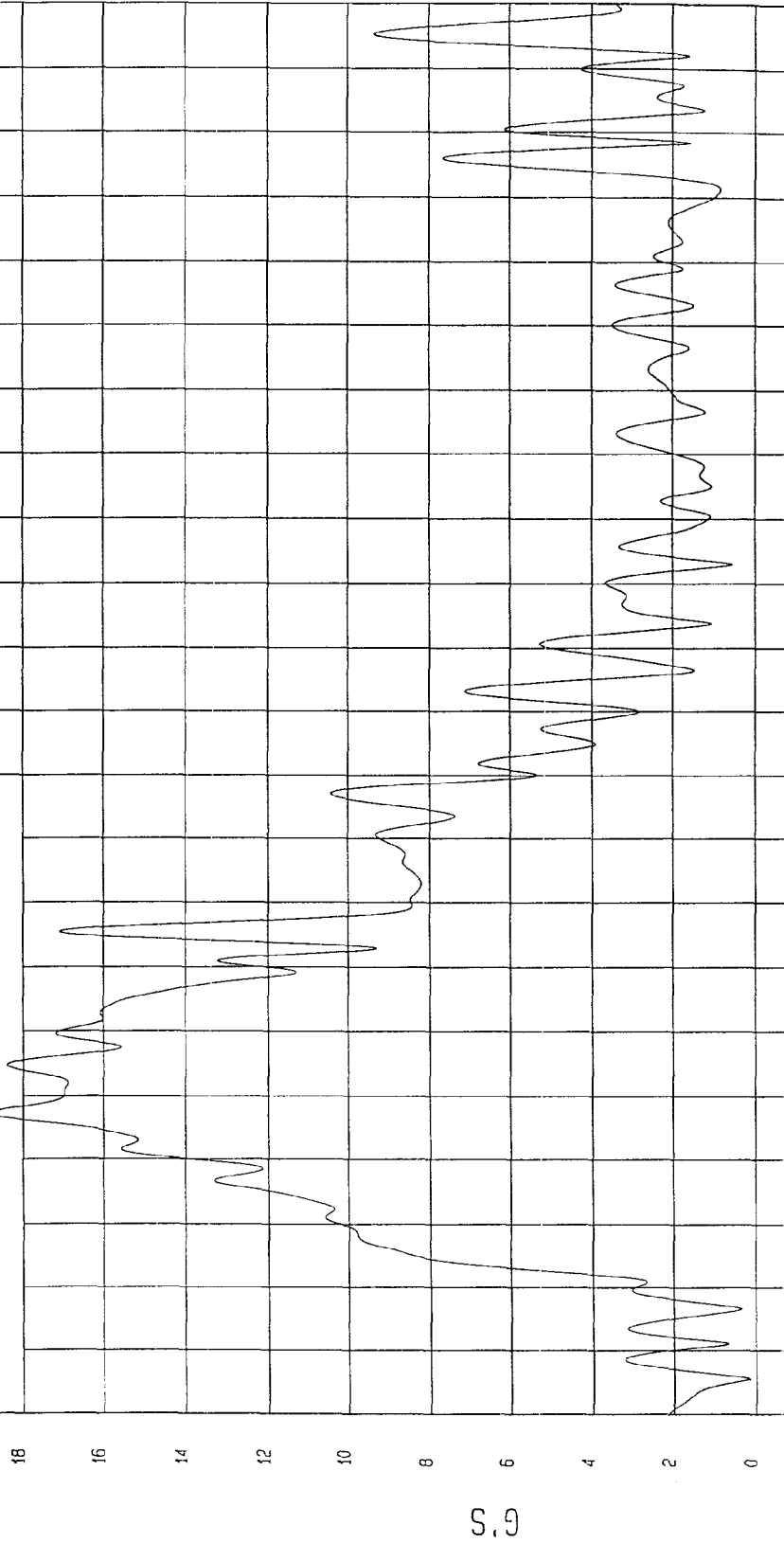
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = .14 G'S at -15 msec

MOVING BARRIER CG RESULTANT ACCELERATION

1 897151AV.A02 Filterclass (60)



MGA Research
12-22-1997 15:50

TIME (SECONDS)

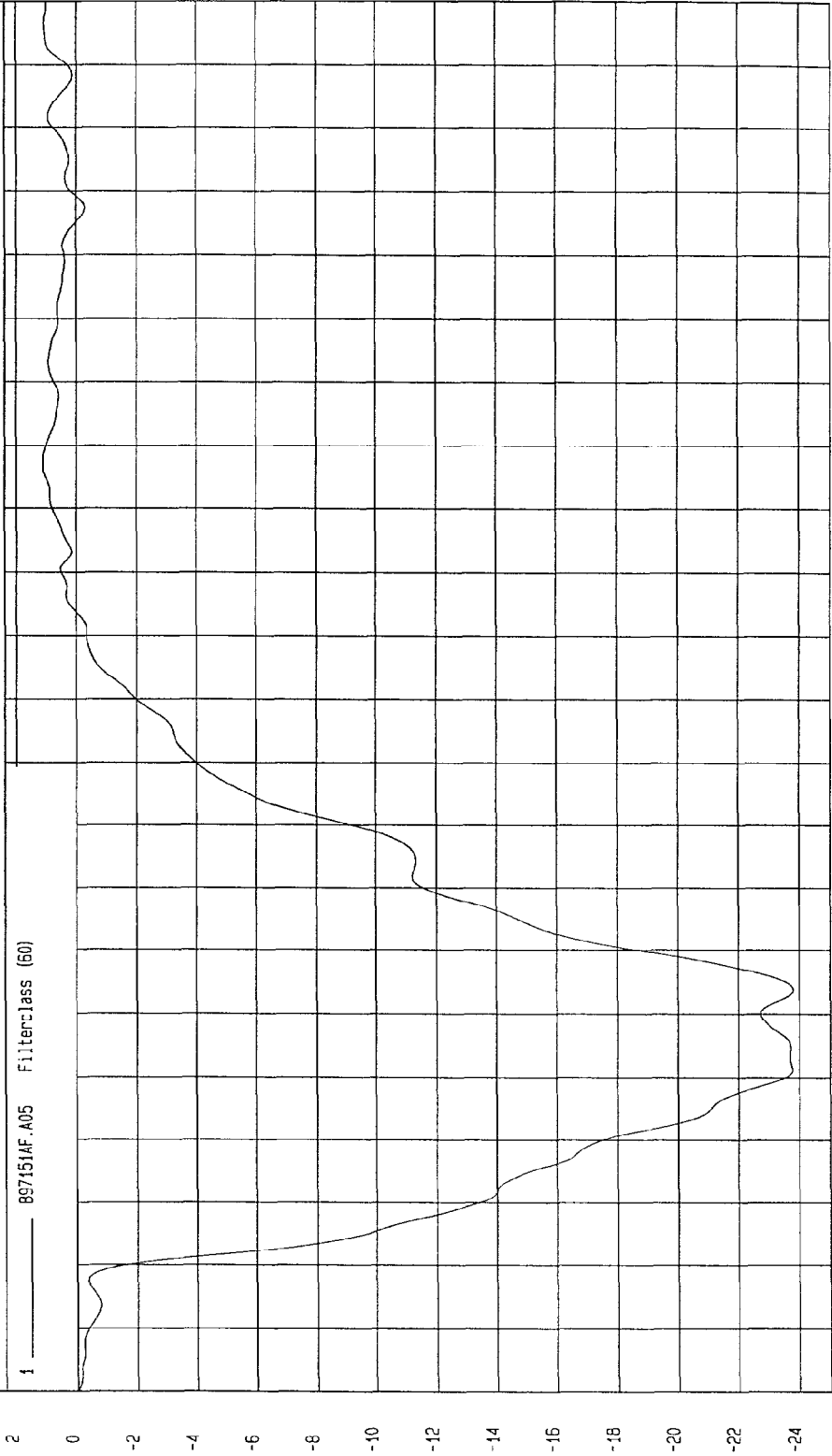
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -23.81 G'S at 44 msec
Maximum = 1.12 G'S at 127 msec

MOVING BARRIER REAR AXLE X ACCELERATION

1 897151AF.A05 Filterclass (50)



W&A Research
12-22-1997 15.49

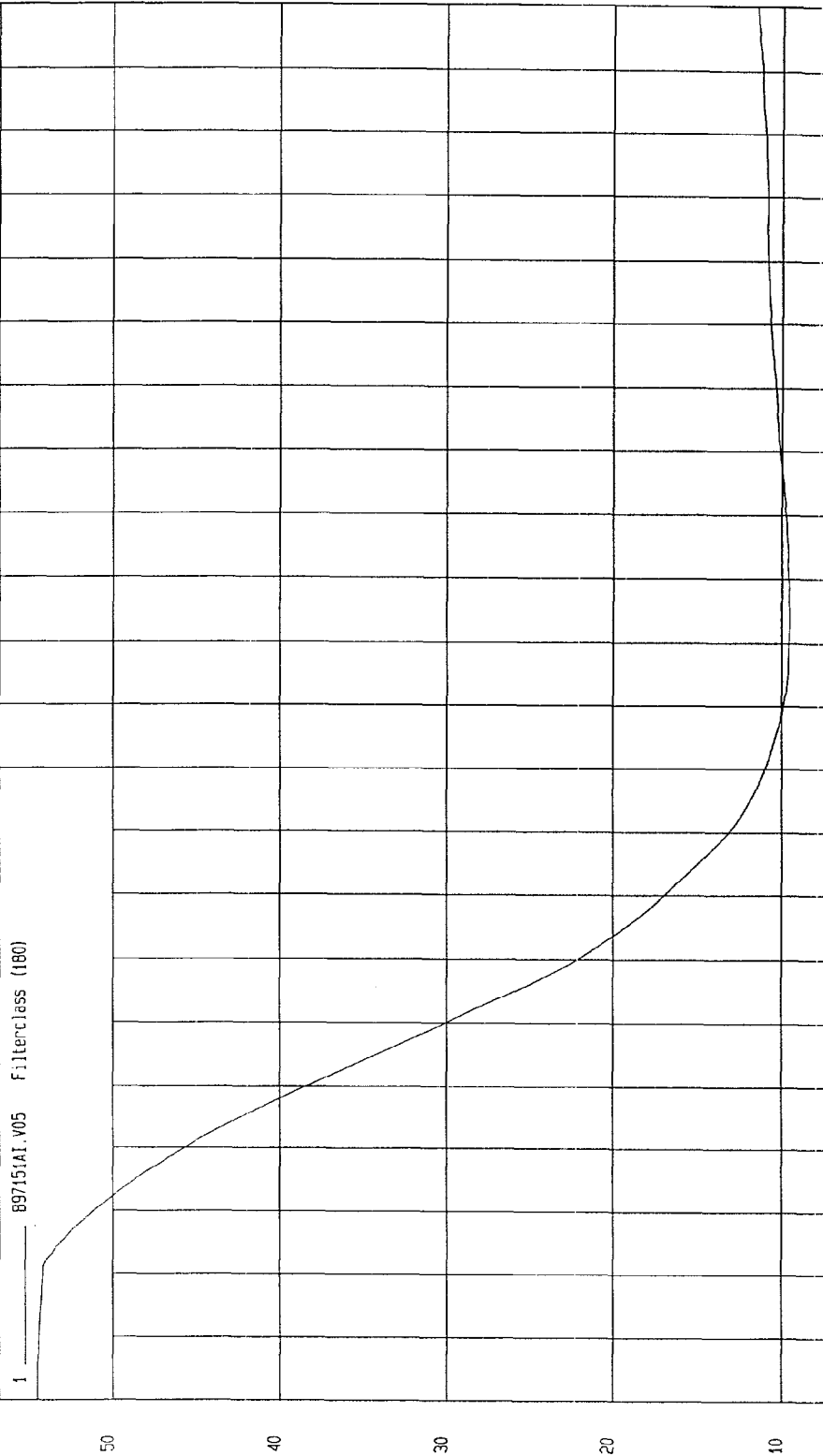
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = 9.53 KPH at 104 msec

MOVING BARRIER REAR AXLE X VELOCITY

1 897151A1.V05 Filterclass (180)



MSA Research
12-22-1997 16.01

TIME Seconds

KPH

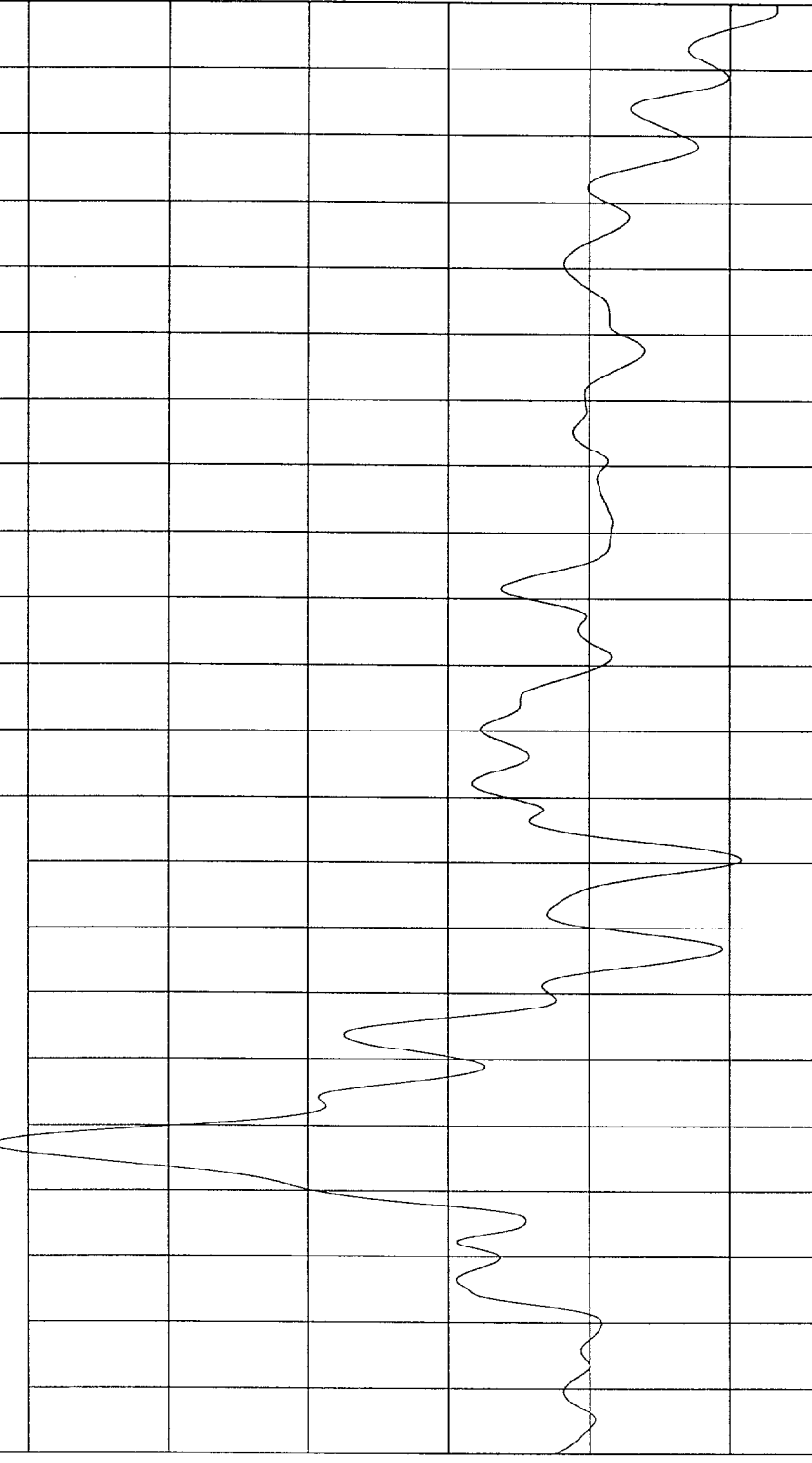
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -1.32 G'S at 199 msec
Maximum = 4.25 G'S at 27 msec

MOVING BARRIER REAR AXLE Y ACCELERATION

1 ——— B97151AF.A06 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

W&K Research
12-22-1997 15:49

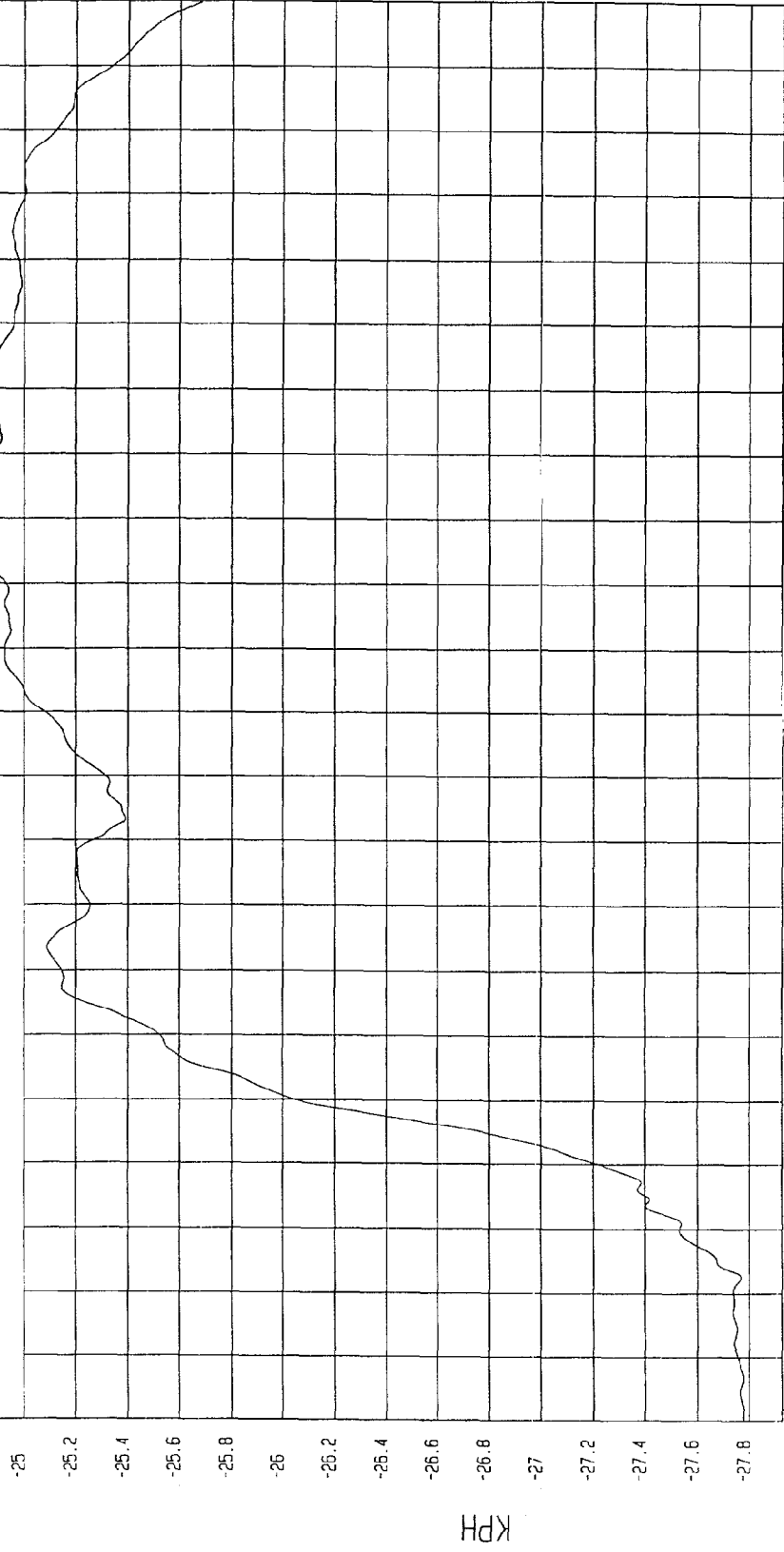
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -27.78 KPH at -20 msec

MOVING BARRIER REAR AXLE Y VELOCITY

1 ——— 897151A1.Y06 Filterclass (160)



MECA Research
12-22-1997 16:01

TIME Seconds

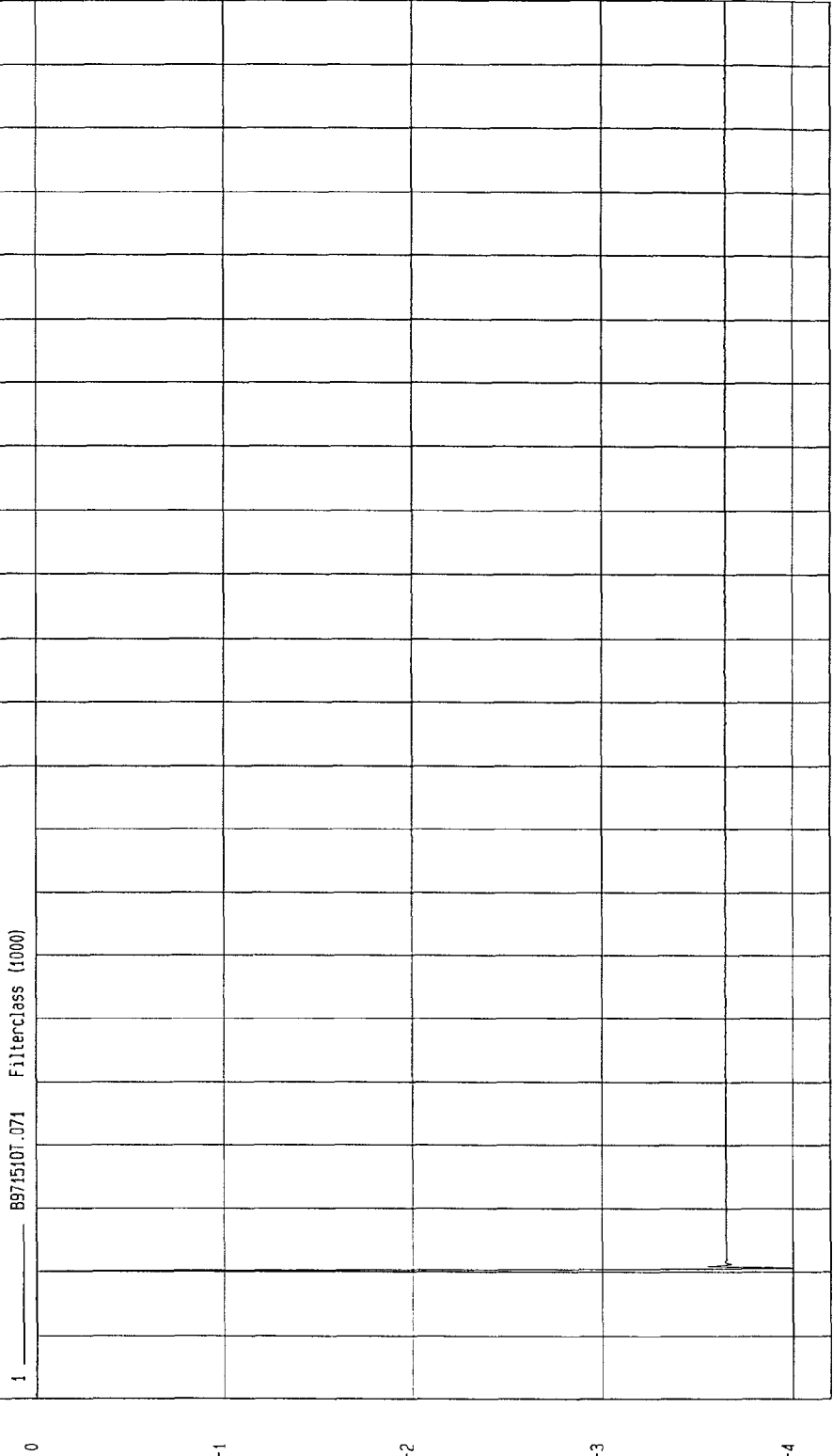
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -3.99 VOLTS at 0 msec Maximum = 4.47E-03 VOLTS at -19 msec

LEFT BARRIER CONTACT

1 8971510T.071 Filterclass (1000)



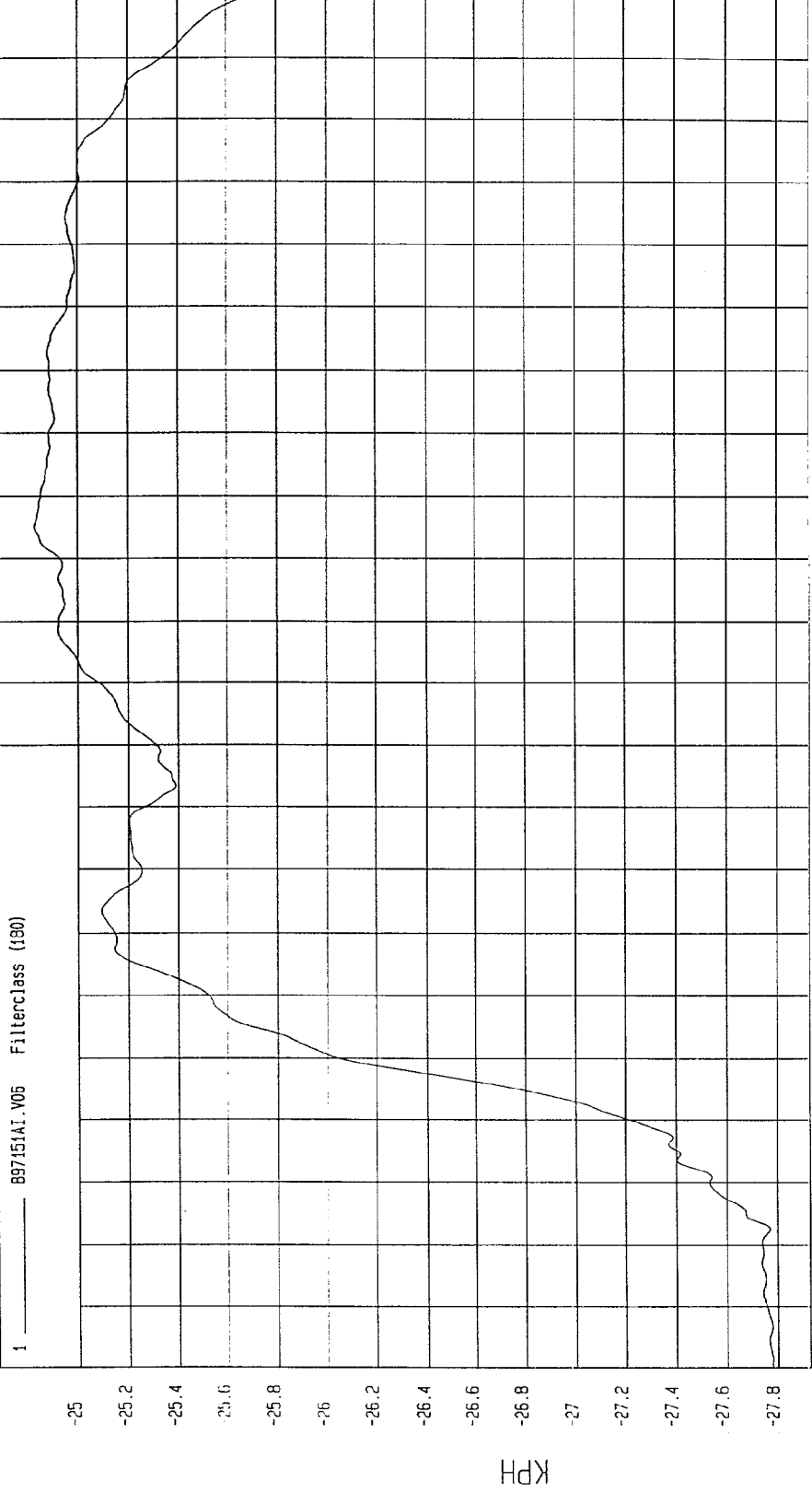
MSA Recorcty
12-22-1997 15:49

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -27.78 KPH at -20 msec Maximum = -24.83 KPH at 115 msec

MOVING BARRIER REAR AXLE Y VELOCITY



TIME Seconds

Ms. Report
12-22-1997 16.01

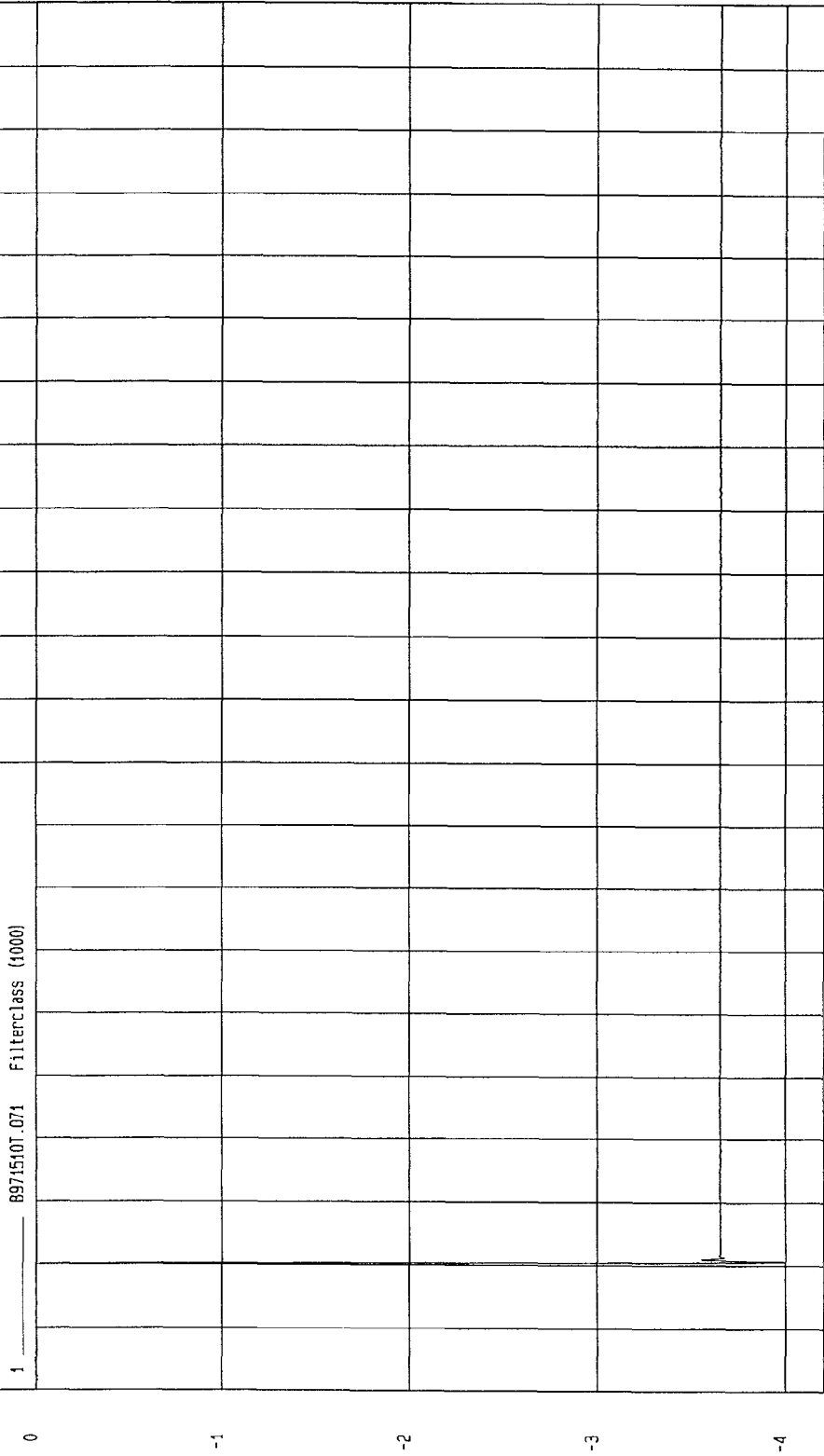
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -3.99 VOLTS at 0 msec Maximum = 4.47E-03 VOLTS at -19 msec

LEFT BARRIER CONTACT

1 8971510T.071 Filterclass (1000)



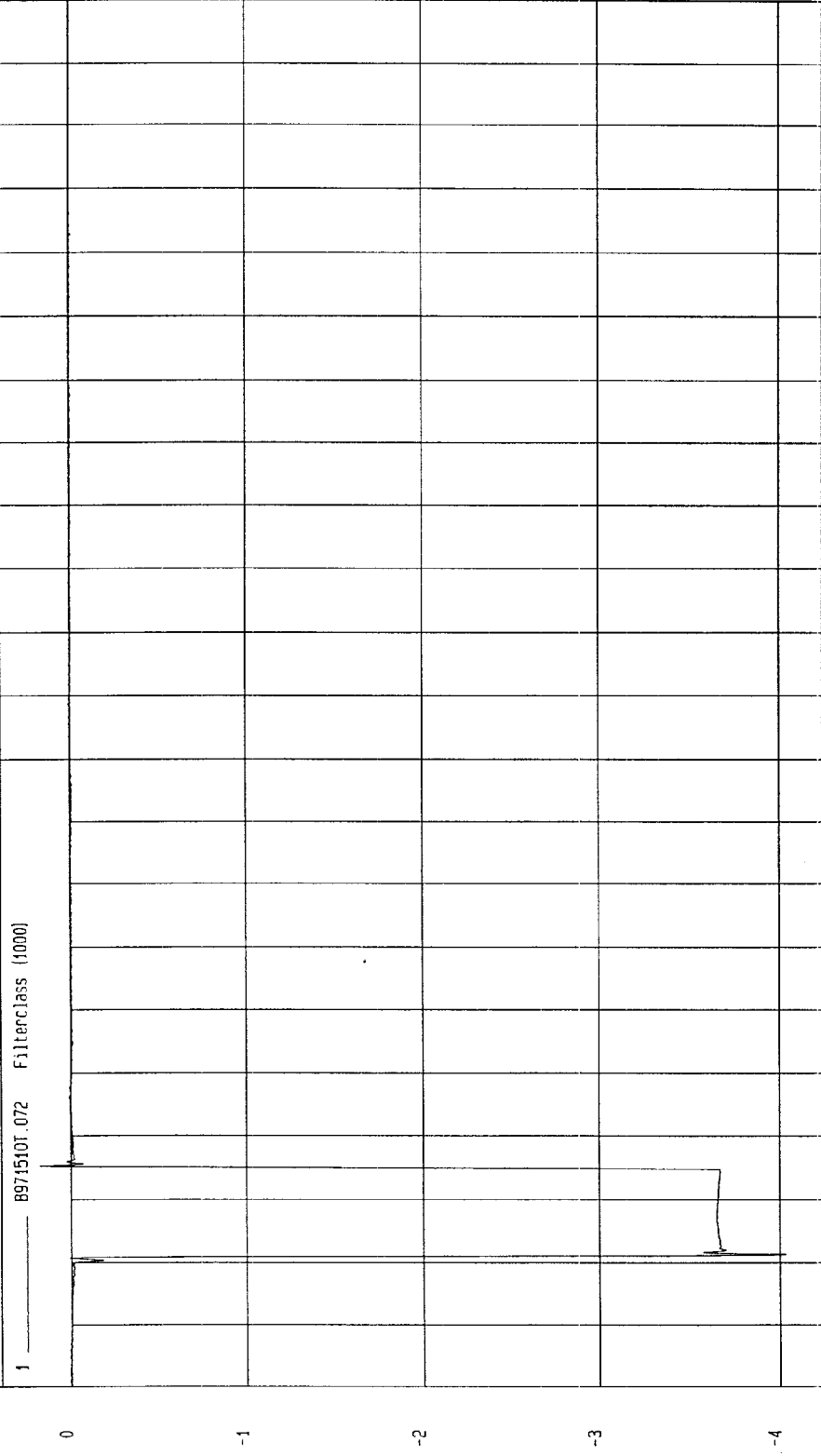
MCA Research
12-22-1997 15: 49

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -4.03 VOLTS at 1 msec Maximum = .16 VOLTS at 15 msec

RIGHT BARRIER CONTACT



TIME (SECONDS)

MGA Research Corp.
12-22-1997 15:50

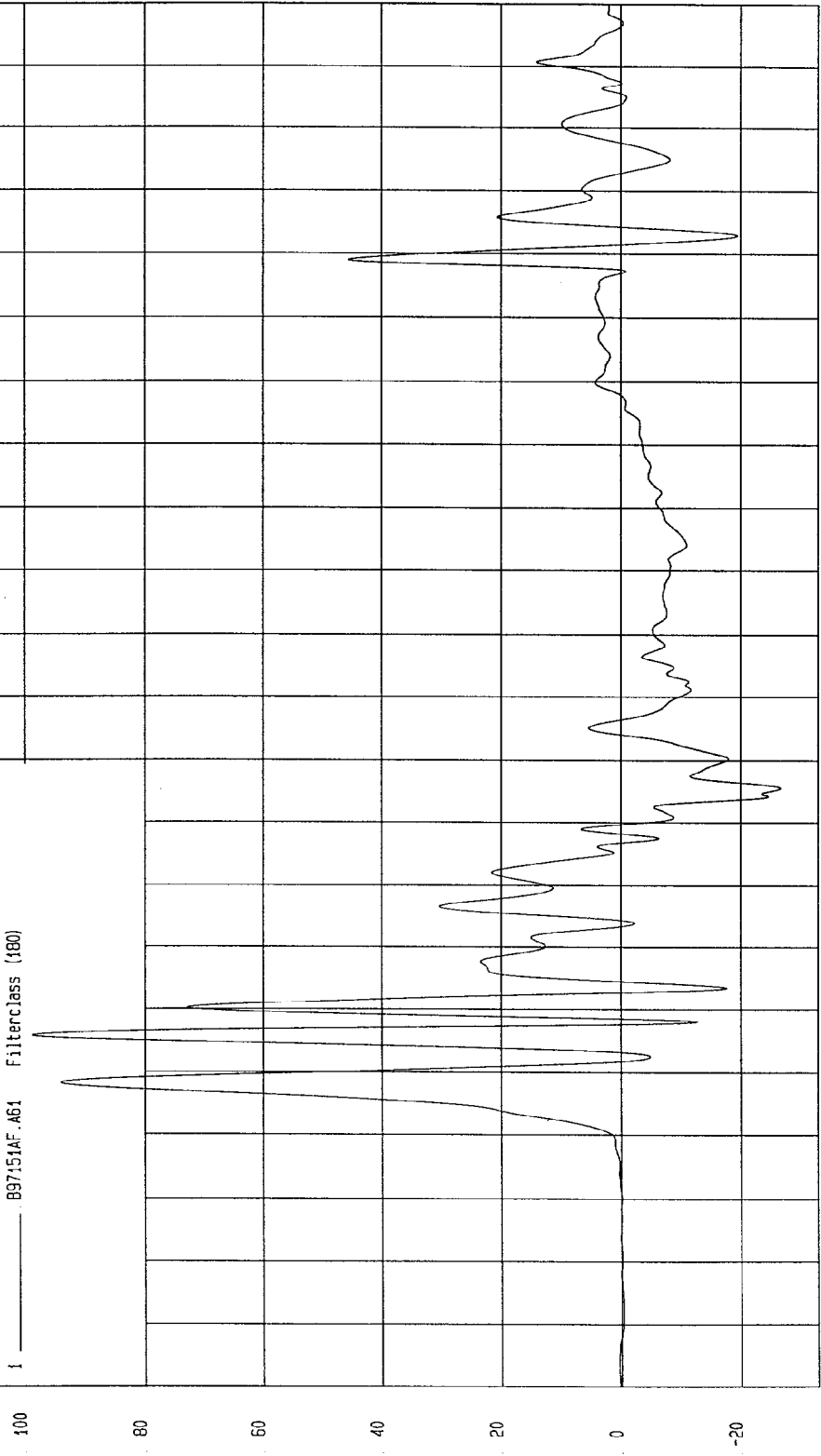
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -25.59 G'S at 76 msec
Maximum = 98.90 G'S at 36 msec

DRIVER UPPER RIB Y REDUNDANT ACCELERATION

1 897151AF.A61 Filterclass (180)



TIME (SECONDS)

19
18
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0.18
0.17
0.16
0.15
0.14
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0.11
0.1
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0.07
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0.05
0.04
0.03
0.02
0.01
0
-0.01
-0.02

NSA Research
12-22-1997 15:30

G.S

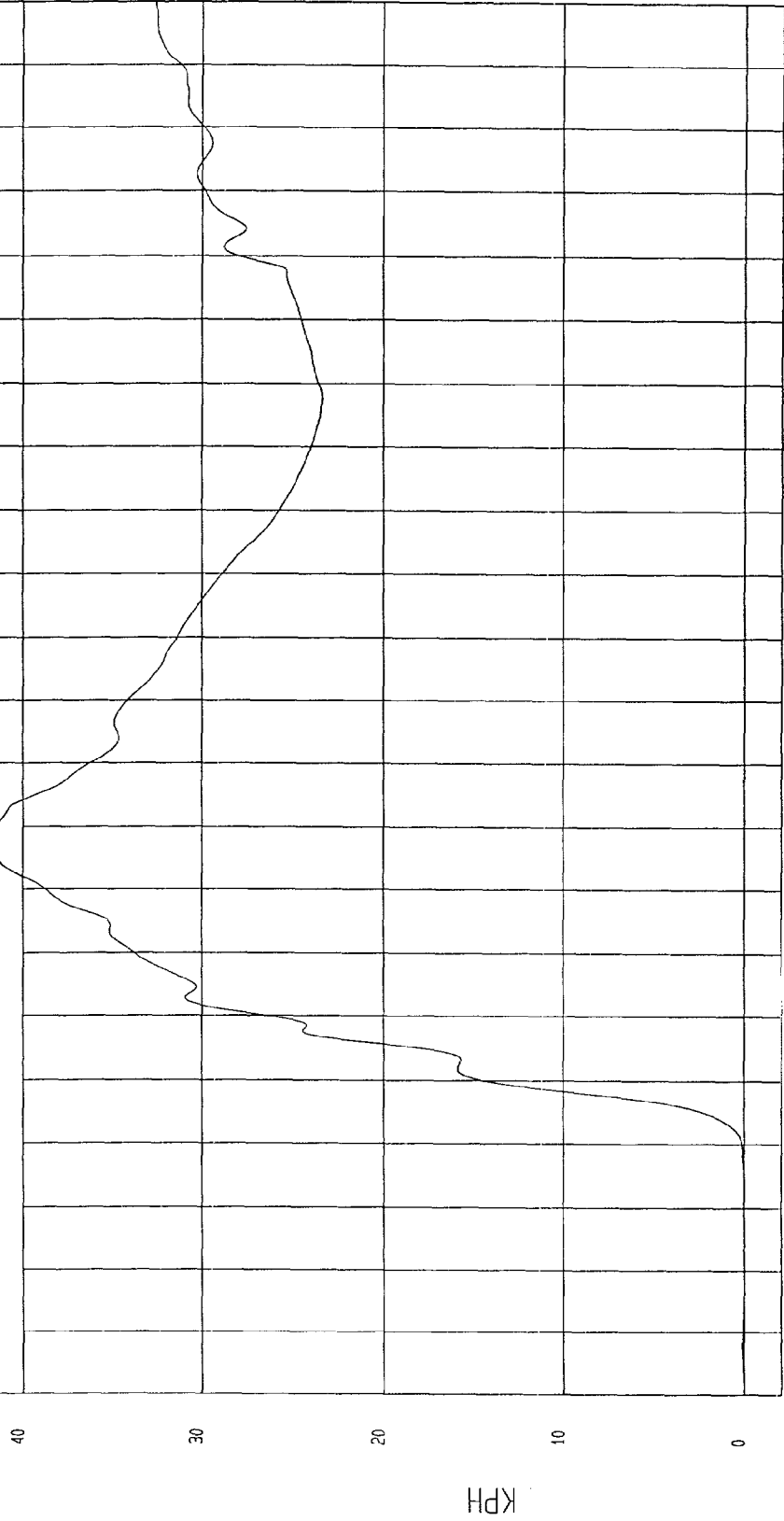
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -2.55E-02 KPH at 3 msec
Maximum = 41.51 KPH at 70 msec

DRIVER UPPER RIB Y REDUNDANT VELOCITY

1 — 897151A1.V61 FilterClass (f80)



MSA Research
12-22-1997 15:42

TIME Seconds

KPH

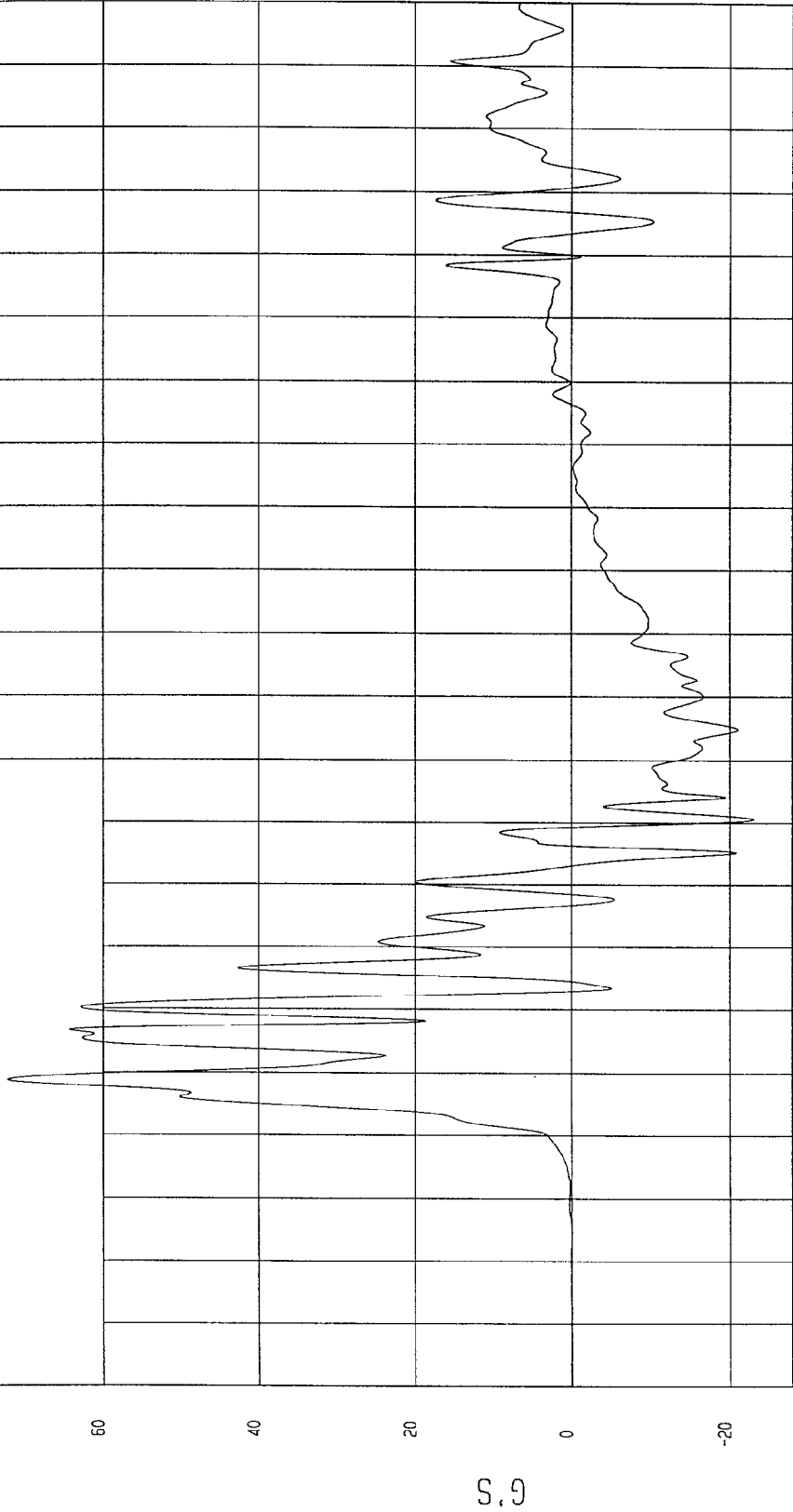
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -22.97 G'S at 71 msec
Maximum = 72.16 G'S at 29 msec

DRIVER LOWER RIB Y REDUNDANT ACCELERATION

1 897151AF.A62 FilterClass (180)



TIME (SECONDS)

MCA Research
12-22-1997 15:31

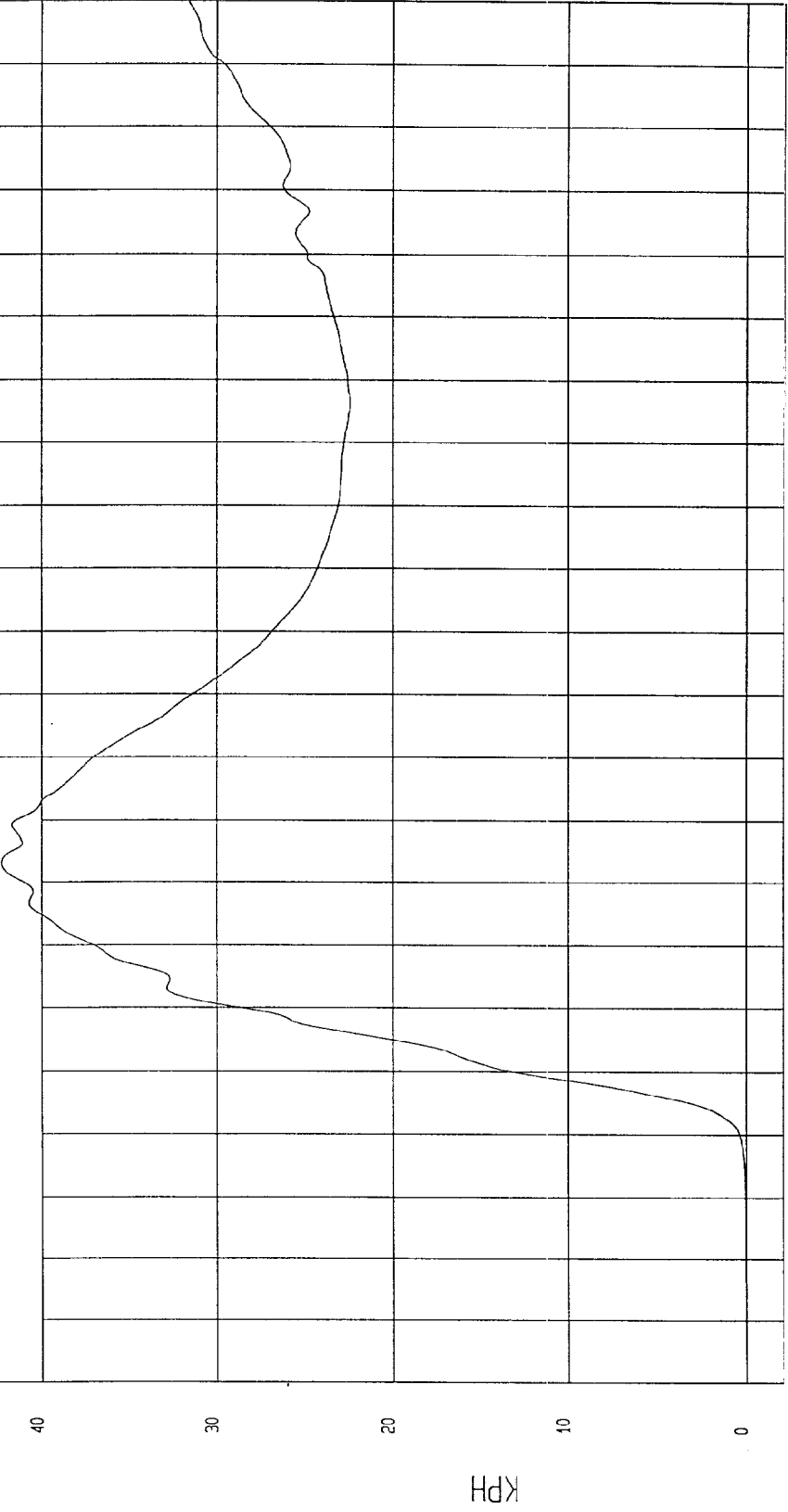
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = 0 KPH at -20 msec Maximum = 42.26 KPH at 63 msec

DRIVER LOWER RIB Y REDUNDANT VELOCITY

1 ——— 897151A1.V62 Filterclass (180)

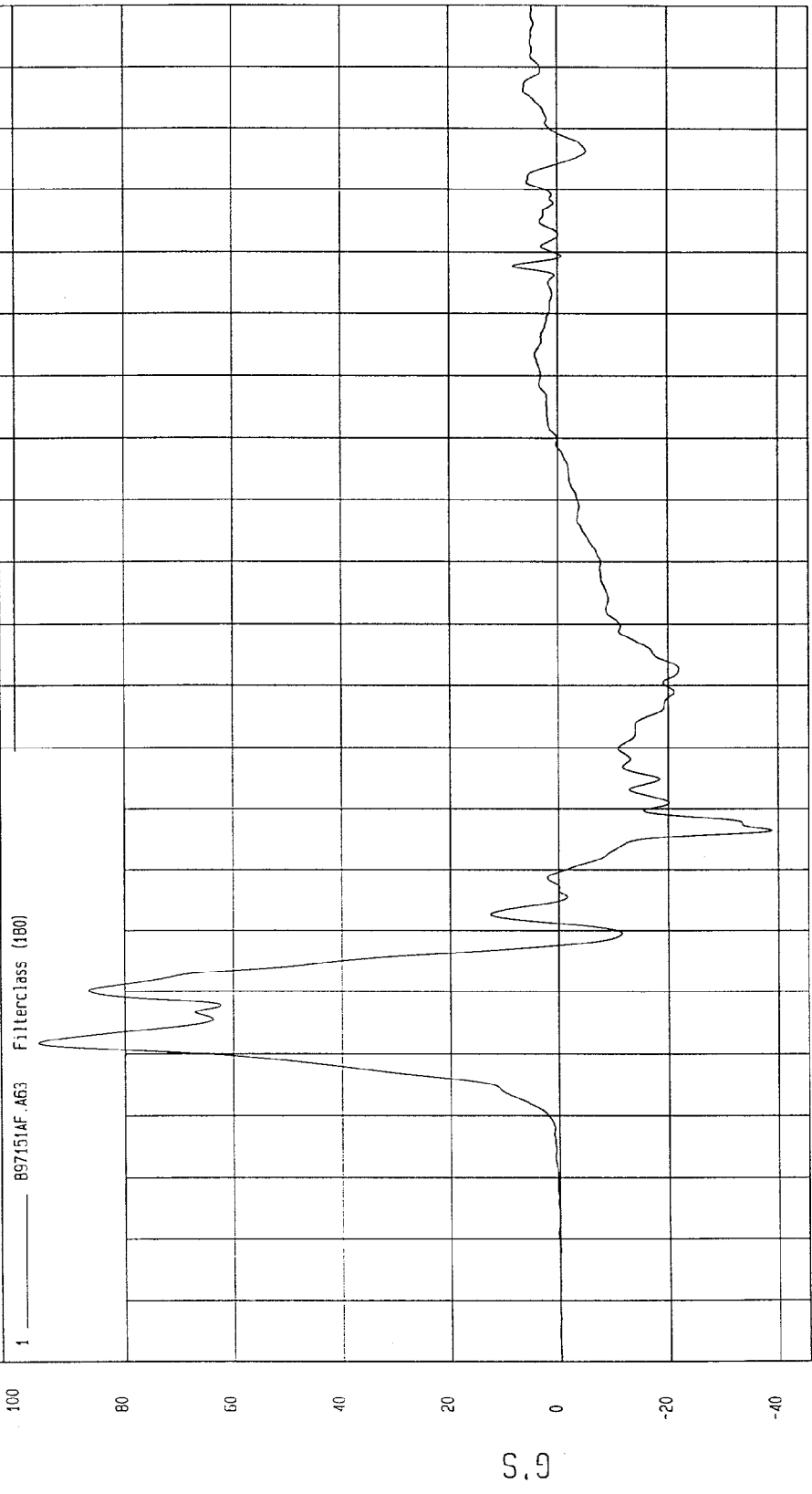


TIME Seconds
MOA Research
12-22-1997 15:42

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997
COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -38.91 G'S at 66 msec Maximum = 95.96 G'S at 32 msec

DRIVER LOWER SPINE Y REDUNDANT ACCELERATION



TIME (SECONDS) WSA Research 12-22-1997 15:31

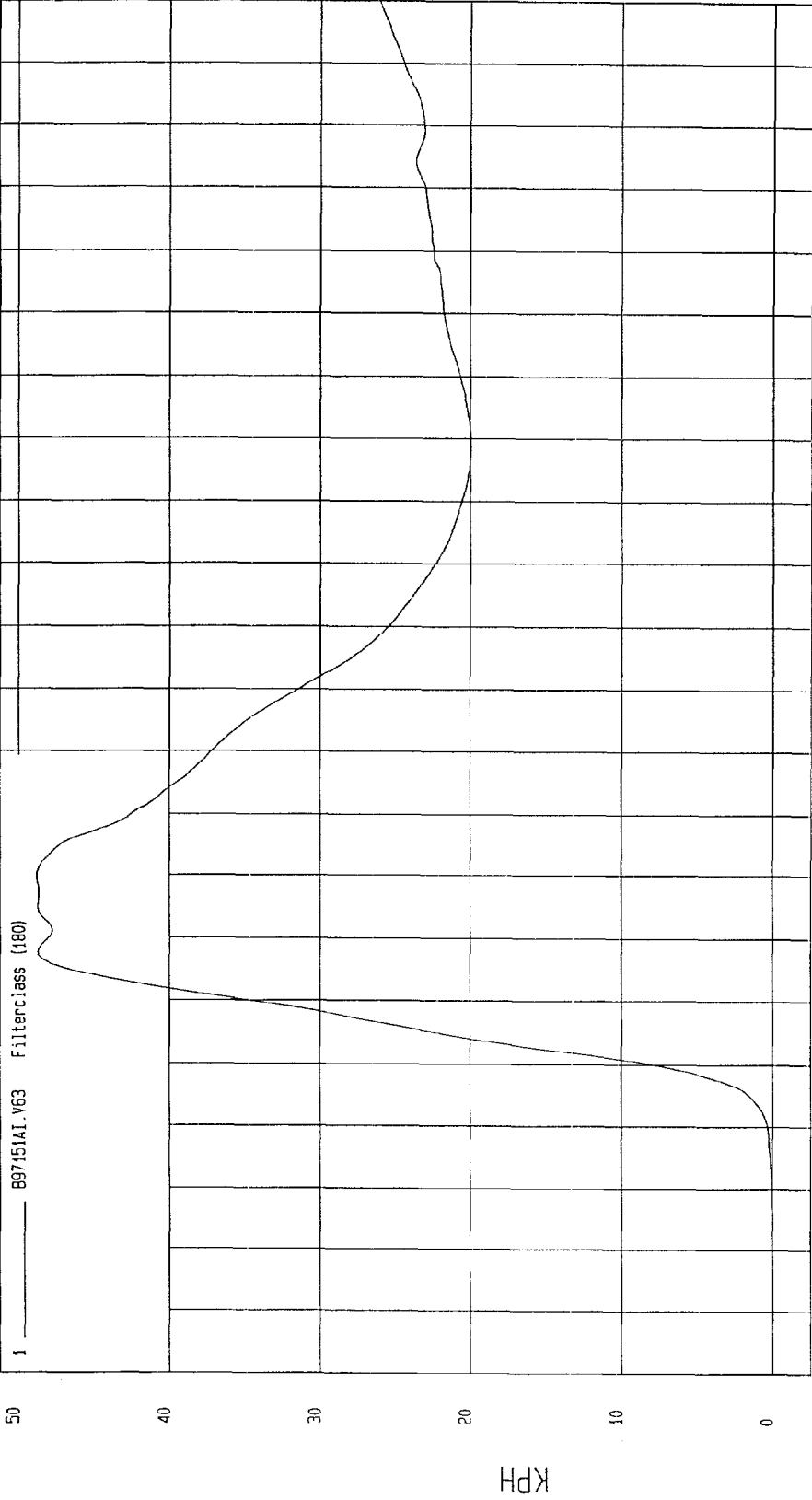
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MWO115) Speed: 38 MPH 61.2 KPH

Minimum = -4.54E-03 KPH at 0 msec
Maximum = 48.79 KPH at 60 msec

DRIVER LOWER SPINE Y REDUNDANT VELOCITY

1 897151A1.V63 Filterclass (180)



MCA Research
12-22-1997 15: 43

TIME Seconds

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -22.05 G'S at 65 msec
Maximum = 102.78 G'S at 34 msec

DRIVER PELVIS Y REDUNDANT ACCELERATION

1 697151AF.A65 Filterclass (180)



MCA Research
12-22-1997 15:31

TIME (SECONDS)

G.S

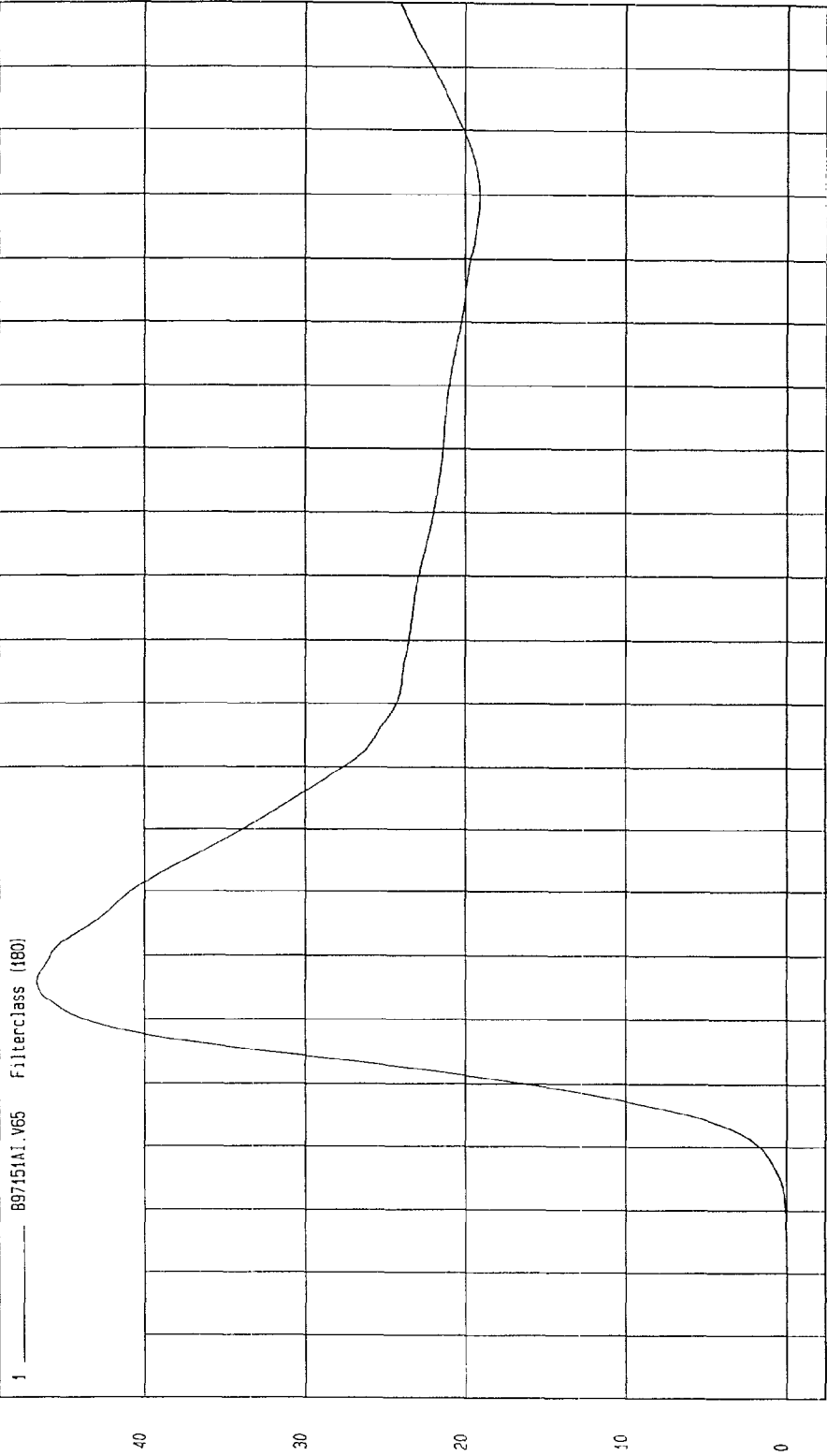
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -7.82E-03 KPH at 3 msec
Maximum = 46.72 KPH at 45 msec

DRIVER PELVIS Y REDUNDANT VELOCITY

1 _____ 897151A1.V65 FilterClass (f80)



MCA Research
12-22-1997 15:43

TIME Seconds

KPH

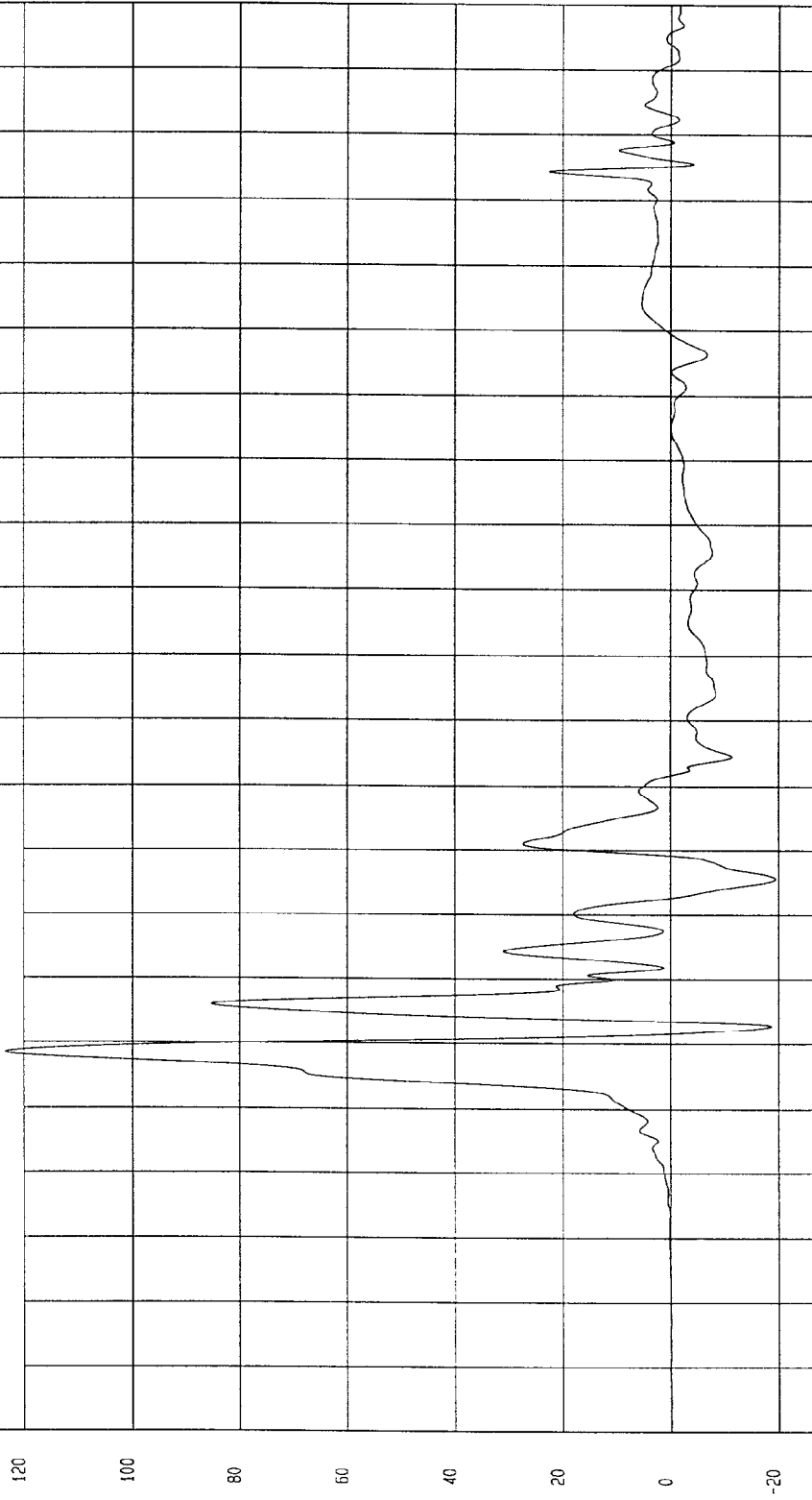
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -19.44 G'S at 66 msec Maximum = 123.39 G'S at 36 msec

REAR PASSENGER UPPER RIB Y REDUNDANT ACCELERATION

1 B97151AF.A66 Filterclass (480)



MOA Research
12-22-1997 15:31

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

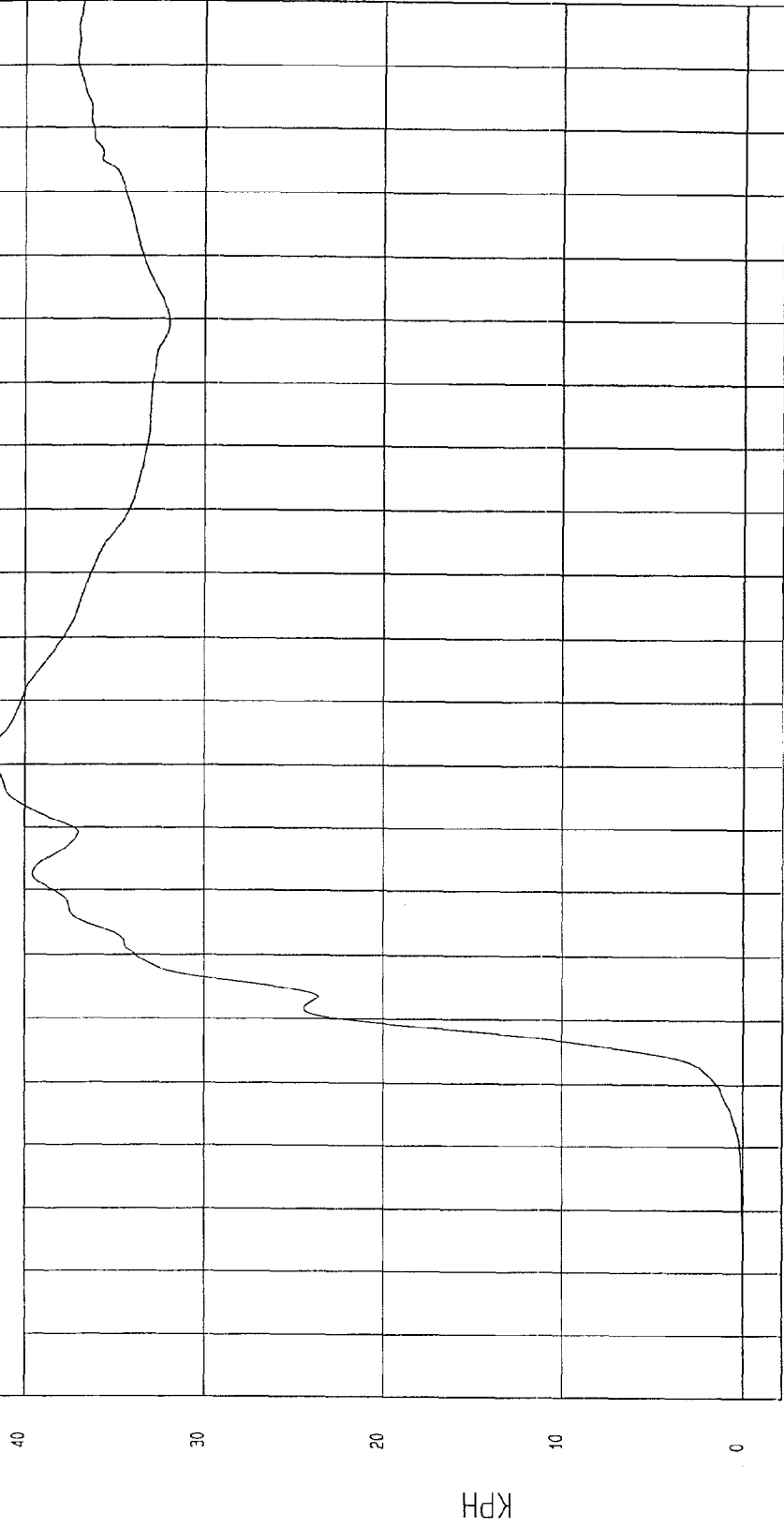
COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -4.12E-03 KPH at -13 msec

Maximum = 41.66 KPH at 62 msec

REAR PASSENGER UPPER RIB Y REDUNDANT VELOCITY

1 897151A1.V66 Filterclass (180)



MSA Research
12-22-1997 15:43

TIME Seconds

KPH

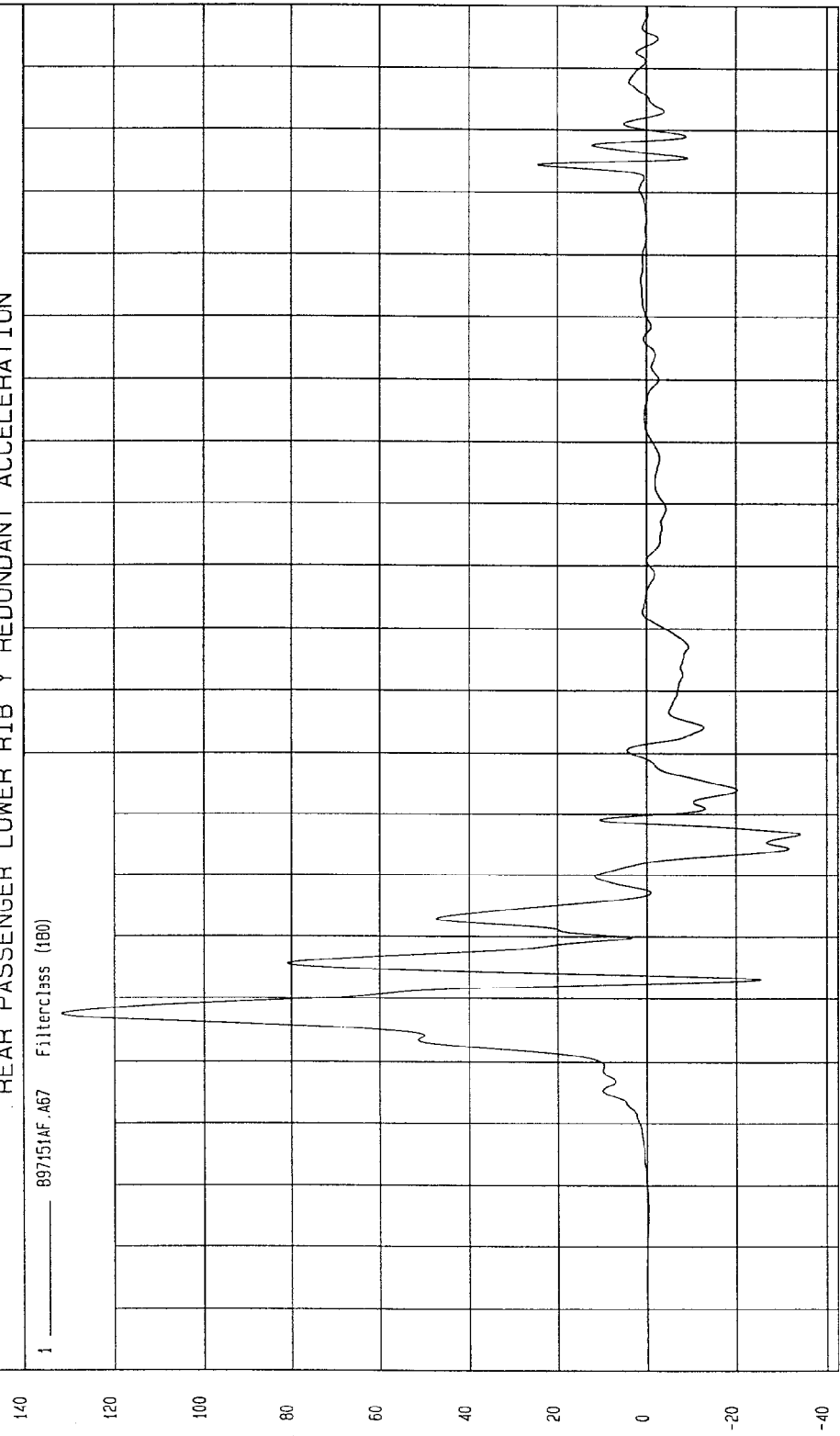
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -34.20 G'S at 67 msec
Maximum = 131.91 G'S at 38 msec

REAR PASSENGER LOWER RIB Y REDUNDANT ACCELERATION

1 897151AF.A67 Filterclass (180)



MCA Research
12-22-1997 13:31

TIME (SECONDS)

G.S

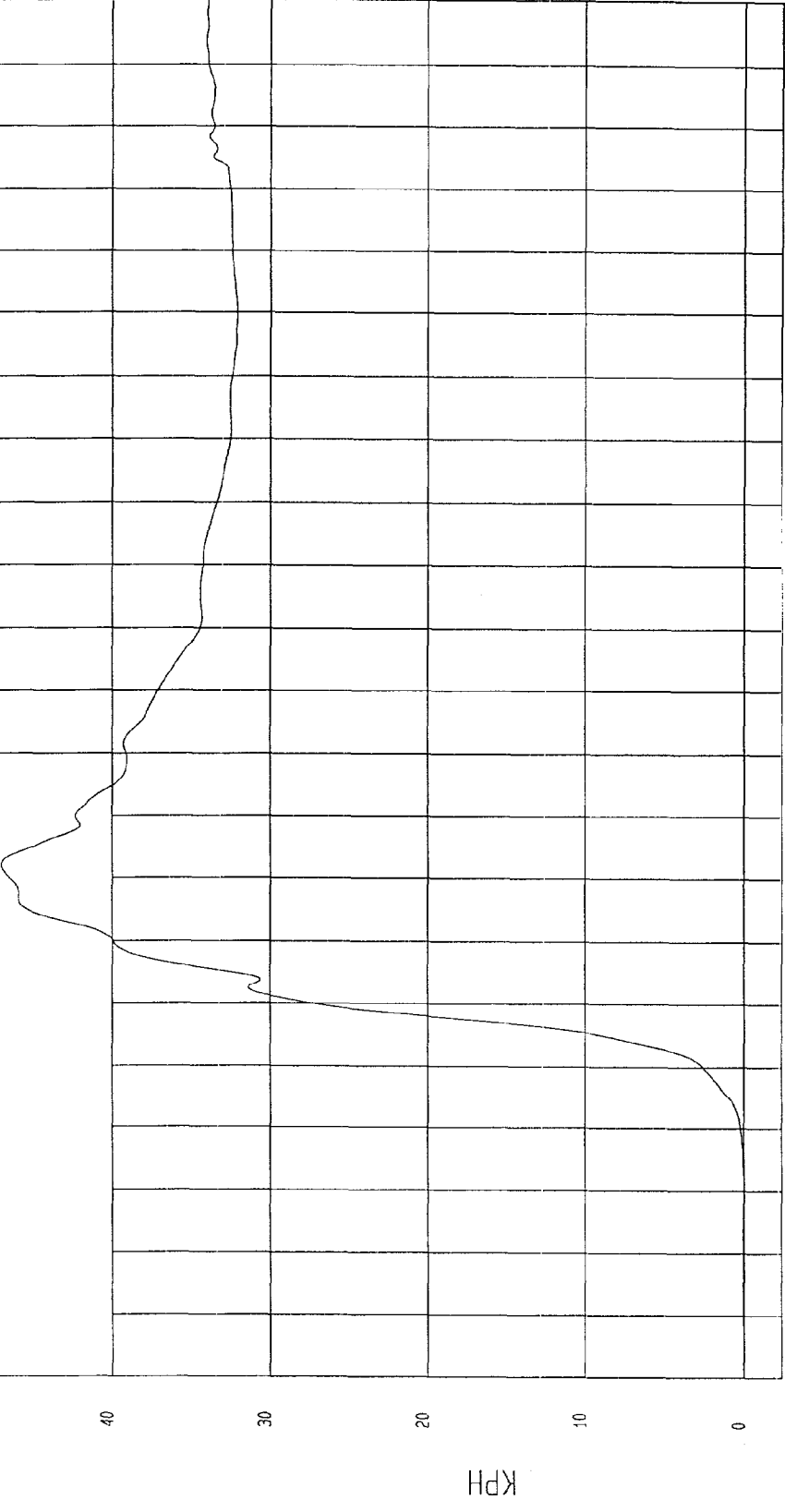
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -5.04E-03 KPH at 10 msec Maximum = 47.04 KPH at 62 msec

REAR PASSENGER LOWER RIB Y REDUNDANT VELOCITY

1 897451A1 V67 FilterClass (180)



MCA Research
12-22-1997 15:43

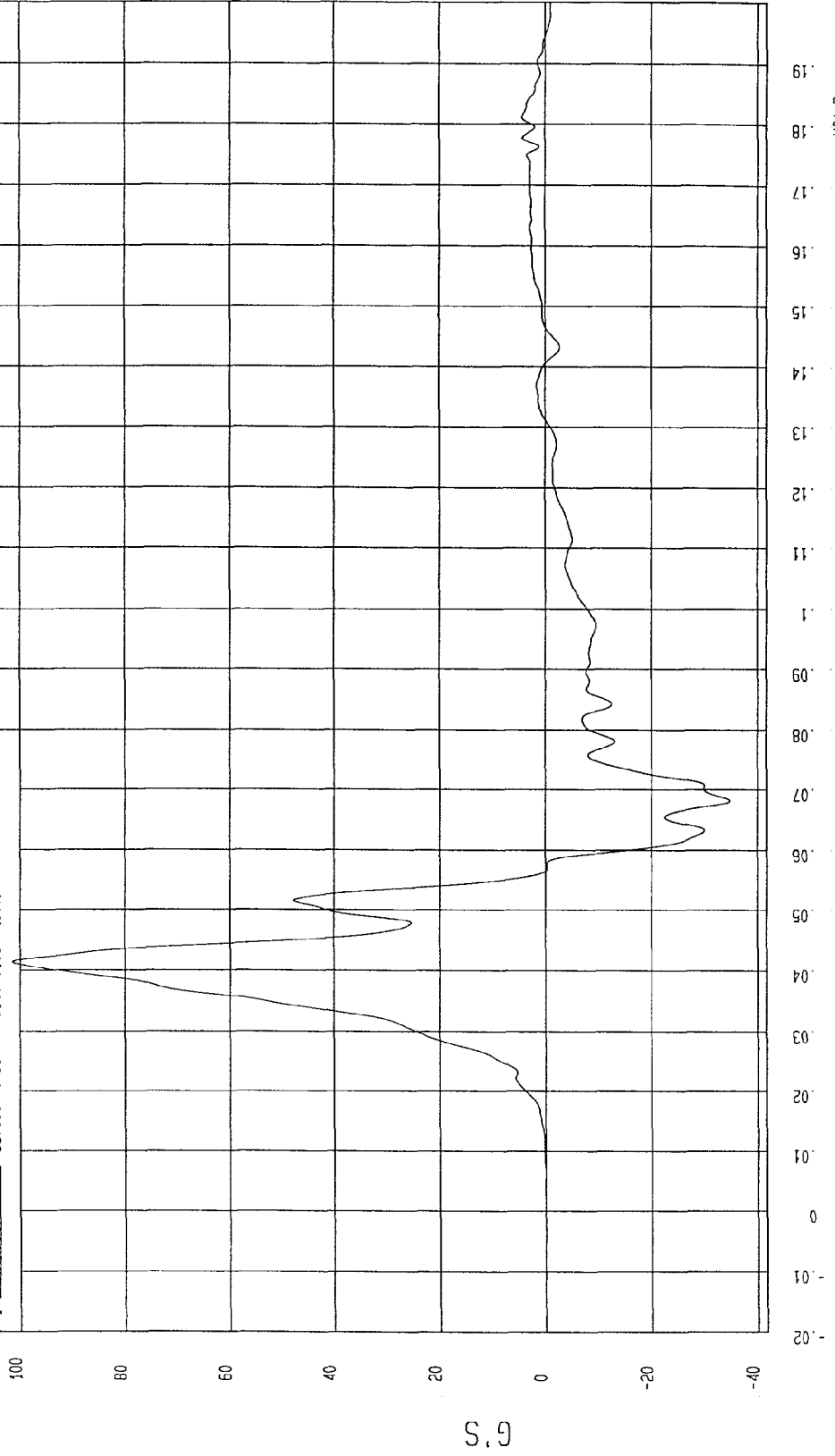
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -34.82 G'S at 68 msec Maximum = 101.57 G'S at 42 msec

REAR PASSENGER LOWER SPINE Y REDUNDANT ACCELERATION

1 897151AF.A68 Filterclass (180)



MCA Research
12-22-1997 15:31

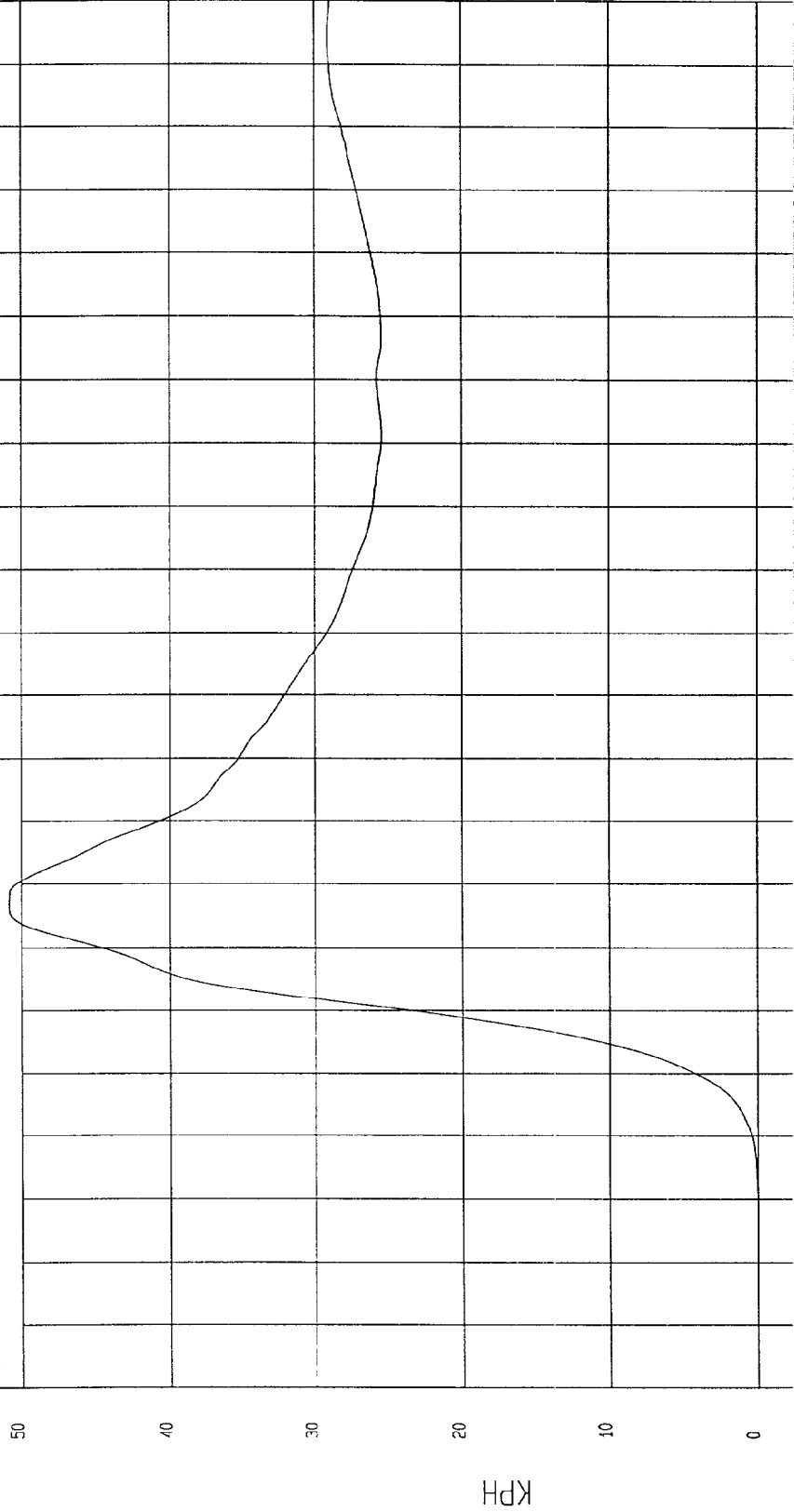
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -1.51E-04 KPH at -8 msec
Maximum = 50.84 KPH at 56 msec

REAR PASSENGER LOWER SPINE Y REDUNDANT VELOCITY

1 ——— B97151A1.V68 Filterclass (180)



MSA Research
12-22-1997 15:43

TIME Seconds

KPH

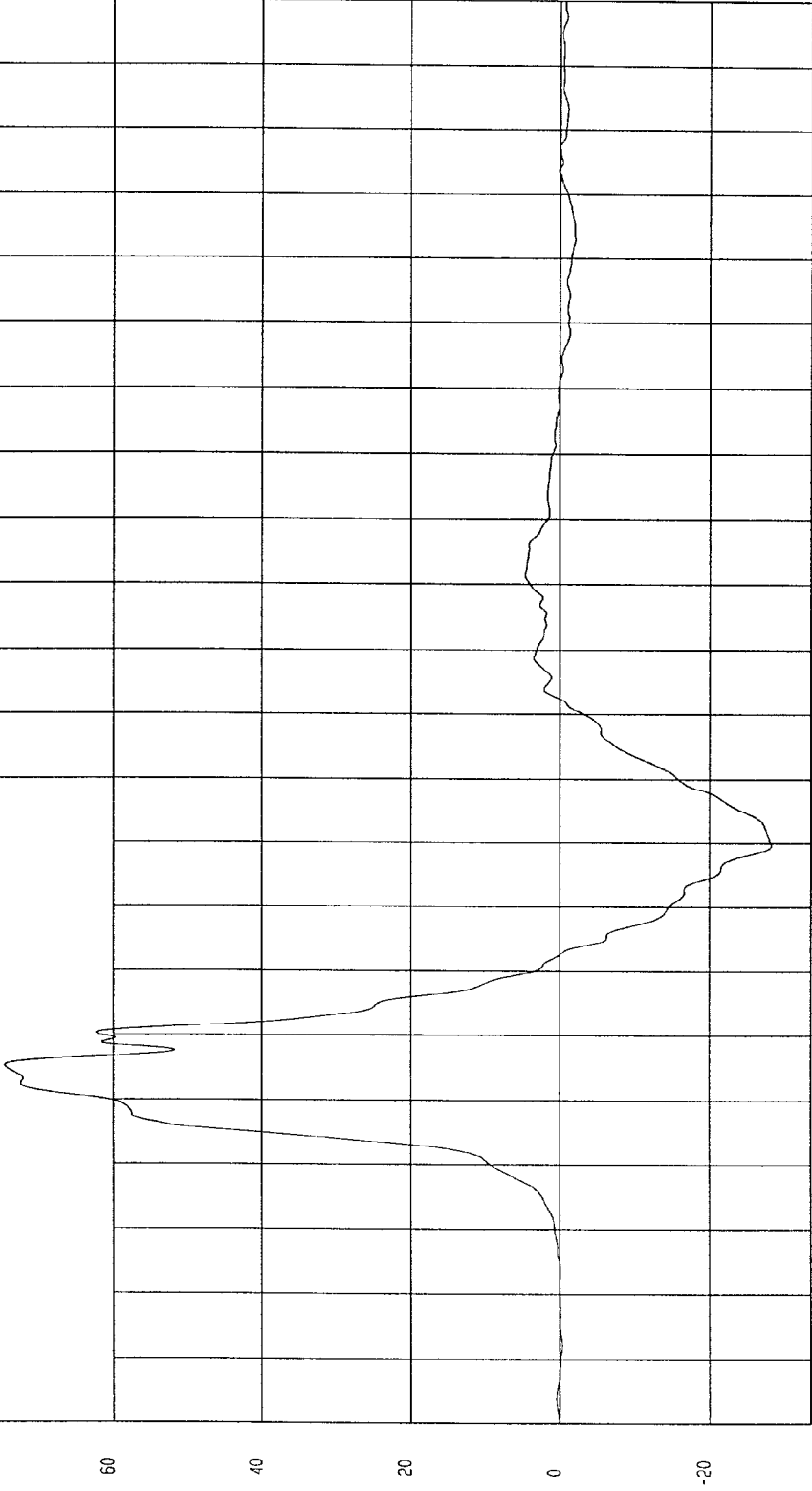
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -20.25 G'S at 70 msec
Maximum = 74.63 G'S at 35 msec

REAR PASSENGER PELVIS Y REDUNDANT ACCELERATION

1 ——— 897151AF.A69 Filterclass (180)



MEGA PRESS CO.
12-22-1997 15:31

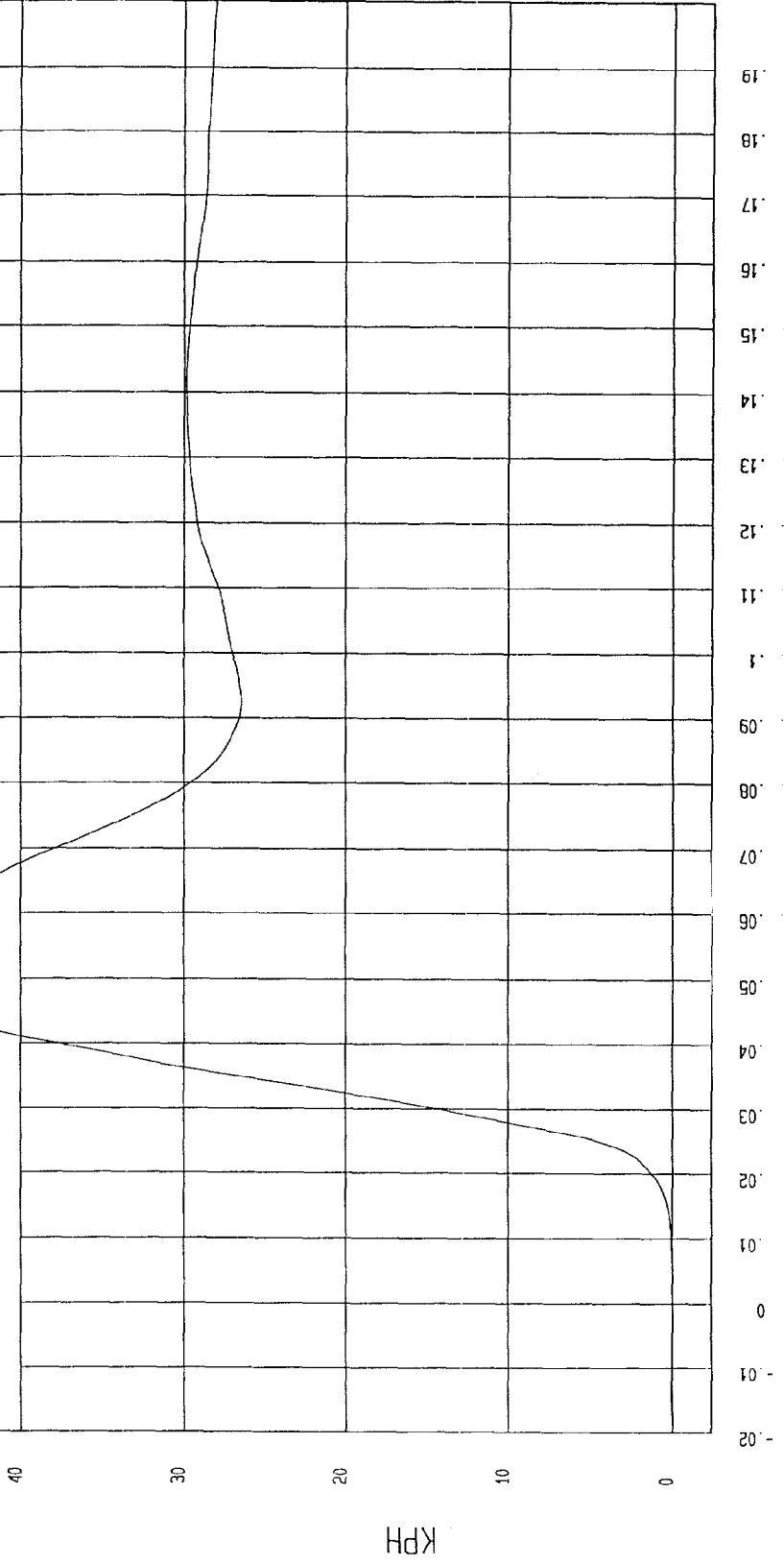
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -2.59E-03 KPH at 4 msec
Maximum = 47.27 KPH at 52 msec

REAR PASSENGER PELVIS Y REDUNDANT VELOCITY

1 ——— 897151A1.V69 FilterClass (180)



MEA Research
12-22-1997 15:43

TIME Seconds

KPH

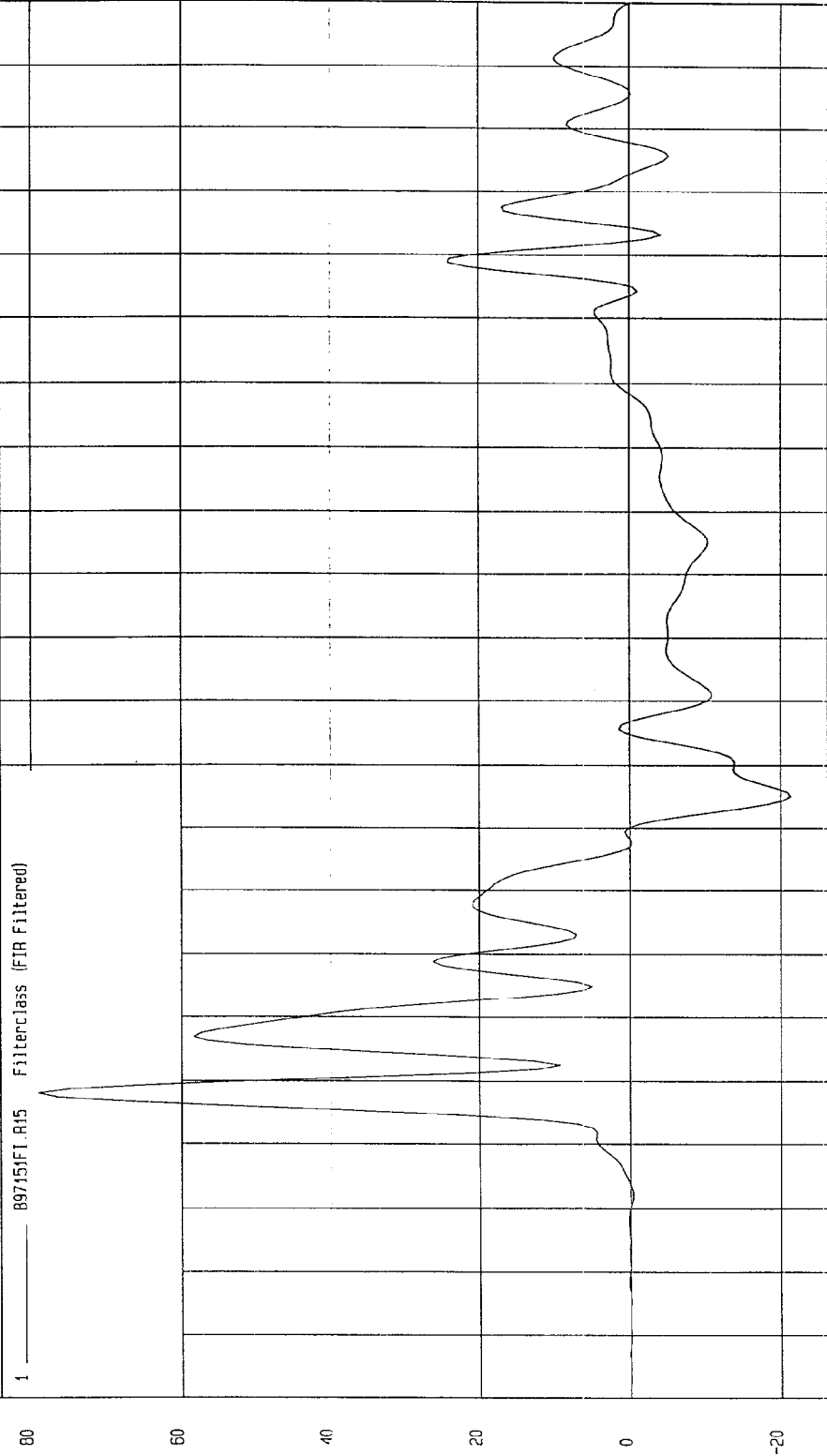
FINITE IMPULSE RESPONSE (FIR) FILTERED DATA

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -21.25 G's at 75 msec Maximum = 79.07 G's at 28 msec

DRIVER UPPER RIB Y ACCELERATION



TIME (SECONDS)

M&A Research
12-17-1997 14.46

S.G

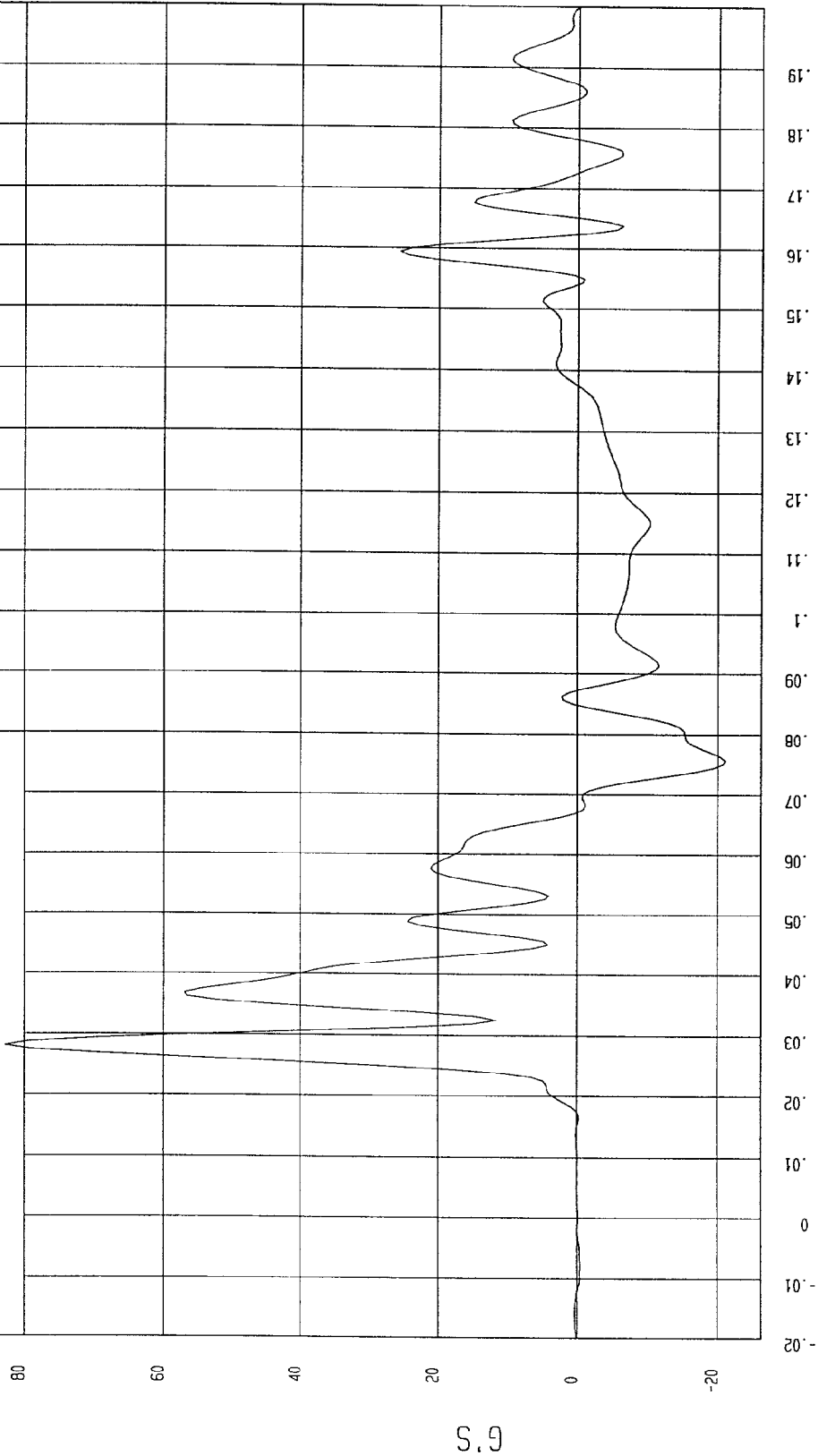
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -21.07 G'S at 76 msec Maximum = 82.66 G'S at 28 msec

DRIVER UPPER RIB Y REDUNDANT ACCELERATION

1 897151F1.R61 Filterclass (FIR Filtered)



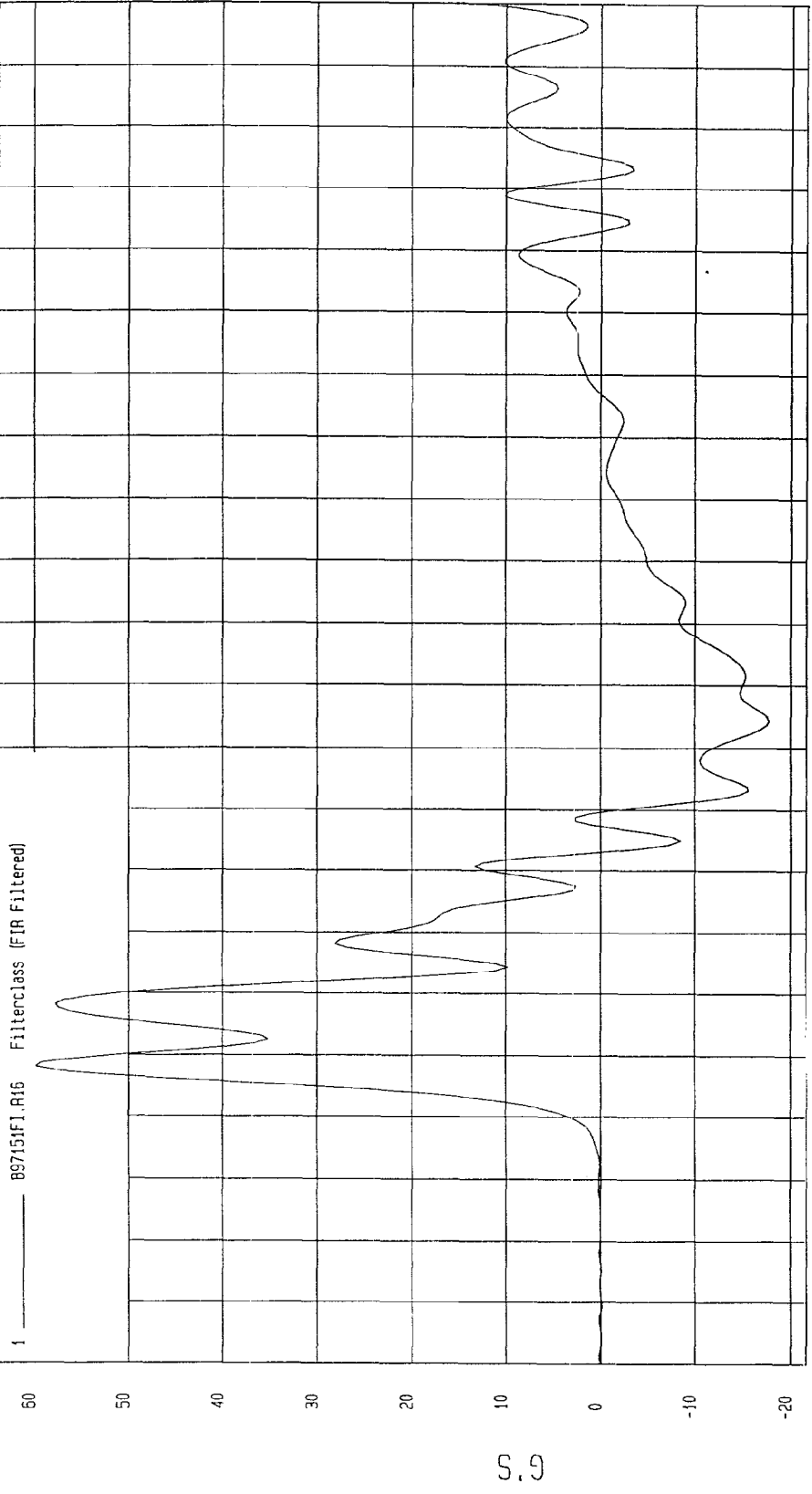
MGA Research
12-22-1997 15:28

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -17.70 G'S at 84 msec Maximum = 59.86 G'S at 28 msec

DRIVER LOWER RIB Y ACCELERATION



TIME (SECONDS)

MCA Research
12-17-1997 14:46

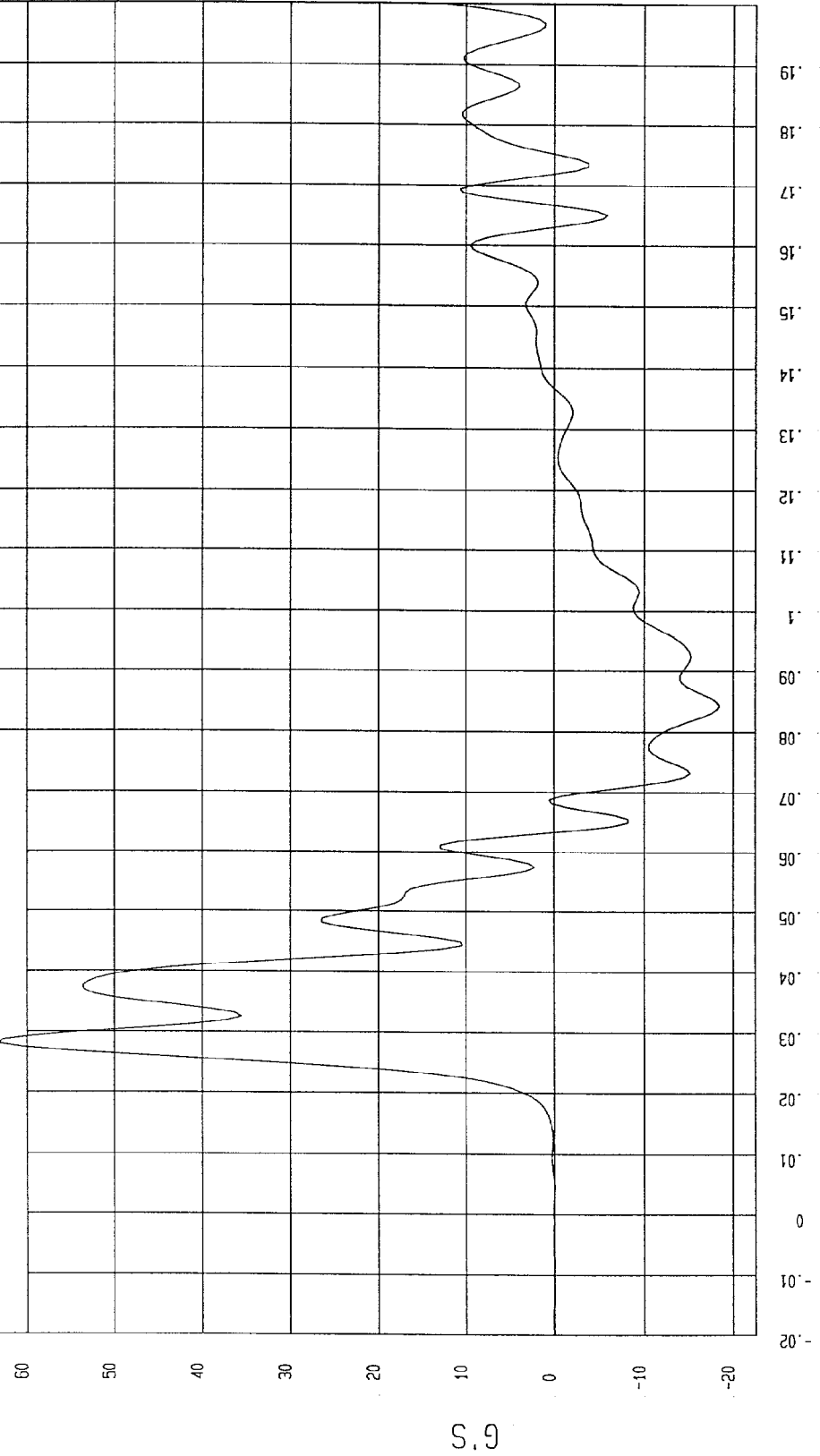
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -18.41 G'S at 84 msec
Maximum = 63.09 G'S at 28 msec

DRIVER LOWER RIB Y REDUNDANT ACCELERATION

1 897151FI.R62 Filterclass (FIR Filtered)



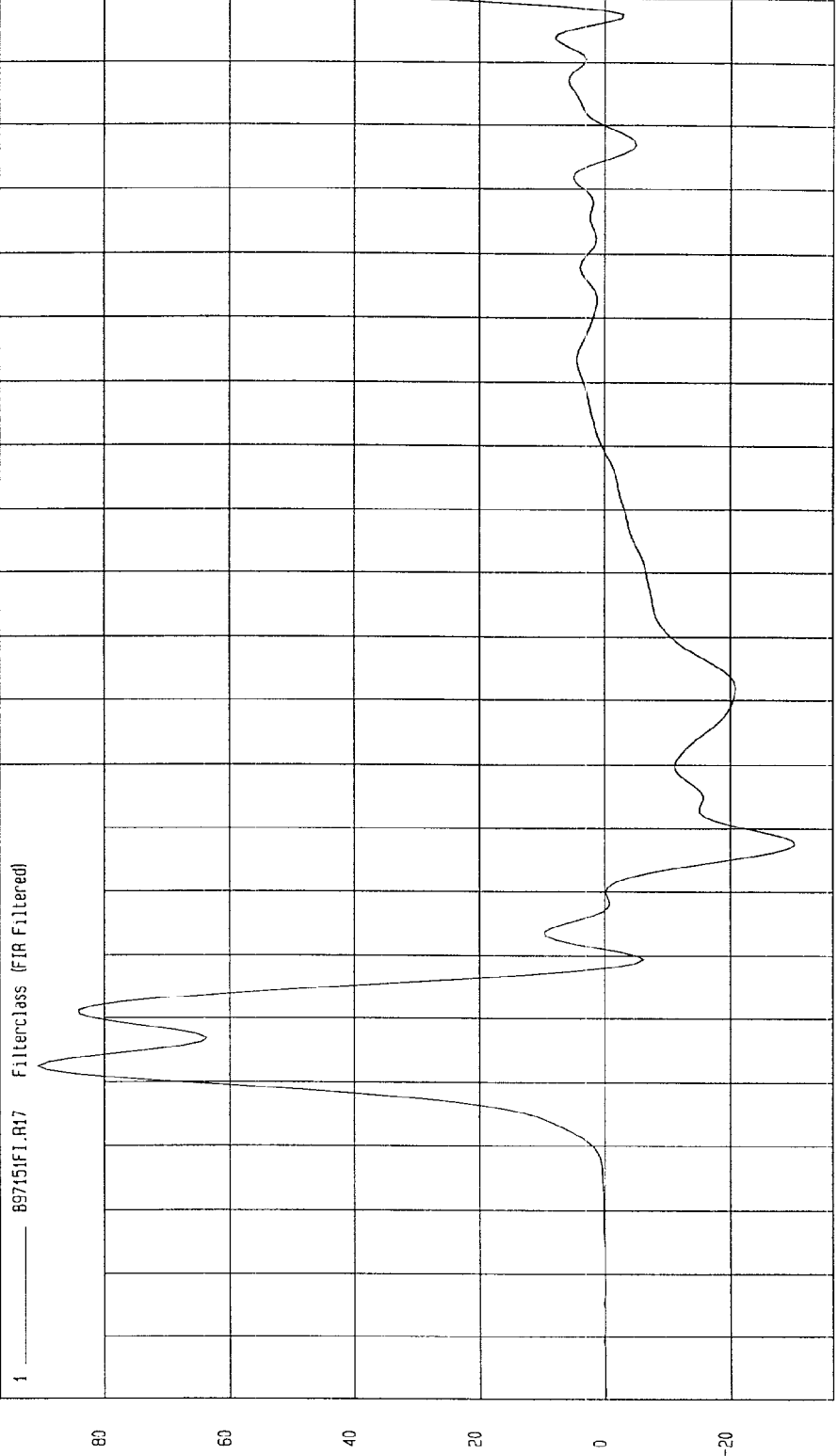
MCA Research
12-22-1997 13:28

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -30.06 G'S at 68 msec Maximum = 90.42 G'S at 32 msec

DRIVER LOWER SPINE Y ACCELERATION



TIME (SECONDS)

MCA Research
12-17-1997 14:46

S.9

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115)

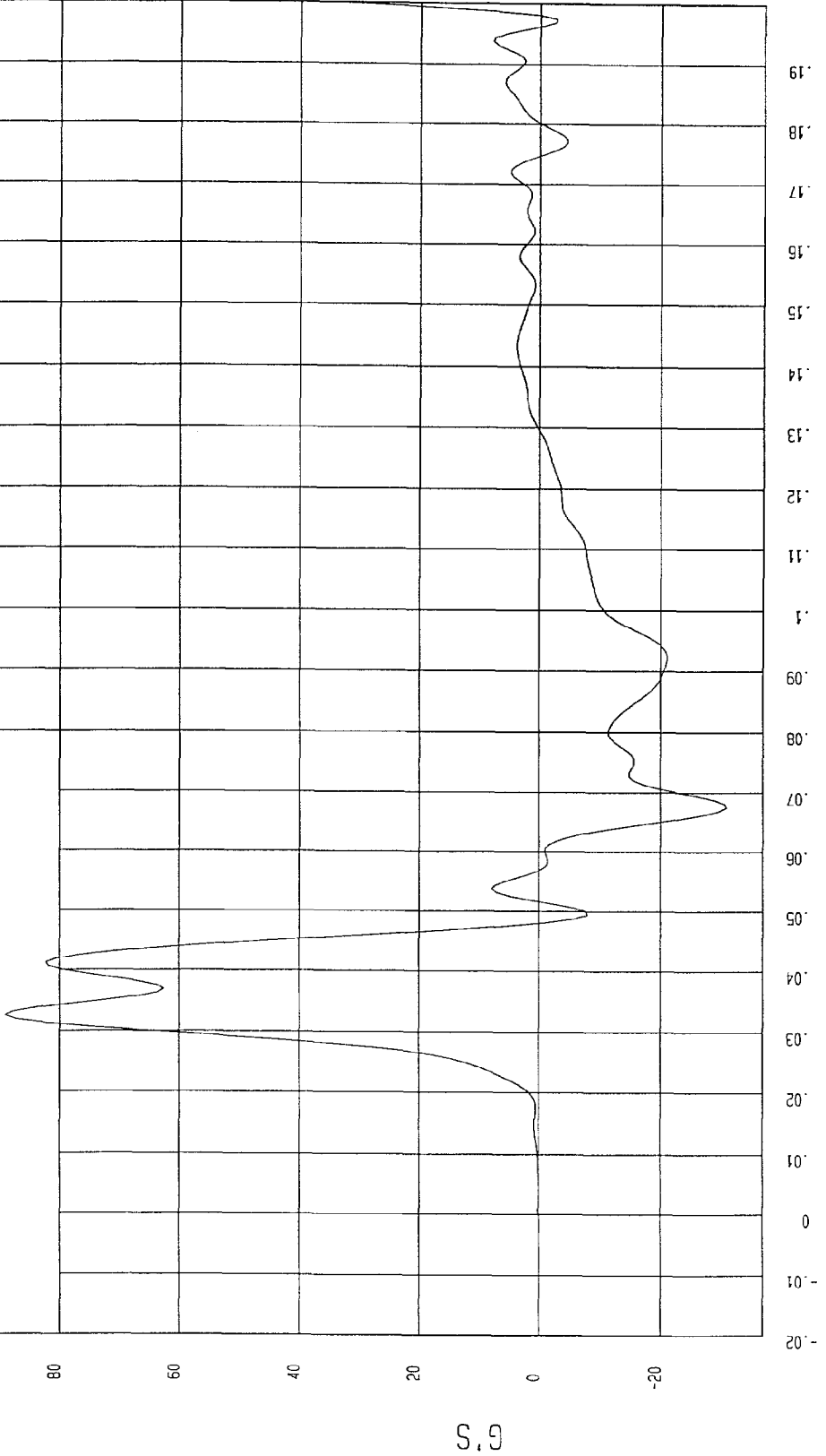
Speed: 38 MPH 61.2 KPH

Minimum = -30.72 G'S at 68 msec

Maximum = 89.04 G'S at 32 msec

DRIVER LOWER SPINE Y REDUNDANT ACCELERATION

1 89715\FI.R63 Filterclass (FIR Filtered)



M&A Research
12-22-1997 15:28

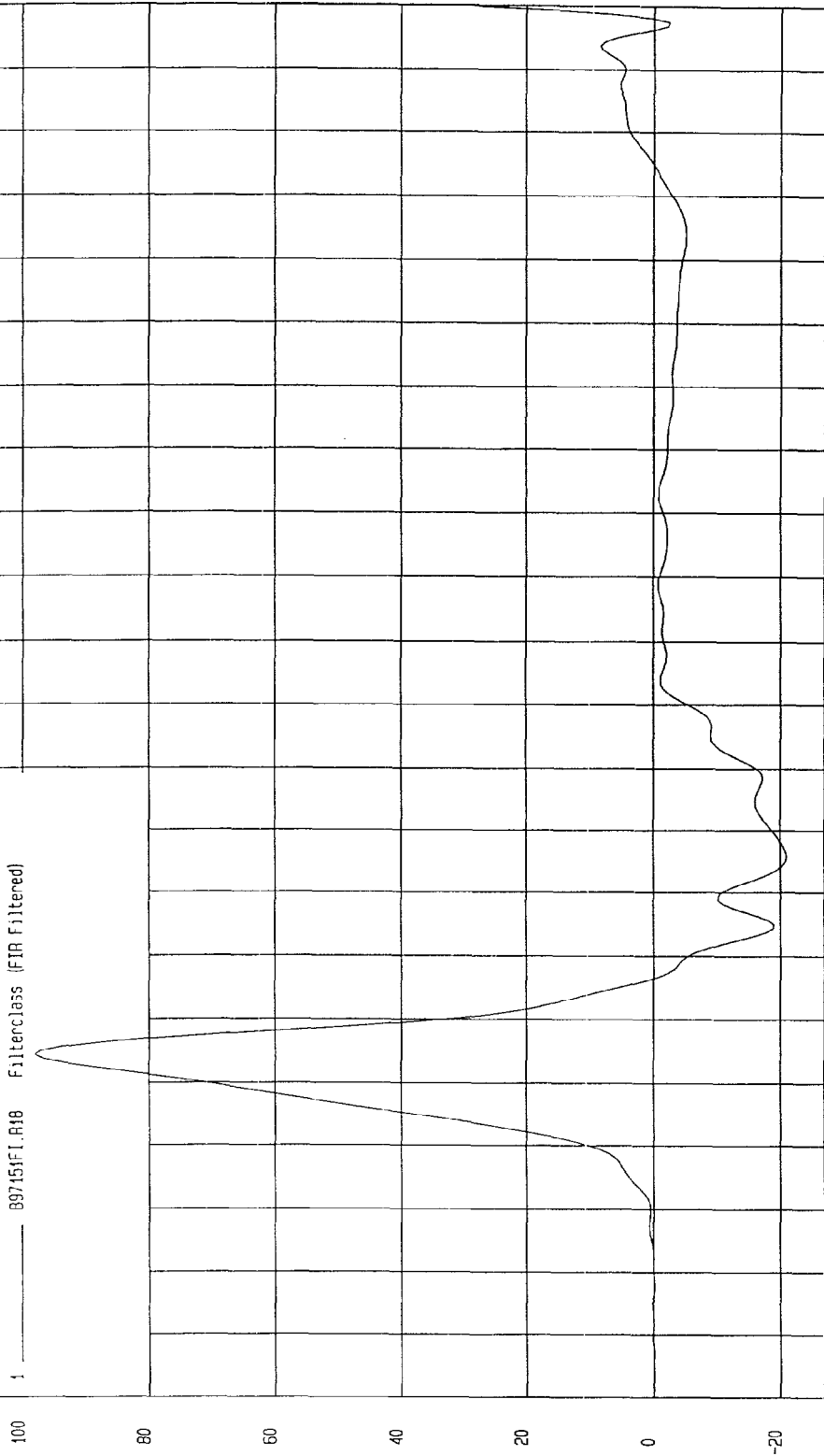
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -20.86 G'S at 66 msec
Maximum = 98.24 G'S at 34 msec

DRIVER PELVIS Y ACCELERATION

1 89715FL.R10 Filterclass (FIR Filtered)



TIME (SECONDS) MGA Research 12-17-1997 14:46

TEST: HIGH SPEED LATERAL IMPACT

TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115)

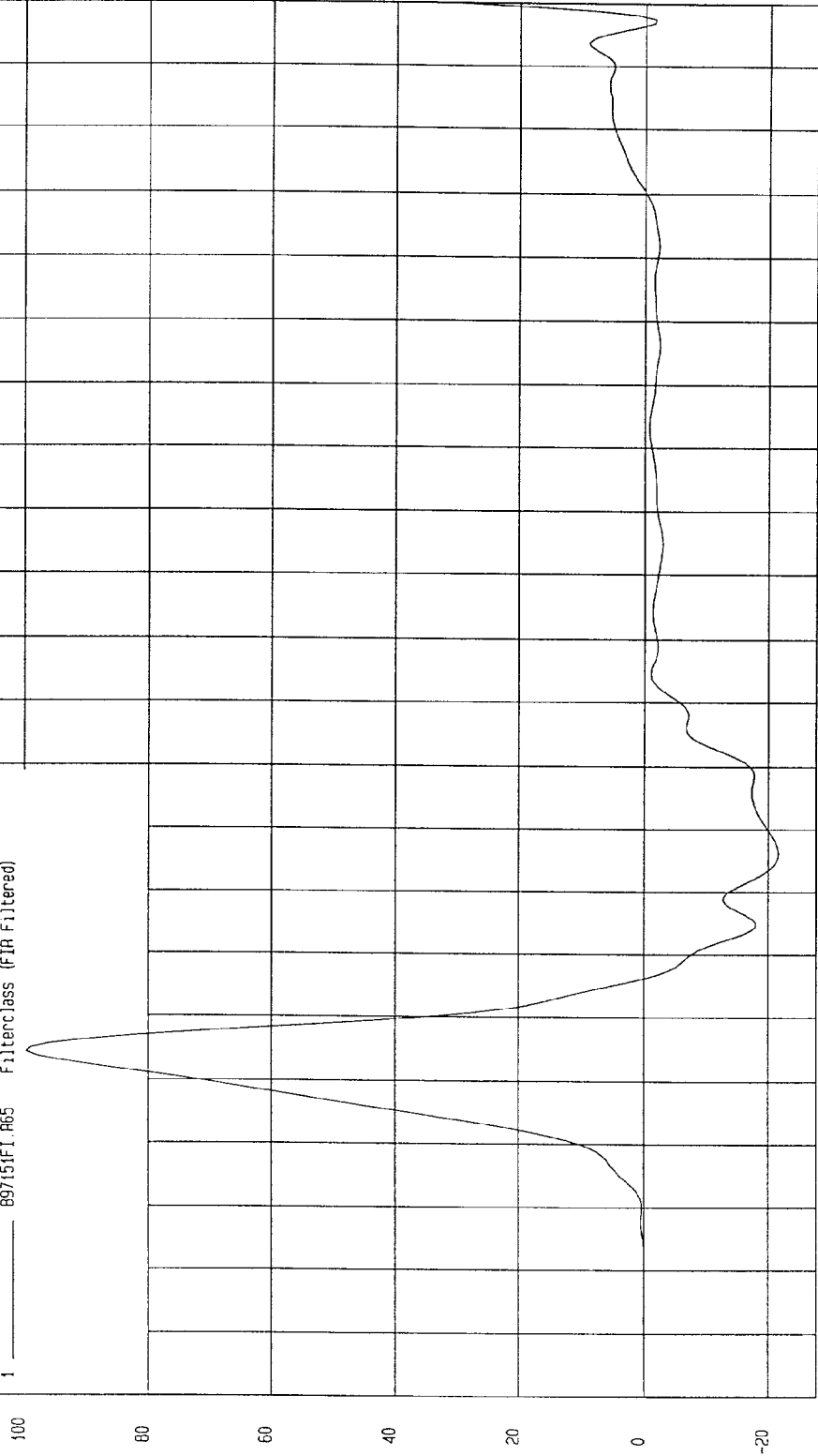
Speed: 38 MPH 61.2 KPH

Minimum = -21.64 G'S at 66 msec

Maximum = 99.71 G'S at 34 msec

DRIVER PELVIS Y REDUNDANT ACCELERATION

1 ——— 097154FI.R65 Filtered (FIR Filtered)



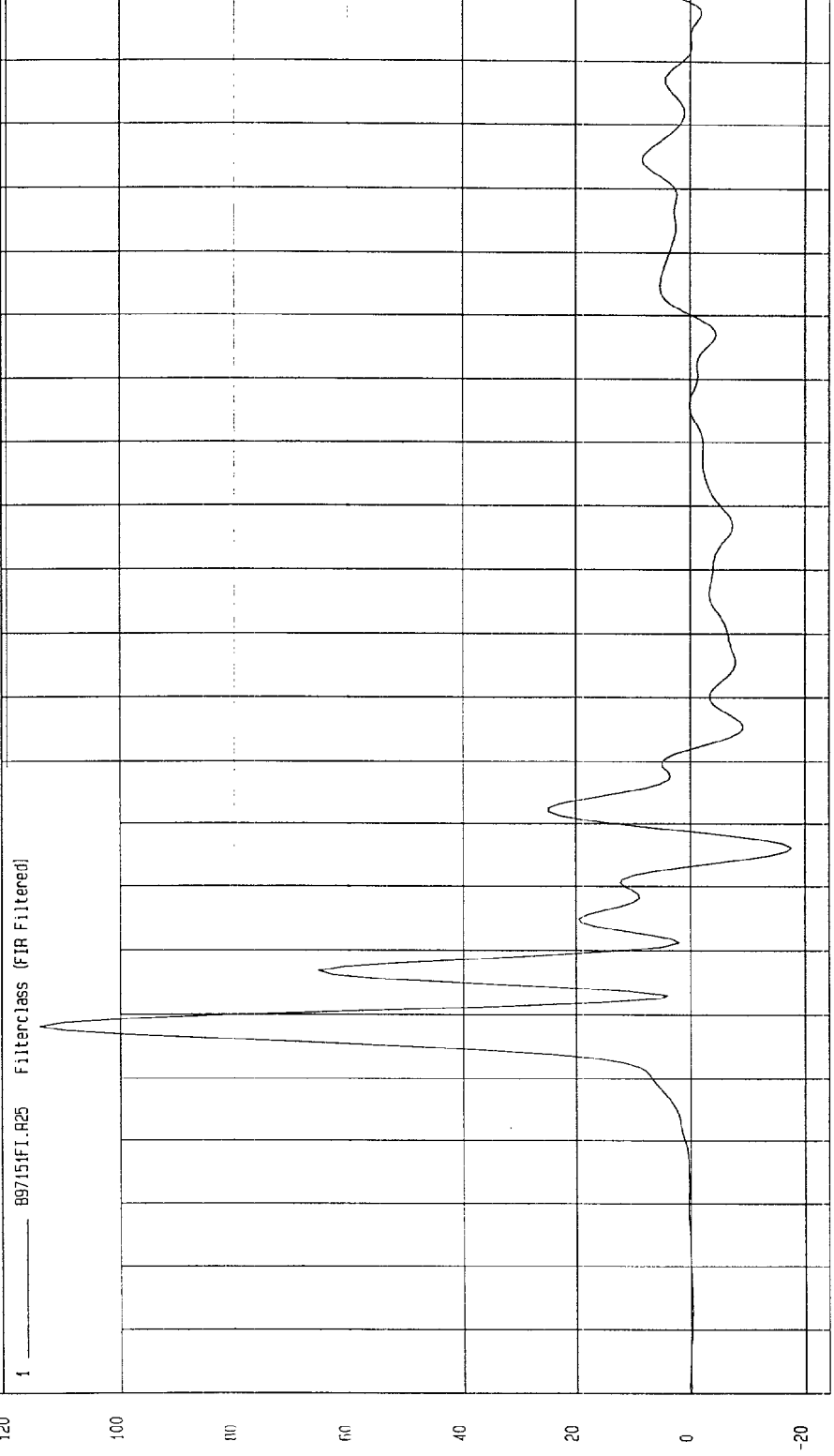
MSA Research
12-22-1997 13:28

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -17.57 G'S at 56 msec Maximum = 114.31 G'S at 38 msec

REAR PASSENGER UPPER RIB Y ACCELERATION



TIME (SECONDS)

MGA Research
12-17-1997 14:46

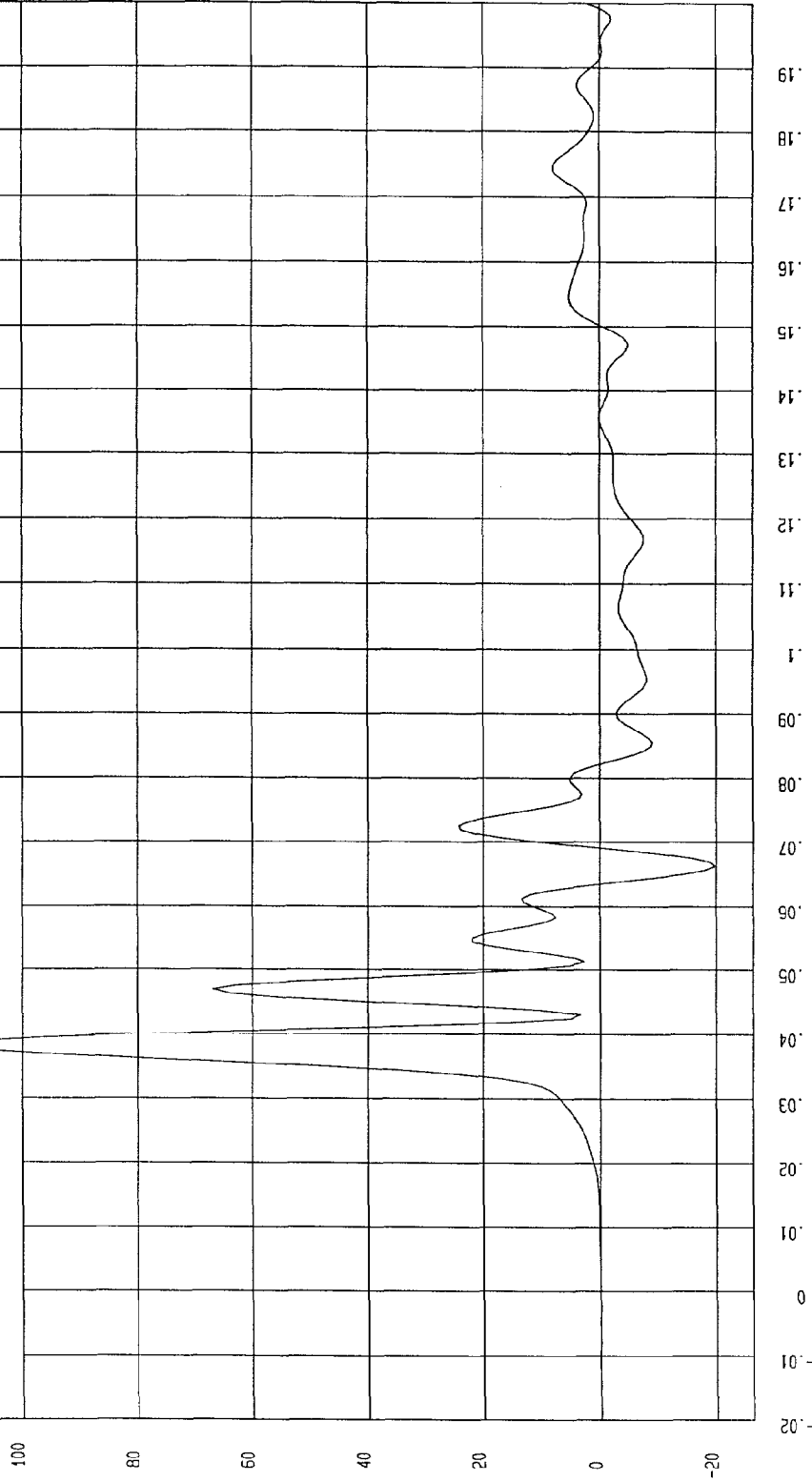
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

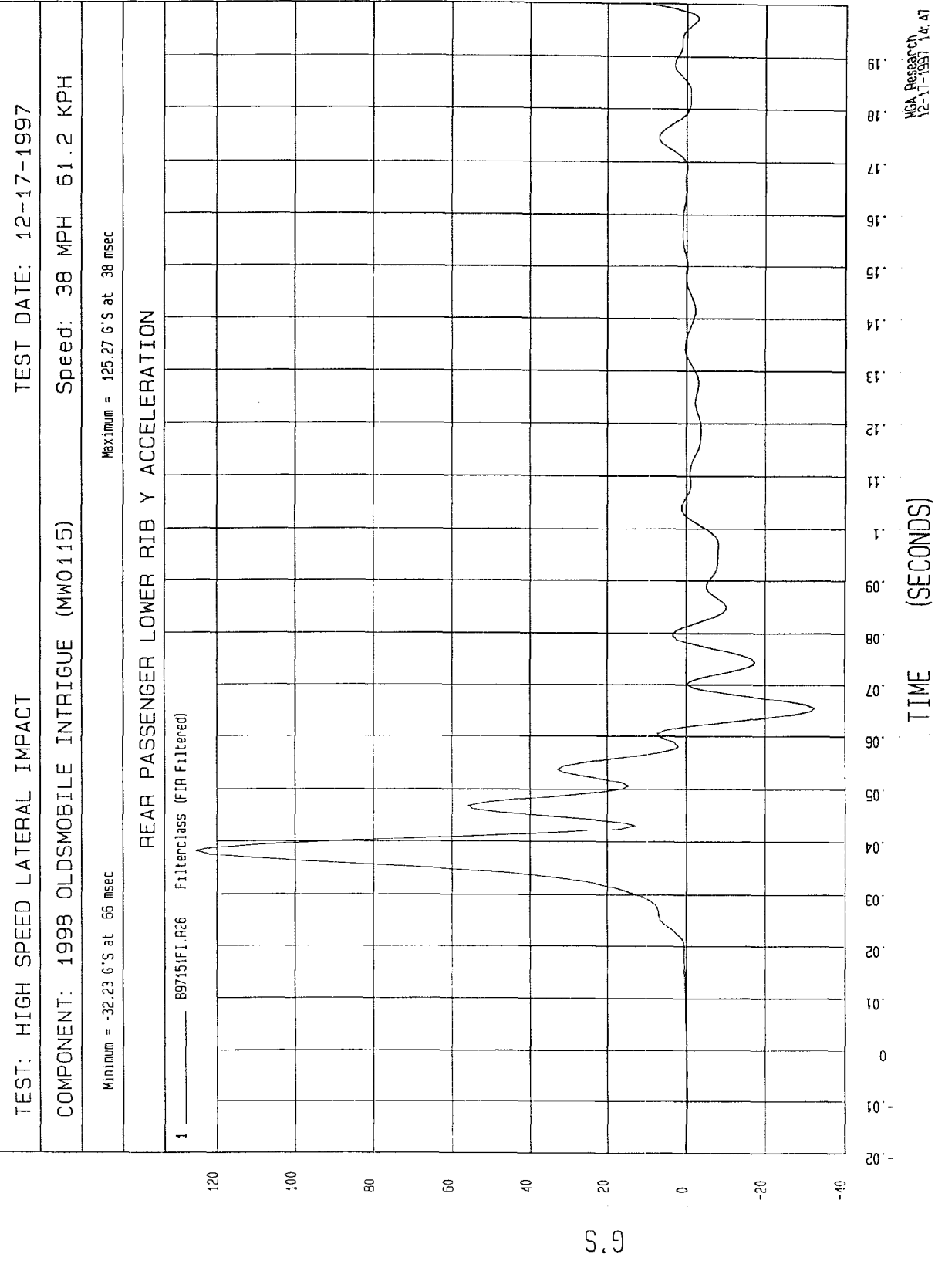
Minimum = -19.72 G'S at 66 msec Maximum = 112.66 G'S at 38 msec

REAR PASSENGER UPPER RIB Y REDUNDANT ACCELERATION

1 897151f1.r66 FilterClass (FIR Filtered)



MOA Research
12-22-1997 15:28



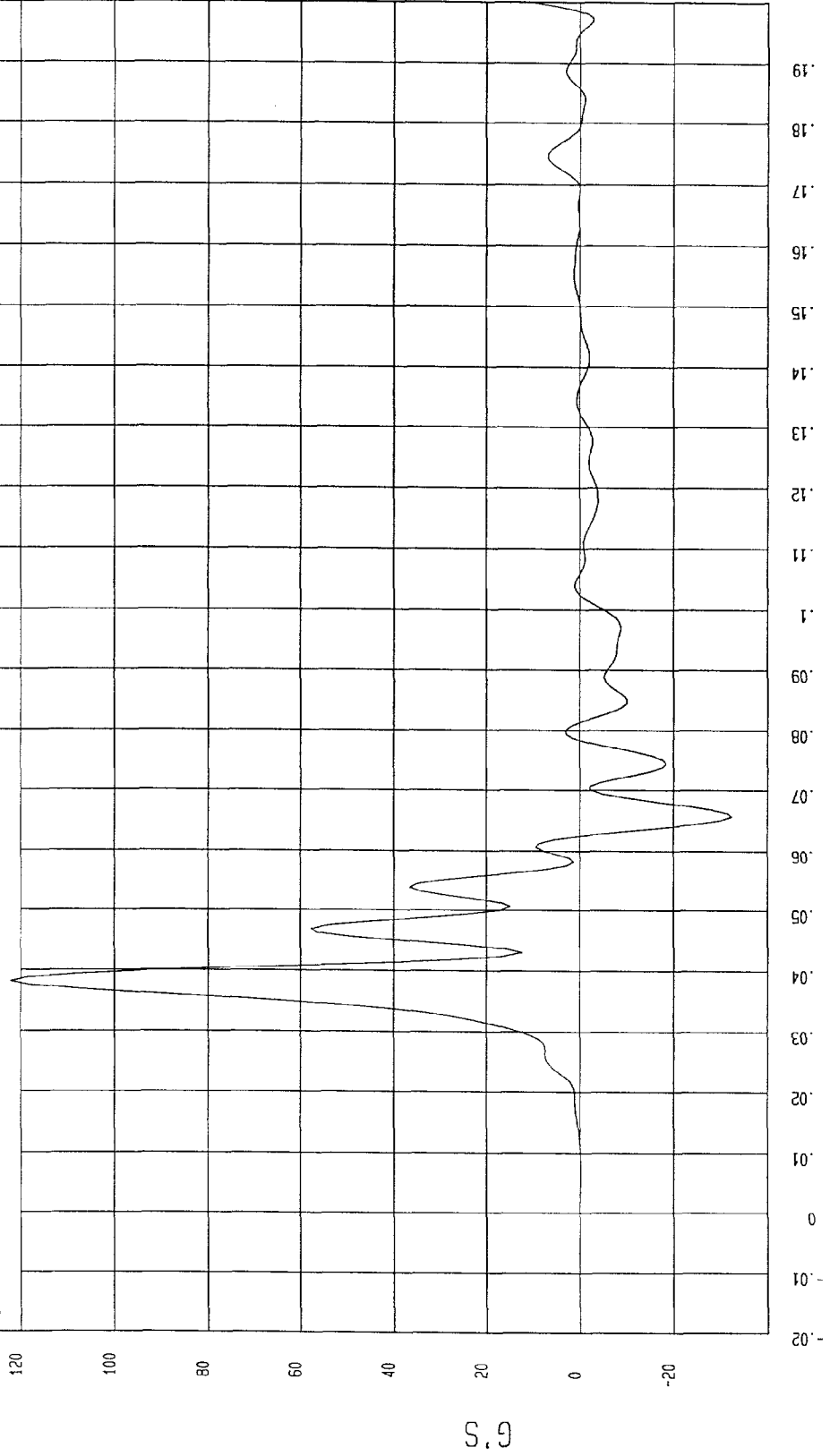
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -32.21 G'S at 66 msec Maximum = 122.18 G'S at 38 msec

REAR PASSENGER LOWER RIB Y REDUNDANT ACCELERATION

1 69715\FI.R67 Filterclass (FIR Filtered)



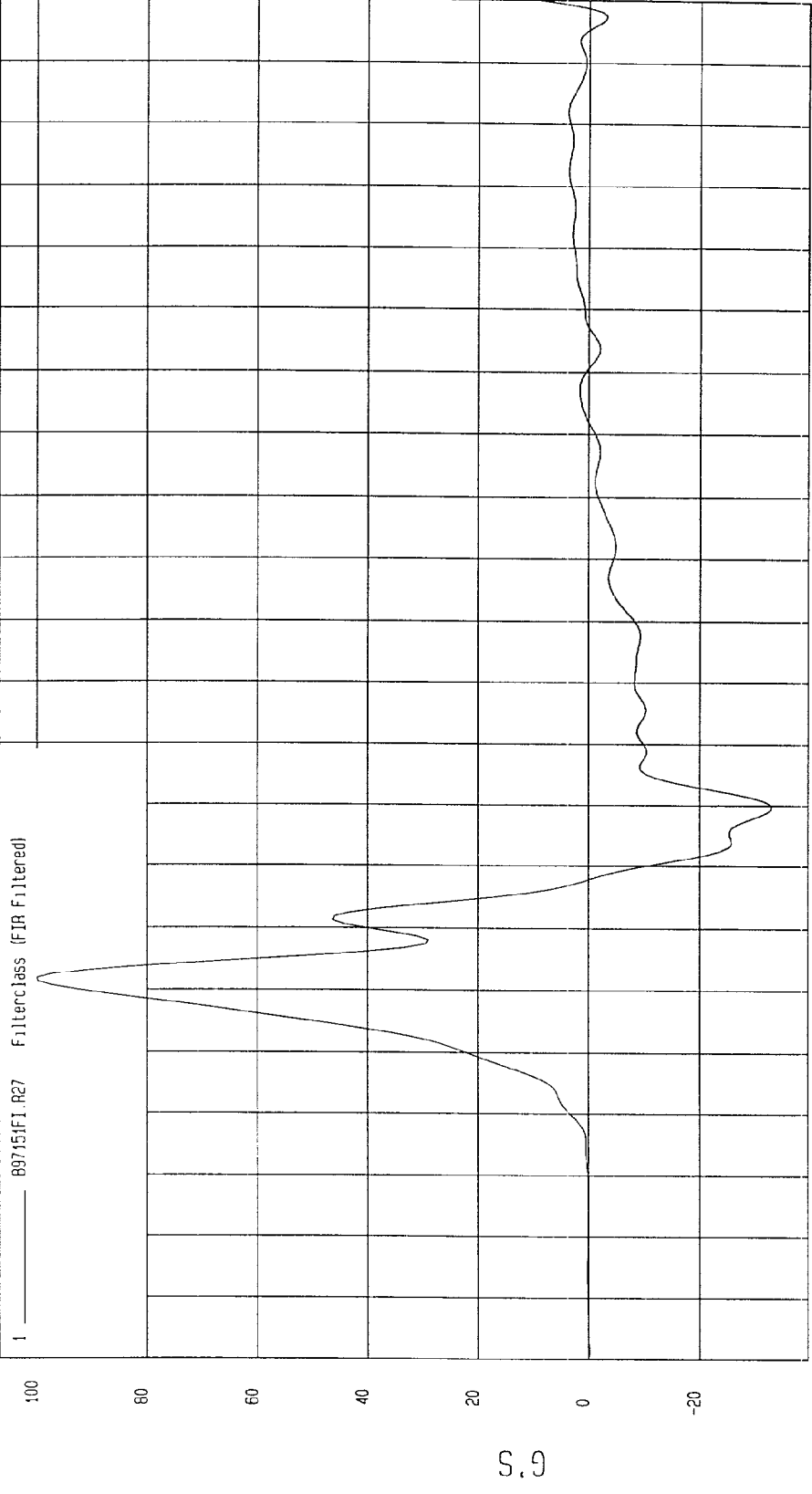
M&E Research Corp
12-22-1997 15:28

TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -32.66 G'S at 69 msec Maximum = 100.04 G'S at 42 msec

REAR PASSENGER LOWER SPINE Y ACCELERATION



TIME (SECONDS)

MCA Research
12-17-1997 14: 47

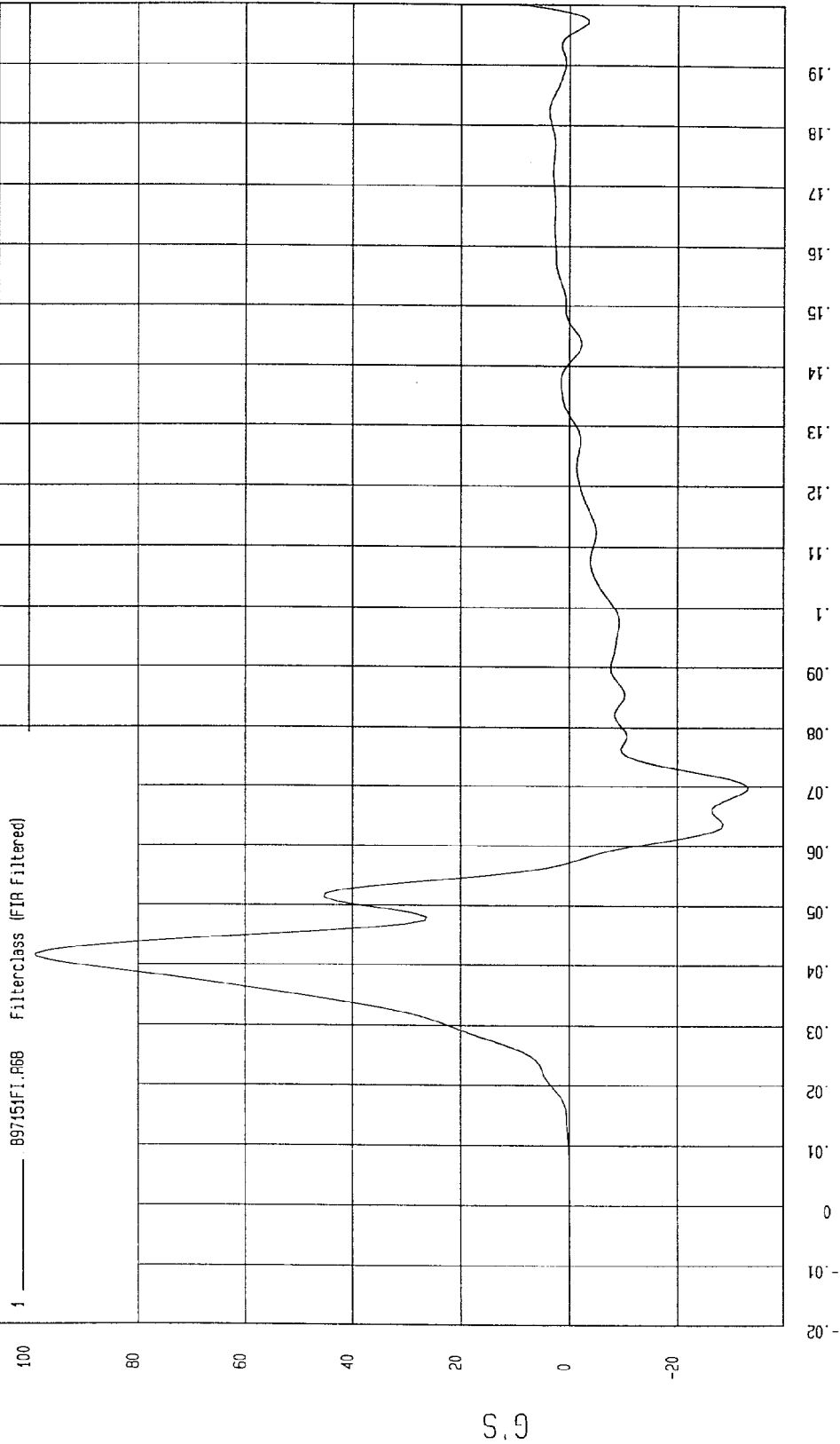
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -32.68 G'S at 70 msec Maximum = 96.94 G'S at 42 msec

REAR PASSENGER LOWER SPINE Y REDUNDANT ACCELERATION

1 ——— 89715FI.868 Filterclass (FIR Filtered)



HGA Research
12-22-1997 15:28

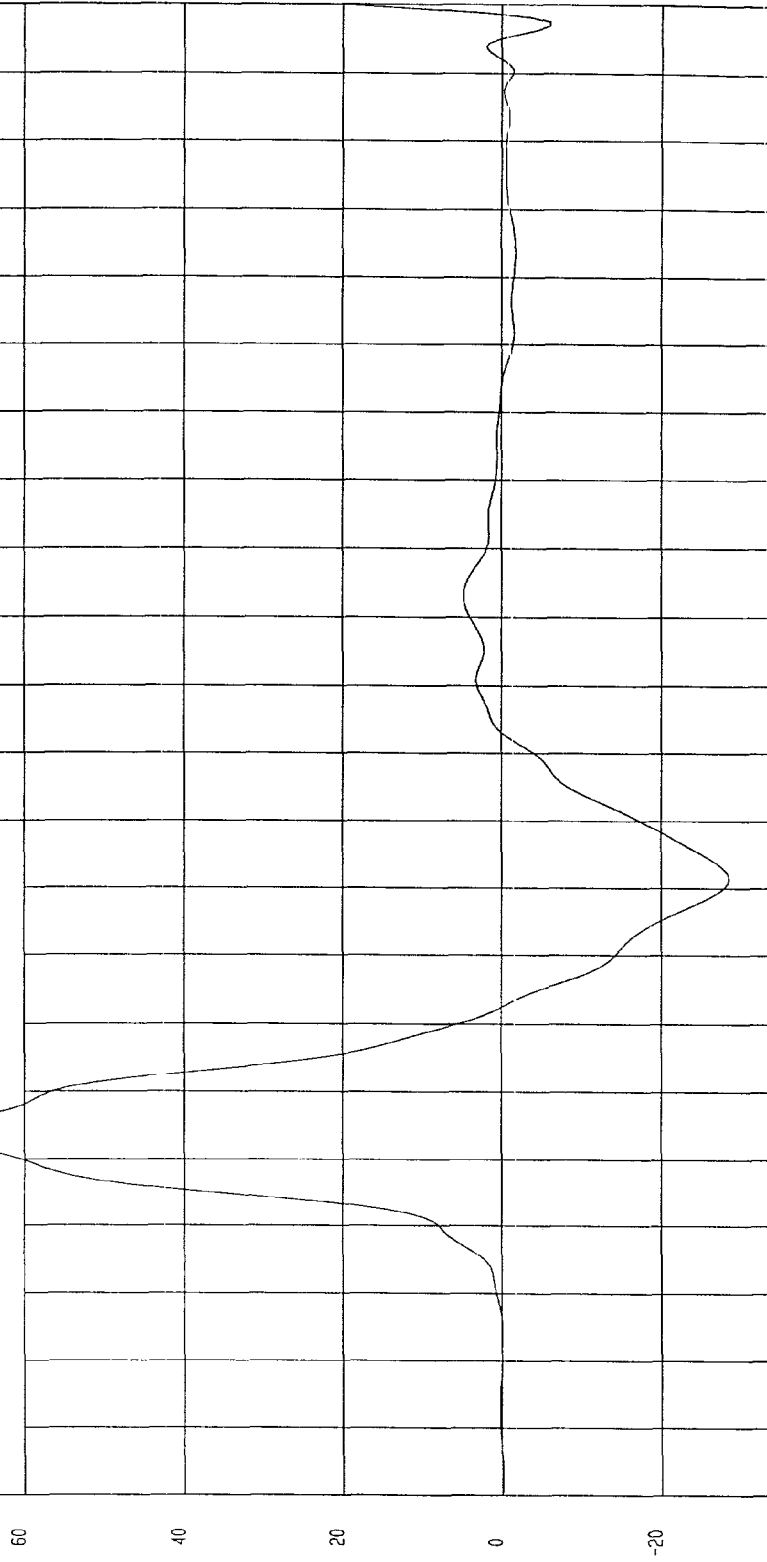
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -26.50 G'S at 71 msec Maximum = 72.57 G'S at 34 msec

REAR PASSENGER PELVIS Y ACCELERATION

1 ——— 89715FI.R28 Filterclass (FIR Filtered)



MGA Research
12-17-1997 14.47

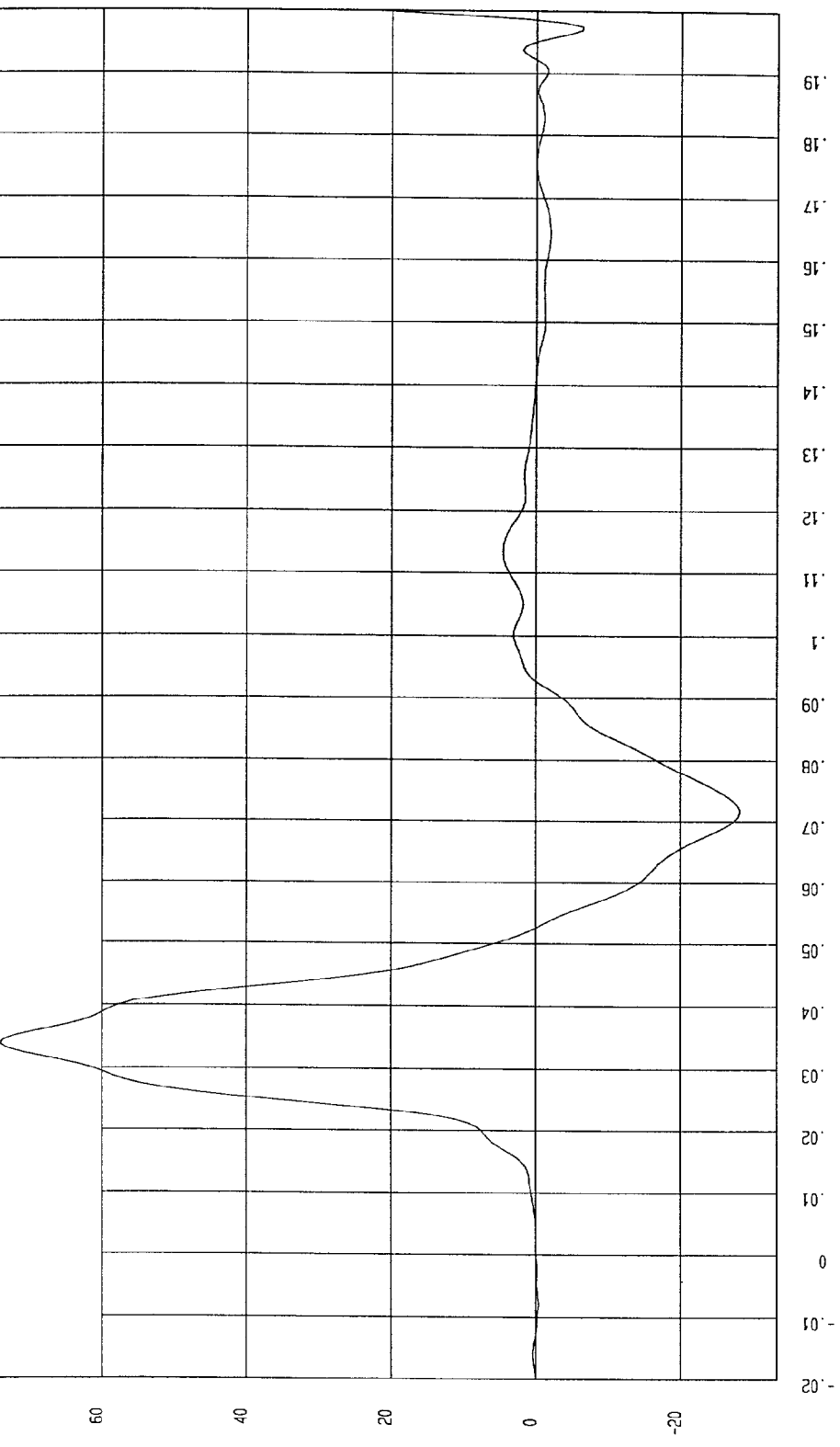
TEST: HIGH SPEED LATERAL IMPACT TEST DATE: 12-17-1997

COMPONENT: 1998 OLDSMOBILE INTRIGUE (MW0115) Speed: 38 MPH 61.2 KPH

Minimum = -28.10 G'S at 71 msec
Maximum = 73.94 G'S at 34 msec

REAR PASSENGER PELVIS Y REDUNDANT ACCELERATION

1 ——— 89715FI.H69 Filterclass (FIR Filtered)



MGA Research
12-22-1997 15:28

APPENDIX C
SID CONFIGURATION AND PERFORMANCE VERIFICATION

REPORT NO. MGA-98-DC017

DUMMY PERFORMANCE CALIBRATIONS

NEW CAR ASSESSMENT PROGRAM
SIDE IMPACT TEST

1998 OLDSMOBILE INTRIGUE
NHTSA NO. MW0115

MGA PROVING GROUNDS
5000 WARREN ROAD
BURLINGTON, WI 53105



Test Date: December 17, 1997

Report Date: January 20, 1998

FINAL REPORT

Prepared For:

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

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	VEHICLE AND DUMMY TEMPERATURE	7-1

PRE-TEST CERTIFICATION DATA

Front Dummy Serial Number: 271

Calibration Test Results Summary

Dummy Serial Number: 271

Pre-Test Calibration

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

SIDE IMPACT DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

DUMMY NO.: 271

DATE OF VERIFICATION: December 15, 1997

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

MEASUREMENTS BY: 

APPROVED BY: 

MGA RESEARCH CORPORATION

THORAX IMPACT TEST

SIDE IMPACT DUMMY (SID)

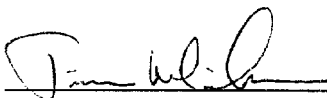
DATE: December 15, 1997


DUMMY NUMBER: 271

TEST NUMBER: D972352

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	17%
PROBE SPEED	14.0 - 14.2 fps	14.1
UPPER RIB	37 - 46 g's	42
LOWER RIB	37 - 46 g's	40
LOWER SPINE	15 - 22 g's	19

TEST MEETS SPECIFICATIONS

TECHNICIAN 

APPROVED BY 

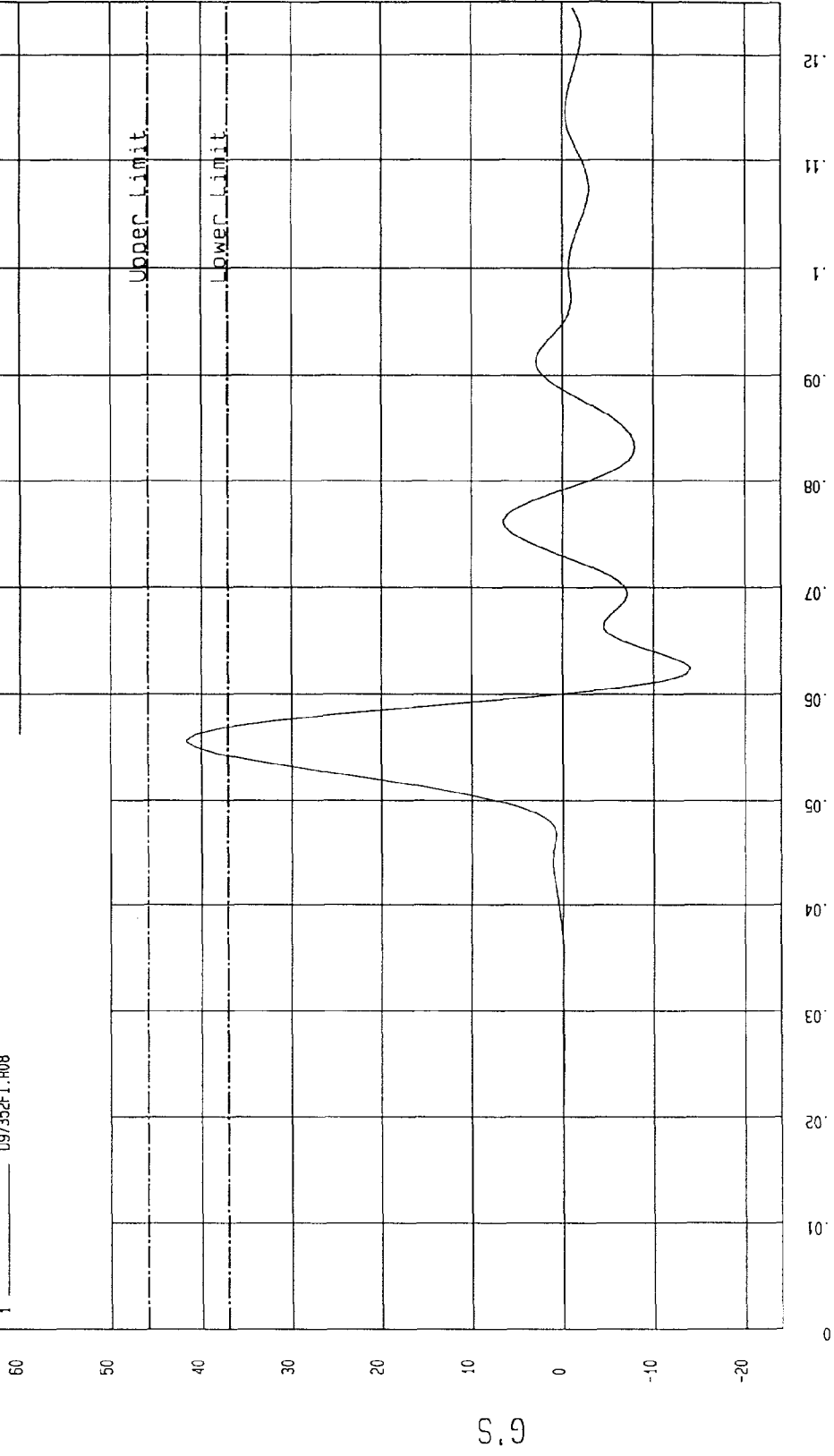
TEST: DUMMY CALIBRATION - THORAX IMPACT TEST DATE: 12-15-1997 - 11:05

COMPONENT: DUMMY # 271 Velocity: 14.05 FT/SEC 4.28 M/SEC

Minimum = -14.16 G'S at 62.5 msec Maximum = 41.76 G'S at 55.6 msec

UPPER RIB ACCELERATION

1 _____ D97352FI.R08



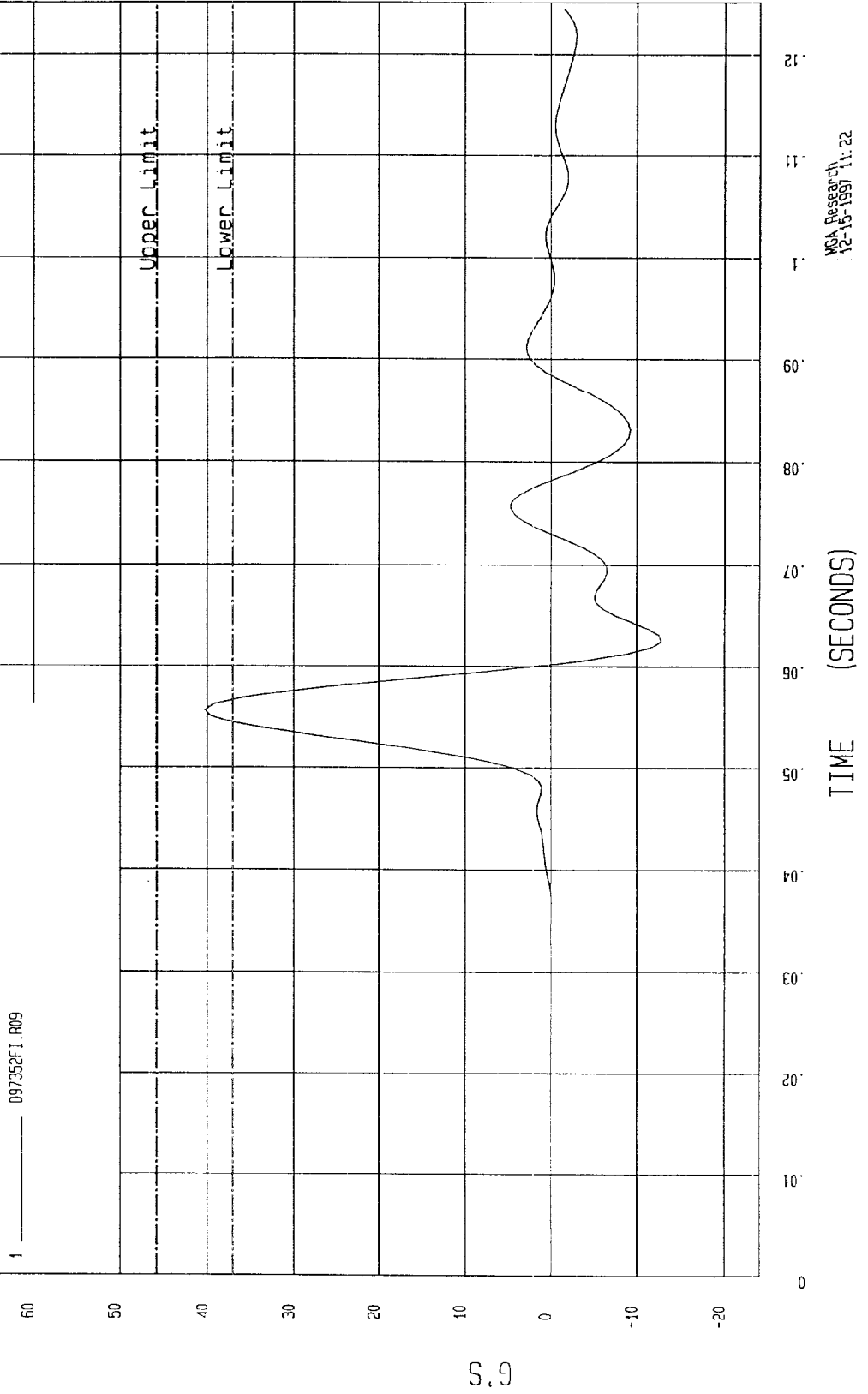
MEA Research
12-15-1997 11:21

TEST: DUMMY CALIBRATION - THORAX IMPACT TEST DATE: 12-15-1997 - 11:05

COMPONENT: DUMMY # 271 Velocity: 14.05 FT/SEC 4.28 M/SEC

Minimum = -12.79 G'S at 62.5 msec Maximum = 40.40 G'S at 55.6 msec

LOWER RIB ACCELERATION

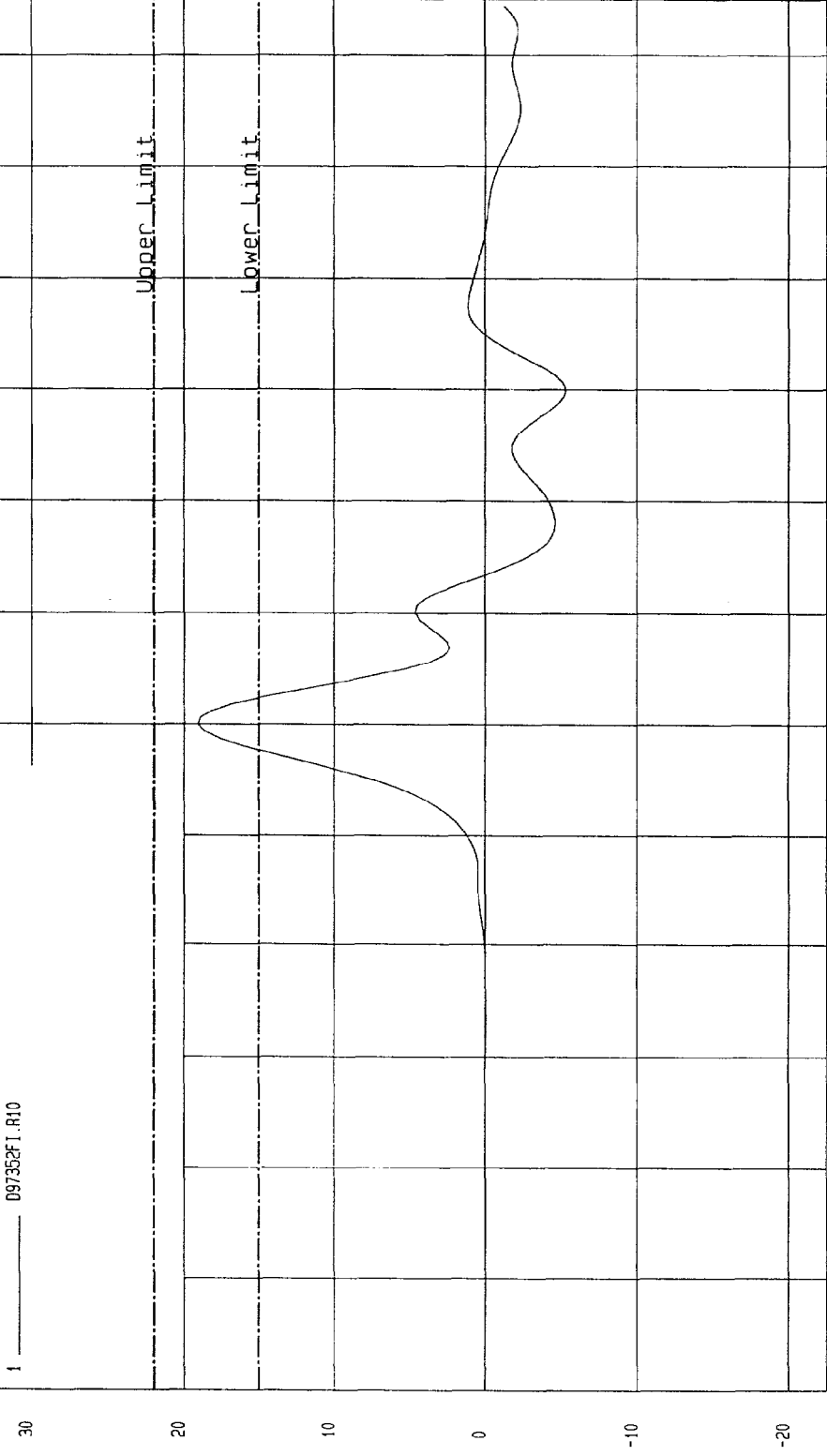


TEST: DUMMY CALIBRATION - THORAX IMPACT TEST DATE: 12-15-1997 - 11:06:04
COMPONENT: DUMMY # 271 Velocity: 14.05 FT/SEC 4.28 M/SEC

Minimum = -5.33 G'S at 90 msec Maximum = 19.09 G'S at 60 msec

LOWER SPINE ACCELERATION

1 _____ 097352FL.R10



MGA Research
12-15-1997 11:22

MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: December 15, 1997


DUMMY NUMBER: 271

TEST NUMBER: D972353

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	17%
PROBE SPEED	14.0 - 14.2 f/s	14.1
PELVIS ACCELERATION	40 - 60 g's	55

TEST MEETS SPECIFICATIONS

TECHNICIAN 

APPROVED BY 

TEST: DUMMY CALIBRATION - PELVIS IMPACT TEST DATE: 12-15-1997 - 11: 21

COMPONENT: DUMMY # 271 Velocity: 14.099 FT/SEC 4.3 M/SEC

Minimum = -10.53 G'S at 60 msec Maximum = 55.12 G'S at 54.3 msec

PELVIS ACCELERATION

1 ——— D97353FI.R11

80
60
40
20
0
-20

G'S

Upper Limit

Lower Limit

TIME (SECONDS)
0 .01 .02 .03 .04 .05 .06 .07 .08 .09 .1 .11 .12
MSA Research
12-15-1997 11:22

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

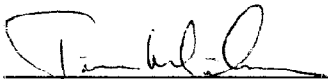
DATE: December 15, 1997

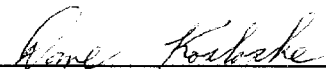
DUMMY NUMBER: 271

TEST NUMBER: D972354

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	17%
FORCE @ 0.5 in	23.3 - 36.5 lbs	30.5
FORCE @ 0.75 in	36.7 - 49.8 lbs	41.6
FORCE @ 1.0 in	50 - 63 lbs	54
FORCE @ 1.3 in	73 - 88 lbs	74

TEST MEETS SPECIFICATIONS

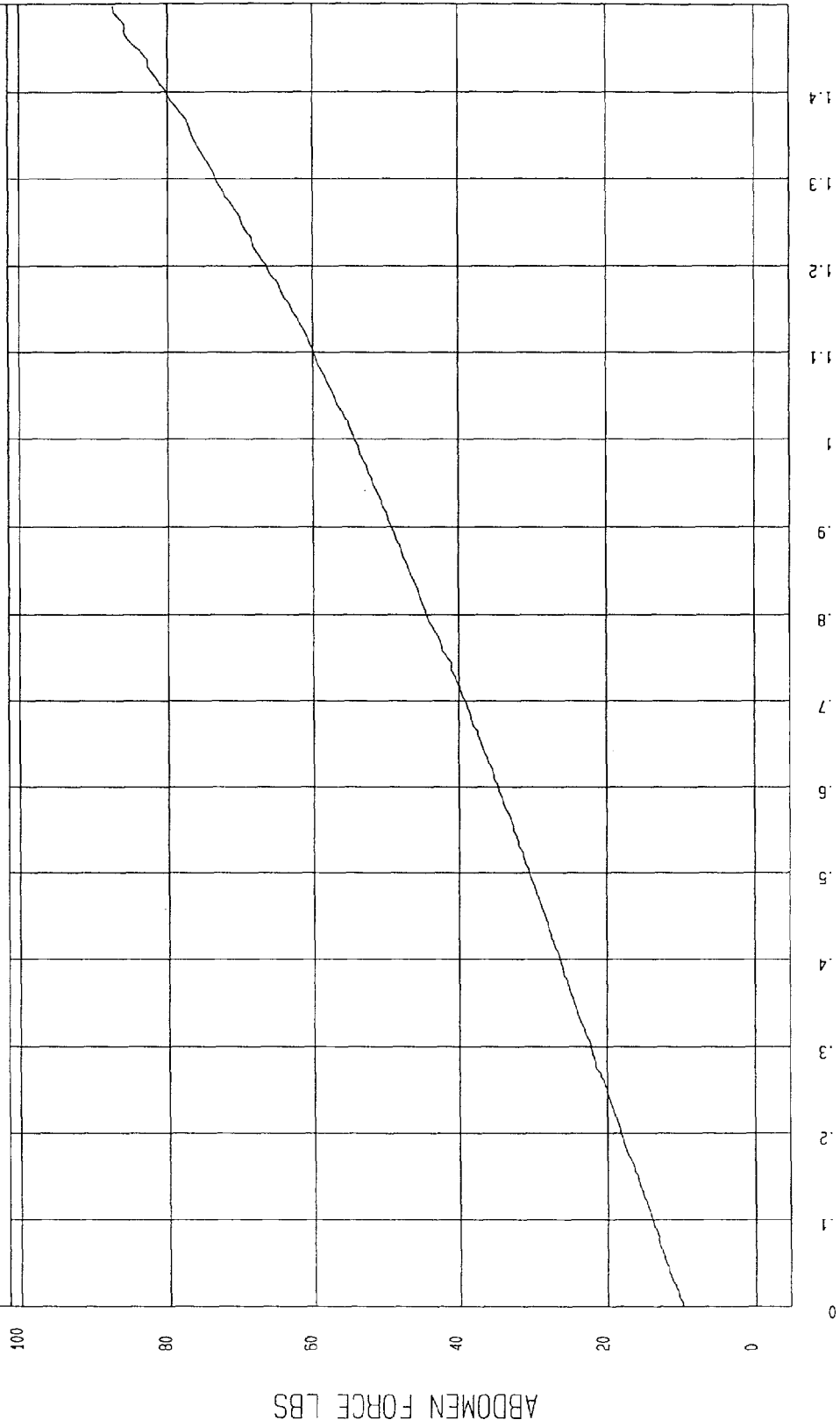
TECHNICIAN 

APPROVED BY 

TEST: DUMMY CALIBRATION - ABDOMEN COMPRESSION TEST DATE: 12-15-1997 - 13:42

COMPONENT: DUMMY # 271

ABDOMEN FORCE as a function of ABDOMEN DISPLACEMENT



NSA Research
12-15-1997 14:20

ABDOMEN DISPLACEMENT INCHES

ABDOMEN FORCE LBS

MGA RESEARCH CORPORATION

LUMBAR FLEXION TEST

SIDE IMPACT DUMMY (SID)

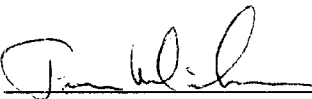
DATE: December 15, 1997

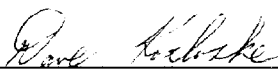
DUMMY NUMBER: 271

TEST NUMBER: D972355

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	17%
FORCE @ 0°	0 - 6 lbs	0
FORCE @ 20°	22 - 34 lbs	23
FORCE @ 30°	34 - 46 lbs	35
FORCE @ 40°	46 - 58 lbs	47
RETURN ANGLE	12° maximum	6°

TEST MEETS SPECIFICATIONS

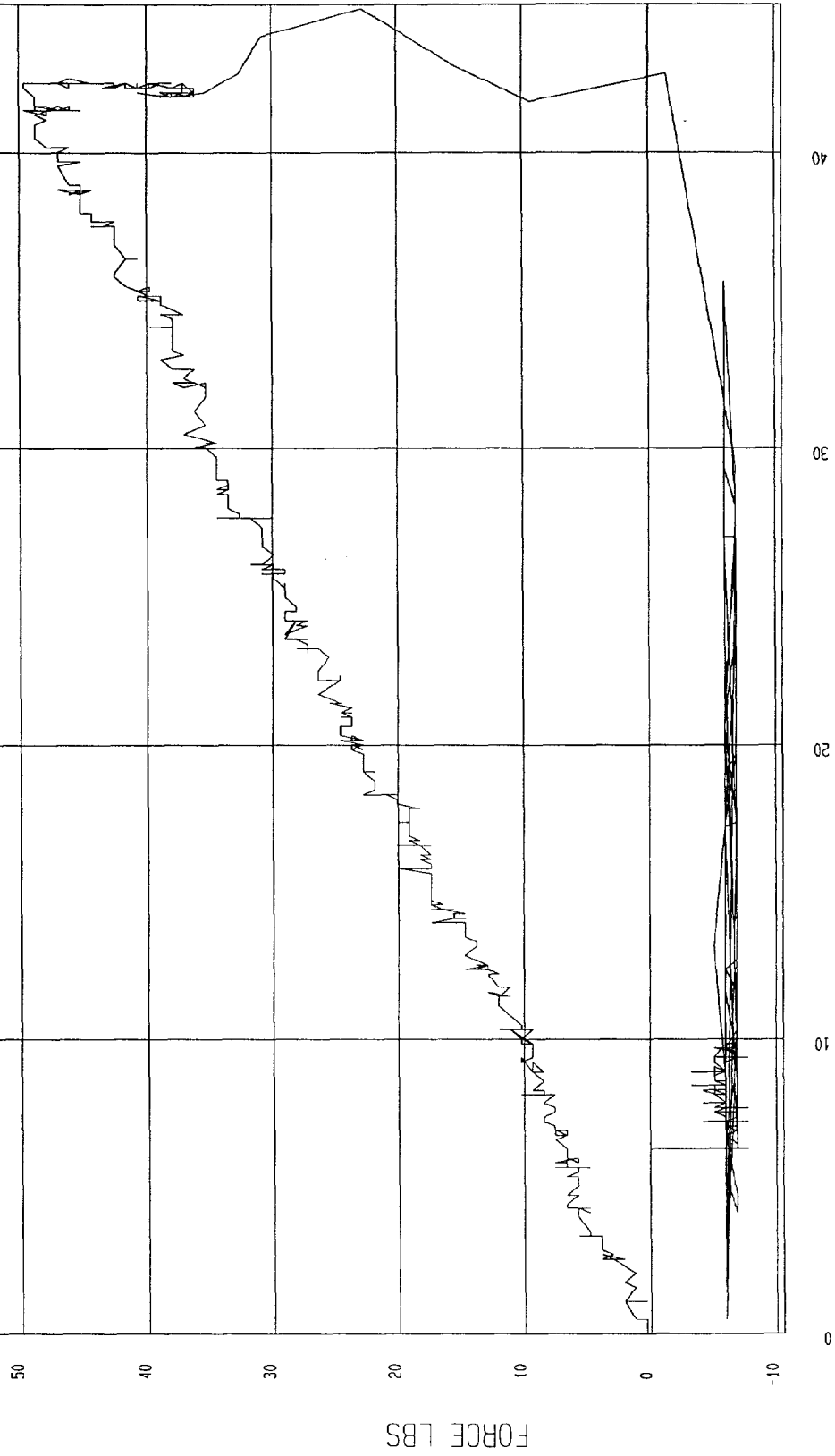
TECHNICIAN 

APPROVED BY 

TEST: DUMMY CALIBRATION - LUMBAR FLEXION TEST DATE: 12-15-1997 - 13:59

COMPONENT: DUMMY # 271

FORCE as a function of TORSO ROTATION



NSA Research
12-15-1997 14.14

PRE-TEST CERTIFICATION DATA

Rear Dummy Serial Number: 270

Calibration Test Results Summary

Dummy Serial Number: 270

Pre-Test Calibration

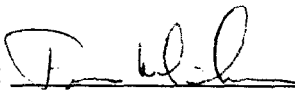
External Dimensions:	The dummy passed all external dimension requirements.
Thorax Impact Test:	The thorax passed all impact test requirements.
Pelvic Impact Test:	The pelvis passed all impact test requirements.
Abdominal Compression Test:	The abdomen passed all compression test requirements.
Lumbar Flexion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

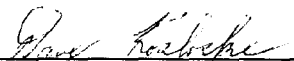
SIDE IMPACT DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

DUMMY NO.: 270

DATE OF VERIFICATION: December 16, 1997

DESCRIPTION	SPECIFICATION	TEST RESULTS
SH - Seated Height	35.0" - 35.8"	35.4
RH - Rib Height	19.75" - 20.50"	20.50
HP - Hip Pivot Height	3.9" ref.	3.9
RD - Rib From Back Line	9.0" to 9.5"	9.4
KV - Knee Pivot From Back Line	20.1" - 20.7"	20.6
SW - Knee Pivot to Floor	19.3" - 19.9"	19.5
HW - Hip Width	14.0" - 15.4"	15.0

MEASUREMENTS BY: 

APPROVED BY: 

MGA RESEARCH CORPORATION

THORAX IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: December 16, 1997

DUMMY NUMBER: 270

TEST NUMBER: D972382

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	20%
PROBE SPEED	14.0 - 14.2 fps	14.0
UPPER RIB	37 - 46 g's	43
LOWER RIB	37 - 46 g's	40
LOWER SPINE	15 - 22 g's	22

TEST MEETS SPECIFICATIONS

TECHNICIAN 

APPROVED BY 

TEST: DUMMY CALIBRATION - THORAX IMPACT TEST DATE: 12-16-1997 - 20:32

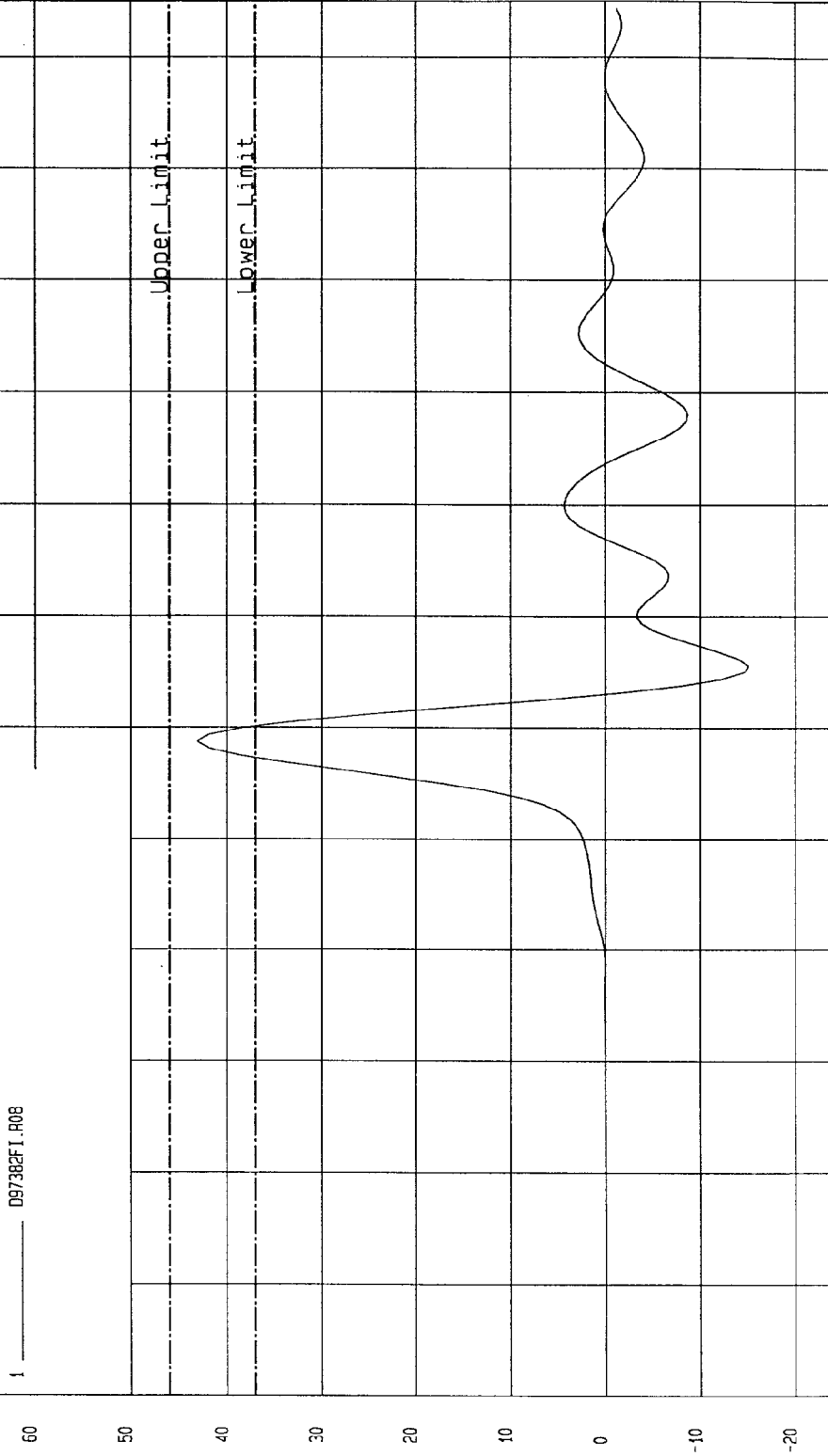
COMPONENT: DUMMY # 270 Velocity: 14.047 FT/SEC 4.28 M/SEC

Minimum = -15.12 G'S at 55.6 msec

Maximum = 43.14 G'S at 58.7 msec

UPPER RIB ACCELERATION

1 _____ D97382FI.R08



NSA Research
12-16-1997 21:04

TEST: DUMMY CALIBRATION - THORAX IMPACT TEST DATE: 12-16-1997 - 20:32

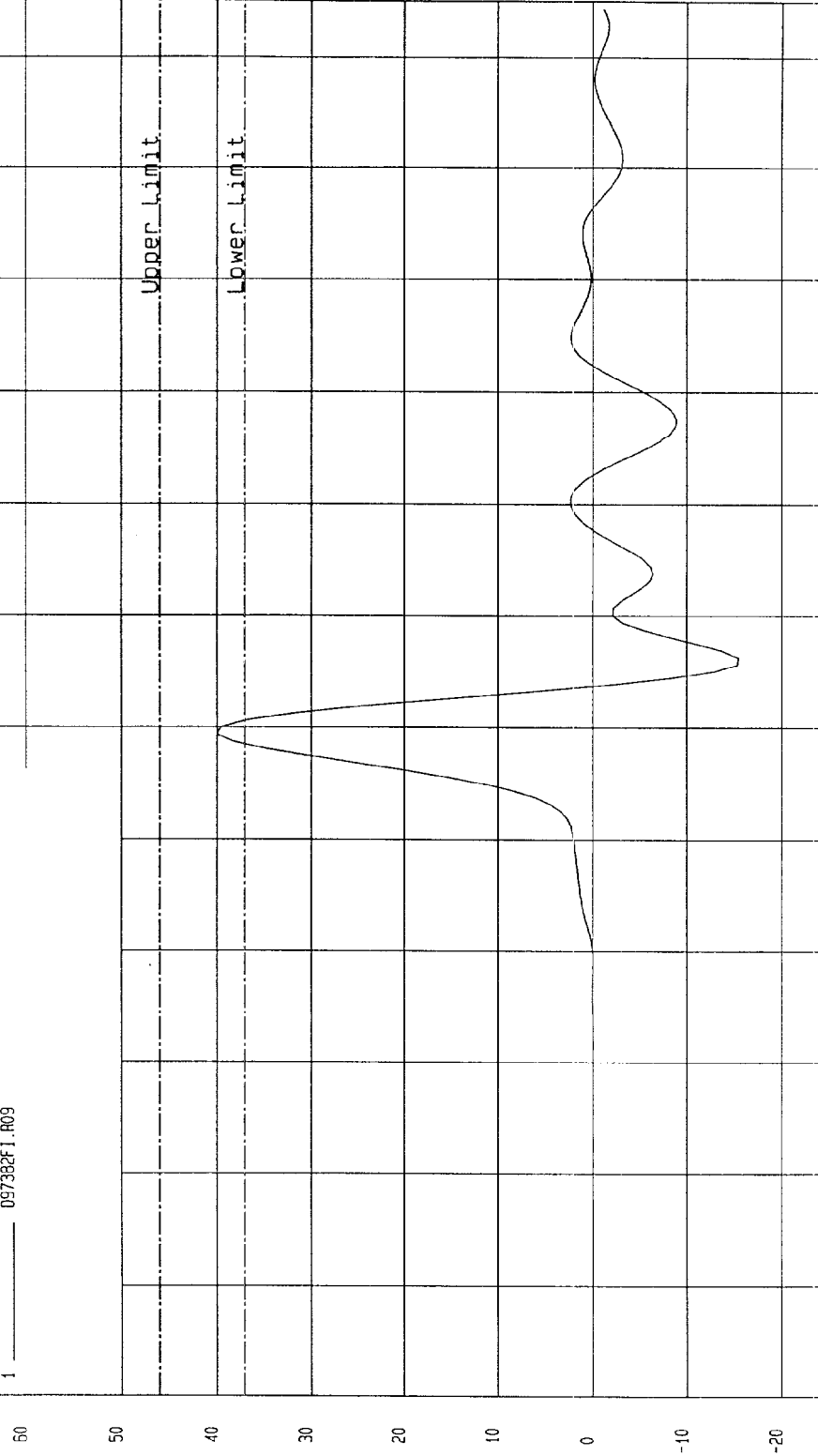
COMPONENT: DUMMY # 270 Velocity: 14.047 FT/SEC 4.28 M/SEC

Minimum = -15.44 G'S at 66.2 msec

Maximum = 40.03 G'S at 59.3 msec

LOWER RIB ACCELERATION

1 097382F1.R09



TIME (SECONDS)

MCA Research
12-16-1997 21:04

G

TEST: DUMMY CALIBRATION - THORAX IMPACT TEST DATE: 12-16-1997 - 20:32

COMPONENT: DUMMY # 270 Velocity: 14.047 FT/SEC 4.28 M/SEC

Minimum = -5.71 G'S at 93.7 msec

Maximum = 21.90 G'S at 63.7 msec

LOWER SPINE ACCELERATION

1 ——— D97382FI.R10

30

20

10

0

-10

-20

G.S

Upper Limit

Lower Limit

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

TIME (SECONDS)

MGA Research
12-16-1997 21.04

MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

SIDE IMPACT DUMMY (SID)

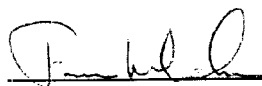
DATE: December 16, 1997

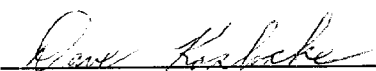
DUMMY NUMBER: 270

TEST NUMBER: D972383

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	20%
PROBE SPEED	14.0 - 14.2 f/s	14.1
PELVIS ACCELERATION	40 - 60 g's	44

TEST MEETS SPECIFICATIONS

TECHNICIAN 

APPROVED BY 

TEST: DUMMY CALIBRATION - PELVIS IMPACT TEST DATE: 12-16-1997 - 21:03

COMPONENT: DUMMY # 270 Velocity: 14.068 FT/SEC 4.29 M/SEC

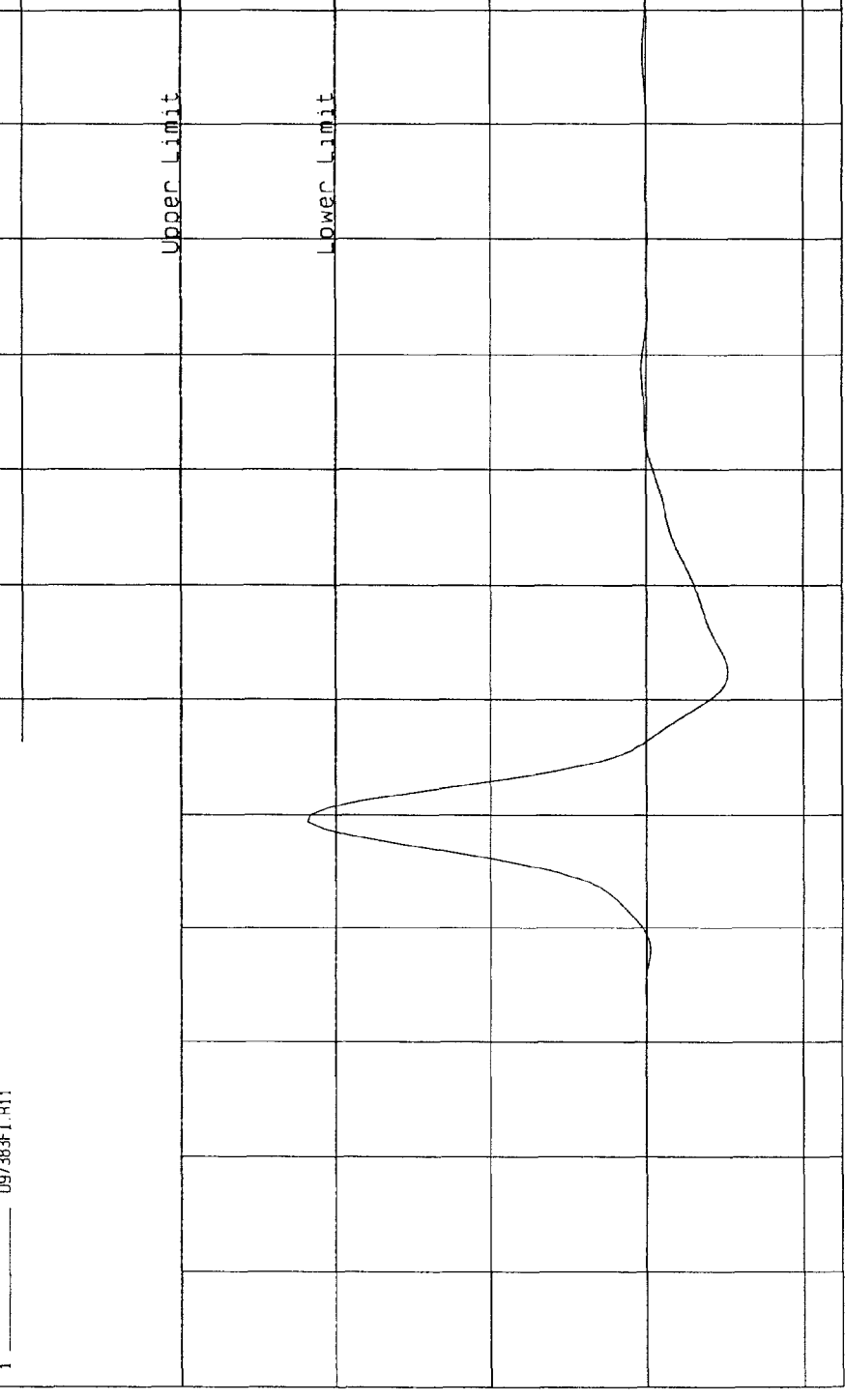
Minimum = -10.52 G'S at 62.5 msec

Maximum = 43.62 G'S at 49.3 msec

PELVIS ACCELERATION

1 097383FI.R11

80
60
40
20
0
-20



NCA Research
12-16-1997 21:05

G.S

TIME (SECONDS)

MGA RESEARCH CORPORATION

ABDOMINAL COMPRESSION TEST
(PRELOAD = 10 LBS)

SIDE IMPACT DUMMY (SID)

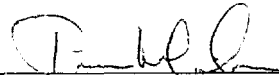
DATE: December 16, 1997

DUMMY NUMBER: 270

TEST NUMBER: D972384

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	20%
FORCE @ 0.5 in	23.3 - 36.5 lbs	31.8
FORCE @ 0.75 in	36.7 - 49.8 lbs	43.4
FORCE @ 1.0 in	50 - 63 lbs	58
FORCE @ 1.3 in	73 - 88 lbs	80

TEST MEETS SPECIFICATIONS

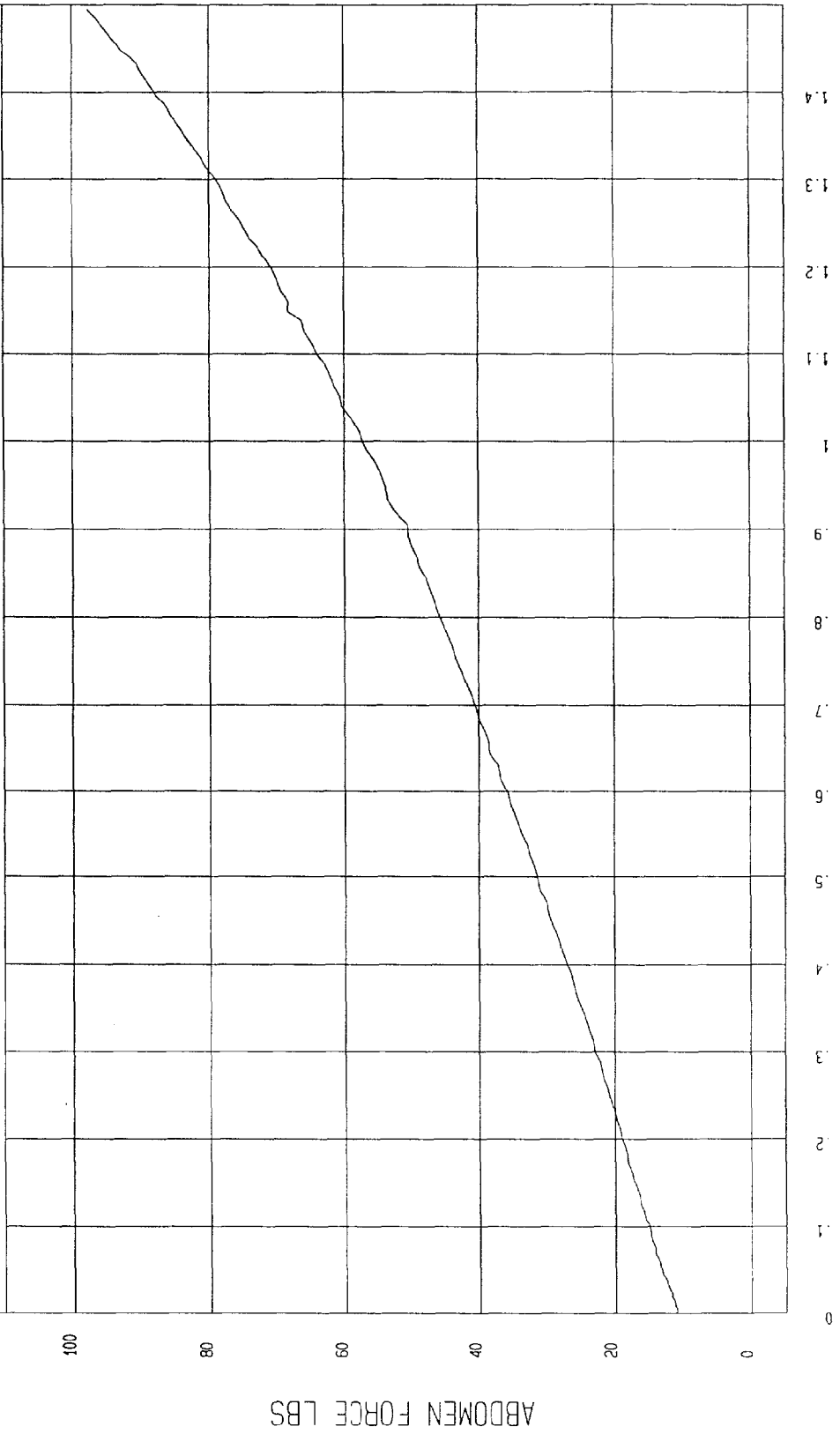
TECHNICIAN 

APPROVED BY 

TEST: DUMMY CALIBRATION - ABDOMEN COMPRESSION TEST DATE: 12-16-1997 - 21:45

COMPONENT: DUMMY # 270

ABDOMEN FORCE as a function of ABDOMEN DISPLACEMENT



MSA Research
12-30-1997 10:08

ABDOMEN DISPLACEMENT INCHES

ABDOMEN FORCE LBS

MGA RESEARCH CORPORATION

LUMBAR FLEXION TEST

SIDE IMPACT DUMMY (SID)

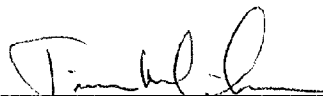
DATE: December 16, 1997

DUMMY NUMBER: 270

TEST NUMBER: D972385

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	20%
FORCE @ 0°	0 - 6 lbs	0
FORCE @ 20°	22 - 34 lbs	22
FORCE @ 30°	34 - 46 lbs	38
FORCE @ 40°	46 - 58 lbs	54
RETURN ANGLE	12° maximum	3°

TEST MEETS SPECIFICATIONS

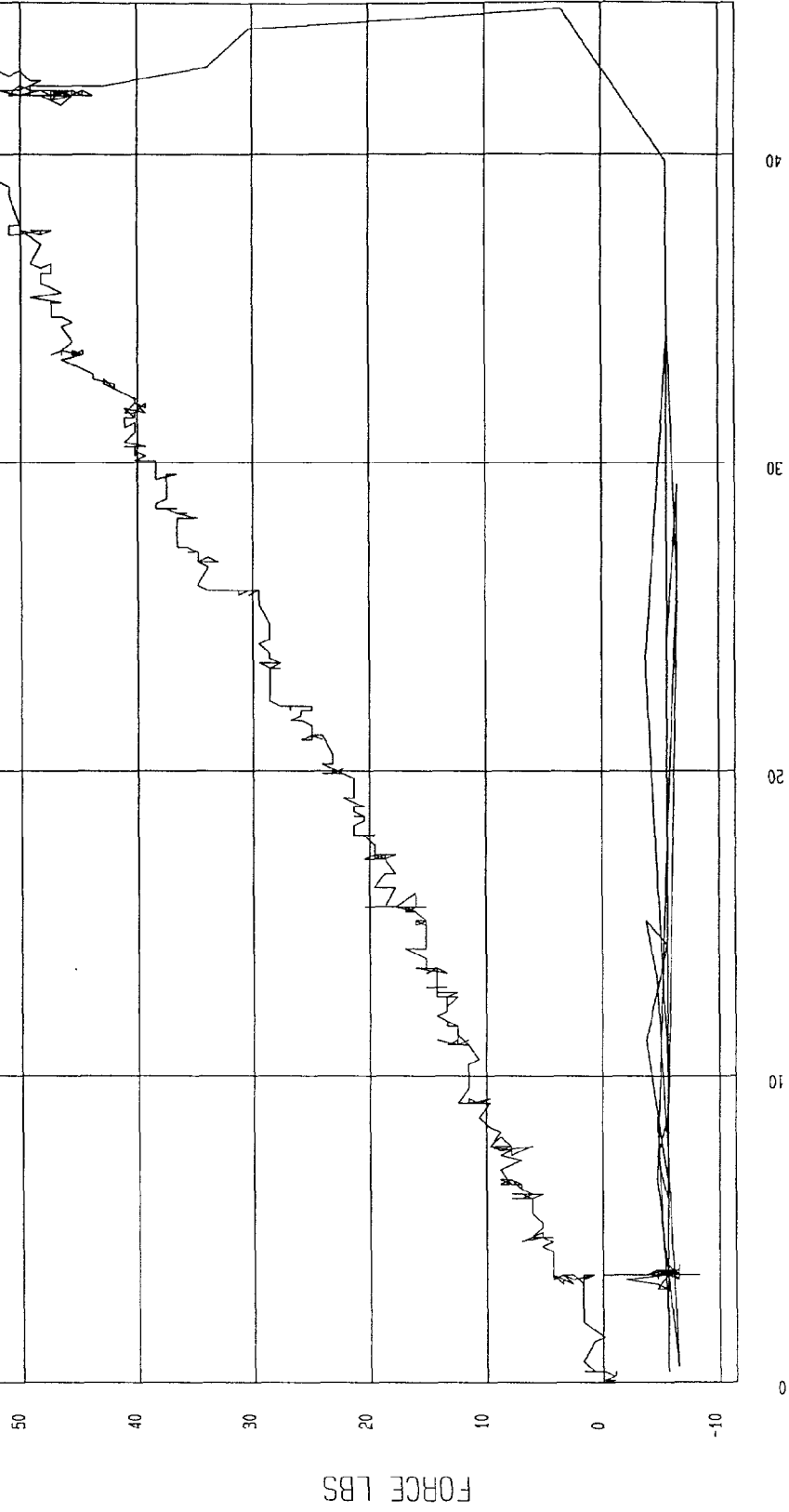
TECHNICIAN 

APPROVED BY 

TEST: DUMMY CALIBRATION - LUMBAR FLEXION TEST DATE: 12-16-1997 - 21:32

COMPONENT: DUMMY # 270

FORCE as a function of TORSO ROTATION



MOA Research
12-30-1997 10:07

POST-TEST CERTIFICATION DATA

Front Dummy Serial Number: 271

Calibration Test Results Summary

Dummy Serial Number: 271

Post-Test Calibration

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

SIDE IMPACT DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

DUMMY NO.: 271

DATE OF VERIFICATION: January 21, 1998

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

MEASUREMENTS BY: 

APPROVED BY: 

MGA RESEARCH CORPORATION

THORAX IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: January 13, 1998

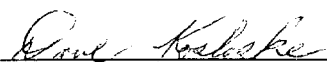
DUMMY NUMBER: 271

TEST NUMBER: D98072

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	14%
PROBE SPEED	14.0 - 14.2 fps	14.0
UPPER RIB	37 - 46 g's	43
LOWER RIB	37 - 46 g's	41
LOWER SPINE	15 - 22 g's	19

TEST MEETS SPECIFICATIONS

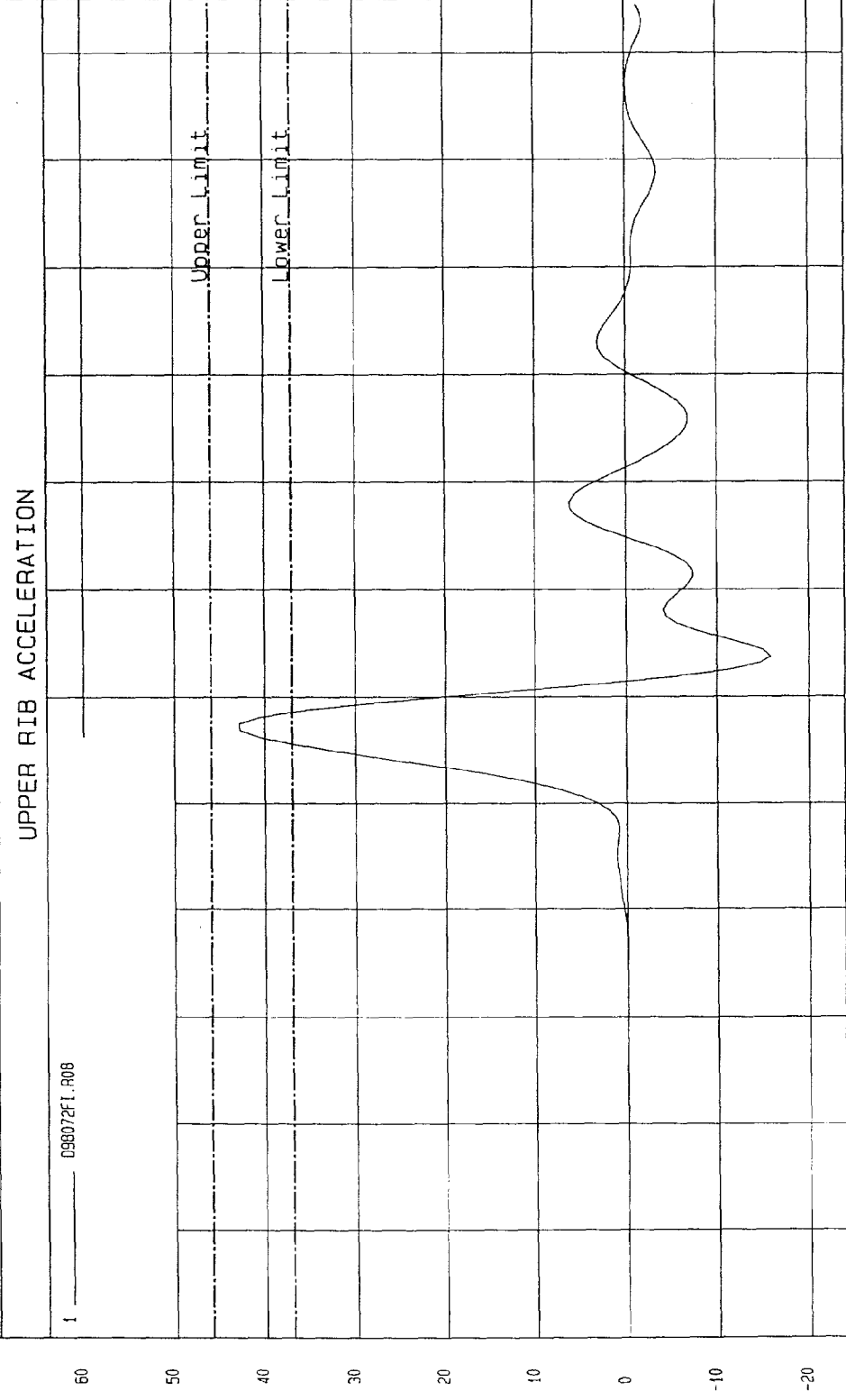
TECHNICIAN 

APPROVED BY 

TEST: DUMMY CALIBRATION - THORAX IMPACT TEST DATE: 01-13-1998 - 14:28

COMPONENT: DUMMY # 271 Velocity: 14.019 FT/SEC 4.27 M/SEC

Minimum = -15.78 G'S at 63.7 msec Maximum = 42.84 G'S at 57.5 msec



1 _____ 098072F1.R08

TIME (SECONDS)

MCA Research
01-13-1998 14.45

G.S

TEST: DUMMY CALIBRATION - THORAX IMPACT TEST DATE: 01-13-1998 - 14:28

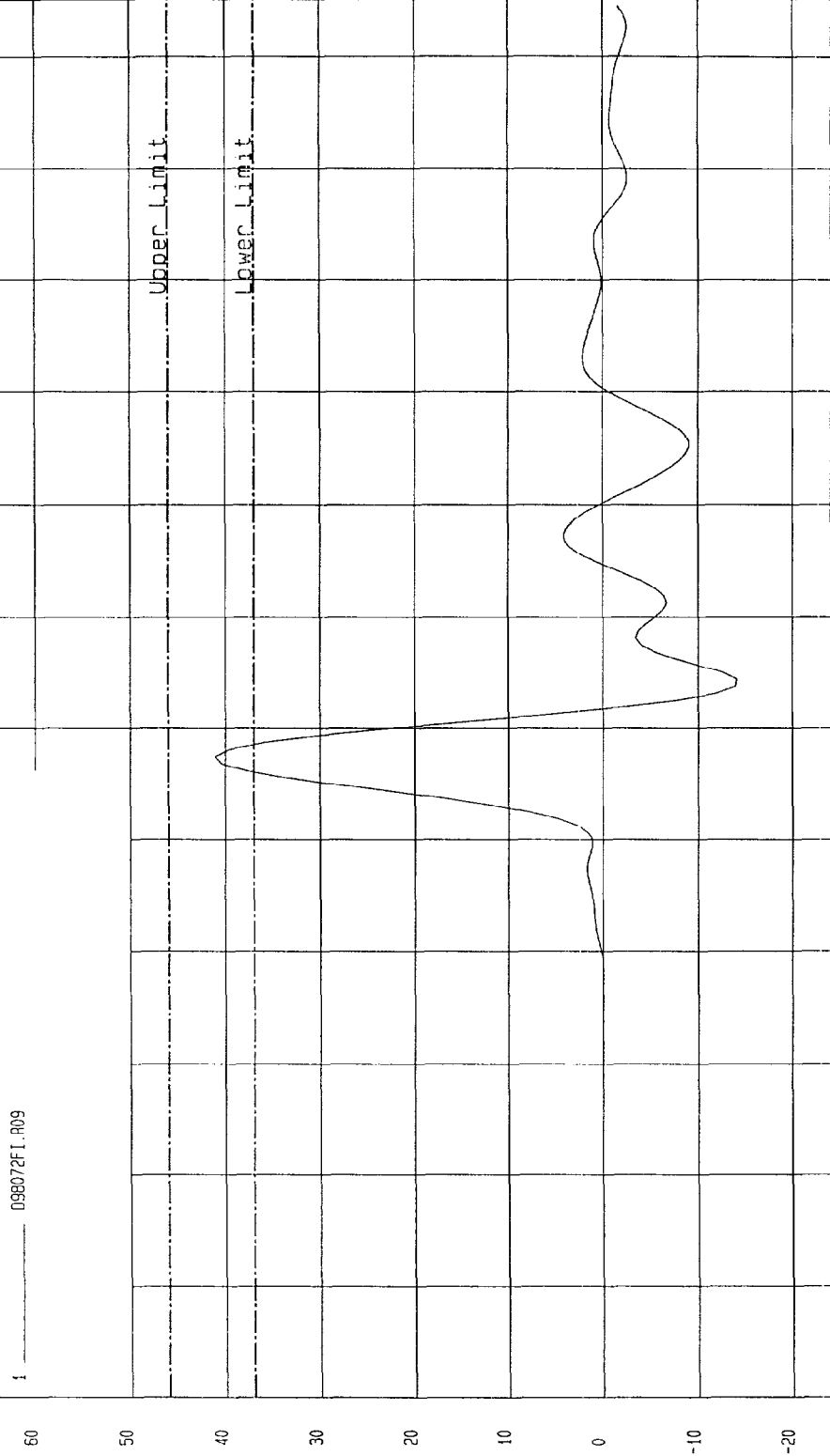
COMPONENT: DUMMY # 271 Velocity: 14.019 FT/SEC 4.27 M/SEC

Minimum = -14.08 G'S at 64.3 msec

Maximum = 41.13 G'S at 57.5 msec

LOWER RIB ACCELERATION

1 098072FI.R09



NGA Research
01-13-1998 14:46

G.S

TEST: DUMMY CALIBRATION - THORAX IMPACT TEST DATE: 01-13-1998 - 14:29:03

COMPONENT: DUMMY # 271 Velocity: 14.019 FT/SEC 4.27 M/SEC

Minimum = -4.90 G'S at 91.8 msec Maximum = 18.96 G'S at 61.8 msec

LOWER SPINE ACCELERATION

1 _____ D98072F1.R10

30
20
10
0
-10
-20

Upper Limit

Lower Limit

G.S

0 .01 .02 .03 .04 .05 .06 .07 .08 .09 .10 .11 .12

TIME (SECONDS)

MGA Research
01-13-1998 14:46

MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: January 13, 1998

DUMMY NUMBER: 271

TEST NUMBER: D98073

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	14%
PROBE SPEED	14.0 - 14.2 f/s	14.1
PELVIS ACCELERATION	40 - 60 g's	52

TEST MEETS SPECIFICATIONS

TECHNICIAN Tim White

APPROVED BY Ron Kralak

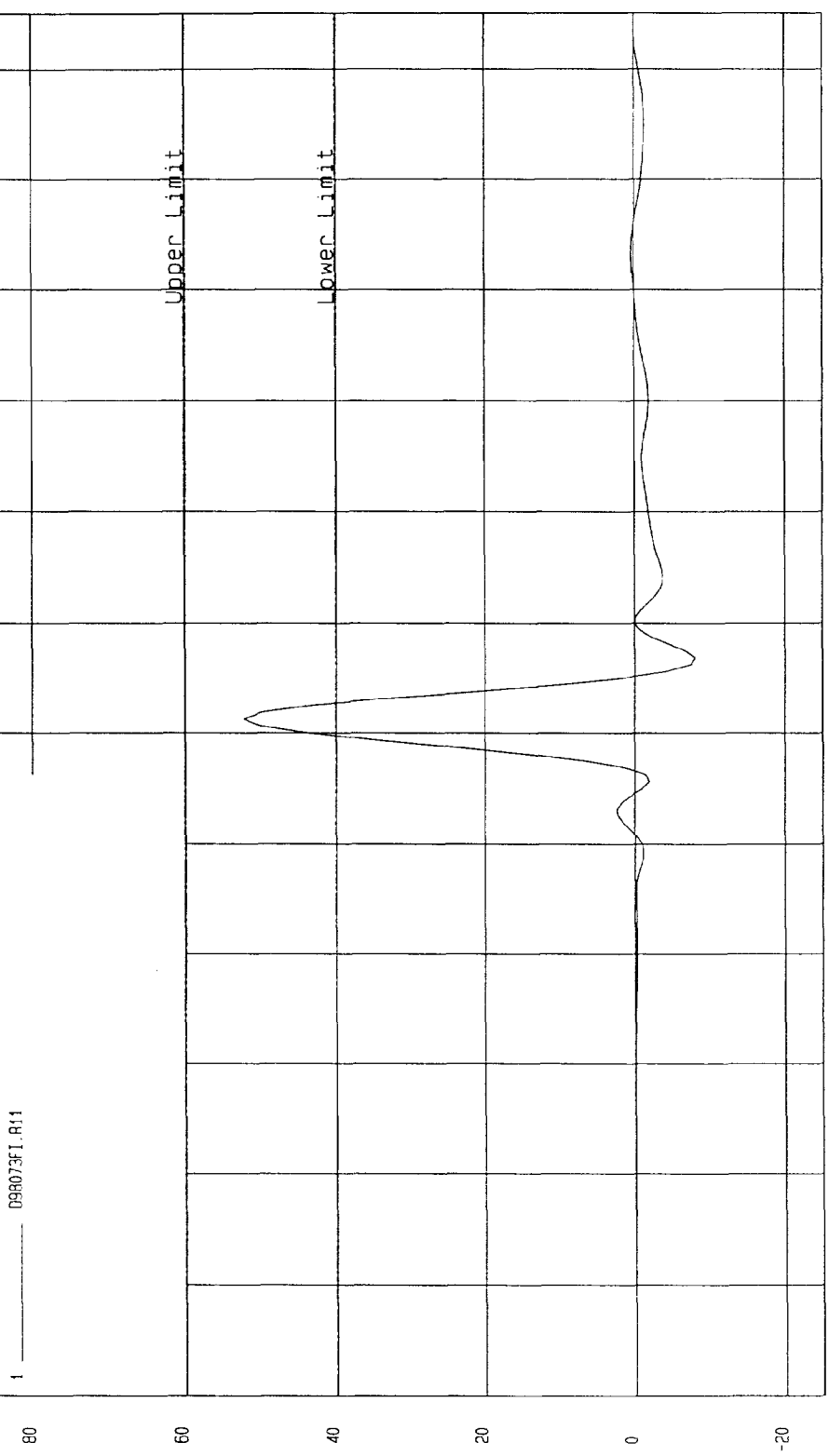
TEST: DUMMY CALIBRATION - PELVIS IMPACT TEST DATE: 01-13-1998 - 14:45

COMPONENT: DUMMY # 271 Velocity: 14.09 FT/SEC 4.29 M/SEC

Minimum = -8.01 G'S at 66.8 msec
Maximum = 52.06 G'S at 61.2 msec

PELVIS ACCELERATION

1 ----- 098073F1.R11



TIME (SECONDS)

MGA Research
01-13-1998 14:45

G

MGA RESEARCH CORPORATION

ABDOMINAL COMPRESSION TEST
(PRELOAD = 10 LBS)

SIDE IMPACT DUMMY (SID)

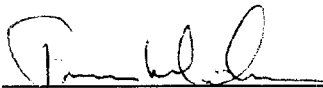
DATE: January 13, 1998

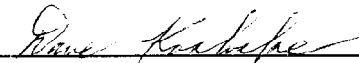
DUMMY NUMBER: 271

TEST NUMBER: D98074

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	12%
FORCE @ 0.5 in	23.3 - 36.5 lbs	33.0
FORCE @ 0.75 in	36.7 - 49.8 lbs	45.6
FORCE @ 1.0 in	50 - 63 lbs	60
FORCE @ 1.3 in	73 - 88 lbs	79

TEST MEETS SPECIFICATIONS

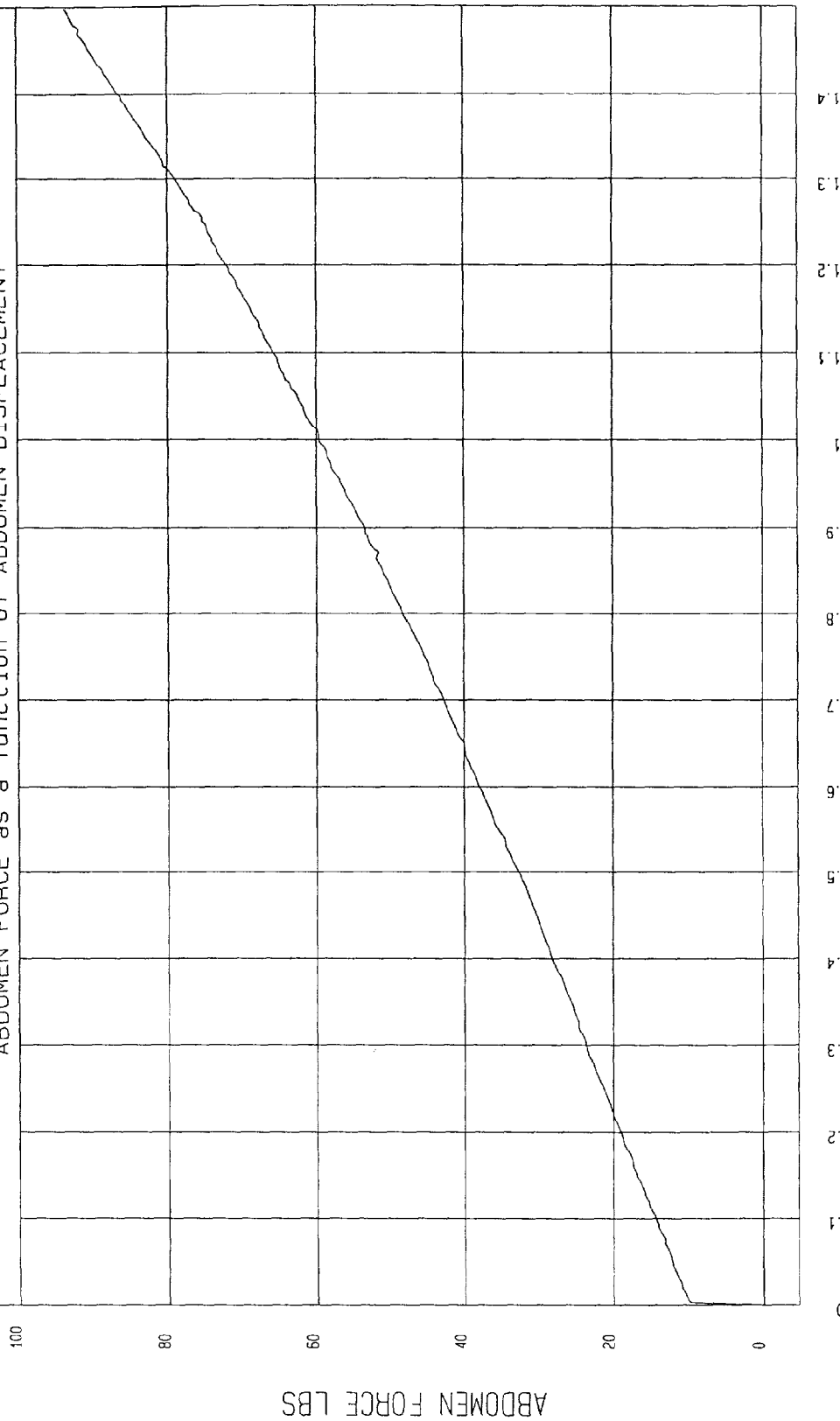
TECHNICIAN 

APPROVED BY 

TEST: DUMMY CALIBRATION - ABDOMEN COMPRESSION TEST DATE: 01-13-1998 - 17:43

COMPONENT: DUMMY # 271

ABDOMEN FORCE as a function of ABDOMEN DISPLACEMENT



MSA Research
01-13-1998 18:13

ABDOMEN DISPLACEMENT INCHES

ABDOMEN FORCE LBS

MGA RESEARCH CORPORATION

LUMBAR FLEXION TEST

SIDE IMPACT DUMMY (SID)

DATE: January 21, 1998

DUMMY NUMBER: 271

TEST NUMBER: D98075

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	19%
FORCE @ 0°	0 - 6 lbs	0
FORCE @ 20°	22 - 34 lbs	27
FORCE @ 30°	34 - 46 lbs	39
FORCE @ 40°	46 - 58 lbs	52
RETURN ANGLE	12° maximum	7°

TEST MEETS SPECIFICATIONS

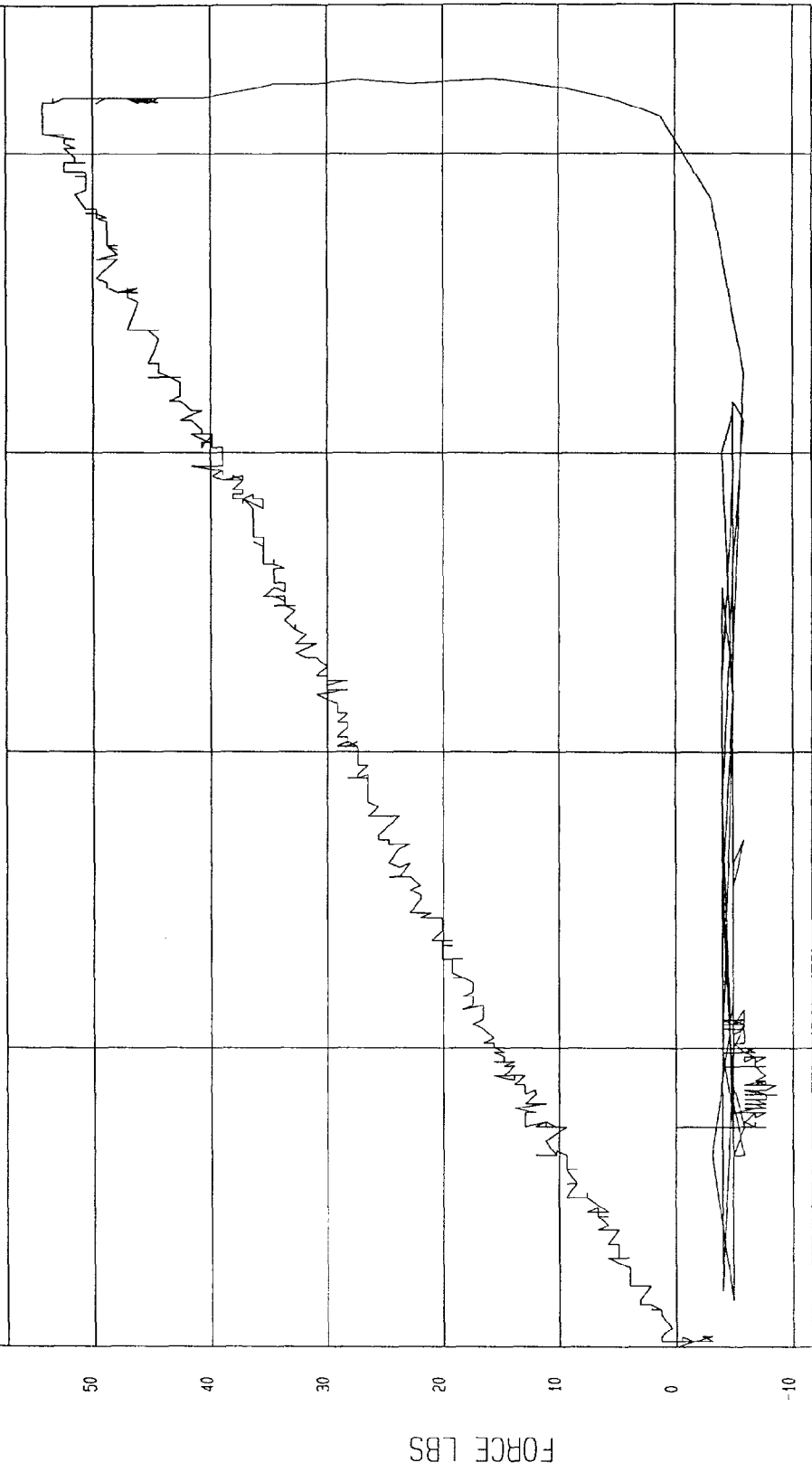
TECHNICIAN 

APPROVED BY 

TEST: DUMMY CALIBRATION - LUMBAR FLEXION TEST DATE: 01-21-1998 - 12:40

COMPONENT: DUMMY # 271

FORCE as a function of TORSO ROTATION



M&E Research
01-21-1998 13:19

POST-TEST CERTIFICATION DATA

Rear Dummy Serial Number: 270

Calibration Test Results Summary

Dummy Serial Number: 270

Post-Test Calibration

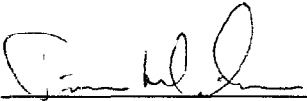
External Dimensions:	The dummy passed all external dimension requirements.
Thorax Impact Test:	The thorax passed all impact test requirements.
Pelvic Impact Test:	The pelvis passed all impact test requirements.
Abdominal Compression Test:	The abdomen passed all compression test requirements.
Lumbar Flexion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

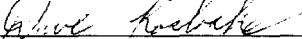
SIDE IMPACT DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

DUMMY NO.: 270

DATE OF VERIFICATION: January 21, 1998

DESCRIPTION	SPECIFICATION	TEST RESULTS
SH - Seated Height	35.0" - 35.8"	35.4
RH - Rib Height	19.75" - 20.50"	20.50
HP - Hip Pivot Height	3.9" ref.	3.9
RD - Rib From Back Line	9.0" to 9.5"	9.4
KV - Knee Pivot From Back Line	20.1" - 20.7"	20.6
SW - Knee Pivot to Floor	19.3" - 19.9"	19.5
HW - Hip Width	14.0" - 15.4"	15.0

MEASUREMENTS BY: 

APPROVED BY: 

MGA RESEARCH CORPORATION
THORAX IMPACT TEST
SIDE IMPACT DUMMY (SID)


DATE: January 13, 1998

DUMMY NUMBER: 270

TEST NUMBER: D98062

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	14%
PROBE SPEED	14.0 - 14.2 fps	14.1
UPPER RIB	37 - 46 g's	41
LOWER RIB	37 - 46 g's	38
LOWER SPINE	15 - 22 g's	20

TEST MEETS SPECIFICATIONS

TECHNICIAN 

APPROVED BY 

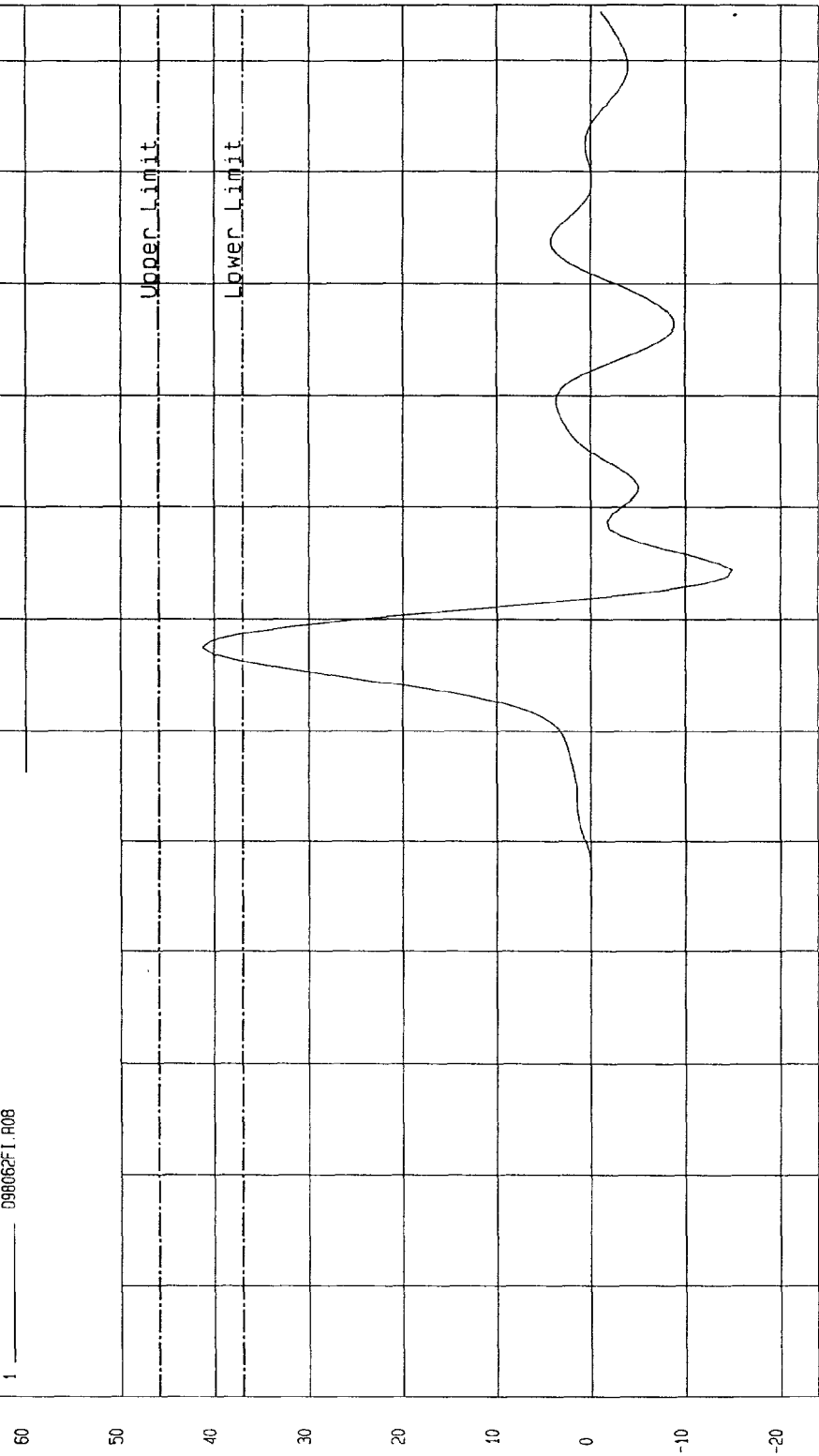
TEST: DUMMY CALIBRATION - THORAX IMPACT TEST DATE: 01-13-1998 - 13:57

COMPONENT: DUMMY # 270 Velocity: 14.084 FT/SEC 4.29 M/SEC

Minimum = -14.84 G'S at 74.3 msec Maximum = 41.26 G'S at 67.5 msec

UPPER RIB ACCELERATION

1 098062FI.R08



WGA Research
01-13-1998 14:02

TEST: DUMMY CALIBRATION - THORAX IMPACT TEST DATE: 01-13-1998 - 13:57

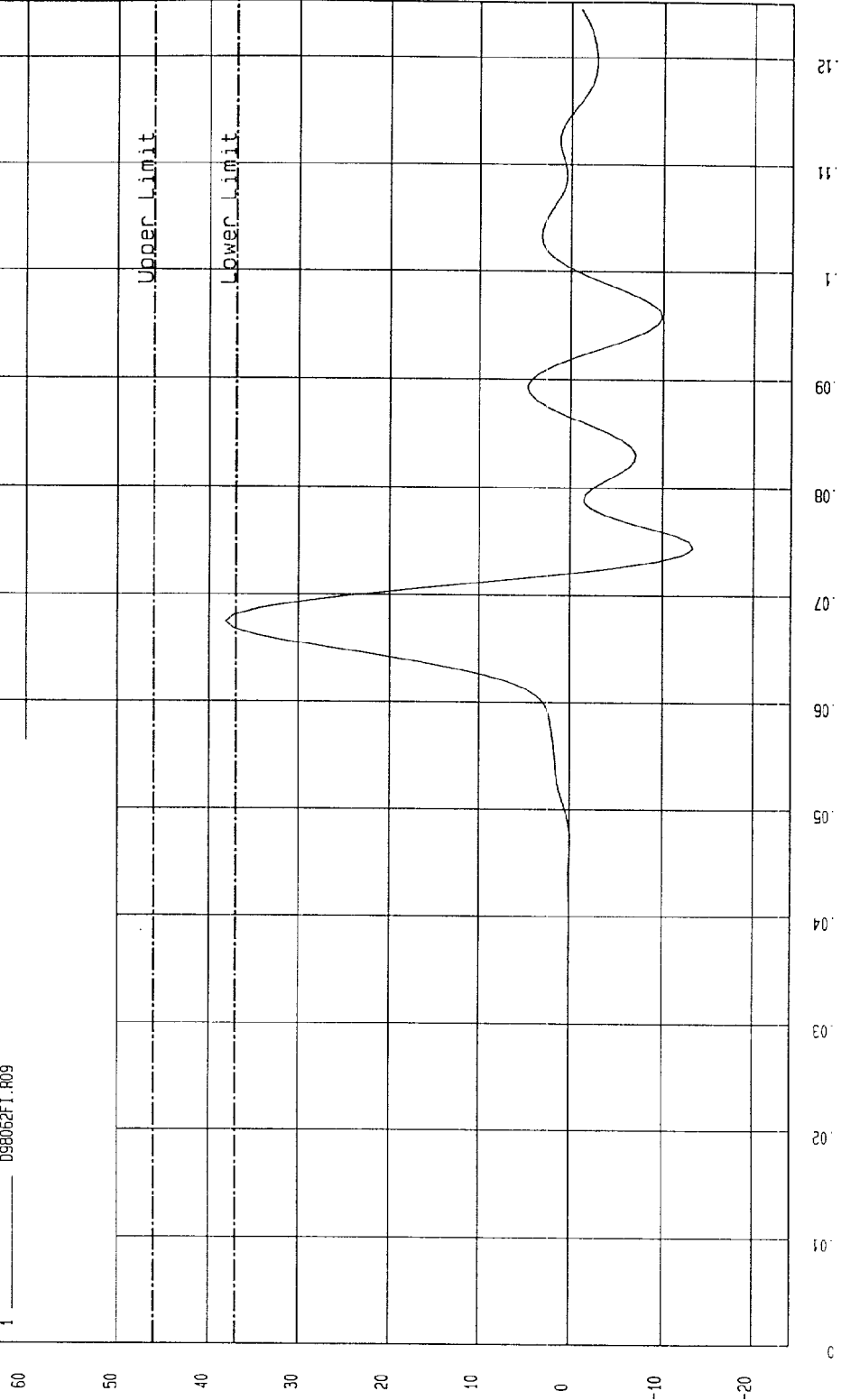
COMPONENT: DUMMY # 270 Velocity: 14.084 FT/SEC 4.29 M/SEC

Minimum = -13.35 G'S at 74.3 msec

Maximum = 38.17 G'S at 67.5 msec

LOWER RIB ACCELERATION

1 _____ D98062FI.R09



NSA Research
01-13-1998 14:02

G.S.

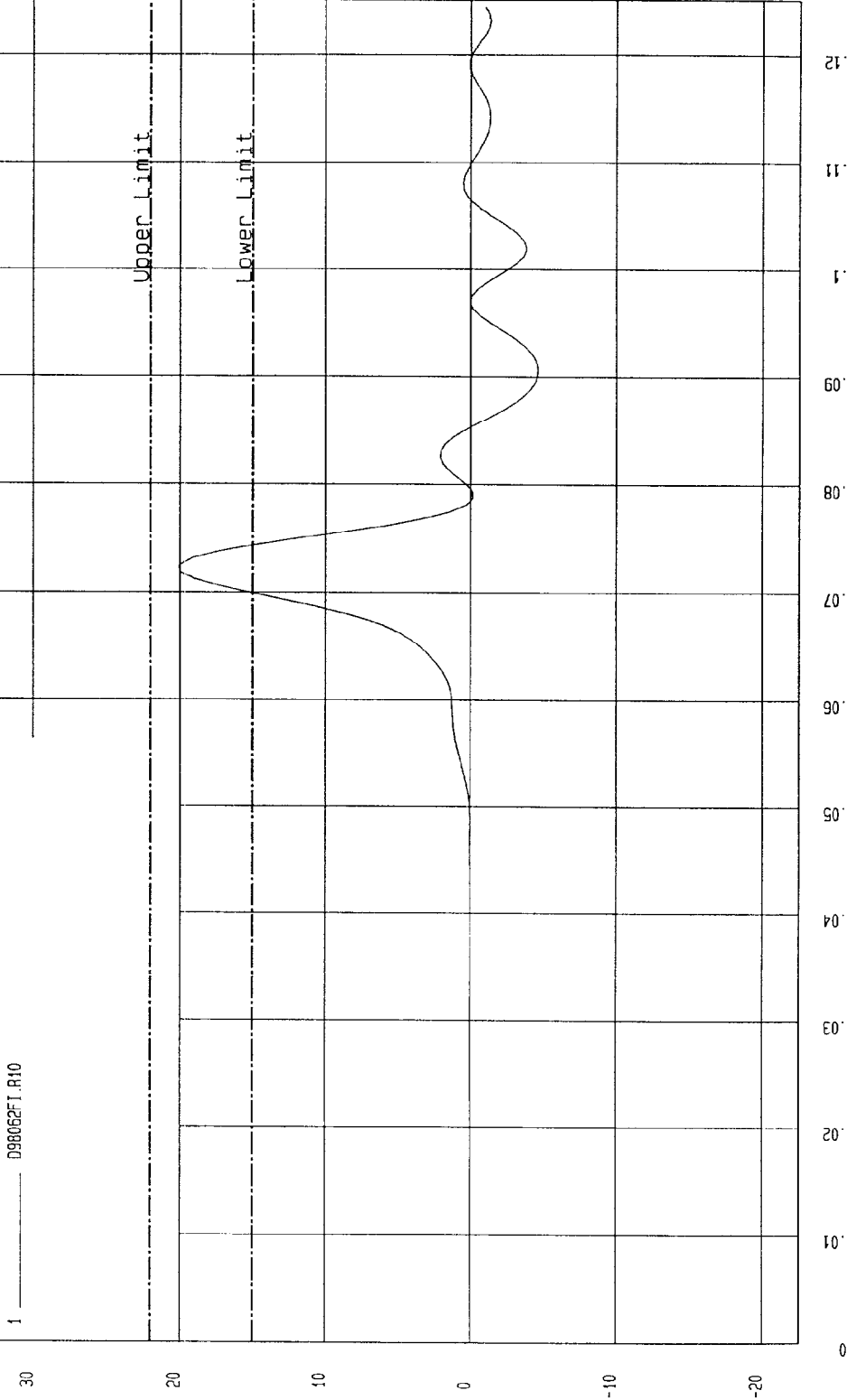
TEST: DUMMY CALIBRATION - THORAX IMPACT TEST DATE: 01-13-1998 - 13:57

COMPONENT: DUMMY # 270 Velocity: 14.084 FT/SEC 4.29 M/SEC

Minimum = -4.68 G'S at 90.6 msec

LOWER SPINE ACCELERATION

1 ——— 098062FLR10



MSA Research
01-13-1998 14:04

MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: January 13, 1998


DUMMY NUMBER: 270

TEST NUMBER: D98063

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	14%
PROBE SPEED	14.0 - 14.2 f/s	14.1
PELVIS ACCELERATION	40 - 60 g's	45

TEST MEETS SPECIFICATIONS

TECHNICIAN 

APPROVED BY 

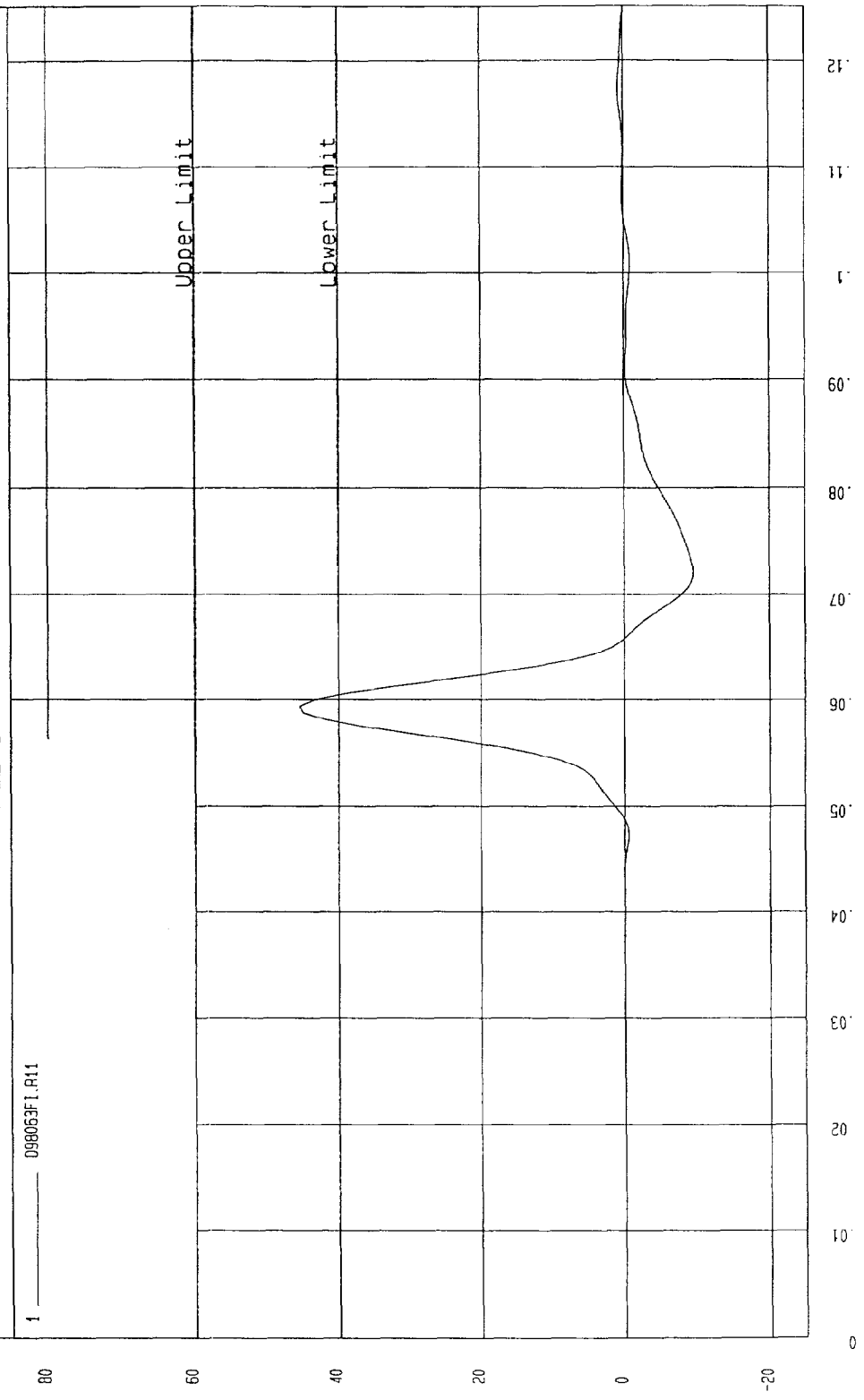
TEST: DUMMY CALIBRATION - PELVIS IMPACT TEST DATE: 01-13-1998 - 14:01

COMPONENT: DUMMY # 270 Velocity: 14.073 FT/SEC 4.29 M/SEC

Minimum = -9.61 G'S at 71.8 msec Maximum = 45.42 G'S at 59.3 msec

PELVIS ACCELERATION

1 _____ 098063F1.R11



MCA Research
01-13-1998 14:03

5.9

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

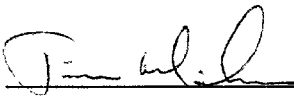
DATE: January 13, 1998

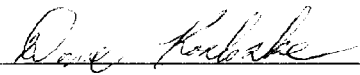
DUMMY NUMBER: 270

TEST NUMBER: D98064

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	12%
FORCE @ 0.5 in	23.3 - 36.5 lbs	30.7
FORCE @ 0.75 in	36.7 - 49.8 lbs	42.0
FORCE @ 1.0 in	50 - 63 lbs	56
FORCE @ 1.3 in	73 - 88 lbs	77

TEST MEETS SPECIFICATIONS

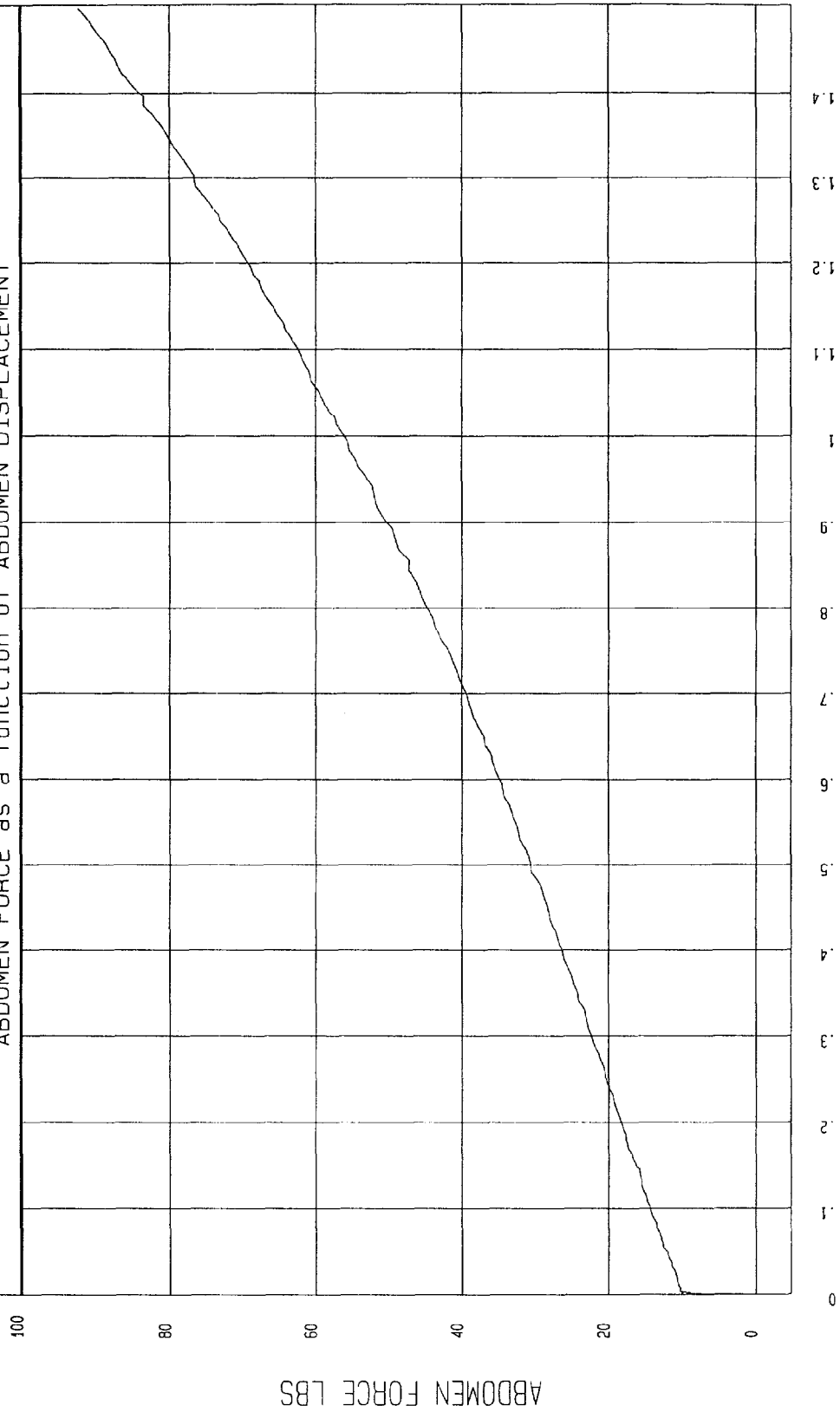
TECHNICIAN 

APPROVED BY 

TEST: DUMMY CALIBRATION - ABDOMEN COMPRESSION TEST DATE: 01-13-1998 - 19:54:12

COMPONENT: DUMMY # 270

ABDOMEN FORCE as a function of ABDOMEN DISPLACEMENT



MCA Research
01-27-1998 19:51

ABDOMEN DISPLACEMENT INCHES

ABDOMEN FORCE LBS

MGA RESEARCH CORPORATION

LUMBAR FLEXION TEST

SIDE IMPACT DUMMY (SID)

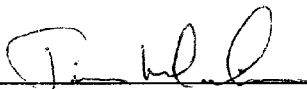
DATE: January 21, 1998

DUMMY NUMBER: 270

TEST NUMBER: D98065

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	19%
FORCE @ 0°	0 - 6 lbs	0
FORCE @ 20°	22 - 34 lbs	24
FORCE @ 30°	34 - 46 lbs	37
FORCE @ 40°	46 - 58 lbs	47
RETURN ANGLE	12° maximum	6°

TEST MEETS SPECIFICATIONS

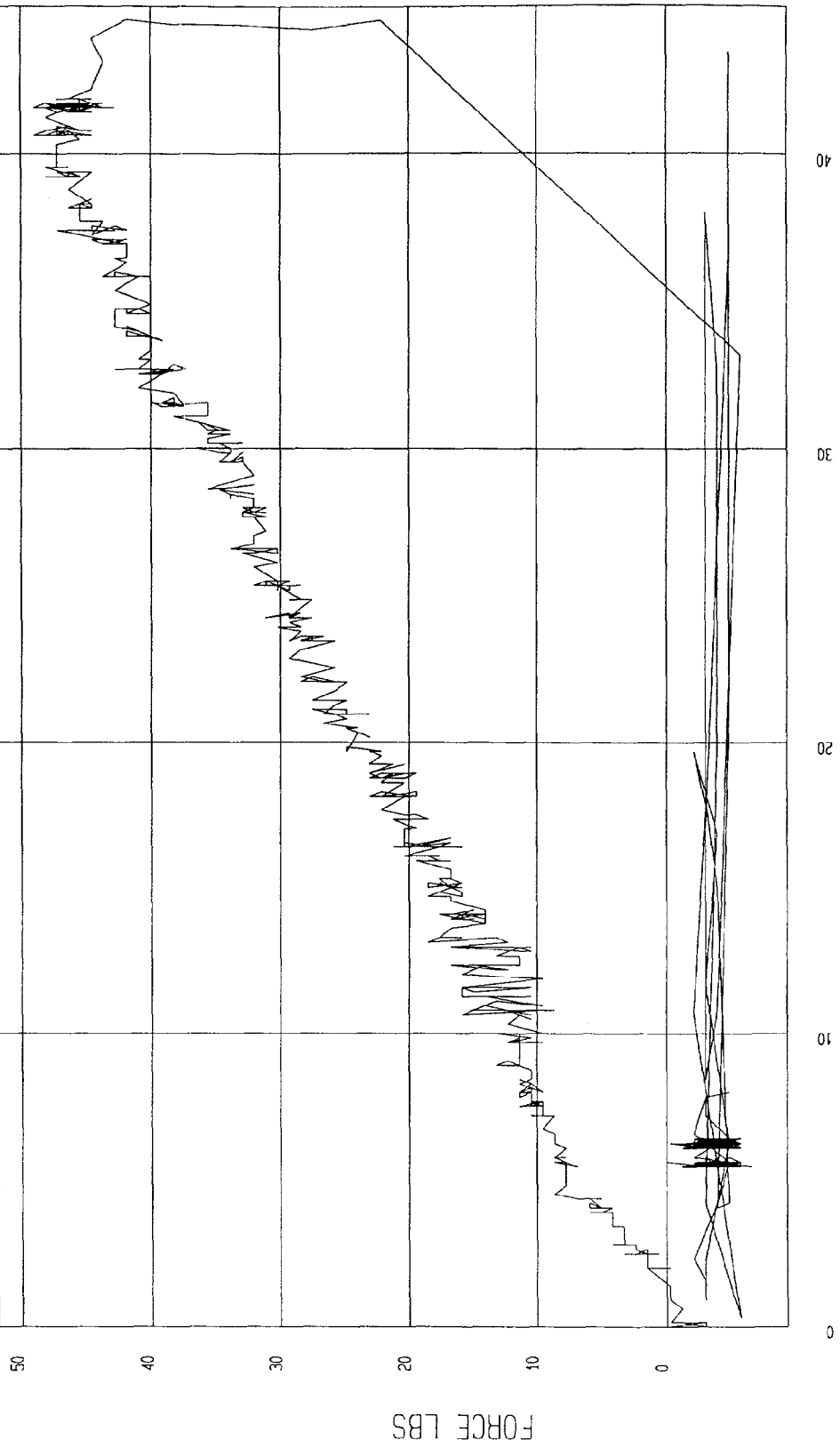
TECHNICIAN 

APPROVED BY 

TEST: DUMMY CALIBRATION - LUMBAR FLEXION TEST DATE: 01-21-1998 - 11:34

COMPONENT: DUMMY # 270

FORCE as a function of TORSO ROTATION



MGA Research
01-21-1998 13:19

POST-TEST DRIVER DUMMY INSPECTION CHECKLIST

Type: Side Impact Dummy

Serial Number: 271

Inspected By: Tim Michnay

Date: January 21, 1998

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

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

POST-TEST PASSENGER DUMMY INSPECTION CHECKLIST

Type: Side Impact Dummy

Serial Number: 270

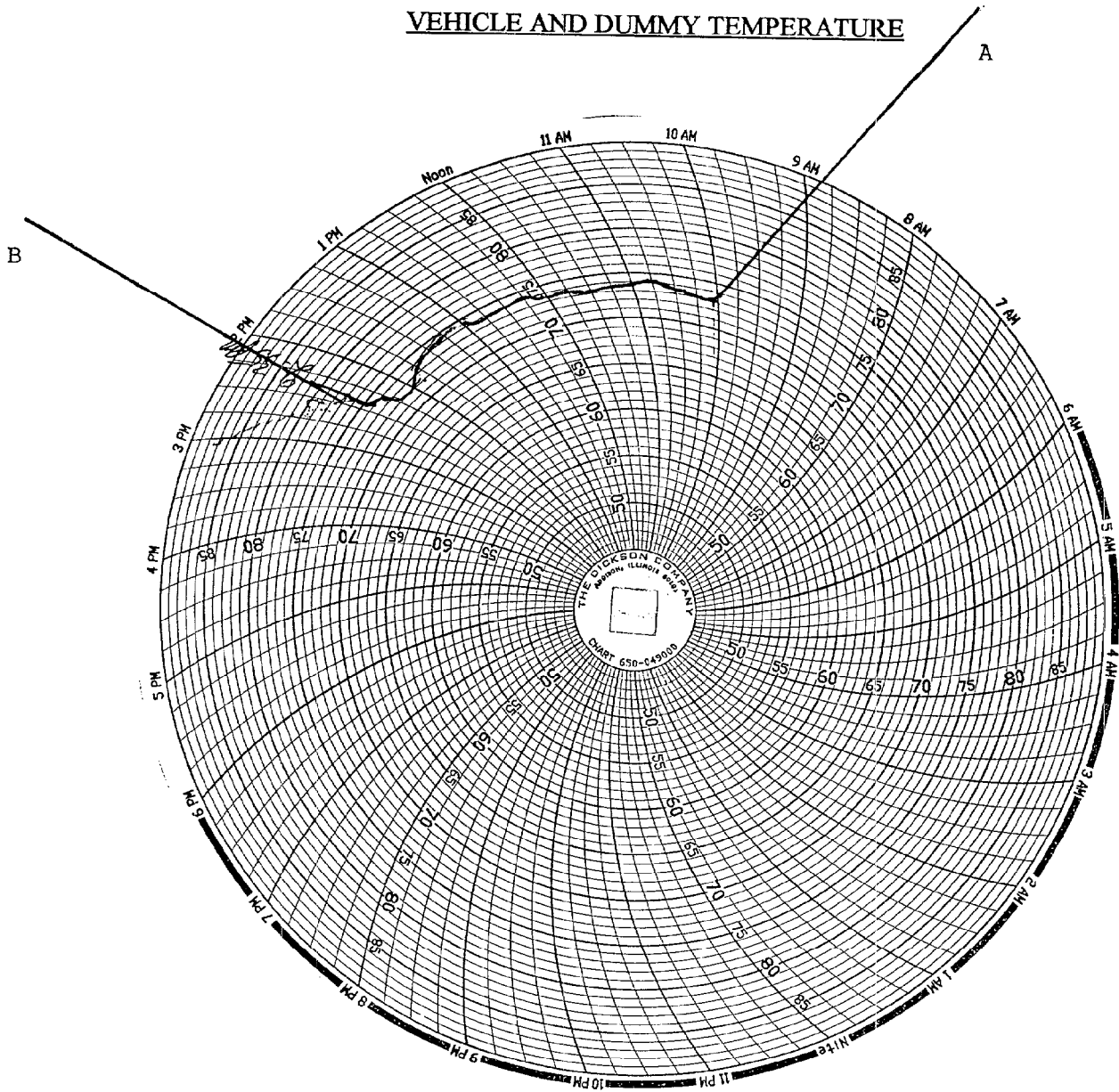
Inspected By: Tim Michnay

Date: January 13, 1998

<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	Rib wrap torn from rivets on impact side--Replaced Jacket torn on impact side by neck- Replaced	

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

VEHICLE AND DUMMY TEMPERATURE



A = dummies installed in vehicle
B = test conducted

APPENDIX D
TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

DUMMY AND VEHICLE CALIBRATION DATA
INSTRUMENTS FOR DRIVER DUMMY NO. 270

	DRIVER		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Upper Rib Y	AKAF3	Endevco	September 16, 1997
Lower Rib Y	ALEC1	Endevco	September 15, 1997
Lower Spine Y	ALCH7	Endevco	September 16, 1997
Pelvis Y	AKAD6	Endevco	September 11, 1997
Upper Rib Redundant Y	ALCN9	Endevco	September 16, 1997
Lower Rib Redundant Y	J10411	Endevco	September 15, 1997
Lower Spine Redundant Y	AJA420	Endevco	September 16, 1997
Pelvis Redundant Y	AJ9A7	Endevco	September 11, 1997
Head Center of GravityX	AN8R0	Endevco	September 11, 1997
Head Center of Gravity Y	AN8P8	Endevco	September 11, 1997
Head Center of Gravity Z	AN8M5	Endevco	September 11, 1997

INSTRUMENTS FOR PASSENGER DUMMY NO. 271

LEFT REAR PASSENGER			
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Upper Rib Y	AP2A4	Endevco	September 11, 1997
Lower Rib Y	AP1B3	Endevco	September 11, 1997
Lower Spine Y	ANAP1	Endevco	September 11, 1997
Pelvis Y	AHTC3	Endevco	September 11, 1997
Upper Rib Redundant Y	AP2D8	Endevco	September 11, 1997
Lower Rib Redundant Y	APIC6	Endevco	September 11, 1997
Lower Spine Redundant Y	ANAT6	Endevco	September 11, 1997
Pelvis Redundant Y	AGP53	Endevco	September 11, 1997
Head Center of Gravity X	AMP95	Endevco	September 11, 1997
Head Center of Gravity Y	AALH1	Endevco	September 11, 1997
Head Center of Gravity Z	AM748	Endevco	September 11, 1997

VEHICLE INSTRUMENT CALIBRATION

VEHICLE ACCELEROMETERS			
SERIAL NO.	MANUFACTURER	CALIBRATION DATE	
J04-F11	Entran	August 7, 1997	Moving Barrier CG X
F11-G04	Entran	August 7, 1997	Moving Barrier CG Y
J04-F12	Entran	August 7, 1997	Moving Barrier CG Z
G13-B07	Entran	August 6, 1997	Moving Barrier Rear Axle X
L14-D04	Entran	August 4, 1997	Moving Barrier Rear Axle Y
J06-D24	Entran	December 10, 1997	Left Mid A-Post Y
F12-G09	Entran	August 7, 1997	Left Lower A-Post Y
E13-D17	Entran	December 10, 1997	Left Mid B-Post Y
F12-G08	Entran	August 1, 1997	Left Lower B-Post Y
G01-J18	Entran	August 7, 1997	Rear Floorpan Above Axle X
I26-D04	Entran	August 7, 1997	Rear Floorpan Above Axle Y
C25-A04	Entran	July 7, 1997	Rear Floorpan Above Axle Z
B12-G06	Entran	December 10, 1997	Driver Seat Track Y
G13-B07	Entran	August 7, 1997	Right Side Sill at Front Seat X
F11-G07	Entran	July 16, 1997	Right Side Sill at Front Seat Y
E10-F19	Entran	July 11, 1997	Right Side Sill at Front Seat Z
G01-J10	Entran	August 7, 1997	Right Side Sill at Rear Seat X
F12-G05	Entran	August 7, 1997	Right Side Sill at Rear Seat Y
I26-D09	Entran	August 5, 1997	Right Side Sill at Rear Seat Z
B14-R01	Entran	August 1, 1997	Left Side Sill at Front Seat Y

VEHICLE INSTRUMENT CALIBRATION

VEHICLE ACCELEROMETERS		
SERIAL NO	MANUFACTURER	CALIBRATION DATE
B14-R01	Entran	August 1, 1997
J06-D19	Entran	December 10, 1997
D05-R20	Entran	July 7, 1997
F12-G03	Entran	July 11, 1997
D05-R16	Entran	July 7, 1997
J10-E10	Entran	December 10, 1997
E25-G07	Entran	December 10, 1997
E13-D18	Entran	December 10, 1997
J23-E06	Entran	August 1, 1997

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