

633005

VZ774

REPORT NO.: 214-MGA-98-08
SAFETY COMPLIANCE TESTING FOR FMVSS NO. 214
"SIDE IMPACT PROTECTION -
PASSENGER CARS"

VOLKSWAGEN UNITED STATES, INC.
1998 VOLKSWAGEN JETTA GL
NHTSA NO: CW5801

MGA PROVING GROUNDS
5000 WARREN ROAD
BURLINGTON, WI 53105



Test Date: January 15, 1998

Report Date: February 3, 1998

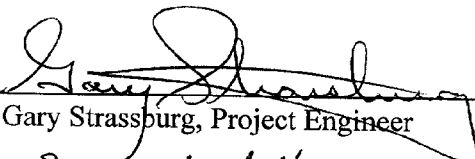
FINAL REPORT

Prepared For:

U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
ENFORCEMENT
OFFICE OF VEHICLE SAFETY COMPLIANCE
400 SEVENTH STREET, SW
ROOM 6115 (NSA-30)
WASHINGTON, D.C. 20590

This Final Report was prepared for the U.S. Department of Transportation, National Highway Traffic Safety Administration, under Contract No. DTNH22-97-C-11033.

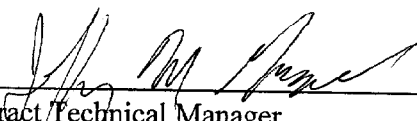
This document is disseminated under the sponsorship of the U. S. Department of Transportation in the interest of information exchange. The United States Government assumes no liability for its content or use thereof.

Prepared By: 
Gary Strassburg, Project Engineer

Approved By: 
David Winkelbauer, Deputy Facility Director

Approval Date: 2/25/98

FINAL REPORT ACCEPTED BY (OVSC):

Accepted By: 
Contract Technical Manager

Acceptance Date: 3/20/98

TECHNICAL REPORT STANDARD TITLE PAGE

1. Report No. 214-MGA-98-08	2. Government Accession No.	3. Recipient's Catalog No.																			
4. Title and Subtitle Final Report of FMVSS No.214 Compliance Side Impact Protection Testing of a 1998 Volkswagen Jetta GL NHTSA No. CW5801		5. Report Date February 3, 1998																			
		6. Performing Organization Code MGA																			
7. Author(s) Gary Strassburg		8. Performing Organization Report No. MGA-DOT-214-08																			
9. Performing Organization Name and Address MGA Research Corporation 5000 Warren Road Burlington, WI 53105		10. Work Unit No.																			
		11. Contract or Grant No. DTNH22-97-C-11033																			
12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration Office of Vehicle Safety Compliance 400 Seventh St., S.W., Room 6115 Washington, D.C. 20590		13. Type of Report and Period Covered Final Test Report January 15, 1998 - February 3, 1998																			
		14. Sponsoring Agency Code NSA-30																			
15. Supplementary Notes																					
16. Abstract A 48/24 kph 90° Impact (Moving Deformable Barrier) Compliance Test was conducted on the subject 1998 Volkswagen Jetta GL 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 January 15, 1998. The impact velocity of the Moving Deformable Barrier (MDB) was 52.9 kph, and the ambient temperature at the struck side of the target vehicle at the time of impact was 20.0°C. The target vehicle post test maximum crush was 290 mm at level 2. The test vehicle's performance follows: <table border="0"> <thead> <tr> <th></th><th><u>DRIVER.</u></th><th><u>LEFT REAR PASS.</u></th></tr> </thead> <tbody> <tr> <td>Left Upper Rib (LUR) Accel., g</td><td>42</td><td>58</td></tr> <tr> <td>Left Lower Rib (LLR) Accel., g</td><td>41</td><td>60</td></tr> <tr> <td>Lower Spine (T₁₂) Accel., g</td><td>58</td><td>65</td></tr> <tr> <td>Thoracic Trauma Index (TTI)</td><td>50</td><td>62</td></tr> <tr> <td>Pelvis (PEV) Accel., g</td><td>60</td><td>71</td></tr> </tbody> </table> The doors on the struck side of the vehicle did not separate from the body at the hinges or latches and the opposite doors did not open during the side impact event.					<u>DRIVER.</u>	<u>LEFT REAR PASS.</u>	Left Upper Rib (LUR) Accel., g	42	58	Left Lower Rib (LLR) Accel., g	41	60	Lower Spine (T ₁₂) Accel., g	58	65	Thoracic Trauma Index (TTI)	50	62	Pelvis (PEV) Accel., g	60	71
	<u>DRIVER.</u>	<u>LEFT REAR PASS.</u>																			
Left Upper Rib (LUR) Accel., g	42	58																			
Left Lower Rib (LLR) Accel., g	41	60																			
Lower Spine (T ₁₂) Accel., g	58	65																			
Thoracic Trauma Index (TTI)	50	62																			
Pelvis (PEV) Accel., g	60	71																			
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																			
19. Security Classif. (of this report) Unclassified	20. Security Classif. (of this page) Unclassified	21. No. of Pages 288	22. Price																		

TABLE OF CONTENTS

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

SECTION 1
PURPOSE AND TEST PROCEDURE

This side impact test is part of the FY 98 FMVSS 214 Side Impact Protection Compliance Test Program, sponsored by the National Highway Traffic Safety Administration (NHTSA), under Contract No. DTNH22-97-C-11033. The purpose of this test was to evaluate side impact protection of a 1998 Volkswagen Jetta GL.

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 1998 Volkswagen Jetta GL was impacted on the left 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 32.9 mph (52.9 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 January 15, 1998. 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 left front and left 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. Left Upper Rib (LUR) uniaxial accelerometer (Y-direction)
2. Left Lower Rib (LLR) uniaxial accelerometer (Y-direction)
3. Lower Thoracic Spine (T₁₂) uniaxial accelerometer (Y-direction)
4. Pelvic (PEV) section uniaxial accelerometer (Y-direction)

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

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

Injury Criteria	Front SID	Rear SID
TTI (g)	49.7	62.3
Pelvis (g)	60.1	71.3

TEST NOTES

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

Left Front Door on Centerline

Midrear of Left Front Door

Left Front Door Upper Centerline

Midrear of Left Rear Door

Left Rear Door Upper Centerline

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

DATA SHEET NO. 1
GENERAL VEHICLE TEST PARAMETER DATA

TEST VEHICLE INFORMATION:

Year/Make/Model/Body Style: 1998/Volkswagen/Jetta/GL 4 Door
Vehicle NHTSA No.: CW5801 VIN: 3VWRA61H7WM153067
Vehicle Body Color: Black Build Date: 11-97
Engine Data: 4 Cylinders; CID; 2 Liter; cc
Placement Longitudinal; X Lateral
Transmission: 5 speed; X Manual; Automatic; Overdrive
Final Drive: Rear Wheel Drive; X Frt. Wheel Drive; Four Wheel Drive

Odometer Reading 67 miles
Options: X A/C; X Pwr. Steering; X Pwr. Brakes; Pwr. Windows;
X Cruise Control; X Tilt Wheel; X Power Door Locks;

DATA FROM TIRE PLACARD:

Tire Pressure (at capacity): 35 Psi FRONT
39 Psi REAR
Recommended Tire Size: 185/60R14 or 195/60R14
Tires on Test Vehicle: 195/60R14 Manufacturer: Goodyear

Vehicle Capacity Data:

Number of Occupants: 2 Front; 3 Rear; 3rd Seat 5 Total
Type of Front Seats: X Bucket; Bench; Split Bench
Type of Front Seat Back: Fixed; X Adjustable with X Lever Knob Power
Vehicle Maximum Capacity Loading = 390.5 kg (A)
No. of Occupants x 68.04 kg. = 340.2 kg (B)
Cargo Capacity (A-B) = 50.3 kg

GENERAL VEHICLE TEST PARAMETER DATA (Cont'd)

WEIGHT OF TEST VEHICLE WITH MAXIMUM FLUIDS:

Right Front	=	<u>375.1</u>	kg	Right Rear	=	<u>246.3</u>	kg
Left Front	=	<u>362.0</u>	kg	Left Rear	=	<u>250.8</u>	kg
TOTAL FRONT	=	<u>737.1</u>	kg	TOTAL REAR	=	<u>497.1</u>	kg
% of Total Vehicle Weight	=	<u>59.7</u>	%;	% of Total Weight	=	<u>40.3</u>	%
TOTAL WEIGHT	=	<u>1234.2</u>	kg				

GENERAL VEHICLE TEST PARAMETER DATA (Cont'd)

Year/Make/Model/Body Style: 1998/Volkswagen/Jetta/GL 4 Door

Vehicle NHTSA No.: CW5801 Test Date: January 15, 1998

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Total Test Vehicle Delivered Weight with Maximum Fluids	=	<u>1234.2</u>	kg
Cargo Carrying Capacity of Test Vehicle	=	<u>50.3</u>	kg
Weight of 2 Side Impact Dummies (2 x <u>80.7</u> kg.)	-	<u>161.4</u>	kg
TEST VEHICLE TARGET WEIGHT	=	<u>1445.9</u>	kg

ACTUAL WEIGHT OF TEST VEHICLE WITH 2 DUMMIES AND CARGO: (FULLY LOADED)

Right Front	=	<u>380.1</u>	kg	Right Rear	=	<u>303.5</u>	kg
Left Front	=	<u>404.2</u>	kg	Left Rear	=	<u>356.1</u>	kg
TOTAL FRONT	=	<u>784.3</u>	kg	TOTAL REAR	=	<u>659.6</u>	kg
% of Total Weight	=	<u>54.3</u>	%	% of Total Weight	=	<u>45.7</u>	%
TOTAL TEST WEIGHT	=	<u>1443.9</u>	kg				

TEST VEHICLE ATTITUDE:

CURB WEIGHT ATTITUDE:

Right Front 654 mm Left Front 655 mm Right Rear 650 mm Left Rear 650 mm

FULLY LOADED WEIGHT ATTITUDE:

Right Front 650 mm Left Front 638 mm Right Rear 630 mm Left Rear 614 mm

TEST ATTITUDE:

Right Front 643 mm Left Front 648 mm Right Rear 630 mm Left Rear 621 mm

GENERAL VEHICLE TEST PARAMETER DATA (Cont'd)

Test Vehicle Wheelbase: 2470 mm

C.G. As Tested = 1078 mm rearward of front wheel centerline

TOTAL VEHICLE LENGTH:

Right Side = 4173 mm

Centerline = 4358 mm

Left Side = 4173 mm

GENERAL VEHICLE TEST PARAMETER DATA (Cont'd)

Year/Make/Model/Body Style: 1998/Volkswagen/Jetta/GL 4 Door

Vehicle NHTSA No.: CW5801 Test Date: January 15, 1998

FRONT SEAT CUSHION PLACEMENT:

Total Length of Adjustment Travel: 235 mm

Test Position: 8th position rearward out of 14 locking positions

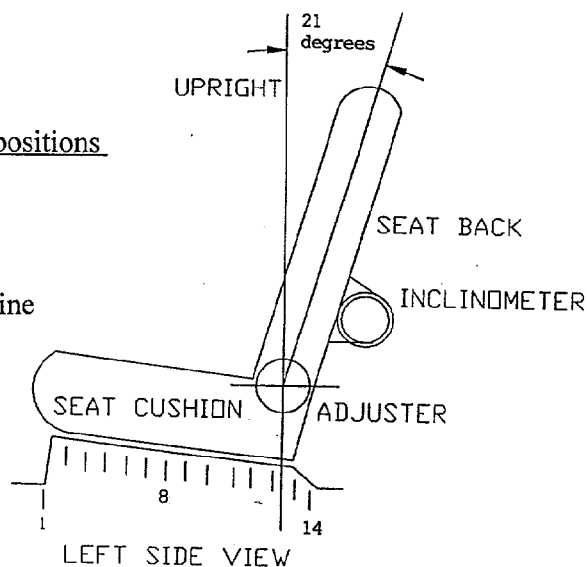
FRONT SEAT BACK ADJUSTMENT POSITION:

Seat Back Angle = 21° measured with H-Point machine

REAR POSITION SEAT:

Total Length of Fore/Aft Adjustment Travel: 0

Seat Back Adjustment Position: N/A



ADJUSTABLE STEERING COLUMN POSITION: mid

ADJUSTABLE D-RING POSITION: mid 3rd position out of 5

WINDOW POSITIONS: Left Front closed Left Rear closed
Right Front open Right Rear open

AMOUNT OF STODDARD SOLVENT IN FUEL TANK:

Fuel system usable capacity = 55 liters

Test Volume: 51.1 liters 93% of capacity

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

Wheelbase: = 2470 mm

Impact Point is 295 mm rearward of front axle centerline

DATA SHEET NO. 2
TEST VEHICLE SUMMARY OF RESULTS

Year/Make/Model/Body Style: 1998/Volkswagen/Jetta/GL 4 Door

Vehicle NHTSA No.: CW5801 Test Date: January 14, 1998

Overall Length = 4358 mm; Overall Width = 1680 mm

TEST WEIGHT:

Right Front = 403.3 kg

Right Rear = 300.3 kg

Left Front = 408.7 kg

Left Rear = 328.9 kg

TOTAL FRONT = 812.0 kg

TOTAL REAR = 629.2 kg

% of Total Weight = 56.3 %

% of Total Weight = 43.7 %

TOTAL VEHICLE WEIGHT = 1441.2 kg

Wheelbase = 2470 mm

Longitudinal C.G. from Center of Front Axle = 1078 mm

Impact Angle with Respect to Impactor = 0° degrees

MAXIMUM EXTERIOR STATIC CRUSH:

1. LEVEL 1 (270 mm above ground) = 167 mm

2. LEVEL 2 (482 mm above ground) = 290 mm

3. LEVEL 3 (582 mm above ground) = 253 mm

4. LEVEL 4 (870 mm above ground) = 201 mm

5. LEVEL 5 (1318 mm above ground) = 55 mm

Maximum Post-Test Intrusion = 290 mm

OCCUPANTS:

	<u>Left Front Passenger</u>	<u>Left Rear Passenger</u>
Type of Dummy	<u>SID</u>	<u>SID</u>
Restraints Used	<u>type II belt</u> <u>with frontal and side 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 = 4

Deformable Barrier = 2

TOTAL = 9

DATA SHEET NO. 3

MOVING DEFORMABLE BARRIER (MDB) SUMMARY OF RESULTS

Year/Make/Model/Body Style: 1998/Volkswagen/Jetta/GL 4 Door

Vehicle NHTSA No.: CW5801 Test Date: January 15, 1998

POSITION OF IMPACT (MDB) ON MONORAIL:

Crabbed 27° to left

MDB DETAILS:

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

MDB WEIGHT:

Left Front	= <u>440.1 kg</u>	Left Rear	= <u>246.6 kg</u>
Right Front	= <u>338.2 kg</u>	Right Rear	= <u>331.9 kg</u>
TOTAL FRONT	= <u>778.3 kg</u>	TOTAL REAR	= <u>578.5 kg</u>
TOTAL MDB WEIGHT = <u>1356.8 kg</u>			

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

Impact Speed = Primary: 32.9 mph (52.9 kph) Secondary: 32.8 mph (52.8 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>126</u> mm |
| 2. | Row B Mid Stack (686 mm) | = <u>120</u> mm |
| 3. | Row C Top of Bumper (533 mm) | = <u>105</u> mm |
| 4. | Row D Center of Bumper (432 mm) | = <u>139</u> mm |

INSTRUMENTATION:

Number of MDB Data Channels = 5

DATA SHEET NO. 4
POST-TEST OBSERVATIONS

Year/Make/Model/Body Style: 1998/Volkswagen/Jetta/GL 4 Door

Vehicle NHTSA No.: CW5801 Test Date: January 15, 1998

VISIBLE DUMMY CONTACT POINTS:

	<u>LEFT FRONT SID</u>	<u>LEFT REAR SID</u>
Head	<u>none</u>	<u>to C-Post and widow frame</u>
Arm	<u>to airbag, B-Post and door panel</u>	<u>to door panel</u>
Pelvis	<u>to airbag</u>	<u>to armrest</u>
Left Knee	<u>to door panel</u>	<u>to door panel</u>
Right Knee	<u>to left knee</u>	<u>to left knee</u>

DOOR OPENING:

	<u>LEFT SIDE</u>	<u>RIGHT SIDE</u>
Front	<u>remained closed</u>	<u>remained closed</u>
Rear	<u>N/A</u>	<u>N/A</u>

MDB DISTANCE FROM TARGET IMPACT POINT:

Horizontal: 2 mm rearward Vertical: 1 mm low

ARM REST LOCATIONS:

Front: 198 mm from bottom of window

Rear: 230 mm from bottom of window

POST-TEST OBSERVATIONS (Cont'd)

SEAT CRUSH:

Front Seat Back: 79 mm Front Seat Cushion: 47 mm

Left Rear Seat Back: 15 mm Rear Seat Cushion: 87 mm

GLAZING DAMAGE:

Both left side windows broke and the windshield cracked

PILLAR PERFORMANCE:

No failure

SILL SEPARATION:

None

FRONTAL AIRBAGS:

Driver Deployed: No Passenger Deployed: No

OTHER NOTABLE IMPACT EFFECTS:

Driver's side airbag deployed properly

SECTION 4
OCCUPANT AND VEHICLE INFORMATION

DATA SHEET NO. 5

SIDE IMPACT DUMMY (SID) INSTRUMENTATION DATA

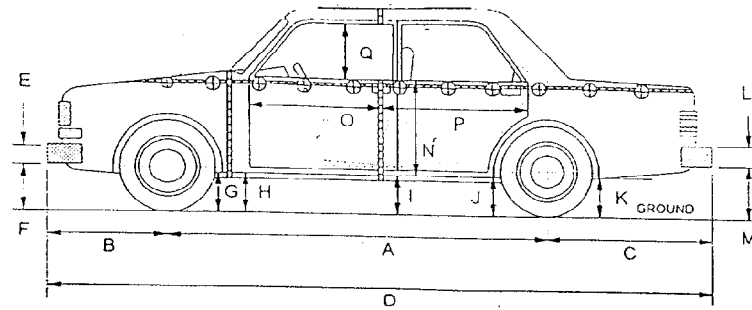
Year/Make/Model/Body Style: 1998/Volkswagen/Jetta/GI 4 Door

Vehicle NHTSA No.: CW5801 Test Date: January 15, 1998

	Front SID ID #036			Rear SID ID #037		
	Pos. Direct.		Neg. Direct	Pos. Direct.		Neg. Direct
	Max (g)	Time (msec)	Max (g)	Time (msec)	Max (g)	Time (msec)
RIB ACCELERATIONS						
Left Upper Rib (LUR) Y	41.6	44	-8.5	76	57.8	42
Left Lower Rib (LLR) Y	40.8	31	-9.2	76	59.9	41
SPINE ACCELERATIONS						
Lower Lateral Y	57.8	39	-11.1	80	64.6	48
PELVIS ACCELERATIONS						
Lateral Y	60.1	33	-14.3	56	71.3	42
					-3.5	90

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

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



LEFT SIDE VIEW

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

J1 = To Pinch Weld
J2 = To Sill

ALL MEASUREMENTS IN (mm)

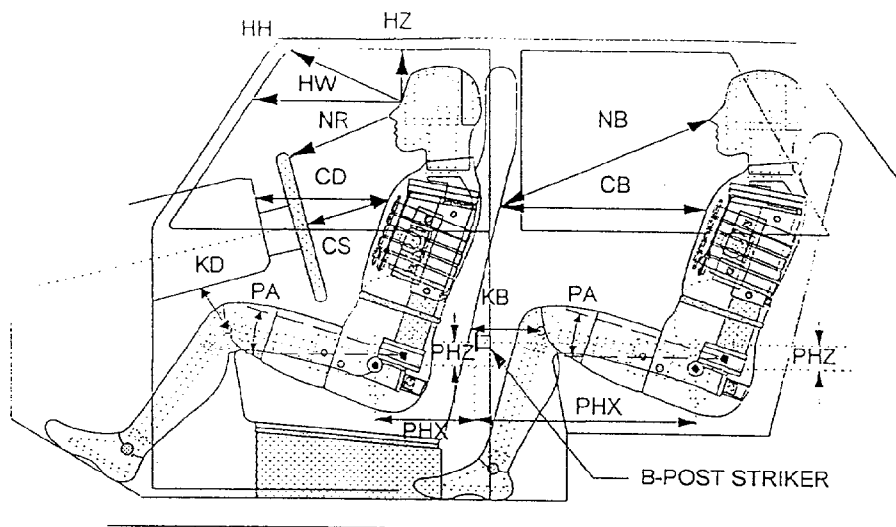
	PRE-TEST	POST-TEST	Δ CHANGE
A	2470	2479	-9
B	825	827	-2
C	1063	1043	20
D	4358	4349	9
E	140	140	0
F	360	370	-10
G	155	170	-15
H	164	194	-30
I	174	179	-5
J1/J2	165/163	173/180	-8/-17
K	237	235	2
L	205	205	0
M	358	368	-10
N	635	561	74
O	748	740	8
P	1101	1036	65
Q	474	474	0
R	4173	4182	-9
S	4172	4157	15
T	1680	1401	279

DATA SHEET NO. 7

SIDE IMPACT DUMMY (SID) LONGITUDINAL CLEARANCE DIMENSIONS

Year/Make/Model/Body Style: 1998/Volkswagen/Jetta/GL 4 Door

NHTSA NO.: CW5801 Test Date: January 15, 1998



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

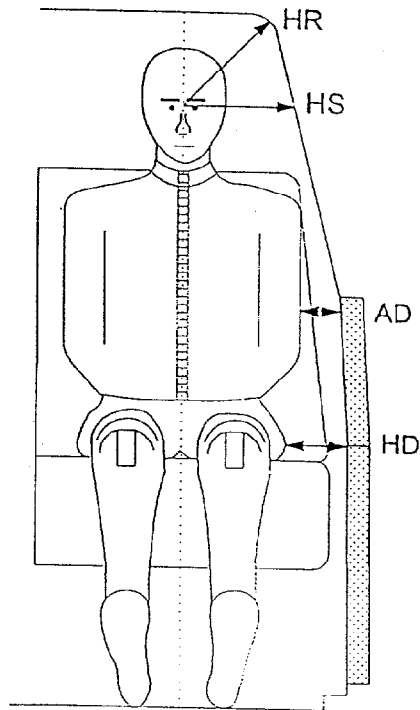
	FRONT PASSENGER ID #036		REAR PASSENGER SID ID #037
HH	425	HZ	134
HW	621	NB	553
HZ	152	CB	463
NR	487	KBL (KBA)	150 (0.0°)
CD	595	KBR (KBA)	148 (0.0°)
CS	462	PA°	24.2°
KDL (KDA°)	174 (24.4°)	PHX	250
KDR (KDA°)	180 (21.3°)	PHZ	243
PA°	23.6°		
PHX	171		
PHZ	242		

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

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

Year/Make/Model/Body Style: 1998/Volkswagen/Jetta/GL 4 Door

NHTSA NO.: CW5801 Test Date: January 15, 1998



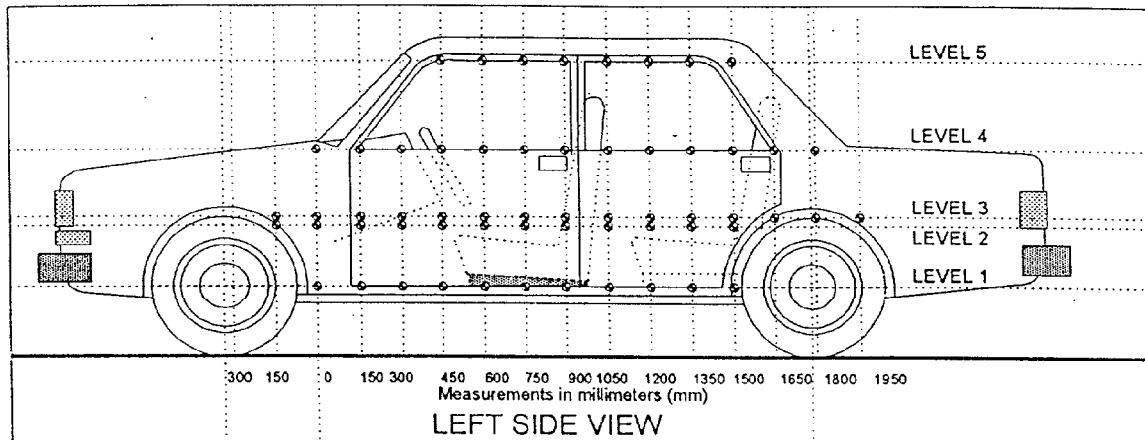
NOTE: All dimensions are in mm

	FRONT PASSENGER ID #036	REAR PASSENGER ID #037
HR	198	165
HS	300	244
AD	111	100
HD	148	135

DATA SHEET NO. 9
VEHICLE SIDE MEASUREMENTS

Year/Make/Model/Body Style: 1998/Volkswagen/Jetta/GL 4 Door

NHTSA NO.: CW5801 Test Date: January 15, 1998



LEVEL 5 - WINDOW TOP
LEVEL 4 - WINDOW SILL
LEVEL 3 - MID-DOOR
LEVEL 2 - OCCUPANT H-POINT
LEVEL 1 - AXLE CENTERLINE HEIGHT or SILL TOP HEIGHT

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

MEASUREMENTS ALONG THE VERTICAL 750 mm. LINE SHOWN ABOVE

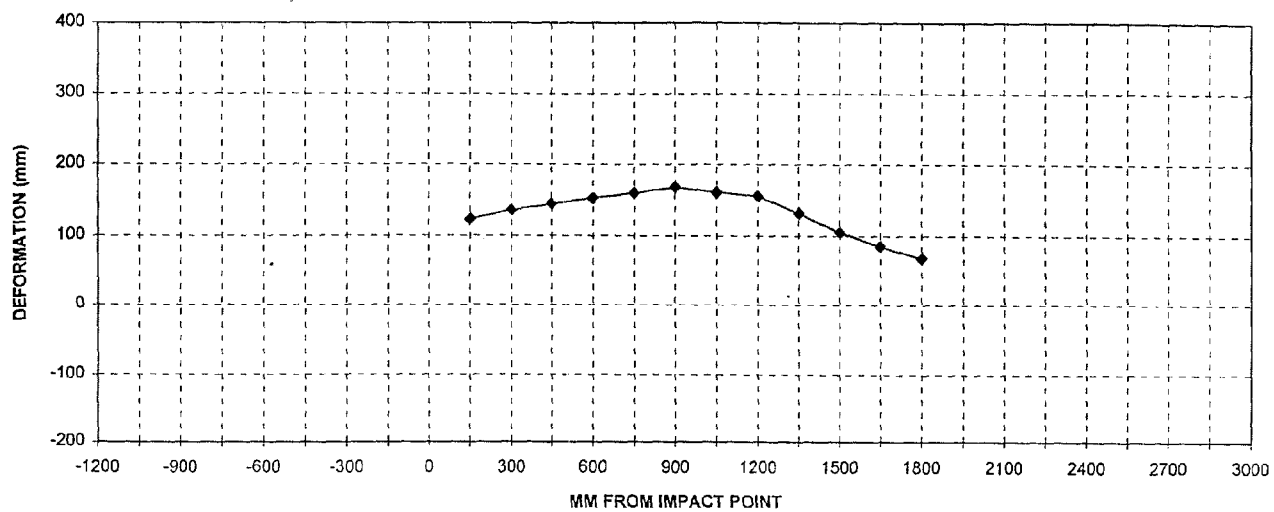
Level 1 @ Axle Centerline Height (or Sill Top Height)	= <u>270</u> mm
Level 2 @ Occupant H-Point	= <u>482</u> mm
Level 3 @ Mid Door	= <u>582</u> mm
Level 4 @ Window Sill	= <u>870</u> mm
Level 5 @ Window Top	= <u>1318</u> mm

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES

	Level 1 - Axle Centerline		
Longitudinal Distance (mm)	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
-1200			
-1050			
-900			
-750			
-600			
-450			
-300			
-150			
0 (impact point)			
150	761	884	123
300	761	897	136
450	761	905	144
600	761	913	152
750	758	917	159
900	757	924	167
1050	757	917	160
1200	757	912	155
1350	756	888	132
1500	754	859	105
1650	753	838	85
1800	749	817	68
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)



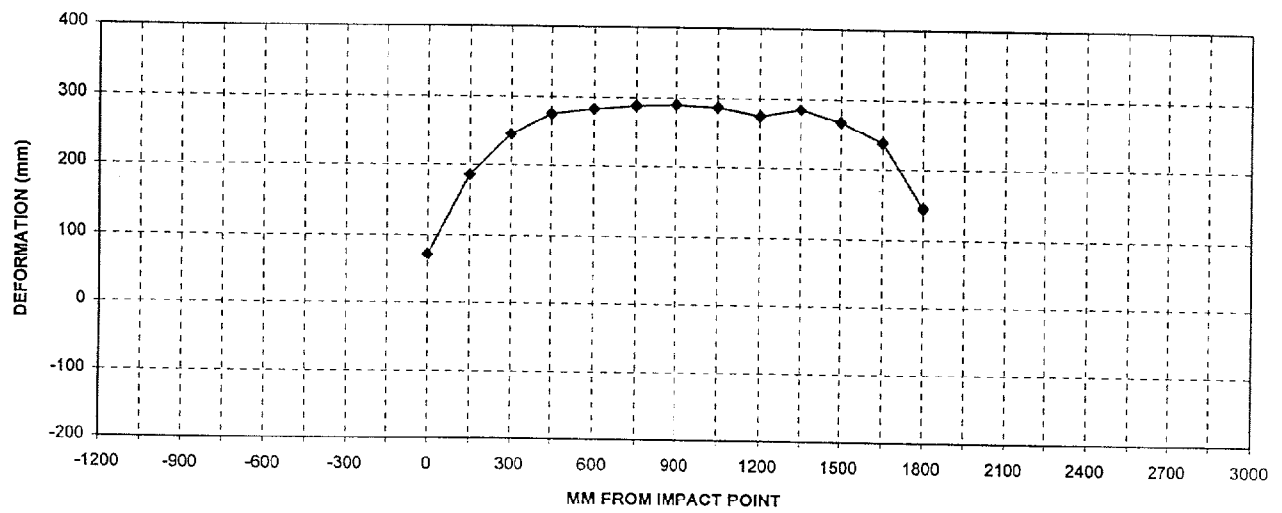
LEVEL 1 - AXLE CENTERLINE

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

	Level 2 - Occupant H Point		
Longitudinal Distance (mm)	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
-1200			
-1050			
-900			
-750			
-600			
-450			
-300			
-150			
0 (impact point)	707	778	71
150	709	895	186
300	708	953	245
450	706	981	275
600	704	987	283
750	702	990	288
900	702	992	290
1050	702	989	287
1200	703	978	275
1350	703	988	285
1500	705	973	268
1650	705	943	238
1800	706	851	145
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)



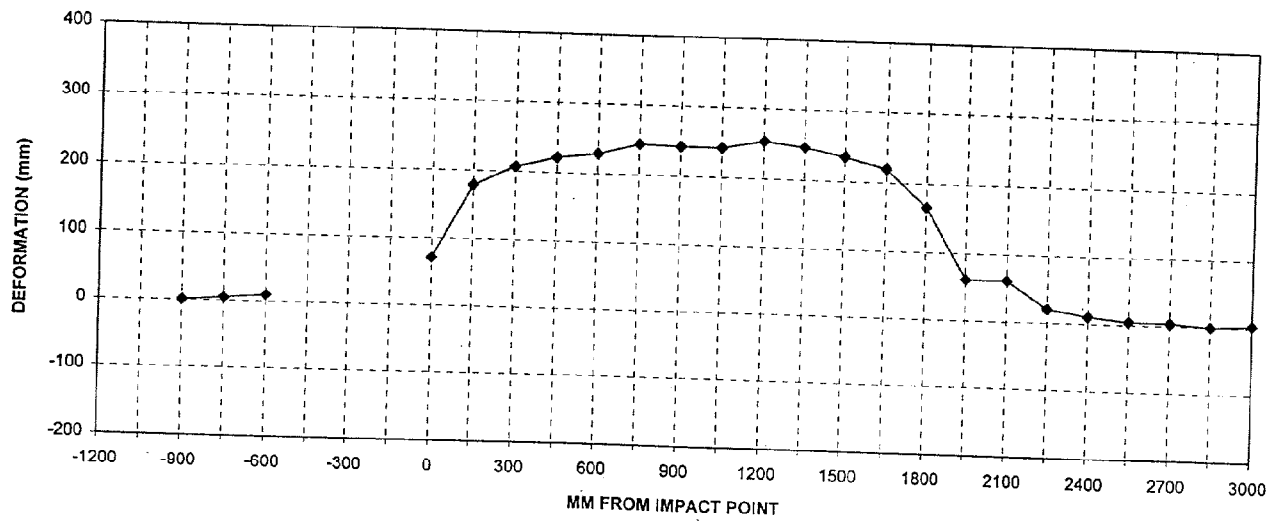
LEVEL 2 - OCCUPANT H-POINT

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	807	808	1
-750	763	768	5
-600	722	732	10
-450			
-300			
-150			
0 (impact point)	702	773	71
150	706	885	179
300	705	912	207
450	703	925	222
600	702	931	229
750	700	944	244
900	701	943	242
1050	701	943	242
1200	702	955	253
1350	702	948	246
1500	703	938	235
1650	704	923	219
1800	706	872	166
1950	701	762	61
2100	701	762	61
2250	701	722	21
2400	723	734	11
2550	753	758	5
2700	775	779	4
2850	797	797	0
3000	821	824	3

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

VEHICLE EXTERIOR STATIC CRUSH (Cont'd)



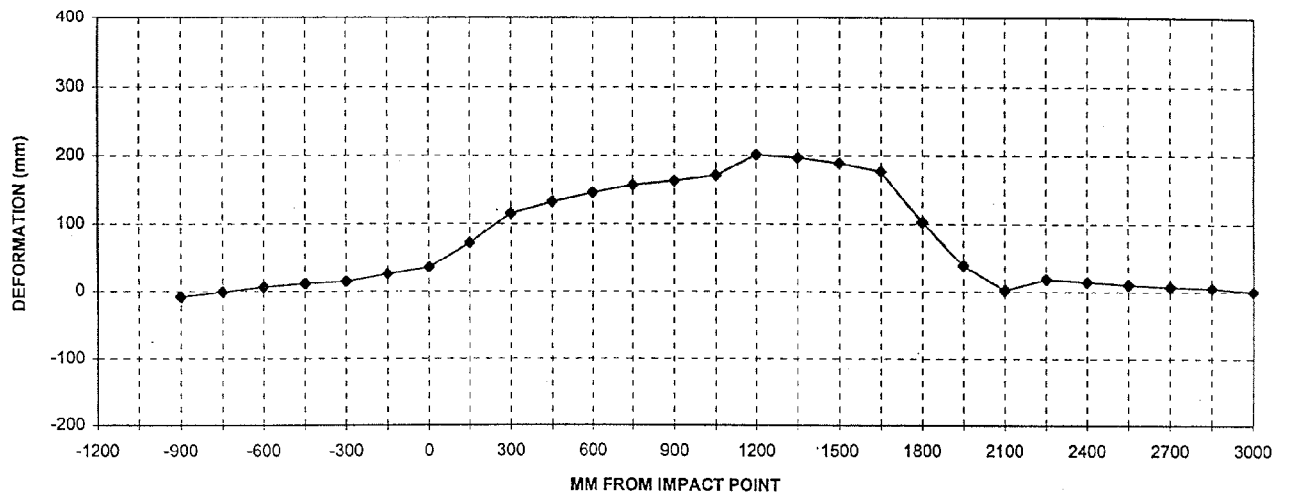
LEVEL 3 - MID DOOR

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

	Level 4 - Window Sill		
Longitudinal Distance (mm)	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
-1200			
-1050			
-900	877	869	-8
-750	840	839	-1
-600	814	820	6
-450	797	808	11
-300	783	797	14
-150	772	797	25
0 (impact point)	766	801	35
150	763	835	72
300	759	874	115
450	755	888	133
600	755	901	146
750	755	912	157
900	754	917	163
1050	758	929	171
1200	760	961	201
1350	761	958	197
1500	765	954	189
1650	767	944	177
1800	771	874	103
1950	779	817	38
2100	789	791	2
2250	802	820	18
2400	813	827	14
2550	827	837	10
2700	841	848	7
2850	857	862	5
3000	878	878	0

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

VEHICLE EXTERIOR STATIC CRUSH (Cont'd)



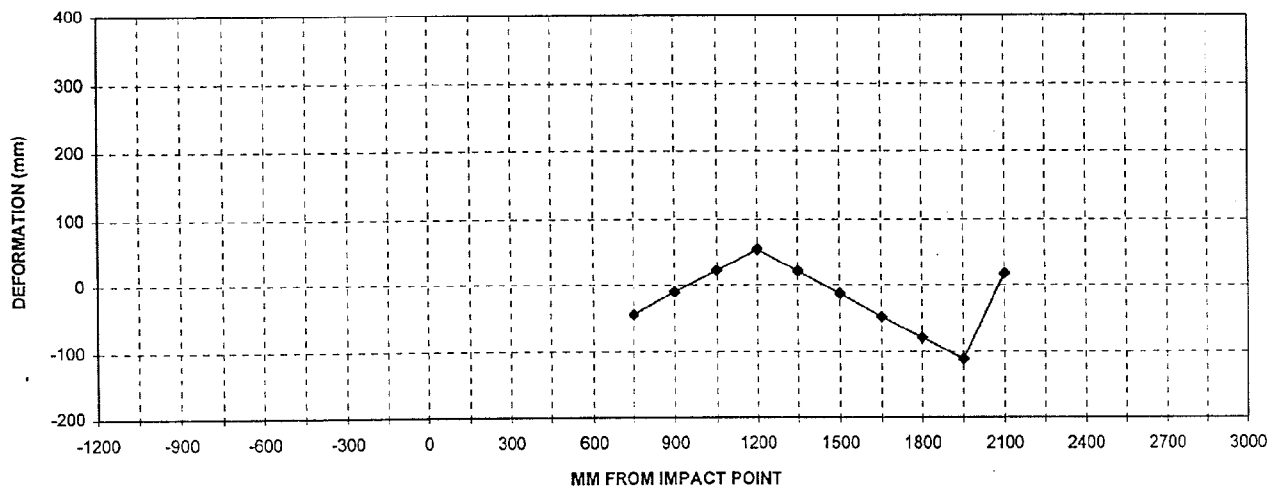
LEVEL 4 - WINDOW SILL

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

	Level 5 - Window Top		
Longitudinal Distance (mm)	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	980	936	-44
900	983	972	-11
1050	987	1009	22
1200	989	1044	55
1350	995	1016	21
1500	995	982	-13
1650	1001	953	-48
1800	1003	924	-79
1950	1012	901	-111
2100	1022	1039	17
2250			
2400			
2550			
2700			
2850			
3000			

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

VEHICLE EXTERIOR STATIC CRUSH (Cont'd)



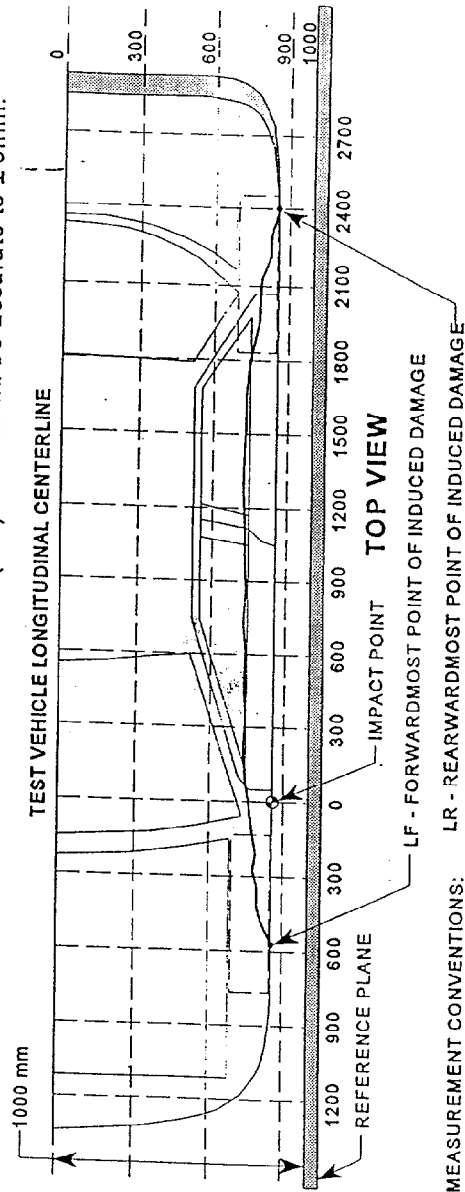
LEVEL 5 - WINDOW TOP

DATA SHEET NO. 11
VEHICLE DAMAGE PROFILE DISTANCES

Year/Make/Model/Body Style: 1998/Volkswagen/Jetta/GL 4 Door

NHTSA NO.: CW5801 Test Date: January 15, 1998

NOTE: All measurements are in millimeters (mm) and should be accurate to ± 3 mm.



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

Figure is not representative of the actual test configuration

DPD MEASUREMENTS	POST-TEST (mm)	PRE-TEST (mm)	STATIC CRUSH (mm)
1. (LF = -900 mm)	807	807	0
2. -155 mm	799	774	25
3. 555 mm	986	705	281
4. 1331 mm	994	703	291
5. 2109 mm	739	701	38
6. (LR = 2850 mm)	797	797	0

DATA SHEET NO. 12

EXTERIOR STATIC CRUSH FOR SIDE IMPACTOR

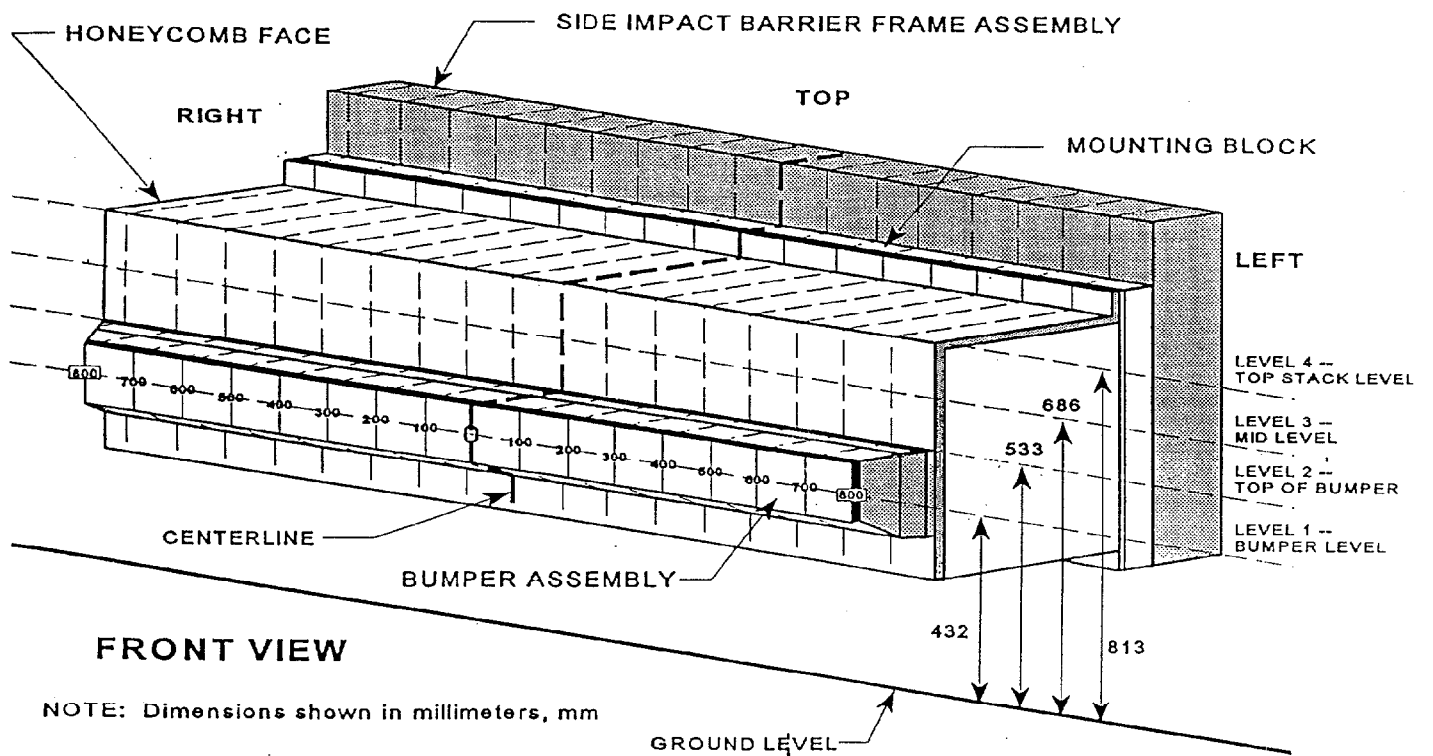
Year/Make/Model/Body Style: 1998/Volkswagen/Jetta/GL 4 Door

Vehicle NHTSA No.: CW5801 Test Date: January 15, 1998

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	mm	47	11	3	5	6	6	11	12	13	15	19	24	37	51	65	85	126
Mid Level Level 3	mm	52	20	9	9	8	9	10	11	12	14	16	18	21	25	39	68	120
Top Bumper Level 2	mm	86	62	37	34	34	32	31	29	33	38	41	46	50	53	64	86	105
Mid Bumper Level 1	mm	131	108	81	62	53	56	50	46	46	49	51	55	58	63	79	113	139

See next page for Barrier Face Graphic

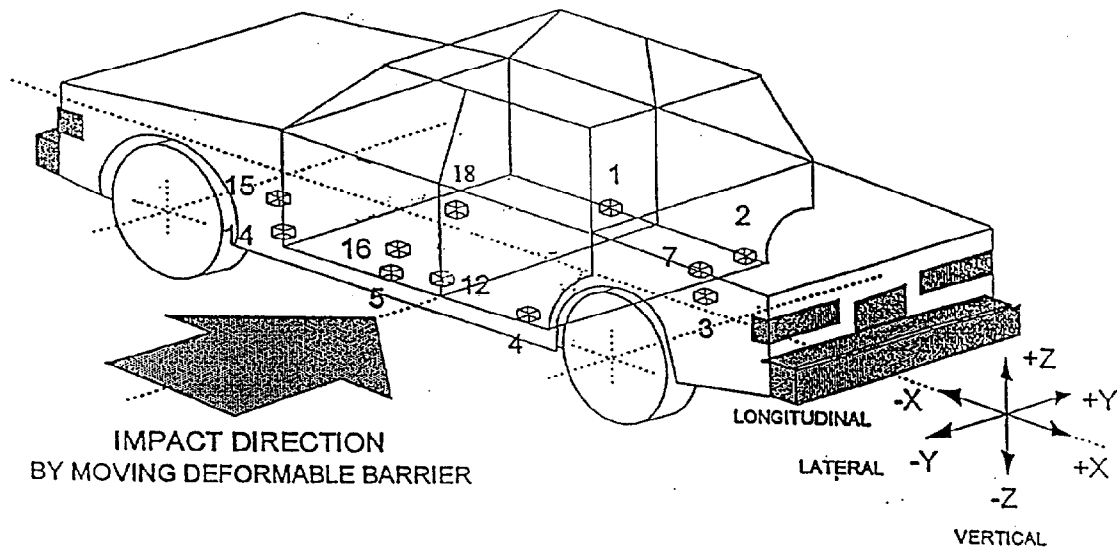
DATA SHEET NO. 12 (Cont'd)



DATA SHEET 13
TEST VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

Year/Make/Model/Body Style: 1998/Volkswagen/Jetta/GL 4 Door

Vehicle NHTSA No.: CW5801 Test Date: January 15, 1998



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

- 7 - Right Rear Occupant Compartment
- 12 - Left Lower B-Post
- 14 - Left Lower A-Post
- 15 - Left Middle A-Post
- 16 - Front Seat Track
- 18 - Vehicle C.G.

DATA SHEET NO. 13 (Cont'd)
TEST VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

Year/Make/Model/Body Style: 1998/Volkswagen/Jetta/GL 4 Door

Vehicle NHTSA No.: CW5801 Test Date: January 15, 1998

Acce l. 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	Right Side Sill @ Front Seat	2430	680	190	6.1	-7.0	22.7	-2.1	3.6	-7.7	23.6
2	Right Side Sill @ Rear Seat	1542	662	185	5.2	-5.4	28.1	-4.8	4.9	-8.7	28.4
3	Rear Floorpan Above Axle	1044	0	500	3.6	-8.5	27.3	-5.2	19.1	-13.7	28.3
4	Left Side Sill @ Rear Seat	1554	-670	200	---	---	35.6	-8.4	---	---	---
5	Left Side Sill @ Front Seat	2435	-688	200	---	---	39.1	-10.0	---	---	---
7	Right Rear Occupant Compartment	1750	322	360	---	---	26.7	-4.1	---	---	---
12	Left Lower B-Post	1955	-644	300	---	---	55.9	**	---	---	---
13	Left Mid B-Post	1970	-692	913	---	---	115.7	-25.6	---	---	---
14	Left Lower A-Post	3004	-652	340	---	---	48.1	-27.0	---	---	---
15	Left Mid A-Post	3058	-720	870	---	---	18.7	-2.8	---	---	---
16	Driver Seat Track	2100	-605	235	---	---	50.9	-19.7	---	---	---
18	Vehicle CG	2532	45	495	3.3	-9.5	25.2	-2.9	10.4	-9.6	25.8

*Reference: X - Rear Bumper (+ Forward) ** Not valid after 70 msec.

Y - Vehicle Centerline (+ To right)

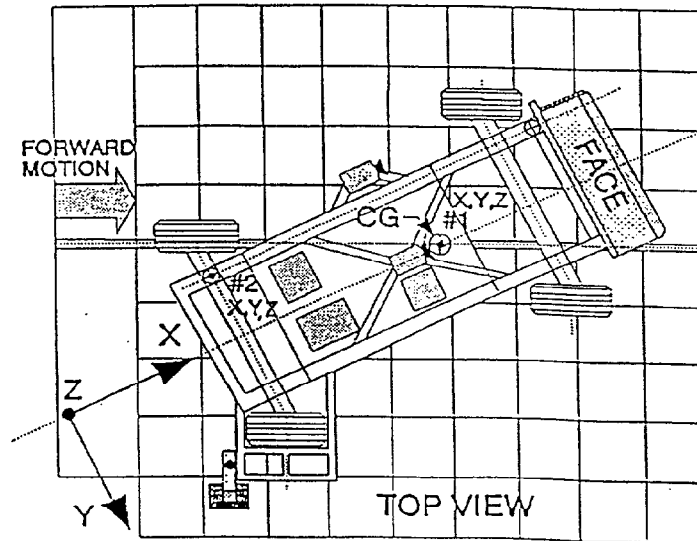
Z - Ground Level (+ Up)

DATA SHEET NO. 14

MOVING DEFORMABLE BARRIER (MDB) ACCELEROMETER LOCATIONS AND DATA SUMMARY

Year/Make/Model/Body Style: 1998/Volkswagen/Jetta/GL 4 Door

Vehicle NHTSA No.: CW5801 Test Date: January 15, 1998



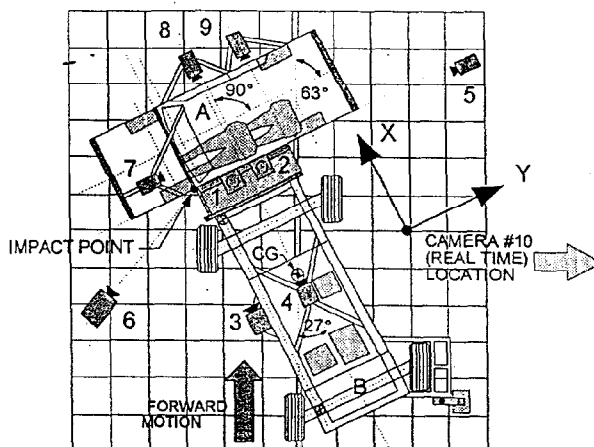
Accel. No.	Description	Coordinates (mm)*			(+) Positive		(-) Negative	
		X	Y	Z	Max. (g)	Time (msec)	Max. (g)	Time (msec)
1	MDB Center of Gravity	-1092	0	483				
	Longitudinal (X)	---	---	---	.9	97	-18.4	37
	Lateral (Y)	---	---	---	1.5	61	-4.4	18
	Vertical (Z)	---	---	---	18.4	54	-12.7	39
	Resultant (R)	---	---	---	22.7	54	---	---
2	Rear Frame Member	-2591	625	622				
	Longitudinal (X)	---	---	---	1.5	188	-22.6	34
	Lateral (Y)	---	---	---	4.3	29	-1.5	57

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

DATA SHEET NO. 15
HIGH SPEED CAMERA LOCATIONS AND DATA

Year/Make/Model/Body Style: 1998/Volkswagen/Jetta/GL 4 Door

Vehicle NHTSA No.: CW5801 Test Date: January 15, 1998



Camera No.	View	Coordinates (mm)*			Angle	Lens (mm)	Film Speed (fps)
		X	Y	Z			
	Real Time					13	24
6	Left Impact	-410	-2310	1625	13	13	952
7	Onboard Hood				13	13	1005
8	Onboard Front Occupant				8	8	952
9	Onboard Rear Occupant				8	8	1165
5	Right Impact	-650	10330	1690	25	25	990
2	Top Overall	80	1320	5000	8	8	1042
1	Top Impact	-300	20	5000	13	13	935
4	Cart Overall				13	13	1018
3	Cart Impact				35	35	966

* 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: 1998/Volkswagen/Jetta/GL 4 Door

Vehicle NHTSA No.: CW5801 Test Date: January 15, 1998

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 Left Side Impact MDB 32.9 mph (52.9 kph)

FUEL SPILLAGE MEASUREMENT:

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

FUEL SPILLAGE LOCATION(S): None

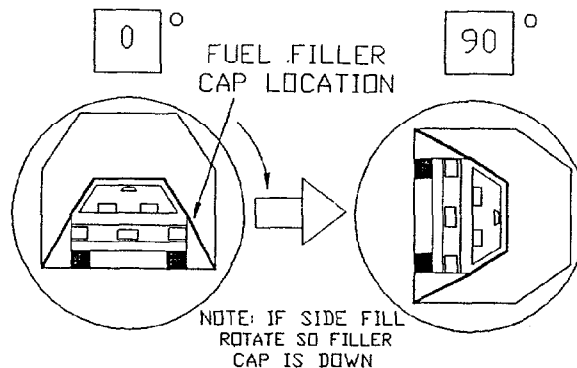
DATA SHEET 16

FMVSS 301 STATIC ROLLOVER TEST DATA

Vehicle Year/Make/Model/Body Style: 1998/Volkswagen/Jetta/GL 4 Door

Vehicle NHTSA No.: CW5801 Test Date: January 15, 1998

TEST PHASE: 0° - 90°



DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time = 2 minutes 43 seconds

(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time = 5 minutes 0 seconds

TOTAL TIME = 7 minutes 43 seconds

Next Whole Minute Interval = 8 minutes

FUEL SPILLAGE MEASUREMENT:

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

FUEL SPILLAGE LOCATIONS(S):

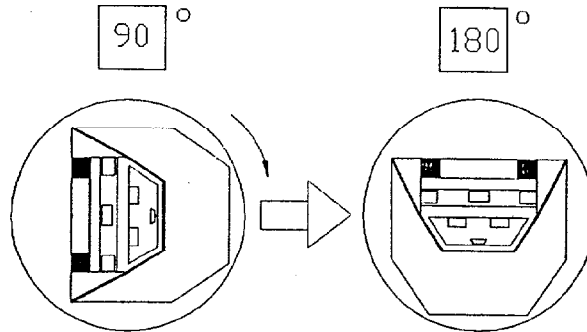
DATA SHEET 16

FMVSS 301 STATIC ROLLOVER TEST DATA (Cont'd)

Vehicle Year/Make/Model/Body Style: 1998/Volkswagen/Jetta/GL 4 Door

Vehicle NHTSA No.: CW5801 Test Date: January 15, 1998

TEST PHASE: 90° - 180°



DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time = 2 minutes 21 seconds

(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time = 5 minutes 0 seconds

TOTAL TIME = 7 minutes 21 seconds

Next Whole Minute Interval = 8 minutes

FUEL SPILLAGE MEASUREMENT:

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

FUEL SPILLAGE LOCATIONS(S):

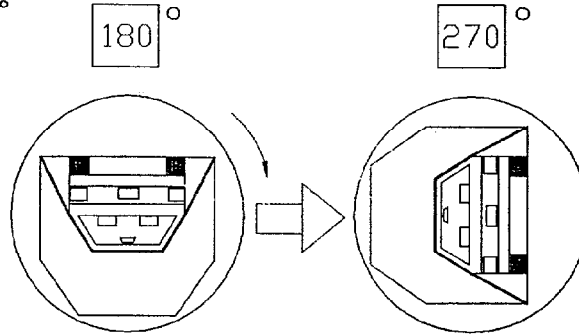
DATA SHEET 16

FMVSS 301 STATIC ROLLOVER TEST DATA (Cont'd)

Vehicle Year/Make/Model/Body Style: 1998/Volkswagen/Jetta/GL 4 Door

Vehicle NHTSA No.: CW5801 Test Date: January 15, 1998

TEST PHASE: 180° - 270°



DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time = 2 minutes 27 seconds

(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time = 5 minutes 0 seconds

TOTAL TIME = 7 minutes 27 seconds

Next Whole Minute Interval = 8 minutes

FUEL SPILLAGE MEASUREMENT:

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

FUEL SPILLAGE LOCATIONS(S):

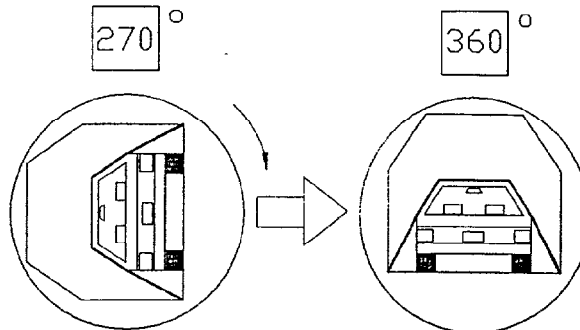
DATA SHEET 16

FMVSS 301 STATIC ROLLOVER TEST DATA

Vehicle Year/Make/Model/Body Style: 1998/Volkswagen/Jetta/GL 4 Door

Vehicle NHTSA No.: CW5801 Test Date: January 15, 1998

TEST PHASE: 270° - 360°



DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time = 2 minutes 49 seconds

(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time = 5 minutes 0 seconds

TOTAL TIME = 7 minutes 49 seconds

Next Whole Minute Interval = 8 minutes

FUEL SPILLAGE MEASUREMENT:

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

FUEL SPILLAGE LOCATIONS(S): None

APPENDIX A - PHOTOGRAPHS

TABLE OF PHOTOGRAPHS

	<u>Page No.</u>
Photo No. A-1 - Pre-Test Front View of Test Vehicle	A-1
Photo No. A-2 - Post-Test Front View of Test Vehicle	A-2
Photo No. A-3 - Pre-Test Rear View of Test Vehicle	A-3
Photo No. A-4 - Post-Test Rear View of Test Vehicle	A-4
Photo No. A-5 - Pre-Test Left Side View of Test Vehicle	A-5
Photo No. A-6 - Post-Test Left Side View of Test Vehicle	A-6
Photo No. A-7 - Pre-Test MDB Positioned Against Vehicle (left side)	A-7
Photo No. A-8 - Pre-Test MDB Positioned Against Vehicle (right side)	A-8
Photo No. A-9 - Pre-Test MDB Positioned Against Vehicle Overhead View	A-9
Photo No. A-10 - Post-Test MDB Positioned Against Vehicle (left side)	A-10
Photo No. A-11 - Post-Test MDB Positioned Against Vehicle (right side)	A-11
Photo No. A-12 - Post-Test MDB Positioned Against Vehicle Overhead View	A-12
Photo No. A-13 - Pre-Test MDB Top View	A-13
Photo No. A-14 - Post-Test MDB Top View	A-14
Photo No. A-15 - Pre-Test MDB Front View	A-15
Photo No. A-16 - Post-Test MDB Front View	A-16
Photo No. A-17 - Pre-Test MDB Left Side View	A-17
Photo No. A-18 - Post-Test MDB Left Side View	A-18
Photo No. A-19 - Pre-Test MDB Right Side View	A-19
Photo No. A-20 - Post-Test MDB Right Side View	A-20
Photo No. A-21 - Pre-Test Driver Dummy Right Side View	A-21
Photo No. A-22 - Post-Test Driver Dummy Right Side View	A-22
Photo No. A-23 - Pre-Test Driver Dummy Left Side View	A-23
Photo No. A-24 - Post-Test Driver Dummy Left Side View	A-24
Photo No. A-25 - Pre-Test Driver Dummy Left Side View (Door Open)	A-25
Photo No. A-26 - Pre-Test Driver Shoulder and Door Top View	A-26
Photo No. A-27 - Post-Test Driver Shoulder and Door Top View	A-27
Photo No. A-28 - Post-Test Driver Dummy Contact	A-28
Photo No. A-29 - Post-Test Driver Dummy Head Contact	A-29

TABLE OF PHOTOGRAPHS

	<u>Page No.</u>
Photo No. A-30 - Pre-Test Rear Passenger Dummy Right Side View	A-30
Photo No. A-31 - Post-Test Rear Passenger Dummy Right Side View	A-31
Photo No. A-32 - Pre-Test Rear Passenger Dummy Left Side View	A-32
Photo No. A-33 - Post-Test Rear Passenger Dummy Left Side View	A-33
Photo No. A-34 - Post-Test Rear Passenger Dummy Left Side View (Door Open)	A-34
Photo No. A-35 - Pre-Test Rear Passenger Dummy Shoulder View	A-35
Photo No. A-36 - Post-Test Rear Passenger Dummy Shoulder View	A-36
Photo No. A-37 - Post-Test Rear Passenger Dummy Contact	A-37
Photo No. A-38 - Post-Test Rear Passenger Dummy Head Contact	A-38
Photo No. A-39 - Pre-Test Right Front Impact Point on Vehicle	A-39
Photo No. A-40 - Post-Test Right Front Impact Point on Vehicle	A-40
Photo No. A-41 - Impact	A-41
Photo No. A-42 - Vehicle Certification Label	A-42
Photo No. A-43 - Tire Placard	A-43
Photo No. A-44 - Rollover 90°	A-44
Photo No. A-45 - Rollover 180°	A-45
Photo No. A-46 - Rollover 270°	A-46
Photo No. A-47 - Rollover 360°	A-47
Photo No. A-48 - Left Front Attitude Point	A-48
Photo No. A-49 - Right Front Attitude Point	A-49
Photo No. A-50 - Left Rear Attitude Point	A-50
Photo No. A-51 - Right Rear Attitude Point	A-51

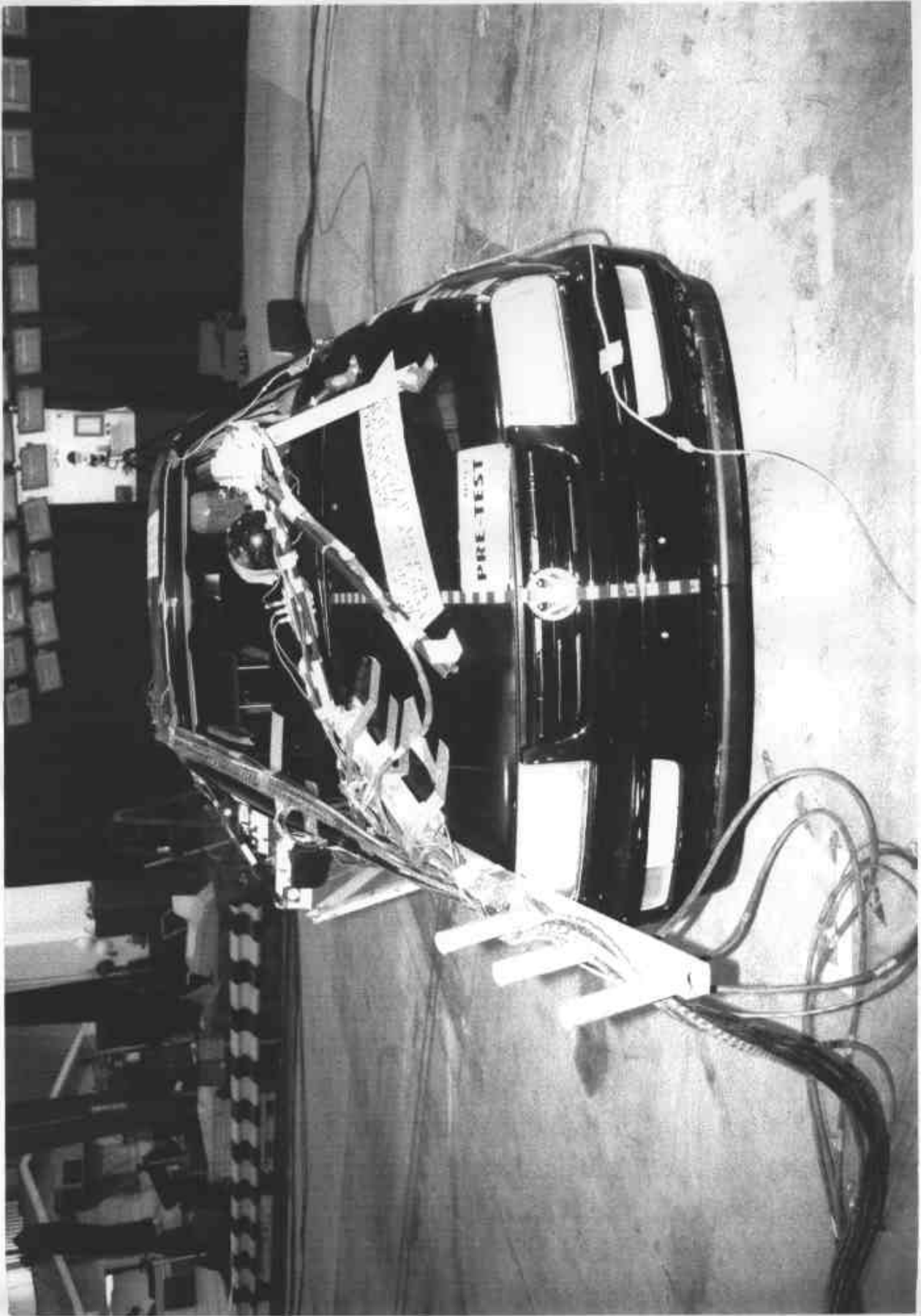


Photo No. A-1 - Pre-Test Front View of Test Vehicle

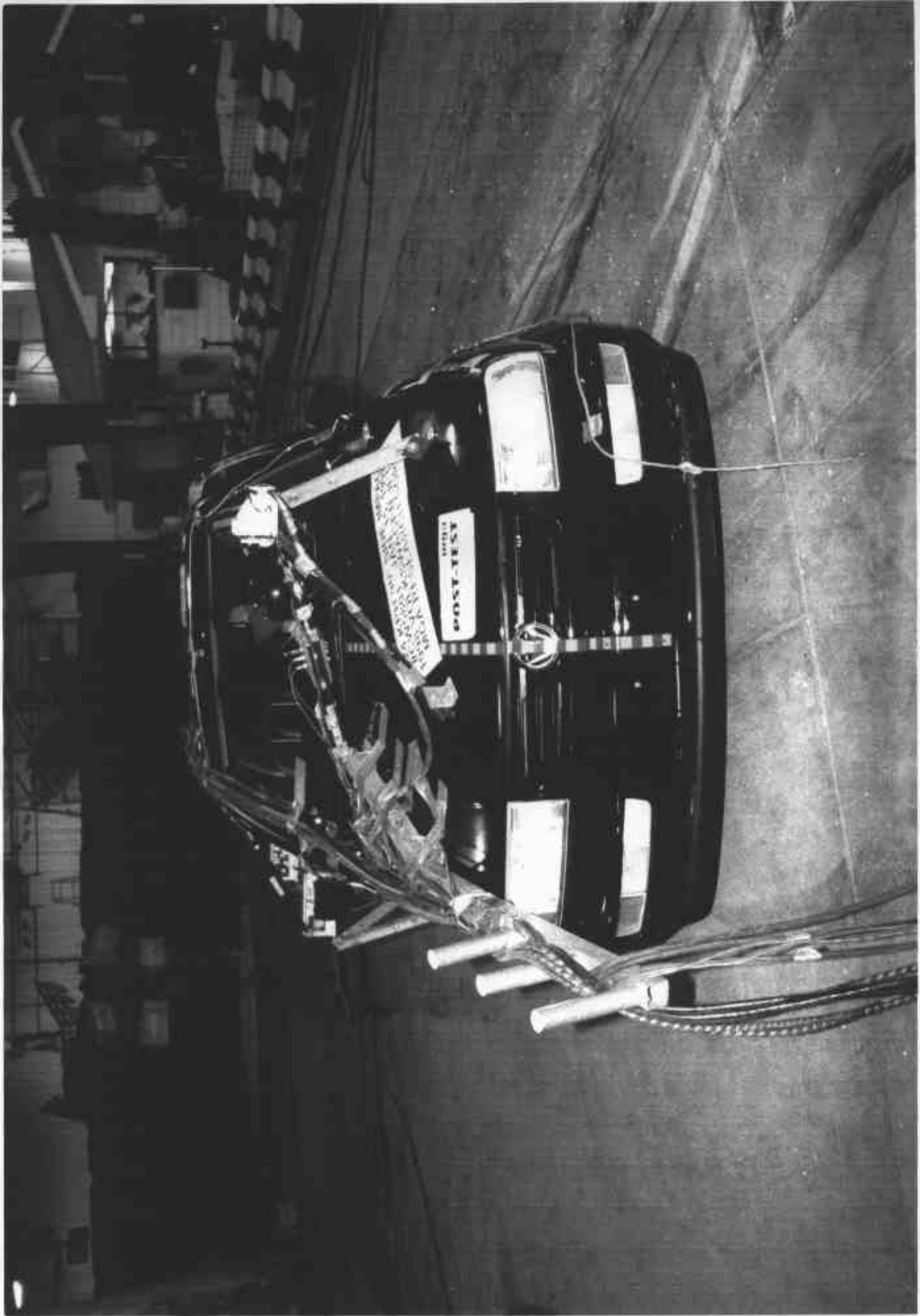


Photo No. A-2 - Post-Test Front View of Test Vehicle

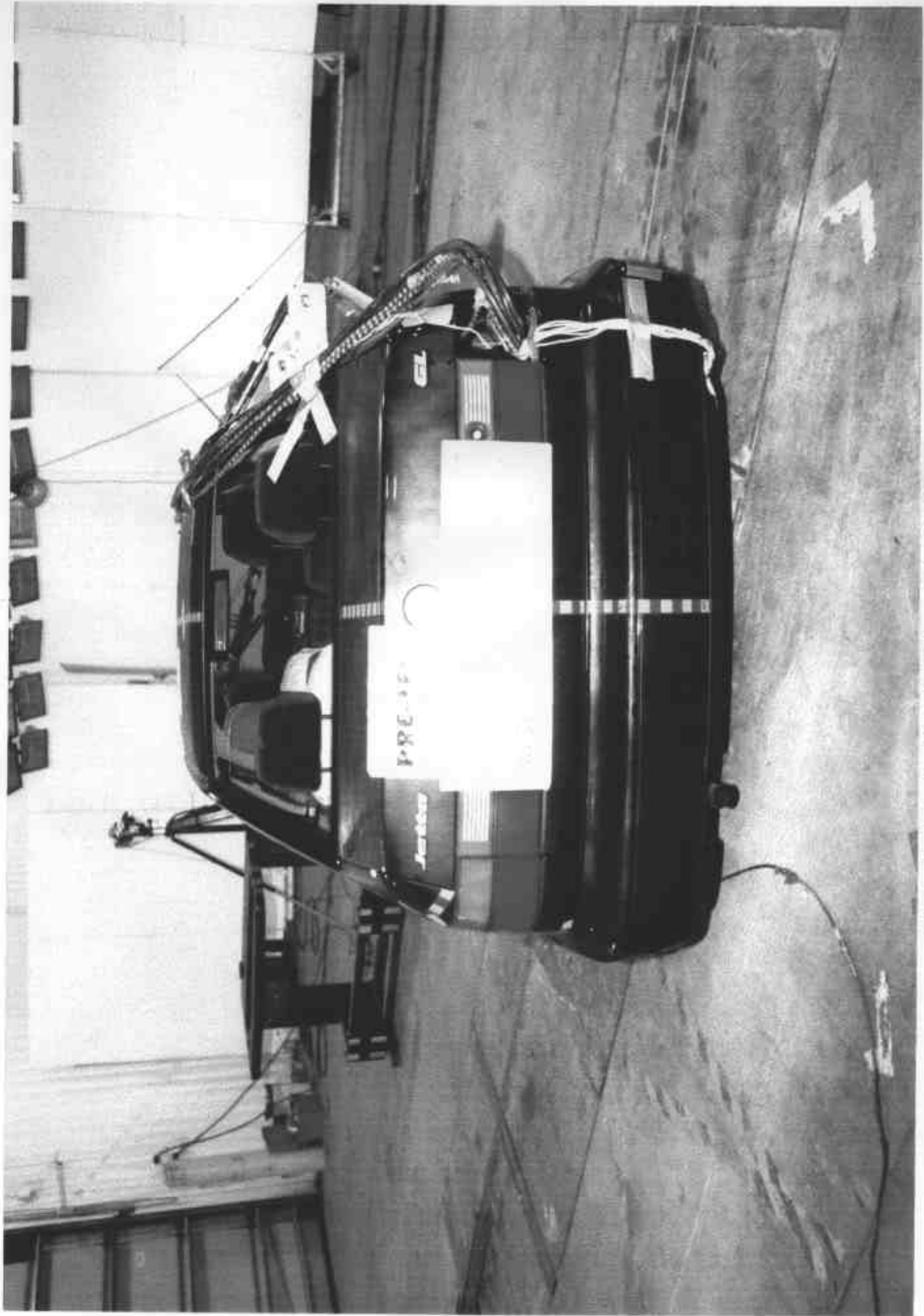


Photo No. A-3 - Pre-Test Rear View of Test Vehicle



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

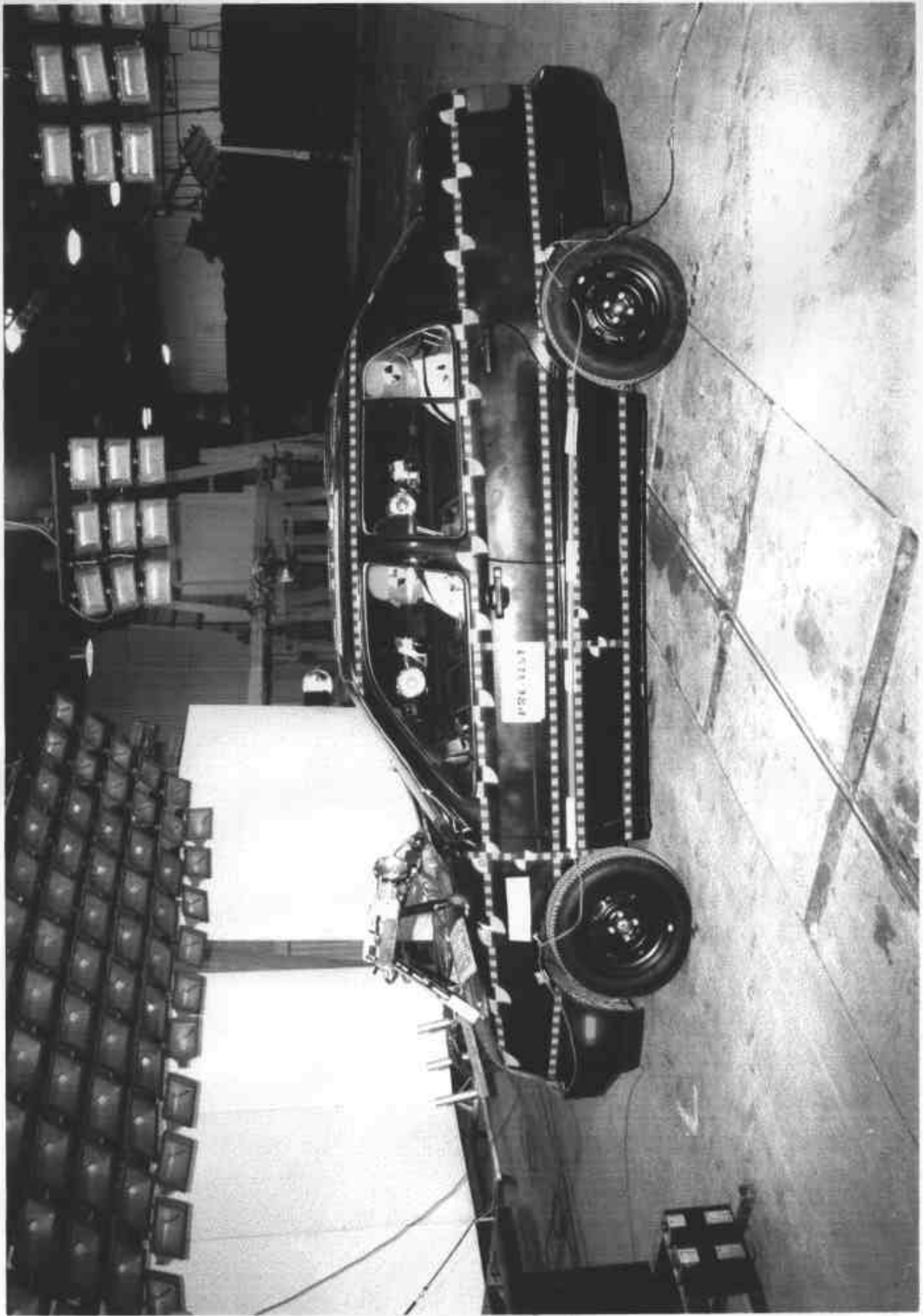


Photo No. A-5 - Pre-Test Left Side View of Test Vehicle

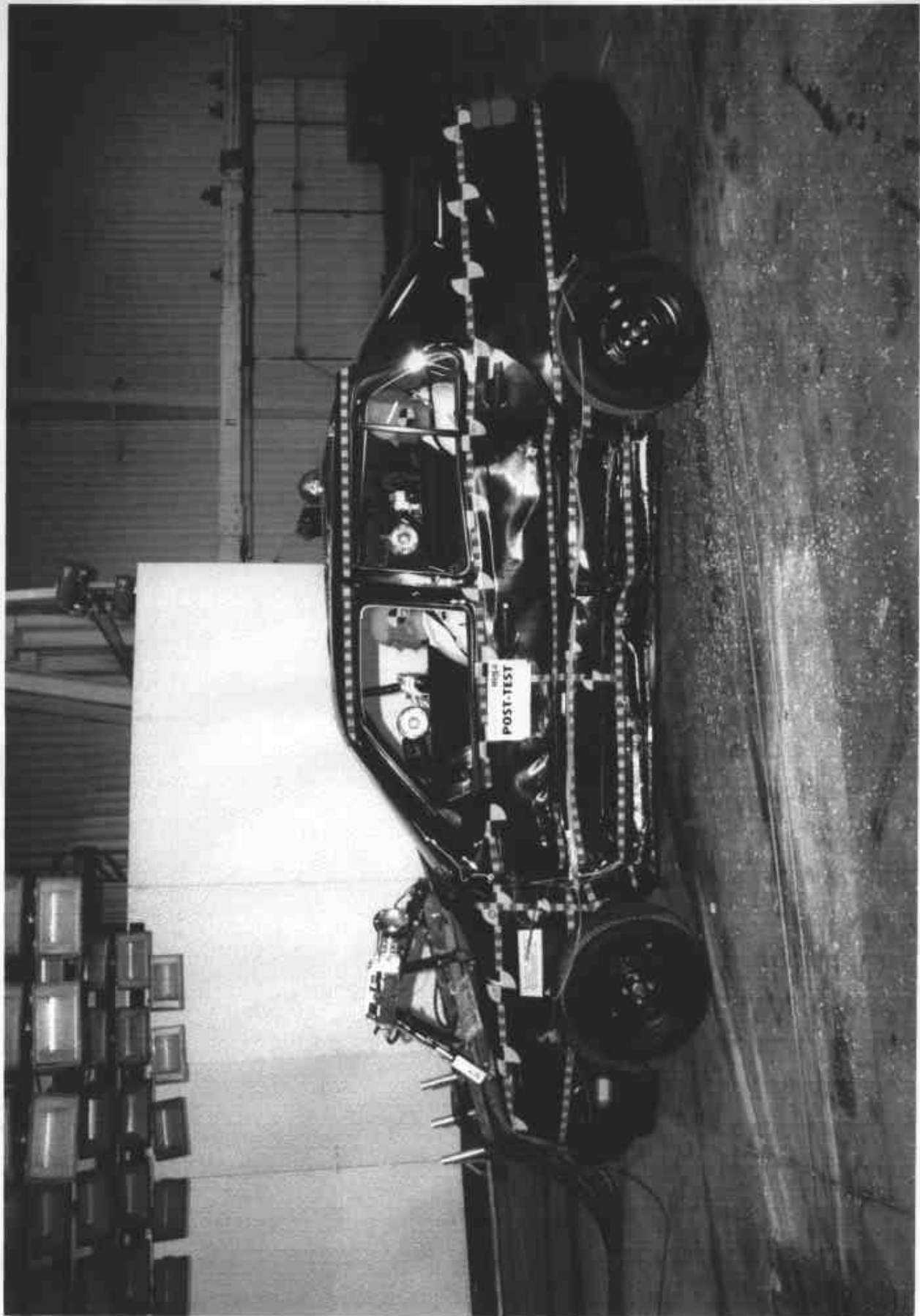


Photo No. A-6 - Post-Test Left Side View of Test Vehicle



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

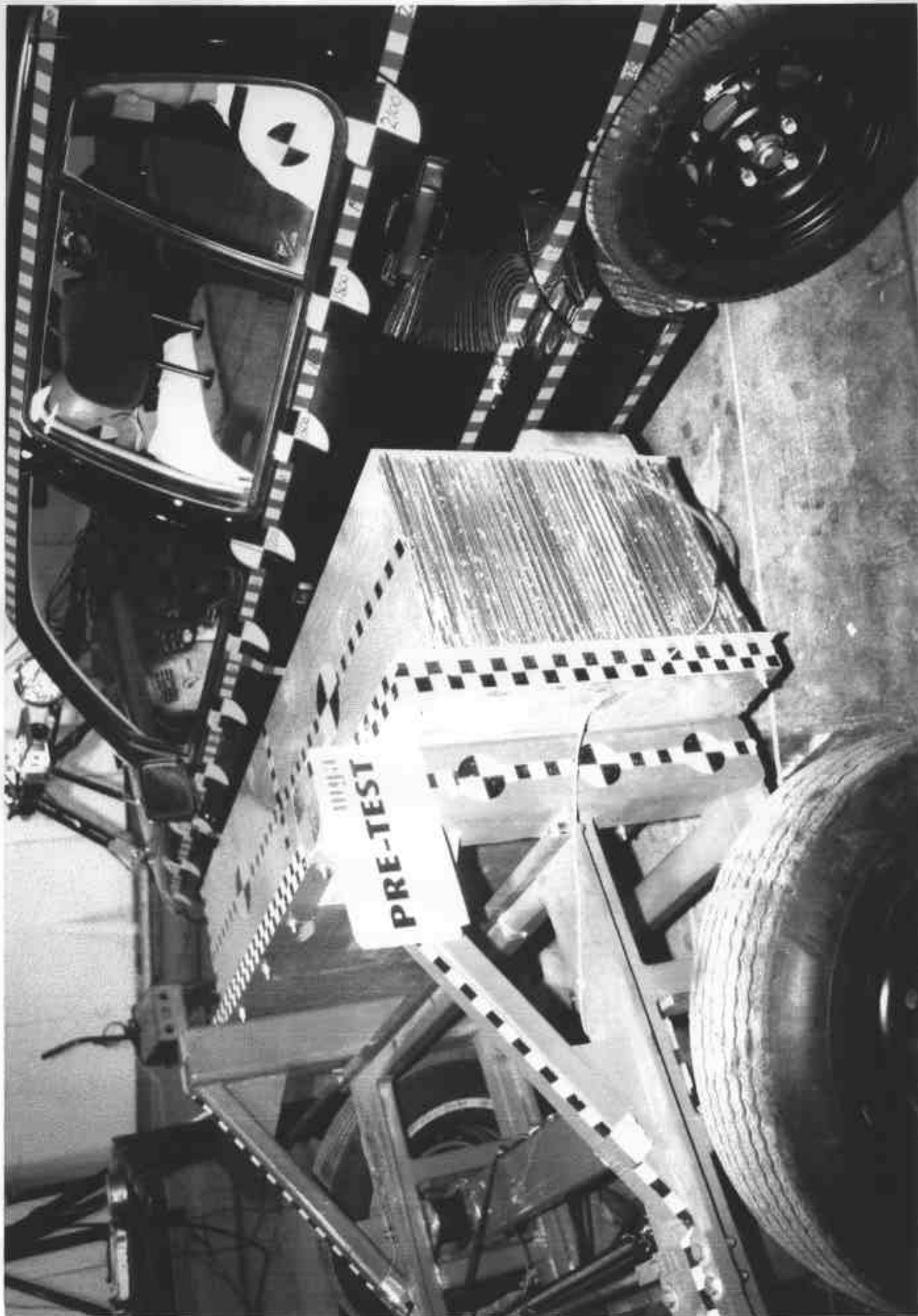


Photo No. A-8 - Pre-Test MDB Positioned Against Vehicle (right side)

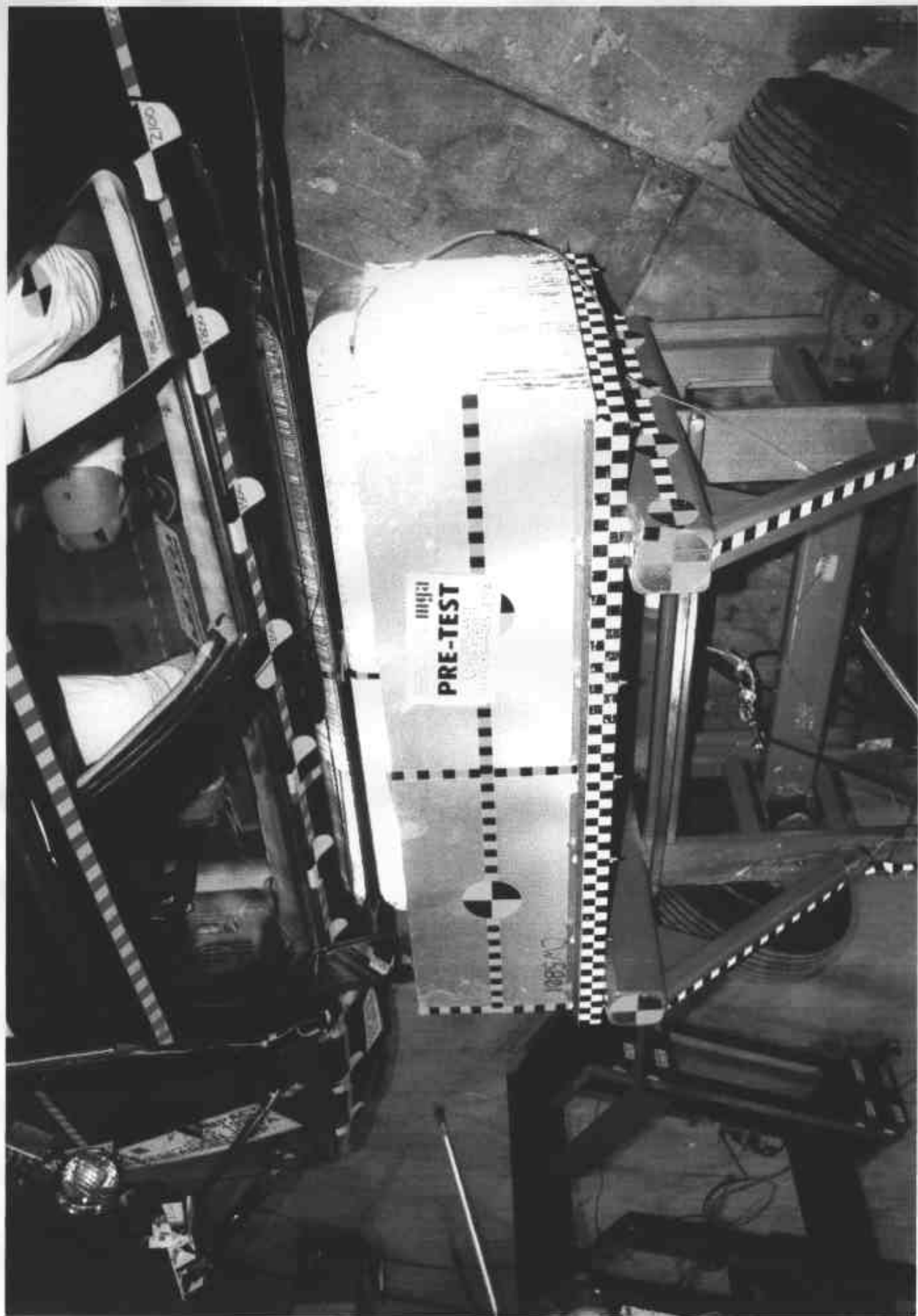


Photo No. A-9 - Pre-Test MDB Positioned Against Vehicle Overhead View

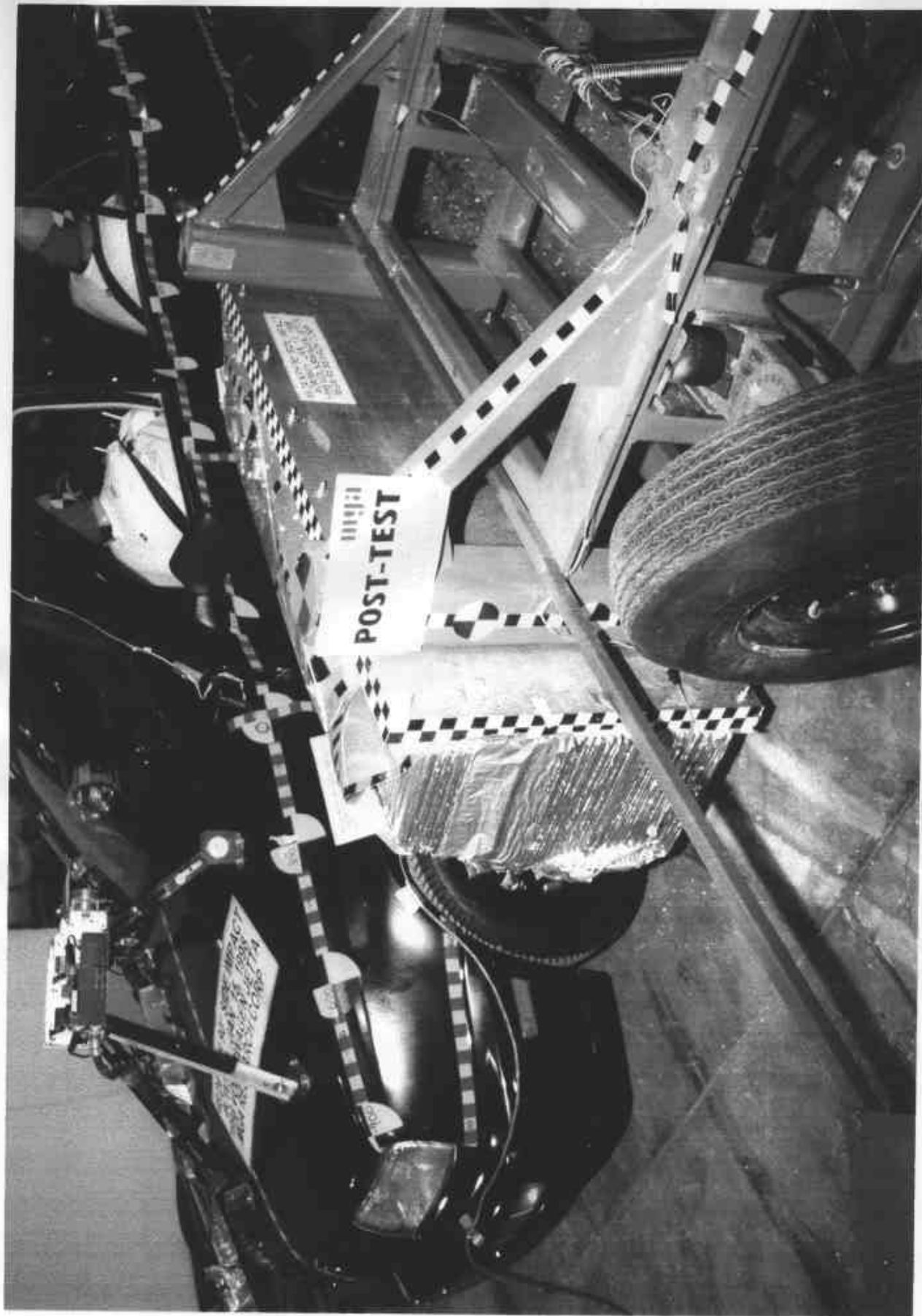


Photo No. A-10 - Post-Test MDB Positioned Against Vehicle (left side)

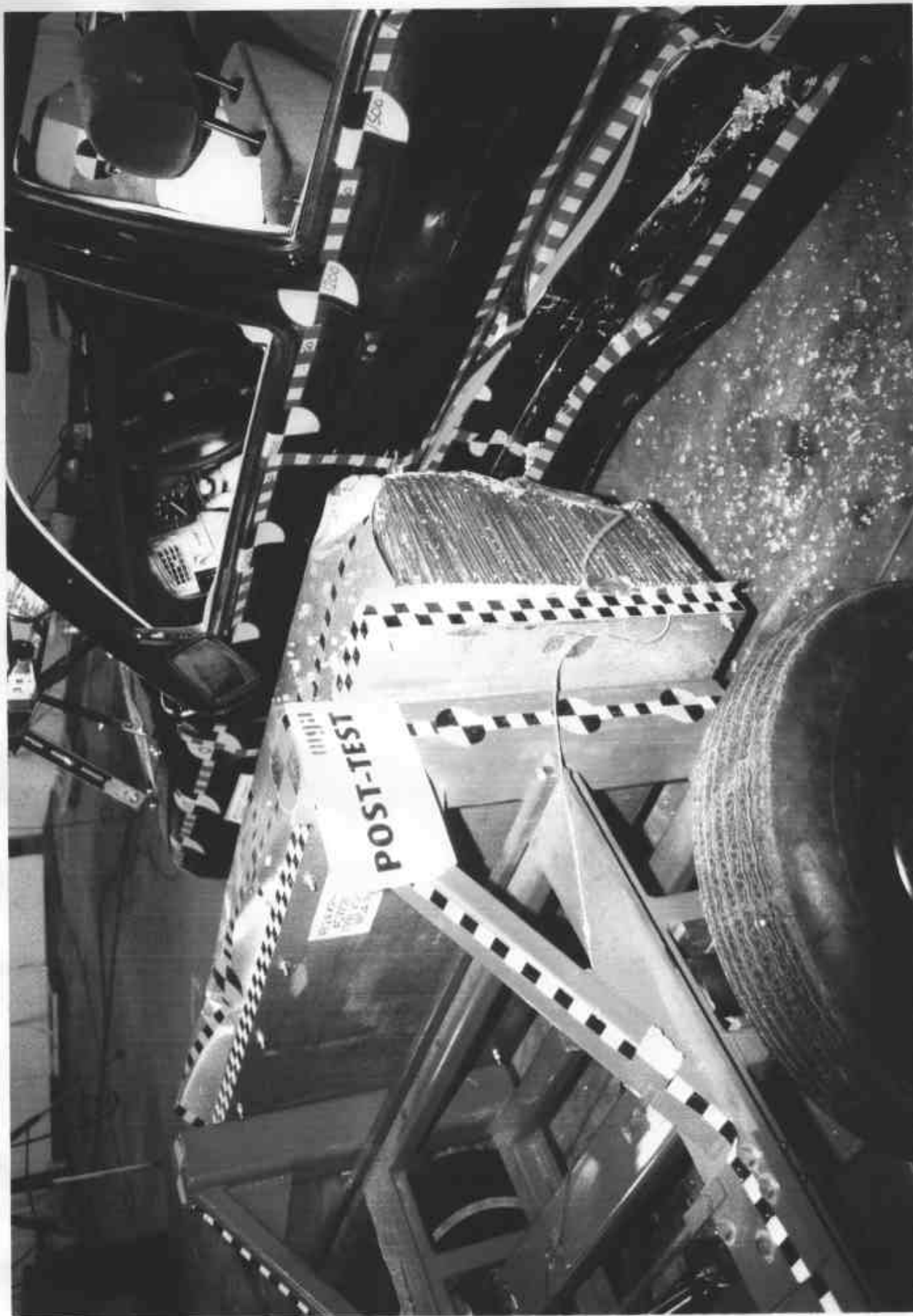


Photo No. A-11 - Post-Test MDB Positioned Against Vehicle (right side)



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

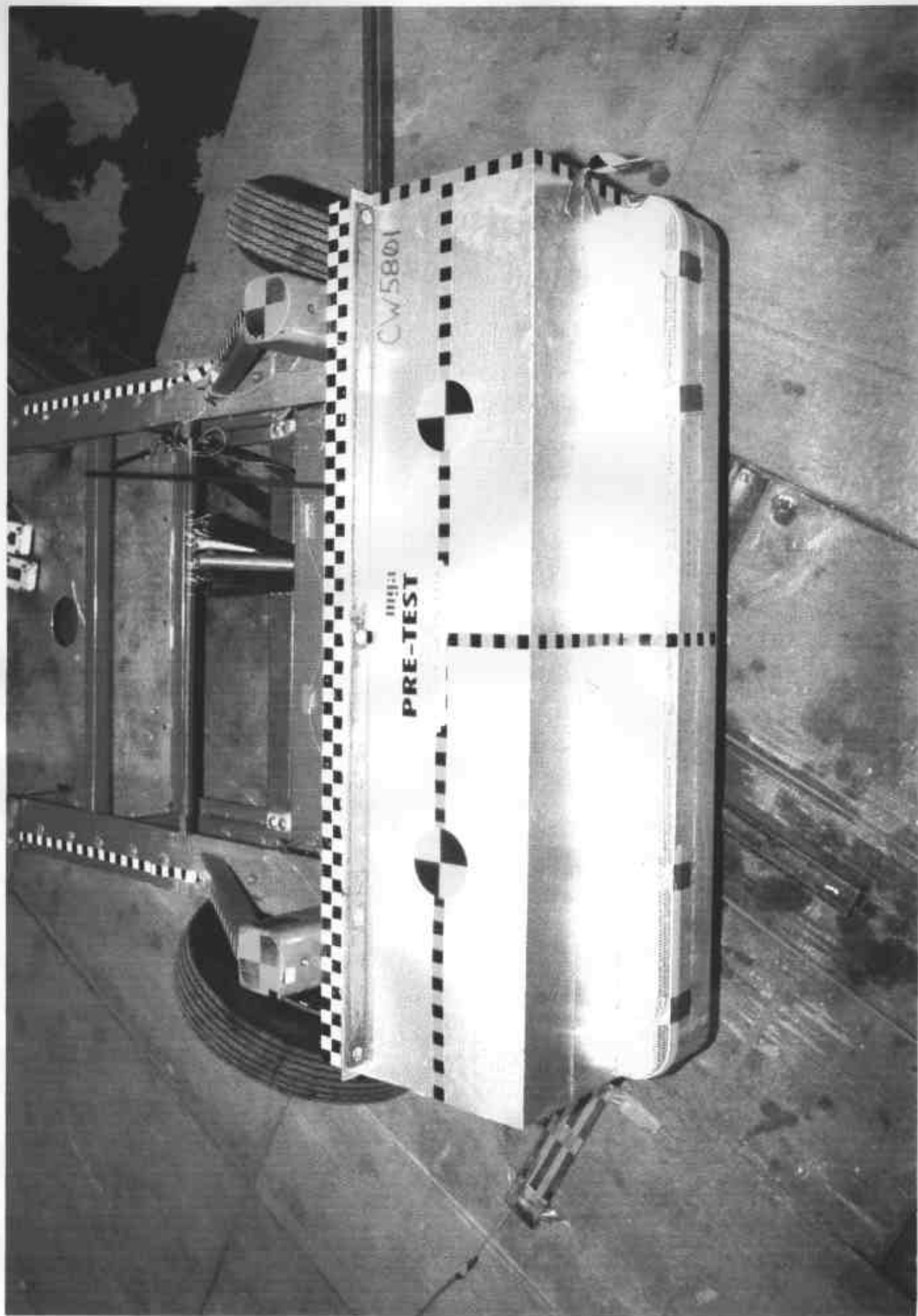


Photo No. A-13 - Pre-Test MDB Top View

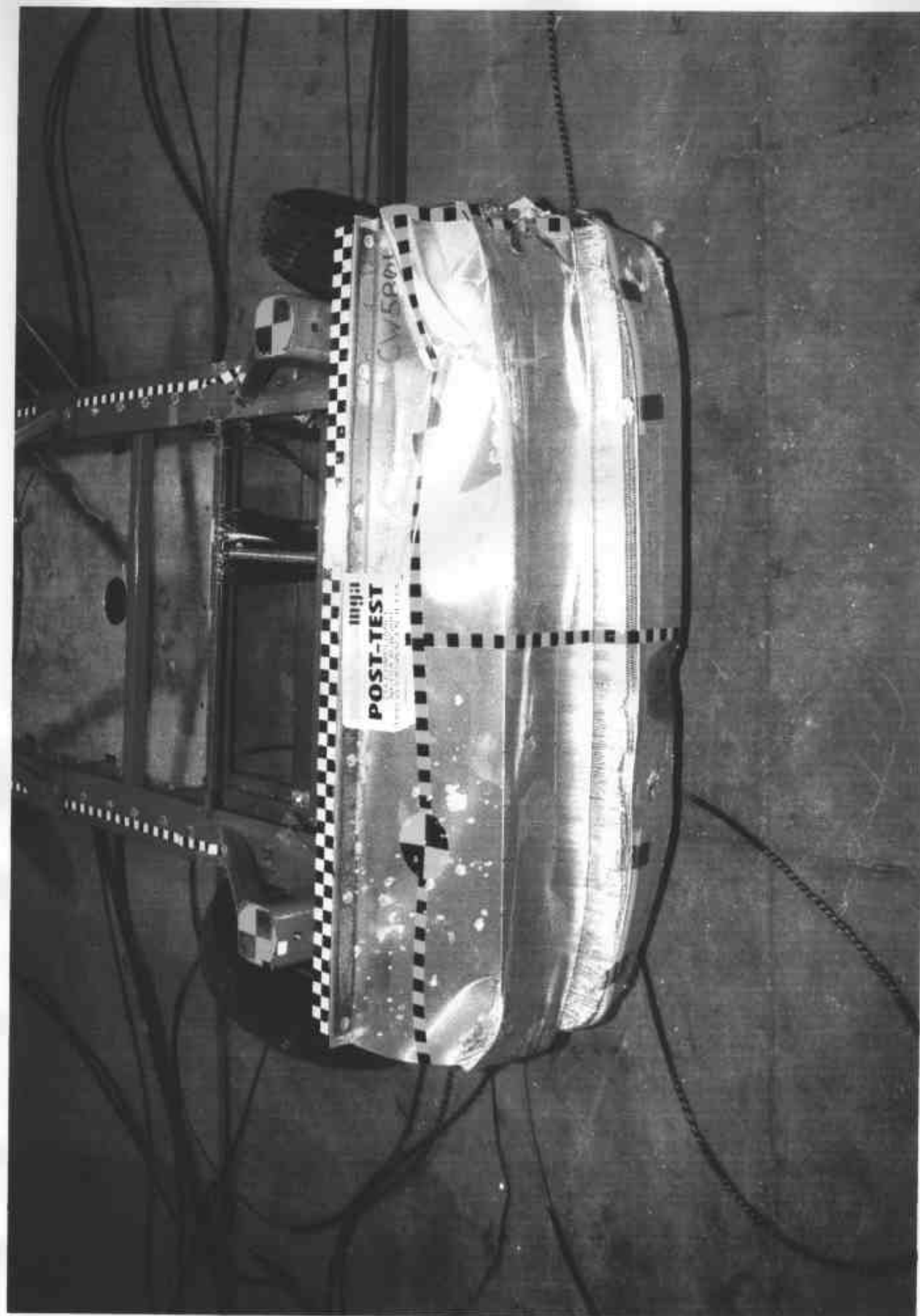


Photo No. A-14 - Post-Test MDB Top View

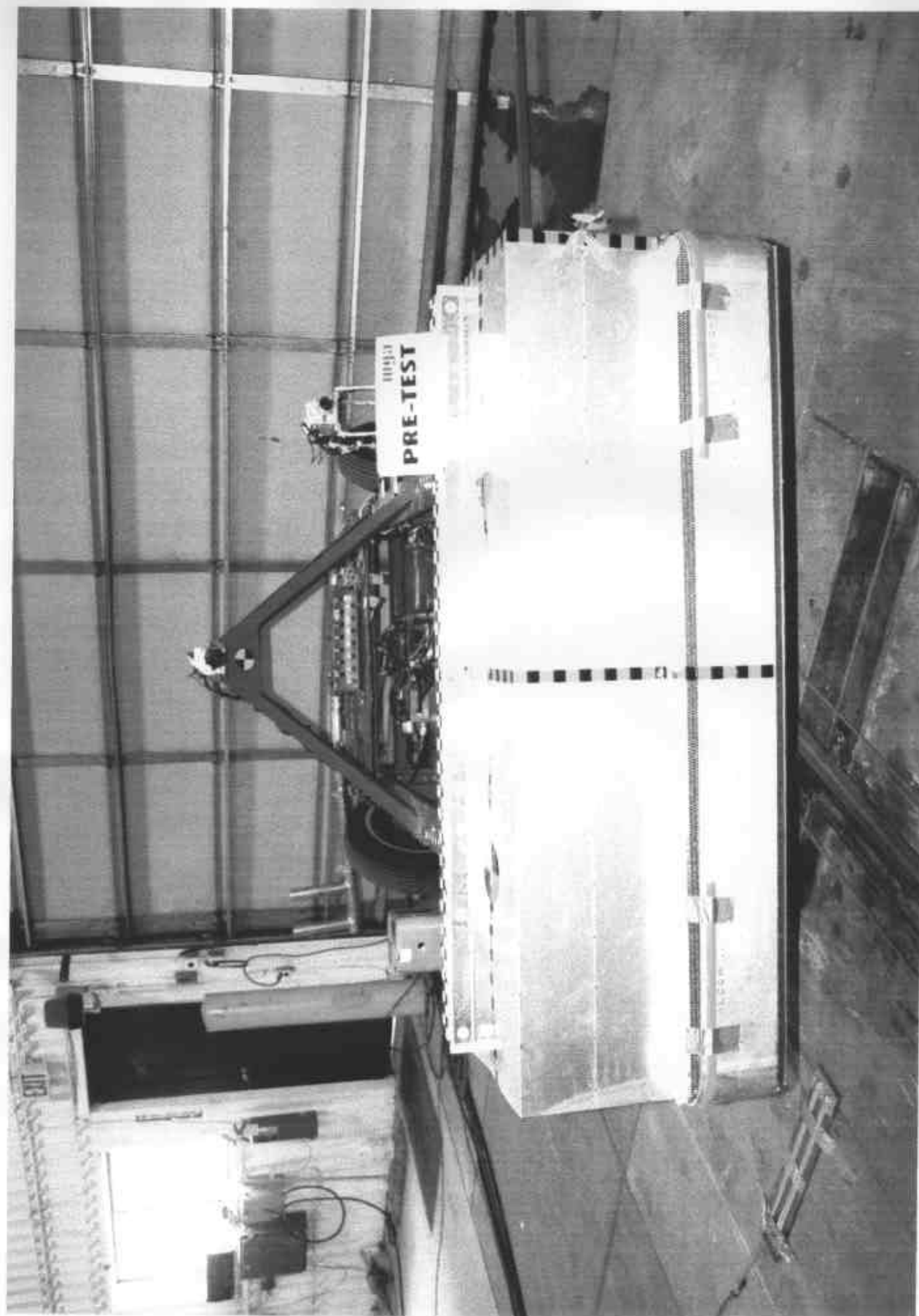


Photo No. A-15 - Pre-Test MDB Front View

A-15

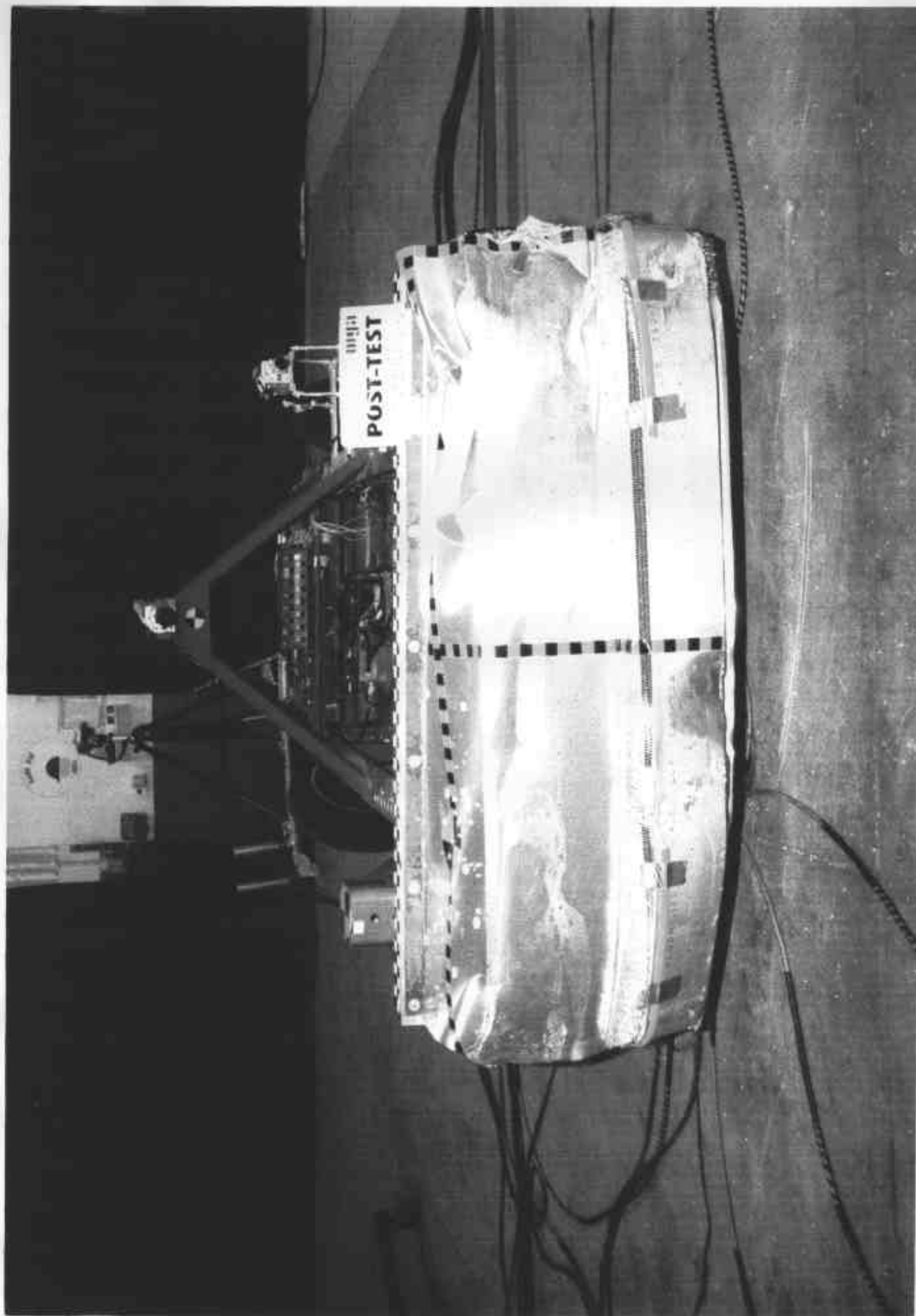


Photo No. A-16 - Post-Test MDB Front View

A-16

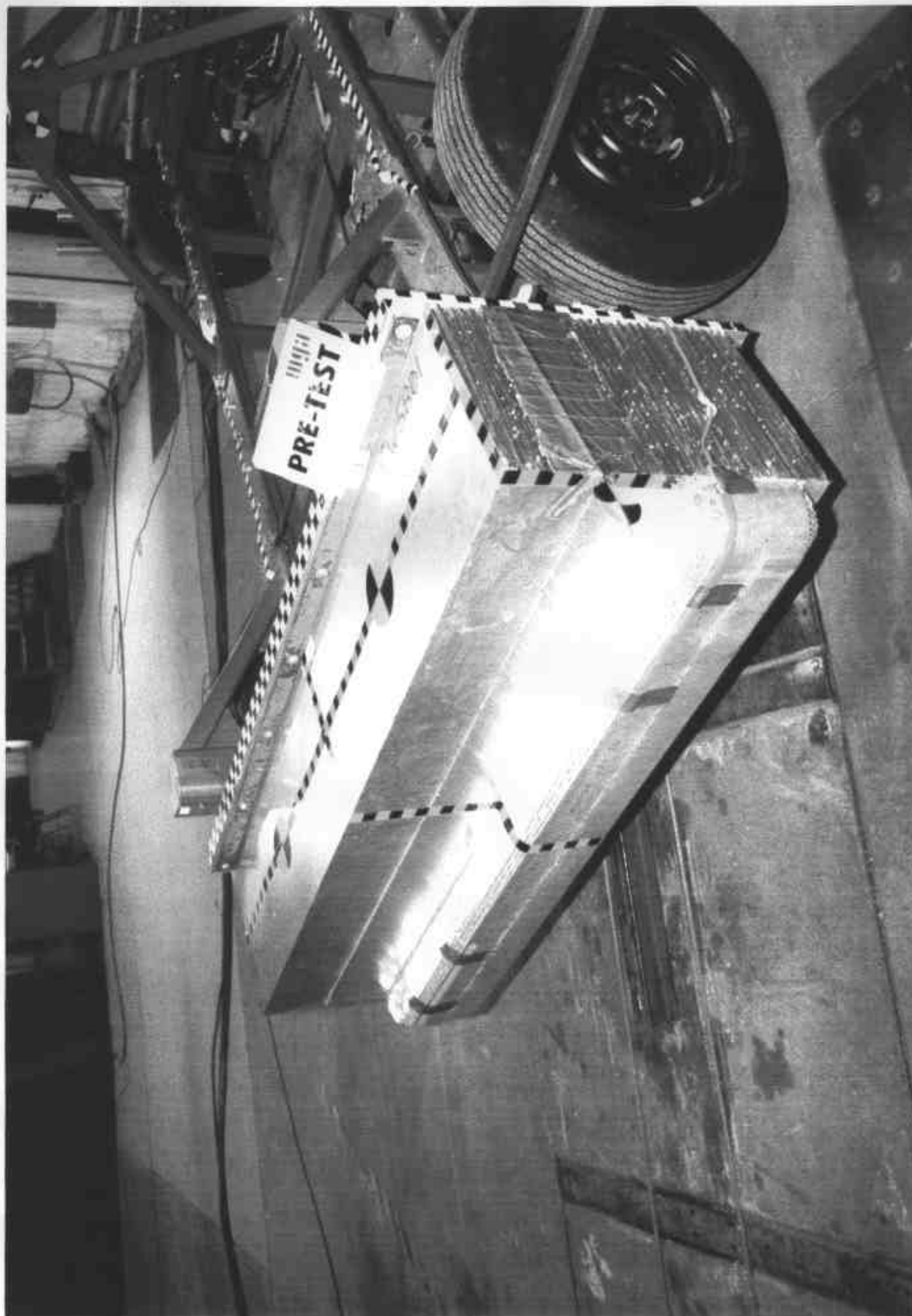


Photo No. A-17 - Pre-Test MDB Left Side View



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

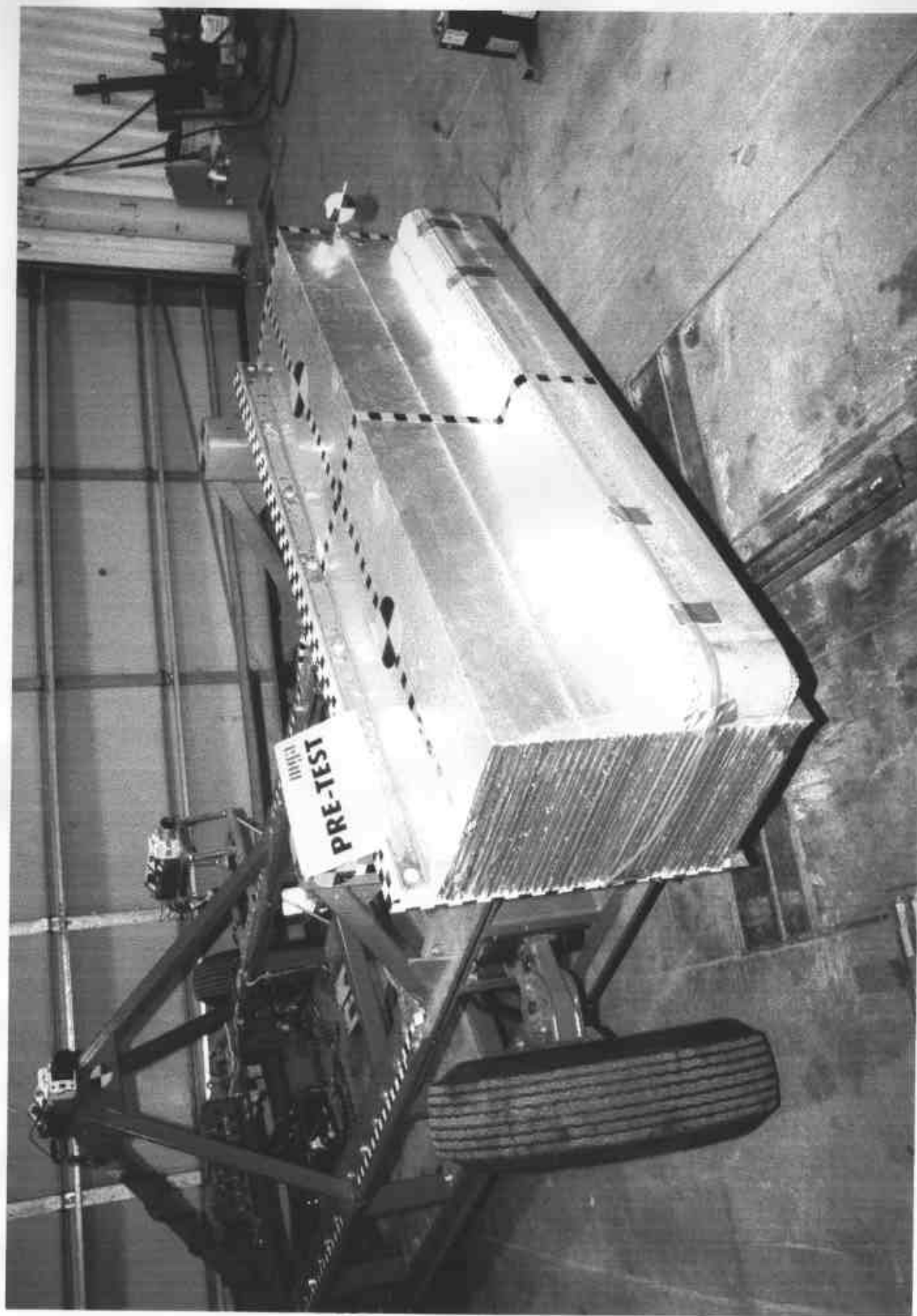


Photo No. A-19 - Pre-Test MDB Right Side View

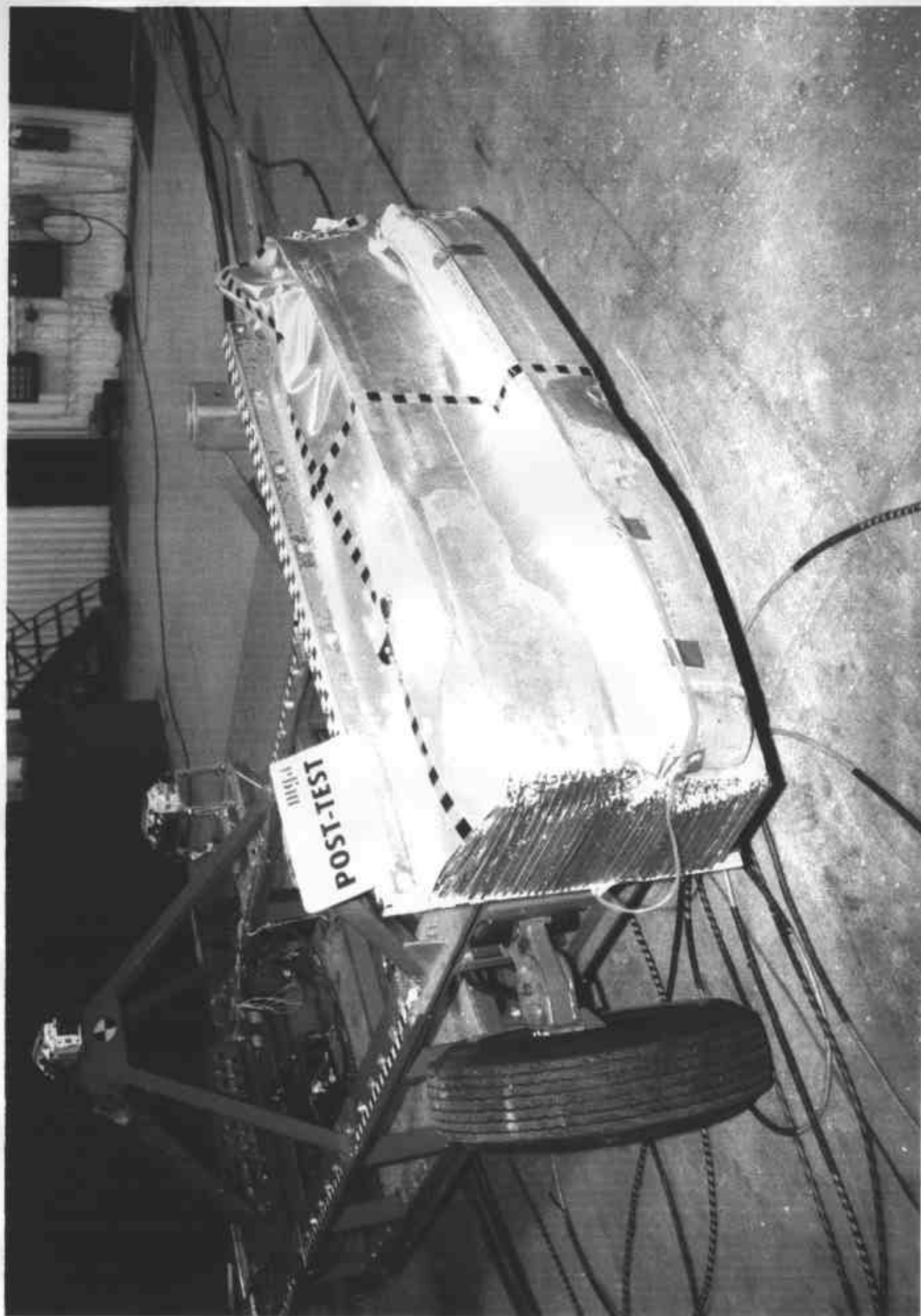


Photo No. A-20 - Post-Test MDB Right Side View

A-20



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



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

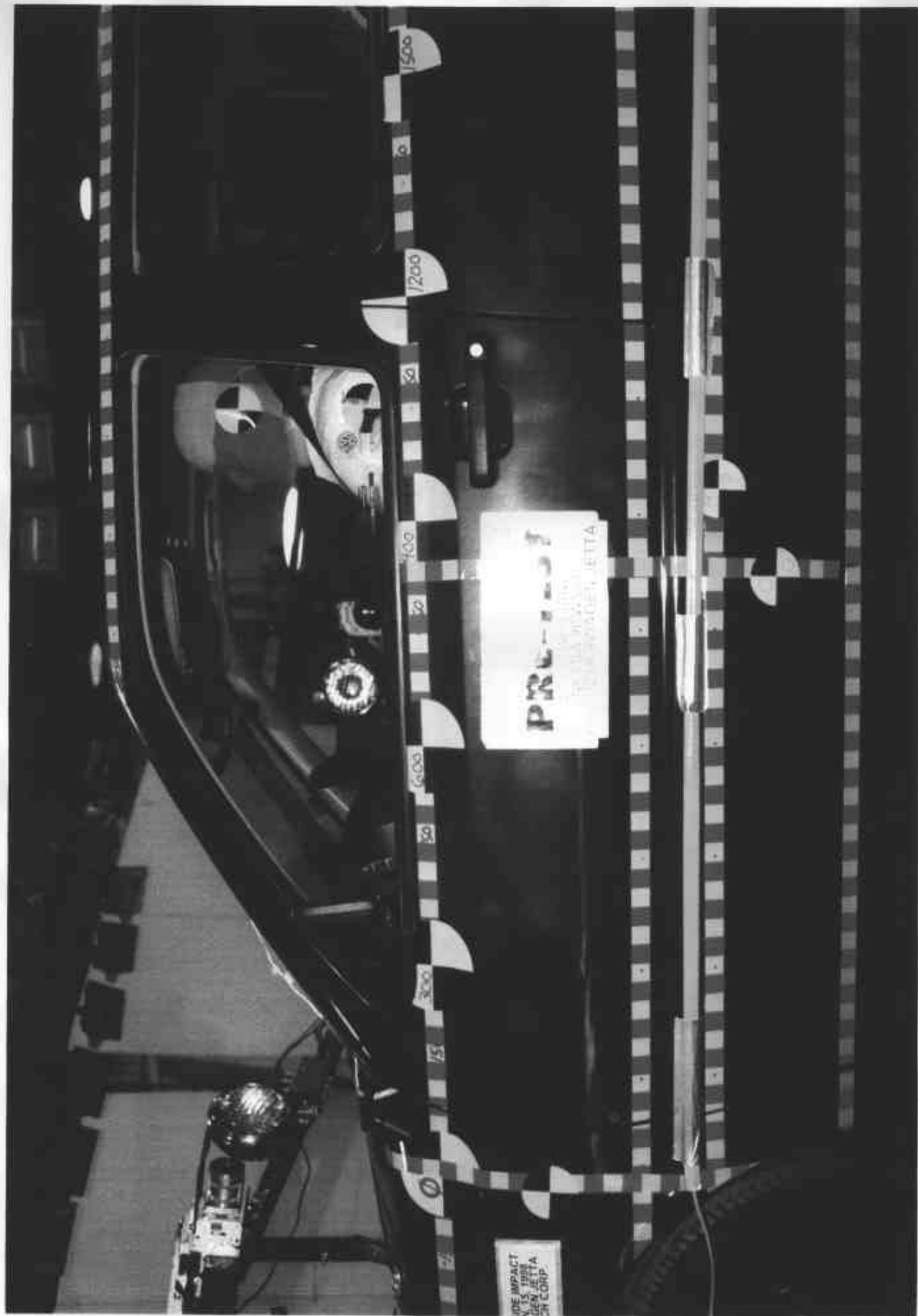


Photo No. A-23 - Pre-Test Driver Dummy Left Side View

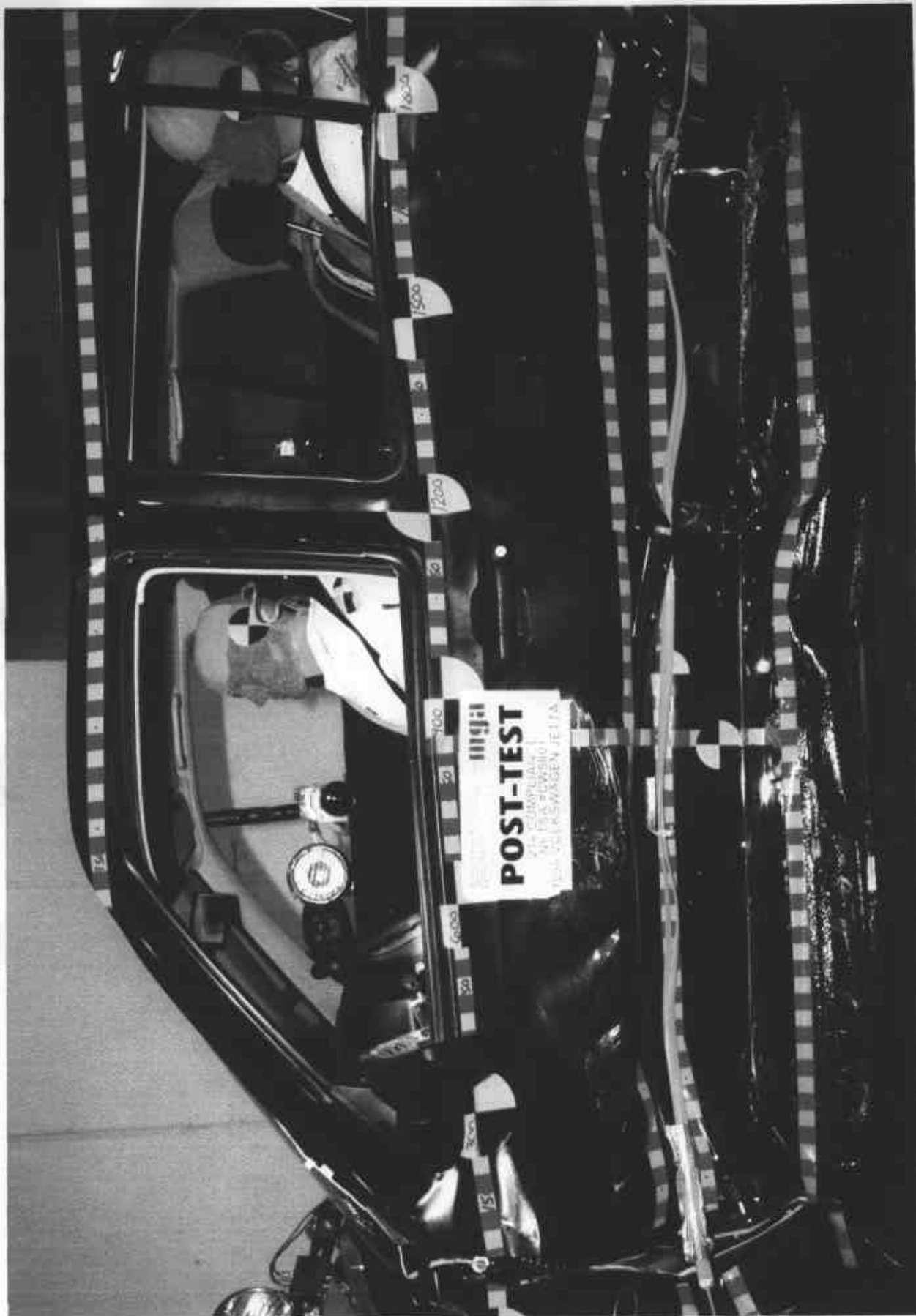


Photo No. A-24 - Post-Test Driver Dummy Left Side View



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



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



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



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

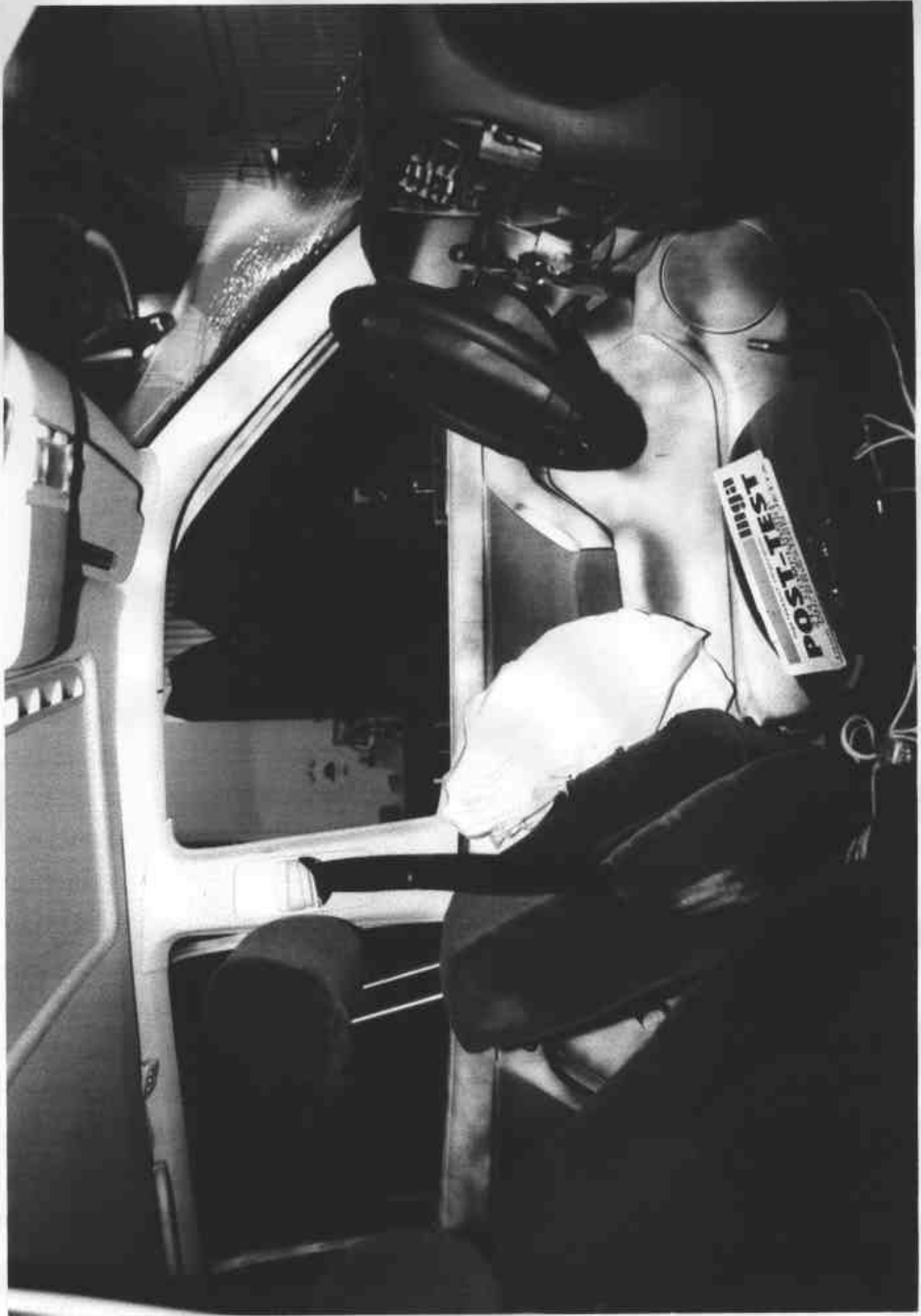


Photo No. A-29 - Post-Test Driver Dummy Head Contact



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



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



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

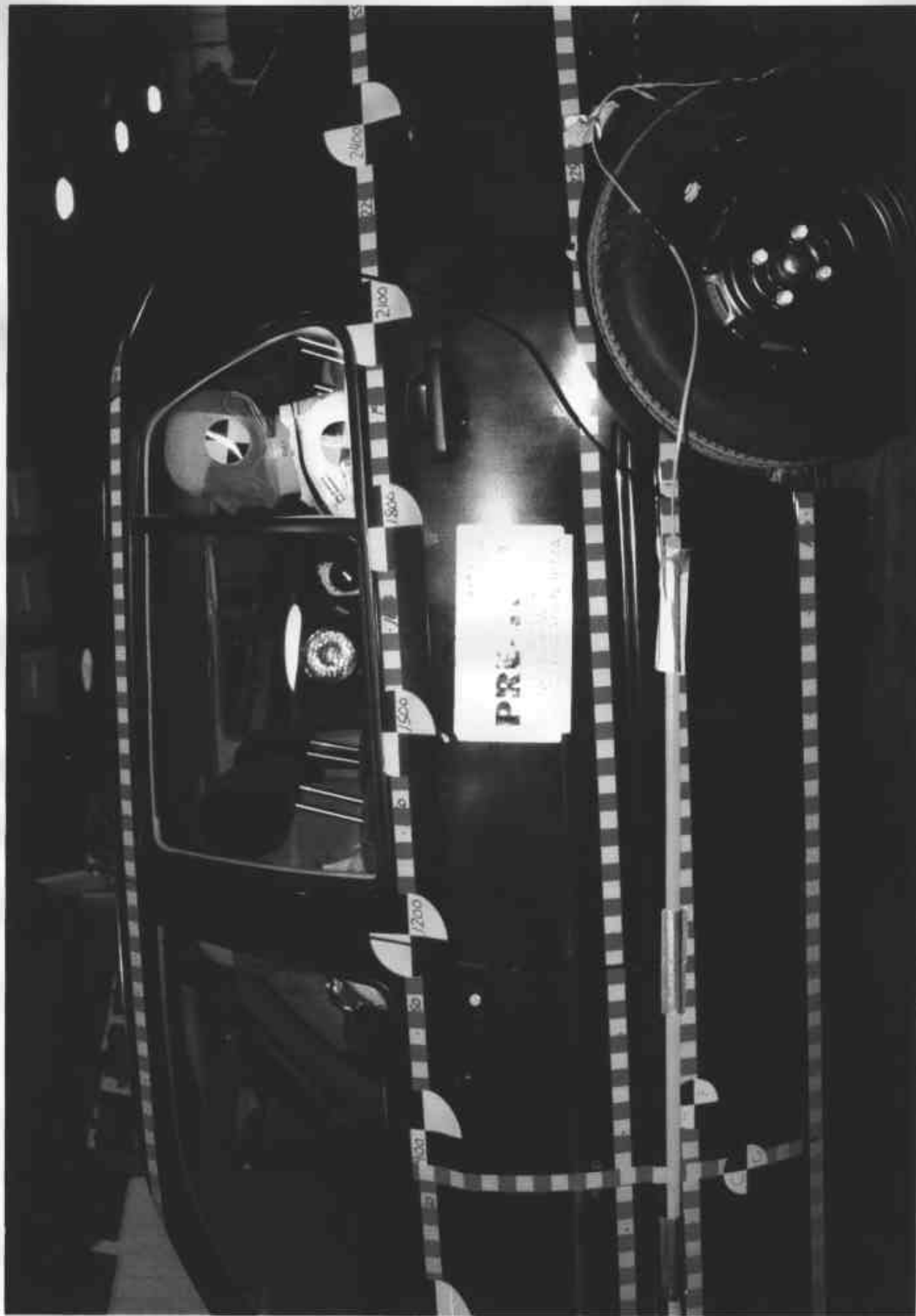


Photo No. A-32 - Pre-Test Rear Passenger Dummy Left Side View

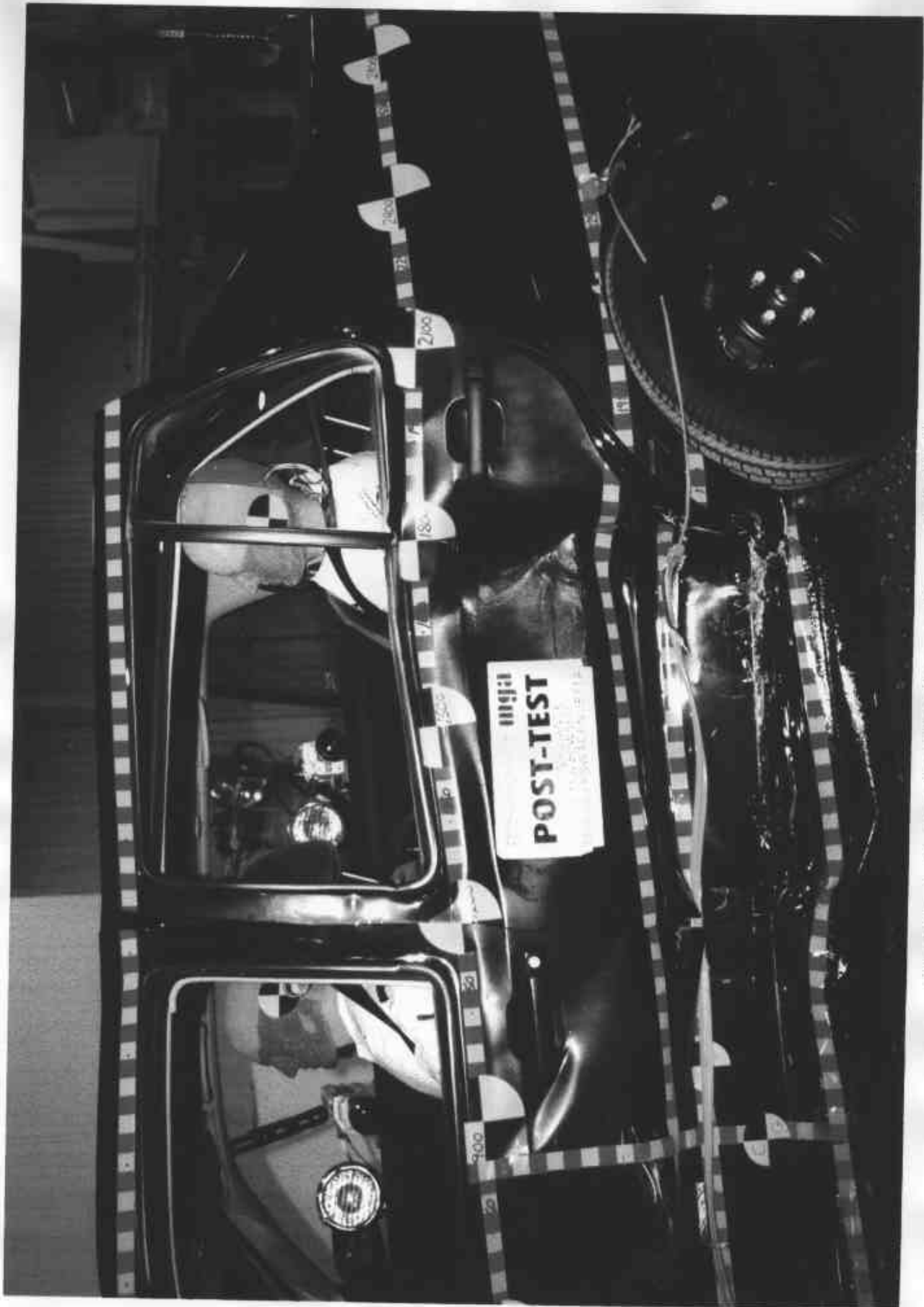


Photo No. A-33 - Post-Test Rear Passenger Dummy Left Side View

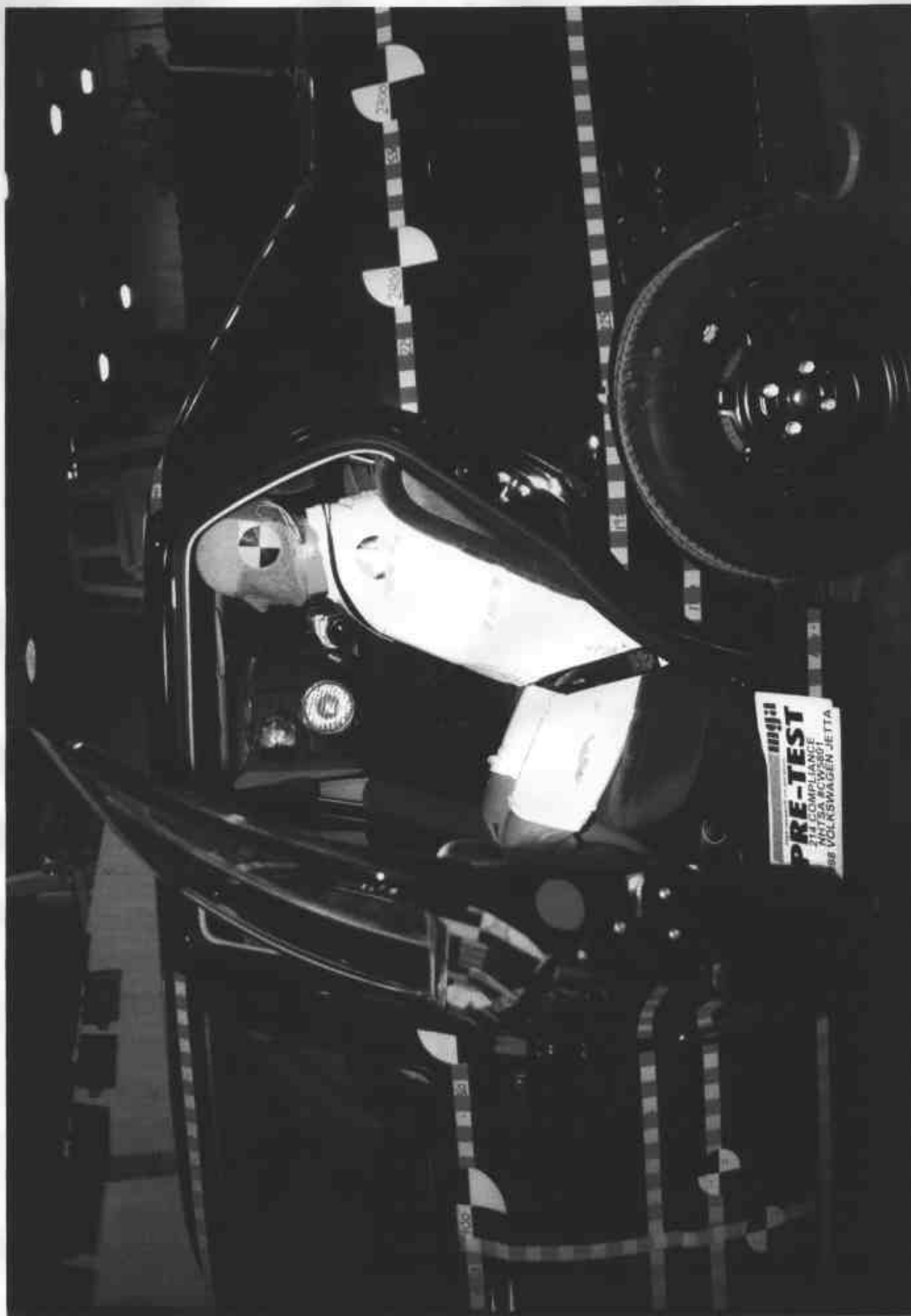


Photo No. A-34 - Post-Test Rear Passenger Dummy Left Side View (Door Open)



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

A-35



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

A-36



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



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



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



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

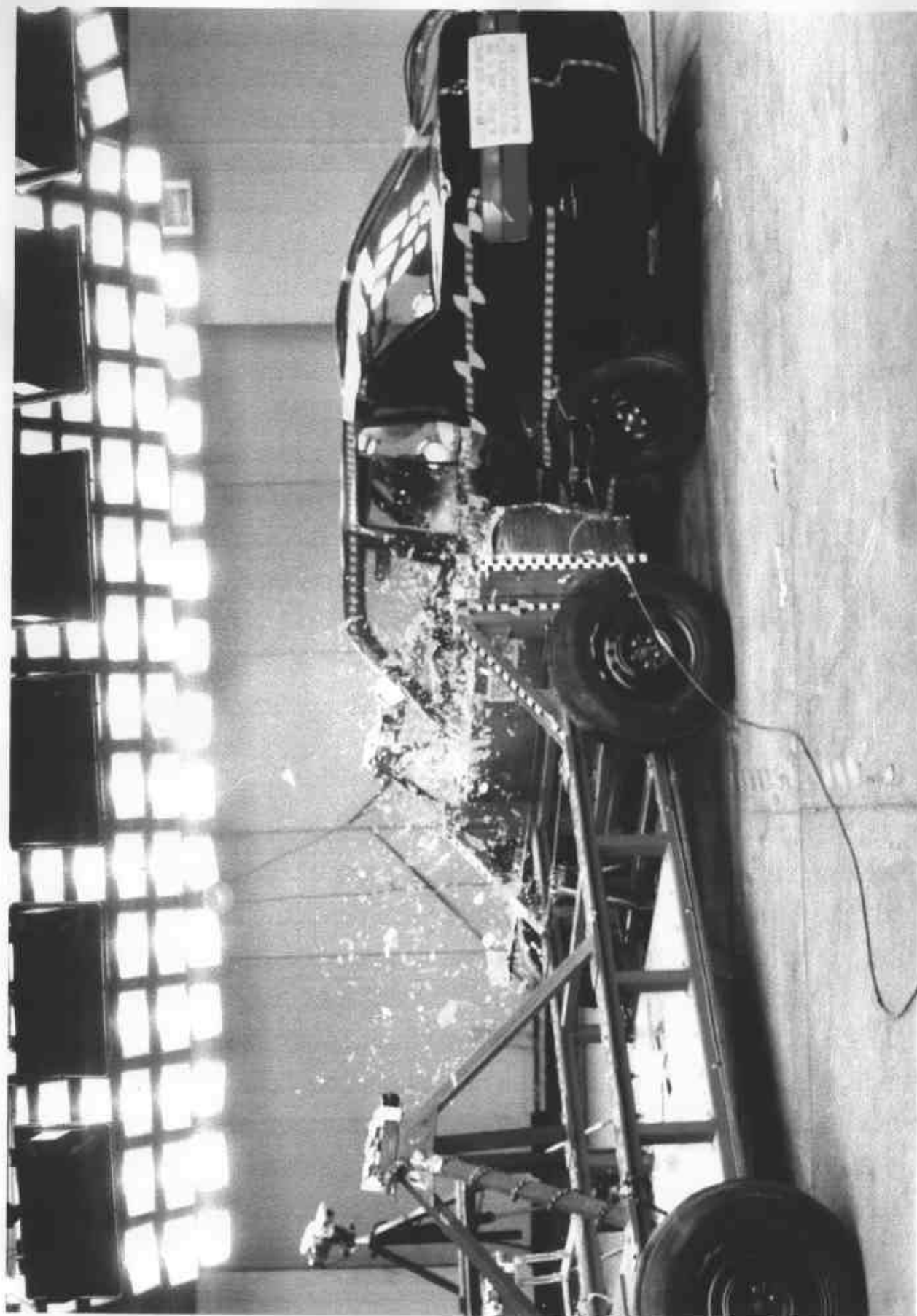


Photo No. A-41 - Impact

A-41

[illegible]

A-42

1HM 010 210 E C-1 87				CHARGE MAXIMUM			
MAX. LOAD (VEHICLE CAPACITY WEIGHT - lbs)				(CAPACITE DE CHARGEMENT) DE LA VOITURE - kg			
DESIGNATED SEATING CAPACITY 5, 2 FRONT / 3 REAR				SIEGES DESIGNES POUR 5 PERSONNES, 2 AV. / 3 AR.			

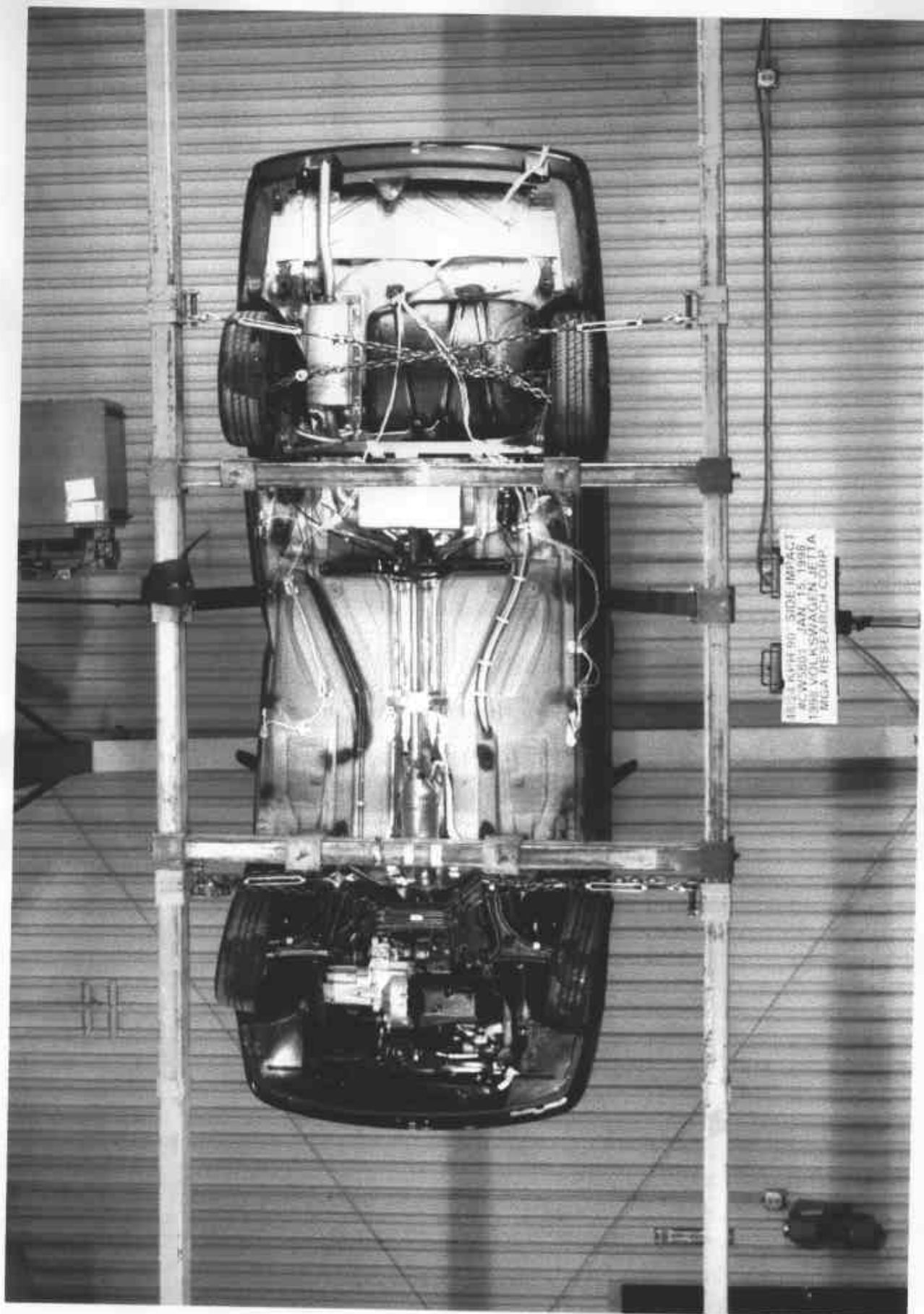


Photo No. A-44 - Rollover 90°

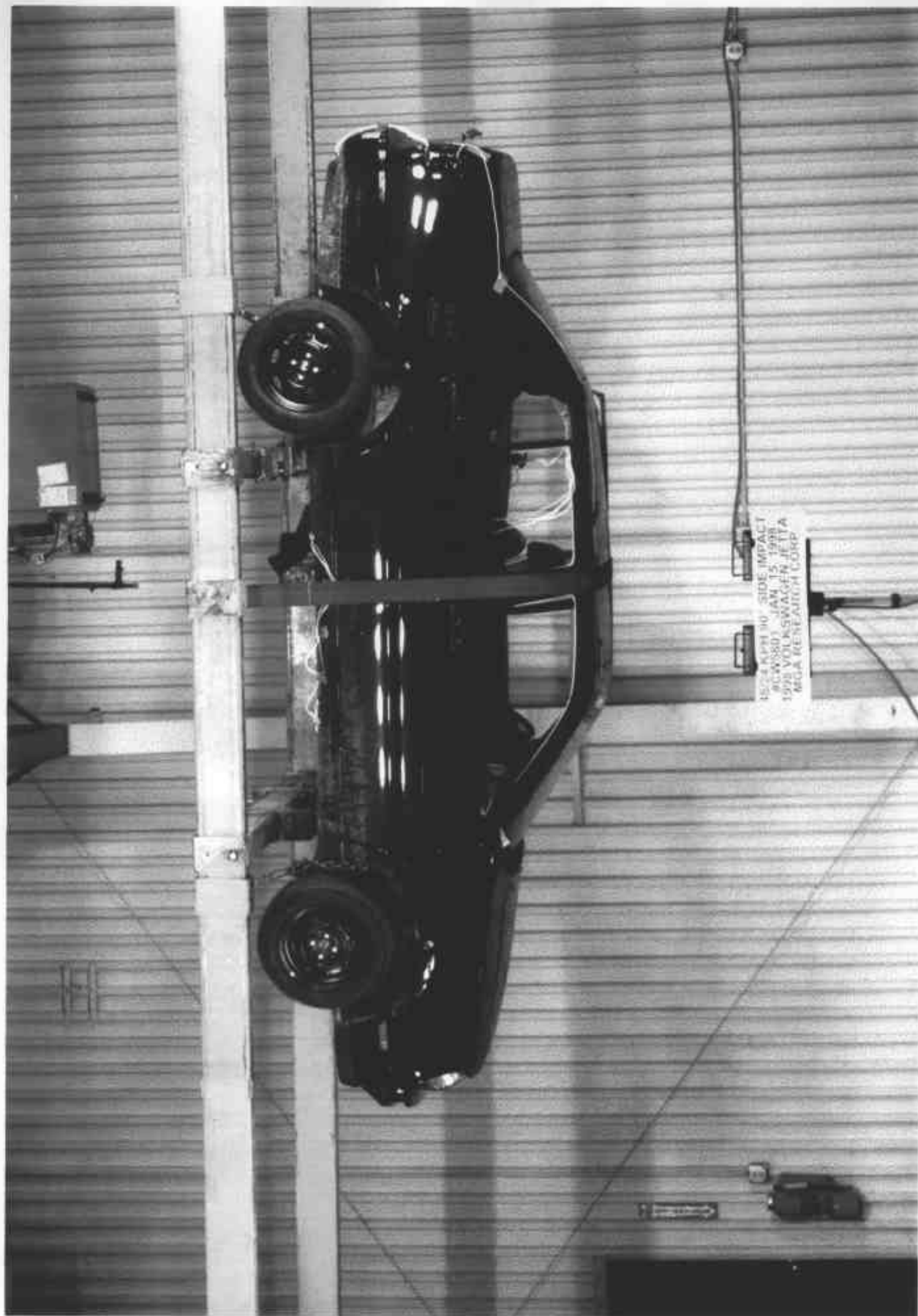


Photo No. A-45 - Rollover 180°

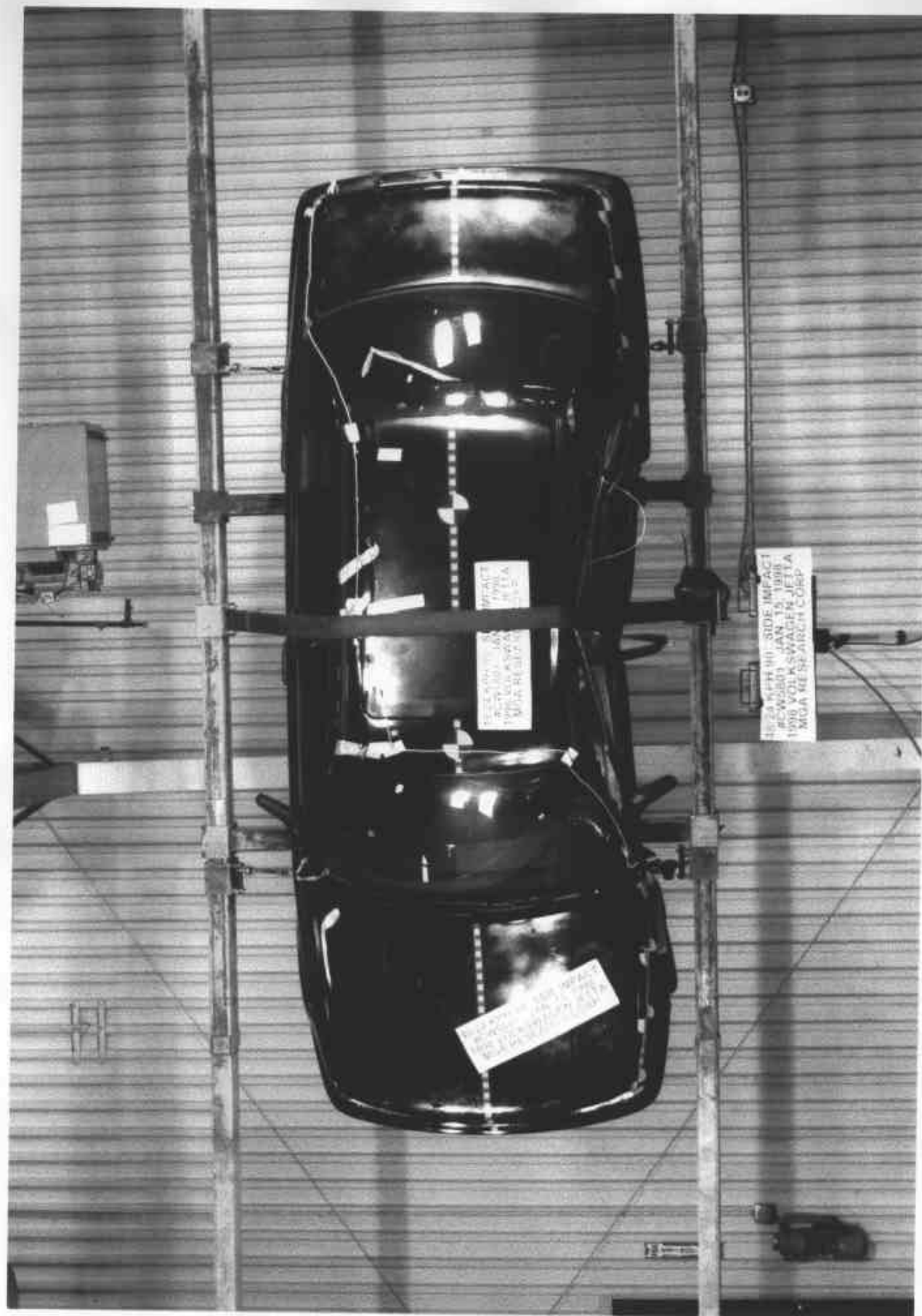


Photo No. A-46 - Rollover 270°

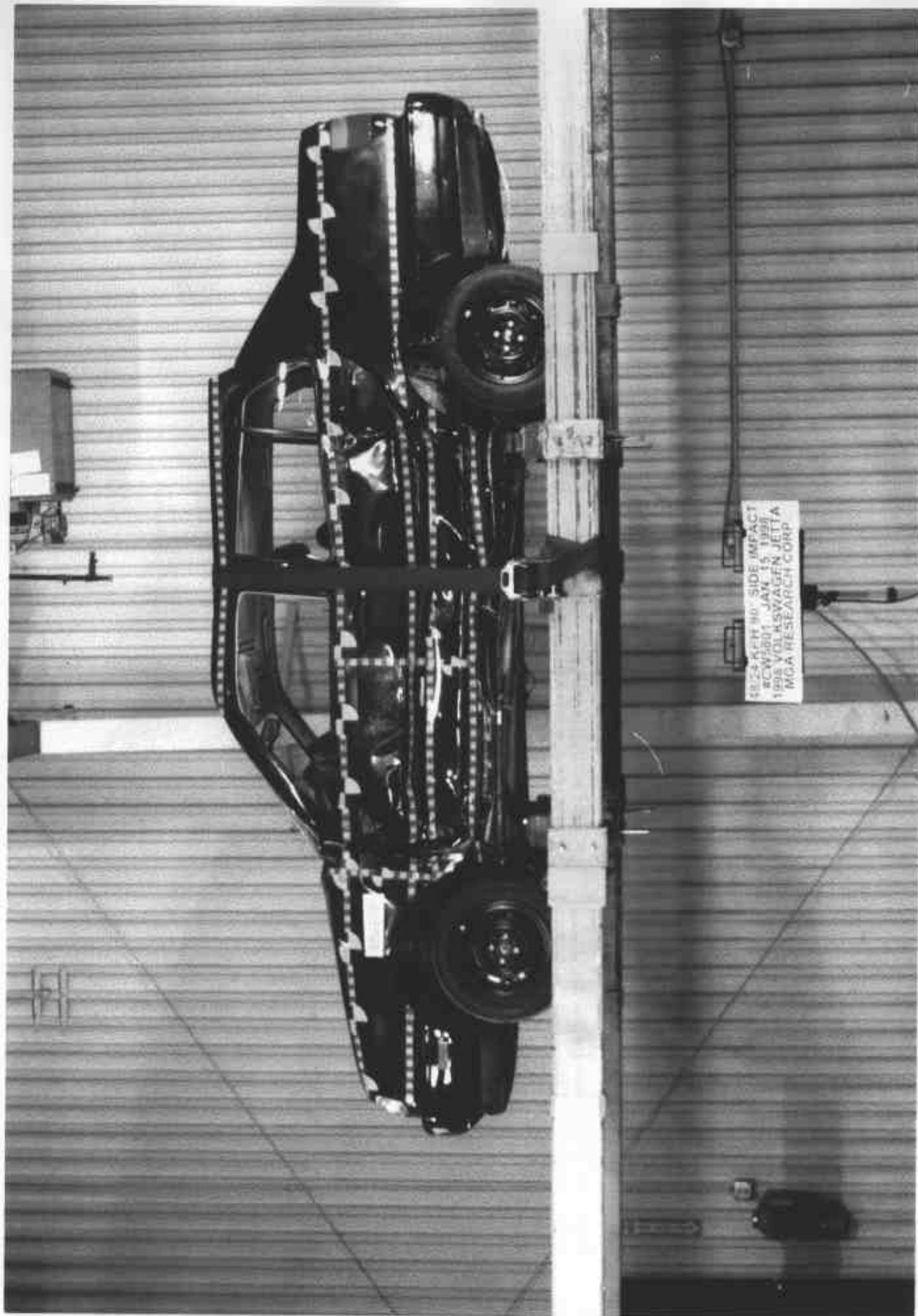


Photo No. A-47 - Rollover 360°

A-47

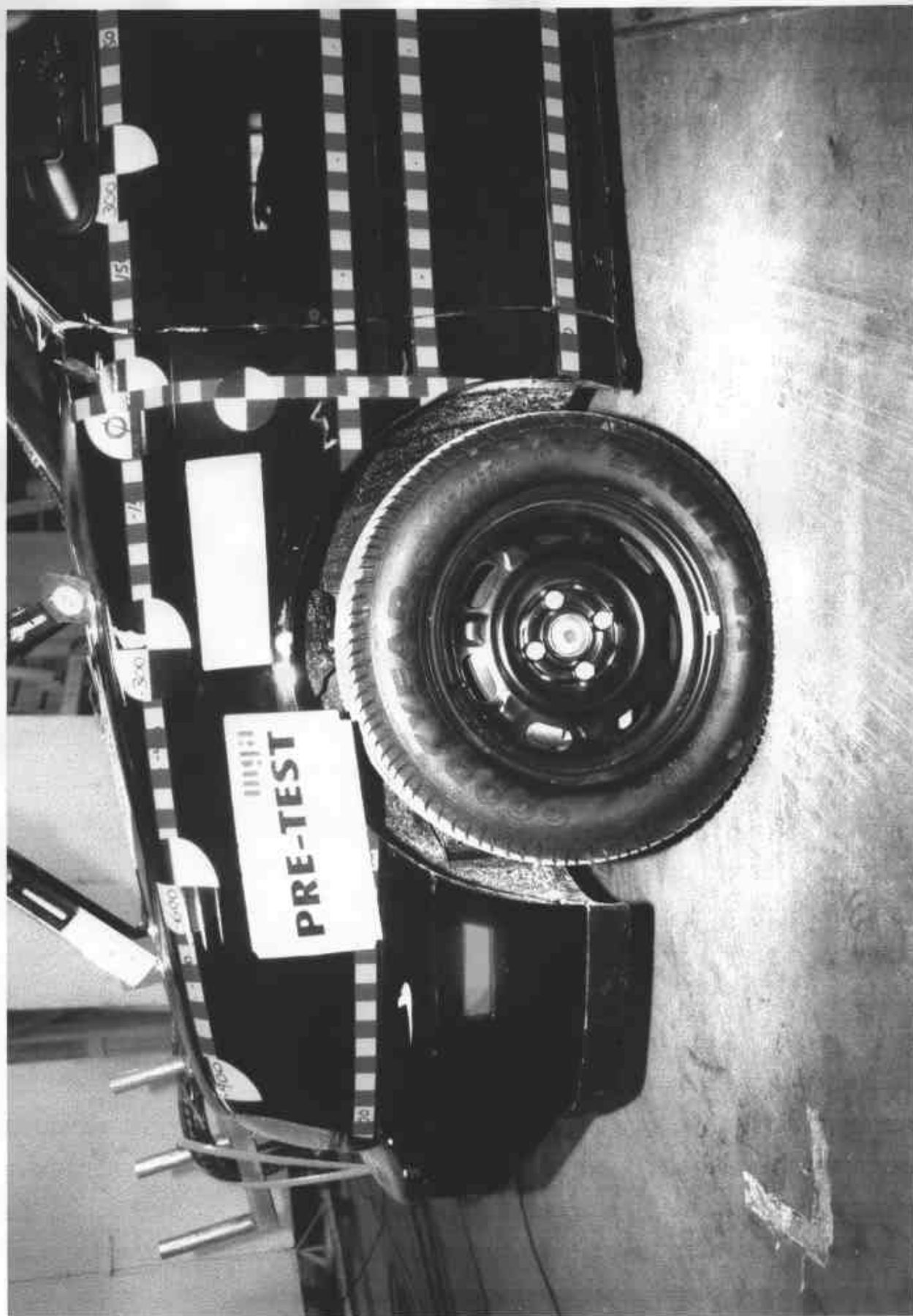


Photo No. A-48 - Left Front Attitude Point



Photo No. A-49 - Right Front Attitude Point

A-49

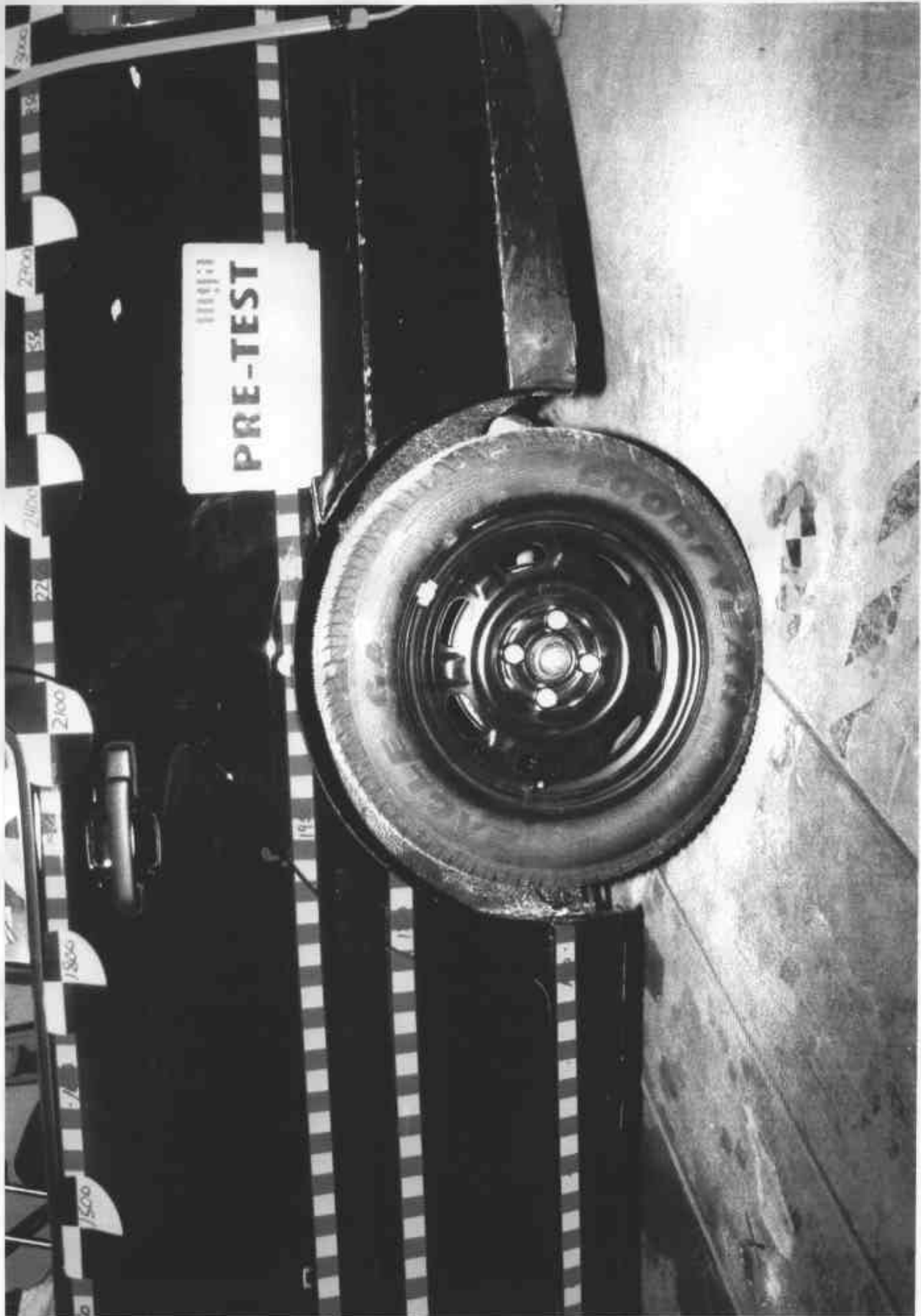


Photo No. A-50 - Left Rear Attitude Point

A-50



Photo No. A-51 - Right Rear Attitude Point

A-51

APPENDIX B - VEHICLE AND SID RESPONSE DATA

Table of Data Plots

<u>Occupant:</u>	<u>Page No.</u>
Figure B-1 - Driver Upper Rib Y Acceleration vs. Time	B-1
Figure B-2 - Driver Upper Rib Y Velocity vs. Time	B-2
Figure B-3 - Driver Lower Rib Y Acceleration vs. Time	B-3
Figure B-4 - Driver Lower Rib Y Velocity vs. Time	B-4
Figure B-5 - Driver Lower Spine Y Acceleration vs. Time	B-5
Figure B-6 - Driver Lower Spine Y Velocity vs. Time	B-6
Figure B-7 - Driver Pelvis Y Acceleration vs. Time	B-7
Figure B-8 - Driver Pelvis Y Velocity vs. Time	B-8
Figure B-9 - Rear Passenger Upper Rib Y Acceleration vs. Time	B-9
Figure B-10 - Rear Passenger Upper Rib Y Velocity vs. Time	B-10
Figure B-11 - Rear Passenger Lower Rib Y Acceleration vs. Time	B-11
Figure B-12 - Rear Passenger Lower Rib Y Velocity vs. Time	B-12
Figure B-13 - Rear Passenger Lower Spine Y Acceleration vs. Time	B-13
Figure B-14 - Rear Passenger Lower Spine Y Velocity vs. Time	B-14
Figure B-15 - Rear Passenger Pelvis Y Acceleration vs. Time	B-15
Figure B-16 - Rear Passenger Pelvis Y Velocity vs. Time	B-16
 <u>Vehicle:</u>	
Figure B-17 - Right Side Sill at Front Seat X Acceleration vs. Time	B-17
Figure B-18 - Right Side Sill at Front Seat X Velocity vs. Time	B-18
Figure B-19 - Right Side Sill at Front Seat Y Acceleration vs. Time	B-19
Figure B-20 - Right Side Sill at Front Seat Y Velocity vs. Time	B-20
Figure B-21 - Right Side Sill at Front Seat Z Acceleration vs. Time	B-21
Figure B-22 - Right Side Sill at Front Seat Z Velocity vs. Time	B-22
Figure B-23 - Right Side Sill at Front Seat Resultant Acceleration vs. Time	B-23
Figure B-24 - Right Side Sill at Rear Seat X Acceleration vs. Time	B-24
Figure B-25 - Right Side Sill at Rear Seat X Velocity vs. Time	B-25
Figure B-26 - Right Side Sill at Rear Seat Y Acceleration vs. Time	B-26
Figure B-27 - Right Side Sill at Rear Seat Y Velocity vs. Time	B-27
Figure B-28 - Right Side Sill at Rear Seat Z Acceleration vs. Time	B-28

Table of Data Plots

<u>Vehicle (Cont'd):</u>	<u>Page No.</u>
Figure B-29 - Right Side Sill at Rear Seat Z Velocity vs. Time	B-29
Figure B-30 - Right Side Sill at Rear Seat Resultant Acceleration vs. Time	B-30
Figure B-31 - Rear Floorpan above Axle X Acceleration vs. Time	B-31
Figure B-32 - Rear Floorpan above Axle X Velocity vs. Time	B-32
Figure B-33 - Rear Floorpan above Axle Y Acceleration vs. Time	B-33
Figure B-34 - Rear Floorpan above Axle Y Velocity vs. Time	B-34
Figure B-35 - Rear Floorpan above Axle Z Acceleration vs. Time	B-35
Figure B-36 - Rear Floorpan above Axle Z Velocity vs. Time	B-36
Figure B-37 - Rear Floorpan above Axle Resultant Acceleration vs. Time	B-37
Figure B-38 - Left Side Sill at Front Seat Y Acceleration vs. Time	B-38
Figure B-39 - Left Side Sill at Front Seat Y Velocity vs. Time	B-39
Figure B-40 - Left Side Sill at Rear Seat Y Acceleration vs. Time	B-40
Figure B-41 - Left Side Sill at Rear Seat Y Velocity vs. Time	B-41
Figure B-42 - Right Rear Occupant Compartment Y Acceleration vs. Time	B-42
Figure B-43 - Right Rear Occupant Compartment Y Velocity vs. Time	B-43
Figure B-44 - Left Lower A Post Y Acceleration vs. Time	B-44
Figure B-45 - Left Lower A Post Y Velocity vs. Time	B-45
Figure B-46 - Left Mid A Post Y Acceleration vs. Time	B-46
Figure B-47 - Left Mid A Post Y Velocity vs. Time	B-47
Figure B-48 - Left Lower B Post Y Acceleration vs. Time*	B-48
Figure B-49 - Left Lower B Post Y Velocity vs. Time*	B-49
Figure B-50 - Left Mid B Post Y Acceleration vs. Time	B-50
Figure B-51 - Left Mid B Post Y Velocity vs. Time	B-51
Figure B-52 - Left Front Seat Track Y Acceleration vs. Time	B-52
Figure B-53 - Left Front Seat Track Y Velocity vs. Time	B-53
Figure B-54 - Vehicle Center of Gravity X Acceleration vs. Time	B-54
Figure B-55 - Vehicle Center of Gravity X Velocity vs. Time	B-55
Figure B-56 - Vehicle Center of Gravity Y Acceleration vs. Time	B-56

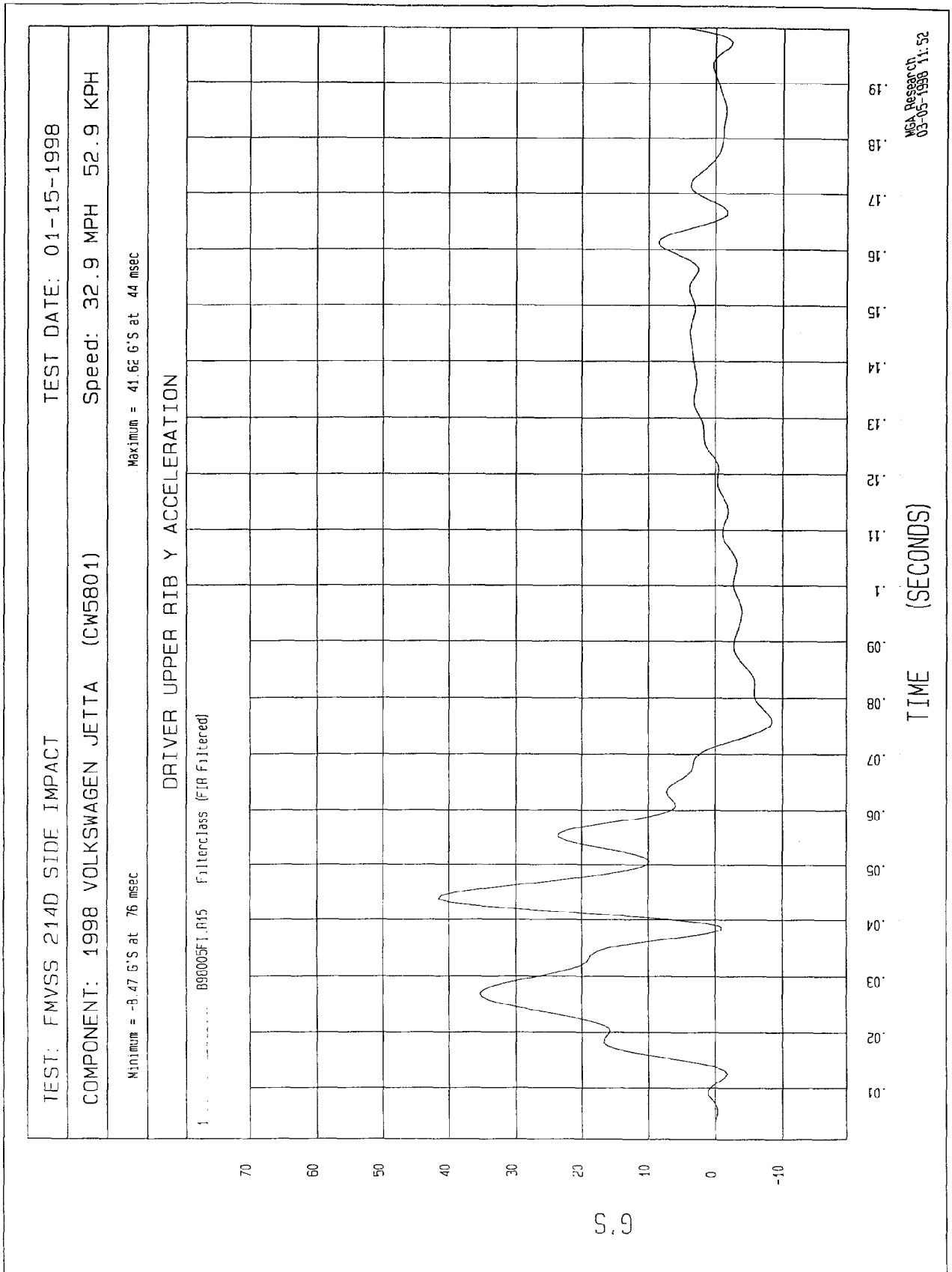
* Data is not valid after approximately 70 msec.

Table of Data Plots

<u>Barrier:</u>	<u>Page No.</u>
Figure B-57 - Vehicle Center of Gravity Y Velocity vs. Time	B-57
Figure B-58 - Vehicle Center of Gravity Z Acceleration vs. Time	B-58
Figure B-59 - Vehicle Center of Gravity Z Velocity vs. Time	B-59
Figure B-60 - Vehicle Center of Gravity Resultant Acceleration vs. Time	B-60
Figure B-61 - Moving Barrier Center of Gravity X Acceleration vs. Time	B-61
Figure B-62 - Moving Barrier Center of Gravity X Velocity vs. Time	B-62
Figure B-63 - Moving Barrier Center of Gravity Y Acceleration vs. Time	B-63
Figure B-64 - Moving Barrier Center of Gravity Y Velocity vs. Time	B-64
Figure B-65 - Moving Barrier Center of Gravity Z Acceleration vs. Time	B-65
Figure B-66 - Moving Barrier Center of Gravity Z Velocity vs. Time	B-66
Figure B-67 - Moving Barrier Center of Gravity Resultant Acceleration vs. Time	B-67
Figure B-68 - Moving Barrier Rear Axle X Acceleration vs. Time	B-68
Figure B-69 - Moving Barrier Rear Axle X Velocity vs. Time	B-69
Figure B-70 - Moving Barrier Rear Axle Y Acceleration vs. Time	B-70
Figure B-71 - Moving Barrier Rear Axle Y Velocity vs. Time	B-71
 <u>FIR Filter:</u>	
Figure B-72 - Driver Upper Rib Y Acceleration vs. Time	B-72
Figure B-73 - Driver Upper Rib Y Velocity vs. Time	B-73
Figure B-74 - Driver Lower Rib Y Acceleration vs. Time	B-74
Figure B-75 - Driver Lower Rib Y Velocity vs. Time	B-75
Figure B-76 - Driver Lower Spine Y Acceleration vs. Time	B-76
Figure B-77 - Driver Lower Spine Y Velocity vs. Time	B-77
Figure B-78 - Driver Pelvis Y Acceleration vs. Time	B-78
Figure B-79 - Driver Pelvis Y Velocity vs. Time	B-79
Figure B-80 - Rear Passenger Upper Rib Y Acceleration vs. Time	B-80
Figure B-81 - Rear Passenger Upper Rib Y Velocity vs. Time	B-81
Figure B-82 - Rear Passenger Lower Rib Y Acceleration vs. Time	B-82
Figure B-83 - Rear Passenger Lower Rib Y Velocity vs. Time	B-83

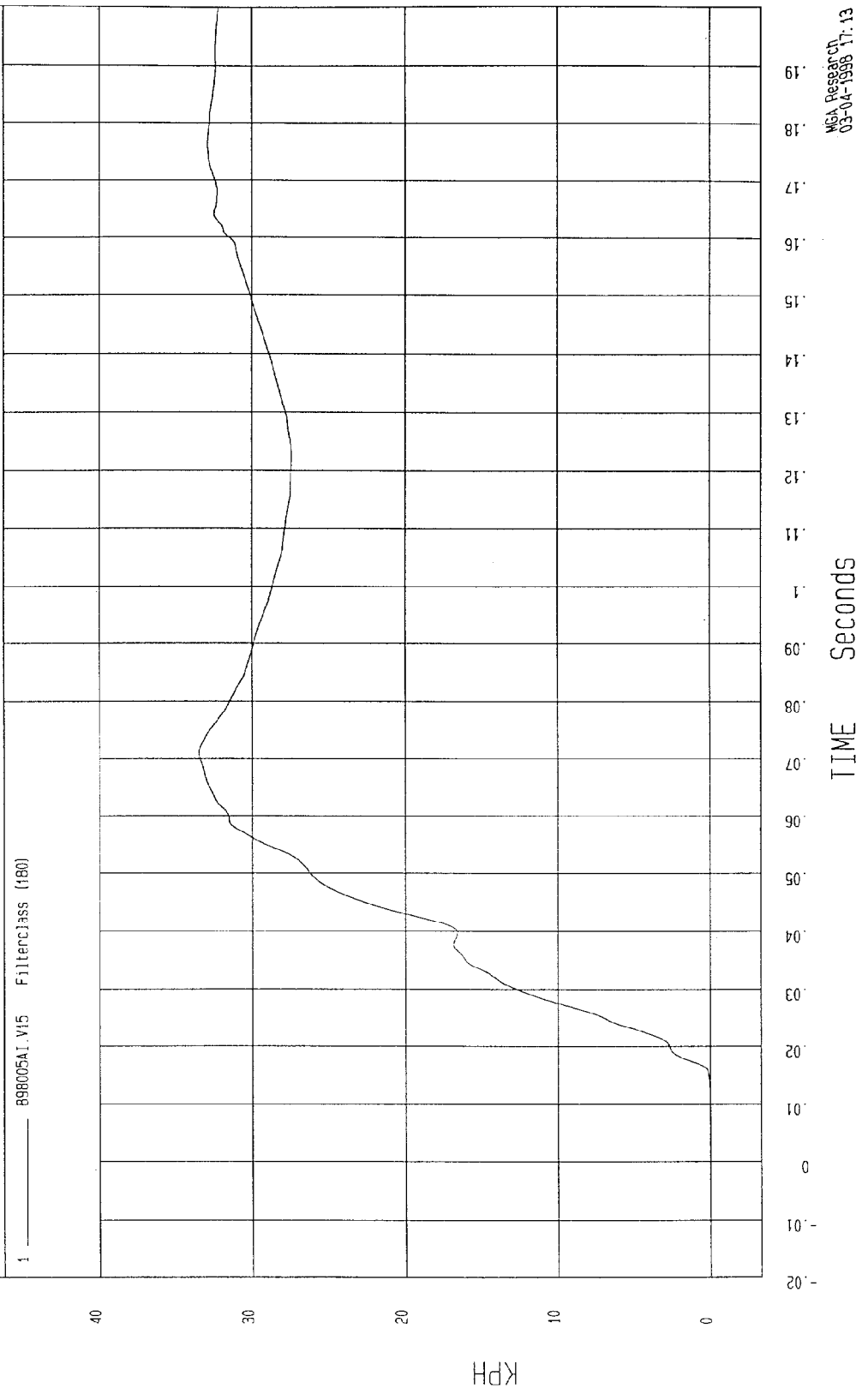
Table of Data Plots

<u>FIR Filter (Cont'd):</u>	<u>Page No.</u>
Figure B-84 - Rear Passenger Lower Spine Y Acceleration vs. Time	B-84
Figure B-85 - Rear Passenger Lower Spine Y Velocity vs. Time	B-85
Figure B-86 - Rear Passenger Pelvis Y Acceleration vs. Time	B-86
Figure B-87 - Rear Passenger Pelvis Y Velocity vs. Time	B-87
Figure B-88 - Driver Upper Rib Y Redundant Acceleration vs. Time	B-88
Figure B-89 - Driver Upper Rib Y Redundant Velocity vs. Time	B-89
Figure B-90 - Driver Lower Rib Y Redundant Acceleration vs. Time	B-90
Figure B-91 - Driver Lower Rib Y Redundant Velocity vs. Time	B-91
Figure B-92 - Driver Lower Spine Y Redundant Acceleration vs. Time	B-92
Figure B-93 - Driver Lower Spine Y Redundant Velocity vs. Time	B-93
Figure B-94 - Driver Pelvis Y Redundant Acceleration vs. Time	B-94
Figure B-95 - Driver Pelvis Y Redundant Velocity vs. Time	B-95
Figure B-96 - Passenger Upper Rib Y Redundant Acceleration vs. Time	B-96
Figure B-97 - Passenger Upper Rib Y Redundant Velocity vs. Time	B-97
Figure B-98 - Passenger Lower Rib Y Redundant Acceleration vs. Time	B-98
Figure B-99 - Passenger Lower Rib Y Redundant Velocity vs. Time	B-99
Figure B-100 - Passenger Lower Spine Y Redundant Acceleration vs. Time	B-100
Figure B-101 - Passenger Lower Spine Y Redundant Velocity vs. Time	B-101
Figure B-102 - Passenger Pelvic Y Redundant Acceleration vs. Time	B-102
Figure B-103 - Passenger Pelvic Y Redundant Velocity vs. Time	B-103

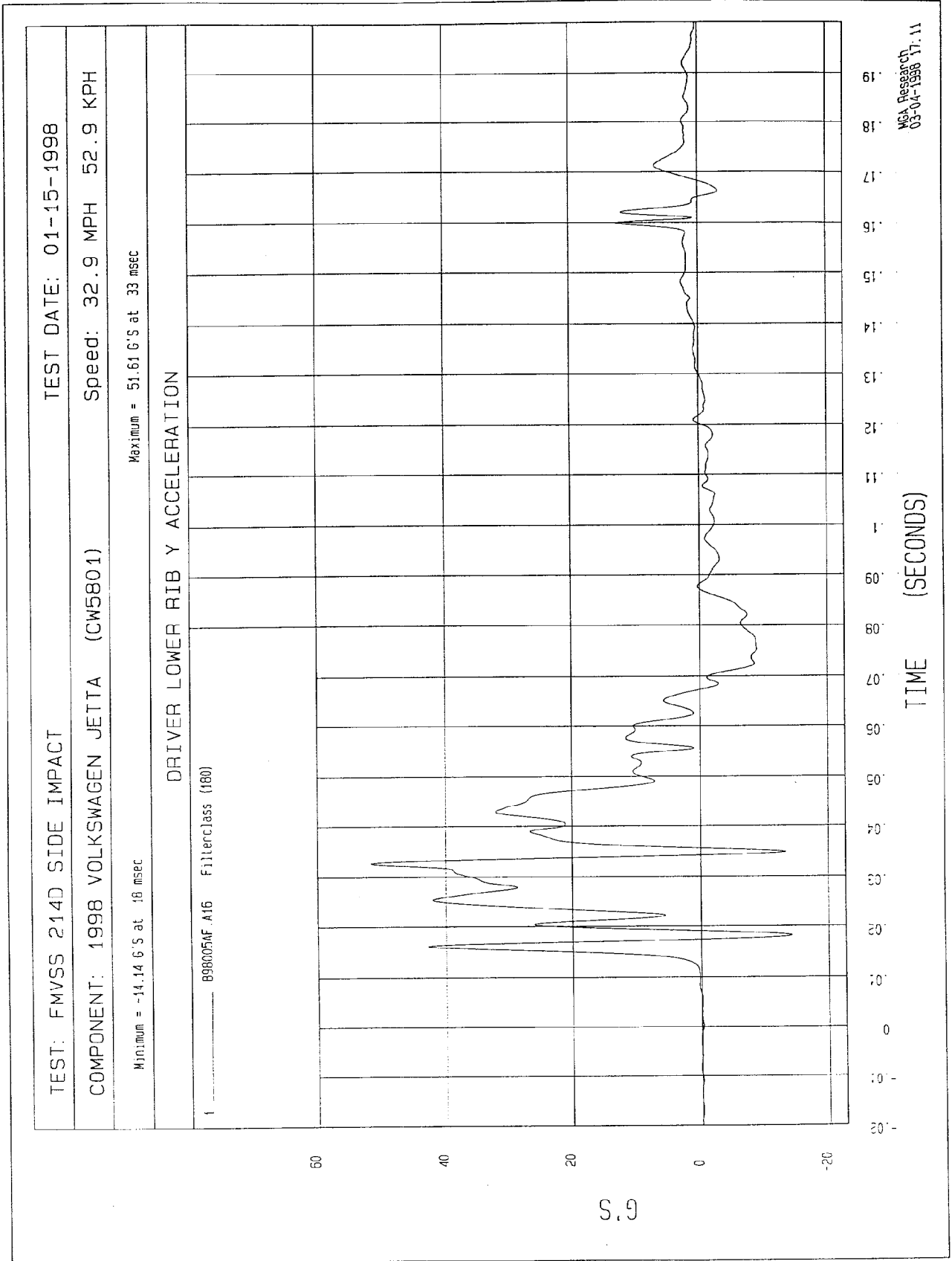


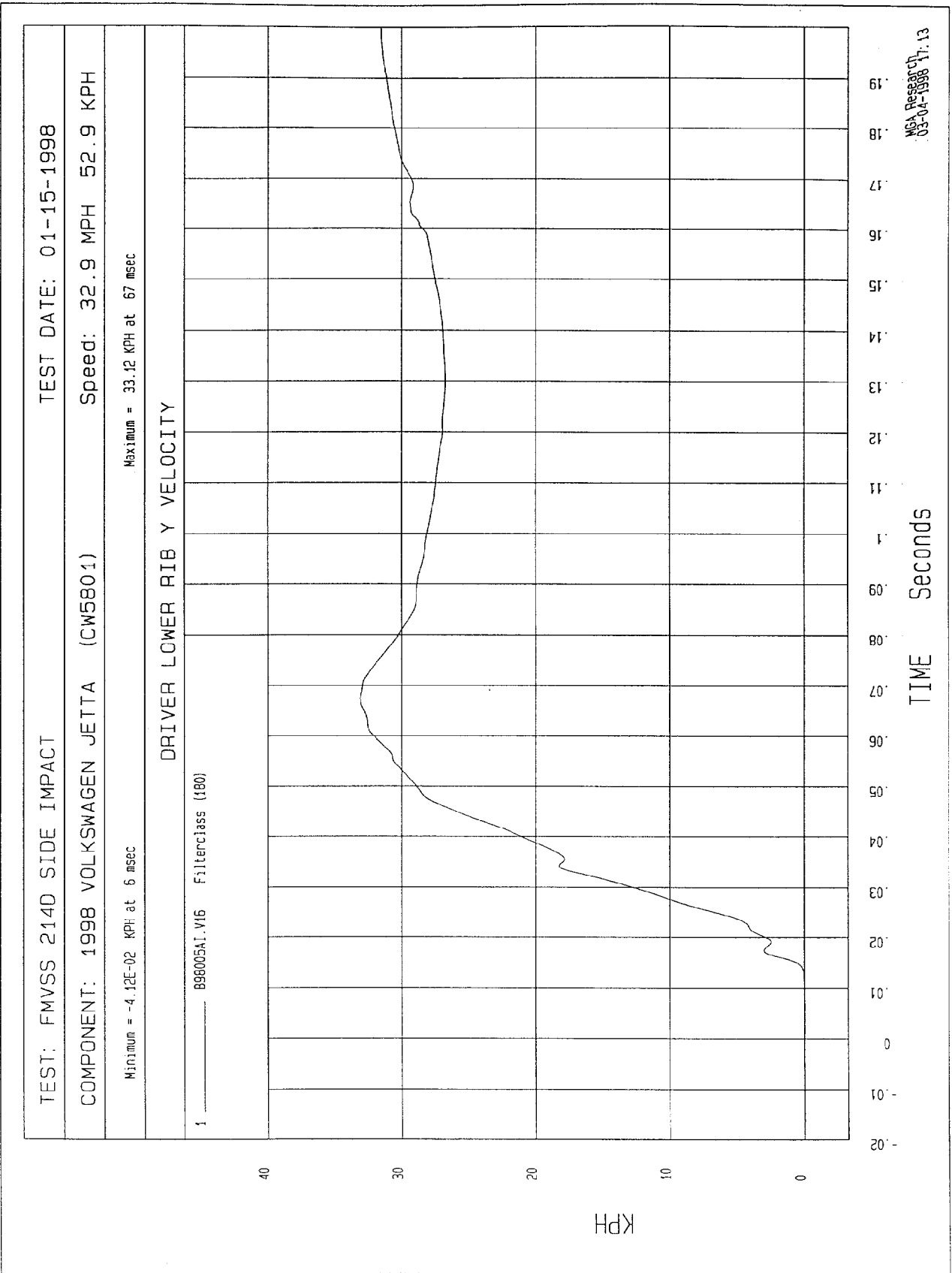
TEST: FMVSS 214D SIDE IMPACT TEST DATE: 01-15-1998
COMPONENT: 1998 VOLKSWAGEN JETTA (CW5801) Speed: 32.9 MPH 52.9 KPH
Minimum = -1.31E-02 KPH at 7 msec Maximum = 33.52 KPH at 71 msec

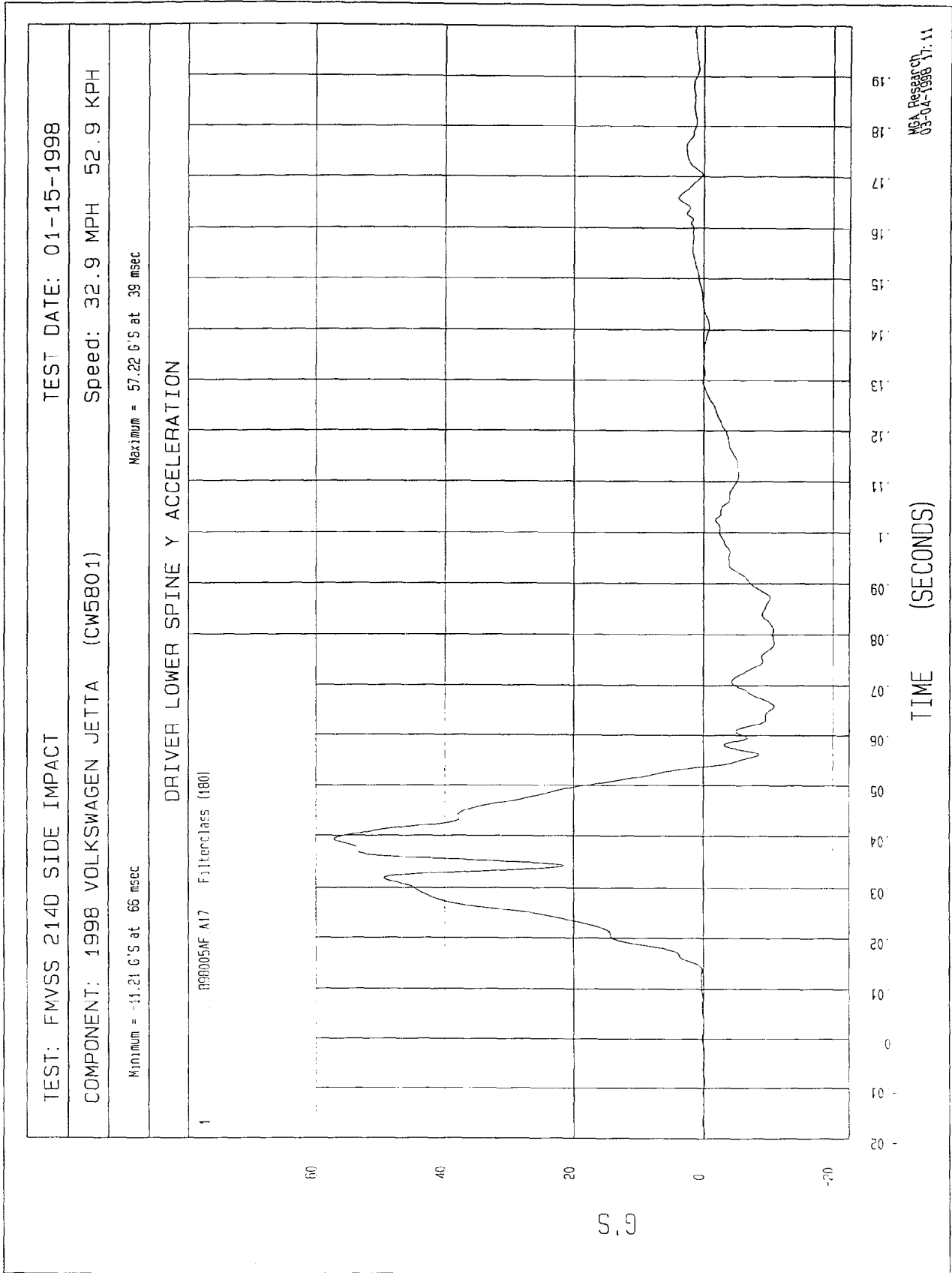
DRIVER UPPER RIB Y VELOCITY



NGA Research
03-04-1998 11:13







TEST: FMVSS 214D SIDE IMPACT

TEST DATE: 01-15-1998

Speed: 32.9 MPH 52.9 KPH

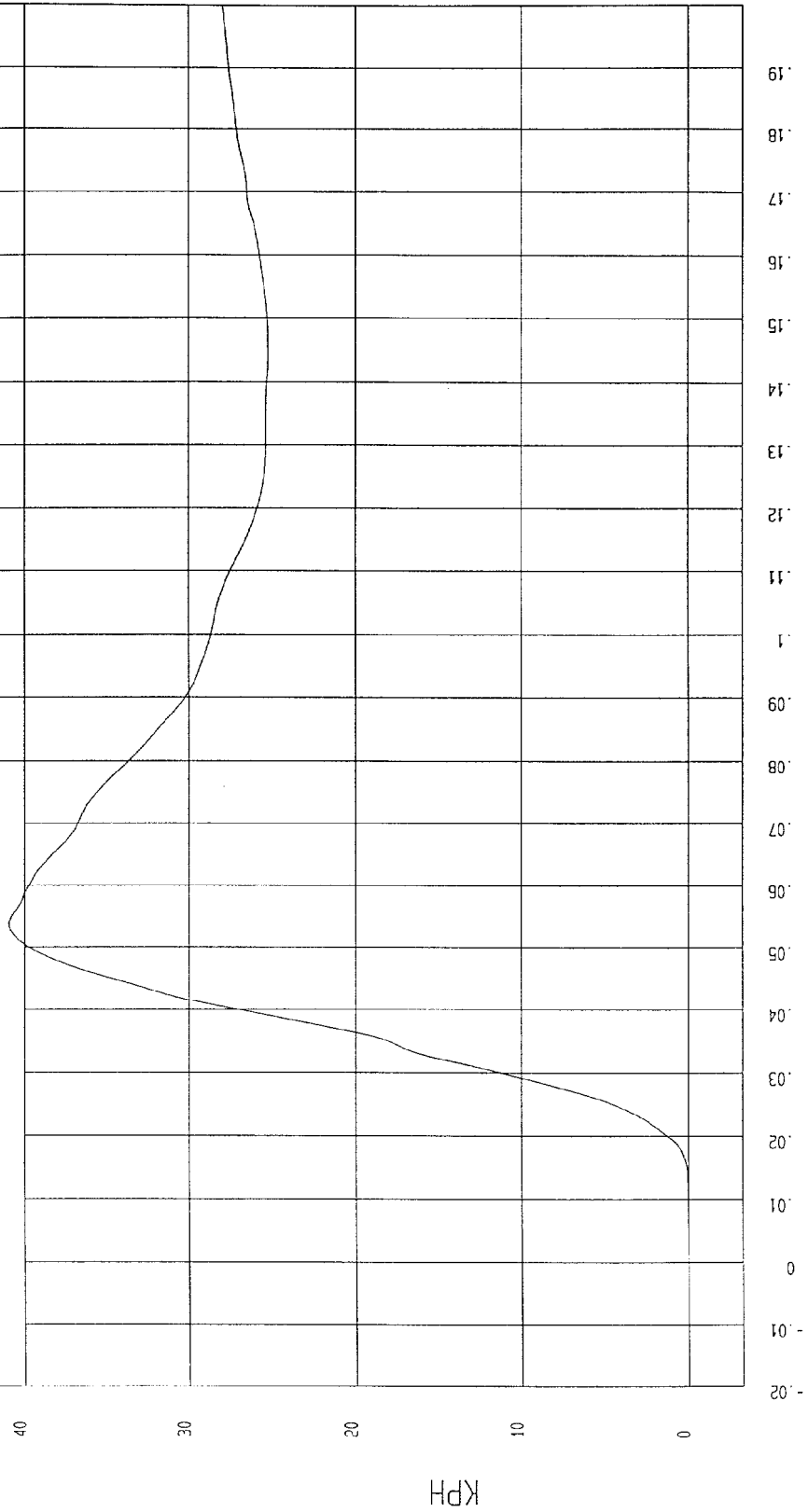
COMPONENT: 1998 VOLKSWAGEN JETTA (CW5801)

Maximum = 40.95 KPH at 54 msec

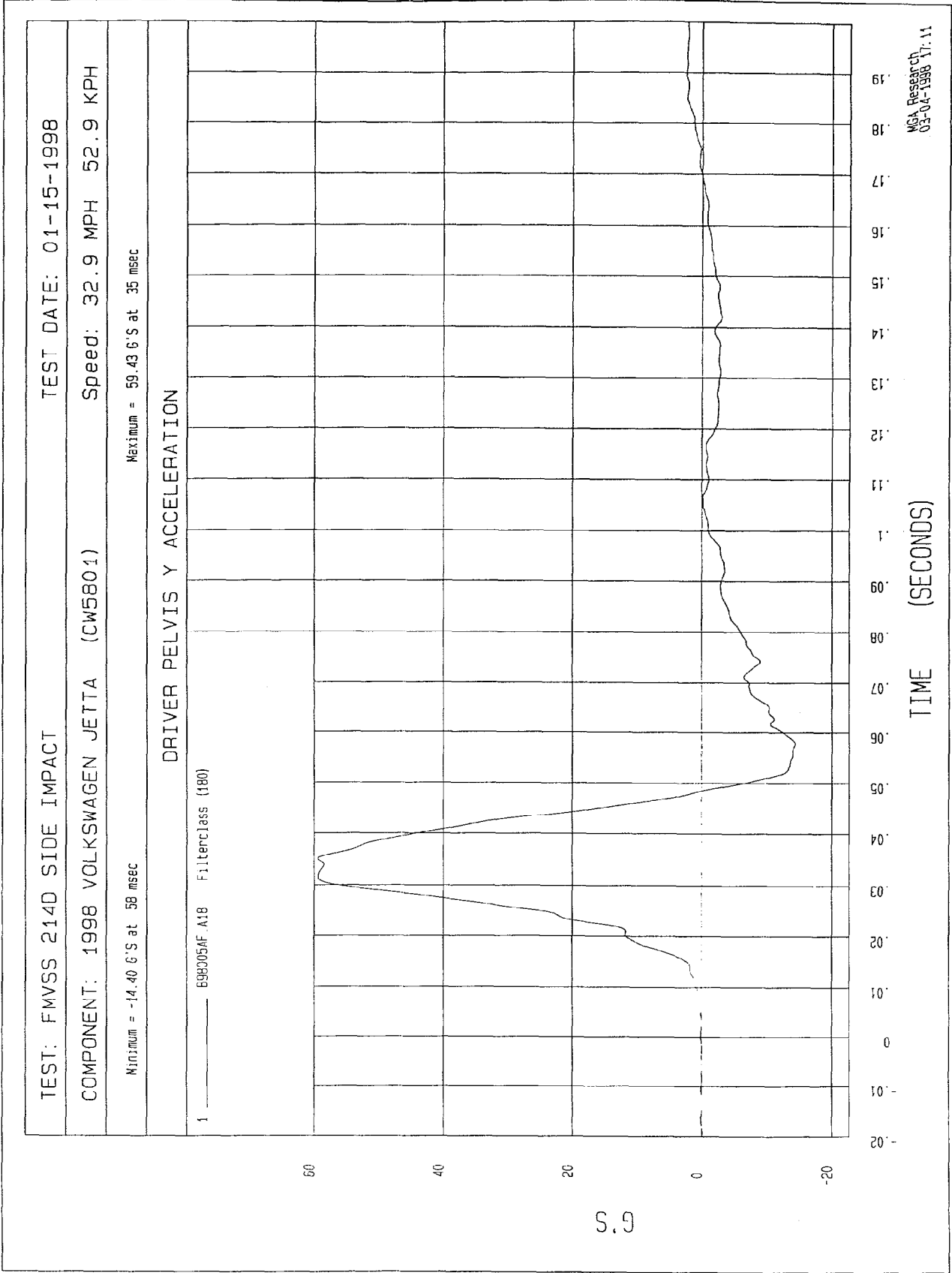
Minimum = -5.43E-03 KPH at -18 msec

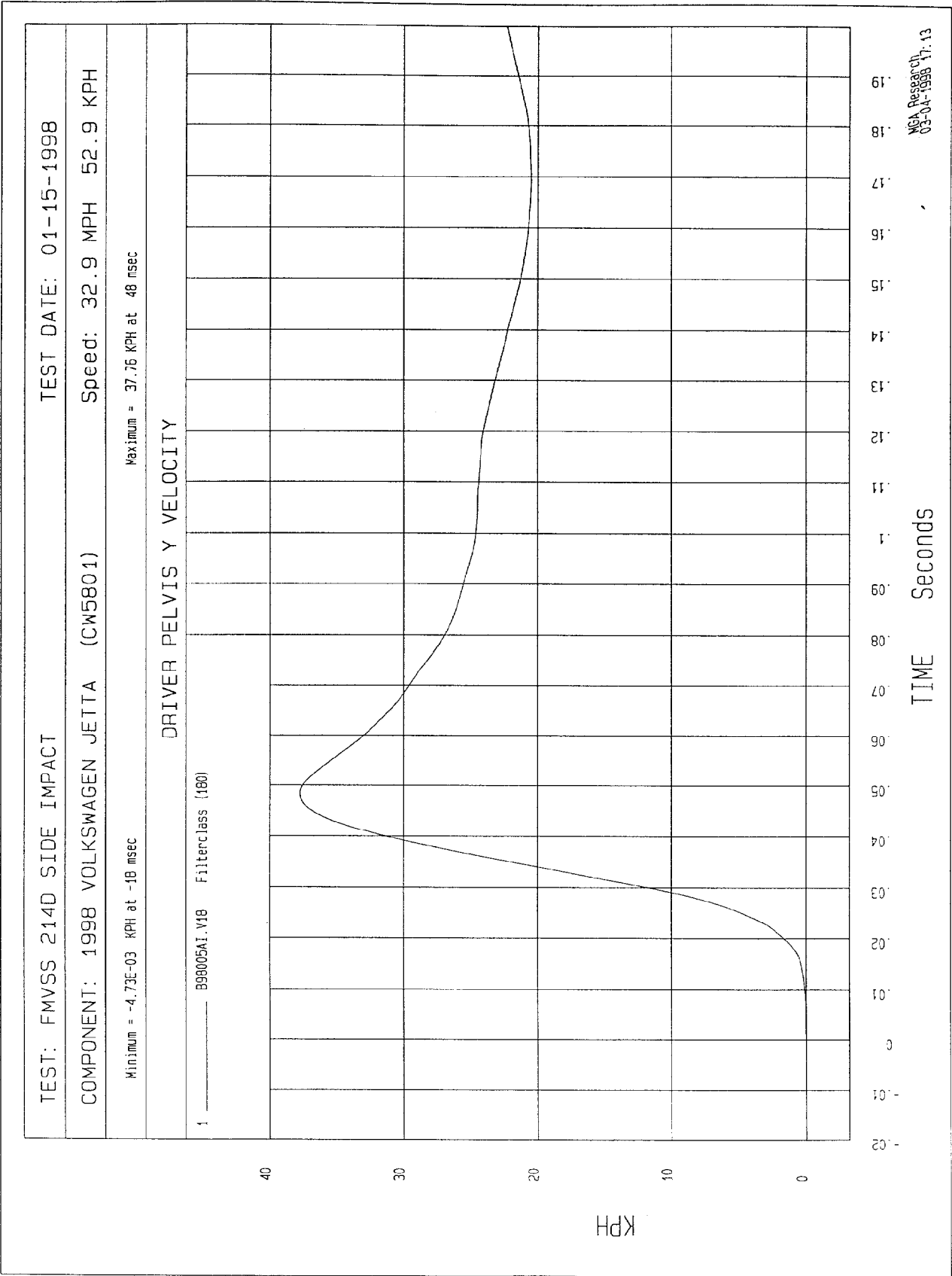
DRIVER LOWER SPINE Y VELOCITY

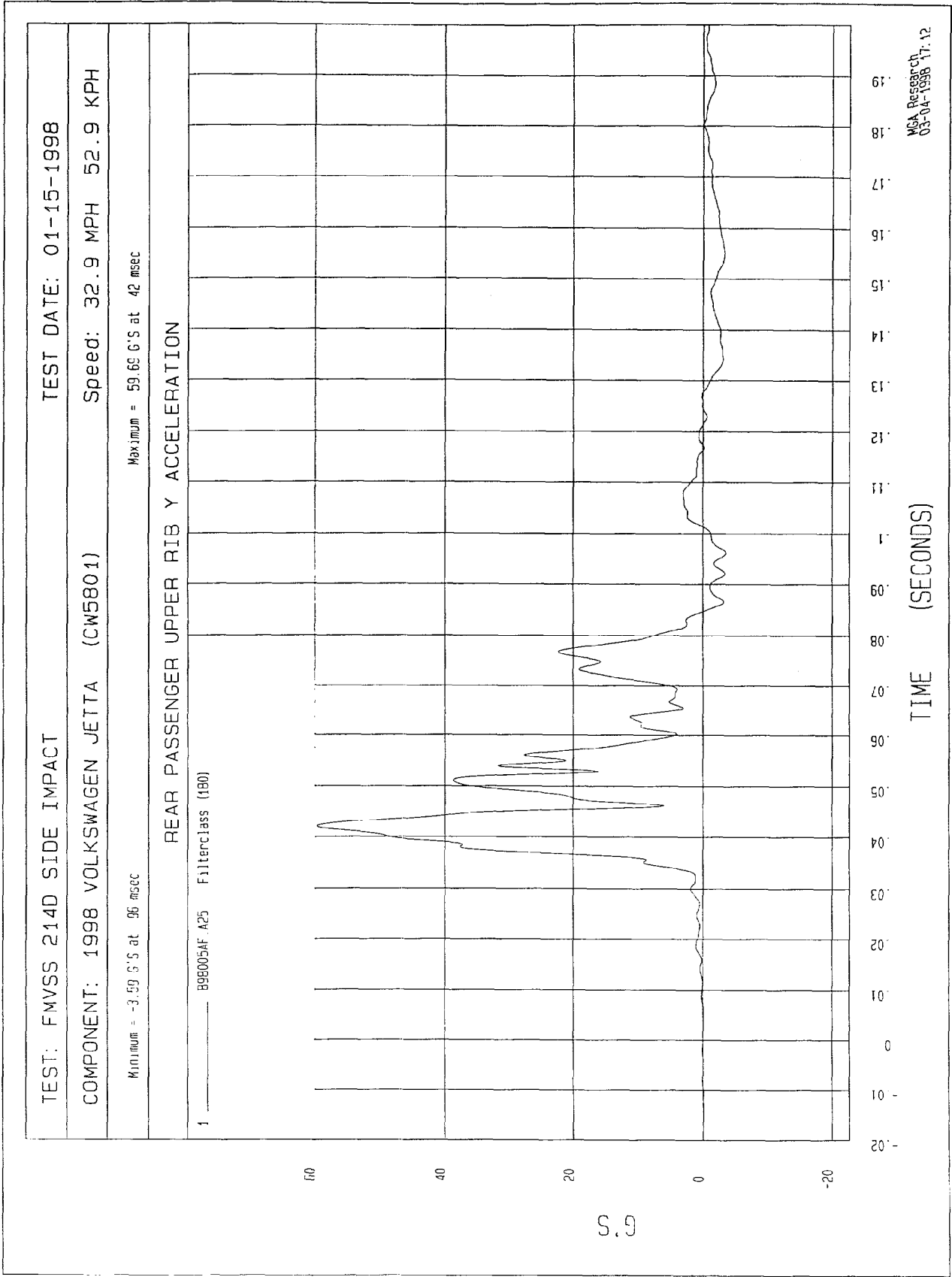
1 B98005A1.V17 Filterclass (180)



MECA Research
03-04-1998 17:13







TEST: FMVSS 214D SIDE IMPACT

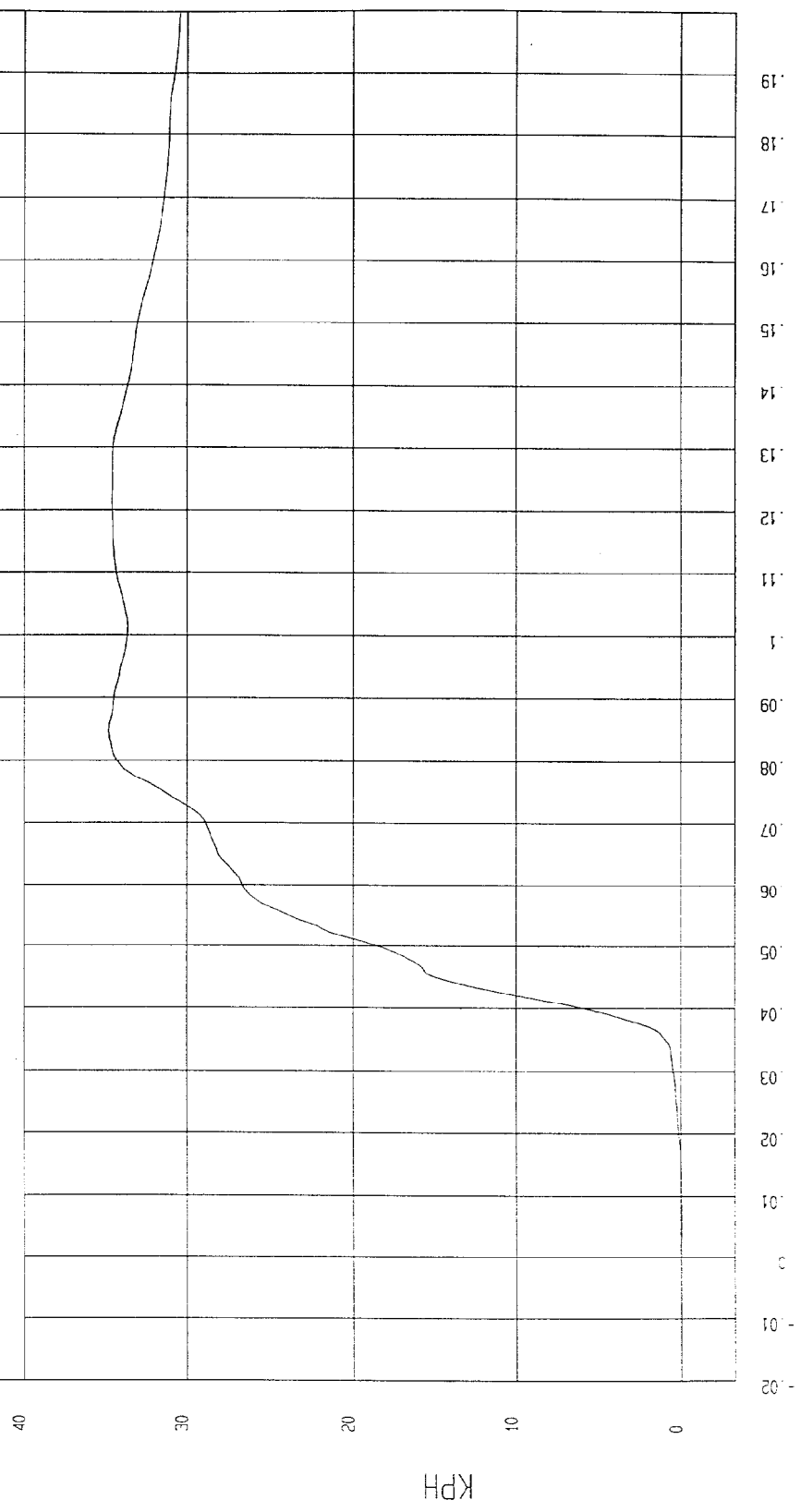
TEST DATE: 01-15-1998

COMPONENT: 1998 VOLKSWAGEN JETTA (CW5801) Speed: 32.9 MPH 52.9 KPH

Minimum = -1.60E-02 KPH at 7 msec Maximum = 34.36 KPH at 85 msec

REAR PASSENGER UPPER RIB Y VELOCITY

1 898005AT.V25 Filterclass (180)



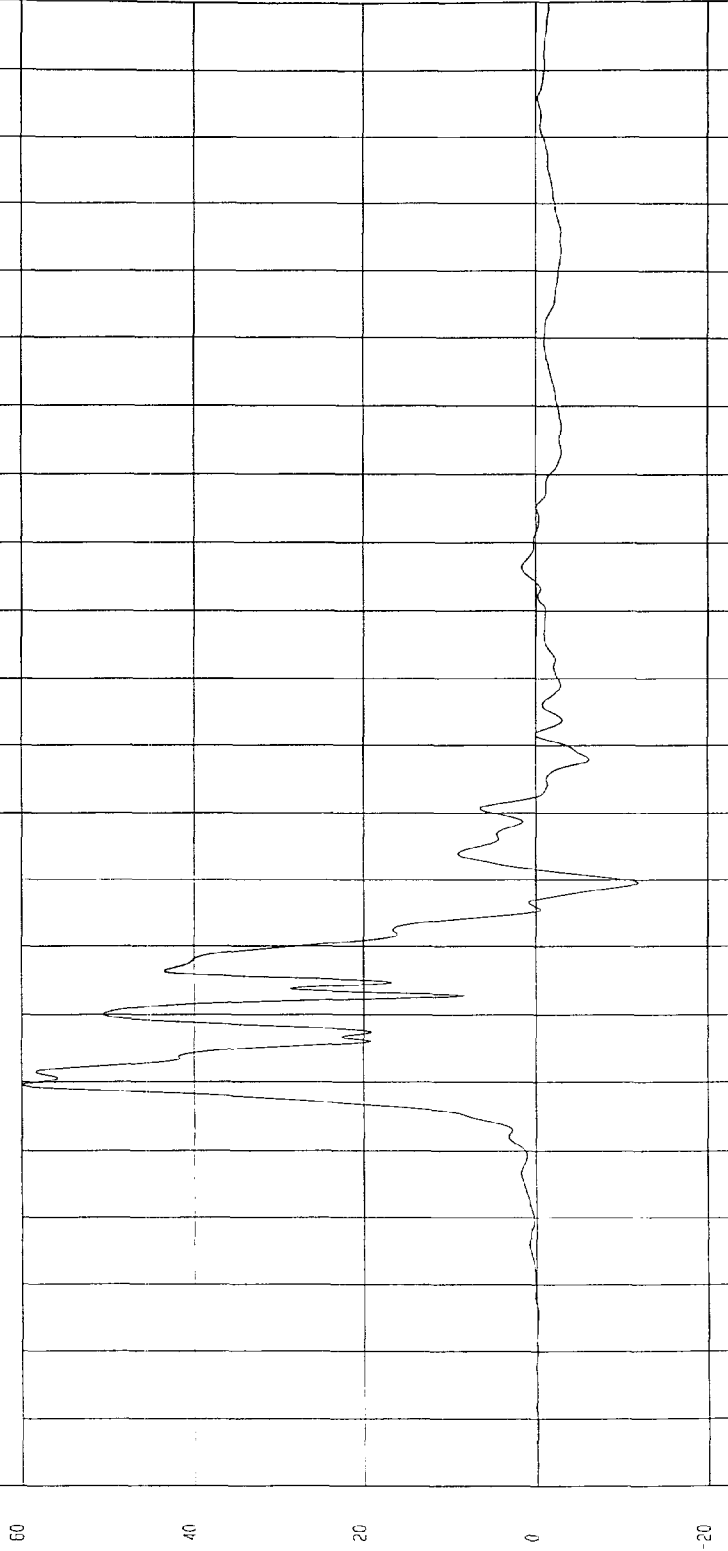
NSA Research
03-04-1998 17:13

TIME Seconds

TEST: FMVSS 214D SIDE IMPACT	TEST DATE: 01-15-1998
COMPONENT: 1998 VOLKSWAGEN JETTA (CW5801)	Speed: 32.9 MPH 52.9 KPH
Minimum = -11.90 G'S at 70 msec	Maximum = 59.98 G'S at 40 msec

REAR PASSENGER LOWER RIB Y ACCELERATION

1 ——— 998005AF.A26 Filterclass (180)



M&A Research
03-04-1998 17:12

TEST: FMVSS 214D SIDE IMPACT

TEST DATE: 01-15-1998

COMPONENT: 1998 VOLKSWAGEN JETTA (CW5801)

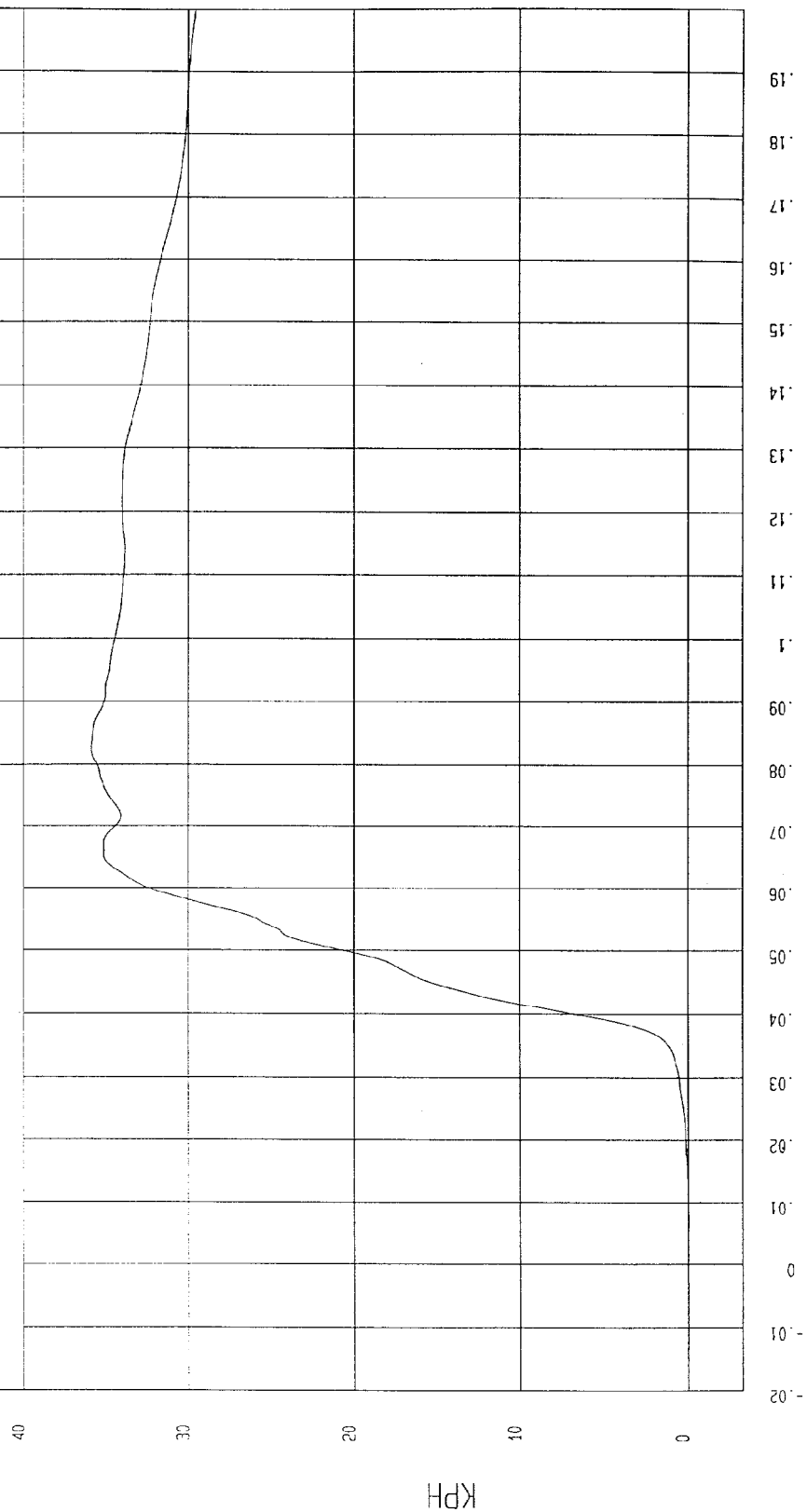
Speed: 32.9 MPH 52.9 KPH

Minimum = -3.03E-02 KPH at 7 msec

Maximum = 35.93 KPH at 82 msec

REAR PASSENGER LOWER RIB Y VELOCITY

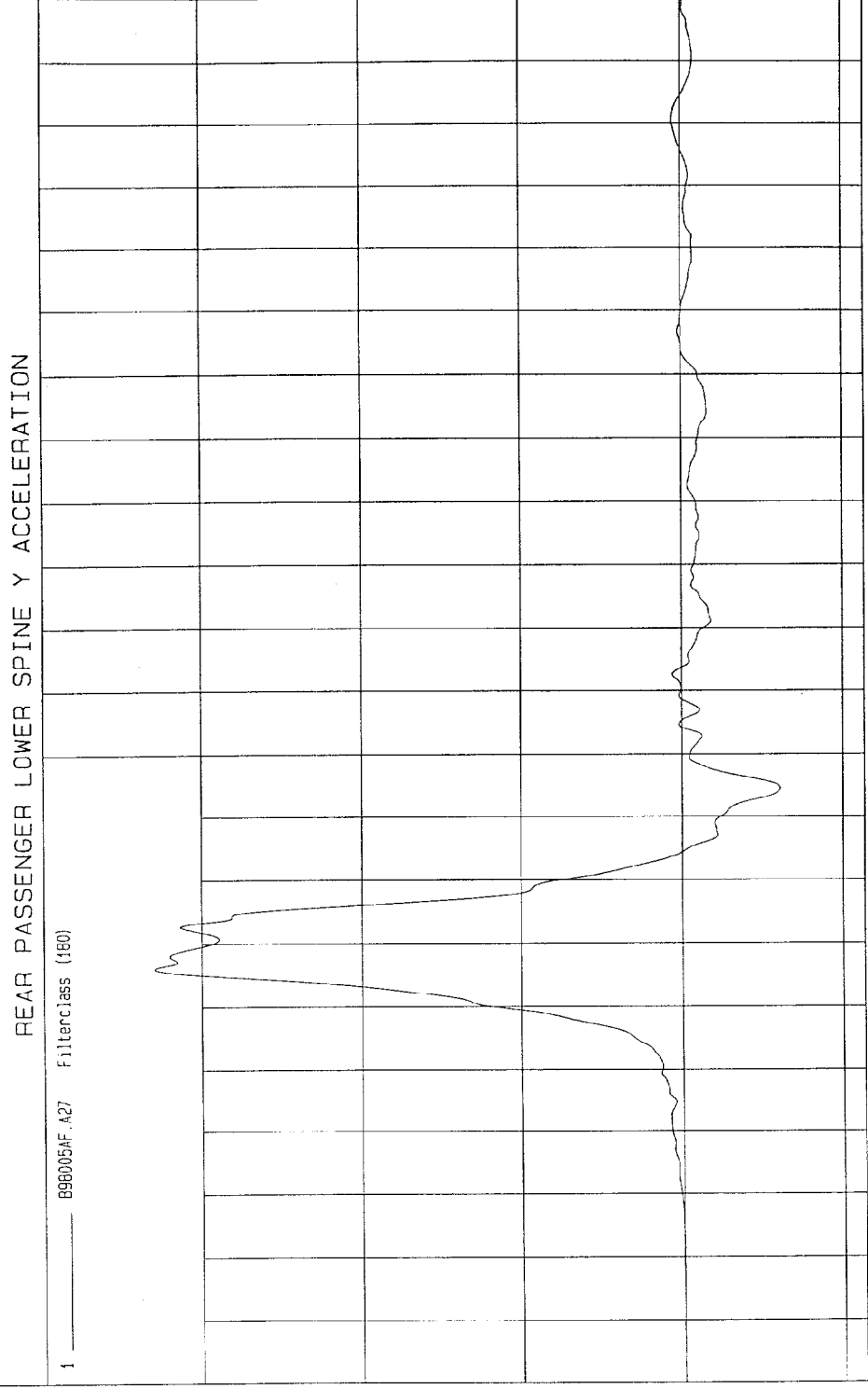
1 ——— B98005A1.V26 Filterclass (180)



NGA Research
03-04-1998 17:13

TIME Seconds

TEST: FMVSS 214D SIDE IMPACT	TEST DATE: 01-15-1998
COMPONENT: 1998 VOLKSWAGEN JETTA (CW5801)	Speed: 32.9 MPH 52.9 KPH
Minimum = -12.21 G'S at 74 msec	
Maximum = 65.88 G'S at 46 msec	



TIME (SECONDS)

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

60
40
20
0
-20

G.S

MEA Research
03-04-1998 17:12

TEST: FMVSS 214D SIDE IMPACT

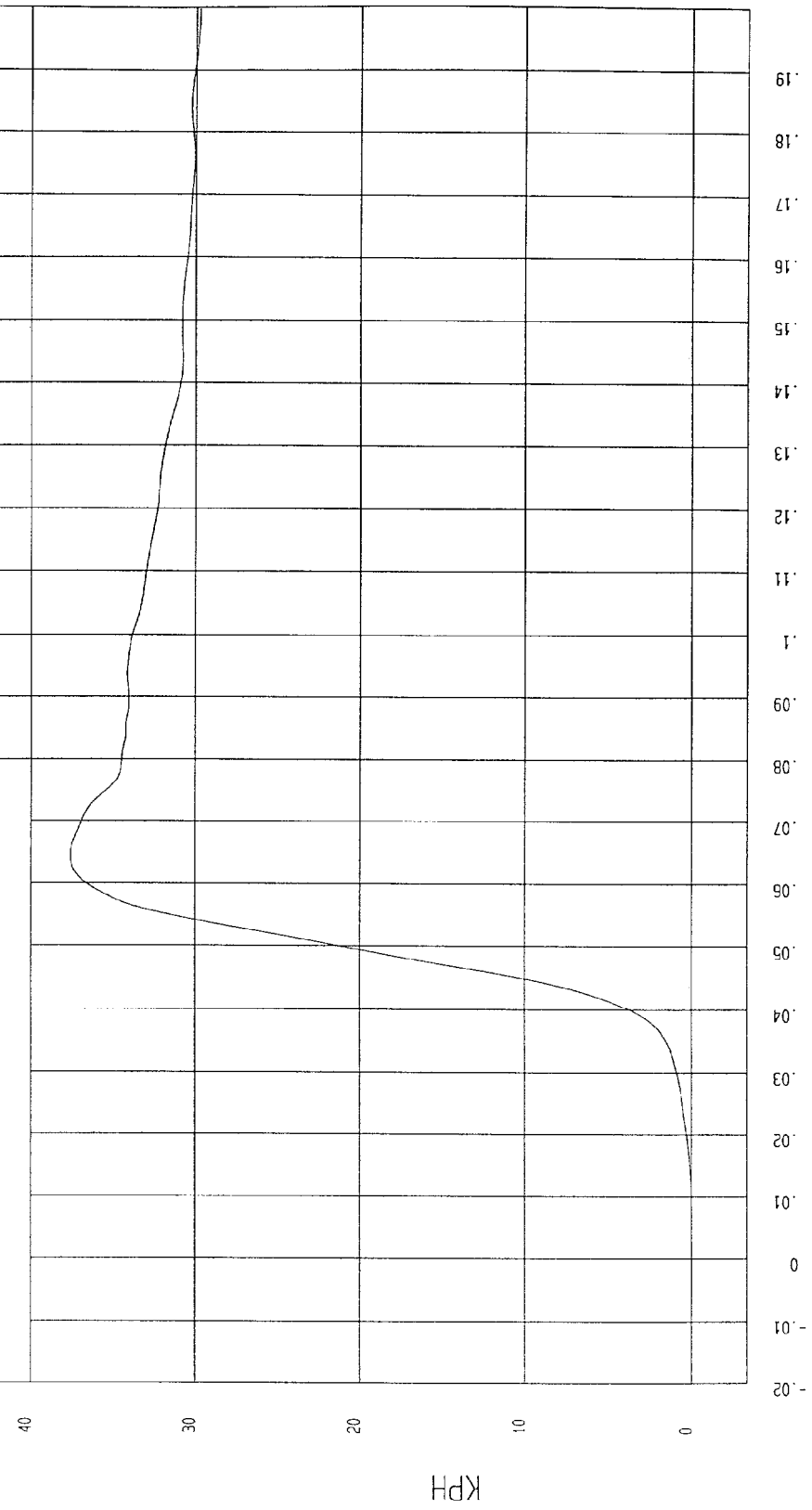
TEST DATE: 01-15-1998

COMPONENT: 1998 VOLKSWAGEN JETTA (CW5801) Speed: 32.9 MPH 52.9 KPH

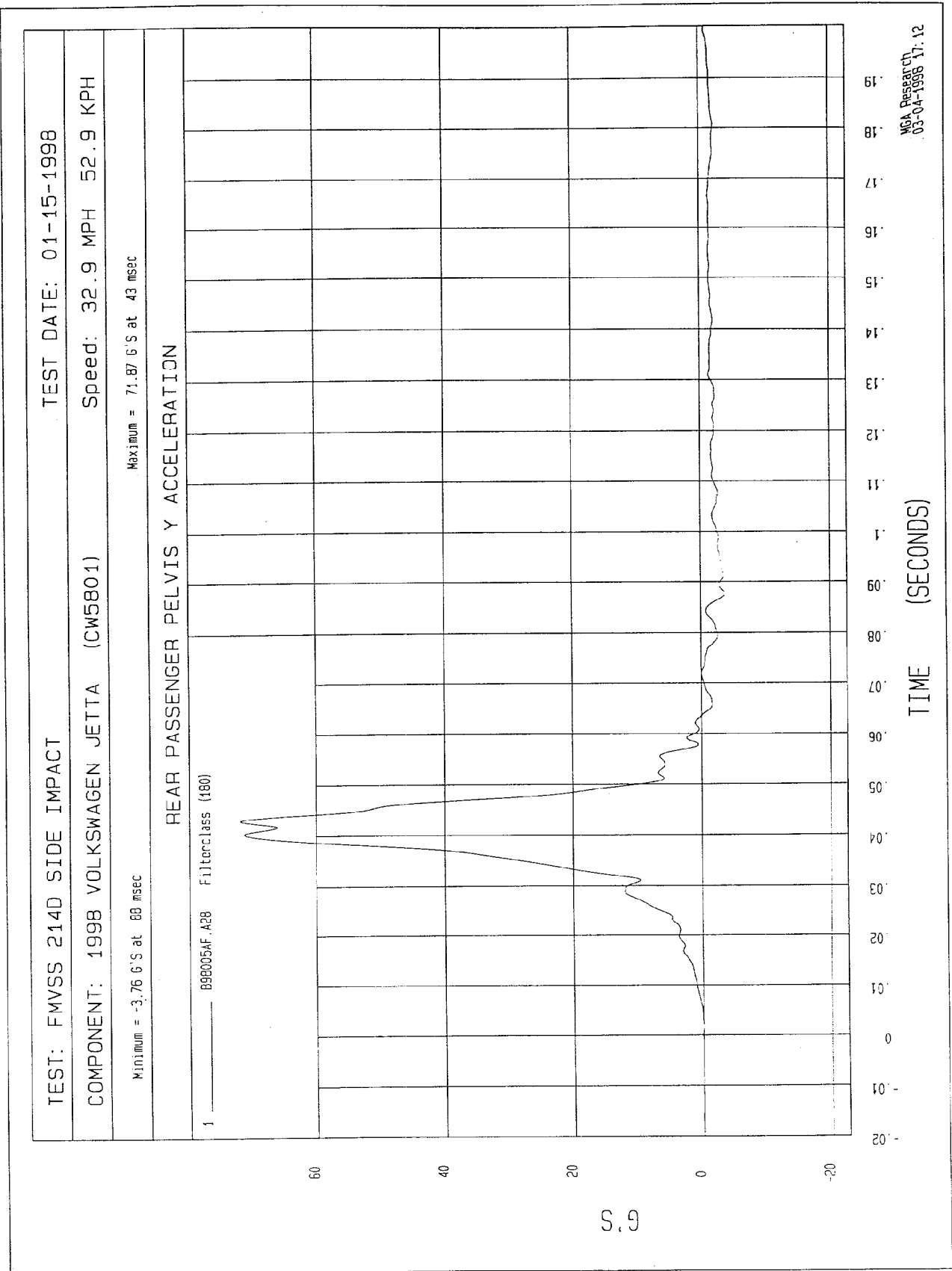
Minimum = -.01 KPH at -3 msec Maximum = 37.55 KPH at 64 msec

REAR PASSENGER LOWER SPINE Y VELOCITY

1 598005A1.V27 Filterclass (180)



WGA Research
03-04-1998 17:13



TEST: FMVSS 214D SIDE IMPACT

TEST DATE: 01-15-1998

Speed: 32.9 MPH 52.9 KPH

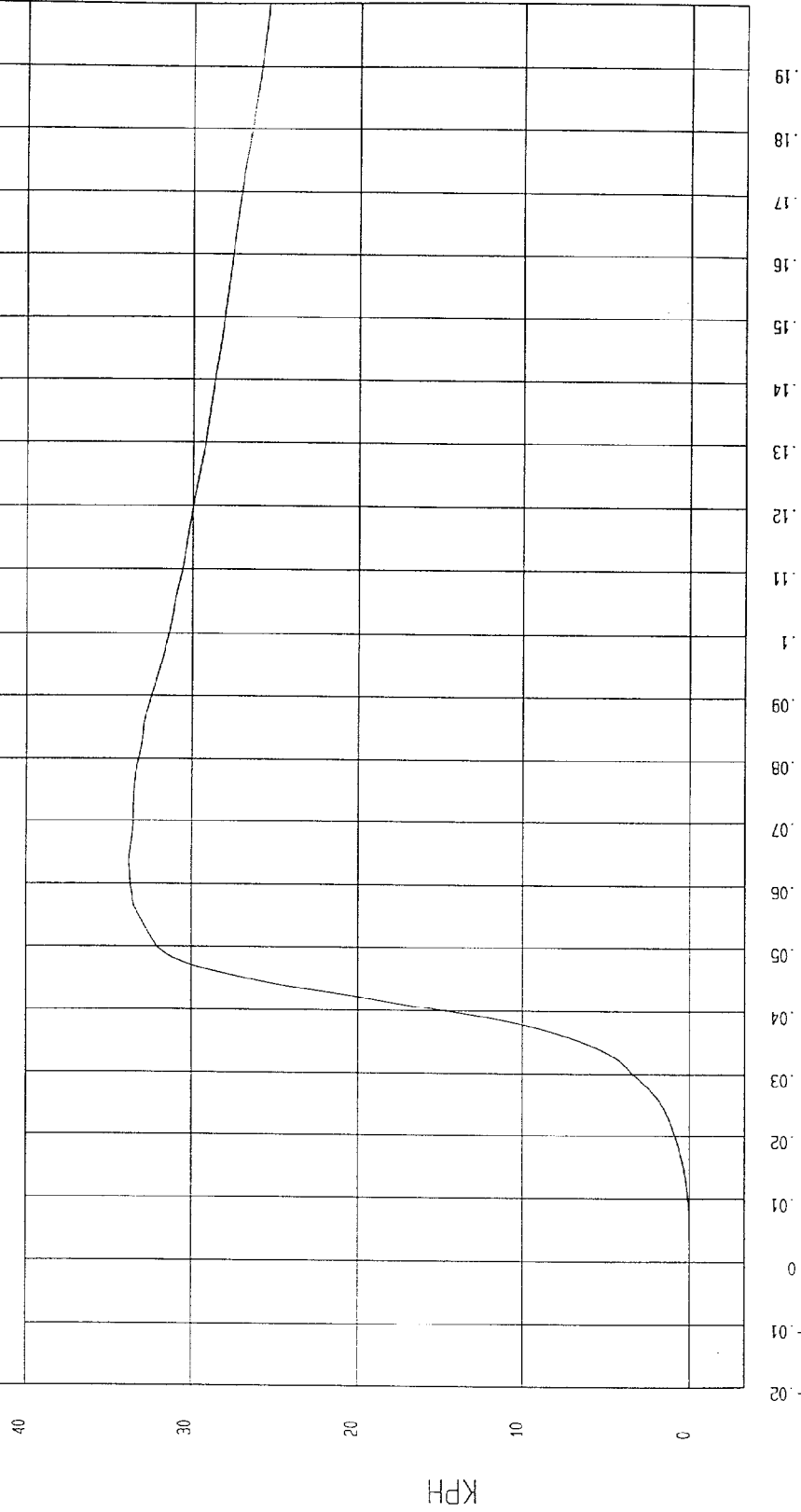
COMPONENT: 1998 VOLKSWAGEN JETTA (CW5801)

Minimum = -1.18E-03 KPH at -18 msec

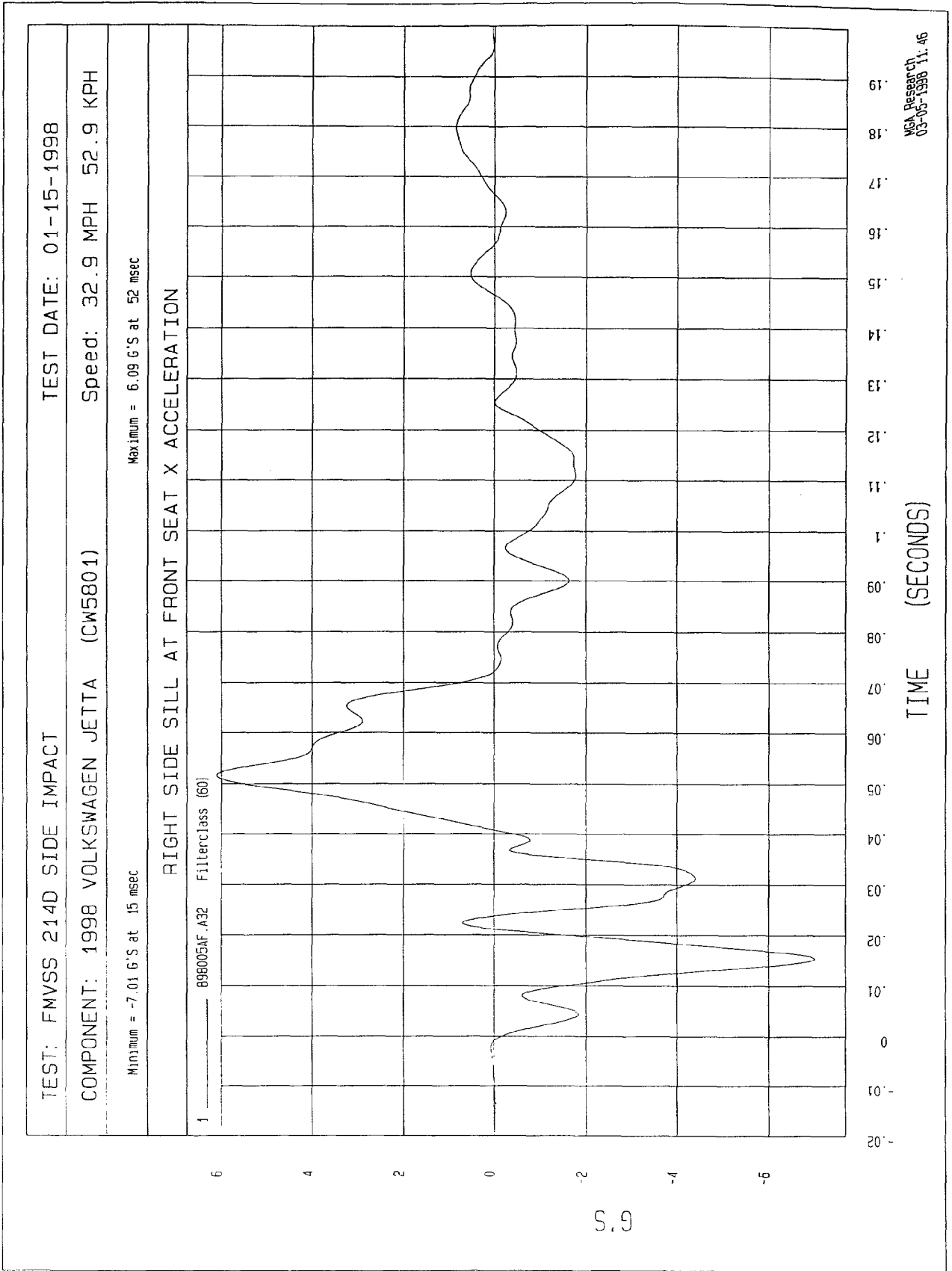
Maximum = 33.77 KPH at 64 msec

REAR PASSENGER PELVIS Y VELOCITY

1 _____ B96005A1.V28 Filterclass (180)

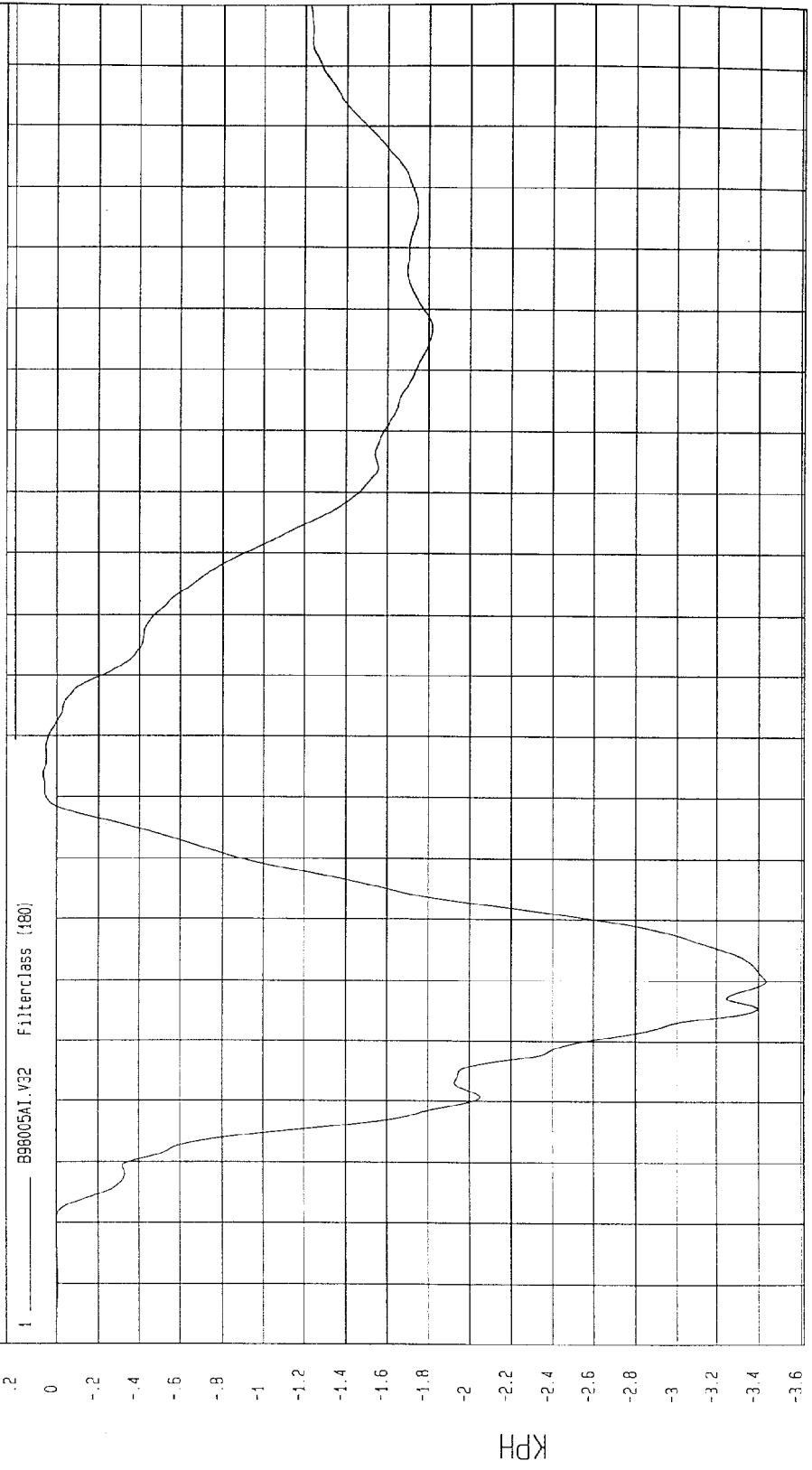


MSA Research
03-04-1998 17:14



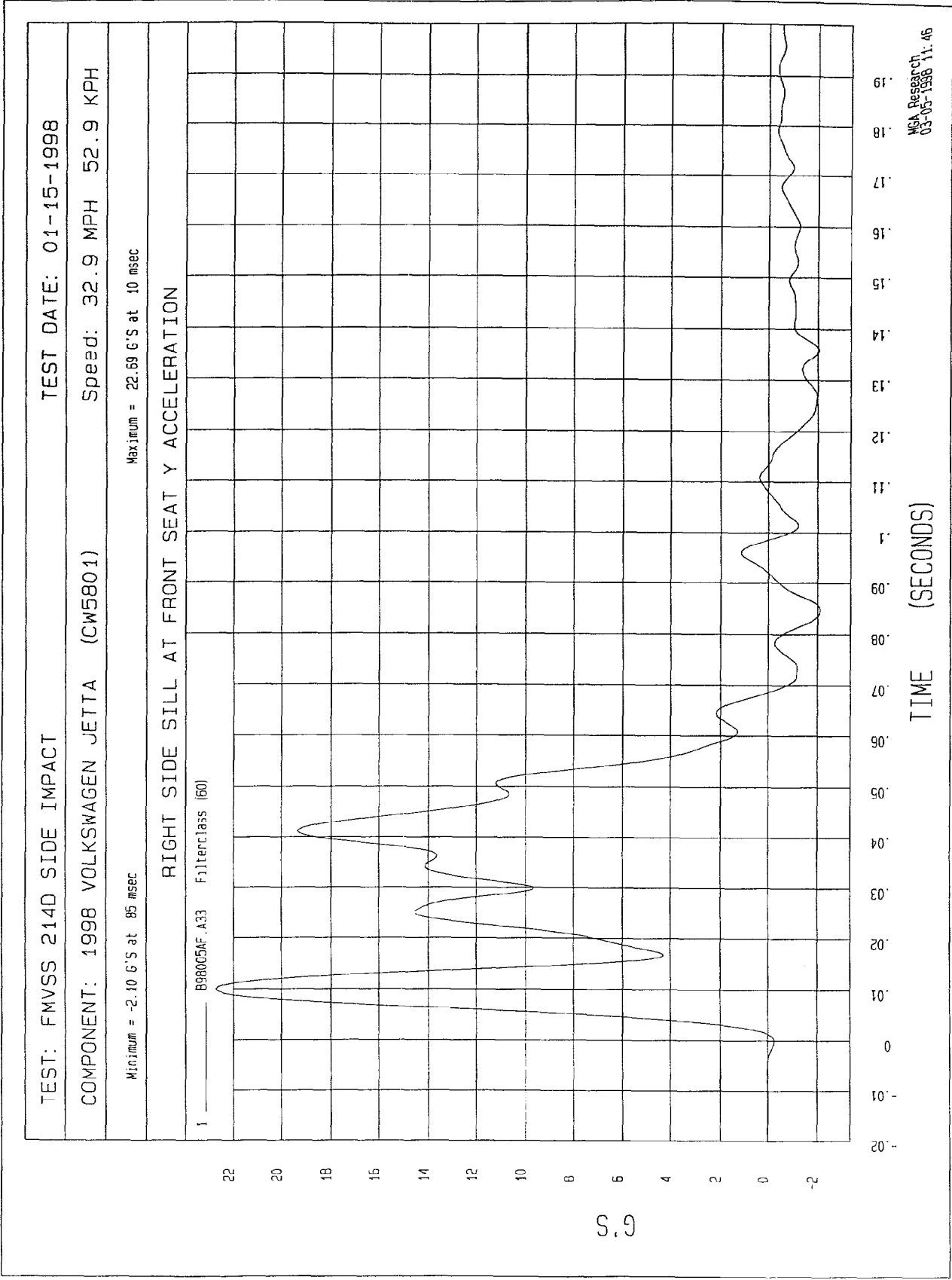
TEST: FMVSS 214D SIDE IMPACT	TEST DATE: 01-15-1998
COMPONENT: 1998 VOLKSWAGEN JETTA (CW5801)	Speed: 32.9 MPH 52.9 KPH
Minimum = -3.43 KPH at 40 msec	Maximum = 6.74E-02 KPH at 74 msec

RIGHT SIDE SILL AT FRONT SEAT X VELOCITY



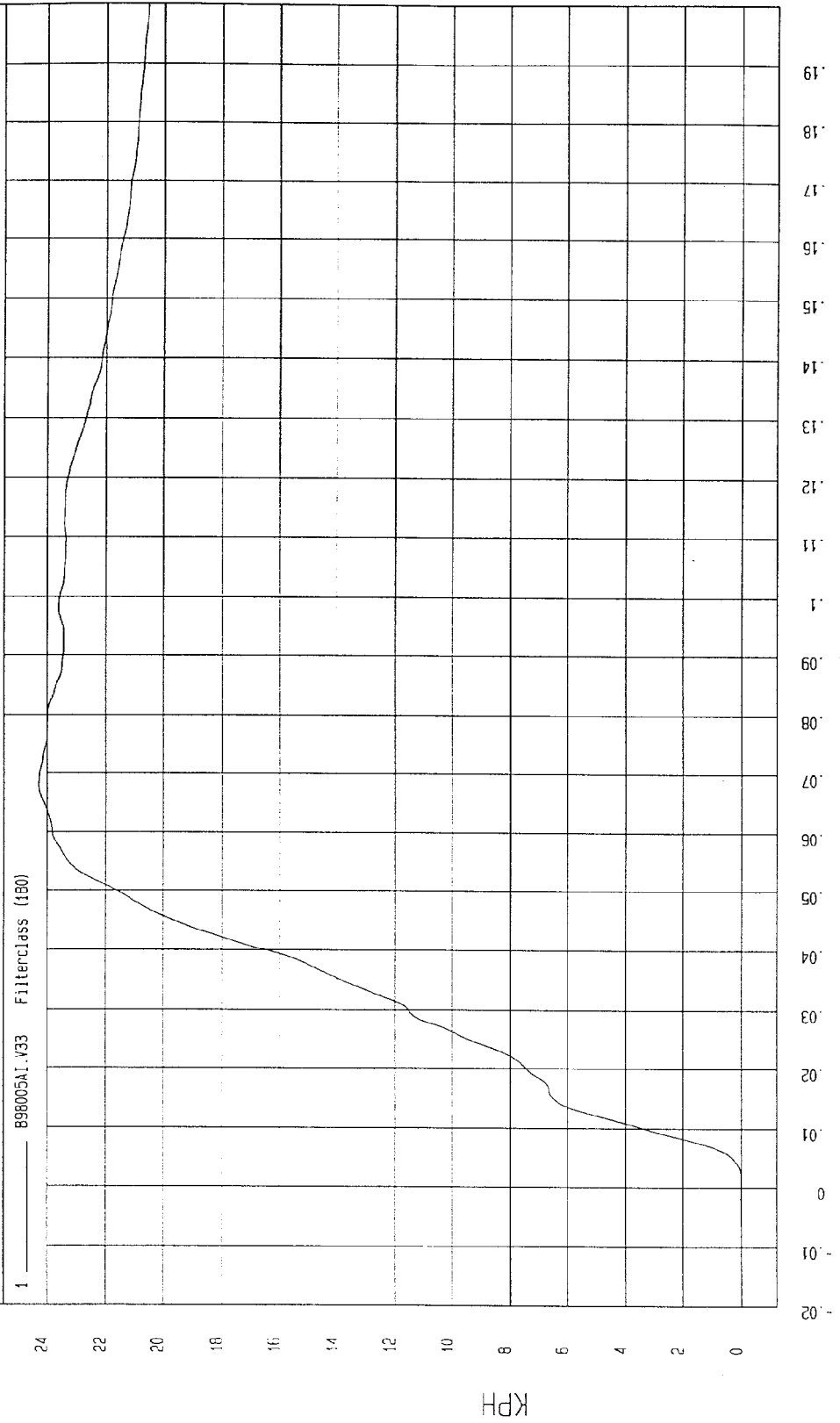
TIME Seconds

MCA Research
03-04-1998 17:08

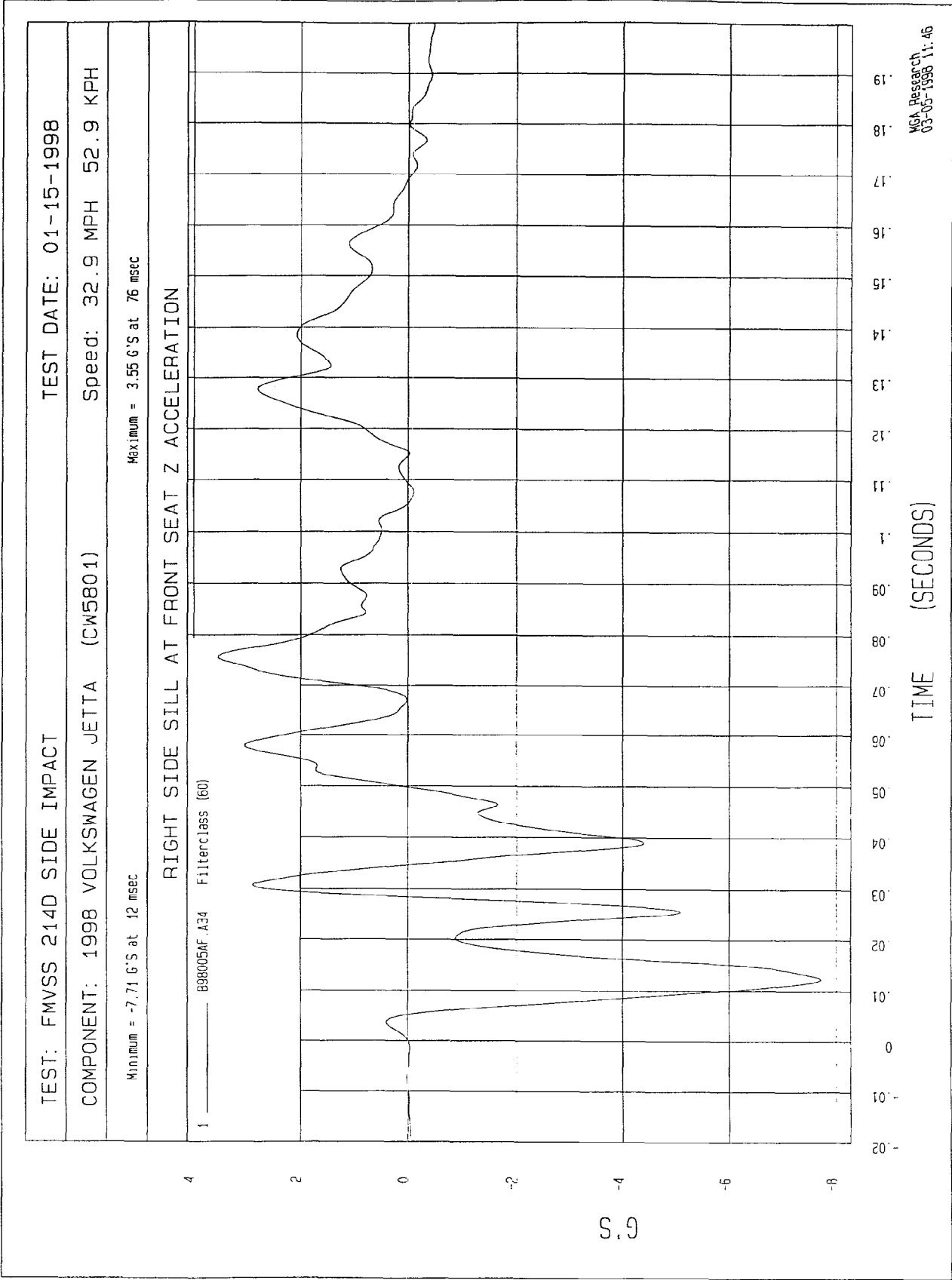


TEST: FMVSS 214D SIDE IMPACT	TEST DATE: 01-15-1998
COMPONENT: 1998 VOLKSWAGEN JETTA (CW5801)	Speed: 32.9 MPH 52.9 KPH
Minimum = -2.59E-05 KPH at -20 msec	
Maximum = 24.28 KPH at 68 msec	

RIGHT SIDE SILL AT FRONT SEAT Y VELOCITY



NSA Research
03-04-1998 17:08



TEST: FMVSS 214D SIDE IMPACT

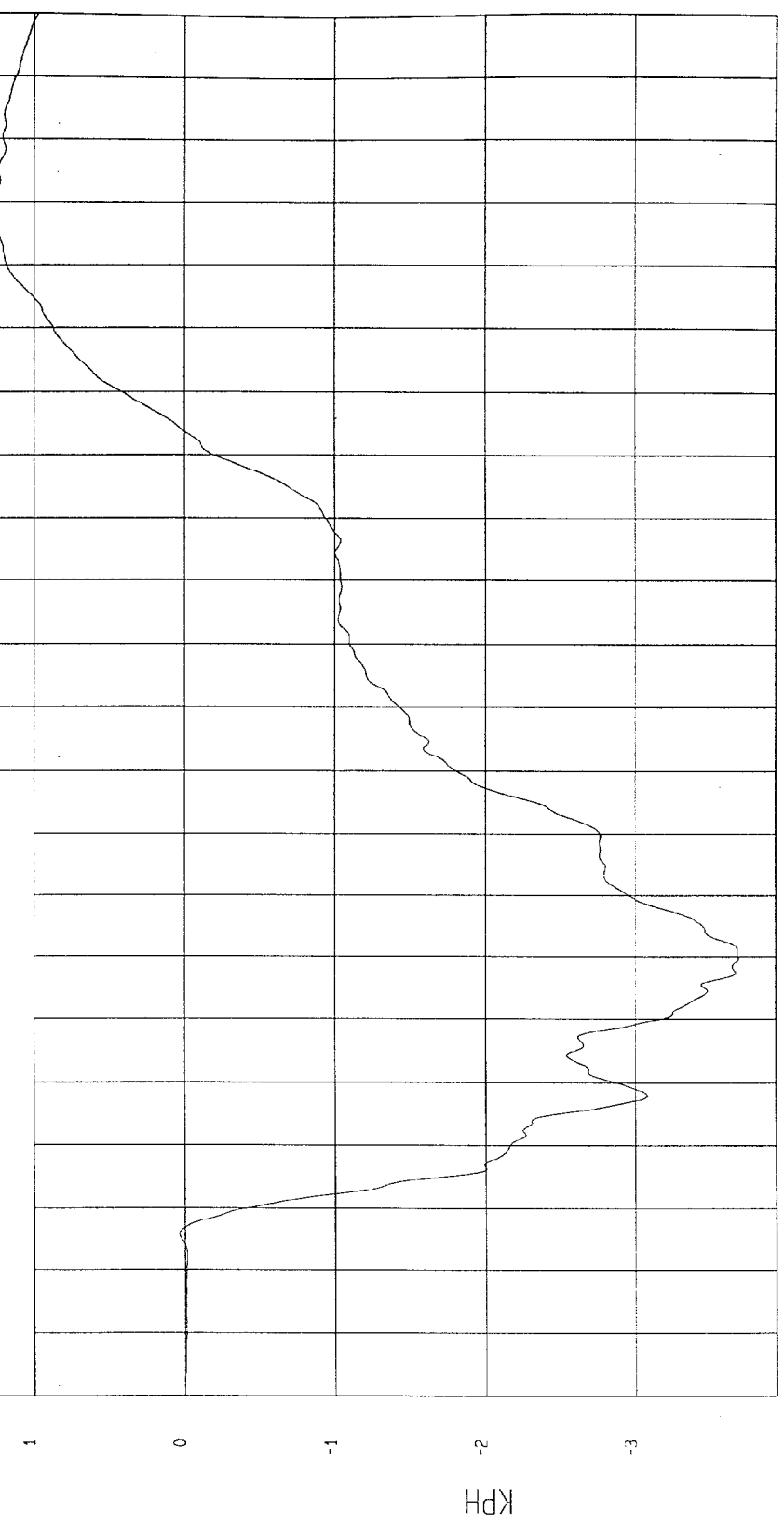
TEST DATE: 01-15-1998

COMPONENT: 1998 VOLKSWAGEN JETTA (CW5801) Speed: 32.9 MPH 52.9 KPH

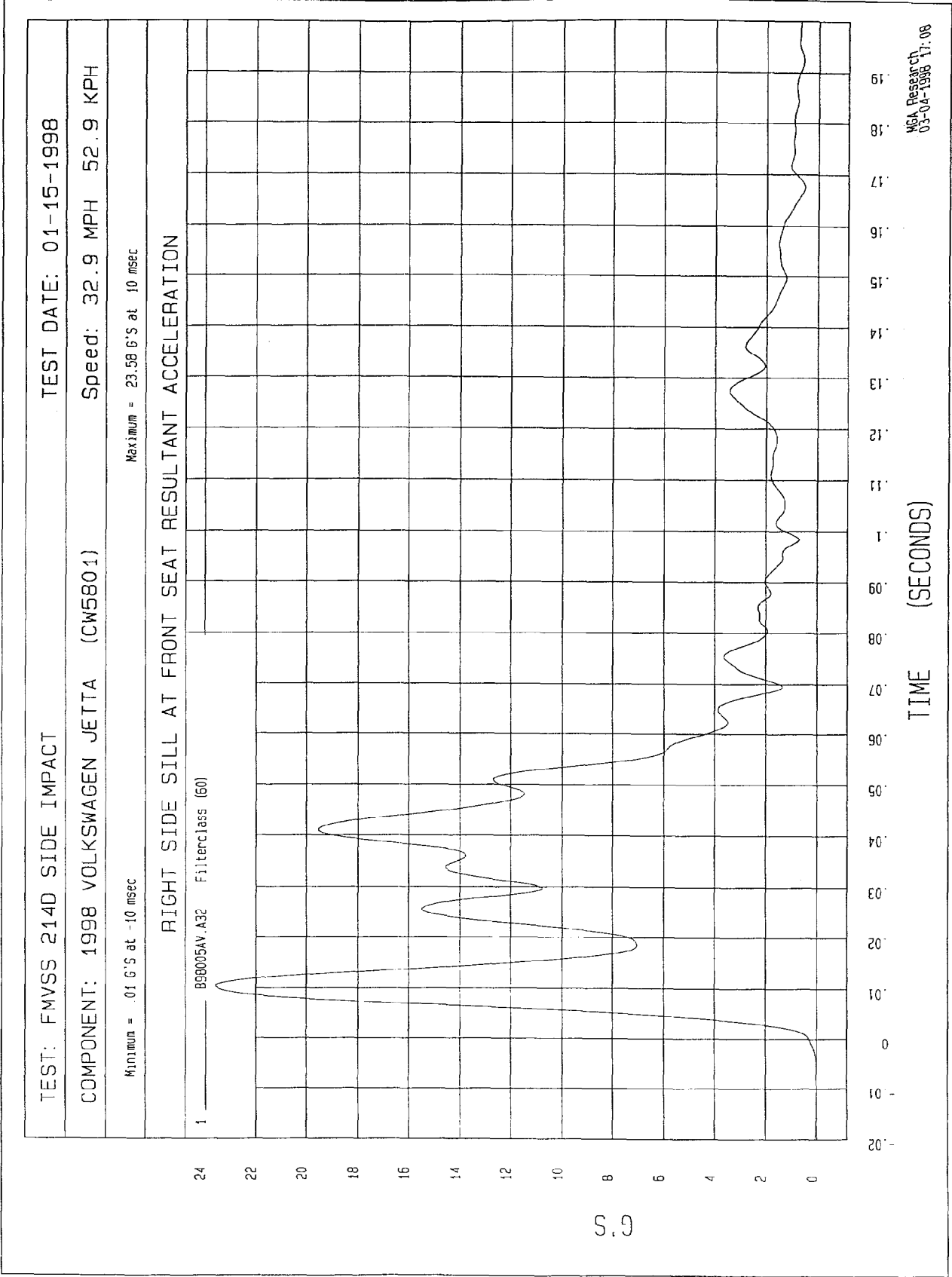
Minimum = -3.67 KPH at 50 msec Maximum = 1.25 KPH at 171 msec

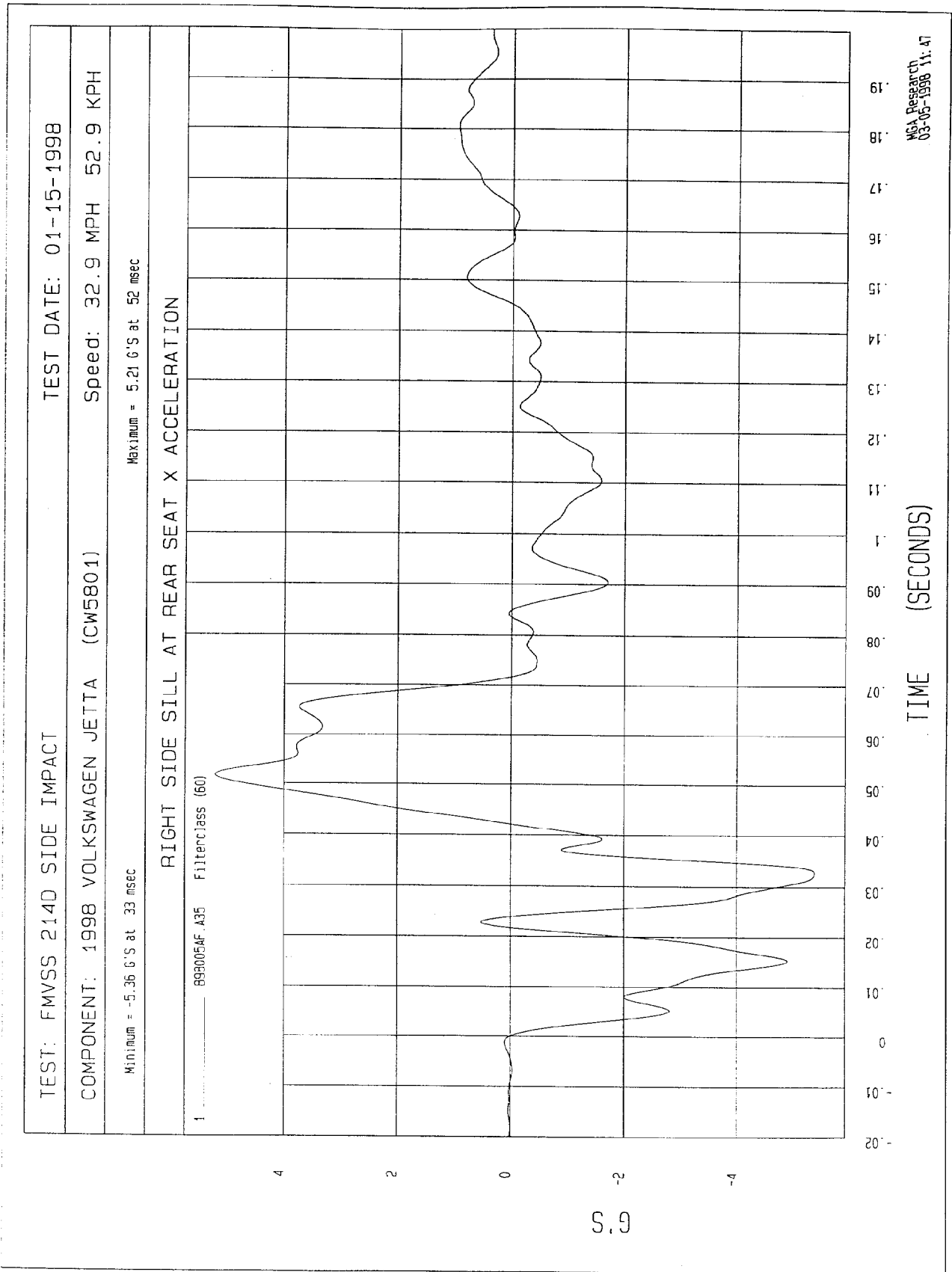
RIGHT SIDE SILL AT FRONT SEAT Z VELOCITY

1 B98005A1.V34 Filterclass (180)



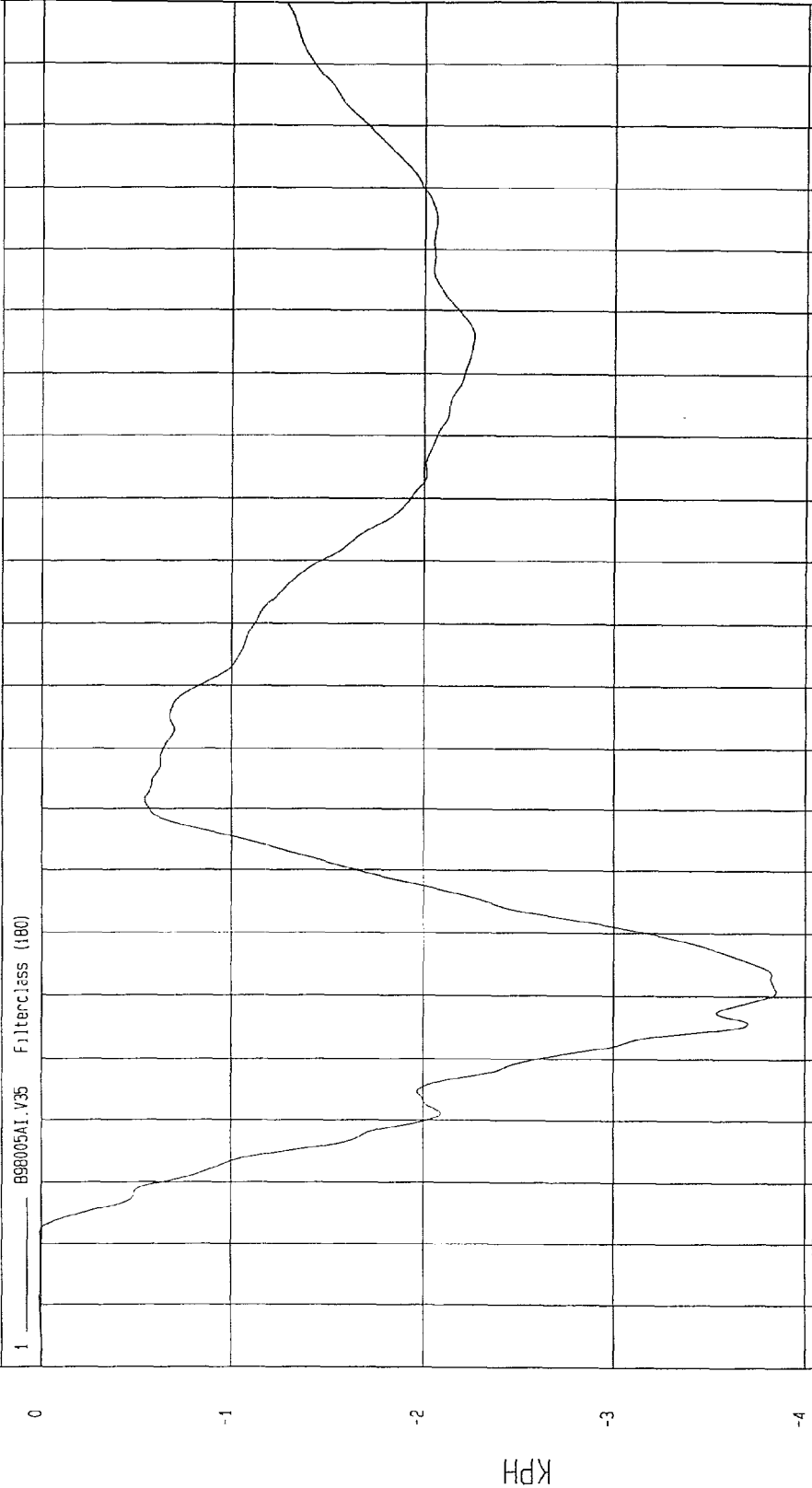
MEA Research
03-04-1998 11:08





TEST: FMVSS 214D SIDE IMPACT	TEST DATE: 01-15-1998
COMPONENT: 1998 VOLKSWAGEN JETTA (CW5801)	Speed: 32.9 MPH 52.9 KPH
Minimum = -3.84 KPH at 41 msec	
Maximum = 8.50E-03 KPH at -8 msec	

RIGHT SIDE SILL AT REAR SEAT X VELOCITY



TIME Seconds

WGA Research
03-04-1998 17:08

TEST: FMVSS 214D SIDE IMPACT

TEST DATE: 01-15-1998

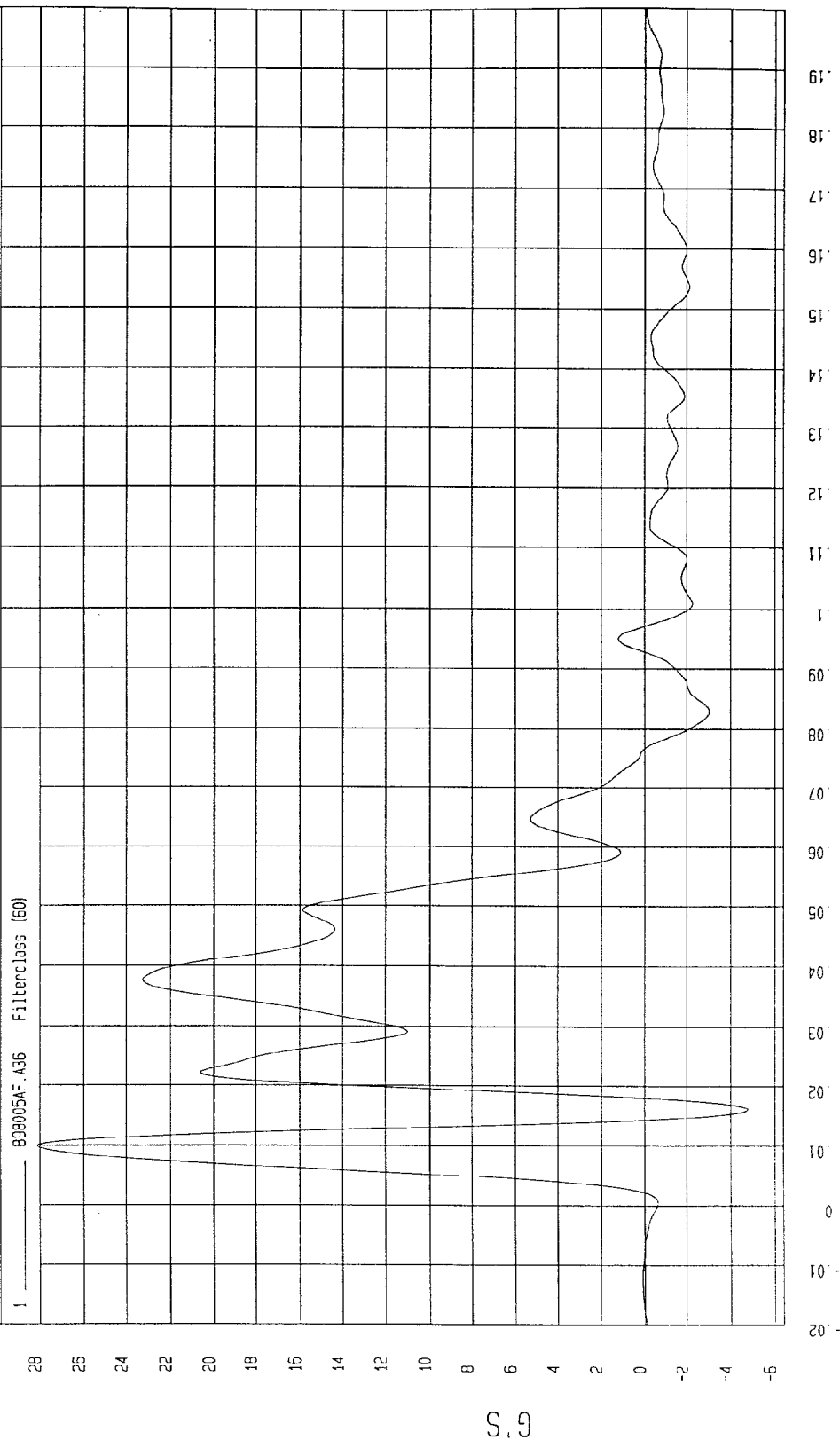
Speed: 32.9 MPH 52.9 KPH

COMPONENT: 1998 VOLKSWAGEN JETTA (CW5801)

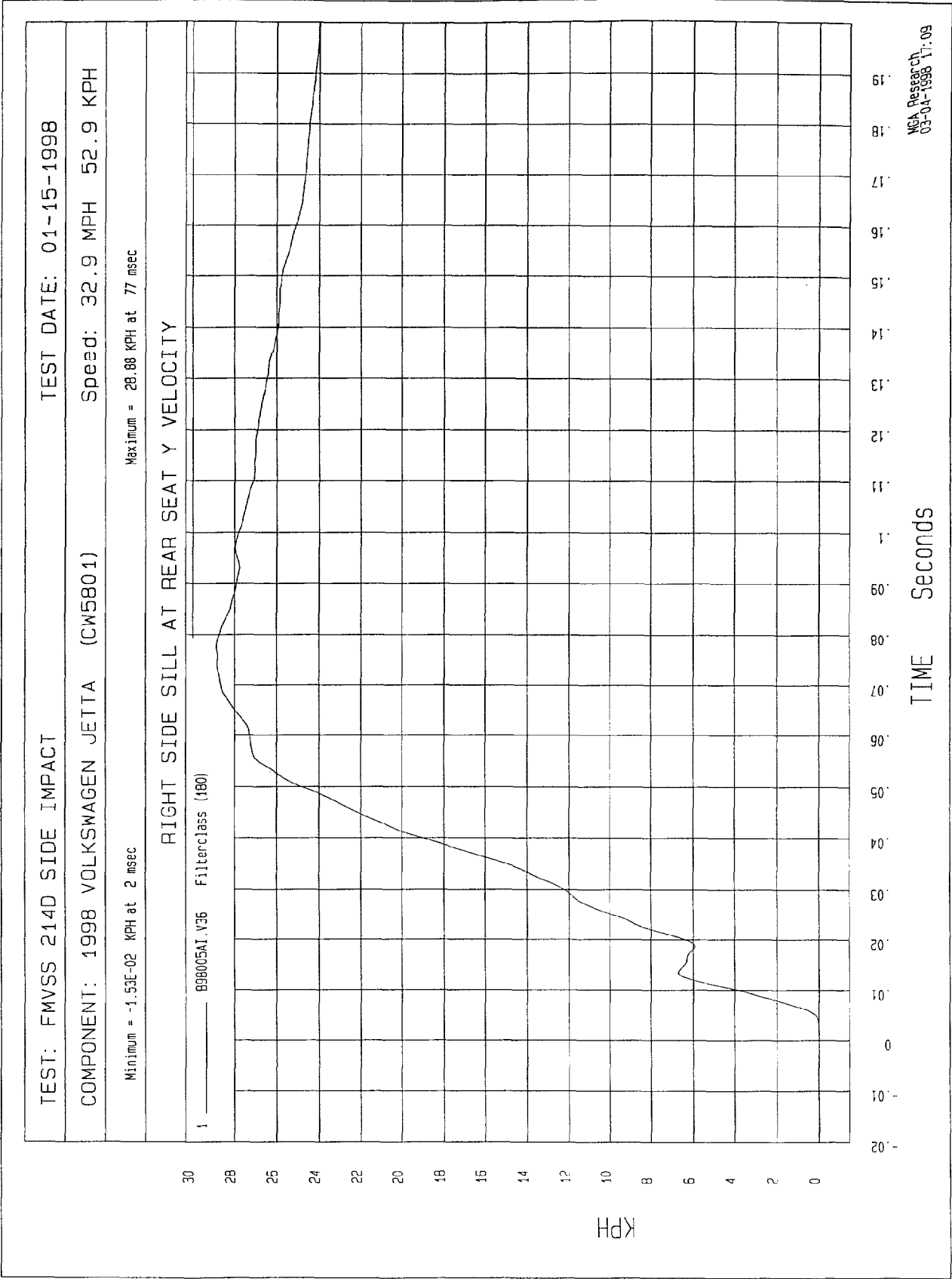
Maximum = 28.14 G'S at 10 msec

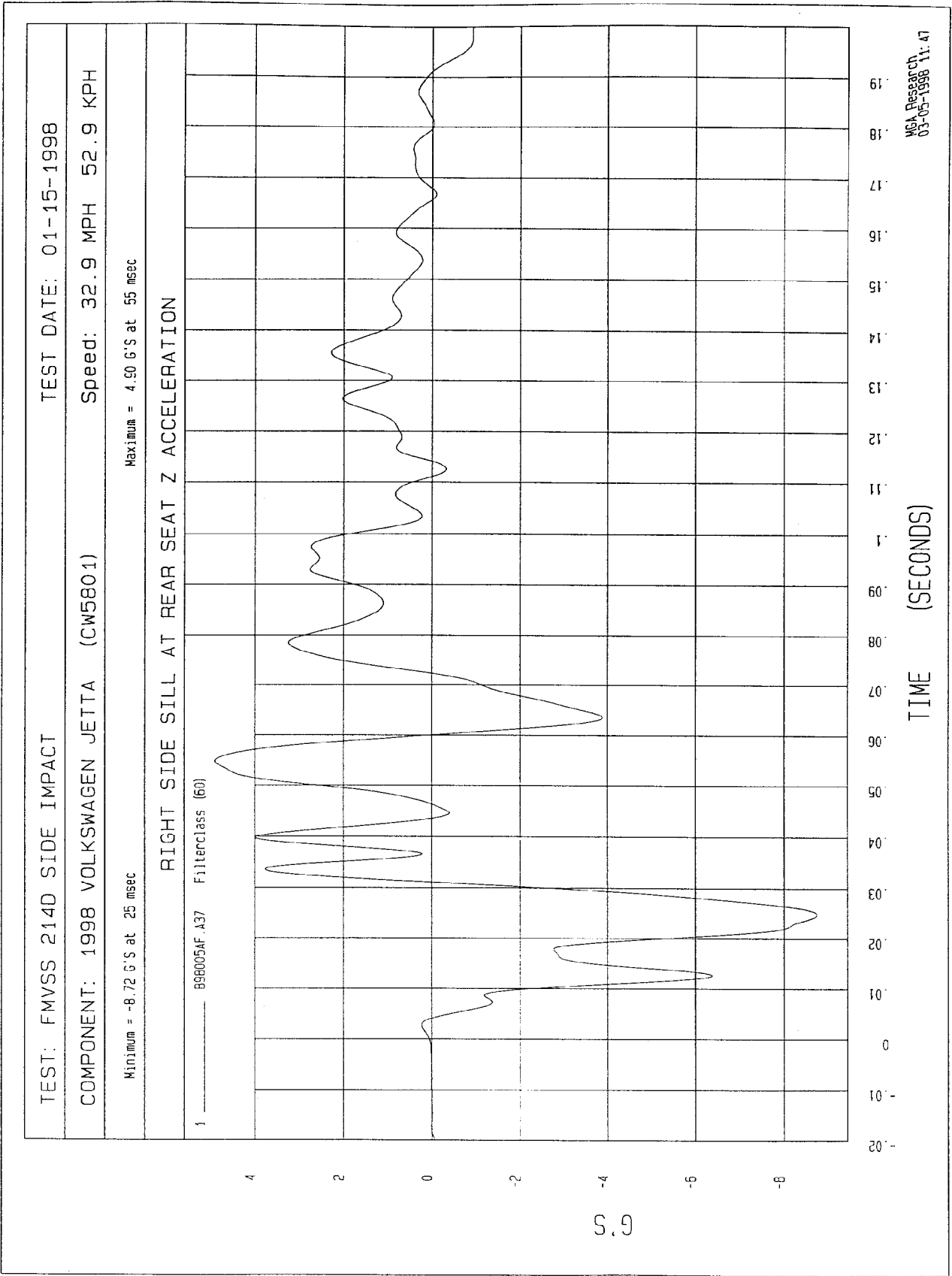
Minimum = -4.75 G'S at 15 msec

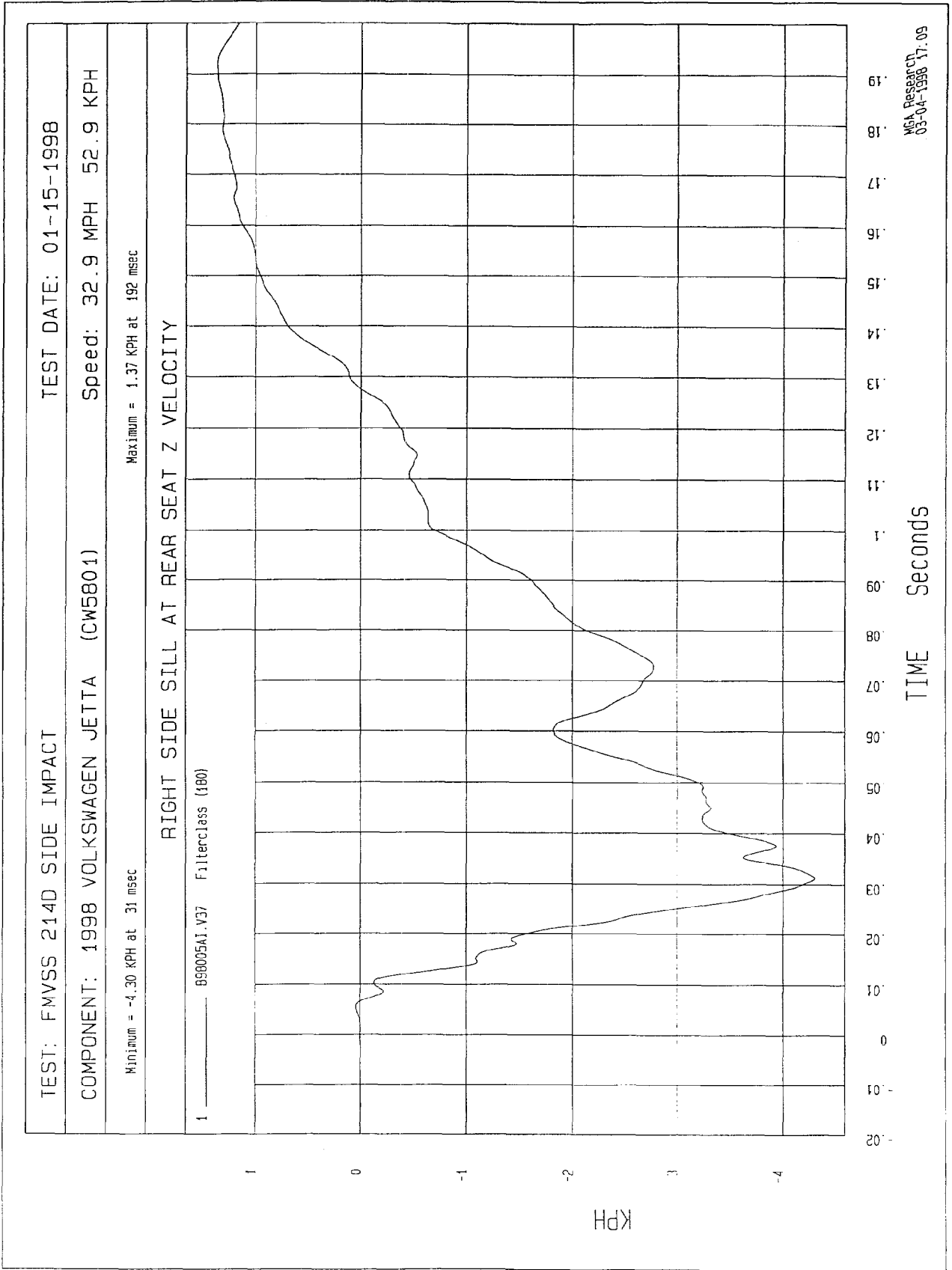
RIGHT SIDE SILL AT REAR SEAT Y ACCELERATION

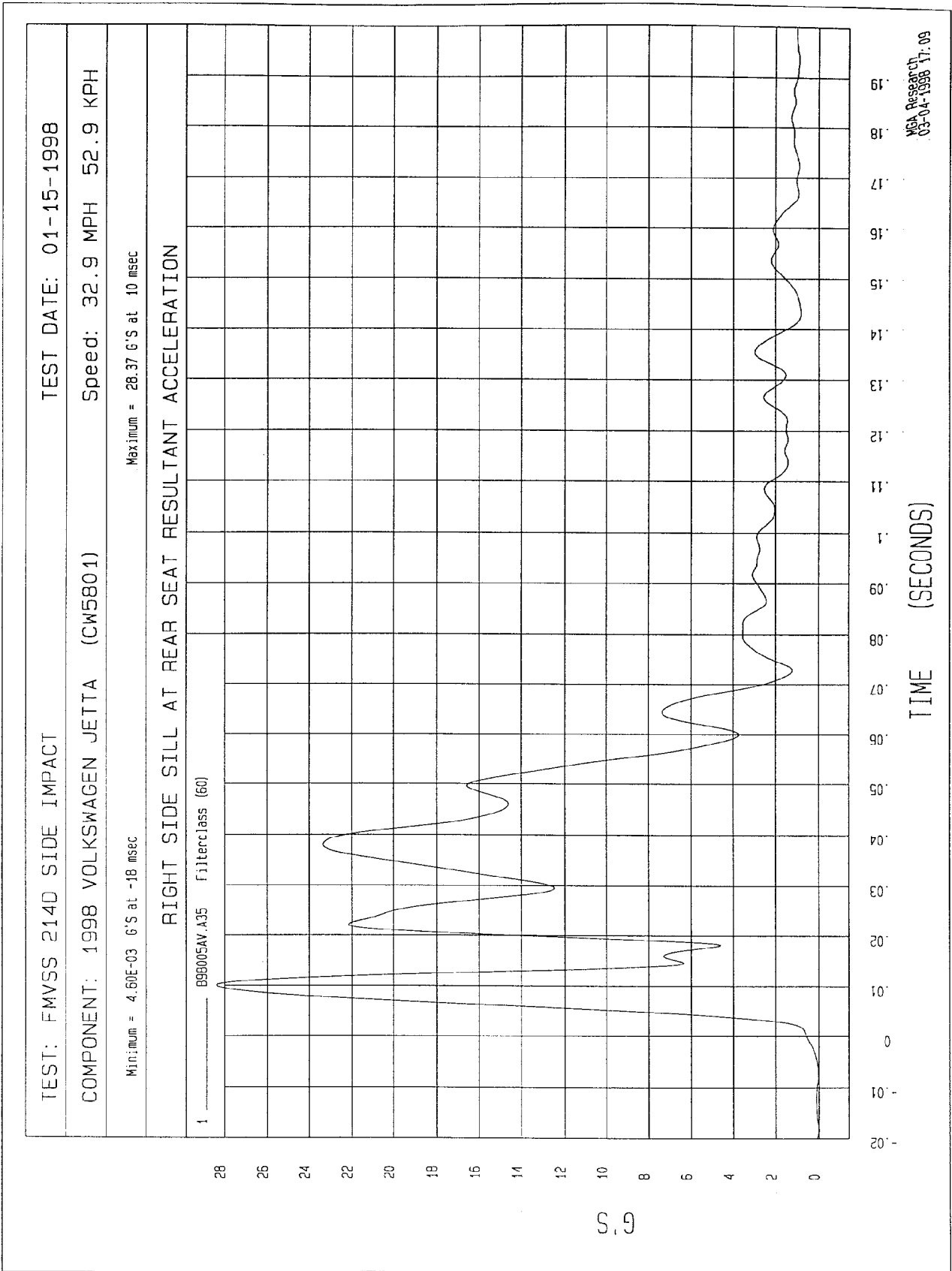


MECA Research
03-05-1998 11: 47







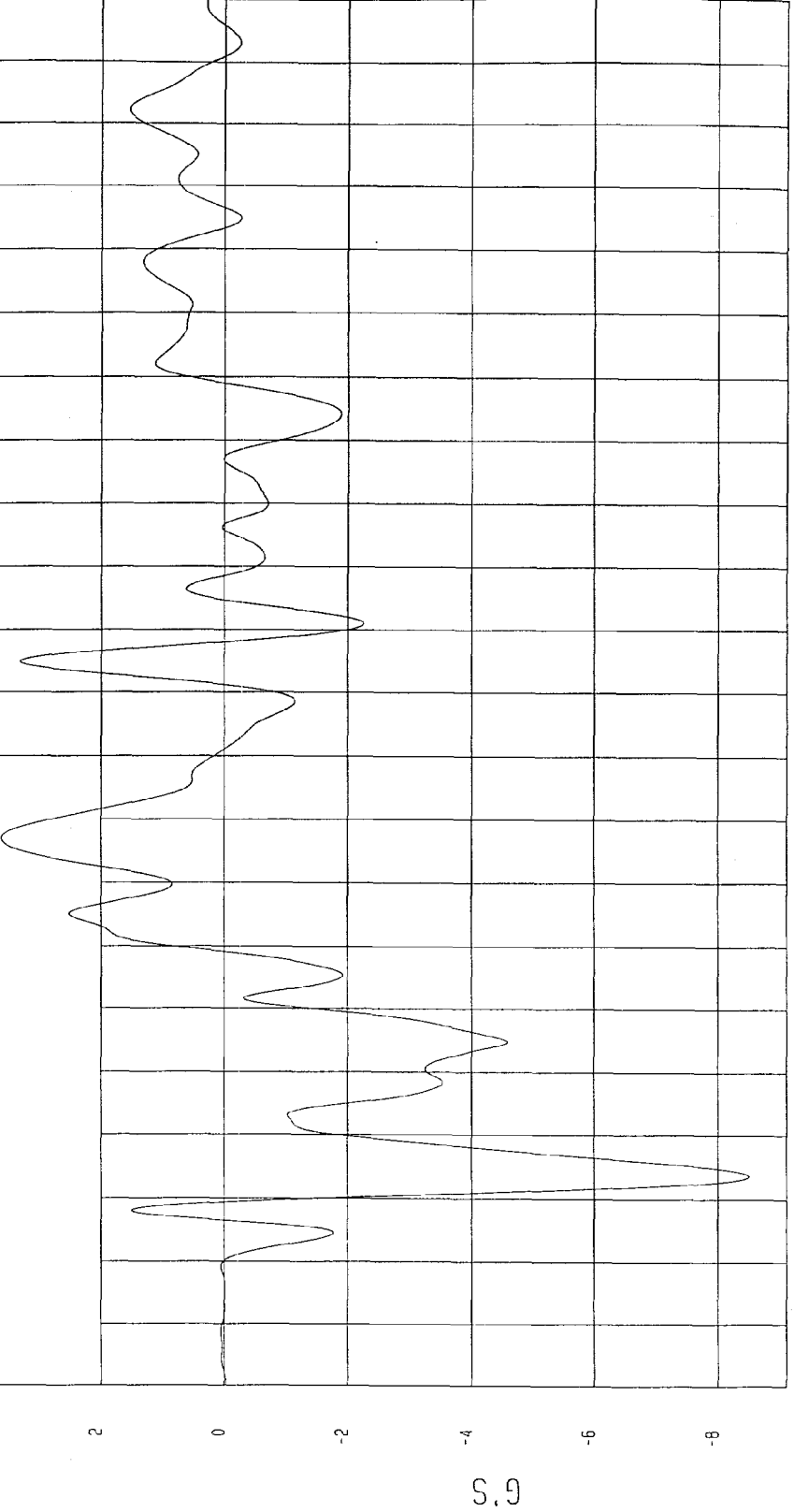


TEST: FMVSS 214D SIDE IMPACT
COMPONENT: 1998 VOLKSWAGEN JETTA (CW5801)

Minimum = -8.49 G's at 14 msec
Maximum = 3.63 G's at 67 msec

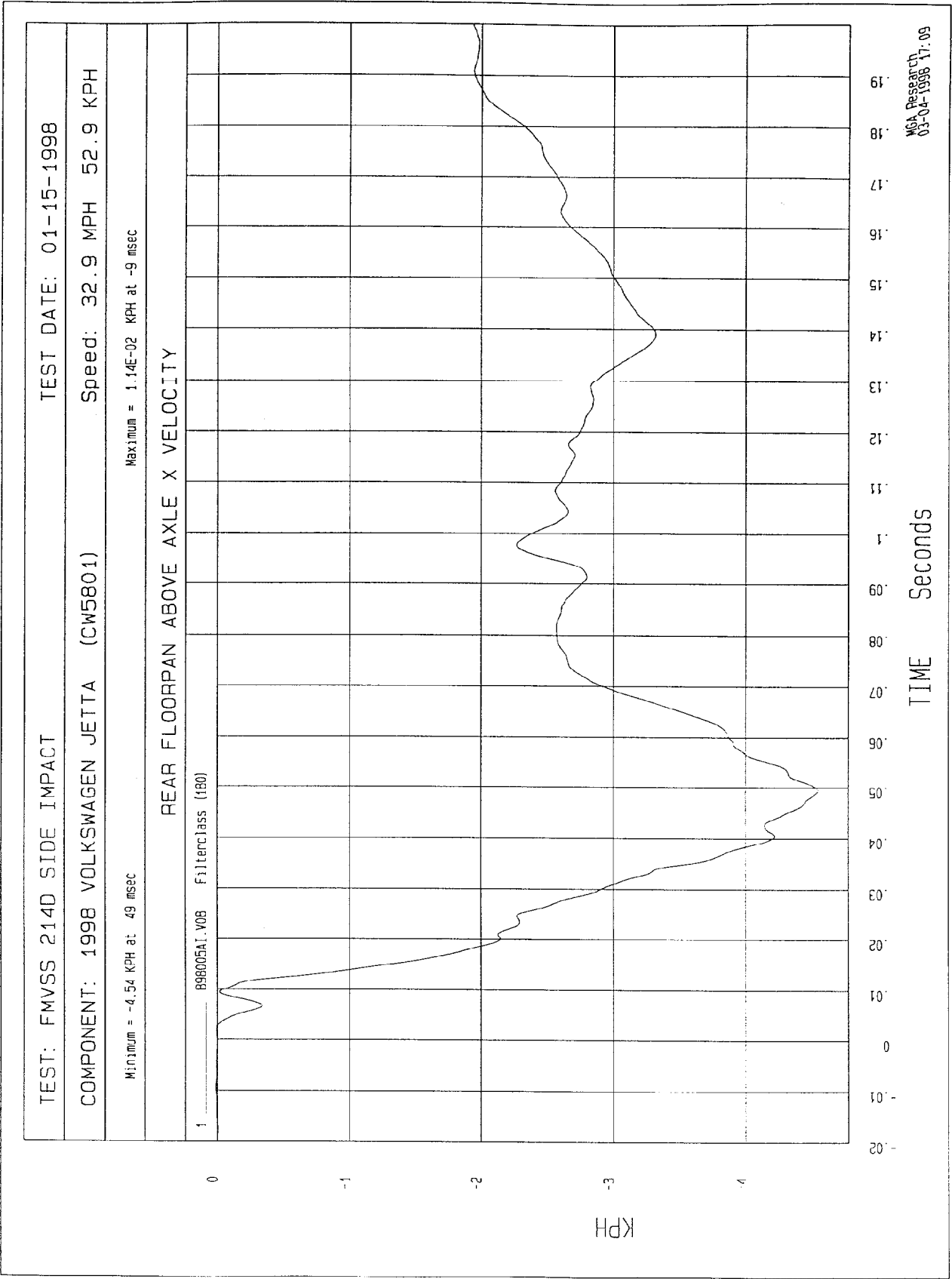
REAR FLOORPAN ABOVE AXLE X ACCELERATION

1 B98005AF.A08 Filterclass (60)



TIME (SECONDS)

NGA Research
03-05-1998 11:47



TEST DATE: 01-15-1998

TEST: FMVSS 214D SIDE IMPACT

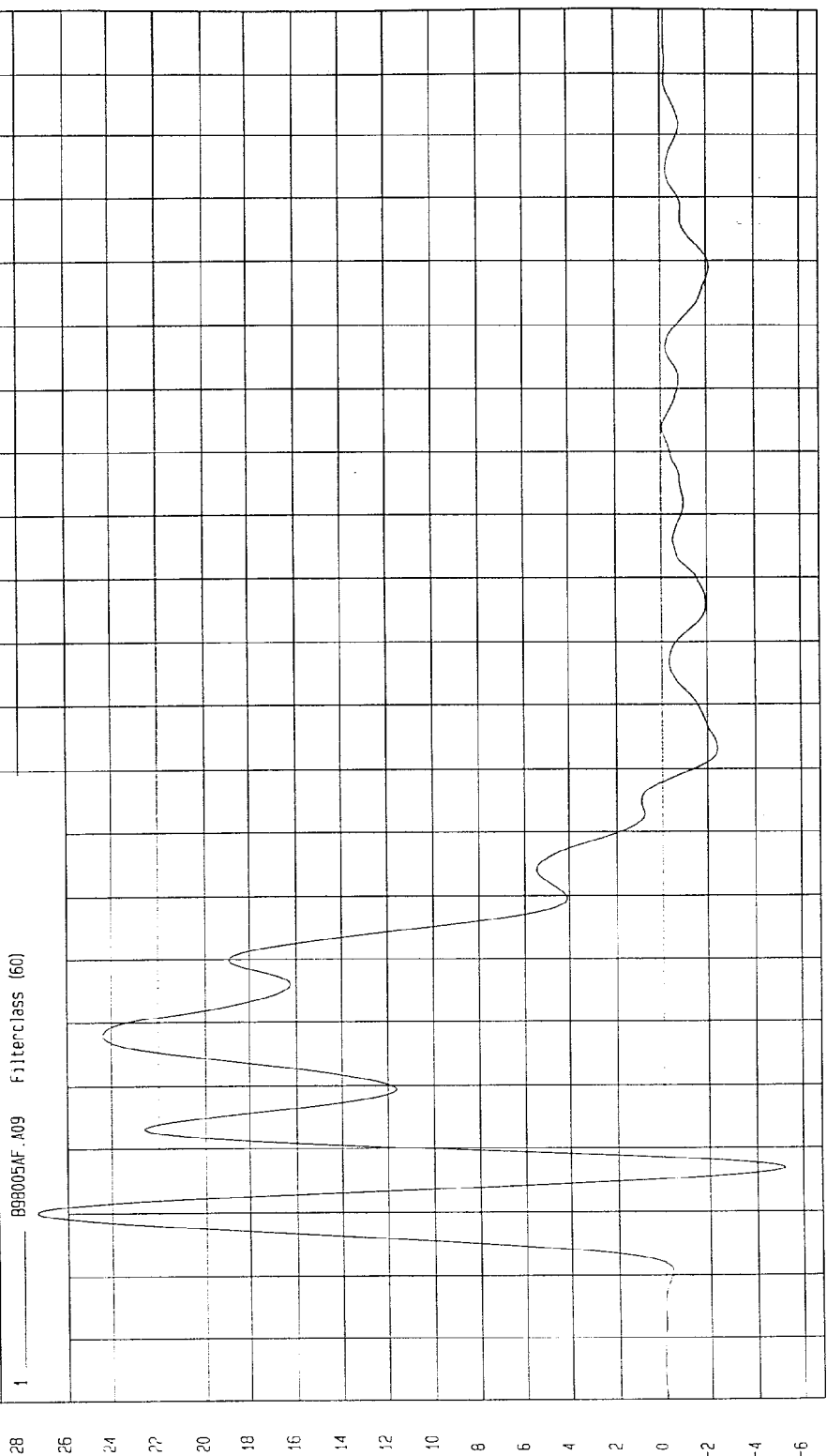
Speed: 32.9 MPH 52.9 KPH

COMPONENT: 1998 VOLKSWAGEN JETTA (CW5801)

Maximum = 27.29 G'S at 10 msec

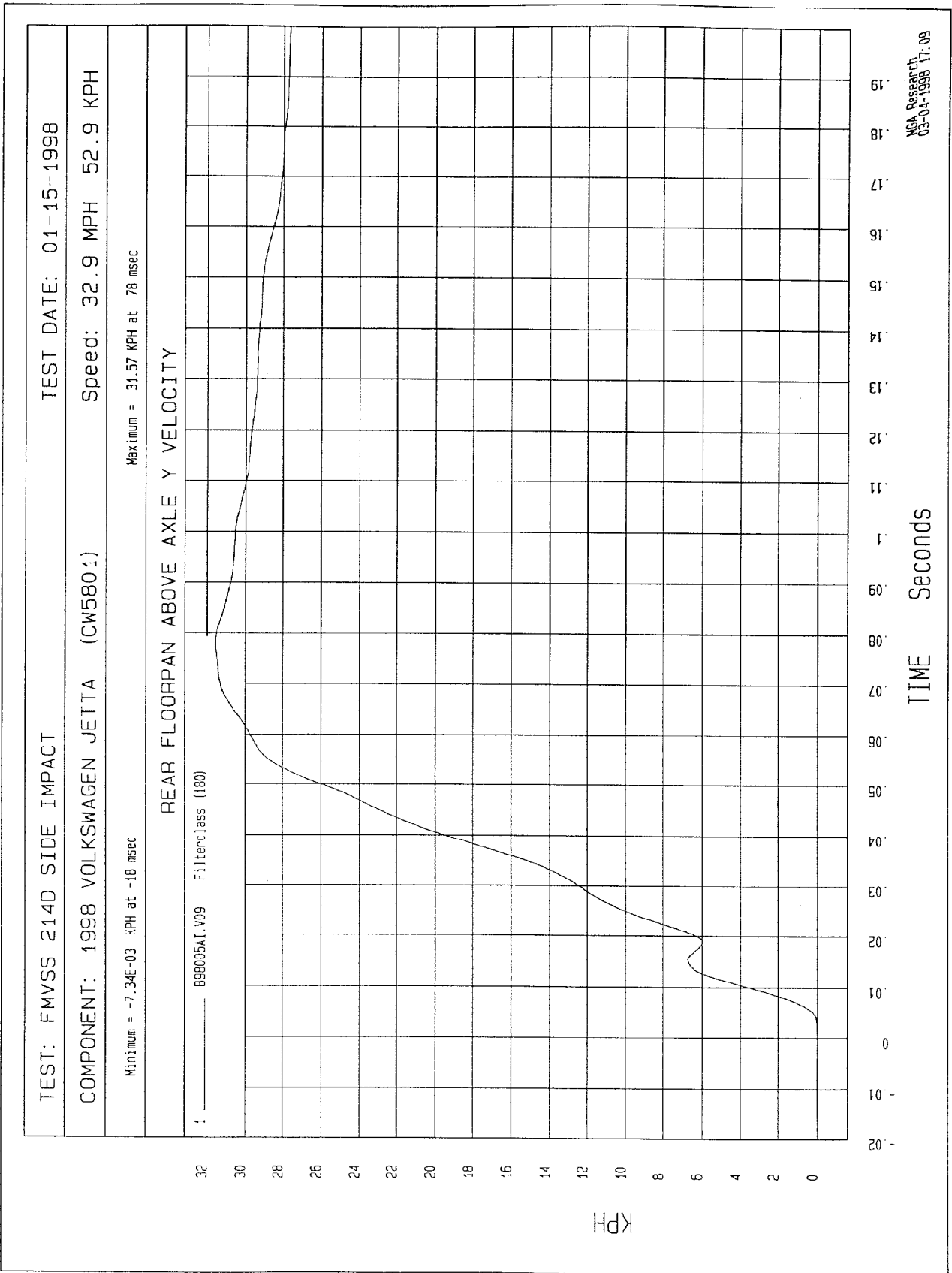
Minimum = -5.18 G'S at 17 msec

REAR FLOORPAN ABOVE AXLE Y ACCELERATION



MGA Research
03-05-1998 11:47

TIME (SECONDS)



TEST: FMVSS 214D SIDE IMPACT

TEST DATE: 01-15-1998

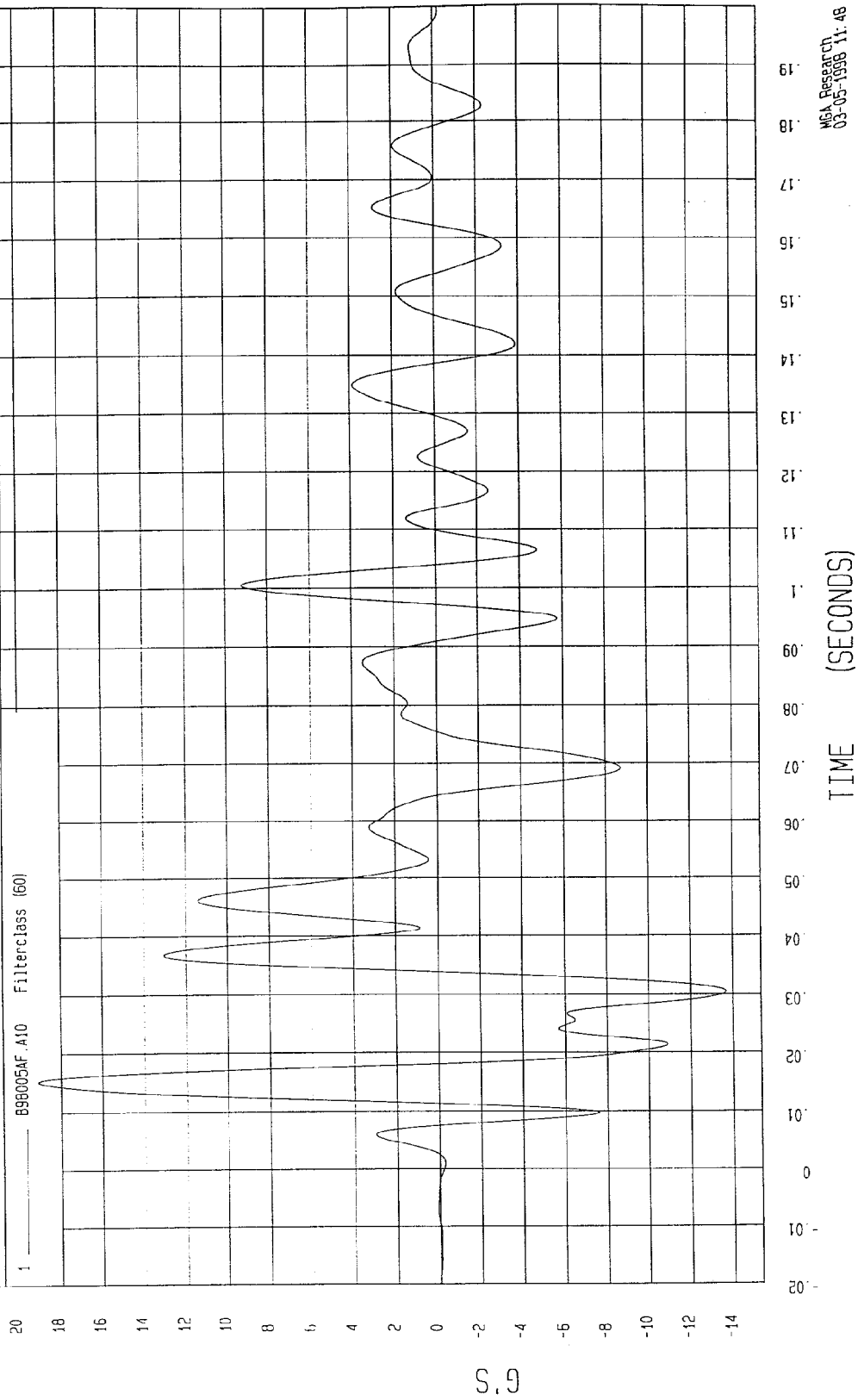
Speed: 32.9 MPH 52.9 KPH

COMPONENT: 1998 VOLKSWAGEN JETTA (CW5801)

Maximum = 19.08 G'S at 15 msec

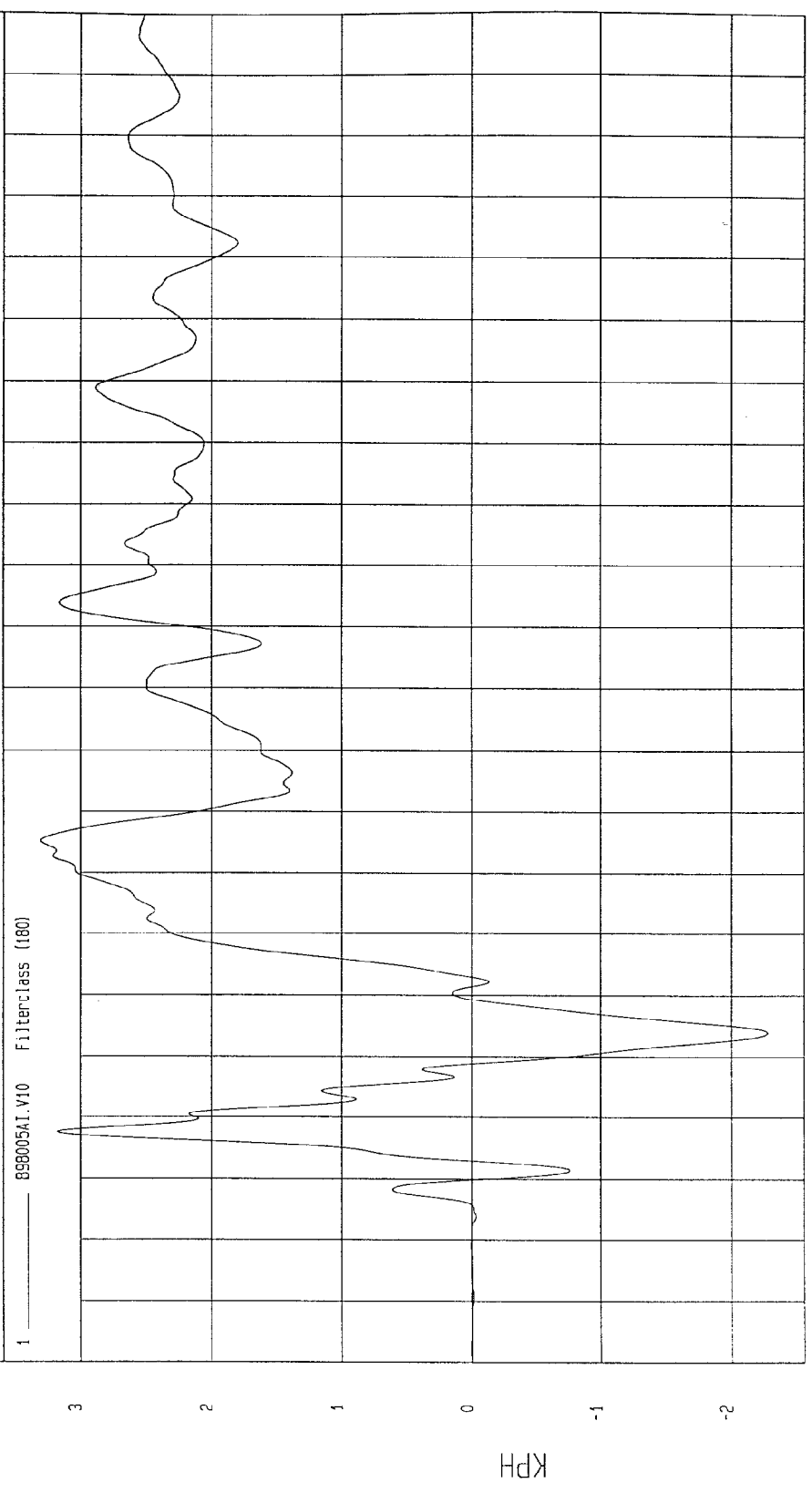
Minimum = -13.66 G'S at 30 msec

REAR FLOORPAN ABOVE AXLE Z ACCELERATION



TEST: FMVSS 214D SIDE IMPACT	TEST DATE: 01-15-1998
COMPONENT: 1998 VOLKSWAGEN JETTA (CW5801)	Speed: 32.9 MPH 52.9 KPH
Minimum = -2.27 KPH at 34 msec	Maximum = 3.30 KPH at 65 msec

REAR FLOORPAN ABOVE AXLE Z VELOCITY



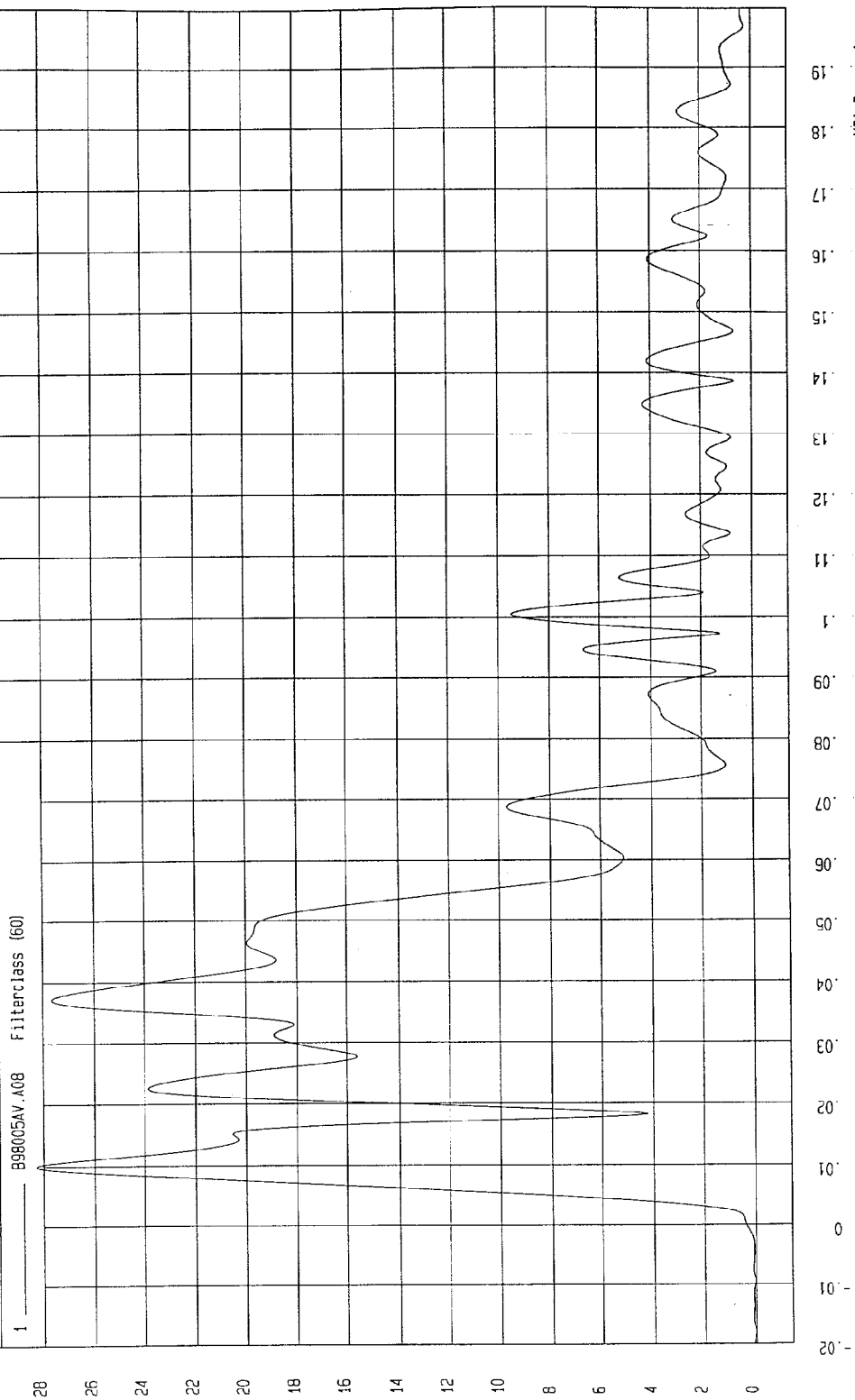
TIME Seconds

MGA Research
03-04-1998 17.09

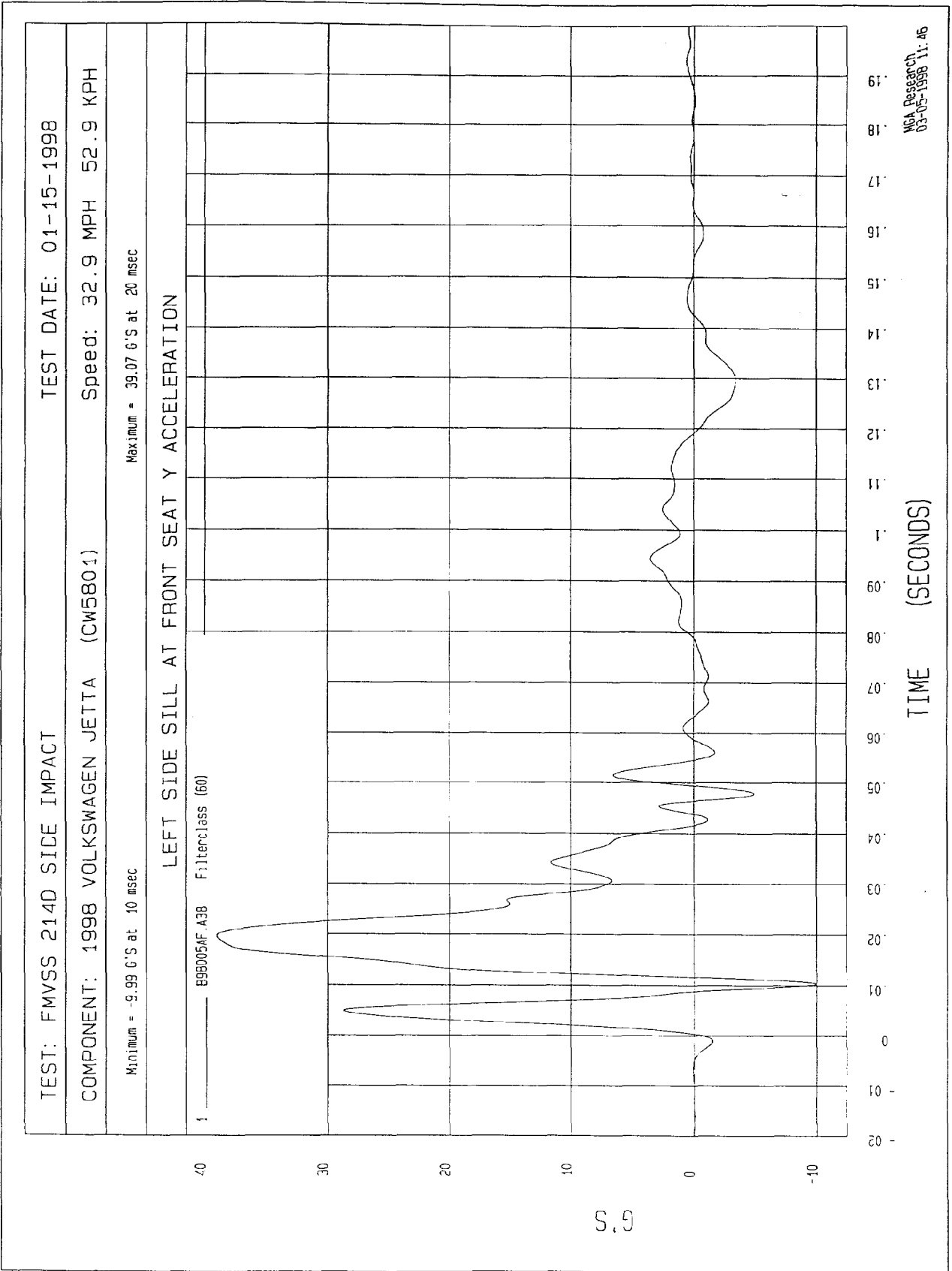
TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 01-15-1998
COMPONENT: 1998 VOLKSWAGEN JETTA (CW5801)
Speed: 32.9 MPH 52.9 KPH

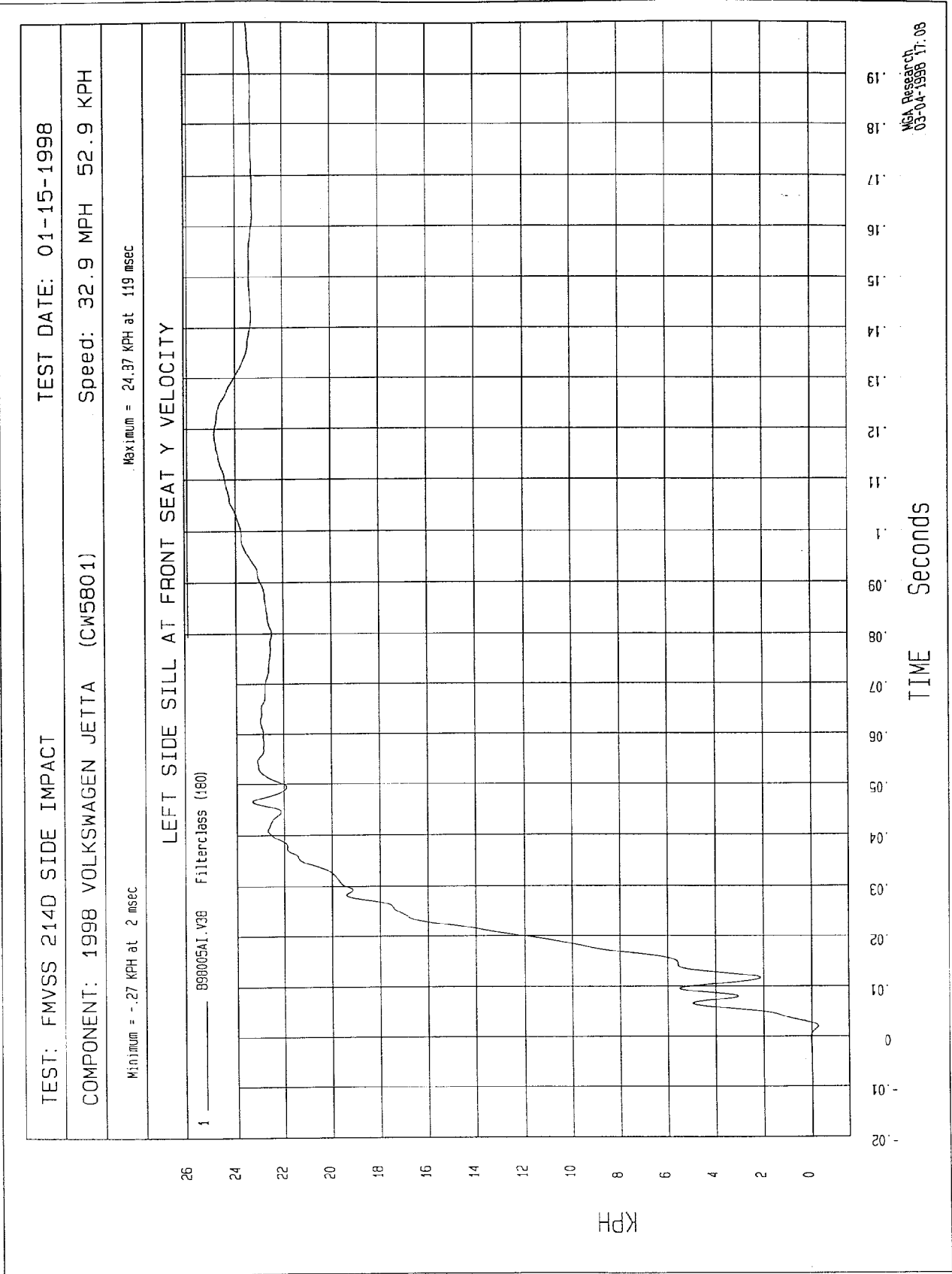
Minimum = 1.55E-02 G'S at -18 msec
Maximum = 28.29 G'S at 10 msec

REAR FLOORPAN ABOVE AXLE RESULTANT ACCELERATION



MCA Research
03-04-1998 17:09



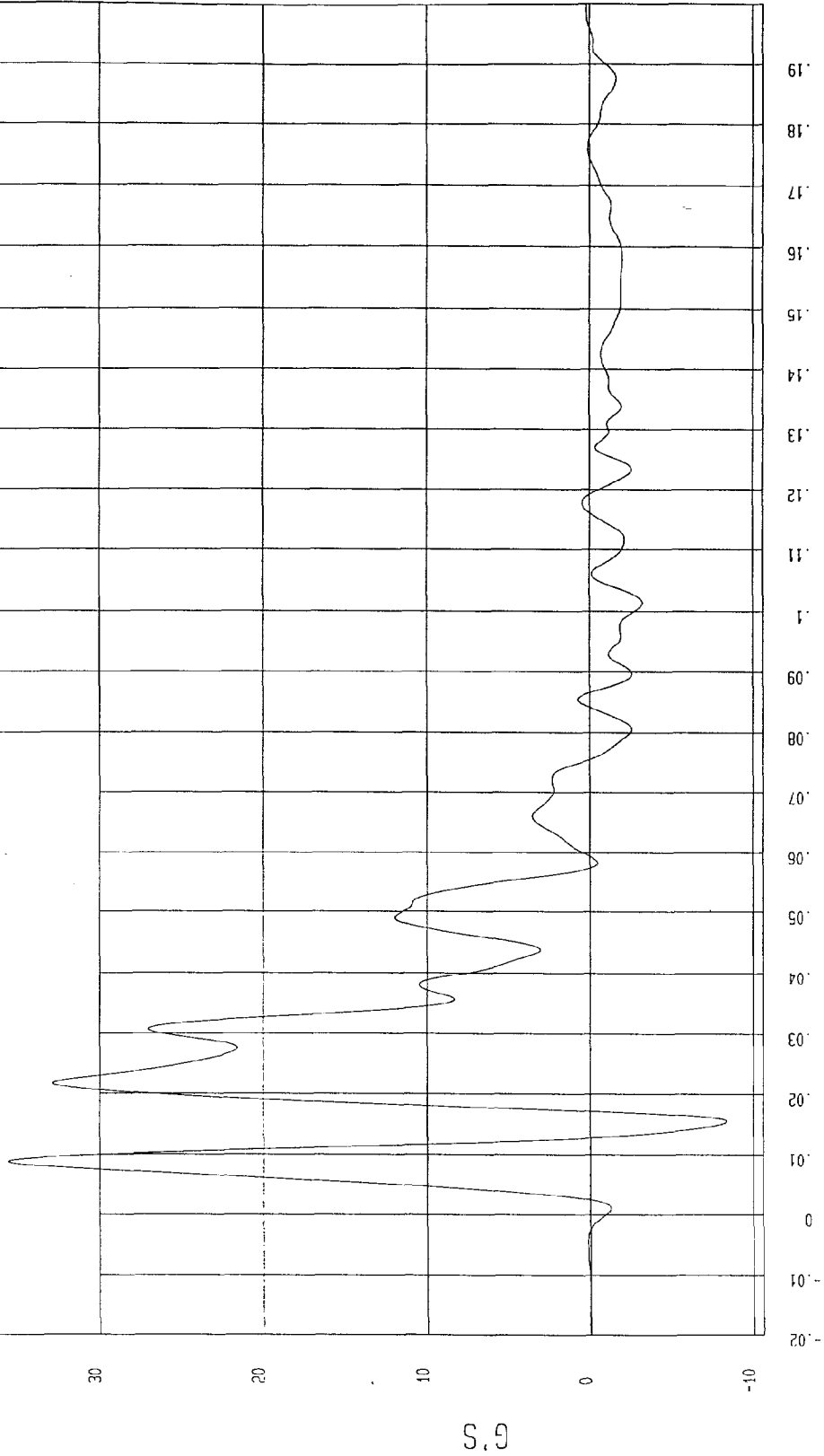


TEST: FMVSS 214D SIDE IMPACT
TEST DATE: 01-15-1998
COMPONENT: 1998 VOLKSWAGEN JETTA (CW5801)
Speed: 32.9 MPH 52.9 KPH

Minimum = -8.39 G'S at 16 msec
Maximum = 35.63 G'S at 9 msec

LEFT SIDE SILL AT REAR SEAT Y ACCELERATION

1 B98005AF.A39 Filterclass (60)



TIME (SECONDS)
MGA Research
03-05-1998 11:46

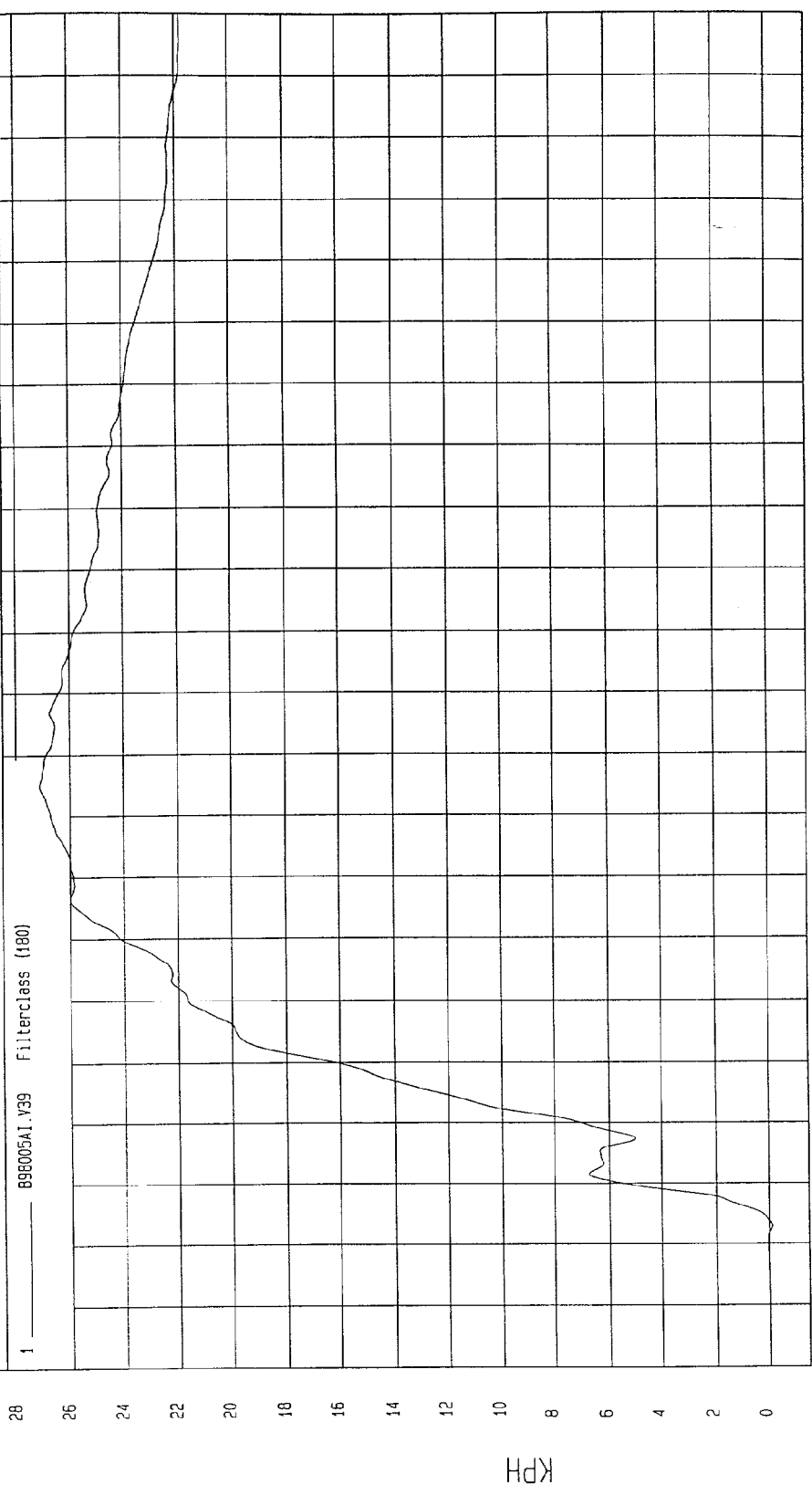
TEST: FMVSS 214D SIDE IMPACT

TEST DATE: 01-15-1998

COMPONENT: 1998 VOLKSWAGEN JETTA (CW5801) Speed: 32.9 MPH 52.9 KPH

Minimum = -.10 KPH at 3 msec Maximum = 27.13 KPH at 75 msec

LEFT SIDE SILL AT REAR SEAT Y VELOCITY



MGA Research
03-04-1998 17:08

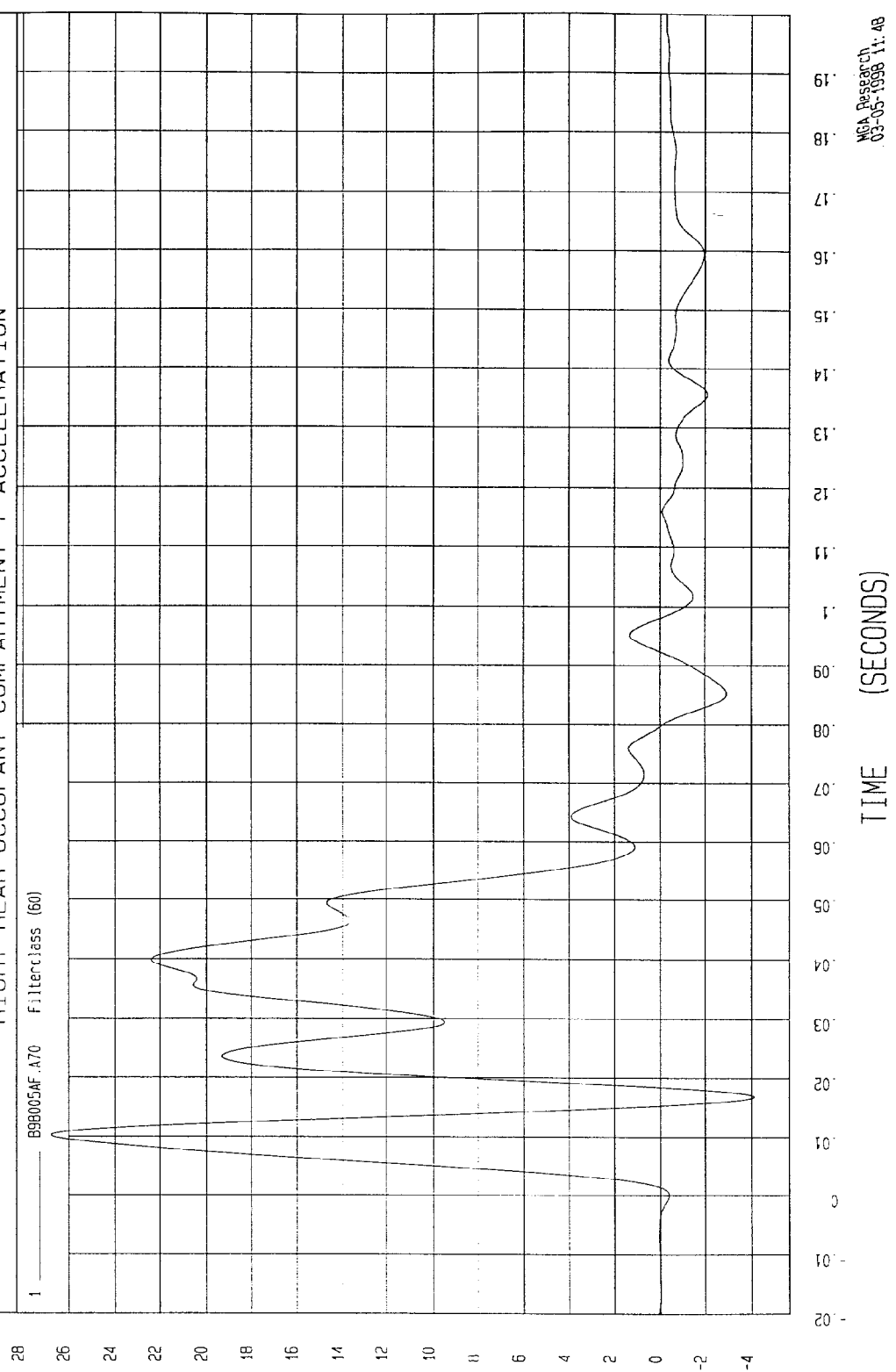
TIME Seconds

TEST: FMVSS 214D SIDE IMPACT TEST DATE: 01-15-1998

COMPONENT: 1998 VOLKSWAGEN JETTA (CW5804) Speed: 32.9 MPH 52.9 KPH

Minimum = -4.10 G'S at 17 msec Maximum = 26.74 G'S at 10 msec

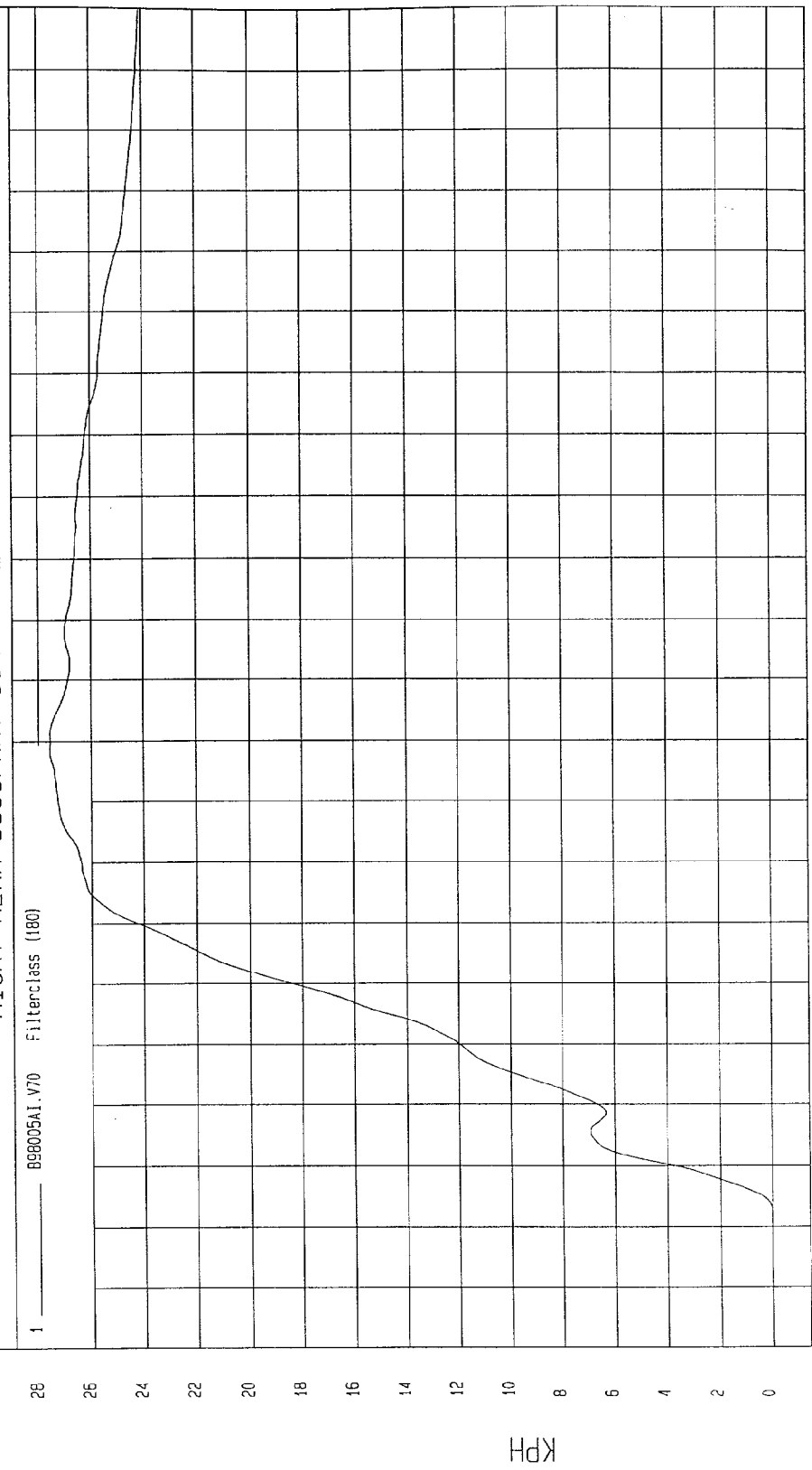
RIGHT REAR OCCUPANT COMPARTMENT Y ACCELERATION



MECA Research
03-05-1998 11:48

TEST: FMVSS 214D SIDE IMPACT	TEST DATE: 01-15-1998
COMPONENT: 1998 VOLKSWAGEN JETTA (CW5801)	Speed: 32.9 MPH 52.9 KPH
Minimum = -3.40E-03 KPH at -14 msec	
Maximum = 27.57 KPH at 76 msec	

RIGHT REAR OCCUPANT COMPARTMENT Y VELOCITY

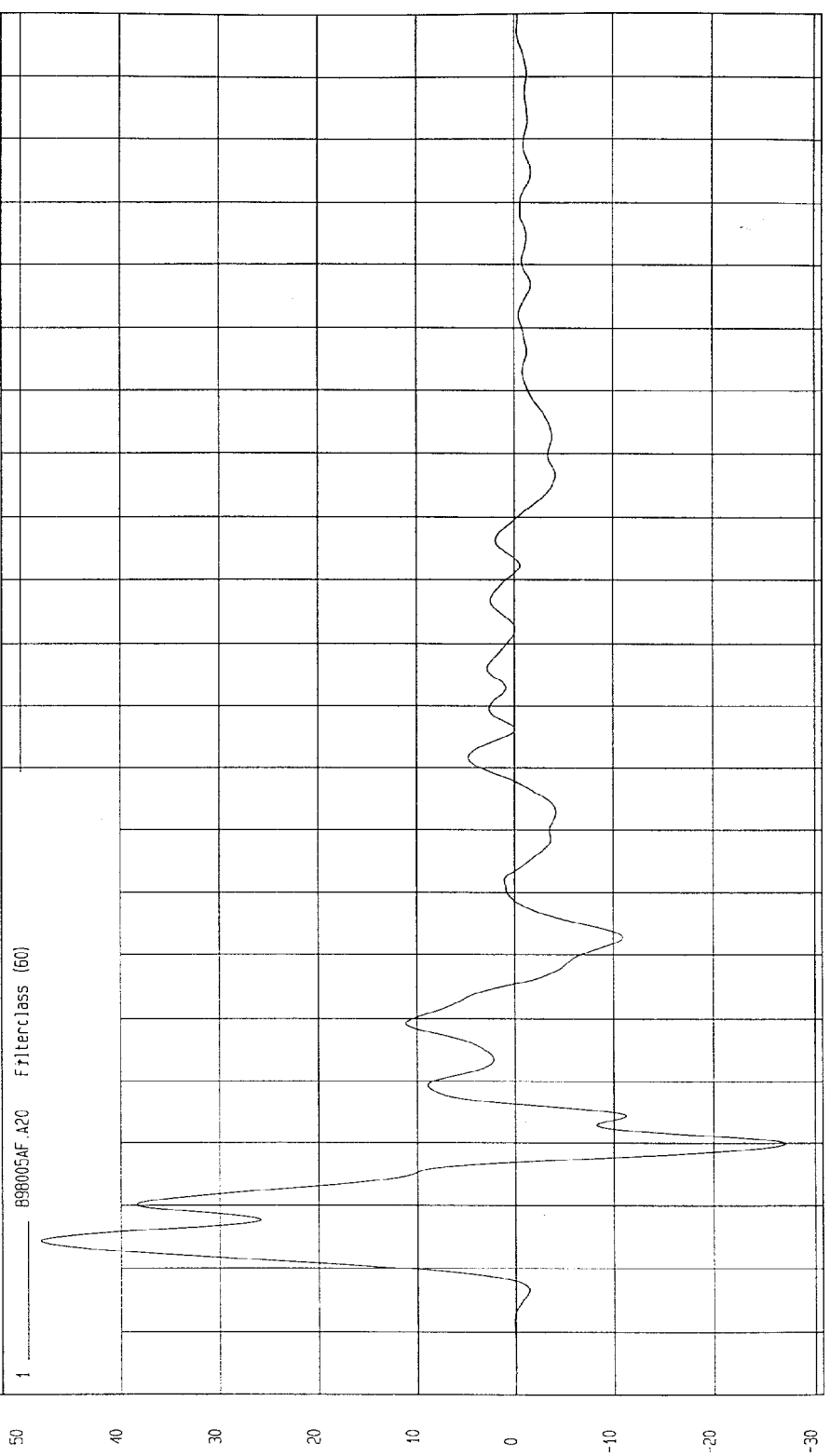


TIME Seconds

MECA Research
03-04-1998 17:09

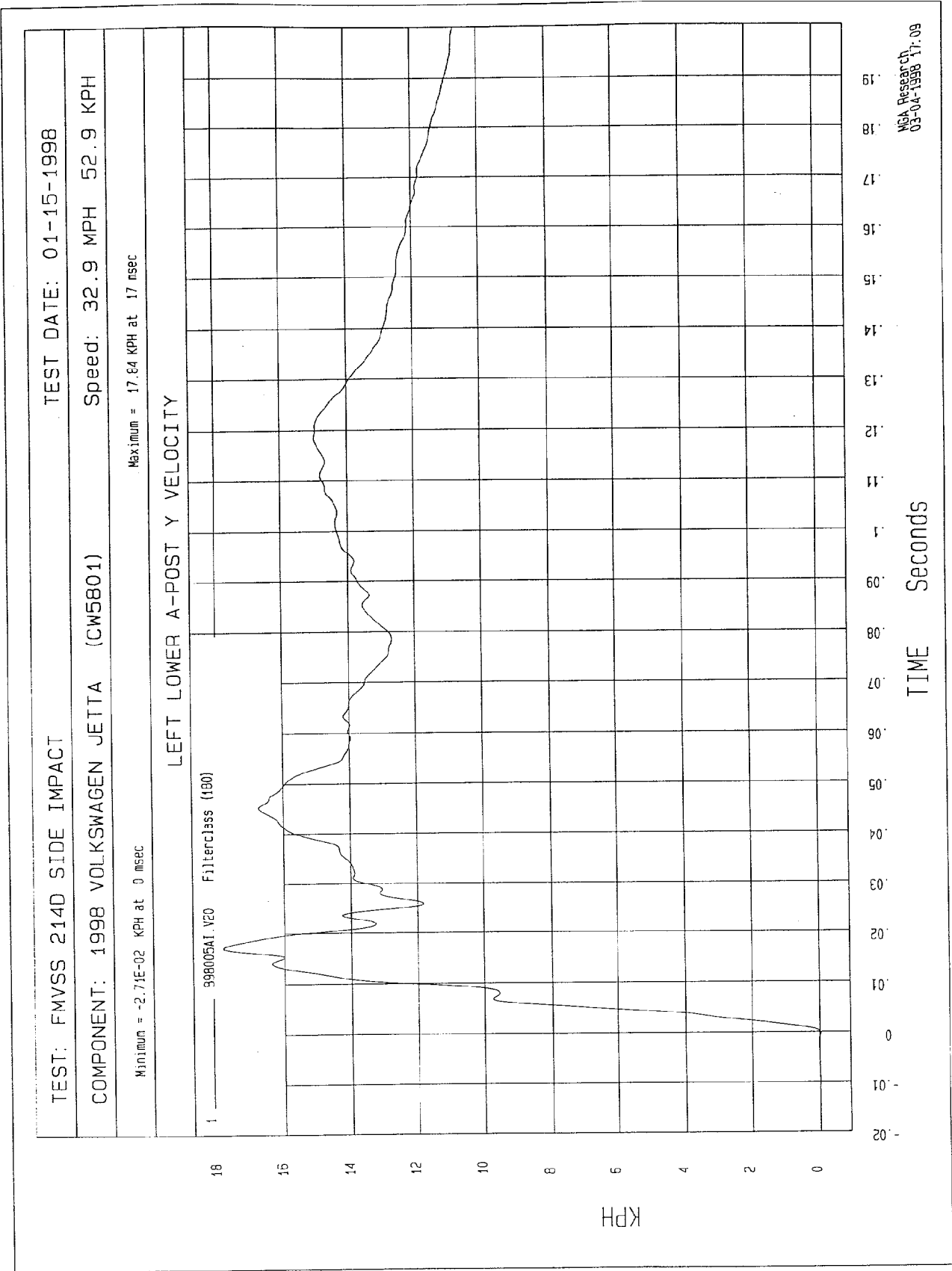
TEST: FMVSS 214D SIDE IMPACT	TEST DATE: 01-15-1998
COMPONENT: 1998 VOLKSWAGEN JETTA (CW5801)	Speed: 32.9 MPH 52.9 KPH
Minimum = -27.01 G'S at 20 msec	
Maximum = 48.14 G'S at 4 msec	

LEFT LOWER A-POST Y ACCELERATION



TIME (SECONDS)

NGA Research
03-05-1998 11:48



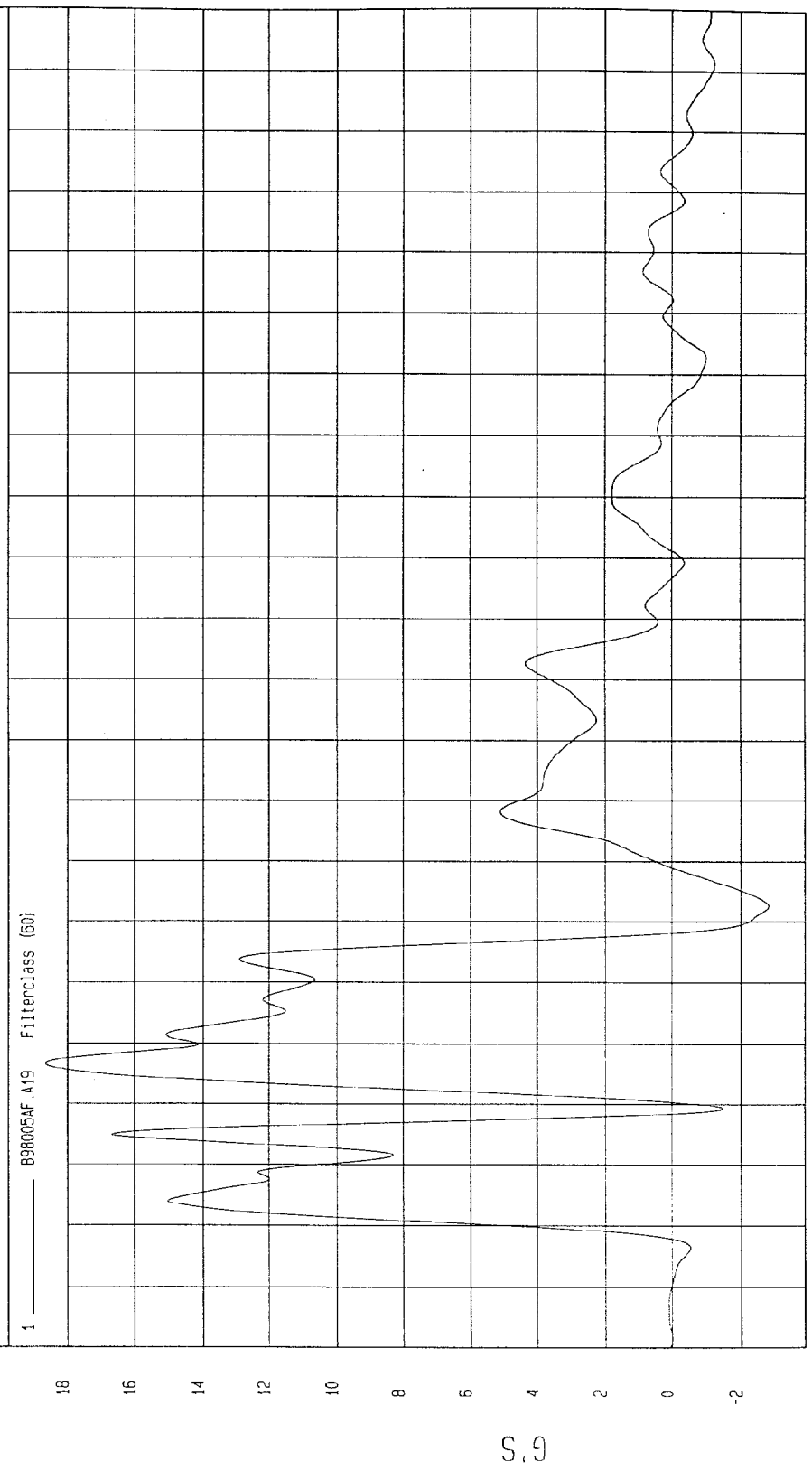
TEST: FMVSS 214D SIDE IMPACT

TEST DATE: 01-15-1998

COMPONENT: 1998 VOLKSWAGEN JETTA (CW5801) Speed: 32.9 MPH 52.9 KPH

Minimum = -2.81 G'S at 53 msec Maximum = 18.65 G'S at 27 msec

LEFT MID A-POST Y ACCELERATION



TIME (SECONDS)

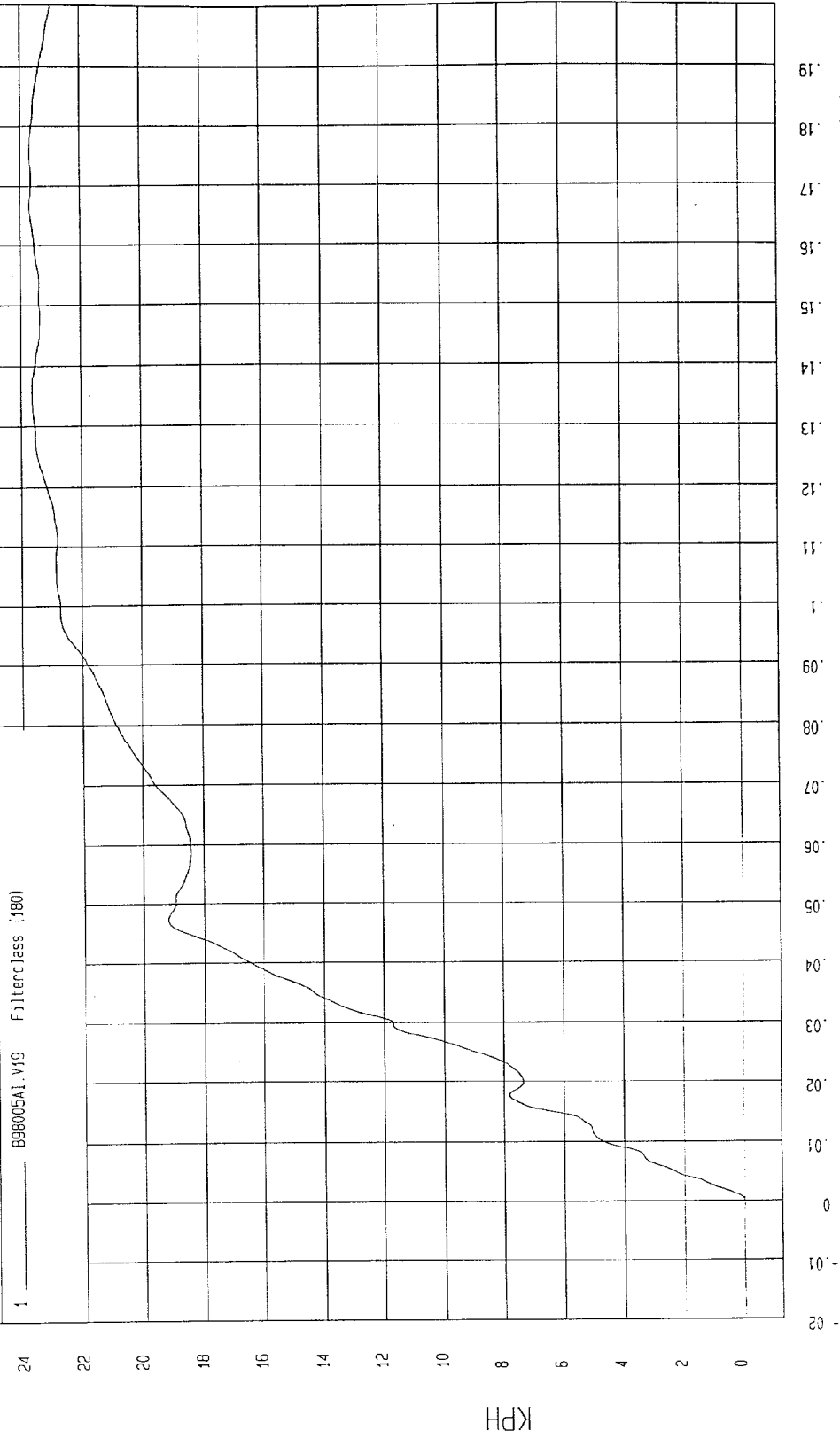
MCA Research
03-05-1998 11:46

TEST: FMVSS 214D SIDE IMPACT TEST DATE: 01-15-1998

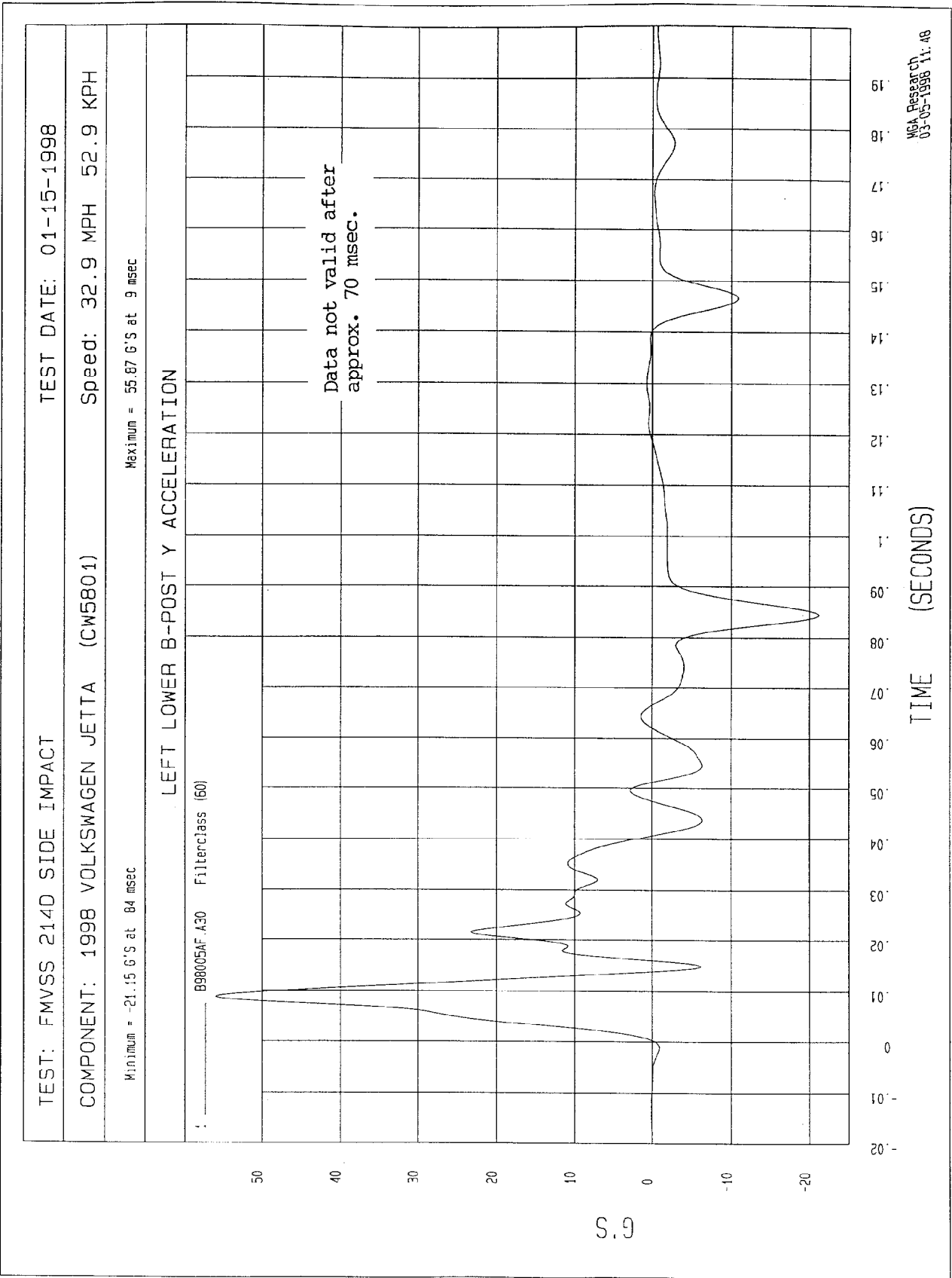
COMPONENT: 1998 VOLKSWAGEN JETTA (CW5801) Speed: 32.9 MPH 52.9 KPH

Minimum = -2.09E-02 KPH at 0 msec Maximum = 23.71 KPH at 166 msec

LEFT MID A-POST Y VELOCITY

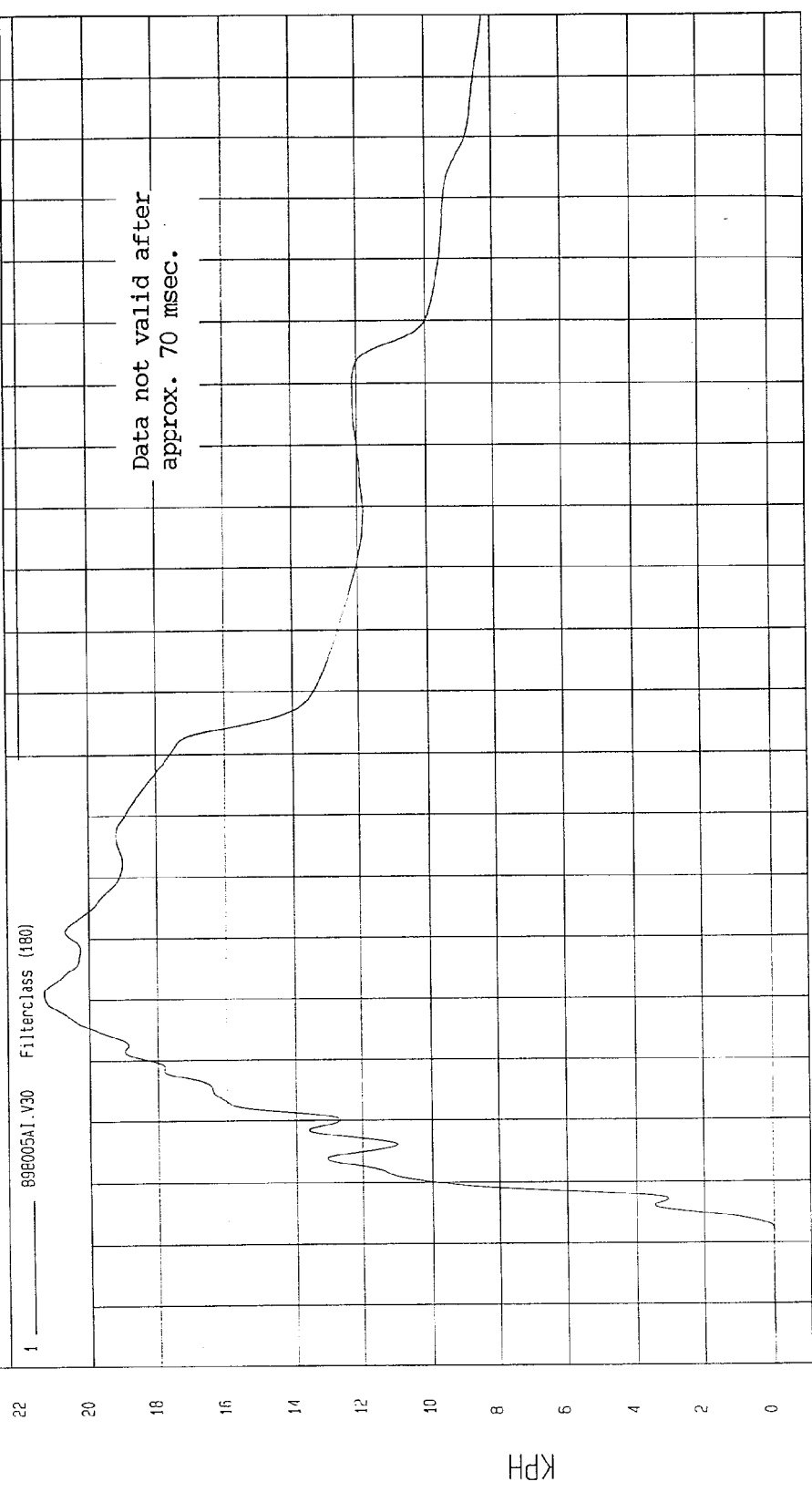


MGA Research
03-04-1998 17.10



TEST: FMVSS 214D SIDE IMPACT	TEST DATE: 01-15-1998
COMPONENT: 1998 VOLKSWAGEN JETTA (CW5801)	Speed: 32.9 MPH 52.9 KPH
Minimum = -.01 KPH at 2 msec	Maximum = 21.30 KPH at 41 msec

LEFT LOWER B-POST Y VELOCITY



Data not valid after approx. 70 msec.

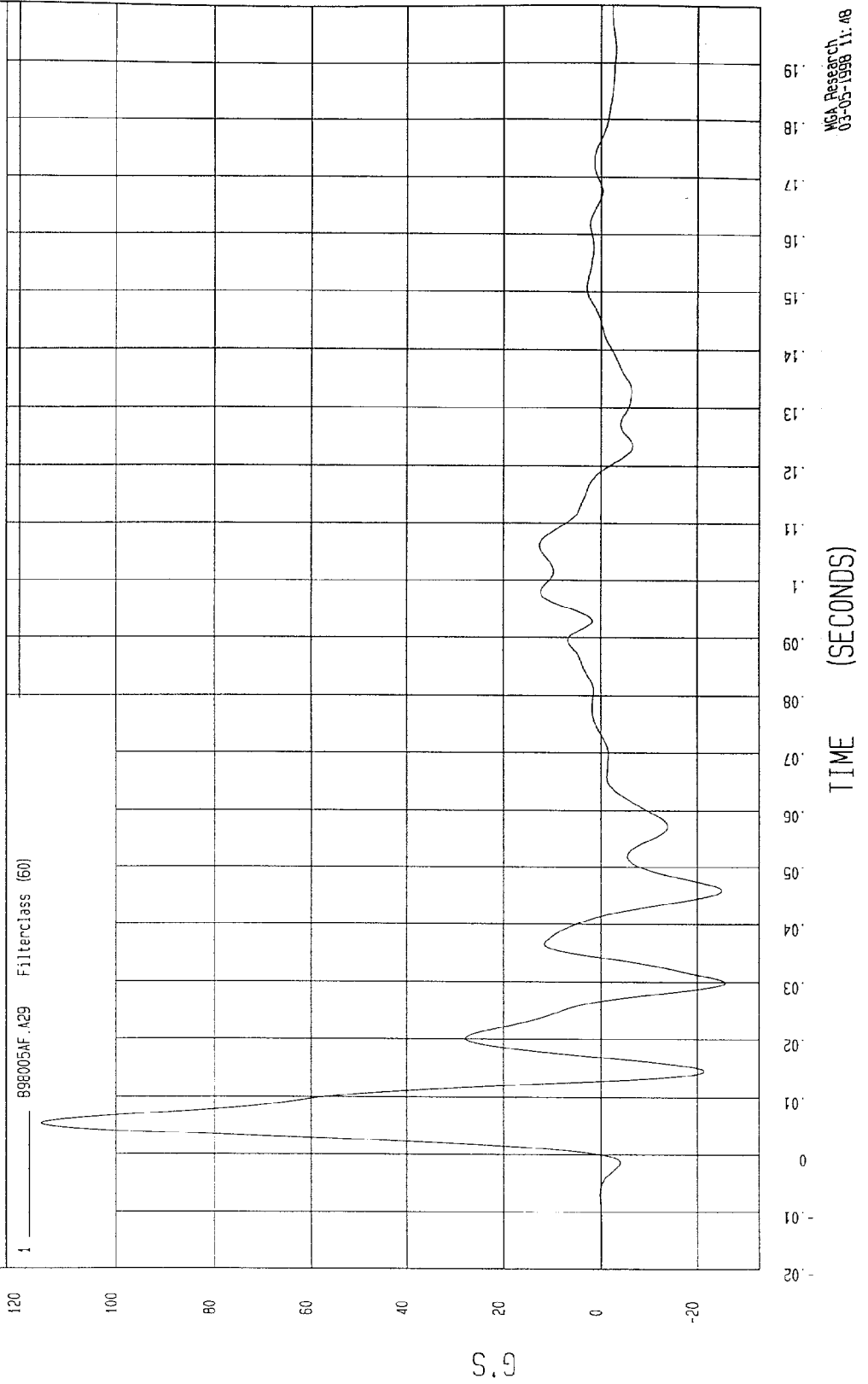
WCA Research
03-04-1998 17:10

TIME Seconds

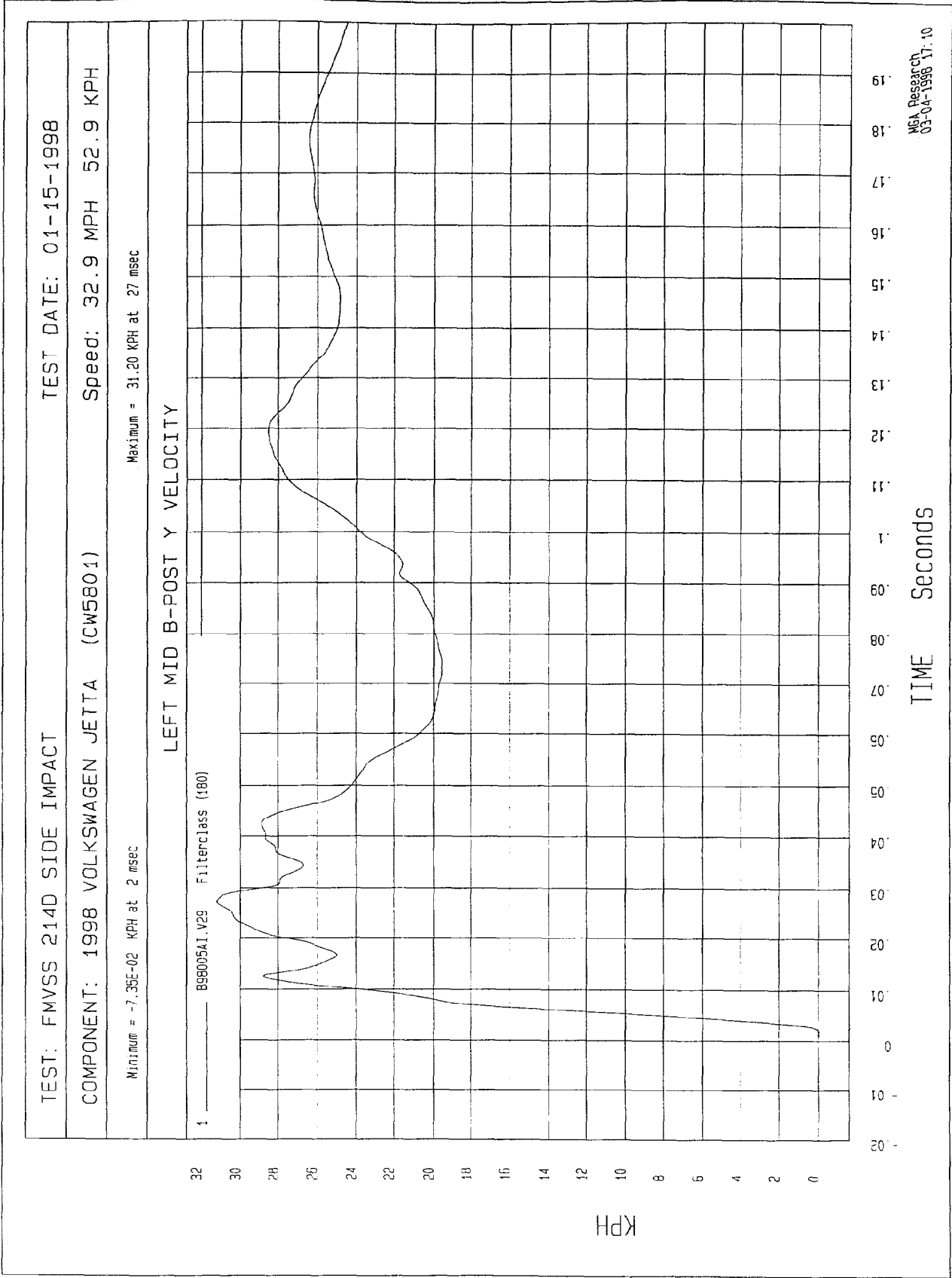
TEST: FMVSS 214D SIDE IMPACT TEST DATE: 01-15-1998
COMPONENT: 1998 VOLKSWAGEN JETTA (CW5801) Speed: 32.9 MPH 52.9 KPH

Minimum = -25.62 G'S at 30 msec Maximum = 115.65 G'S at 5 msec

LEFT MID B-POST Y ACCELERATION



MGA Research
03-05-1998 11:48



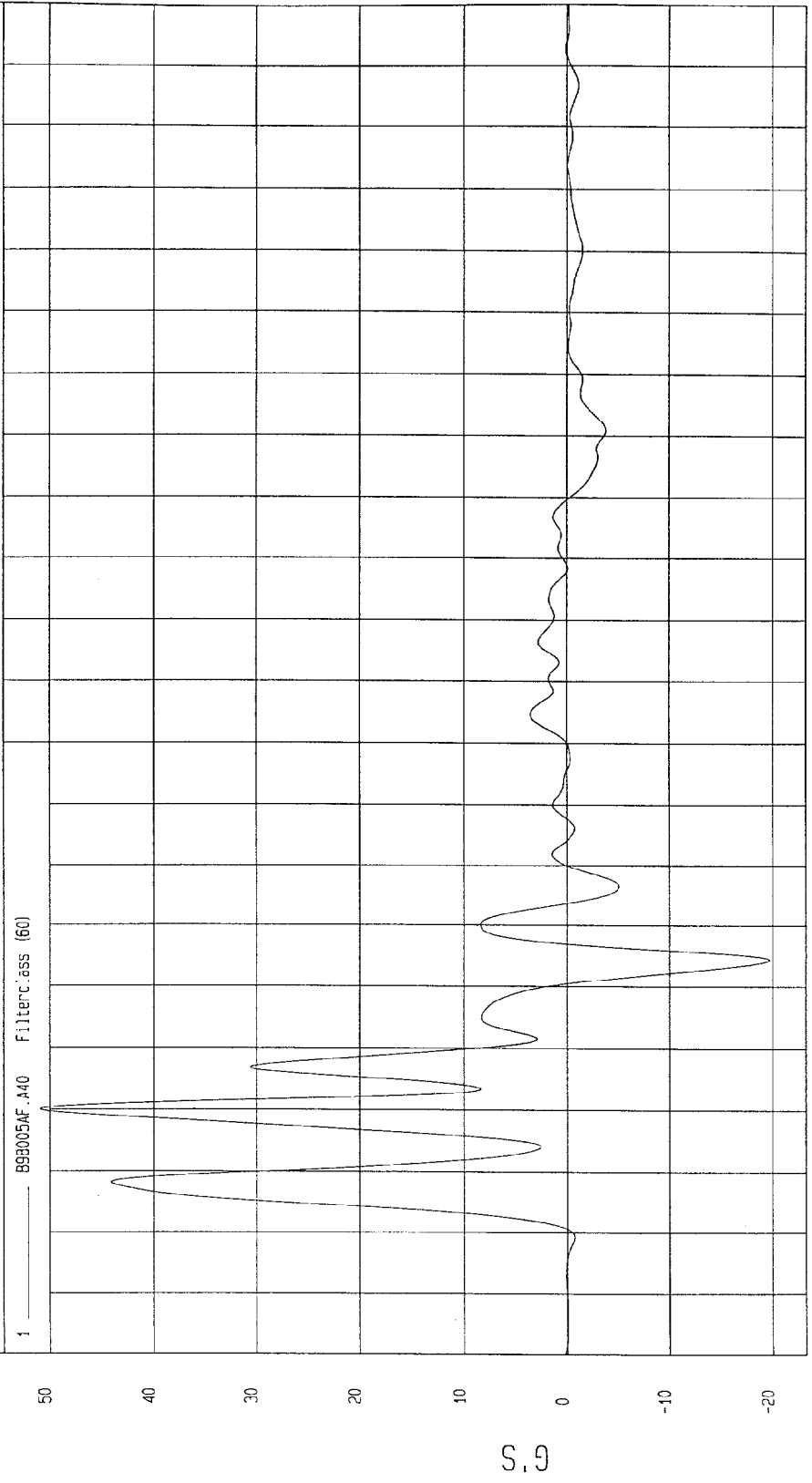
TEST: FMVSS 214D SIDE IMPACT

TEST DATE: 01-15-1998

COMPONENT: 1998 VOLKSWAGEN JETTA (CW5801) Speed: 32.9 MPH 52.9 KPH

Minimum = -19.68 G'S at 44 msec Maximum = 50.94 G'S at 20 msec

DRIVER SEAT TRACK Y ACCELERATION

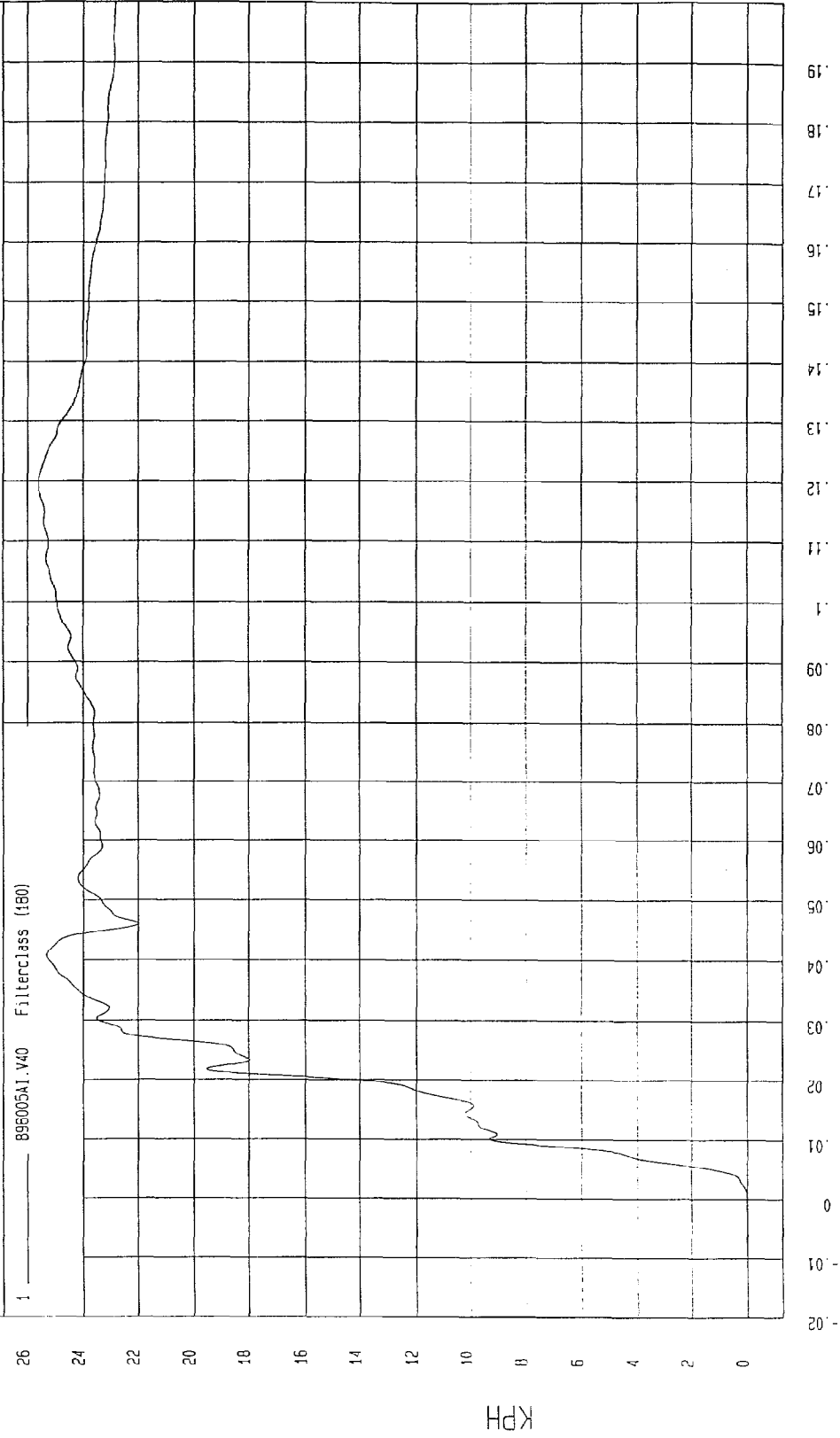


TIME (SECONDS)

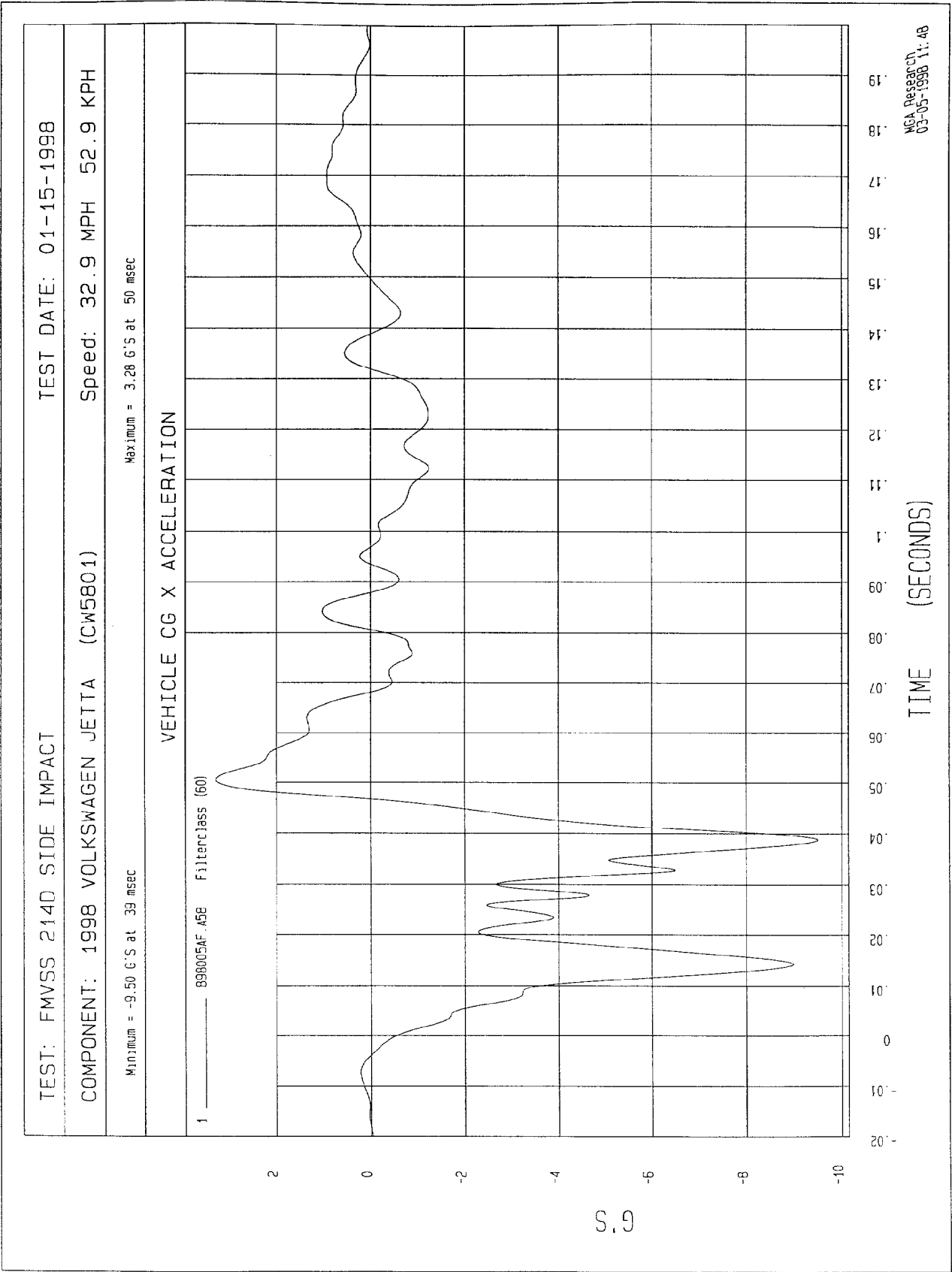
MSA Research
03-05-1998 11: 47

TEST: FMVSS 214D SIDE IMPACT	TEST DATE: 01-15-1998
COMPONENT: 1998 VOLKSWAGEN JETTA (CW58041)	Speed: 32.9 MPH 52.9 KPH
Minimum = -1.63E-03 KPH at -10 msec	Maximum = 25.58 KPH at 120 msec

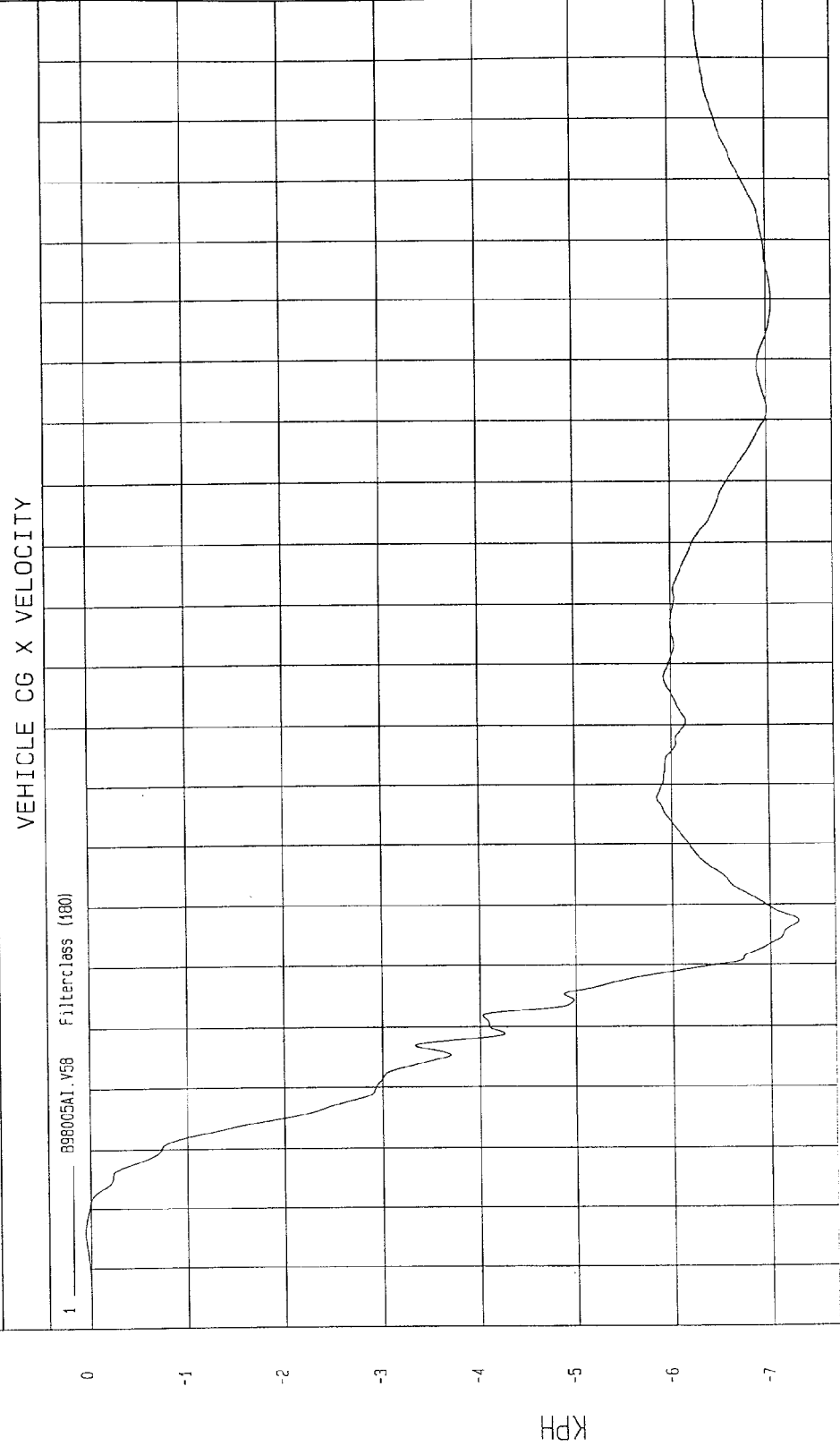
DRIVER SEAT TRACK Y VELOCITY



MGA Research
03-04-1998 17:09



TEST: FMVSS 214D SIDE IMPACT	TEST DATE: 01-15-1998
COMPONENT: 1998 VOLKSWAGEN JETTA (CW5801)	Speed: 32.9 MPH 52.9 KPH
Minimum = -7.26 KPH at 47 msec	
Maximum = 5.11E-02 KPH at -4 msec	



TIME Seconds

MECA Research
03-04-1998 11: 40

TEST: FMVSS 214D SIDE IMPACT

TEST DATE: 01-15-1998

Speed: 32.9 MPH 52.9 KPH

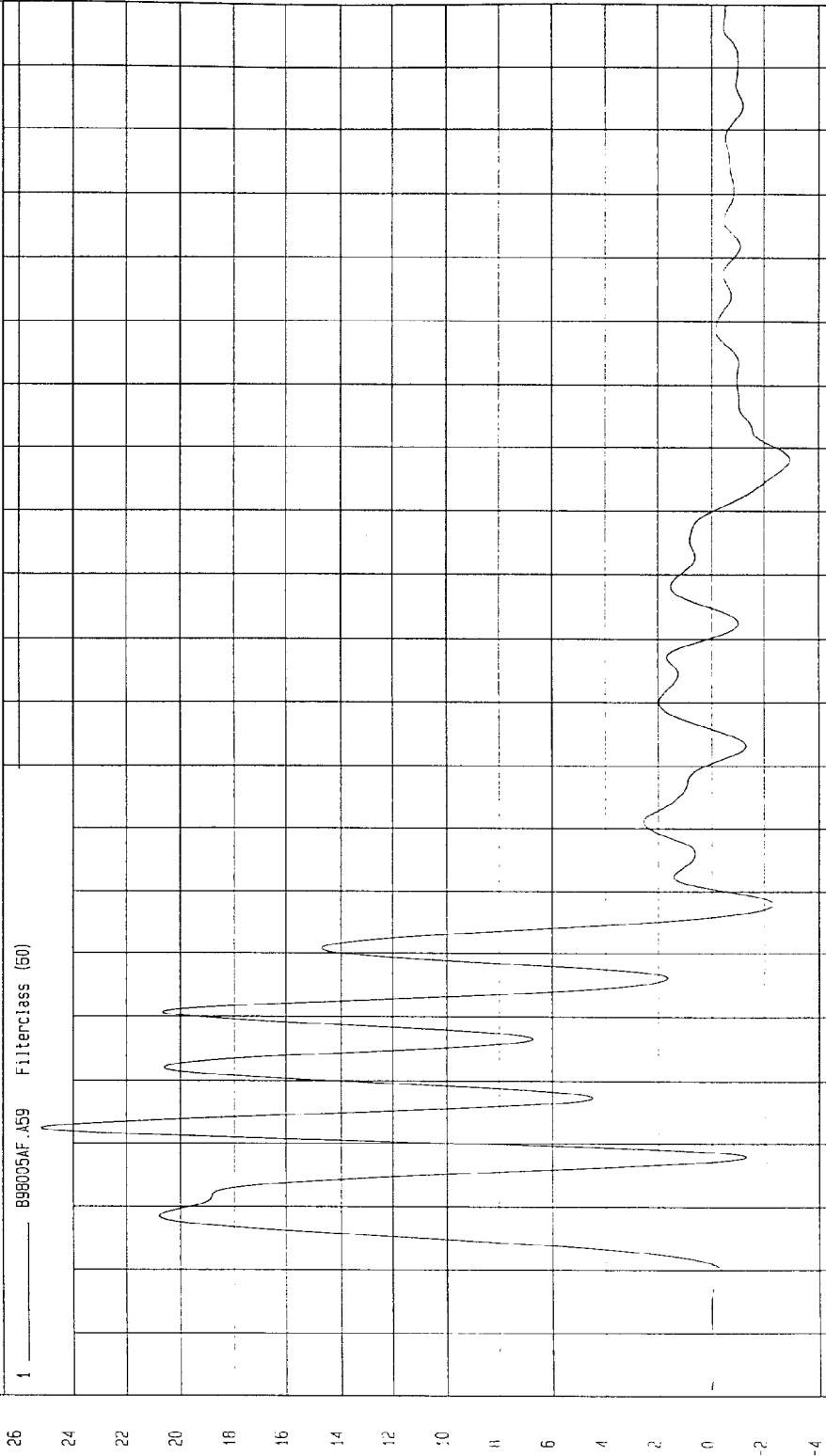
COMPONENT: 1998 VOLKSWAGEN JETTA (CW5801)

Maximum = 25.19 G'S at 22 msec

Minimum = -2.94 G'S at 128 msec

VEHICLE CG Y ACCELERATION

1 B98005AF.A59 Filterclass (50)



NSA Research
03-05-1998 11:48

TIME (SECONDS)

G

TEST DATE: 01-15-1998

TEST: FMVSS 214D SIDE IMPACT

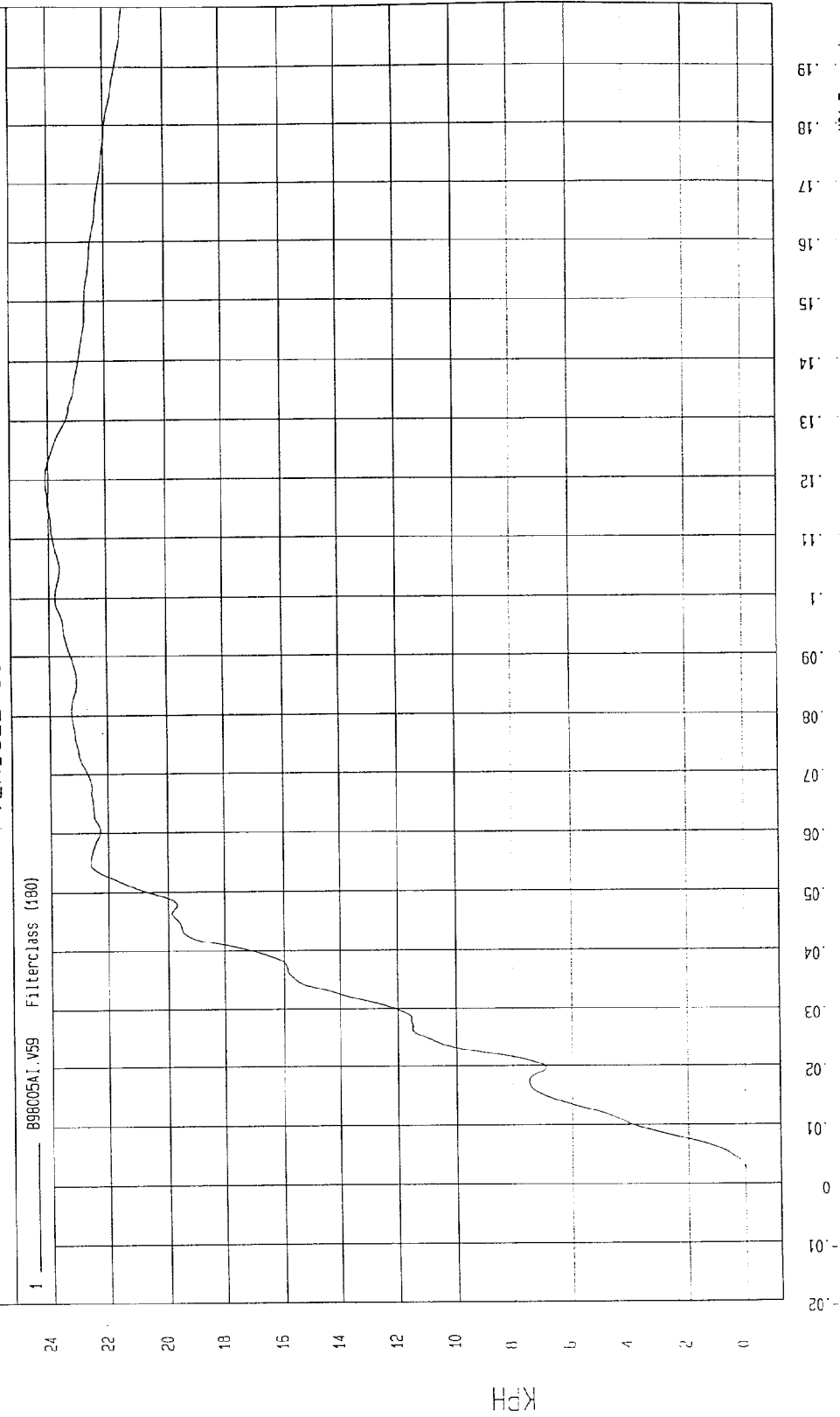
Speed: 32.9 MPH 52.9 KPH

COMPONENT: 1998 VOLKSWAGEN JETTA (CW5B01)

Maximum = 24.10 KPH at 120 msec

Minimum = 0 KPH at -20 msec

VEHICLE CG Y VELOCITY



NSA Research
03-04-1998 17:10

TIME Seconds

TEST: FMVSS 214D SIDE IMPACT

TEST DATE: 01-15-1998

Speed: 32.9 MPH 52.9 KPH

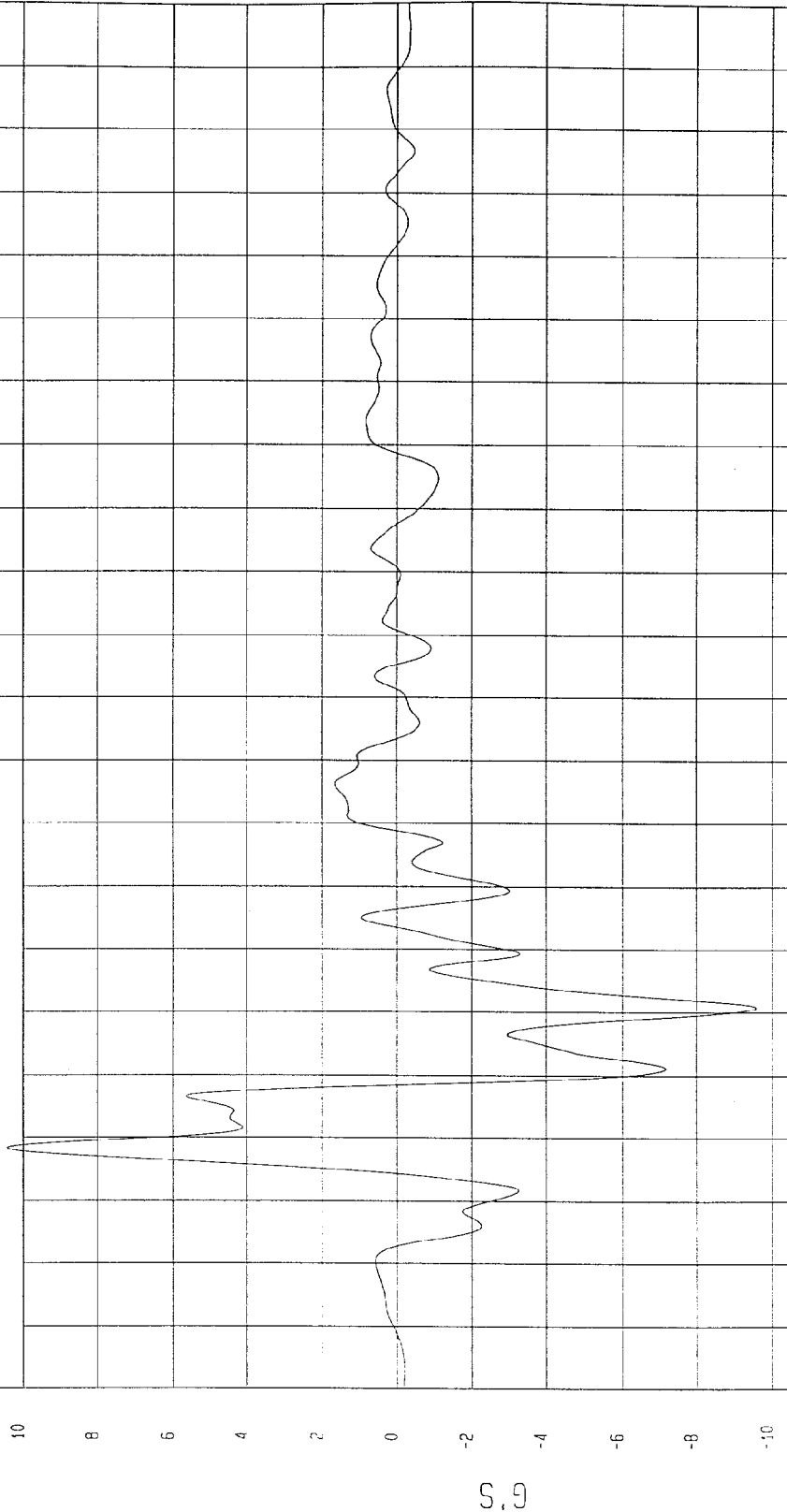
COMPONENT: 1998 VOLKSWAGEN JETTA (CW5801)

Maximum = 10.43 G'S at 18 msec

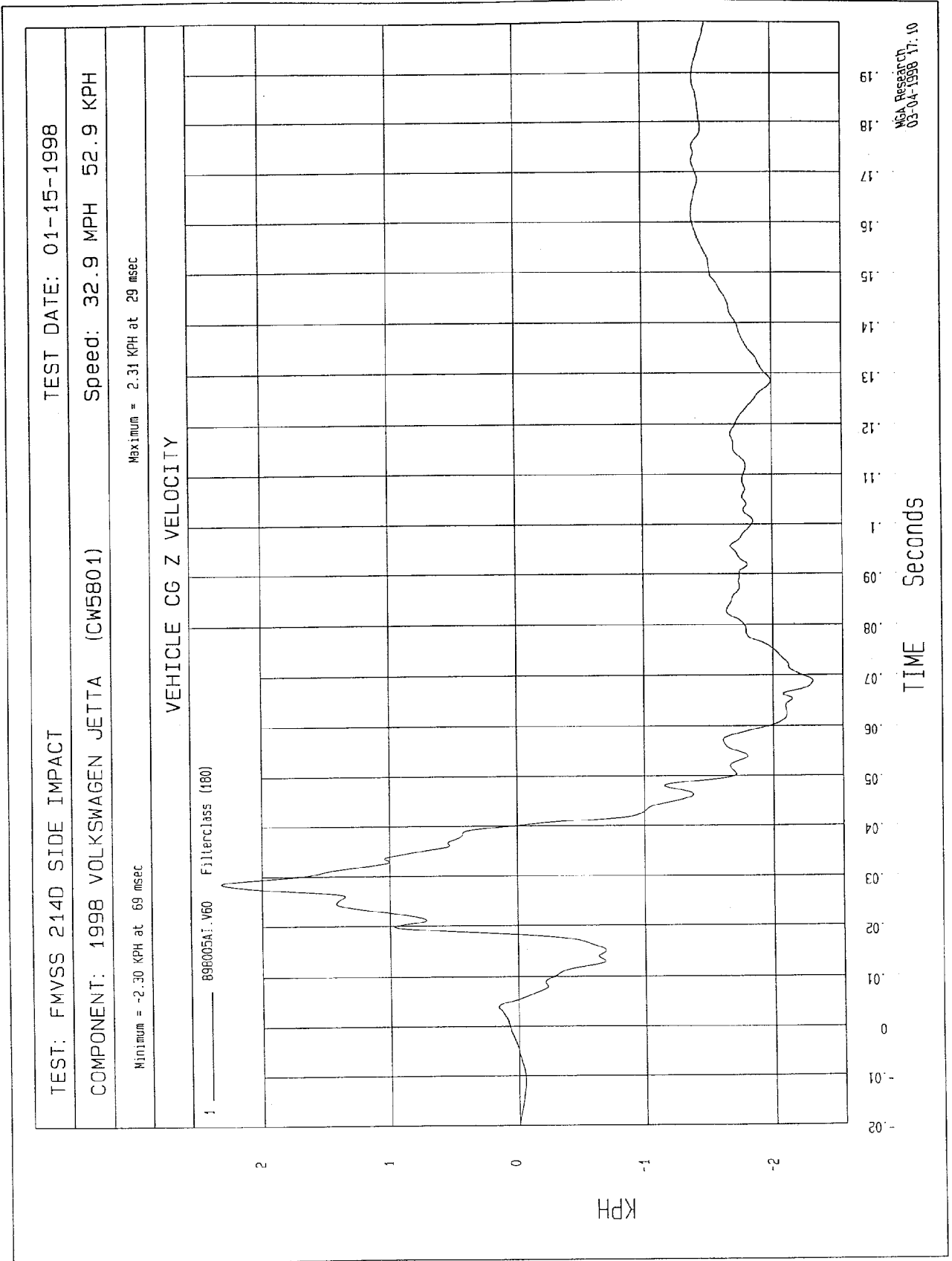
Minimum = -9.58 G'S at 41 msec

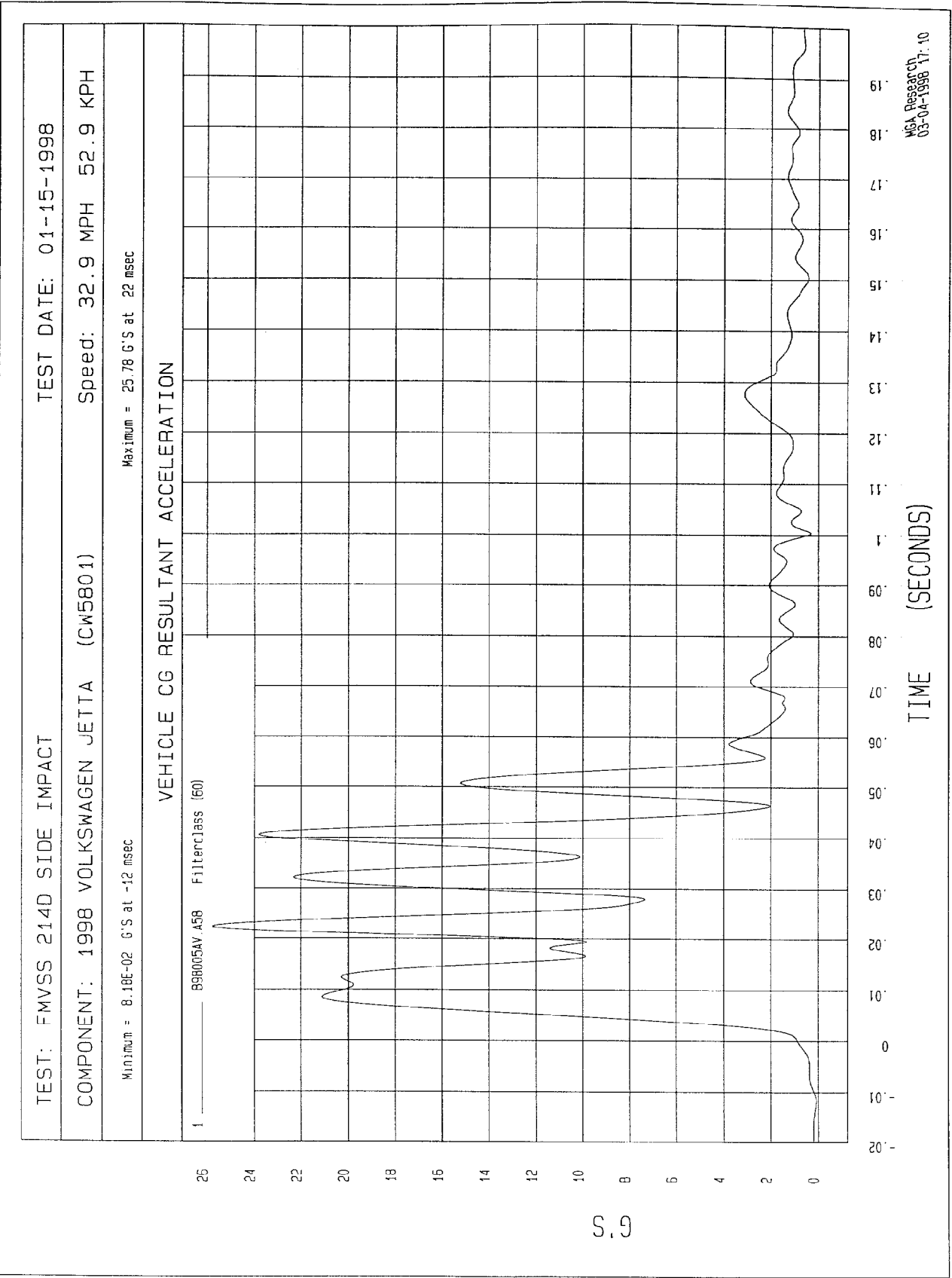
VEHICLE CG Z ACCELERATION

1 B98005AF.A60 Filterclass (60)



WSA Research
03-05-1998 11:49





TEST: FMVSS 214D SIDE IMPACT

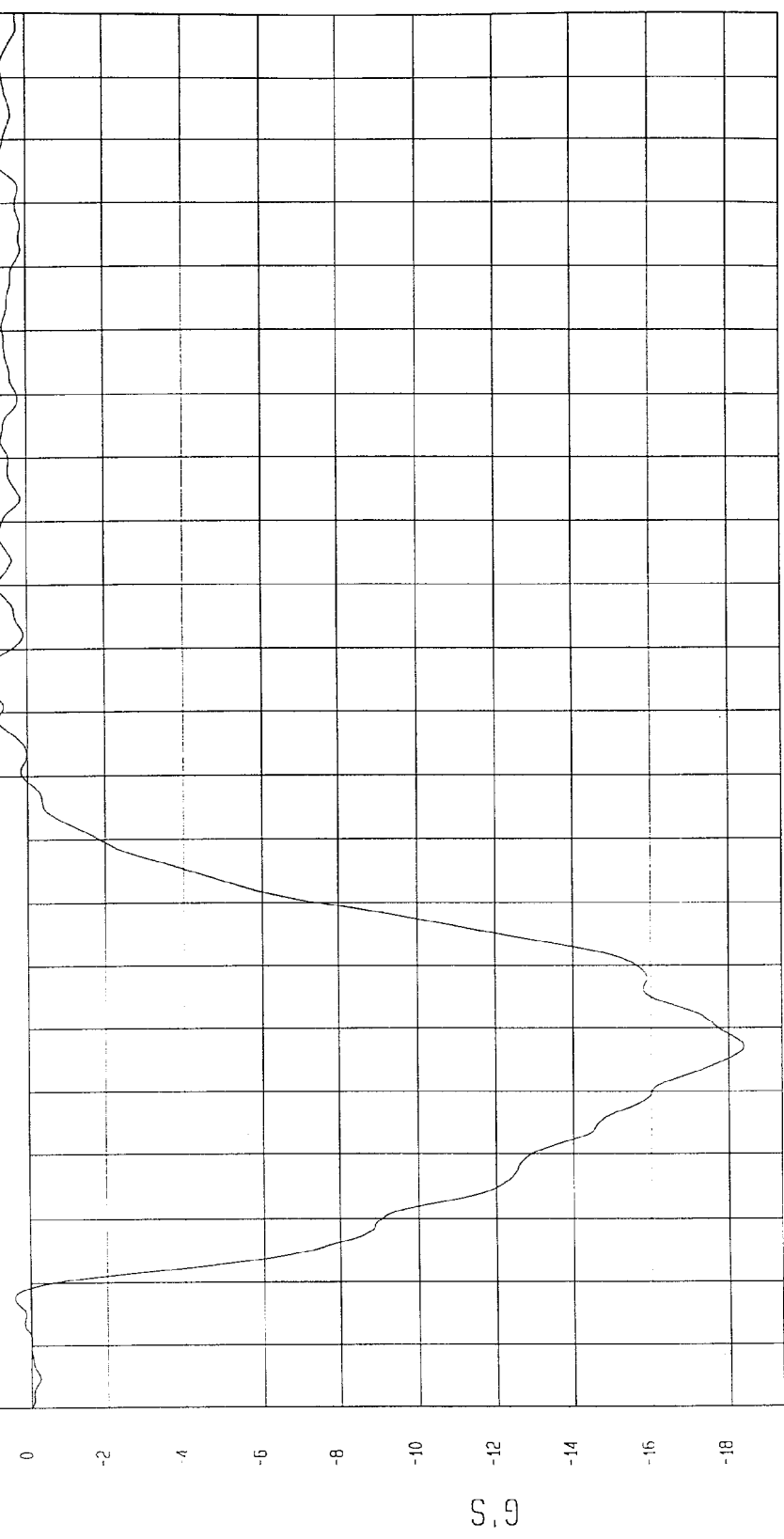
TEST DATE: 01-15-1998

COMPONENT: 1998 VOLKSWAGEN JETTA (CW5801) Speed: 32.9 MPH 52.9 KPH

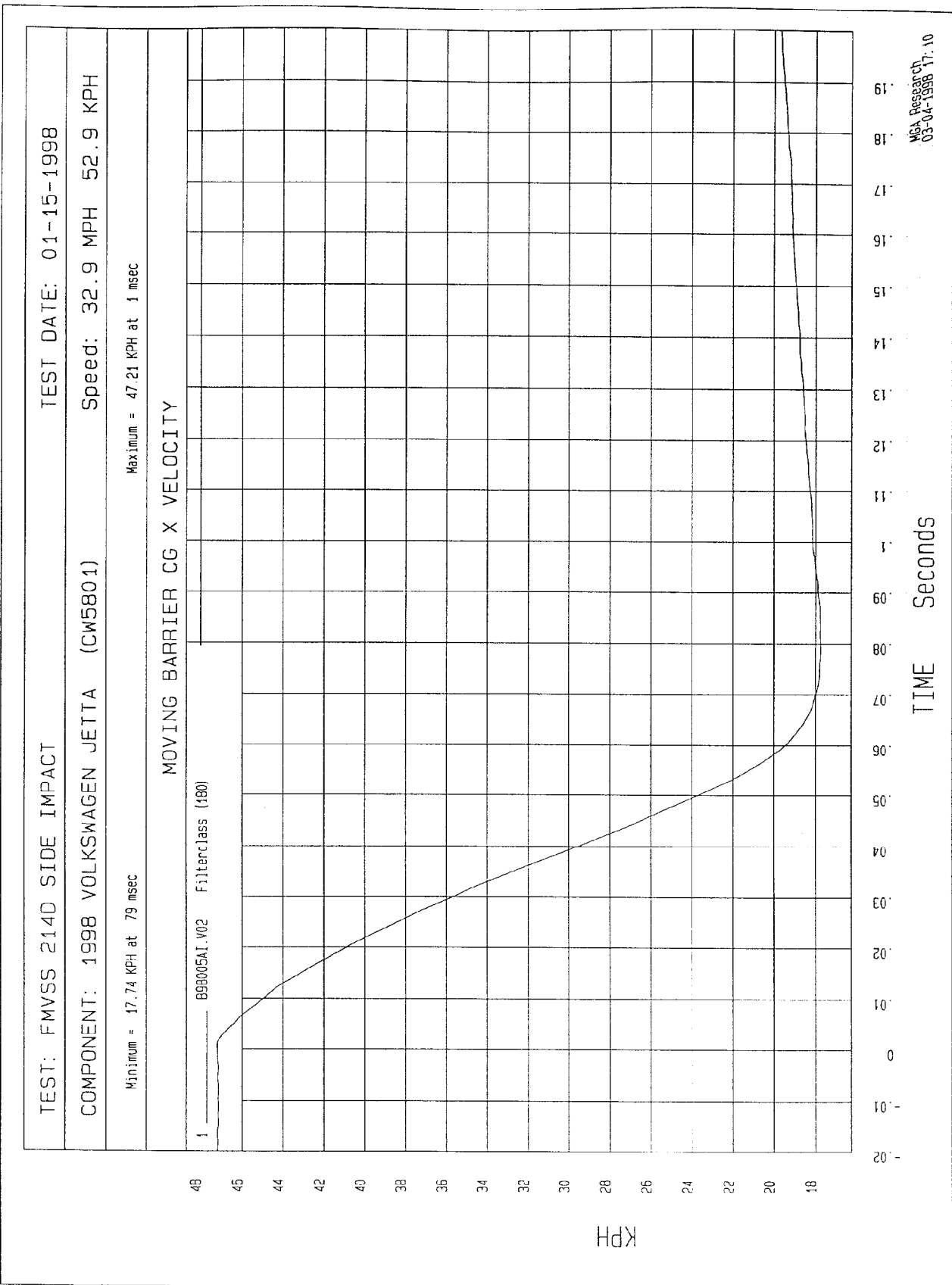
Minimum = -18.38 G'S at 37 msec Maximum = .92 G'S at 97 msec

MOVING BARRIER CG X ACCELERATION

1 B98005AF.A02 Filterclass (60)



MCA Research
03-05-1998 11:49



TEST: FMVSS 214D SIDE IMPACT

TEST DATE: 01-15-1998

COMPONENT: 1998 VOLKSWAGEN JETTA (CW5801)

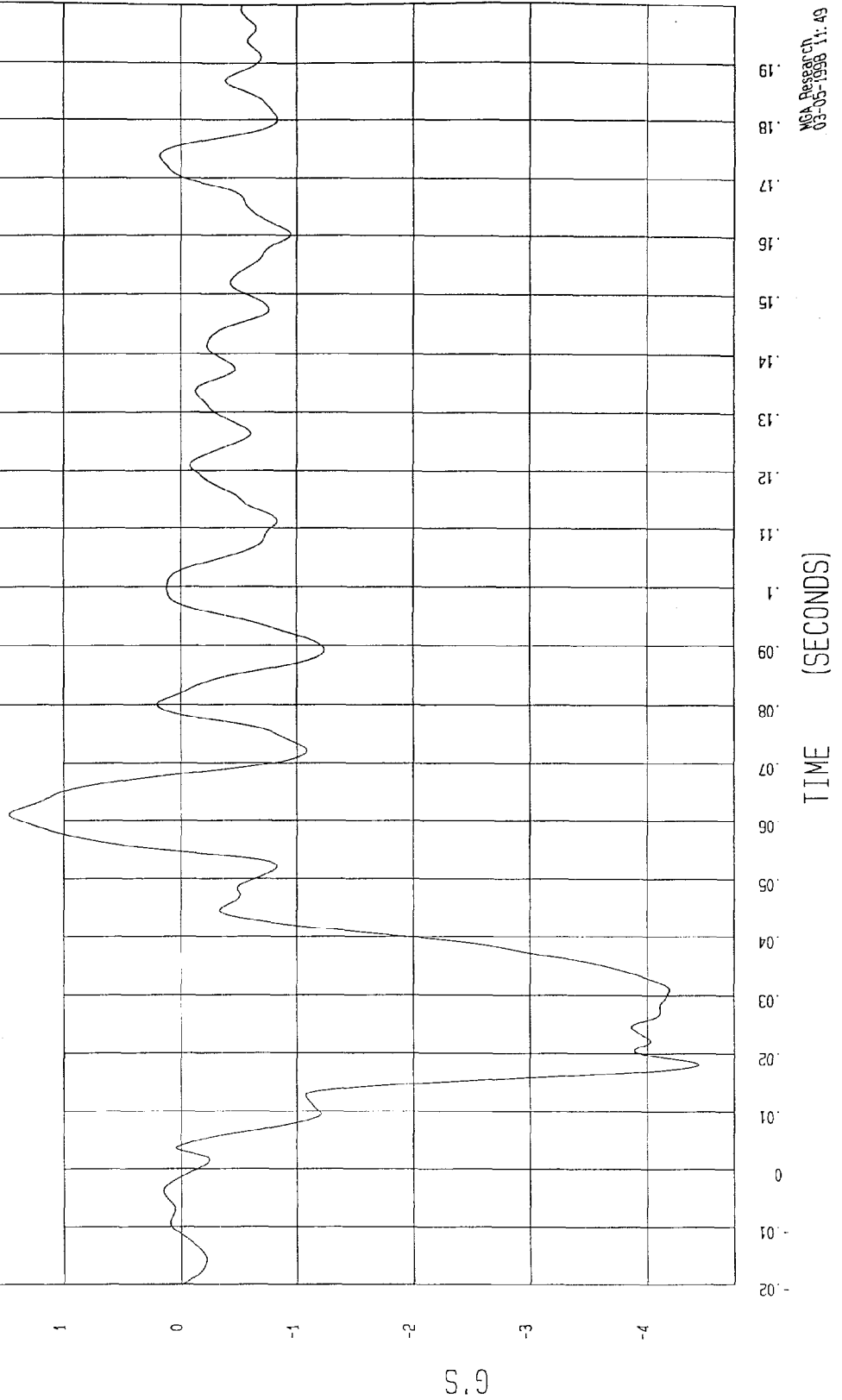
Speed: 32.9 MPH 52.9 KPH

Minimum = -4.43 G'S at 18 msec

Maximum = 1.46 G'S at 61 msec

MOVING BARRIER CG Y ACCELERATION

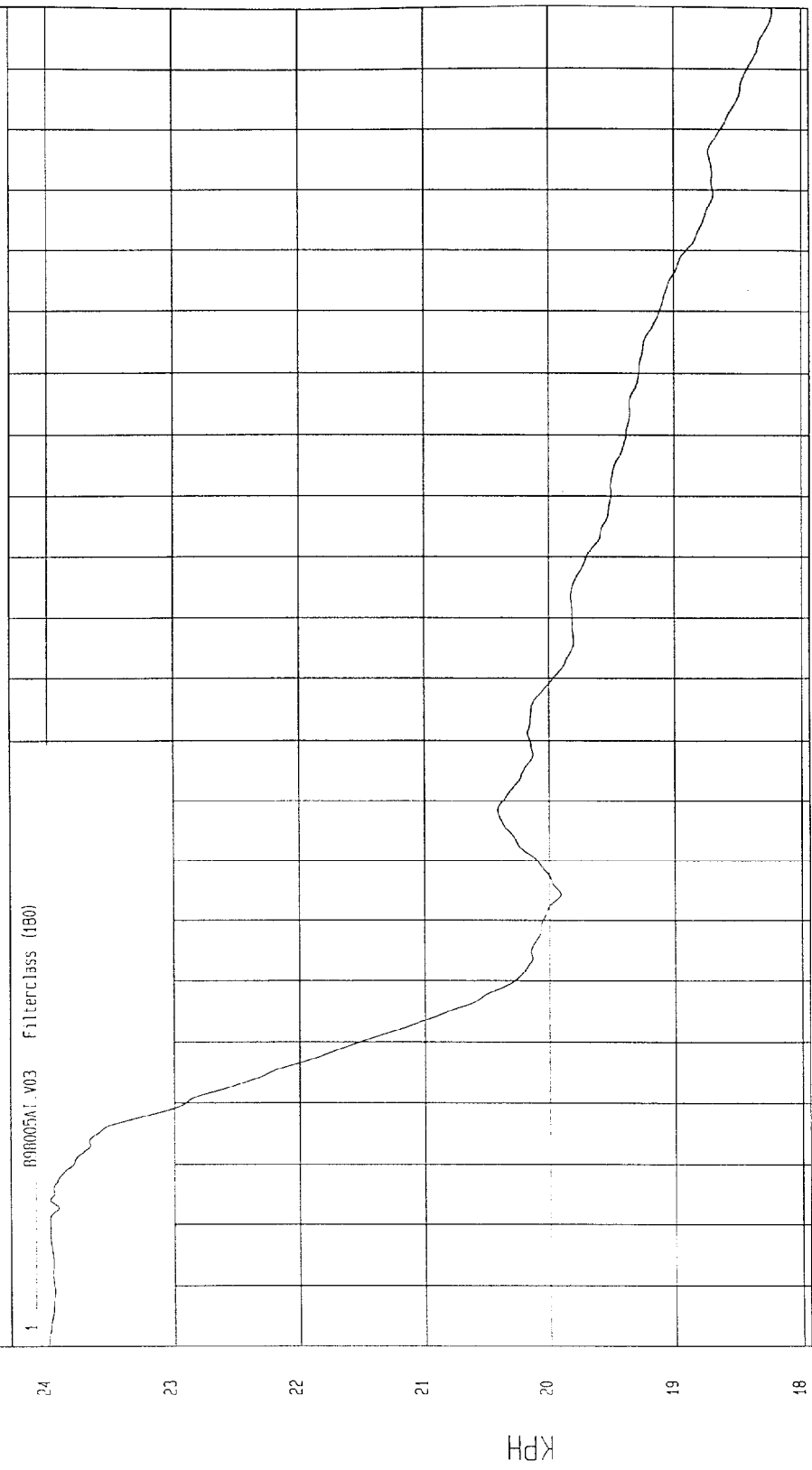
1 898005AF A03 Filterclass (60)



WGA Research
03-05-1998 11:49

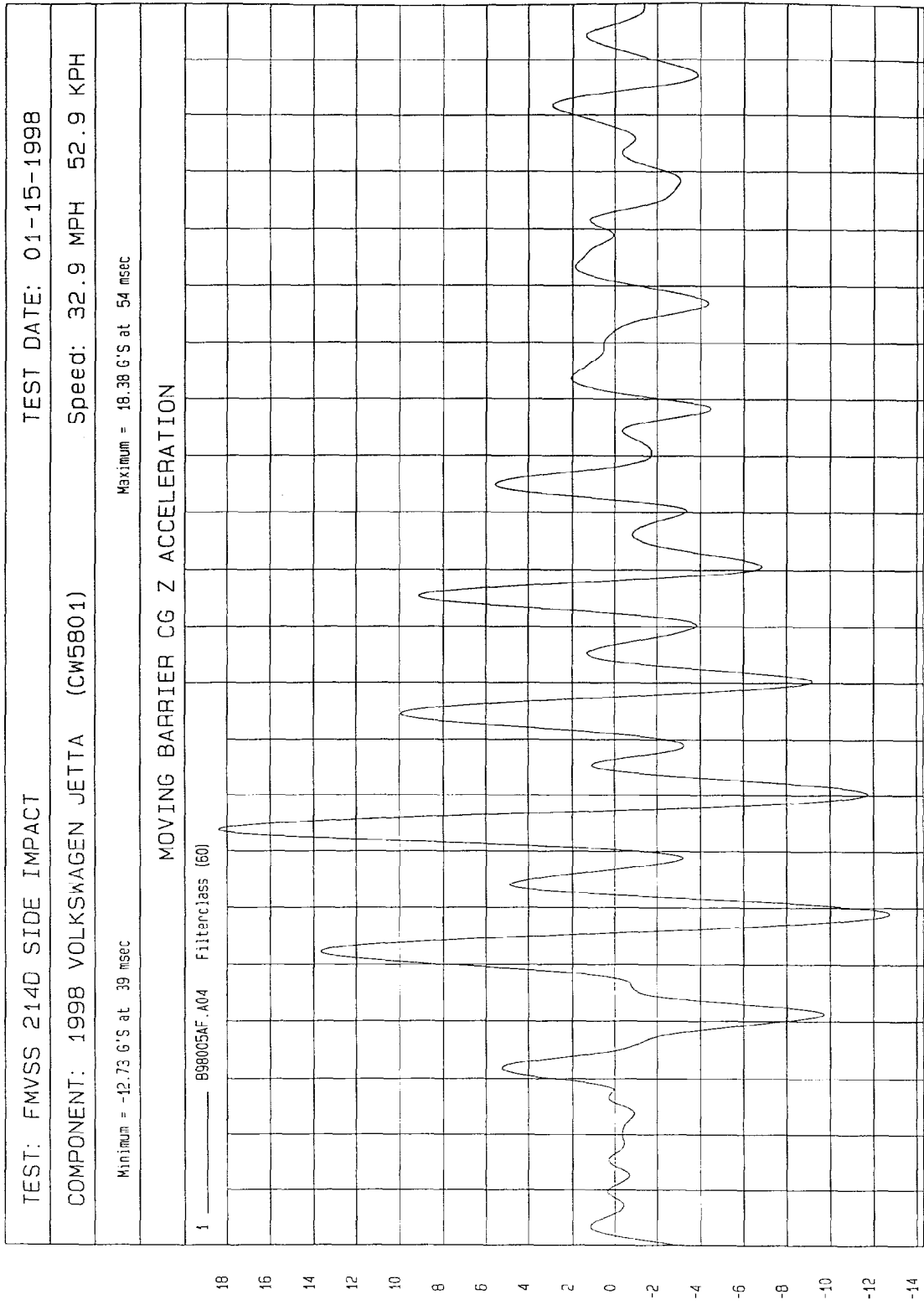
TEST: FMVSS 214D SIDE IMPACT	TEST DATE: 01-15-1998
COMPONENT: 1998 VOLKSWAGEN JETTA (CW5801)	Speed: 32.9 MPH 52.9 KPH
Minimum = 18.22 KPH at 200 msec	Maximum = 24 KPH at -20 msec

MOVING BARRIER CG Y VELOCITY

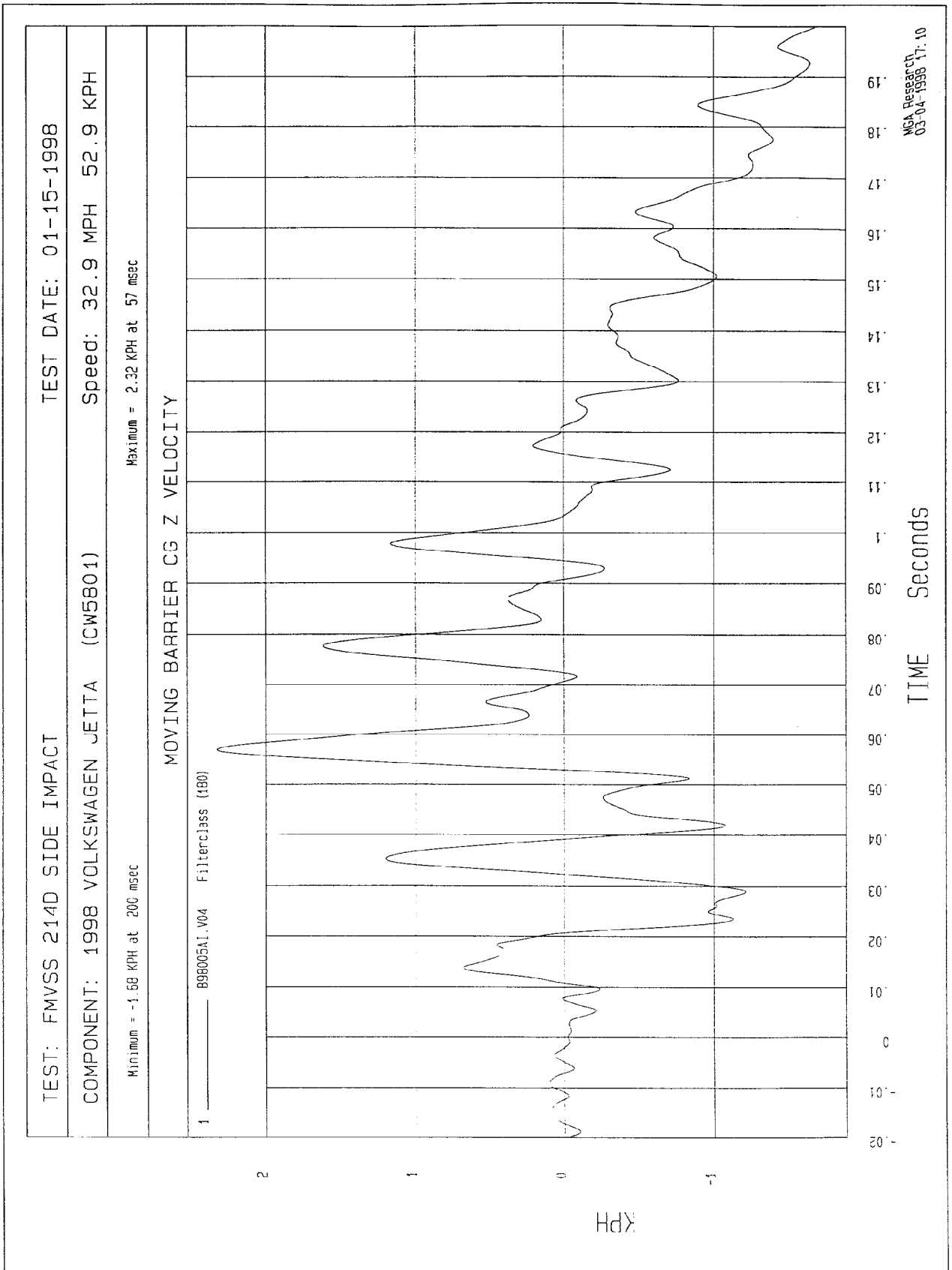


TIME Seconds

NCA Research
03-04-1998 17.10

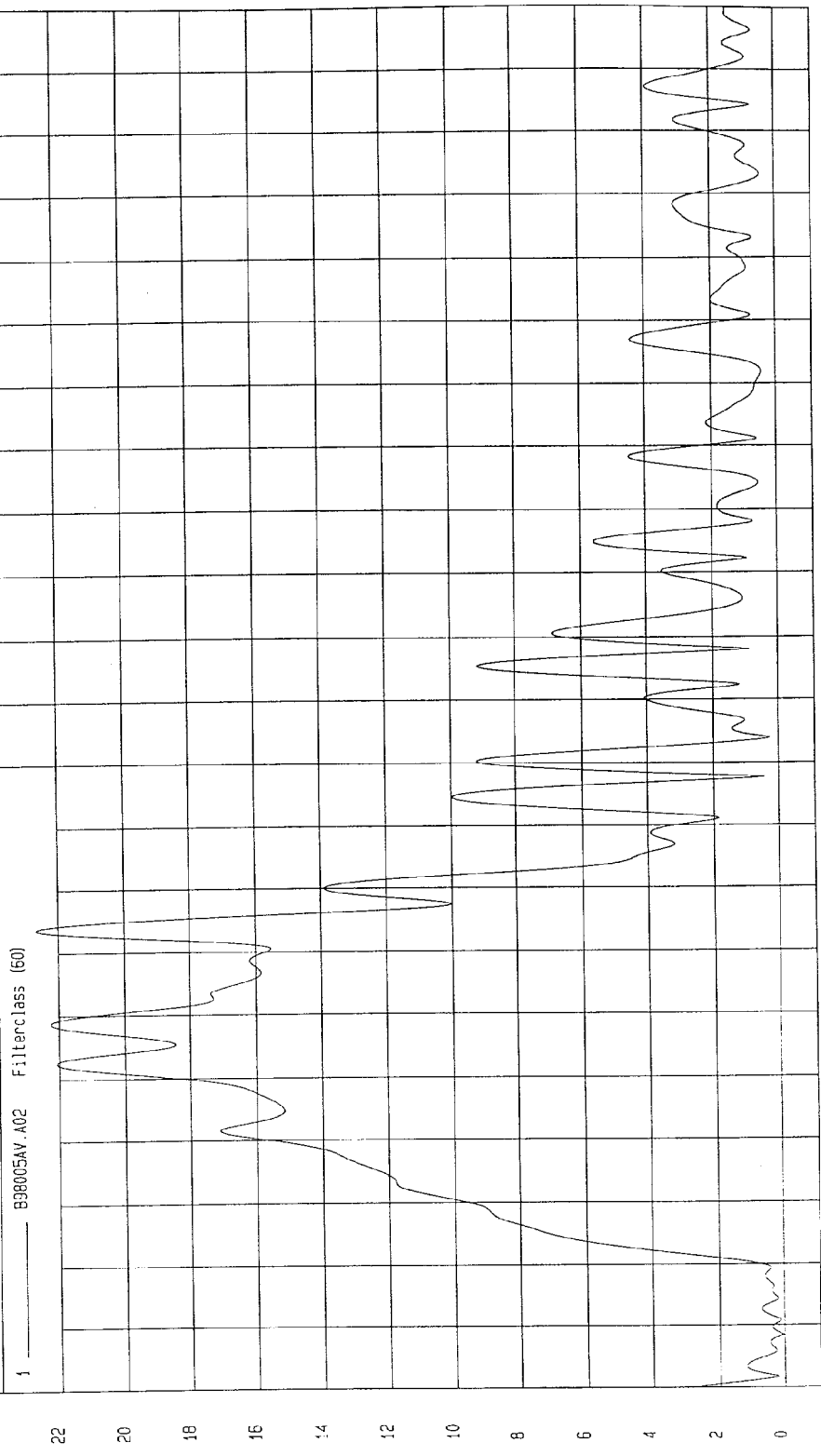


MCA Research
03-05-1998 11:49



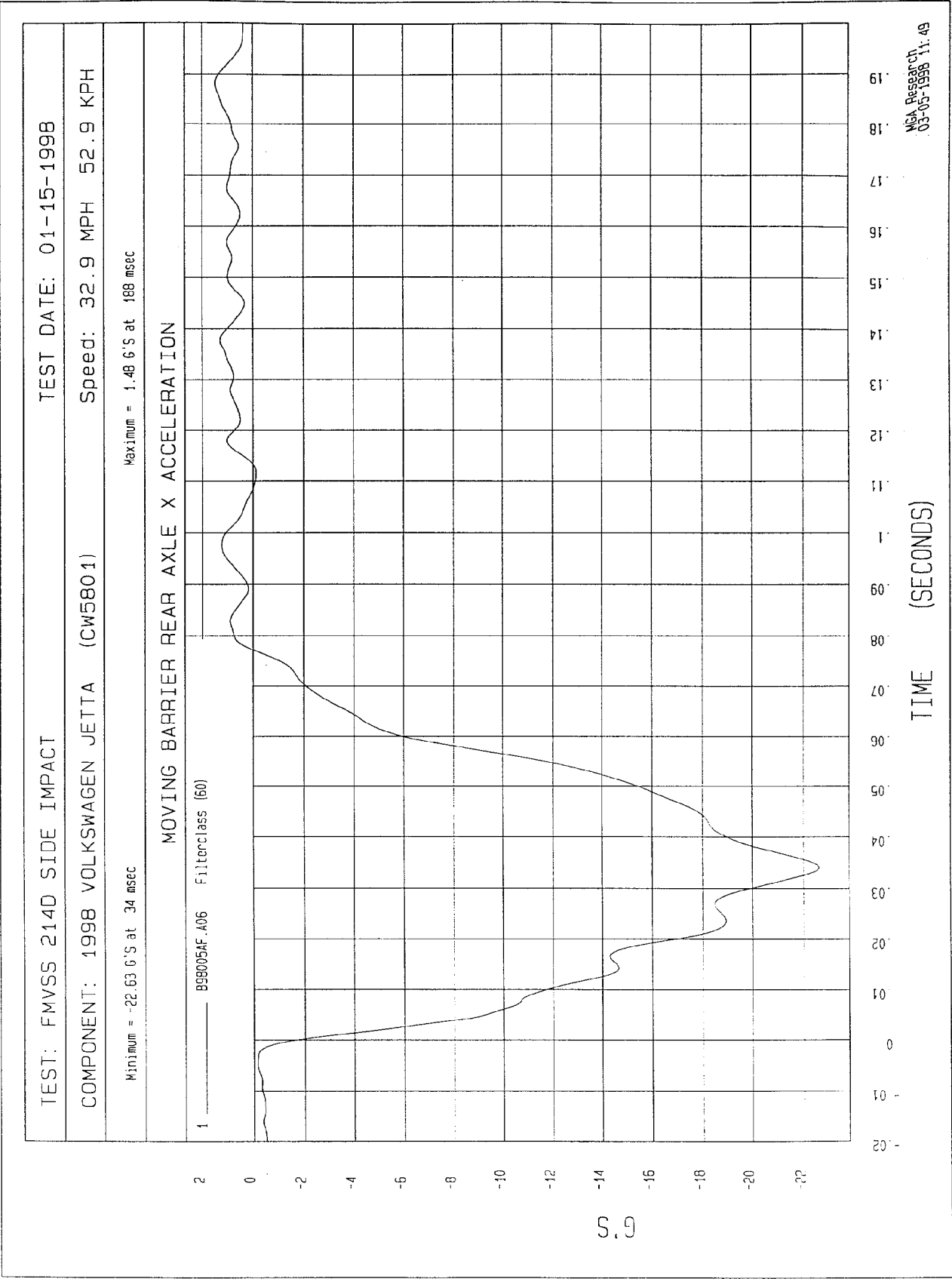
TEST: FMVSS 214D SIDE IMPACT	TEST DATE: 01-15-1998
COMPONENT: 1998 VOLKSWAGEN JETTA (CW5801)	Speed: 32.9 MPH 52.9 KPH
Minimum = 4.20E-02 G'S at -12 msec	Maximum = 22.67 G'S at 54 msec

MOVING BARRIER CG RESULTANT ACCELERATION



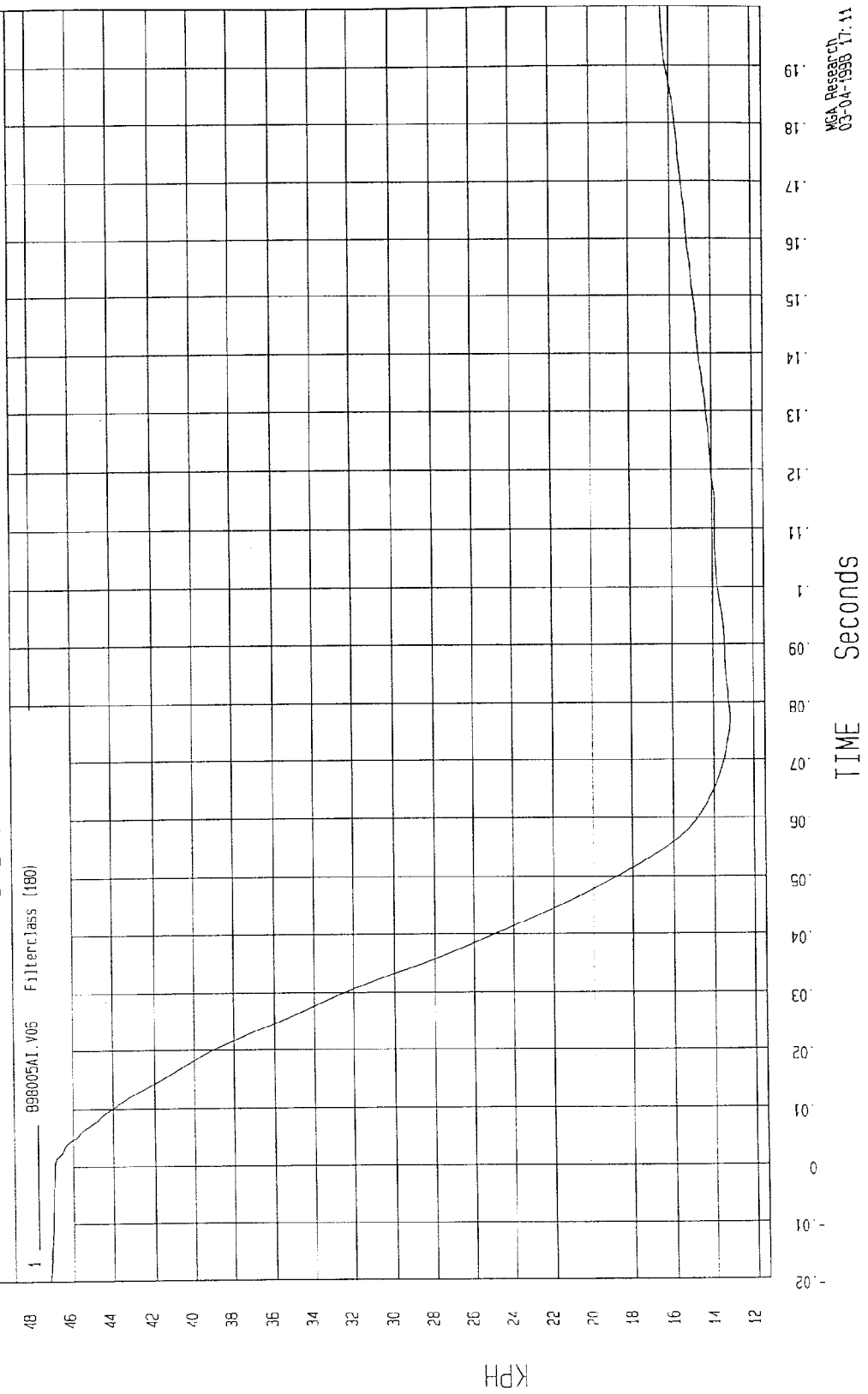
TIME (SECONDS)

WCA Research
03-04-1998 17:10

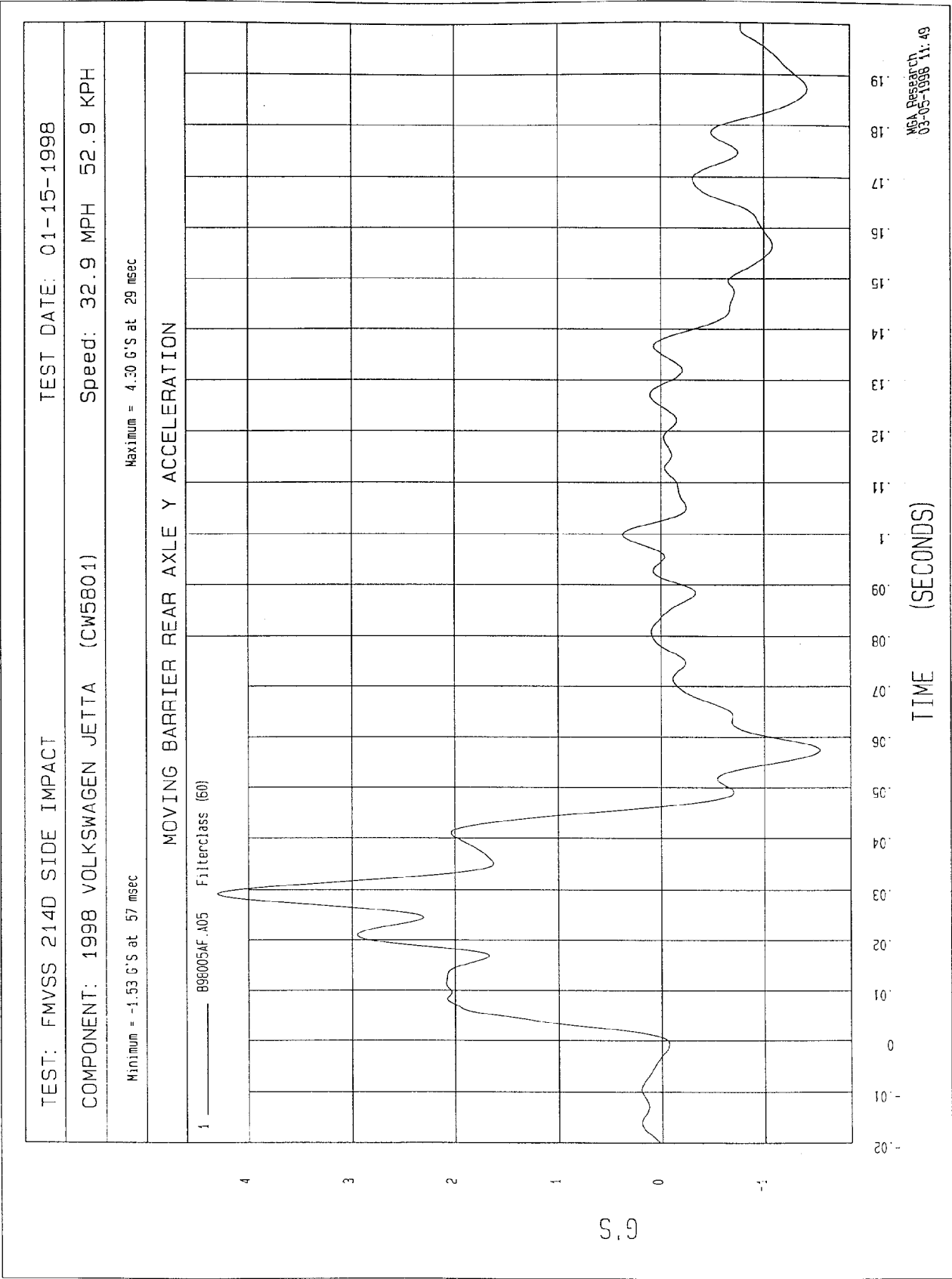


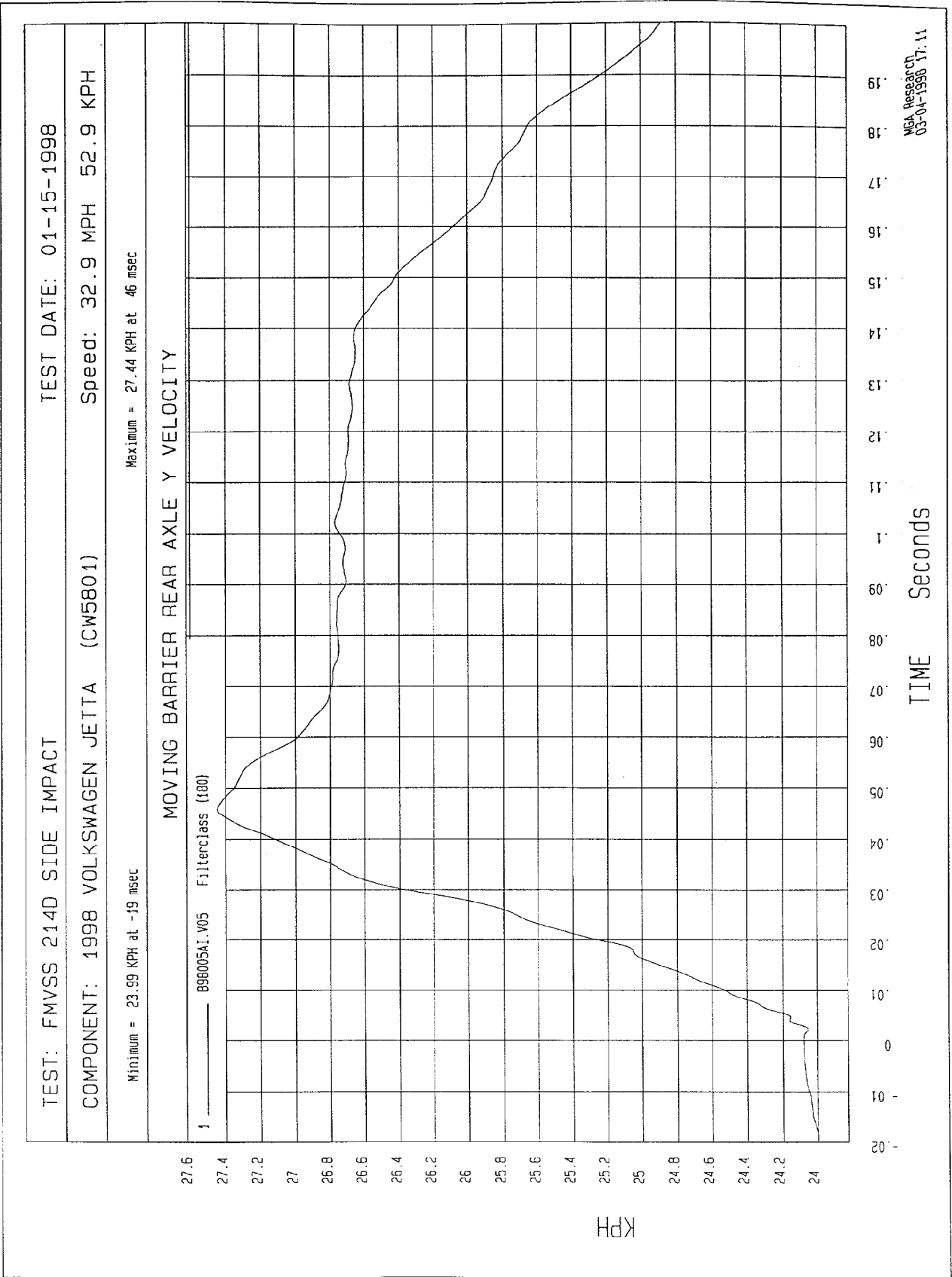
TEST: FMVSS 214D SIDE IMPACT	TEST DATE: 01-15-1998
COMPONENT: 1998 VOLKSWAGEN JETTA (CW5801)	Speed: 32.9 MPH 52.9 KPH
Minimum = 13.15 KPH at 77 msec	Maximum = 47.2 KPH at -20 msec

MOVING BARRIER REAR AXLE X VELOCITY

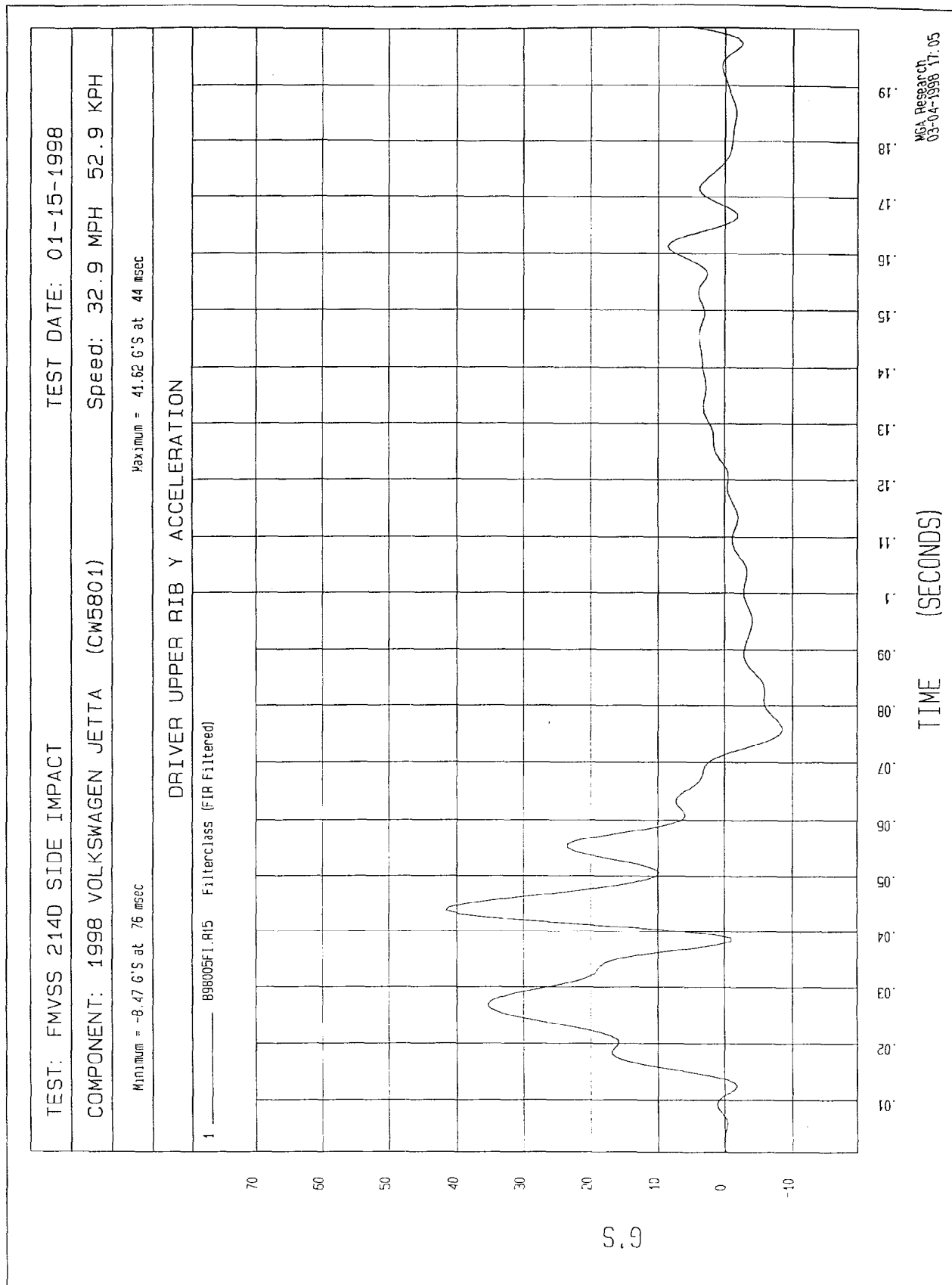


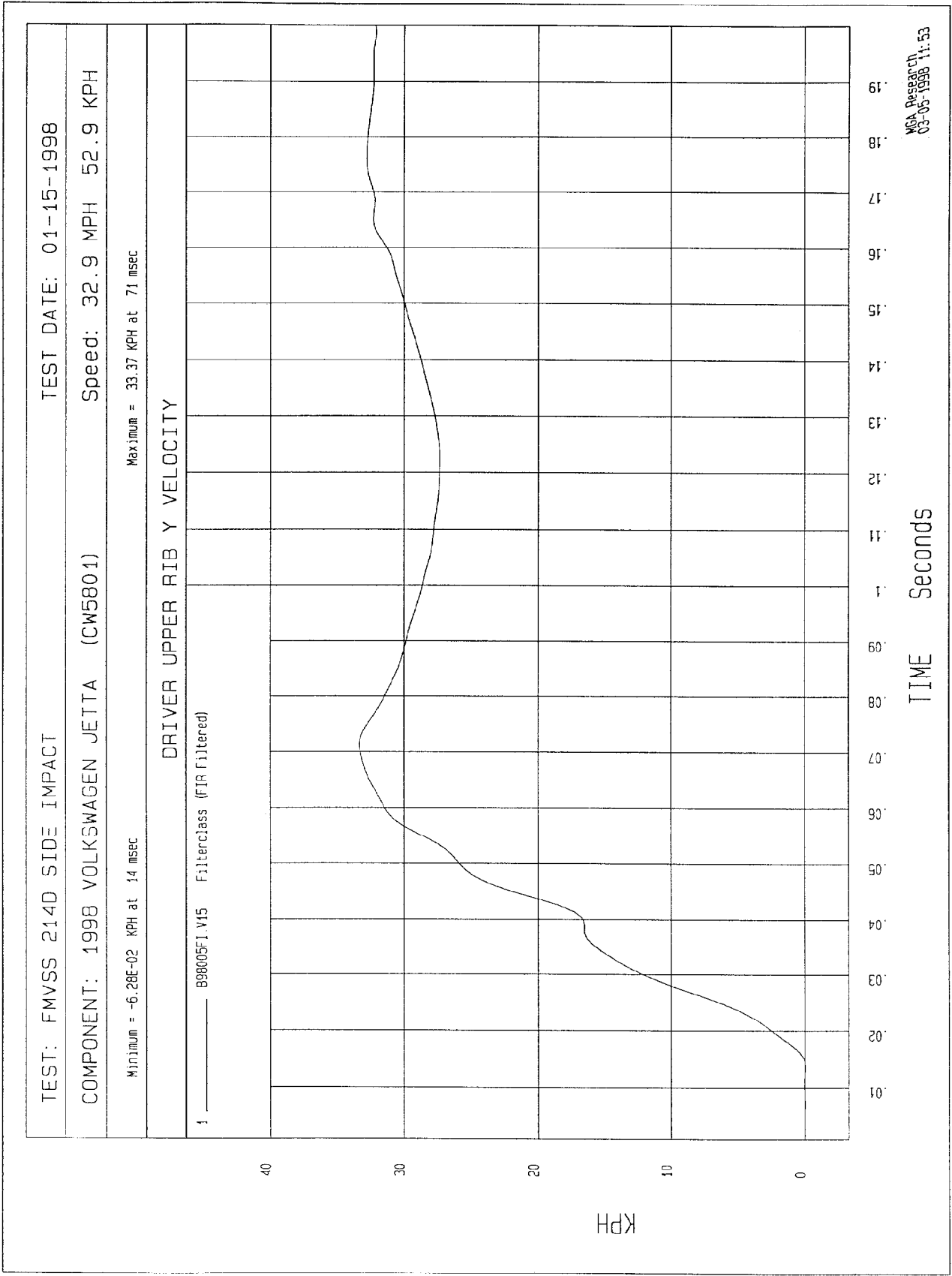
NCA Research
03-04-1998 17:11

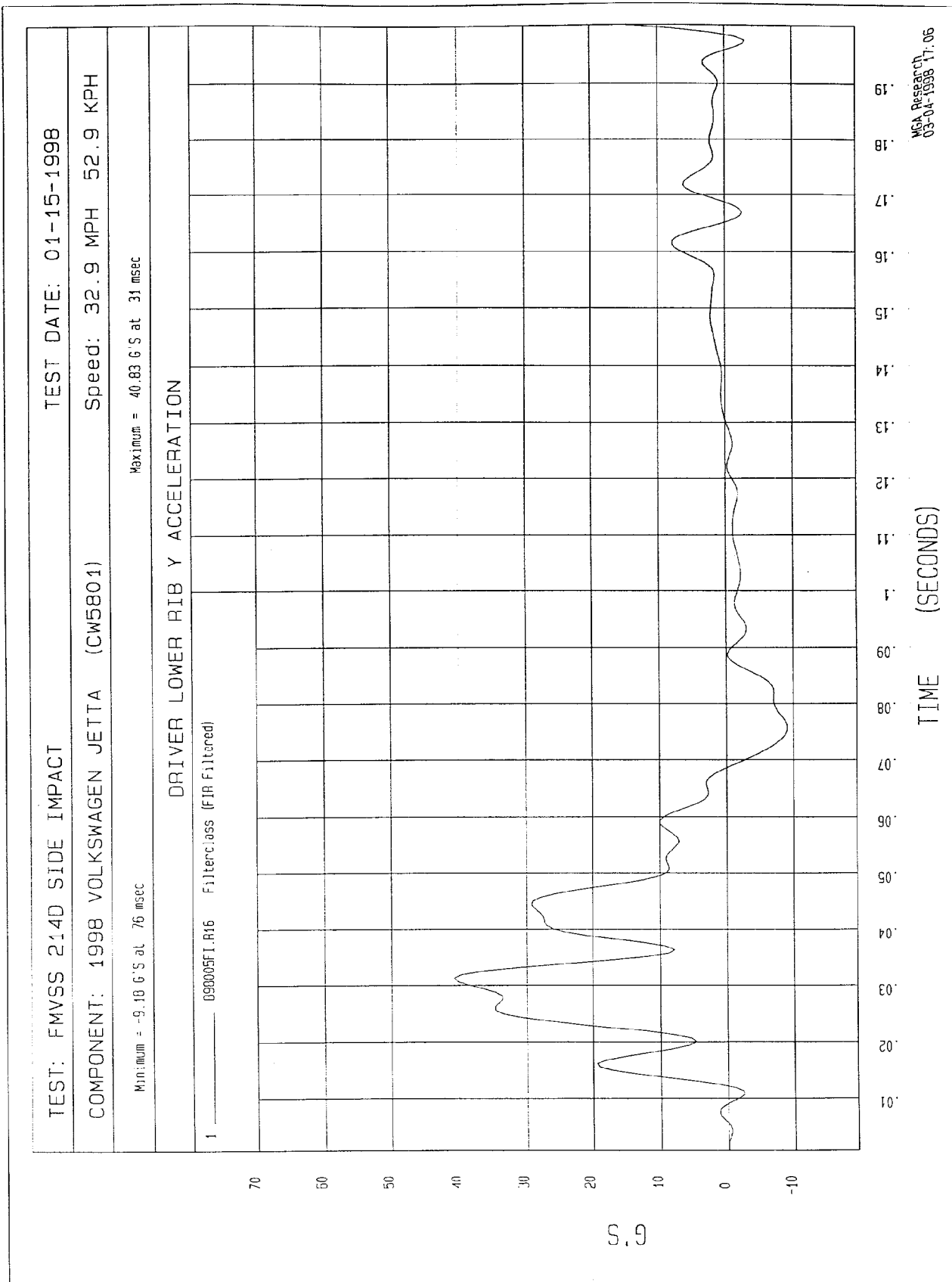


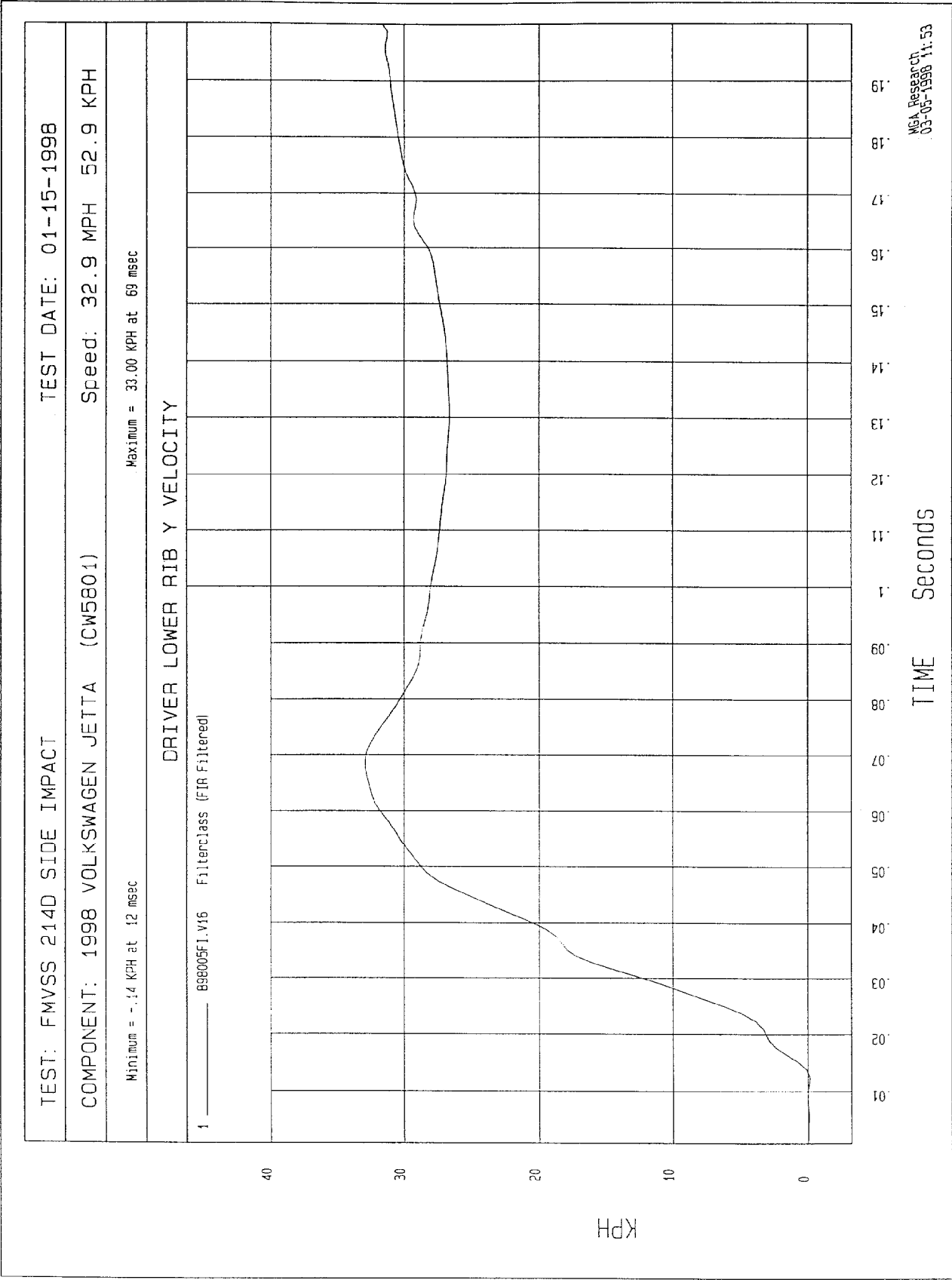


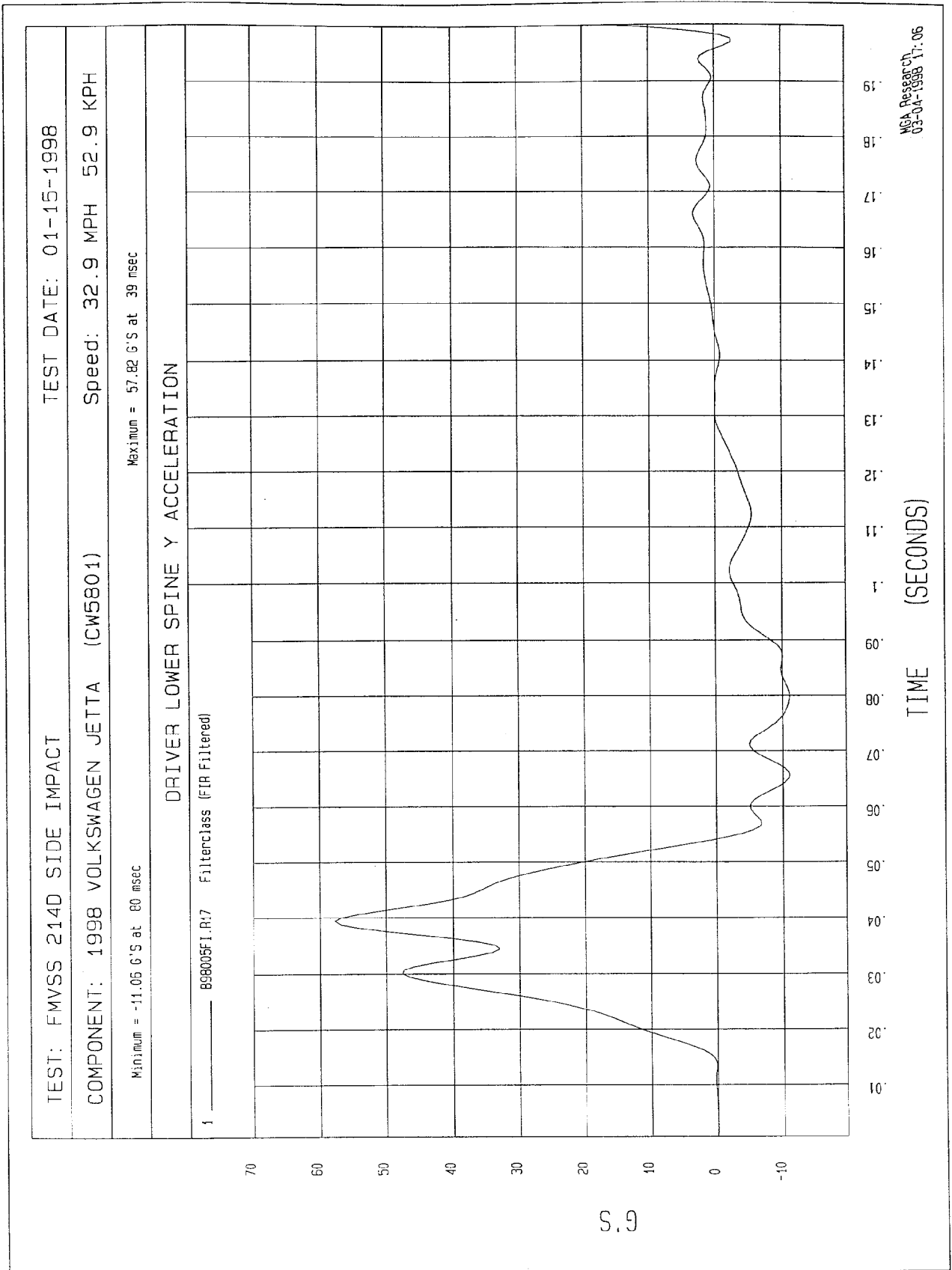
FINITE IMPULSE RESPONSE (FIR) FILTERED DATA

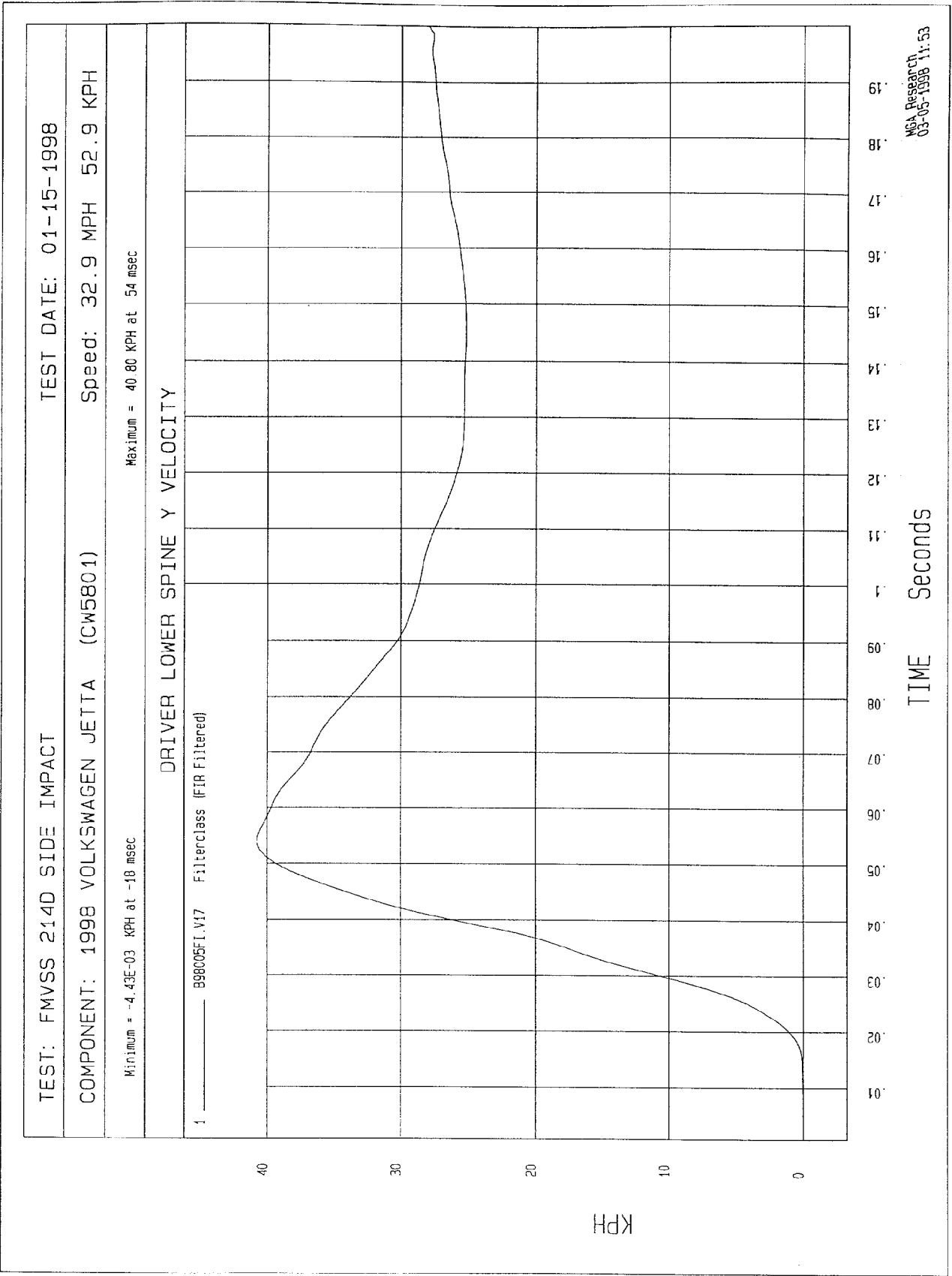


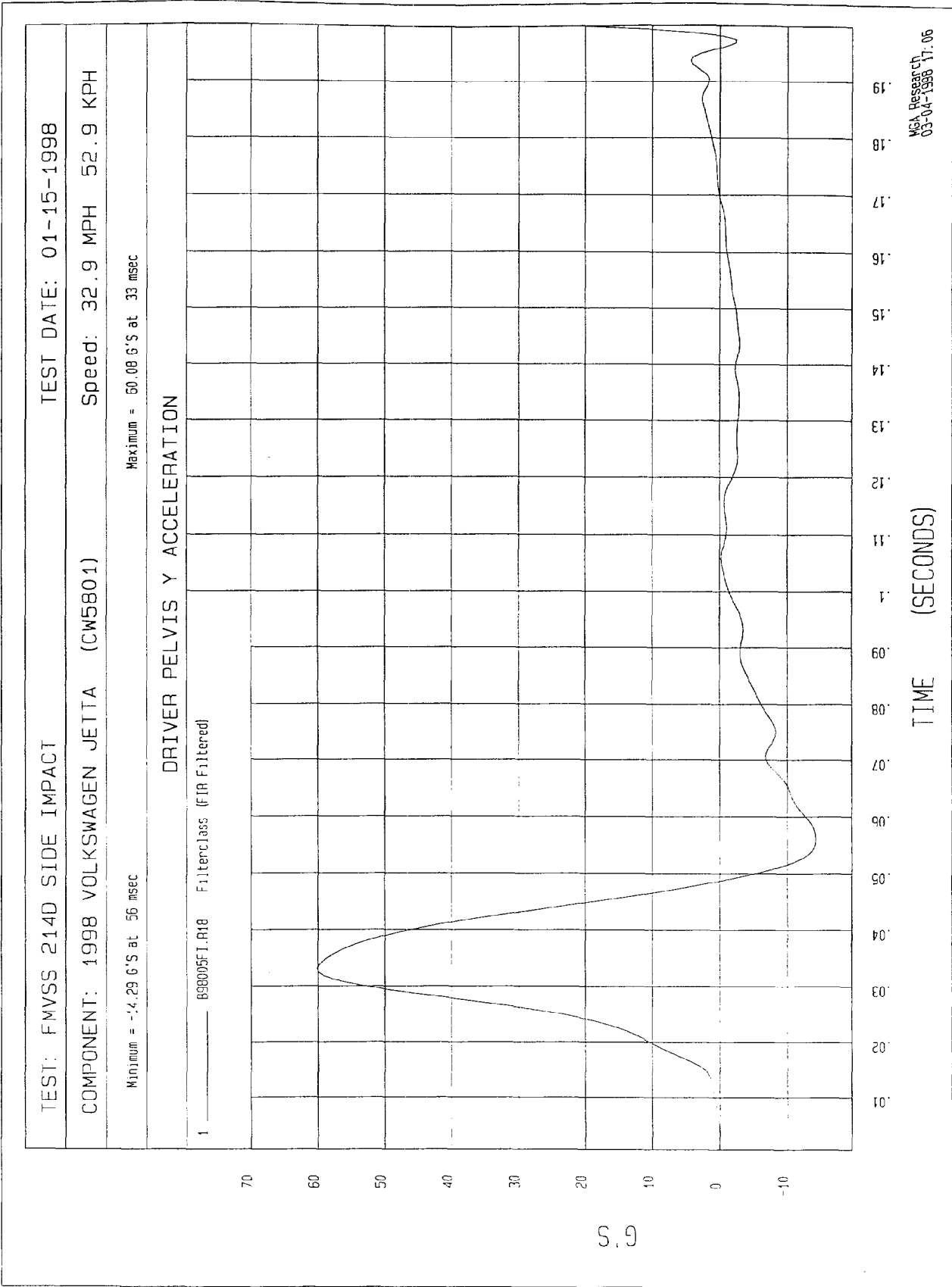


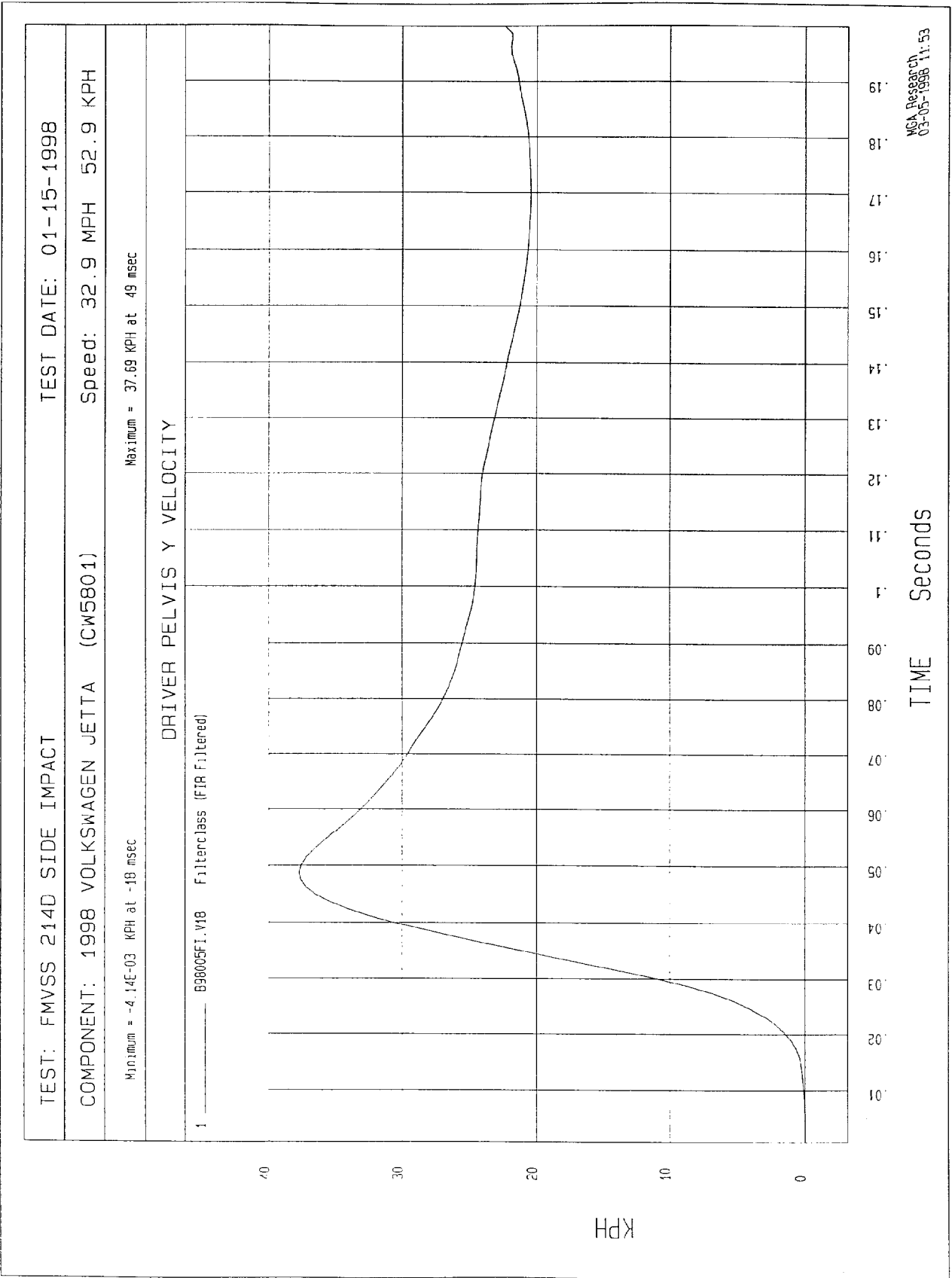












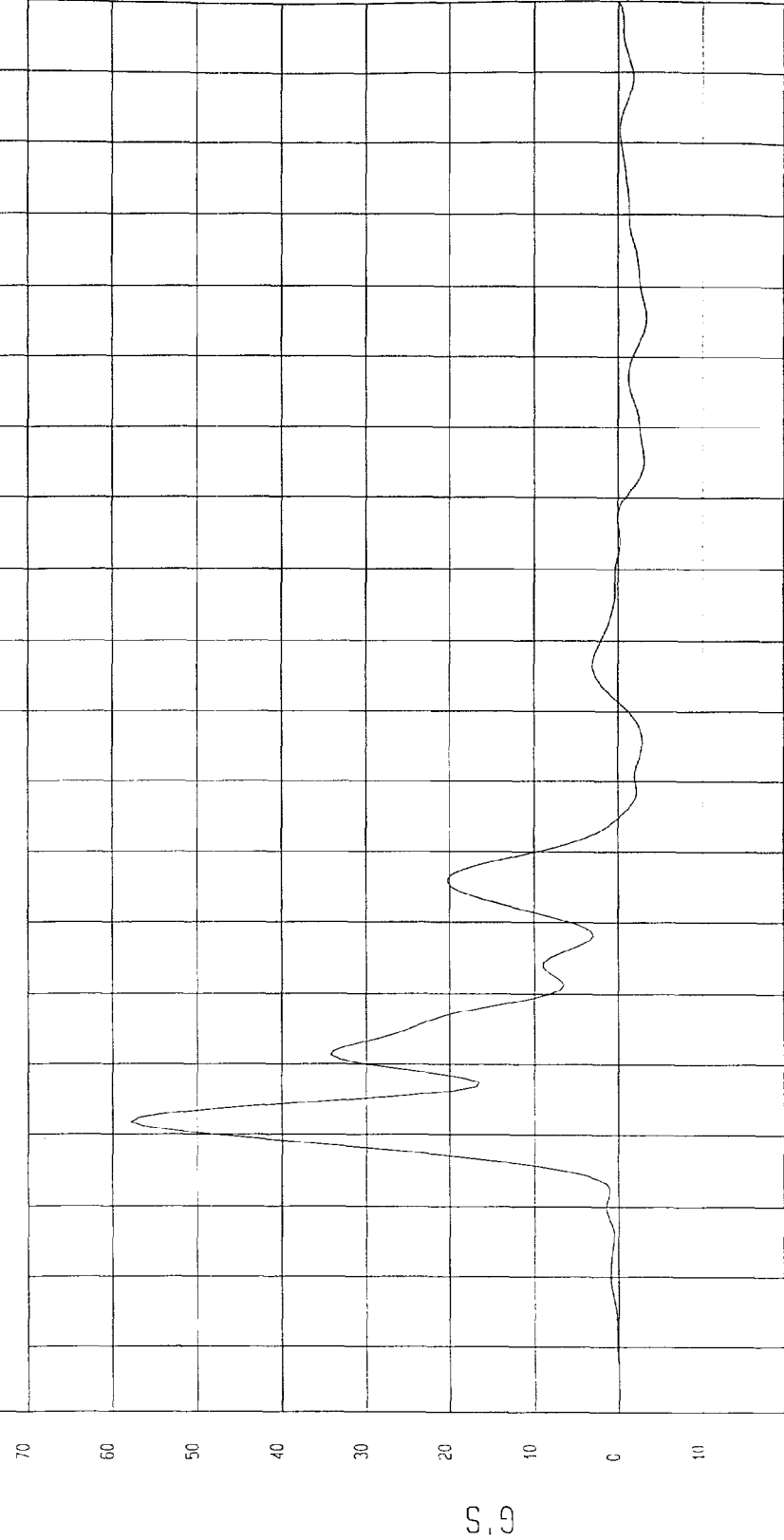
TEST: FMVSS 214D SIDE IMPACT TEST DATE: 01-15-1998

COMPONENT: 1998 VOLKSWAGEN JETTA (CW5801) Speed: 32.9 MPH 52.9 KPH

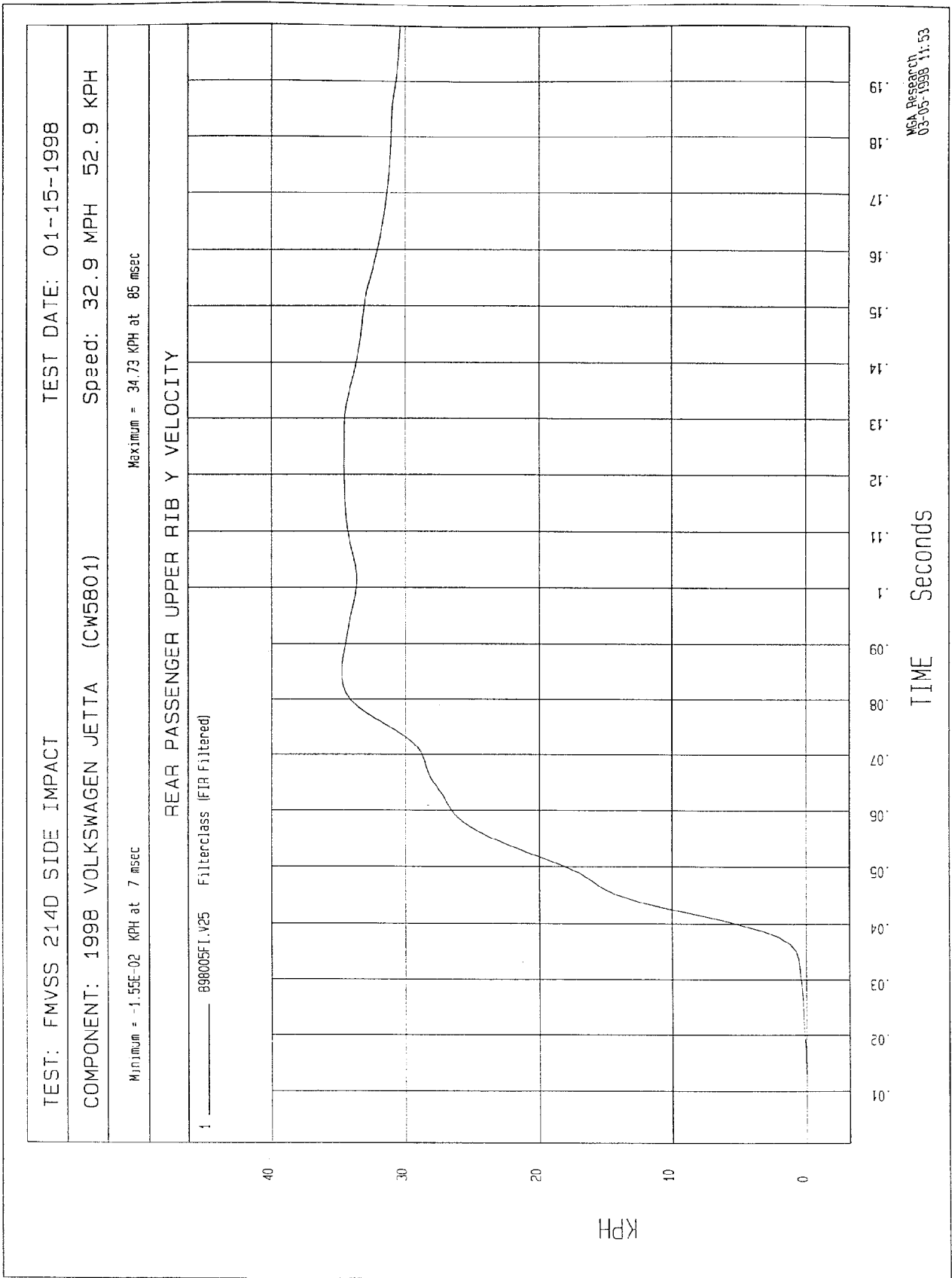
Minimum = -3.23 G'S at 156 msec Maximum = 57.84 G'S at 42 msec

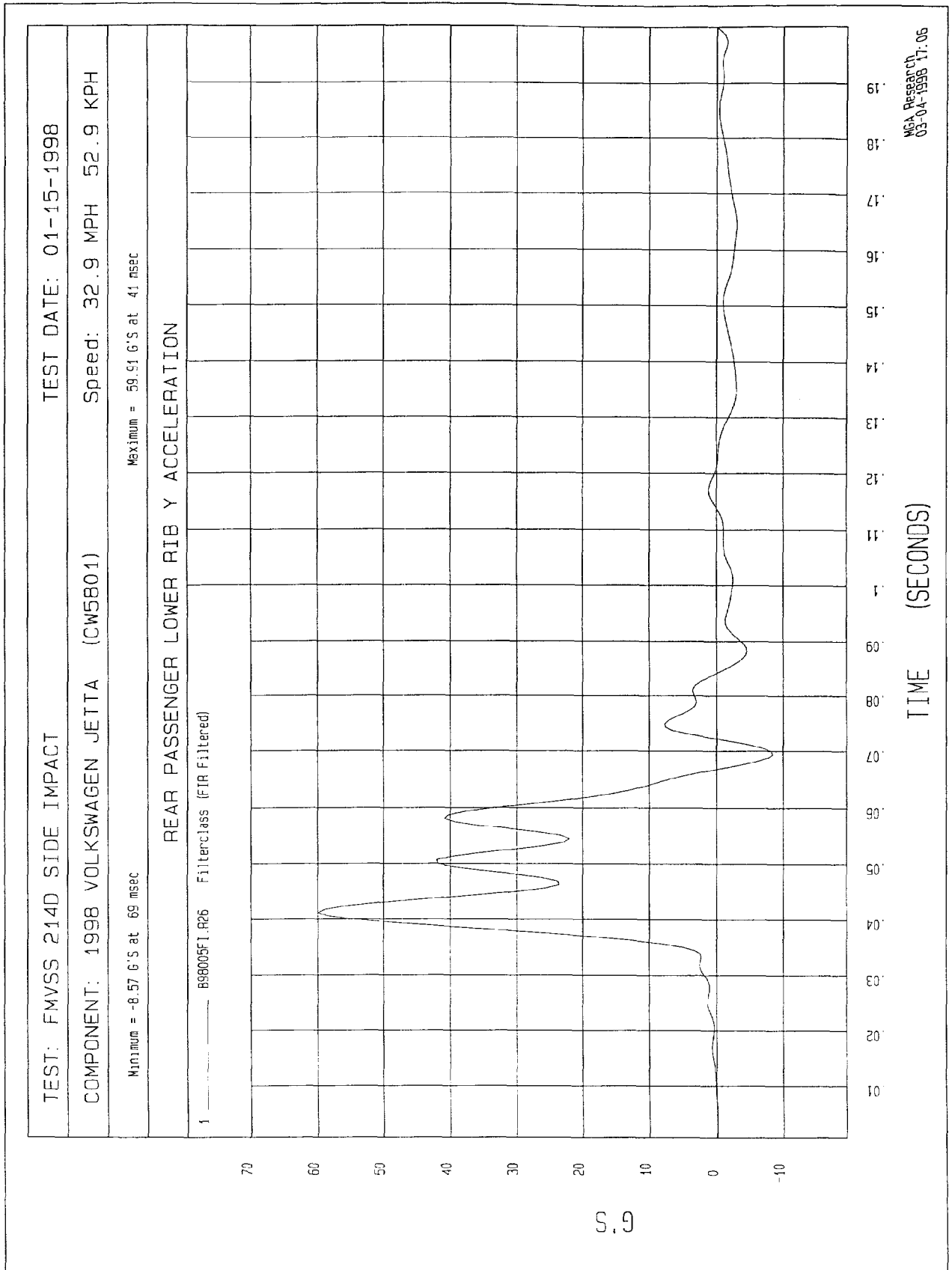
REAR PASSENGER UPPER RIB Y ACCELERATION

1 B980C5F1.R25 Filterclass (FIR Filtered)



NGA Research
03-04-1996 17:06





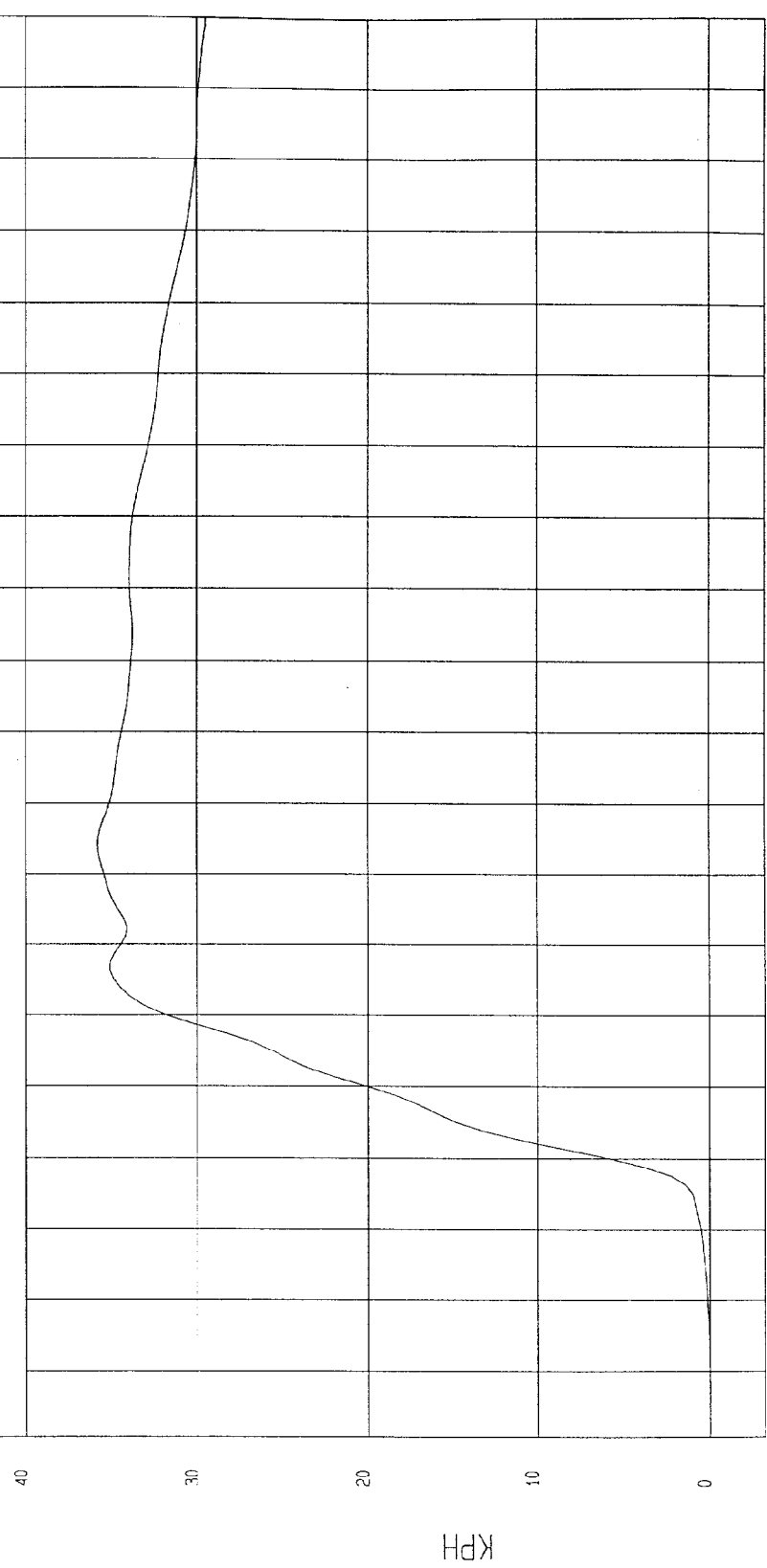
TEST: FMVSS 214D SIDE IMPACT TEST DATE: 01-15-1998

COMPONENT: 1998 VOLKSWAGEN JETTA (CW5801) Speed: 32.9 MPH 52.9 KPH

Minimum = -2.98E-02 KPH at 8 msec Maximum = 35.84 KPH at 84 msec

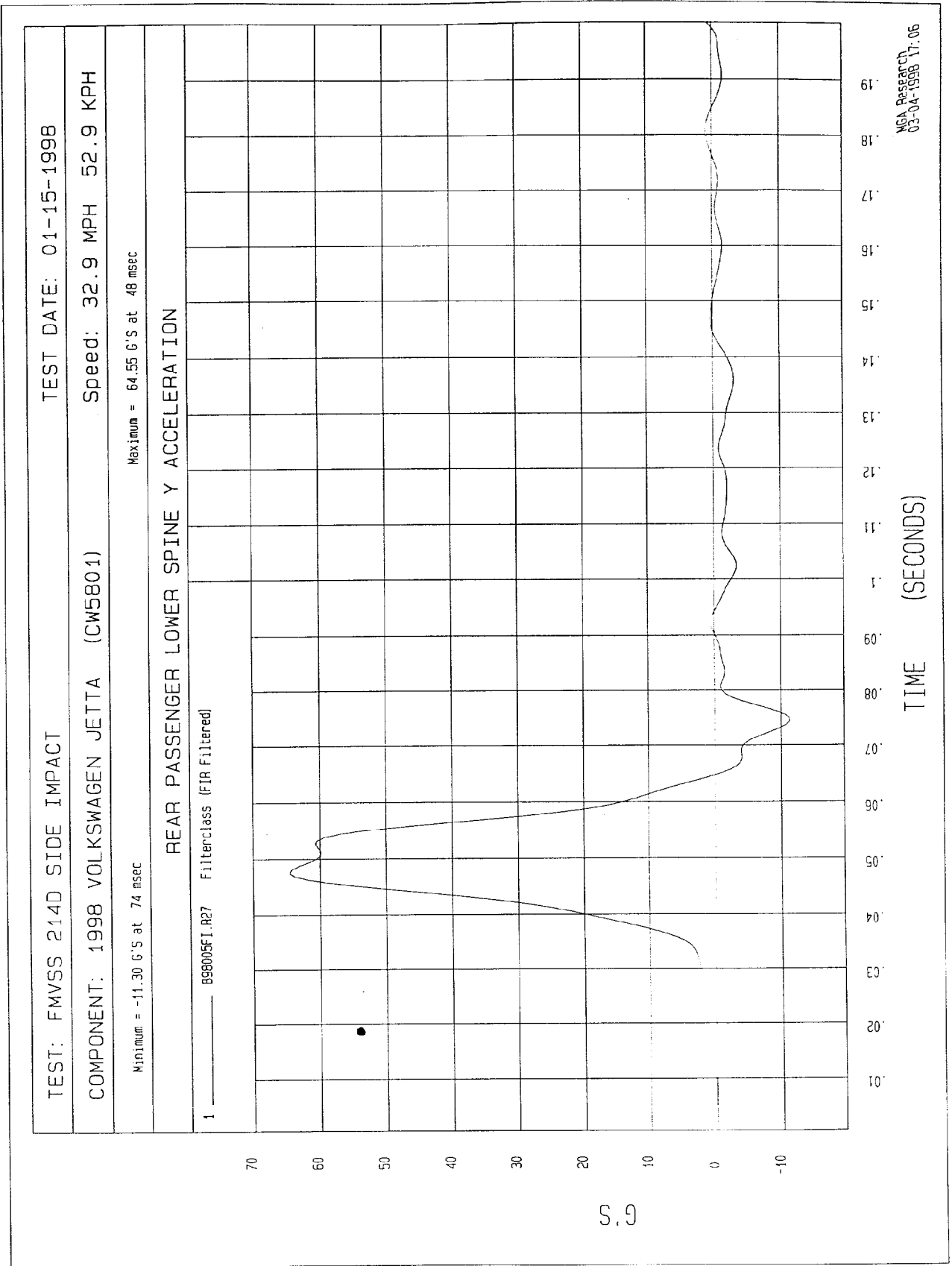
REAR PASSENGER LOWER RIB Y VELOCITY

1 896005F1.V26 Filterclass (FIR Filtered)



NGA Research
03-05-1998 11:53

TIME Seconds



TEST: FMVSS 214D SIDE IMPACT

TEST DATE: 01-15-1998

Speed: 32.9 MPH 52.9 KPH

COMPONENT: 1998 VOLKSWAGEN JETTA (CW5801)

Minimum = -9.86E-03 KPH at -3 msec

Maximum = 37.49 KPH at 65 msec

REAR PASSENGER LOWER SPINE Y VELOCITY

1 89B005F1.V27 Filterclass (FIR Filtered)

40

30

20

10

0

KPH

.19

.18

.17

.16

.15

.14

.13

.12

.11

.1

.09

.08

.07

.06

.05

.04

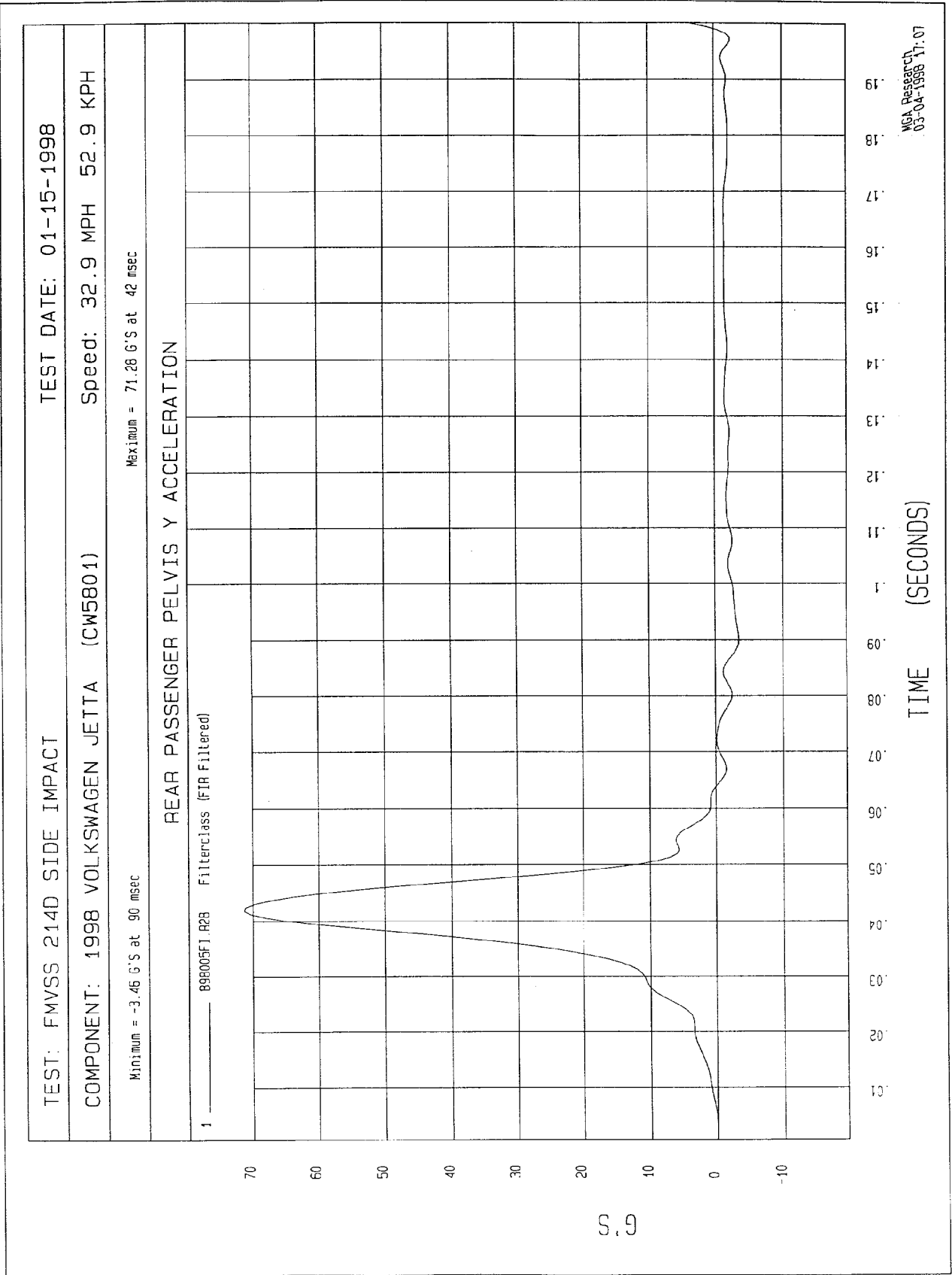
.03

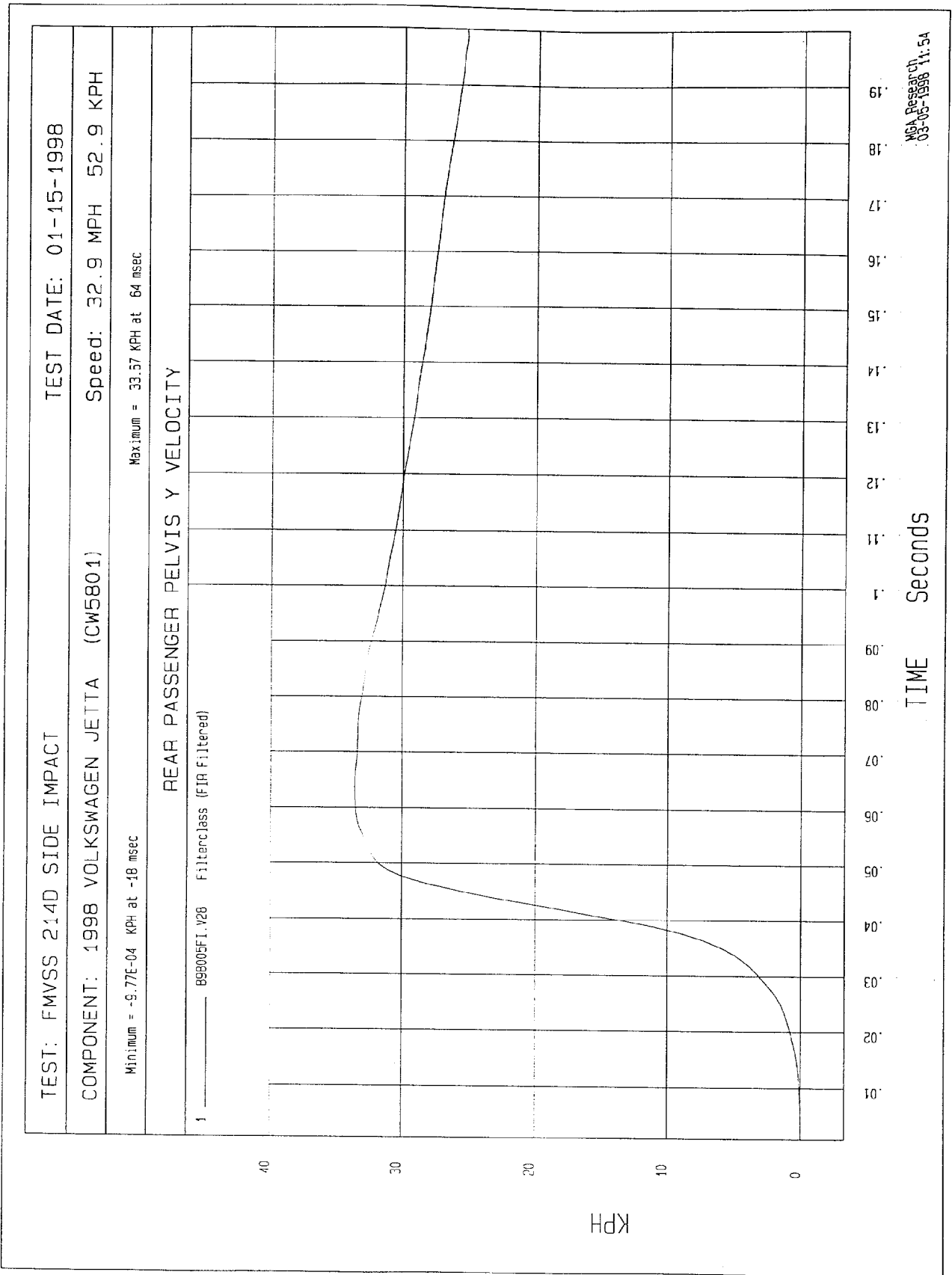
.02

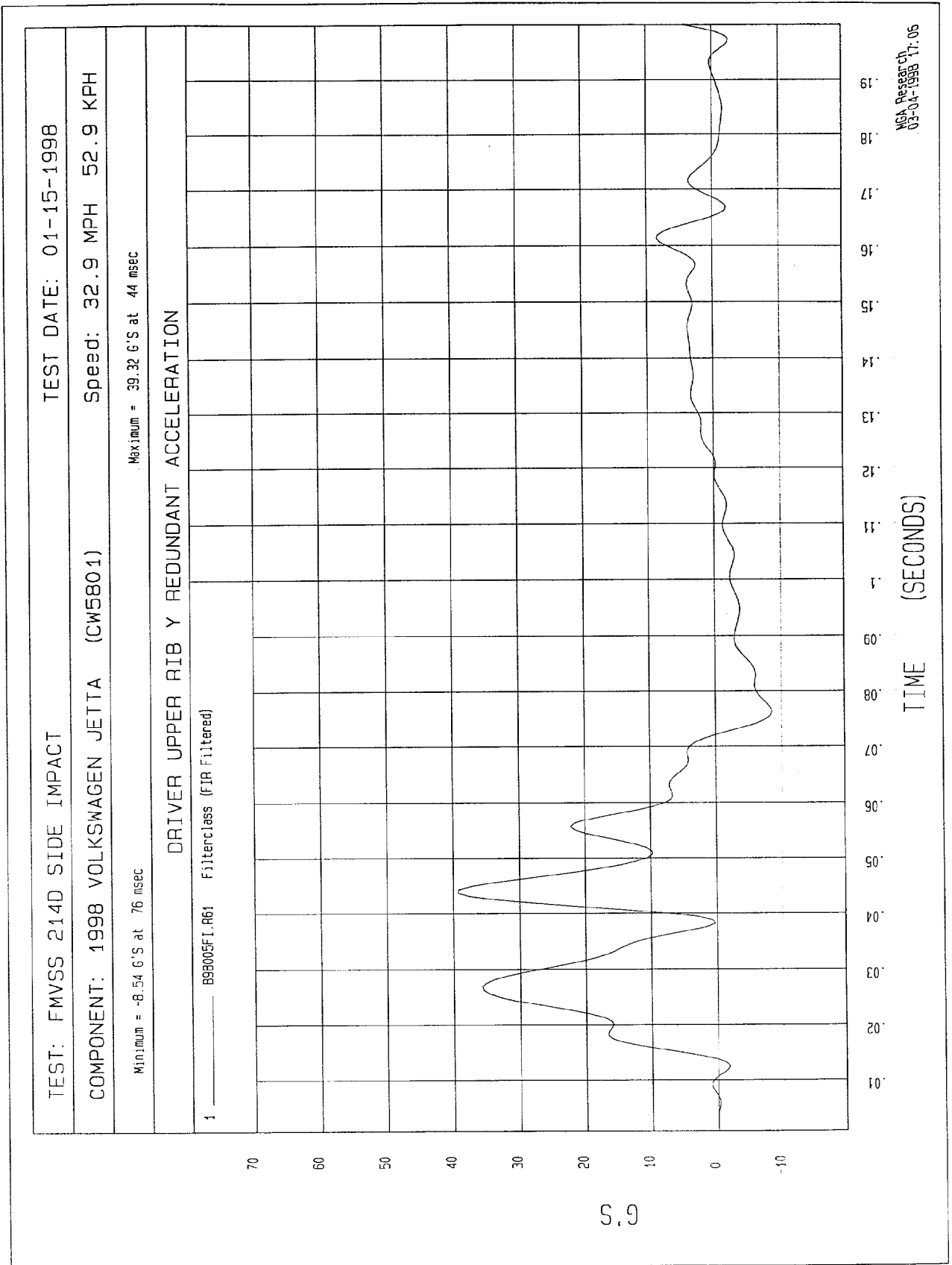
.01

TIME Seconds

MOA Research
03-05-1998 11:53







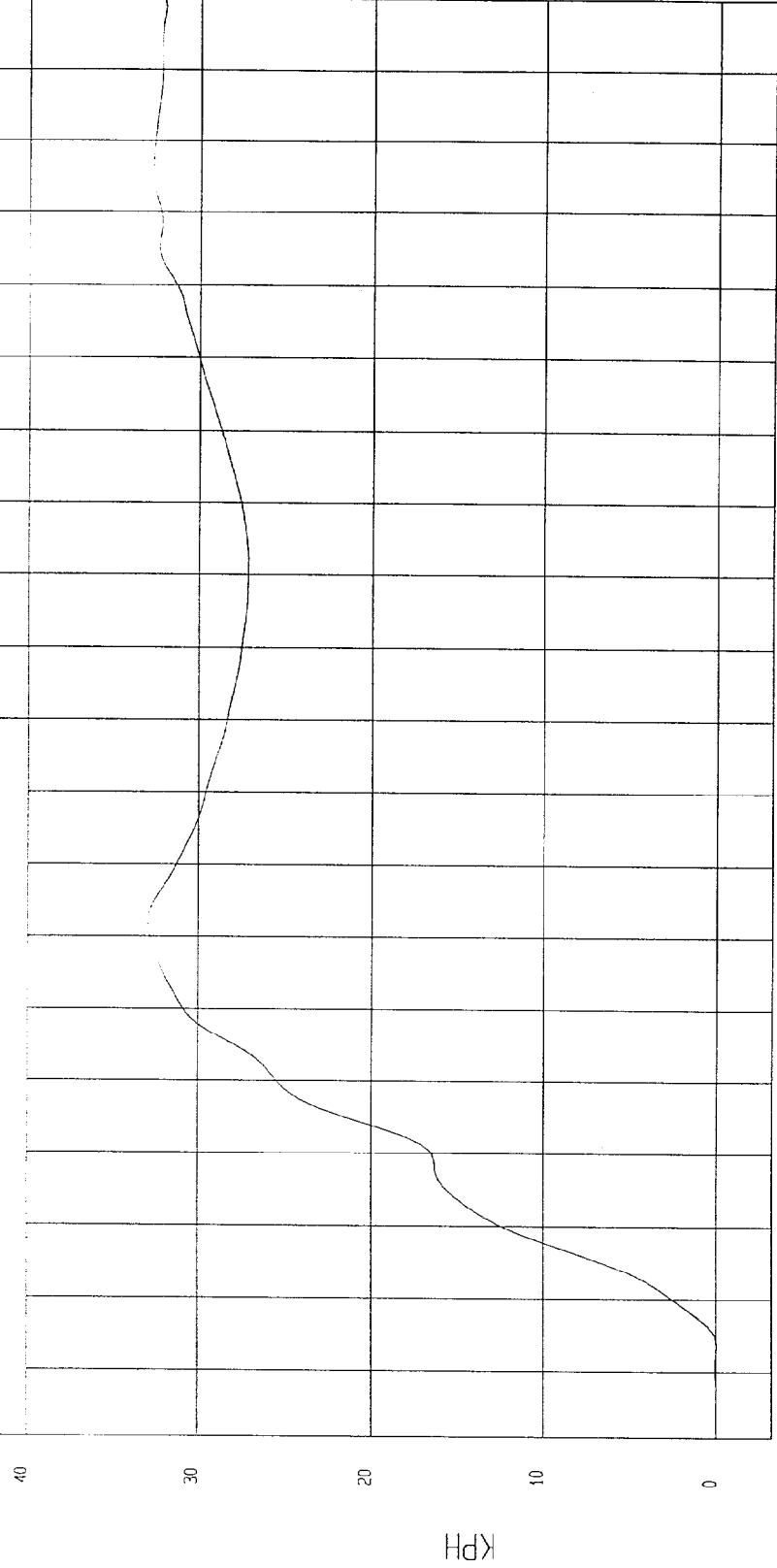
TEST: FMVSS 214D SIDE IMPACT TEST DATE: 01-15-1998

COMPONENT: 1998 VOLKSWAGEN JETTA (CW5801) Speed: 32.9 MPH 52.9 KPH

Minimum = -3.80E-02 KPH at 14 msec Maximum = 33.08 KPH at 72 msec

DRIVER UPPER RIB Y REDUNDANT VELOCITY

1 ——— 898005FI.V61 Filterclass (FIR Filtered)



TIME Seconds

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

WCA Research
03-05-1998 11:54

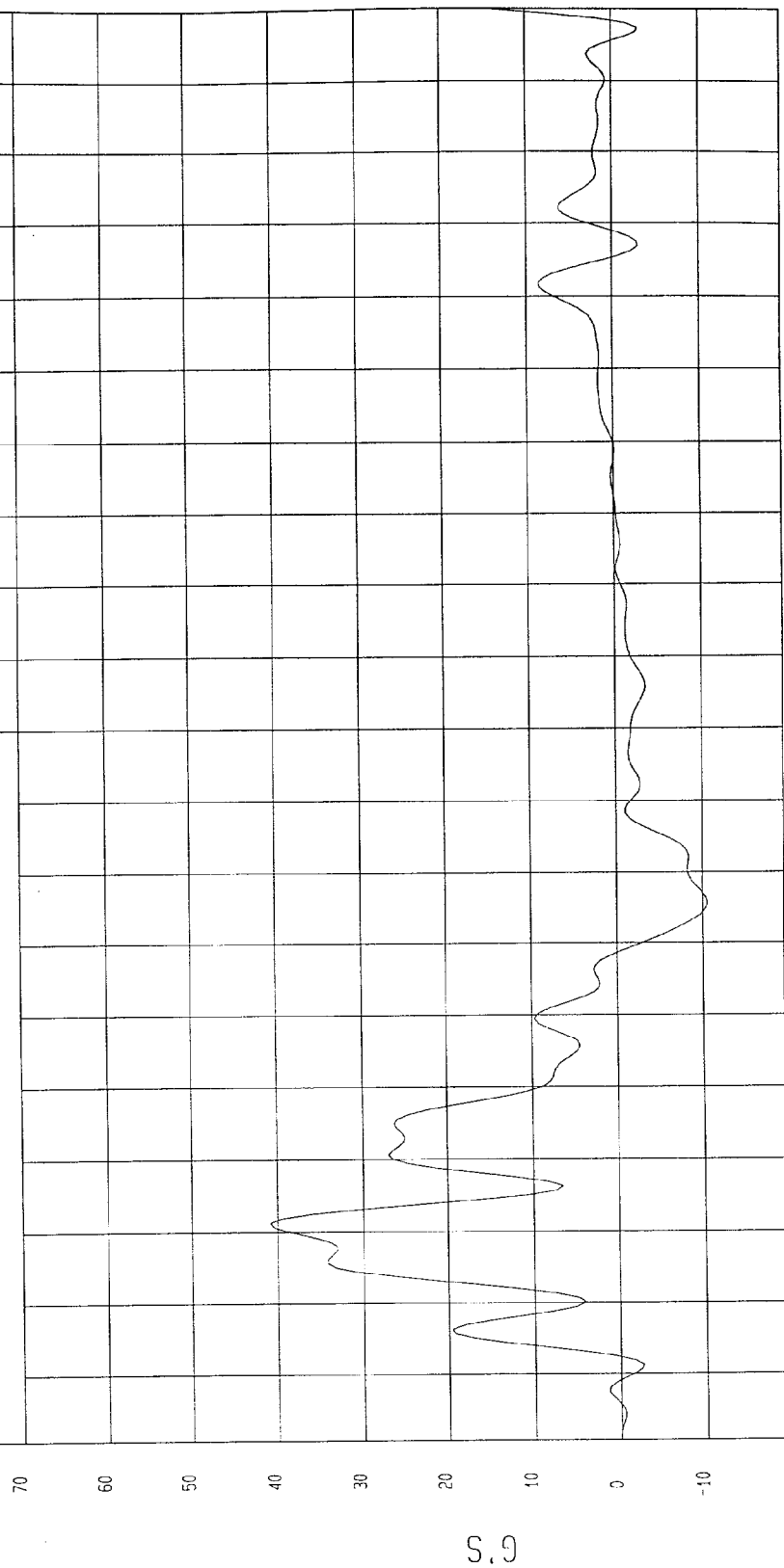
TEST: FMVSS 214D SIDE IMPACT TEST DATE: 01-15-1998

COMPONENT: 1998 VOLKSWAGEN JETTA (CW5801) Speed: 32.9 MPH 52.9 KPH

Minimum = -10.51 G'S at 76 msec Maximum = 40.93 G'S at 31 msec

DRIVER LOWER RIB Y REDUNDANT ACCELERATION

1 998005FI.R62 Filterclass (FIR Filtered)



MCA Research
03-04-1998 17.06

TEST: FMVSS 214D SIDE IMPACT

TEST DATE: 01-15-1998

Speed: 32.9 MPH 52.9 KPH

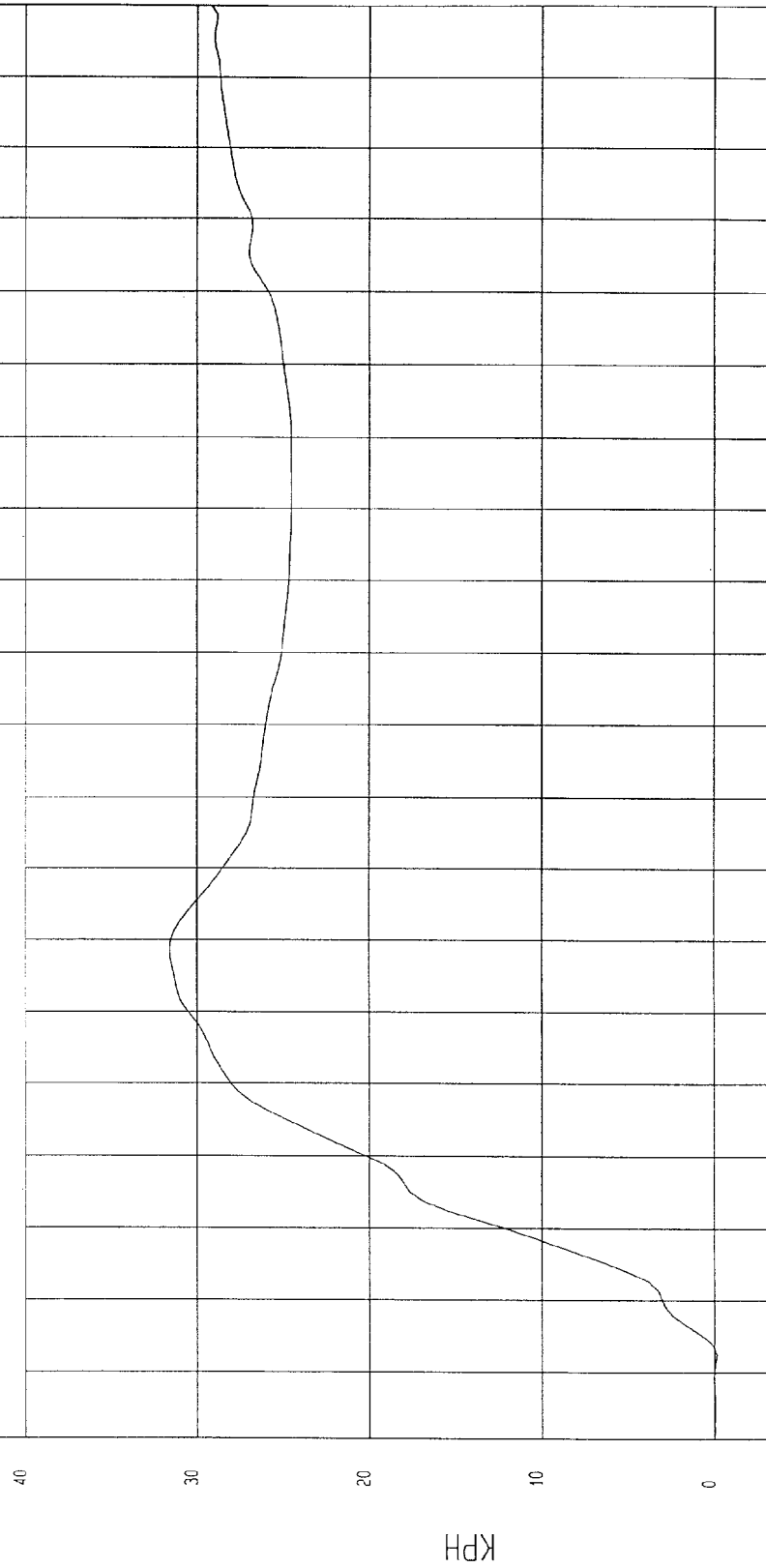
COMPONENT: 1998 VOLKSWAGEN JETTA (CW5801)

Maximum = 31.60 KPH at 69 msec

Minimum = -13 KPH at 12 msec

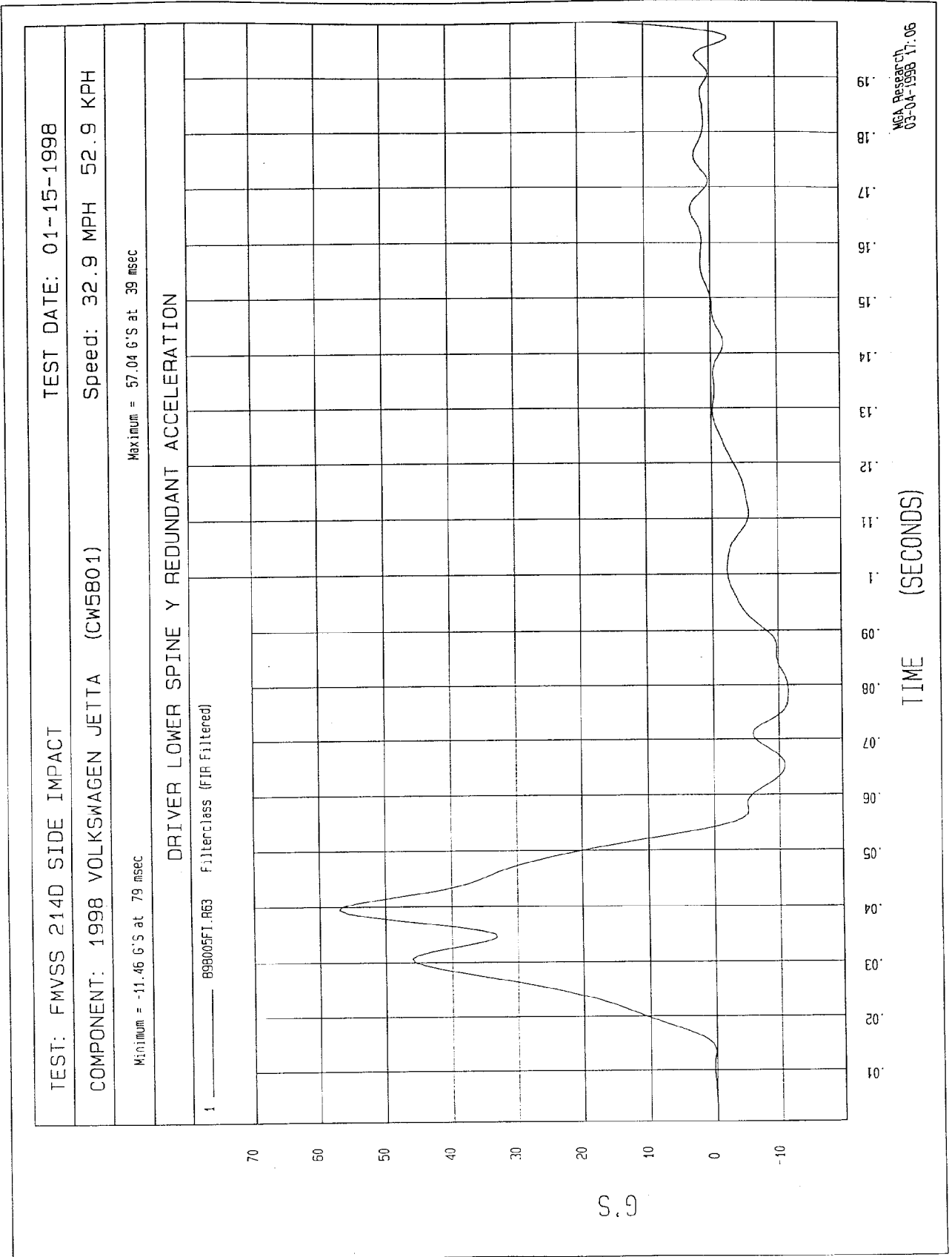
DRIVER LOWER RIB Y REDUNDANT VELOCITY

1 898005FI.V62 Filterclass (FIR Filtered)



NCA Research
03-05-1998 11:54

TIME Seconds



TEST: FMVSS 214D SIDE IMPACT

TEST DATE: 01-15-1998

COMPONENT: 1998 VOLKSWAGEN JETTA (CW5801)

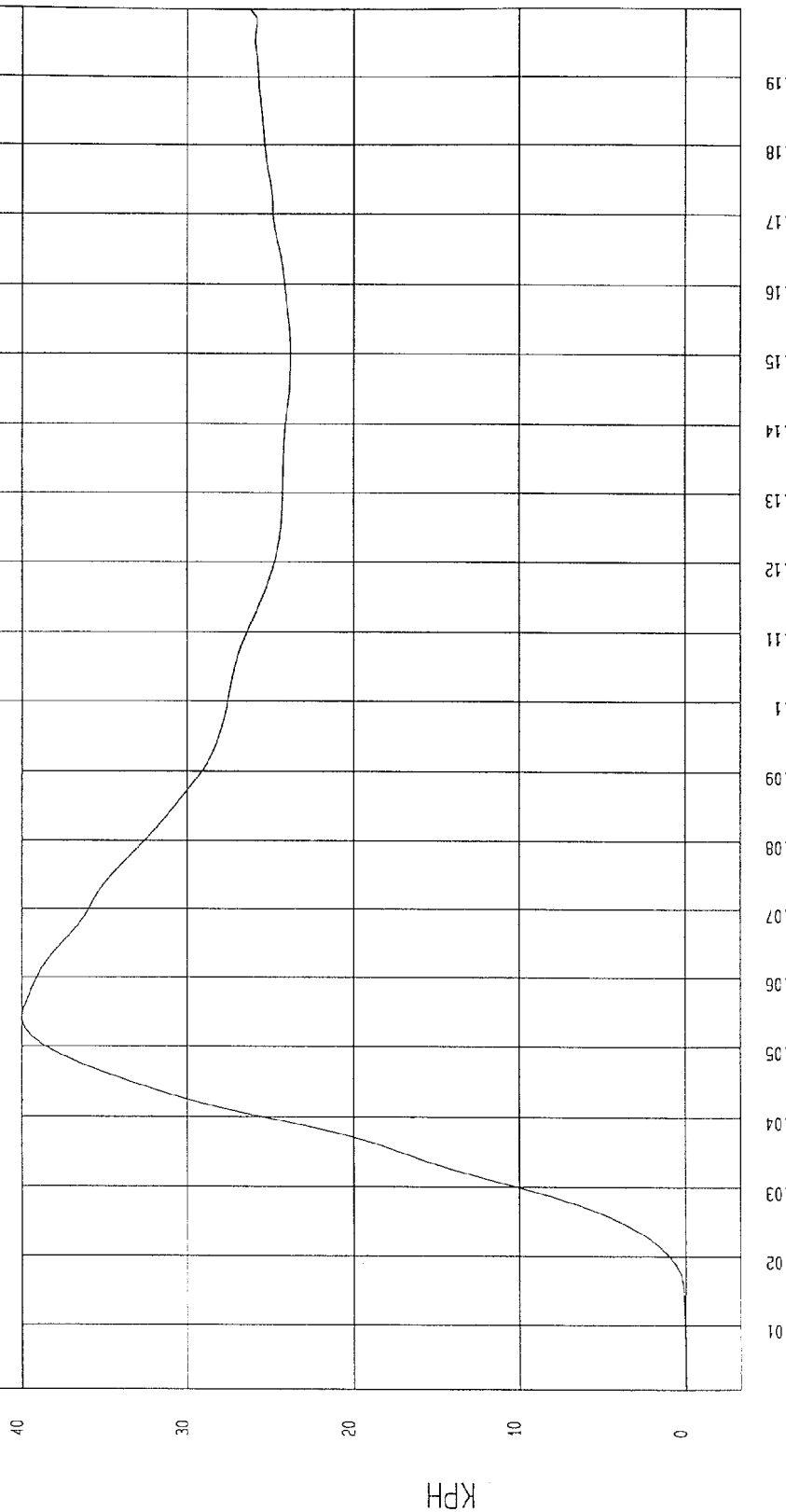
Speed: 32.9 MPH 52.9 KPH

Minimum = -2.40E-03 KPH at -18 msec

Maximum = 40.01 KPH at 54 msec

DRIVER LOWER SPINE Y REDUNDANT VELOCITY

1 B98005F1.V63 Filterclass (FIR Filtered)



NSA Research
03-05-1998 11:54

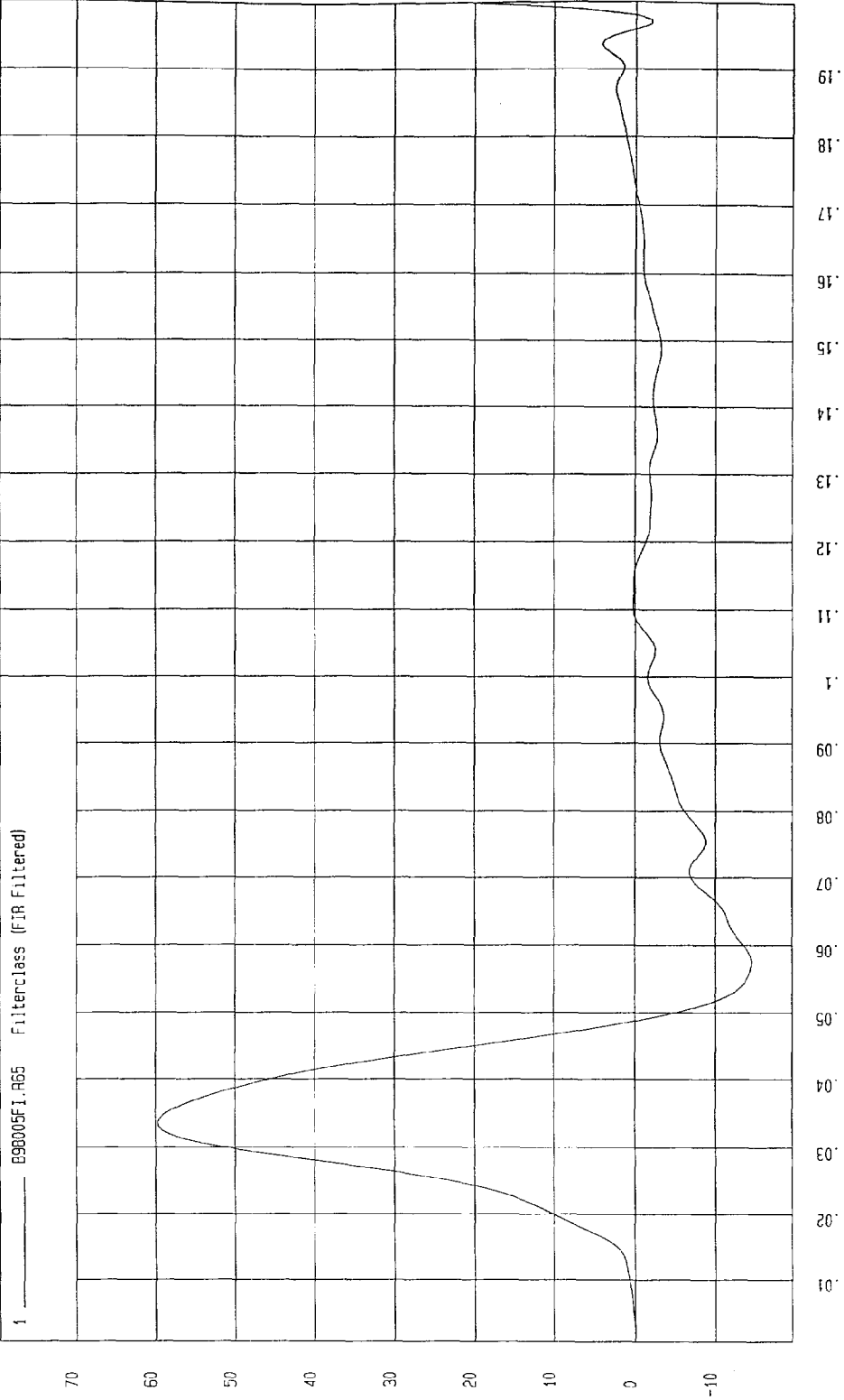
TIME Seconds

TEST: FMVSS 214D SIDE IMPACT TEST DATE: 01-15-1998

COMPONENT: 1998 VOLKSWAGEN JETTA (CW5801) Speed: 32.9 MPH 52.9 KPH

Minimum = -14.54 G'S at 58 msec Maximum = 59.74 G'S at 34 msec

DRIVER PELVIS Y REDUNDANT ACCELERATION



MCA Research
03-04-1998 11:05

TEST: FMVSS 214D SIDE IMPACT

TEST DATE: 01-15-1998

Speed: 32.9 MPH 52.9 KPH

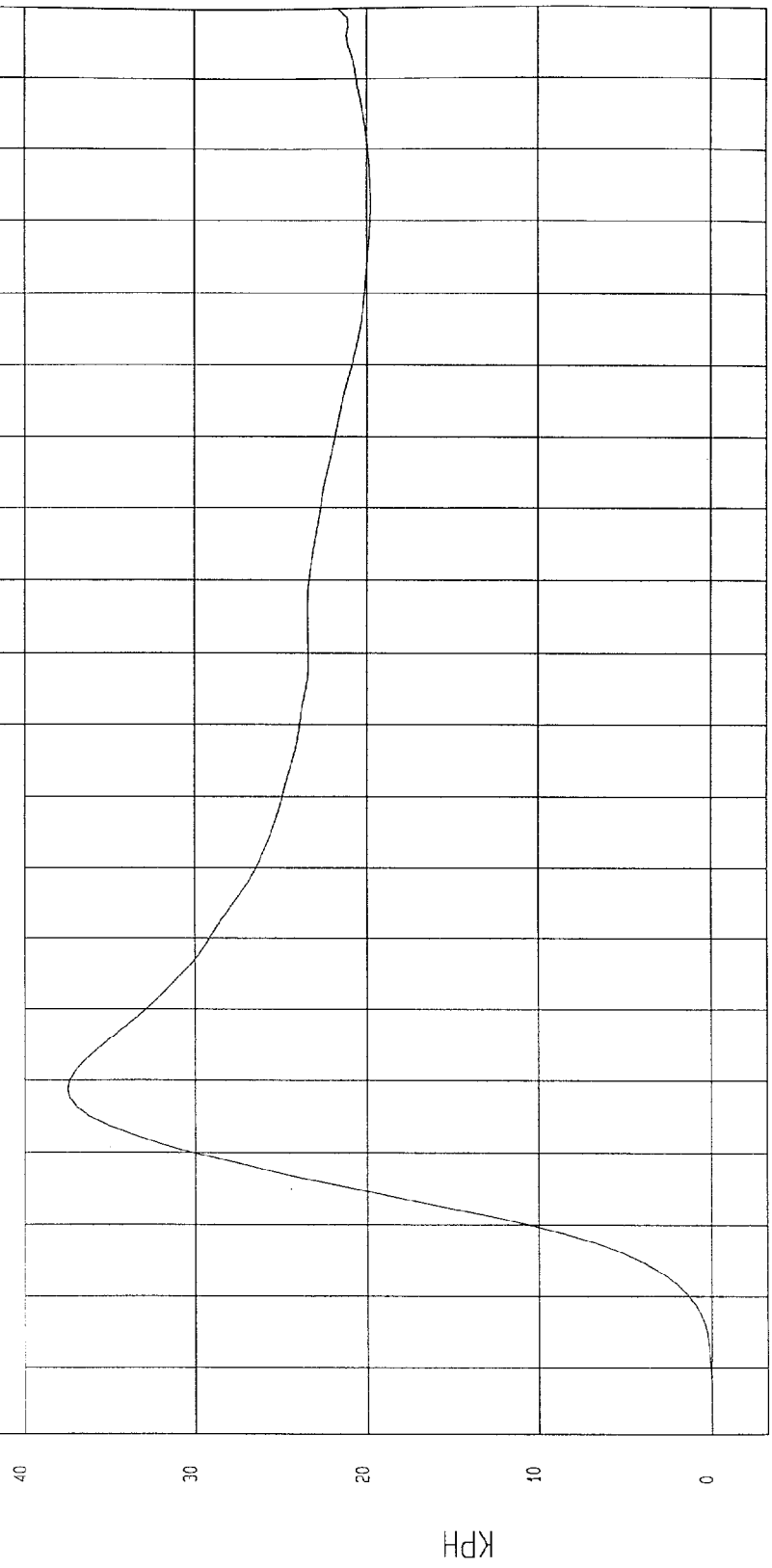
COMPONENT: 1998 VOLKSWAGEN JETTA (CW5801)

Maximum = 37.46 KPH at 49 msec

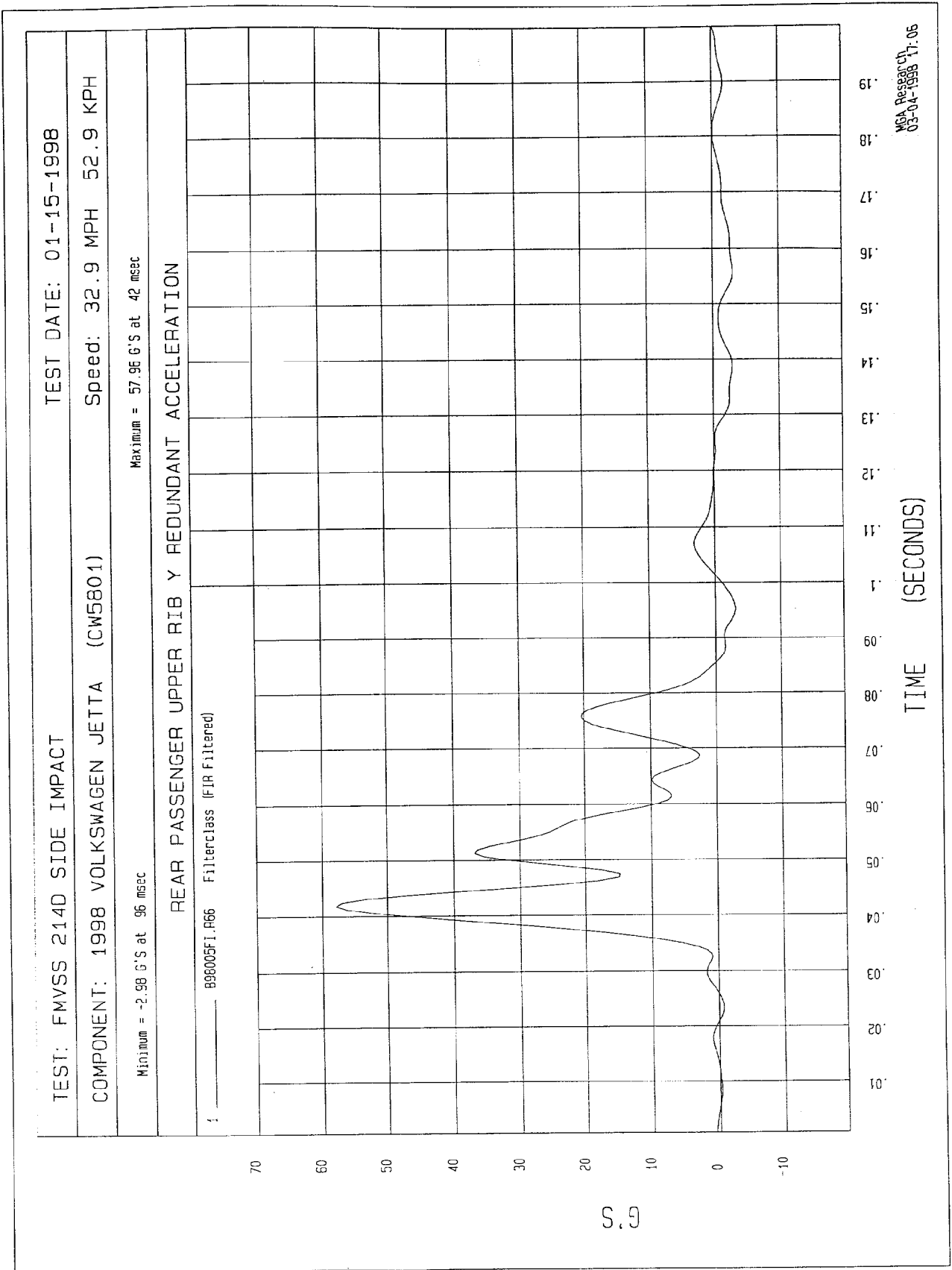
Minimum = -7.93E-05 KPH at -16 msec

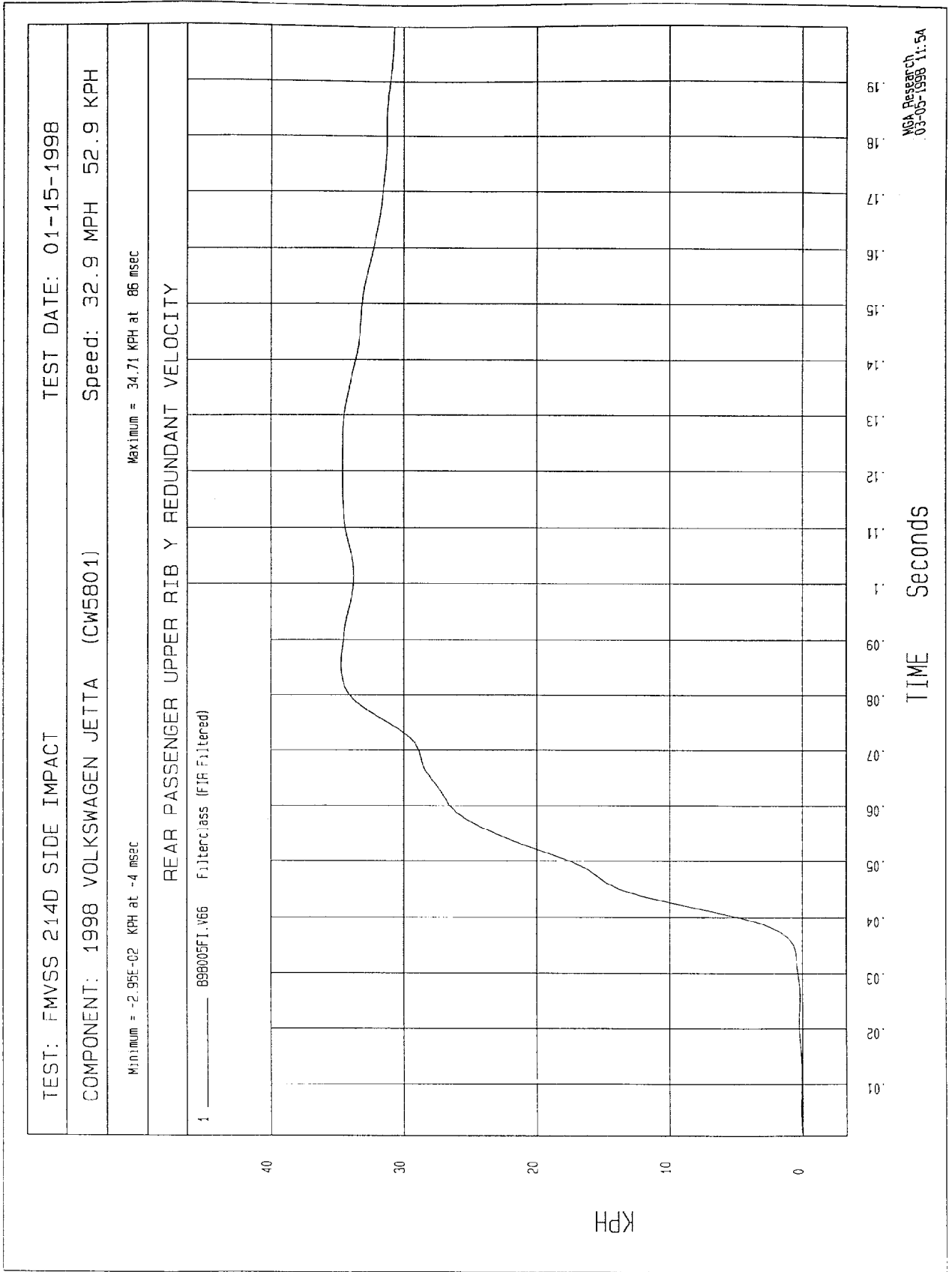
DRIVER PELVIS Y REDUNDANT VELOCITY

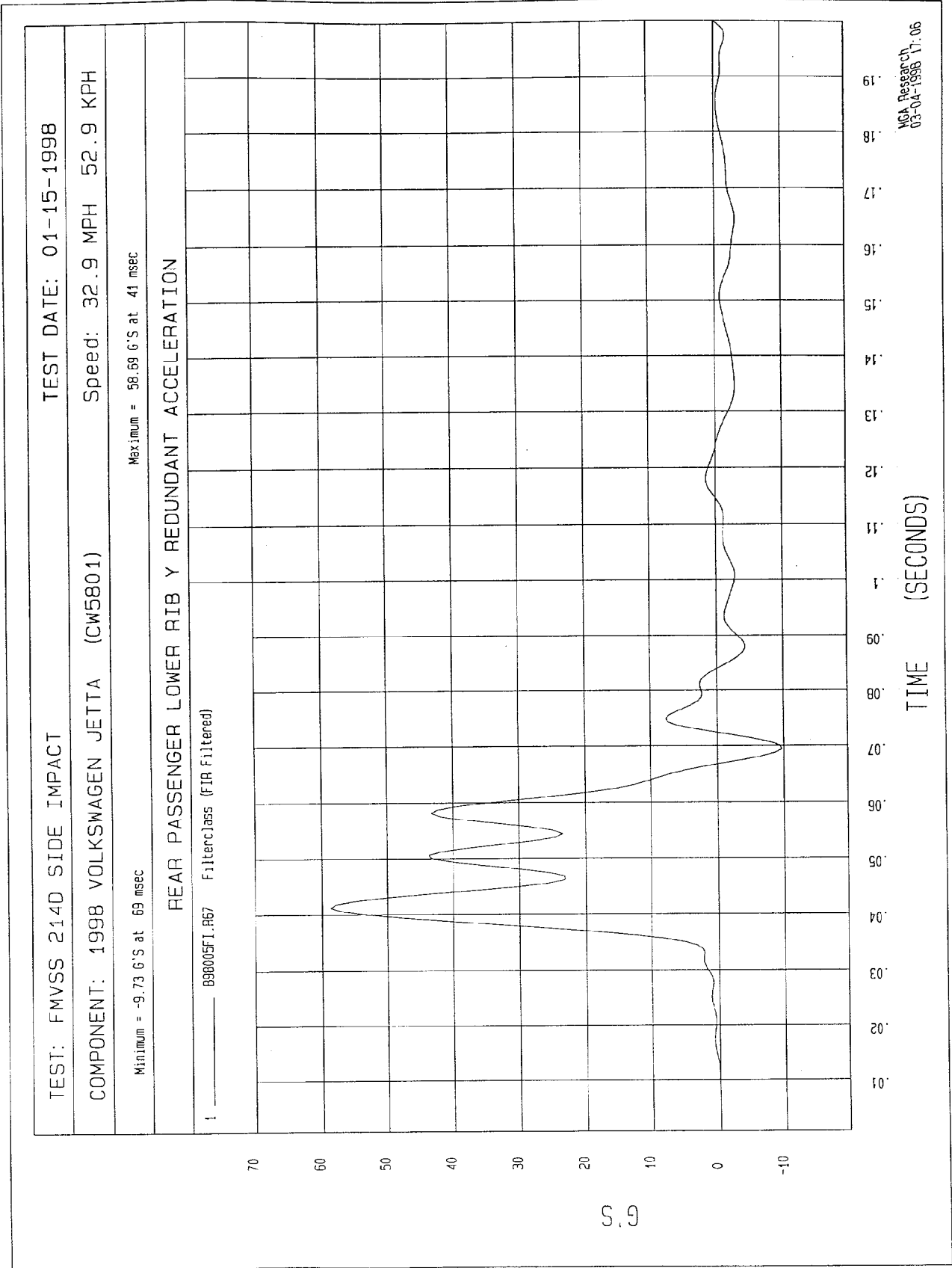
1 ——— B98005F1.V65 Filterclass (FIR Filtered)



TIME Seconds
MCA Research
03-05-1998 11:54





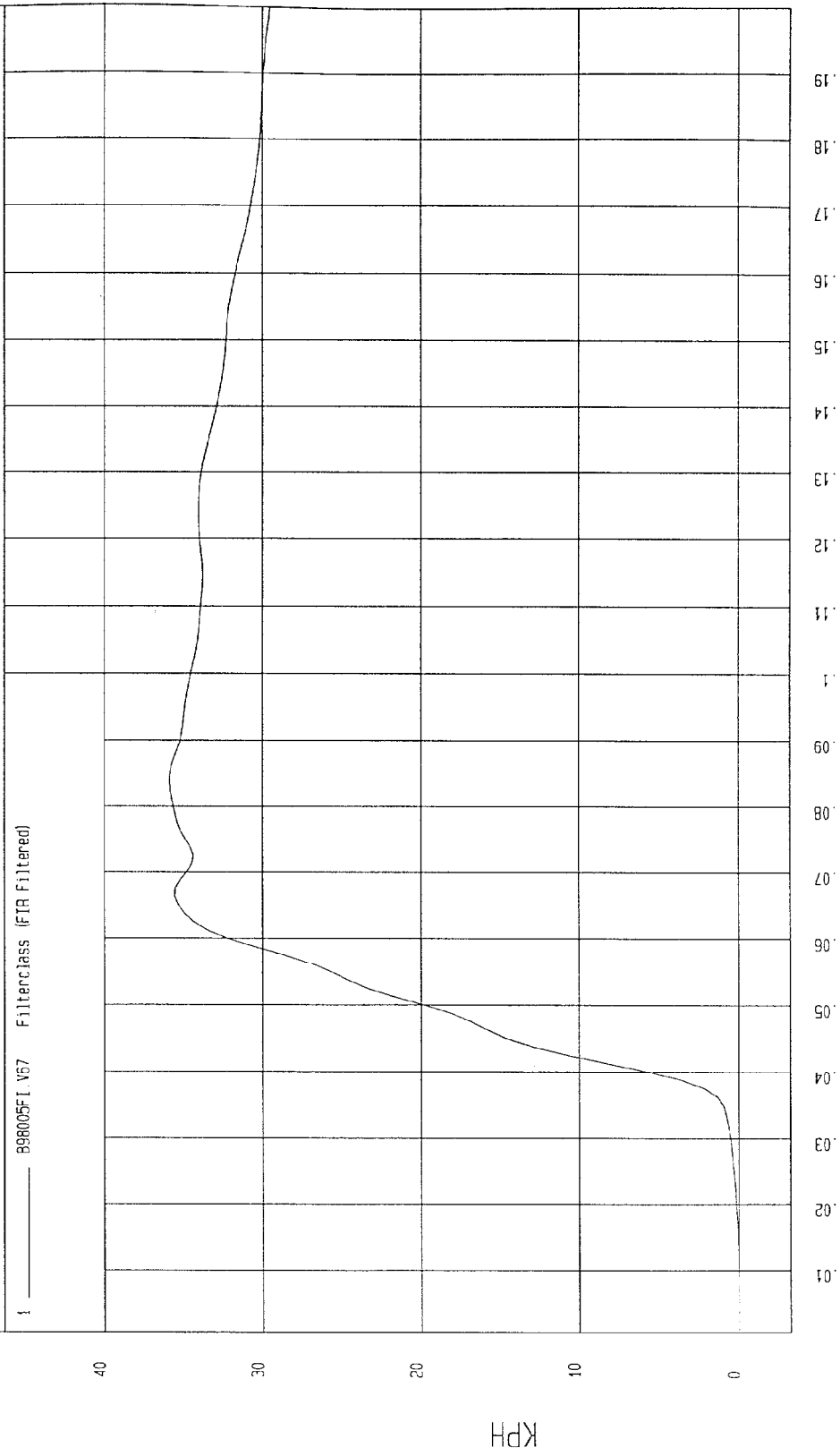


TEST: FMVSS 214D SIDE IMPACT TEST DATE: 01-15-1998

COMPONENT: 1998 VOLKSWAGEN JETTA (CW5801) Speed: 32.9 MPH 52.9 KPH

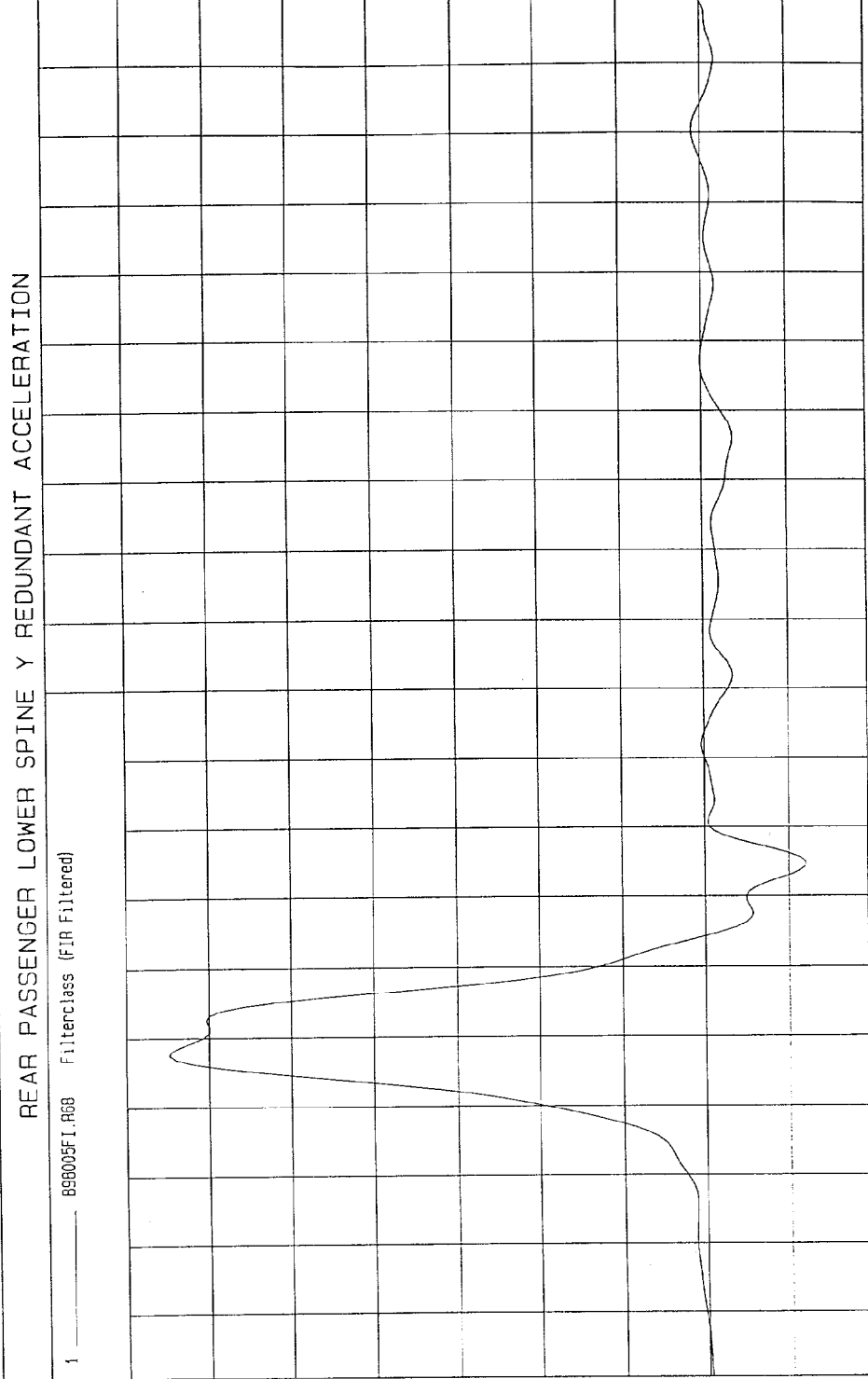
Minimum = -5.44E-05 KPH at -19 msec Maximum = 35.88 KPH at 84 msec

REAR PASSENGER LOWER RIB Y REDUNDANT VELOCITY



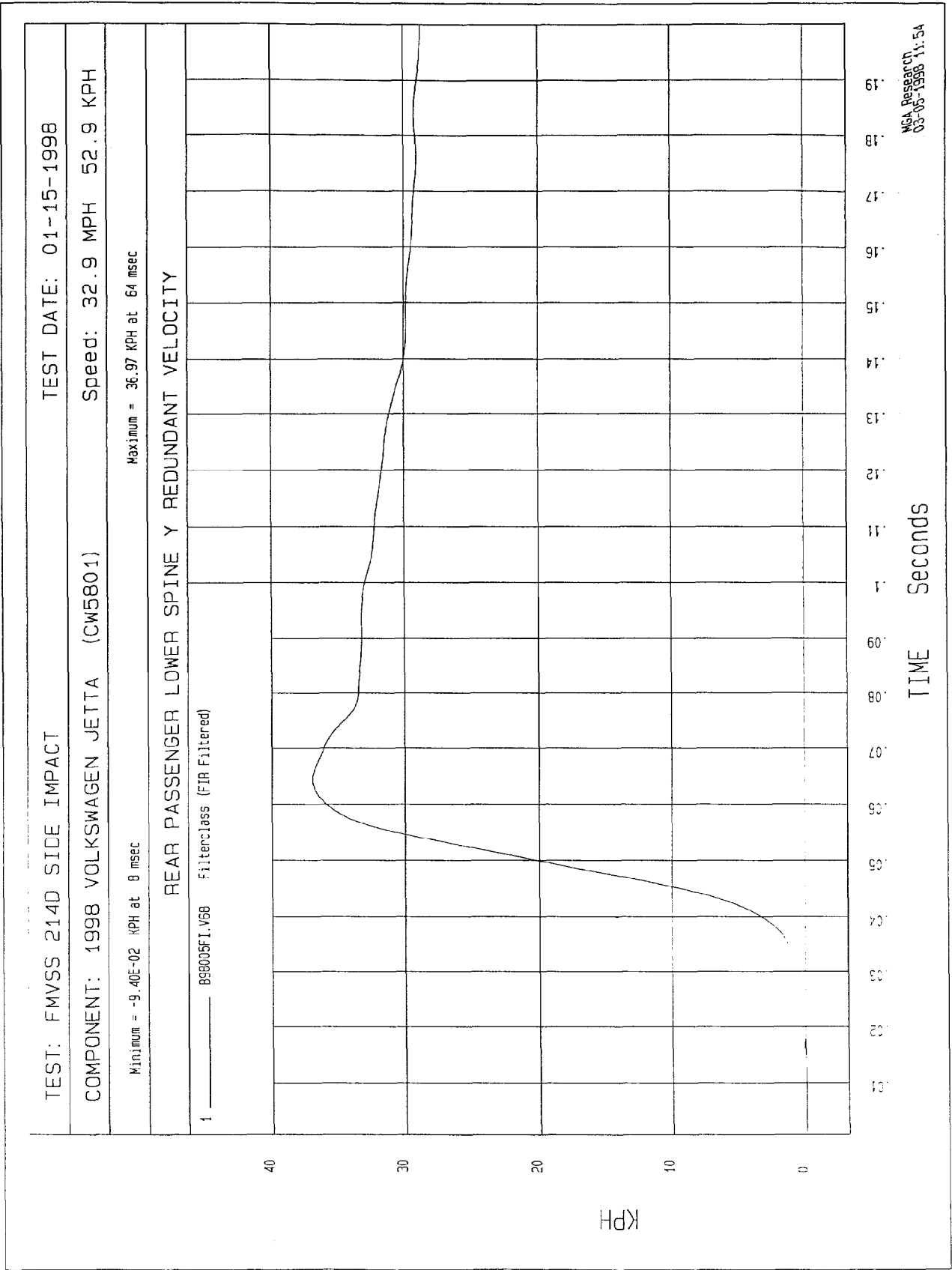
MCA Research
03-05-1998 11:54

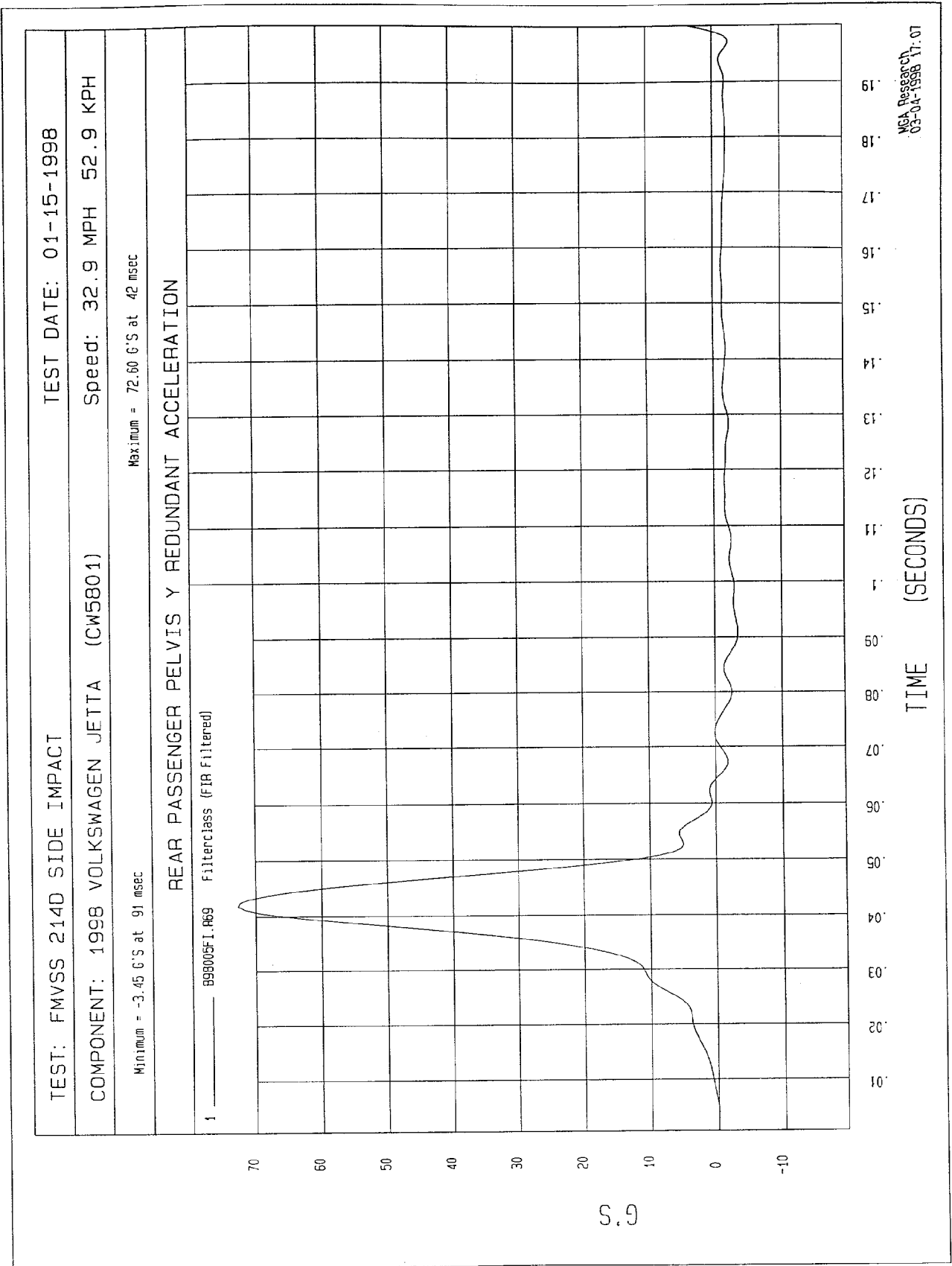
TEST: FMVSS 214D SIDE IMPACT	TEST DATE: 01-15-1998
COMPONENT: 1998 VOLKSWAGEN JETTA (CW5801)	Speed: 32.9 MPH 52.9 KPH
Minimum = -12.09 G'S at 75 msec	
Maximum = 64.85 G'S at 48 msec	

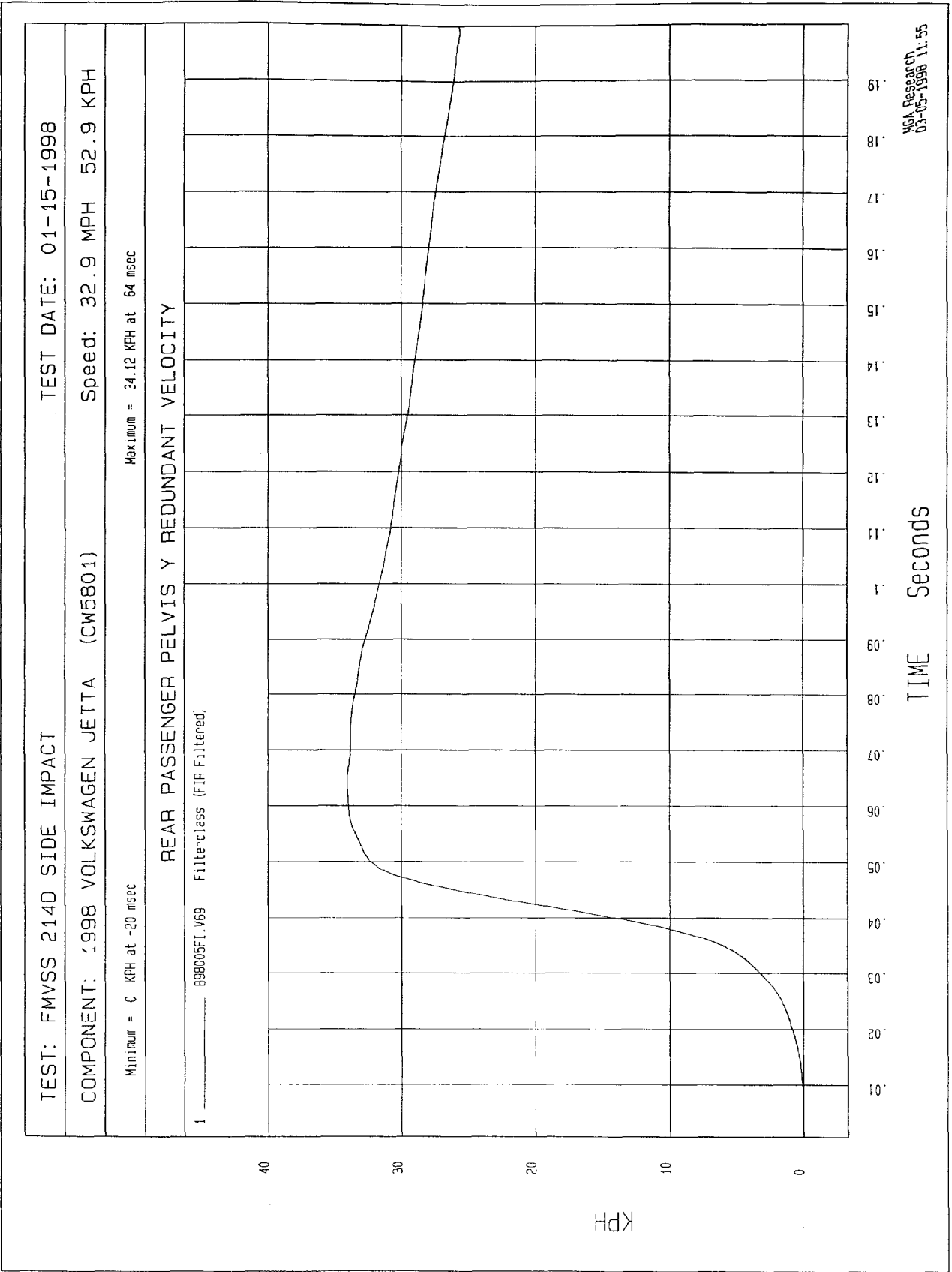


TIME (SECONDS)

MSA Research
03-04-1998 17:06







APPENDIX C
SID CONFIGURATION AND PERFORMANCE VERIFICATION

REPORT NO. MGA-98-DC08

DUMMY PERFORMANCE CALIBRATIONS

FMVSS 214 - SIDE IMPACT TEST

VOLKSWAGEN AMERICA, INC.
1998 VOLKSWAGEN JETTA GL
NHTSA NO. CW5801

MGA PROVING GROUNDS
5000 WARREN ROAD
BURLINGTON, WI 53105



Test Date: January 15, 1998

Report Date: February 3, 1998

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

TABLE OF CONTENTS

		<u>Page No.</u>
DUMMY S/N: 036	PRE-TEST CERTIFICATION DATA	1-1
DUMMY S/N: 037	PRE-TEST CERTIFICATION DATA	2-1
DUMMY S/N: 036	POST-TEST CERTIFICATION DATA	3-1
DUMMY S/N: 037	POST-TEST CERTIFICATION DATA	4-1
DUMMY S/N: 036	POST-TEST INSPECTION CHECKLIST	5-1
DUMMY S/N: 037	POST-TEST INSPECTION CHECKLIST	6-1
	VEHICLE AND DUMMY TEMPERATURE	7-1

PRE-TEST CERTIFICATION DATA

Front Dummy Serial Number: 036

Calibration Test Results Summary

Dummy Serial Number: 036

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.

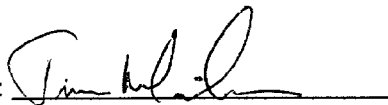
SIDE IMPACT DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

DUMMY NO.: 036

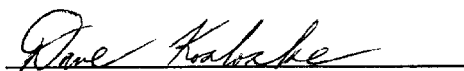
DATE OF VERIFICATION: January 14, 1998

DESCRIPTION	SPECIFICATION	TEST RESULTS
SH - Seated Height	35.0" - 35.8"	35.6
RH - Rib Height	19.75" - 20.50"	20.00
HP - Hip Pivot Height	3.9" ref.	3.9
RD - Rib From Back Line	9.0" to 9.5"	9.1
KV - Knee Pivot From Back Line	20.1" - 20.7"	20.5
SW - Knee Pivot to Floor	19.3" - 19.9"	19.4
HW - Hip Width	14.0" - 15.4"	14.5

MEASUREMENTS BY:



APPROVED BY:



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

DATE: January 14, 1998

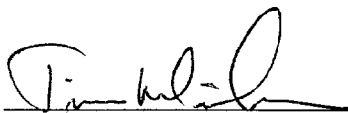
DUMMY NUMBER: 036

TEST NUMBER: D9809678

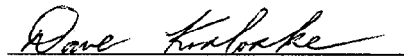
TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		66° - 78° F	70°
RELATIVE HUMIDITY		10 - 70%	12%
VELOCITY 10 ft/s	FORCE (lb.)	188 - 253	204
	DISPLACEMENT (in.)	1.18 - 1.38	1.20
VELOCITY 14 ft/s	FORCE (lb.)	389 - 472	441
	DISPLACEMENT (in.)	1.26 - 1.47	1.33
VELOCITY 20 ft/s	FORCE (lb.)	841 - 1000	857
	DISPLACEMENT (in.)	1.30 - 1.57	1.37

TEST MEETS SPECIFICATIONS

TECHNICIAN



APPROVED BY



TEST: DAMPENER BENCH TEST

TEST DATE: 01-14-1998 - 15:16

COMPONENT: DUMMY # 036

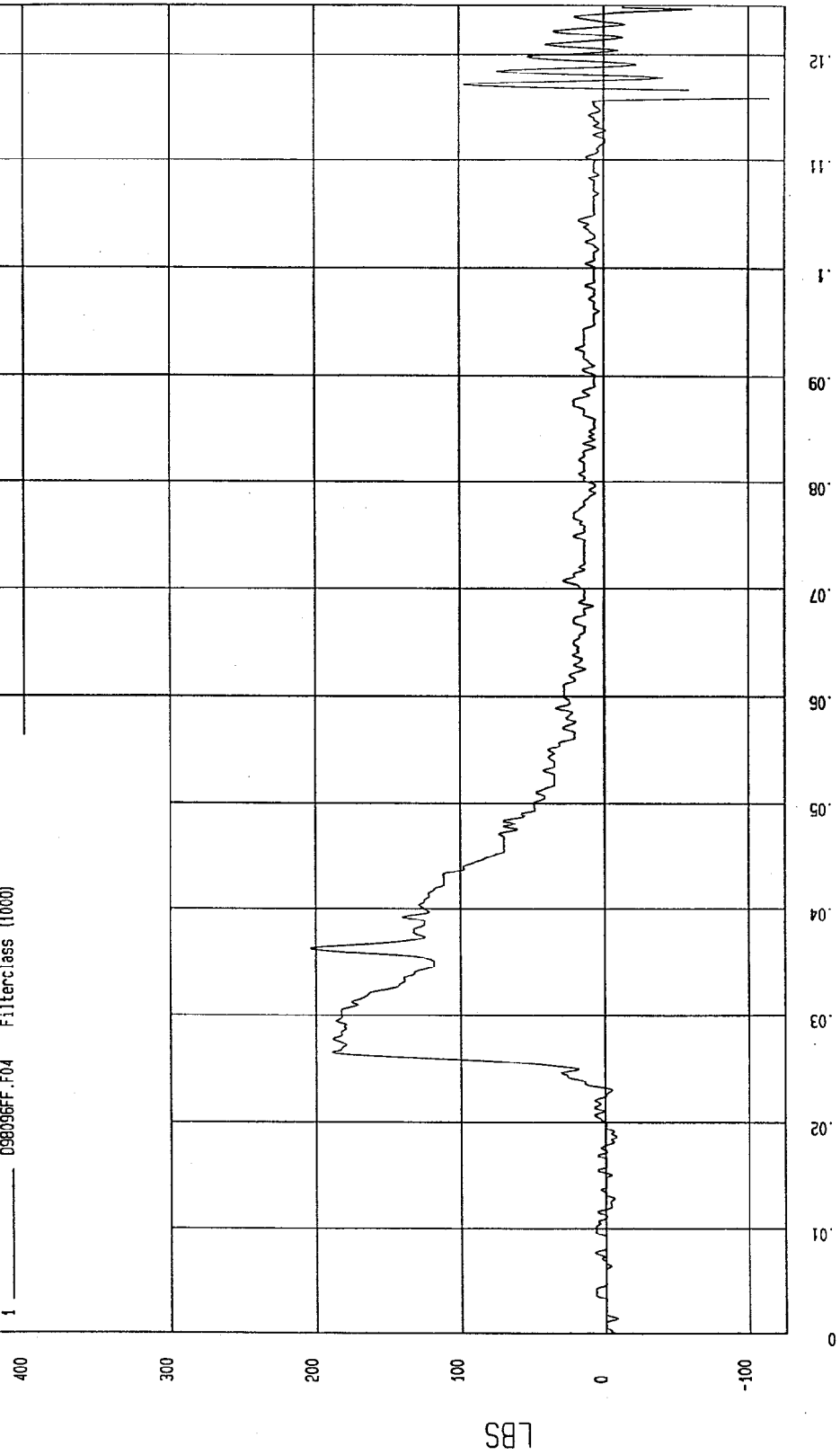
Velocity: 10 FT/SEC 3.05 M/SEC

Minimum = -309.72 LBS at 116. msec

Maximum = 203.73 LBS at 36.3 msec

PEAK FORCE

1 _____ D98096FF.F04 Filterclass (1000)



NCA Research
01-14-1998 15:35

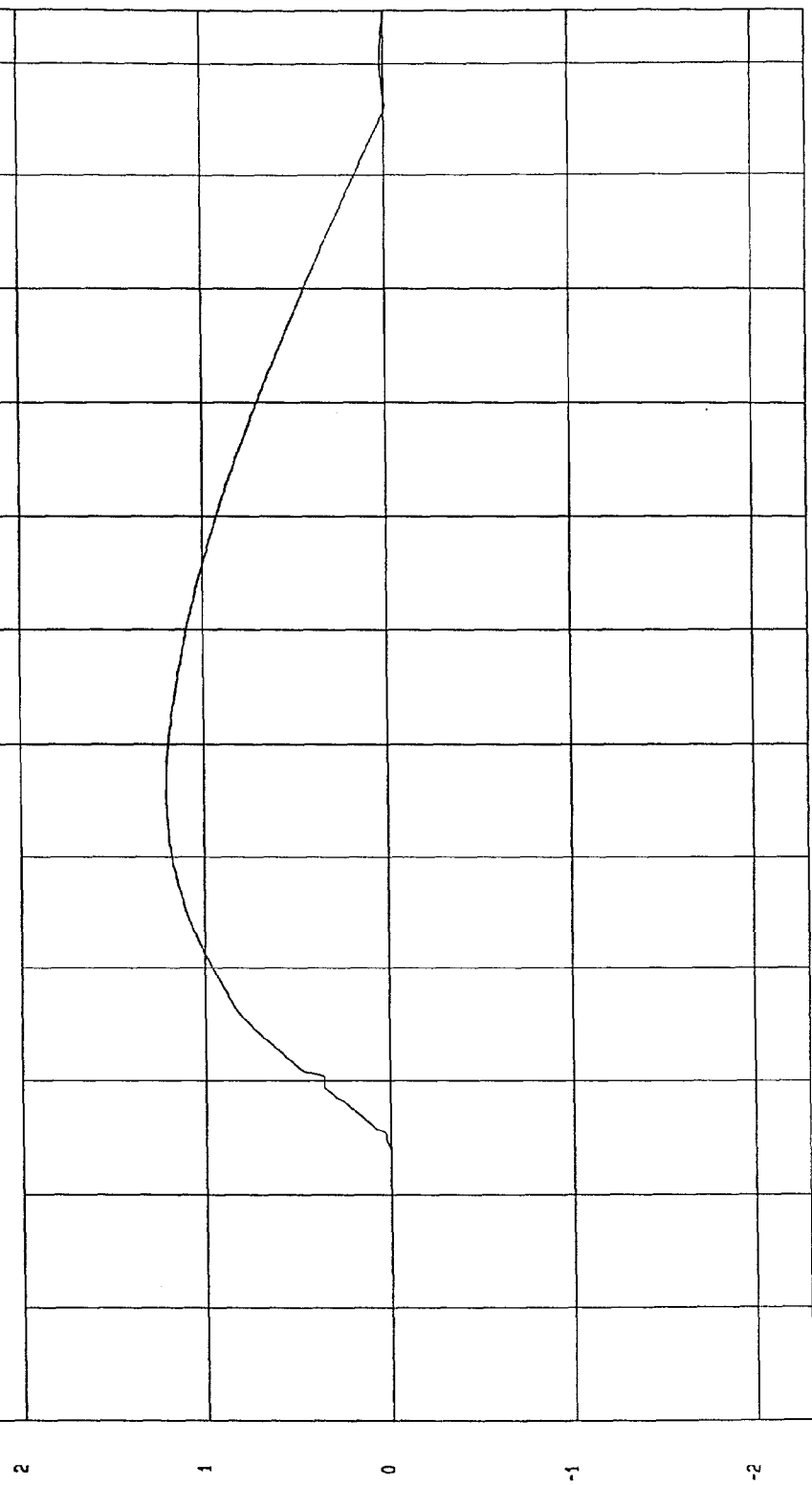
TEST: DAMPENER BENCH TEST TEST DATE: 01-14-1998 - 15:16

COMPONENT: DUMMY # 036 Velocity: 10 FT/SEC 3.05 M/SEC

Minimum = -7.37E-03 IN at 116. msec Maximum = 1.20 IN at 54.6 msec

PEAK DISPLACEMENT

1 ——— D98096DF.005 Filterclass (1000)



TIME (SECONDS)

MCA Research
01-14-1998 15:36

TEST: DAMPENER BENCH TEST

TEST DATE: 01-14-1998 - 15:31

COMPONENT: DUMMY # 036

Velocity: 14 FT/SEC 4.27 M/SEC

Minimum = -381.36 LBS at 104. msec

Maximum = 440.79 LBS at 25.7 msec

PEAK FORCE

1 098097FF.F04 Filterclass (1000)

600

400

200

0

-200

-400

LBS

0

0.01

0.02

0.03

0.04

0.05

0.06

0.07

0.08

0.09

0.1

0.11

0.12

TIME (SECONDS)

MCA Research
01-14-1998 15:35

TEST: DAMPENER BENCH TEST

TEST DATE: 01-14-1998 - 15:31

COMPONENT: DUMMY # 036

Velocity: 14 FT/SEC 4.27 M/SEC

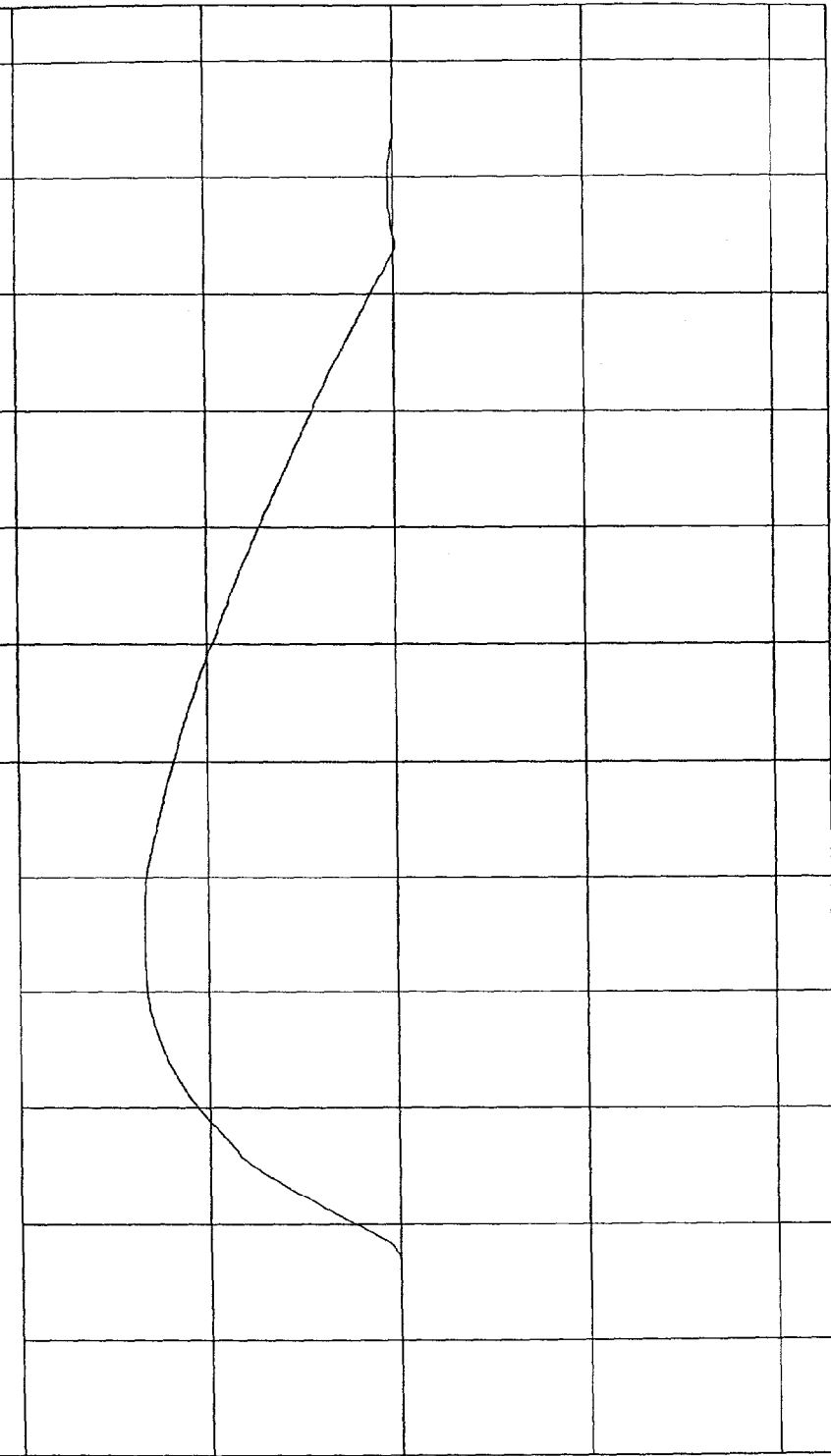
Minimum = -9.26E-03 IN at 104. msec

Maximum = 1.33 IN at 45.6 msec

PEAK DISPLACEMENT

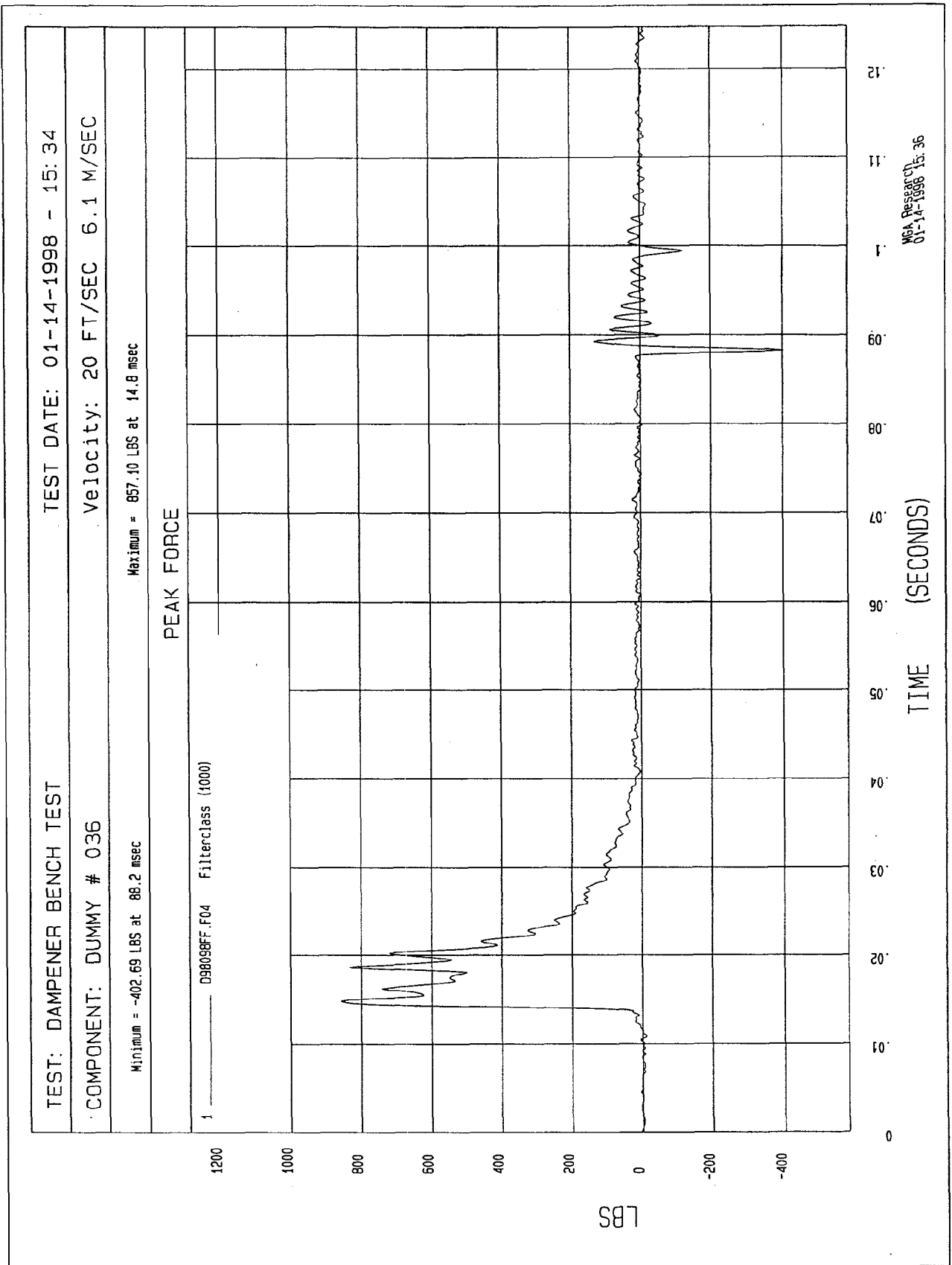
1 ——— 0980970F.005 Filterclass (1000)

2
1
0
-1
-2



NSA Research
01-14-1998 15:35

TIME (SECONDS)



TEST: DAMPENER BENCH TEST

TEST DATE: 01-14-1998 - 15:34

COMPONENT: DUMMY # 036

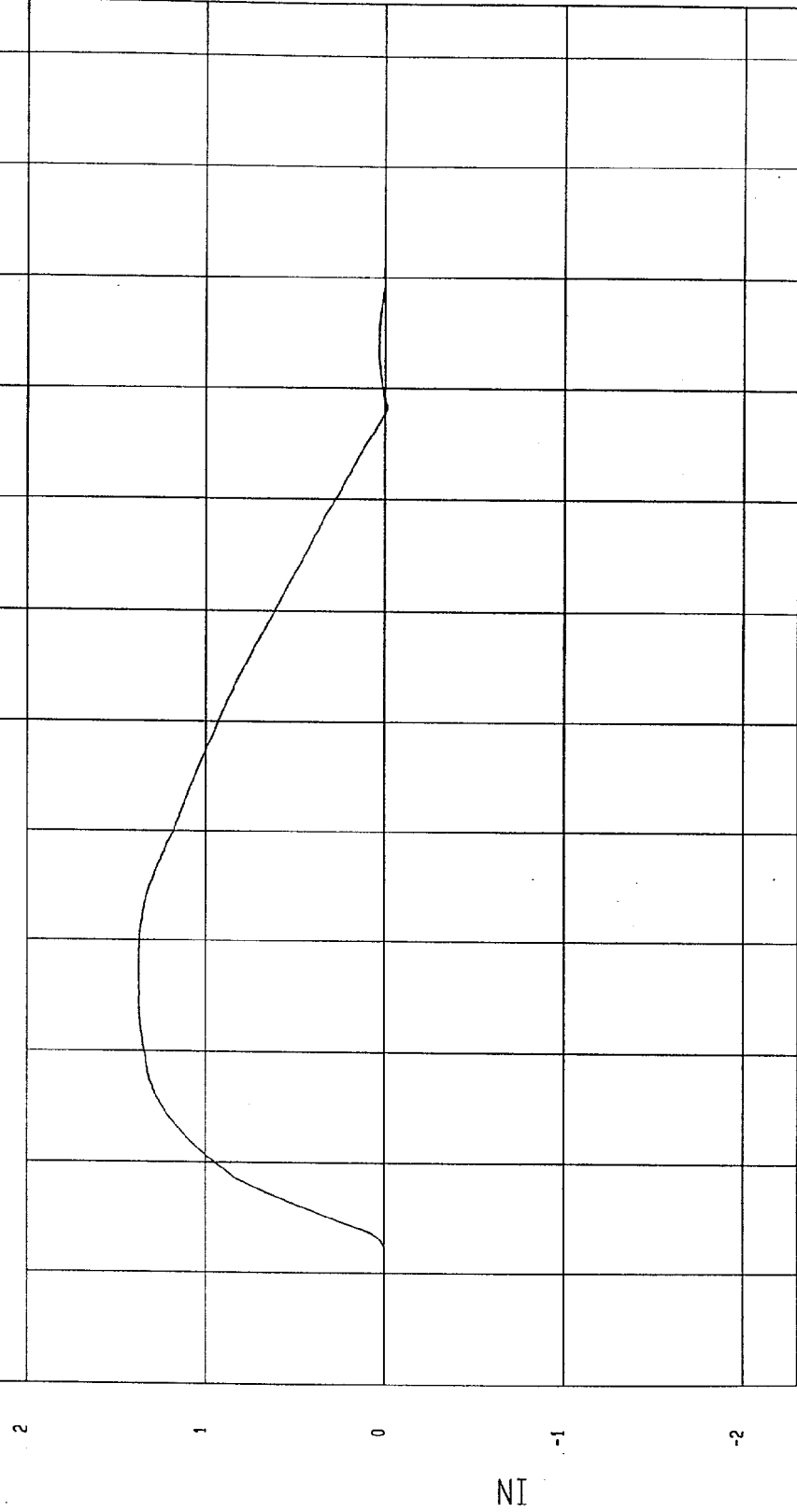
Velocity: 20 FT/SEC 6.1 M/SEC

Minimum = -1.25E-02 IN at 88.2 msec

Maximum = 1.37 IN at 37.6 msec

PEAK DISPLACEMENT

1 ——— D98098DF 005 Filterclass (1000)



MOA Research
01-14-1998 15:37

MGA RESEARCH CORPORATION

THORAX IMPACT TEST

SIDE IMPACT DUMMY (SID)

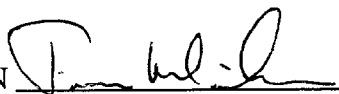
DATE: January 14, 1998

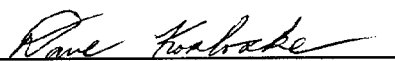
DUMMY NUMBER: 036

TEST NUMBER: D98092

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	12%
PROBE SPEED	14.0 - 14.2 fps	14.1
UPPER RIB	37 - 46 g's	41
LOWER RIB	37 - 46 g's	42
LOWER SPINE	15 - 22 g's	19

TEST MEETS SPECIFICATIONS

TECHNICIAN 

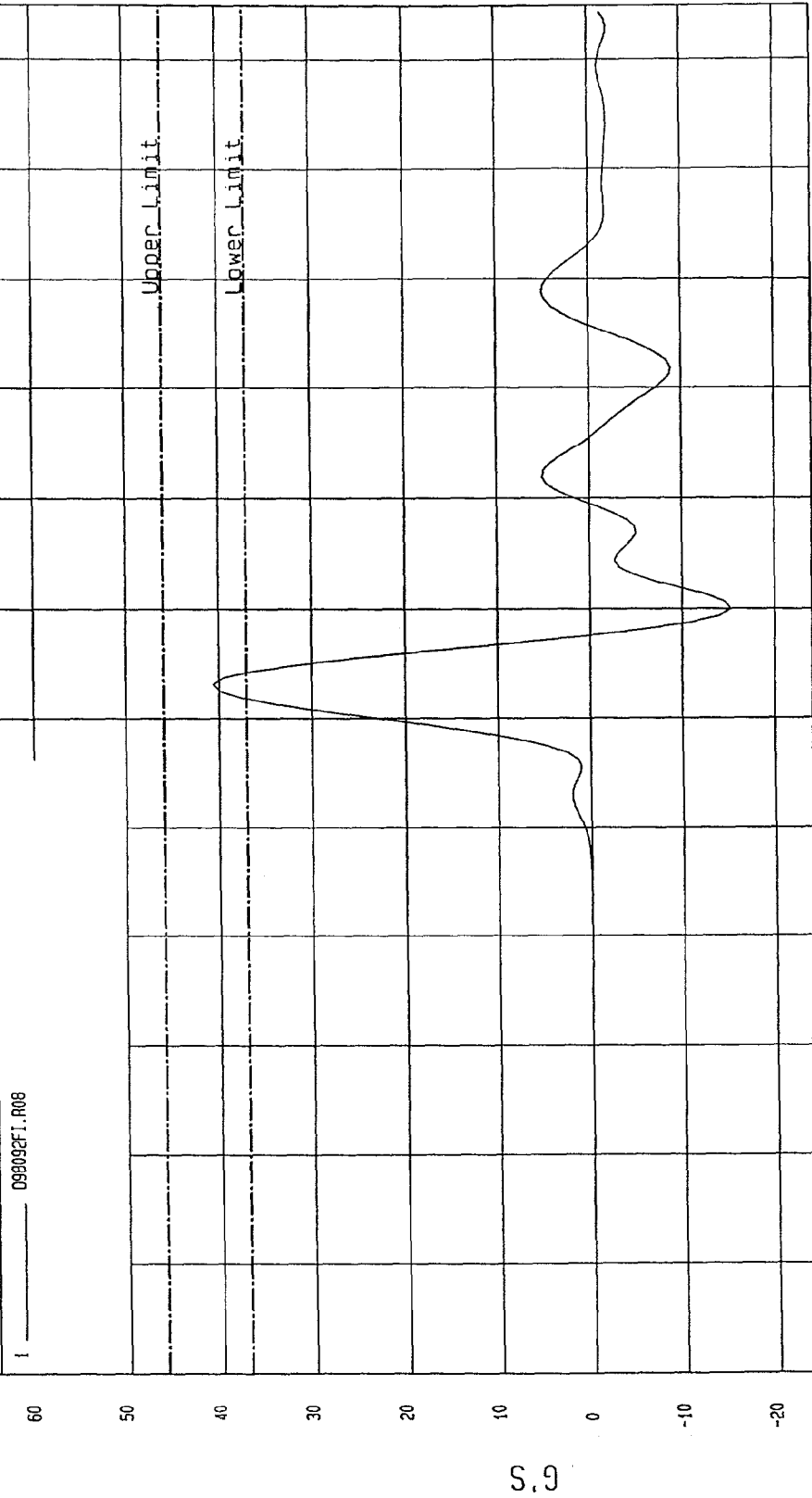
APPROVED BY 

TEST: DUMMY CALIBRATION - THORAX IMPACT TEST DATE: 01-14-1998 - 17:33

COMPONENT: DUMMY # 036 Velocity: 14.115 FT/SEC 4.3 M/SEC

Minimum = -15.21 G'S at 70 msec Maximum = 40.64 G'S at 63.1 msec

UPPER RIB ACCELERATION



NGA Research
01-14-1998 17:39

TEST: DUMMY CALIBRATION - THORAX IMPACT TEST DATE: 01-14-1998 - 17:33

COMPONENT: DUMMY # 036 Velocity: 14.115 FT/SEC 4.3 M/SEC

Minimum = -15.60 G'S at 70 msec

Maximum = 42.18 G'S at 63.1 msec

LOWER RIB ACCELERATION

1 _____ 098092F1.R09

60
50
40
30
20
10
0
-10
-20

Upper Limit

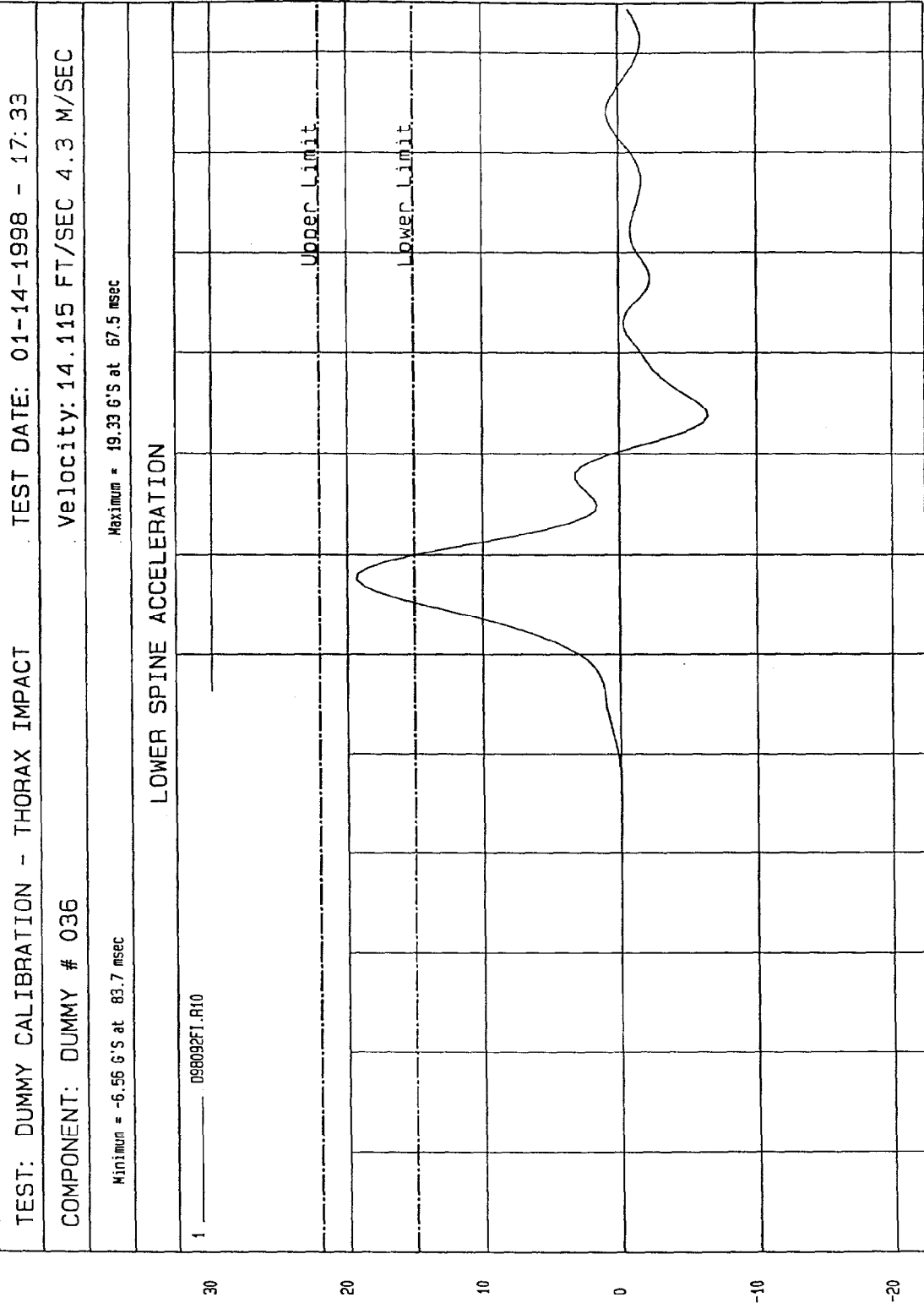
Lower Limit

S.9

TIME (SECONDS)

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

NCA Research
01-14-1998 17:39



TIME (SECONDS)

WSA Research
01-14-1998 17:39

G's

MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: January 14, 1998

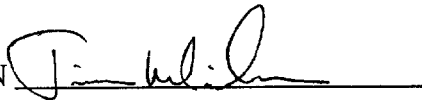
DUMMY NUMBER: 036

TEST NUMBER: D98093

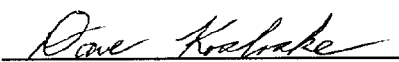
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	12%
PROBE SPEED	14.0 - 14.2 f/s	14.1
PELVIS ACCELERATION	40 - 60 g's	46

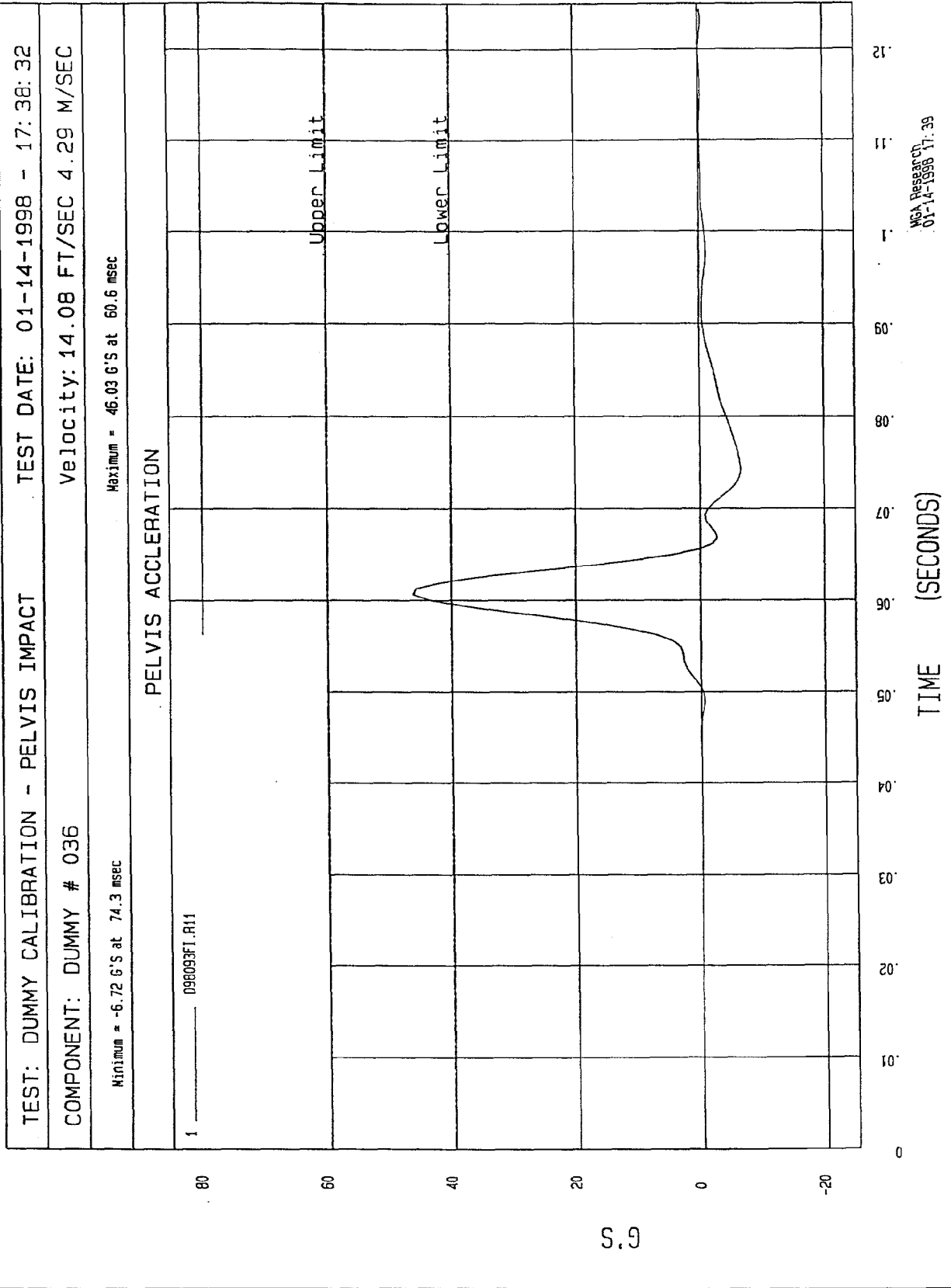
TEST MEETS SPECIFICATIONS

TECHNICIAN



APPROVED BY





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

DATE: January 13, 1998

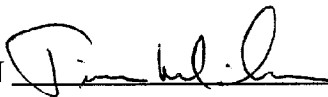
DUMMY NUMBER: 036

TEST NUMBER: D98094

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	12%
FORCE @ 0.5 in	23.3 - 36.5 lbs	34.1
FORCE @ 0.75 in	36.7 - 49.8 lbs	46.8
FORCE @ 1.0 in	50 - 63 lbs	62
FORCE @ 1.3 in	73 - 88 lbs	84

TEST MEETS SPECIFICATIONS

TECHNICIAN



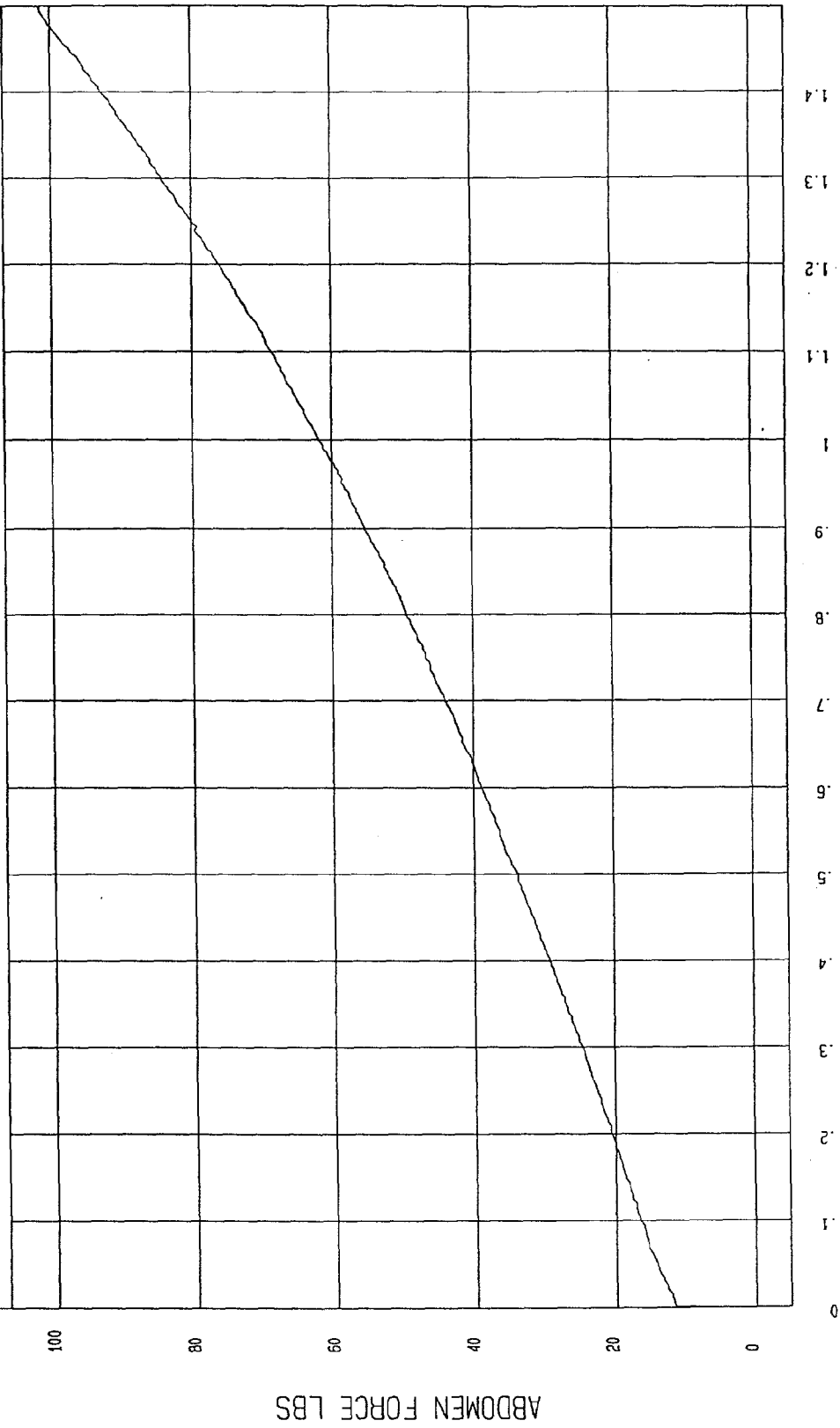
APPROVED BY



TEST: DUMMY CALIBRATION - ABDOMEN COMPRESSION TEST DATE: 01-13-1998 - 17:59

COMPONENT: DUMMY # 036

ABDOMEN FORCE as a function of ABDOMEN DISPLACEMENT



MCA Research
01-13-1998 18:14

ABDOMEN DISPLACEMENT INCHES

ABDOMEN FORCE LBS

MGA RESEARCH CORPORATION

LUMBAR FLEXION TEST

SIDE IMPACT DUMMY (SID)

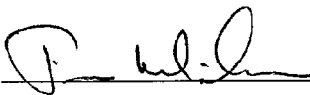
DATE: January 14, 1998

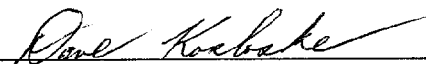
DUMMY NUMBER: 036

TEST NUMBER: D98095

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	12%
FORCE @ 0°	0 - 6 lbs	0
FORCE @ 20°	22 - 34 lbs	29
FORCE @ 30°	34 - 46 lbs	45
FORCE @ 40°	46 - 58 lbs	57
RETURN ANGLE	12° maximum	1°

TEST MEETS SPECIFICATIONS

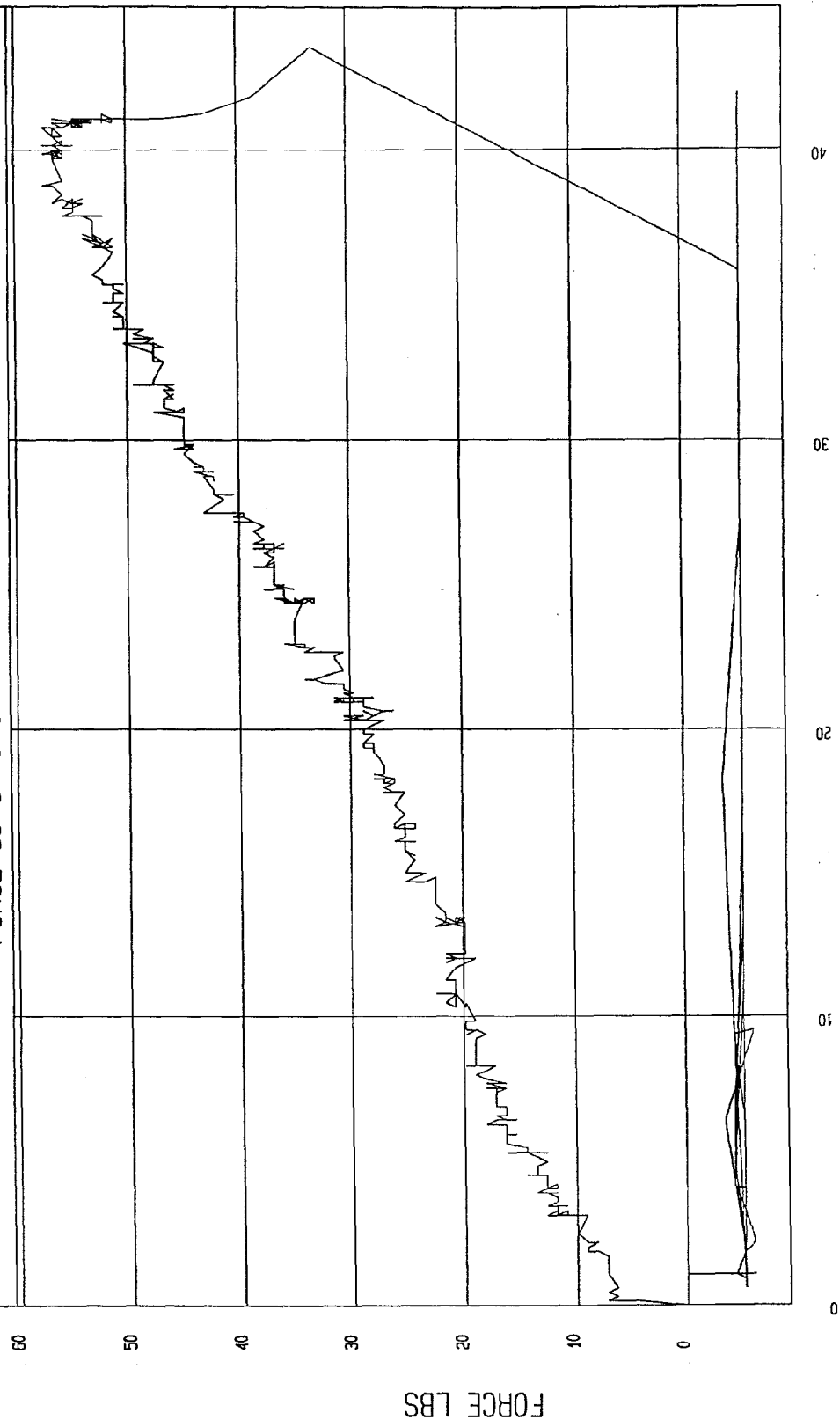
TECHNICIAN 

APPROVED BY 

TEST: DUMMY CALIBRATION - LUMBAR FLEXION TEST DATE: 01-14-1998 - 11:22

COMPONENT: DUMMY # 036

FORCE as a function of TORSO ROTATION



MCA Research
01-14-1998 17:42

PRE-TEST CERTIFICATION DATA

Rear Dummy Serial Number: 037

Calibration Test Results Summary

Dummy Serial Number: 037

Pre-Test Calibration

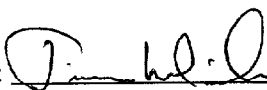
External Dimensions:	The dummy passed all external dimension requirements.
Thorax Impact Test:	The thorax passed all impact test requirements.
Pelvic Impact Test:	The pelvis passed all impact test requirements.
Abdominal Compression Test:	The abdomen passed all compression test requirements.
Lumbar Flexion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

SIDE IMPACT DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

DUMMY NO.: 037

DATE OF VERIFICATION: January 28, 1998

DESCRIPTION	SPECIFICATION	TEST RESULTS
SH - Seated Height	35.0" - 35.8"	35.5
RH - Rib Height	19.75" - 20.50"	19.95
HP - Hip Pivot Height	3.9" ref.	3.9
RD - Rib From Back Line	9.0" to 9.5"	9.2
KV - Knee Pivot From Back Line	20.1" - 20.7"	20.6
SW - Knee Pivot to Floor	19.3" - 19.9"	19.4
HW - Hip Width	14.0" - 15.4"	14.8

MEASUREMENTS BY: 

APPROVED BY: 

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

DATE: January 14, 1998

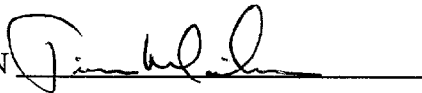
DUMMY NUMBER: 037

TEST NUMBER: D9810678

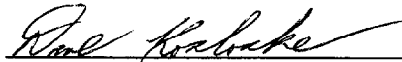
TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		66° - 78° F	70°
RELATIVE HUMIDITY		10 - 70%	12%
VELOCITY 10 ft/s	FORCE (lb.)	188 - 253	228
	DISPLACEMENT (in.)	1.18 - 1.38	1.21
VELOCITY 14 ft/s	FORCE (lb.)	389 - 472	426
	DISPLACEMENT (in.)	1.26 - 1.47	1.38
VELOCITY 20 ft/s	FORCE (lb.)	841 - 1000	855
	DISPLACEMENT (in.)	1.30 - 1.57	1.43

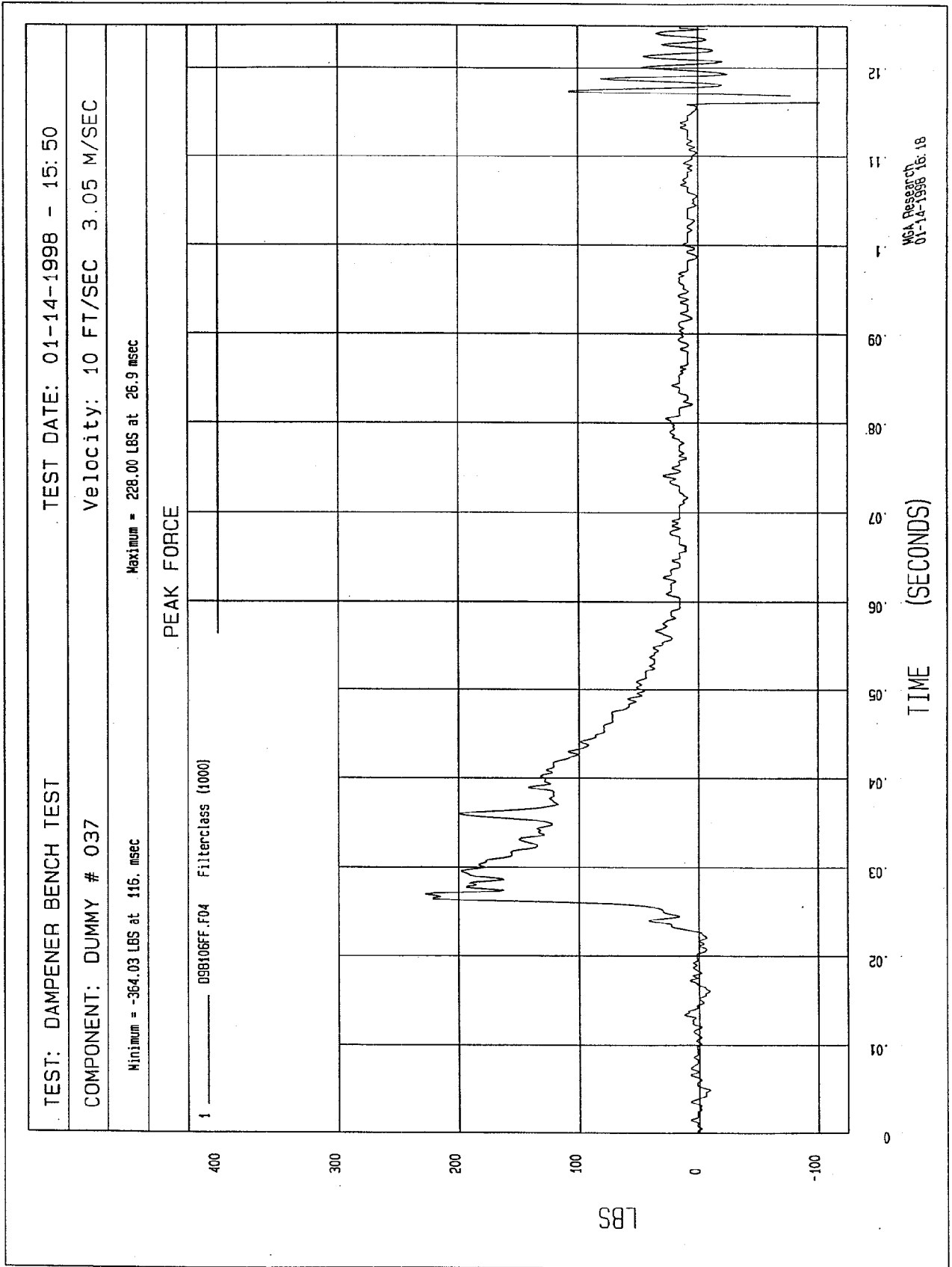
TEST MEETS SPECIFICATIONS

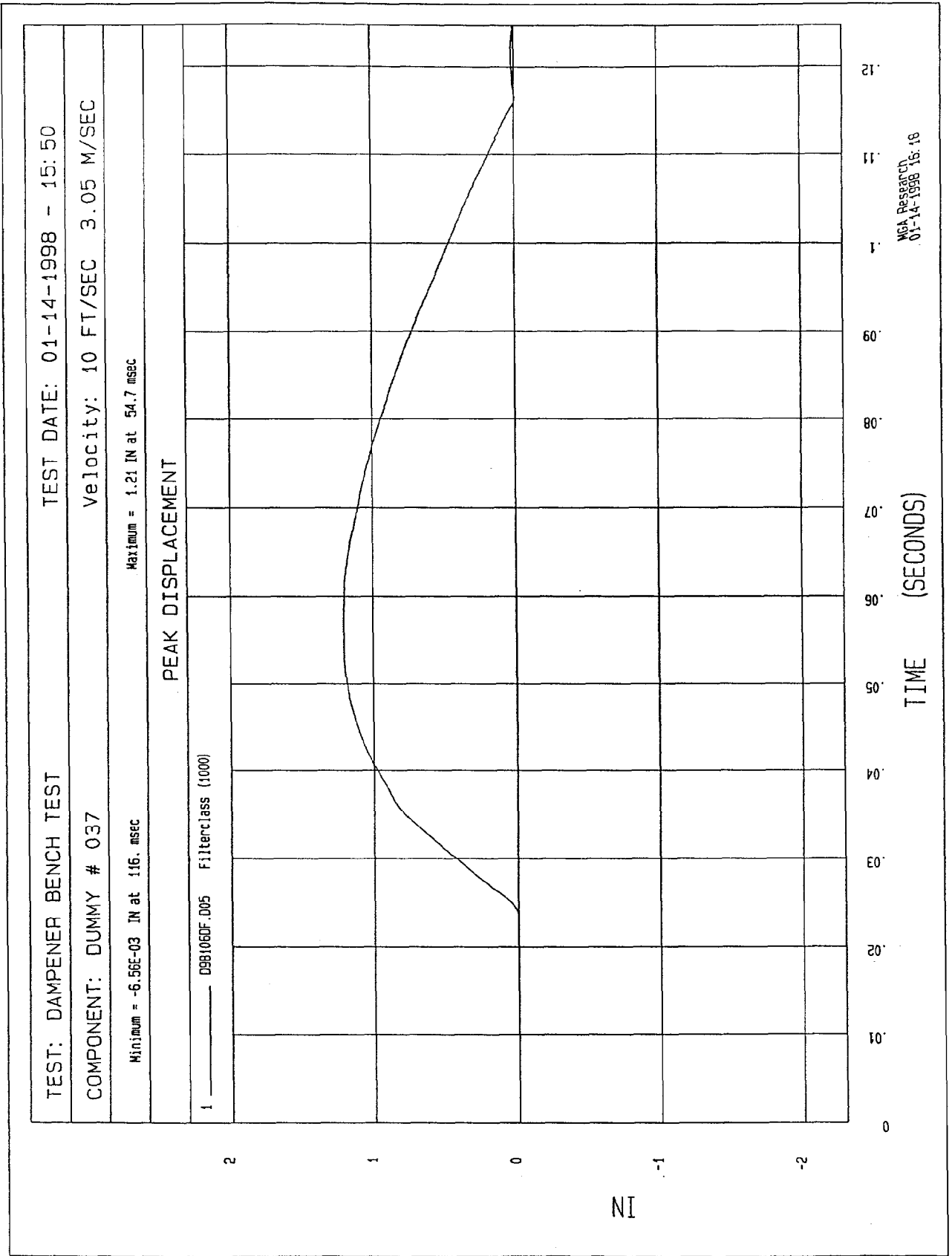
TECHNICIAN



APPROVED BY







TEST: DAMPENER BENCH TEST

TEST DATE: 01-14-1998 - 16:14

COMPONENT: DUMMY # 037

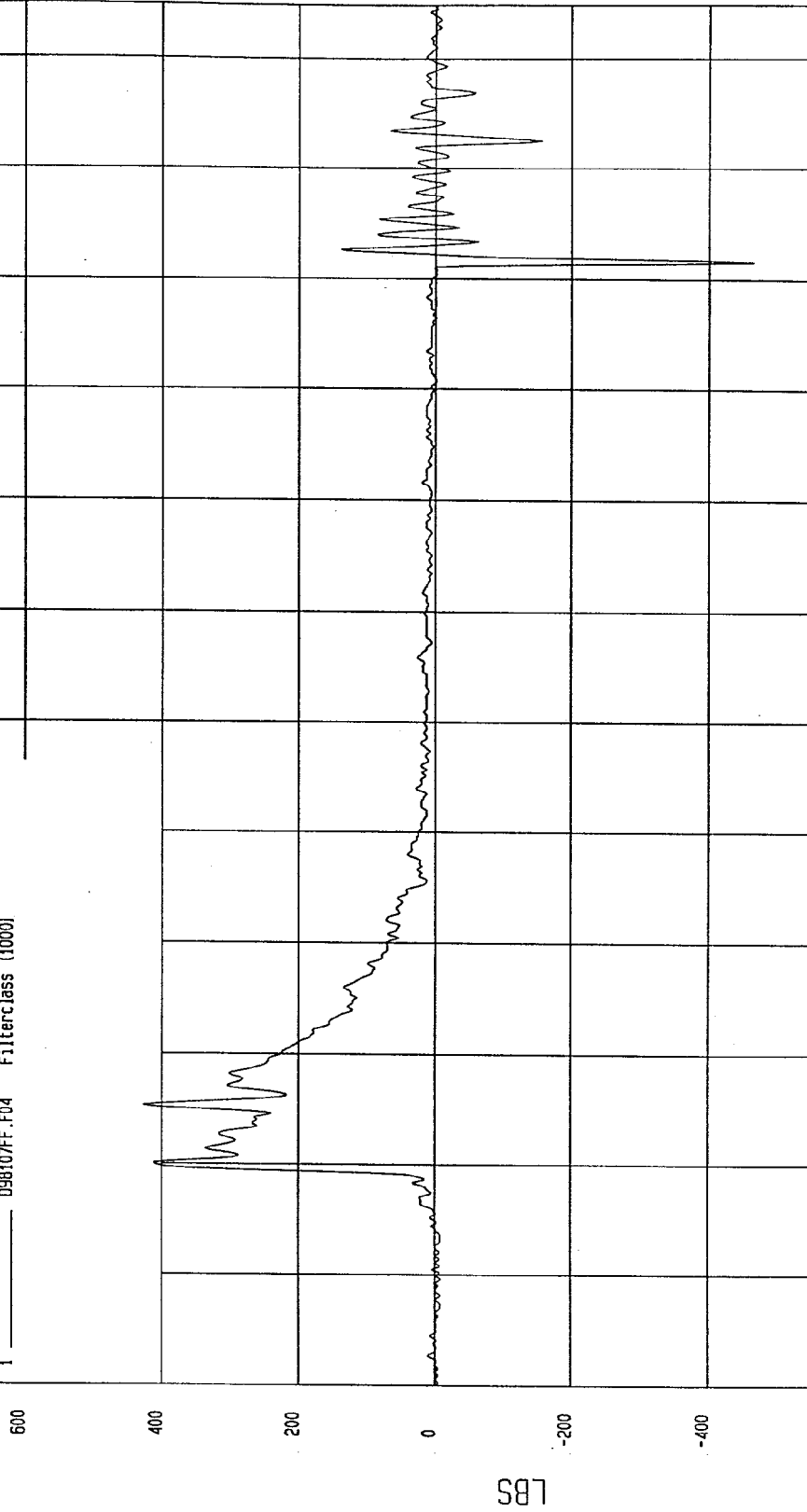
Velocity: 14 FT/SEC 4.27 M/SEC

Minimum = -463.84 LBS at 101. msec

Maximum = 426.08 LBS at 25.3 msec

PEAK FORCE

1 _____ D98107FF.F04 Filterclass (1000)



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

WSA Research
01-14-1998 16:18

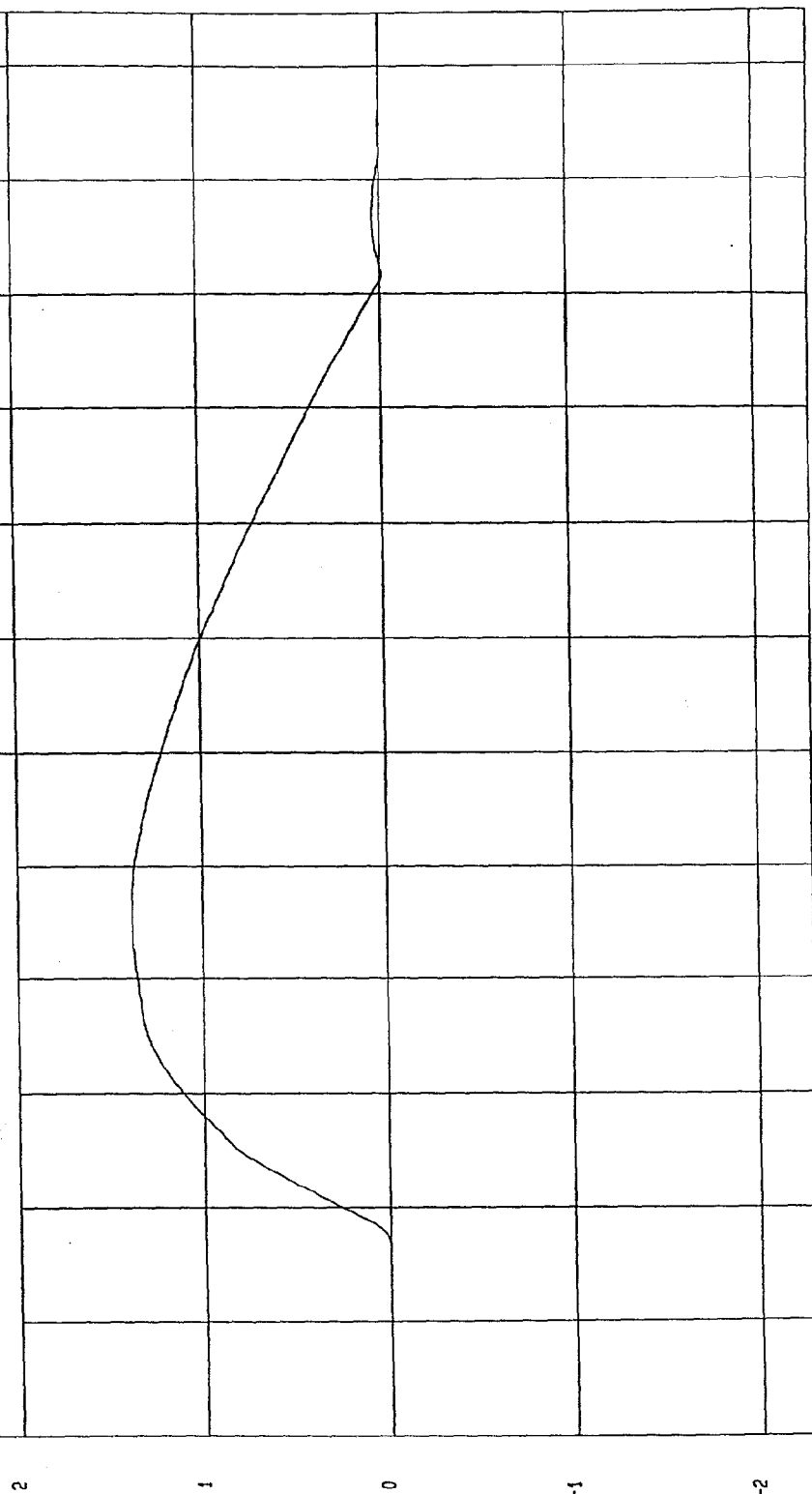
TEST: DAMPENER BENCH TEST TEST DATE: 01-14-1998 - 16:14

COMPONENT: DUMMY # 037 Velocity: 14 FT/SEC 4.27 M/SEC

Minimum = -8.23E-03 IN at 101. msec Maximum = 1.38 IN at 44.6 msec

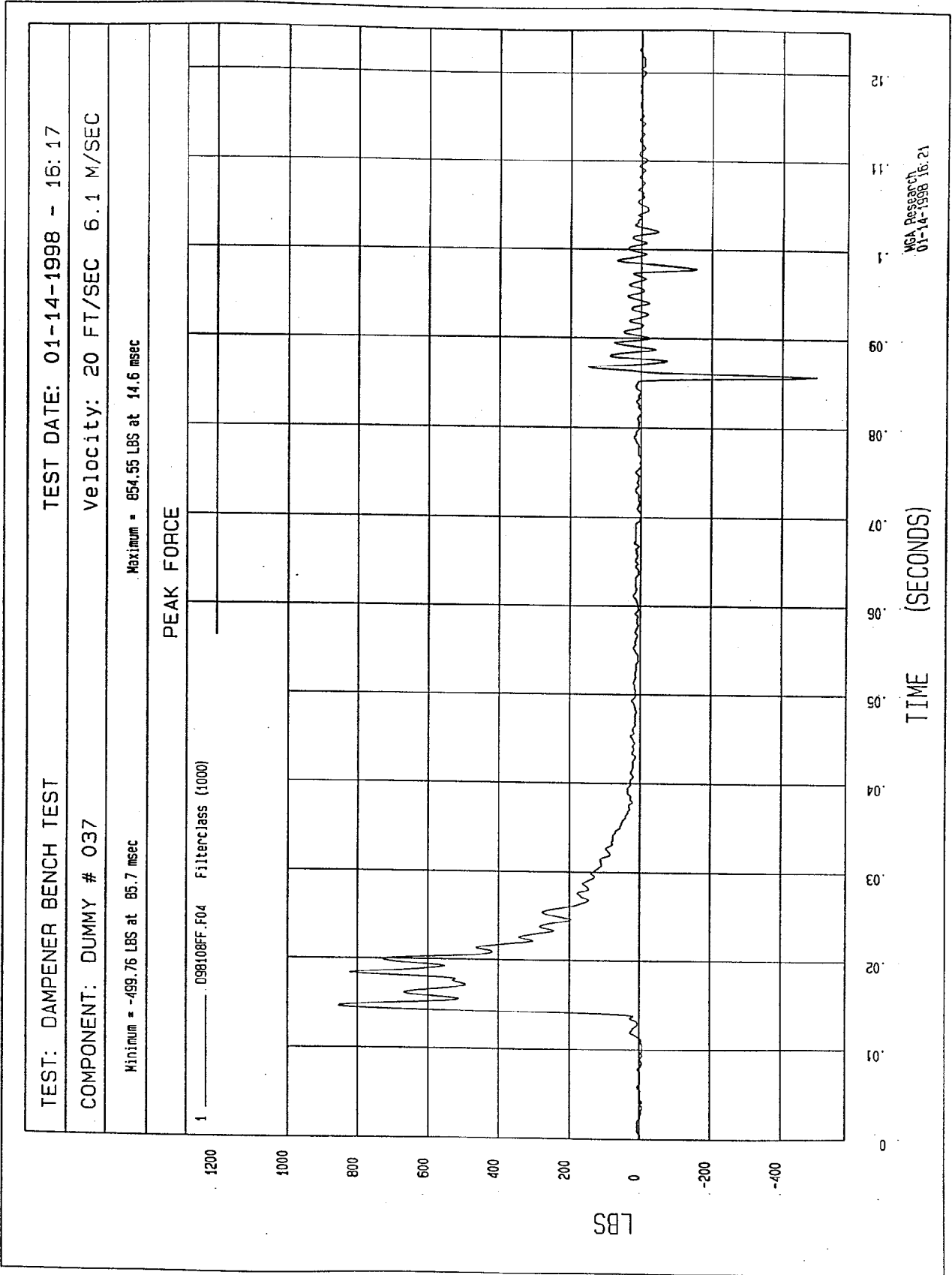
PEAK DISPLACEMENT

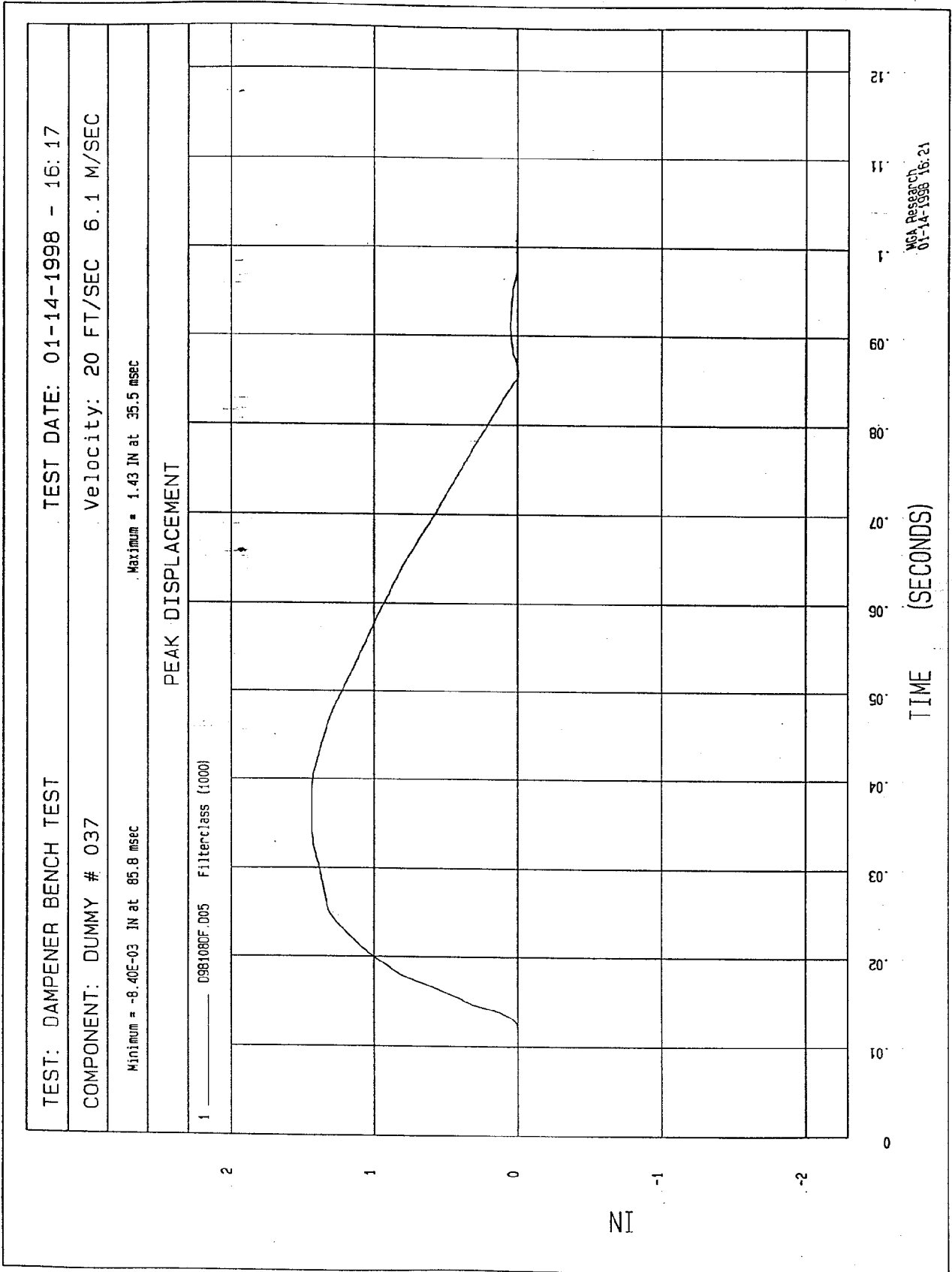
1 ——— D981070F.D05 Filterclass (1000)



TIME (SECONDS)

MSA Research
01-14-1998 16:18





MGA RESEARCH CORPORATION

THORAX IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: January 14, 1998

DUMMY NUMBER: 037

TEST NUMBER: D98102

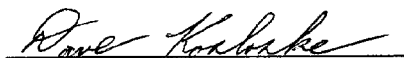
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	14%
PROBE SPEED	14.0 - 14.2 fps	14.1
UPPER RIB	37 - 46 g's	38
LOWER RIB	37 - 46 g's	43
LOWER SPINE	15 - 22 g's	19

TEST MEETS SPECIFICATIONS

TECHNICIAN



APPROVED BY

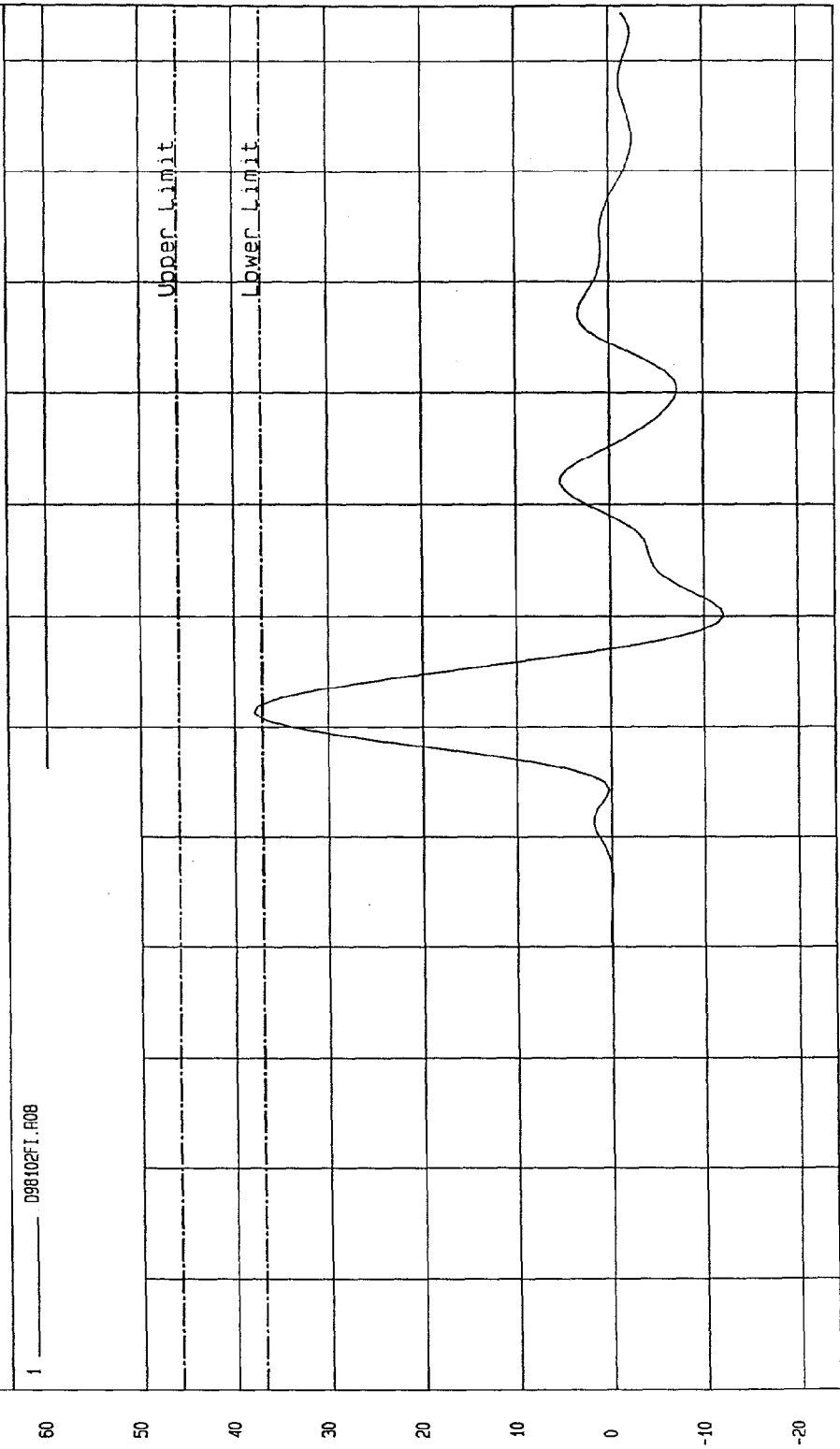


TEST: DUMMY CALIBRATION - THORAX IMPACT TEST DATE: 01-14-1998 - 18:05

COMPONENT: DUMMY # 037 Velocity: 14.08 FT/SEC 4.29 M/SEC

Minimum = -12.07 G'S at 70 msec Maximum = 37.88 G'S at 61.2 msec

UPPER RIB ACCELERATION

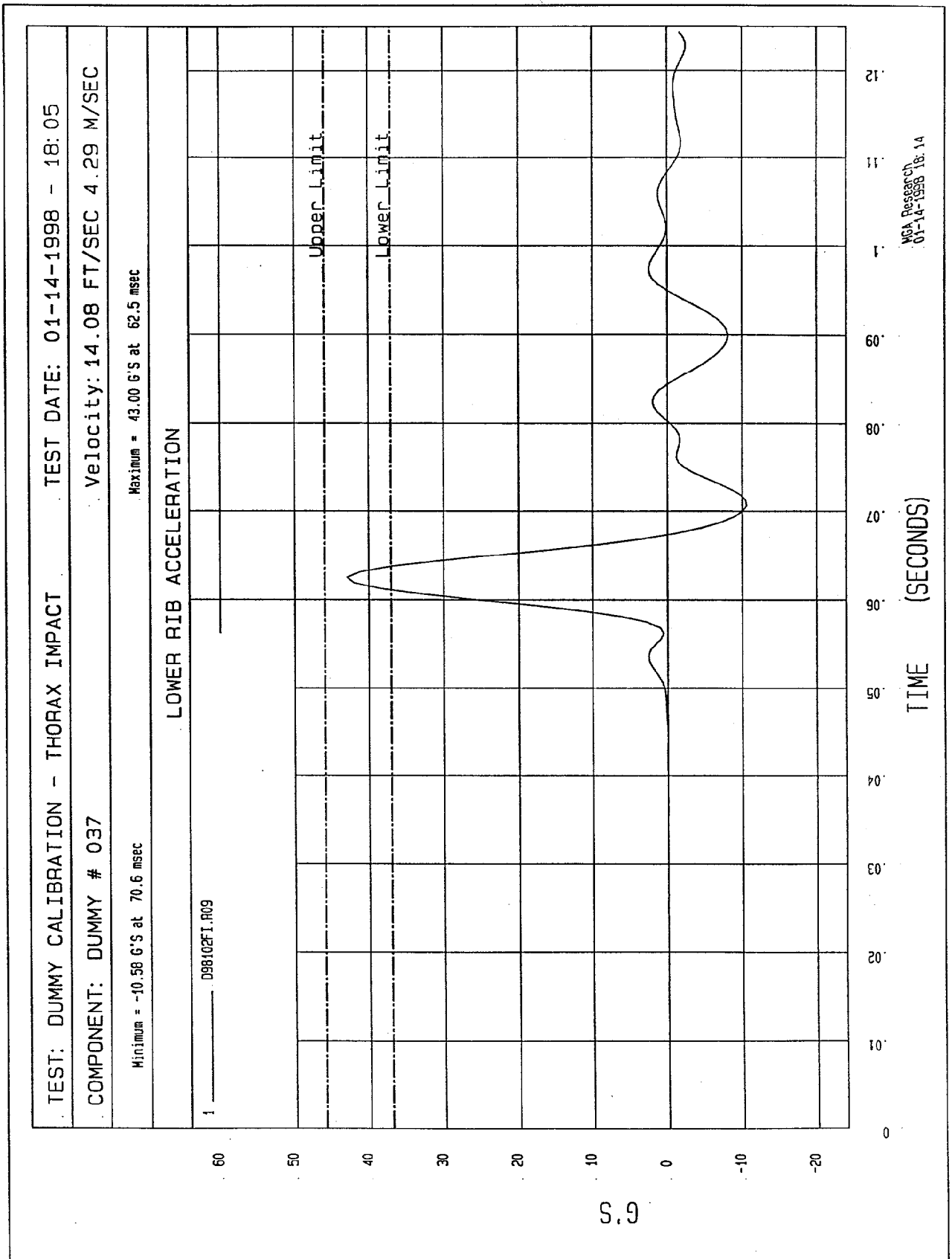


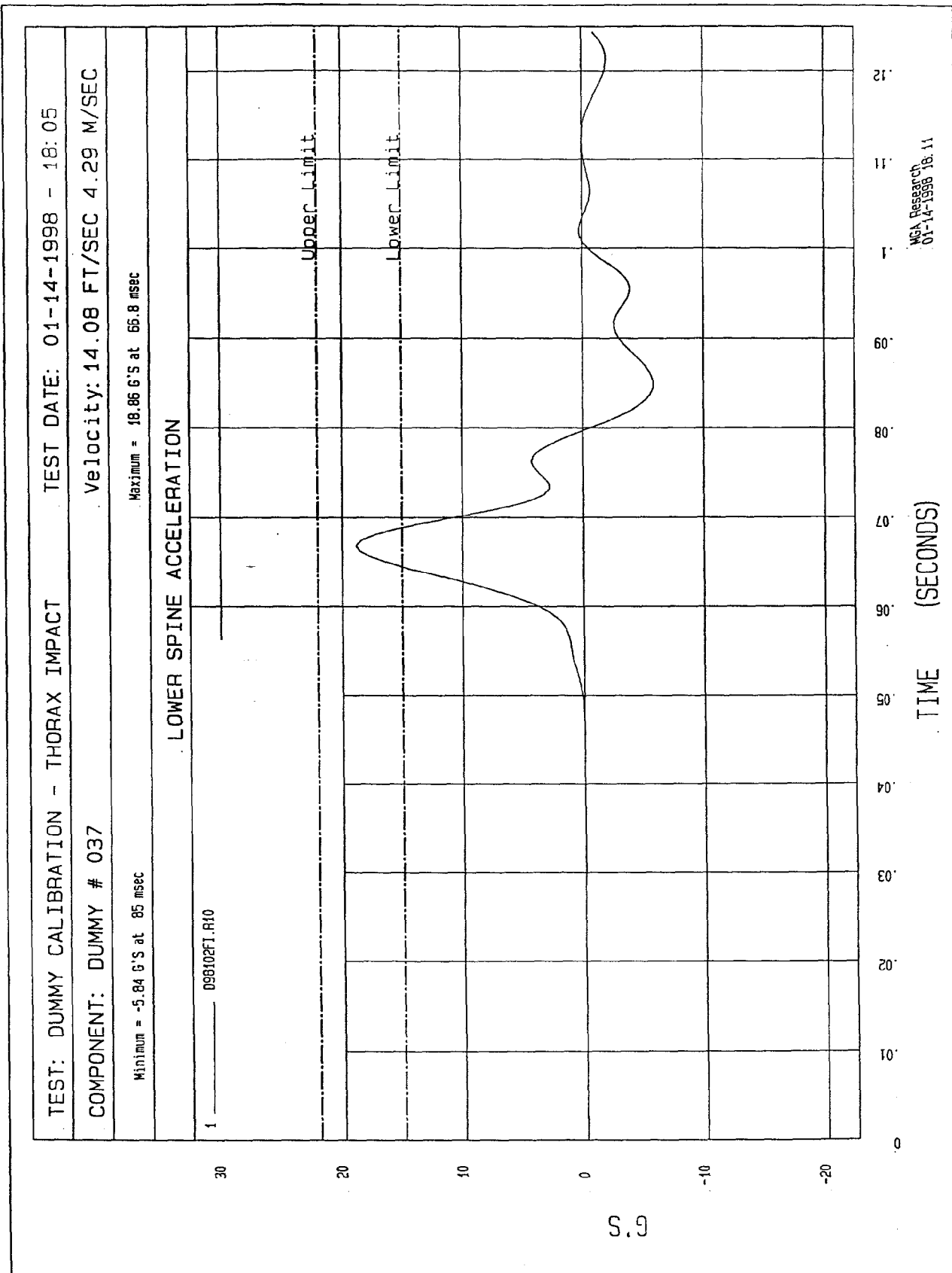
TIME (SECONDS)

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

MECA Research
01-14-1998 18:09

S.9





MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: January 14, 1998

DUMMY NUMBER: 037

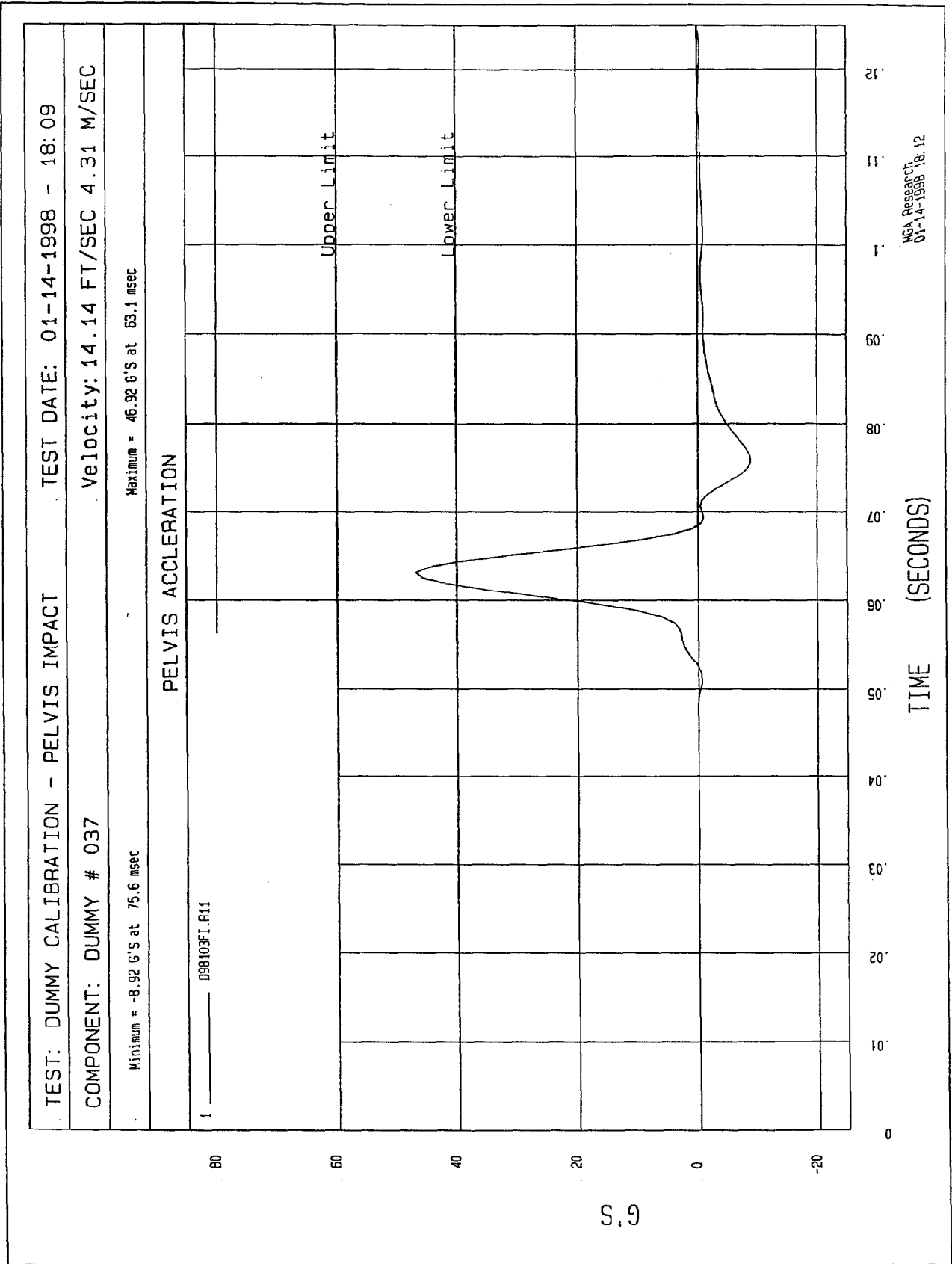
TEST NUMBER: D98103

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	14%
PROBE SPEED	14.0 - 14.2 f/s	14.1
PELVIS ACCELERATION	40 - 60 g's	47

TEST MEETS SPECIFICATIONS

TECHNICIAN Tim White

APPROVED BY Rene Kibake



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

DATE: January 13, 1998

DUMMY NUMBER: 037

TEST NUMBER: D98104

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	12%
FORCE @ 0.5 in	23.3 - 36.5 lbs	29.3
FORCE @ 0.75 in	36.7 - 49.8 lbs	40.7
FORCE @ 1.0 in	50 - 63 lbs	54
FORCE @ 1.3 in	73 - 88 lbs	74

TEST MEETS SPECIFICATIONS

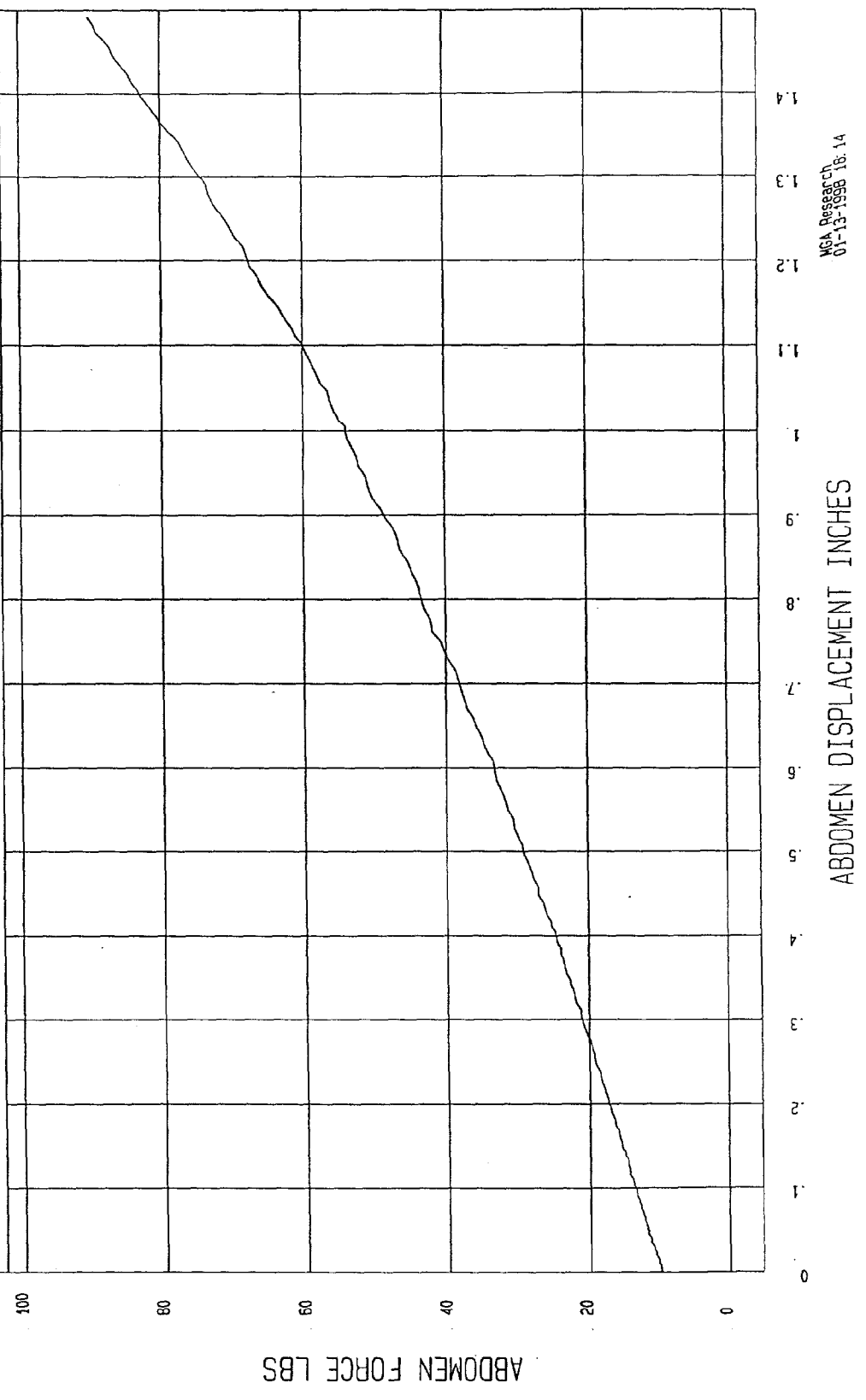
TECHNICIAN Tim White

APPROVED BY Dave Korbak

TEST: DUMMY CALIBRATION - ABDOMEN COMPRESSION TEST DATE: 01-13-1998 - 18:03

COMPONENT: DUMMY # 037

ABDOMEN FORCE as a function of ABDOMEN DISPLACEMENT



MCA Research
01-13-1998 18.14

MGA RESEARCH CORPORATION

LUMBAR FLEXION TEST

SIDE IMPACT DUMMY (SID)

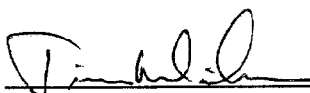
DATE: January 14, 1998

DUMMY NUMBER: 037

TEST NUMBER: D98105

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	12%
FORCE @ 0°	0 - 6 lbs	0
FORCE @ 20°	22 - 34 lbs	25
FORCE @ 30°	34 - 46 lbs	36
FORCE @ 40°	46 - 58 lbs	48
RETURN ANGLE	12° maximum	5°

TEST MEETS SPECIFICATIONS

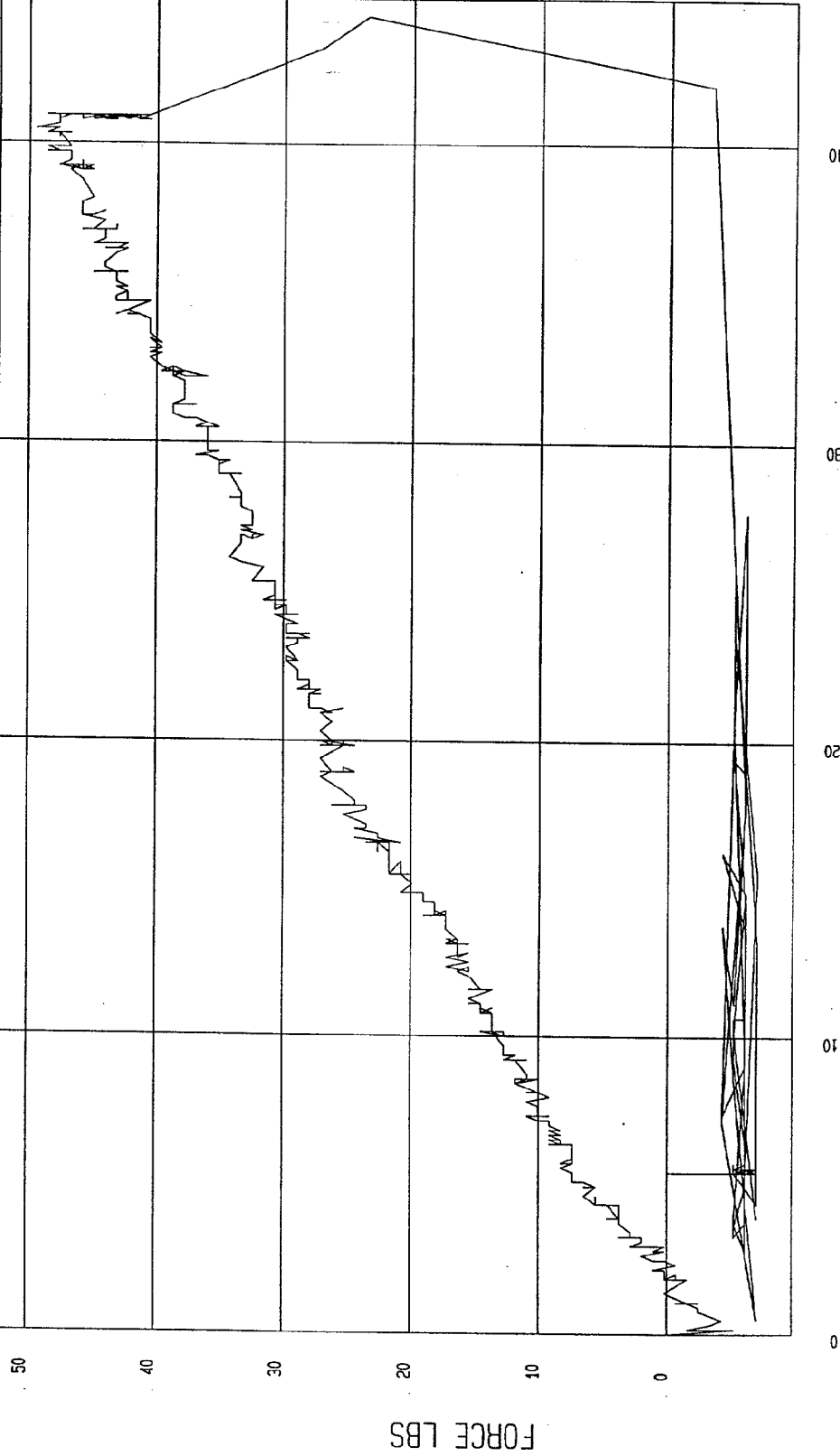
TECHNICIAN 

APPROVED BY 

TEST: DUMMY CALIBRATION - LUMBAR FLEXION TEST DATE: 01-14-1998 - 11:48

COMPONENT: DUMMY # 037

FORCE as a function of TORSO ROTATION



NSA Research
01-14-1998 17:42

POST-TEST CERTIFICATION DATA

Front Dummy Serial Number: 036

Calibration Test Results Summary

Dummy Serial Number: 036

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.: 036

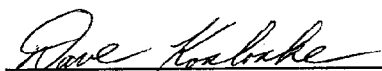
DATE OF VERIFICATION: January 28, 1998

DESCRIPTION	SPECIFICATION	TEST RESULTS
SH - Seated Height	35.0" - 35.8"	35.6
RH - Rib Height	19.75" - 20.50"	20.00
HP - Hip Pivot Height	3.9" ref.	3.9
RD - Rib From Back Line	9.0" to 9.5"	9.1
KV - Knee Pivot From Back Line	20.1" - 20.7"	20.5
SW - Knee Pivot to Floor	19.3" - 19.9"	19.4
HW - Hip Width	14.0" - 15.4"	14.5

MEASUREMENTS BY:



APPROVED BY:



MGA RESEARCH CORPORATION

THORAX IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: January 22, 1998

DUMMY NUMBER: 036

TEST NUMBER: D98082

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	21%
PROBE SPEED	14.0 - 14.2 fps	14.1
UPPER RIB	37 - 46 g's	45
LOWER RIB	37 - 46 g's	44
LOWER SPINE	15 - 22 g's	19

TEST MEETS SPECIFICATIONS

TECHNICIAN Jim W. L.

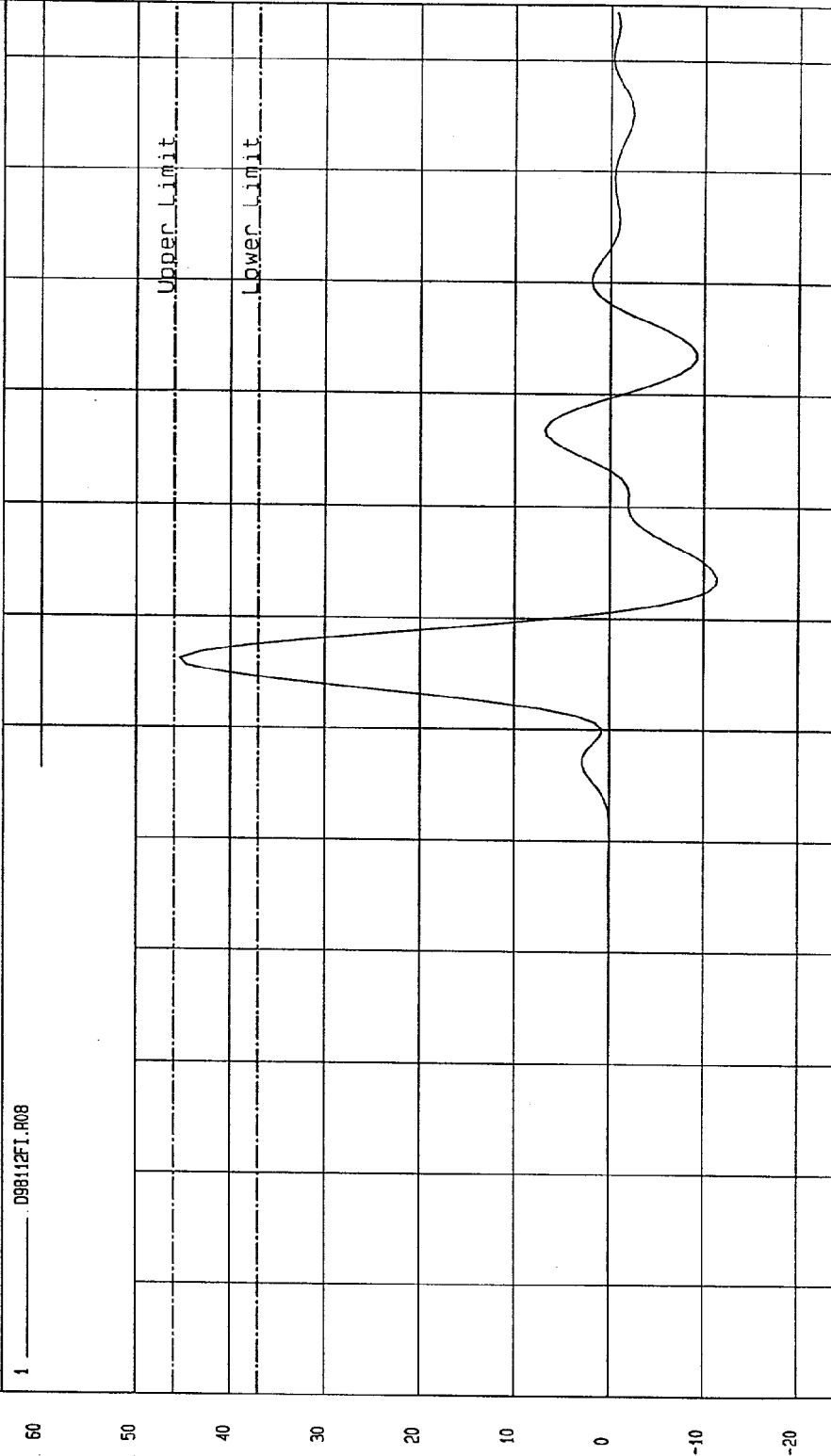
APPROVED BY Steve Koshake

TEST: DUMMY CALIBRATION - THORAX IMPACT TEST DATE: 01-22-1998 - 09:48

COMPONENT: DUMMY # 036 Velocity: 14.077 FT/SEC 4.29 M/SEC

Minimum = -11.37 G'S at 73.7 msec Maximum = 45.45 G'S at 66.2 msec

UPPER RIB ACCELERATION



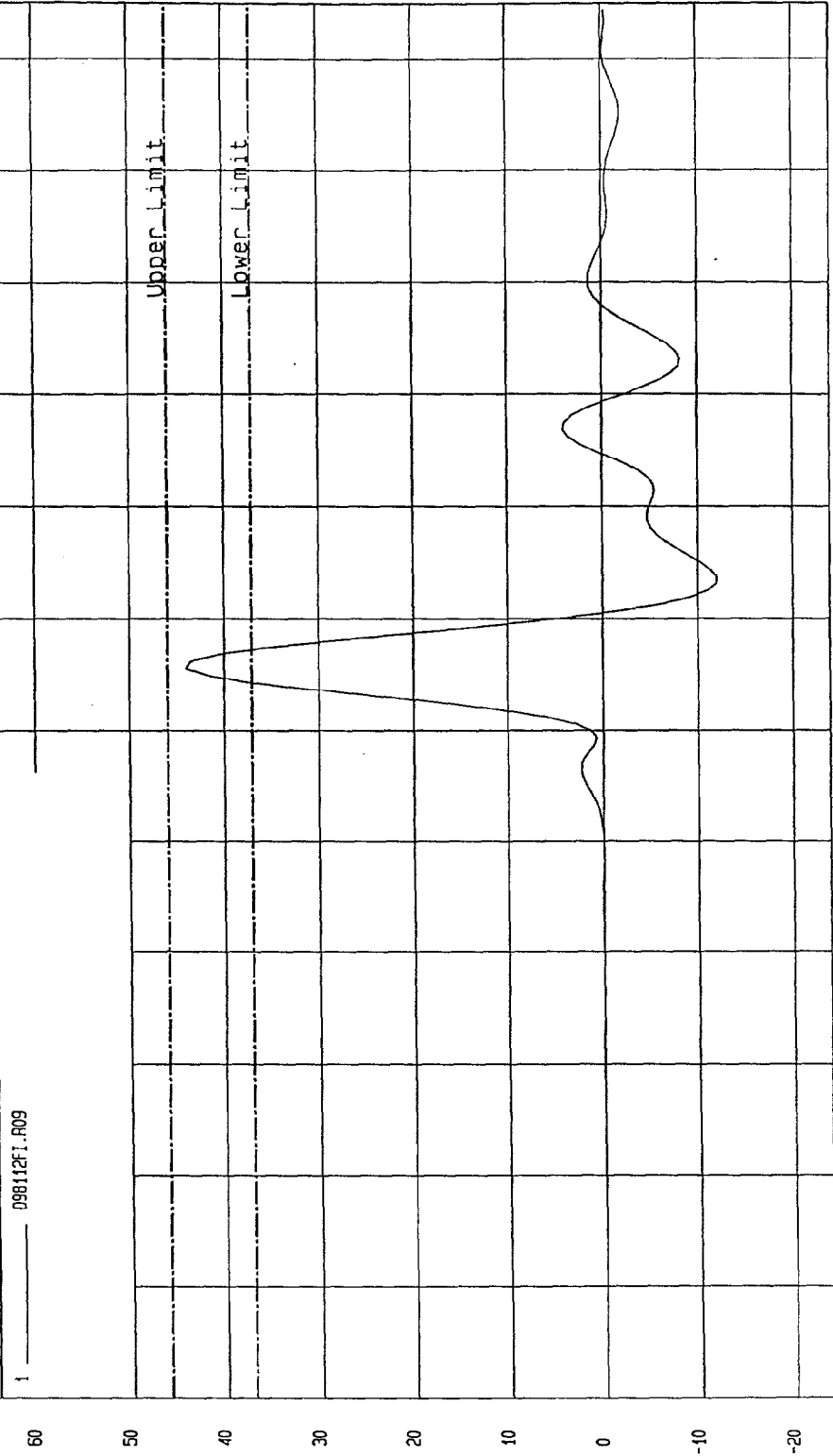
MGA Research
01-22-1998 10:12

TEST: DUMMY CALIBRATION - THORAX IMPACT TEST DATE: 01-22-1998 - 09:48

COMPONENT: DUMMY # 036 Velocity: 14.077 FT/SEC 4.29 M/SEC

Minimum = -11.97 G'S at 73.7 msec Maximum = 44.07 G'S at 65.6 msec

LOWER RIB ACCELERATION



12

11

10

60

80

40

90

05

04

03

20

10

0

TIME (SECONDS)

WGA Research
01-22-1998 10:13

S.9

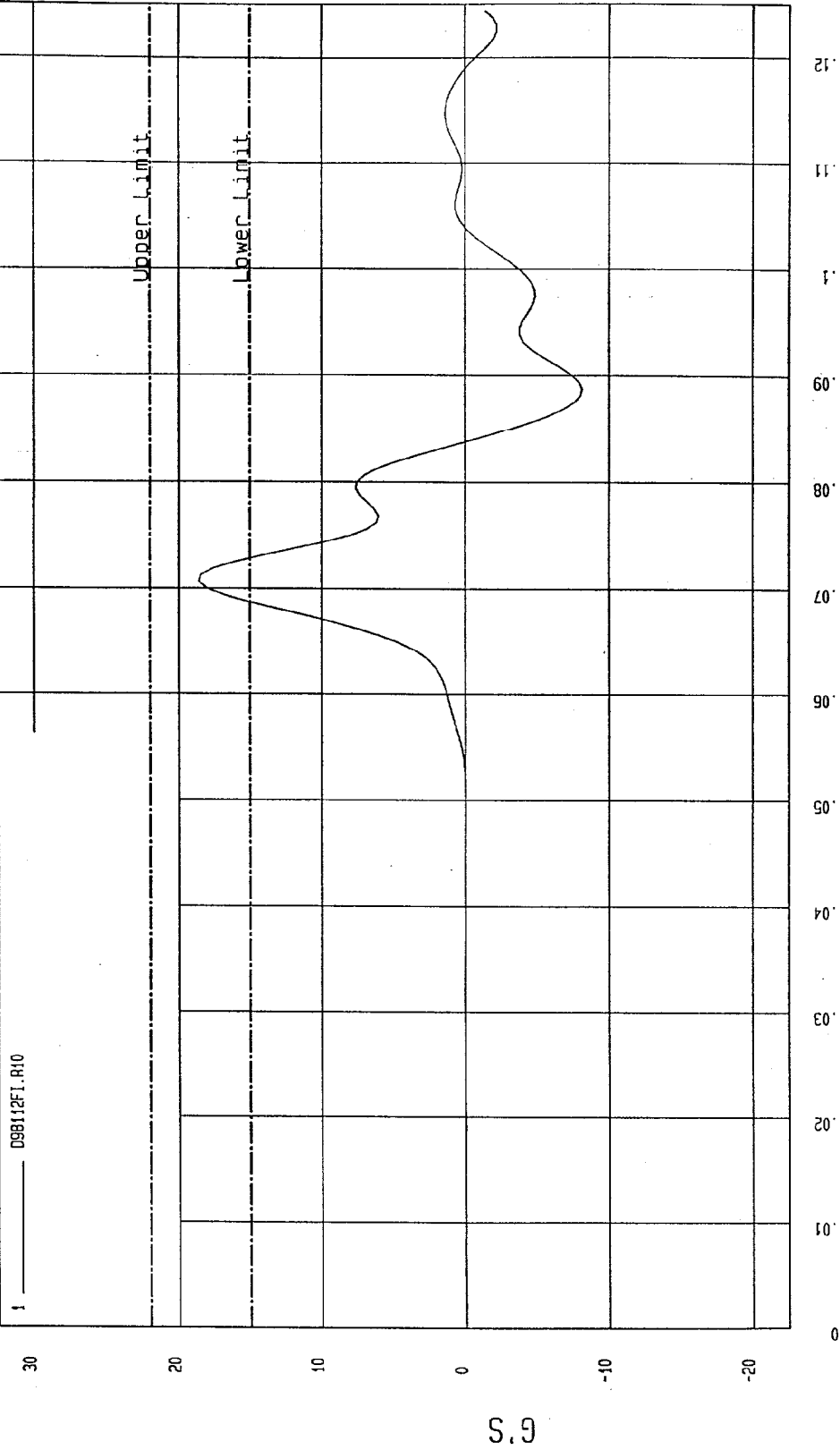
TEST: DUMMY CALIBRATION - THORAX IMPACT TEST DATE: 01-22-1998 - 09:48

COMPONENT: DUMMY # 036 Velocity: 14.077 FT/SEC 4.29 M/SEC

Minimum = -8.11 G'S at 88.7 msec

Maximum = 18.60 G'S at 70.6 msec

LOWER SPINE ACCELERATION



MCA Research
01-22-1998 10:13

MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: January 22, 1998

DUMMY NUMBER: 036

TEST NUMBER: D98113

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	21%
PROBE SPEED	14.0 - 14.2 f/s	14.1
PELVIS ACCELERATION	40 - 60 g's	43

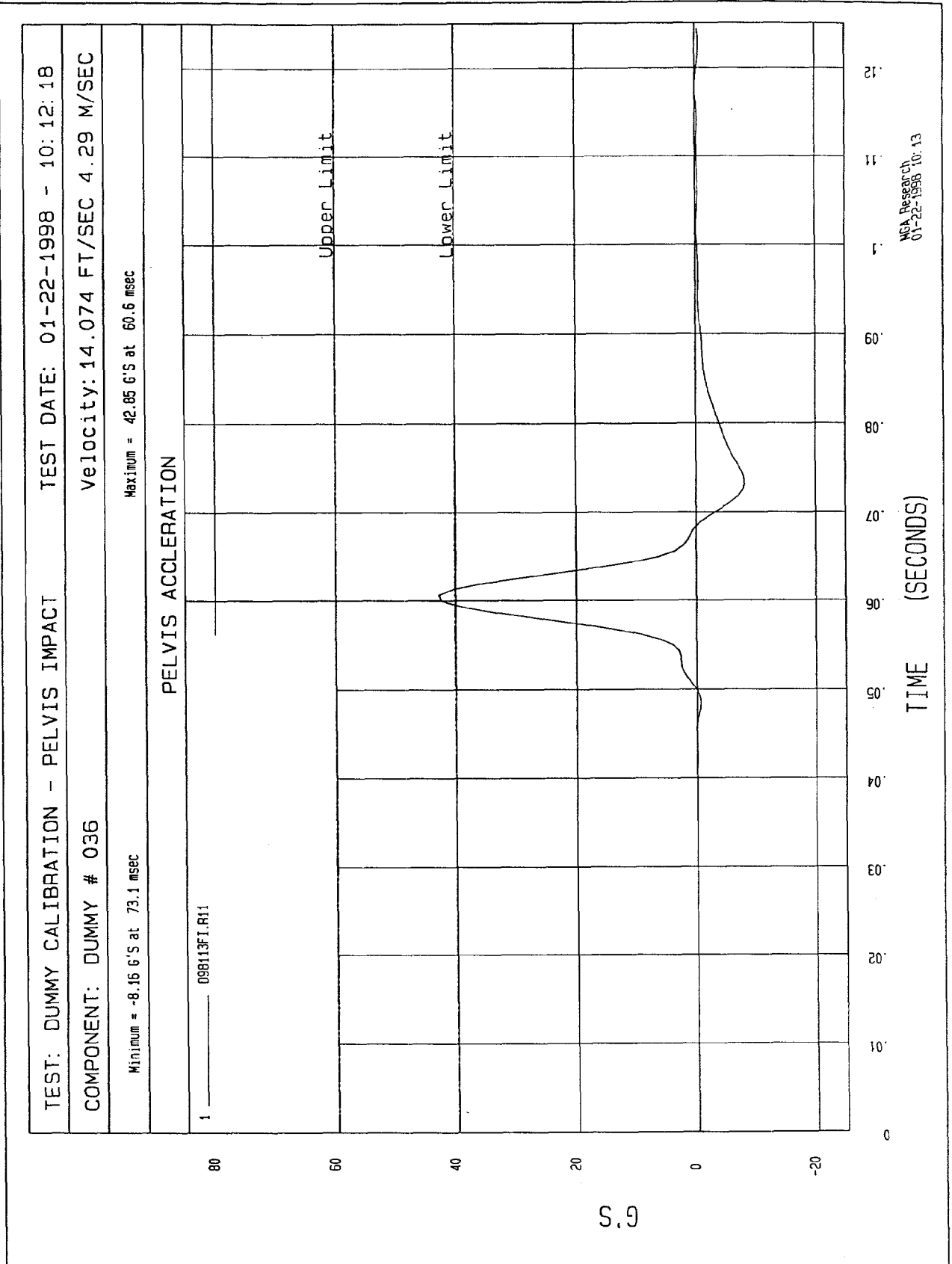
TEST MEETS SPECIFICATIONS

TECHNICIAN



APPROVED BY





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

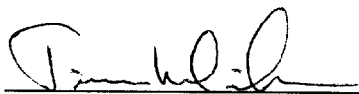
DATE: January 28, 1998

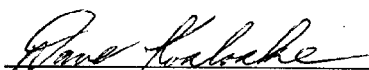
DUMMY NUMBER: 036

TEST NUMBER: D98114

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	26%
FORCE @ 0.5 in	23.3 - 36.5 lbs	33.1
FORCE @ 0.75 in	36.7 - 49.8 lbs	45.1
FORCE @ 1.0 in	50 - 63 lbs	59
FORCE @ 1.3 in	73 - 88 lbs	78

TEST MEETS SPECIFICATIONS

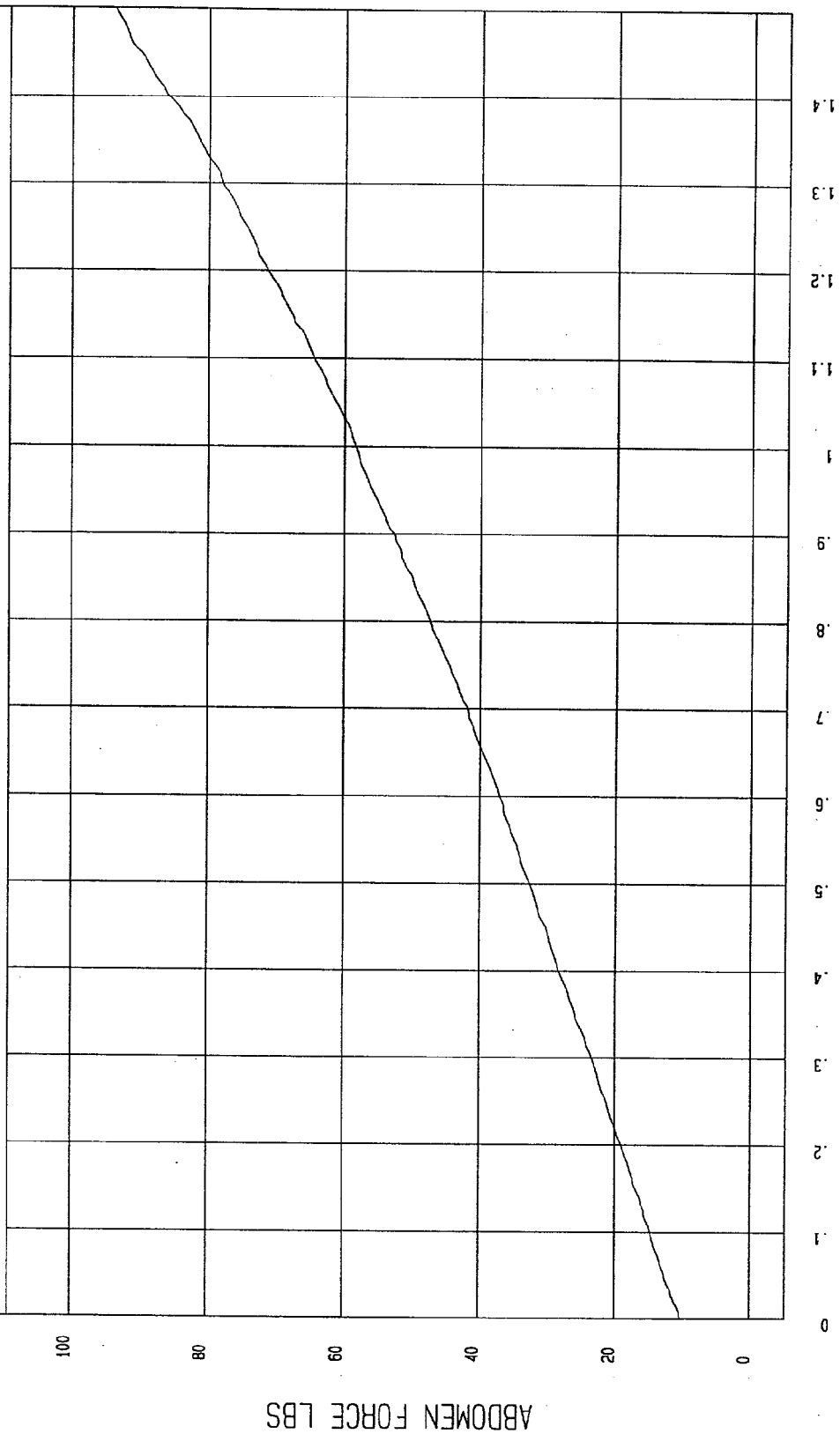
TECHNICIAN 

APPROVED BY 

TEST: DUMMY CALIBRATION - ABDOMEN COMPRESSION TEST DATE: 01-28-1998 - 09:55

COMPONENT: DUMMY # 036

ABDOMEN FORCE as a function of ABDOMEN DISPLACEMENT



MCA Research
01-28-1998 10:31

ABDOMEN DISPLACEMENT INCHES

MGA RESEARCH CORPORATION

LUMBAR FLEXION TEST

SIDE IMPACT DUMMY (SID)

DATE: January 23, 1998

DUMMY NUMBER: 036

TEST NUMBER: D98115

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	24%
FORCE @ 0°	0 - 6 lbs	0
FORCE @ 20°	22 - 34 lbs	23
FORCE @ 30°	34 - 46 lbs	38
FORCE @ 40°	46 - 58 lbs	47
RETURN ANGLE	12° maximum	3°

TEST MEETS SPECIFICATIONS

TECHNICIAN



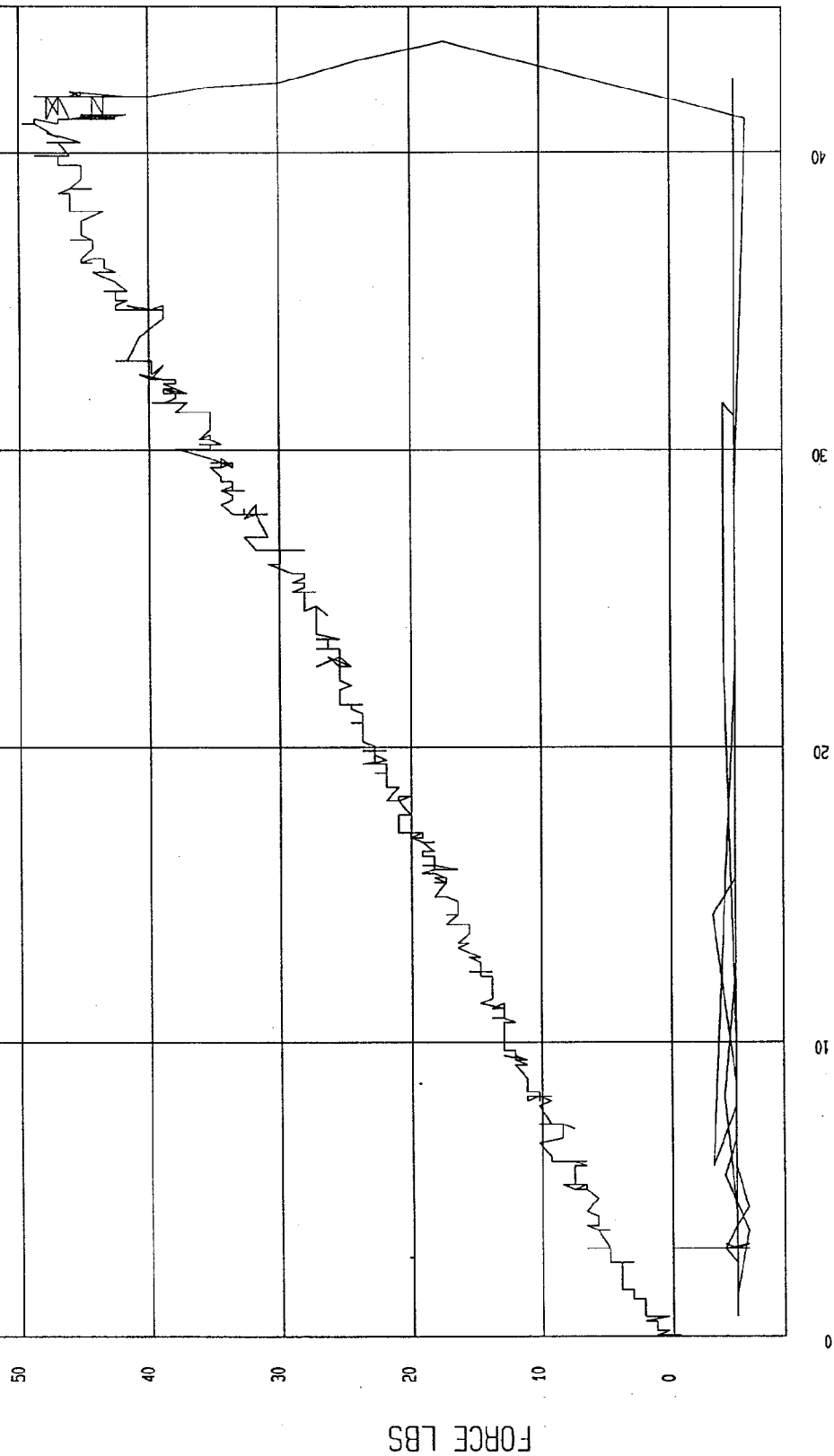
APPROVED BY



TEST: DUMMY CALIBRATION - LUMBAR FLEXION TEST DATE: 01-23-1998 - 08:46

COMPONENT: DUMMY # 036

FORCE as a function of TORSO ROTATION



MCA Research
01-23-1998 11:12

POST-TEST CERTIFICATION DATA

Rear Dummy Serial Number: 037

Calibration Test Results Summary

Dummy Serial Number: 037

Post-Test Calibration

External Dimensions:	The dummy passed all external dimension requirements.
Thorax Impact Test:	The thorax did not pass all impact test requirements.
Pelvic Impact Test:	The pelvis passed all impact test requirements.
Abdominal Compression Test:	The abdomen passed all compression test requirements.
Lumbar Flexion Test:	The lumbar passed all flexion test requirements.

SIDE IMPACT DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

DUMMY NO.: 037

DATE OF VERIFICATION: January 28, 1998

DESCRIPTION	SPECIFICATION	TEST RESULTS
SH - Seated Height	35.0" - 35.8"	35.5
RH - Rib Height	19.75" - 20.50"	19.95
HP - Hip Pivot Height	3.9" ref.	3.9
RD - Rib From Back Line	9.0" to 9.5"	9.2
KV - Knee Pivot From Back Line	20.1" - 20.7"	20.6
SW - Knee Pivot to Floor	19.3" - 19.9"	19.4
HW - Hip Width	14.0" - 15.4"	14.8

MEASUREMENTS BY: Tim W.O.

APPROVED BY: Rene Kralovec

MGA RESEARCH CORPORATION

THORAX IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: January 22, 1998

DUMMY NUMBER: 037

TEST NUMBER: D98122

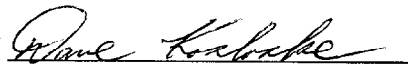
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	21%
PROBE SPEED	14.0 - 14.2 fps	14.0
UPPER RIB	37 - 46 g's	44
LOWER RIB	37 - 46 g's	49*
LOWER SPINE	15 - 22 g's	21

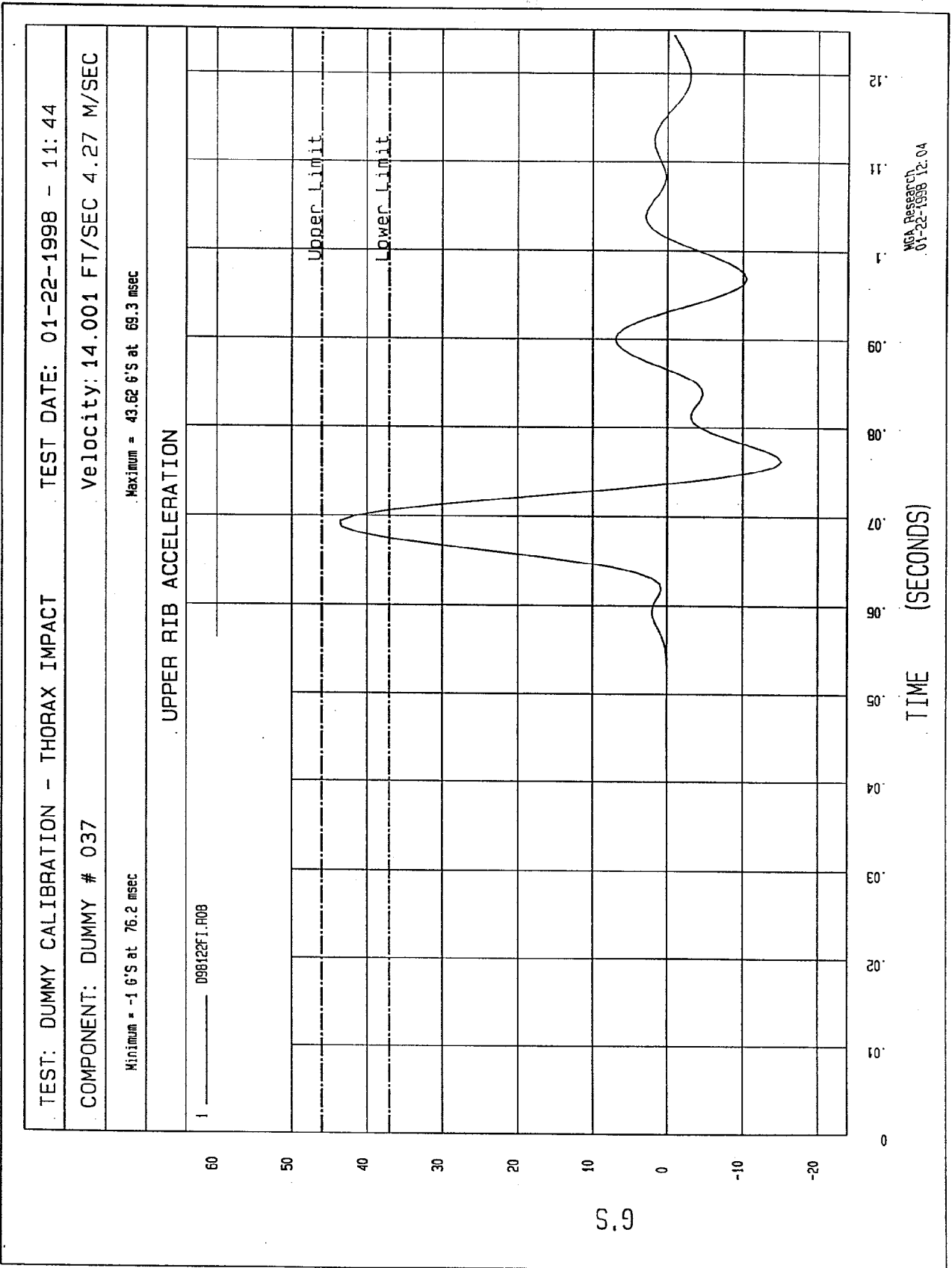
* FAILED - DOES NOT MEET SPECIFICATION

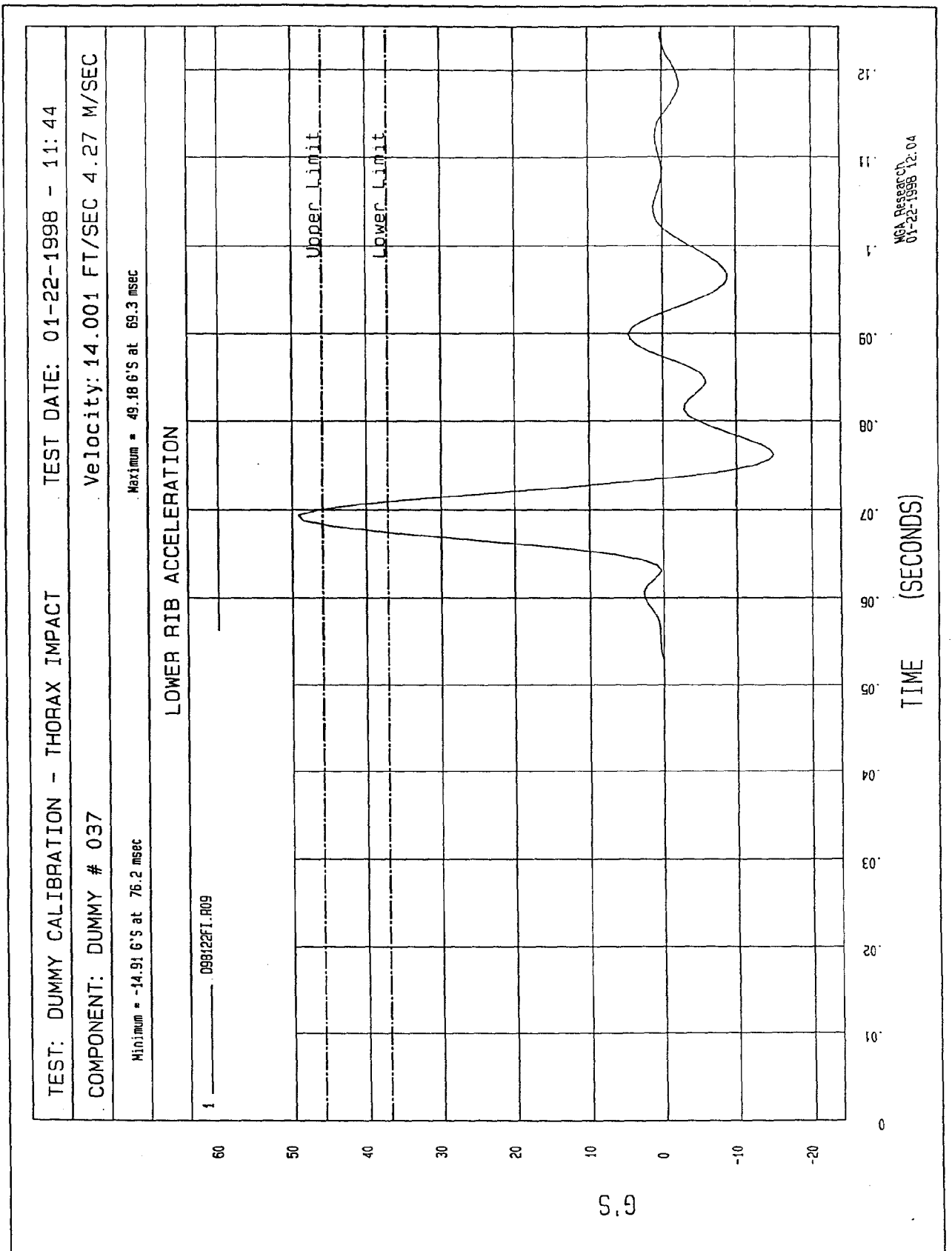
TECHNICIAN



APPROVED BY







TEST: DUMMY CALIBRATION - THORAX IMPACT TEST DATE: 01-22-1998 - 11:44

COMPONENT: DUMMY # 037 Velocity: 14.001 FT/SEC 4.27 M/SEC

Minimum = -7.78 G'S at 91.2 msec Maximum = 21.35 G'S at 74.3 msec

LOWER SPINE ACCELERATION

1 _____ D98122F1.R10

30

20

10

0

-10

-20

G'S

Upper Limit

Lower Limit

12

11

10

09

08

07

06

05

04

03

02

01

0

TIME (SECONDS)

NSA Research
01-22-1998 12:05

MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

SIDE IMPACT DUMMY (SID)

DATE: January 22, 1998

DUMMY NUMBER: 037

TEST NUMBER: D98123

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	21%
PROBE SPEED	14.0 - 14.2 f/s	14.0
PELVIS ACCELERATION	40 - 60 g's	56

TEST MEETS SPECIFICATIONS

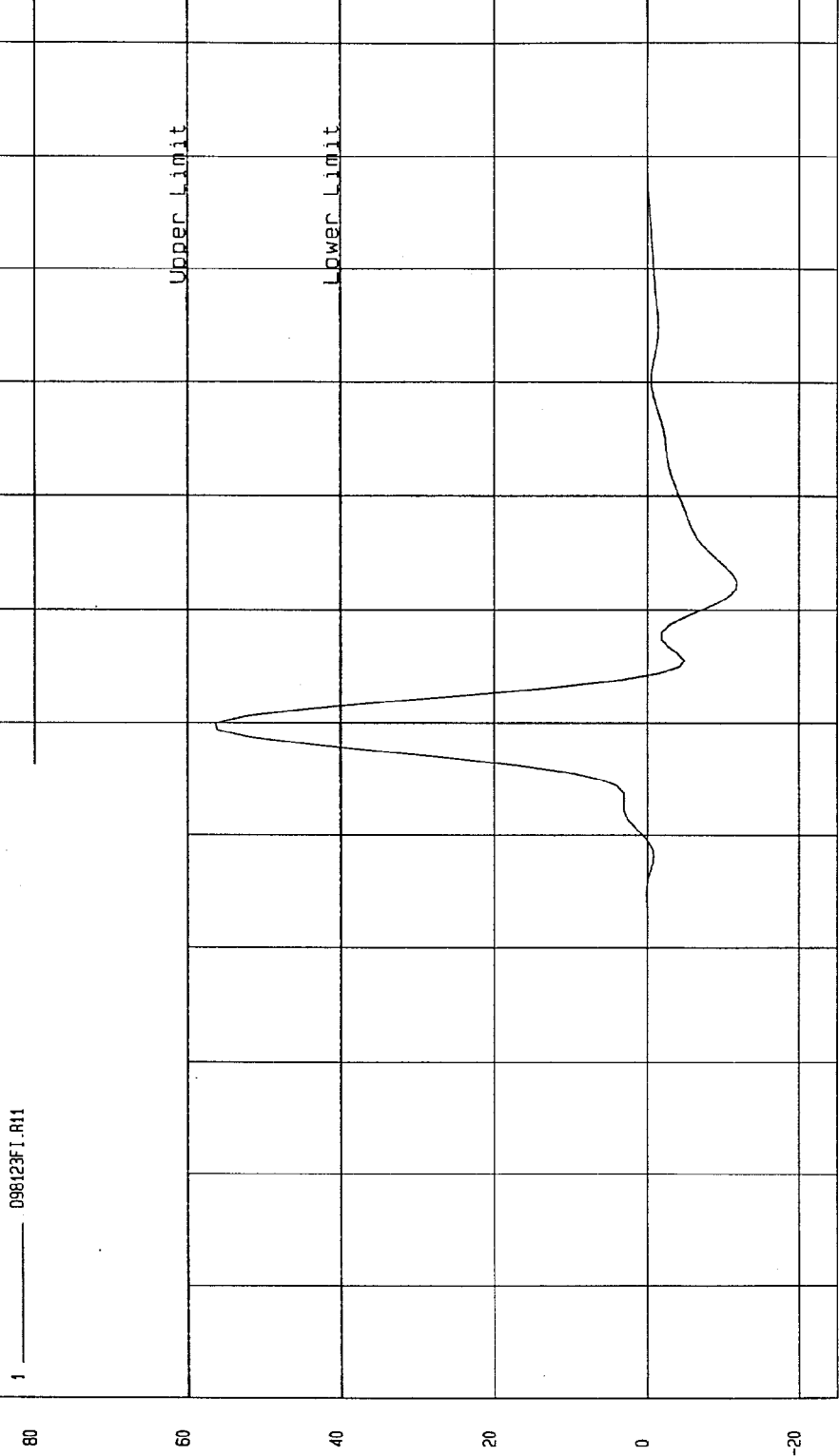
TECHNICIAN Tim Kulich

APPROVED BY Dave Kabiske

TEST: DUMMY CALIBRATION - PELVIS IMPACT TEST DATE: 01-22-1998 - 12:01
COMPONENT: DUMMY # 037 Velocity: 14.049 FT/SEC 4.28 M/SEC

Minimum = -11.62 G'S at 72.5 msec Maximum = 56.22 G'S at 60 msec

PELVIS ACCELERATION



TIME (SECONDS)

NSA Research
01-22-1998 12:05

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

DATE: January 28, 1998

DUMMY NUMBER: 037

TEST NUMBER: D98124

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	26%
FORCE @ 0.5 in	23.3 - 36.5 lbs	31.2
FORCE @ 0.75 in	36.7 - 49.8 lbs	42.2
FORCE @ 1.0 in	50 - 63 lbs	55
FORCE @ 1.3 in	73 - 88 lbs	75

TEST MEETS SPECIFICATIONS

TECHNICIAN

Tim White

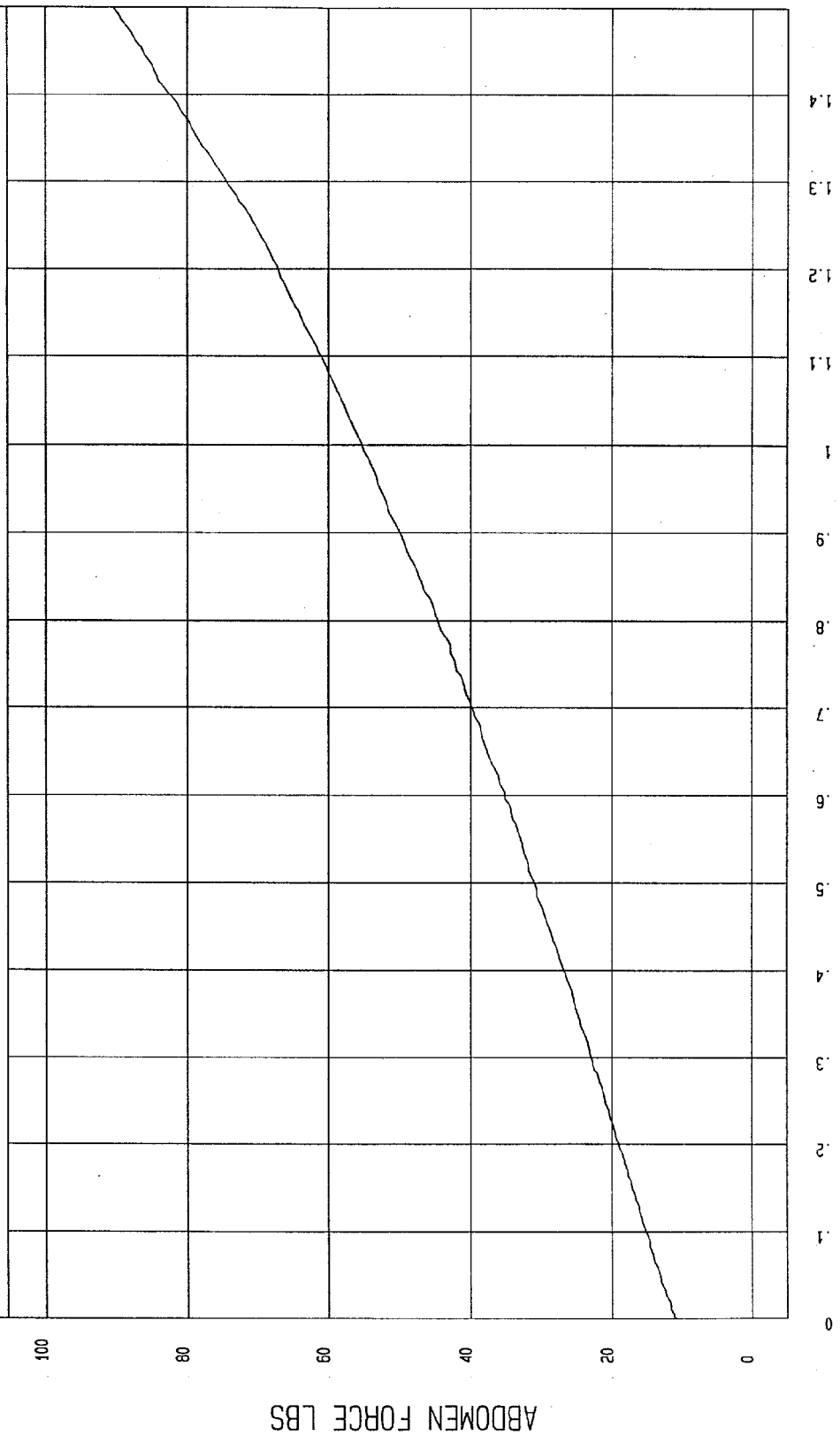
APPROVED BY

Dave Kosloski

TEST: DUMMY CALIBRATION - ABDOMEN COMPRESSION TEST DATE: 01-28-1998 - 10:02

COMPONENT: DUMMY # 037

ABDOMEN FORCE as a function of ABDOMEN DISPLACEMENT



MCA Research
01-28-1998 10:32

MGA RESEARCH CORPORATION

LUMBAR FLEXION TEST

SIDE IMPACT DUMMY (SID)

DATE: January 23, 1998

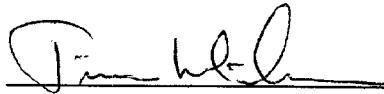
DUMMY NUMBER: 037

TEST NUMBER: D98125

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78° F	70°
RELATIVE HUMIDITY	10 - 70%	24%
FORCE @ 0°	0 - 6 lbs	0
FORCE @ 20°	22 - 34 lbs	27
FORCE @ 30°	34 - 46 lbs	39
FORCE @ 40°	46 - 58 lbs	52
RETURN ANGLE	12° maximum	3°

TEST MEETS SPECIFICATIONS

TECHNICIAN



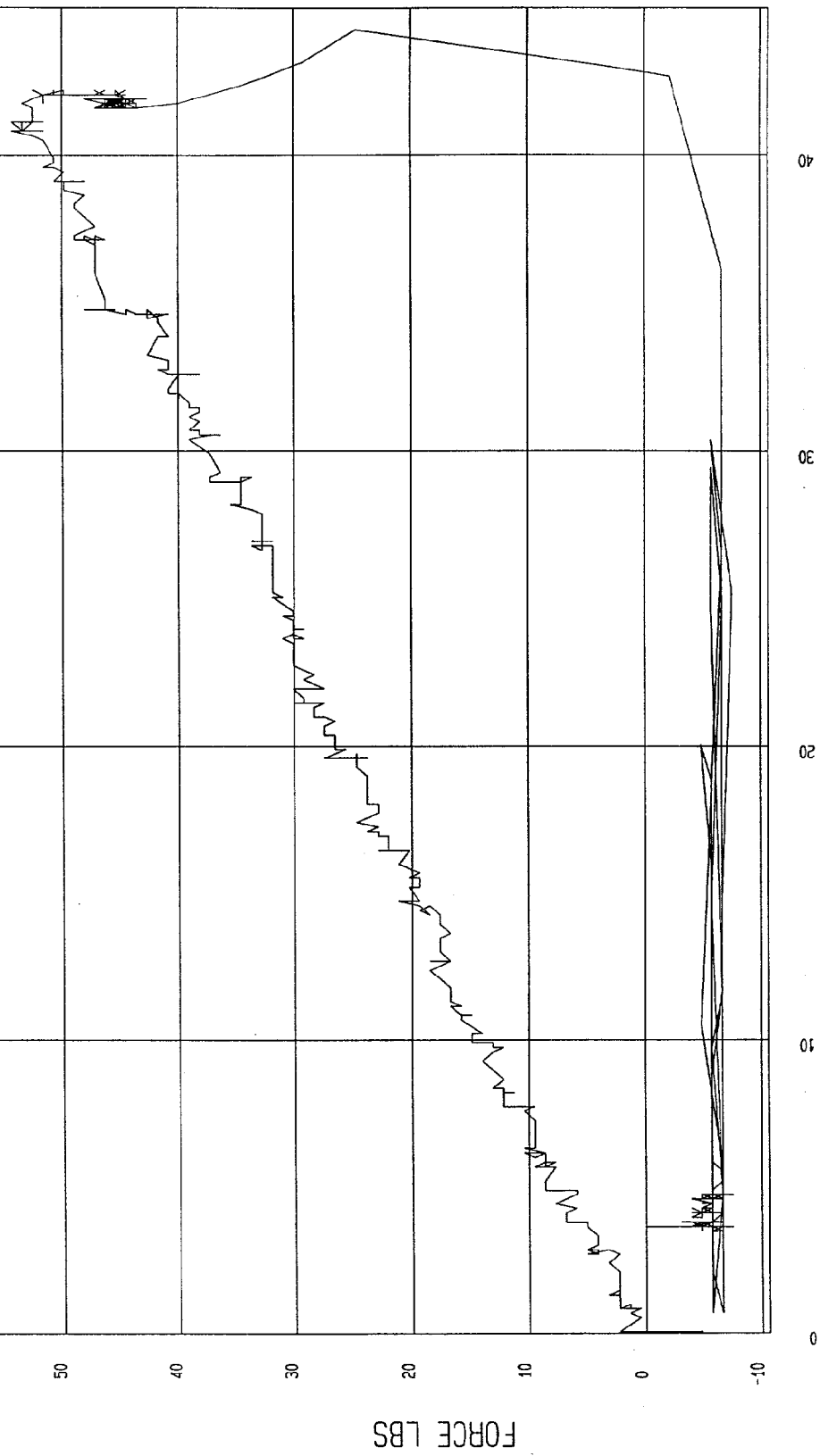
APPROVED BY



TEST: DUMMY CALIBRATION - LUMBAR FLEXION TEST DATE: 01-23-1998 - 09:56

COMPONENT: DUMMY # 037

FORCE as a function of TORSO ROTATION



MSA Research
01-23-1998 11:12

POST-TEST DRIVER DUMMY INSPECTION CHECKLIST

Type: Side Impact Dummy

Serial Number: 036

Inspected By: Tim Michnay

Date: January 14, 1998

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

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

POST-TEST PASSENGER DUMMY INSPECTION CHECKLIST

Type: Side Impact Dummy

Serial Number: 037

Inspected By: Tim Michnay

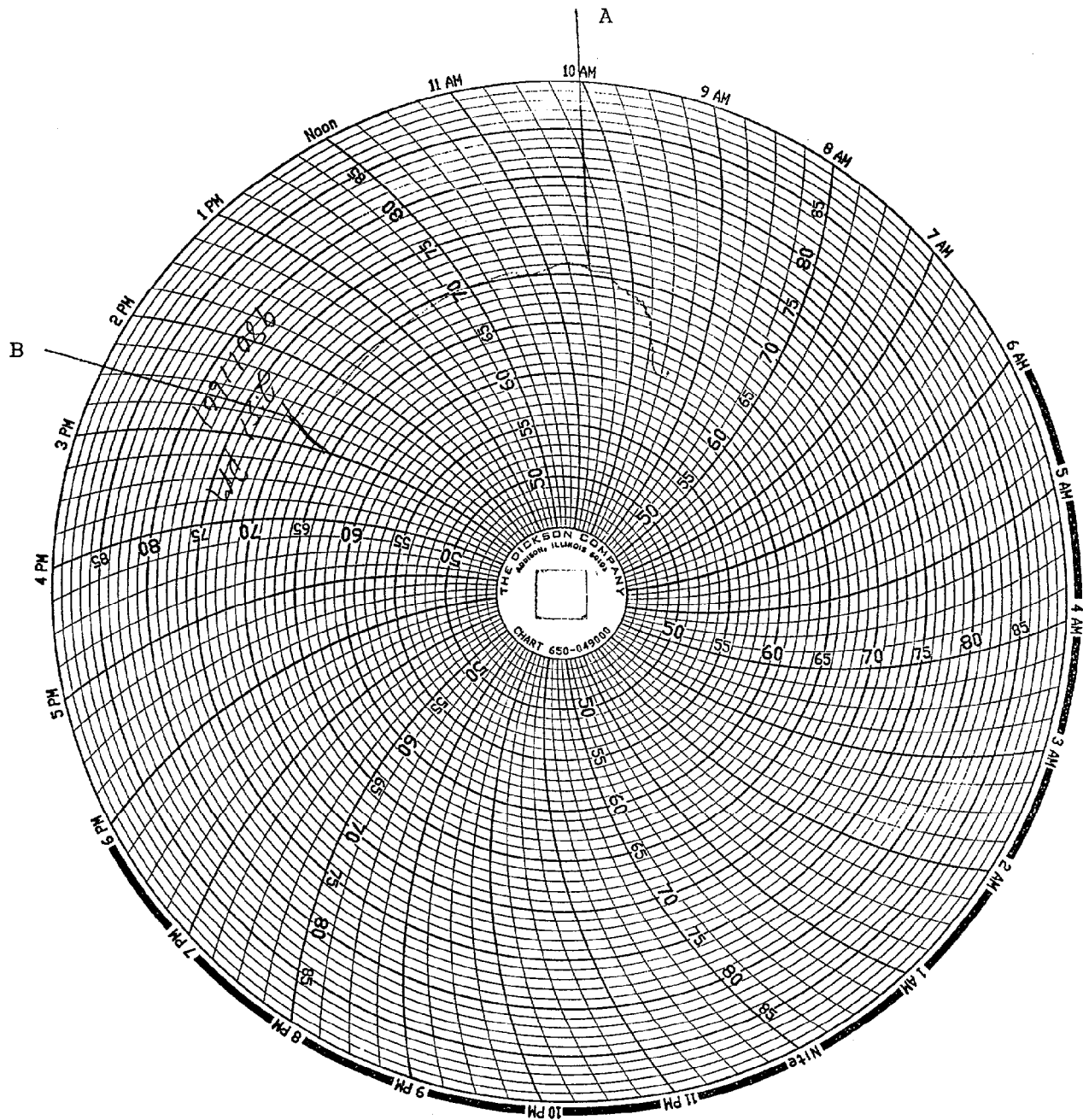
Date: January 14, 1998

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

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

* Failed Thorax Impact Test. No Visual Damage Noted.

VEHICLE AND DUMMY TEMPERATURE



A = Dummies installed in vehicle
B = Test conducted

APPENDIX D
TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

DUMMY AND VEHICLE CALIBRATION DATA
INSTRUMENTS FOR DRIVER DUMMY NO. 036

	LEFT FRONT PASSENGER		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Upper Rib Y	AKAC4	Endevco	August 6, 1997
Lower Rib Y	J10431	Endevco	August 5, 1997
Lower Spine Y	AGP28	Endevco	September 15, 1997
Pelvis Y	AJ9P7	Endevco	August 6, 1997
Upper Rib Redundant Y	J13642	Endevco	August 6, 1997
Lower Rib Redundant Y	AN9E3	Endevco	August 5, 1997
Lower Spine Redundant Y	AJ8T5	Endevco	September 15, 1997
Pelvis Redundant Y	AJ462	Endevco	August 6, 1997

INSTRUMENTS FOR LEFT REAR PASSENGER DUMMY NO. 037

	LEFT REAR PASSENGER		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Upper Rib Y	AKAF3	Endevco	September 16, 1997
Lower Rib Y	ALEC1	Endevco	September 15, 1997
Lower Spine Y	ALCH7	Endevco	September 16, 1997
Pelvis Y	AKAD6	Endevco	September 11, 1997
Upper Rib Redundant Y	ALCN9	Endevco	September 16, 1997
Lower Rib Redundant Y	J10411	Endevco	September 15, 1997
Lower Spine Redundant Y	ALCH7	Endevco	September 16, 1997
Pelvis Redundant Y	AJ9A7	Endevco	September 11, 1997

VEHICLE INSTRUMENT CALIBRATION

	VEHICLE AND MDB ACCELEROMETERS		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Moving Barrier CG X	J04-F10	Entran	August 7, 1997
Moving Barrier CG Y	F11-G04	Entran	August 7, 1997
Moving Barrier CG Z	J04-F12	Entran	August 7, 1997
Moving Barrier Rear Axle X	G13-B07	Entran	August 6, 1997
Moving Barrier Rear Axle Y	L14-D04	Entran	August 4, 1997
Left Mid A-Post Y	F10-D04	Entran	August 4, 1997
Left Lower A-Post Y	E10-F04	Entran	August 7, 1997
Left Mid B-Post Y	E10-F06	Entran	August 6, 1997
Left Lower B-Post Y	I25-J19	Entran	August 7, 1997
Rear Floorpan Above Axle X	B14-R15	Entran	January 8, 1998
Rear Floorpan Above Axle Y	G13-B15	Entran	January 8, 1998
Rear Floorpan Above Axle Z	H02-J04	Entran	January 8, 1998
Driver Seat Track Y	E13-D18	Entran	December 10, 1997
Right Side Sill at Front Seat X	B14-R01	Entran	August 1, 1997
Right Side Sill at Front Seat Y	I25-J09	Entran	August 7, 1997
Right Side Sill at Front Seat Z	F20-G12	Entran	August 7, 1997
Right Side Sill at Rear Seat X	J10-E10	Entran	December 10, 1997
Right Side Sill at Rear Seat Y	E25-G07	Entran	December 10, 1997
Right Side Sill at Rear Seat Z	J10-E16	Entran	December 10, 1997
Left Side Sill at Front Seat Y	G08-B03	Entran	January 12, 1998

VEHICLE INSTRUMENT CALIBRATION

	VEHICLE AND MDB ACCELEROMETERS		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Left Side Sill at Rear Seat Y	F12-G09	Entran	August 7, 1997
Rear Occupant Compartment Y	A09-G05	Entran	August 1, 1997
Vehicle CG X	E13-D01	Entran	August 1, 1997
Vehicle CG Y	C14-Z08	Entran	August 1, 1997
Vehicle CG Z	J23-E06	Entran	August 1, 1997

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