

V2499

REPORT NO.: 214-MGA-97-08
SAFETY COMPLIANCE TESTING FOR
FMVSS 214 "SIDE IMPACT PROTECTION -
PASSENGER CARS"

GENERAL MOTORS CORPORATION
1997 PONTIAC GRAND AM 4 DOOR
NHTSA NO: CV0107

MGA PROVING GROUNDS
5000 WARREN ROAD
BURLINGTON, WI 53105



Test Date: November 13, 1996

Report Date: December 31, 1996

FINAL REPORT

Prepared For:

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15. Supplementary Notes																							
16. Abstract A 48/24 kph 90° Impact (Moving Deformable Barrier) Compliance Test was conducted on the subject 1997 Pontiac Grand AM 4 Door in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-214D-04 for the determination of FMVSS No. 214 Side Impact Protection compliance. The test was conducted at MGA Research Corporation in Burlington, Wisconsin, on November 13, 1996. The impact velocity of the Moving Deformable Barrier (MDB) was 53.4 kph, and the ambient temperature at the struck side of the target vehicle at the time of impact was 23 °C. The target vehicle post test maximum crush was 353 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>RIGHT FRONT PASS.</u></th> <th style="text-align: center;"><u>RIGHT REAR PASS.</u></th> </tr> </thead> <tbody> <tr> <td>Right Upper Rib (RUR) Accel., g</td> <td style="text-align: center;">61</td> <td style="text-align: center;">63</td> </tr> <tr> <td>Right Lower Rib (RLR) Accel., g</td> <td style="text-align: center;">54</td> <td style="text-align: center;">68</td> </tr> <tr> <td>Lower Spine (T₁₂) Accel., g</td> <td style="text-align: center;">78</td> <td style="text-align: center;">64</td> </tr> <tr> <td>Thoracic Trauma Index (TTI)</td> <td style="text-align: center;">69</td> <td style="text-align: center;">66</td> </tr> <tr> <td>Pelvis (PEV) Accel., g</td> <td style="text-align: center;">81</td> <td style="text-align: center;">65</td> </tr> </tbody> </table> The doors on the struck side of the vehicle did not separate from the body and the opposite doors did not open during the side impact event.							<u>RIGHT FRONT PASS.</u>	<u>RIGHT REAR PASS.</u>	Right Upper Rib (RUR) Accel., g	61	63	Right Lower Rib (RLR) Accel., g	54	68	Lower Spine (T ₁₂) Accel., g	78	64	Thoracic Trauma Index (TTI)	69	66	Pelvis (PEV) Accel., g	81	65
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17. Key Words Compliance Testing Side Impact Protection FMVSS 214 Side Impact Dummy (SID)			18. Distribution Statement Copies of this report are available from: National Highway Traffic Safety Adm. Technical Ref. Division, Room 5108 (NAD-52) 400 Seventh Street, S.W. Washington, D.C. 20590 Telephone No. 202-366-4946 Attn: Robert Hornickle																				
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SECTION 1
PURPOSE AND TEST PROCEDURE

This side impact test is part of the FY 96 FMVSS 214 Side Impact Protection Compliance Test Program, sponsored by the National Highway Traffic Safety Administration (NHTSA), under Contract No. DTNH22-93-C-02047. The purpose of this test was to evaluate side impact protection of a 1997 Pontiac Grand AM 4 Door.

This side impact test was conducted in accordance with the Vehicle Safety Compliance's FMVSS 214 test procedure (TP-214D-04, dated September 1, 1995).

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

SECTION 2
SUMMARY OF SIDE IMPACT TEST

A 1997 Pontiac Grand AM 4 Door was impacted on the right 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 33.2 mph (53.4 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 November 13, 1996. 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 right front and right rear designated seating positions according to instructions specified in the OVSC Side Impact Laboratory Test Procedure which is dated September 1, 1995. 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. Right Upper Rib (RUR) uniaxial accelerometer (Y-direction)
2. Right Lower Rib (RLR) uniaxial accelerometer (Y-direction)
3. Lower Thoracic Spine (T₁₂) uniaxial accelerometer (Y-direction)
4. Pelvic (PEV) section uniaxial accelerometer (Y-direction)

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

The following table summarizes the results of the FMVSS 214 Right Side Impact test:

Injury Criteria	Front SID	Rear SID
TTI (g)	69	66
Pelvis (g)	81	65

TEST NOTES

1. The following accelerometers were not used for this test:

Right Front Door on Centerline

Midrear of Right Front Door

Right Front Door Upper Centerline

Midrear of Right Rear Door

Right Rear Door Upper Centerline

Rear Seat Track

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

DATA SHEET NO. 1

GENERAL VEHICLE TEST PARAMETER DATA

TEST VEHICLE INFORMATION:

Year/Make/Model/Body Style: 1997/Pontiac/Grand AM/4 Door

Vehicle NHTSA No.: CV0107 VIN: 1G2NE52M1VC723676

Vehicle Body Color: Medium Red Metallic Build Date: 9/96

Engine Data: 6 Cylinders; CID; 3.1 Liter; cc

Placement Longitudinal; X Lateral

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

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

Odometer Reading 49 miles

Options: X A/C; X Pwr. Steering; X Pwr. Brakes; 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: P195/65R15

Tires on Test Vehicle: P195/65R15 Manufacturer: B.F. Goodrich

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 = 400.1 kg (A)

No. of Occupants x 68.04 kg. = 340.2 kg (B)

Cargo Capacity (A-B) = 59.9 kg

GENERAL VEHICLE TEST PARAMETER DATA (Cont'd)

WEIGHT OF TEST VEHICLE WITH MAXIMUM FLUIDS:

Right Front	=	<u>449.5</u>	kg	Right Rear	=	<u>235.9</u>	kg
Left Front	=	<u>448.6</u>	kg	Left Rear	=	<u>232.2</u>	kg
TOTAL FRONT	=	<u>898.1</u>	kg	TOTAL REAR	=	<u>468.1</u>	kg
% of Total Vehicle Weight		=	<u>65.7</u>	%;	% of Total Weight = <u>34.3</u> %		
TOTAL WEIGHT = <u>1366.2</u> kg							

GENERAL VEHICLE TEST PARAMETER DATA (Cont'd)

Year/Make/Model/Body Style: 1997/Pontiac/Grand AM/4 Door

Vehicle NHTSA No.: CV0107 Test Date: November 13, 1996

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Total Test Vehicle Delivered Weight with Maximum Fluids	= <u>1366.2</u> kg
Cargo Carrying Capacity of Test Vehicle	= <u>59.9</u> kg
Weight of 2 Side Impact Dummies (2 x <u>80.7</u> kg.)	= <u>161.4</u> kg
TEST VEHICLE TARGET WEIGHT	= <u>1587.5</u> kg

ACTUAL WEIGHT OF TEST VEHICLE WITH 2 DUMMIES AND CARGO:

Right Front = <u>449.5</u> kg	Right Rear = <u>235.9</u> kg
Left Front = <u>448.6</u> kg	Left Rear = <u>232.2</u> kg
TOTAL FRONT = <u>898.1</u> kg	TOTAL REAR = <u>468.1</u> kg
% of Total Weight = <u>65.7</u> %	% of Total Weight = <u>34.3</u> %
TOTAL TEST WEIGHT = <u>1366.2</u> kg	

TEST VEHICLE ATTITUDE:

CURB WEIGHT ATTITUDE:

Right Front 679 mm Left Front 681 mm Right Rear 713 mm Left Rear 709 mm

FULLY LOADED WEIGHT ATTITUDE:

Right Front 665 mm Left Front 679 mm Right Rear 664 mm Left Rear 674 mm

TEST ATTITUDE:

Right Front 671 mm Left Front 678 mm Right Rear 672 mm Left Rear 679 mm

GENERAL VEHICLE TEST PARAMETER DATA (Cont'd)

Test Vehicle Wheelbase: 2630 mm

C.G. = 1038 mm rearward of front wheel centerline

TOTAL VEHICLE LENGTH:

Right Side = 4360 mm

Centerline = 4734 mm

Left Side = 4360 mm

GENERAL VEHICLE TEST PARAMETER DATA (Cont'd)

Year/Make/Model/Body Style: 1997/Pontiac/Grand AM/4 Door

Vehicle NHTSA No.: CV0107 Test Date: November 13, 1996

FRONT SEAT CUSHION PLACEMENT:

Total Length of Adjustment Travel: 182 mm

Test Position: 5th position rearward out of 10 total

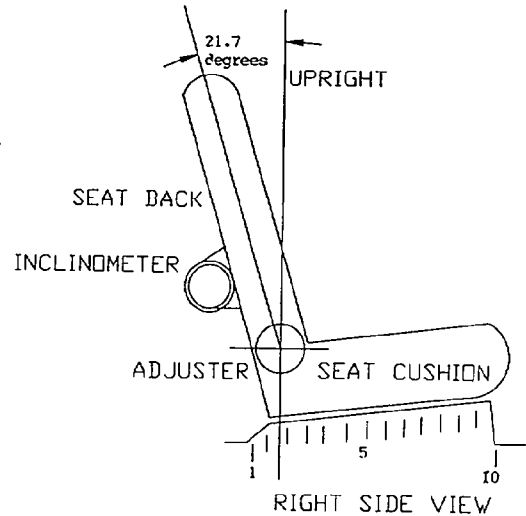
FRONT SEAT BACK ADJUSTMENT POSITION:

Seat Back Angle = 21.7° from the vertical position

REAR POSITION SEAT:

Total Length of Fore/Aft Adjustment Travel: 0

Seat Back Adjustment Position: Non-Adjustable



ADJUSTABLE STEERING COLUMN POSITION: 3rd position of 5

WINDOW POSITIONS: Left Front Open Left Rear Open

Right Front Closed Right Rear Closed

AMOUNT OF STODDARD SOLVENT IN FUEL TANK:

Fuel system usable capacity = 57.5 liters

Test Volume: 53.5 liters 93 % of capacity

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

Wheelbase: = 2630 mm

Impact Point is 375 mm rearward of front axle centerline

DATA SHEET NO. 2

TEST VEHICLE SUMMARY OF RESULTS

Year/Make/Model/Body Style: 1997/Pontiac/Grand AM/4 Door

Vehicle NHTSA No.: CV0107 Test Date: November 13, 1996

Overall Length = 4734 mm; Overall Width = 1658 mm

TEST WEIGHT:

Right Front = 496.2 kg

Right Rear = 323.0 kg

Left Front = 460.9 kg

Left Rear = 300.7 kg

TOTAL FRONT = 957.1 kg

TOTAL REAR = 623.7 kg

% of Total Weight = 60.5 %

% of Total Weight = 39.5 %

TOTAL VEHICLE WEIGHT = 1580.8 kg

Wheelbase = 2630 mm

Longitudinal C.G. from Center of Front Axle = 1038 mm

Impact Angle with Respect to Impactor = 0° degrees

MAXIMUM EXTERIOR STATIC CRUSH:

1. LEVEL 1 (260 mm above ground) = 24 mm*

2. LEVEL 2 (468 mm above ground) = 336 mm

3. LEVEL 3 (634 mm above ground) = 309 mm

4. LEVEL 4 (879 mm above ground) = 278 mm

5. LEVEL 5 (1322 mm above ground) = 58 mm

Maximum Post-Test Intrusion = 353 mm

OCCUPANTS:

Right Front Passenger

Right Rear Passenger

Type of Dummy

SID

SID

Restraints Used

type II belt

type II belt

with airbag

* Post-test measurements were not available for a section of level one due to a trim panel coming off during impact.

TEST VEHICLE SUMMARY OF RESULTS (Cont'd)

INSTRUMENTATION:

Number of Vehicle Data Channels: = 20

Number of Cameras: Onboard Vehicle = 3

Offboard Vehicle = 4

Deformable Barrier = 2

TOTAL = 9

DATA SHEET NO. 3

MOVING DEFORMABLE BARRIER (MDB) SUMMARY OF RESULTS

Year/Make/Model/Body Style: 1997/Pontiac/Grand AM/4 Door

Vehicle NHTSA No.: CV0107 Test Date: November 13, 1996

POSITION OF IMPACT (MDB) ON MONORAIL:

Crabbed 27° to right

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>1106 mm</u>
C.G. Location From Center Line	=	<u>14.7 mm</u>
C.G. Location Above Ground Level	=	<u>488 mm</u>

MDB WEIGHT:

Left Front	=	<u>434.5 kg</u>	Left Rear	=	<u>233.2 kg</u>
Right Front	=	<u>342.9 kg</u>	Right Rear	=	<u>346.0 kg</u>
TOTAL FRONT	=	<u>777.4 kg</u>	TOTAL REAR	=	<u>579.2 kg</u>
TOTAL MDB WEIGHT	=	<u>1356.6 kg</u>			

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

Impact Speed = Primary: 33.2 mph (53.4 kph) Secondary: 33.1 mph (53.3 kph)

CRASH TEST SUMMARY FOR SIDE IMPACTOR (Cont'd)

MAXIMUM STATIC CRUSH OF HONEYCOMB IMPACT FACE:

1. Row A Top of Stack (813 mm) = 117 mm
2. Row B Mid Stack (686 mm) = 97 mm
3. Row C Top of Bumper (533 mm) = 62 mm
4. Row D Center of Bumper (432 mm) = 101 mm

INSTRUMENTATION:

Number of MDB Data Channels = 5

DATA SHEET NO. 4

POST-TEST OBSERVATIONS

Year/Make/Model/Body Style: 1997/Pontiac/Grand AM/4 Door

Vehicle NHTSA No.: CV0107 Test Date: November 13, 1996

VISIBLE DUMMY CONTACT POINTS:

	<u>RIGHT FRONT SID</u>	<u>RIGHT REAR SID</u>
Head	<u>to headrest and right shoulder</u>	<u>to headrest and C pillar</u>
Arm	<u>to door panel</u>	<u>to door panel</u>
Pelvis	<u>to door panel</u>	<u>to door panel</u>
Left Knee	<u>to right knee</u>	<u>none</u>
Right Knee	<u>to door panel</u>	<u>to door panel</u>

DOOR OPENING:

	<u>LEFT SIDE</u>	<u>RIGHT SIDE</u>
Front	<u>Yes</u>	<u>No</u>
Rear	<u>Yes</u>	<u>No</u>

MDB DISTANCE FROM TARGET IMPACT POINT:

Horizontal: 16 mm forward Vertical: 10 mm high

ARM REST LOCATIONS:

Front: 242 mm from bottom of window

Rear: 260 mm from bottom of window

POST-TEST OBSERVATIONS (Cont'd)

SEAT CRUSH:

Front Seat Back: 26 mm Front Seat Cushion: 82 mm

Rear Seat Back: 60 mm Rear Seat Cushion: 133 mm

GLAZING DAMAGE:

Right front and rear door windows broken, windshield right side cracked

PILLAR PERFORMANCE:

No failure noted

SILL SEPARATION:

None noted

OTHER NOTABLE IMPACT EFFECTS:

Fuel door opened on impact

SECTION 4
OCCUPANT AND VEHICLE INFORMATION

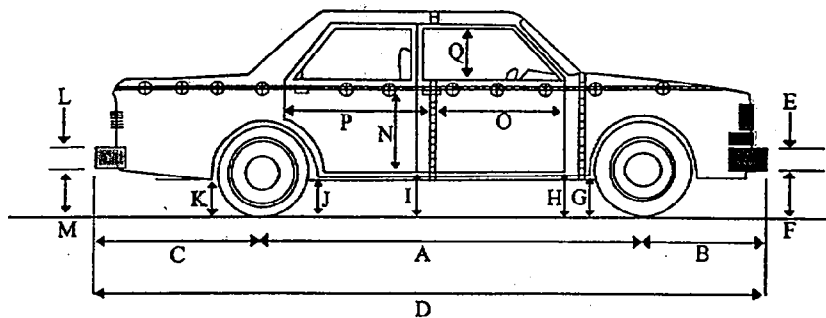
DATA SHEET NO. 5
SIDE IMPACT DUMMY (SID) INSTRUMENTATION DATA

Year/Make/Model/Body Style: 1997/Pontiac/Grand AM/4 Door
 Vehicle NHTSA No.: CV0107 Test Date: November 13, 1996

	Front SID ID #271			Rear SID ID #272		
	Pos. Direct.	Neg. Direct		Pos. Direct.	Neg. Direct	
	Max (g)	Time (msec)	Time (msec)	Max (g)	Time (msec)	Time (msec)
RIB ACCELERATIONS						
Right Upper Rib (RUR) Y	19	75	28	4	86	41
Right Lower Rib (RLR) Y	15	90	28	19	64	41
SPINE ACCELERATIONS						
Lower Lateral Y	13	65	32	24	68	42
PELVIS ACCELERATIONS						
Lateral Y	11	94	26	9	73	31

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)

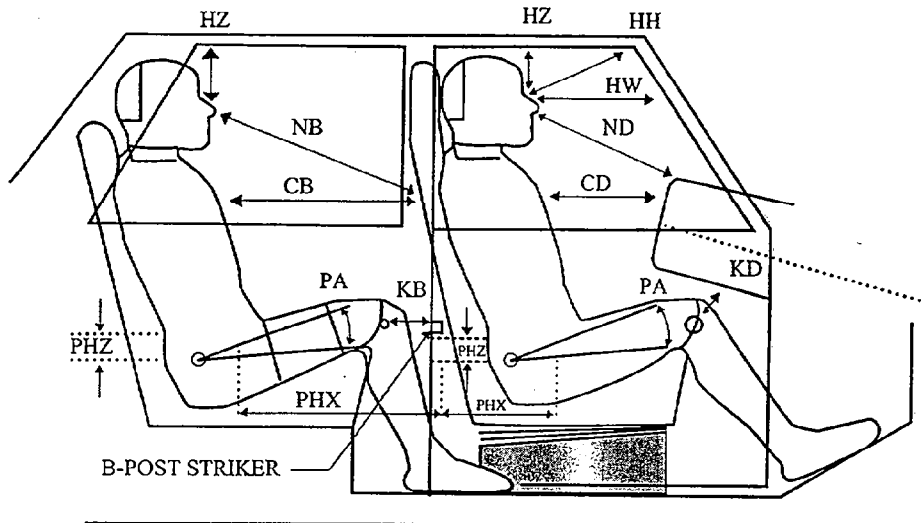
	PRE-TEST	POST-TEST	Δ CHANGE
A	2630	2577	53
B	1056	1050	6
C	1048	1045	3
D	4734	4672	62
E	133	135	2
F	390	392	2
G	219	236	17
H	213	231	18
I	218	199	19
J1/J2	220/218	201/212	19/6
K	240	207	33
L	338	335	3
M	380	342	38
N	637	623	14
O	743	730	13
P	1182	1106	76
Q	450	443	7
R	4360	4303	57
S	4360	4368	8
T	1658	1473	185

DATA SHEET NO. 7

SIDE IMPACT DUMMY (SID) LONGITUDINAL CLEARANCE DIMENSIONS

Year/Make/Model/Body Style: 1997/Pontiac/Grand AM/4 Door

NHTSA NO.: CV0107 Test Date: November 13, 1996



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

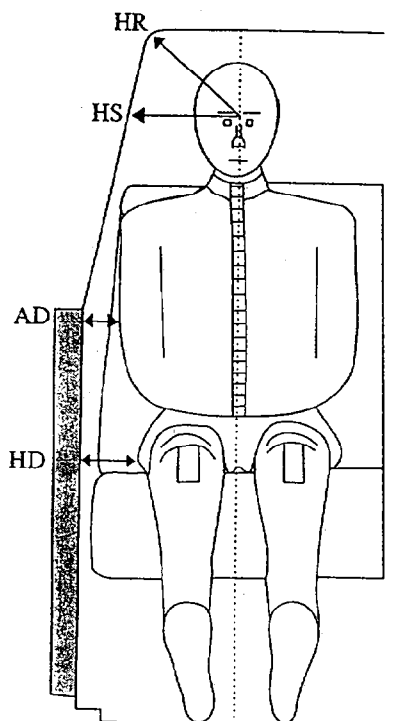
	FRONT PASSENGER ID #271	REAR PASSENGER SID ID #272
HH	339	
HW	553	HZ 148
HZ	131	NB 591
NR	N/A	CB 506
CD	547	KBL (KBA) 198 (0°)
CS	N/A	KBR (KBA) 204 (0°)
KDL(KDA°)	111 (30.7°)	PA° 24.2°
KDR(KDA°)	164 (32.8°)	PHX 266
PA°	24.4°	PHZ 329
PHX	198	
PHZ	108	

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

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

Year/Make/Model/Body Style: 1997/Pontiac/Grand AM/4 Door

NHTSA NO.: CV0107 Test Date: November 13, 1996



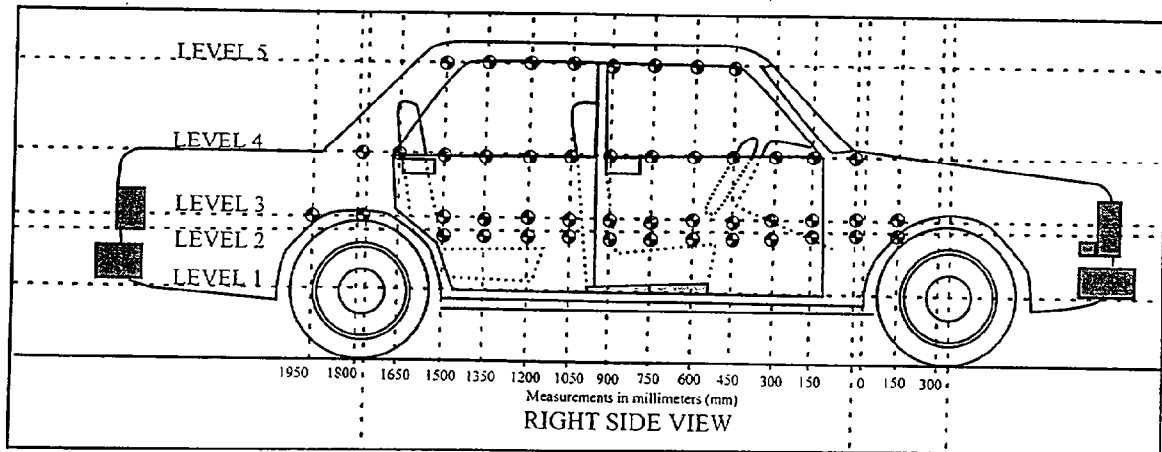
NOTE: All dimensions are in mm

	FRONT PASSENGER ID #271	REAR PASSENGER ID #272
HR	151	146
HS	294	270
AD	93	76
HD	109	115

DATA SHEET NO. 9
VEHICLE SIDE MEASUREMENTS

Year/Make/Model/Body Style: 1997/Pontiac/Grand AM/4 Door

NHTSA NO.: CV0107 Test Date: November 13, 1996



LEVEL 5 - WINDOW TOP

LEVEL 4 - WINDOW SILL

LEVEL 3 - MID DOOR

LEVEL 2 - OCCUPANT H-POINT

LEVEL 1 - AXLE CENTERLINE HEIGHT OR SILL TOP HEIGHT

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>260</u> mm
Level 2 @ Occupant H-Point	=	<u>468</u> mm
Level 3 @ Mid Door	=	<u>634</u> mm
Level 4 @ Window Sill	=	<u>879</u> mm
Level 5 @ Window Top	=	<u>1322</u> mm

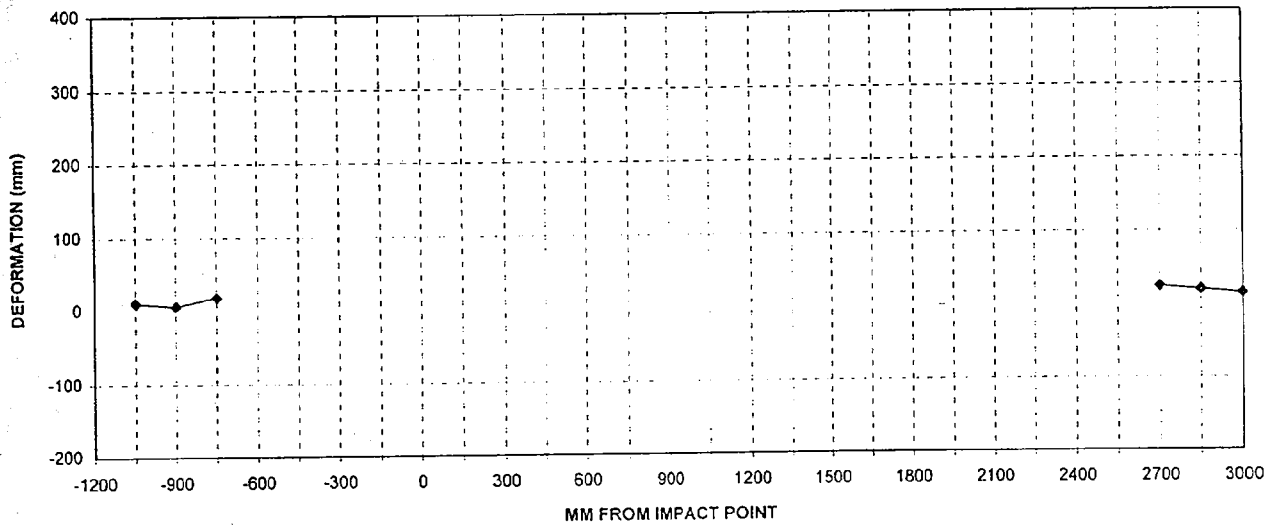
**DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES**

Longitudinal Distance (mm)	Level 1 - Axle Centerline		
	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
-1200			
-1050	847	857	10
-900	824	830	6
-750	796	814	18
-600			
-450			
-300			
-150			
0 (impact point)	764	N/A	
150	767	N/A	
300	767	N/A	
450	767	N/A	
600	767	N/A	
750	767	N/A	
900	769	N/A	
1050	769	N/A	
1200	769	N/A	
1350	768	N/A	
1500	768	N/A	
1650	769	N/A	
1800	767	N/A	
1950			
2100			
2250			
2400			
2550			
2700	784	808	24
2850	796	816	20
3000	816	831	15

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

N/A: Post-test measurements were not available for this section of the vehicle due to a trim panel coming off during impact.

VEHICLE EXTERIOR STATIC CRUSH (Cont'd)



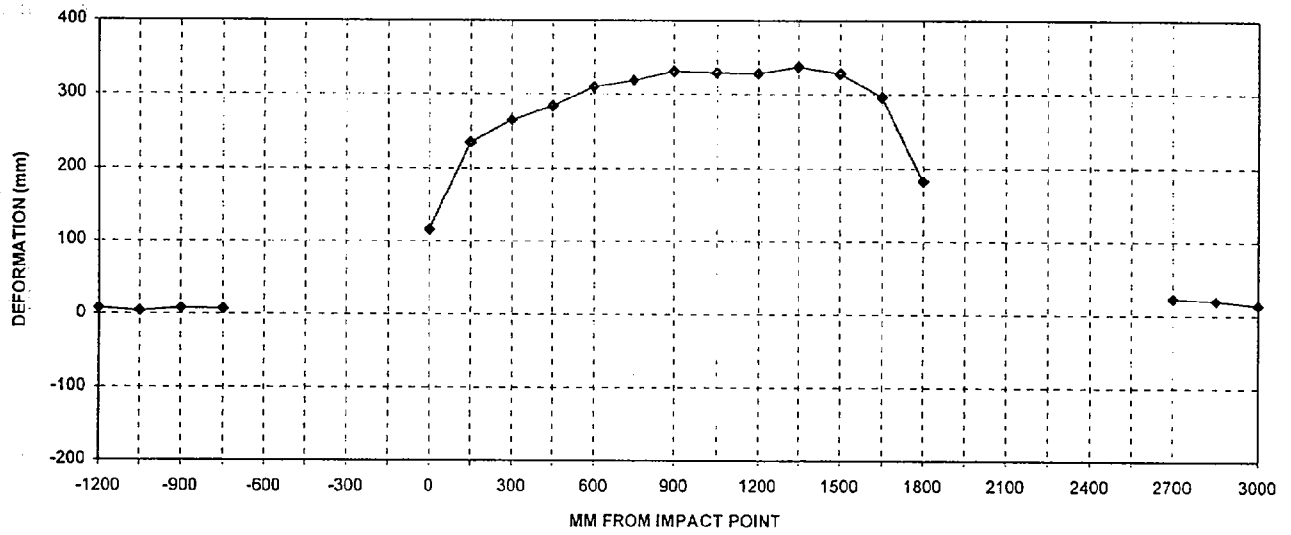
LEVEL 1 - AXLE CENTERLINE

DATA SHEET NO. 10 (Cont'd)
VEHICLE EXTERIOR CRUSH PROFILES

Longitudinal Distance (mm)	Level 2 - Occupant H Point		
	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
-1200	823	831	8
-1050	786	790	4
-900	770	778	8
-750	756	763	7
-600			
-450			
-300			
-150			
0 (impact point)	714	829	115
150	710	945	235
300	713	978	265
450	710	994	284
600	707	1016	309
750	707	1025	318
900	706	1036	330
1050	706	1034	328
1200	707	1034	327
1350	706	1042	336
1500	702	1029	327
1650	700	996	296
1800	699	881	182
1950			
2100			
2250			
2400			
2550			
2700	738	761	23
2850	750	770	20
3000	773	787	14

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

VEHICLE EXTERIOR STATIC CRUSH (Cont'd)



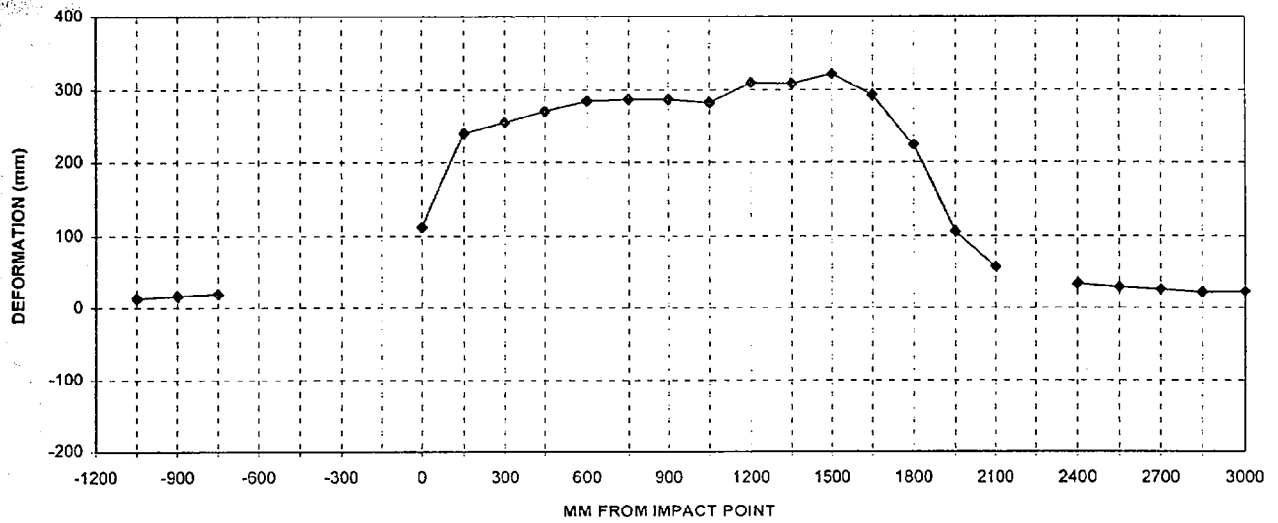
LEVEL 2 - OCCUPANT H-POINT

DATA SHEET NO. 10 (Cont'd)
VEHICLE EXTERIOR CRUSH PROFILES

Longitudinal Distance (mm)	Level 3 - Mid Door		
	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
-1200			
-1050	819	832	13
-900	778	794	16
-750	754	773	19
-600			
-450			
-300			
-150			
0 (impact point)	712	824	112
150	716	957	241
300	715	971	256
450	713	984	271
600	711	996	285
750	710	997	287
900	710	997	287
1050	708	991	283
1200	709	1018	309
1350	708	1016	308
1500	708	1029	321
1650	710	1003	293
1800	713	937	224
1950	718	824	106
2100	709	766	57
2250			
2400	720	753	33
2550	734	762	28
2700	745	770	25
2850	757	778	21
3000	778	800	22

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

VEHICLE EXTERIOR STATIC CRUSH (Cont'd)



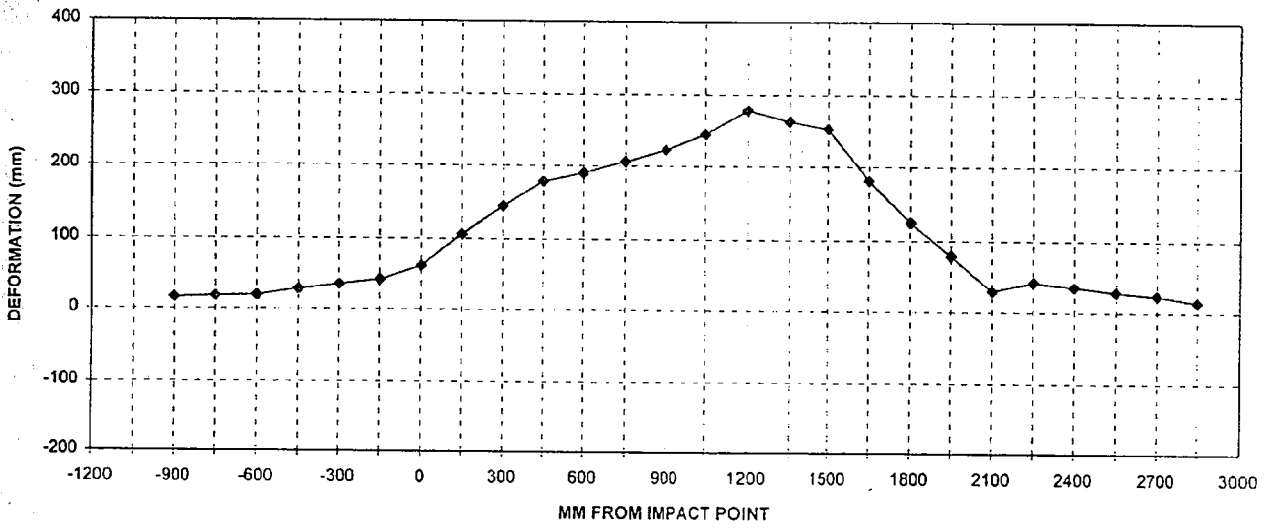
LEVEL 3 - MID DOOR

DATA SHEET NO. 10 (Cont'd)
VEHICLE EXTERIOR CRUSH PROFILES

Longitudinal Distance (mm)	Level 4 - Window Sill		
	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
-1200			
-1050			
-900	836	852	16
-750	820	838	18
-600	812	831	19
-450	800	828	28
-300	788	823	35
-150	781	823	42
0 (impact point)	772	834	62
150	770	876	106
300	767	912	145
450	766	944	178
600	762	952	190
750	762	968	206
900	762	985	223
1050	763	1008	245
1200	763	1041	278
1350	764	1027	263
1500	764	1017	253
1650	766	947	181
1800	768	893	125
1950	769	848	79
2100	774	803	29
2250	780	822	42
2400	787	822	35
2550	798	826	28
2700	810	833	23
2850	830	844	14
3000			

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

VEHICLE EXTERIOR STATIC CRUSH (Cont'd)



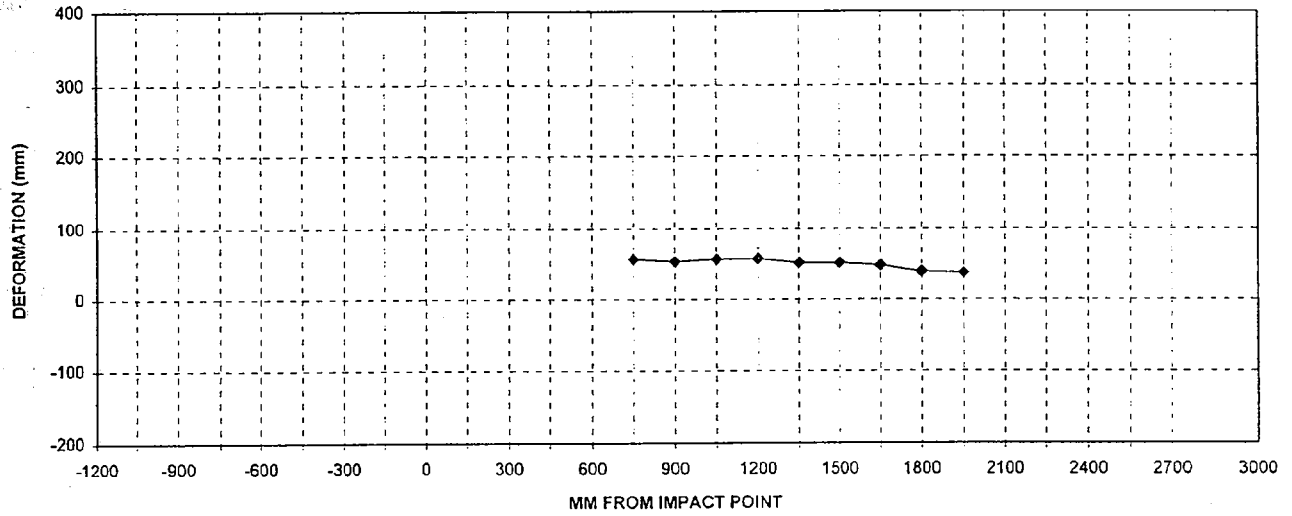
LEVEL 4 - WINDOW SILL

DATA SHEET NO. 10 (Cont'd)
VEHICLE EXTERIOR CRUSH PROFILES - ALL LEVELS

Longitudinal Distance (mm)	Level 5 - Window Top		
	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
-1200			
-1050			
-900			
-750			
-600			
-450			
-300			
-150			
0 (impact point)			
150			
300			
450			
600			
750	1089	1146	57
900	1086	1140	54
1050	1081	1138	57
1200	1081	1139	58
1350	1084	1136	52
1500	1081	1133	52
1650	1080	1129	49
1800	1079	1119	40
1950	1080	1118	38
2100			
2250			
2400			
2550			
2700			
2850			
3000			

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

VEHICLE EXTERIOR STATIC CRUSH (Cont'd)

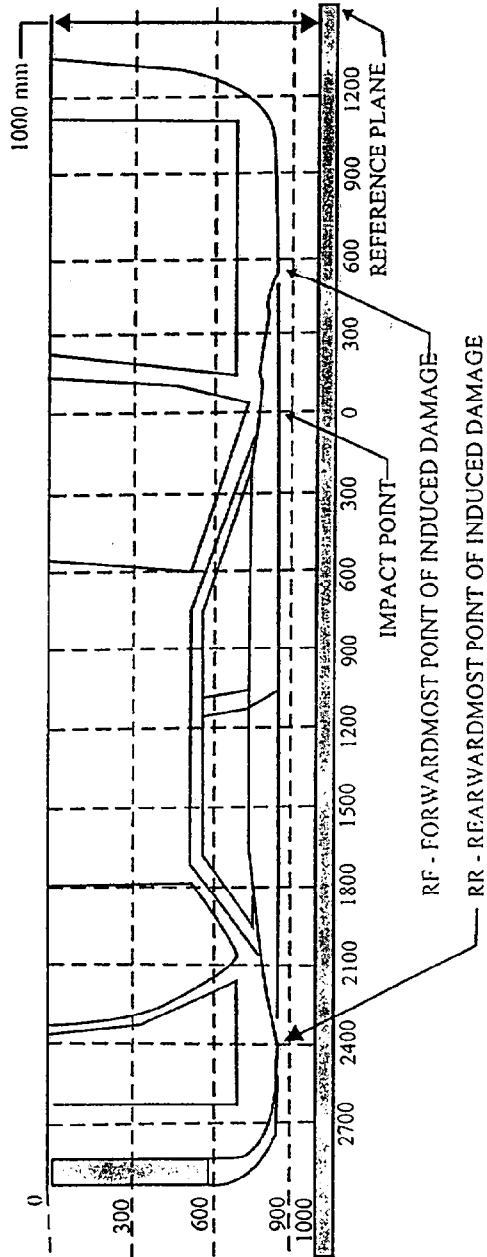


LEVEL 5 - WINDOW TOP

DATA SHEET NO. 11
VEHICLE DAMAGE PROFILE DISTANCES

Year/Make/Model/Body Style: 1997/Pontiac/Grand AM/4 Door

NHTSA NO.: CV0107 Test Date: November 13, 1996



DPD MEASUREMENTS	POST-TEST (mm)	PRE-TEST (mm)	STATIC CRUSH (mm)
1. (RF = 3000 mm)	787	773	14*
2. 2160 mm	818	774	44
3. 1320 mm	1059	706	353
4. 480 mm	994	708	286
5. -360 mm	825	790	35
6. (RR = -1200 mm)	831	823	8*

* Induced damage was recorded for the full length of the vehicle.

DATA SHEET NO. 12

EXTERIOR STATIC CRUSH FOR SIDE IMPACTOR

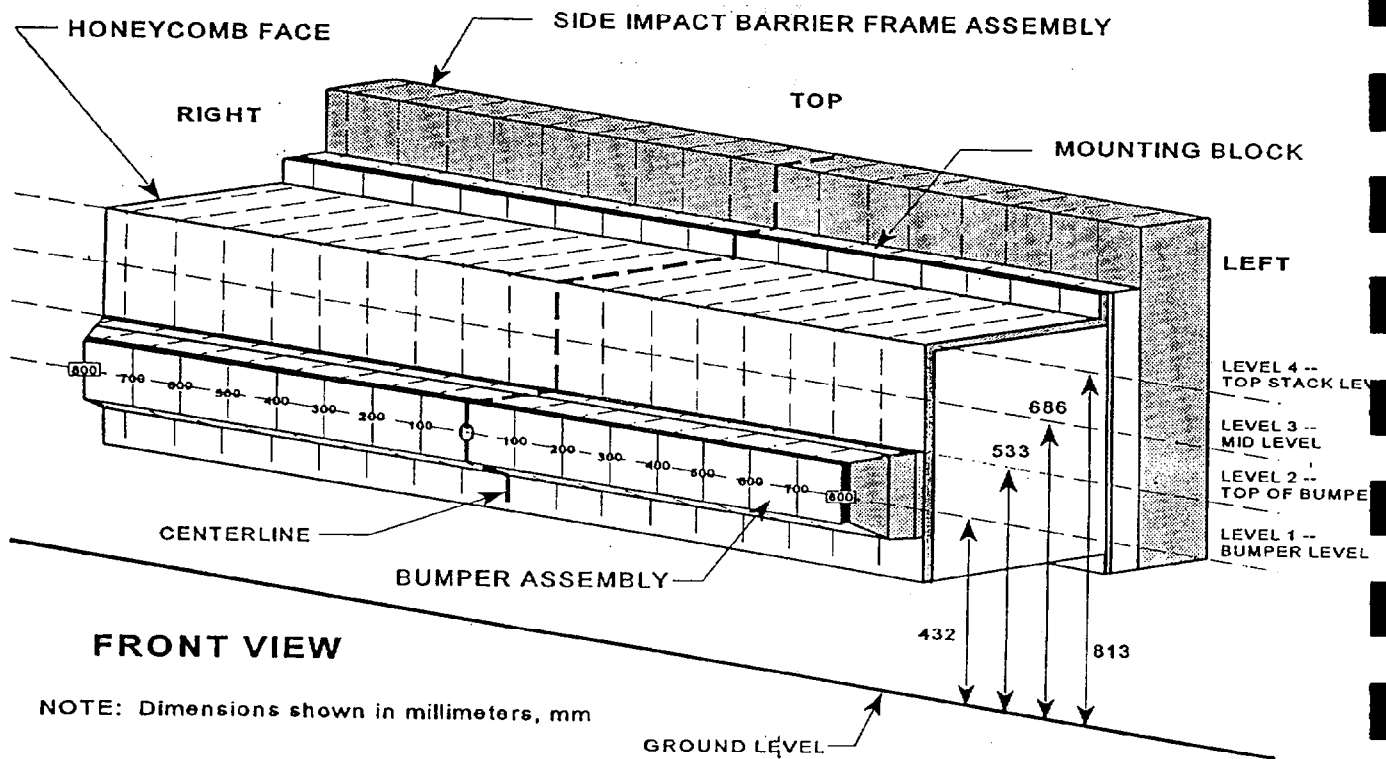
Year/Make/Model/Body Style: 1997/Pontiac/Grand AM/4 Door

Vehicle NHTSA No.: CV0107 Test Date: November 13, 1996

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	117	96	73	38	25	19	14	12	10	7	6	4	1	0	0	-1	38
Mid Level Level 3	686 mm	97	59	23	17	14	12	10	8	7	5	4	3	1	-1	-2	-3	8
Top Bumper Level 2	533 mm	62	55	47	42	37	42	40	37	35	32	29	32	34	32	32	42	60
Mid Bumper Level 1	432 mm	92	101	70	61	55	51	49	47	46	44	47	51	46	45	52	70	94

See next page for Barrier Face Graphic

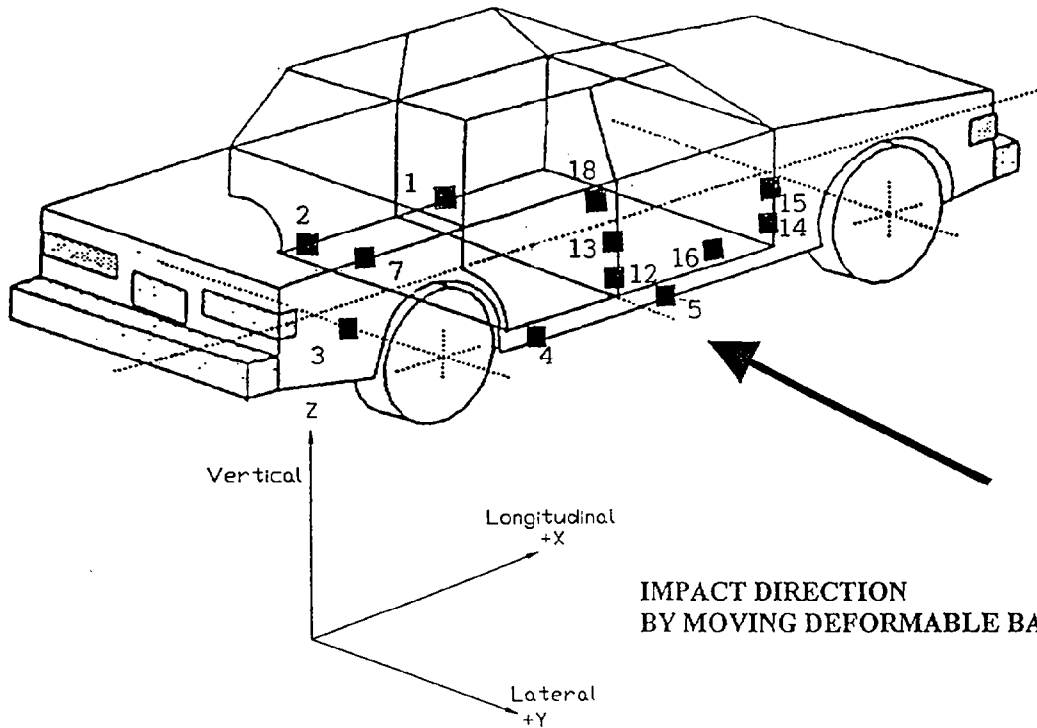
DATA SHEET NO. 12 (Cont'd)



DATA SHEET 13
TEST VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

Year/Make/Model/Body Style: 1997/Pontiac/Grand AM/4 Door

Vehicle NHTSA No.: CV0107 Test Date: November 13, 1996



- 1 - Left Side Sill @ Front Seat
- 2 - Left Side Sill @ Rear Seat
- 3 - Rear Floorpan Above Axle
- 4 - Right Side Sill @ Rear Seat
- 5 - Right Side Sill @ Front Seat
- 7 - Left Rear Occupant Compartment

- 12 - Right Lower B-Post
- 13 - Right Mid B-Post
- 14 - Right Lower A-Post
- 15 - Right Mid 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: 1997/Pontiac/Grand AM/4 Door

Vehicle NHTSA No.: CV0107 Test Date: November 13, 1996

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	Left Side Sill @ Front Seat	2692	-662	228	4.7	-3.6	2.1	-19.7	4.9	-5.3	20.1
2	Left Side Sill @ Rear Seat	1795	-638	230	4.0	-4.5	0.3 ^o	-15.0 ^o	4.0	-5.0	15.8
3	Rr. Floorpan Above Axle	1121	0	332	7.6	-9.1	2.5	-20.0	6.9	-10.7	21.4
4	Right Side Sill @ Rr. Seat	1792	638	227	---	---	**	**	---	---	---
5	Right Side Sill @ Frt. Seat	2692	638	226	---	---	22.1	-44.7	---	---	---
7	Left Rear Occupant Compartment	1887	-308	349	---	---	4.6	-22.9	---	---	---
12	Right Lower B-Post	2109	638	355	---	---	33.0	-119.6	---	---	---
13	Right Mid B-Post	2104	702	844	---	---	36.1	-140.9	---	---	---
14	Right Lower A-Post	3091	636	377	---	---	30.7	-51.9	---	---	---
15	Right Mid A-Post	3122	720	839	---	---	32.5	-63.6	---	---	---
16	Right Front Passenger Seat Track	2314	495	270	---	---	56.1	-70.8	---	---	---
18	Vehicle CG	2617	-42	352	4.4	-9.0	3.4	-24.6	12.7	-6.0	25.6

*Reference: X - Rear Bumper (+ Forward)

Y - Vehicle Centerline (+ To right)

Z - Ground Level (+ Up)

** No valid data collected

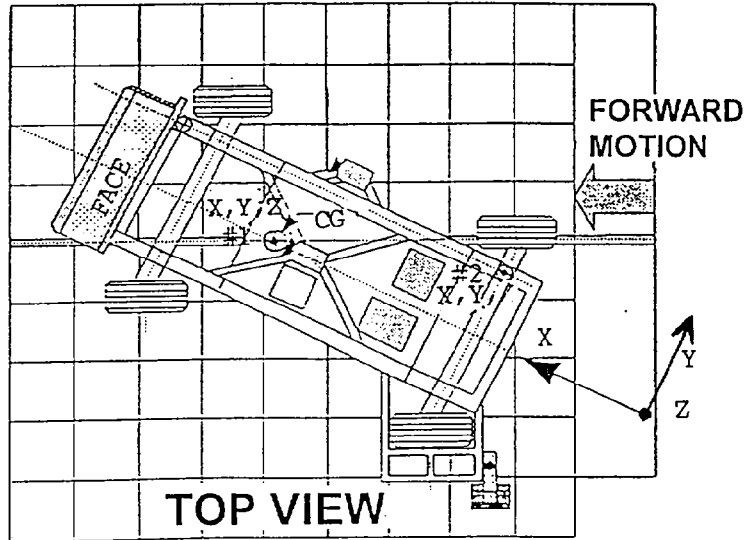
^o No valid data collected after approximately 43 msec.

DATA SHEET NO. 14

MOVING DEFORMABLE BARRIER (MDB) ACCELEROMETER LOCATIONS AND DATA SUMMARY

Year/Make/Model/Body Style: 1997/Pontiac/Grand AM/4 Door

Vehicle NHTSA No.: CV0107 Test Date: November 13, 1996



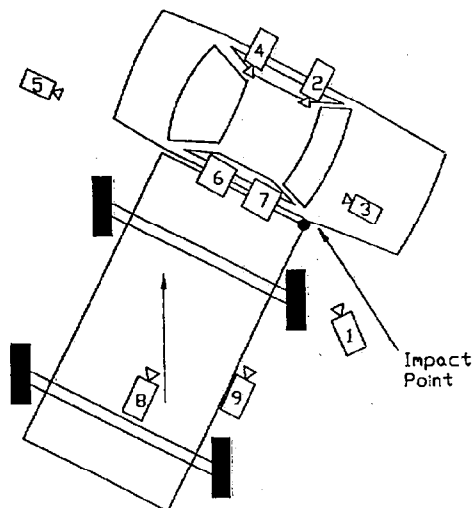
Accel. No.	Description	Coordinates (mm)*			(+ Positive		(-) Negative	
		X	Y	Z	Max. (g)	Time (msec)	Max. (g)	Time (msec)
1	MDB Center of Gravity	-1092	0	483				
	Longitudinal (X)	---	---	---	1.5	147	-15.9	43
	Lateral (Y)	---	---	---	6.8	33	-1.1	65
	Vertical (Z)	---	---	---	8.4	188	-8.9	194
	Resultant (R)	---	---	---	18.6	33	---	---
2	Rear Frame Member	-2591	625	622				
	Longitudinal (X)	---	---	---	1.6	160	-20.4	31
	Lateral (Y)	---	---	---	1.2	68	-5.3	23

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

DATA SHEET NO. 15
HIGH SPEED CAMERA LOCATIONS AND DATA

Year/Make/Model/Body Style: 1997/Pontiac/Grand AM/4 Door

Vehicle NHTSA No.: CV0107 Test Date: November 13, 1996



Camera No.	View	Coordinates (mm)*			Angle	Lens (mm)	Film Speed (fps)
		X	Y	Z			
	Real Time					13	24
1	Front Impact	-1200	2150	1685	90°	13	952
2	Onboard Front Passenger					8	913
4	Onboard Rear Passenger					8	1000
3	Onboard Hood					13	1000
5	Rear Impact	50	-9230	1940	90°	25	1015
6	Top Overall	-130	-1200	5200		8	1020
7	Top Impact	-80	-10	5200		13	855
8	Cart Overall					13	1020
9	Cart Impact					35	943

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

DATA SHEET 16
FUEL SYSTEM INTEGRITY POST IMPACT TEST DATA

Vehicle Year/Make/Model/Body Style: 1997/Pontiac/Grand AM/4 Door

Vehicle NHTSA No.: CV0107 Test Date: November 13, 1996

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 33.2 mph (53.4 kph)

FUEL SPILLAGE MEASUREMENT:

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

FUEL SPILLAGE LOCATION(S): None

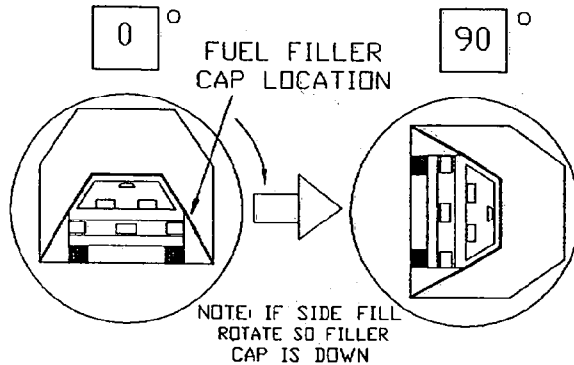
DATA SHEET 16

FMVSS 301 STATIC ROLLOVER TEST DATA

Vehicle Year/Make/Model/Body Style: 1997/Pontiac/Grand AM/4 Door

Vehicle NHTSA No.: CV0107 Test Date: November 13, 1996

TEST PHASE: 0° - 90°



DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time = 2 minutes 45 seconds
(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time = 5 minutes 0 seconds

TOTAL TIME = 7 minutes 45 seconds

Next Whole Minute Interval = 8 minutes

FUEL SPILLAGE MEASUREMENT:

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

FUEL SPILLAGE LOCATIONS(S): None

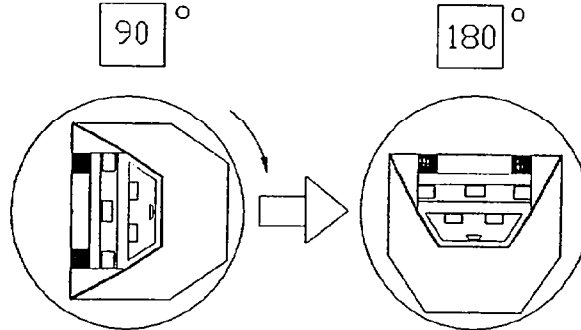
DATA SHEET 16

FMVSS 301 STATIC ROLLOVER TEST DATA (Cont'd)

Vehicle Year/Make/Model/Body Style: 1997/Pontiac/Grand AM/4 Door

Vehicle NHTSA No.: CV0107 Test Date: November 13, 1996

TEST PHASE: 90° - 180°



DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time = 2 minutes 25 seconds

(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time = 5 minutes 0 seconds

TOTAL TIME = 7 minutes 25 seconds

Next Whole Minute Interval = 8 minutes

FUEL SPILLAGE MEASUREMENT:

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

FUEL SPILLAGE LOCATIONS(S): None

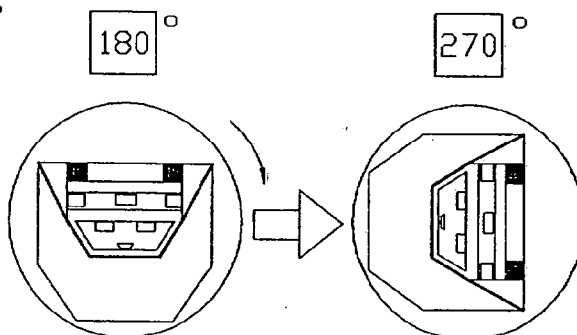
DATA SHEET 16

FMVSS 301 STATIC ROLLOVER TEST DATA (Cont'd)

Vehicle Year/Make/Model/Body Style: 1997/Pontiac/Grand AM/4 Door

Vehicle NHTSA No.: CV0107 Test Date: November 13, 1996

TEST PHASE: 180° - 270°



DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time = 2 minutes 30 seconds

(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time = 5 minutes 0 seconds

TOTAL TIME = 7 minutes 30 seconds

Next Whole Minute Interval = 8 minutes

FUEL SPILLAGE MEASUREMENT:

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

FUEL SPILLAGE LOCATIONS(S): None

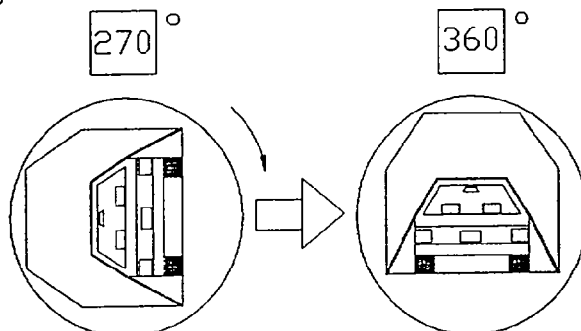
DATA SHEET 16

FMVSS 301 STATIC ROLLOVER TEST DATA

Vehicle Year/Make/Model/Body Style: 1997/Pontiac/Grand AM/4 Door

Vehicle NHTSA No.: CV0107 Test Date: November 13, 1996

TEST PHASE: 270° - 360°



DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time = 2 minutes 40 seconds

(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time = 5 minutes 0 seconds

TOTAL TIME = 7 minutes 40 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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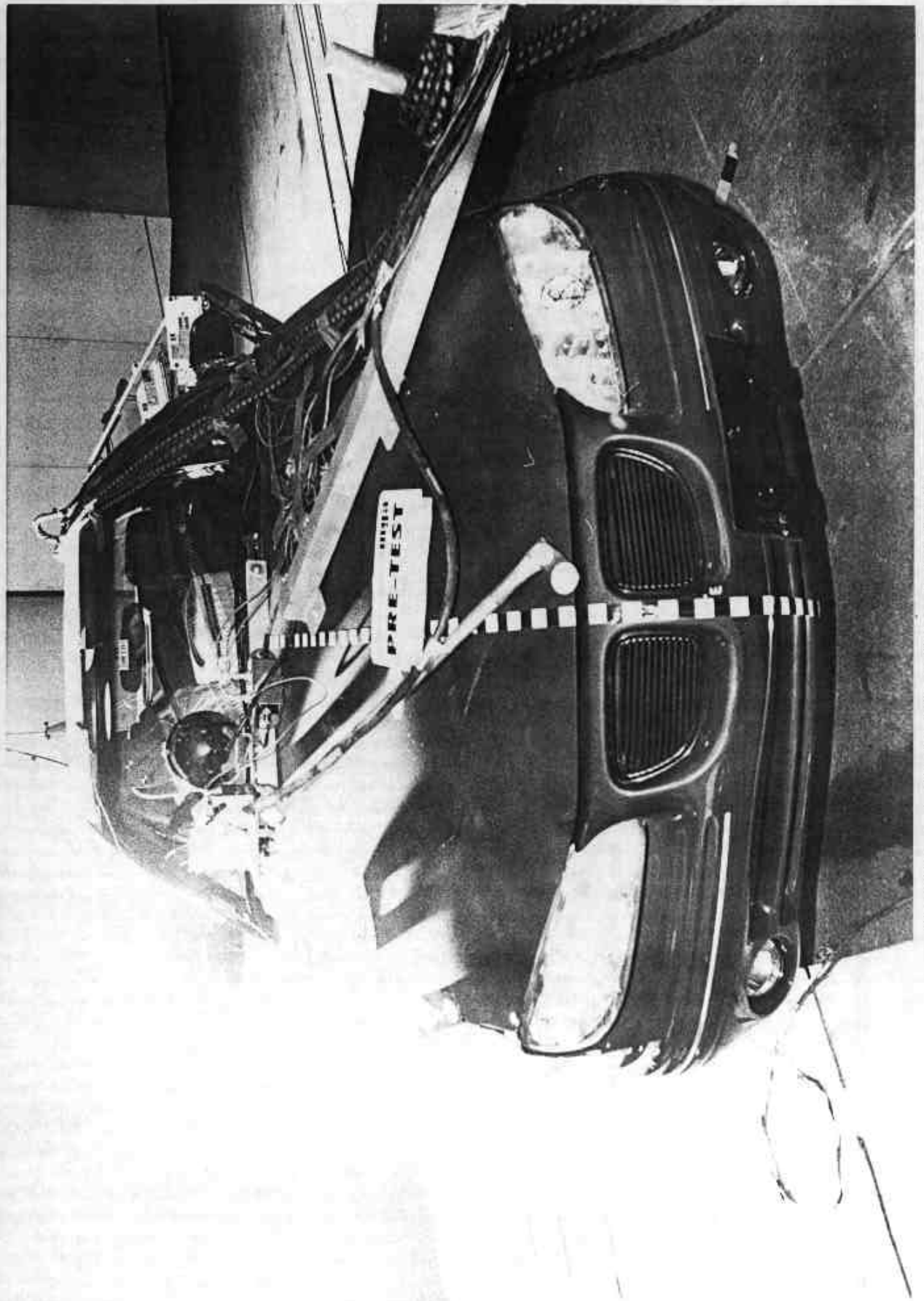


Photo No. A-1 - Pre-Test Front View of Test Vehicle

A-1

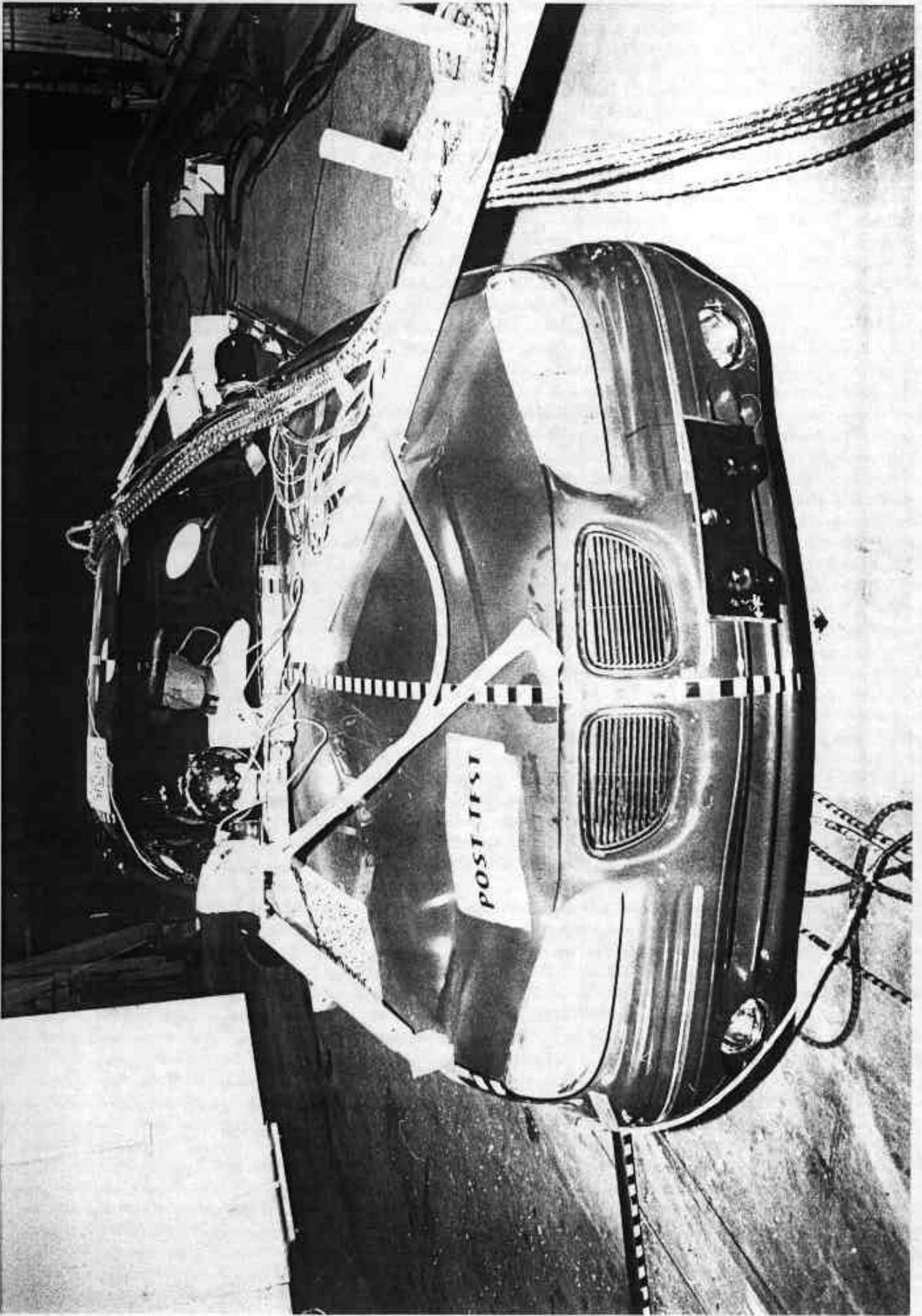


Photo No. A-2 - Post-Test Front View of Test Vehicle

A-2

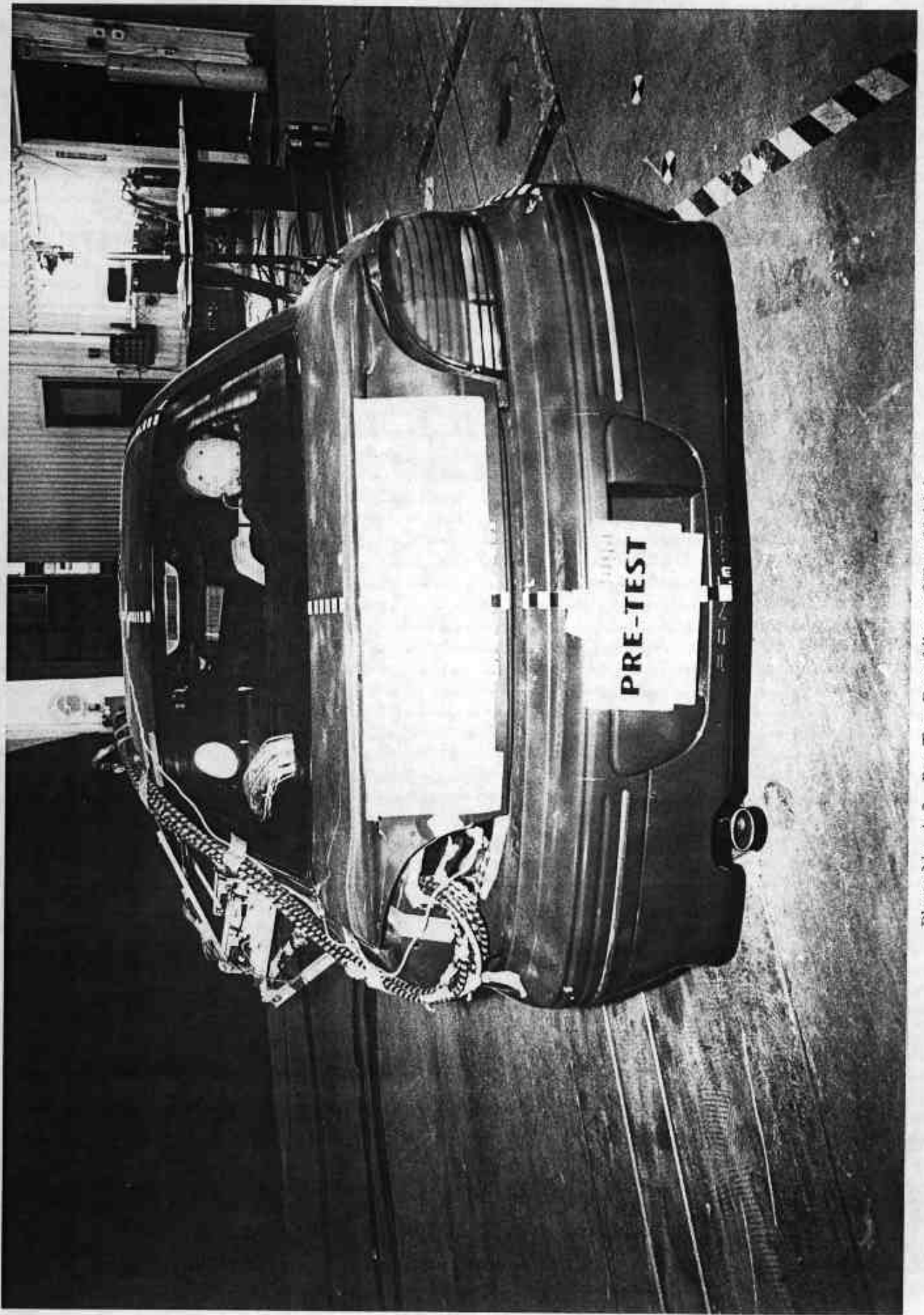


Photo No. A-3 - Pre-Test Rear View of Test Vehicle

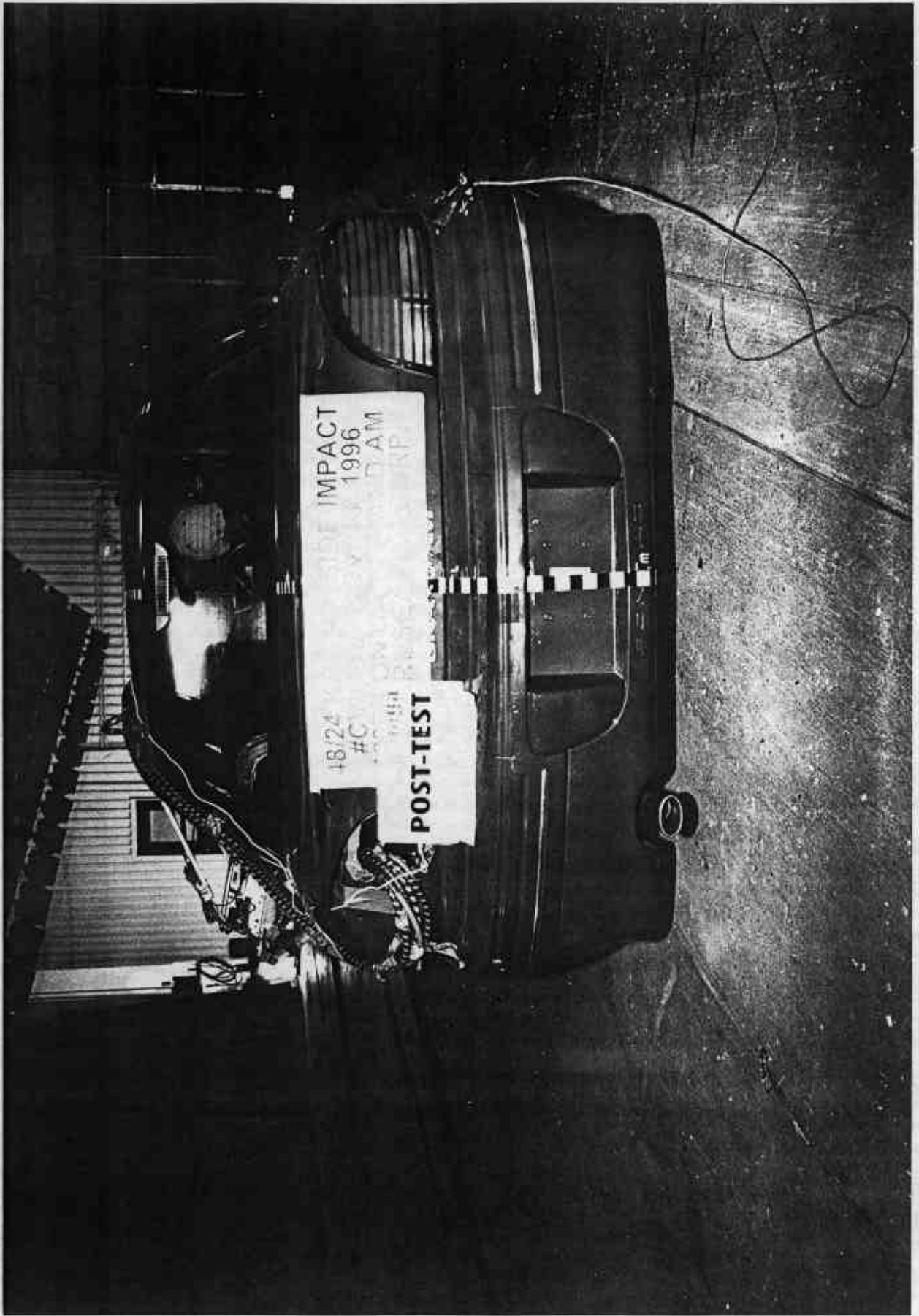


Photo No. A-4 - Post-Test Rear View of Test Vehicle

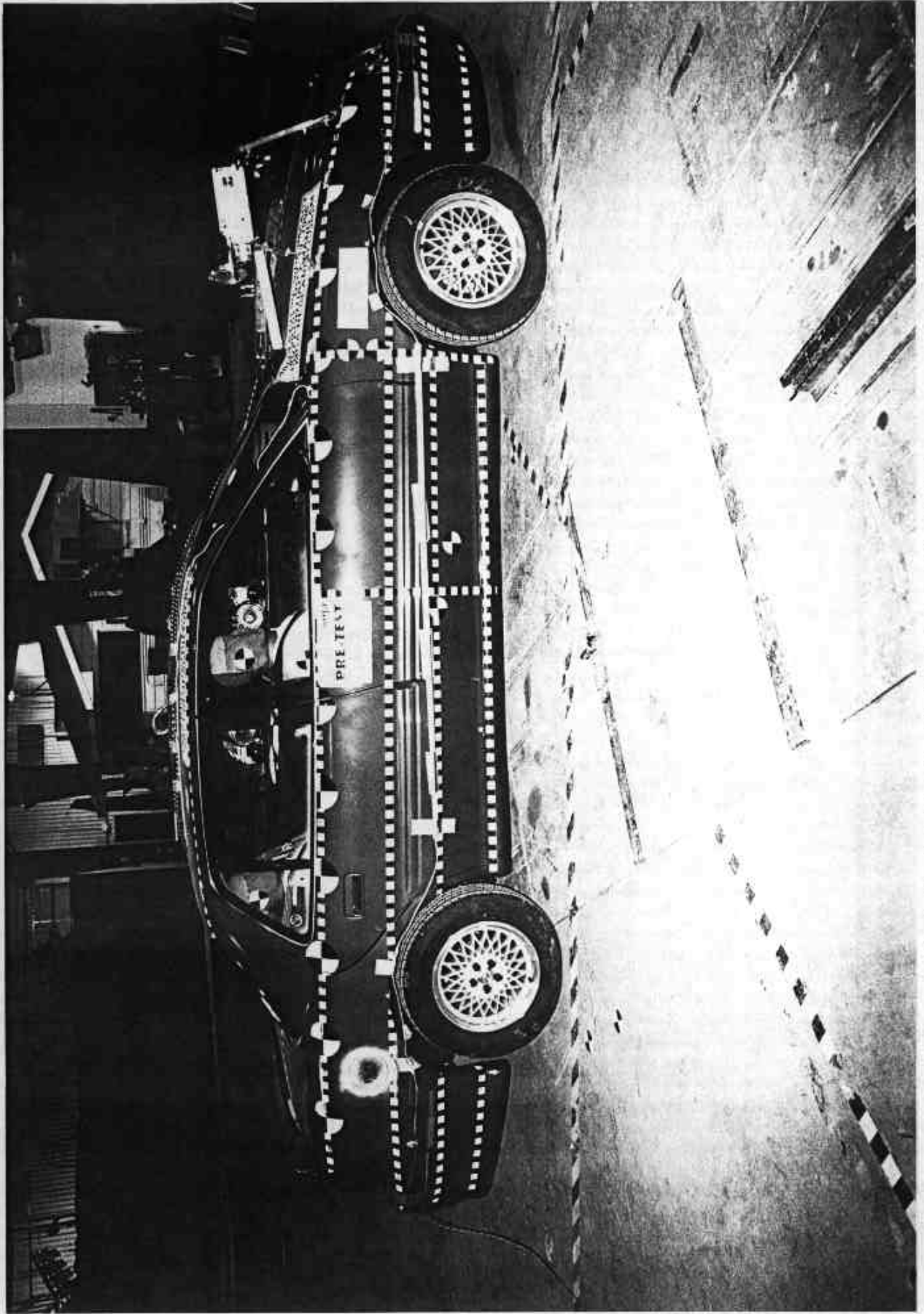


Photo No. A-5 - Pre-Test Right Side View of Test Vehicle

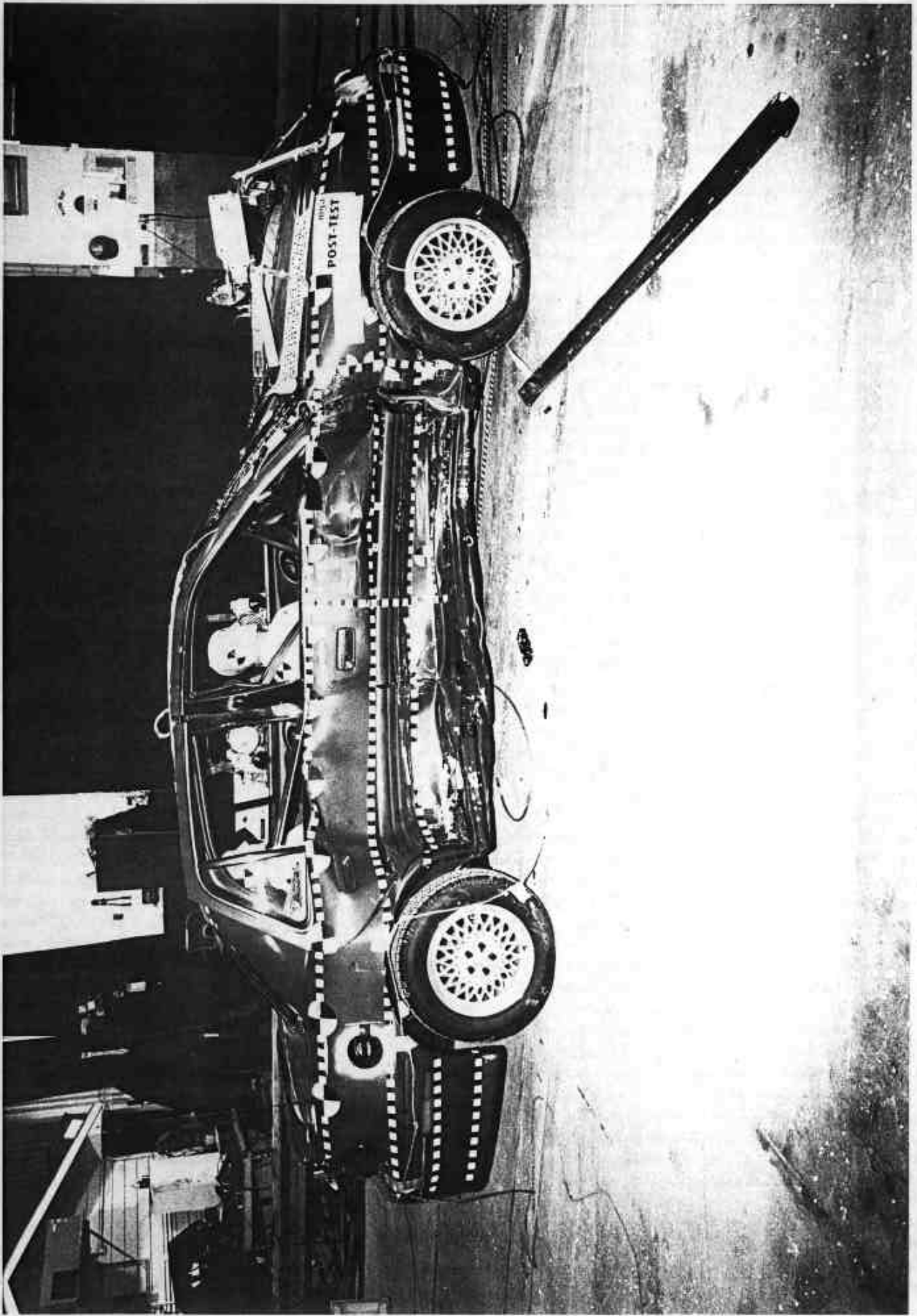


Photo No. A-6 - Post-Test Right Side View of Test Vehicle

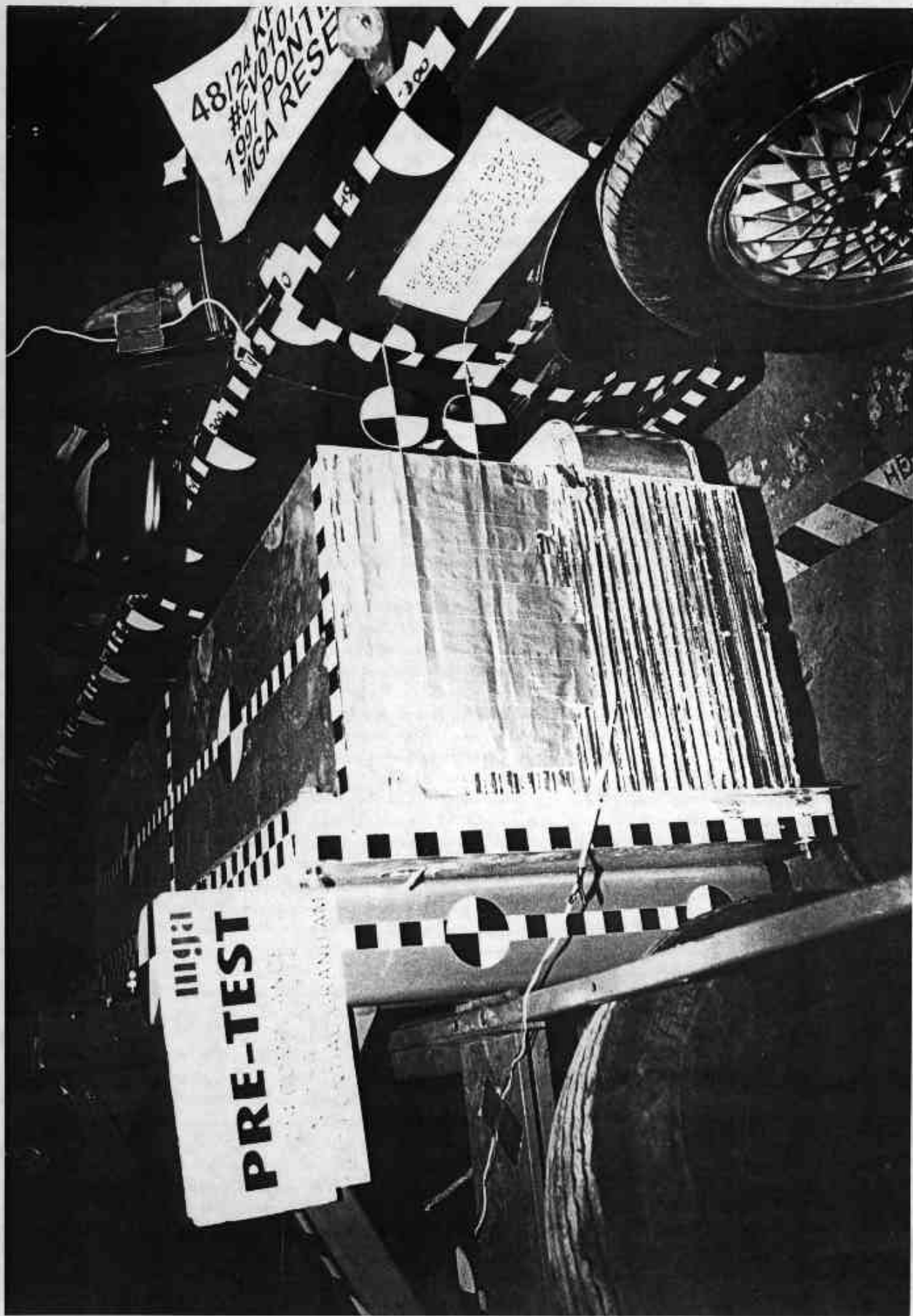


Photo No. A-7 - Pre-Test MDB Positioned Against Vehicle (right side)

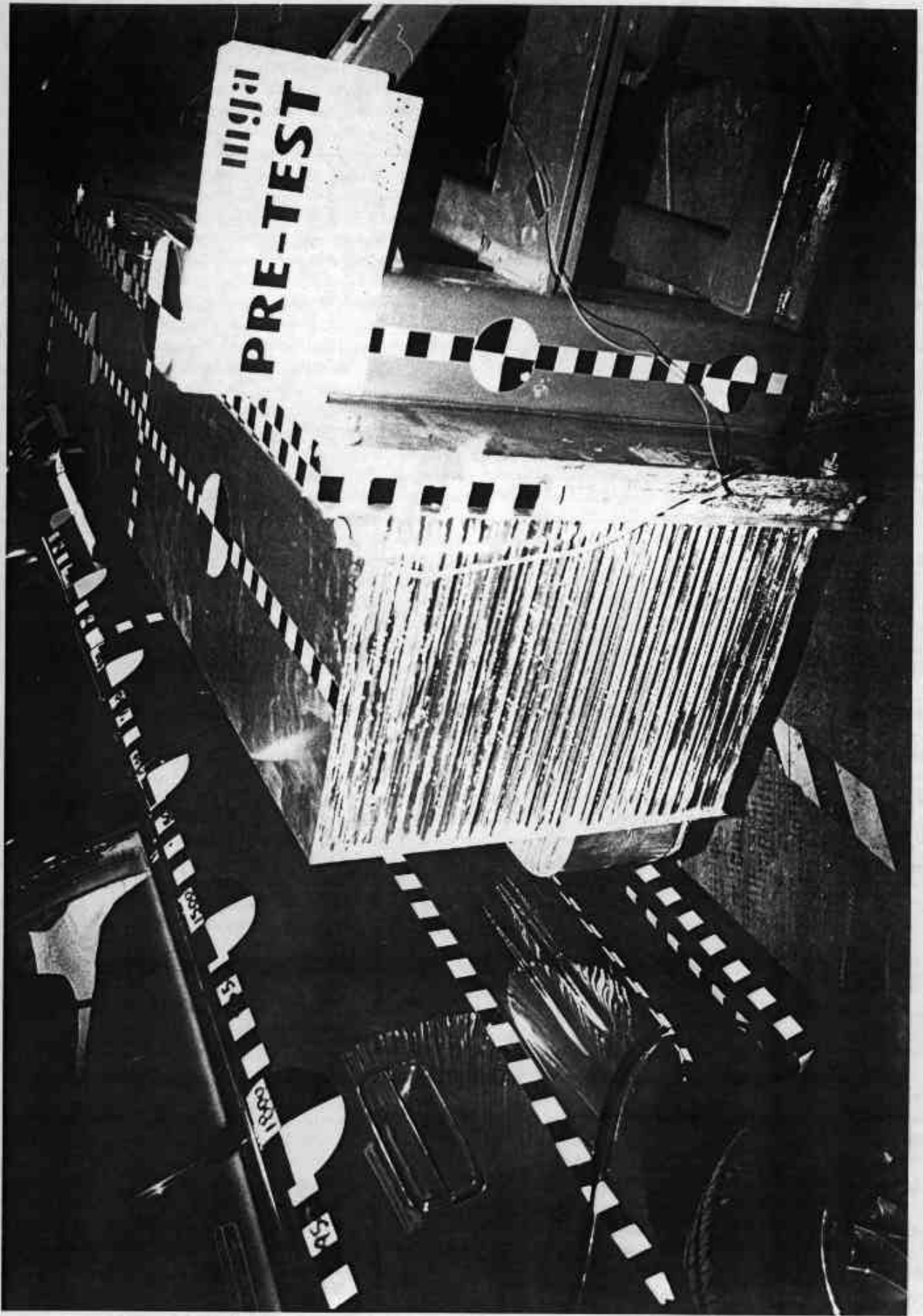


Photo No. A-8 - Pre-Test MDB Positioned Against Vehicle (left side)

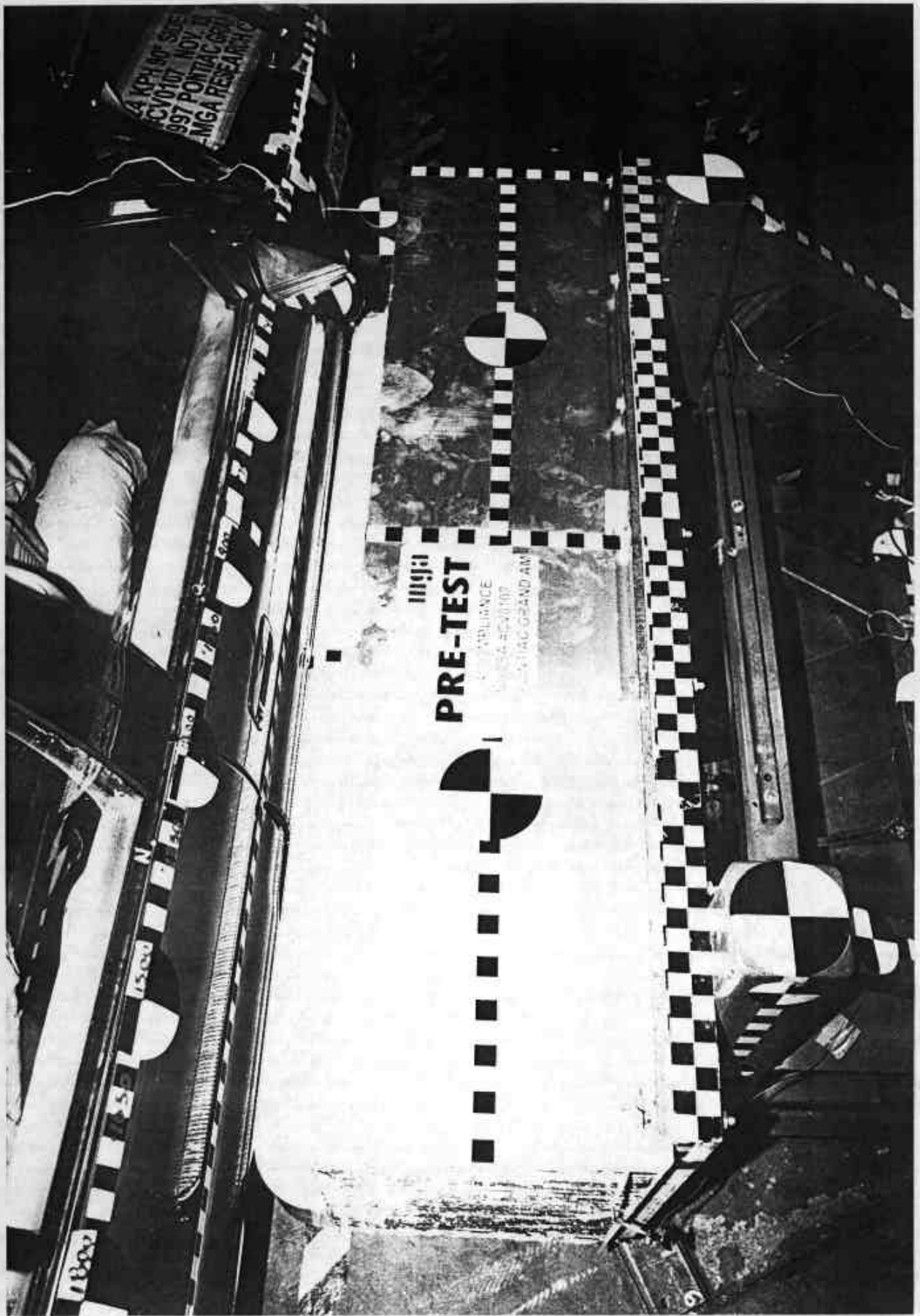


Photo No. A-9 - Pre-Test MDB Positioned Against Vehicle Overhead View

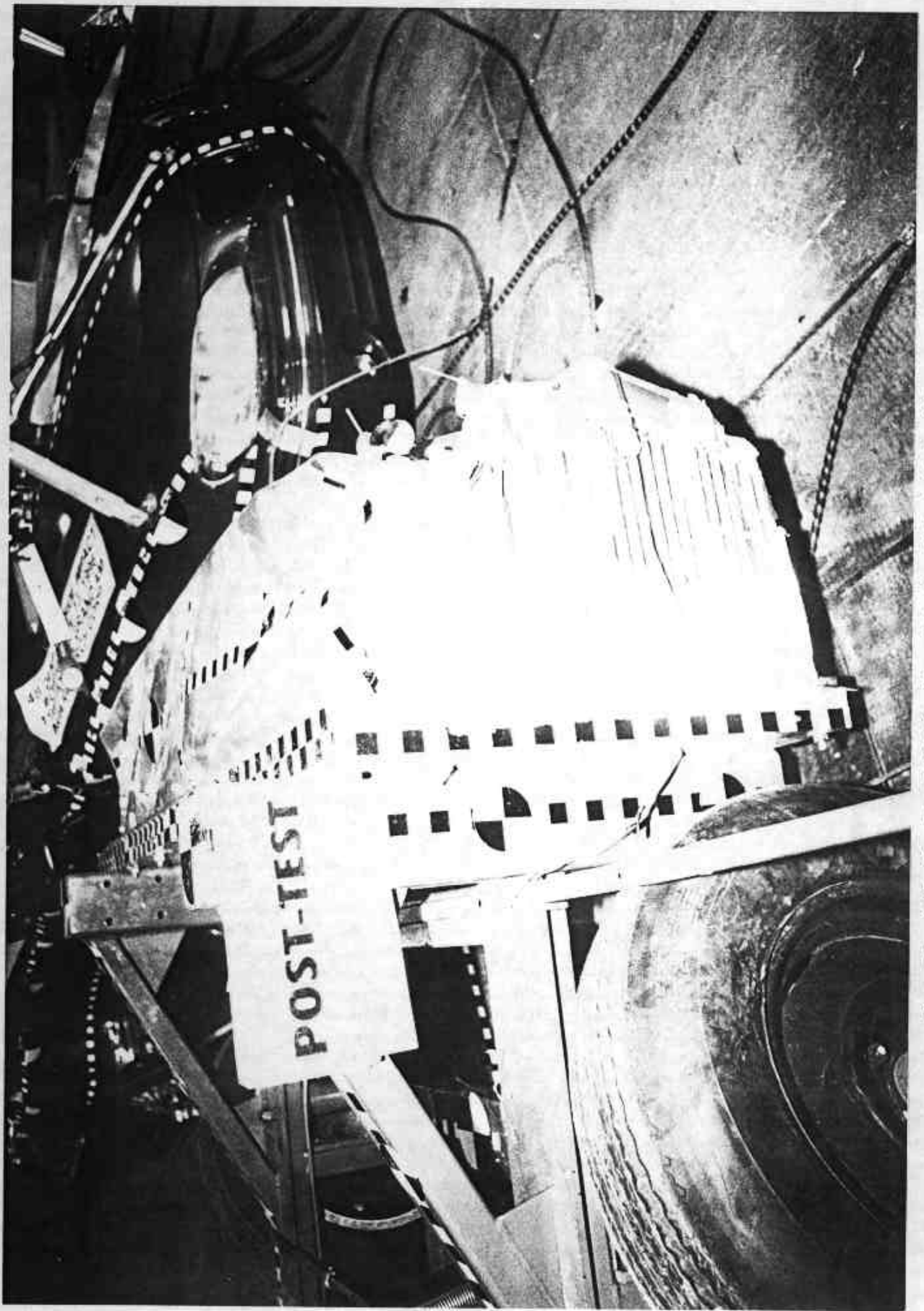


Photo No. A-10 - Post-Test MDB Positioned Against Vehicle (right side)

A-10

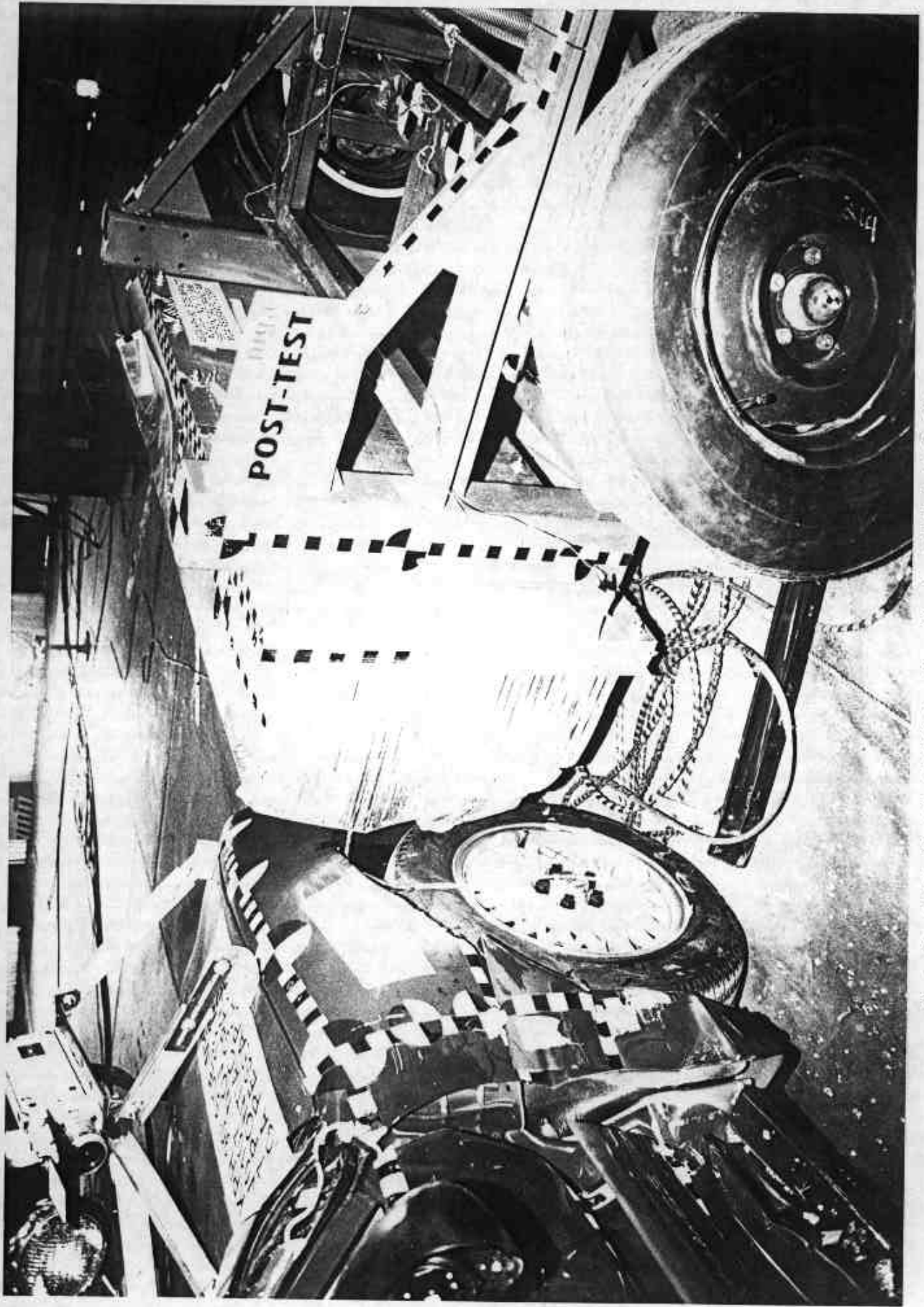


Photo No. A-11 - Post-Test MIDB Positioned Against Vehicle (left side)

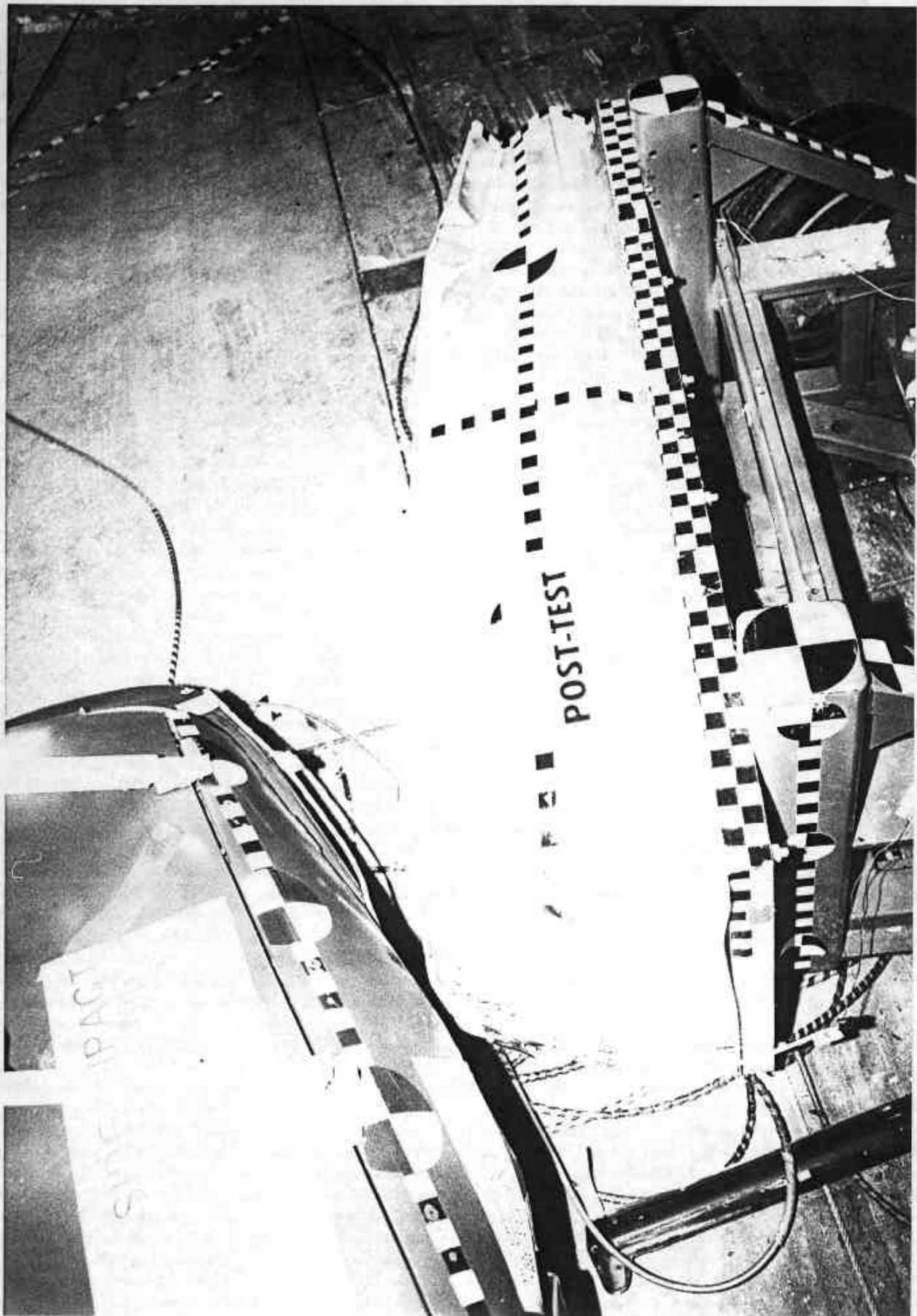
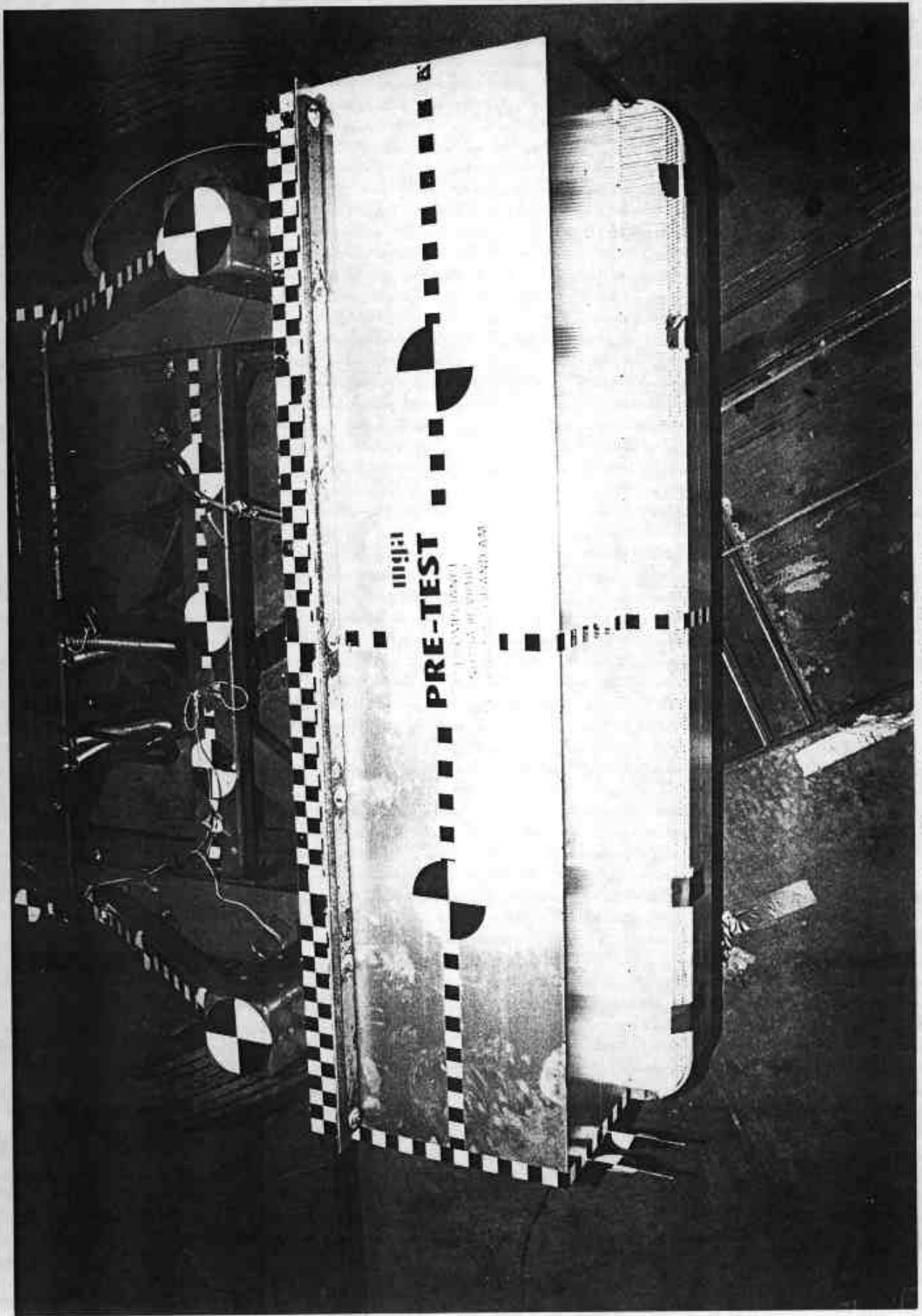


Photo No. A-12 - Post-Test MDB Positioned Against Vehicle Overhead View

A-12



A-13

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

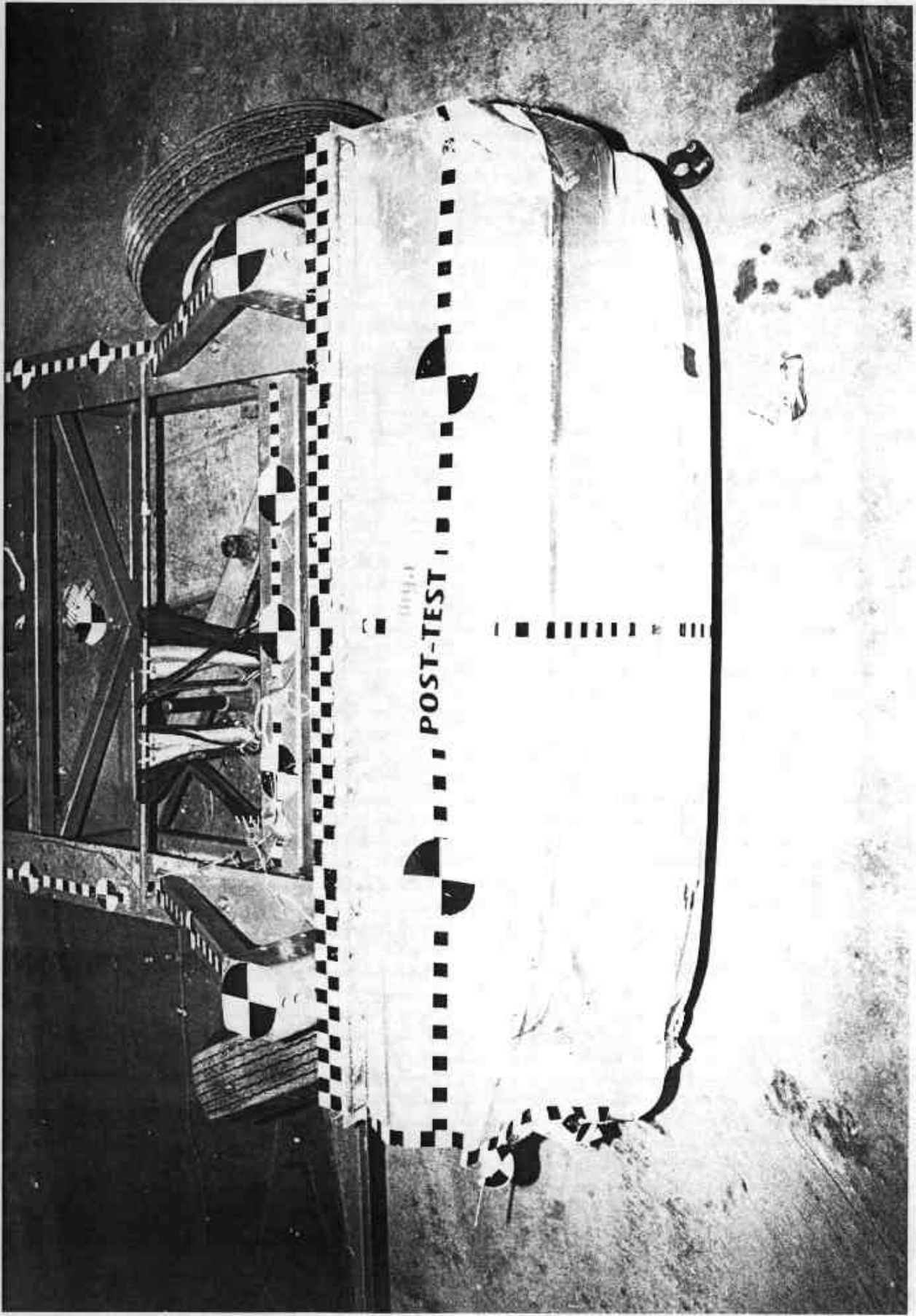


Photo No. A-14 - Post-Test MDB Top View

A-14

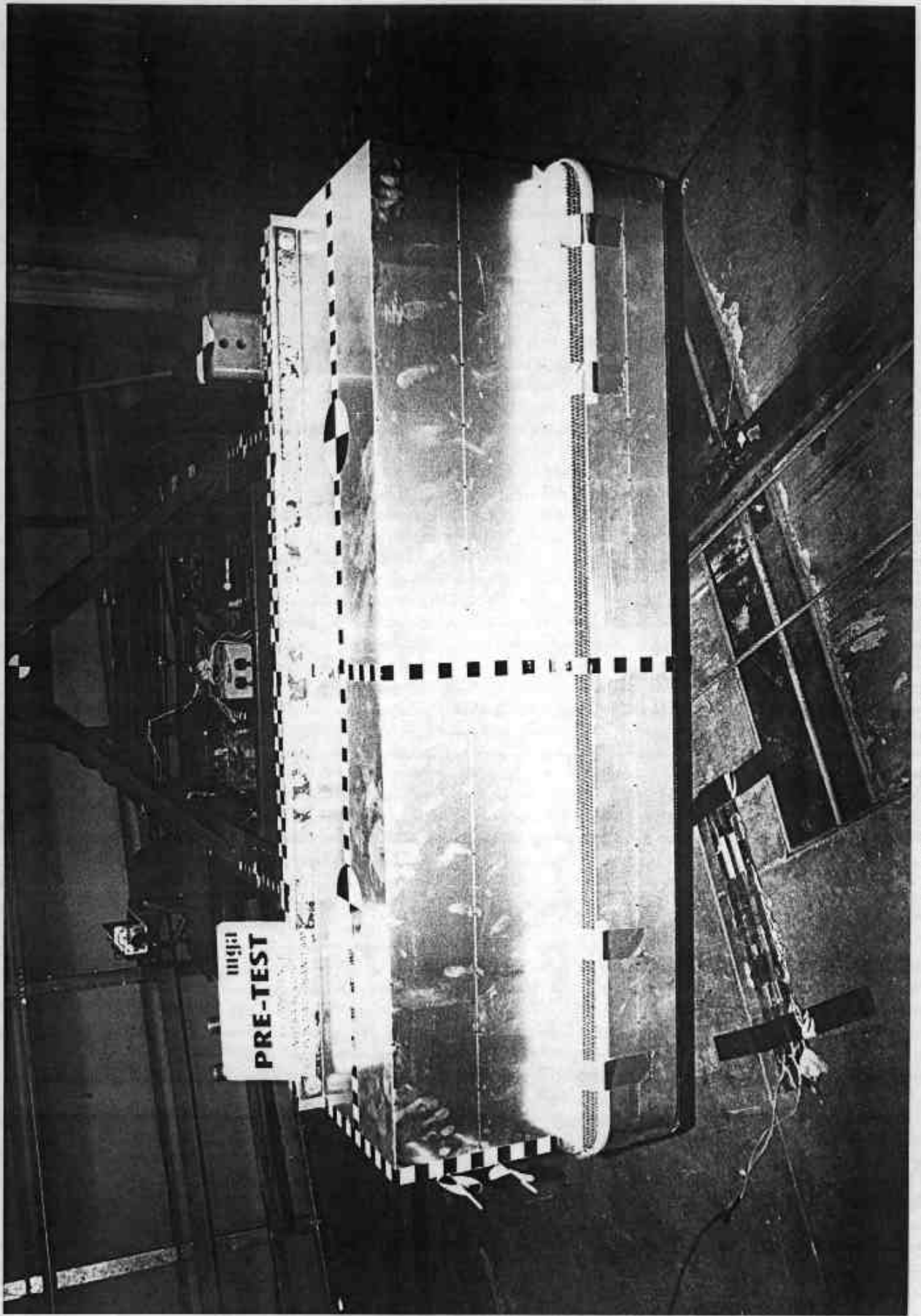
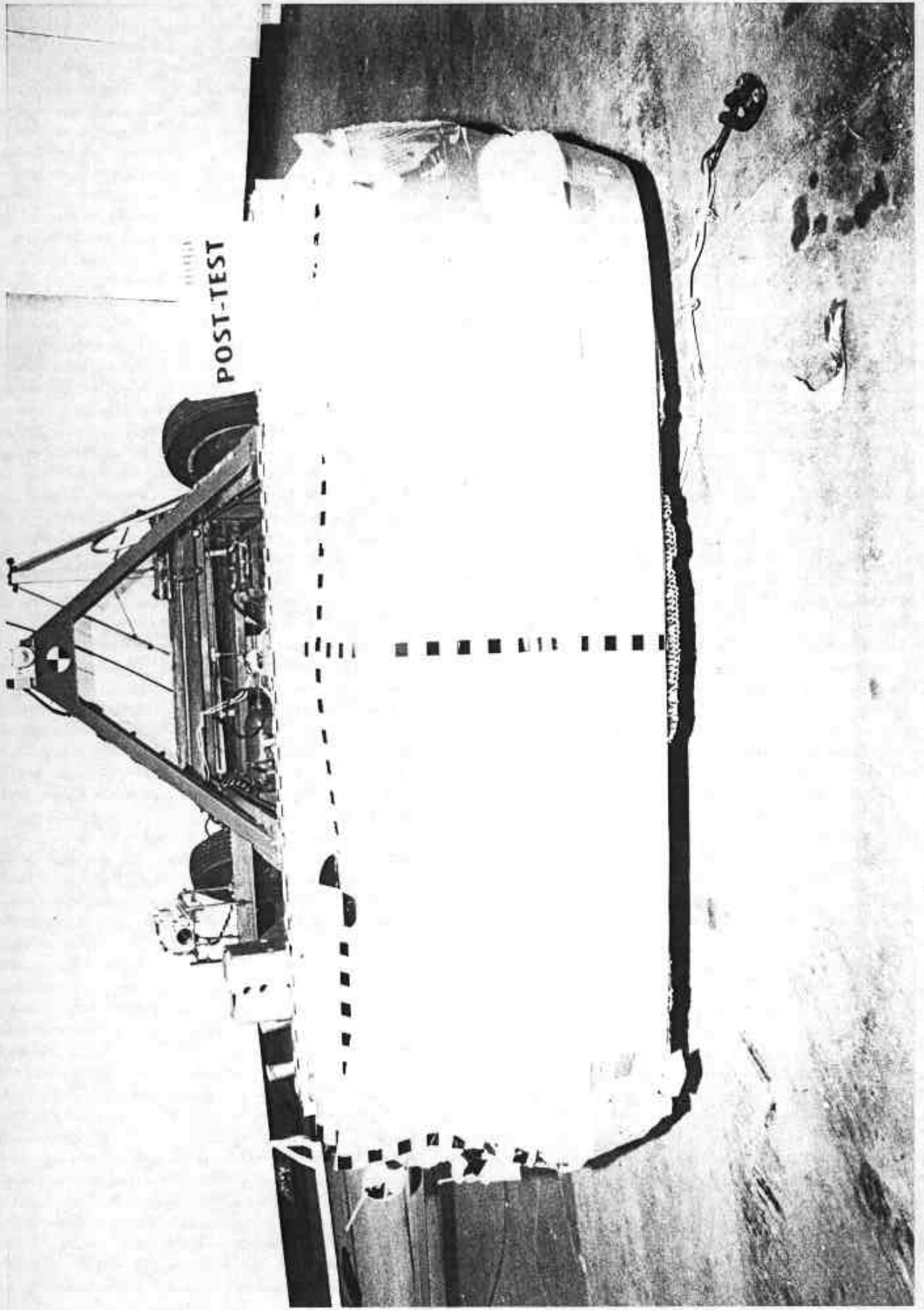


Photo No. A-15 - Pre-Test MDB Front View



A-16

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

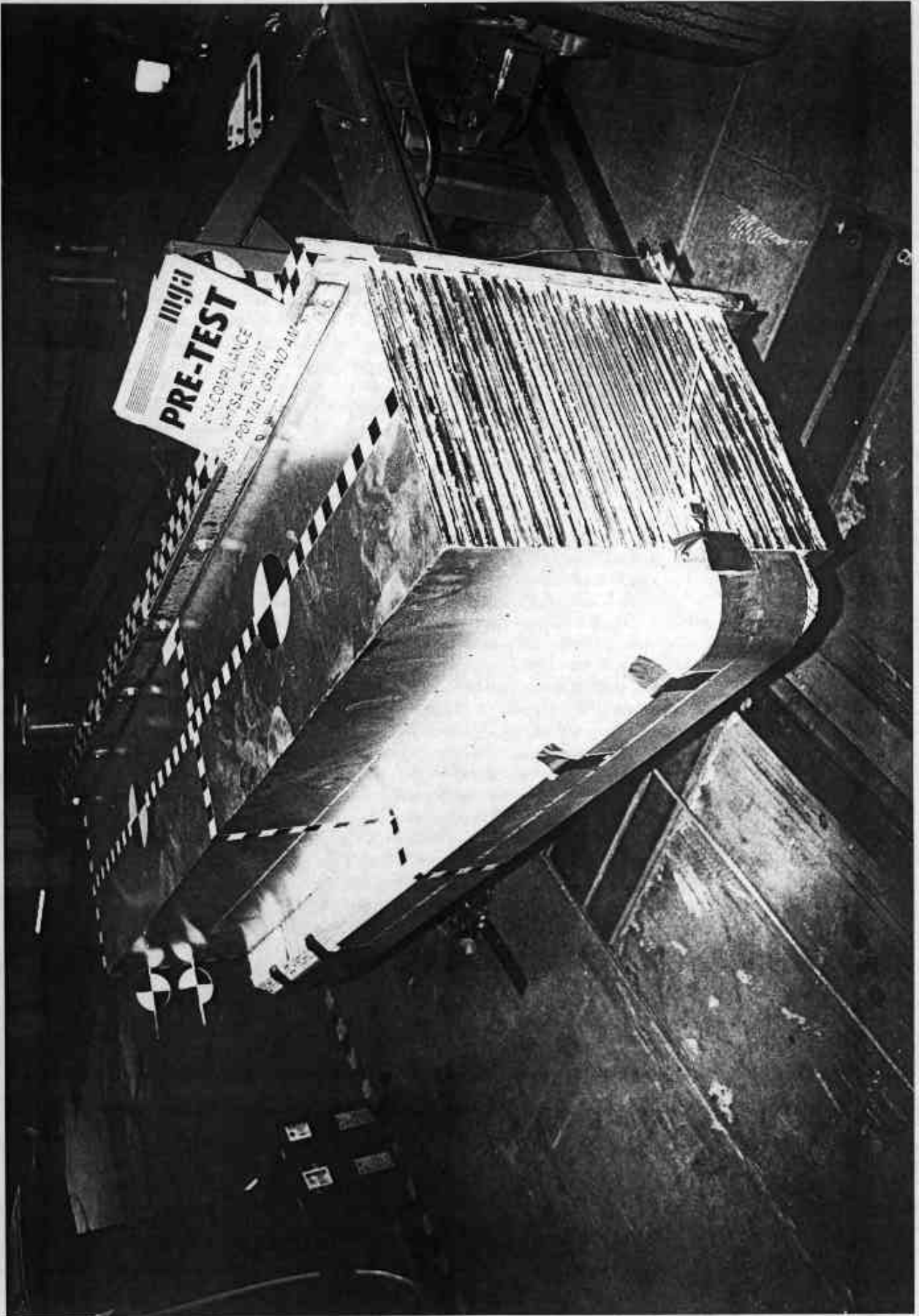


Photo No. A-17 - Pre-Test MDB Left Side View

A-17

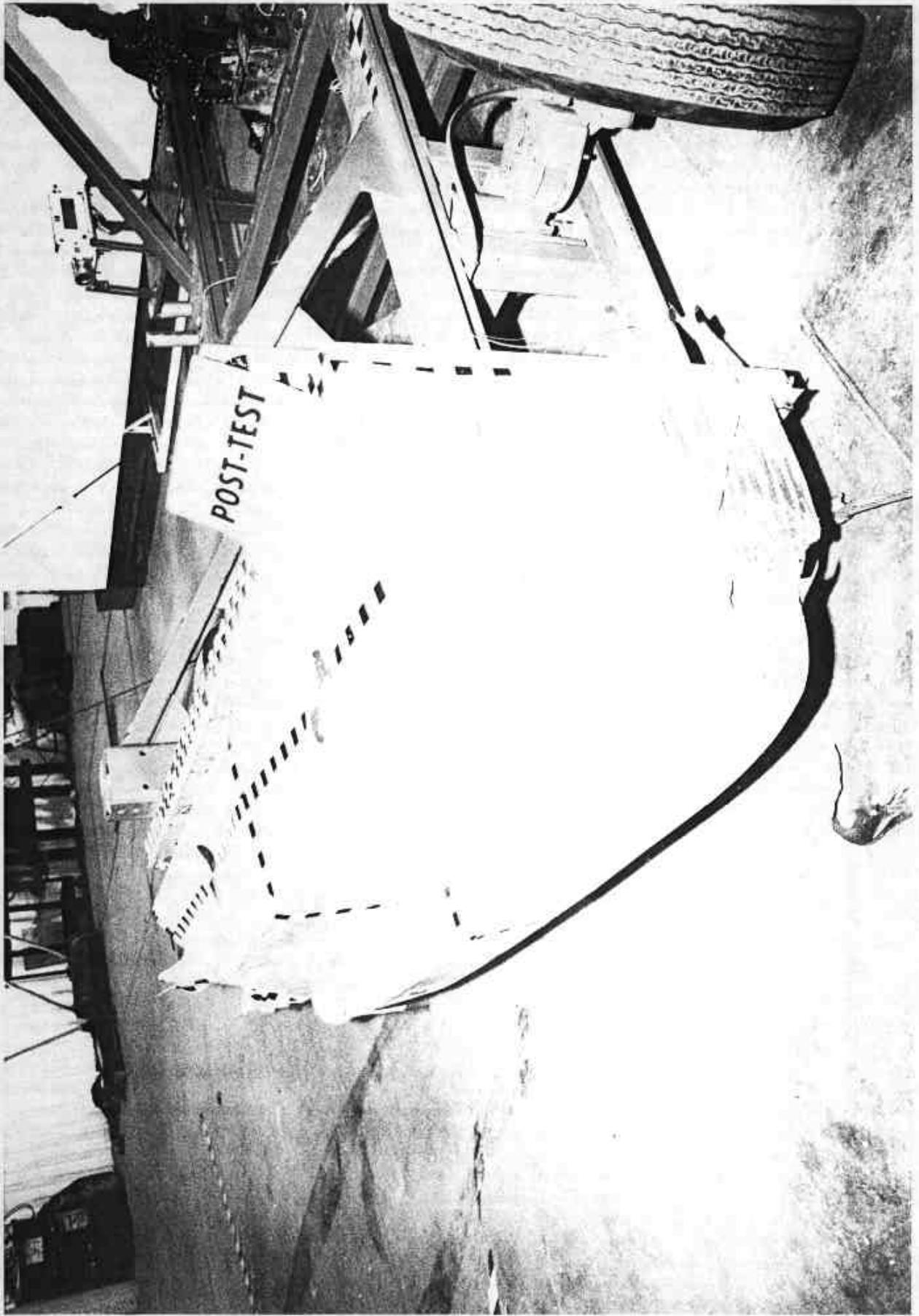


Photo No. A-18 - Post-Test MDB Left Side View

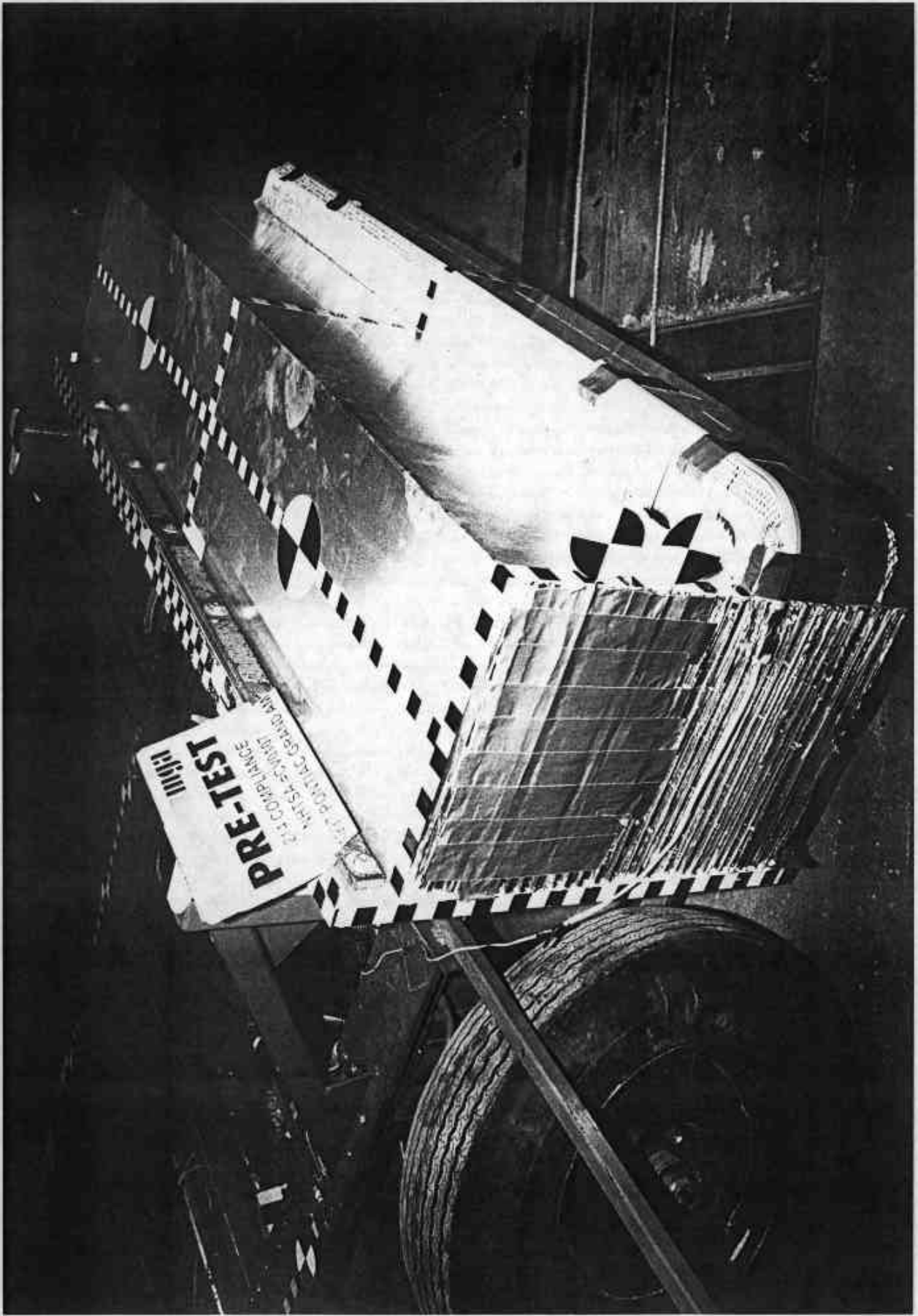


Photo No. A-19 - Pre-Test MDB Right Side View

A-19

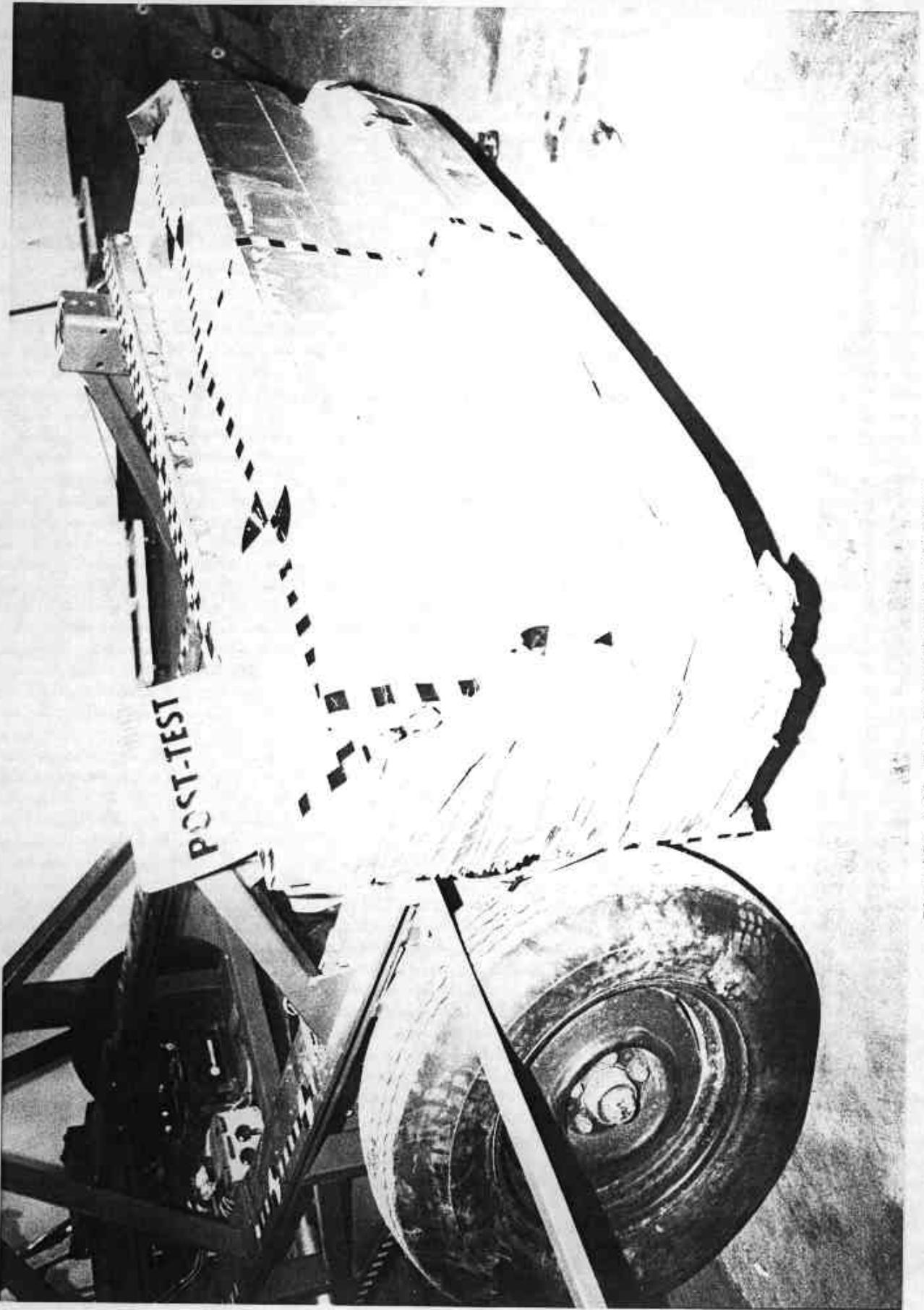


Photo No. A-20 - Post-Test MDB Right Side View

A-20



Photo No. A-21 - Pre-Test Front Passenger Dummy Left Side View

A-21

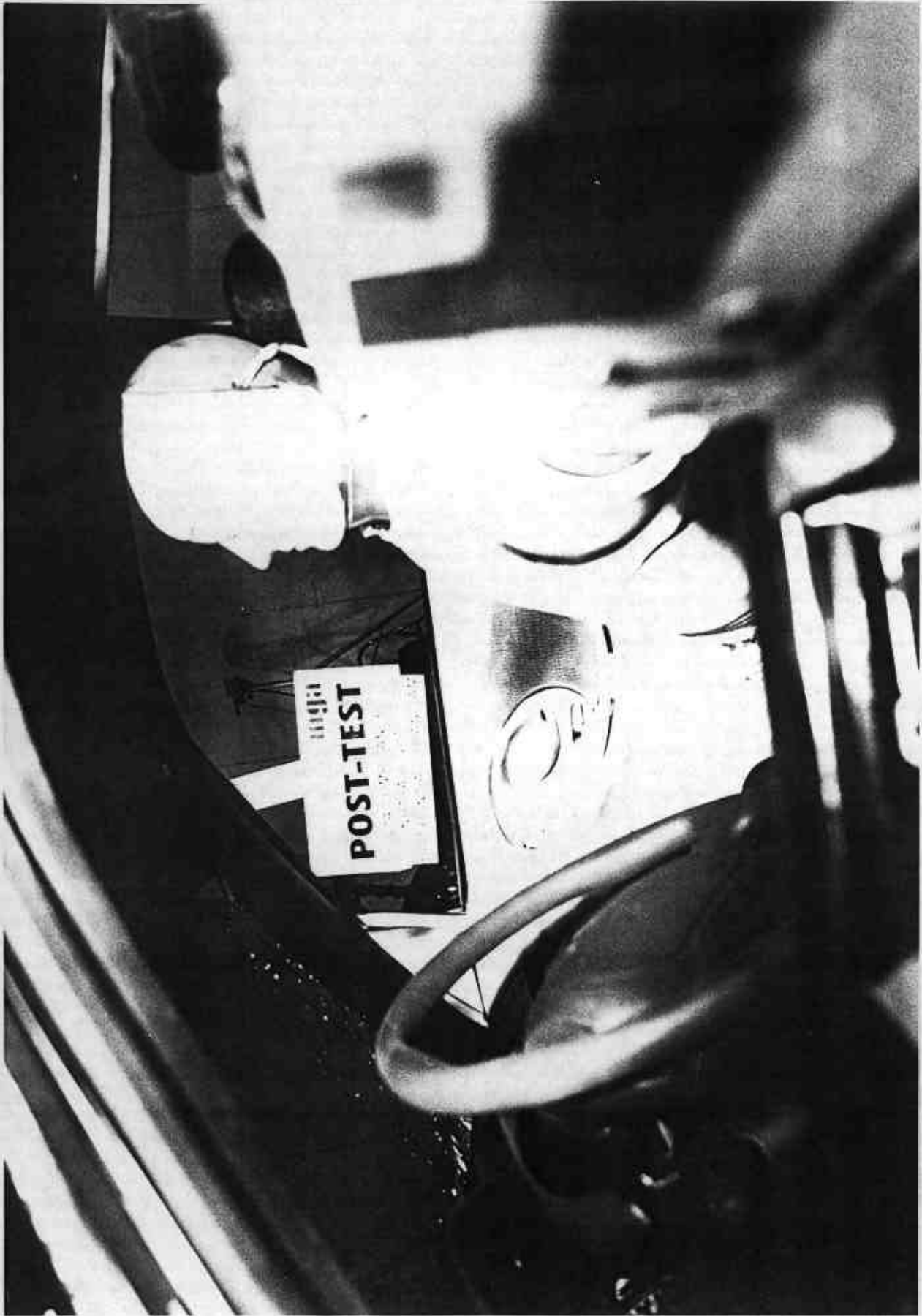
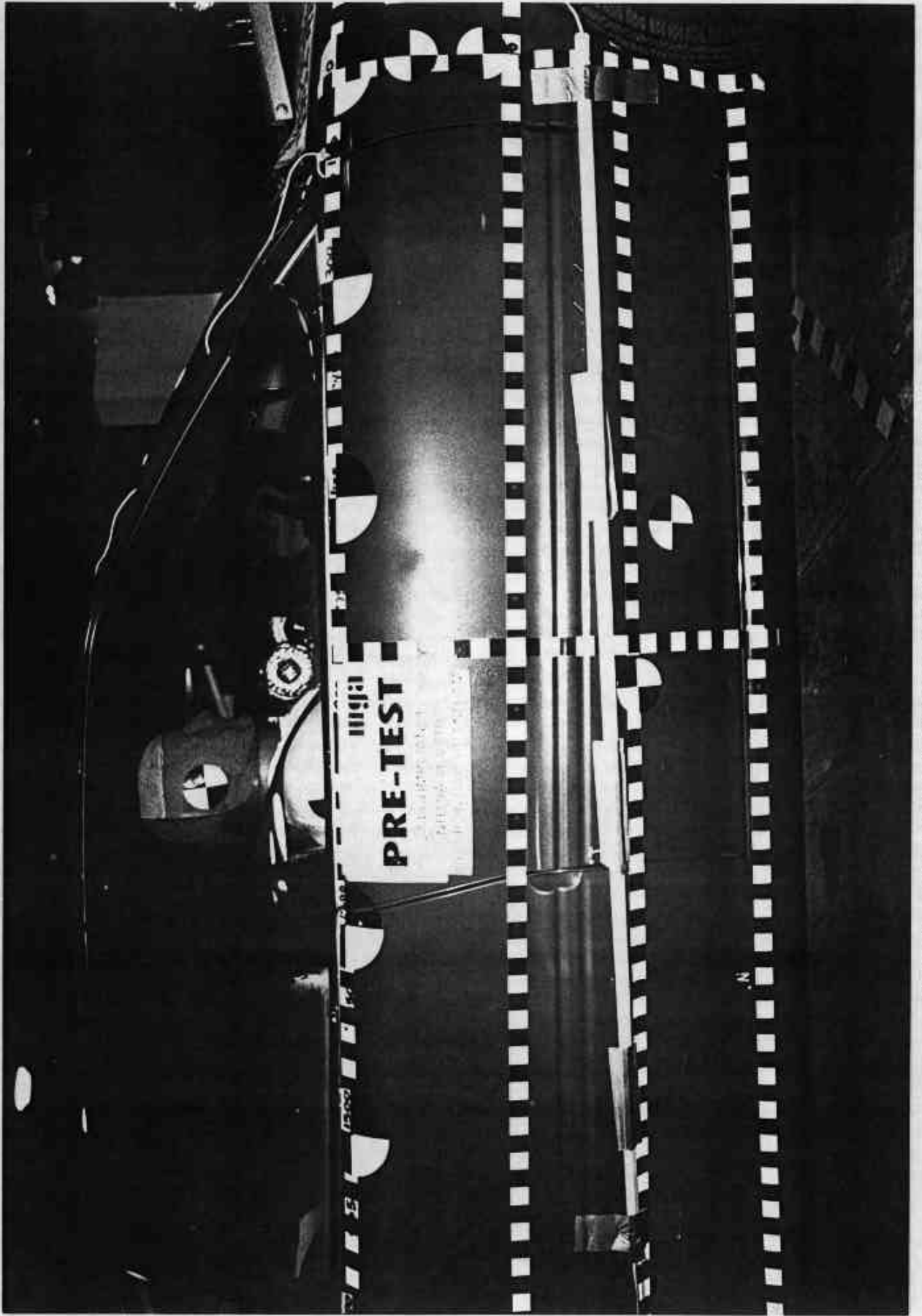


Photo No. A-22 - Post-Test Front Passenger Dummy Left Side View

A-22



A-23

Photo No. A-23 - Pre-Test Front Passenger Dummy Right Side View

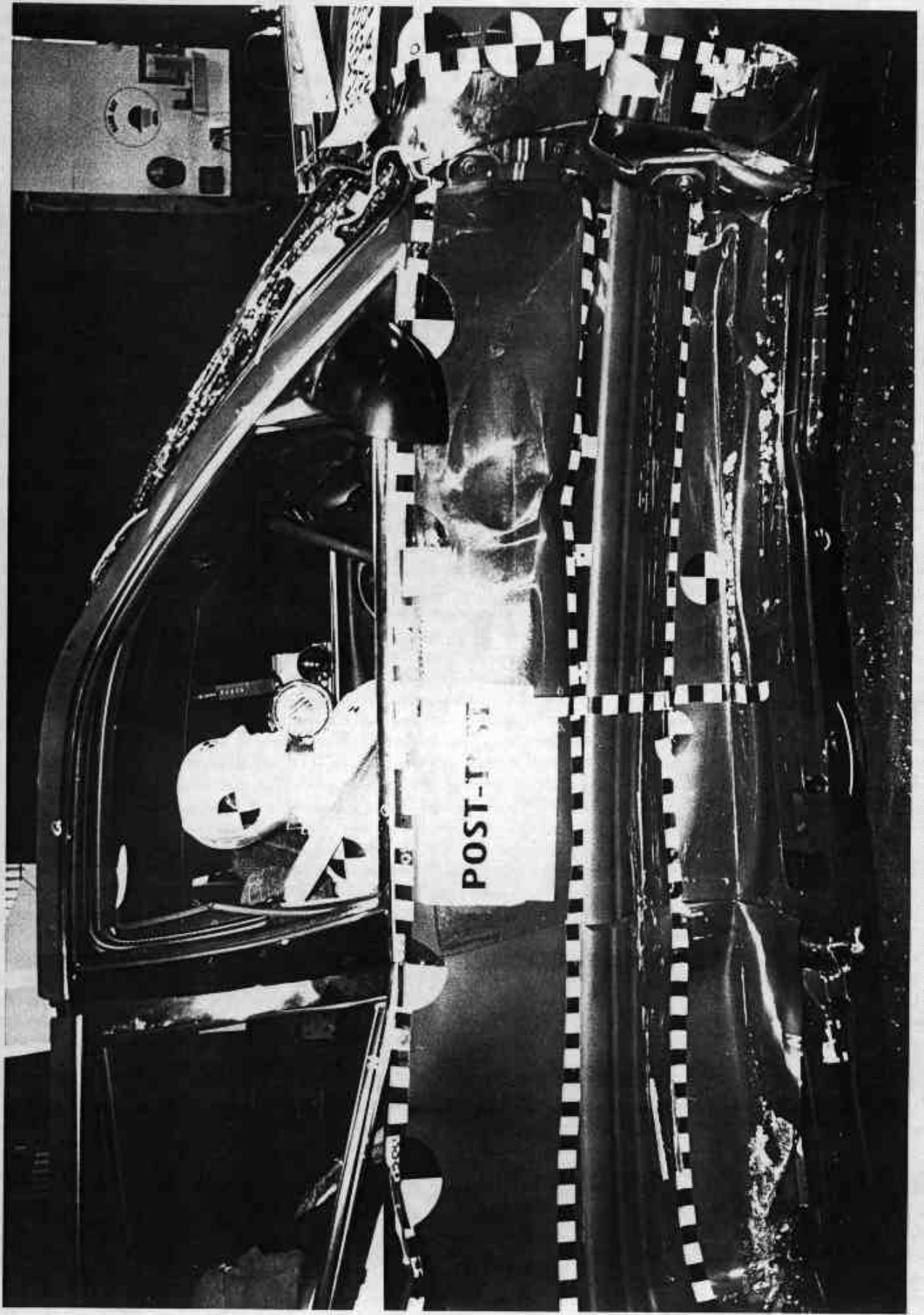


Photo No. A-24 - Post-Test Front Passenger Dummy Right Side View

A-24

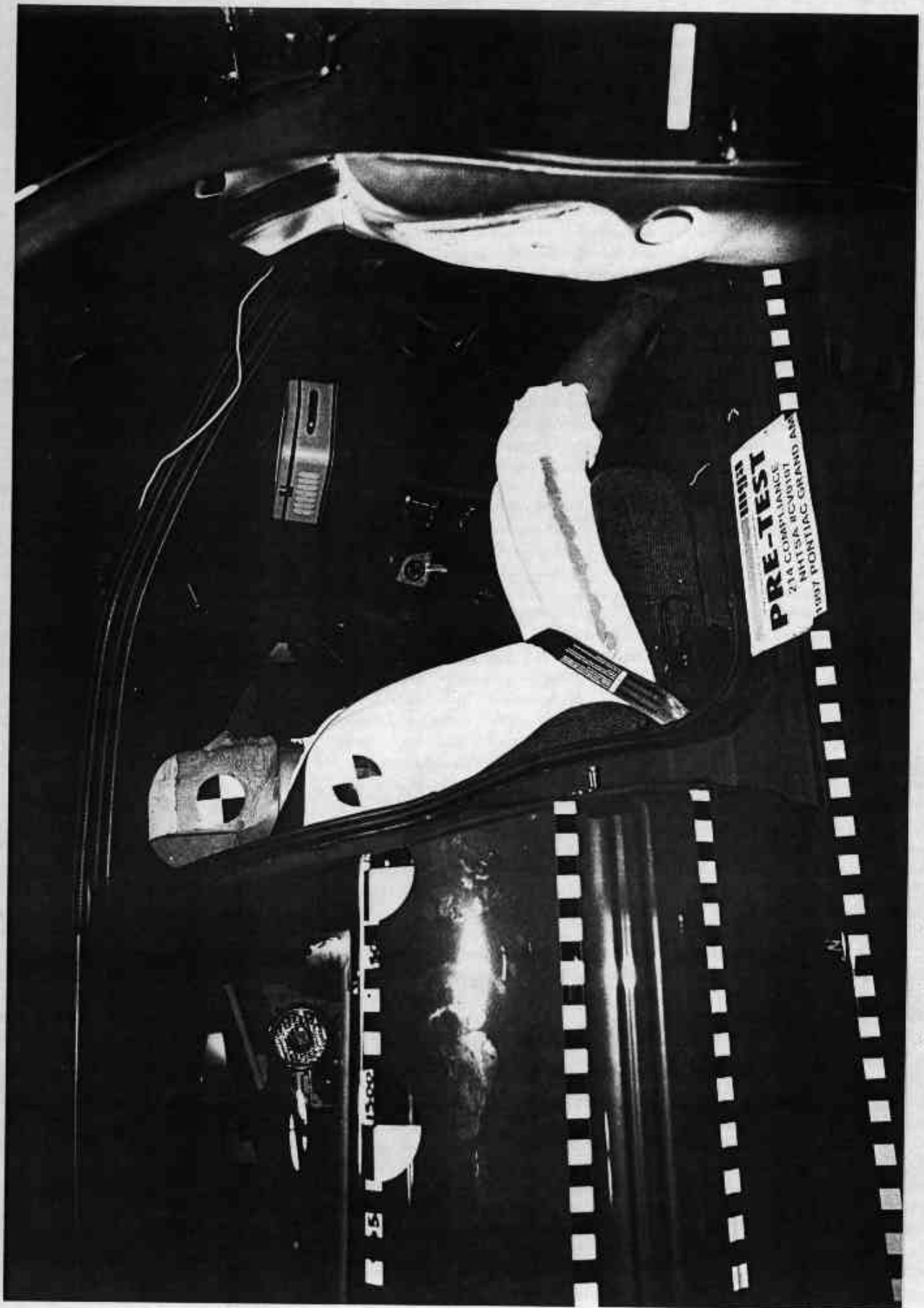


Photo No. A-25 - Pre-Test Front Passenger Dummy Right Side View (Door Open)

A-25

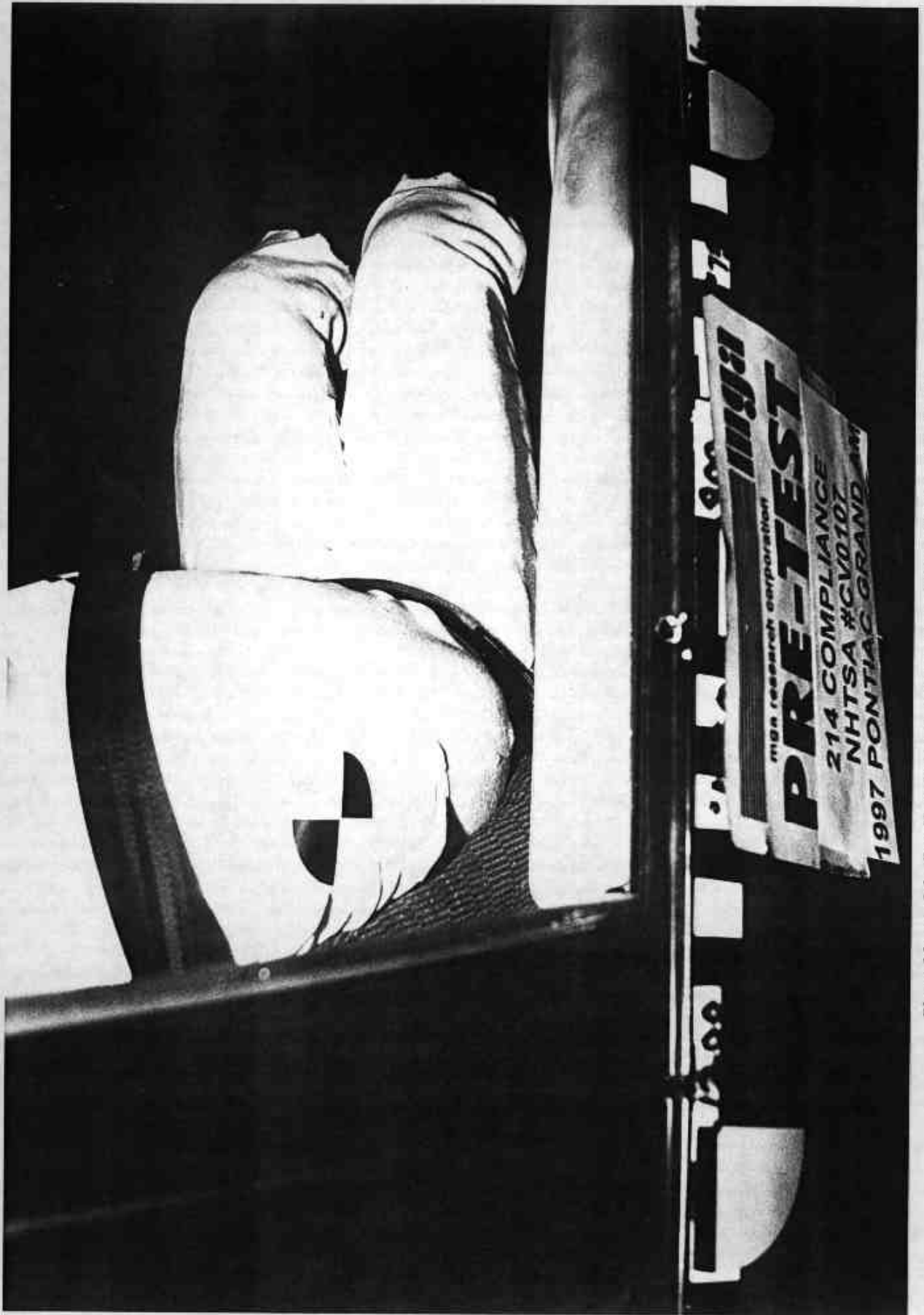


Photo No. A-26 - Pre-Test Front Passenger Shoulder and Door Top View



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



Photo No. A-28 - Post-Test Front Passenger Dummy Contact



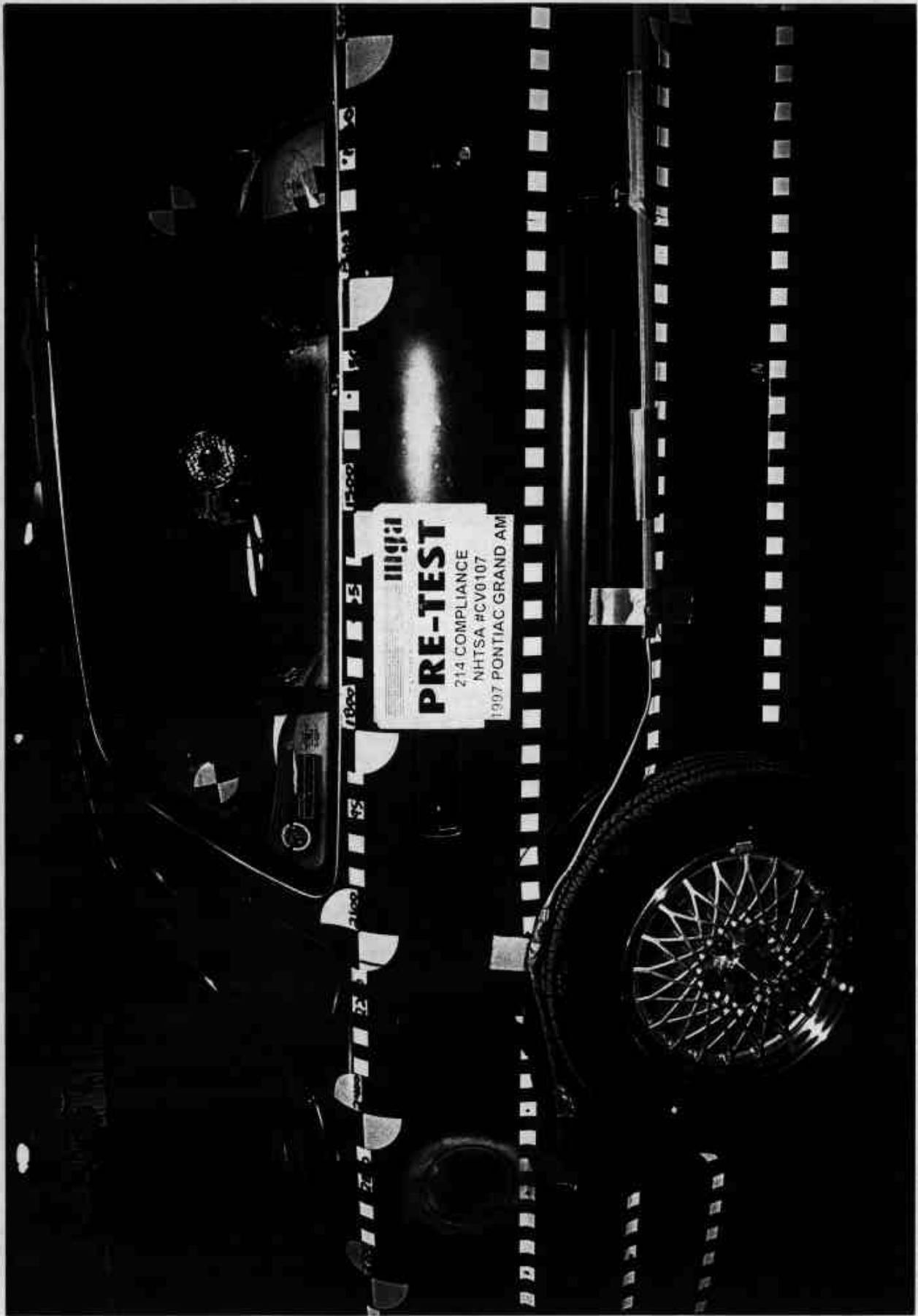
Photo No. A-29 - Post-Test Front Passenger Dummy Head Contact



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



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



A-32

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

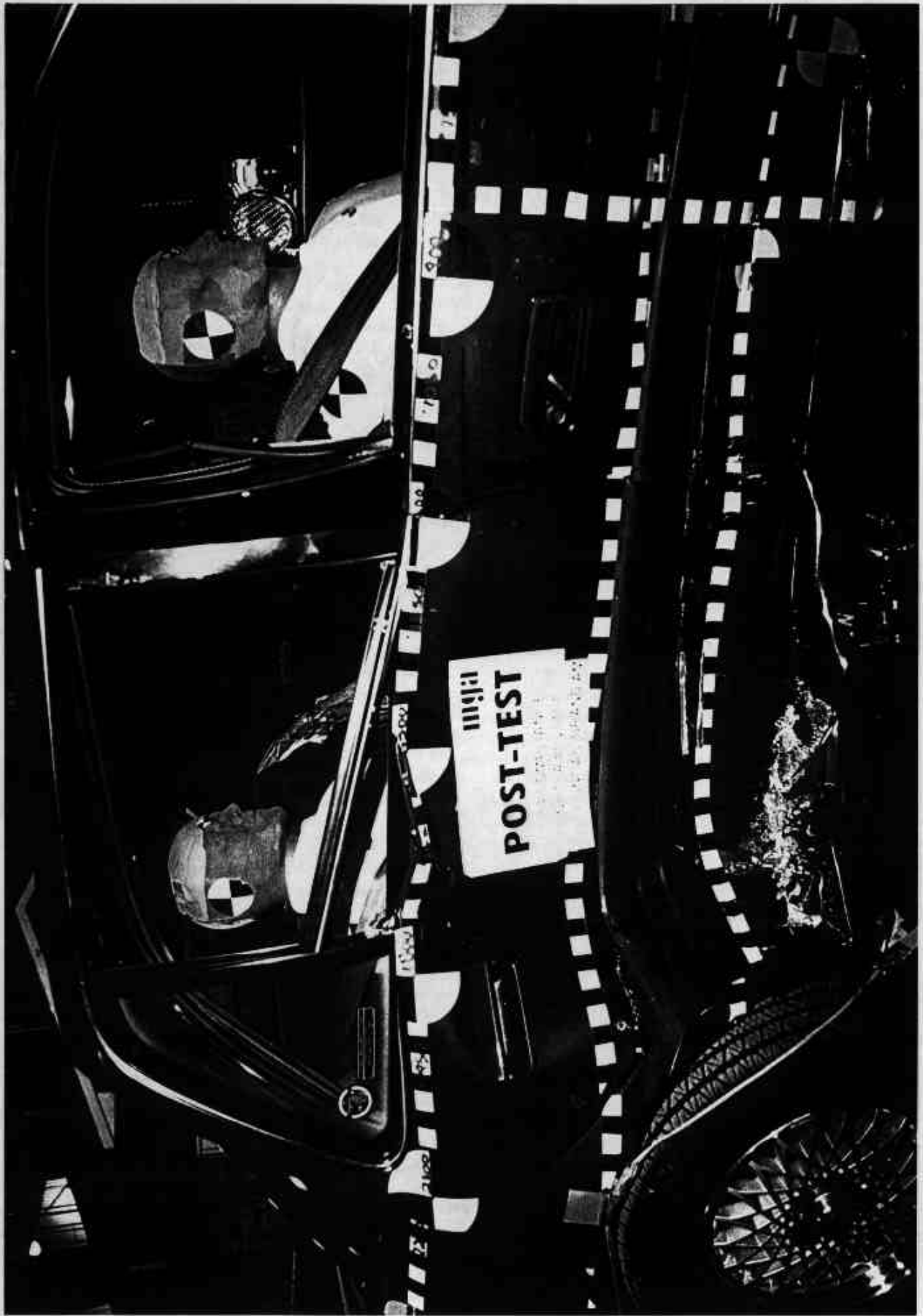


Photo No. A-33 - Post-Test Rear Passenger Dummy Right Side View

A-33



A-34

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

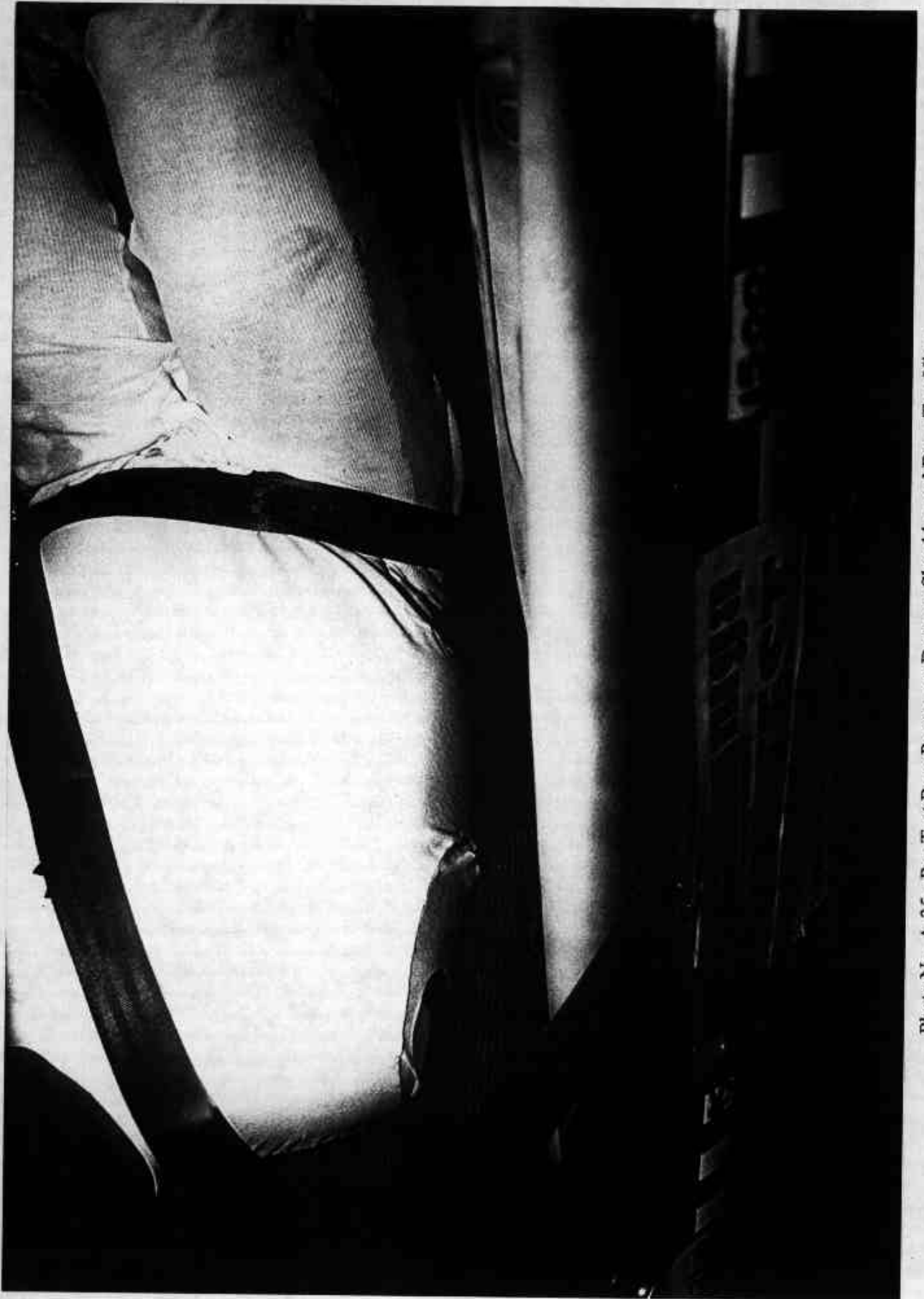


Photo No. A-35 - Pre-Test Rear Passenger Dummy Shoulder and Door Top View

A-35



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214 COMPLIANCE
NHTSA #CV0107
1997 PONTIAC GRAND AM

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

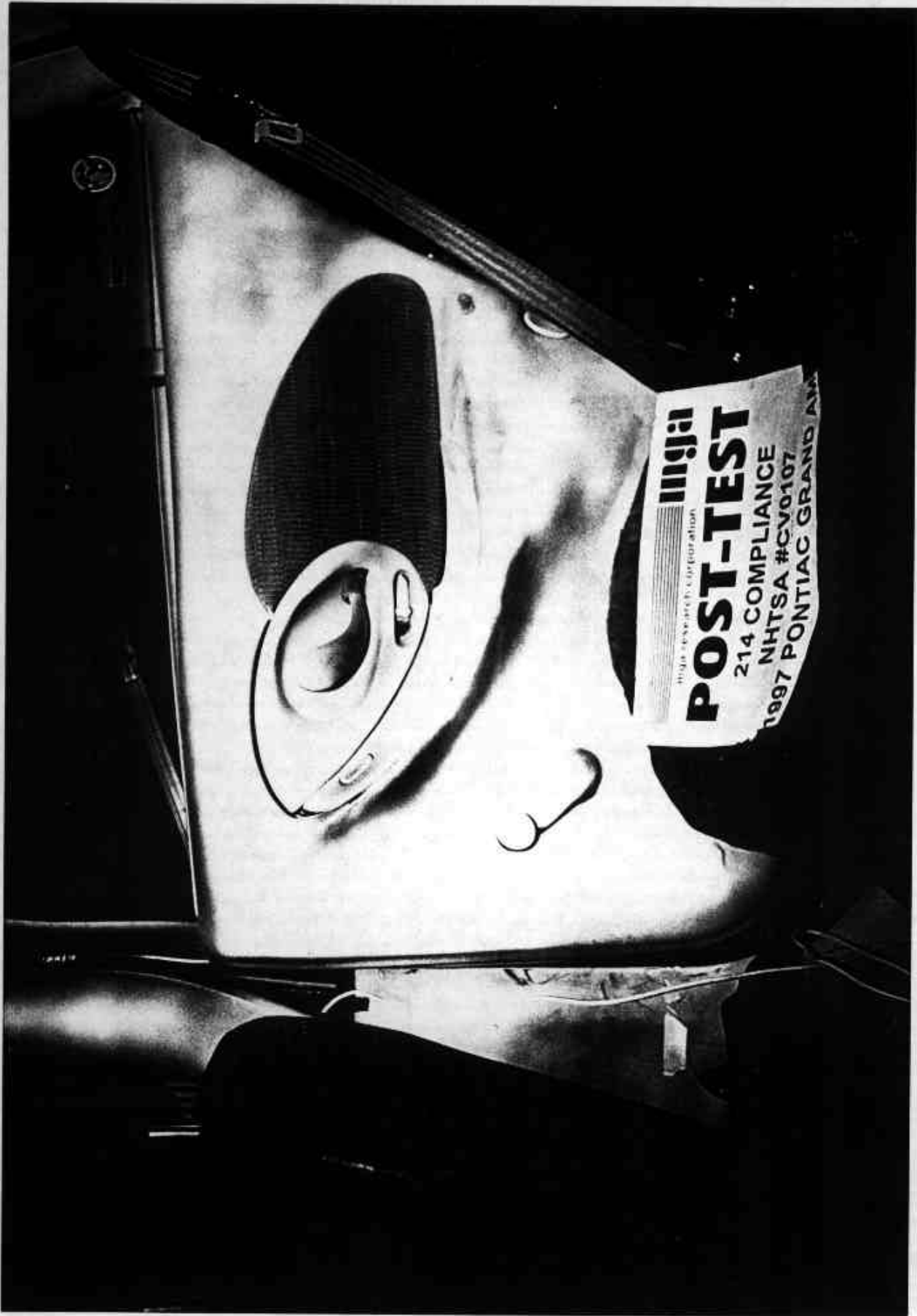


Photo No. A-37 - Post-Test Rear Passenger Dummy Contact

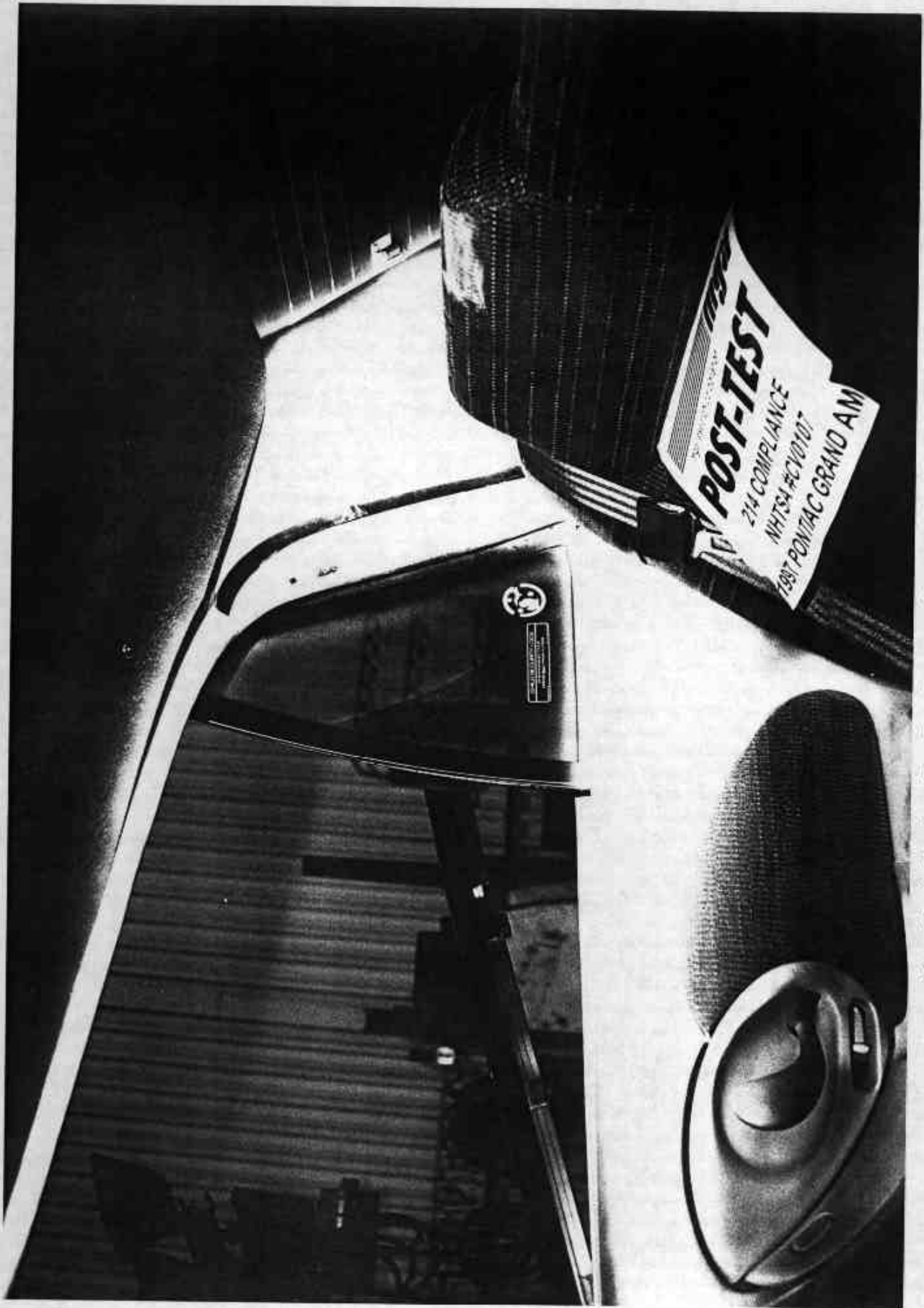


Photo No. A-38 - Post-Test Rear Passenger Dummy Head Contact



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

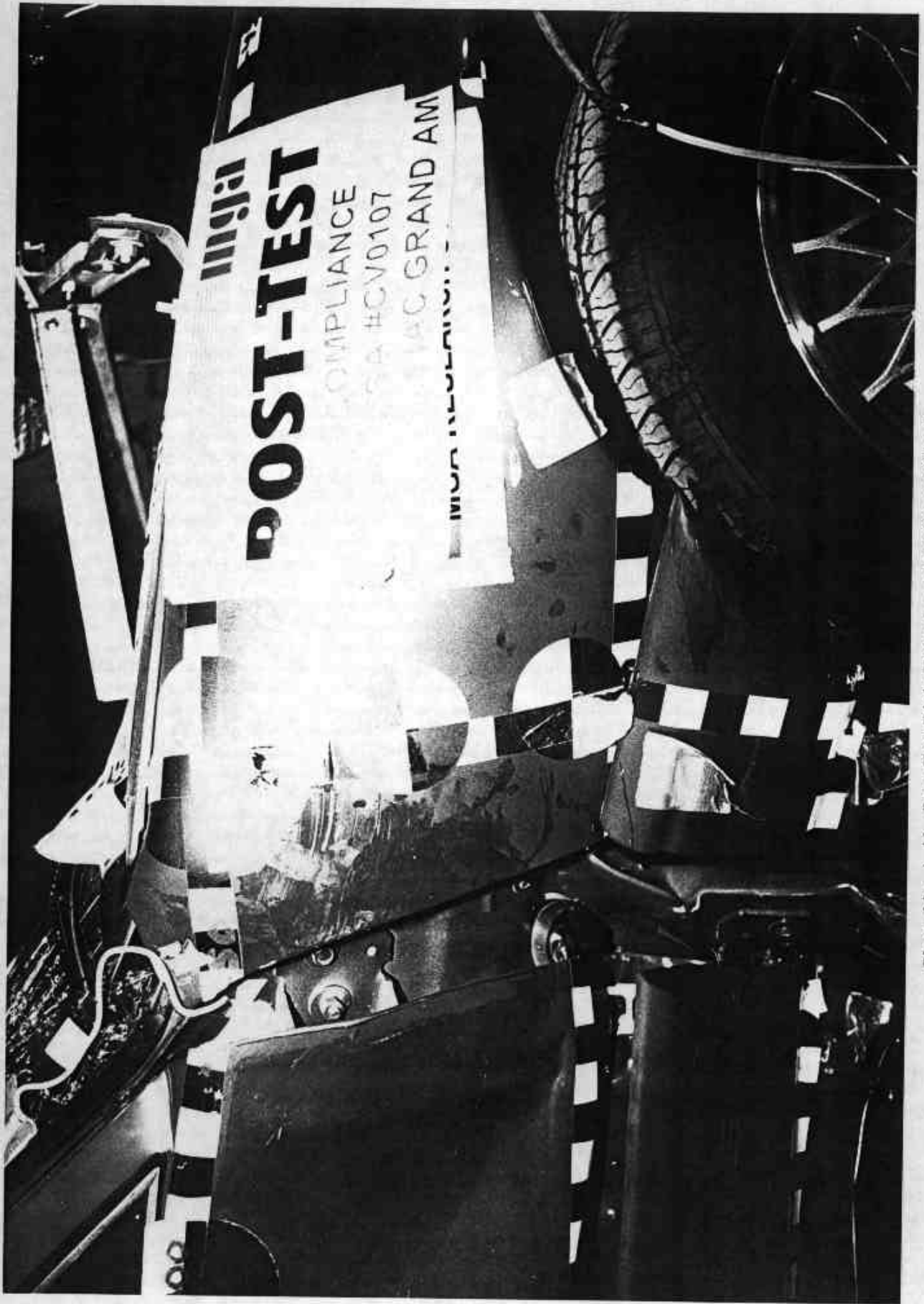
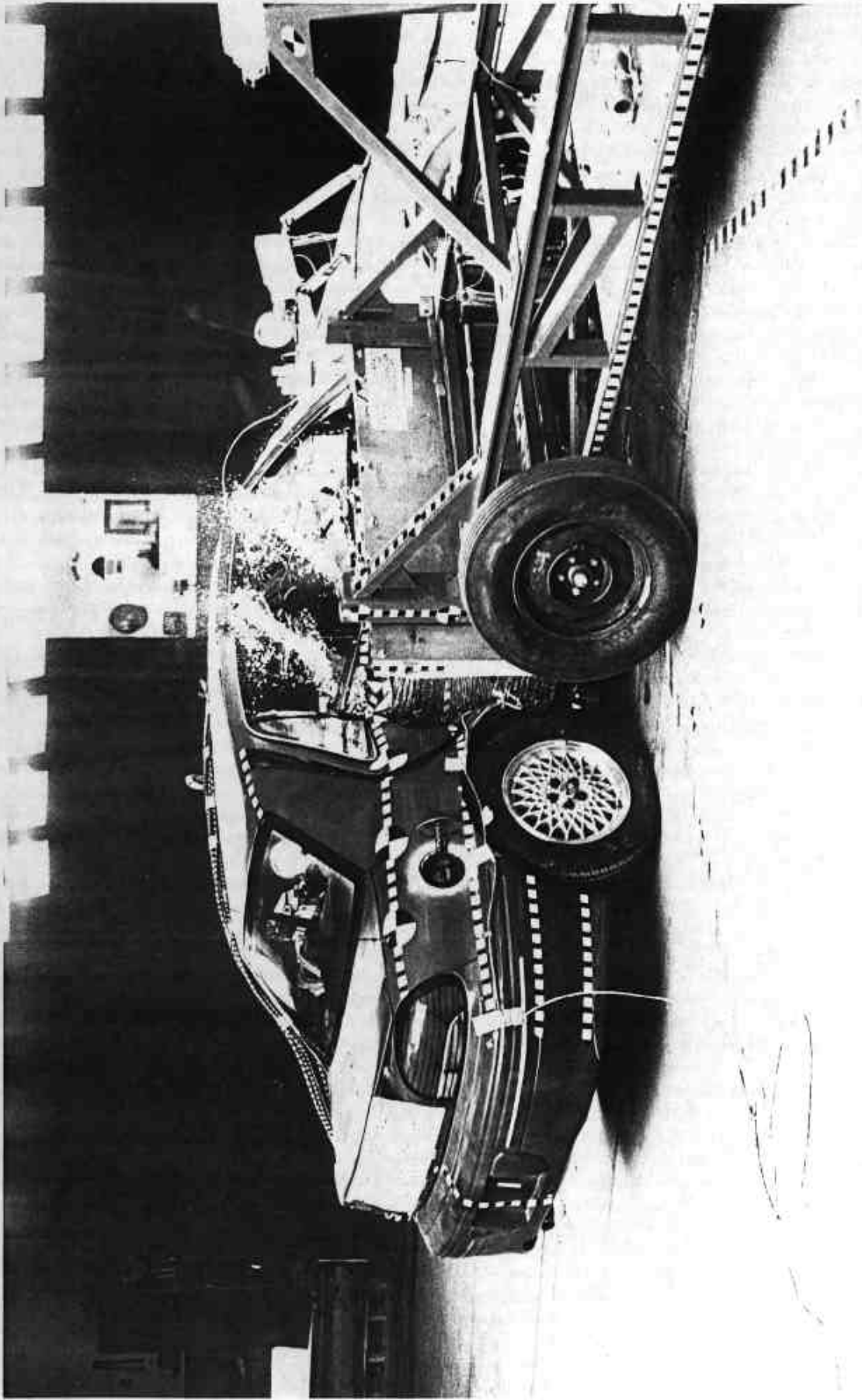


Photo No. A-40 - Post-Test Right Front Impact Point on Vehicle



A-41

Photo No. A-41 - Impact

TIRE - LOADING INFORMATION



OCCUPANTS		VEHICLE CAP. WT.
FRT. CTR.	RR.	TOTAL
2	3	5
		LBS
		882
		400
		KG

MAX. LOADING @ GVWR SAME AS VEHICLE CAPACITY WEIGHT.
1G2NE52M1VC723676
 MODEL: NE69 NAE

TIRE SIZE	SPEED RTG	COLD TIRE PRESSURE
FRT P195/65R15	S	30/210 PSI/KPA
RR P195/65R15	S	30/210 PSI/KPA
SPA T115/70D14	M	60/420 PSI/KPA

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



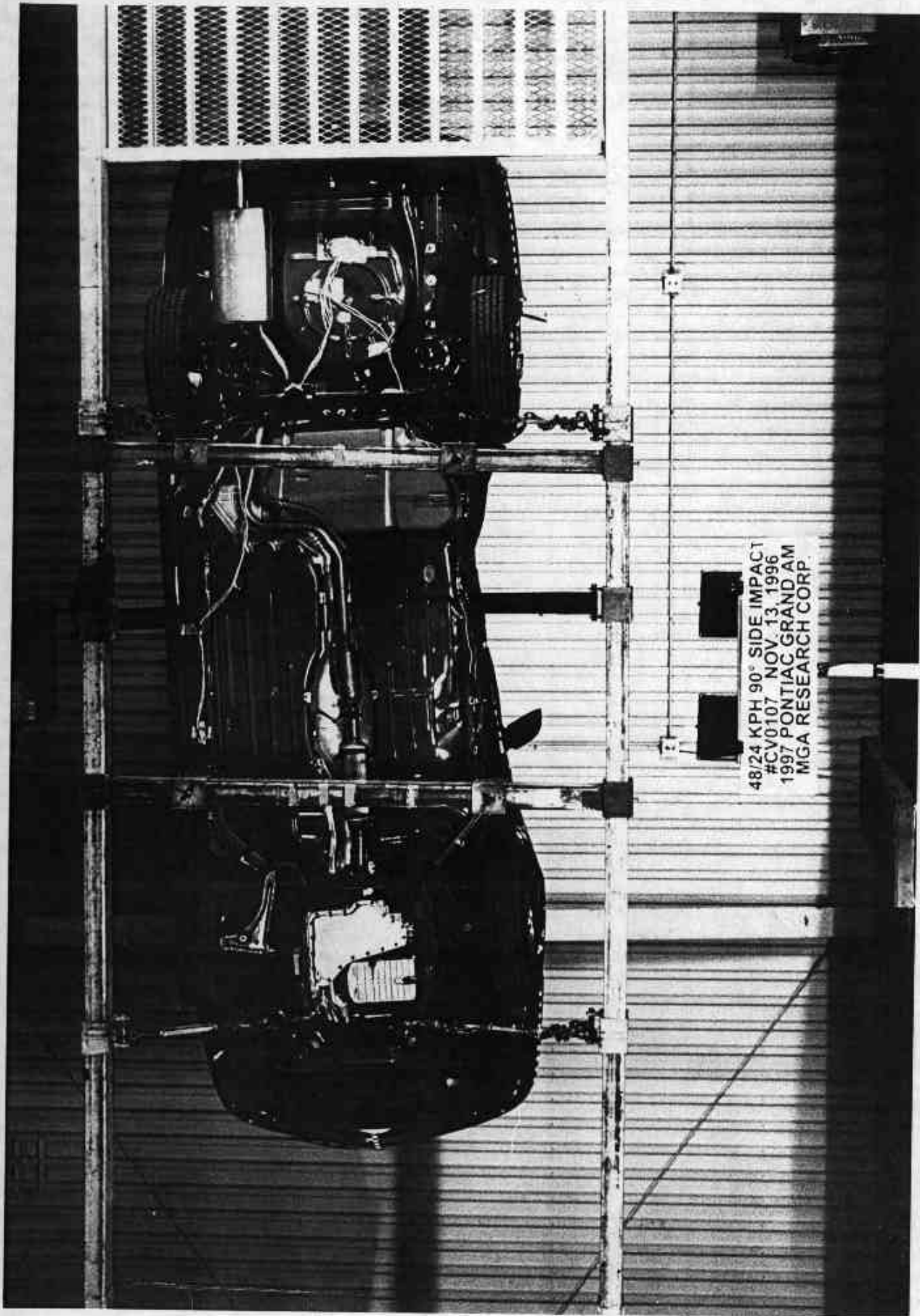
MFD BY GENERAL MOTORS CORP

DATE	GVWR	GAWR FRT	GAWR RR
09/96	3911 LB	2215 LB	1696 LB
	1774 KG	1005 KG	769 KG

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

1G2NE52M1VC723676 TYPE: PASS CAR

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



48/24 KPH 90° SIDE IMPACT
#CV0107 NOV 13, 1996
1997 PONTIAC GRAND AM
MGA RESEARCH CORP.

Photo No. A-43 - Rollover 90°

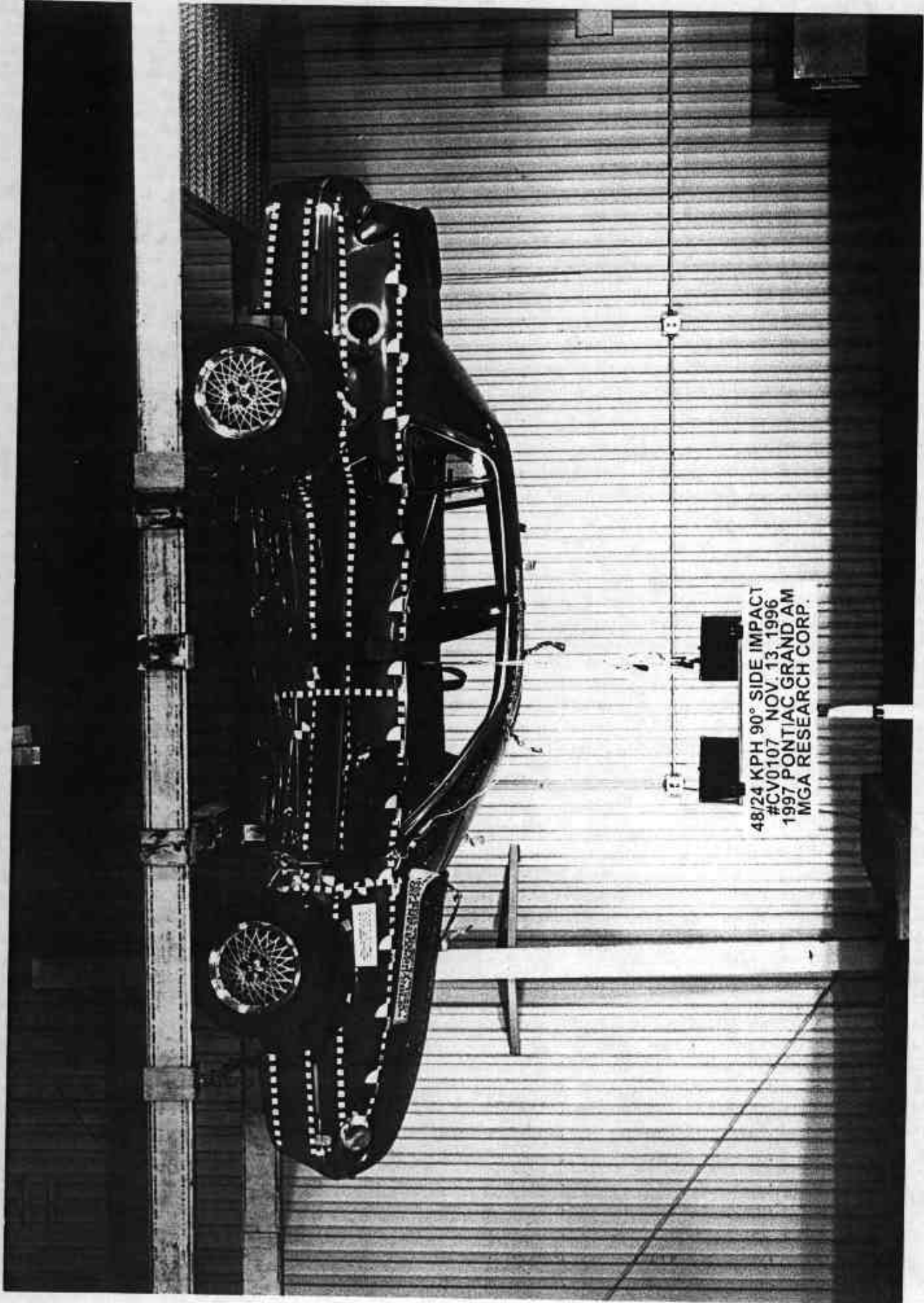
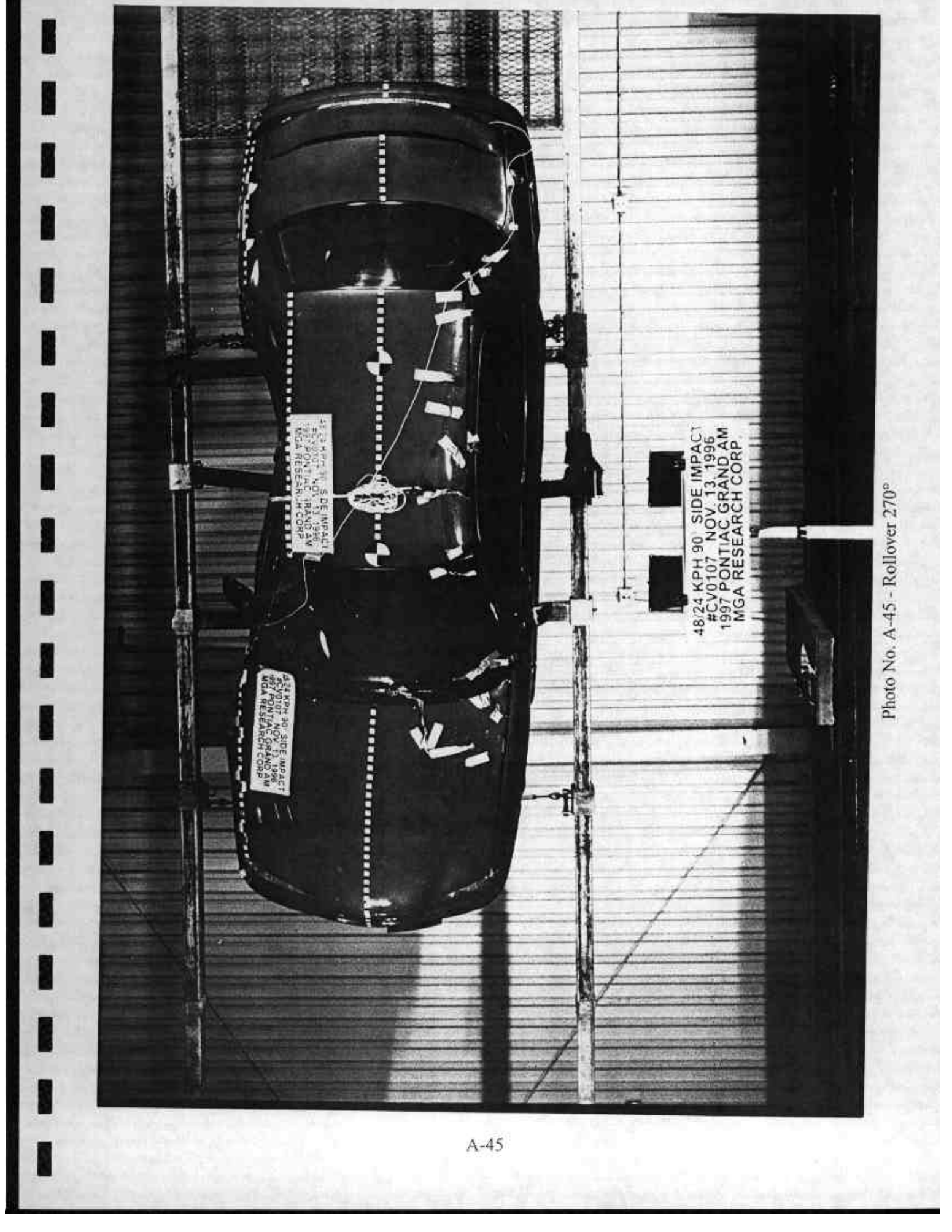


Photo No. A-44 - Rollover 180°

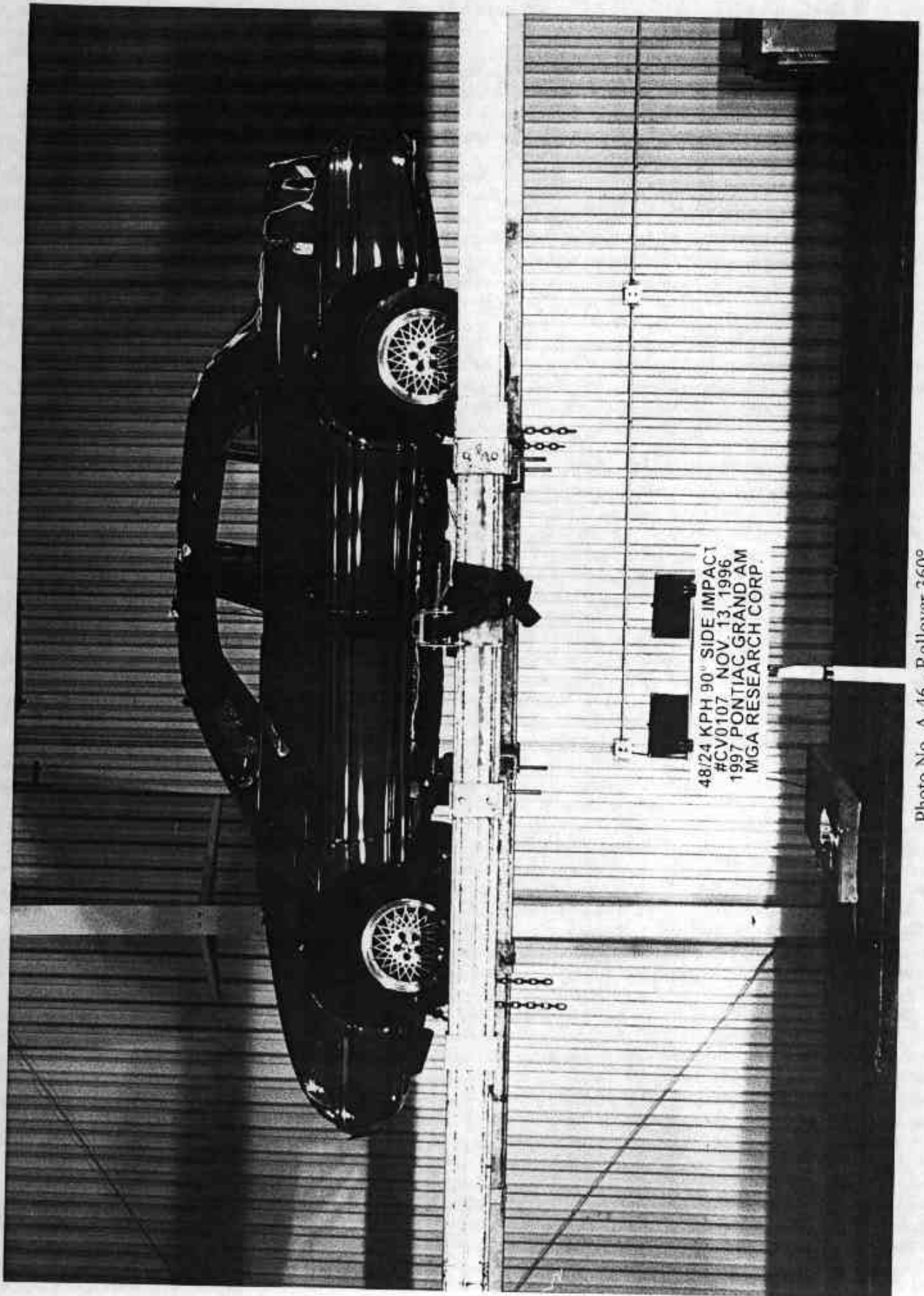


48,24 KPH 90° SIDE IMPACT
NOV. 13, 1996
PONTIAC GRAND AM
MGA RESEARCH CORP.

48,24 KPH 90° SIDE IMPACT
NOV. 13, 1996
PONTIAC GRAND AM
MGA RESEARCH CORP.

48,24 KPH 90° SIDE IMPACT
#CV0107 NOV. 13, 1996
1997 PONTIAC GRAND AM
MGA RESEARCH CORP.

Photo No. A-45 - Rollover 270°



48/24 KPH 90° SIDE IMPACT
#CV0107 NOV 13 1996
1997 PONTIAC GRAND AM
MGA RESEARCH CORP.

Photo No. A-46 - Rollover 360°

A-46



Photo No. A-47 - Right Front Attitude Point



Photo No. A-48 - Left Front Altitude Point

A-48

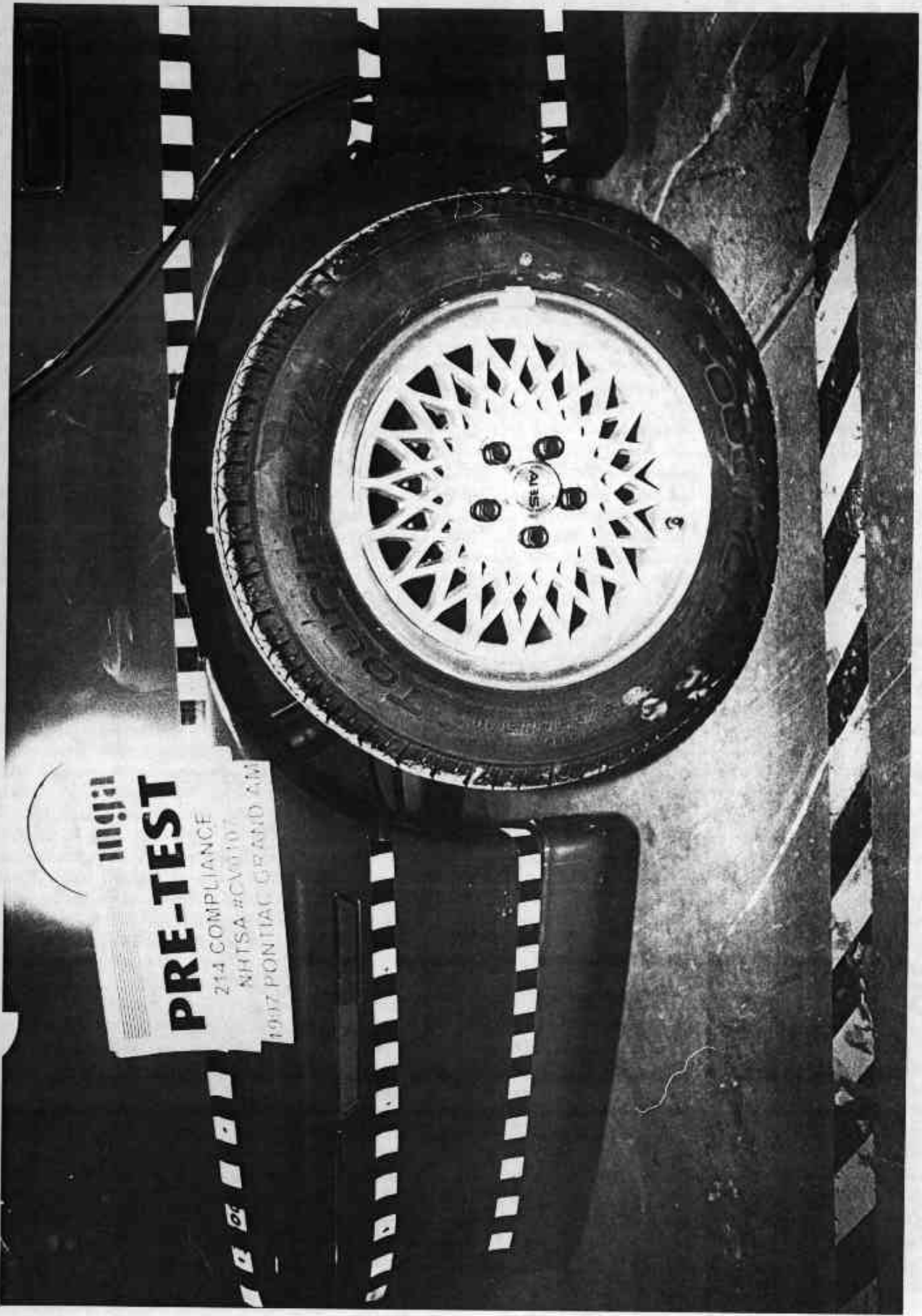


Photo No. A-49 - Right Rear Attitude Point



Photo No. A-50 - Left Rear Attitude Point

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* No valid data collected

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* No valid data collected after approximately 43 msec.

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FIR Filter

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TEST DATE: 11-13-1996

TEST: FMVSS 214 SIDE IMPACT

Speed: 33.2 MPH 53.4 KPH

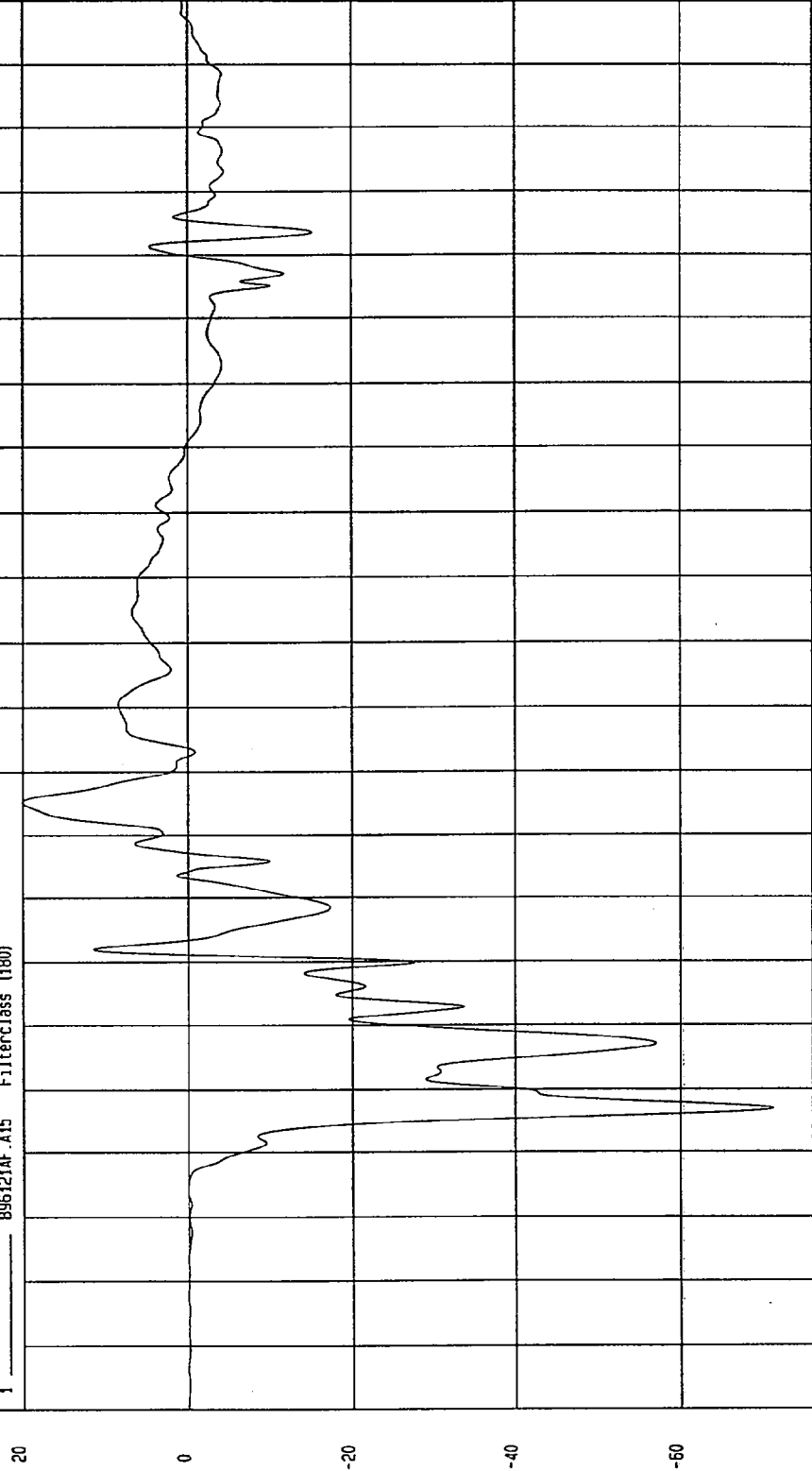
COMPONENT: 1997 PONTIAC GRAND AM (CV0107)

YMAX= 20.11753 G'S at 75. msec

YMIN= -71.20538 G'S at 27 msec

FRONT PASSENGER UPPER RIB Y ACCELERATION

1 896121AF.A15 Filterclass (180)



TIME (SECONDS)

MCA Research
12-10-1996 16:10

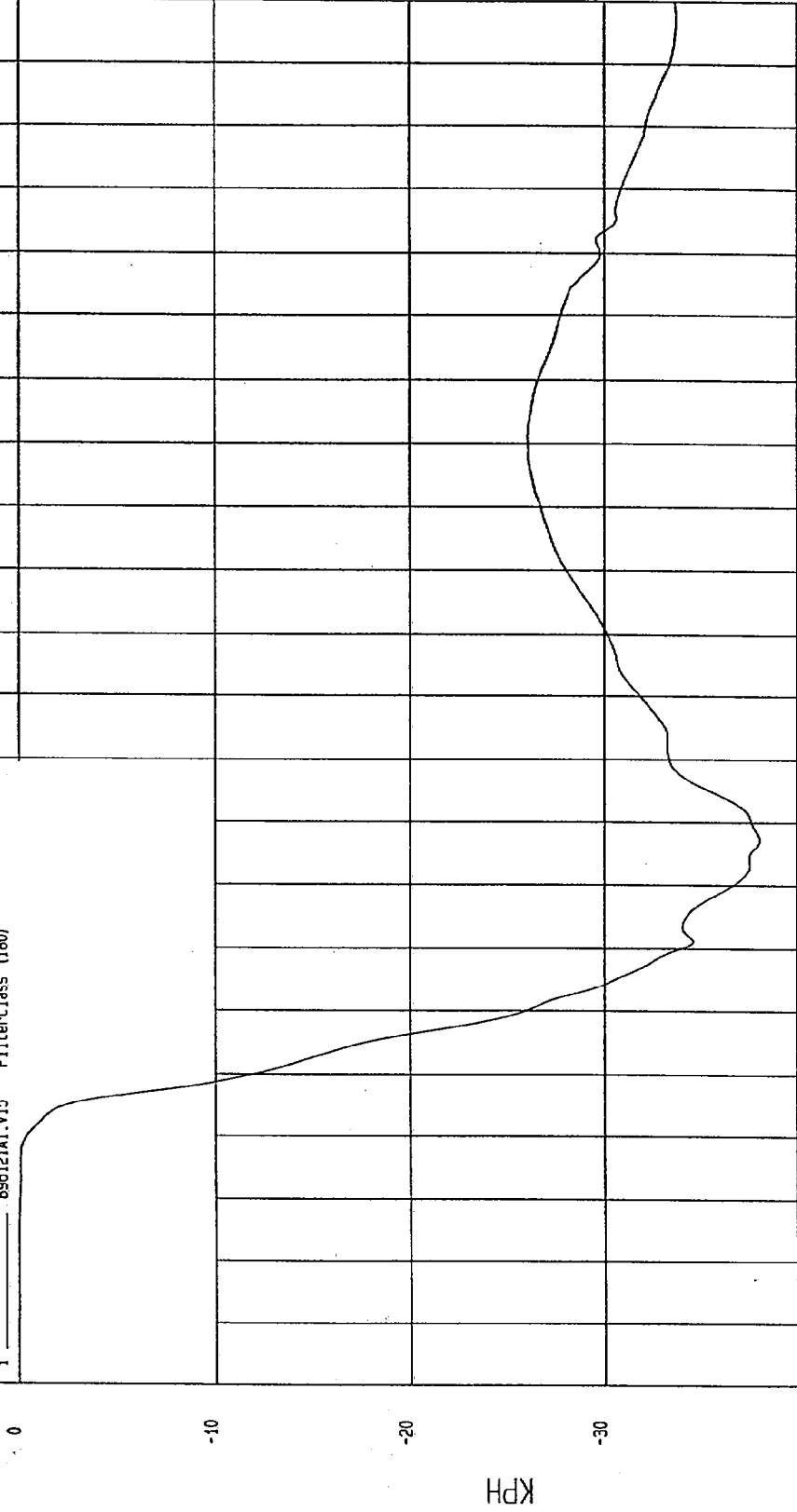
TEST: FMVSS 214 SIDE IMPACT TEST DATE: 11-13-1996

COMPONENT: 1997 PONTIAC GRAND AM (CV0107) Speed: 33.2 MPH 53.4 KPH

YMIN=-37.84816 KPH at 57. msec YMAX= 1.324407E-02 KPH at -12. msec

FRONT PASSENGER UPPER RIB Y VELOCITY

1 896121A1.V15 FilterClass (180)



MGA Research
12-10-1996 16:19

TIME Seconds

TEST DATE: 11-13-1996

TEST: FMVSS 214 SIDE IMPACT

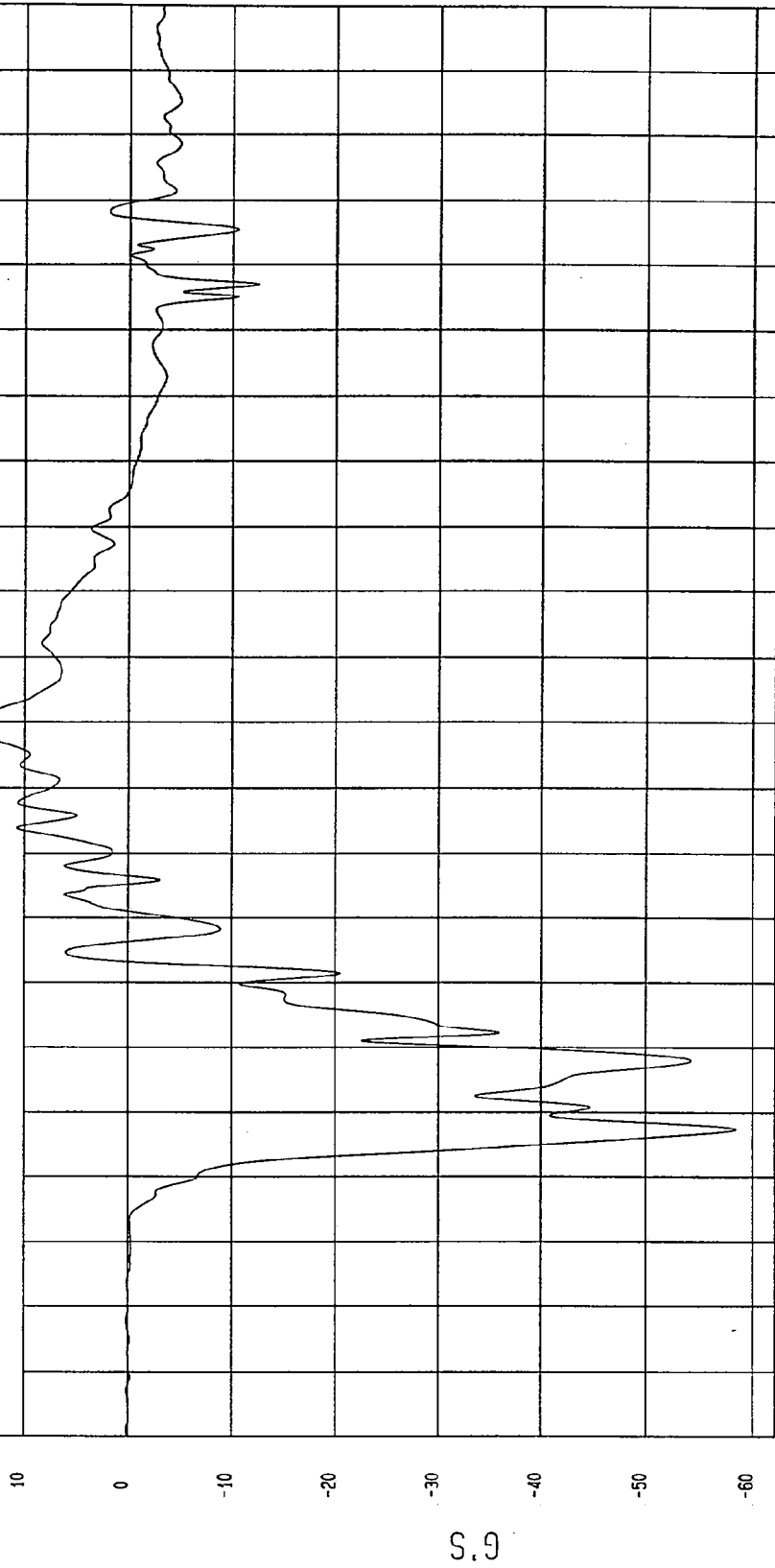
COMPONENT: 1997 PONTIAC GRAND AM (CV0107) Speed: 33.2 MPH 53.4 KPH

YMIN=-58.45223 G'S at 27. msec

YMAX= 15.20773 G'S at 89. msec

FRONT PASSENGER LOWER RIB Y ACCELERATION

1 ——— 896121AF.A16 FilterClass (180)



NSA Research
12-10-1996 16:10

TIME (SECONDS)

TEST DATE: 11-13-1996

TEST: FMVSS 214 SIDE IMPACT

Speed: 33.2 MPH 53.4 KPH

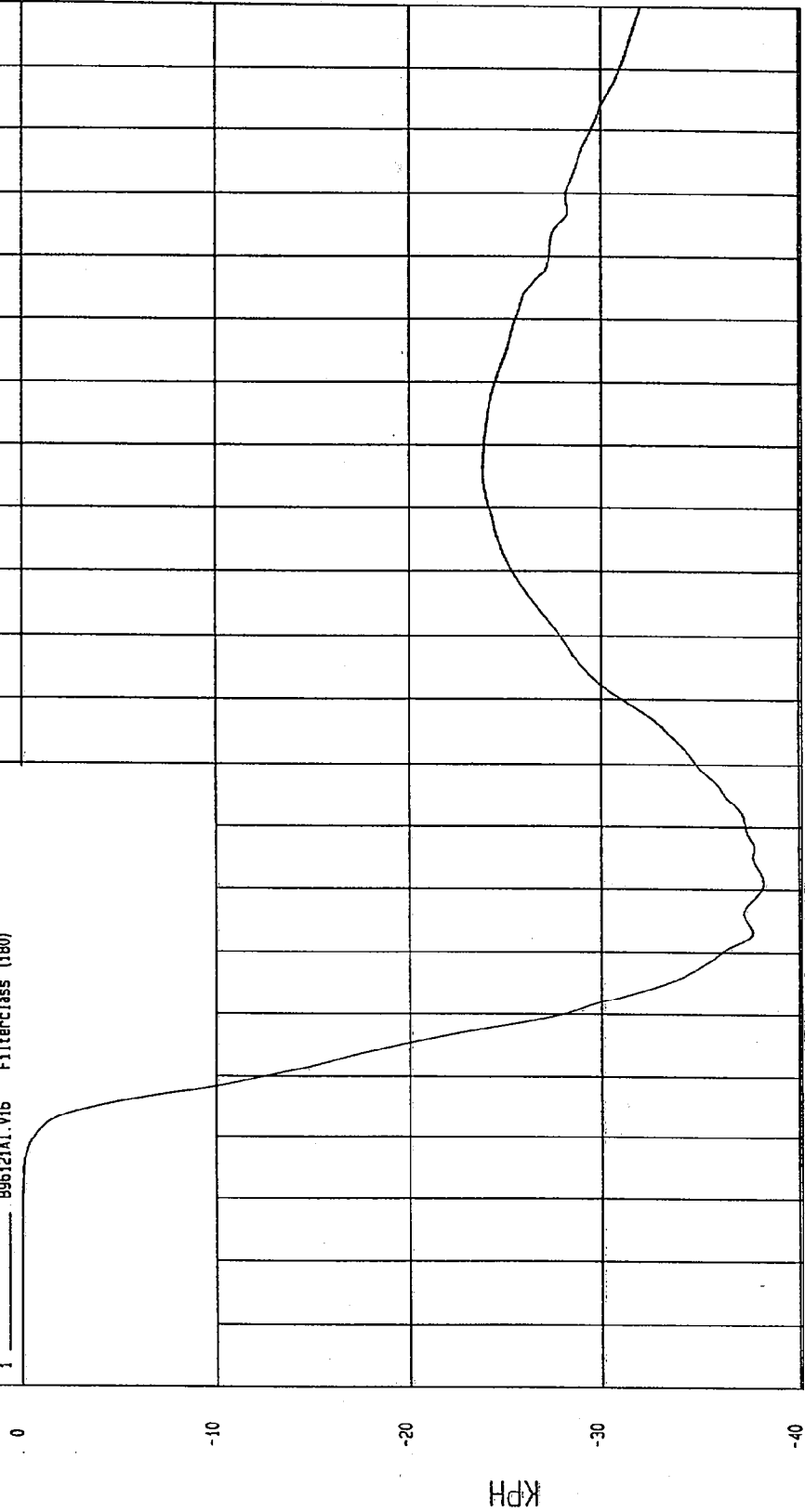
COMPONENT: 1997 PONTIAC GRAND AM (CV0107)

YMIN=-38.21429 KPH at 61 msec

YMAX= 1.212395E-02 KPH at -12. msec

FRONT PASSENGER LOWER RIB Y VELOCITY

1 896121A1.V16 Filterclass (180)



NCA Research
12-10-1996 16:20

TIME Seconds

TEST DATE: 11-13-1996

TEST: FMVSS 214 SIDE IMPACT

Speed: 33.2 MPH 53.4 KPH

COMPONENT: 1997 PONTIAC GRAND AM (CV0107)

YMIN=-78.05769 G'S at 32. msec

YMAX= 20.89524 G'S at 64. msec

FRONT PASSENGER LOWER SPINE Y ACCELERATION

896121AF-A17 Filterclass (180)

1

20 0 -20 -40 -60 -80

G.S

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

NSA Research
12-10-1996 16:10

TEST DATE: 11-13-1996

TEST: FMVSS 214 SIDE IMPACT

Speed: 33.2 MPH 53.4 KPH

COMPONENT: 1997 PONTIAC GRAND AM (CV0107)

YMIN=-41.90162 KPH at 56. msec

YMAX= 9.126402E-03 KPH at -12. msec

FRONT PASSENGER LOWER SPINE Y VELOCITY

1 896121A1.V17 Filterclass (180)

1

0

-10

-20

-30

-40

KPH

.19

.18

.17

.16

.15

.14

.13

.12

.11

.1

.09

.08

.07

.06

.05

.04

.03

.02

.01

0

-.01

-.02

NSA Research
12-10-1996 16:20

TIME
Seconds

TEST DATE: 11-13-1996

TEST: FMVSS 214 SIDE IMPACT

Speed: 33.2 MPH 53.4 KPH

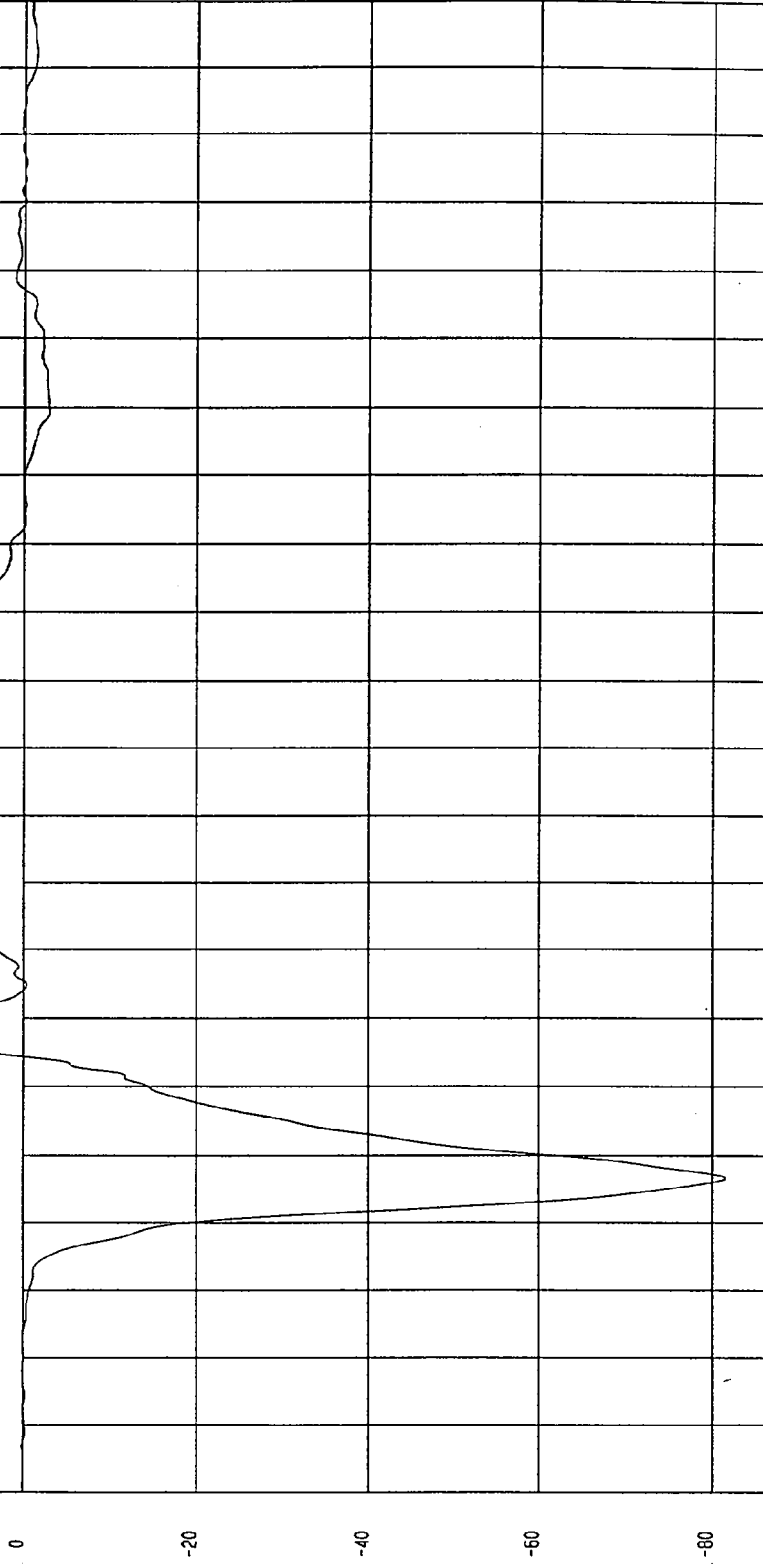
COMPONENT: 1997 PONTIAC GRAND AM (CV0107)

YMAX= 11.00216 G'S at 93. msec

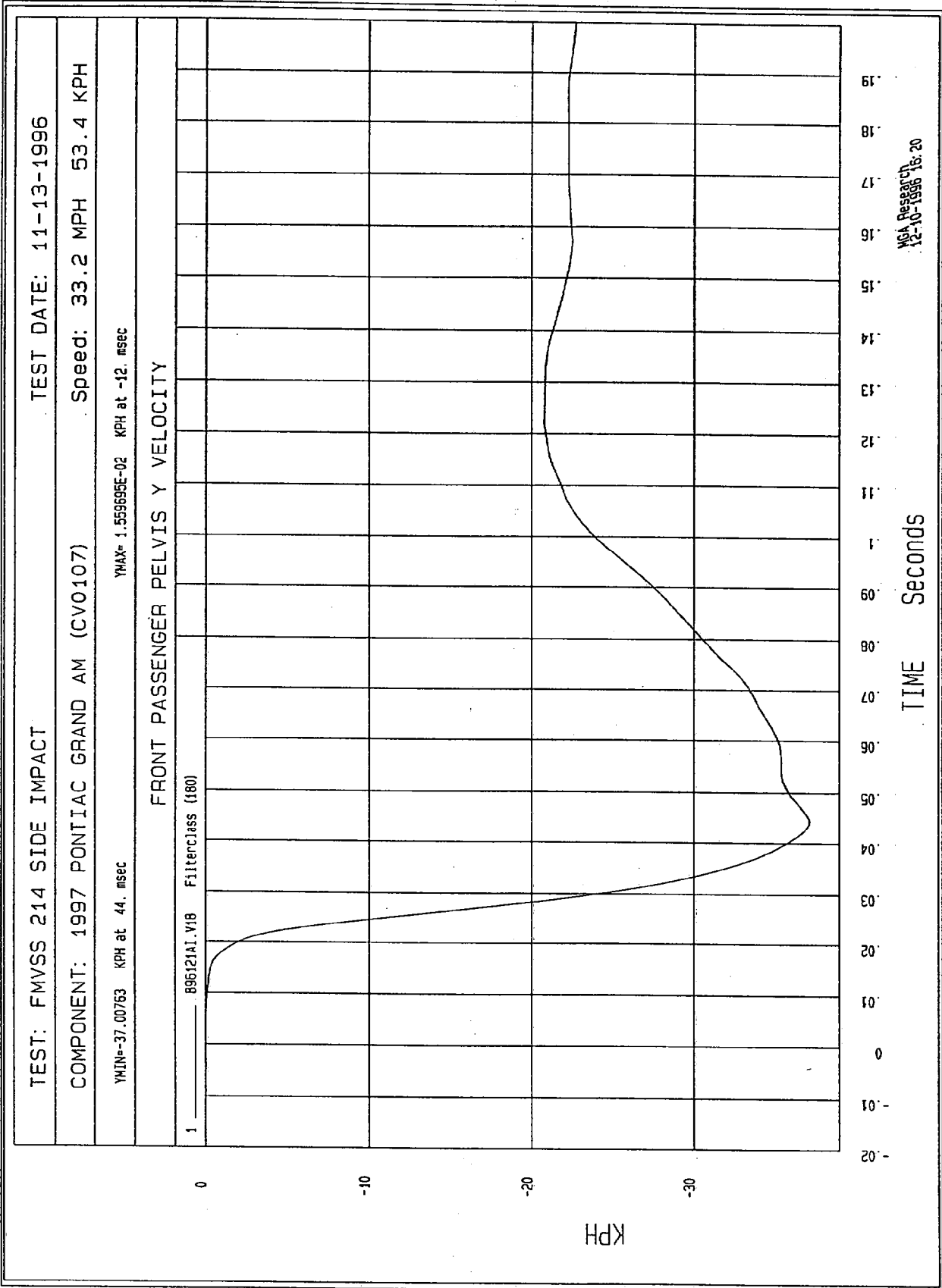
YMIN=-81.54143 G'S at 26. msec

FRONT PASSENGER PELVIS Y ACCELERATION

1 _____ B96121AF.A18 FilterClass (180)



MCA Research
12-10-1996 16:11

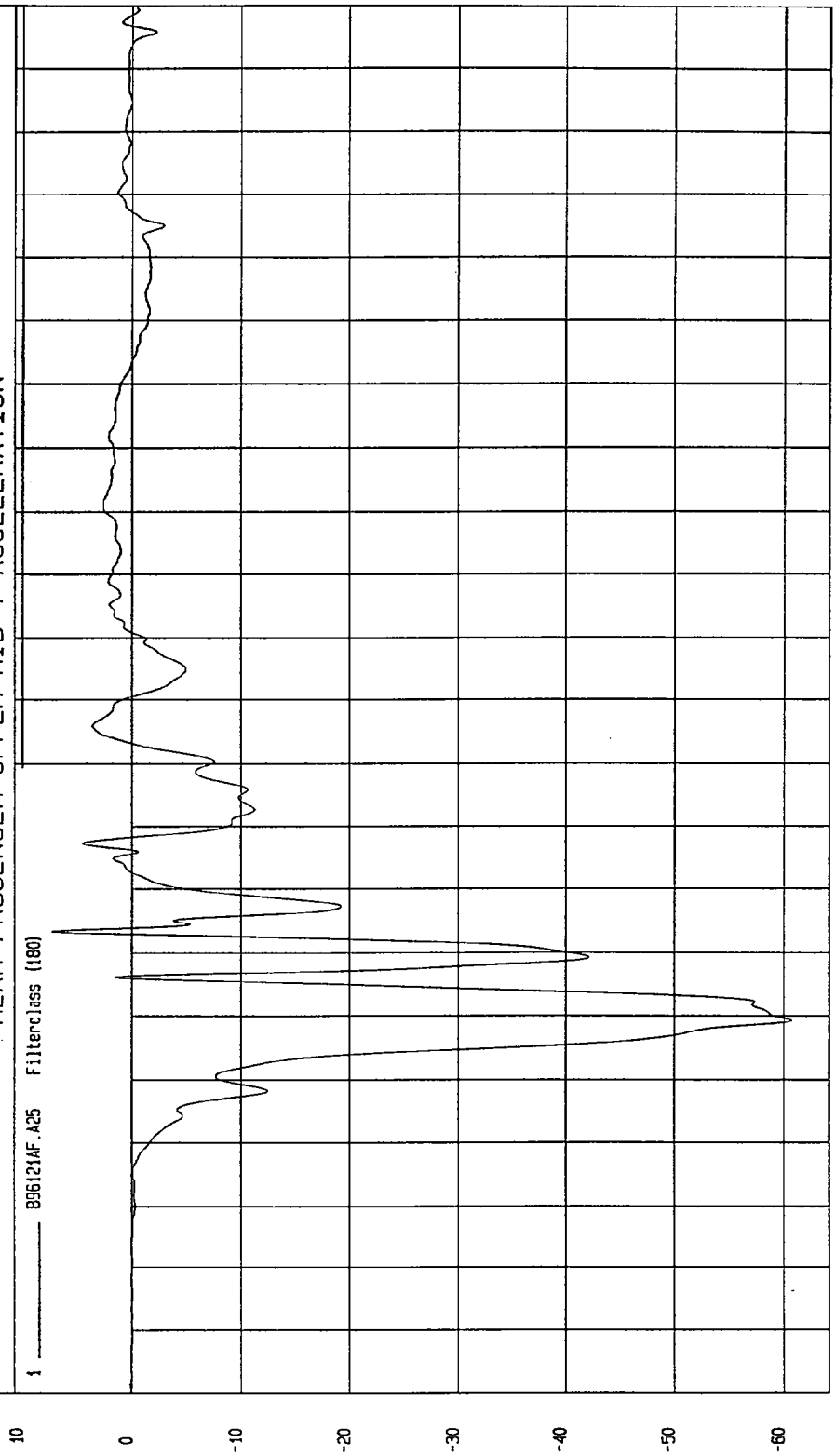


TEST: FMVSS 214 SIDE IMPACT TEST DATE: 11-13-1996

COMPONENT: 1997 PONTIAC GRAND AM (CV0107) Speed: 33.2 MPH 53.4 KPH

YMIN=-60.68934 G'S at 39. msec YMAX= 7.322457 G'S at 53. msec

REAR PASSENGER UPPER RIB Y ACCELERATION

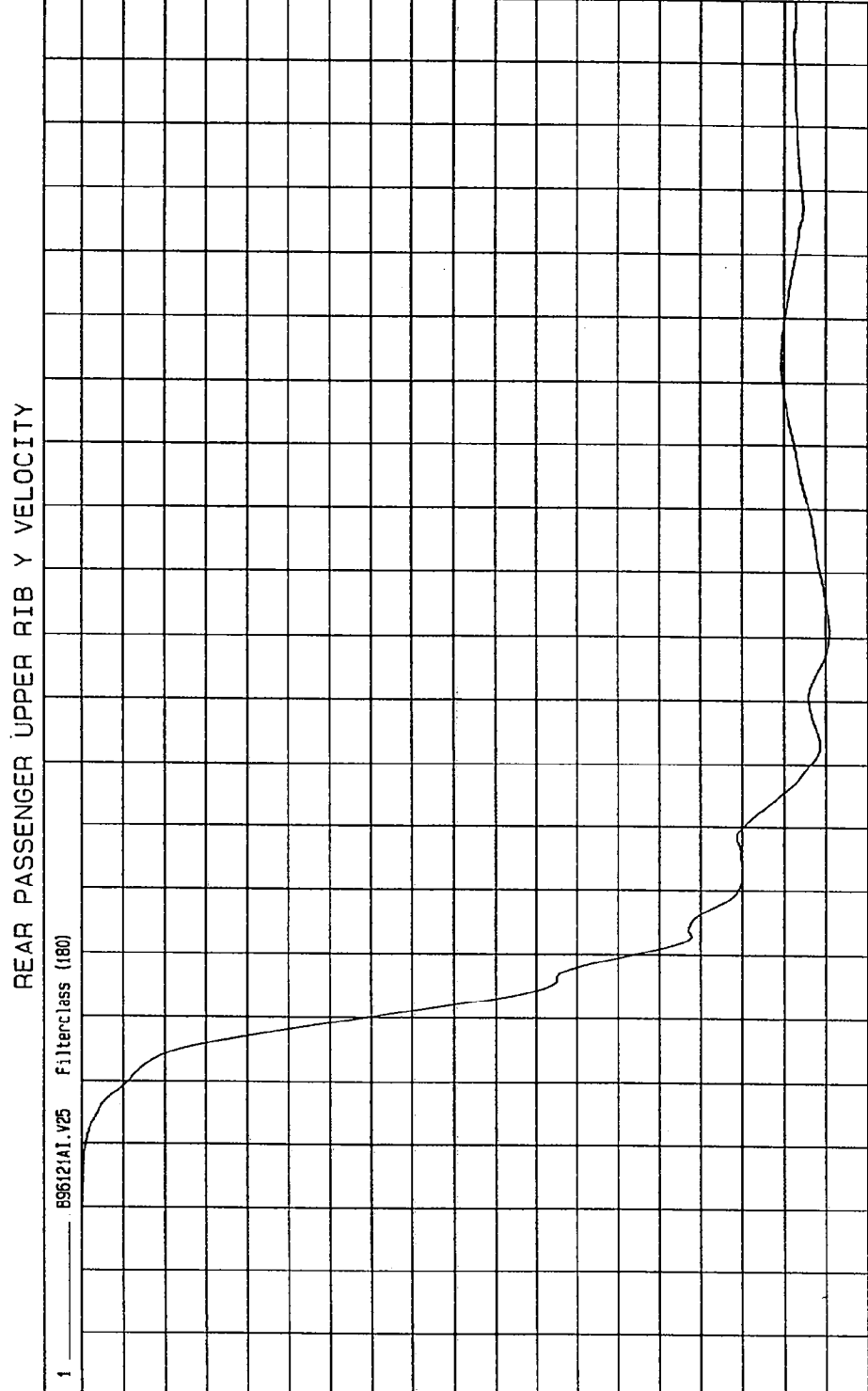


TIME (SECONDS)

MGA Research
12-10-1996 16:11

G.S.

TEST: FMVSS 214 SIDE IMPACT TEST DATE: 11-13-1996
 COMPONENT: 1997 PONTIAC GRAND AM (CV0107) Speed: 33.2 MPH 53.4 KPH
 YMIN=-36.18766 KPH at 100 msec YMAX= 1.873017E-02 KPH at -12. msec



MSA Research
 12-10-1996 16:20

TEST: FMVSS 214 SIDE IMPACT

TEST DATE: 11-13-1996

COMPONENT: 1997 PONTIAC GRAND AM (CV0107)

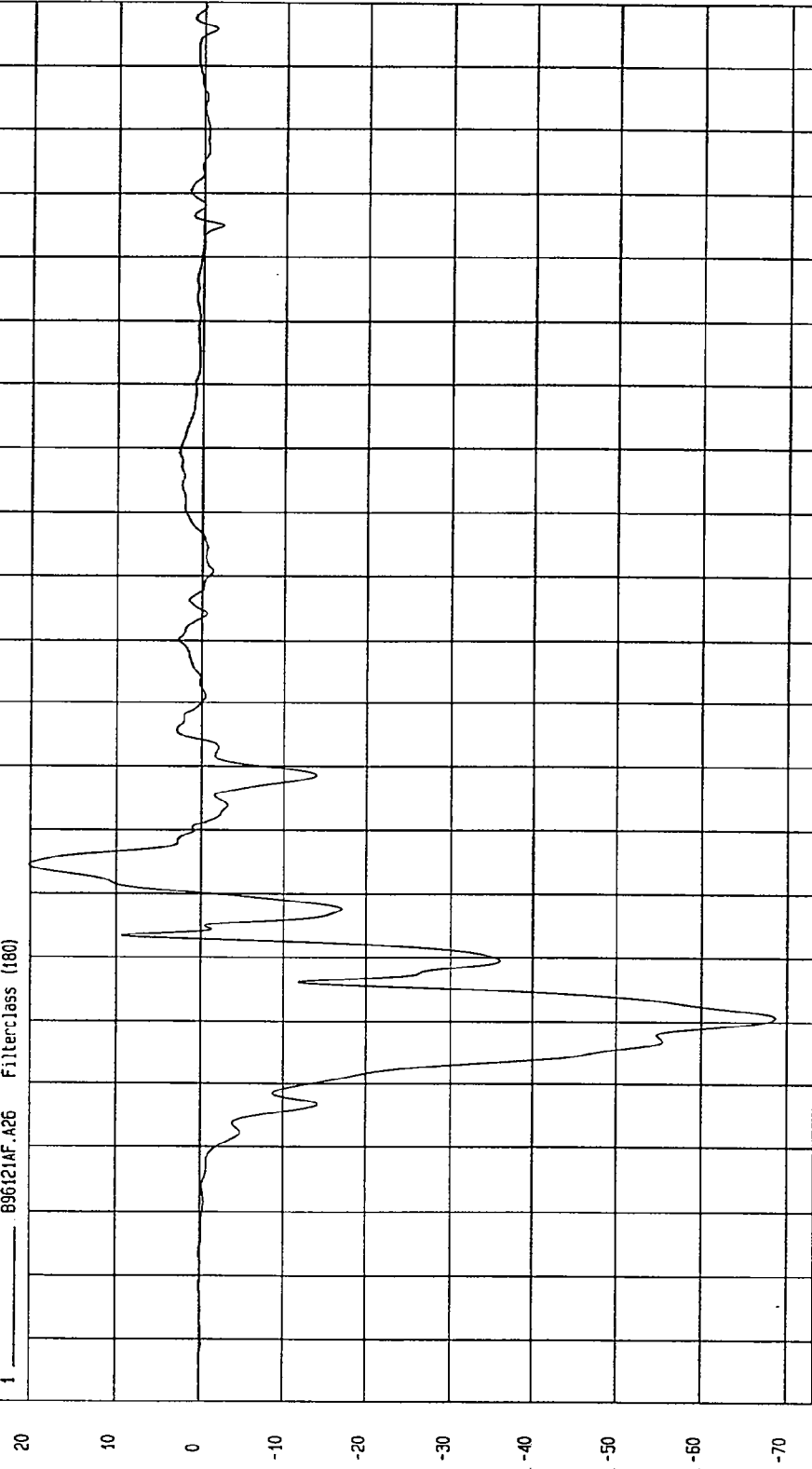
Speed: 33.2 MPH 53.4 KPH

YMIN=-60.65976 G'S at 40. msec

YMAX= 20.20897 G'S at 64. msec

REAR PASSENGER LOWER RIB Y ACCELERATION

1 896121AF.A26 Filterclass (180)



TIME (SECONDS)

MGA Research
12-10-1996 16.11

TEST DATE: 11-13-1996

TEST: FMVSS 214 SIDE IMPACT

Speed: 33.2 MPH 53.4 KPH

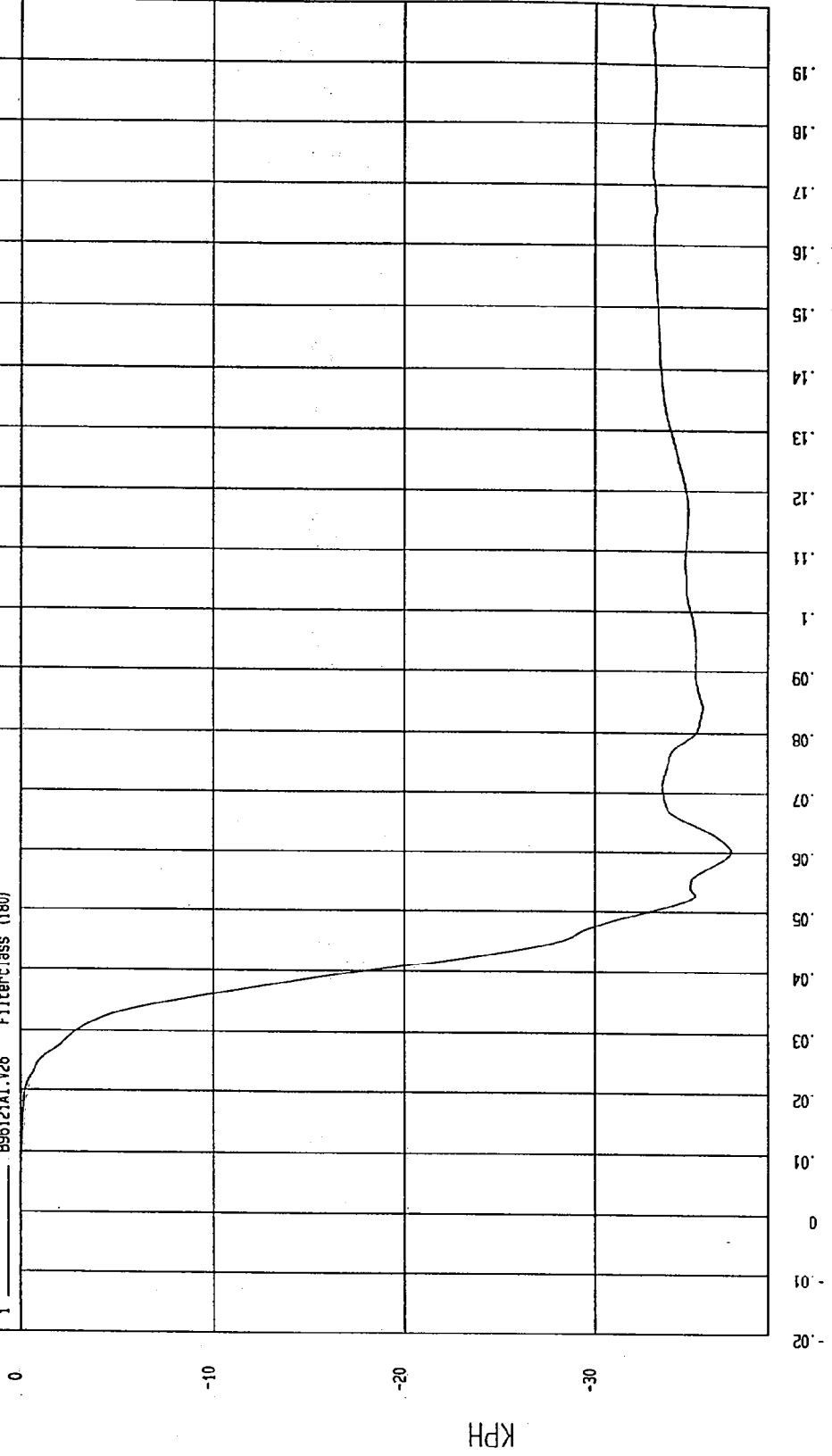
COMPONENT: 1997 PONTIAC GRAND AM (CV0107)

YMAX= 1.60734E-02 KPH at -12 msec

YMIN=-37.04443 KPH at 60. msec

REAR PASSENGER LOWER RIB Y VELOCITY

1 896121A1.V26 Filterclass (180)



MSA Research
12-10-1996 16:20

TIME Seconds

KPH

TEST DATE: 11-13-1996

TEST: FMVSS 214 SIDE IMPACT

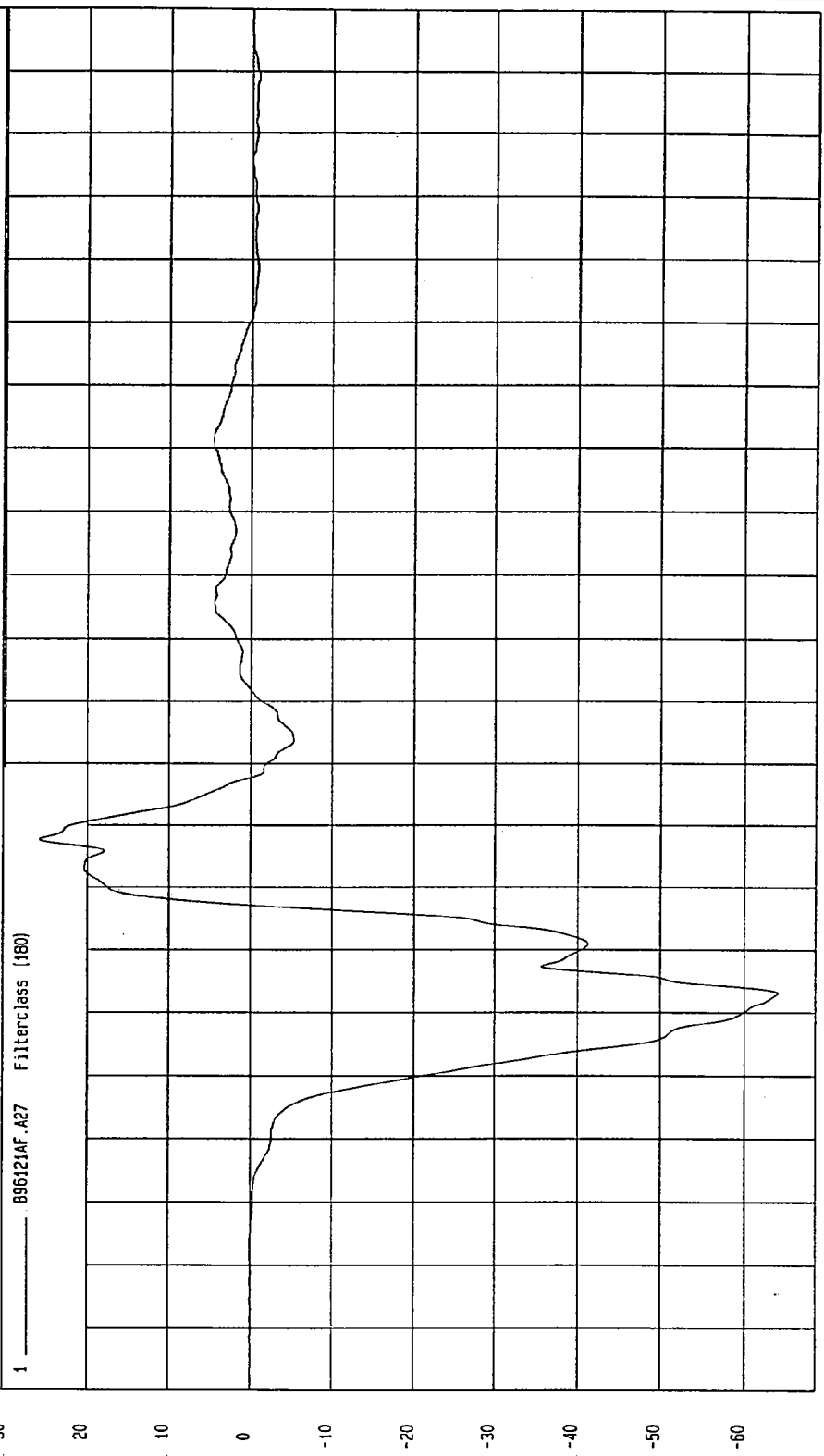
COMPONENT: 1997 PONTIAC GRAND AM (CV0107) Speed: 33.2 MPH 53.4 KPH

YMIN=-64.05114 G'S at 43. msec

YMAX= 25.79485 G'S at 67. msec

REAR PASSENGER LOWER SPINE Y ACCELERATION

1 896121AF.A27 Filterclass (180)



NSA Research
12-10-1996 16:11

TIME (SECONDS)

G.S

TEST: FMVSS 214 SIDE IMPACT

TEST DATE: 11-13-1996

Speed: 33.2 MPH 53.4 KPH

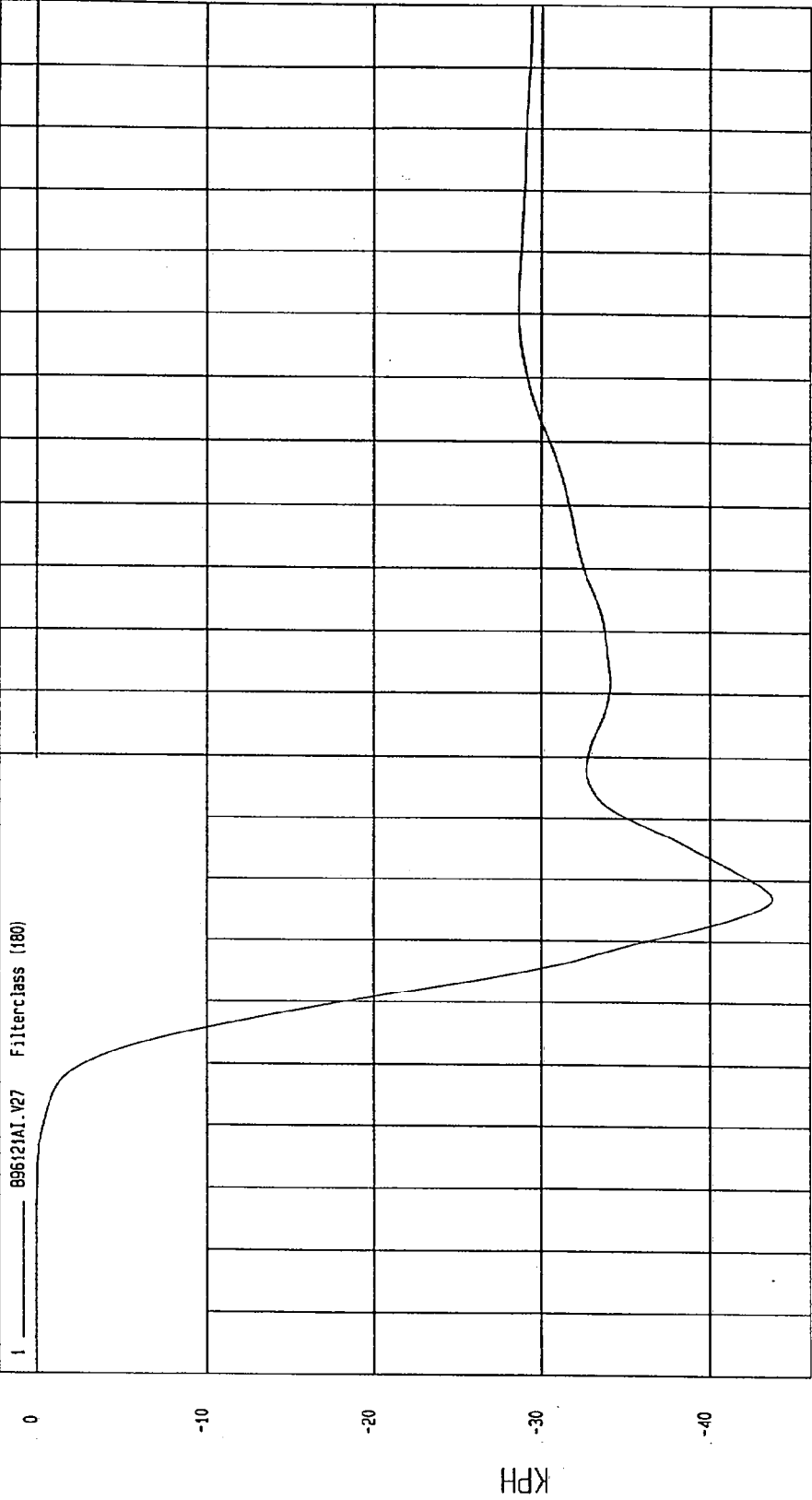
COMPONENT: 1997 PONTIAC GRAND AM (CV0107)

YMAX= 7.374059E-03 KPH at 4.6 msec

YMIN=-43.72183 KPH at 57 msec

REAR PASSENGER LOWER SPINE Y VELOCITY

1 ——— 896121A1.V27 Filterclass (180)



NGA Research
12-10-1996 16:20

TIME Seconds

TEST: FMVSS 214 SIDE IMPACT TEST DATE: 11-13-1996

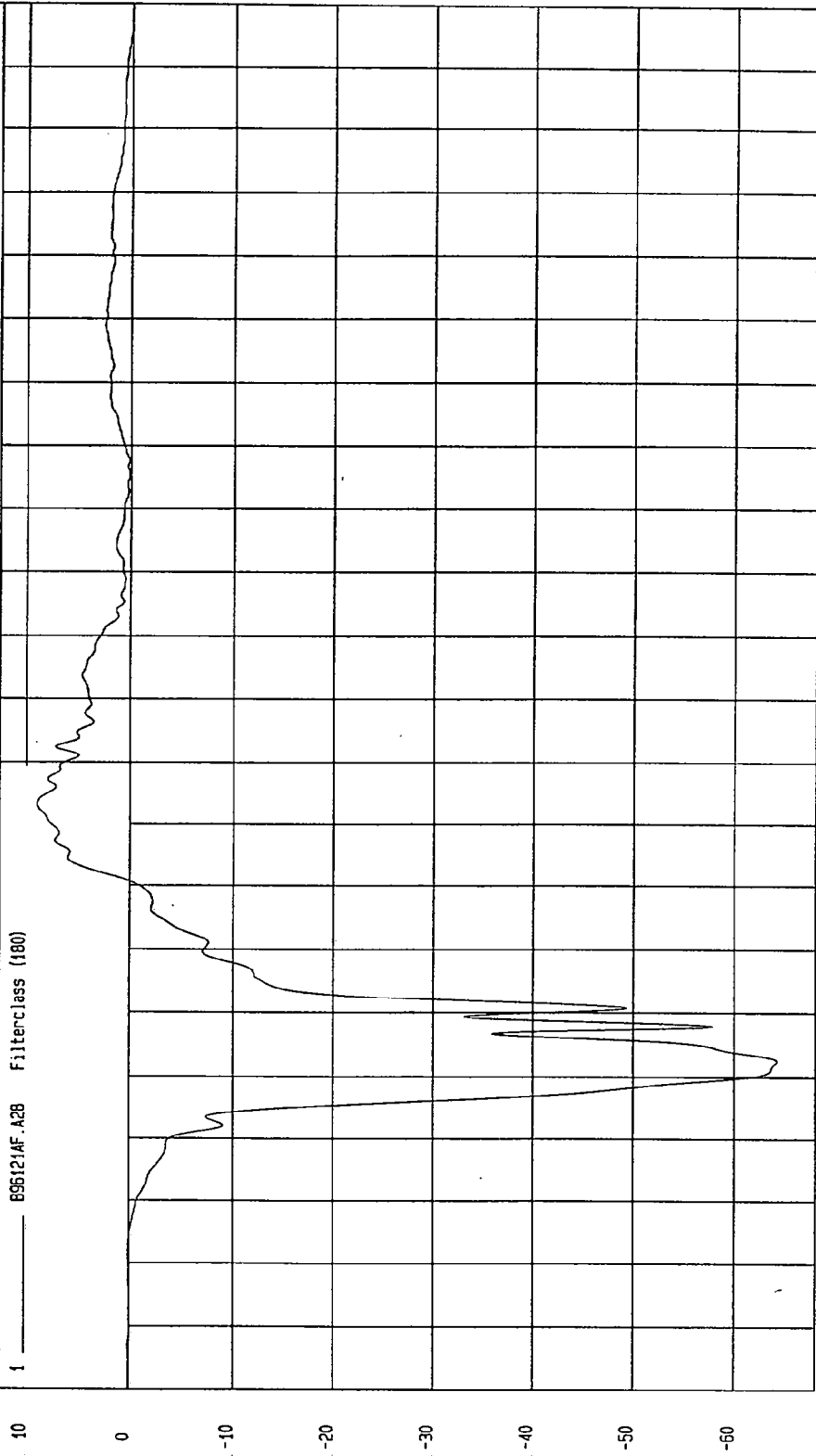
COMPONENT: 1997 PONTIAC GRAND AM (CV0107) Speed: 33.2 MPH 53.4 KPH

YMIN=-64.22961 G'S at 32. msec

YMAX= 8.975532 G'S at 73. msec

REAR PASSENGER PELVIS Y ACCELERATION

1 856121AF.A28 Filterclass (180)



NCA Research
12-10-1996 16. 11

TEST: FMVSS 214 SIDE IMPACT

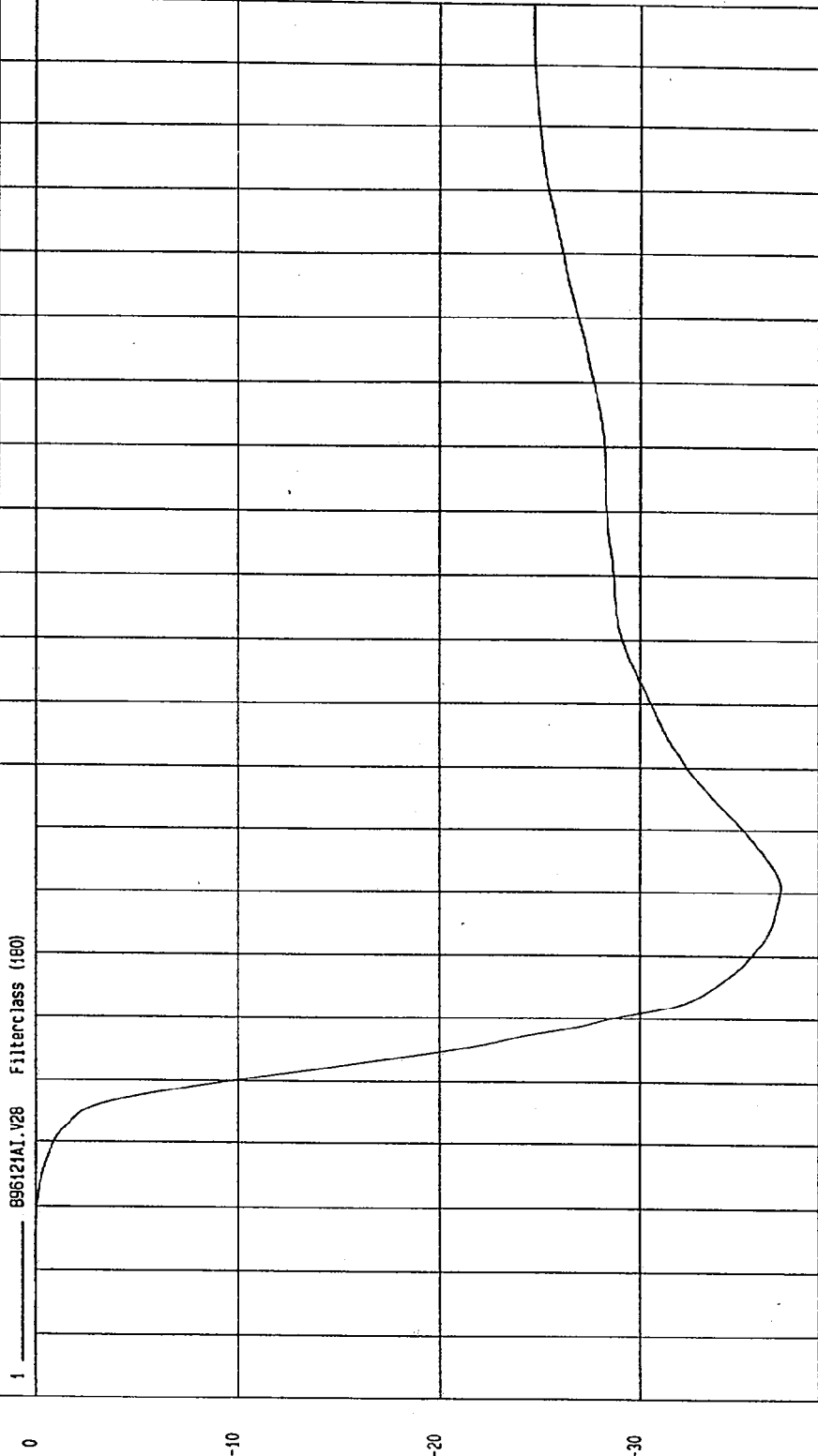
TEST DATE: 11-13-1996

COMPONENT: 1997 PONTIAC GRAND AM (CV0107) Speed: 33.2 MPH 53.4 KPH

YMIN=-36.84351 KPH at 60. msec YMAX= 1.527575E-02 KPH at 4.1 msec

REAR PASSENGER PELVIS Y VELOCITY

1 896121A1.V28 Filterclass (160)



TIME Seconds
VCA Research
12-10-1996 16:20

TEST DATE: 11-13-1996

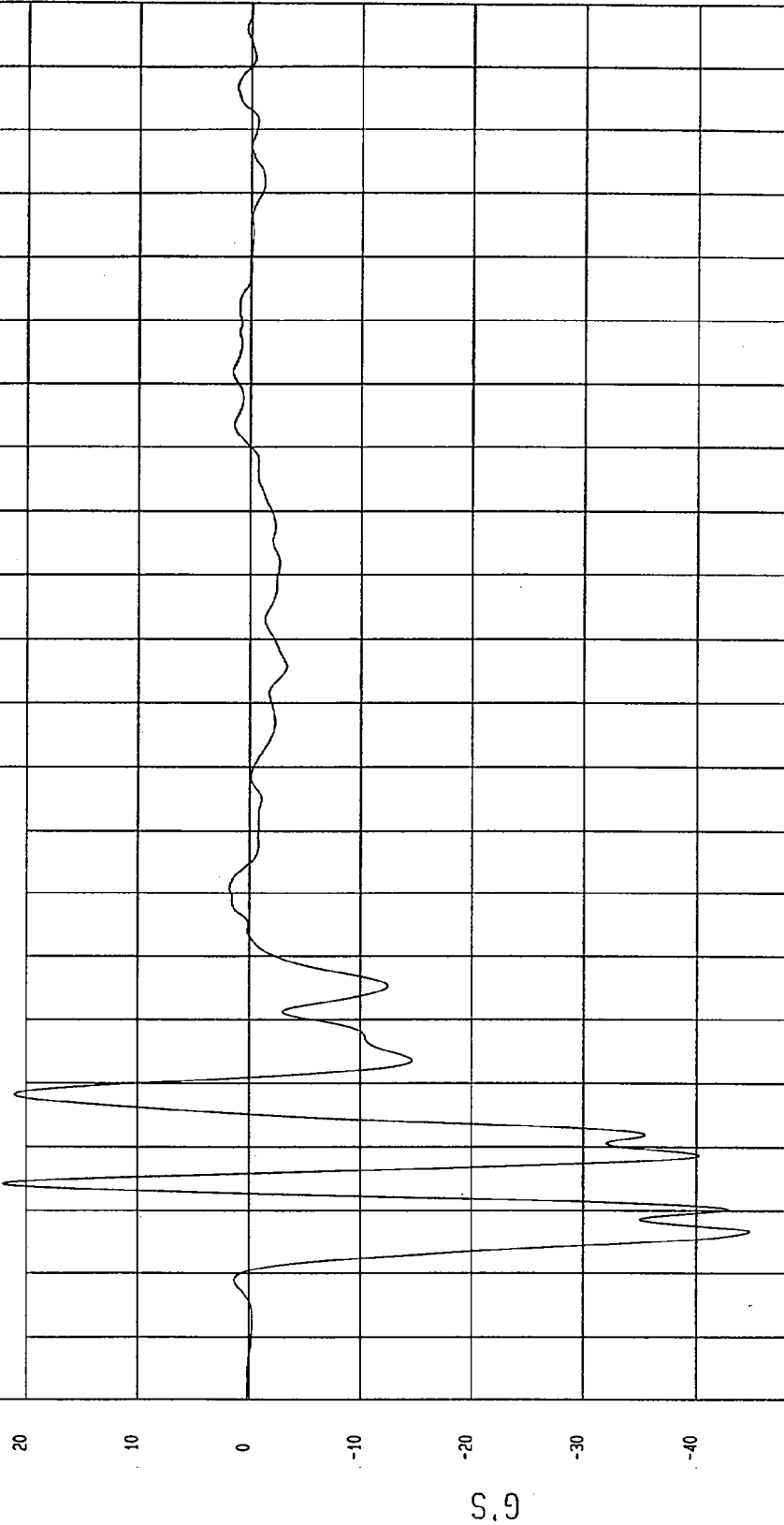
TEST: FMVSS 214 SIDE IMPACT

COMPONENT: 1997 PONTIAC GRAND AM (CV0107) Speed: 33.2 MPH 53.4 KPH

YMIN=-44.71746 G'S at 6.6 msec YMAX= 22.05124 G'S at 14. msec

RIGHT SIDE SILL AT FRONT SEAT Y ACCELERATION

1 896121AF.A38 Filterclass (60)



TIME (SECONDS)

MEA Research
12-10-1996 18:36

TEST DATE: 11-13-1996

Speed: 33.2 MPH 53.4 KPH

TEST: FMVSS 214 SIDE IMPACT

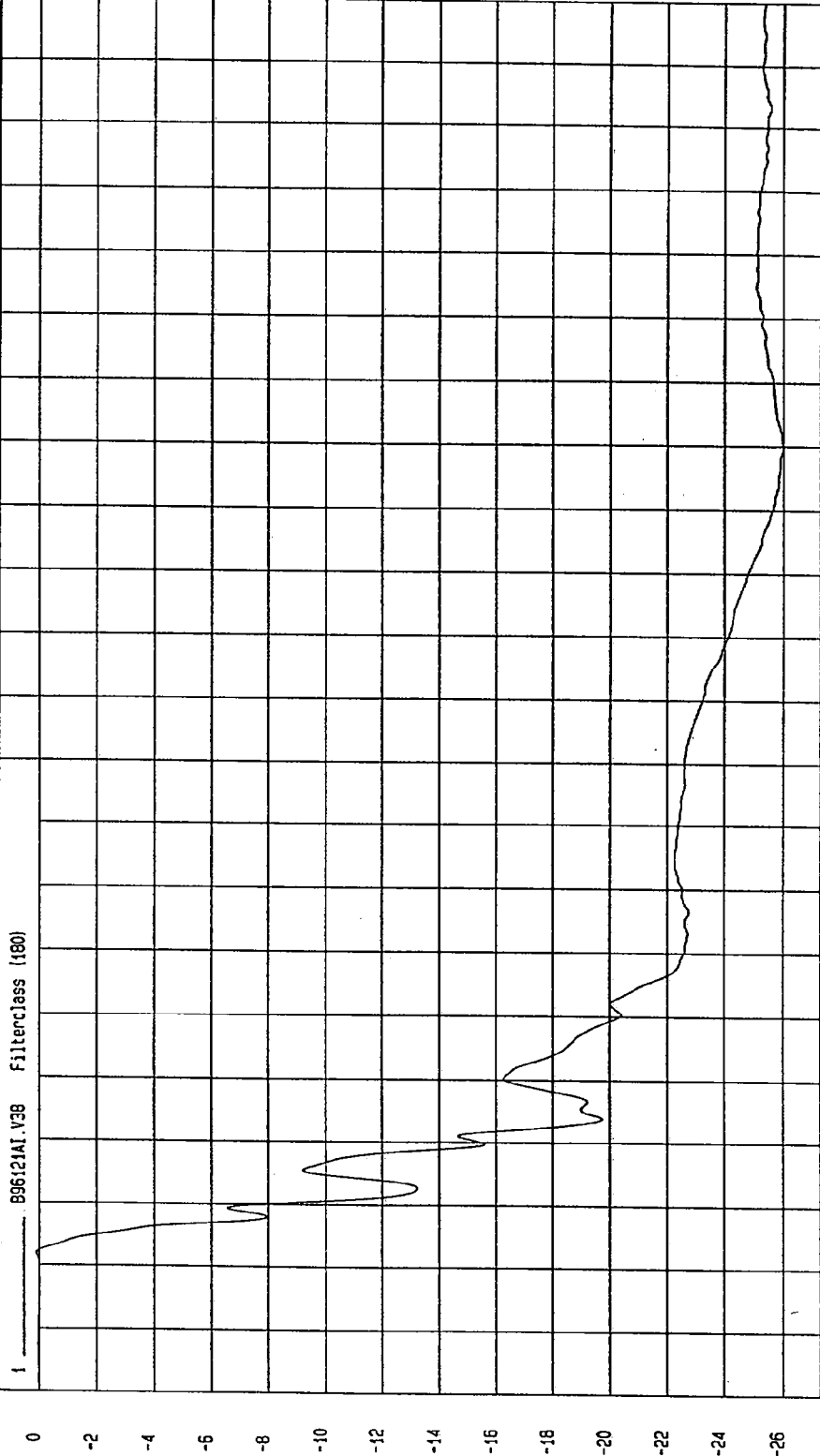
COMPONENT: 1997 PONTIAC GRAND AM (CV0107)

YMIN=-25.9928 KPH at 129 msec

YMAX= .1091125 KPH at 1.9 msec

RIGHT SIDE SILL AT FRONT SEAT Y VELOCITY

896121A1.V38 Filterclass (180)



MCA Research
12-10-1996 16:39

RIGHT SIDE SILL AT REAR SEAT Y ACCELERATION VS. TIME

NO VALID DATA COLLECTED

TEST DATE: 11-13-1996

TEST: FMVSS 214 SIDE IMPACT

Speed: 33.2 MPH 53.4 KPH

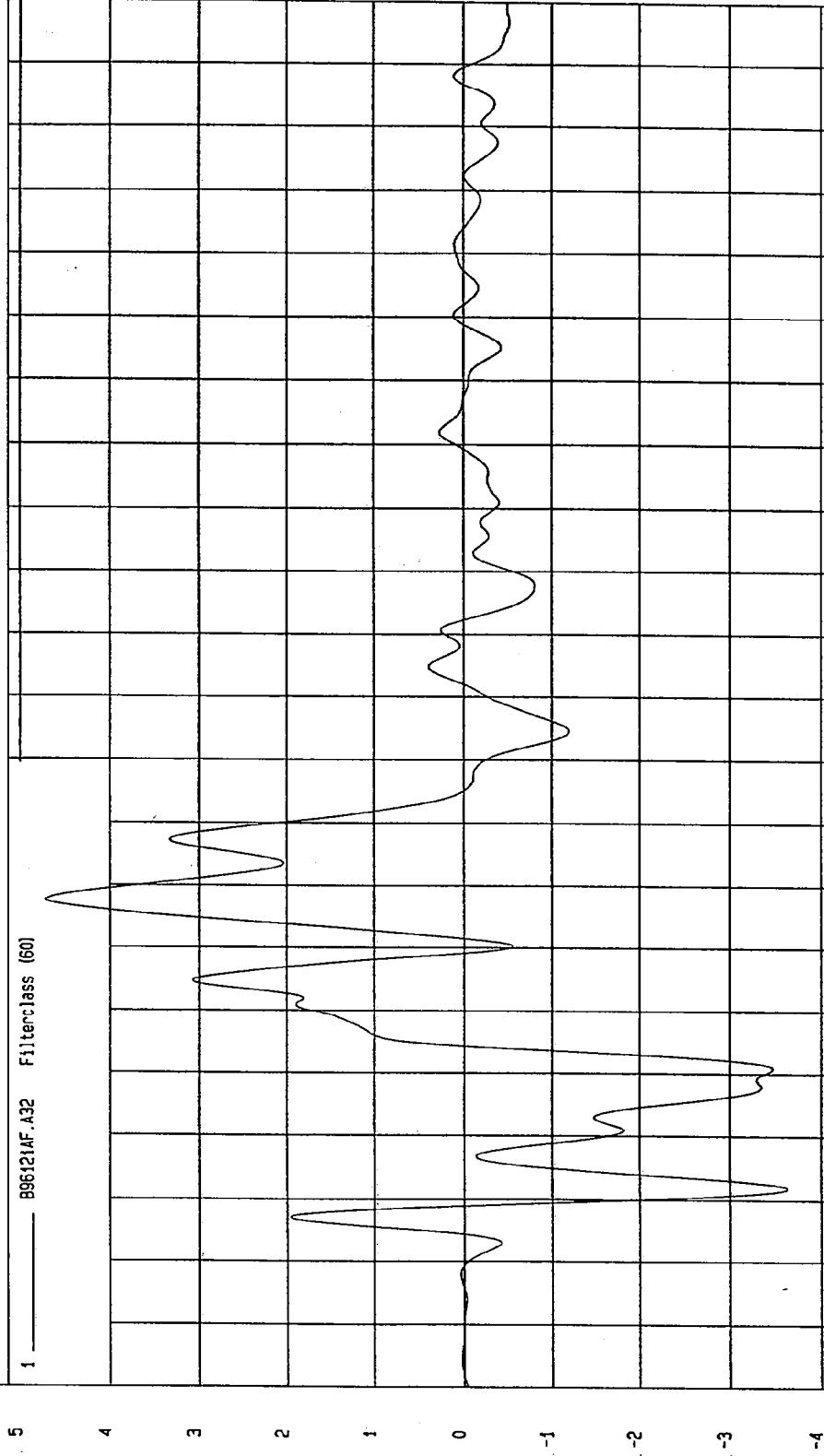
COMPONENT: 1997 PONTIAC GRAND AM (CV0107)

YMAX= 4.725387 G's at 57. msec

YMIN= -3.634157 G's at 11. msec

LEFT SIDE SILL AT FRONT SEAT X ACCELERATION

1 _____ 896121AF.A32 Filterclass (60)



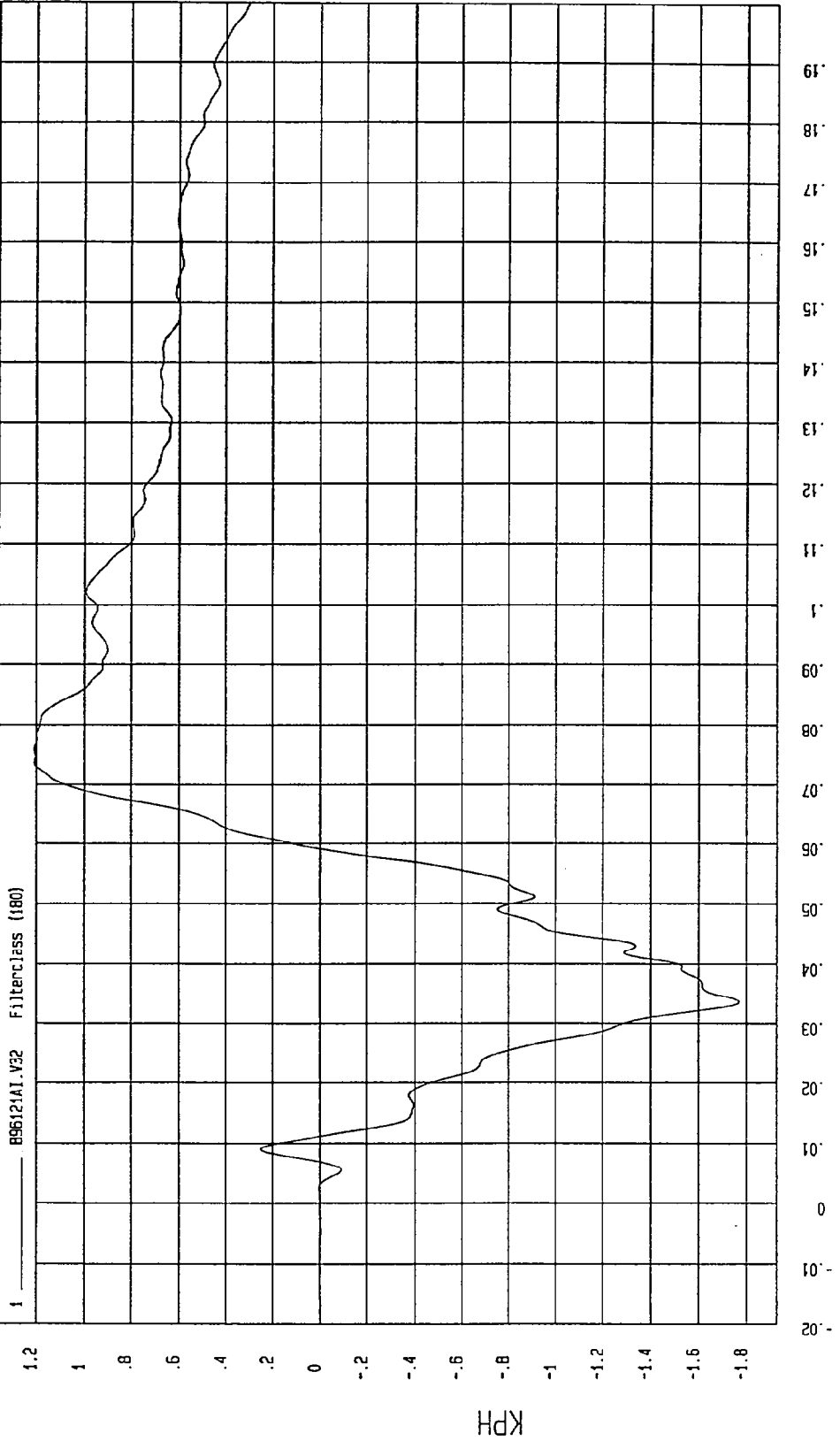
MCA Research
12-10-1996 16:36

TEST: FMVSS 214 SIDE IMPACT TEST DATE: 11-13-1996

COMPONENT: 1997 PONTIAC GRAND AM (CV0107) Speed: 33.2 MPH 53.4 KPH

YMIN=-1.77083 KPH at 33. msec YMAX= 1.209383 KPH at 75. msec

LEFT SIDE SILL AT FRONT SEAT X VELOCITY



NCA Research
12-10-1996 16:39

TEST: FMVSS 214 SIDE IMPACT

TEST DATE: 11-13-1996

Speed: 33.2 MPH 53.4 KPH

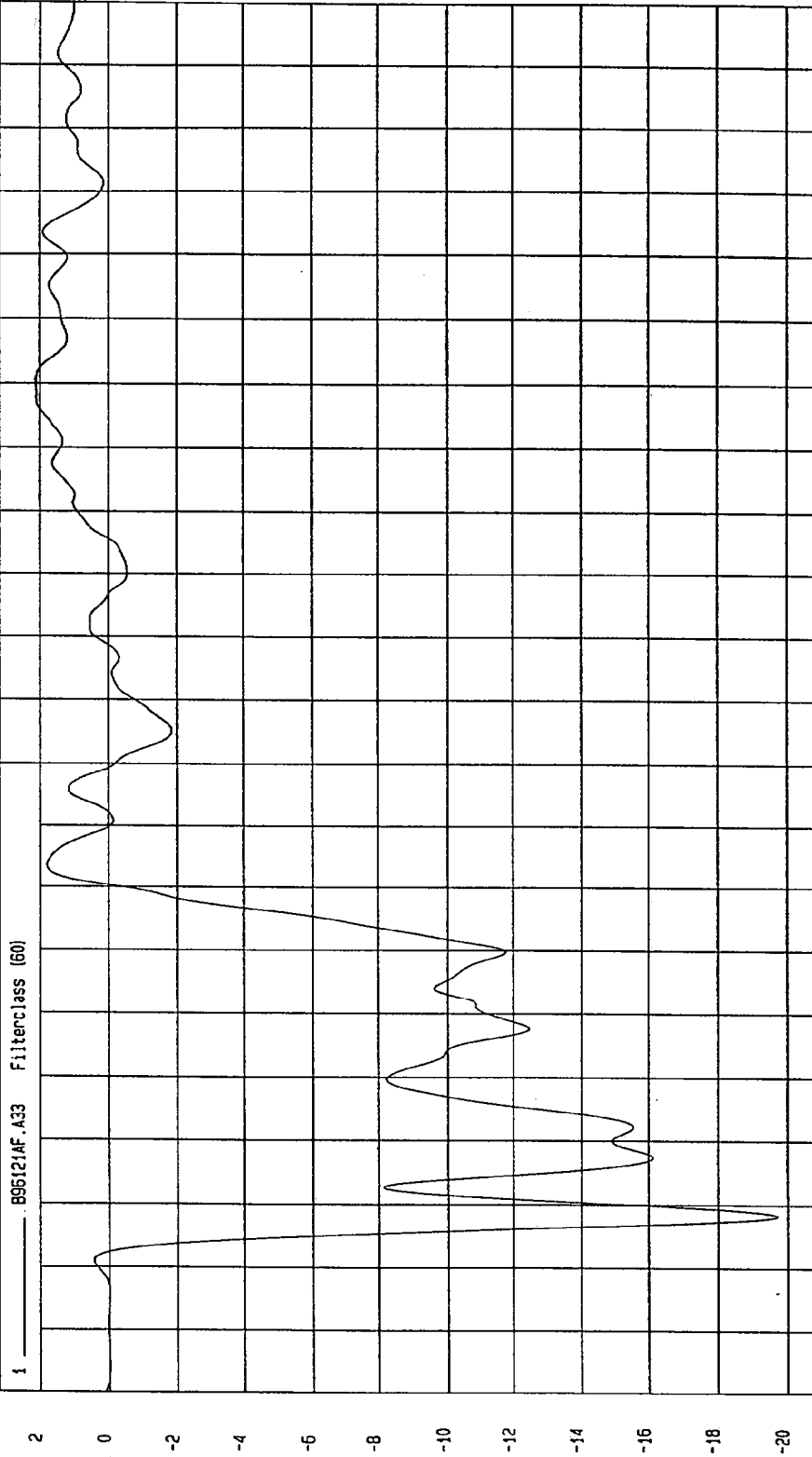
COMPONENT: 1997 PONTIAC GRAND AM (CV0107)

YMIN=-19.71306 G'S at 8.2 msec

YMAX= 2.121449 G'S at 140 msec

LEFT SIDE SILL AT FRONT SEAT Y ACCELERATION

1 896121AF.A33 Filter: class (60)



NSA Research
12-10-1996 16:36

TIME (SECONDS)

G

TEST DATE: 11-13-1996

TEST: FMVSS 214 SIDE IMPACT

Speed: 33.2 MPH 53.4 KPH

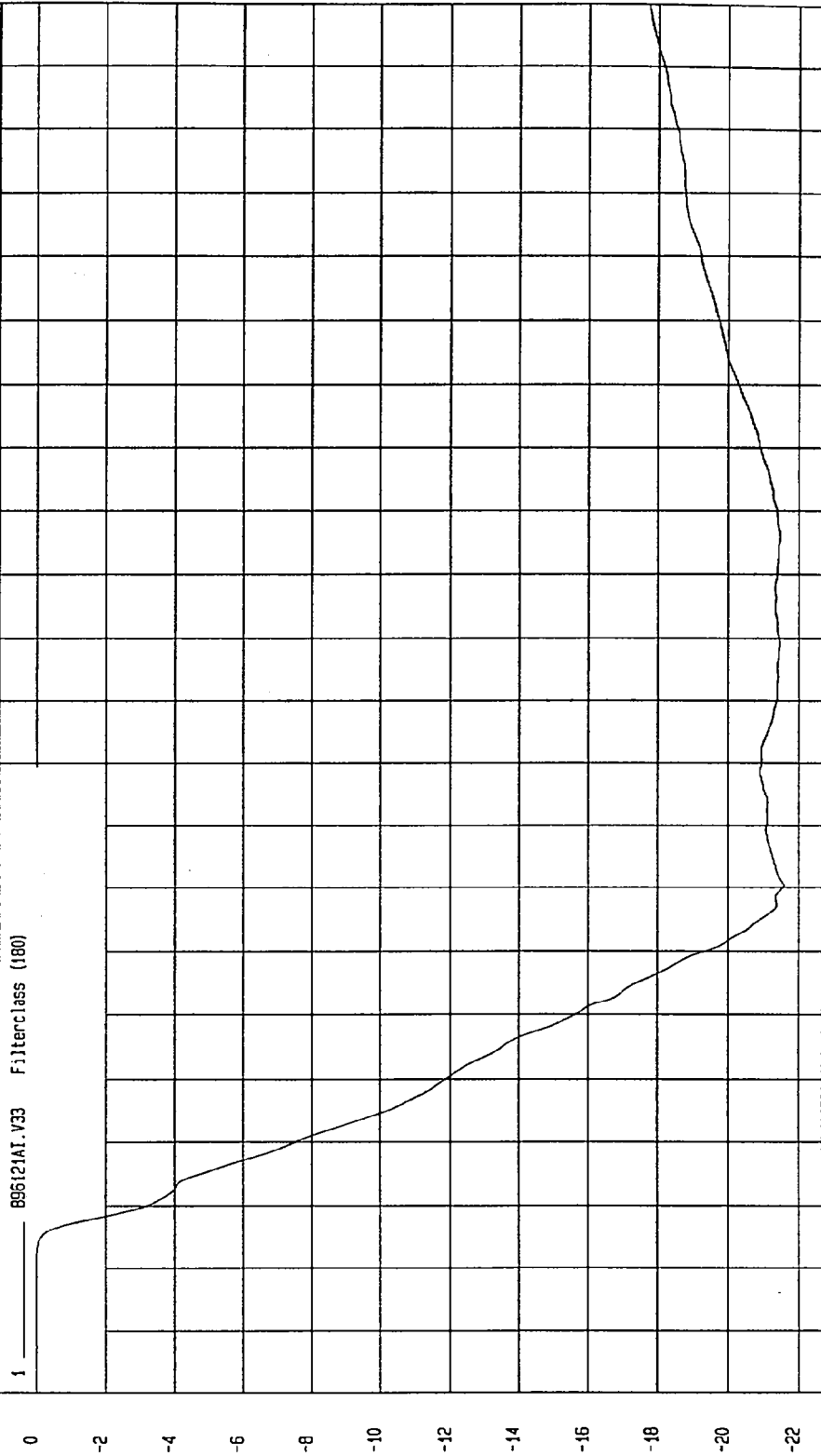
COMPONENT: 1997 PONTIAC GRAND AM (CV0107)

YMAX= 4.39065E-04 KPH at -19. msec

YMIN=-21.58139 KPH at 60. msec

LEFT SIDE SILL AT FRONT SEAT Y VELOCITY

896121A1.V33 Filterclass (180)



NCA Research
12-10-1996 16:39

TIME Seconds

KPH

TEST: FMVSS 214 SIDE IMPACT TEST DATE: 11-13-1996

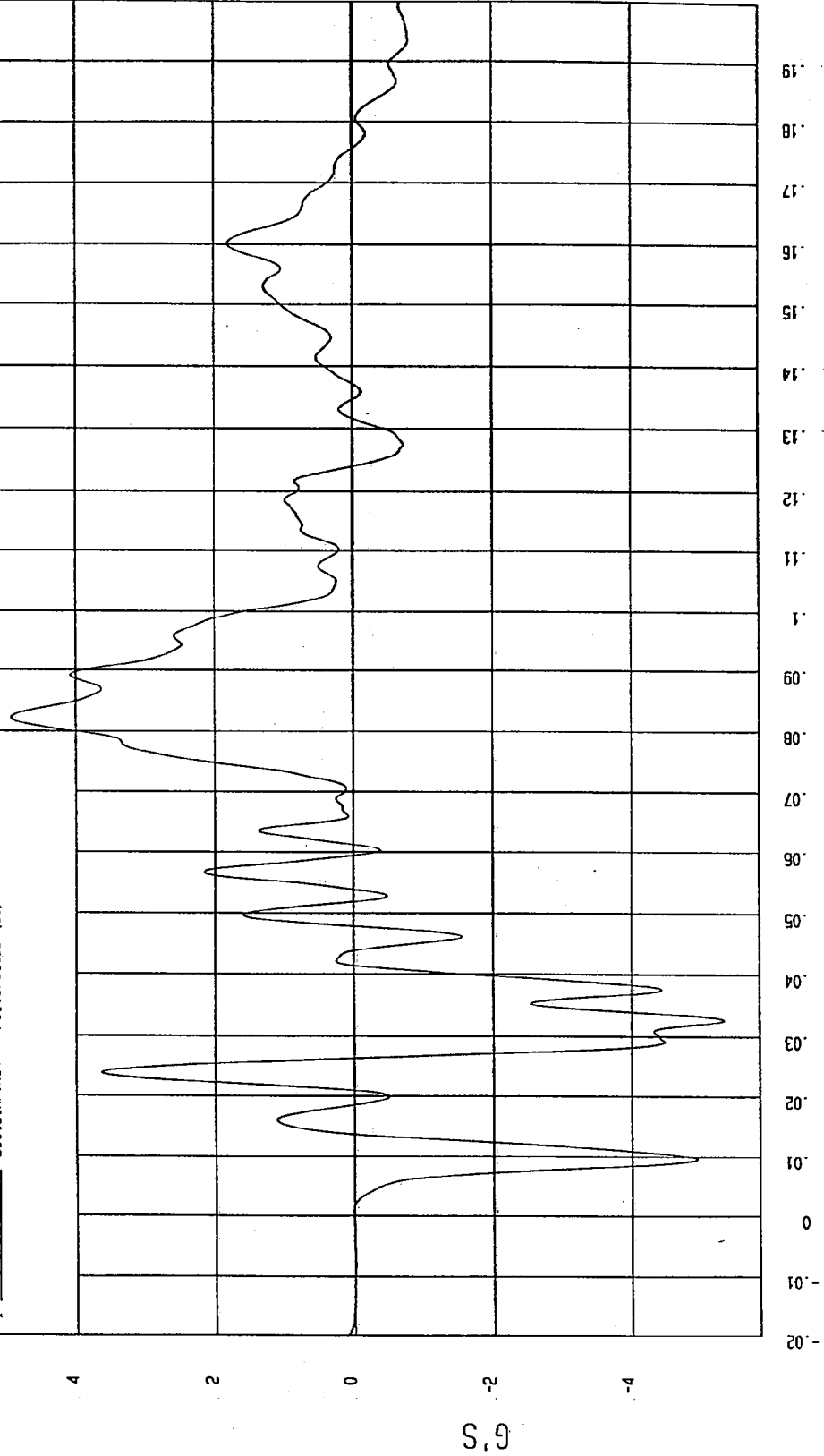
COMPONENT: 1997 PONTIAC GRAND AM (CV0107) Speed: 33.2 MPH 53.4 KPH

YMIN=-5.315654 G'S at 32. msec

YMAX= 4.92624 G'S at 82. msec

LEFT SIDE SILL AT FRONT SEAT Z ACCELERATION

1 _____ B96121AF.A34 FilterClass (60)



MCA Research
12-10-1996 16:36

TEST DATE: 11-13-1996

TEST: FMVSS 214 SIDE IMPACT

Speed: 33.2 MPH 53.4 KPH

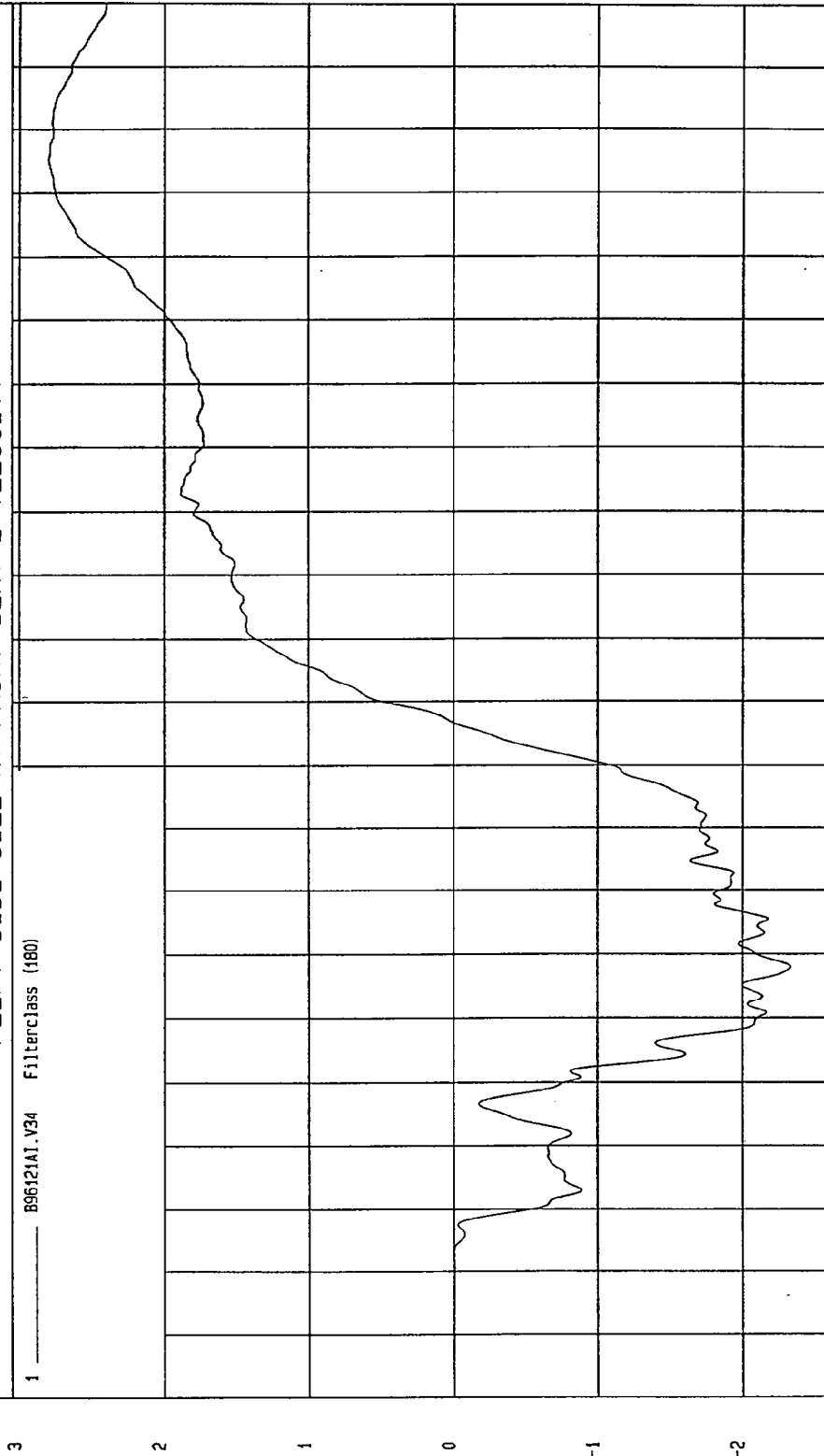
COMPONENT: 1997 PONTIAC GRAND AM (CV0107)

YMAX= 2.796547 KPH at 175 msec

YMIN=-2.33321 KPH at 48 msec

LEFT SIDE SILL AT FRONT SEAT Z VELOCITY

1 _____ B96121A1.V34 Filterclass (180)



TIME Seconds

MCA Research
12-10-1996 16:39

TEST DATE: 11-13-1996

TEST: FMVSS 214 SIDE IMPACT

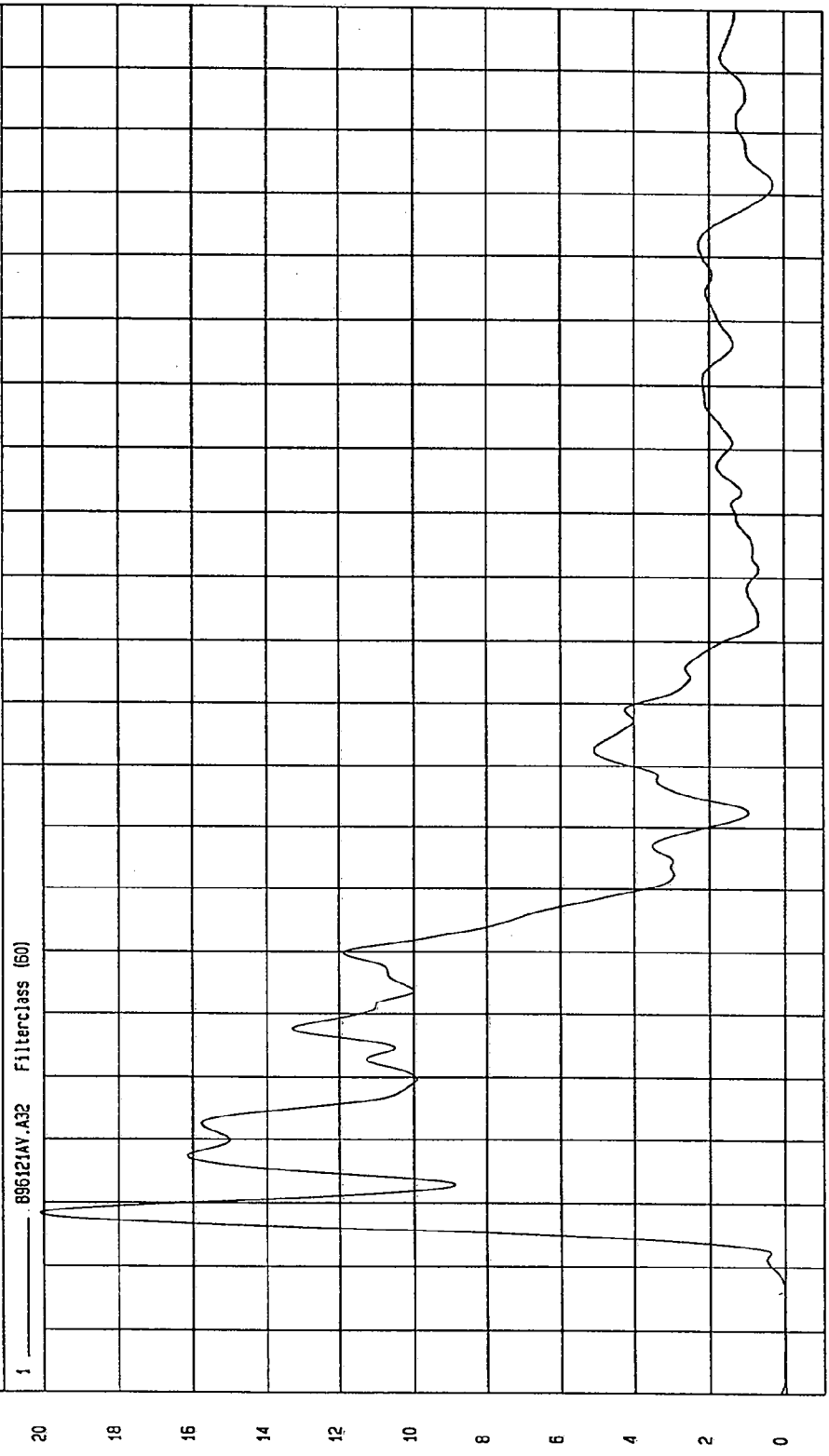
Speed: 33.2 MPH 53.4 KPH

COMPONENT: 1997 PONTIAC GRAND AM (CV0107)

YMAX= 20.10055 G'S at 8.2 msec

YMIN= 5.65867E-03 G'S at -12. msec

LEFT SIDE SILL AT FRONT SEAT RESULTANT ACCELERATION



TIME (SECONDS)

MGA Research
12-10-1996 16:52

G.S.

TEST DATE: 11-13-1996

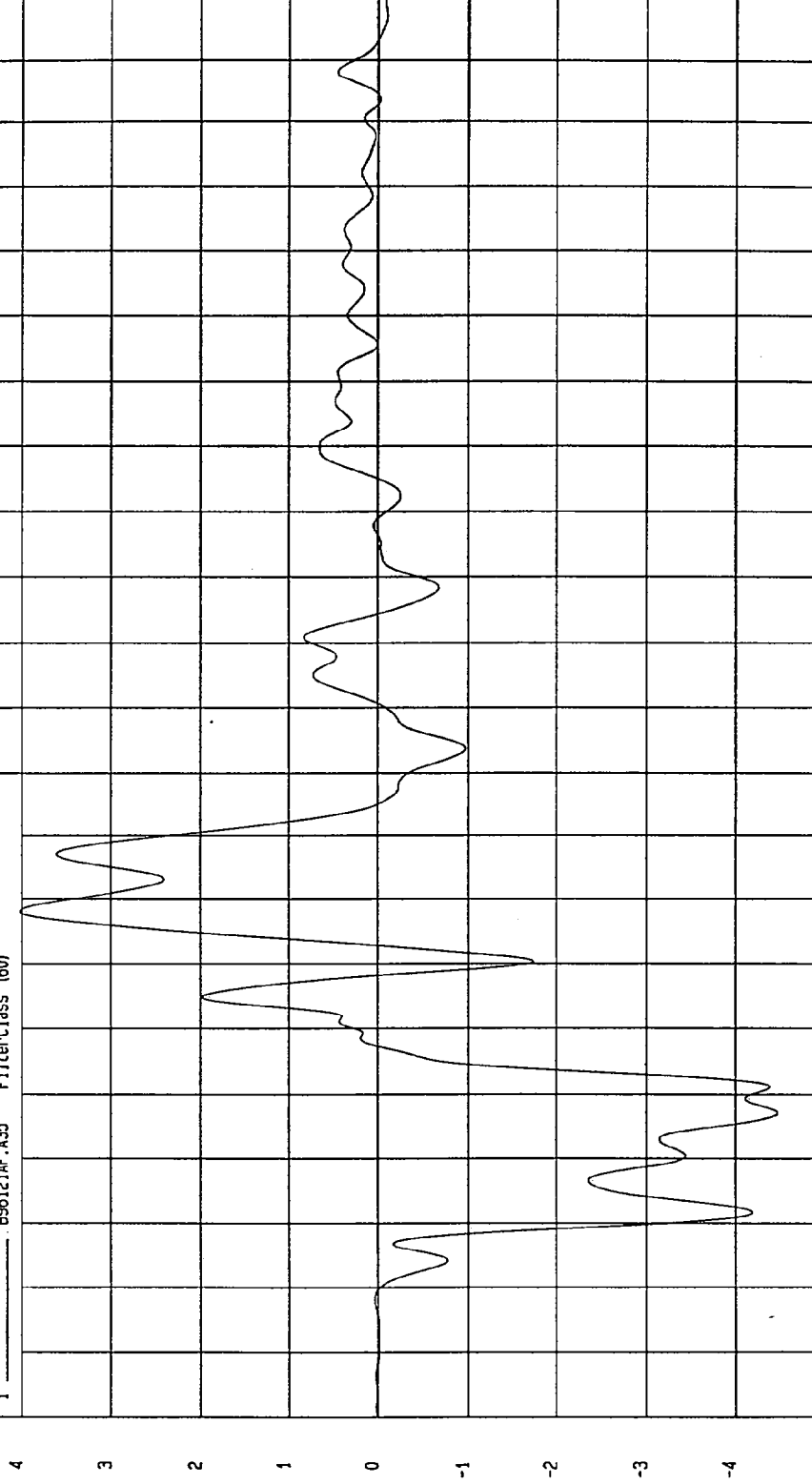
TEST: FMVSS 214 SIDE IMPACT

COMPONENT: 1997 PONTIAC GRAND AM (CV0107) Speed: 33.2 MPH 53.4 KPH

YMIN=-4.46462 G'S at 27. msec YMAX= 4.024509 G'S at 59 msec

LEFT SIDE SILL AT REAR SEAT X ACCELERATION

1 B96121AF.A35 Filterclass (60)



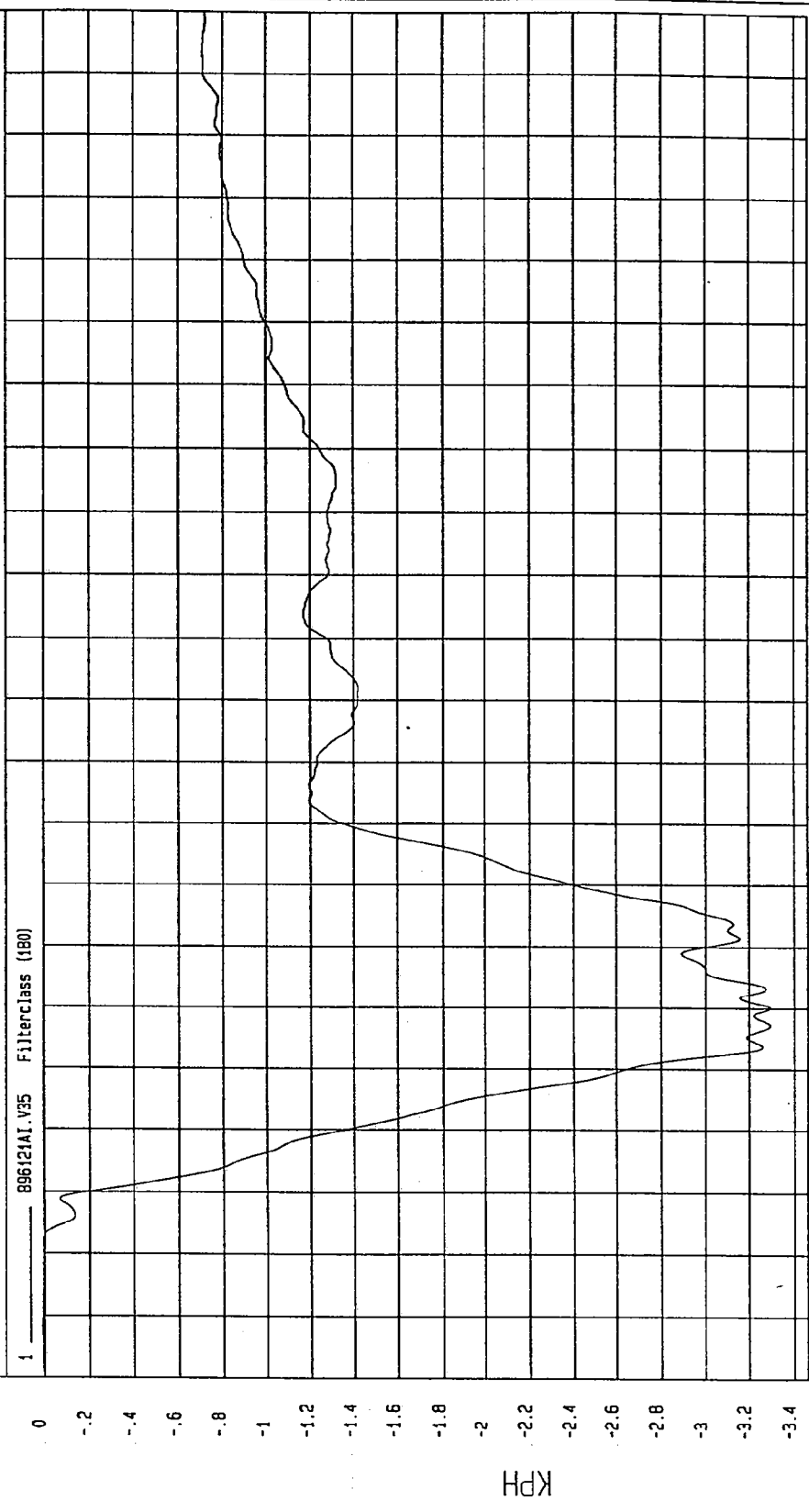
TIME (SECONDS)

NCA Research
12-10-1996 16:36

TEST DATE: 11-13-1996
TEST: FMVSS 214 SIDE IMPACT
COMPONENT: 1997 PONTIAC GRAND AM (CV0107) Speed: 33.2 MPH 53.4 KPH

YMIN=-3.296178 KPH at 40. msec YMAX= 6.090067E-03 KPH at -12. msec

LEFT SIDE SILL AT REAR SEAT X VELOCITY



TIME Seconds
NCA Research
12-10-1996 16:39

TEST DATE: 11-13-1996

TEST: FMVSS 214 SIDE IMPACT

Speed: 33.2 MPH 53.4 KPH

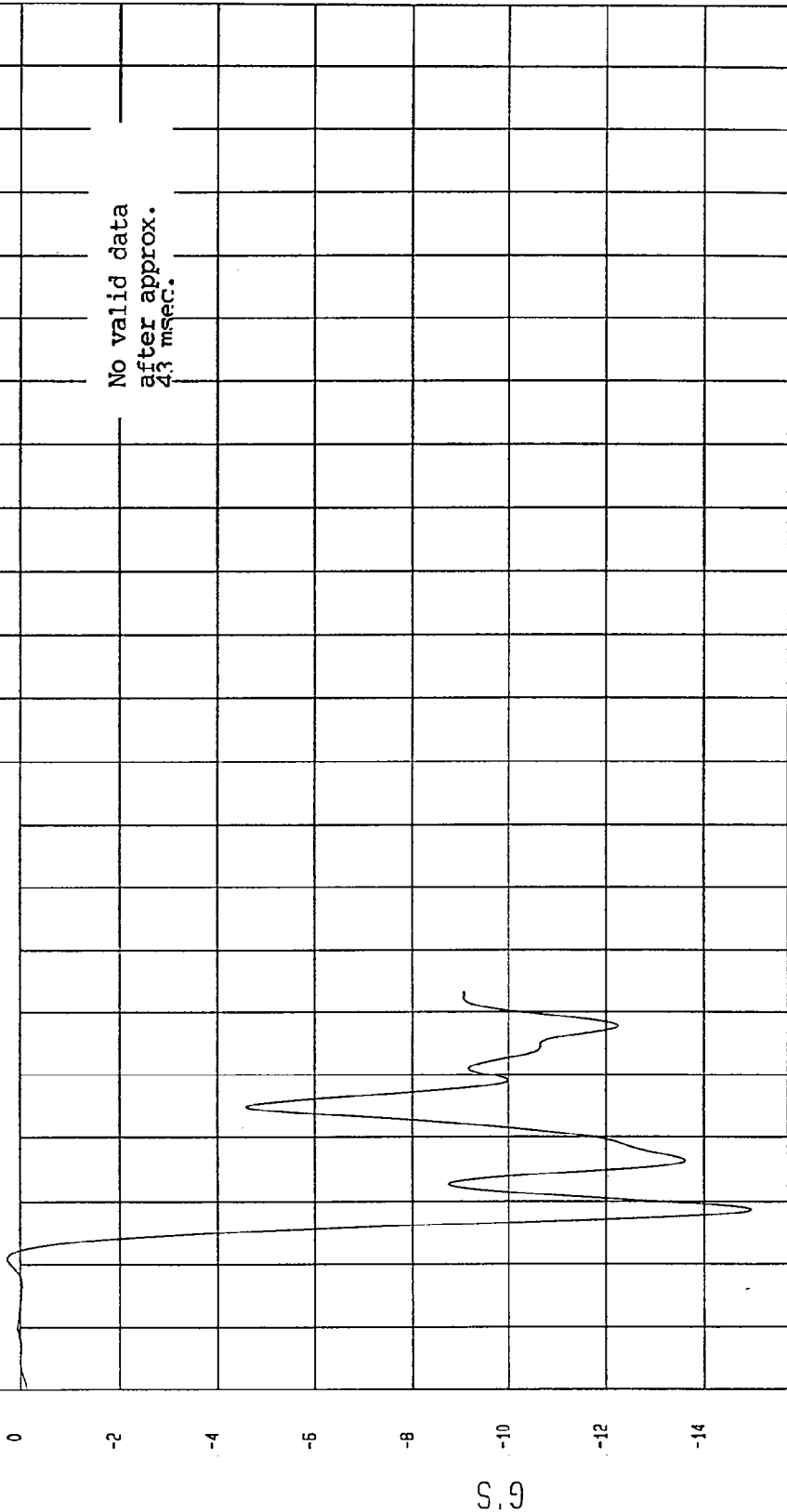
COMPONENT: 1997 PONTIAC GRAND AM (CV0107)

YMAX= .2533796 G'S at .89 msec

YMIN=-14.95777 G'S at 0.6 msec

LEFT SIDE SILL AT REAR SEAT Y ACCELERATION

1 896121AF.A36 Filterclass (60)



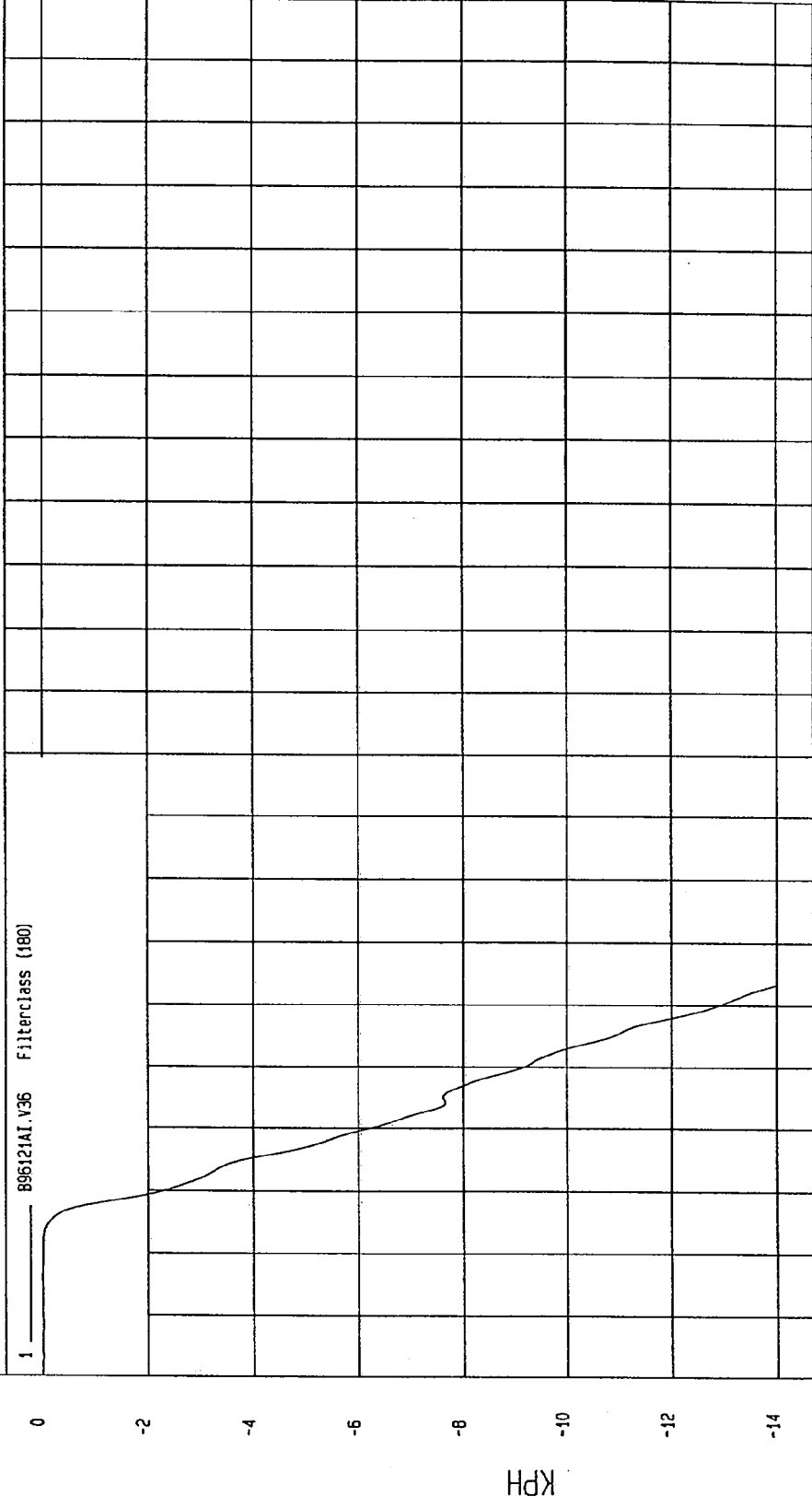
TIME (SECONDS)

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

NCA REPORT
12-15-1996 18:55

TEST: FMVSS 214 SIDE IMPACT TEST DATE: 11-13-1996
 COMPONENT: 1997 PONTIAC GRAND AM (CV0107) Speed: 33.2 MPH 53.4 KPH
 YMIN=-13.99447 KPH at 43. msec YMAX= 0 KPH at -20 msec

LEFT SIDE SILL AT REAR SEAT Y VELOCITY



MCA Research
 12-15-1996 16:55

TIME Seconds

KPH

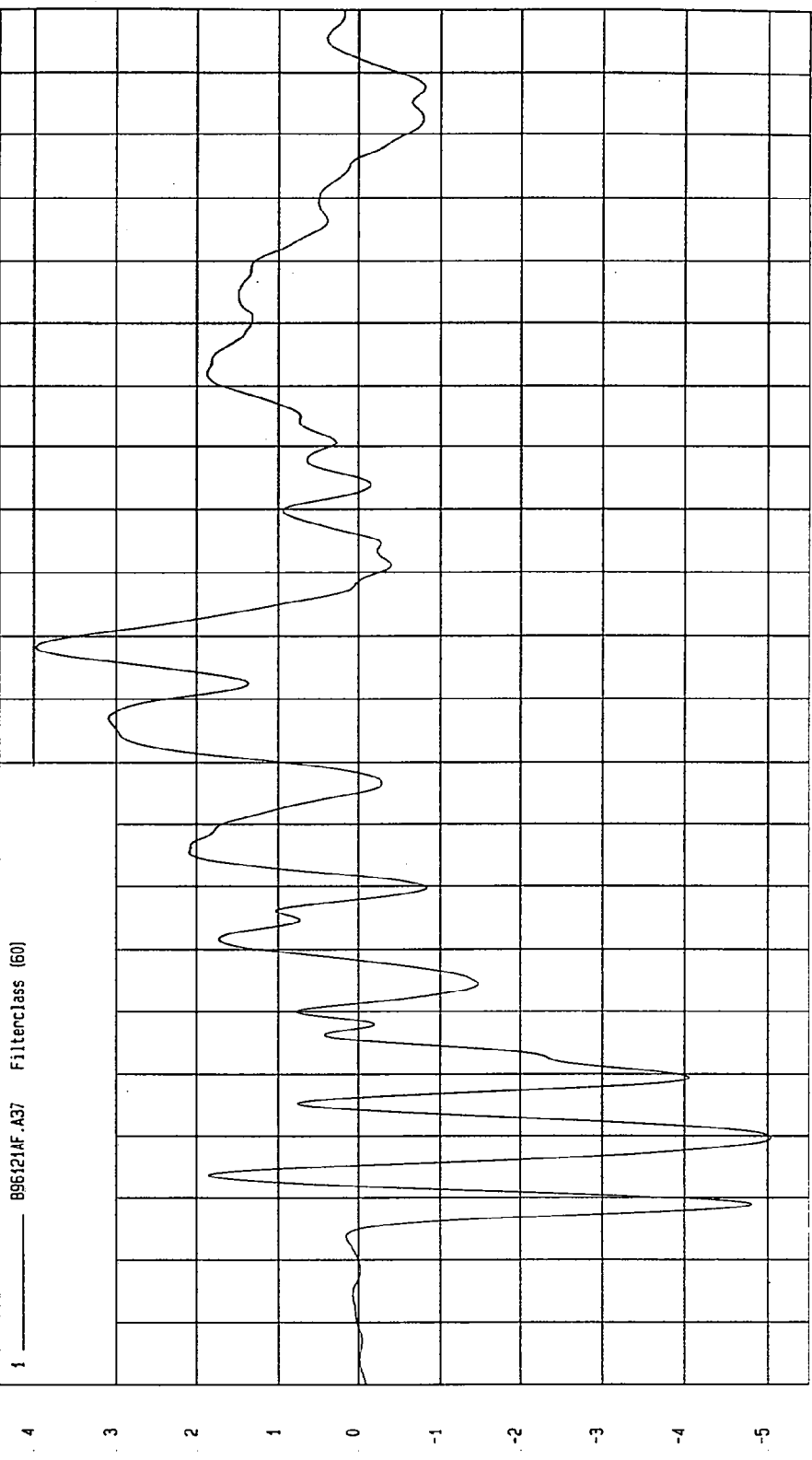
TEST: FMVSS 214 SIDE IMPACT TEST DATE: 11-13-1996

COMPONENT: 1997 PONTIAC GRAND AM (CV0107) Speed: 33.2 MPH 53.4 KPH

YMIN=-5.039722 G'S at 19. msec YMAX= 3.977057 G'S at 98. msec

LEFT SIDE SILL AT REAR SEAT Z ACCELERATION

1 896121AF.A37 FilterClass (50)



TIME (SECONDS) MCA Research 12-10-1996 16:37

TEST DATE: 11-13-1996

TEST: FMVSS 214 SIDE IMPACT

Speed: 33.2 MPH 53.4 KPH

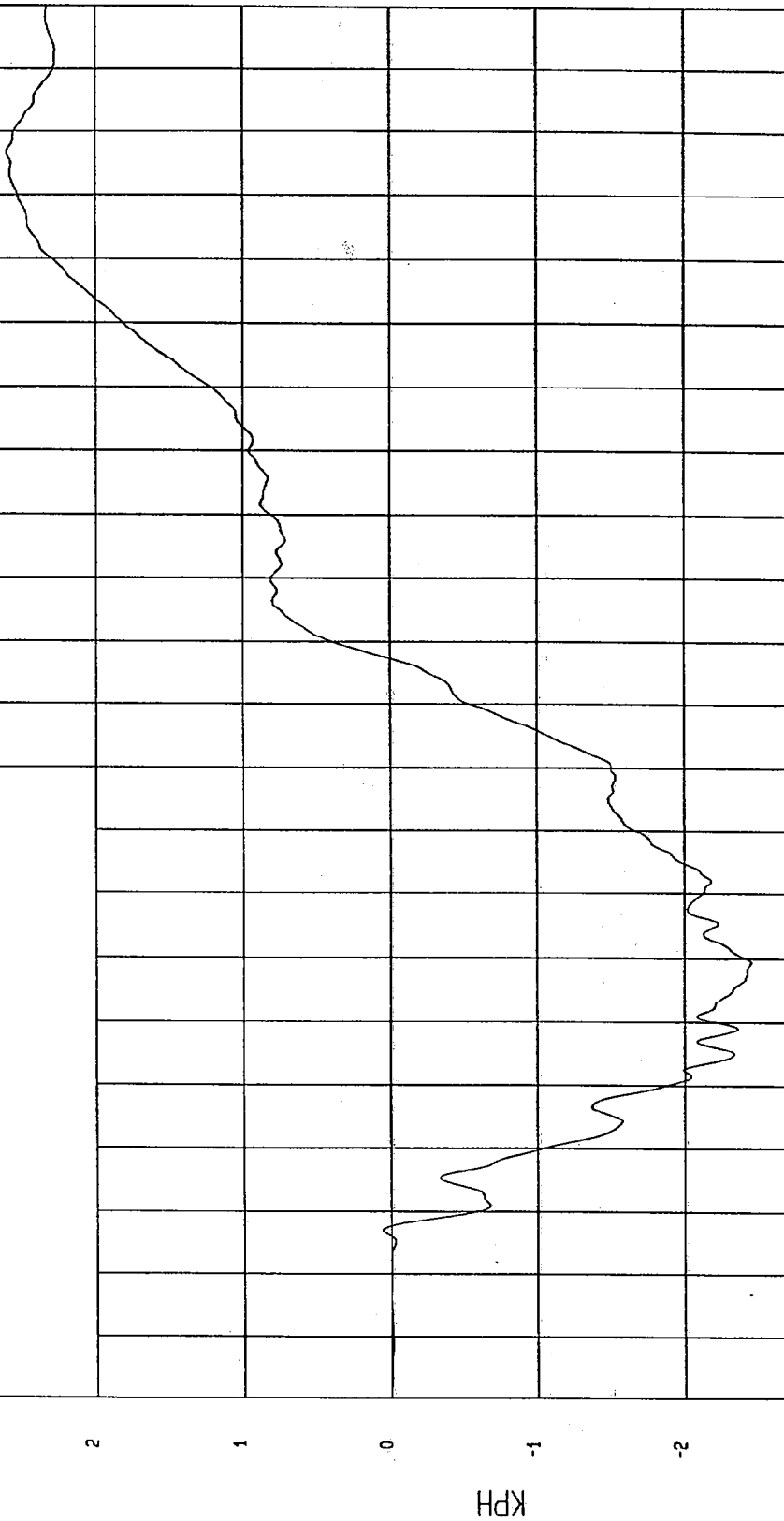
COMPONENT: 1997 PONTIAC GRAND AM (CV0107)

YMIN=-2.44858 KPH at 49. msec

YMAX= 2.61398 KPH at 176 msec

LEFT SIDE SILL AT REAR SEAT Z VELOCITY

1 896121A1.V37 Filterclass (180)



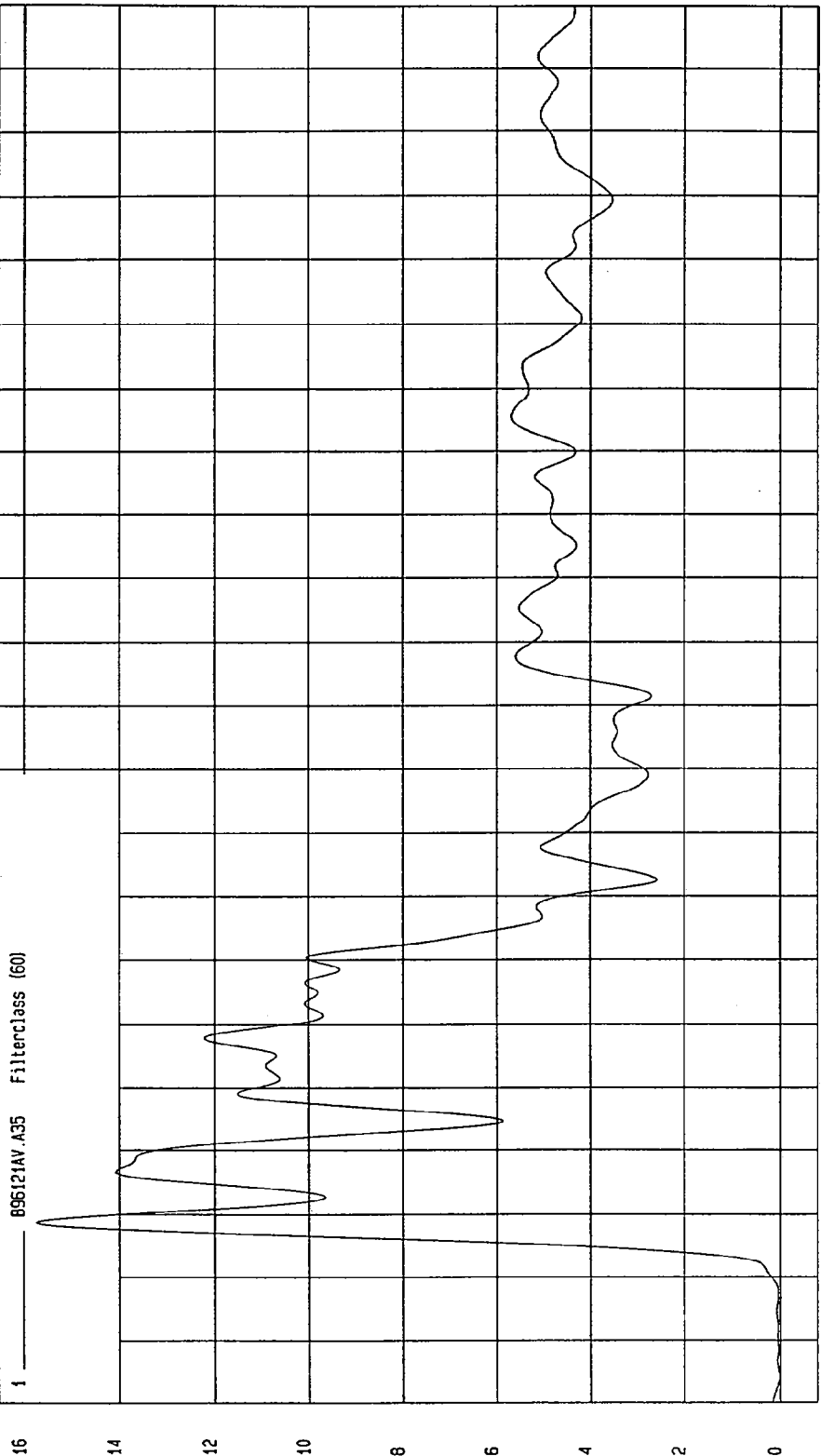
TIME Seconds

MSA Research
12-10-1996 16:40

TEST: FMVSS 214 SIDE IMPACT TEST DATE: 11-13-1996
COMPONENT: 1997 PONTIAC GRAND AM (CV0107) Speed: 33.2 MPH 53.4 KPH

YMIN= 1.640587E-02 G'S at -15. msec YMAX= 15.75595 G'S at 8.7 msec

LEFT SIDE SILL AT REAR SEAT RESULTANT ACCELERATION



NSA Research
12-10-1996 16.52

TEST DATE: 11-13-1996

TEST: FMVSS 214 SIDE IMPACT

Speed: 33.2 MPH 53.4 KPH

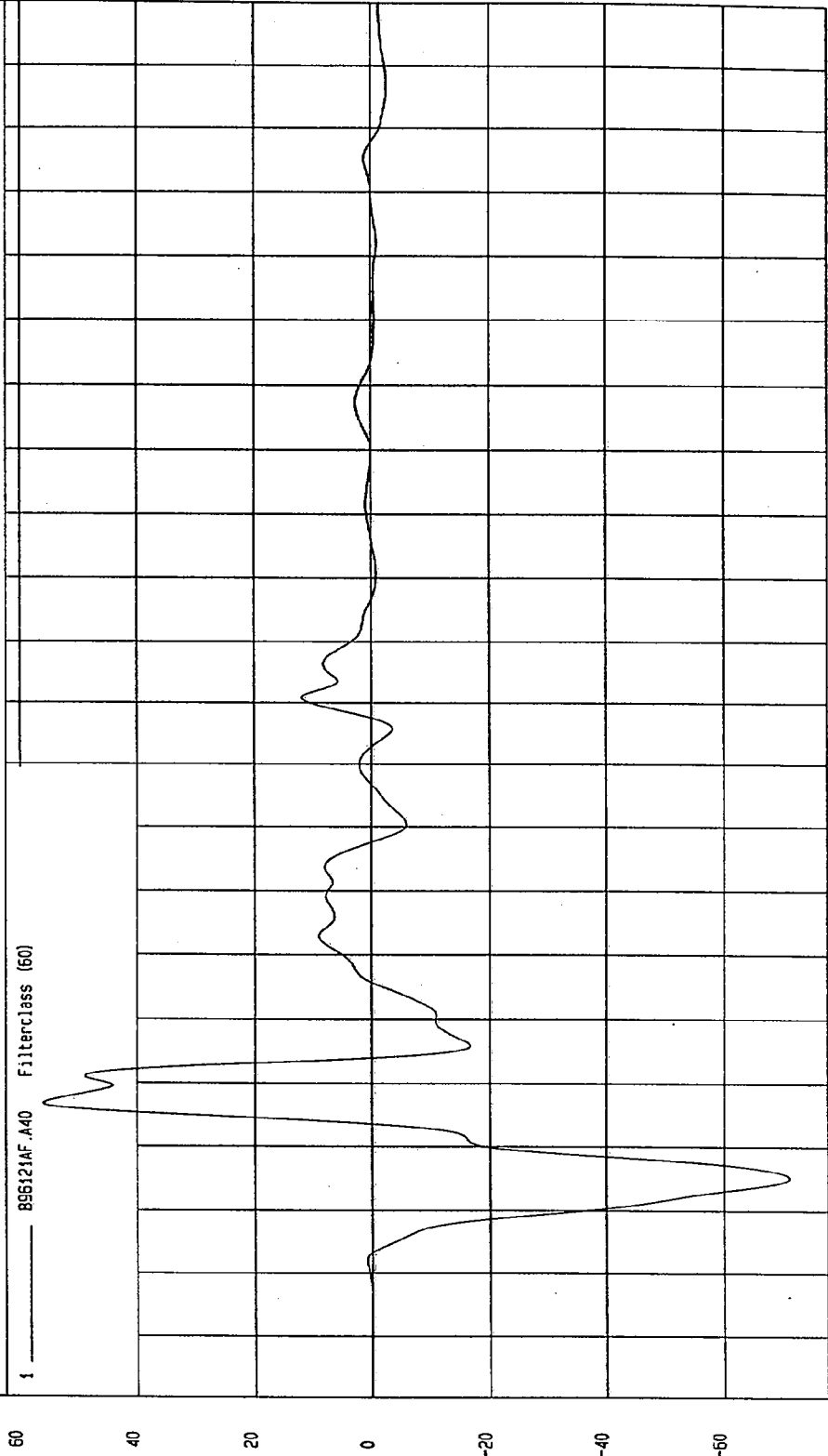
COMPONENT: 1997 PONTIAC GRAND AM (CV0107)

YMAX= 56.12884 G'S at 26. msec

YMIN=-70.84344 G'S at 15. msec

RIGHT FRONT PASSENGER SEAT TRACK Y ACCELERATION

1 ——— 896121AF.A40 Filterclass (60)



MSA Report Ct.
12-10-1996 16:37

TIME (SECONDS)

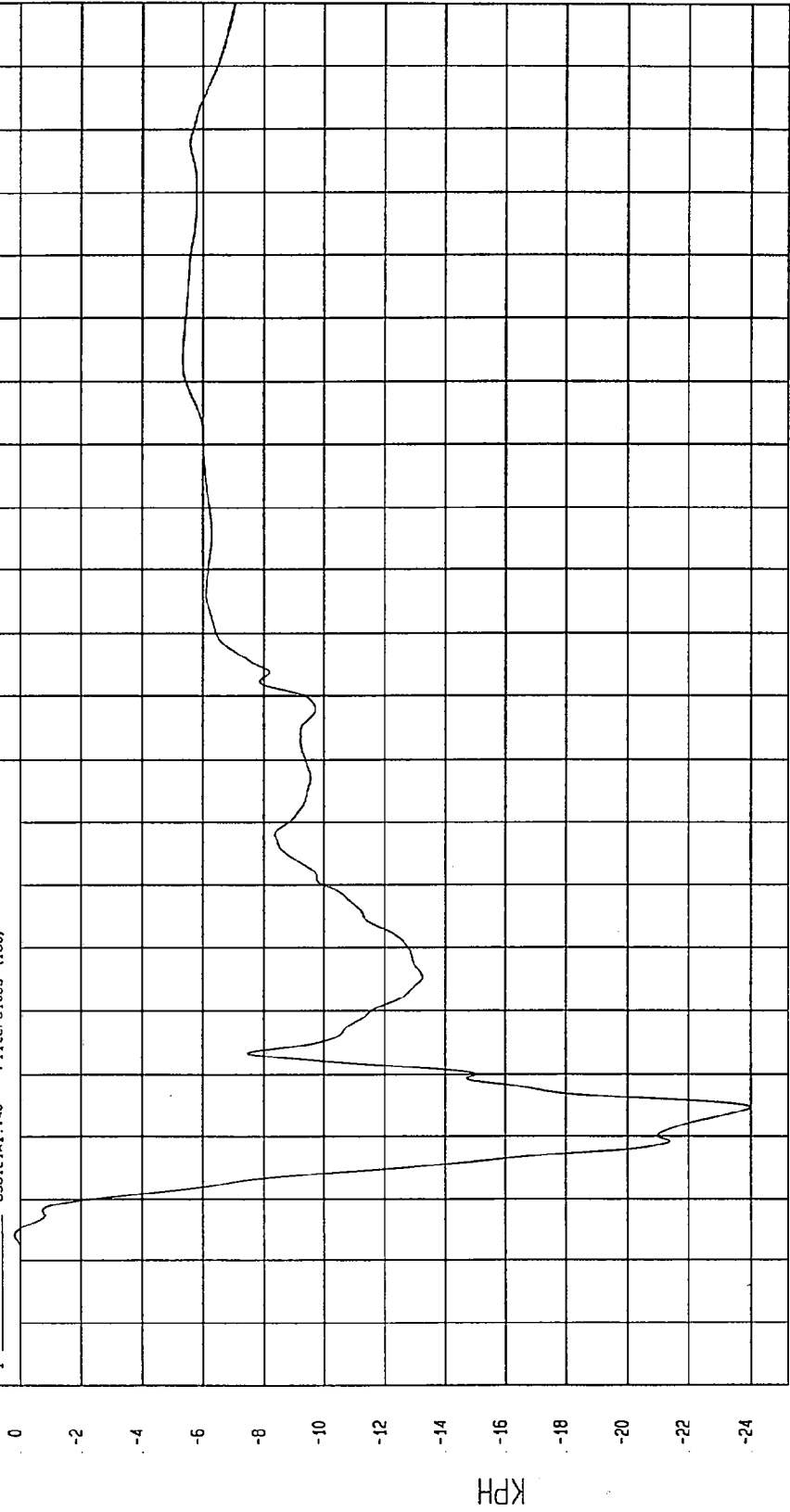
S.G

TEST: FMVSS 214 SIDE IMPACT
TEST DATE: 11-13-1996
COMPONENT: 1997 PONTIAC GRAND AM (CV0107) Speed: 33.2 MPH 53.4 KPH

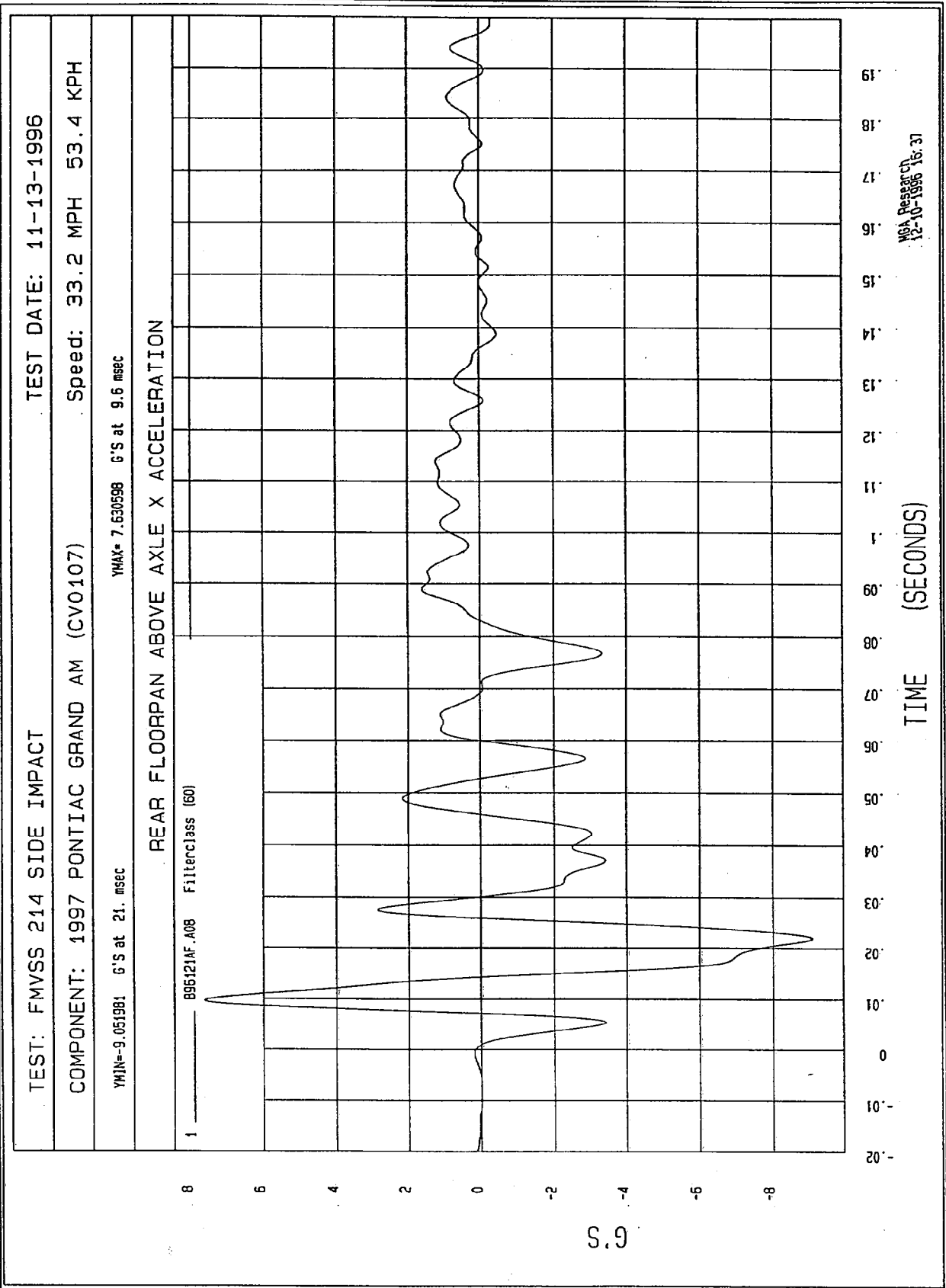
YMIN=-24.00994 KPH at 24. msec YMAX= .189728 KPH at 4.1 msec

RIGHT FRONT PASSENGER SEAT TRACK Y VELOCITY

1 896121A1.V40 Filterclass (180)



TIME Seconds
MCA Research
12-10-1996 16:40



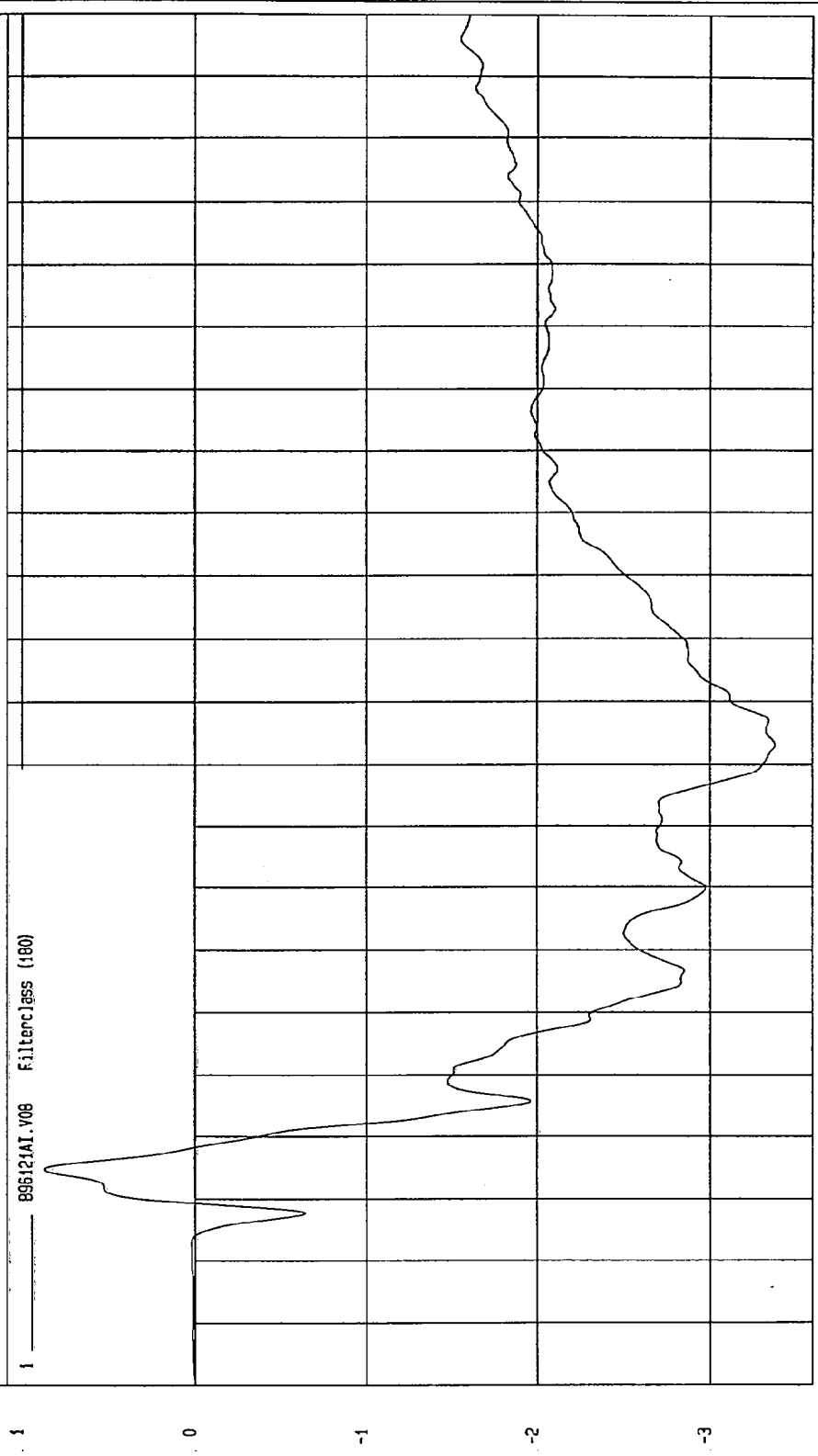
TEST: FMVSS 214 SIDE IMPACT TEST DATE: 11-13-1996

COMPONENT: 1997 PONTIAC GRAND AM (CV0107) Speed: 33.2 MPH 53.4 KPH

YMIN=-3.370832 KPH at 83. msec YMAX=.8748302 KPH at 14. msec

REAR FLOORPAN ABOVE AXLE X VELOCITY

1 895121A1.V08 Filter:pass (180)



TIME Seconds
MGA Research
12-10-1996 16.40

TEST: FMVSS 214 SIDE IMPACT

TEST DATE: 11-13-1996

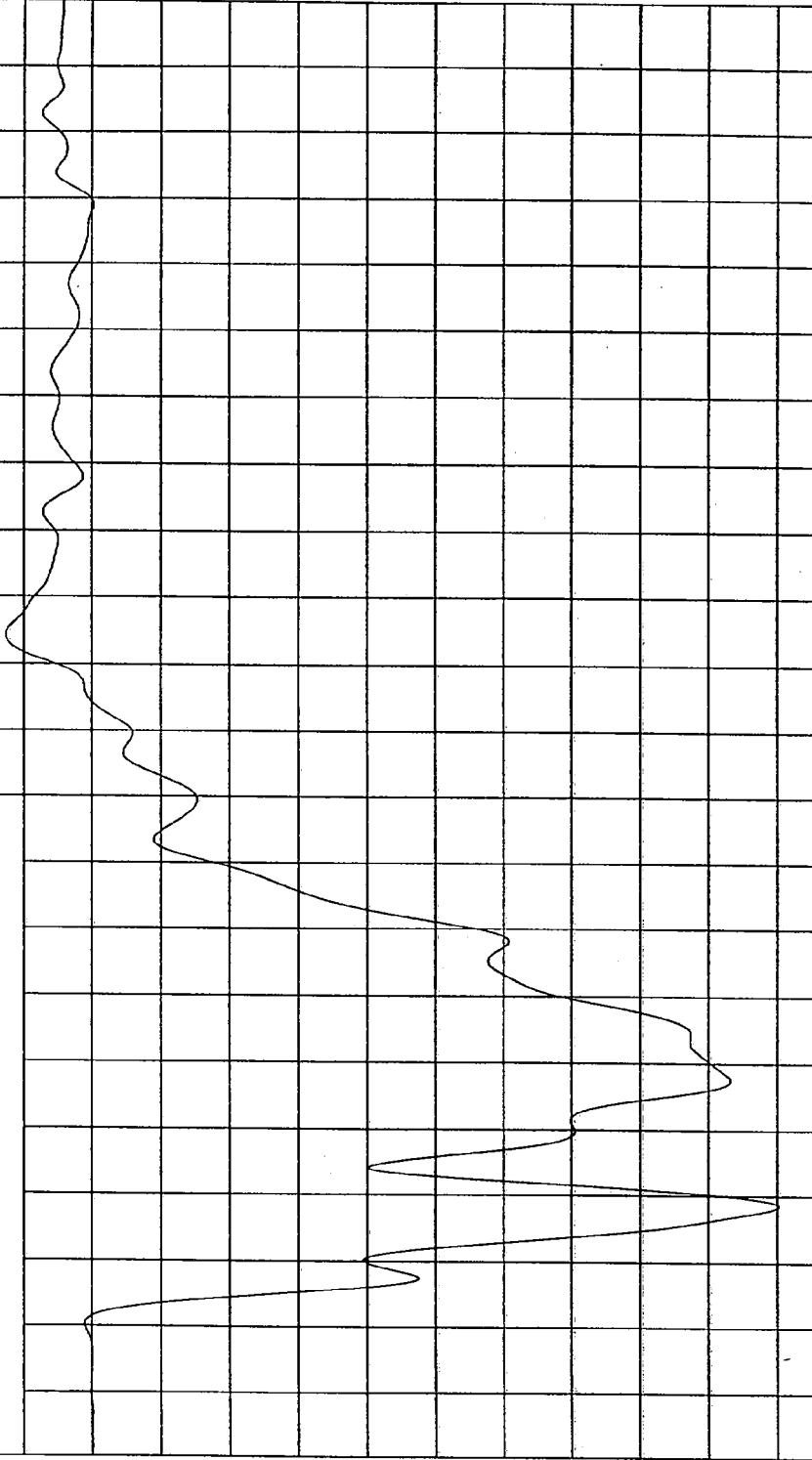
COMPONENT: 1997 PONTIAC GRAND AM (CV0107) Speed: 33.2 MPH 53.4 KPH

YMIN=-20.04764 G'S at 18. msec

YMAX= 2.519763 G'S at 104 msec

REAR FLOORPAN ABOVE AXLE Y ACCELERATION

1 ——— 895121AF.A09 Filterclass (60)



TIME (SECONDS)

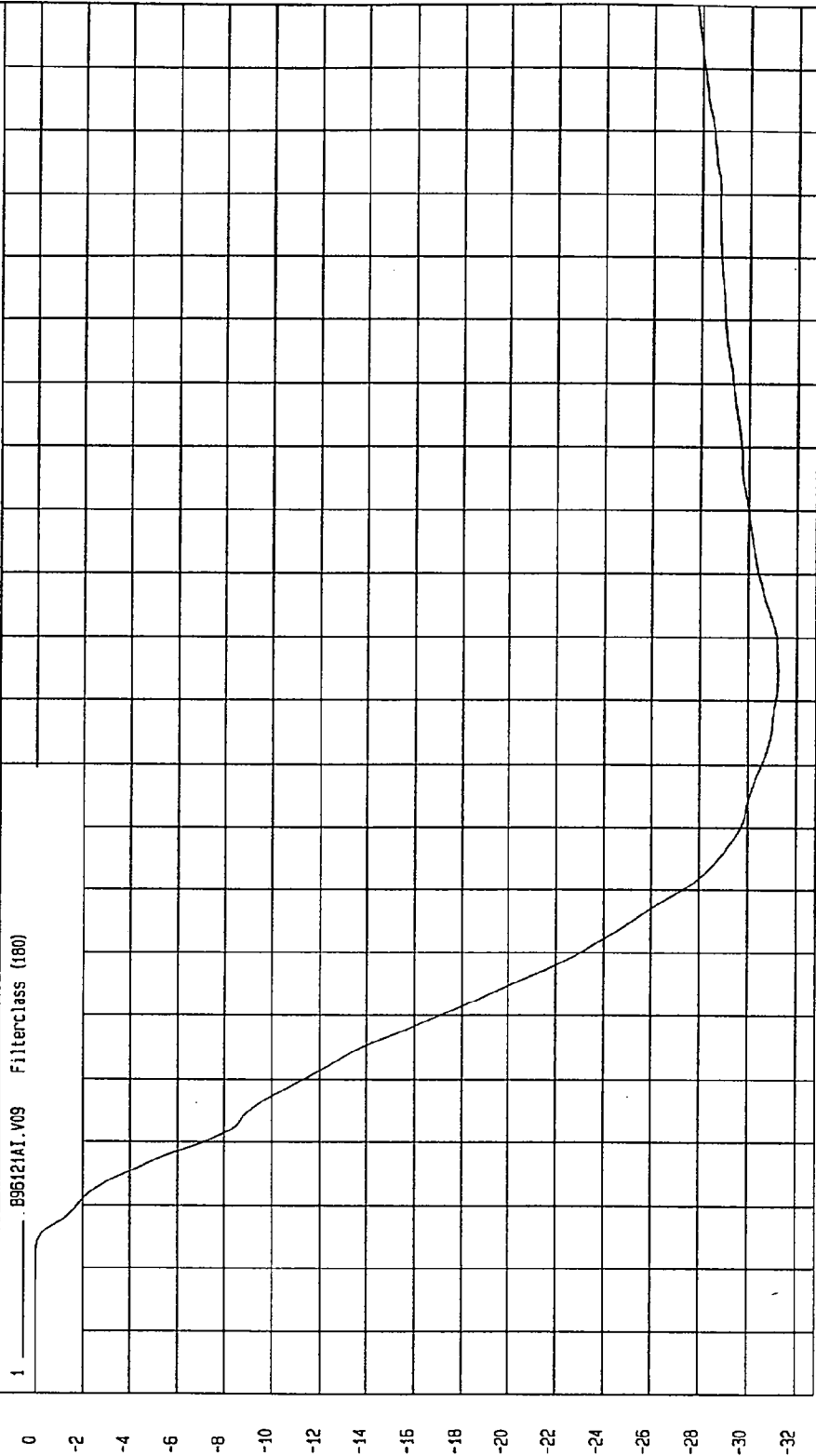
VCA Research
12-10-1996 16: 37

TEST: FMVSS 214 SIDE IMPACT
TEST DATE: 11-13-1996
COMPONENT: 1997 PONTIAC GRAND AM (CV0107)
Speed: 33.2 MPH 53.4 KPH

YMIN=-31.24156 KPH at 94. msec
YMAX= 0 KPH at -20 msec

REAR FLOORPAN ABOVE AXLE Y VELOCITY

1 - .895121A1.V09 Filterclass (180)



NCA Research
12-10-1996 16.40

TIME Seconds

KPH

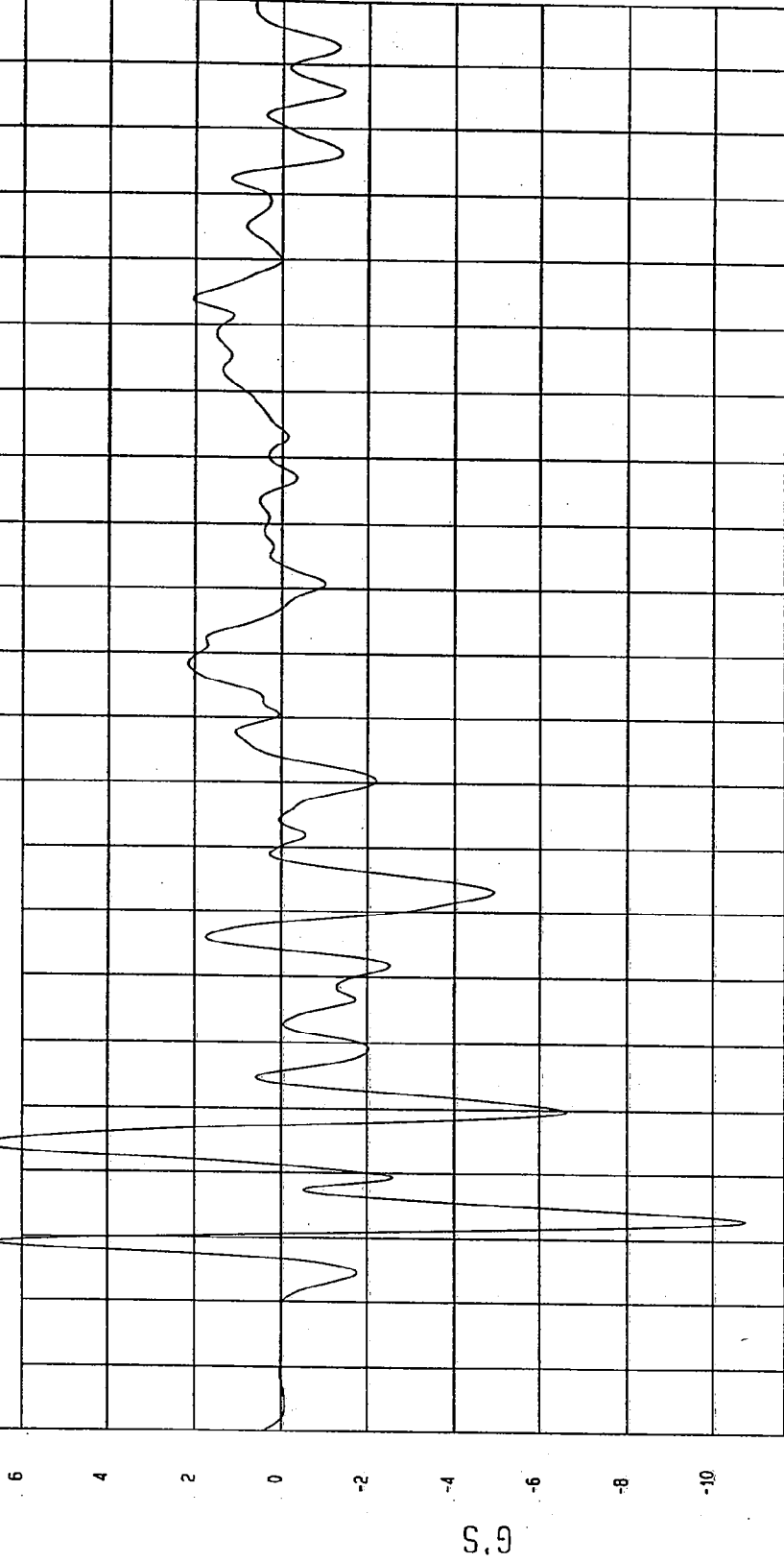
TEST: FMVSS 214 SIDE IMPACT TEST DATE: 11-13-1996

COMPONENT: 1997 PONTIAC GRAND AM (CV0107) Speed: 33.2 MPH 53.4 KPH

YMIN=-10.73559 G'S at 13 msec YMAX= 6.908978 G'S at 24. msec

REAR FLOORPAN ABOVE AXLE Z ACCELERATION

1 896121AF.A10 Filterclass (60)



TIME (SECONDS)

NGA Research
12-10-1996 16:37

TEST: FMVSS 214 SIDE IMPACT TEST DATE: 11-13-1996

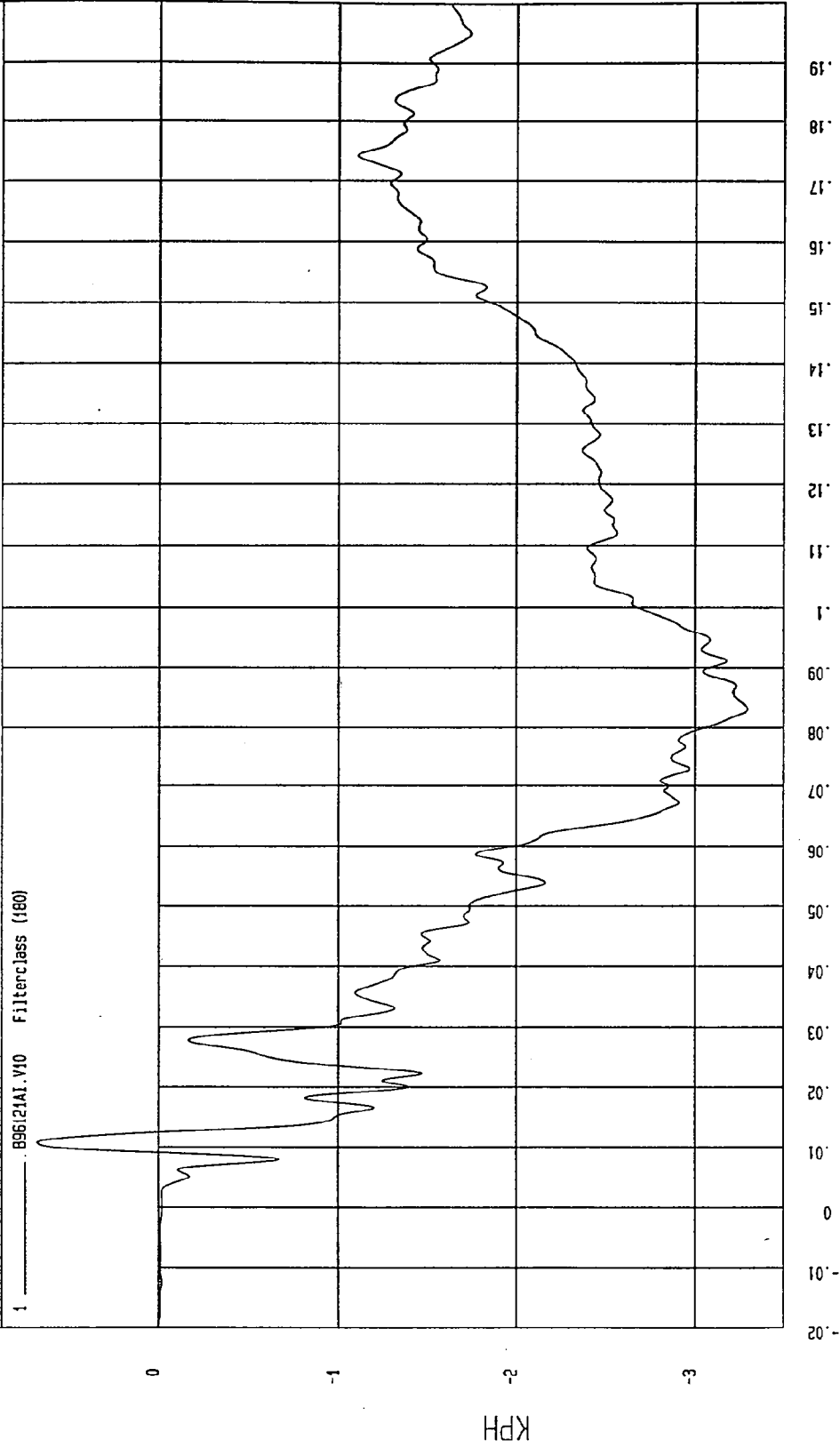
COMPONENT: 1997 PONTIAC GRAND AM (CV0107) Speed: 33.2 MPH 53.4 KPH

YMIN=-3.284688 KPH at 83. msec

YMAX=.6774946 KPH at 10. msec

REAR FLOORPAN ABOVE AXLE Z VELOCITY

1 .896121A1.V10 Filterclass (160)



MSA Research
12-10-1996 16:40

TIME Seconds

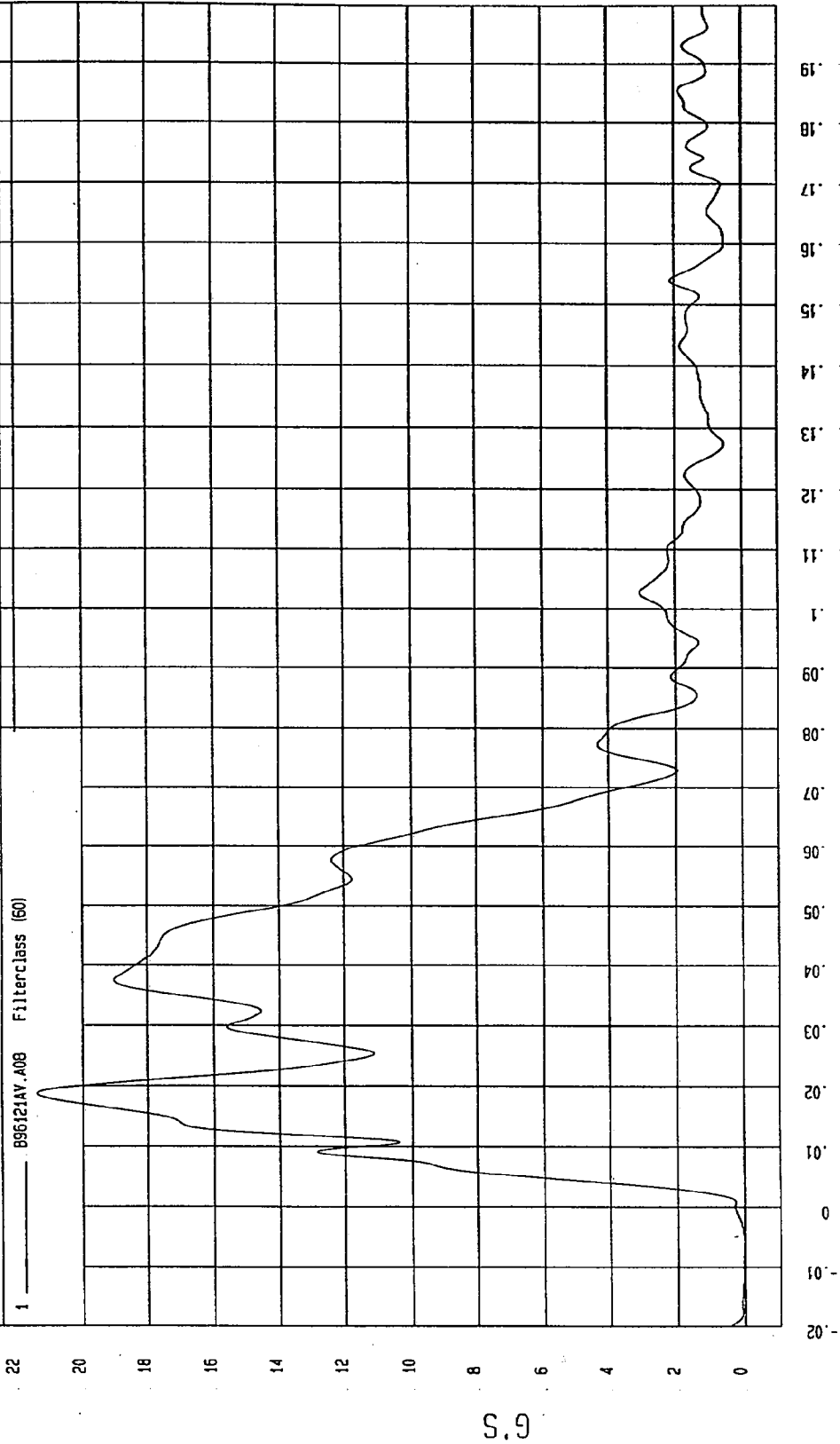
TEST: FMVSS 214 SIDE IMPACT TEST DATE: 11-13-1996

COMPONENT: 1997 PONTIAC GRAND AM (CV0107) Speed: 33.2 MPH 53.4 KPH

YMIN= 1.515377E-02 G'S at -11. msec YMAX= 21.35714 G'S at 18. msec

REAR FLOORPAN ABOVE AXLE RESULTANT ACCELERATION

1 896121AY.A08 Filterclass (60)



MSA Research
12-10-1996 16:52

TEST DATE: 11-13-1996

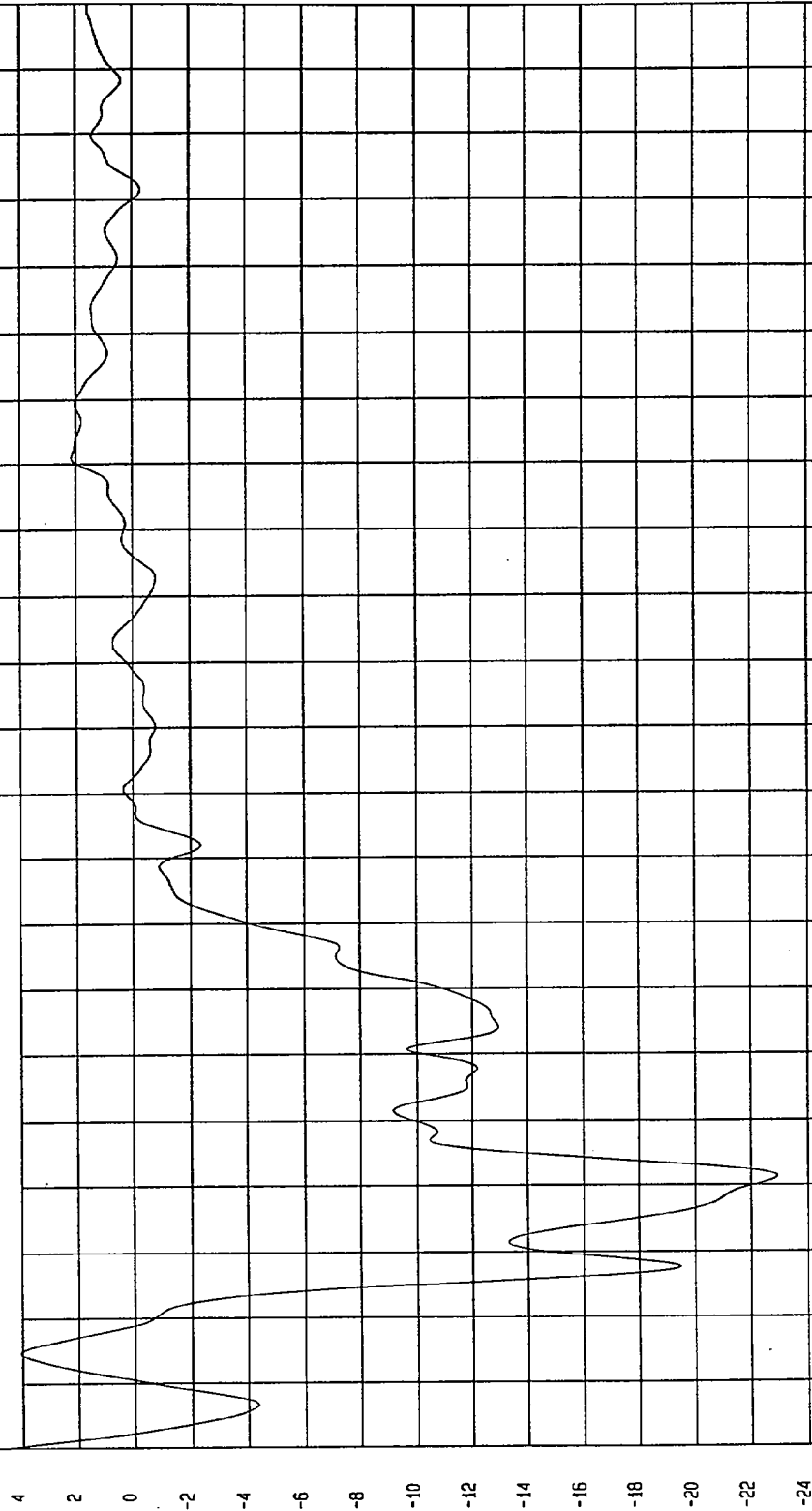
TEST: FMVSS 214 SIDE IMPACT

COMPONENT: 1997 PONTIAC GRAND AM (CV0107) Speed: 33.2 MPH 53.4 KPH

YMIN=-22.92752 G'S at 21. msec YMAX= 4.609373 G'S at -20 msec

LEFT REAR OCCUPANT COMPARTMENT Y ACCELERATION

1 ——— .896121AF A70 Filterclass (60)



MCA Research
12-10-1996 16: 37

TIME (SECONDS)

G.S

TEST DATE: 11-13-1996

TEST: FMVSS 214 SIDE IMPACT

Speed: 33.2 MPH 53.4 KPH

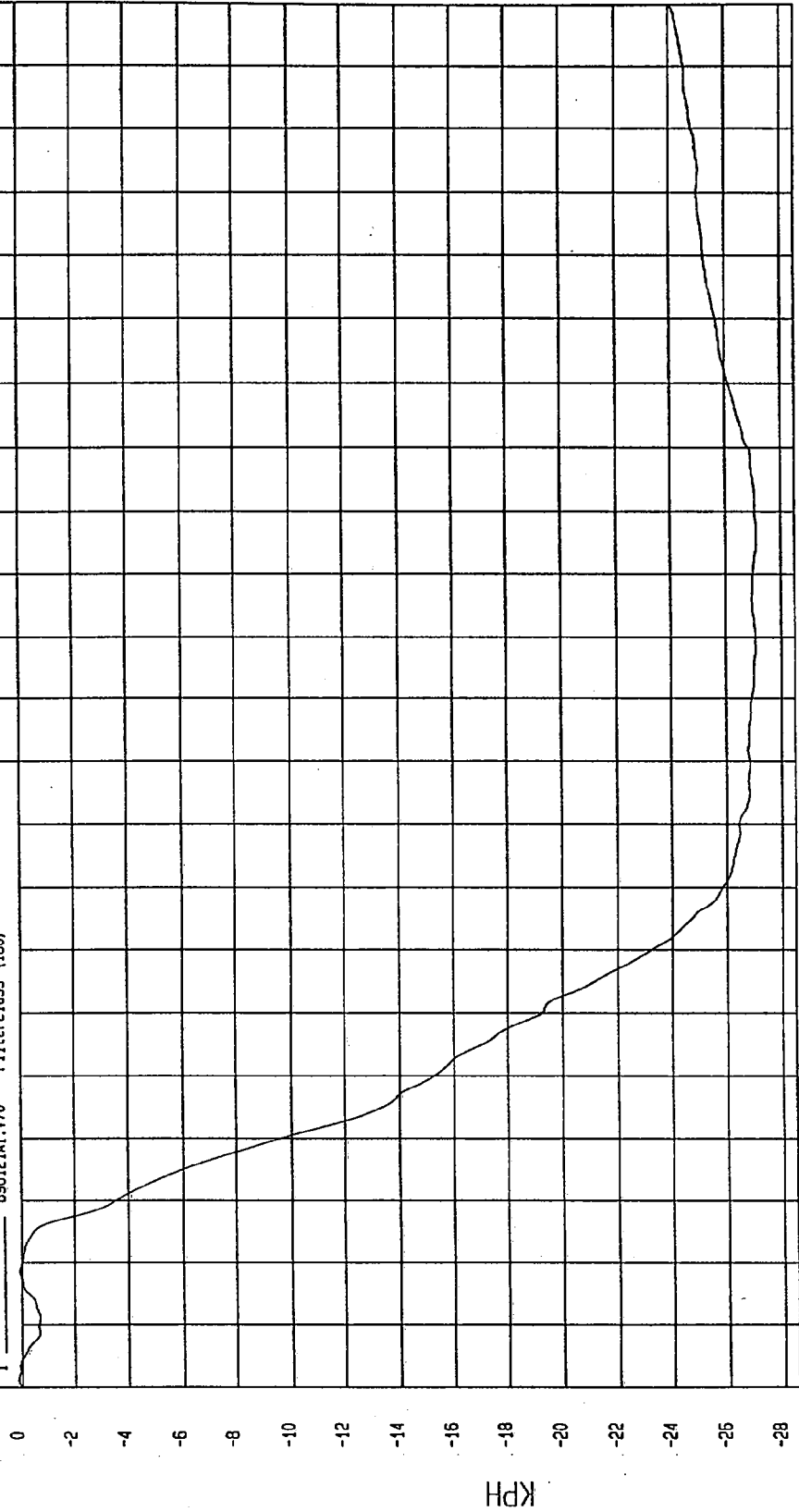
COMPONENT: 1997 PONTIAC GRAND AM (CV0107)

YMAX= .1329452 KPH at -.18. msec

YMIN=-27.13325 KPH at 115 msec

LEFT REAR OCCUPANT COMPARTMENT Y VELOCITY

1 896121A1.V70 FilterClass (180)



TIME Seconds
NSA Research
12-10-1996 16:40

TEST DATE: 11-13-1996

TEST: FMVSS 214 SIDE IMPACT

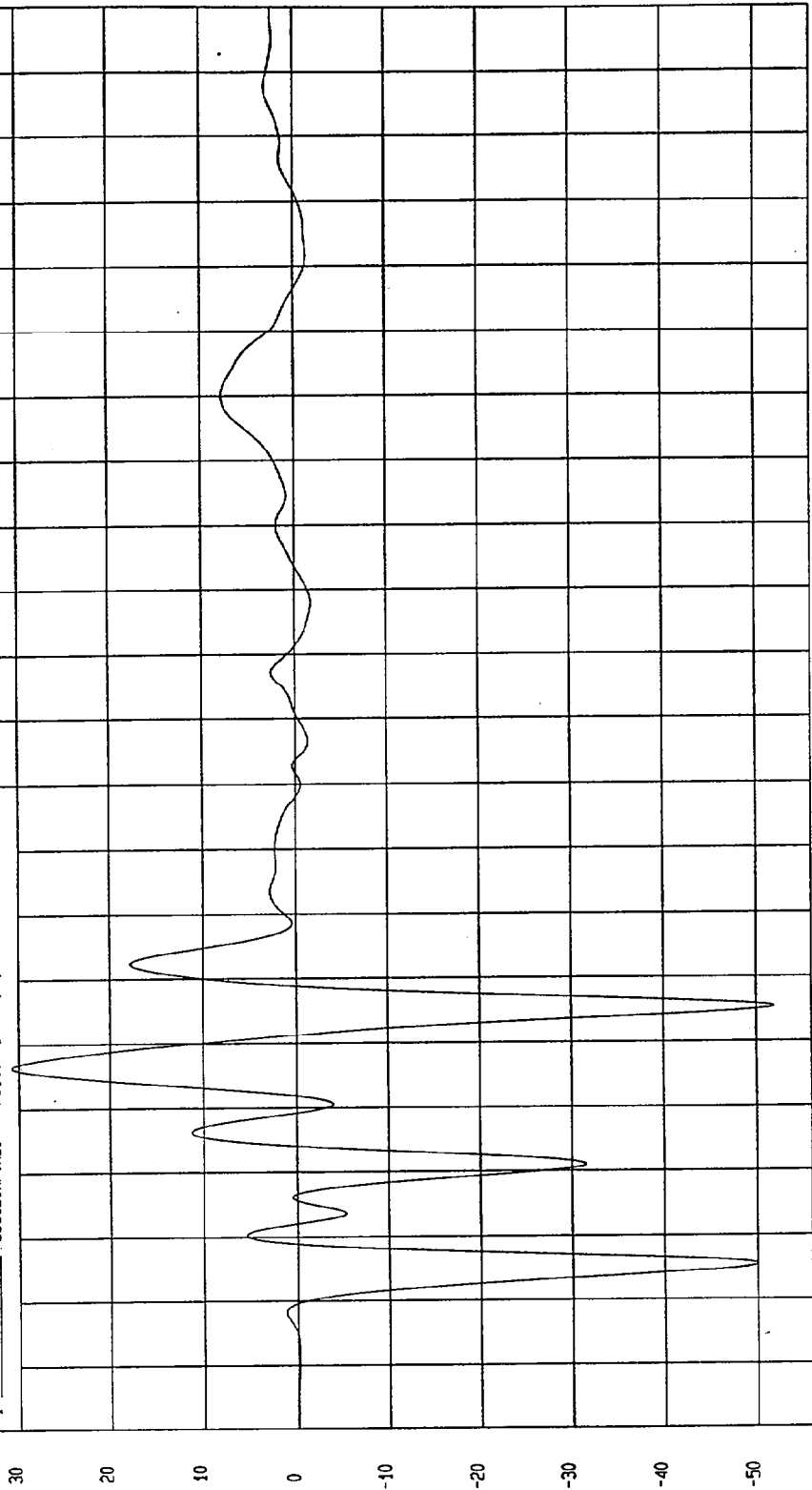
COMPONENT: 1997 PONTIAC GRAND AM (CV0107) Speed: 33.2 MPH 53.4 KPH

YMIN=-51.93382 6'S at 45. msec

YMAX= 30.71672 6'S at 36. msec

RIGHT LOWER A-POST Y ACCELERATION

1 896121AF.A20 Filterclass (60)



TIME (SECONDS)

MCA Research
12-10-1996 16:37

G.S

TEST DATE: 11-13-1996

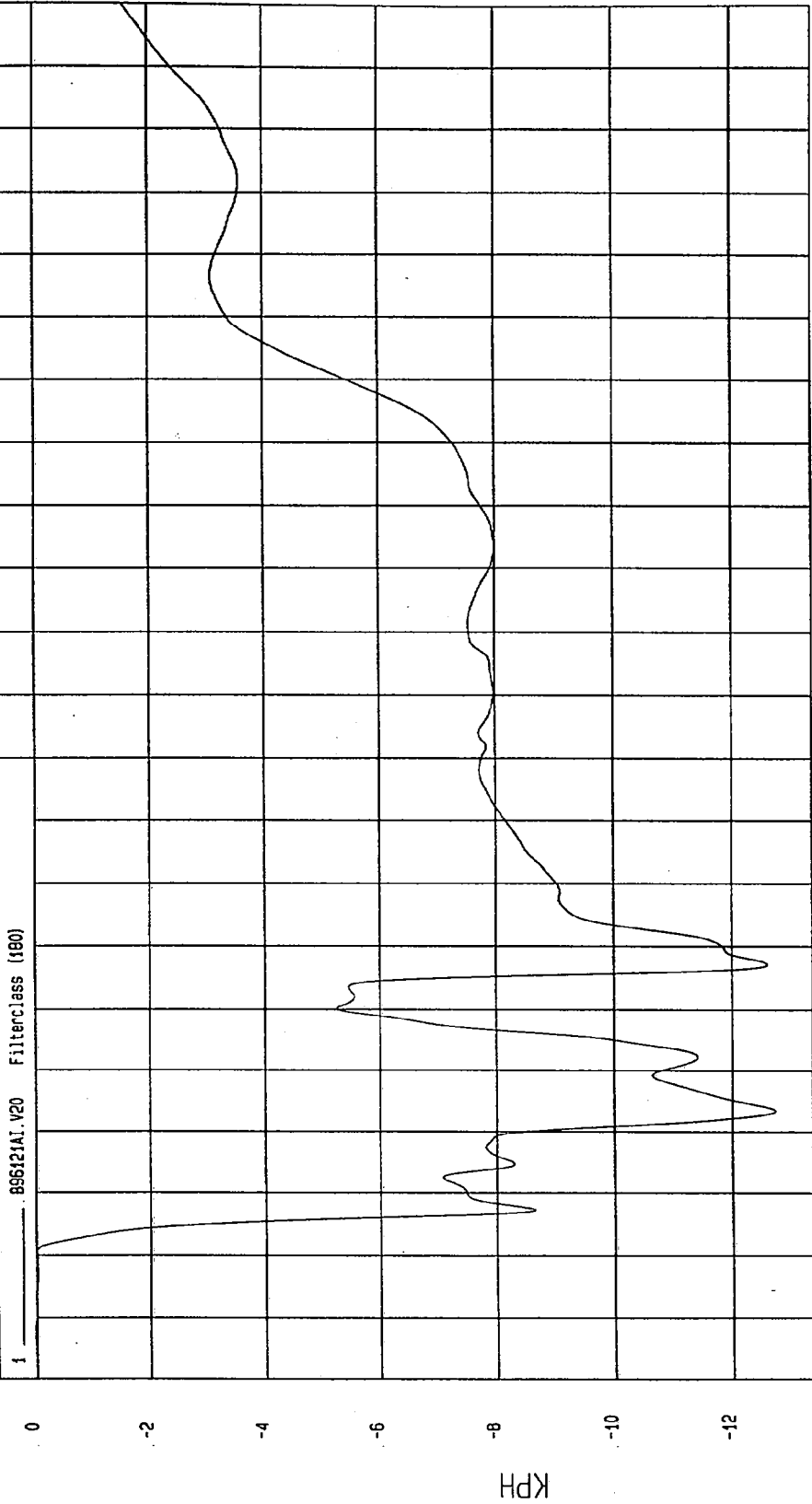
TEST: FMVSS 214 SIDE IMPACT

COMPONENT: 1997 PONTIAC GRAND AM (CV0107) Speed: 33.2 MPH 53.4 KPH

YMIN=-12.71461 KPH at 23. msec YMAX= 1.46141E-02 KPH at -12. msec

RIGHT LOWER A-POST Y VELOCITY

1 896121A1.V20 FilterClass (180)



TIME Seconds
NCA Research
12-10-1996 16:40

TEST DATE: 11-13-1996

TEST: FMVSS 214 SIDE IMPACT

Speed: 33.2 MPH 53.4 KPH

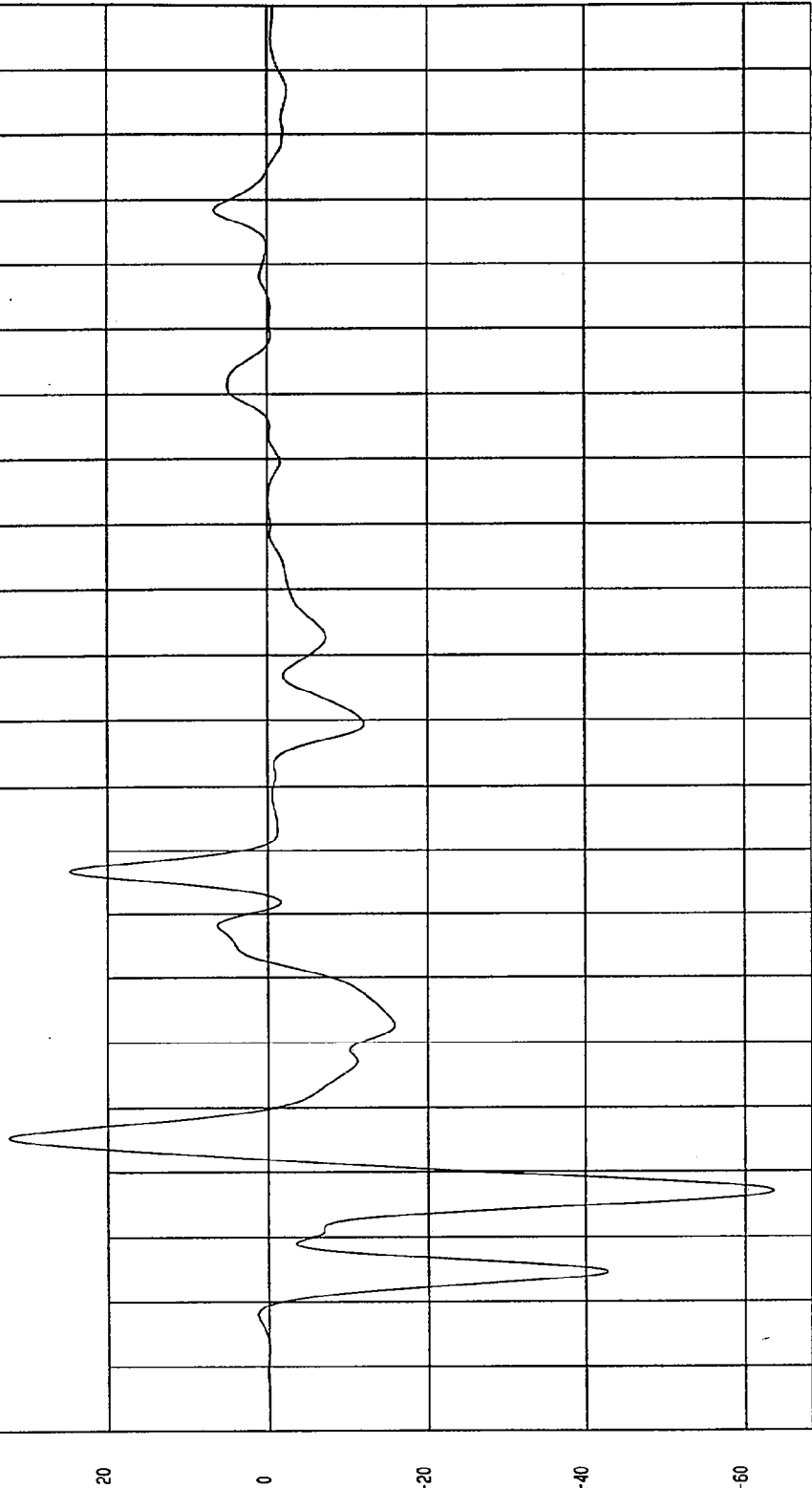
COMPONENT: 1997 PONTIAC GRAND AM (CV0107)

YMIN=-63.58864 G'S at 17 msec

YMAX= 32.52966 G'S at 25. msec

RIGHT MID A-POST Y ACCELERATION

1 _____ 896121AF.A19 Filterclass [60]



TIME (SECONDS)

MCA Research
12-10-1996 16: 31

S.9

TEST DATE: 11-13-1996

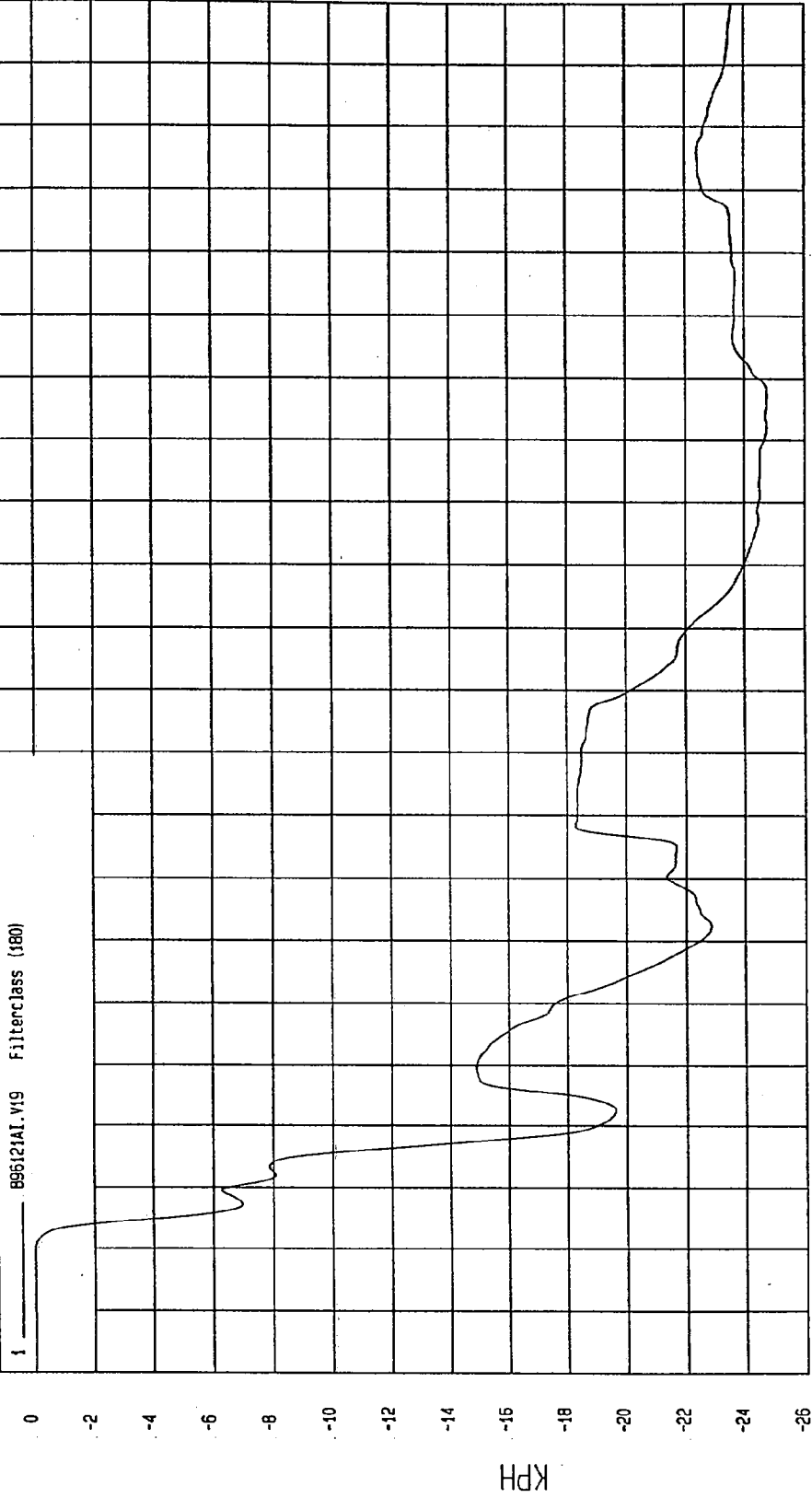
TEST: FMVSS 214 SIDE IMPACT

COMPONENT: 1997 PONTIAC GRAND AM (CV0107) Speed: 33.2 MPH 53.4 KPH

YMIN=-24.76475 KPH at 137 msec YMAX= 1.546079E-03 KPH at -9.3 msec

RIGHT MID A-POST Y VELOCITY

1 896121A1.V19 Filterclass (160)



MEA Research
12-10-1996 16:40

TIME Seconds

TEST DATE: 11-13-1996

TEST: FMVSS 214 SIDE IMPACT

Speed: 33.2 MPH 53.4 KPH

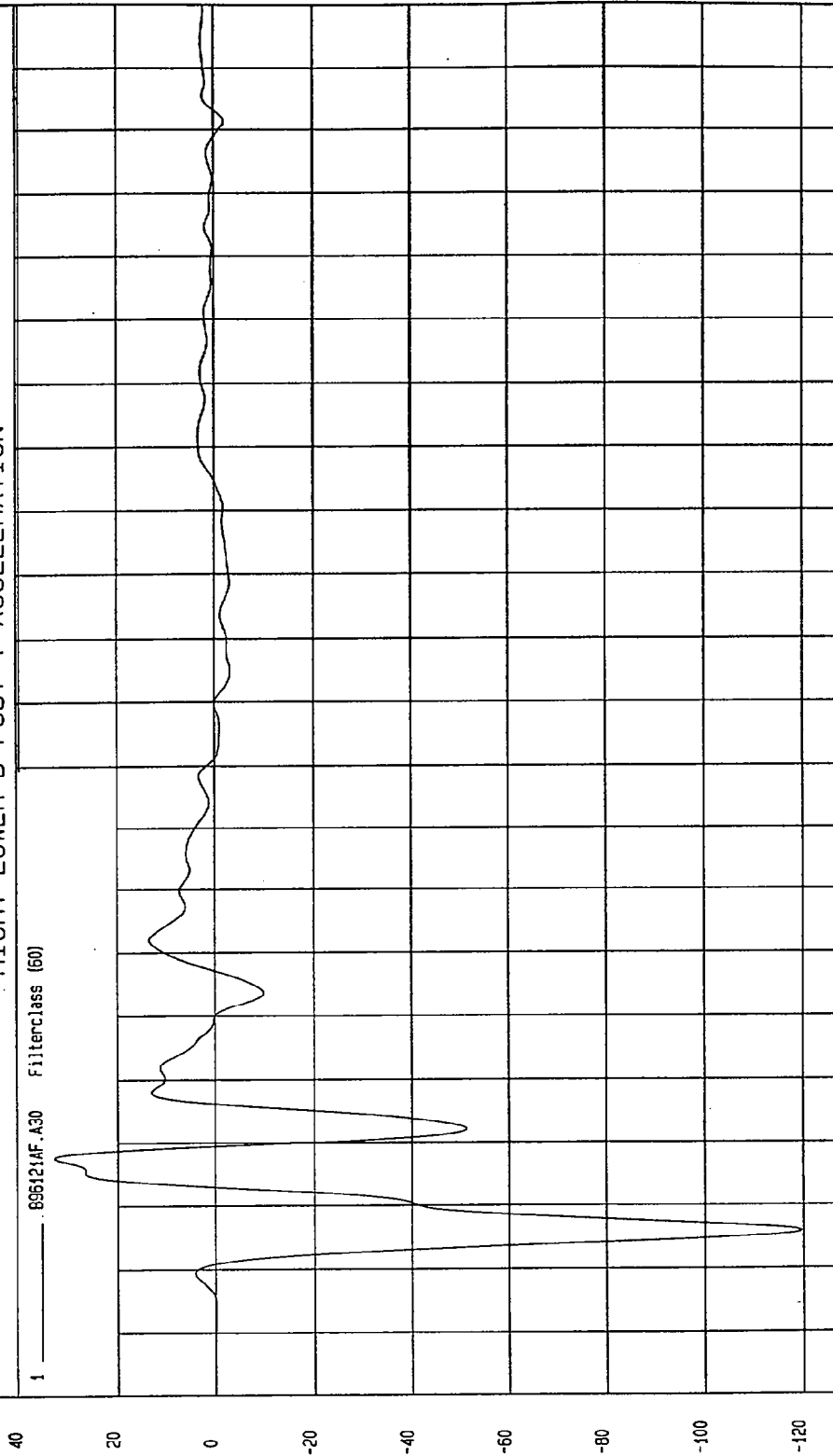
COMPONENT: 1997 PONTIAC GRAND AM (CV0107)

YMAX= 33.02975 G'S at 17. msec

YMIN=-119.6126 G'S at 5.9 msec

RIGHT LOWER B-POST Y ACCELERATION

1 .696121AF.A30 Filterclass (60)



MCA Research
12-10-1996 16: 26

TEST DATE: 11-13-1996

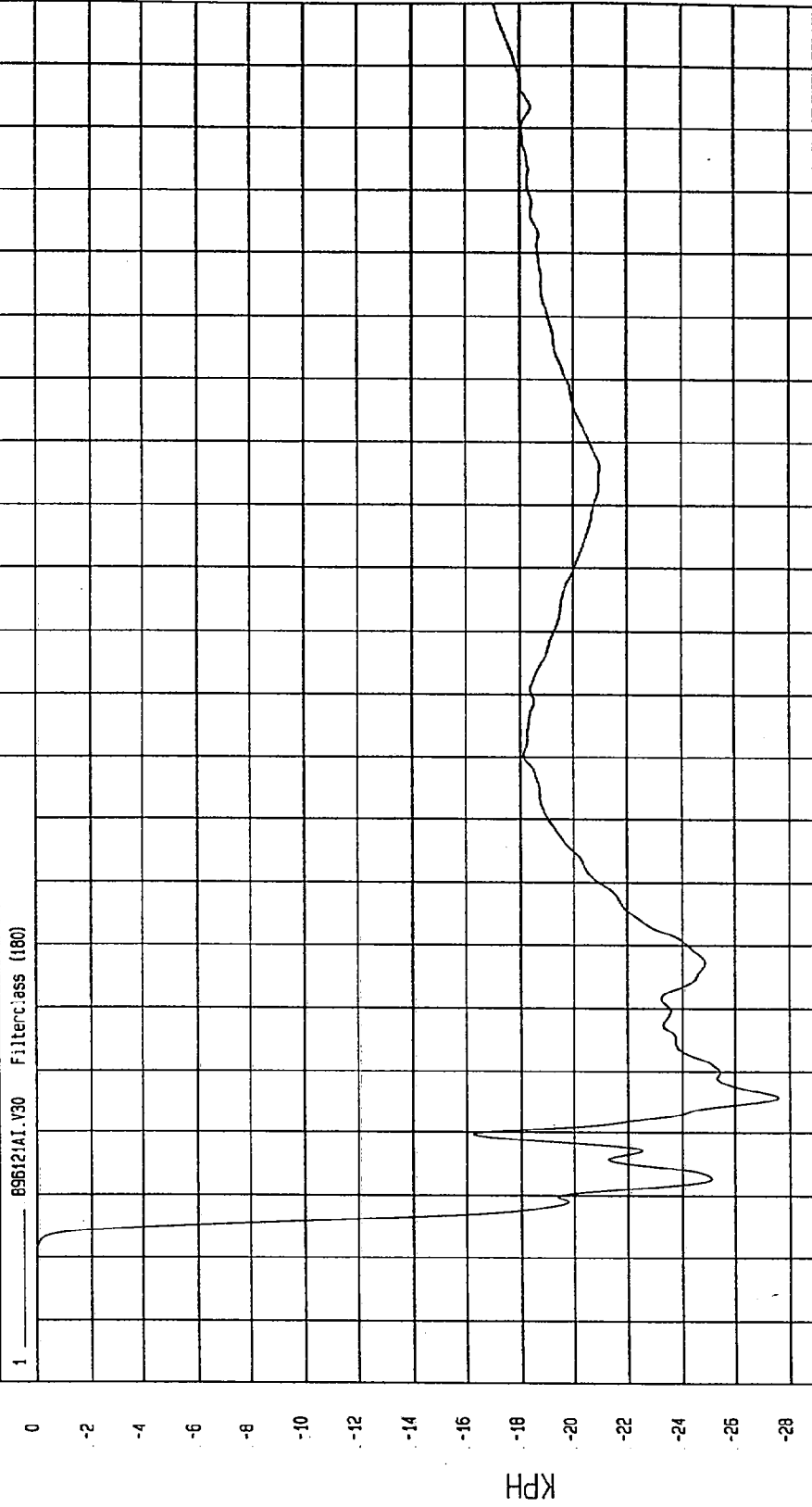
TEST: FMVSS 214 SIDE IMPACT

COMPONENT: 1997 PONTIAC GRAND AM (CV0107) Speed: 33.2 MPH 53.4 KPH

YMIN=-27.5777 KPH at 25. msec YMAX= 1.253103E-02 KPH at -11. msec

RIGHT LOWER B-POST Y VELOCITY

1 896121A1.V30 Filter: class (180)



MSA Research
12-10-1996 16:40

TIME Seconds

TEST DATE: 11-13-1996

TEST: FMVSS 214 SIDE IMPACT

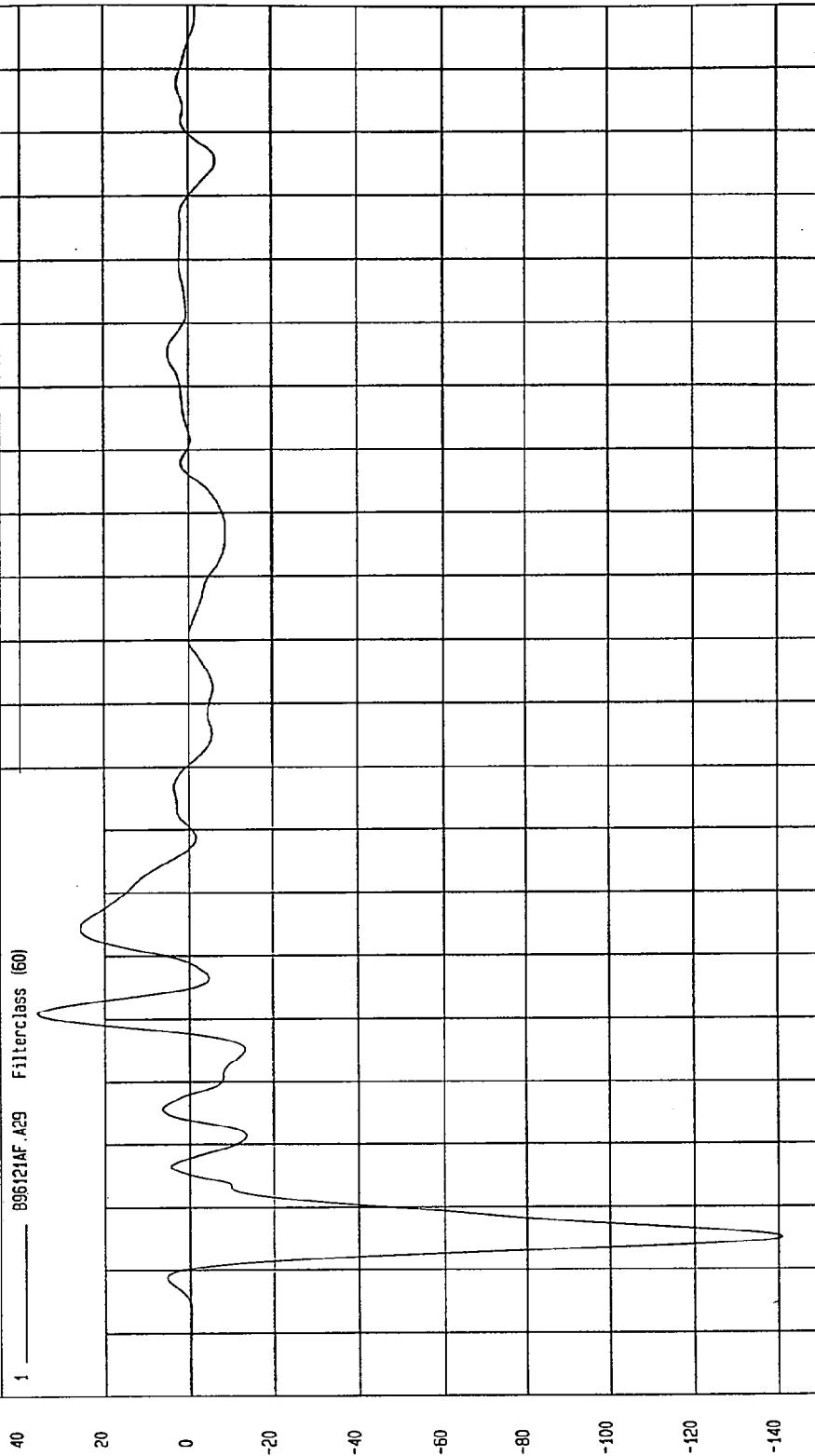
COMPONENT: 1997 PONTIAC GRAND AM (CV0107) Speed: 33.2 MPH 53.4 KPH

YMIN=-140.9487 G'S at 5.0 msec

YMAX= 36.06691 G'S at 40. msec

RIGHT MID B-POST Y ACCELERATION

1 896121AF.A29 Filterclass (60)



MSA Research
12-10-1996 16:38

TEST DATE: 11-13-1996

TEST: FMVSS 214 SIDE IMPACT

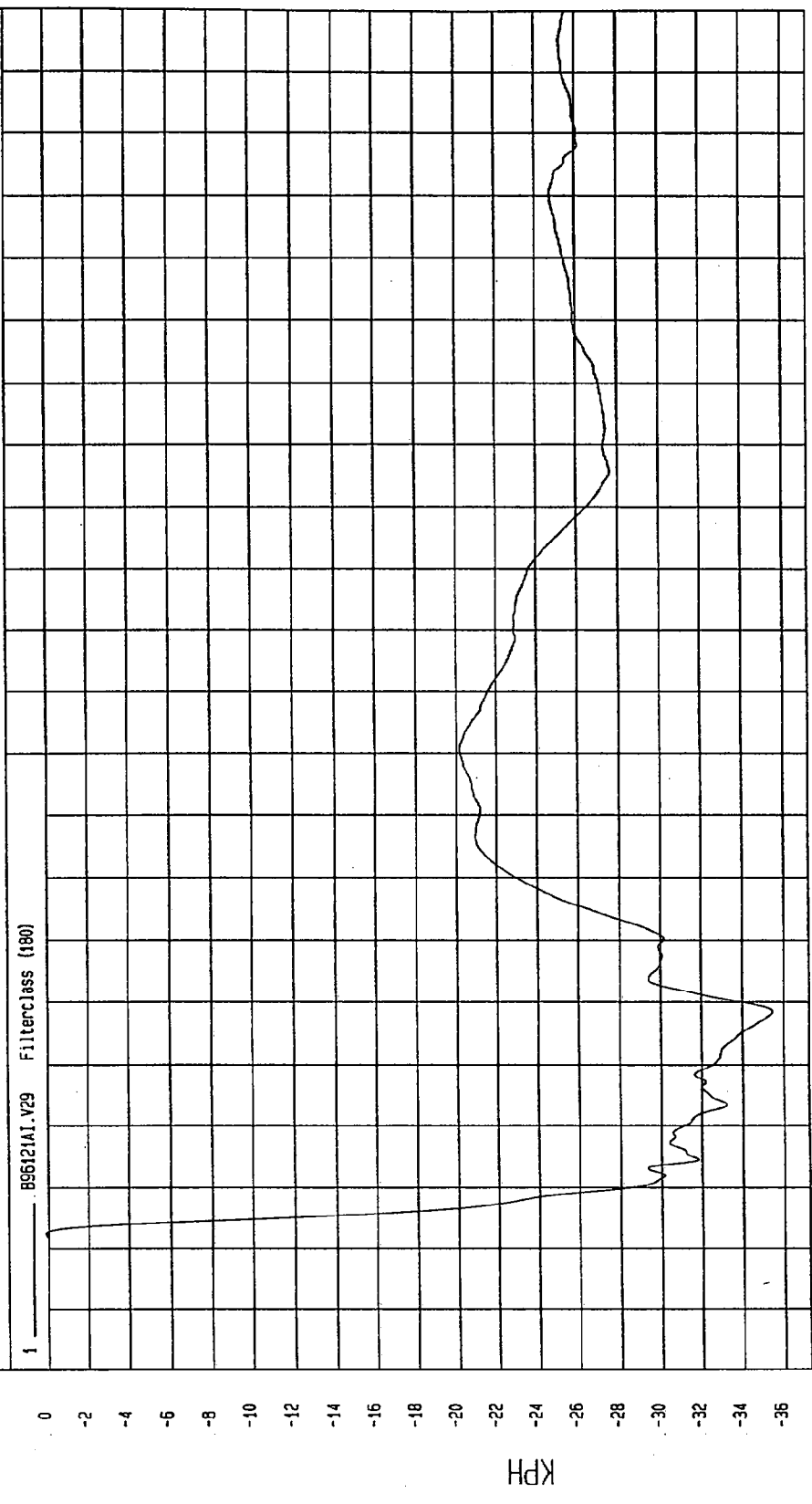
Speed: 33.2 MPH 53.4 KPH

COMPONENT: 1997 PONTIAC GRAND AM (CV0107)

YMAX= .1240056 KPH at 2.4 msec

YMIN=-35.45564 KPH at 38. msec

RIGHT MID B-POST Y VELOCITY



TIME Seconds

NSA Research
12-10-1996 16:40

TEST DATE: 11-13-1996

Speed: 33.2 MPH 53.4 KPH

TEST: FMVSS 214 SIDE IMPACT

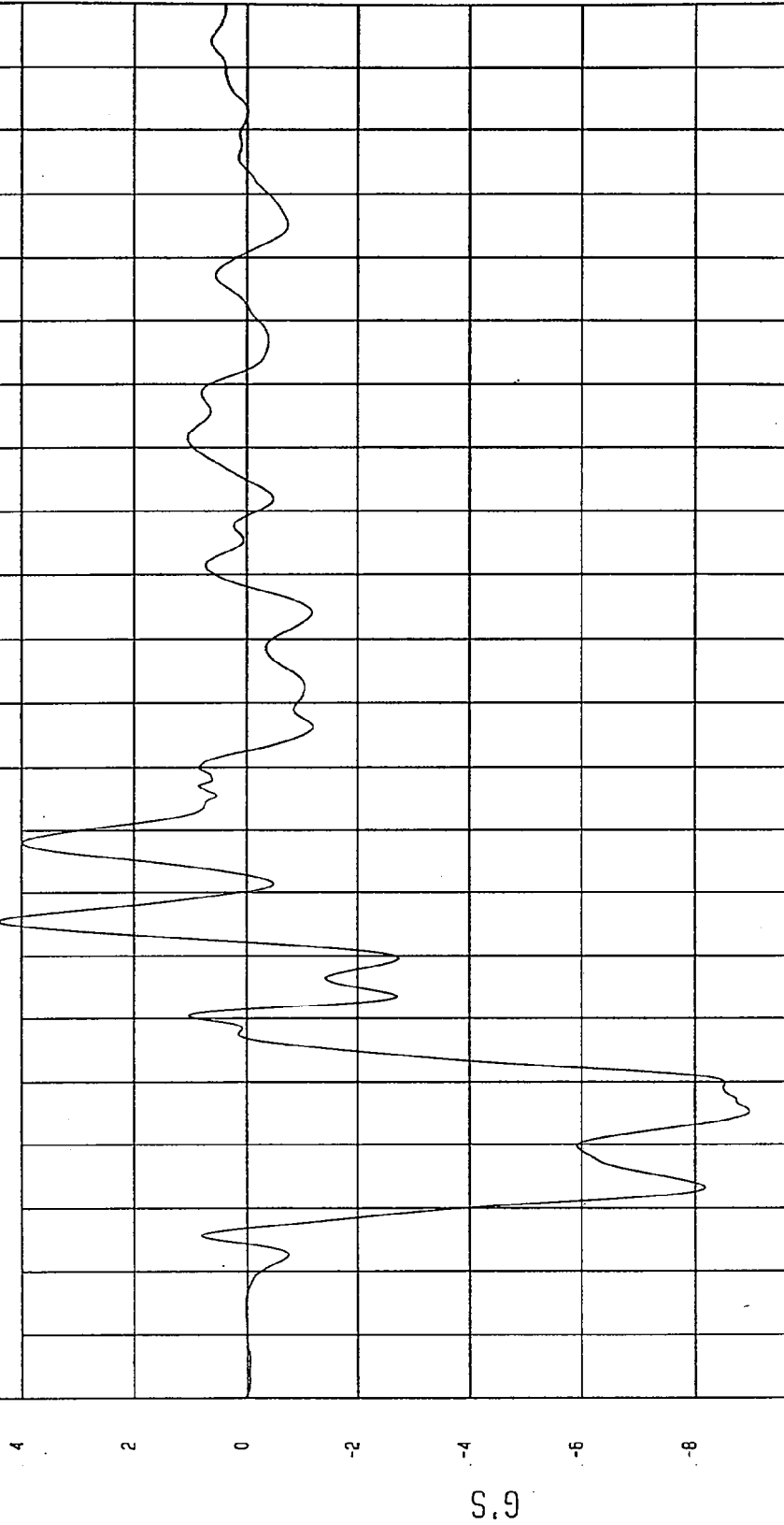
COMPONENT: 1997 PONTIAC GRAND AM (CV0107)

YMAX= 4.410512 G'S at 55. msec

YMIN= -8.964244 G'S at 25. msec

VEHICLE CG X ACCELERATION

1 ——— B96121AF.A58 Filterclass (60)



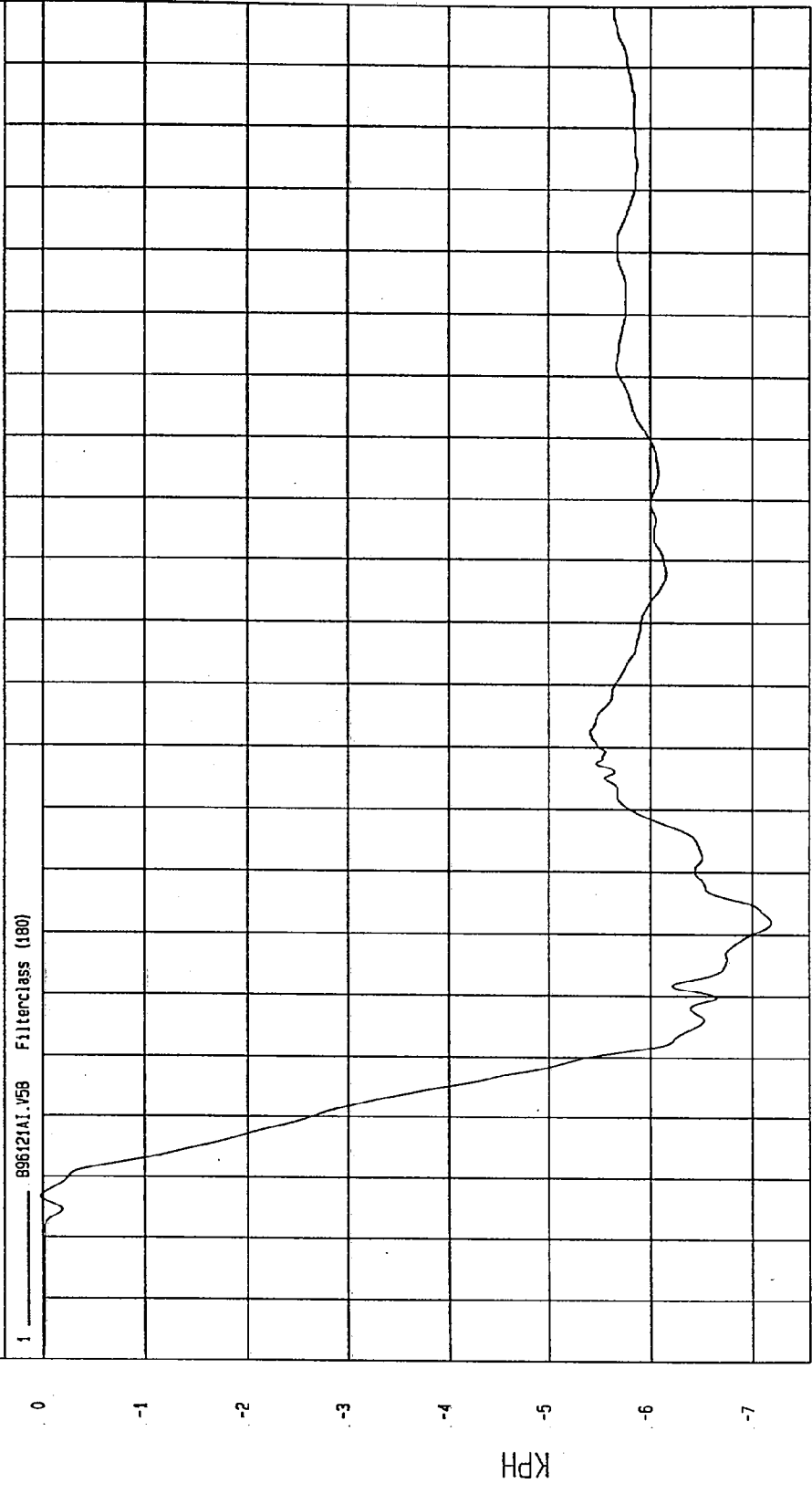
TIME (SECONDS)

NSA Research
12-10-1996 16: 38

TEST: FMVSS 214 SIDE IMPACT
TEST DATE: 11-13-1996
COMPONENT: 1997 PONTIAC GRAND AM (CV0107)
Speed: 33.2 MPH 53.4 KPH

YMIN=-7.18752 KPH at 52 msec
YMAX= 2.640221E-02 KPH at 6.7 msec

VEHICLE CG X VELOCITY



TIME Seconds
M&A Research, Inc.
12-10-1996 16:41

TEST DATE: 11-13-1996

TEST: FMVSS 214 SIDE IMPACT

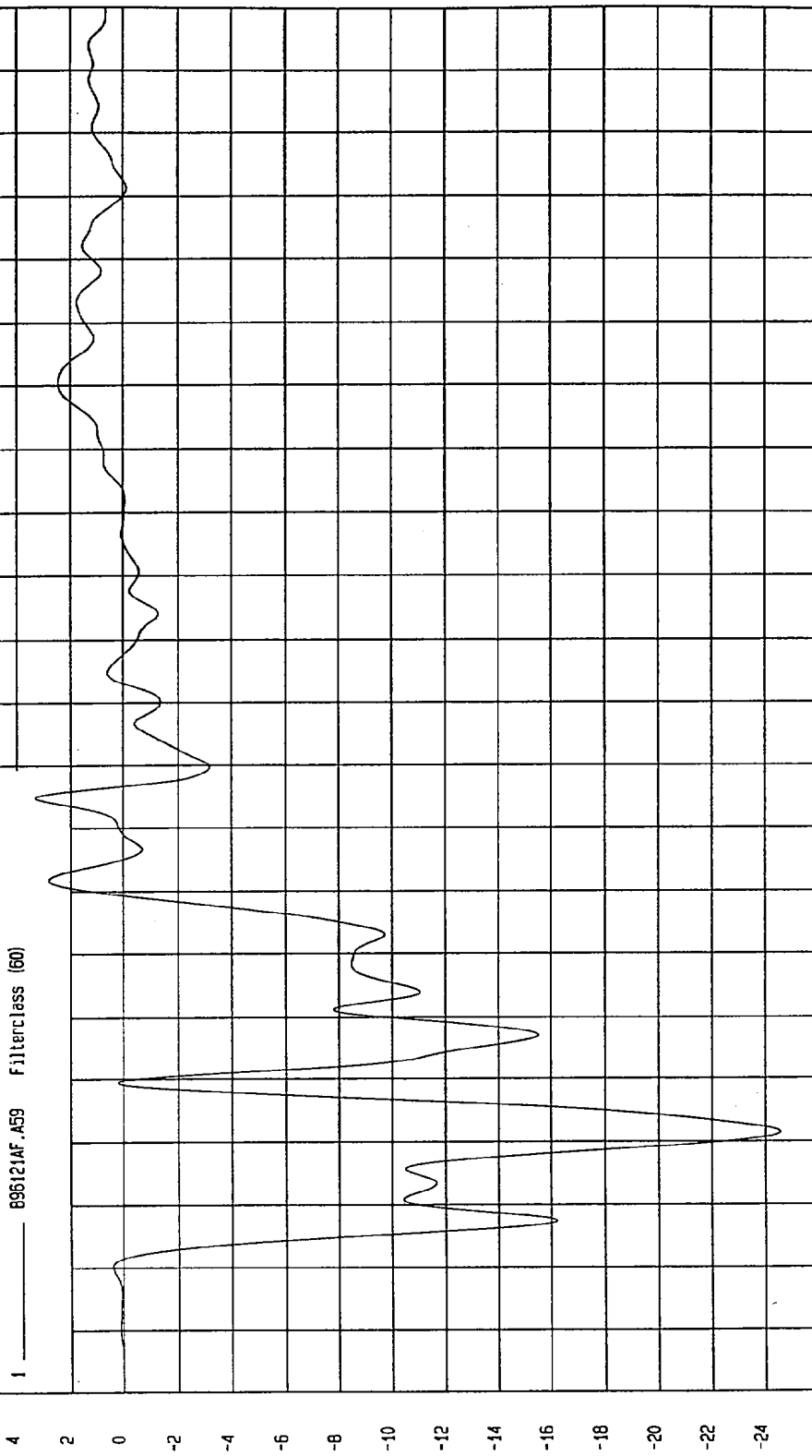
COMPONENT: 1997 PONTIAC GRAND AM (CV0107) Speed: 33.2 MPH 53.4 KPH

YMIN=-24.57084 G'S at 21. msec

YMAX= 3.351867 G'S at 74. msec

VEHICLE CG Y ACCELERATION

1 896121AF.A59 Filterclass (60)



MSA Report CT
12-10-1996 16.38

TEST DATE: 11-13-1996

TEST: FMVSS 214 SIDE IMPACT

Speed: 33.2 MPH 53.4 KPH

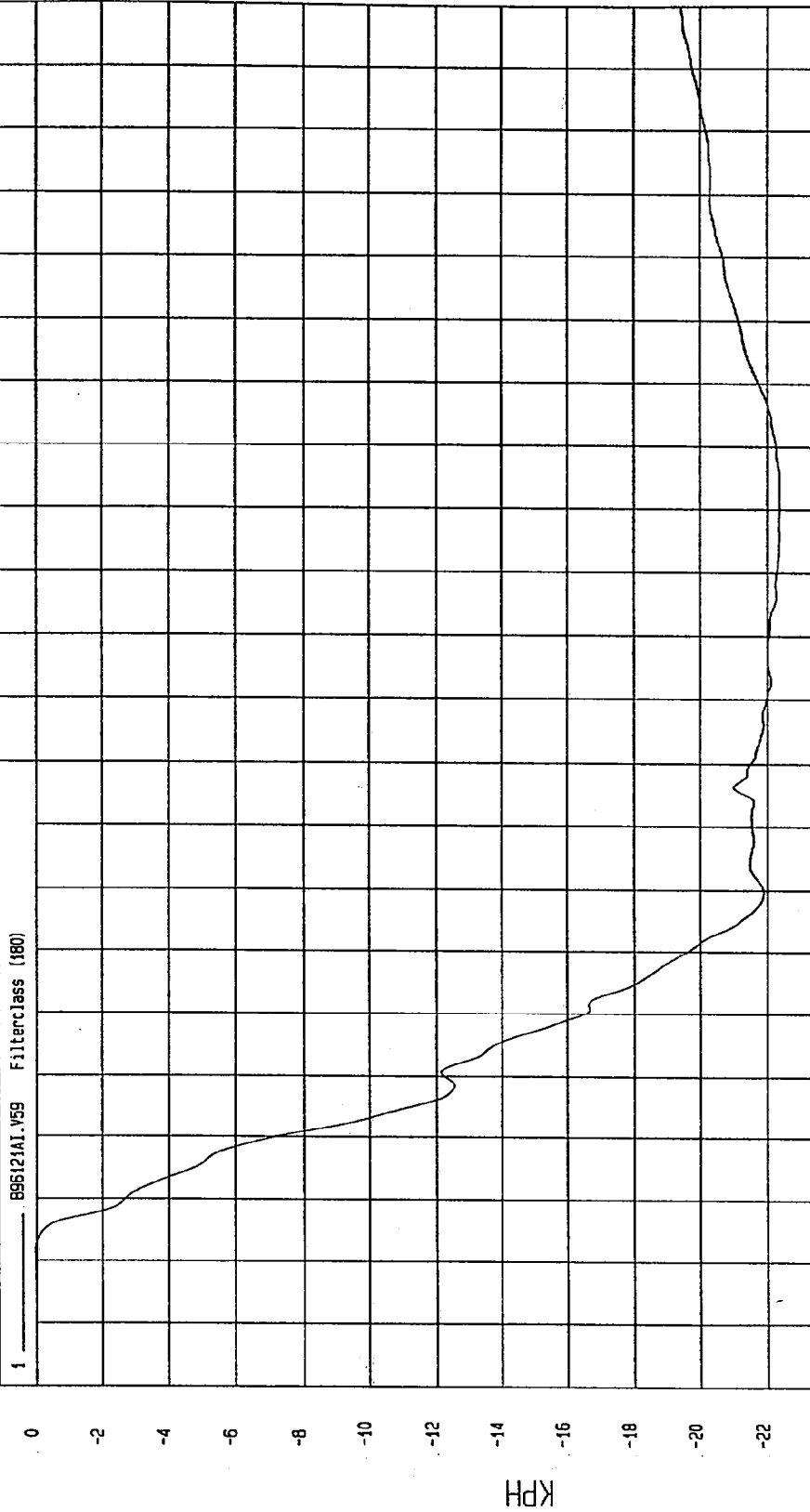
COMPONENT: 1997 PONTIAC GRAND AM (CV0107)

YMIN=-22.37072 KPH at 124 msec

YMAX=.0388726 KPH at 1.9 msec

VEHICLE CG Y VELOCITY

1 895121A1.V59 FilterClass (180)



MOA Research
12-10-1996 16:41

TIME Seconds

TEST DATE: 11-13-1996

TEST: FMVSS 214 SIDE IMPACT

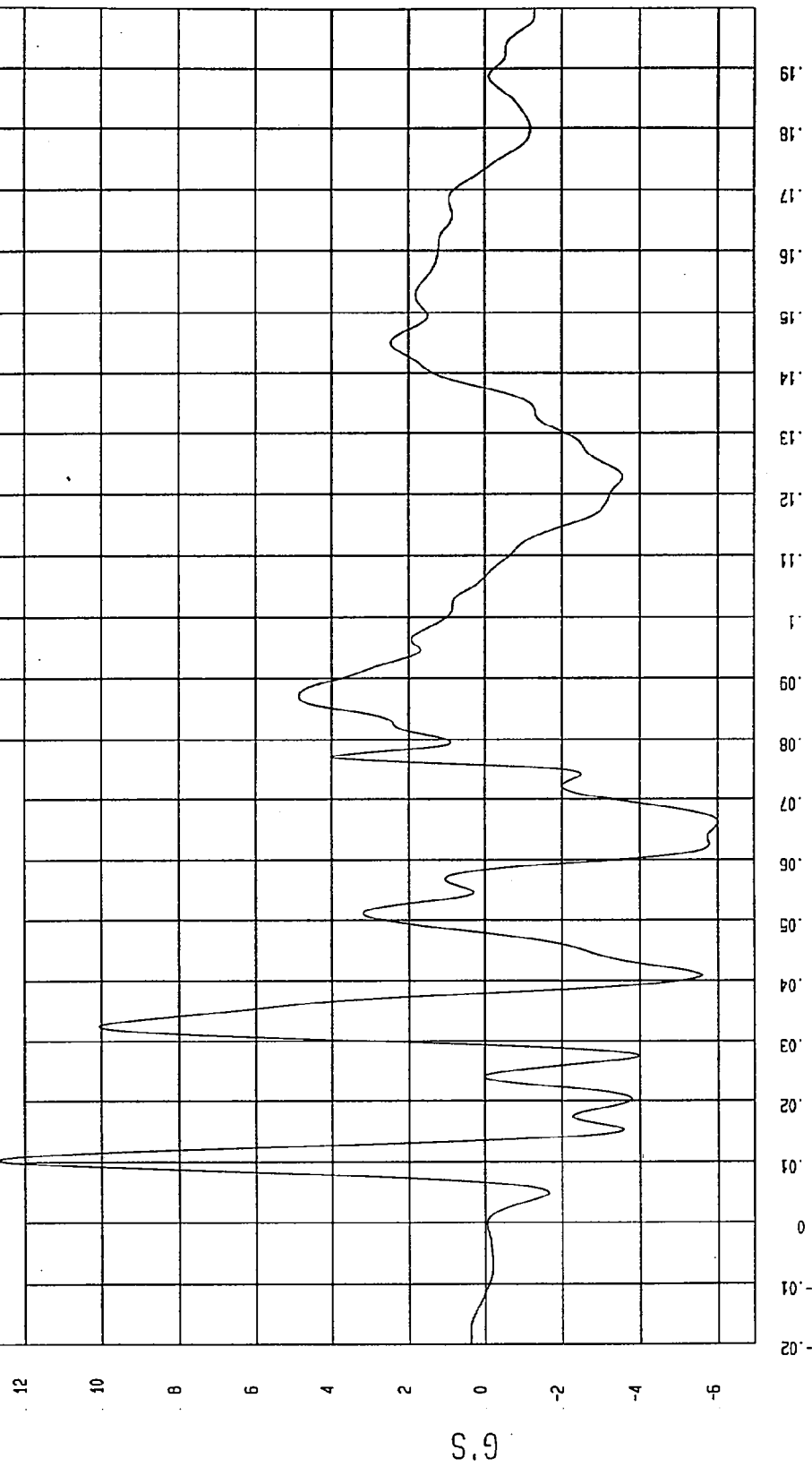
COMPONENT: 1997 PONTIAC GRAND AM (CV0107) Speed: 33.2 MPH 53.4 KPH

YMIN=-6.009306 G'S at 66. msec

YMAX= 12.68727 G'S at 10. msec

VEHICLE CG Z ACCELERATION

1 896121AF.M60 Filterclass (60)



MCA Research
12-10-1996 16:38

TIME (SECONDS)

TEST: FMVSS 214 SIDE IMPACT TEST DATE: 11-13-1996

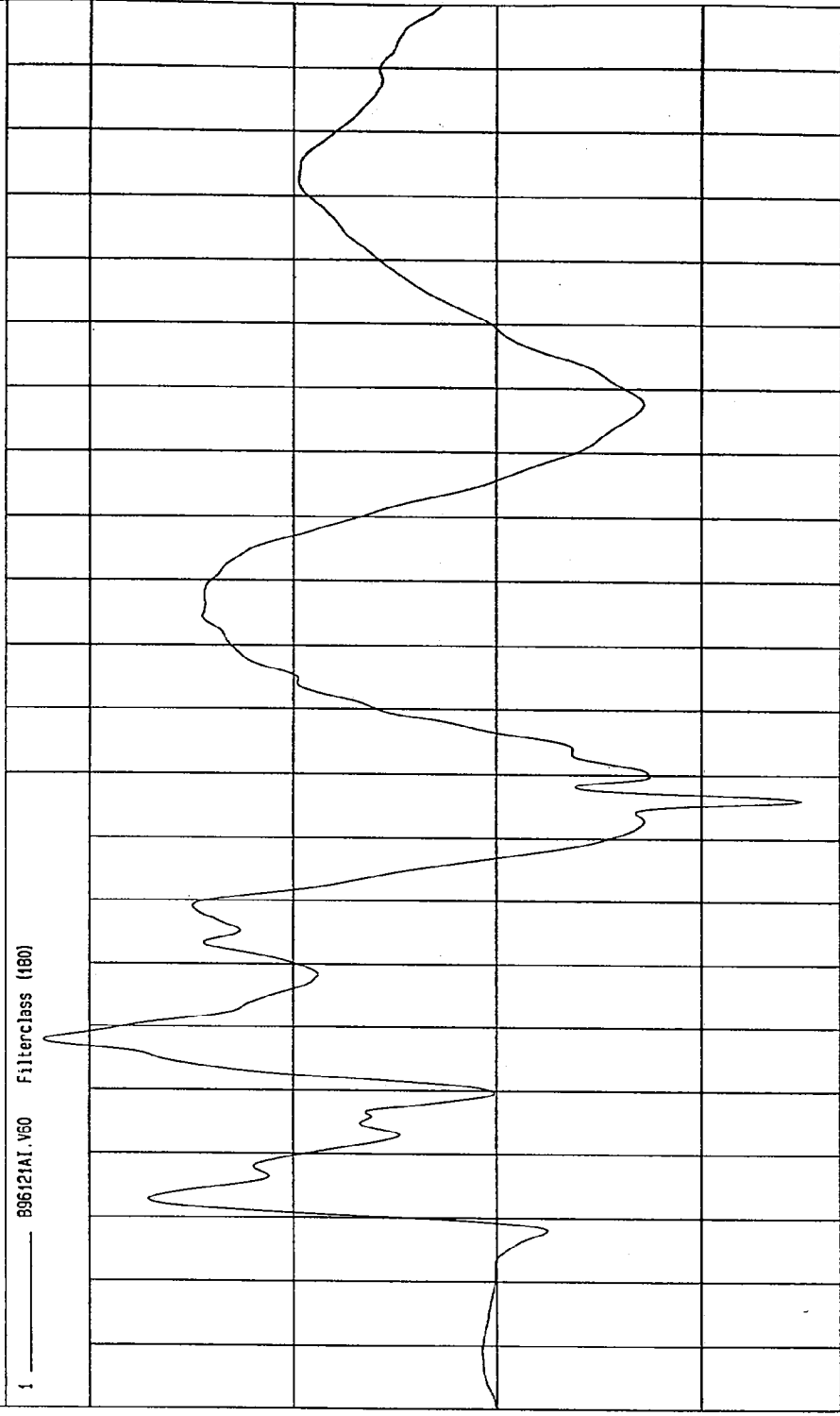
COMPONENT: 1997 PONTIAC GRAND AM (CV0107) Speed: 33.2 MPH 53.4 KPH

YMIN=-1.479988 KPH at 76 msec

YMAX= 2.223332 KPH at 37. msec

VEHICLE CG Z VELOCITY

1 ——— 896121A1.V60 Filterclass (180)



TIME Seconds

MPA Research
12-10-1996 16:41

TEST DATE: 11-13-1996

TEST: FMVSS 214 SIDE IMPACT

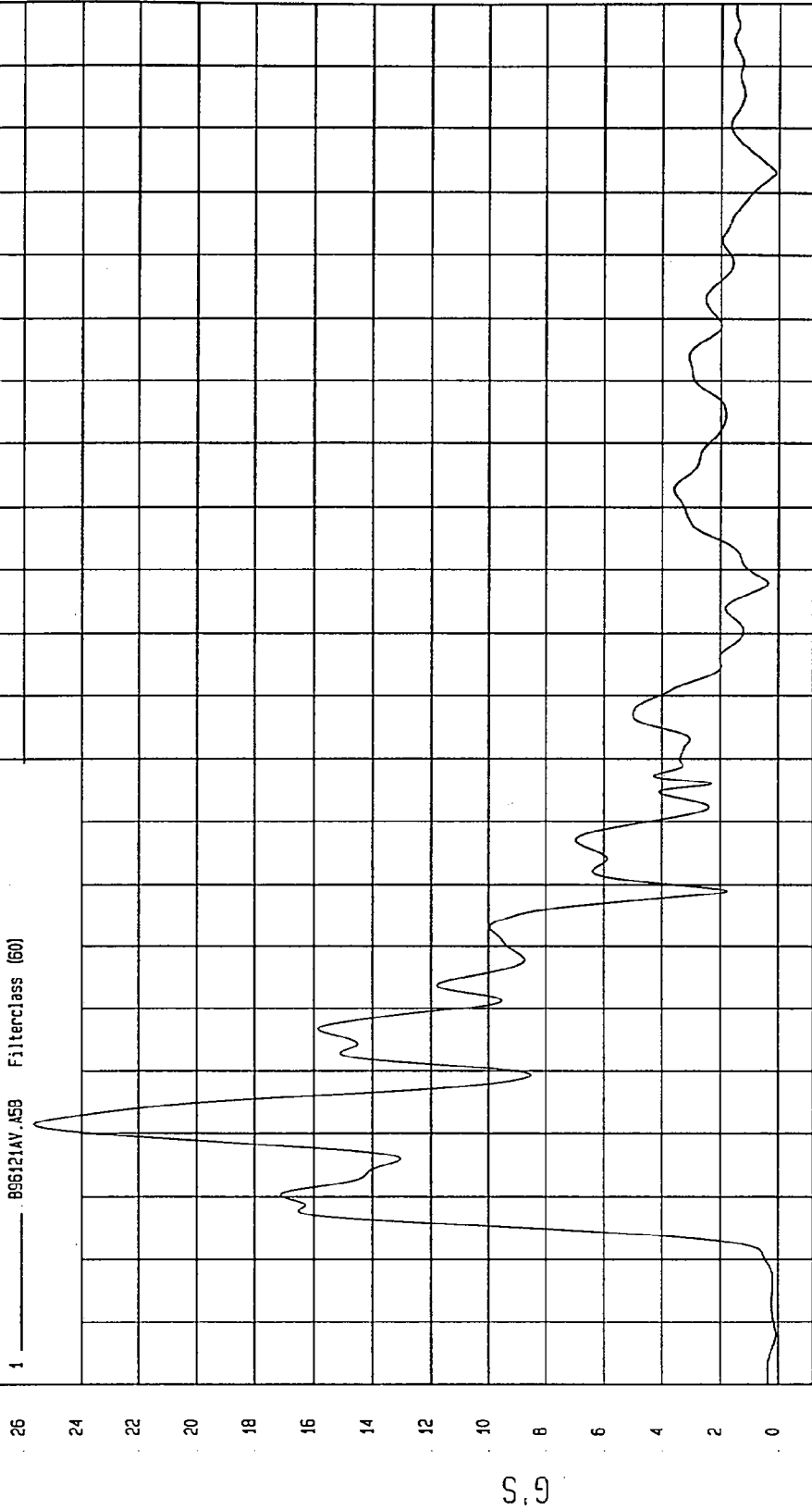
COMPONENT: 1997 PONTIAC GRAND AM (CV0107) Speed: 33.2 MPH 53.4 KPH

YMIN= 7.44871E-02 G'S at -12 msec

YMAX= 25.64615 G'S at 21. msec

VEHICLE CG RESULTANT ACCELERATION

1 856121AV.A59 Filterclass (60)



MCA Research
12-10-1996 16:52

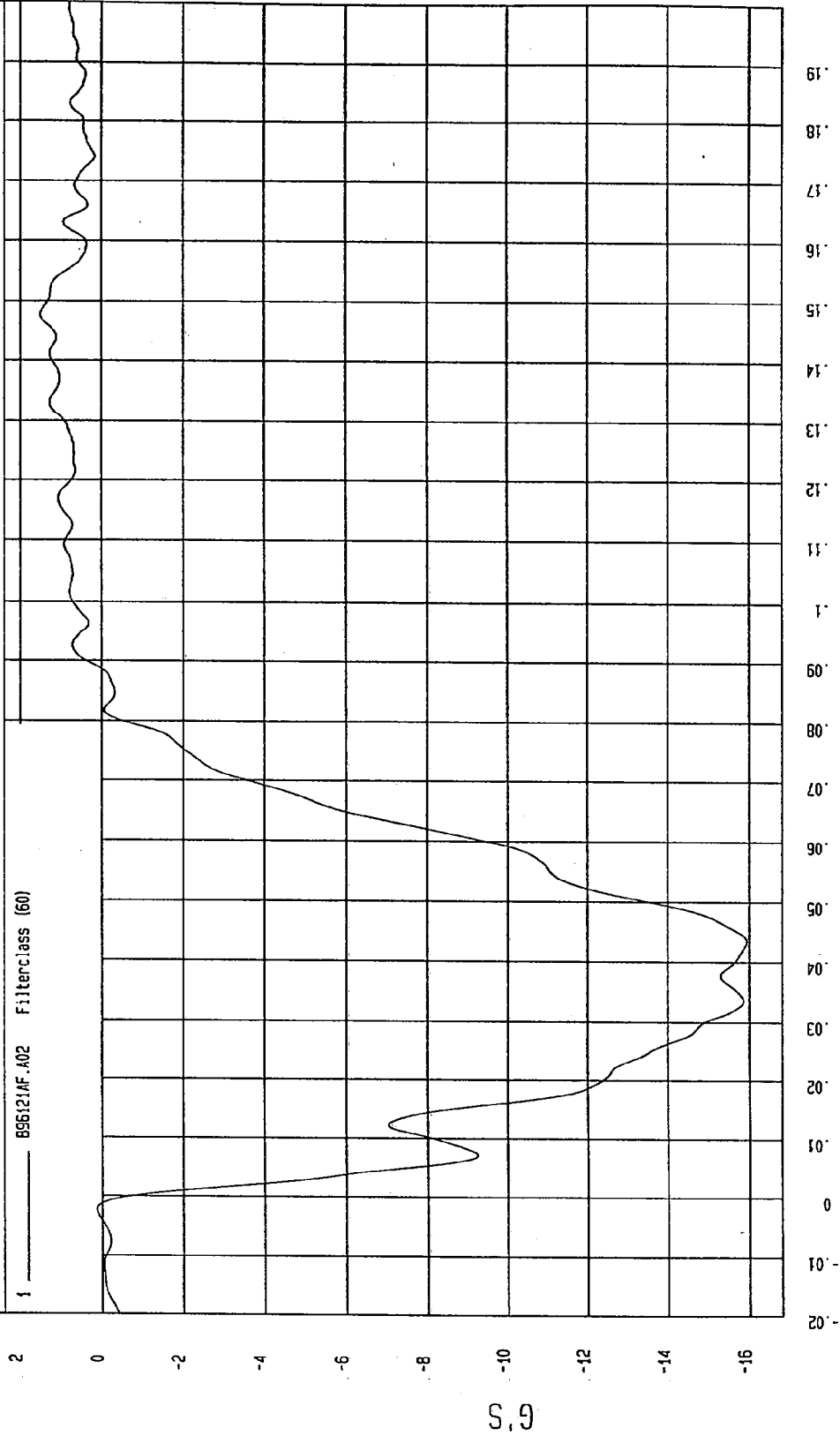
TEST: FMVSS 214 SIDE IMPACT TEST DATE: 11-13-1996

COMPONENT: 1997 PONTIAC GRAND AM (CV0107) Speed: 33.2 MPH 53.4 KPH

YMIN=-15.93661 G'S at 43. msec YMAX= 1.525235 G'S at 147 msec

MOVING BARRIER CG X ACCELERATION

1 _____ 896121AF.A02 Filterclass (60)



MCA Research
12-10-1996 16:36

TEST: FMVSS 214 SIDE IMPACT

TEST DATE: 11-13-1996

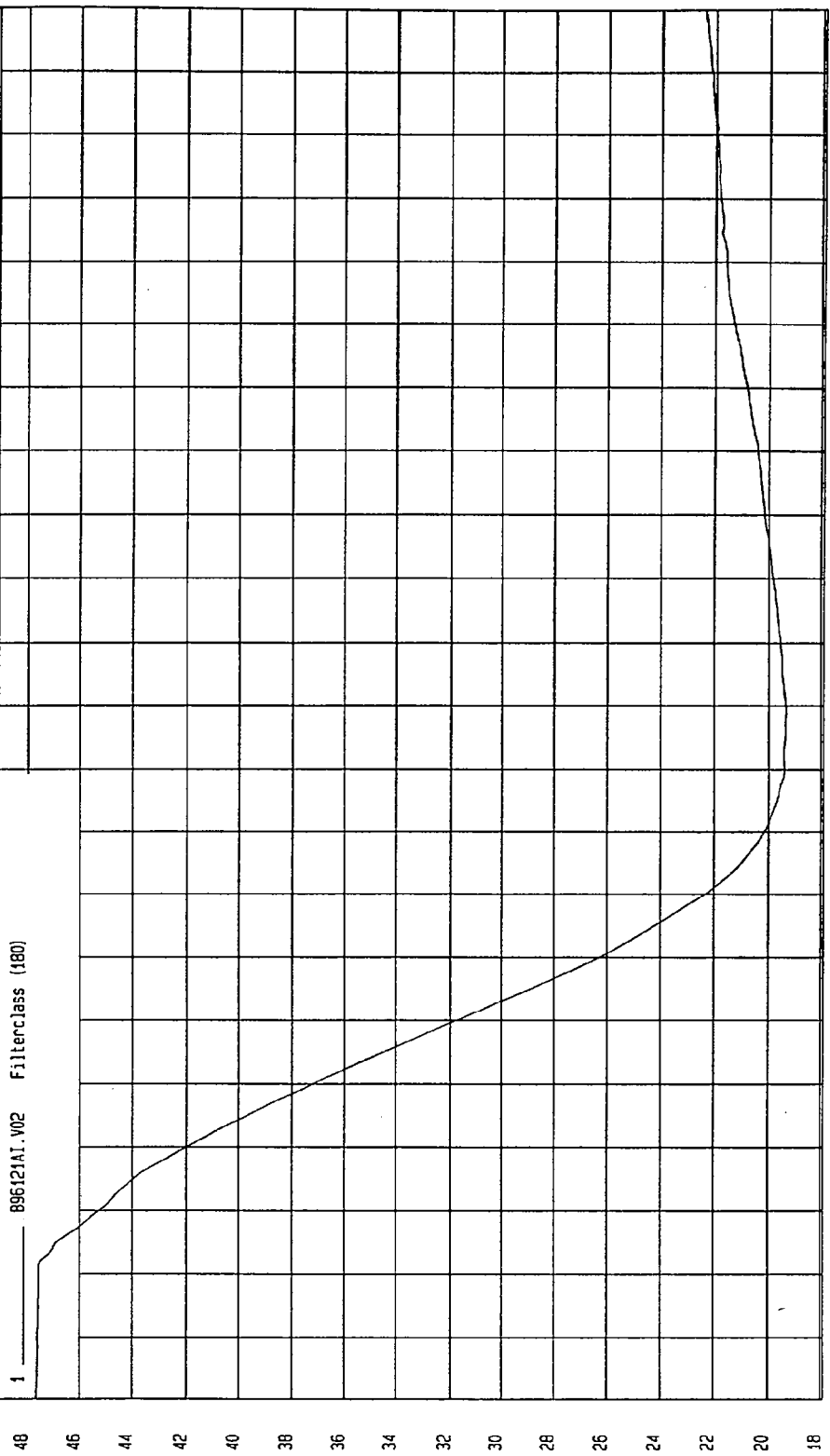
COMPONENT: 1997 PONTIAC GRAND AM (CV0107) Speed: 33.2 MPH 53.4 KPH

YMIN= 19.32494 KPH at 89. msec

YMAX= 47.67 KPH at -20 msec

MOVING BARRIER CG X VELOCITY

1 896121A1.V02 Filterclass (180)



TIME Seconds

NSA Research
12-10-1996 16:41

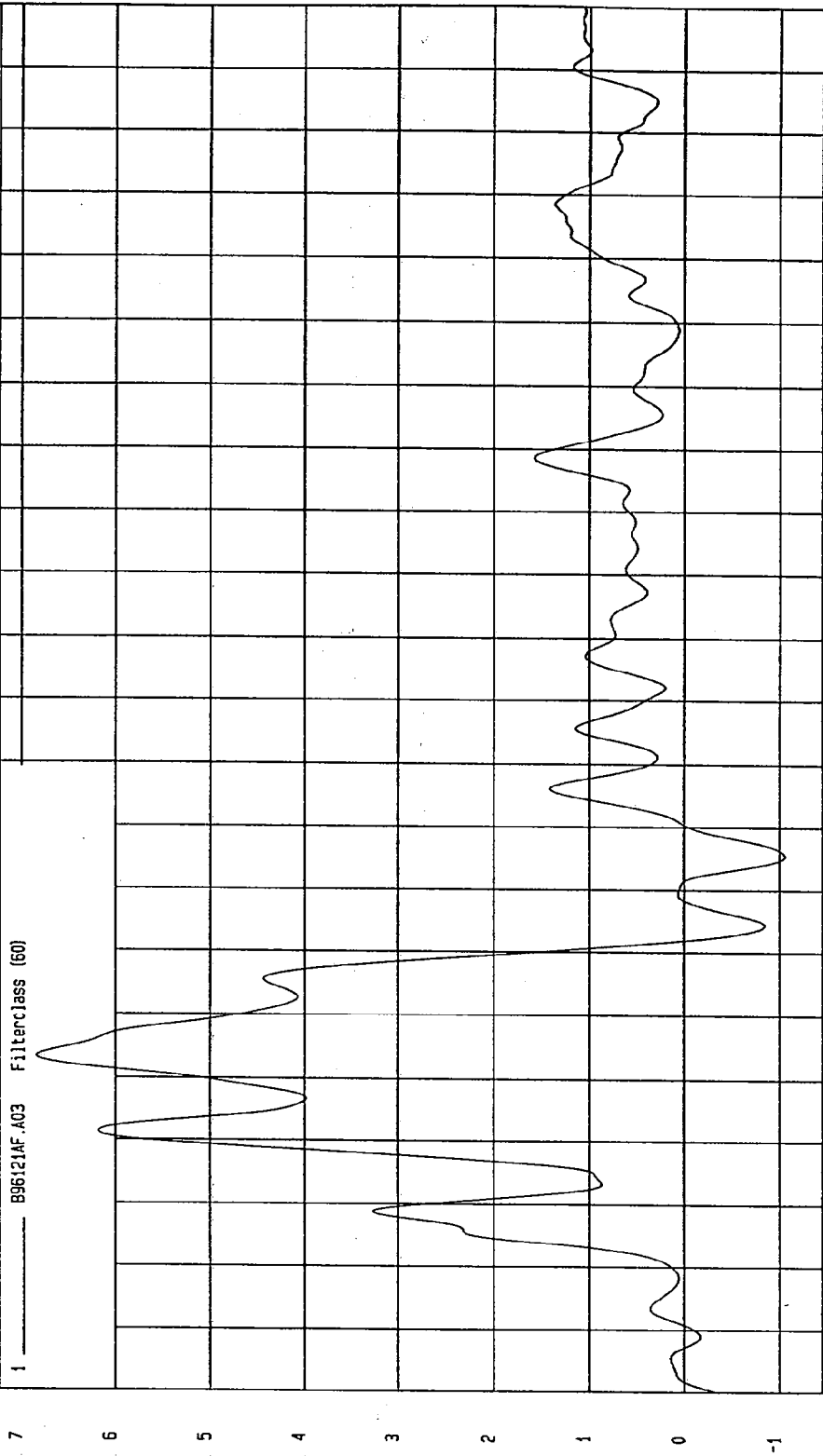
TEST: FMVSS 214 SIDE IMPACT TEST DATE: 11-13-1996

COMPONENT: 1997 PONTIAC GRAND AM (CV0107) Speed: 33.2 MPH 53.4 KPH

YMIN=-1.057858 G'S at 65. msec YMAX= 6.843545 G'S at 33. msec

MOVING BARRIER CG Y ACCELERATION

1 B96121AF.A03 FilterClass (60)



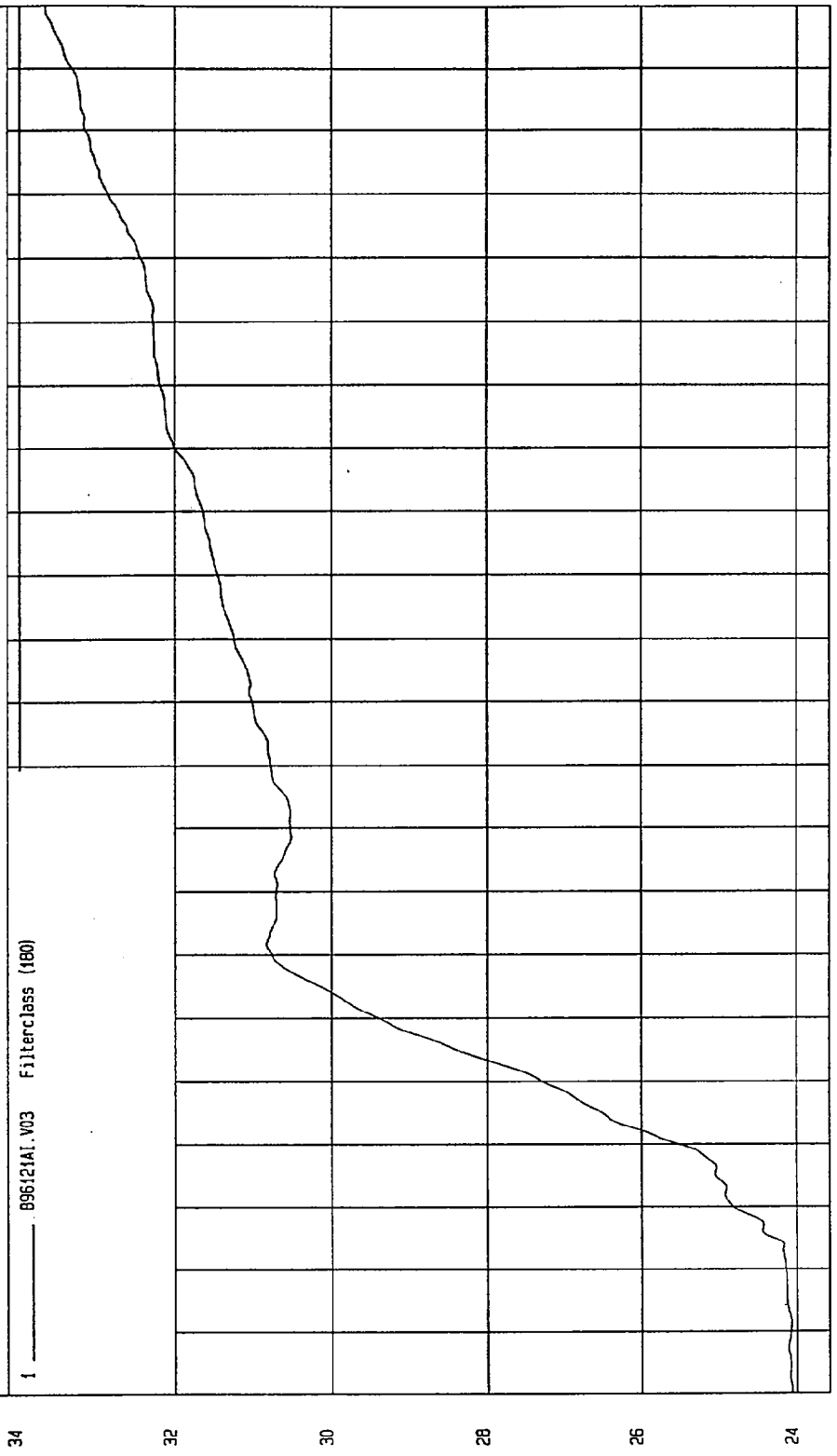
MCA Research
12-10-1996 18:38

TEST: FMVSS 214 SIDE IMPACT TEST DATE: 11-13-1996
 COMPONENT: 1997 PONTIAC GRAND AM (CV0107) Speed: 33.2 MPH 53.4 KPH

YMIN= 24.06369 KPH at -19. msec YMAX= 33.68018 KPH at 199 msec

MOVING BARRIER CG Y VELOCITY

1 _____ 896121A1.V03 Filterclass (180)



TIME Seconds
 MCA Research
 12-10-1996 16:41

TEST DATE: 11-13-1996

TEST: FMVSS 214 SIDE IMPACT

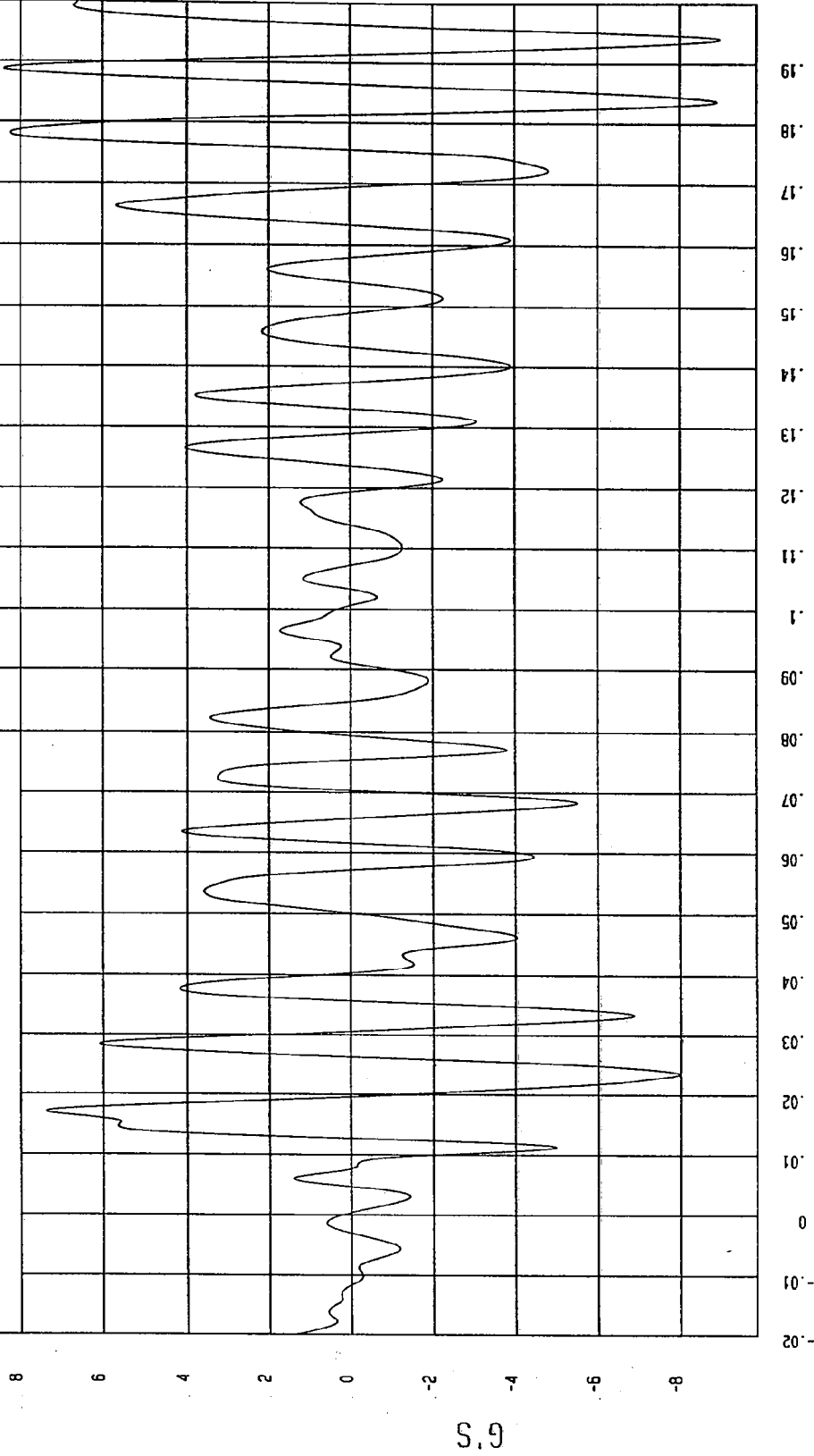
COMPONENT: 1997 PONTIAC GRAND AM (CV0107) Speed: 33.2 MPH 53.4 KPH

YMIN=-8.941165 G'S at 194 msec

YMAX= 8.391088 G'S at 188 msec

MOVING BARRIER CG Z ACCELERATION

1 896121AF.A04 Filter: class (60)



MECA Research Corp
12-10-1996 16:38

TEST DATE: 11-13-1996

TEST: FMVSS 214 SIDE IMPACT

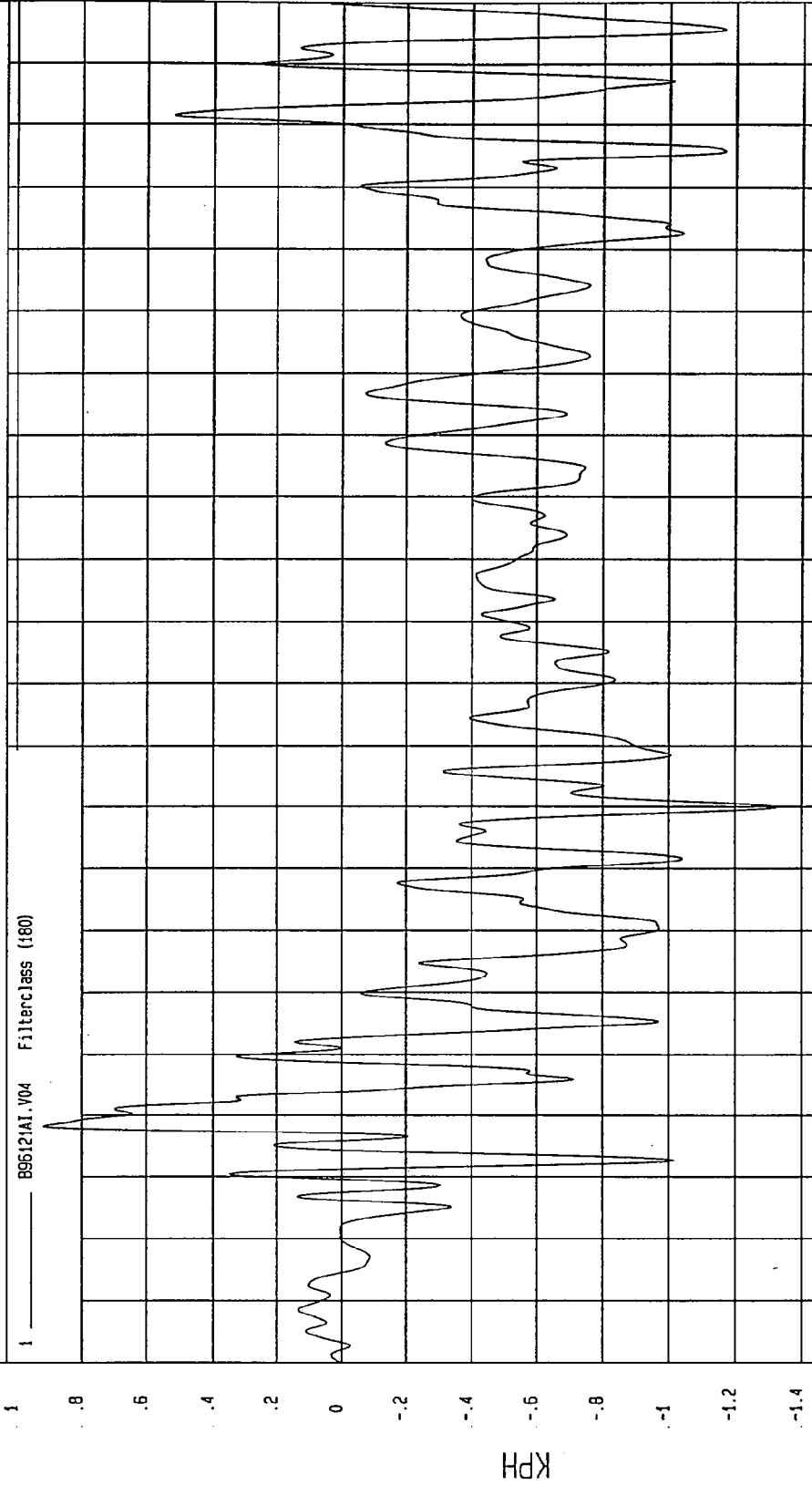
Speed: 33.2 MPH 53.4 KPH

COMPONENT: 1997 PONTIAC GRAND AM (CV0107)

YMAX= .9188708 KPH at 18. msec

YMIN=-1.325251 KPH at 69. msec

MOVING BARRIER CG Z VELOCITY



TIME Seconds

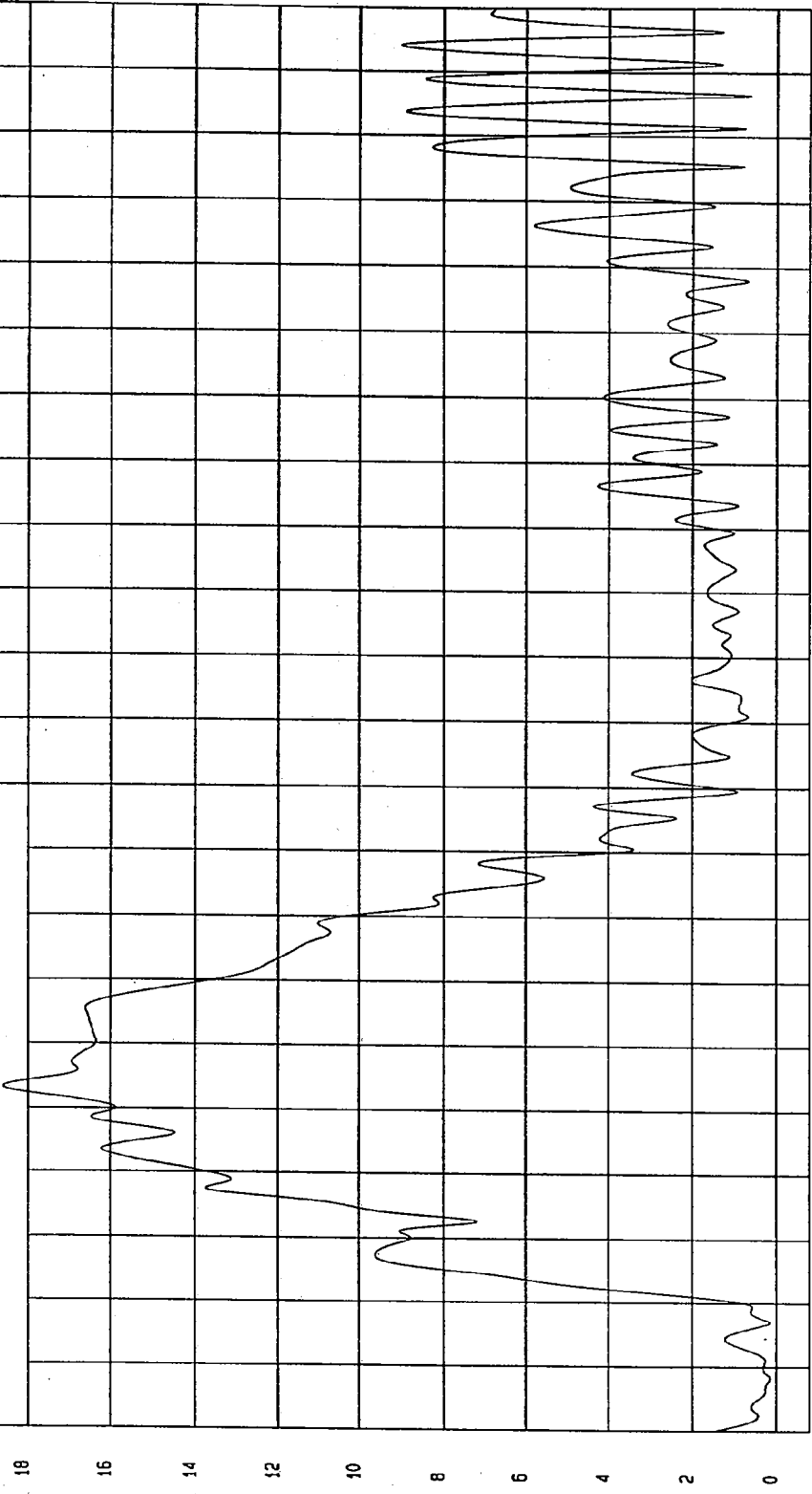
NCA Research
12-10-1996 16: 41

TEST: FMVSS 214 SIDE IMPACT
TEST DATE: 11-13-1996
COMPONENT: 1997 PONTIAC GRAND AM (CV0107)
Speed: 33.2 MPH 53.4 KPH

YMIN= .140524 G'S at -3.1 msec
YMAX= 18.98263 G'S at 33. msec

MOVING BARRIER CG RESULTANT ACCELERATION

1 896121AV.A02 Filterclass (60)



MCA Research
12-10-1996 16:52

TEST DATE: 11-13-1996

TEST: FMVSS 214 SIDE IMPACT

Speed: 33.2 MPH 53.4 KPH

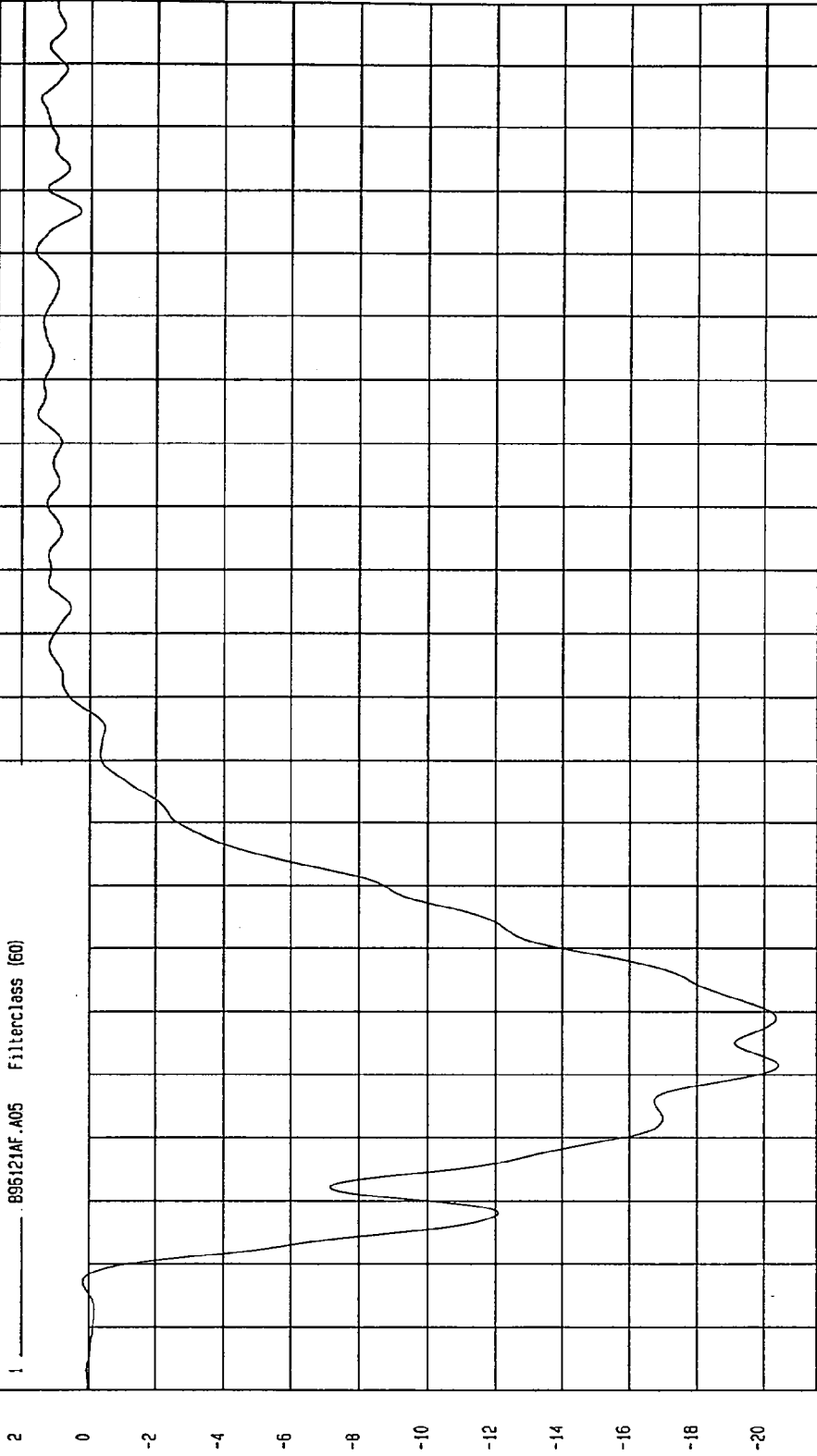
COMPONENT: 1997 PONTIAC GRAND AM (CV0107)

YMIN=-20.43608 G'S at 31. msec

YMAX= 1.621343 G'S at 160 msec

MOVING BARRIER REAR AXLE X ACCELERATION

1 896121AF.A05 Filterclass (60)



MCA Research
12-10-1996 16:39

TEST DATE: 11-13-1996

TEST: FMVSS 214 SIDE IMPACT

Speed: 33.2 MPH 53.4 KPH

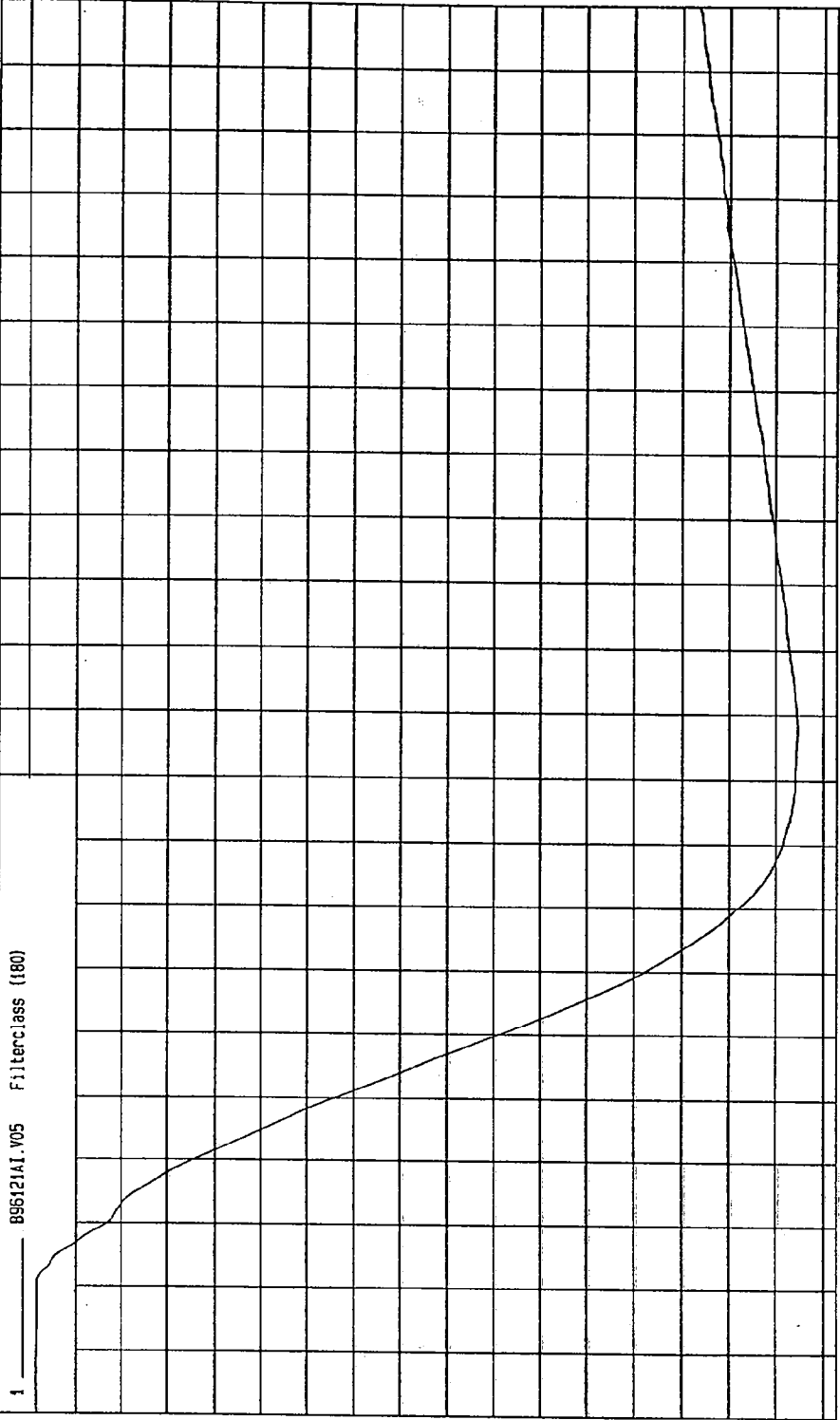
COMPONENT: 1997 PONTIAC GRAND AM (CV0107)

YMIN= 15.05079 KPH at 87. msec

YMAX= 47.68156 KPH at -15. msec

MOVING BARRIER REAR AXLE X VELOCITY

1 ——— 896121A1.V05 Filterclass (180)



MPA Research
12-10-1996 16:41

TIME Seconds

TEST DATE: 11-13-1996

TEST: FMVSS 214 SIDE IMPACT

Speed: 33.2 MPH 53.4 KPH

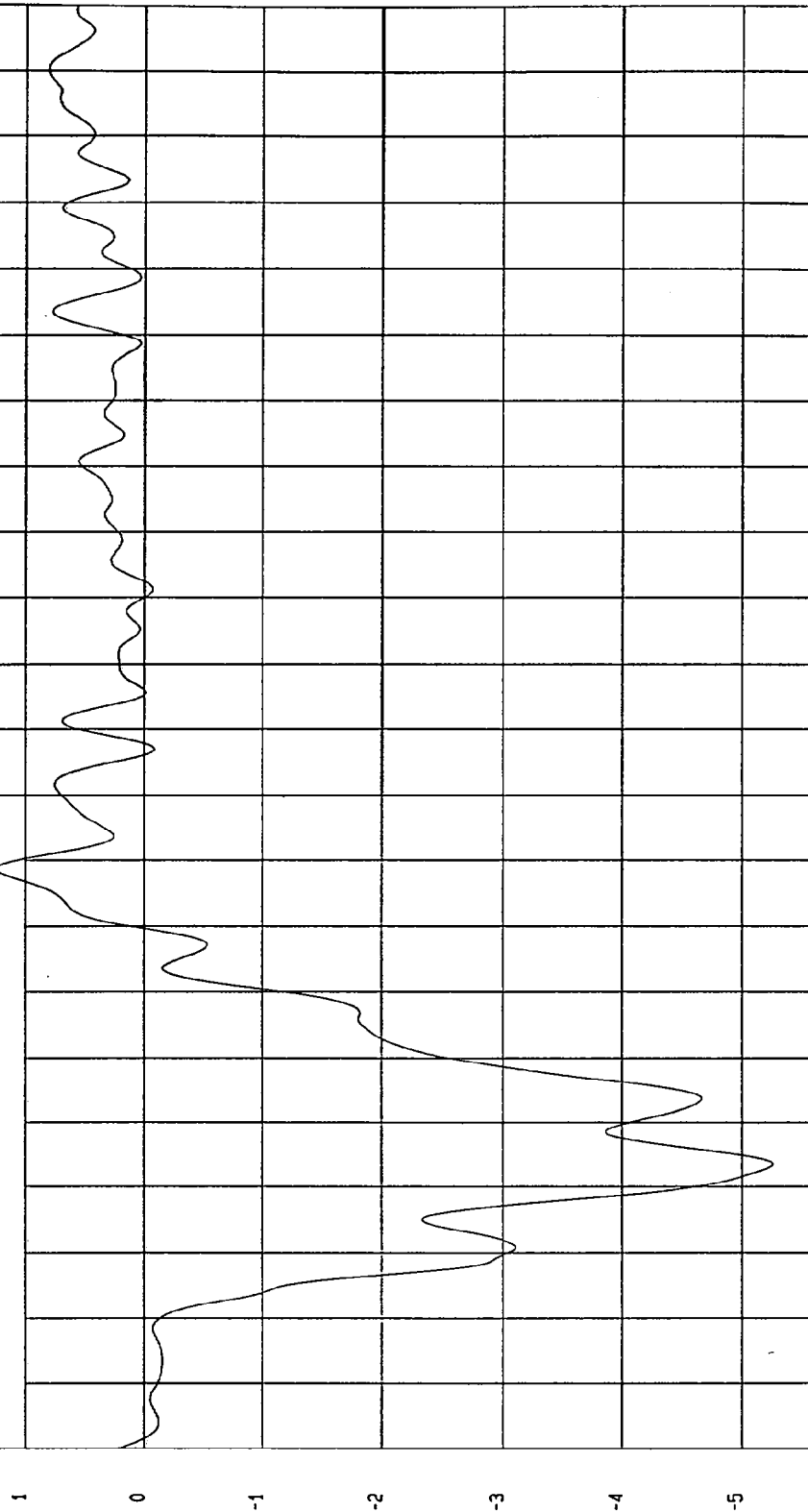
COMPONENT: 1997 PONTIAC GRAND AM (CV0107)

YMAX= 1.235089 G'S at 68. msec

YMIN= -5.260746 G'S at 23. msec

MOVING BARRIER REAR AXLE Y ACCELERATION

1 B96121AF.A06 FilterClass (60)



TIME (SECONDS)

NGA Research
12-10-1996 16:39

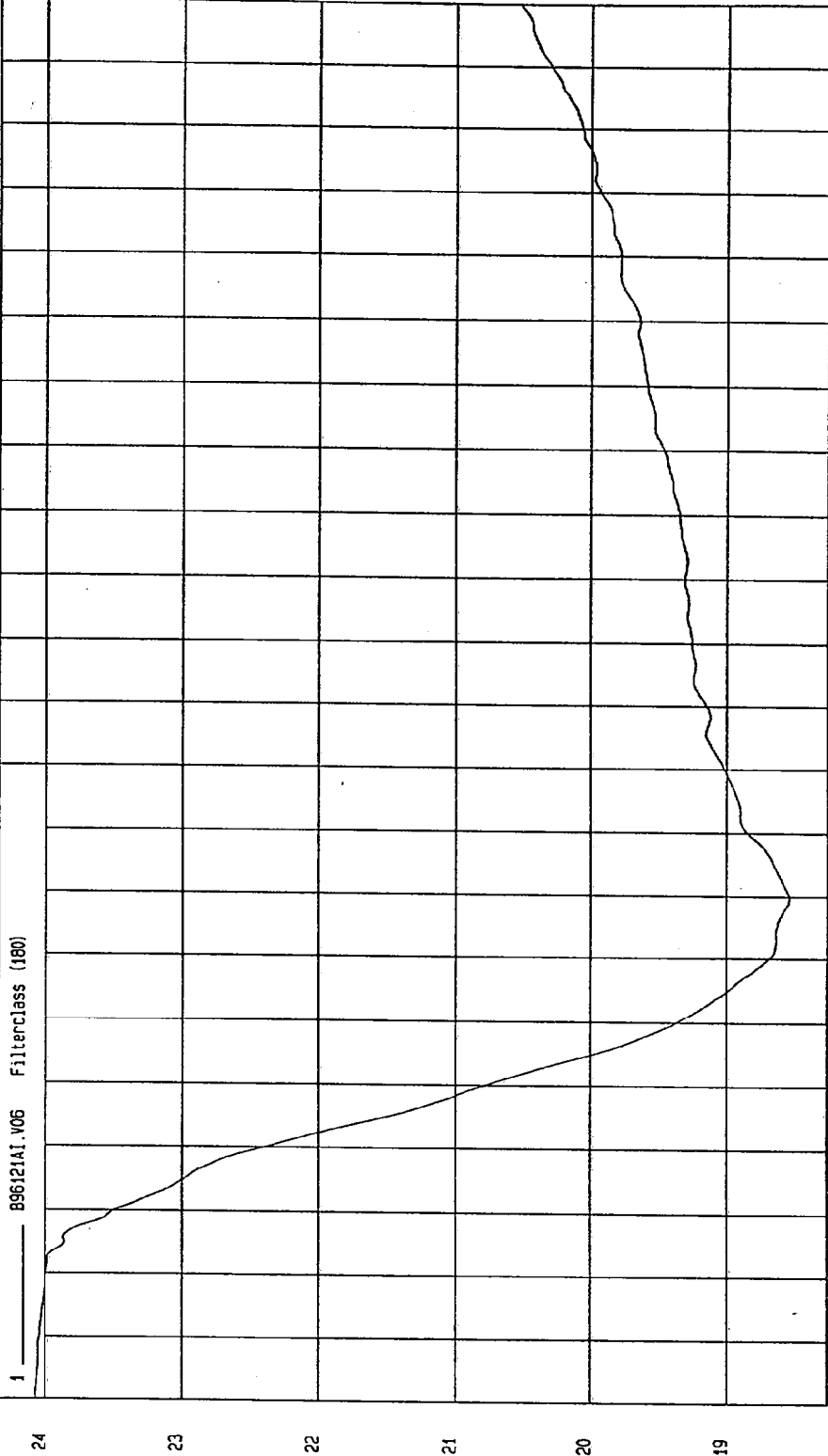
TEST: FMVSS 214 SIDE IMPACT TEST DATE: 11-13-1996

COMPONENT: 1997 PONTIAC GRAND AM (CV0107) Speed: 33.2 MPH 53.4 KPH

YMIN= 18.54158 KPH at 59. msec YMAX= 24.07168 KPH at -19. msec

MOVING BARRIER REAR AXLE Y VELOCITY

1 896121A1.V06 FilterClass (180)



TIME Seconds
MOA Research
12-10-1996 16: 41

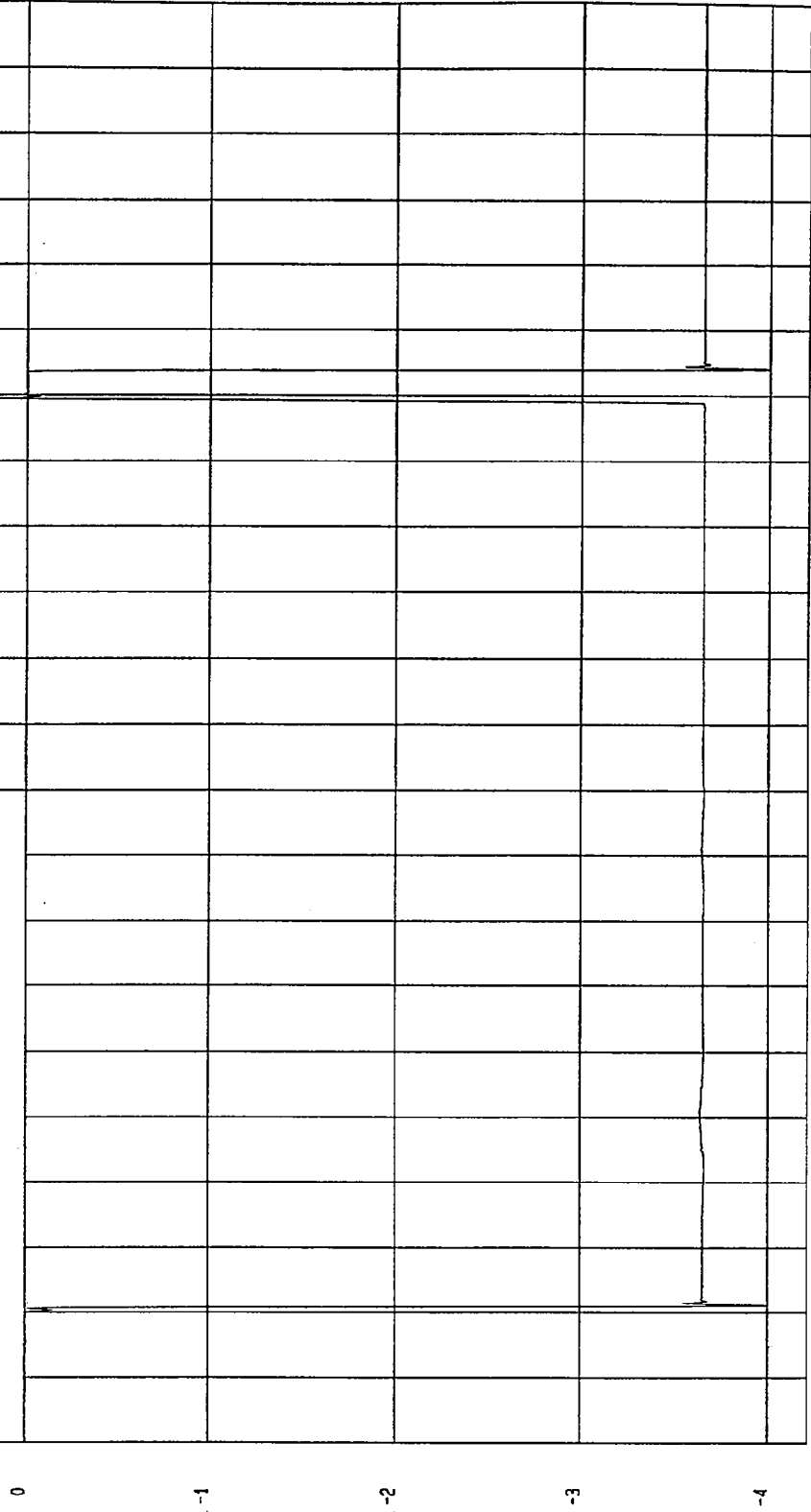
TEST: FMVSS 214 SIDE IMPACT TEST DATE: 11-13-1996

COMPONENT: 1997 PONTIAC GRAND AM (CV0107) Speed: 33.2 MPH 53.4 KPH

YMIN=-4.005277 VOLTS at 1.1 msec YMAX= .1597619 VOLTS at 139 msec

LEFT BARRIER CONTACT

1 _____ 89612101.071 Filterclass (1000)



MGA Research
12-10-1996 16.39

TEST DATE: 11-13-1996

TEST: FMVSS 214 SIDE IMPACT

Speed: 33.2 MPH 53.4 KPH

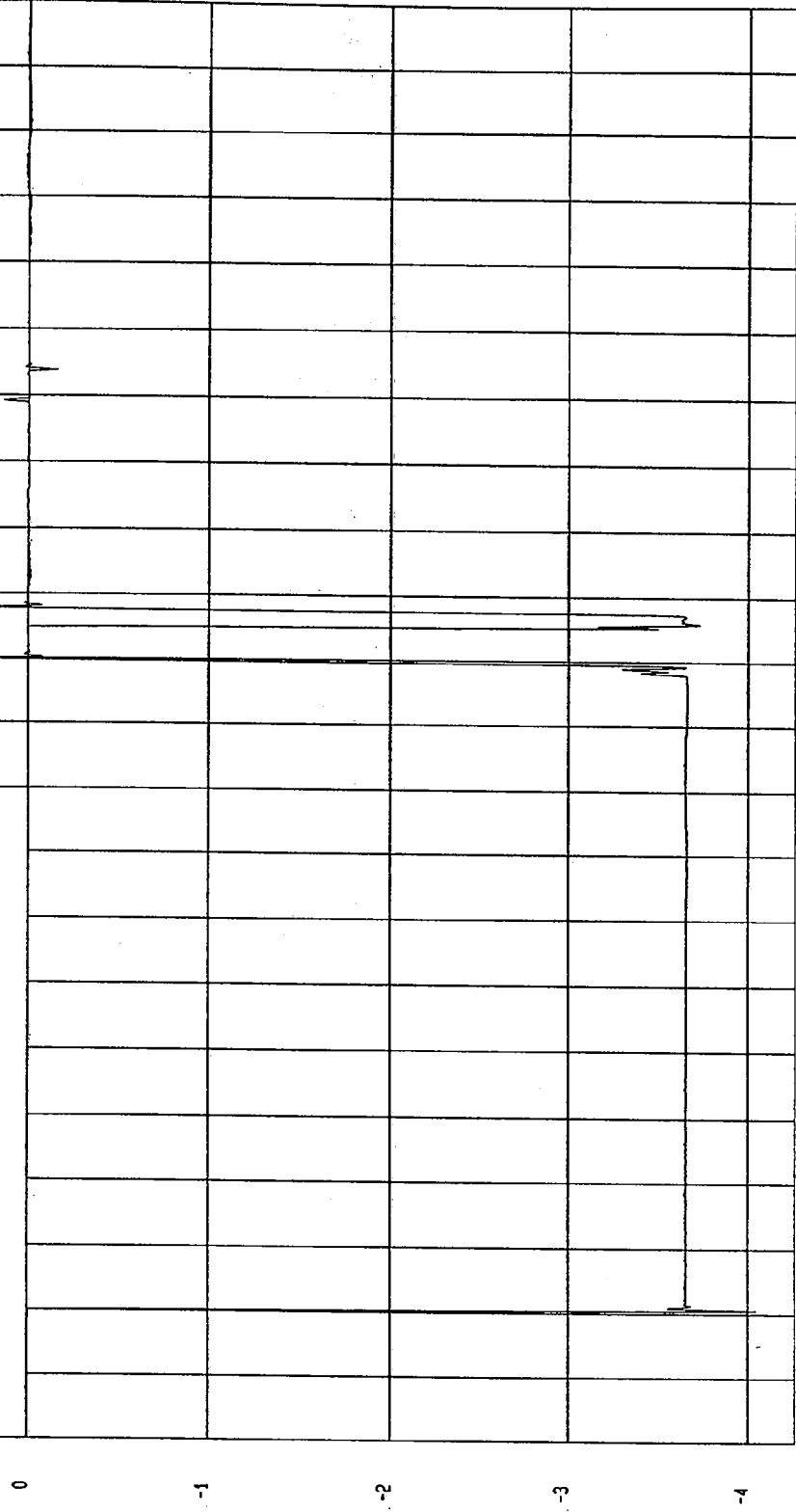
COMPONENT: 1997 PONTIAC GRAND AM (CV0107)

YMAX = .2303941 VOLTS at 107 msec

YMIN = -4.049391 VOLTS at .5 msec

RIGHT BARRIER CONTACT

1 8961210T.072 FilterClass (1000)



MGA Research
12-10-1996 16:39

TEST DATE: 11-13-1996

TEST: FMVSS 214 SIDE IMPACT

Speed: 33.2 MPH 53.4 KPH

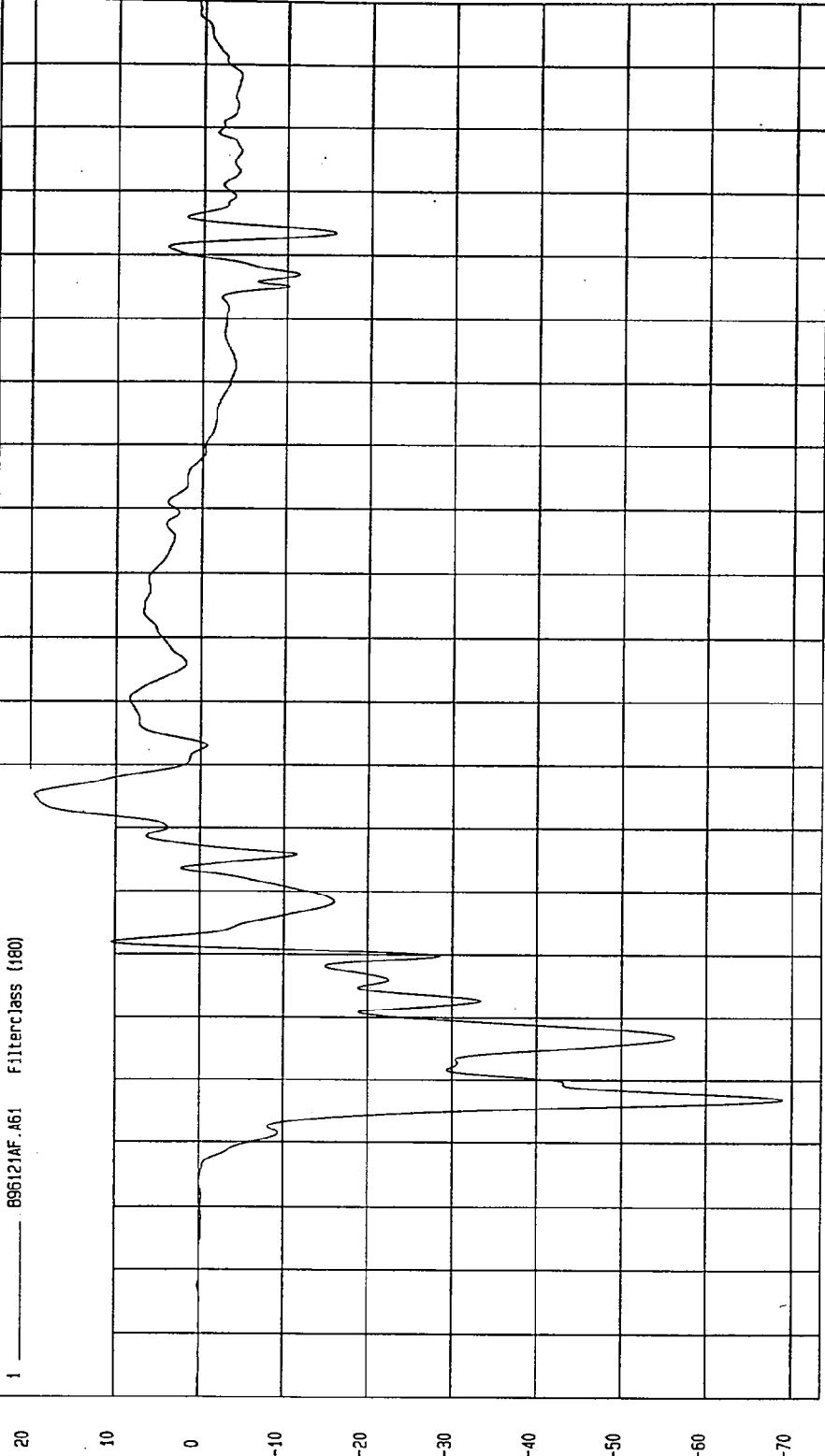
COMPONENT: 1997 PONTIAC GRAND AM (CV0107)

YMAX= 19.5546 G'S at 75. msec

YMIN= -68.96124 G'S at 27 msec

FRONT PASSENGER UPPER RIB Y REDUNDANT ACCELERATION

1 ——— B96121AF.A61 F11terc1ass (180)



TIME (SECONDS)

MSA Research
12-10-1996 16: 11

TEST DATE: 11-13-1996

TEST: FMVSS 214 SIDE IMPACT

Speed: 33.2 MPH 53.4 KPH

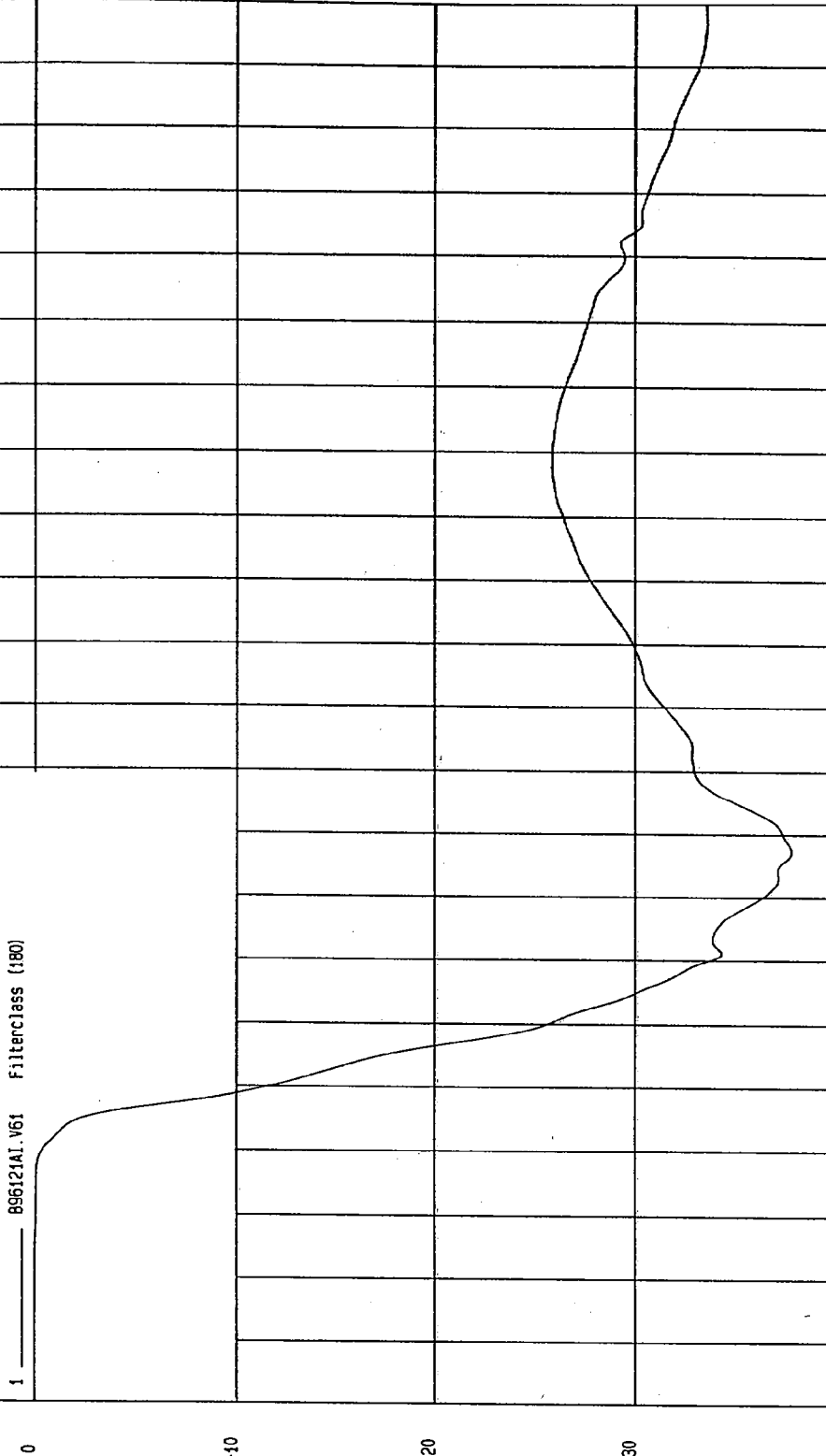
COMPONENT: 1997 PONTIAC GRAND AM (CV0107)

YMAX= 1.209971E-02 KPH at -16. msec

YMIN=-37.69477 KPH at 67. msec

FRONT PASSENGER UPPER RIB Y REDUNDANT VELOCITY

1 896121A1.V61 FilterClass (180)



TIME Seconds
MOA Research
12-10-1996 16:20

TEST DATE: 11-13-1996

TEST: FMVSS 214 SIDE IMPACT

Speed: 33.2 MPH 53.4 KPH

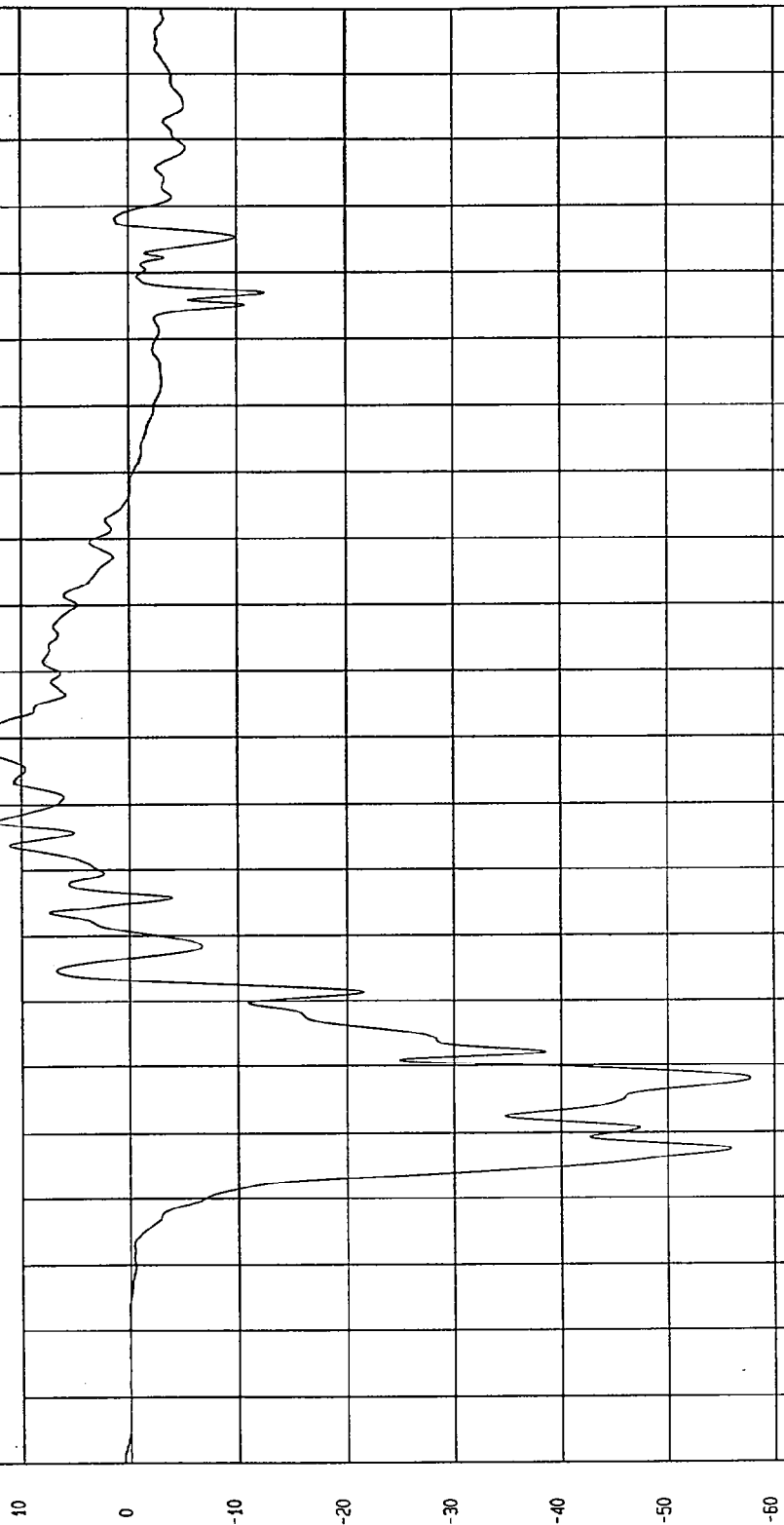
COMPONENT: 1997 PONTIAC GRAND AM (CV0107)

YMIN=-57.80576 G'S at 38 msec

YMAX= 14.78922 G'S at 89 msec

FRONT PASSENGER LOWER RIB Y REDUNDANT ACCELERATION

1 _____ B96121AF.A62 Filterclass (180)



NSA Research
12-10-1996 16.11

TIME (SECONDS)

S.G

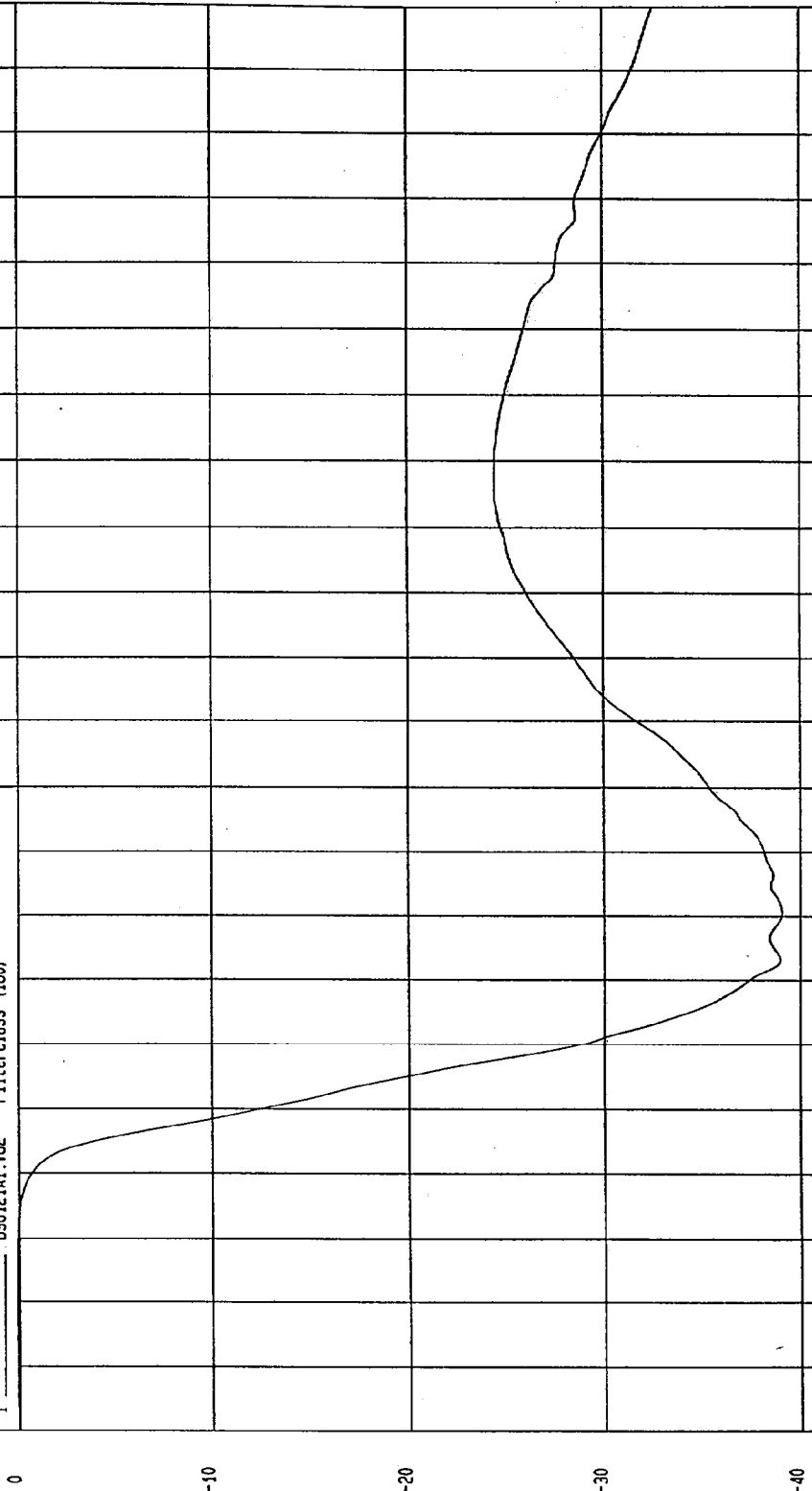
TEST: FMVSS 214 SIDE IMPACT TEST DATE: 11-13-1996

COMPONENT: 1997 PONTIAC GRAND AM (CV0107) Speed: 33.2 MPH 53.4 KPH

YMIN=-39.07451 KPH at 60. msec YMAX= .1069994 KPH at 4.5 msec

FRONT PASSENGER LOWER RIB Y REDUNDANT VELOCITY

1 896121A1.V62 Filterclass (f80)



NSA Research
12-10-1996 16:20

TIME Seconds

KPH

TEST DATE: 11-13-1996

TEST: FMVSS 214 SIDE IMPACT

Speed: 33.2 MPH 53.4 KPH

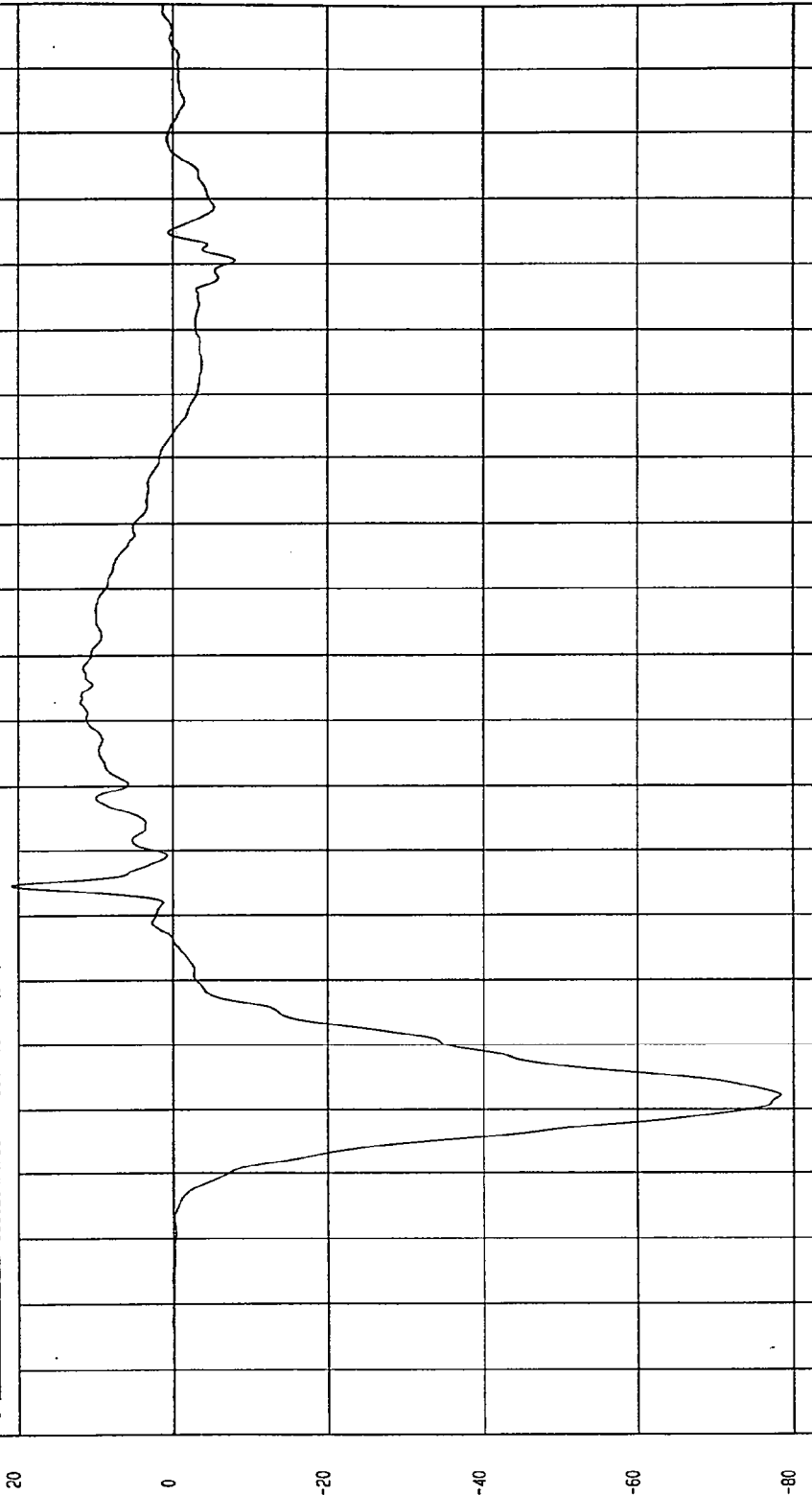
COMPONENT: 1997 PONTIAC GRAND AM (CV0107)

YMIN=-78.41087 G'S at 32. msec

YMAX= 20.88565 G'S at 64. msec

FRONT PASSENGER LOWER SPINE Y REDUNDANT ACCELERATION

1 896121AF.A63 Filterclass (180)



MGA Research
12-10-1996 16: 11

TIME (SECONDS)

G.S

TEST DATE: 11-13-1996

TEST: FMVSS 214 SIDE IMPACT

Speed: 33.2 MPH 53.4 KPH

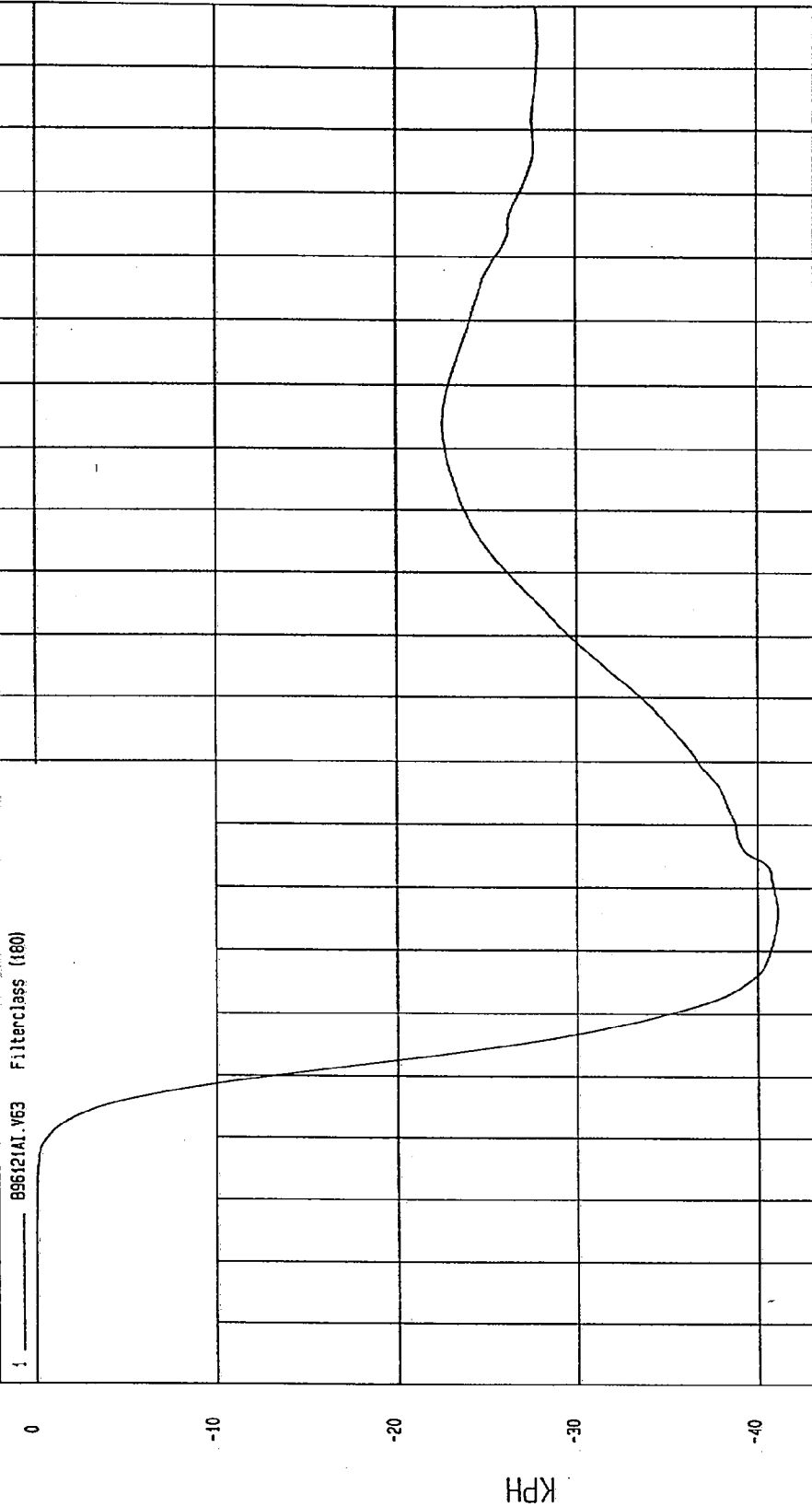
COMPONENT: 1997 PONTIAC GRAND AM (CV0107)

YMAX= 3.435906E-03 KPH at -12. msec

YMIN=-41.09764 KPH at 56. msec

FRONT PASSENGER LOWER SPINE Y REDUNDANT VELOCITY

1 ——— 896121A1.V63 Filterclass (160)



MOA Research
12-10-1996 16:20

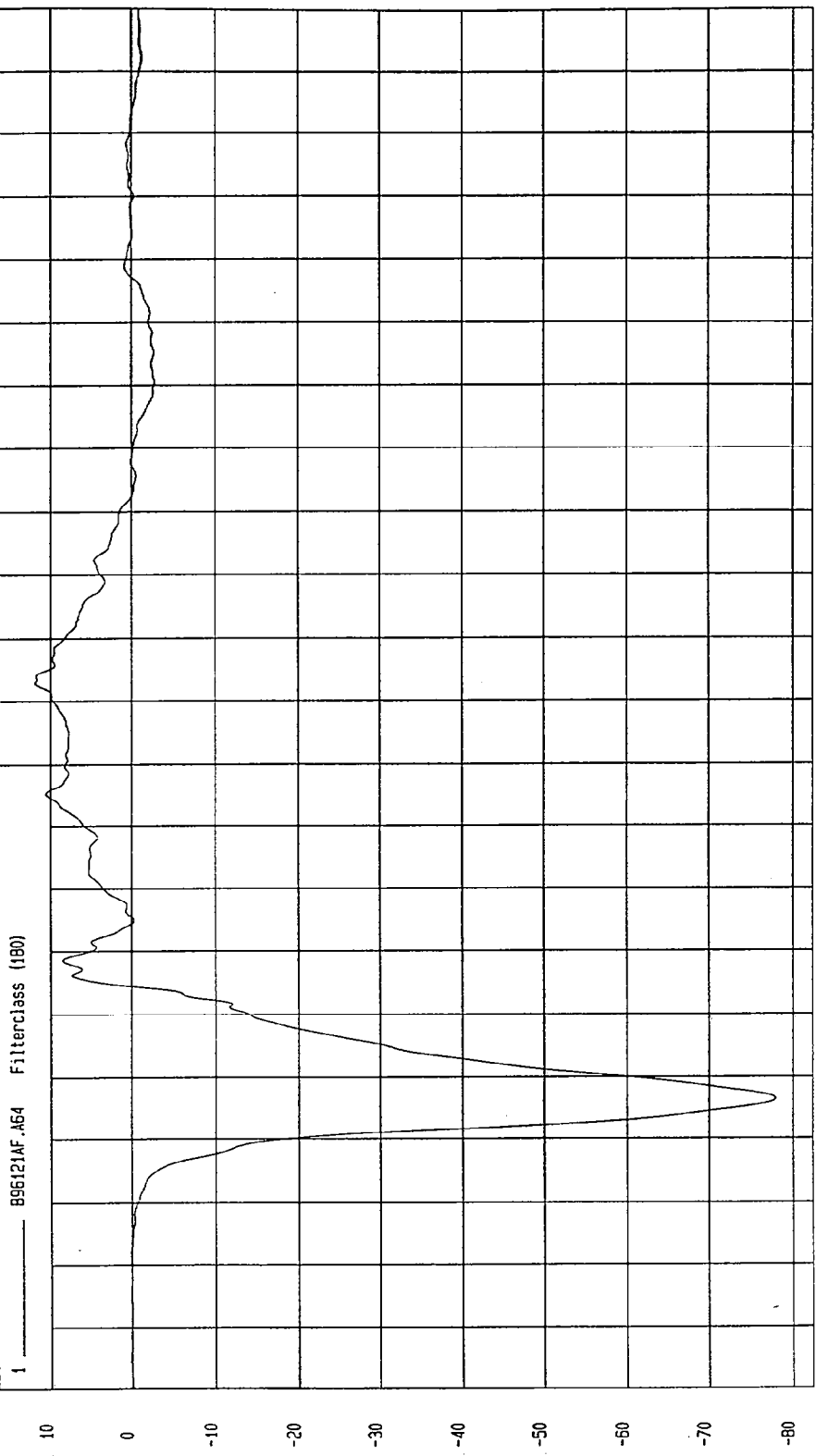
TIME Seconds

KPH

TEST: FMVSS 214 SIDE IMPACT TEST DATE: 11-13-1996
COMPONENT: 1997 PONTIAC GRAND AM (CV0107) Speed: 33.2 MPH 53.4 KPH

YMIN=-77.95963 G'S at 26. mSec YMAX= 11.83557 G'S at 92. mSec

FRONT PASSENGER PELVIS Y REDUNDANT ACCELERATION



TIME (SECONDS)

MCA Research
12-10-1996 16:12

TEST DATE: 11-13-1996

Speed: 33.2 MPH 53.4 KPH

TEST: FMVSS 214 SIDE IMPACT

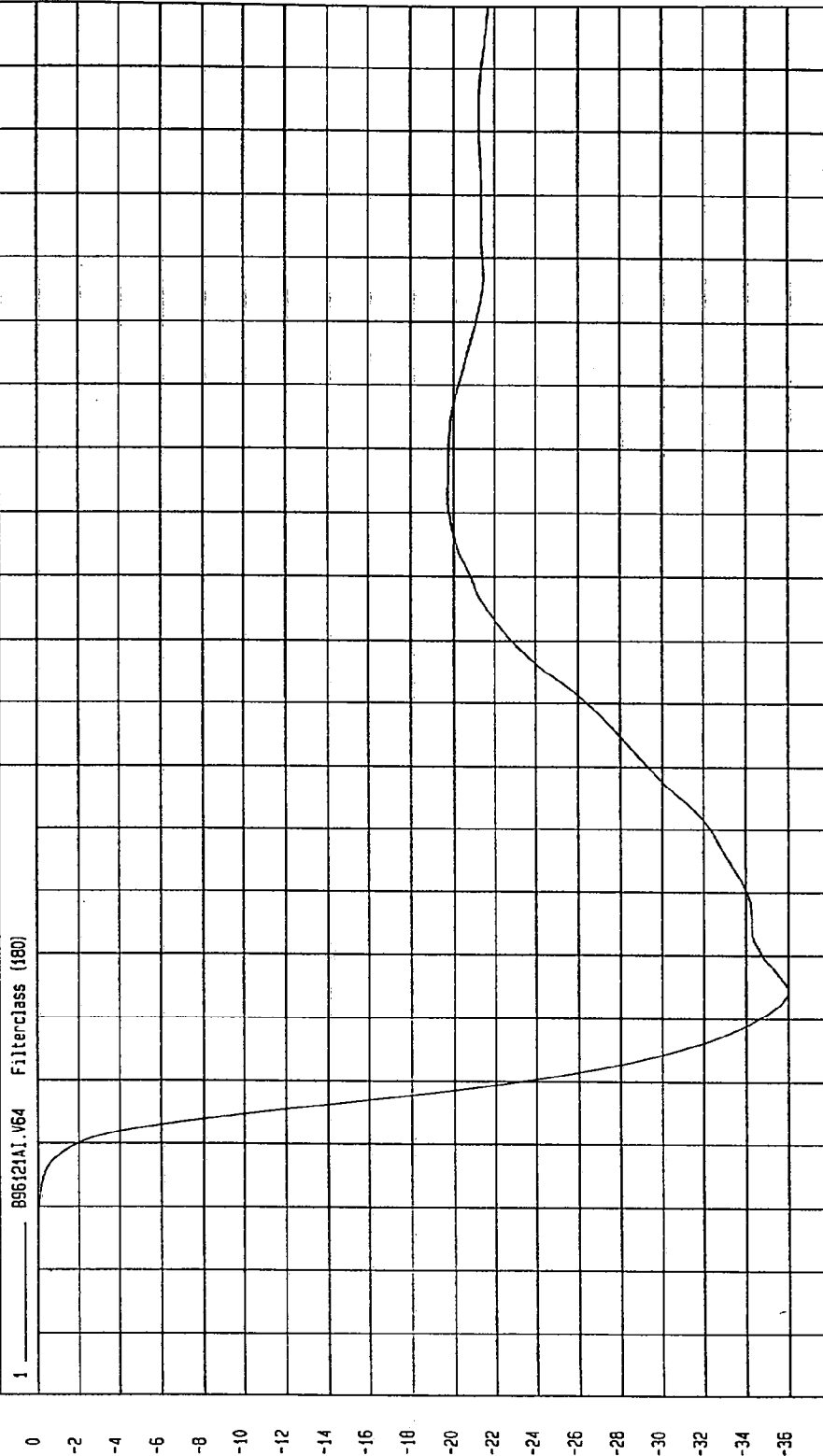
COMPONENT: 1997 PONTIAC GRAND AM (CV0107)

YMIN=-36.00053 KPH at 44. msec

YMAX= 1.469727E-02 KPH at 2.7 msec

FRONT PASSENGER PELVIS Y REDUNDANT VELOCITY

1 B96121A1.V64 Filterclass (180)



MGA Research
12-10-1996 16:20

TIME Seconds

KPH

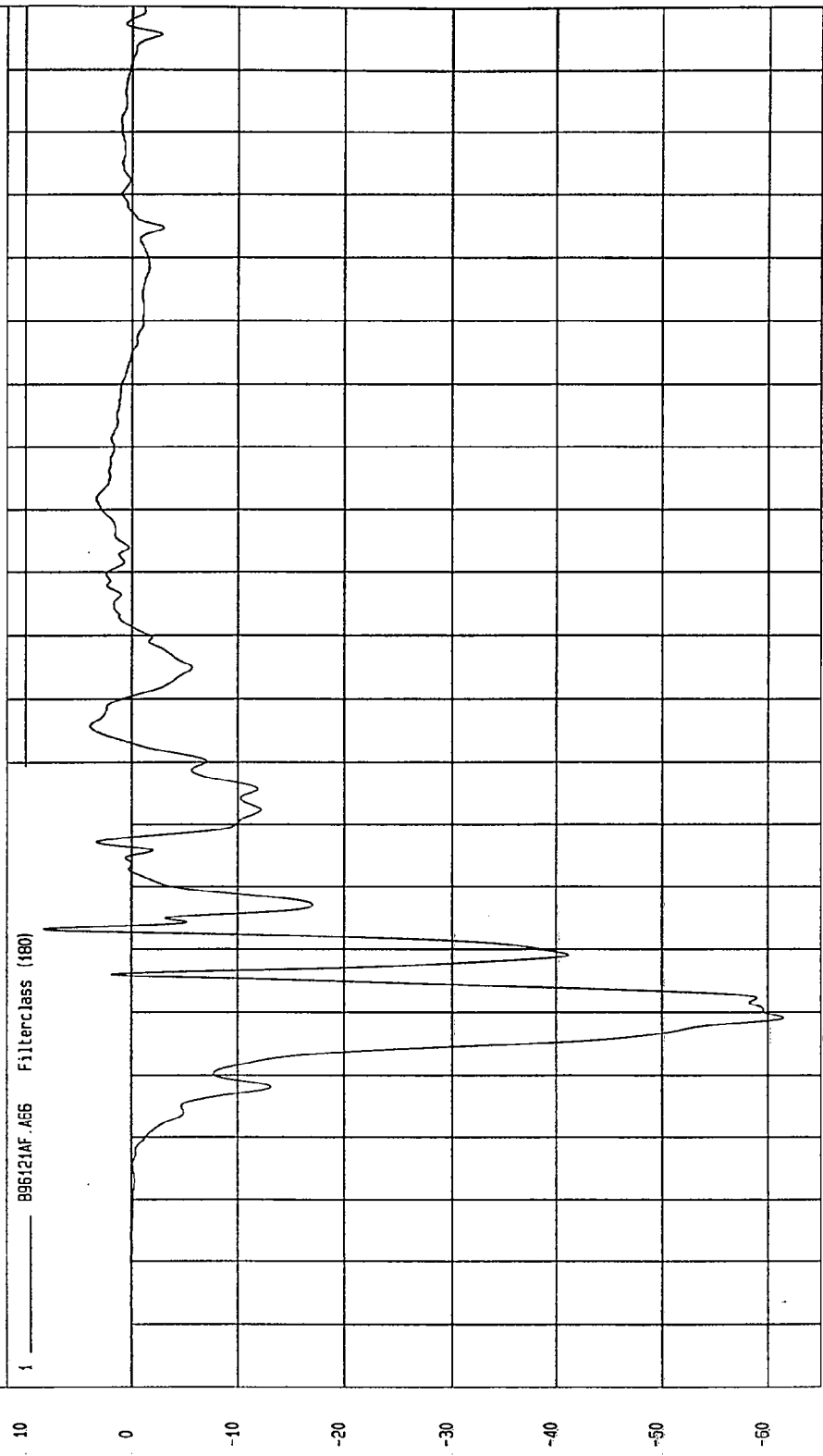
TEST: FMVSS 214 SIDE IMPACT TEST DATE: 11-13-1996

COMPONENT: 1997 PONTIAC GRAND AM (CV0107) Speed: 33.2 MPH 53.4 KPH

YMIN=-61.50374 G'S at 39. msec YMAX= 8.294198 G'S at 53. msec

REAR PASSENGER UPPER RIB Y REDUNDANT ACCELERATION

1 896121AF.A56 FilterClass (180)



TIME (SECONDS)

MCA Research
12-10-1996 16:42

TEST DATE: 11-13-1996

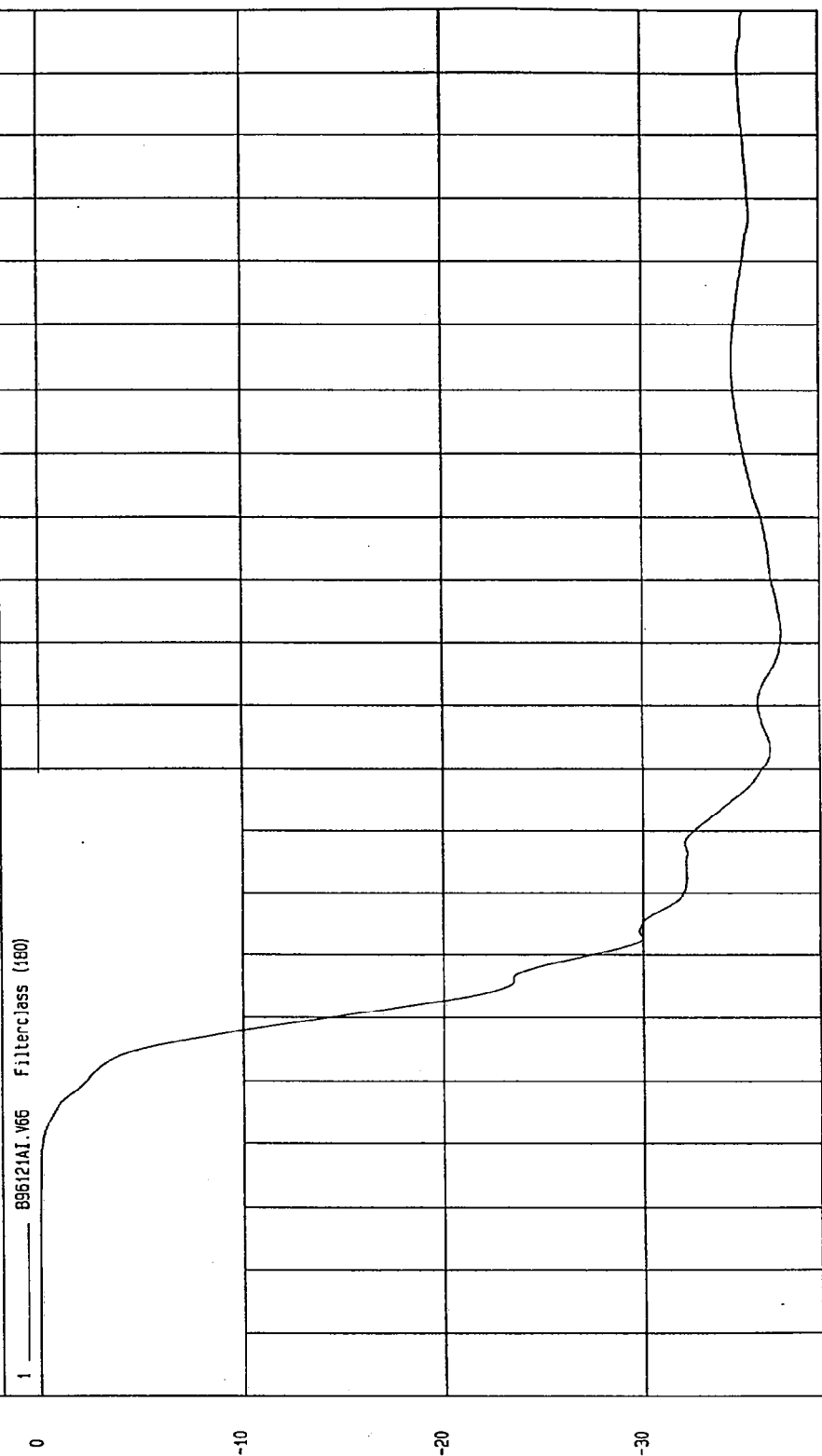
TEST: FMVSS 214 SIDE IMPACT

COMPONENT: 1997 PONTIAC GRAND AM (CV0107) Speed: 33.2 MPH 53.4 KPH

YMIN=-36.87146 KPH at 101 msec YMAX= 6.558417E-03 KPH at 4.9 msec

REAR PASSENGER UPPER RIB Y REDUNDANT VELOCITY

1 896121A1.166 Filterclass (180)



TIME Seconds
MSA Research
12-10-1996 16: 21

TEST DATE: 11-13-1996

TEST: FMVSS 214 SIDE IMPACT

Speed: 33.2 MPH 53.4 KPH

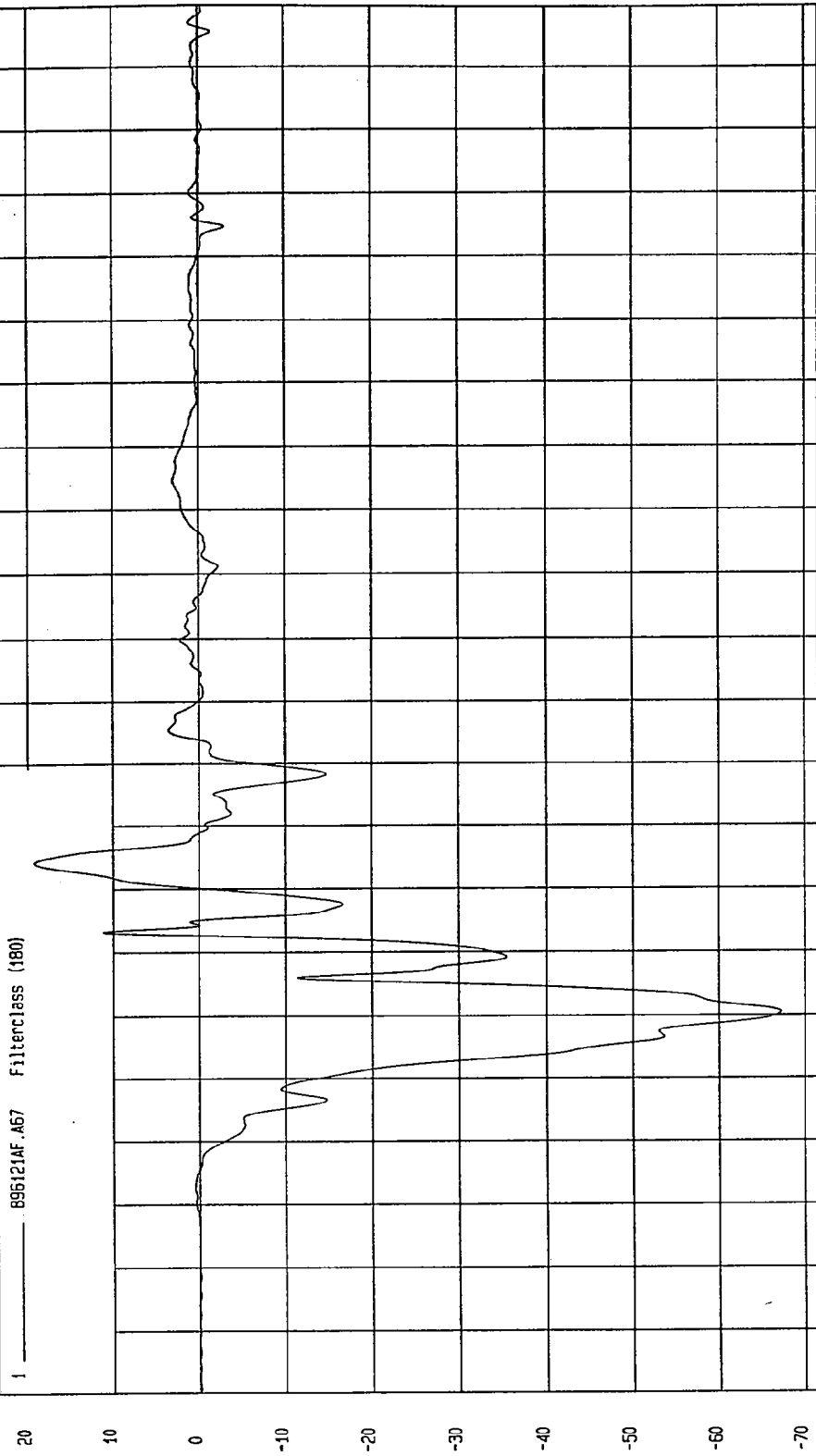
COMPONENT: 1997 PONTIAC GRAND AM (CV0107)

YMAX= 19.25508 G'S at 64. msec

YMIN=-67.21322 G'S at 40. msec

REAR PASSENGER LOWER RIB Y REDUNDANT ACCELERATION

896121AF.A67 Filterclass (180)



TIME (SECONDS)

MCA Research
12-10-1996 16.12

TEST DATE: 11-13-1996

TEST: FMVSS 214 SIDE IMPACT

Speed: 33.2 MPH 53.4 KPH

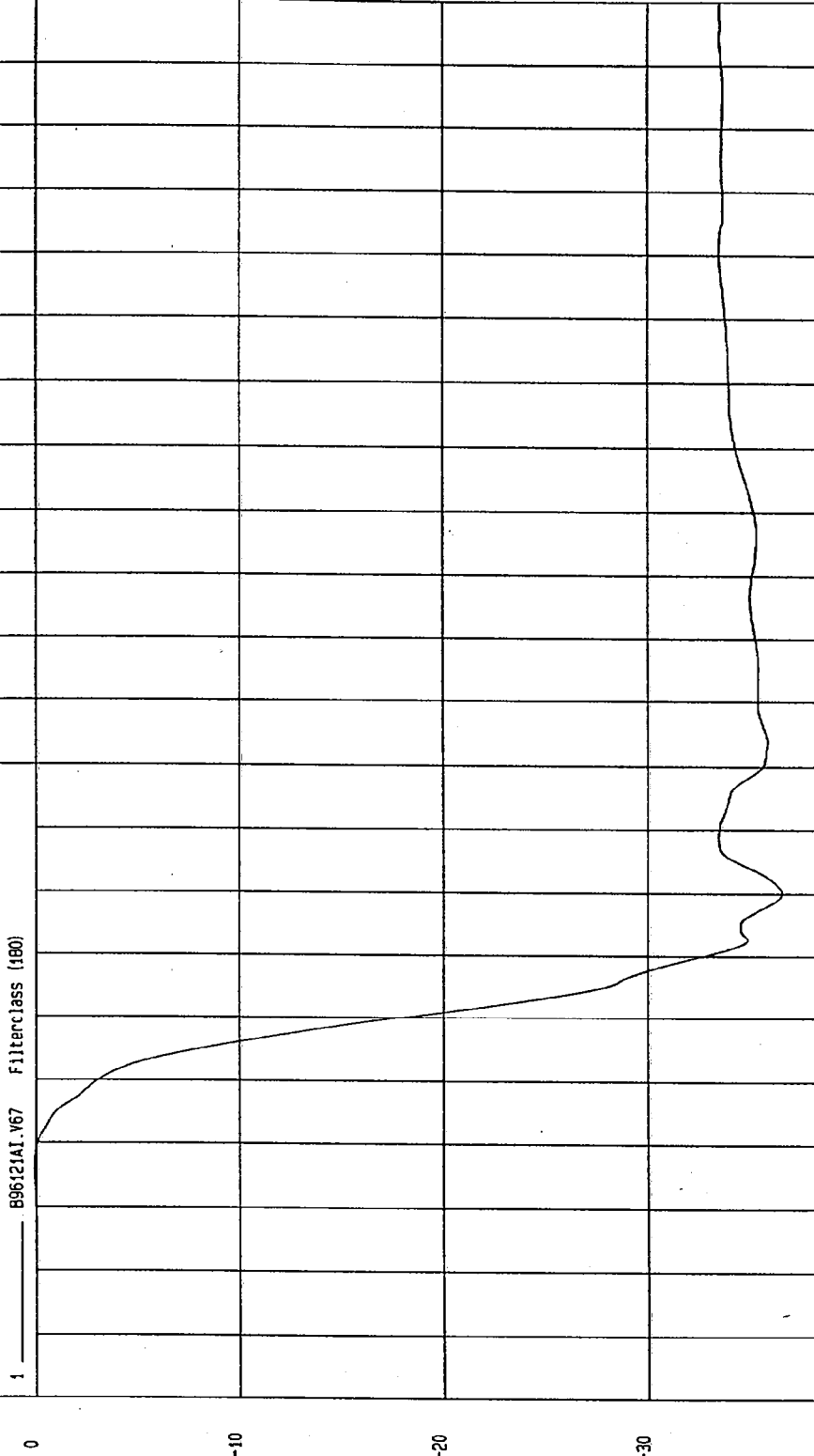
COMPONENT: 1997 PONTIAC GRAND AM (CV0107)

YMIN=-36.50675 KPH at 60. msec

YMAX= 8.873648E-02 KPH at 15. msec

REAR PASSENGER LOWER RIB Y REDUNDANT VELOCITY

1 896121A1.V67 FilterClass (180)



TIME Seconds

NSA Research
12-10-1996 16:21

TEST DATE: 11-13-1996

TEST: FMVSS 214 SIDE IMPACT

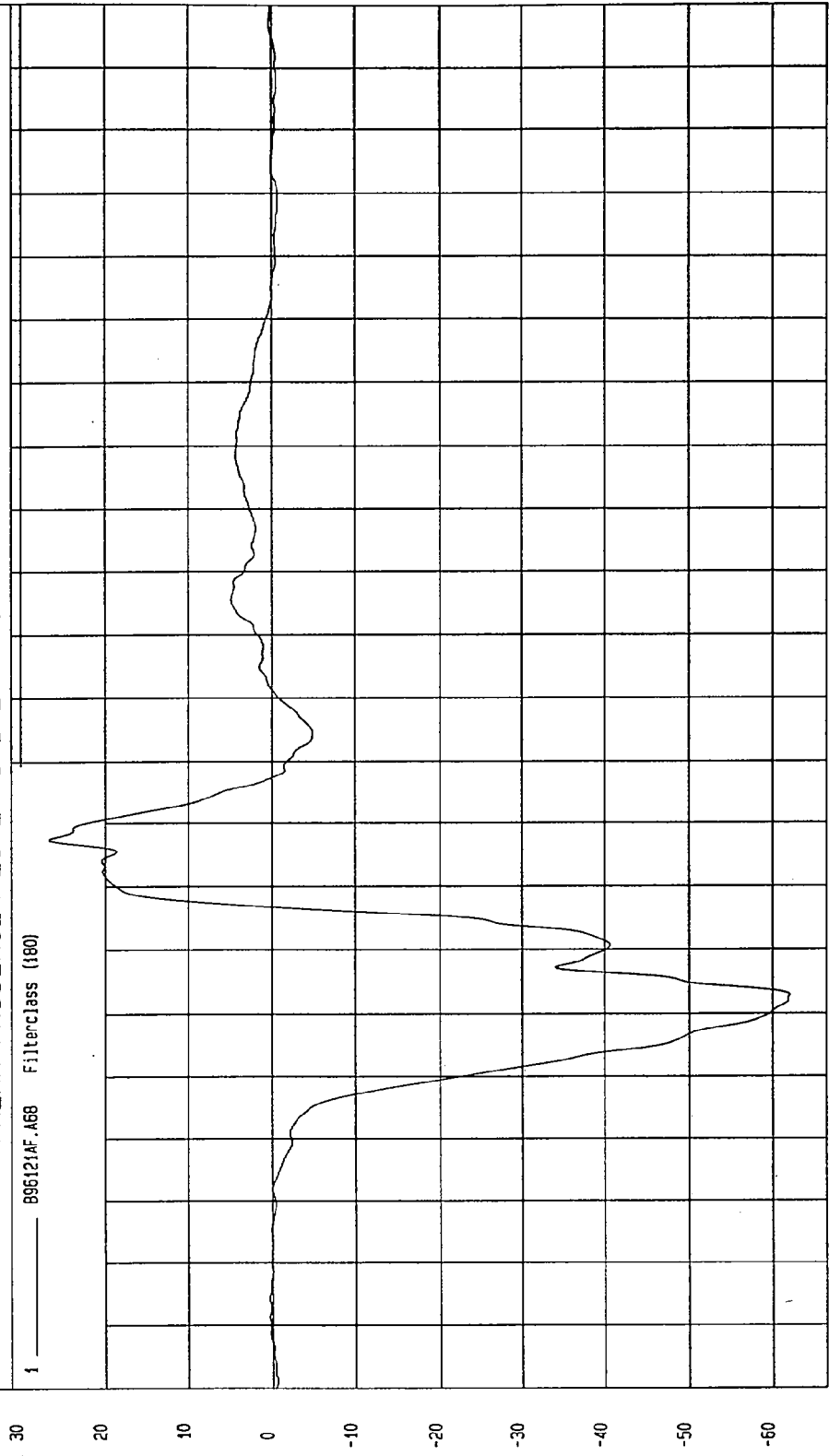
COMPONENT: 1997 PONTIAC GRAND AM (CV0107) Speed: 33.2 MPH 53.4 KPH

YMIN=-61.98195 G'S at 42. msec

YMAX= 26.70261 G'S at 67. msec

REAR PASSENGER LOWER SPINE Y REDUNDANT ACCELERATION

1 896121AF.A68 Filterclass (180)



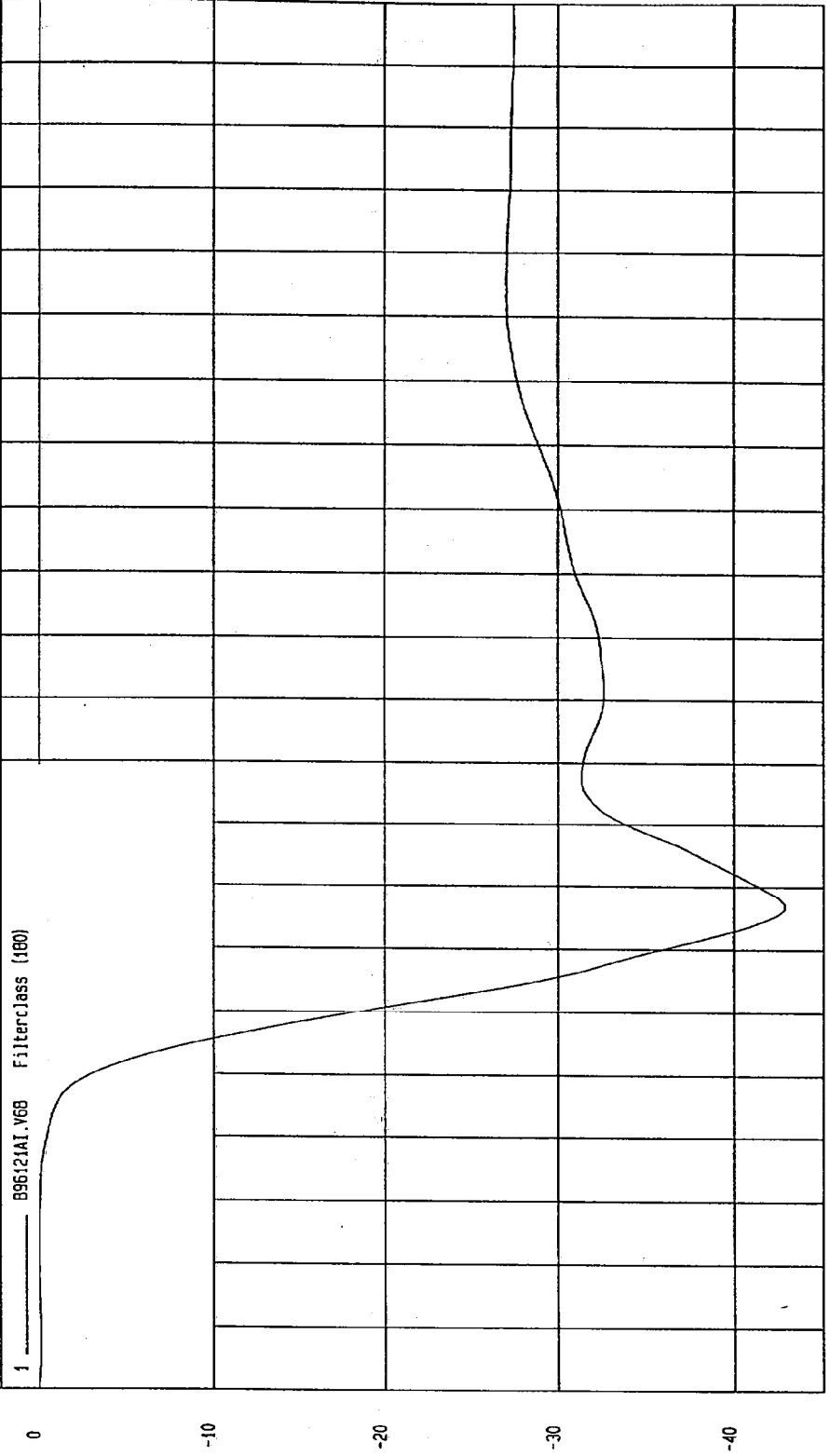
NGA Research
12-10-1996 16: 12

TEST: FMVSS 214 SIDE IMPACT TEST DATE: 11-13-1996
COMPONENT: 1997 PONTIAC GRAND AM (CV0107) Speed: 33.2 MPH 53.4 KPH

YMIN=-42.86973 KPH at 56. msec YMAX= 0 KPH at -20 msec

REAR PASSENGER LOWER SPINE Y REDUNDANT VELOCITY

1 896121A1.V68 Filterclass (180)



TIME Seconds
VCA Research
12-10-1996 16:21

TEST DATE: 11-13-1996

TEST: FMVSS 214 SIDE IMPACT

Speed: 33.2 MPH 53.4 KPH

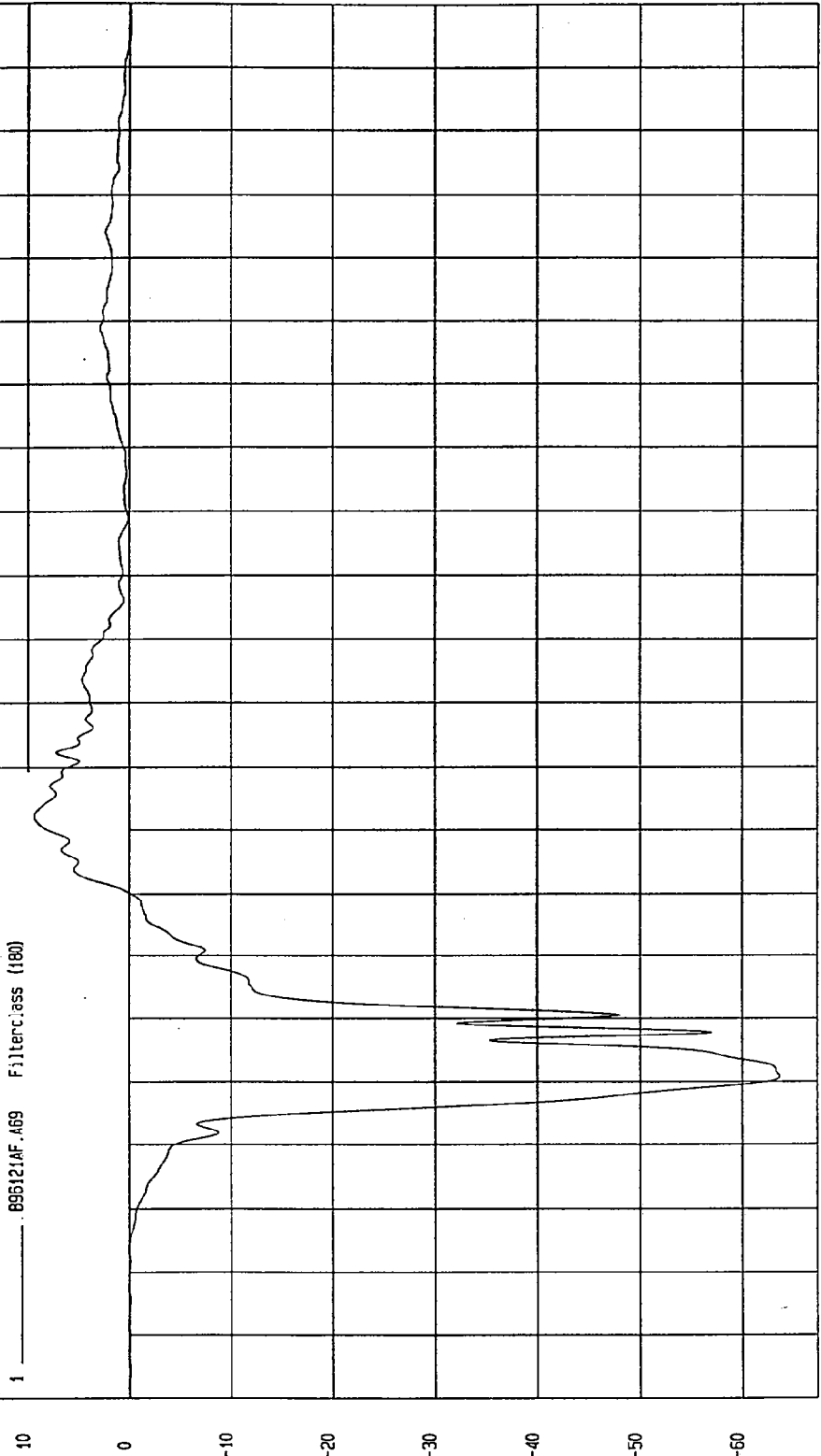
COMPONENT: 1997 PONTIAC GRAND AM (CV0107)

YMAX= 9.440945 G'S at 72. msec

YMIN=-63.60861 G'S at 30. msec

REAR PASSENGER PELVIS Y REDUNDANT ACCELERATION

1 B96121AF.A69 Filter: class (100)



TIME (SECONDS)

NSA Research
12-10-1996 16.12

G.S

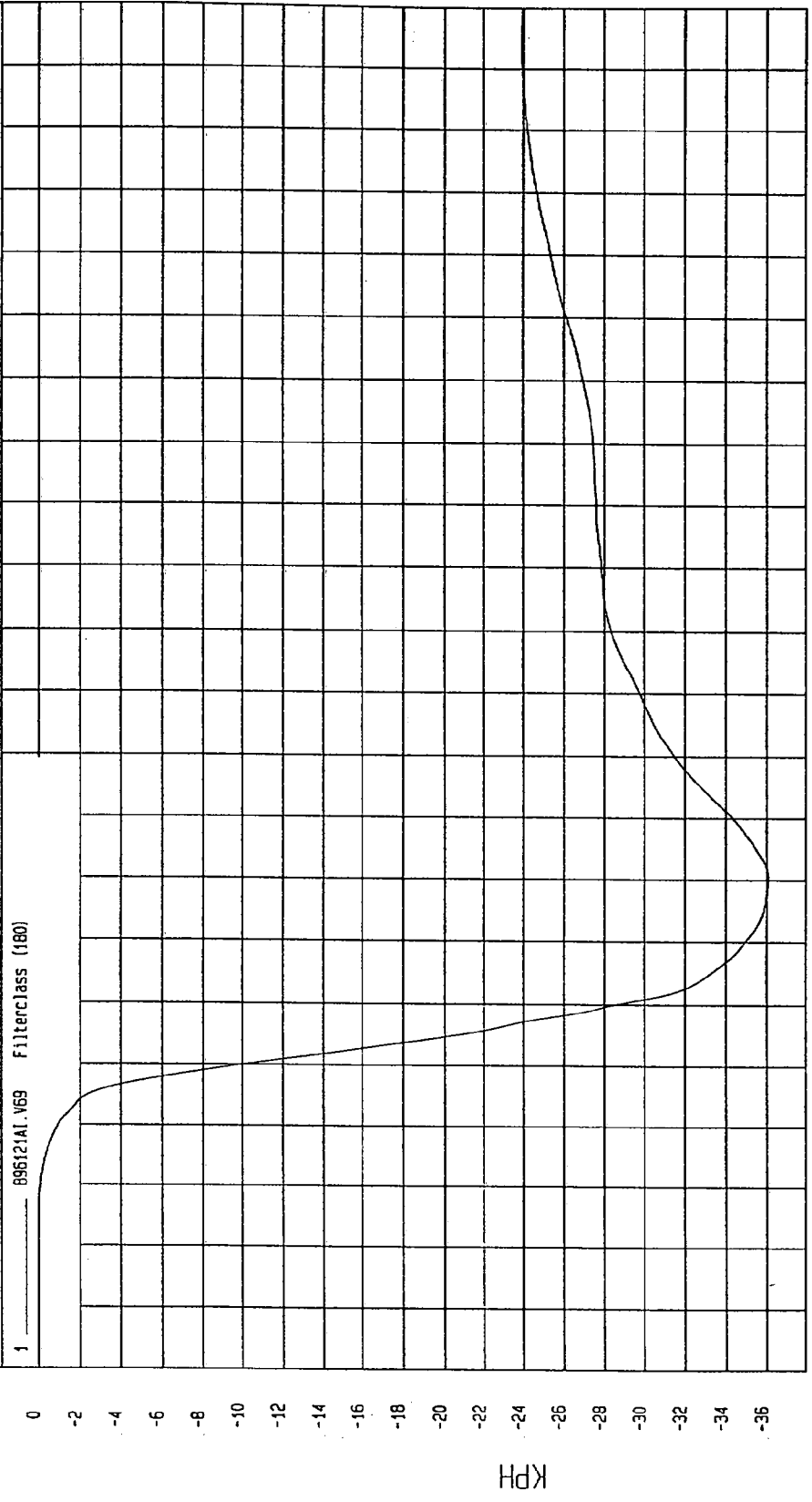
TEST: FMVSS 214 SIDE IMPACT TEST DATE: 11-13-1996

COMPONENT: 1997 PONTIAC GRAND AM (CV0107) Speed: 33.2 MPH 53.4 KPH

YMIN=-36.07885 KPH at 60. msec YMAX= 3.911608E-03 KPH at 4.6 msec

REAR PASSENGER PELVIS Y REDUNDANT VELOCITY

1 896121A1.V69 Filterclass (180)



MCA Research
12-10-1996 16:21

TIME Seconds

KPH

TEST: FMVSS 214 SIDE IMPACT

TEST DATE: 11-13-1996

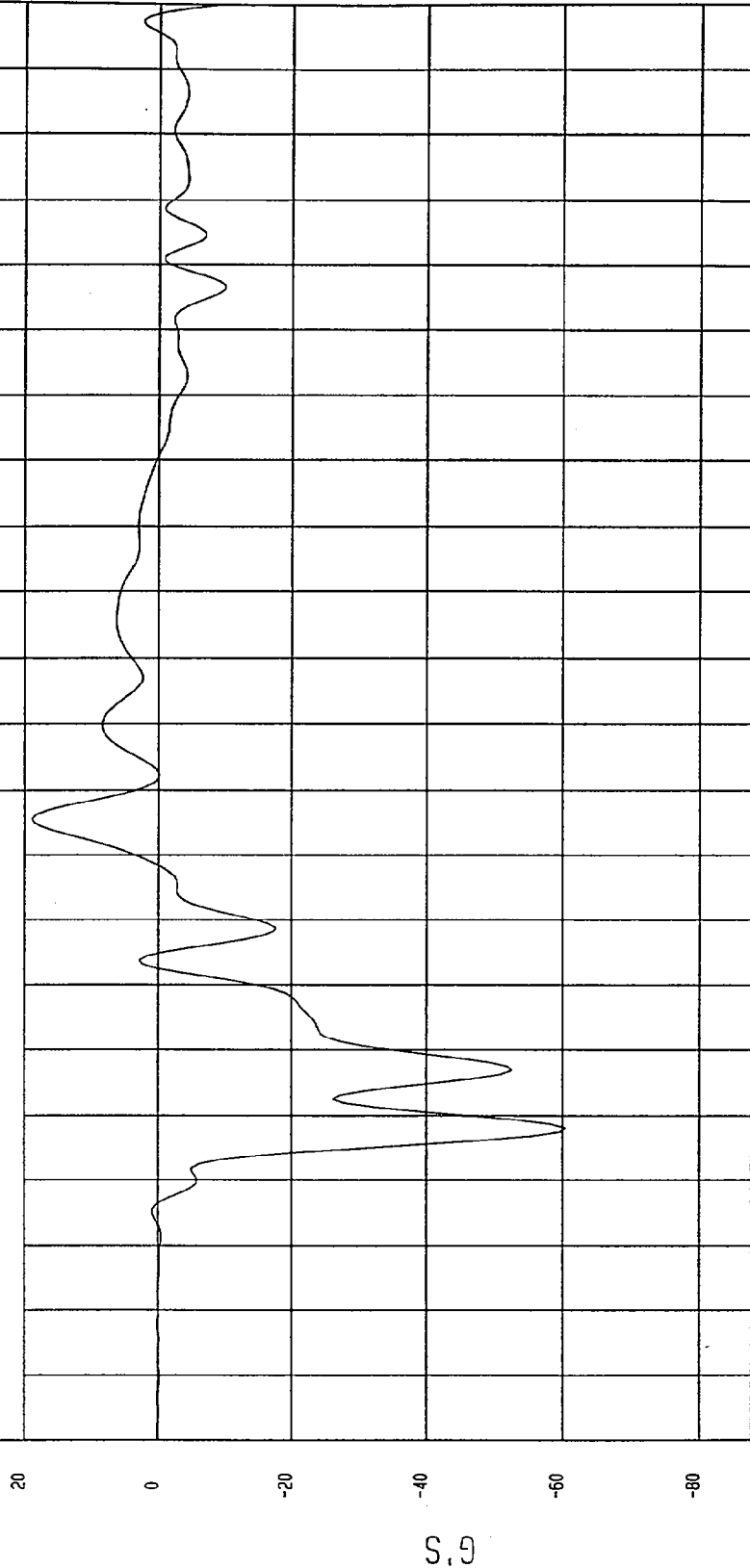
COMPONENT: 1997 PONTIAC GRAND AM (CV0107) Speed: 33.2 MPH 53.4 KPH

YMIN=-60.503 G'S at 28. msec

YMAX= 18.89496 G'S at 75. msec

FRONT PASSENGER UPPER RIB Y ACCELERATION

1 .896121F1.R15 Filterclass (FIR Filtered)



MCA Research
12-10-1996 16.08

TEST DATE: 11-13-1996

TEST: FMVSS 214 SIDE IMPACT

Speed: 33.2 MPH 53.4 KPH

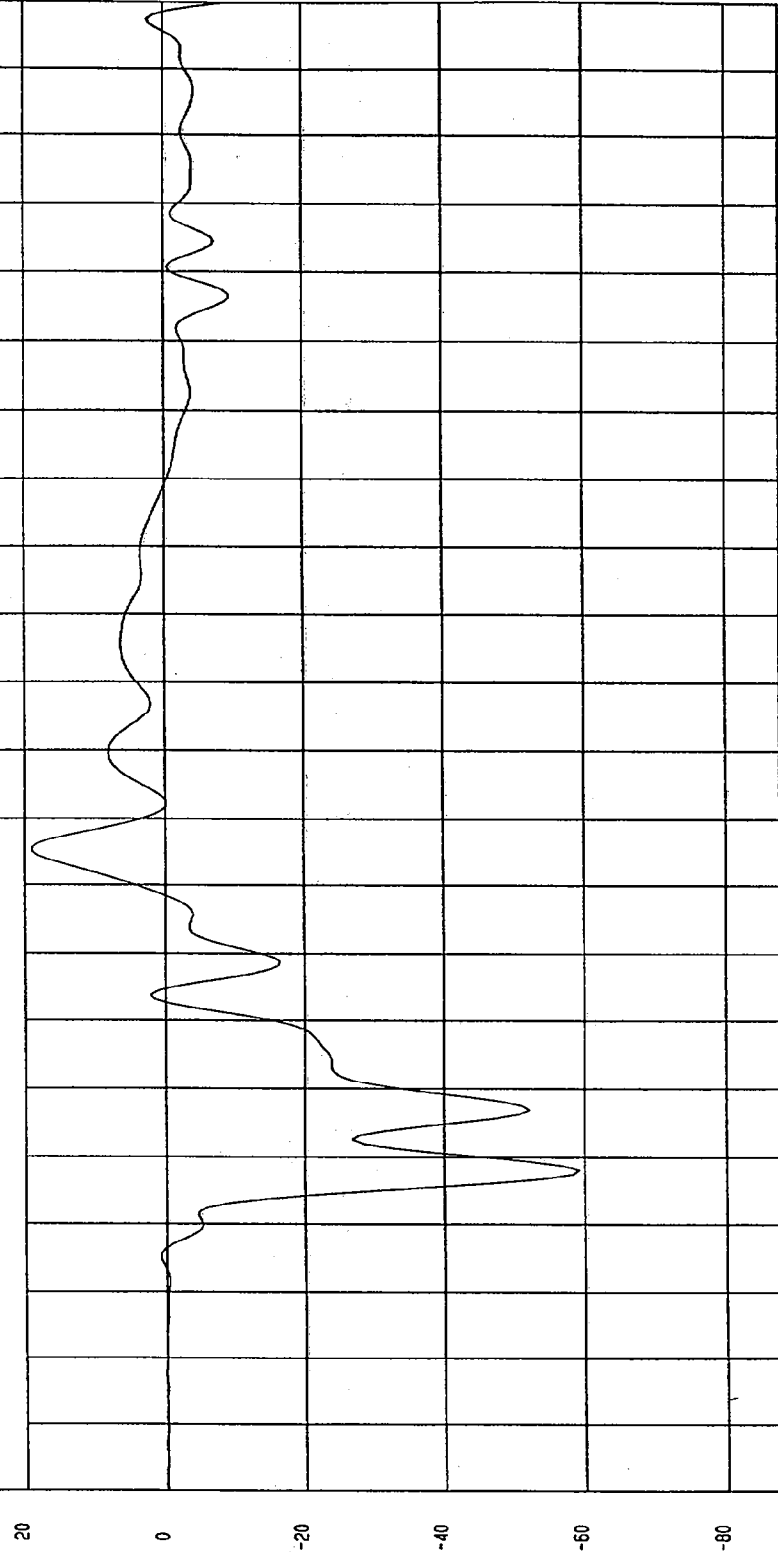
COMPONENT: 1997 PONTIAC GRAND AM (CV0107)

YMAX= 19.09368 G'S at 75. msec

YMIN=-59.18966 G'S at 28. msec

FRONT PASSENGER UPPER RIB Y REDUNDANT ACCELERATION

1 ——— 89612\FI.D61 Filterclass (FIR Filtered)



MCA Research
12-10-1996 16:08

TIME (SECONDS)

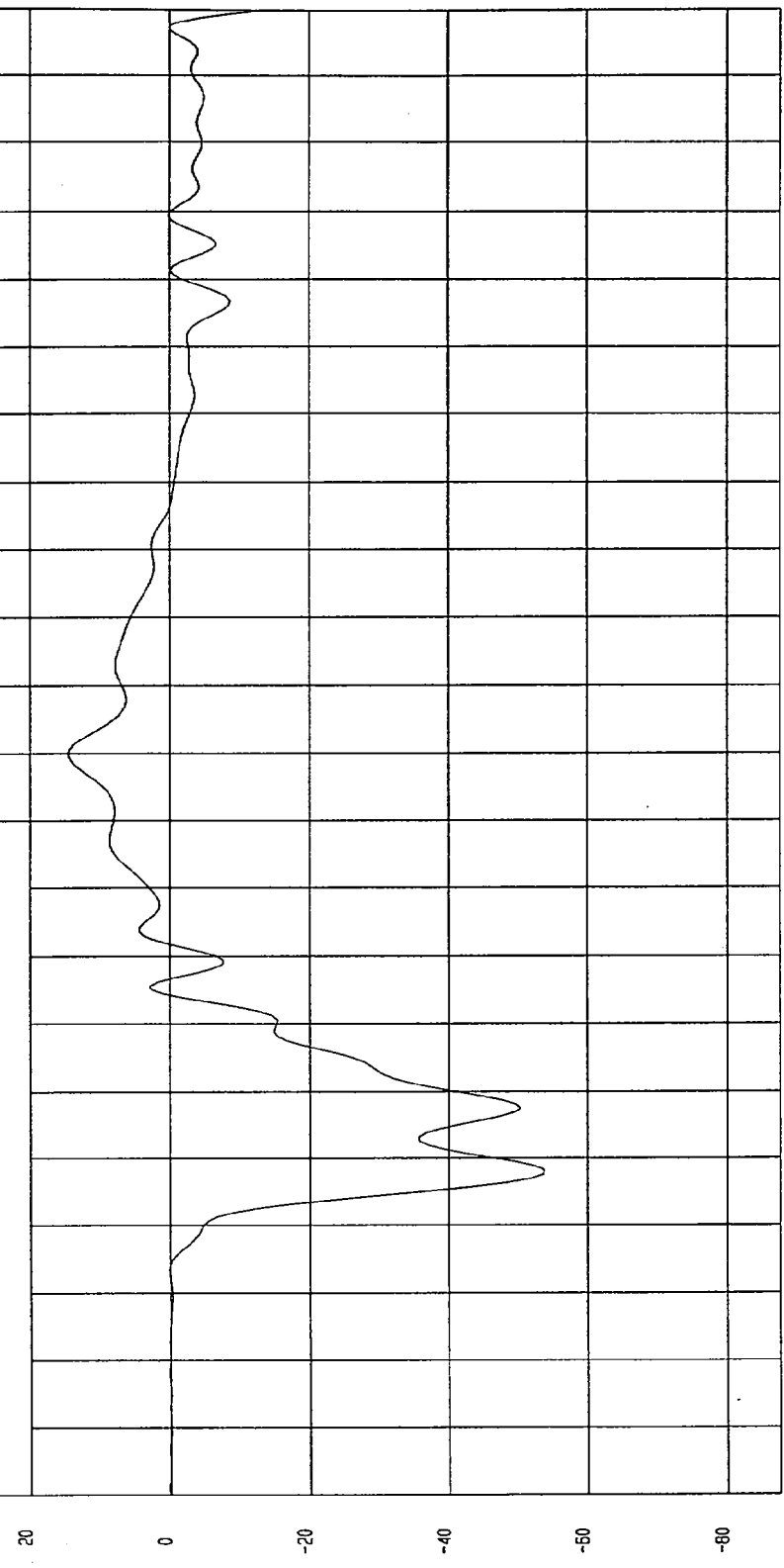
G.S

TEST: FMVSS 214 SIDE IMPACT
TEST DATE: 11-13-1996
COMPONENT: 1997 PONTIAC GRAND AM (CV0107) Speed: 33.2 MPH 53.4 KPH

YMIN=-53.73692 G'S at 28. msec
YMAX= 14.65807 G'S at 90 msec

FRONT PASSENGER LOWER RIB Y ACCELERATION

1 ——— 89612IFI.R16 Filterclass (FIR Filtered)



TIME (SECONDS)
MCA Research
12-10-1996 16:08

TEST DATE: 11-13-1996

TEST: FMVSS 214 SIDE IMPACT

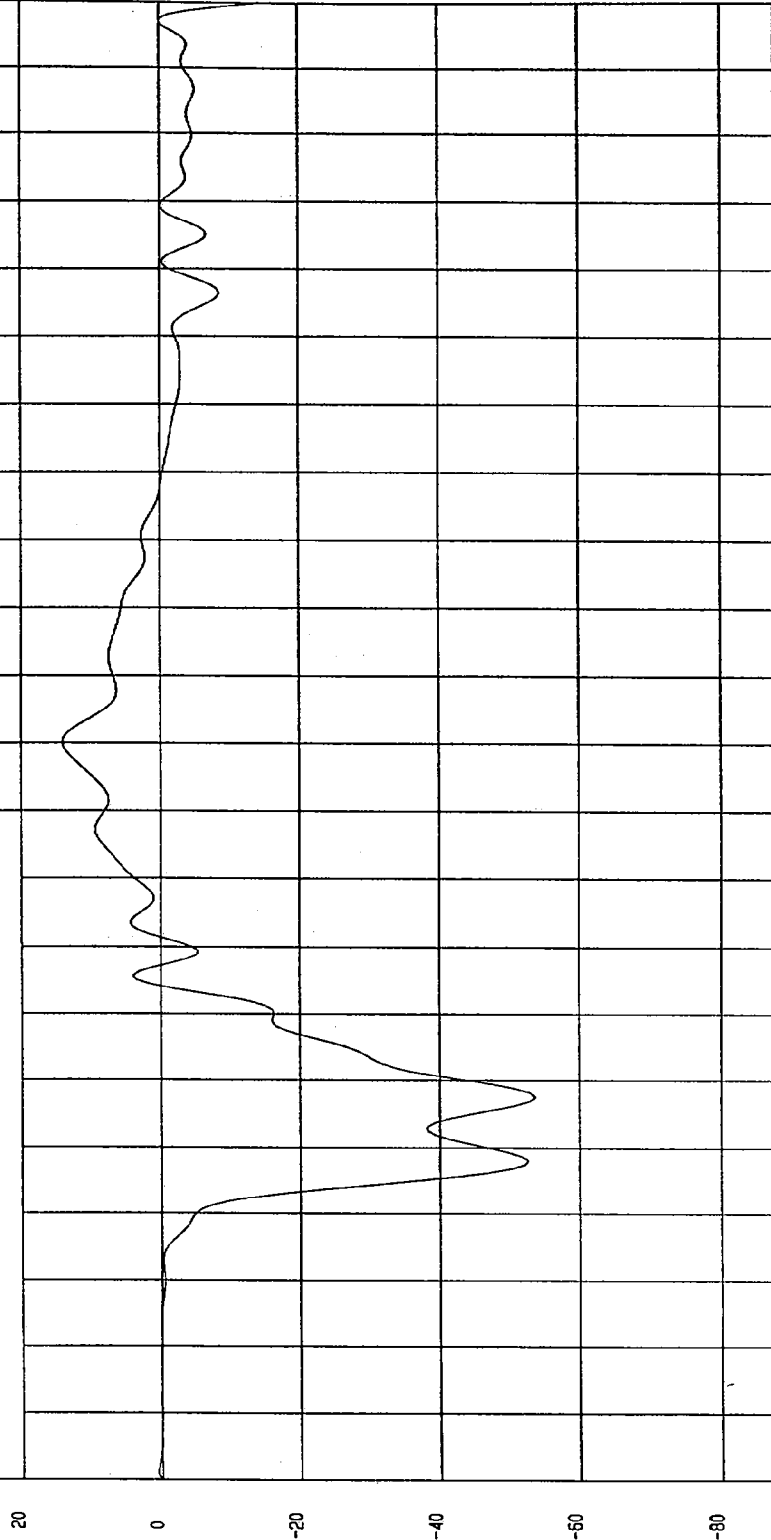
Speed: 33.2 MPH 53.4 KPH

COMPONENT: 1997 PONTIAC GRAND AM (CV0107)

YMIN=-53.7162 G'S at 37. msec YMAX= 14.11164 G'S at 90 msec

FRONT PASSENGER LOWER RIB Y REDUNDANT ACCELERATION

1 896121F1.R62 Filterclass (FIR Filtered)



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

HCA Research
12-10-1996 16:08

TEST DATE: 11-13-1996

TEST: FMVSS 214 SIDE IMPACT

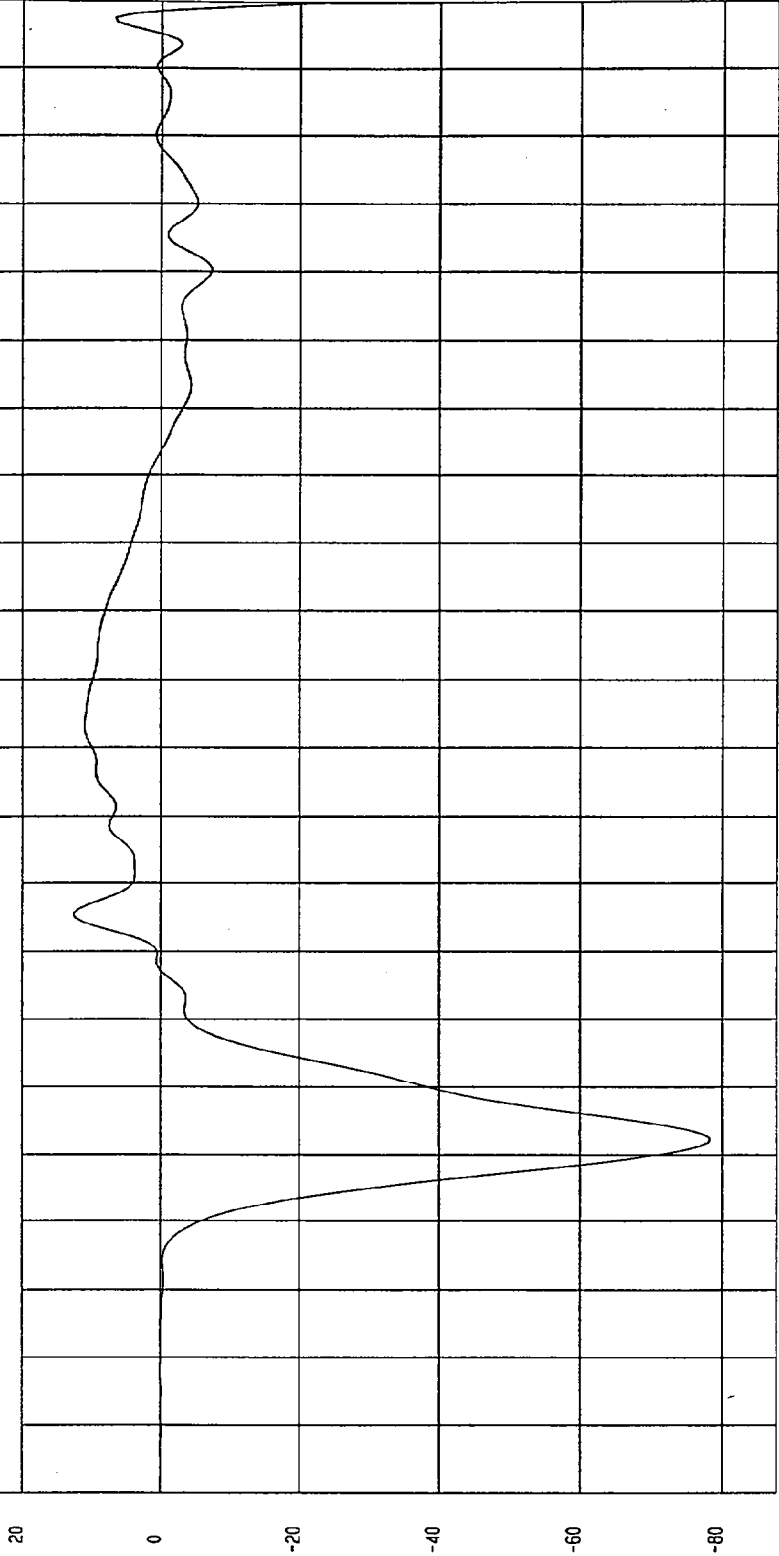
COMPONENT: 1997 PONTIAC GRAND AM (CV0107) Speed: 33.2 MPH 53.4 KPH

YMIN=-78.2702 G'S at 32. msec

YMAX= 12.6683 G'S at 65. msec

FRONT PASSENGER LOWER SPINE Y ACCELERATION

1 B9612IFI.R17 Filterclass (FIR Filtered)



TIME (SECONDS)

MCA Research
12-10-1996 16:08

TEST DATE: 11-13-1996

TEST: FMVSS 214 SIDE IMPACT

Speed: 33.2 MPH 53.4 KPH

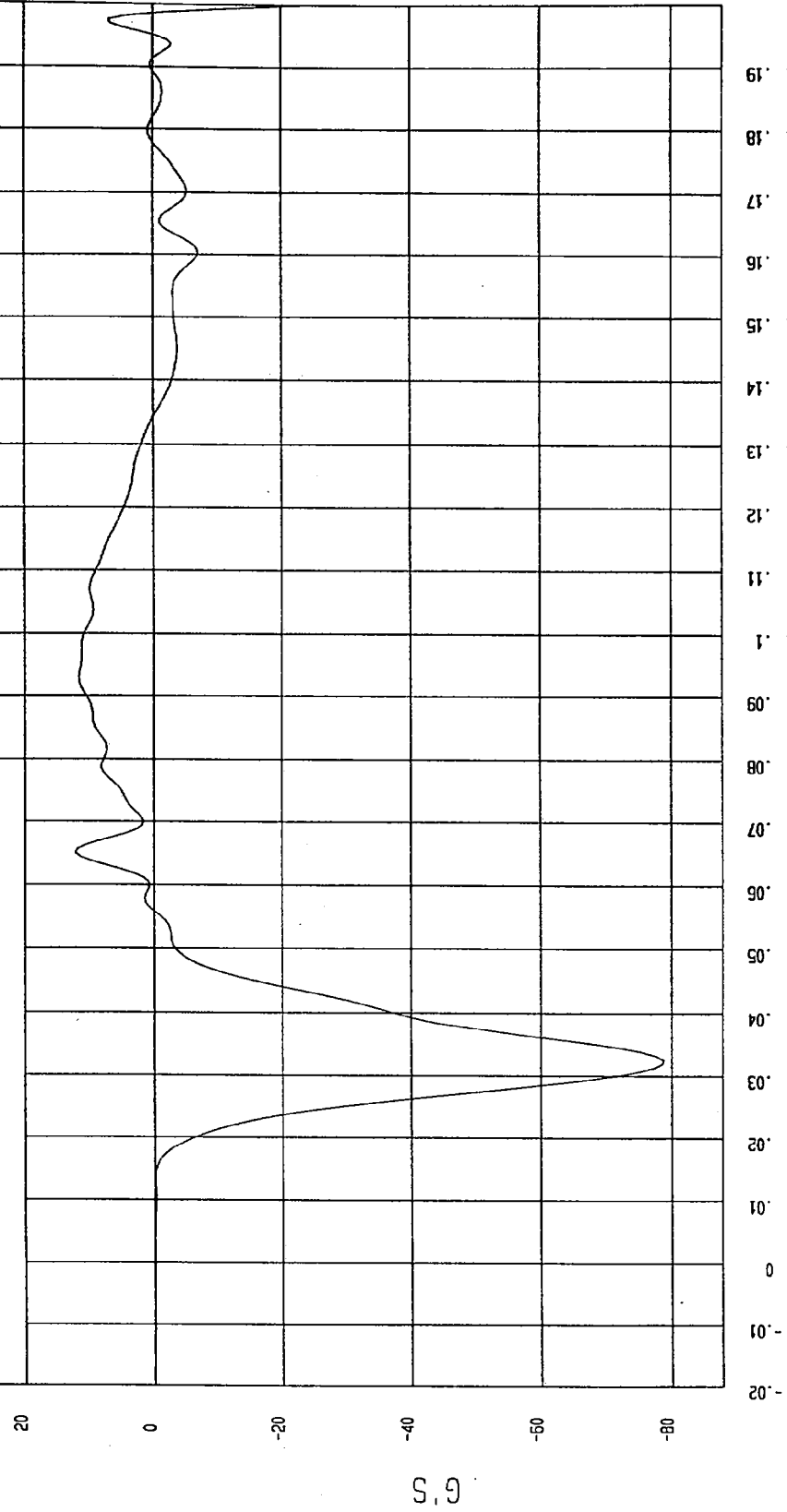
COMPONENT: 1997 PONTIAC GRAND AM (CV0107)

YMAX= 12.13356 G'S at 65 msec

YMIN= -76.71645 G'S at 32. msec

FRONT PASSENGER LOWER SPINE Y REDUNDANT ACCELERATION

1 _____ 89612FI.R63 Filterclass (FIR Filtered)



NSA Research
12-10-1996 16.08

TEST DATE: 11-13-1996

Speed: 33.2 MPH 53.4 KPH

TEST: FMVSS 214 SIDE IMPACT

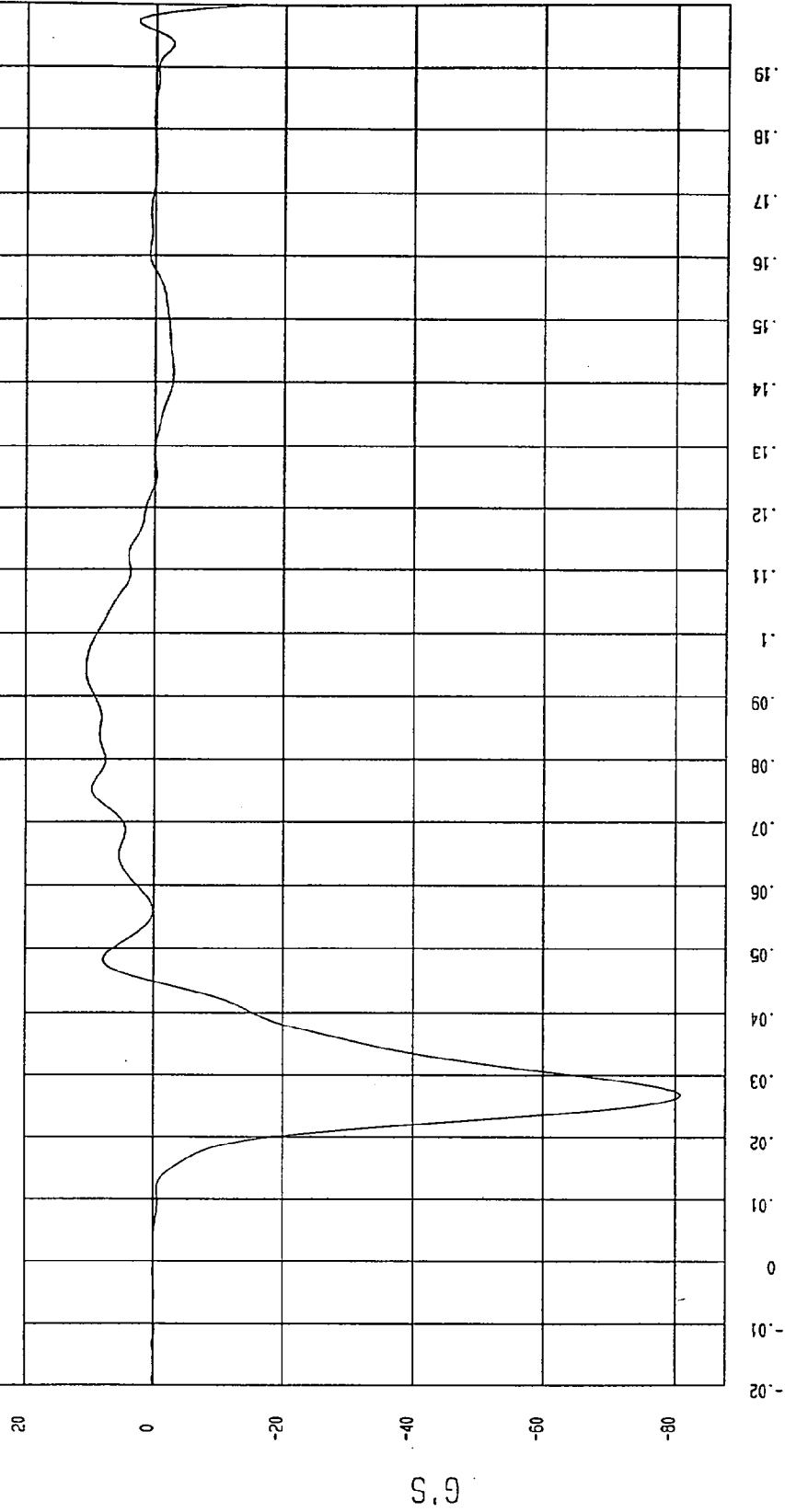
COMPONENT: 1997 PONTIAC GRAND AM (CV0107)

YMIN=-80.92693 G'S at 26. msec

YMAX= 10.66774 G'S at 94. msec

FRONT PASSENGER PELVIS Y ACCELERATION

1 ——— 89612FI.R18 Filterclass (FIR Filtered)



MCA Research
12-10-1996 16:08

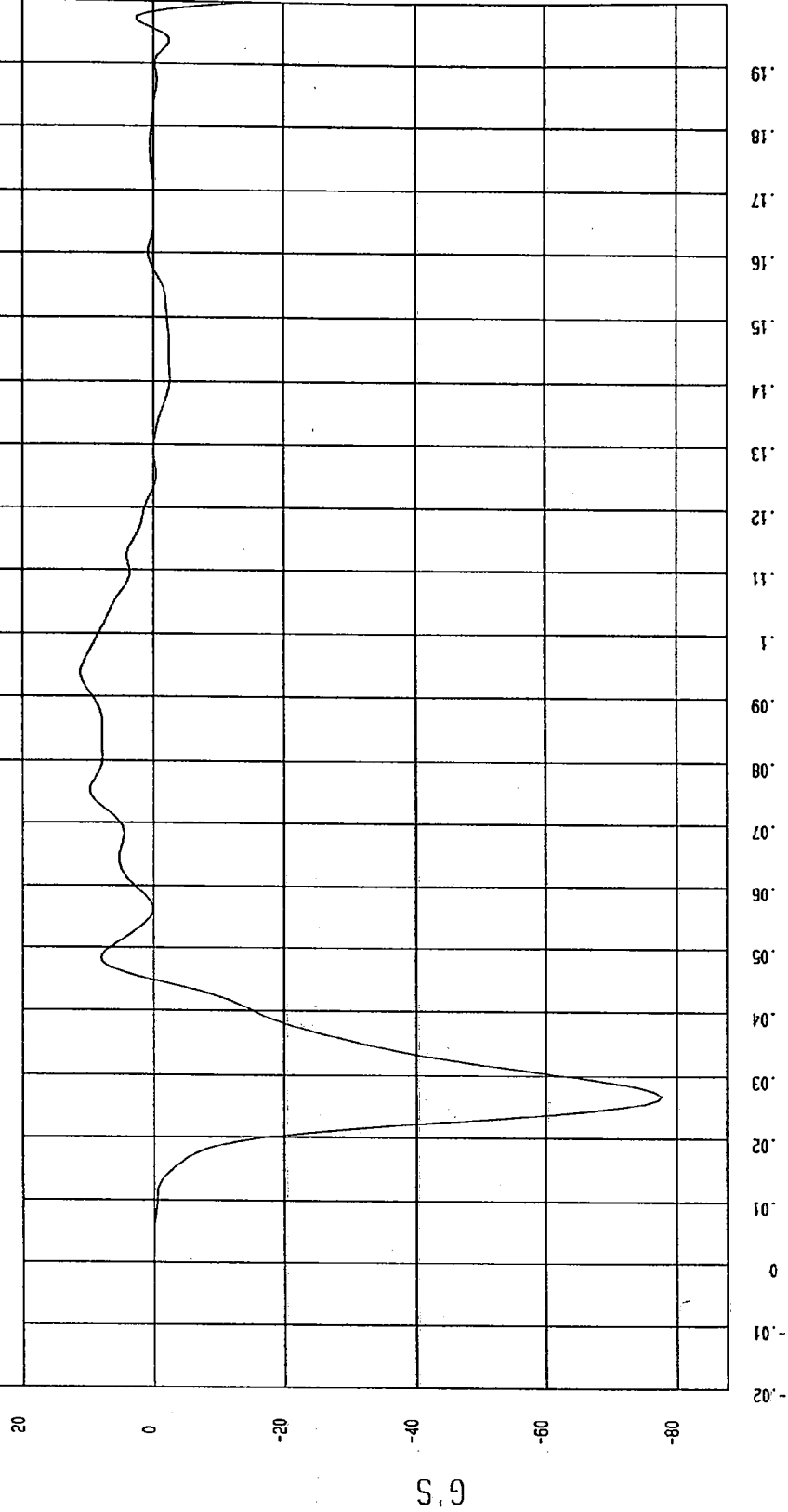
TEST: FMVSS 214 SIDE IMPACT
TEST DATE: 11-13-1996

COMPONENT: 1997 PONTIAC GRAND AM (CV0107)
Speed: 33.2 MPH 53.4 KPH

YMIN=-77.71149 G'S at 26. msec
YMAX= 11.2319 G'S at 93. msec

FRONT PASSENGER PELVIS Y REDUNDANT ACCELERATION

1 _____ 896121F1.R64 Filterclass (FIR Filtered)



MSA Research
12-10-1996 16:08

TEST DATE: 11-13-1996

TEST: FMVSS 214 SIDE IMPACT

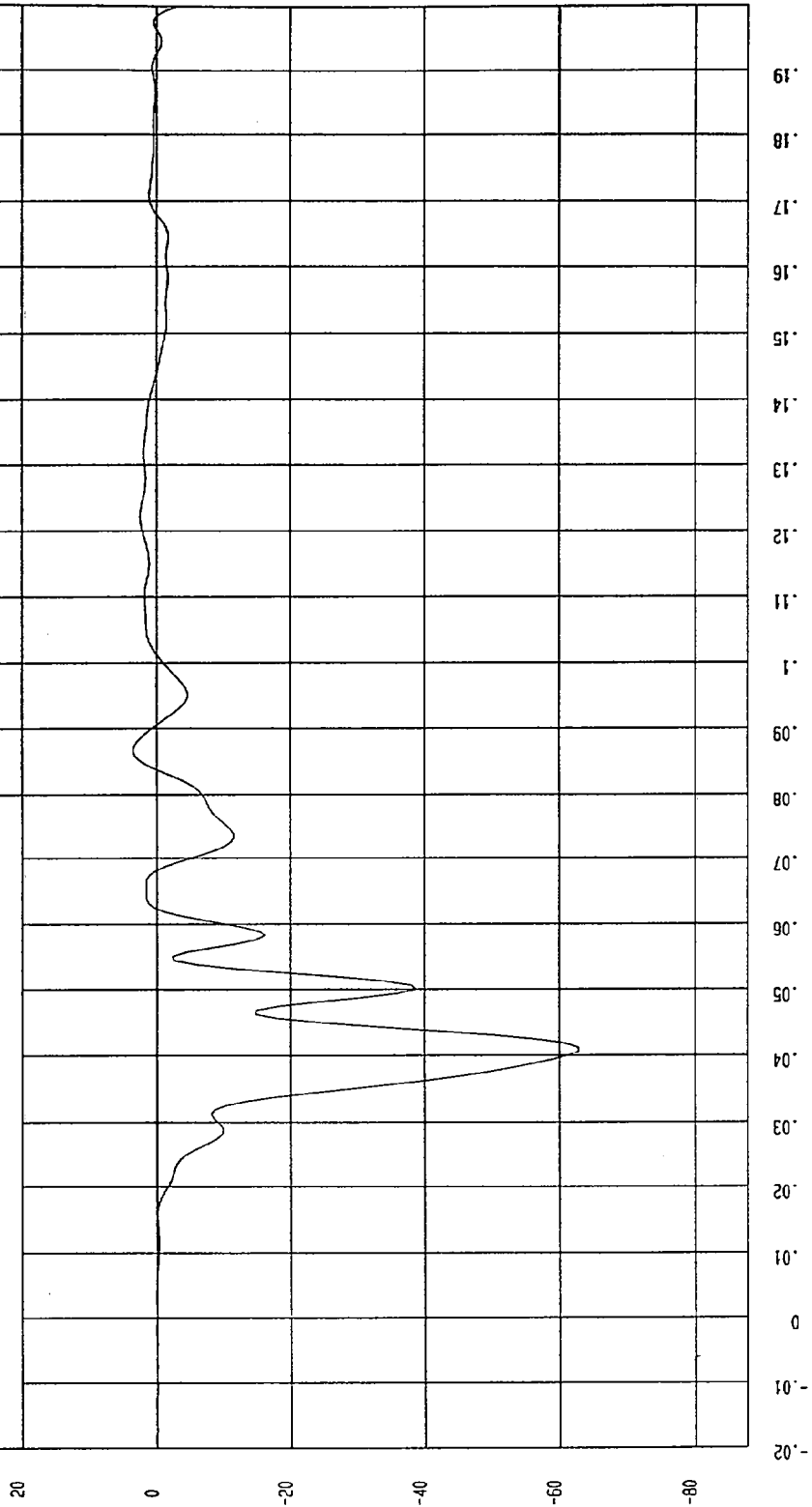
COMPONENT: 1997 PONTIAC GRAND AM (CV0107) Speed: 33.2 MPH 53.4 KPH

YMIN=-62.7403 G'S at 41. msec

YMAX= 3.573407 G'S at 86. msec

FEAR PASSENGER UPPER RIB Y ACCELERATION

1 89612IFI.R25 Filterclass (FIR Filtered)



MCA Research
12-10-1996 16.08

TEST DATE: 11-13-1996

Speed: 33.2 MPH 53.4 KPH

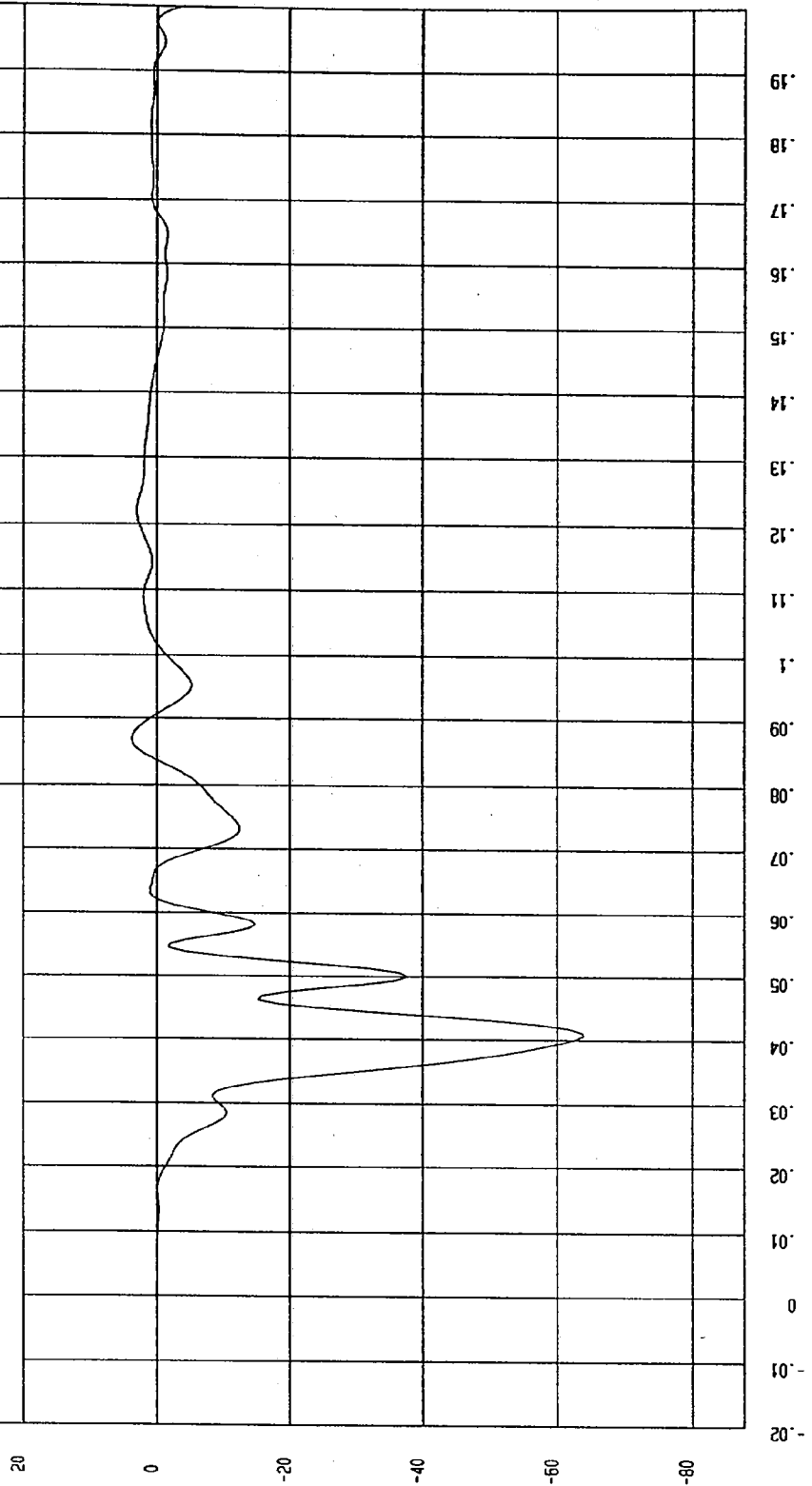
TEST: FMVSS 214 SIDE IMPACT

COMPONENT: 1997 PONTIAC GRAND AM (CV0107)

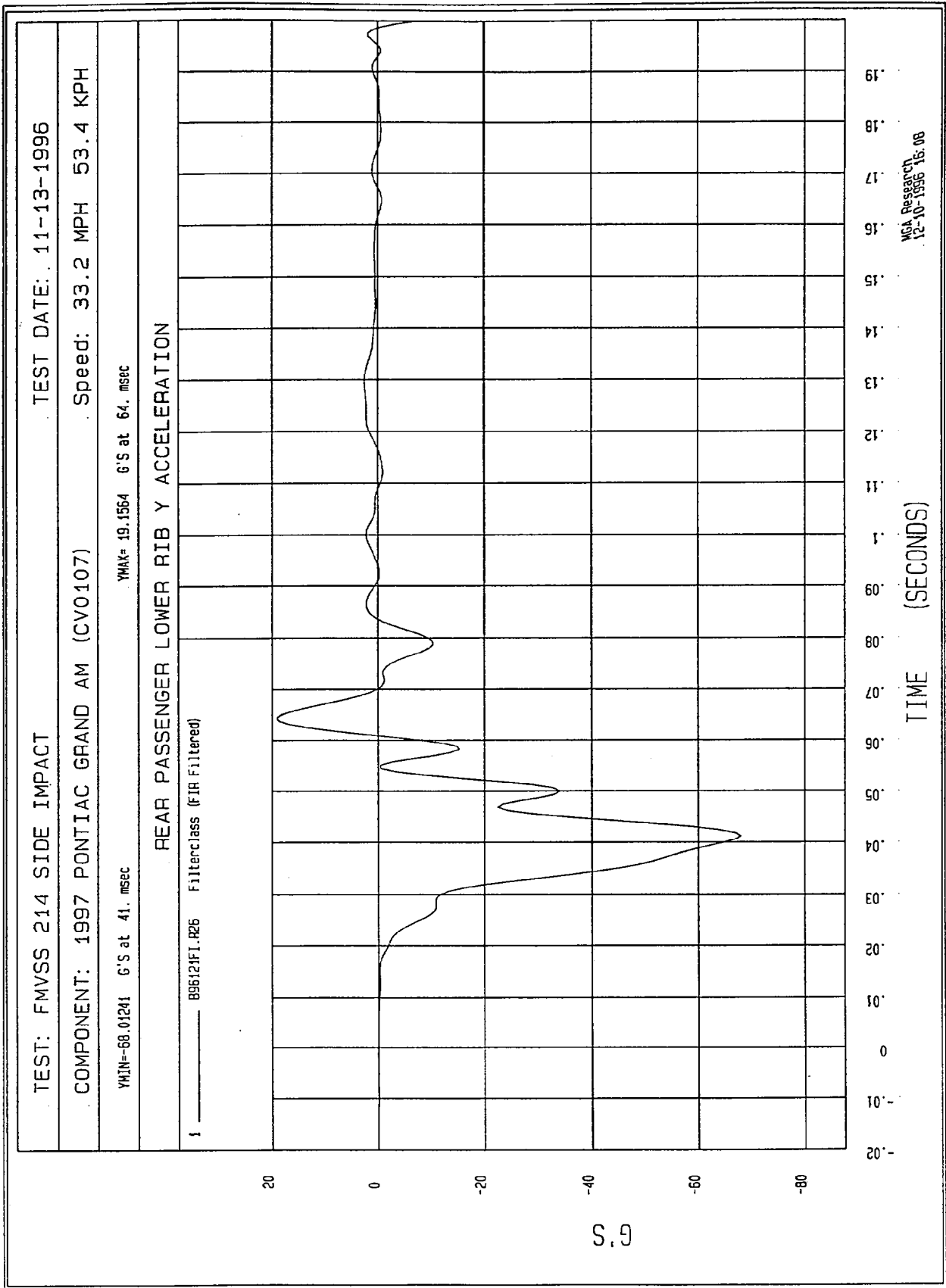
YMIN=-63.93529 G'S at 40. msec YMAX= 3.856236 G'S at 86. msec

REAR PASSENGER UPPER RIB Y REDUNDANT ACCELERATION

1 89612FI.R66 Filterclass (FIR Filtered)



MSA Report Ctr
12-10-1996 16:08



TEST DATE: 11-13-1996

Speed: 33.2 MPH 53.4 KPH

TEST: FMVSS 214 SIDE IMPACT

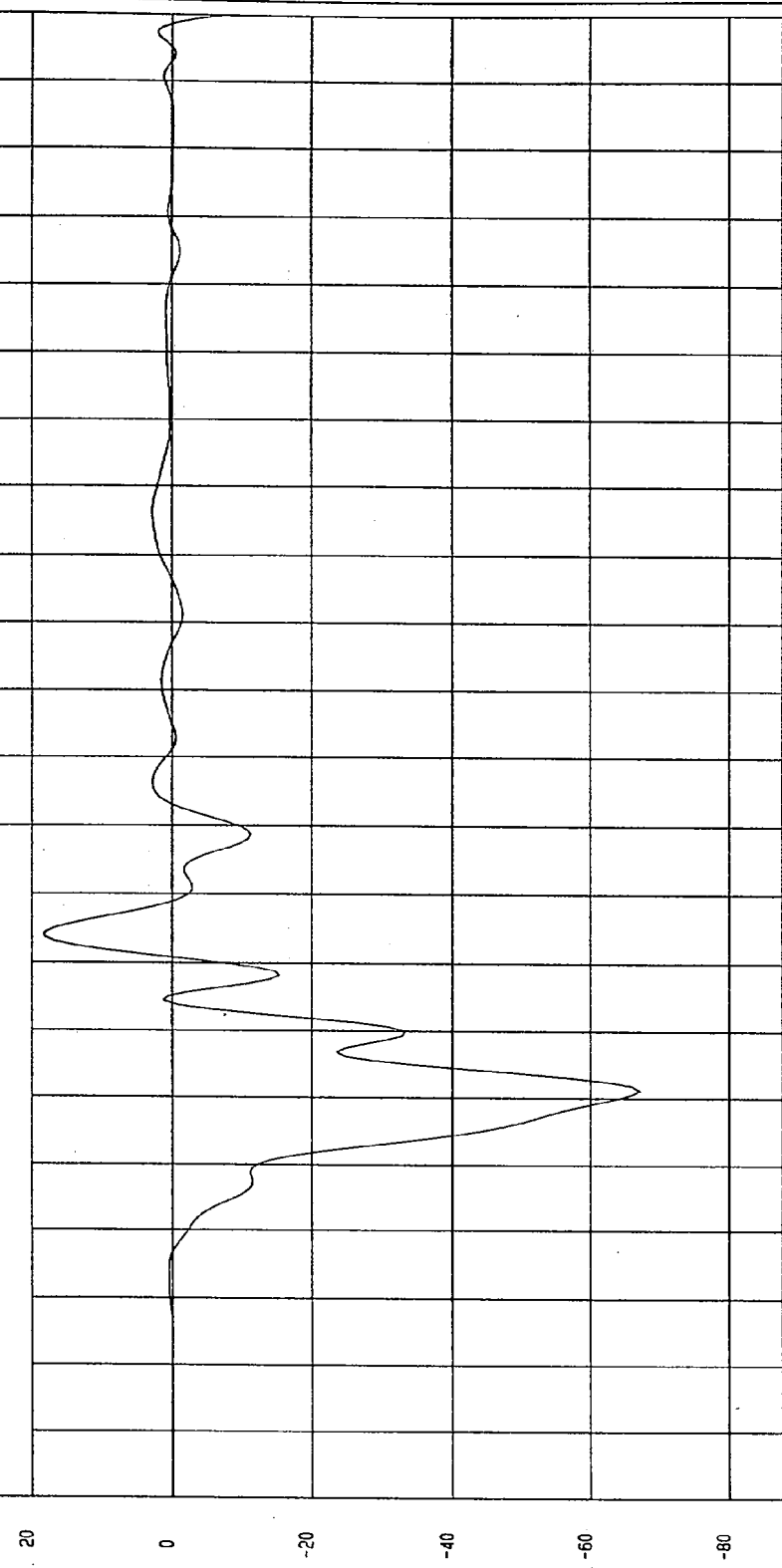
COMPONENT: 1997 PONTIAC GRAND AM (CV0107)

YMIN=-67.0519 G'S at 41. msec

YMAX= 18.22038 G'S at 63. msec

REAR PASSENGER LOWER RIB Y REDUNDANT ACCELERATION

1 88612f1.r67 Filterclass (FIR Filtered)



MGA Research
12-10-1996 16:08

TIME (SECONDS)

G.S

TEST DATE: 11-13-1996

TEST: FMVSS 214 SIDE IMPACT

Speed: 33.2 MPH 53.4 KPH

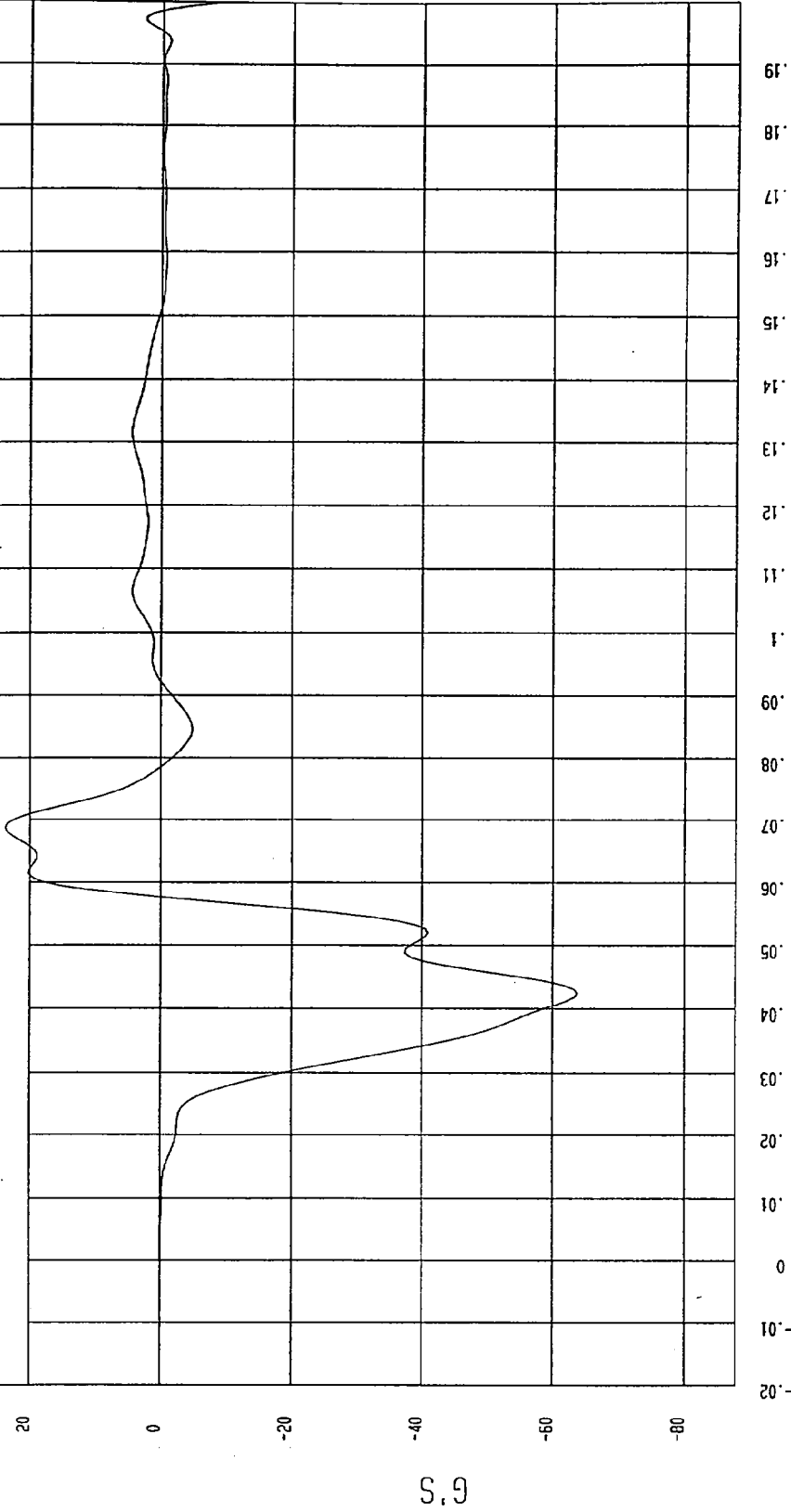
COMPONENT: 1997 PONTIAC GRAND AM (CV0107)

YMAX= 23.84322 G'S at 68. msec

YMIN= -63.73379 G'S at 42. msec

REAR PASSENGER LOWER SPINE Y ACCELERATION

1 ----- B9612IF1.R27 Filterclass (FIR Filtered)



MCA Research
12-10-1996 16:09

TEST: FMVSS 214 SIDE IMPACT

TEST DATE: 11-13-1996

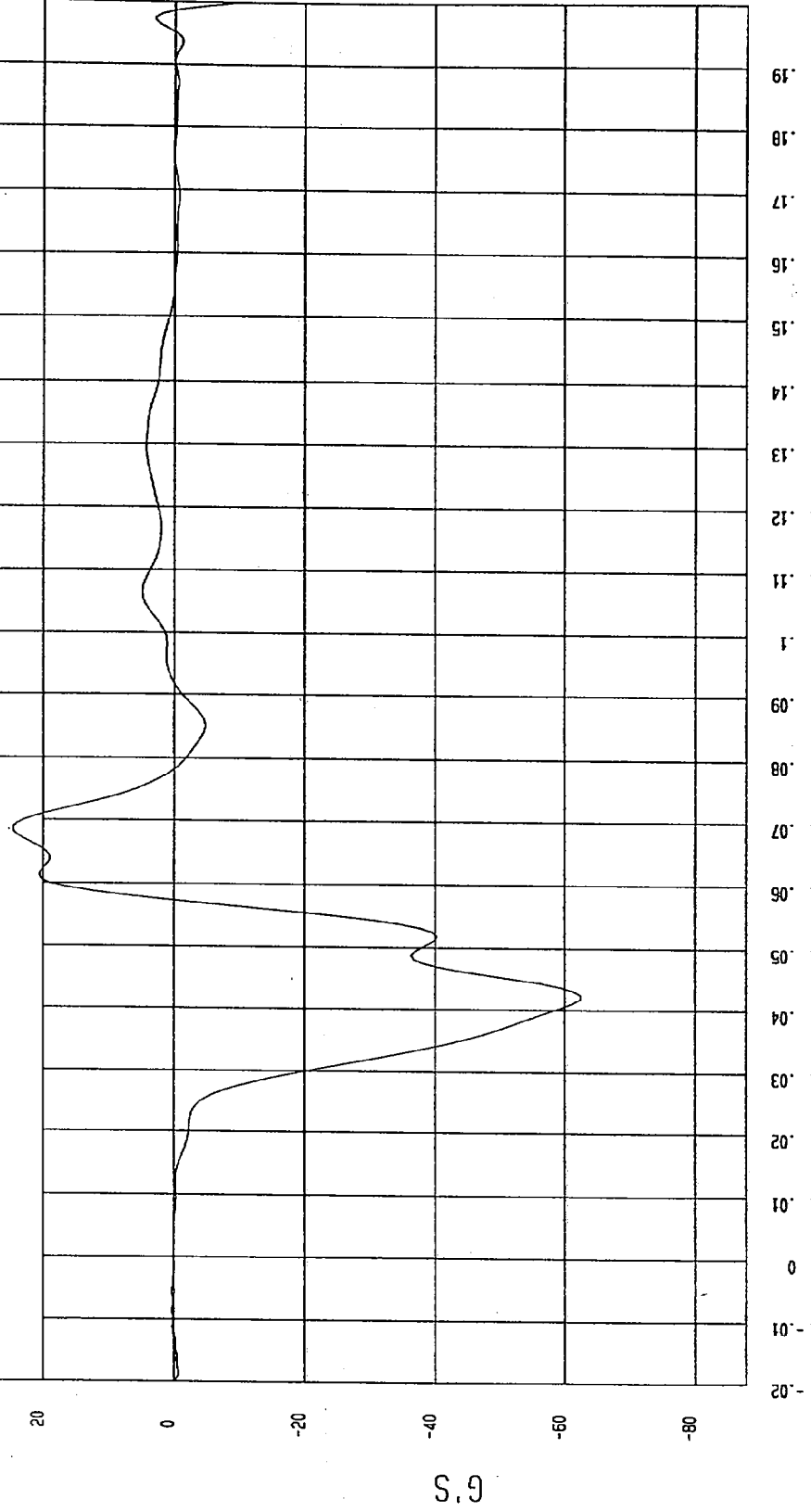
COMPONENT: 1997 PONTIAC GRAND AM (CV0107) Speed: 33.2 MPH 53.4 KPH

YMIN=-62.45349 G'S at 41. msec

YMAX= 24.75033 G'S at 68. msec

REAR PASSENGER LOWER SPINE Y REDUNDANT ACCELERATION

1 89612\FI.R68 Filterclass (FIR Filtered)



NCA Research
12-10-1996 16.09

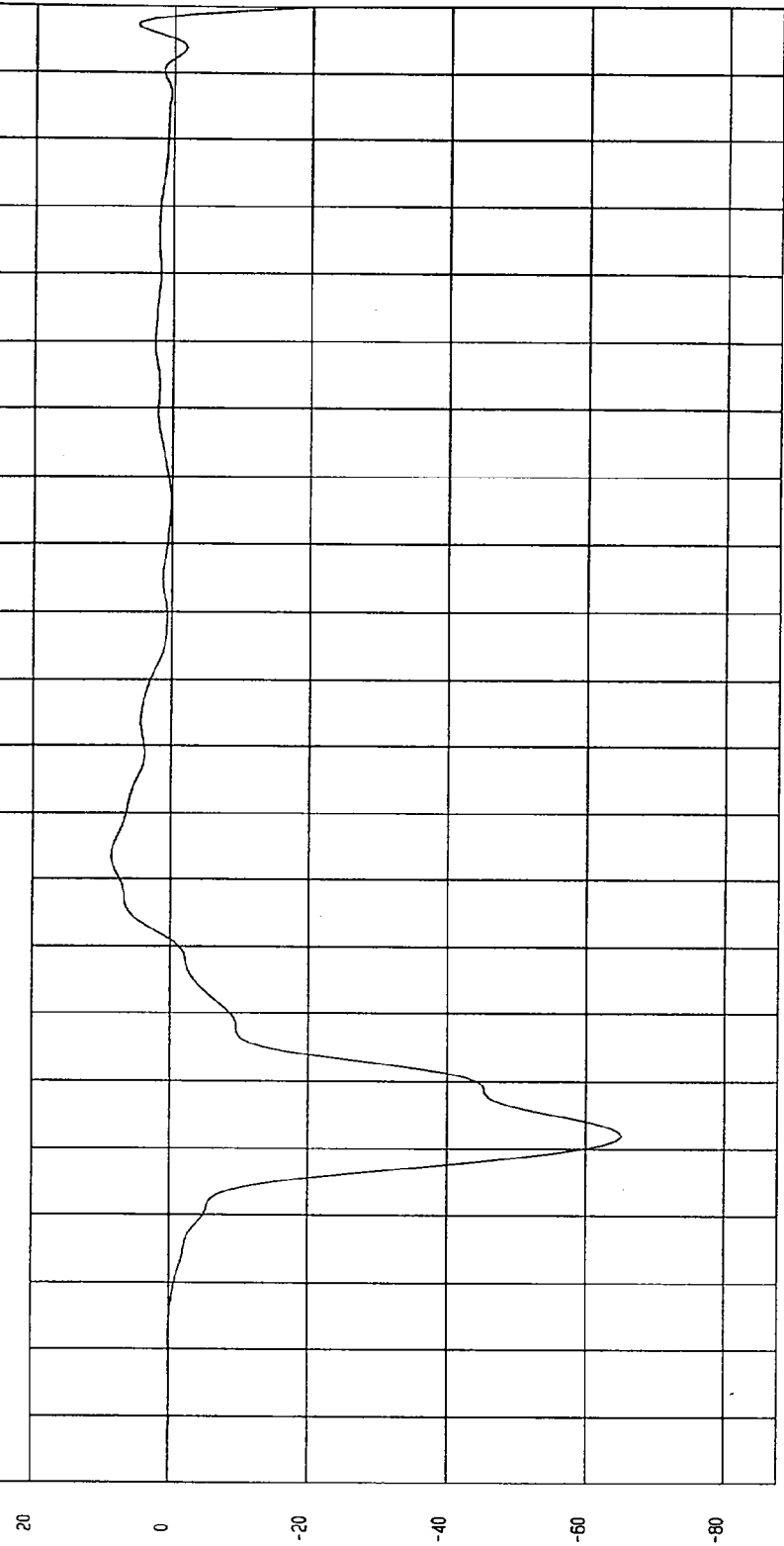
TEST: FMVSS 214 SIDE IMPACT TEST DATE: 11-13-1996

COMPONENT: 1997 PONTIAC GRAND AM (CV0107) Speed: 33.2 MPH 53.4 KPH

YMIN=-65.13445 G'S at 31. msec .YMAX= 6.663101 G'S at 73. msec

REAR PASSENGER PELVIS Y ACCELERATION

1 ——— 89612FI.R28 Filterclass (FIR Filtered)



TIME (SECONDS)

NSA Research
12-10-1996 16:09

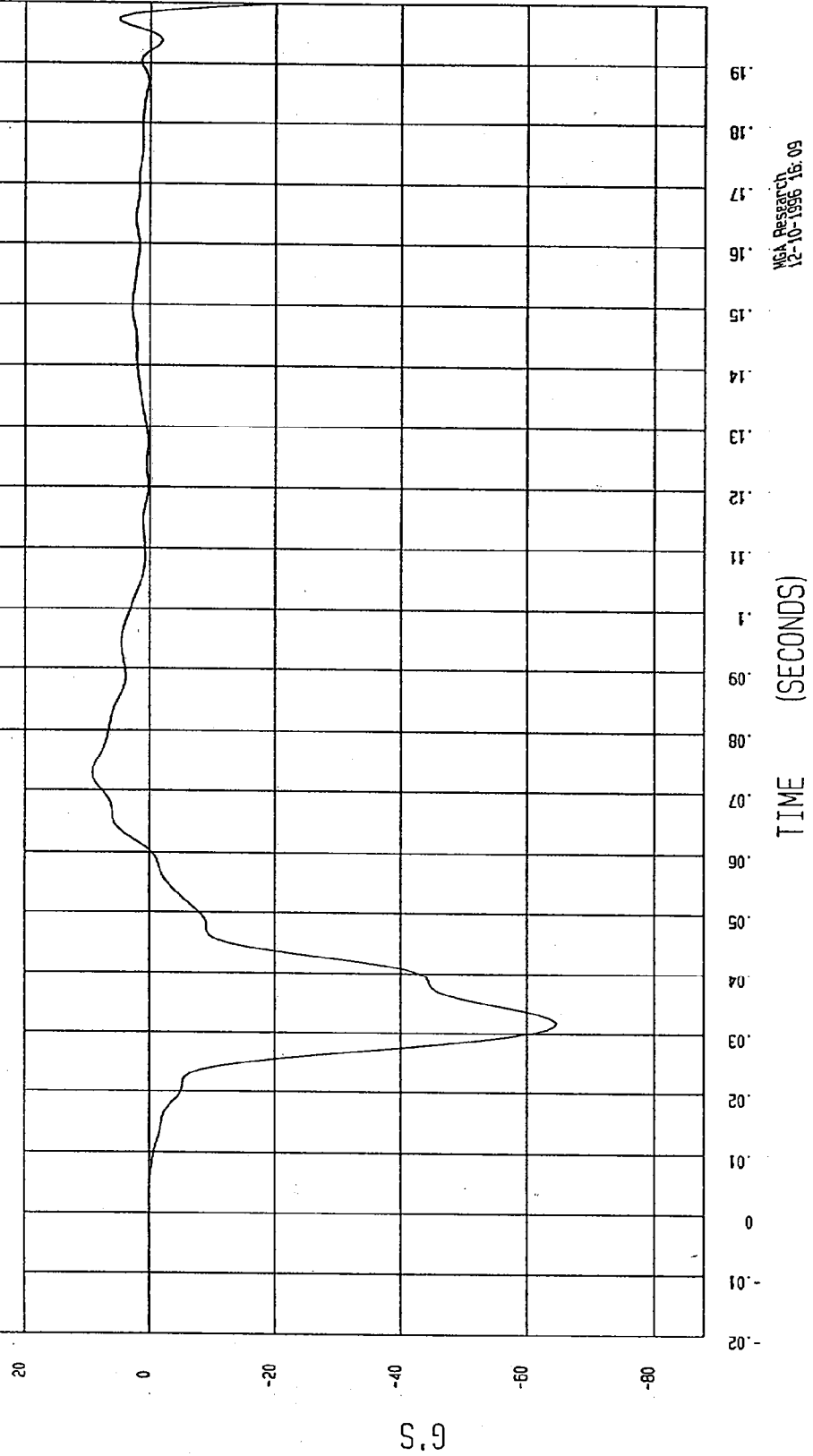
TEST: FMVSS 214 SIDE IMPACT TEST DATE: 11-13-1996

COMPONENT: 1997 PONTIAC GRAND AM (CV0107) Speed: 33.2 MPH 53.4 KPH

YMIN=-64.66096 G'S at 31. msec YMAX= 9.134418 G'S at 73. msec

REAR PASSENGER PELVIS Y REDUNDANT ACCELERATION

1 _____ 89612IF1.R69 Filterclass (FIR Filtered)



NCA Research
12-10-1996 16.09

APPENDIX C

SID CONFIGURATION AND PERFORMANCE VERIFICATION

REPORT NO. MGA-96-DC08

DUMMY PERFORMANCE CALIBRATIONS

FMVSS 214 - SIDE IMPACT TEST

GENERAL MOTORS CORPORATION
1997 PONTIAC GRAND AM 4 DOOR
NHTSA NO. CV0107

MGA PROVING GROUNDS
5000 WARREN ROAD
BURLINGTON, WI 53105



Test Date: November 13, 1996

Report Date: December 31, 1996

FINAL REPORT

Prepared For:

U. S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
ENFORCEMENT
OFFICE OF VEHICLE SAFETY COMPLIANCE
MAIL CODE: NEF-30
400 SEVENTH STREET, S.W., ROOM 6115
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: November 8, 1996

DESCRIPTION	SPECIFICATION	TEST RESULTS
SH - Seated Height	35.0" - 35.8"	35.4
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"	15.0

MEASUREMENTS BY: *Tom Milil*

APPROVED BY: *Rene Kebabek*

MGA RESEARCH CORPORATION

THORAX IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: November 8, 1996

DUMMY NUMBER: 271

TEST NUMBER: D961602

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	28%
PROBE SPEED	13.8 - 14.2 fps	13.9
UPPER RIB	37 - 46 g's	40
LOWER RIB	37 - 46 g's	42
LOWER SPINE	15 - 22 g's	20

TEST MEETS SPECIFICATIONS

TECHNICIAN Tim White

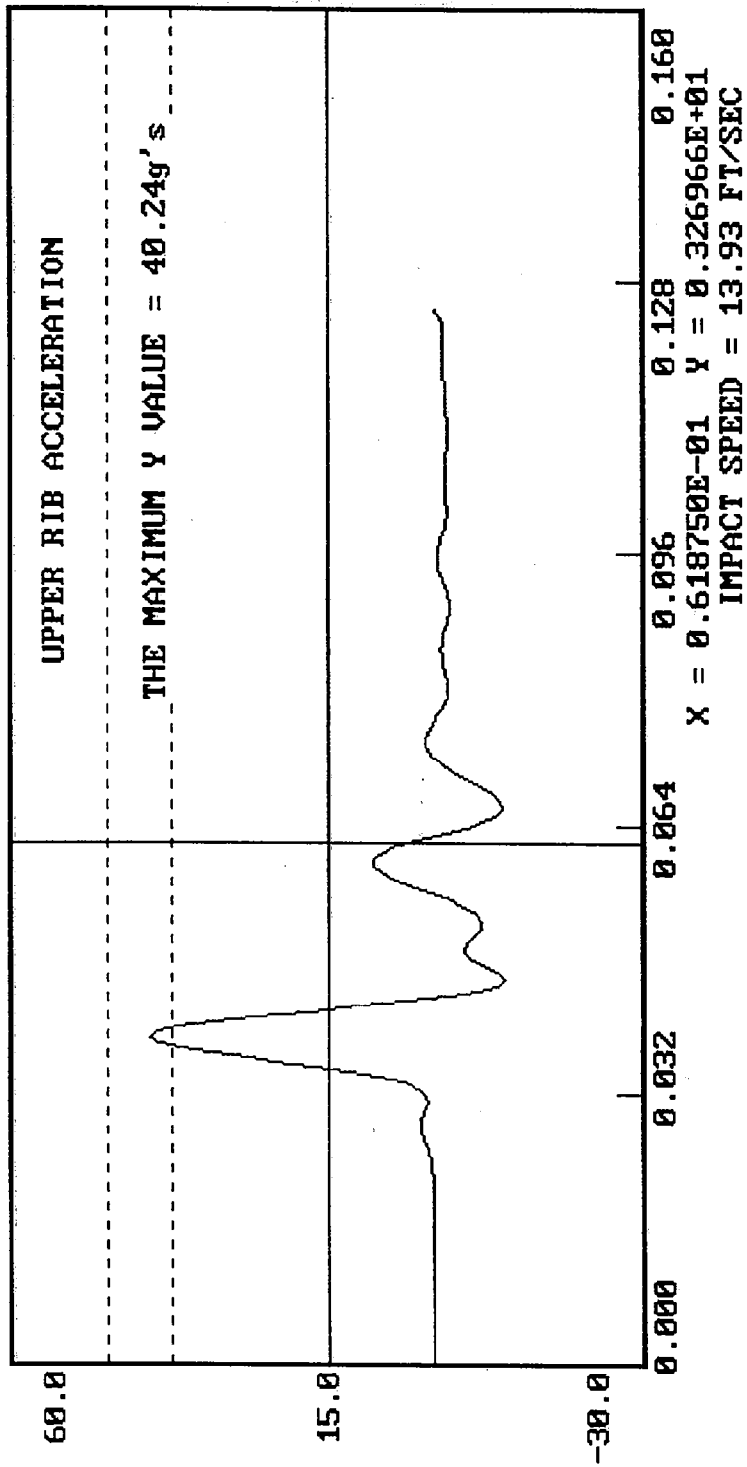
APPROVED BY Steve Kubeke

11-08-1996 09:01

DUMMY CALIBRATION - THORAX IMPACT

DUMMY # 271

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

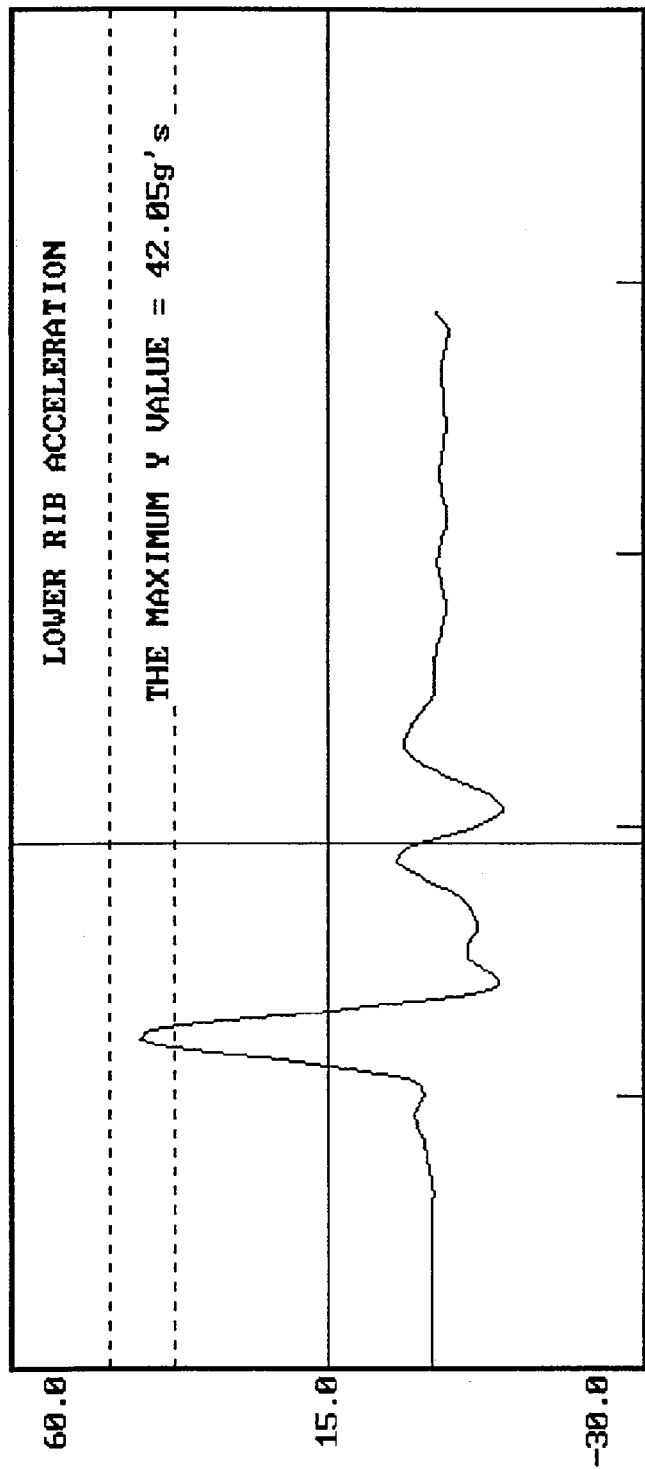


DUMMY CALIBRATION - THORAX IMPACT

DUMMY # 271

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

11-08-1996 09:01



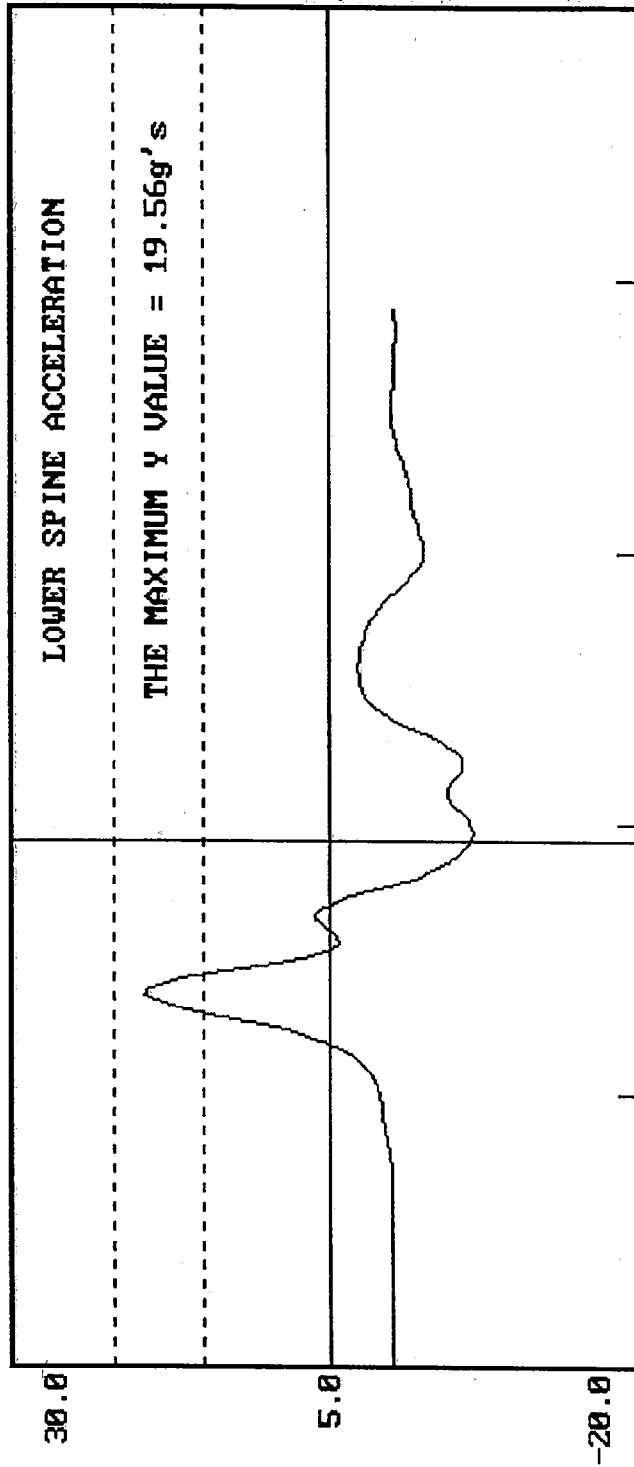
X = 0.618750E-01 Y = 0.148071E+01
IMPACT SPEED = 13.93 FT/SEC

11-08-1996 09:01

DUMMY CALIBRATION - THORAX IMPACT

DUMMY # 271

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



X = 0.618750E-01 Y = -.620307E+01
IMPACT SPEED = 13.93 FT/SEC

MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: November 08, 1996

DUMMY NUMBER: 271

TEST NUMBER: D961603

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	28%
PROBE SPEED	13.8 - 14.2 f/s	14.0
PELVIS ACCELERATION	40 - 60 g's	59

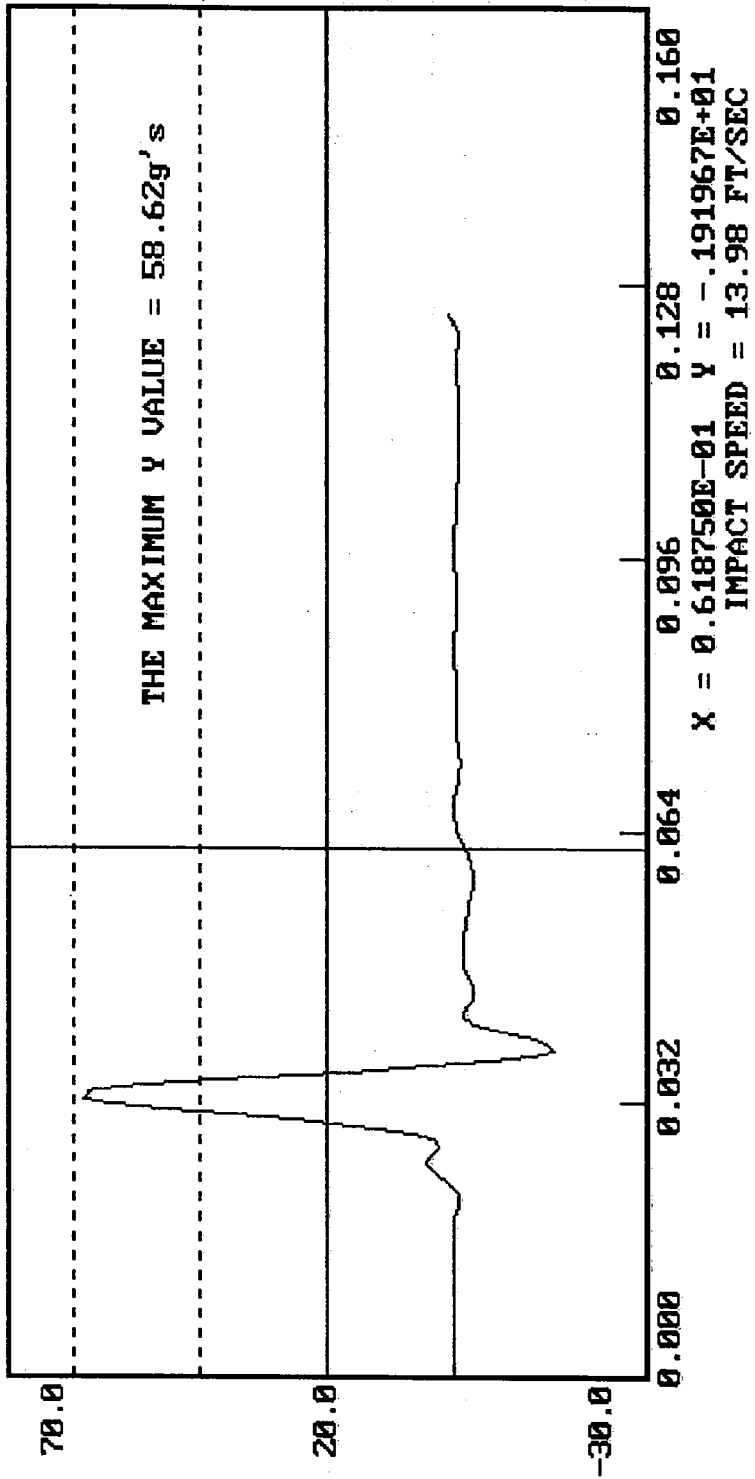
TEST MEETS SPECIFICATIONS

TECHNICIAN Jim Helmer

APPROVED BY Dave Kebeke

11-08-1996 09:08

DUMMY CALIBRATION - PELVIS IMPACT
DUMMY # 271
ACCELERATION (G'S) VS. TIME ((SECONDS))



MGA RESEARCH CORPORATION

ABDOMINAL COMPRESSION TEST
(PRELOAD = 10 LBS)

SIDE IMPACT DUMMY (SID)

DATE: November 07, 1996

DUMMY NUMBER: 271

TEST NUMBER: D961604

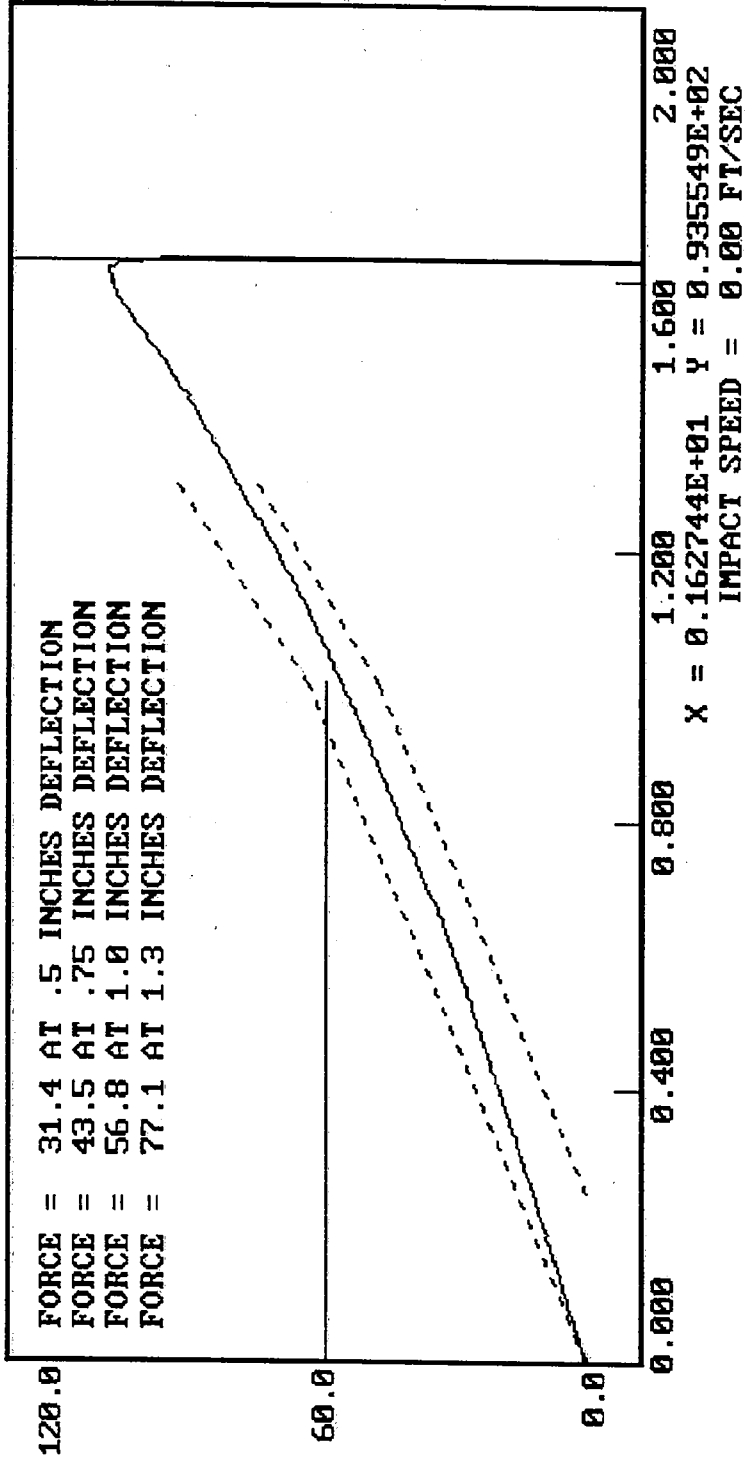
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	35%
FORCE @ 0.5 in	23.3 - 36.5 lbs	31.4
FORCE @ 0.75 in	36.7 - 49.8 lbs	43.5
FORCE @ 1.0 in	50 - 63 lbs	57
FORCE @ 1.3 in	73 - 88 lbs	77

TEST MEETS SPECIFICATIONS

TECHNICIAN Jim Melton

APPROVED BY Paul Koelke

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



MGA RESEARCH CORPORATION

LUMBAR FLEXION TEST

SIDE IMPACT DUMMY (SID)

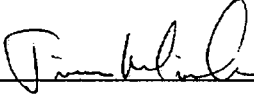
DATE: October 31, 1996

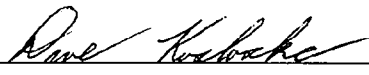
DUMMY NUMBER: 271

TEST NUMBER: D961605

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	18%
FORCE @ 0°	0 - 6 lbs	0
FORCE @ 20°	22 - 34 lbs	28
FORCE @ 30°	34 - 46 lbs	39
FORCE @ 40°	46 - 58 lbs	48
RETURN ANGLE	12° maximum	7°

TEST MEETS SPECIFICATIONS

TECHNICIAN 

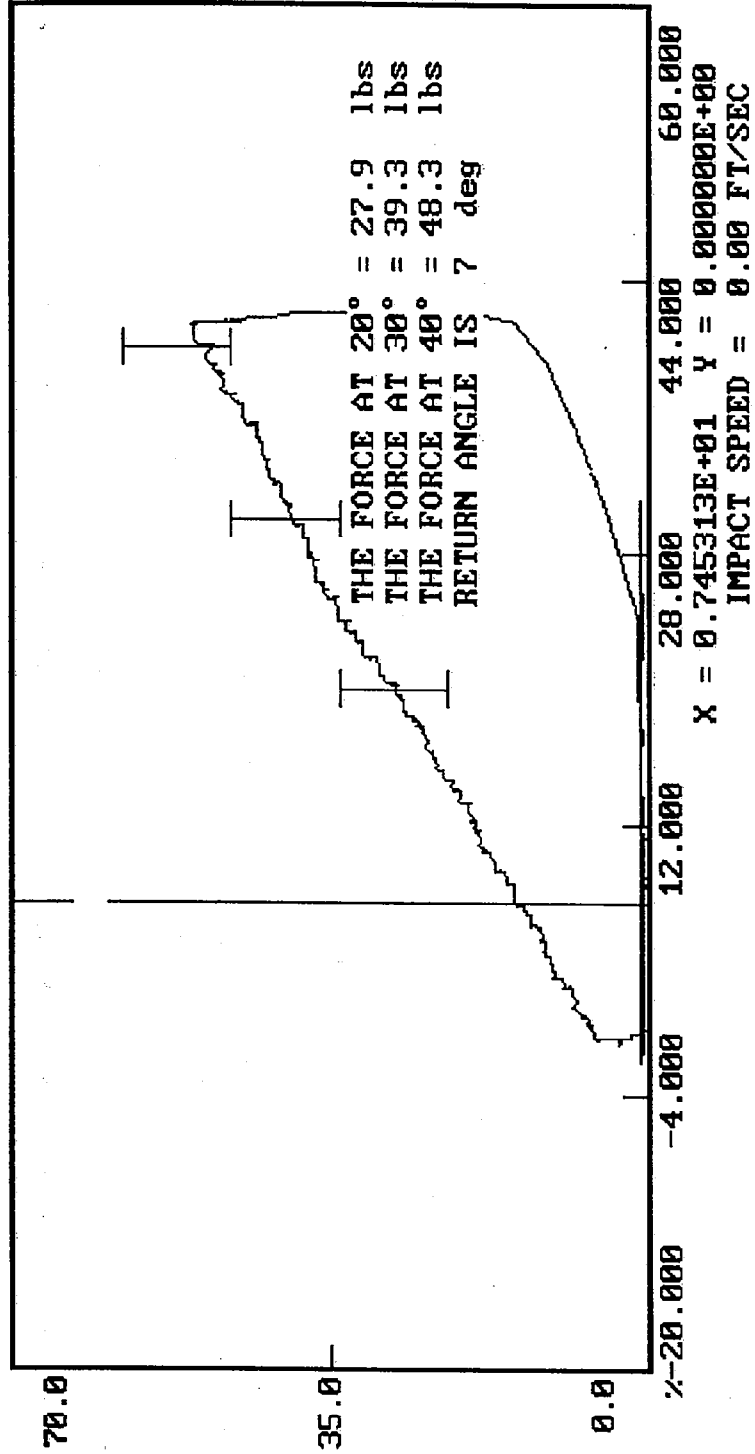
APPROVED BY 

10-31-1996 12:11

DUMMY CALIBRATION - LUMBAR FLEXION

DUMMY # 271

FORCE (LBS) VS. TORSO ROTATION (DEGREES)



PRE-TEST CERTIFICATION DATA

Rear Dummy Serial Number: 272

Calibration Test Results Summary

Passenger Serial Number: 272

Pre-Test Calibration

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

SIDE IMPACT DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

DUMMY NO.: 272

DATE OF VERIFICATION: November 07, 1996

DESCRIPTION	SPECIFICATION	TEST RESULTS
SH - Seated Height	35.0" - 35.8"	35.2
RH - Rib Height	19.75" - 20.50"	20.20
HP - Hip Pivot Height	3.9" ref.	3.9
RD - Rib From Back Line	9.0" to 9.5"	9.4
KV - Knee Pivot From Back Line	20.1" - 20.7"	20.7
SW - Knee Pivot to Floor	19.3" - 19.9"	19.6
HW - Hip Width	14.0" - 15.4"	15.0

MEASUREMENTS BY: 

APPROVED BY: 

MGA RESEARCH CORPORATION

THORAX IMPACT TEST

SIDE IMPACT DUMMY (SID)

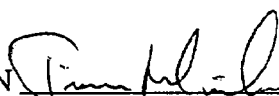
DATE: November 07, 1996

DUMMY NUMBER: 272

TEST NUMBER: D961612

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	30%
PROBE SPEED	13.8 - 14.2 fps	14.0
UPPER RIB	37 - 46 g's	41
LOWER RIB	37 - 46 g's	39
LOWER SPINE	15 - 22 g's	19

TEST MEETS SPECIFICATIONS

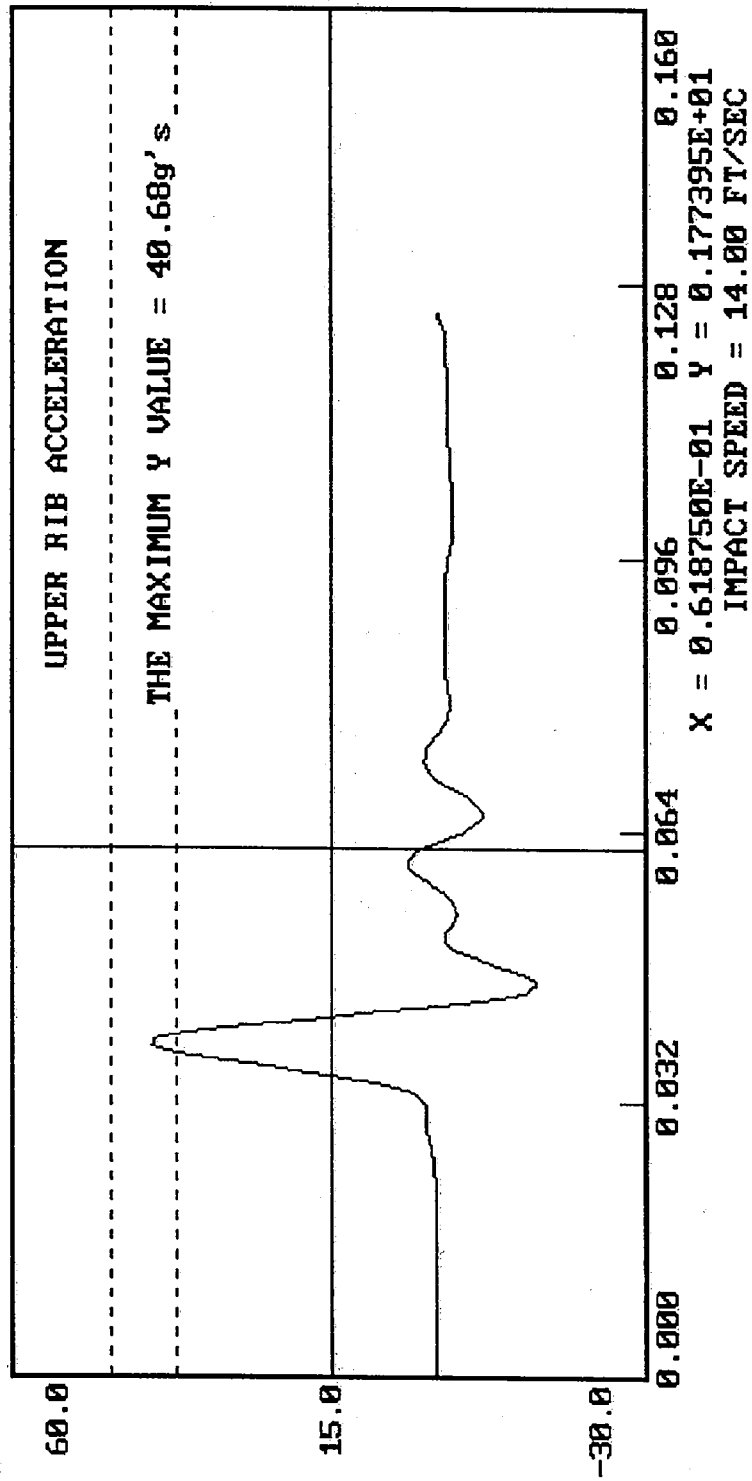
TECHNICIAN 

APPROVED BY 

DUMMY CALIBRATION - THORAX IMPACT
DUMMY # 272

11-07-1996 15:28

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

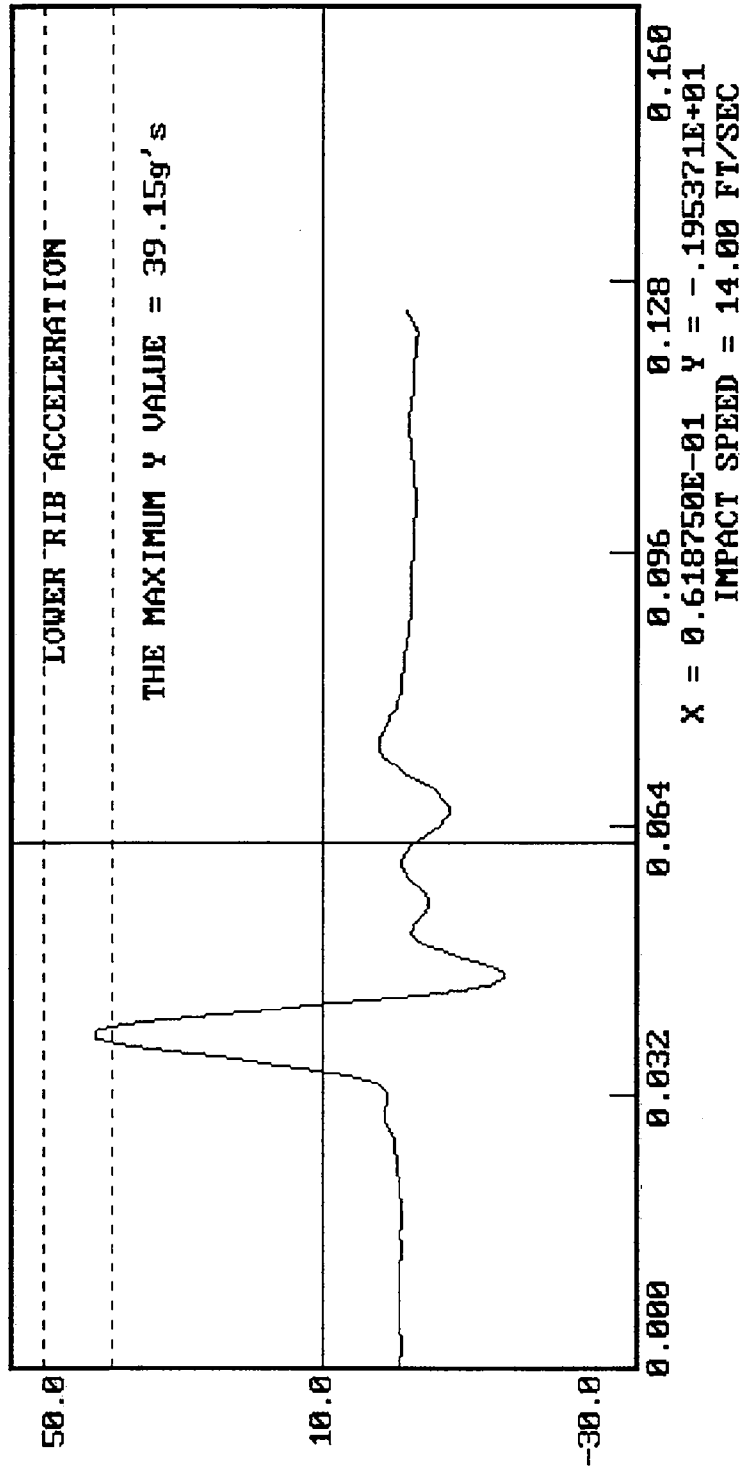


11-07-1996 15:29

DUMMY CALIBRATION - THORAX IMPACT

DUMMY # 272

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

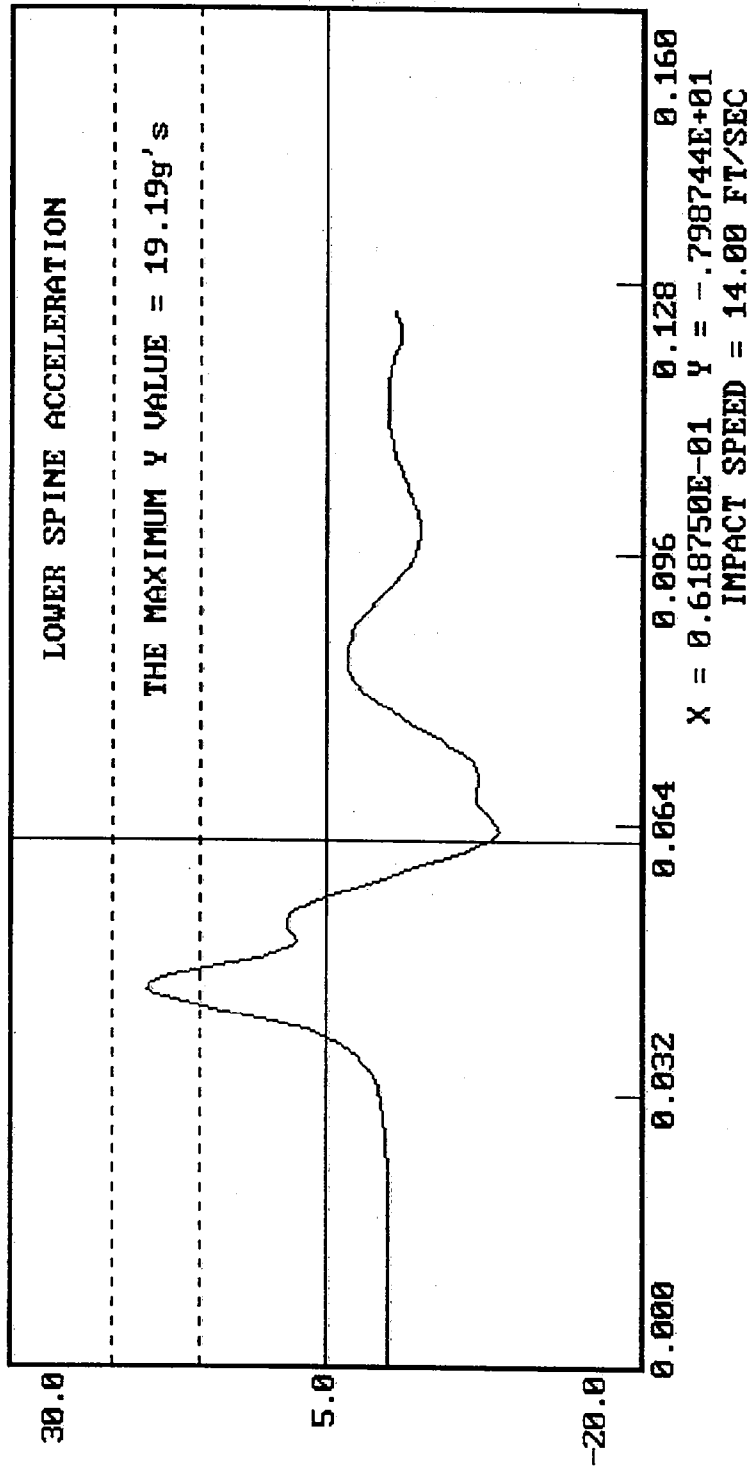


11-07-1996 15:29

DUMMY CALIBRATION - THORAX IMPACT

DUMMY # 272

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



MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: November 07, 1996

DUMMY NUMBER: 272

TEST NUMBER: D961613

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	30%
PROBE SPEED	13.8 - 14.2 f/s	14.0
PELVIS ACCELERATION	40 - 60 g's	54

TEST MEETS SPECIFICATIONS

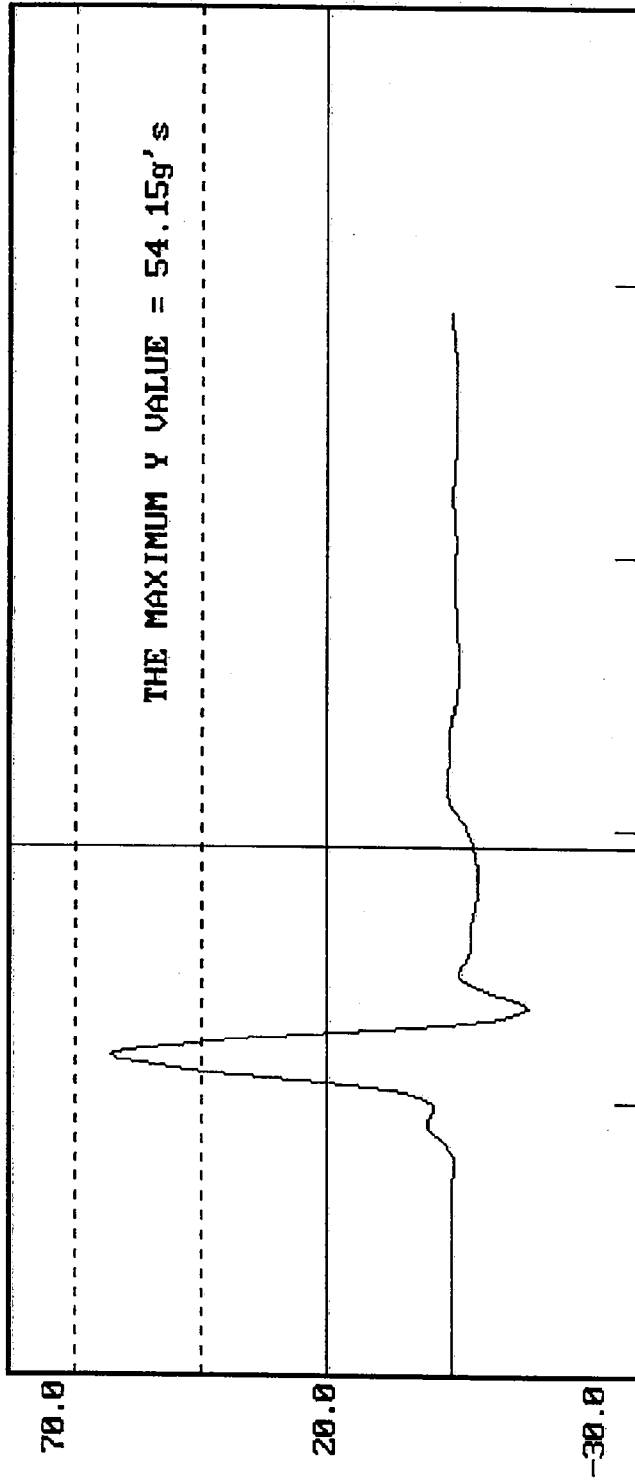
TECHNICIAN Jim Mel...

APPROVED BY Rue Kabake

11-07-1996 15:40

DUMMY CALIBRATION - PELVIS IMPACT
DUMMY # 272

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



X = 0.096 0.128 0.160
Y = 0.618750E-01 Y = -.350854E+01
IMPACT SPEED = 13.97 FT/SEC

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

DATE: October 31, 1996

DUMMY NUMBER: 272

TEST NUMBER: D961614

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	18%
FORCE @ 0.5 in	23.3 - 36.5 lbs	31.1
FORCE @ 0.75 in	36.7 - 49.8 lbs	44.0
FORCE @ 1.0 in	50 - 63 lbs	60
FORCE @ 1.3 in	73 - 88 lbs	85

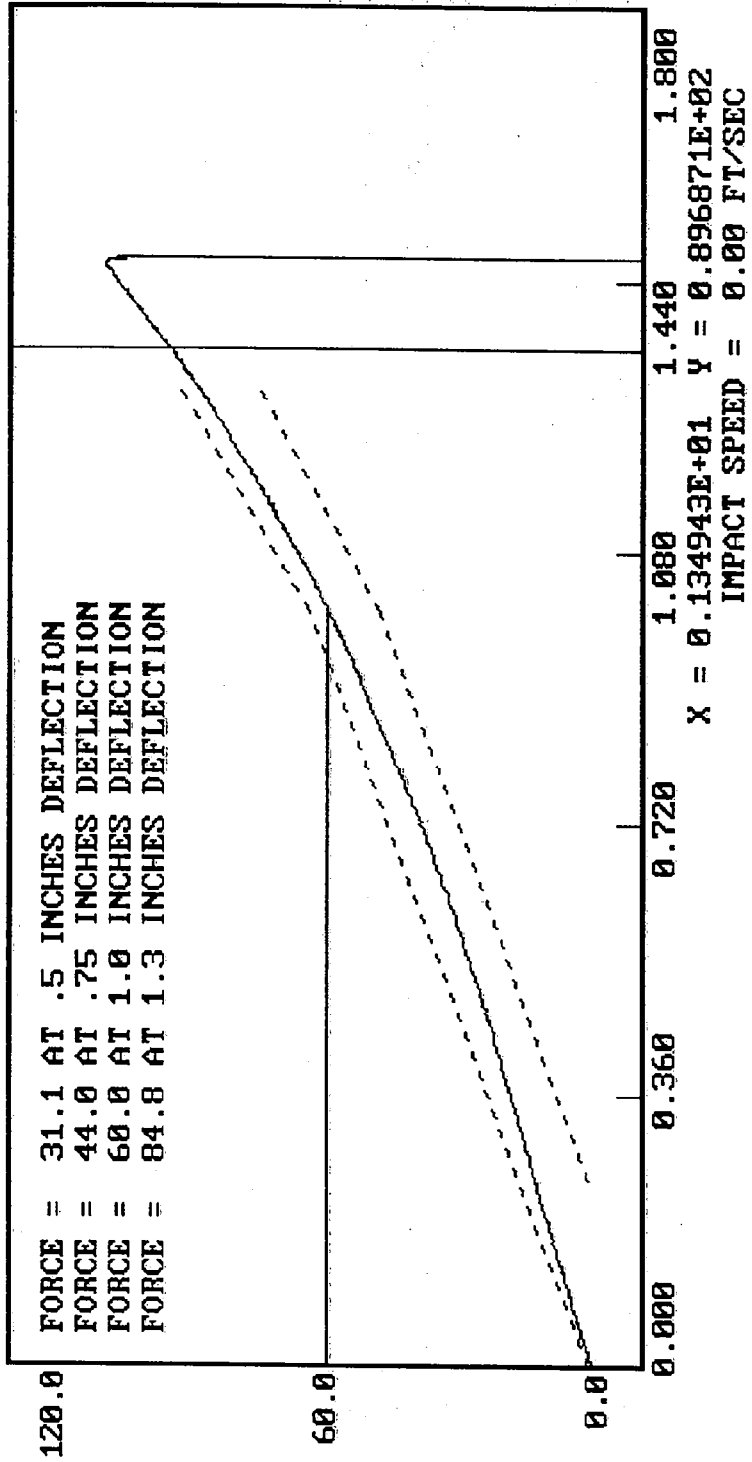
TEST MEETS SPECIFICATIONS

TECHNICIAN 

APPROVED BY 

DUMMY CALIBRATION - ABDOMEN COMPRESSION
 DUMMY # 272
 10-31-1996 15:54

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



MGA RESEARCH CORPORATION

LUMBAR FLEXION TEST

SIDE IMPACT DUMMY (SID)

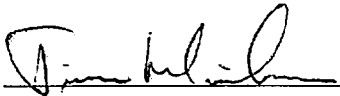
DATE: October 31, 1996

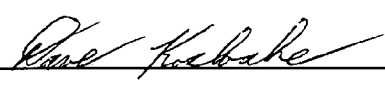
DUMMY NUMBER: 272

TEST NUMBER: D961615

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	18%
FORCE @ 0°	0 - 6 lbs	0
FORCE @ 20°	22 - 34 lbs	26
FORCE @ 30°	34 - 46 lbs	38
FORCE @ 40°	46 - 58 lbs	49
RETURN ANGLE	12° maximum	7°

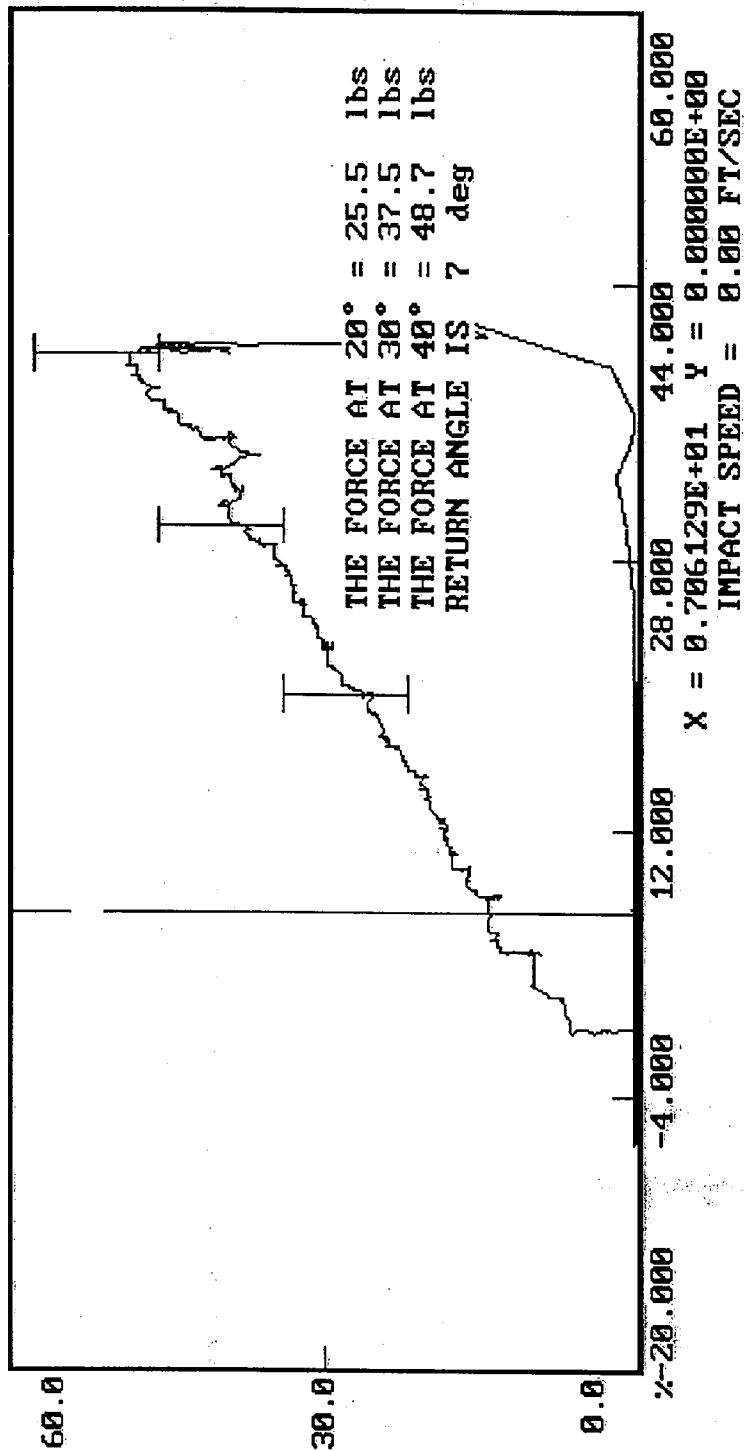
TEST MEETS SPECIFICATIONS

TECHNICIAN 

APPROVED BY 

10-31-1996 12:42

DUMMY CALIBRATION - LUMBAR FLEXION
DUMMY # 272
FORCE (LBS) VS. TORSO ROTATION (DEGREES)



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: November 14, 1996

DESCRIPTION	SPECIFICATION	TEST RESULTS
SH - Seated Height	35.0" - 35.8"	35.4
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"	15.0

MEASUREMENTS BY: 

APPROVED BY: 

MGA RESEARCH CORPORATION

THORAX IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: November 14, 1996

DUMMY NUMBER: 271

TEST NUMBER: D961782

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	18%
PROBE SPEED	13.8 - 14.2 fps	14.0
UPPER RIB	37 - 46 g's	42
LOWER RIB	37 - 46 g's	44
LOWER SPINE	15 - 22 g's	22

TEST MEETS SPECIFICATIONS

TECHNICIAN 

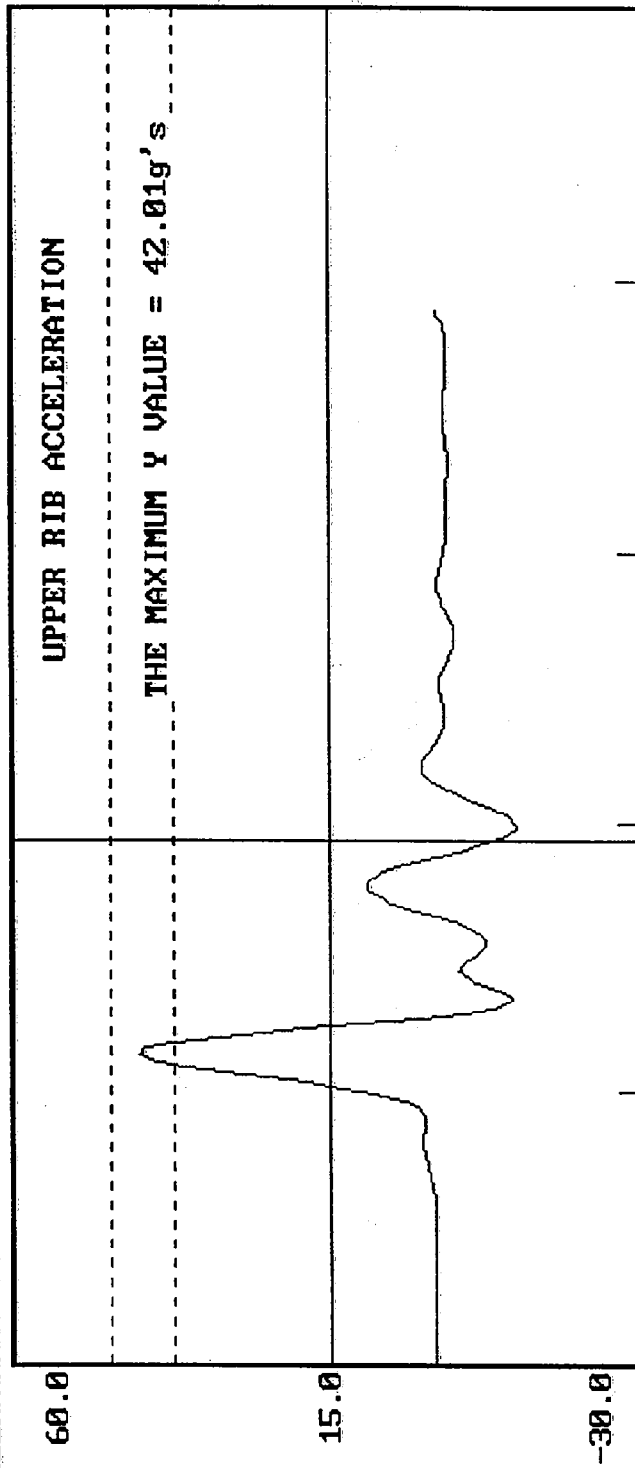
APPROVED BY 

11-14-1996 14:08

DUMMY CALIBRATION - THORAX IMPACT

DUMMY # 271

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



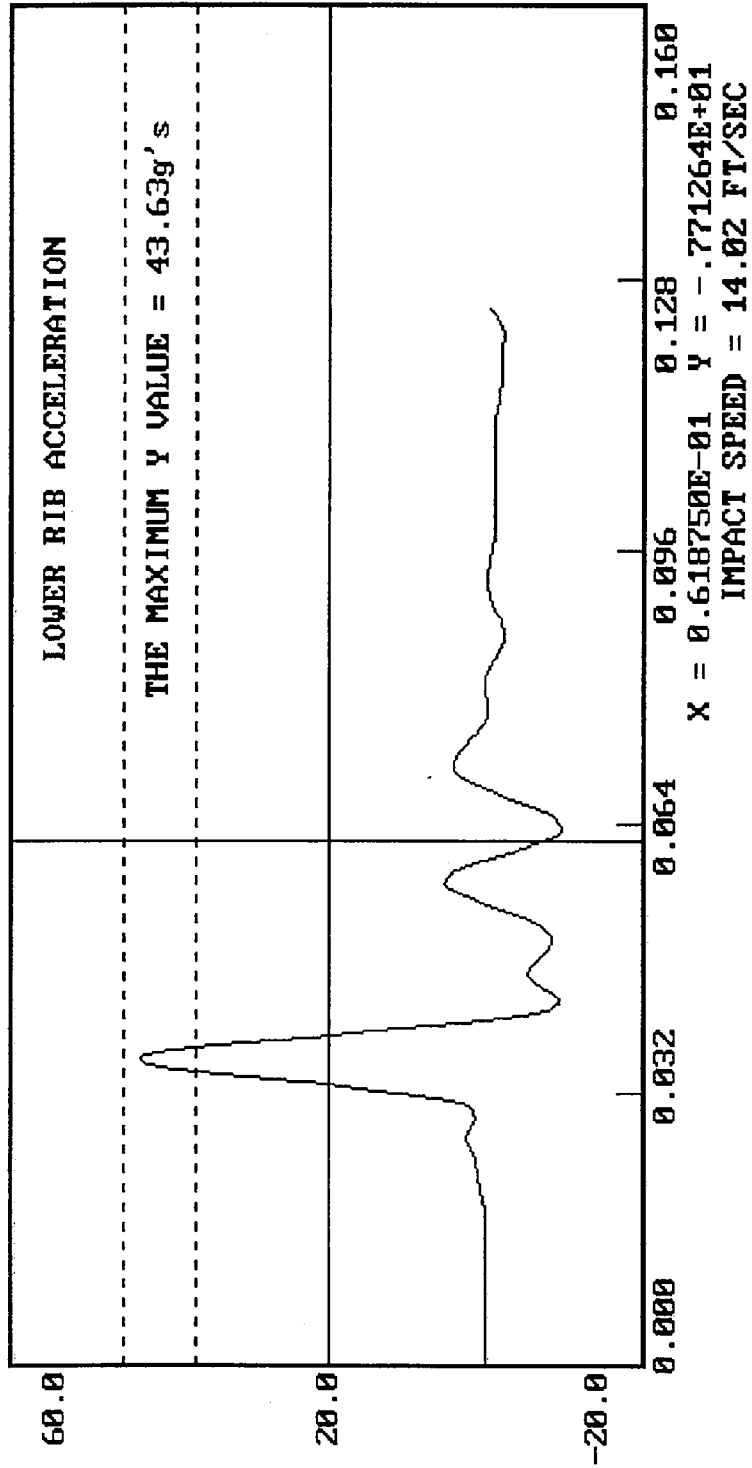
X = 0.618750E-01 Y = -.875406E+01
IMPACT SPEED = 14.02 FT/SEC

11-14-1996 14:08

DUMMY CALIBRATION - THORAX IMPACT

DUMMY # 271

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

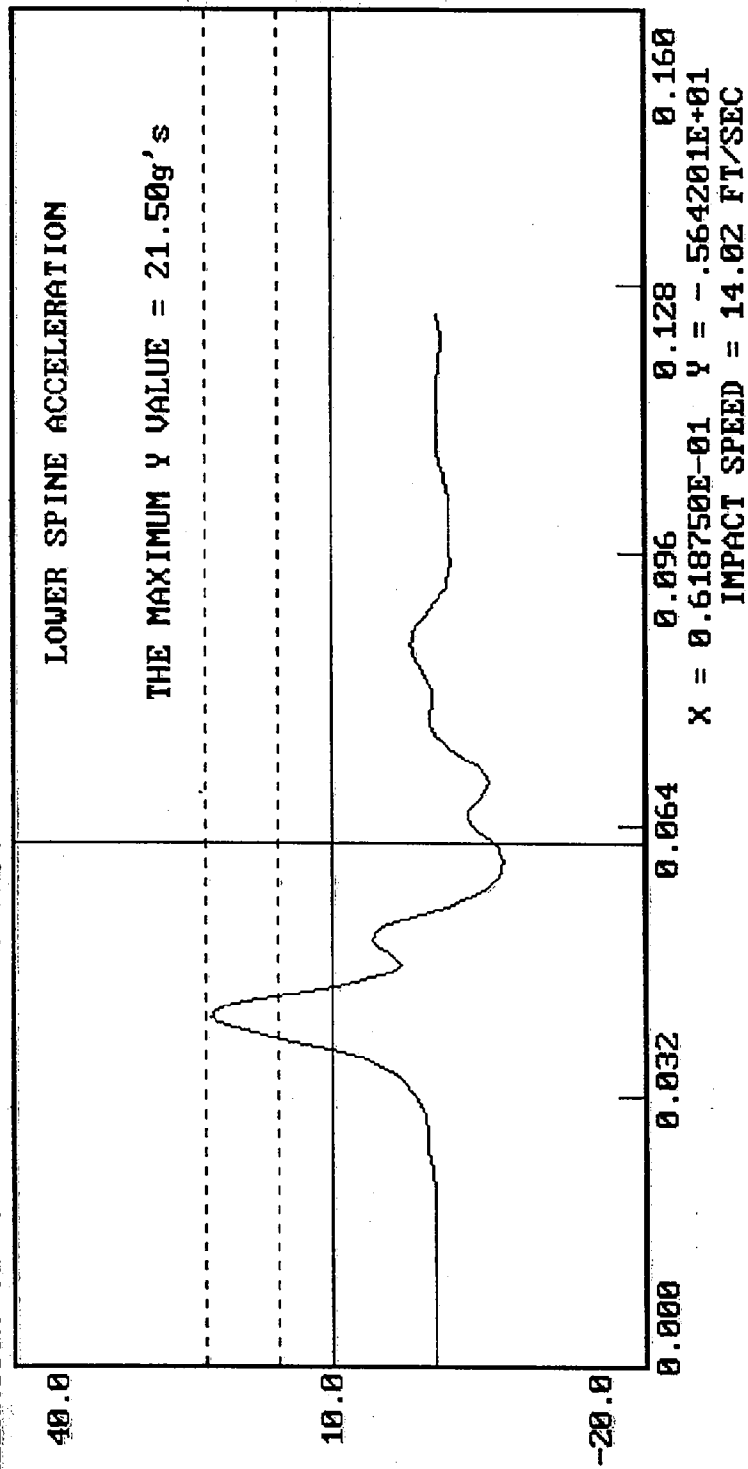


11-14-1996 14:08

DUMMY CALIBRATION - THORAX IMPACT

DUMMY # 271

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



MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

SIDE IMPACT DUMMY (SID)

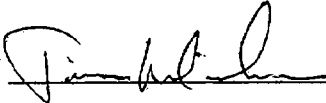
DATE: November 14, 1996

DUMMY NUMBER: 271

TEST NUMBER: D961783

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	20%
PROBE SPEED	13.8 - 14.2 f/s	14.0
PELVIS ACCELERATION	40 - 60 g's	57

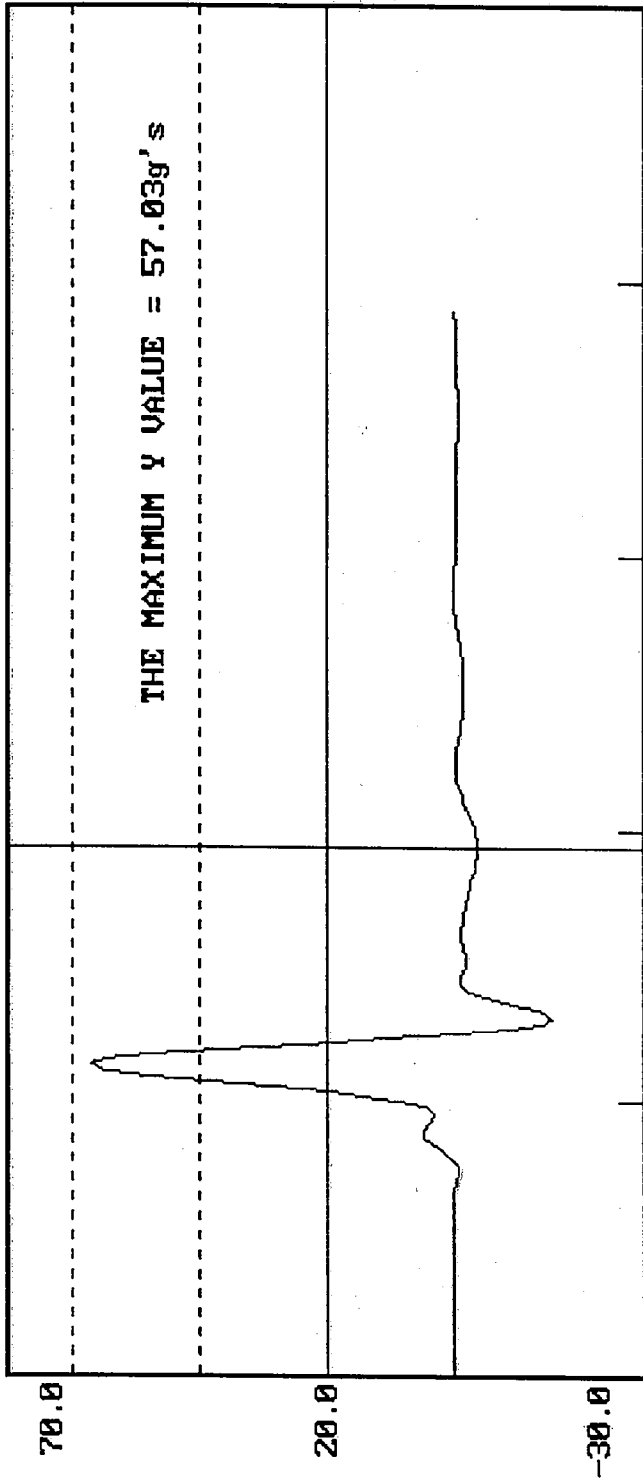
TEST MEETS SPECIFICATIONS

TECHNICIAN 

APPROVED BY 

11-14-1996 14:17

DUMMY CALIBRATION - PELVIS IMPACT
DUMMY # 271
ACCELERATION (G'S) VS. TIME ((SECONDS))



X = 0.618750E-01 Y = -.376602E+01
IMPACT SPEED = 14.00 FT/SEC

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

DATE: November 14, 1996

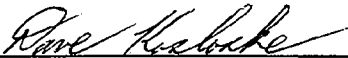
DUMMY NUMBER: 271

TEST NUMBER: D961784

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	15%
FORCE @ 0.5 in	23.3 - 36.5 lbs	32.3
FORCE @ 0.75 in	36.7 - 49.8 lbs	45.5
FORCE @ 1.0 in	50 - 63 lbs	59
FORCE @ 1.3 in	73 - 88 lbs	79

TEST MEETS SPECIFICATIONS

TECHNICIAN 

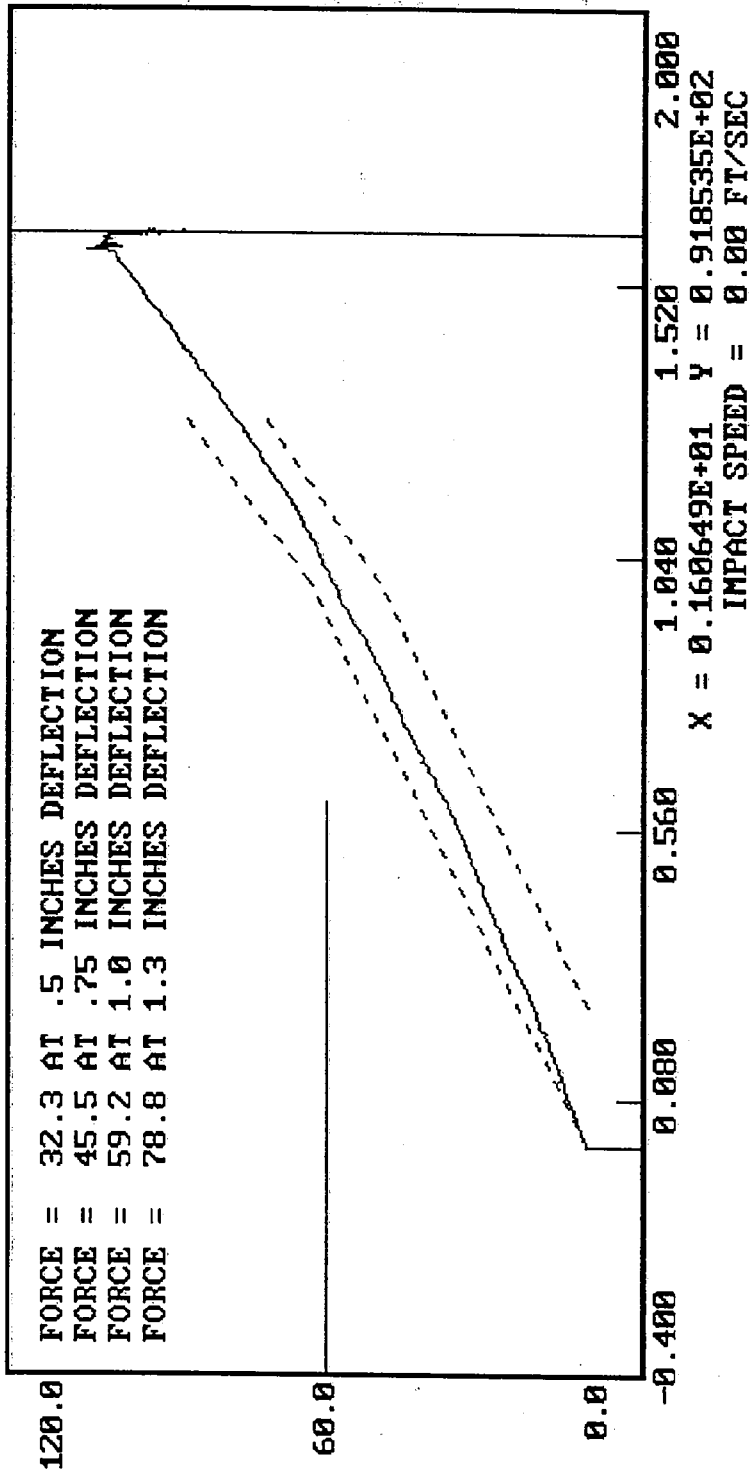
APPROVED BY 

DUMMY CALIBRATION - ABDOMEN COMPRESSION

DUMMY # 271

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

11-14-1996 22:26



MGA RESEARCH CORPORATION

LUMBAR FLEXION TEST

SIDE IMPACT DUMMY (SID)

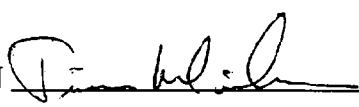
DATE: November 14, 1996

DUMMY NUMBER: 271

TEST NUMBER: D961785

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	20%
FORCE @ 0°	0 - 6 lbs	0
FORCE @ 20°	22 - 34 lbs	24
FORCE @ 30°	34 - 46 lbs	37
FORCE @ 40°	46 - 58 lbs	53
RETURN ANGLE	12° maximum	7°

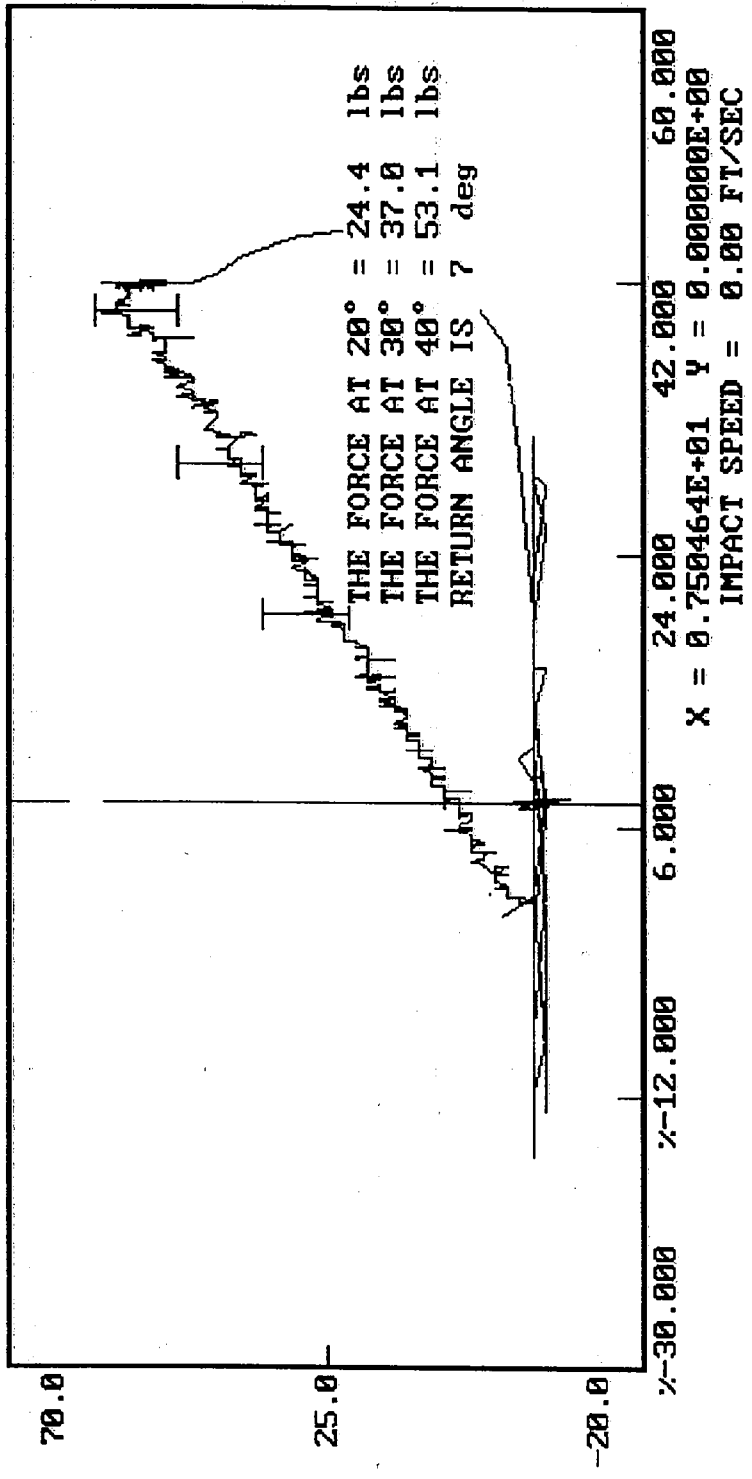
TEST MEETS SPECIFICATIONS

TECHNICIAN 

APPROVED BY 

11-14-1996 17:57

DUMMY CALIBRATION - LUMBAR FLEXION
DUMMY # 271
FORCE (LBS) VS. TORSO ROTATION (DEGREES)



POST-TEST CERTIFICATION DATA

Rear Dummy Serial Number: 272

Calibration Test Results Summary

Dummy Serial Number: 272

Post-Test Calibration

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

SIDE IMPACT DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

DUMMY NO.: 272

DATE OF VERIFICATION: November 14, 1996

DESCRIPTION	SPECIFICATION	TEST RESULTS
SH - Seated Height	35.0" - 35.8"	35.2
RH - Rib Height	19.75" - 20.50"	20.20
HP - Hip Pivot Height	3.9" ref.	3.9
RD - Rib From Back Line	9.0" to 9.5"	9.4
KV - Knee Pivot From Back Line	20.1" - 20.7"	20.7
SW - Knee Pivot to Floor	19.3" - 19.9"	19.6
HW - Hip Width	14.0" - 15.4"	15.0

MEASUREMENTS BY: 

APPROVED BY: 

MGA RESEARCH CORPORATION

THORAX IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: November 14, 1996

DUMMY NUMBER: 272

TEST NUMBER: D961792

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	20%
PROBE SPEED	13.8 - 14.2 fps	14.0
UPPER RIB	37 - 46 g's	42
LOWER RIB	37 - 46 g's	43
LOWER SPINE	15 - 22 g's	22

TEST MEETS SPECIFICATIONS

TECHNICIAN 

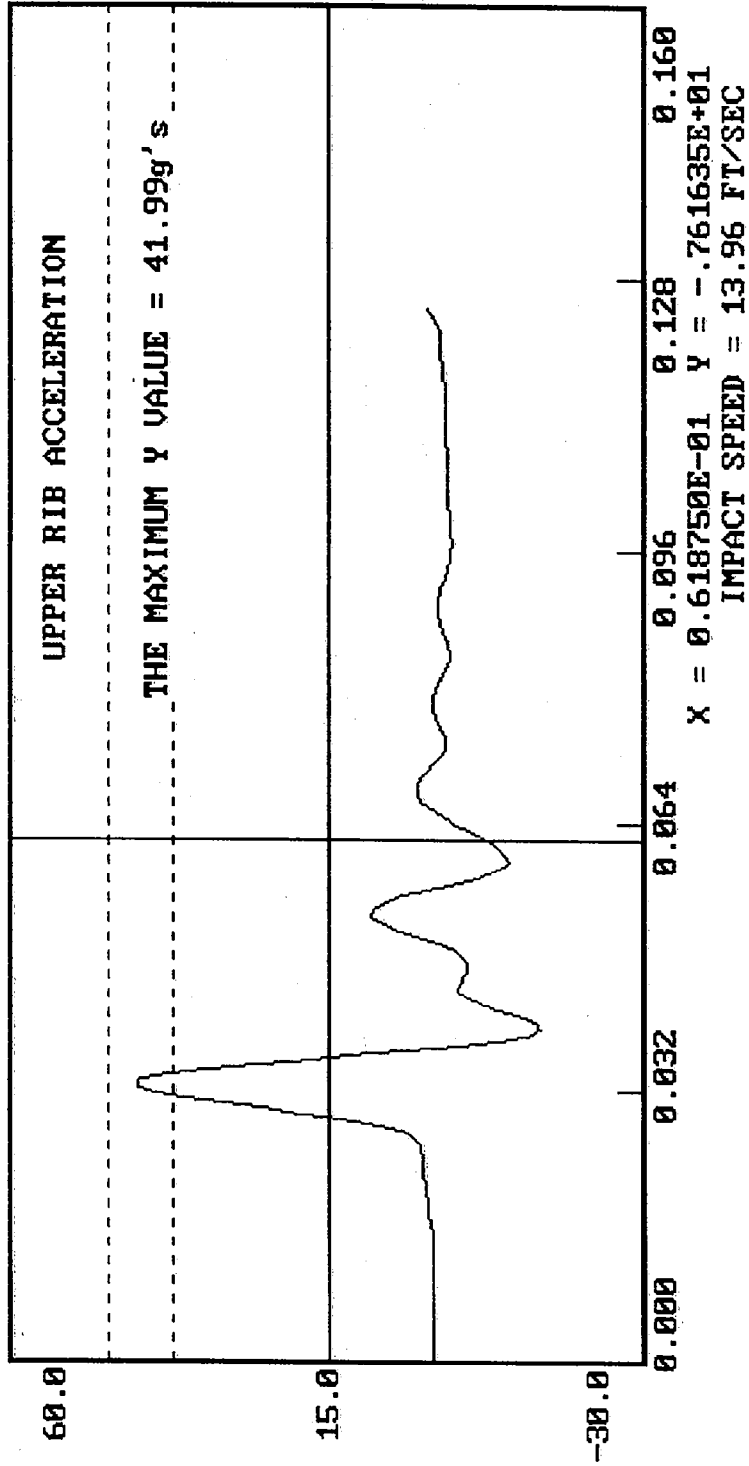
APPROVED BY 

DUMMY CALIBRATION - THORAX IMPACT

DUMMY # 272

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

11-14-1996 15:08

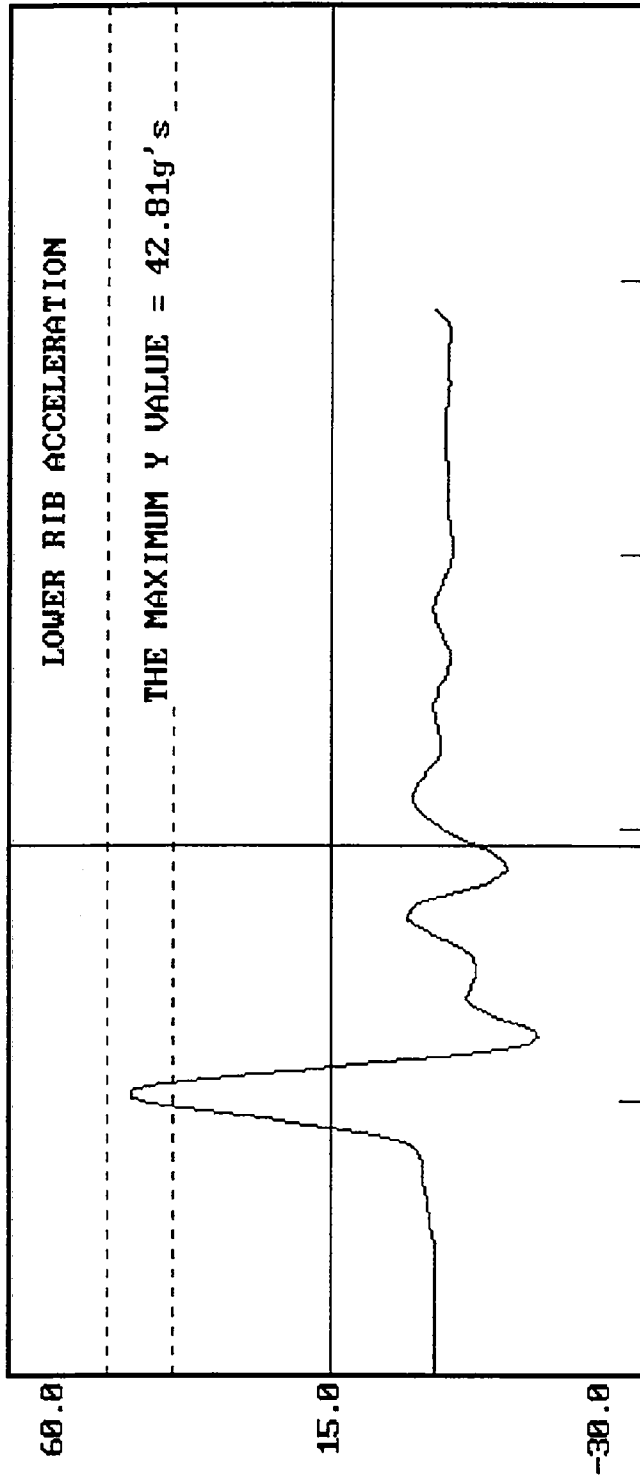


11-14-1996 15:08

DUMMY CALIBRATION - THORAX IMPACT

DUMMY # 272

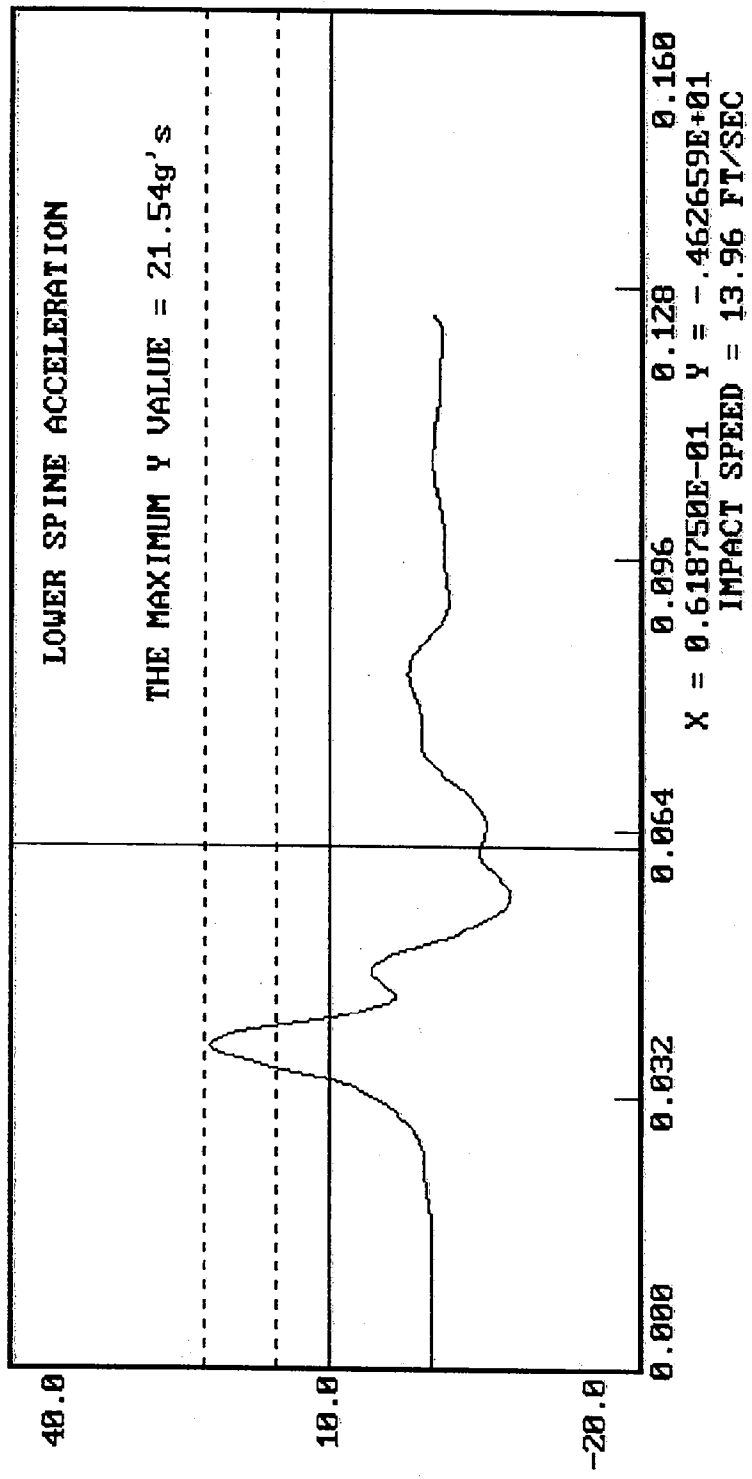
ACCELERATION (G'S) VS. TIME ((SECONDS))



X = 0.618750E-01 Y = -.586421E+01
IMPACT SPEED = 13.96 FT/SEC

DUMMY CALIBRATION - THORAX IMPACT
DUMMY # 272
ACCELERATION (G'S) VS. TIME ((SECONDS))

11-14-1996 15:08



MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: November 14, 1996

DUMMY NUMBER: 272

TEST NUMBER: D961793

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	18%
PROBE SPEED	13.8 - 14.2 f/s	14.0
PELVIS ACCELERATION	40 - 60 g's	57

TEST MEETS SPECIFICATIONS

TECHNICIAN Jim Helwig

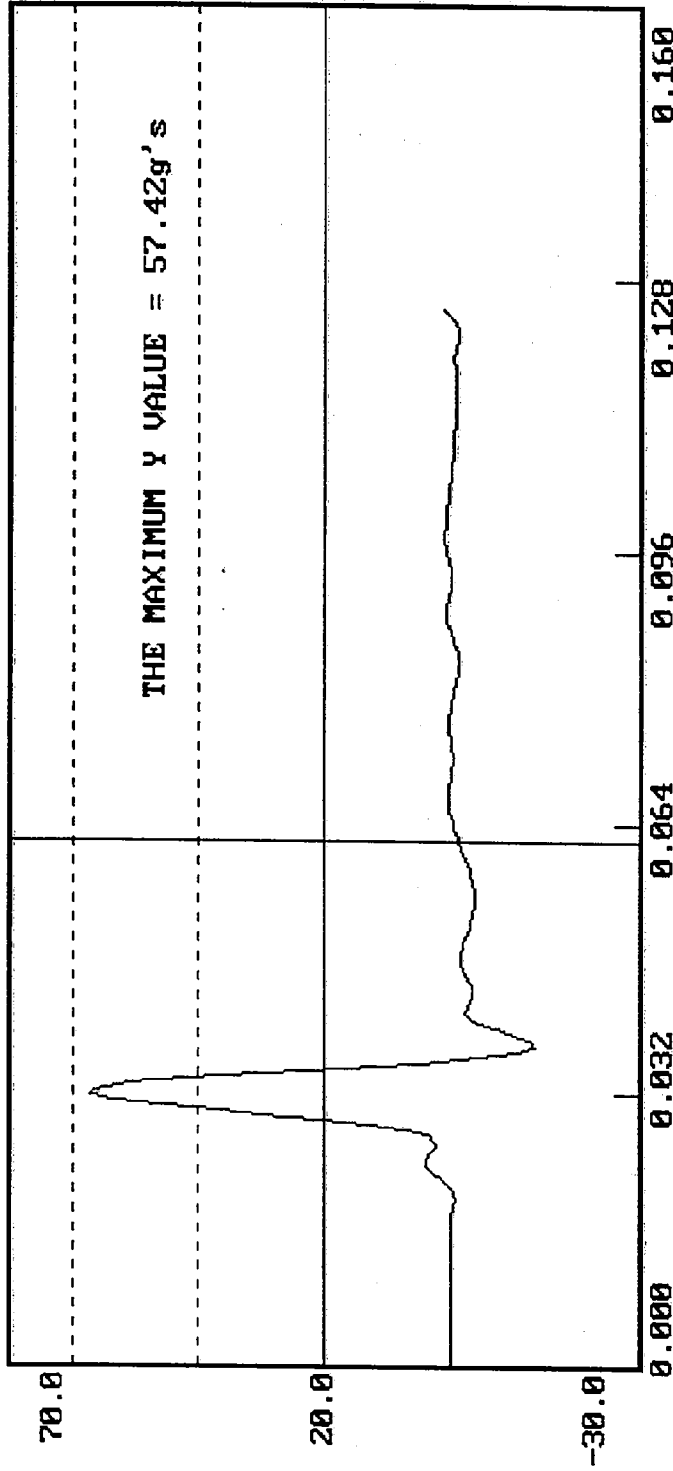
APPROVED BY Rene Heuback

DUMMY CALIBRATION - PELVIS IMPACT

DUMMY # 272

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

11-14-1996 15:15



X = 0.618750E-01 Y = -.132199E+01
IMPACT SPEED = 14.02 FT/SEC

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

DATE: November 14, 1996

DUMMY NUMBER: 272

TEST NUMBER: D961794

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	15%
FORCE @ 0.5 in	23.3 - 36.5 lbs	30.0
FORCE @ 0.75 in	36.7 - 49.8 lbs	42.3
FORCE @ 1.0 in	50 - 63 lbs	54
FORCE @ 1.3 in	73 - 88 lbs	74

TEST MEETS SPECIFICATIONS

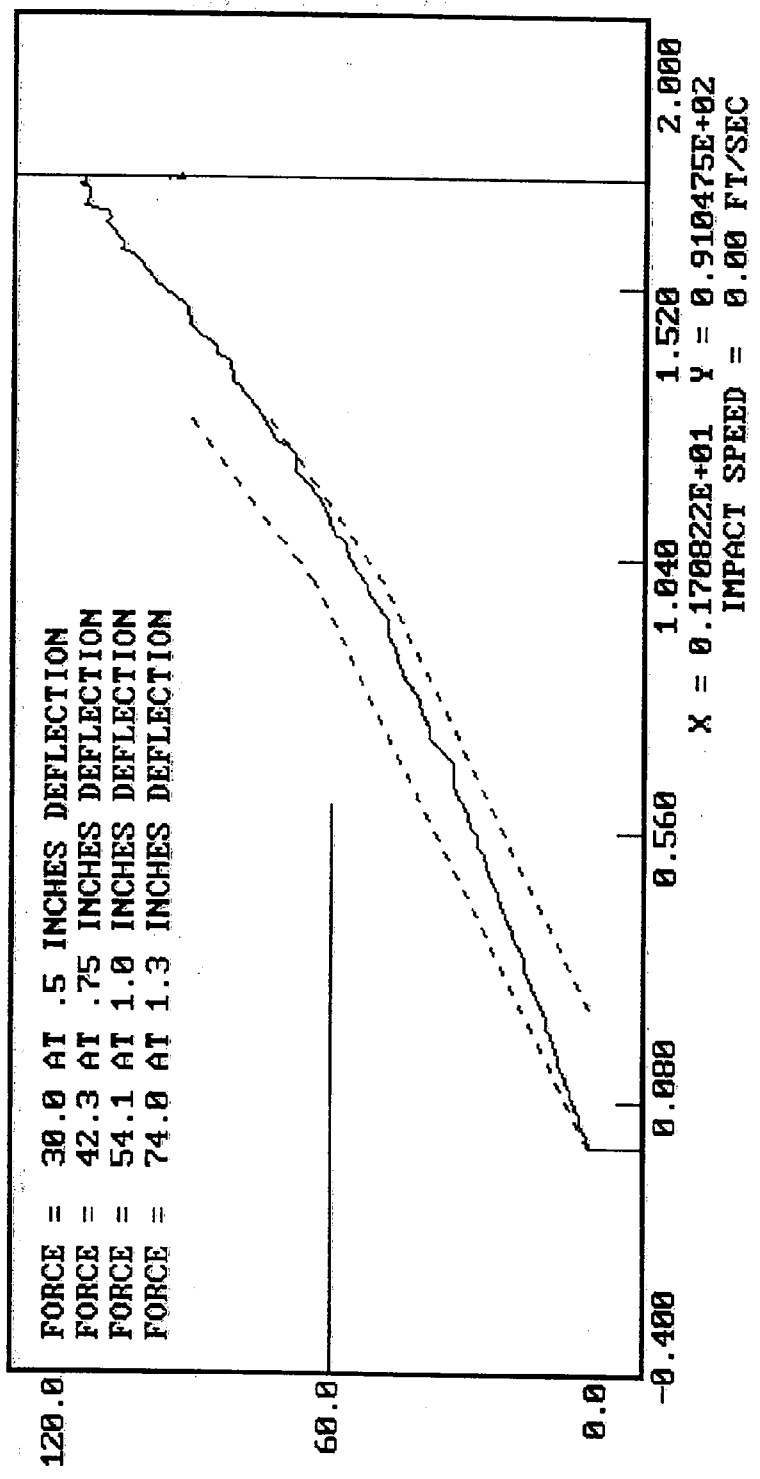
TECHNICIAN 

APPROVED BY 

DUMMY CALIBRATION - ABDOMEN COMPRESSION
DUMMY # 272

11-14-1996 22:21

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



MGA RESEARCH CORPORATION

LUMBAR FLEXION TEST

SIDE IMPACT DUMMY (SID)

DATE: November 14, 1996

DUMMY NUMBER: 272

TEST NUMBER: D961795

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	26
FORCE @ 30°	34 - 46 lbs	37
FORCE @ 40°	46 - 58 lbs	57
RETURN ANGLE	12° maximum	4°

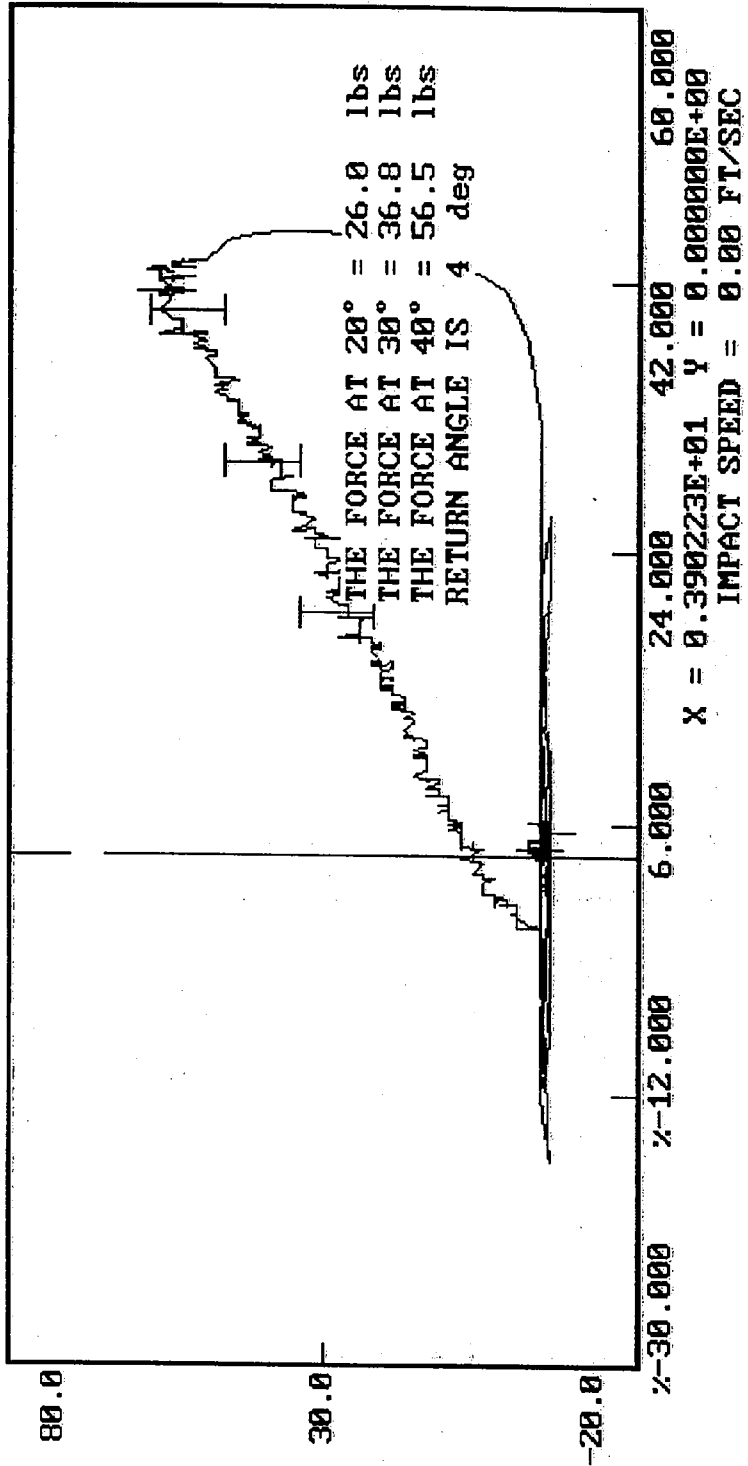
TEST MEETS SPECIFICATIONS

TECHNICIAN Tim Melillo

APPROVED BY Paul Kosbade

11-14-1996 17:47

DUMMY CALIBRATION - LUMBAR FLEXION
DUMMY # 272
FORCE (LBS) VS. TORSO ROTATION (DEGREES)



POST-TEST DRIVER DUMMY INSPECTION CHECKLIST

Type: Side Impact Dummy

Serial Number: 271

Inspected By: Tim Michnay

Date: November 14, 1996

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

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

POST-TEST PASSENGER DUMMY INSPECTION CHECKLIST

Type: Side Impact Dummy

Serial Number: 272

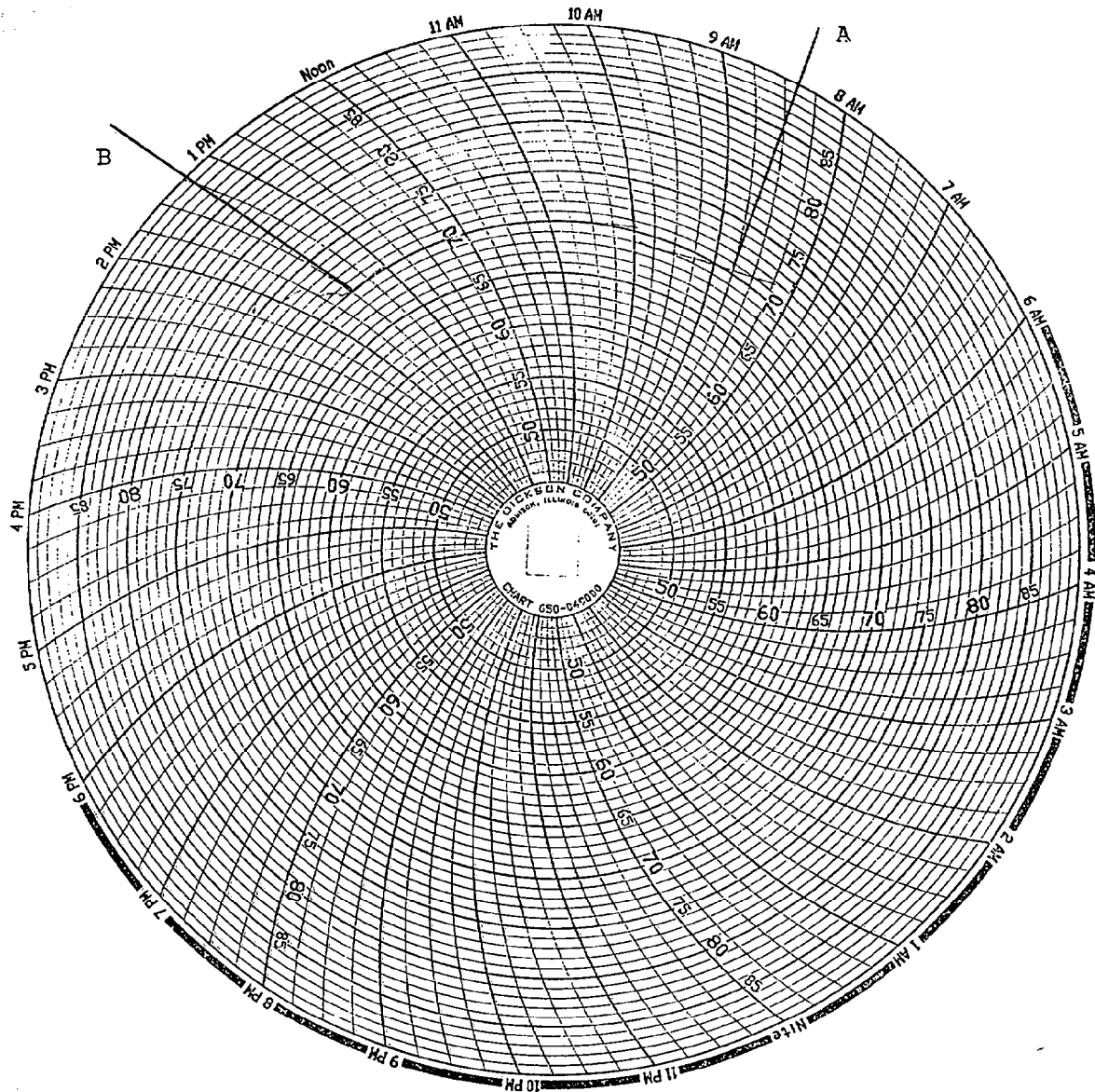
Inspected By: Tim Michnay

Date: November 14, 1996

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

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

VEHICLE AND DUMMY TEMPERATURE



A = Dummies installed in vehicle
B = Test conducted

APPENDIX D
TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

DUMMY AND VEHICLE CALIBRATION DATA
 INSTRUMENTS FOR RIGHT FRONT PASSENGER DUMMY NO. 271

RIGHT FRONT PASSENGER		
	SERIAL NO.	CALIBRATION DATE
Upper Rib Y	AP2A4	September 16, 1996
Lower Rib Y	AP1B3	September 16, 1996
Lower Spine Y	ANAP1	September 16, 1996
Pelvis Y	AHTC3	September 16, 1996
Upper Rib Redundant Y	AP2D8	September 16, 1996
Lower Rib Redundant Y	APIC6	September 16, 1996
Lower Spine Redundant Y	ANAT6	September 16, 1996
Pelvis Redundant Y	AGP53	September 16, 1996

INSTRUMENTS FOR RIGHT REAR PASSENGER DUMMY NO. 272

RIGHT REAR PASSENGER		
	SERIAL NO.	CALIBRATION DATE
Upper Rib Y	ALFJ7	July 12, 1996
Lower Rib Y	APYN0	June 07, 1996
Lower Spine Y	AP0G2	July 12, 1996
Pelvis Y	APY15	September 16, 1996
Upper Rib Redundant Y	ALDD6	July 12, 1996
Lower Rib Redundant Y	APYN3	June 07, 1996
Lower Spine Redundant Y	AP138	July 12, 1996
Pelvis Redundant Y	APY16	September 16, 1996

VEHICLE INSTRUMENT CALIBRATION

VEHICLE AND MDB ACCELEROMETERS			
SERIAL NO.	MANUFACTURER	CALIBRATION DATE	
Moving Barrier CG X	C14-Z10	Entran	July 12, 1996
Moving Barrier CG Y	B14-R01	Entran	July 15, 1996
Moving Barrier CG Z	B14-R16	Entran	July 11, 1996
Moving Barrier Rear Axle X	B14-R03	Entran	July 11, 1996
Moving Barrier Rear Axle Y	A10-G01	Entran	June 04, 1996
Right Mid A-Post Y	D05-R13	Entran	June 04, 1996
Right Lower A-Post Y	L14-D05	Entran	October 02, 1996
Right Mid B-Post Y	L22-G05	Entran	July 11, 1996
Right Lower B-Post Y	D05-R09	Entran	June 04, 1996
Rear Floorpan Above Axle X	A10-G04	Entran	July 11, 1996
Rear Floorpan Above Axle Y	B28-B03	Entran	July 11, 1996
Rear Floorpan Above Axle Z	A09-G07	Entran	July 11, 1996
Right Front Passenger Seat Track Y	L14-D08	Entran	July 03, 1996
Left Side Sill at Front Seat X	B14-R15	Entran	July 11, 1996
Left Side Sill at Front Seat Y	J10-E12	Entran	July 10, 1996
Left Side Sill at Front Seat Z	L14-D01	Entran	October 02, 1996
Left Side Sill at Rear Seat X	A09-G02	Entran	July 15, 1996
Left Side Sill at Rear Seat Y	B14-R12	Entran	July 15, 1996
Left Side Sill at Rear Seat Z	J10-E11	Entran	July 10, 1996
Right Side Sill at Front Seat Y	J10-E18	Entran	July 10, 1996

VEHICLE INSTRUMENT CALIBRATION

VEHICLE AND MDB ACCELEROMETERS			
	SERIAL NO	MANUFACTURER	CALIBRATION DATE
Right Side Sill at Rear Seat Y	B14-R18	Entran	July 15, 1996
Left Rear Occupant Compartment Y	C14-Z15	Entran	July 11, 1996
Vehicle CG X	D05-R19	Entran	June 04, 1996
Vehicle CG Y	D05-R21	Entran	June 04, 1996
Vehicle CG Z	D05-R20	Entran	June 04, 1996

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

