

REPORT NO.: 214-MGA-97-16
SAFETY COMPLIANCE TESTING FOR
FMVSS 214 "SIDE IMPACT PROTECTION -
PASSENGER CARS"

V2474

FUJI HEAVY INDUSTRIES LTD.
1997 SUBARU IMPREZA OUTBACK 4 DOOR
NHTSA NO: CV5500

MGA PROVING GROUNDS
5000 WARREN ROAD
BURLINGTON, WI 53105



Test Date: December 12, 1996

Report Date: January 3, 1997

FINAL REPORT

Prepared For:

U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
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		12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration Office of Vehicle Safety Compliance (Mail Code: NSA-30) 400 Seventh St., S.W., Room 6115 Washington, D.C. 20590																					
15. Supplementary Notes																							
16. Abstract A 48/24 kph 90° Impact (Moving Deformable Barrier) Compliance Test was conducted on the subject 1997 Subaru Impreza Outback 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 December 12, 1996. The impact velocity of the Moving Deformable Barrier (MDB) was 53.5 kph, and the ambient temperature at the struck side of the target vehicle at the time of impact was 22.8 °C. The target vehicle post test maximum crush was 322 mm at level 2. The test vehicle's performance follows: <table border="0"> <thead> <tr> <th></th> <th><u>RIGHT FRONT PASS.</u></th> <th><u>RIGHT REAR PASS.</u></th> </tr> </thead> <tbody> <tr> <td>Right Upper Rib (RUR) Accel., g</td> <td>96</td> <td>48</td> </tr> <tr> <td>Right Lower Rib (RLR) Accel., g</td> <td>77</td> <td>54</td> </tr> <tr> <td>Lower Spine (T₁₂) Accel., g</td> <td>86</td> <td>62</td> </tr> <tr> <td>Thoracic Trauma Index (TTI)</td> <td>91</td> <td>58</td> </tr> <tr> <td>Pelvis (PEV) Accel., g</td> <td>60</td> <td>51</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. The data recorded appears to indicate that the 1997 Subaru Impreza Outback does not comply with the requirements of FMVSS 214 which were set forth by the NHTSA.							<u>RIGHT FRONT PASS.</u>	<u>RIGHT REAR PASS.</u>	Right Upper Rib (RUR) Accel., g	96	48	Right Lower Rib (RLR) Accel., g	77	54	Lower Spine (T ₁₂) Accel., g	86	62	Thoracic Trauma Index (TTI)	91	58	Pelvis (PEV) Accel., g	60	51
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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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Approval Date: 1-8-97

FINAL REPORT ACCEPTED BY (OVSC):

Accepted By: [Signature]
Contract Technical Manager

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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 Subaru Impreza Outback 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 Subaru Impreza Outback 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 33.3 mph (53.5 kph). The target vehicle was stationary and was positioned at an angle of 63° to the line of forward motion. The side impact test was conducted by MGA Research Corporation in Burlington, Wisconsin, on December 12, 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)	91	58
Pelvis (g)	60	51

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
2. The FMVSS 301 static rollover test on the 1997 Subaru Impreza Outback 4 Door was not conducted due to the apparent non-compliance.



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

DATA SHEET NO. 1

GENERAL VEHICLE TEST PARAMETER DATA

TEST VEHICLE INFORMATION:

Year/Make/Model/Body Style: 1997/Subaru/Impreza/Outback 4 Door

Vehicle NHTSA No.: CV5500 VIN: JF1GFA852VG803286

Vehicle Body Color: Green Build Date: 6/96

Engine Data: 4 Cylinders; CID; 2.2 Liter; cc

Placement X Longitudinal; Lateral

Transmission: 5 speed; X Manual; Automatic; Overdrive

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

Odometer Reading 101 miles

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

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

DATA FROM TIRE PLACARD:

Tire Pressure (at capacity): 32 Psi FRONT

29 Psi REAR

Recommended Tire Size: P205/60R15

Tires on Test Vehicle: P205/60R15 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 = 408.1 kg (A)

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

Cargo Capacity (A-B) = 67.9 kg

GENERAL VEHICLE TEST PARAMETER DATA (Cont'd)

WEIGHT OF TEST VEHICLE WITH MAXIMUM FLUIDS:

Right Front	=	<u>353.7</u> kg	Right Rear	=	<u>289.8</u> kg
Left Front	=	<u>373.7</u> kg	Left Rear	=	<u>287.5</u> kg
TOTAL FRONT	=	<u>727.4</u> kg	TOTAL REAR	=	<u>577.3</u> kg
% of Total Vehicle Weight =		<u>55.8</u> %;	% of Total Weight =		<u>44.2</u> %
TOTAL WEIGHT = <u>1304.7</u> kg					

GENERAL VEHICLE TEST PARAMETER DATA (Cont'd)

Year/Make/Model/Body Style: 1997/Subaru/Impreza/Outback 4 Door

Vehicle NHTSA No.: CV5500 Test Date: December 12, 1996

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Total Test Vehicle Delivered Weight with Maximum Fluids	= <u>1304.7</u> kg
Cargo Carrying Capacity of Test Vehicle	= <u>67.9</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>1534.0</u> kg

ACTUAL WEIGHT OF TEST VEHICLE WITH 2 DUMMIES AND CARGO:

Right Front	= <u>406.7</u> kg	Right Rear	= <u>387.3</u> kg
Left Front	= <u>385.9</u> kg	Left Rear	= <u>353.7</u> kg
TOTAL FRONT	= <u>792.6</u> kg	TOTAL REAR	= <u>741.0</u> kg
% of Total Weight	= <u>51.6</u> %	% of Total Weight	= <u>48.4</u> %
TOTAL TEST WEIGHT	= <u>1533.6</u> kg		

TEST VEHICLE ATTITUDE:

CURB WEIGHT ATTITUDE:

Right Front 685 mm Left Front 681 mm Right Rear 677 mm Left Rear 673 mm

FULLY LOADED WEIGHT ATTITUDE:

Right Front 669 mm Left Front 675 mm Right Rear 637 mm Left Rear 643 mm

TEST ATTITUDE:

Right Front 671 mm Left Front 678 mm Right Rear 639 mm Left Rear 645 mm

GENERAL VEHICLE TEST PARAMETER DATA (Cont'd)

Test Vehicle Wheelbase: 2527 mm

C.G. = 723 mm rearward of front wheel centerline

TOTAL VEHICLE LENGTH:

Right Side = 4143 mm

Centerline = 4320 mm

Left Side = 4143 mm

GENERAL VEHICLE TEST PARAMETER DATA (Cont'd)

Year/Make/Model/Body Style: 1997/Subaru/Impreza/Outback 4 Door

Vehicle NHTSA No.: CV5500 Test Date: December 12, 1996

FRONT SEAT CUSHION PLACEMENT:

Total Length of Adjustment Travel: 220 mm

Test Position: 9th position rearward out of 17 total

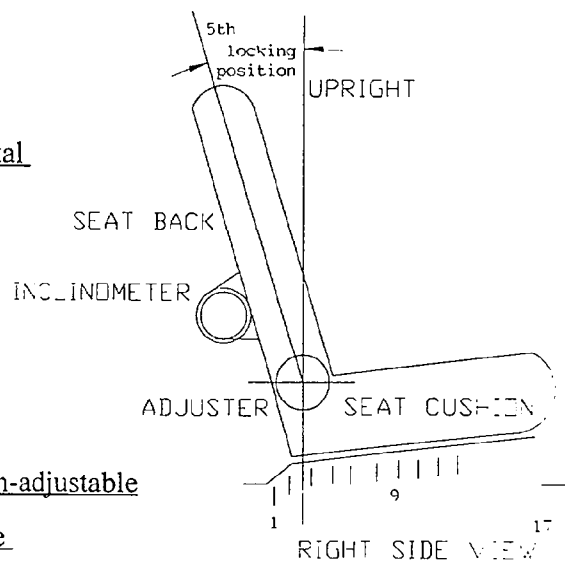
FRONT SEAT BACK ADJUSTMENT POSITION:

Seat Back Angle = 5th locking position

REAR POSITION SEAT:

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

Seat Back Adjustment Position: Non-Adjustable



ADJUSTABLE STEERING COLUMN POSITION: Mid position

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 = 60.2 liters

Test Volume: 55.8 liters 92.7 % of capacity

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

Wheelbase: = 2527 mm

Impact Point is 324 mm rearward of front axle centerline

DATA SHEET NO. 2
TEST VEHICLE SUMMARY OF RESULTS

Year/Make/Model/Body Style: 1997/Subaru/Impreza/Outback 4 Door

Vehicle NHTSA No.: CV5500 Test Date: December 12, 1996

Overall Length = 4320 mm; Overall Width = 1692 mm

TEST WEIGHT:

Right Front = 405.0 kg Right Rear = 370.5 kg
Left Front = 400.0 kg Left Rear = 352.3 kg
TOTAL FRONT = 805.0 kg TOTAL REAR = 722.8 kg
% of Total Weight = 57.7 % % of Total Weight = 47.3 %
TOTAL VEHICLE WEIGHT = 1527.8 kg
Wheelbase = 2527 mm
Longitudinal C.G. from Center of Front Axle = 1196 mm
Impact Angle with Respect to Impactor = 0° degrees

MAXIMUM EXTERIOR STATIC CRUSH:

1. LEVEL 1 (251 mm above ground) = 142 mm
 2. LEVEL 2 (467 mm above ground) = 322 mm
 3. LEVEL 3 (596 mm above ground) = 315 mm
 4. LEVEL 4 (884 mm above ground) = 236 mm
 5. LEVEL 5 (328 mm above ground) = 66 mm
- Maximum Post-Test Intrusion = 322 mm

OCCUPANTS:

	<u>Right Front Passenger</u>	<u>Right Rear Passenger</u>
Type of Dummy	<u>SID</u>	<u>SID</u>
Restraints Used	<u>type II belt with</u> <u>front airbag</u>	<u>type II belt</u>

TEST VEHICLE SUMMARY OF RESULTS (Cont'd)

INSTRUMENTATION:

Number of Vehicle Data Channels: = 20

Number of Cameras: Onboard Vehicle = 3

Offboard Vehicle = 3

Deformable Barrier = 2

TOTAL = 8

DATA SHEET NO. 3

MOVING DEFORMABLE BARRIER (MDB) SUMMARY OF RESULTS

Year/Make/Model/Body Style: 1997/Subaru/Impreza/Outback 4 Door

Vehicle NHTSA No.: CV5500 Test Date: December 12, 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: 33.3 mph (53.5 kph) Secondary: 33.2 mph (53.4 kph)

CRASH TEST SUMMARY FOR SIDE IMPACTOR (Cont'd)

MAXIMUM STATIC CRUSH OF HONEYCOMB IMPACT FACE:

- | | | |
|----|---------------------------------|-----------------|
| 1. | Row A Top of Stack (813 mm) | = <u>143</u> mm |
| 2. | Row B Mid Stack (686 mm) | = <u>127</u> mm |
| 3. | Row C Top of Bumper (533 mm) | = <u>76</u> mm |
| 4. | Row D Center of Bumper (432 mm) | = <u>139</u> mm |

INSTRUMENTATION:

Number of MDB Data Channels = 7

DATA SHEET NO. 4

POST-TEST OBSERVATIONS

Year/Make/Model/Body Style: 1997/Subaru/Impreza/Outback 4 Door

Vehicle NHTSA No.: CV5500 Test Date: December 12, 1996

VISIBLE DUMMY CONTACT POINTS:

	<u>RIGHT FRONT SID</u>	<u>RIGHT REAR SID</u>
Head	<u>to d-ring & driver's seat headrest</u>	<u>to C Post</u>
Arm	<u>to door trim panel</u>	<u>to door trim panel</u>
Pelvis	<u>to door trim panel & armrest</u>	<u>to door trim panel & armrest</u>
Left Knee	<u>to right knee</u>	<u>to right knee</u>
Right Knee	<u>to door trim panel</u>	<u>to door trim panel</u>

DOOR OPENING:

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

MDB DISTANCE FROM TARGET IMPACT POINT:

Horizontal: 8 mm forward Vertical: 10 mm high

ARM REST LOCATIONS:

Front: 240 mm from bottom of window

Rear: 254 mm from bottom of window

POST-TEST OBSERVATIONS (Cont'd)

SEAT CRUSH:

Front Seat Back: 40 mm Front Seat Cushion: 50 mm

Left Rear Seat Back: 12 mm Rear Seat Cushion: 60 mm

GLAZING DAMAGE:

Windshield cracked, front & rear door glass broke

PILLAR PERFORMANCE:

No failure noted

SILL SEPARATION:

No failure noted

OTHER NOTABLE IMPACT EFFECTS:

None noted

SECTION 4
OCCUPANT AND VEHICLE INFORMATION

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

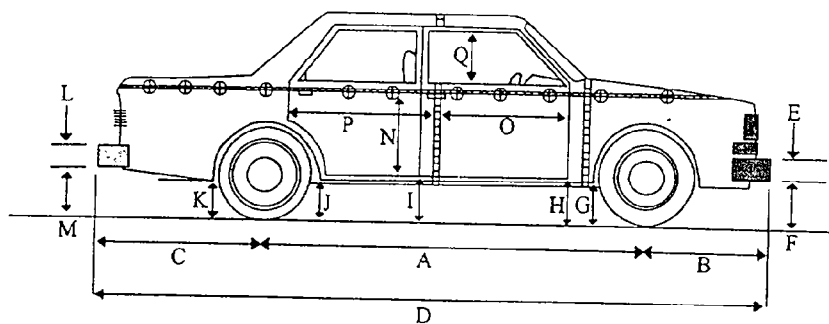
Year/Make/Model/Body Style: 1997/Subaru/Impreza/Outback 4 Door

Vehicle NHTSA No.: CV5500 Test Date: December 12, 1996

	Front SID ID #272				Rear SID ID #271			
	Pos. Direct.		Neg. Direct		Pos. Direct.		Neg. Direct	
	Max (g)	Time (msec)	Max (g)	Time (msec)	Max (g)	Time (msec)	Max (g)	Time (msec)
RIB ACCELERATIONS								
Right Upper Rib (RUR) Y	14.4	90	-95.8	27	4.4	160	-47.6	49
Right Lower Rib (RLR) Y	12.8	93	-76.9	26	10.1	78	-54.0	48
SPINE ACCELERATIONS								
Lower Lateral Y	22.6	68	-86.0	31	19.6	71	-62.3	53
PELVIS ACCELERATIONS								
Lateral Y	15.3	88	-59.6	33	7.7	100	-51.0	46

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)

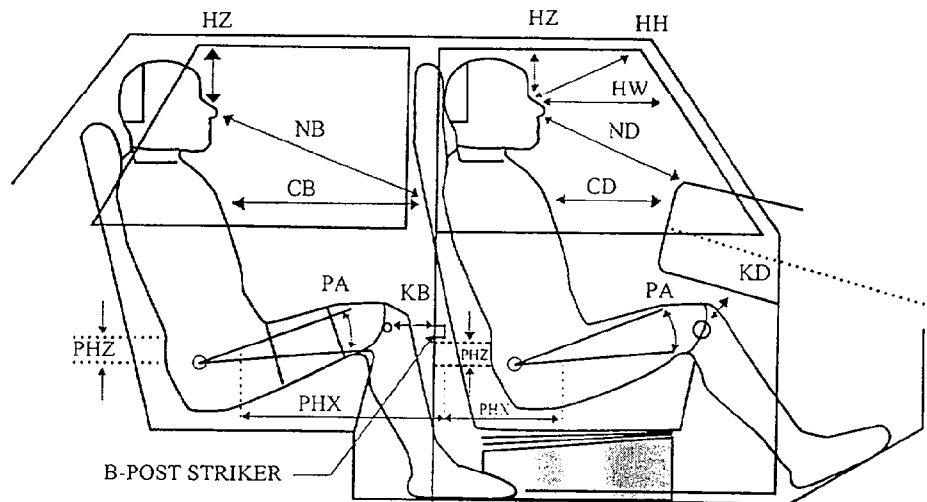
	PRE-TEST	POST-TEST	Δ CHANGE
A	2527	2499	28
B	855	854	1
C	945	943	2
D	4320	4296	24
E	182	182	0
F	405	418	13
G	227	249	22
H	180	232	52
I	170	202	32
J1/J2	172/170	180/174	8/4
K	253	253	0
L	305	305	0
M	295	279	16
N	635	573	62
O	710	698	12
P	1221	1162	59
Q	444	449	5
R	4143	4088	55
S	4143	4132	11
T	1692	1422	270

DATA SHEET NO. 7

SIDE IMPACT DUMMY (SID) LONGITUDINAL CLEARANCE DIMENSIONS

Year/Make/Model/Body Style: 1997/Subaru/Impreza/Outback 4 Door

NHTSA NO.: CV5500 Test Date: December 12, 1996



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

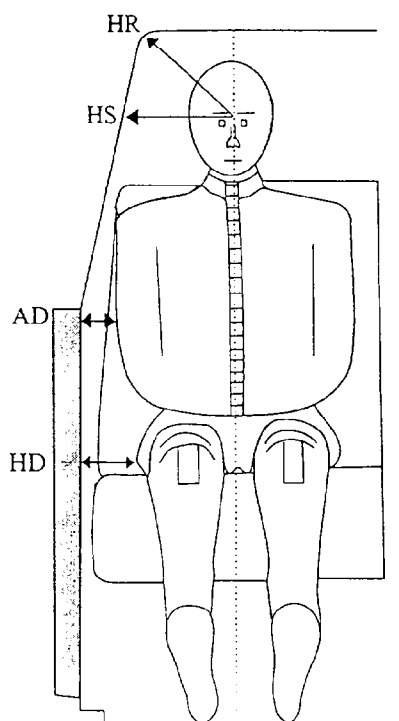
	FRONT PASSENGER ID #272		REAR PASSENGER SID ID #271
HH	356	HZ	148
HW	608	NB	574
HZ	172	CB	468
ND	635	KBL (KBA)	148 (0°)
CD	668	KBR (KBA)	128 (0°)
CS	N/A	PA°	24.5°
KDL(KDA°)	224 (15.8°)	PHX	333
KDR(KDA°)	216 (24.0°)	PHZ	272
PA°	24.4°		
PHX	141		
PHZ	124		

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

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

Year/Make/Model/Body Style: 1997/Subaru/Impreza/Outback 4 Door

NHTSA NO.: CV5500 Test Date: December 12, 1996



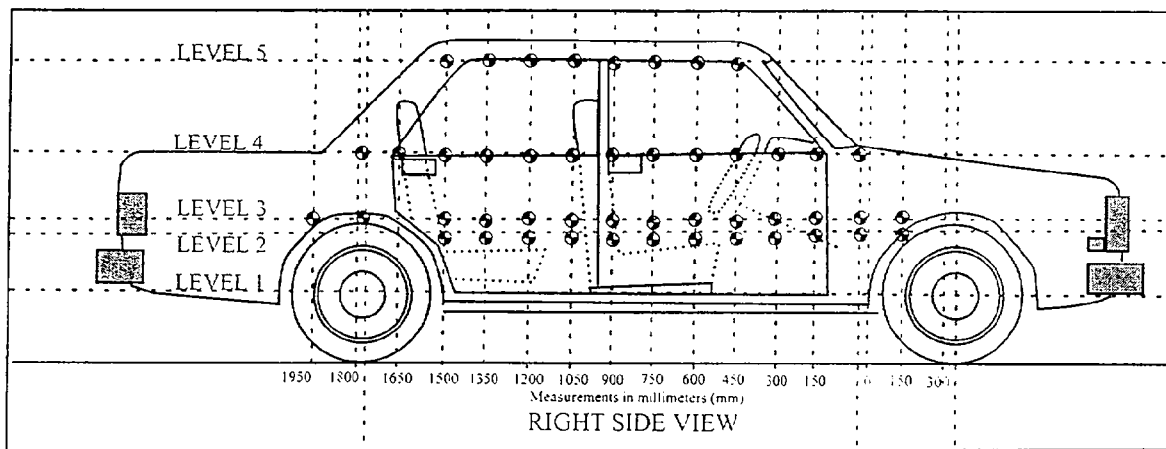
NOTE: All dimensions are in mm

	FRONT PASSENGER ID #272	REAR PASSENGER ID #271
HR	184	181
HS	255	223
AD	85	101
HD	156	165

DATA SHEET NO. 9
VEHICLE SIDE MEASUREMENTS

Year/Make/Model/Body Style: 1997/Subaru/Impreza/Outback 4 Door

NHTSA NO.: CV5500 Test Date: December 12, 1996



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

MEASUREMENTS ALONG THE VERTICAL 750 mm. LINE SHOWN ABOVE

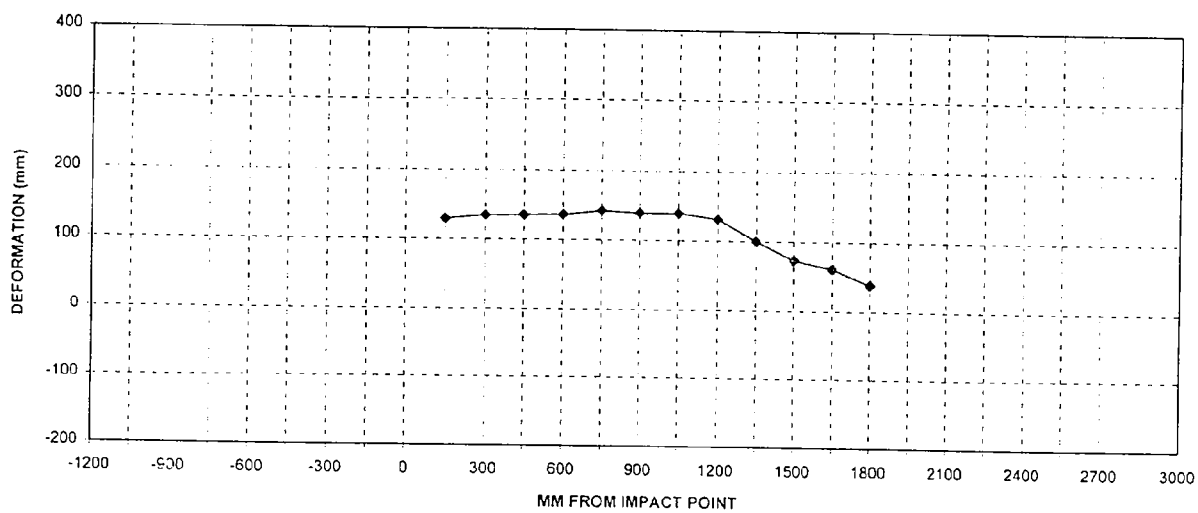
Level 1 @ Axle Centerline Height (or Sill Top Height)	= <u>1328</u> mm
Level 2 @ Occupant H-Point	= <u>884</u> mm
Level 3 @ Mid Door	= <u>596</u> mm
Level 4 @ Window Sill	= <u>467</u> mm
Level 5 @ Window Top	= <u>251</u> mm

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			
-900			
-750			
-600			
-450			
-300			
-150			
0 (impact point)			
150	792	921	129
300	795	929	134
450	795	930	135
600	794	930	136
750	793	935	142
900	793	932	139
1050	792	931	139
1200	792	923	131
1350	792	892	100
1500	793	866	73
1650	793	854	61
1800	791	830	39
1950			
2100			
2250			
2400			
2550			
2700			
2850			
3000			

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

VEHICLE EXTERIOR STATIC CRUSH (Cont'd)



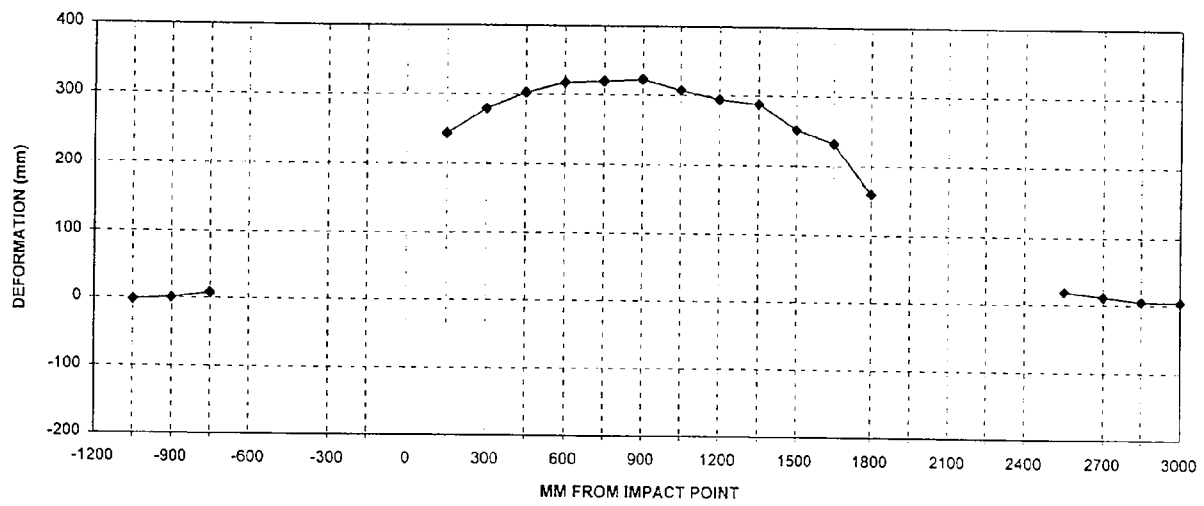
LEVEL 1 - AXLE CENTERLINE

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			
-1050	828	826	-2
-900	783	784	1
-750	755	763	8
-600			
-450			
-300			
-150			
0 (impact point)			
150	742	986	244
300	746	1025	279
450	746	1048	302
600	745	1062	317
750	745	1064	319
900	745	1067	322
1050	745	1052	307
1200	746	1040	294
1350	746	1034	288
1500	746	998	252
1650	746	979	233
1800	746	906	160
1950			
2100			
2250			
2400			
2550	751	770	19
2700	773	785	12
2850	798	803	5
3000	841	845	4

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

VEHICLE EXTERIOR STATIC CRUSH (Cont'd)



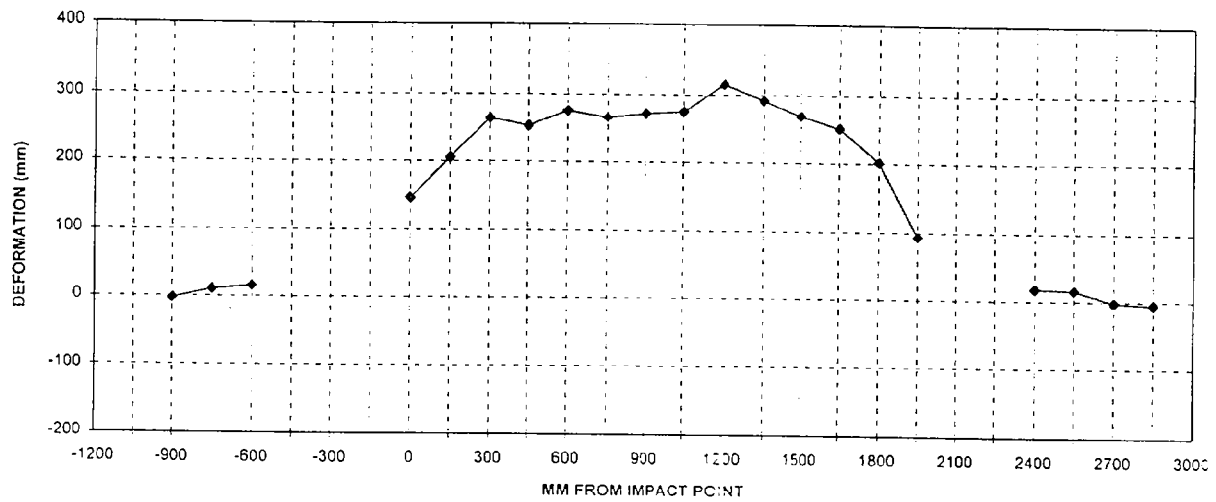
LEVEL 2 - OCCUPANT H-POINT

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

	Level 3 - Mid Door		
Longitudinal Distance (mm)	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
-1200			
-1050			
-900	806	803	-3
-750	765	775	10
-600	735	750	15
-450			
-300			
-150			
0 (impact point)	726	872	146
150	730	935	205
300	733	997	264
450	736	989	253
600	737	1013	276
750	738	1004	266
900	738	1010	272
1050	738	1013	275
1200	738	1053	315
1350	738	1030	292
1500	738	1007	269
1650	738	989	251
1800	739	940	201
1950	737	830	93
2100			
2250			
2400	740	758	18
2550	760	776	16
2700	789	787	-2
2850	830	825	-5
3000			

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

VEHICLE EXTERIOR STATIC CRUSH (Cont'd)



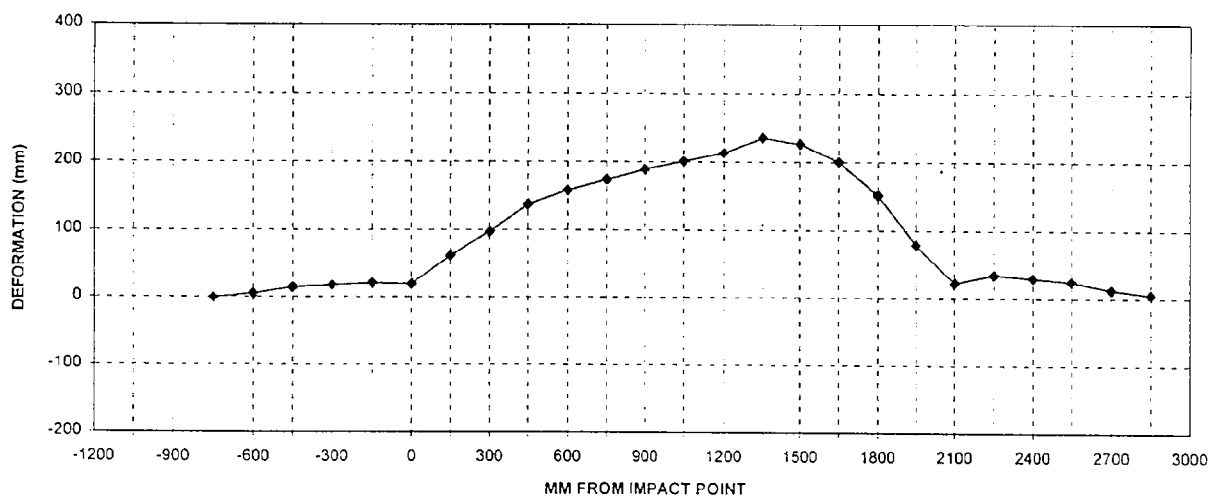
LEVEL 3 - MID DOOR

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			
-750	878	877	-1
-600	861	866	5
-450	840	854	14
-300	827	844	17
-150	818	838	20
0 (impact point)	810	829	19
150	803	865	62
300	805	902	97
450	811	948	137
600	811	969	158
750	810	984	174
900	810	999	189
1050	812	1013	201
1200	813	1026	213
1350	814	1050	236
1500	817	1044	227
1650	820	1020	200
1800	822	974	152
1950	827	906	79
2100	830	852	22
2250	836	870	34
2400	846	875	29
2550	858	882	24
2700	886	898	12
2850	930	935	5
3000			

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

VEHICLE EXTERIOR STATIC CRUSH (Cont'd)



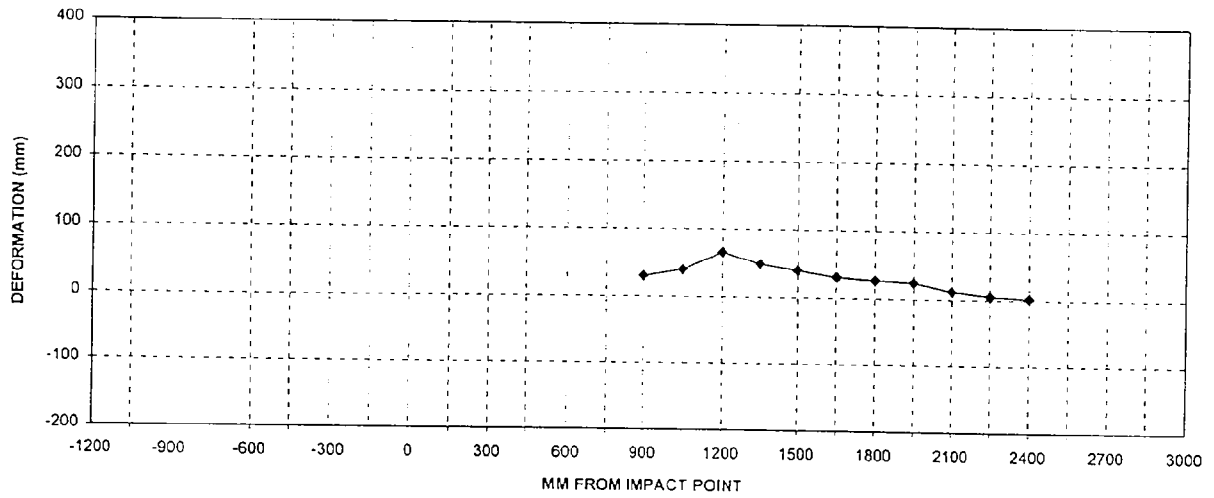
LEVEL 4 - WINDOW SILL

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

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			
900	1045	1075	30
1050	1044	1084	40
1200	1044	1100	66
1350	1048	1097	49
1500	1050	1090	40
1650	1053	1084	31
1800	1059	1086	27
1950	1063	1087	24
2100	1068	1080	12
2250	1077	1082	5
2400	1091	1093	2
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)

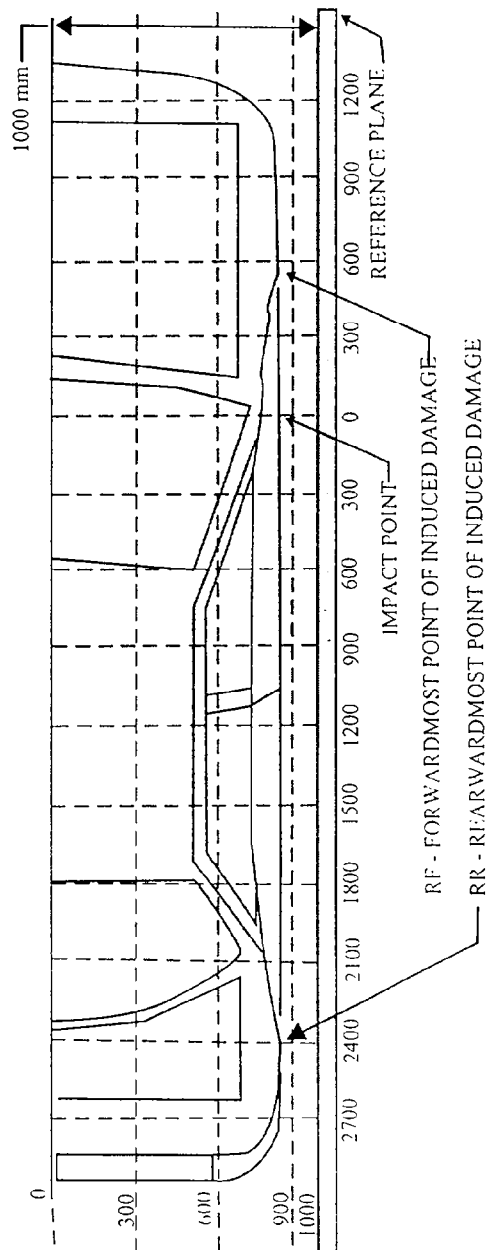


LEVEL 5 - WINDOW TOP

DATA SHEET NO. 11
VEHICLE DAMAGE PROFILE DISTANCES

Year/Make/Model/Body Style: 1997/Subaru/Impreza/Outback 4 Door

NHTSA NO.: CV5500 Test Date: December 12, 1996



DPD MEASUREMENTS	POST-TEST (mm)	PRE-TEST (mm)	STATIC CRUSH (mm)
1. (RF = -1050 mm)	826	826	0
2. 330 mm	860	746	114
3. 684 mm	1051	745	306
4. 1034 mm	1072	745	327
5. 1395 mm	1029	746	283
6. (RR = 3000 mm)	841	841	0

DATA SHEET NO. 12

EXTERIOR STATIC CRUSH FOR SIDE IMPACTOR

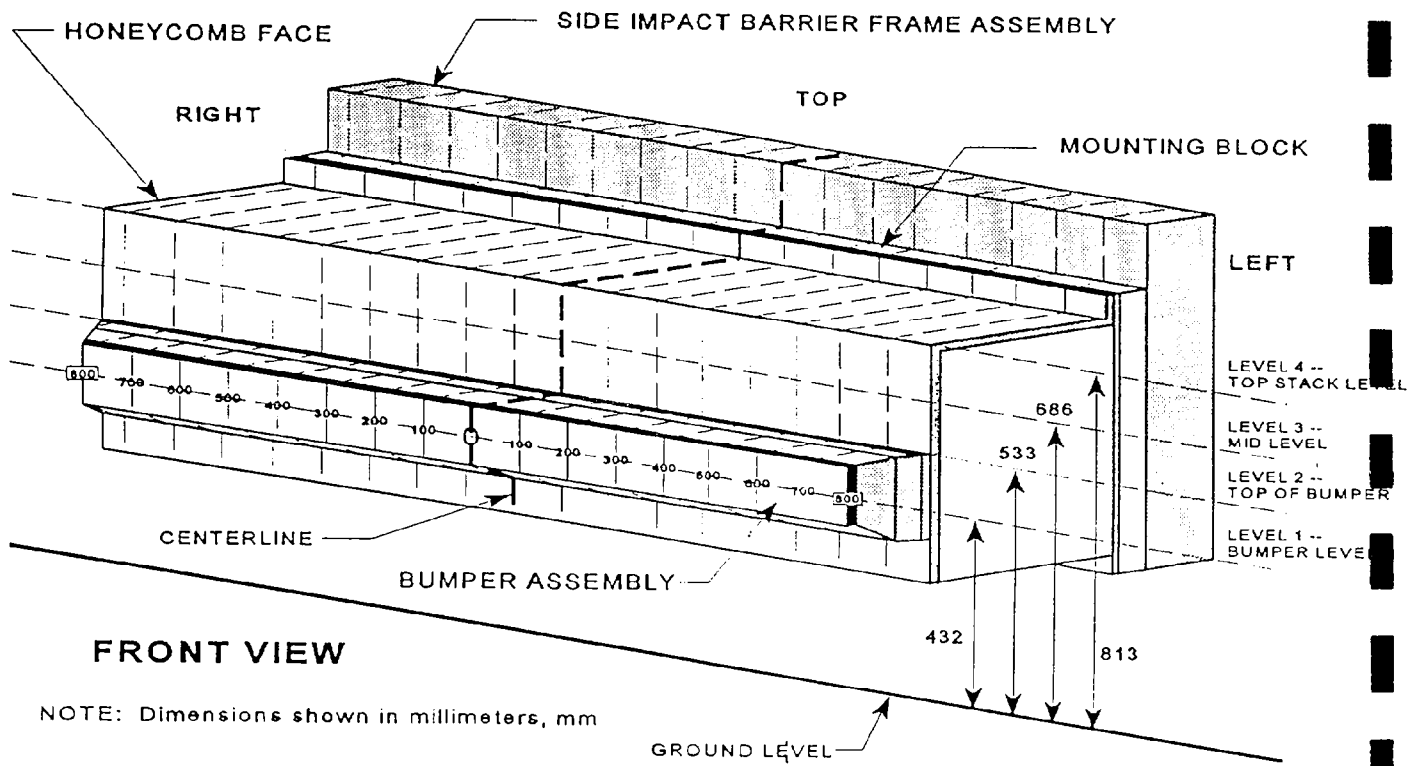
Year/Make/Model/Body Style: 1997/Subaru/Impreza/Outback 4 Door

Vehicle NHTSA No.: CV5500 Test Date: December 12, 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	143	115	84	50	25	21	16	13	10	8	5	4	3	1	0	-1	32
Mid Level Level 3	686 mm	127	89	45	19	10	8	7	6	6	7	7	3	1	0	1	8	36
Top Bumper Level 2	533 mm	74	53	38	31	29	24	22	21	21	23	26	31	36	43	54	68	76
Mid Bumper Level 1	432 mm	93	84	58	45	43	41	44	46	52	62	74	86	89	102	121	132	139

See next page for Barrier Face Graphic

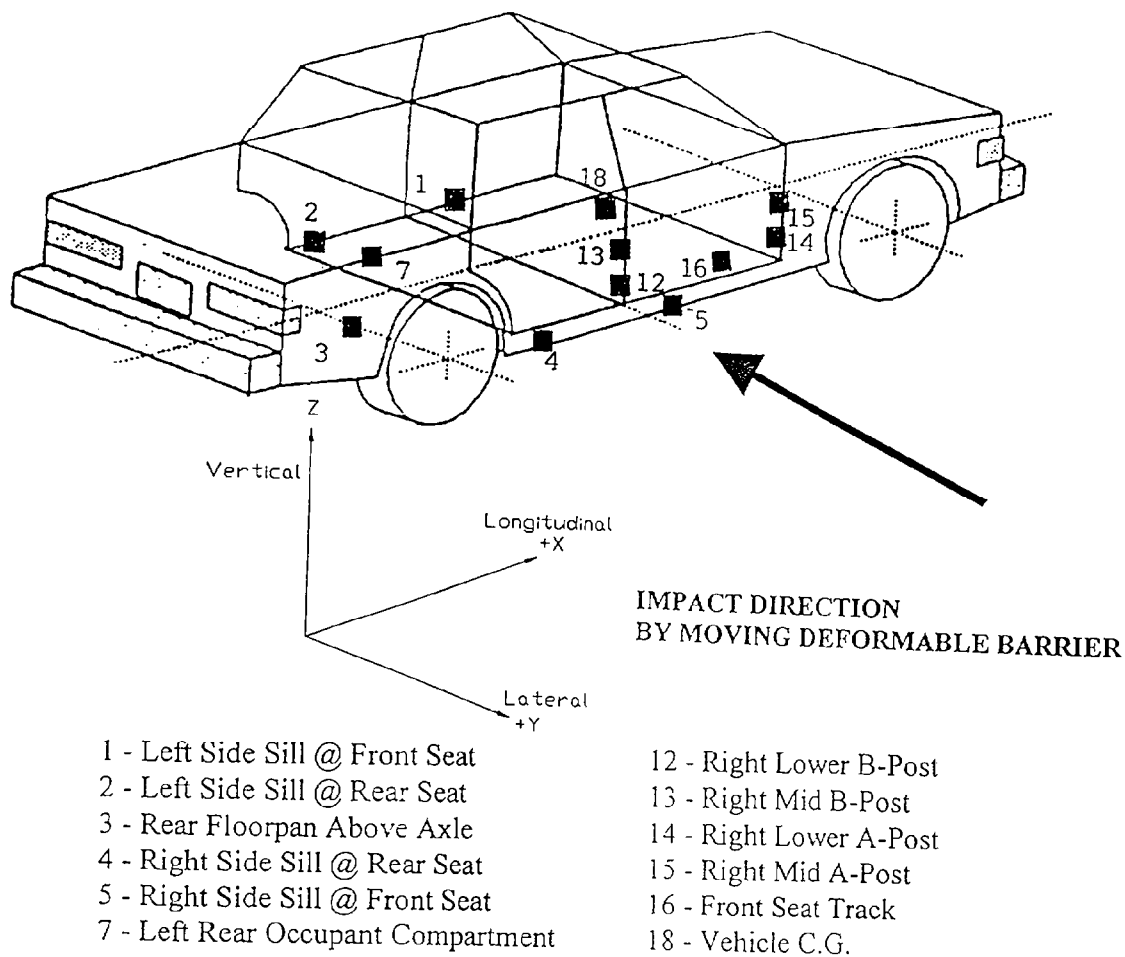
DATA SHEET NO. 12 (Cont'd)



DATA SHEET 13
TEST VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

Year/Make/Model/Body Style: 1997/Subaru/Impreza/Outback 4 Door

Vehicle NHTSA No.: CV5500 Test Date: December 12, 1996



DATA SHEET NO. 13

TEST VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

Year/Make/Model/Body Style: 1997/Subaru/Impreza/Outback 4 Door

Vehicle NHTSA No.: CV5500 Test Date: December 12, 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	2210	693	200	3.9	-5.3	2.2	-21.8	6.6	-5.0	22.3
2	Left Side Sill @ Rear Seat	1650	638	248	5.7	-7.2	2.2	-19.7	10.1	-7.6	20.2
3	Rr. Floorpan Above Axle	892	35	485	3.0	-7.5	2.2	-17.9	12.2	-11.6	21.7
4	Right Side Sill @ Rr. Seat	1679	638	245	---	---	15.0	-44.2	---	---	---
5	Right Side Sill @ Frt. Seat	2203	693	195	---	---	12.9	-34.3	---	---	---
7	Left Rear Occupant Compartment	1730	-530	319	---	---	1.8	-21.9	---	---	---
12	Right Lower B-Post	1927	706	375	---	---	**	**	---	---	---
13	Right Mid B-Post	1934	696	845			50.1	-121.6	---	---	---
14	Right Lower A-Post	2997	712	355	---	---	89.9	-58.0	---	---	---
15	Right Mid A-Post	2977	727	840	---	---	36.4	-40.2	---	---	---
16	Right Front Passenger Seat Track	2148	564	308	---	---	26.1	-61.3	---	---	---
18	Vehicle CG	2250	0	418	4.6	-9.0	1.7	-23.2	12.8	-7.4	23.5

*Reference: X - Rear Bumper (+ Forward)

Y - Vehicle Centerline (+ To right)

Z - Ground Level (+ Up)

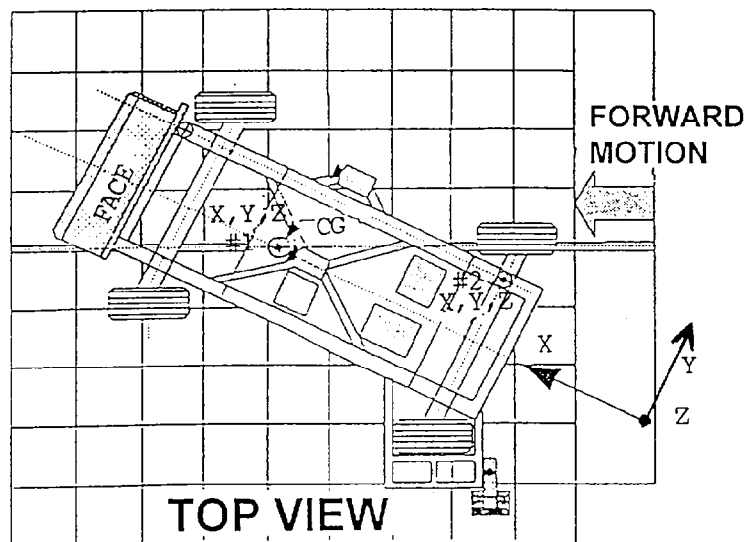
** No valid data collected

DATA SHEET NO. 14

MOVING DEFORMABLE BARRIER (MDB) ACCELEROMETER LOCATIONS AND DATA SUMMARY

Year/Make/Model/Body Style: 1997/Subaru/Impreza/Outback 4 Door

Vehicle NHTSA No.: CV5500 Test Date: December 12, 1996



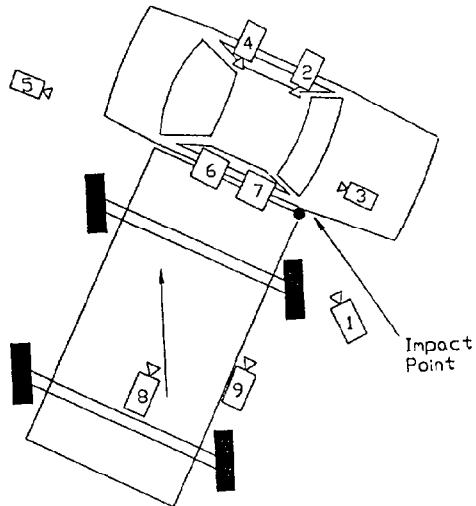
Accel. No.	Description	Coordinates (mm)*			(+) Positive		(-) Negative	
		X	Y	Z	Max. (g)	Time (msec)	Max. (g)	Time (msec)
1	MDB Center of Gravity	-1092	0	483				
	Longitudinal (X)	---	---	---	1.5	155	-16.4	32
	Lateral (Y)	---	---	---	6.7	33	-1.2	64
	Vertical (Z)	---	---	---	10.7	20	-18.4	25
	Resultant (R)	---	---	---	23.3	25	---	---
2	Rear Frame Member	-2591	625	622				
	Longitudinal (X)	---	---	---	1.8	152	-20.4	34
	Lateral (Y)	---	---	---	1.8	65	-5.9	35

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

DATA SHEET NO. 15
HIGH SPEED CAMERA LOCATIONS AND DATA

Year/Make/Model/Body Style: 1997/Subaru/Impreza/Outback 4 Door

Vehicle NHTSA No.: CV5500 Test Date: December 12, 1996



Camera No.	View	Coordinates (mm)*			Angle	Lens (mm)	Film Speed (fps)
		X	Y	Z			
	Real Time					13	24
1	Front Impact	-840	2100	1620	90°	13	1000
2	Onboard Front Passenger					8	877
4	Onboard Rear Passenger					8	971
3	Onboard Hood					13	1010
5	Rear Impact	100	-9310	1910	90°	25	1000
6	Top Overall	-370	-1110	5000	90°	8	1031
7	Top Impact	-320	120	5000	90°	13	847
8	Cart Overall					13	1020
9	Cart Impact					35	926

* 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/Subaru/Impreza/Outback 4 Door

Vehicle NHTSA No.: CV5500 Test Date: December 12, 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 33.3 mph (53.5 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

APPENDIX A - PHOTOGRAPHS

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Photo No. A-48 - Right Rear Attitude Point	A-48
Photo No. A-49 - Left Rear Attitude Point	A-49

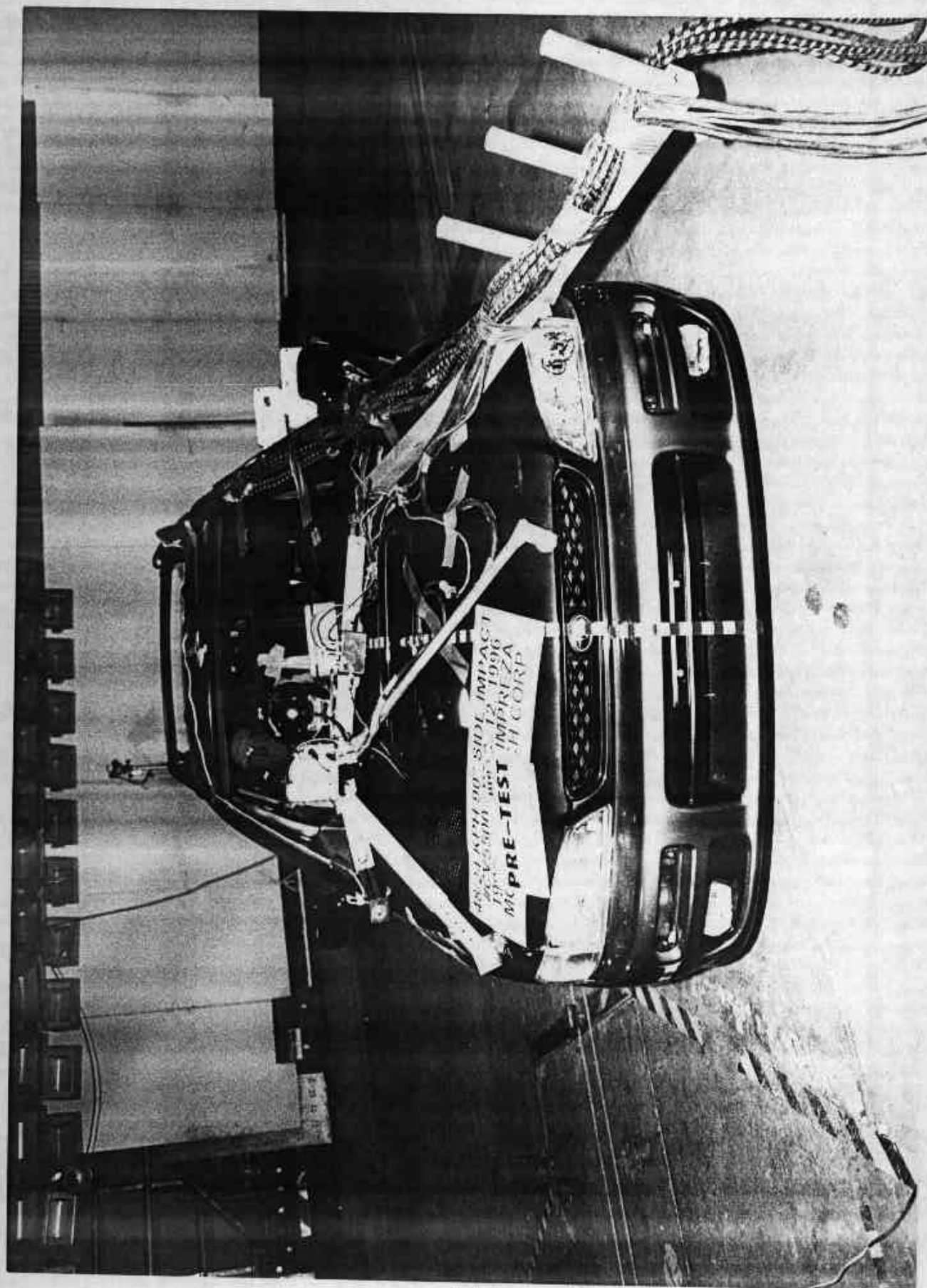


Photo No. A-1 - Pre-Test Front View of Test Vehicle

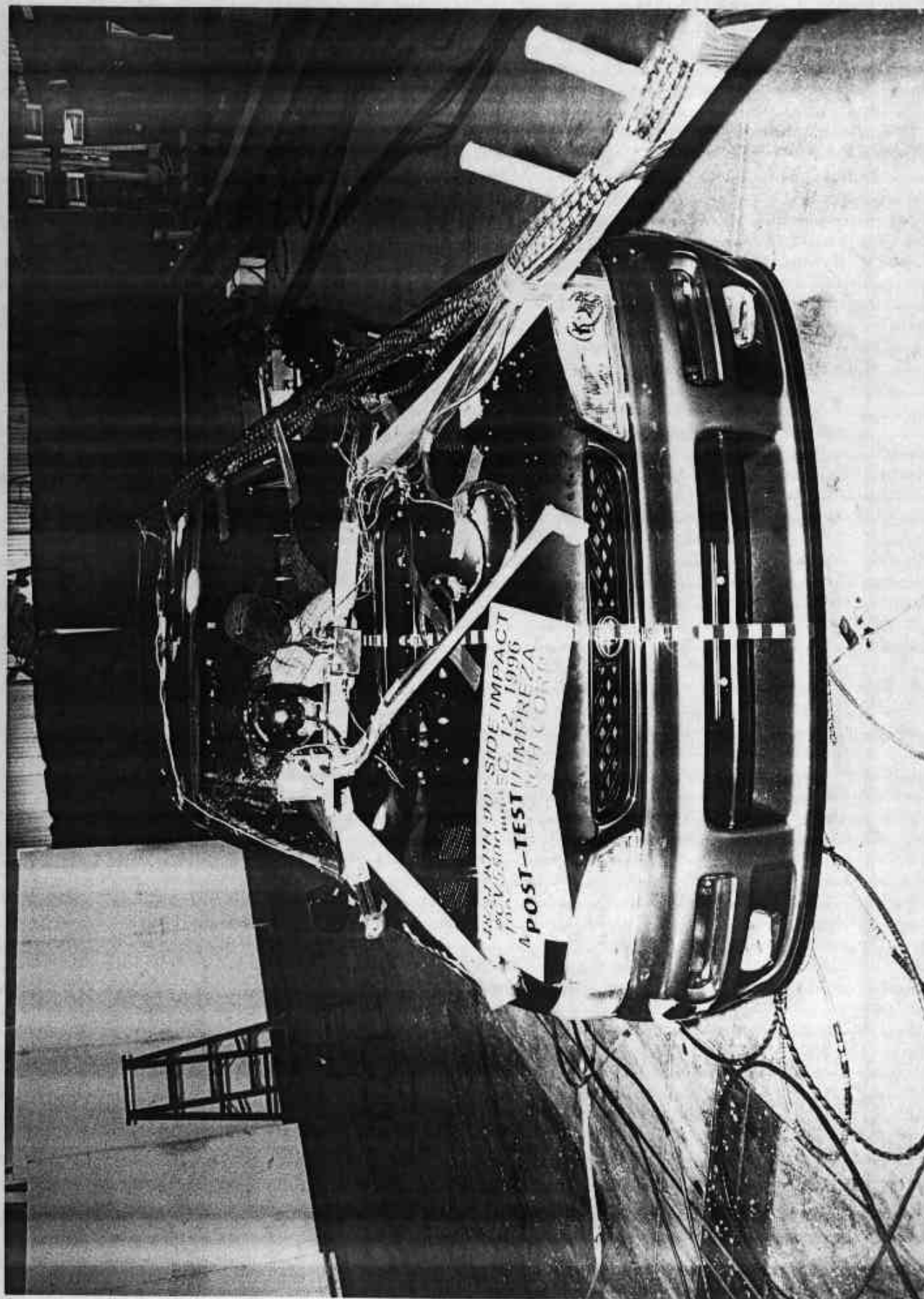


Photo No. A-2 - Post-Test Front View of Test Vehicle

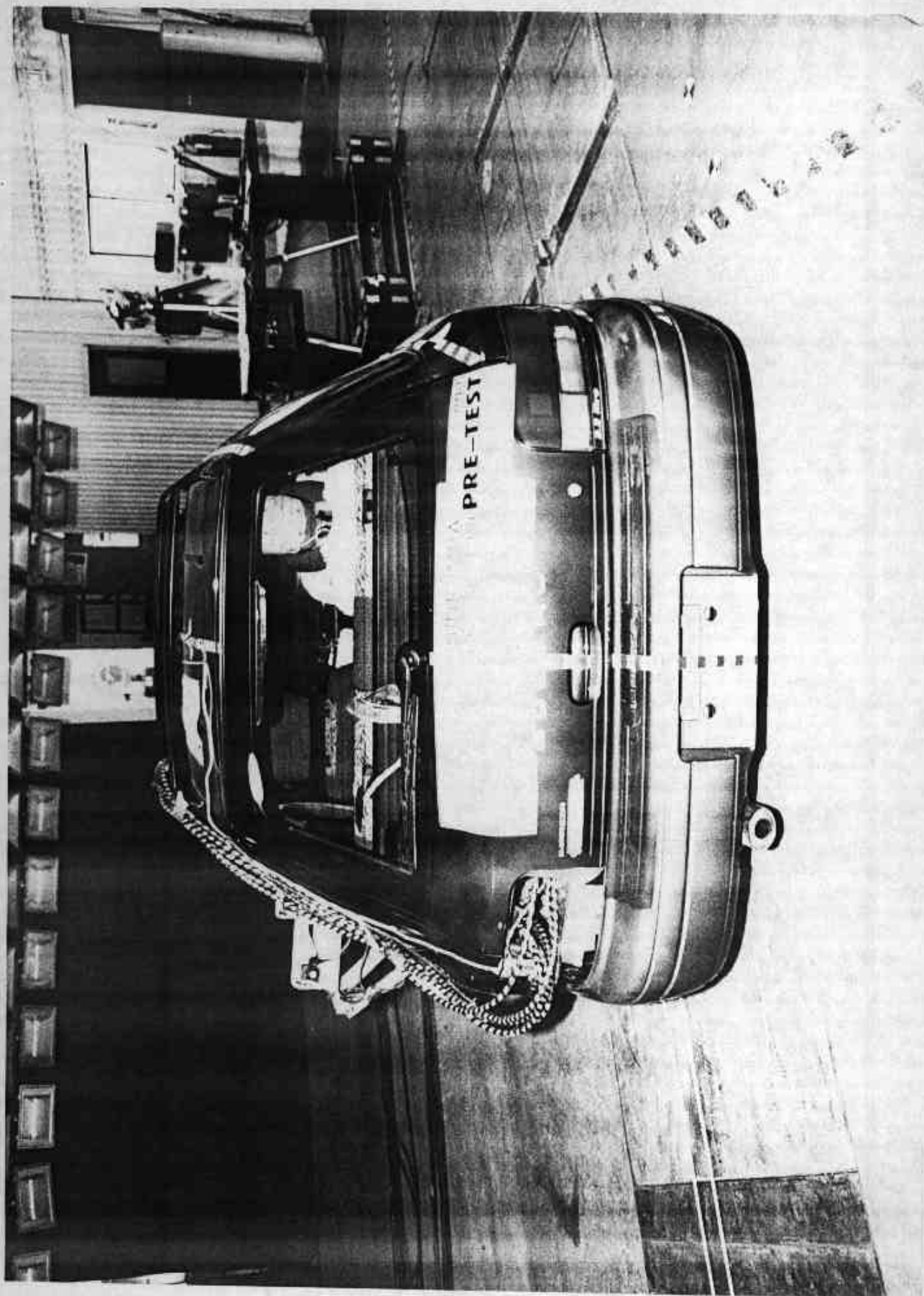


Photo No. A-3 - Pre-Test Rear View of Test Vehicle

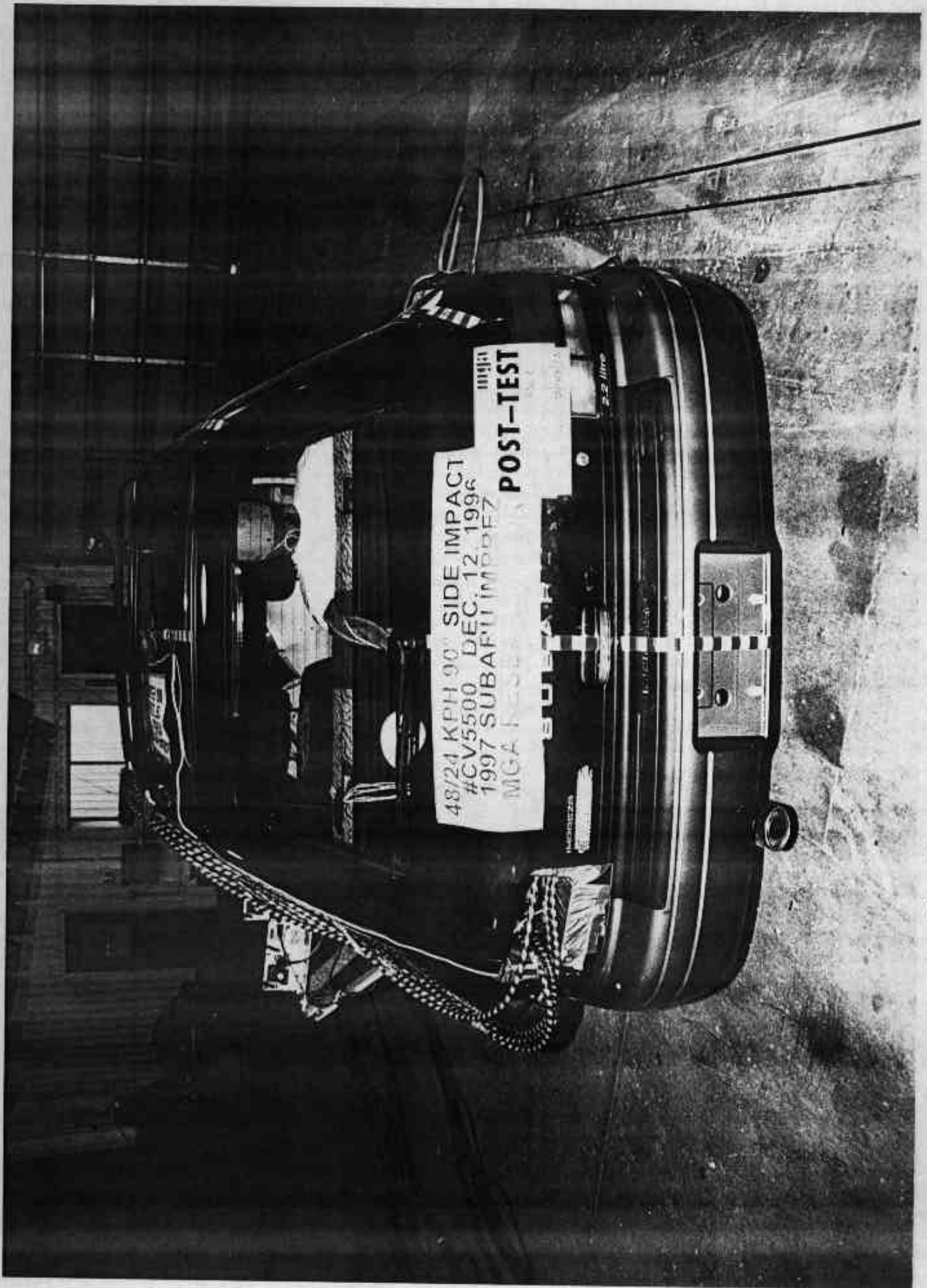


Photo No. A-4 - Post-Test Rear View of Test Vehicle

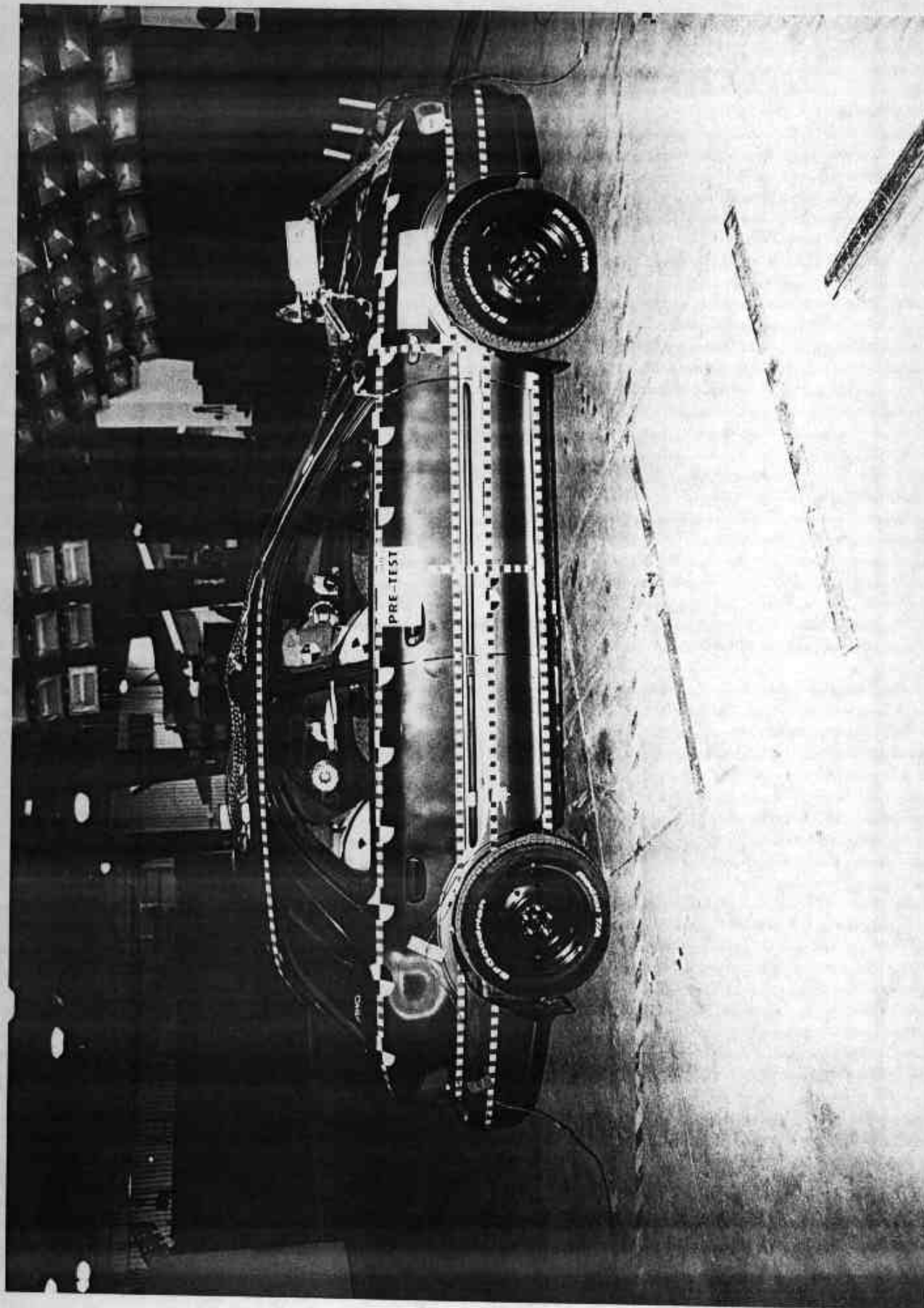


Photo No. A-5 - Pre-Test Right Side View of Test Vehicle

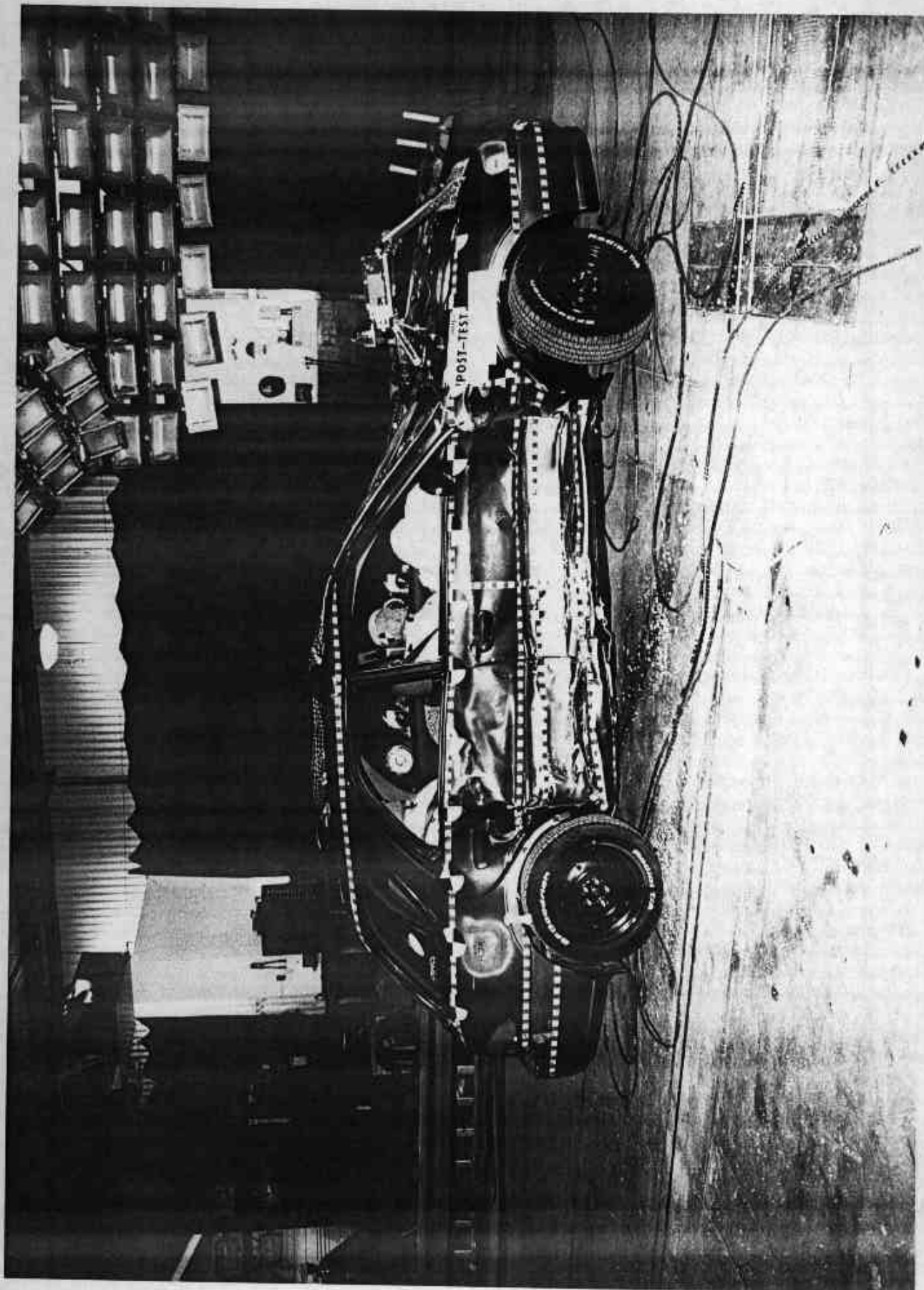


Photo No. A-6 - Post-Test Right Side View of Test Vehicle

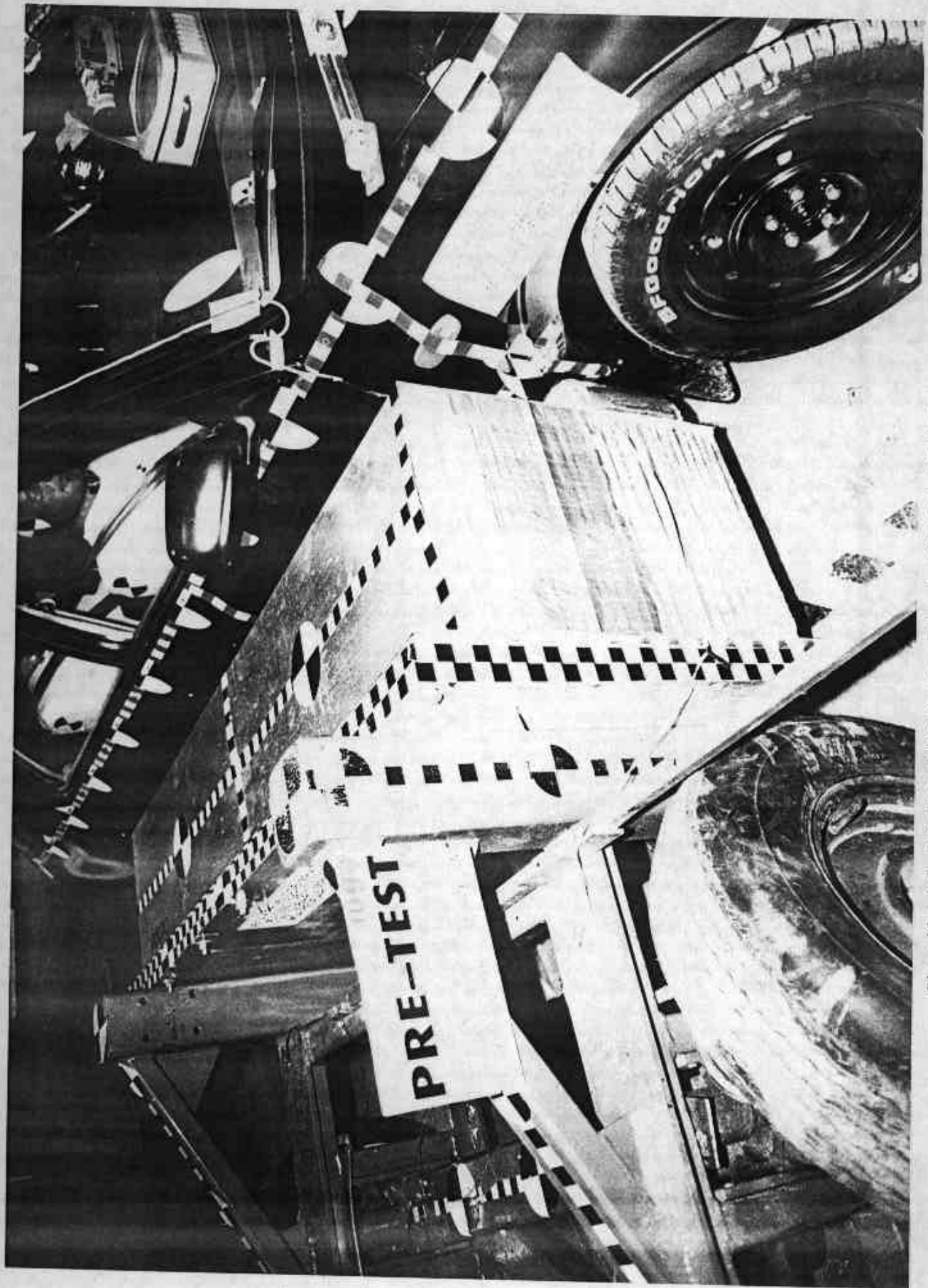


Photo No. A-7 - Pre-Test MDB Positioned Against Vehicle (right side)

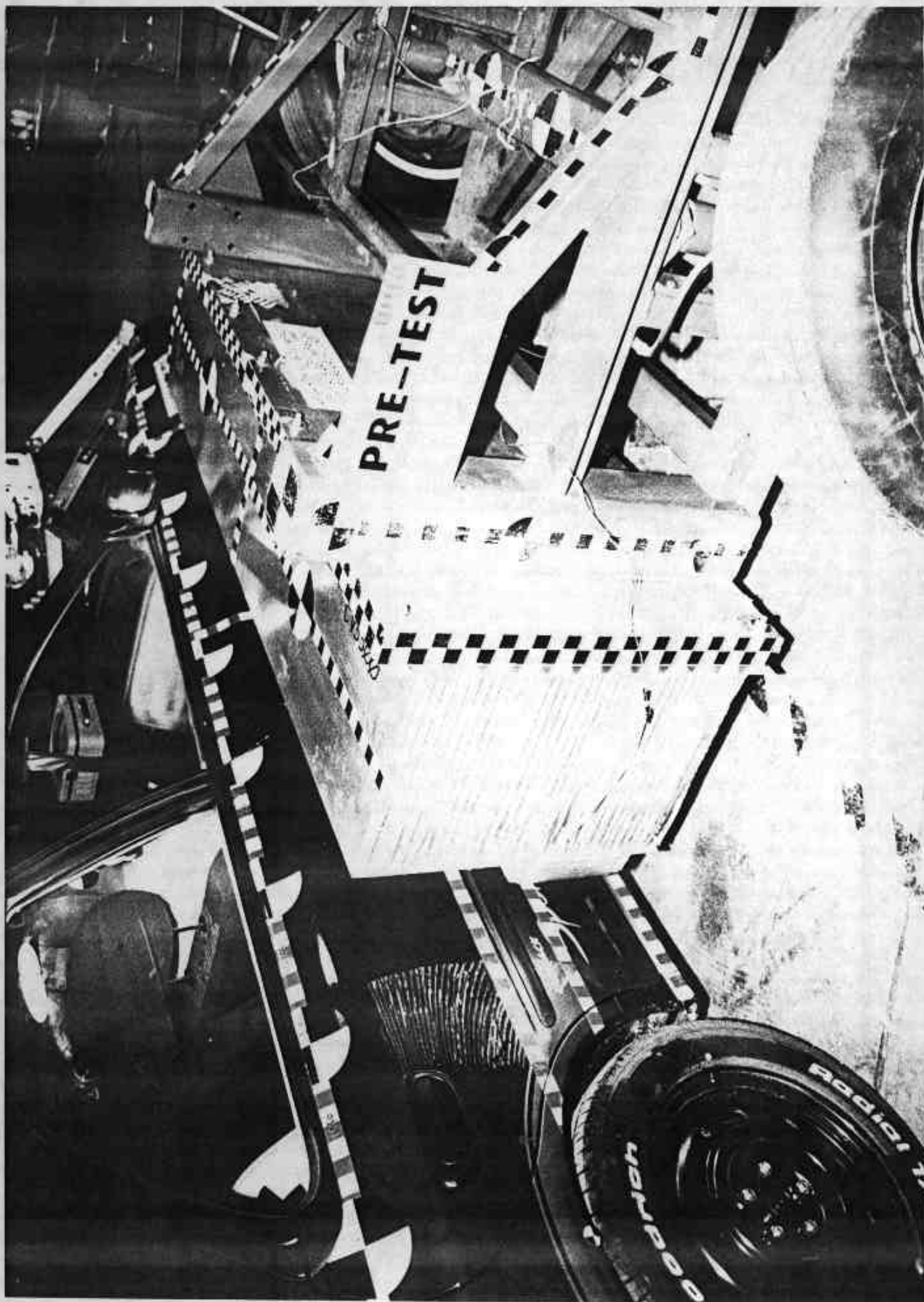


Photo No. A-8 - Pre-Test MDB Positioned Against Vehicle (left side)

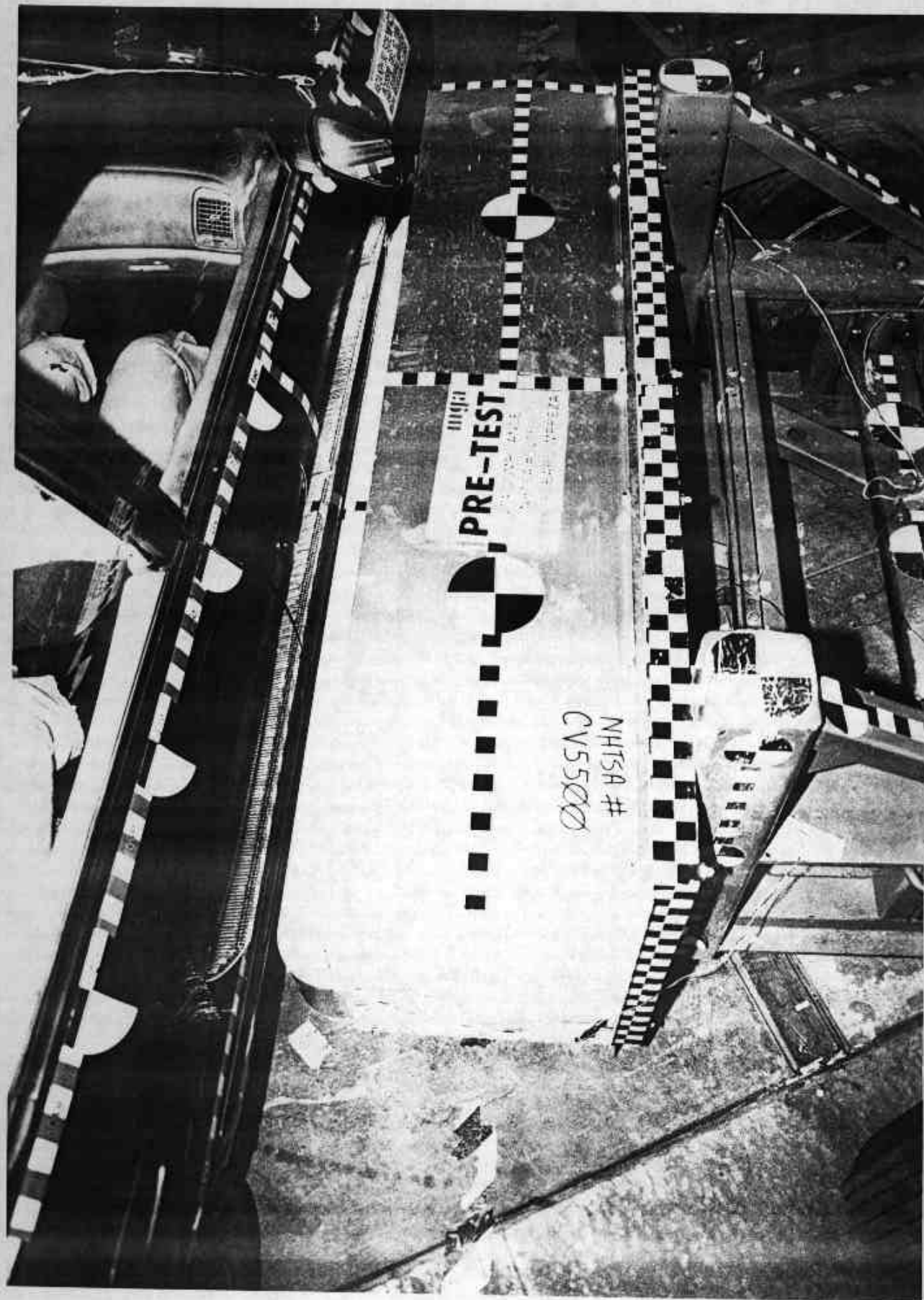


Photo No. A-9 - Pre-Test MDB Positioned Against Vehicle Overhead View

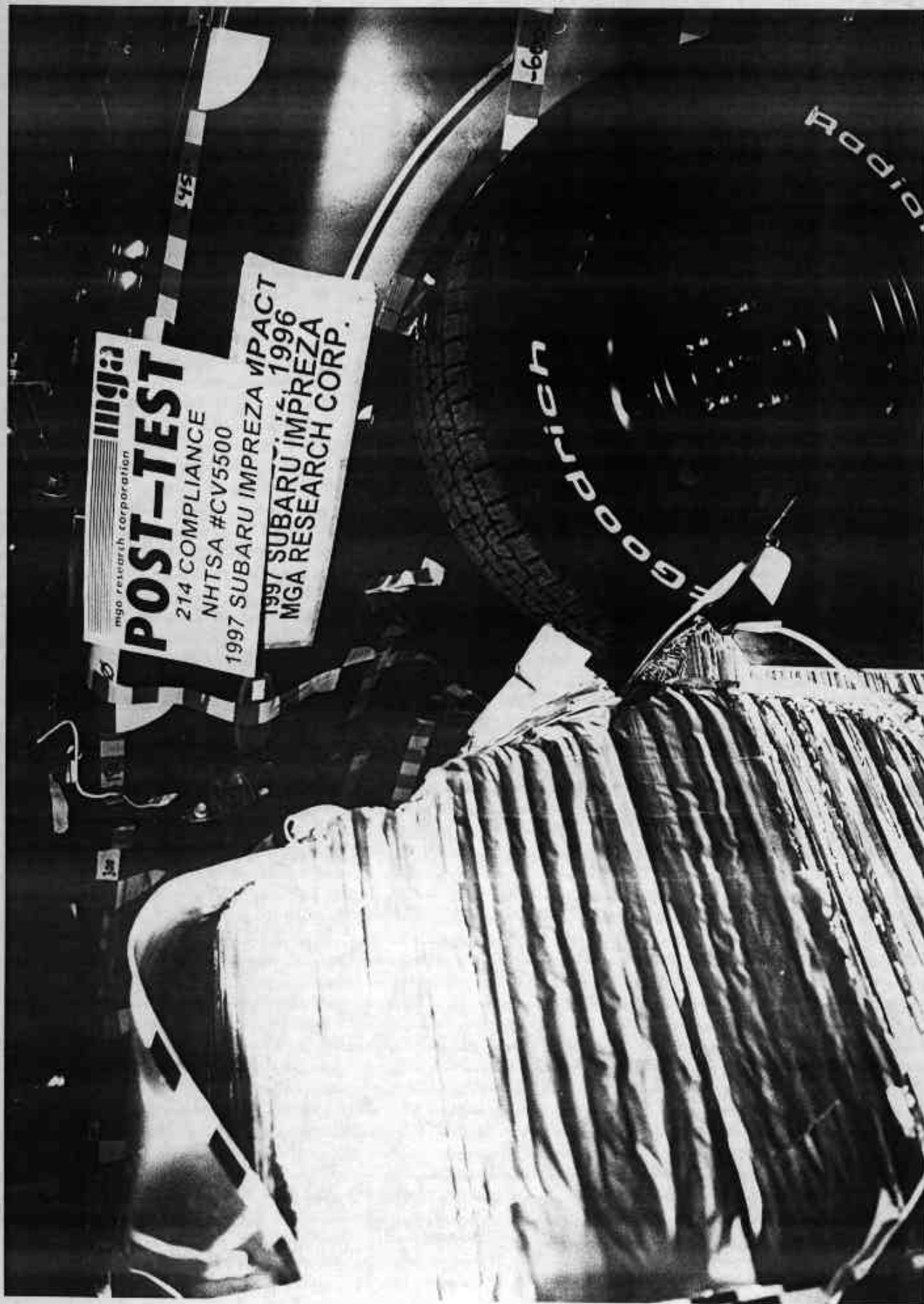


Photo No. A-10 - Post-Test MDB Positioned Against Vehicle (right side)



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

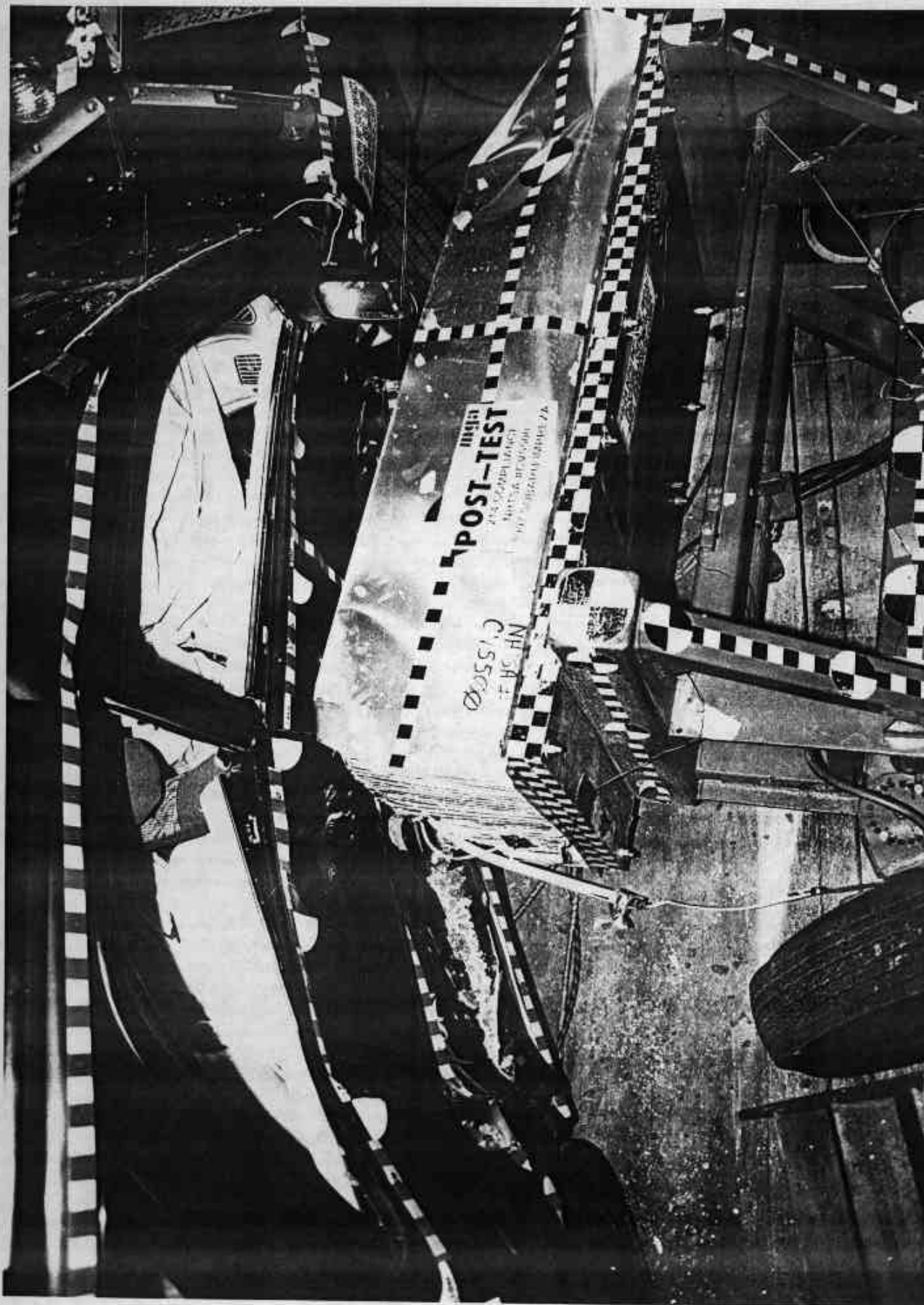


Photo No. A-12 - Post-Test MDB Positioned Against Vehicle Overhead View

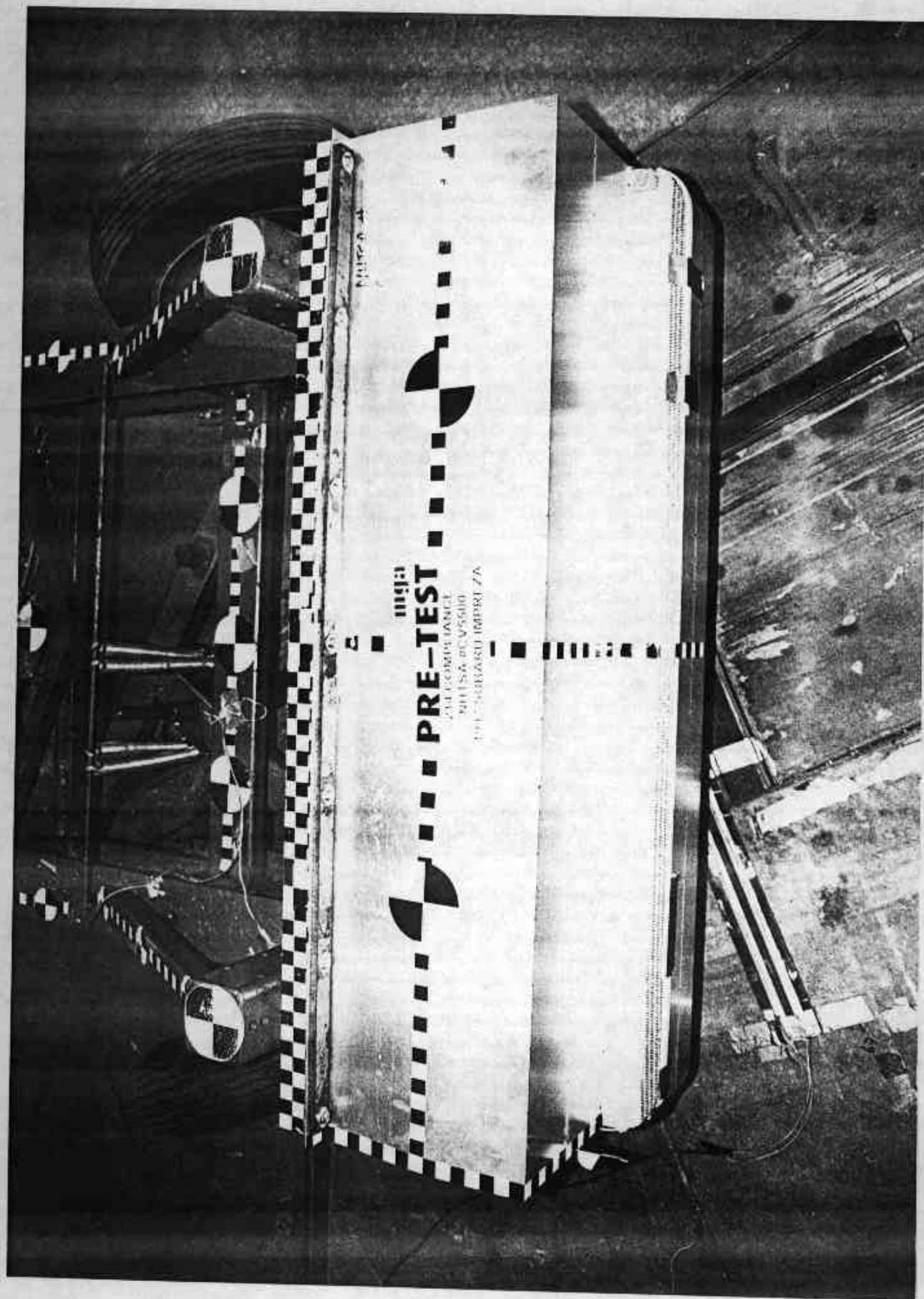


Photo No. A-13 - Pre-Test MDB Top View

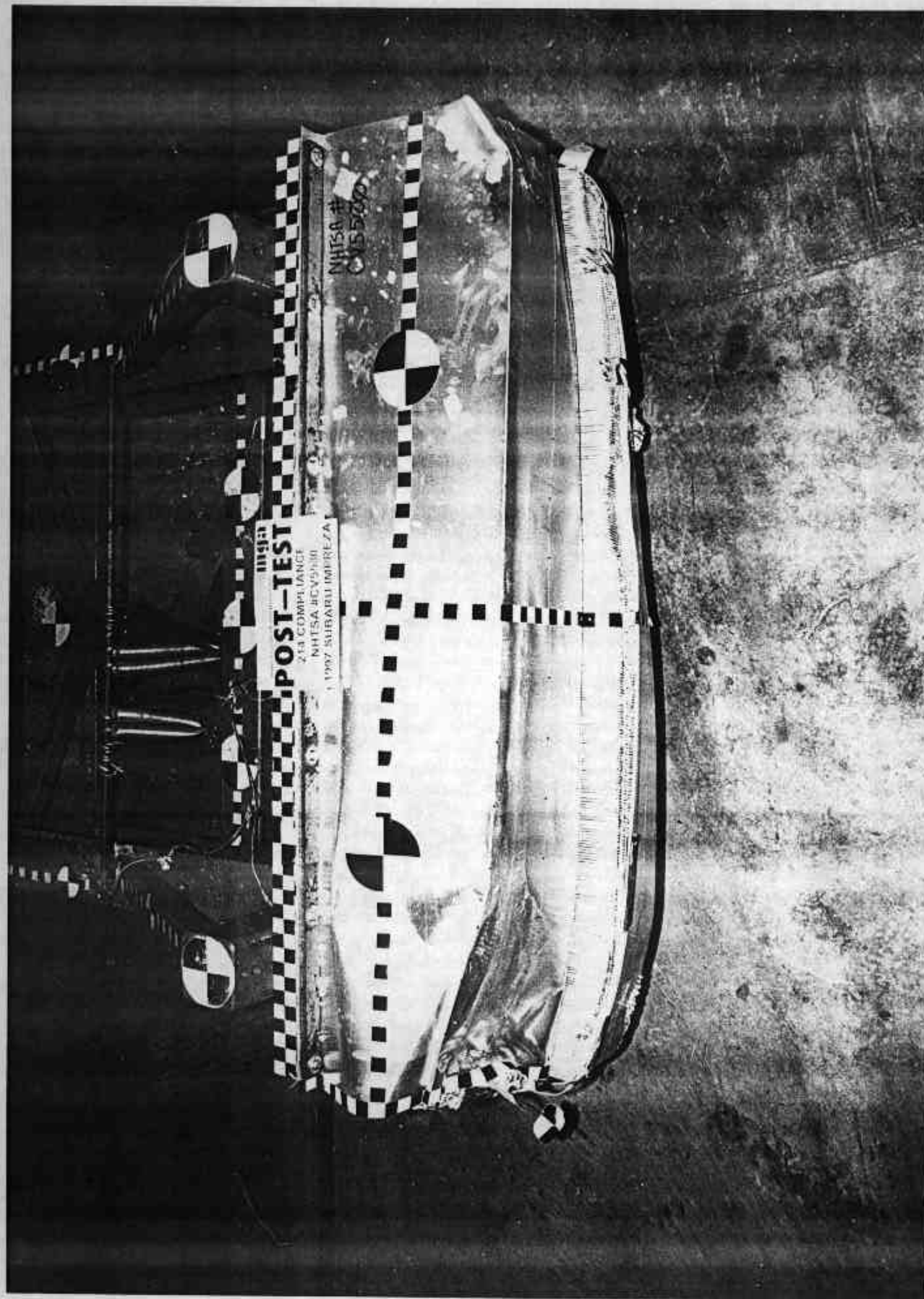


Photo No. A-14 - Post-Test MDB Top View

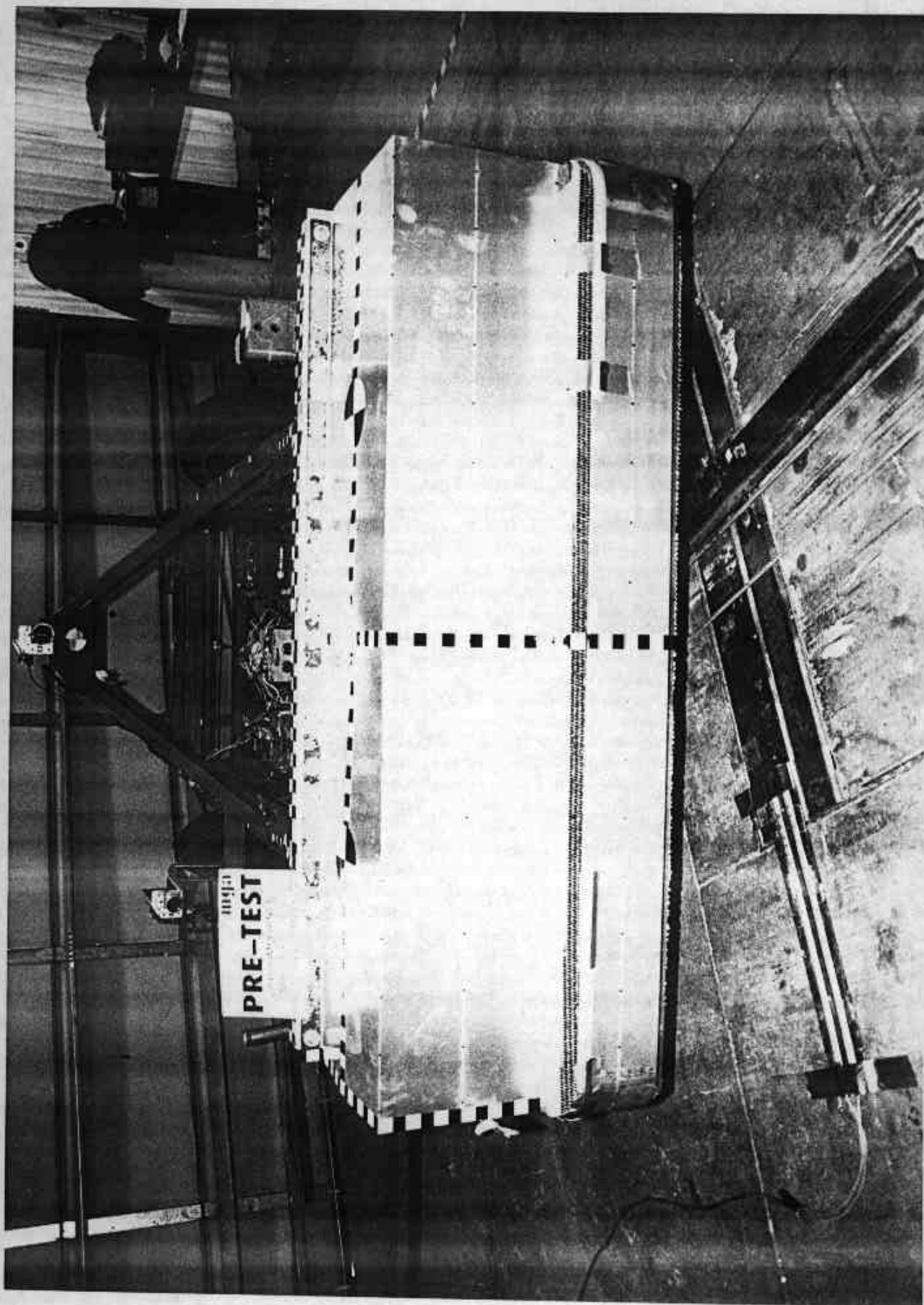


Photo No. A-15 - Pre-Test MDB Front View

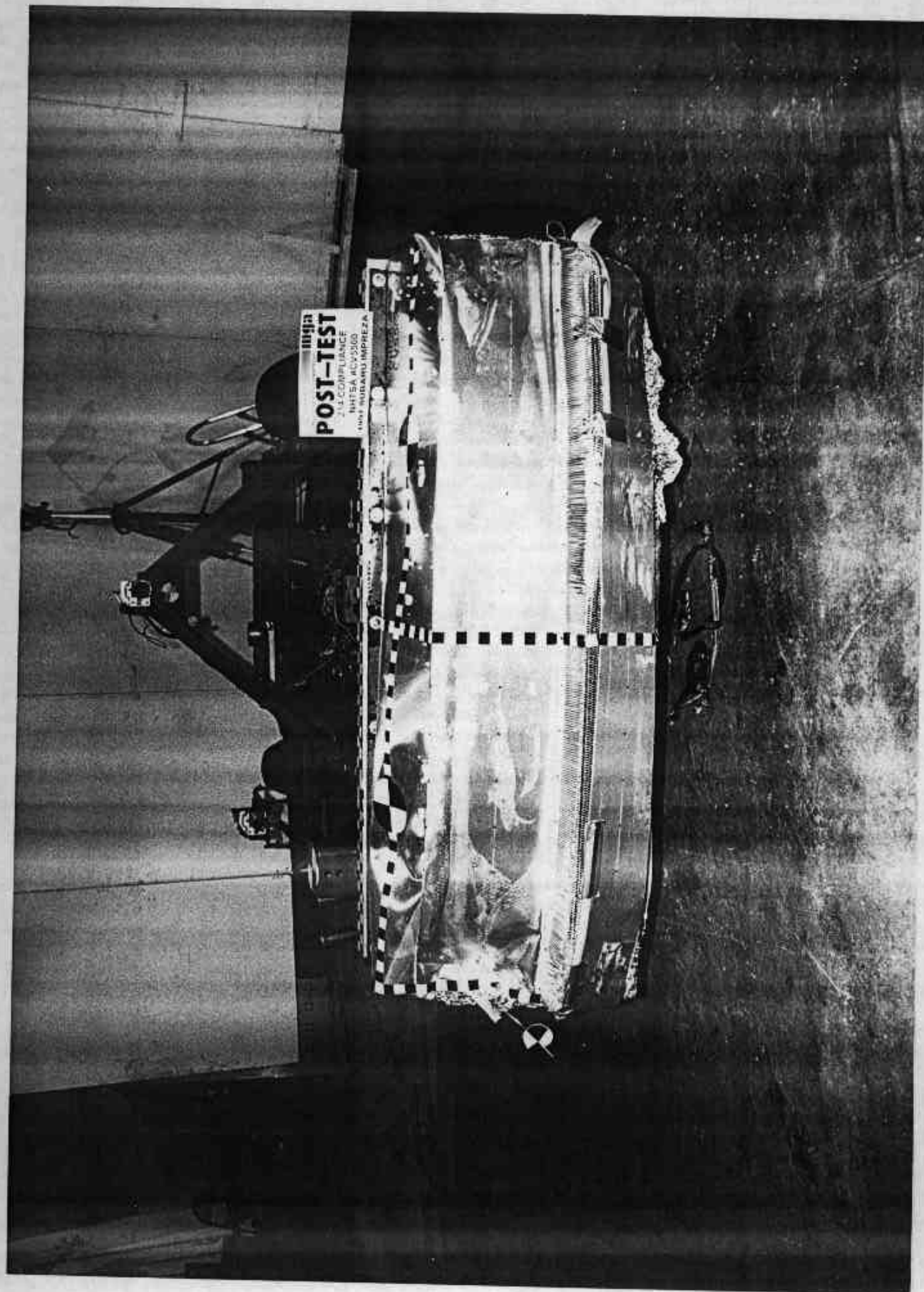


Photo No. A-16 - Post-Test MDB Front View

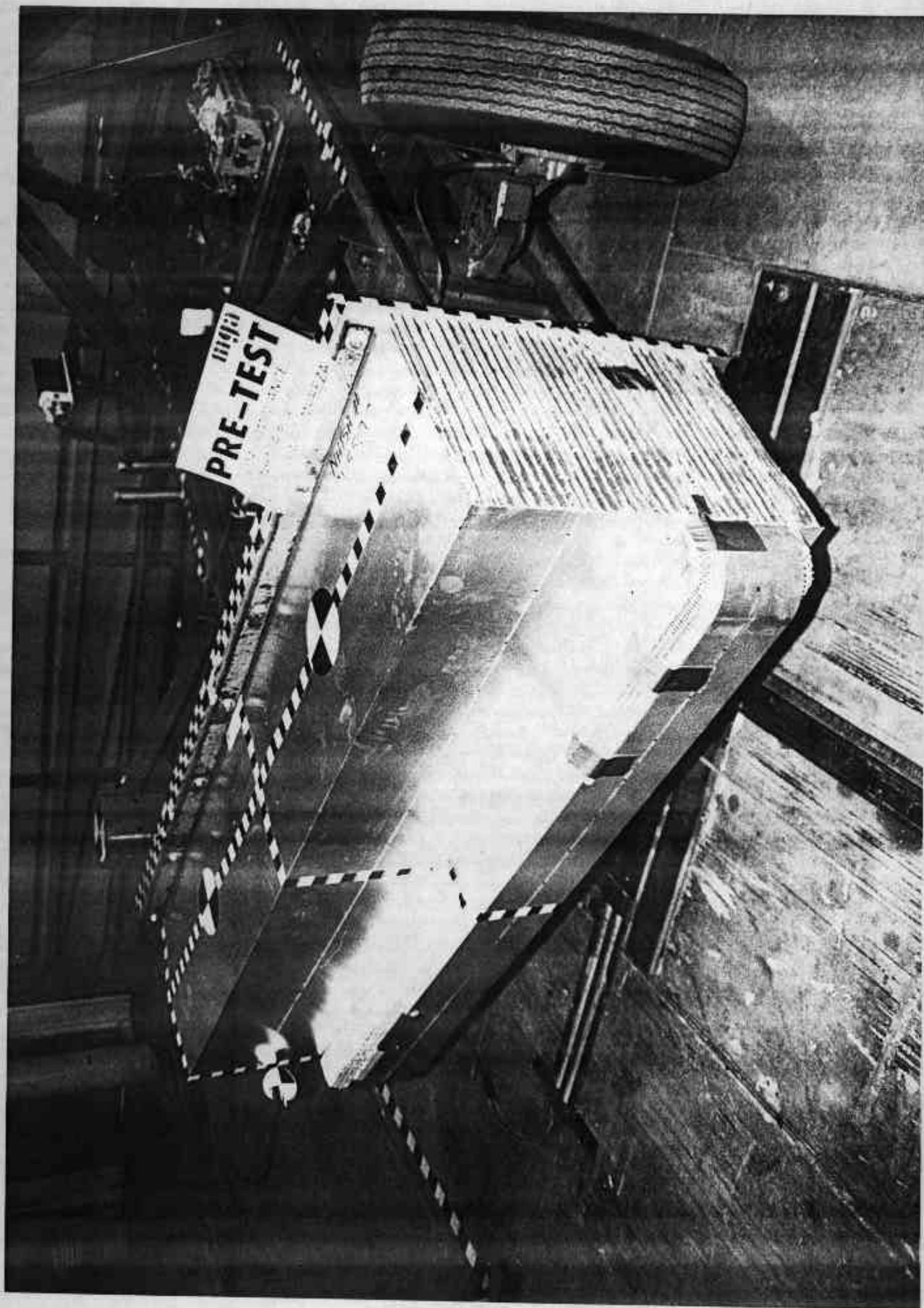


Photo No. A-17 - Pre-Test MDB Left Side View

A-17

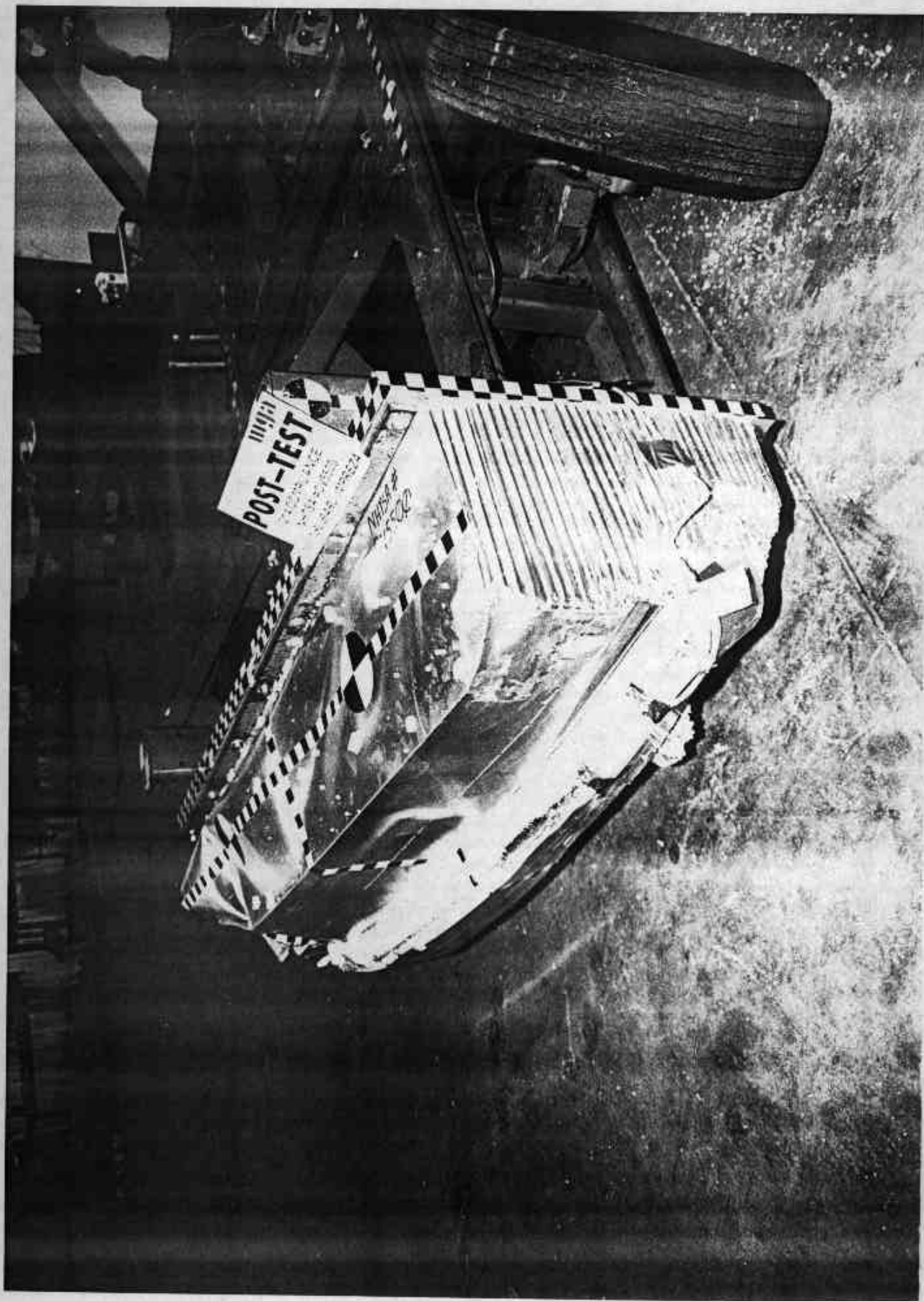


Photo No. A-18 - Post-Test MDB Left Side View

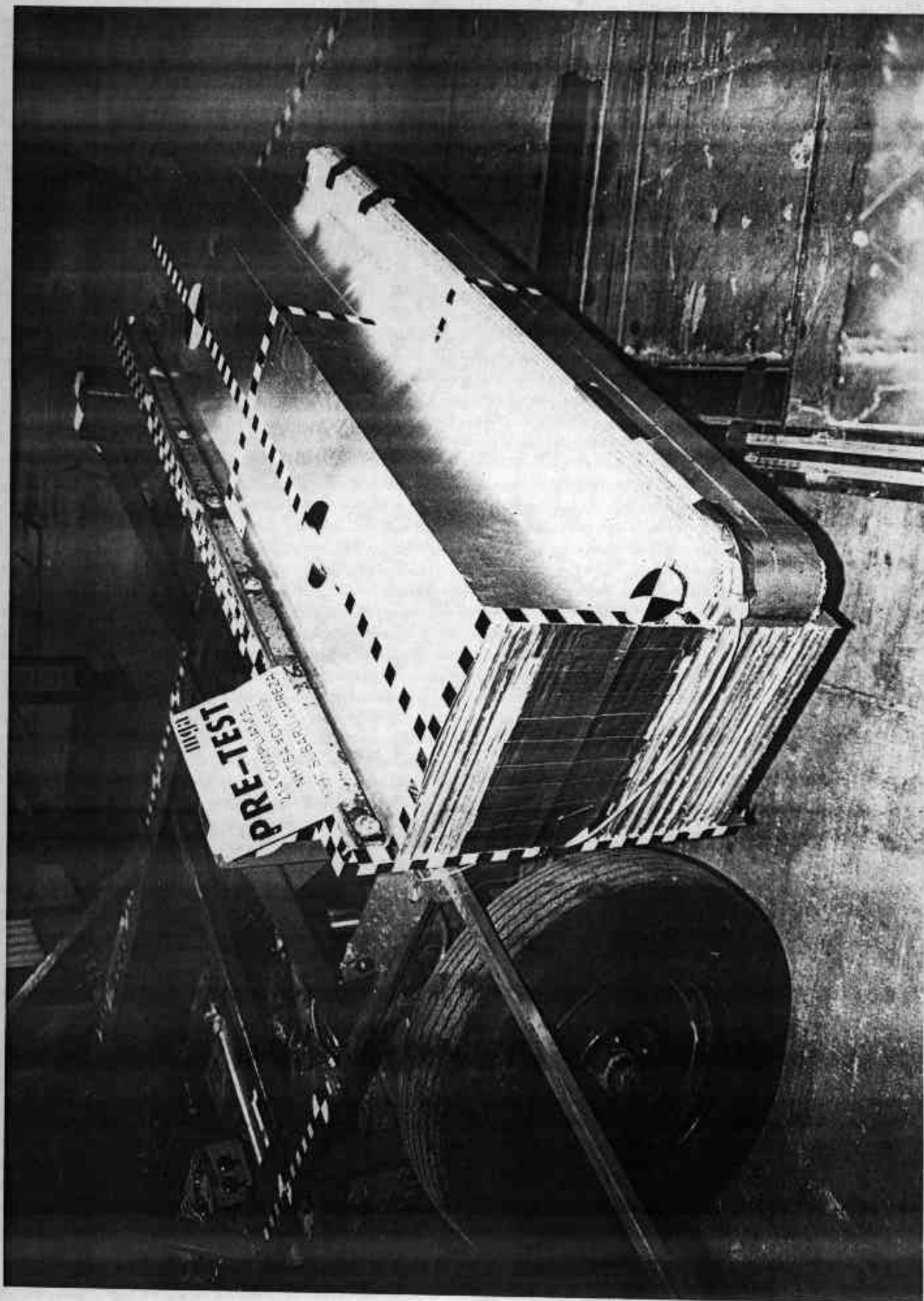


Photo No. A-19 - Pre-Test MDB Right Side View

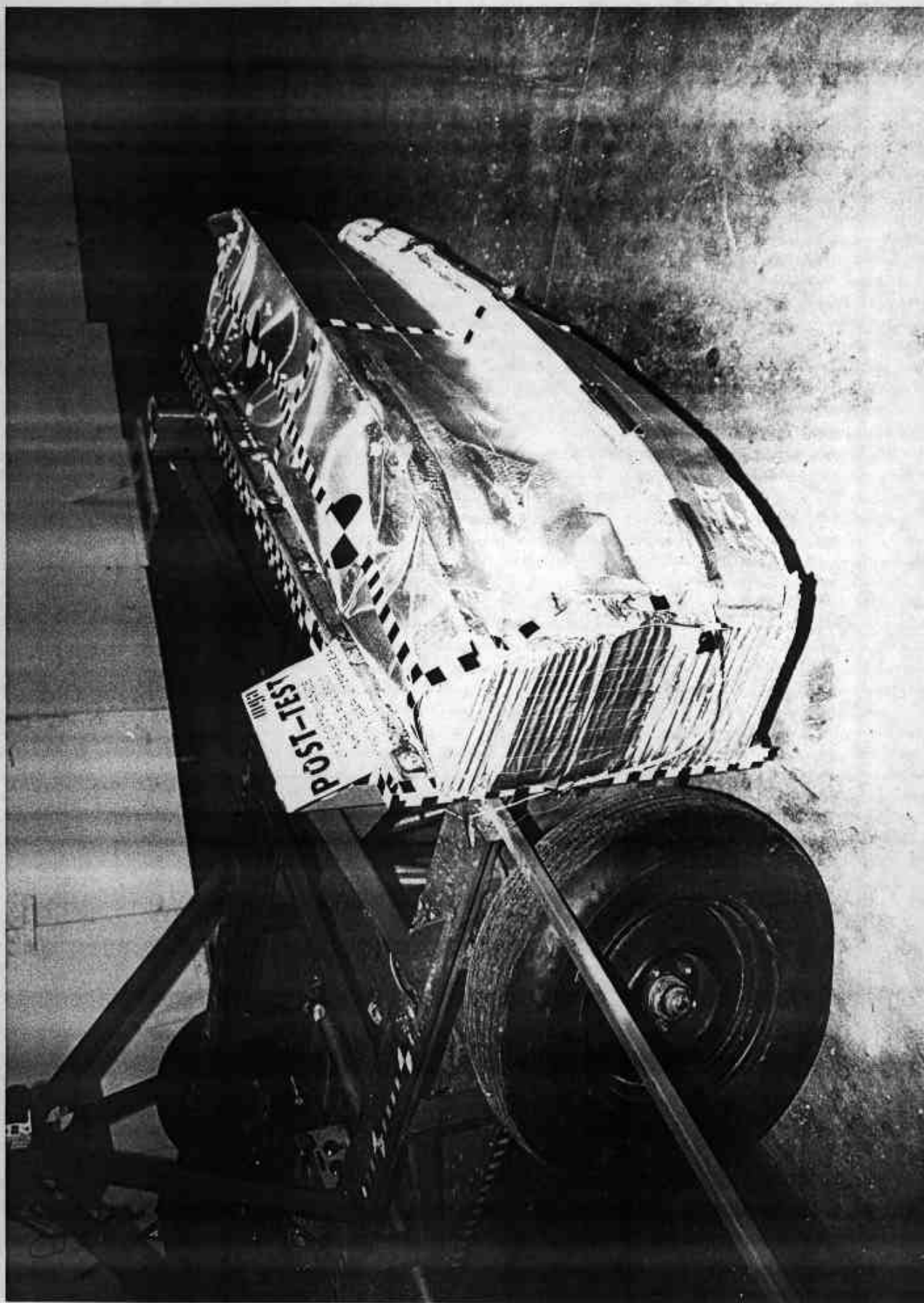


Photo No. A-20 - Post-Test MDB Right Side View



Photo No. A-21 - Pre-Test Front Passenger Seat Position View



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

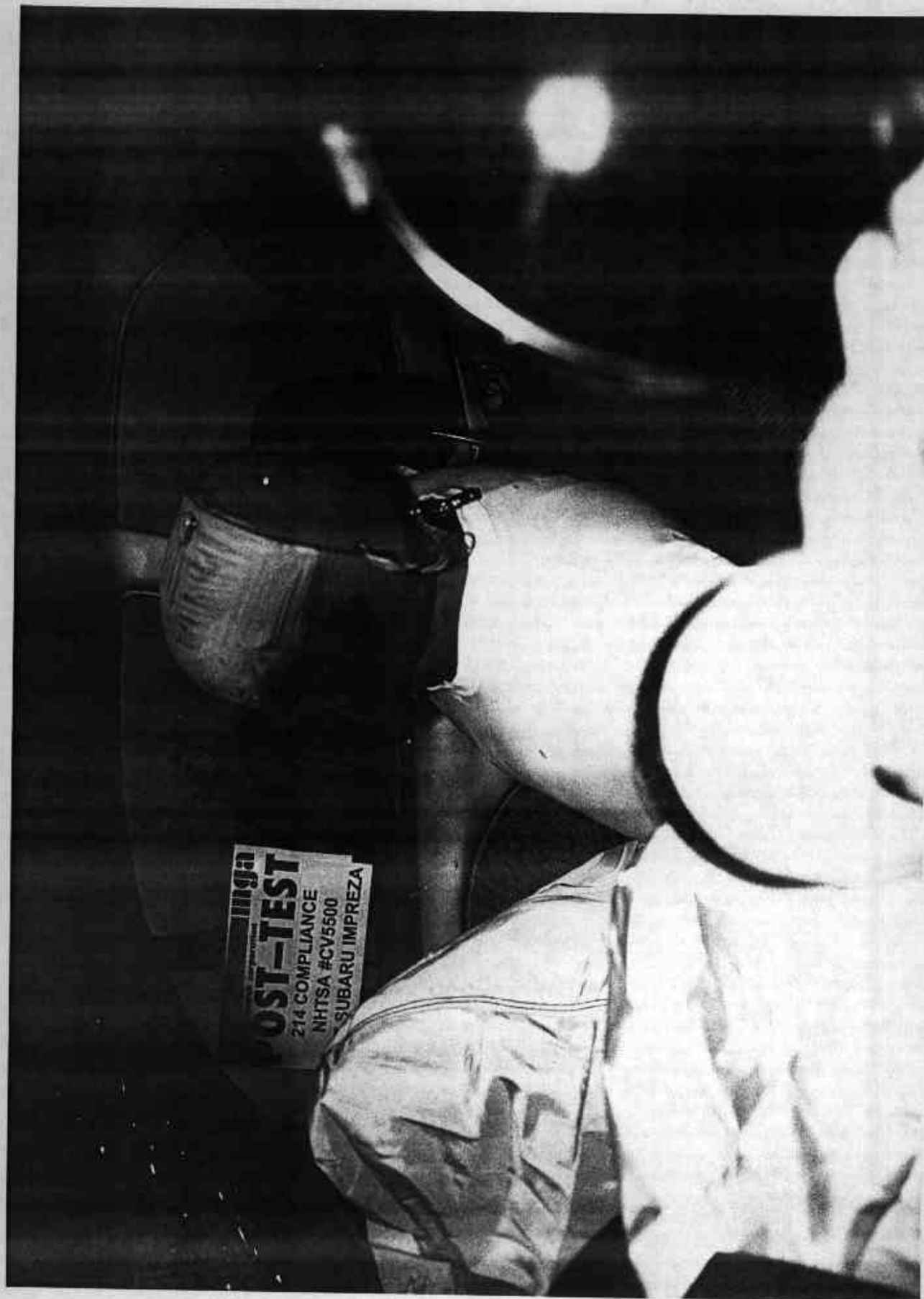


Photo No. A-23 - Post-Test Front Passenger Dummy Left Side View

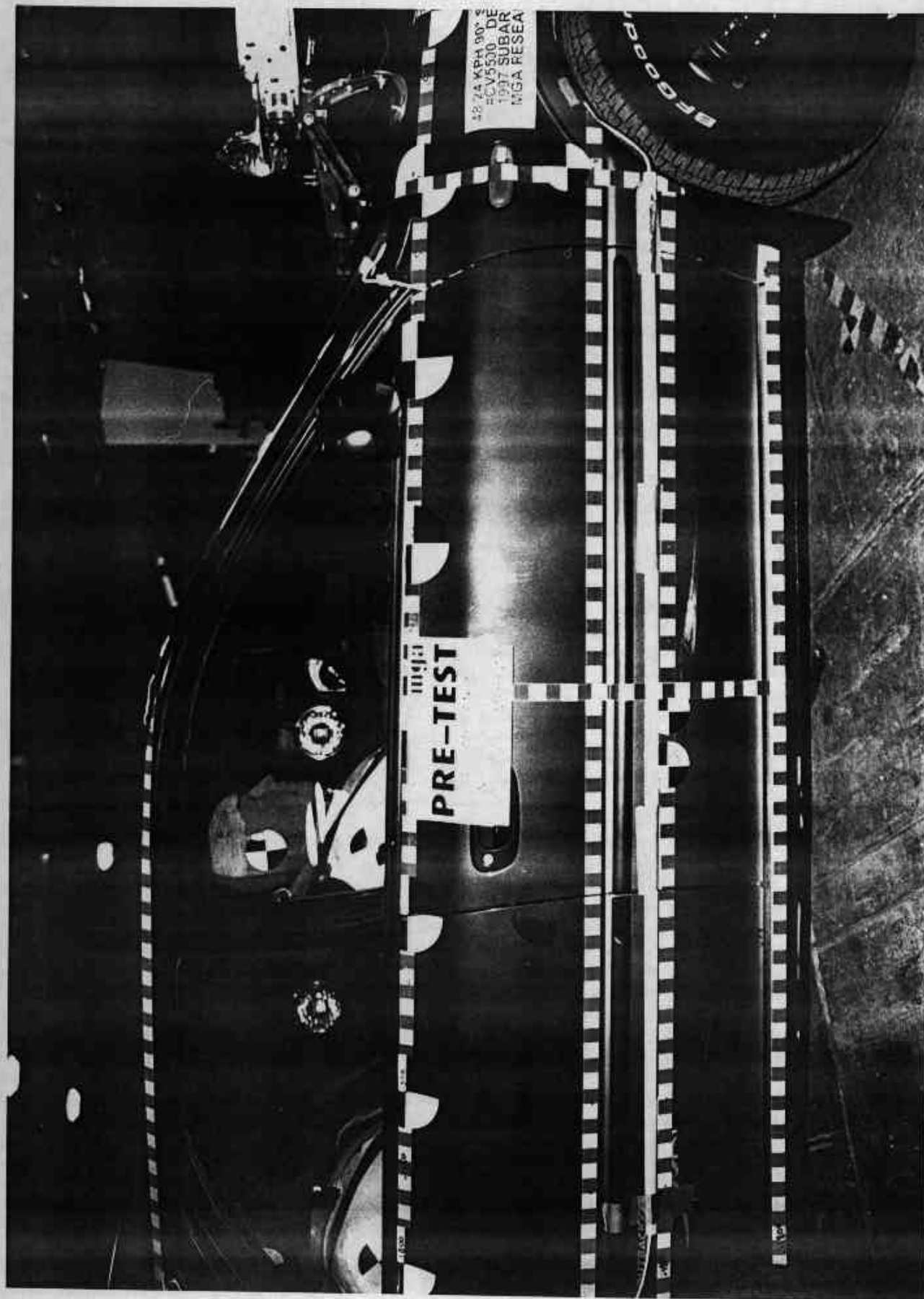


Photo No. A-24 - Pre-Test Front Passenger Dummy Right Side View

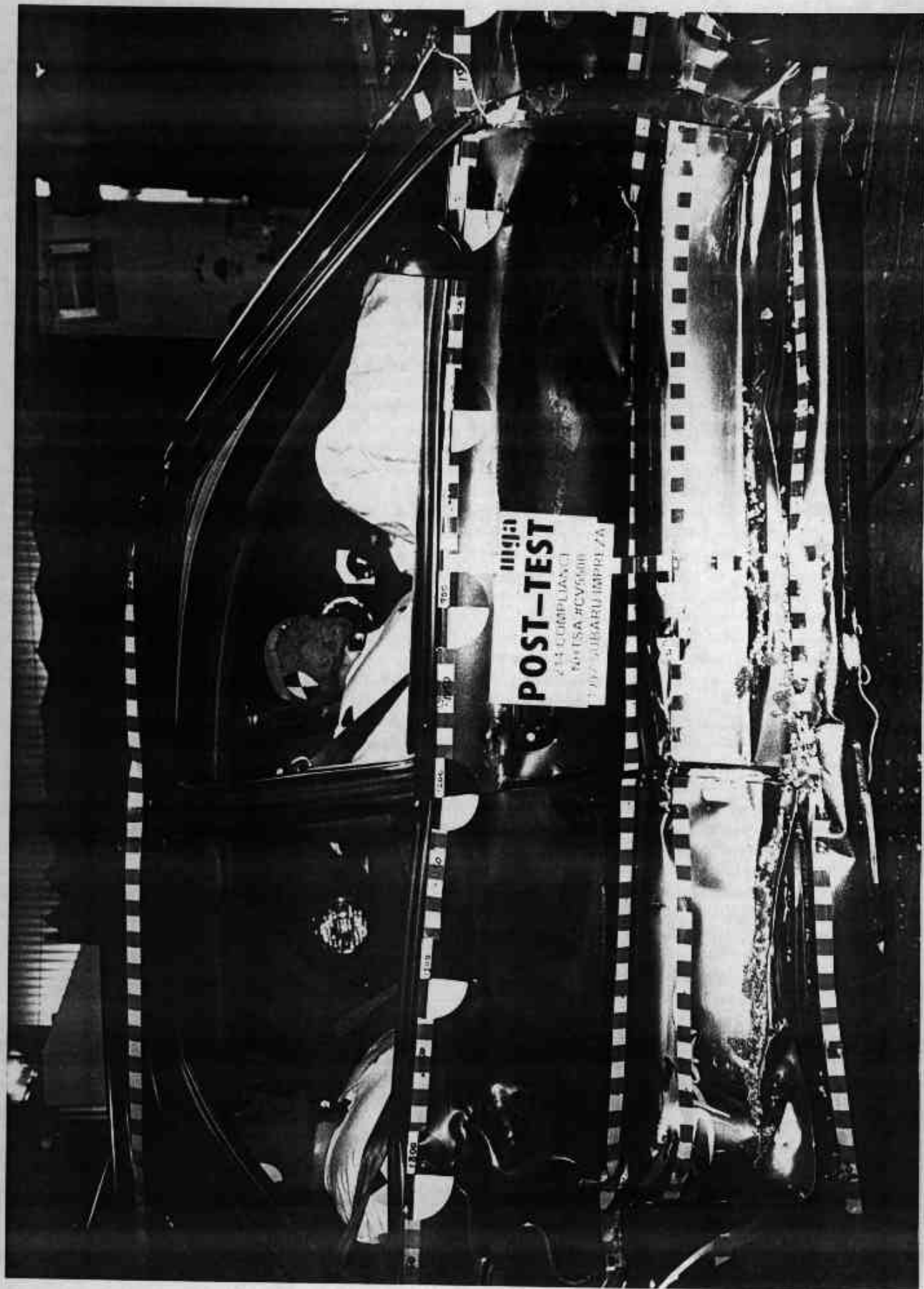


Photo No. A-25 - Post-Test Front Passenger Dummy Right Side View

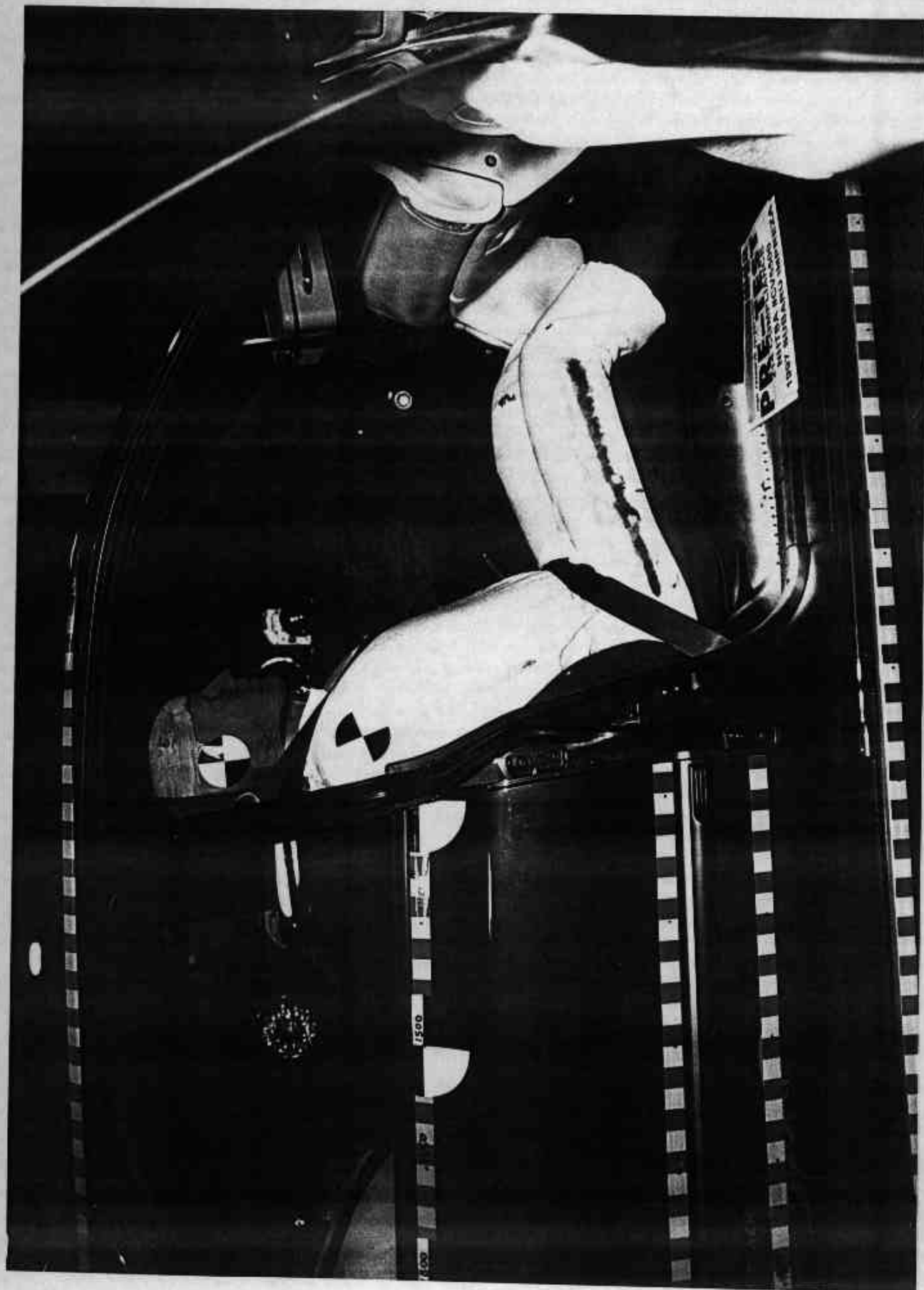


Photo No. A-26 - Pre-Test Front Passenger Dummy Right Side View (Door Open)



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



A-28

Photo No. A-28 - Post-Test Front Passenger Dummy Shoulder and Door Top View



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

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214 COMPLIANCE

NHTSA #CV5500

1997 SUBARU IMPREZA

A-30

Photo No. A-30 - Post-Test Front Passenger Dummy Contact



Photo No. A-31 - Post-Test Front Passenger Dummy Head Contact

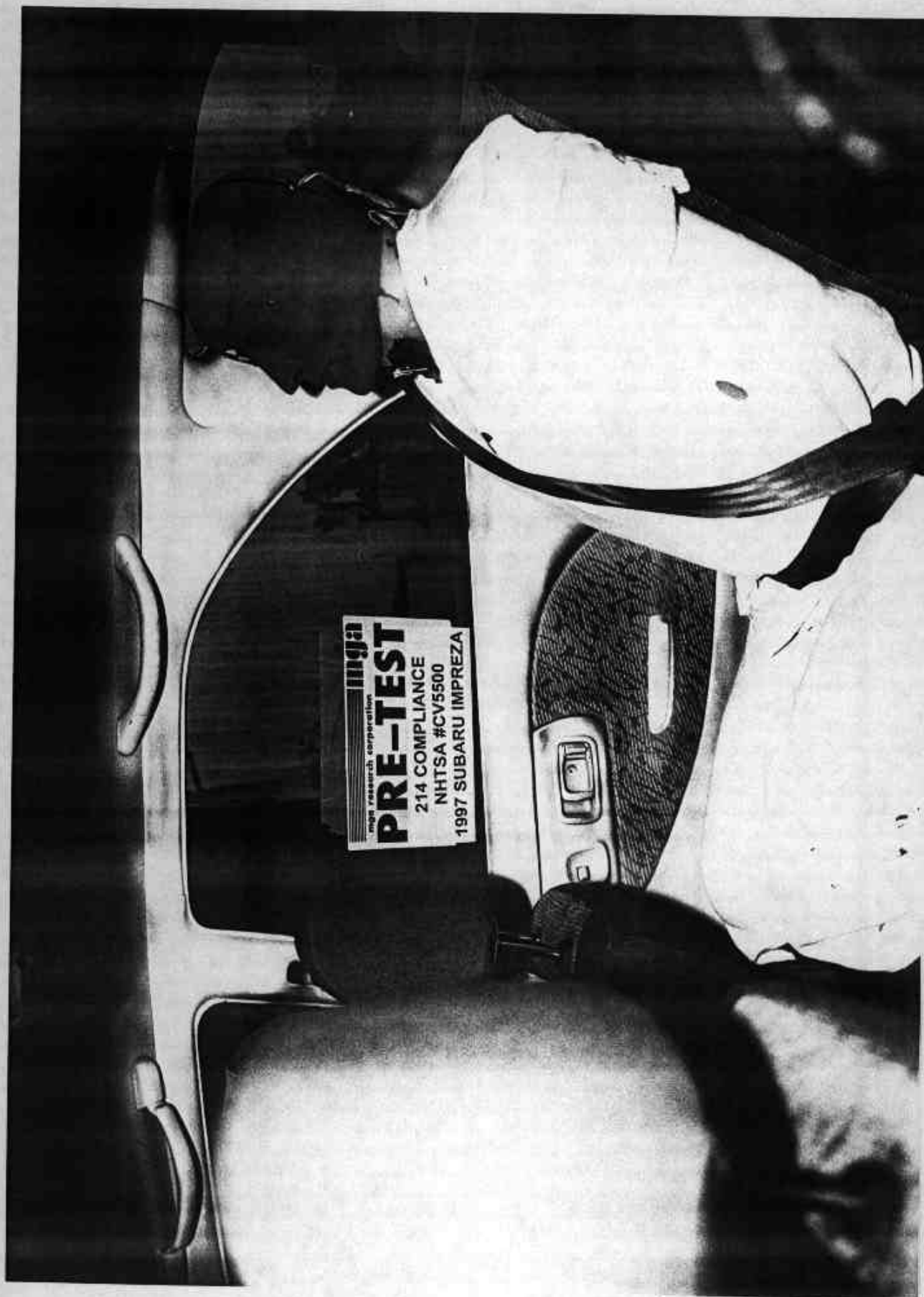


Photo No. A-32 - Pre-Test Rear Passenger Dummy Left Side View

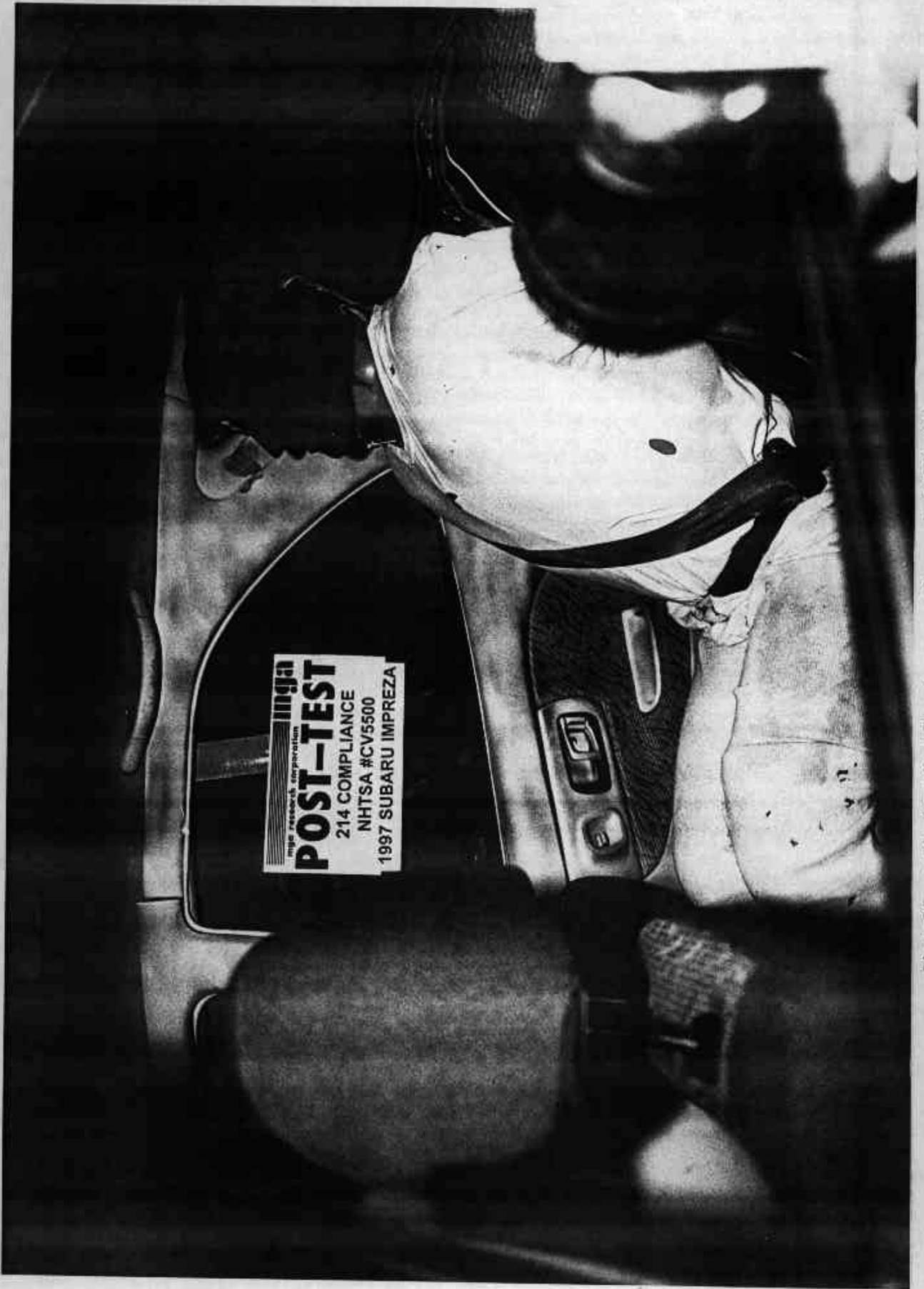


Photo No. A-33 - Post-Test Rear Passenger Dummy Left Side View

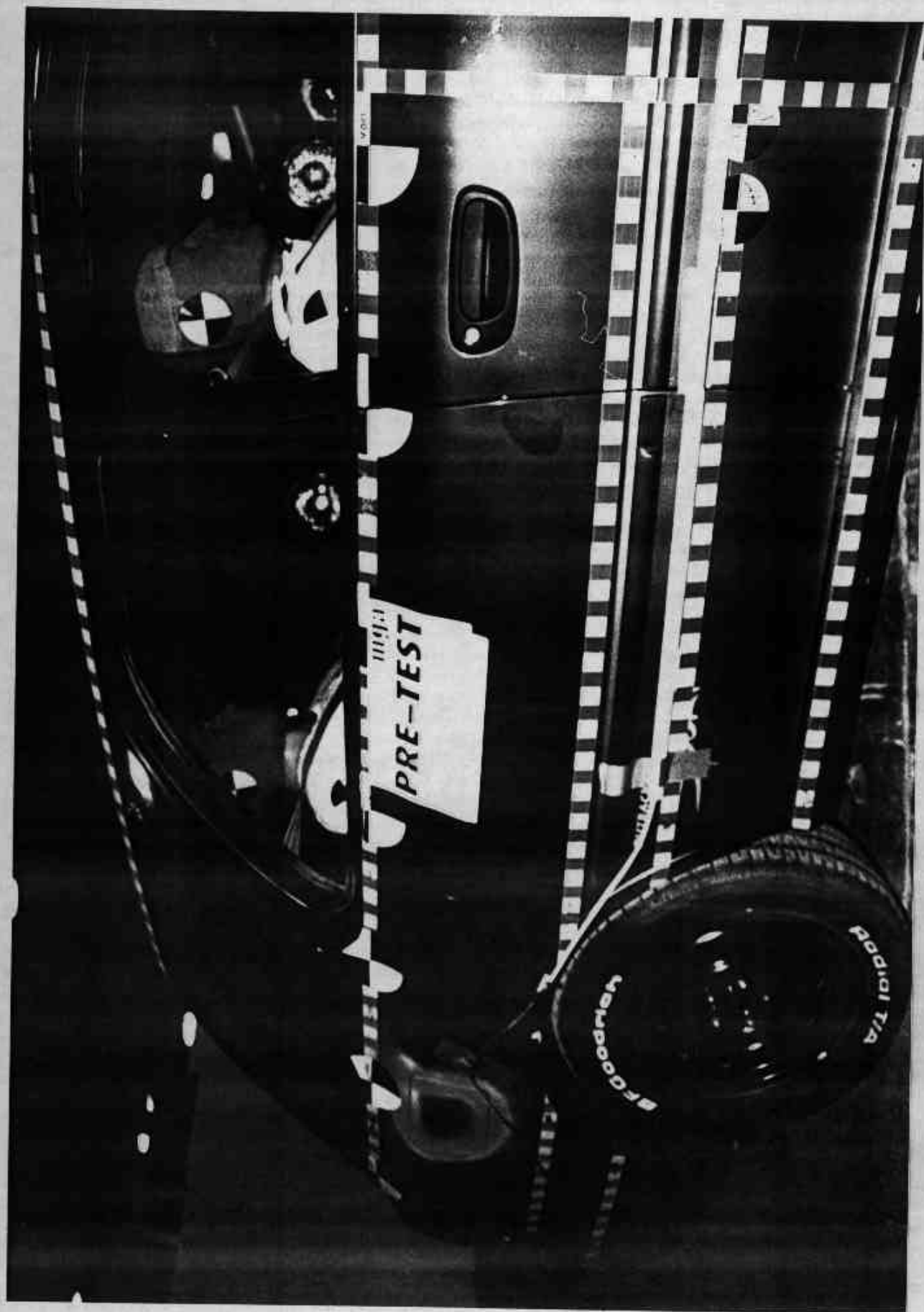


Photo No. A-34 - Pre-Test Rear Passenger Dummy Right Side View

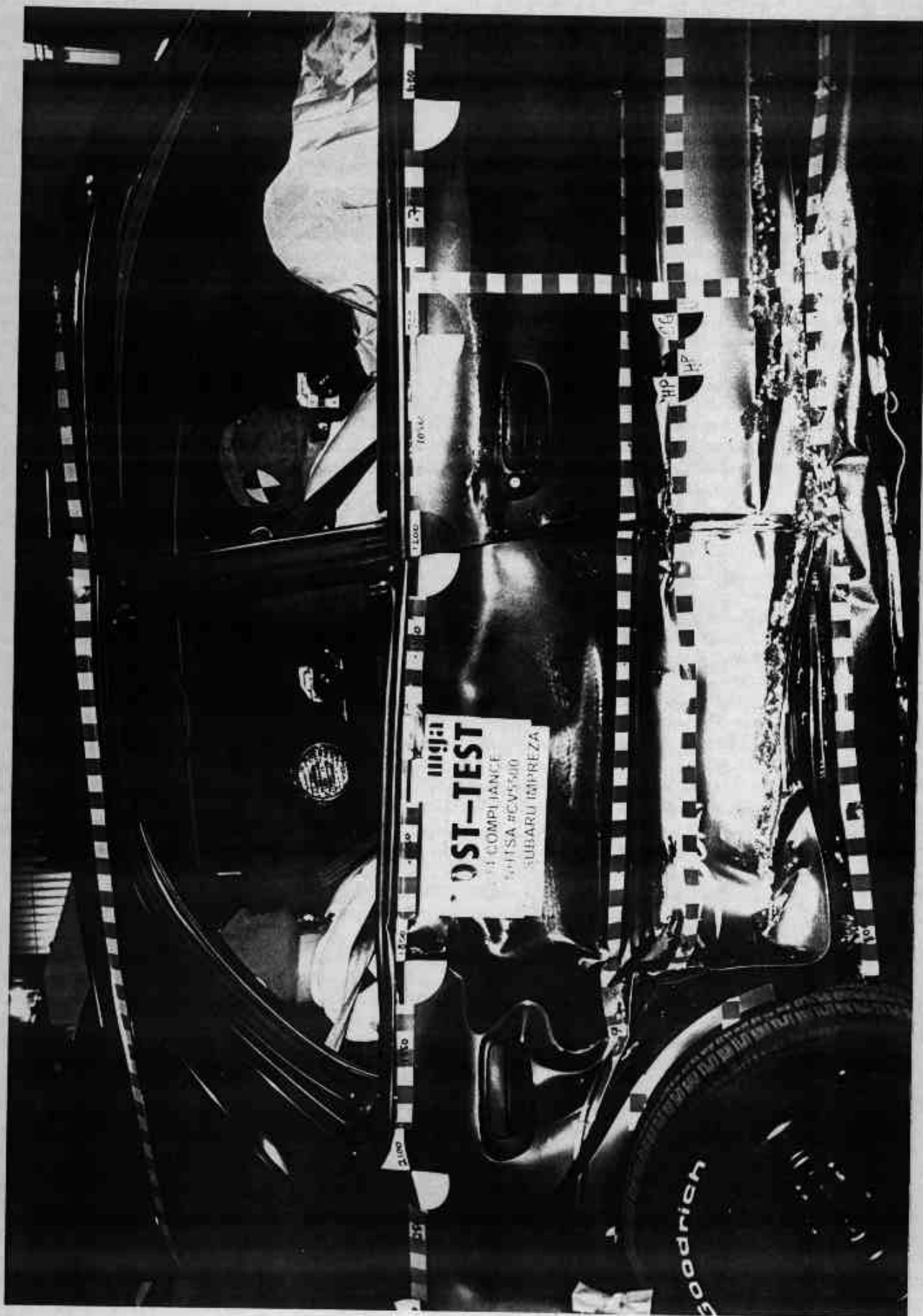


Photo No. A-35 - Post-Test Rear Passenger Dummy Right Side View

A-35

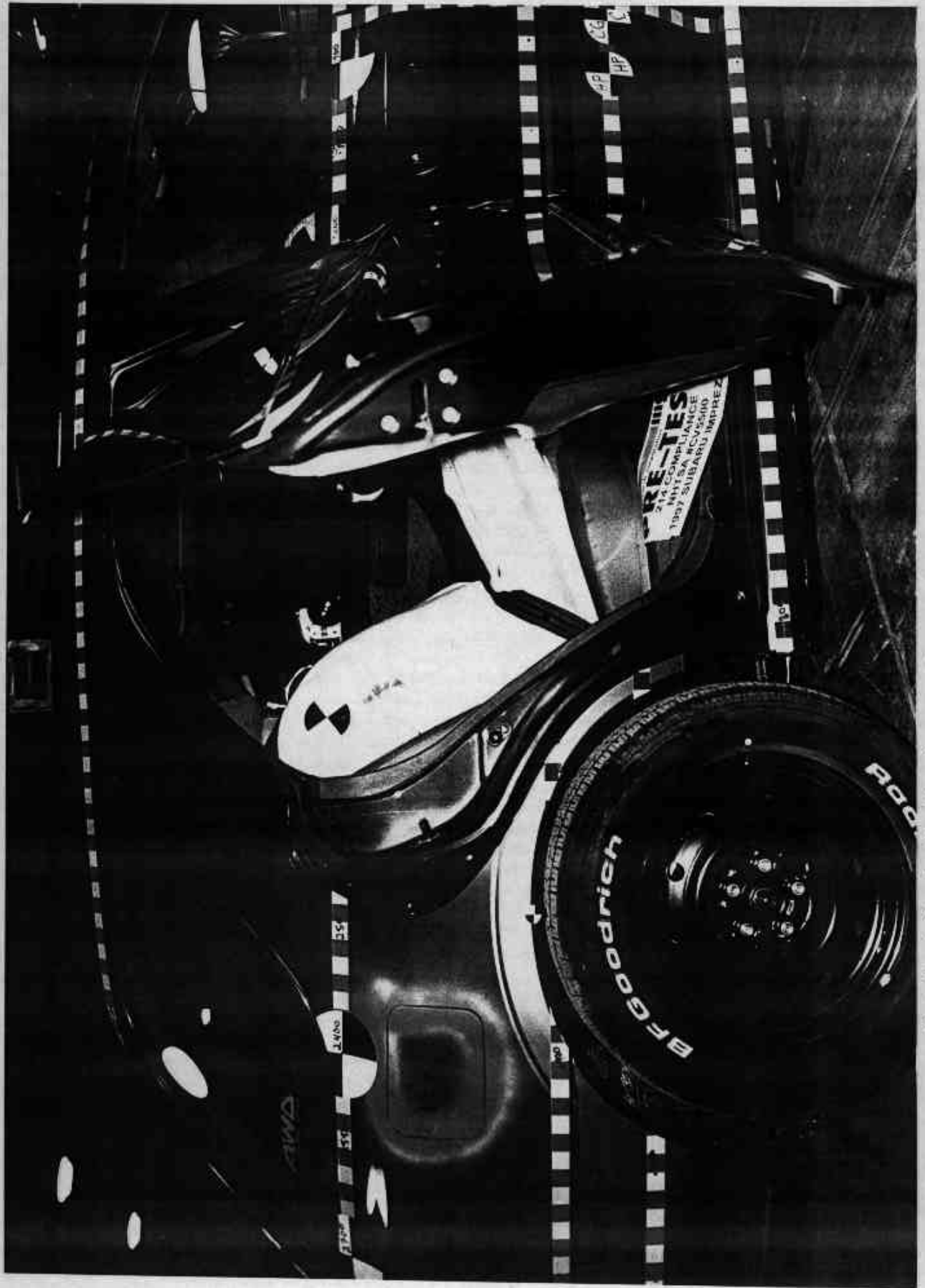


Photo No. A-36 - Pre-Test Rear Passenger Dummy Right Side View (Door Open)



A-37

Photo No. A-37 - Pre-Test Rear Passenger Dummy Shoulder and Door Top View



Photo No. A-38 - Post-Test Rear Passenger Dummy Shoulder and Door Top View

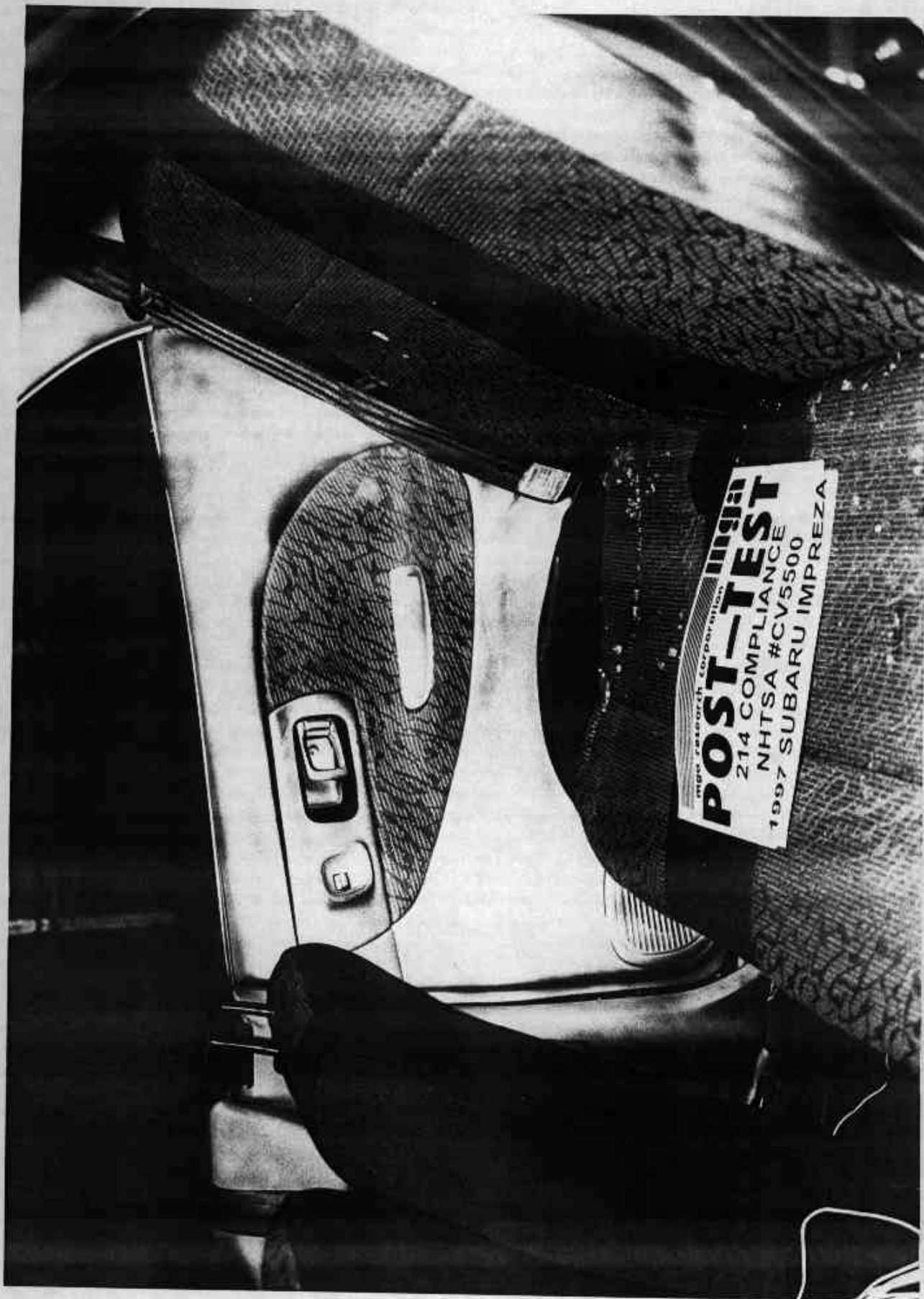


Photo No. A-39 - Post-Test Rear Passenger Dummy Contact



mgaj
mgaj research corporation
POST-TEST
214 COMPLIANCE
NHTSA #CV5500
1997 SUBARU IMPREZA

Photo No. A-40 - Post-Test Rear Passenger Dummy Head Contact



Photo No. A-41 - Pre-Test Right Front Impact Point on Vehicle



Photo No. A-42 - Post-Test Right Front Impact Point on Vehicle

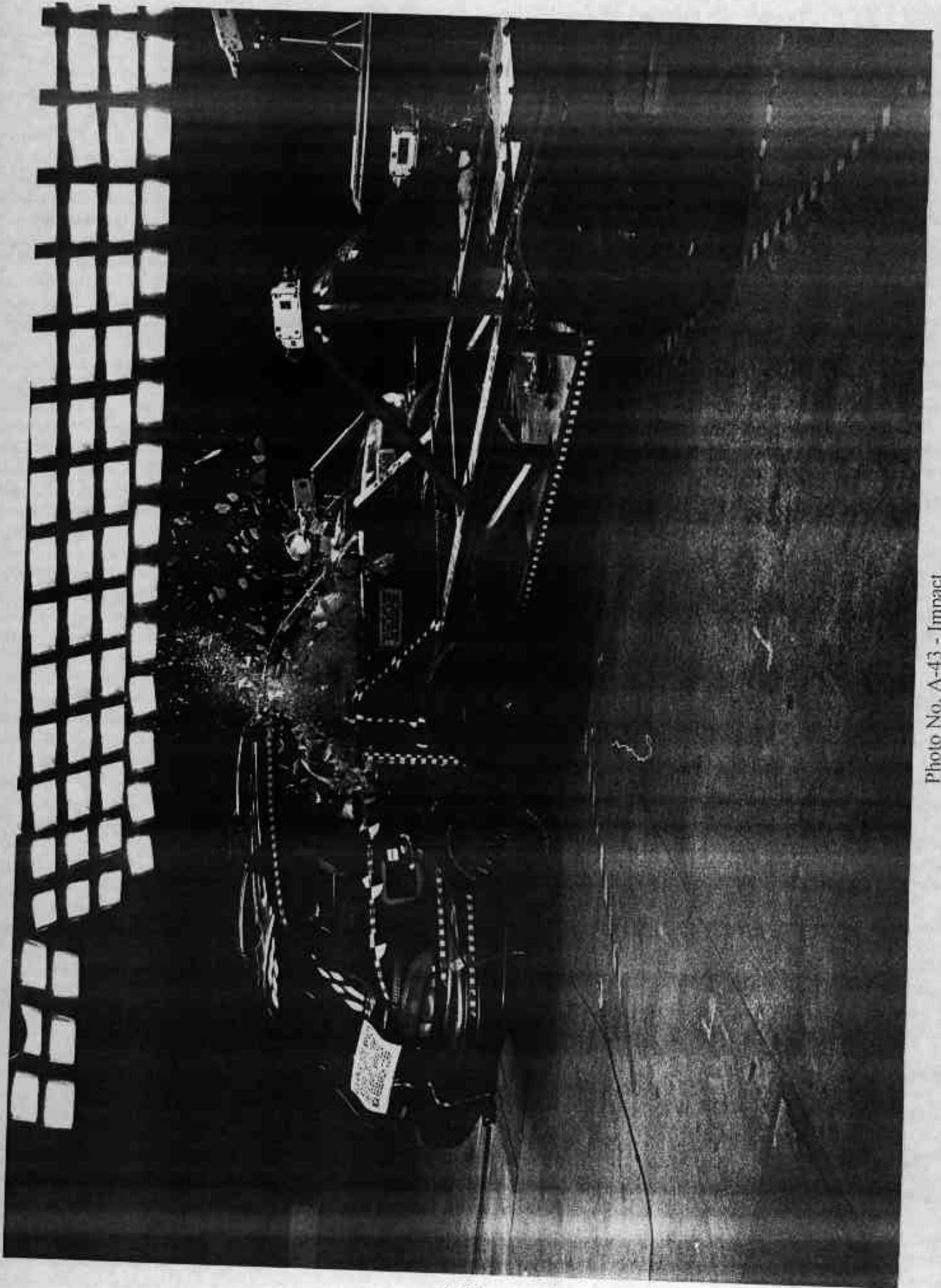


Photo No. A-43 - Impact

A-43

MFD BY FUJI HEAVY IND. LTD. JAPAN

MFD IN 08/96

GVWR: 3950LB(1792KG)
GAWR: FRONT-1950LB(885KG)
REAR -2000LB(907KG)

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

VIN

035

(FK)

PASSENGER CAR

Photo No. A-44 - Vehicle Certification Label



Photo No. A-45 - Tire Placard



Photo No. A-46 - Right Front Attitude Point

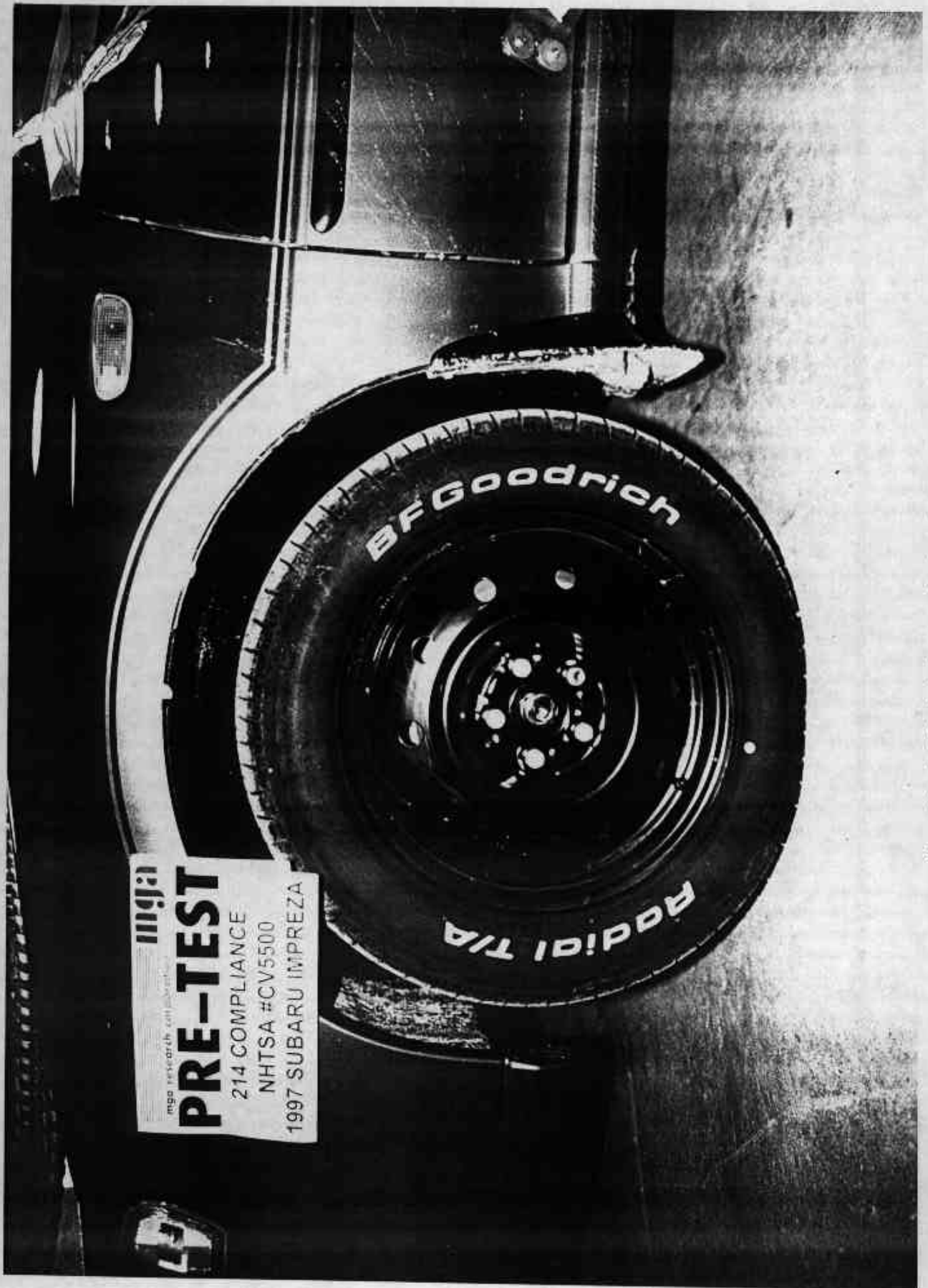


Photo No. A-47 - Left Front Attitude Point



Photo No. A-48 - Right Rear Attitude Point



Photo No. A-49 - Left Rear Attitude Point

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* No valid data collected

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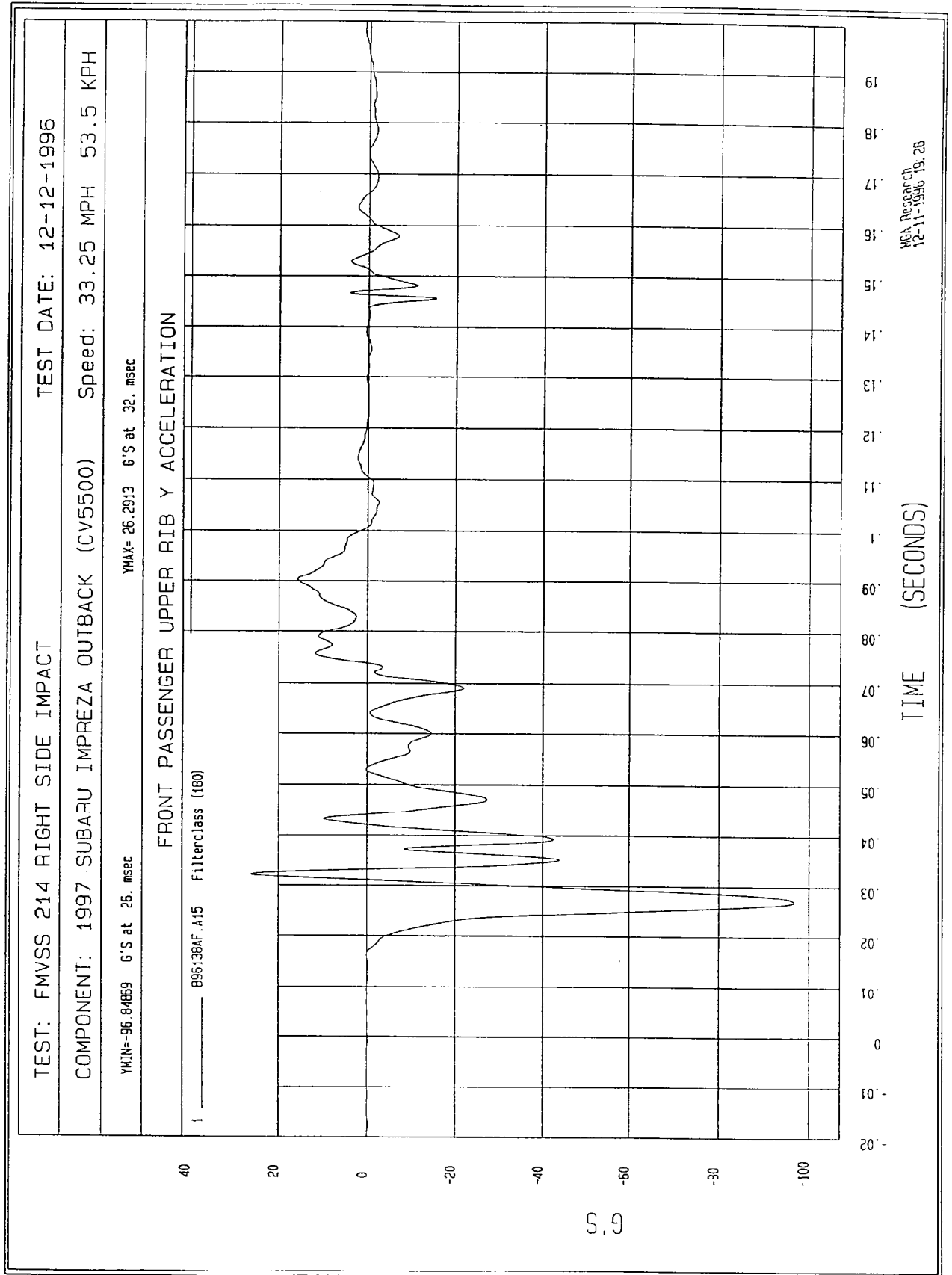
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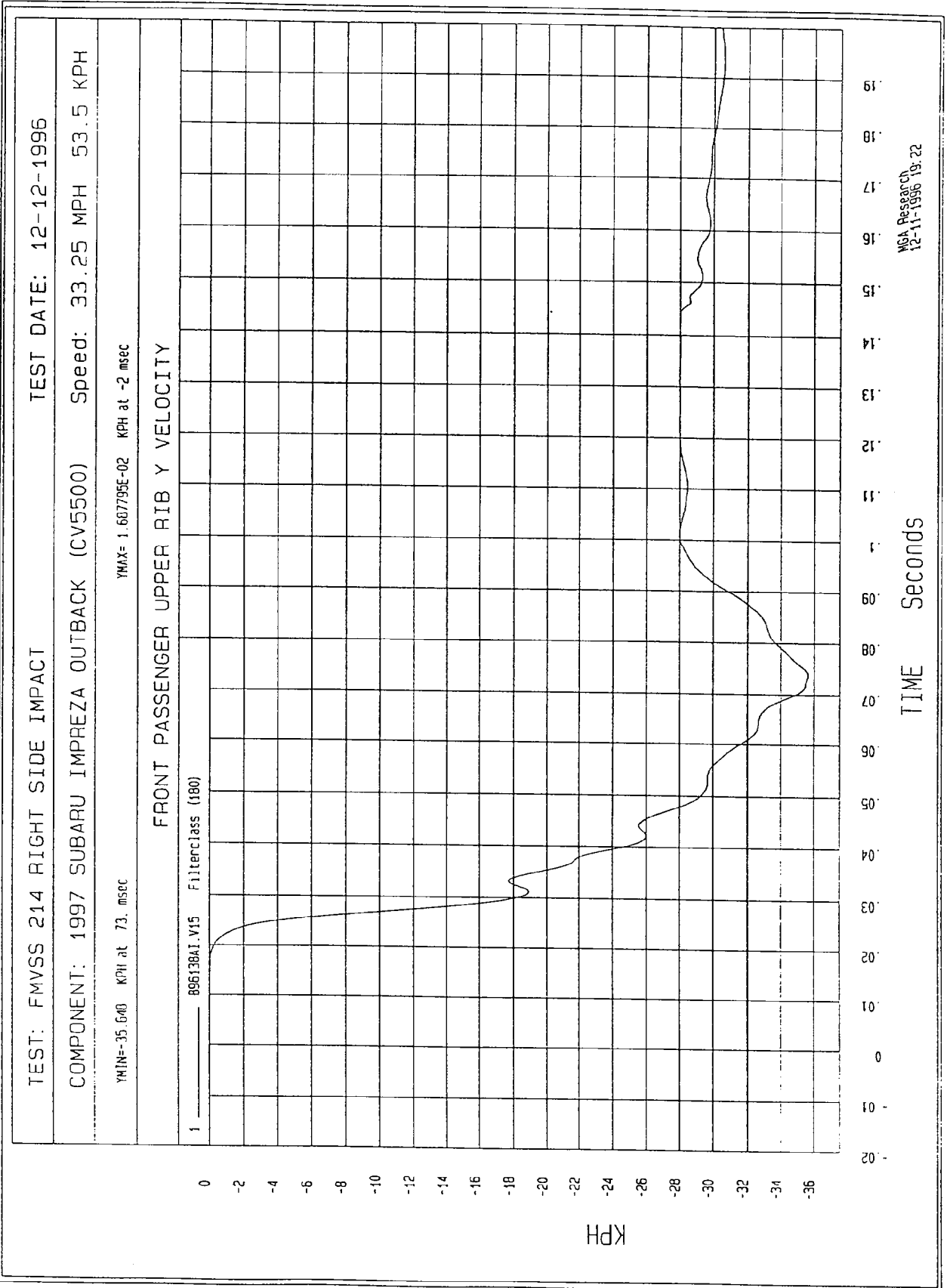
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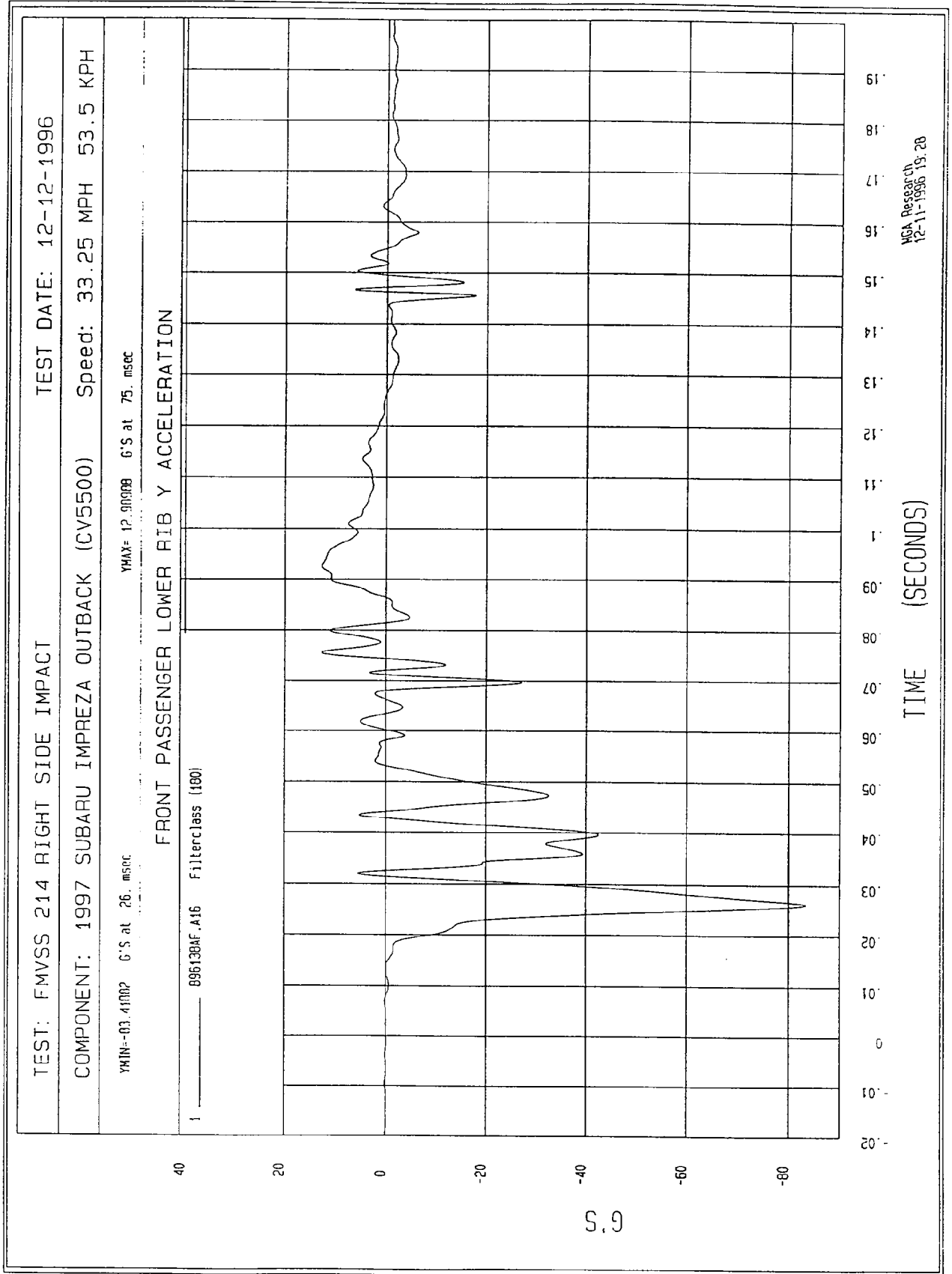
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FIR Filter

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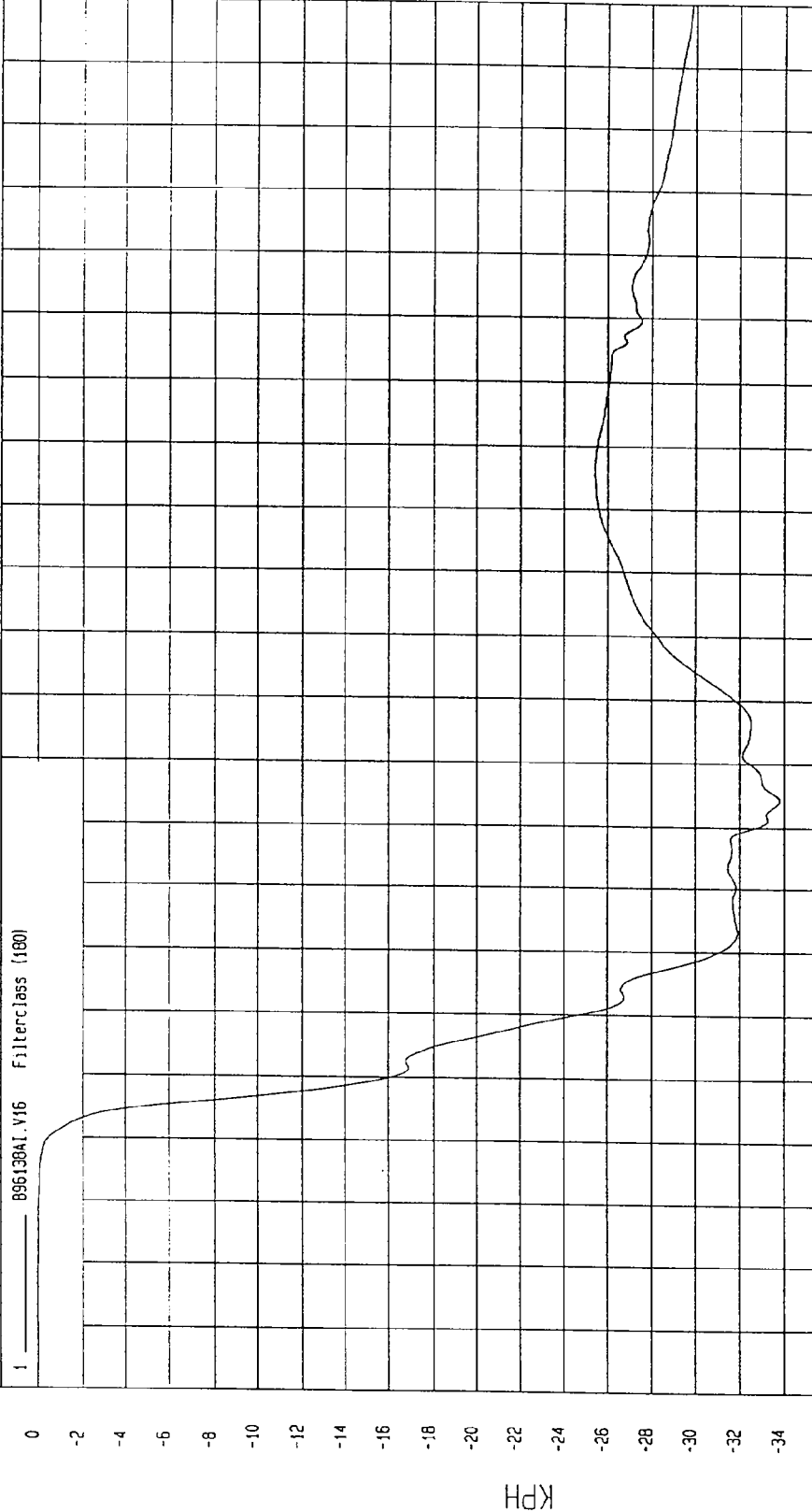




TEST: FMVSS 214 RIGHT SIDE IMPACT TEST DATE: 12-12-1996
COMPONENT: 1997 SUBARU IMPREZA OUTBACK (CV5500) Speed: 33.25 MPH 53.5 KPH

YMIN=-33.79907 KPH at 74. msec YMAX= 9.562643E-03 KPH at -2.7 msec

FRONT PASSENGER LOWER RIB Y VELOCITY



HEA Research
12-11-1996 19:22

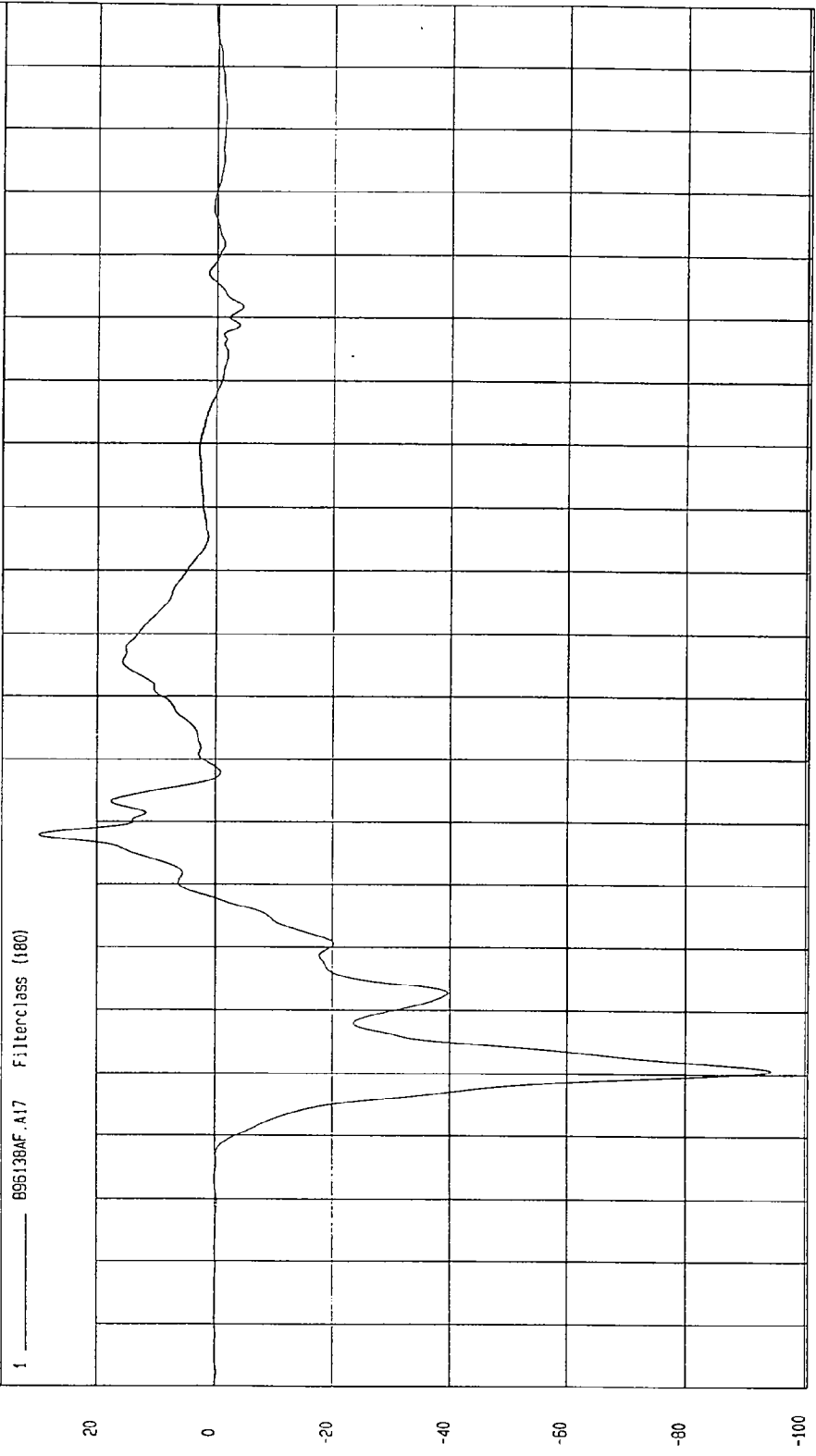
TIME Seconds

TEST: FMVSS 214 RIGHT SIDE IMPACT TEST DATE: 12-12-1996

COMPONENT: 1997 SUBARU IMPREZA OUTBACK (CV5500) Speed: 33.25 MPH 53.5 KPH

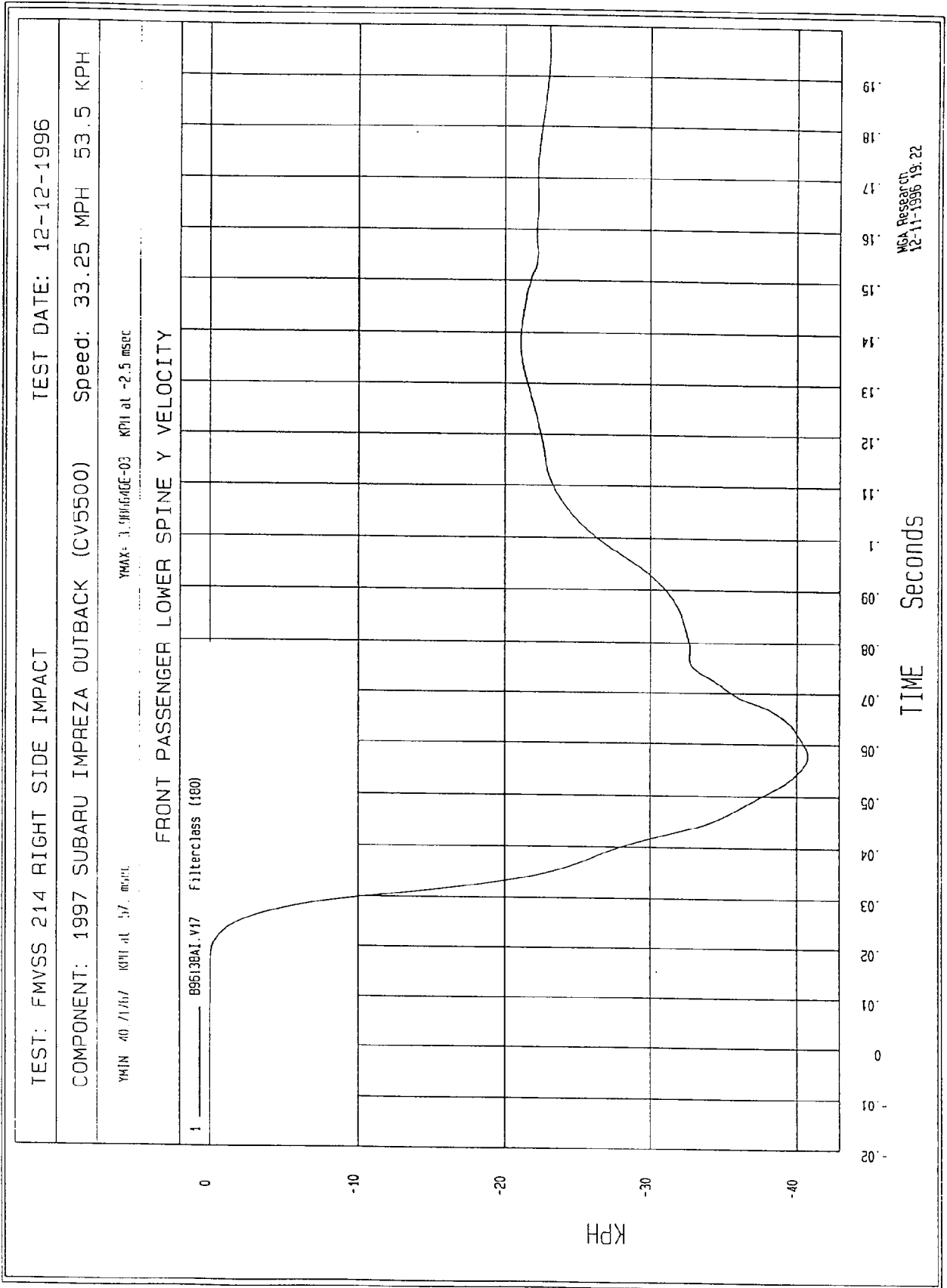
Minimum = -94.30 G'S at 30 msec Maximum = 29.79 G'S at 68 msec

FRONT PASSENGER LOWER SPINE Y ACCELERATION



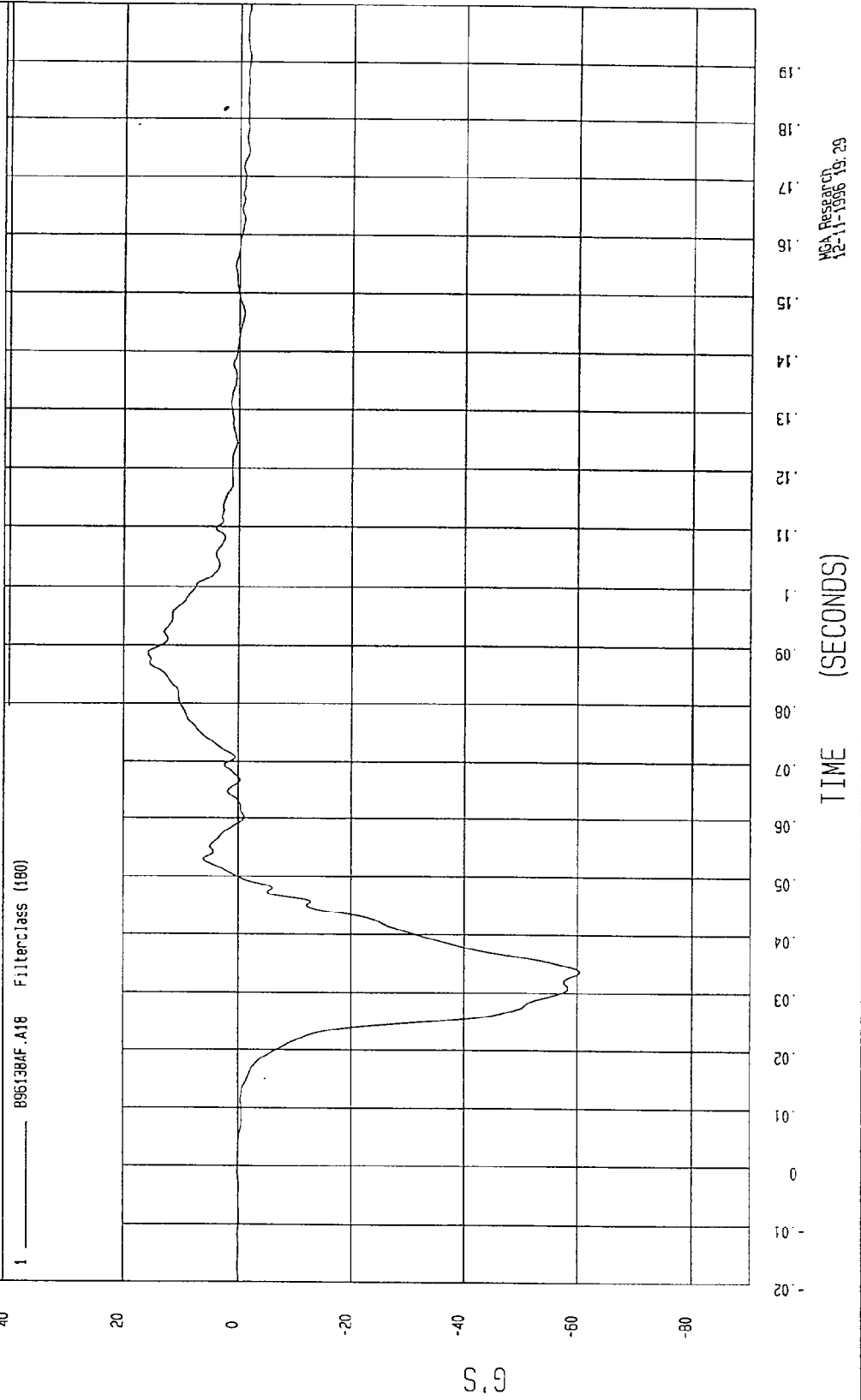
TIME (SECONDS)

NSA Research
01-03-1997 10:34



TEST: FMVSS 214 RIGHT SIDE IMPACT TEST DATE: 12-12-1996
COMPONENT: 1997 SUBARU IMPREZA OUTBACK (CV5500) Speed: 33.25 MPH 53.5 KPH
YMIN=-60.43431 G'S at 33. msec YMAX= 15.80708 G'S at 88. msec

FRONT PASSENGER PELVIS Y ACCELERATION

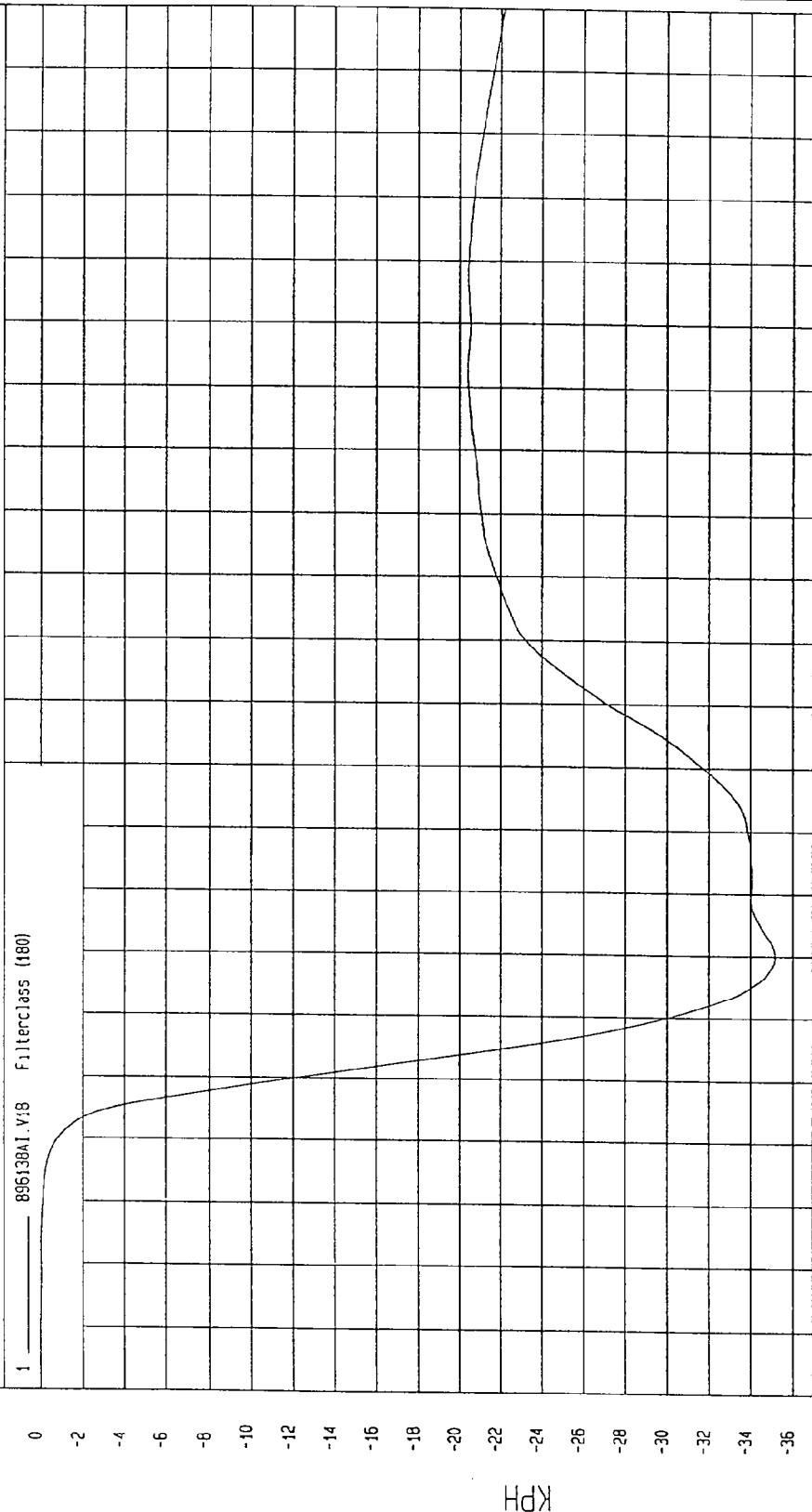


TEST: FMVSS 214 RIGHT SIDE IMPACT TEST DATE: 12-12-1996

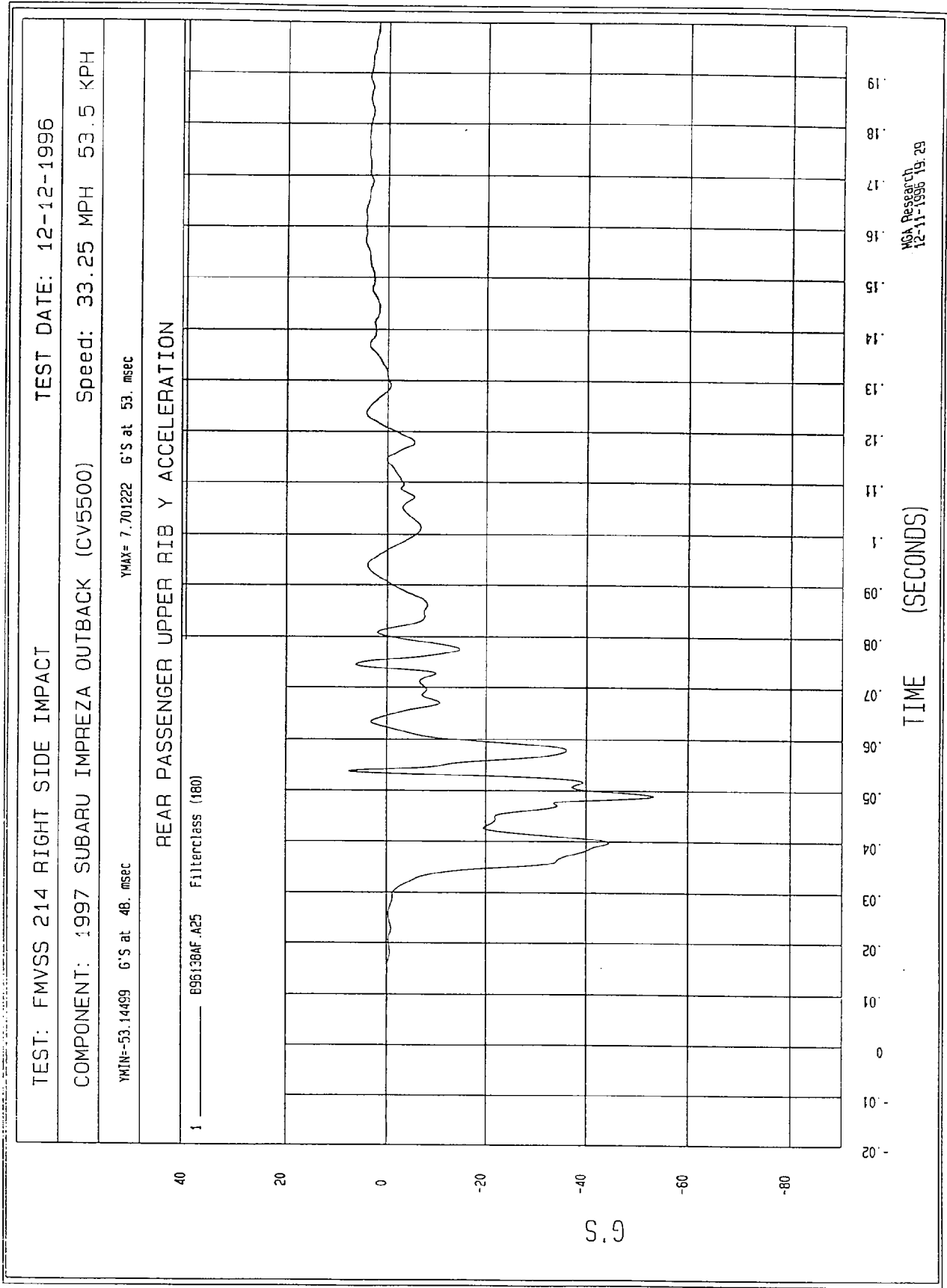
COMPONENT: 1997 SUBARU IMPREZA OUTBACK (CV5500) Speed: 33.25 MPH 53.5 KPH

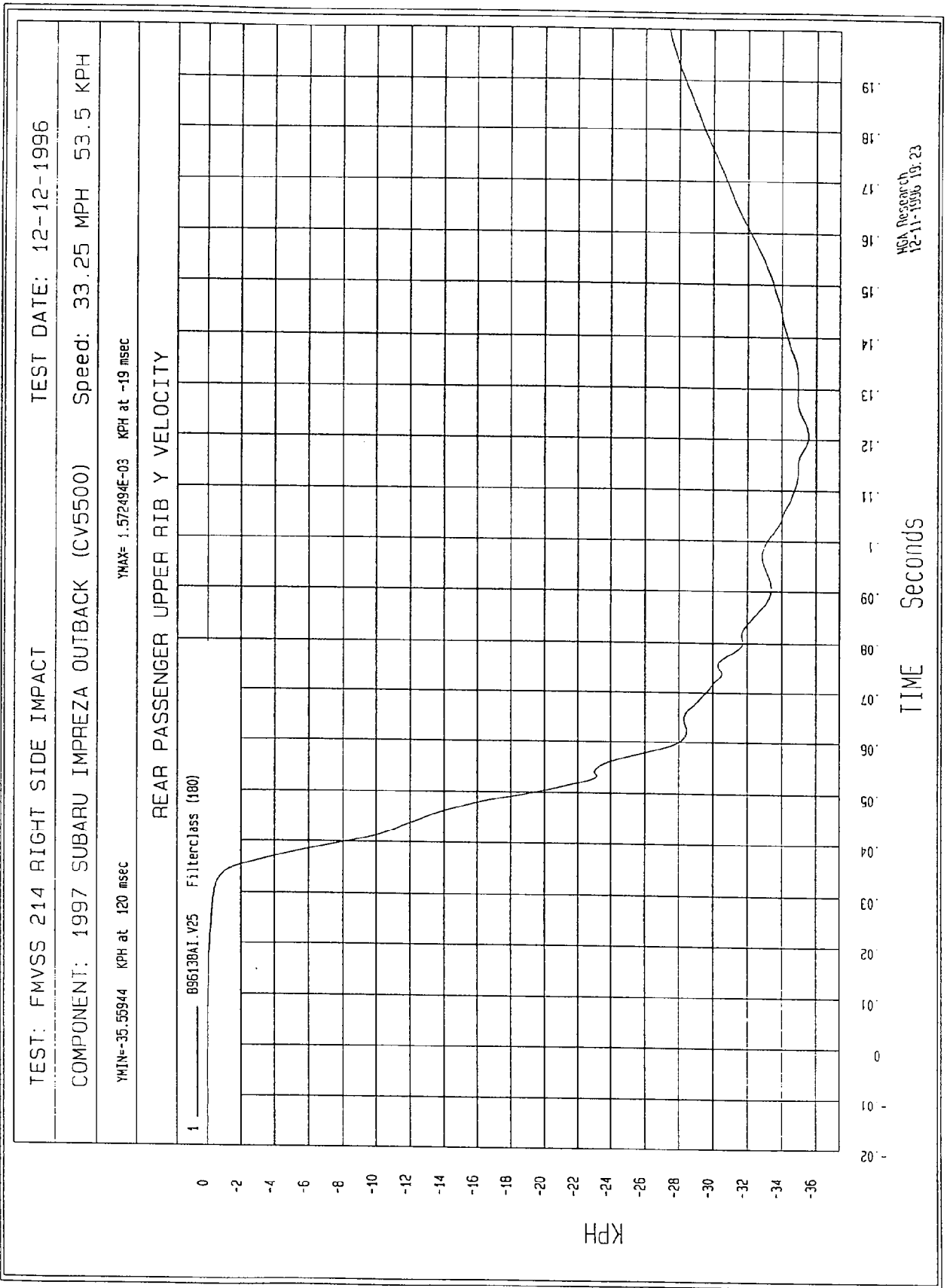
YMIN=-35.16009 KPH at 49. msec YMAX= 9.161486E-03 KPH at -10. msec

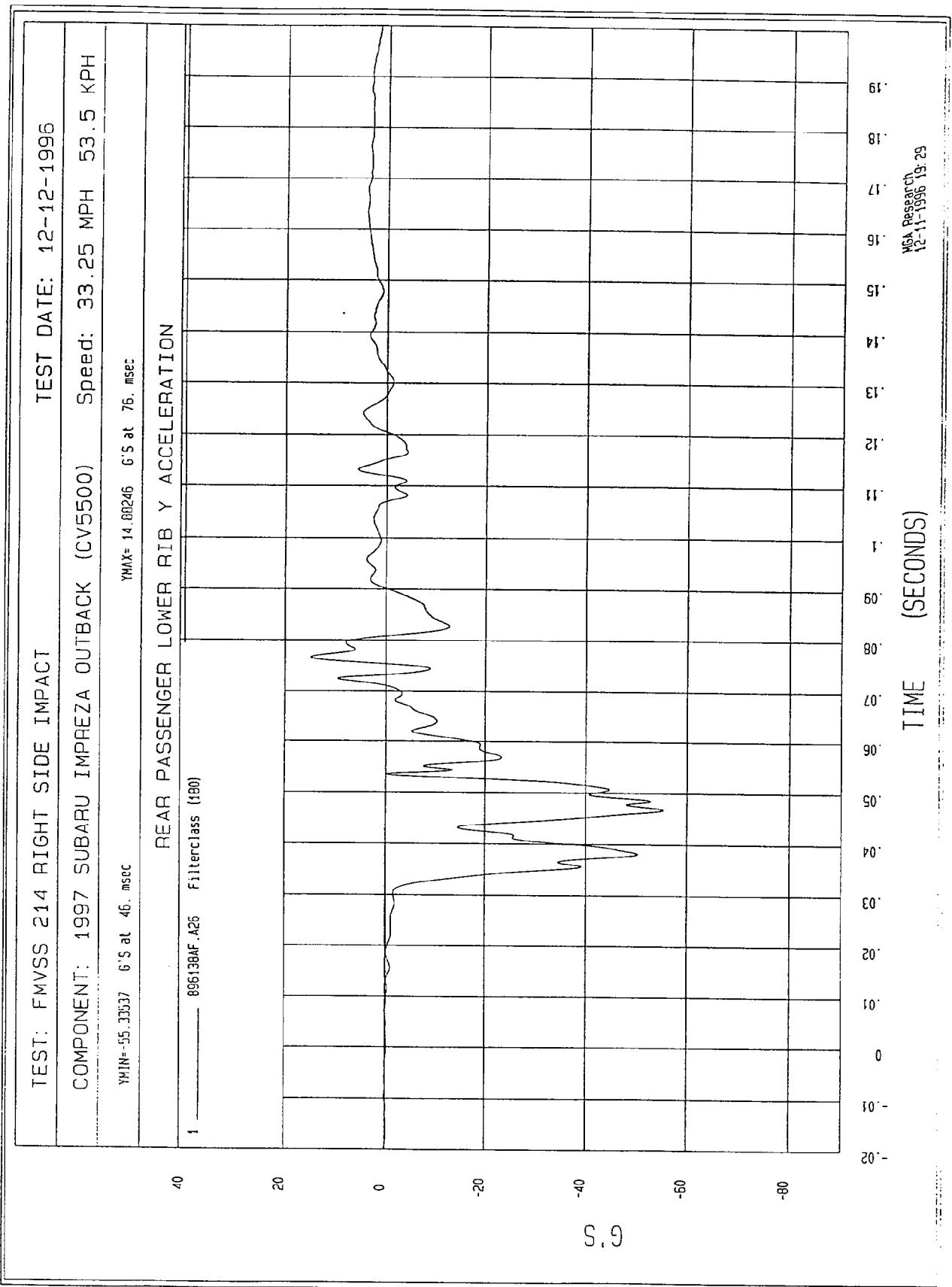
FRONT PASSENGER PELVIS Y VELOCITY

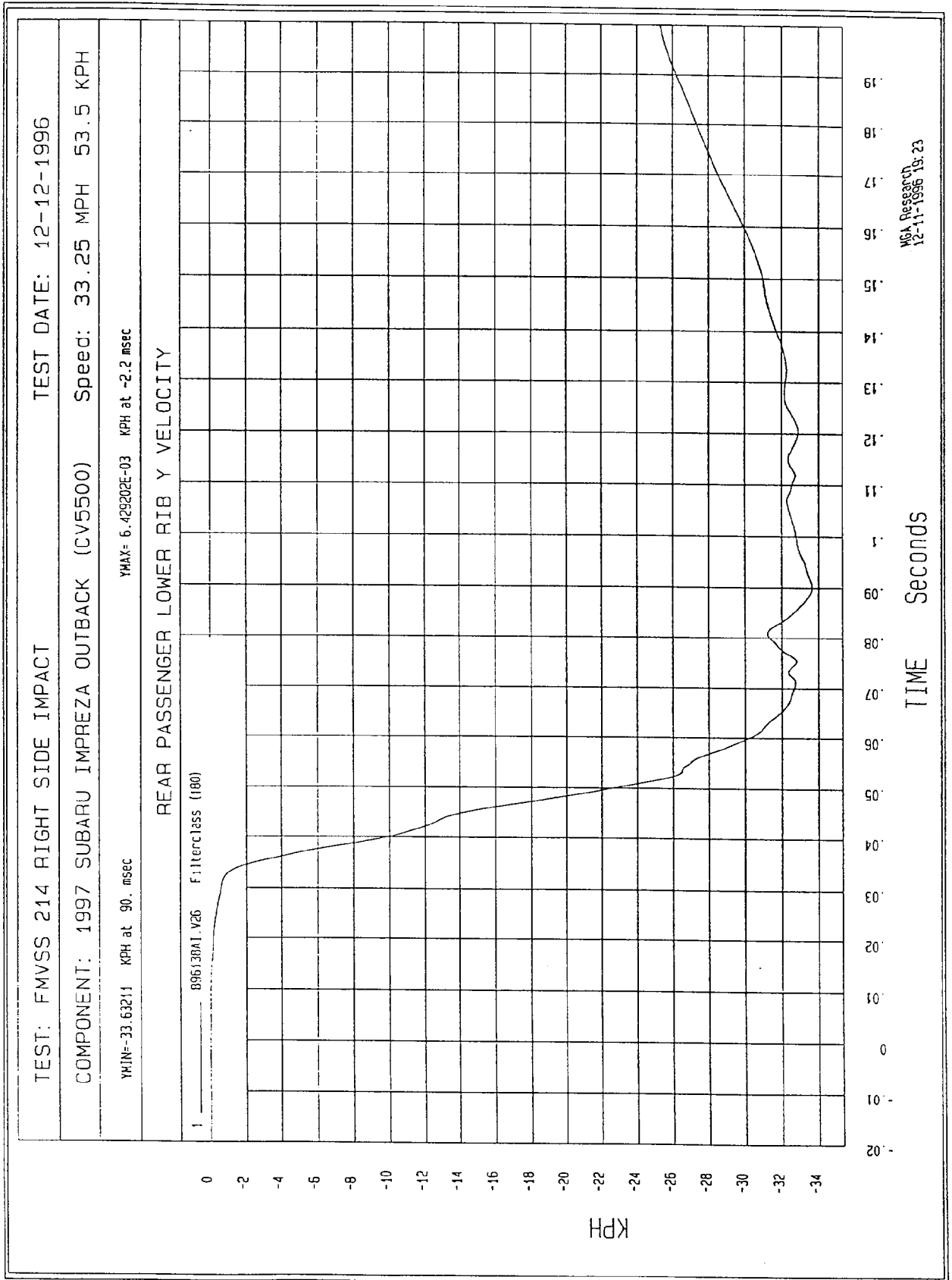


MCA Research
12-11-1996 19:23









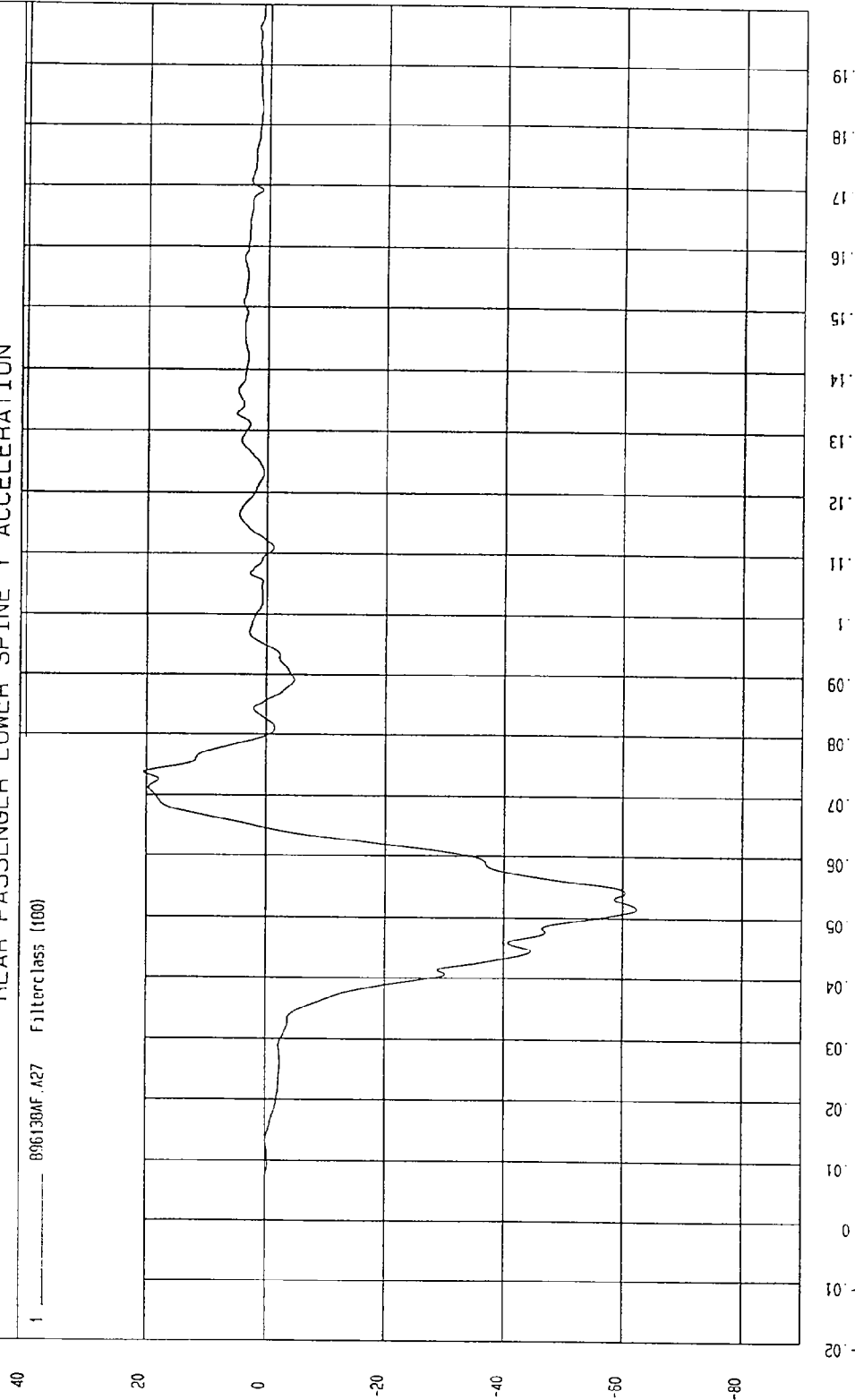
TEST: FMVSS 214 RIGHT SIDE IMPACT TEST DATE: 12-12-1996

COMPONENT: 1997 SUBARU IMPREZA OUTBACK (CV5500) Speed: 33.25 MPH 53.5 KPH

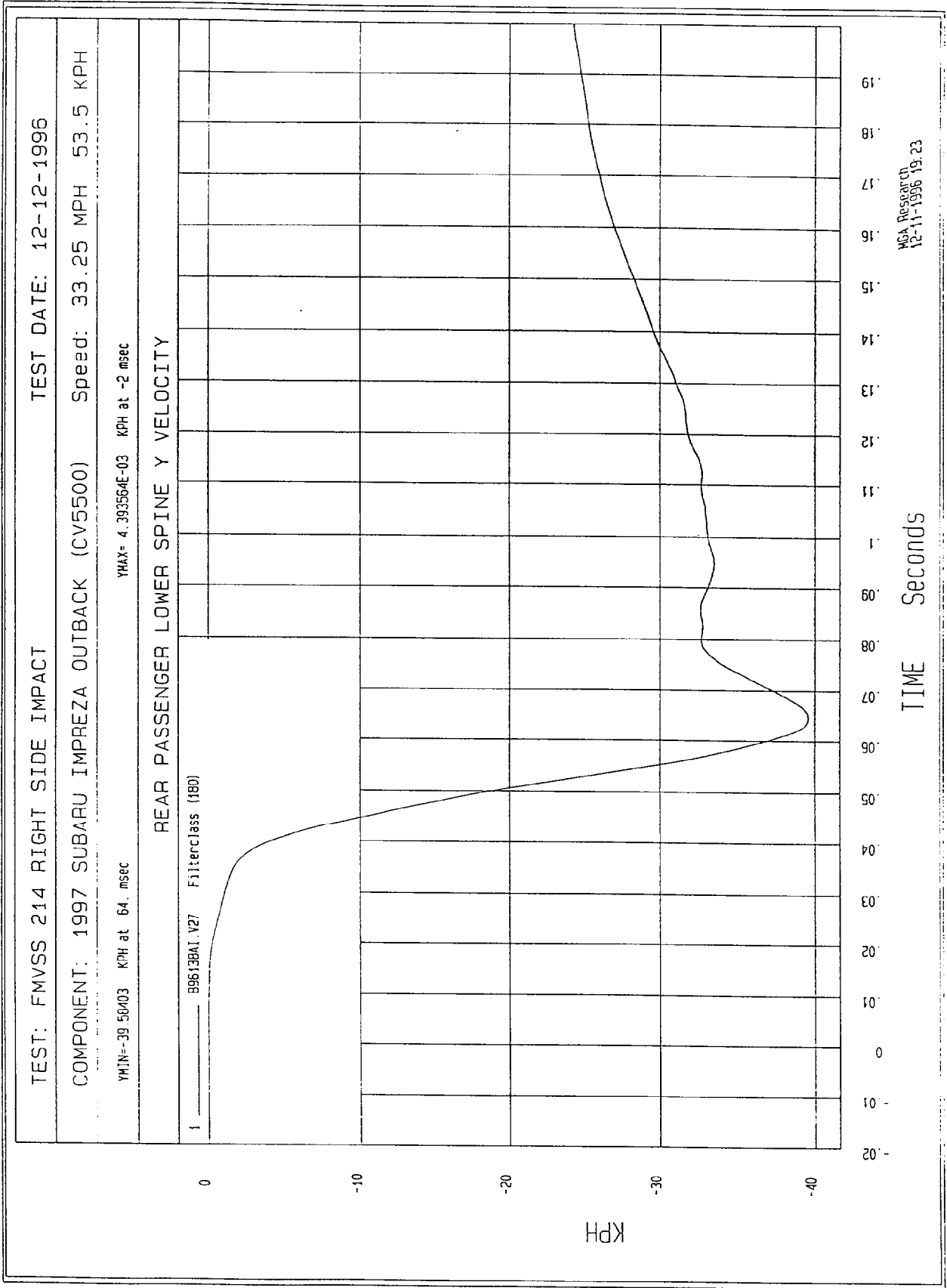
YMIN=-62.41902 G'S at 51. msec YMAX= 20.46325 G'S at 73. msec

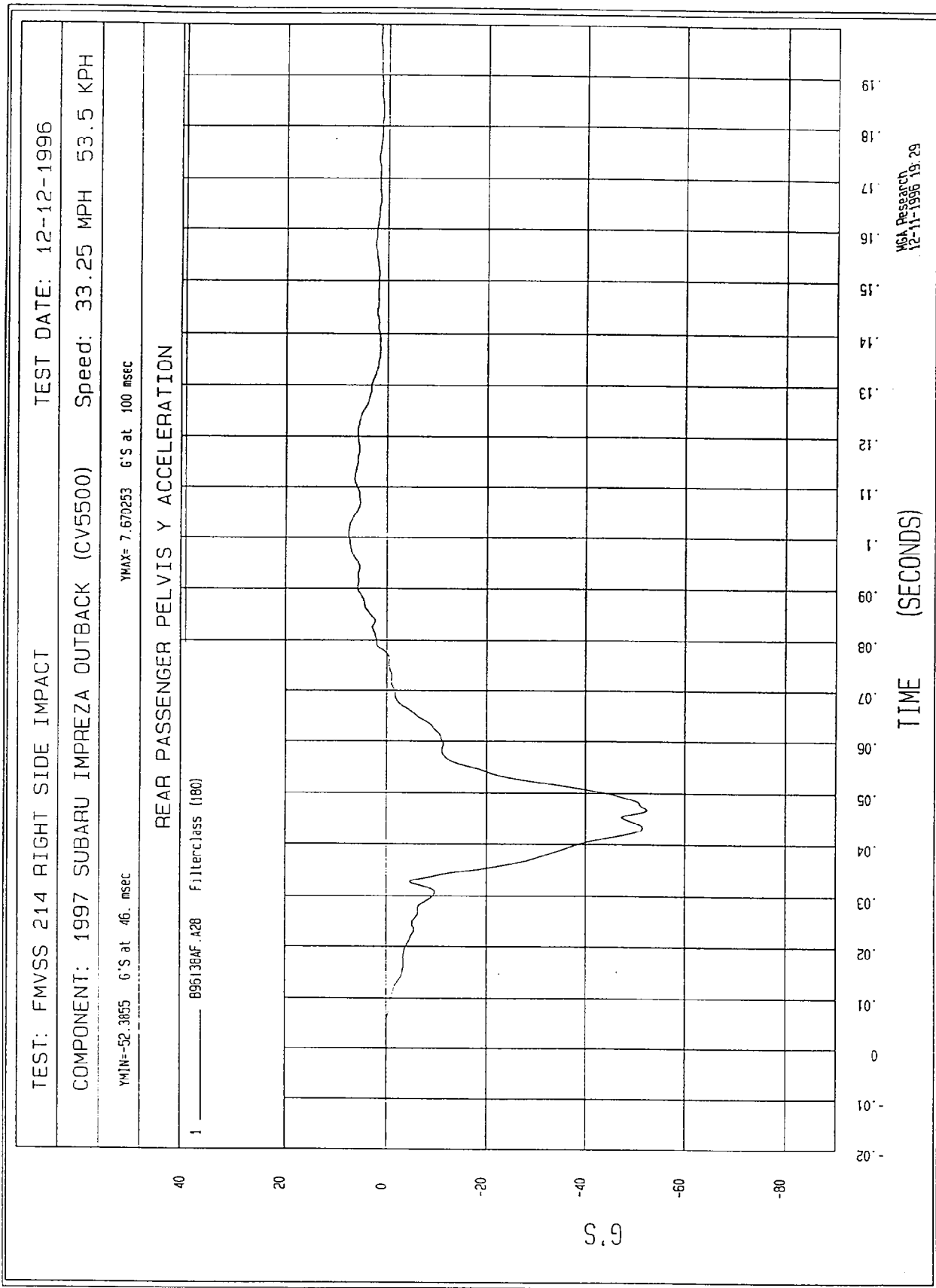
REAR PASSENGER LOWER SPINE Y ACCELERATION

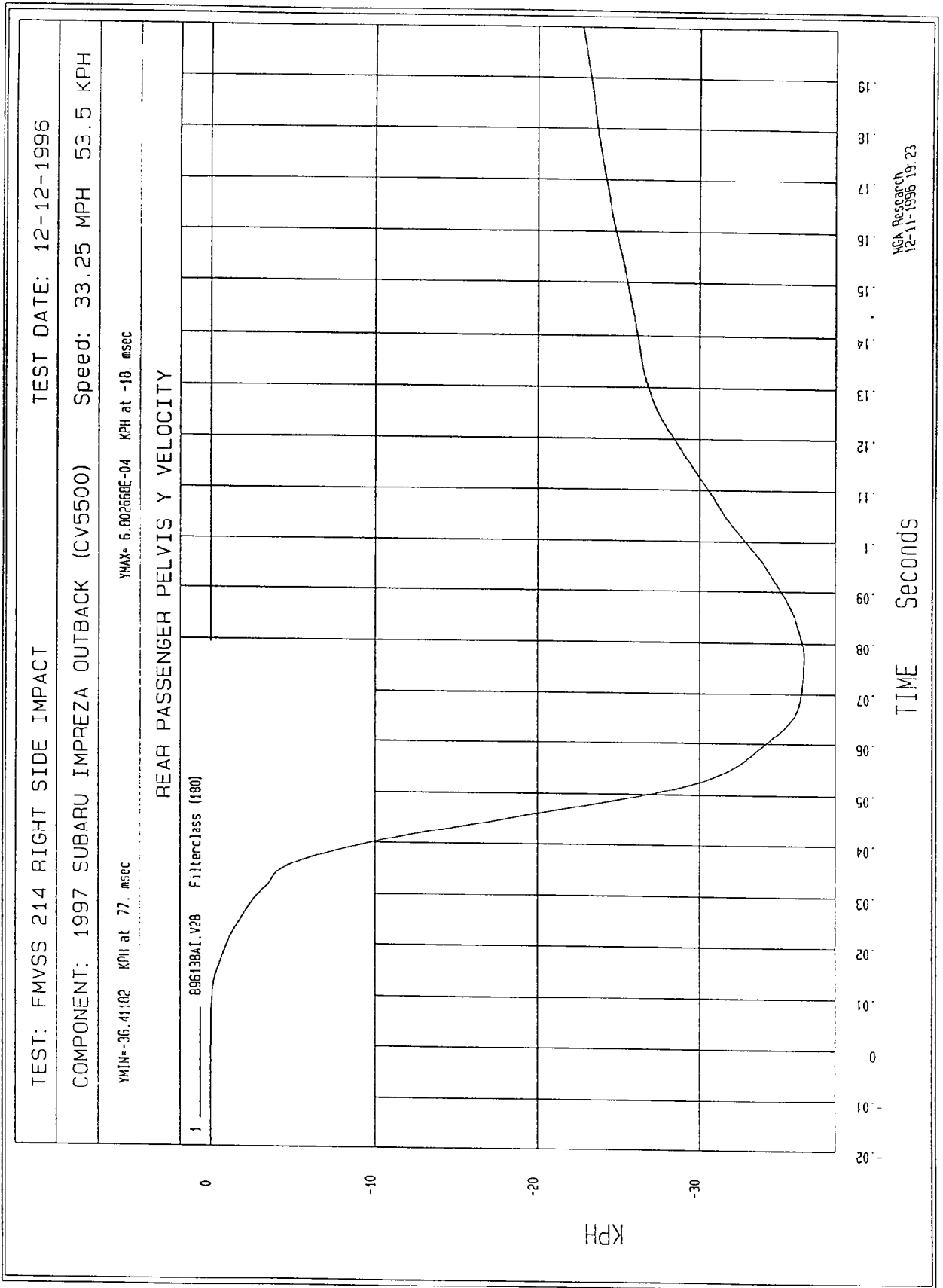
1 ----- 896130AF.A27 FilterClass (100)



MCA Research
12-11-1996 19:29





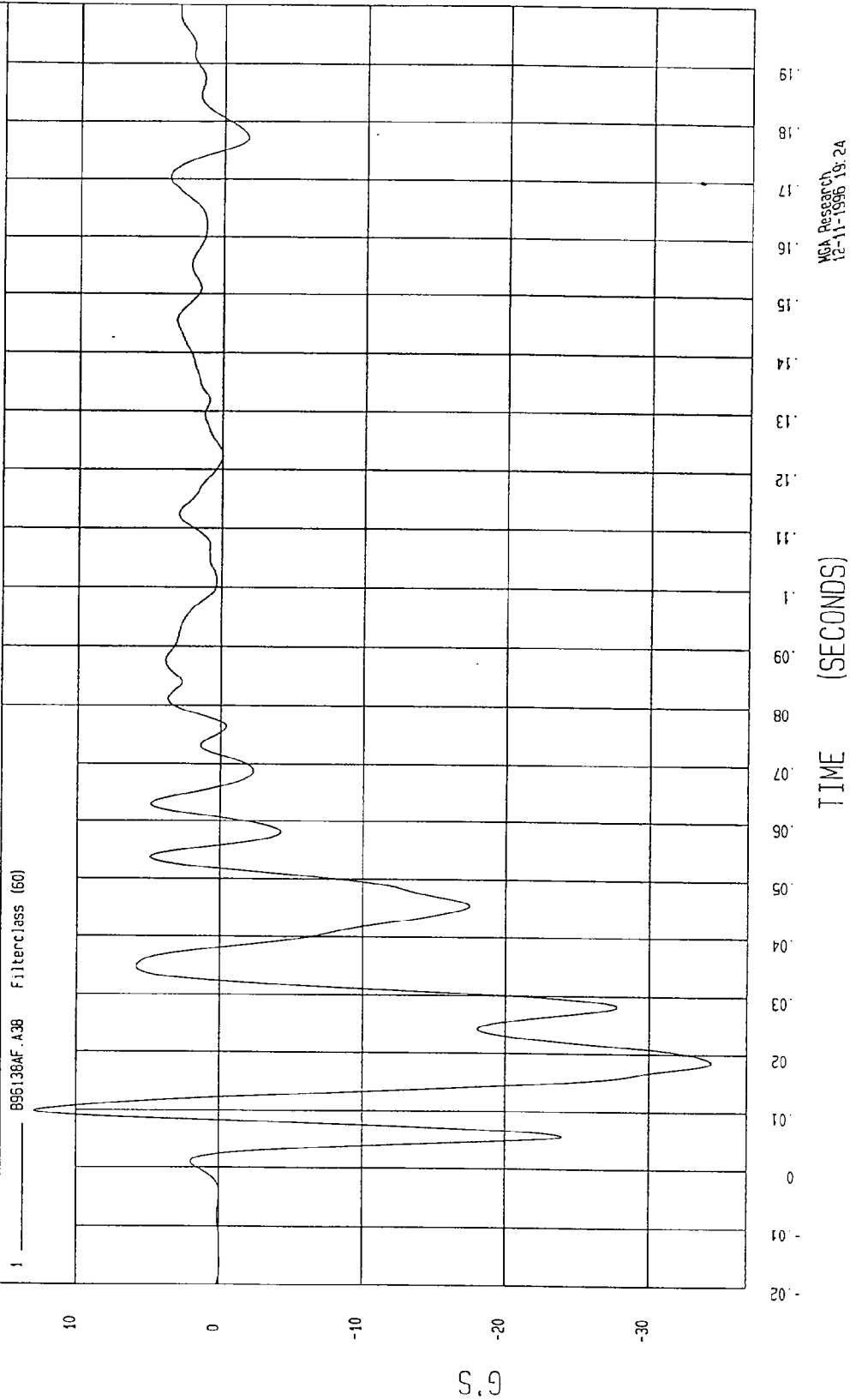


TEST: FMVSS 214 RIGHT SIDE IMPACT TEST DATE: 12-12-1996

COMPONENT: 1997 SUBARU IMPREZA OUTBACK (CV5500) Speed: 33.25 MPH 53.5 KPH

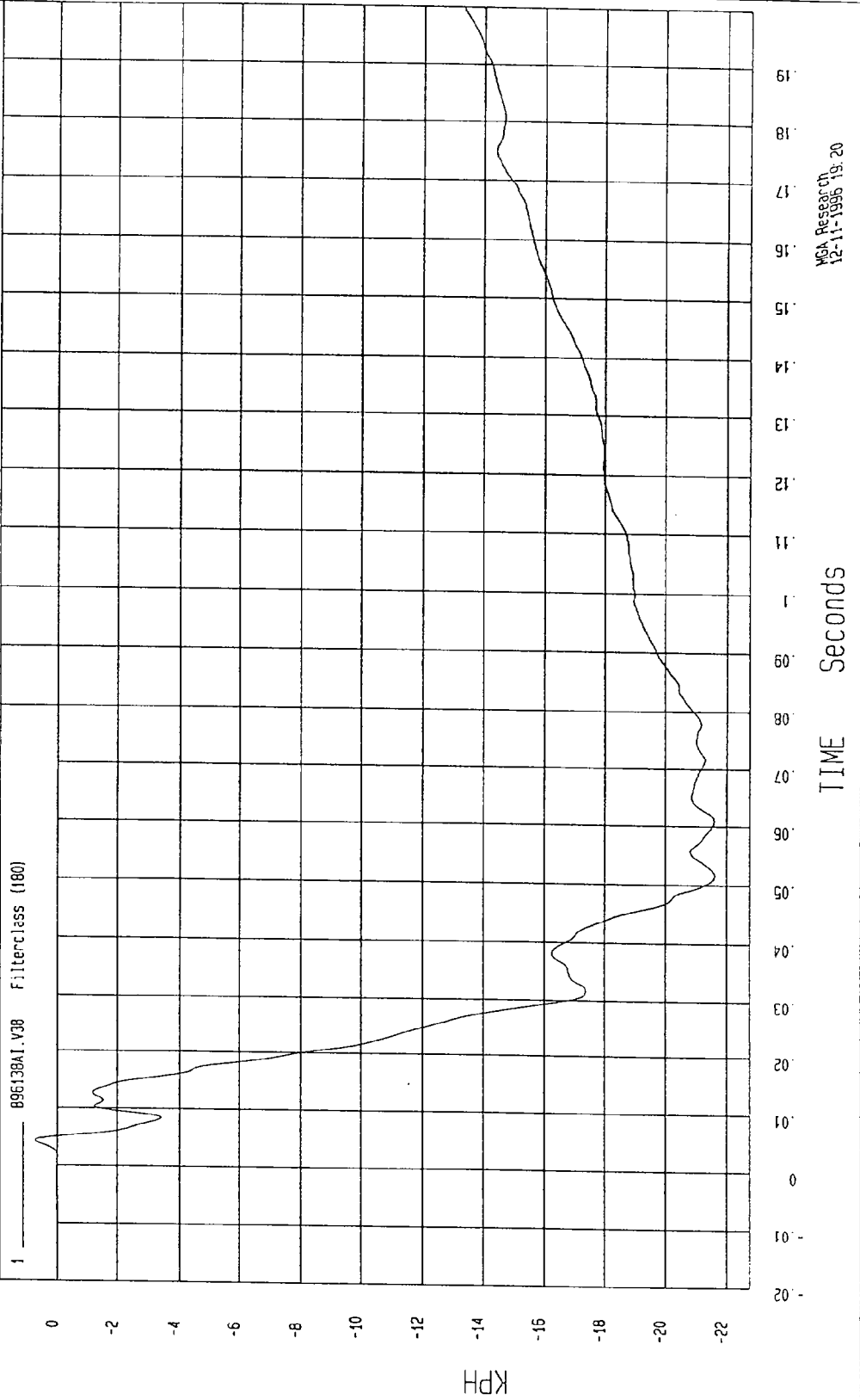
YMIN=-34.3023 G'S at 18. msec YMAX= 12.93025 G'S at 9.7 msec

RIGHT SIDE SILL AT FRONT SEAT Y ACCELERATION



TEST: FMVSS 214 RIGHT SIDE IMPACT TEST DATE: 12-12-1996
COMPONENT: 1997 SUBARU IMPREZA OUTBACK (CV5500) Speed: 33.25 MPH 53.5 KPH
YMIN=-21.62379 KPH at 51. msec YMAX= 7292346 KPH at 4.1 msec

RIGHT SIDE SILL AT FRONT SEAT Y VELOCITY

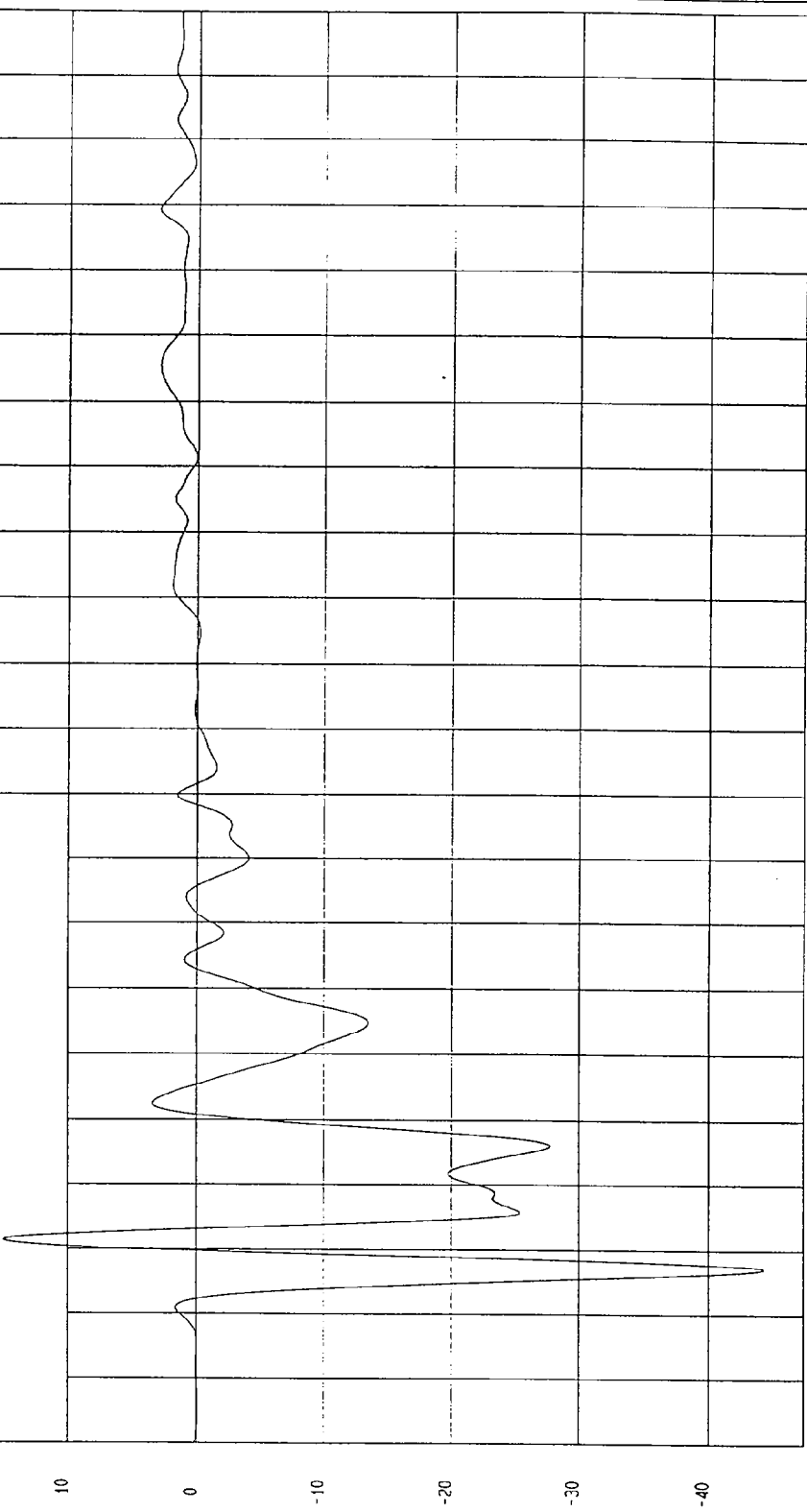


TEST: FMVSS 214 RIGHT SIDE IMPACT TEST DATE: 12-12-1996
COMPONENT: 1997 SUBARU IMPREZA OUTBACK (CV5500) Speed: 33.25 MPH 53.5 KPH

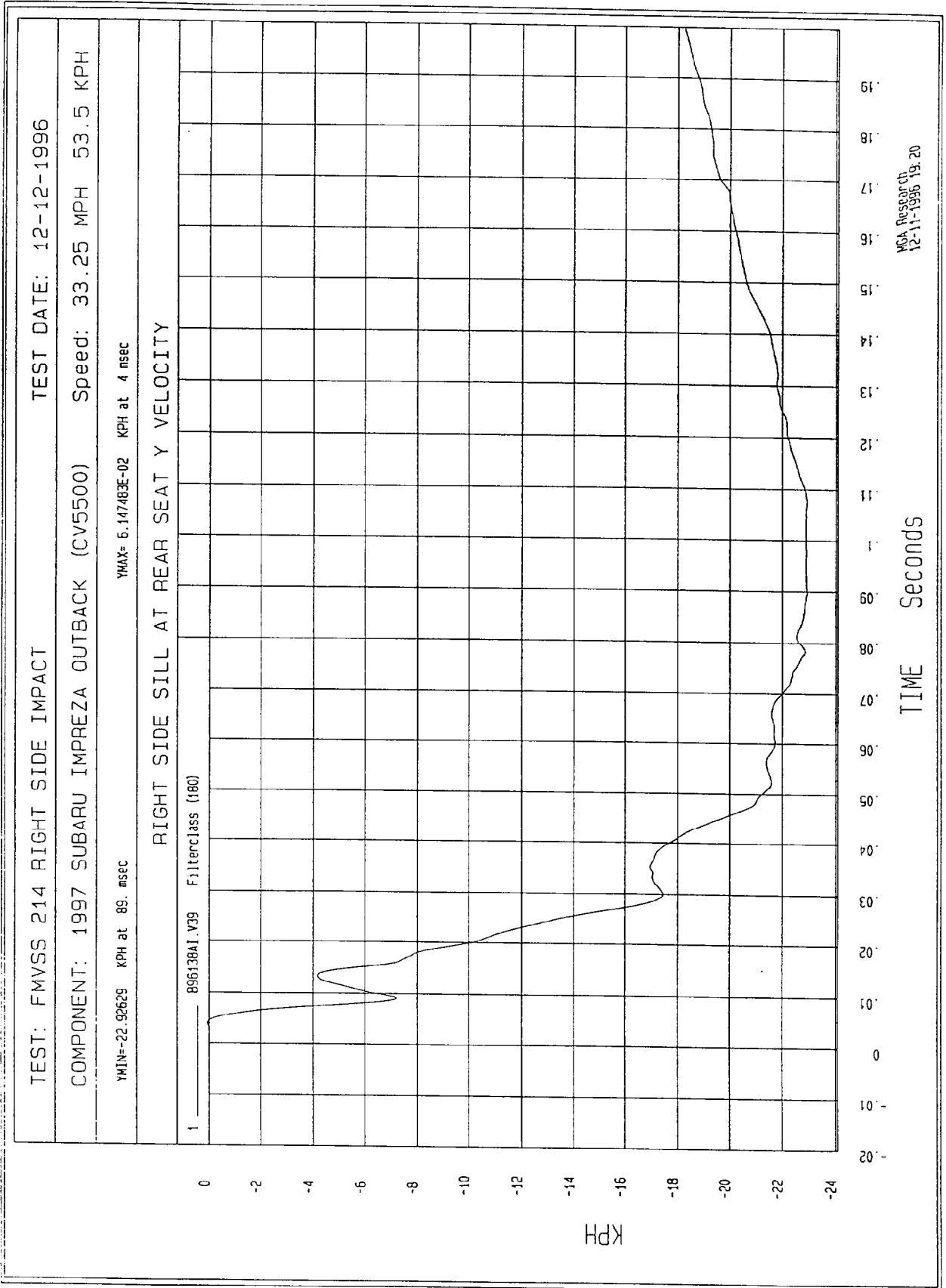
YMIN=-44.20348 G'S at 7.0 msec YMAX= 14.95774 G'S at 11. msec

RIGHT SIDE SILL AT REAR SEAT Y ACCELERATION

1 896138AF A39 Filterclass (60)



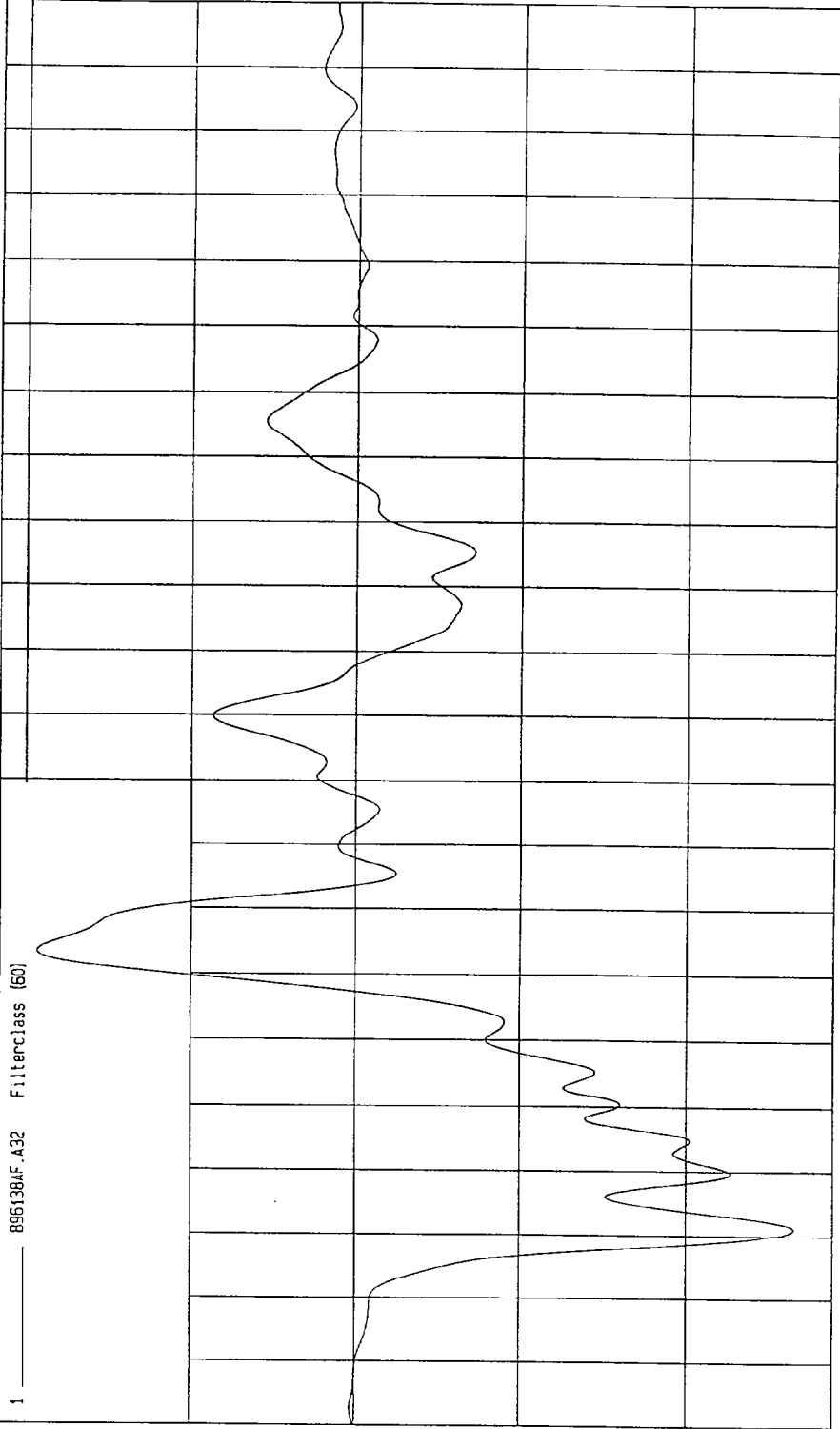
NSA Research
12-11-1996 19:24



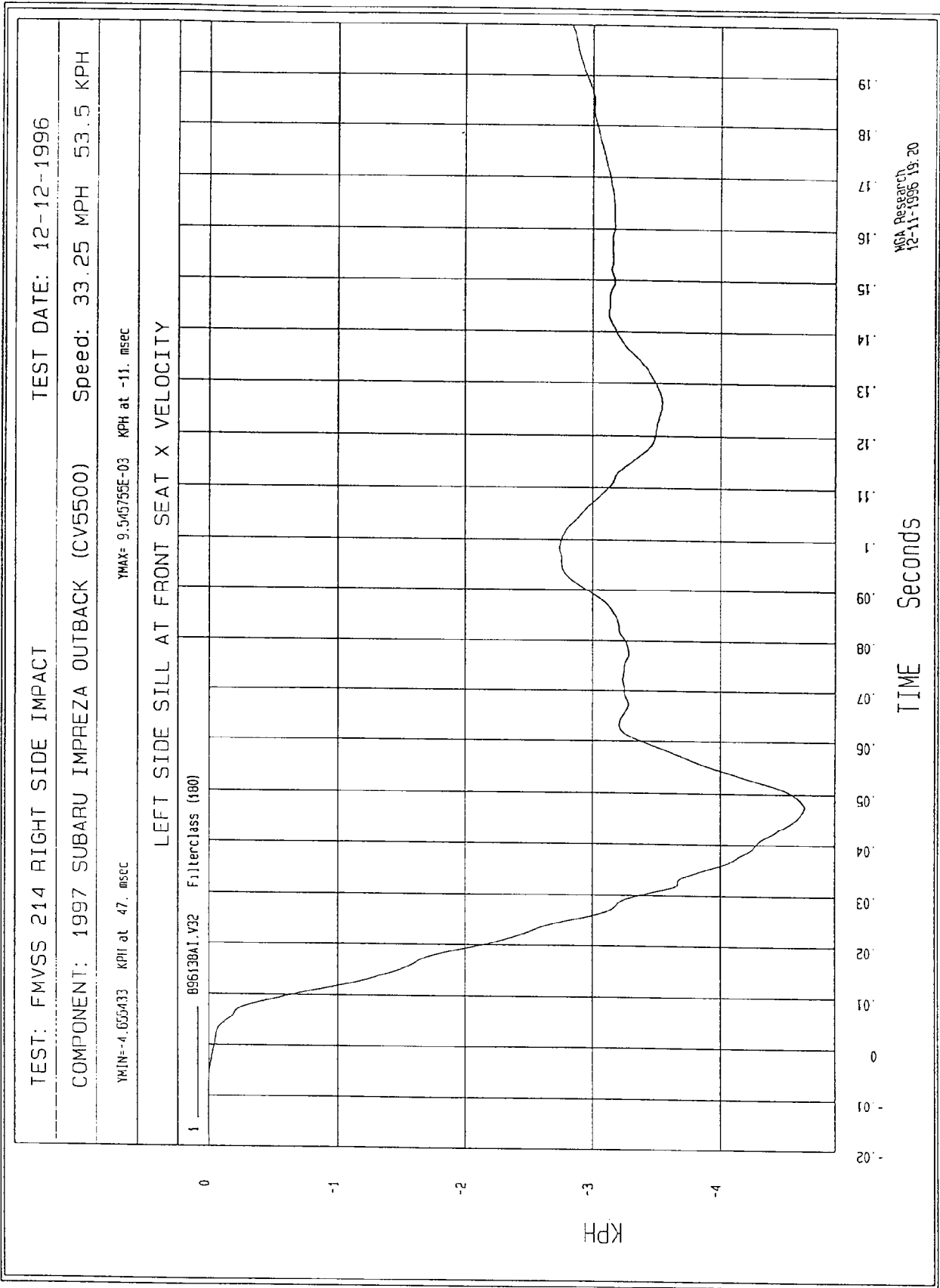
TEST: FMVSS 214 RIGHT SIDE IMPACT TEST DATE: 12-12-1996
COMPONENT: 1997 SUBARU IMPREZA OUTBACK (CV5500) Speed: 33.25 MPH 53.5 KPH
YMIN=-5.282398 G'S at 11 msec YMAX= 3.863484 G'S at 53 msec

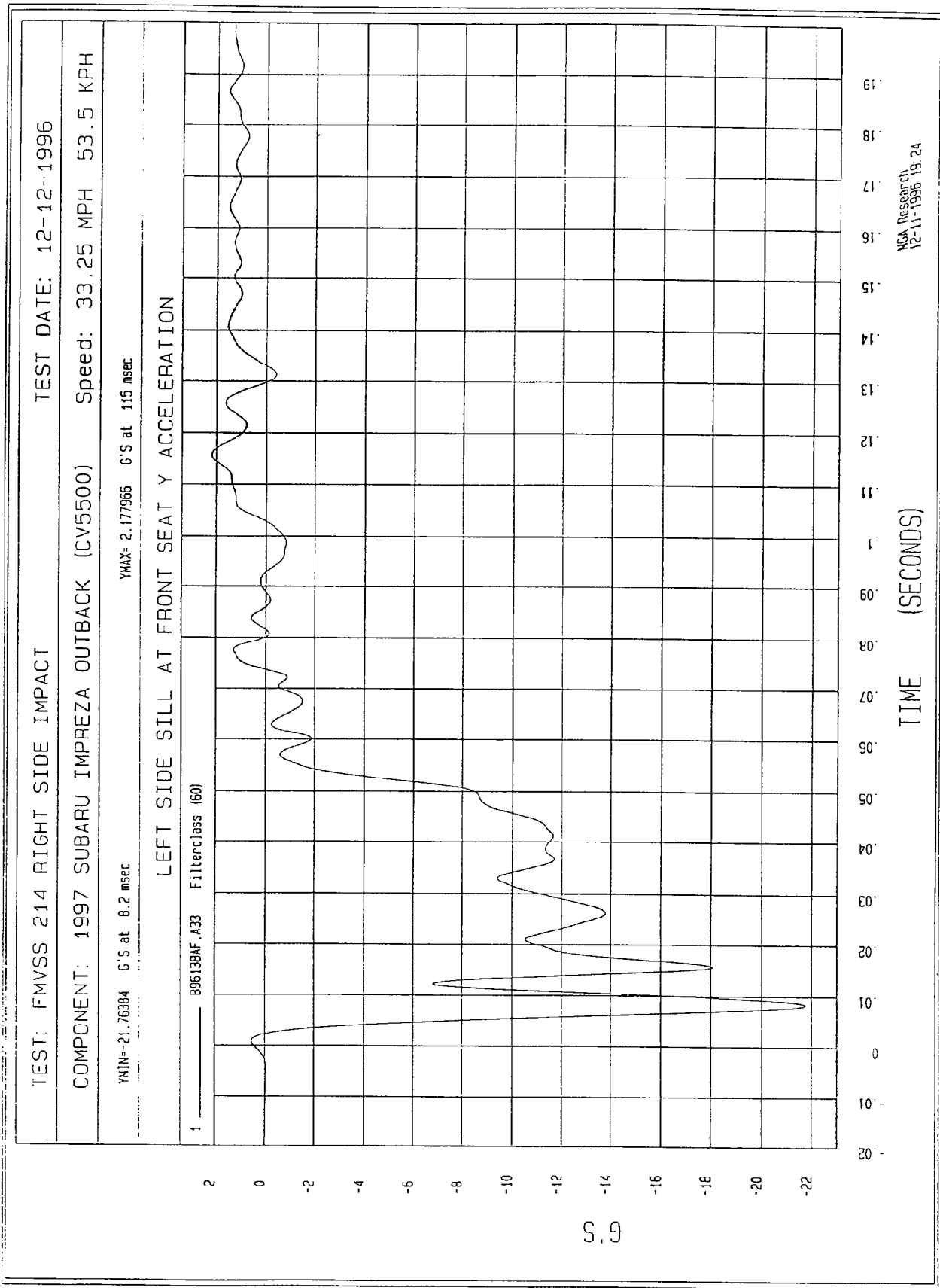
LEFT SIDE SILL AT FRONT SEAT X ACCELERATION

1 ——— 8961384F.A32 Filterclass (60)



HGA Research
12-11-1996 19:24



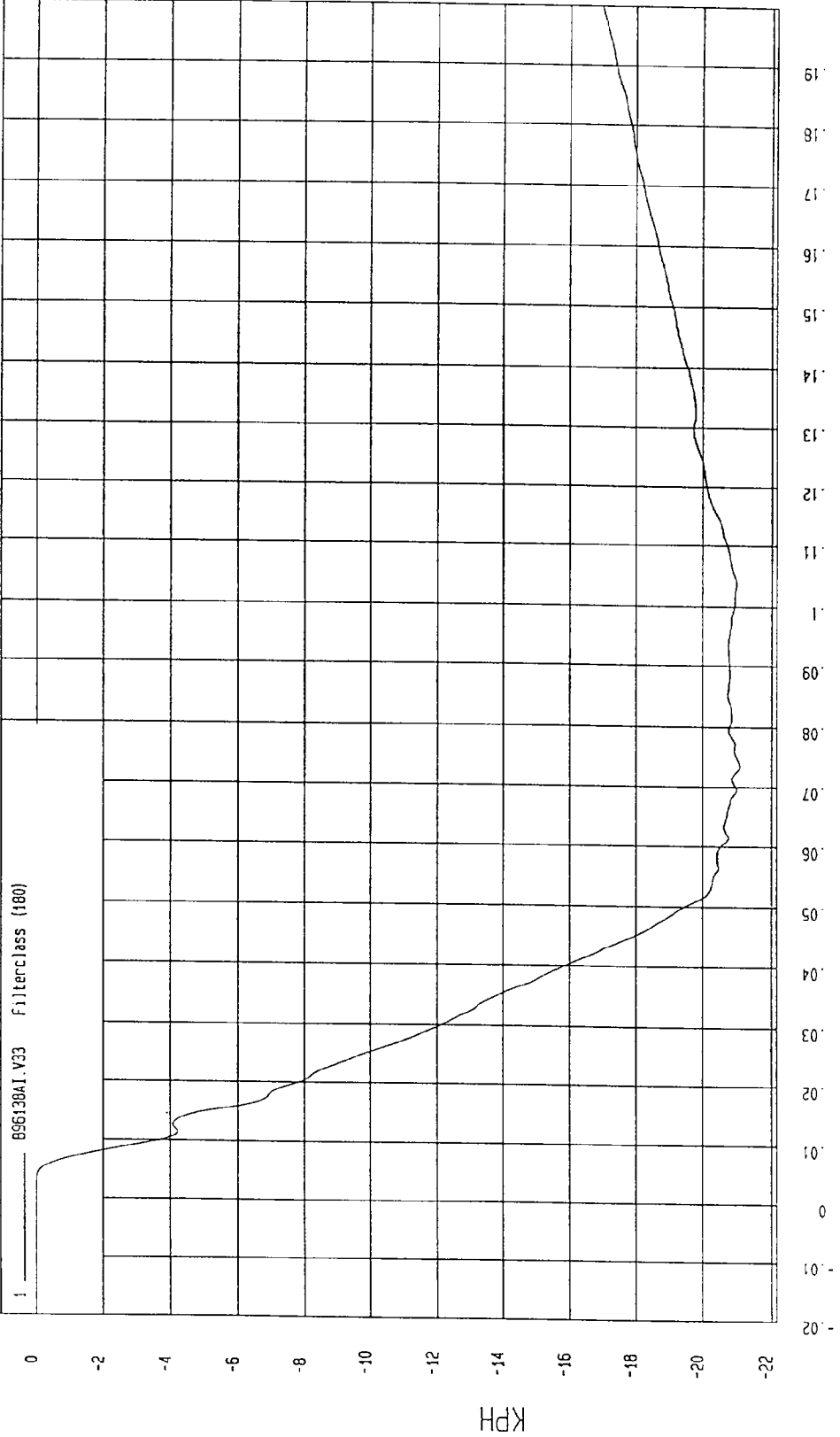


TEST: FMVSS 214 RIGHT SIDE IMPACT TEST DATE: 12-12-1996

COMPONENT: 1997 SUBARU IMPREZA OUTBACK (CV5500) Speed: 33.25 MPH 53.5 KPH

YMIN=-21.03175 KPH at 73. msec YMAX= 2.234037E-03 KPH at -13. msec

LEFT SIDE SILL AT FRONT SEAT Y VELOCITY



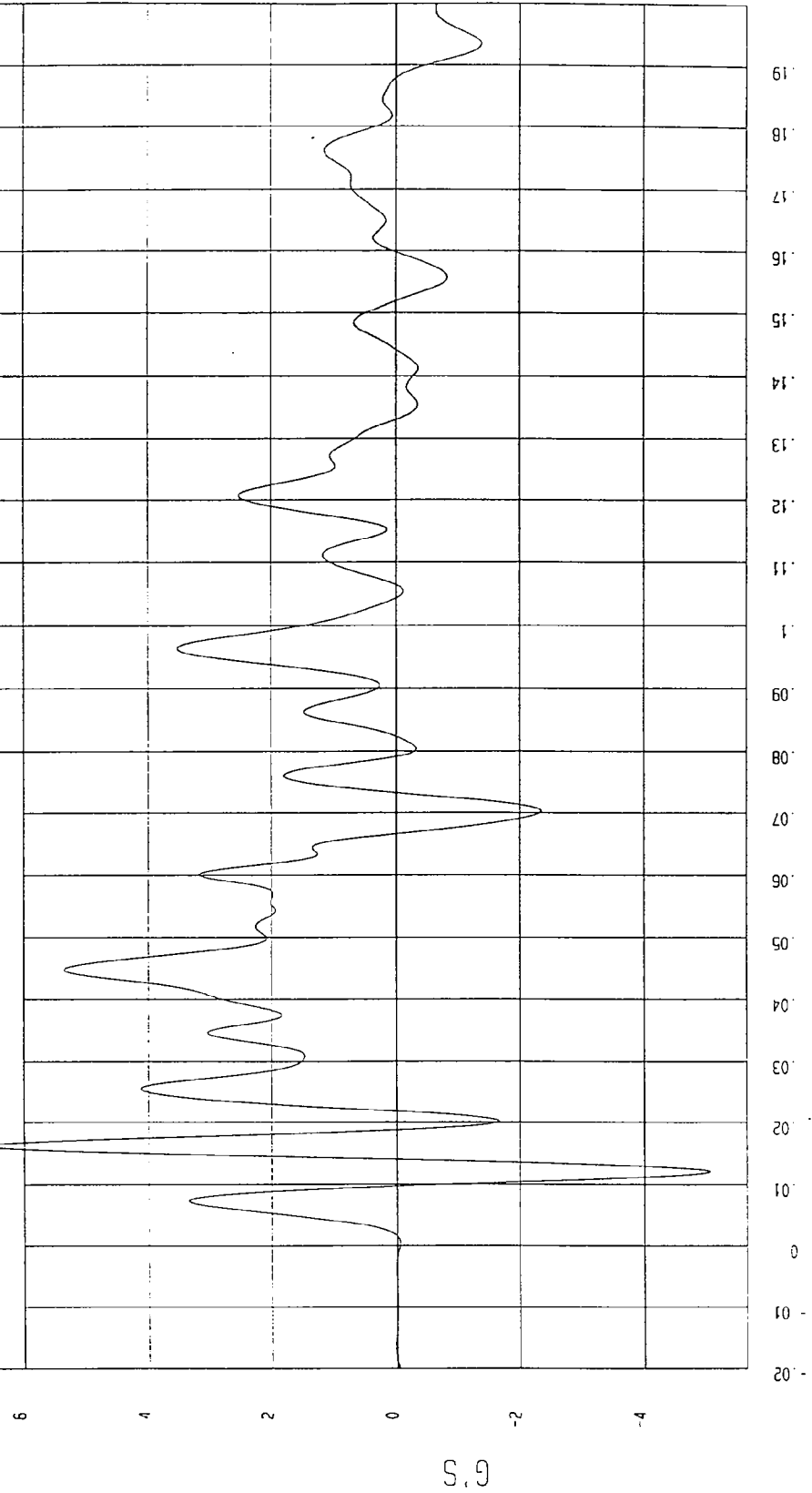
MCA Research
12-11-1996 19:20

TEST: FMVSS 214 RIGHT SIDE IMPACT TEST DATE: 12-12-1996
COMPONENT: 1997 SUBARU IMPREZA OUTBACK (CV5500) Speed: 33.25 MPH 53.5 KPH

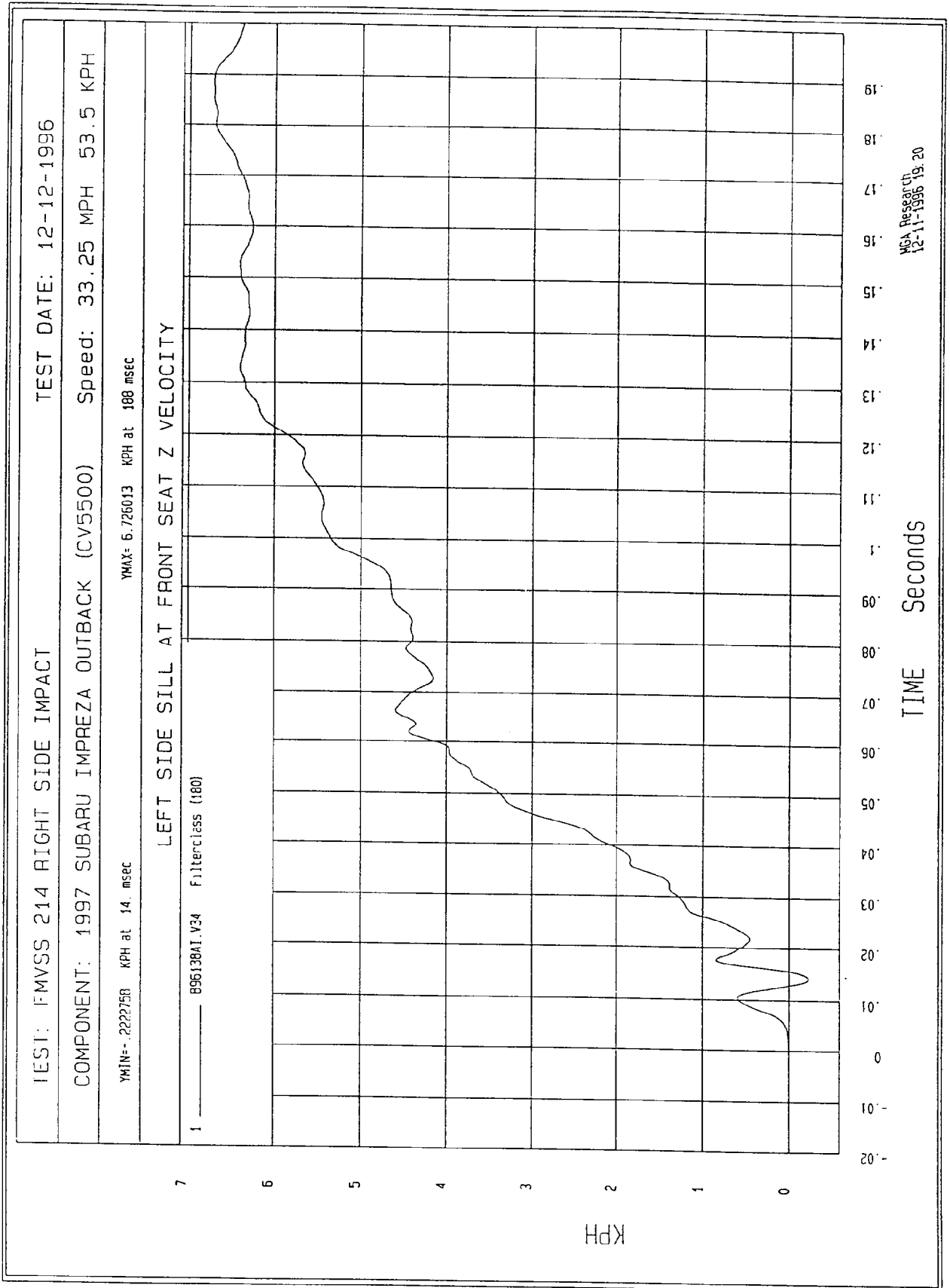
YMIN=-5.024374 G'S at 12. msec YMAX= 6.59909 G'S at 16. msec

LEFT SIDE SILL AT FRONT SEAT Z ACCELERATION

1 896138AF.A34 Filterclass (50)



MCA Research
12-11-1996 19:25

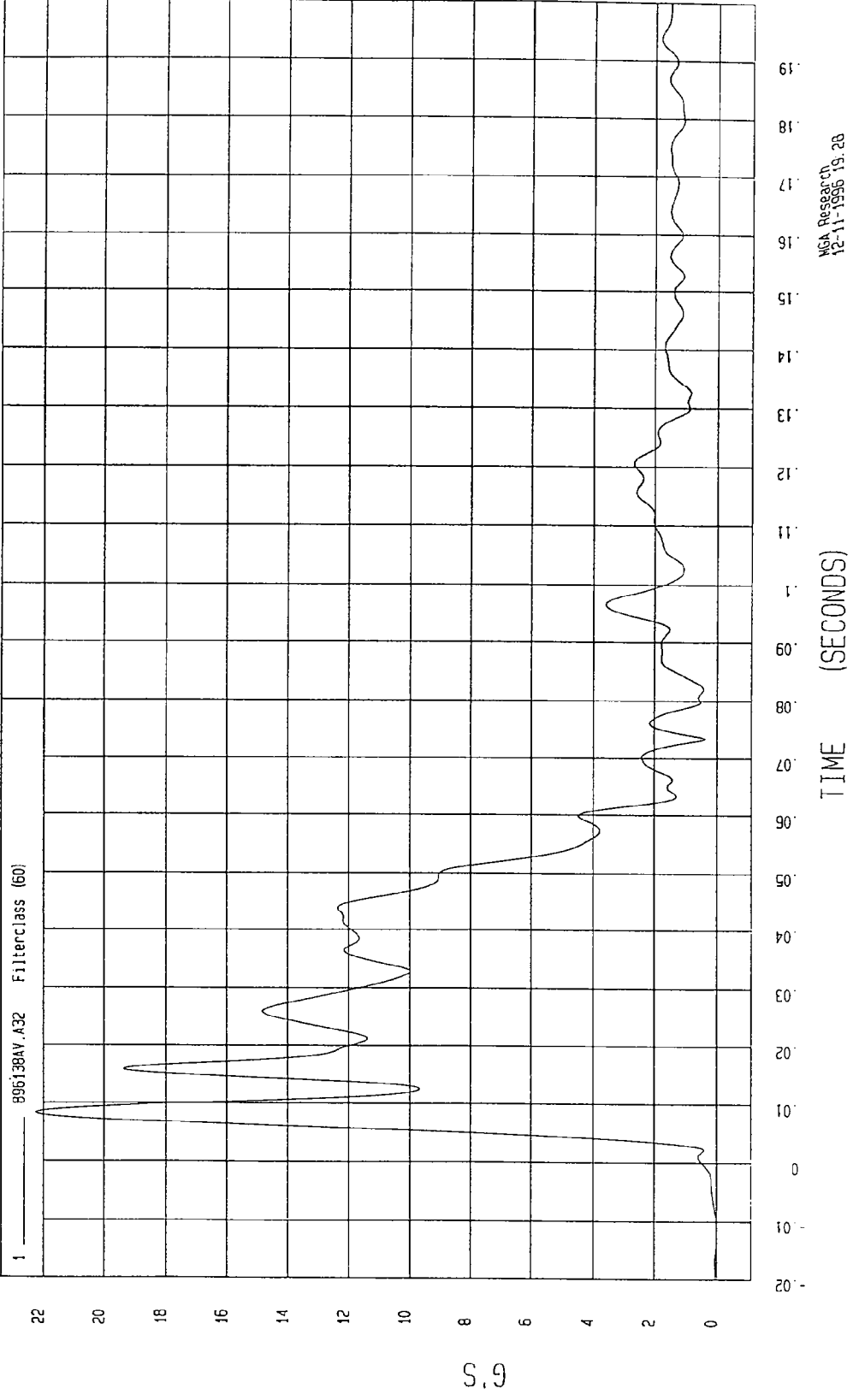


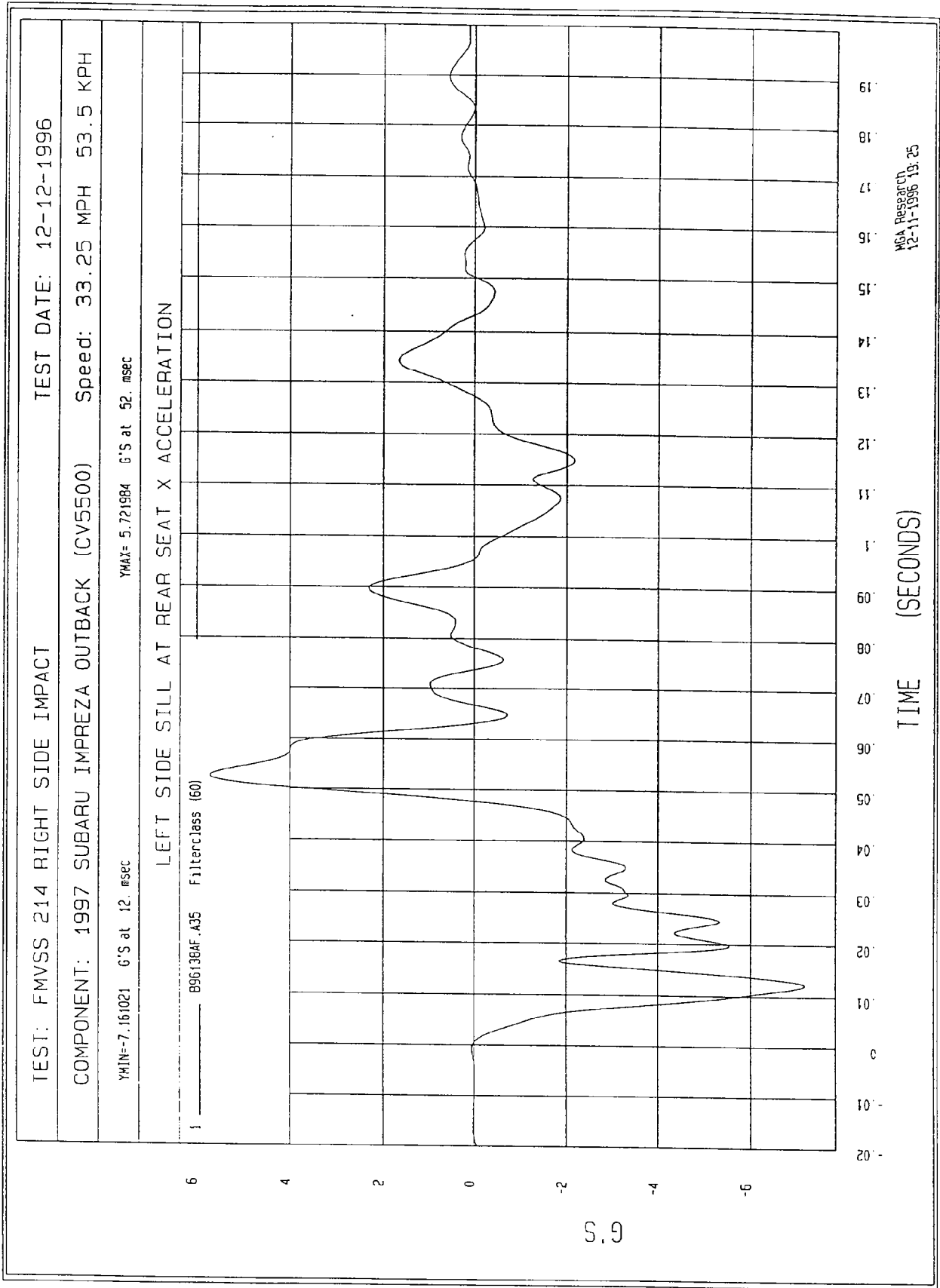
TEST: FMVSS 214 RIGHT SIDE IMPACT TEST DATE: 12-12-1996

COMPONENT: 1997 SUBARU IMPREZA OUTBACK (CV5500) Speed: 33.25 MPH 53.5 KPH

YMIN= 8.629511E-03 G'S at -13 msec YMAX= 22.26086 G'S at 8.2 msec

LEFT SIDE SILL AT FRONT SEAT RESULTANT ACCELERATION



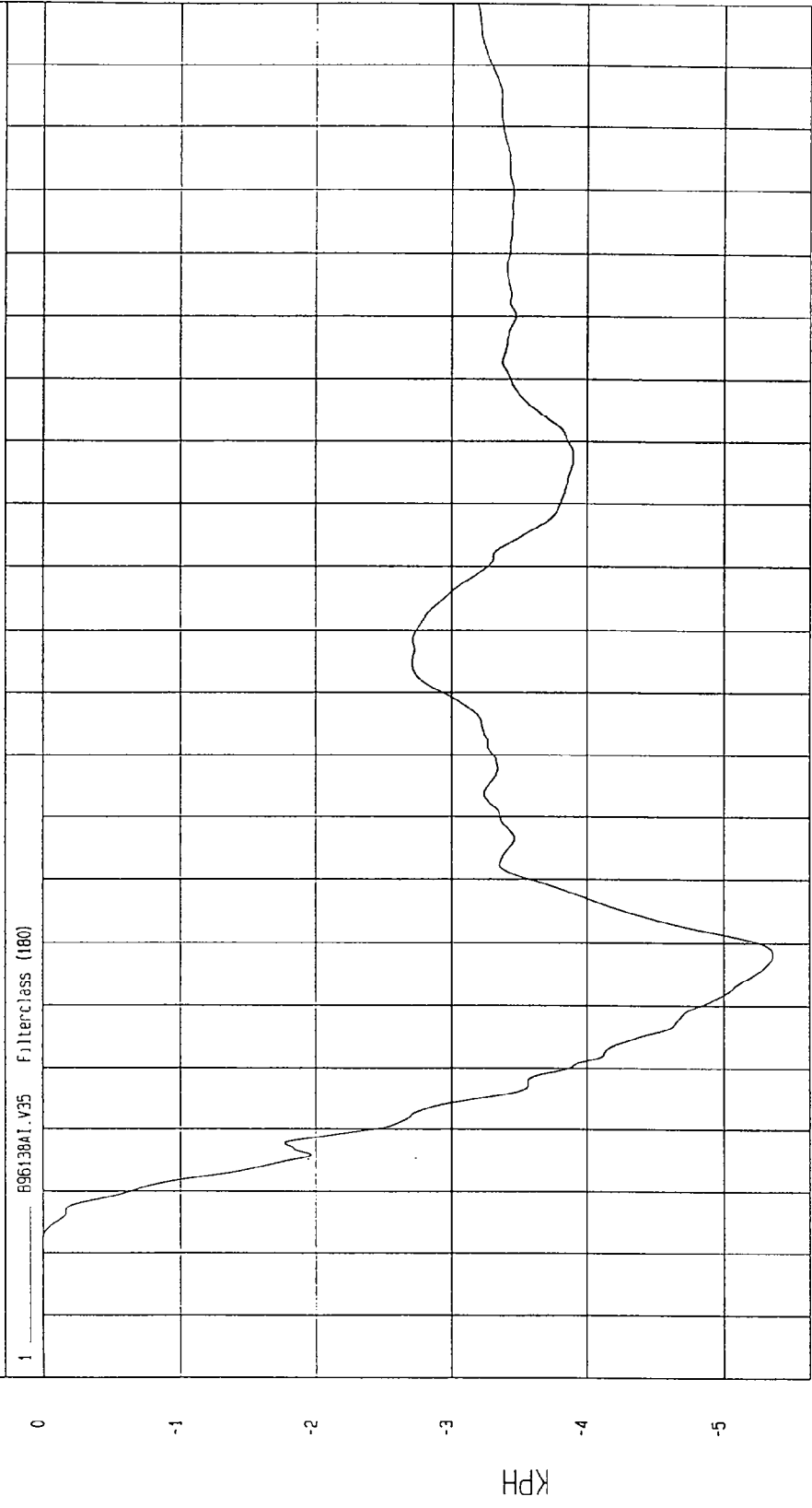


TEST: FMVSS 214 RIGHT SIDE IMPACT TEST DATE: 12-12-1996

COMPONENT: 1997 SUBARU IMPREZA OUTBACK (CV5500) Speed: 33.25 MPH 53.5 KPH

YMIN=-5.354153 KPH at 48. msec YMAX= 5.09676E-03 KPH at 1.7 msec

LEFT SIDE SILL AT REAR SEAT X VELOCITY



TIME Seconds

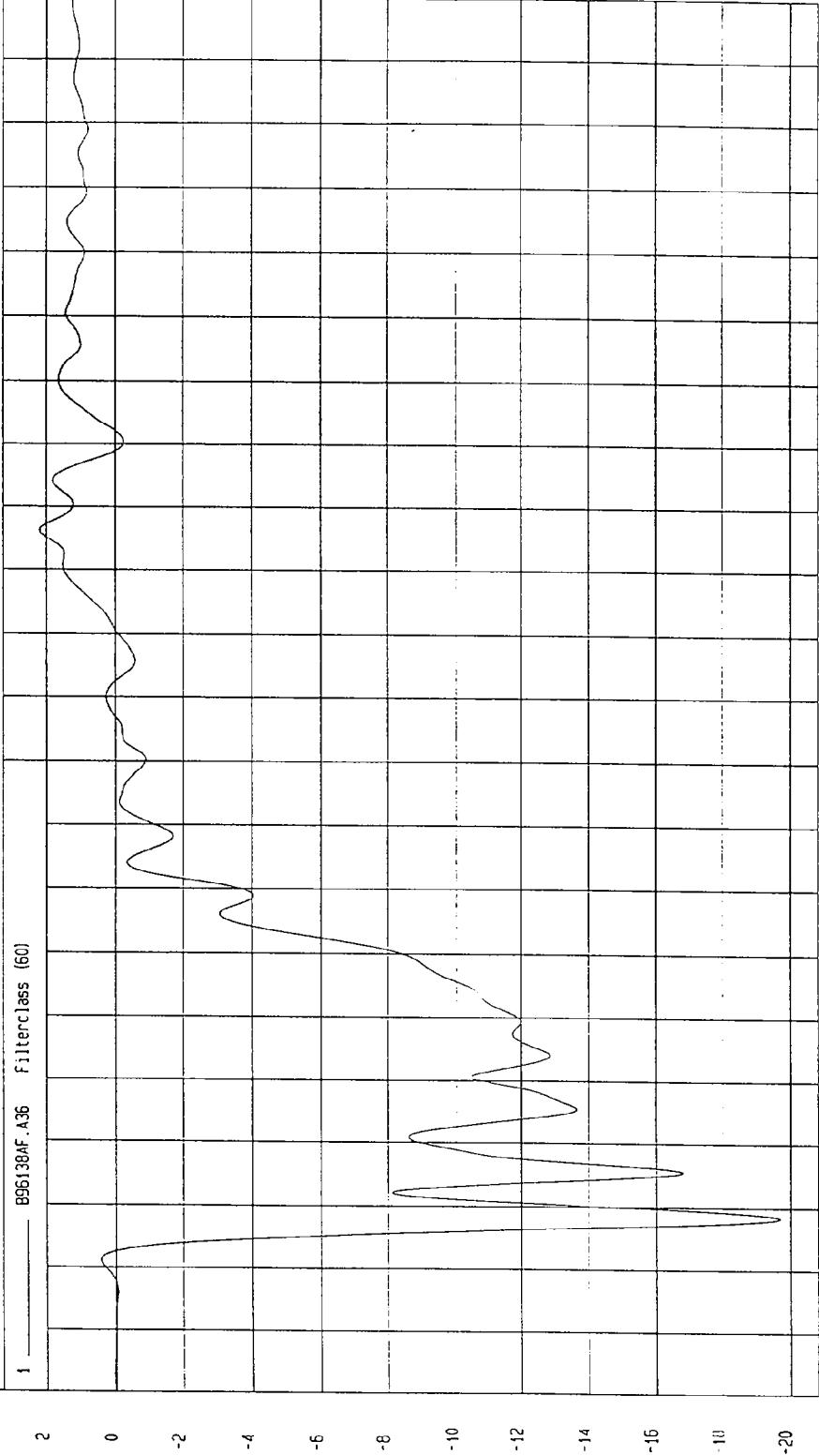
MOA Research
12-11-1996 19:20

TEST: FMVSS 214 RIGHT SIDE IMPACT TEST DATE: 12-12-1996

COMPONENT: 1997 SUBARU IMPREZA OUTBACK (CV5500) Speed: 33.25 MPH 53.5 KPH

YMIN=-19.70682 G'S at 8.4 msec YMAX= 2.202547 G'S at 116 msec

LEFT SIDE SILL AT REAR SEAT Y ACCELERATION



TIME (SECONDS)

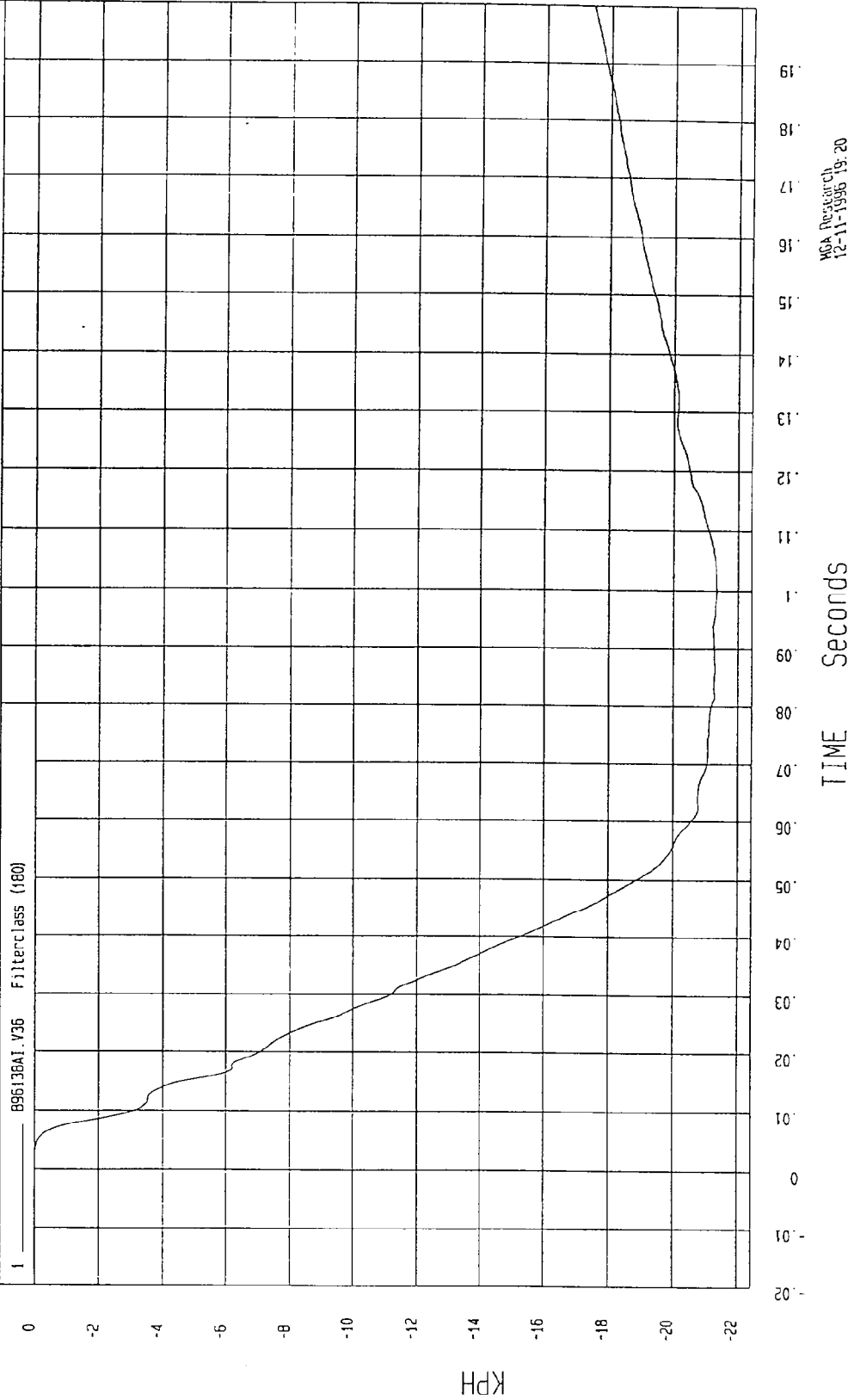
MCA Research
12-11-1996 19:25

TEST: FMVSS 214 RIGHT SIDE IMPACT TEST DATE: 12-12-1996

COMPONENT: 1997 SUBARU IMPREZA OUTBACK (CV5500) Speed: 33.25 MPH 53.5 KPH

YMIN=-21.34335 KPH at 99. msec YMAX= 8.106335E-03 KPH at -11. msec

LEFT SIDE SILL AT REAR SEAT Y VELOCITY

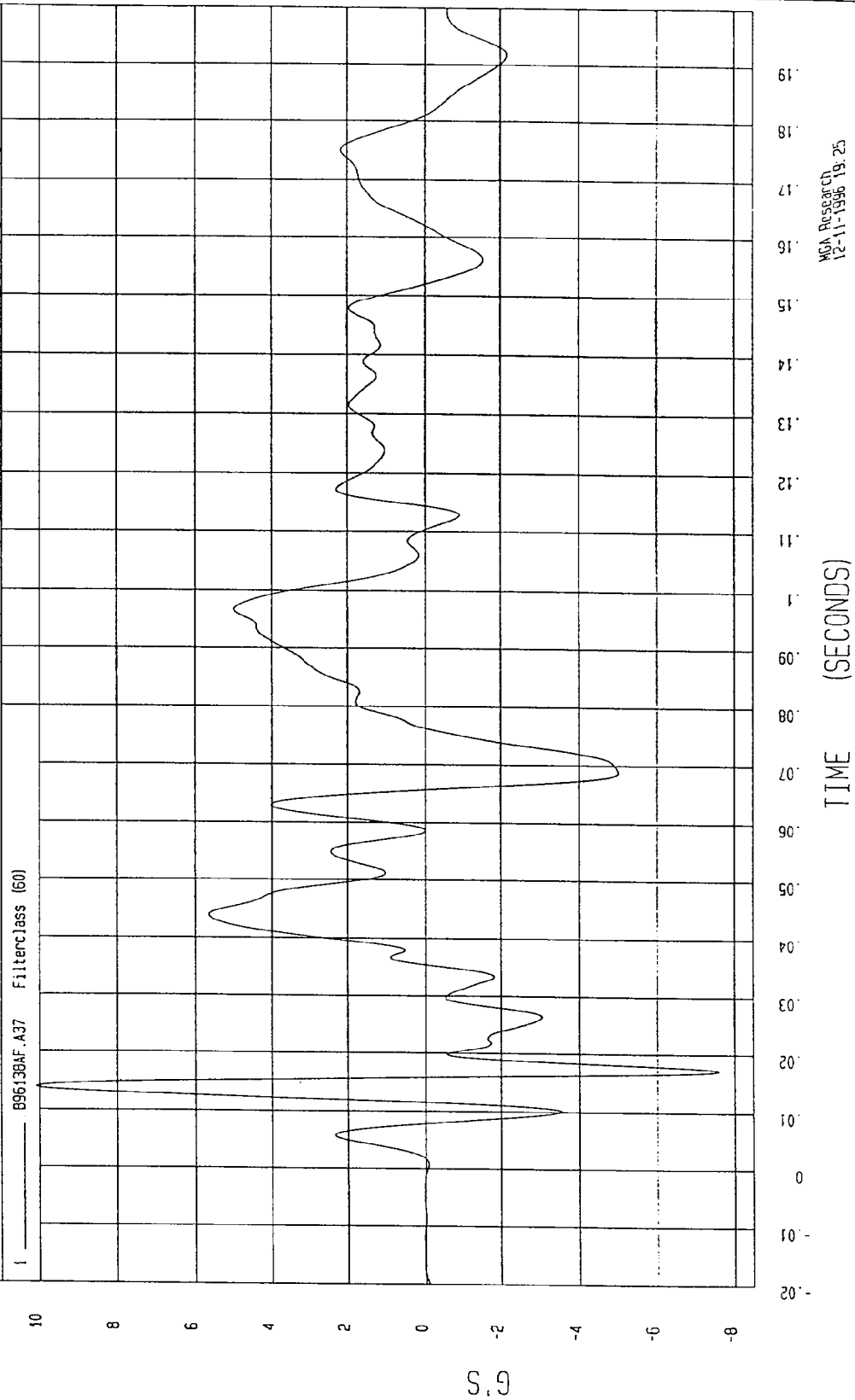


TEST: FMVSS 214 RIGHT SIDE IMPACT TEST DATE: 12-12-1996

COMPONENT: 1997 SUBARU IMPREZA OUTBACK (CV5500) Speed: 33.25 MPH 53.5 KPH

YMIN=-7.59/077 G'S at 17. msec YMAX= 10.10/206 G'S at 14 msec

LEFT SIDE SILL AT REAR SEAT Z ACCELERATION



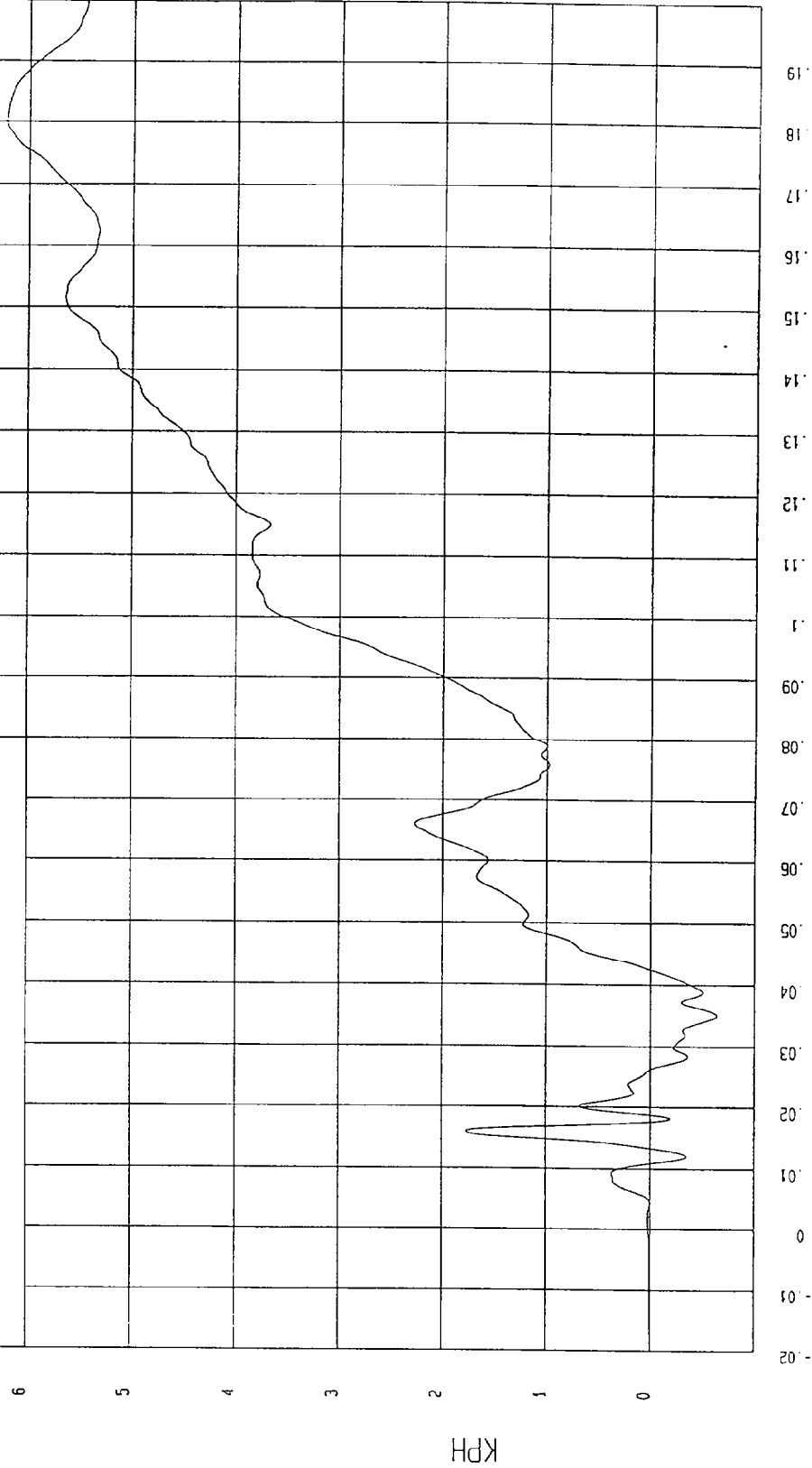
TEST: FMVSS 214 RIGHT SIDE IMPACT TEST DATE: 12-12-1996

COMPONENT: 1997 SUBARU IMPREZA OUTBACK (CV5500) Speed: 33.25 MPH 53.5 KPH

YMIN=-.647403 KPH at 35 msec YMAX= 6.217475 KPH at 179 msec

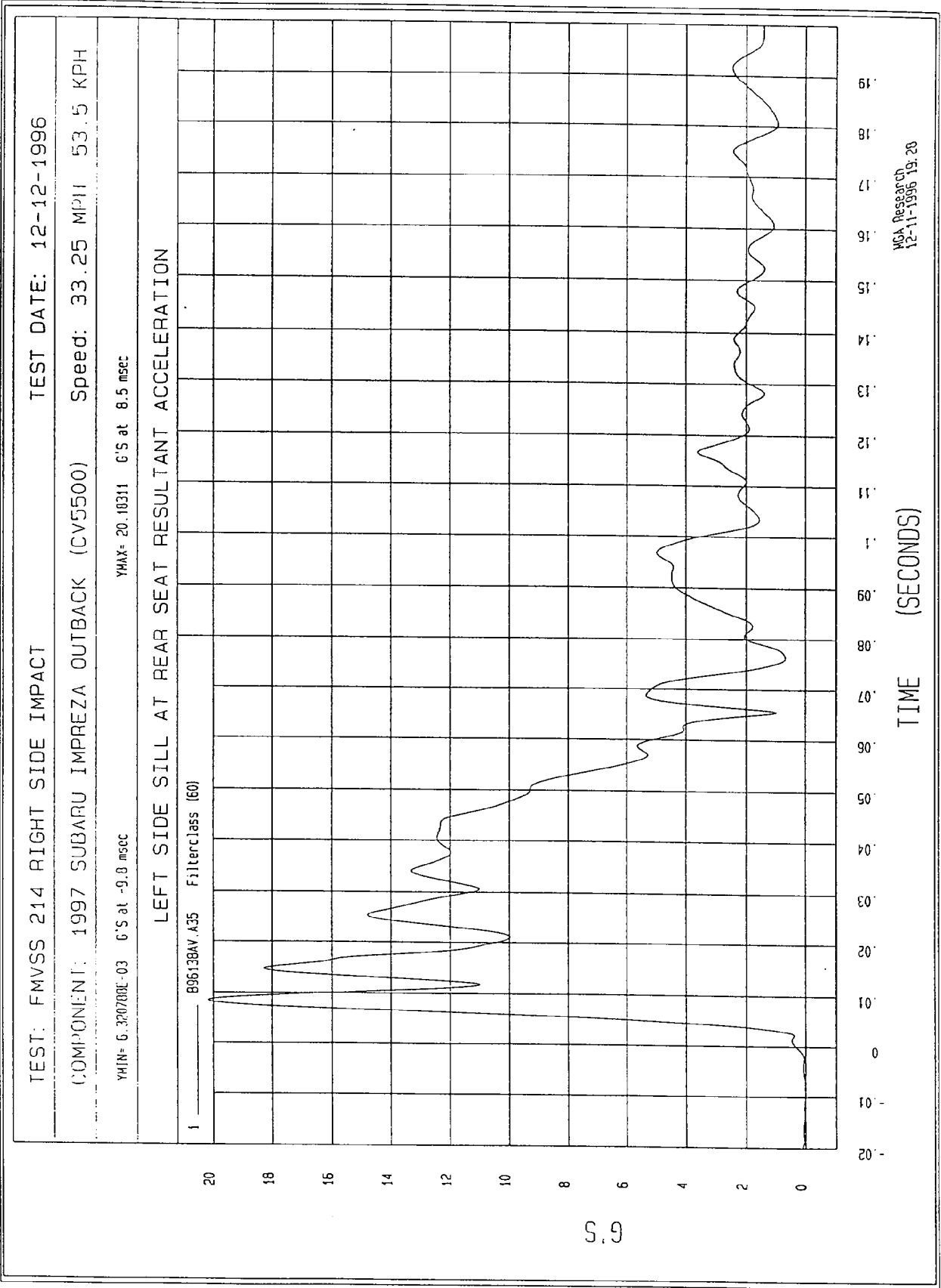
LEFT SIDE SILL AT REAR SEAT Z VELOCITY

1 896138A1.V37 Filterclass (180)



MCA Research
12-11-1996 19:20

TIME Seconds



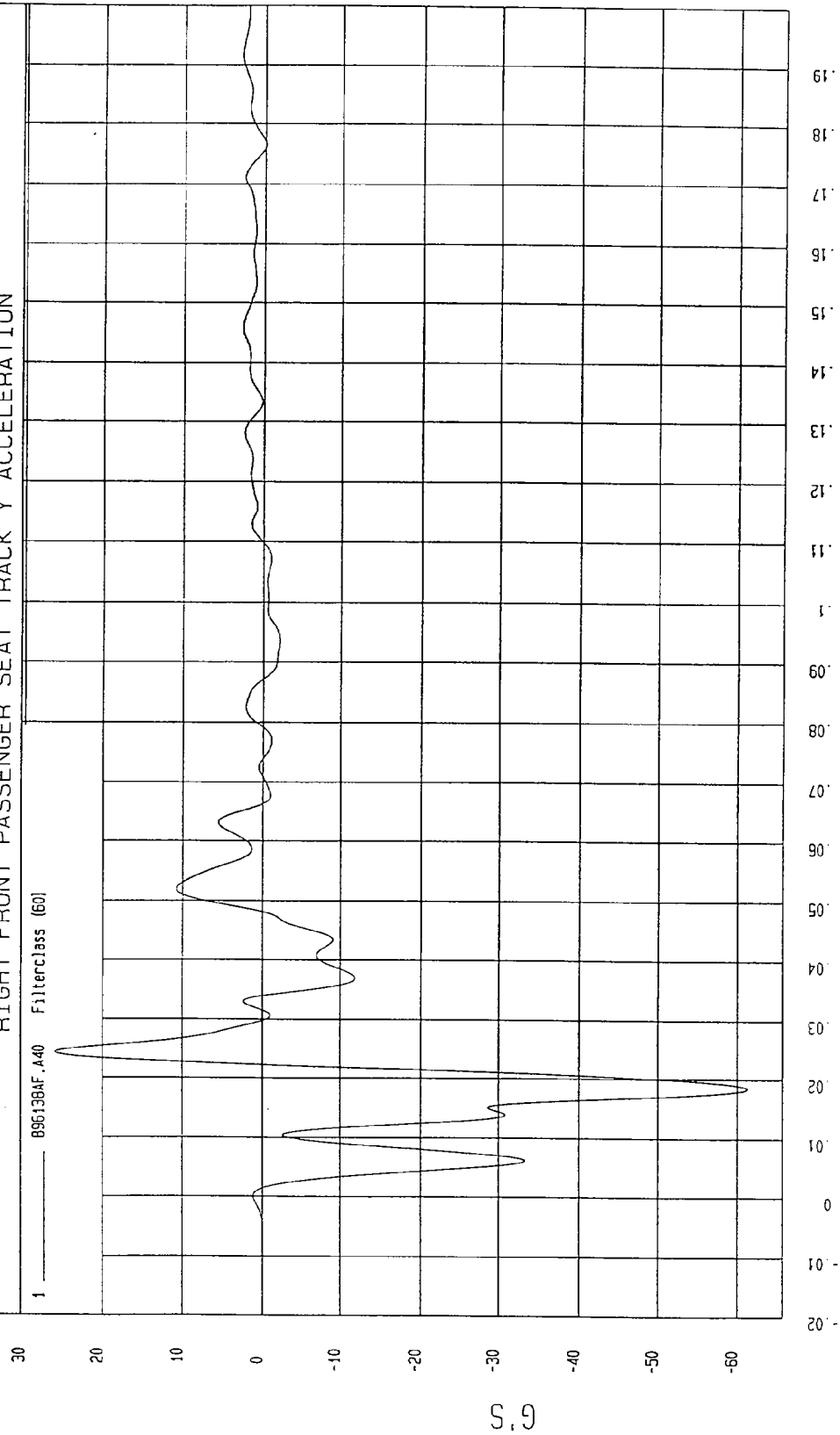
TEST: FMVSS 214 RIGHT SIDE IMPACT TEST DATE: 12-12-1995

COMPONENT: 1997 SUBARU IMPREZA OUTBACK (CV5500) Speed: 33.25 MPH 53.5 KPH

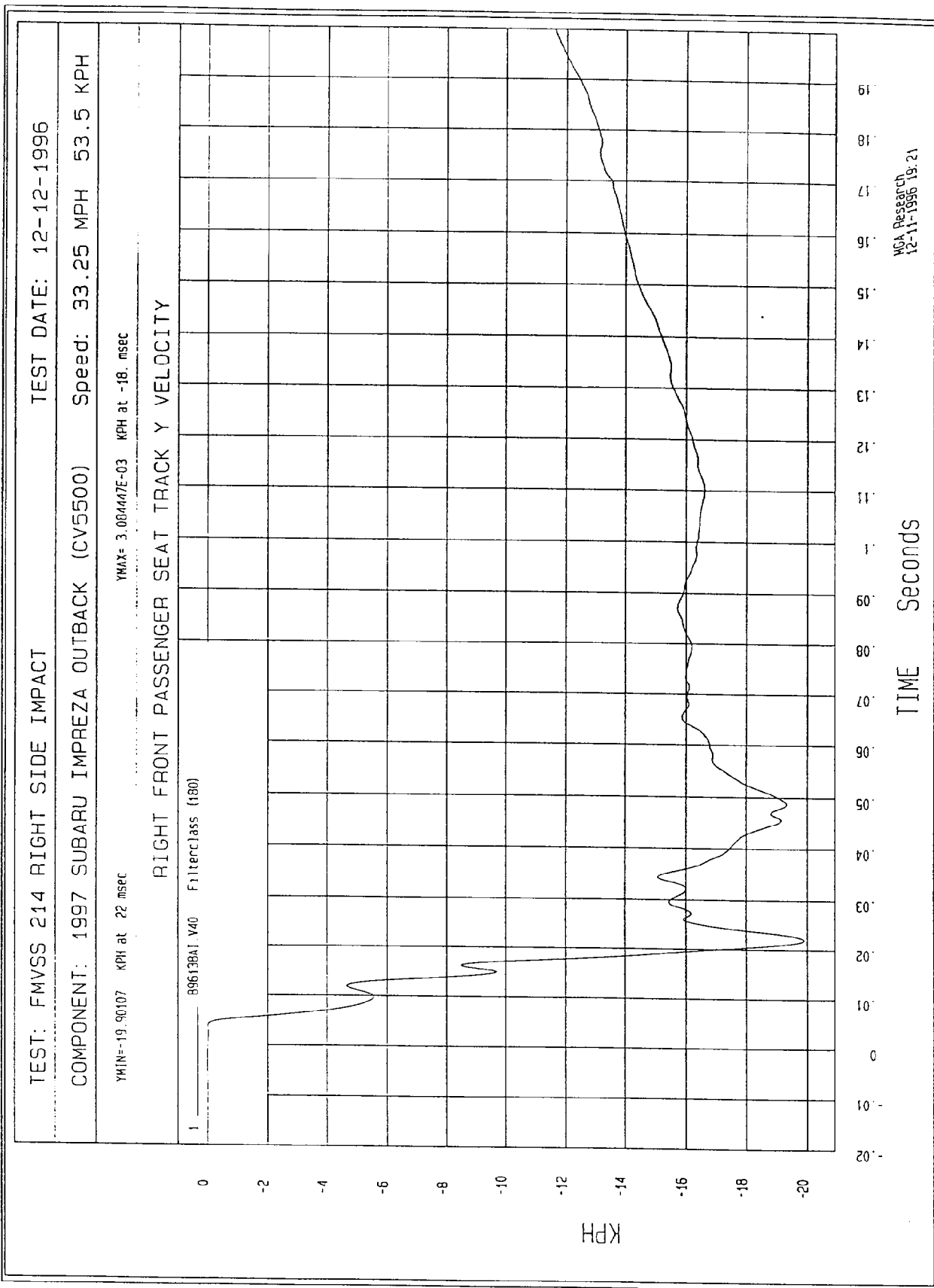
YMIN=-61.32174 G'S at 18. msec YMAX= 26.0876 G'S at 24. msec

RIGHT FRONT PASSENGER SEAT TRACK Y ACCELERATION

1 896138AF.A40 Filterclass (60)



MCA Research
12-11-1995 19:25



TEST: FMVSS 214 RIGHT SIDE IMPACT

TEST DATE: 12-12-1996

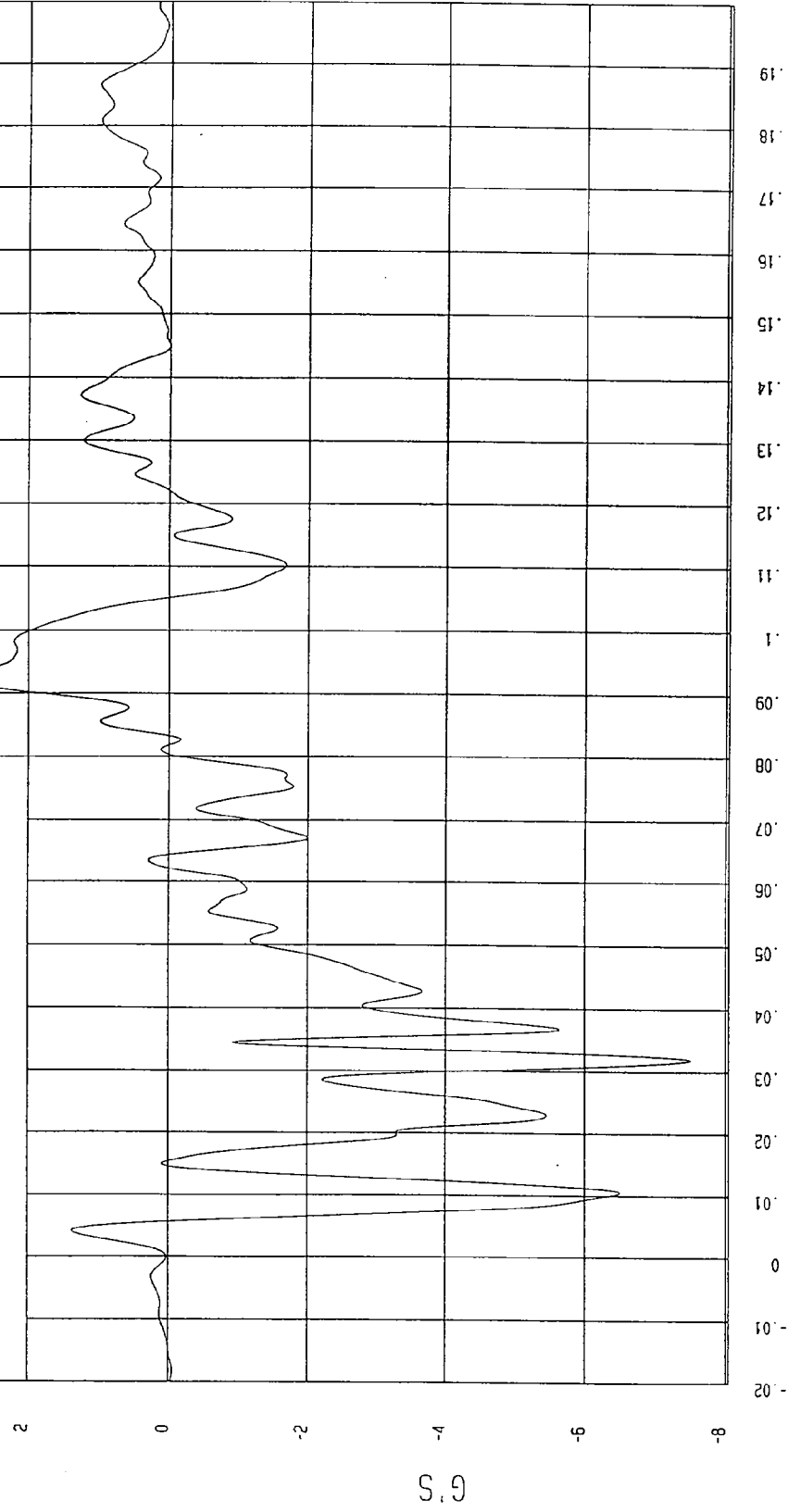
COMPONENT: 1997 SUBARU IMPREZA OUTBACK (CV5500) Speed: 33.25 MPH 53.5 KPH

YMIN=-7.518967 G'S at 31. msec

YMAX= 2.99775 G'S at 92. msec

REAR FLOORPAN ABOVE AXLE X ACCELERATION

1 ——— 896138AF.A08 Filterclass (60)



MSA Research
12-11-1996 19.25

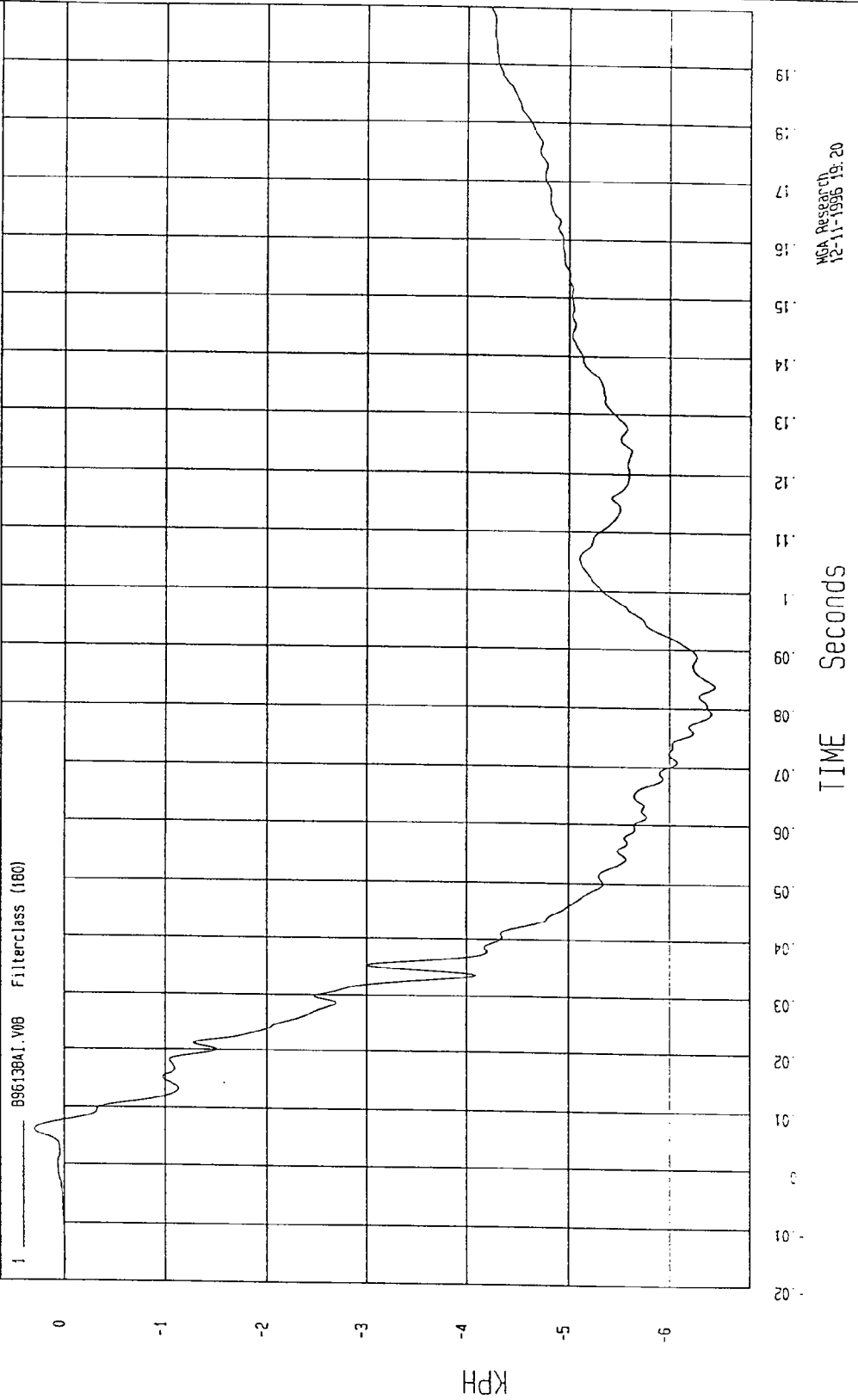
TEST: FMVSS 214 RIGHT SIDE IMPACT

TEST DATE: 12-12-1996

COMPONENT: 1997 SUBARU IMPREZA OUTBACK (CV5500) Speed: 33.25 MPH 53.5 KPH

YMIN=-5.440096 KPH at 03. msec YMAX= .2935048 KPH at 6.0 msec

REAR FLOORPAN ABOVE AXLE X VELOCITY

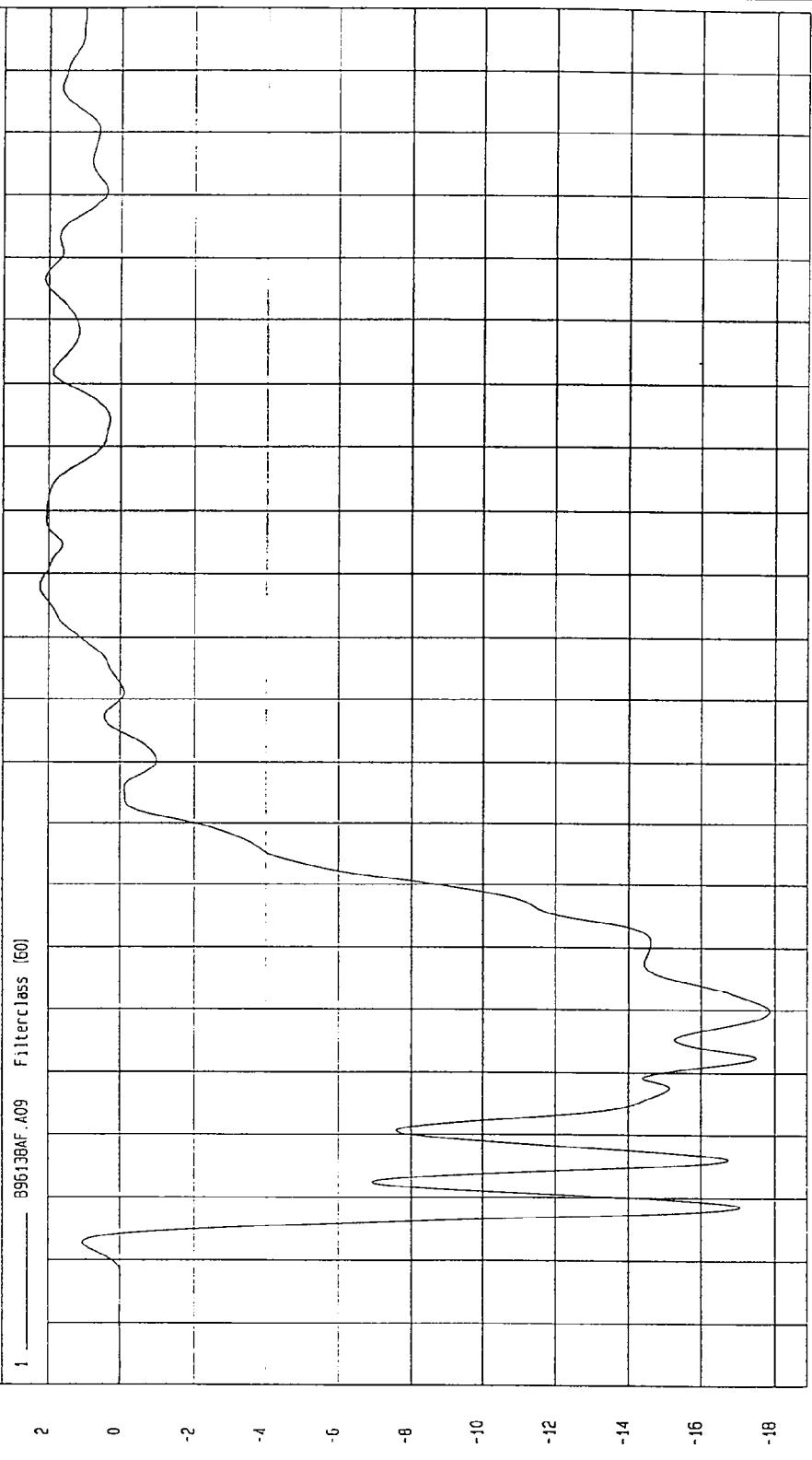


TEST: FMVSS 214 RIGHT SIDE IMPACT TEST DATE: 12-12-1996

COMPONENT: 1997 SUBARU IMPREZA OUTBACK (CV5500) Speed: 33.25 MPH 53.5 KPH

YMIN=-17.06597 G'S at 39. msec YMAX= 2.232052 G'S at 108 msec

REAR FLOORPAN ABOVE AXLE Y ACCELERATION



TIME (SECONDS)

MCA Research
12-11-1996 19:25

TEST: FMVSS 214 RIGHT SIDE IMPACT

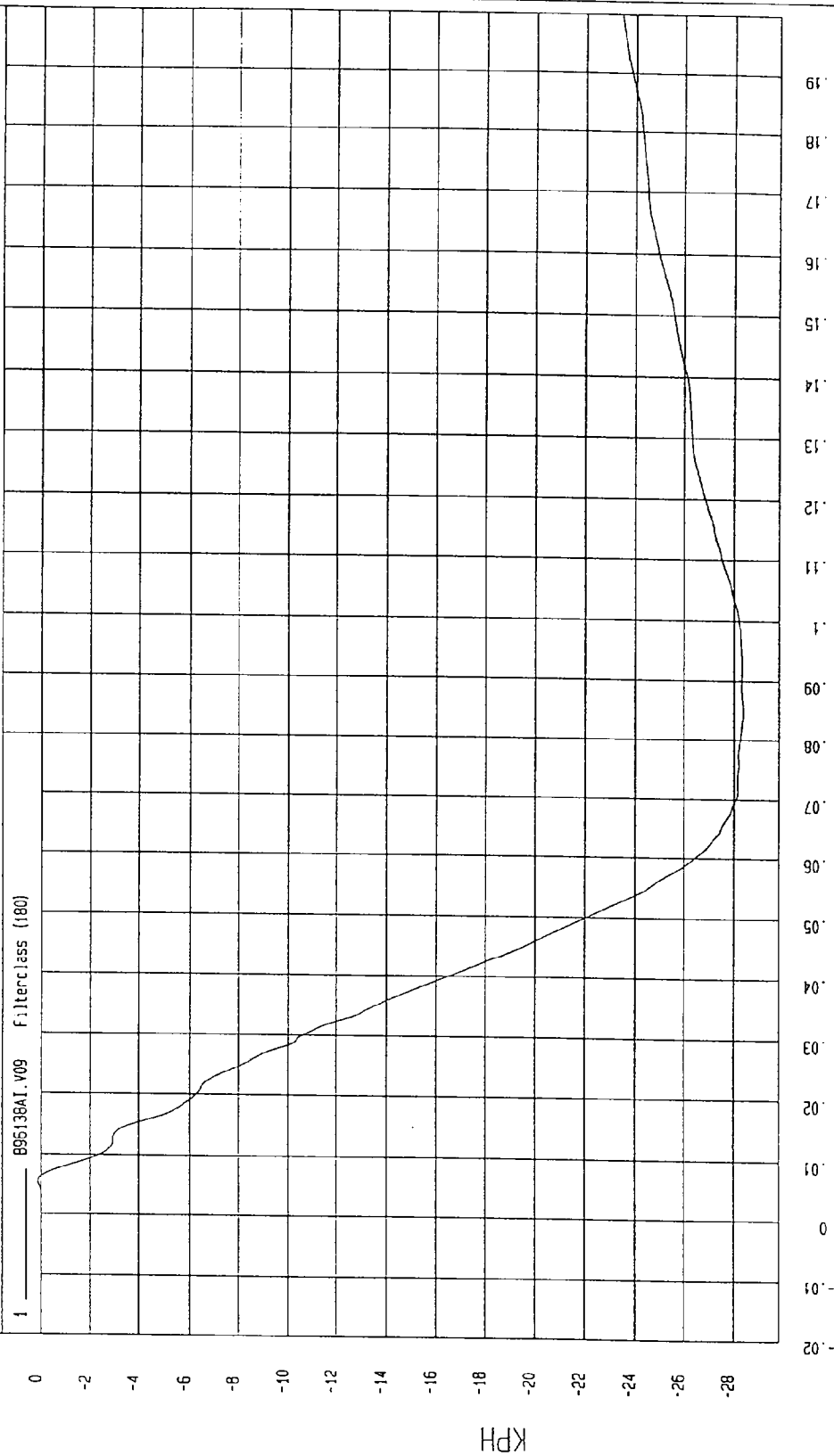
TEST DATE: 12-12-1996

COMPONENT: 1997 SUBARU IMPREZA OUTBACK (CV5500) Speed: 33.25 MPH 53.5 KPH

YMIN=-28.36666 KPH at 84. msec

YMAX= .1311807 KPH at 5.4 msec

REAR FLOORPAN ABOVE AXLE Y VELOCITY



VCA Research
12-11-1996 19:20

TIME Seconds

TEST: FMVSS 214 RIGHT SIDE IMPACT

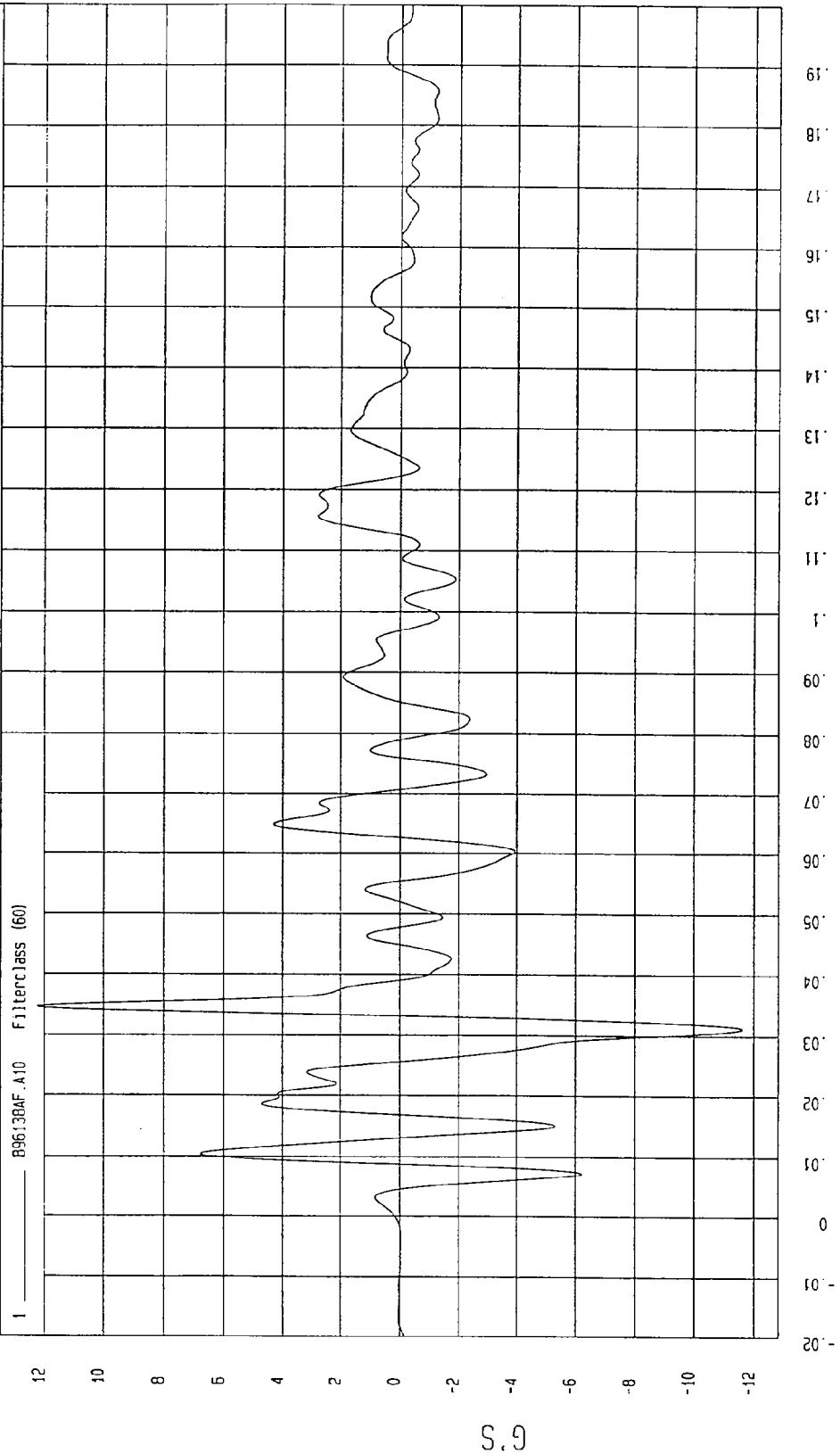
TEST DATE: 12-12-1996

COMPONENT: 1997 SUBARU IMPREZA OUTBACK (CV5500) Speed: 33.25 MPH 53.5 KPH

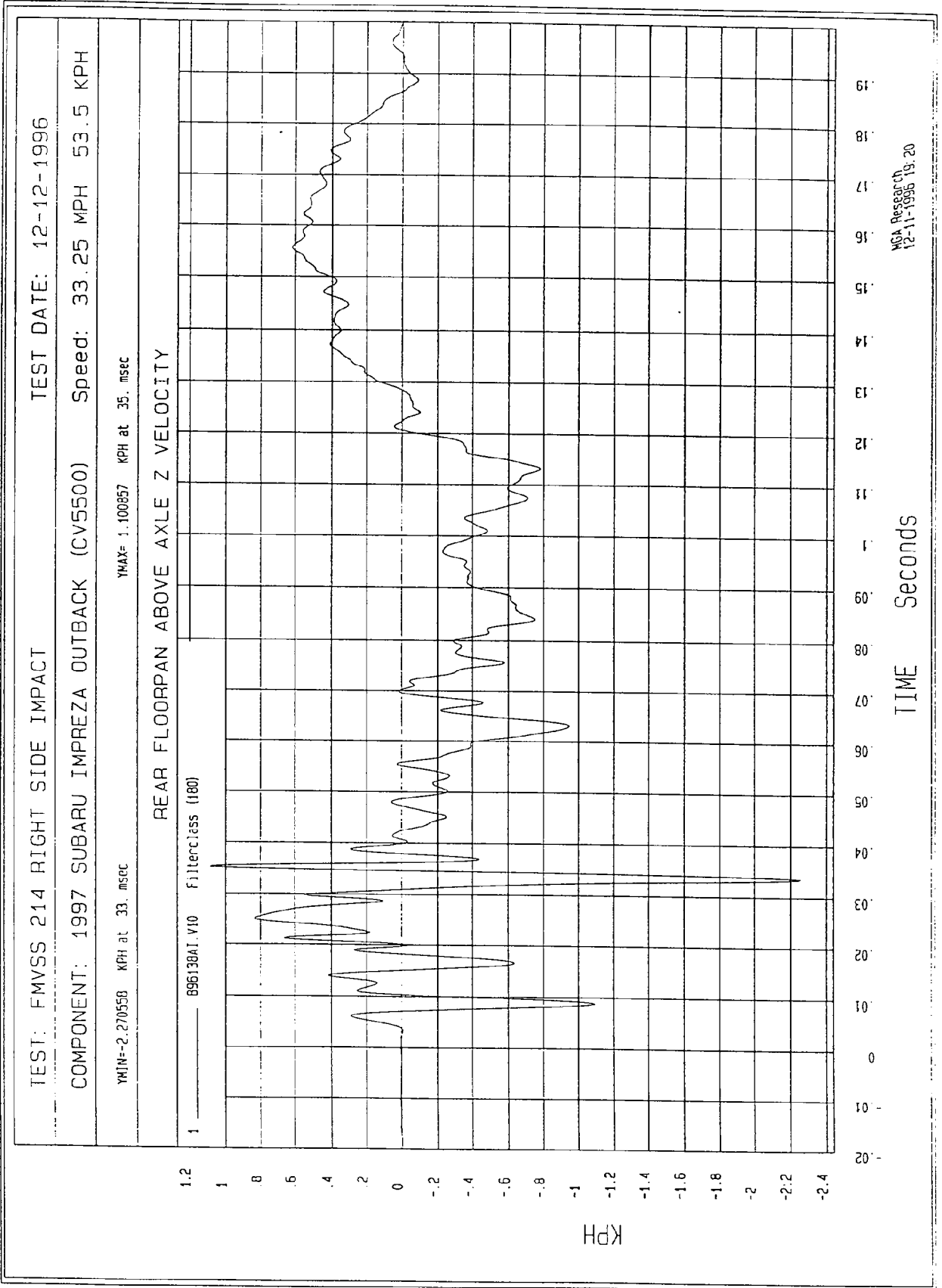
YMIN=-11.601505 G'S at 31. msec

YMAX= 12.24202 G'S at 34. msec

REAR FLOORPAN ABOVE AXLE Z ACCELERATION



MSA Research
12-11-1996 19:25

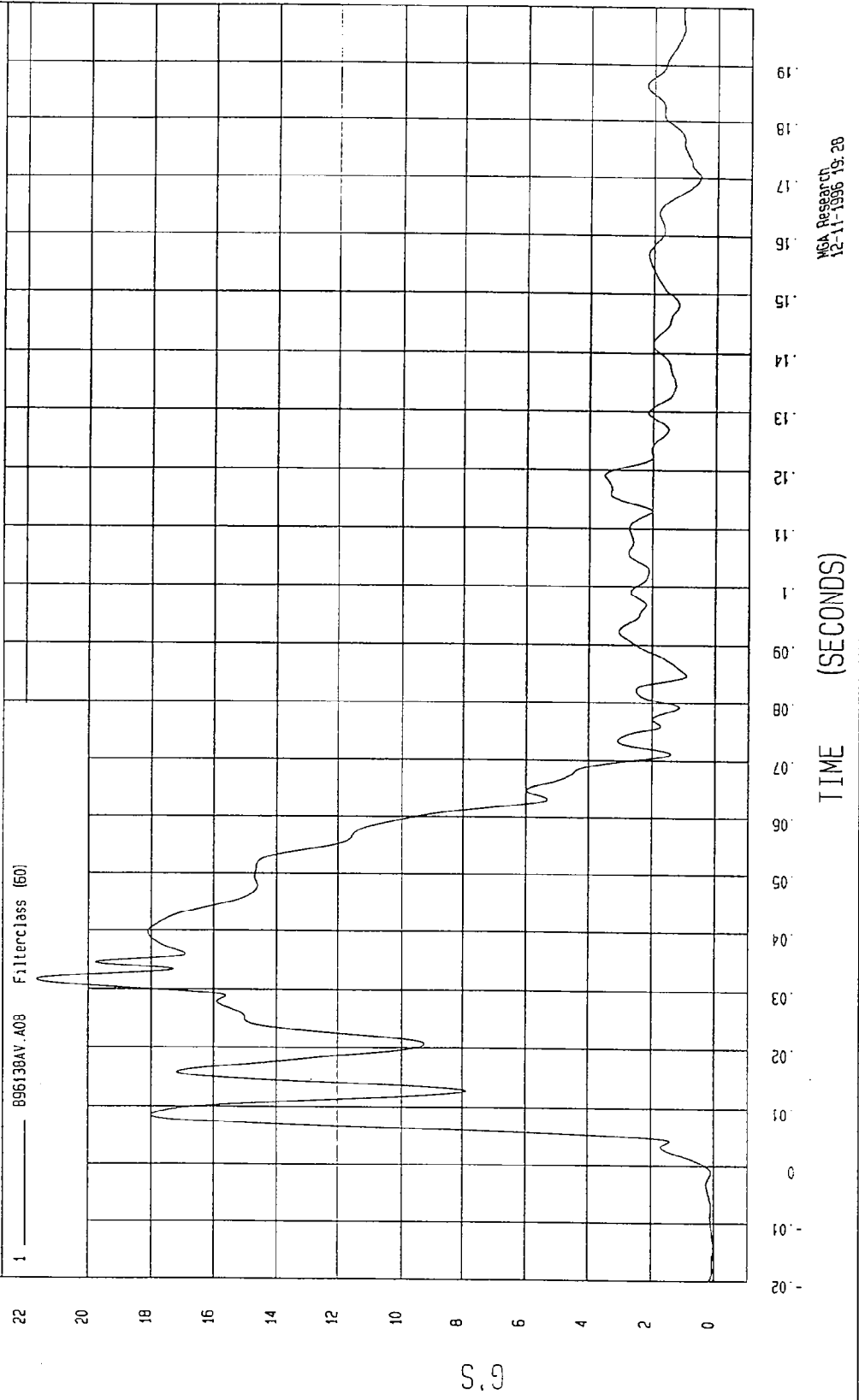


TEST: FMVSS 214 RIGHT SIDE IMPACT TEST DATE: 12-12-1996

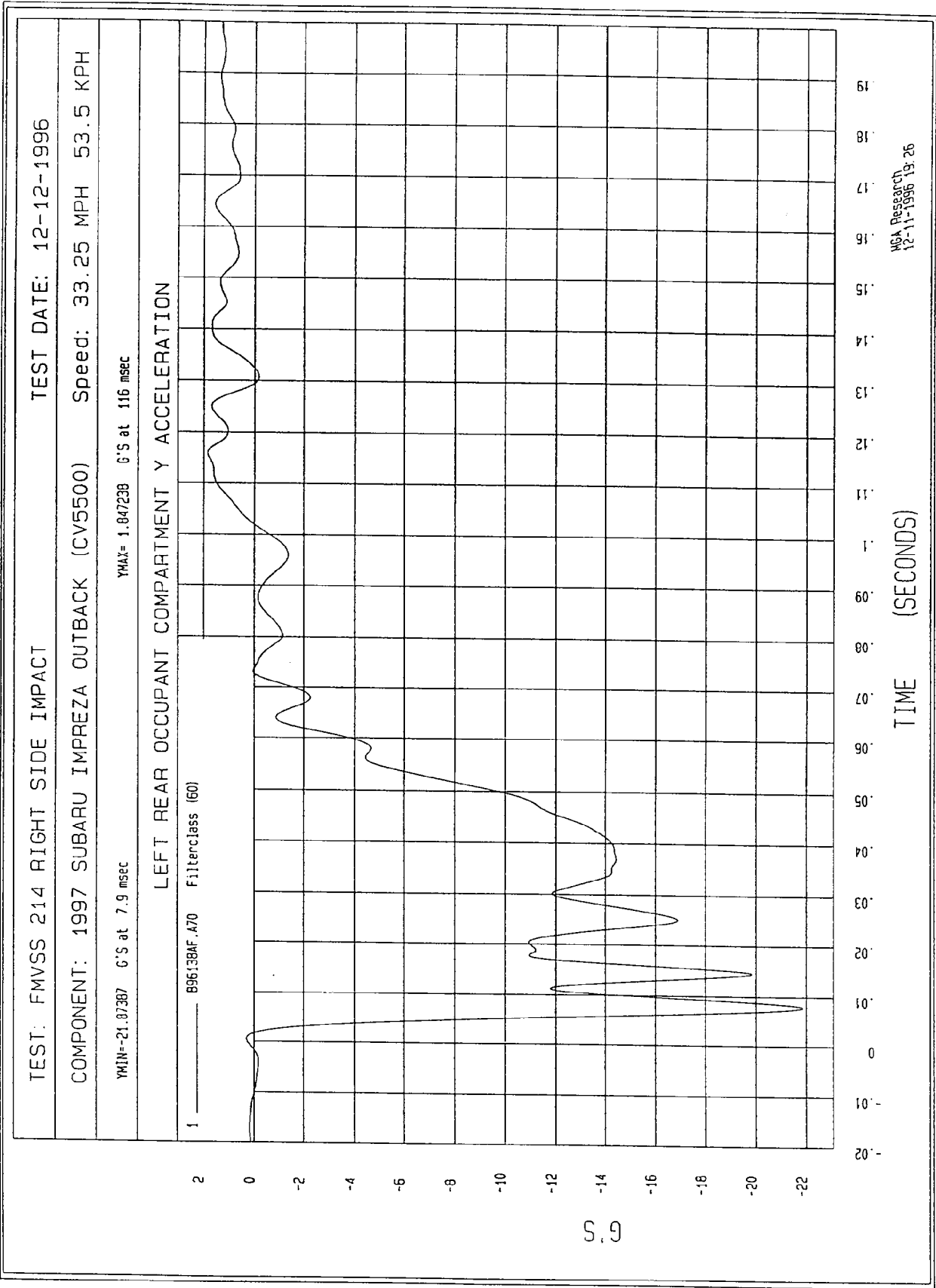
COMPONENT: 1997 SUBARU IMPREZA OUTBACK (CV5500) Speed: 33.25 MPH 53.5 KPH

YMIN= 2.331733E-02 G'S at -14. msec YMAX= 21.65129 G'S at 31. msec

REAR FLOORPAN ABOVE AXLE RESULTANT ACCELERATION



MCA Research
12-11-1996 19:28

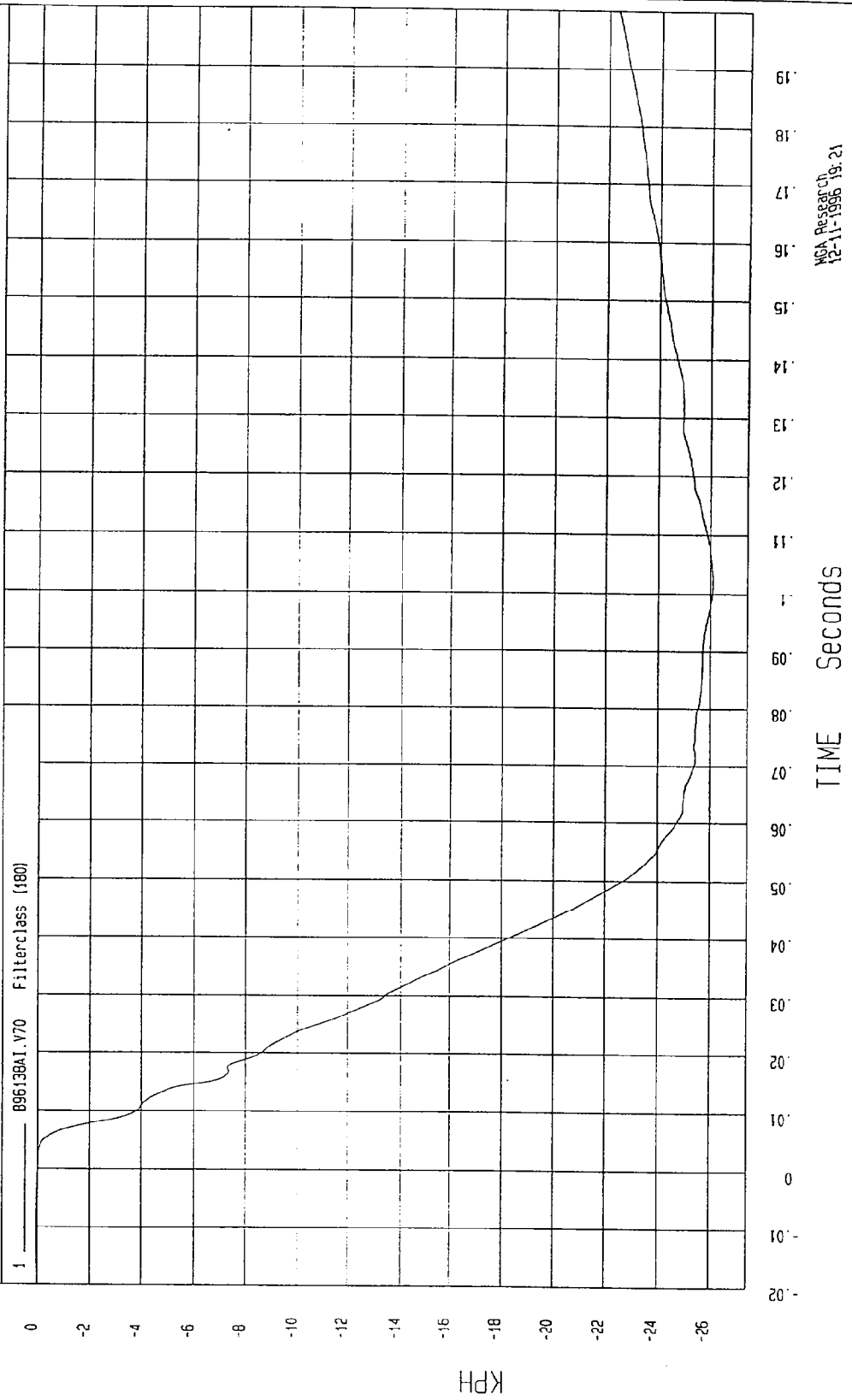


TEST: FMVSS 214 RIGHT SIDE IMPACT TEST DATE: 12-12-1996

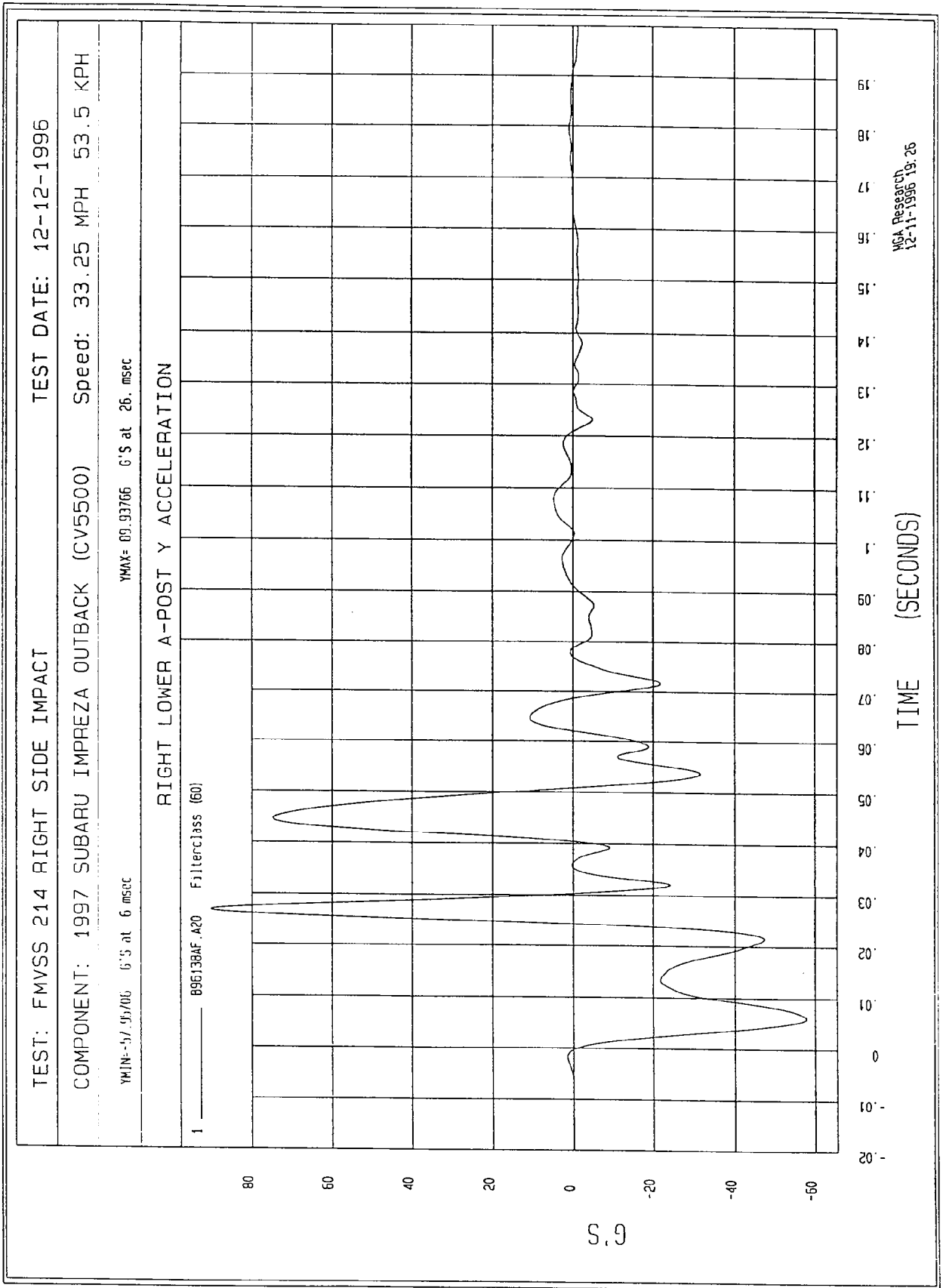
COMPONENT: 1997 SUBARU IMPREZA OUTBACK (CV5500) Speed: 33.25 MPH 53.5 KPH

YMIN=-26.10338 KPH at 101 msec YMAX= 4.755941E-02 KPH at -10. msec

LEFT REAR OCCUPANT COMPARTMENT Y VELOCITY

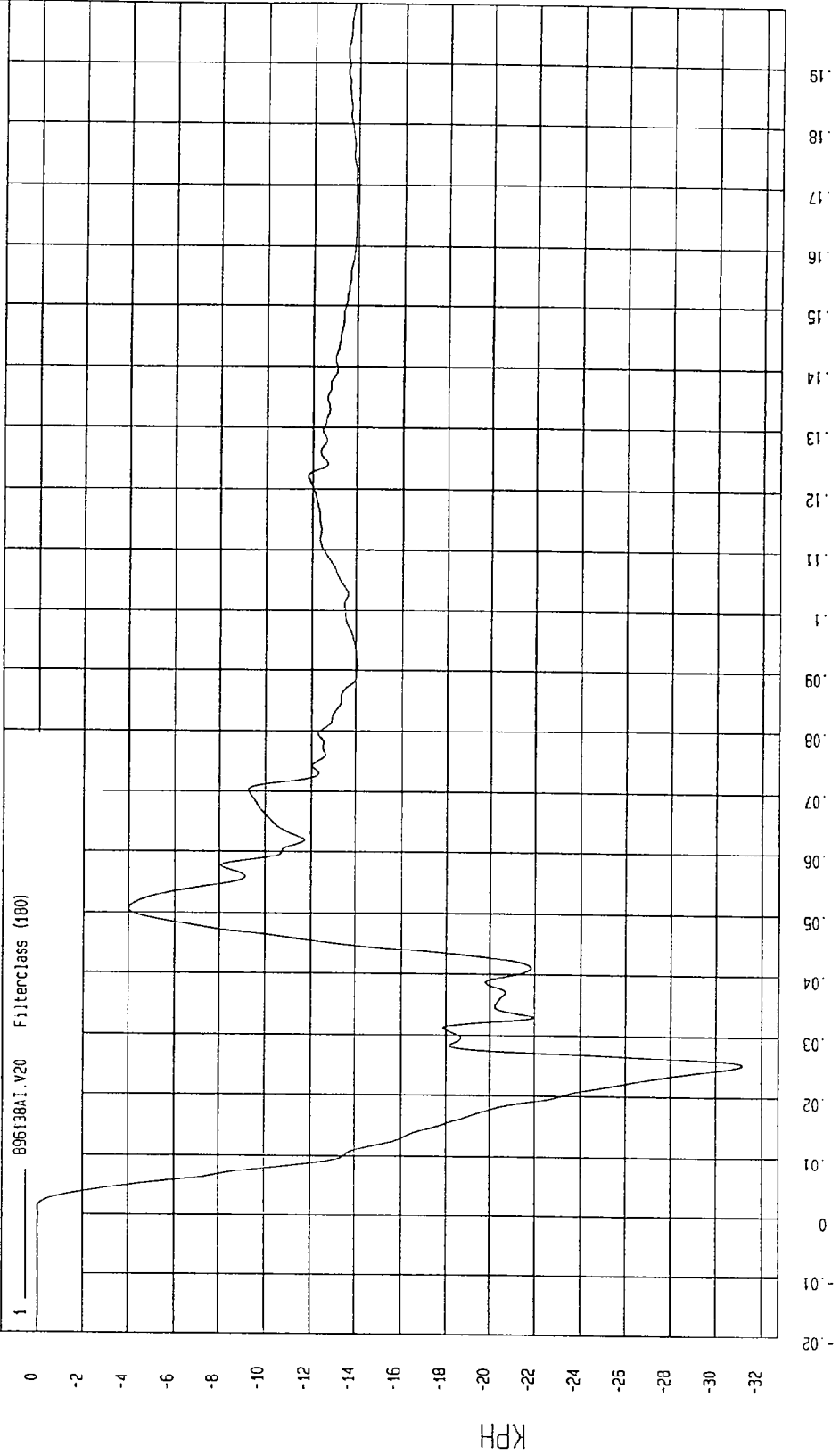


MCA Research
12-11-1996 19:21

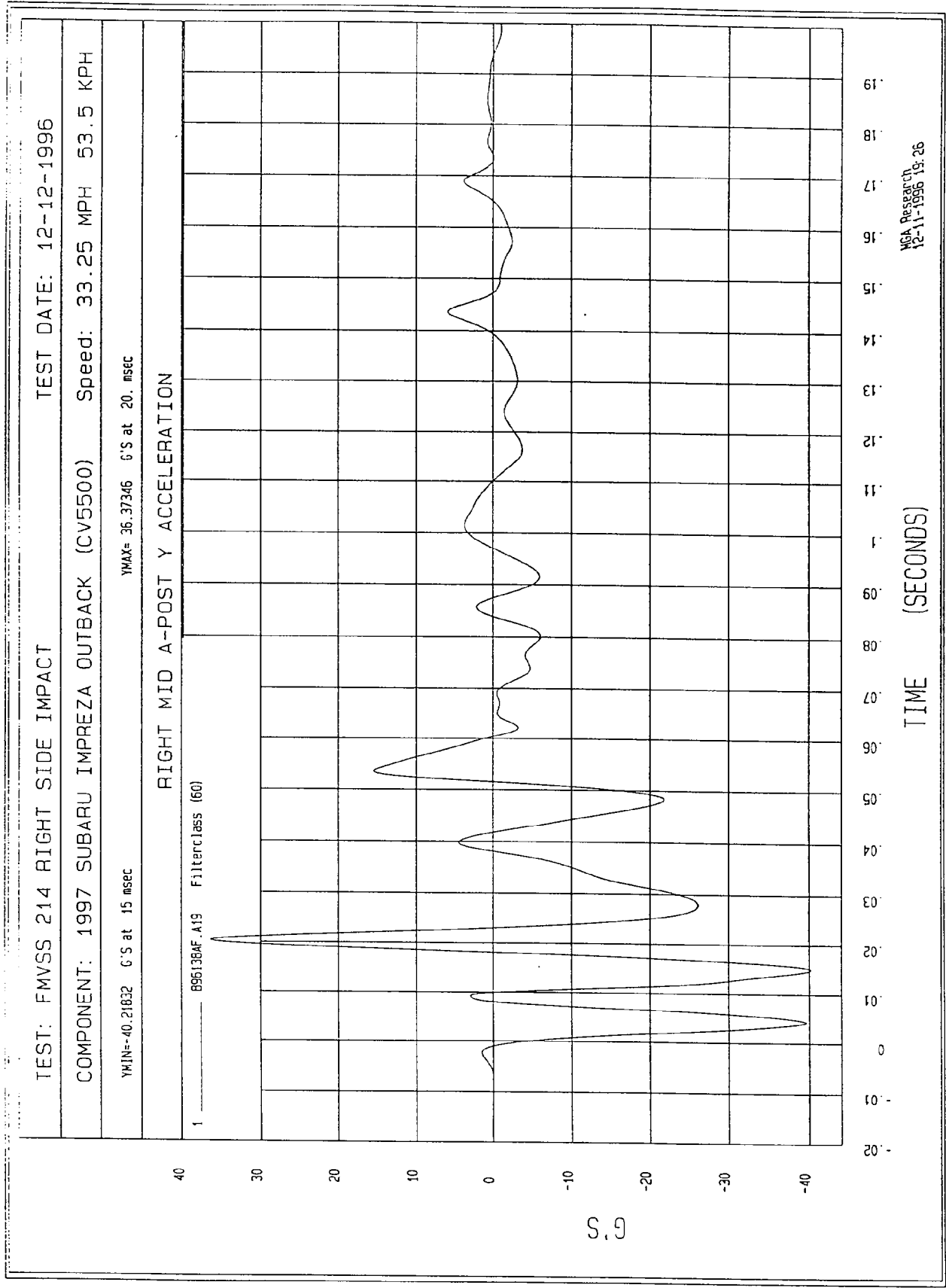


TEST: FMVSS 214 RIGHT SIDE IMPACT TEST DATE: 12-12-1996
COMPONENT: 1997 SUBARU IMPREZA OUTBACK (CV5500) Speed: 33.25 MPH 53.5 KPH
YMIN=-31.17497 KPH at 25. msec YMAX= 6.799920E-03 KPH at 1.1 msec

RIGHT LOWER A-POST Y VELOCITY



MGA Research
12-11-1996 19:21



MCA Research
12-11-1996 19:26

TEST: FMVSS 214 RIGHT SIDE IMPACT

TEST DATE: 12-12-1996

COMPONENT: 1997 SUBARU IMPREZA OUTBACK (CV5500) Speed: 33.25 MPH 53.5 KPH

YMIN=-25.09502 KPH at 164 msec

YMAX= 6.314519E-02 KPH at .89 msec

RIGHT MID A-POST Y VELOCITY

1 896138A1.V19 Filterclass (f80)



MSA Research
12-11-1996 19.21

RIGHT LOWER B-POST Y ACCELERATION VS. TIME

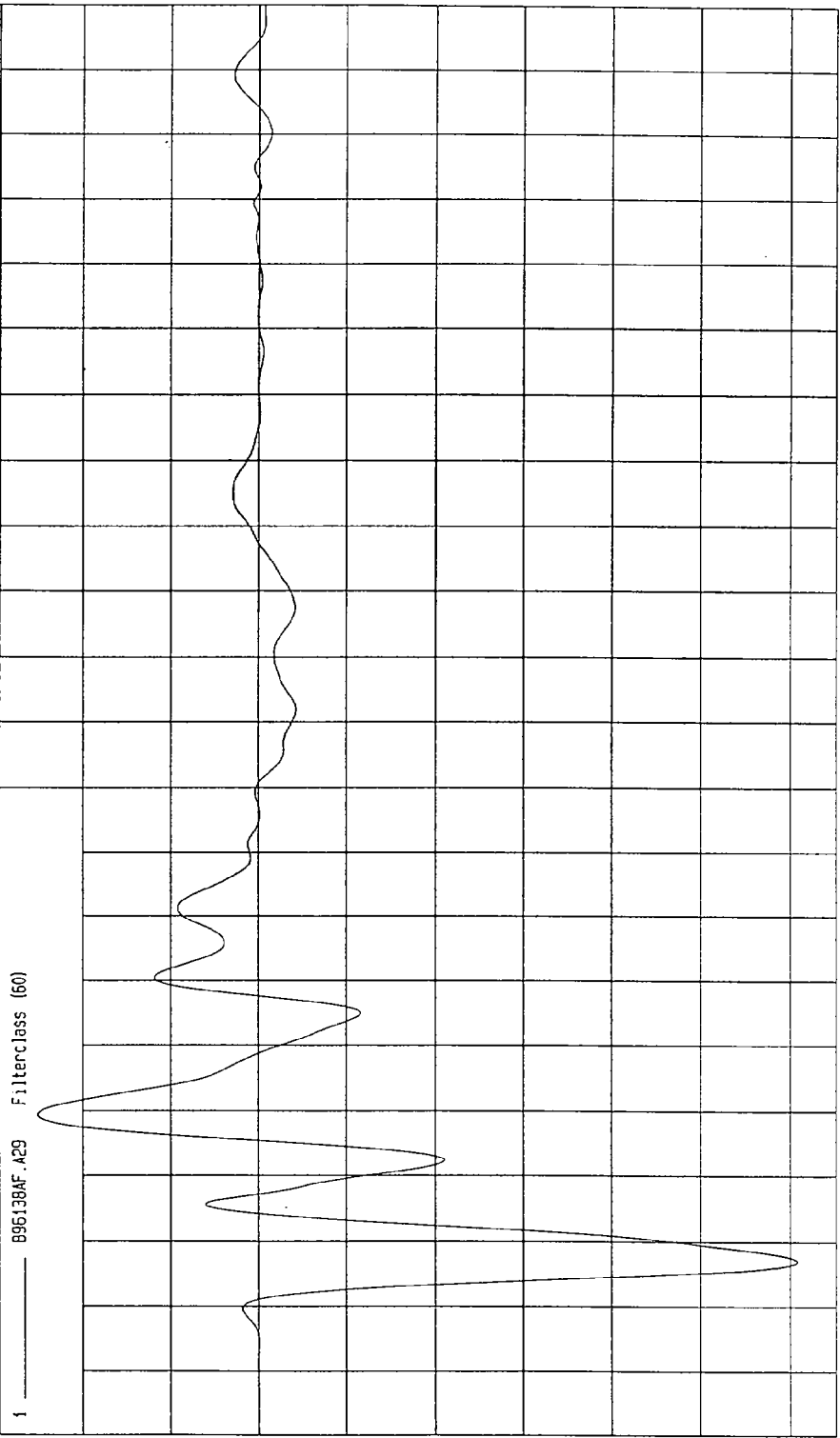
NO VALID DATA COLLECTED

TEST: FMVSS 214 RIGHT SIDE IMPACT TEST DATE: 12-12-1996

COMPONENT: 1997 SUBARU IMPREZA OUTBACK (CV5500) Speed: 33.25 MPH 53.5 KPH

YMIN=-121 G'S G'S at 7.0 msec YMAX= 50.00619 G'S at 29. msec

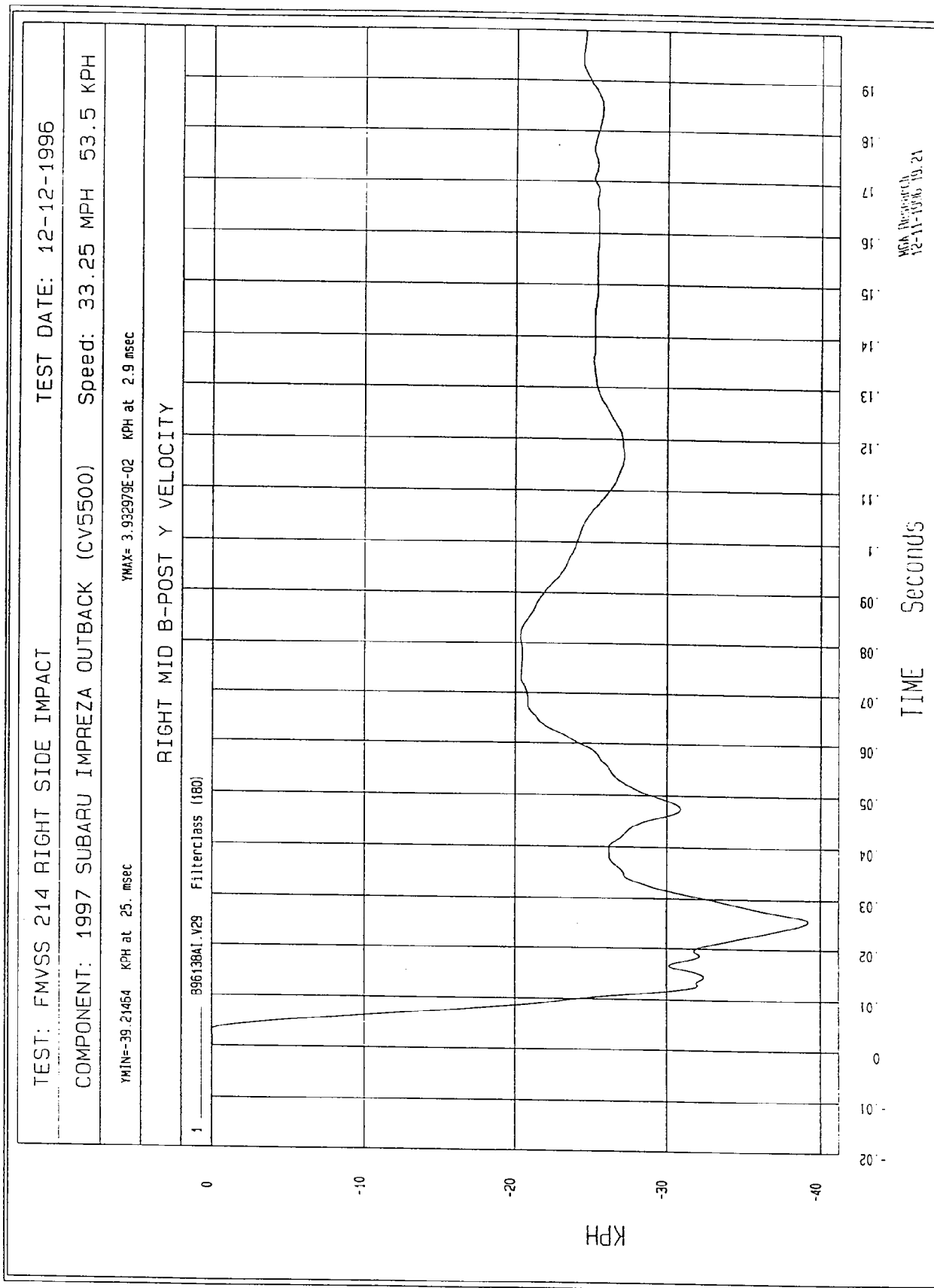
RIGHT MID B-POST Y ACCELERATION



TIME (SECONDS)

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

MOA Research
12-11-1996 19:26

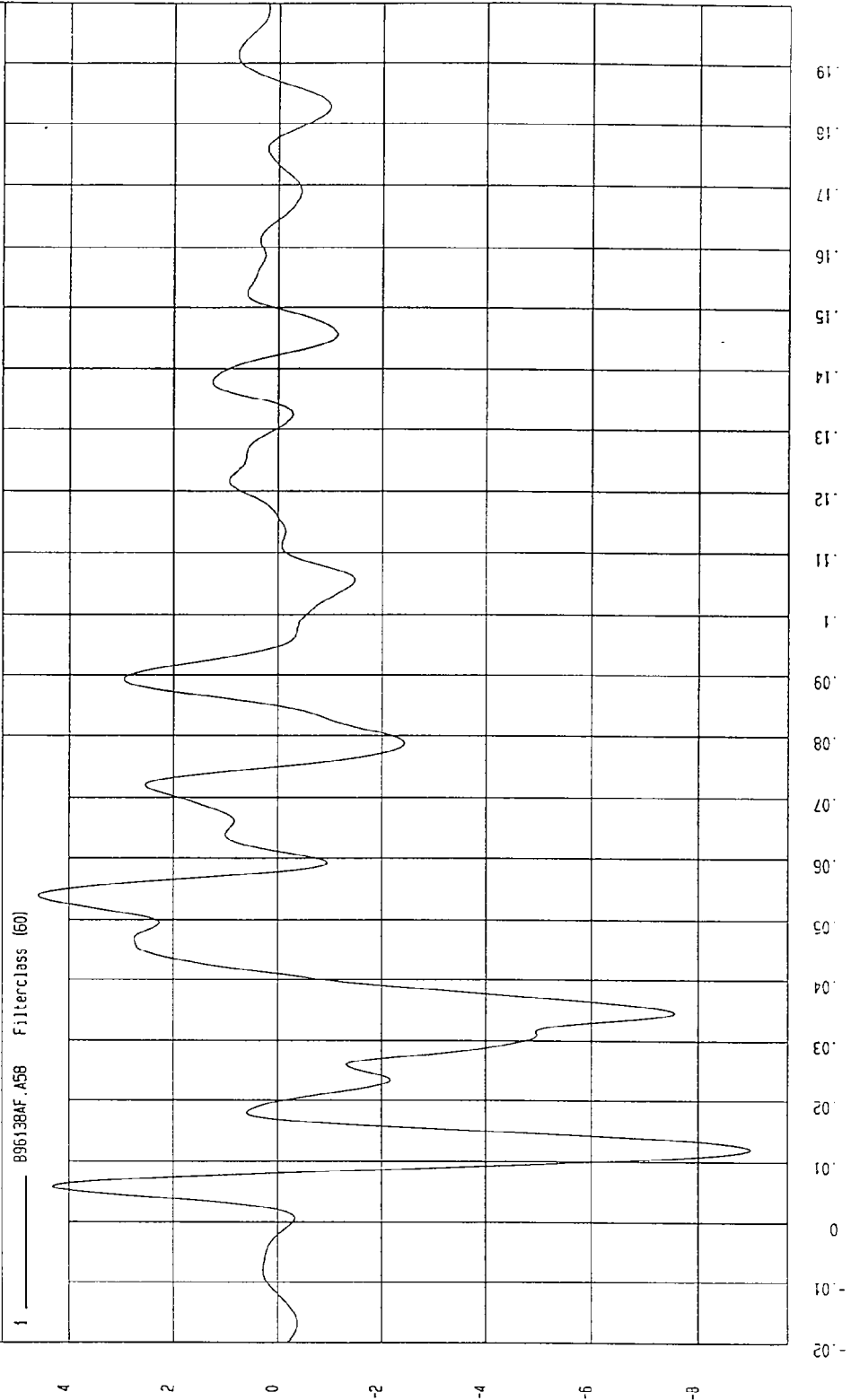


TEST: FMVSS 214 RIGHT SIDE IMPACT TEST DATE: 12-12-1996

COMPONENT: 1997 SUBARU IMPREZA OUTBACK (CV5500) Speed: 33.25 MPH 53.5 KPH

YMIN=-0.000210 G'S at 12 msec YMAX= 4.583447 G'S at 53. msec

VEHICLE CG X ACCELERATION



WGA Research
12-11-1996 19:26

TEST: FMVSS 214 RIGHT SIDE IMPACT

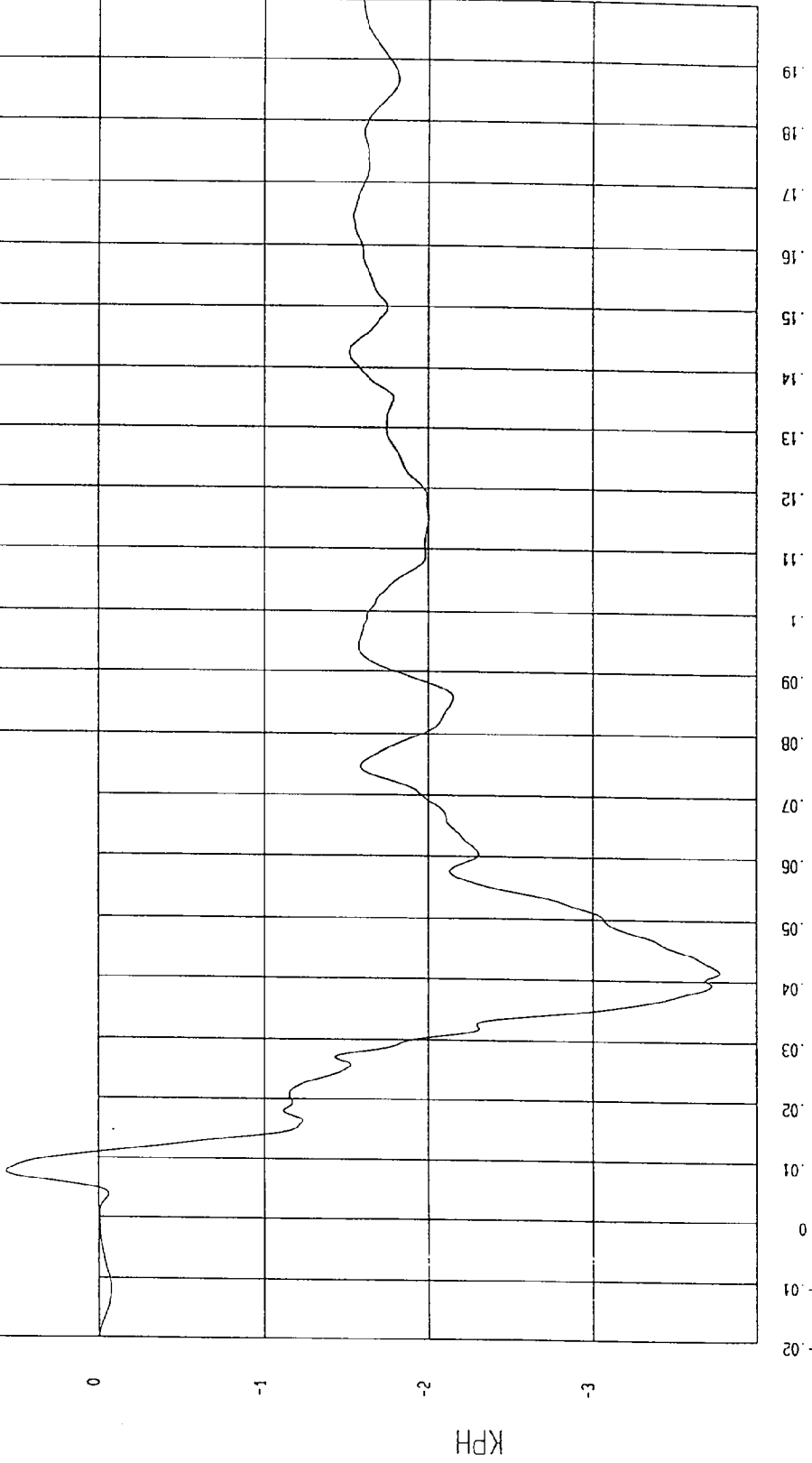
TEST DATE: 12-12-1996

COMPONENT: 1997 SUBARU IMPREZA OUTBACK (CV5500) Speed: 33.25 MPH 53.5 KPH

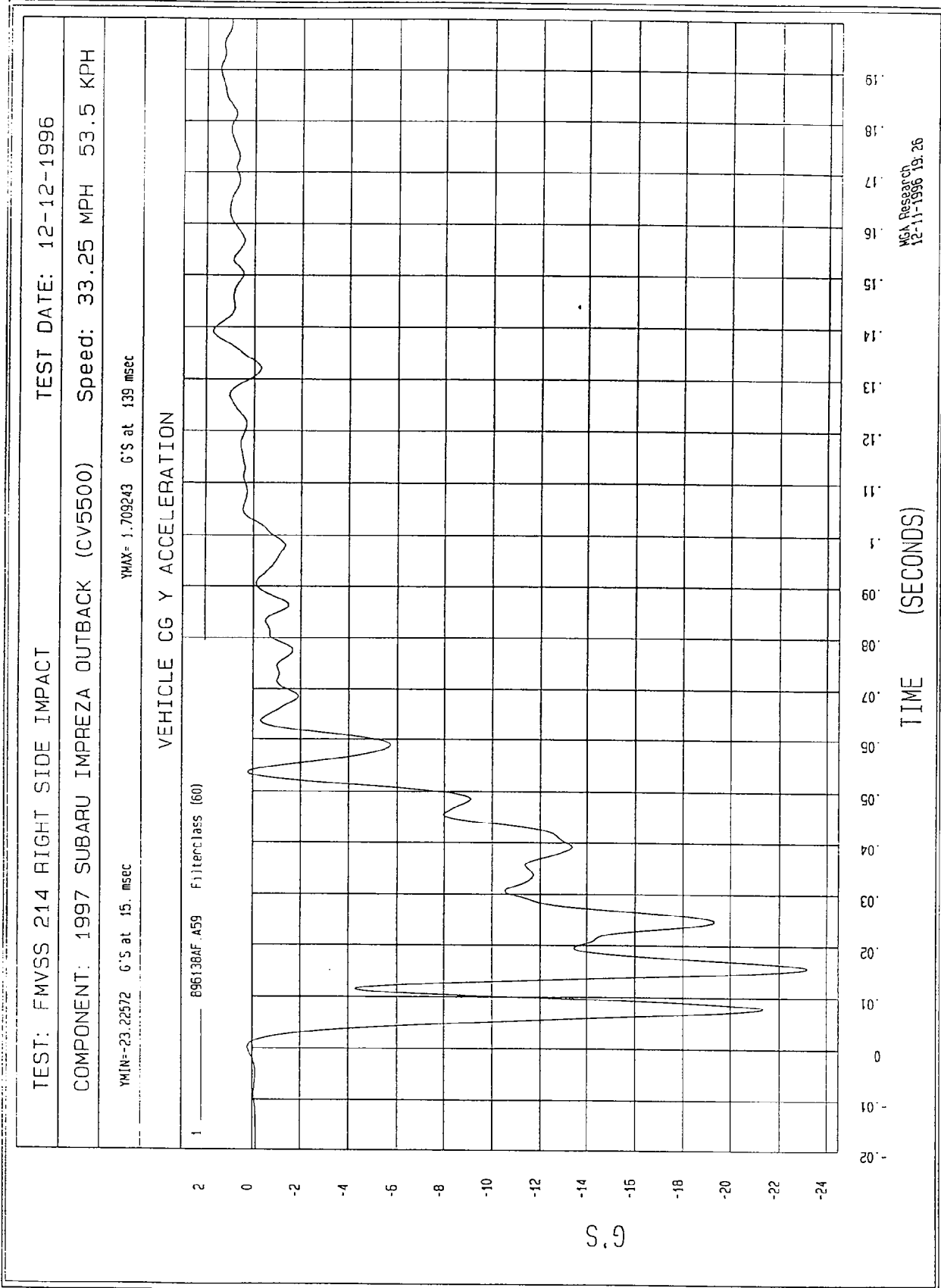
YMIN=-3.76458 KPH at 41. msec YMAX= .5575941 KPH at 7.6 msec

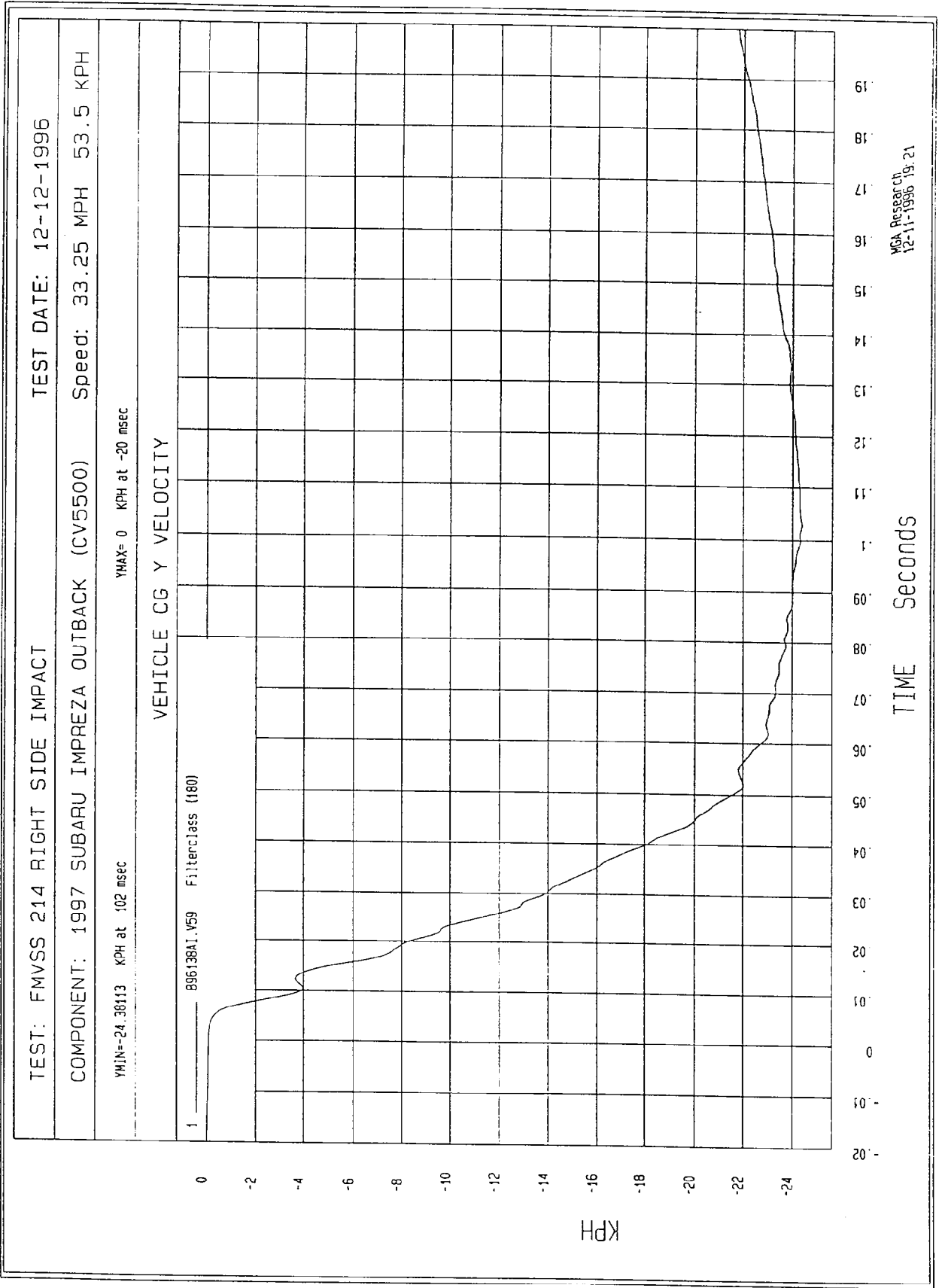
VEHICLE CG X VELOCITY

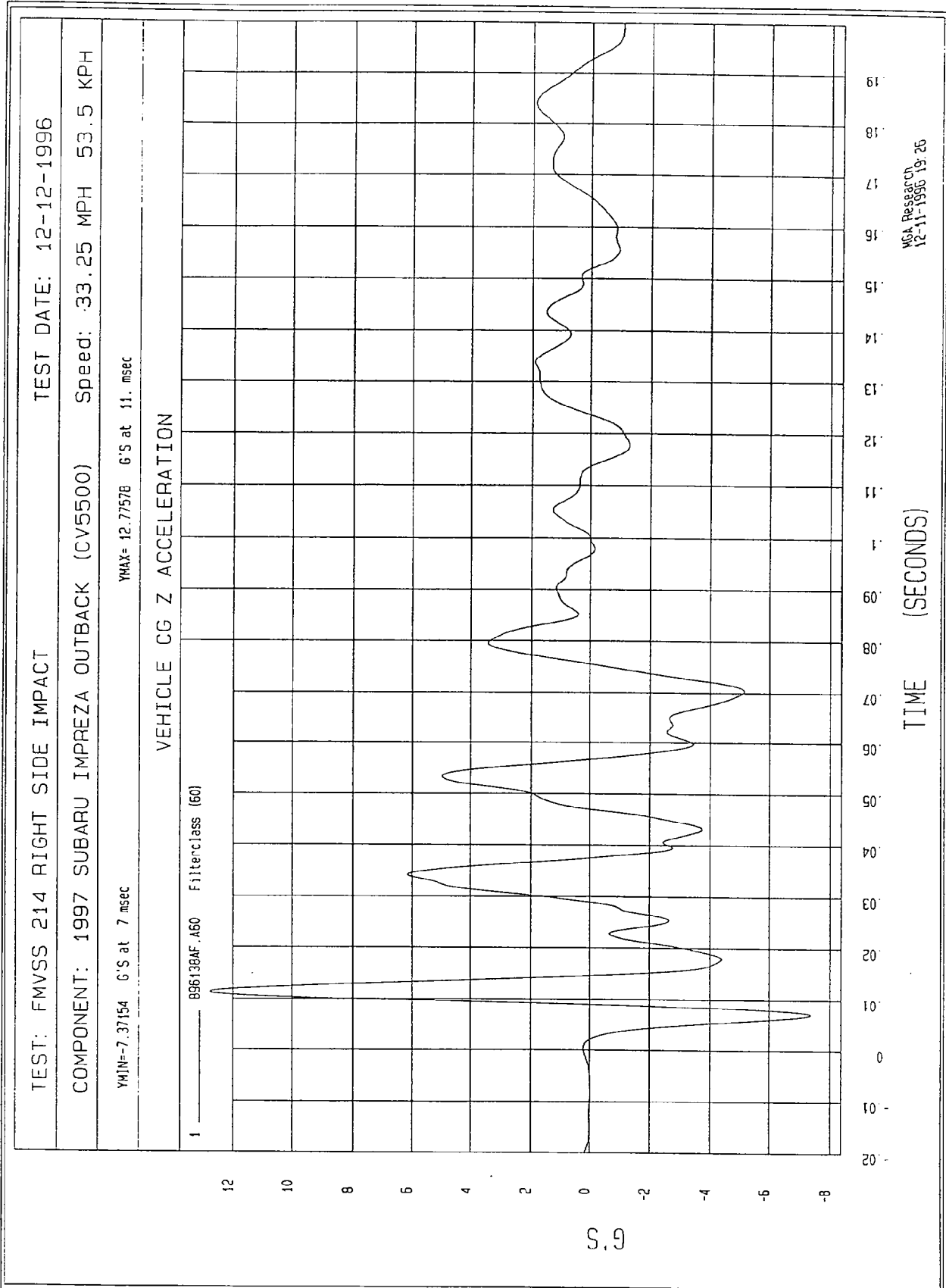
1 896138A1.V50 Filterclass (180)

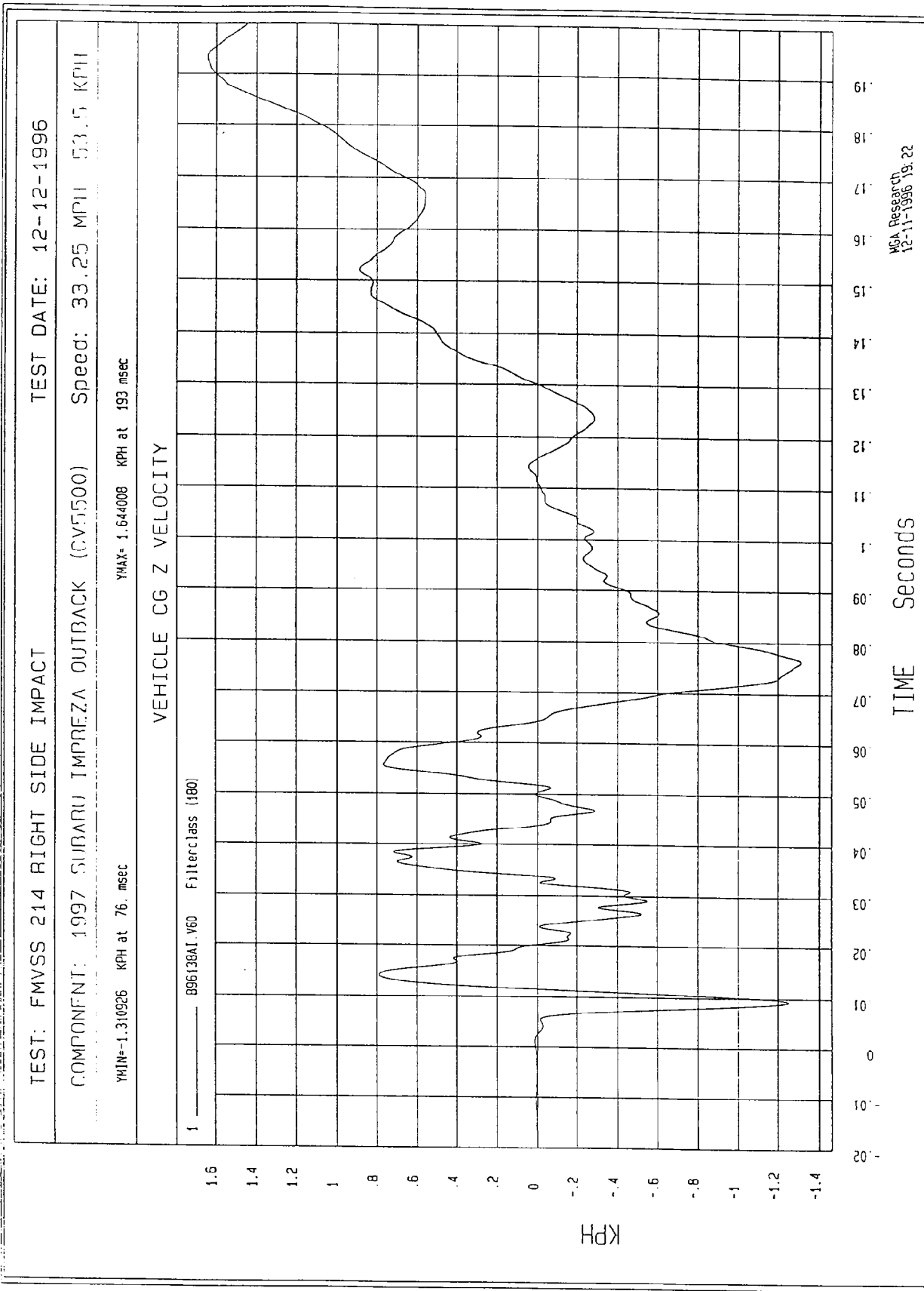


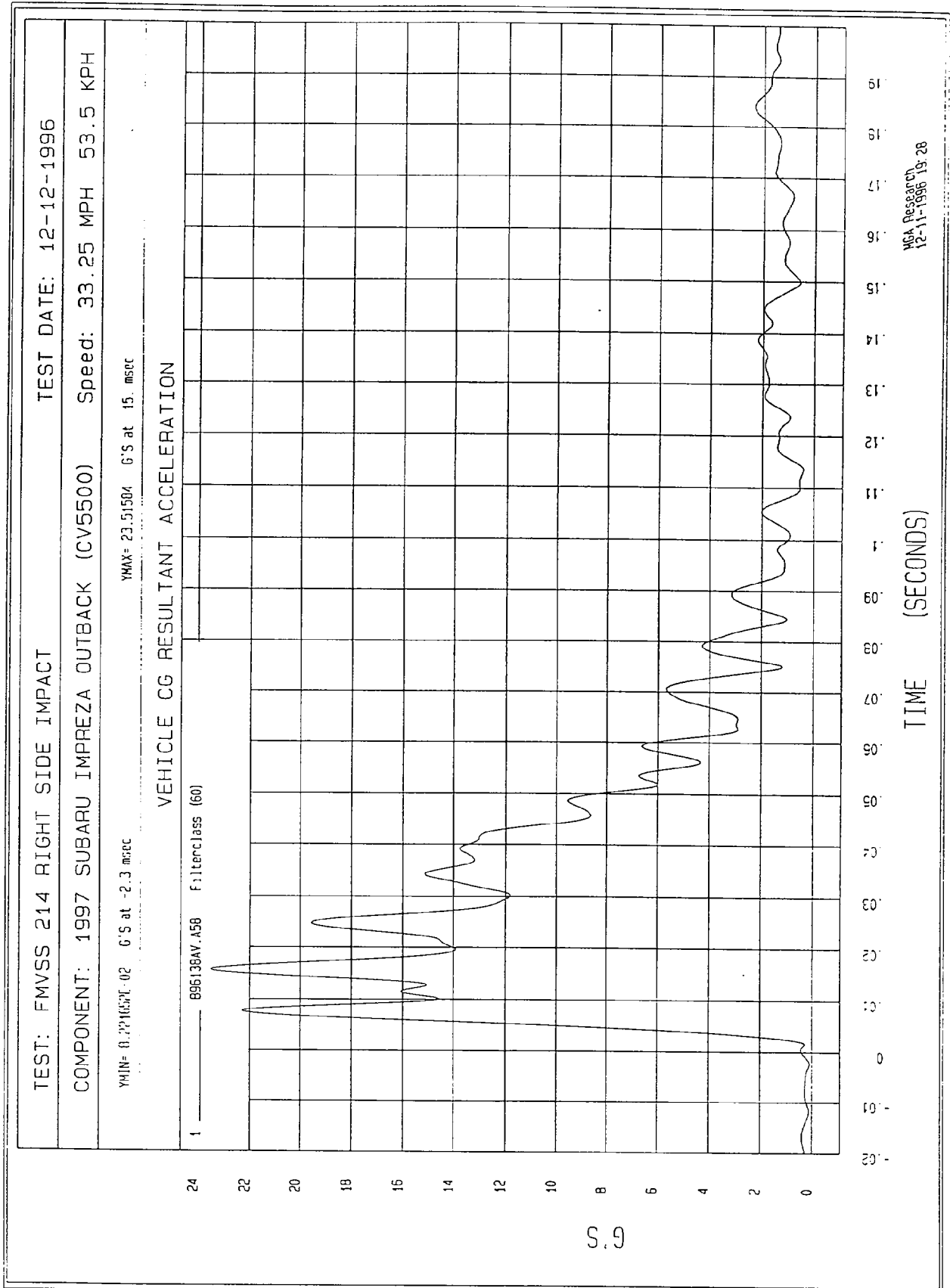
TIME Seconds MGA Research 12-11-1996 19:21

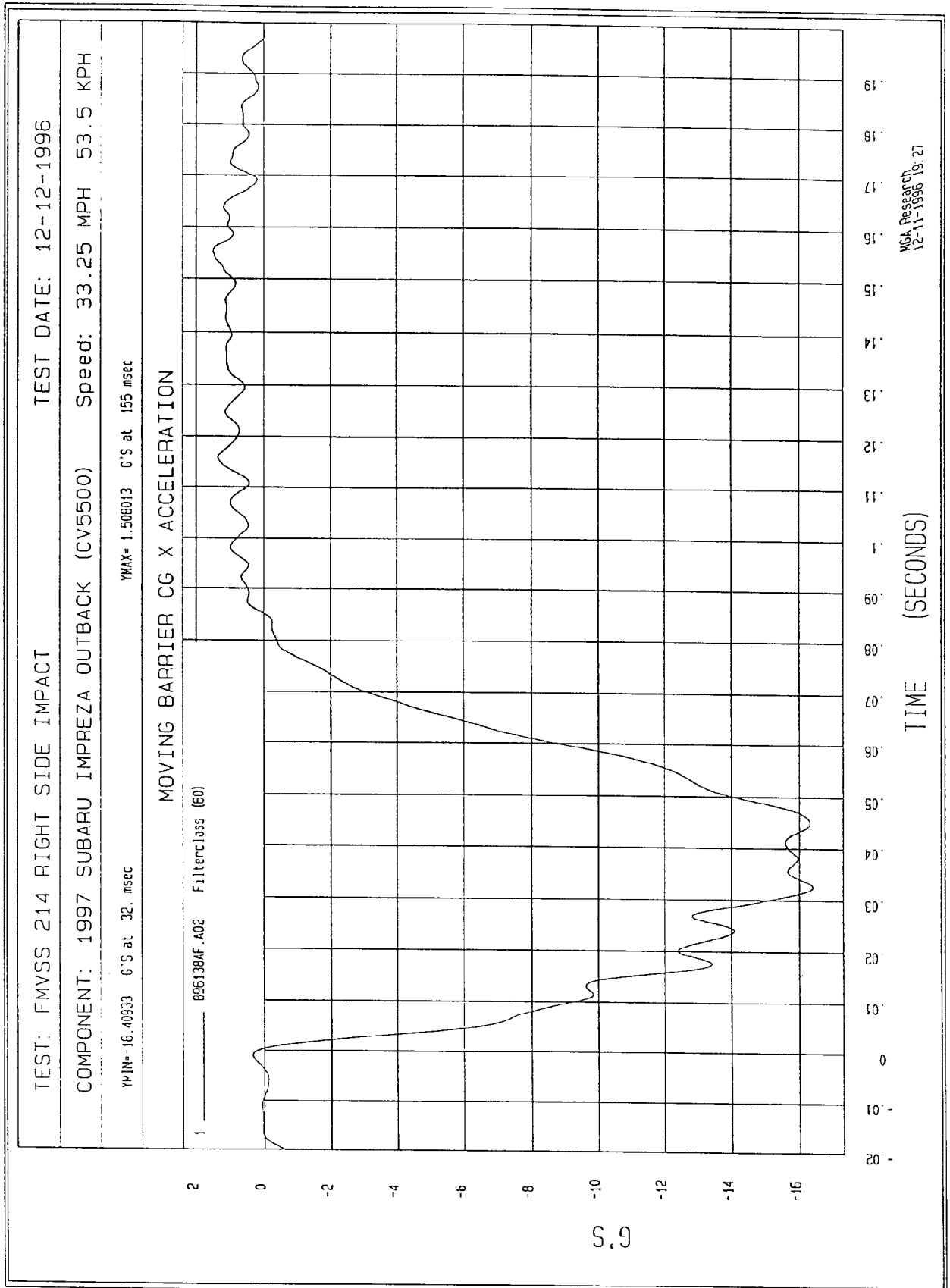










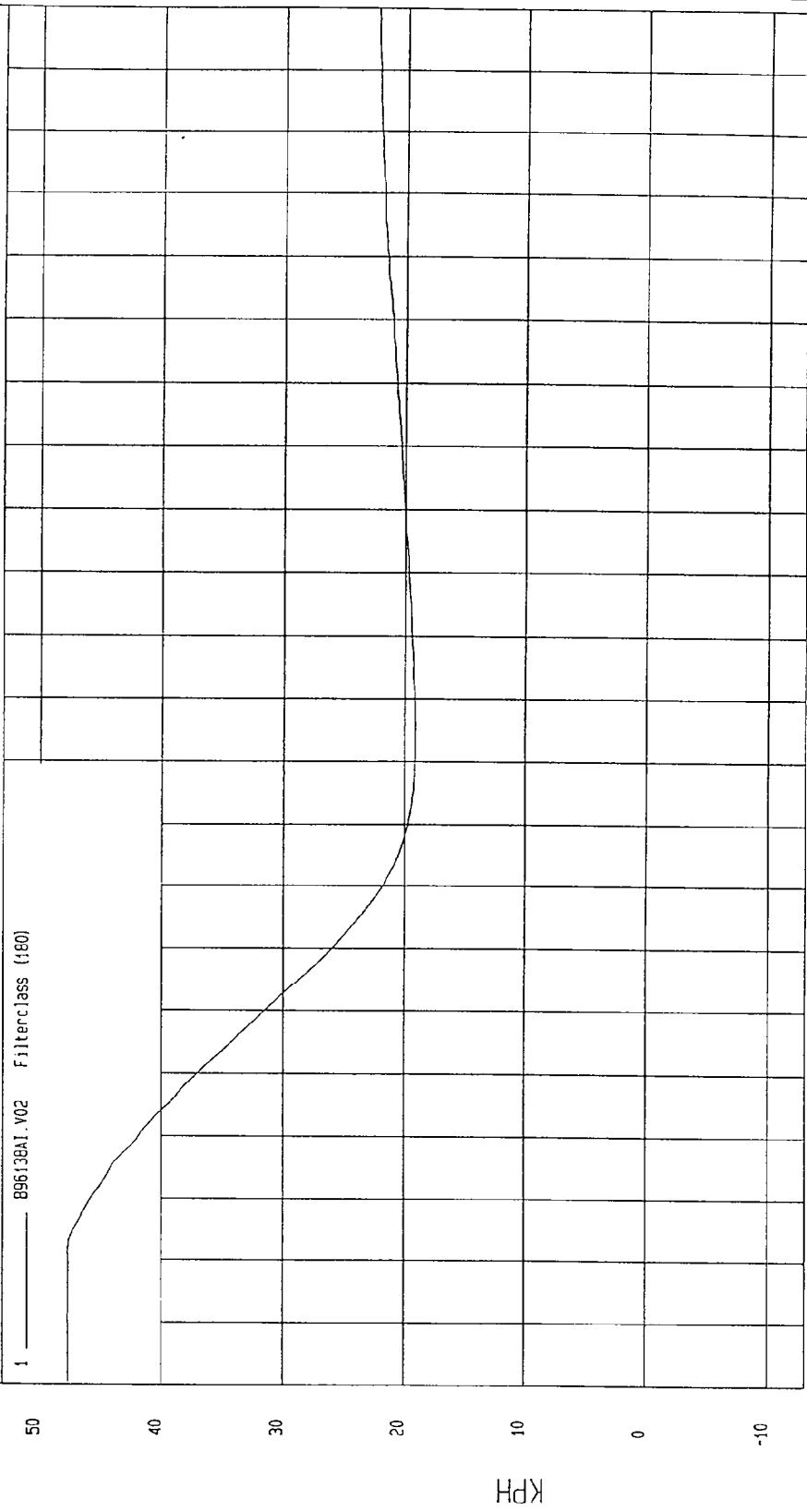


TEST: FMVSS 214 RIGHT SIDE IMPACT TEST DATE: 12-12-1996

COMPONENT: 1997 SUBARU IMPREZA OUTBACK (CV5500) Speed: 33.25 MPH 53.5 KPH

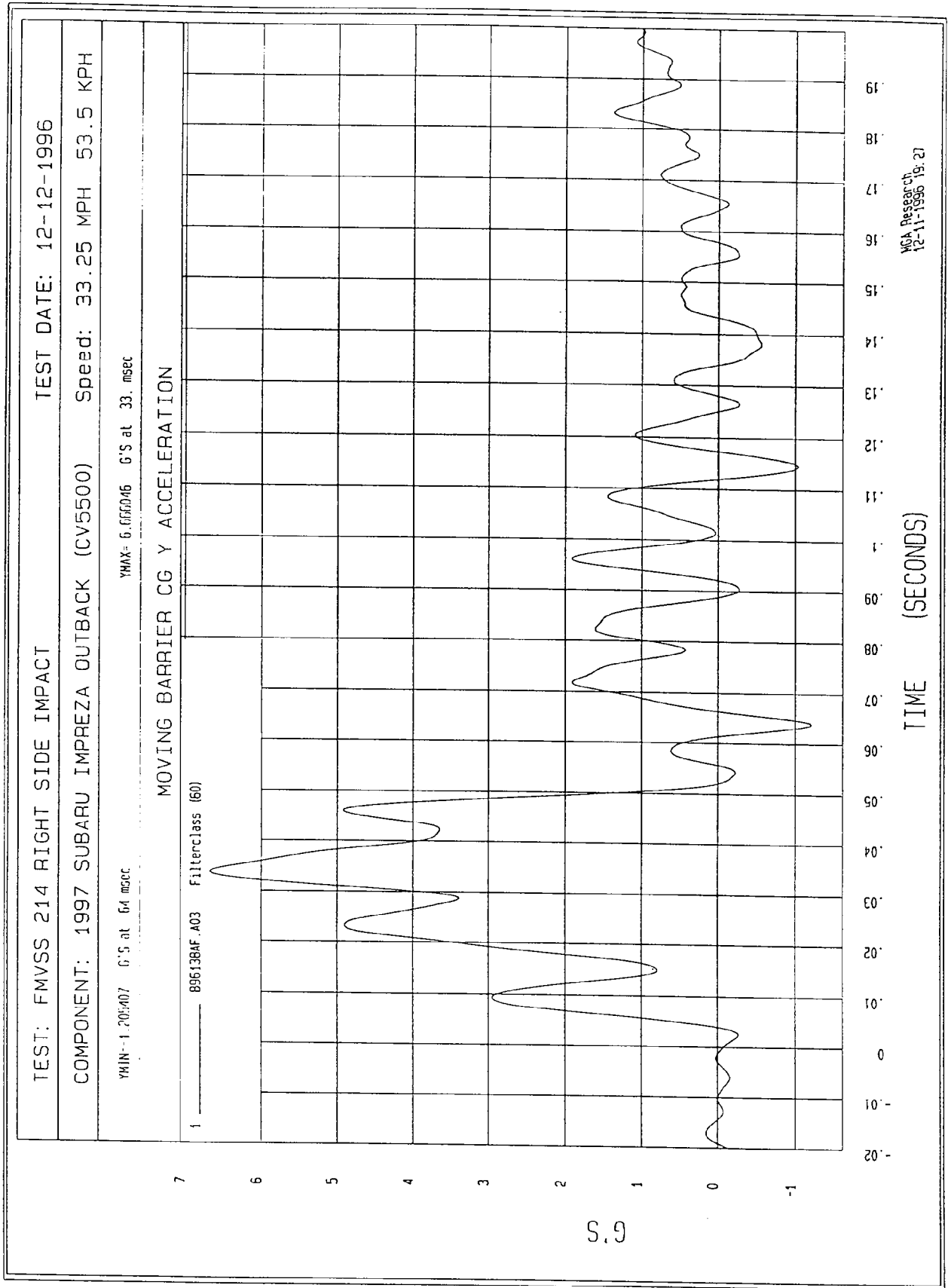
YMIN= 19.15371 KPH at 85. msec YMAX= 47.72559 KPH at 1.1 msec

MOVING BARRIER CG X VELOCITY



TIME Seconds

MGA Research
12-11-1996 19:22

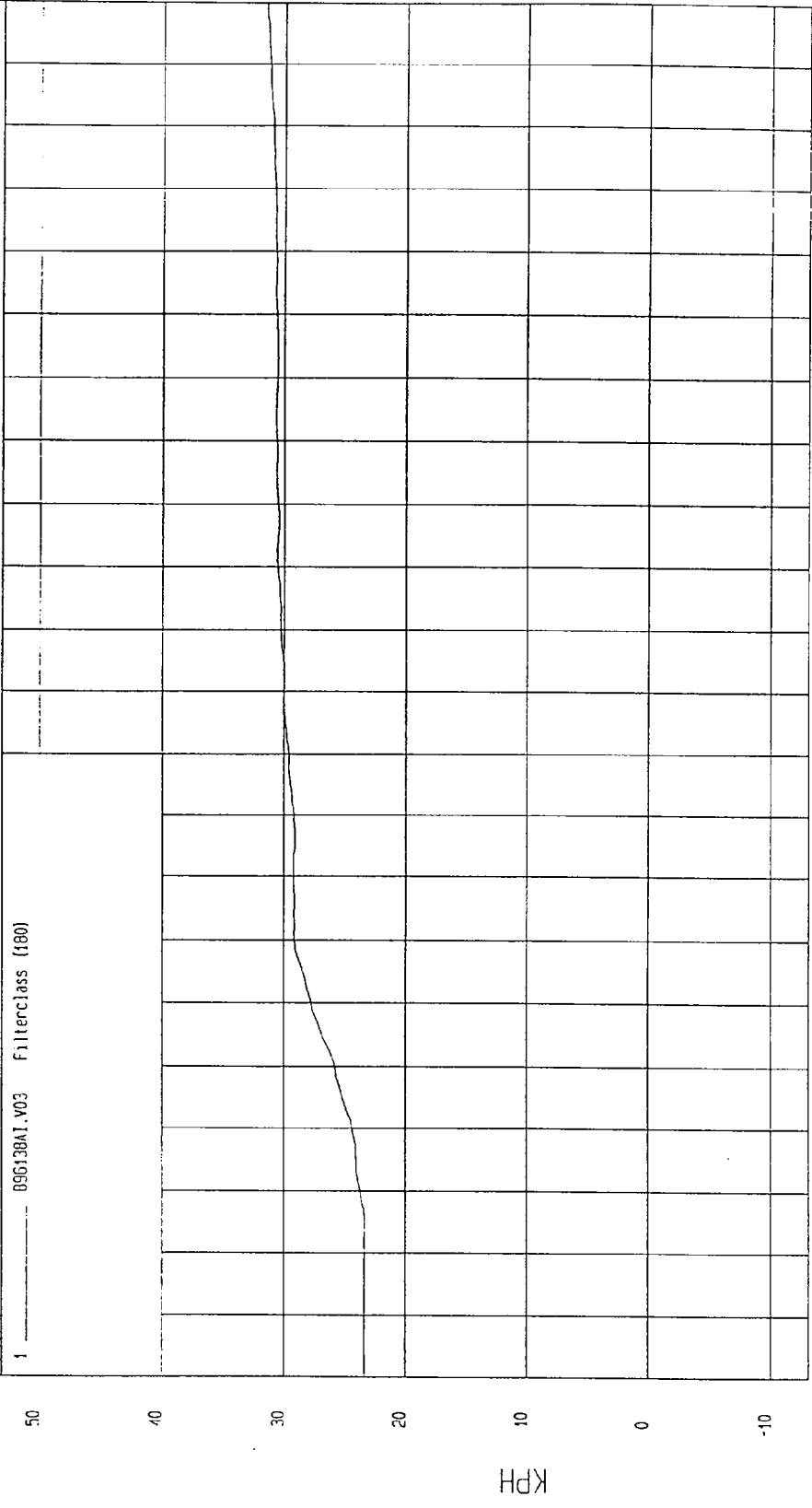


TEST: FMVSS 214 RIGHT SIDE IMPACT TEST DATE: 12-12-1996

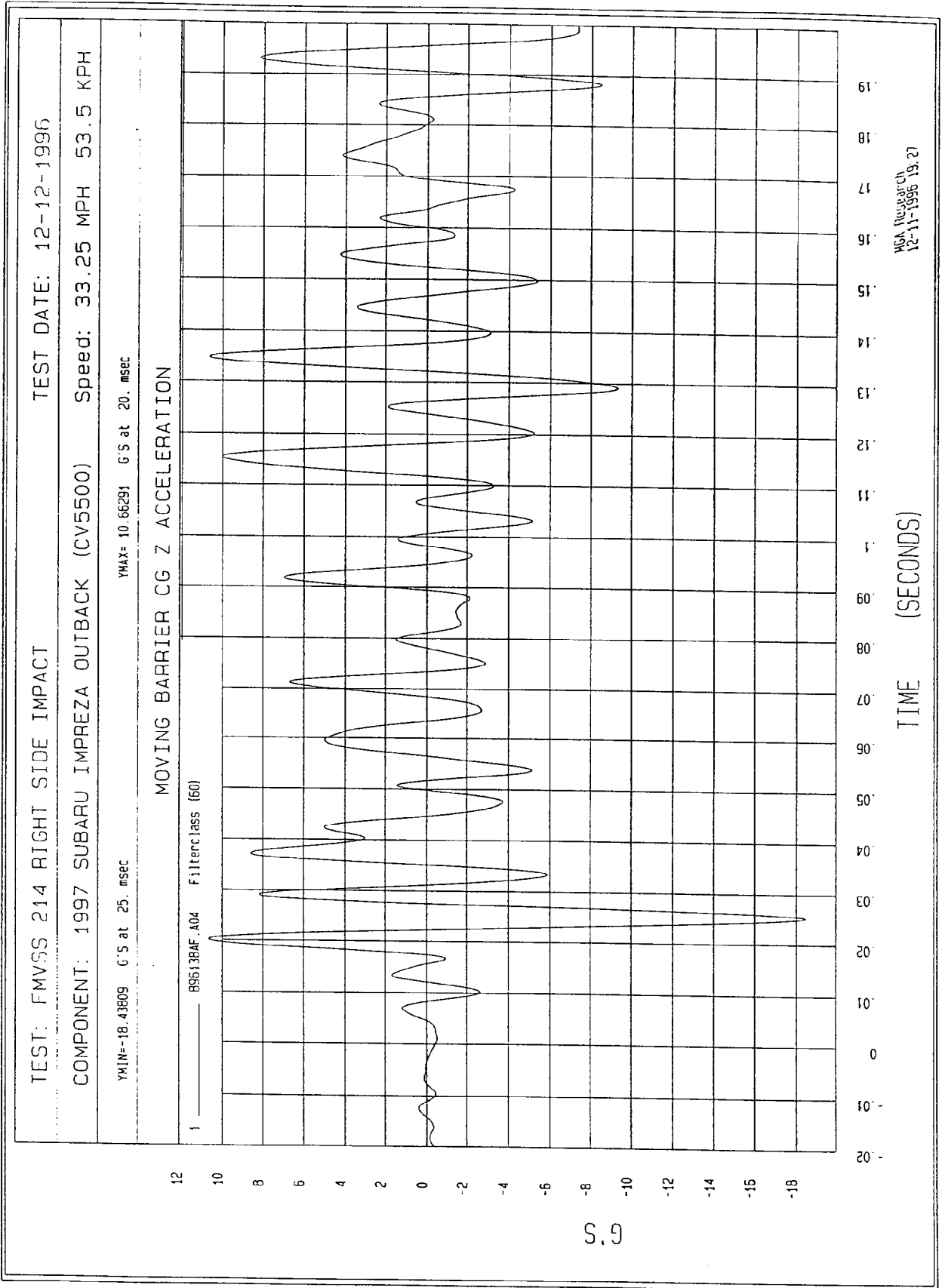
COMPONENT: 1997 SUBARU IMPREZA OUTBACK (CV5500) Speed: 33.25 MPH 53.5 KPH

YMIN= 23.2505 KPH at 4.4 msec YMAX= 31.52515 KPH at 198 msec

MOVING BARRIER CG Y VELOCITY



MCA Research
12-11-1996 19:22

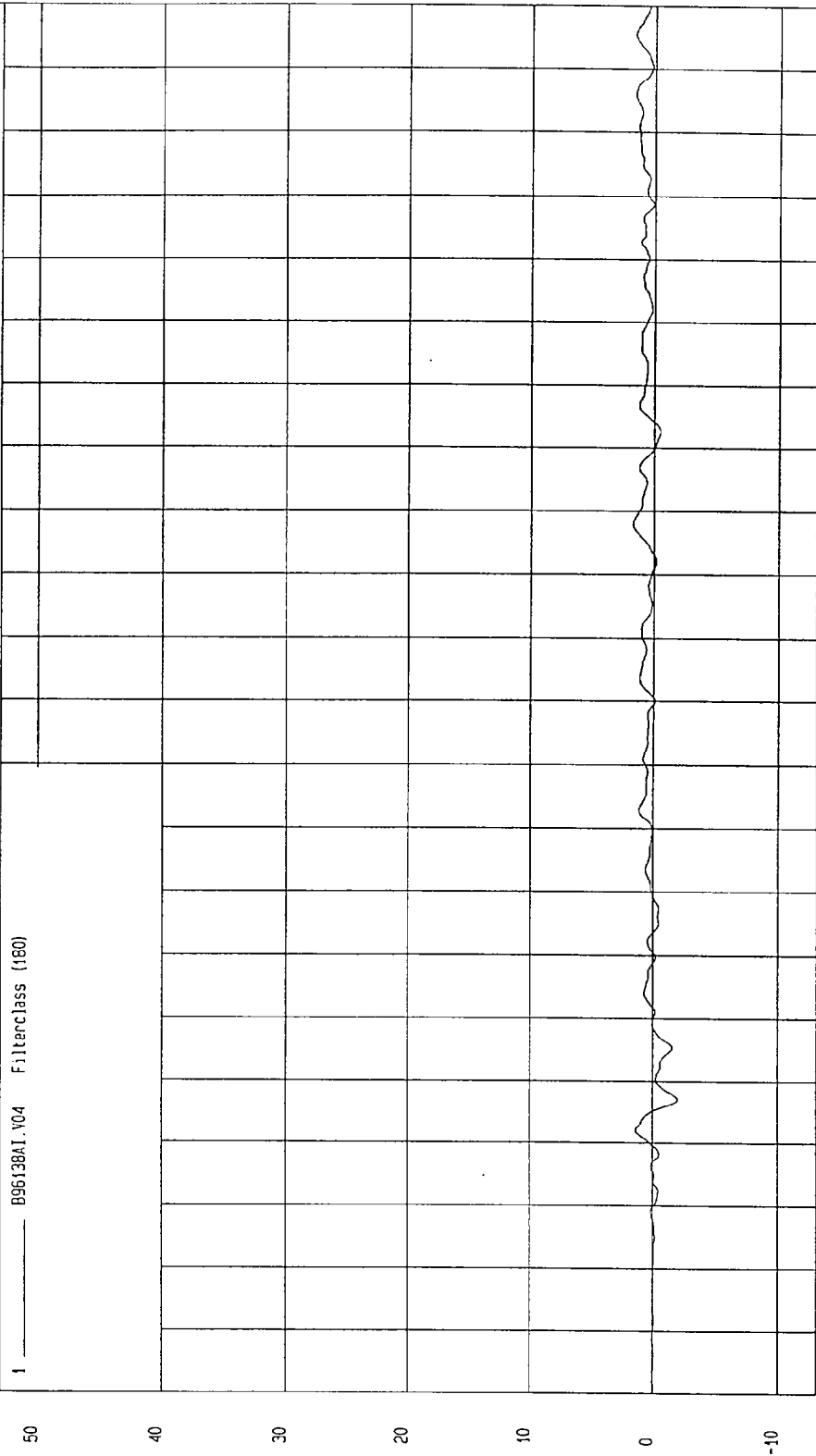


TEST: FMVSS 214 RIGHT SIDE IMPACT TEST DATE: 12-12-1996

COMPONENT: 1997 SUBARU IMPREZA OUTBACK (CV5500) Speed: 33.25 MPH 53.5 KPH

YMIN=-2.001255 KPH at 27 msec YMAX= 1.691969 KPH at 118 msec

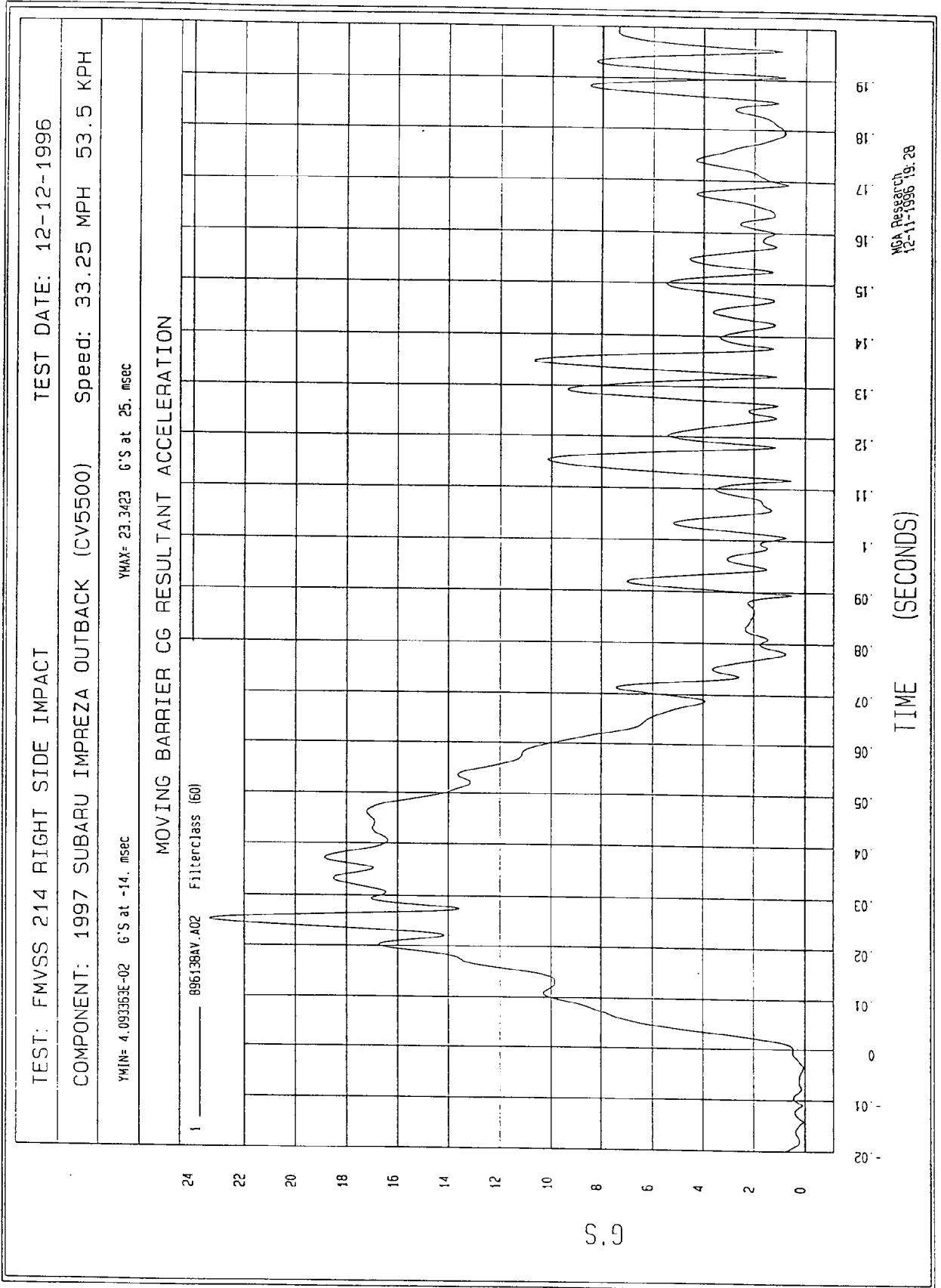
MOVING BARRIER CG Z VELOCITY



NSA Research
12-11-1996 19:22

TIME Seconds

KPH

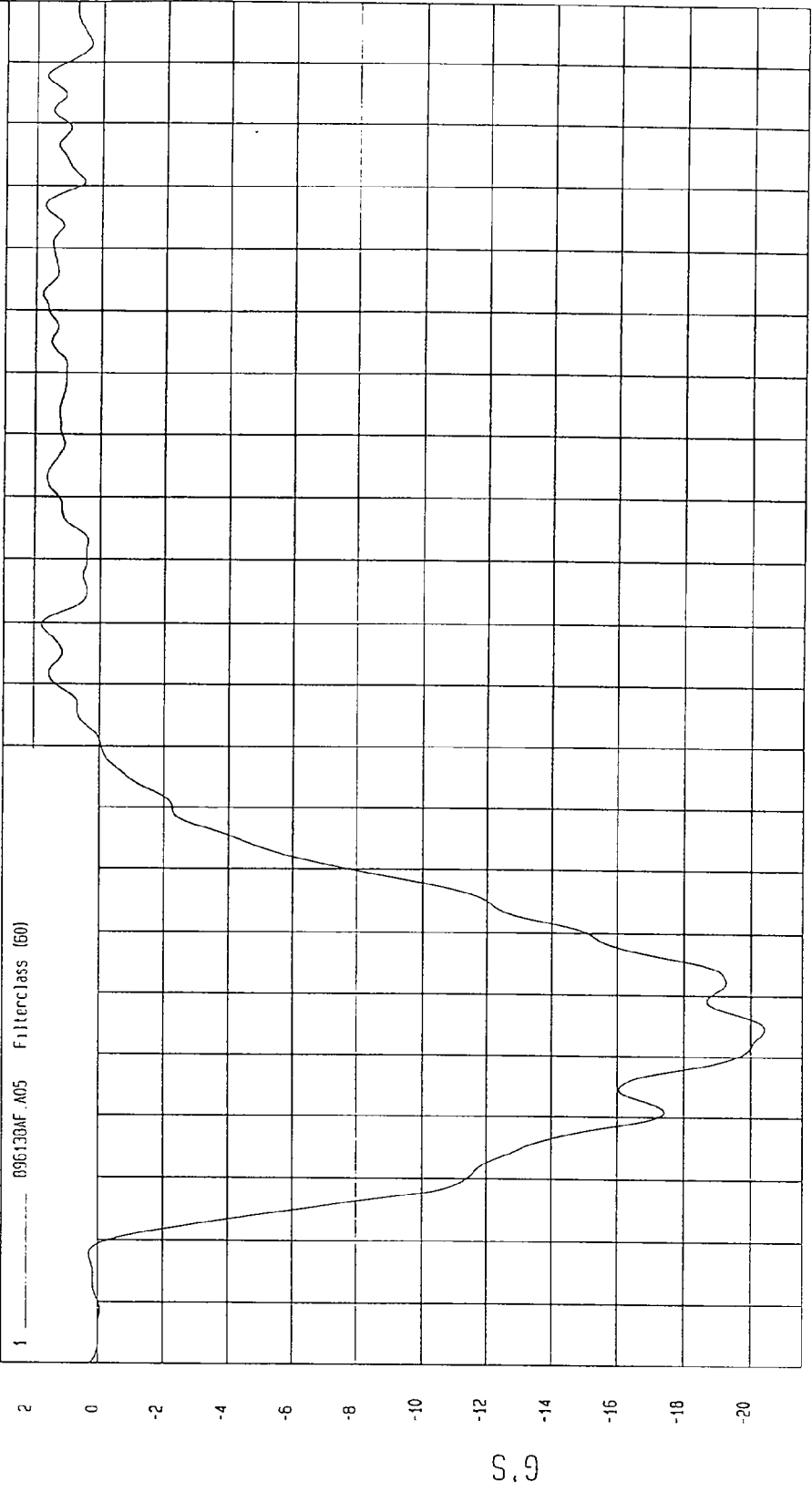


TEST: FMVSS 214 RIGHT SIDE IMPACT TEST DATE: 12-12-1996

COMPONENT: 1997 SUBARU IMPREZA OUTBACK (CV5500) Speed: 33.25 MPH 53.5 KPH

YMIN=-20.42209 G'S at 34. msec YMAX= 1.792951 G'S at 152 msec

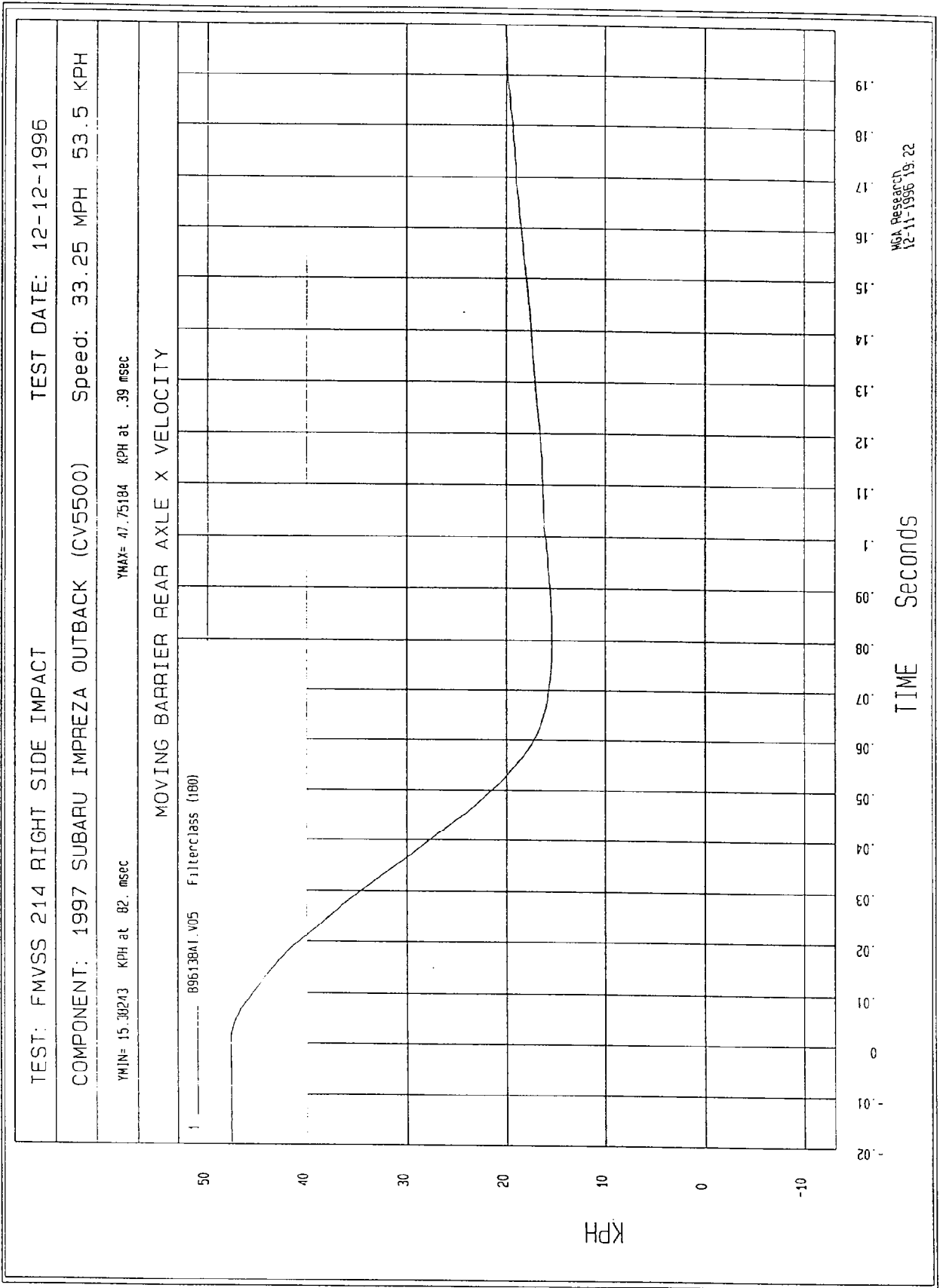
MOVING BARRIER REAR AXLE X ACCELERATION

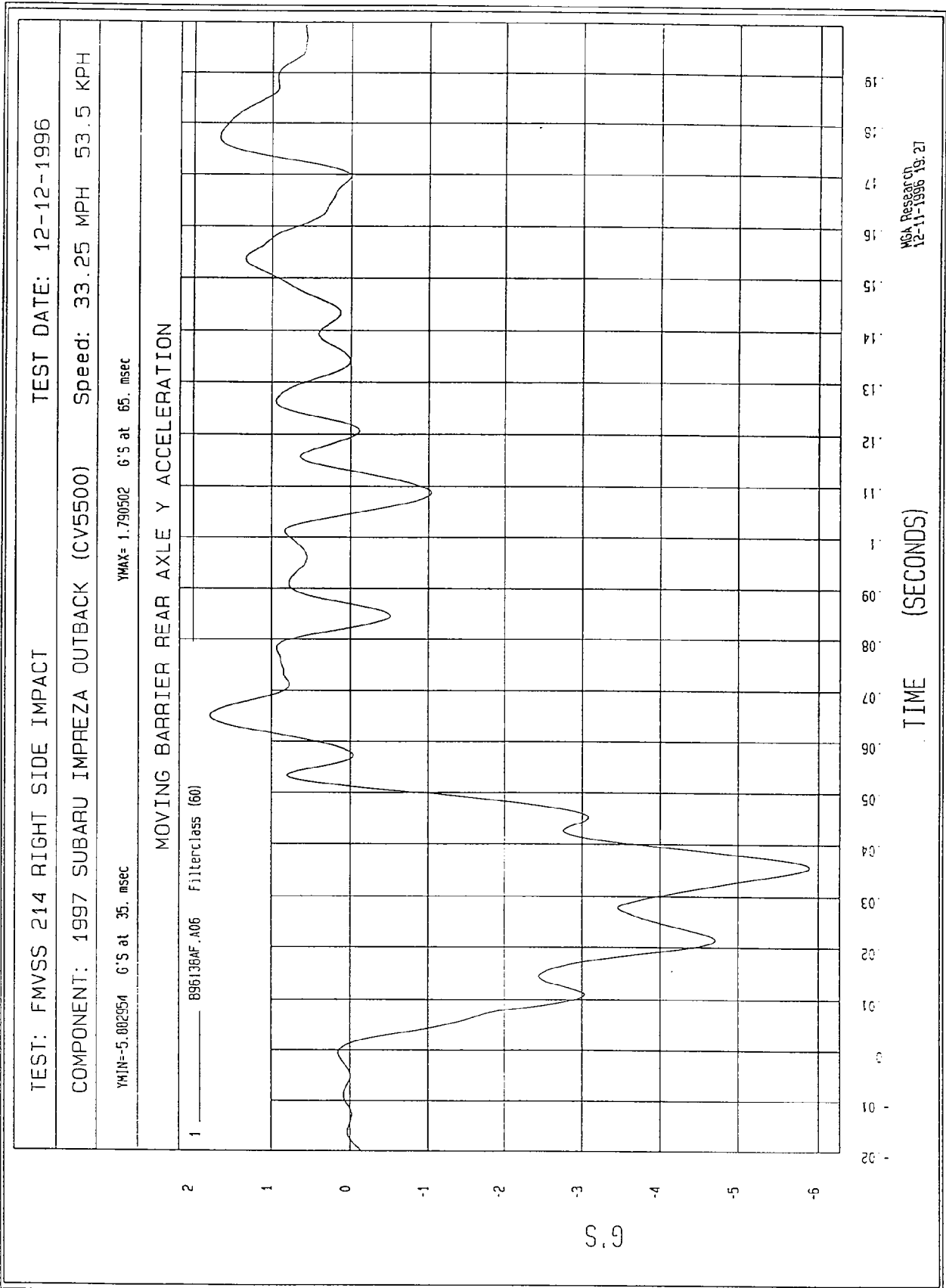


TIME (SECONDS)

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

MGA Research
12-11-1996 19.27



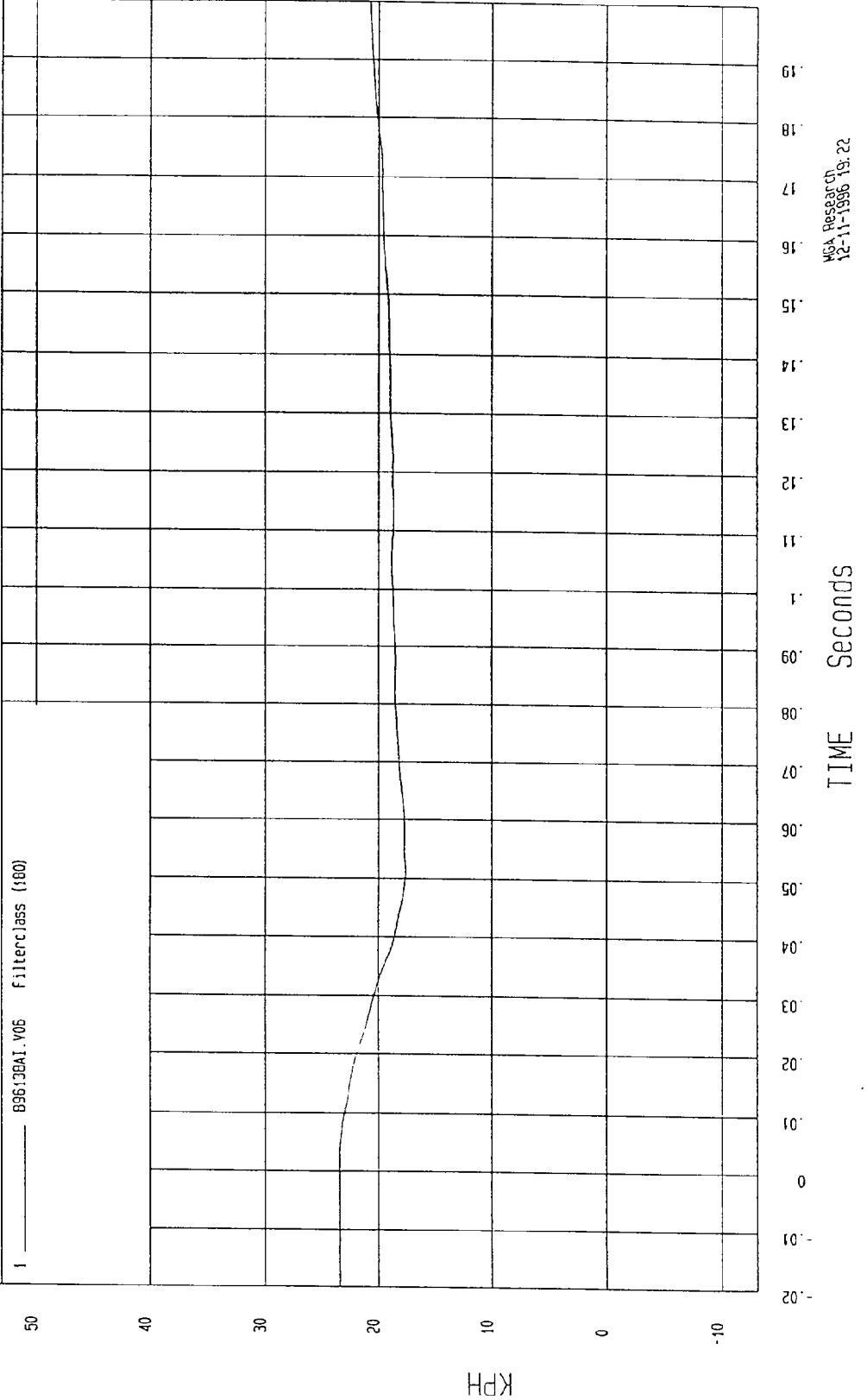


TEST: FMVSS 214 RIGHT SIDE IMPACT TEST DATE: 12-12-1996

COMPONENT: 1997 SUBARU IMPREZA OUTBACK (CV5500) Speed: 33.25 MPH 53.5 KPH

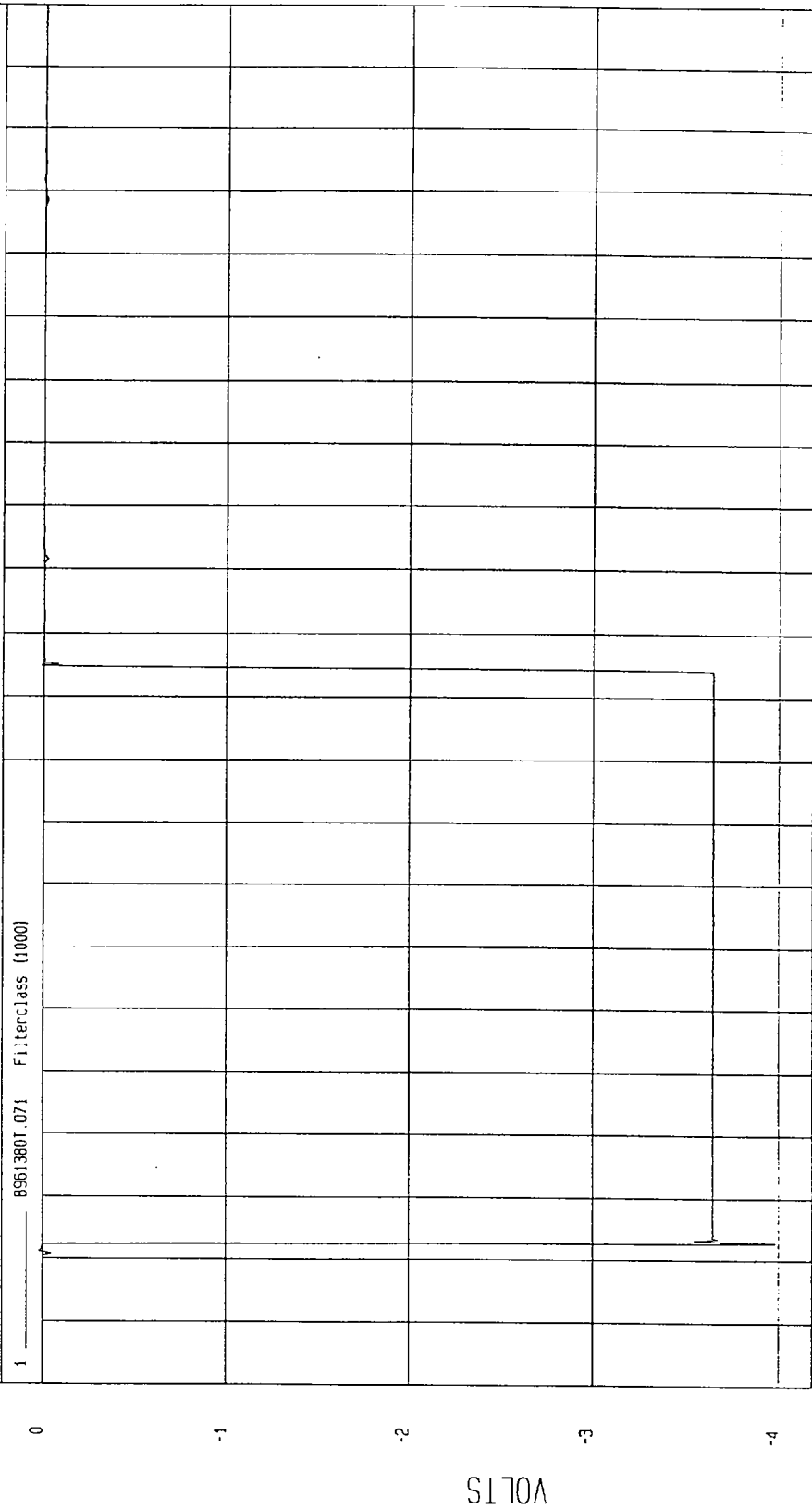
YMIN= 17.68251 KPH at 51. msec YMAX= 23.32955 KPH at 2.6 msec

MOVING BARRIER REAR AXLE Y VELOCITY

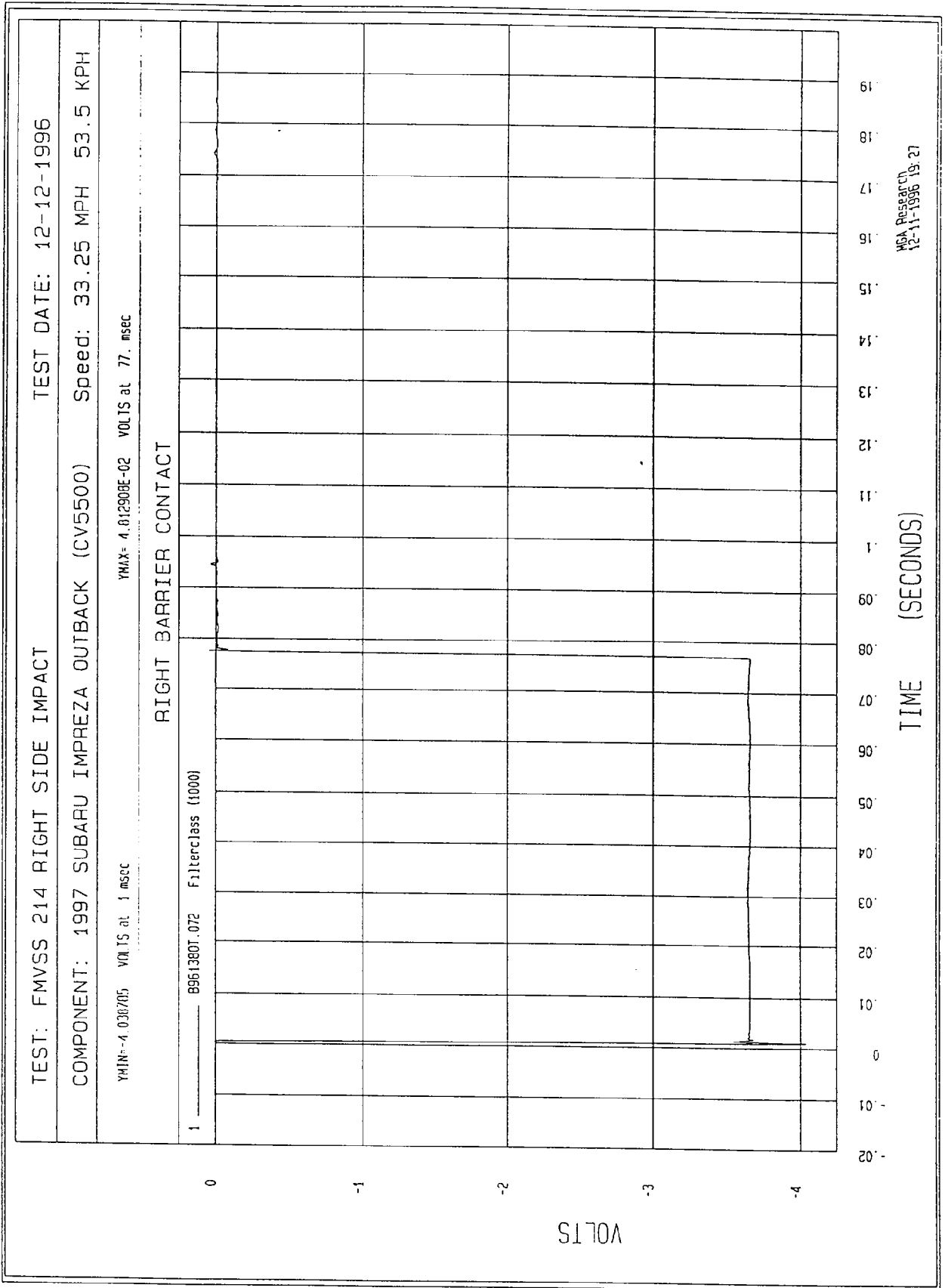


TEST: FMVSS 214 RIGHT SIDE IMPACT TEST DATE: 12-12-1996
COMPONENT: 1997 SUBARU IMPREZA OUTBACK (CV5500) Speed: 33.25 MPH 53.5 KPH
YMIN=-3.984535 VOLTS at 2.6 msec YMAX= 2.484292E-02 VOLTS at 1.1 msec

LEFT BARRIER CONTACT



MSA Research
12-11-1996 13:27

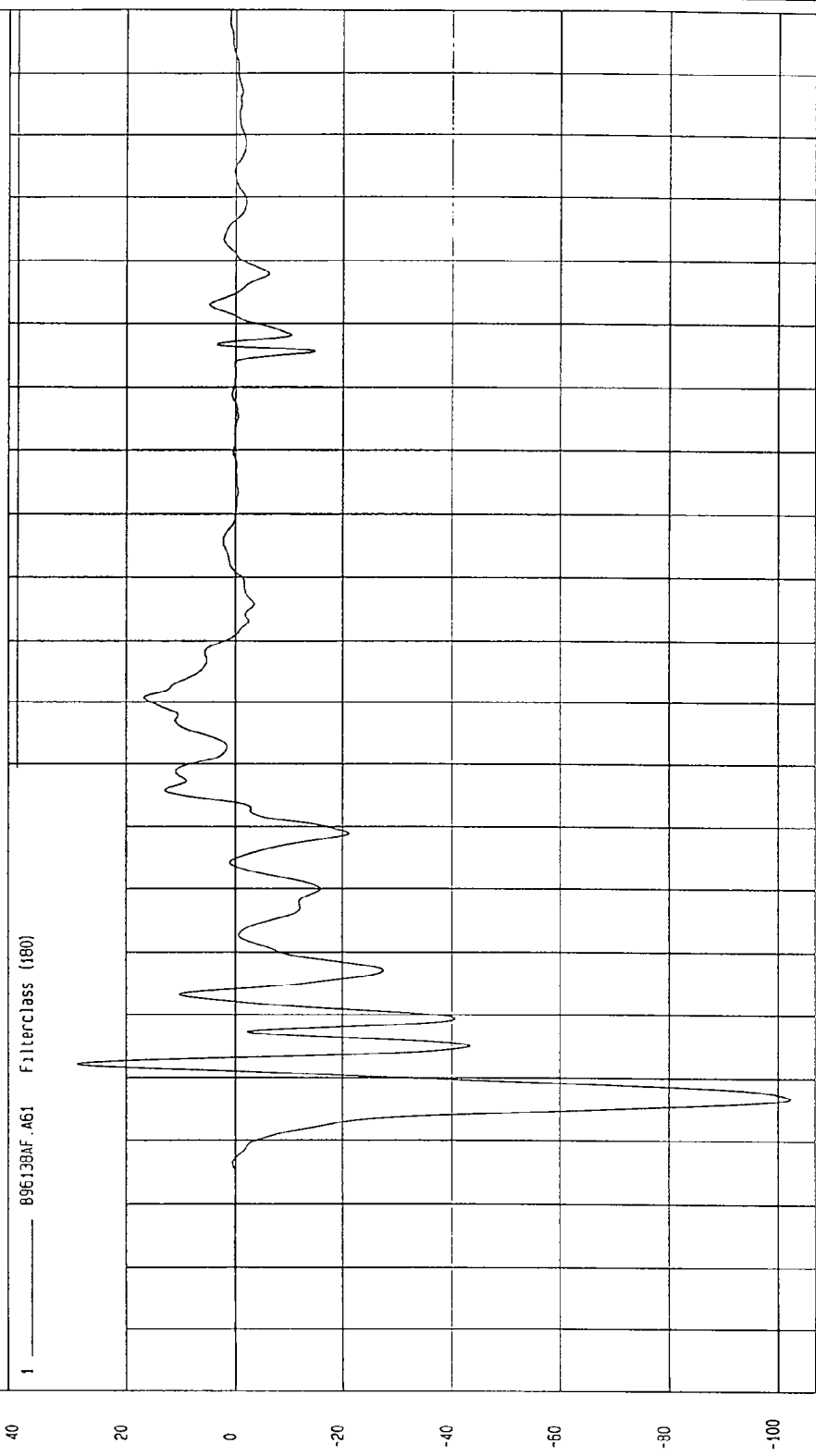


TEST: FMVSS 214 RIGHT SIDE IMPACT TEST DATE: 12-12-1996

COMPONENT: 1997 SUBARU IMPREZA OUTBACK (CV55500) Speed: 33.25 MPH 53.5 KPH

YMIN=-102.2075 G'S at 26. msec YMAX= 29.27435 G'S at 32. msec

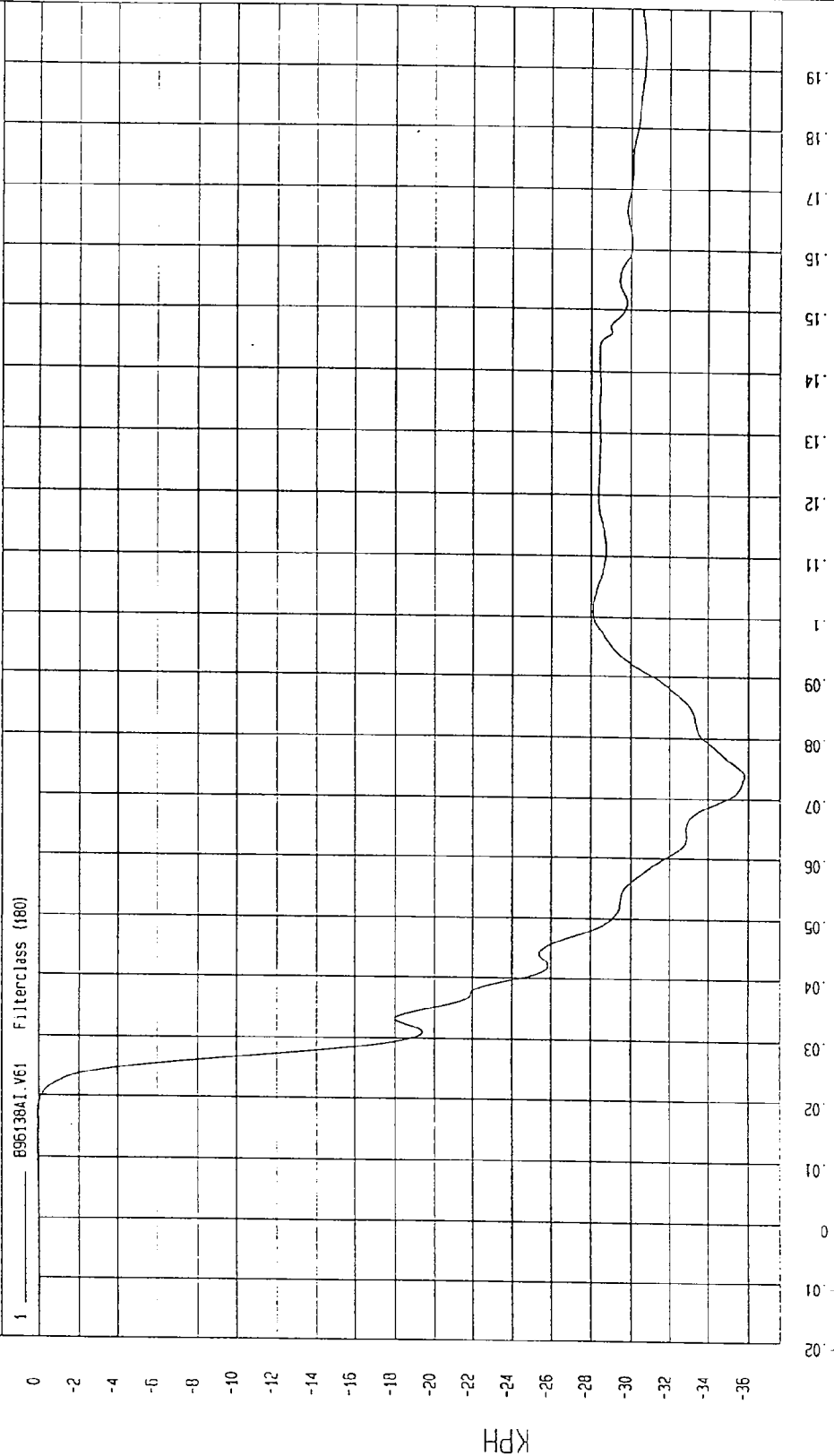
FRONT PASSENGER UPPER RIB Y REDUNDANT ACCELERATION



MGA Research
12-11-1996 19:29

TEST: FMVSS 214 RIGHT SIDE IMPACT TEST DATE: 12-12-1996
COMPONENT: 1997 SUBARU IMPREZA OUTBACK (CV5500) Speed: 33.25 MPH 53.5 KPH
YMIN=-35.7907 KPH at 73. msec YMAX= 7.793967E-02 KPH at 17. msec

FRONT PASSENGER UPPER RIB Y REDUNDANT VELOCITY



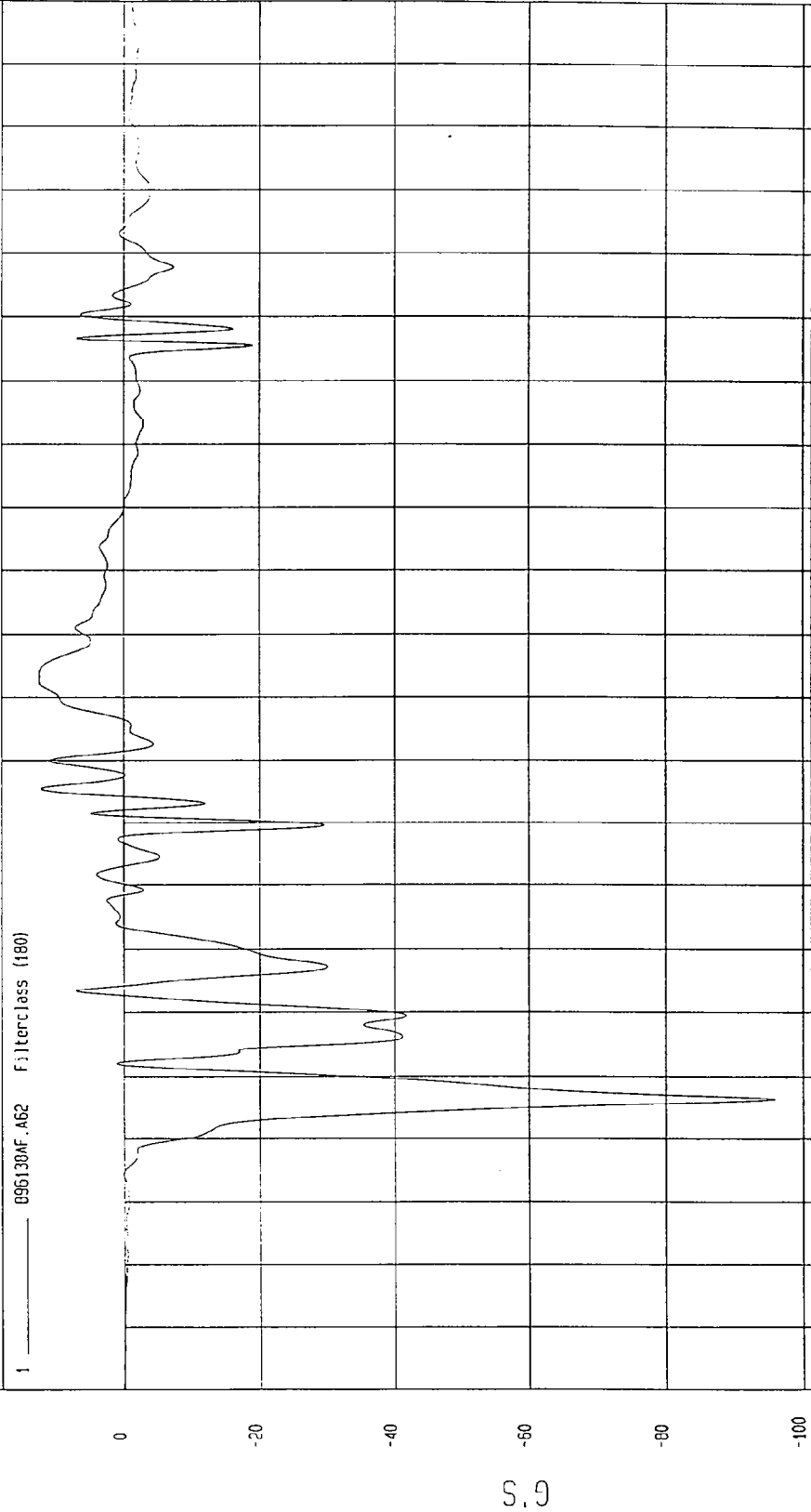
NSA Research
12-11-1996 15:23

TEST: FMVSS 214 RIGHT SIDE IMPACT TEST DATE: 12-12-1996

COMPONENT: 1997 SUBARU IMPREZA OUTBACK (CV5500) Speed: 33.25 MPH 53.5 KPH

Minimum = -95.83 G'S at 26 msec Maximum = 12.64 G'S at 93 msec

FRONT PASSENGER LOWER RIB Y REDUNDANT ACCELERATION



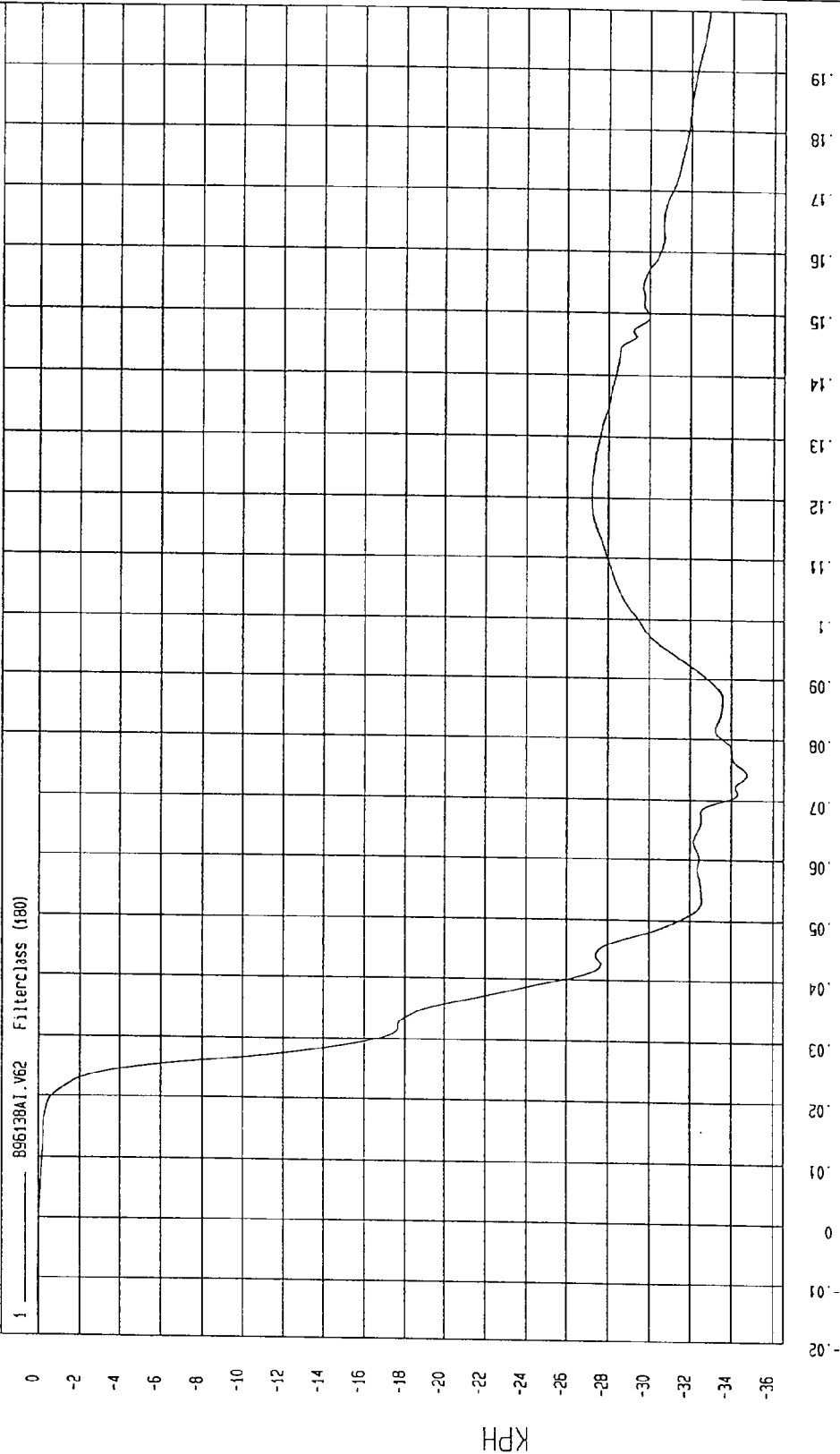
NCA Research
01-03-1997 10:33

TEST: FMVSS 214 RIGHT SIDE IMPACT TEST DATE: 12-12-1996

COMPONENT: 1997 SUBARU IMPREZA OUTBACK (CV5500) Speed: 33.25 MPH 53.5 KPH

YMIN=-34.75374 KPH at 74. msec YMAX= 3.684948E-02 KPH at -10 msec

FRONT PASSENGER LOWER RIB Y REDUNDANT VELOCITY



NSA Research
12-11-1996 19:23

TEST: FMVSS 214 RIGHT SIDE IMPACT

TEST DATE: 12-12-1996

COMPONENT: 1997 SUBARU IMPREZA OUTBACK (CV5500) Speed: 33.25 MPH 53.5 KPH

Minimum = -97.90 G'S at 30 msec Maximum = 29.82 G'S at 68 msec

FRONT PASSENGER LOWER SPINE Y REDUNDANT ACCELERATION

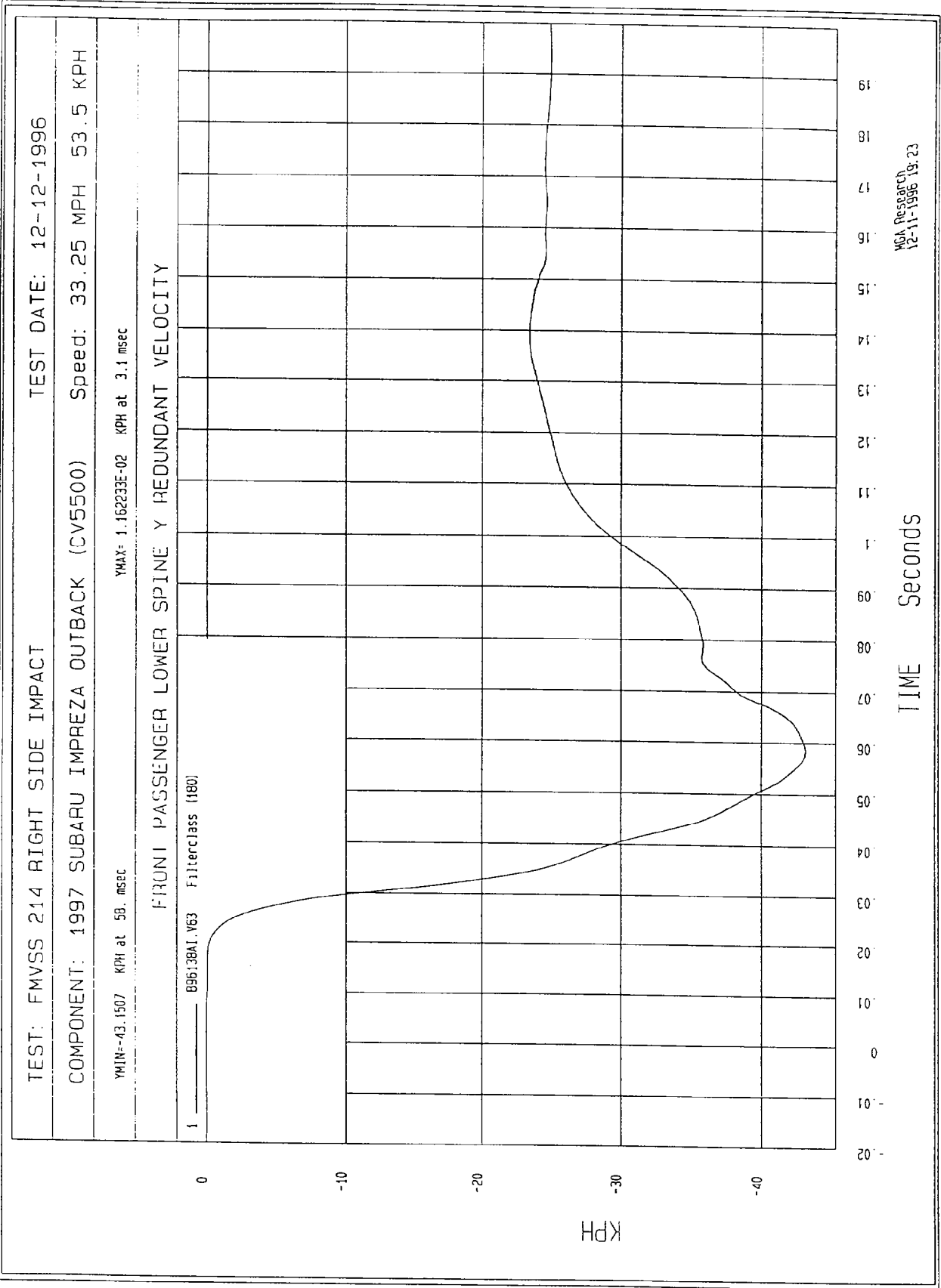
1 B95138AF.A63 Filterclass (180)

20 0 -20 -40 -60 -80 -100

G

TIME (SECONDS) 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190

MGA Research
01-03-1997 10:33



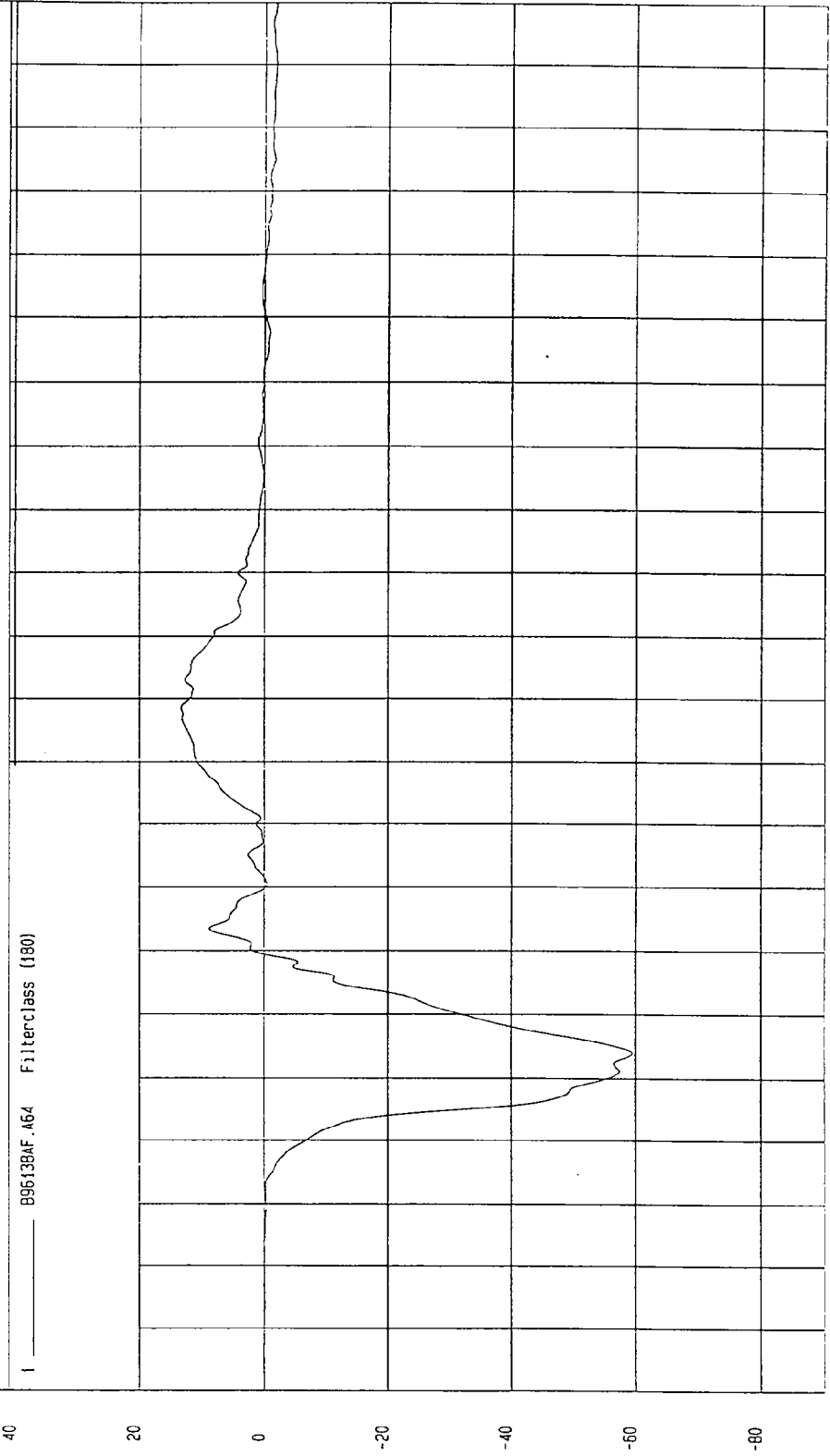
TEST: FMVSS 214 RIGHT SIDE IMPACT TEST DATE: 12-12-1996

COMPONENT: 1997 SUBARU IMPREZA OUTBACK (CV5500) Speed: 33.25 MPH 53.5 KPH

YMIN= -59.55235 G'S at 34 msec YMAX= 13.41798 G'S at 80. msec

FRONT PASSENGER PELVIS Y REDUNDANT ACCELERATION

1 B95138AF.A64 Filterclass (180)



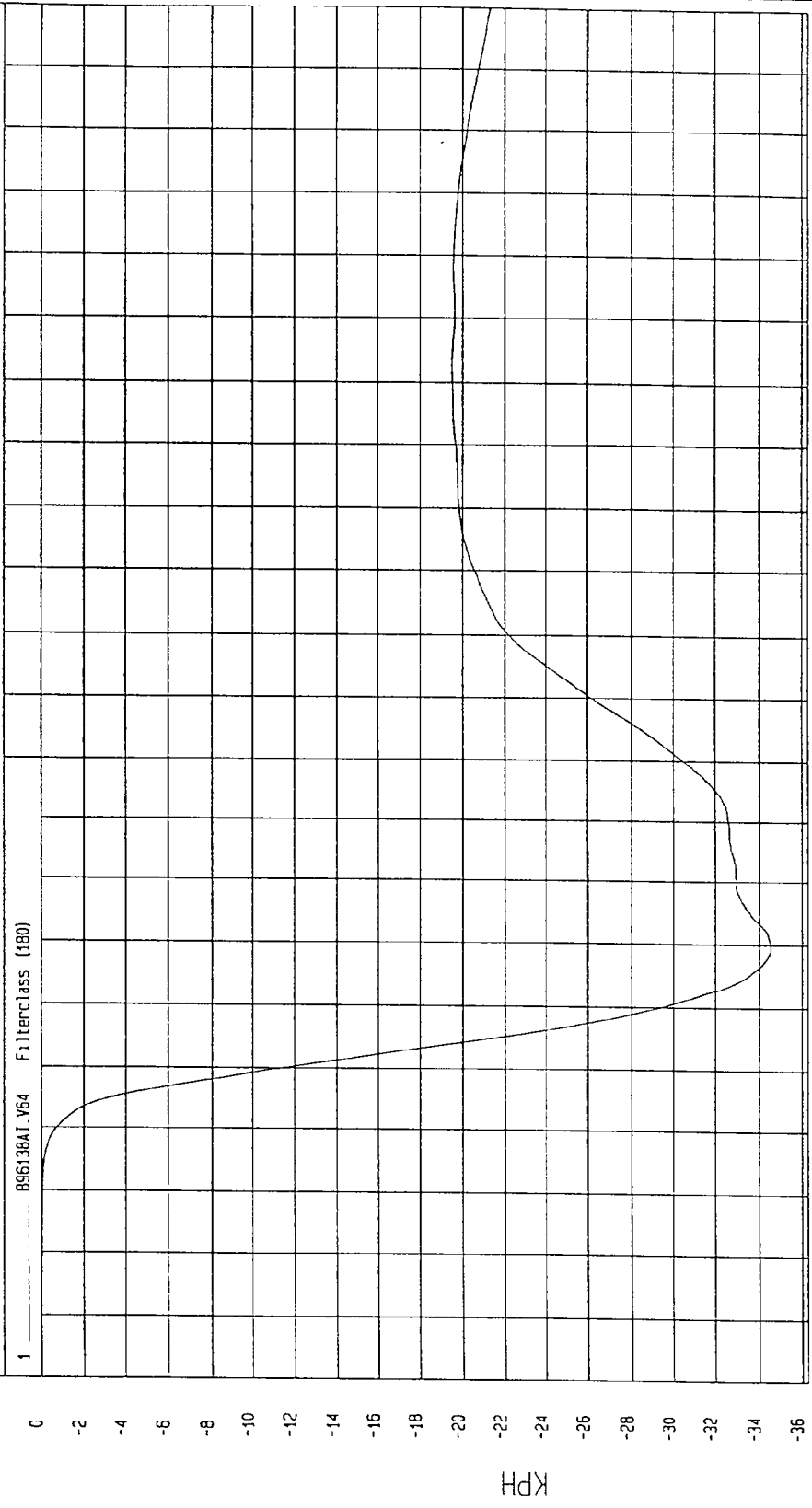
MSA Research
12-11-1996 19:30

TEST: FMVSS 214 RIGHT SIDE IMPACT TEST DATE: 12-12-1996

COMPONENT: 1997 SUBARU IMPREZA OUTBACK (CV5500) Speed: 33.25 MPH 53.5 KPH

YMIN=-34.53846 KPH at 49. msec YMAX= 1.234942E-02 KPH at -9 msec

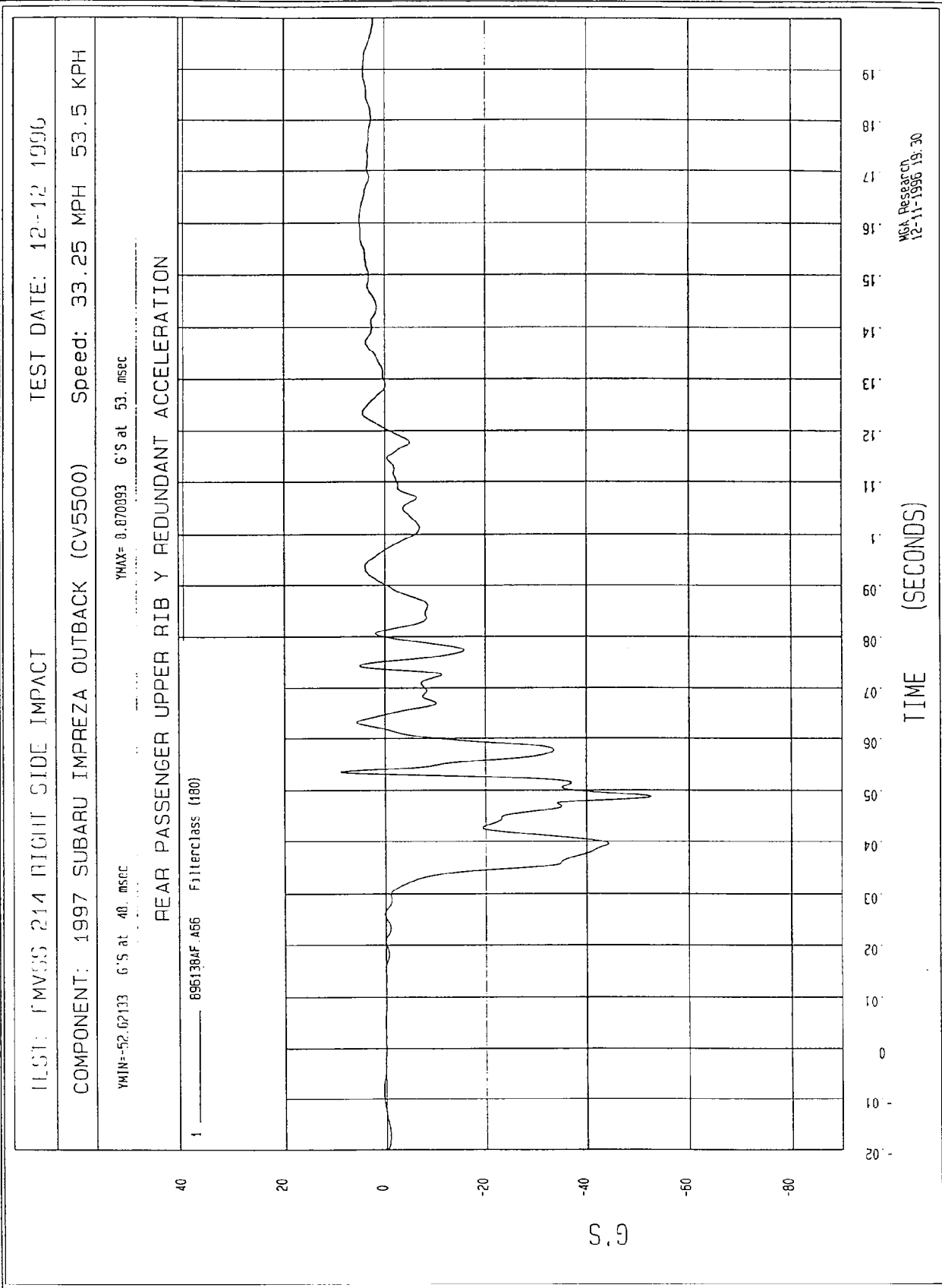
FRONT PASSENGER PELVIS Y REDUNDANT VELOCITY

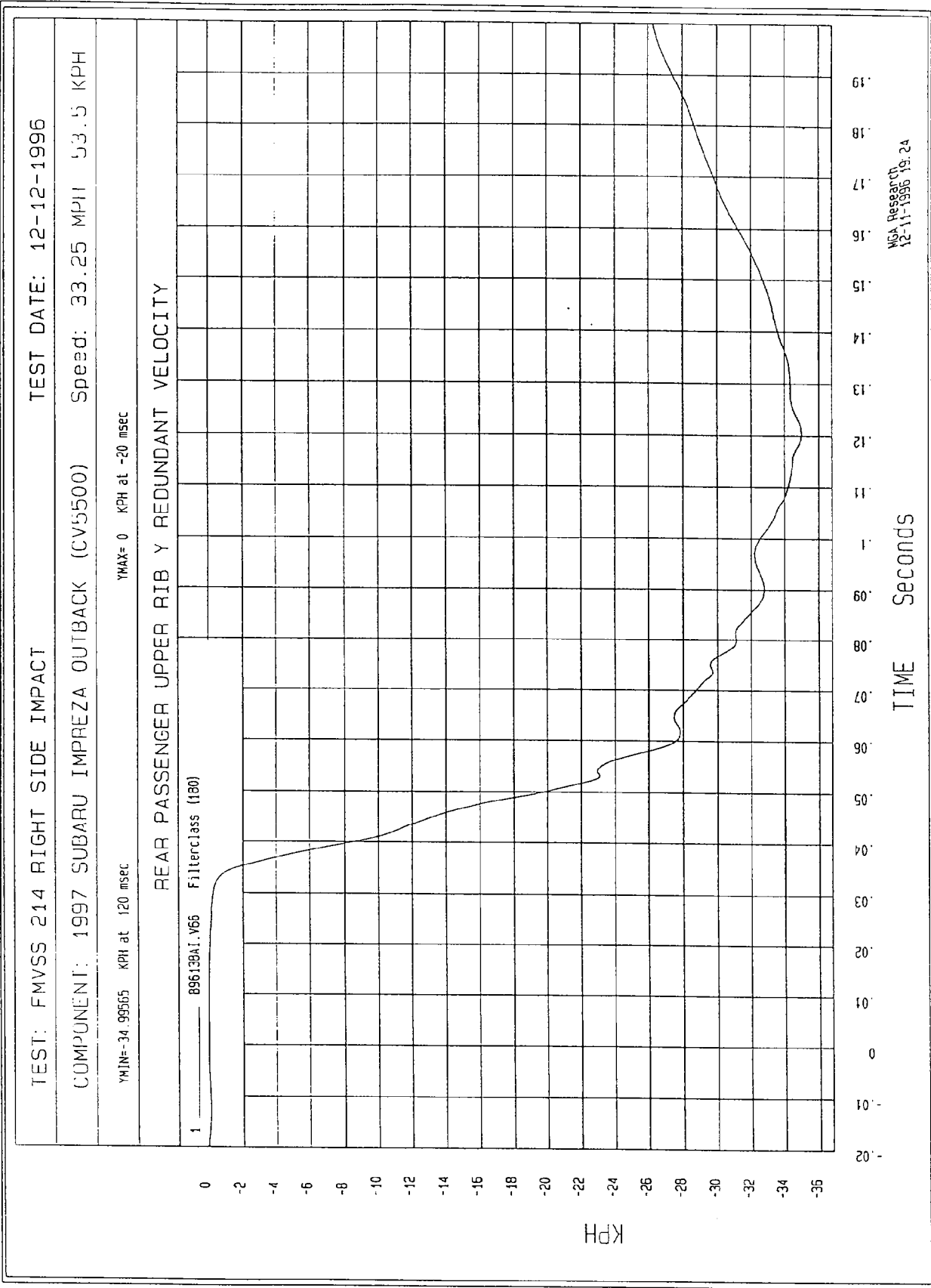


WGA Research
12-11-1996 19:23

TIME Seconds

KPH





TEST: FMVSS 214 RIGHT SIDE IMPACT

TEST DATE: 12-12-1996

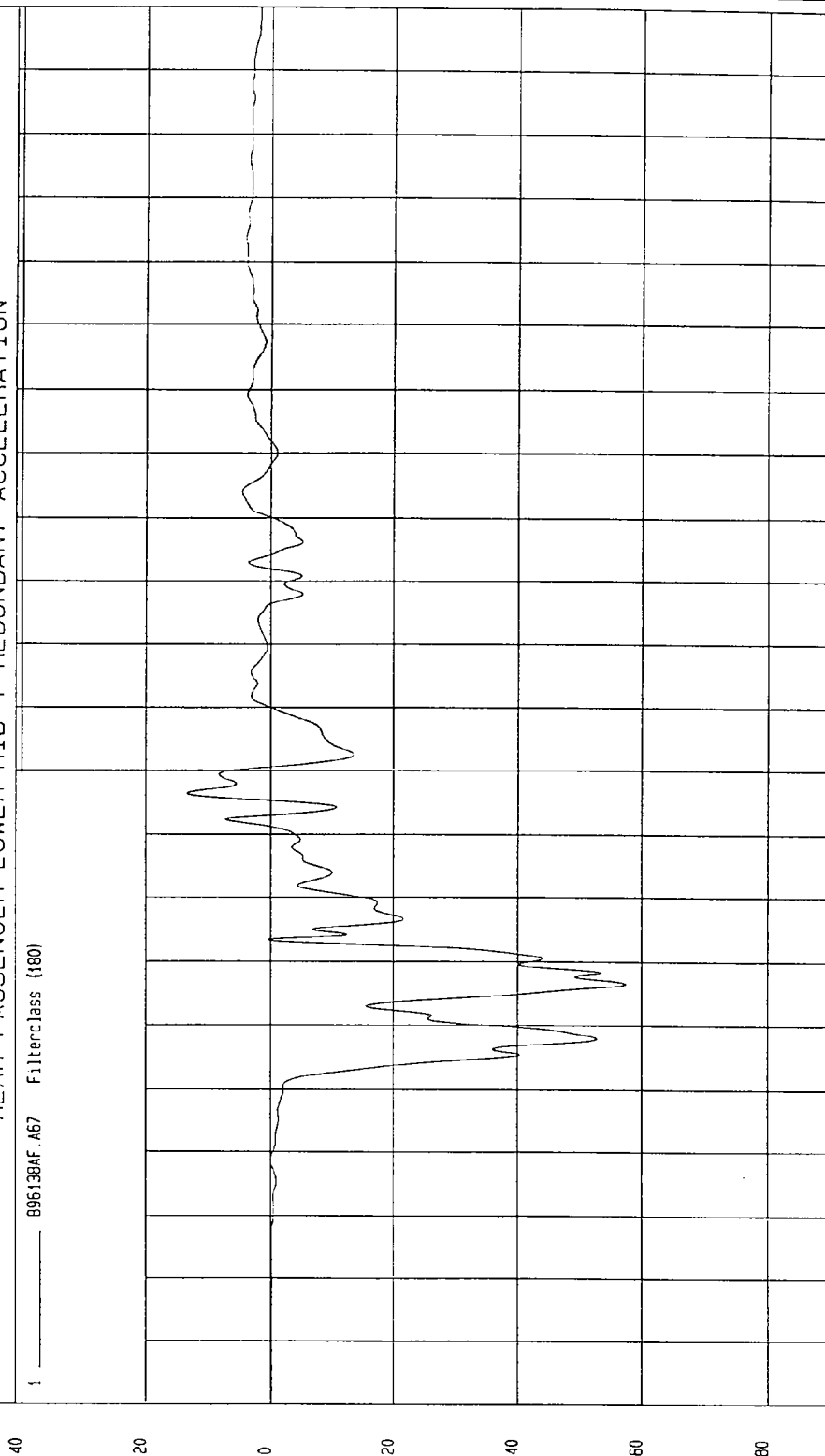
COMPONENT: 1997 SUBARU IMPREZA OUTBACK (CV5500) Speed: 33.25 MPH 53.5 KPH

YMIN=-57.45309 G'S at 46. msec

YMAX= 13.57597 G'S at 76. msec

REAR PASSENGER LOWER RIB Y REDUNDANT ACCELERATION

1 896138AF.A67 Filterclass (180)



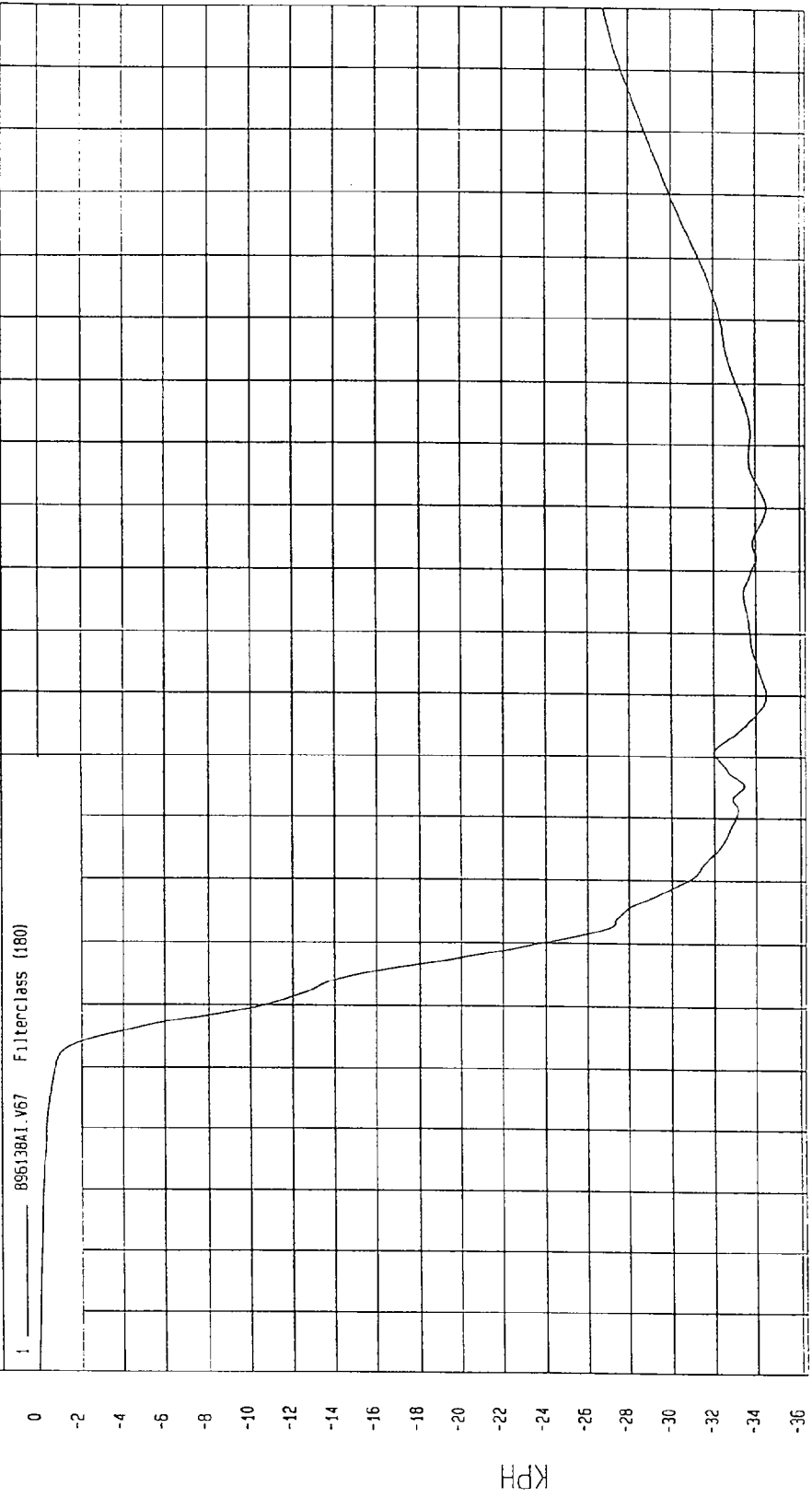
MGA Research
12-11-1996 19:30

TEST: FMVSS 214 RIGHT SIDE IMPACT TEST DATE: 12-12-1996

COMPONENT: 1997 SUBARU IMPREZA OUTBACK (CV5500) Speed: 33.25 MPH 53.5 KPH

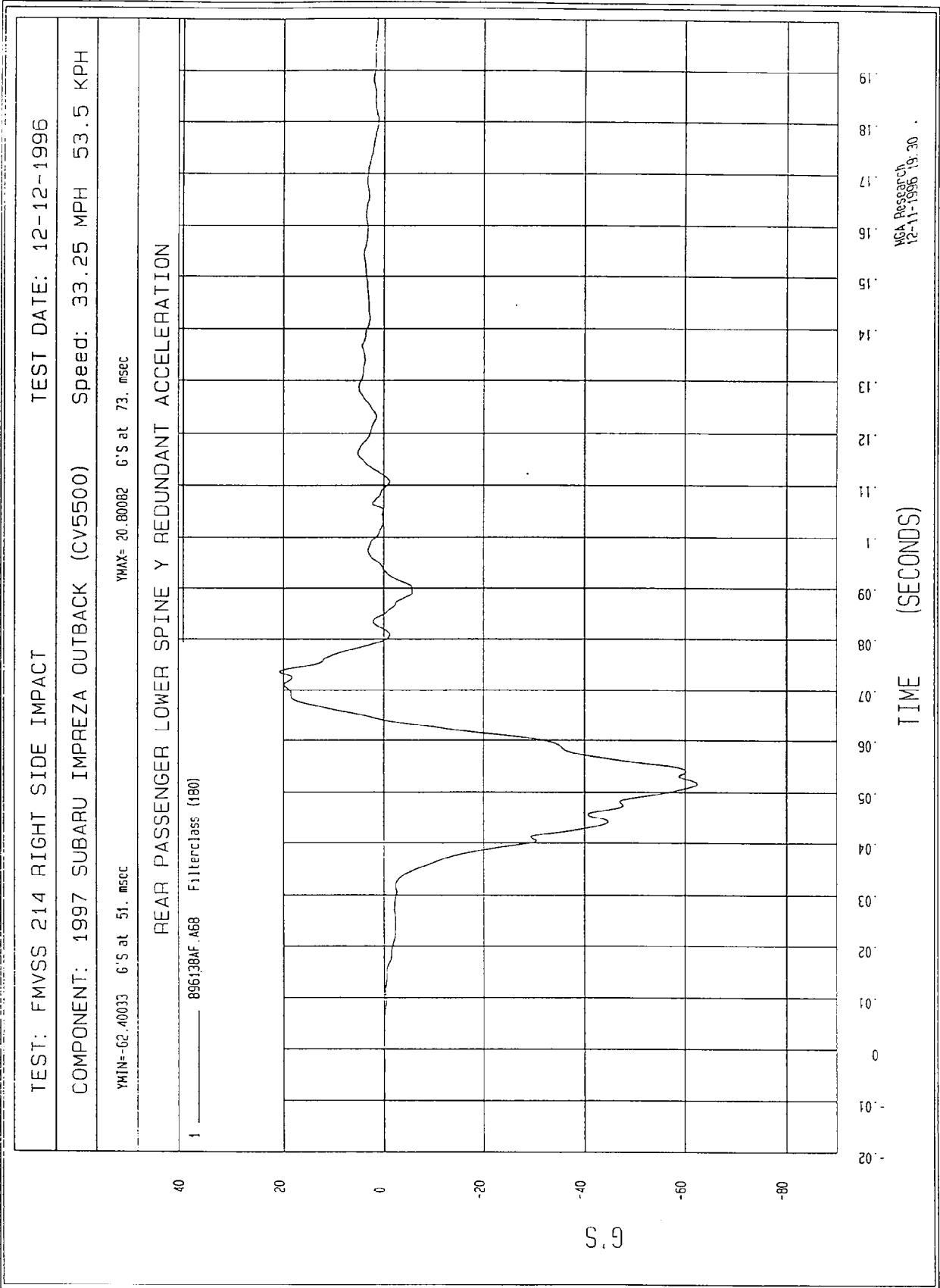
YMIN=-34 KPH at 120 msec YMAX= 0 KPH at -20 msec

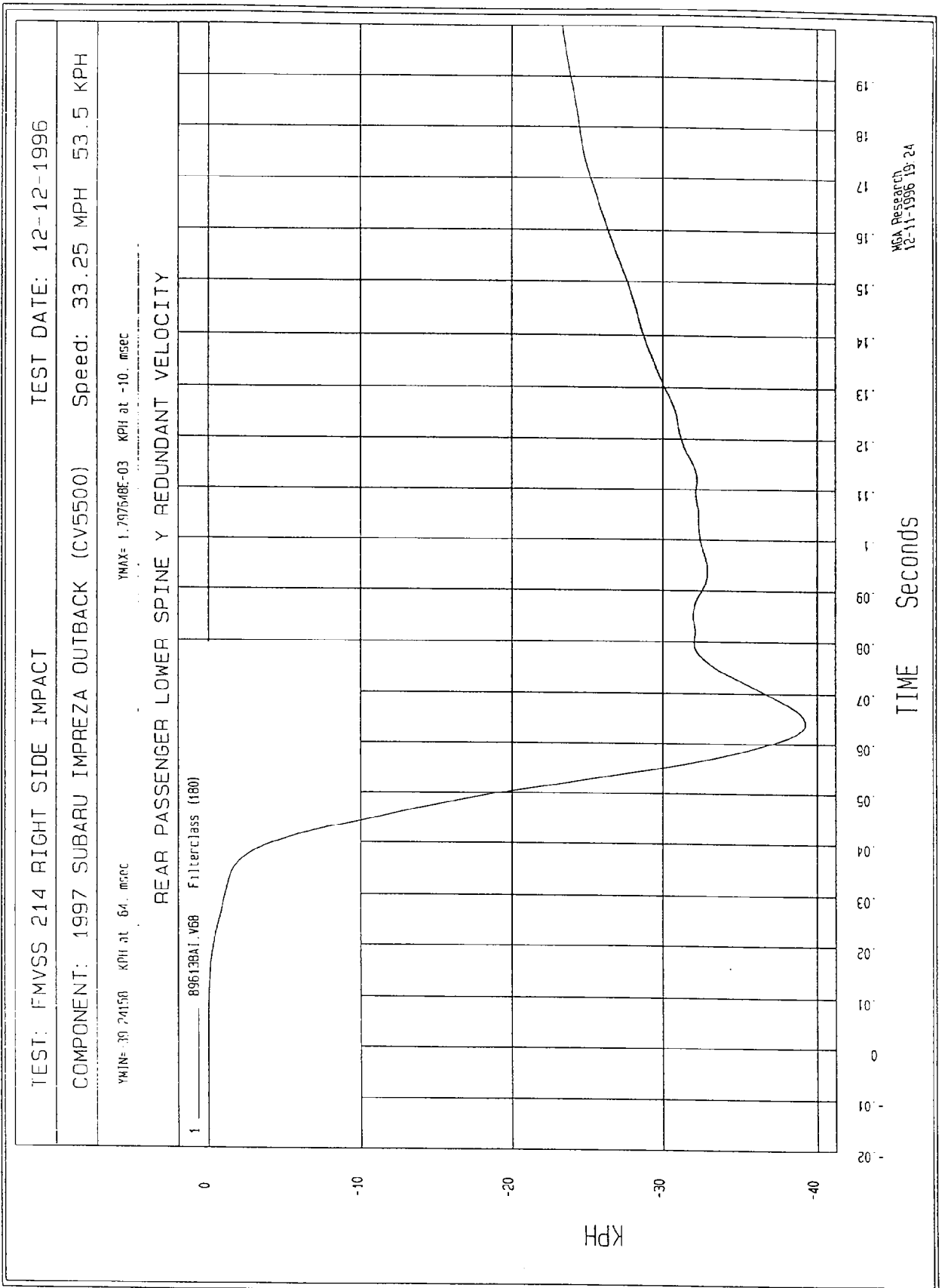
REAR PASSENGER LOWER RIB Y REDUNDANT VELOCITY

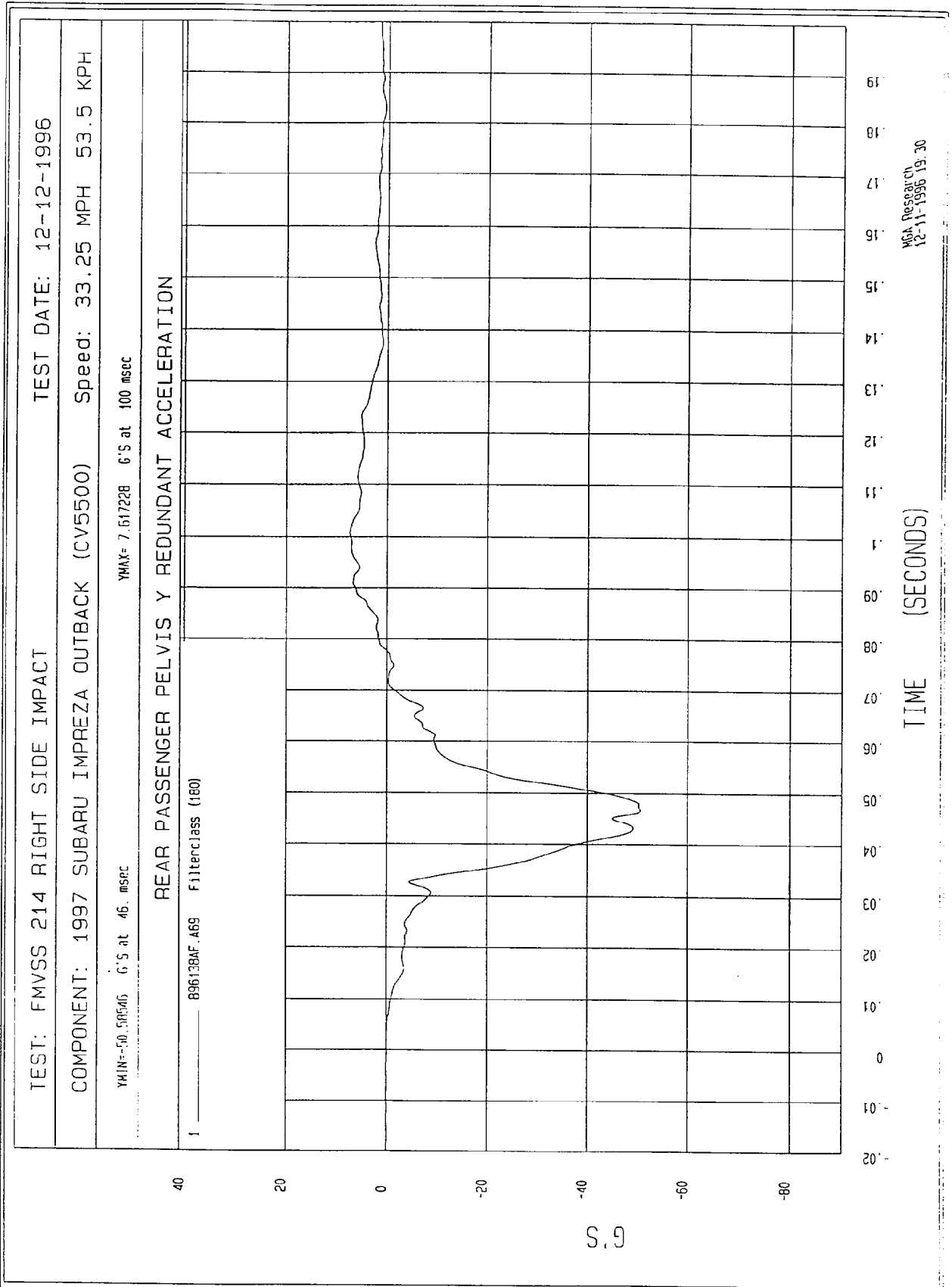


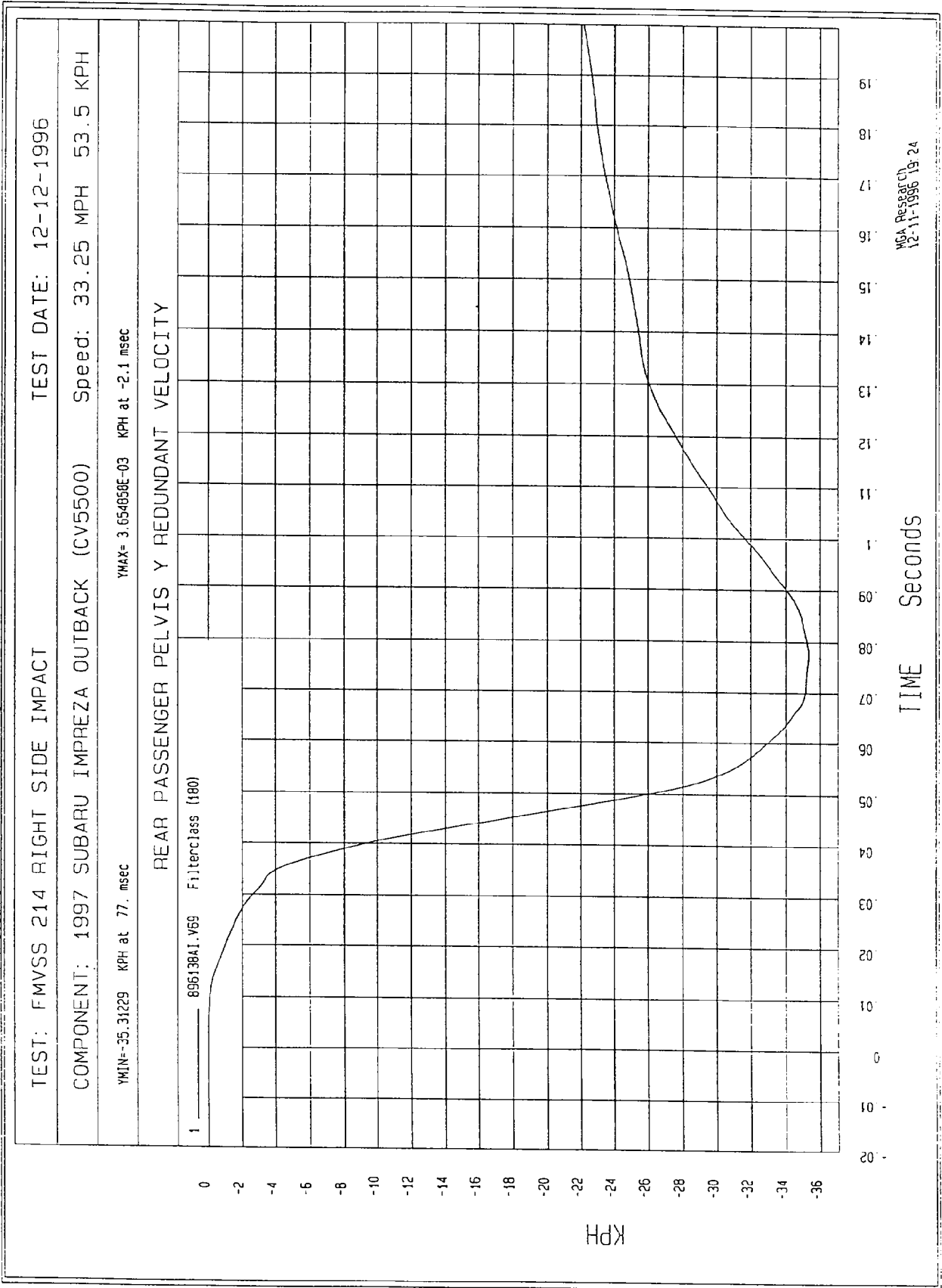
TIME Seconds

MGA Research
12-11-1996 19:24

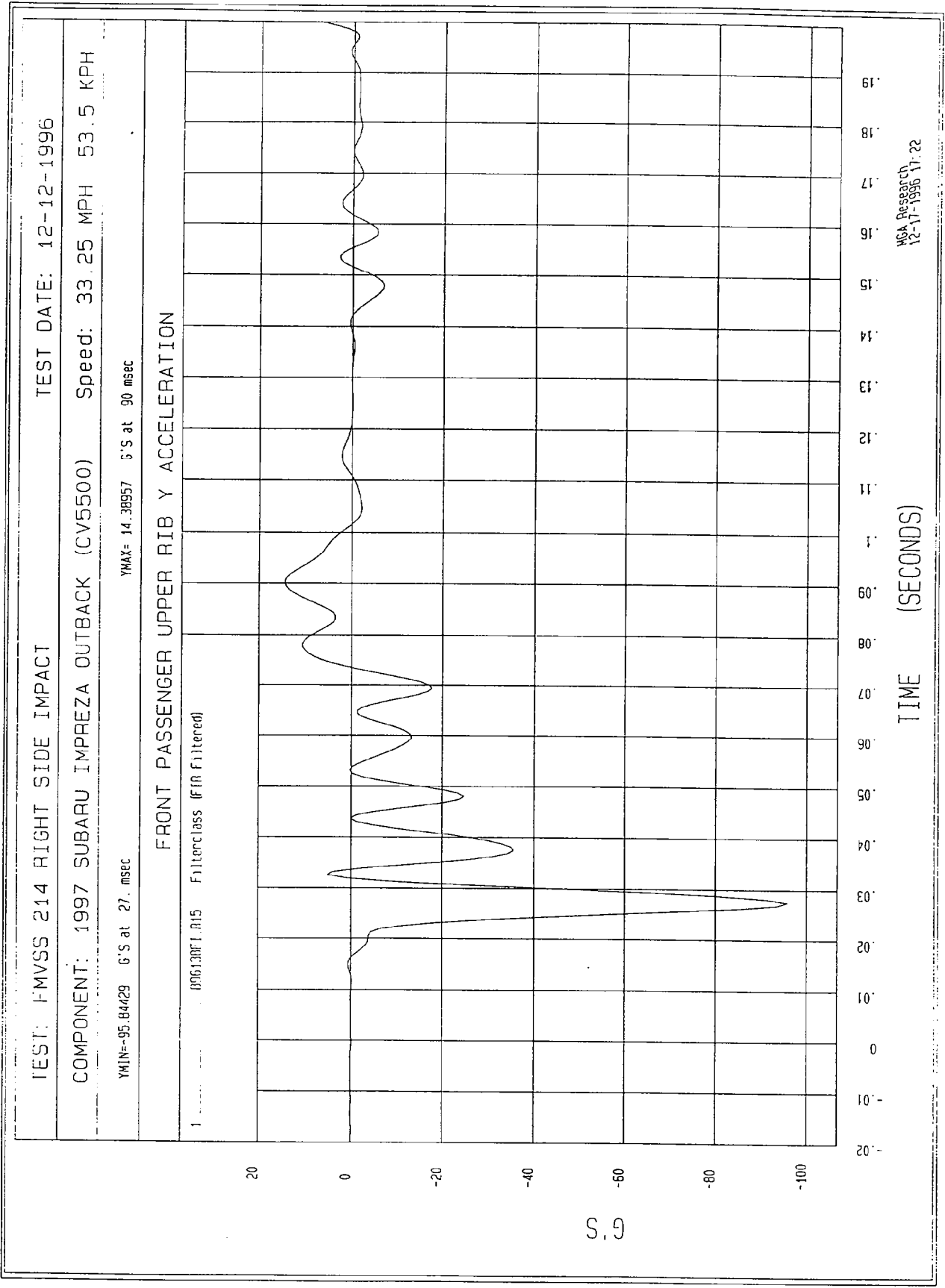


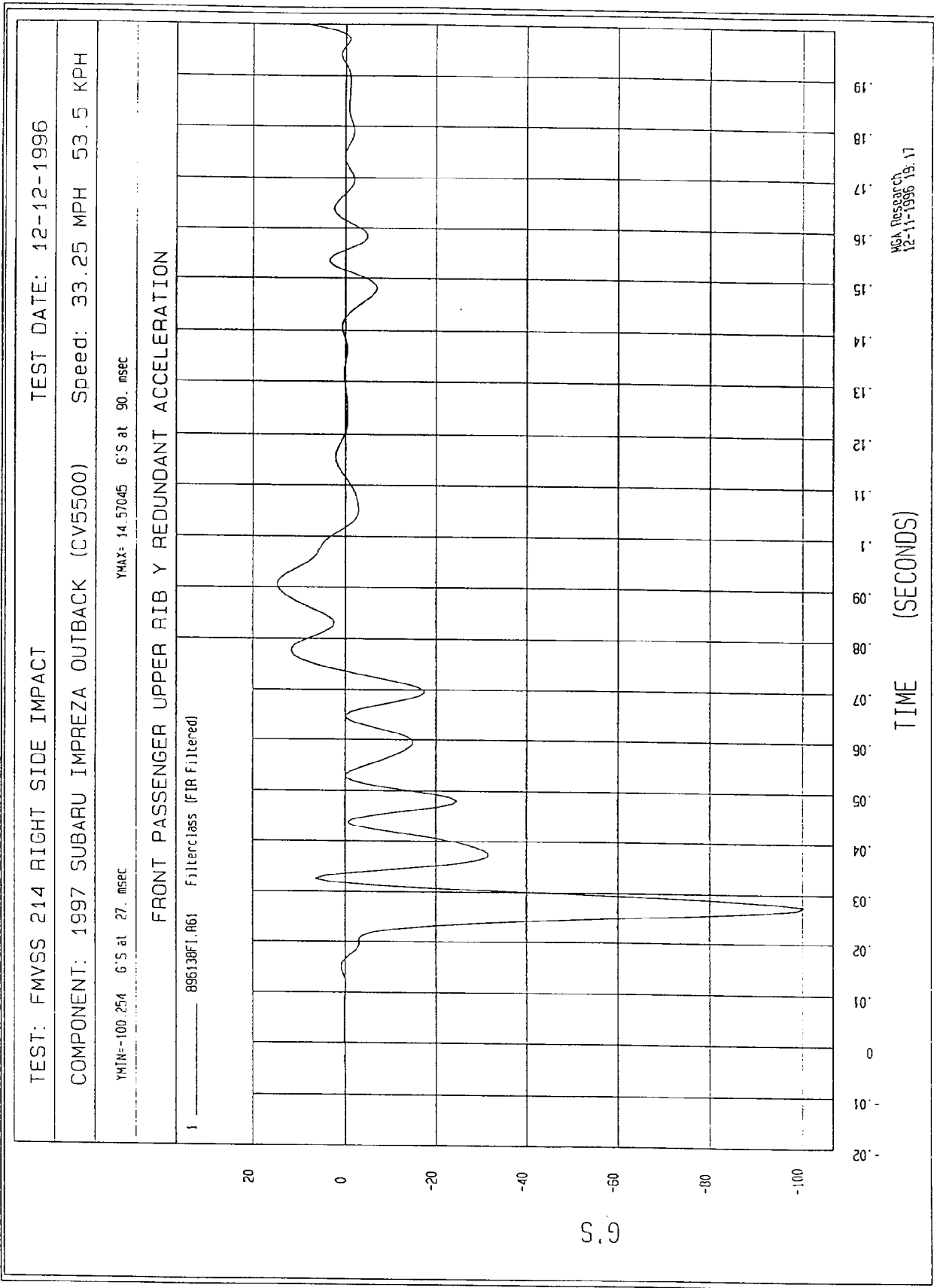


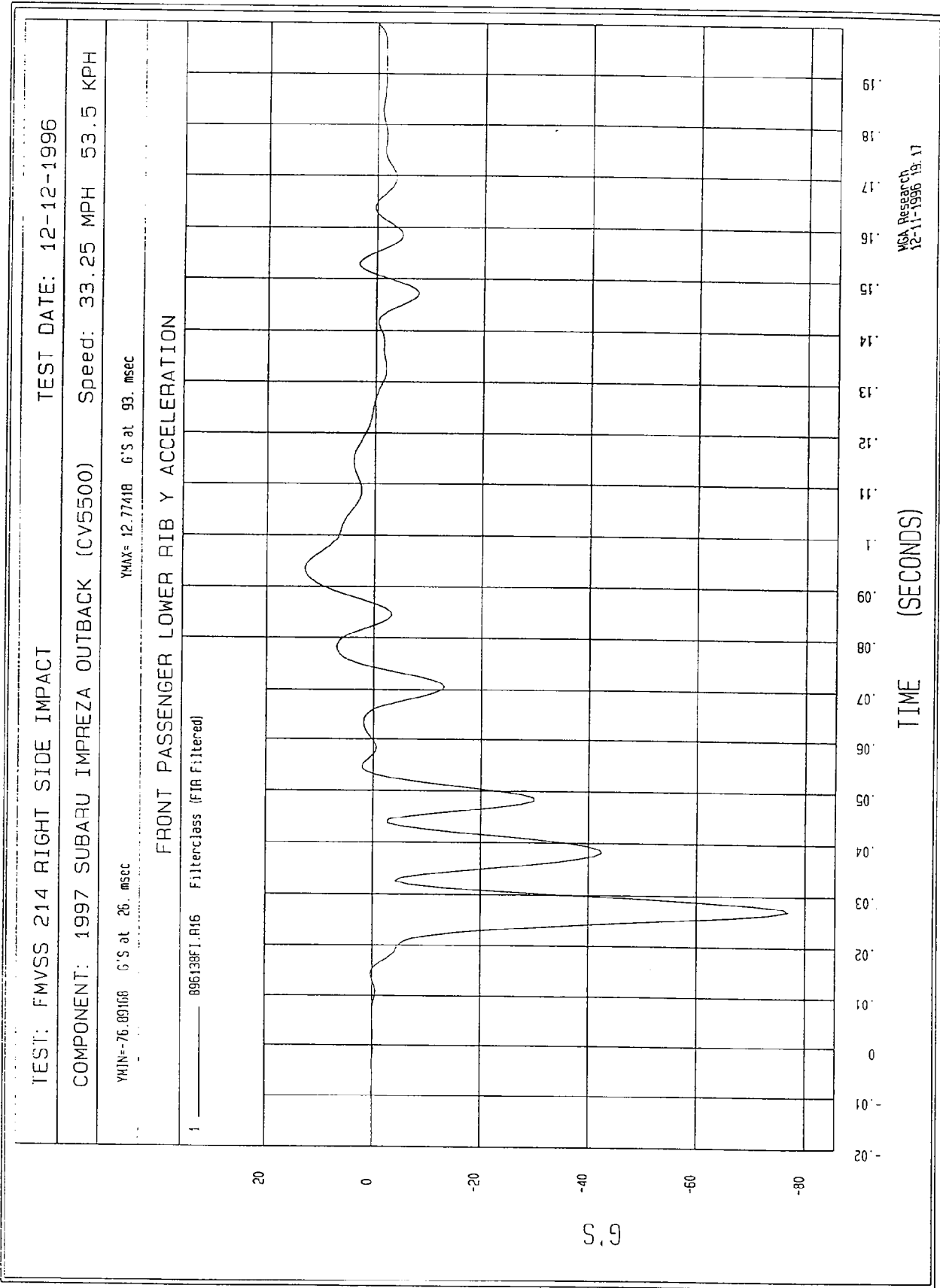


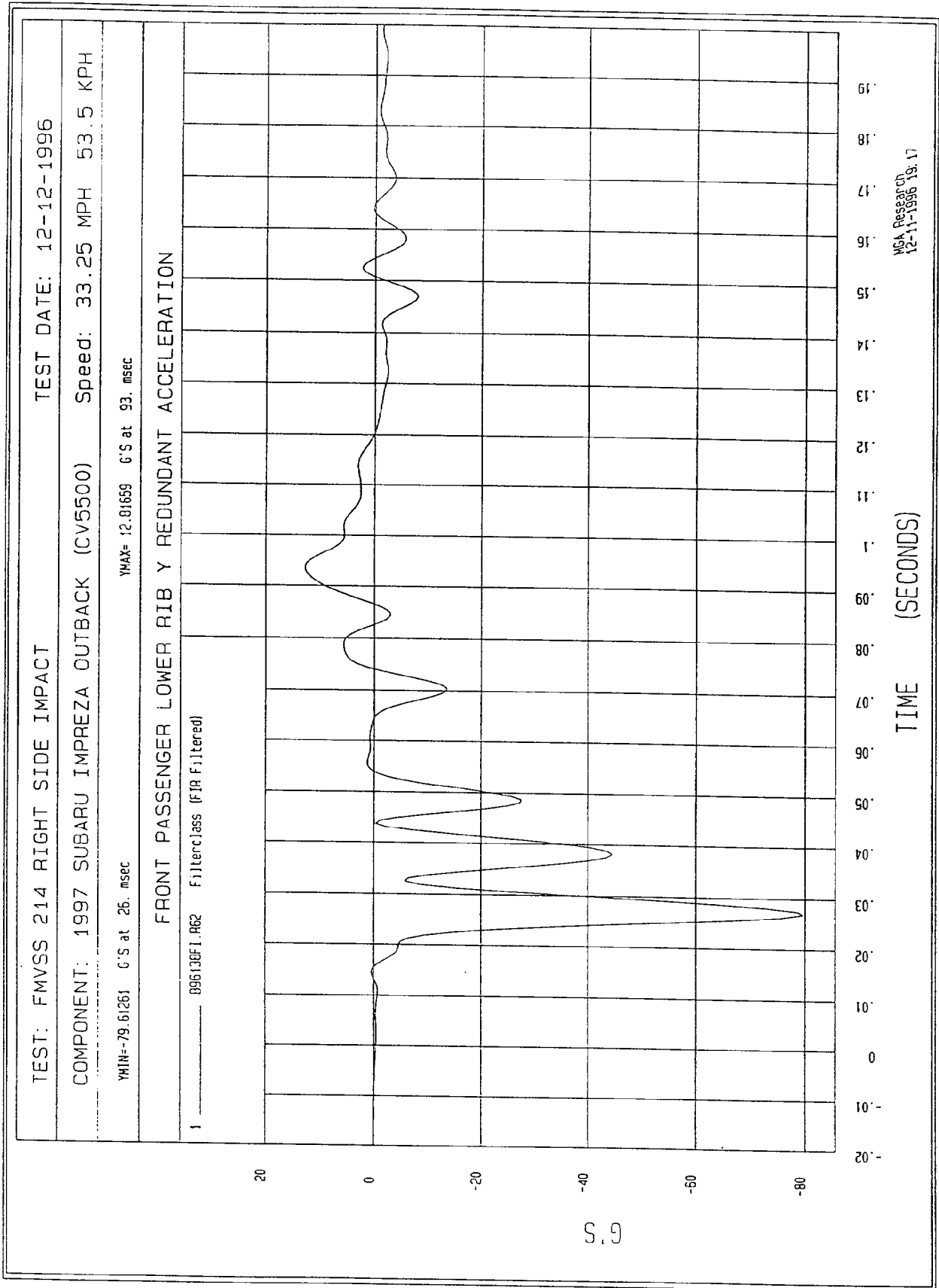


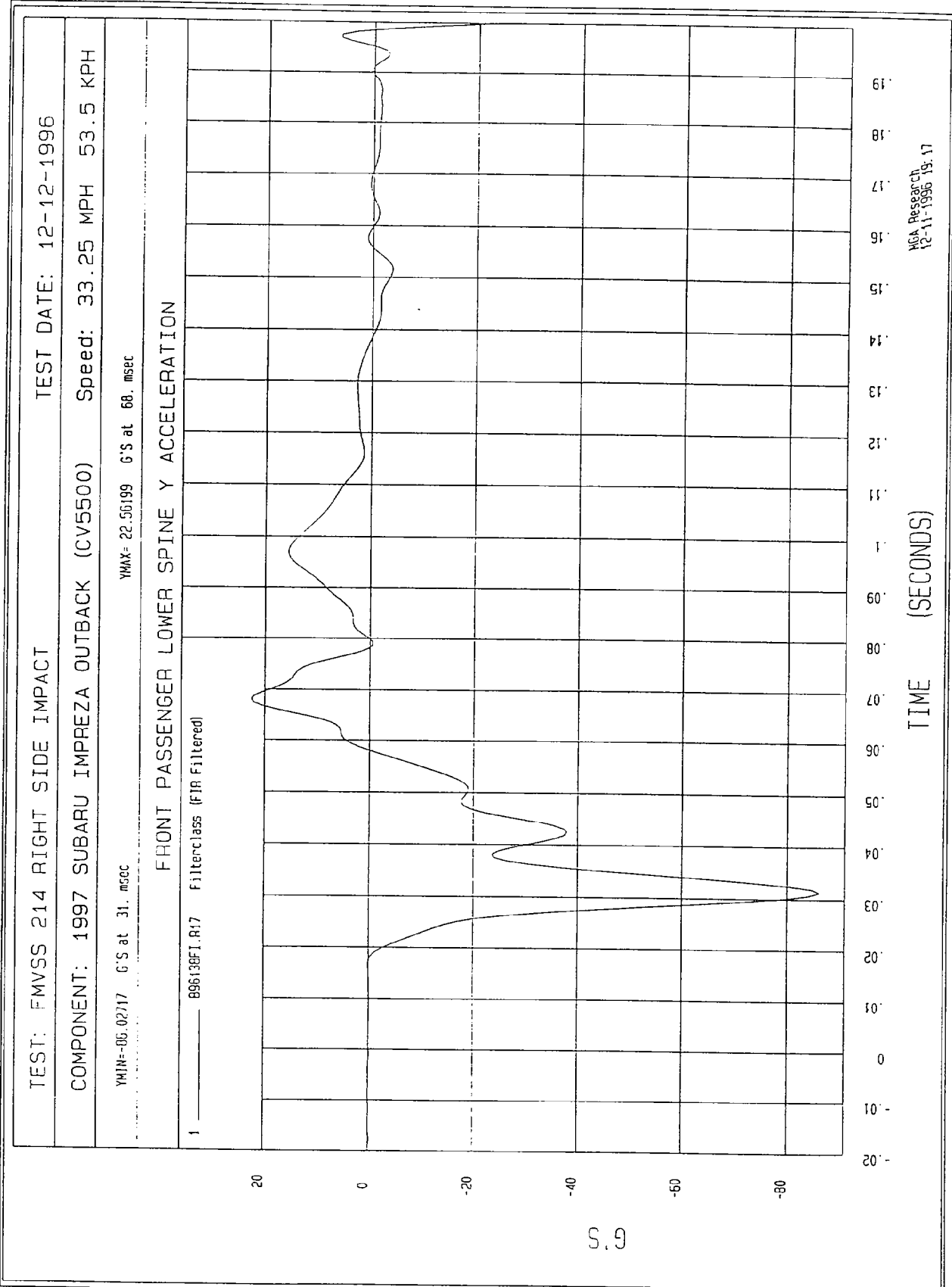
FINITE IMPULSE RESPONSE (FIR) FILTERED DATA











TEST: FMVSS 214 RIGHT SIDE IMPACT TEST DATE: 12-12-1996

COMPONENT: 1997 SUBARU IMPREZA OUTBACK (CV5500) Speed: 33.25 MPH 53.5 KPH

YMIN= 0.5 OUTBACK G'S at 31. msec YMAX= 22.70909 G'S at 60. msec

FRONT PASSENGER LOWER SPINE Y REDUNDANT ACCELERATION



TIME (SECONDS)

MSA Research
12-11-1996 19.17

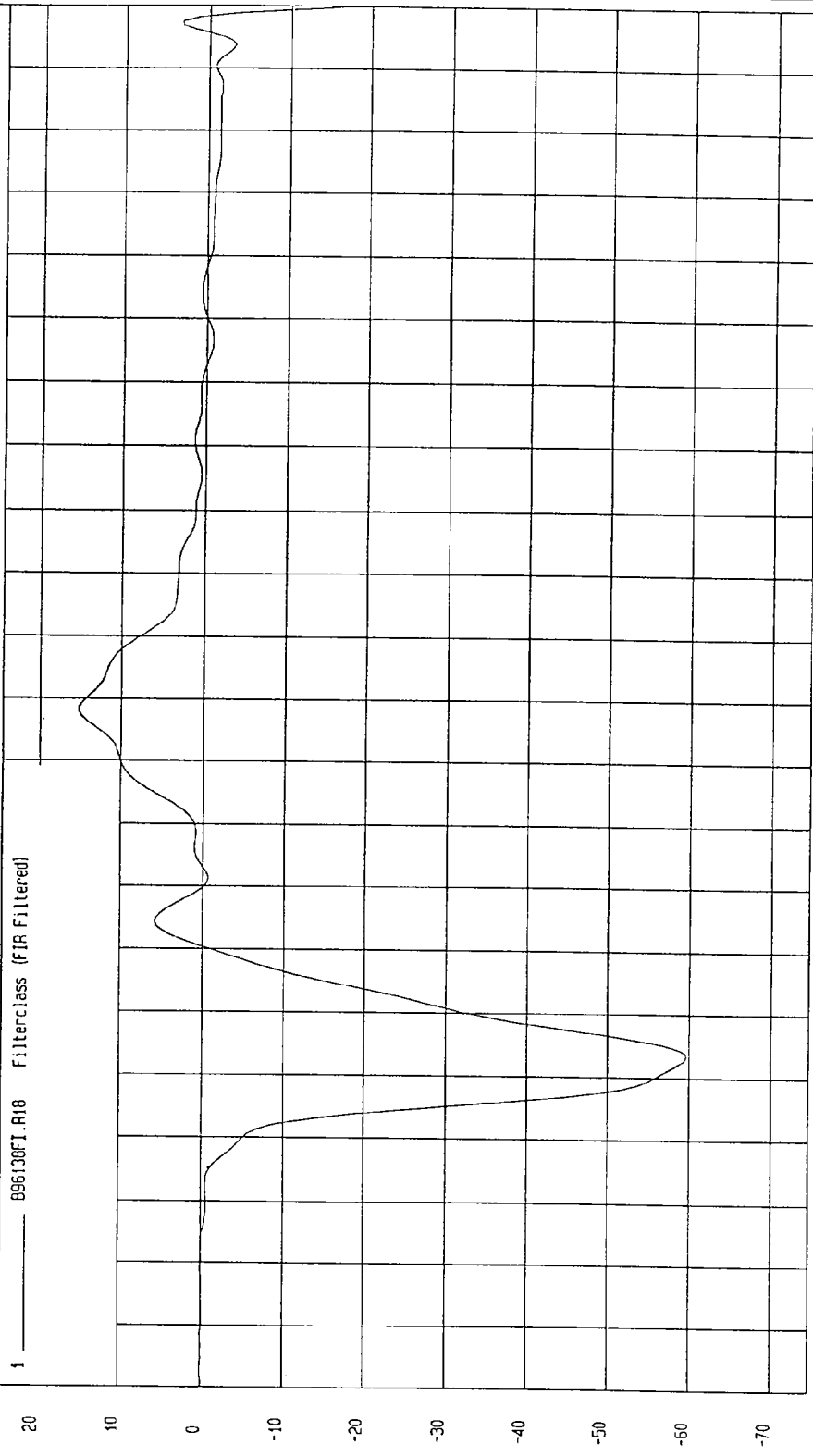
S.G

TEST: FMVSS 214 RIGHT SIDE IMPACT TEST DATE: 12-12-1996

COMPONENT: 1997 SUBARU IMPREZA OUTBACK (CV5500) Speed: 33.25 MPH 53.5 KPH

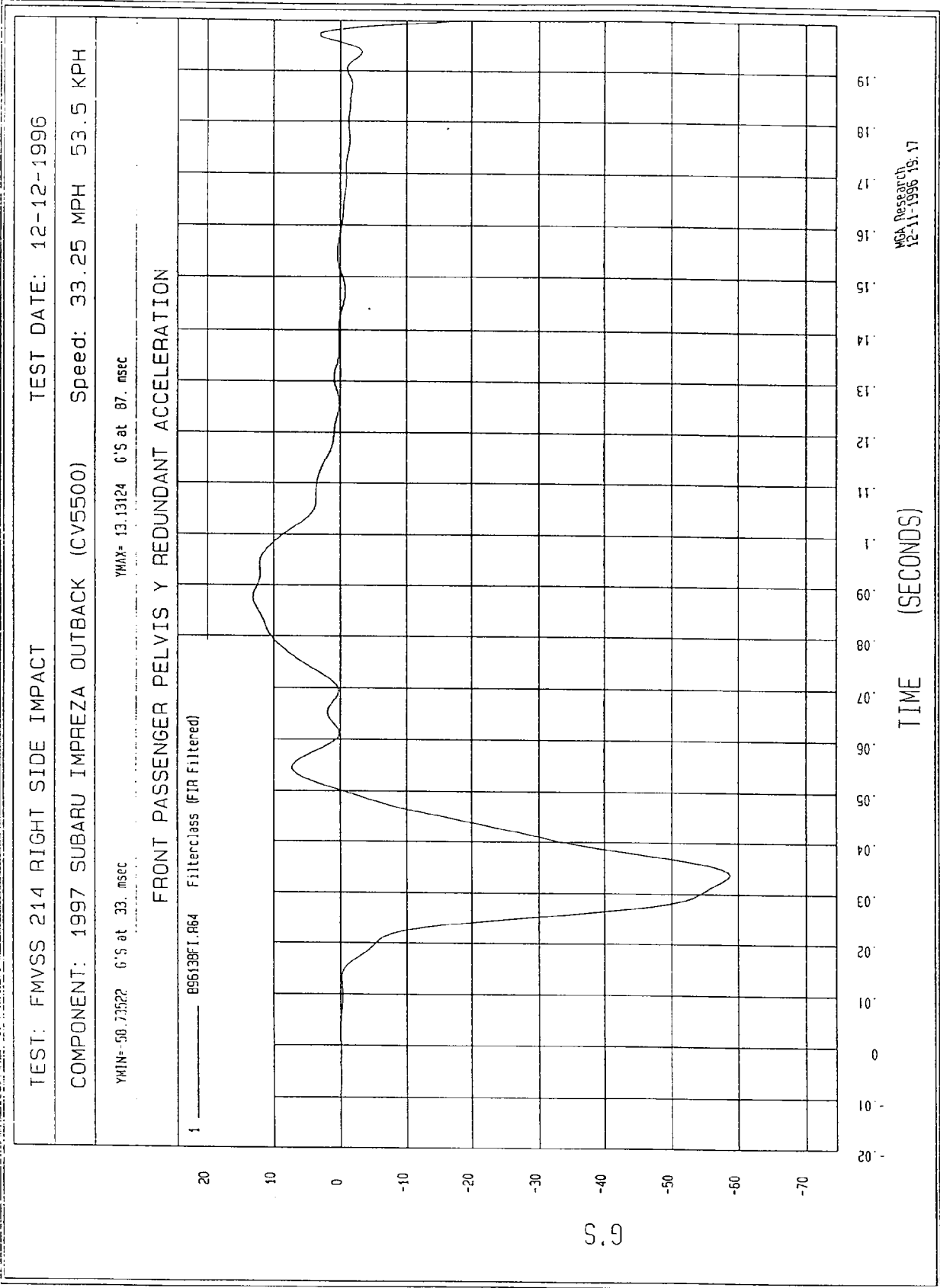
YMIN=-59.60284 G'S at 33. msec YMAX= 15.29109 G'S at 88. msec

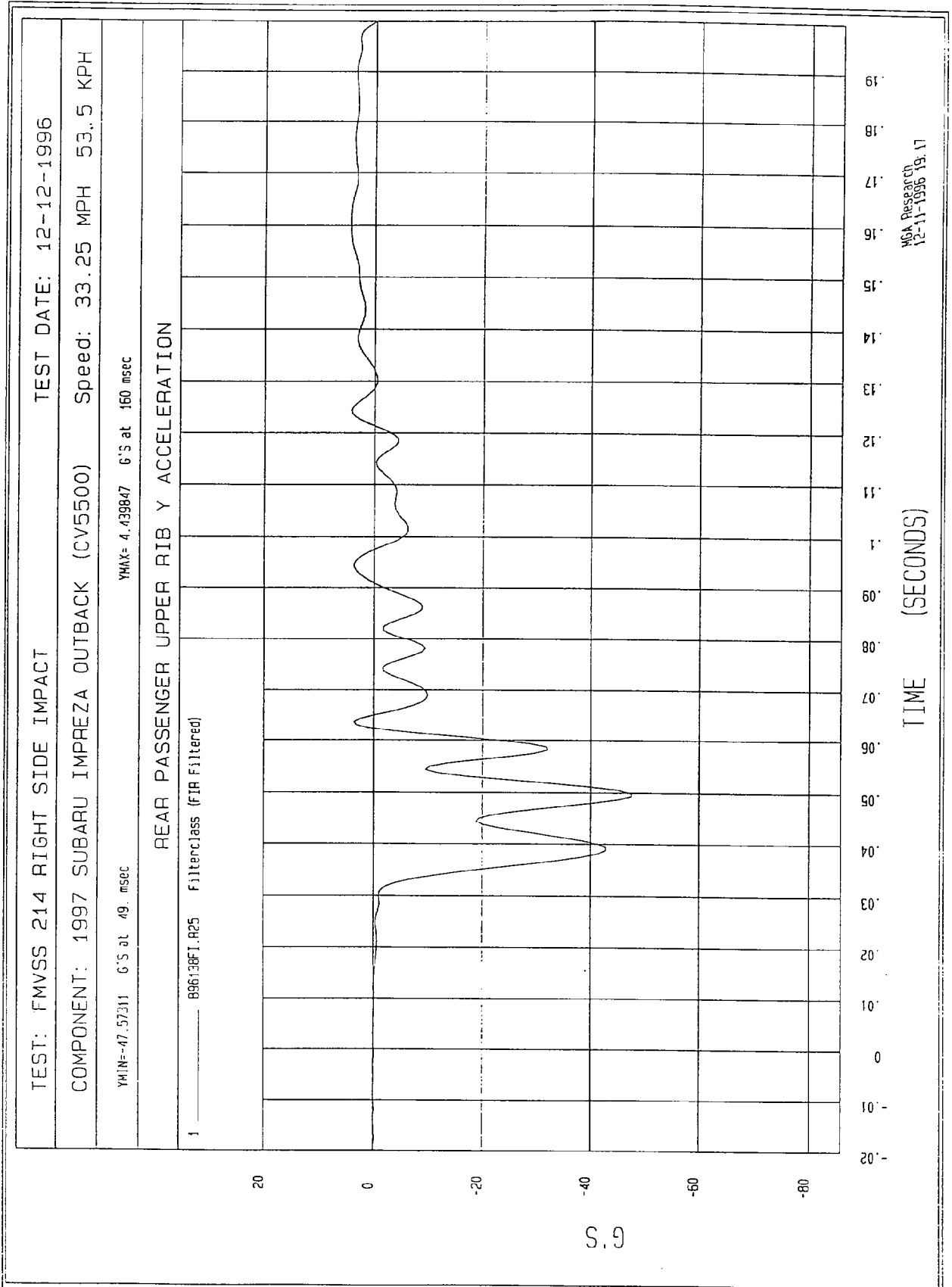
FRONT PASSENGER PELVIS Y ACCELERATION

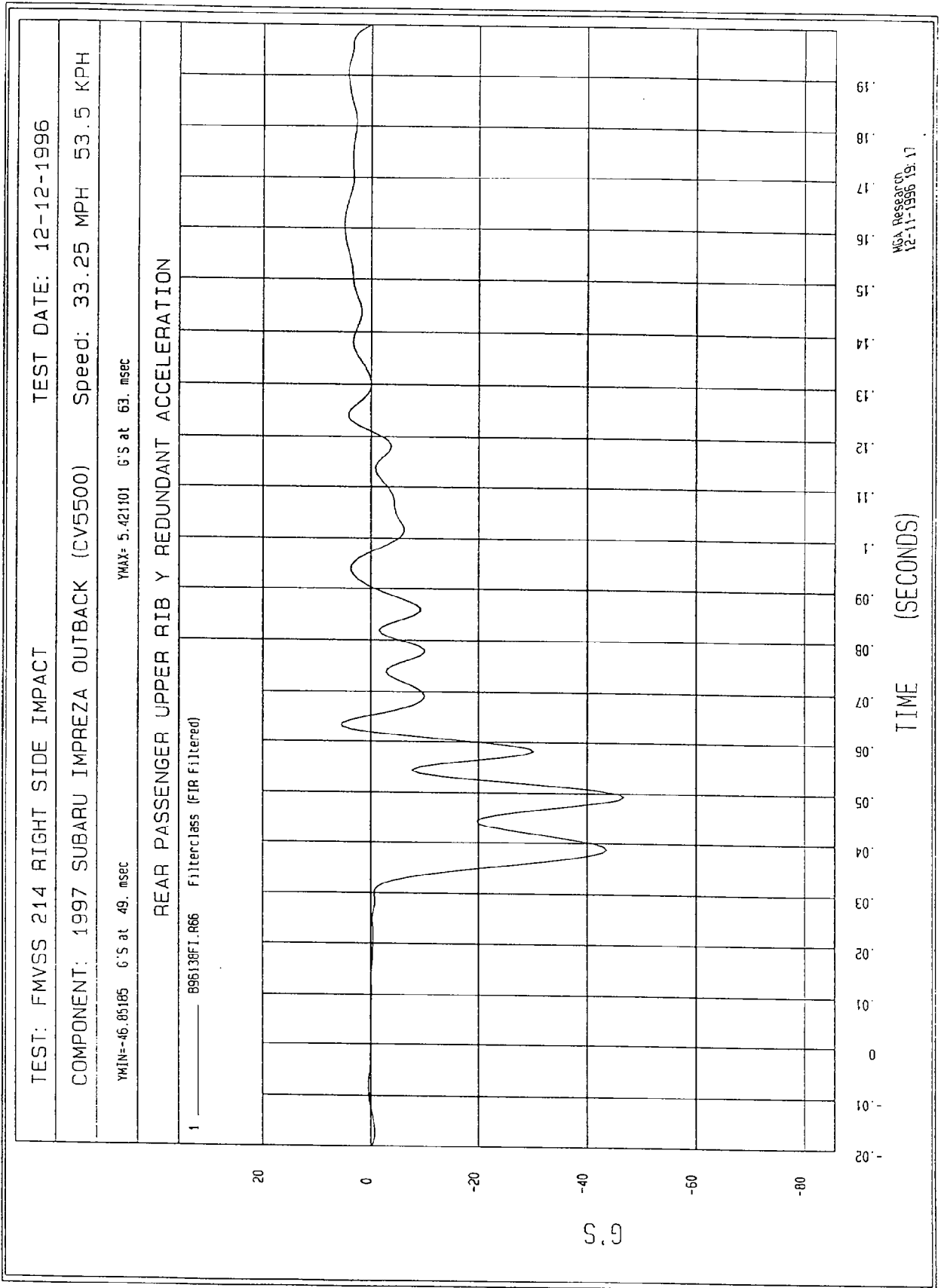


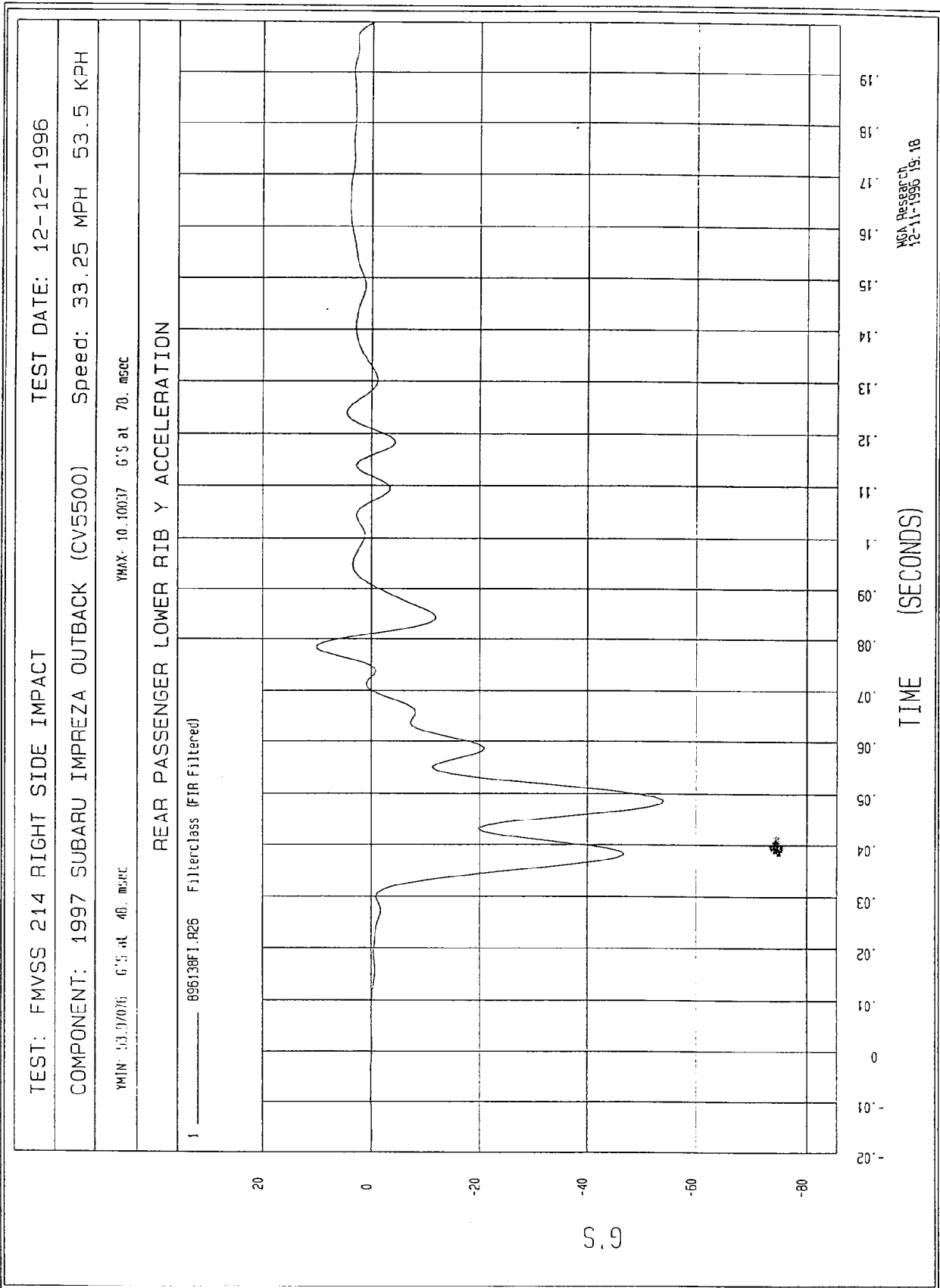
TIME (SECONDS)

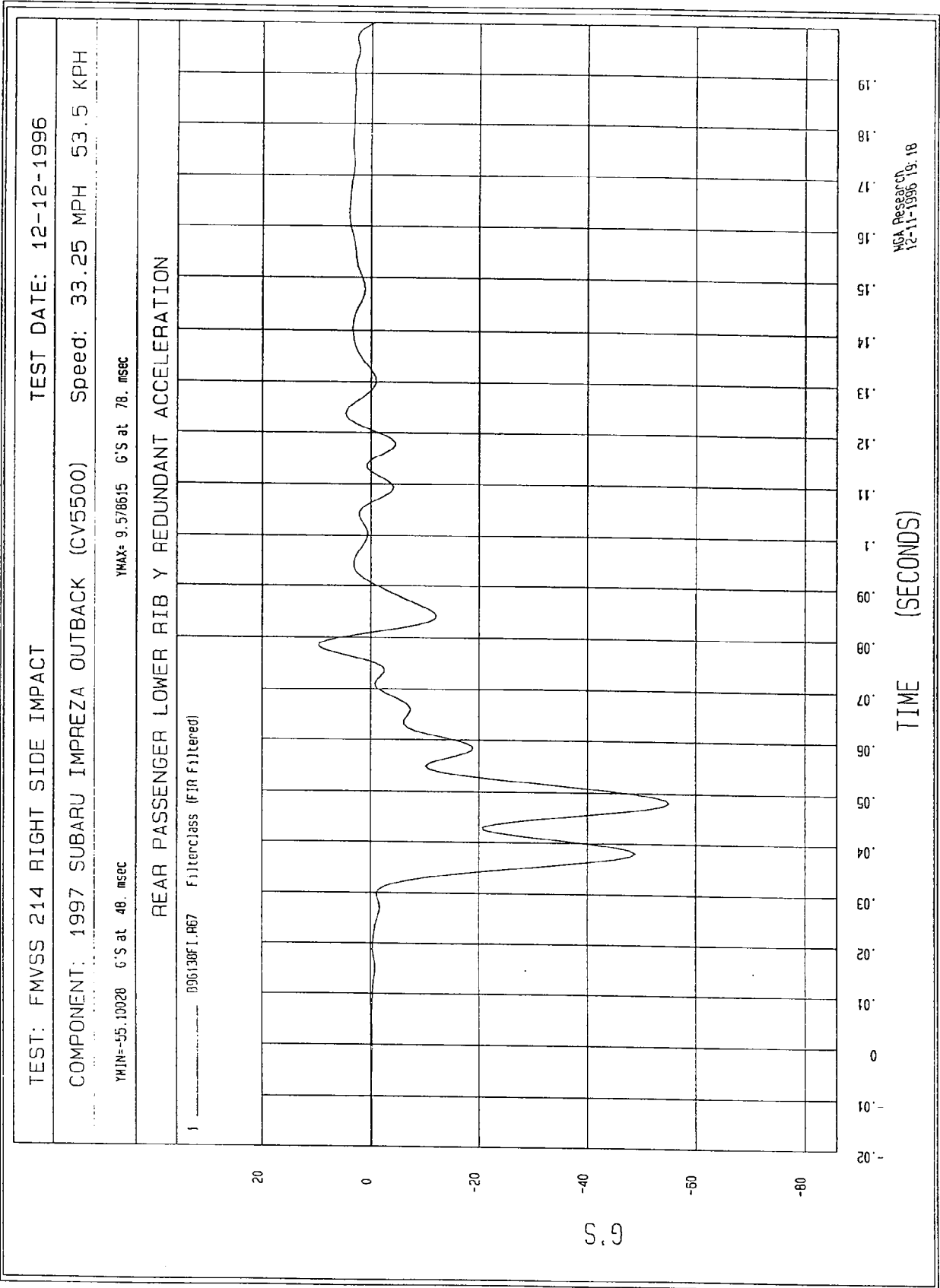
WGA Research
12-11-1996 19:17

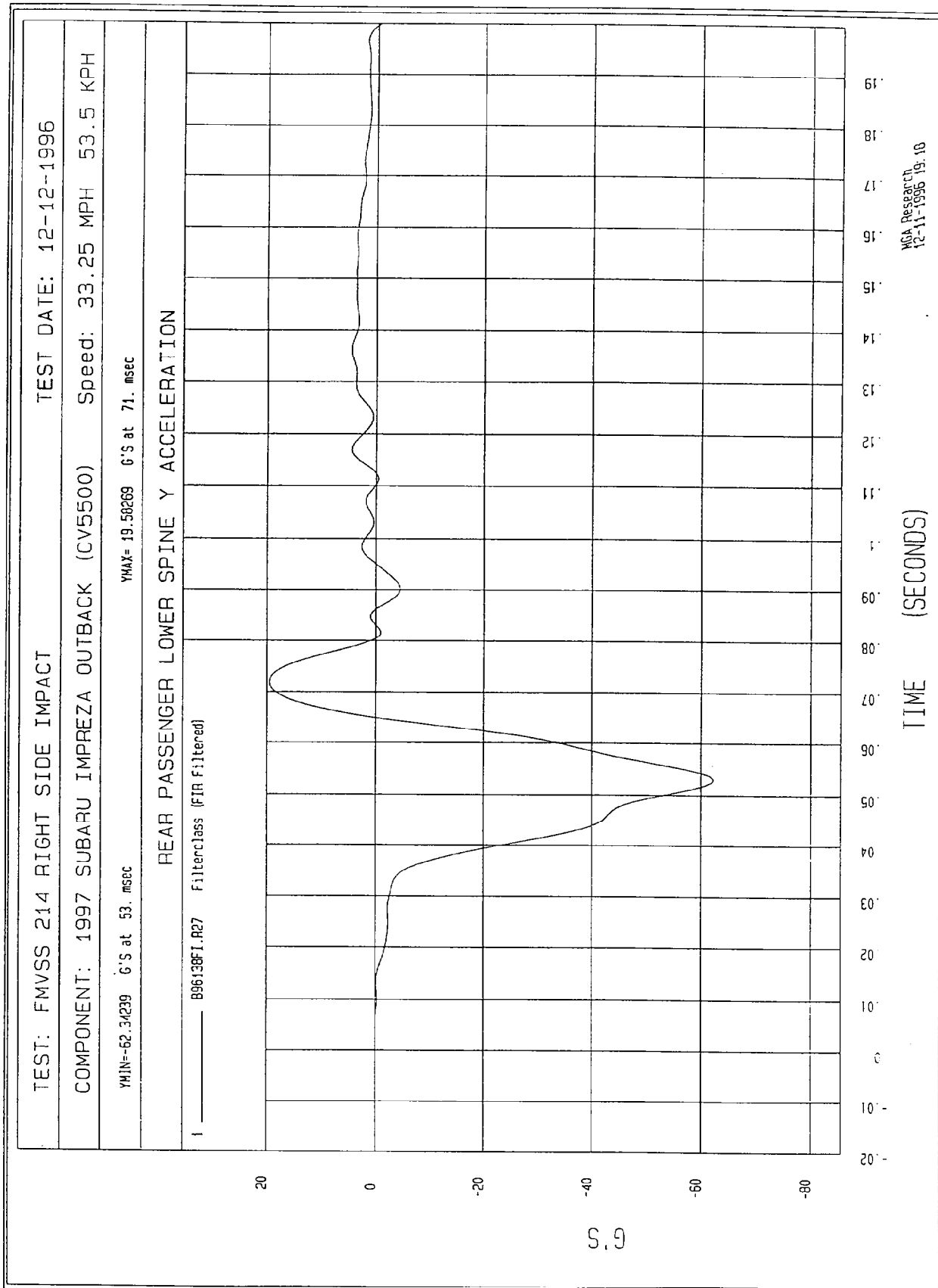


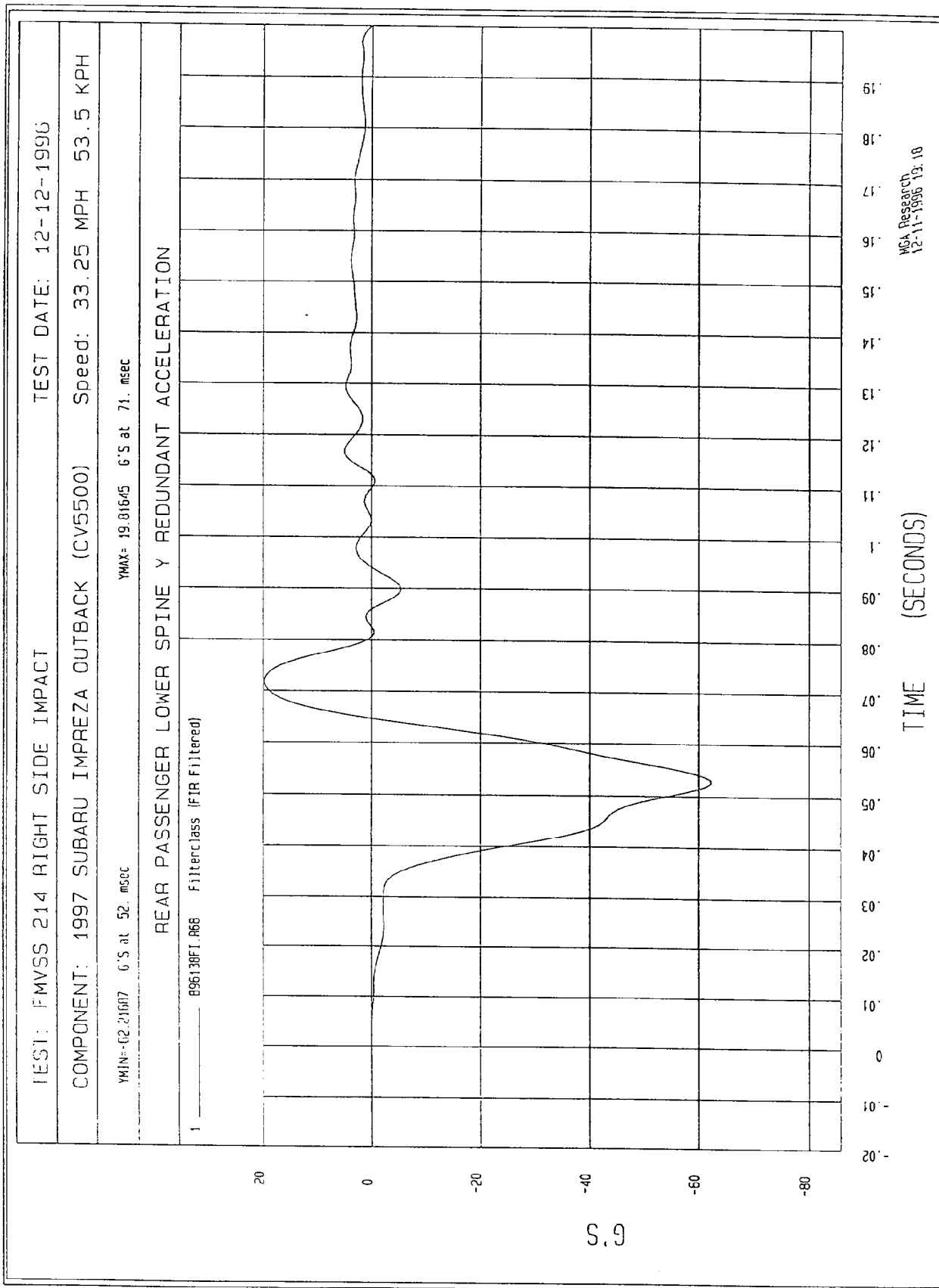






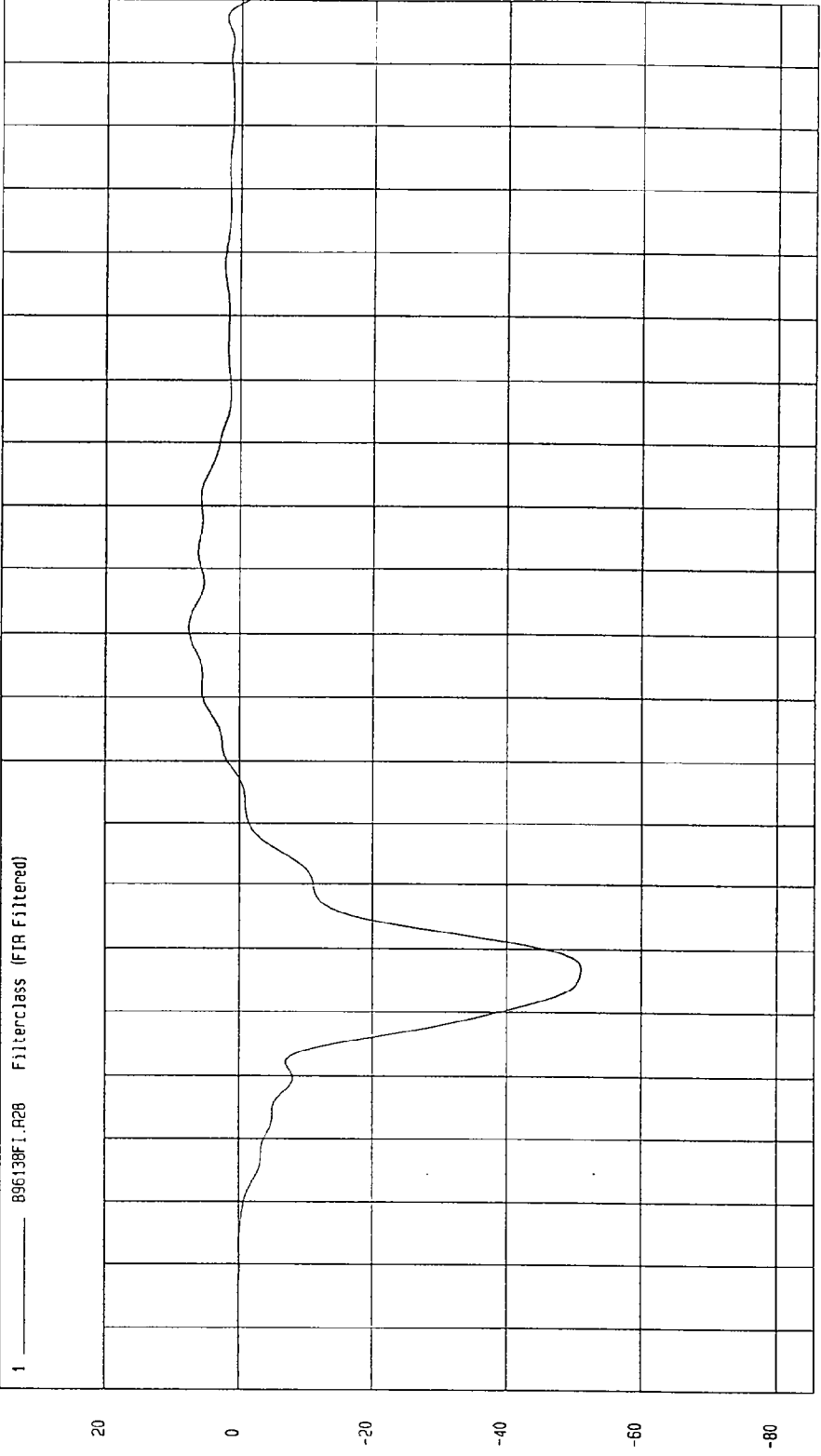






TEST: FMVSS 214 RIGHT SIDE IMPACT TEST DATE: 12-12-1996
COMPONENT: 1997 SUBARU IMPREZA OUTBACK (CV5500) Speed: 33.25 MPH 53.5 KPH
YMIN=-50.59931 G'S at .05. msec YMAX= 7.712482 G'S at 100 msec

REAR PASSENGER PELVIS Y ACCELERATION



TIME (SECONDS)

MCA Research
12-11-1996 19:18

TEST DATE: 12-12-1996

TEST: FMVSS 214 RIGHT SIDE IMPACT

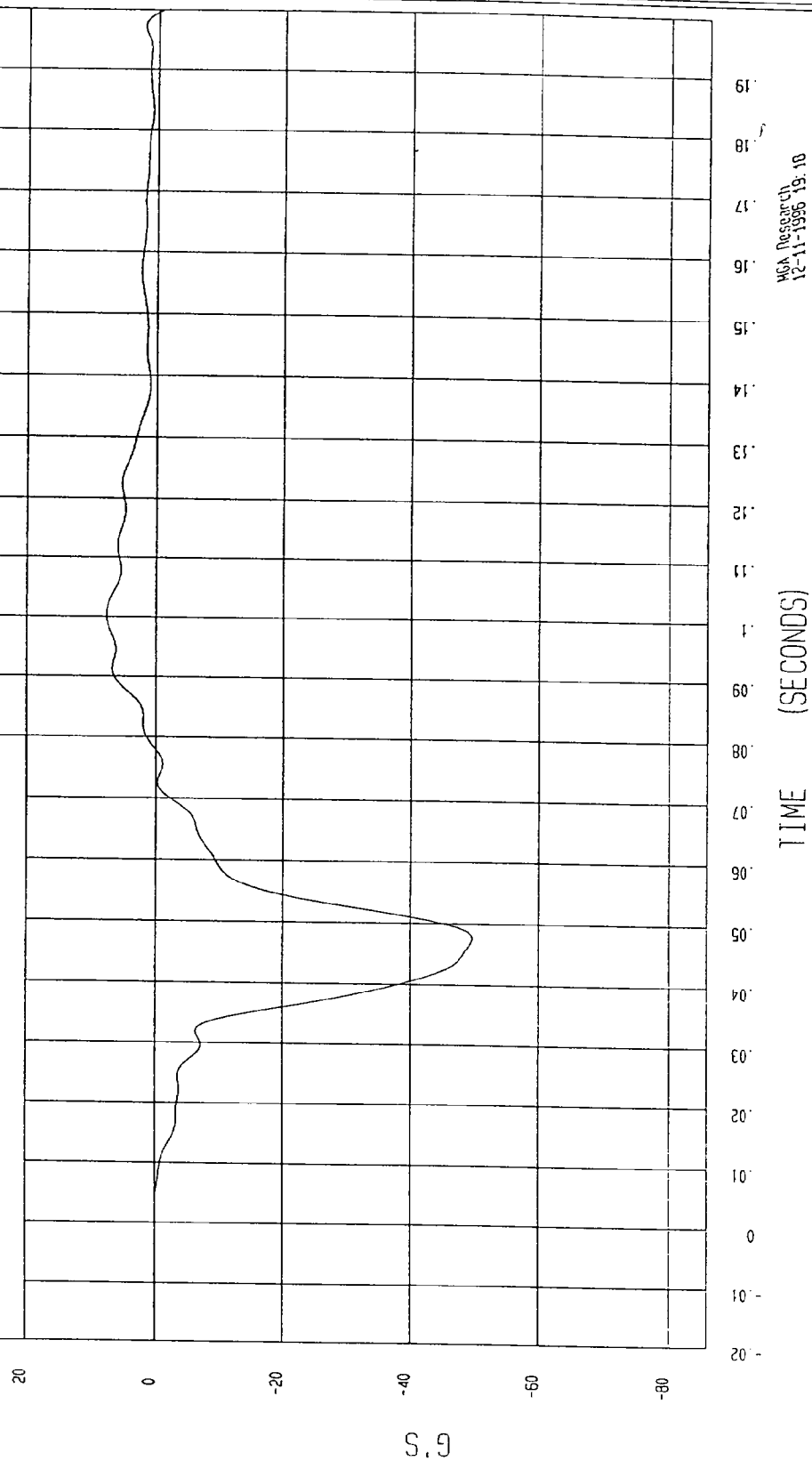
COMPONENT:	1997 SUBARU IMPREZA OUTBACK (CV5500)	Speed:	33.25 MPH	53.5 KPH
------------	--------------------------------------	--------	-----------	----------

YMIN=-49.52403 6'S at 47. msec

YMAX= 7.56685 G'S at 100 msec

REAR PASSENGER PELVIS Y REDUNDANT ACCELERATION

1	_____	896138FI.R69	Filterclass (FIR Filtered)



MGA Research
12-11-1996 19:18

APPENDIX C

SID CONFIGURATION AND PERFORMANCE VERIFICATION

REPORT NO. MGA-96-DC16

DUMMY PERFORMANCE CALIBRATIONS

FMVSS 214 - SIDE IMPACT TEST

FUJI HEAVY INDUSTRIES LTD.
1997 SUBARU IMPREZA OUTBACK 4 DOOR
NHTSA NO. CV5500

MGA PROVING GROUNDS
5000 WARREN ROAD
BURLINGTON, WI 53105



Test Date: December 12, 1996

Report Date: January 3, 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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DUMMY S/N: 271	POST-TEST CERTIFICATION DATA	4-1
DUMMY S/N: 272	POST-TEST INSPECTION CHECKLIST	5-1
DUMMY S/N: 271	POST-TEST INSPECTION CHECKLIST	6-1
	VEHICLE AND DUMMY TEMPERATURE	7-1

PRE-TEST CERTIFICATION DATA

Front Dummy Serial Number: 272

Calibration Test Results Summary

Dummy 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.

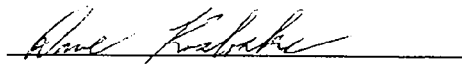
SIDE IMPACT DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

DUMMY NO.: 272

DATE OF VERIFICATION: December 11, 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
THORACIC SHOCK ABSORBER TEST
SIDE IMPACT DUMMY (SID)

DATE: December 11, 1996

DUMMY NUMBER: 272

TEST NUMBER: D96213678

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		66° - 78° F	70°
RELATIVE HUMIDITY		10 - 70%	30%
VELOCITY 10 ft/s	FORCE (lb.)	188 - 253	216
	DISPLACEMENT (in.)	1.18 - 1.38	1.30
VELOCITY 14 ft/s	FORCE (lb.)	389 - 472	428
	DISPLACEMENT (in.)	1.26 - 1.47	1.40
VELOCITY 20 ft/s	FORCE (lb.)	841 - 1000	856
	DISPLACEMENT (in.)	1.30 - 1.57	1.47

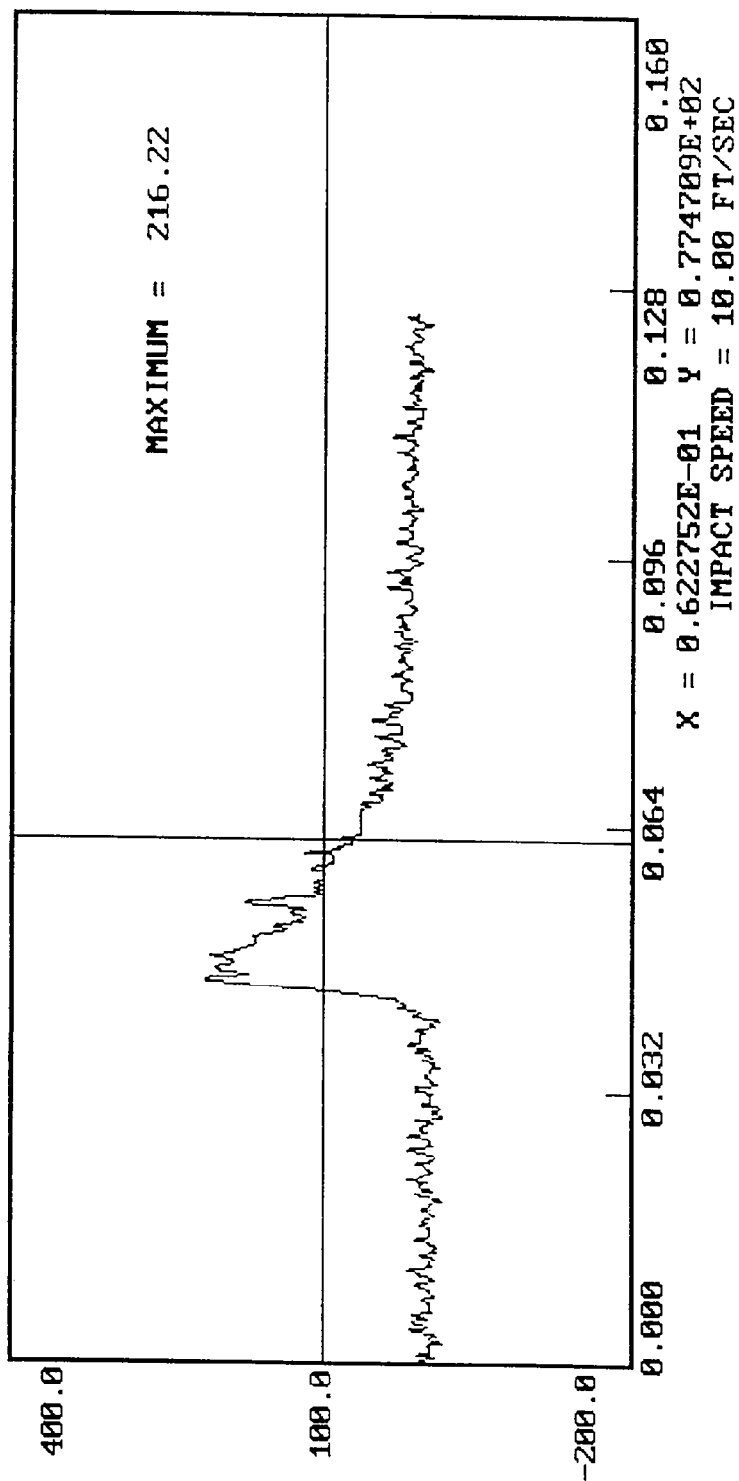
TEST MEETS SPECIFICATIONS

TECHNICIAN Jim M. [Signature]

APPROVED BY [Signature]

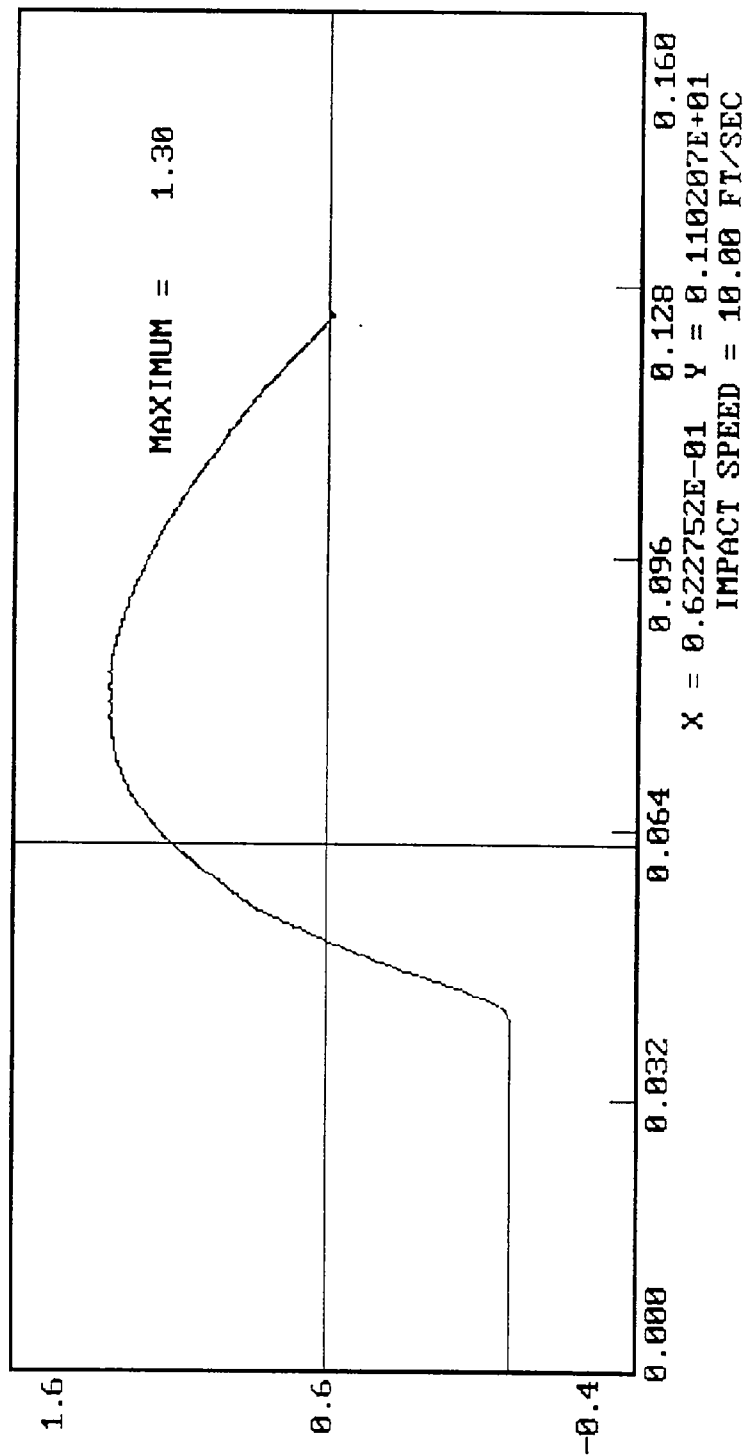
DUMMY CALIBRATION - DAMPENER BENCH TEST
 DUMMY # 272
 FORCE (LBS) VS. TIME ((SECONDS))

12-11-1996 11:46



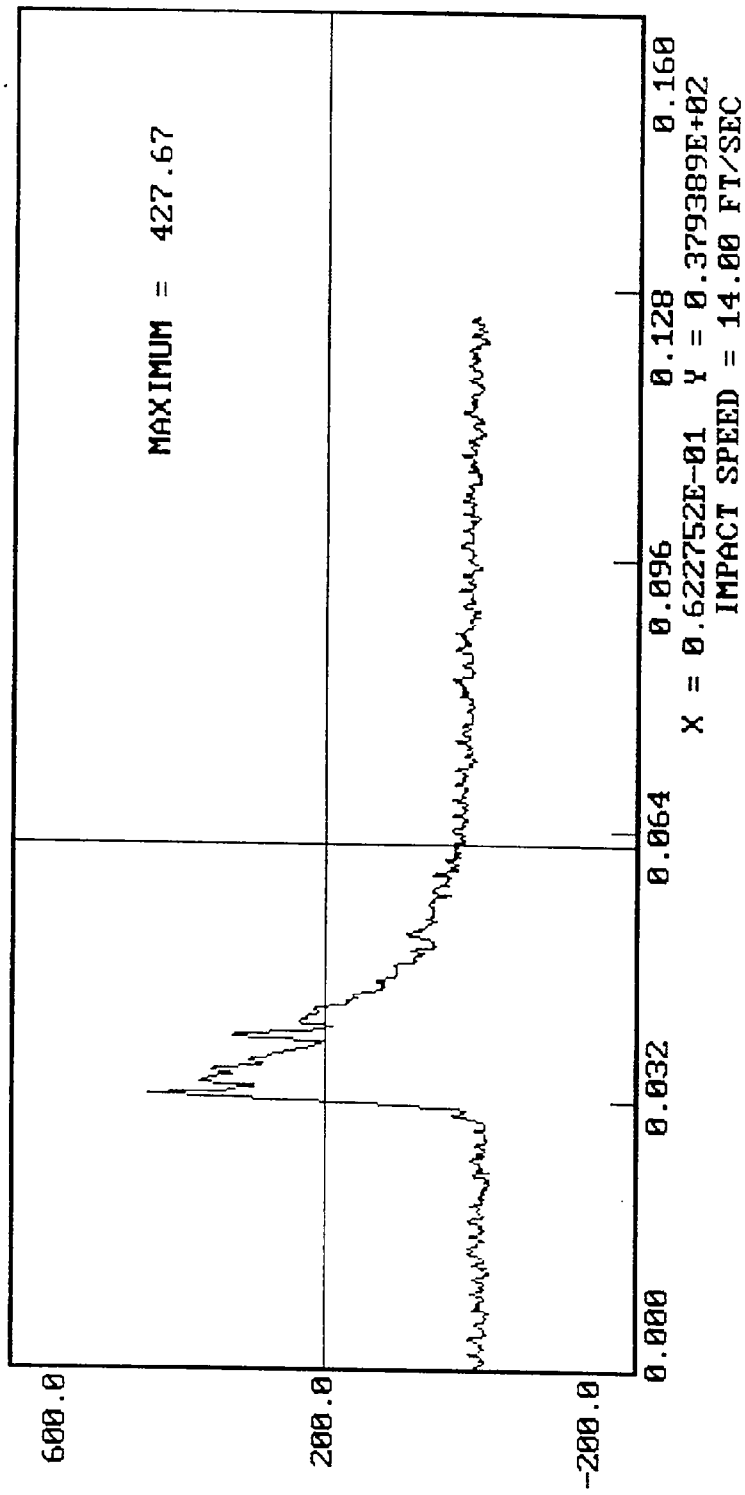
DUMMY CALIBRATION - DAMPENER BENCH TEST
 DUMMY # 272
 DISPLACEMENT (IN) VS. TIME ((SECONDS))

12-11-1996 11:46

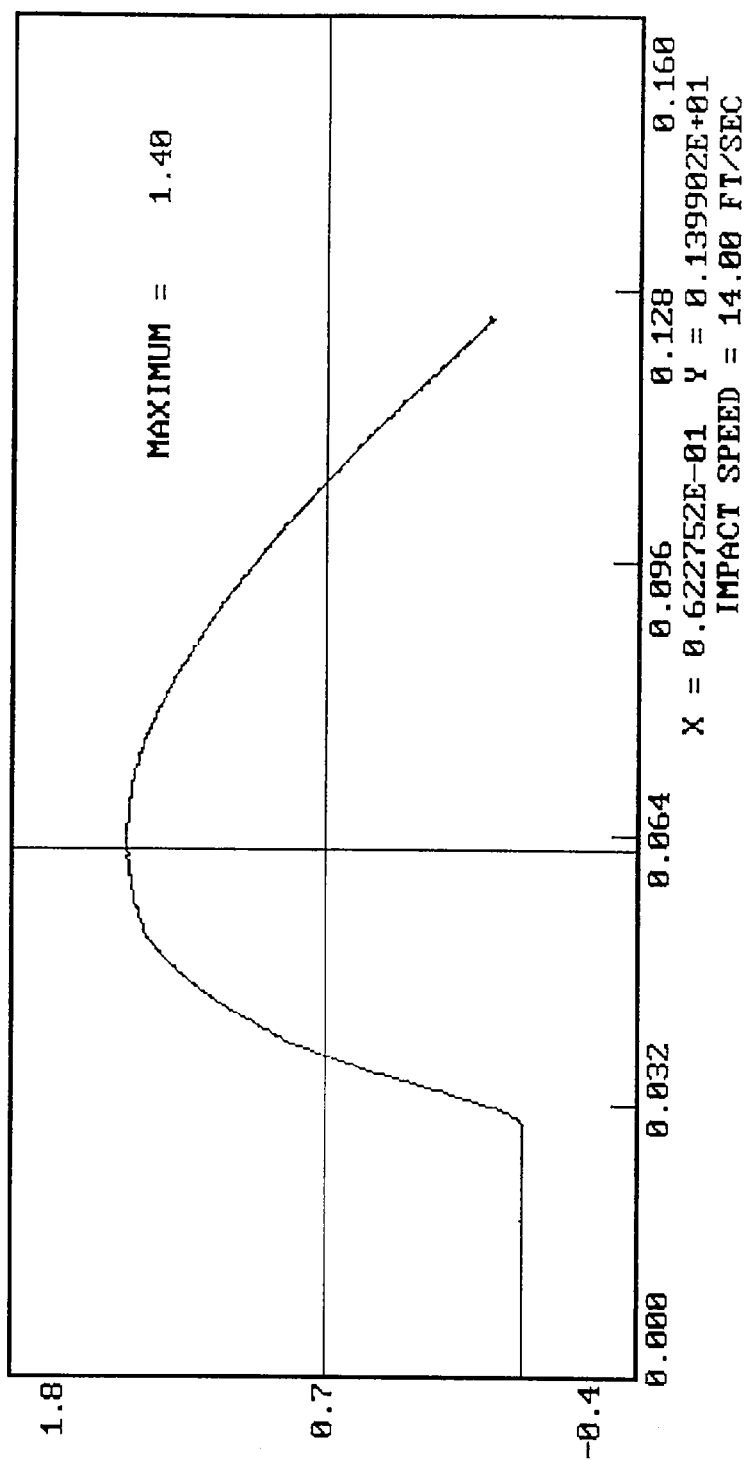


DUMMY CALIBRATION - DAMPENER BENCH TEST
 DUMMY # 272
 FORCE (LBS) VS. TIME (SECONDS)

12-11-1996 11:19

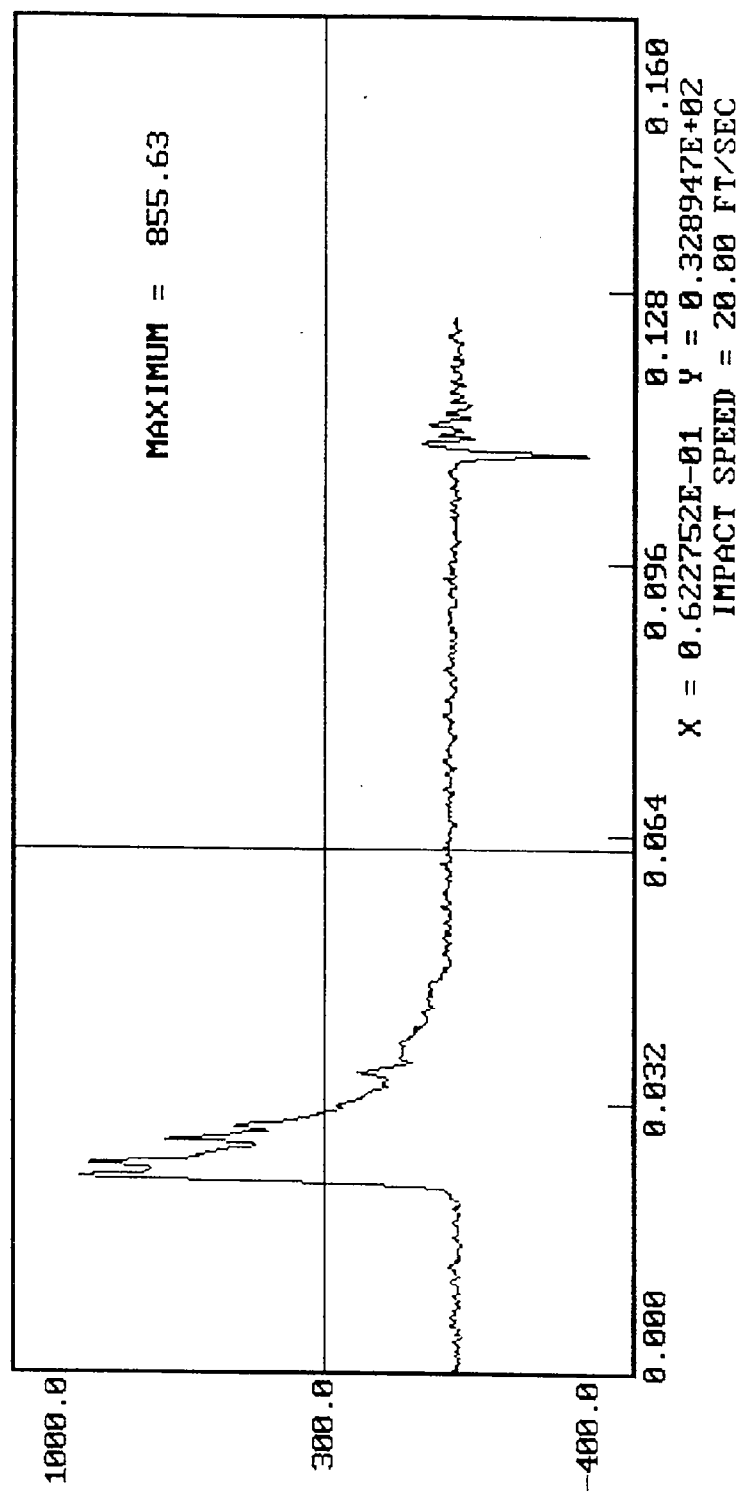


DUMMY CALIBRATION - DAMPENER BENCH TEST
 DUMMY # 272
 12-11-1996 11:19
 DISPLACEMENT (IN) VS. TIME (SECONDS))



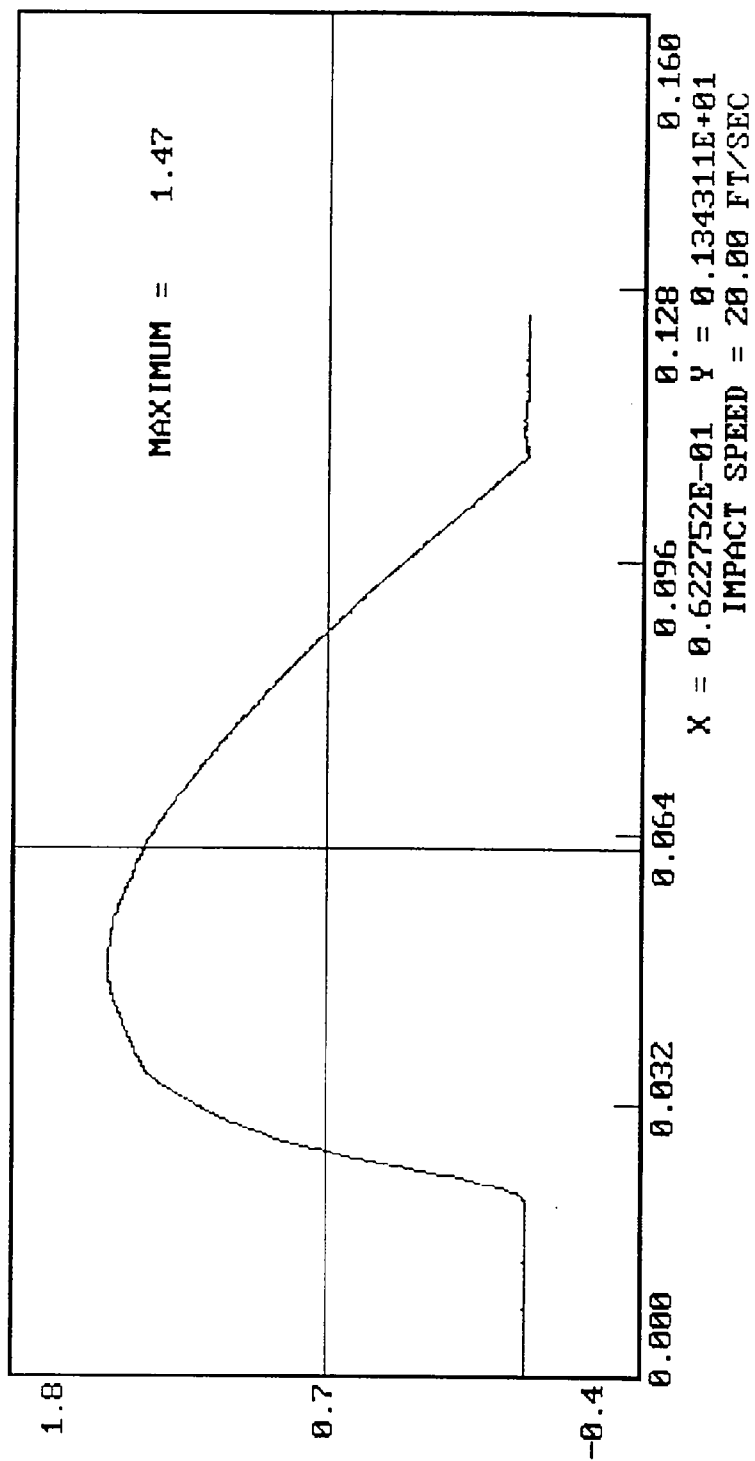
DUMMY CALIBRATION - DAMPENER BENCH TEST
DUMMY # 272
FORCE (LBS) VS. TIME ((SECONDS))

12-11-1996 11:17



12-11-1996 11:17

DUMMY CALIBRATION - DAMPENER BENCH TEST
DUMMY # 272
DISPLACEMENT (IN) VS. TIME ((SECONDS))



MGA RESEARCH CORPORATION

THORAX IMPACT TEST

SIDE IMPACT DUMMY (SID)

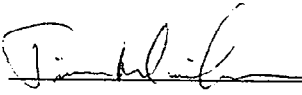
DATE: December 11, 1996

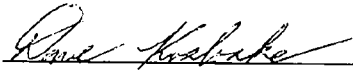
DUMMY NUMBER: 272

TEST NUMBER: D962132

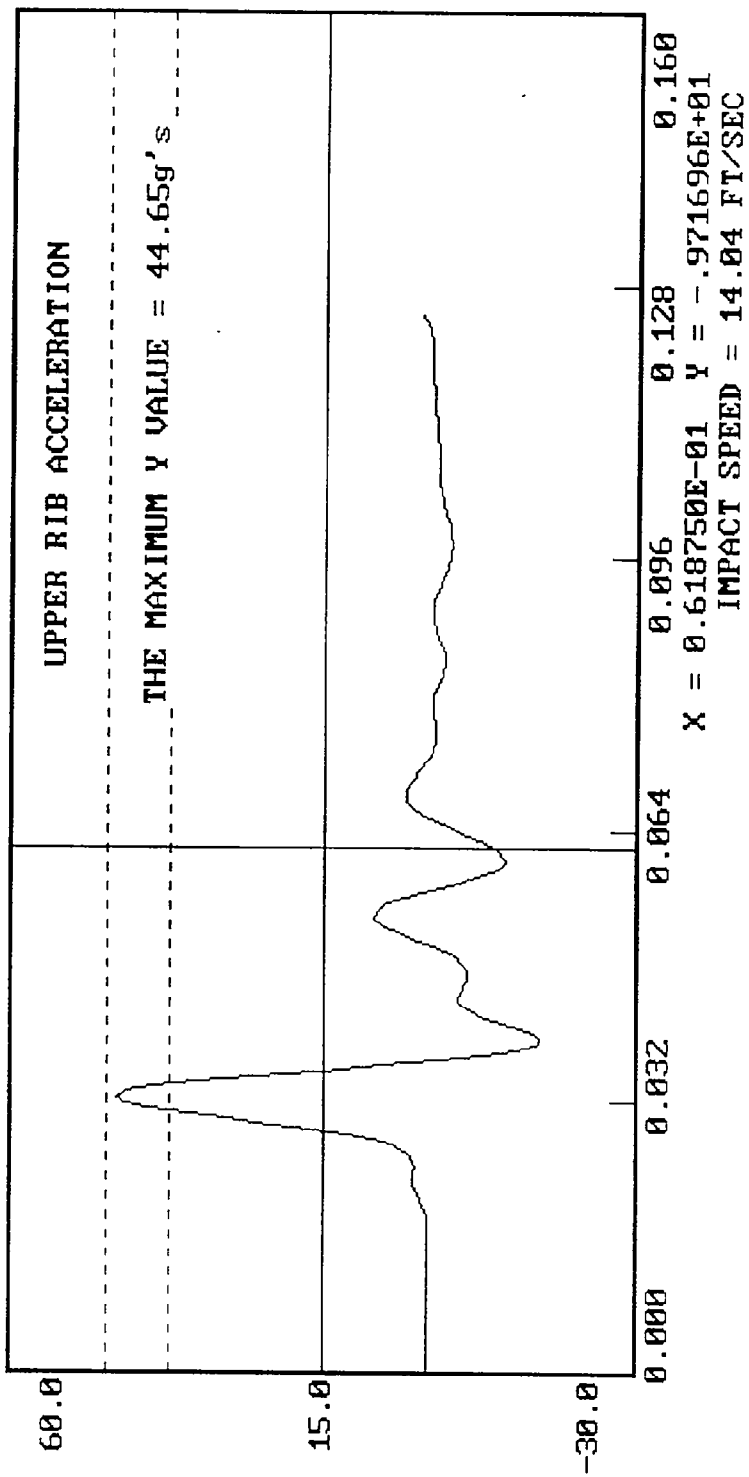
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	30%
PROBE SPEED	13.8 - 14.2 fps	14.0
UPPER RIB	37 - 46 g's	45
LOWER RIB	37 - 46 g's	43
LOWER SPINE	15 - 22 g's	21

TEST MEETS SPECIFICATIONS

TECHNICIAN 

APPROVED BY 

DUMMY CALIBRATION - THORAX IMPACT
 DUMMY # 272
 12-11-1996 15:55
 ACCELERATION (G'S) VS. TIME ((SECONDS))

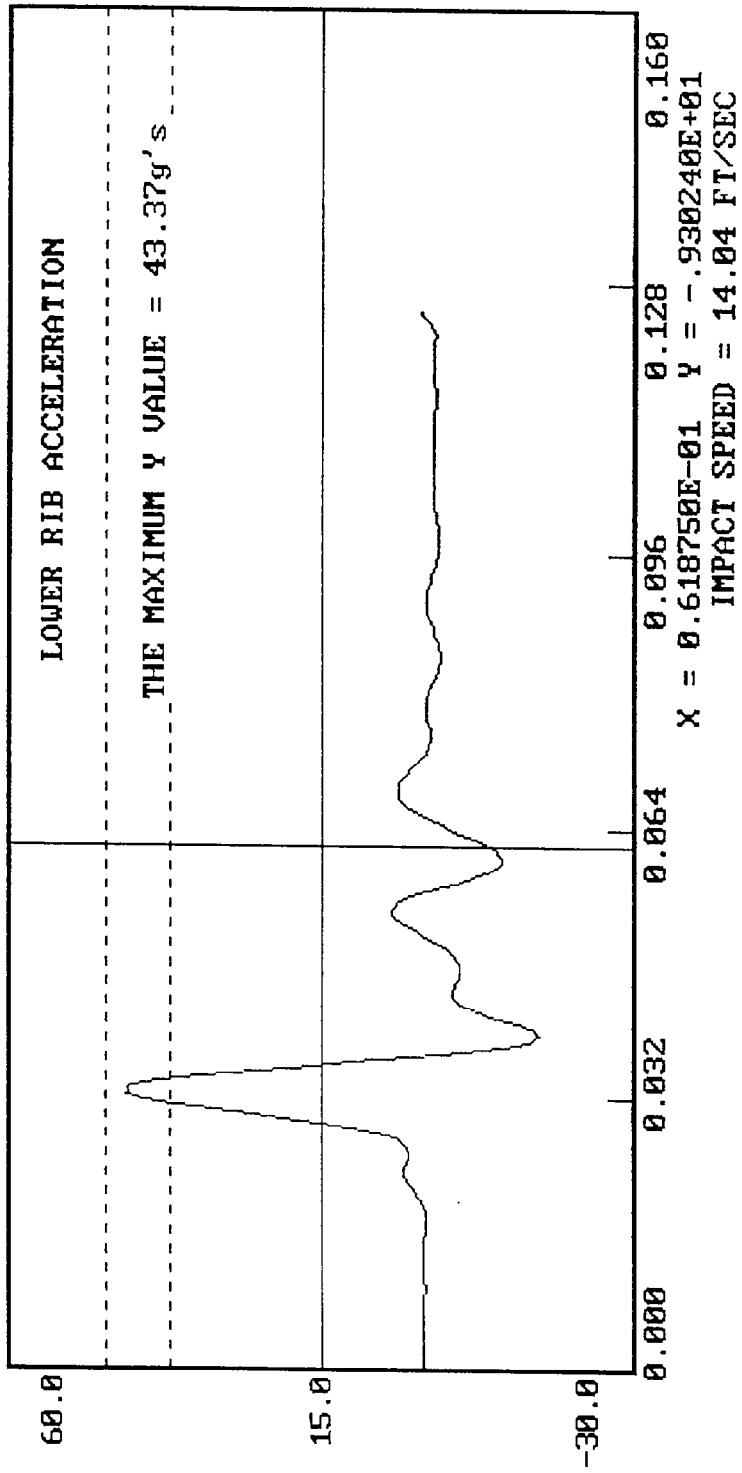


12-11-1996 15:55

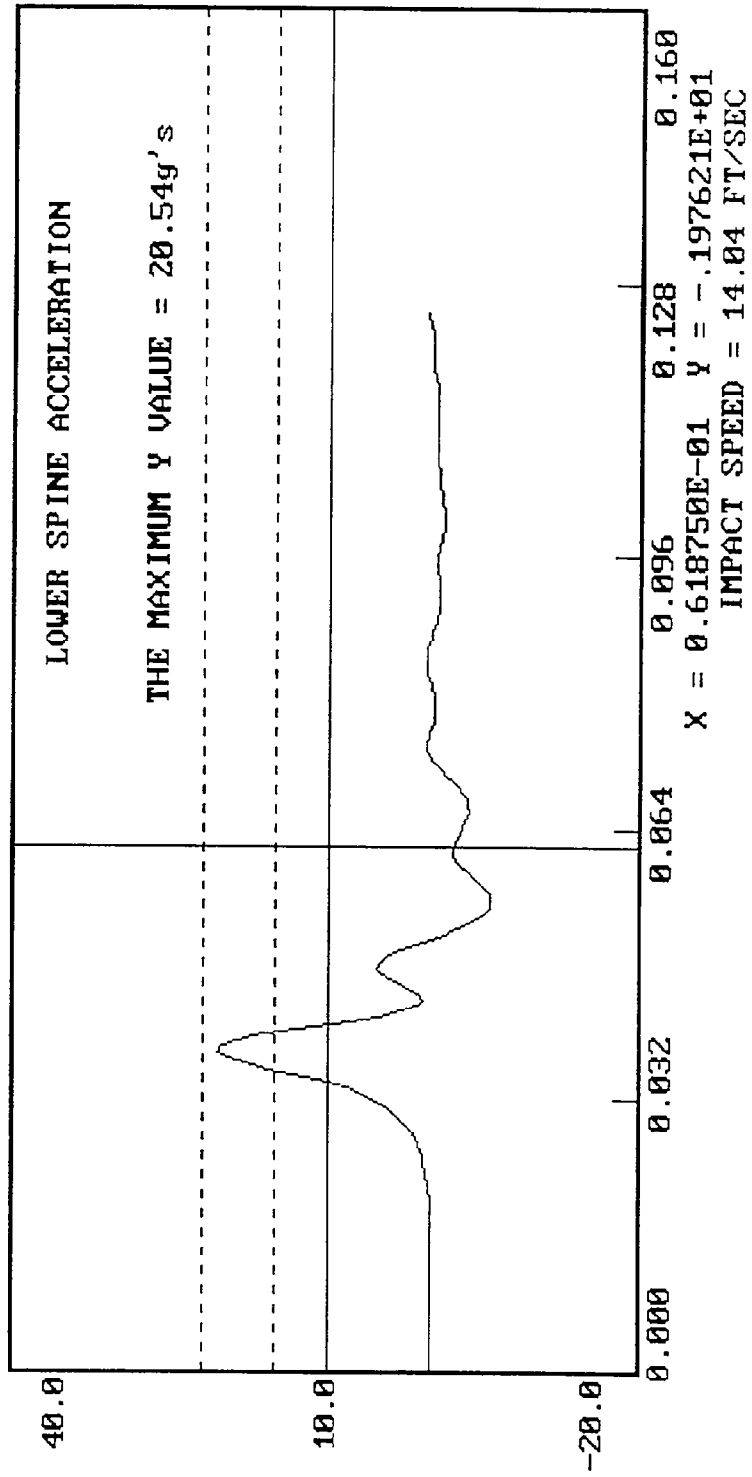
DUMMY CALIBRATION - THORAX IMPACT

DUMMY # 272

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



DUMMY CALIBRATION - THORAX IMPACT
 DUMMY # 272
 12-11-1996 15:55
 ACCELERATION (G'S) VS. TIME ((SECONDS))



MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: December 11, 1996

DUMMY NUMBER: 272

TEST NUMBER: D962133

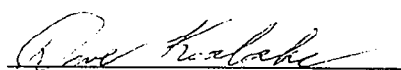
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	30%
PROBE SPEED	13.8 - 14.2 f/s	14.0
PELVIS ACCELERATION	40 - 60 g's	44

TEST MEETS SPECIFICATIONS

TECHNICIAN



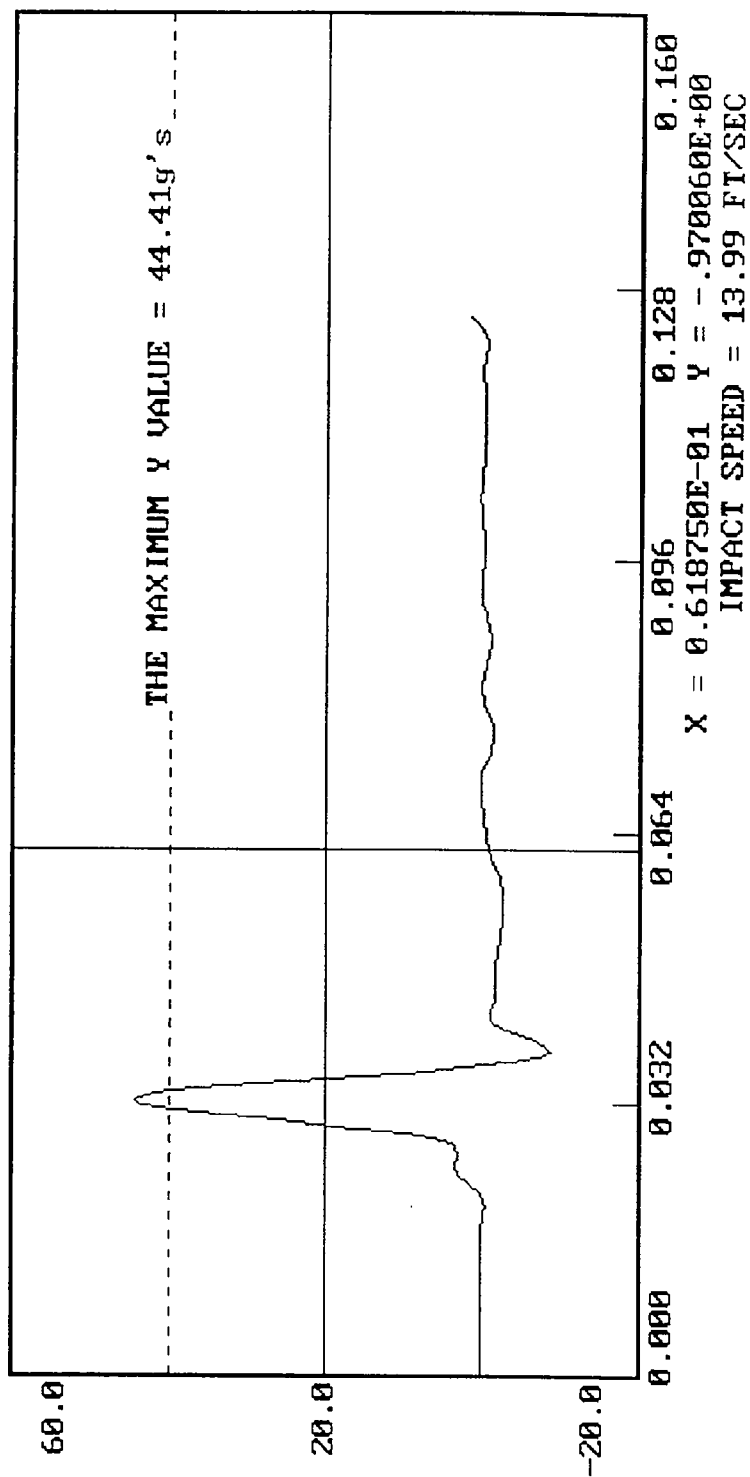
APPROVED BY



DUMMY CALIBRATION - PELVIS IMPACT
 DUMMY # 272

12-11-1996 16:14

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



MGA RESEARCH CORPORATION

ABDOMINAL COMPRESSION TEST
(PRELOAD = 10 LBS)

SIDE IMPACT DUMMY (SID)

DATE: December 11, 1996

DUMMY NUMBER: 272

TEST NUMBER: D962134

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	30%
FORCE @ 0.5 in	23.3 - 36.5 lbs	30.4
FORCE @ 0.75 in	36.7 - 49.8 lbs	42.1
FORCE @ 1.0 in	50 - 63 lbs	56
FORCE @ 1.3 in	73 - 88 lbs	76

TEST MEETS SPECIFICATIONS

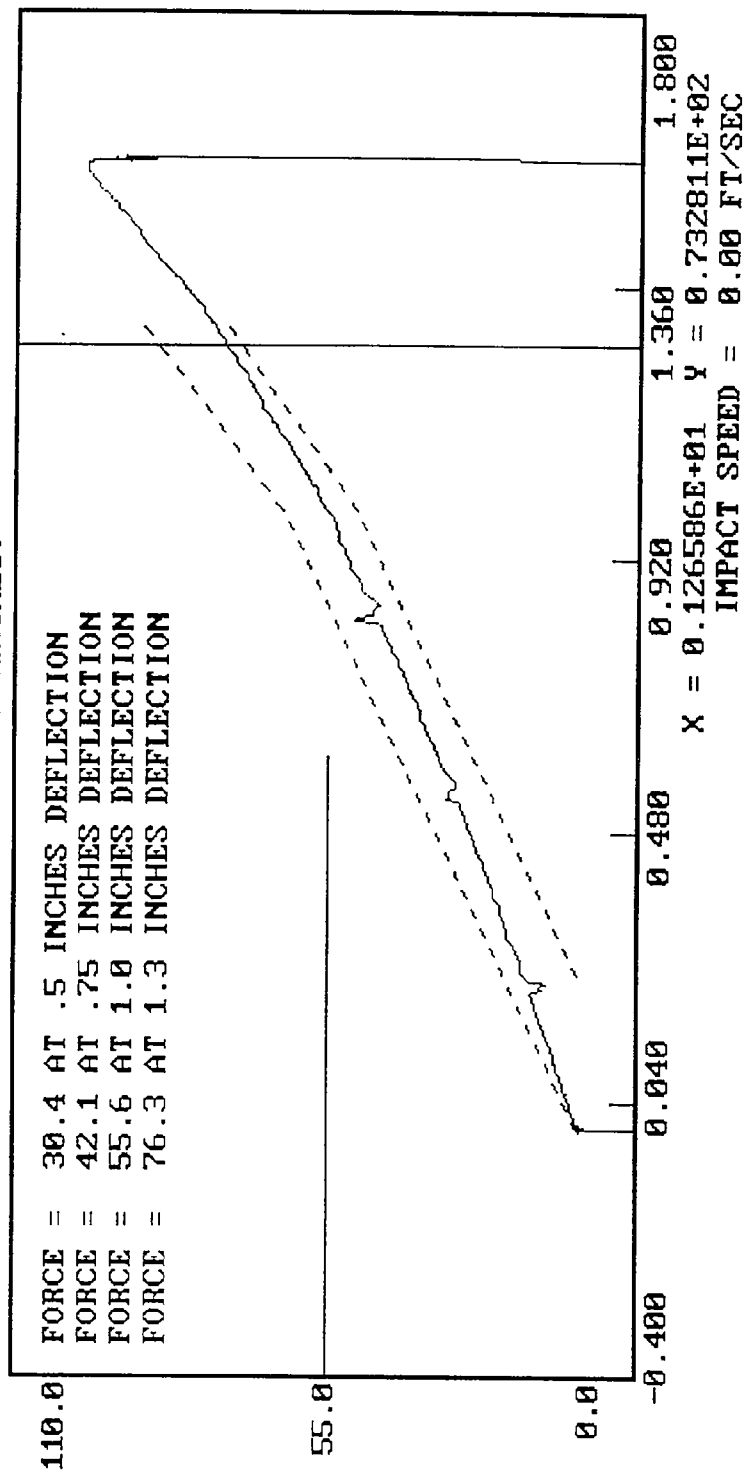
TECHNICIAN

Tom White

APPROVED BY

Gene Krabaker

DUMMY CALIBRATION - ABDOMEN COMPRESSION
 DUMMY # 272
 12-11-1996 16:36
 ABDOMEN FORCE (LBS) VS. ABDOMEN DISPLACEMENT (INCHES)



MGA RESEARCH CORPORATION

LUMBAR FLEXION TEST

SIDE IMPACT DUMMY (SID)

DATE: December 11, 1996

DUMMY NUMBER: 272

TEST NUMBER: D962135

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	30%
FORCE @ 0°	0 - 6 lbs	0
FORCE @ 20°	22 - 34 lbs	28
FORCE @ 30°	34 - 46 lbs	42
FORCE @ 40°	46 - 58 lbs	53
RETURN ANGLE	12° maximum	1°

TEST MEETS SPECIFICATIONS

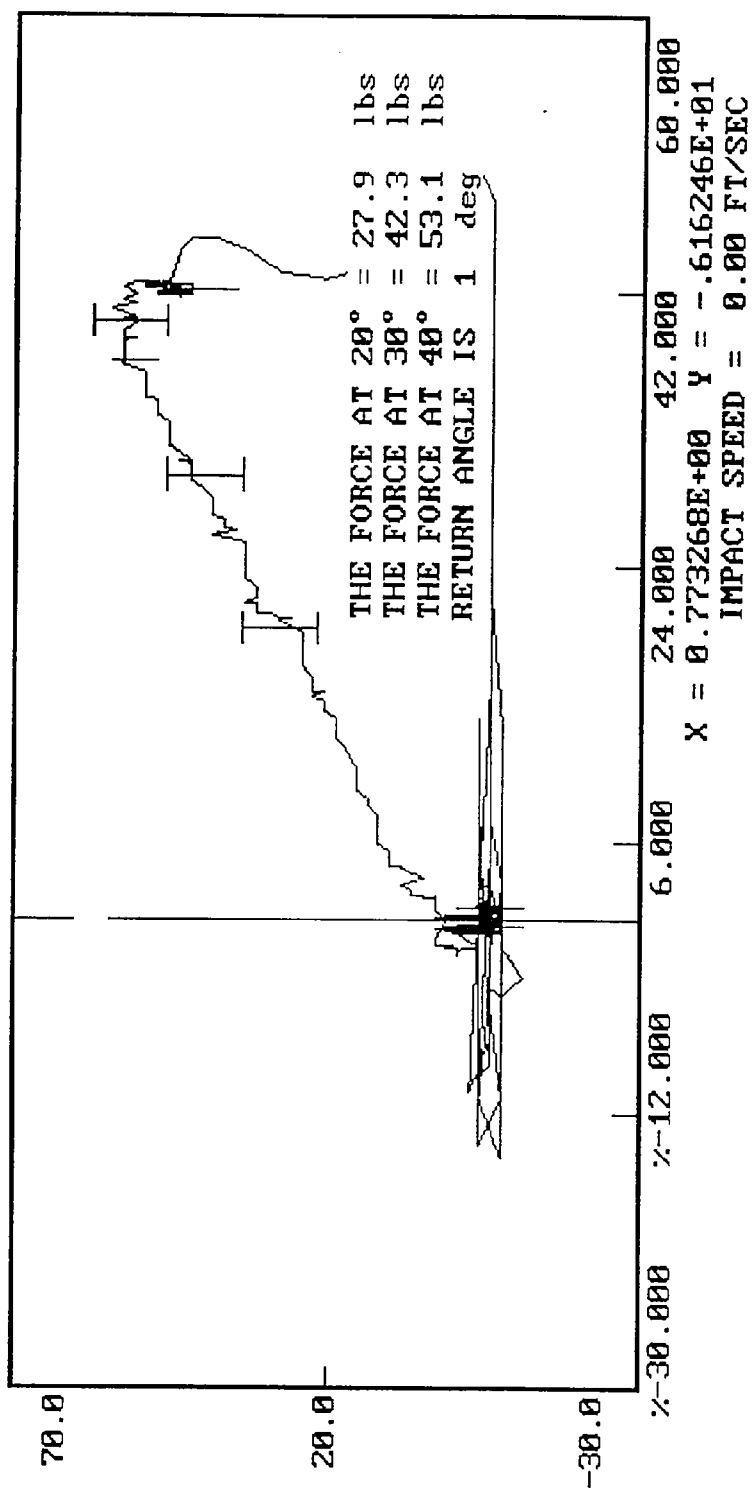
TECHNICIAN

Jim Kline

APPROVED BY

David Koschke

DUMMY CALIBRATION - LUMBAR FLEXION
 DUMMY # 272
 12-11-1996 17:19
 FORCE (LBS) VS. TORSO ROTATION (DEGREES)



PRE-TEST CERTIFICATION DATA

Rear Dummy Serial Number: 271

Calibration Test Results Summary

Passenger Serial Number: 271

Pre-Test Calibration

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

SIDE IMPACT DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

DUMMY NO.: 271

DATE OF VERIFICATION: December 11, 1996

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

MEASUREMENTS BY: Jim Mahan

APPROVED BY: Rose Kabake

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

DATE: December 11, 1996

DUMMY NUMBER: 271

TEST NUMBER: D96212678

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		66° - 78° F	70°
RELATIVE HUMIDITY		10 - 70%	30%
VELOCITY 10 ft/s	FORCE (lb.)	188 - 253	247
	DISPLACEMENT (in.)	1.18 - 1.38	1.29
VELOCITY 14 ft/s	FORCE (lb.)	389 - 472	464
	DISPLACEMENT (in.)	1.26 - 1.47	1.39
VELOCITY 20 ft/s	FORCE (lb.)	841 - 1000	919
	DISPLACEMENT (in.)	1.30 - 1.57	1.50

TEST MEETS SPECIFICATIONS

TECHNICIAN Tim White

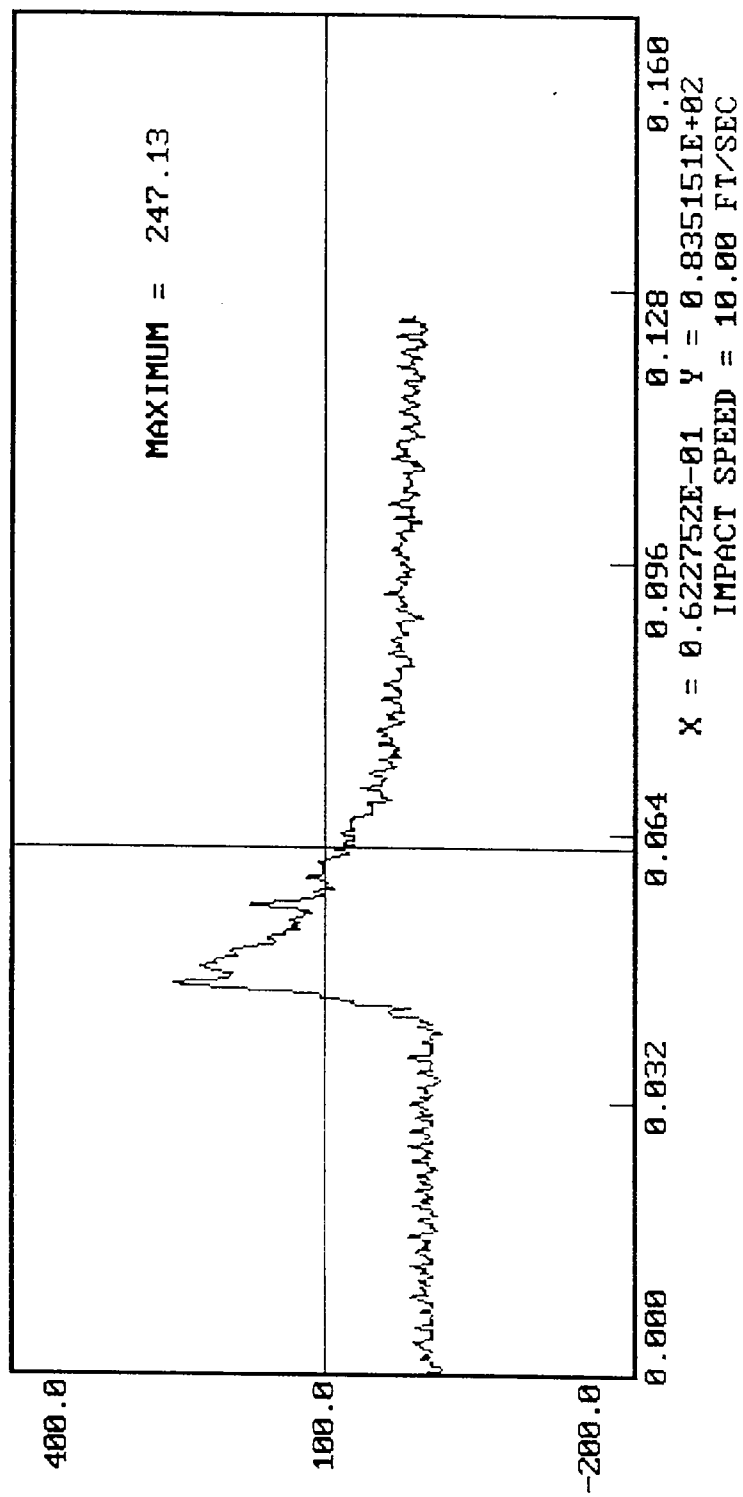
APPROVED BY Dave Kishoke

12-11-1996 09:24

DUMMY CALIBRATION - DAMPENER BENCH TEST

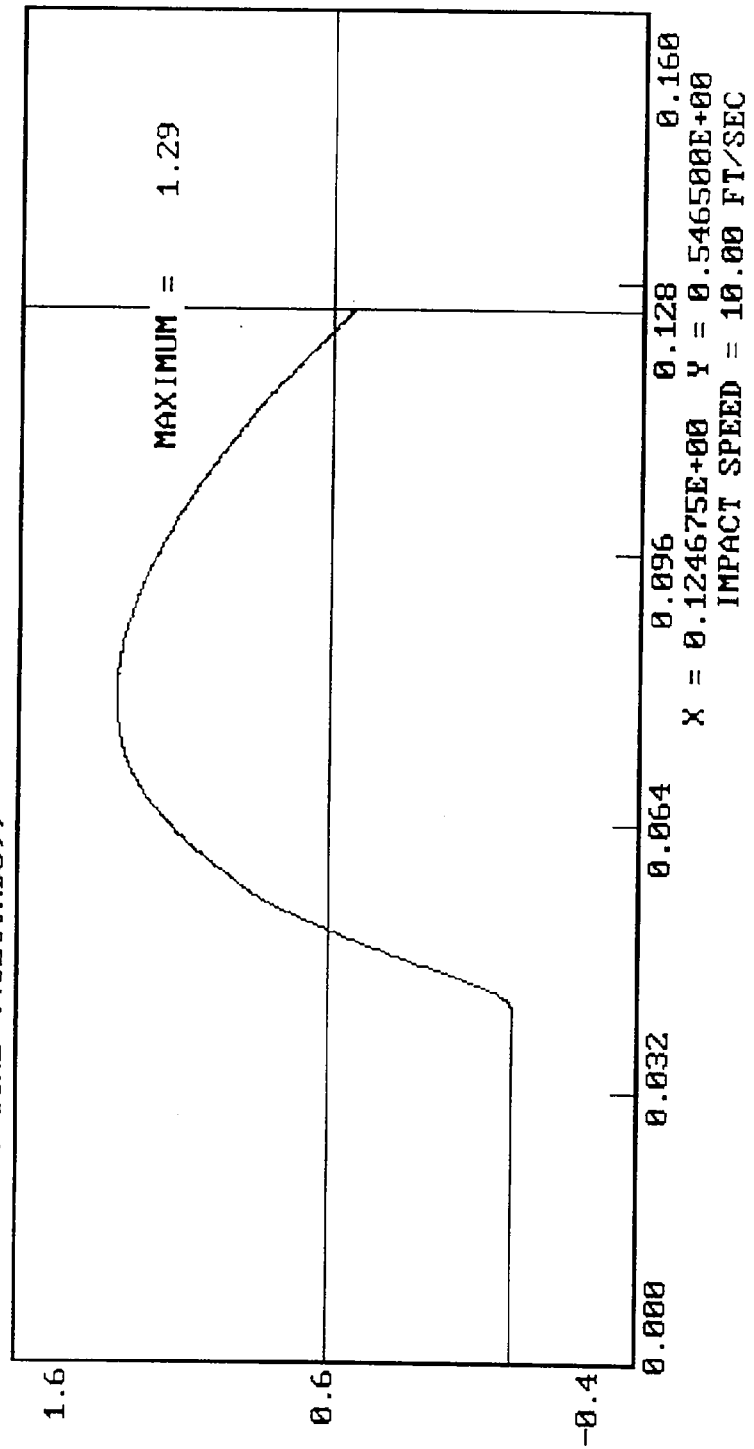
DUMMY # 271

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



DUMMY CALIBRATION - DAMPENER BENCH TEST
 DUMMY # 271
 DISPLACEMENT (IN) VS. TIME ((SECONDS))

12-11-1996 09:24

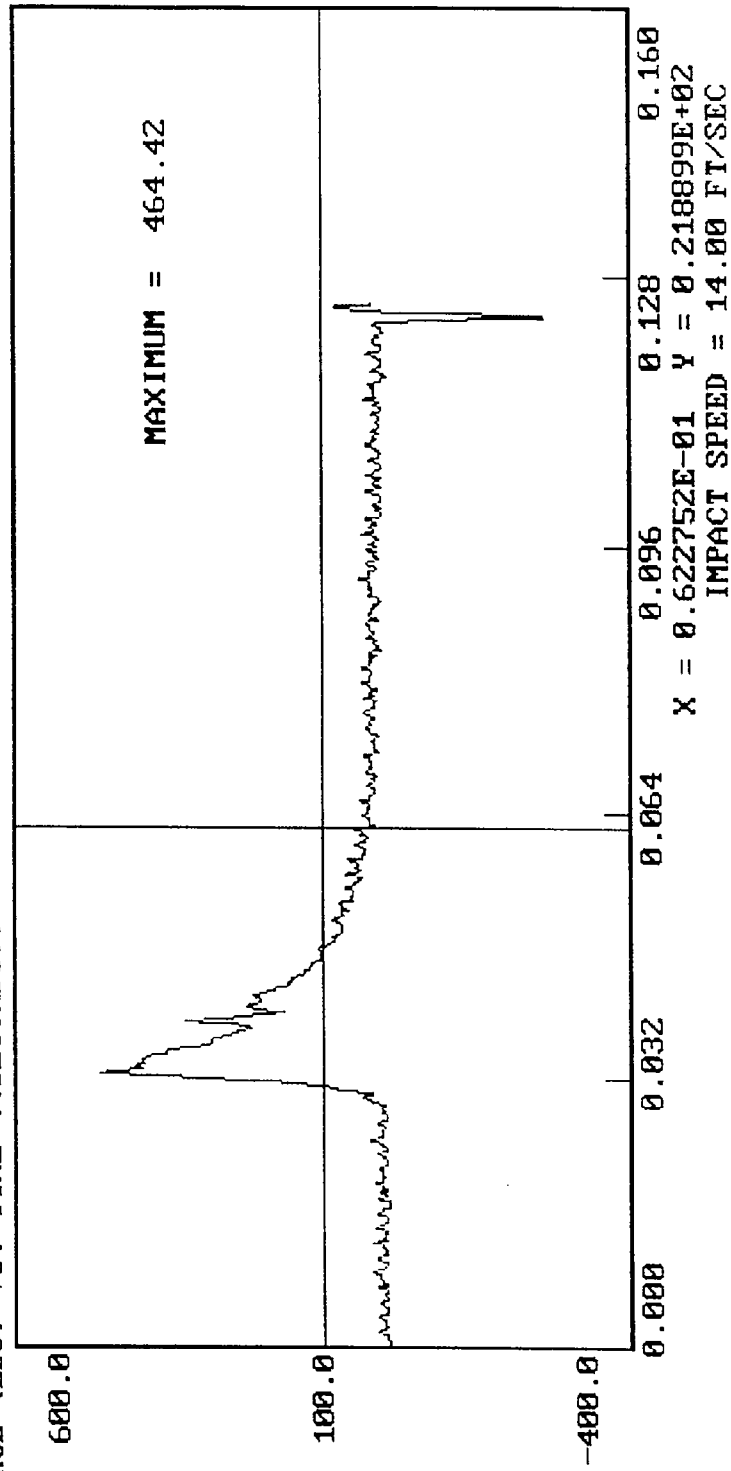


12-11-1996 09:41

DUMMY CALIBRATION - DAMPENER BENCH TEST

DUMMY # 271

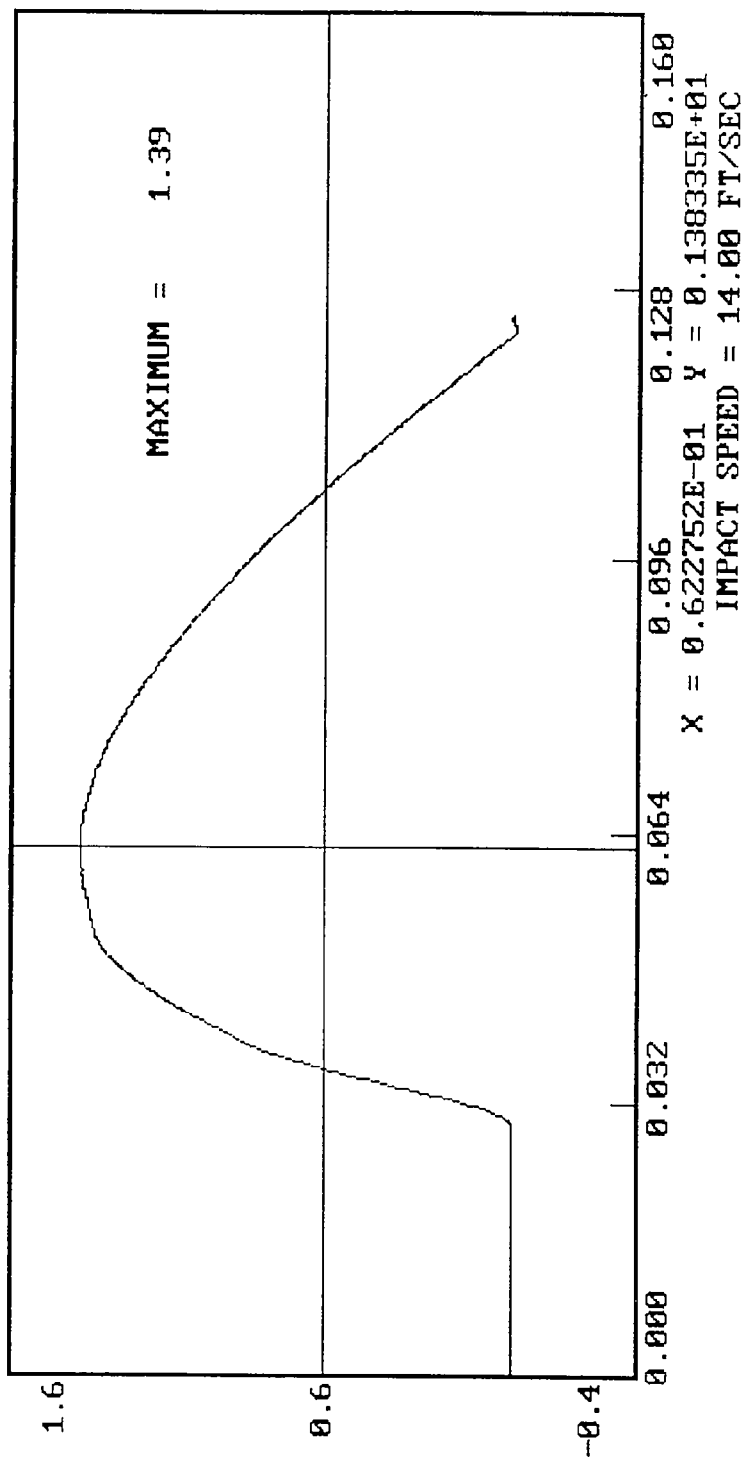
FORCE (LBS) VS. TIME ((SECONDS))



DUMMY CALIBRATION - DAMPENER BENCH TEST
DUMMY # 271
DISPLACEMENT (IN) VS. TIME ((SECONDS))

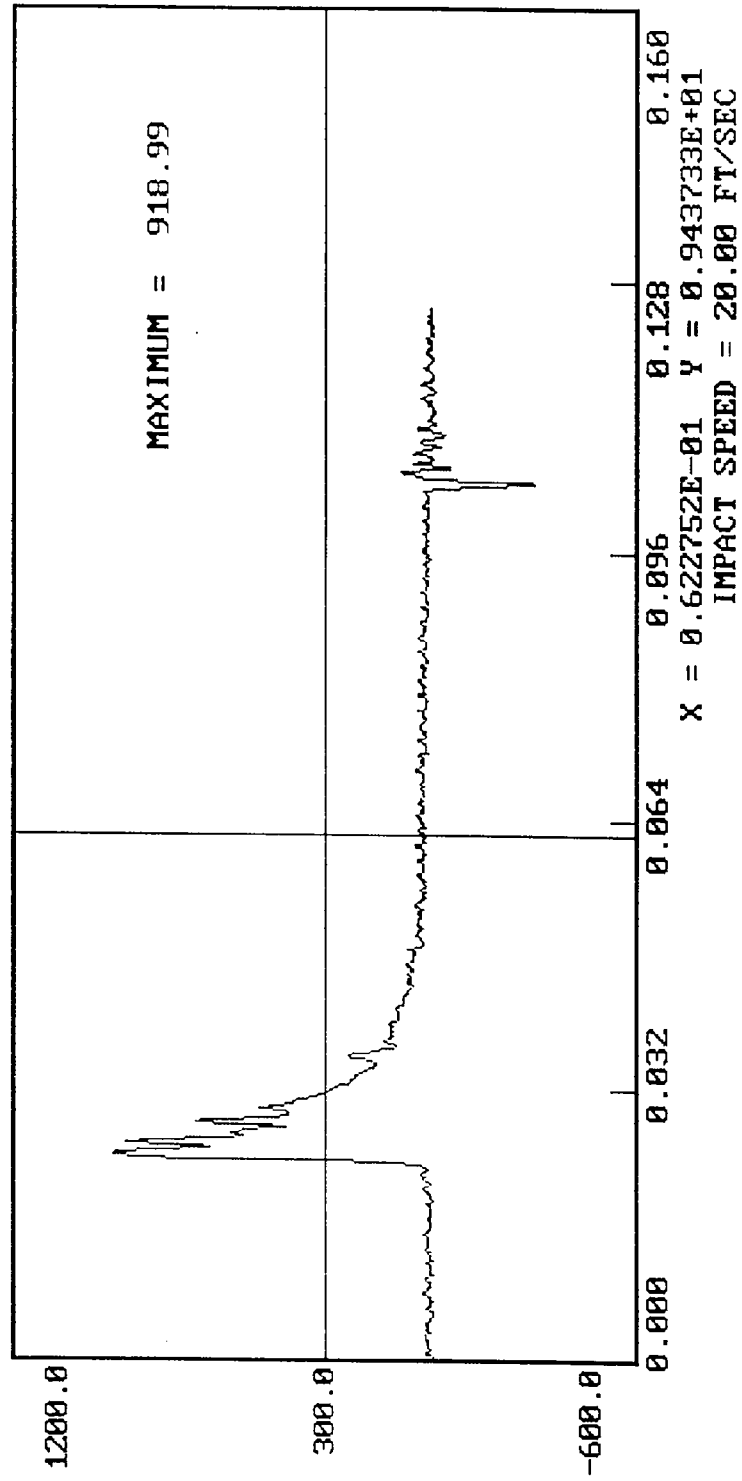
12-11-1996 09:41

MAXIMUM = 1.39



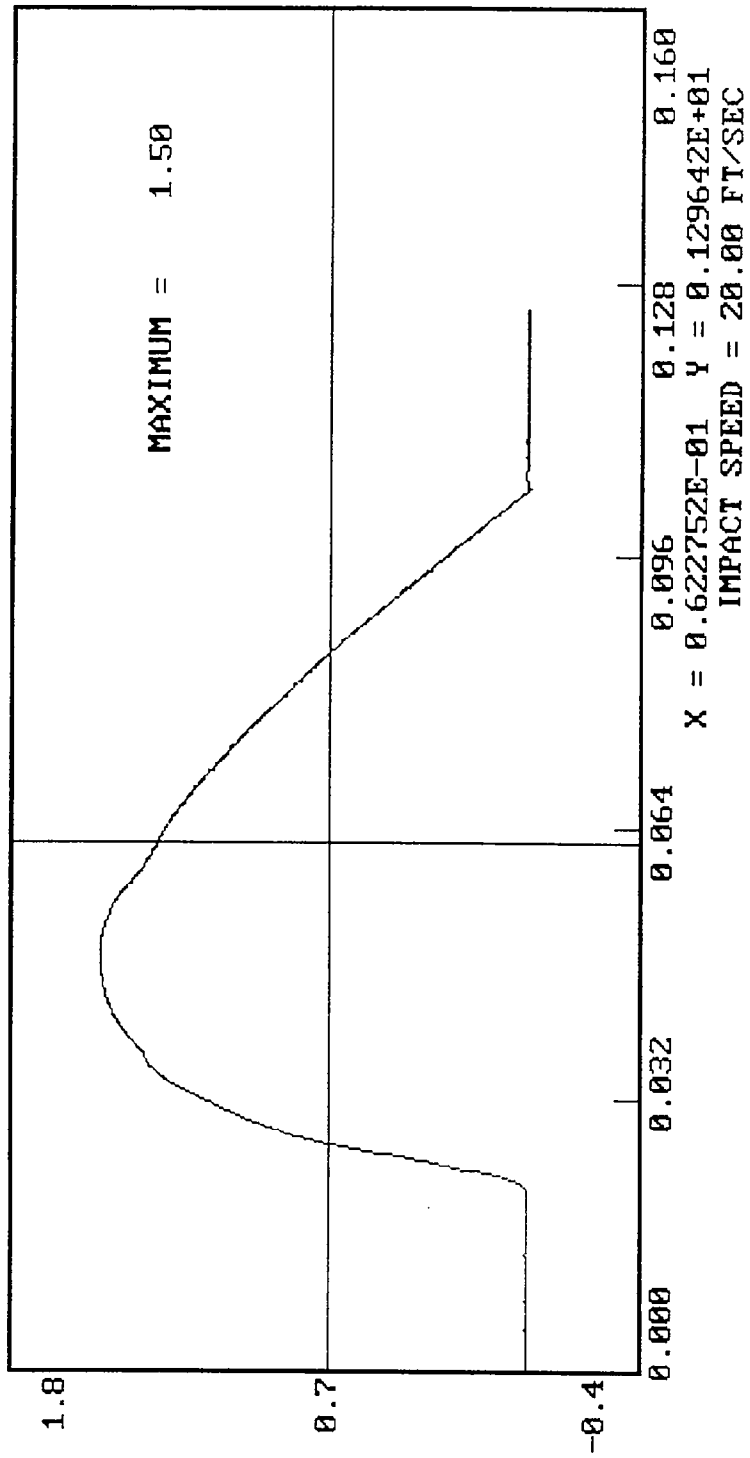
DUMMY CALIBRATION - DAMPENER BENCH TEST
 DUMMY # 271
 FORCE (LBS) VS. TIME ((SECONDS))

12-11-1996 10:31



DUMMY CALIBRATION - DAMPENER BENCH TEST
 DUMMY # 271
 DISPLACEMENT (IN) VS. TIME ((SECONDS))

12-11-1996 10:31



MGA RESEARCH CORPORATION

THORAX IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: December 11, 1996

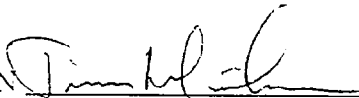
DUMMY NUMBER: 271

TEST NUMBER: D962122

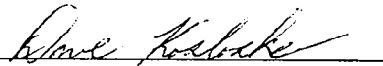
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	30%
PROBE SPEED	13.8 - 14.2 fps	14.1
UPPER RIB	37 - 46 g's	39
LOWER RIB	37 - 46 g's	39
LOWER SPINE	15 - 22 g's	19

TEST MEETS SPECIFICATIONS

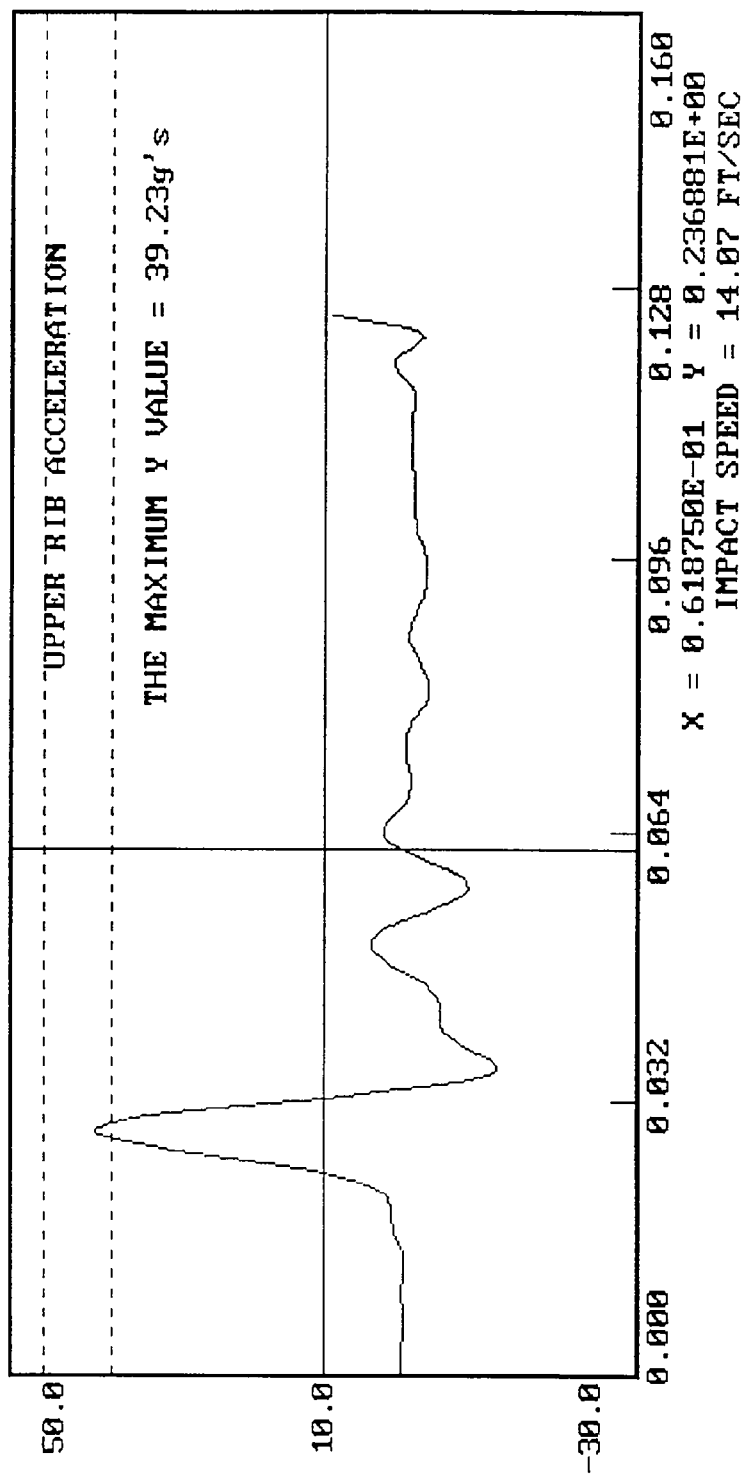
TECHNICIAN



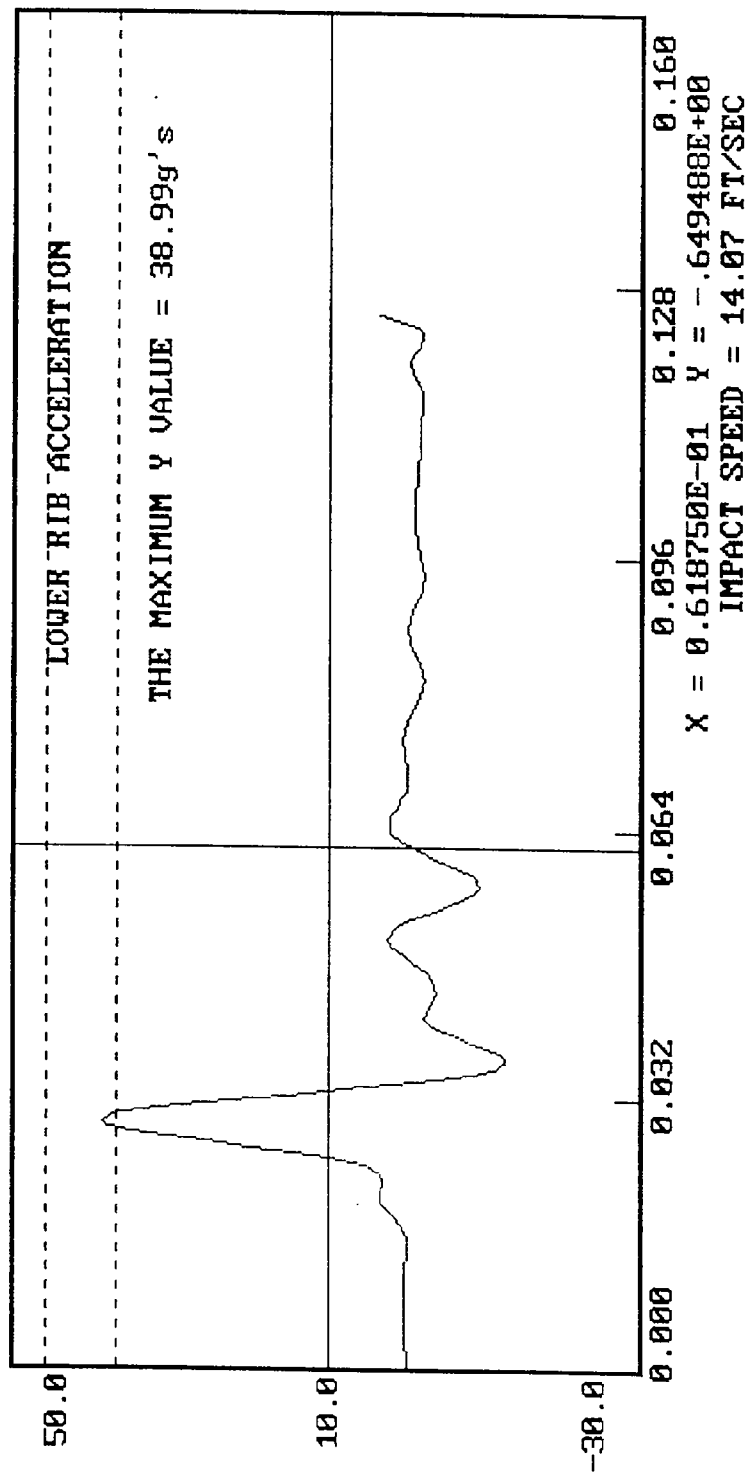
APPROVED BY



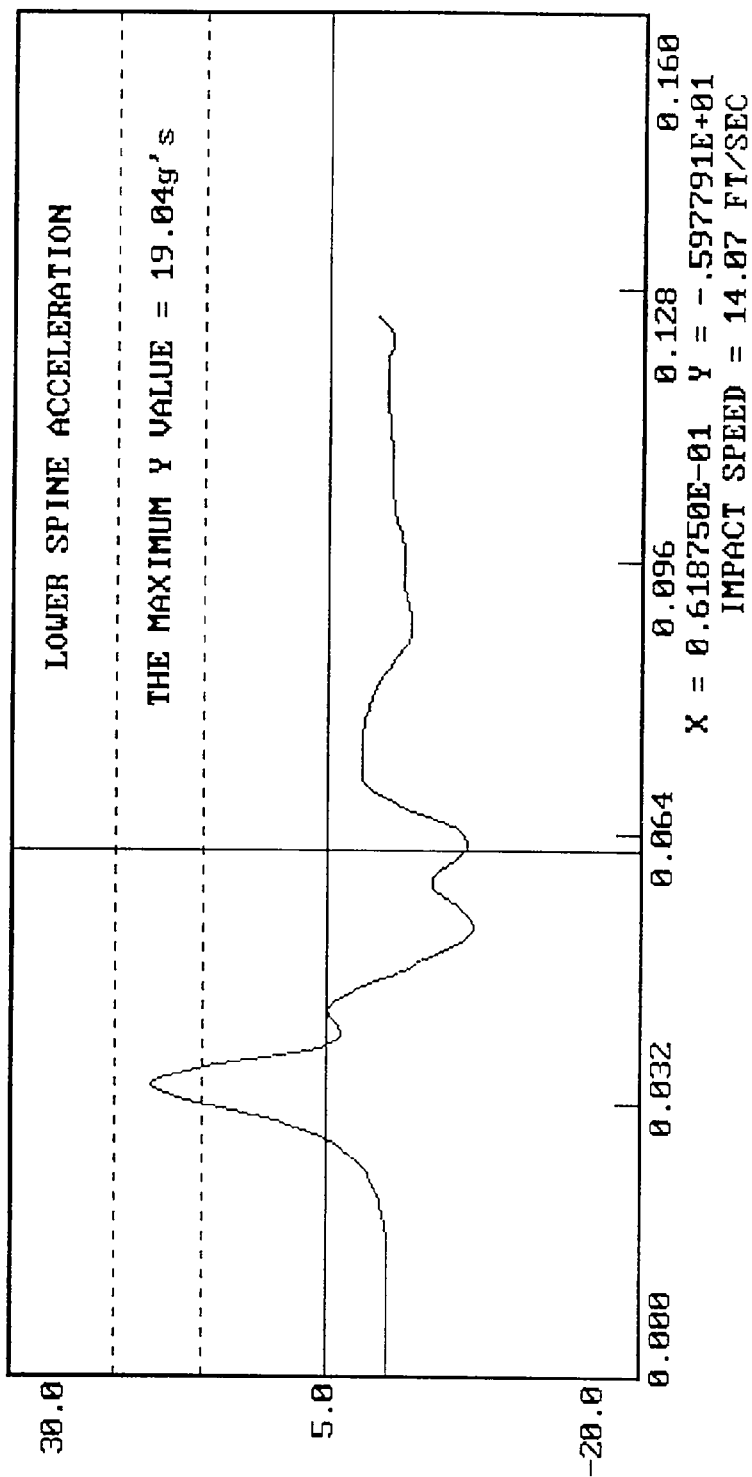
DUMMY CALIBRATION - THORAX IMPACT
 DUMMY # 271
 12-11-1996 14:41
 ACCELERATION (G'S) VS. TIME ((SECONDS))



DUMMY CALIBRATION - THORAX IMPACT
 DUMMY # 271
 12-11-1996 14:41
 ACCELERATION (G'S) VS. TIME ((SECONDS))



DUMMY CALIBRATION - THORAX IMPACT
 DUMMY # 271
 12-11-1996 14:41
 ACCELERATION (G'S) VS. TIME ((SECONDS))



MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: December 11, 1996

DUMMY NUMBER: 271

TEST NUMBER: D962123

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	30%
PROBE SPEED	13.8 - 14.2 f/s	14.2
PELVIS ACCELERATION	40 - 60 g's	41

TEST MEETS SPECIFICATIONS

TECHNICIAN Jim M. L.

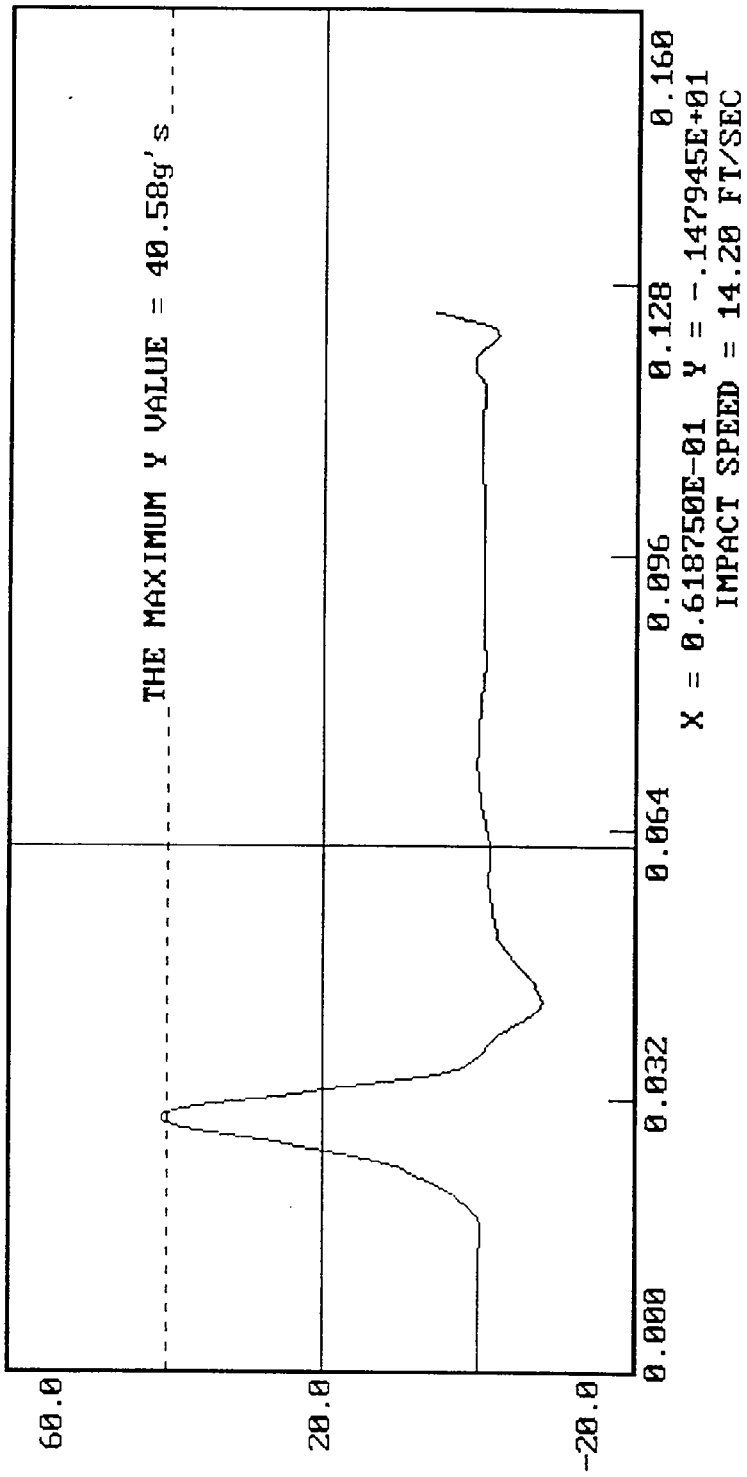
APPROVED BY Dave Kralovec

12-11-1996 15:33

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: December 11, 1996

DUMMY NUMBER: 271

TEST NUMBER: D962124

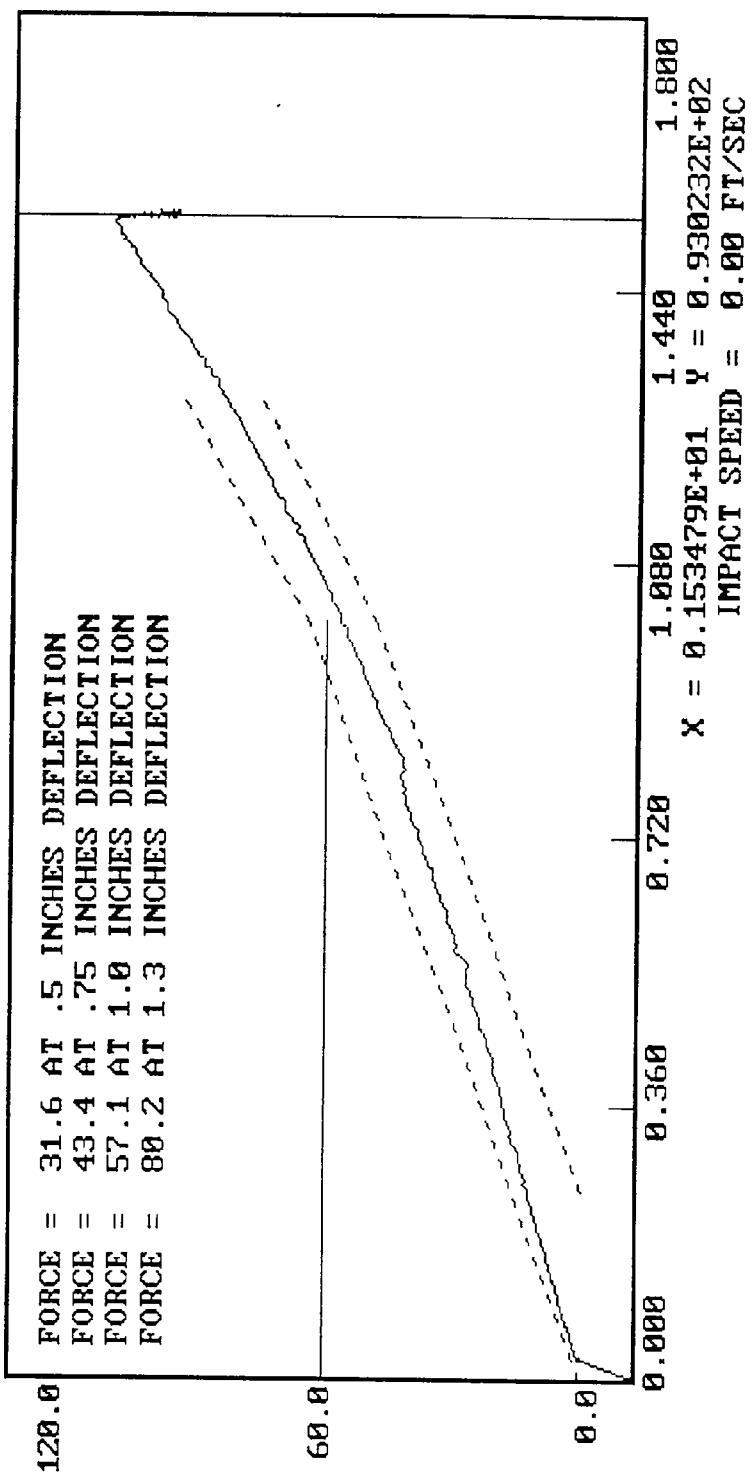
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	30%
FORCE @ 0.5 in	23.3 - 36.5 lbs	31.6
FORCE @ 0.75 in	36.7 - 49.8 lbs	43.4
FORCE @ 1.0 in	50 - 63 lbs	57
FORCE @ 1.3 in	73 - 88 lbs	80

TEST MEETS SPECIFICATIONS

TECHNICIAN Jim White

APPROVED BY Bob Kabele

DUMMY CALIBRATION - ABDOMEN COMPRESSION
 DUMMY # 271
 12-11-1996 16:48
 ABDOMEN FORCE (LBS) VS. ABDOMEN DISPLACEMENT (INCHES)



MGA RESEARCH CORPORATION

LUMBAR FLEXION TEST

SIDE IMPACT DUMMY (SID)

DATE: December 11, 1996

DUMMY NUMBER: 271

TEST NUMBER: D962125

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	30%
FORCE @ 0°	0 - 6 lbs	0
FORCE @ 20°	22 - 34 lbs	24
FORCE @ 30°	34 - 46 lbs	35
FORCE @ 40°	46 - 58 lbs	47
RETURN ANGLE	12° maximum	2°

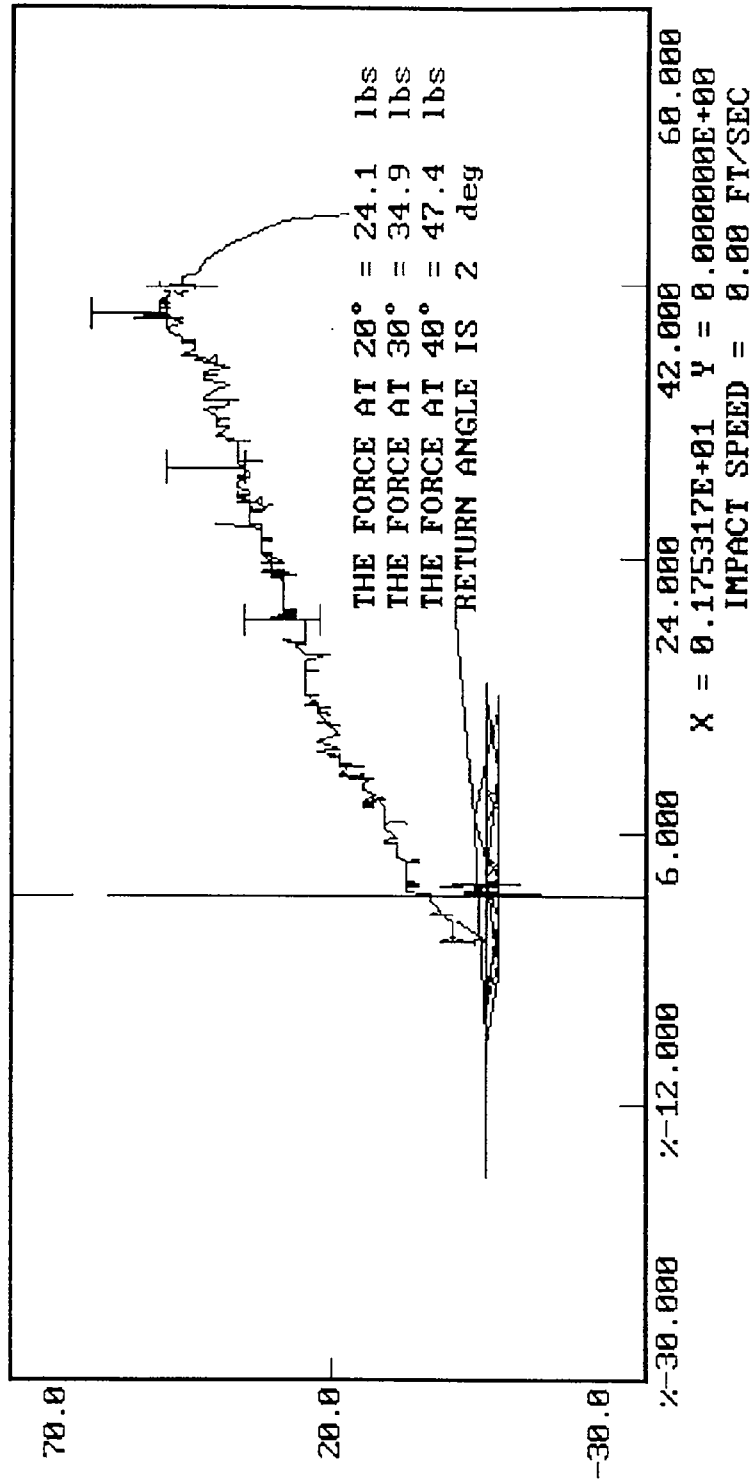
TEST MEETS SPECIFICATIONS

TECHNICIAN Jim Miller

APPROVED BY Steve Kishake

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

12-11-1996 17:00



POST-TEST CERTIFICATION DATA

Front 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: December 16, 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: Jim M. L.

APPROVED BY: Gene Kelske

MGA RESEARCH CORPORATION

THORAX IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: December 16, 1996

DUMMY NUMBER: 272

TEST NUMBER: D962192

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	44
LOWER RIB	37 - 46 g's	42
LOWER SPINE	15 - 22 g's	19

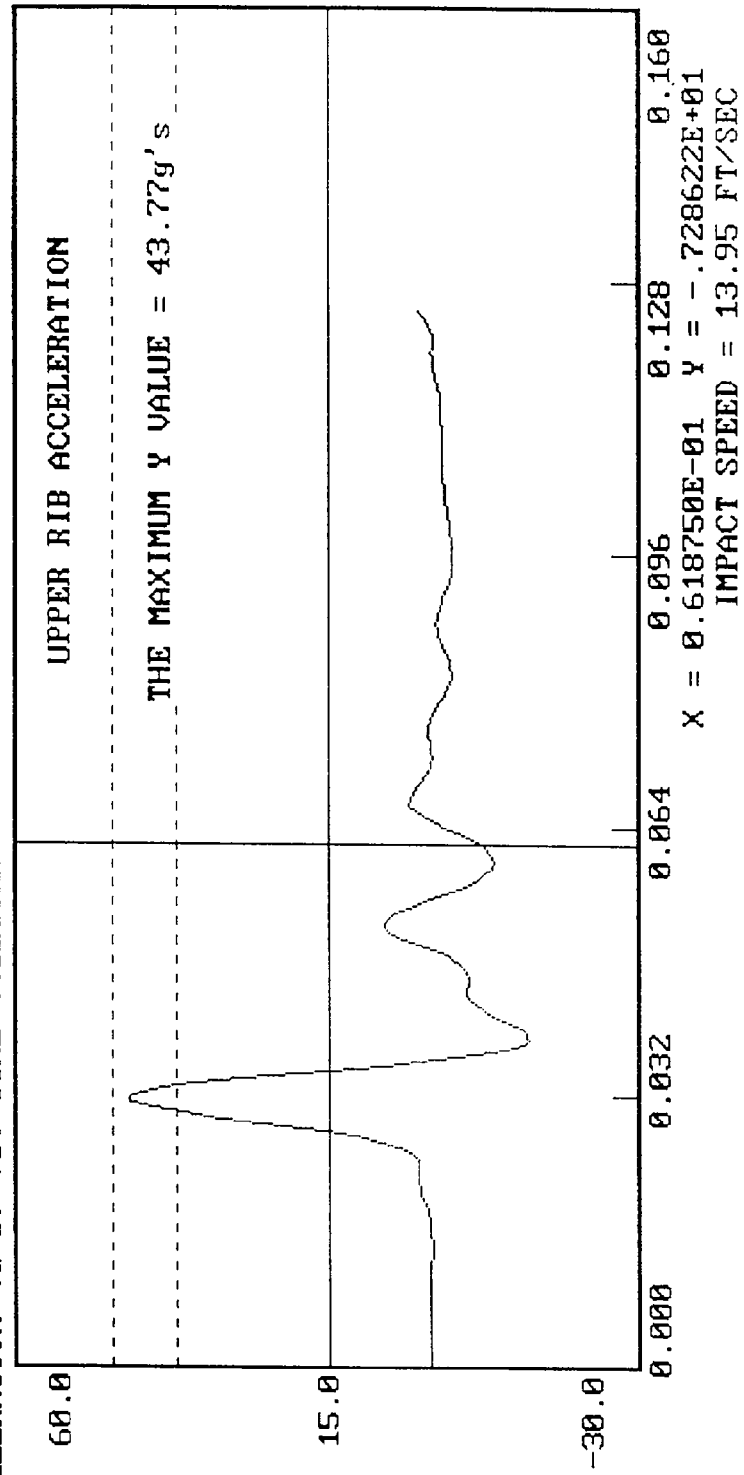
TEST MEETS SPECIFICATIONS

TECHNICIAN Jim [Signature]

APPROVED BY [Signature]

12-16-1996 11:43

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

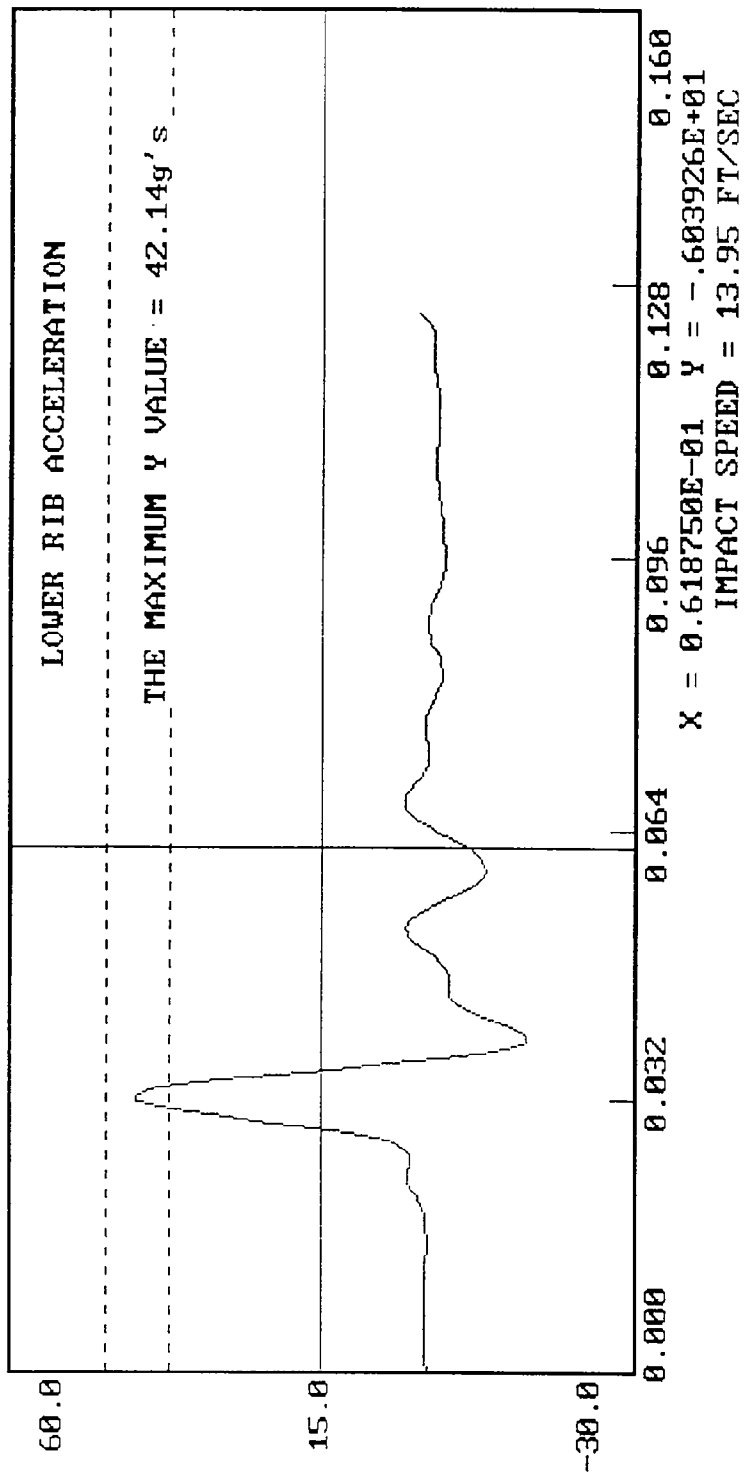


12-16-1996 11:43

DUMMY CALIBRATION - THORAX IMPACT

DUMMY # 272

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

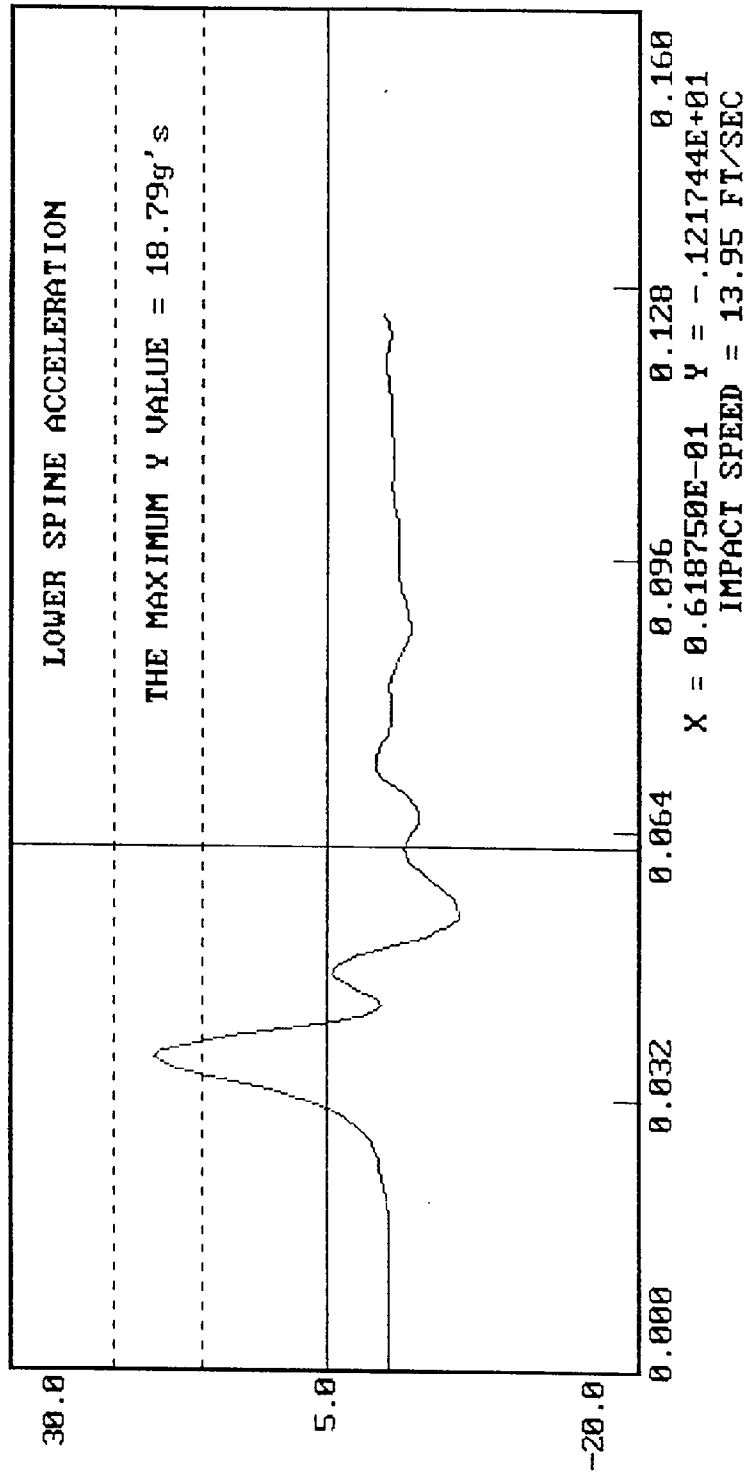


12-16-1996 11:43

DUMMY CALIBRATION - THORAX IMPACT

DUMMY # 272

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



MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: December 16, 1996

DUMMY NUMBER: 272

TEST NUMBER: D962193

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	47

TEST MEETS SPECIFICATIONS

TECHNICIAN

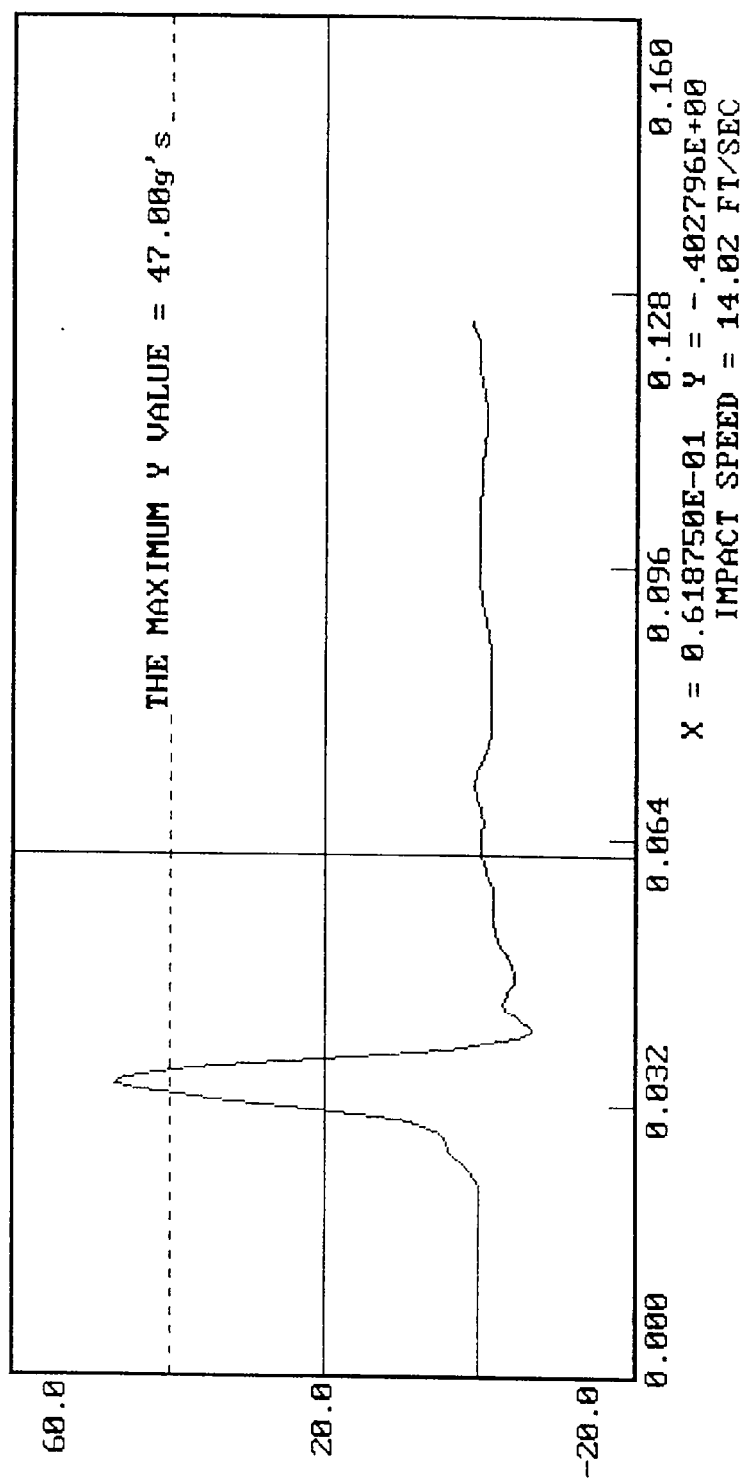
Jim Melan

APPROVED BY

Steve Kaboraki

12-16-1996 11:50

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



MGA RESEARCH CORPORATION

ABDOMINAL COMPRESSION TEST
(PRELOAD = 10 LBS)

SIDE IMPACT DUMMY (SID)

DATE: December 16, 1996

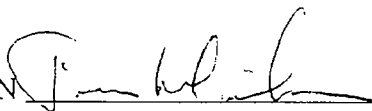
DUMMY NUMBER: 272

TEST NUMBER: D962194

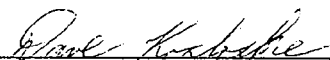
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	20%
FORCE @ 0.5 in	23.3 - 36.5 lbs	32.7
FORCE @ 0.75 in	36.7 - 49.8 lbs	44.4
FORCE @ 1.0 in	50 - 63 lbs	59
FORCE @ 1.3 in	73 - 88 lbs	82

TEST MEETS SPECIFICATIONS

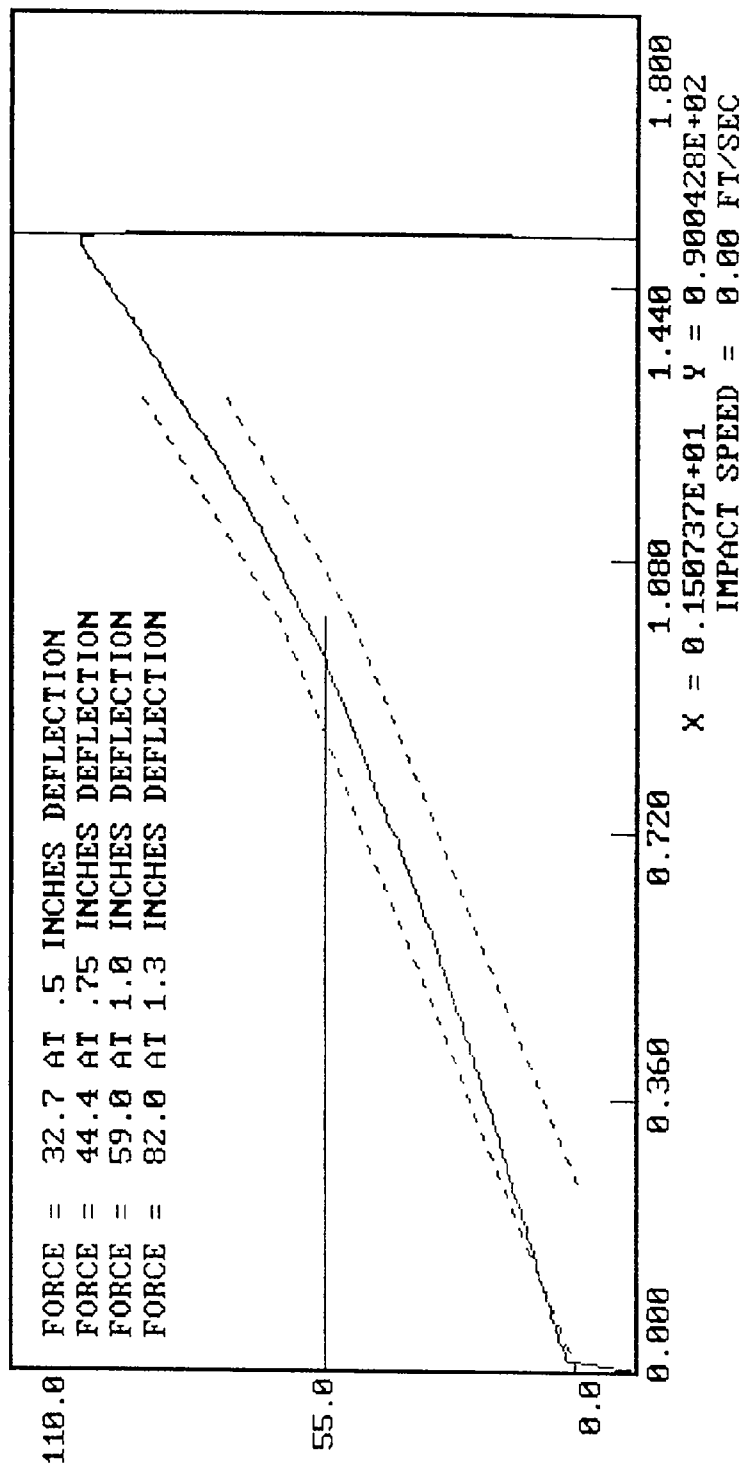
TECHNICIAN



APPROVED BY



DUMMY CALIBRATION - ABDOMEN COMPRESSION
 DUMMY # 272
 12-16-1996 12:31
 ABDOMEN FORCE (LBS) VS. ABDOMEN DISPLACEMENT (INCHES)



MGA RESEARCH CORPORATION

LUMBAR FLEXION TEST

SIDE IMPACT DUMMY (SID)

DATE: December 16, 1996

DUMMY NUMBER: 272

TEST NUMBER: D962195

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	49
RETURN ANGLE	12° maximum	1°

TEST MEETS SPECIFICATIONS

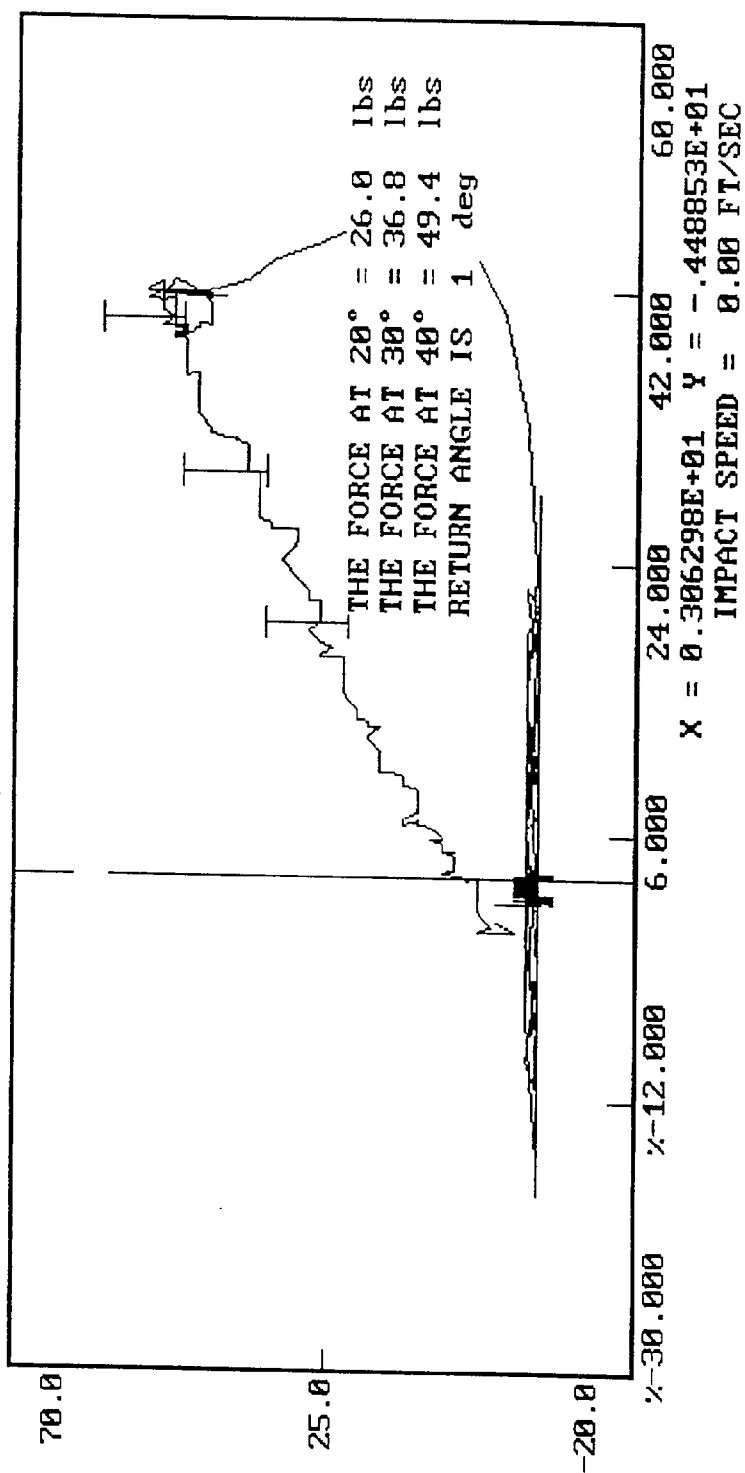
TECHNICIAN

Tim White

APPROVED BY

Steve Kaskas

DUMMY CALIBRATION - LUMBAR FLEXION
 DUMMY # 272
 12-16-1996 12:54
 FORCE (LBS) VS. TORSO ROTATION (DEGREES)



POST-TEST CERTIFICATION DATA

Rear Dummy Serial Number: 271

Calibration Test Results Summary

Dummy Serial Number: 271

Post-Test Calibration

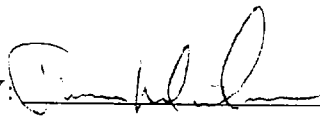
External Dimensions:	The dummy passed all external dimension requirements.
Thorax Impact Test:	The thorax passed all impact test requirements.
Pelvic Impact Test:	The pelvis passed all impact test requirements.
Abdominal Compression Test:	The abdomen passed all compression test requirements.
Lumbar Flexion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

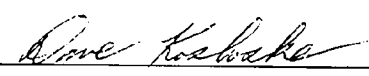
SIDE IMPACT DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

DUMMY NO.: 271

DATE OF VERIFICATION: December 16, 1996

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

MEASUREMENTS BY: 

APPROVED BY: 

MGA RESEARCH CORPORATION

THORAX IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: December 16, 1996

DUMMY NUMBER: 271

TEST NUMBER: D962182

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	20%
PROBE SPEED	13.8 - 14.2 fps	13.9
UPPER RIB	37 - 46 g's	43
LOWER RIB	37 - 46 g's	44
LOWER SPINE	15 - 22 g's	19

TEST MEETS SPECIFICATIONS

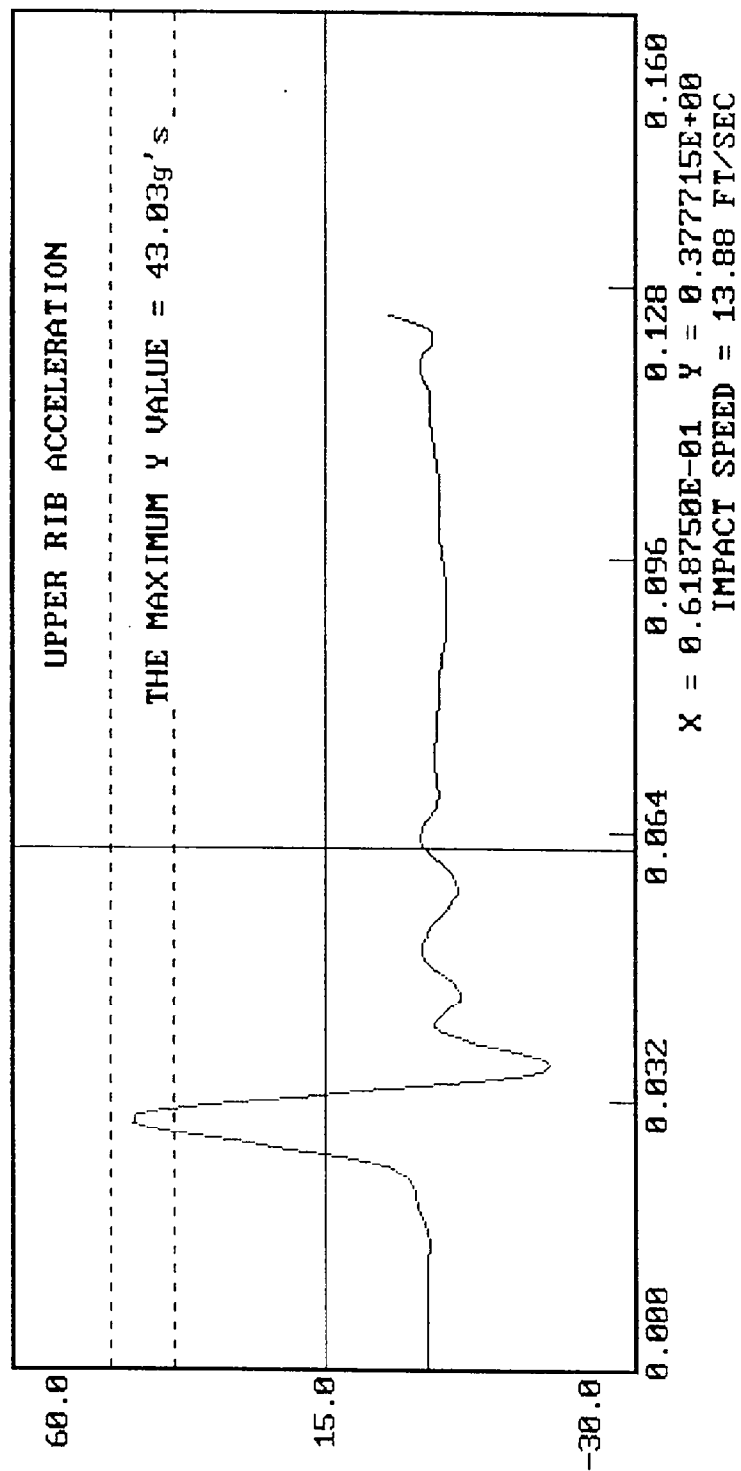
TECHNICIAN

Jim Whit

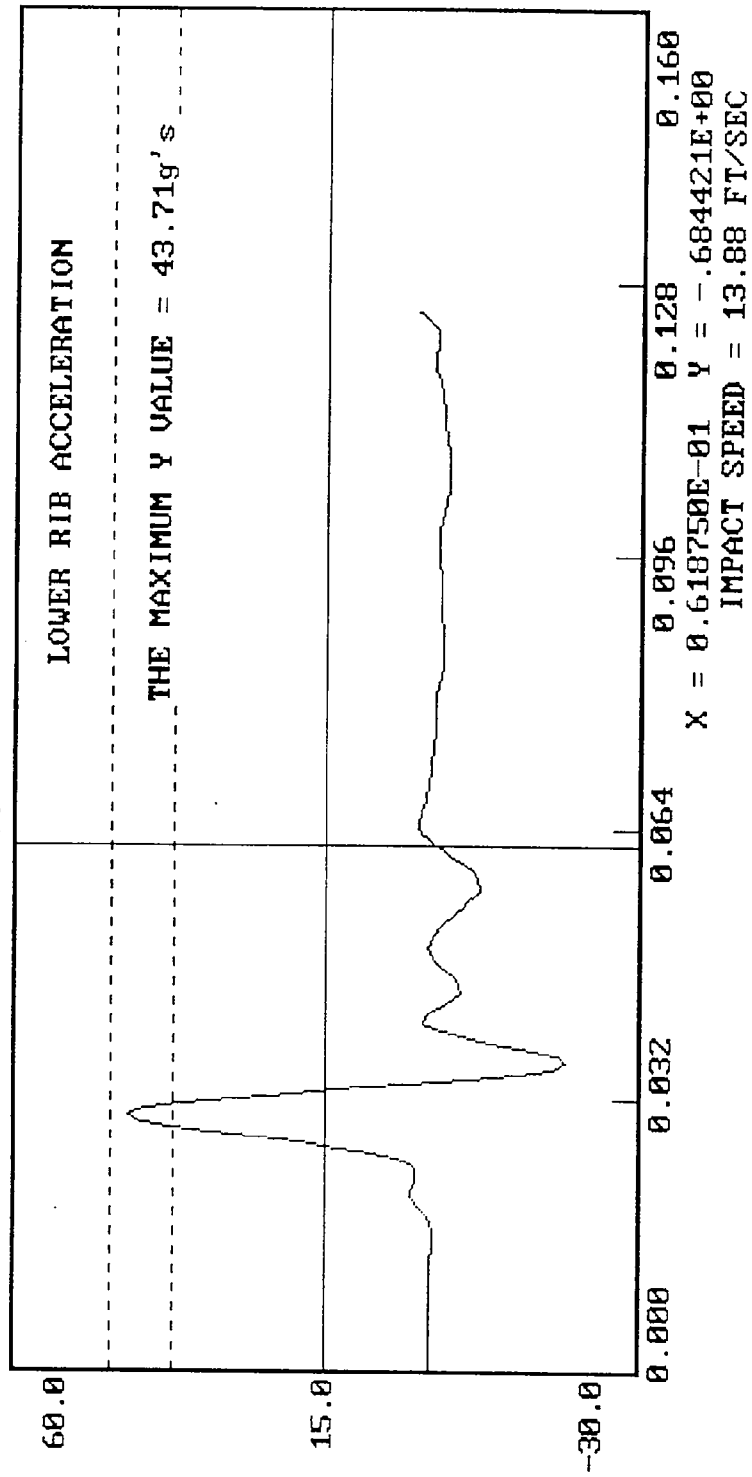
APPROVED BY

Rene Kabake

DUMMY CALIBRATION - THORAX IMPACT
 DUMMY # 271
 12-16-1996 11:19
 ACCELERATION (G'S) VS. TIME ((SECONDS))



DUMMY CALIBRATION - THORAX IMPACT
 DUMMY # 271
 12-16-1996 11:19
 ACCELERATION (G'S) VS. TIME ((SECONDS))

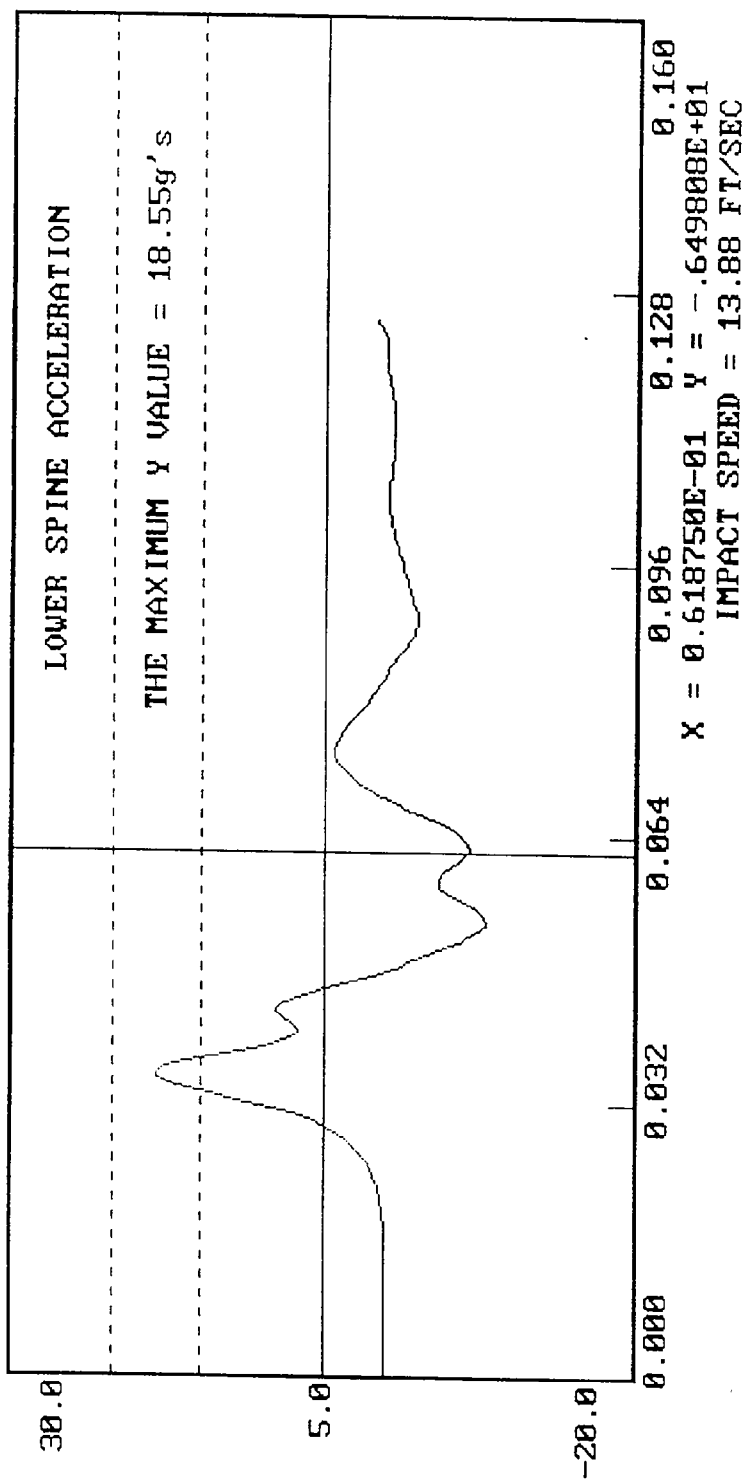


DUMMY CALIBRATION - THORAX IMPACT

DUMMY # 271

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

12-16-1996 11:28



MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: December 16, 1996

DUMMY NUMBER: 271

TEST NUMBER: D962183

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	20%
PROBE SPEED	13.8 - 14.2 f/s	14.2
PELVIS ACCELERATION	40 - 60 g's	43

TEST MEETS SPECIFICATIONS

TECHNICIAN

Jim Wilson

APPROVED BY

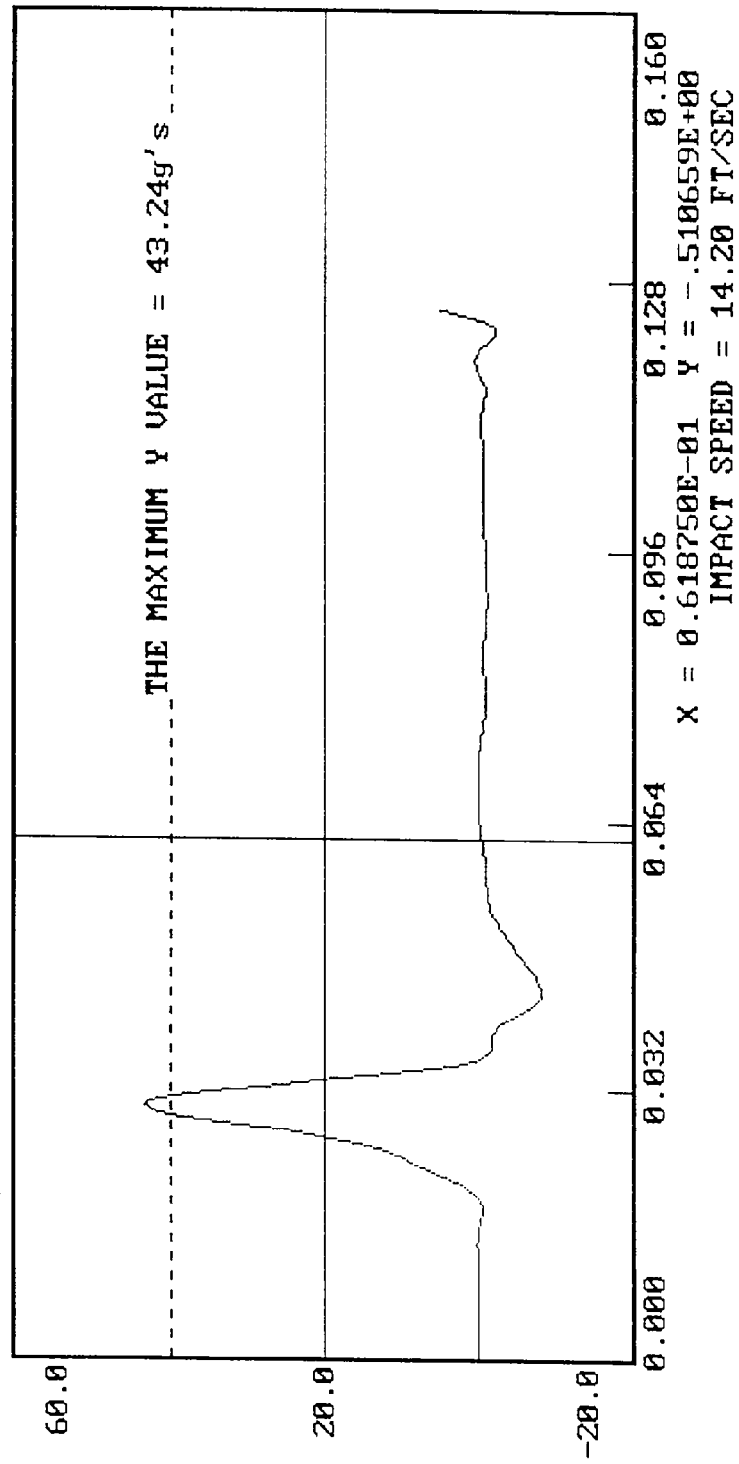
Steve Kralovich

12-16-1996 11:26

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)

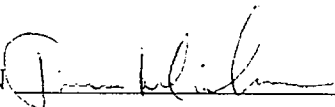
DATE: December 16, 1996

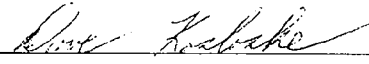
DUMMY NUMBER: 271

TEST NUMBER: D962184

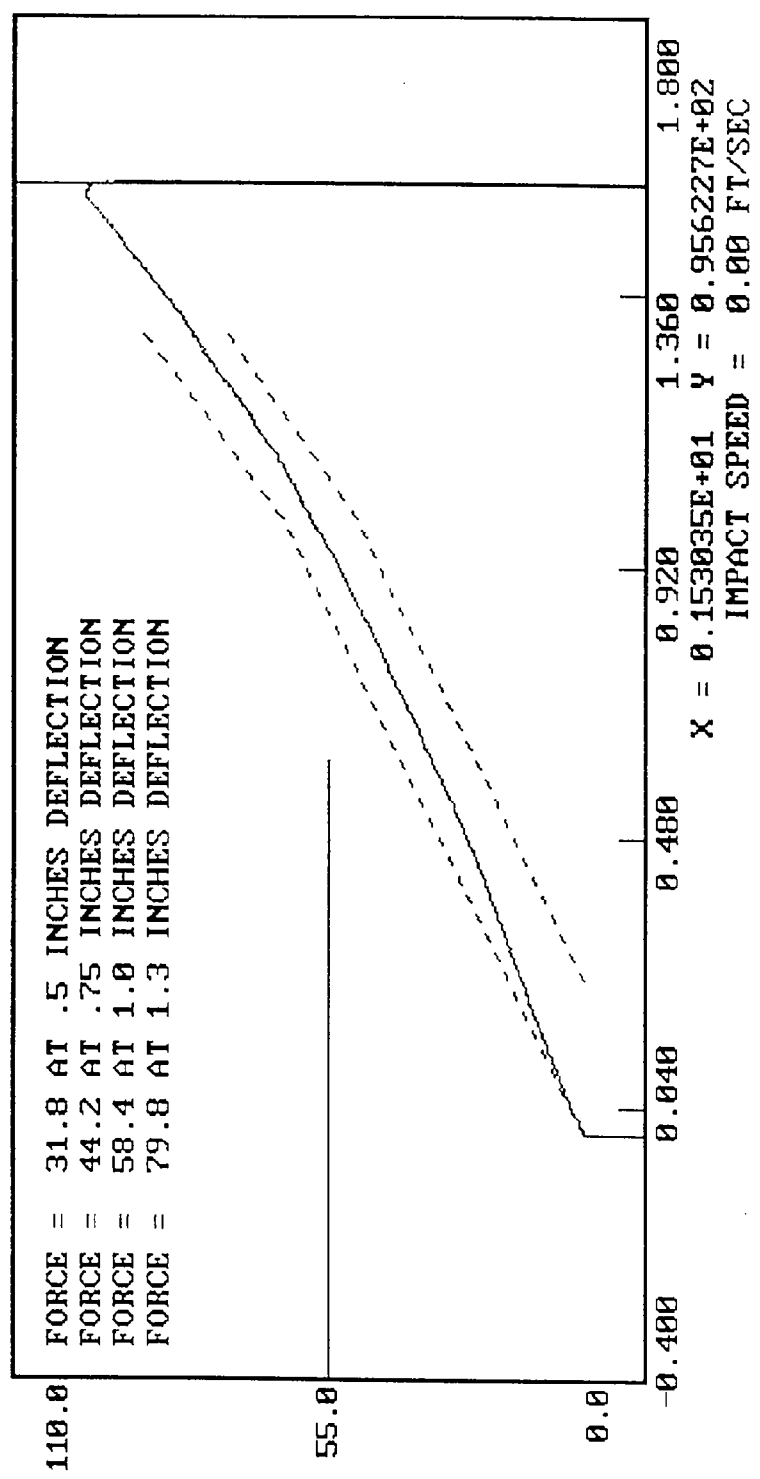
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	20%
FORCE @ 0.5 in	23.3 - 36.5 lbs	31.8
FORCE @ 0.75 in	36.7 - 49.8 lbs	44.2
FORCE @ 1.0 in	50 - 63 lbs	58
FORCE @ 1.3 in	73 - 88 lbs	80

TEST MEETS SPECIFICATIONS

TECHNICIAN 

APPROVED BY 

DUMMY CALIBRATION - ABDOMEN COMPRESSION
 DUMMY # 271
 12-16-1996 12:23
 ABDOMEN FORCE (LBS) VS. ABDOMEN DISPLACEMENT (INCHES)



MGA RESEARCH CORPORATION

LUMBAR FLEXION TEST

SIDE IMPACT DUMMY (SID)

DATE: December 16, 1996

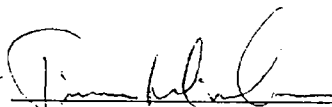
DUMMY NUMBER: 271

TEST NUMBER: D962185

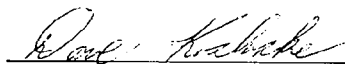
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	20%
FORCE @ 0°	0 - 6 lbs	0
FORCE @ 20°	22 - 34 lbs	26
FORCE @ 30°	34 - 46 lbs	37
FORCE @ 40°	46 - 58 lbs	48
RETURN ANGLE	12° maximum	5°

TEST MEETS SPECIFICATIONS

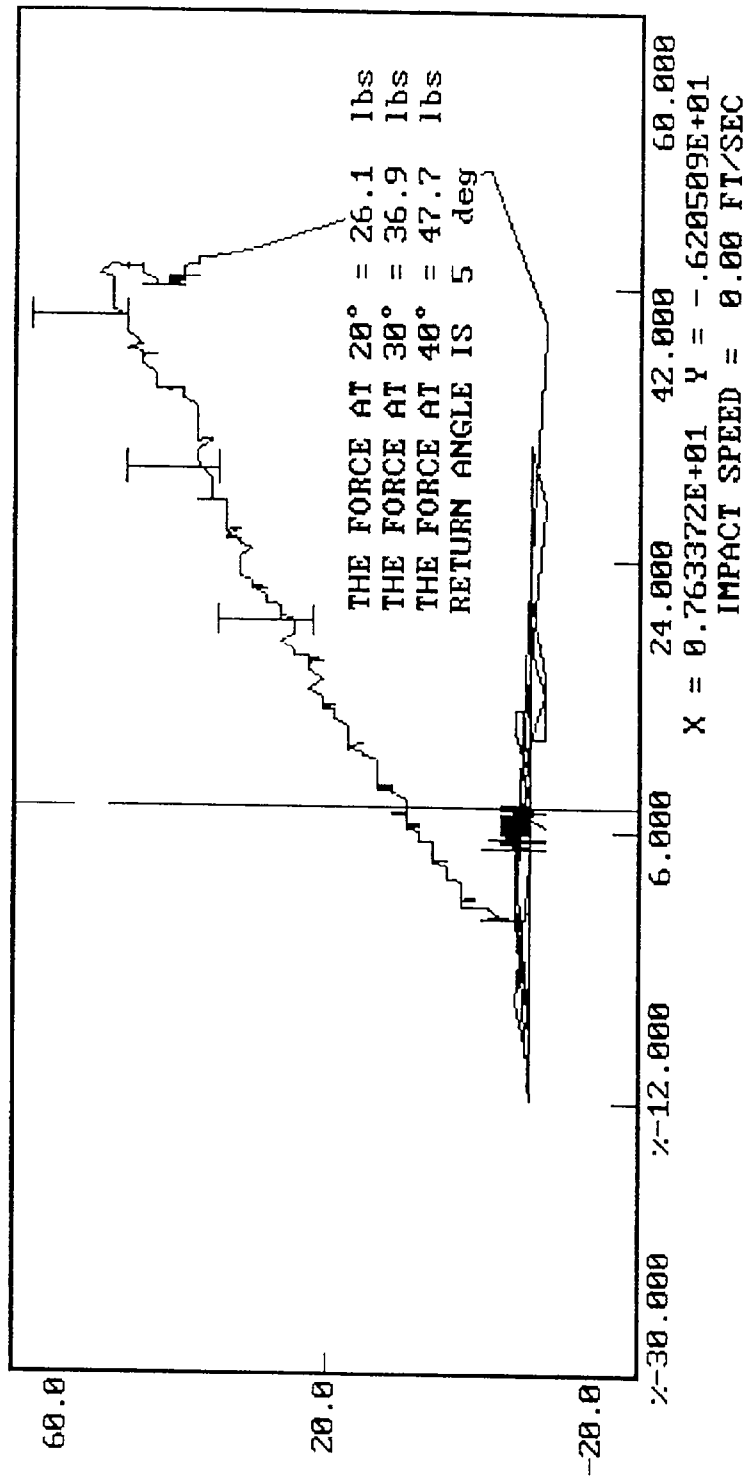
TECHNICIAN



APPROVED BY



DUMMY CALIBRATION - LUMBAR FLEXION
 DUMMY # 271
 FORCE (LBS) VS. TORSO ROTATION (DEGREES) 12-16-1996 13:05



POST-TEST DRIVER DUMMY INSPECTION CHECKLIST

Type: Side Impact Dummy

Serial Number: 272

Inspected By: Tim Michnay

Date: December 16, 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	Rib wrap torn from rivets on impact side - replaced	

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

POST-TEST PASSENGER DUMMY INSPECTION CHECKLIST

Type: Side Impact Dummy

Serial Number: 271

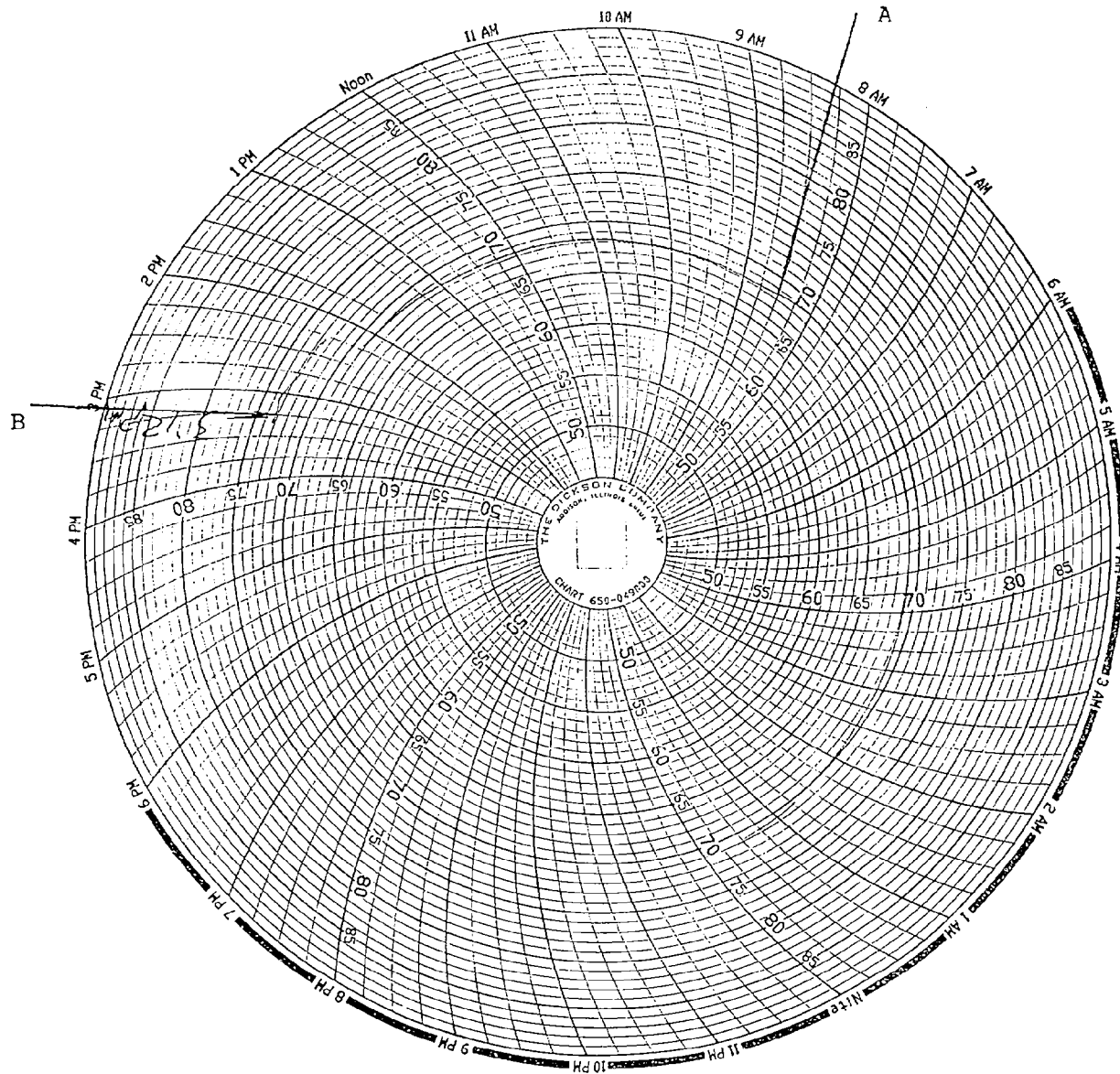
Inspected By: Tim Michnay

Date: December 16, 1996

<u>Part</u>	<u>Items Checked</u>	<u>Comments</u>
Skin	visual inspection	Jacket Torn
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	Jacket torn on impact side - replaced	

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

VEHICLE AND DUMMY TEMPERATURE



A = Dummies installed in vehicle
B = Test conducted

APPENDIX D
TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

DUMMY AND VEHICLE CALIBRATION DATA
INSTRUMENTS FOR RIGHT FRONT PASSENGER DUMMY NO. 272

	RIGHT FRONT PASSENGER		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Upper Rib Y	ALFJ7	Endevco	December 09, 1996
Lower Rib Y	APYN0	Endevco	December 09, 1996
Lower Spine Y	AP0G2	Endevco	December 09, 1996
Pelvis Y	APY15	Endevco	December 09, 1996
Upper Rib Redundant Y	ALDD6	Endevco	December 09, 1996
Lower Rib Redundant Y	APYN3	Endevco	December 09, 1996
Lower Spine Redundant Y	AP138	Endevco	December 09, 1996
Pelvis Redundant Y	APY16	Endevco	December 09, 1996

INSTRUMENTS FOR RIGHT REAR PASSENGER DUMMY NO. 271

RIGHT REAR PASSENGER			
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Upper Rib Y	AP2A4	Endevco	September 16, 1996
Lower Rib Y	AP1B3	Endevco	September 16, 1996
Lower Spine Y	ANAP1	Endevco	September 16, 1996
Pelvis Y	AHTC3	Endevco	September 16, 1996
Upper Rib Redundant Y	AP2D8	Endevco	September 16, 1996
Lower Rib Redundant Y	AP1C6	Endevco	September 16, 1996
Lower Spine Redundant Y	ANAT6	Endevco	September 16, 1996
Pelvis Redundant Y	AGP53	Endevco	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	B13-Z05	Entran	July 11, 1996
Moving Barrier Rear Axle X	B14-R03	Entran	July 11, 1996
Moving Barrier Rear Axle Y	B14-R13	Entran	July 15, 1996
Right Mid A-Post Y	B02-G09	Entran	December 03, 1996
Right Lower A-Post Y	L14-D16	Entran	December 03, 1996
Right Mid B-Post Y	C14-Z07	Entran	July 11, 1996
Right Lower B-Post Y	B14-R12	Entran	July 15, 1996
Rear Floorpan Above Axle X	C14-Z08	Entran	July 11, 1996
Rear Floorpan Above Axle Y	B14-R09	Entran	July 15, 1996
Rear Floorpan Above Axle Z	E25-G11	Entran	October 01, 1996
Right Front Passenger Seat Track Y	G19-G08	Entran	December 03, 1996
Left Side Sill at Front Seat X	D06-A09	Entran	July 03, 1996
Left Side Sill at Front Seat Y	C20-J10	Entran	July 11, 1996
Left Side Sill at Front Seat Z	A09-G10	Entran	July 12, 1996
Left Side Sill at Rear Seat X	J10-E03	Entran	July 10, 1996
Left Side Sill at Rear Seat Y	B02-G06	Entran	October 02, 1996
Left Side Sill at Rear Seat Z	D05-R05	Entran	July 11, 1996
Right Side Sill at Front Seat Y	B28-B01	Entran	July 10, 1996

VEHICLE INSTRUMENT CALIBRATION

	VEHICLE AND MDB ACCELEROMETERS		
	SERIAL NO	MANUFACTURER	CALIBRATION DATE
Right Side Sill at Rear Seat Y	E13-D07	Entran	July 10, 1996
Left Rear Occupant Compartment Y	F10-D02	Entran	December 03, 1996
Vehicle CG X	B14-R14	Entran	July 11, 1996
Vehicle CG Y	A09-G04	Entran	July 03, 1996
Vehicle CG Z	A10-G08	Entran	July 12, 1996

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