

NEW CAR ASSESSMENT PROGRAM
SIDE IMPACT TESTING
PASSENGER CARS

NISSAN

1999 NISSAN FRONTIER
PICKUP
NHTSA NO: MX5202

MGA PROVING GROUNDS
5000 WARREN ROAD
BURLINGTON, WI 53105



Test Date: November 6, 1998

Report Date: November 11, 1998

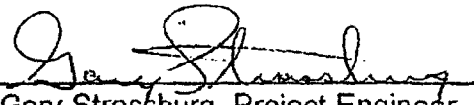
FINAL REPORT

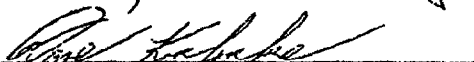
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16. Abstract A 90° Moving Deformable Barrier NCAP side impact was conducted on the subject 1999 Nissan Frontier to obtain new car assessment and research data indicant of FMVSS No. 214D performance. The test was conducted at MGA Research Corporation in Burlington, Wisconsin, on November 6, 1998. The impact velocity of the Moving Deformable Barrier (MDB) was 61.8 kph, and the ambient temperature at the struck side (driver's) of the target vehicle at the time of impact was 20 °C. The target vehicle post test maximum crush was 392 mm at level 3. The test vehicle's performance follows: <table border="0"> <tr> <td></td> <td style="text-align: center;"><u>DRIVER</u></td> </tr> <tr> <td>Left Upper Rib (LUR) Accel., g</td> <td style="text-align: center;">49</td> </tr> <tr> <td>Left Lower Rib (LLR) Accel., g</td> <td style="text-align: center;">46</td> </tr> <tr> <td>Lower Spine (T₁₂) Accel., g</td> <td style="text-align: center;">79</td> </tr> <tr> <td>Thoracic Trauma Index (TTI)</td> <td style="text-align: center;">64</td> </tr> <tr> <td>Pelvis (PEV) Accel., g</td> <td style="text-align: center;">103</td> </tr> </table> The door on the struck side of the vehicle did not separate from the body at the hinges or latche and the opposite door did not open during the side impact event.					<u>DRIVER</u>	Left Upper Rib (LUR) Accel., g	49	Left Lower Rib (LLR) Accel., g	46	Lower Spine (T ₁₂) Accel., g	79	Thoracic Trauma Index (TTI)	64	Pelvis (PEV) Accel., g	103
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17. Key Words New Car Assessment Program (NCAP) FMVSS No. 214D Side Impact Dummy (SID) Occupant Side Impact Protection		18. Distribution Statement Copies of this report are available from: National Highway Traffic Safety Adm. Technical Ref. Division, Room 5108 (NAD-52) 400 Seventh Street, S.W. Washington, D.C. 20590													
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SECTION 1
PURPOSE AND TEST PROCEDURE

This side impact test is part of the FY99 NCAP Side Impact Program, sponsored by the National Highway Traffic Safety Administration (NHTSA), under Contract No. DTNH22-97-D-22001. The purpose of this test was to evaluate side impact protection of a 1999 Nissan Frontier.

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

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

SECTION 2

SUMMARY OF SIDE IMPACT TEST

A 1999 Nissan Frontier was impacted on the left or driver's side by a Moving Deformable Barrier (MDB) which was moving forward in a 27° crabbed position to the tow road guidance system at a velocity of 38.4 mph (61.8 kph). The target vehicle was stationary and was positioned at an angle of 63° to the line of forward motion. The side impact test was conducted by MGA Research Corporation in Burlington, Wisconsin, on November 6, 1998. Pre- and post-test photographs of the test vehicle, the MDB and the side impact dummies (SIDs) are included in Appendix A.

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

The SID was instrumented with the following accelerometers.

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

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

The following table summarizes the results of the test:

Injury Criteria	Front SID
TTI (g)	64
Pelvis (g)	103

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: 1999/Nissan/Frontier/Pickup
Vehicle NHTSA No.: MX5202 VIN: 1N6DD26S0XC316028
Vehicle Body Color: Black Build Date: 10/98
Engine Data: 4 Cylinders; CID; 2.4 Liter; cc
Placement X Longitudinal; Lateral
Transmission: 4 Speed; Manual; X Automatic; X Overdrive
Final Drive: X Rear Wheel Drive; Frt. Wheel Drive; Four Wheel Drive

Odometer Reading 41 miles
Options: X A/C; X Pwr. Steering; X Pwr. Brakes; Pwr. Windows;
 Cruise Control; Tilt Wheel; Power Door Locks;

DATA FROM TIRE PLACARD:

Tire Pressure (at capacity): 35 Psi FRONT
35 Psi REAR
Recommended Tire Size: P215/65/R15
Tires on Test Vehicle: P215/65/R15 Manufacturer: Firestone

Vehicle Capacity Data:

Number of Occupants: 3 Front; 2 Rear; 3rd Seat, 5 Total
Type of Front Seats: Bucket; Bench; X Split Bench
Type of Front Seat Back: Fixed; X Adjustable with X Lever
Vehicle Maximum Capacity Loading = 657.3 kg (A)
No. of Occupants x 68.04 kg. = 340.2 kg (B)
Cargo Capacity (A-B) = 317.1 kg

GENERAL VEHICLE TEST PARAMETER DATA (Cont'd)WEIGHT OF TEST VEHICLE WITH MAXIMUM FLUIDS:

Right Front	=	<u>420.5</u> kg	Right Rear	=	<u>333.4</u> kg
Left Front	=	<u>420.0</u> kg	Left Rear	=	<u>300.7</u> kg
TOTAL FRONT	=	<u>840.5</u> kg	TOTAL REAR	=	<u>634.1</u> kg
% of Total Vehicle Weight =		<u>57.0</u> %;	% of Total Weight =		<u>43.0</u> %
TOTAL WEIGHT = <u>1474.6</u> kg					

GENERAL VEHICLE TEST PARAMETER DATA (Cont'd)Year/Make/Model/Body Style: 1999/Nissan/Frontier/PickupVehicle NHTSA No.: MX5202 Test Date: November 6, 1998CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Total Test Vehicle Delivered Weight with Maximum Fluids	=	<u>1474.6</u> kg
Cargo Carrying Capacity of Test Vehicle*	=	<u>136.1</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>1772.1</u> kg

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

Right Front	=	<u>441.4</u> kg	Right Rear	=	<u>419.6</u> kg
Left Front	=	<u>494.4</u> kg	Left Rear	=	<u>415.5</u> kg
TOTAL FRONT	=	<u>935.8</u> kg	TOTAL REAR	=	<u>835.1</u> kg
% of Total Weight	=	<u>52.8</u> %	% of Total Weight	=	<u>47.2</u> %
TOTAL TEST WEIGHT	=	<u>1770.9</u> kg			

TEST VEHICLE ATTITUDE:

CURB WEIGHT ATTITUDE:

Right Front 762 mm Left Front 775 mm Right Rear 778 mm Left Rear 781 mm

FULLY LOADED WEIGHT ATTITUDE:

Right Front 758 mm Left Front 759 mm Right Rear 748 mm Left Rear 740 mm

TEST ATTITUDE:

Right Front 758 mm Left Front 759 mm Right Rear 747 mm Left Rear 742 mm

* Cargo weight for multi-purpose passenger vehicles, truck, and buses is the vehicle's rated cargo and luggage weight from the vehicle's label or 300 pounds, whichever is less.

GENERAL VEHICLE TEST PARAMETER DATA (Cont'd)

Test Vehicle Wheelbase: 2952 mm

C.G. = 1387 mm rearward of front wheel centerline

TOTAL VEHICLE LENGTH:

Right Side = 4695 mm

Centerline = 5094 mm

Left Side = 4695 mm

DATA SHEET NO. 2
TEST VEHICLE SUMMARY OF RESULTS

Year/Make/Model/Body Style: 1999/Nissan/Frontier/Pickup
 Vehicle NHTSA No.: MX5202 Test Date: November 6, 1998
 Overall Length = 5094 mm; Overall Width = 1660 mm

TEST WEIGHT:

Right Front	=	<u>446.3</u> kg	Right Rear	=	<u>422.3</u> kg
Left Front	=	<u>489.9</u> kg	Left Rear	=	<u>406.9</u> kg
TOTAL FRONT	=	<u>936.2</u> kg	TOTAL REAR	=	<u>829.2</u> kg
% of Total Weight	=	<u>53.0</u> %	% of Total Weight	=	<u>47.0</u> %
TOTAL VEHICLE WEIGHT = <u>1765.4</u> kg					
Wheelbase = <u>2952</u> mm					
Longitudinal C.G. from Center of Front Axle				=	<u>1387</u> mm
Impact Angle with Respect to Impactor				=	<u>90 °</u> degrees

MAXIMUM EXTERIOR STATIC CRUSH:

1. LEVEL 1 (361 mm above ground) = 325 mm
 2. LEVEL 2 (700 mm above ground) = 388 mm
 3. LEVEL 3 (674 mm above ground) = 392 mm
 4. LEVEL 4 (1003 mm above ground) = 323 mm
 5. LEVEL 5 (1500 mm above ground) = 157 mm
- Maximum Post-Test Intrusion = 392 mm

OCCUPANTS:

	<u>Driver</u>	<u>Left Rear Passenger</u>
Type of Dummy	<u>SID</u>	<u>None *</u>
Restraints Used	<u>3 pt seatbelt</u>	<u></u>

* The rear seating position was a side facing seat.

TEST VEHICLE SUMMARY OF RESULTS (Cont'd)INSTRUMENTATION:

Number of Vehicle Data Channels:		=	<u>22</u>
Number of Cameras:	Onboard Vehicle	=	<u>2</u>
	Offboard Vehicle	=	<u>4</u>
	Deformable Barrier	=	<u>2</u>
	TOTAL	=	<u>8</u>

DATA SHEET NO. 3

MOVING DEFORMABLE BARRIER (MDB) SUMMARY OF RESULTSYear/Make/Model/Body Style: 1999/Nissan/Frontier/PickupVehicle NHTSA No.: MX5202 Test Date: November 6, 1998POSITION OF IMPACT (MDB) ON MONORAIL:Crabbed 27 ° to leftMDB 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>1098 mm</u>
C.G. Location From Center Line	=	<u>-15 mm</u>
C.G. Location Above Ground Level	=	<u>485 mm</u>

MDB WEIGHT:

Left Front	=	<u>457.7 kg</u>	Left Rear	=	<u>235.1 kg</u>
Right Front	=	<u>328.1 kg</u>	Right Rear	=	<u>342.6 kg</u>
TOTAL FRONT	=	<u>785.8 kg</u>	TOTAL REAR	=	<u>577.7 kg</u>
TOTAL MDB WEIGHT = <u>1363.5 kg</u>					

Impact Angle (MDB C/L to Target Vehicle C/L) = 90 ° degreesImpact Speed = Primary: 38.4 mph (61.8 kph) Secondary: 38.3 mph (61.6 kph)

CRASH TEST SUMMARY FOR SIDE IMPACTOR (Cont'd)MAXIMUM STATIC CRUSH OF HONEYCOMB IMPACT FACE:

1. Row A Top of Stack (813 mm) = 256 mm
2. Row B Mid Stack (686 mm) = 245 mm
3. Row C Top of Bumper (533 mm) = 200 mm
4. Row D Center of Bumper (432 mm) = 132 mm

INSTRUMENTATION:

Number of MDB Data Channels = 7

DATA SHEET NO. 4
POST-TEST OBSERVATIONS

Year/Make/Model/Body Style: 1999/Nissan/Frontier/Pickup

Vehicle NHTSA No.: MX5202 Test Date: November 6, 1998

VISIBLE DUMMY CONTACT POINTS:

	<u>LEFT FRONT SID</u>
Head	<u>Shoulder</u>
Arm	<u>Door panel/armrest</u>
Pelvis	<u>Armrest</u>
Left Knee	<u>Door panel</u>
Right Knee	<u>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 rear Vertical: 3 mm high

ARM REST LOCATIONS:

Front: 190 mm from window opening

Rear: N/A

POST-TEST OBSERVATIONS (Cont'd)SEAT CRUSH:

Front Seat Back: 32 mm Front Seat Cushion: 35 mm

Left Rear Seat Back: N/A mm Rear Seat Cushion: N/A mm

GLAZING DAMAGE:

Left side window broke, windshield cracked

PILLAR PERFORMANCE:

No failure

SILL SEPARATION:

None

OTHER NOTABLE IMPACT EFFECTS:

None

AIRBAG DEPLOYMENT STATUS:

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

SECTION 4
OCCUPANT AND VEHICLE INFORMATION

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

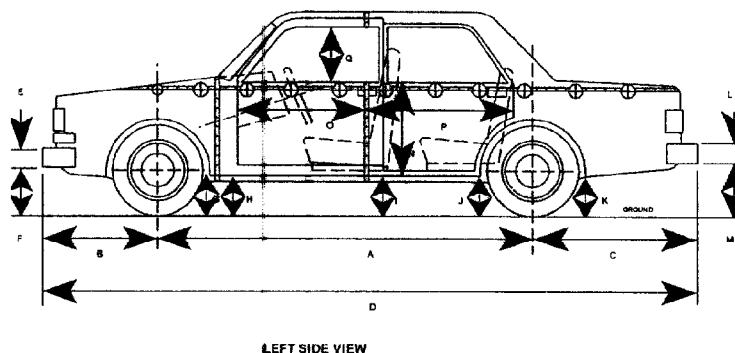
Year/Make/Model/Body Style: 1999/Nissan/Frontier

Vehicle NHTSA No.: MX5202 Test Date: November 6, 1998

Driver SID ID # 272					
	Pos. Direct.		Neg. Direct		
	Max (g)	Time (msec)	Max (g)	Time (msec)	
RIB ACCELERATIONS					
Left Upper Rib (LUR) Y	49.1	52	10.4	87	
Left Lower Rib (LLR) Y	46.1	41	9.3	100	
SPINE ACCELERATIONS					
Lower Lateral Y	78.5	35	12.3	53	
PELVIS ACCELERATIONS					
Lateral Y	102.6	34	12.3	59	

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

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



D = Length at Centerline

R = Right Side Length

S = Left Side Length

T = Width at B Post

E & L = Bumper Thickness

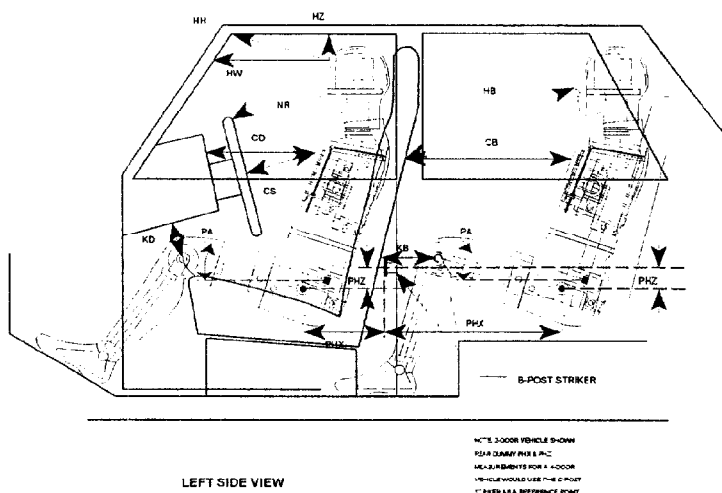
J1 = To Pinch Weld

J2 = To Sill

ALL MEASUREMENTS IN (mm)

	PRE-TEST	POST-TEST	Δ CHANGE
A	2949	2936	13
B	860	865	-5
C	1285	1245	40
D	5094	5046	48
E	85	85	0
F	562	568	-6
G	289	290	-1
H	290	290	0
I	300	282	18
J1/J2	300/299	339/341	-39/-42
K	358	419	-61
L	165	165	0
M	378	357	21
N	660	628	32
O	902	800	102
P	286	283	3
Q	466	458	8
R	4695	4775	-80
S	4695	4605	90
T	1660	1416	244

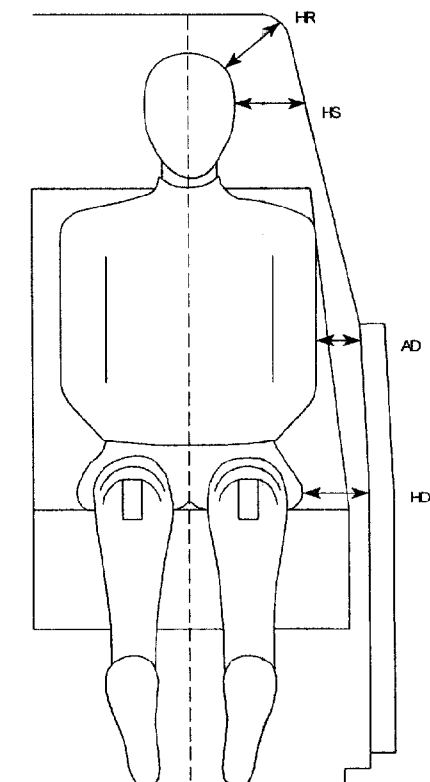
DATA SHEET NO. 7

SIDE IMPACT DUMMY (SID) LONGITUDINAL CLEARANCE DIMENSIONSYear/Make/Model/Body Style: 1999/Nissan/FrontierNHTSA NO.: MX5202 Test Date: November 6, 1998NOTE: All dimensions are in mm with tolerance of ± 3 mm

	DRIVER SID ID # 272
HH	525
HW	693
HZ	168
NR	504
CD	617
CS	359
KDL(KDA°)	244 (0°)
KDR(KDA°)	295 (0°)
PA°	24.3°
PHX	255
PHZ	65

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 DIMENSIONSYear/Make/Model/Body Style: 1999/Nissan/FrontierNHTSA NO.: MX5202 Test Date: November 6, 1998

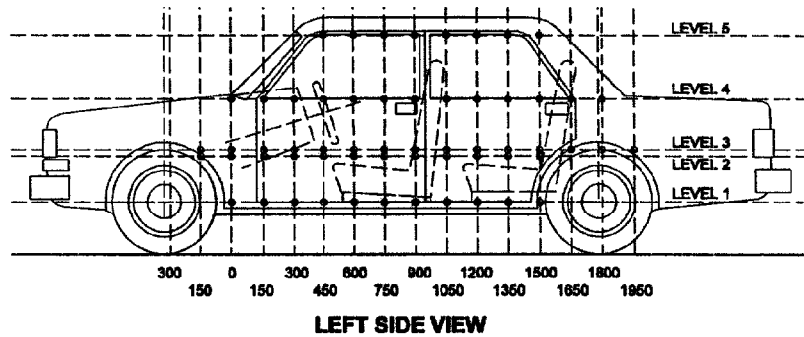
NOTE: All dimensions are in mm

	DRIVER SID ID # 272
HR	253
HS	322
AD	96
HD	134

DATA SHEET NO. 9
VEHICLE SIDE MEASUREMENTS

Year/Make/Model/Body Style: 1999/Nissan/Frontier

NHTSA NO.: MX5202 Test Date: November 6, 1998



NOTE: All measurements are in millimeters (mm)

LEVEL 5 - WINDOW TOP
 LEVEL 4 - WINDOW SILL
 LEVEL 3 - OCCUPANT H-POINT
 LEVEL 2 - MID-DOOR
 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)

= 361 mm

Level 2 @ Mid Door

= 674 mm

Level 3 @ Occupant H-Point

= 700 mm

Level 4 @ Window Sill

= 1003 mm

Level 5 @ Window Top

= 1500 mm

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES

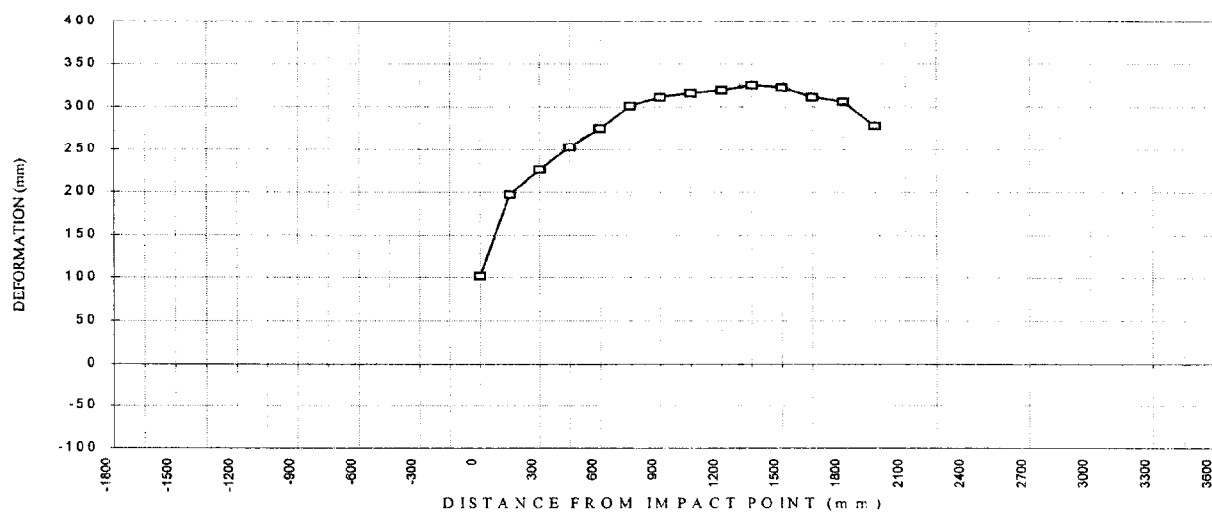
	Level 1 - Axle Centerline		
Longitudinal Distance (mm)	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
-1800			
-1650			
-1500			
-1350			
-1200			
-1050			
-900			
-750			
-600			
-450			
-300			
-150			
0 (impact point)	807	909	102
150	809	1006	197
300	809	1035	226
450	806	1059	253
600	806	1081	275
750	805	1106	301
900	804	1115	311
1050	805	1121	316
1200	805	1124	319
1350	804	1129	325
1500	804	1126	322
1650	803	1114	311
1800	802	1108	306

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

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES

	Level 1 - Axle Centerline		
Longitudinal Distance (mm)	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
1950	797	1075	278
2100			
2250			
2400			
2550			
2700			
2850			
3000			
3150			
3300			
3450			
3600			

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

VEHICLE EXTERIOR STATIC CRUSH

LEVEL 1 - AXLE CENTERLINE

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES

	Level 2 -Mid-Door		
Longitudinal Distance (mm)	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
-1800			
-1650			
-1500			
-1350			
-1200			
-1050	767	784	17
-900	746	775	29
-750			
-600			
-450			
-300			
-150	740	821	81
0 (impact point)	740	932	192
150	741	1049	308
300	741	1077	336
450	741	1090	349
600	741	1095	354
750	740	1099	359
900	739	1099	360
1050	738	1097	359
1200	737	1102	365
1350	735	1127	392
1500	735	1084	349
1650	741	934	193
1800	739	944	205

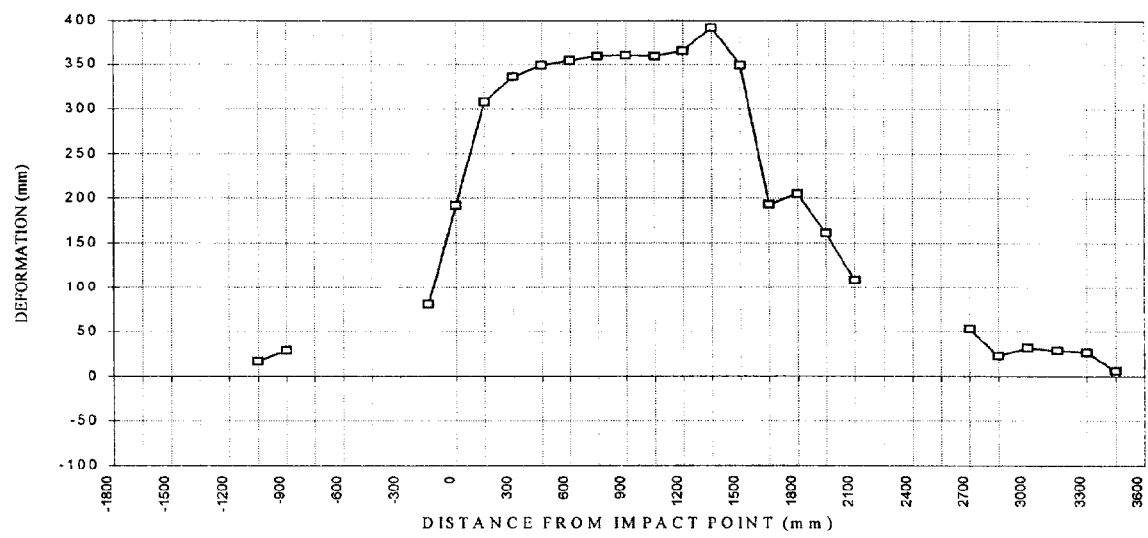
Reference plane is parallel to test vehicle longitudinal centerline.
Given dimensions = Reference plane to car body

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES

	Level 2 - Mid-Door		
Longitudinal Distance (mm)	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
1950	732	893	161
2100	725	834	109
2250			
2400			
2550			
2700	727	780	53
2850	731	754	23
3000	737	769	32
3150	742	771	29
3300	743	770	27
3450	750	756	6
3600			

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

VEHICLE EXTERIOR STATIC CRUSH



LEVEL 2 - OCCUPANT H-POINT

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES

Longitudinal Distance (mm)	Level 3 - Occupant H-Point		
	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
-1800			
-1650			
-1500			
-1350			
-1200			
-1050			
-900			
-750			
-600			
-450			
-300			
-150	740	830	90
0 (impact point)	740	942	202
150	741	1049	308
300	741	1069	328
450	741	1082	341
600	740	1094	354
750	740	1095	355
900	738	1100	362
1050	738	1103	365
1200	738	1103	365
1350	737	1125	388
1500	737	1089	352
1650	742	934	192
1800	740	956	216

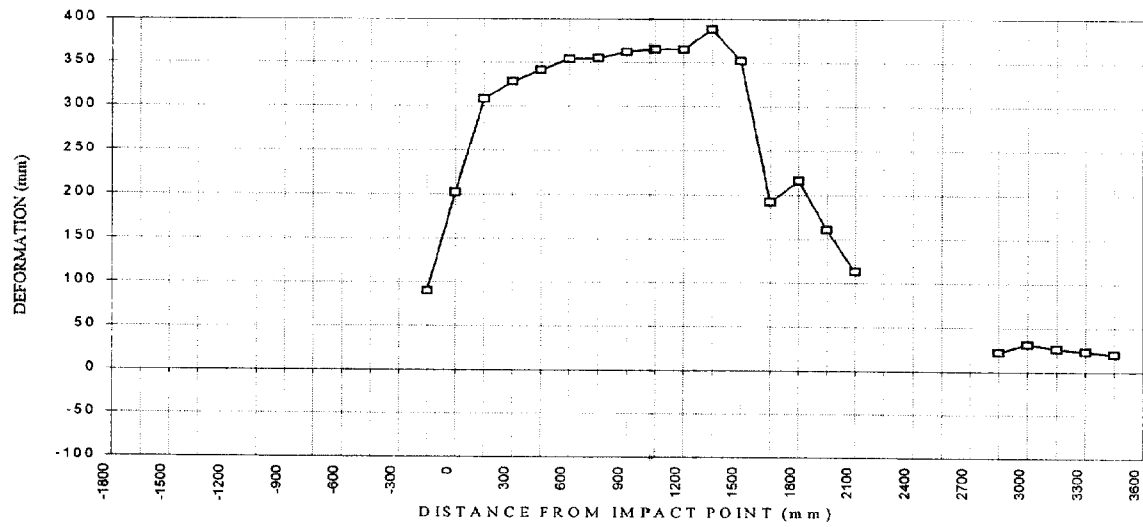
Reference plane is parallel to test vehicle longitudinal centerline.
Given dimensions = Reference plane to car body

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES

Longitudinal Distance (mm)	Level 3 - Occupant H-Point		
	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
1950	734	895	161
2100	728	841	113
2250			
2400			
2550			
2700			
2850	731	753	22
3000	740	771	31
3150	745	771	26
3300	748	771	23
3450	754	774	20
3600			

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

VEHICLE EXTERIOR STATIC CRUSH



LEVEL 3 - MID-DOOR

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES

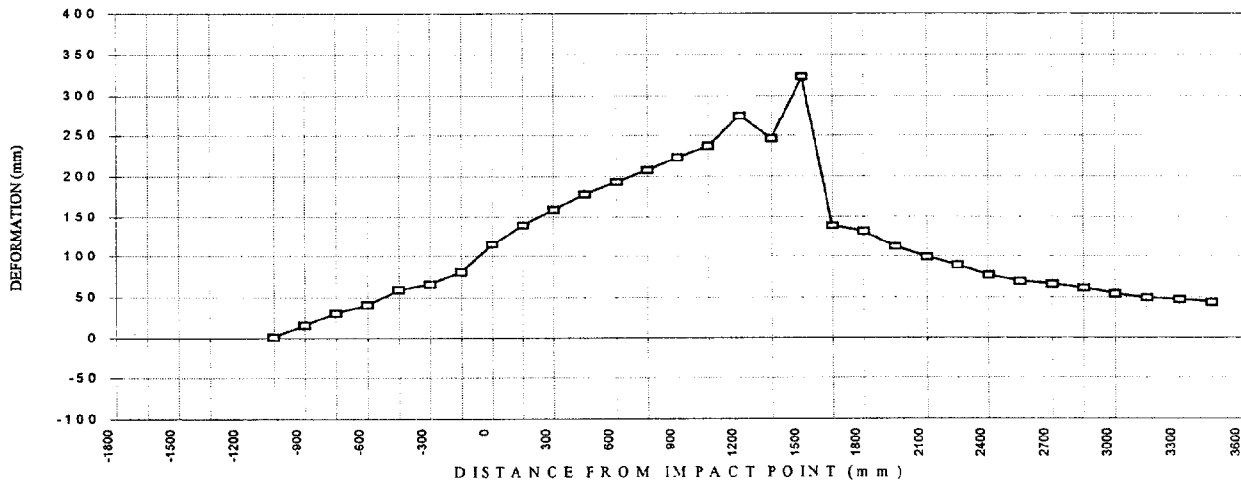
	Level 4 - Window Sill		
Longitudinal Distance (mm)	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
-1800			
-1650			
-1500			
-1350			
-1200			
-1050	843	844	1
-900	815	831	16
-750	802	833	31
-600	795	836	41
-450	786	845	59
-300	781	847	66
-150	777	858	81
0 (impact point)	776	891	115
150	775	915	140
300	775	934	159
450	773	951	178
600	773	966	193
750	773	981	208
900	773	996	223
1050	773	1010	237
1200	772	1046	274
1350	772	1018	246
1500	772	1095	323
1650	775	914	139
1800	776	908	132

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

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES

	Level 4 - Window Sill		
Longitudinal Distance (mm)	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
1950	774	886	112
2100	771	870	99
2250	771	860	89
2400	774	851	77
2550	774	843	69
2700	775	841	66
2850	778	839	61
3000	781	835	54
3150	783	832	49
3300	783	830	47
3450	787	831	44
3600			

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

VEHICLE EXTERIOR STATIC CRUSH

LEVEL 4 - WINDOW SILL

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES

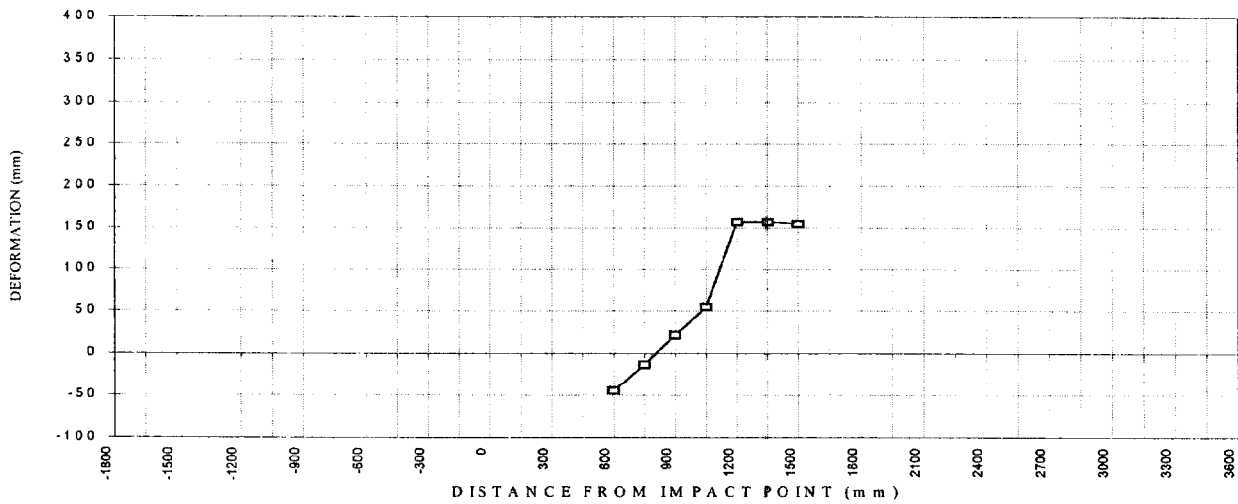
	Level 5 - Window Top		
Longitudinal Distance (mm)	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
-1800			
-1650			
-1500			
-1350			
-1200			
-1050			
-900			
-750			
-600			
-450			
-300			
-150			
0 (impact point)			
150			
300			
450			
600	938	894	-44
750	940	927	-13
900	938	960	22
1050	941	996	55
1200	941	1098	157
1350	941	1098	157
1500	943	1098	155
1650			
1800			

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

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES

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

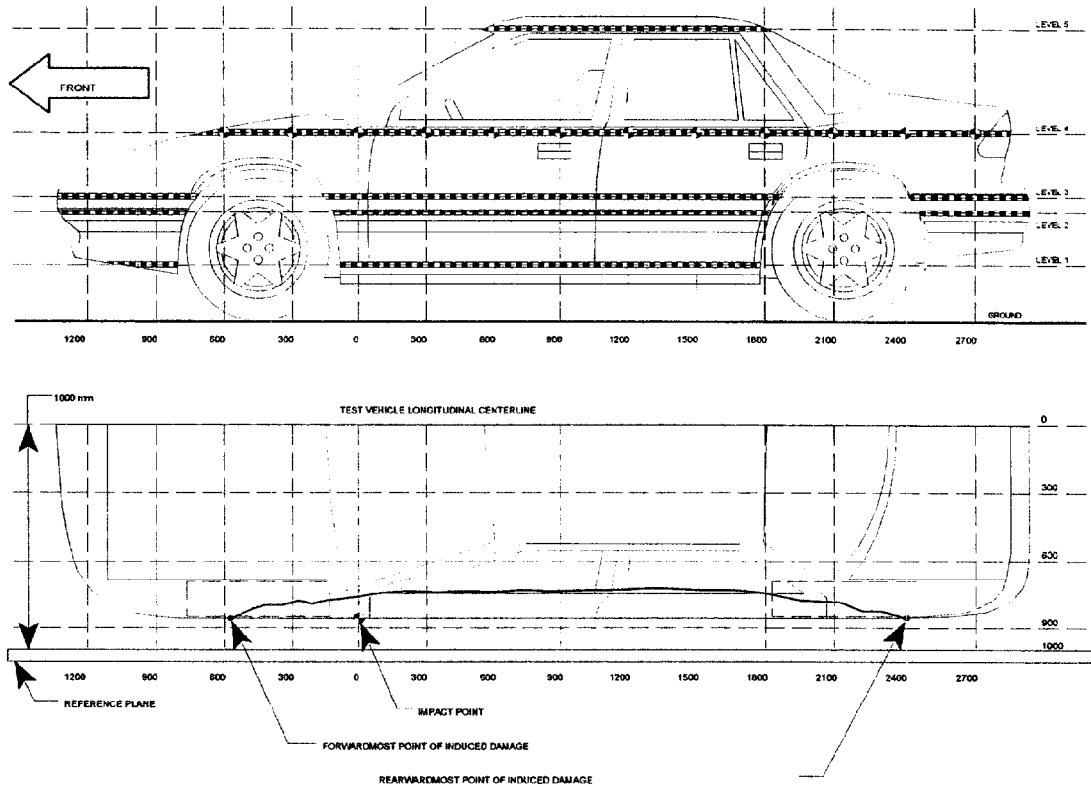
Reference plane is parallel to test vehicle longitudinal centerline.
 Given dimensions = Reference plane to car body

VEHICLE EXTERIOR STATIC CRUSH

LEVEL 5 - WINDOW TOP

DATA SHEET NO. 11
VEHICLE DAMAGE PROFILE DISTANCES

Year/Make/Model/Body Style: 1999/Nissan/Frontier
 NHTSA NO.: MX5202 Test Date: November 6, 1998



NOTE: All measurements are in millimeters (mm)

DPD MEASUREMENTS	POST-TEST (mm)	PRE-TEST (mm)	STATIC CRUSH (mm)
1. (LF = <u>-1050</u> mm)	844	843	0
2. -163 mm	856	778	78
3. 730 mm	1100	740	360
4. 1641 mm	912	773	139
5. 2554 mm	843	774	69
6. (LR = <u>3450</u> mm)	756	750	0

DATA SHEET NO. 12
EXTERIOR STATIC CRUSH FOR SIDE IMPACTOR

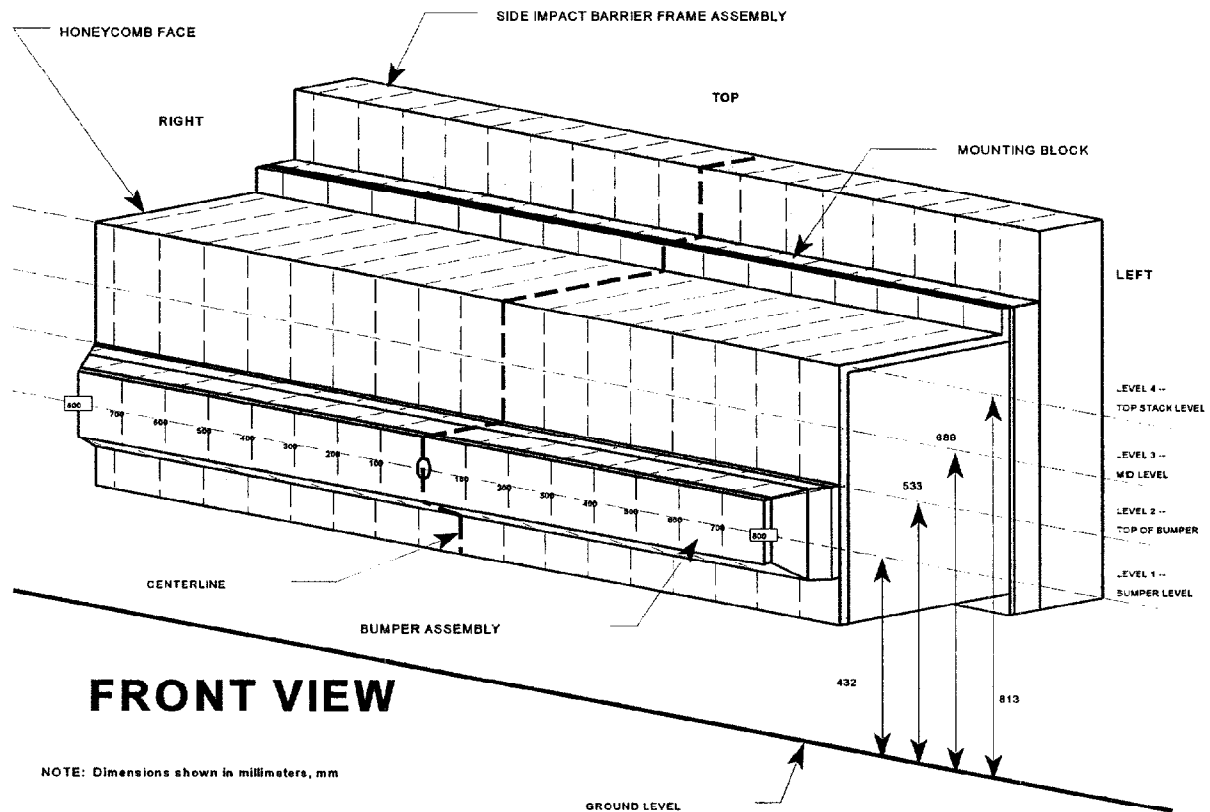
Year/Make/Model/Body Style: 1999/Nissan/Frontier

Vehicle NHTSA No.: MX5202 Test Date: November 6, 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	813 mm	221	256	174	97	57	41	45	40	31	25	25	34	49	64	81	98	113
Mid Level Level 3	686 mm	212	245	158	66	23	15	22	29	11	10	12	14	17	23	35	50	67
Top Bumper Level 2	533 mm	186	200	110	96	86	79	67	61	55	53	51	50	49	49	50	34	37
Mid Bumper Level 1	432 mm	132	132	113	94	88	77	82	79	79	80	81	81	82	82	86	91	98

See next page for Barrier Face Graphic

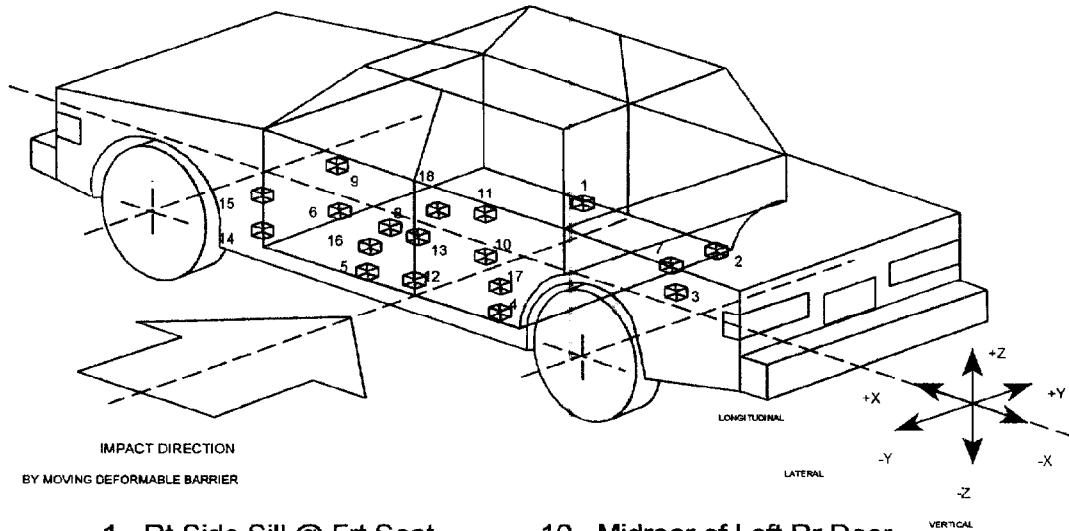
DATA SHEET NO. 12 (Cont'd)



DATA SHEET 13
TEST VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

Year/Make/Model/Body Style: 1999/Nissan/Frontier

Vehicle NHTSA No.: MX5202 Test Date: November 6, 1998



- 1 - Rt Side Sill @ Frt Seat
- 2 - Rt Side Sill @ Rr Seat
- 3 - Rr Floorpan Above Axle
- 4 - Left Side Sill @ Rr Seat
- 5 - Left Side Sill @ Frt Seat
- 6 - Left Frt Door on Centerline
- 7 - Rt Rr Occ Compartment
- 8 - Midrear of Left Frt Door

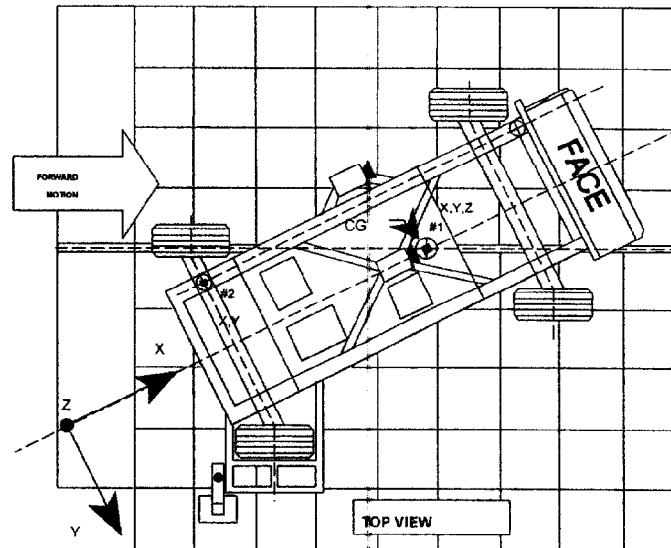
- 10 - Midrear of Left Rr Door
- 11 - Left Rr Door Up'r C/Line
- 12 - Left Lwr B-Post
- 13 - Left Middle B-Post
- 14 - Left Lwr A-Post
- 15 - Left Middle A-Post
- 16 - Frt Seat Track
- 17 - Rr Seat Track

DATA SHEET NO. 13
TEST VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY
Year/Make/Model/Body Style: 1999/Nissan/Frontier
Vehicle NHTSA No.: MX5202 Test Date: November 6, 1998

Accel. No.	Description	Coordinates (mm)*			Long. (X) Maximums (g's)		Lat. (Y) Maximums (g's)		Vert. (Z) Maximums (g's)		Resultant (g's)
		X	Y	Z	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	
1	Rt. Side Sill @ Front Seat	3099	663	330	7.2	-6.2	34.8	-13.3	13.4	-14.0	35.6
2	Rt. Side Sill @ Rear Seat	2467	663	354	7.1	-5.5	30.7	-12.7	9.8	-8.7	31.0
3	Rr. Floorpan Above Axle	1335	0	630	6.1	-8.5	22.0	-4.4	14.8	-26.5	33.3
4	Left Side Sill @ Rr. Seat	2475	-663	348	---	---	95.8	**	---	---	---
5	Left Side Sill @ Frt. Seat	3098	-663	328	---	---	NVD	NVD	---	---	---
6	Left Front Door Centerline	3210	-700	779	---	---	190.9	-226.2	---	---	---
7	Right Rear Occupant Compartment	2502	337	468	---	---	30.5	-16.2	---	---	---
8	Mid Rear of Left Front Door	2818	-686	755	---	---	214.6	-145.1	---	---	---
9	Left Front Door Upper Centerline	3240	-680	996	---	---	148.4	-76.4	---	---	---
10	Left Rear Door Mid Rear	N/R	N/R	N/R	---	---	N/R	N/R	---	---	---
11	Left Rear Door Upper Centerline	N/R	N/R	N/R	---	---	N/R	N/R	---	---	---
12	Left Lower B-Post	2652	-677	473	---	---	277.3	-158.4	---	---	---
13	Left Mid B-Post	2642	-681	1000	---	---	149.6	-27.5	---	---	---
14	Left Lower A-Post	3719	-672	468	---	---	**	**	---	---	---
15	Left Mid A-Post	3724	-746	1080	---	---	11.6	-3.2	---	---	---
16	Driver Left Seat Track	2860	-604	458	---	---	121.8	-17.1	---	---	---
18	Vehicle CG	3199	0	554	8.4	-18.4	33.0	-12.0	36.8	-28.6	39.7

*Reference: X - Rear Bumper (+ Forward), Y - Vehicle Centerline (+ To right) Z - Ground Level (+ Up)
NVD = No valid data ** Not valid shortly after contact

DATA SHEET NO. 14

MOVING DEFORMABLE BARRIER (MDB) ACCELEROMETER LOCATIONS AND DATA SUMMARYYear/Make/Model/Body Style: 1999/Nissan/FrontierVehicle NHTSA No.: MX5202 Test Date: November 6, 1998

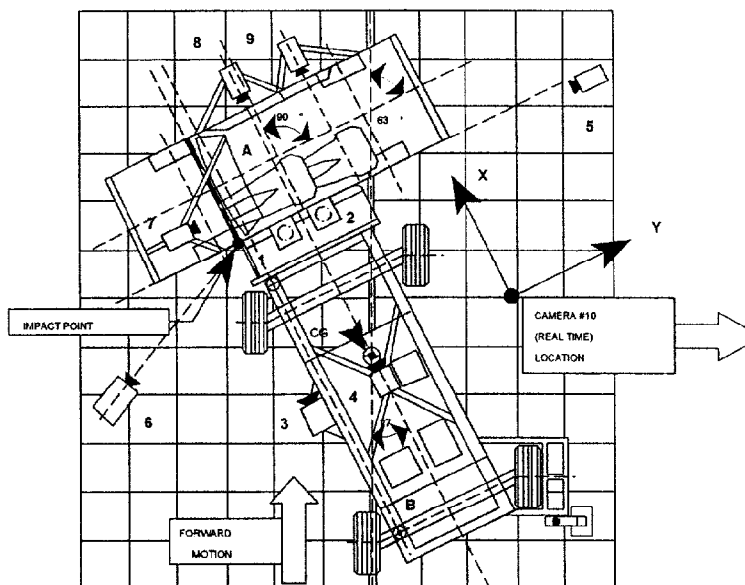
Accel. No.	Description	Coordinates (mm)*			(+) Positive		(-) Negative	
		X	Y	Z	Max. (g)	Time (msec)	Max. (g)	Time (msec)
1	MDB Center of Gravity							
	Longitudinal (X)	---	---	---	1.3	122	-18.6	35
	Lateral (Y)	---	---	---	3.6	60	-8.3	48
	Vertical (Z)	---	---	---	18.2	37	-10.6	26
	Resultant (R)	---	---	---	26.8	37	—	—
2	Rear Frame Member							
	Longitudinal (X)	---	---	---	1.7	118	-22.0	38
	Lateral (Y)	---	---	---	6.5	36	-2.0	184

*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: 1999/Nissan/Frontier

Vehicle NHTSA No.: MX5202 Test Date: November 6, 1998



Camera No.	View	Coordinates (mm)*			Lens (mm)	Film Speed (fps)
		X	Y	Z		
	Real Time					
1	Top Overall	-240	1220	5000	8	980
2	Top Impact	-230	30	5000	13	935
3	Cart Pointer				35	1020
4	Cart Overall				13	1010
5	Right Impact	-1190	10350	2000	25	1010
6	Left Impact	-385	-2480	1670	13	1000
7	Onboard Hood				13	1015
8	Onboard Driver				8	952

* Reference: (from point of impact)

+X = Forward

+Y = To Right

+Z = Upward

DATA SHEET 16
FUEL SYSTEM INTEGRITY POST IMPACT TEST DATA

Vehicle Year/Make/Model/Body Style: 1999/Nissan/Frontier
 Vehicle NHTSA No.: MX5202 Test Date: November 6, 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 Side Impact MDB 38.4 mph (61.8 kph)

FUEL SPILLAGE MEASUREMENT:

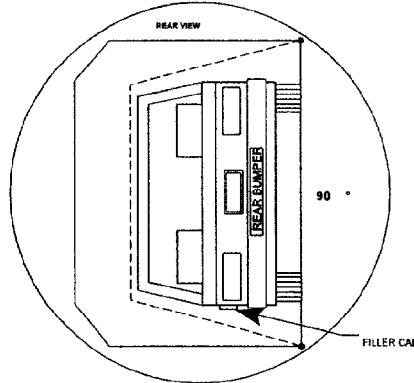
POST IMPACT TEST	TEST RESULTS	MAXIMUM ALLOWABLE
1. From impact until vehicle motion ceases	0	1 oz
2. For 5 minute period after vehicle motion ceases	0	5 oz
3. For next 25 minutes	0	1 oz./1 min

FUEL SPILLAGE LOCATION(S): None

DATA SHEET 16
FMVSS 301 STATIC ROLLOVER TEST DATA

Vehicle Year/Make/Model/Body Style: 1999/Nissan/Frontier
Vehicle NHTSA No.: MX5202 Test Date: November 6, 1998

TEST PHASE: 0° - 90°



DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time = 2 minutes 39 seconds
(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time = 5 minutes 0 seconds

TOTAL TIME = 7 minutes 39 seconds

Next Whole Minute Interval = 8 minutes

FUEL SPILLAGE MEASUREMENT:

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

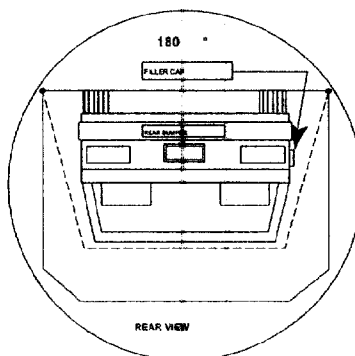
FUEL SPILLAGE LOCATIONS(S): NONE

DATA SHEET 16
FMVSS 301 STATIC ROLLOVER TEST DATA (Cont'd)

Vehicle Year/Make/Model/Body Style: 1999/Nissan/Frontier

Vehicle NHTSA No.: MX5202 Test Date: November 6, 1998

TEST PHASE: 90° - 180°



DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time = 2 minutes 41 seconds

(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time = 5 minutes 0 seconds

TOTAL TIME = 7 minutes 41 seconds

Next Whole Minute Interval = 8 minutes

FUEL SPILLAGE MEASUREMENT:

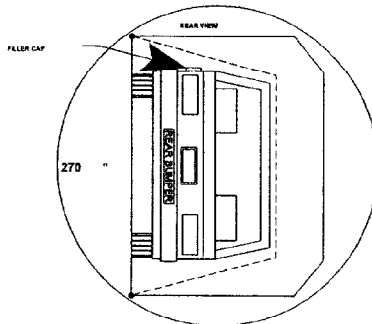
90° TO 180° ROTATION	TEST RESULTS	MAXIMUM ALLOWABLE
1. First 5 Minutes From Onset of Rotation	0 oz.	5 oz
2. Sixth Minute From Onset of Rotation	0 oz.	1 oz
3. Seventh Minute From Onset of Rotation	0 oz.	1 oz
4. Eighth Minute if Required	0 oz.	1 oz

FUEL SPILLAGE LOCATIONS(S): NONE

DATA SHEET 16
FMVSS 301 STATIC ROLLOVER TEST DATA (Cont'd)

Vehicle Year/Make/Model/Body Style: 1999/Nissan/Frontier
 Vehicle NHTSA No.: MX5202 Test Date: November 6, 1998

TEST PHASE: 180° - 270°



DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time = 2 minutes 26 seconds

(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time = 5 minutes 0 seconds

TOTAL TIME = 7 minutes 26 seconds

Next Whole Minute Interval = 8 minutes

FUEL SPILLAGE MEASUREMENT:

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

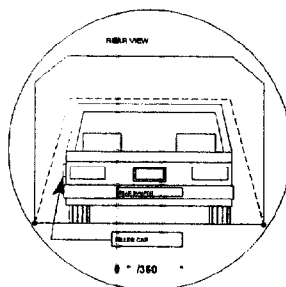
FUEL SPILLAGE LOCATIONS(S): NONE

DATA SHEET 16
FMVSS 301 STATIC ROLLOVER TEST DATA

Vehicle Year/Make/Model/Body Style: 1999/Nissan/Frontier

Vehicle NHTSA No.: MX5202 Test Date: November 6, 1998

TEST PHASE: 270° - 360°



DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time = 2 minutes 26 seconds

(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time = 5 minutes 0 seconds

TOTAL TIME = 7 minutes 26 seconds

Next Whole Minute Interval = 8 minutes

FUEL SPILLAGE MEASUREMENT:

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

FUEL SPILLAGE LOCATIONS(S): NONE

APPENDIX A - PHOTOGRAPHS

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Photo No. A-39 - Right Front Attitude Point	A-39
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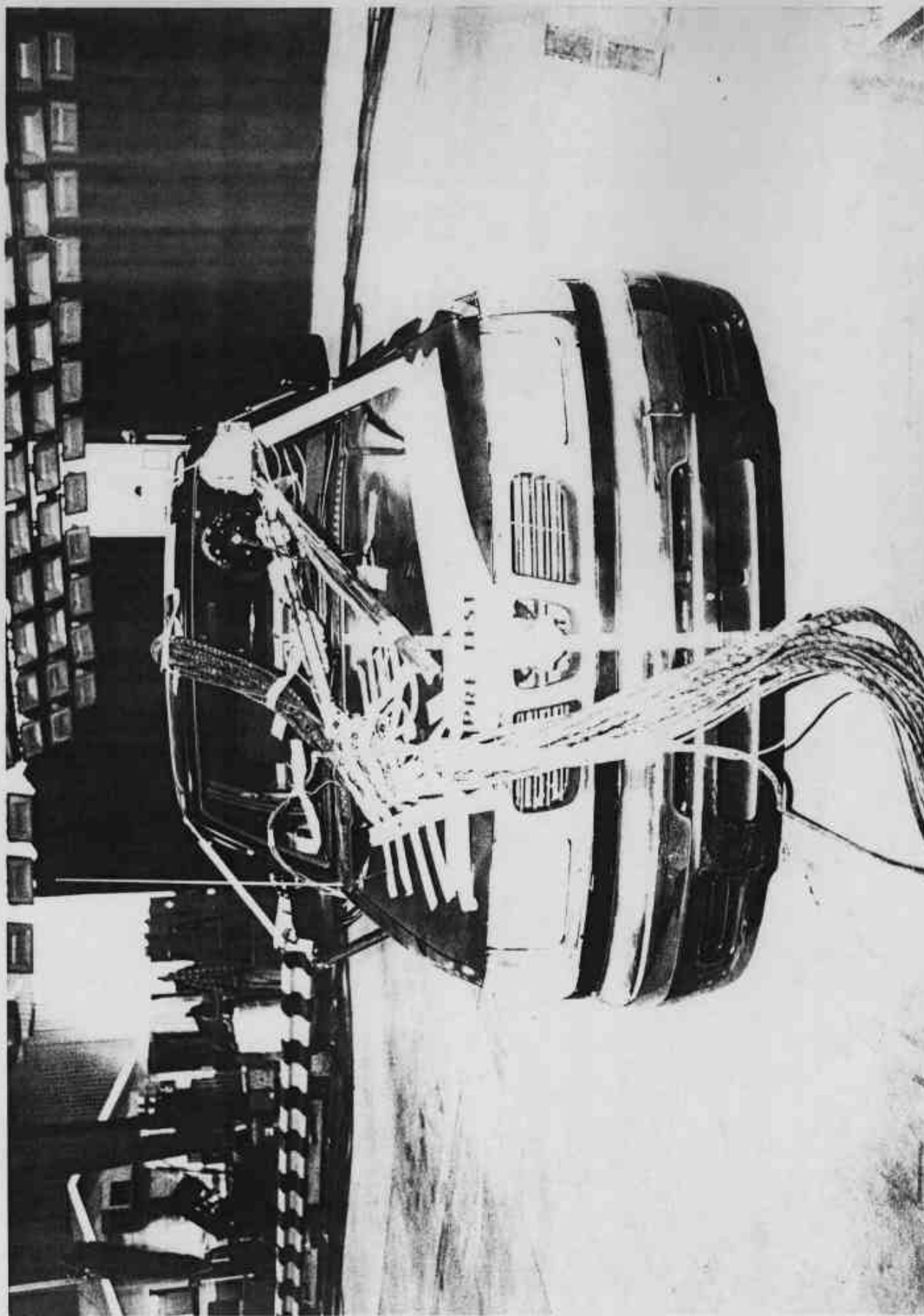


Photo No. A-1 - Pre-Test Front View of Test Vehicle

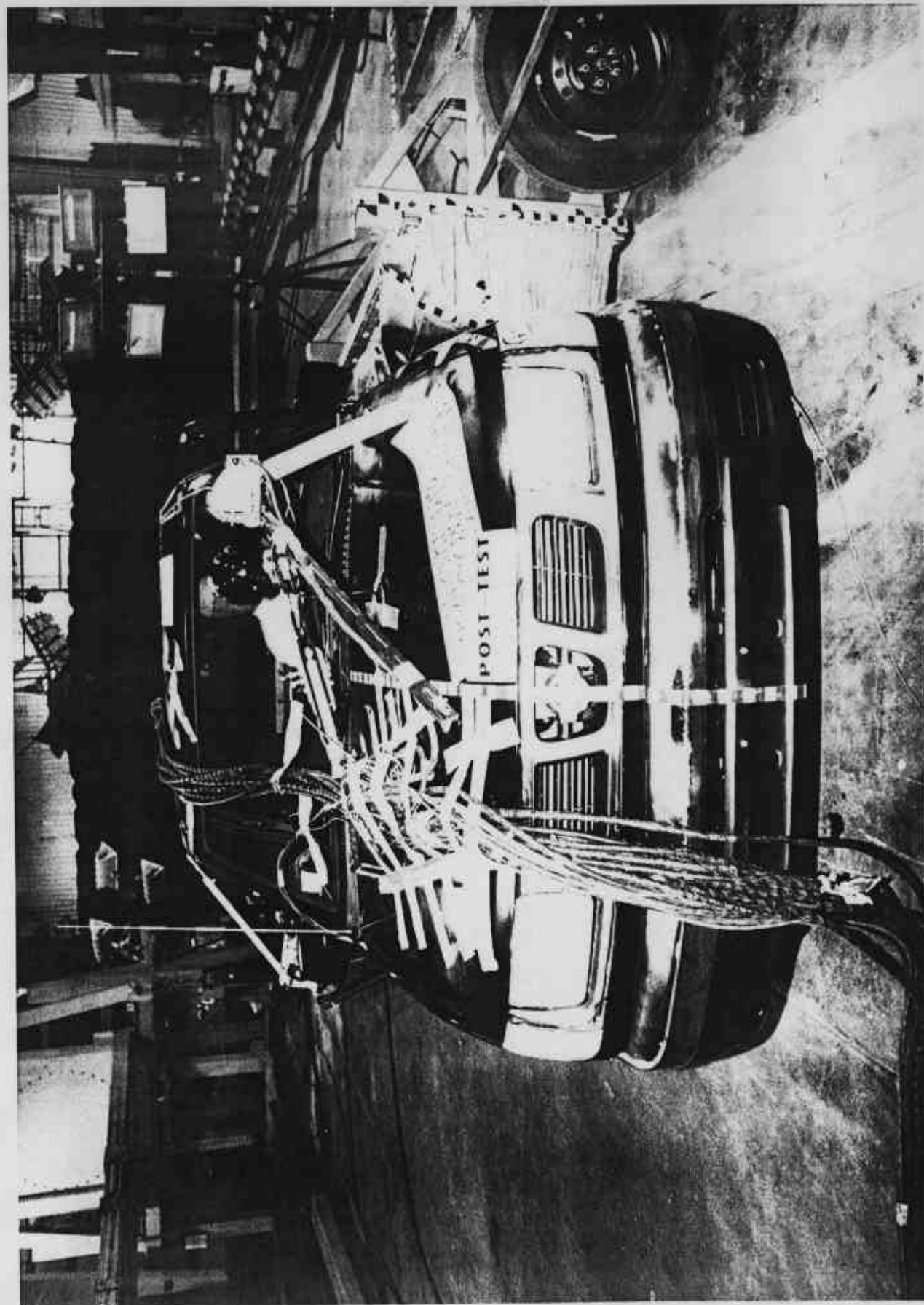


Photo No. A-2 - Post-Test Front View of Test Vehicle

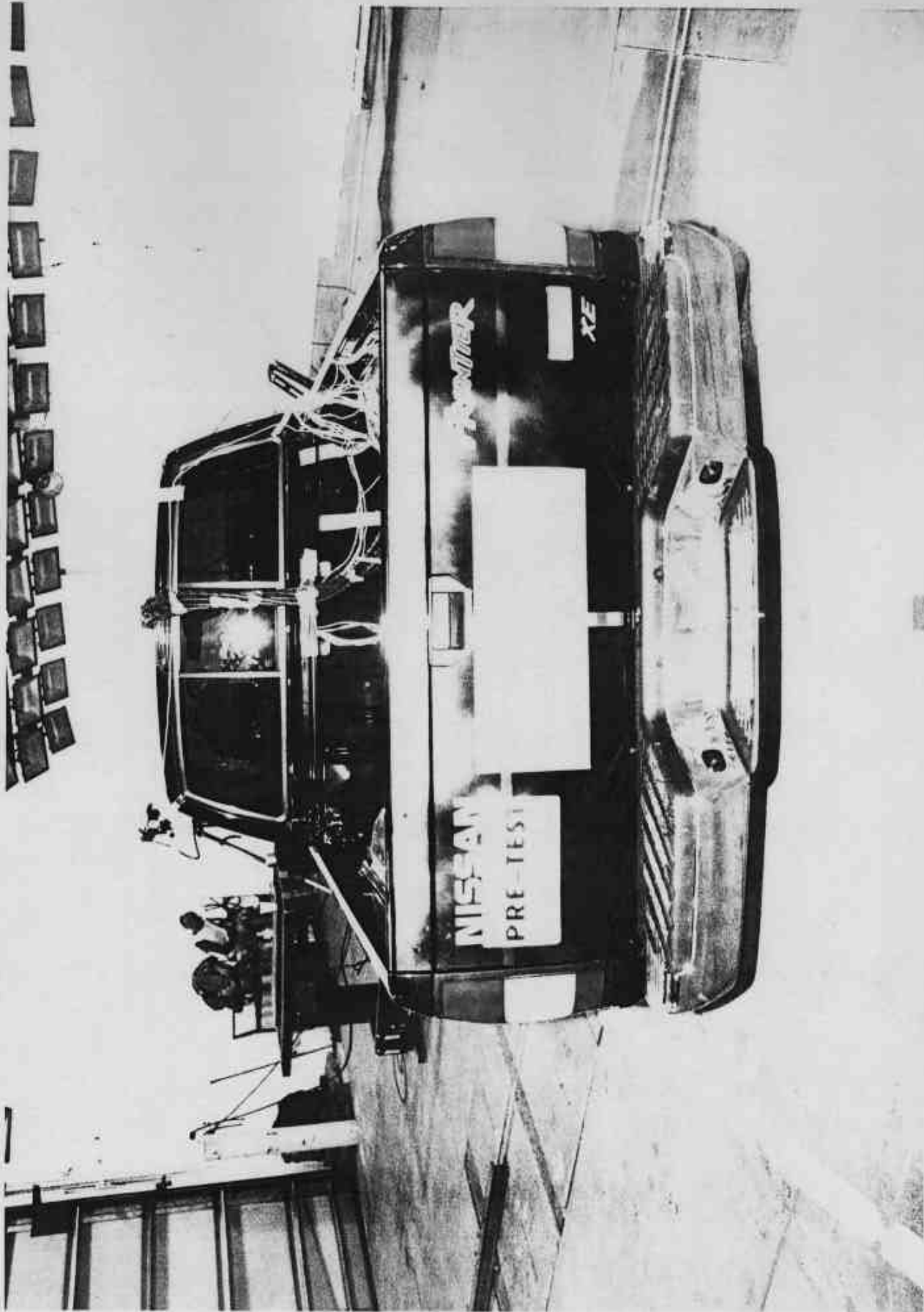


Photo No. A-3 - Pre-Test Rear View of Test Vehicle

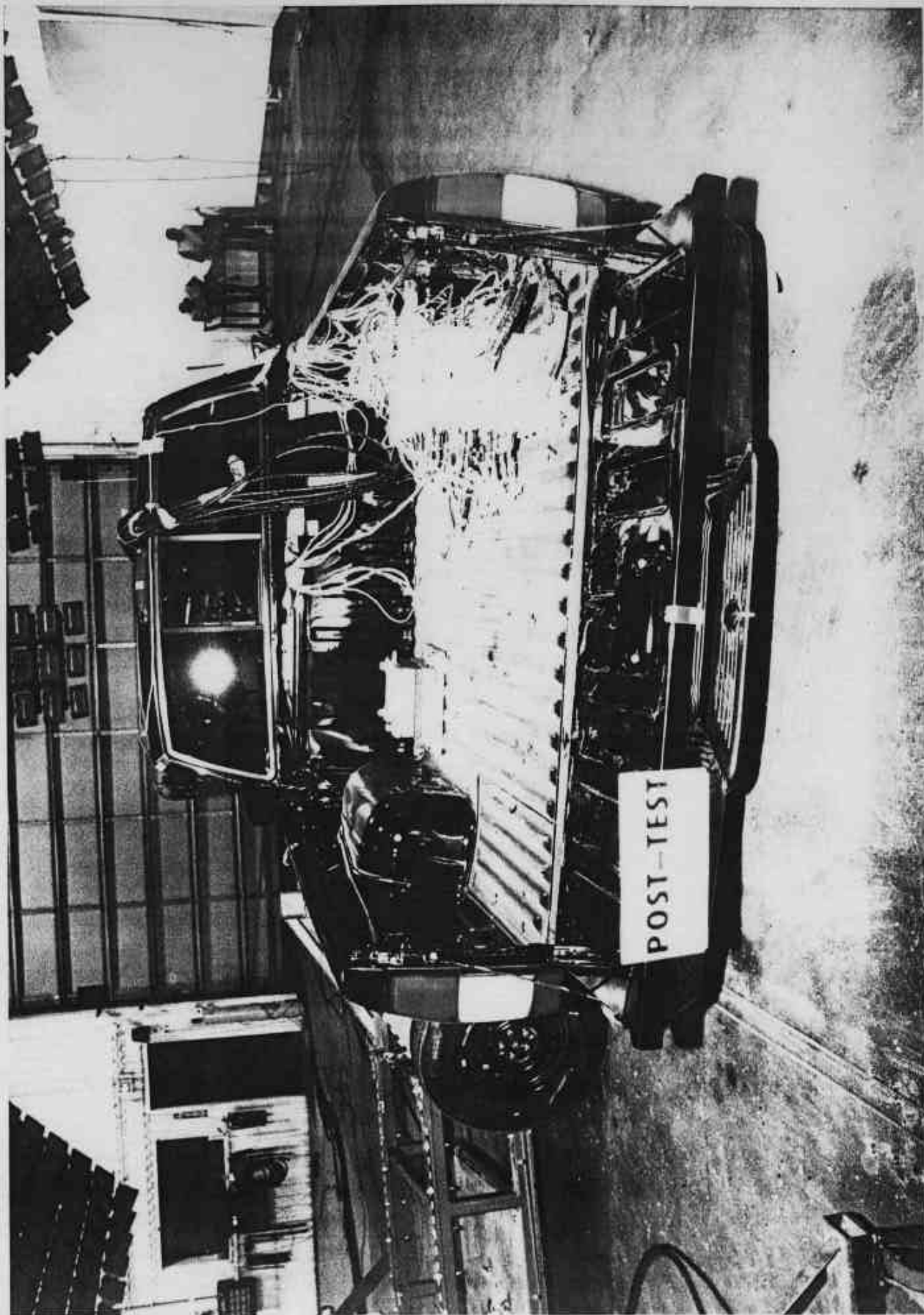


Photo No. A-4 - Post-Test Rear View of Test Vehicle

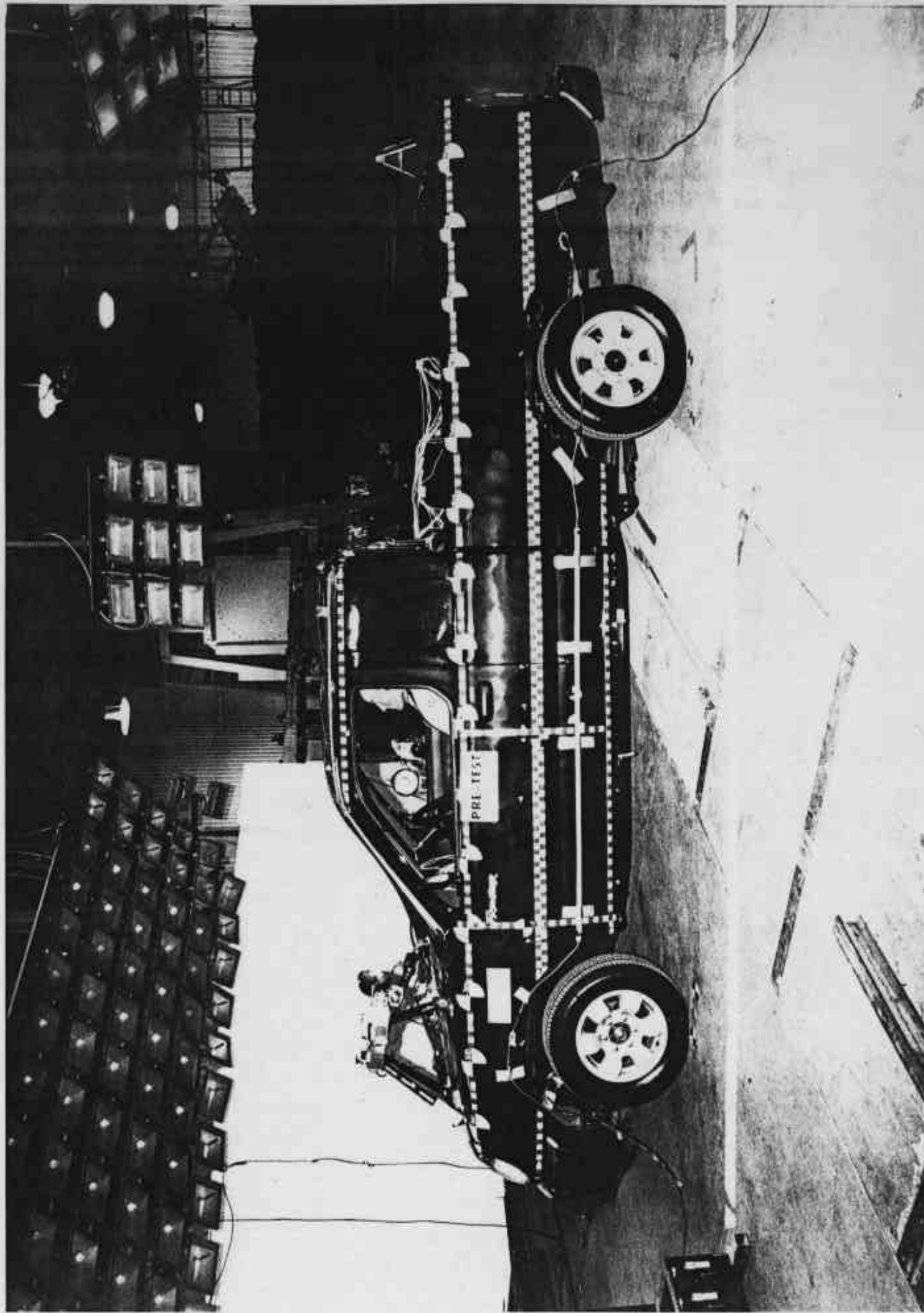


Photo No. A-5 - Pre-Test Left Side View of Test Vehicle

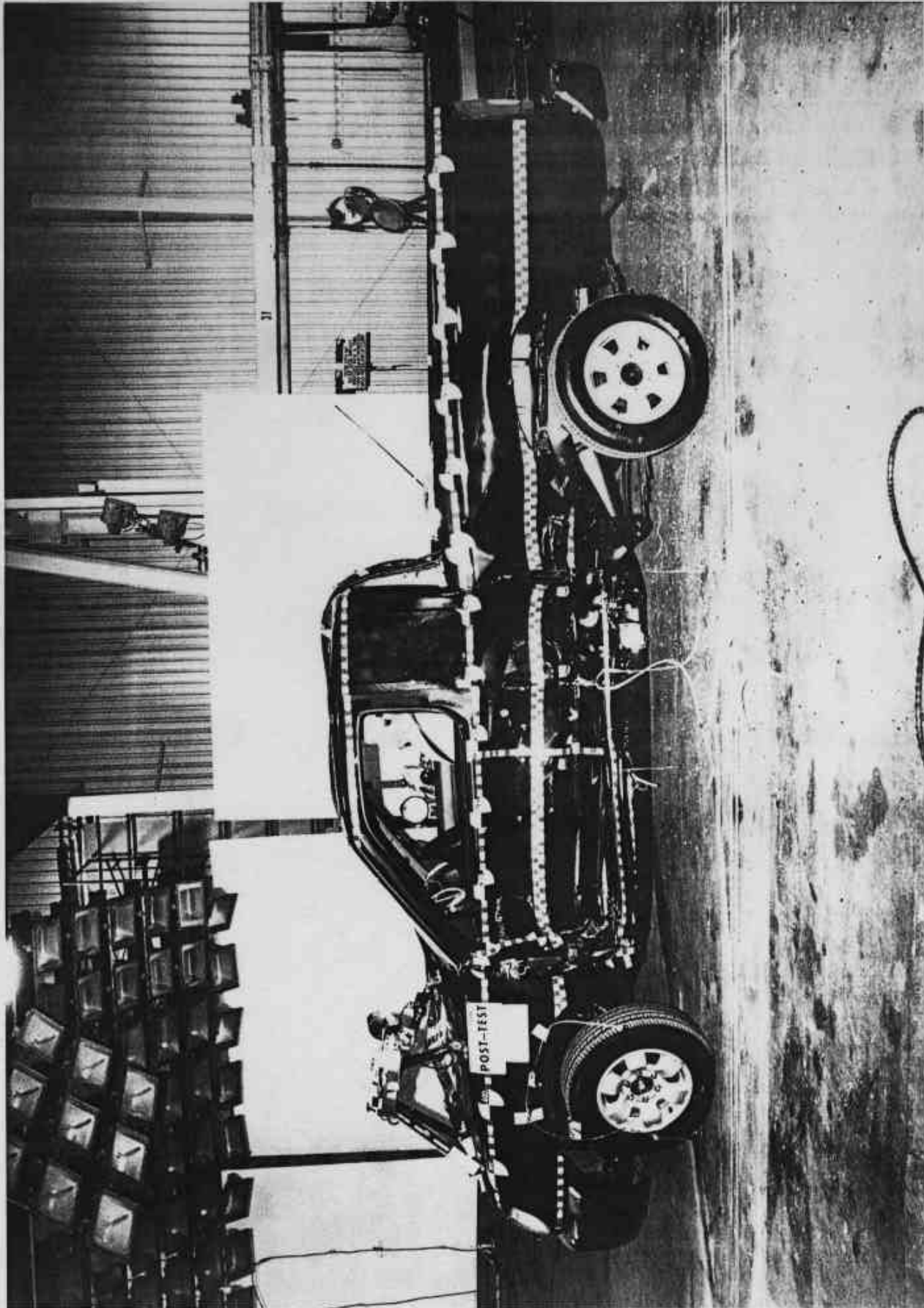
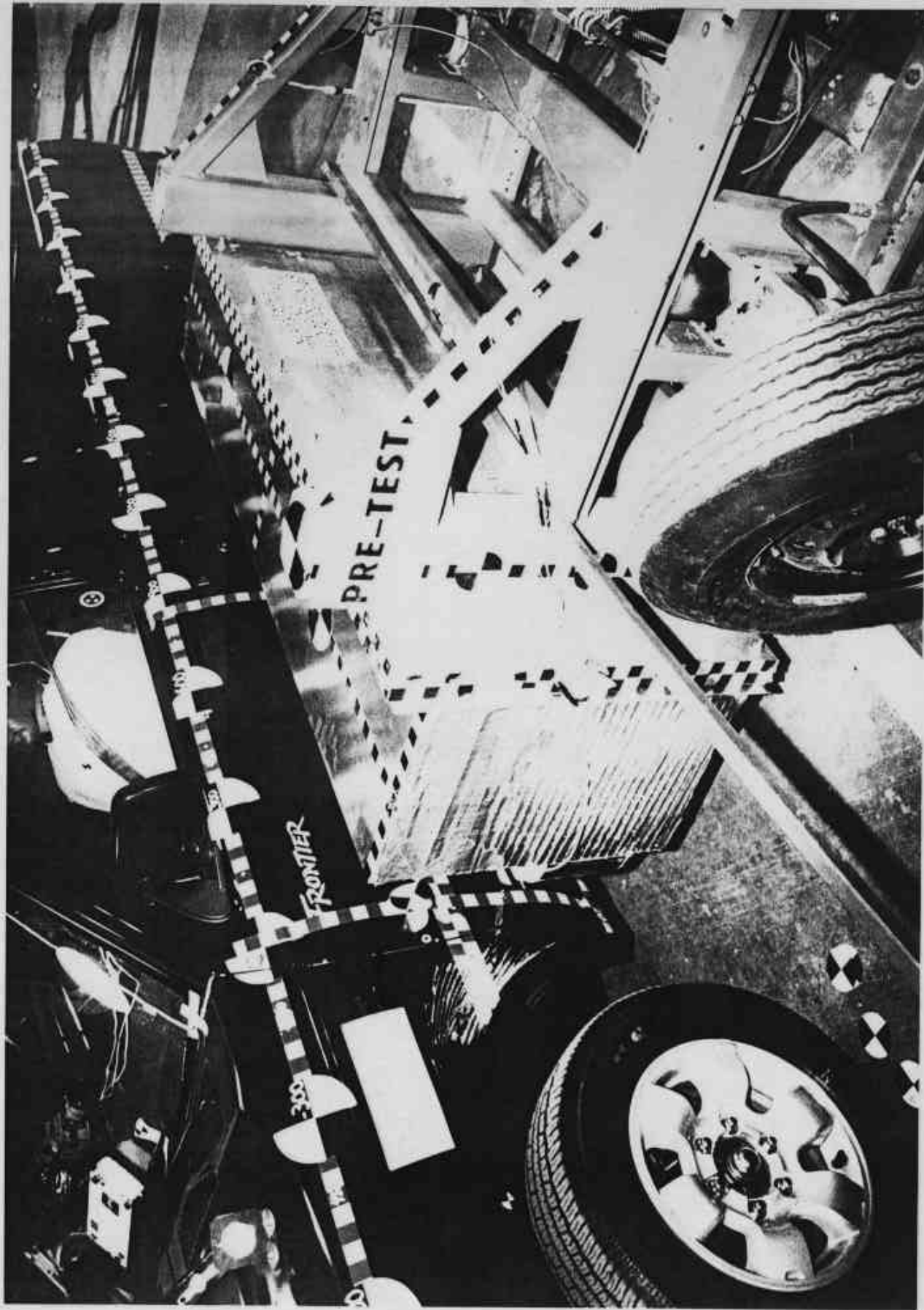


Photo No. A-6 - Post-Test Left Side View of Test Vehicle



A-7

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

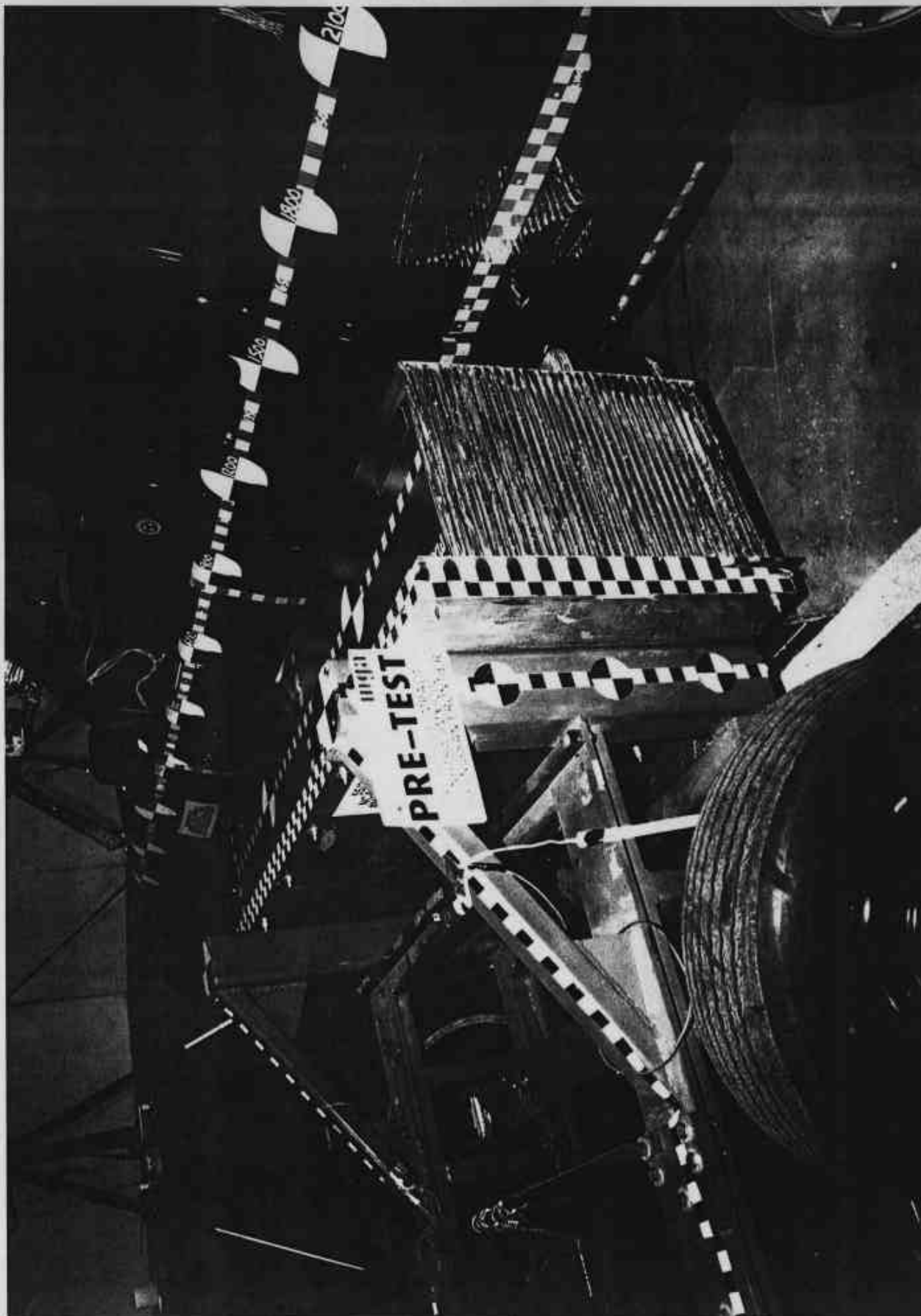


Photo No. A-8 - Pre-Test MDB Positioned Against Vehicle (right side)

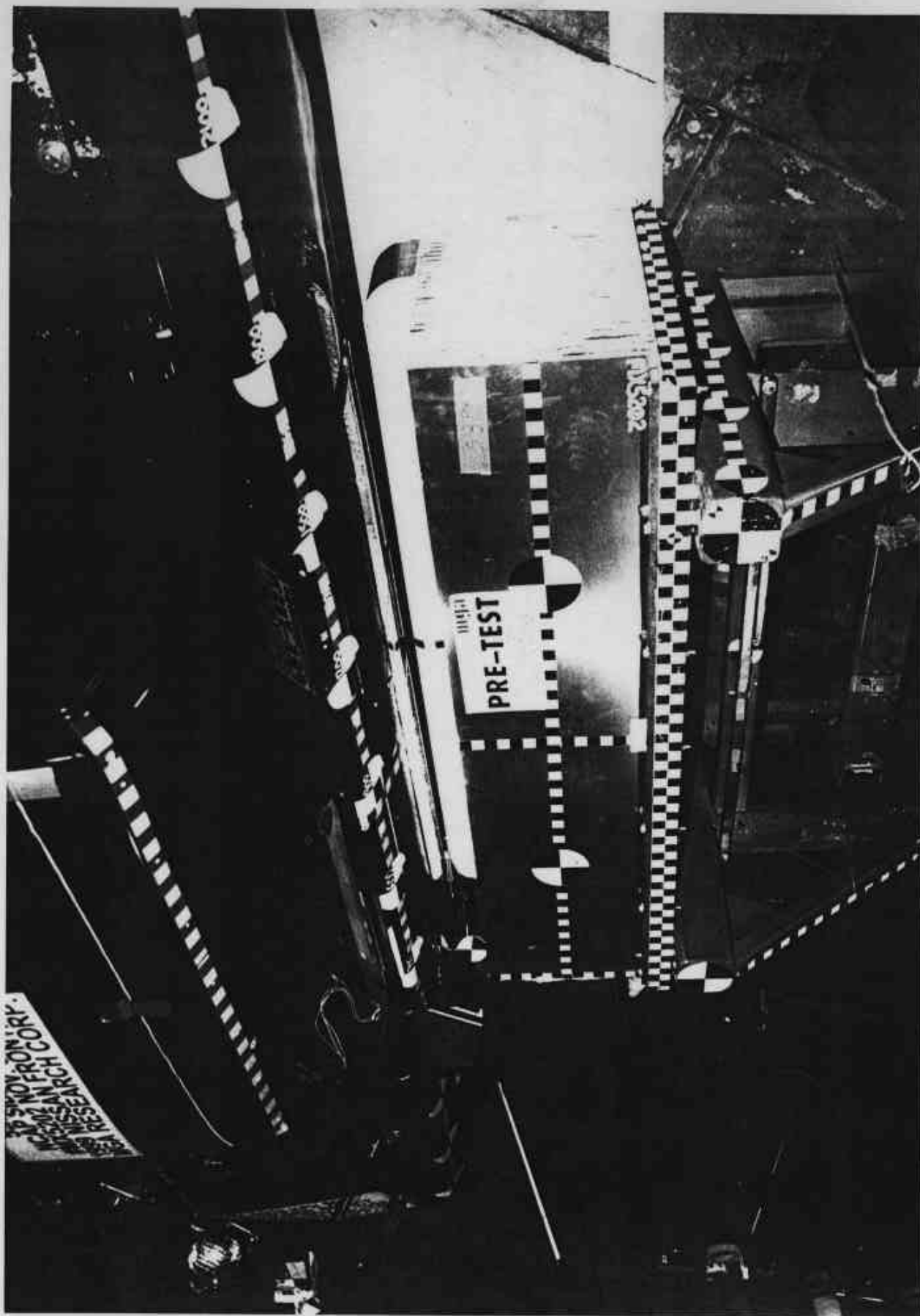


Photo No. A-9 - Pre-Test MDB Positioned Against Vehicle Overhead View

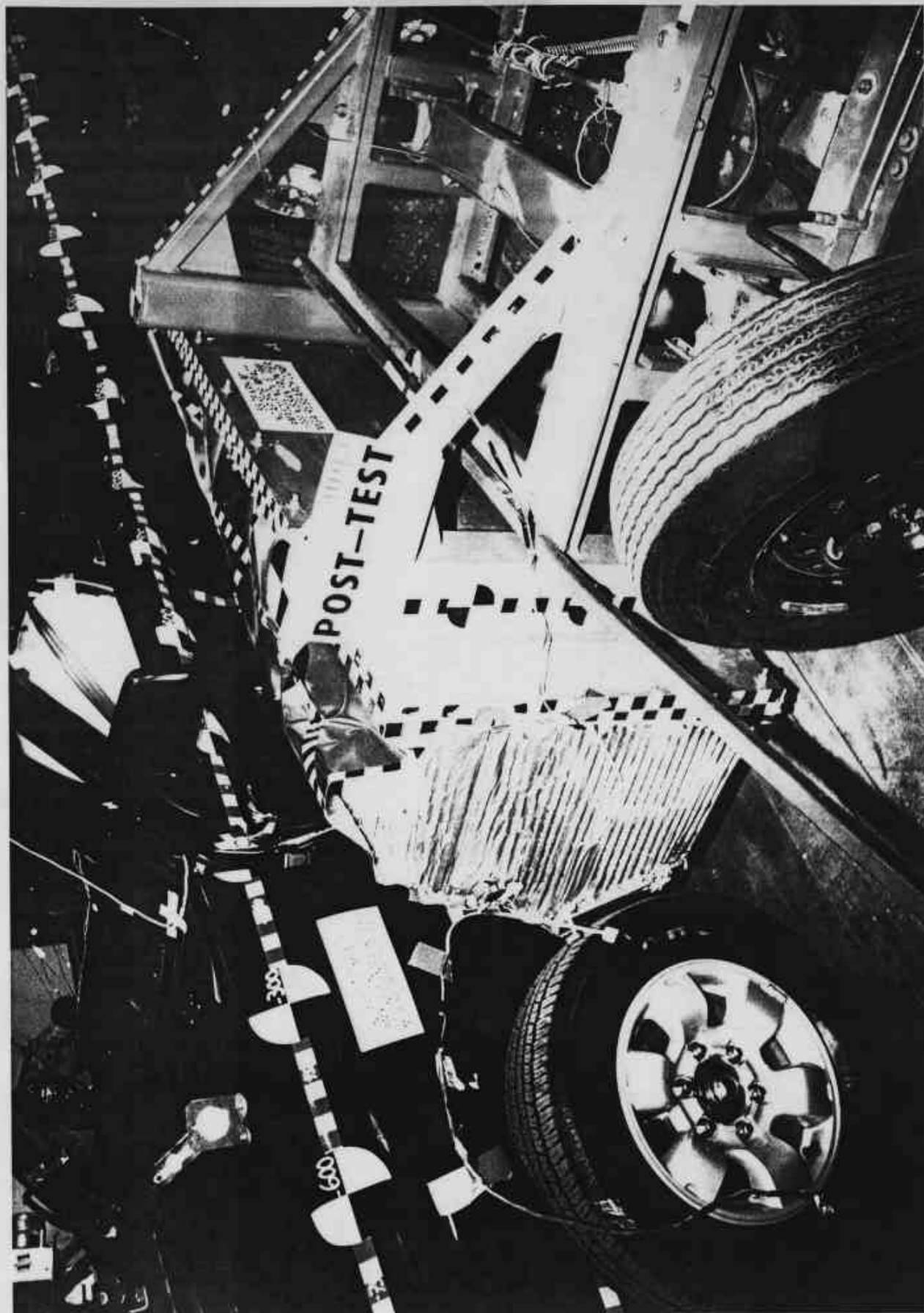


Photo No. A-10 - Post-Test MDB Positioned Against Vehicle (left side)

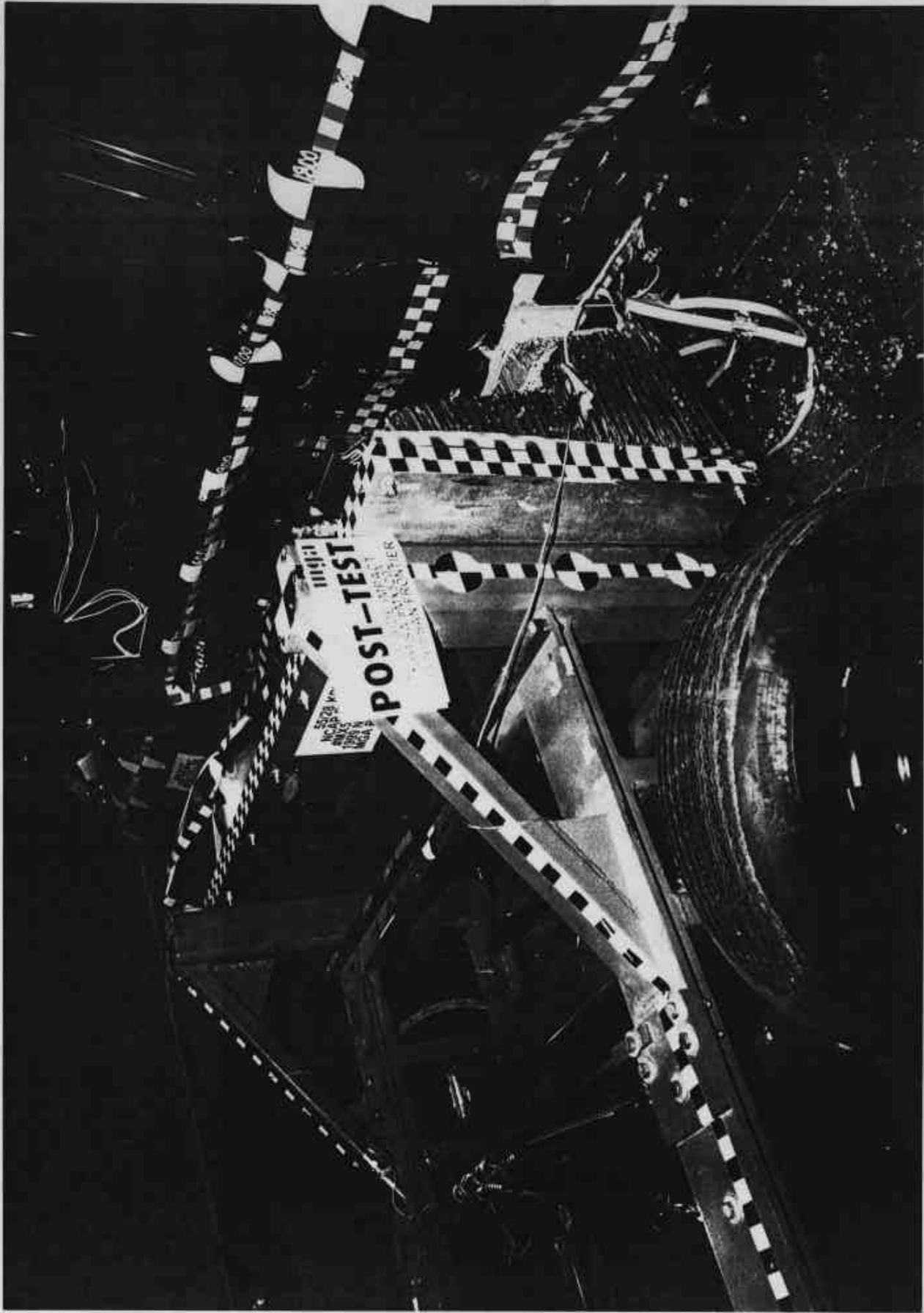


Photo No. A-11 - Post-Test MDB Positioned Against Vehicle (right side)

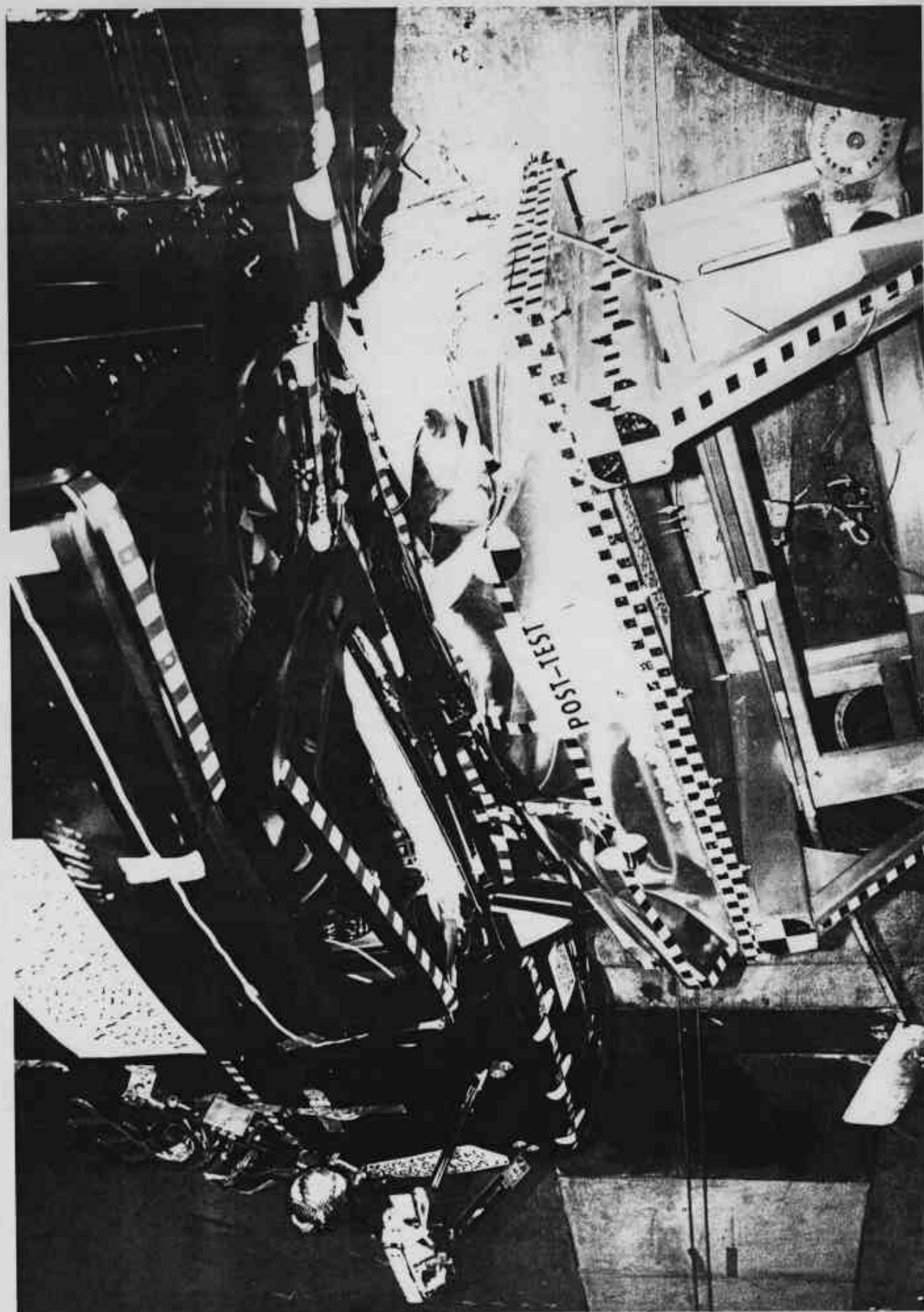


Photo No. A-12 - Post-Test MDB Positioned Against Vehicle Overhead View

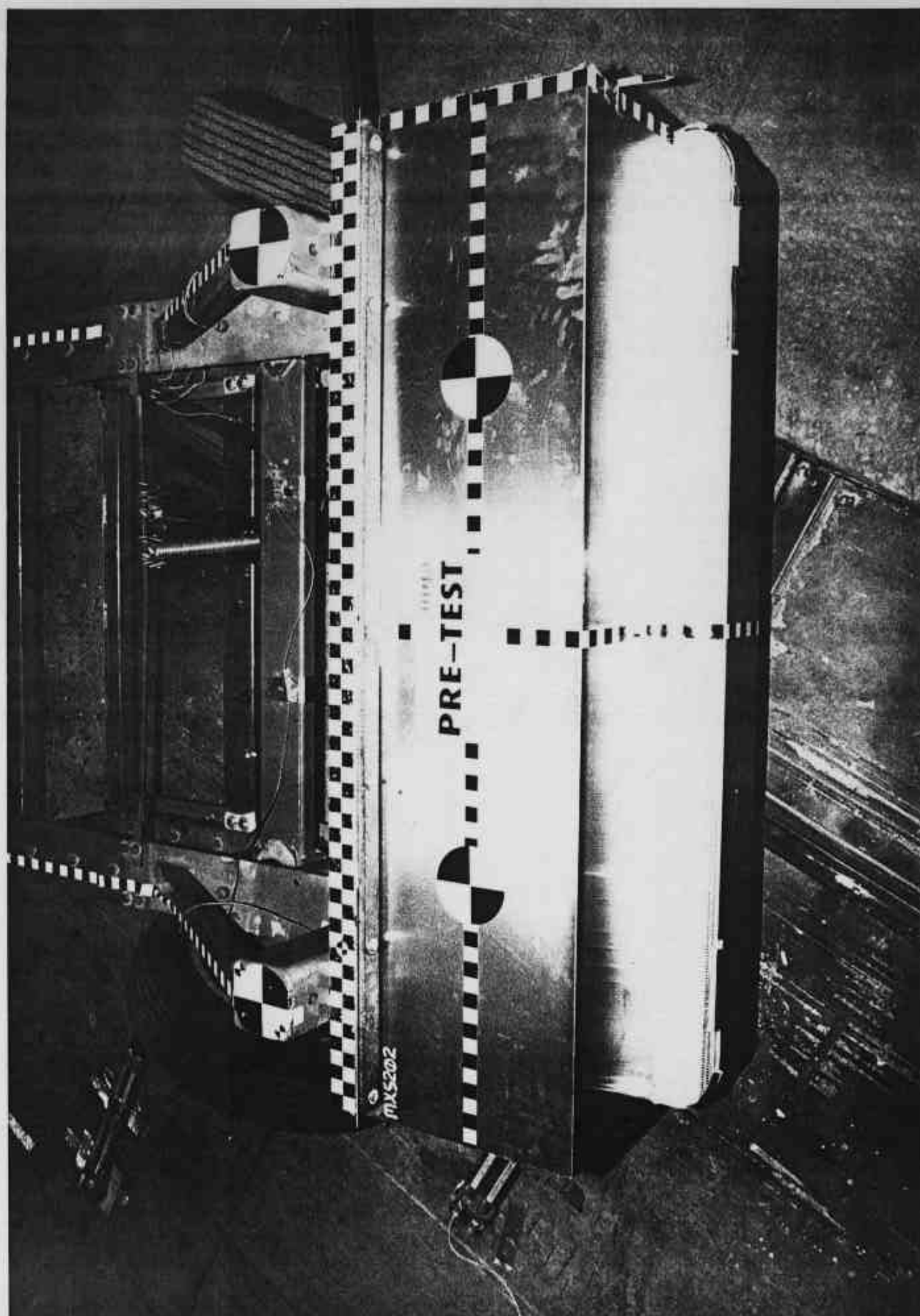


Photo No. A-13 - Pre-Test MDB Top View

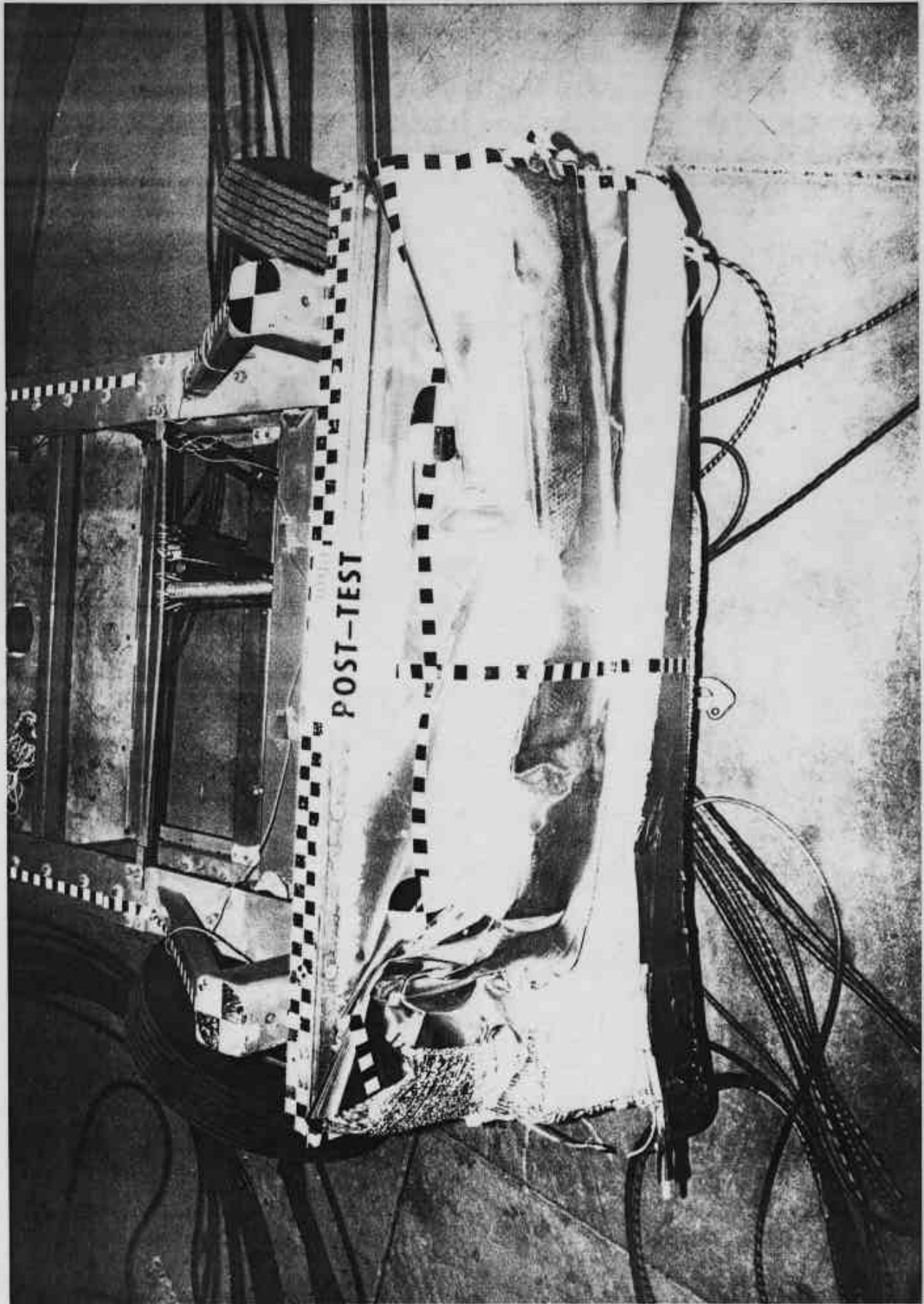


Photo No. A-14 - Post-Test MDB Top View

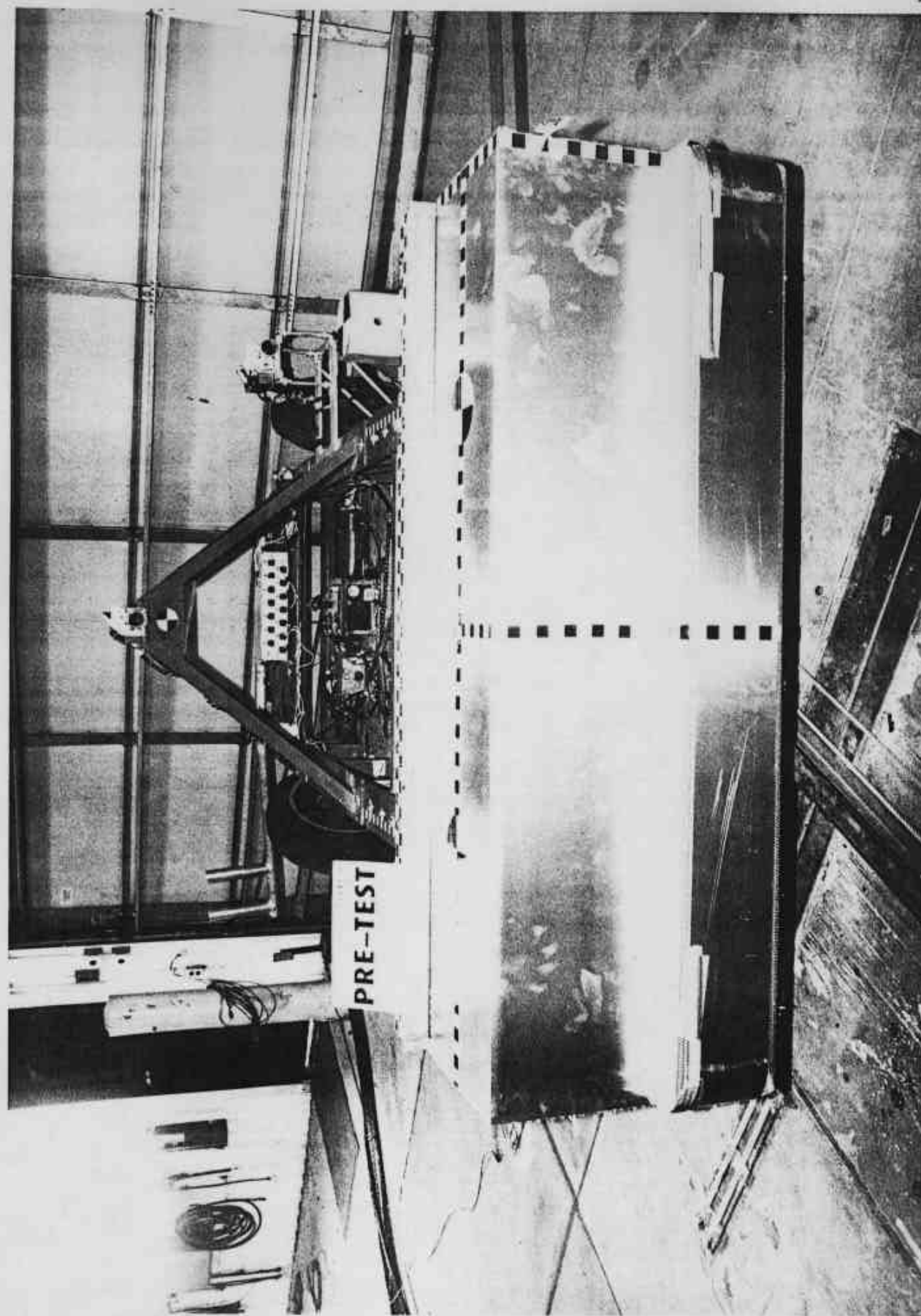


Photo No. A-15 - Pre-Test MDB Front View

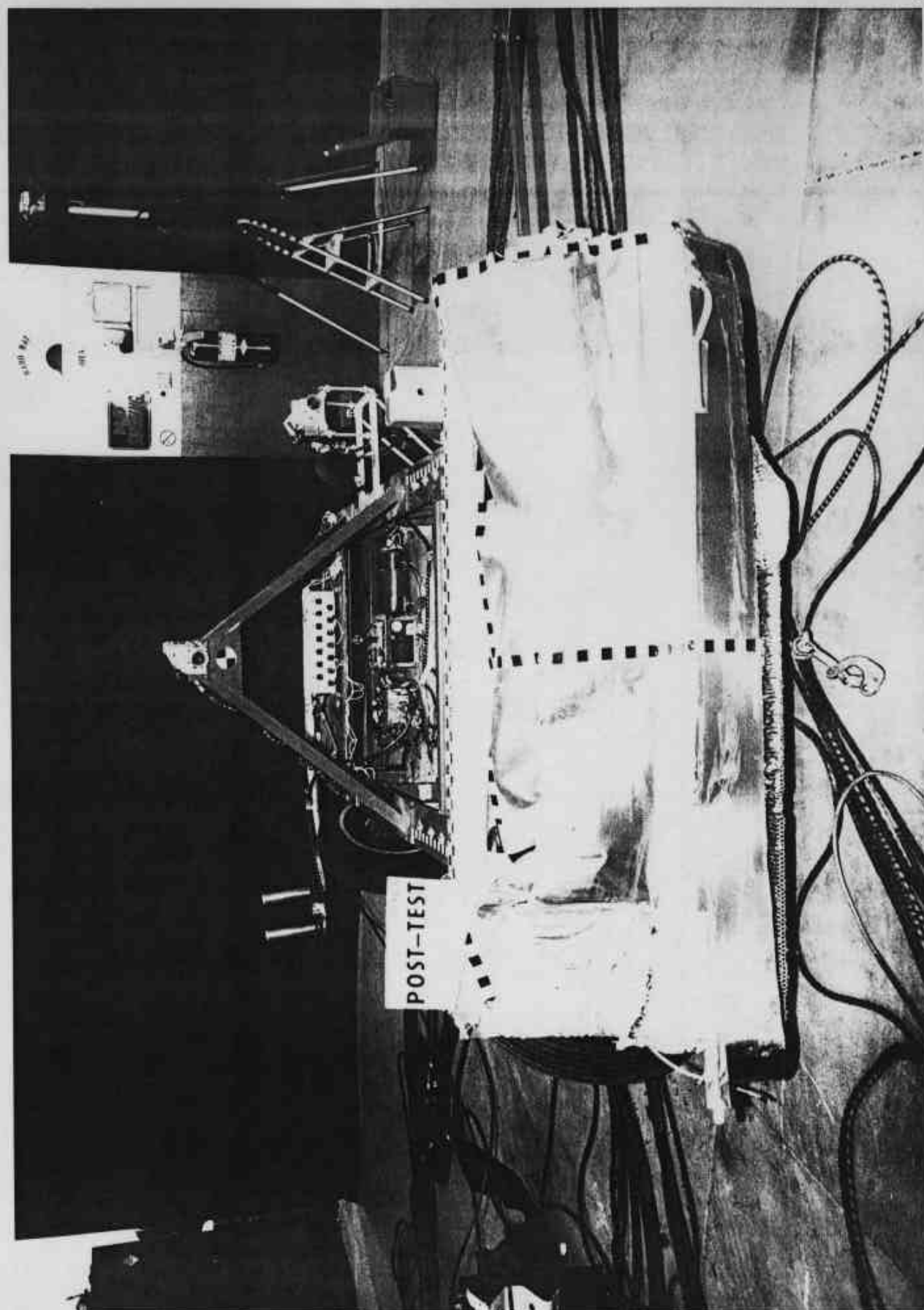


Photo No. A-16 - Post-Test MDB Front View

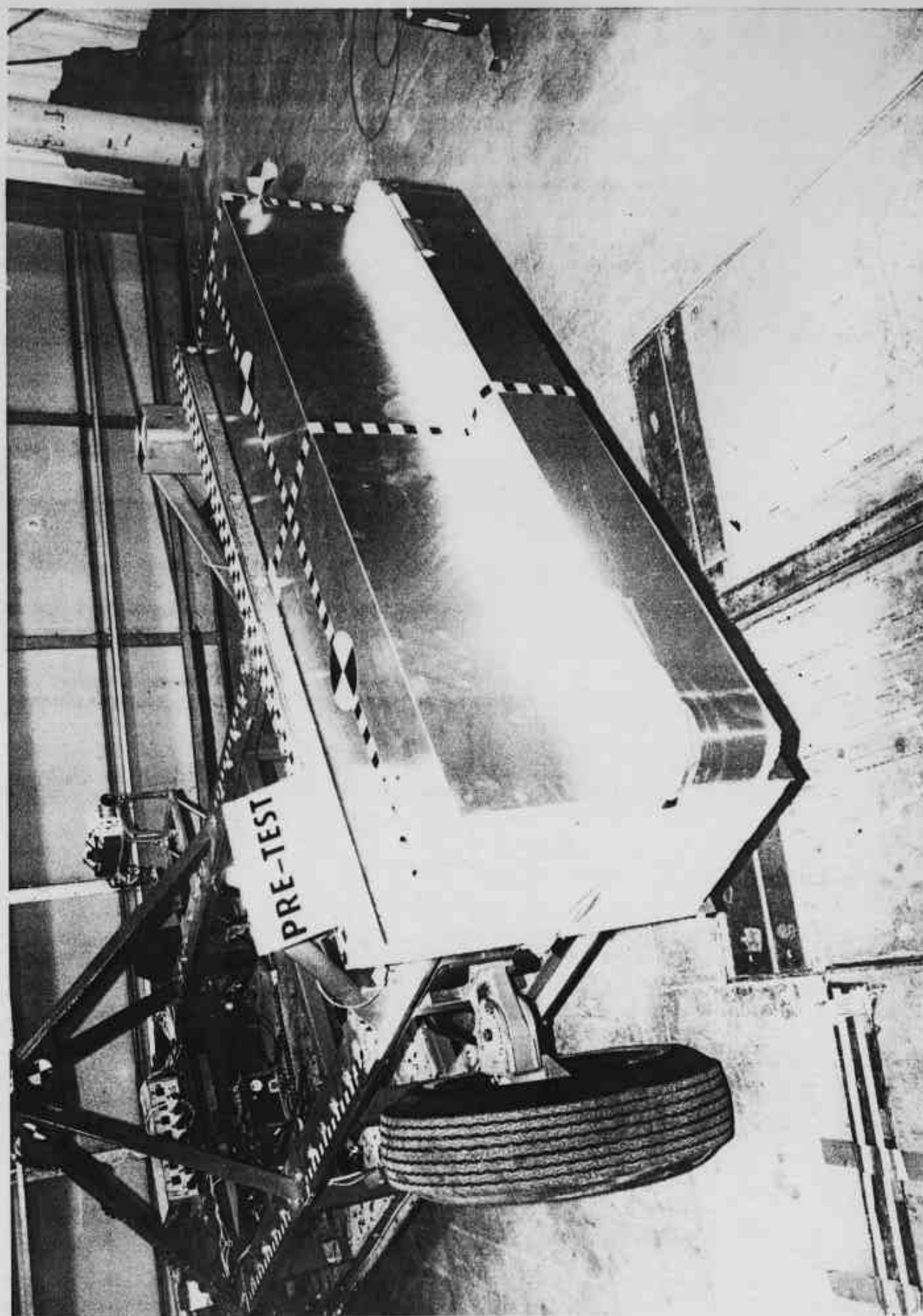


Photo No. A-17 - Pre-Test MDB Right Side View

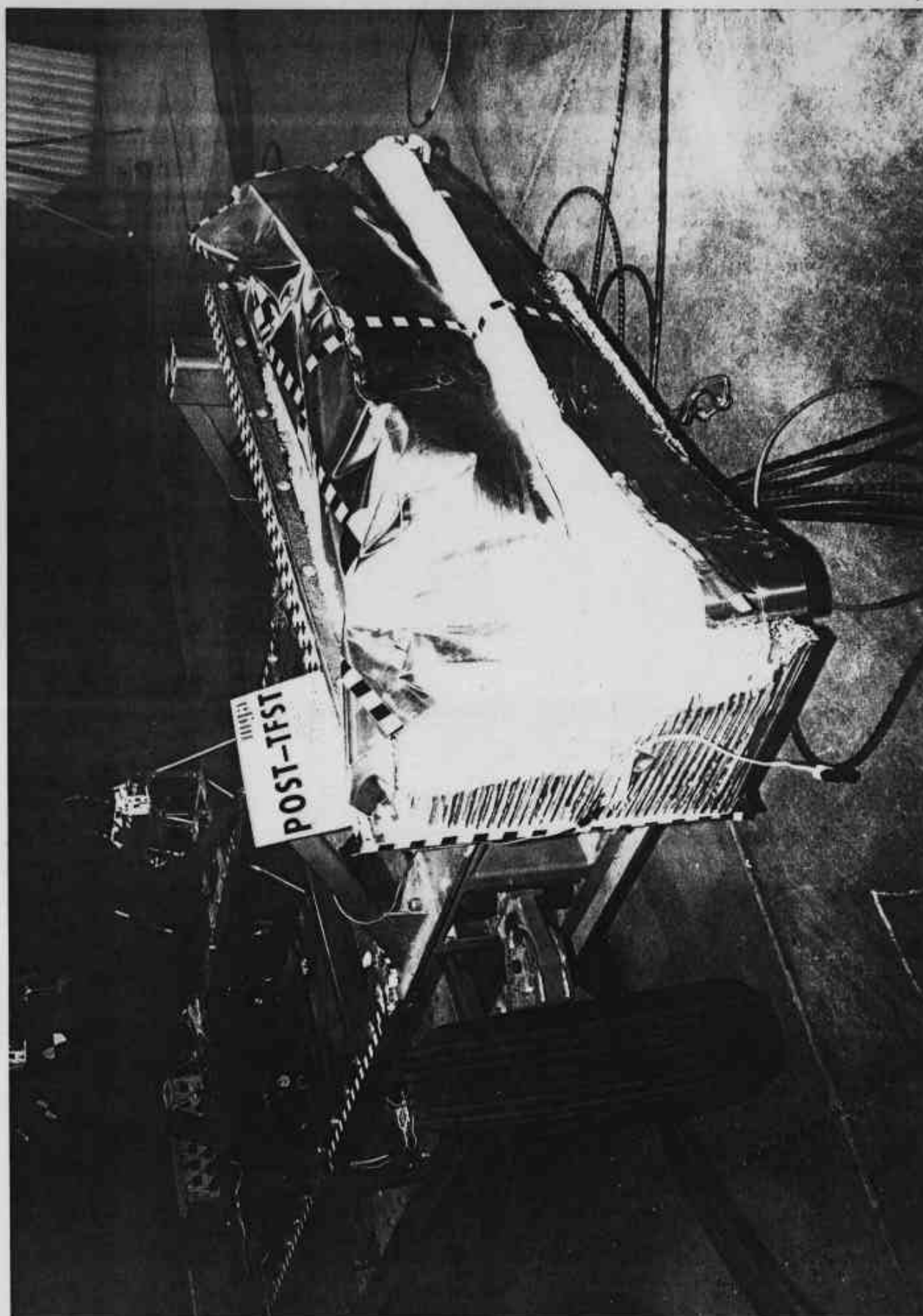


Photo No. A-18 - Post-Test MDB Right Side View

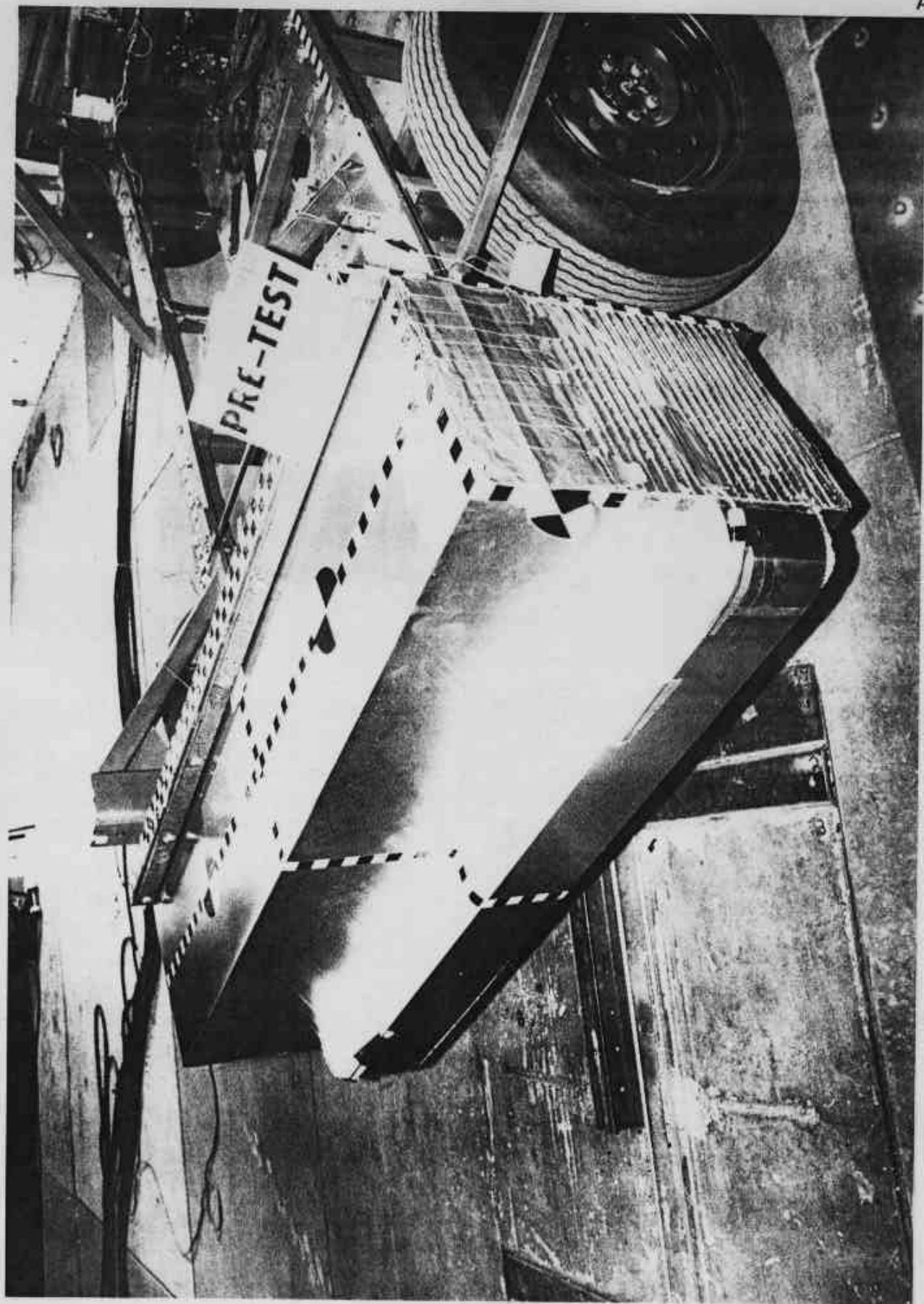


Photo No. A-19 - Pre-Test MDB Left Side View

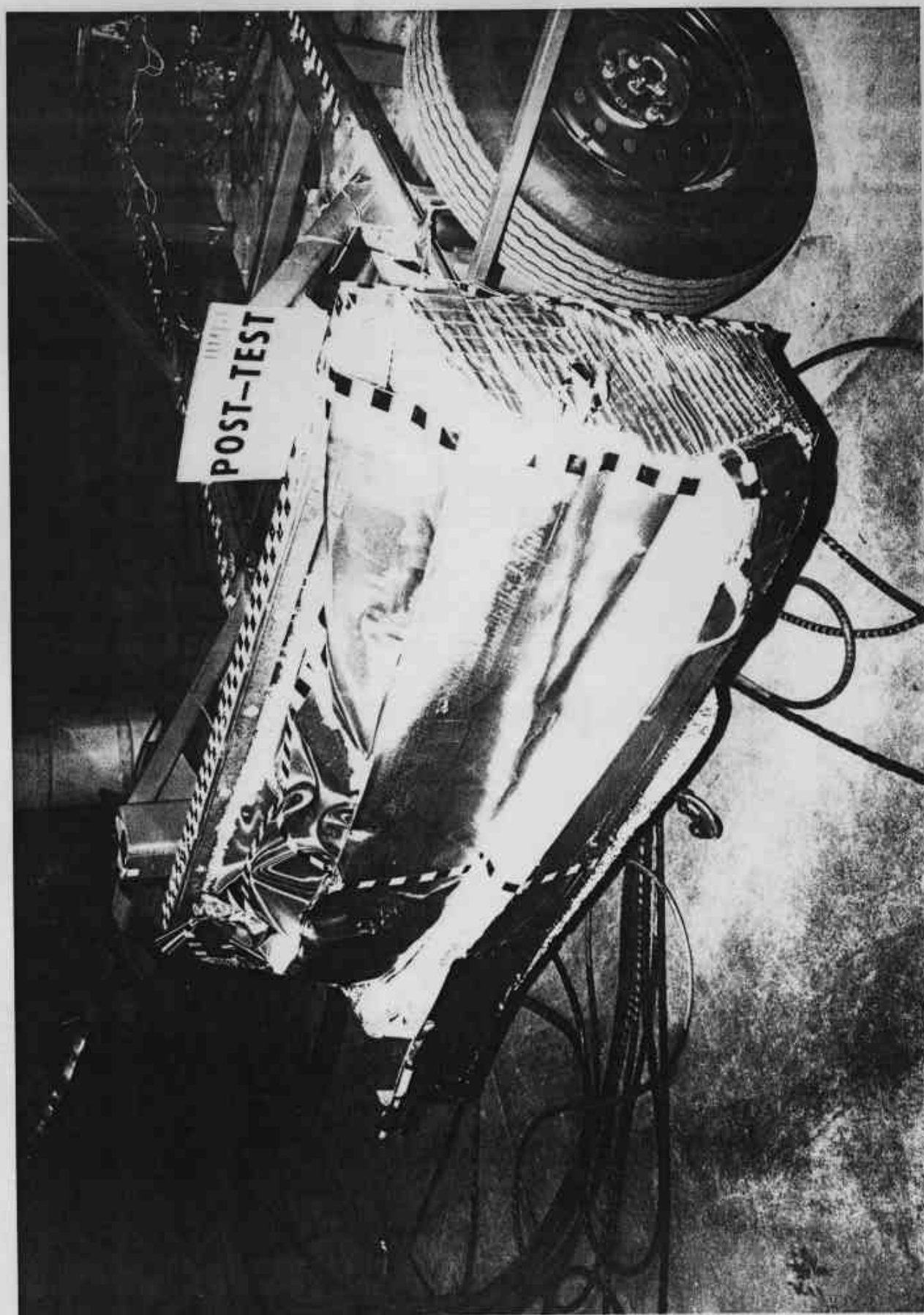


Photo No. A-20 - Post-Test MDB Left Side View

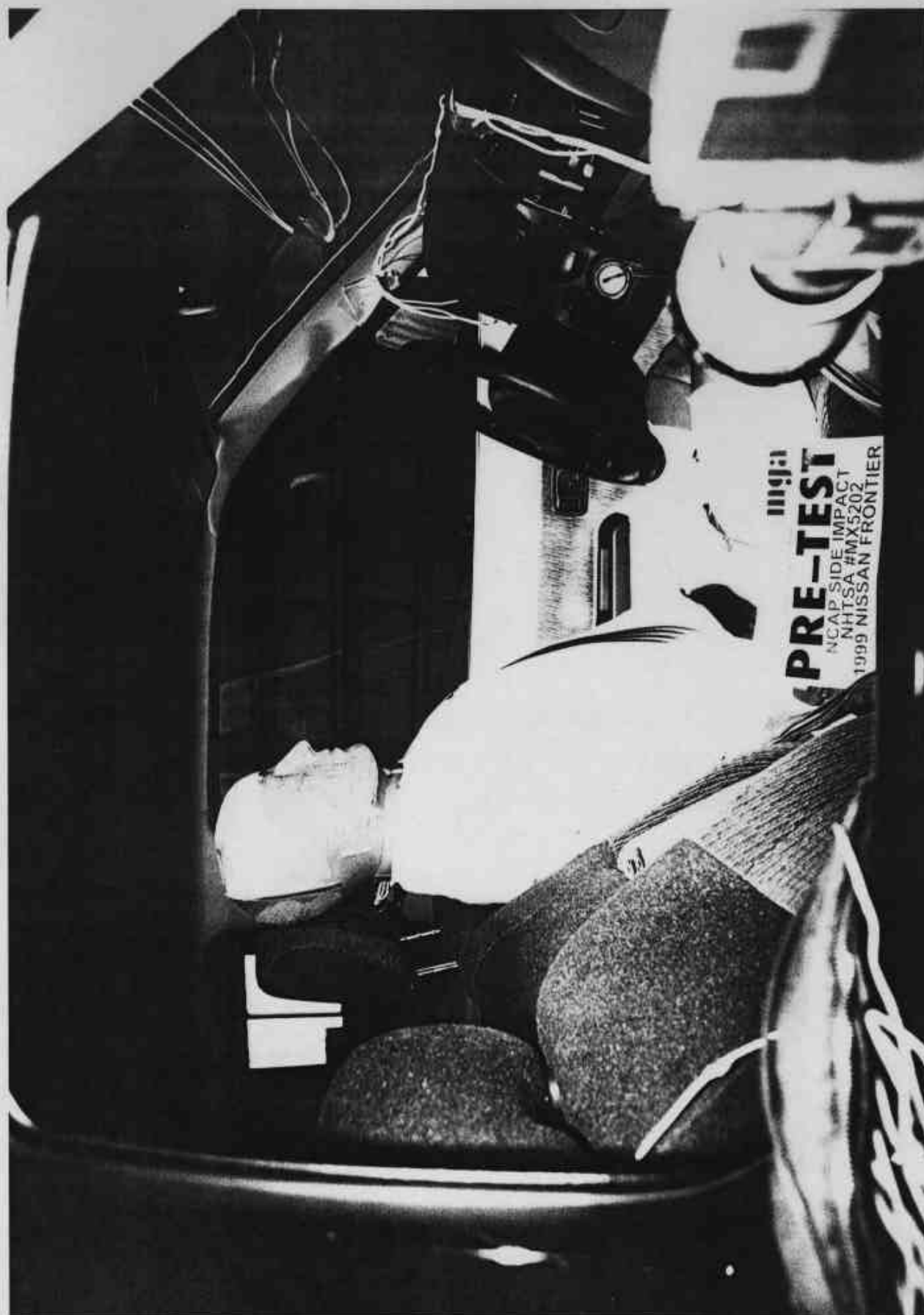


Photo No. A-21 - Pre-Test Driver Dummy Right Side View



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

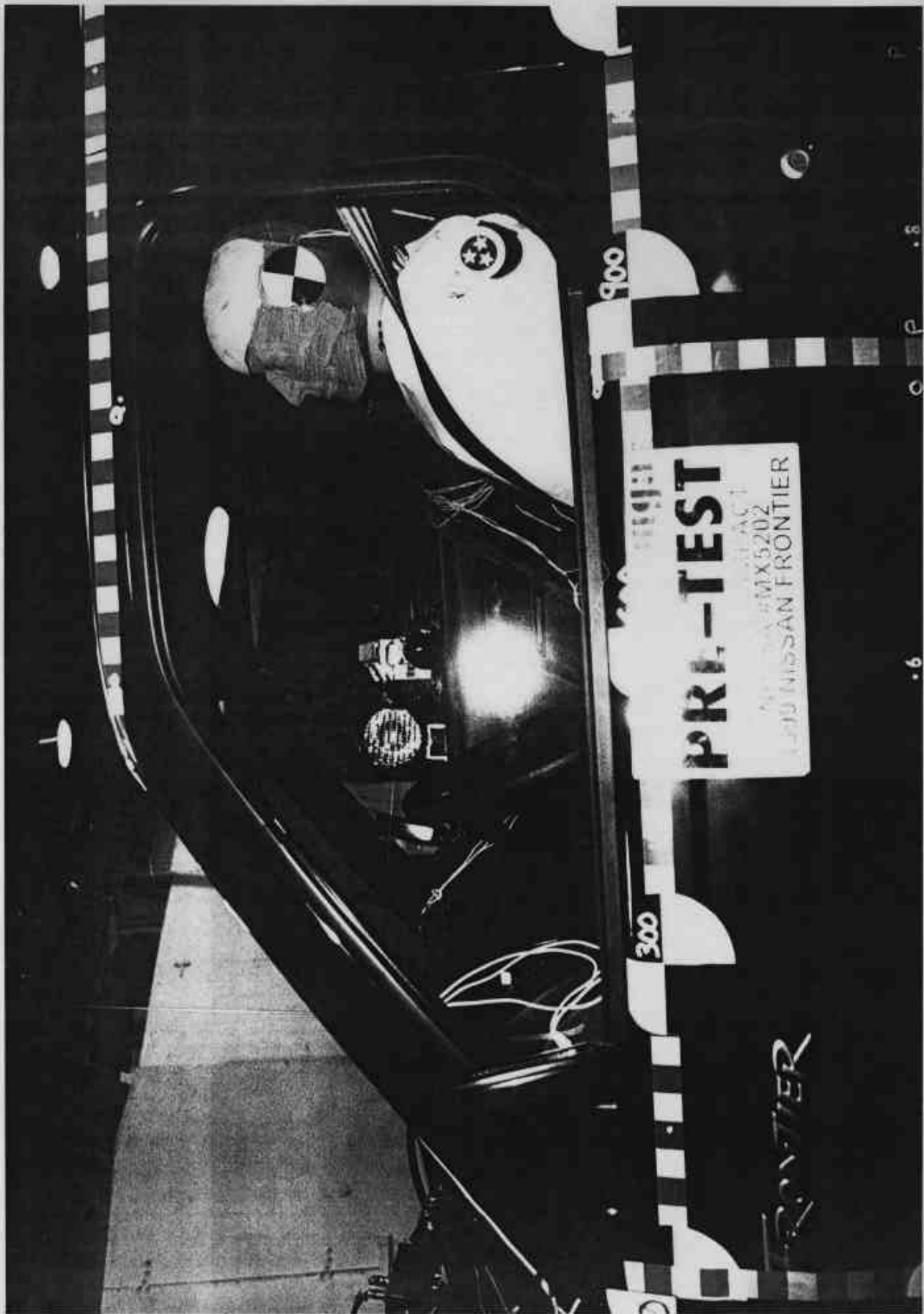


Photo No. A-23 - Pre-Test Driver Dummy Left Side View



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

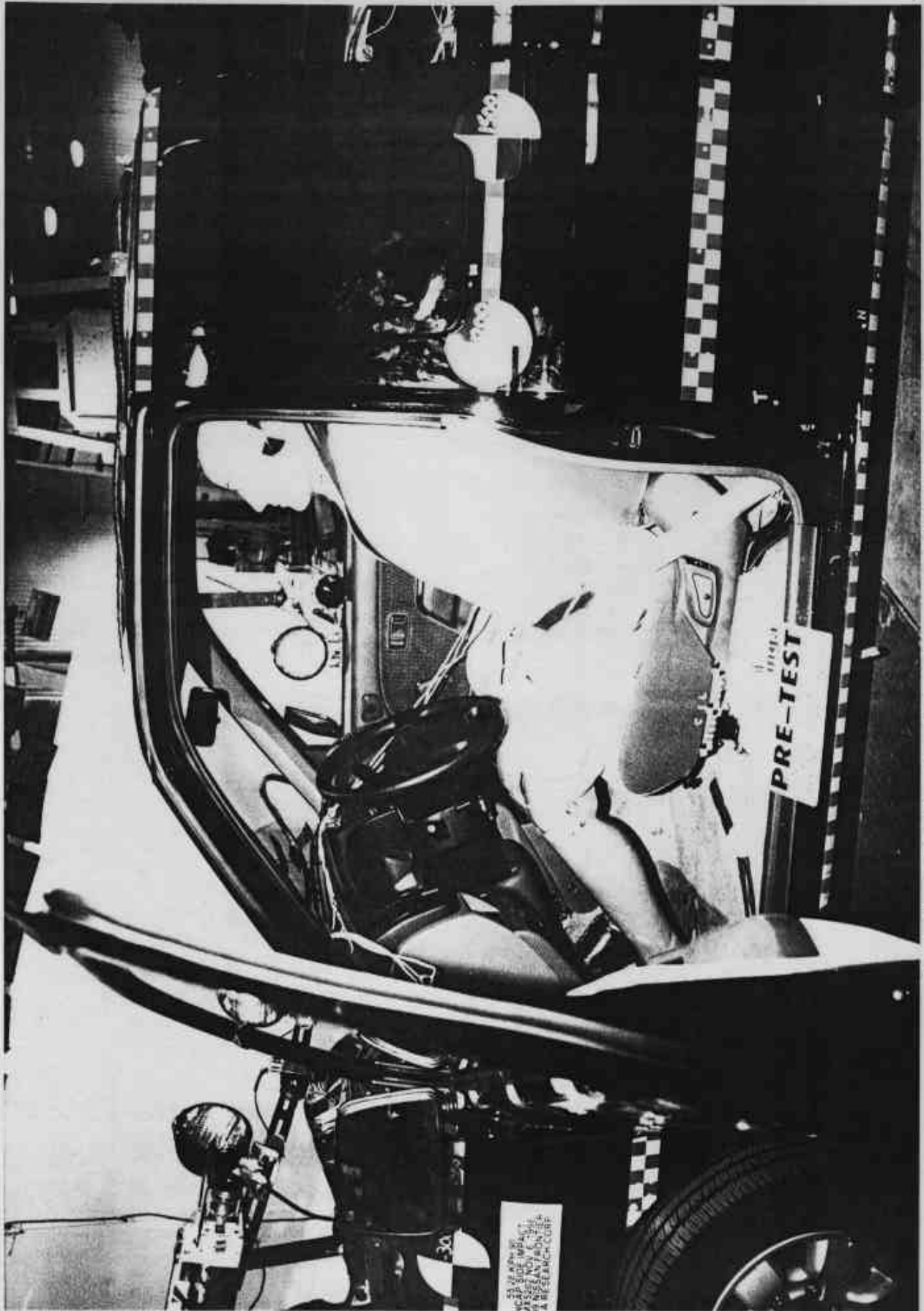


Photo No. A-25 - Pre-Test Driver Dummy Left Side View (Door Open)



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

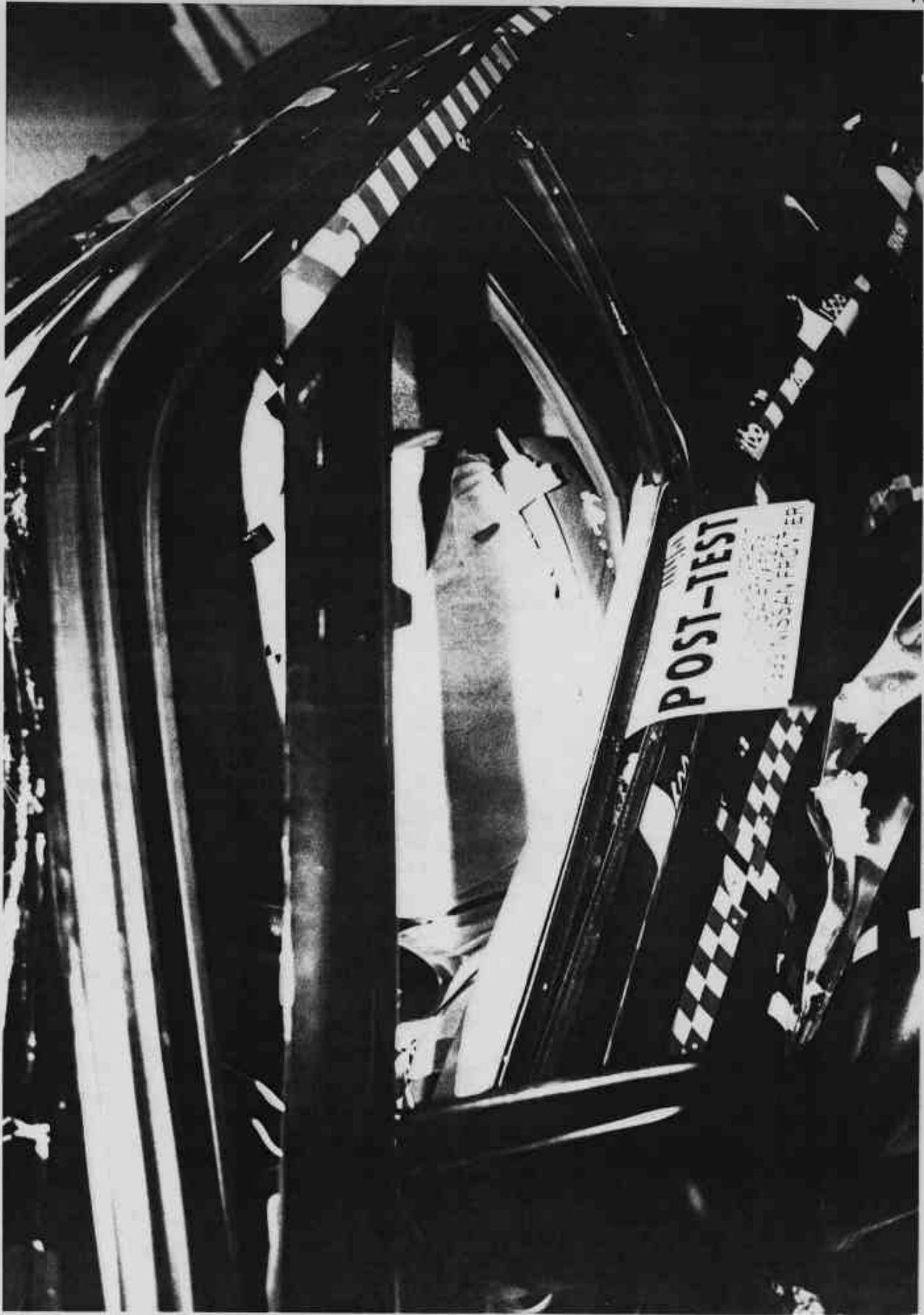


Photo No. A-27 - Post-Test Driver Dummy Shoulder and Door Top View

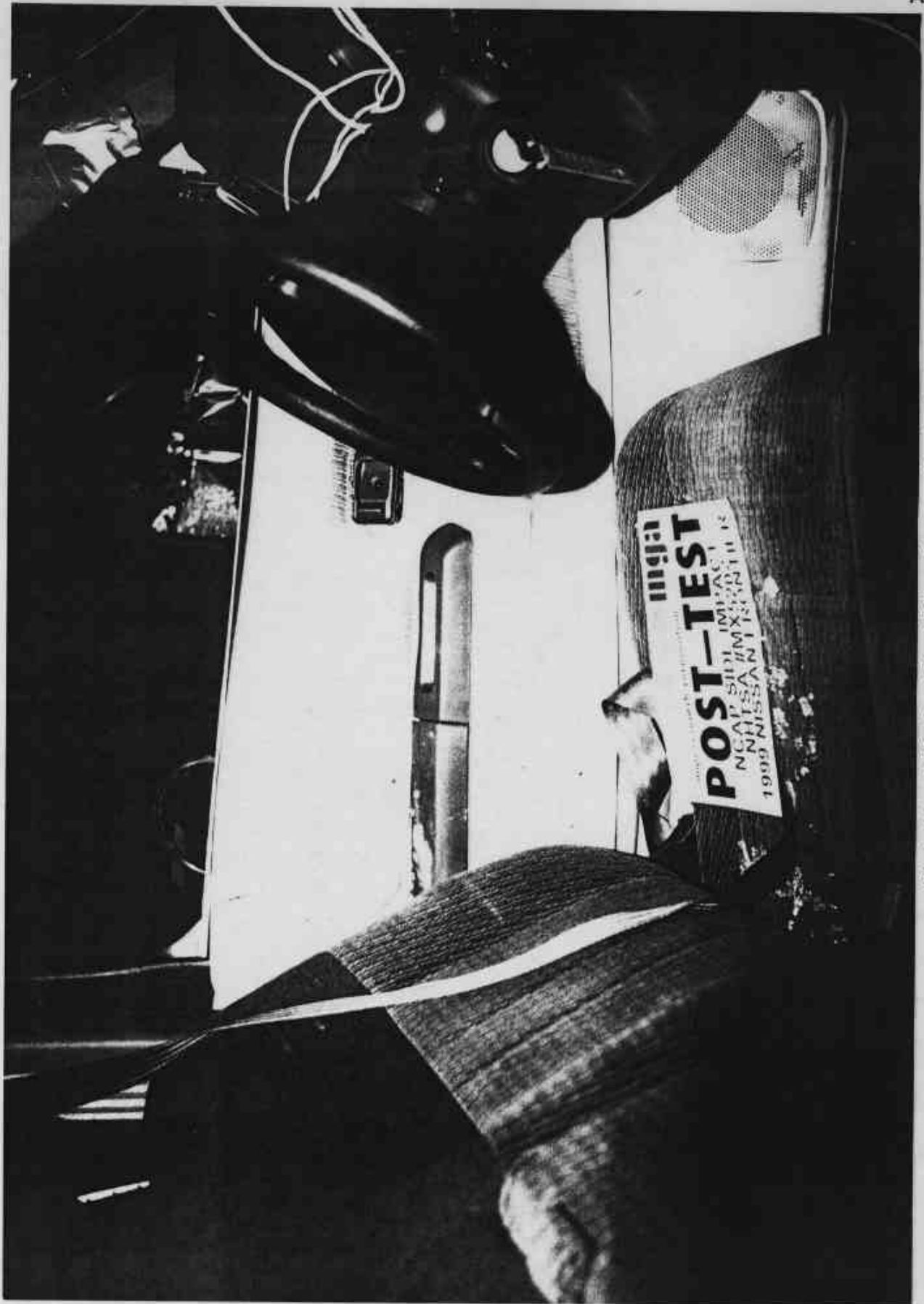


Photo No. A-28 - Post-Test Driver Dummy Contact

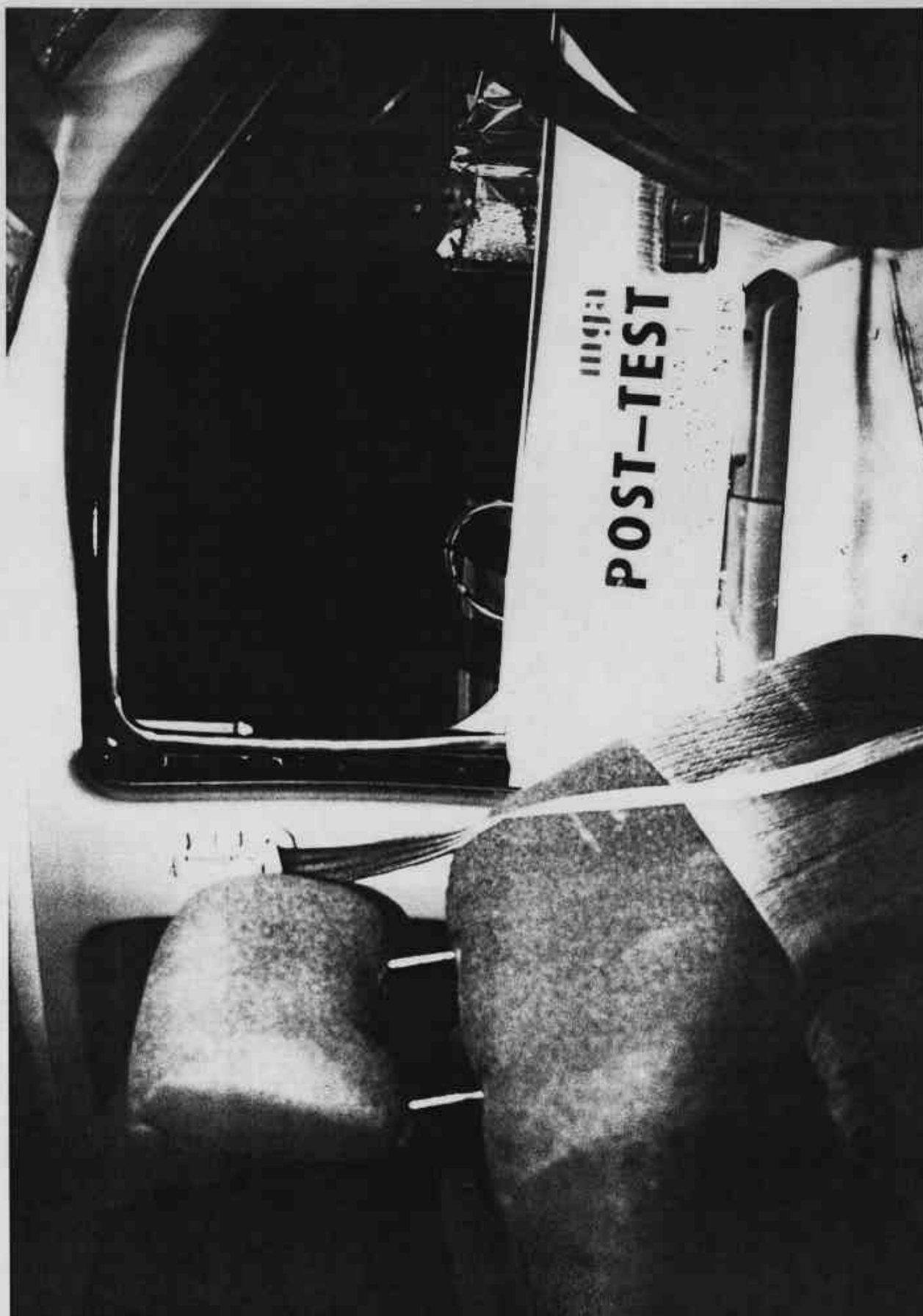


Photo No. A-29 - Post-Test Driver Dummy Head Contact

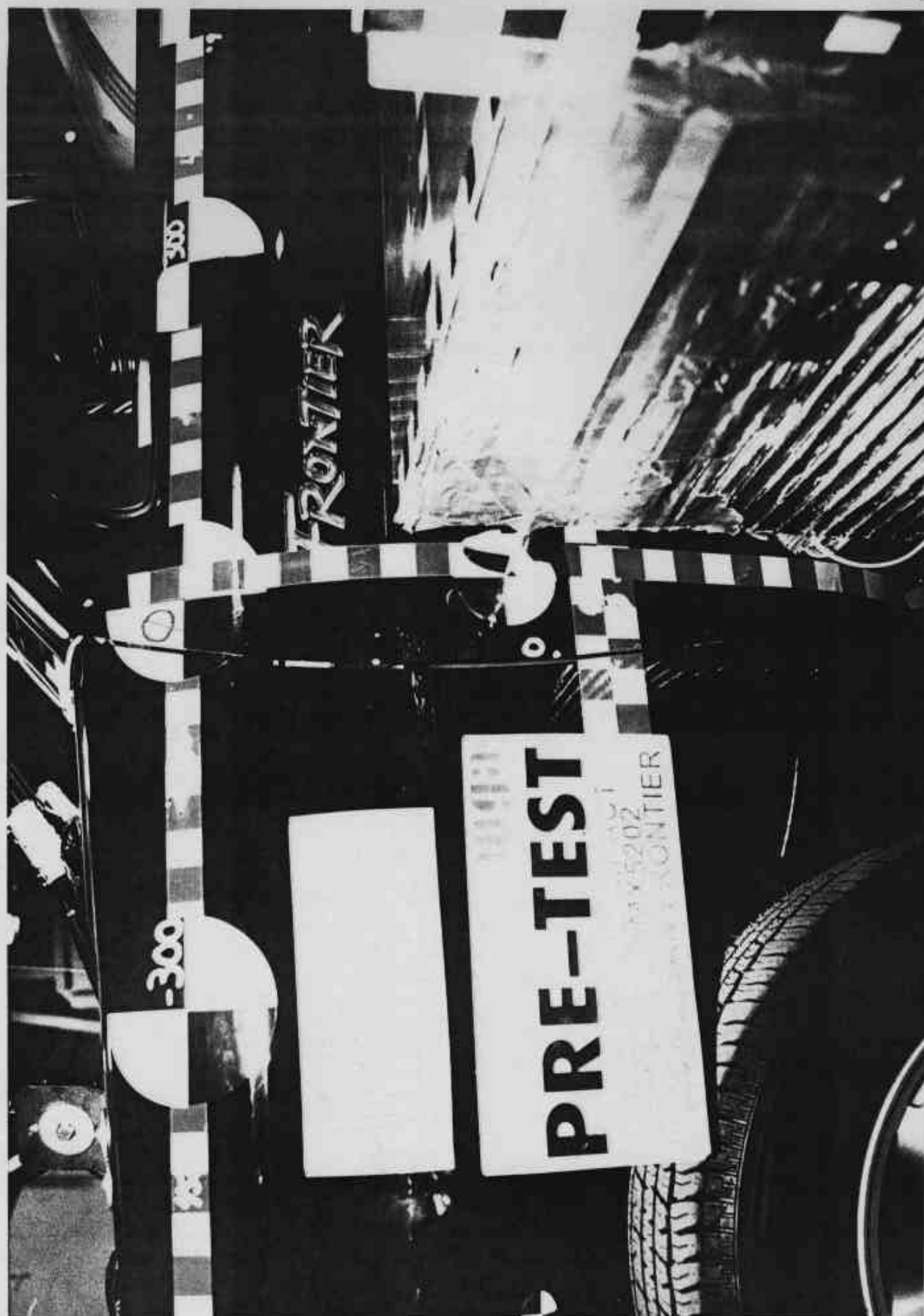


Photo No. A-30 - Pre-Test Left Front Impact Point on Vehicle

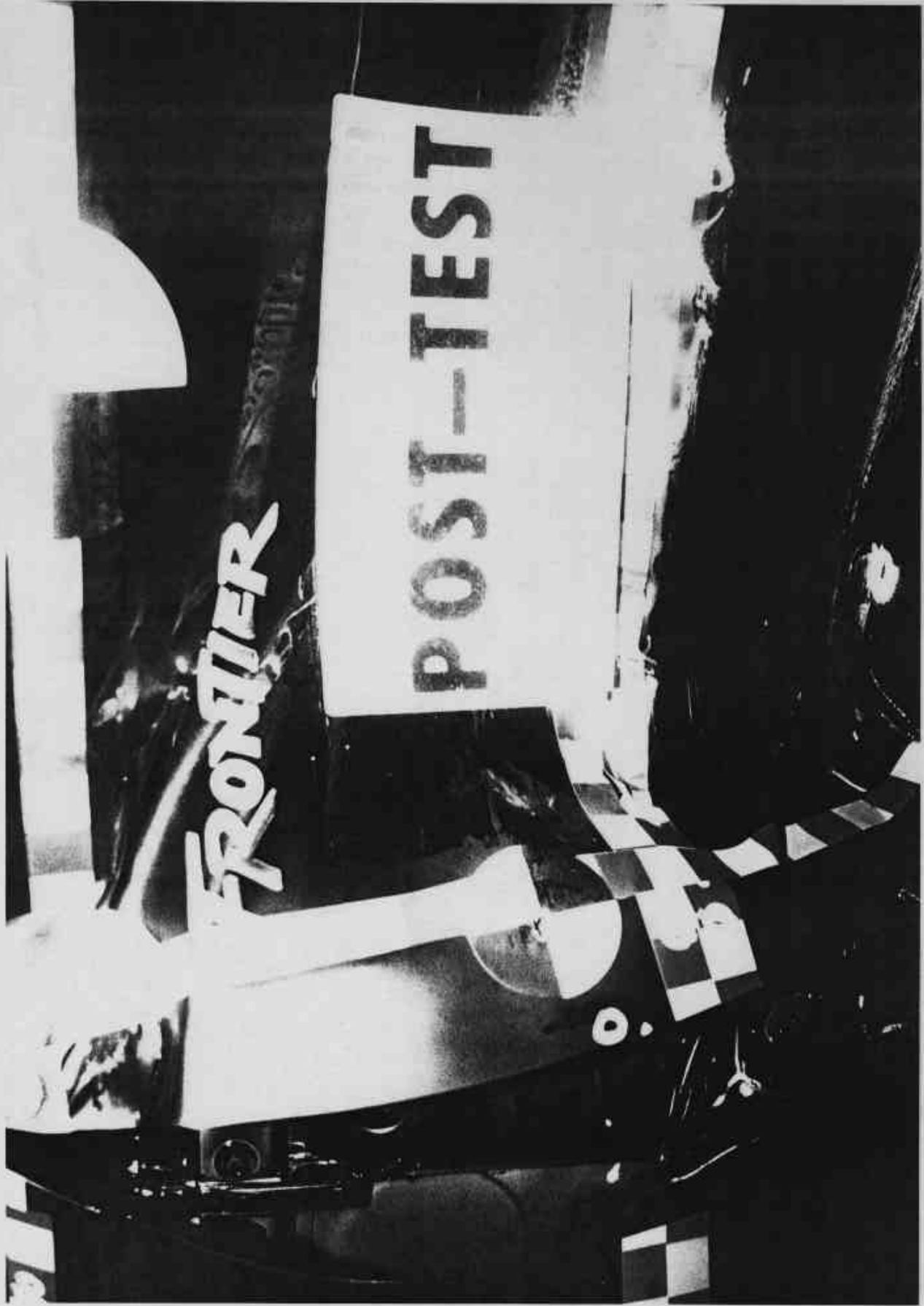


Photo No. A-31 - Post-Test Left Front Impact Point on Vehicle

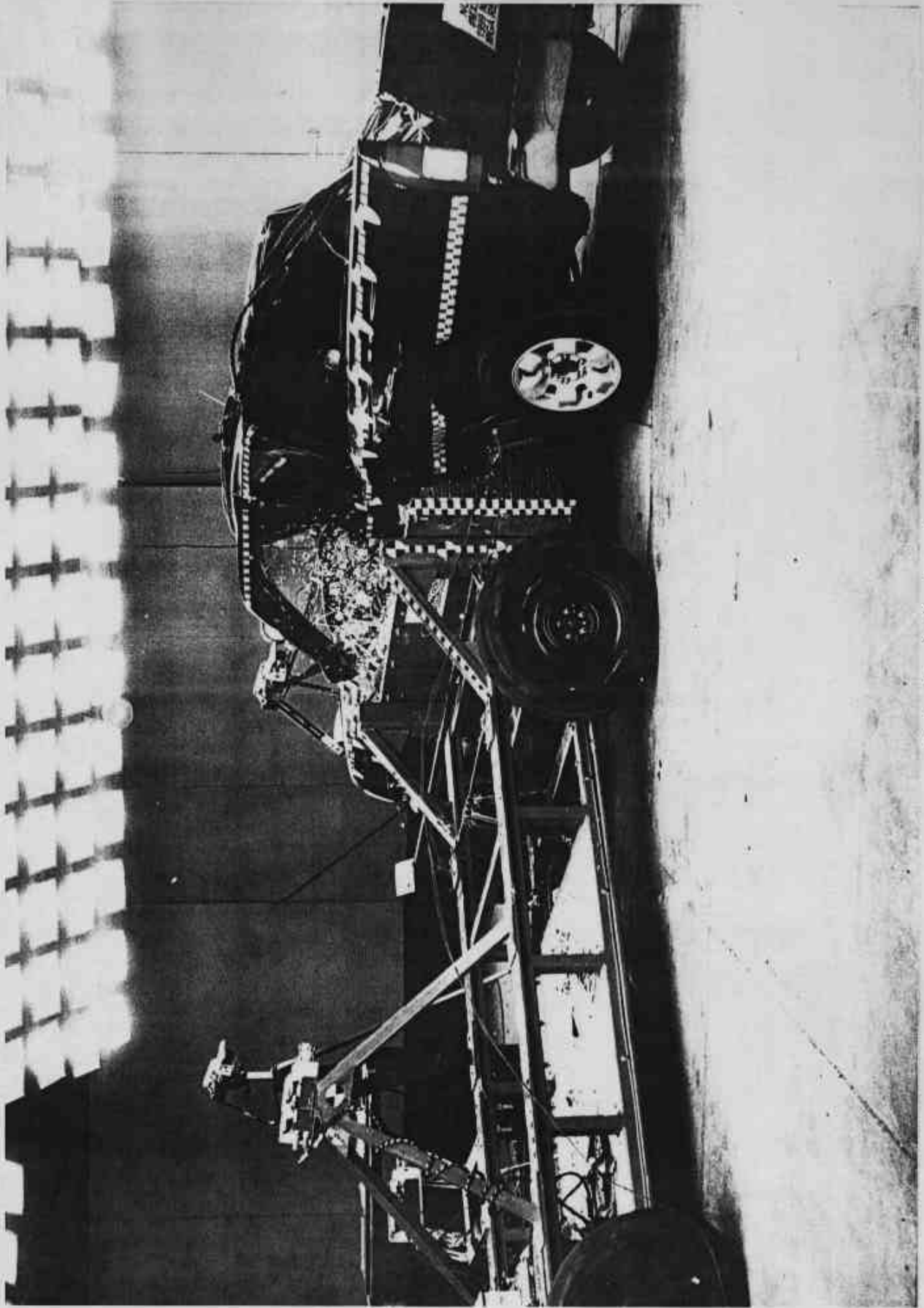
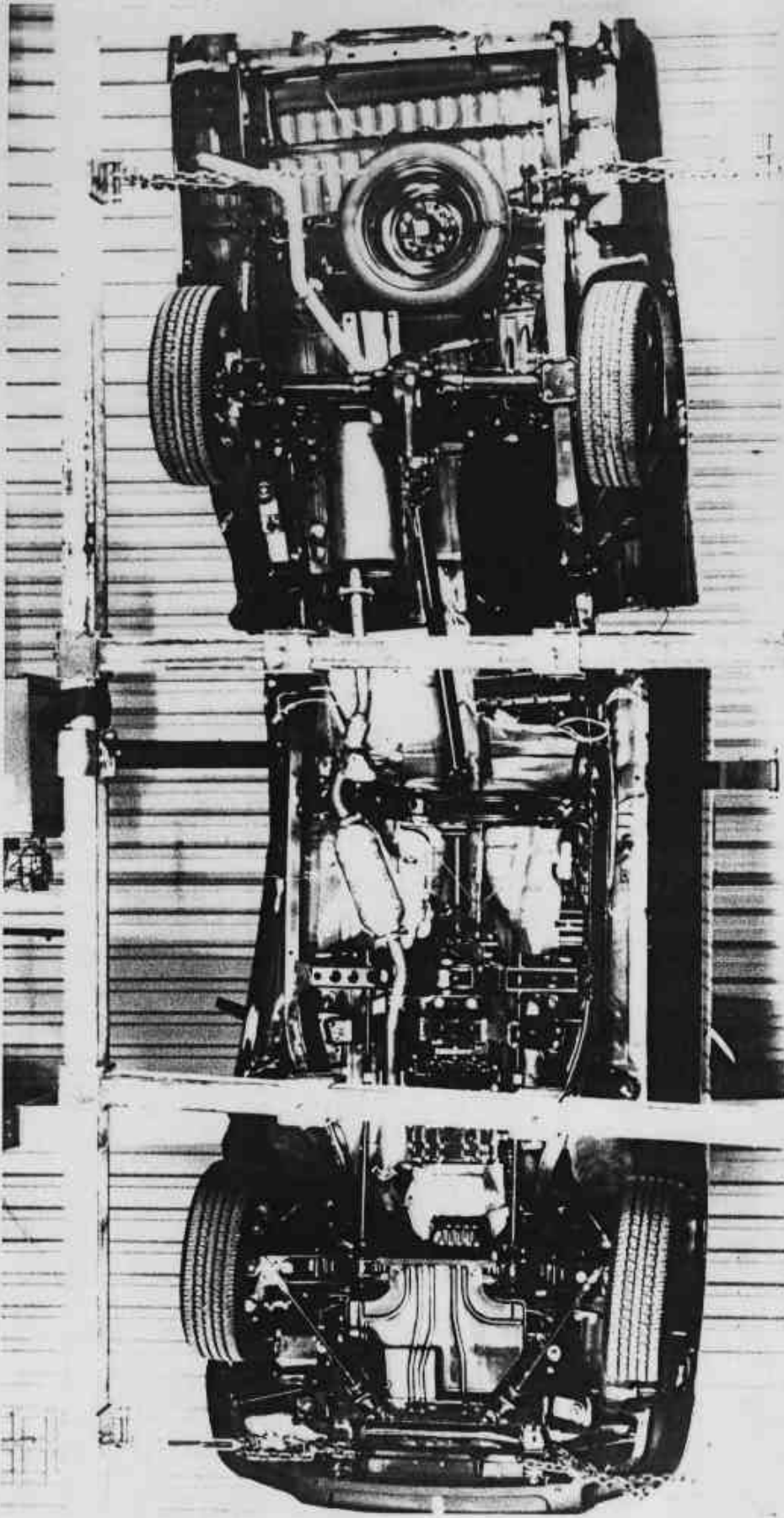


Photo No. A-32 - Impact

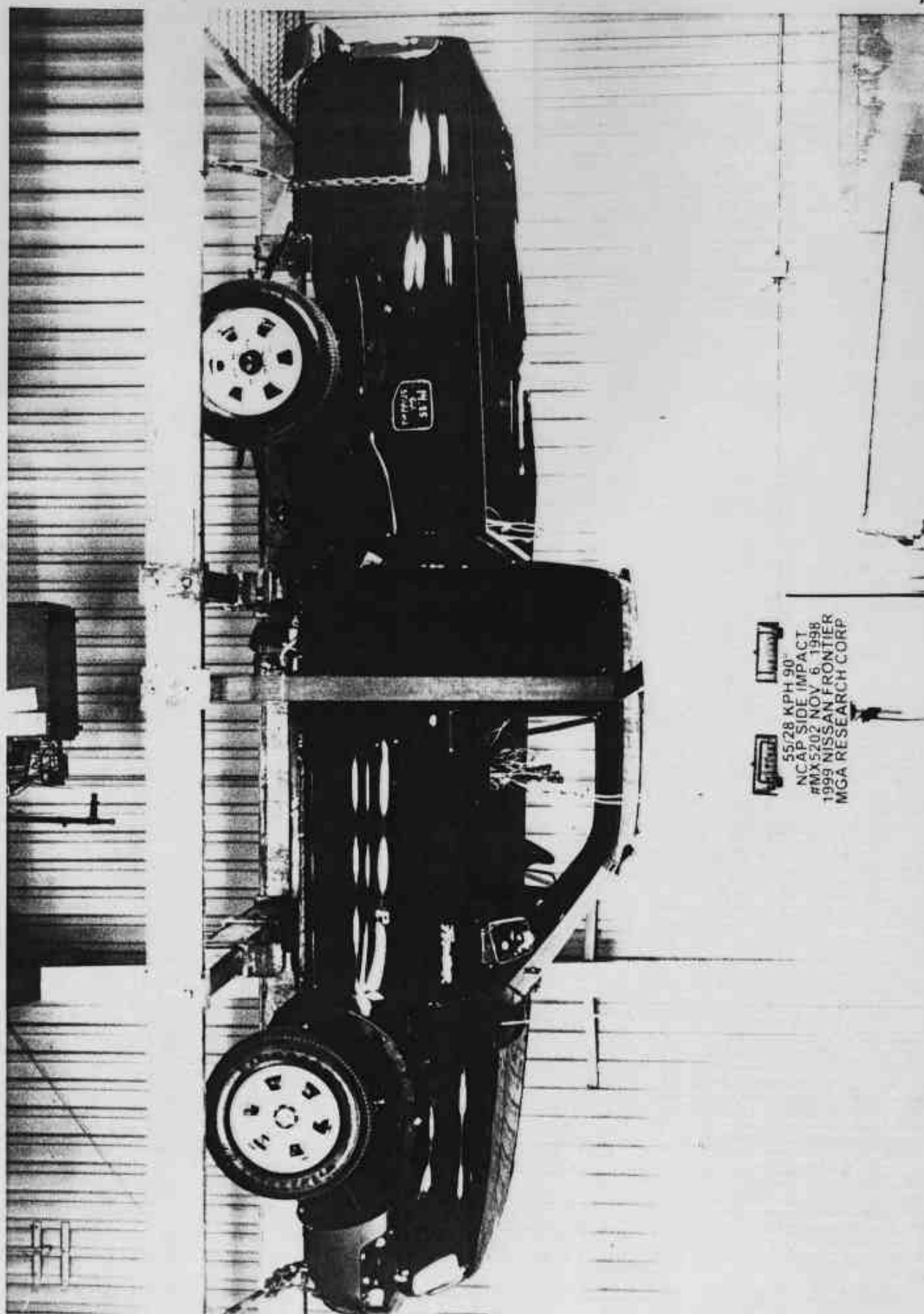


Photo No. A-33 - Vehicle Certification Label and Tire Placard



55-28 KPH-100
 AT AP SIDE IMPACT
 2000 NISSAN FRONTIER
 NOV 6, 1998
 MOA RESEARCH, LLC

Photo No. A-34 - Rollover 90°



55/28 KPH 90°
NCAP SIDE IMPACT
#MX5202 NOV. 6, 1998
1999 NISSAN FRONTIER
MGA RESEARCH CORP.

Photo No. A-35 - Rollover 180°

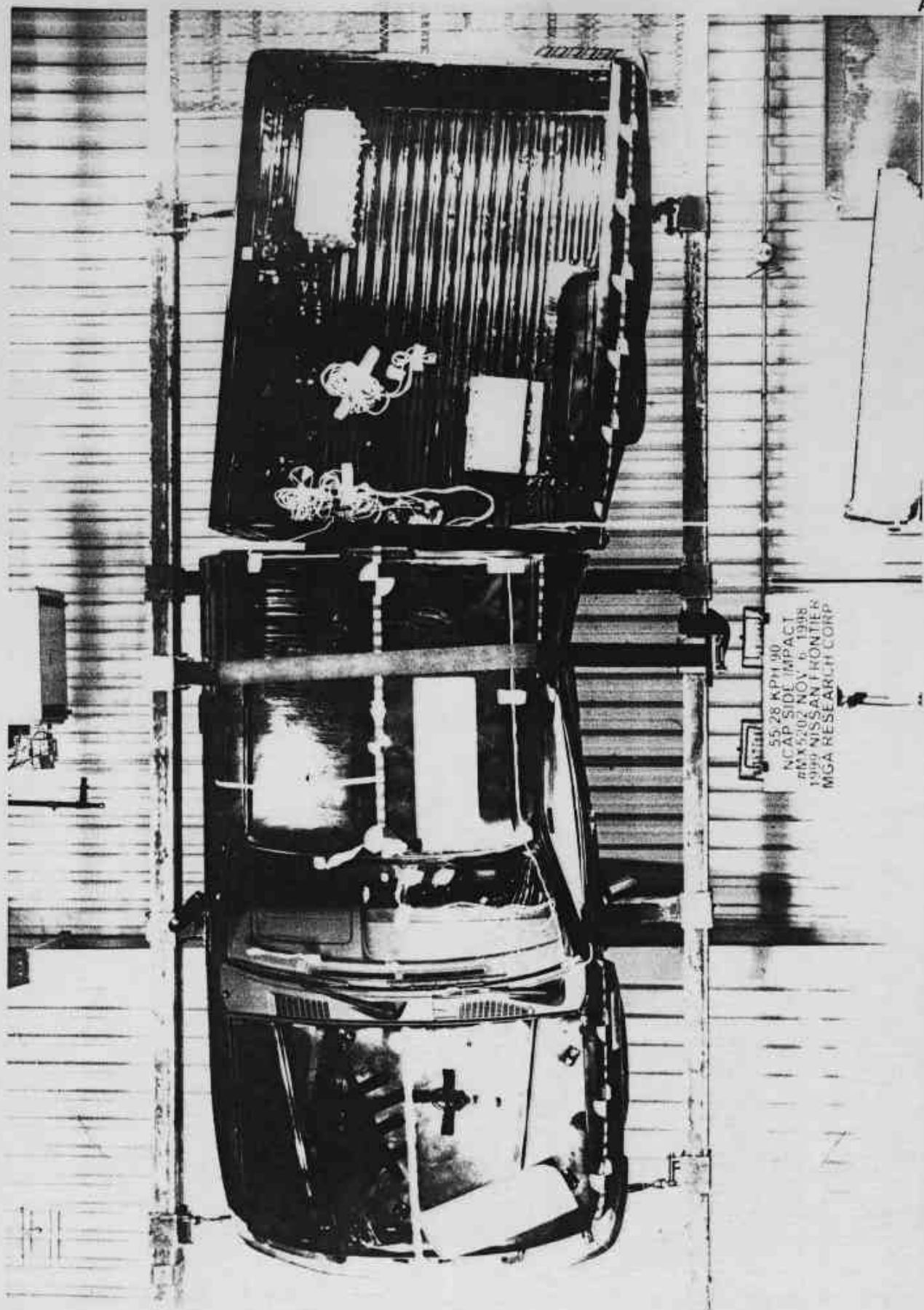


Photo No. A-36 - Rollover 270°

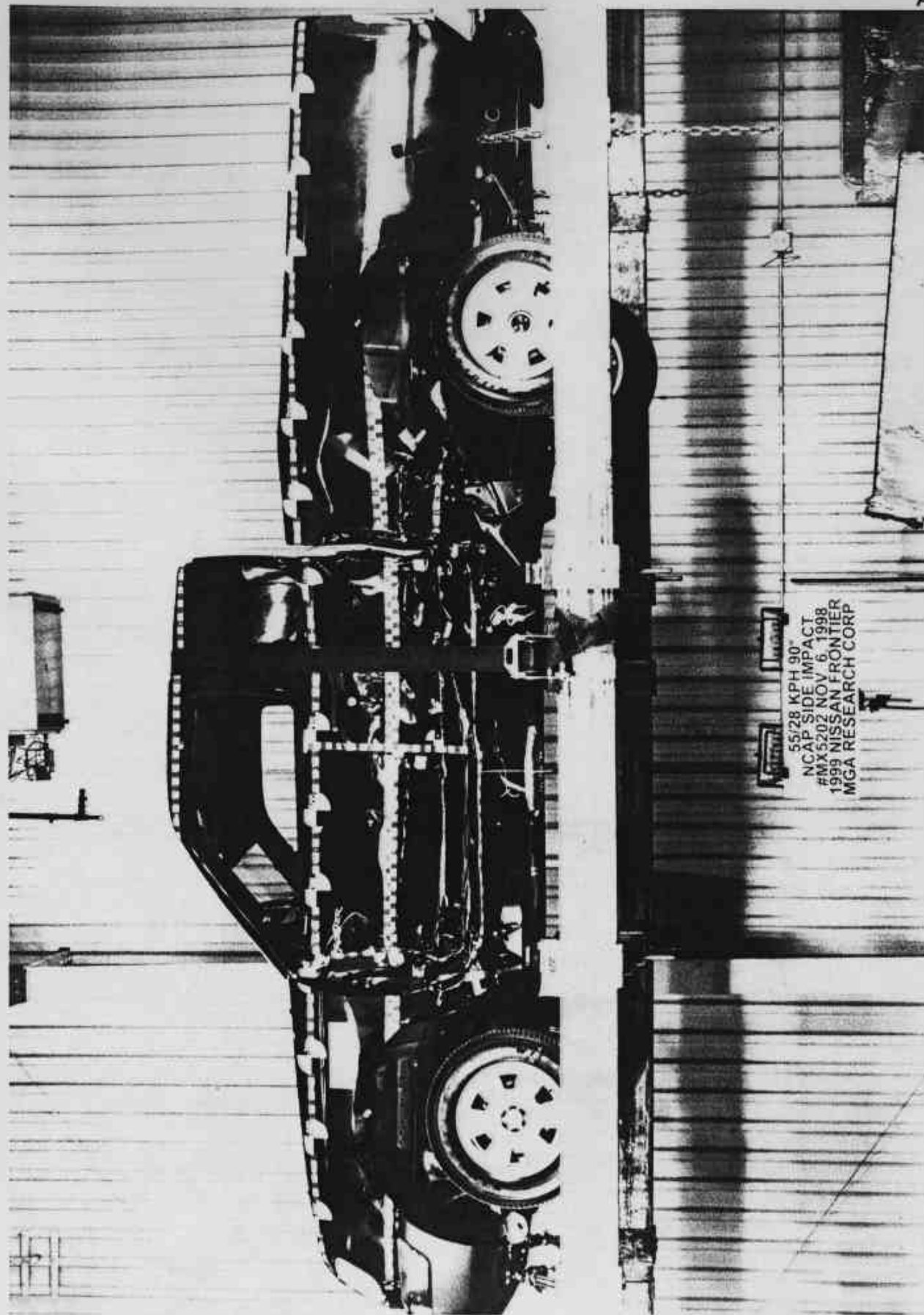


Photo No. A-37 - Rollover 360°

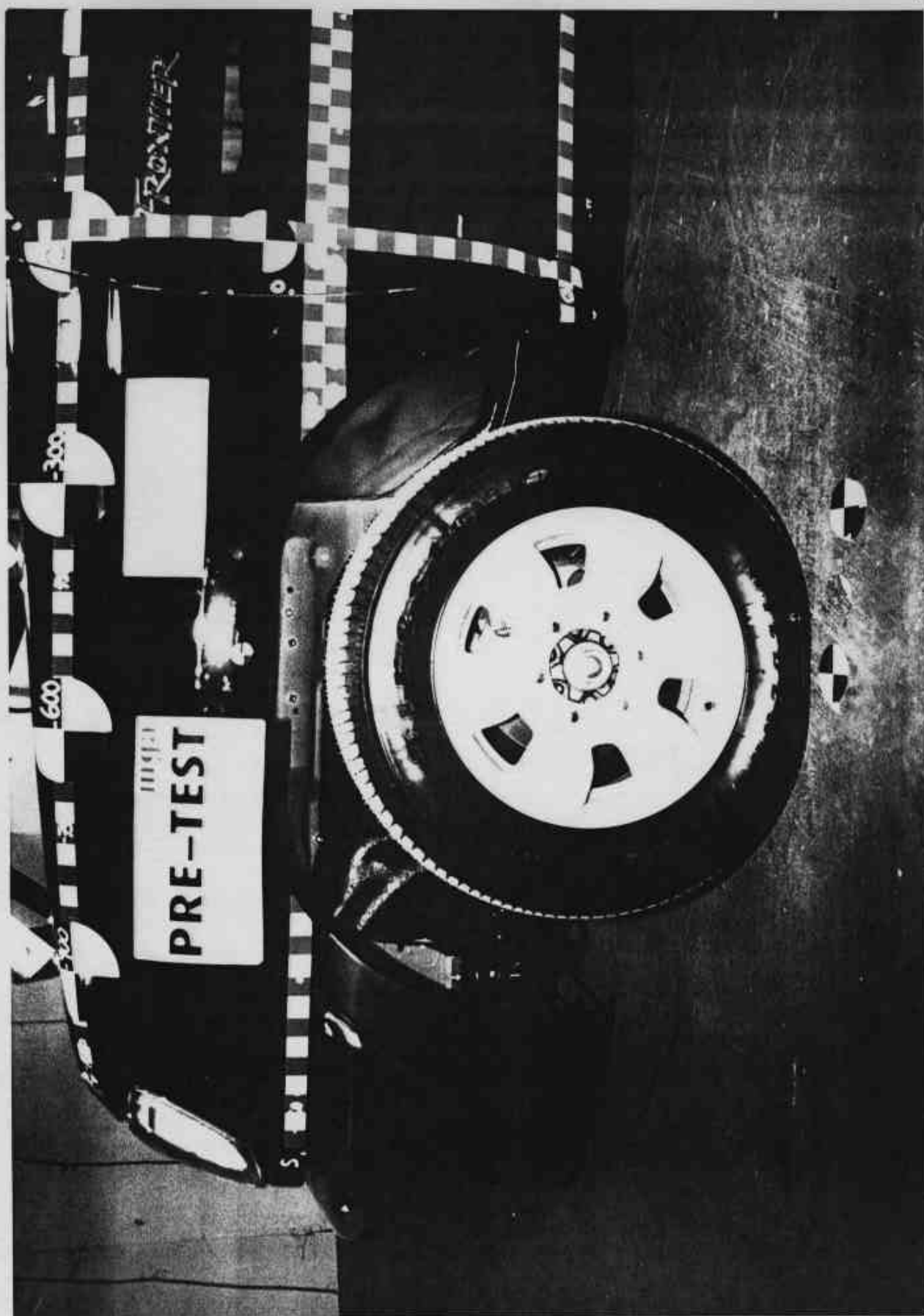


Photo No. A-38 - Left Front Attitude Point

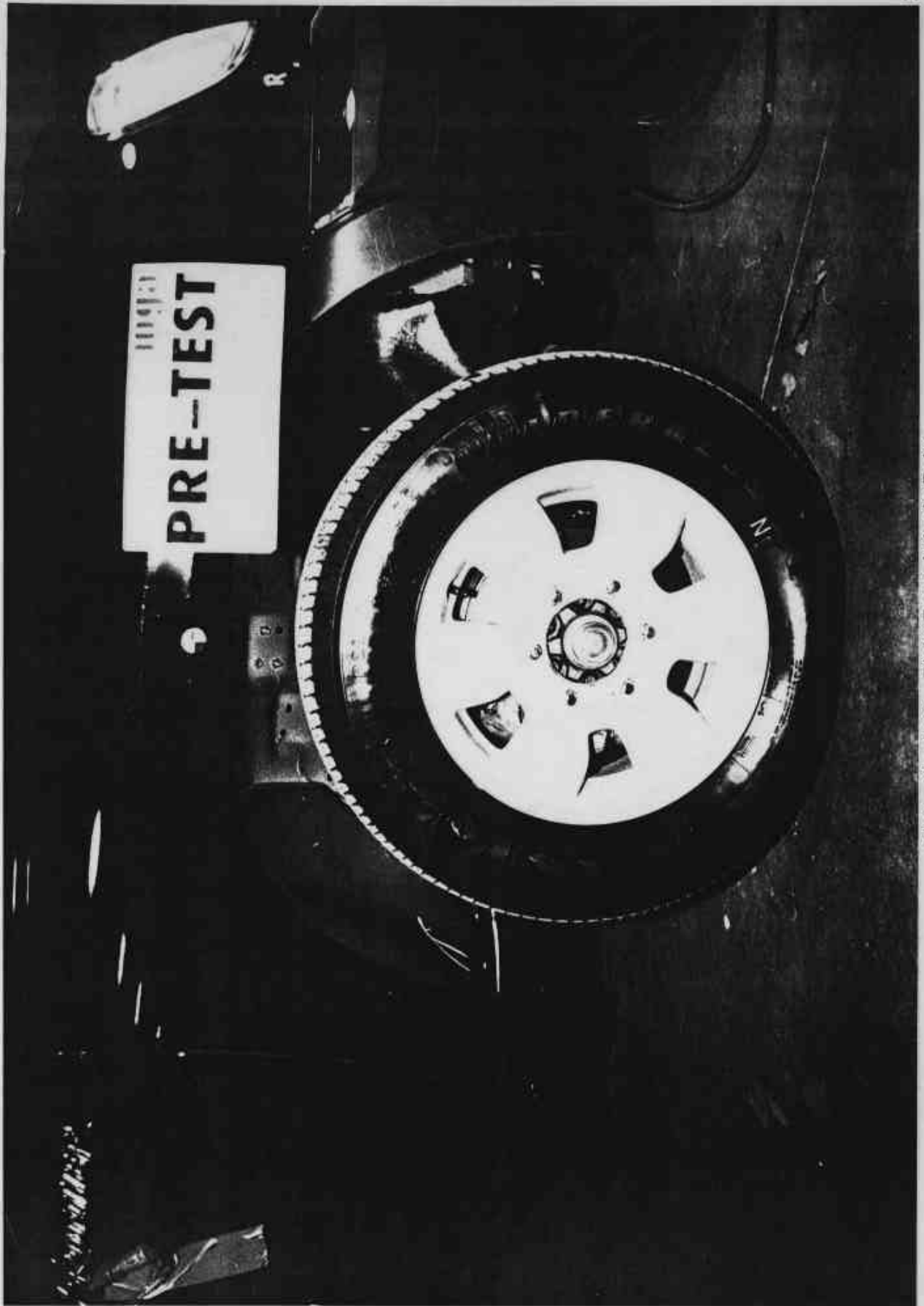


Photo No. A-39 - Right Front Attitude Point

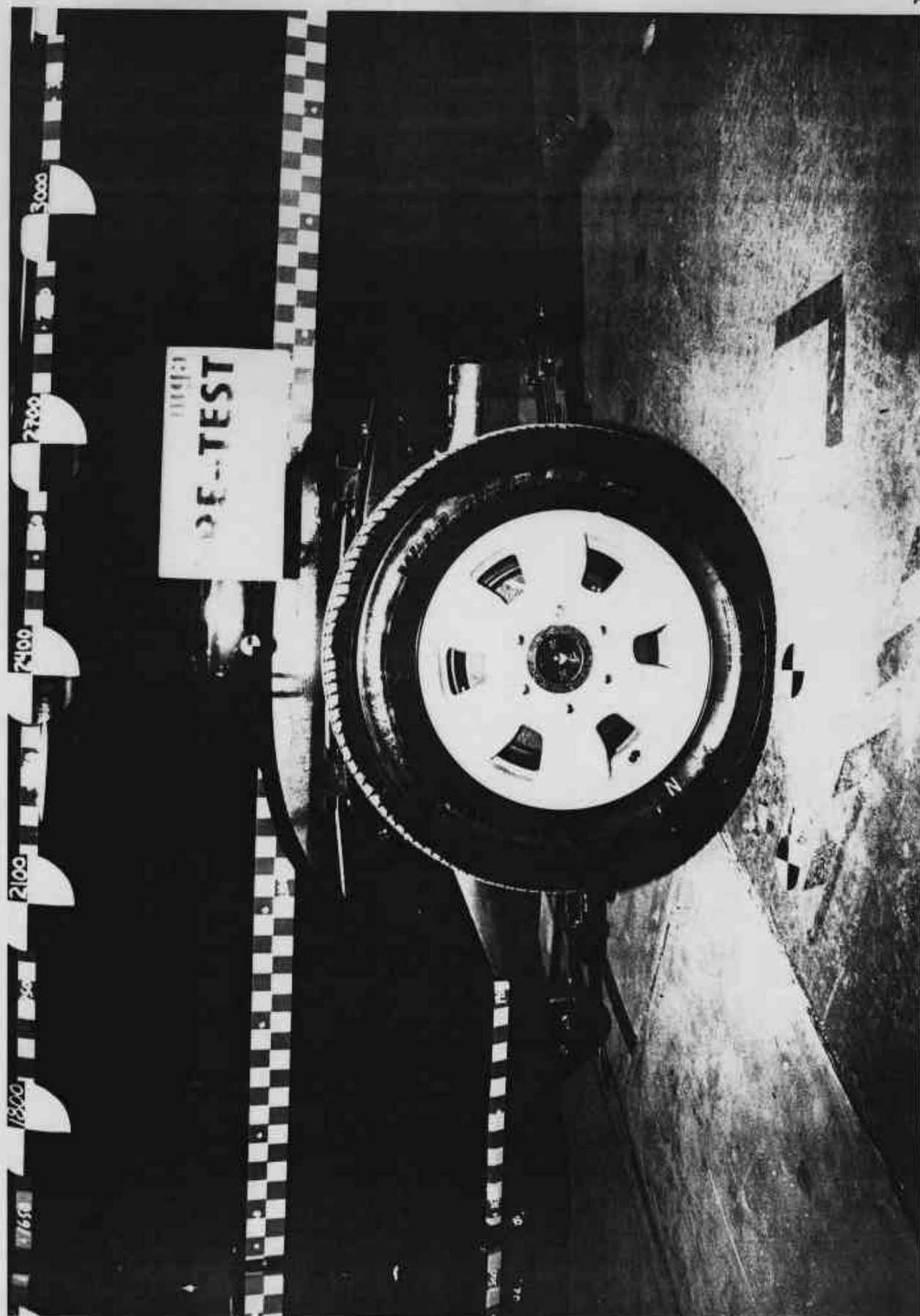


Photo No. A-40 - Left Rear Attitude Point

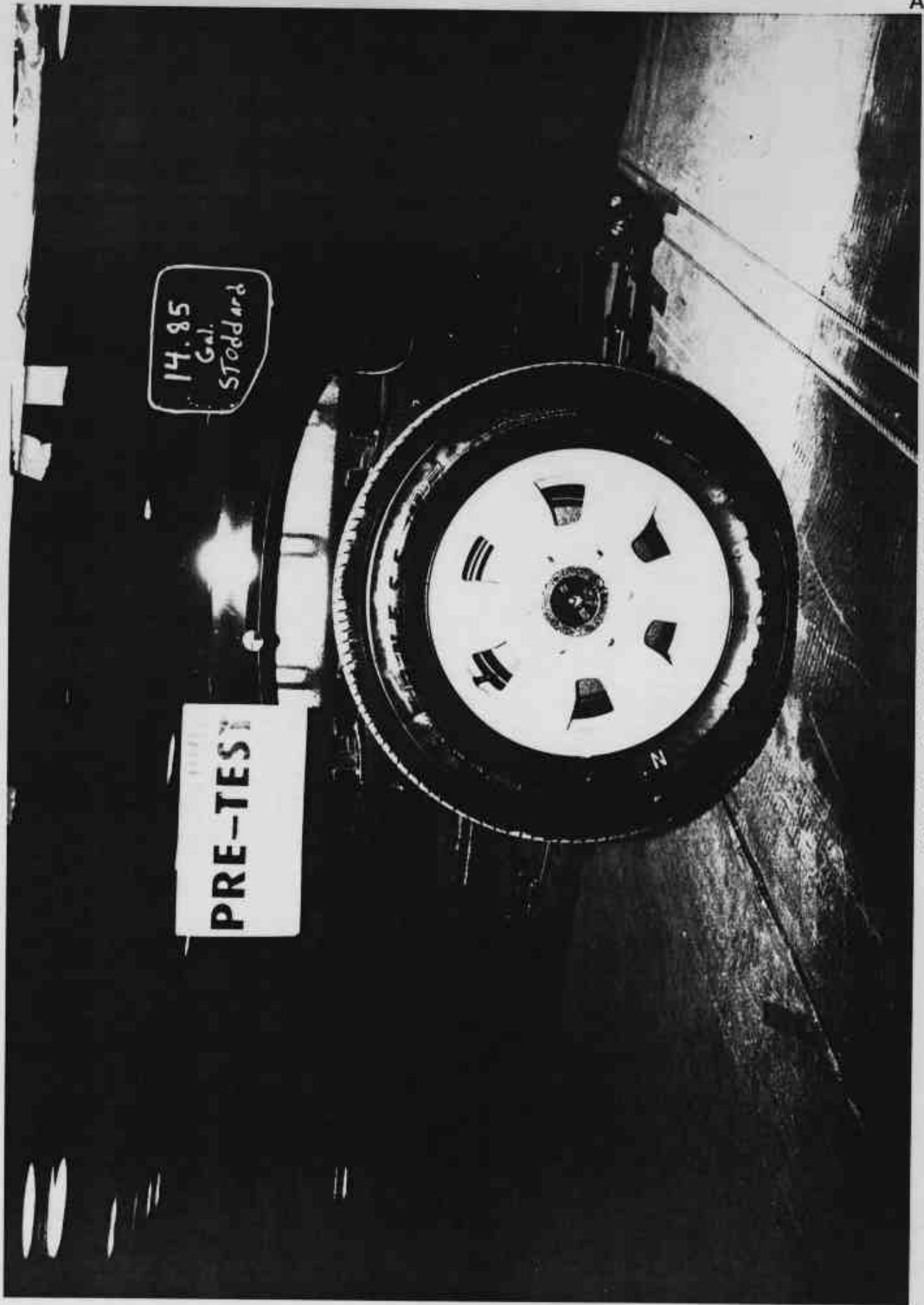


Photo No. A-41 - Right Rear Attitude Point

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* No valid data collected

** No valid data collected after approximately 40 msec.

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* No valid data collected after approximately 10 msec.

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FIR Filtered

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TEST: NCAP SIDE IMPACT TEST

TEST DATE: 11-06-1998

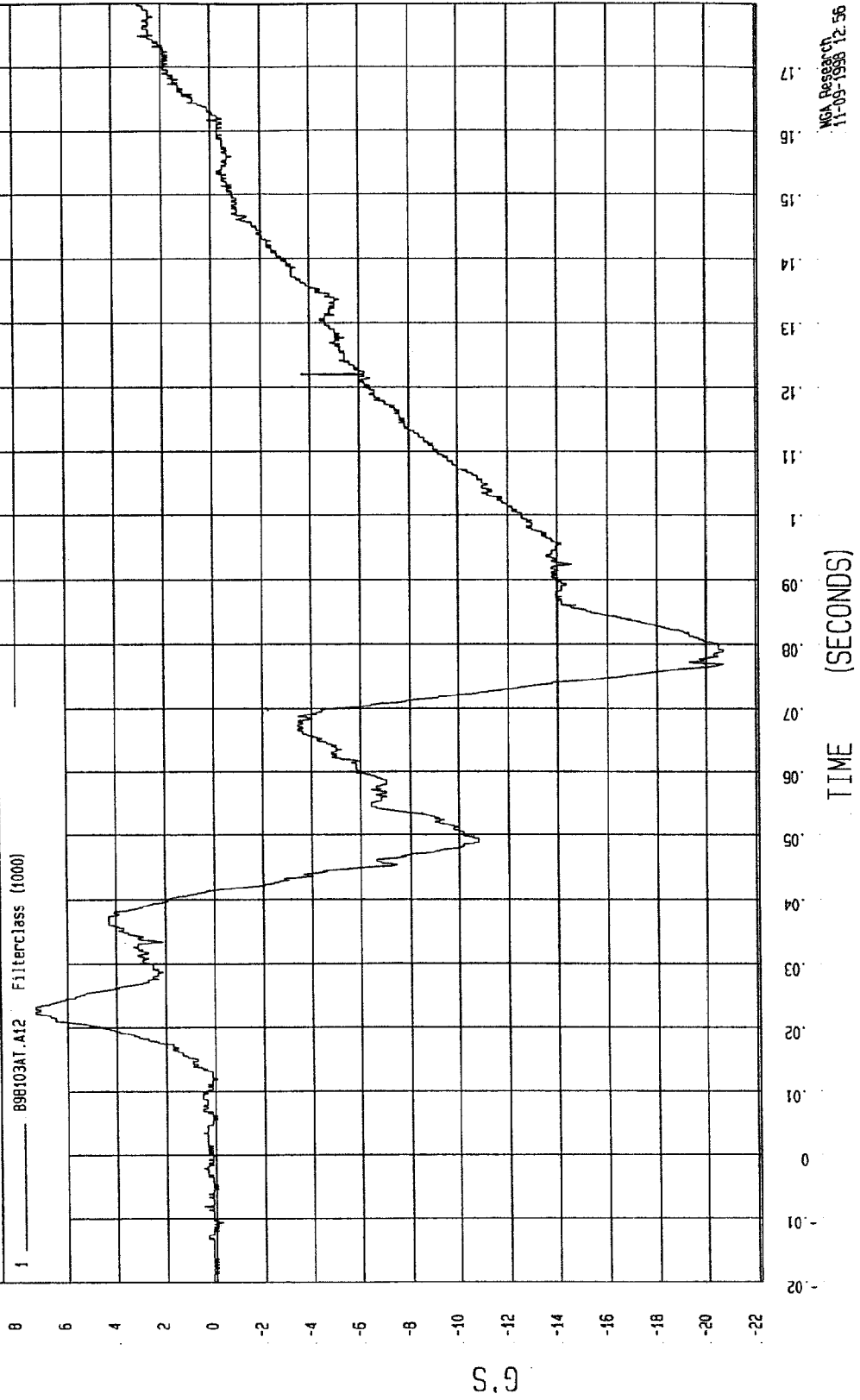
Speed: 38.38 MPH 61.8 KPH

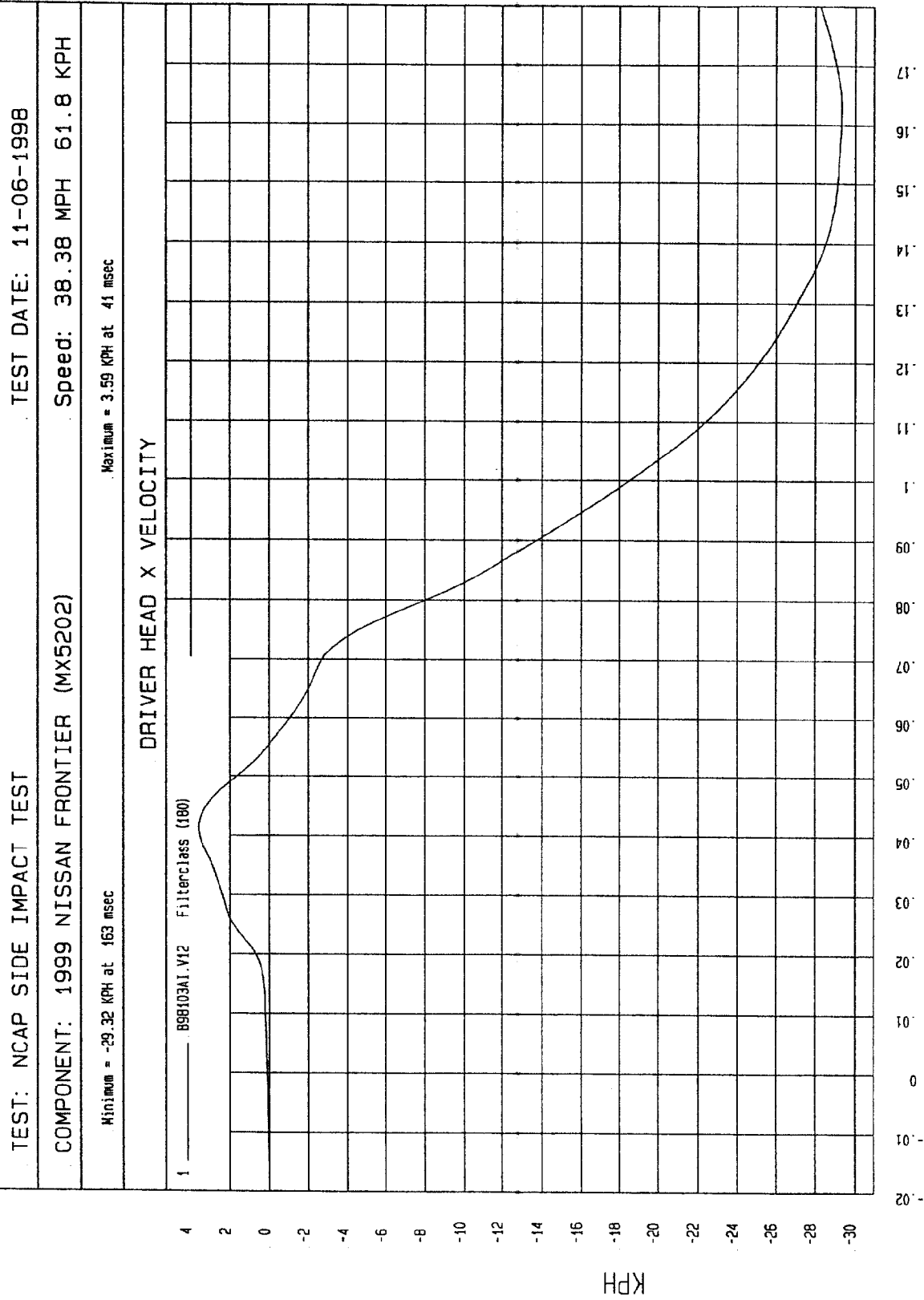
COMPONENT: 1999 NISSAN FRONTIER (MX5202)

Maximum = 7.27 G's at 22 msec

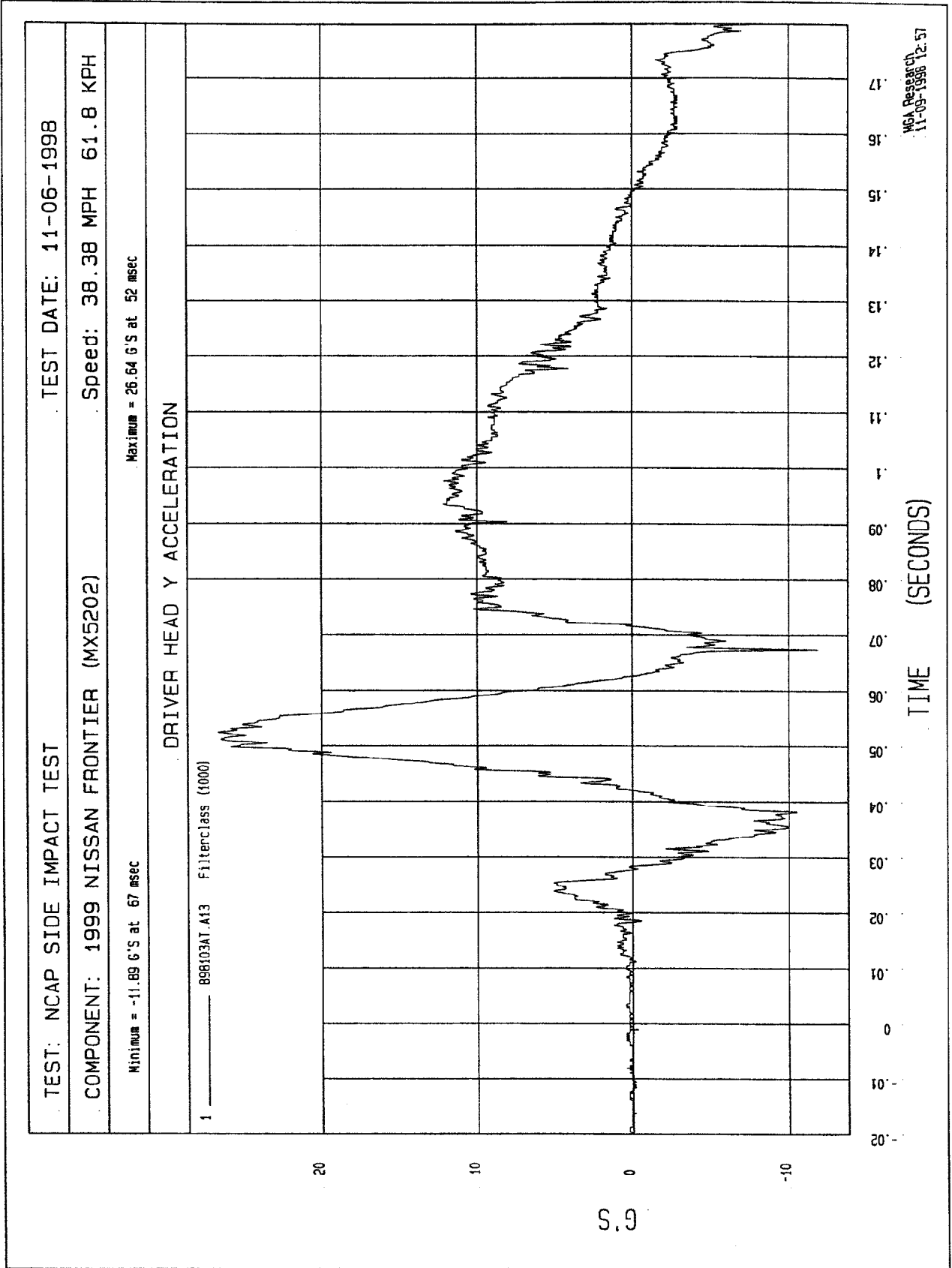
Minimum = -20.71 G's at 77 msec

DRIVER HEAD X ACCELERATION





MSA Research
11-09-1998 12:58

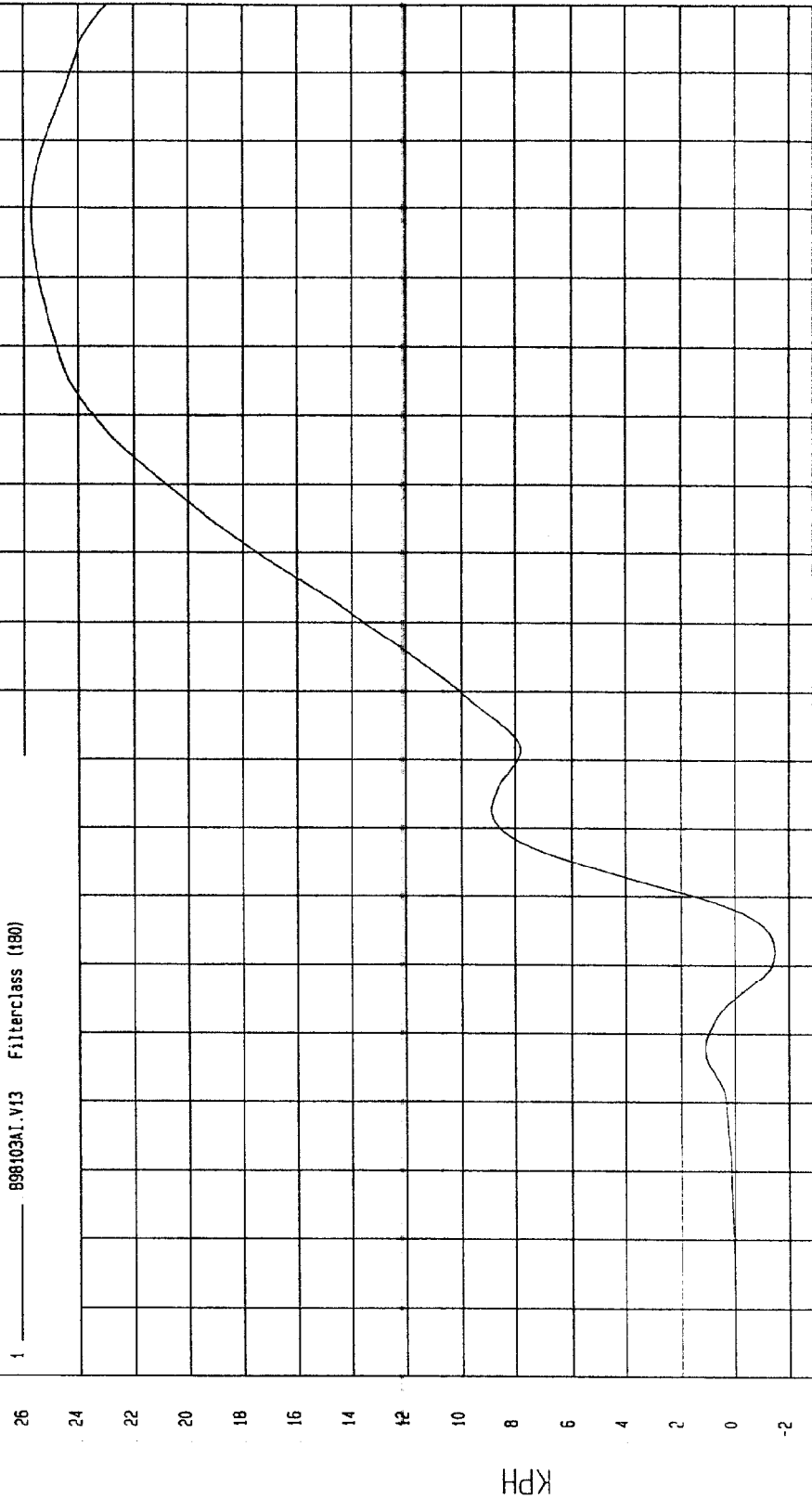


TEST: NCAP SIDE IMPACT TEST TEST DATE: 11-06-1998

COMPONENT: 1999 NISSAN FRONTIER (MX5202) Speed: 38.38 MPH 61.8 KPH

Minimum = -1.49 KPH at 42 msec Maximum = 25.7 KPH at 149 msec

DRIVER HEAD Y VELOCITY

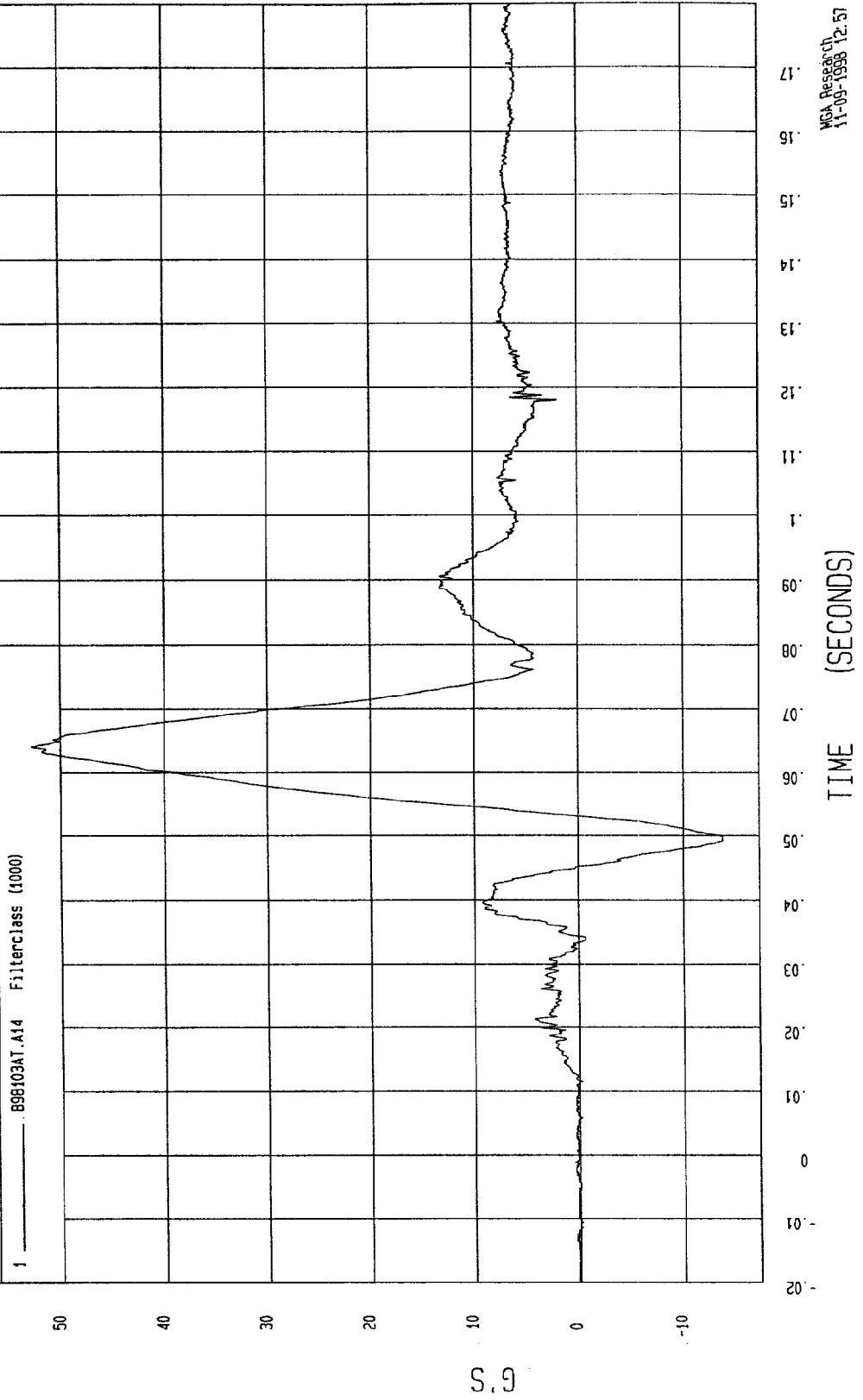


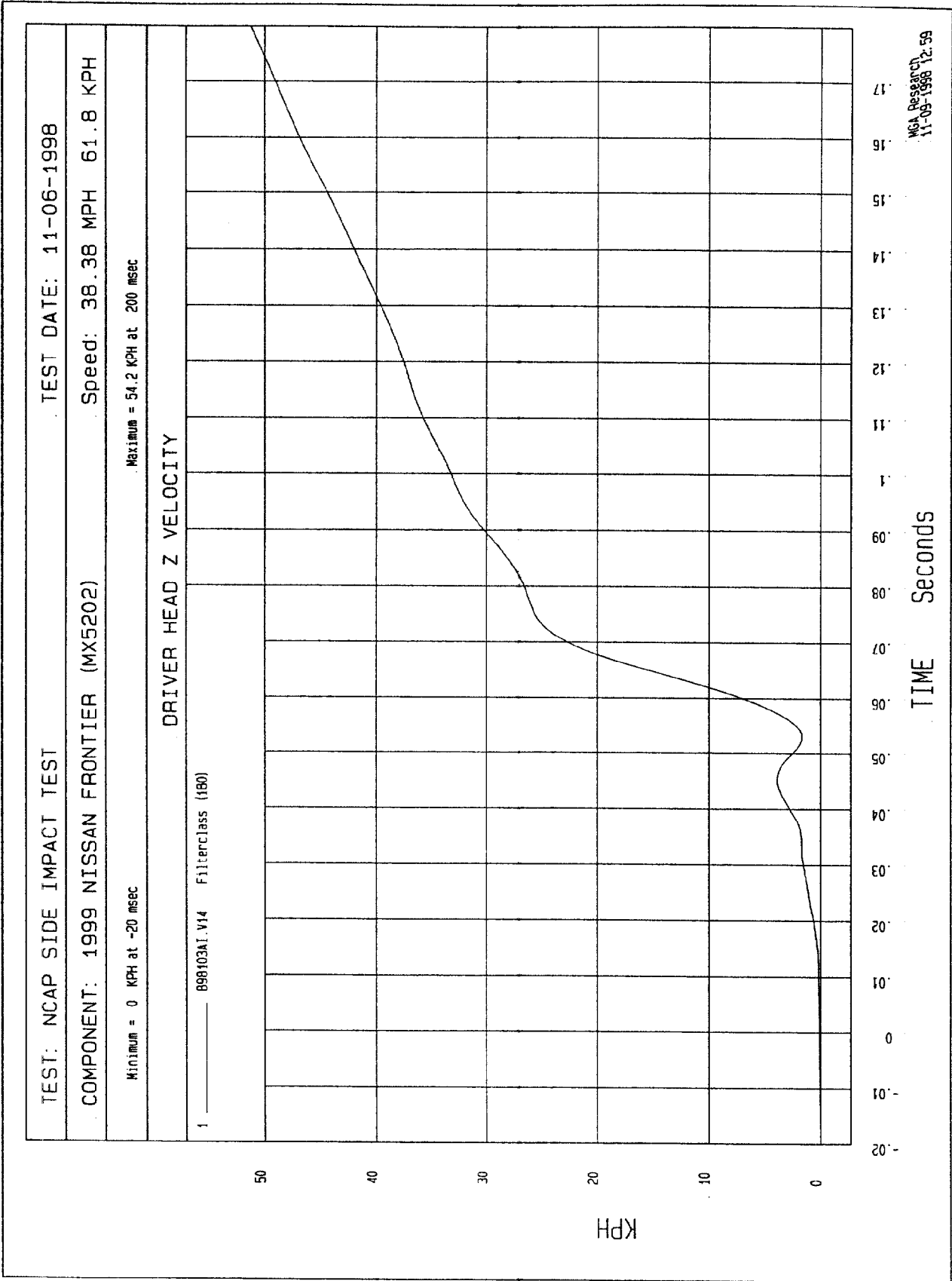
TEST: NCAP SIDE IMPACT TEST TEST DATE: 11-06-1998

COMPONENT: 1999 NISSAN FRONTIER (MX5202) Speed: 38.38 MPH 61.8 KPH

Minimum = -13.8 G'S at 49 msec Maximum = 52.69 G'S at 64 msec

DRIVER HEAD Z ACCELERATION



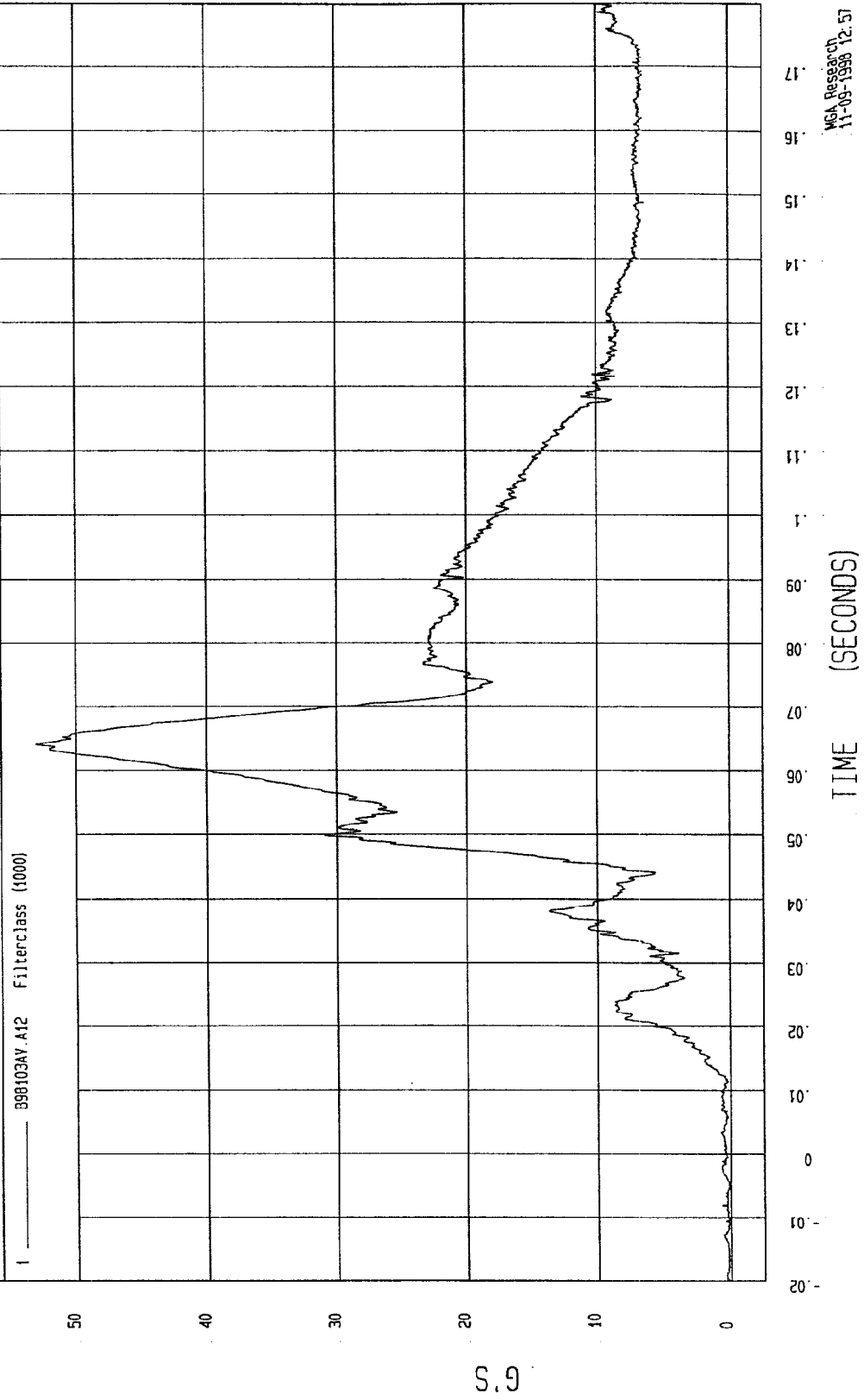


TEST: NCAP SIDE IMPACT TEST TEST DATE: 11-06-1998

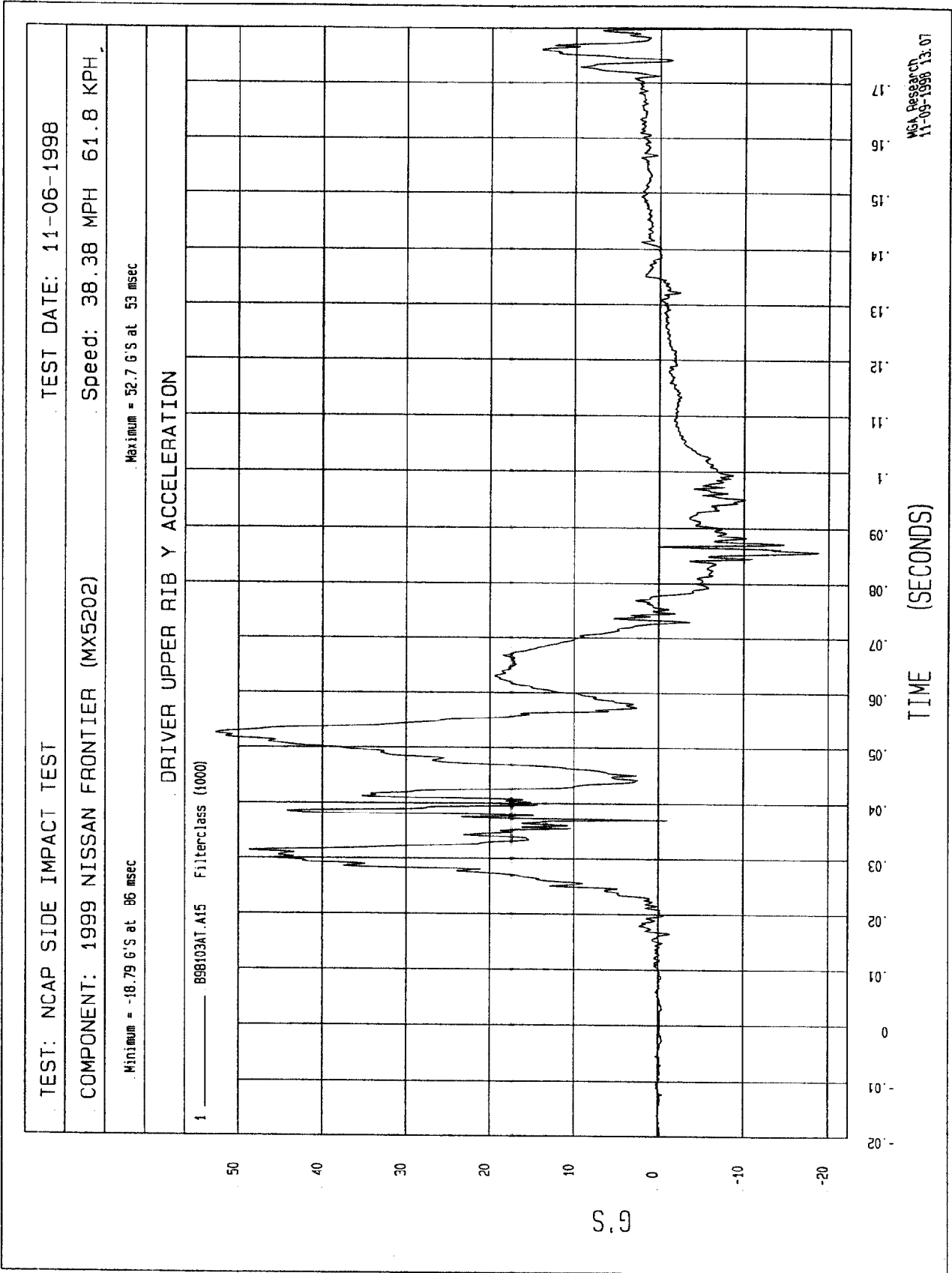
COMPONENT: 1999 NISSAN FRONTIER (MX5202) Speed: 38.38 MPH 61.8 KPH

Minimum = 8.92E-02 G'S at -17 msec Maximum = 52.99 G'S at 54 msec

DRIVER HEAD RESULTANT



MCA Research
11-09-1998 12:57



TEST: NCAP SIDE IMPACT TEST

TEST DATE: 11-06-1998

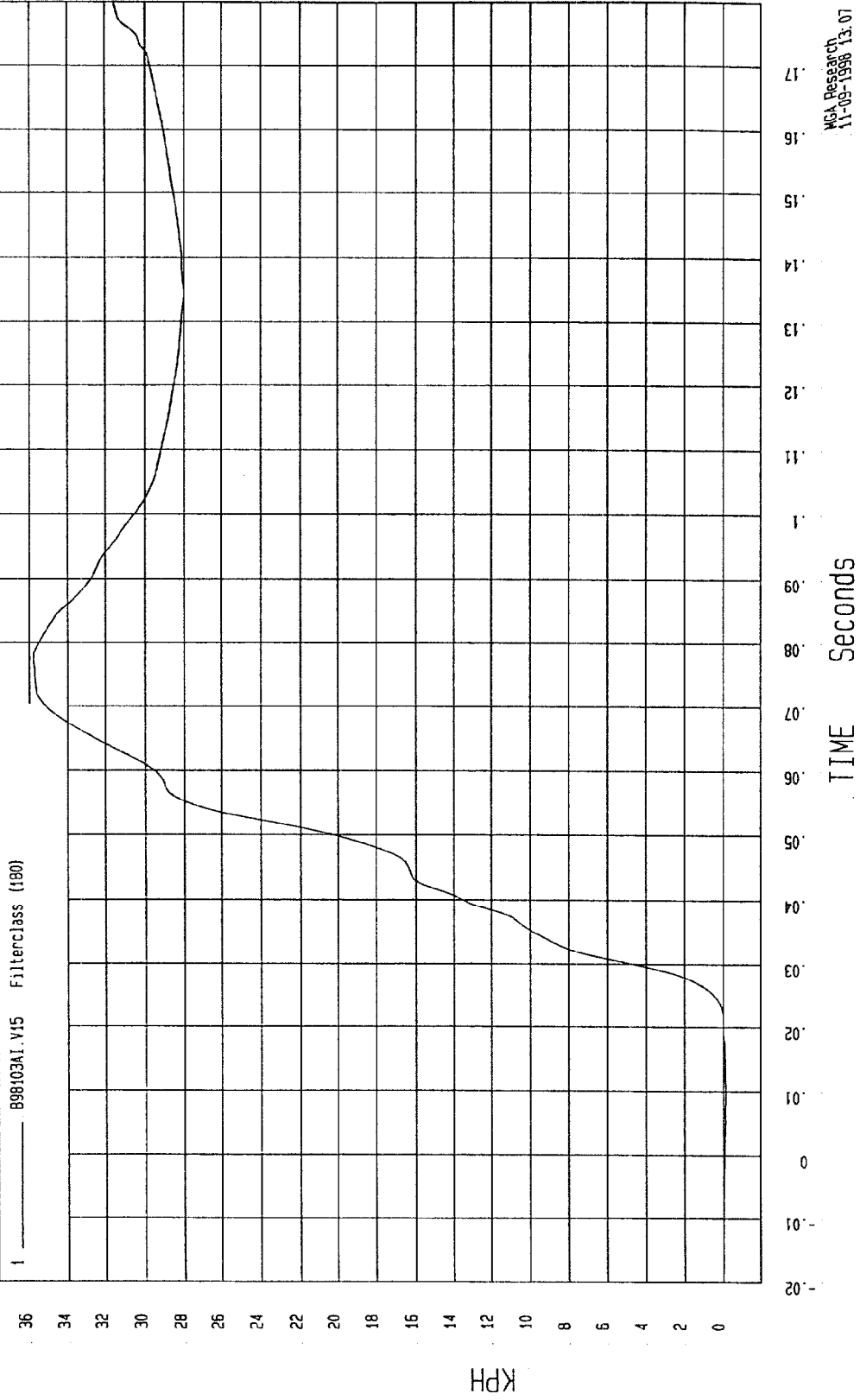
COMPONENT: 1999 NISSAN FRONTIER (MX5202)

Speed: 38.38 MPH 61.8 KPH

Minimum = -13 KPH at 10 msec

Maximum = 35.81 KPH at 78 msec

DRIVER UPPER RIB Y VELOCITY

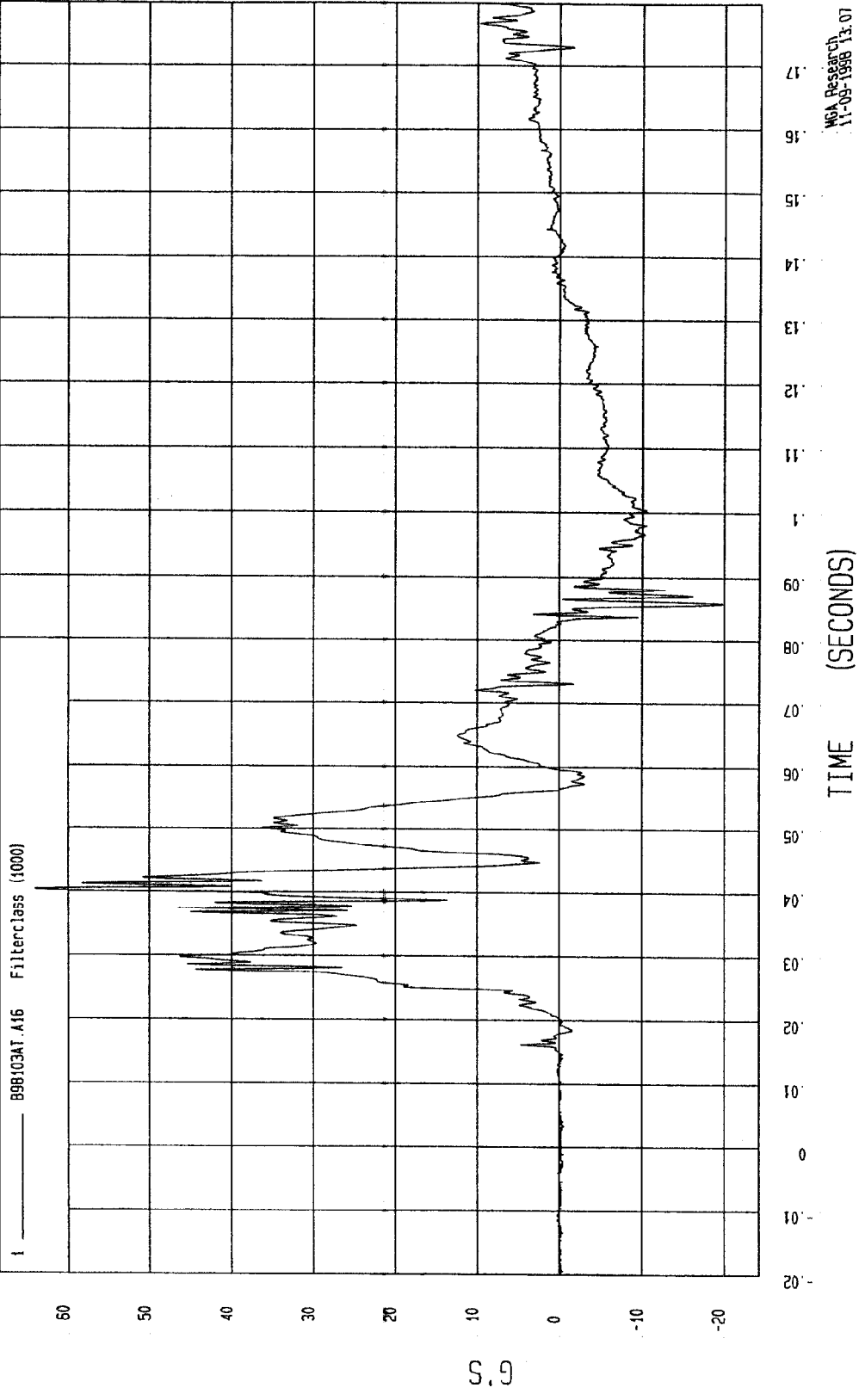


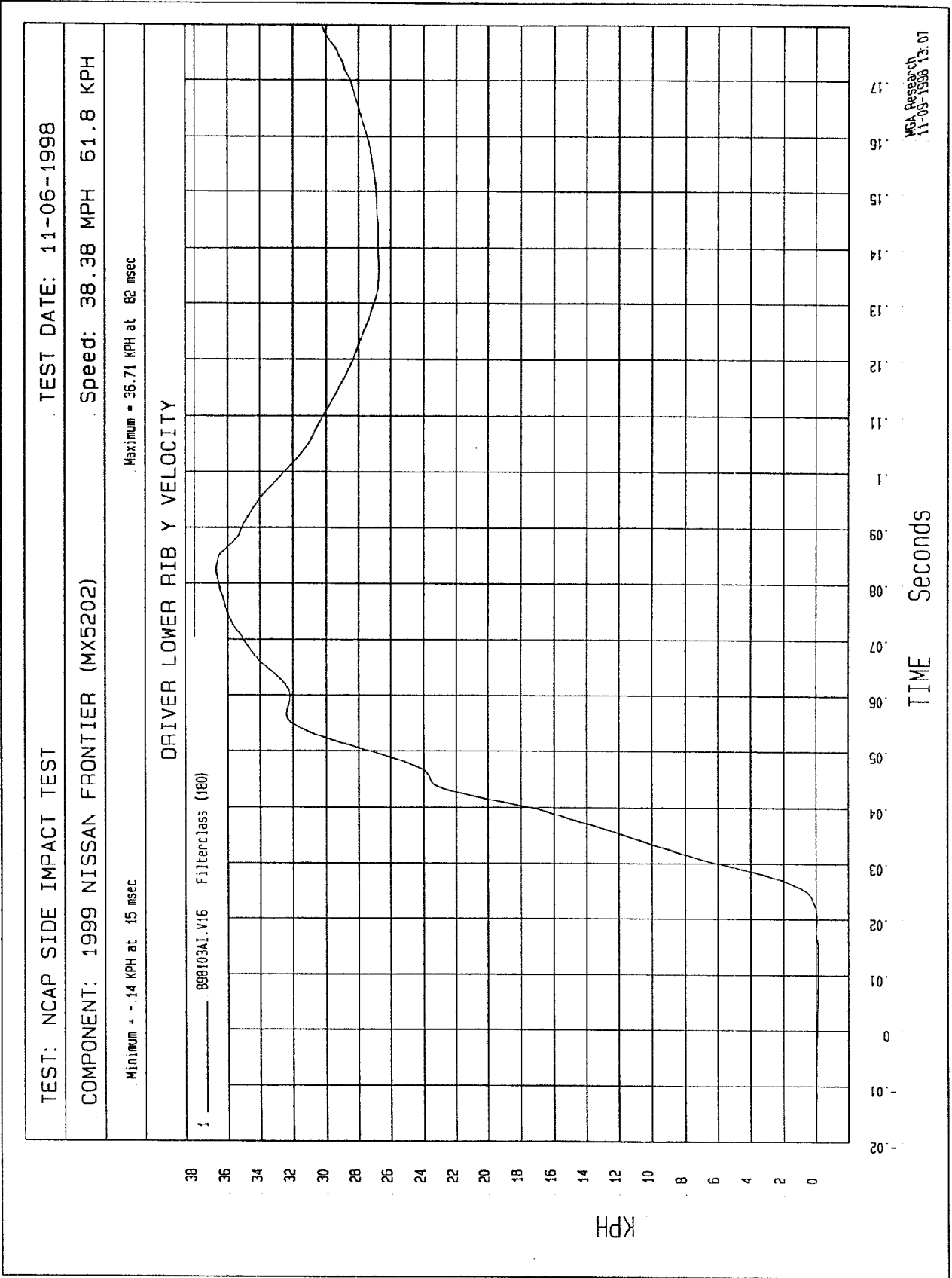
TEST: NCAP SIDE IMPACT TEST TEST DATE: 11-06-1998

COMPONENT: 1999 NISSAN FRONTIER (MX5202) Speed: 38.38 MPH 61.8 KPH

Minimum = -19.95 G'S at 86 msec Maximum = 64.05 G'S at 40 msec

DRIVER LOWER RIB Y ACCELERATION



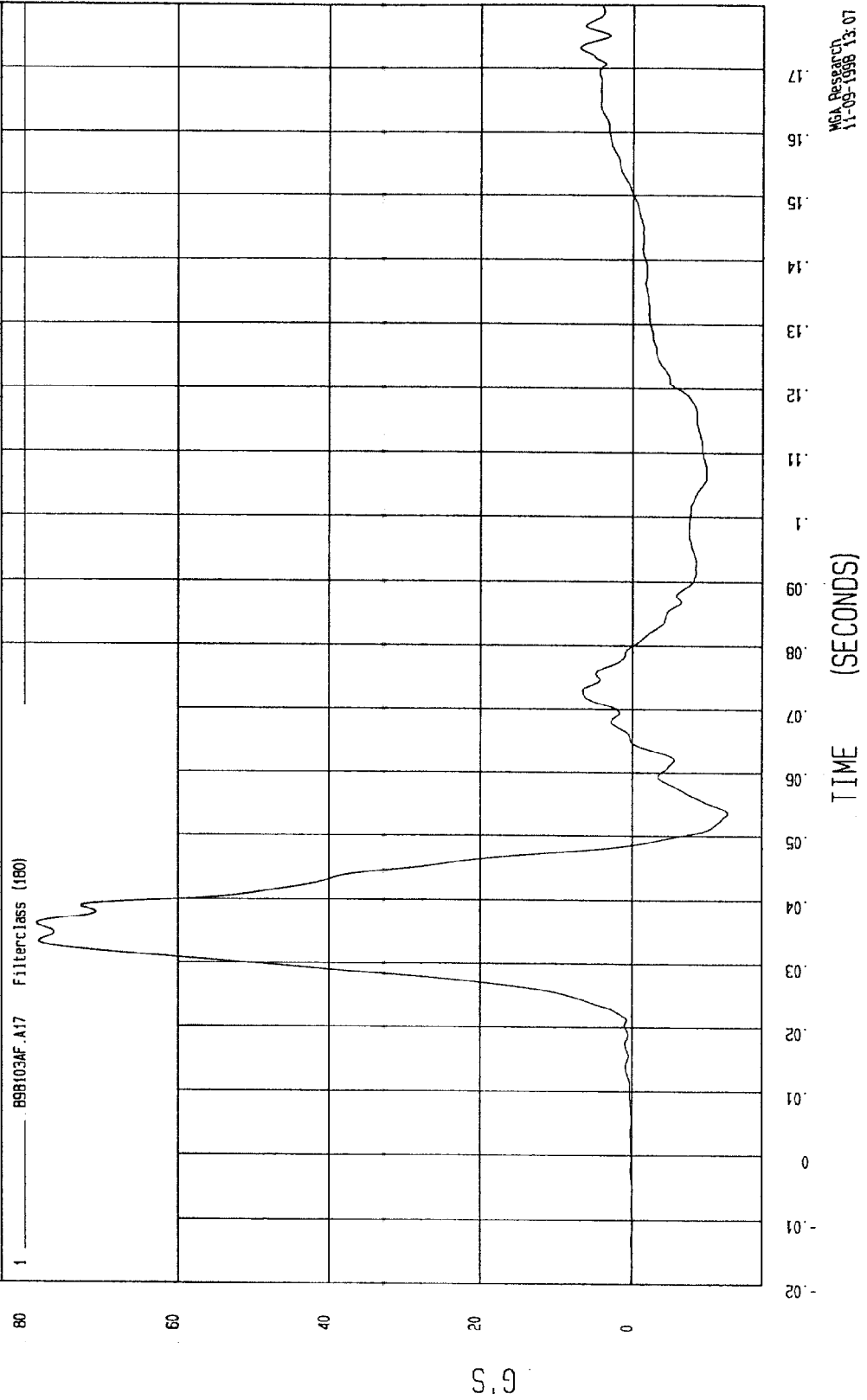


TEST: NCAP SIDE IMPACT TEST TEST DATE: 11-06-1998

COMPONENT: 1999 NISSAN FRONTIER (MX5202) Speed: 38.38 MPH 61.8 KPH

Minimum = -12.54 G'S at 54 msec Maximum = 78.47 G'S at 36 msec

DRIVER LOWER SPINE Y ACCELERATION

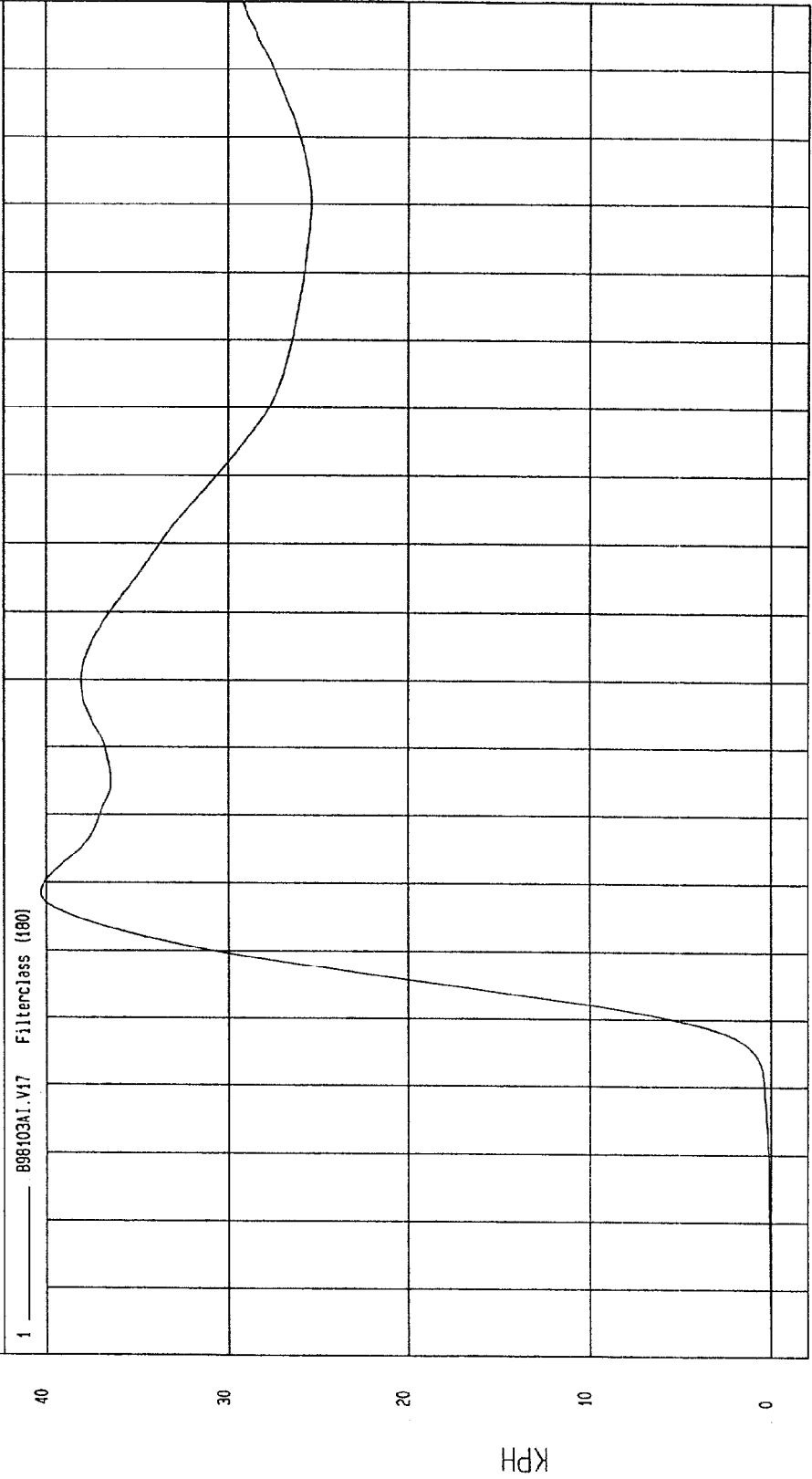


TEST: NCAP SIDE IMPACT TEST TEST DATE: 11-06-1998

COMPONENT: 1999 NISSAN FRONTIER (MX5202) Speed: 38.38 MPH 61.8 KPH

Minimum = 0 KPH at -20 msec Maximum = 40.29 KPH at 48 msec

DRIVER LOWER SPINE Y VELOCITY



TIME Seconds

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

WCA Research
11-09-1998 13.07

TEST: NCAP SIDE IMPACT TEST

TEST DATE: 11-06-1998

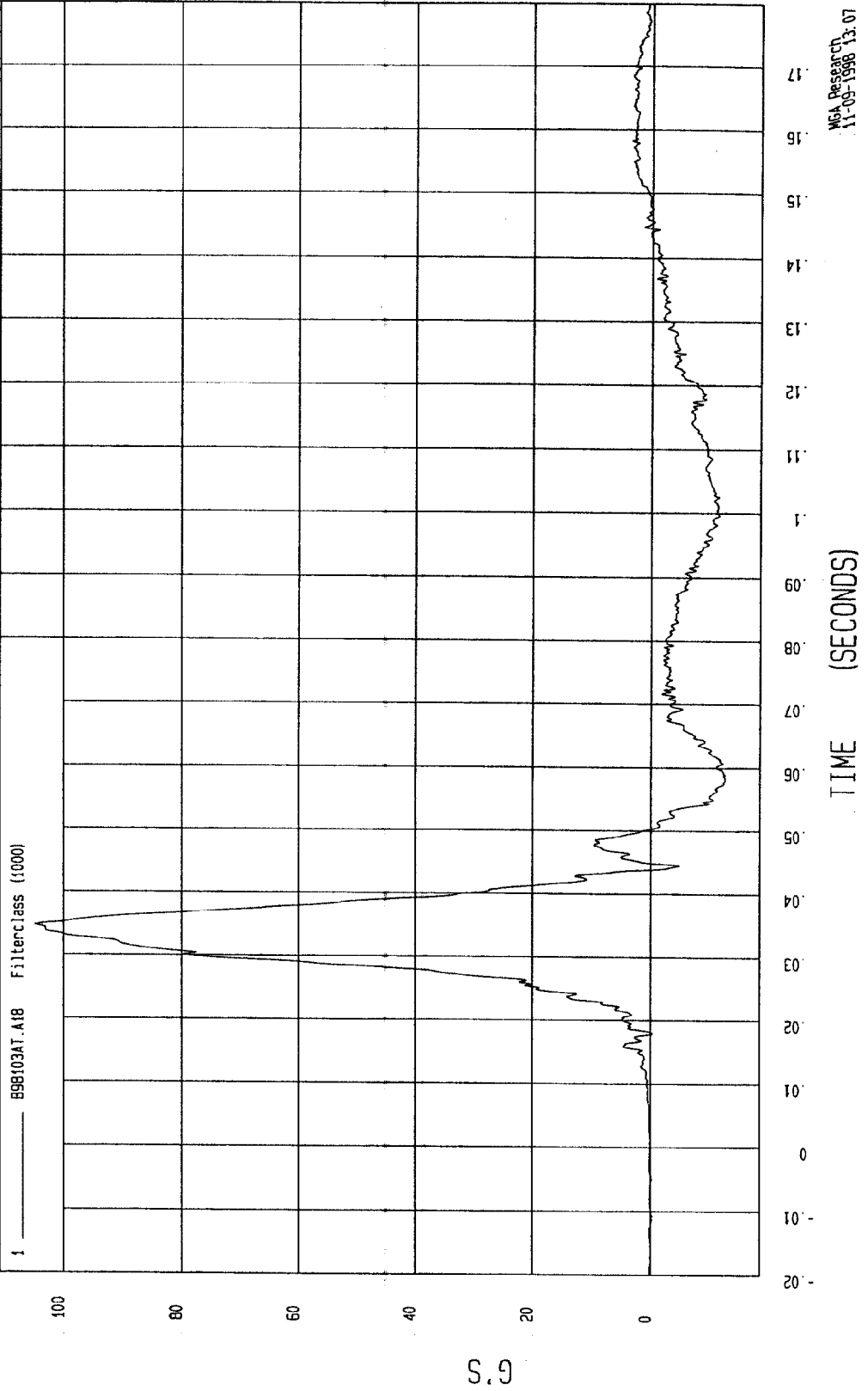
COMPONENT: 1999 NISSAN FRONTIER (MX5202)

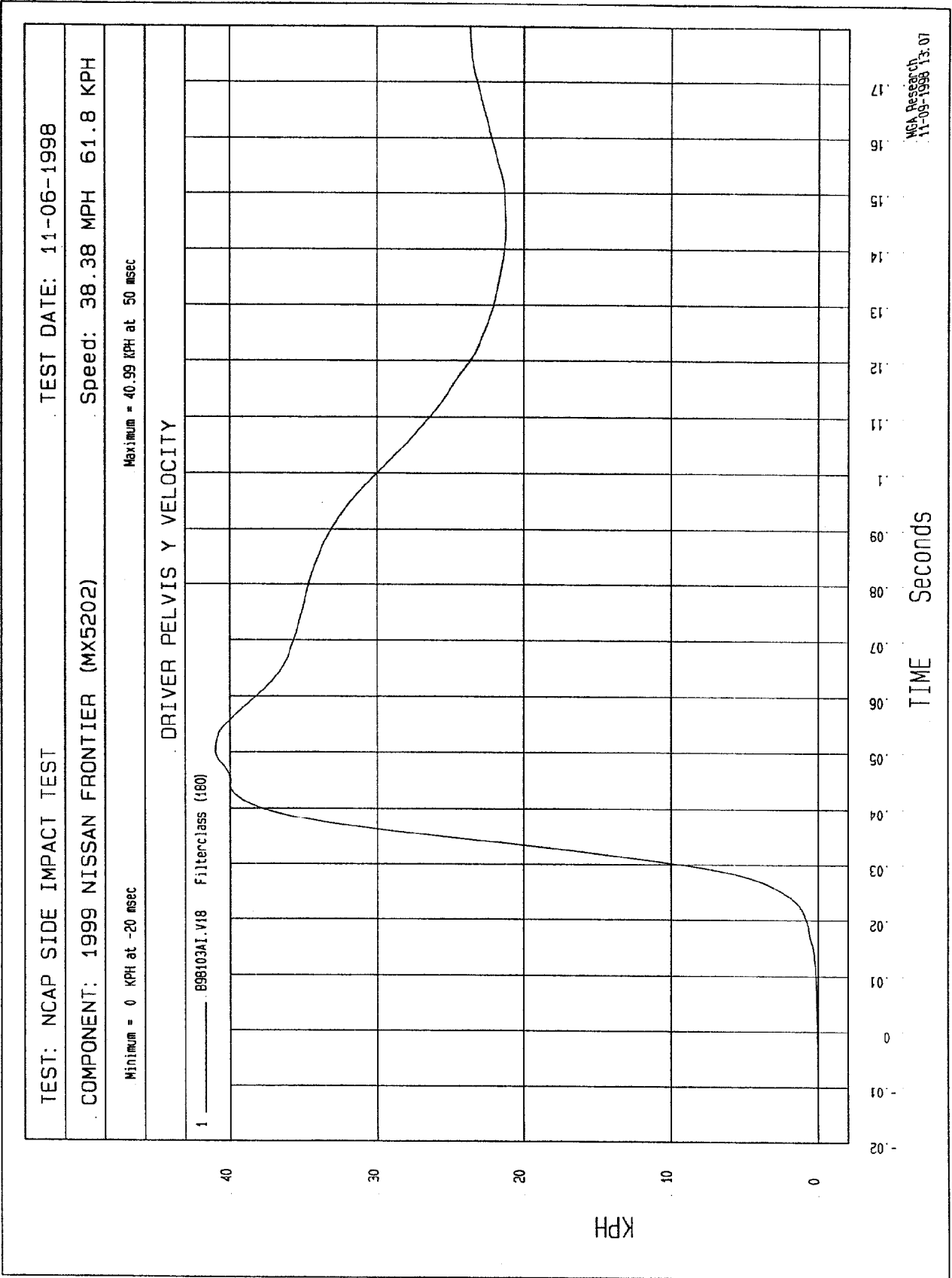
Speed: 38.38 MPH 61.8 KPH

Minimum = -12.5 G'S at 58 msec

Maximum = 104.81 G'S at 35 msec

DRIVER PELVIS Y ACCELERATION



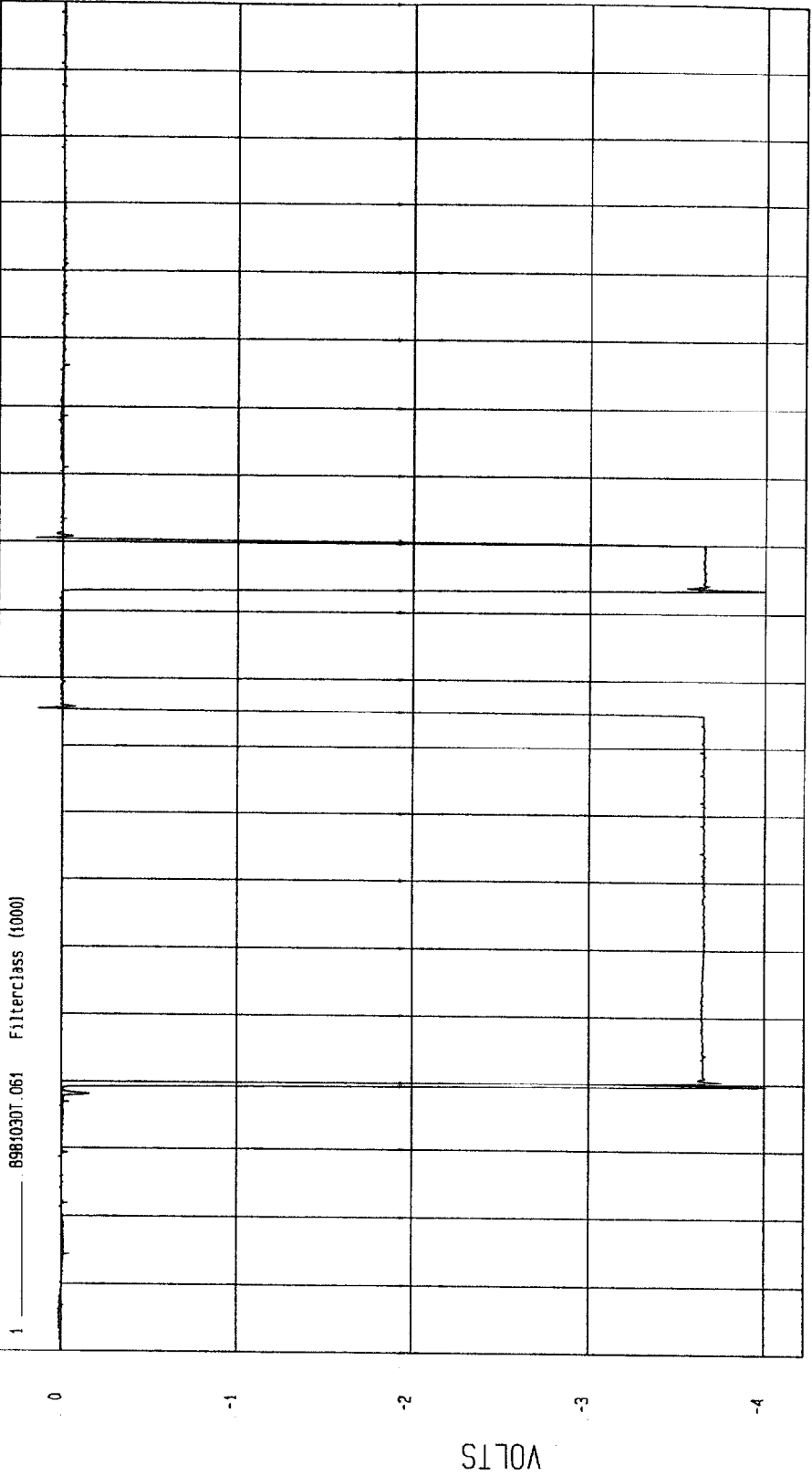


TEST: NCAP SIDE IMPACT TEST TEST DATE: 11-06-1998

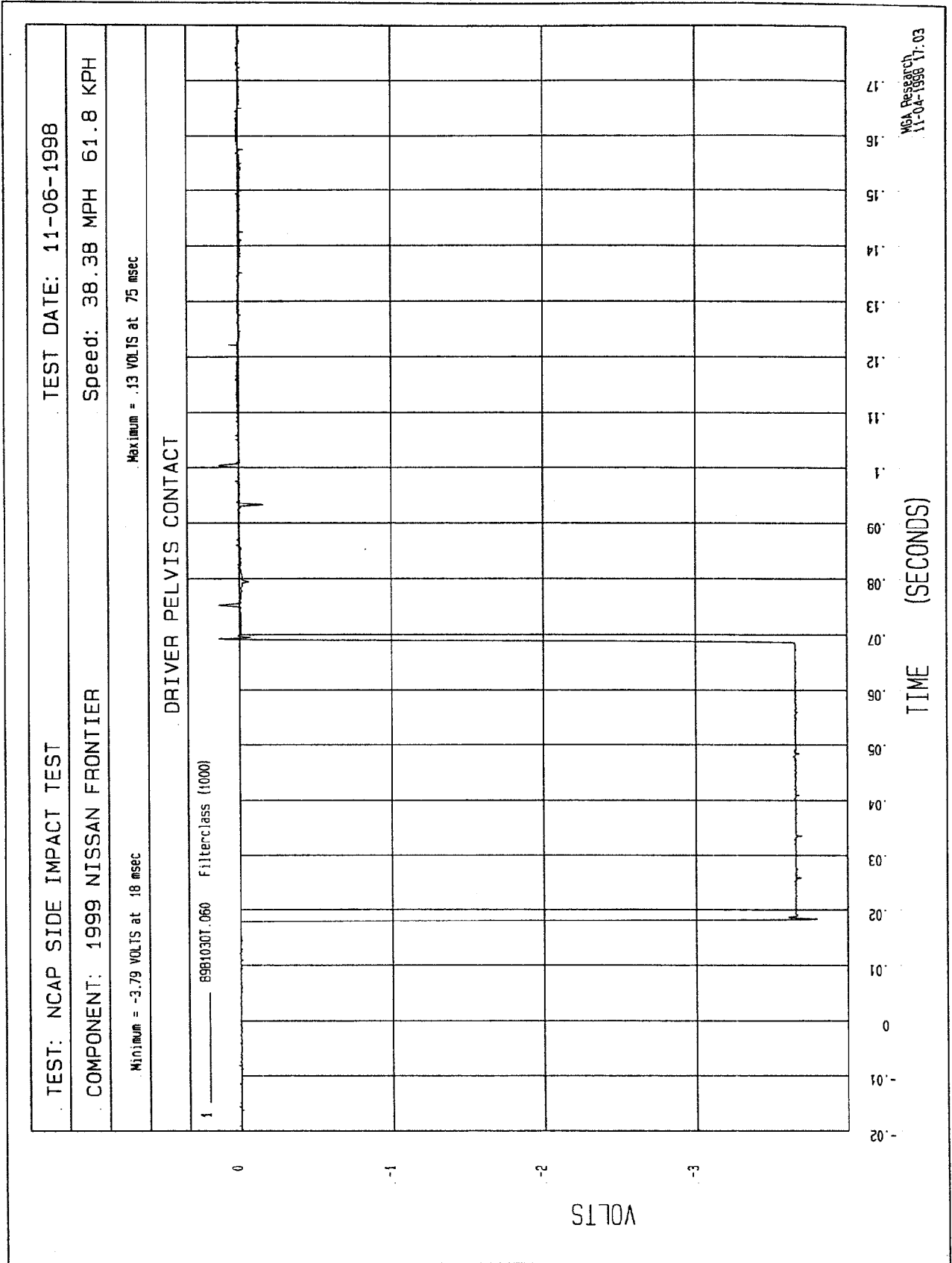
COMPONENT: 1999 NISSAN FRONTIER Speed: 38.38 MPH 61.8 KPH

Minimum = -4.01 VOLTS at 20 msec Maximum = .15 VOLTS at 100 msec

DRIVER SHOULDER CONTACT



MCA Research
11-04-1998 17:04



LEFT SILL AT FRONT SEAT Y ACCELERATION VS. TIME

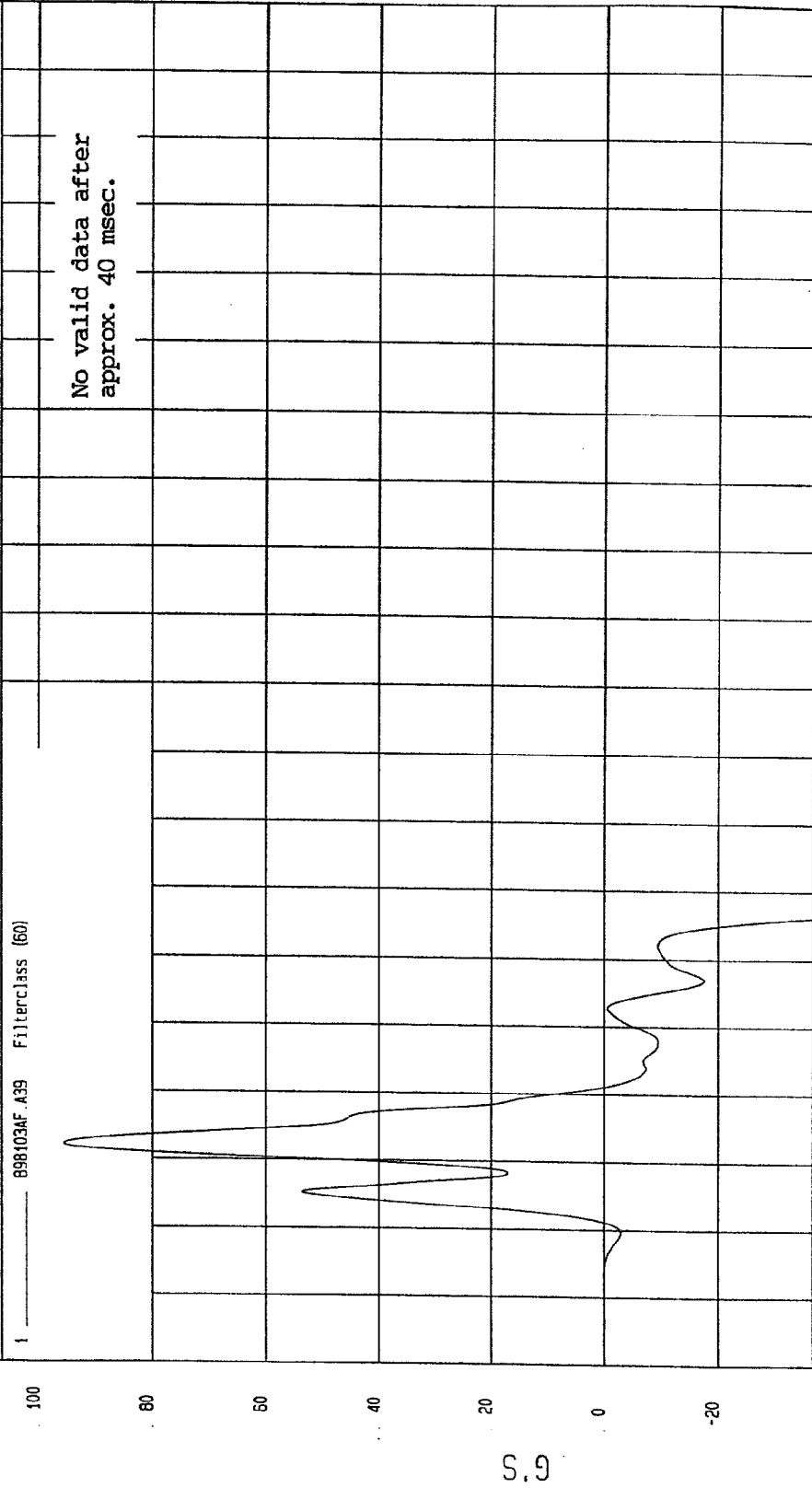
NO VALID DATA COLLECTED

TEST: NCAP SIDE IMPACT TEST TEST DATE: 11-06-1998

COMPONENT: 1999 NISSAN FRONTIER (MX5202) Speed: 38.38 MPH 61.8 KPH

Minimum = -615.14 G'S at 145 msec Maximum = 95.78 G'S at 12 msec

LEFT SILL AT REAR SEAT Y ACCELERATION



TIME (SECONDS)

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

100 80 60 40 20 0 -20

G.S.

MCA Research
11-09-1998 13:18

TEST: NCAP SIDE IMPACT TEST

TEST DATE: 11-06-1998

Speed: 38.38 MPH 61.8 KPH

COMPONENT: 1999 NISSAN FRONTIER (MX5202)

Maximum = 26.77 KPH at 18 msec

Minimum = -574.08 KPH at 200 msec

LEFT SILL AT REAR SEAT Y VELOCITY

1 898103M.V39 Filterclass (180)

No valid data after
approx. 40 msec.

KPH

TIME Seconds

MCA Research
11-09-1998 13.19

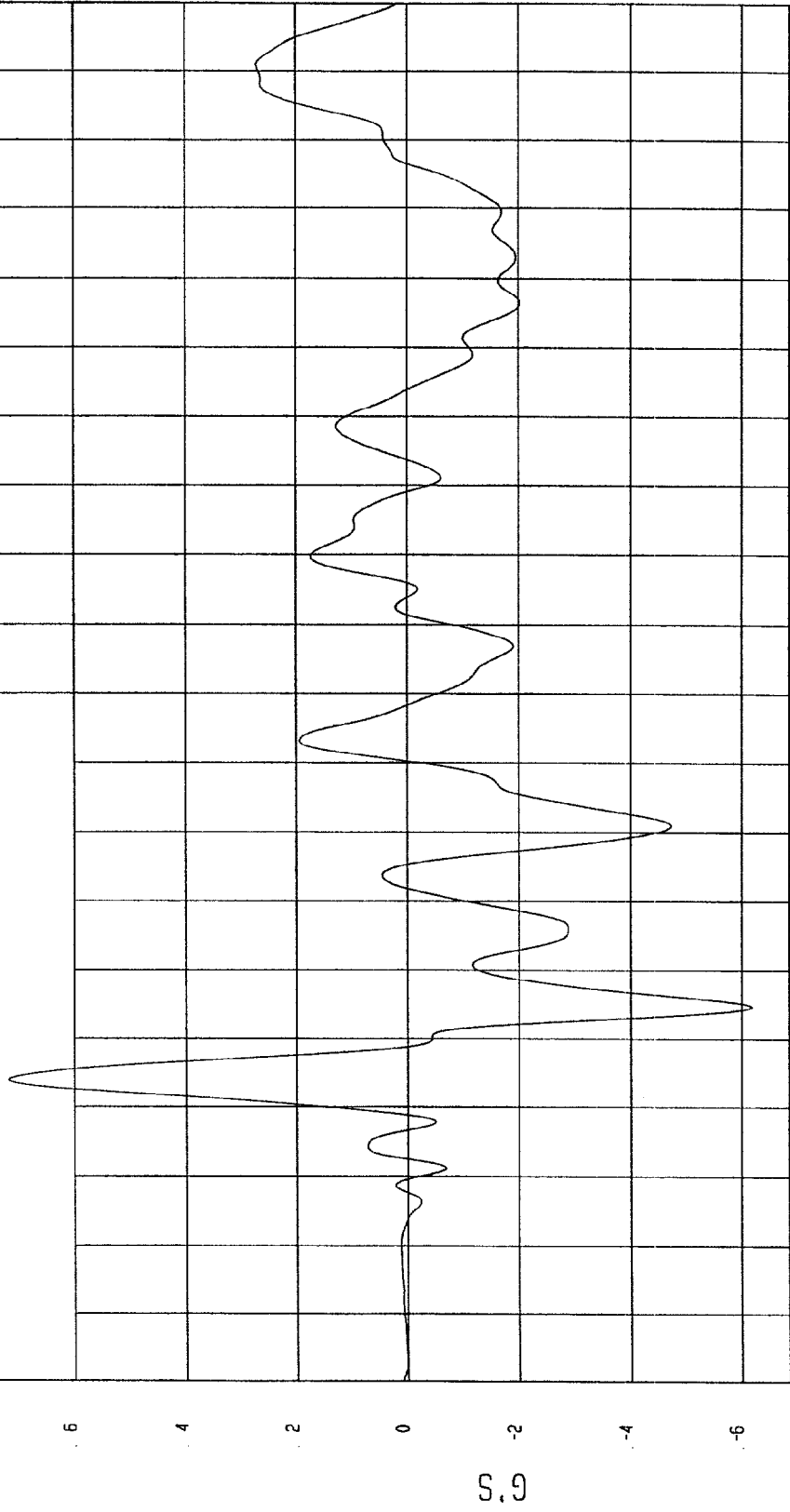
TEST: NCAP SIDE IMPACT TEST TEST DATE: 11-06-1998

COMPONENT: 1999 NISSAN FRONTIER (MX5202) Speed: 38.38 MPH 61.8 KPH

Minimum = -6.18 G'S at 35 msec Maximum = 7.18 G'S at 24 msec

RIGHT SILL AT FRONT SEAT X ACCELERATION

1 ——— B98103AF.A32 Filterclass (60)



WCA Research
11-05-1998 12.18

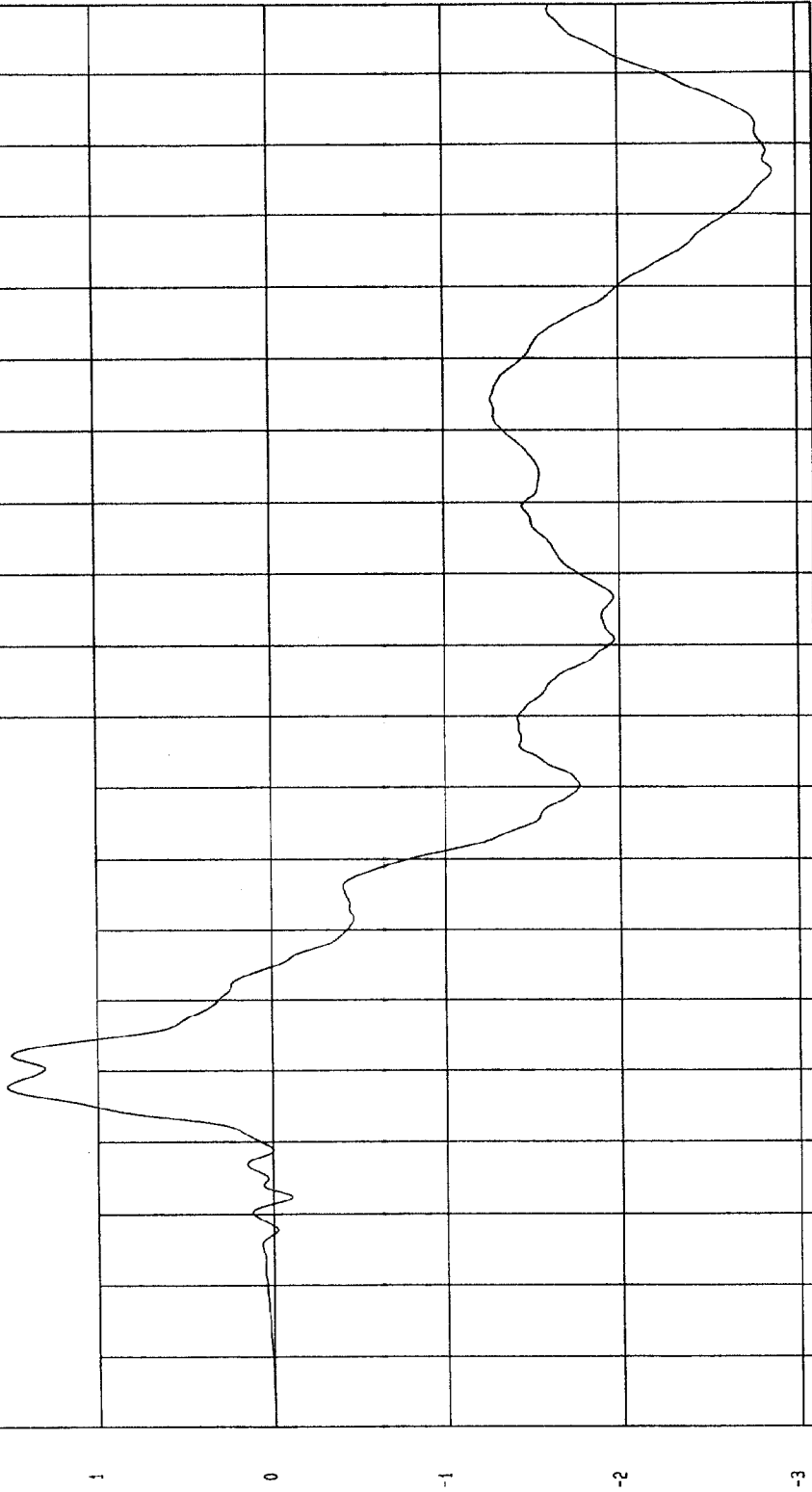
TEST: NCAP SIDE IMPACT TEST TEST DATE: 11-06-1998

COMPONENT: 1999 NISSAN FRONTIER (MX5202) Speed: 38.38 MPH 61.8 KPH

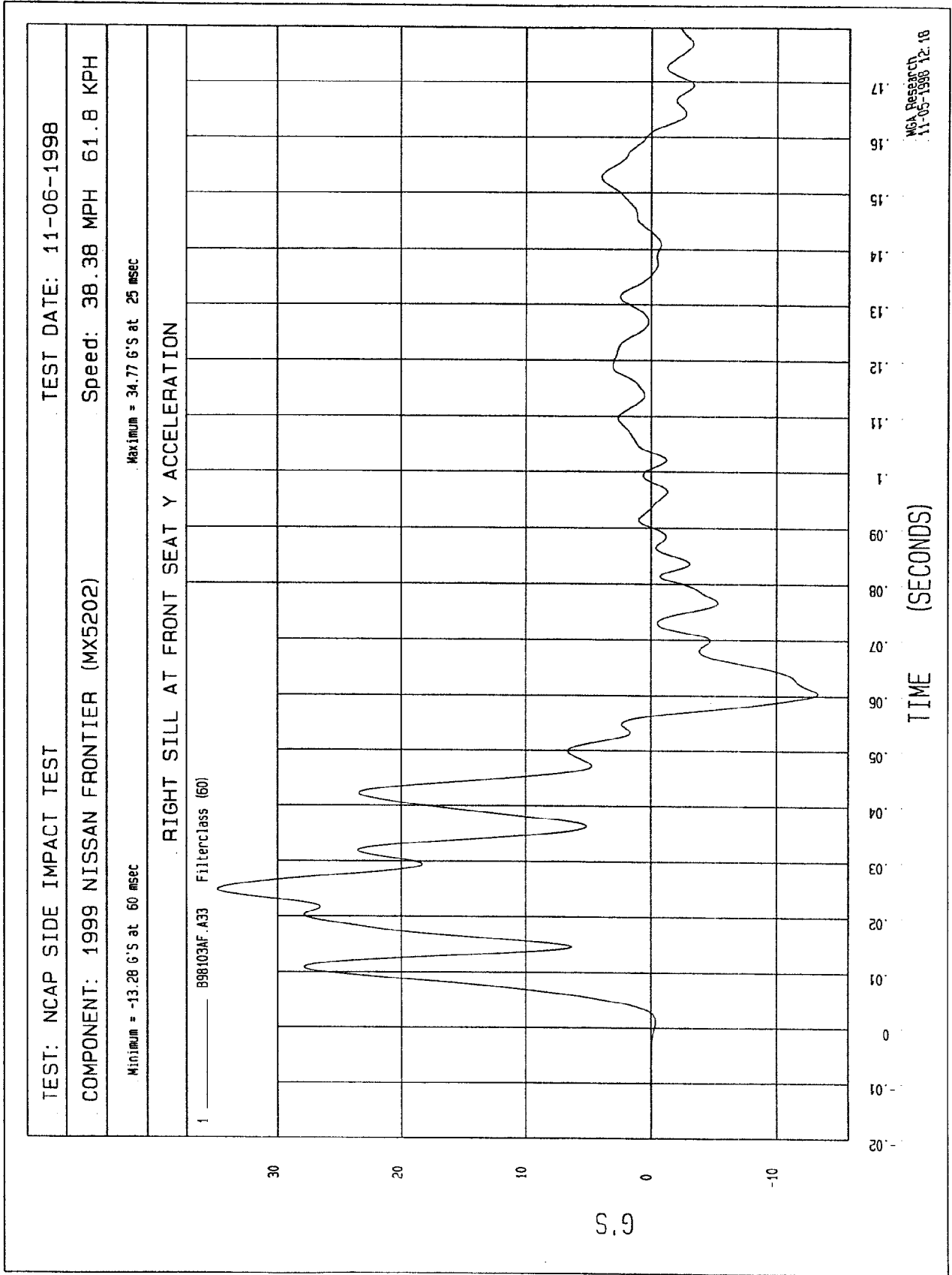
Minimum = -2.87 KPH at 156 msec Maximum = 1.51 KPH at 28 msec

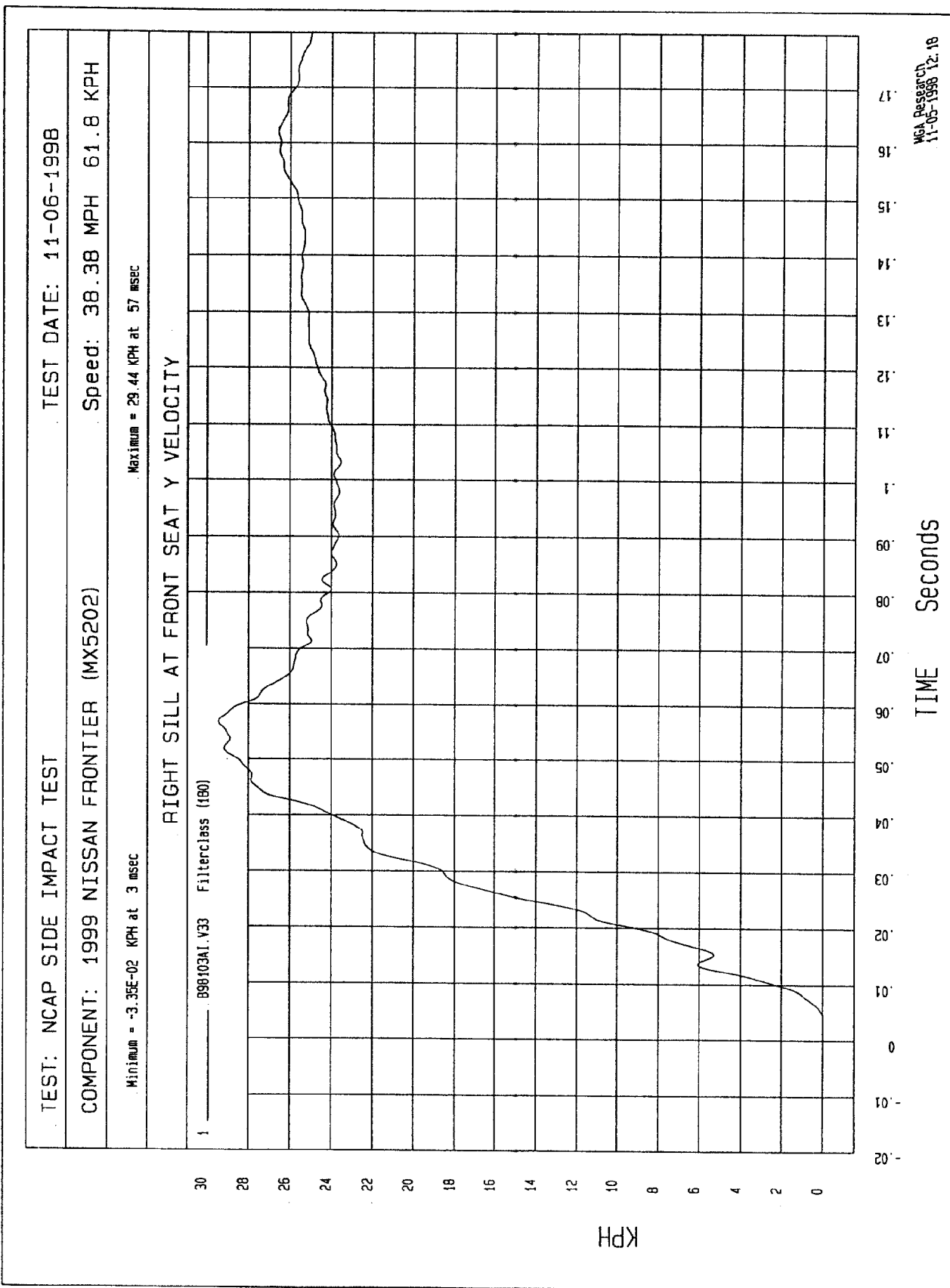
RIGHT SILL AT FRONT SEAT X VELOCITY

1 _____ B98103A1.V32 Filterclass (180)

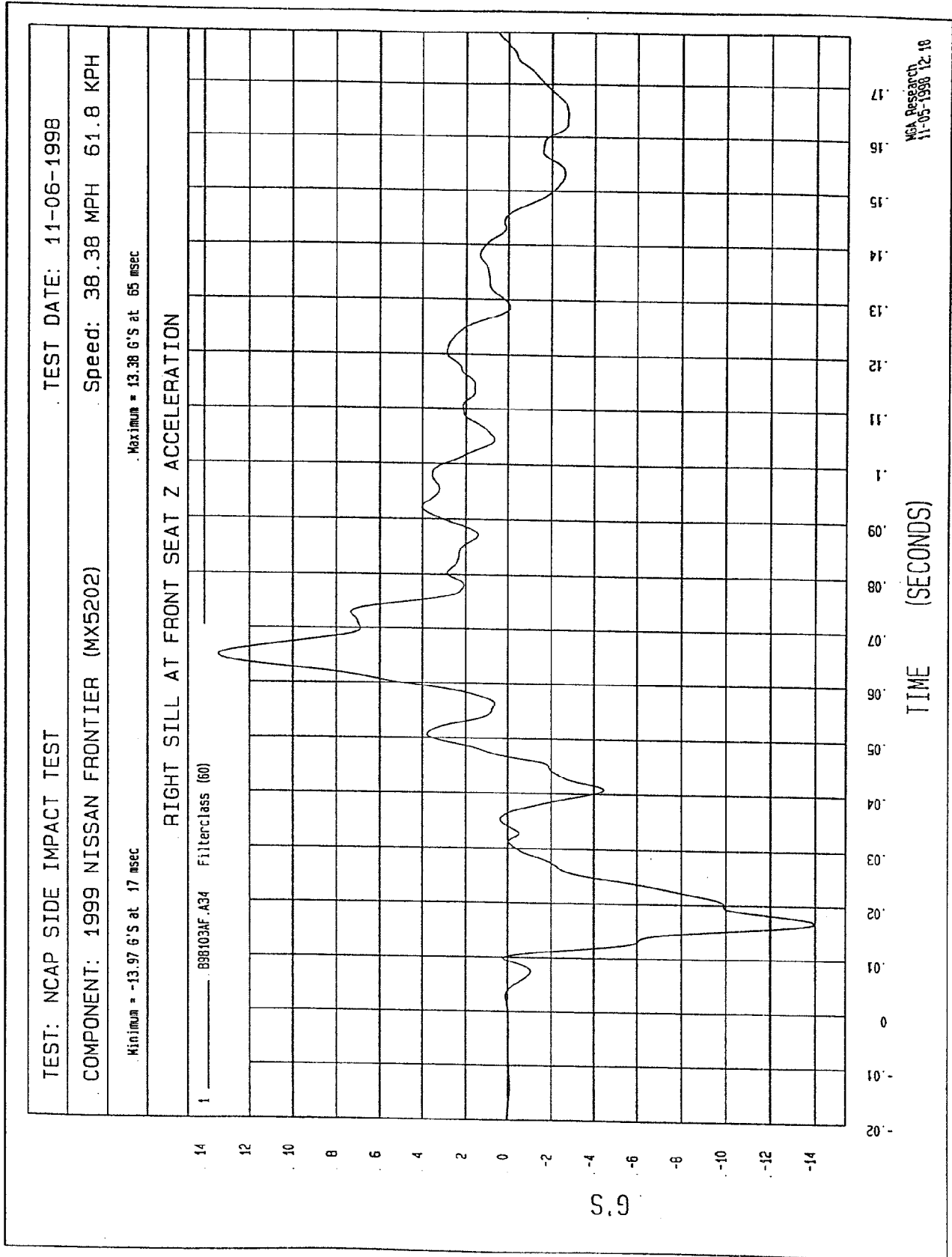


MSA Research
11-05-1998 12:18





MCA Research
11-05-1998 12:18



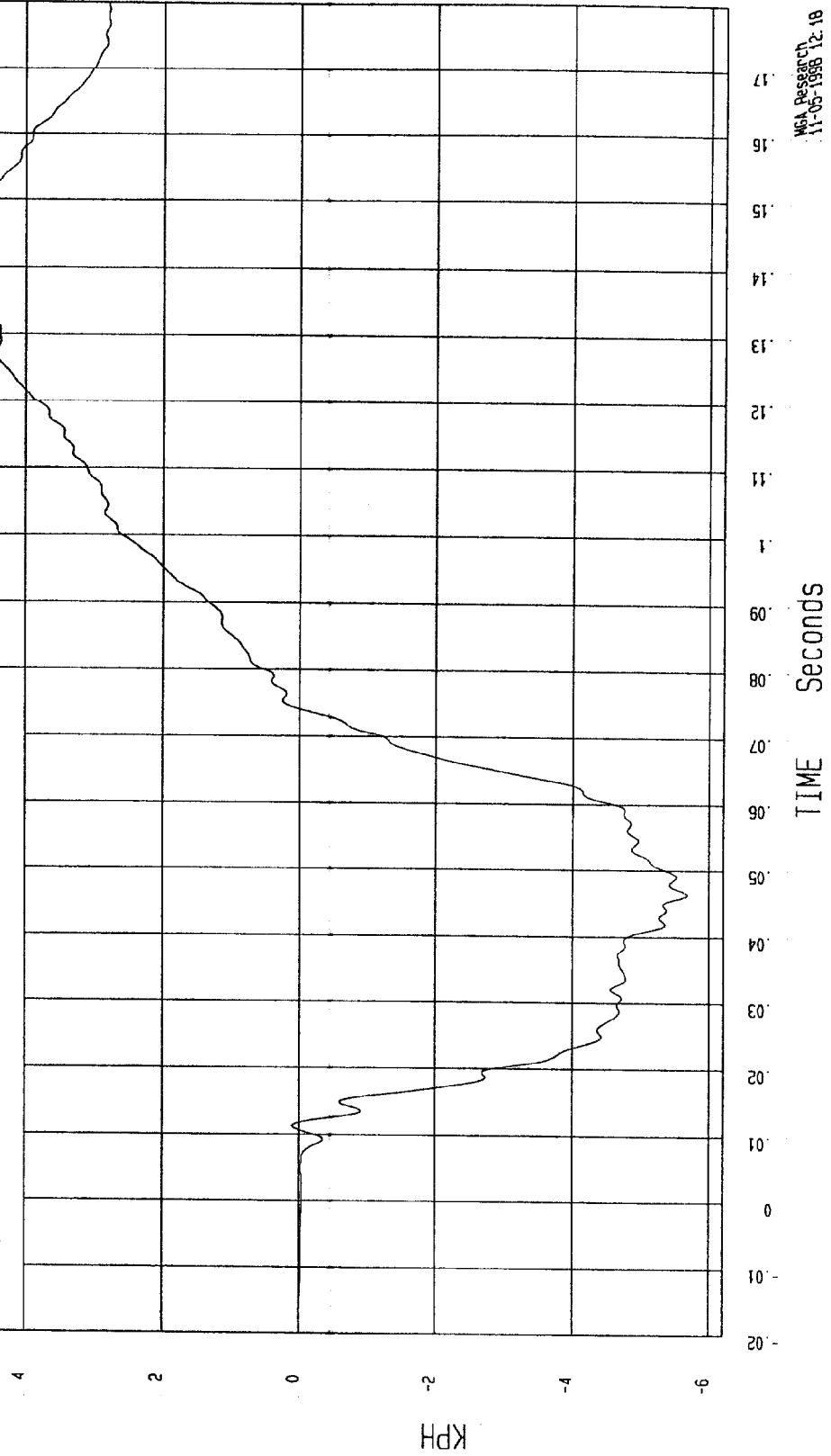
TEST: NCAP SIDE IMPACT TEST TEST DATE: 11-06-1998

COMPONENT: 1999 NISSAN FRONTIER (MX5202) Speed: 38.38 MPH 61.8 KPH

Minimum = -5.68 KPH at 46 msec Maximum = 4.81 KPH at 142 msec

RIGHT SILL AT FRONT SEAT Z VELOCITY

1 ——— 898103A1.V34 Filterclass (180)



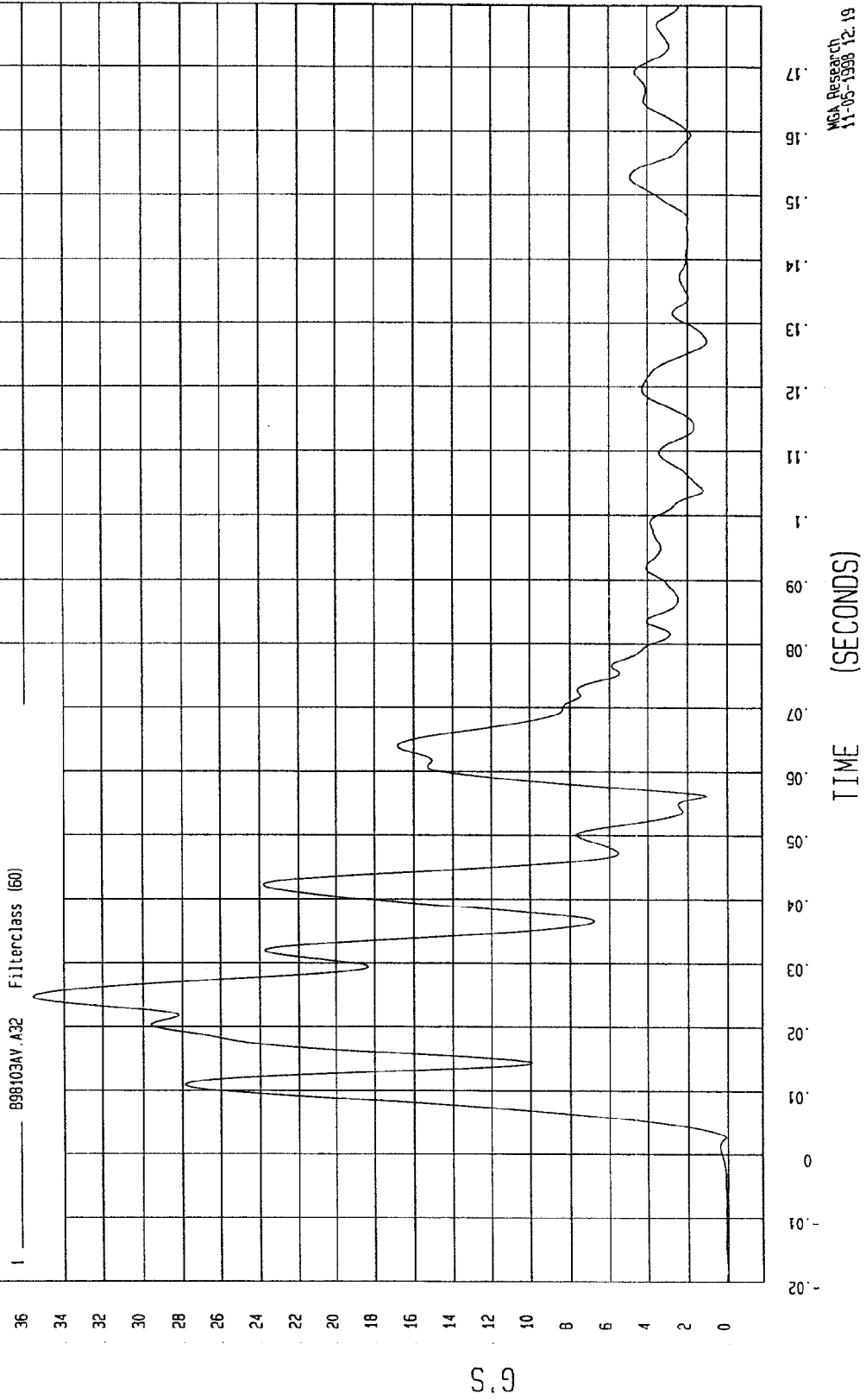
WCA Research
11-05-1998 12:18

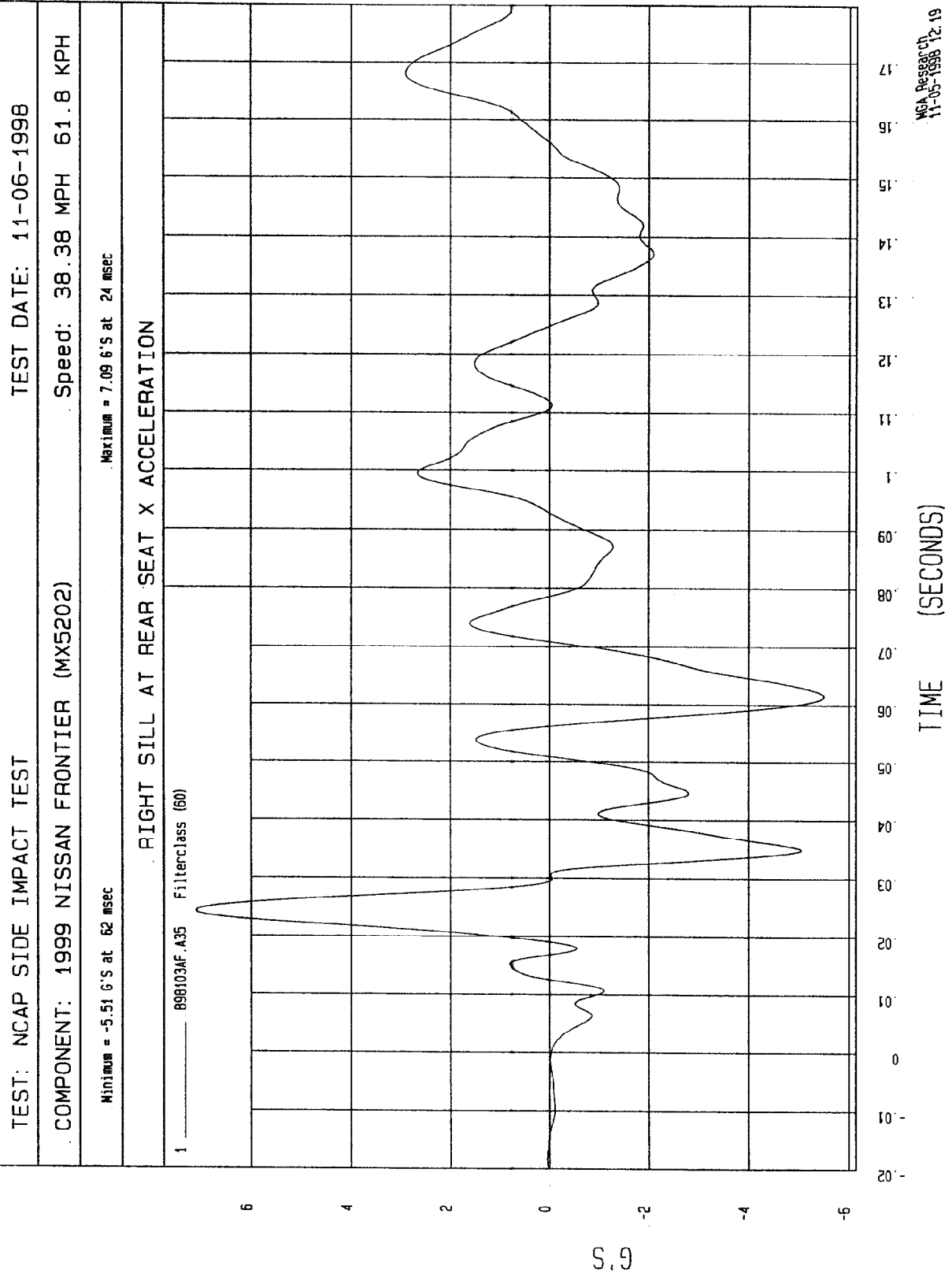
TEST: NCAP SIDE IMPACT TEST TEST DATE: 11-06-1998

COMPONENT: 1999 NISSAN FRONTIER (MX5202) Speed: 38.38 MPH 61.8 KPH

Minimum = 2.67E-02 G'S at -18 msec Maximum = 35.61 G'S at 25 msec

RIGHT SILL AT FRONT SEAT RESULTANT ACCELERATION





TEST: NCAP SIDE IMPACT TEST

TEST DATE: 11-06-1998

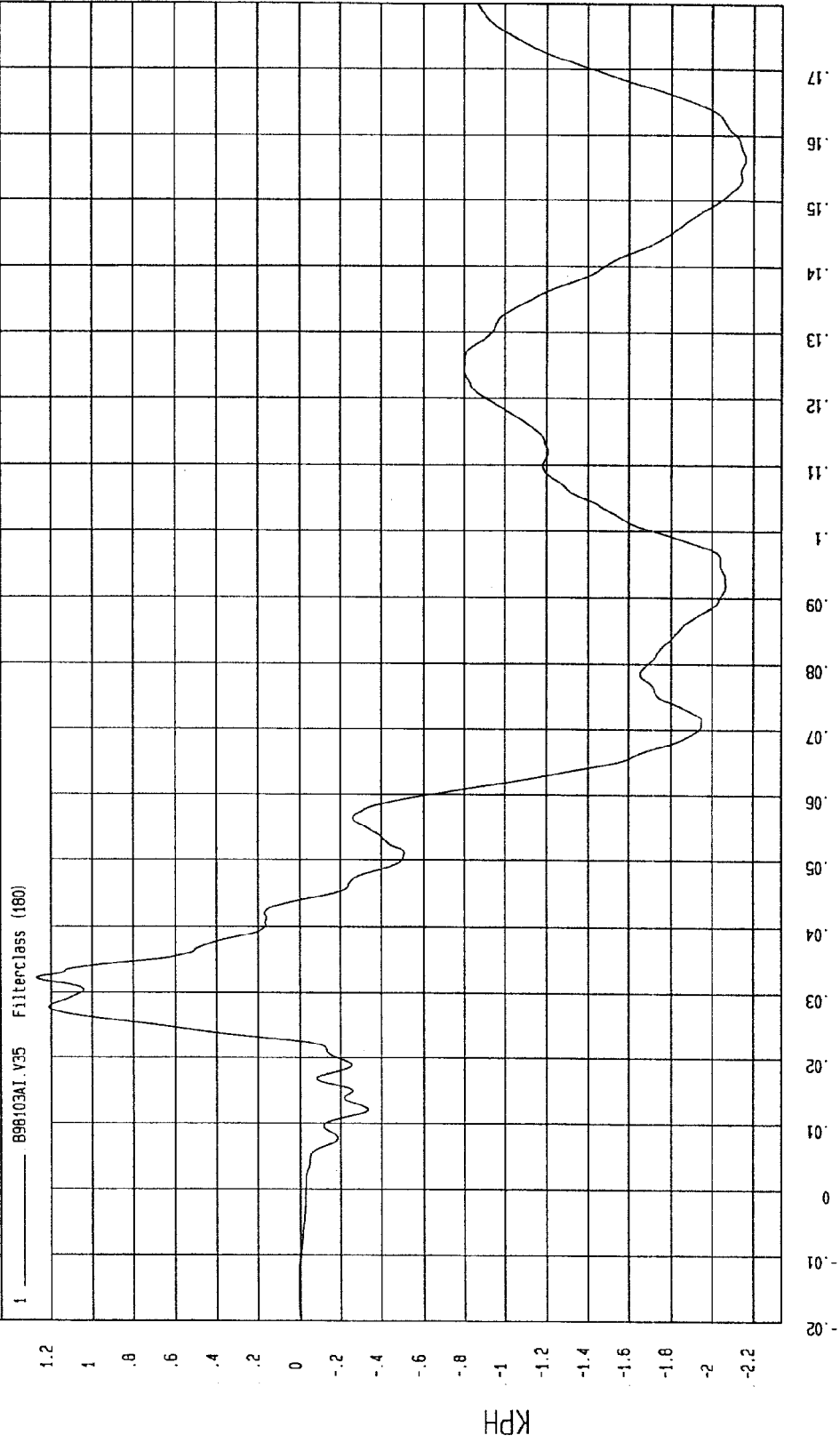
Speed: 38.38 MPH 61.8 KPH

COMPONENT: 1999 NISSAN FRONTIER (MX5202)

Maximum = 1.27 KPH at 32 msec

Minimum = -2.16 KPH at 156 msec

RIGHT SILL AT REAR SEAT X VELOCITY



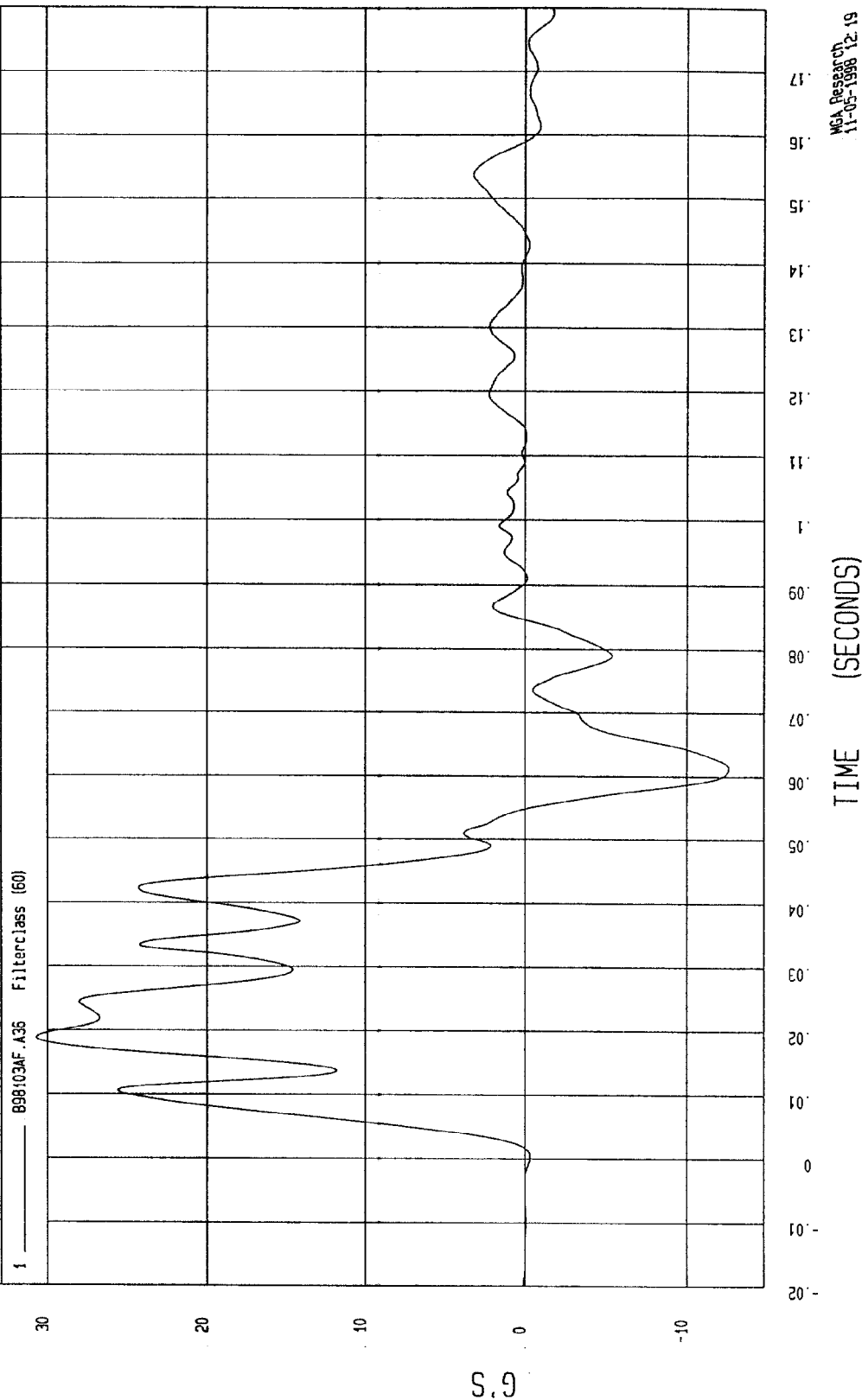
MSA Research
11-06-1998 12:19

TEST: NCAP SIDE IMPACT TEST TEST DATE: 11-06-1998

COMPONENT: 1999 NISSAN FRONTIER (MX5202) Speed: 38.38 MPH 61.8 KPH

Minimum = -12.67 G'S at 61 msec Maximum = 30.69 G'S at 19 msec

RIGHT SILL AT REAR SEAT Y ACCELERATION

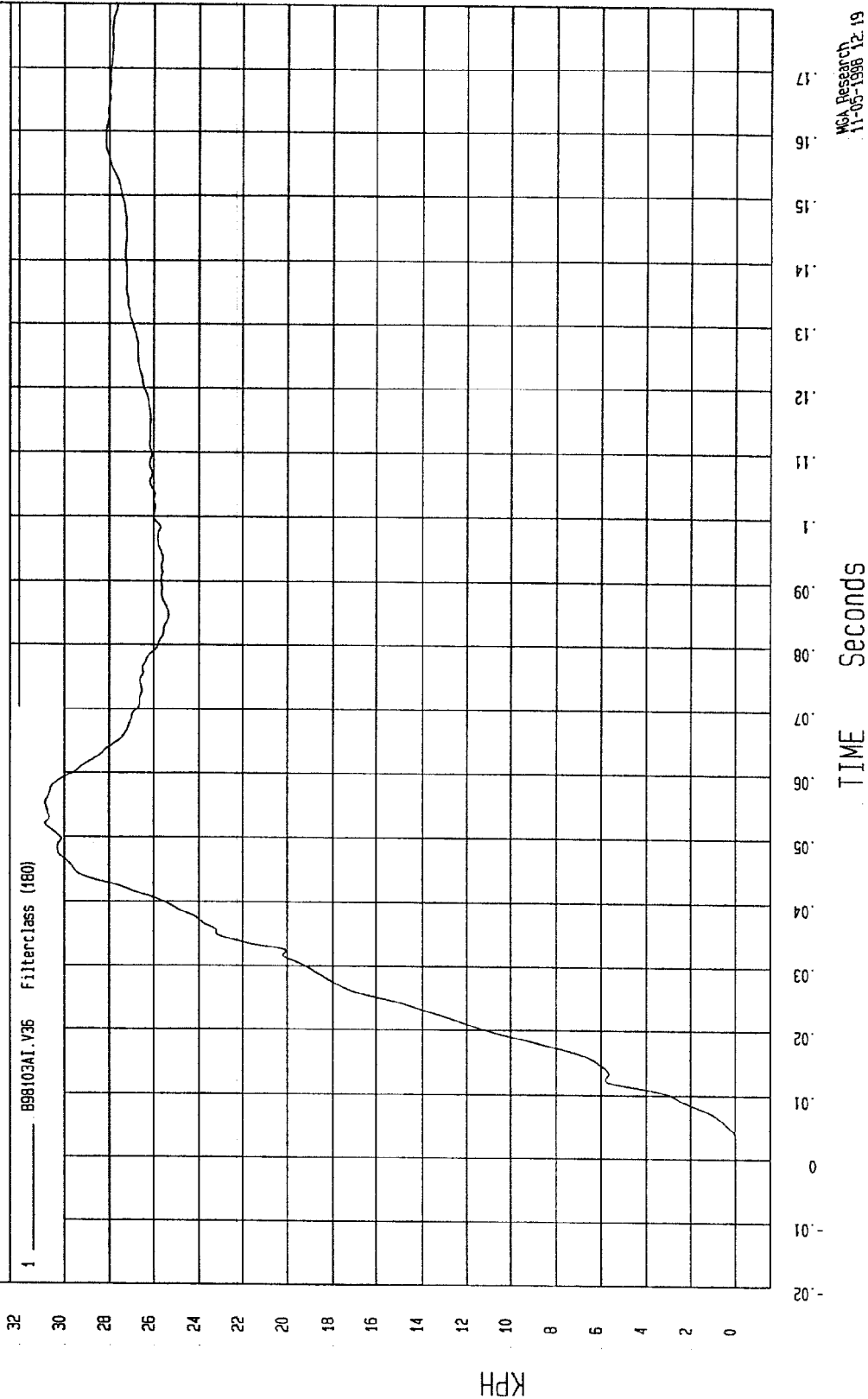


TEST: NCAP SIDE IMPACT TEST TEST DATE: 11-06-1998

COMPONENT: 1999 NISSAN FRONTIER (MX5202) Speed: 38.38 MPH 61.8 KPH

Minimum = -2.10E-02 KPH at -4 msec
Maximum = 30.85 KPH at 55 msec

RIGHT SILL AT REAR SEAT Y VELOCITY



TEST: NCAP SIDE IMPACT TEST

TEST DATE: 11-06-1998

SPEED: 38.38 MPH 61.8 KPH

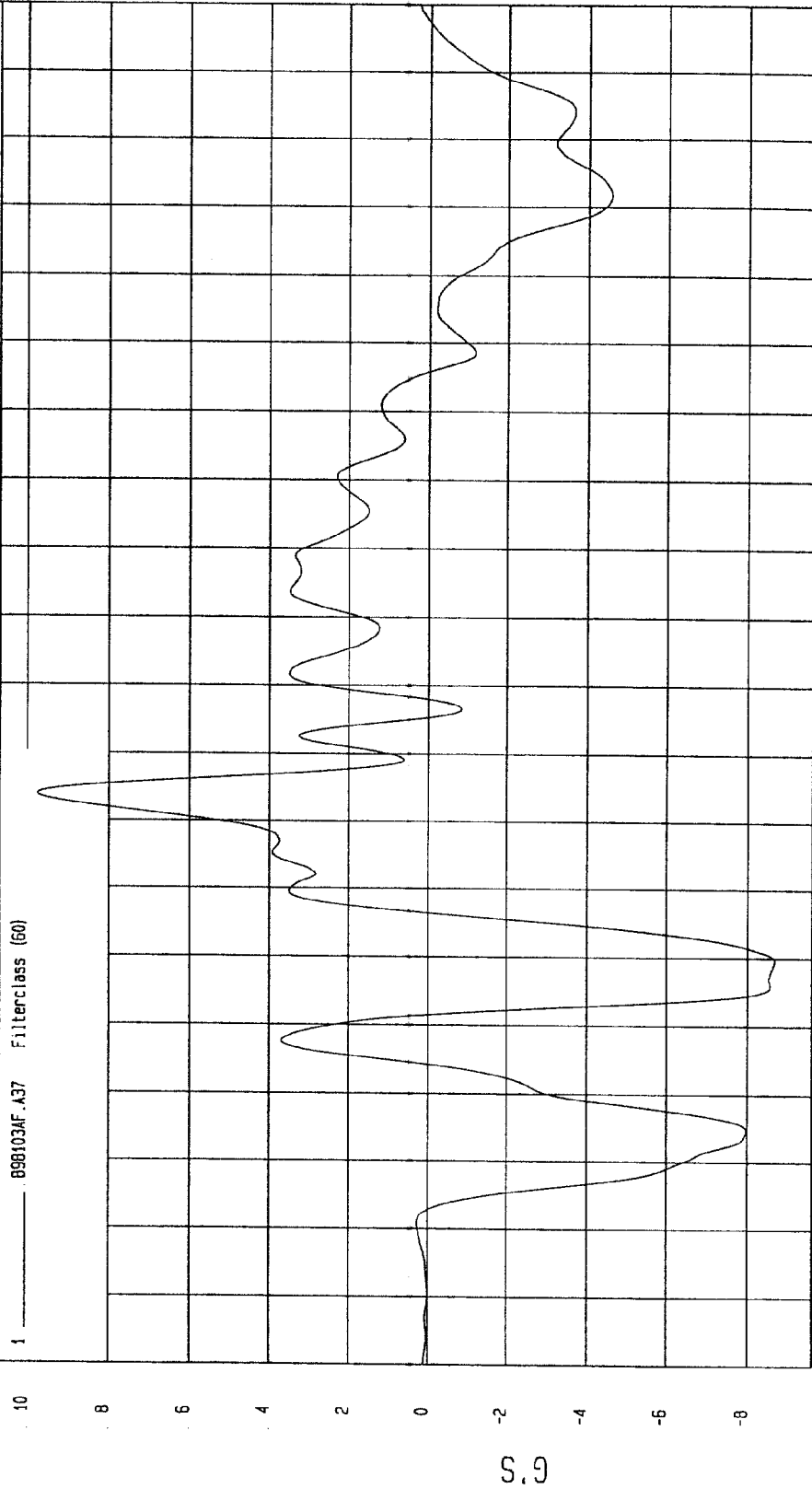
COMPONENT: 1999 NISSAN FRONTIER (MX5202)

Minimum = -8.7 G'S at 40 msec

Maximum = 9.76 G'S at 64 msec

RIGHT SILL AT REAR SEAT Z ACCELERATION

1 898103AF.A37 Filterclass (50)



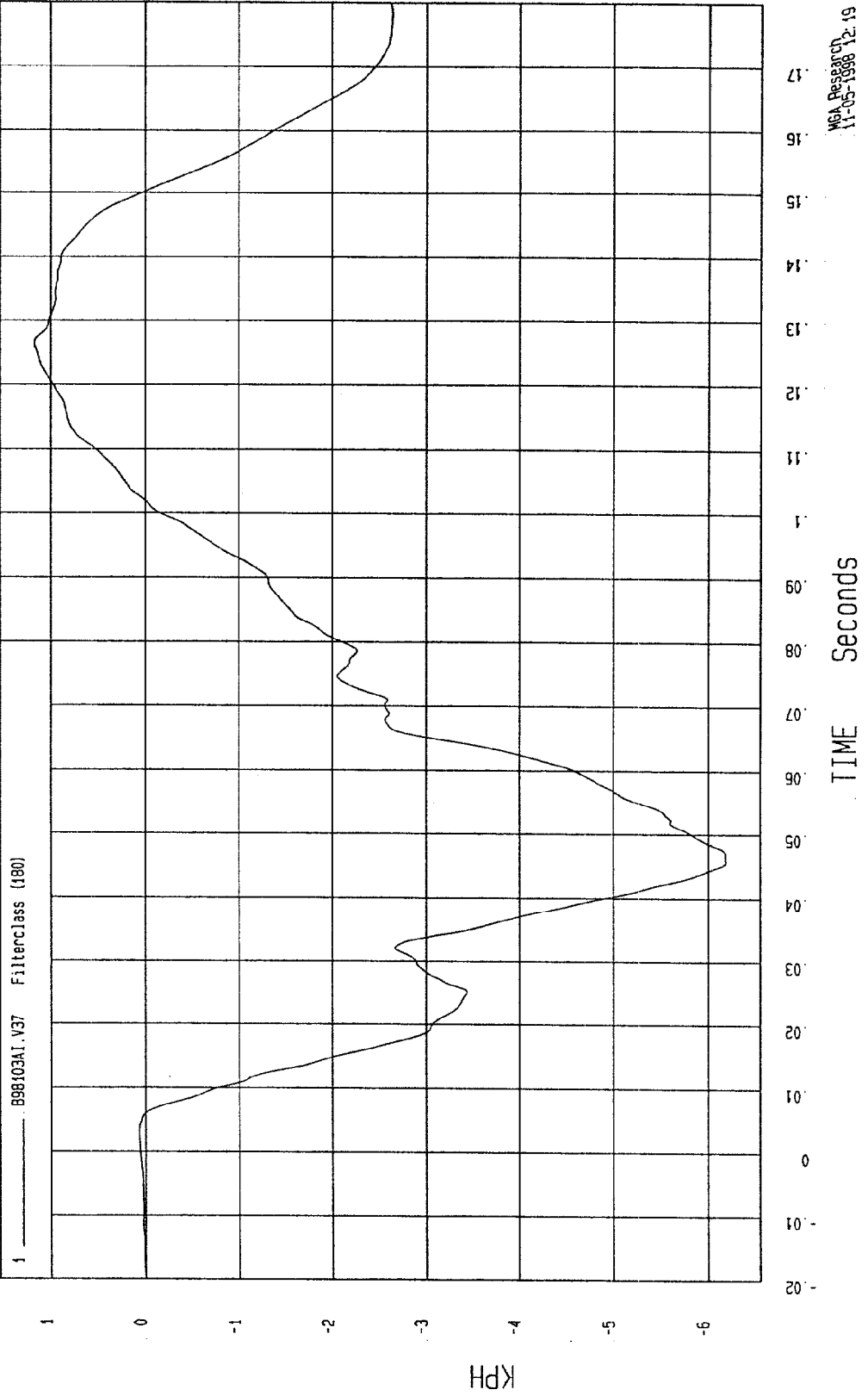
MCA Research
11-05-1998 12:19

TEST: NCAP SIDE IMPACT TEST TEST DATE: 11-06-1998

COMPONENT: 1999 NISSAN FRONTIER (MX5202) Speed: 38.38 MPH 61.8 KPH

Minimum = -6.19 KPH at 46 msec Maximum = 1.17 KPH at 126 msec

RIGHT SILL AT REAR SEAT Z VELOCITY

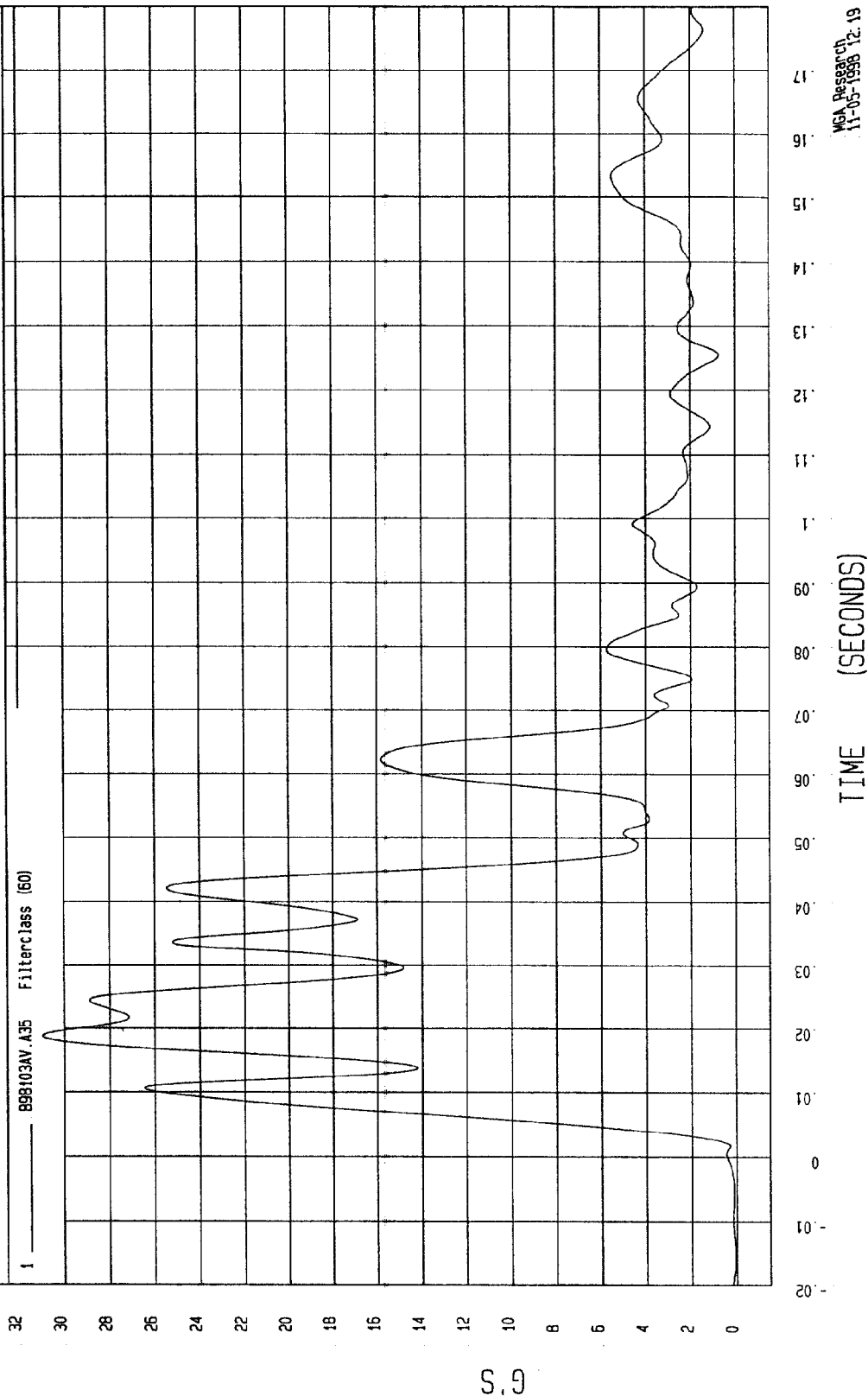


TEST: NCAP SIDE IMPACT TEST TEST DATE: 11-06-1998

COMPONENT: 1999 NISSAN FRONTIER (MX5202) Speed: 38.38 MPH 61.8 KPH

Minimum = .05 G'S at .16 msec Maximum = 30.97 G'S at .19 msec

RIGHT SILL AT REAR SEAT RESULTANT ACCELERATION



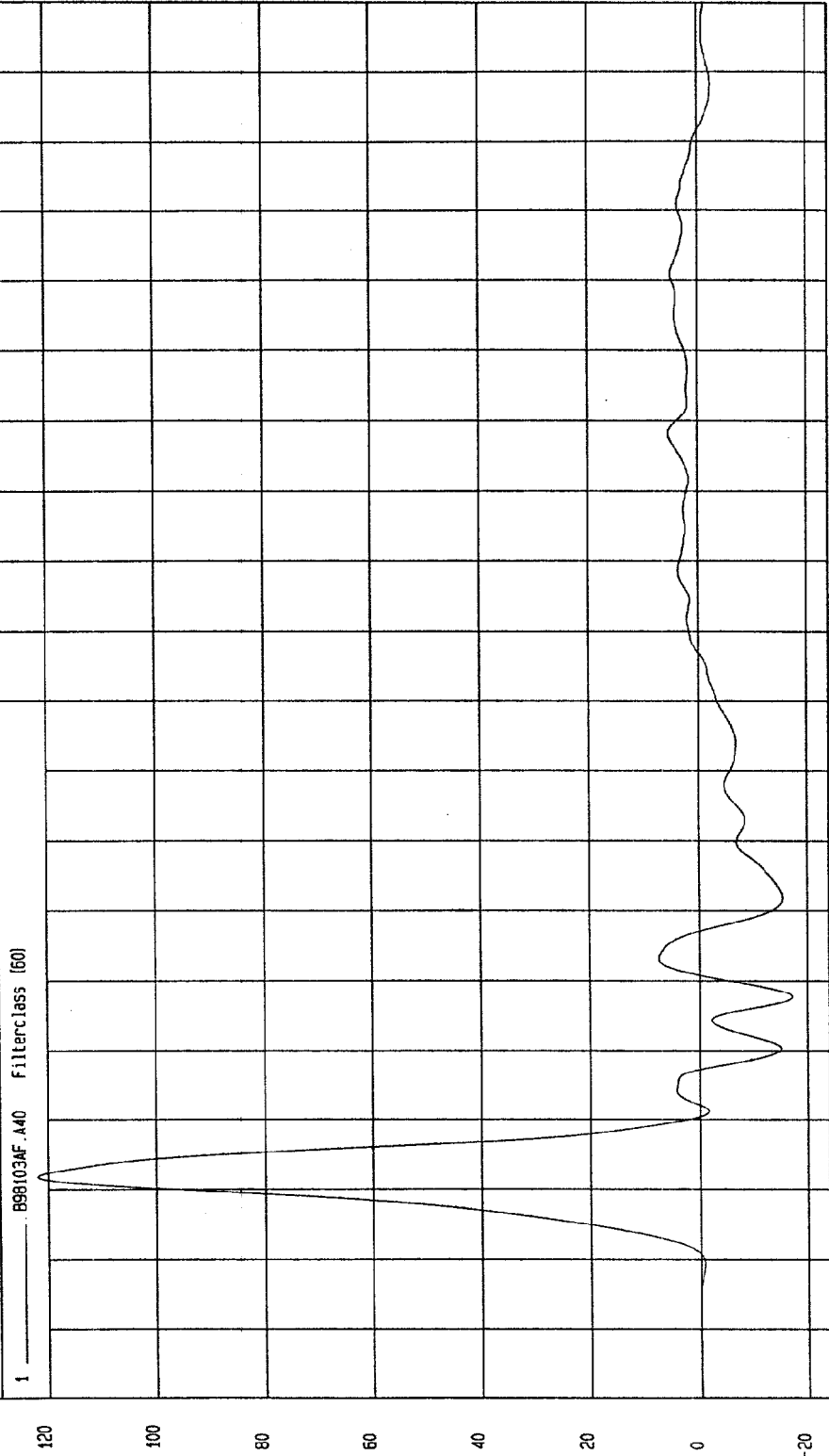
WCA Research
11-05-1998 12:19

TEST: NCAP SIDE IMPACT TEST TEST DATE: 11-06-1998

COMPONENT: 1999 NISSAN FRONTIER (MX5202) Speed: 38.38 MPH 61.8 KPH

Minimum = -17.1 G'S at 38 msec Maximum = 121.82 G'S at 12 msec

DRIVER SEAT TRACK Y ACCELERATION



NCA Research
11-05-1998 12:19

TIME (SECONDS)

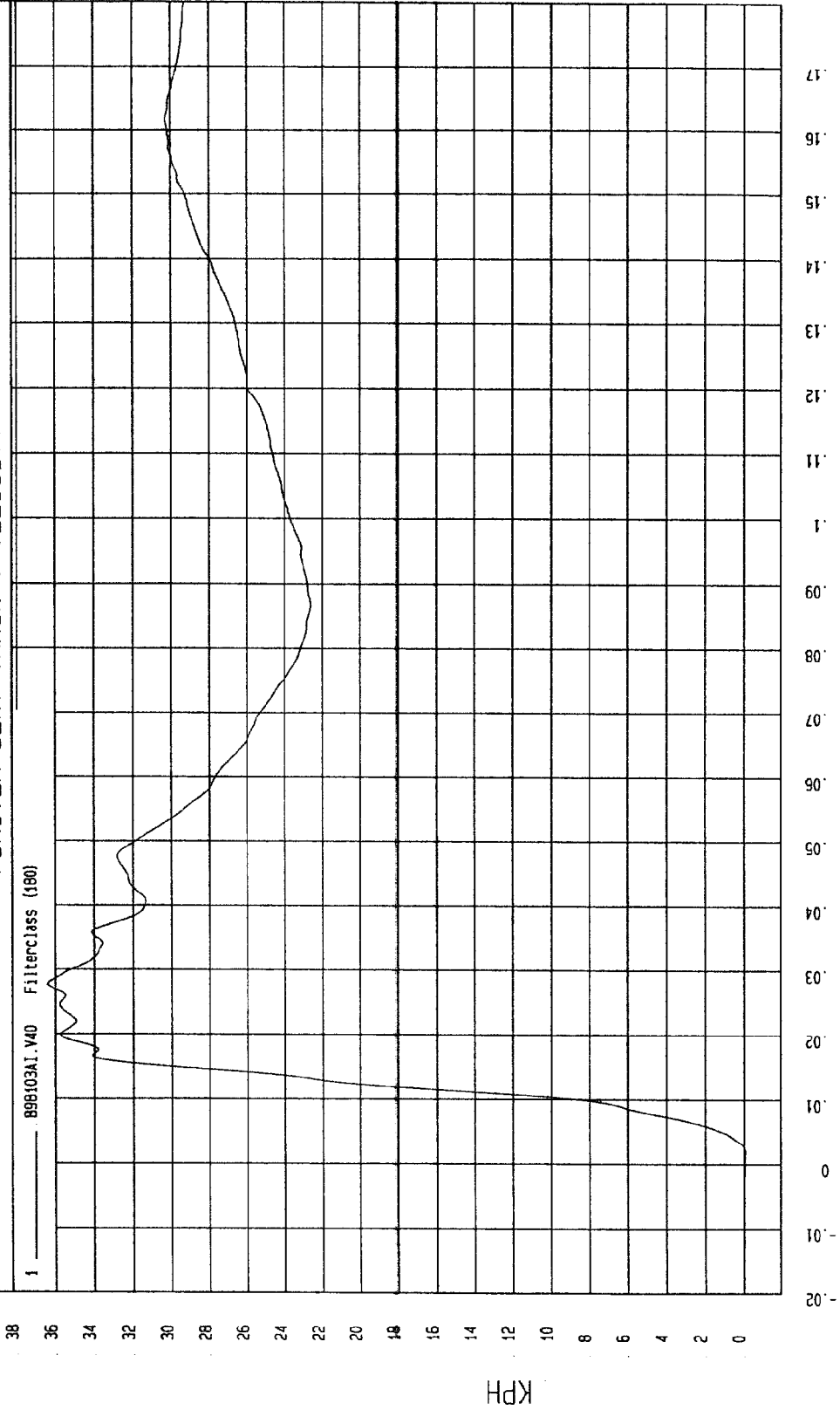
S.G

TEST: NCAP SIDE IMPACT TEST TEST DATE: 11-06-1998

COMPONENT: 1999 NISSAN FRONTIER (MX5202) Speed: 38.38 MPH 61.8 KPH

Minimum = -6.28E-02 KPH at 2 msec Maximum = 36.42 KPH at 28 msec

DRIVER SEAT TRACK Y VELOCITY



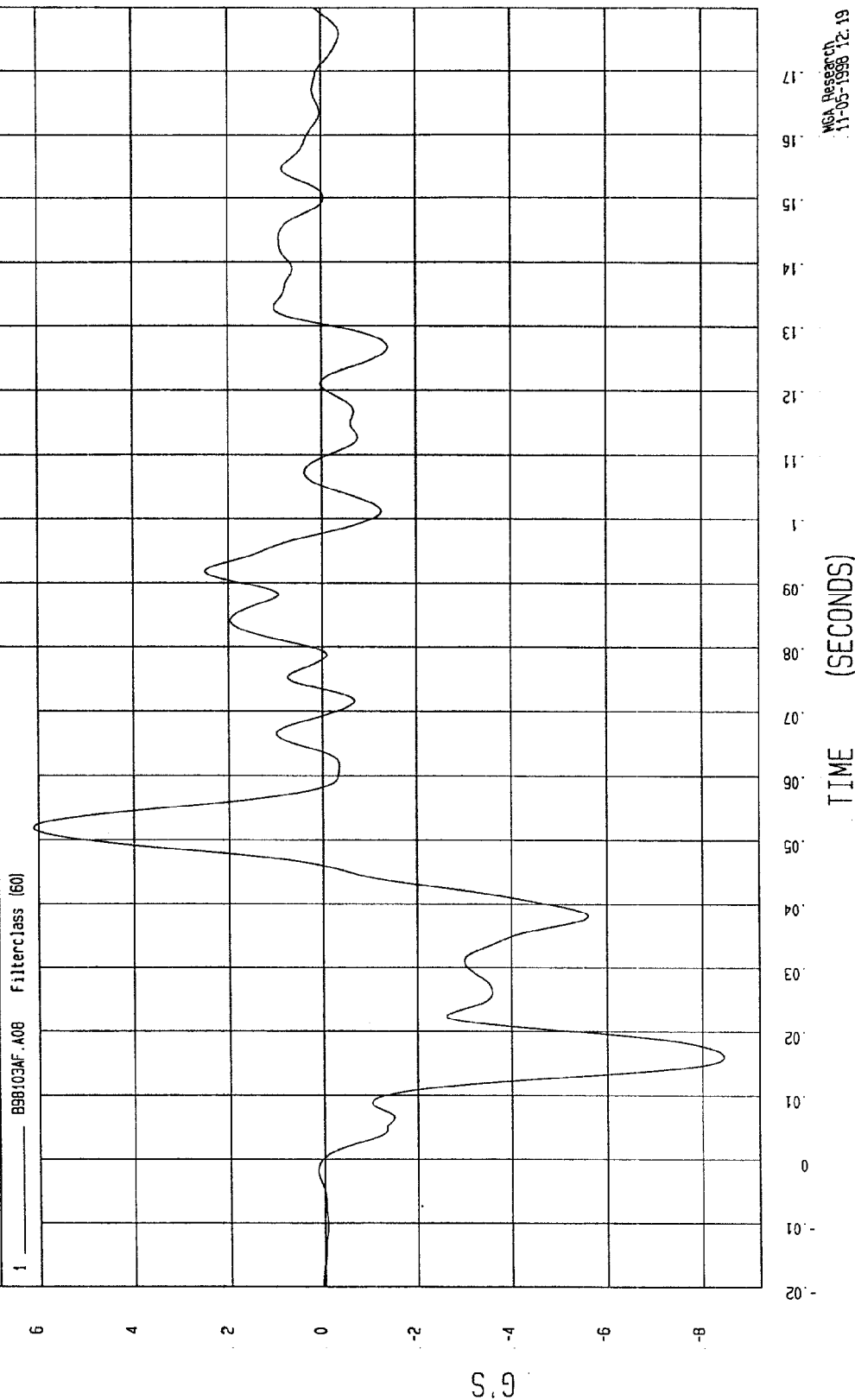
NSA Research
11-05-1998 12:19

TEST: NCAP SIDE IMPACT TEST TEST DATE: 11-06-1998

COMPONENT: 1999 NISSAN FRONTIER (MX5202) Speed: 38.38 MPH 61.8 KPH

Minimum = -8.46 G'S at 16 msec Maximum = 6.16 G'S at 52 msec

REAR FLOORPAN ABOVE AXLE X ACCELERATION

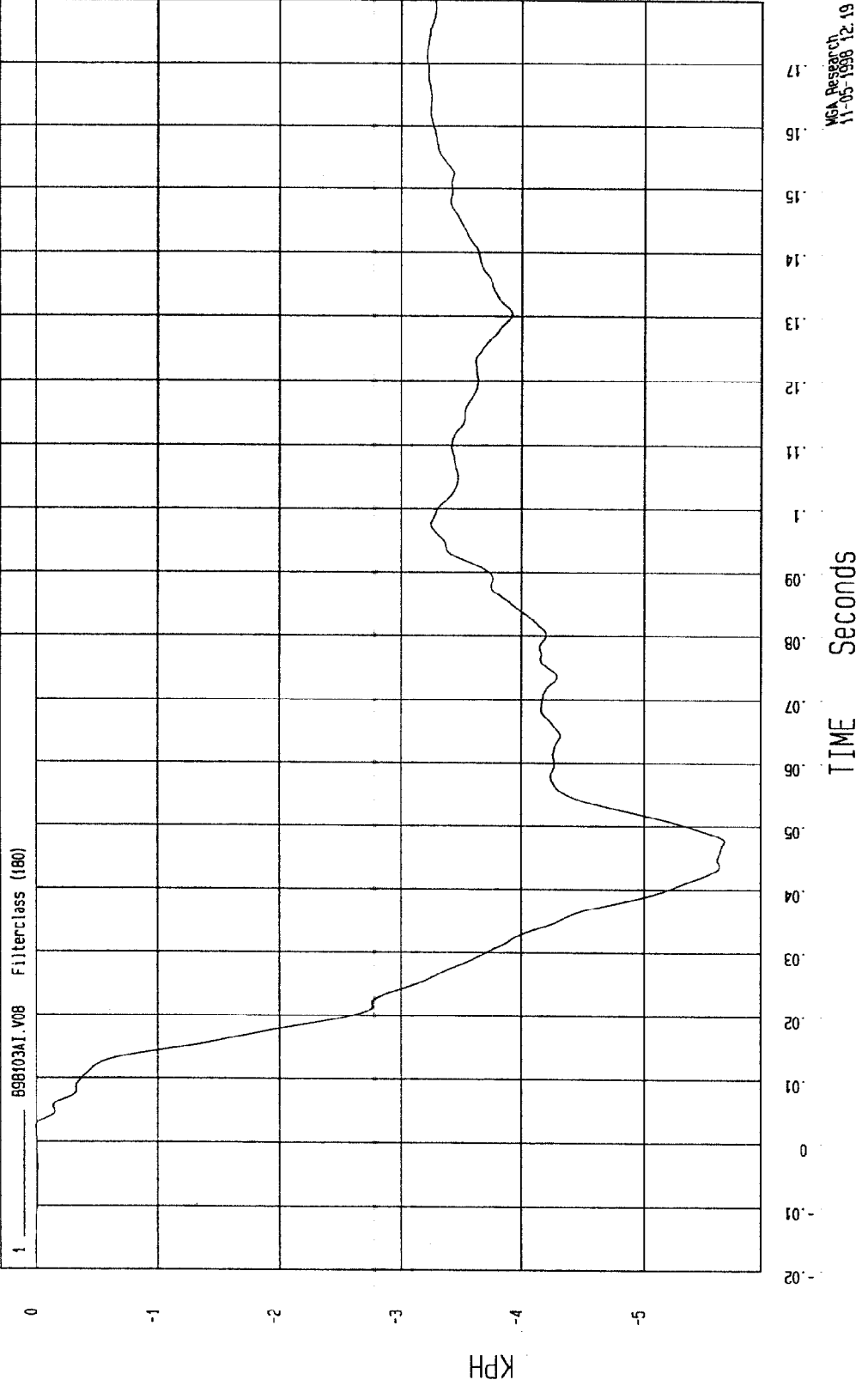


TEST: NCAP SIDE IMPACT TEST TEST DATE: 11-06-1998

COMPONENT: 1999 NISSAN FRONTIER (MX5202) Speed: 38.38 MPH 61.8 KPH

Minimum = -5.66 KPH at 48 msec Maximum = 4.48E-03 KPH at -17 msec

REAR FLOORPAN ABOVE AXLE X VELOCITY

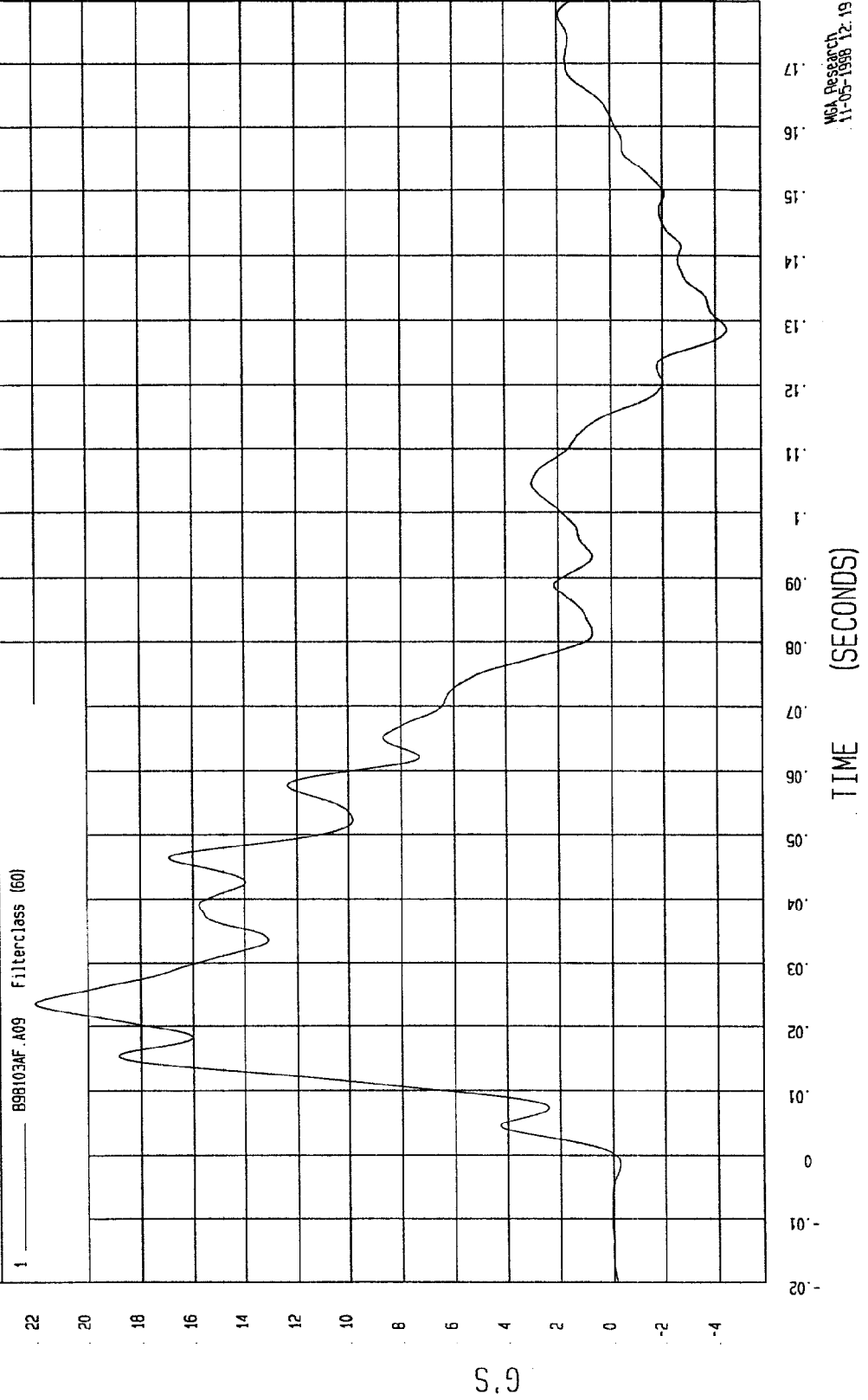


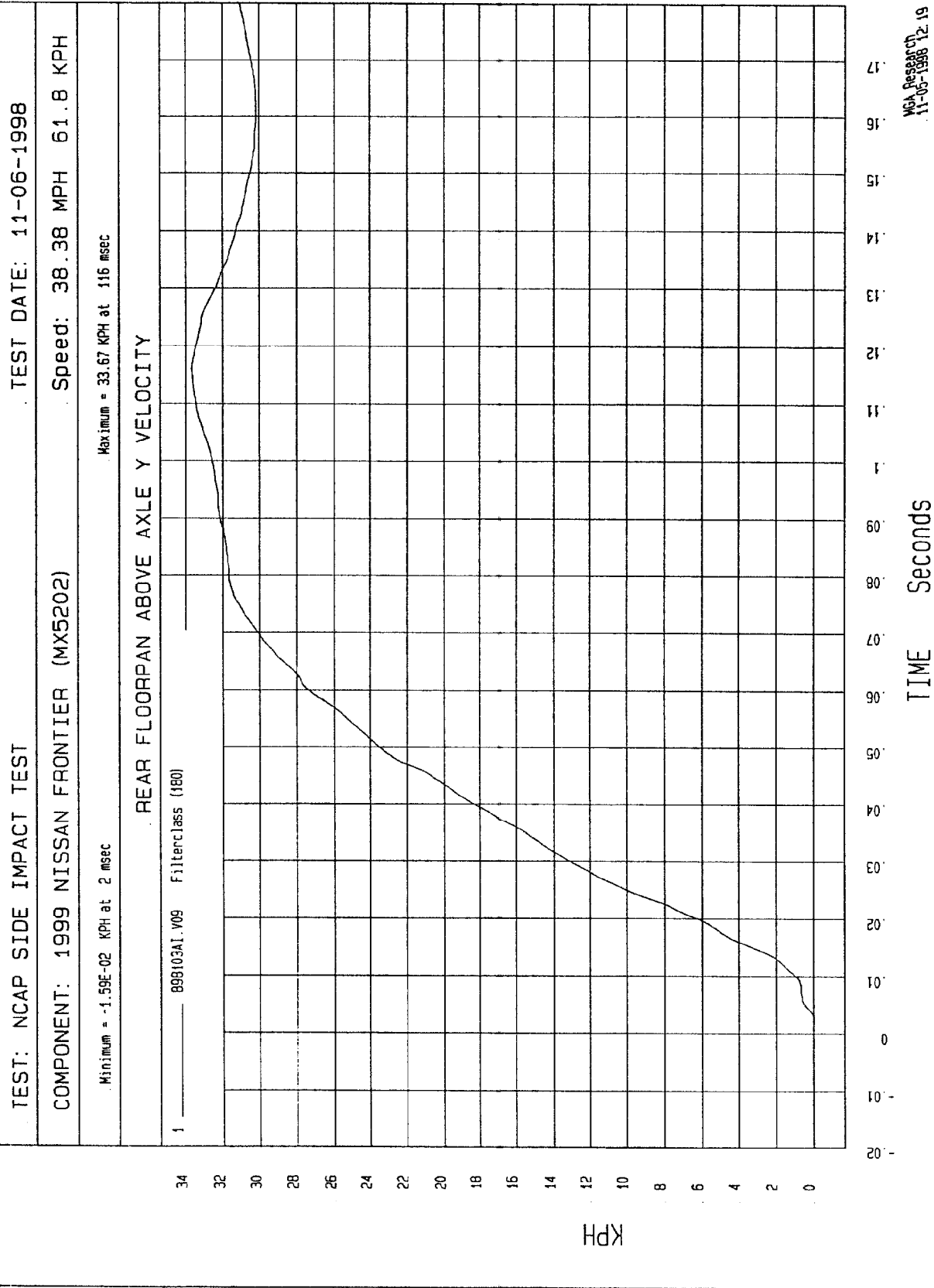
TEST: NCAP SIDE IMPACT TEST TEST DATE: 11-06-1998

COMPONENT: 1999 NISSAN FRONTIER (MX5202) Speed: 38.38 MPH 61.8 KPH

Minimum = -4.42 G'S at 129 msec Maximum = 22.6'S at 24 msec

REAR FLOORPAN ABOVE AXLE Y ACCELERATION





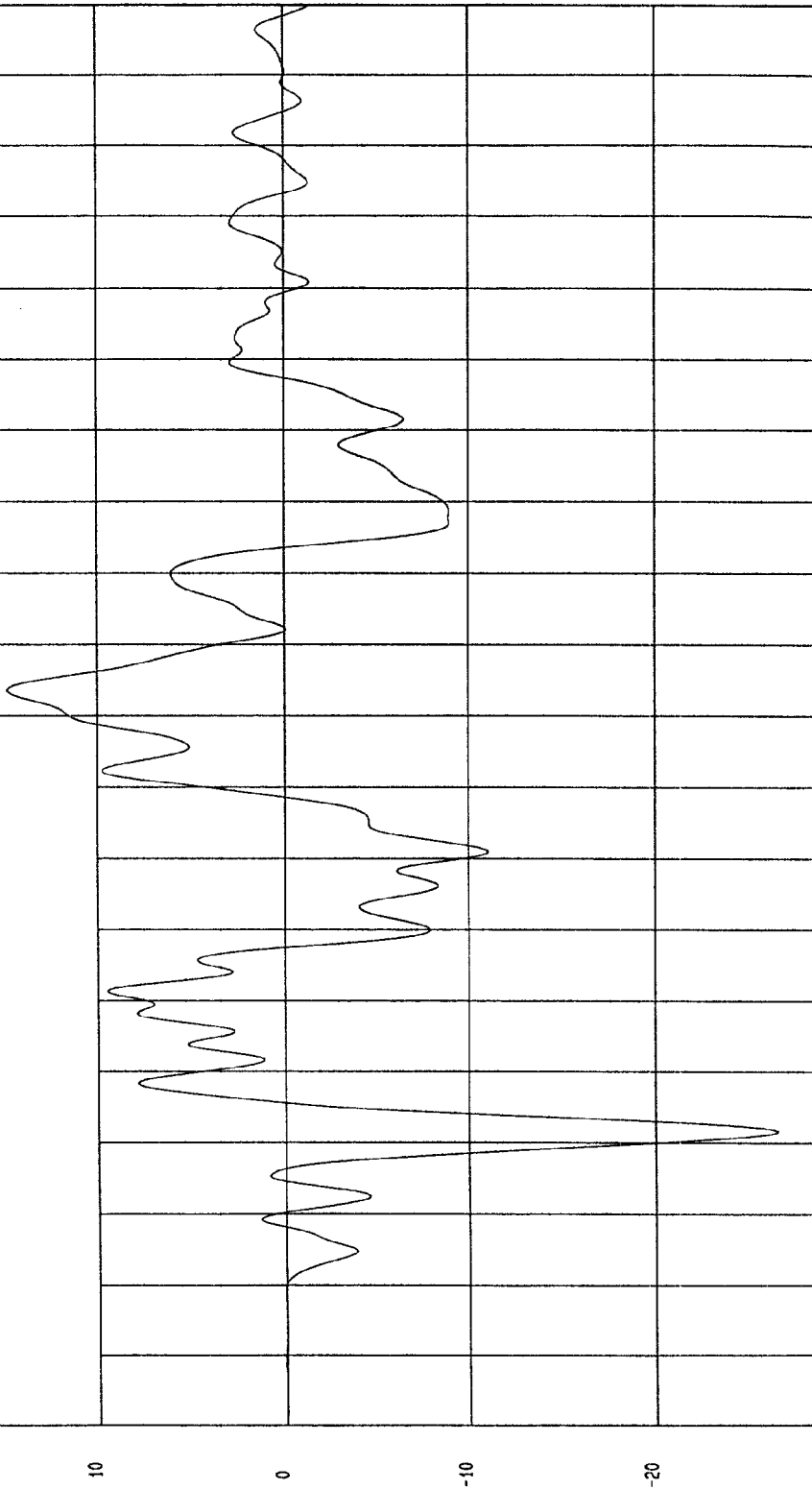
TEST: NCAP SIDE IMPACT TEST TEST DATE: 11-06-1998

COMPONENT: 1999 NISSAN FRONTIER (MX5202) Speed: 38.38 MPH 61.8 KPH

Minimum = -26.51 G'S at 22 msec Maximum = 14.84 G'S at 84 msec

REAR FLOORPAN ABOVE AXLE Z ACCELERATION

1 ——— B98103AF.A10 Filterclass (50)



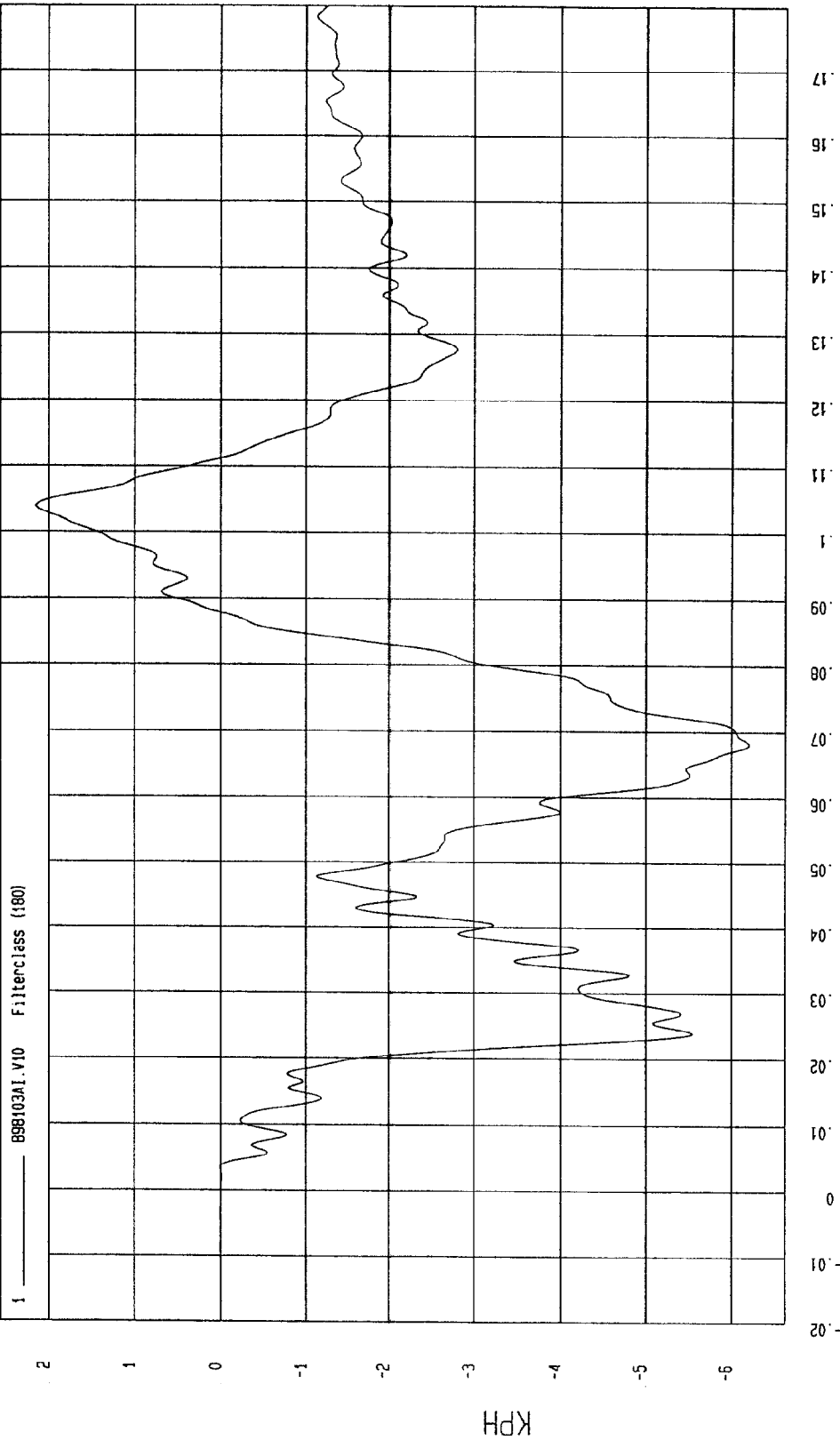
MSA Research
11-05-1998 12:19

TEST: NCAP SIDE IMPACT TEST TEST DATE: 11-06-1998

COMPONENT: 1999 NISSAN FRONTIER (MX5202) Speed: 38.38 MPH 61.8 KPH

Minimum = -6.21 KPH at 58 msec Maximum = 2.15 KPH at 104 msec

REAR FLOORPAN ABOVE AXLE Z VELOCITY



WCA Research
11-05-1998 12:19

TEST: NCAP SIDE IMPACT TEST

TEST DATE: 11-06-1998

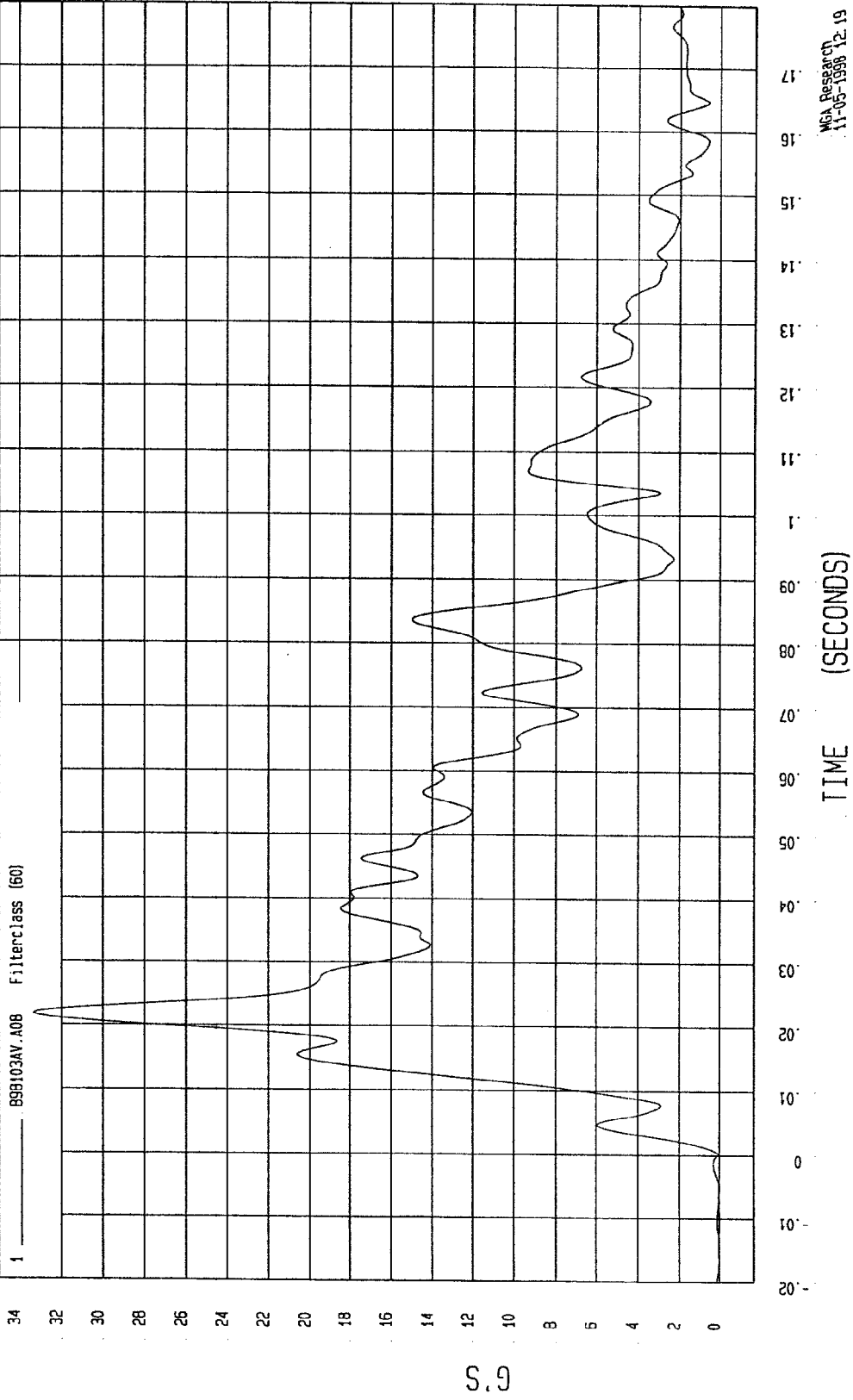
Speed: 38.38 MPH 61.8 KPH

COMPONENT: 1999 NISSAN FRONTIER (MX5202)

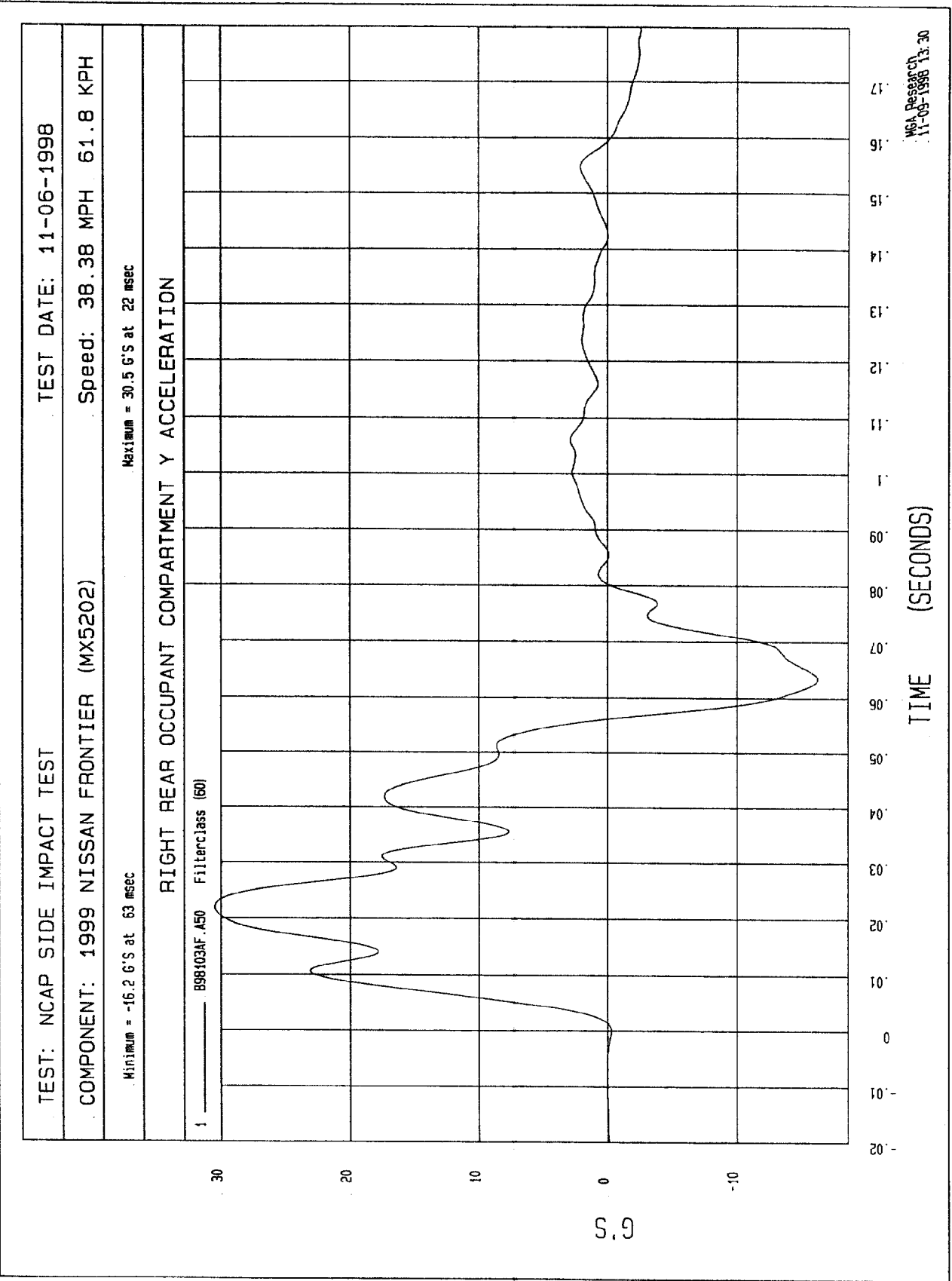
Maximum = 33.34 G'S at 22 msec

Minimum = 5.25E-03 G'S at 0 msec

REAR FLOORPAN ABOVE AXLE RESULTANT ACCELERATION



WDA Research
11-06-1998 12:19

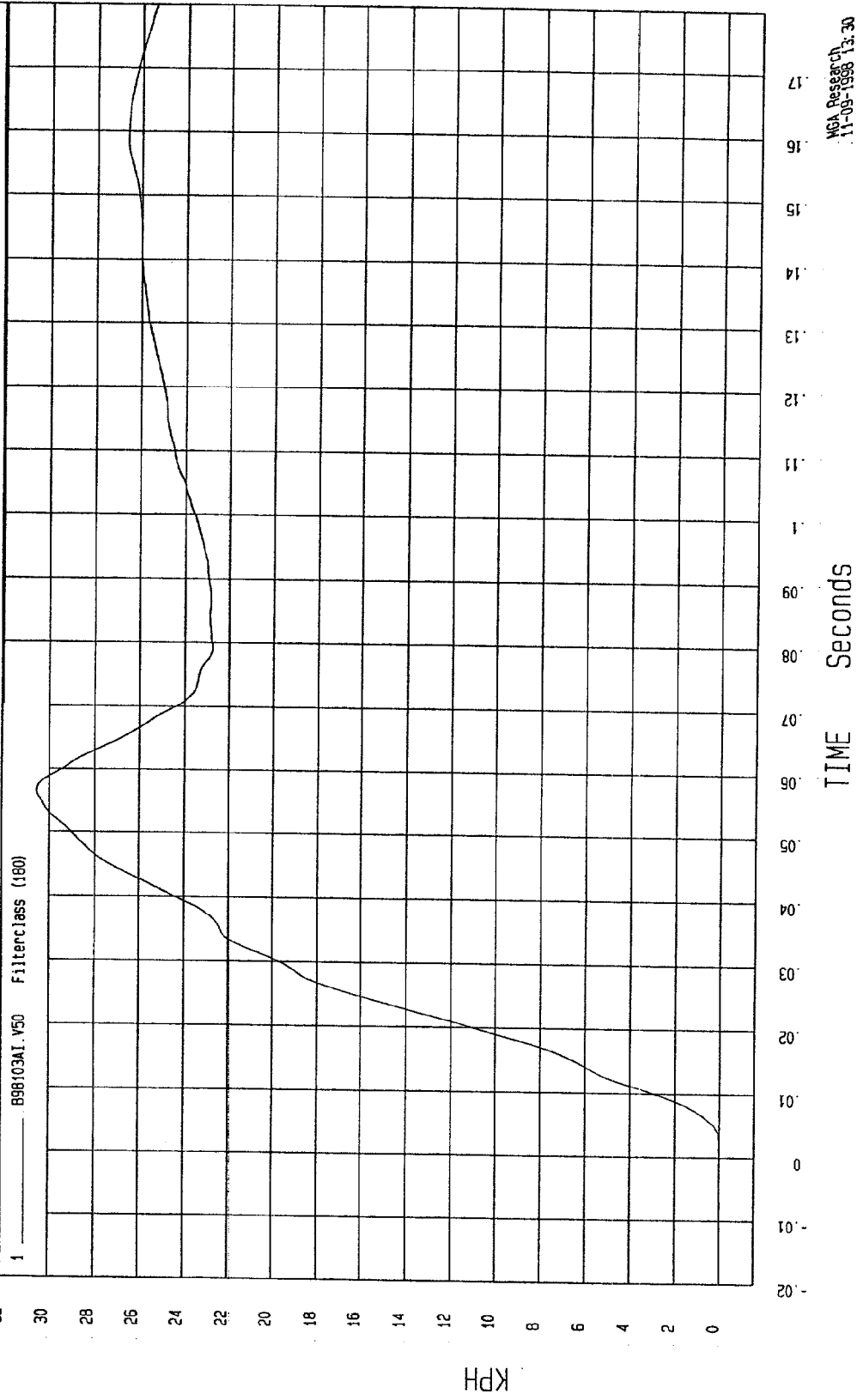


TEST: NCAP SIDE IMPACT TEST TEST DATE: 11-06-1998

COMPONENT: 1999 NISSAN FRONTIER (MX5202) Speed: 38.38 MPH 61.8 KPH

Minimum = -1.57E-02 KPH at -12 msec Maximum = 30.56 KPH at 57 msec

RIGHT REAR OCCUPANT COMPARTMENT Y VELOCITY

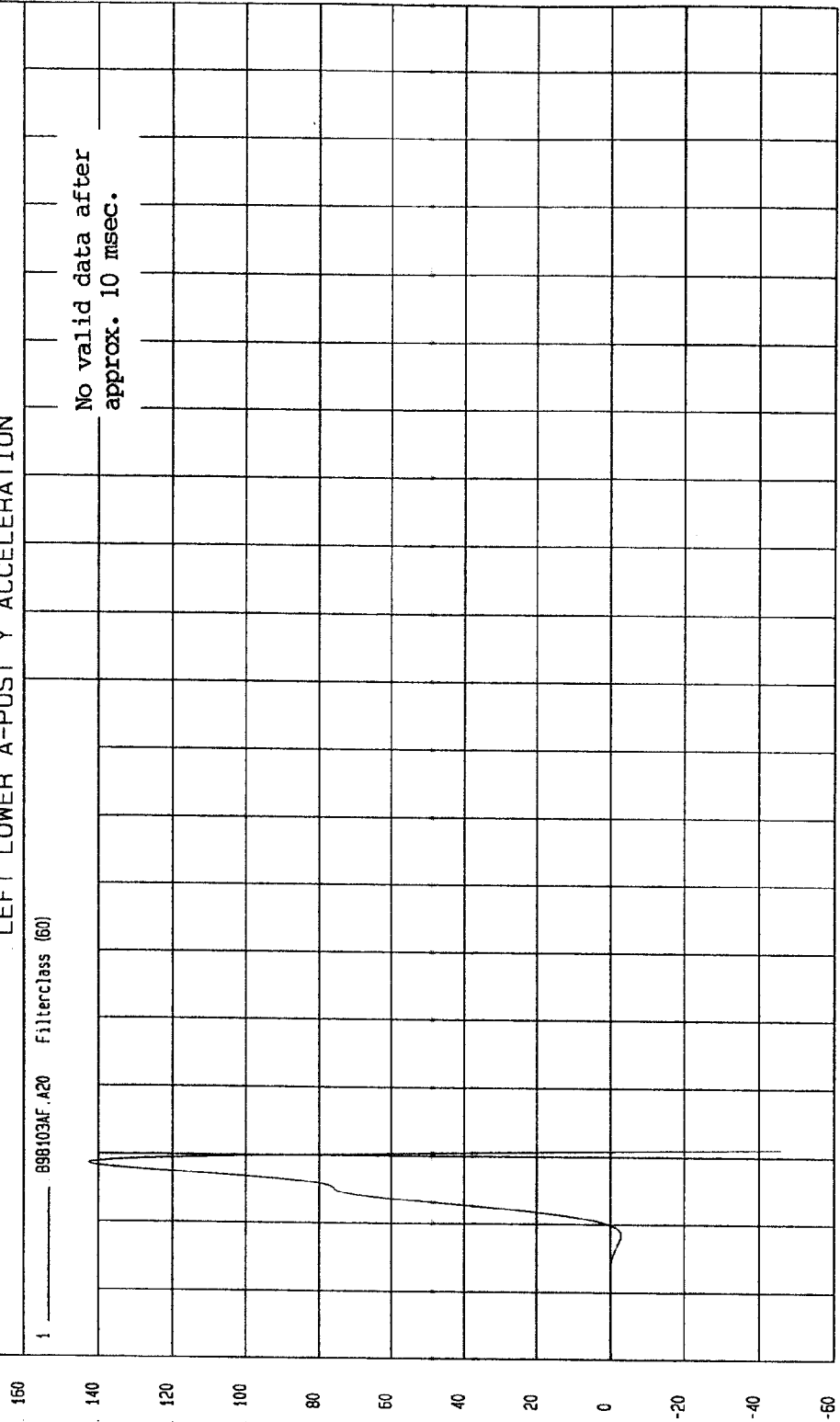


TEST: NCAP SIDE IMPACT TEST TEST DATE: 11-06-1998

COMPONENT: 1999 NISSAN FRONTIER (MX5202) Speed: 38.38 MPH 61.8 KPH

Minimum = -1043.86 G'S at 18 msec Maximum = 142.56 G'S at 9 msec

LEFT LOWER A-POST Y ACCELERATION



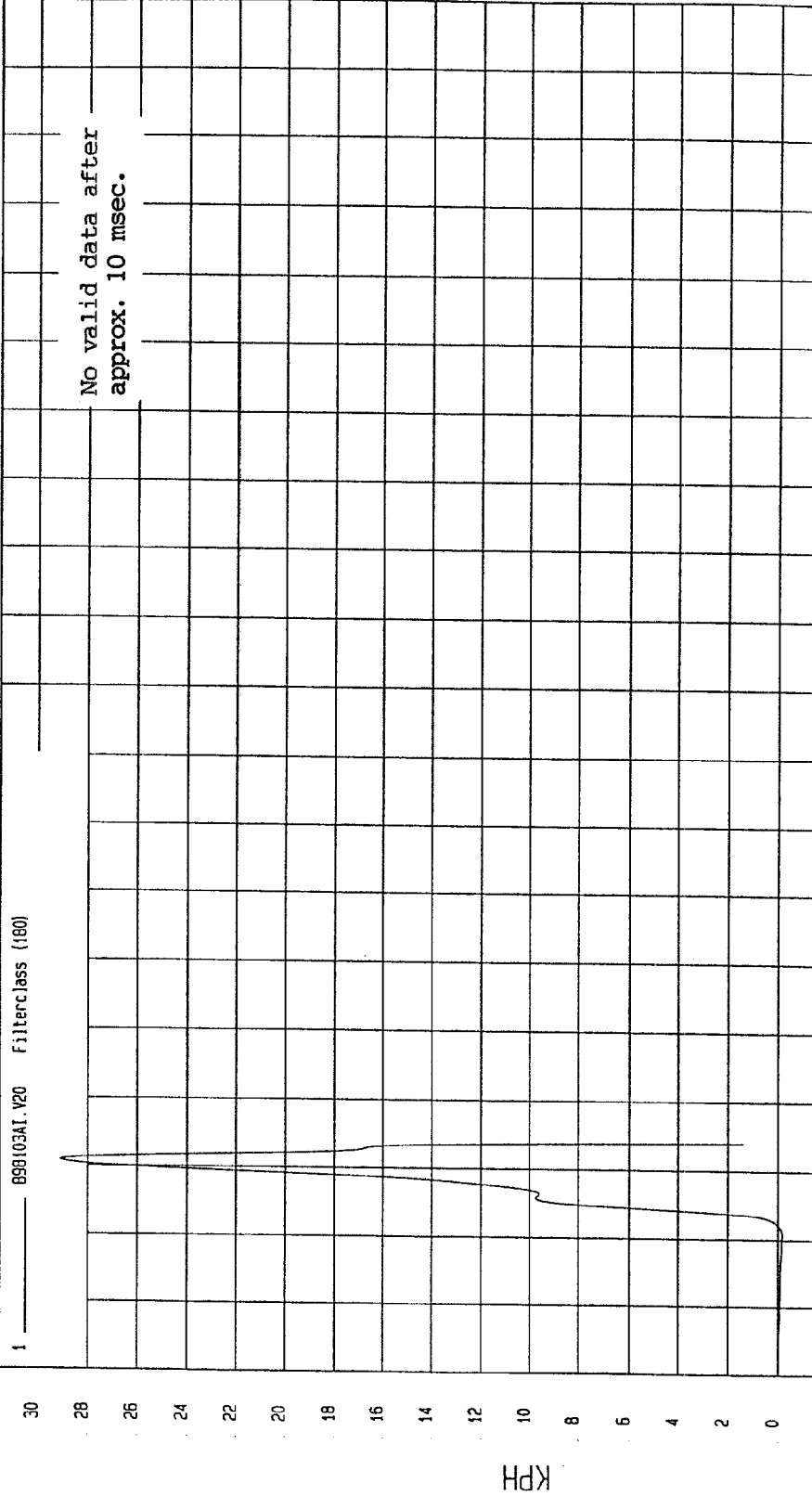
WGL Research
11-09-1998 13:22

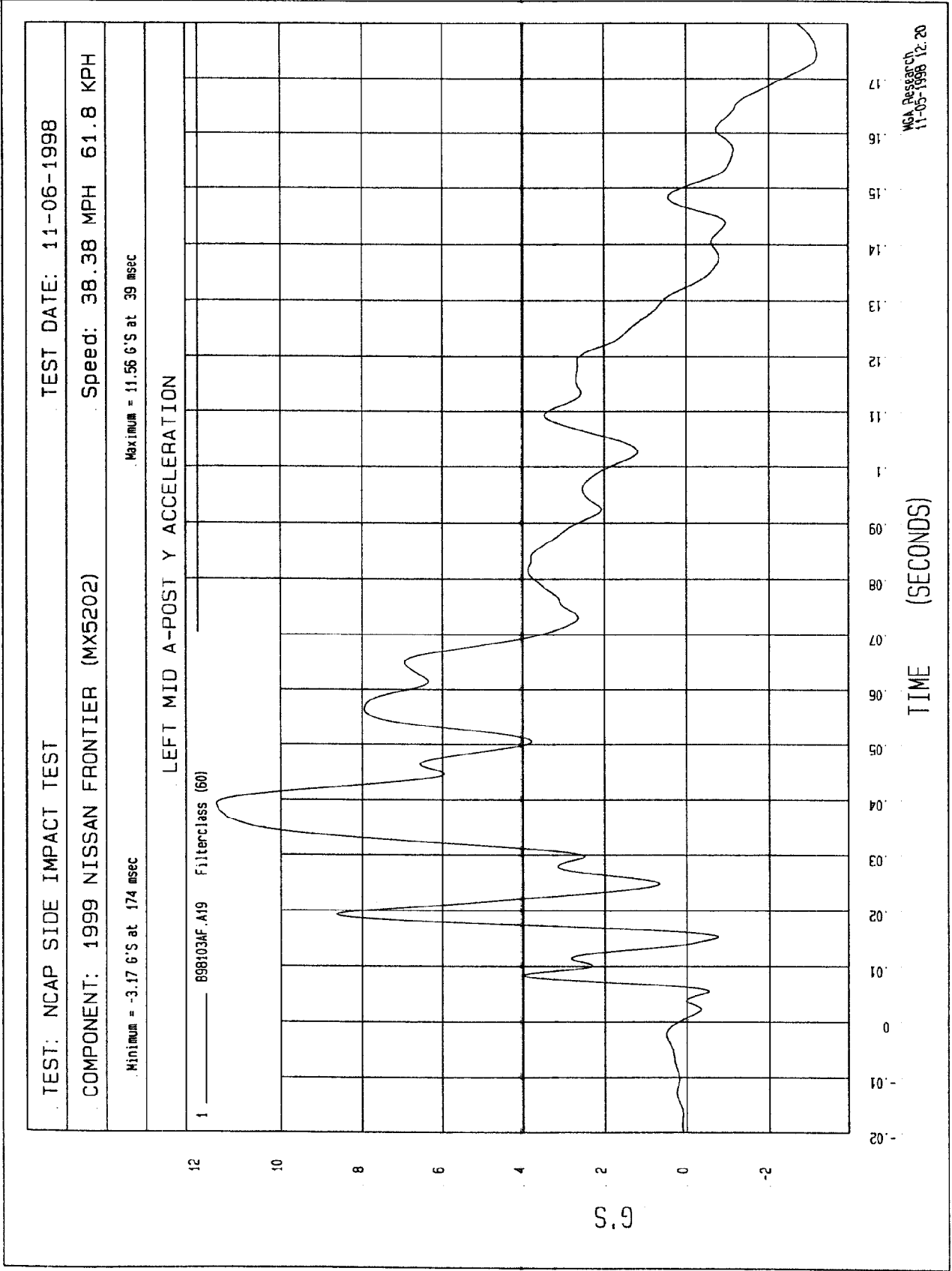
TEST: NCAP SIDE IMPACT TEST TEST DATE: 11-06-1998

COMPONENT: 1999 NISSAN FRONTIER (MX5202) Speed: 38.38 MPH 61.8 KPH

Minimum = -5641.47 KPH at 200 msec Maximum = 29.11 KPH at 11 msec

LEFT LOWER A-POST Y VELOCITY





TEST: NCAP SIDE IMPACT TEST

TEST DATE: 11-06-1998

Speed: 38.38 MPH 61.8 KPH

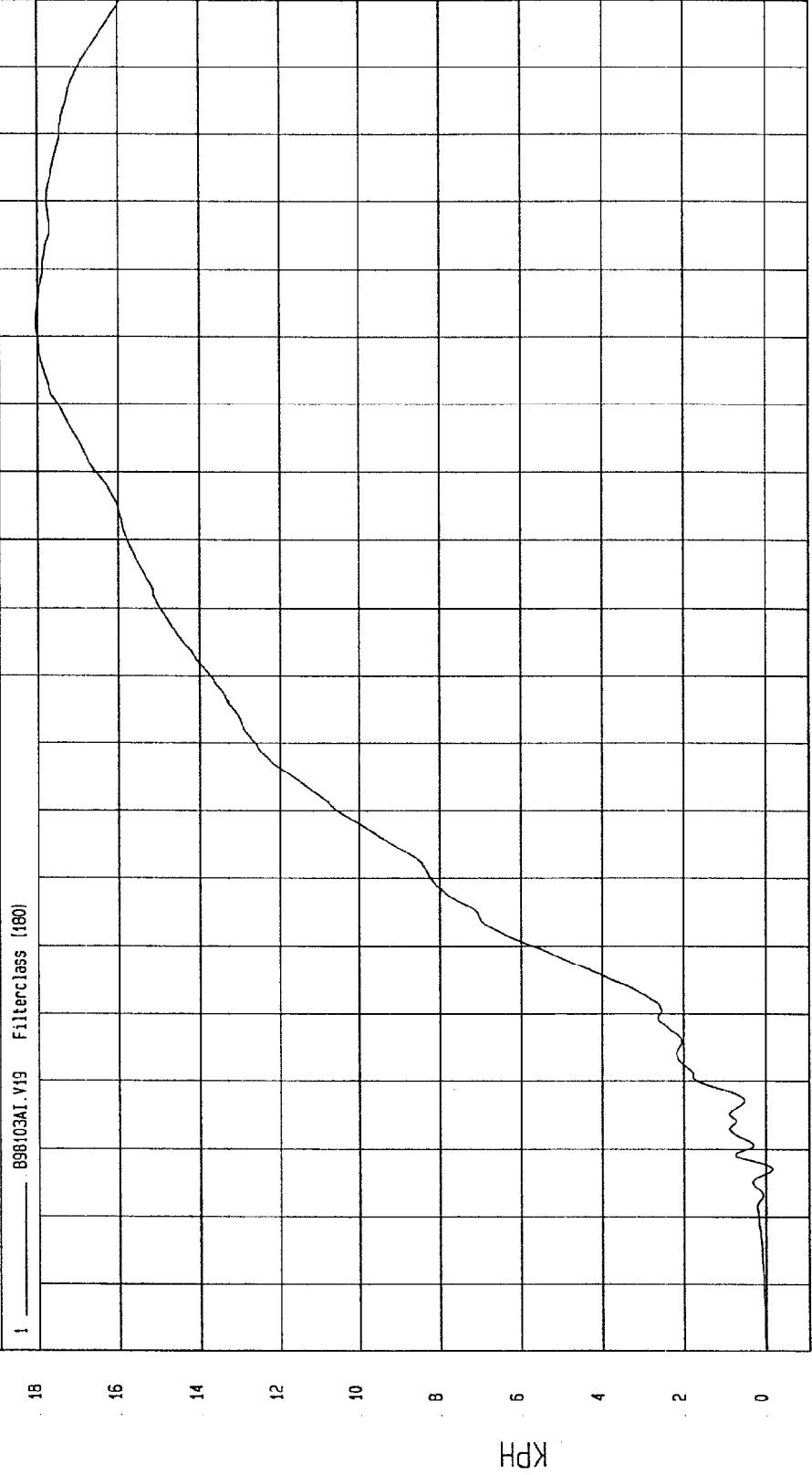
COMPONENT: 1999 NISSAN FRONTIER (MX5202)

Maximum = 18.04 KPH at 132 msec

Minimum = -.16 KPH at 7 msec

LEFT MID A-POST Y VELOCITY

1 898103A1.V19 Filterclass (180)



MCA Research
11-05-1998 12:20

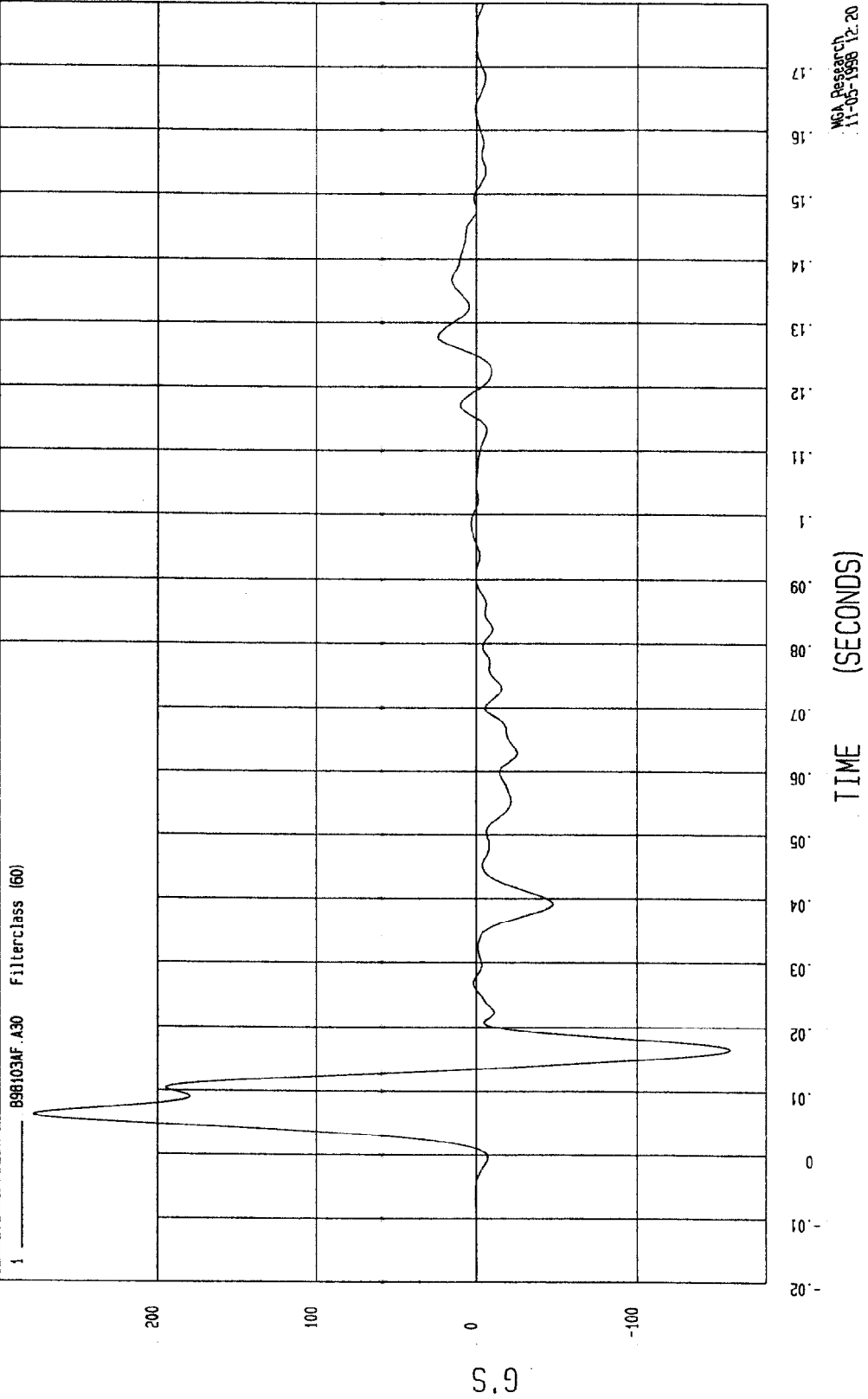
TIME Seconds

TEST: NCAP SIDE IMPACT TEST TEST DATE: 11-06-1998

COMPONENT: 1999 NISSAN FRONTIER (MX5202) Speed: 38.38 MPH 61.8 KPH

Minimum = -158.39 G'S at 16 msec Maximum = 277.34 G'S at 6 msec

LEFT LOWER B-POST Y ACCELERATION

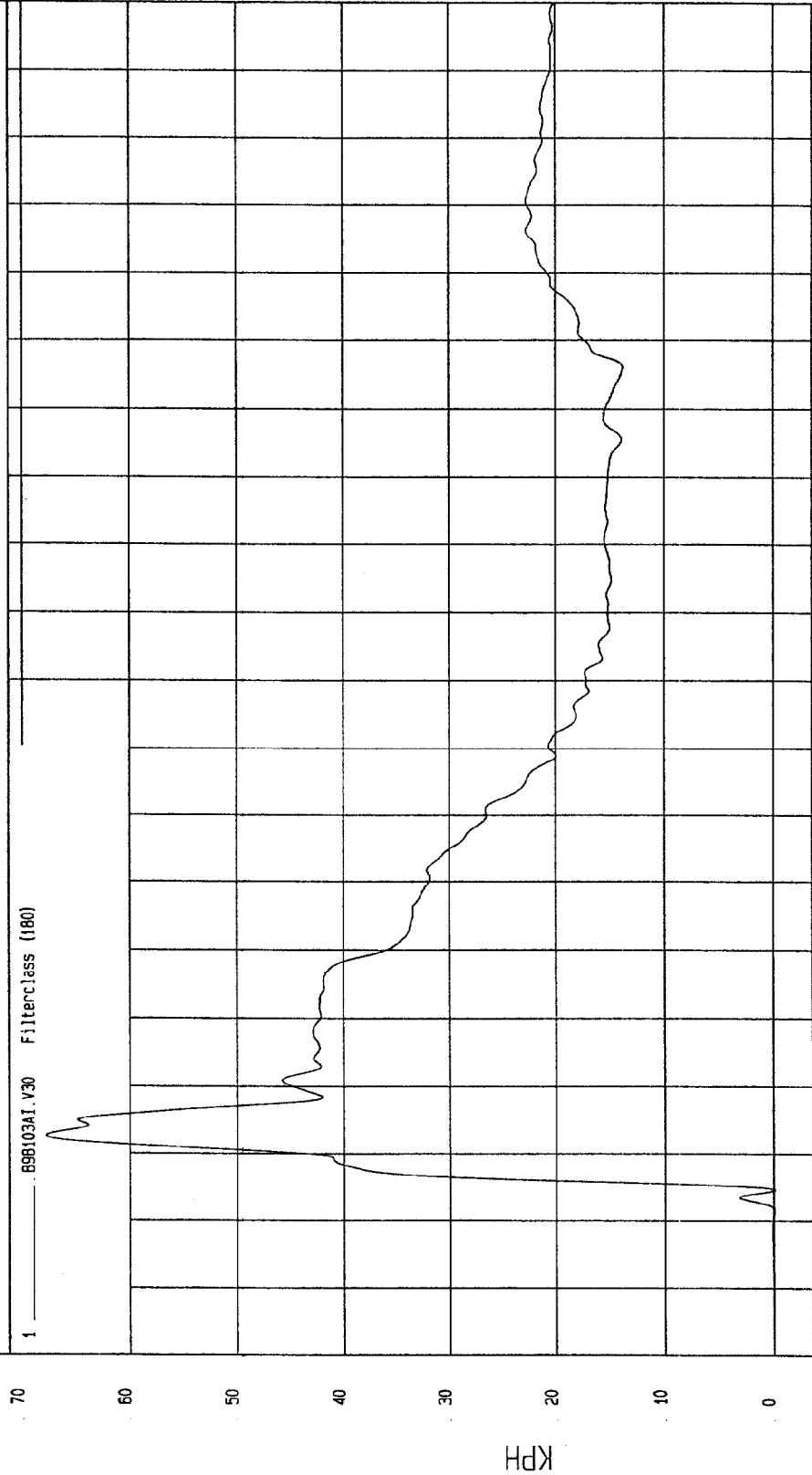


TEST: NCAP SIDE IMPACT TEST TEST DATE: 11-06-1998

COMPONENT: 1999 NISSAN FRONTIER (MX5202) Speed: 38.38 MPH 61.8 KPH

Minimum = -24 KPH at 5 msec Maximum = 67.84 KPH at 13 msec

LEFT LOWER B-POST Y VELOCITY



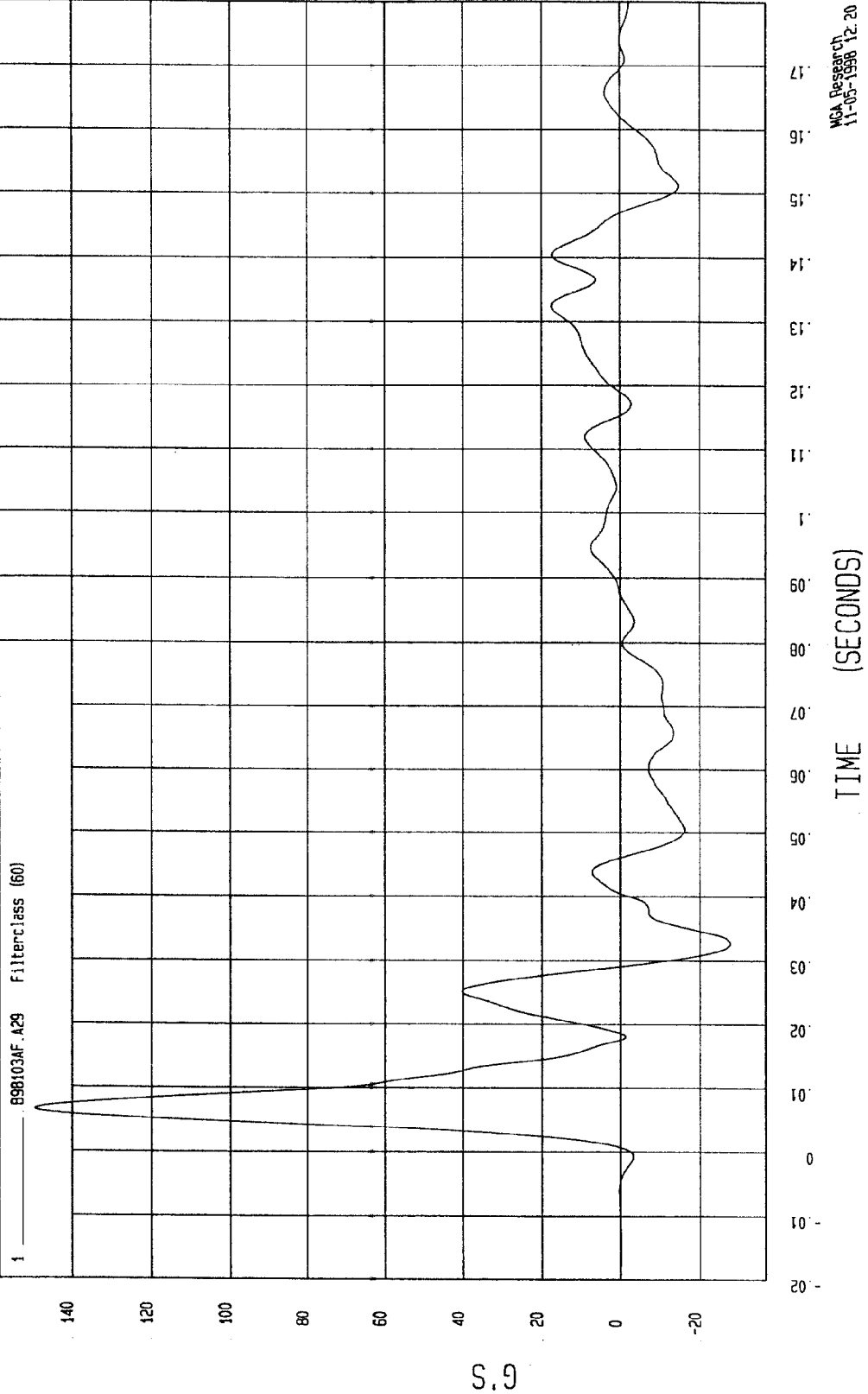
MSA Research
11-06-1998 12:20

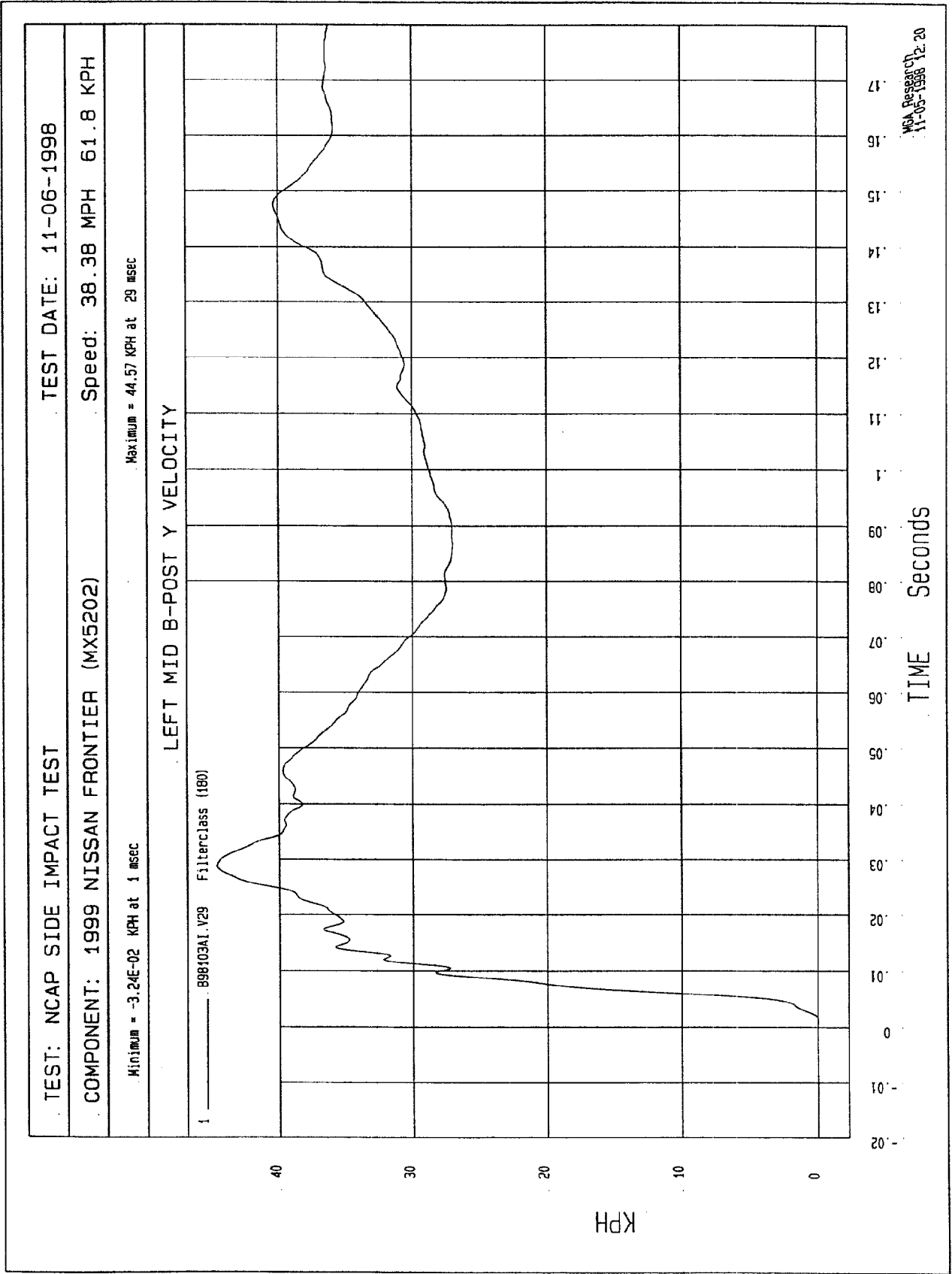
TEST: NCAP SIDE IMPACT TEST TEST DATE: 11-06-1998

COMPONENT: 1999 NISSAN FRONTIER (MX5202) Speed: 38.38 MPH 61.8 KPH

Minimum = -27.53 G'S at 33 msec Maximum = 149.6 G'S at 7 msec

LEFT MID B-POST Y ACCELERATION





TEST: NCAP SIDE IMPACT TEST

TEST DATE: 11-06-1998

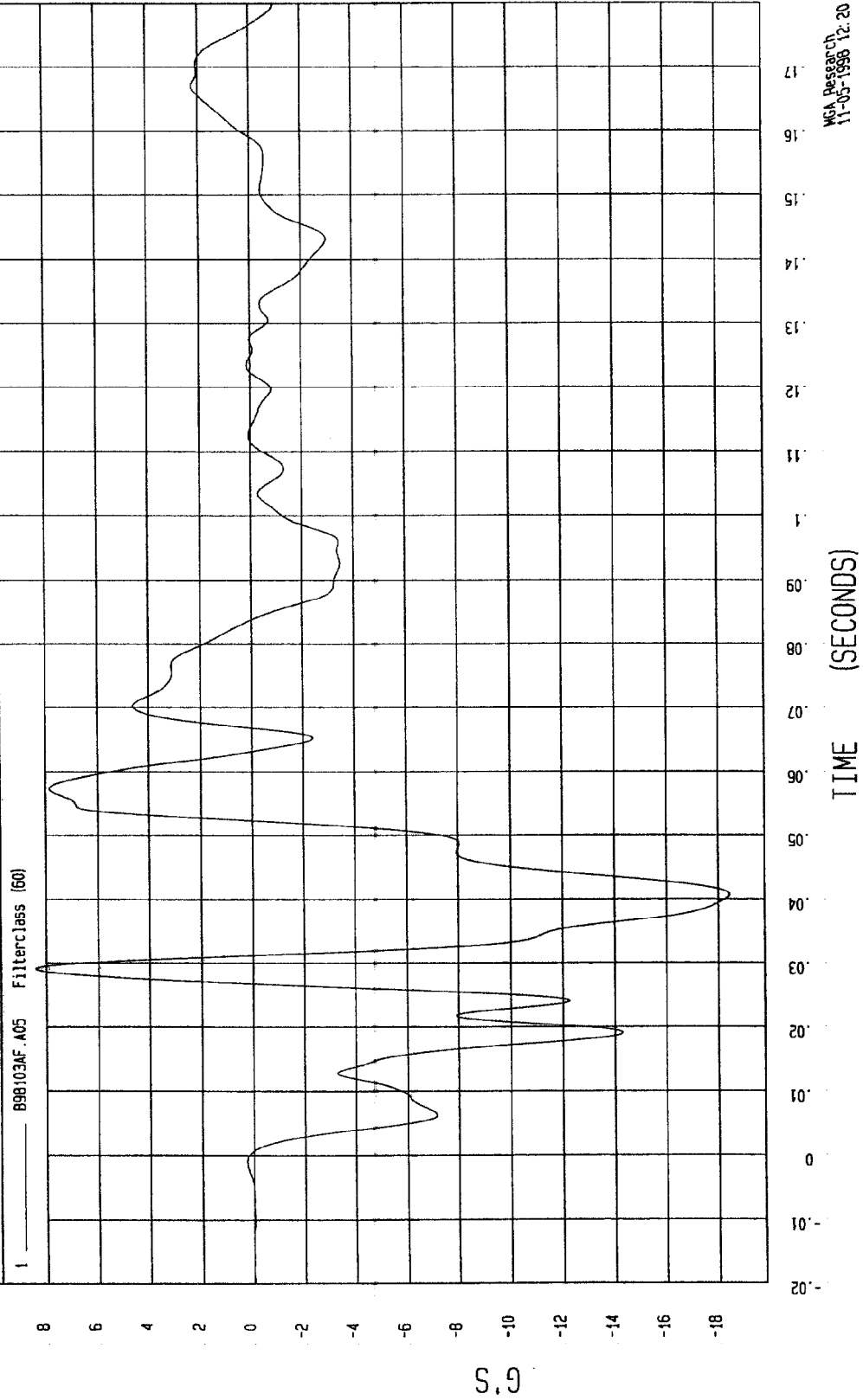
Speed: 38.38 MPH 61.8 KPH

COMPONENT: 1999 NISSAN FRONTIER (MX5202)

Maximum = 8.4 G'S at 29 msec

Minimum = -18.43 G'S at 41 msec

VEHICLE CG X ACCELERATION

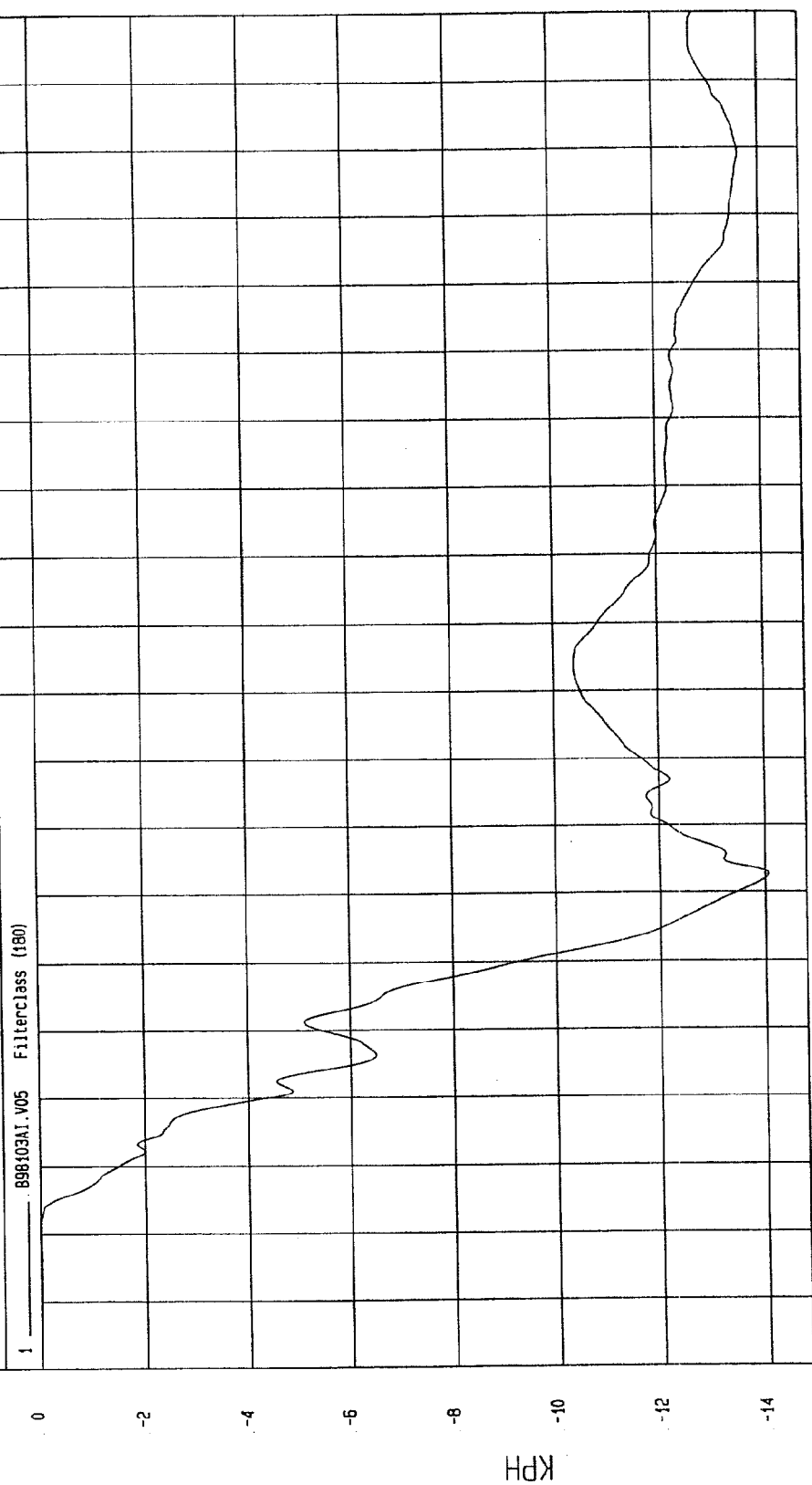


TEST: NCAP SIDE IMPACT TEST TEST DATE: 11-06-1998

COMPONENT: 1999 NISSAN FRONTIER (MX5202) Speed: 38.38 MPH 61.8 KPH

Minimum = -14.07 KPH at 53 msec Maximum = 6.95E-03 KPH at 1 msec

VEHICLE CG X VELOCITY



MSA Research
11-05-1998 12:20

TEST: NCAP SIDE IMPACT TEST

TEST DATE: 11-06-1998

Speed: 38.38 MPH 61.8 KPH

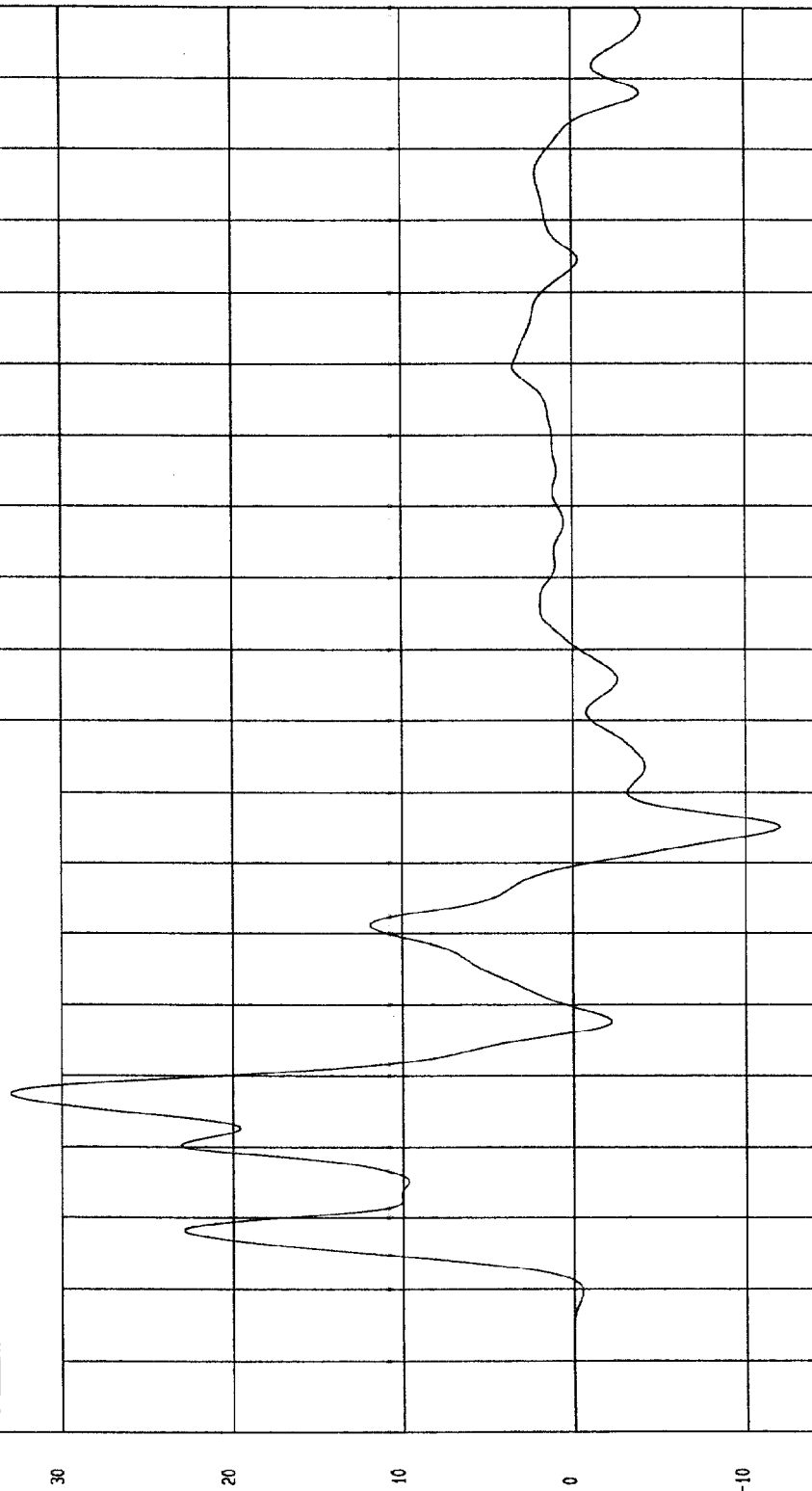
COMPONENT: 1999 NISSAN FRONTIER (MX5202)

Maximum = 32.96 G'S at 28 msec

Minimum = -11.97 G'S at 65 msec

VEHICLE CG Y ACCELERATION

1 _____ B98103AF.A05 Filterclass (60)



MSA Research
11-05-1998 12:20

TEST: NCAP SIDE IMPACT TEST TEST DATE: 11-06-1998

COMPONENT: 1999 NISSAN FRONTIER (MX5202) Speed: 38.38 MPH 61.8 KPH

Minimum = -1.30E-02 KPH at 2 msec Maximum = 23.06 KPH at 60 msec

VEHICLE CG Y VELOCITY

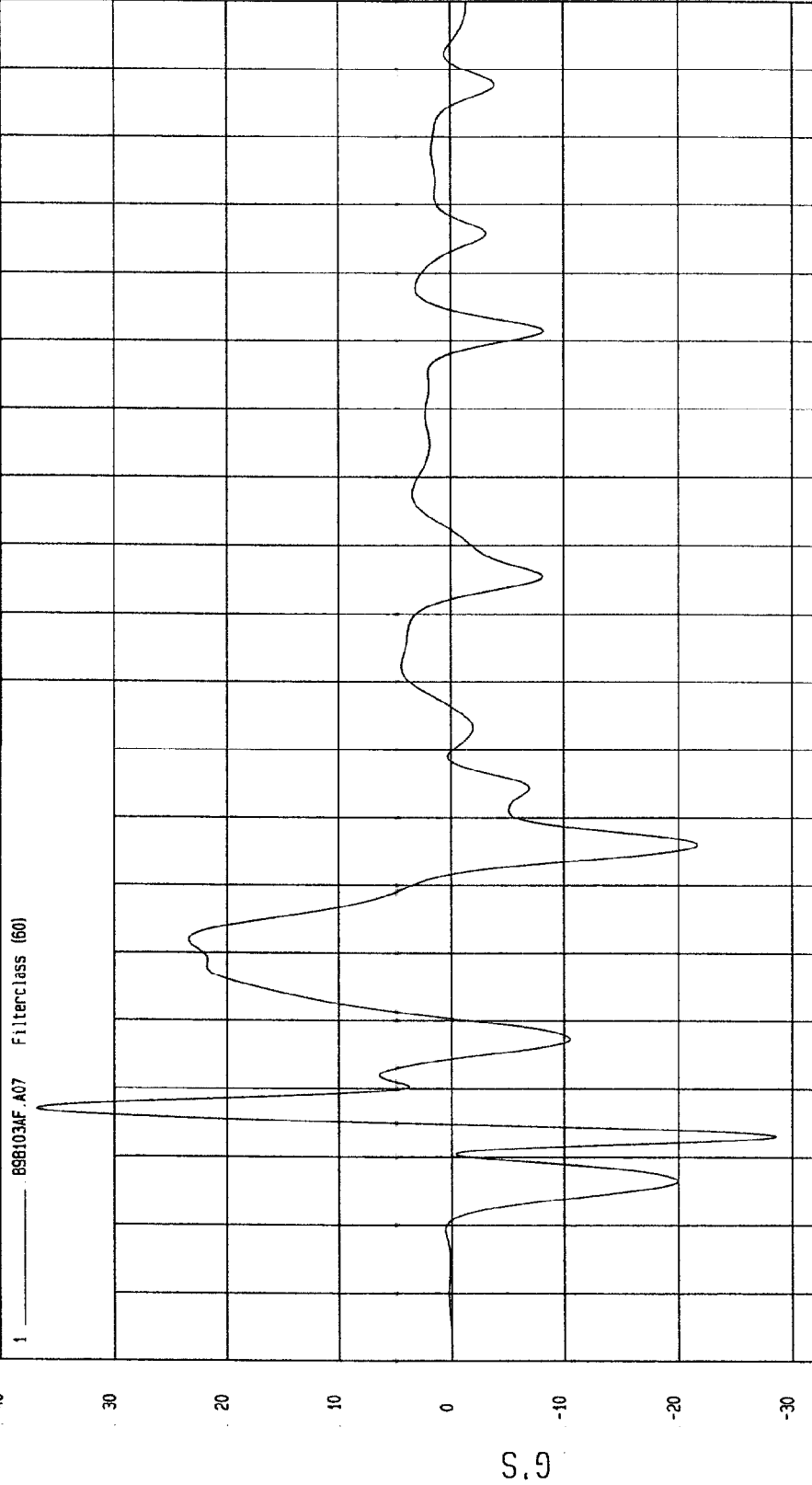


TEST: NCAP SIDE IMPACT TEST TEST DATE: 11-06-1998

COMPONENT: 1999 NISSAN FRONTIER (MX5202) Speed: 38.38 MPH 61.8 KPH

Minimum = -28.61 G'S at 13 msec Maximum = 36.82 G'S at 17 msec

VEHICLE CG Z ACCELERATION



MCA Research
11-06-1998 12:20

TEST: NCAP SIDE IMPACT TEST

TEST DATE: 11-06-1998

Speed: 38.38 MPH 61.8 KPH

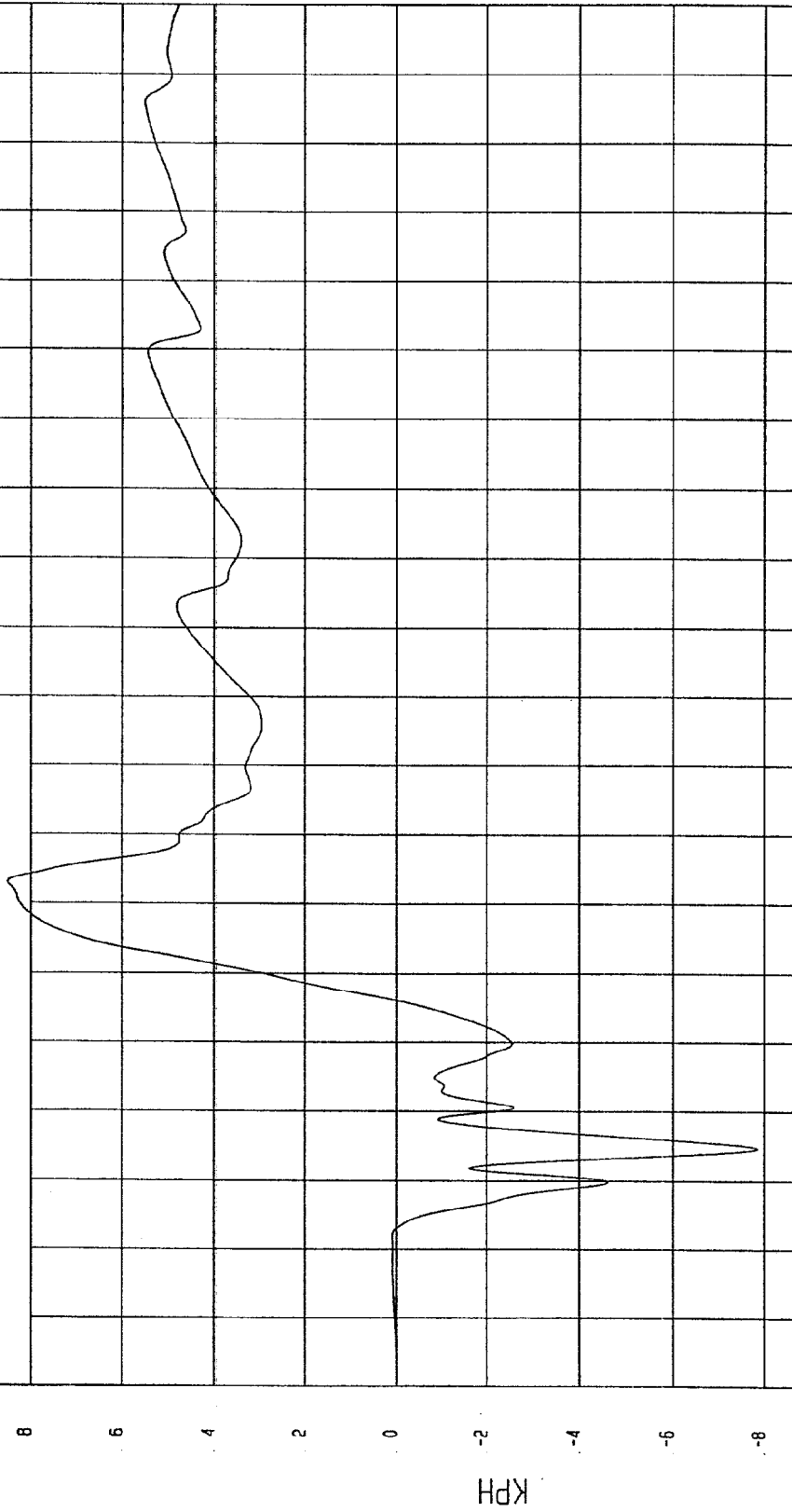
COMPONENT: 1999 NISSAN FRONTIER (MX5202)

Maximum = 8.49 KPH at 53 msec

Minimum = -7.86 KPH at 15 msec

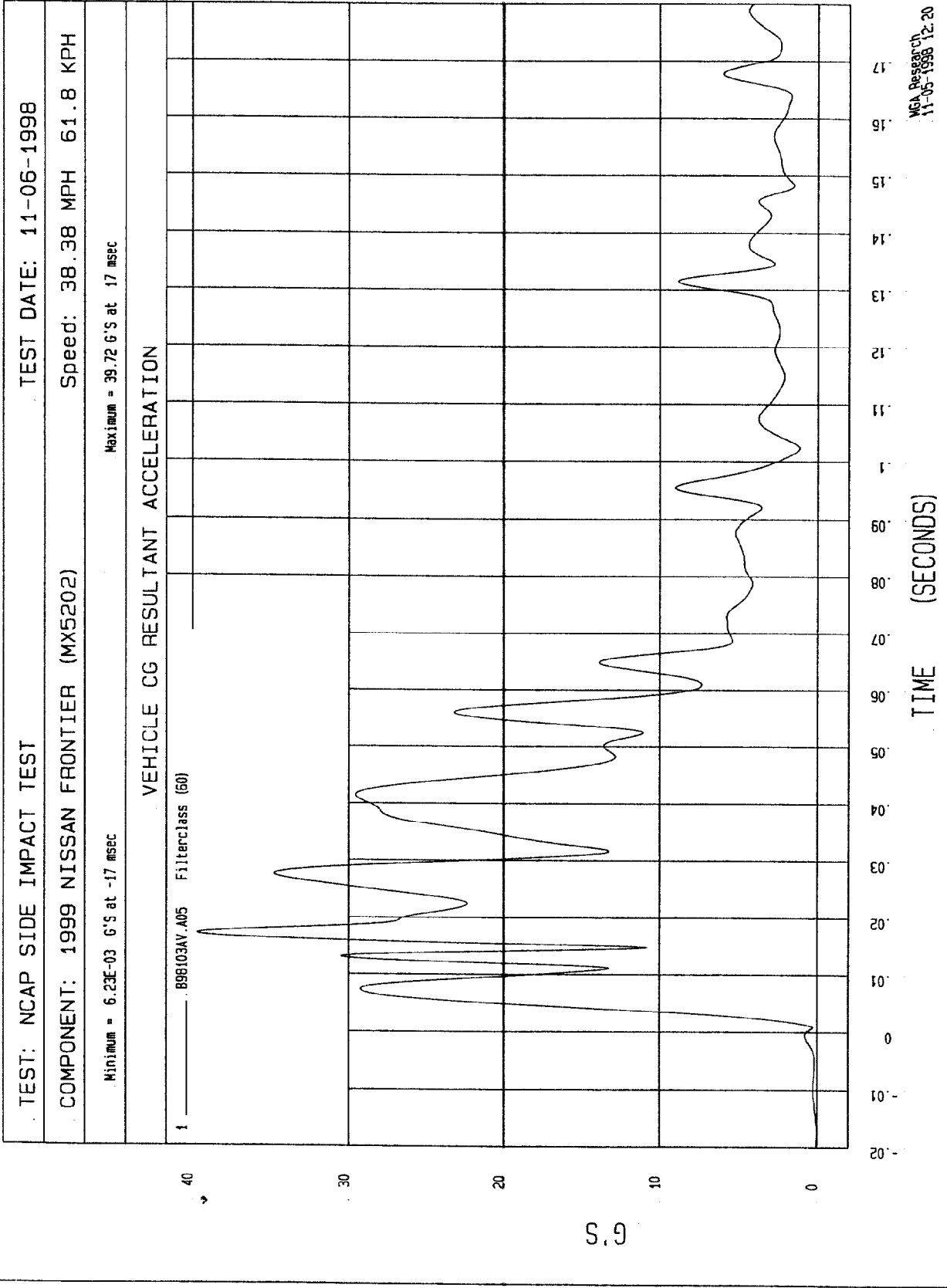
VEHICLE CG Z VELOCITY

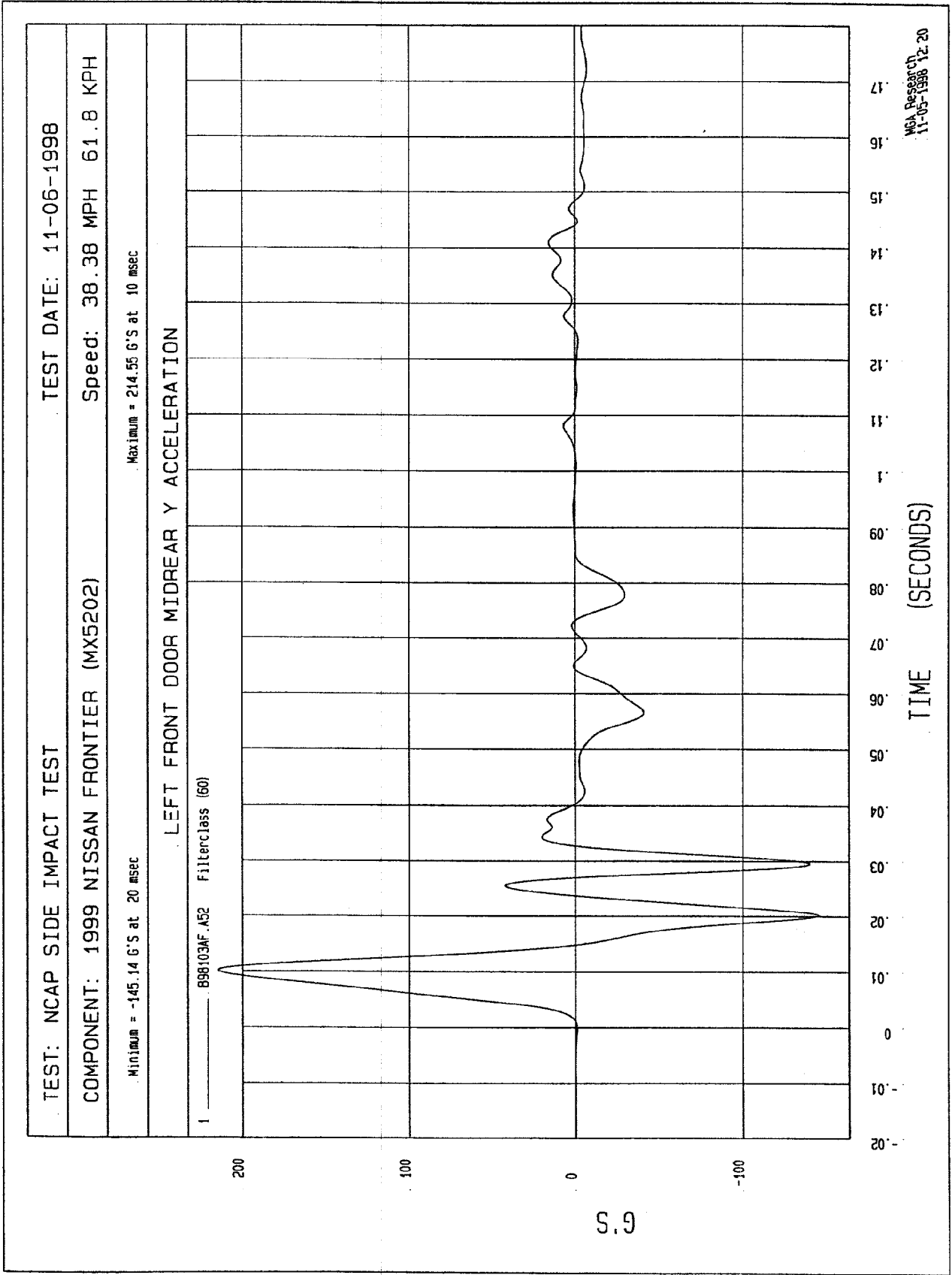
1 ——— B98103A1.V07 Filterclass (180)



WCA Research
11-05-1998 12:20

TIME Seconds



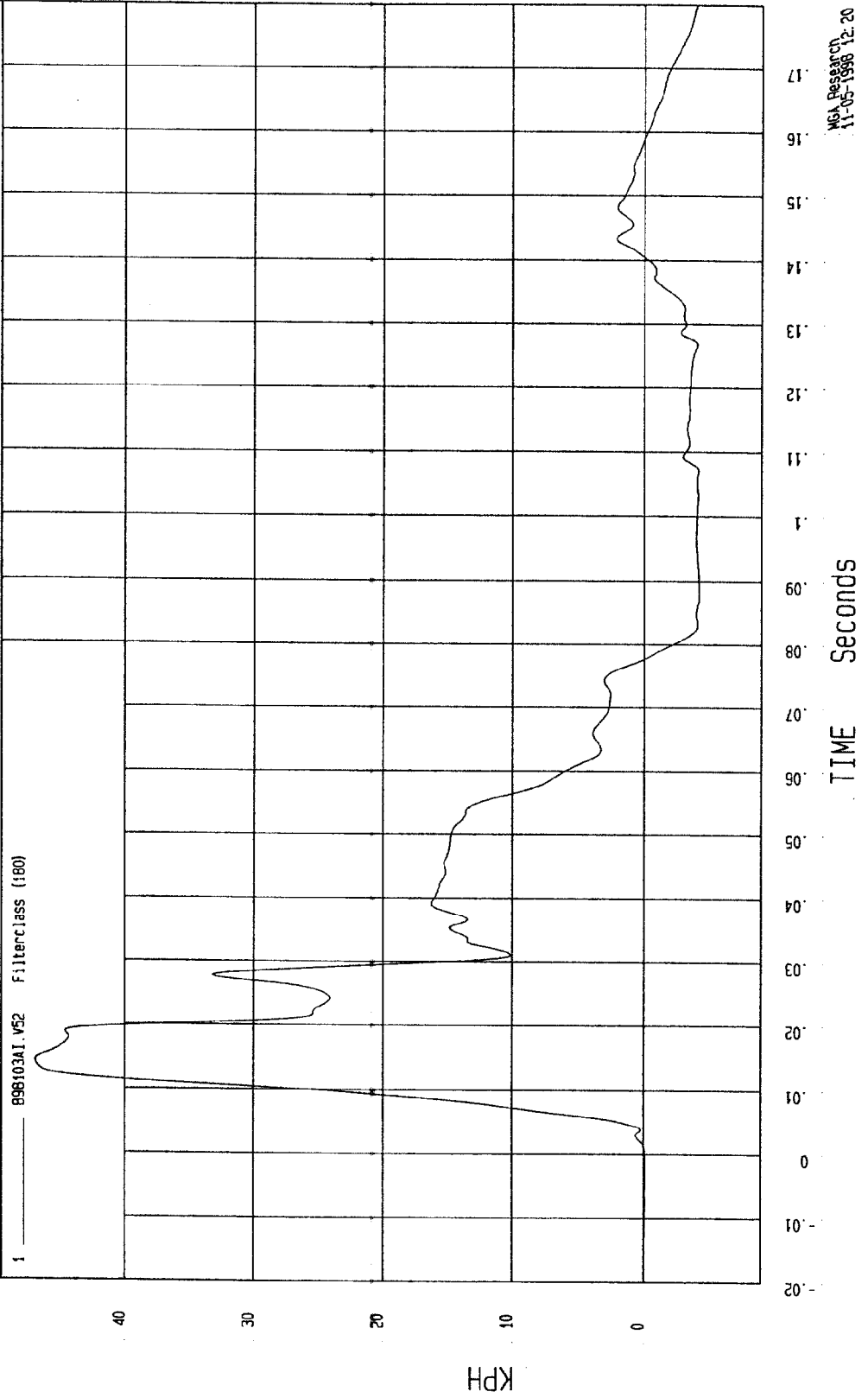


TEST: NCAP SIDE IMPACT TEST TEST DATE: 11-06-1998

COMPONENT: 1999 NISSAN FRONTIER (MX5202) Speed: 38.38 MPH 61.8 KPH

Minimum = -6.28 KPH at 200 msec Maximum = 46.81 KPH at 14 msec

LEFT FRONT DOOR MIDREAR Y VELOCITY

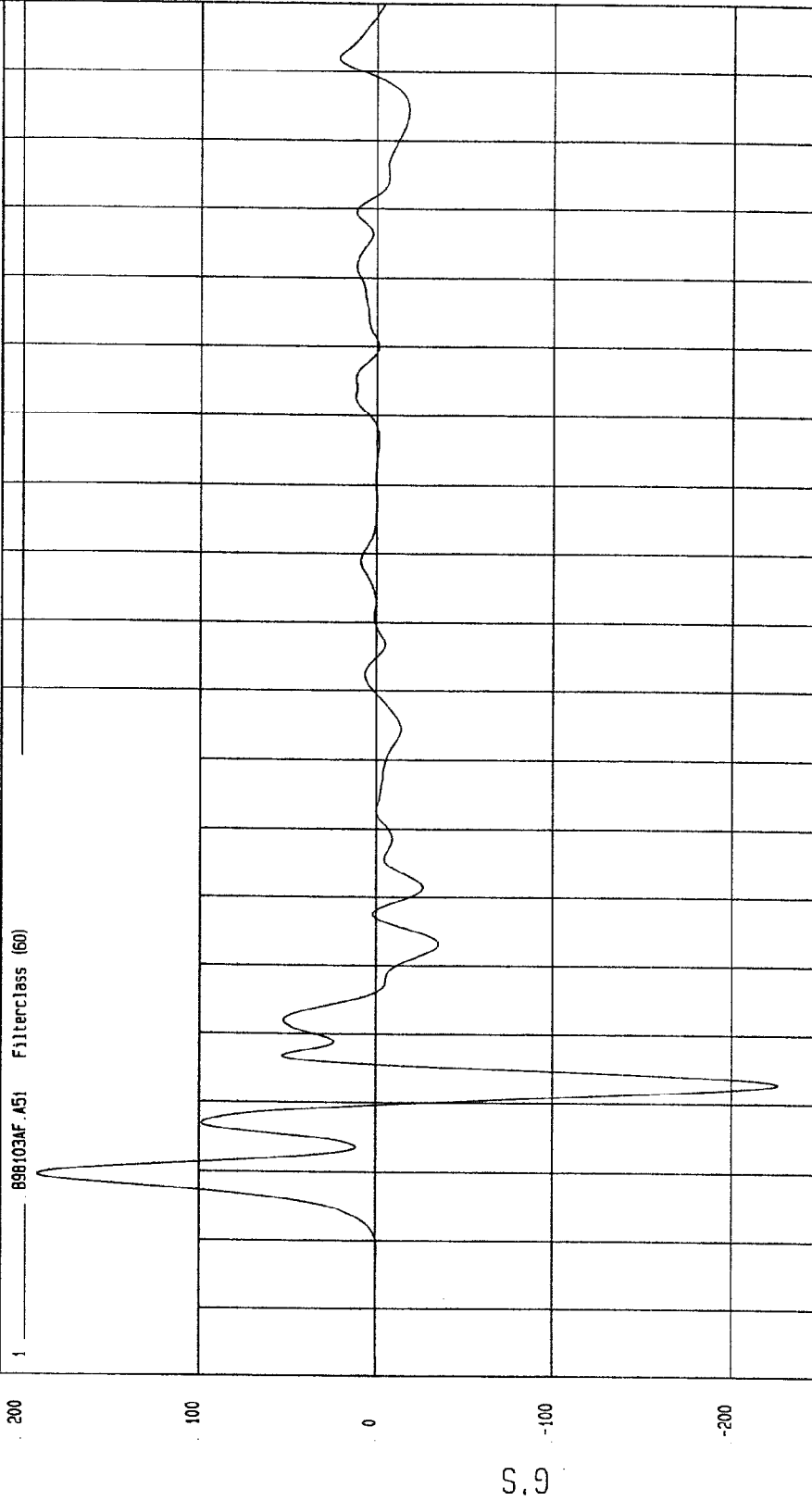


TEST: NCAP SIDE IMPACT TEST TEST DATE: 11-06-1998

COMPONENT: 1999 NISSAN FRONTIER (MX5202) Speed: 38.38 MPH 61.8 KPH

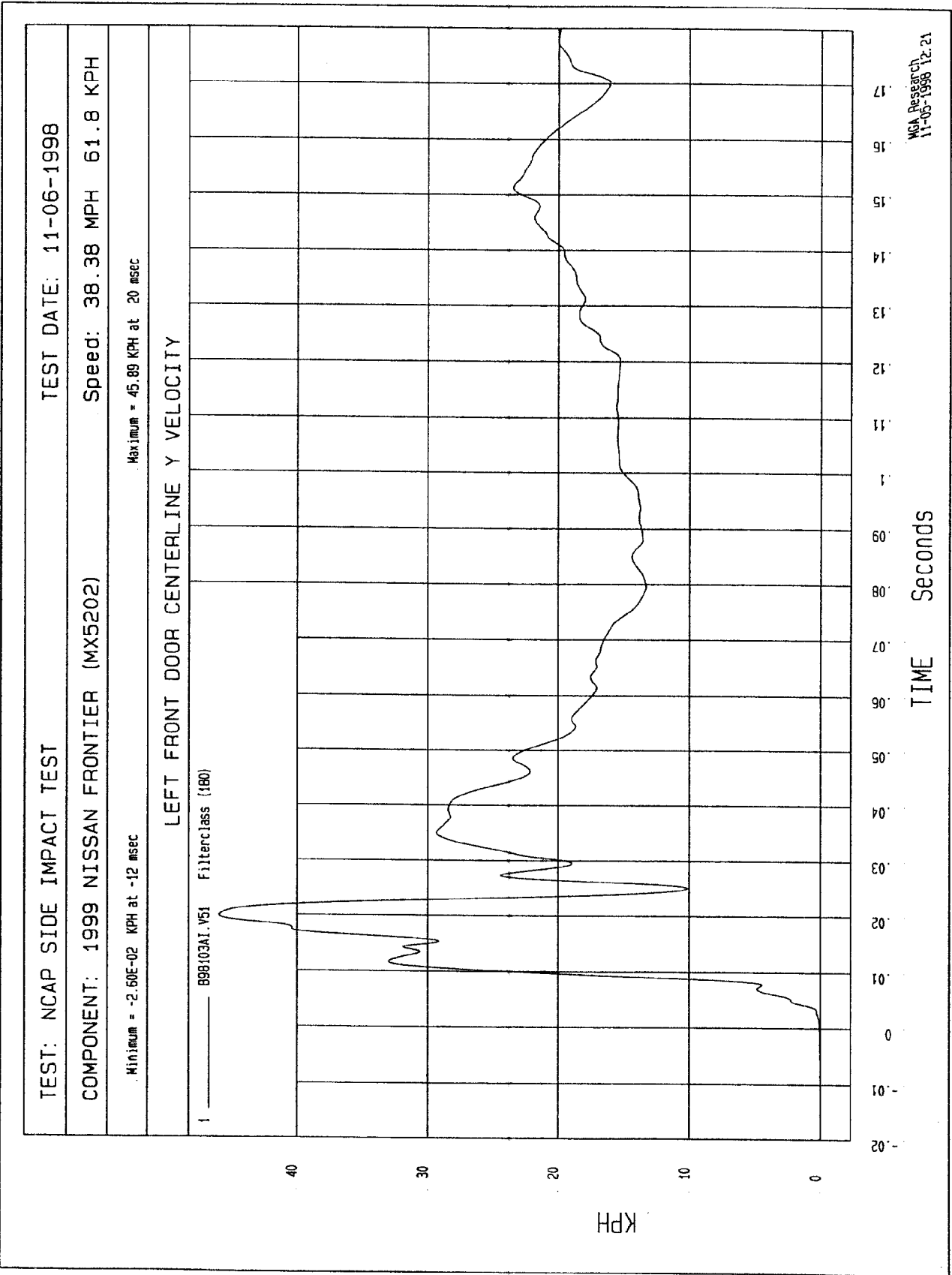
Minimum = -226.2 G'S at 23 msec Maximum = 190.9 G'S at 9 msec

LEFT FRONT DOOR CENTERLINE Y ACCELERATION



TIME (SECONDS)

MGA Research
11-05-1998 12:20



TEST: NCAP SIDE IMPACT TEST

TEST DATE: 11-06-1998

Speed: 38.38 MPH 61.8 KPH

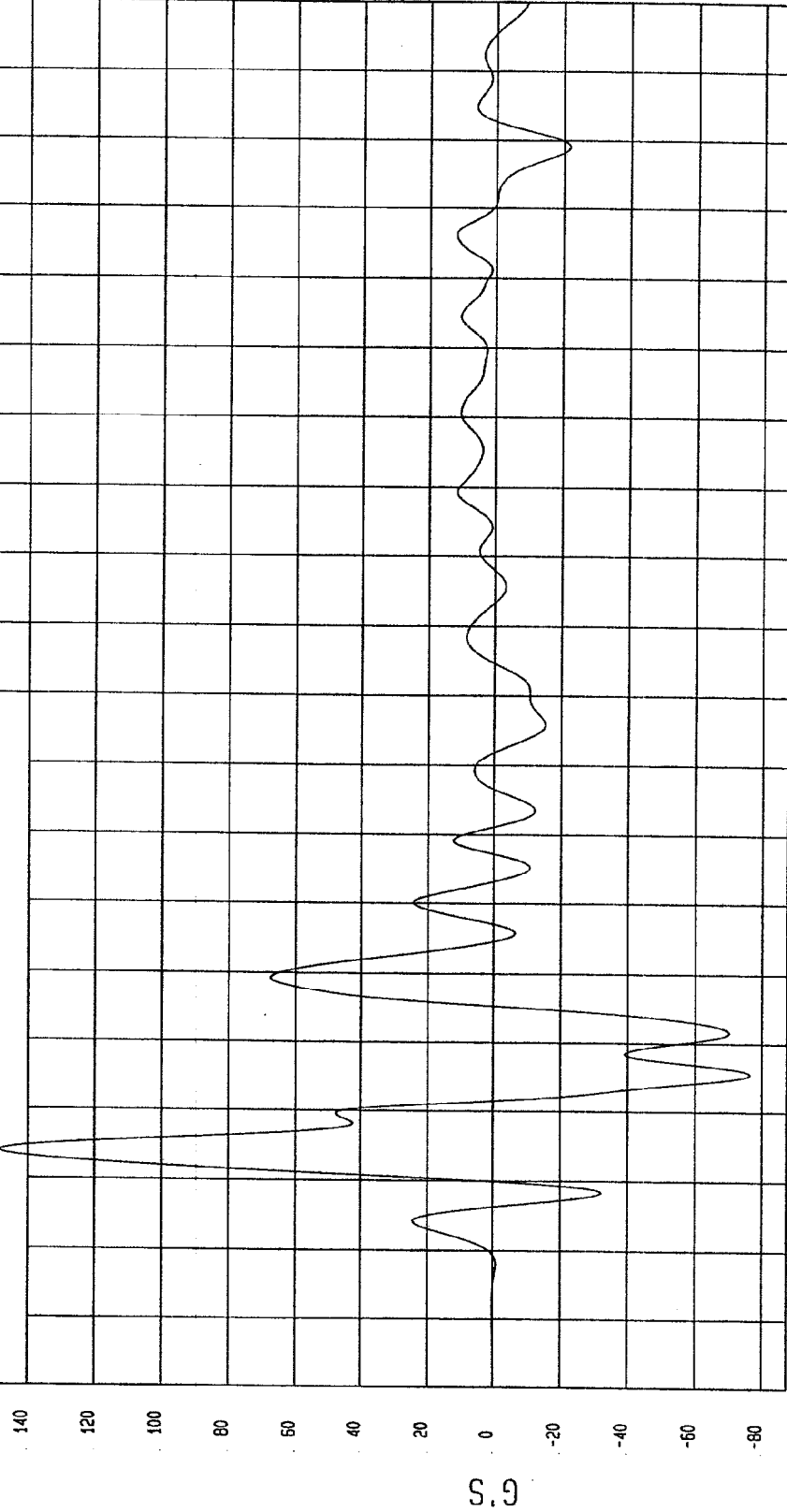
COMPONENT: 1999 NISSAN FRONTIER (MX5202)

Maximum = 148.39 G'S at 14 msec

Minimum = -76.4 G'S at 26 msec

LEFT FRONT DOOR UPPER CENTERLINE Y ACCELERATION

1 _____ B98103AF.A53 Filterclass (60)



NCA Research
11-05-1998 12:21

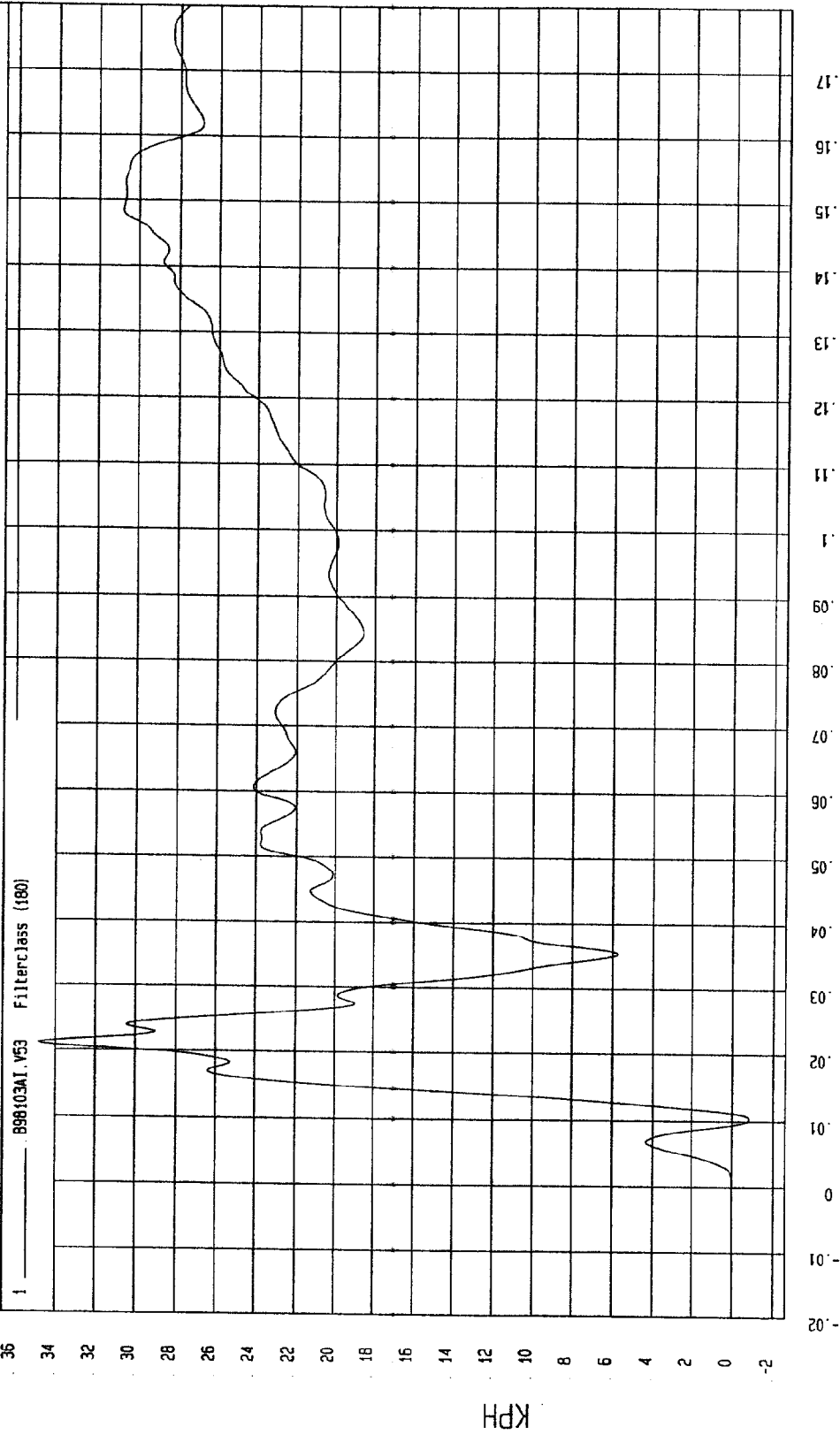
TIME (SECONDS)

TEST: NCAP SIDE IMPACT TEST TEST DATE: 11-06-1998

COMPONENT: 1999 NISSAN FRONTIER (MX5202) Speed: 38.38 MPH 61.8 KPH

Minimum = -.83 KPH at 10 msec Maximum = 34.85 KPH at 21 msec

LEFT FRONT DOOR UPPER CENTERLINE Y VELOCITY

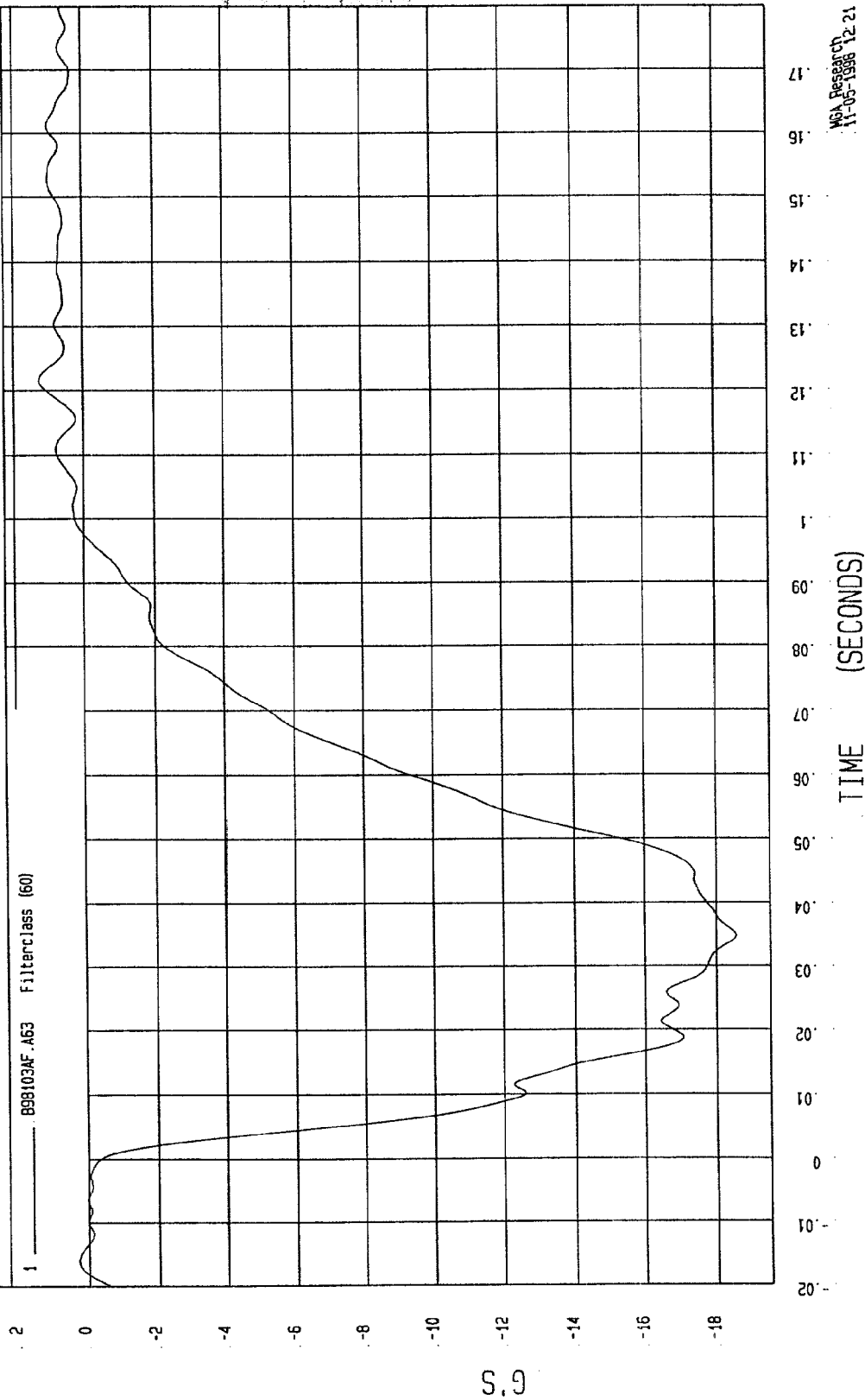


TEST: NCAP SIDE IMPACT TEST TEST DATE: 11-06-1998

COMPONENT: 1999 NISSAN FRONTIER (MX5202) Speed: 38.38 MPH 61.8 KPH

Minimum = -18.57 G'S at 35 msec Maximum = 1.28 G'S at 122 msec

MOVING BARRIER CG X ACCELERATION

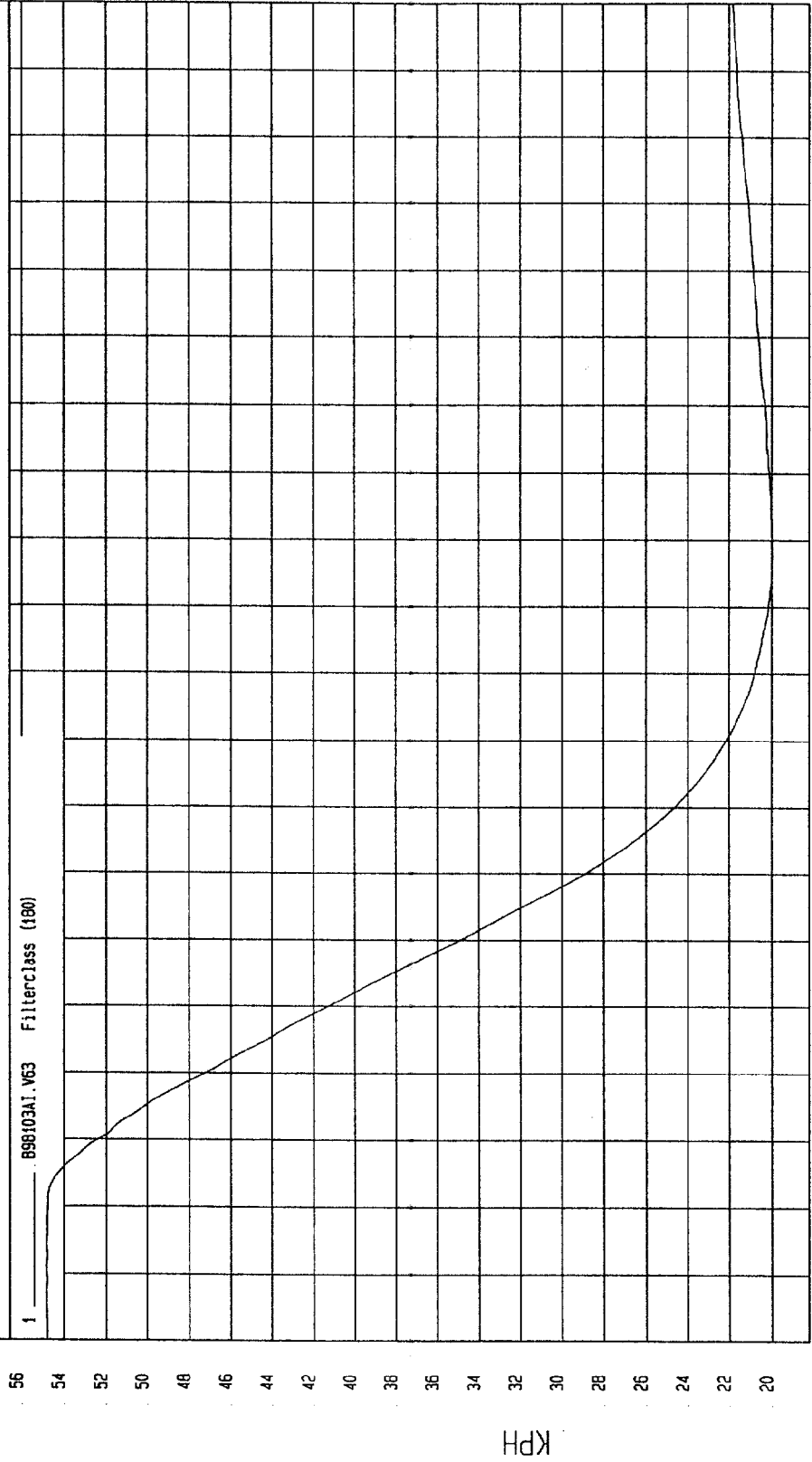


TEST: NCAP SIDE IMPACT TEST TEST DATE: 11-06-1998

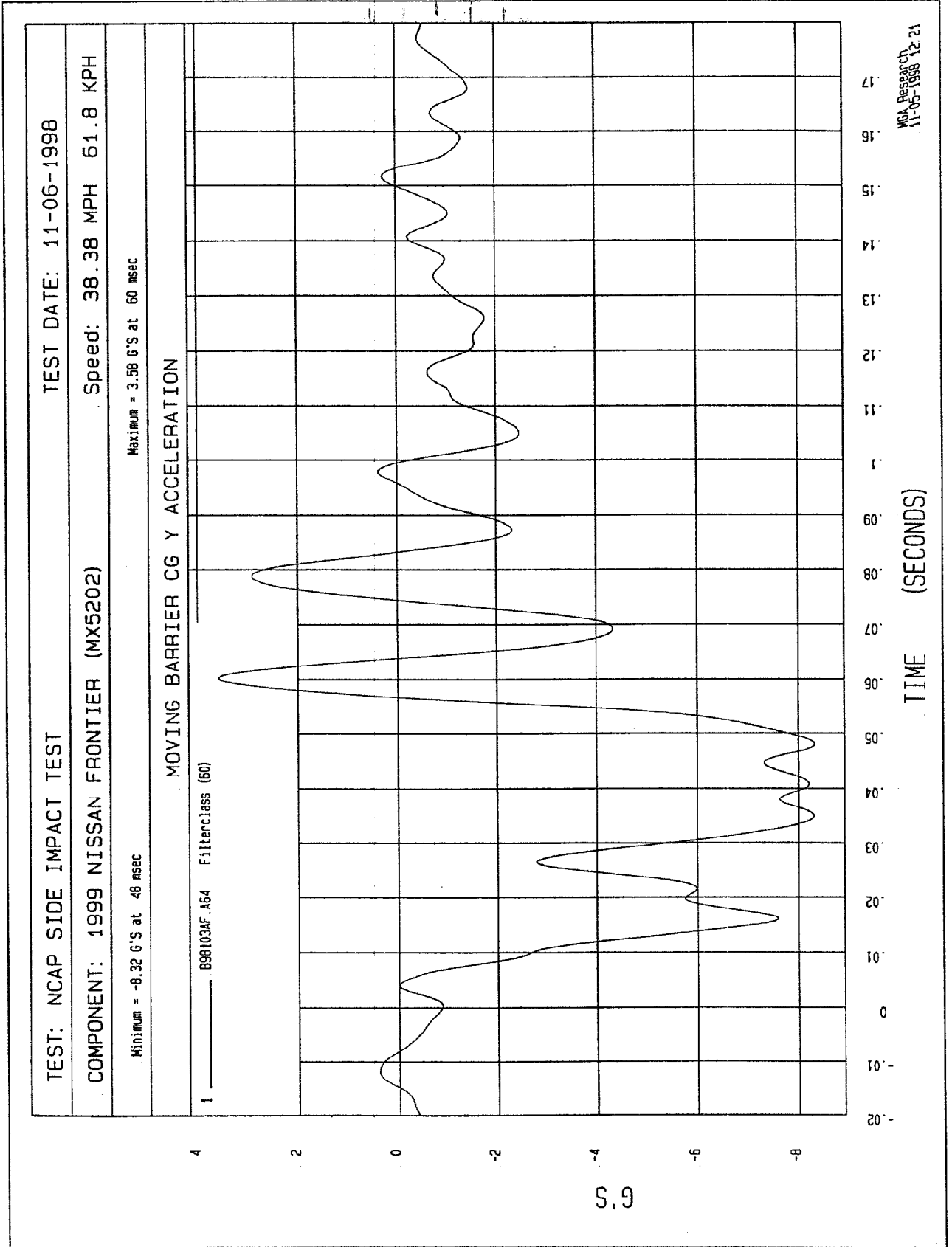
COMPONENT: 1999 NISSAN FRONTIER (MX5202) Speed: 38.38 MPH 61.8 KPH

Minimum = 19.99 KPH at 97 msec Maximum = 54.84 KPH at -9 msec

MOVING BARRIER CG X VELOCITY



W&A Research
11-05-1996 12:21

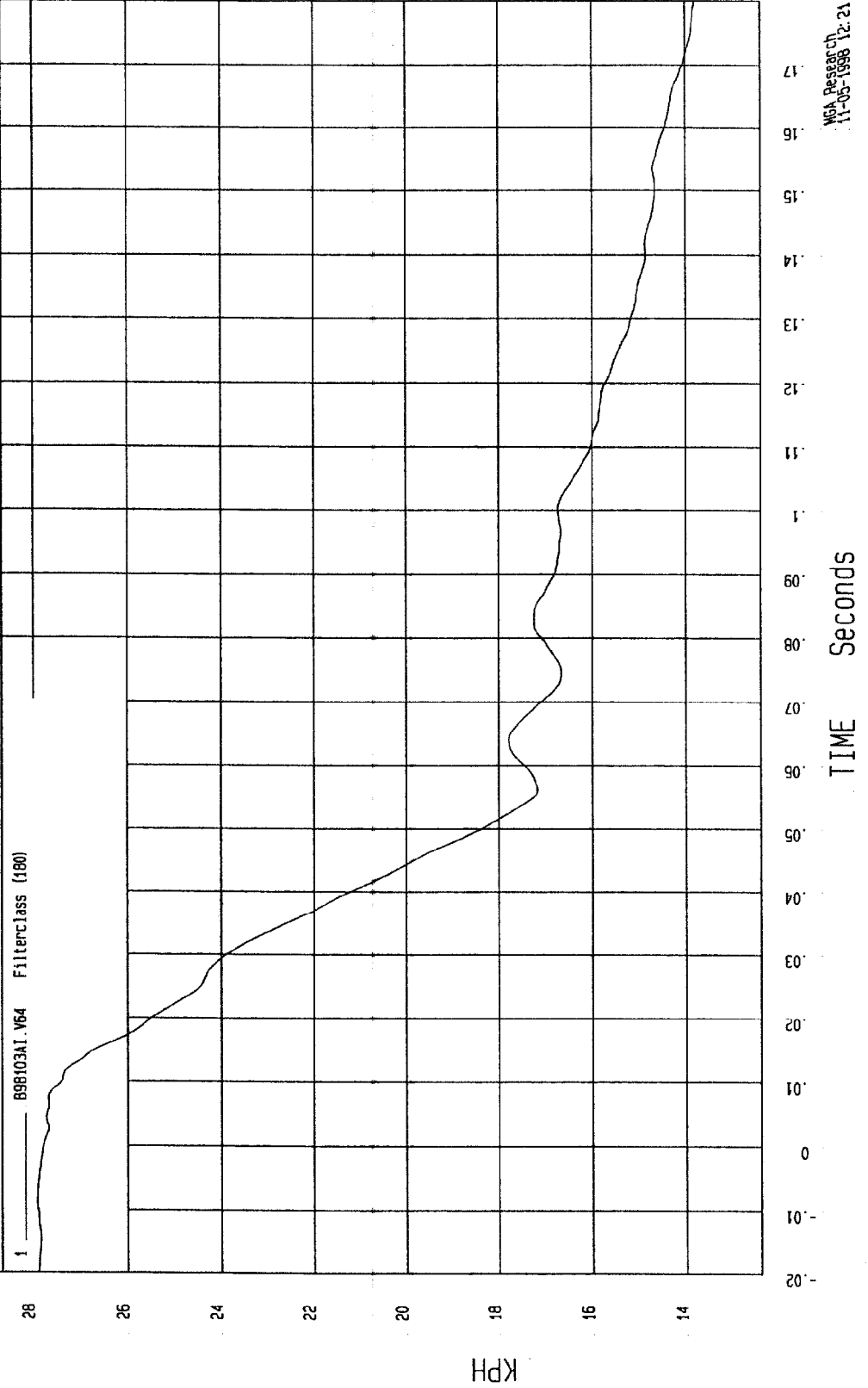


TEST: NCAP SIDE IMPACT TEST TEST DATE: 11-06-1998

COMPONENT: 1999 NISSAN FRONTIER (MX5202) Speed: 38.38 MPH 61.8 KPH

Minimum = 13.15 KPH at 200 msec Maximum = 27.93 KPH at -9 msec

MOVING BARRIER CG Y VELOCITY

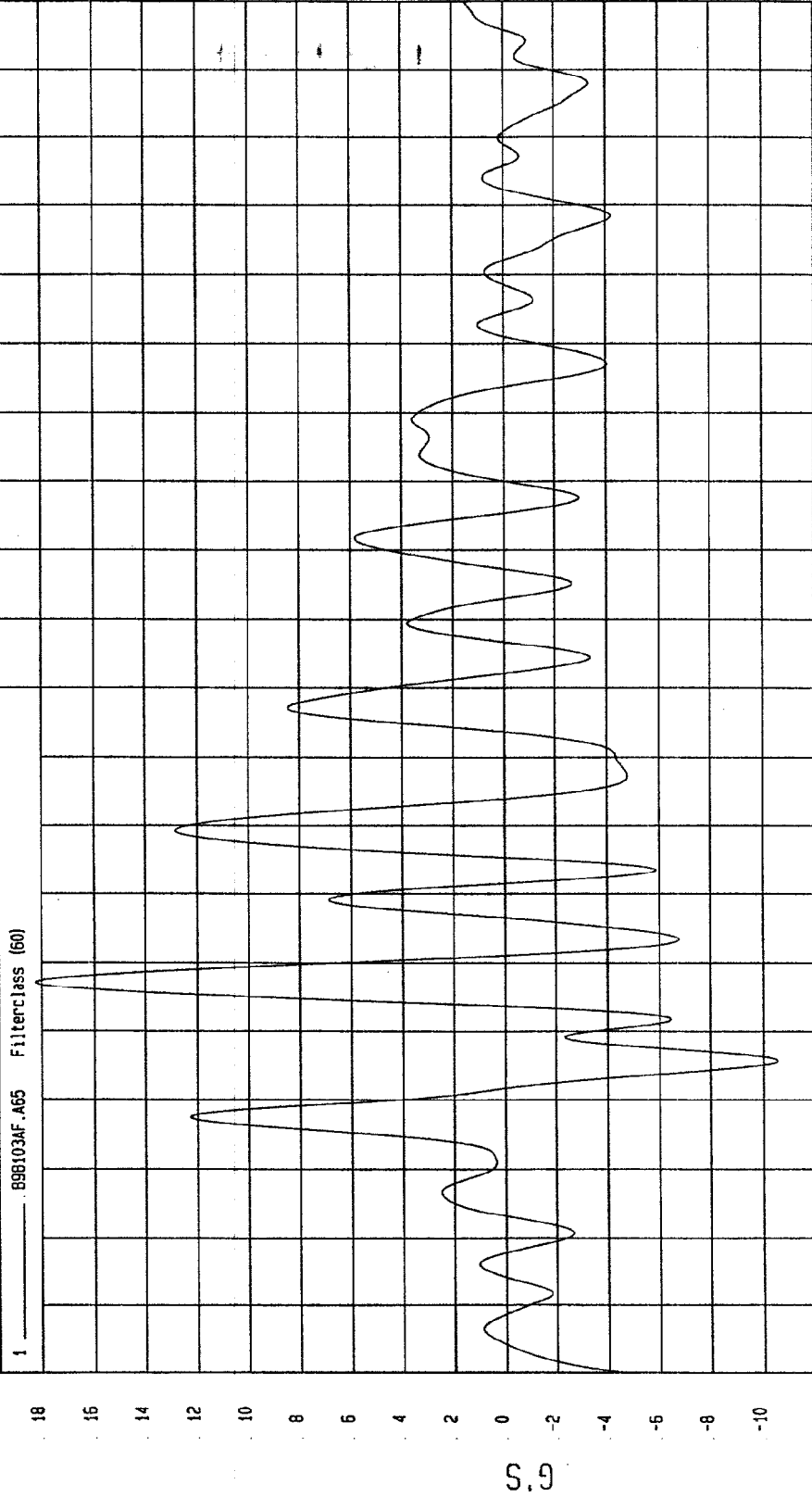


TEST: NCAP SIDE IMPACT TEST TEST DATE: 11-06-1998

COMPONENT: 1999 NISSAN FRONTIER (MX5202) Speed: 38.38 MPH 61.8 KPH

Minimum = -10.55 G'S at 26 msec Maximum = 18.23 G'S at 37 msec

MOVING BARRIER CG Z ACCELERATION



TIME (SECONDS)

MCA Research
11-05-1998 12:21

TEST: NCAP SIDE IMPACT TEST

TEST DATE: 11-06-1998

COMPONENT: 1999 NISSAN FRONTIER (MX5202)

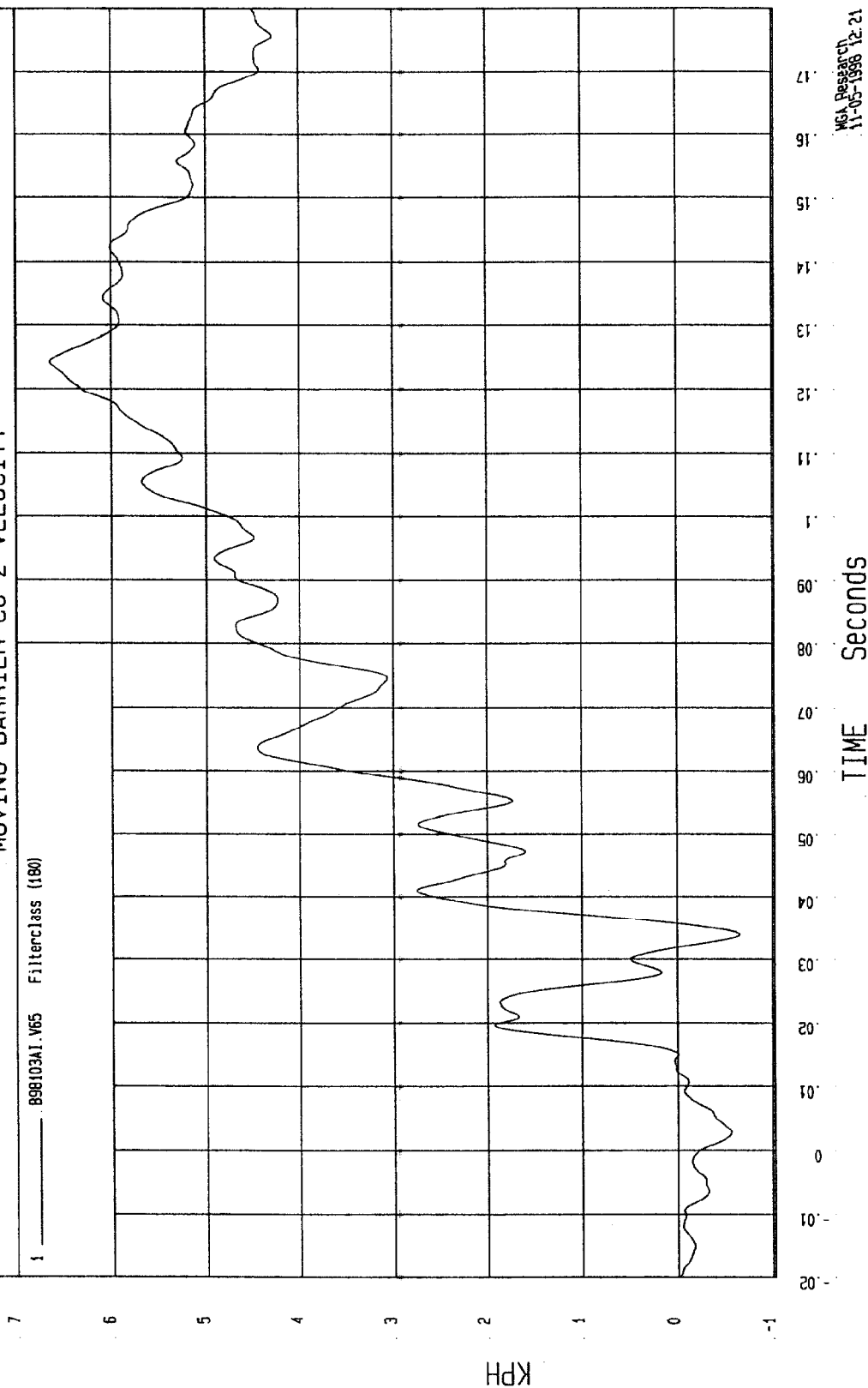
Speed: 38.38 MPH 61.8 KPH

Minimum = -1.56 KPH at 34 msec

Maximum = 6.64 KPH at 124 msec

MOVING BARRIER CG Z VELOCITY

1 B98103A1.V65 Filterclass (180)



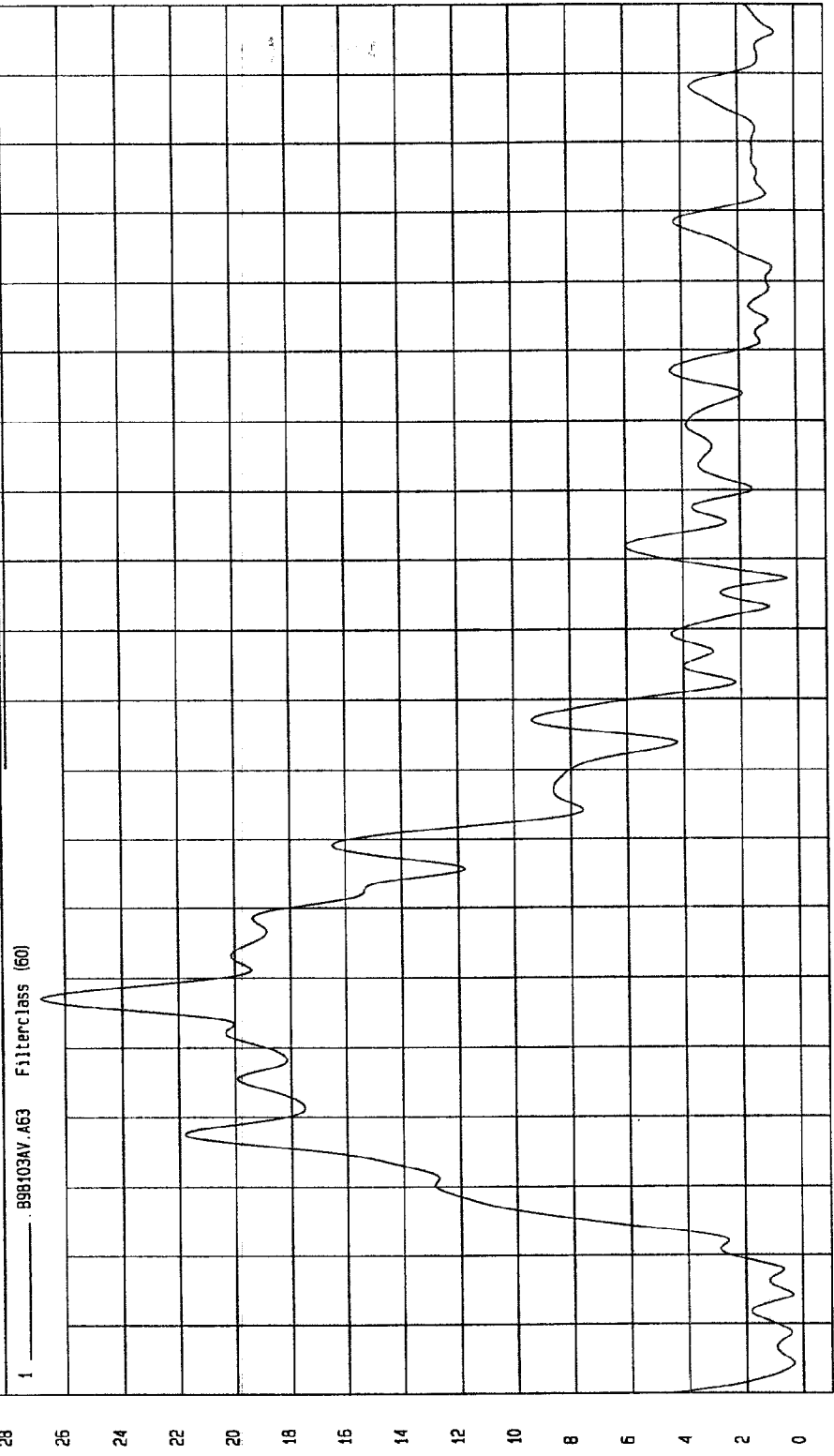
MSA Research
11-05-1998 12:21

TEST: NCAP SIDE IMPACT TEST TEST DATE: 11-06-1998

COMPONENT: 1999 NISSAN FRONTIER (MX5202) Speed: 38.38 MPH 61.8 KPH

Minimum = .32 G'S at -15 msec Maximum = 26.84 G'S at 37 msec

MOVING BARRIER CG RESULTANT ACCELERATION



TIME (SECONDS)

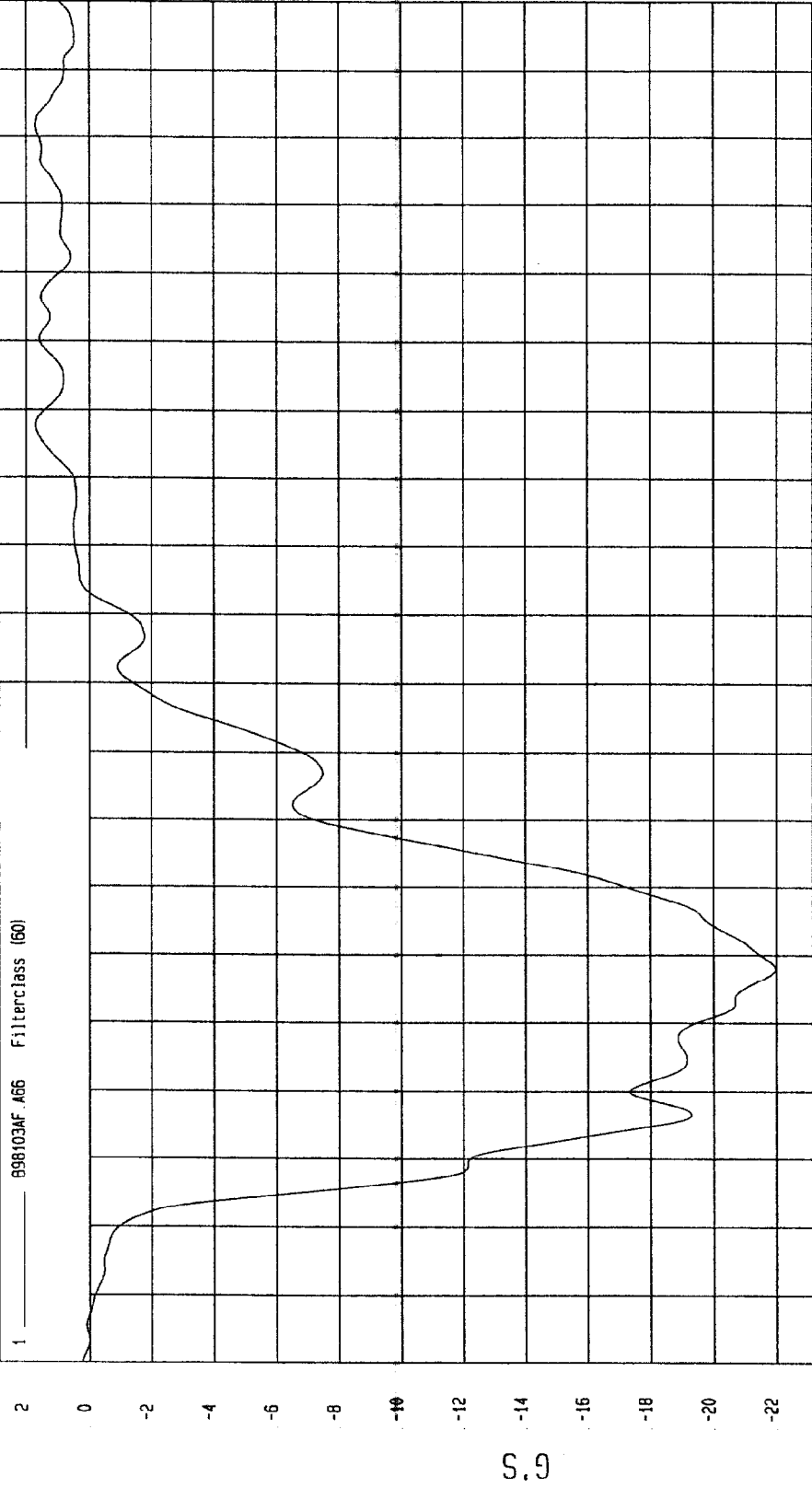
WCA Research
11-05-1998 12:21

TEST: NCAP SIDE IMPACT TEST TEST DATE: 11-06-1998

COMPONENT: 1999 NISSAN FRONTIER (MX5202) Speed: 38.38 MPH 61.8 KPH

Minimum = -21.96 G'S at 38 msec Maximum = 1.7 G'S at 118 msec

MOVING BARRIER REAR AXLE X ACCELERATION

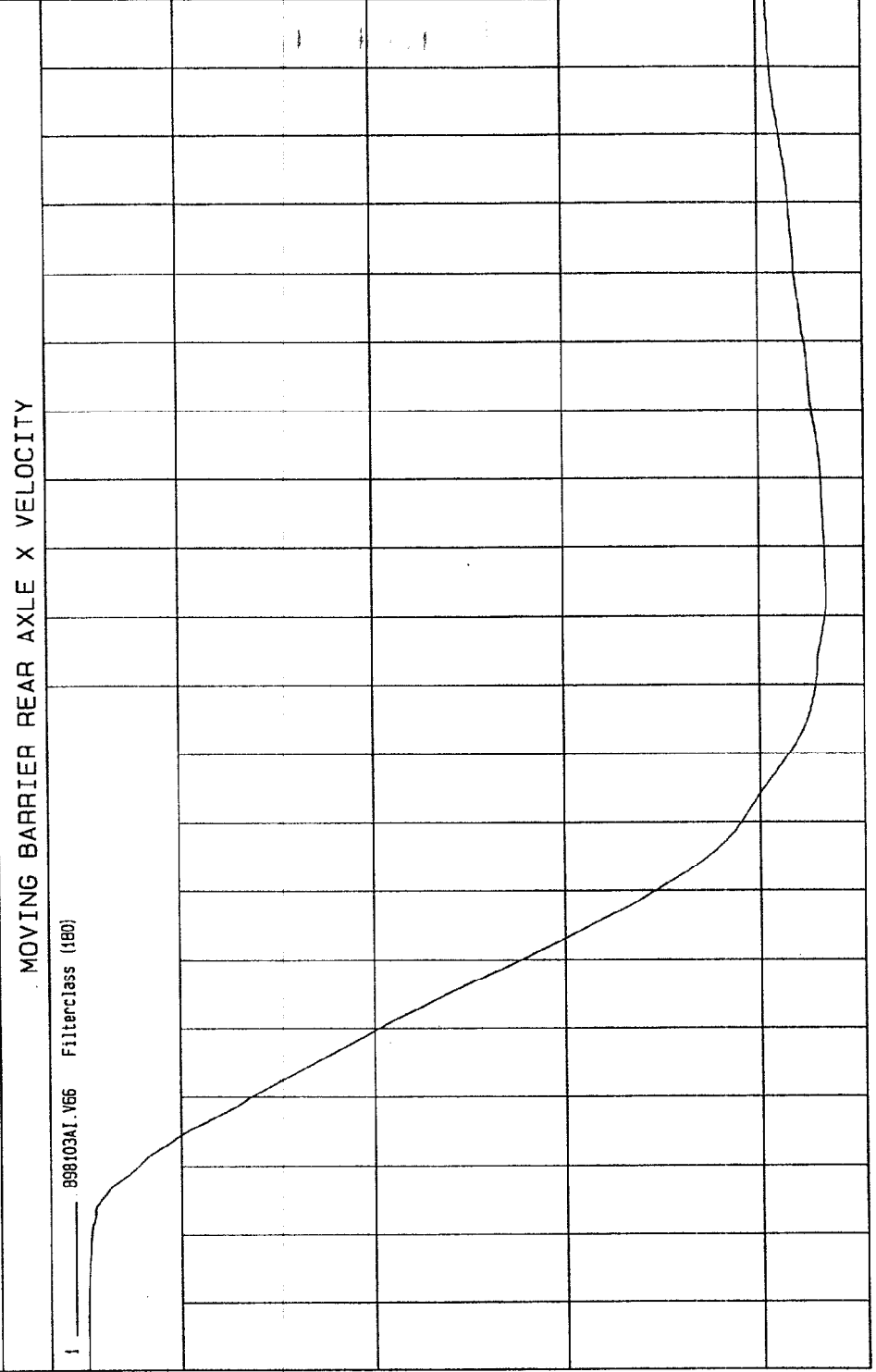


MCA Research
11-06-1998 12:21

TEST: NCAP SIDE IMPACT TEST TEST DATE: 11-06-1998

COMPONENT: 1999 NISSAN FRONTIER (MX5202) Speed: 38.38 MPH 61.8 KPH

Minimum = 16.58 KPH at 92 msec Maximum = 54.82 KPH at -13 msec



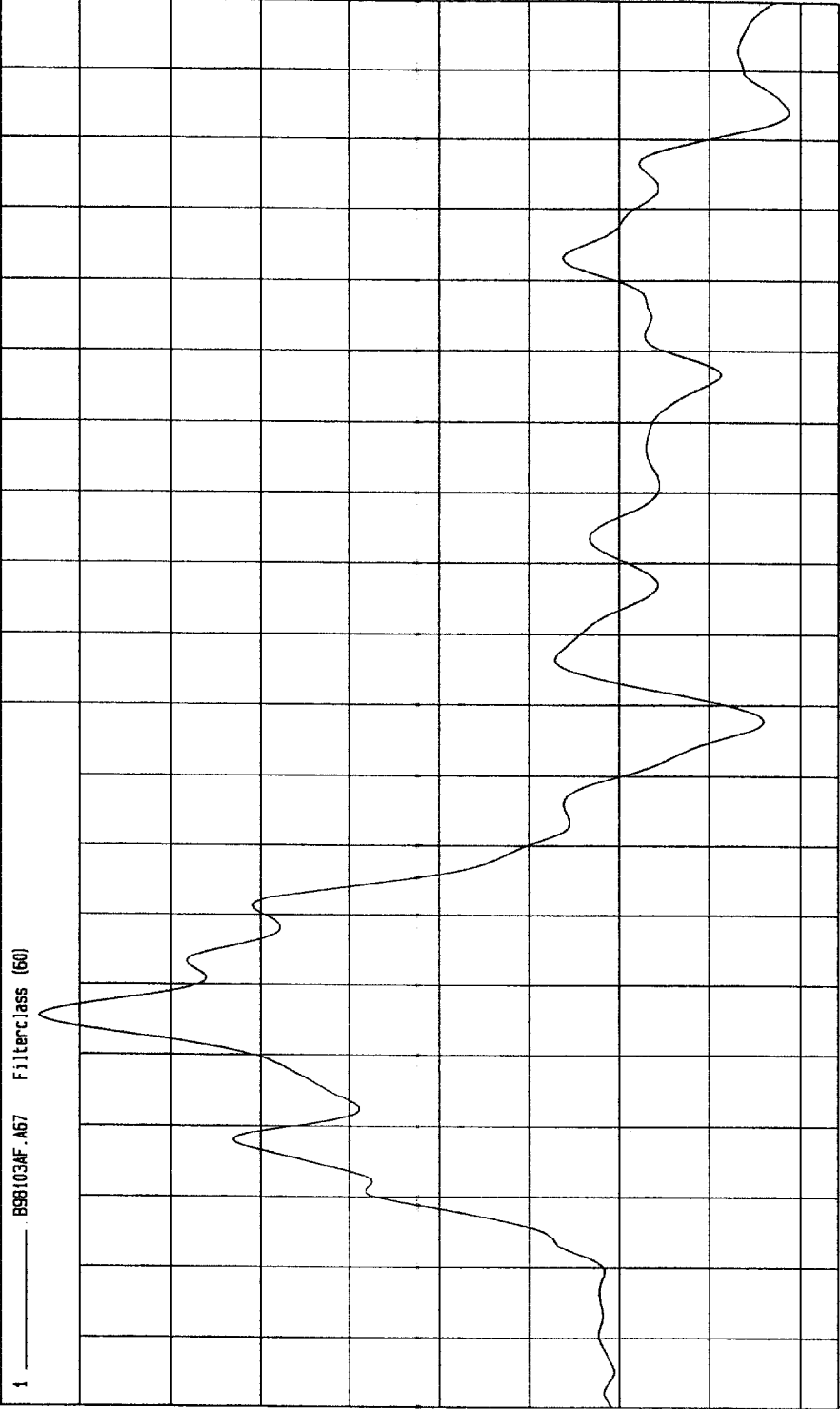
V66 Research
11-05-1998 12:21

TEST: NCAP SIDE IMPACT TEST TEST DATE: 11-06-1998

COMPONENT: 1999 NISSAN FRONTIER (MX5202) Speed: 38.38 MPH 61.8 KPH

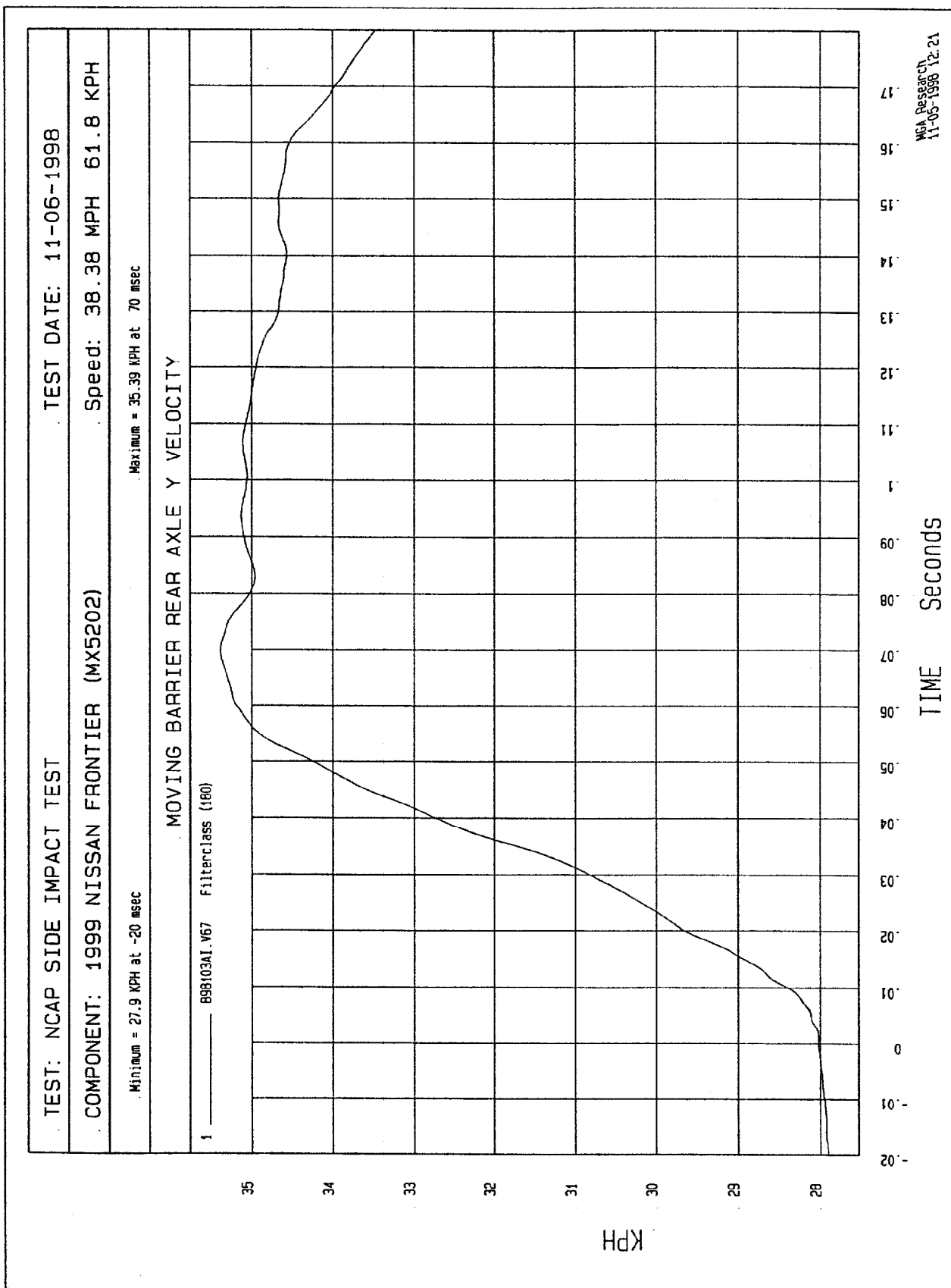
Minimum = -2 G'S at 184 msec Maximum = 6.45 G'S at 36 msec

MOVING BARRIER REAR AXLE Y ACCELERATION



TIME (SECONDS)

WCA Research
11-05-1998 12:21



TEST: NCAP SIDE IMPACT TEST

TEST DATE: 11-06-1998

Speed: 38.38 MPH 61.8 KPH

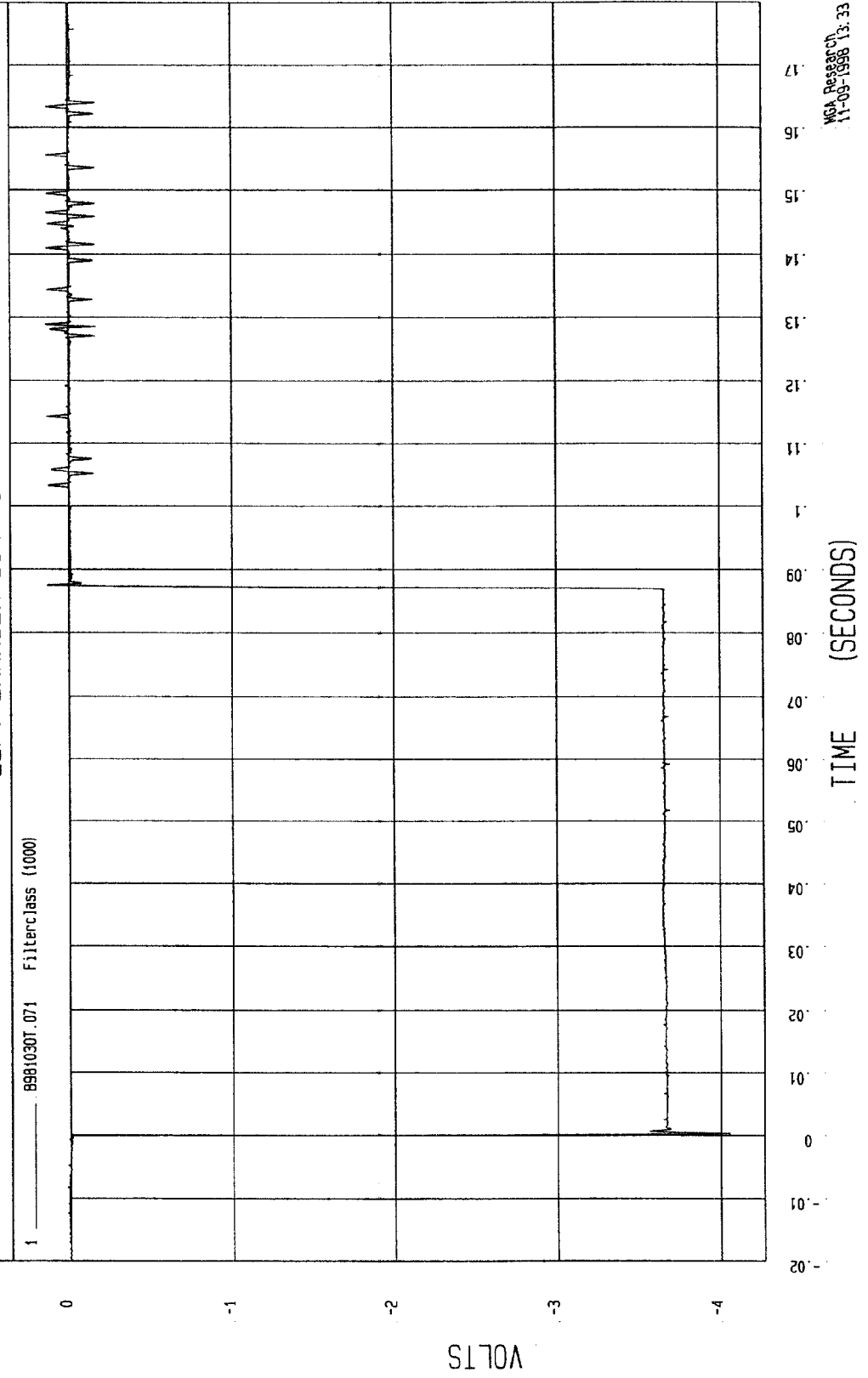
COMPONENT: 1999 NISSAN FRONTIER (MX5202)

Minimum = -4.05 VOLTS at 0 msec

Maximum = .15 VOLTS at 187 msec

LEFT BARRIER CONTACT

1 8981030T.071 FilterClass (1000)



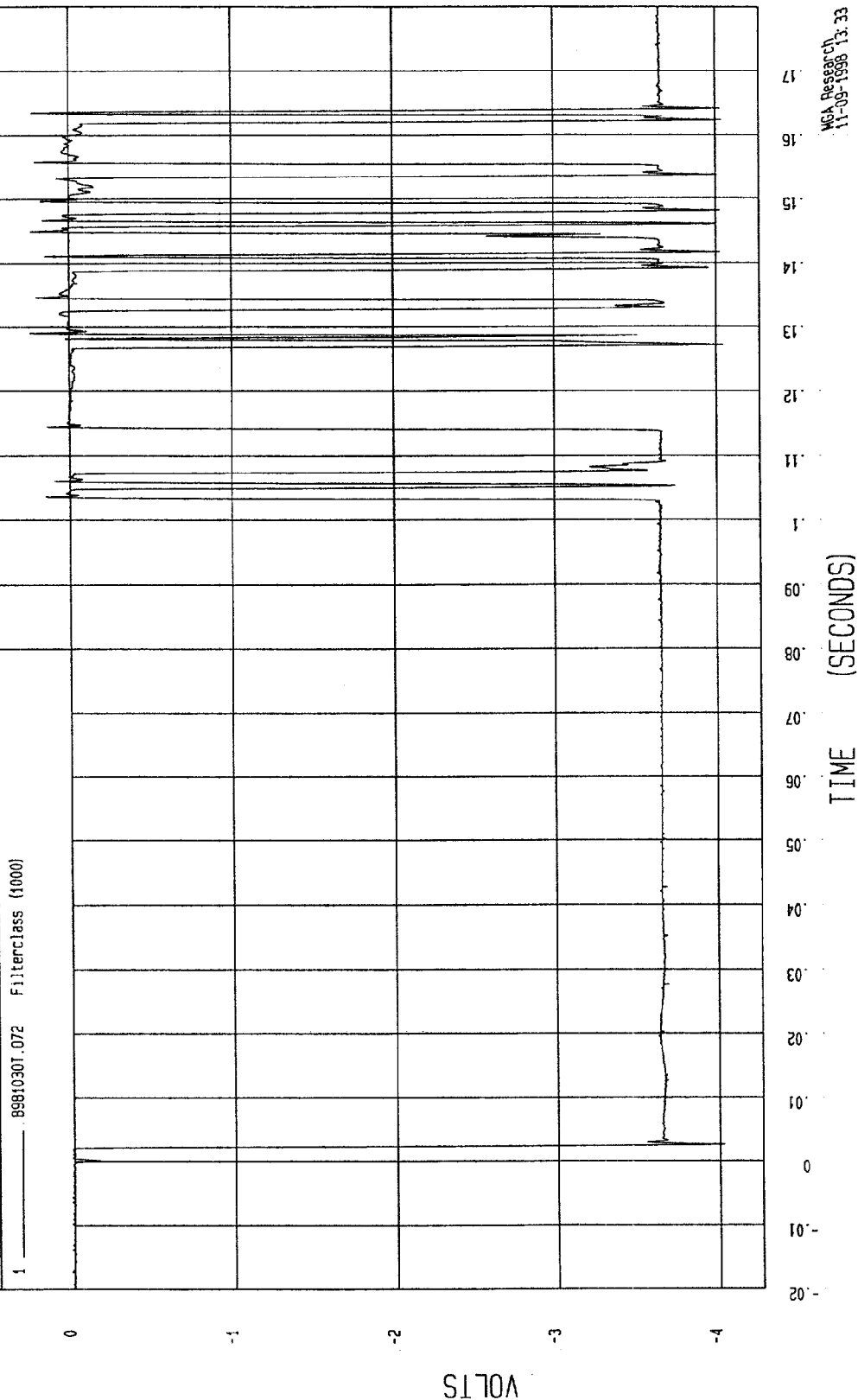
MCA Research
11-09-1998 13:33

TEST: NCAP SIDE IMPACT TEST TEST DATE: 11-06-1998

COMPONENT: 1999 NISSAN FRONTIER (MX5202) Speed: 38.38 MPH 61.8 KPH

Minimum = -4.04 VOLTS at 127 msec Maximum = .23 VOLTS at 129 msec

RIGHT BARRIER CONTACT



TEST: NCAP SIDE IMPACT TEST TEST DATE: 11-06-1998

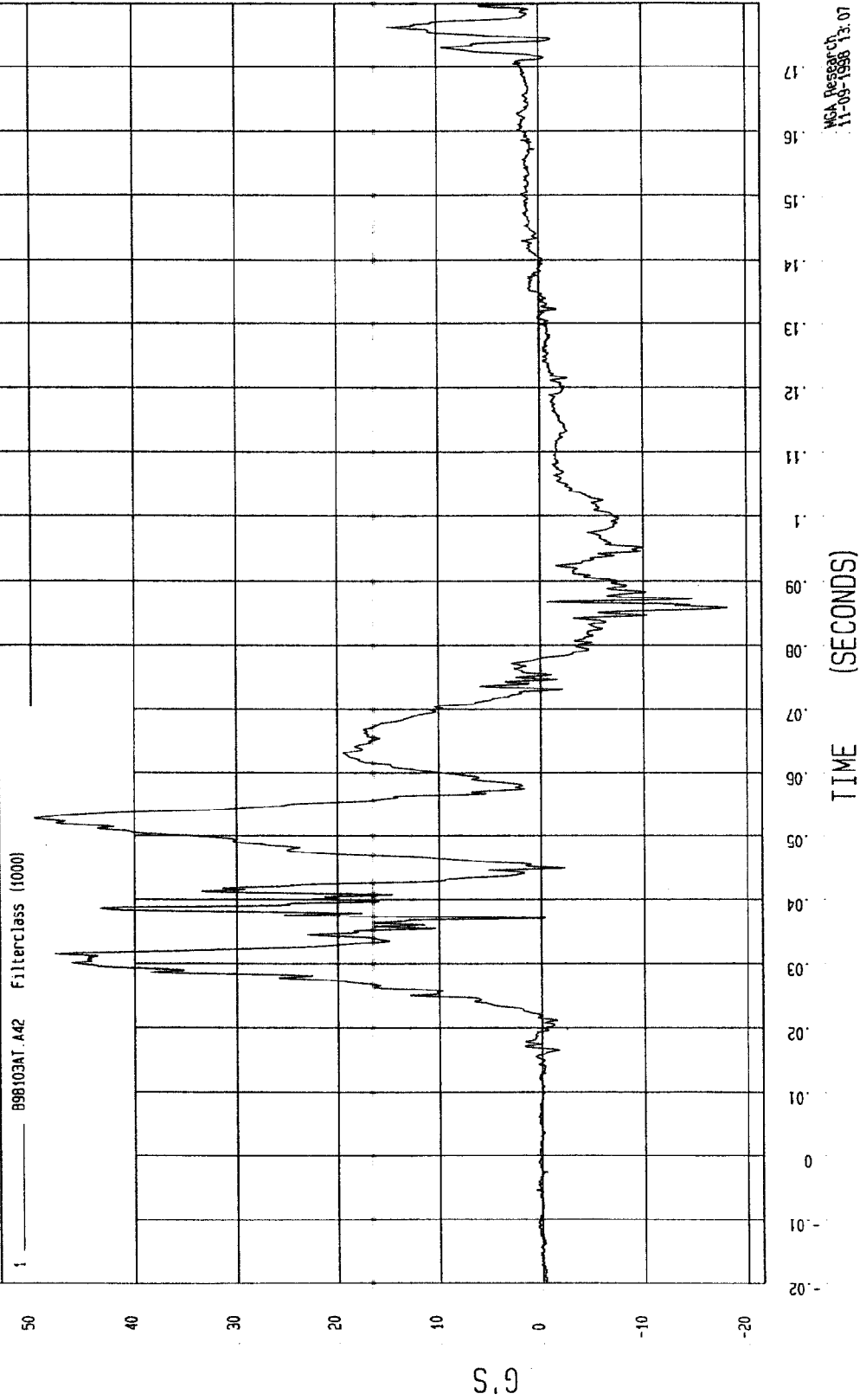
SPEED: 38.38 MPH 61.8 KPH

COMPONENT: 1999 NISSAN FRONTIER (MX5202)

Maximum = 49.73 G'S at 53 msec

Minimum = -18.09 G'S at 86 msec

DRIVER UPPER RIB Y REDUNDANT ACCELERATION



MCA Research
11-09-1998 13:07

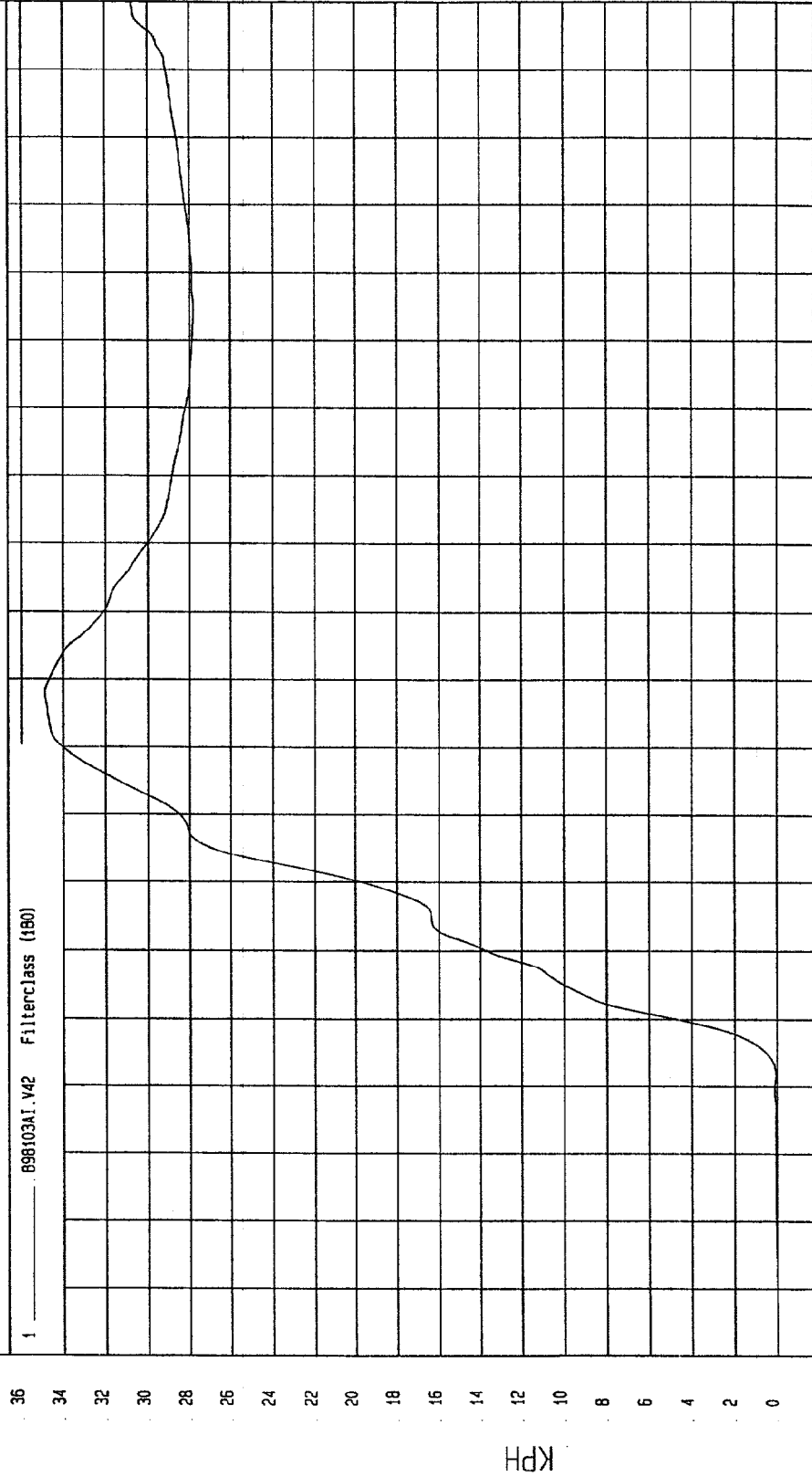
TEST: NCAP SIDE IMPACT TEST TEST DATE: 11-06-1998

COMPONENT: 1999 NISSAN FRONTIER (MX5202) Speed: 38.38 MPH 61.8 KPH

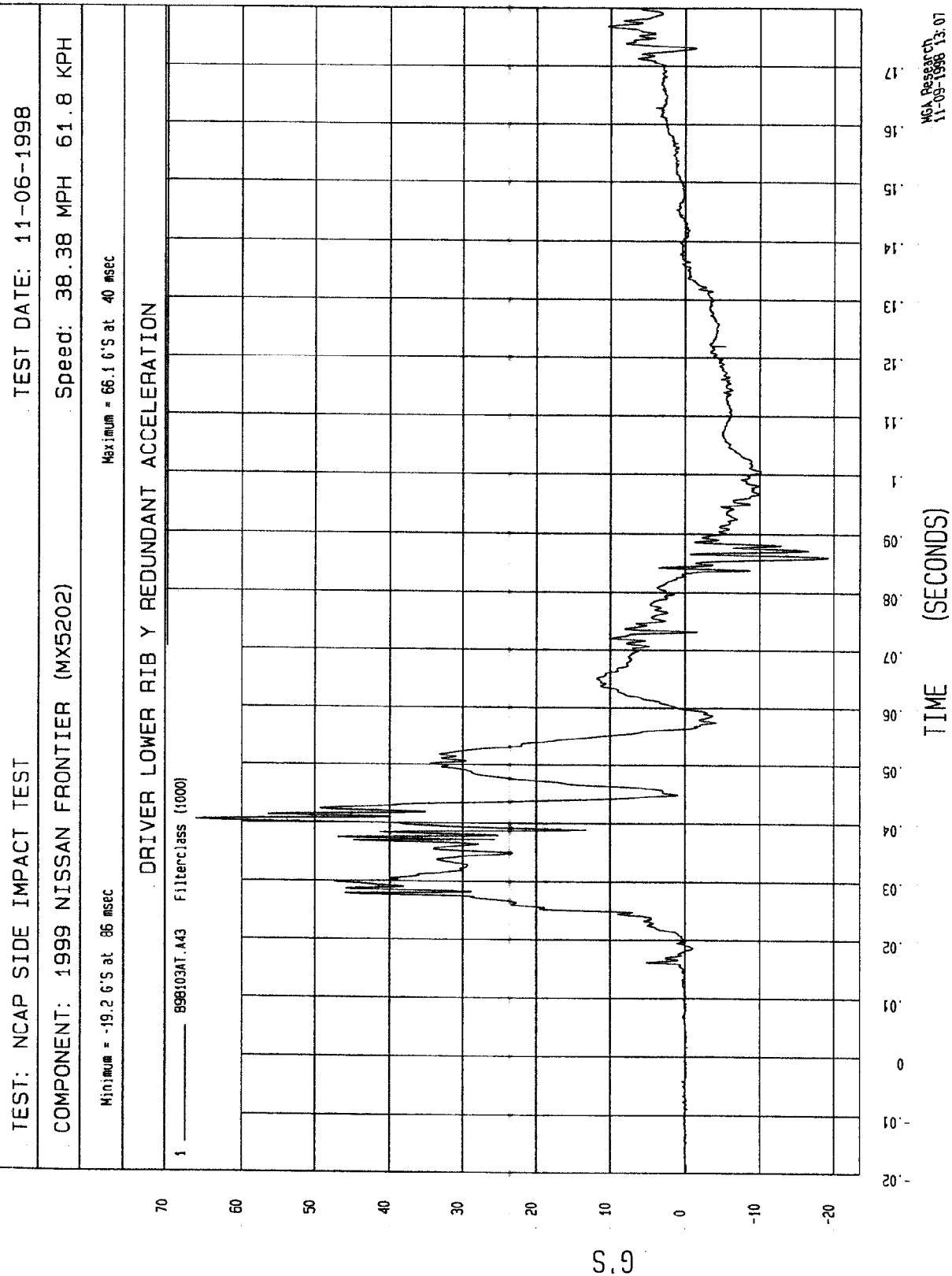
Minimum = -2.17E-02 KPH at -17 msec
Maximum = 34.89 KPH at 78 msec

DRIVER UPPER RIB Y REDUNDANT VELOCITY

1 898103A1.V42 Filterclass (180)



WGA Research
11-09-1998 13:07

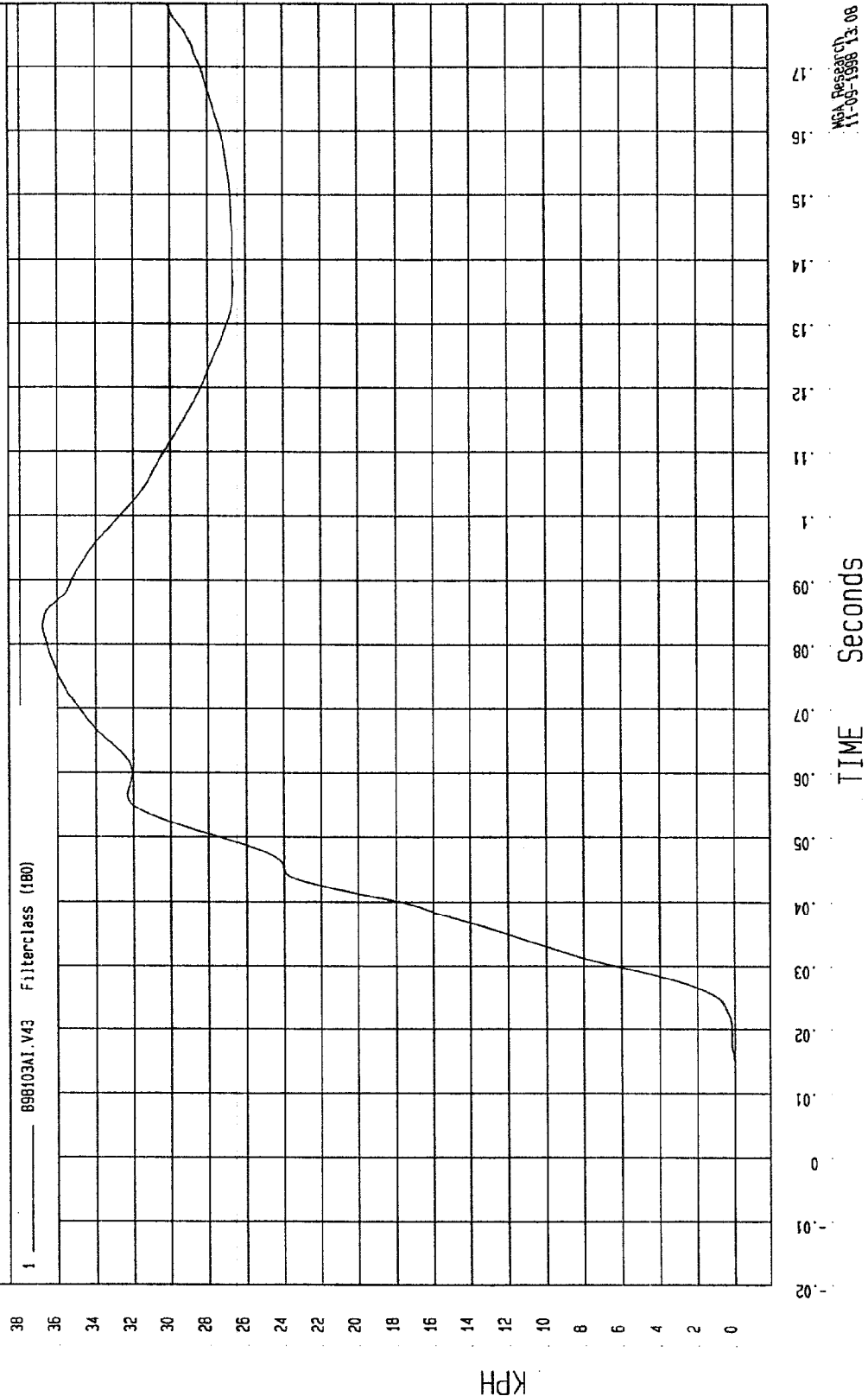


TEST: NCAP SIDE IMPACT TEST TEST DATE: 11-06-1998

COMPONENT: 1999 NISSAN FRONTIER (MX5202) Speed: 38.38 MPH 61.8 KPH

Minimum = -02 KPH at 5 msec Maximum = 36.77 KPH at 83 msec

DRIVER LOWER RIB Y REDUNDANT VELOCITY



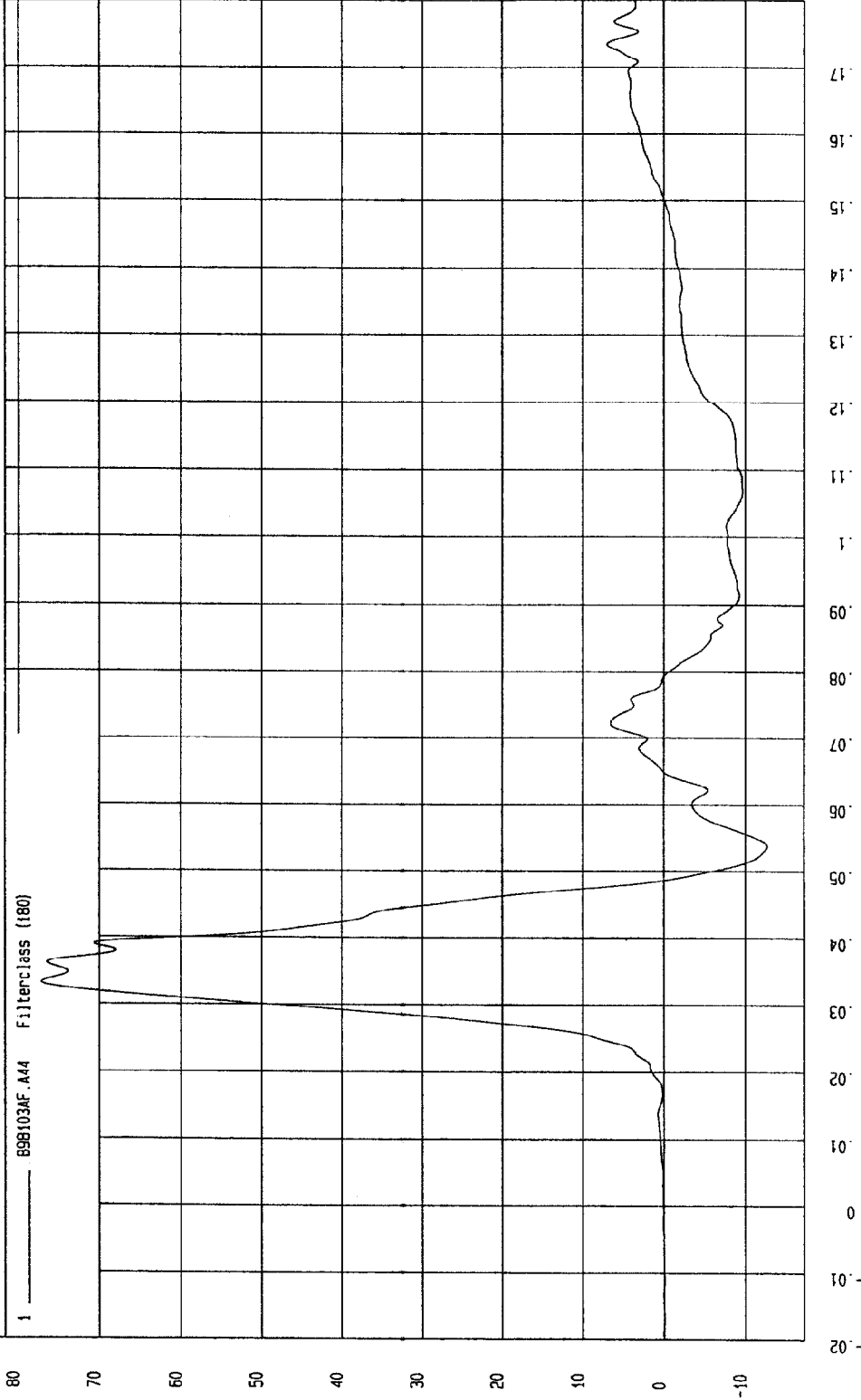
MCA Research
11-09-1998 13:08

TEST: NCAP SIDE IMPACT TEST TEST DATE: 11-06-1998

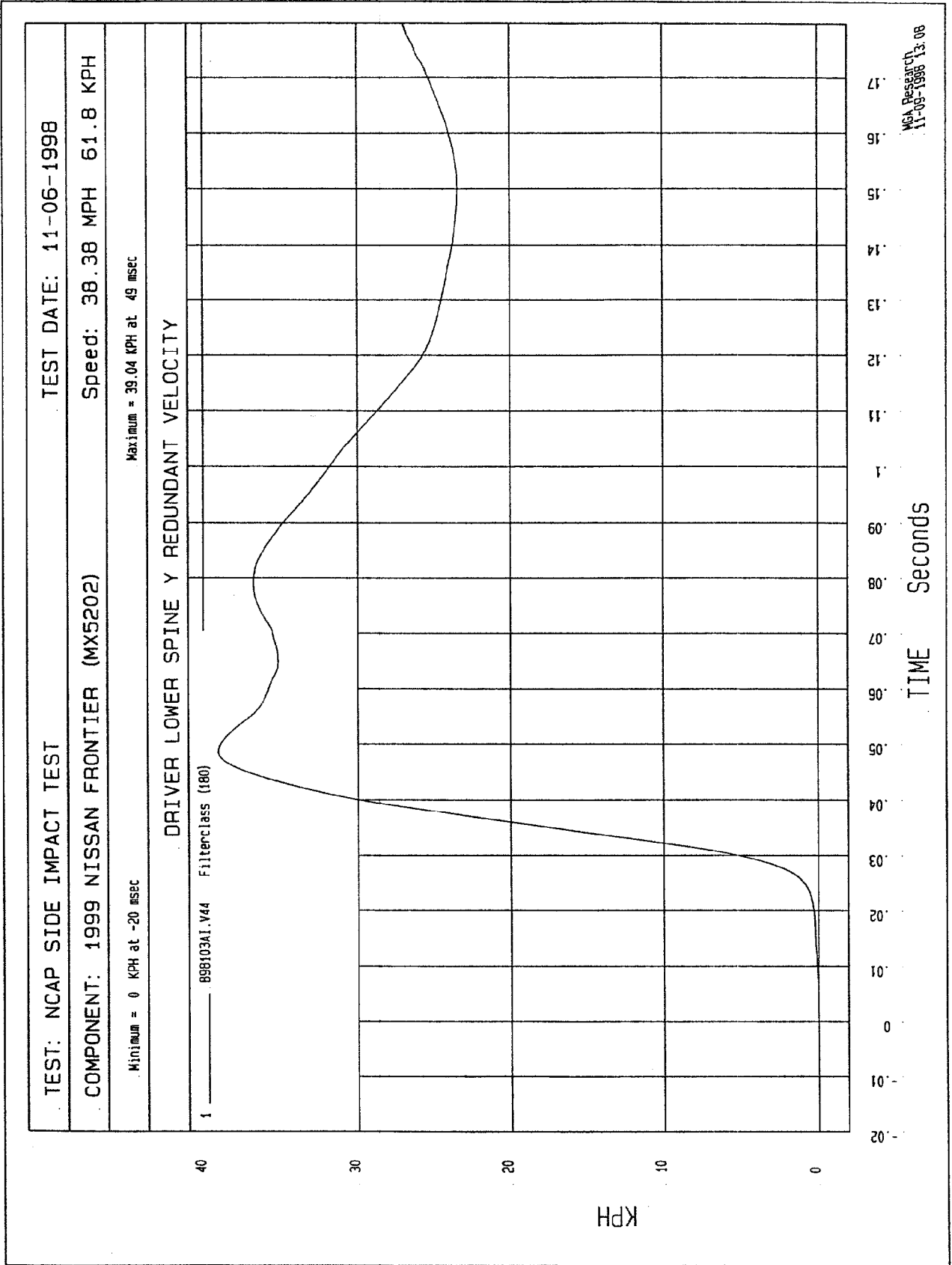
COMPONENT: 1999 NISSAN FRONTIER (MX5202) Speed: 38.38 MPH 61.8 KPH

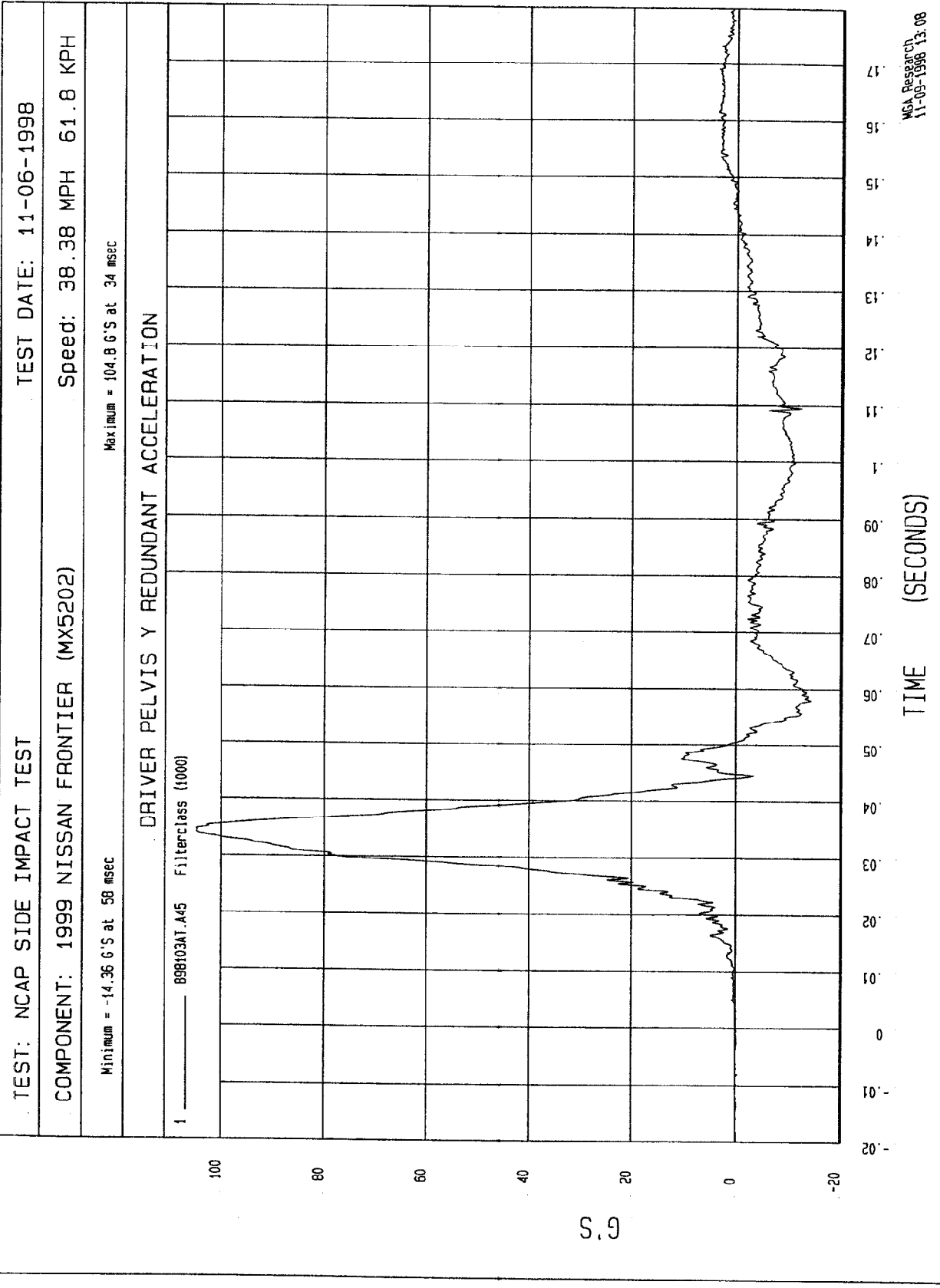
Minimum = -12.68 G'S at 54 msec Maximum = 77.16 G'S at 33 msec

DRIVER LOWER SPINE Y REDUNDANT ACCELERATION



MSA Research
11-09-1998 13:08





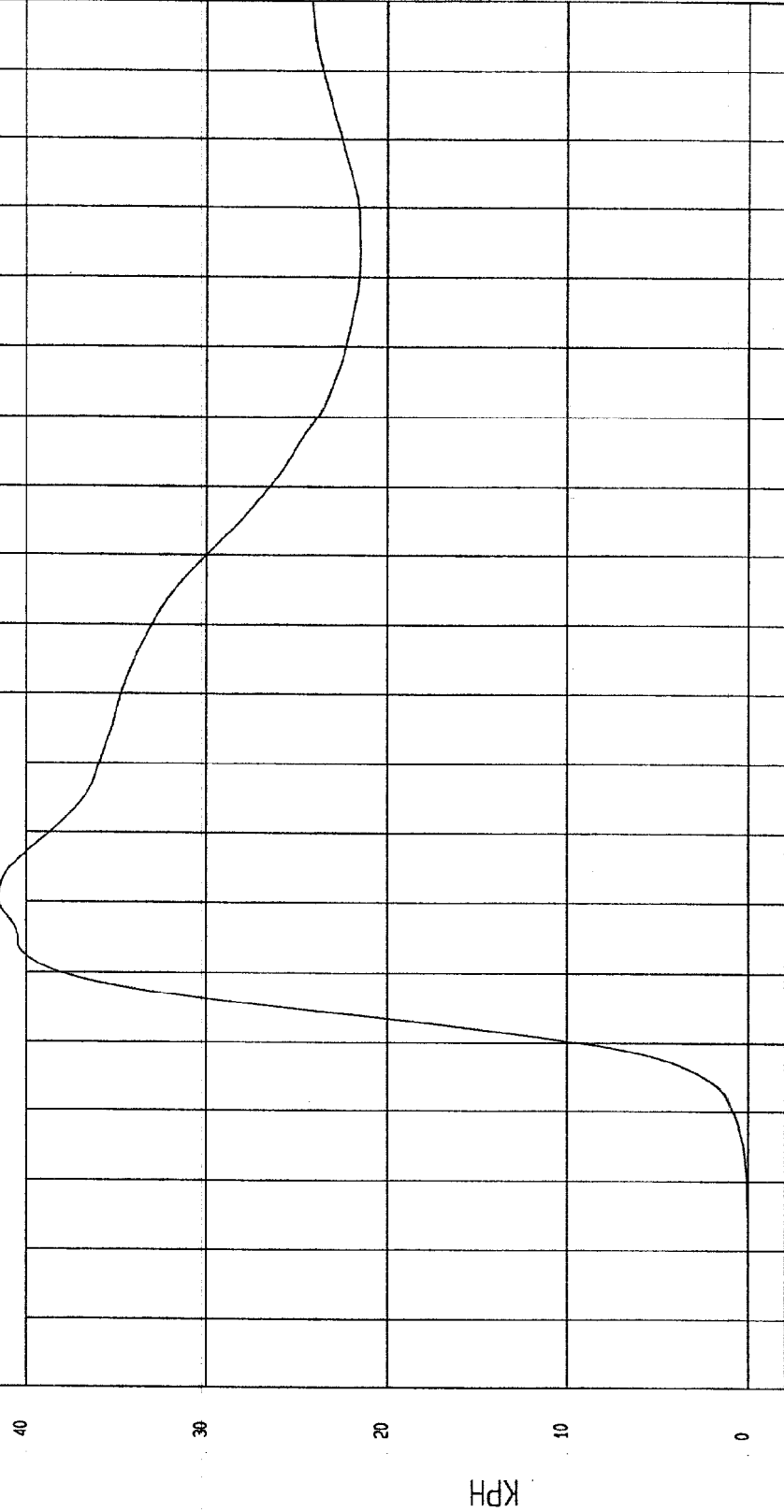
TEST: NCAP SIDE IMPACT TEST TEST DATE: 11-06-1998

COMPONENT: 1999 NISSAN FRONTIER (MX5202) Speed: 38.38 MPH 61.8 KPH

Minimum = -1.02E-02 KPH at -12 msec Maximum = 41.55 KPH at 50 msec

DRIVER PELVIS Y REDUNDANT VELOCITY

1 ——— B98103A1.V45 FilterClass (180)



FINITE IMPULSE RESPONSE (FIR) FILTERED DATA

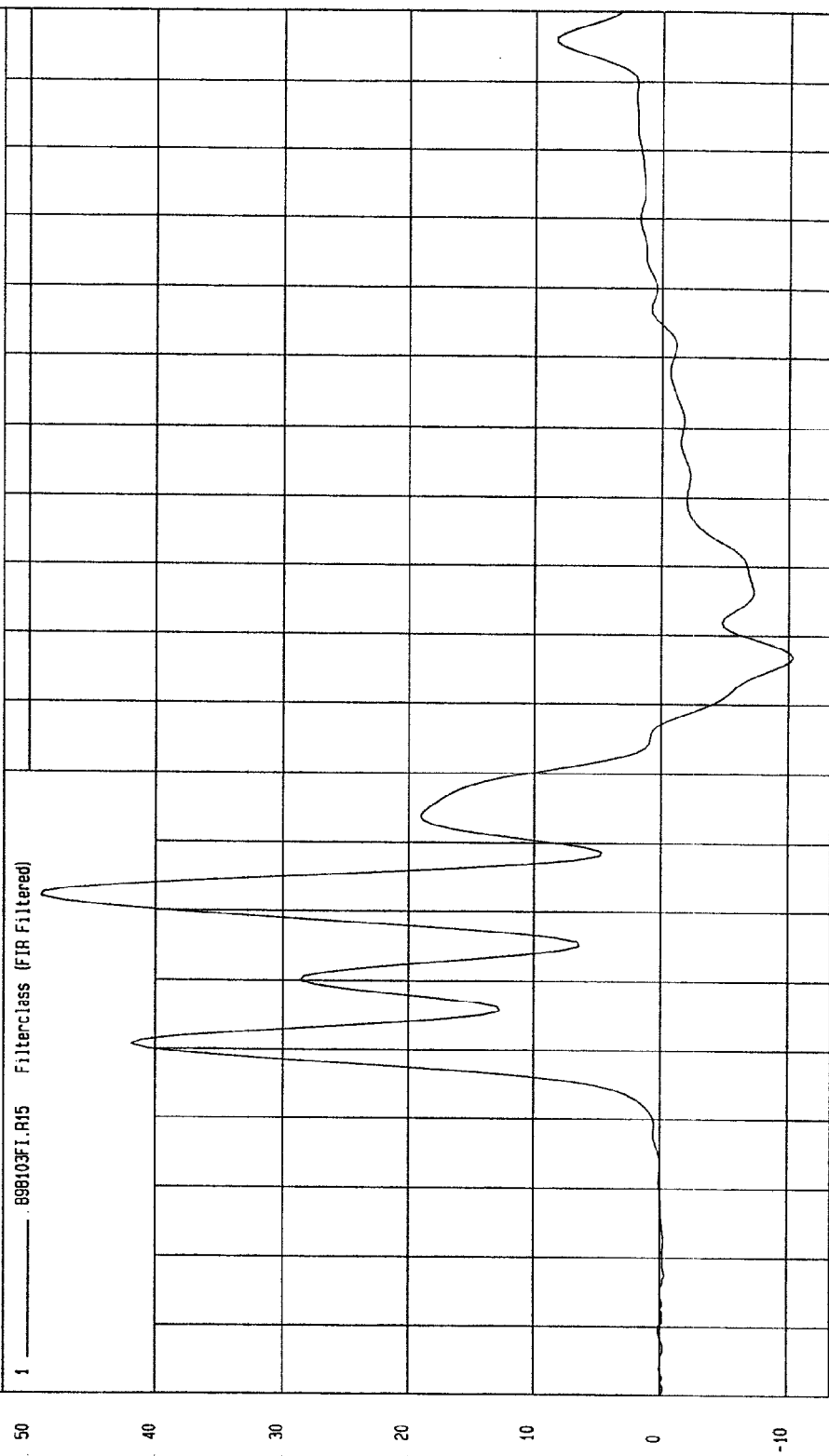
TEST: NCAP SIDE IMPACT TEST TEST DATE: 11-06-1998

COMPONENT: 1999 NISSAN FRONTIER Speed: 38.38 MPH 61.8 KPH

Minimum = -10.35 G'S at 87 msec
Maximum = 49.05 G'S at 52 msec

DRIVER UPPER RIB Y ACCELERATION

1 ——— 898103F1.R15 Filterclass (FIR Filtered)



WCA Research
11-11-1998 12:41

TEST: NCAP SIDE IMPACT TEST

TEST DATE: 11-06-1998

COMPONENT: 1999 NISSAN FRONTIER

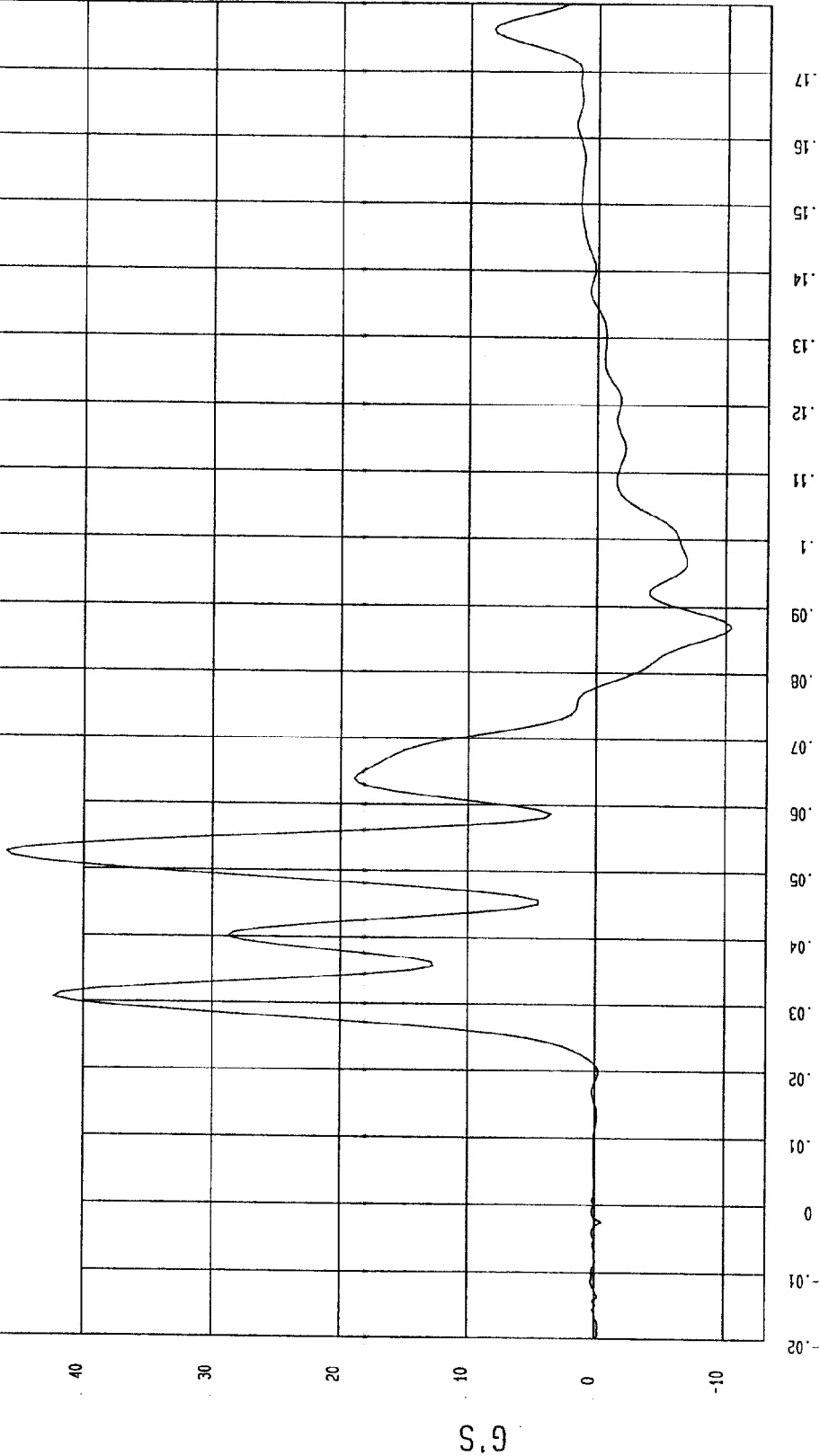
Speed: 38.38 MPH 61.8 KPH

Minimum = -10.4 G'S at 87 msec

Maximum = 45.98 G'S at 52 msec

DRIVER UPPER RIB Y REDUNDANT ACCELERATION

1 ——— 898103F1.R42 Filterclass (FIR Filtered)



MCA Research
11-11-1998 12:41

TIME (SECONDS)

TEST: NCAP SIDE IMPACT TEST

TEST DATE: 11-06-1998

Speed: 38.38 MPH 61.8 KPH

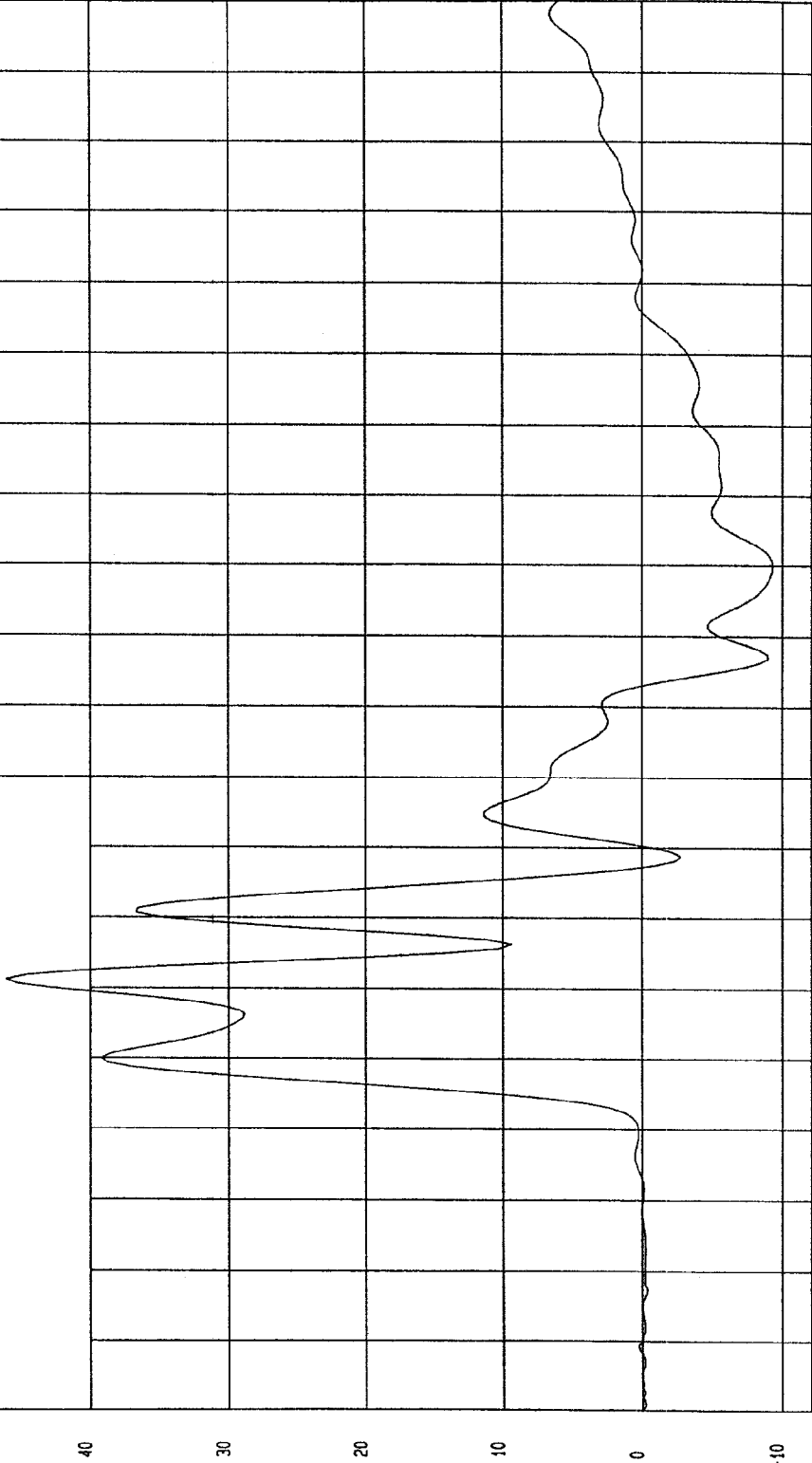
COMPONENT: 1999 NISSAN FRONTIER

Maximum = 46.13 G'S at 41 msec

Minimum = -9.31 G'S at 100 msec

DRIVER LOWER RIB Y ACCELERATION

1 898103F1.R16 Filterclass (FIR Filtered)



MCA Research
11-11-1998 12:41

TIME (SECONDS)

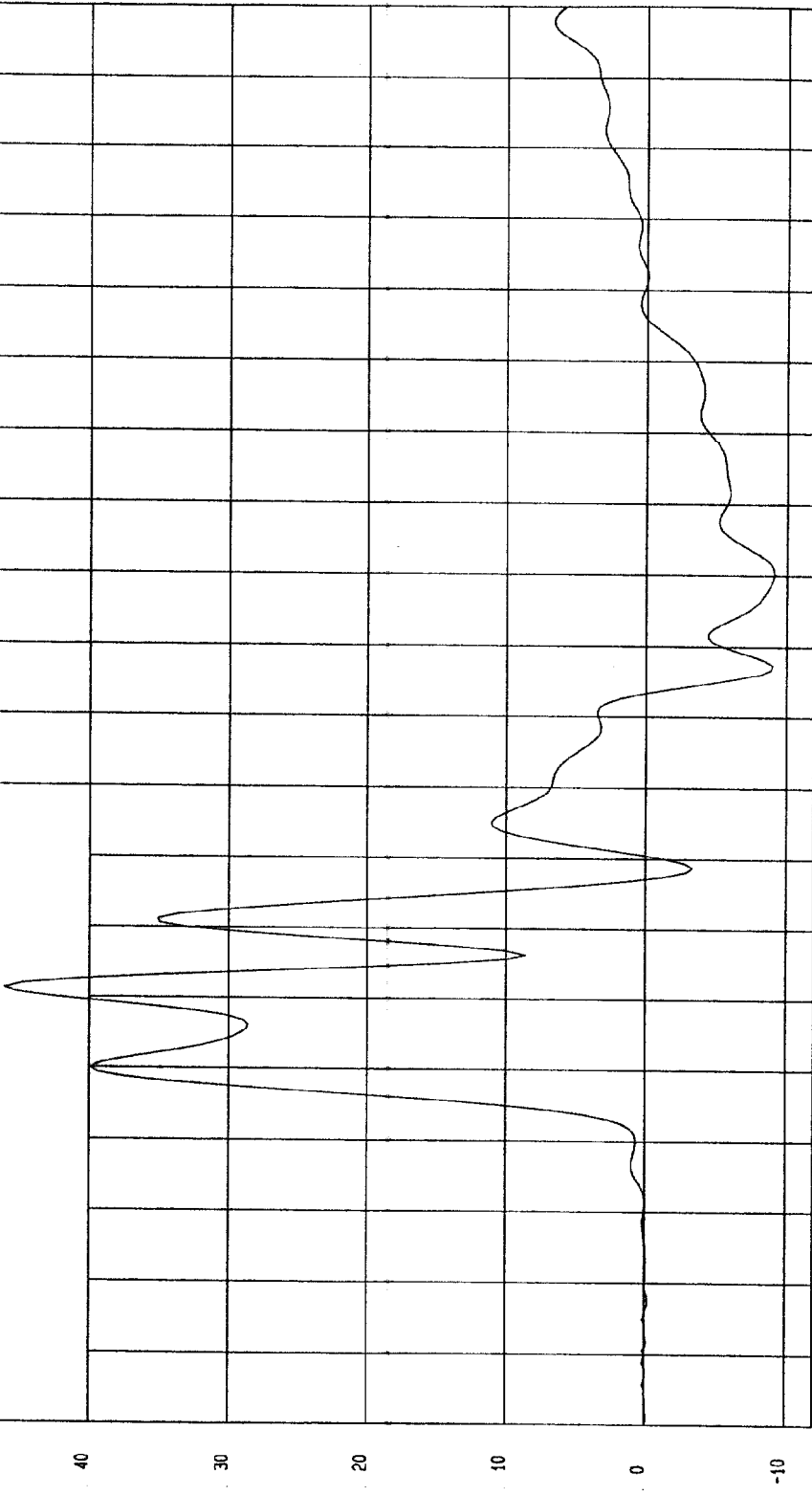
TEST: NCAP SIDE IMPACT TEST TEST DATE: 11-06-1998

COMPONENT: 1999 NISSAN FRONTIER Speed: 38.38 MPH 61.8 KPH

Minimum = -9.13 G'S at 101 msec Maximum = 46.07 G'S at 41 msec

DRIVER LOWER RIB Y REDUNDANT ACCELERATION

1 898103F1.R43 Filterclass (FIR Filtered)



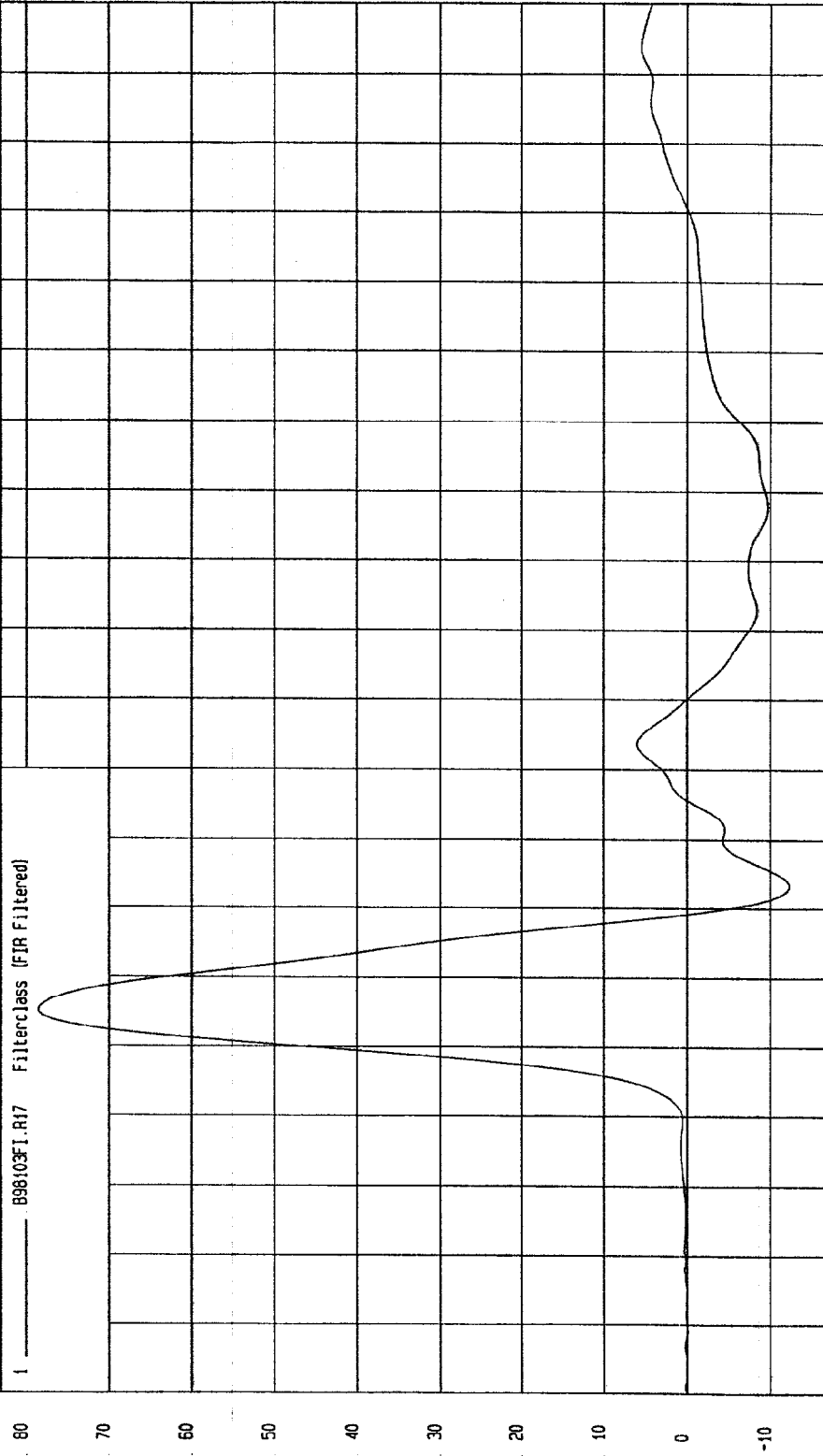
MCA Research
11-11-1998 12:41

TEST: NCAP SIDE IMPACT TEST TEST DATE: 11-06-1998

COMPONENT: 1999 NISSAN FRONTIER Speed: 38.38 MPH 61.8 KPH

Minimum = -12.31 G'S at 53 msec Maximum = 78.54 G'S at 35 msec

DRIVER LOWER SPINE Y ACCELERATION



WCA Research
11-11-1998 12:41

TEST: NCAP SIDE IMPACT TEST

TEST DATE: 11-06-1998

Speed: 38.38 MPH 61.8 KPH

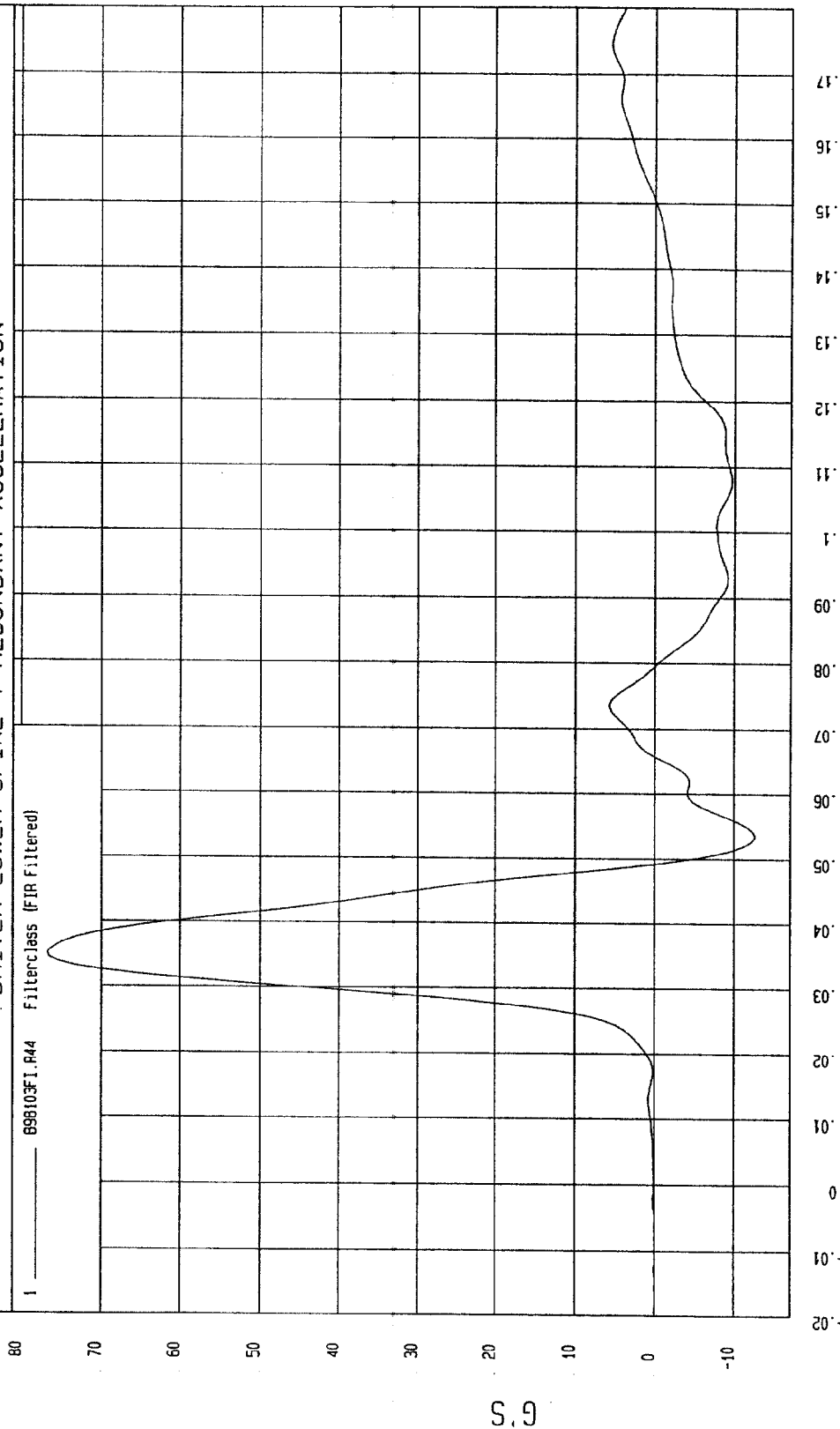
COMPONENT: 1999 NISSAN FRONTIER

Maximum = 76.67 G'S at 35 msec

Minimum = -12.54 G'S at 54 msec

DRIVER LOWER SPINE Y REDUNDANT ACCELERATION

1 _____ 898103F1.R44 FilterClass (FIR Filtered)



NGA Research
11-11-1998 12:41

TIME (SECONDS)

TEST: NCAP SIDE IMPACT TEST

TEST DATE: 11-06-1998

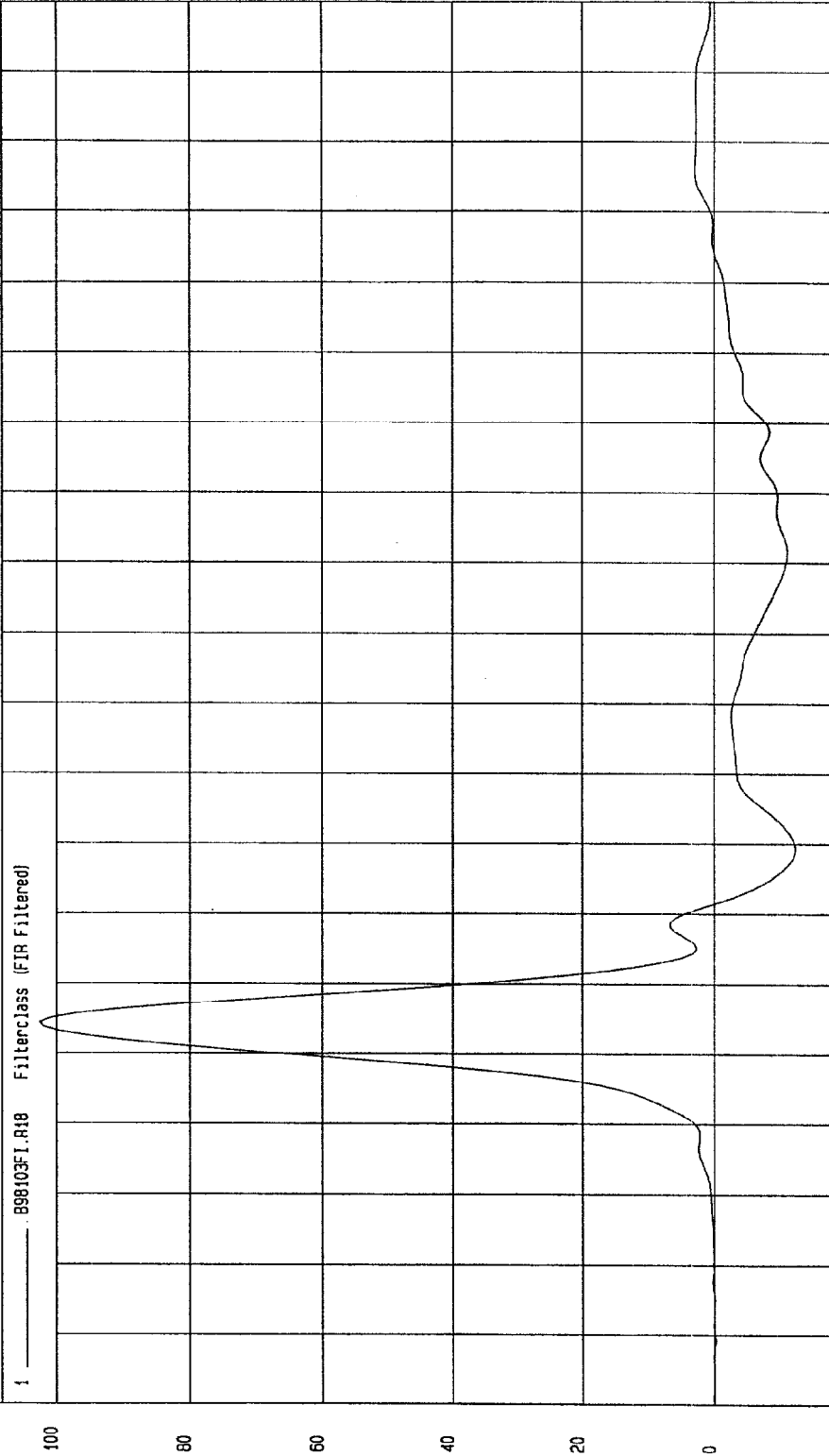
COMPONENT: 1999 NISSAN FRONTIER

Speed: 38.38 MPH 61.8 KPH

Minimum = -12.26 G'S at 59 msec

Maximum = 102.55 G'S at 34 msec

DRIVER PELVIS Y ACCELERATION



TIME (SECONDS)

MCA Research
11-11-1998 12:41

G's

TEST: NCAP SIDE IMPACT TEST

TEST DATE: 11-06-1998

COMPONENT: 1999 NISSAN FRONTIER

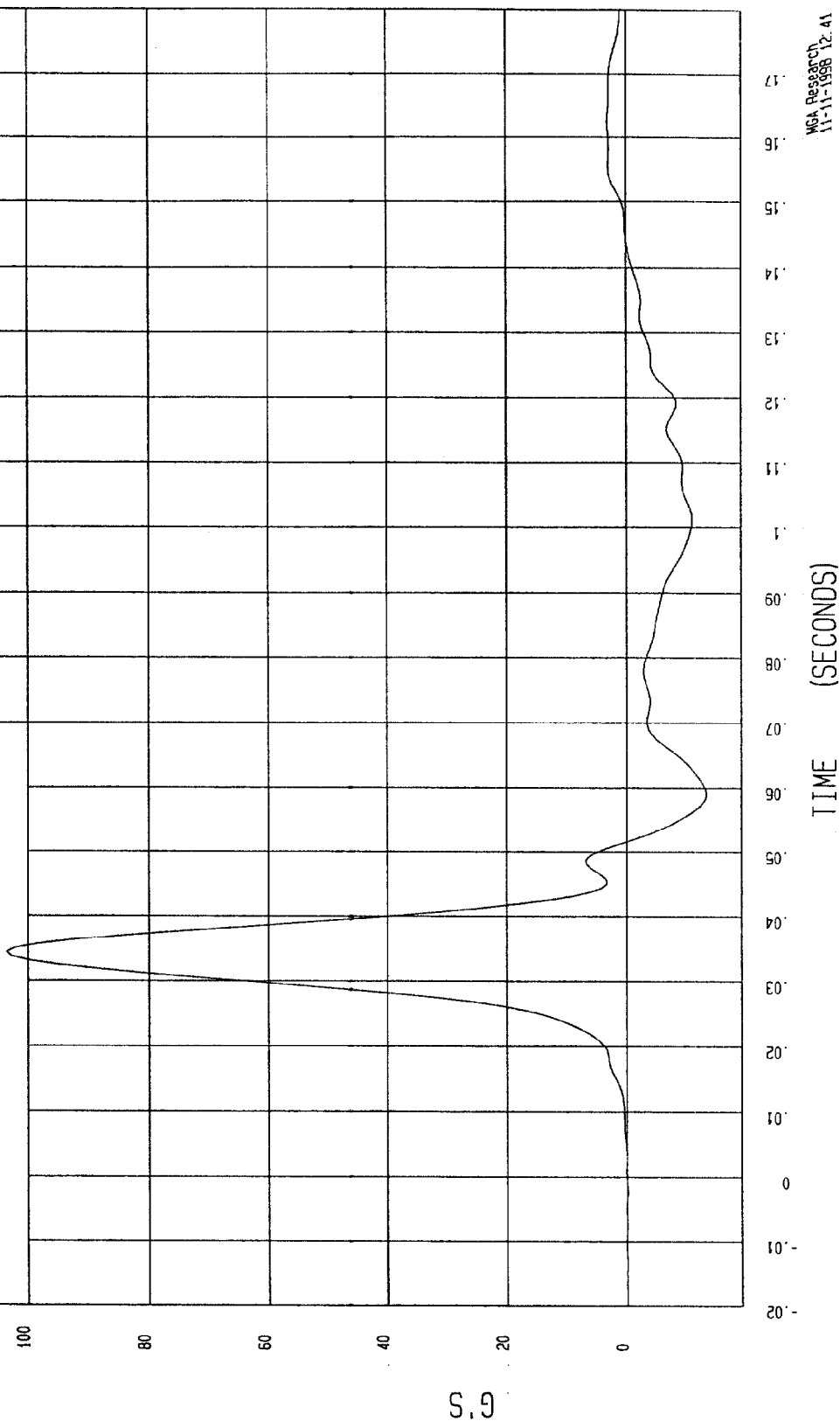
Speed: 38.38 MPH 61.8 KPH

Maximum = 103.64 G'S at 34 msec

Minimum = -13.25 G'S at 59 msec

DRIVER PELVIS Y REDUNDANT ACCELERATION

1 — 898103F1.R45 Filterclass (FIR Filtered)

MGA Research
11-11-1998 12:41

APPENDIX C
SID CONFIGURATION AND PERFORMANCE VERIFICATION

PRE-TEST CERTIFICATION DATA

Driver Dummy Serial Number: 272

Calibration Test Results Summary

Driver Dummy Serial Number: 272

Pre-Test Calibration

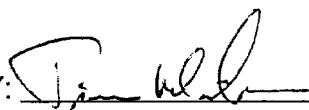
External Dimensions:	The dummy passed all external dimension requirements.
Thorax Impact Test:	The thorax passed all impact test requirements.
Pelvic Impact Test:	The pelvis passed all impact test requirements.
Abdominal Compression Test:	The abdomen passed all compression test requirements.
Lumbar Flexion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

SIDE IMPACT DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

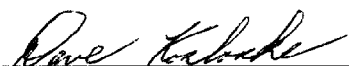
DUMMY SERIAL NUMBER: 272DATE OF VERIFICATION: October 23, 1998

DESCRIPTION	SPECIFICATION	TEST RESULTS
SH - Seated Height (mm)	889 - 909	892
RH - Rib Height (mm)	501 - 521	512
HP - Hip Pivot Height (mm)	99 ref.	99
RD - Rib From Back Line (mm)	229 - 241	238
KV - Knee Pivot From Back Line (mm)	511 - 526	523
SW - Knee Pivot to Floor (mm)	490 - 505	493
HW - Hip Width (mm)	356 - 391	378

MEASUREMENTS BY:



APPROVED BY:



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THORACIC SHOCK ABSORBER TEST

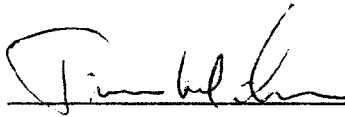
SIDE IMPACT DUMMY (SID)

DATE: October 22, 1998DUMMY SERIAL NUMBER: 272 TEST NUMBER: D981336/7/8

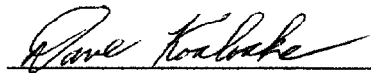
TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)		18.9 - 25.5	21.0°
RELATIVE HUMIDITY (%)		10 - 70	24%
VELOCITY 3.05 m/s	FORCE (N)	836 - 1125	878
	DISPLACEMENT (mm)	30 - 35	34
VELOCITY 4.27 m/s	FORCE (N)	1730 - 2099	1861
	DISPLACEMENT (mm)	32 - 37	37
VELOCITY 6.1 m/s	FORCE (N)	3741 - 4448	4031
	DISPLACEMENT (mm)	33 - 40	39

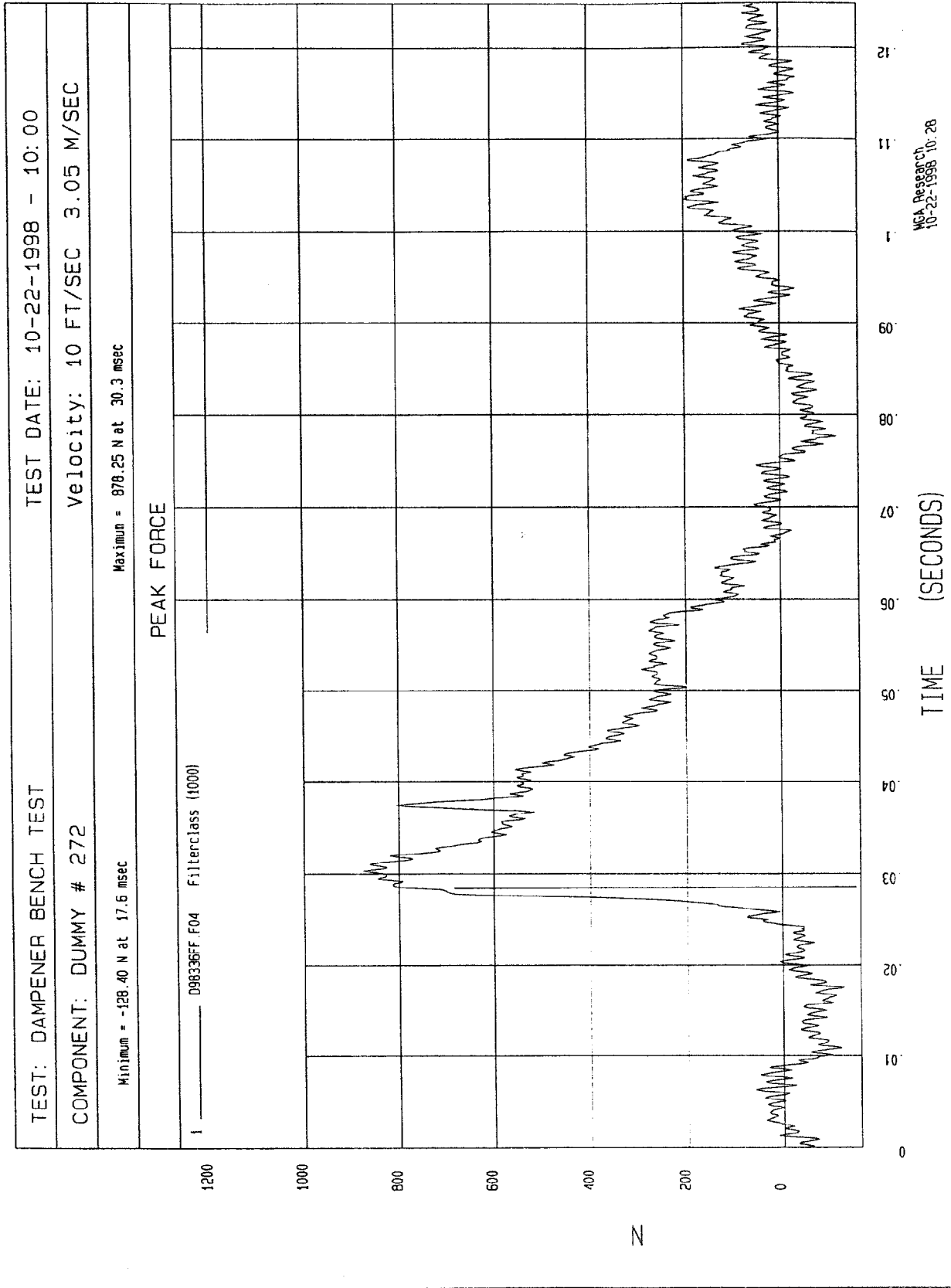
TEST MEETS SPECIFICATIONS

TECHNICIAN

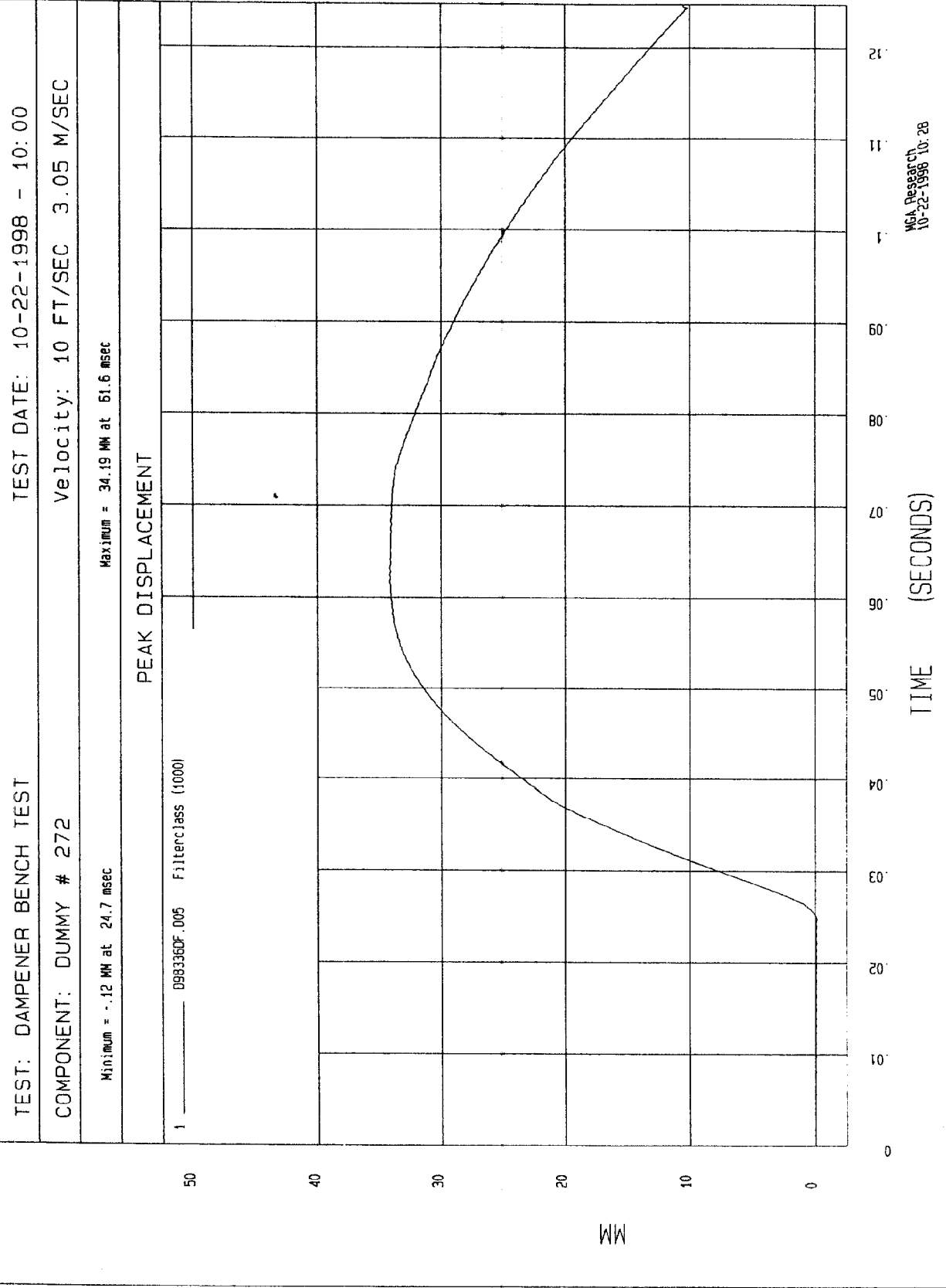


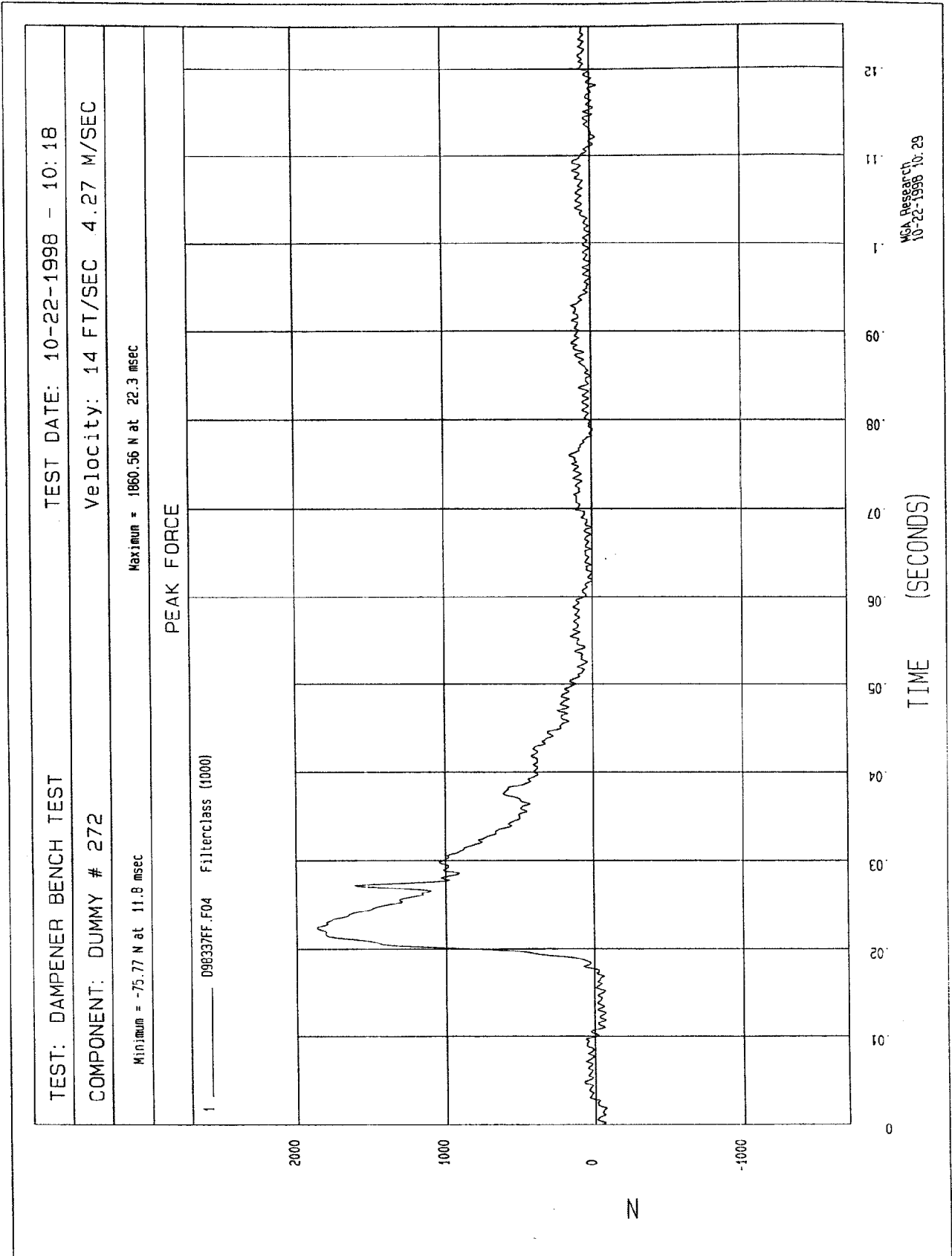
APPROVED BY

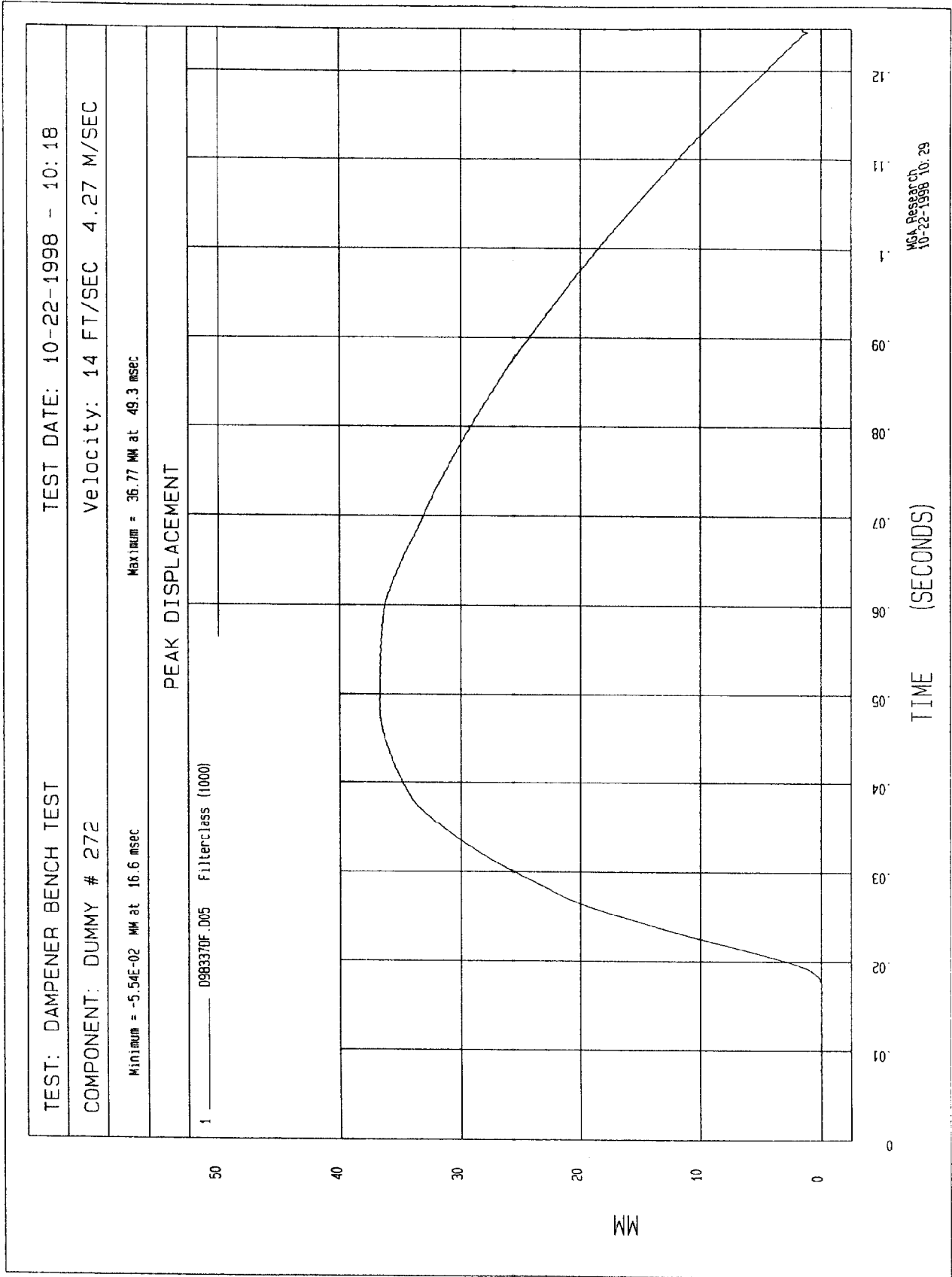




NSA Research
10-22-1998 10:28



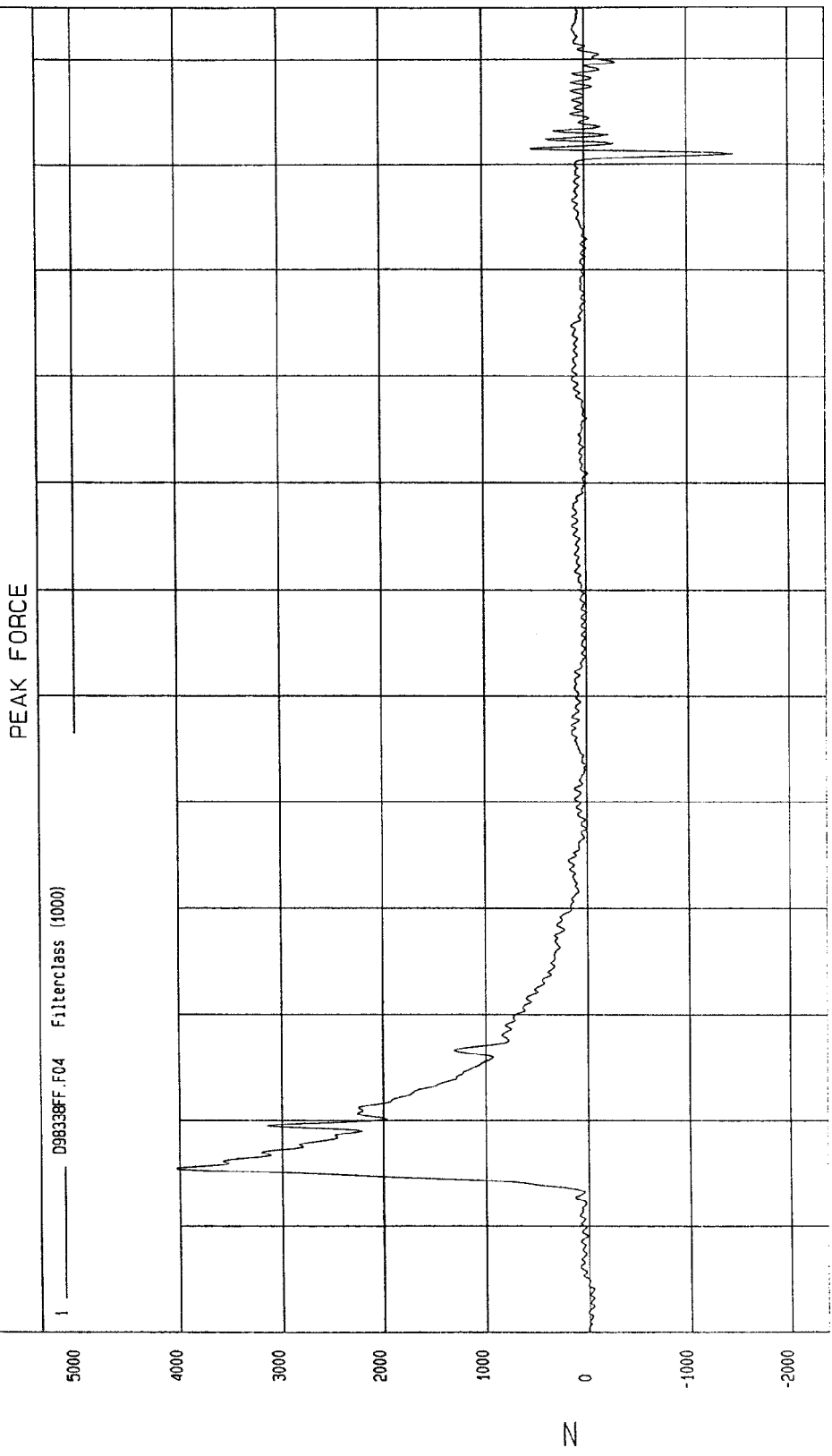




TEST: DAMPENER BENCH TEST TEST DATE: 10-22-1998 - 10:23

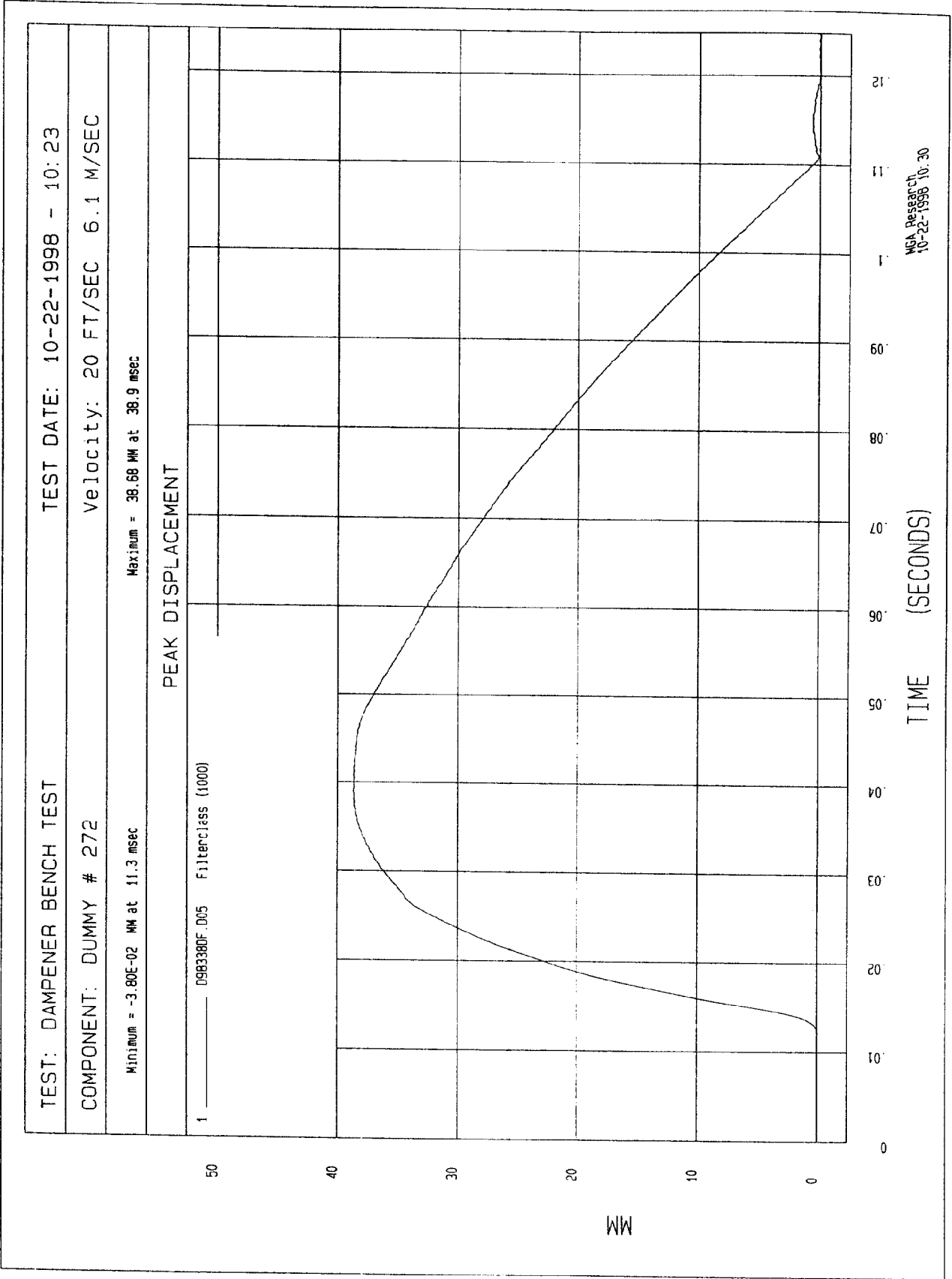
COMPONENT: DUMMY # 272 Velocity: 20 FT/SEC 6.1 M/SEC

Minimum = -1460.49 N at 110. msec Maximum = 4031.01 N at 15.4 msec



TIME (SECONDS)

WCA Research
10-22-1998 10:29



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THORAX IMPACT TEST

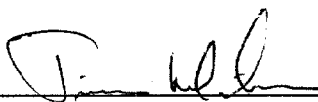
SIDE IMPACT DUMMY (SID)

DATE: October 23, 1998DUMMY SERIAL NUMBER: 272TEST NUMBER: D981332

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.0°
RELATIVE HUMIDITY (%)	10 - 70	26%
PROBE SPEED (m/s)	4.27 - 4.33	4.28
UPPER RIB (g's)	37 - 46 g's	45
LOWER RIB (g's)	37 - 46 g's	43
LOWER SPINE (g's)	15 - 22 g's	16

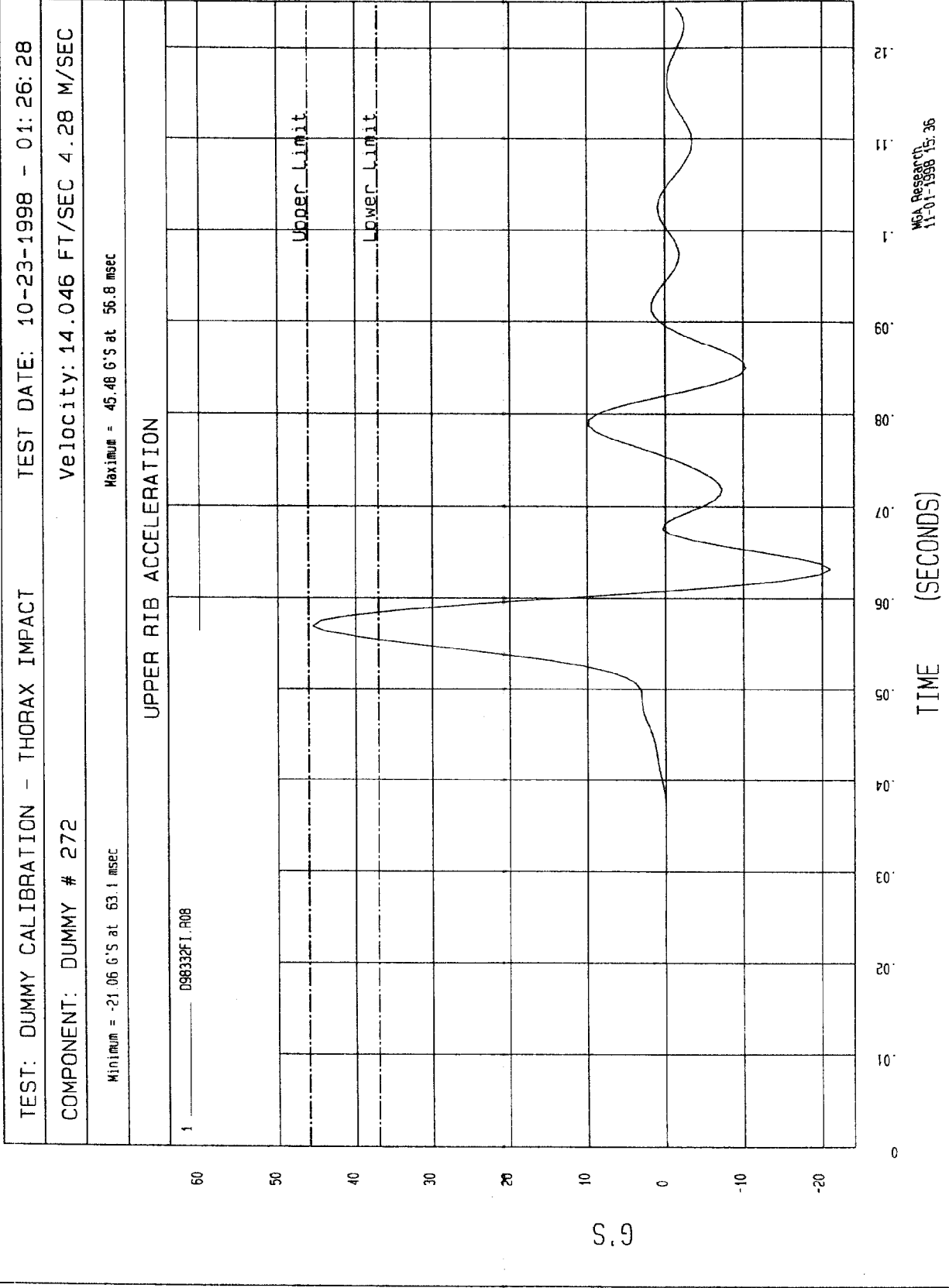
TEST MEETS SPECIFICATIONS

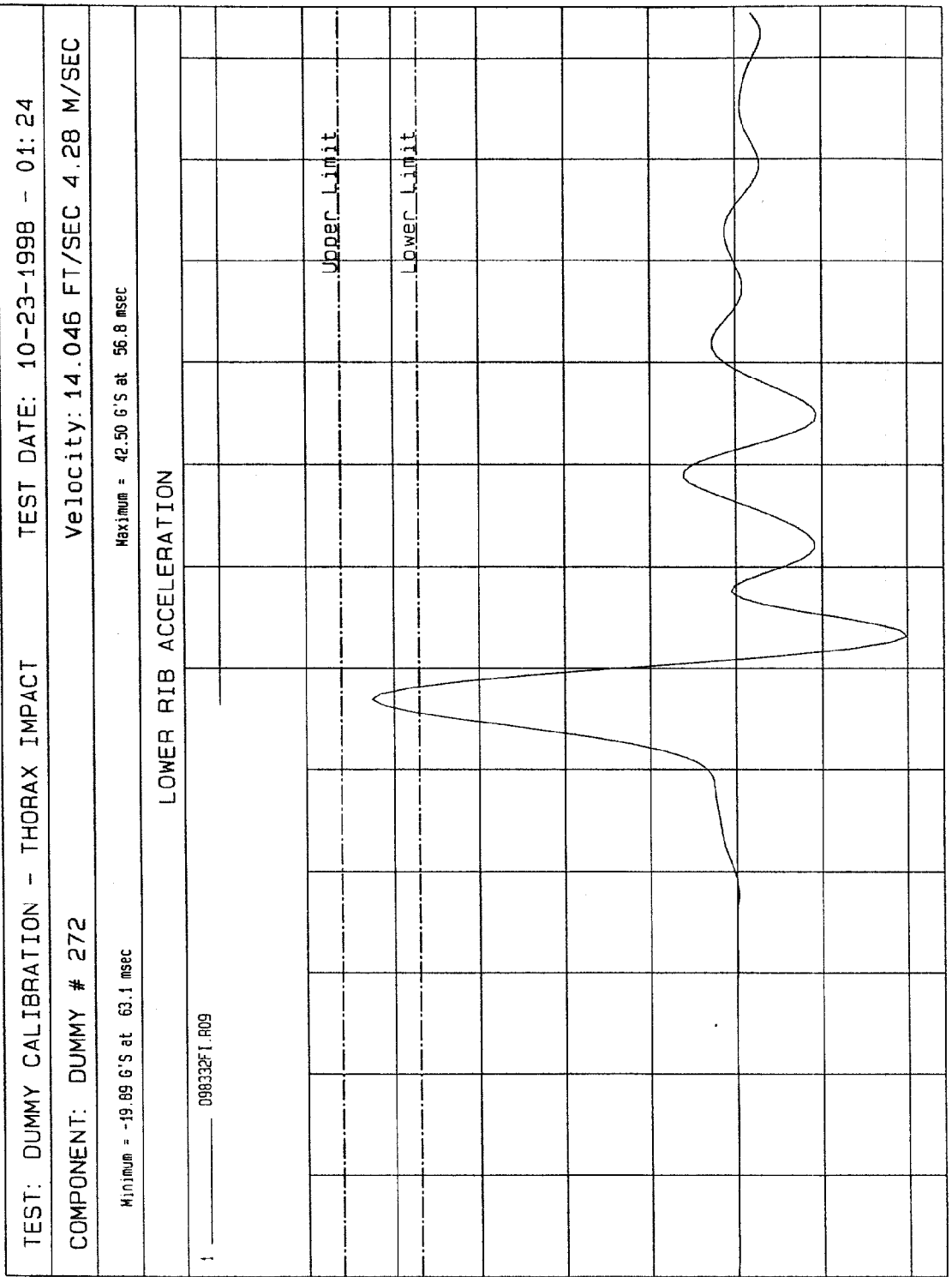
TECHNICIAN



APPROVED BY



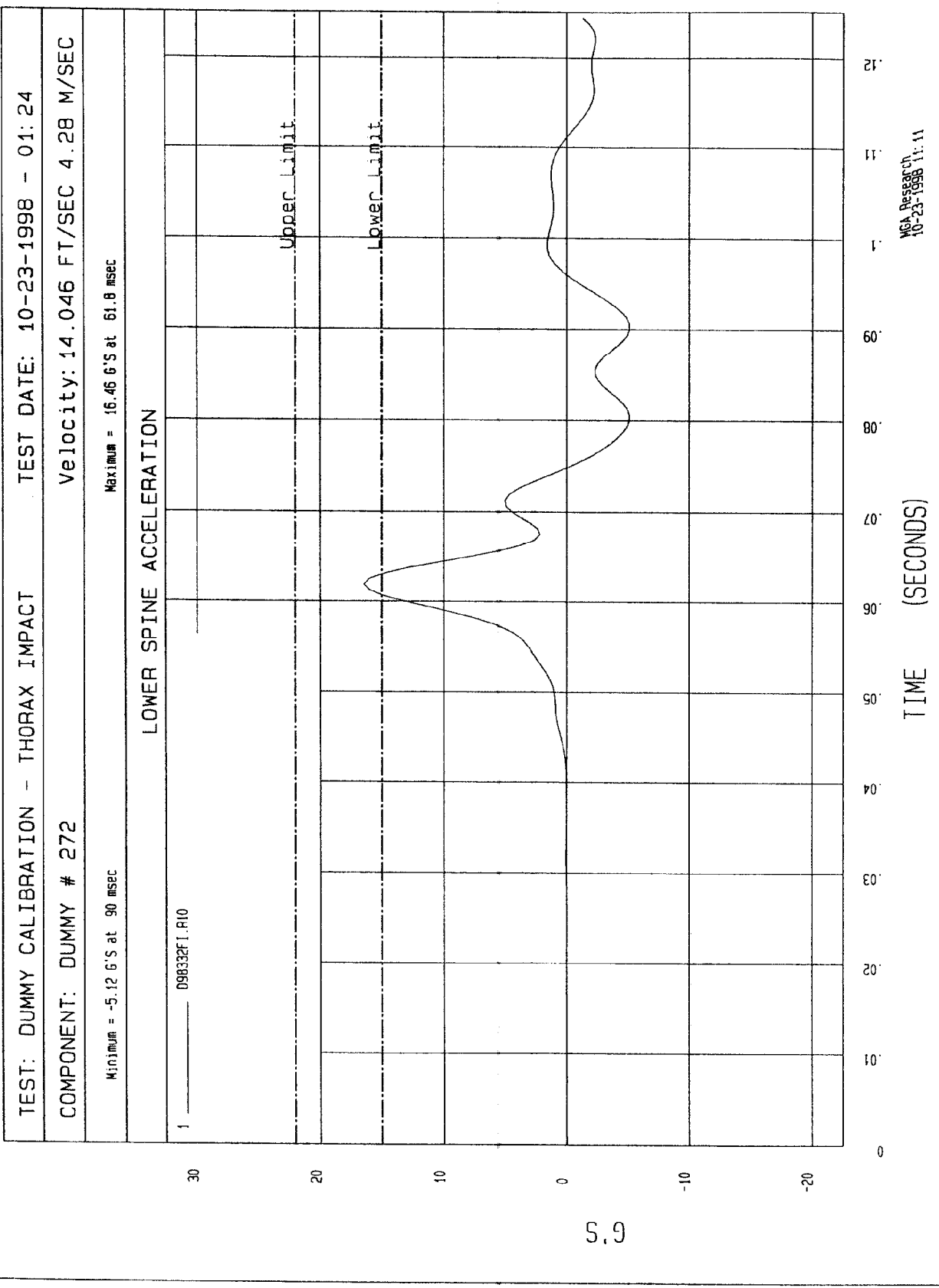




WSA Research
10-23-1998 11:11

TIME (SECONDS)

G.S



5.9

MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

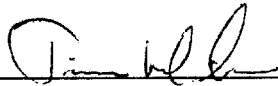
SIDE IMPACT DUMMY (SID)

DATE: October 23, 1998DUMMY SERIAL NUMBER: 272TEST NUMBER: D981333

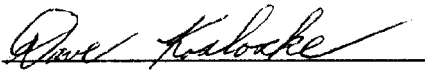
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.0°
RELATIVE HUMIDITY (%)	10 - 70	26%
PROBE SPEED (m/s)	4.27 - 4.33	4.27
PELVIS ACCELERATION (g's)	40 - 60	41

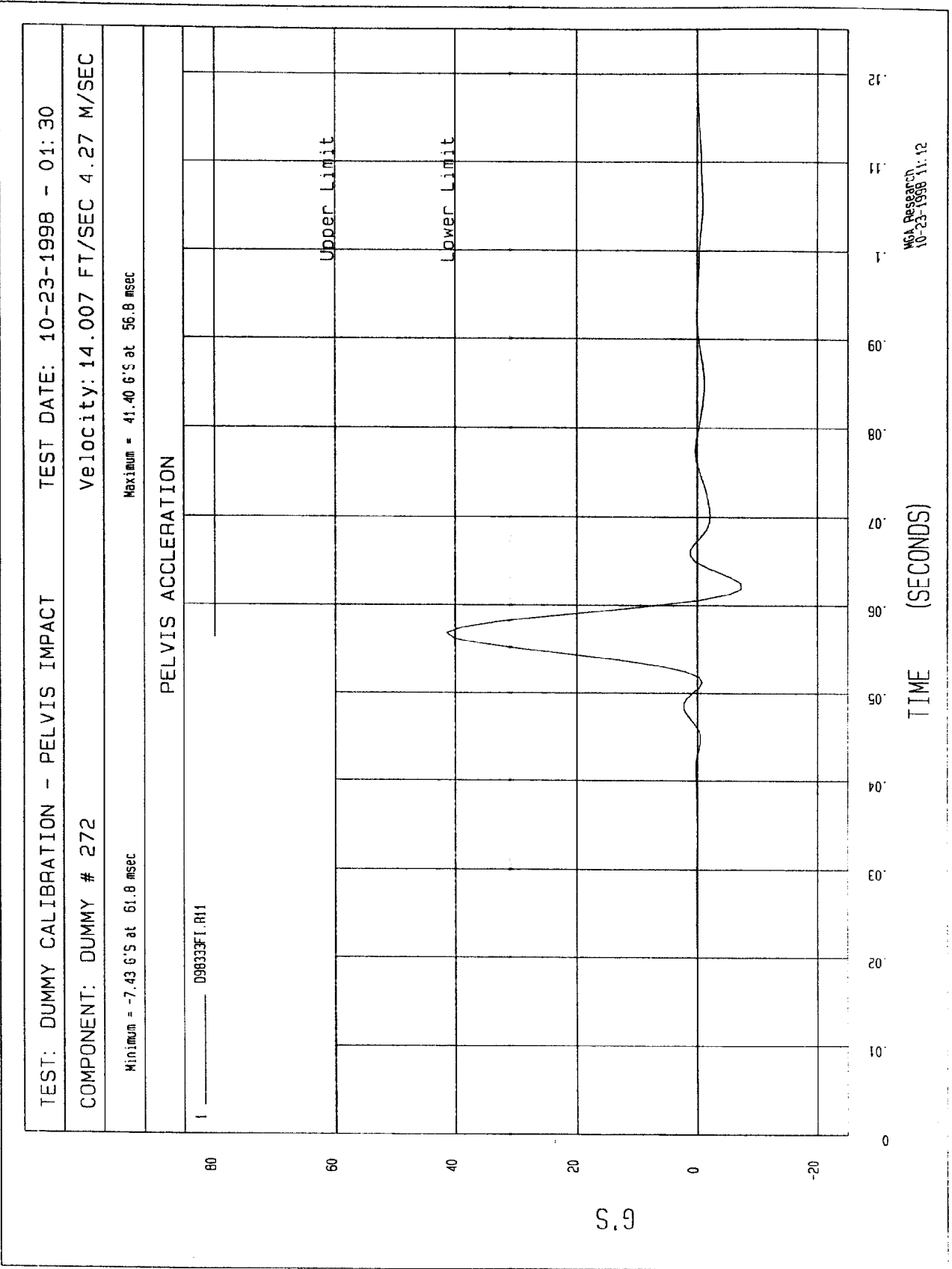
TEST MEETS SPECIFICATIONS

TECHNICIAN



APPROVED BY





MGA RESEARCH CORPORATION

ABDOMINAL COMPRESSION TEST
(PRELOAD = 10 LBS)

SIDE IMPACT DUMMY (SID)

DATE: October 22, 1998DUMMY SERIAL NUMBER: 272TEST NUMBER: D981334

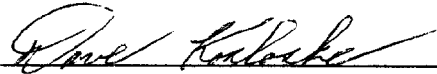
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.0°
RELATIVE HUMIDITY (%)	10 - 70	24%
FORCE @ 12.7 mm	104 - 162	142
FORCE @ 19.0 mm	163 - 222	197
FORCE @ 25.4 mm	222 - 280	259
FORCE @ 33 mm	325 - 391	357

TEST MEETS SPECIFICATIONS

TECHNICIAN



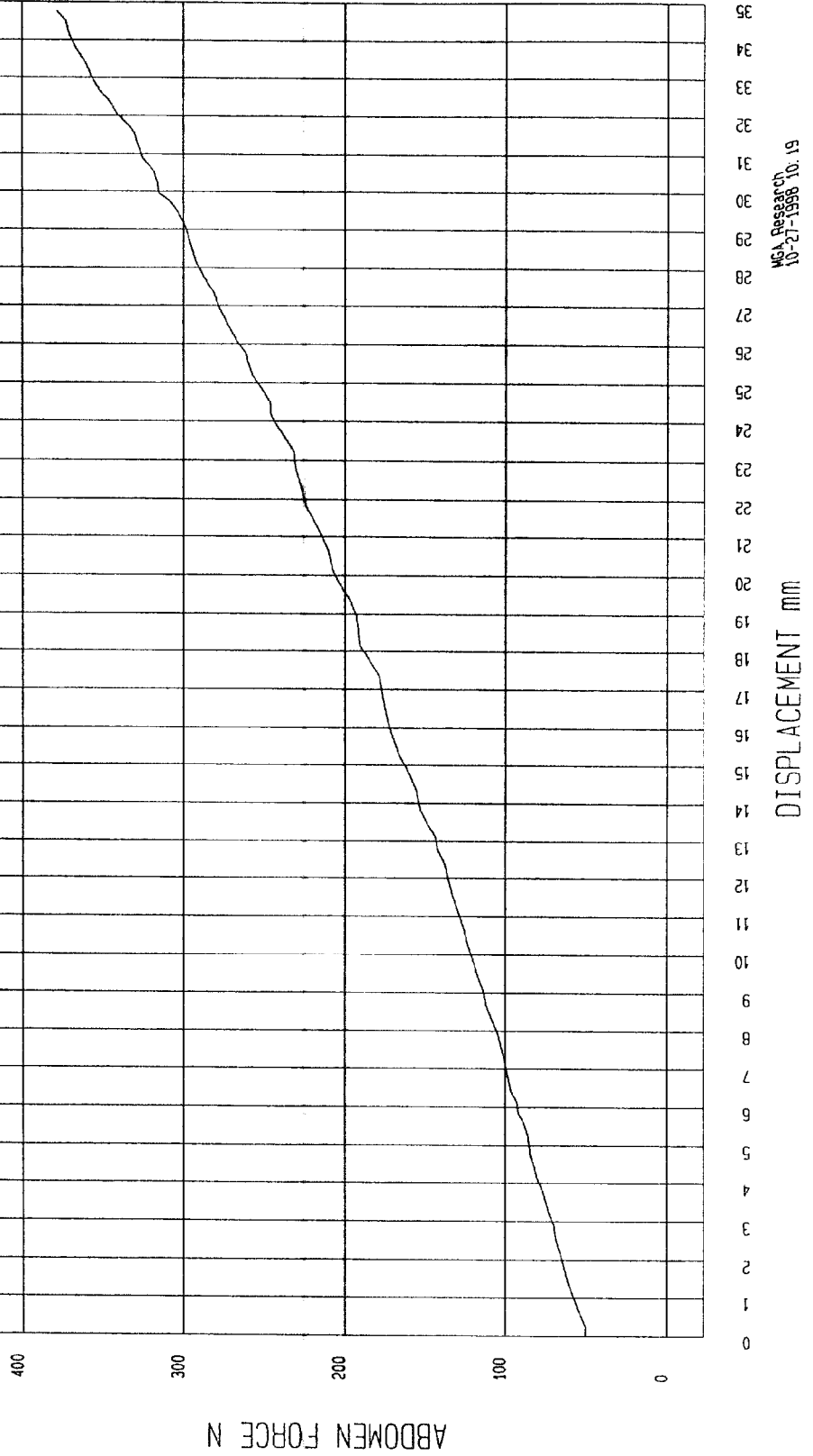
APPROVED BY



TEST: DUMMY CALIBRATION - ABDOMEN COMPRESSION TEST DATE: 10-22-1998 - 10:17:48

COMPONENT: DUMMY # 272

ABDOMEN FORCE as a function of DISPLACEMENT



WCA Research
10-27-1998 10:19

MGA RESEARCH CORPORATION

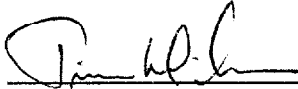
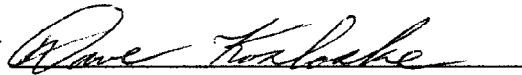
LUMBAR FLEXION TEST

SIDE IMPACT DUMMY (SID)

DATE: October 22, 1998DUMMY SERIAL NUMBER: 272TEST NUMBER: D981335

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.0°
RELATIVE HUMIDITY (%)	10 - 70	25%
FORCE @ 0°	0 - 26.7	0
FORCE @ 20°	97.9 - 151.2	98.3
FORCE @ 30°	151.2 - 204.6	167.3
FORCE @ 40°	204.6 - 258.0	227.5
RETURN ANGLE	12° maximum	5°

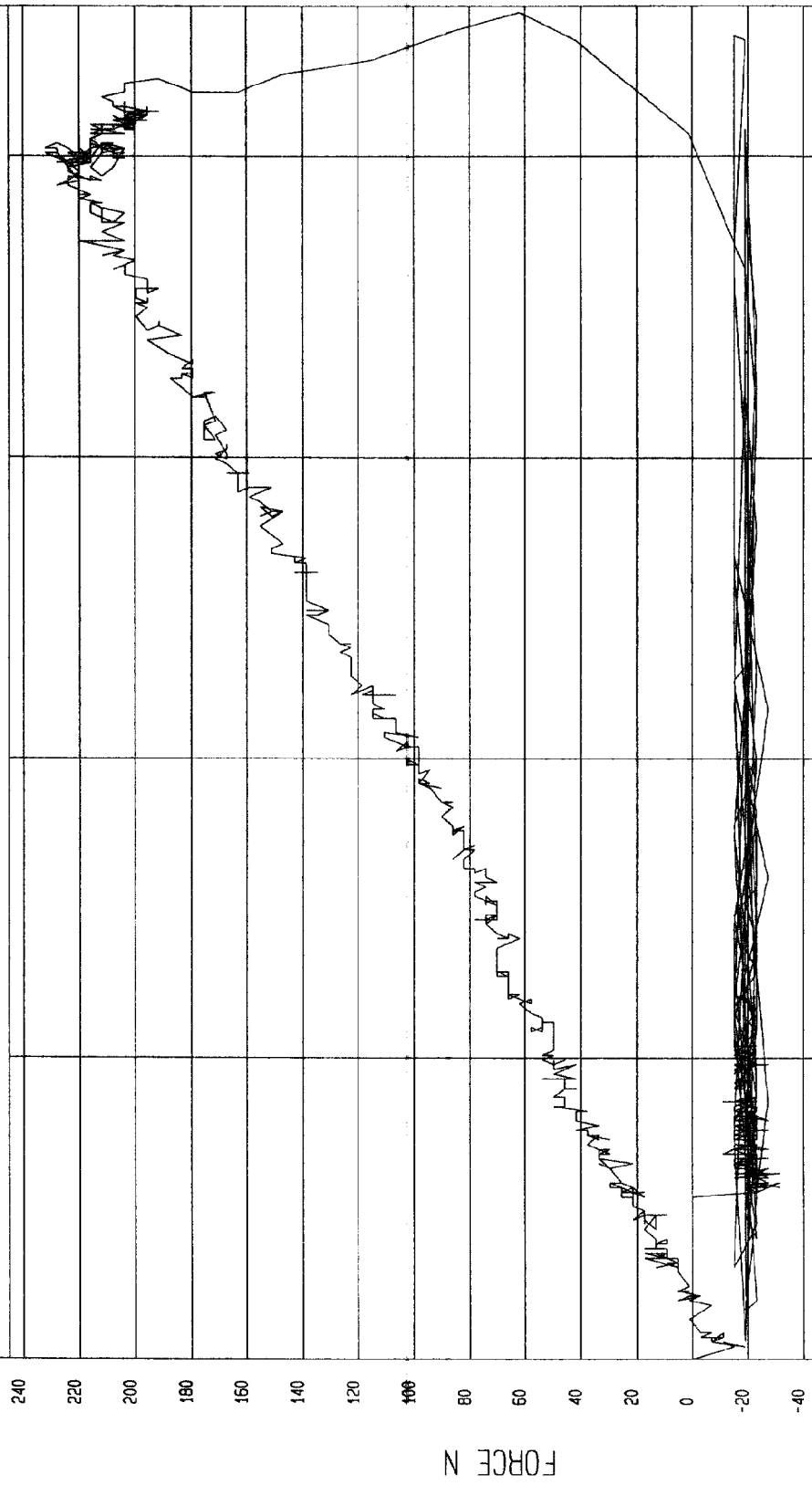
TEST MEETS SPECIFICATIONS

TECHNICIAN APPROVED BY 

TEST: DUMMY CALIBRATION - LUMBAR FLEXION TEST DATE: 10-22-1998 - 10:35:00

COMPONENT: DUMMY # 272

FORCE as a function of TORSO ROTATION



MGA Research
11-20-1998 08:49

POST-TEST CERTIFICATION DATA

Driver Dummy Serial Number: 272

Calibration Test Results Summary

Driver Dummy Serial Number: 272

Post-Test Calibration

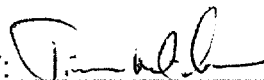
External Dimensions:	The dummy passed all external dimension requirements.
Thorax Impact Test:	The thorax passed all impact test requirements.
Pelvic Impact Test:	The pelvis passed all impact test requirements.
Abdominal Compression Test:	The abdomen passed all compression test requirements.
Lumbar Flexion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

SIDE IMPACT DUMMY CONFIGURATION AND PERFORMANCE VERIFICATION DATA

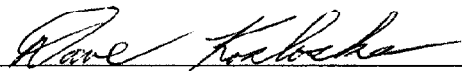
DUMMY SERIAL NUMBER: 272DATE OF VERIFICATION: November 19, 1998

DESCRIPTION	SPECIFICATION	TEST RESULTS
SH - Seated Height (mm)	889 - 909	892
RH - Rib Height (mm)	501 - 521	512
HP - Hip Pivot Height (mm)	99 ref.	99
RD - Rib From Back Line (mm)	229 - 241	238
KV - Knee Pivot From Back Line (mm)	511 - 526	523
SW - Knee Pivot to Floor (mm)	490 - 505	493
HW - Hip Width (mm)	356 - 391	378

MEASUREMENTS BY:



APPROVED BY:



MGA RESEARCH CORPORATION

THORAX IMPACT TEST

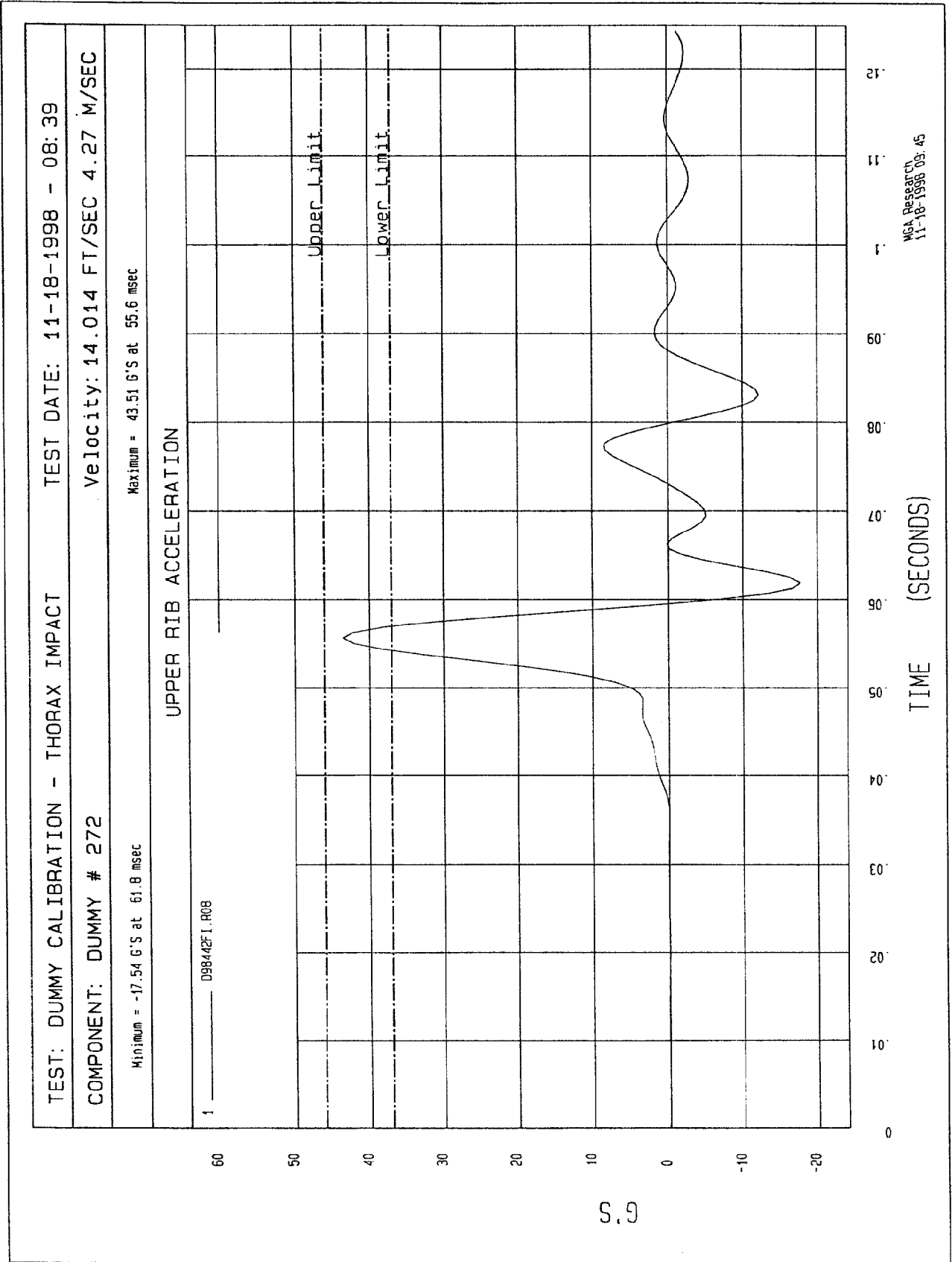
SIDE IMPACT DUMMY (SID)

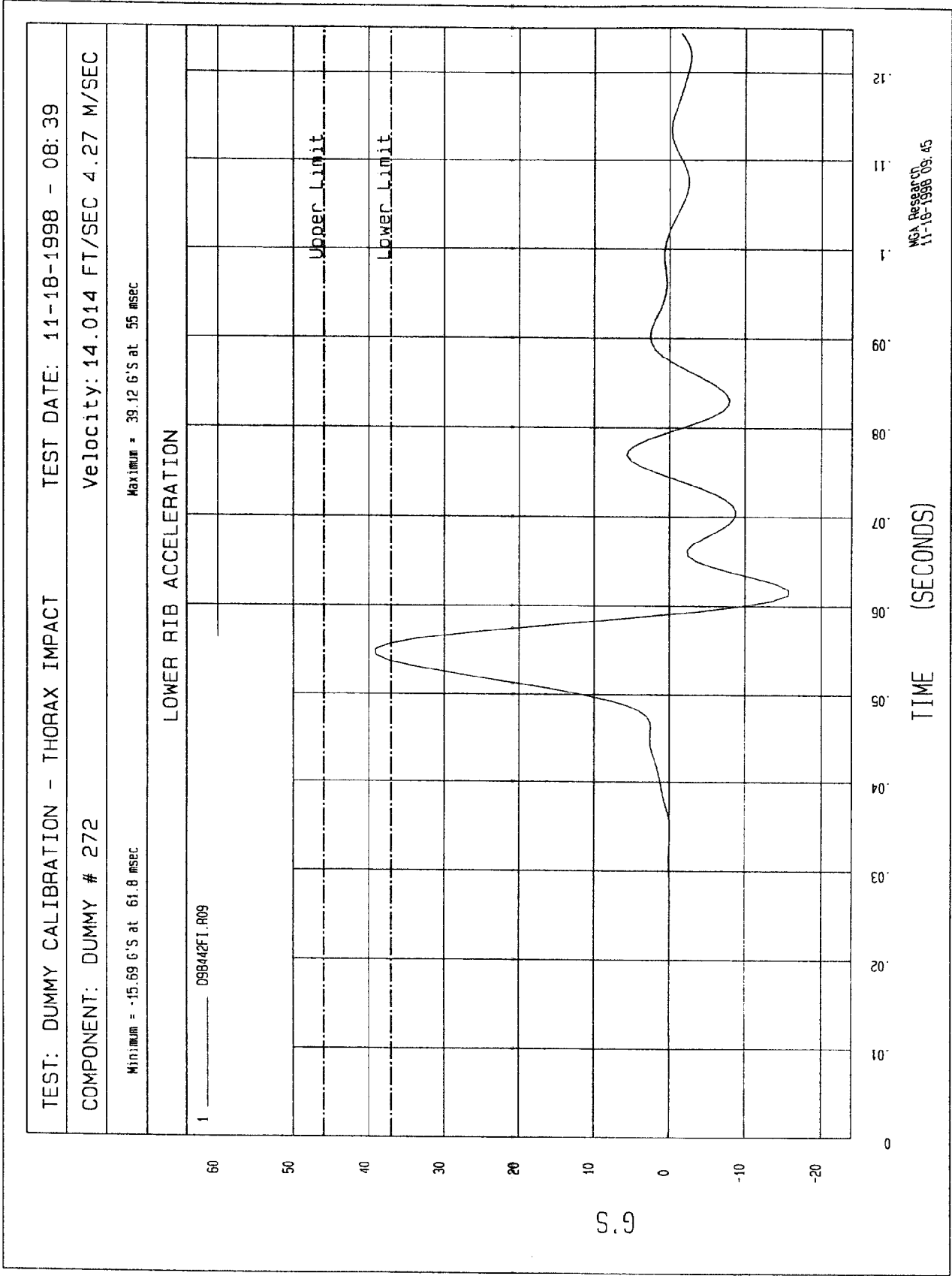
DATE: November 18, 1998DUMMY SERIAL NUMBER: 272TEST NUMBER: D981442

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.0°
RELATIVE HUMIDITY (%)	10 - 70	25%
PROBE SPEED (m/s)	4.27 - 4.33	4.27
UPPER RIB (g's)	37 - 46 g's	44
LOWER RIB (g's)	37 - 46 g's	39
LOWER SPINE (g's)	15 - 22 g's	19

TEST MEETS SPECIFICATIONS

TECHNICIAN Tim W. L.APPROVED BY Rene K. K.





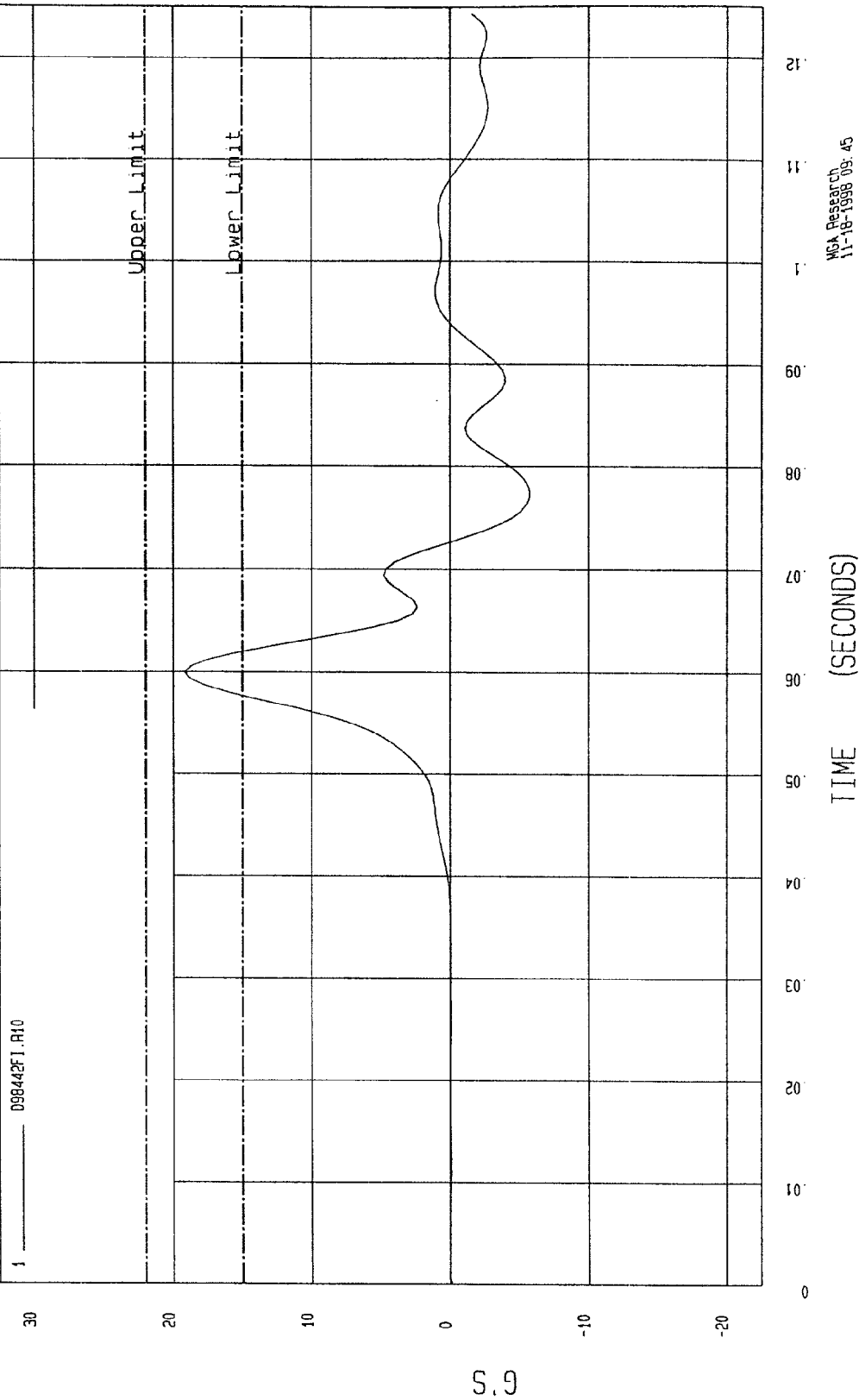
TEST: DUMMY CALIBRATION - THORAX IMPACT TEST DATE: 11-18-1998 - 08:44:13

COMPONENT: DUMMY # 272 Velocity: 14.014 FT/SEC 4.27 M/SEC

Minimum = -5.70 G'S at 77.5 msec

Maximum = 19.16 G'S at 60 msec

LOWER SPINE ACCELERATION



MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

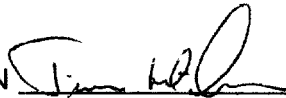
SIDE IMPACT DUMMY (SID)

DATE: November 18, 1998DUMMY SERIAL NUMBER: 272TEST NUMBER: D981443

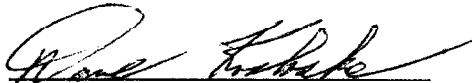
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.0°
RELATIVE HUMIDITY (%)	10 - 70	25%
PROBE SPEED (m/s)	4.27 - 4.33	4.29
PELVIS ACCELERATION (g's)	40 - 60	54

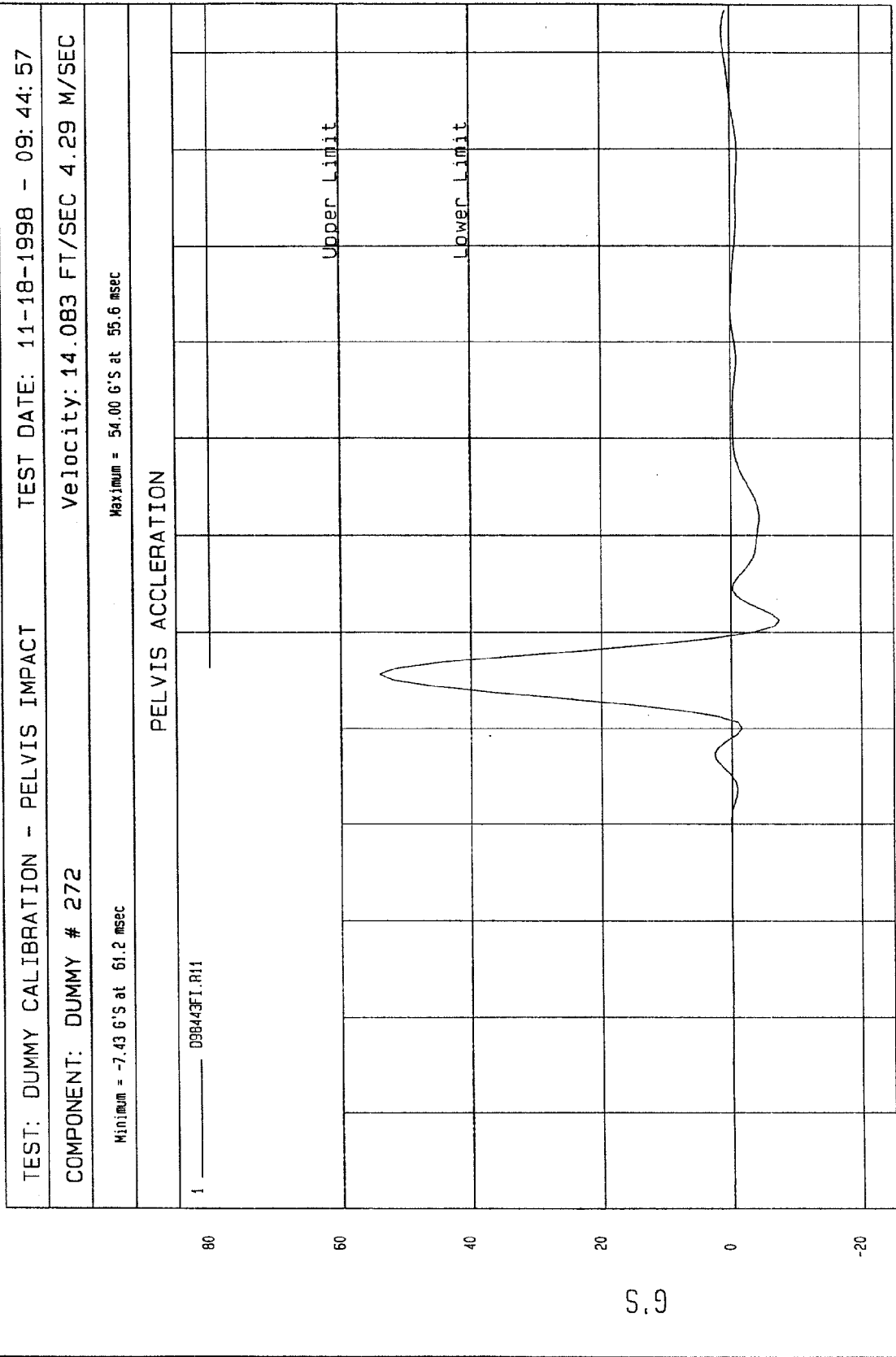
TEST MEETS SPECIFICATIONS

TECHNICIAN



APPROVED BY





NGA Research
11-18-1998 09:46

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

DATE: November 19, 1998

DUMMY SERIAL NUMBER: 272

TEST NUMBER: D981444

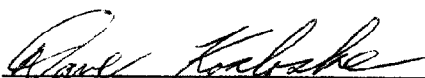
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.0°
RELATIVE HUMIDITY (%)	10 - 70	24%
FORCE @ 12.7 mm	104 - 162	133
FORCE @ 19.0 mm	163 - 222	190
FORCE @ 25.4 mm	222 - 280	254
FORCE @ 33 mm	325 - 391	359

TEST MEETS SPECIFICATIONS

TECHNICIAN



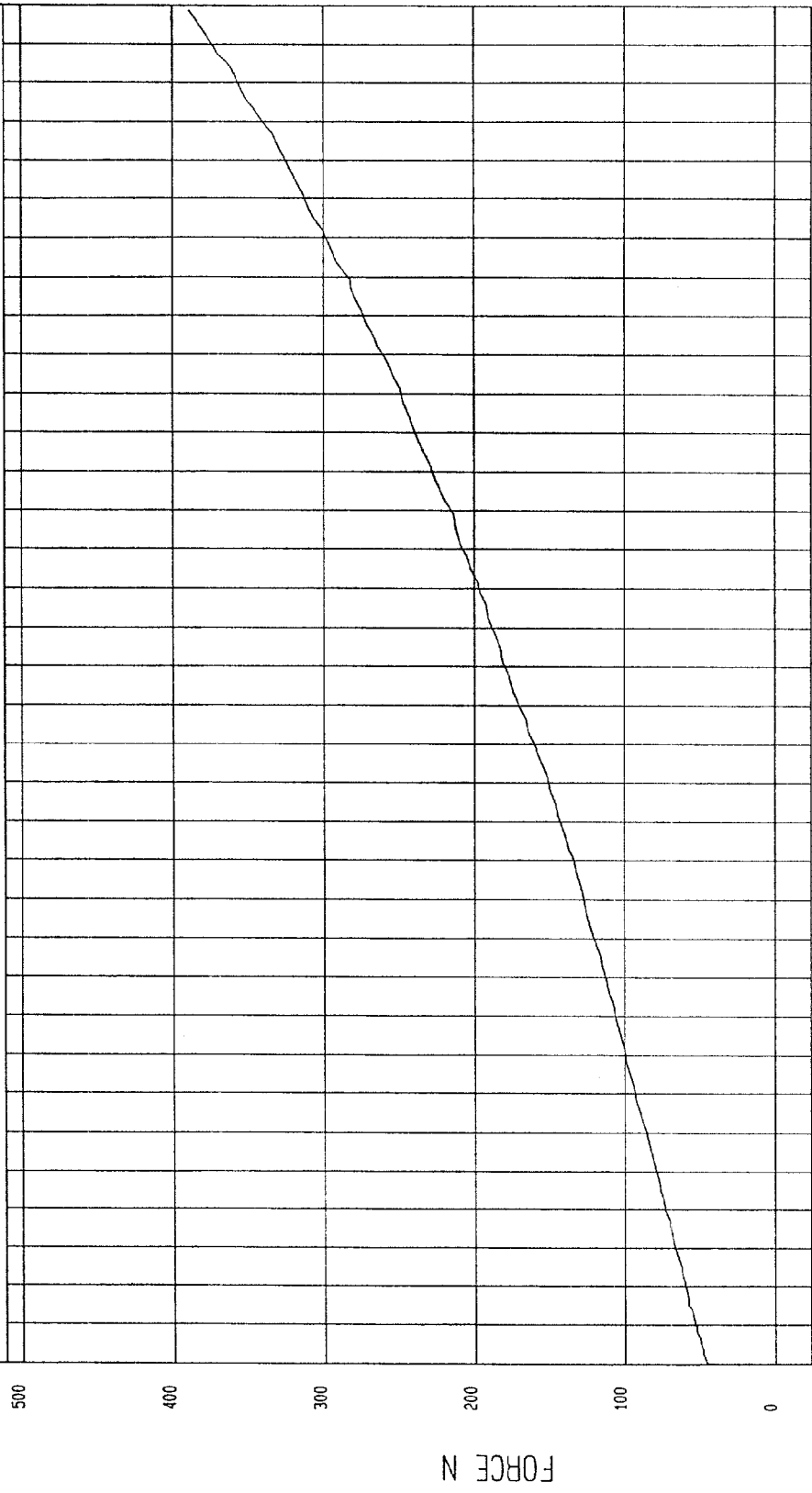
APPROVED BY



TEST: DUMMY CALIBRATION - ABDOMEN COMPRESSION TEST DATE: 11-19-1998 - 08:49:39

COMPONENT: DUMMY # 272

FORCE as a function of DISPLACEMENT



MCA Research
11-19-1998 08:52

DISPLACEMENT mm

MGA RESEARCH CORPORATION

LUMBAR FLEXION TEST

SIDE IMPACT DUMMY (SID)

DATE: November 18, 1998DUMMY SERIAL NUMBER: 272TEST NUMBER: D981445

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.0°
RELATIVE HUMIDITY (%)	10 - 70	25%
FORCE @ 0°	0 - 26.7	0
FORCE @ 20°	97.9 - 151.2	109.9
FORCE @ 30°	151.2 - 204.6	162.4
FORCE @ 40°	204.6 - 258.0	206.4
RETURN ANGLE	12° maximum	7°

TEST MEETS SPECIFICATIONS

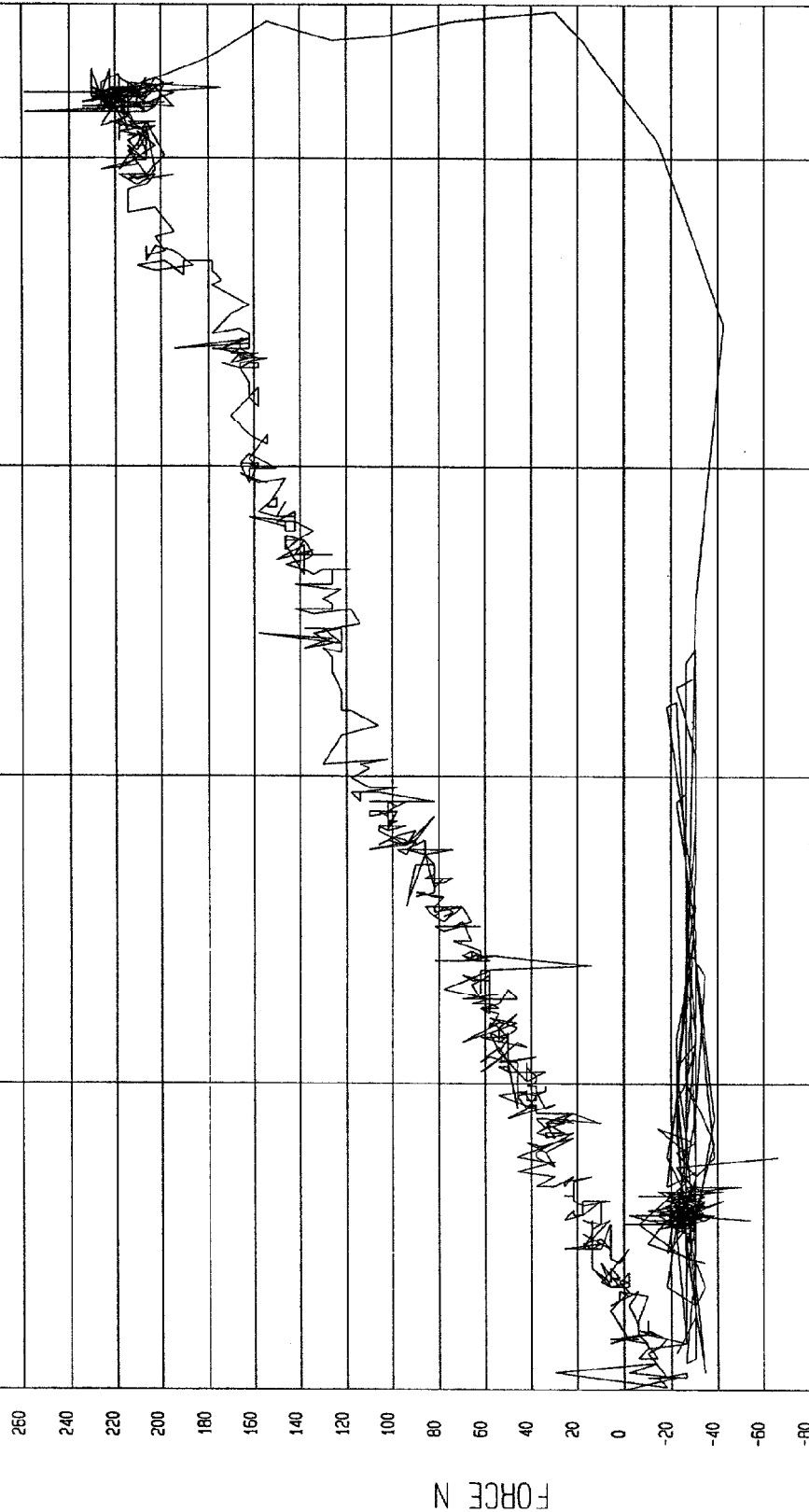
TECHNICIAN _____

APPROVED BY *Rene Kabeke*

TEST: DUMMY CALIBRATION - LUMBAR FLEXION TEST DATE: 11-18-1998 - 11:57:36

COMPONENT: DUMMY # 272

FORCE as a function of TORSO ROTATION



NCA Research
11-18-1998 1A: 21

TORSO ROTATION DEGREES

POST-TEST DRIVER DUMMY INSPECTION CHECKLIST

Type: Side Impact Dummy

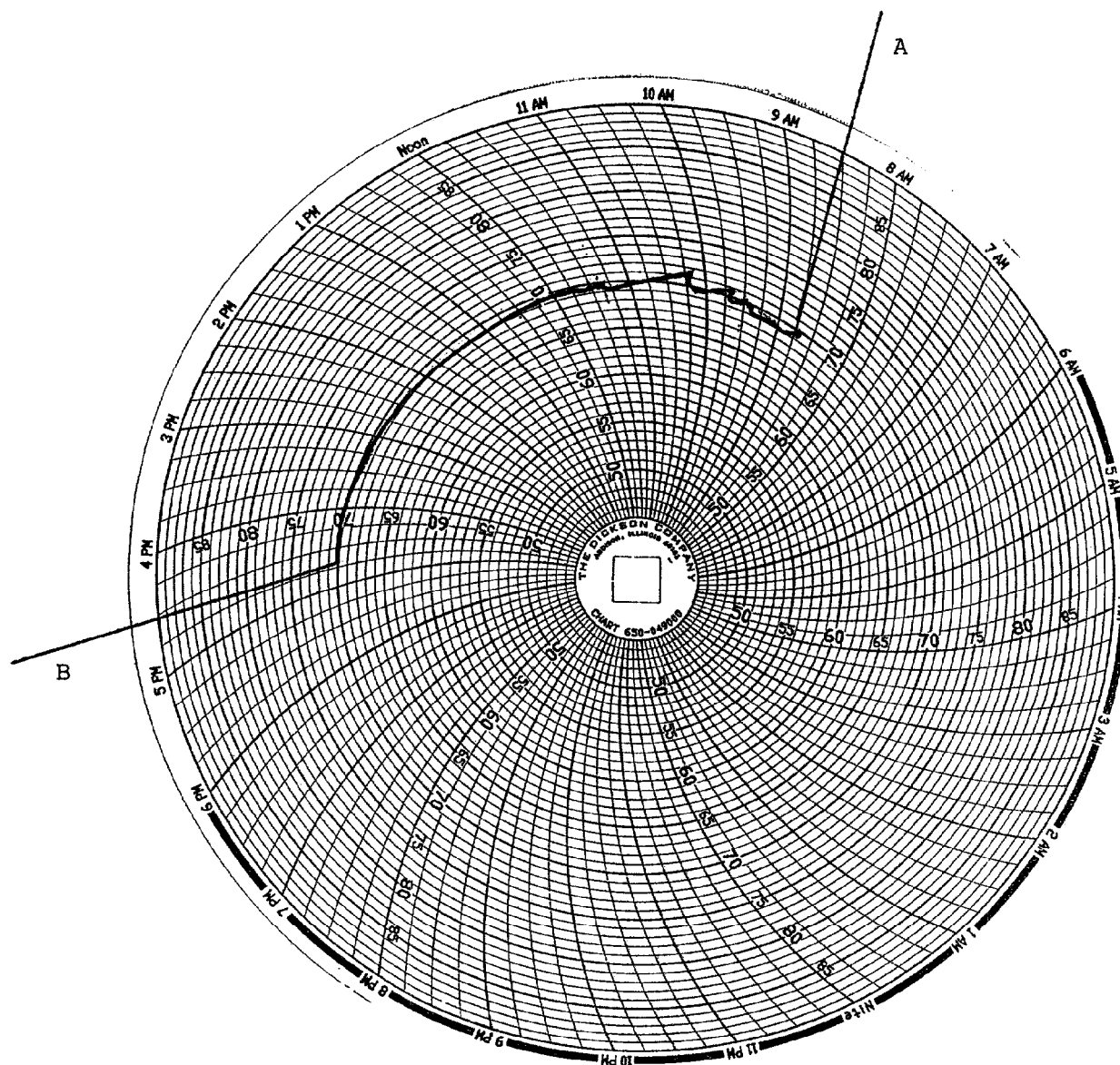
Serial Number: 272

Inspected By: Tim Michnay

Date: November 18, 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):

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. 272

	DRIVER		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Upper Rib Y	AKAF3	Endevco	October 9, 1998
Lower Rib Y	ALEC1	Endevco	October 9, 1998
Lower Spine Y	AP2F7	Endevco	October 14, 1998
Pelvis Y	AGM32	Endevco	October 14, 1998
Upper Rib Redundant Y	ALCN9	Endevco	October 9, 1998
Lower Rib Redundant Y	J10411	Endevco	October 9, 1998
Lower Spine Redundant Y	J14120	Endevco	October 14, 1998
Pelvis Redundant Y	AKAH3	Endevco	October 14, 1998
Head Center of Gravity X	AJ9B0	Endevco	October 14, 1998
Head Center of Gravity Y	AHTR2	Endevco	October 14, 1998
Head Center of Gravity Z	AGTE9	Endevco	October 14, 1998

VEHICLE INSTRUMENT CALIBRATION

	VEHICLE ACCELEROMETERS		
	SERIAL NO	MANUFACTURER	CALIBRATION DATE
Left Side Sill at Front Seat Y	B28-B03	Entran	September 24, 1998
Left Side Sill at Rear Seat Y	F12-G07	Entran	June 16, 1998
Right Rear Occupant Compartment Y	F18-G08	Entran	September 16, 1998
Vehicle CG X	J13-F18	Entran	June 28, 1998
Vehicle CG Y	J06-D19	Entran	June 28, 1998
Vehicle CG Z	E13-D18	Entran	June 28, 1998
Left Front Door on Centerline	I25-J07	Entran	June 28, 1998
Midrear of Left Front Door	G01-J16	Entran	June 28, 1998
Left Front Door Upper Centerline	I25-J06	Entran	September 24, 1998
Midrear of Left Rear Door	N/R	N/R	N/R
Left Rear Door Upper Centerline	N/R	N/R	N/R

N/R = Not Recorded

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

All Entran accelerometers are Model No. EGE-72

VEHICLE INSTRUMENT CALIBRATION

	VEHICLE ACCELEROMETERS		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Moving Barrier CG X	J06-D22	Entran	June 22, 1998
Moving Barrier CG Y	I18-E18	Entran	September 16, 1998
Moving Barrier CG Z	F12-G02	Entran	June 28, 1998
Moving Barrier Rear Axle X	J10-E14	Entran	June 16, 1998
Moving Barrier Rear Axle Y	F07-A14	Entran	June 16, 1998
Left Mid A-Post Y	G13-B15	Entran	June 16, 1998
Left Lower A-Post Y	G19-G12	Entran	May 15, 1998
Left Mid B-Post Y	K11-J08	Entran	September 15, 1998
Left Lower B-Post Y	I26-D04	Entran	May 20, 1998
Rear Floorpan Above Axle X	G01-J11	Entran	June 17, 1998
Rear Floorpan Above Axle Y	I25-J08	Entran	June 25, 1998
Rear Floorpan Above Axle Z	H02-J15	Entran	June 17, 1998
Driver Seat Track Y	F10-D07	Entran	June 25, 1998
Right Side Sill at Front Seat X	MGA095	Entran	June 25, 1998
Right Side Sill at Front Seat Y	I14-D16	Entran	June 25, 1998
Right Side Sill at Front Seat Z	E25-G07	Entran	June 28, 1998
Right Side Sill at Rear Seat X	F20-G05	Entran	August 27, 1998
Right Side Sill at Rear Seat Y	G08-B07	Entran	May 20, 1998
Right Side Sill at Rear Seat Z	F20-G07	Entran	September 24, 1998