

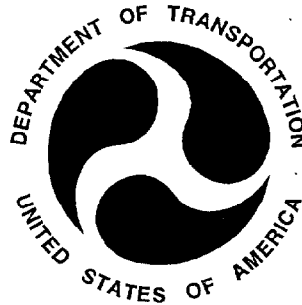
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REPORT NO.: 214-MGA-2000-02
SAFETY COMPLIANCE TESTING FOR FMVSS NO. 214
"SIDE IMPACT PROTECTION"

Nissan Motor Company
2000 Nissan Frontier Pickup
NHTSA NO: CY5200

MGA RESEARCH CORPORATION
5000 WARREN ROAD
BURLINGTON, WI 53105



Test Date: September 21, 1999

Report Date: September 22, 1999

FINAL REPORT

Prepared For:

U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
SAFETY ASSURANCE
OFFICE OF VEHICLE SAFETY COMPLIANCE
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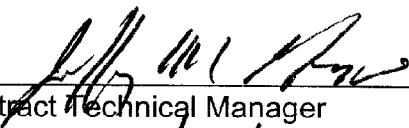
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15. Supplementary Notes													
16. Abstract A 48/24 kph 90° Impact (Moving Deformable Barrier) Compliance Test was conducted on the subject 2000 Nissan Frontier Pickup in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-214D-05 for the determination of FMVSS No. 214 Side Impact Protection compliance. The test was conducted at MGA Research Corporation in Burlington, Wisconsin, on September 21, 1999. The impact velocity of the Moving Deformable Barrier (MDB) was 52.8 kph, and the ambient temperature at the struck side of the target vehicle at the time of impact was 72°C. The target vehicle post test maximum crush was 321 mm at level 1. The test vehicle's performance follows: <u>DRIVER.</u> <table style="margin-left: auto; margin-right: auto;"> <tr><td>Left Upper Rib (LUR) Accel., g</td><td>35</td></tr> <tr><td>Left Lower Rib (LLR) Accel., g</td><td>38</td></tr> <tr><td>Lower Spine (T₁₂) Accel., g</td><td>57</td></tr> <tr><td>Thoracic Trauma Index (TTI)</td><td>48</td></tr> <tr><td>Pelvis (PEV) Accel., g</td><td>75</td></tr> </table> The doors on the struck side of the vehicle did not separate from the body at the hinges or latches and the opposite doors did not open during the side impact event.				Left Upper Rib (LUR) Accel., g	35	Left Lower Rib (LLR) Accel., g	38	Lower Spine (T ₁₂) Accel., g	57	Thoracic Trauma Index (TTI)	48	Pelvis (PEV) Accel., g	75
Left Upper Rib (LUR) Accel., g	35												
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SECTION 1

PURPOSE AND TEST PROCEDURE

This side impact test is part of the FY 2000 FMVSS 214 Side Impact Protection Compliance Test Program, sponsored by the National Highway Traffic Safety Administration (NHTSA), under Contract No. DTNH22-97-C-11033. The purpose of this test was to evaluate side impact protection of a 2000 Nissan Frontier Pickup.

This side impact test was conducted in accordance with the Vehicle Safety Compliance's FMVSS 214 test procedure (TP-214D-05, dated August 2, 1999).

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

SECTION 2

SUMMARY OF SIDE IMPACT TEST

A 2000/Nissan/Frontier/Pickup was impacted on the left side by a Moving Deformable Barrier (MDB) which was moving forward in a 27° crabbed position to the tow road guidance system at a velocity of 52.8 kph (32.8 mph). 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 September 21, 1999. Pre- and post-test photographs of the test vehicle, the MDB and the side impact dummy (SID) are included in Appendix A.

One Side Impact Dummy (SID) was placed in the left front designated seating position according to instructions specified in the OVSC Side Impact Laboratory Test Procedure which is dated August 2, 1999. The left rear designated seating position was a side facing seat. The side impact event was documented by eight 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)

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

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

Injury Criteria	Front SID
TTI (g)	48
Pelvis (g)	75

TEST NOTES

1. A test dummy was not placed in the left rear occupant seating position for the test. The rear seat is side facing.
2. The following accelerometers were not used for this test:

Left Front Door on Centerline

Midrear of Left Front Door

Left Front Door Upper Centerline

Midrear of Left Rear Door

Left Rear Door Upper Centerline

Rear Seat Track

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

DATA SHEET NO. 1
GENERAL VEHICLE TEST PARAMETER DATA

TEST VEHICLE INFORMATION:

Year/Make/Model/Body Style: 2000/Nissan/Frontier/Pickup
 Vehicle NHTSA No.: CY5200 VIN: 1N6DD26S2YC308725
 Vehicle Body Color: Red Build Date: 5-99
 Engine Data: 4 Cylinders; CID; 2.4 Liter; cc
 Placement X Longitudinal; Lateral
 Transmission: 5 speed; X Manual; Automatic; X Overdrive
 Final Drive: X Rear Wheel Drive; Frt. Wheel Drive; Four Wheel Drive

Odometer Reading 33.3 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): 26 Psi FRONT
 35 Psi REAR

Recommended Tire Size: P215/65R15

Tires on Test Vehicle: P215/65R15 Manufacturer: Firestone

Vehicle Capacity Data:

Number of Occupants: 2 Front; 2 Rear; 3rd Seat 4 Total

Type of Front Seats: X Bucket; Bench; Split Bench

Type of Front Seat Back: Fixed; X Adjustable with X Lever Knob Power

Vehicle Maximum Capacity Loading = 408.24 kg (A)

No. of Occupants x 68.04 kg. = 272.16 kg (B)

Cargo Capacity (A-B) = 136.08 kg

GENERAL VEHICLE TEST PARAMETER DATA (Cont'd)

WEIGHT OF TEST VEHICLE WITH MAXIMUM FLUIDS:

Right Front =	<u>425.0</u> kg	Right Rear =	<u>324.8</u> kg
Left Front =	<u>396.4</u> kg	Left Rear =	<u>323.0</u> kg
TOTAL FRONT =	<u>821.4</u> kg	TOTAL REAR =	<u>647.8</u> kg
% of Total Weight =	<u>55.9</u> %	% of Total Weight =	<u>44.1</u> %
TOTAL WEIGHT =	<u>1469.2</u> kg		

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Total Test Vehicle Delivered Weight with Maximum Fluids	= <u>1469.2</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>1766.7</u> kg

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

Right Front =	<u>450.9</u> kg	Right Rear =	<u>435.9</u> kg
Left Front =	<u>441.8</u> kg	Left Rear =	<u>438.2</u> kg
TOTAL FRONT =	<u>892.7</u> kg	TOTAL REAR =	<u>874.1</u> kg
% of Total Weight =	<u>50.5</u> %	% of Total Weight =	<u>49.5</u> %
TOTAL WEIGHT =	<u>1766.8</u> kg		

TEST VEHICLE ATTITUDE:

CURB WEIGHT ATTITUDE:

Right Front 769 mm Left Front 780 mm Right Rear 779 mm Left Rear 790 mm

FULLY LOADED WEIGHT ATTITUDE:

Right Front 752 mm Left Front 763 mm Right Rear 735 mm Left Rear 744 mm

TEST ATTITUDE:

Right Front 752 mm Left Front 764 mm Right Rear 746 mm Left Rear 744 mm

* light trucks and MPVs RCW is 136.1 kgs or manufacturer's value, whichever is less

GENERAL VEHICLE TEST PARAMETER DATA (Cont'd)

Test Vehicle Wheelbase: 2954 mm

C.G. As Tested = 1429 mm rearward of front wheel centerline

TOTAL VEHICLE LENGTH:

Right Side = 4695 mm

Centerline = 5084 mm

Left Side = 4695 mm

FRONT SEAT CUSHION PLACEMENT:

Total Length of Adjustment Travel: 124 mm

Test Position 7th position rearward out of 13 possible positions

FRONT SEAT BACK ADJUSTMENT POSITION:

Seat Back Angle = set in 6th position with the first position as 0

REAR POSITION SEAT:

Total Length of Fore/Aft Adjustment Travel: Non adjustable

Seat Back Adjustment Position: Non adjustable

ADJUSTABLE STEERING COLUMN POSITION: Not Adjustable

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

AMOUNT OF STODDARD SOLVENT IN FUEL TANK:

Fuel system usable capacity = 59.8 liters

Test Volume: 55.6 liters 93 % of capacity

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

Wheelbase: = 2954 mm

Impact Point is 508 mm rearward of front axle centerline

DATA SHEET NO. 2
TEST VEHICLE SUMMARY OF RESULTS

Year/Make/Model/Body Style: 2000/Nissan/Frontier/Pickup
 Vehicle NHTSA No.: CY5200 Test Date: September 21, 1999
 Overall Length = 5084 mm; Overall Width = 1658 mm

TEST WEIGHT:

Right Front =	<u>450.9</u> kg	Right Rear =	<u>422.3</u> kg
Left Front =	<u>457.2</u> kg	Left Rear =	<u>429.1</u> kg
TOTAL FRONT =	<u>908.1</u> kg	TOTAL REAR =	<u>851.4</u> kg
% of Total Weight =	<u>51.6</u> %	% of Total Weight =	<u>48.4</u> %
TOTAL WEIGHT =	<u>1759.5</u> kg		

Wheelbase = 2954 mm

Longitudinal C.G. from Center of Front Axle = 1429 mm

Impact Angle with Respect to Impactor = 0 ° degrees

MAXIMUM EXTERIOR STATIC CRUSH:

1. LEVEL 1 (362 mm above ground) = 321 mm
2. LEVEL 2 (672 mm above ground) = 313 mm
3. LEVEL 3 (710 mm above ground) = 319 mm
4. LEVEL 4 (1005 mm above ground) = 233 mm
5. LEVEL 5 (1503 mm above ground) = 163 mm

Maximum Post-Test Intrusion = 321 mm

OCCUPANTS:

	<u>Driver</u>	<u>Left Rear Passenger</u>
Type of Dummy	<u>SID</u>	<u>Not Installed</u>
Restraints Used	<u>type II belt</u> <u>with frontal airbag</u>	

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

Number of Vehicle Data Channels: = 20

Number of Cameras: Onboard Vehicle = 2

Offboard Vehicle = 4

Deformable Barrier = 2

TOTAL = 8

DATA SHEET NO. 3

MOVING DEFORMABLE BARRIER (MDB) SUMMARY OF RESULTSYear/Make/Model/Body Style: 2000/Nissan/Frontier/PickupVehicle NHTSA No.: CY5200 Test Date: September 21, 1999POSITION OF IMPACT (MDB) ON MONORAIL:Crabbed 27° to leftMDB DETAILS:

Overall Width of Framework Carriage	= <u>1252</u> mm
Overall Length of MDB (incl. honeycomb impact face)	= <u>4115</u> mm
Wheelbase of Framework Carriage	= <u>2591</u> mm
Tread of Framework Carriage (Front & Rear)	= <u>1880</u> mm
C.G. Location Rearward of Front Axle	= <u>1100</u> mm
C.G. Location From Center Line	= <u>-10</u> mm
C.G. Location Above Ground Level	= <u>477</u> mm

MDB WEIGHT:

Left Front	= <u>458.8</u> kg	Left Rear	= <u>230.3</u> kg
Right Front	= <u>324.4</u> kg	Right Rear	= <u>350.6</u> kg
TOTAL FRONT	= <u>783.2</u> kg	TOTAL REAR	= <u>580.9</u> kg
TOTAL MDB WEIGHT = <u>1364.1</u> kg			

Impact Angle (MDB C/L to Target Vehicle C/L) = 90° degreesImpact Speed = Primary: 32.8 mph (52.8 kph) Secondary: 32.8 mph (52.8 kph)

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

- | | | | | |
|----|---------------------------------|---|------------|----|
| 1. | Row A Top of Stack (813 mm) | = | <u>172</u> | mm |
| 2. | Row B Mid Stack (686 mm) | = | <u>155</u> | mm |
| 3. | Row C Top of Bumper (533 mm) | = | <u>113</u> | mm |
| 4. | Row D Center of Bumper (432 mm) | = | <u>74</u> | mm |

INSTRUMENTATION:

Number of MDB Data Channels = 5

DATA SHEET NO. 4
POST-TEST OBSERVATIONS

Year/Make/Model/Body Style: 2000/Nissan/Frontier/Pickup
 Vehicle NHTSA No.: CY5200 Test Date: September 21, 1999

VISIBLE DUMMY CONTACT POINTS:

	<u>DRIVER</u>	<u>LEFT REAR SID</u>
Head	<u>to side window & shoulder belt</u>	<u>NA</u>
Arm	<u>to door panel</u>	<u>NA</u>
Pelvis	<u>to door panel</u>	<u>NA</u>
Left Knee	<u>to door panel</u>	<u>NA</u>
Right Knee	<u>to left knee</u>	<u>NA</u>

DOOR OPENING:

	<u>LEFT SIDE</u>	<u>RIGHT SIDE</u>
Front	<u>Remained closed</u>	<u>Remained closed</u>
Rear	<u>NA</u>	<u>NA</u>

MDB DISTANCE FROM TARGET IMPACT POINT:

Horizontal: 4 mm forward Vertical: 3 mm down

ARM REST LOCATIONS:

Front: 198 mm from bottom of window
 Rear: N/A

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

Front Seat Back: 8 mm Front Seat Cushion: 15 mm

Left Rear Seat Back: NA Rear Seat Cushion: NA

GLAZING DAMAGE:

Windshield cracked

PILLAR PERFORMANCE:

No failure

SILL SEPARATION:

None

FRONTAL AIRBAGS:

Driver Deployed: Yes Passenger Deployed: Passenger airbag was turned off

OTHER NOTABLE IMPACT EFFECTS:

None noted

SECTION 4
OCCUPANT AND VEHICLE INFORMATION

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

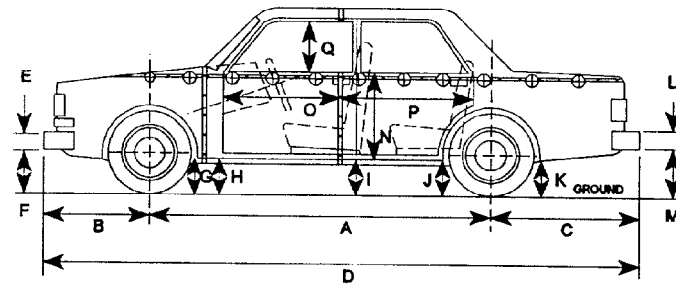
Year/Make/Model/Body Style: 2000/Nissan/Frontier/Pickup

Vehicle NHTSA No.: CY5200 Test Date: September 21, 1999

Front SID ID #048				
	Pos. Direct.		Neg. Direct.	
	Max (g)	Time (msec)	Max (g)	Time (msec)
RIB ACCELERATIONS				
Left Upper Rib (LUR) Y	35.4	46	-9.3	90
Left Lower Rib (LLR) Y	38.4	45	-8.0	108
SPINE ACCELERATIONS				
Lower Lateral Y	57.4	42	-10.2	109
PELVIS ACCELERATIONS				
Lateral Y	74.6	39	-12.7	116

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

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



LEFT SIDE VIEW

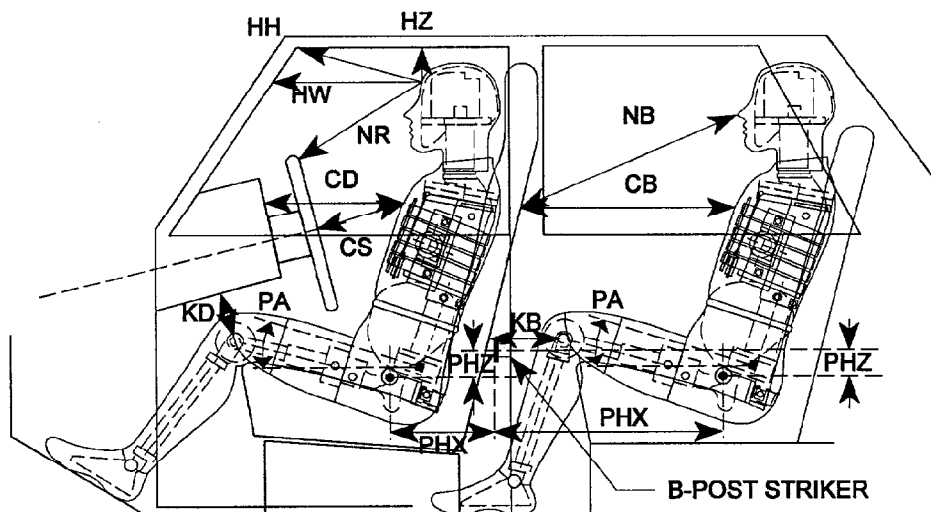
D = Length at Centerline
 R = Right Side Length
 S = Left Side Length
 T = Width at B Post
 J1 = To Pinch Weld
 J2 = To Sill

E & L = Bumper Thickness

ALL MEASUREMENTS IN (mm)

	PRE-TEST	POST-TEST	Δ CHANGE
A	2954	2939	-15
B	830	868	38
C	1300	1247	-53
D	5084	5054	-30
E	93	93	0
F	564	572	8
G	290	308	18
H	291	305	14
I	298	323	25
J1/J2	317/318	446/578	129/260
K	350	402	52
L	240	240	0
M	323	307	-16
N	727	685	-42
O	900	824	-76
P	287	287	0
Q	462	455	-7
R	4695	4801	106
S	4695	4617	-78
T	1658	1461	-197

DATA SHEET NO. 7

SIDE IMPACT DUMMY (SID) LONGITUDINAL CLEARANCE DIMENSIONSYear/Make/Model/Body Style: 2000/Nissan/Frontier/PickupNHTSA NO.: CY5200 Test Date: September 21, 1999NOTE: All dimensions are in mm with tolerance of ± 3 mm

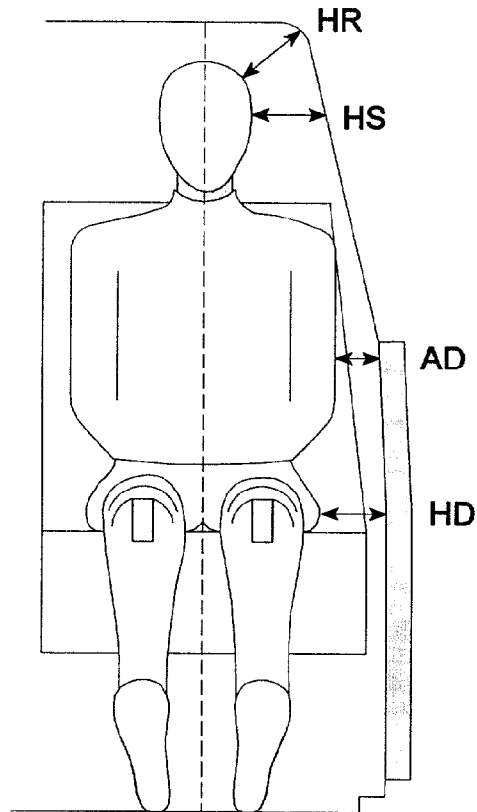
	DRIVER ID #048
HH	520
HW	665
HZ	160
NR	493
CD	628
CS	370
KDL (KDA°)	200 (17.1°)
KDR (KDA°)	185 (22.0 °)
PA°	24.7°
PHX	252
PHZ	78

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

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

Year/Make/Model/Body Style: 2000/Nissan/Frontier/Pickup

NHTSA NO.: CY5200 Test Date: September 21, 1999

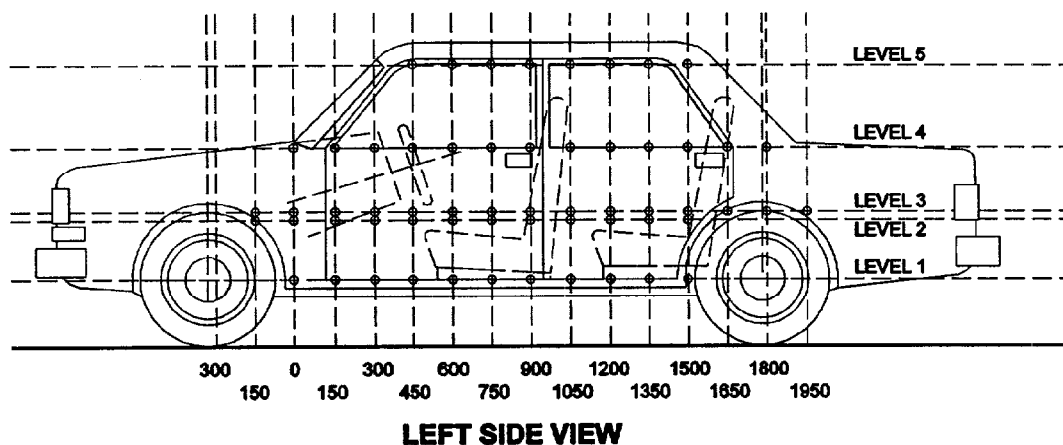


NOTE: All dimensions are in mm

	DRIVER ID #048
HR	231
HS	313
AD	93
HD	144

DATA SHEET NO. 9

VEHICLE SIDE MEASUREMENTS

Year/Make/Model/Body Style: 2000/Nissan/Frontier/PickupNHTSA NO.: CY5200 Test Date: September 21, 1999

NOTE: All measurements are in millimeters (mm)

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

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

MEASUREMENTS ALONG THE VERTICAL 750 mm. LINE SHOWN ABOVE

Level 1 @ Axle Centerline Height

(or Sill Top Height) = 362 mm

Level 2 @ Occupant H-Point = 672 mm

Level 3 @ Mid Door = 710 mm

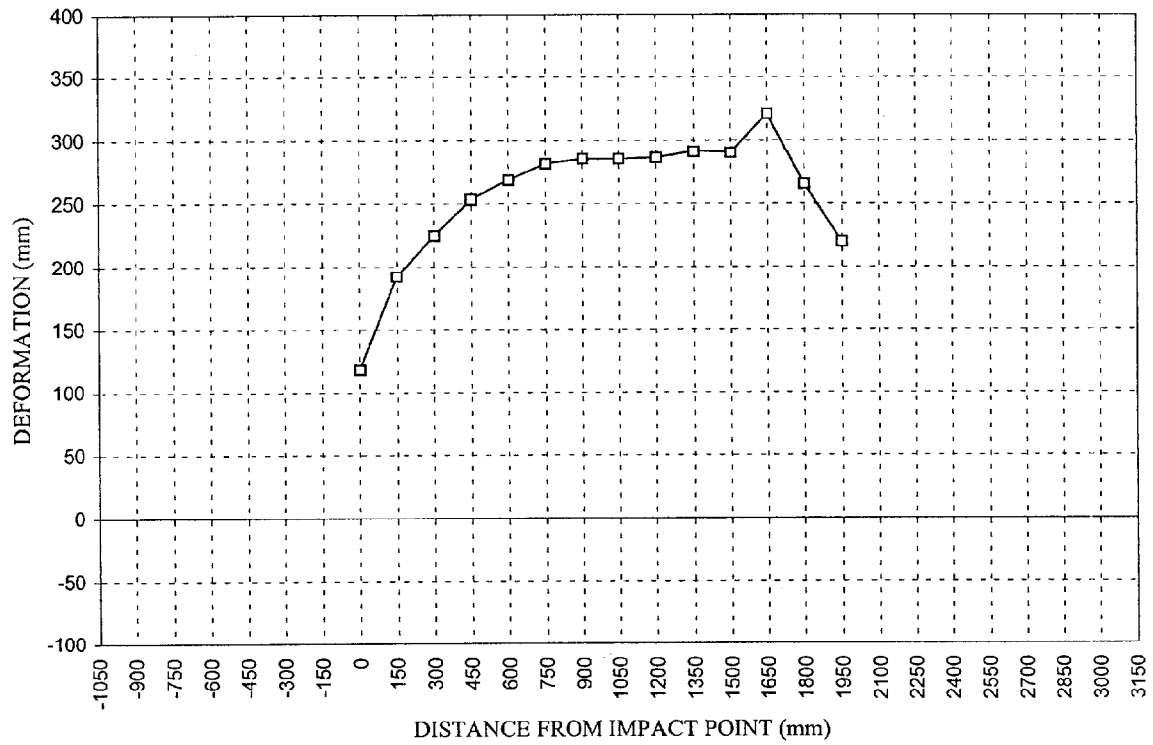
Level 4 @ Window Sill = 1005 mm

Level 5 @ Window Top = 1503 mm

DATA SHEET NO. 10
VEHICLE EXTERIOR CRUSH PROFILES

	Level 1 - Axle Centerline		
Longitudinal Distance (mm)	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
-1200			
-1050			
-900			
-750			
-600			
-450			
-300			
-150			
0 (impact point)	816	934	118
150	819	1011	192
300	820	1045	225
450	818	1071	253
600	819	1087	268
750	818	1099	281
900	818	1103	285
1050	819	1104	285
1200	818	1104	286
1350	817	1108	291
1500	817	1107	290
1650	818	1139	321
1800	813	1078	265
1950	813	1033	220
2100			
2250			
2400			
2550			
2700			
2850			
3000			

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

VEHICLE EXTERIOR STATIC CRUSH (Cont'd)

LEVEL 1 - AXLE CENTERLINE

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

Longitudinal Distance (mm)	Level 2 - Occupant H Point		
	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
-1200			
-1050			
-900			
-750			
-600			
-450			
-300			
-150	749	848	99
0 (impact point)	751	903	152
150	753	1013	260
300	753	1032	279
450	753	1041	288
600	754	1048	294
750	753	1047	294
900	753	1055	302
1050	753	1053	300
1200	752	1064	312
1350	752	1062	310
1500	752	1065	313
1650	755	976	221
1800	753	967	214
1950	747	887	140
2100	741	831	90
2250			
2400			
2550			
2700	744	806	62
2850	745	782	37
3000	753	786	33

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

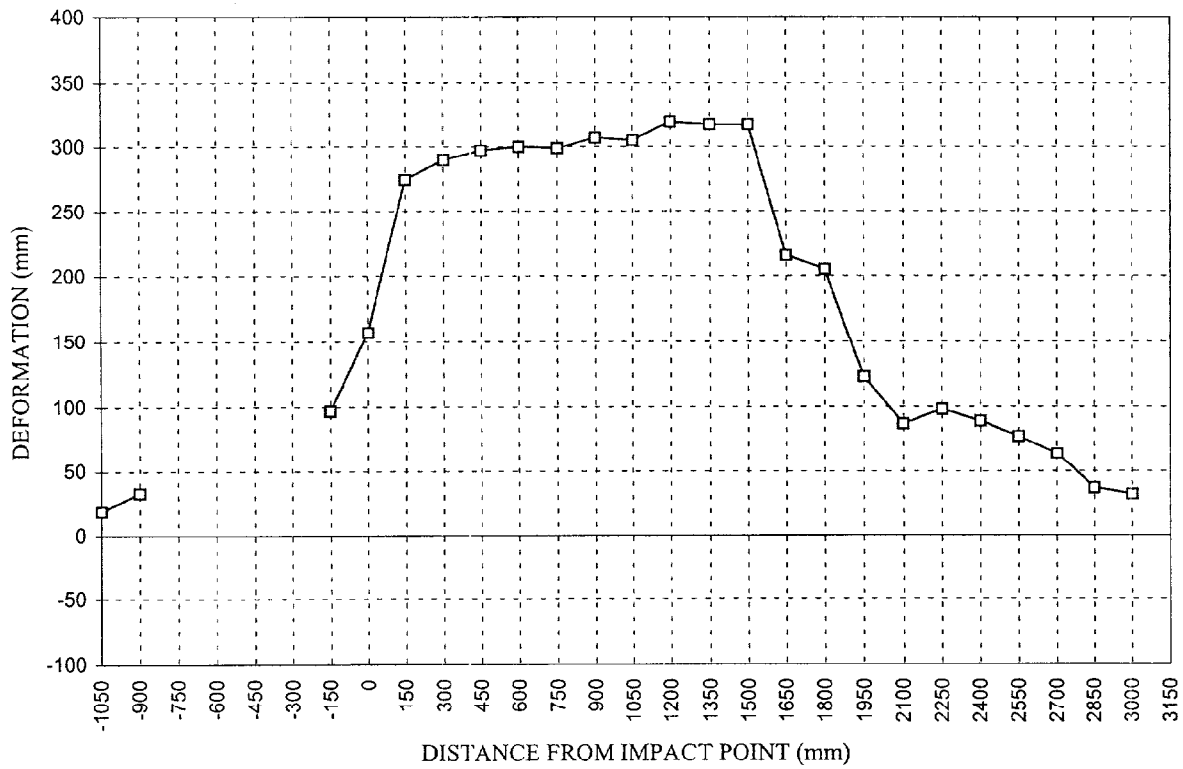
VEHICLE EXTERIOR STATIC CRUSH (Cont'd)

LEVEL 2 - OCCUPANT H-POINT

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

	Level 3 - Mid Door		
Longitudinal Distance (mm)	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
-1200			
-1050	778	797	19
-900	752	785	33
-750			
-600			
-450			
-300			
-150	746	843	97
0 (impact point)	748	905	157
150	748	1023	275
300	749	1039	290
450	749	1046	297
600	750	1050	300
750	750	1049	299
900	749	1056	307
1050	748	1053	305
1200	748	1067	319
1350	748	1065	317
1500	748	1065	317
1650	752	968	216
1800	750	955	205
1950	747	870	123
2100	738	825	87
2250	738	836	98
2400	741	830	89
2550	741	818	77
2700	740	804	64
2850	744	781	37
3000	752	784	32

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

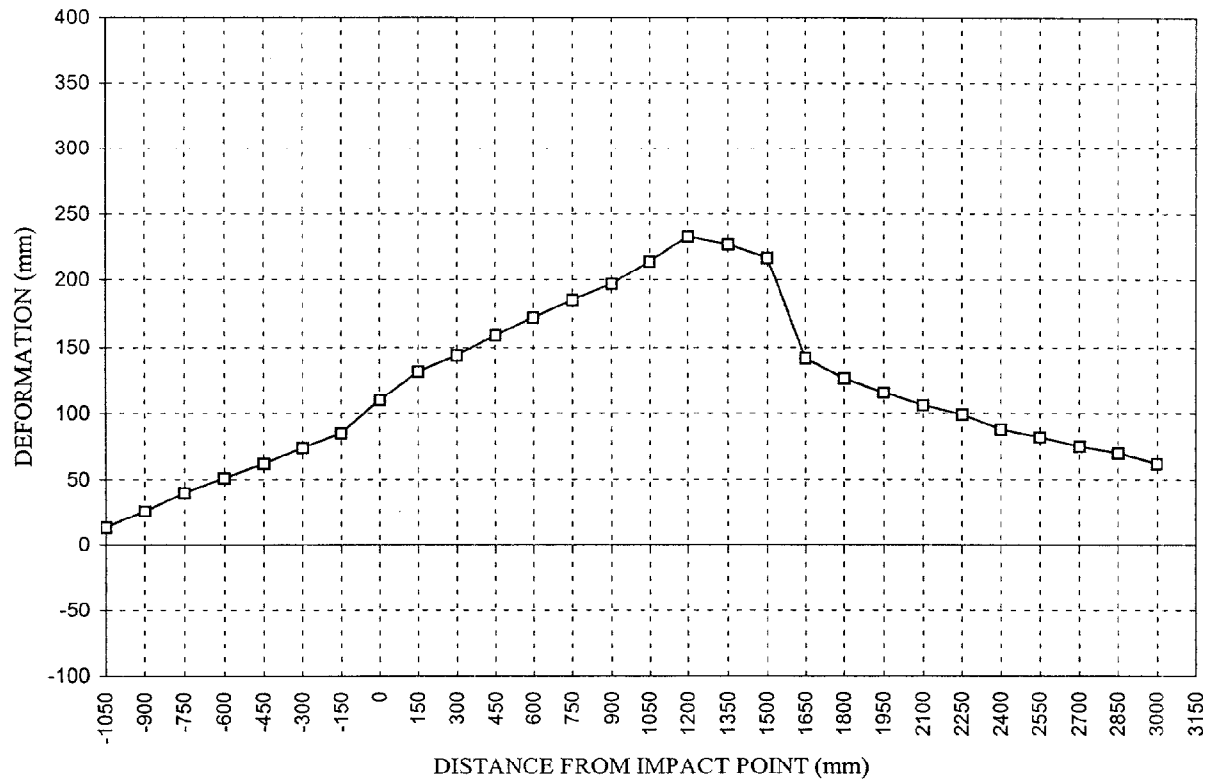
VEHICLE EXTERIOR STATIC CRUSH (Cont'd)

LEVEL 3 - MID DOOR

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

	Level 4 - Window Sill		
Longitudinal Distance (mm)	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
-1200			
-1050	844	857	13
-900	818	844	26
-750	808	848	40
-600	801	852	51
-450	795	857	62
-300	791	865	74
-150	790	875	85
0 (impact point)	787	897	110
150	788	920	132
300	788	932	144
450	788	947	159
600	787	959	172
750	787	972	185
900	787	984	197
1050	787	1001	214
1200	787	1020	233
1350	787	1014	227
1500	787	1004	217
1650	792	934	142
1800	792	919	127
1950	792	908	116
2100	789	895	106
2250	789	888	99
2400	790	878	88
2500	791	873	82
2700	793	868	75
2850	795	865	70
3000	797	859	62

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

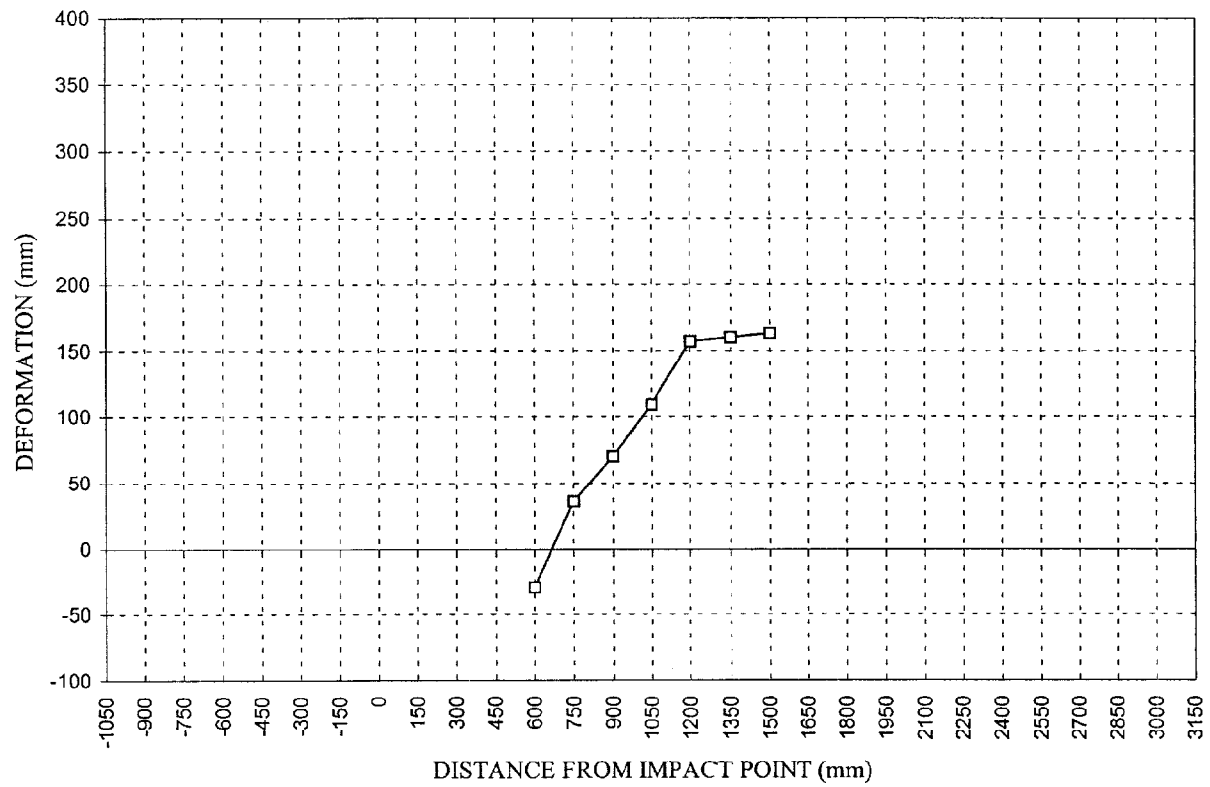
VEHICLE EXTERIOR STATIC CRUSH (Cont'd)

LEVEL 4 - WINDOW SILL

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

Longitudinal Distance (mm)	Level 5 - Window Top		
	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
-1200			
-1050			
-900			
-750			
-600			
-450			
-300			
-150			
0 (impact point)			
150			
300			
450			
600	984	955	-29
750	954	990	36
900	957	1027	70
1050	955	1064	109
1200	960	1117	157
1350	960	1120	160
1500	963	1126	163
1650			
1800			
1950			
2100			
2250			
2400			
2550			
2700			
2850			
3000			

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

VEHICLE EXTERIOR STATIC CRUSH (Cont'd)

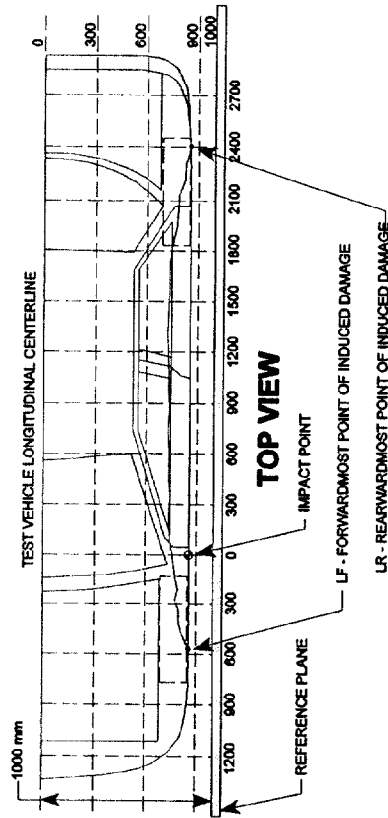
LEVEL 5 - WINDOW TOP

DATA SHEET NO. 11

VEHICLE DAMAGE PROFILE DISTANCES

Year/Make/Model/Body Style: 2000/Nissan/Frontier/Pickup

NHTSA NO.: CY5200 Test Date: September 21, 1999



MEASUREMENT CONVENTIONS:

Forward of the impact point (towards front of vehicle) is considered negative (-).

Rearward of the impact point (towards rear of vehicle) is considered positive (+).

DPD MEASUREMENTS	POST-TEST (mm)	PRE-TEST (mm)	STATIC CRUSH (mm)
1. (LR = 3000 mm)	784	752	32
2. 2208 mm	838	738	100
3. 1368 mm	1127	785	342
4. 566 mm	1117	787	330
5. -247 mm	866	791	75
6. (LF = -1050 mm)	857	844	13

DATA SHEET NO. 12

EXTERIOR STATIC CRUSH FOR SIDE IMPACTOR

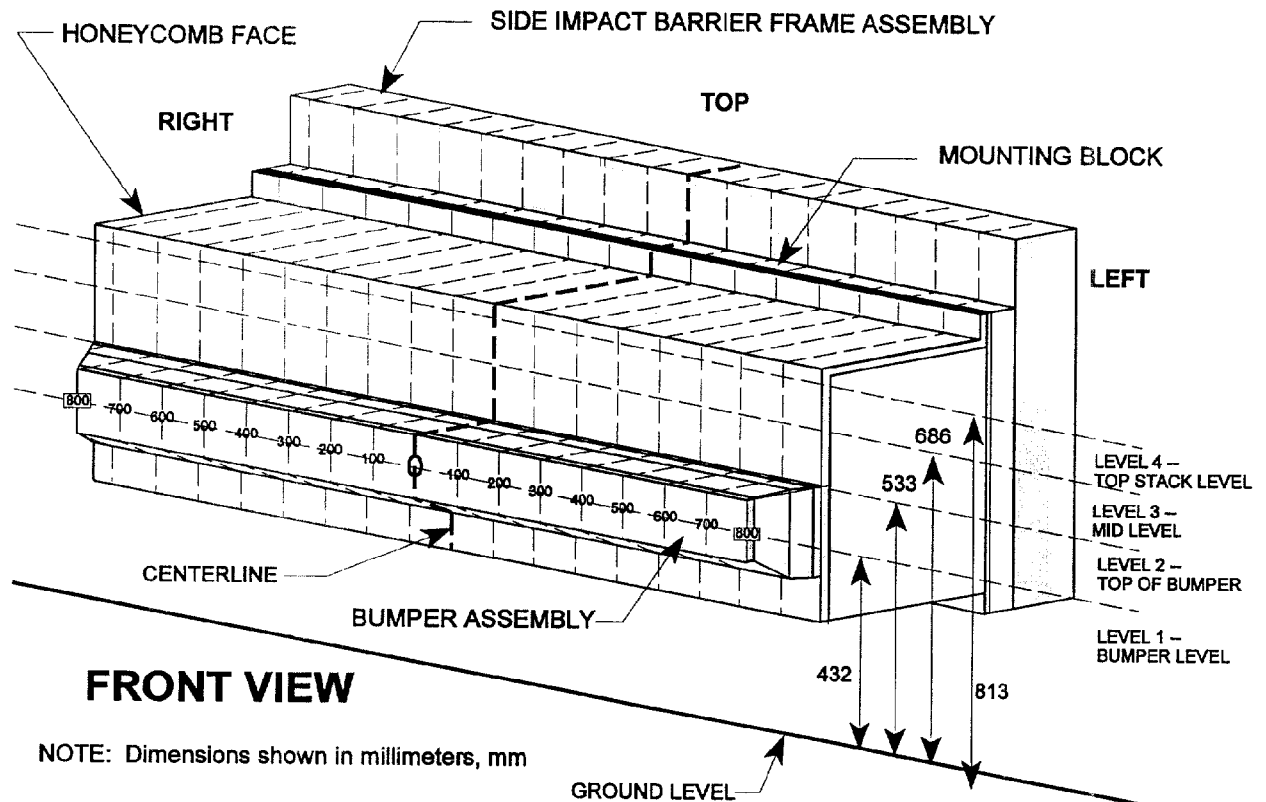
Year/Make/Model/Body Style: 2000/Nissan/Frontier/Pickup

Vehicle NHTSA No.: CY5200 Test Date: September 21, 1999

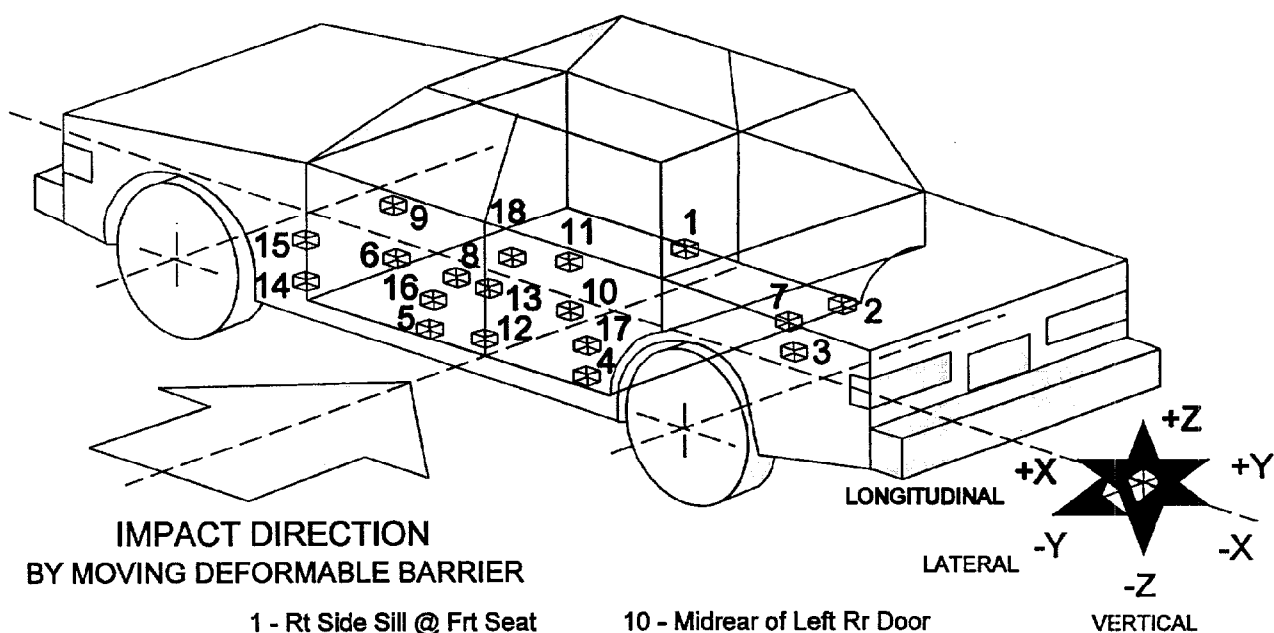
Location	Height at CL*	Distance Right of Center (mm)									Distance Left of Center (mm)							
		800	700	600	500	400	300	200	100	0	100	200	300	400	500	600	700	800
Top Stack Level 4	813 mm	152	172	84	28	0	2	23	11	0	-2	0	3	8	13	22	30	45
Mid Level Level 3	686 mm	136	155	66	13	8	4	6	1	-1	-2	-2	-2	6	9	17	22	30
Top Bumper Level 2	533 mm	113	82	44	31	29	26	16	12	11	10	8	7	6	3	5	11	13
Mid Bumper Level 1	432 mm	74	64	53	47	46	45	40	39	38	37	36	35	36	36	40	52	67

* See next page for Barrier Face Graphic

DATA SHEET NO. 12 (Cont'd)



DATA SHEET 13

TEST VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARYYear/Make/Model/Body Style: 2000/Nissan/Frontier/PickupVehicle NHTSA No.: CY5200 Test Date: September 21, 1999

IMPACT DIRECTION
BY MOVING DEFORMABLE BARRIER

- | | |
|---------------------------------|-------------------------------|
| 1 - Rt Side Sill @ Frt Seat | 10 - Midrear of Left Rr Door |
| 2 - Rt Side Sill @ Rr Seat | 11 - Left Rr Door Uptr C/Line |
| 3 - Rr Floorpan Above Axle | 12 - Left Lwr B-Post |
| 4 - Left Side Sill @ Rr Seat | 13 - Left Middle B-Post |
| 5 - Left Side Sill @ Frt Seat | 14 - Left Lwr A-Post |
| 6 - Left Frt Door on Centerline | 15 - Left Middle A-Post |
| 7 - Rt Rr Occ Compartment | 16 - Frt Seat Track |
| 8 - Midrear of Left Frt Door | 17 - Rr Seat Track |
| 9 - Left Frt Door Uptr C/Line | 18 - Vehicle C.G. |

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

Year/Make/Model/Body Style: 2000/Nissan/Frontier/Pickup

Vehicle NHTSA No.: CY5200 Test Date: September 21, 1999

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	Right Side Sill @ Front Seat	3061	667	324	6.6	-7.8	32.9	-8.6	8.0	-12.4	33.1
2	Right Side Sill @ Rear Seat	2178	672	335	5.1	-8.0	37.7	-9.6	7.9	-16.0	40.4
3	Rear Floorpan Above Axle	1290	0	650	6.9	-8.1	23.2	-2.6	17.1	-11.7	26.2
4	Left Side Sill @ Rear Seat	2166	-672	362	---	---	97.7	-44.2	---	---	---
5	Left Side Sill @ Front Seat	3050	-667	330	---	---	203.5	**	---	---	---
7	Right Rear Occupant Compartment	2220	320	635	---	---	38.2	-11.0	---	---	---
12	Left Lower B-Post	2653	-625	520	---	---	176.8	-112.8	---	---	---
13	Left Middle B-Post	2653	-685	973			110.8	-13.7			
14	Left Lower A-Post	3715	-693	518	---	---	82.9	-46.9	---	---	---
15	Left Mid A-Post	3794	-765	970	---	---	19.6	-3.6	---	---	---
16	Driver Seat Track	2863	-560	475	---	---	93.1	-13.8	---	---	---
18	Vehicle CG	3153	0	486	10.3	-14.3	29.1	-5.2	22.0	-34.6	46.7

*Reference: X - Rear Bumper (+ Forward)

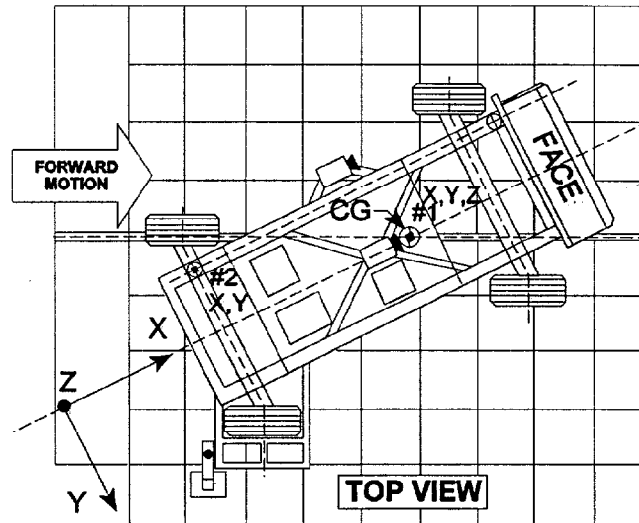
Y - Vehicle Centerline (+ To right)

Z - Ground Level (+ Up)

** Not valid after 23 msec.

DATA SHEET NO. 14
MOVING DEFORMABLE BARRIER (MDB) ACCELEROMETER LOCATIONS AND DATA
SUMMARY

Year/Make/Model/Body Style: 2000/Nissan/Frontier/Pickup
Vehicle NHTSA No.: CY5200 Test Date: September 21, 1999

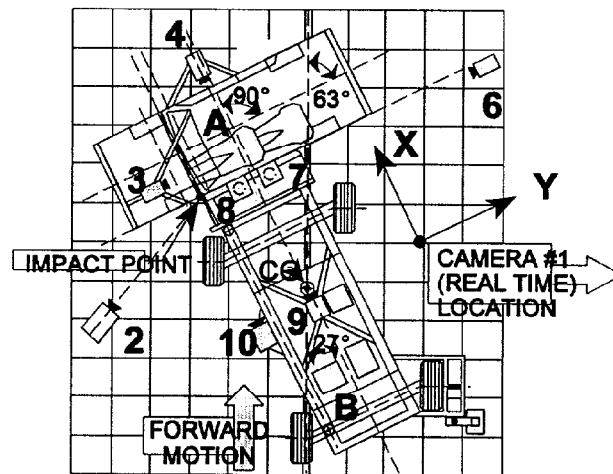


Accel. No.	Description	Coordinates (mm)*			(+) Positive		(-) Negative	
		X	Y	Z	Max. (g)	Time (msec)	Max. (g)	Time (msec)
1	MDB Center of Gravity	-1092	0	483				
	Longitudinal (X)	---	---	---	.9	132	-17.7	37
	Lateral (Y)	---	---	---	0	0	-7.9	35
	Vertical (Z)	---	---	---	17.1	78	-19.8	30
	Resultant (R)	---	---	---	25.8	30	---	---
2	Rear Frame Member	-2591	-625	622				
	Longitudinal (X)	---	---	---	2.0	136	-21.2	38
	Lateral (Y)	---	---	---	1.9	71	-3.3	36

*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: 2000/Nissan/Frontier/Pickup
 Vehicle NHTSA No.: CY5200 Test Date: September 21, 1999



Camera No.	View	Coordinates (mm)*			Lens (mm)	Film Speed (fps)
		X	Y	Z		
1	Real Time				10	24
2	Left Impact	-1860	-2500	1850	13	1005
3	Onboard Hood				13	1000
4	Onboard Front Occupant				8	1015
6	Right Impact	-350	10120	1700	25	1000
7	Top Overall	-310	1170	5000	8	1042
8	Top Impact	-180	70	5000	13	980
9	Cart Overall				13	1000
10	Cart Impact				35	962

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

DATA SHEET 16

FUEL SYSTEM INTEGRITY POST IMPACT TEST DATAVehicle Year/Make/Model/Body Style: 2000/Nissan/Frontier/PickupVehicle NHTSA No.: CY5200 Test Date: September 21, 1999TEST REQUIREMENTS:

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

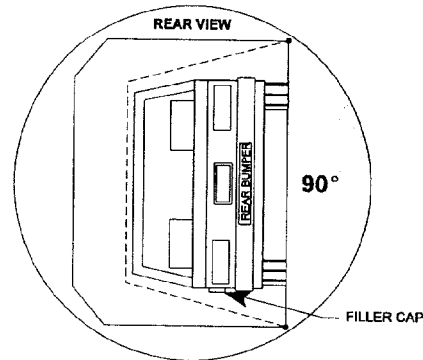
TEST VEHICLE IMPACT TYPE: X Left Side Impact MDB 32.8 mph (52.8 kph)

FUEL SPILLAGE MEASUREMENT:

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

FUEL SPILLAGE LOCATION(S): None

DATA SHEET 16

FMVSS 301 STATIC ROLLOVER TEST DATAVehicle Year/Make/Model/Body Style: 2000/Nissan/Frontier/PickupVehicle NHTSA No.: CY5200 Test Date: September 21, 1999TEST PHASE: 0° - 90°DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:Rollover Fixture 90° Rotation Time = 2 minutes 42 seconds

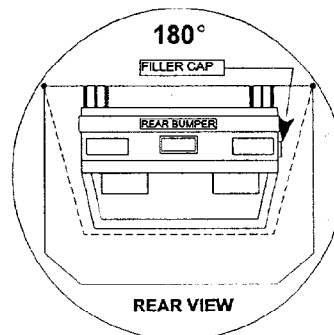
(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time = 5 minutes 0 secondsTOTAL TIME = 7 minutes 42 secondsNext Whole Minute Interval = 8 minutesFUEL 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: 2000/Nissan/Frontier/PickupVehicle NHTSA No.: CY5200 Test Date: September 21, 1999TEST PHASE: 90° - 180°DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:Rollover Fixture 90° Rotation Time = 2 minutes 37 seconds

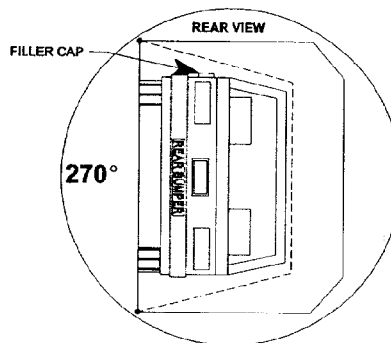
(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time = 5 minutes 0 secondsTOTAL TIME = 7 minutes 37 secondsNext Whole Minute Interval = 8 minutesFUEL 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: 2000/Nissan/Frontier/PickupVehicle NHTSA No.: CY5200 Test Date: September 21, 1999TEST PHASE: 180° - 270°DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:Rollover Fixture 90° Rotation Time = 2 minutes 12 seconds

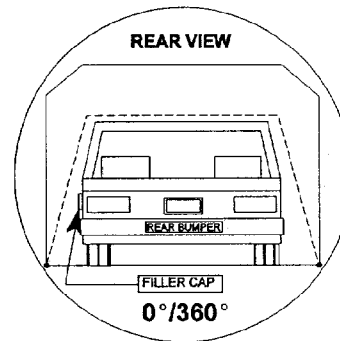
(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time = 5 minutes 0 secondsTOTAL TIME = 7 minutes 12 secondsNext Whole Minute Interval = 8 minutesFUEL 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 DATAVehicle Year/Make/Model/Body Style: 2000/Nissan/Frontier/PickupVehicle NHTSA No.: CY5200 Test Date: September 21, 1999TEST PHASE: 270° - 360°DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:Rollover Fixture 90° Rotation Time = 2 minutes 41 seconds

(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time = 5 minutes 0 secondsTOTAL TIME = 7 minutes 41 secondsNext Whole Minute Interval = 8 minutesFUEL 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-41 - Right Rear Attitude Point	A-41

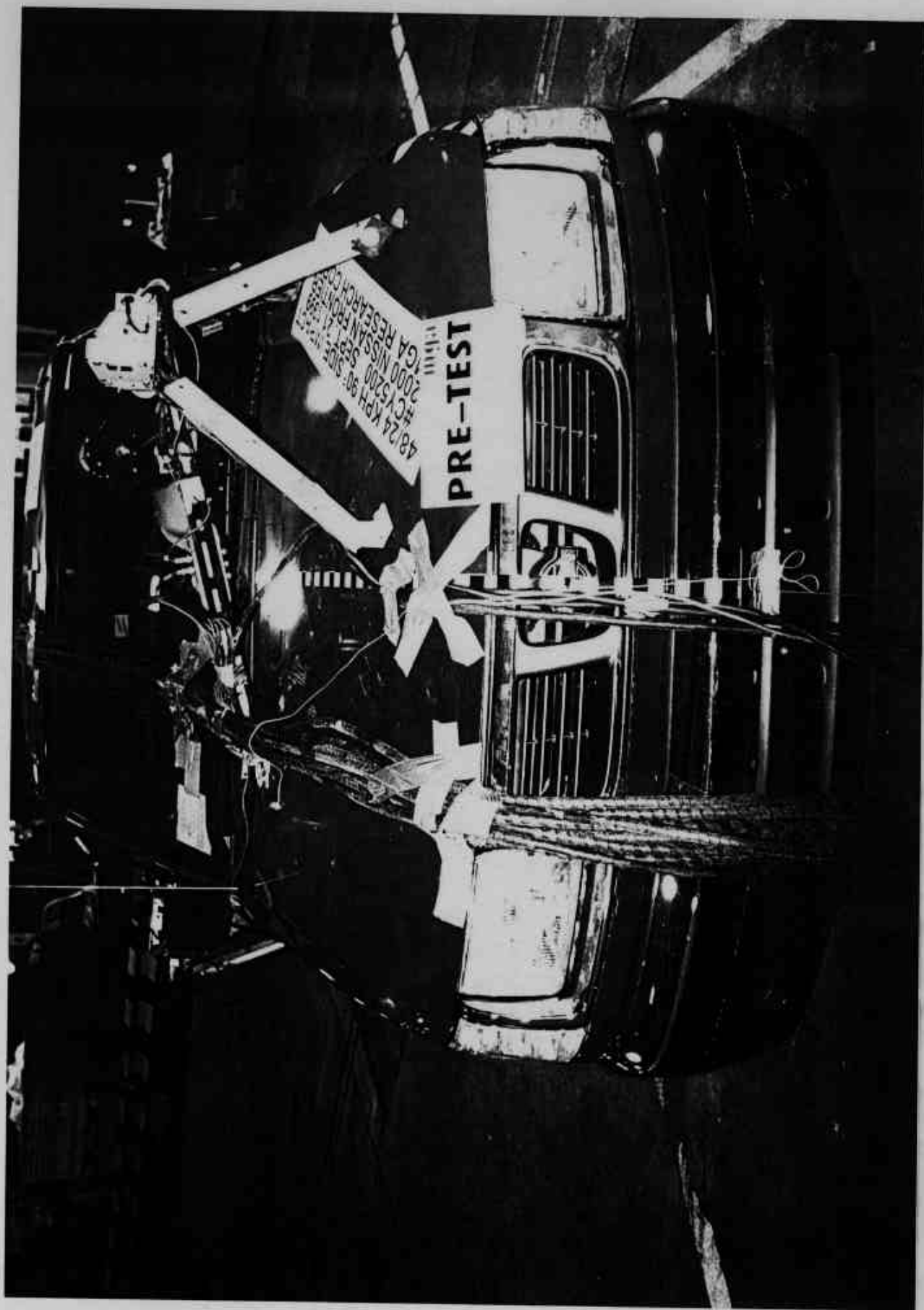


Photo No. A-1 - Pre-Test Front View of Test Vehicle

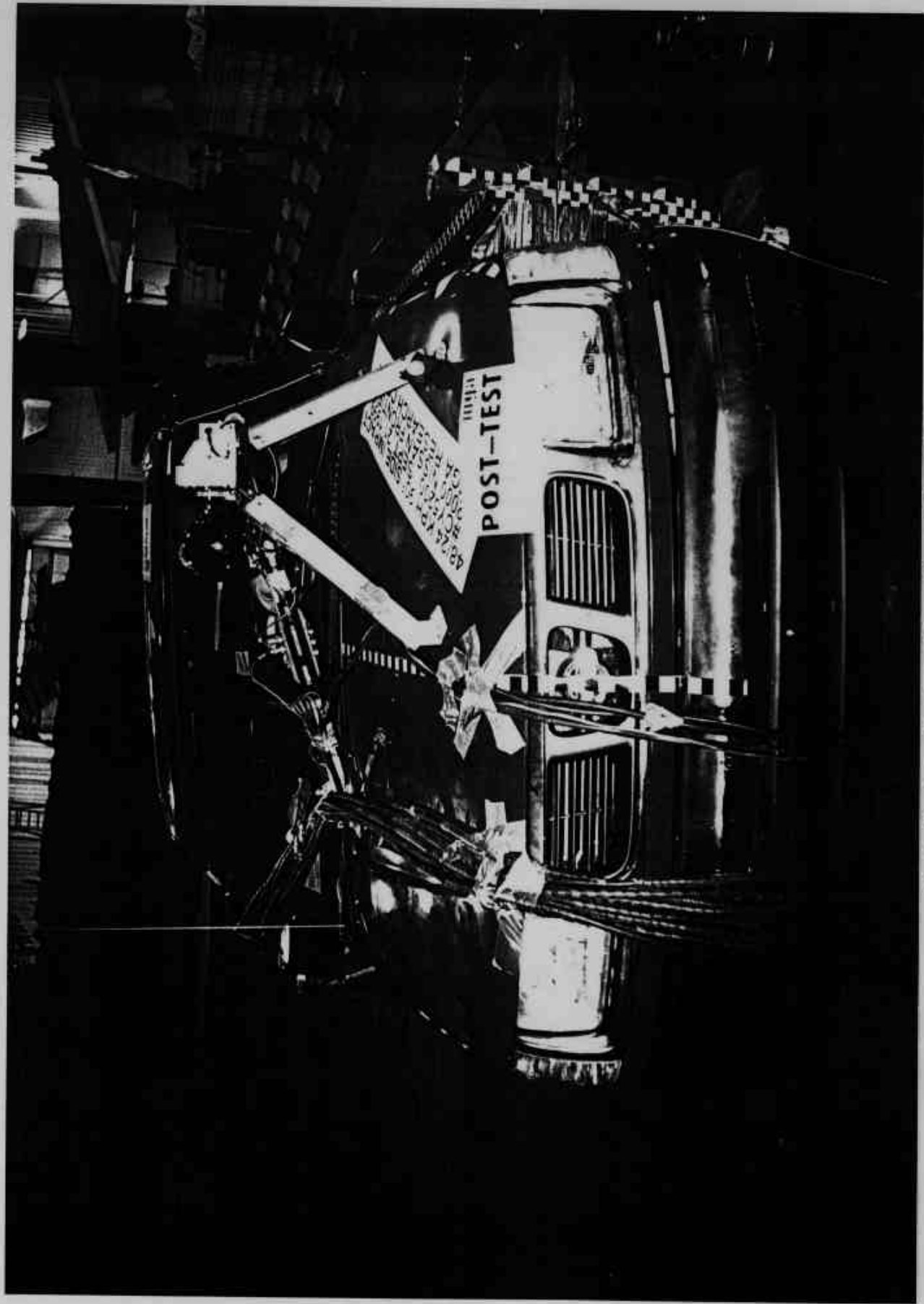


Photo No. A-2 - Post-Test Front View of Test Vehicle

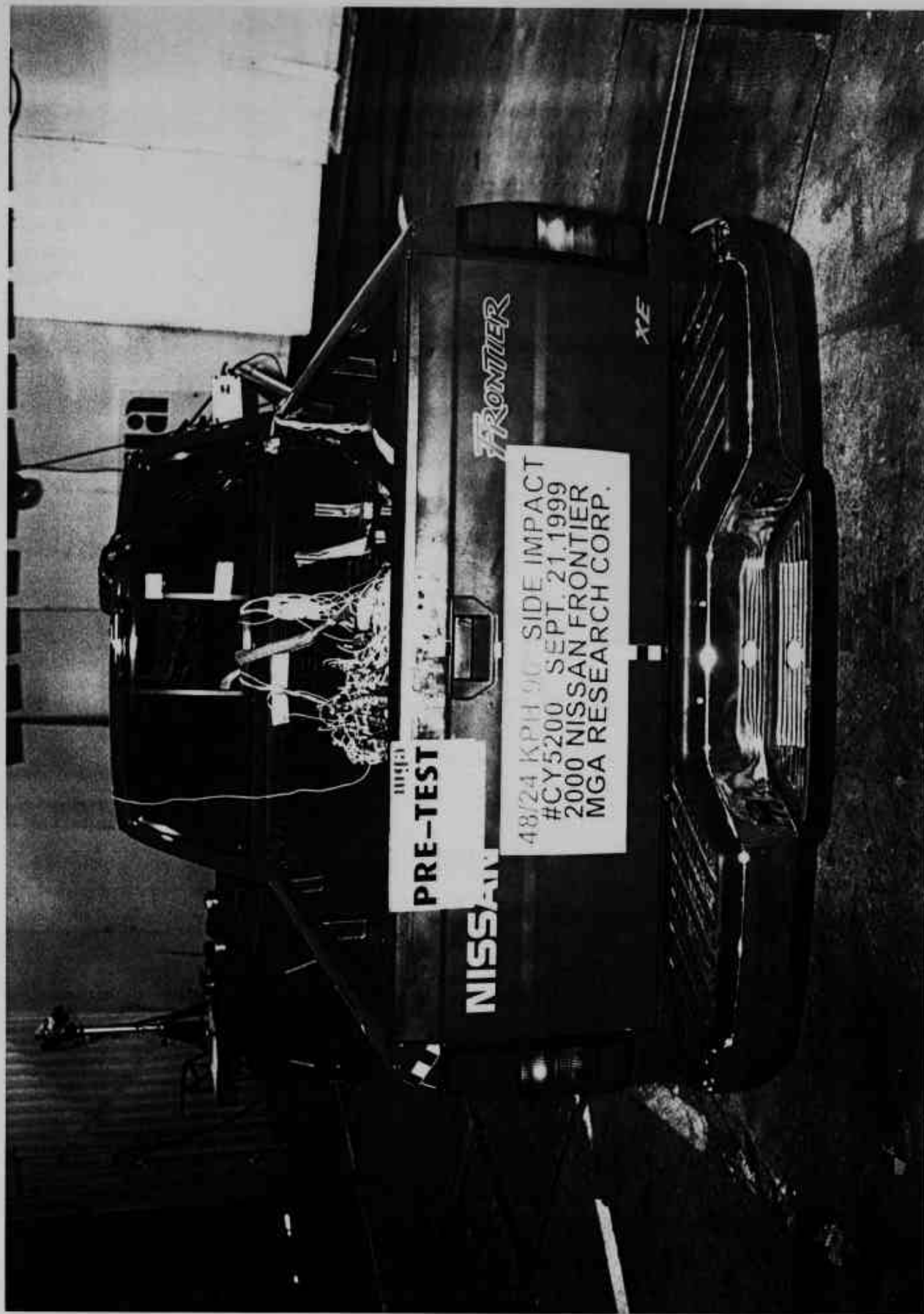


Photo No. A-3 - Pre-Test Rear View of Test Vehicle



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

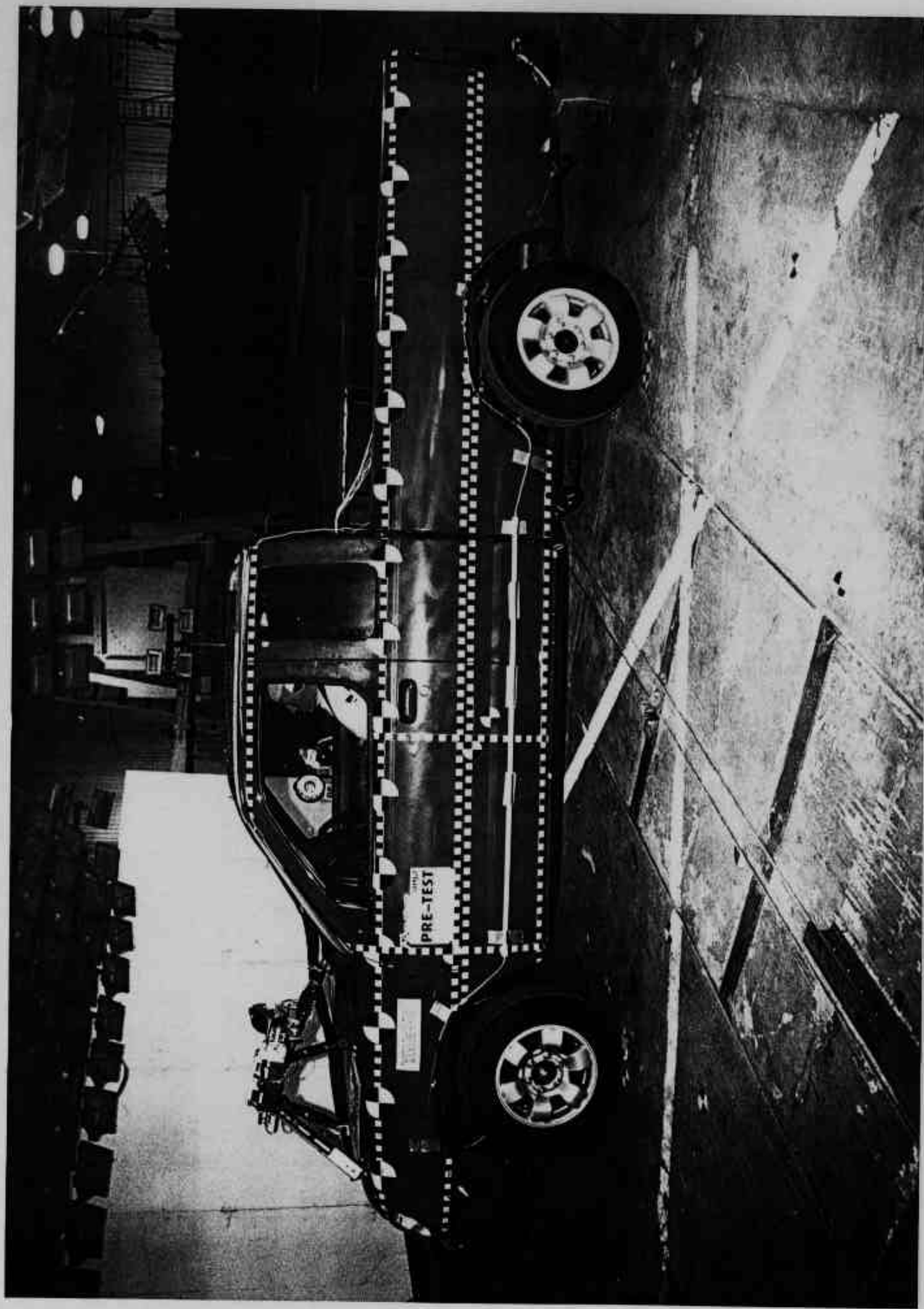


Photo No. A-5 - Pre-Test Left Side View of Test Vehicle

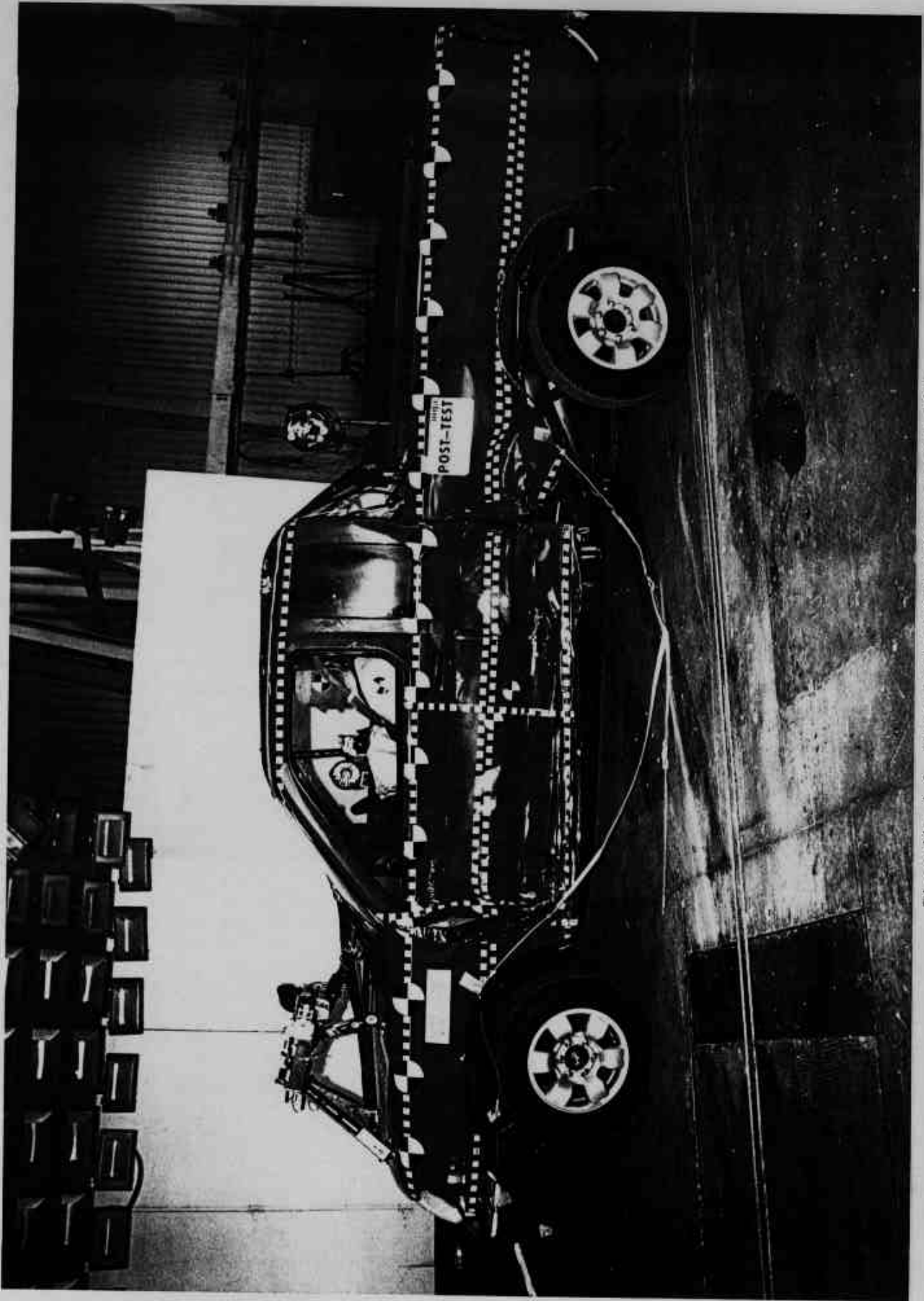


Photo No. A-6 - Post-Test Left Side View of Test Vehicle

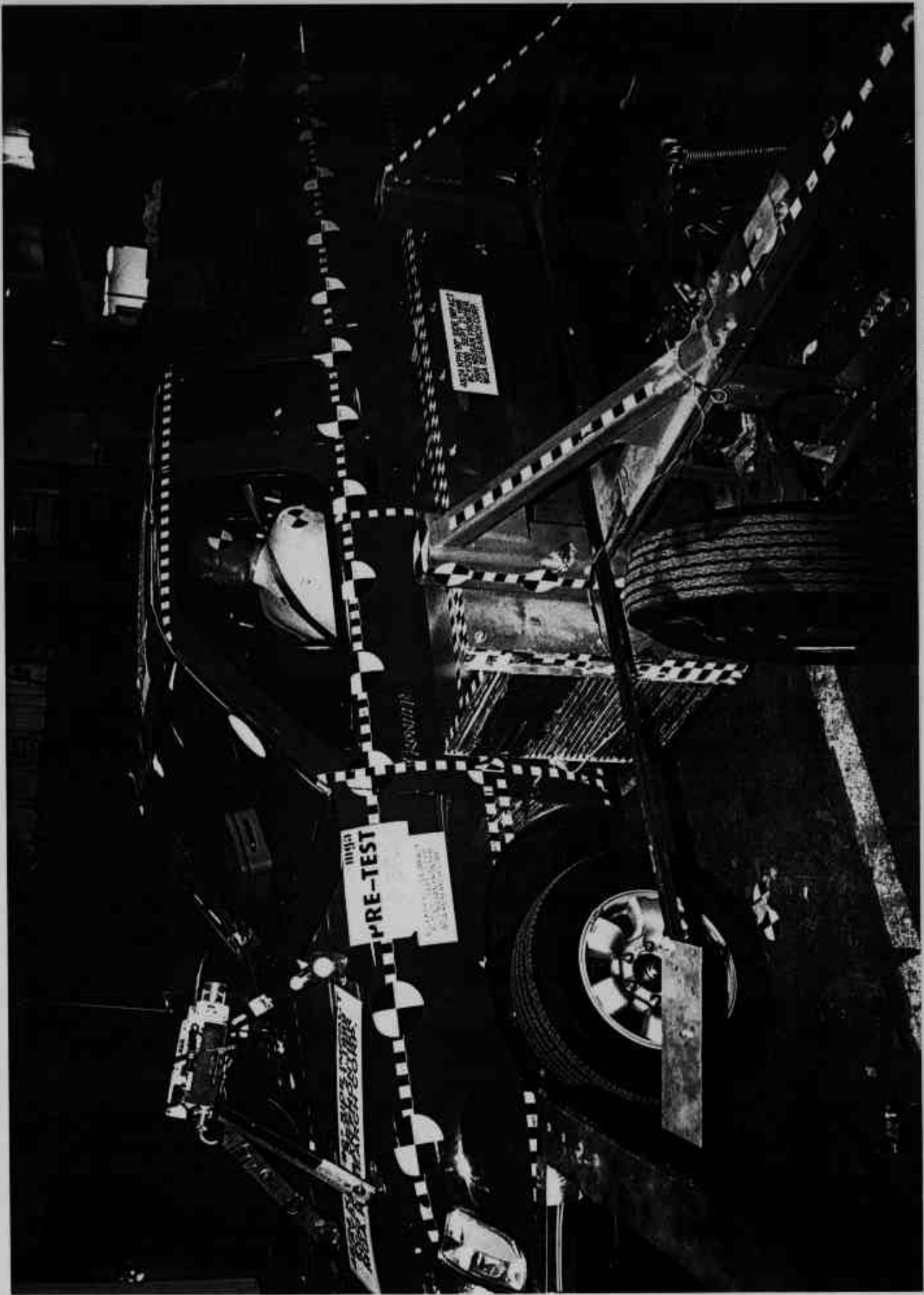


Photo No. A-7 - Pre-Test MDB Positioned Against Vehicle (left side)



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

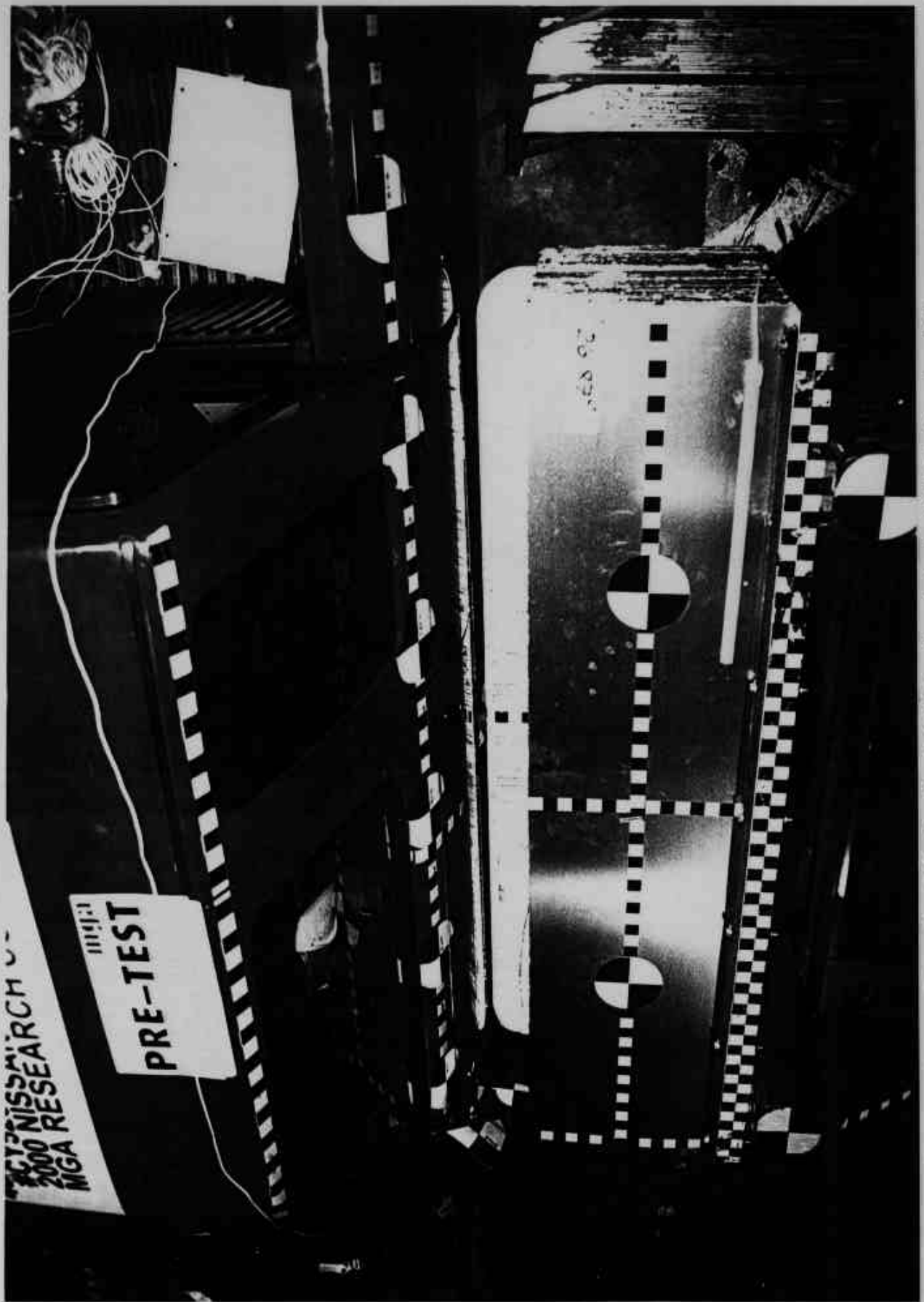


Photo No. A-9 - Pre-Test MDB Positioned Against Vehicle Overhead View

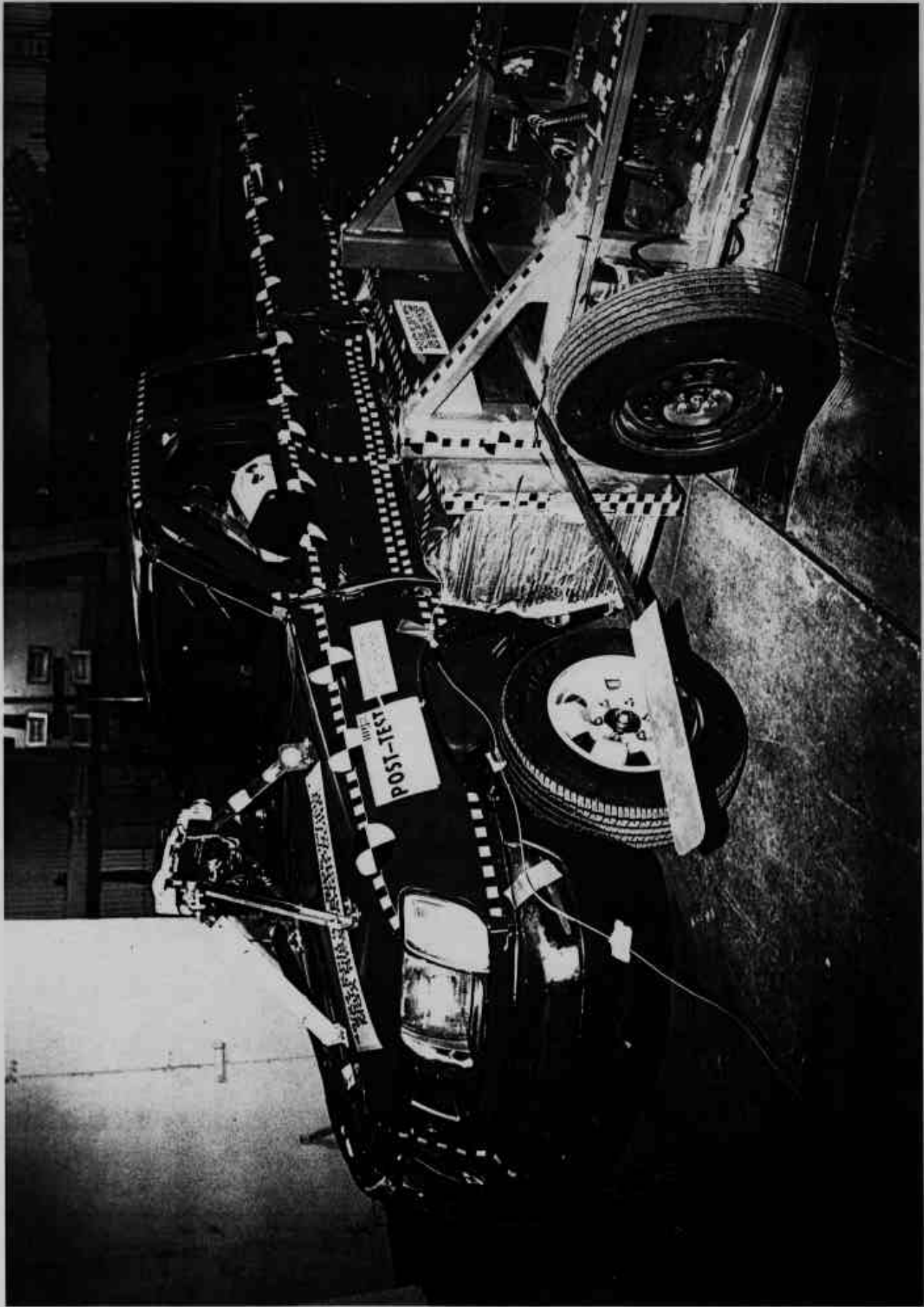


Photo No. A-10 - Post-Test MDB Positioned Against Vehicle (left side)

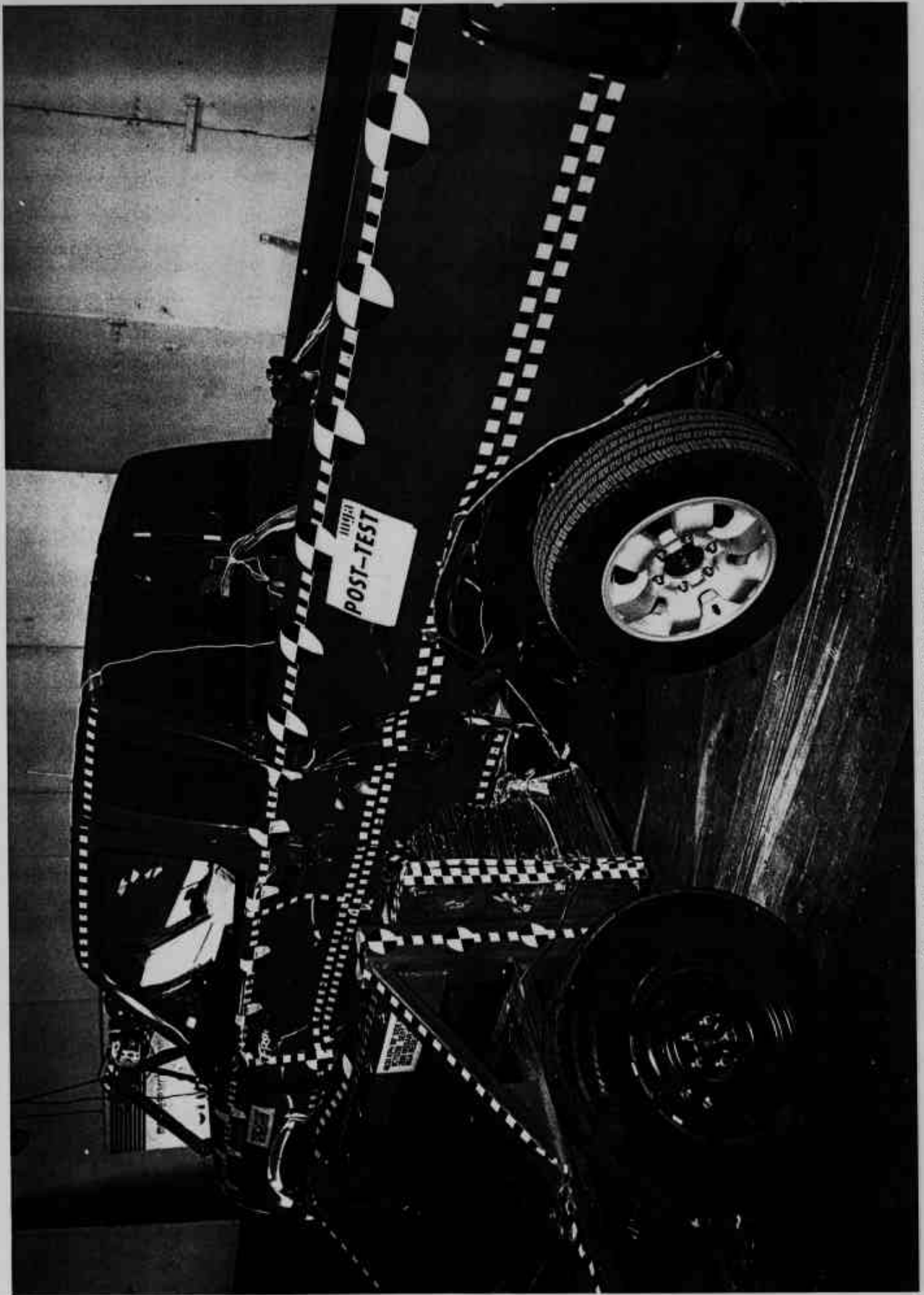


Photo No. A-11 - Post-Test MDB Positioned Against Vehicle (right side)



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

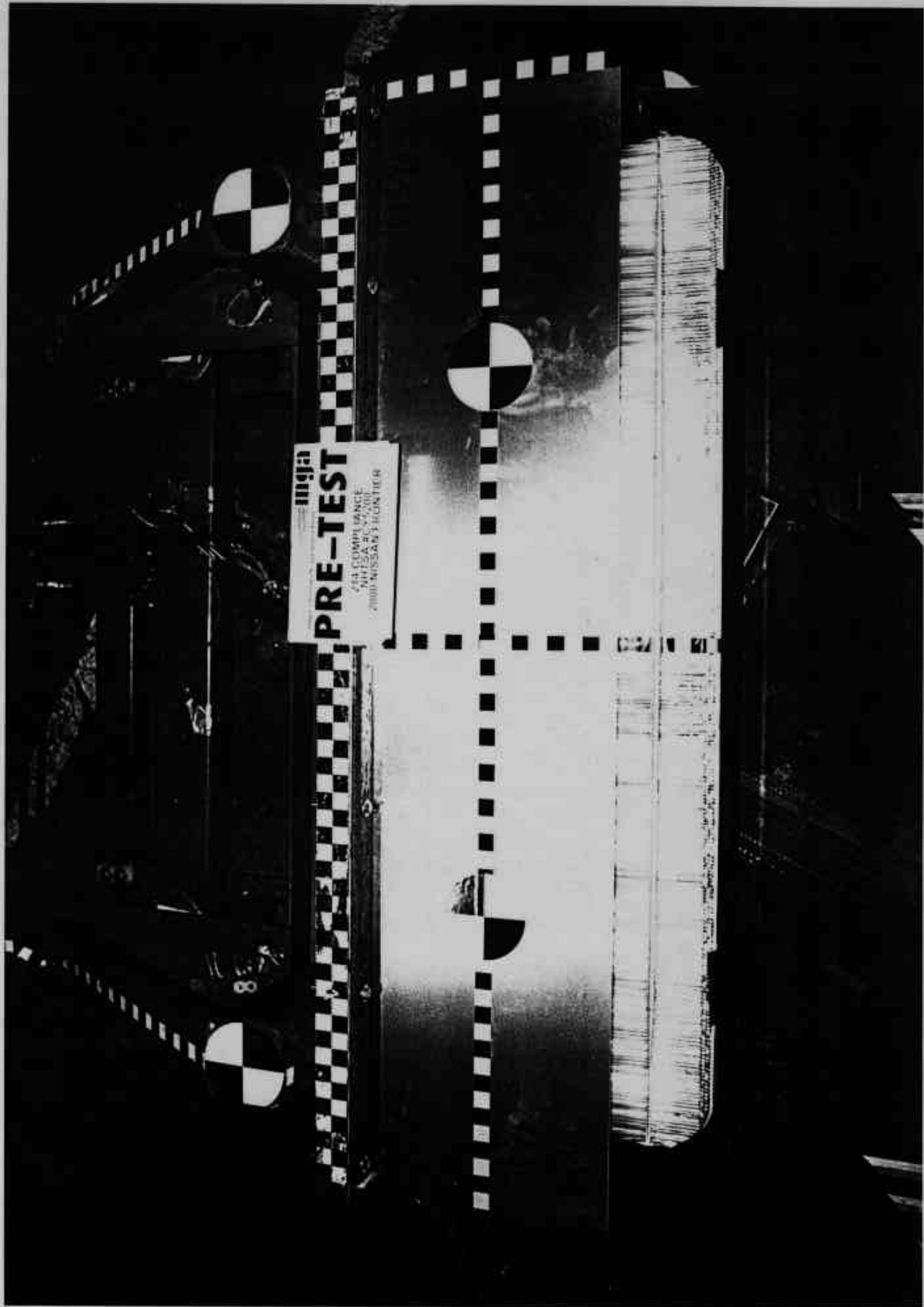


Photo No. A-13 - Pre-Test MDB Top View

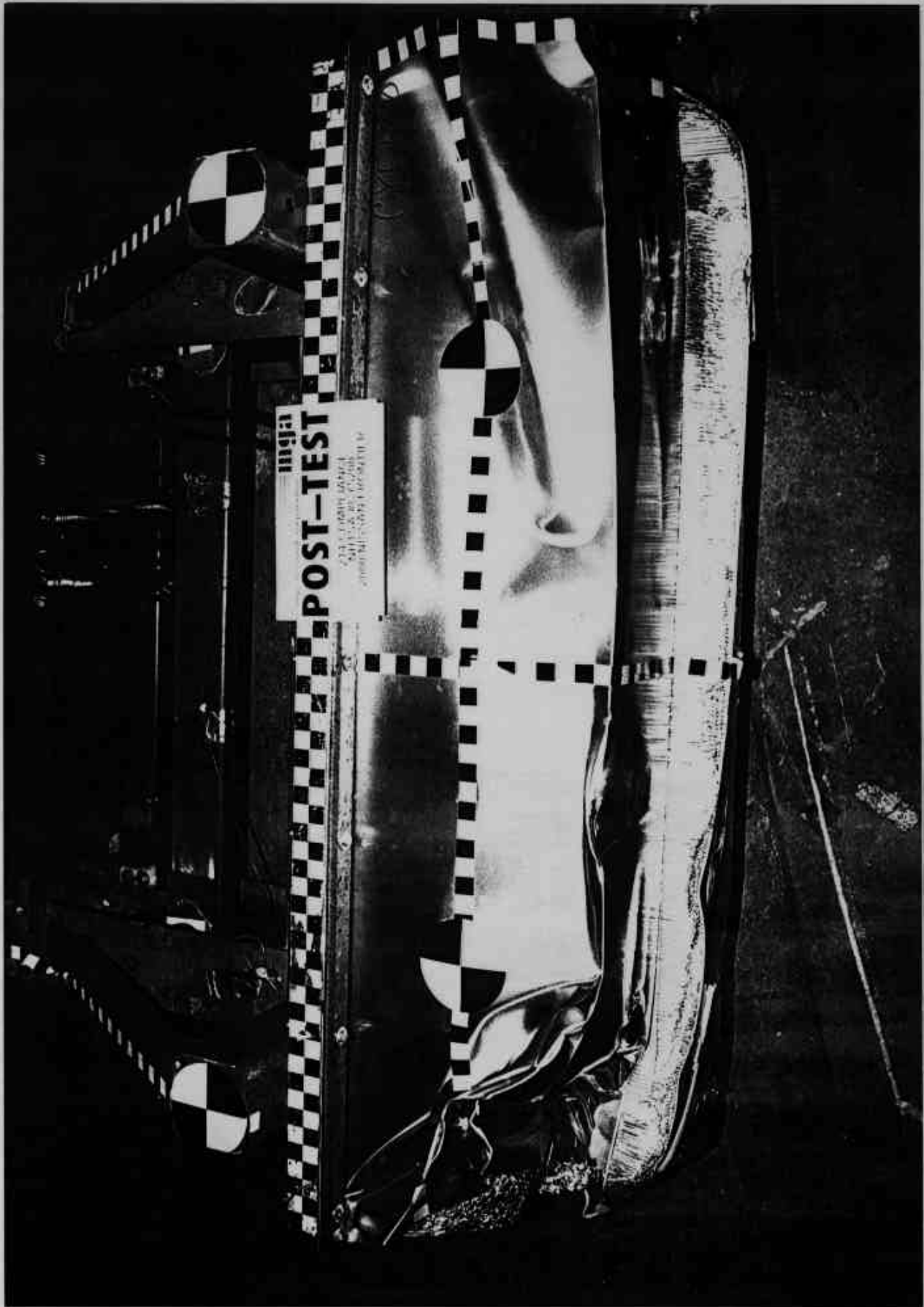


Photo No. A-14 - Post-Test MDB Top View

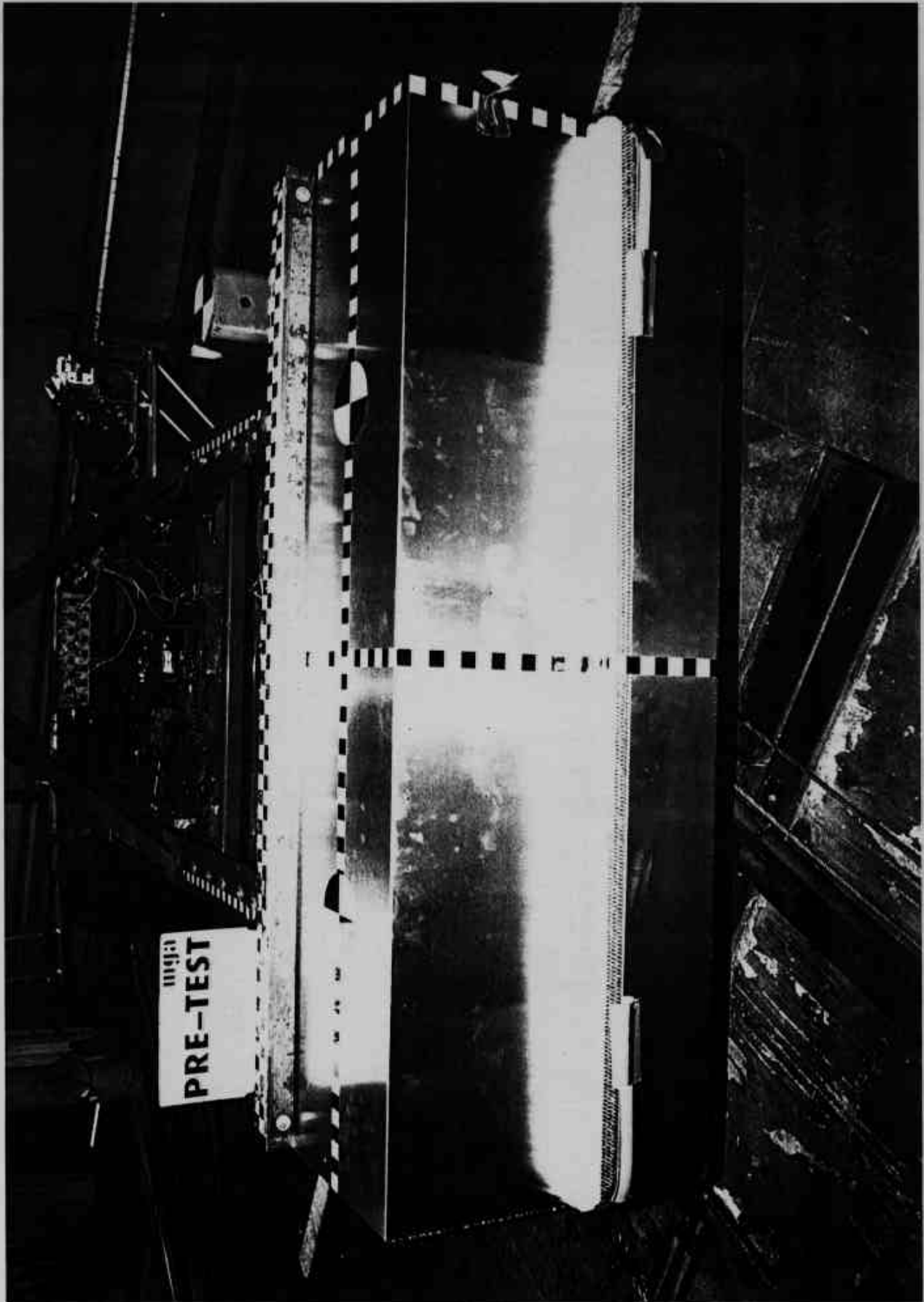


Photo No. A-15 - Pre-Test MDB Front View

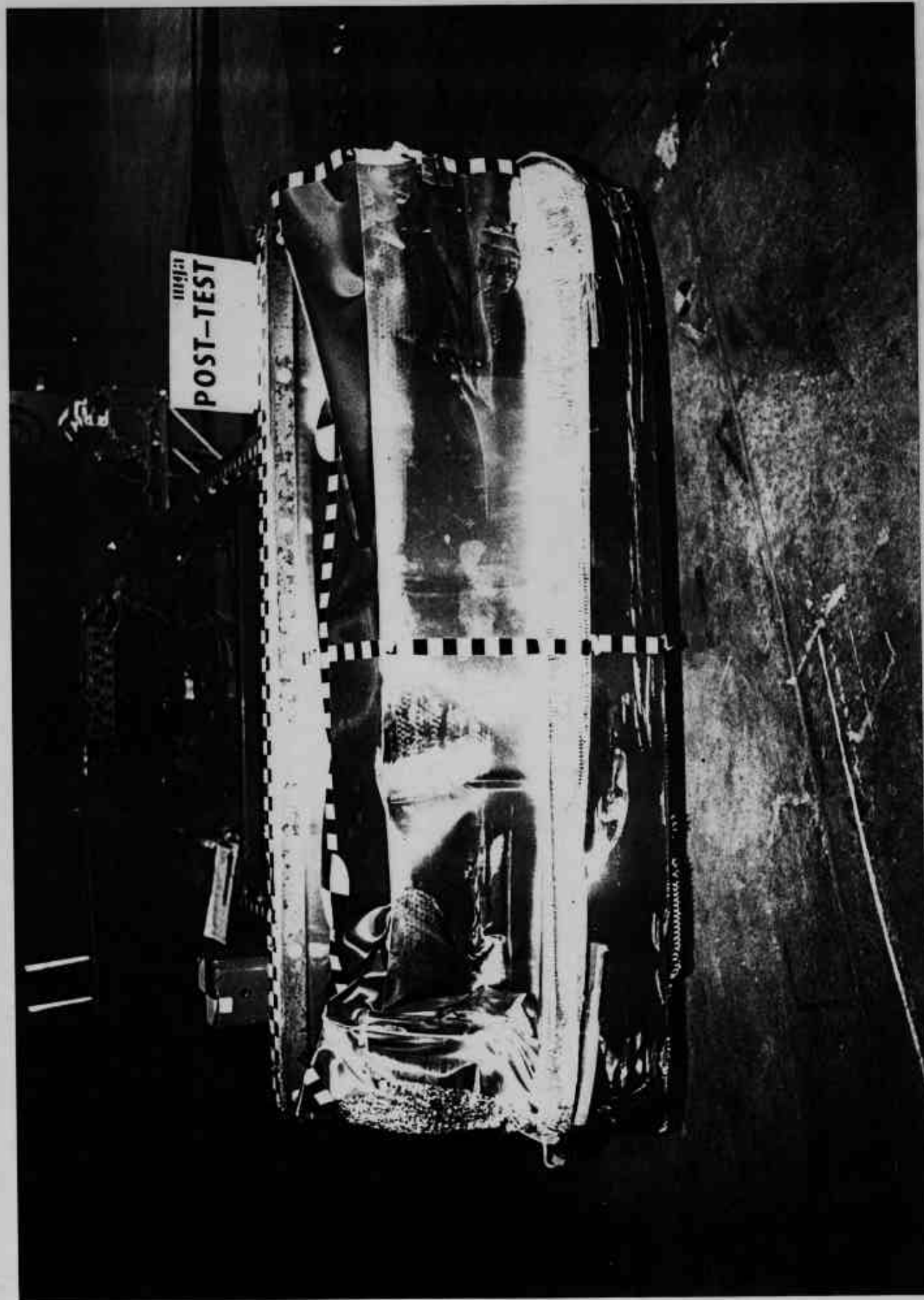


Photo No. A-16 - Post-Test MDB Front View



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

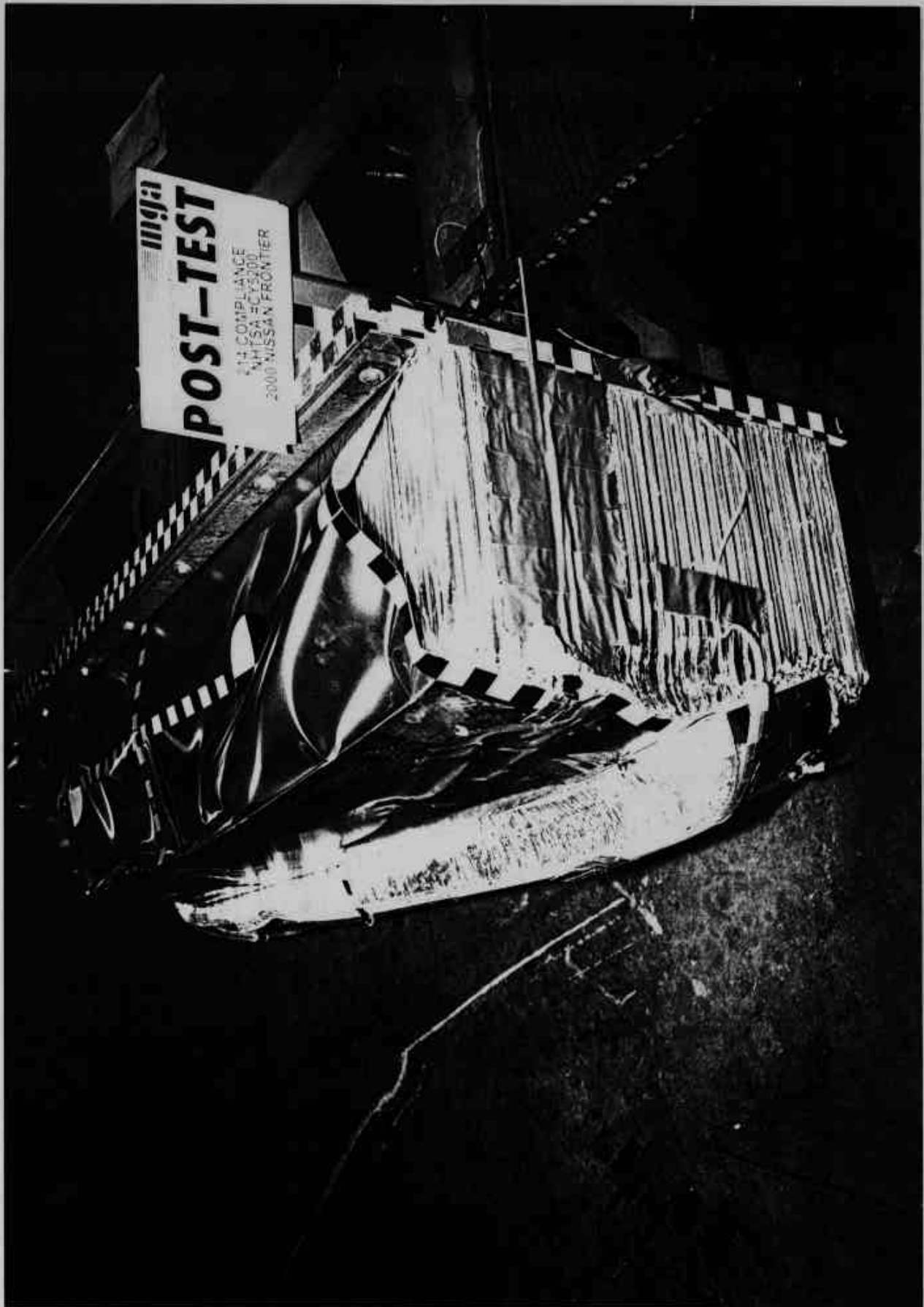


Photo No. A-18 - Post-Test MDB Left Side View

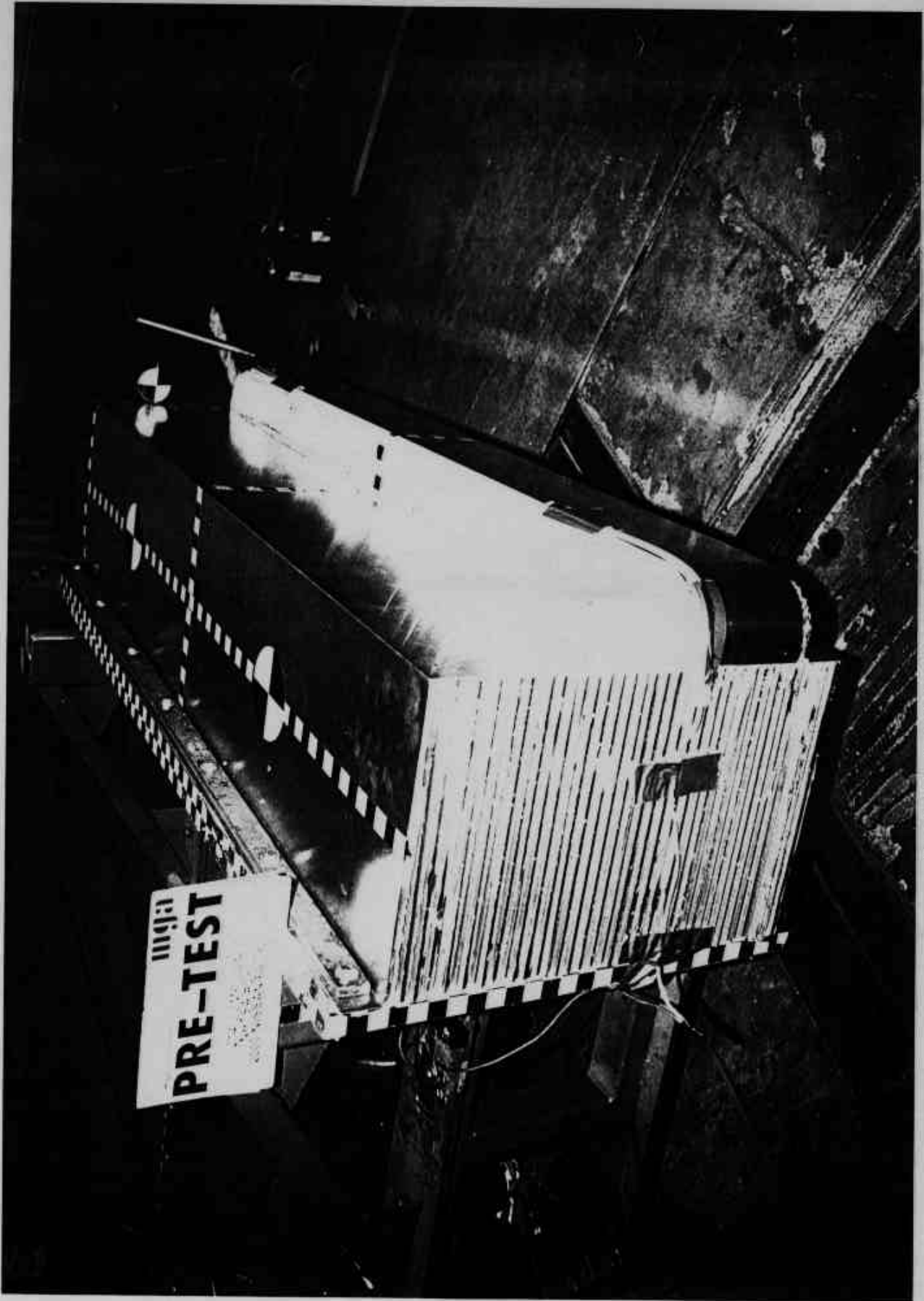


Photo No. A-19 - Pre-Test MDB Right Side View

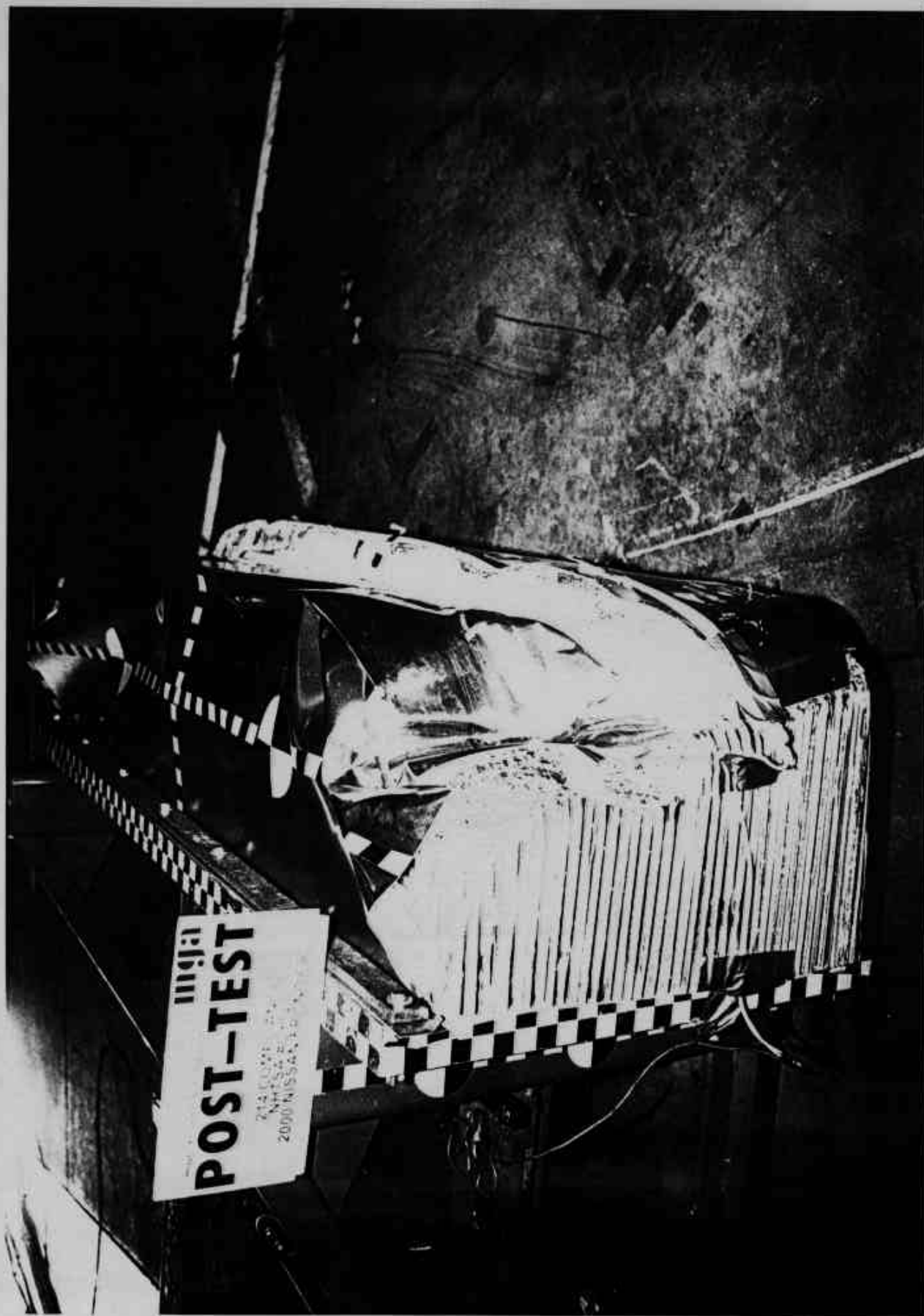


Photo No. A-20 - Post-Test MDB Right Side View



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



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

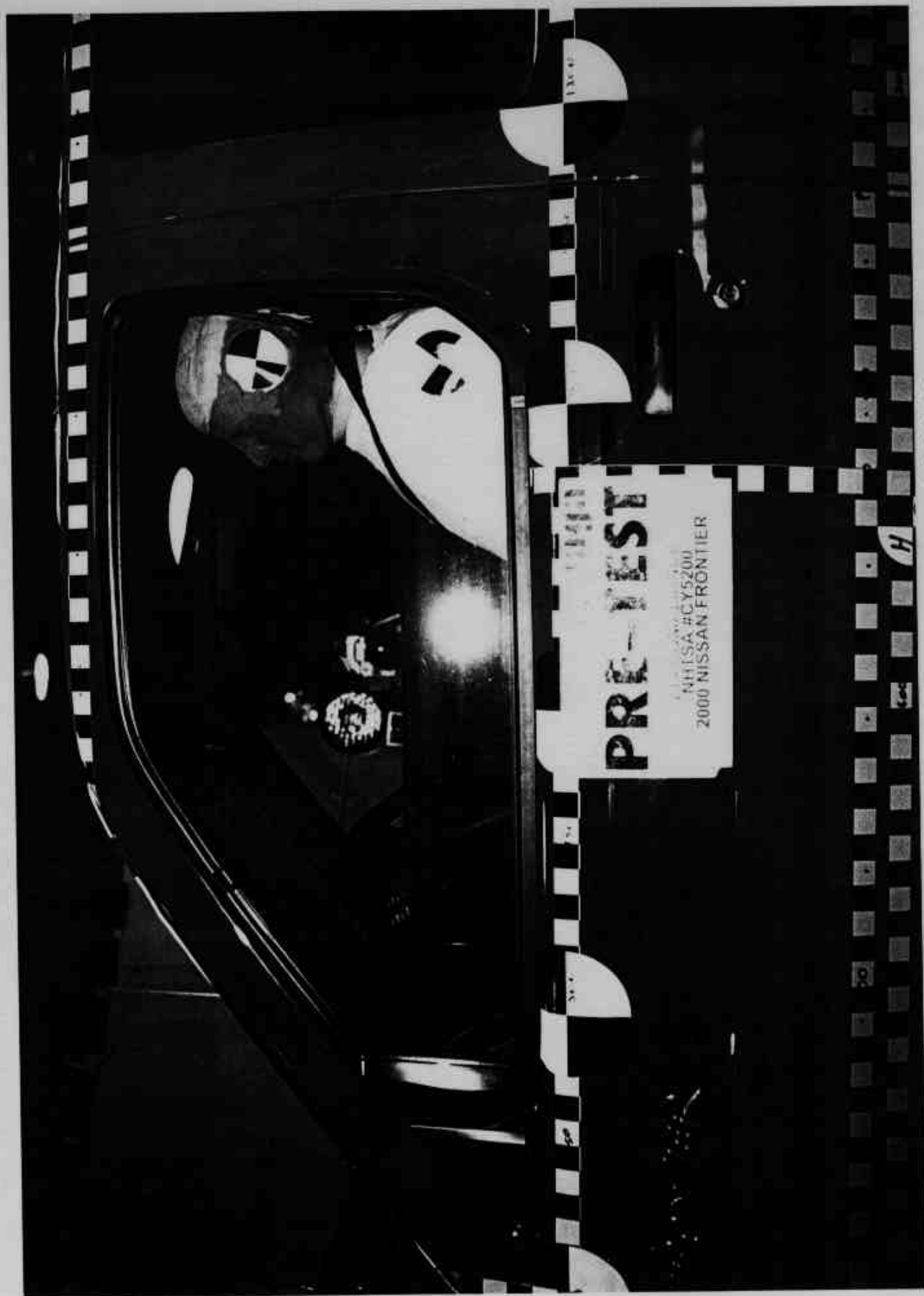


Photo No. A-23 - Pre-Test Driver Dummy Left Side View



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



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

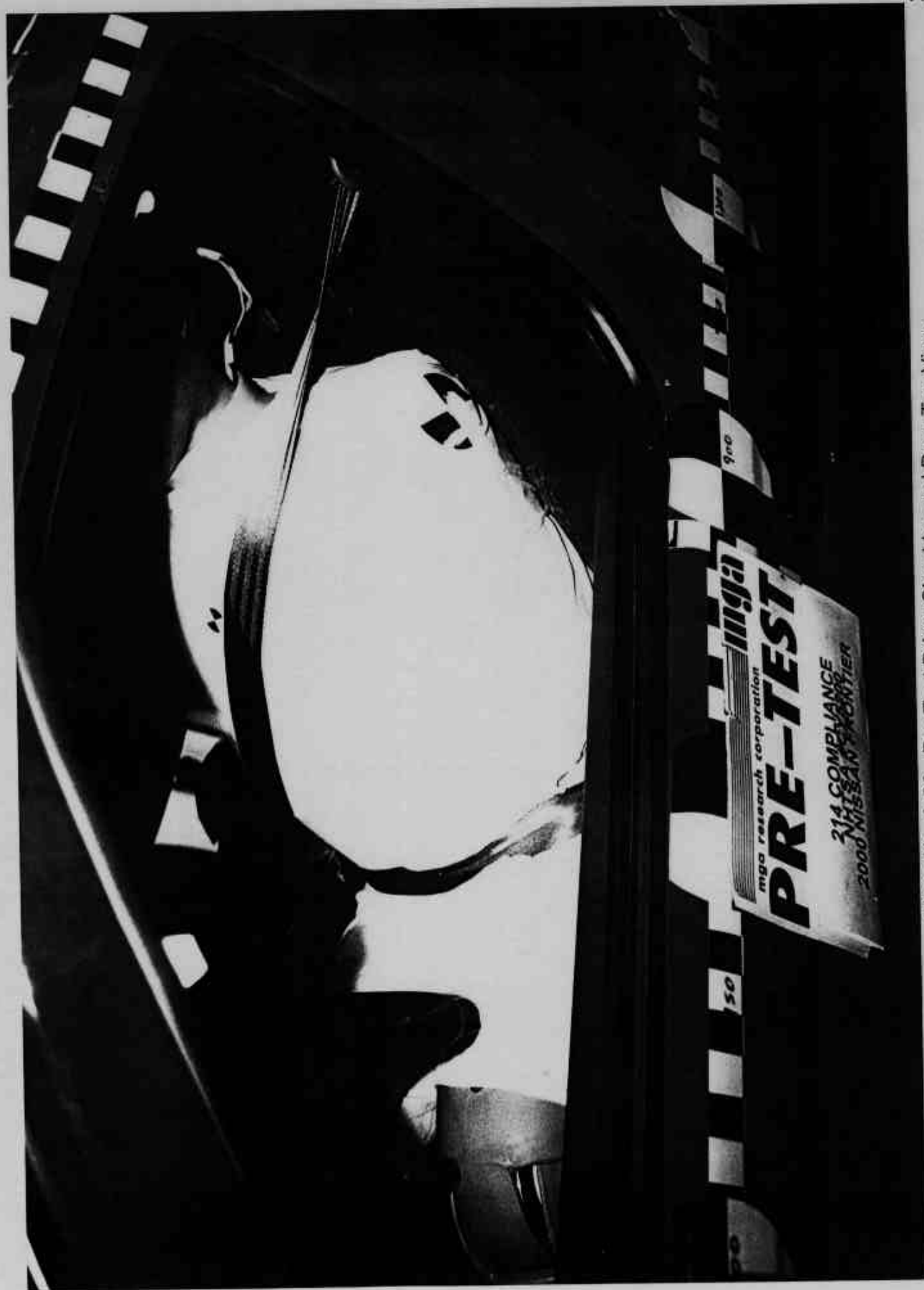


Photo No. A-26 - Pre-Test Driver Shoulder and Door Top View



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



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



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



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

90° SIDE IMPACT

imq

a research corporation

OST-TEST

214 COMPLIANCE
NHTSA #CY5200
2000 NISSAN FRONTIER



A-31

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

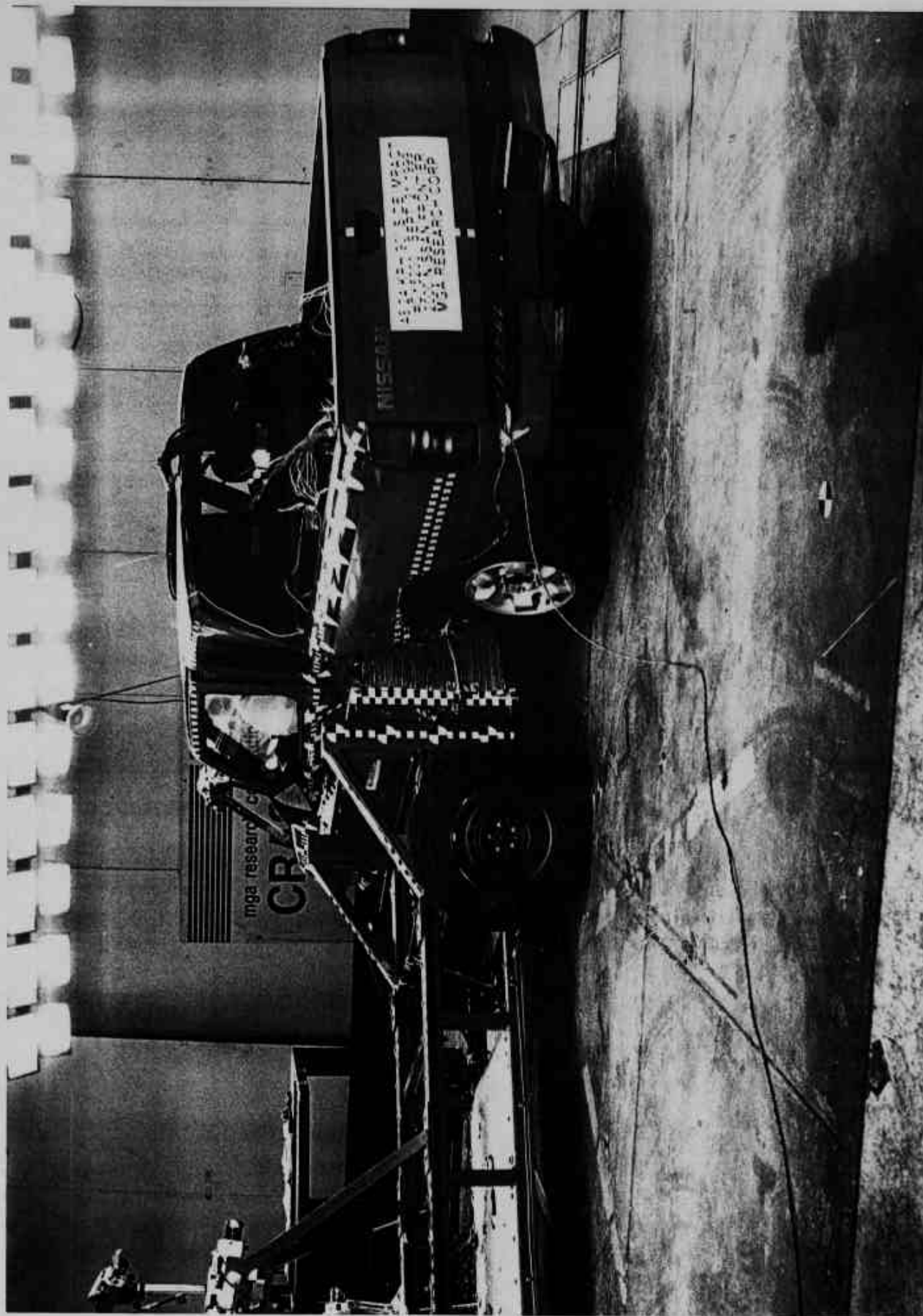
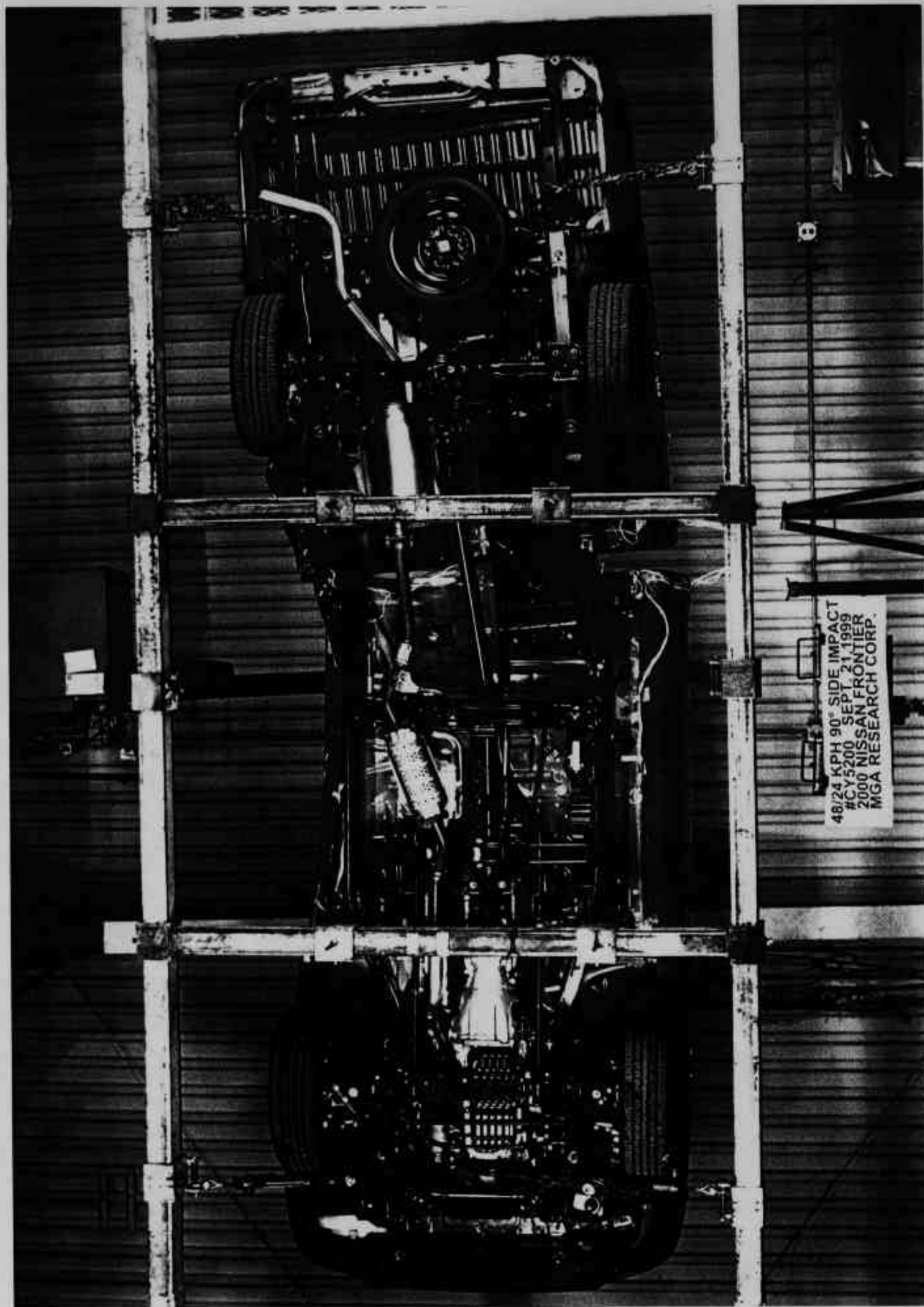


Photo No. A-32 - Impact

1Y6DD26S2YC308725
 THIS VEHICLE CONFORMS TO
 ALL APPLICABLE FEDERAL
 MOTOR VEHICLE SAFETY,
 BUMPER AND THEFT
 PREVENTION STANDARDS IN
 EFFECT ON THE DATE OF
 MANUFACTURE SHOWN ABOVE.
 SEE OWNER'S MANUAL FOR
 ADDITIONAL INFORMATION.
 VIN: 1N6D03552YC308725
 TRUCK 886
 MODEL: B86SEF-ELN 02000
 COLOR: TRIM
 RSE
 4X4
 ENGINE
 4N37 1254 23800

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



48/24 KPH 90° SIDE IMPACT
#CY5200 SEPT 21 1999
2000 NISSAN FRONTIER
MGA RESEARCH CORP.

Photo No. A-34 - Rollover 90°



Photo No. A-35 - Rollover 180°

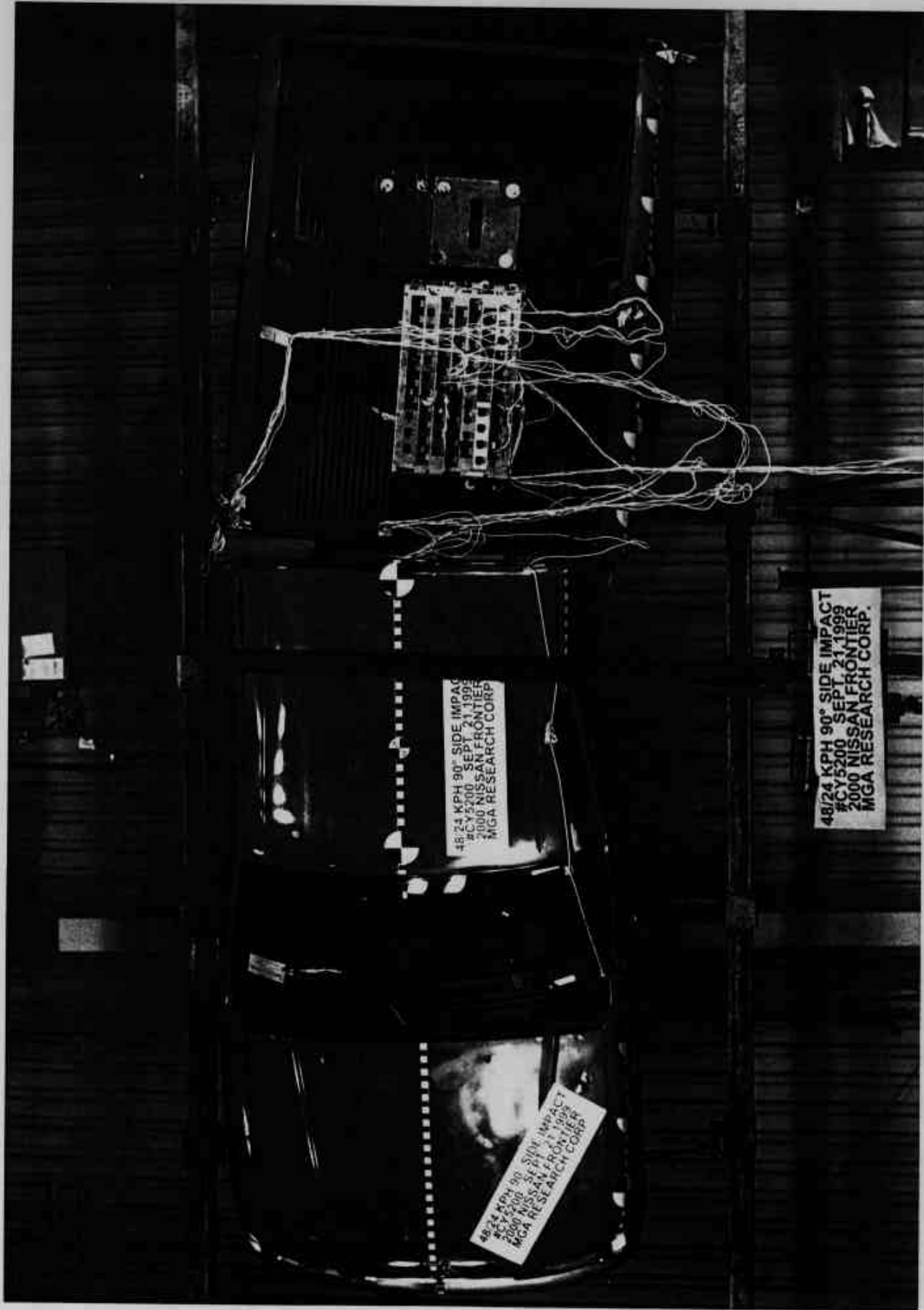
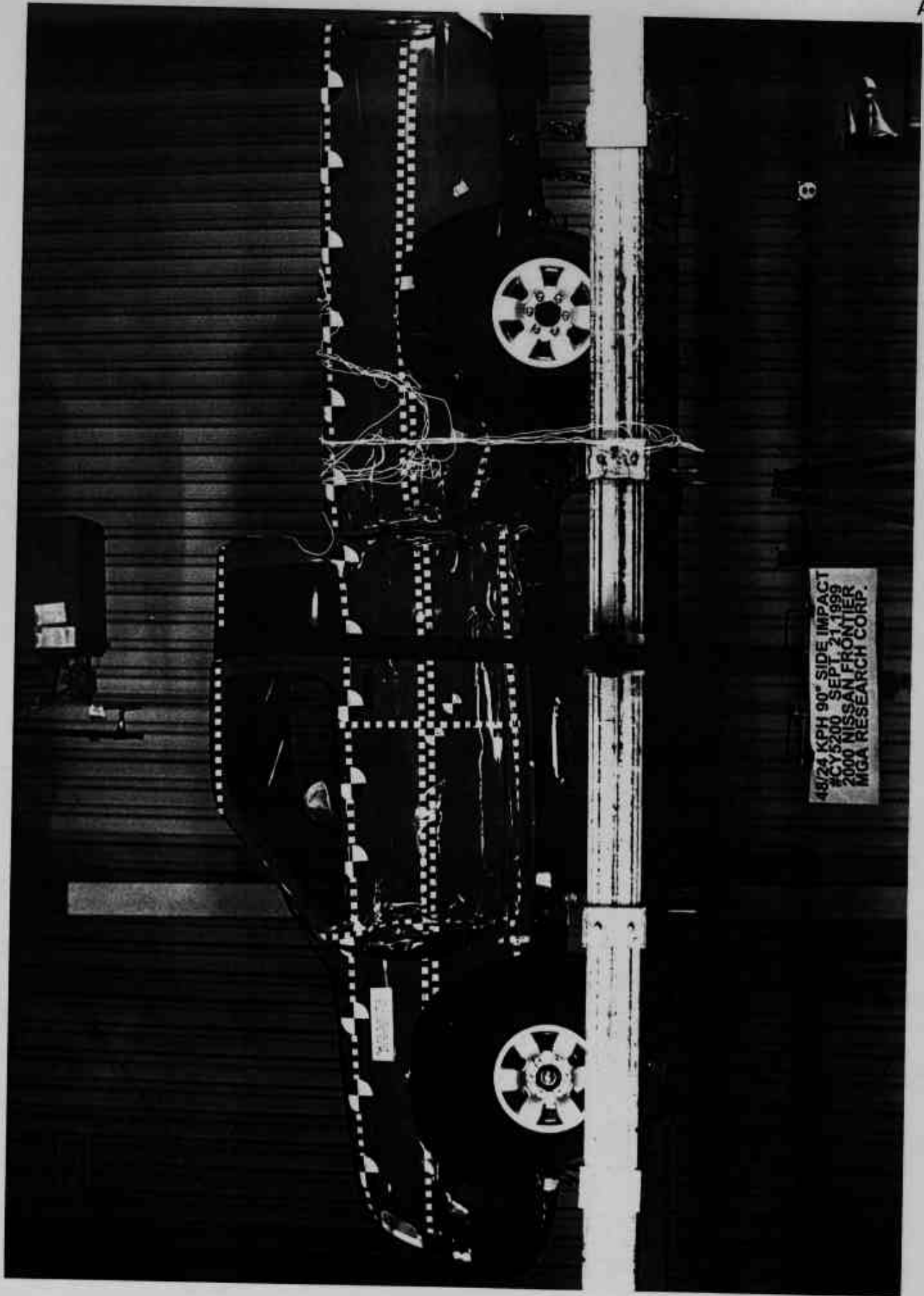


Photo No. A-36 - Rollover 270°



48/24 KPH 90° SIDE IMPACT
#CY5200 SEP 11 21 1999
2000 NISSAN FRONTIER
MGA RESEARCH CORP.

Photo No. A-37 - Rollover 360°



Photo No. A-38 - Left Front Attitude Point



Photo No. A-39 - Right Front Attitude Point

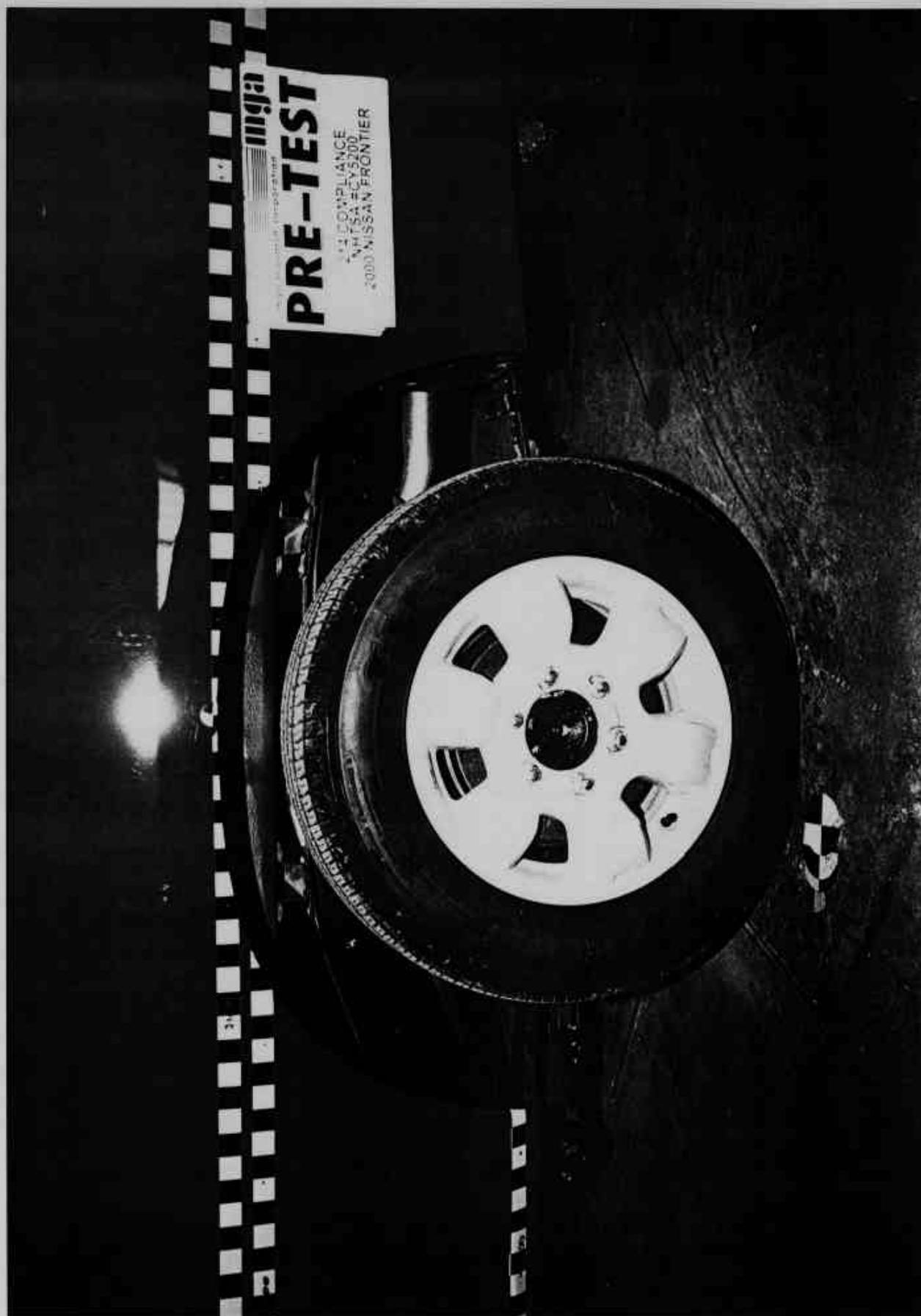


Photo No. A-40 - Left Rear Attitude Point



Photo No. A-41 - Right Rear Attitude Point

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* Data not valid after approximately 23. msec.

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TEST: FMVSS 214 DYNAMIC SIDE IMPACT

TEST DATE: 09-21-1999

Speed: 32.8 MPH 52.8 KPH

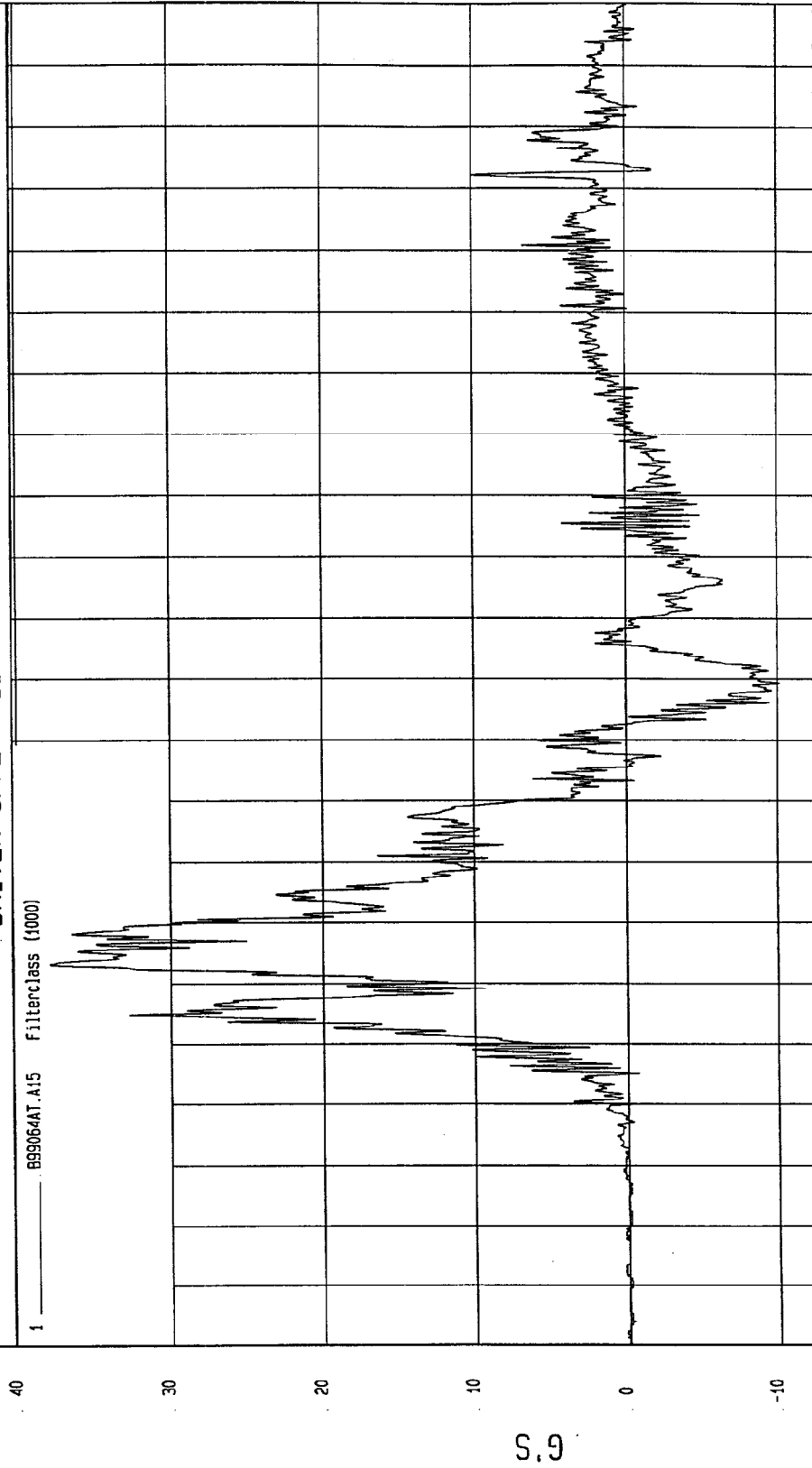
COMPONENT: 2000 NISSAN FRONTIER (CY5200)

Maximum = 37.89 G'S at 43 msec

Minimum = -10.17 G'S at 89 msec

DRIVER UPPER RIB Y ACCELERATION

1 899064T.A15 FilterClass (1000)



MSC Research
09-21-1999 12:06

TEST: FMVSS 214 DYNAMIC SIDE IMPACT

TEST DATE: 09-21-1999

SPEED: 32.8 MPH 52.8 KPH

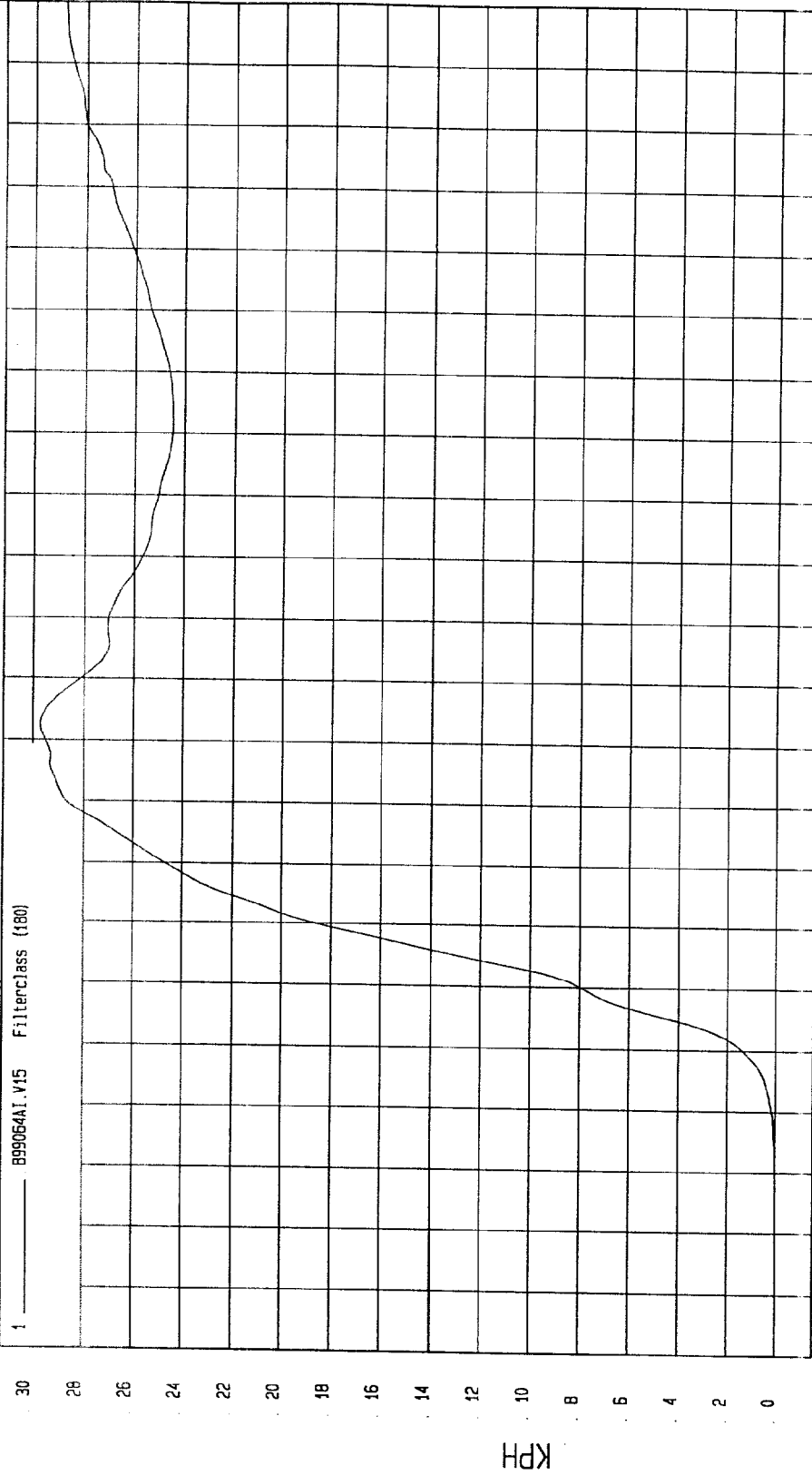
COMPONENT: 2000 NISSAN FRONTIER (CY5200)

Minimum = -1.14E-02 KPH at -9 msec

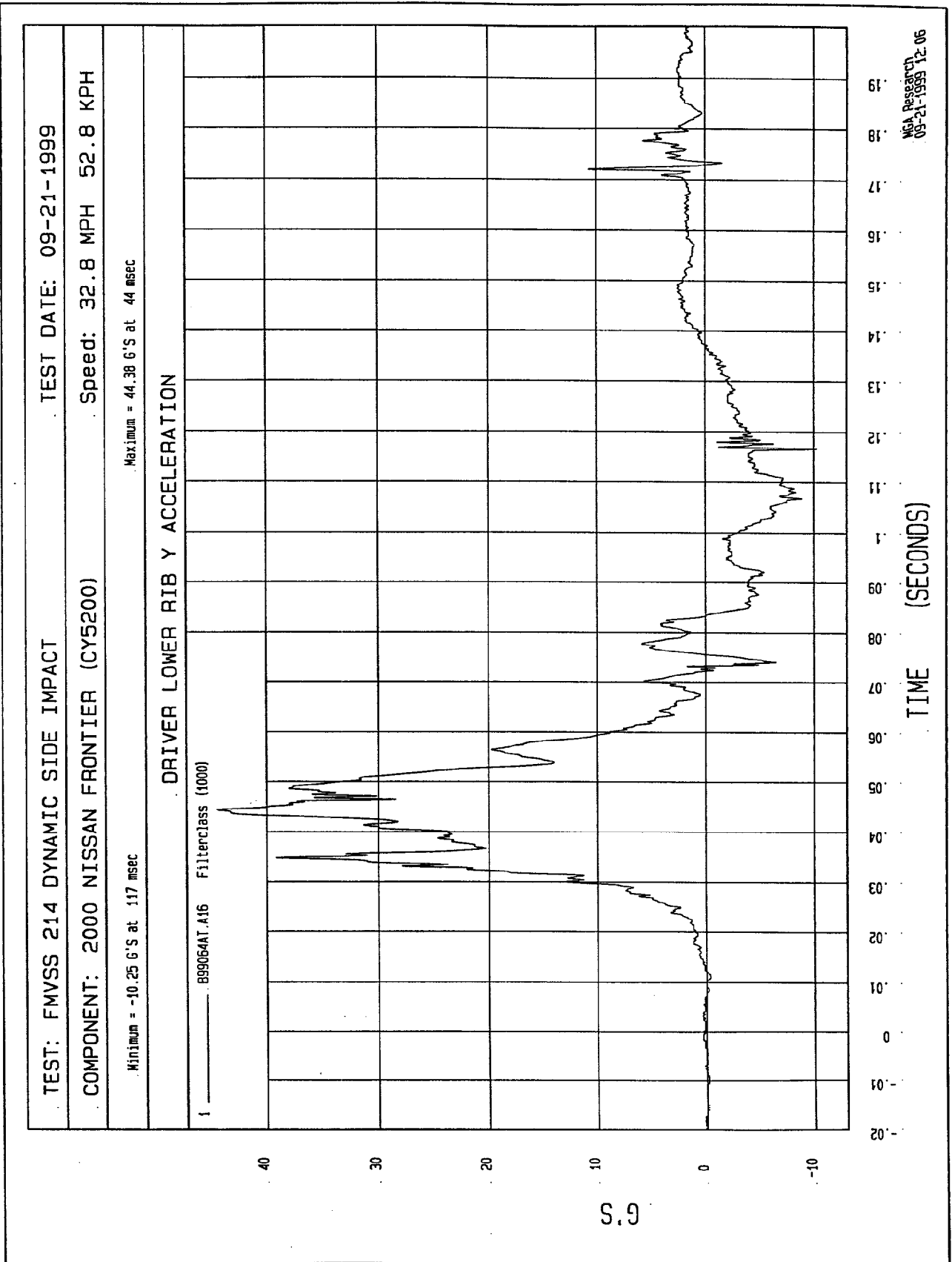
Maximum = 29.71 KPH at 82 msec

DRIVER UPPER RIB Y VELOCITY

1 — B99064A1.V15 FilterClass (180)



MCA Research
09-21-1999 12:06



TEST: FMVSS 214 DYNAMIC SIDE IMPACT

TEST DATE: 09-21-1999

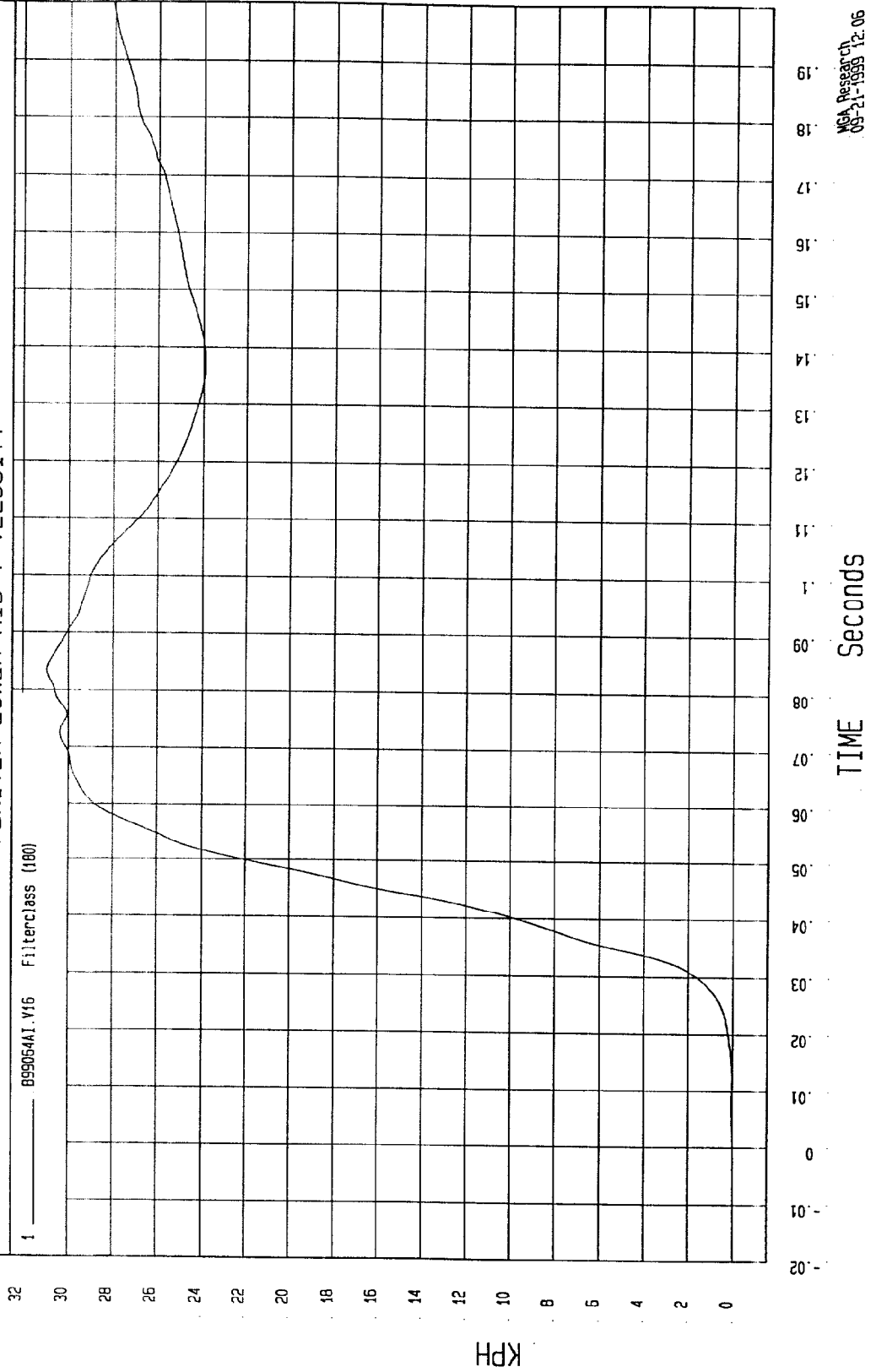
Speed: 32.8 MPH 52.8 KPH

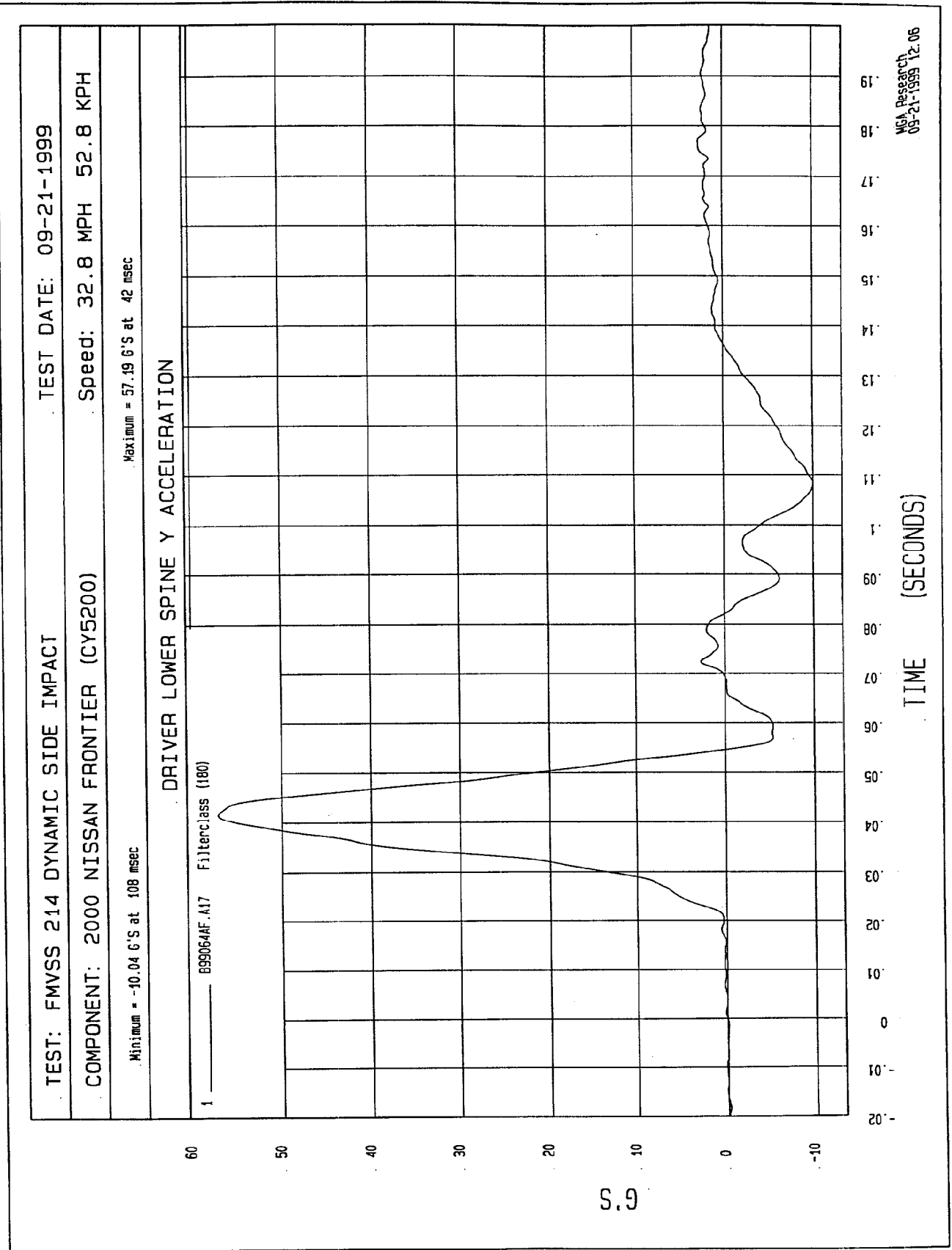
COMPONENT: 2000 NISSAN FRONTIER (CY5200)

Maximum = 30.93 KPH at 84 msec

Minimum = -9.51E-03 KPH at -4 msec

DRIVER LOWER RIB Y VELOCITY





TEST: FMVSS 214 DYNAMIC SIDE IMPACT

TEST DATE: 09-21-1999

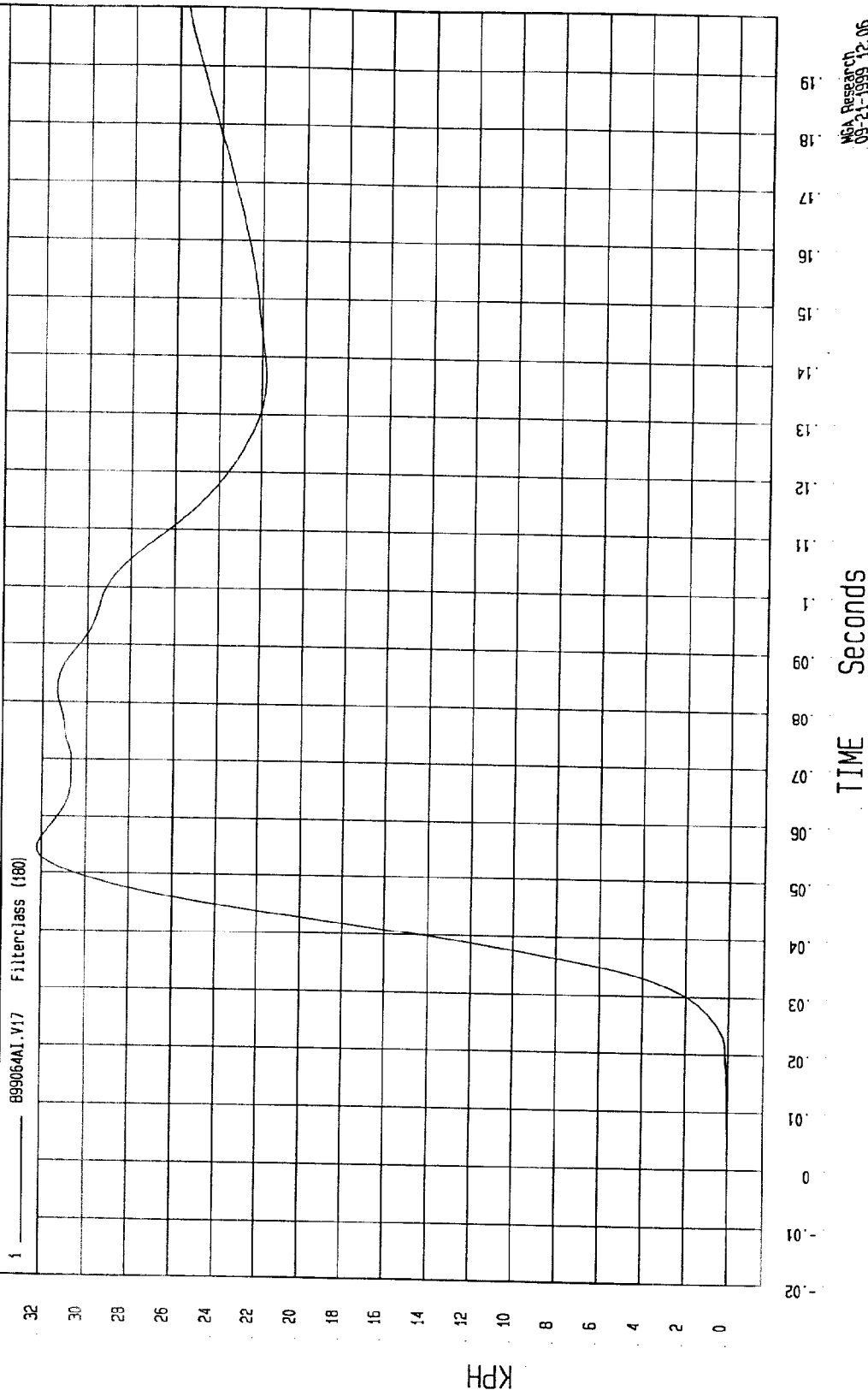
Speed: 32.8 MPH 52.8 KPH

COMPONENT: 2000 NISSAN FRONTIER (CY5200)

Minimum = -02 KPH at -16 msec

Maximum = 32.23 KPH at 54 msec

DRIVER LOWER SPINE Y VELOCITY



NSA Research
09-21-1999 12:06

TEST: FMVSS 214 DYNAMIC SIDE IMPACT

TEST DATE: 09-21-1999

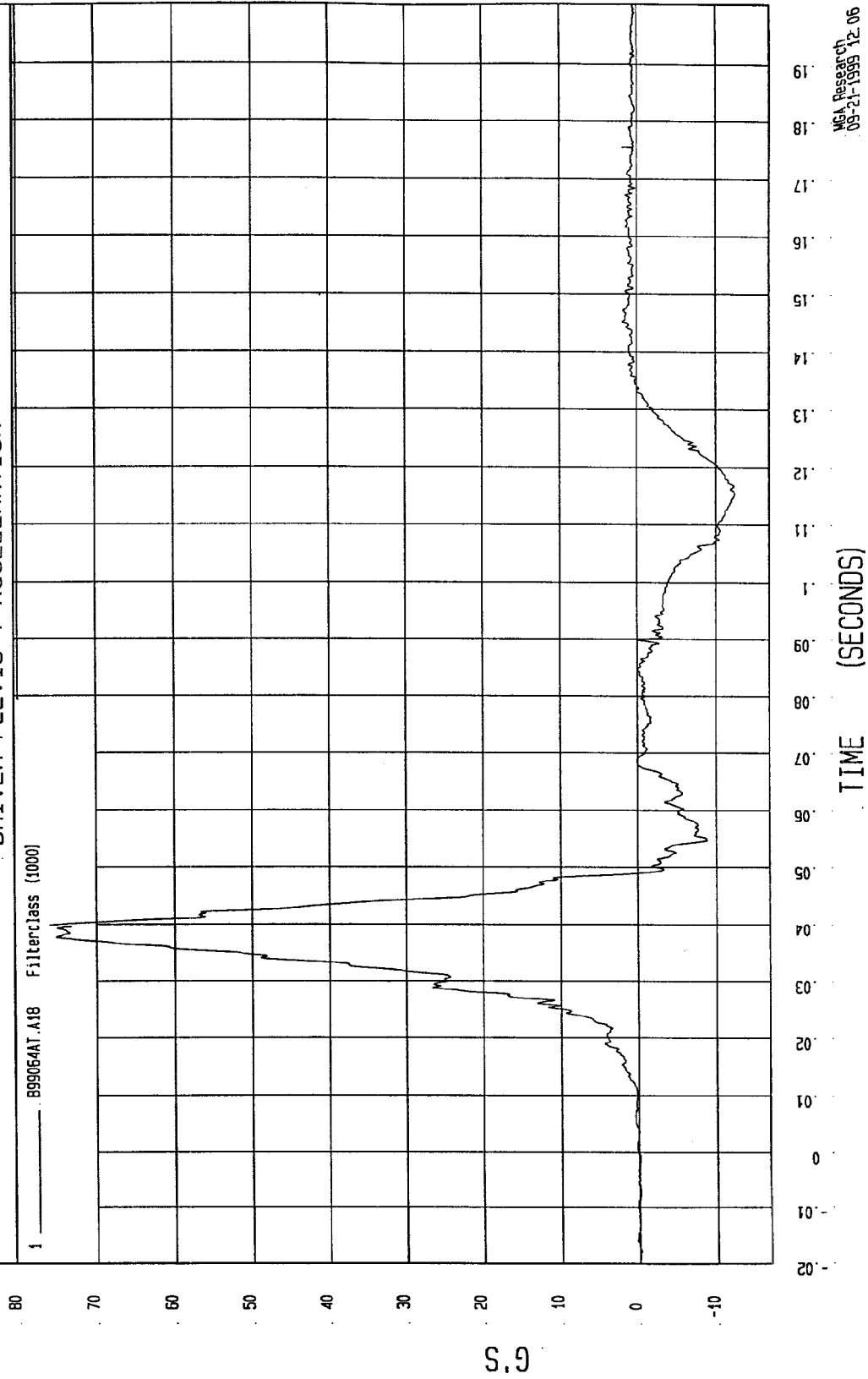
Speed: 32.8 MPH 52.8 KPH

COMPONENT: 2000 NISSAN FRONTIER (CY5200)

Maximum = 76.01 G'S at 40 msec

Minimum = -12.58 G'S at 115 msec

DRIVER PELVIS Y ACCELERATION



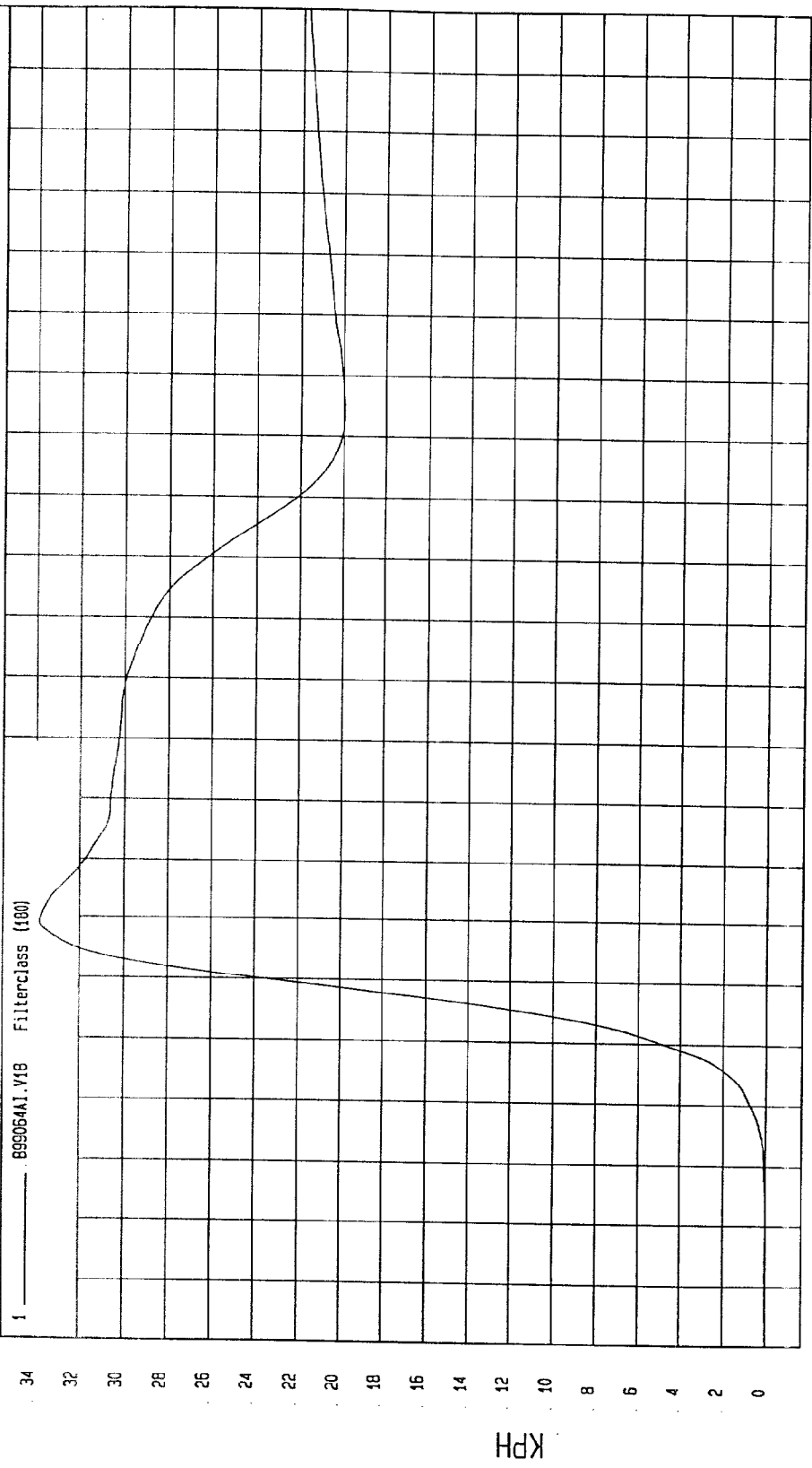
MECA Research
09-21-1999 12:06

TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST DATE: 09-21-1999

COMPONENT: 2000 NISSAN FRONTIER (CY5200) Speed: 32.8 MPH 52.8 KPH

Minimum = -7.85E-03 KPH at -17 msec Maximum = 33.82 KPH at 49 msec

DRIVER PELVIS Y VELOCITY



TIME Seconds

MGA Research
09-21-1999 12:06

TEST: FMVSS 214 DYNAMIC SIDE IMPACT

TEST DATE: 09-21-1999

Speed: 32.8 MPH 52.8 KPH

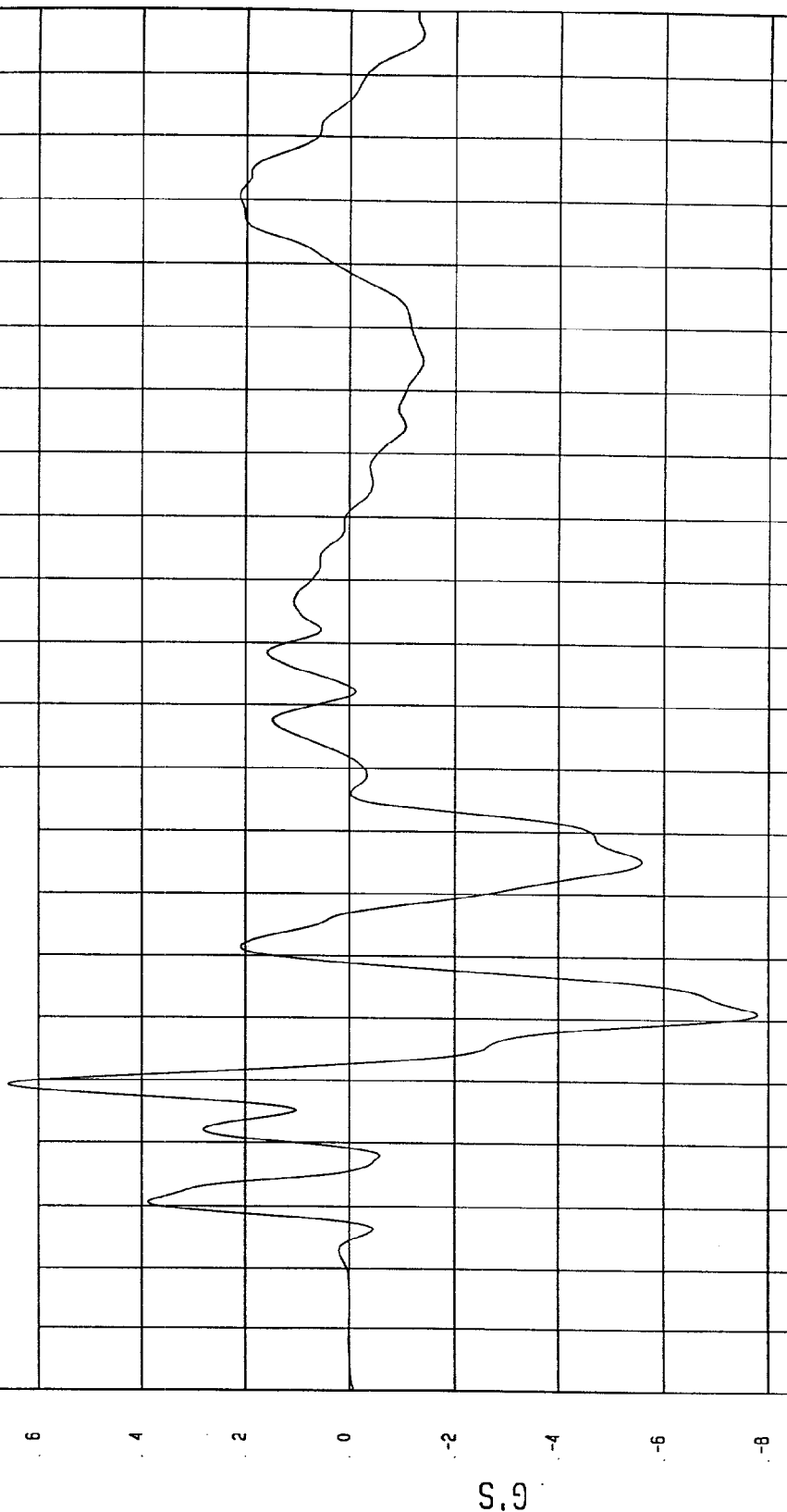
COMPONENT: 2000 NISSAN FRONTIER (CY5200)

Maximum = 6.58 G'S at 29 msec

Minimum = -7.8 G'S at 41 msec

RIGHT SIDE SILL AT FRONT SEAT X ACCELERATION

1 B99064AF.A32 Filter: class (60)



TIME (SECONDS)

MCA Research
09-21-1999 11:55

TEST: FMVSS 214 DYNAMIC SIDE IMPACT

TEST DATE: 09-21-1999

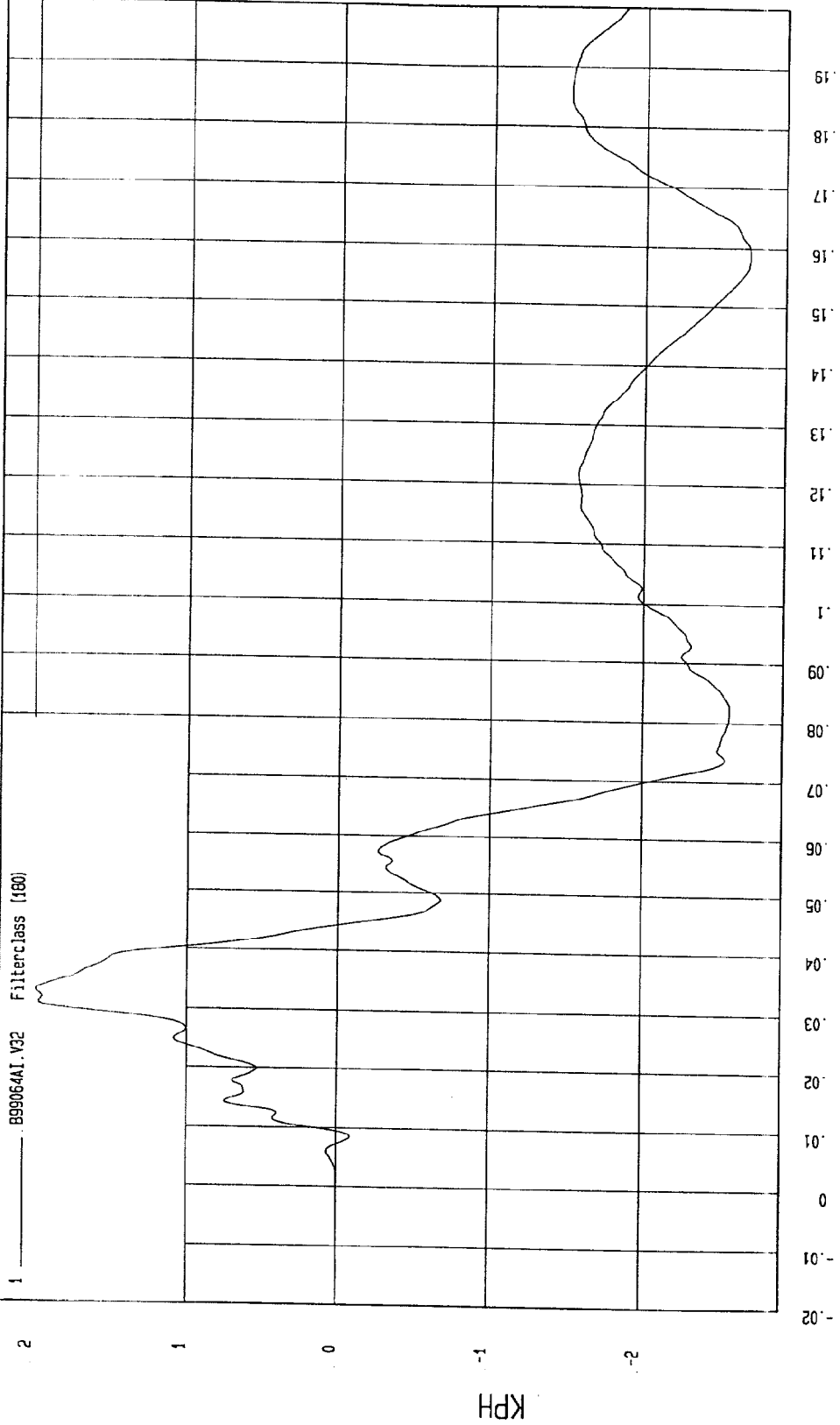
Speed: 32.8 MPH 52.8 KPH

COMPONENT: 2000 NISSAN FRONTIER (CY5200)

Minimum = -2.69 KPH at 158 msec

Maximum = 1.99 KPH at 33 msec

RIGHT SIDE SILL AT FRONT SEAT X VELOCITY



MCA Research
09-21-1999 11:55

TIME Seconds

TEST: FMVSS 214 DYNAMIC SIDE IMPACT

TEST DATE: 09-21-1999

Speed: 32.8 MPH 52.8 KPH

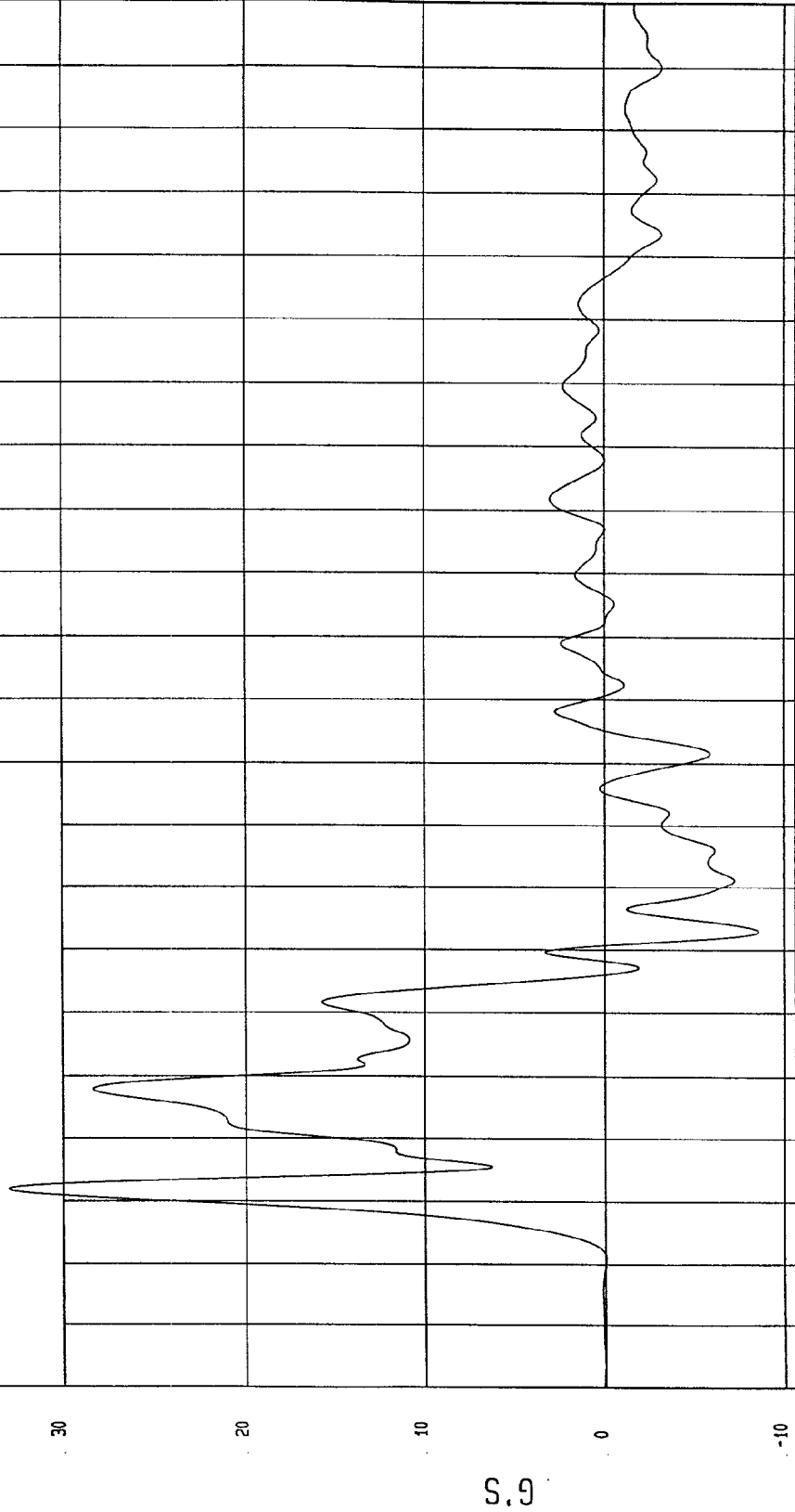
COMPONENT: 2000 NISSAN FRONTIER (CY5200)

Maximum = 32.92 G'S at 12 msec

Minimum = -8.57 G'S at 53 msec

RIGHT SIDE SILL AT FRONT SEAT Y ACCELERATION

1 899064AF.A33 Filterclass (60)



MCA Research
09-21-1999 11:55

TEST: FMVSS 214 DYNAMIC SIDE IMPACT

TEST DATE: 09-21-1999

COMPONENT: 2000 NISSAN FRONTIER (CY5200)

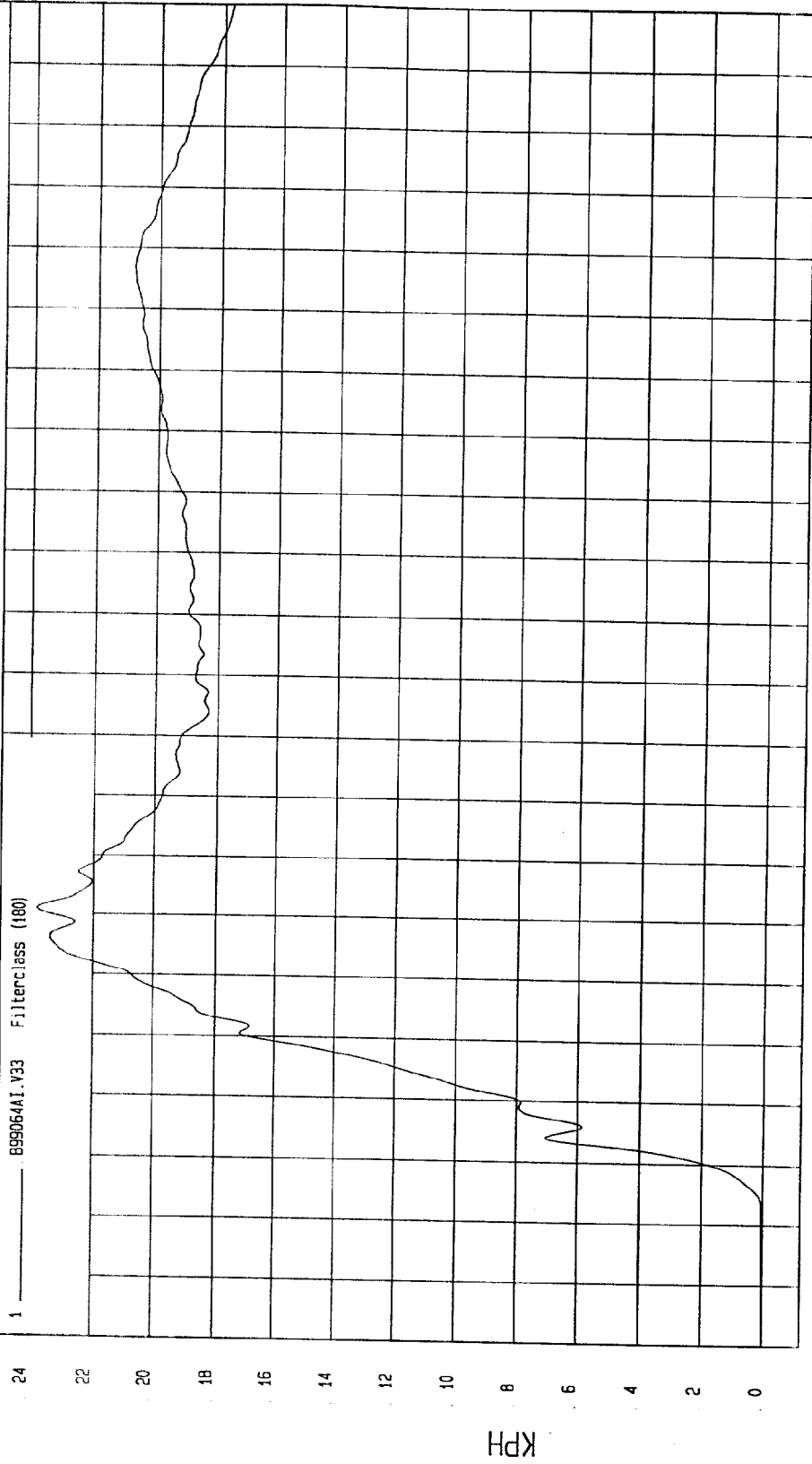
Speed: 32.8 MPH 52.8 KPH

Minimum = 0 KPH at -20 msec

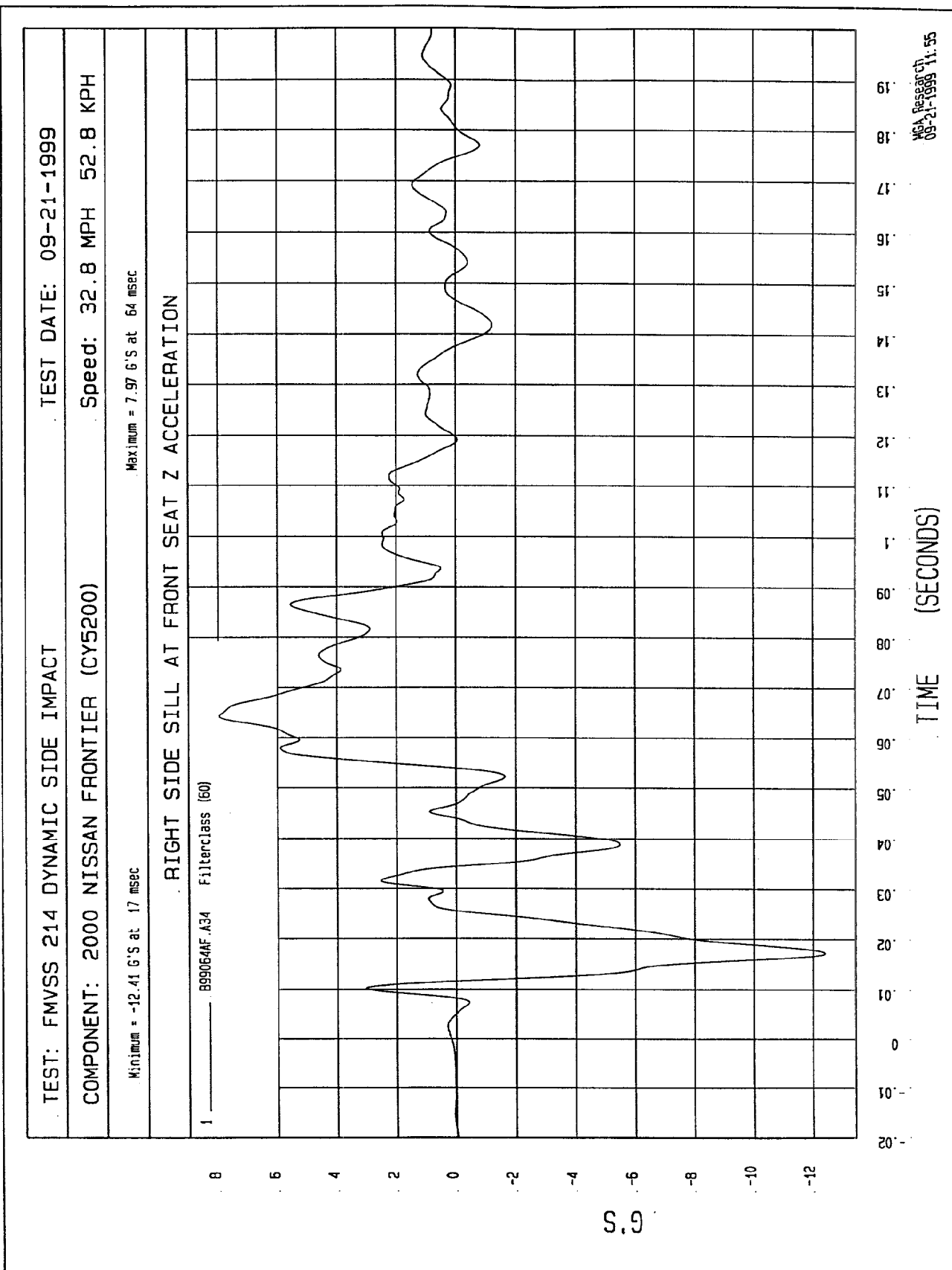
Maximum = 23.77 KPH at 51 msec

RIGHT SIDE SILL AT FRONT SEAT Y VELOCITY

1 ——— B99064A1.V33 Filterclass (180)



WCA Research
09-21-1999 11:55



TEST: FMVSS 214 DYNAMIC SIDE IMPACT

TEST DATE: 09-21-1999

Speed: 32.8 MPH 52.8 KPH

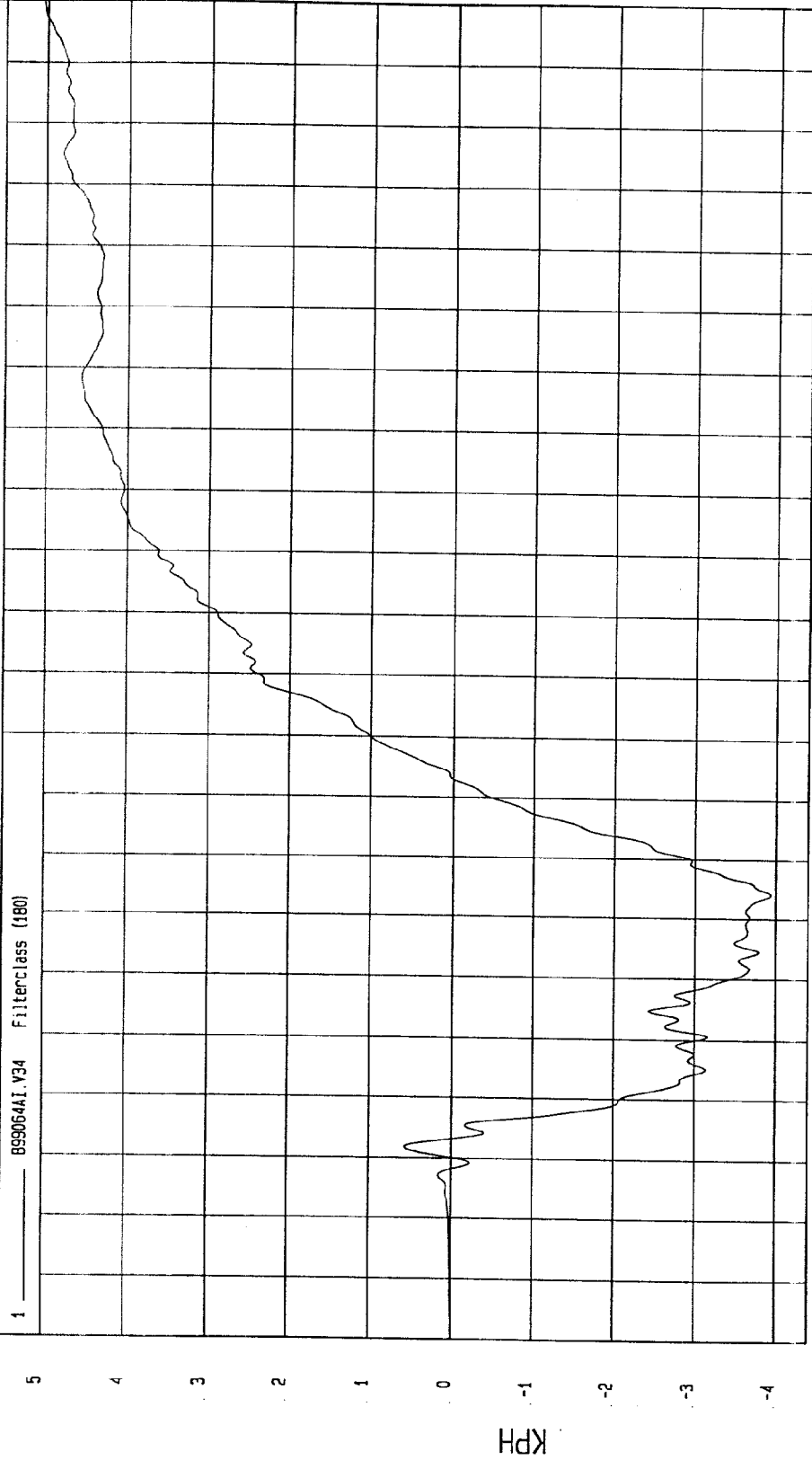
COMPONENT: 2000 NISSAN FRONTIER (CY5200)

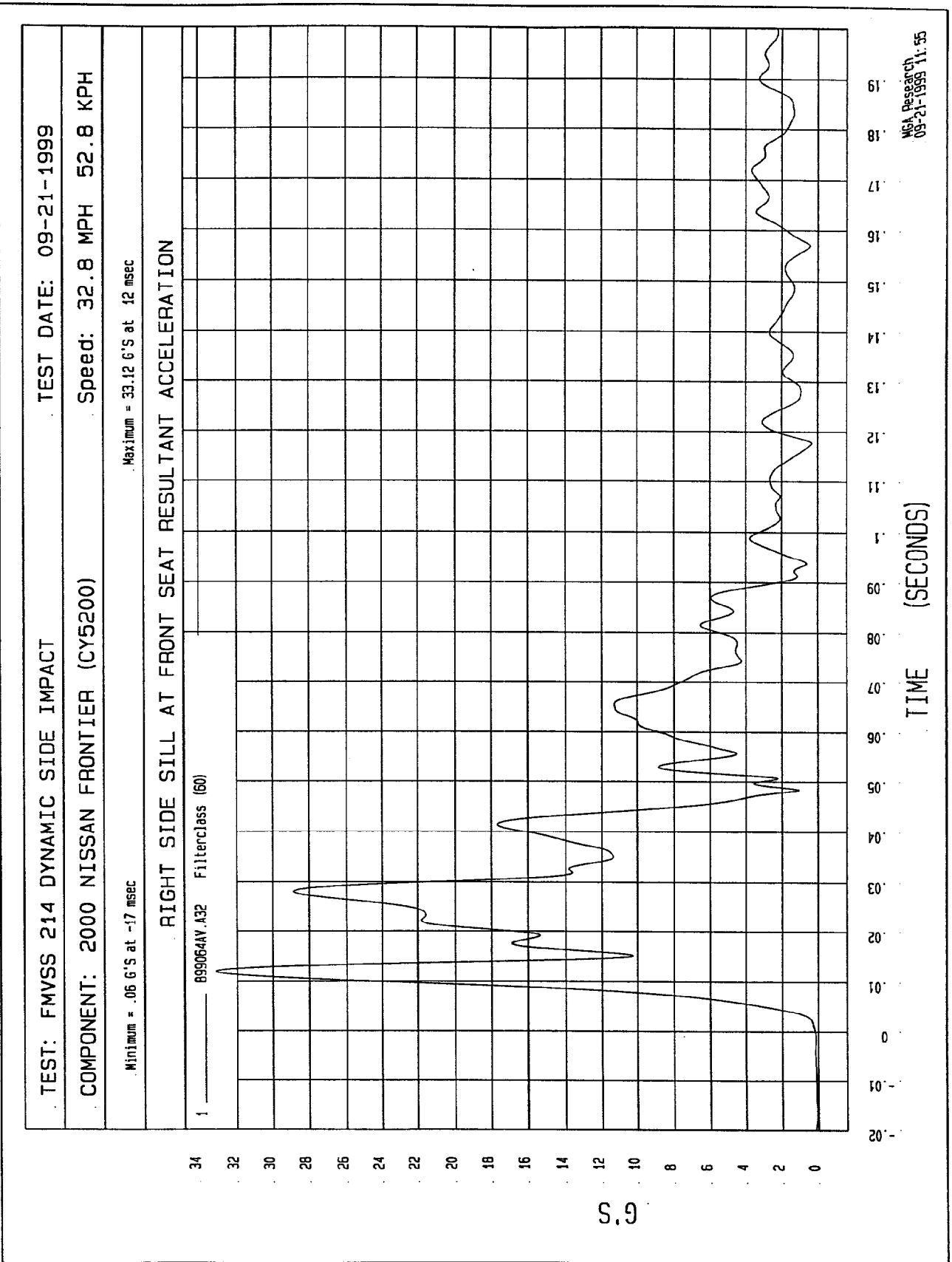
Maximum = 5.04 KPH at 200 msec

Minimum = -3.94 KPH at 54 msec

RIGHT SIDE SILL AT FRONT SEAT Z VELOCITY

1 ——— B99064A1.V34 Filterclass (180)





TEST: FMVSS 214 DYNAMIC SIDE IMPACT

TEST DATE: 09-21-1999

Speed: 32.8 MPH 52.8 KPH

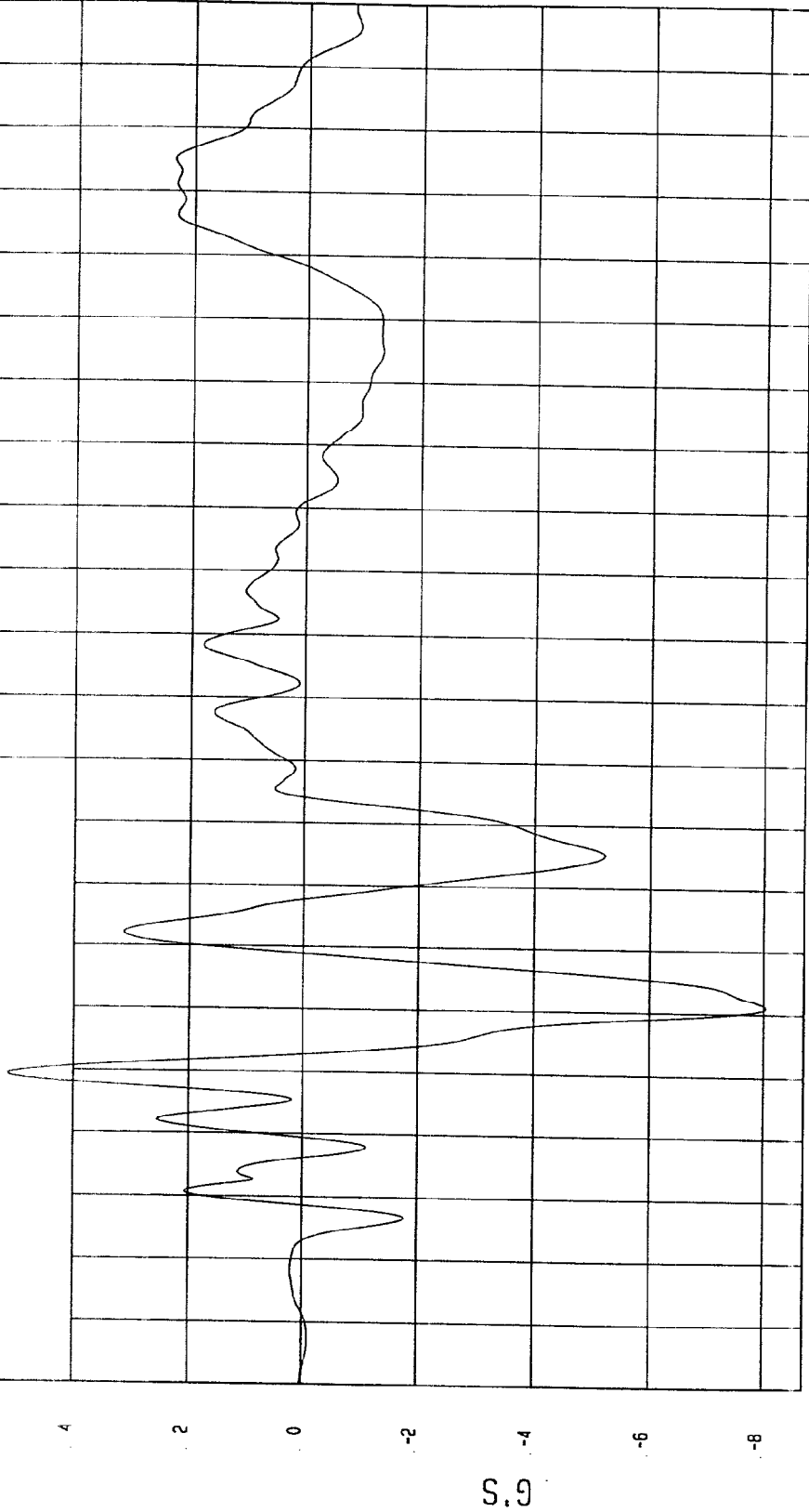
COMPONENT: 2000 NISSAN FRONTIER (CY5200)

Minimum = -8.04 G'S at 41 msec

Maximum = 5.11 G'S at 29 msec

RIGHT SIDE SILL AT REAR SEAT X ACCELERATION

1 899064AF.A35 Filterclass (50)



MGA Research
09-21-1999 11:55

TEST: FMVSS 214 DYNAMIC SIDE IMPACT

TEST DATE: 09-21-1999

Speed: 32.8 MPH 52.8 KPH

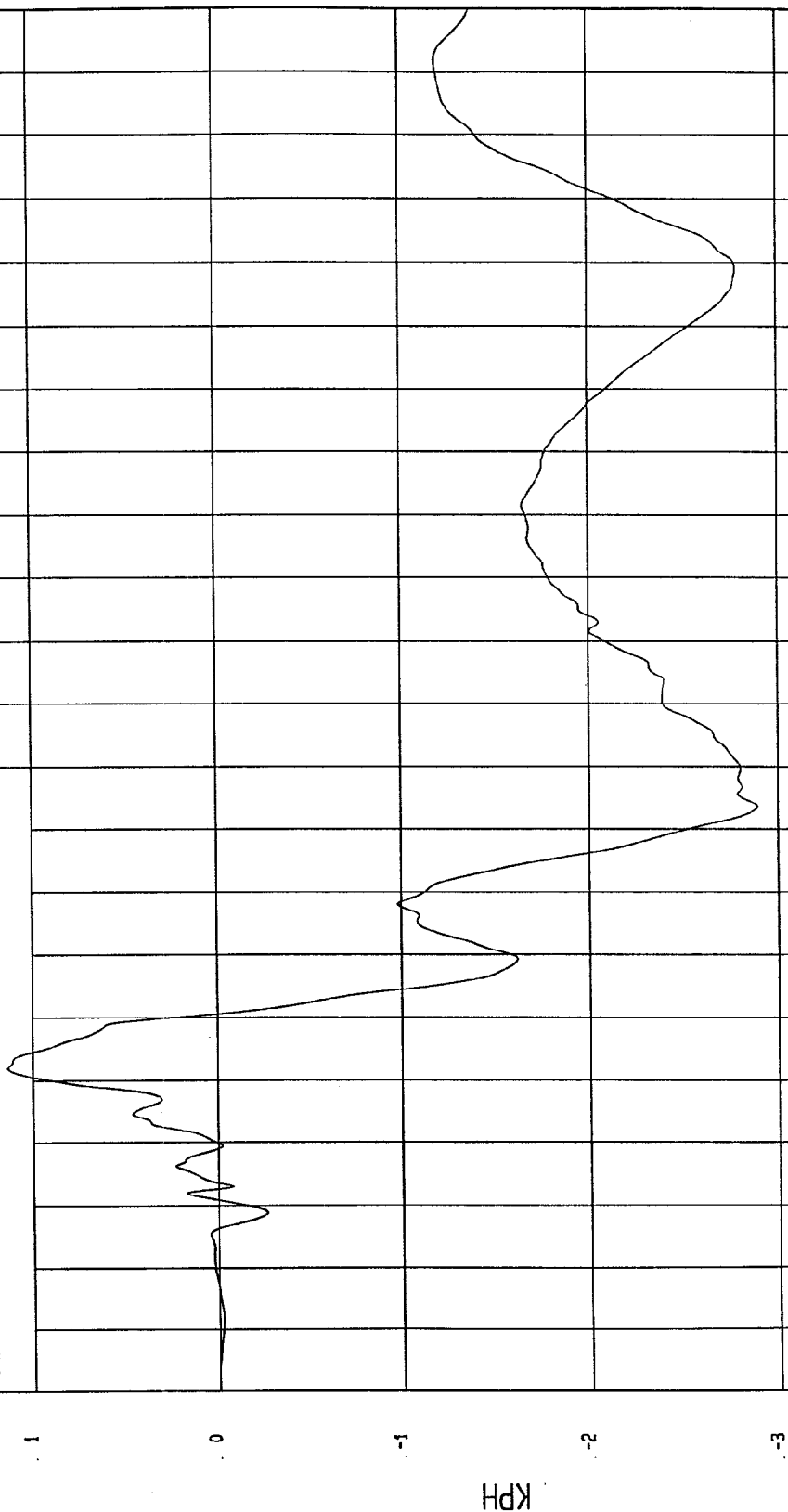
COMPONENT: 2000 NISSAN FRONTIER (CY5200)

Maximum = 1.13 KPH at 32 msec

Minimum = -2.89 KPH at 74 msec

RIGHT SIDE SILL AT REAR SEAT X VELOCITY

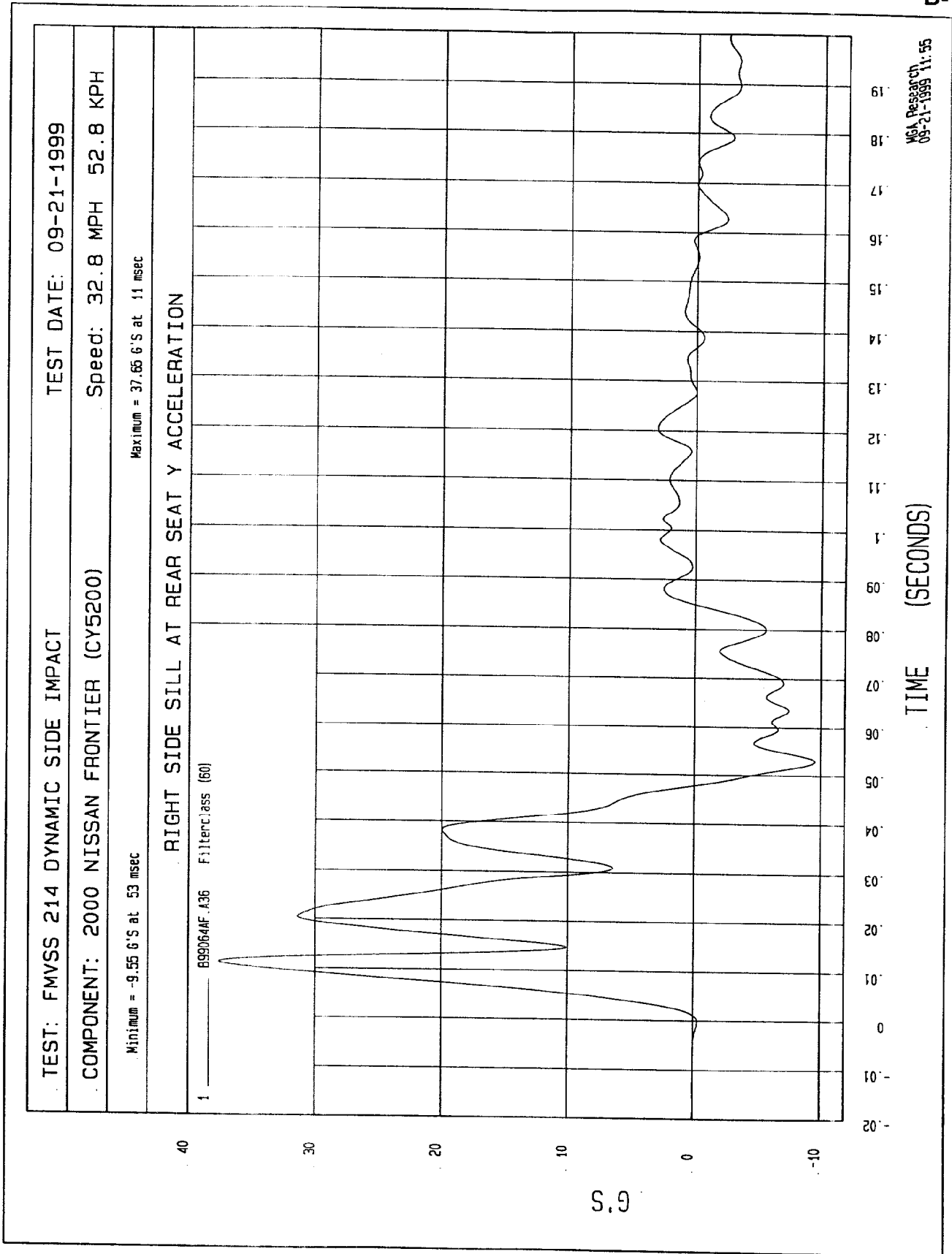
1 B99064A1.V35 Filterclass (180)



MOA Research
09-21-1999 11:55

TIME Seconds

KPH

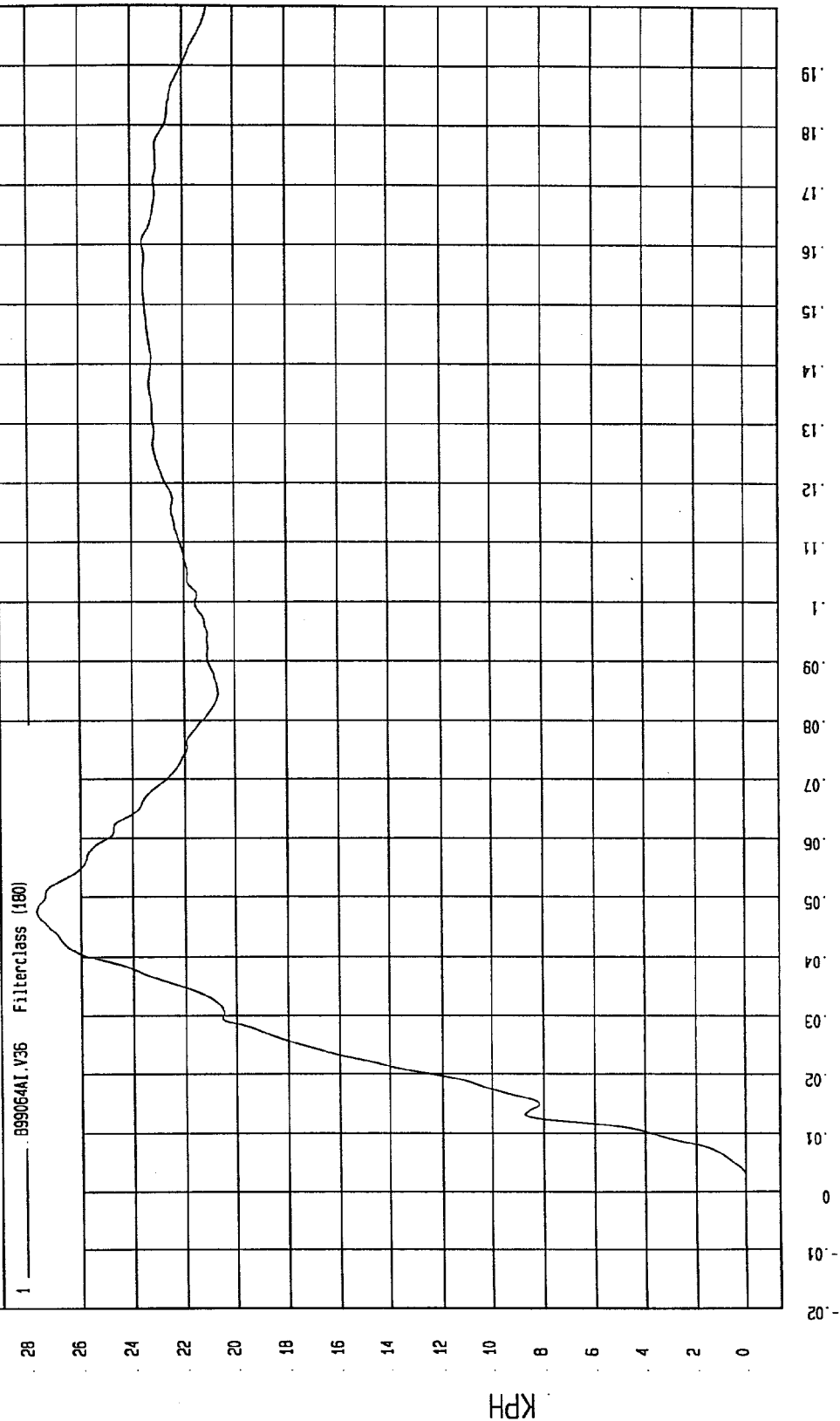


TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST DATE: 09-21-1999

COMPONENT: 2000 NISSAN FRONTIER (CY5200) Speed: 32.8 MPH 52.8 KPH

Minimum = -1.52E-03 KPH at -17 msec Maximum = 27.72 KPH at 48 msec

RIGHT SIDE SILL AT REAR SEAT Y VELOCITY



MCA Research
09-21-1999 11:55

TEST: FMVSS 214 DYNAMIC SIDE IMPACT

TEST DATE: 09-21-1999

Speed: 32.8 MPH 52.8 KPH

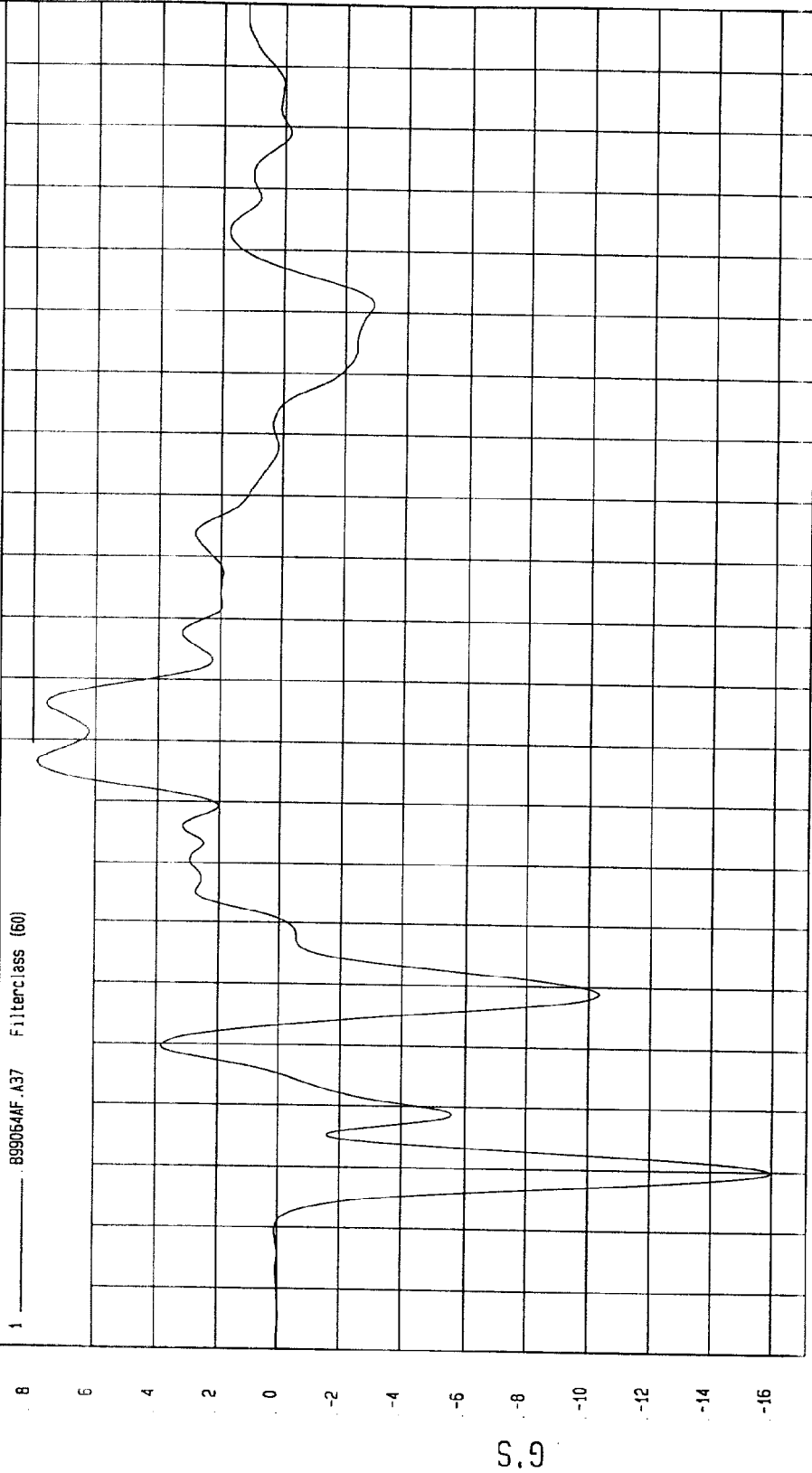
COMPONENT: 2000 NISSAN FRONTIER (CY5200)

Maximum = 7.86 G'S at 76 msec

Minimum = -15.95 G'S at 10 msec

RIGHT SIDE SILL AT REAR SEAT Z ACCELERATION

1 _____ B99064AF A37 Filterclass (60)



NSA Research
09-21-1999 11:55

TEST: FMVSS 214 DYNAMIC SIDE IMPACT

TEST DATE: 09-21-1999

Speed: 32.8 MPH 52.8 KPH

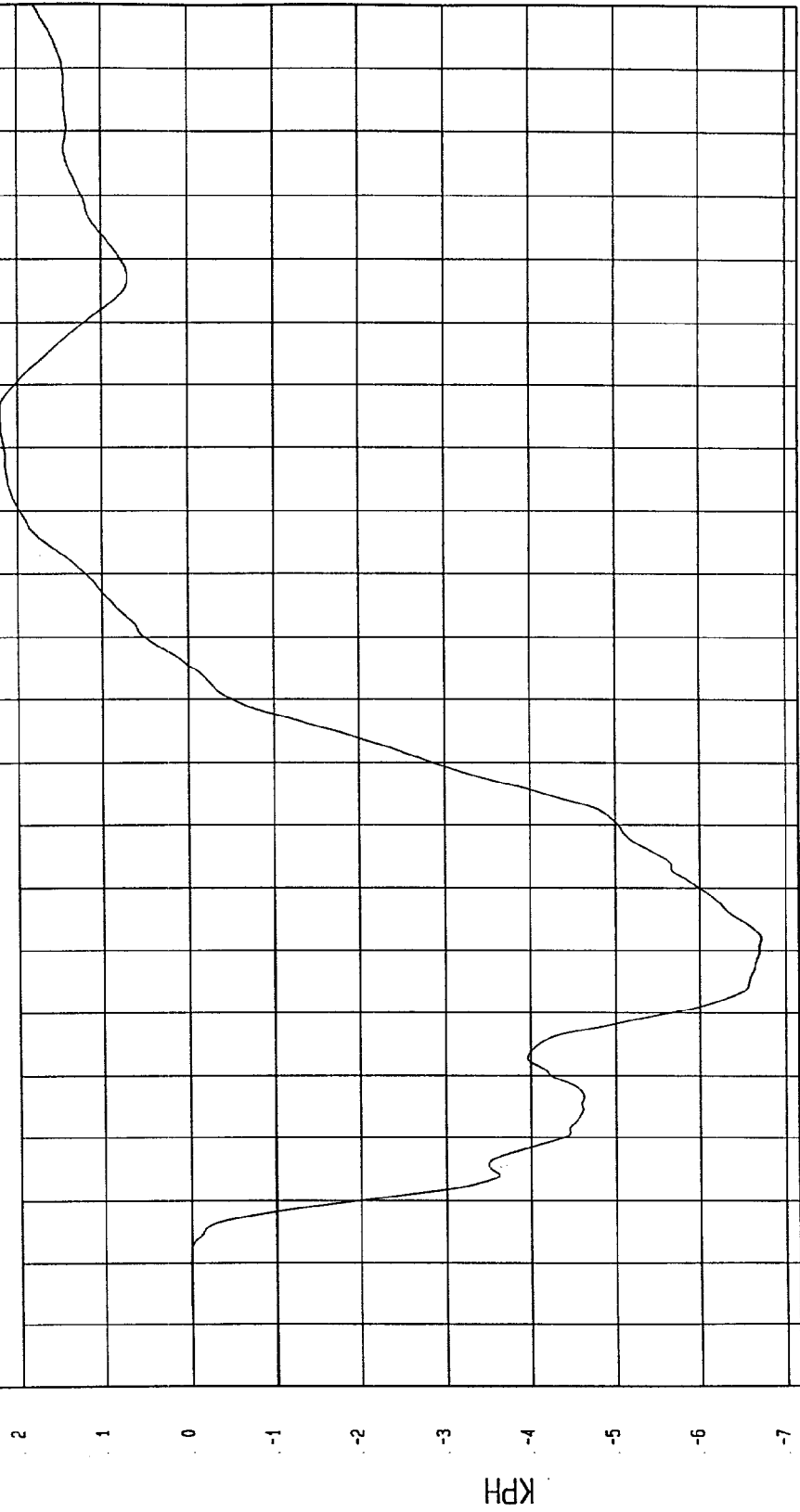
COMPONENT: 2000 NISSAN FRONTIER (CY5200)

Maximum = 2.2 KPH at 135 msec

Minimum = -6.71 KPH at 52 msec

RIGHT SIDE SILL AT REAR SEAT Z VELOCITY

1 B99064A1.V37 Filterclass (180)



NGA Research
09-21-1999 11:55

TIME Seconds

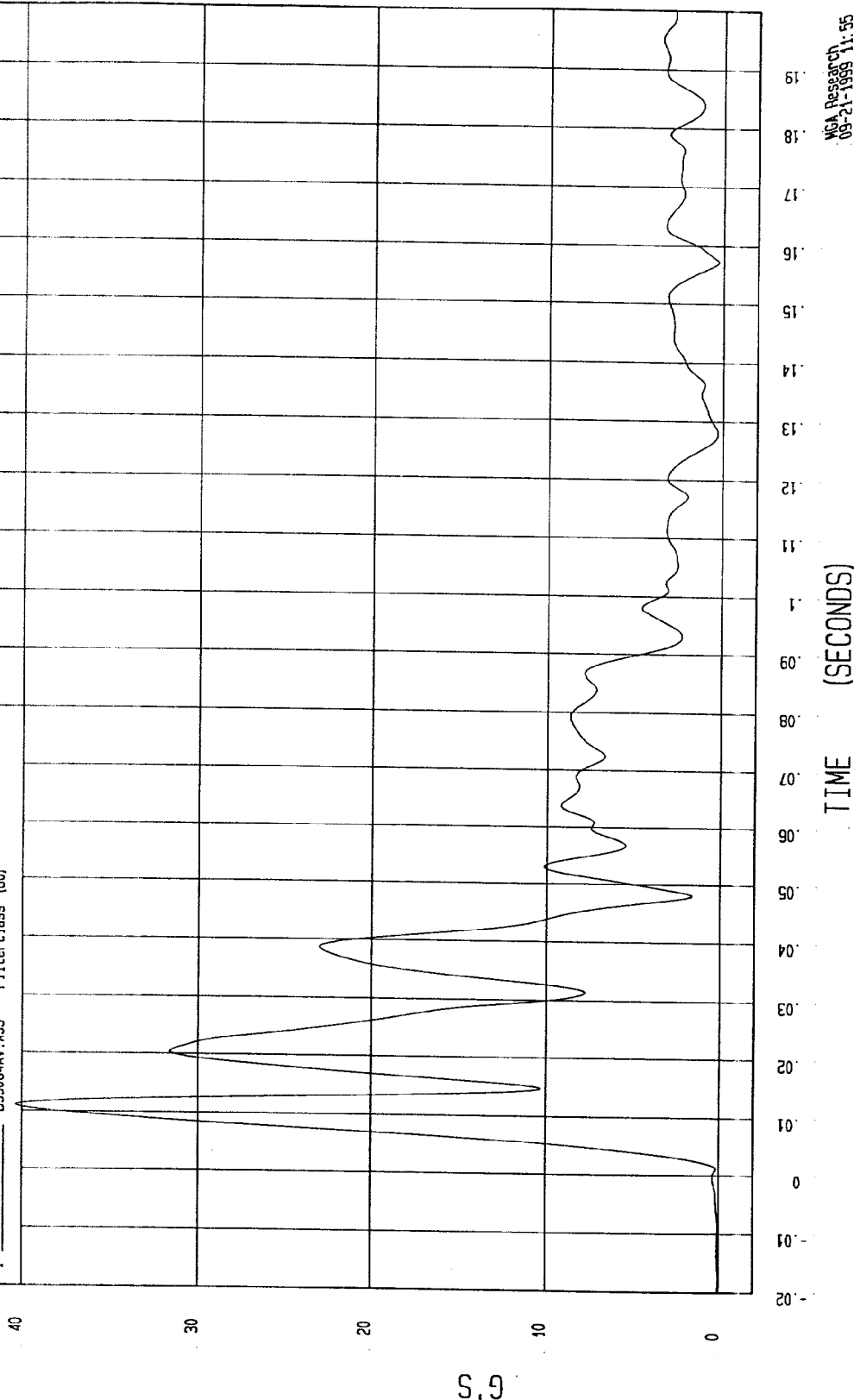
TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST DATE: 09-21-1999

COMPONENT: 2000 NISSAN FRONTIER (CY5200) Speed: 32.8 MPH 52.8 KPH

Minimum = 2.32E-02 G'S at -18 msec Maximum = 40.35 G'S at 11 msec

RIGHT SIDE SILL AT REAR SEAT RESULTANT ACCELERATION

1 B99064AV.A35 Filterclass (60)



WCA Research
09-21-1999 11:55

TEST: FMVSS 214 DYNAMIC SIDE IMPACT

TEST DATE: 09-21-1999

Speed: 32.8 MPH 52.8 KPH

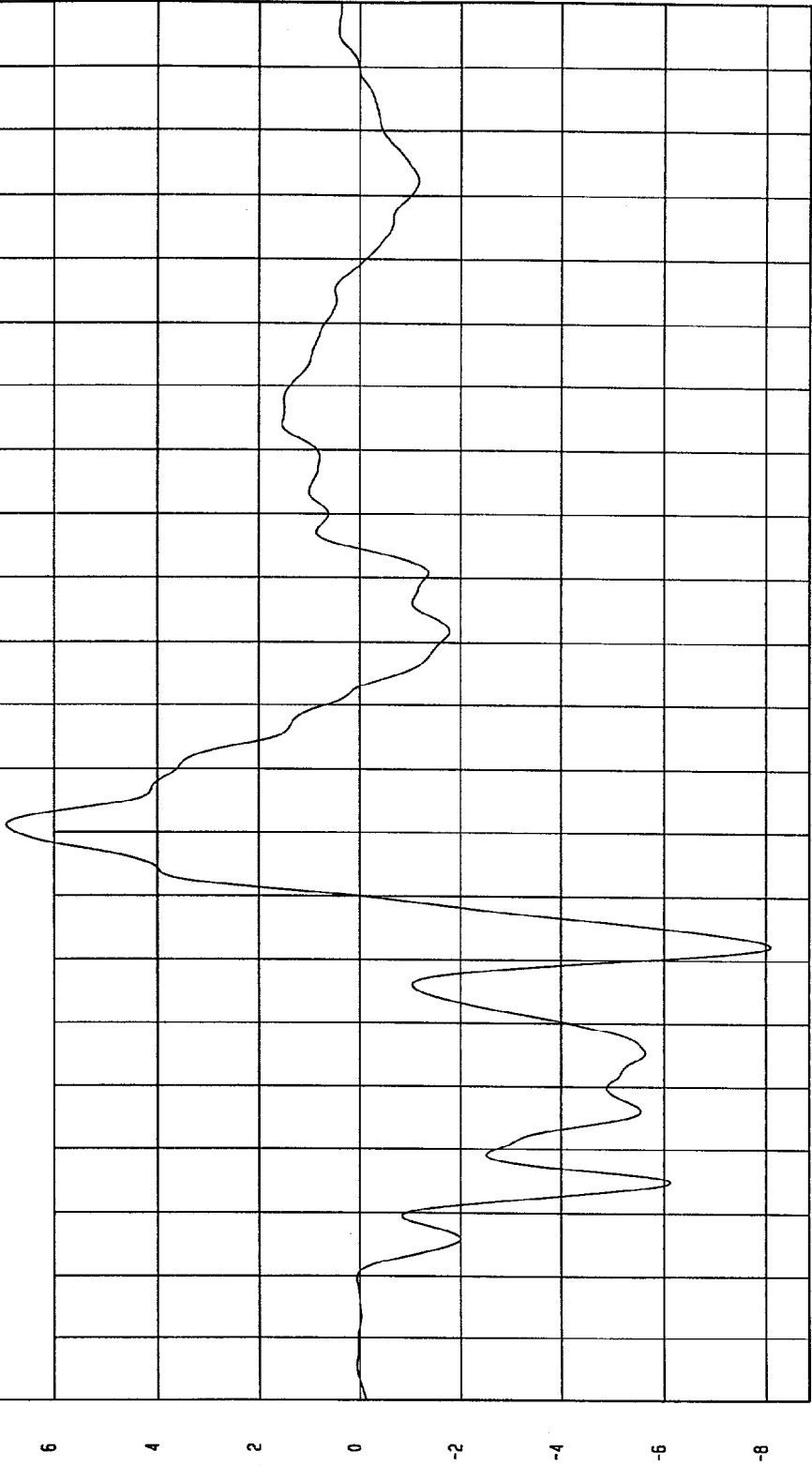
COMPONENT: 2000 NISSAN FRONTIER (CY5200)

Maximum = 6.89 G'S at 71 msec

Minimum = -8.1 G'S at 52 msec

REAR FLOORPAN ABOVE AXLE X ACCELERATION

1 B99064AF.A08 Filterclass (60)



WGA Research
09-21-1999 11:55

TEST: FMVSS 214 DYNAMIC SIDE IMPACT

TEST DATE: 09-21-1999

Speed: 32.8 MPH 52.8 KPH

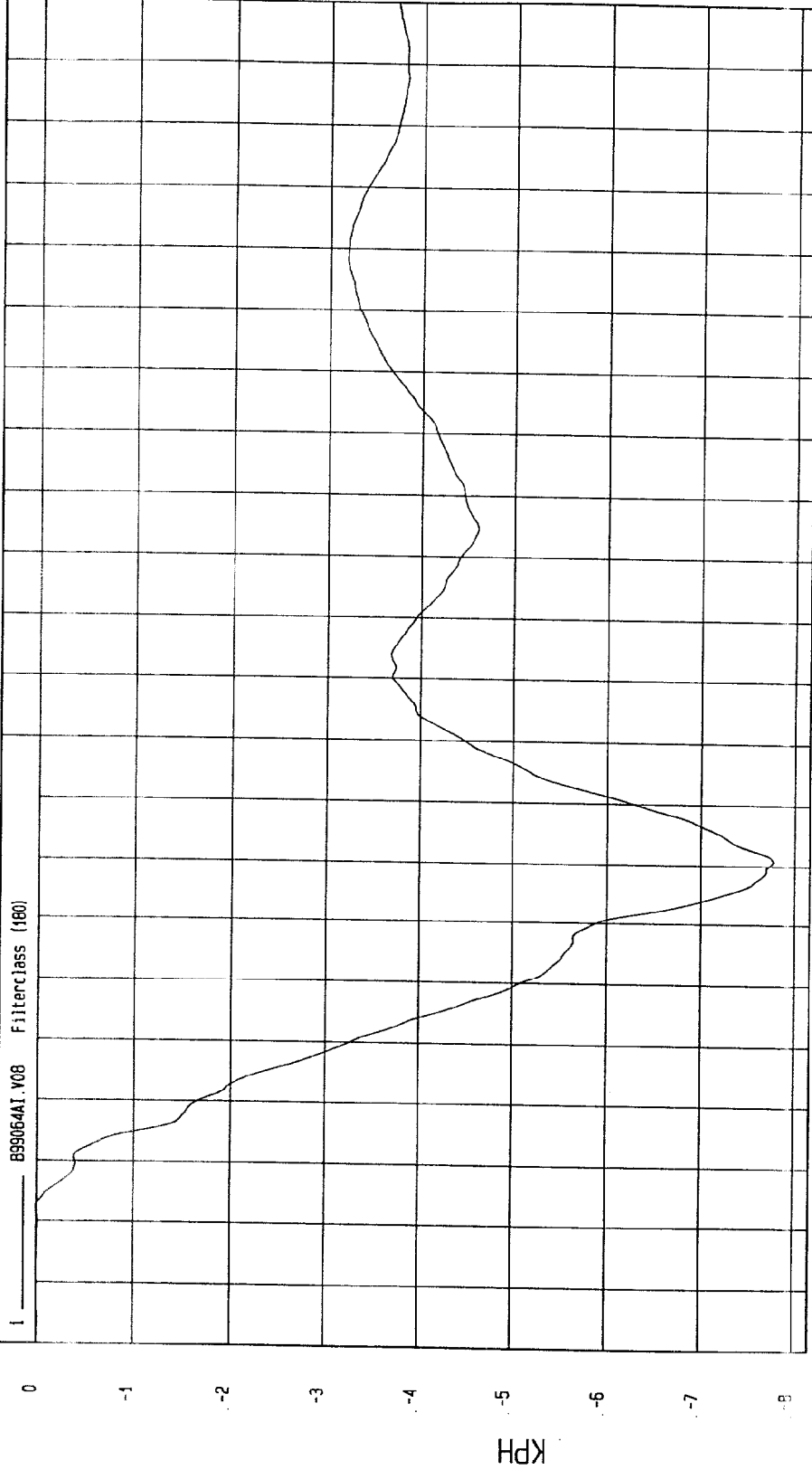
COMPONENT: 2000 NISSAN FRONTIER (CY5200)

Minimum = -7.77 KPH at 61 msec

Maximum = 8.05E-03 KPH at 2 msec

REAR FLOORPAN ABOVE AXLE X VELOCITY

1 B99064A1.V08 Filterclass (180)



MSA Research
09-21-1999 11:55

TIME Seconds

TEST: FMVSS 214 DYNAMIC SIDE IMPACT

TEST DATE: 09-21-1999

COMPONENT: 2000 NISSAN FRONTIER (CY5200)

Speed: 32.8 MPH 52.8 KPH

Maximum = 23.22 G's at 22 msec

Minimum = -2.63 G's at 115 msec

REAR FLOORPAN ABOVE AXLE Y ACCELERATION

1 89064AF.A09 FilterClass (50)

24

22

20

18

16

14

12

10

8

6

4

2

0

-2

G.S

19

18

17

16

15

14

13

12

11

10

09

08

07

06

05

04

03

02

01

0

-01

-02

TIME (SECONDS)

WGA Research
09-21-1999 11:56

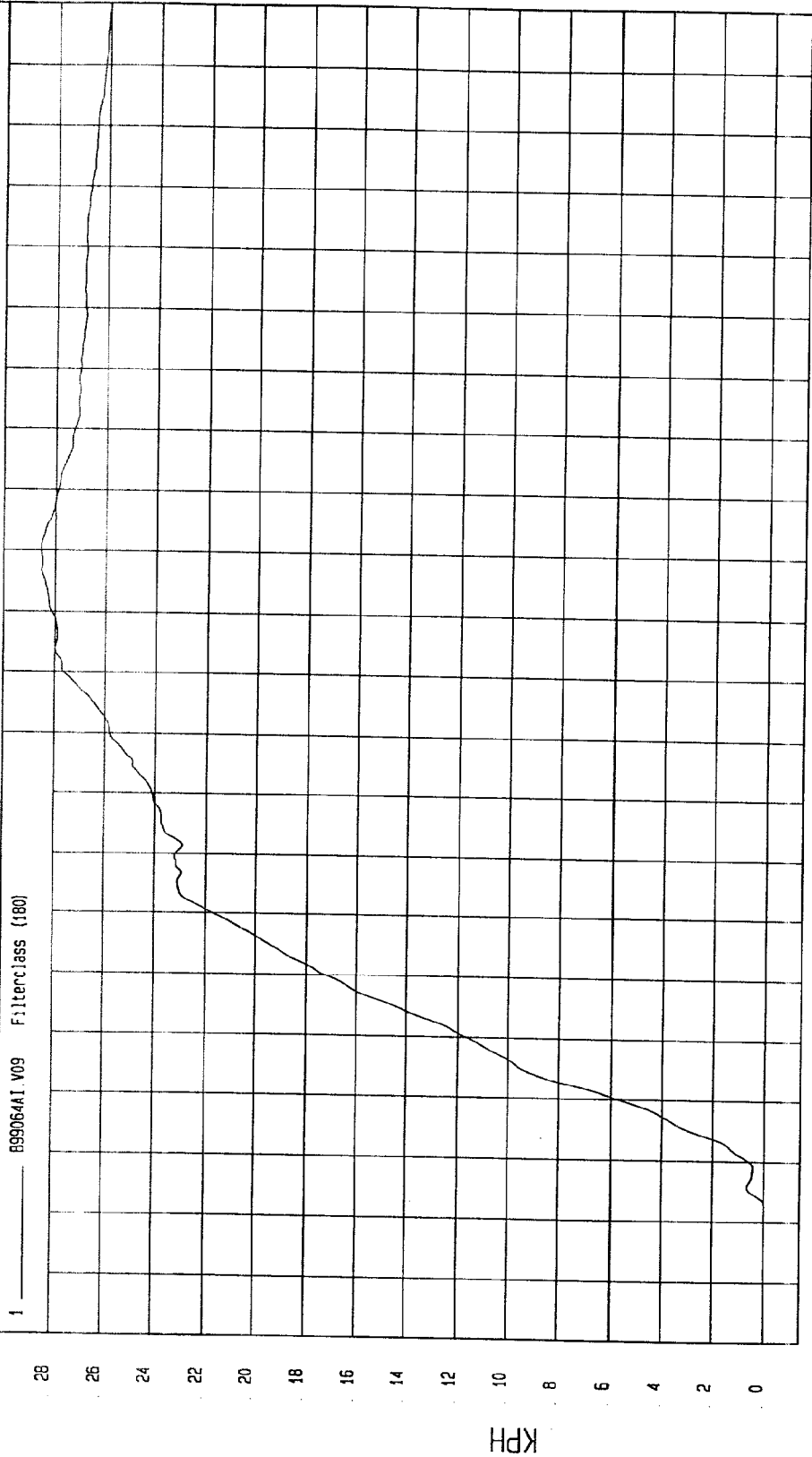
TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST DATE: 09-21-1999

COMPONENT: 2000 NISSAN FRONTIER (CY5200) Speed: 32.8 MPH 52.8 KPH

Minimum = -1.69E-02 KPH at 2 msec Maximum = 28.54 KPH at 110 msec

REAR FLOORPAN ABOVE AXLE Y VELOCITY

1 899064AI V09 Filterclass (180)



MSA Research
09-21-1999 11:56

TEST: FMVSS 214 DYNAMIC SIDE IMPACT

TEST DATE: 09-21-1999

COMPONENT: 2000 NISSAN FRONTIER (CY5200)

Speed: 32.8 MPH 52.8 KPH

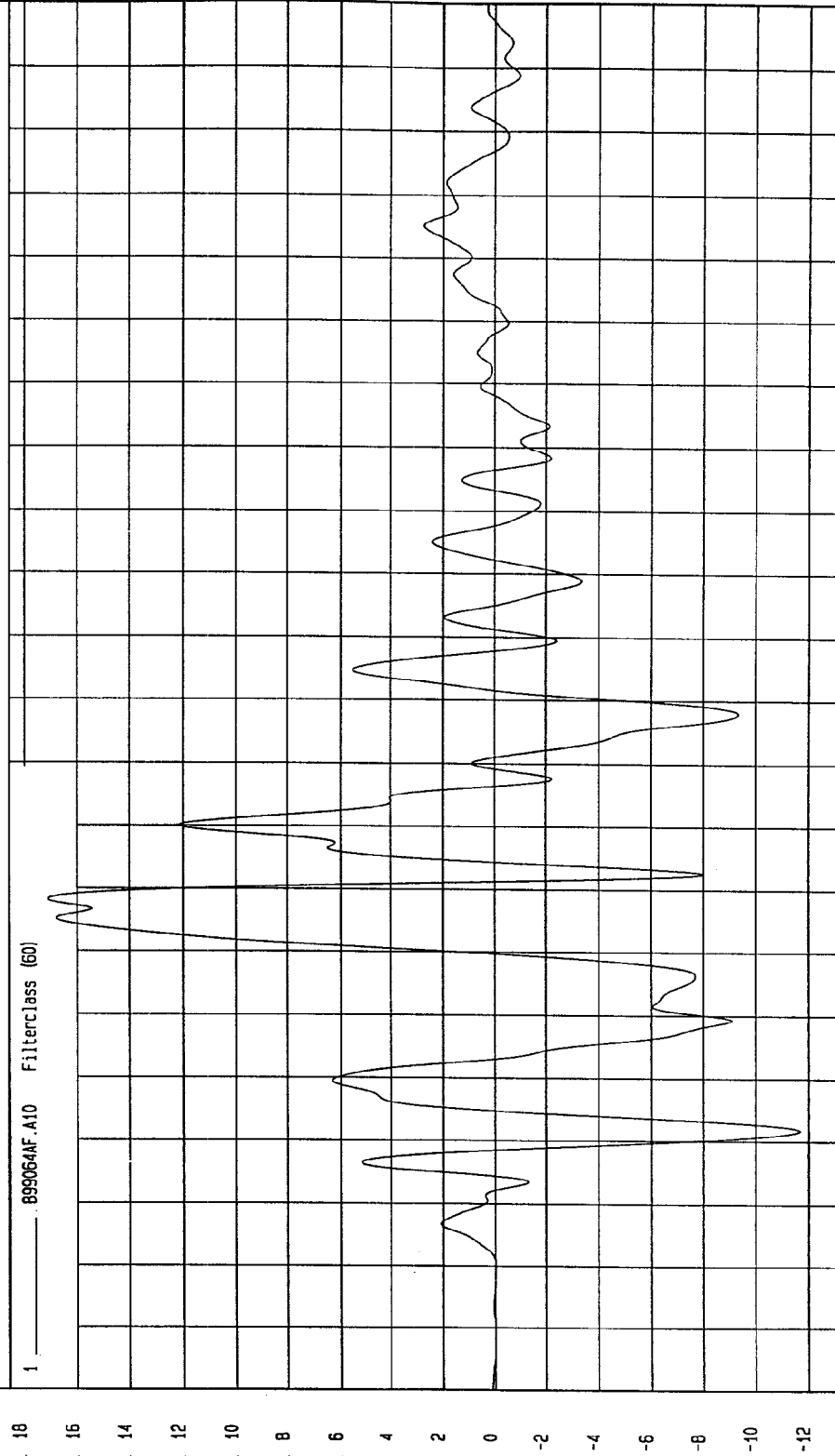
Maximum = 17.12 G'S at 58 msec

Minimum = -11.69 G'S at 22 msec

REAR FLOORPAN ABOVE AXLE Z ACCELERATION

1 899064F.A10 Filterclass (60)

G.S



WCA Research
09-21-1999 13:47

TIME (SECONDS)

TEST: FMVSS 214 DYNAMIC SIDE IMPACT

TEST DATE: 09-21-1999

SPEED: 32.8 MPH 52.8 KPH

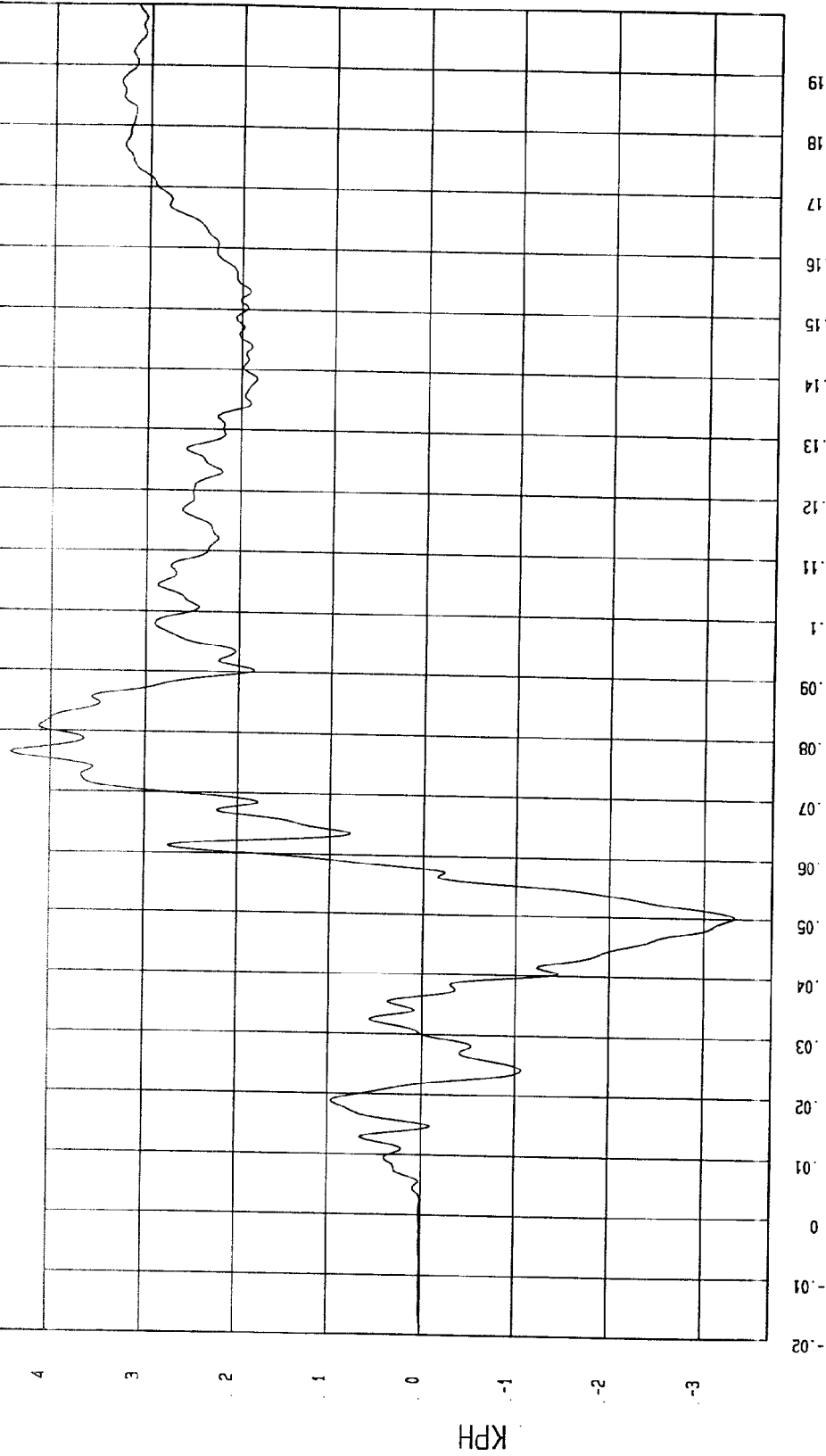
COMPONENT: 2000 NISSAN FRONTIER (CY5200)

Minimum = -3.32 KPH at 50 msec

Maximum = 4.42 KPH at 76 msec

REAR FLOORPAN ABOVE AXLE Z VELOCITY

1 _____ 899064A1.V10 Filterclass (180)



MSA Research
09-21-1999 12:04

TEST: FMVSS 214 DYNAMIC SIDE IMPACT

TEST DATE: 09-21-1999

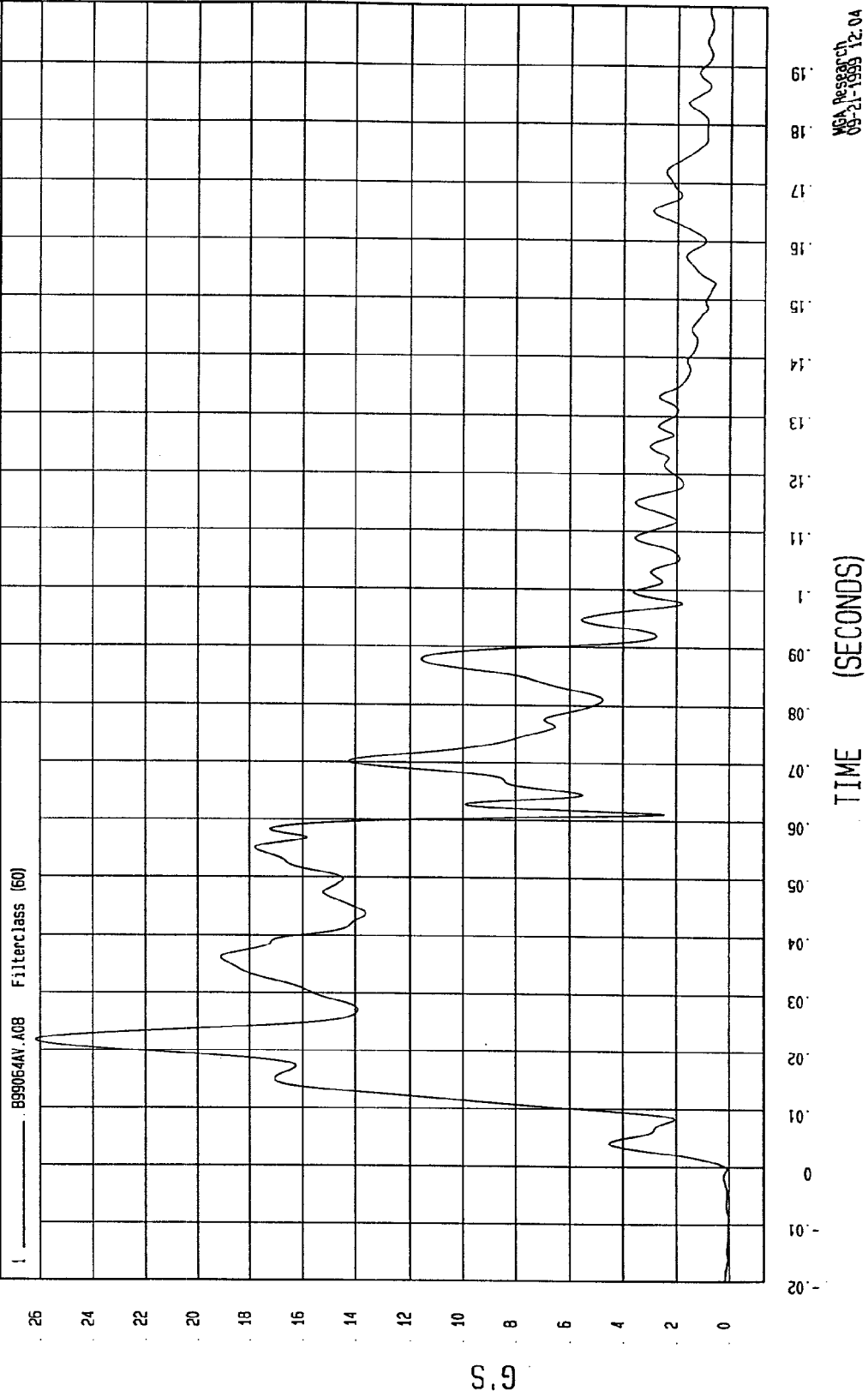
Speed: 32.8 MPH 52.8 KPH

COMPONENT: 2000 NISSAN FRONTIER (CY5200)

Minimum = 2.52E-02 G'S at -9 msec

Maximum = 26.18 G'S at 22 msec

REAR FLOORPAN ABOVE AXLE RESULTANT ACCELERATION



TEST: FMVSS 214 DYNAMIC SIDE IMPACT

TEST DATE: 09-21-1999

COMPONENT: 2000 NISSAN FRONTIER (CY5200)

Speed: 32.8 MPH 52.8 KPH

Minimum = -1068.86 G'S at 32 msec

Maximum = 203.47 G'S at 10 msec

LEFT SIDE SILL AT FRONT SEAT Y ACCELERATION

1 ——— B93064AF A38 Filterclass (60)

220

200

180

160

140

120

100

80

60

40

20

0

-20

-40

-60

-80

-100

G'S

Data not valid after
approx. 23 msec.

TIME (SECONDS)

19

18

17

16

15

14

13

12

11

10

09

08

07

06

05

04

03

02

01

0

-01

-02

MCA Research
09-21-1999 13:53

TEST: FMVSS 214 DYNAMIC SIDE IMPACT

TEST DATE: 09-21-1999

Speed: 32.8 MPH 52.8 KPH

COMPONENT: 2000 NISSAN FRONTIER (CY5200)

Maximum = 35.65 KPH at 12 msec

Minimum = -6278.34 KPH at 200 msec

LEFT SIDE SILL AT FRONT SEAT Y VELOCITY

1 B99064A1.V3B FilterClass (180)

Data not valid after
approx. 23 msec.

30

20

10

0

KPH

-02

-01

0

.01

.02

.03

.04

.05

.06

.07

.08

.09

.1

.11

.12

.13

.14

.15

.16

.17

.18

.19

TIME Seconds

WCA Research
09-21-1999 13:53

TEST: FMVSS 214 DYNAMIC SIDE IMPACT

TEST DATE: 09-21-1999

Speed: 32.8 MPH 52.8 KPH

COMPONENT: 2000 NISSAN FRONTIER (CY5200)

Maximum = 97.71 G'S at 8 msec

Minimum = -44.18 G'S at 13 msec

LEFT SIDE SILL AT REAR SEAT Y ACCELERATION

1 89064F.A39 Filterclass (50)

100

80

60

40

20

0

-20

-40

G.S

-02

-01

0

01

02

03

04

05

06

07

08

09

1

11

12

13

14

15

16

17

18

19

TIME (SECONDS)

NSA Research
09-21-1999 11:54

TEST: FMVSS 214 DYNAMIC SIDE IMPACT

TEST DATE: 09-21-1999

Speed: 32.8 MPH 52.8 KPH

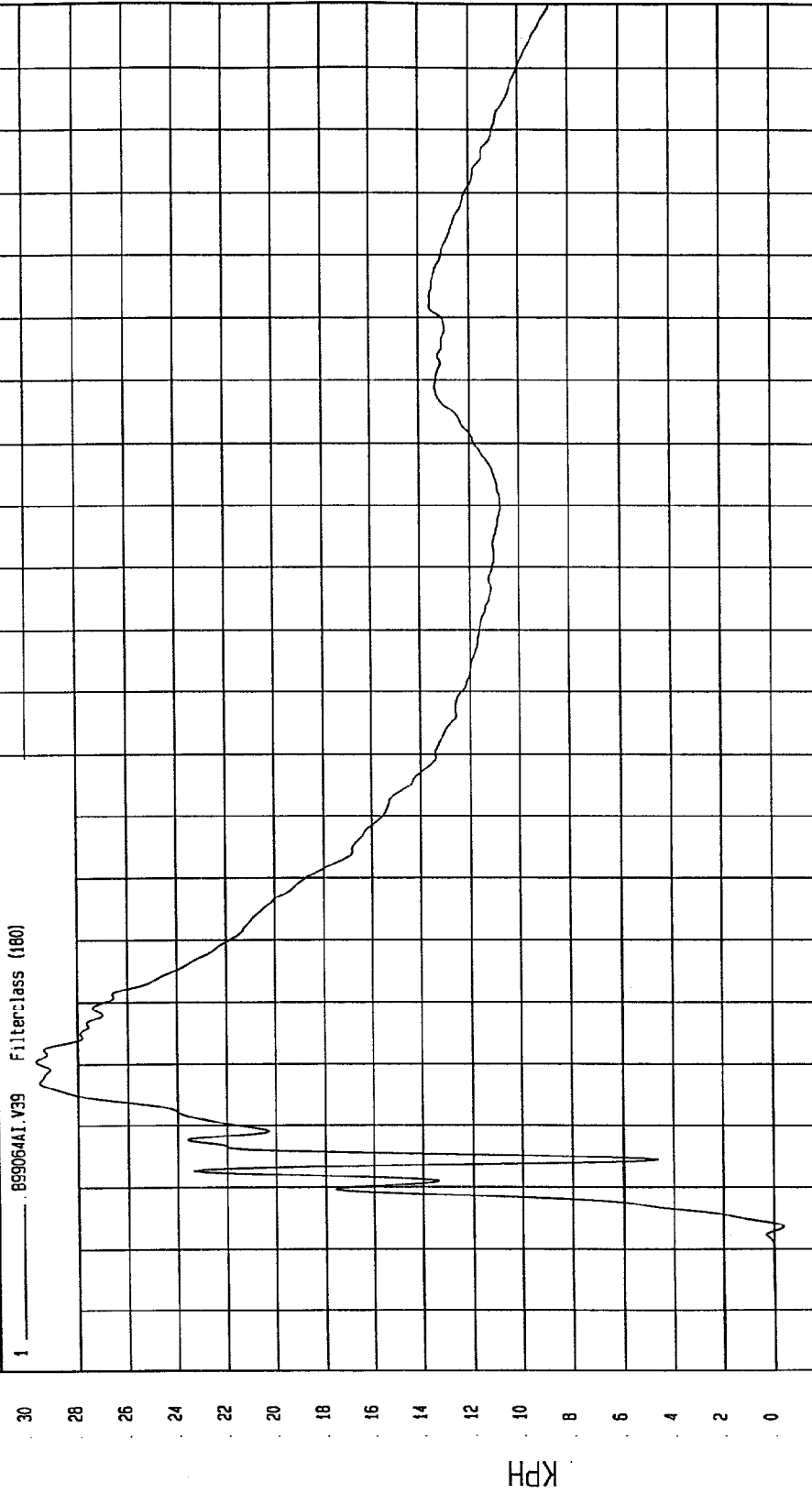
COMPONENT: 2000 NISSAN FRONTIER (CY5200)

Maximum = 29.64 KPH at 30 msec

Minimum = -4 KPH at 4 msec

LEFT SIDE SILL AT REAR SEAT Y VELOCITY

1 _____ B99064A1.V39 Filterclass (180)



MGA Research
09-21-1999 11:55

TIME Seconds

TEST: FMVSS 214 DYNAMIC SIDE IMPACT

TEST DATE: 09-21-1999

Speed: 32.8 MPH 52.8 KPH

COMPONENT: 2000 NISSAN FRONTIER (CY5200)

Maximum = 38.17 G's at 10 msec

Minimum = -11.03 G's at 65 msec

RIGHT REAR OCCUPANT COMPARTMENT Y ACCELERATION

1 B99064AF.A50 Filterclass (60)

40

30

20

10

G's

0

-10

-20

19

18

17

16

15

14

13

12

11

10

09

08

07

06

05

04

03

02

01

0

-01

-02

TIME (SECONDS)

MGA Research
09-21-1999 12:04

TEST: FMVSS 214 DYNAMIC SIDE IMPACT

TEST DATE: 09-21-1999

Speed: 32.8 MPH 52.8 KPH

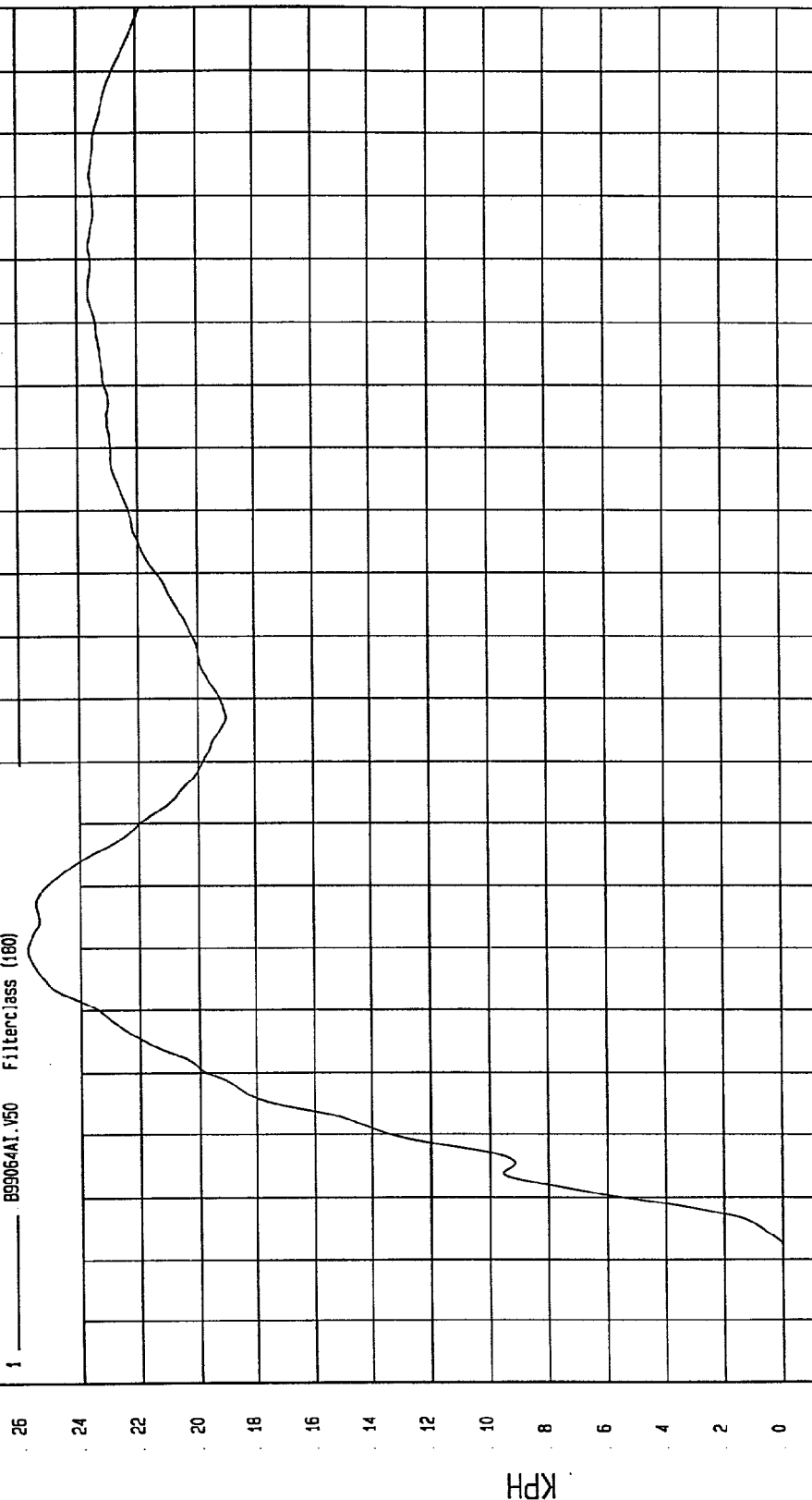
COMPONENT: 2000 NISSAN FRONTIER (CY5200)

Maximum = 25.75 KPH at 50 msec

Minimum = -1.28E-02 KPH at -9 msec

RIGHT REAR OCCUPANT COMPARTMENT Y VELOCITY

1 B99064A1.V50 Filterclass (180)



NCA Research
09-21-1999 12:04

TIME Seconds

TEST: FMVSS 214 DYNAMIC SIDE IMPACT

TEST DATE: 09-21-1999

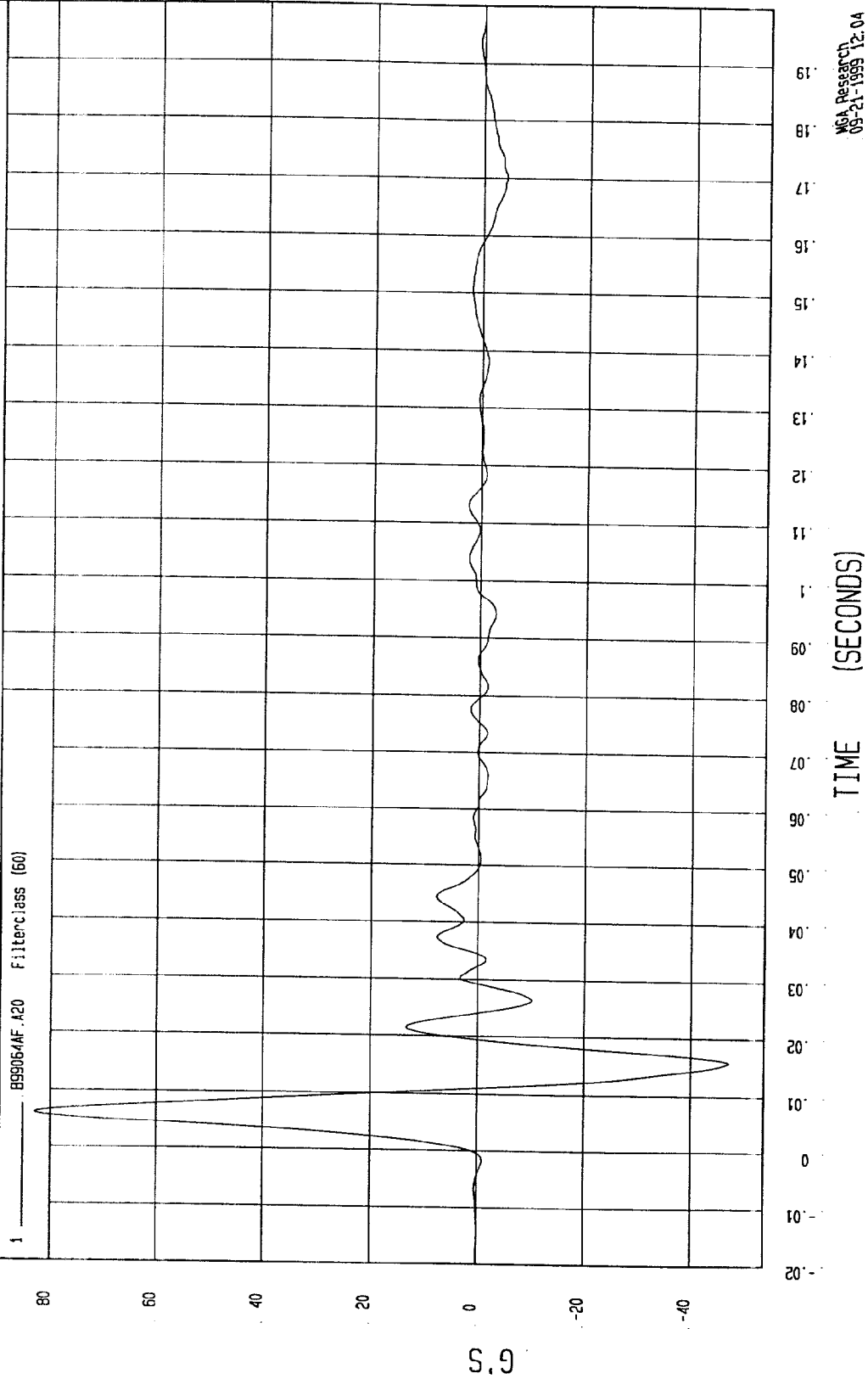
Speed: 32.8 MPH 52.8 KPH

COMPONENT: 2000 NISSAN FRONTIER (CY5200)

Maximum = 82.91 G'S at 6 msec

Minimum = -46.91 G'S at 16 msec

LEFT LOWER A-POST Y ACCELERATION



TEST: FMVSS 214 DYNAMIC SIDE IMPACT

TEST DATE: 09-21-1999

COMPONENT: 2000 NISSAN FRONTIER (CY5200)

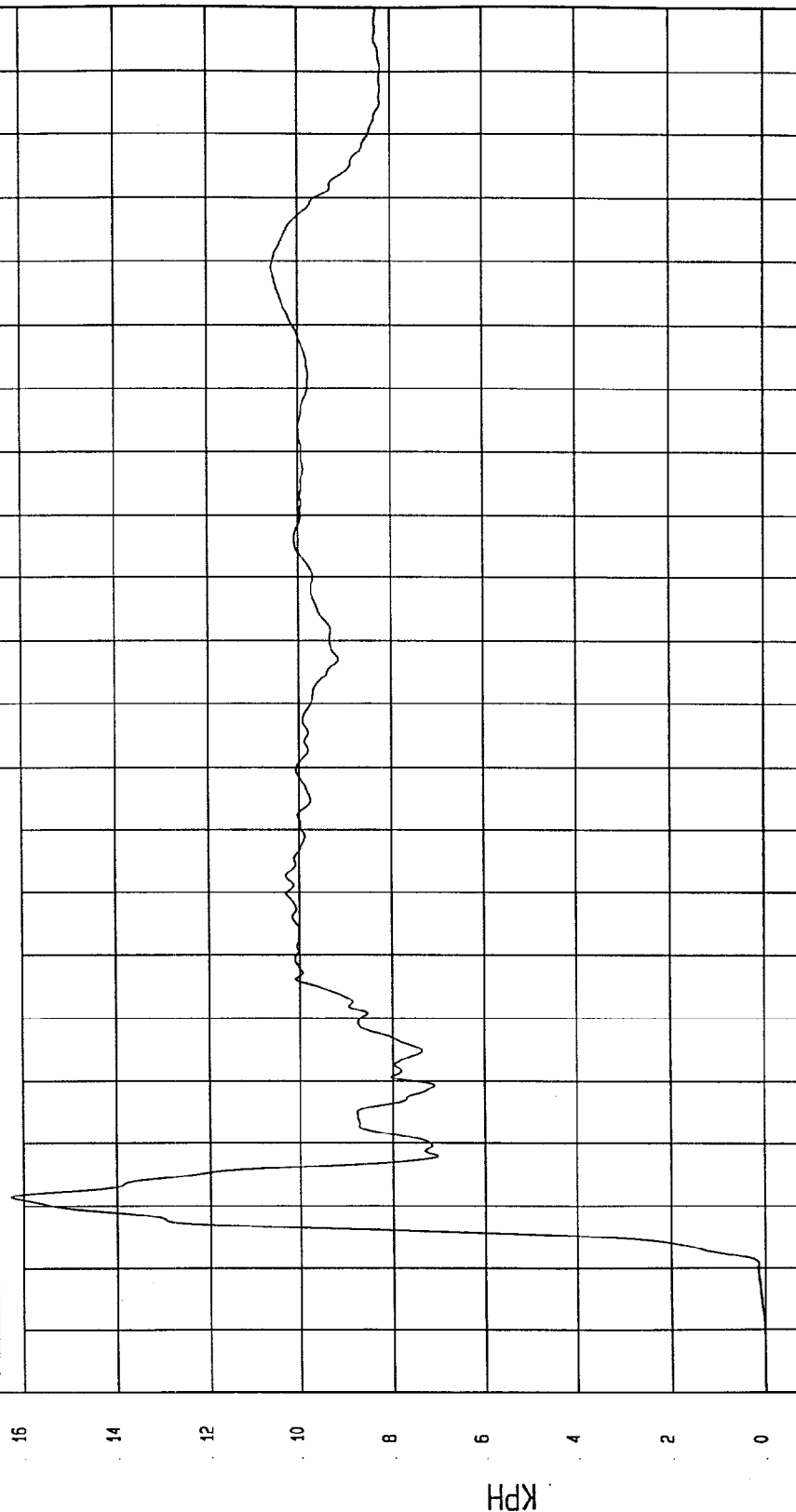
Speed: 32.8 MPH 52.8 KPH

Minimum = 0 KPH at -20 msec

Maximum = 16.26 KPH at 11 msec

LEFT LOWER A-POST Y VELOCITY

1 899064A1.V20 FilterClass (180)



WCA Research
09-21-1999 12:04

TIME Seconds

TEST: FMVSS 214 DYNAMIC SIDE IMPACT

TEST DATE: 09-21-1999

Speed: 32.8 MPH 52.8 KPH

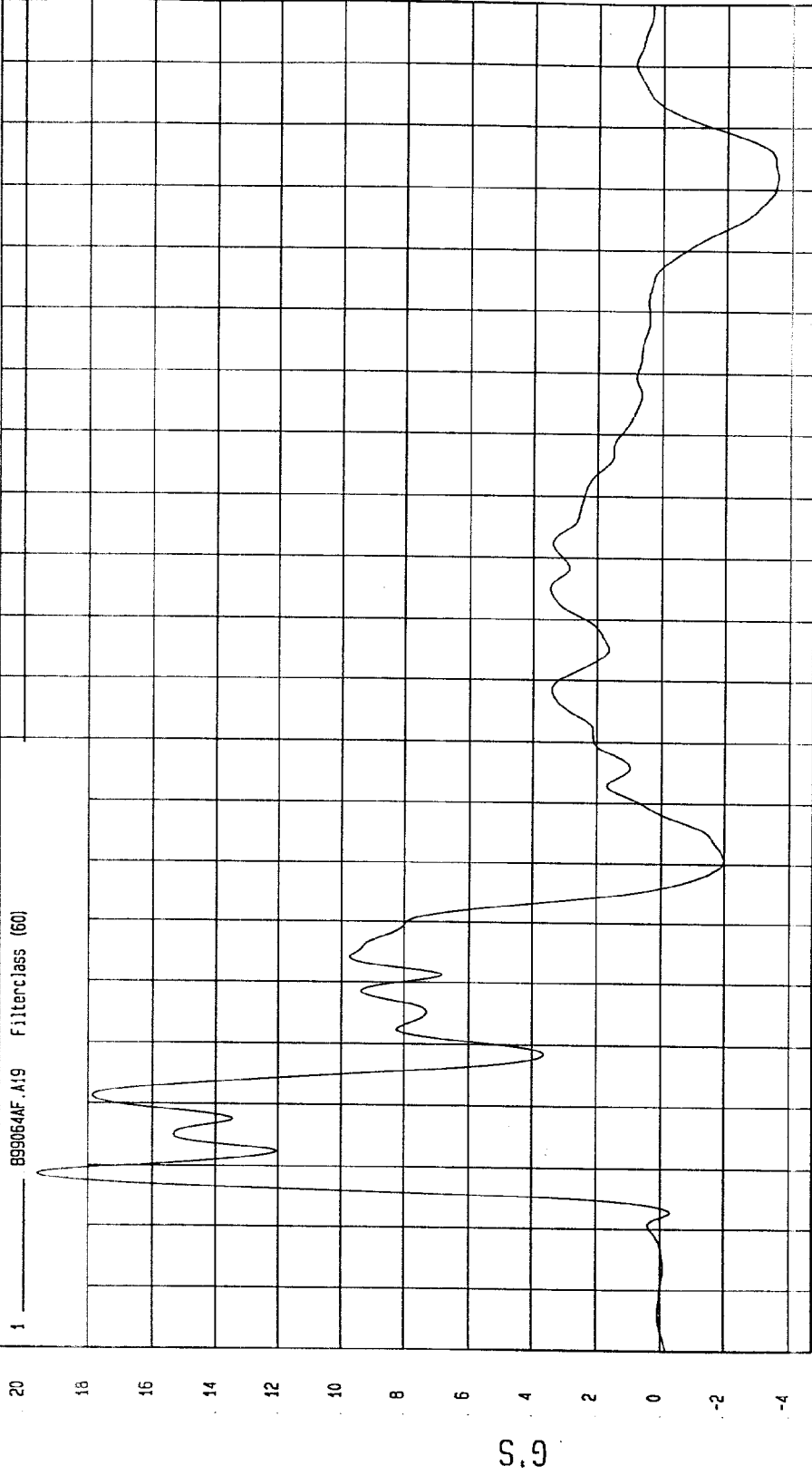
COMPONENT: 2000 NISSAN FRONTIER (CY5200)

Minimum = -3.57 G'S at 172 msec

Maximum = 19.59 G'S at 9 msec

LEFT MID A-POST Y ACCELERATION

1 ——— B89064AF.A19 Filterclass (60)



MCA Research
09-21-1999 13:40

TIME (SECONDS)

TEST: FMVSS 214 DYNAMIC SIDE IMPACT

TEST DATE: 09-21-1999

Speed: 32.8 MPH 52.8 KPH

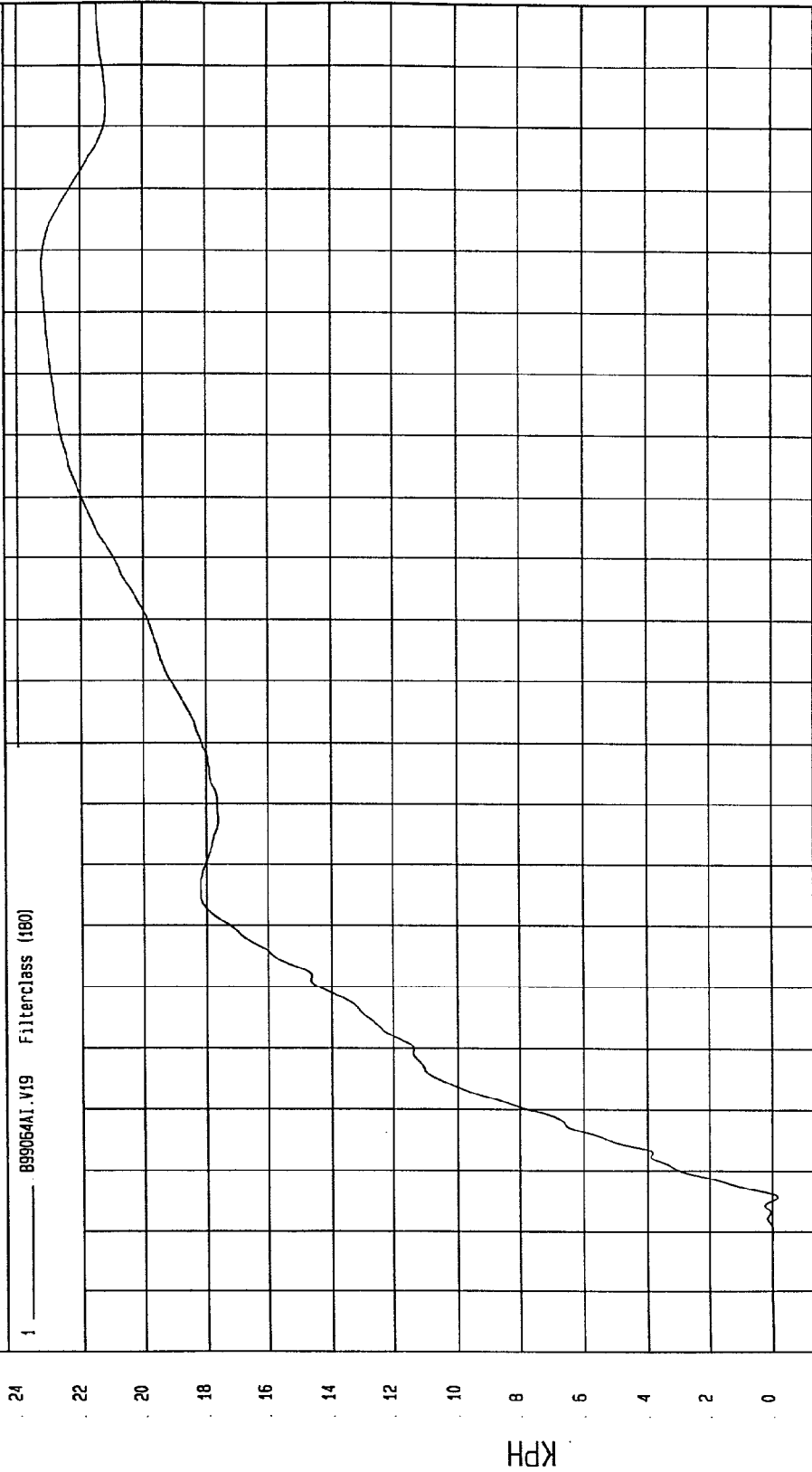
COMPONENT: 2000 NISSAN FRONTIER (CY5200)

Maximum = 23.22 KPH at 158 msec

Minimum = -.19 KPH at 6 msec

LEFT MID A-POST Y VELOCITY

1 _____ B9906A1.V19 FilterClass (180)



MCA Research
09-21-1999 13:40

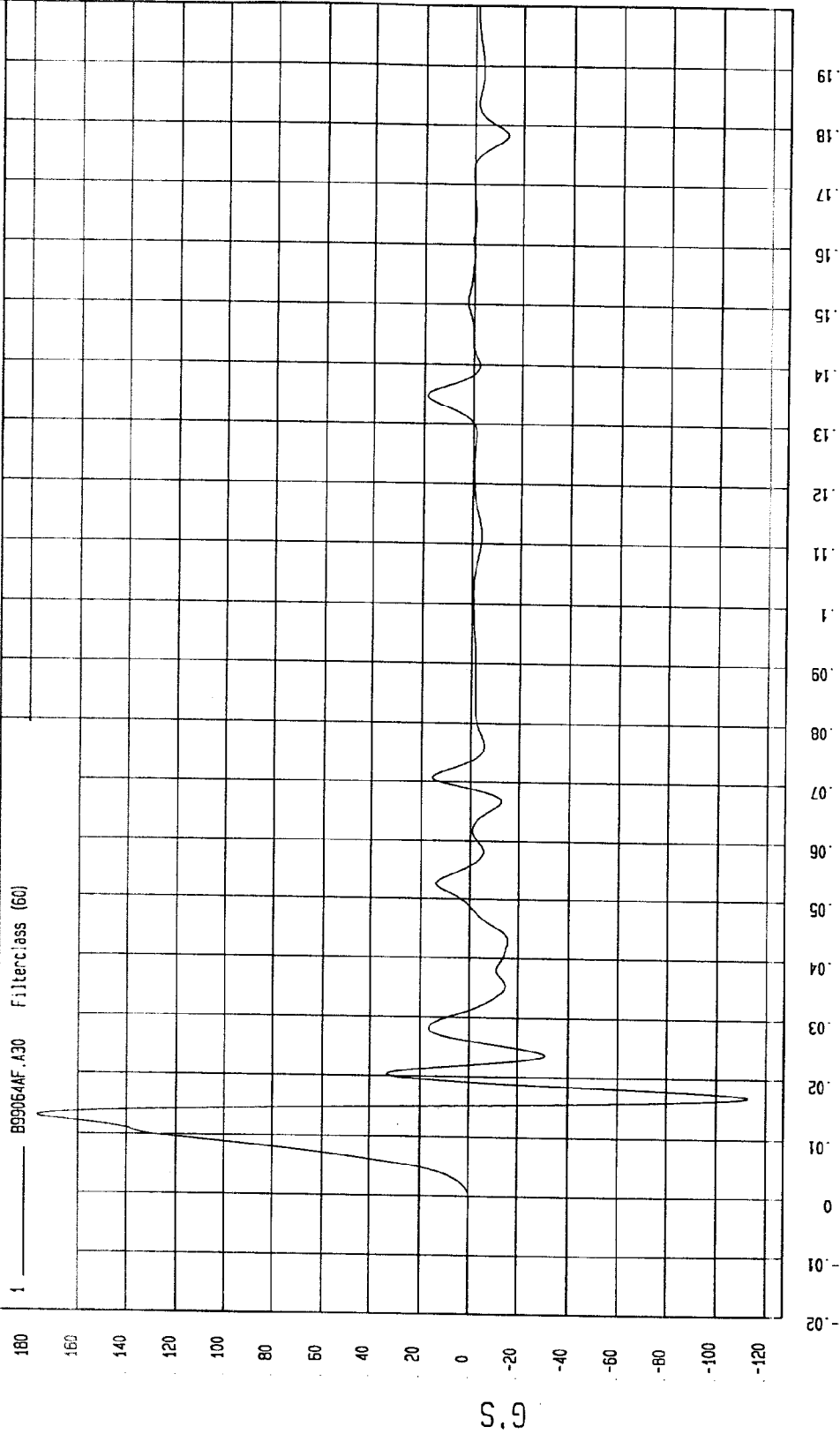
TIME Seconds

TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST DATE: 09-21-1999

COMPONENT: 2000 NISSAN FRONTIER (CY5200) Speed: 32.8 MPH 52.8 KPH

Minimum = -112.75 G'S at 17 msec Maximum = 176.81 G'S at 13 msec

LEFT LOWER B-POST Y ACCELERATION



MGA Research
09-21-1999 12:04

TEST: FMVSS 214 DYNAMIC SIDE IMPACT

TEST DATE: 09-21-1999

Speed: 32.8 MPH 52.8 KPH

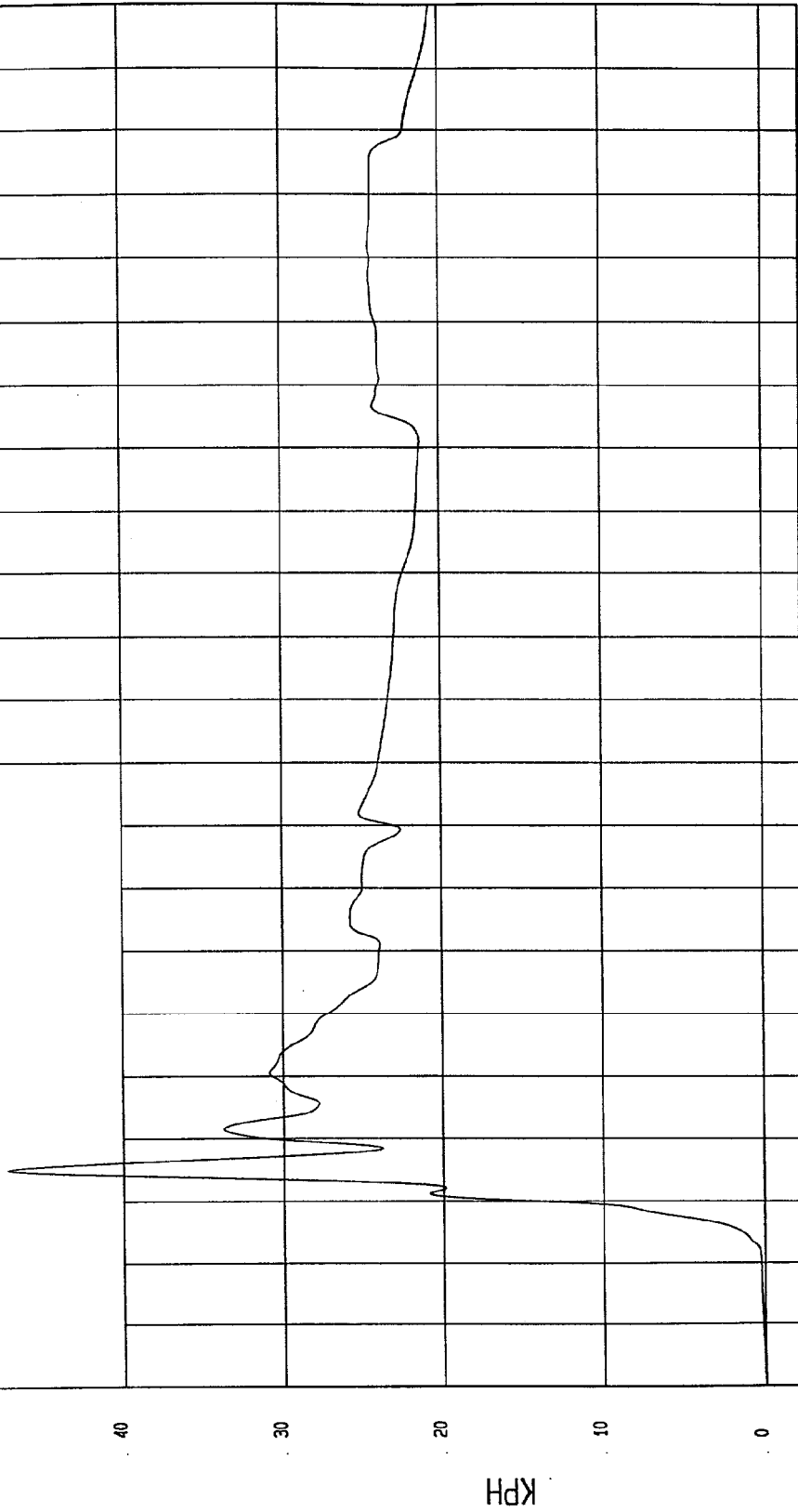
COMPONENT: 2000 NISSAN FRONTIER (CY5200)

Maximum = 47.25 KPH at 15 msec

Minimum = 0 KPH at -20 msec

LEFT LOWER B-POST Y VELOCITY

1 B99064A1.V30 Filterclass (180)



WCA Research
09-21-1999 12:04

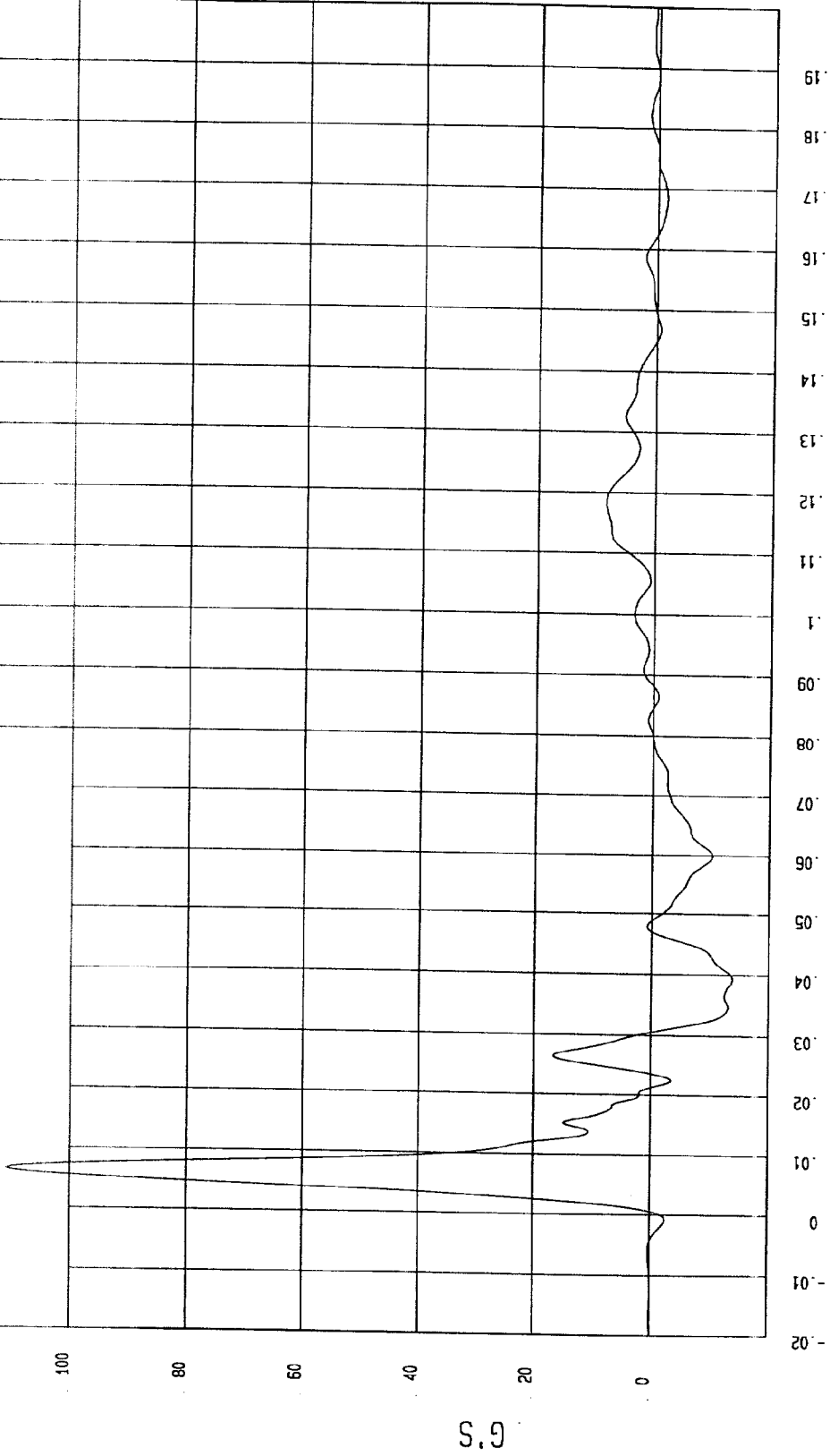
TIME Seconds

TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST DATE: 09-21-1999
COMPONENT: 2000 NISSAN FRONTIER (CY5200) Speed: 32.8 MPH 52.8 KPH

Minimum = -13.69 G'S at 39 msec Maximum = 110.78 G'S at 5 msec

LEFT MID B-POST Y ACCELERATION

1 — B99064F.A29 Filterclass (60)



MSA Research
09-21-1999 13:40

TEST: FMVSS 214 DYNAMIC SIDE IMPACT

TEST DATE: 09-21-1999

Speed: 32.8 MPH 52.8 KPH

COMPONENT: 2000 NISSAN FRONTIER (CY5200)

Maximum = 26.33 KPH at 31 msec

Minimum = -5.75E-04 KPH at -20 msec

LEFT MID B-POST Y VELOCITY



MECA Research
09-21-1999 13:40

TIME Seconds

TEST: FMVSS 214 DYNAMIC SIDE IMPACT

TEST DATE: 09-21-1999

Speed: 32.8 MPH 52.8 KPH

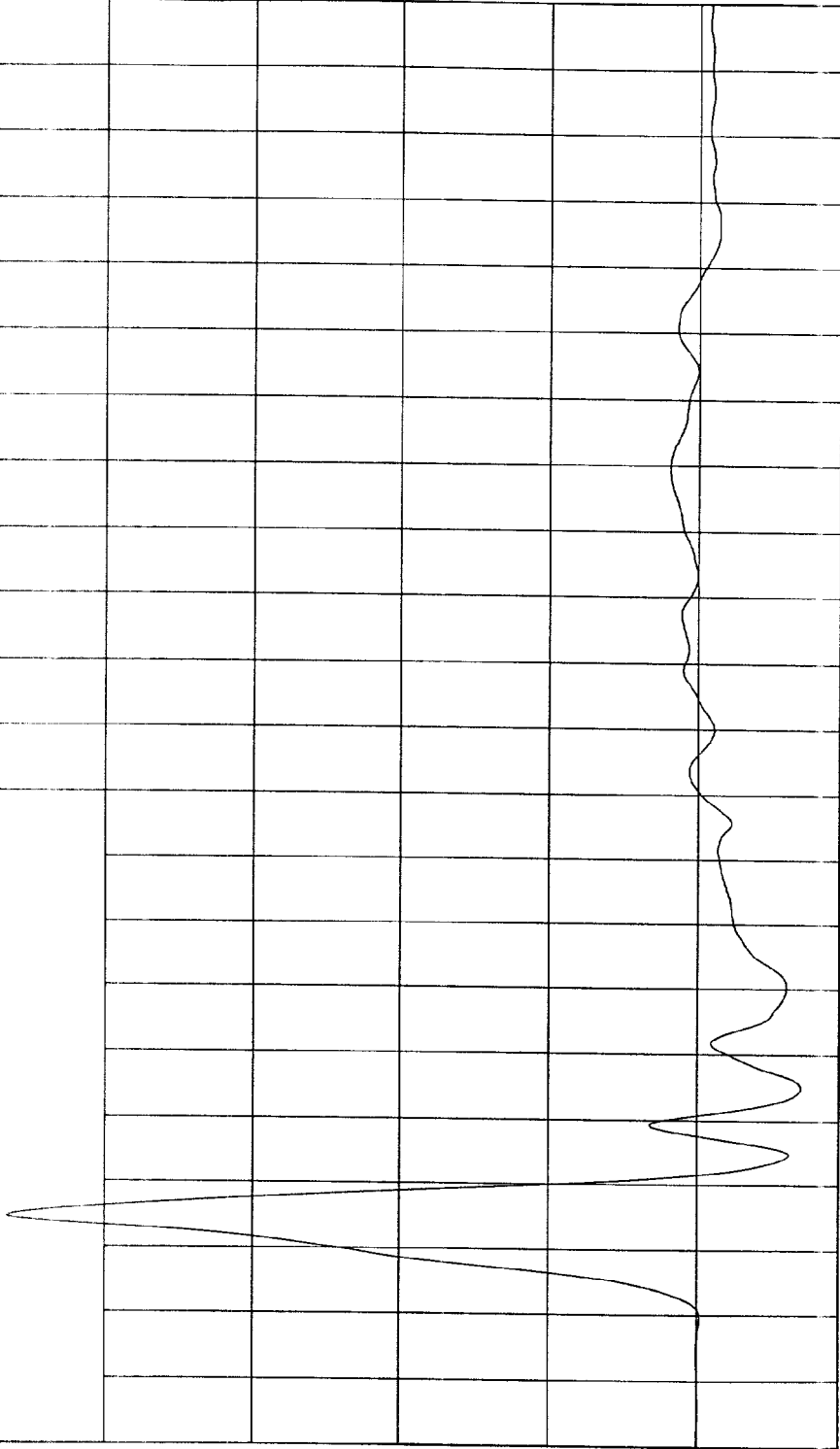
COMPONENT: 2000 NISSAN FRONTIER (CY5200)

Minimum = -13.81 G'S at 35 msec

Maximum = 93.11 G'S at 15 msec

DRIVER SEAT TRACK Y ACCELERATION

1 ——— B99064AF.A40 Filterclass (60)



TIME (SECONDS)

MCA Research
09-21-1999 11:55

TEST: FMVSS 214 DYNAMIC SIDE IMPACT

TEST DATE: 09-21-1999

Speed: 32.8 MPH 52.8 KPH

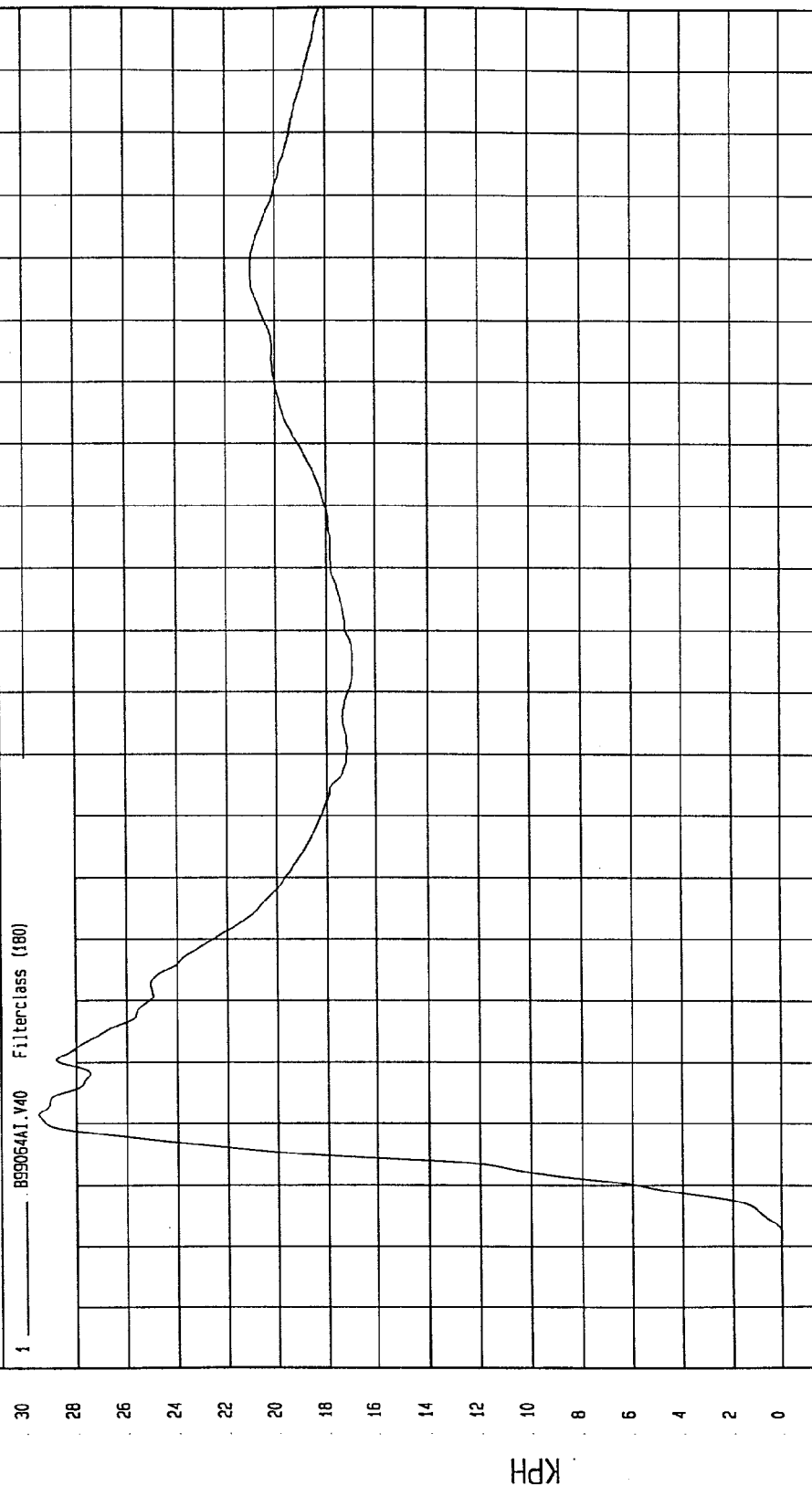
COMPONENT: 2000 NISSAN FRONTIER (CY5200)

Maximum = 29.48 KPH at 21 msec

Minimum = -1.99E-02 KPH at 2 msec

DRIVER SEAT TRACK Y VELOCITY

1 B99064A1.V40 Filterclass (180)



NCA Research
09-21-1999 11:55

TIME Seconds

TEST: FMVSS 214 DYNAMIC SIDE IMPACT

TEST DATE: 09-21-1999

Speed: 32.8 MPH 52.8 KPH

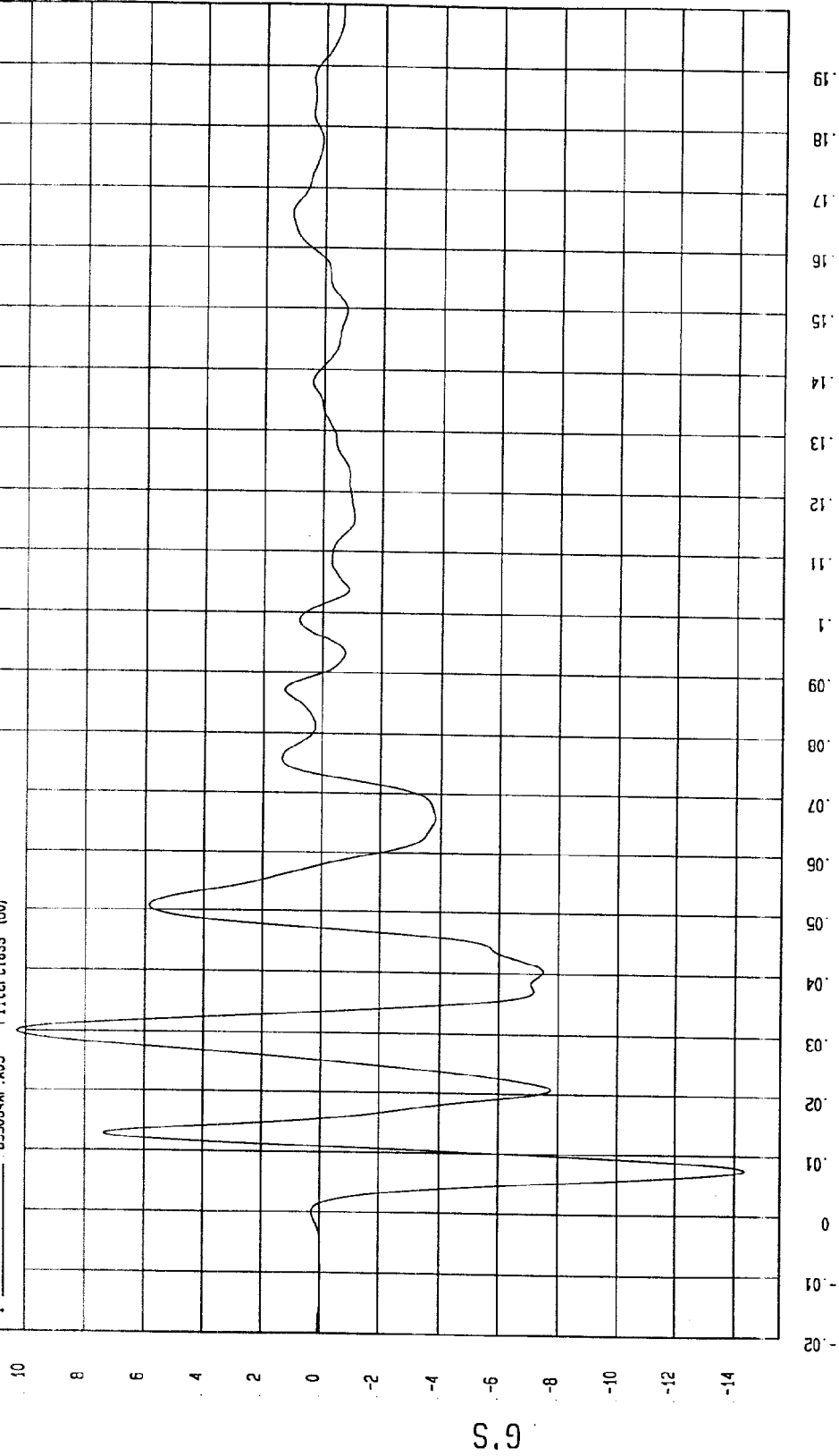
COMPONENT: 2000 NISSAN FRONTIER (CY5200)

Maximum = 10.3 G'S at 30 msec

Minimum = -14.34 G'S at 8 msec

VEHICLE CG X ACCELERATION

1 B99064AF.A05 Filterclass (60)



MCA Research
09-21-1999 13:47

TEST: FMVSS 214 DYNAMIC SIDE IMPACT

Speed: 32.8 MPH 52.8 KPH

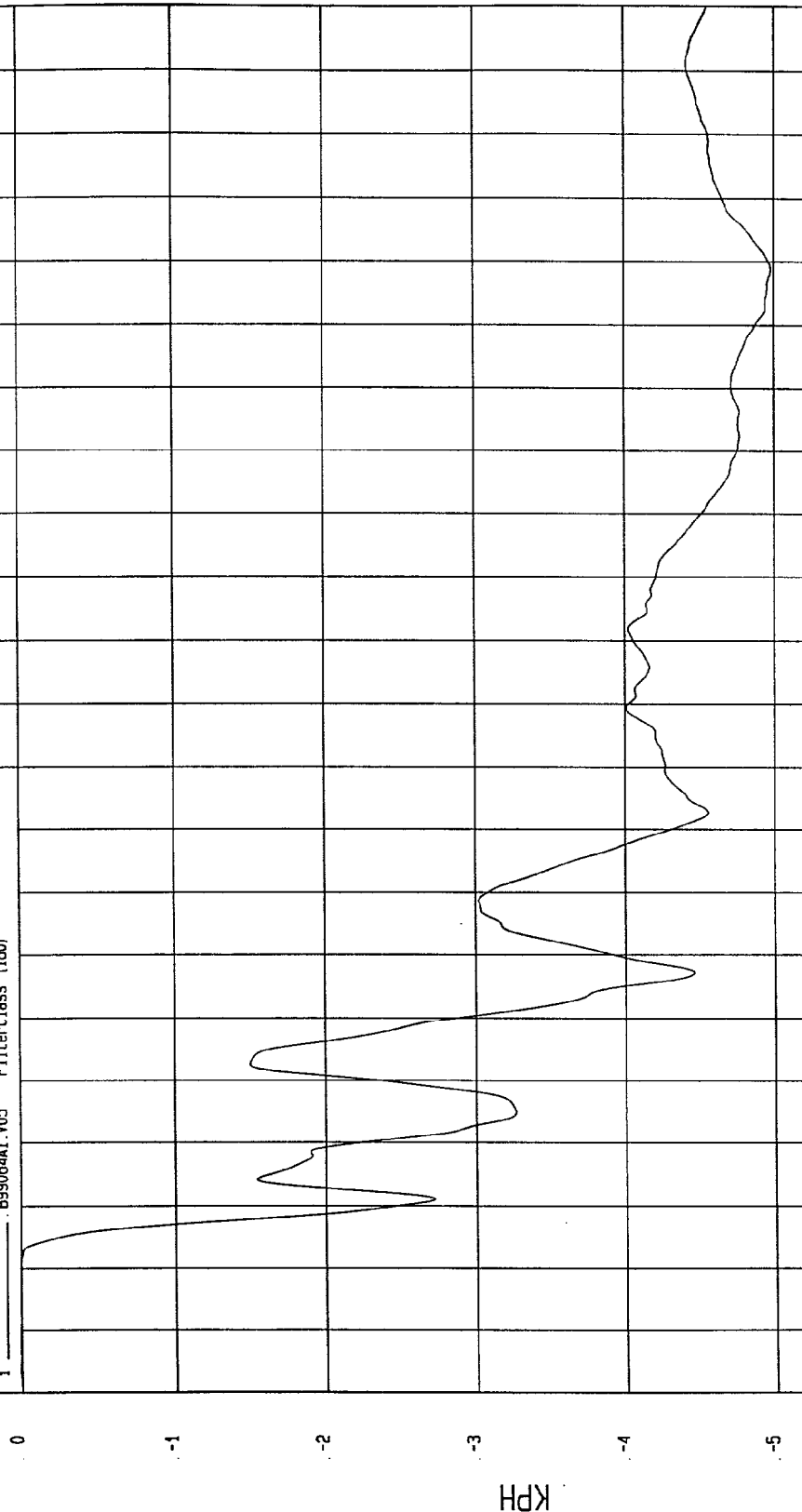
COMPONENT: 2000 NISSAN FRONTIER (CY5200)

Maximum = 8.86E-03 KPH at -16 msec

Minimum = -4.98 KPH at 159 msec

VEHICLE CG X VELOCITY

1 899064AI.V05 FilterClass (180)



NGA Research
09-21-1999 13:47

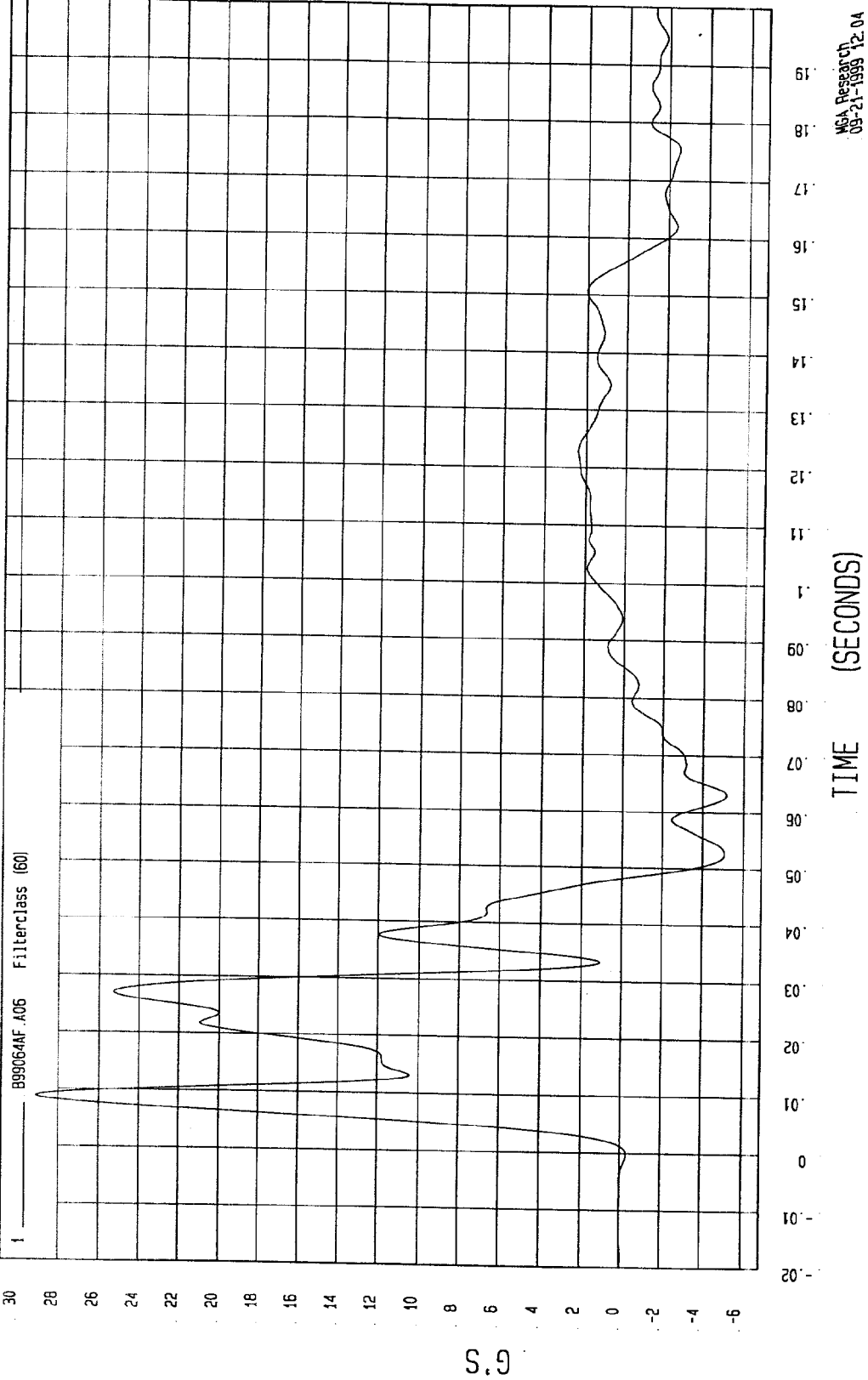
TIME Seconds

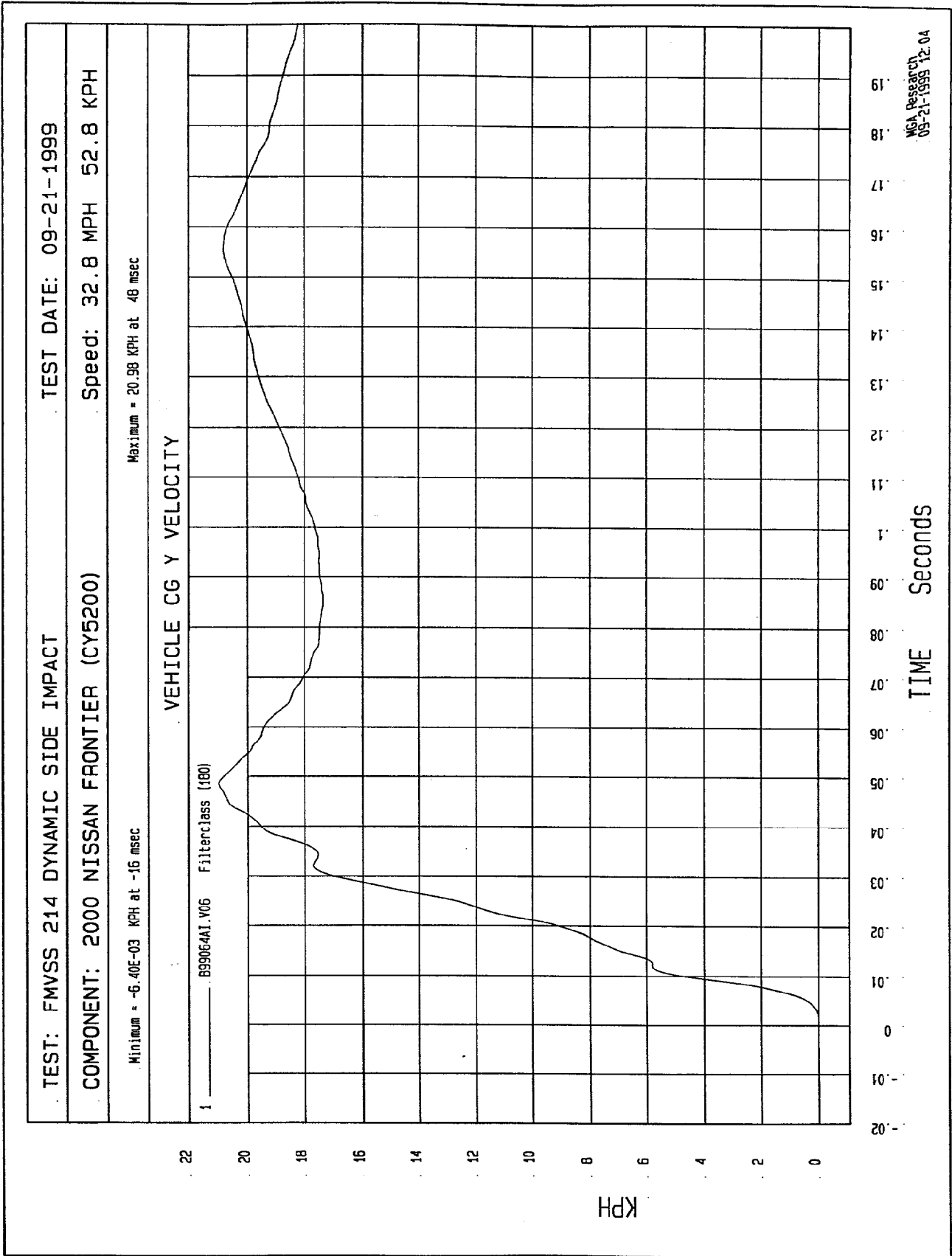
TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST DATE: 09-21-1999

COMPONENT: 2000 NISSAN FRONTIER (CY5200) Speed: 32.8 MPH 52.8 KPH

Minimum = -5.17 G'S at 63 msec Maximum = 29.07 G'S at 9 msec

VEHICLE CG Y ACCELERATION





TEST: FMVSS 214 DYNAMIC SIDE IMPACT

TEST DATE: 09-21-1999

Speed: 32.8 MPH 52.8 KPH

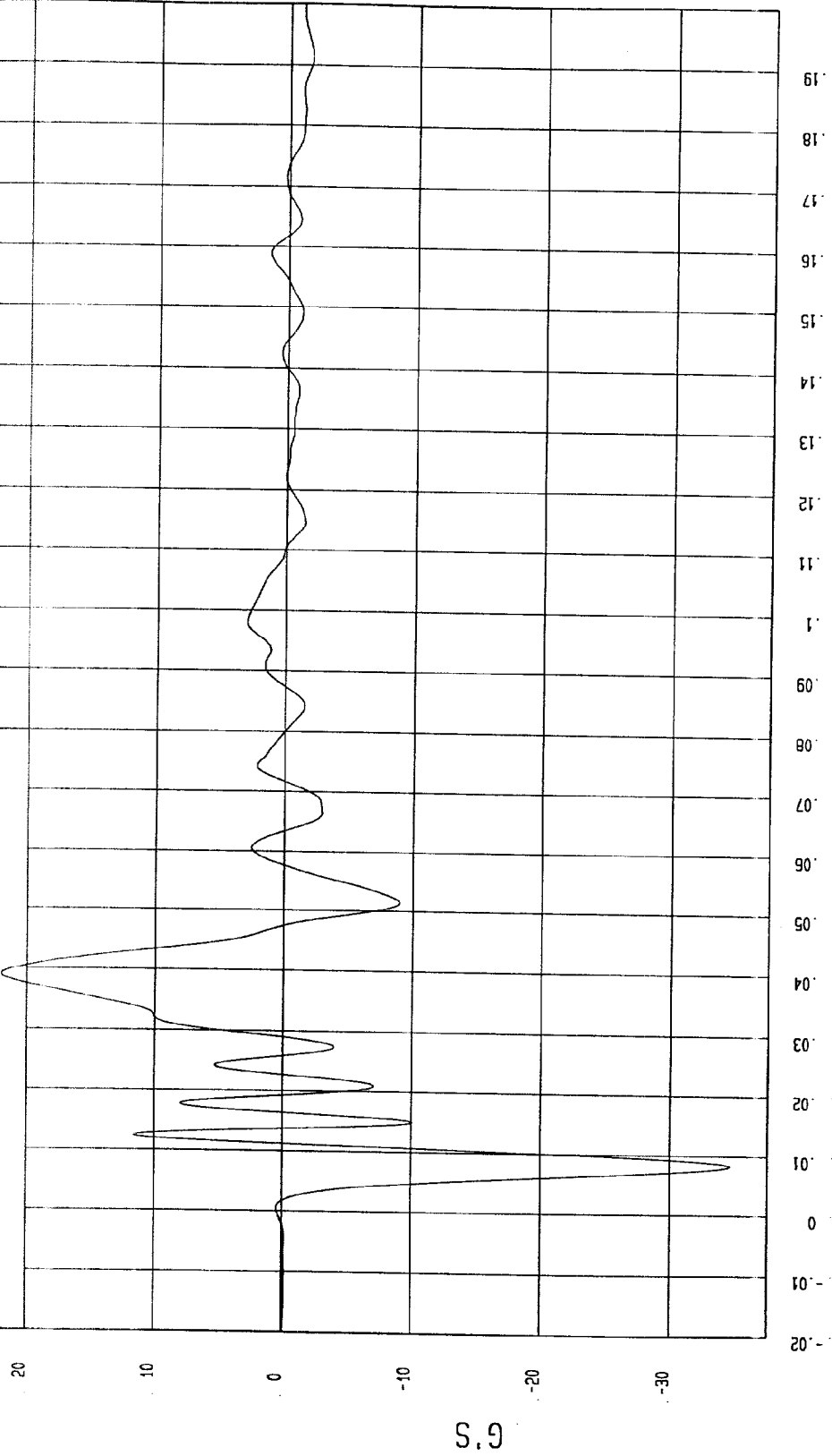
COMPONENT: 2000 NISSAN FRONTIER (CY5200)

Maximum = 21.97 G'S at 39 msec

Minimum = -34.59 G'S at 8 msec

VEHICLE CG Z ACCELERATION

1 899064AF.A07 Filterclass (60)



MCA Research
09-21-1999 12:04

TEST: FMVSS 214 DYNAMIC SIDE IMPACT

TEST DATE: 09-21-1999

Speed: 32.8 MPH 52.8 KPH

COMPONENT: 2000 NISSAN FRONTIER (CY5200)

Maximum = 2.37 KPH at 49 msec

Minimum = -6.9 KPH at 11 msec

VEHICLE CG Z VELOCITY

1 _____ 899064A1.V07 Filterclass (180)



WGA Research
09-21-1999 12:05

TEST: FMVSS 214 DYNAMIC SIDE IMPACT

TEST DATE: 09-21-1999

Speed: 32.8 MPH 52.8 KPH

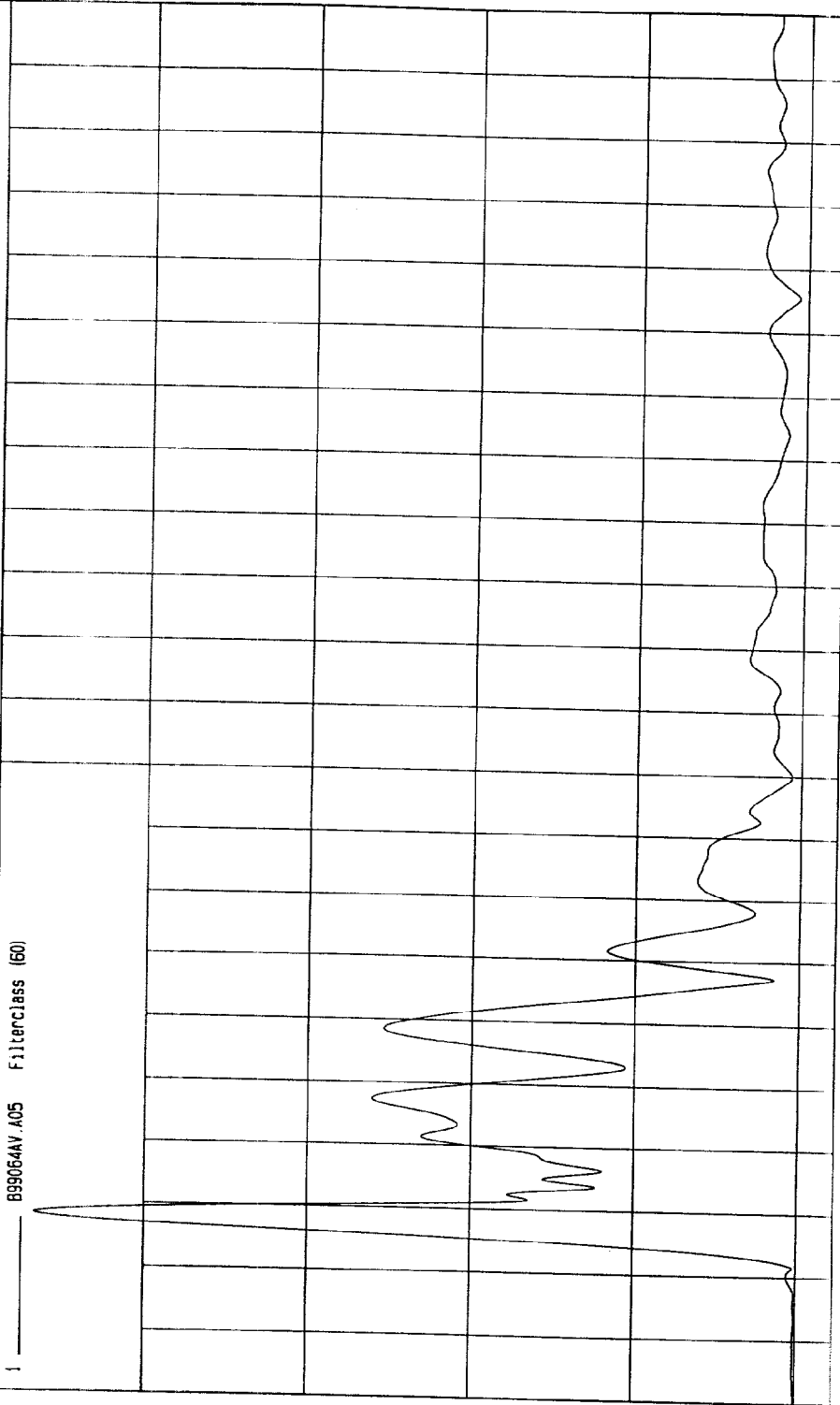
COMPONENT: 2000 NISSAN FRONTIER (CY5200)

Minimum = 9.32E-02 G'S at -20 msec

Maximum = 46.74 G'S at 8 msec

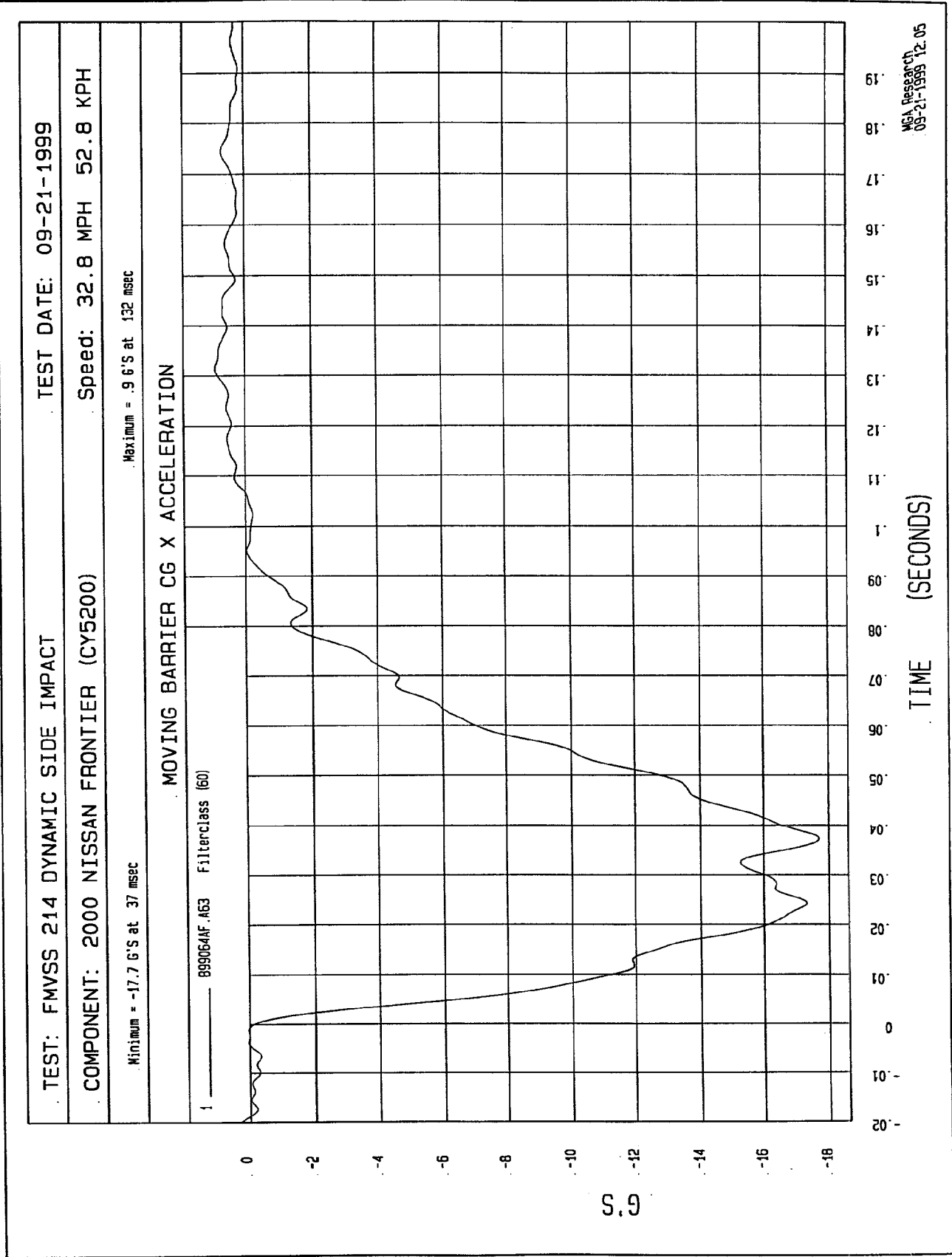
VEHICLE CG RESULTANT ACCELERATION

1 — B99064V.A05 Filterclass (60)



TIME (SECONDS)

W&A Research
09-21-1999 12:05



TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST DATE: 09-21-1999

COMPONENT: 2000 NISSAN FRONTIER (CY5200) Speed: 32.8 MPH 52.8 KPH

Minimum = 16.25 KPH at 108 msec Maximum = 47.02 KPH at -18 msec

MOVING BARRIER CG X VELOCITY

1 — B99064A1.V63 Filterclass (180)

KPH

48
46
44
42
40
38
36
34
32
30
28
26
24
22
20
18
16

TIME Seconds

-0.02 0 .01 .02 .03 .04 .05 .06 .07 .08 .09 .10 .11 .12 .13 .14 .15 .16 .17 .18 .19

TEST: FMVSS 214 DYNAMIC SIDE IMPACT

TEST DATE: 09-21-1999

Speed: 32.8 MPH 52.8 KPH

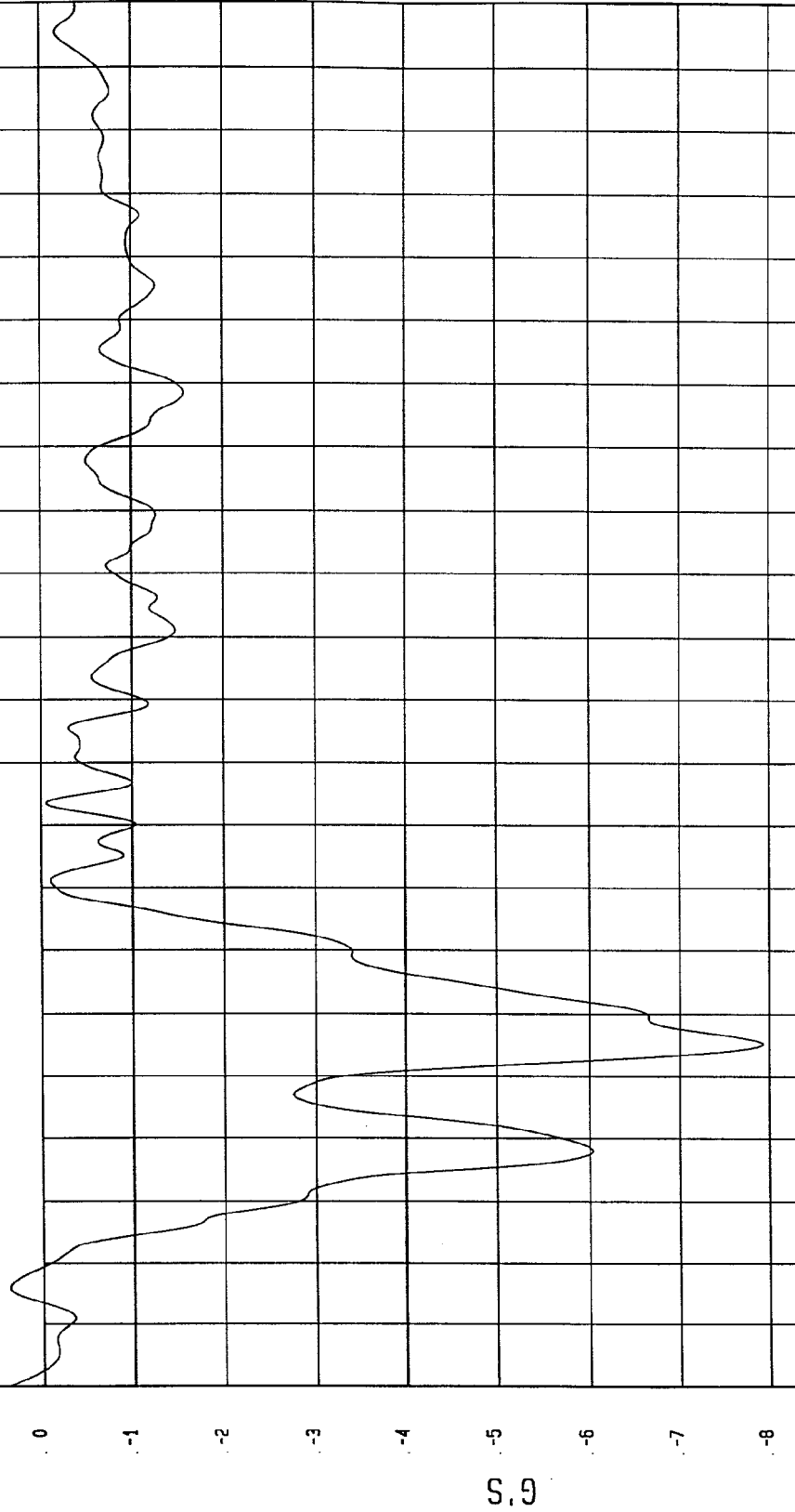
COMPONENT: 2000 NISSAN FRONTIER (CY5200)

Maximum = .38 G'S at -20 msec

Minimum = -7.93 G'S at 35 msec

MOVING BARRIER CG Y ACCELERATION

1 ——— B99064AF.A64 Filterclass (60)



MCA Research
09-21-1999 12:05

TEST: FMVSS 214 DYNAMIC SIDE IMPACT

TEST DATE: 09-21-1999

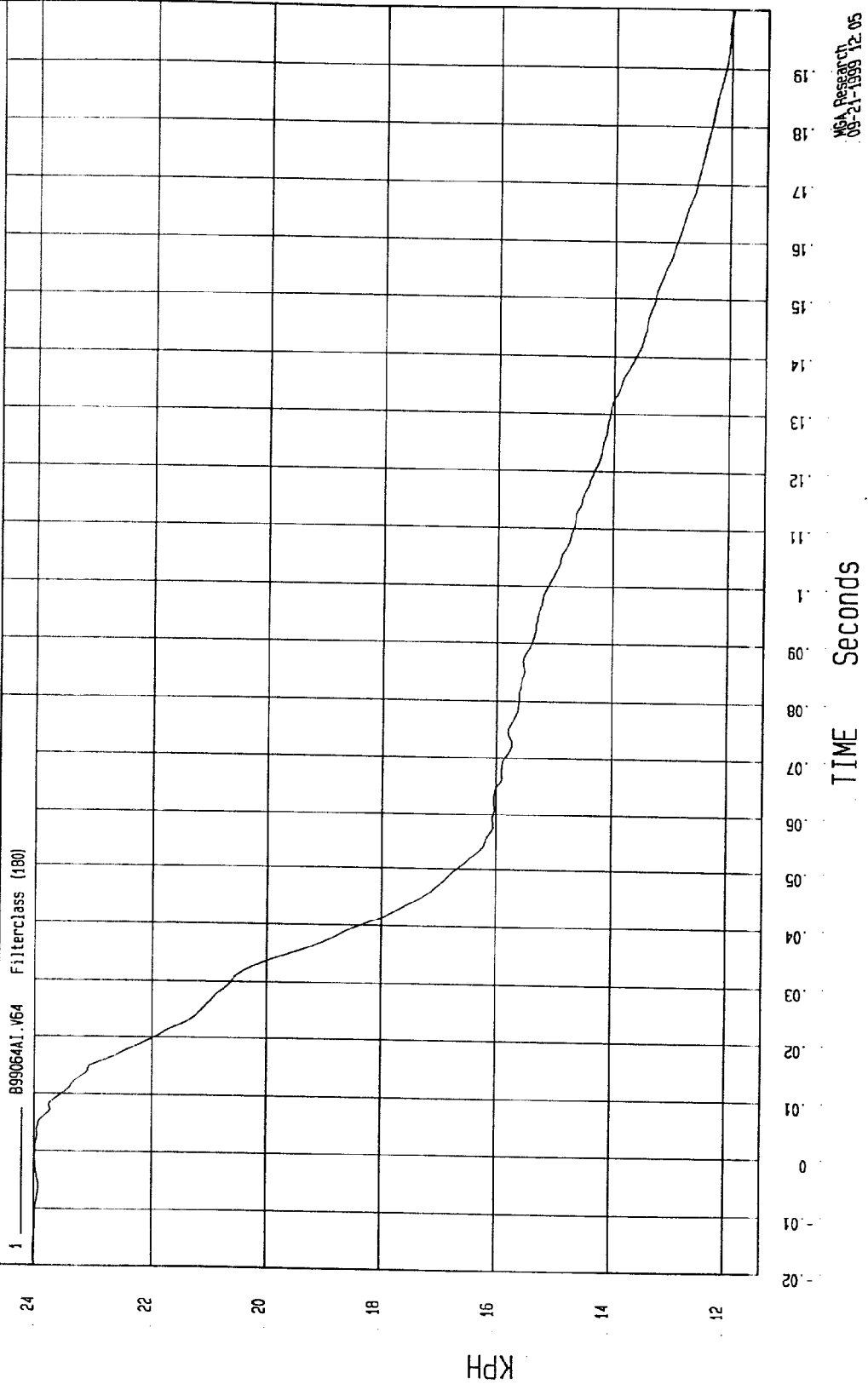
Speed: 32.8 MPH 52.8 KPH

COMPONENT: 2000 NISSAN FRONTIER (CY5200)

Minimum = 11.97 KPH at 200 msec

Maximum = 24.01 KPH at -19 msec

MOVING BARRIER CG Y VELOCITY



TEST: FMVSS 214 DYNAMIC SIDE IMPACT

TEST DATE: 09-21-1999

Speed: 32.8 MPH 52.8 KPH

COMPONENT: 2000 NISSAN FRONTIER (CY5200)

Maximum = 17.05 G'S at 78 msec

Minimum = -19.79 G'S at 30 msec

MOVING BARRIER CG Z ACCELERATION

1 B99064AF.A65 Filterclass (60)

10

0

-10

-20

G.S

19

18

17

16

15

14

13

12

11

10

09

08

07

06

05

04

03

02

01

0

-01

-02

TIME (SECONDS)

MOA Research
09-21-1999 12:05

TEST: FMVSS 214 DYNAMIC SIDE IMPACT

TEST DATE: 09-21-1999

Speed: 32.8 MPH 52.8 KPH

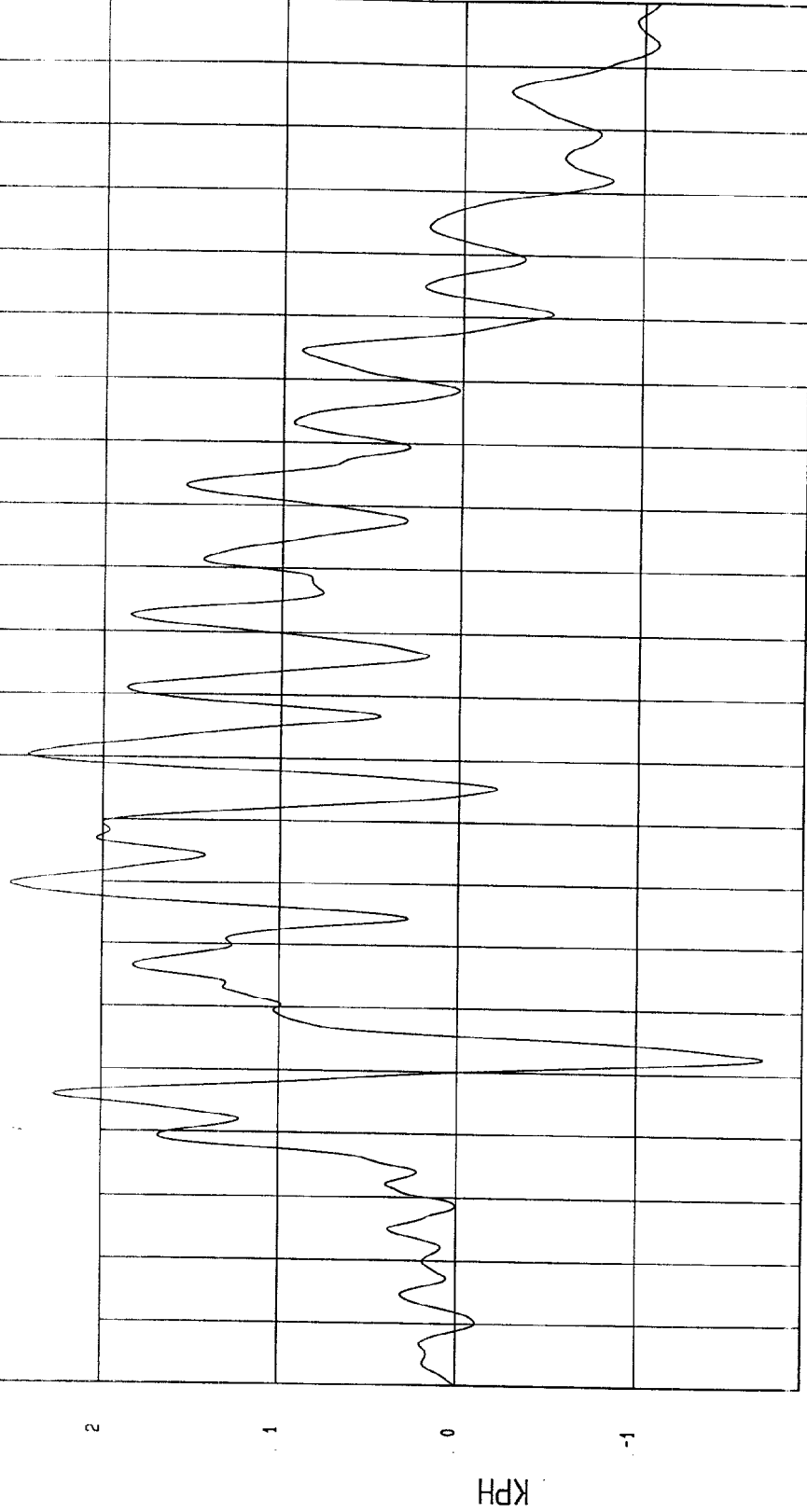
COMPONENT: 2000 NISSAN FRONTIER (CY5200)

Minimum = -1.71 KPH at 32 msec

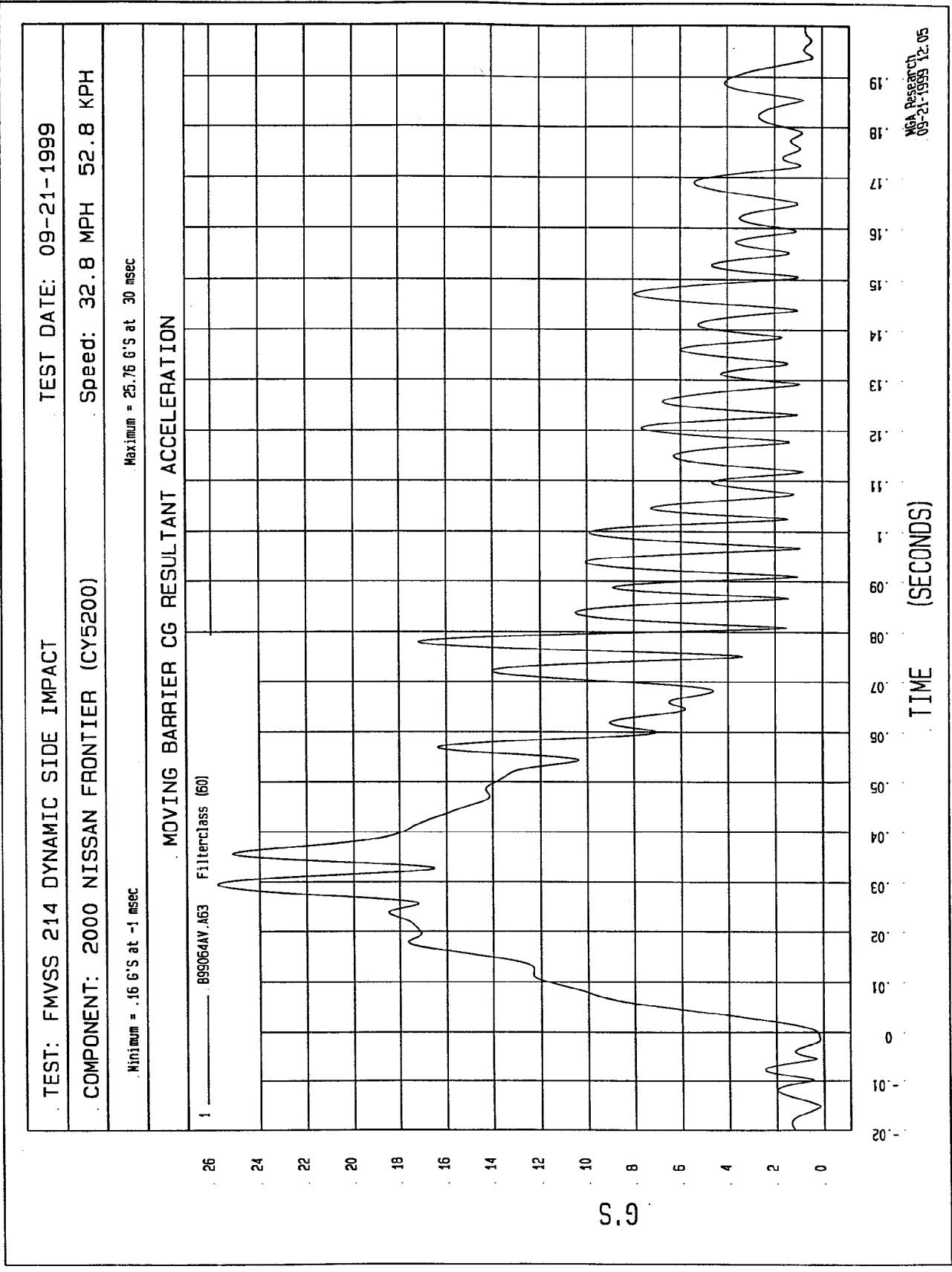
Maximum = 2.52 KPH at 60 msec

MOVING BARRIER CG Z VELOCITY

1 ——— B99064A1.VB5 Filterclass (180)



WCA Research
09-21-1999 12:05



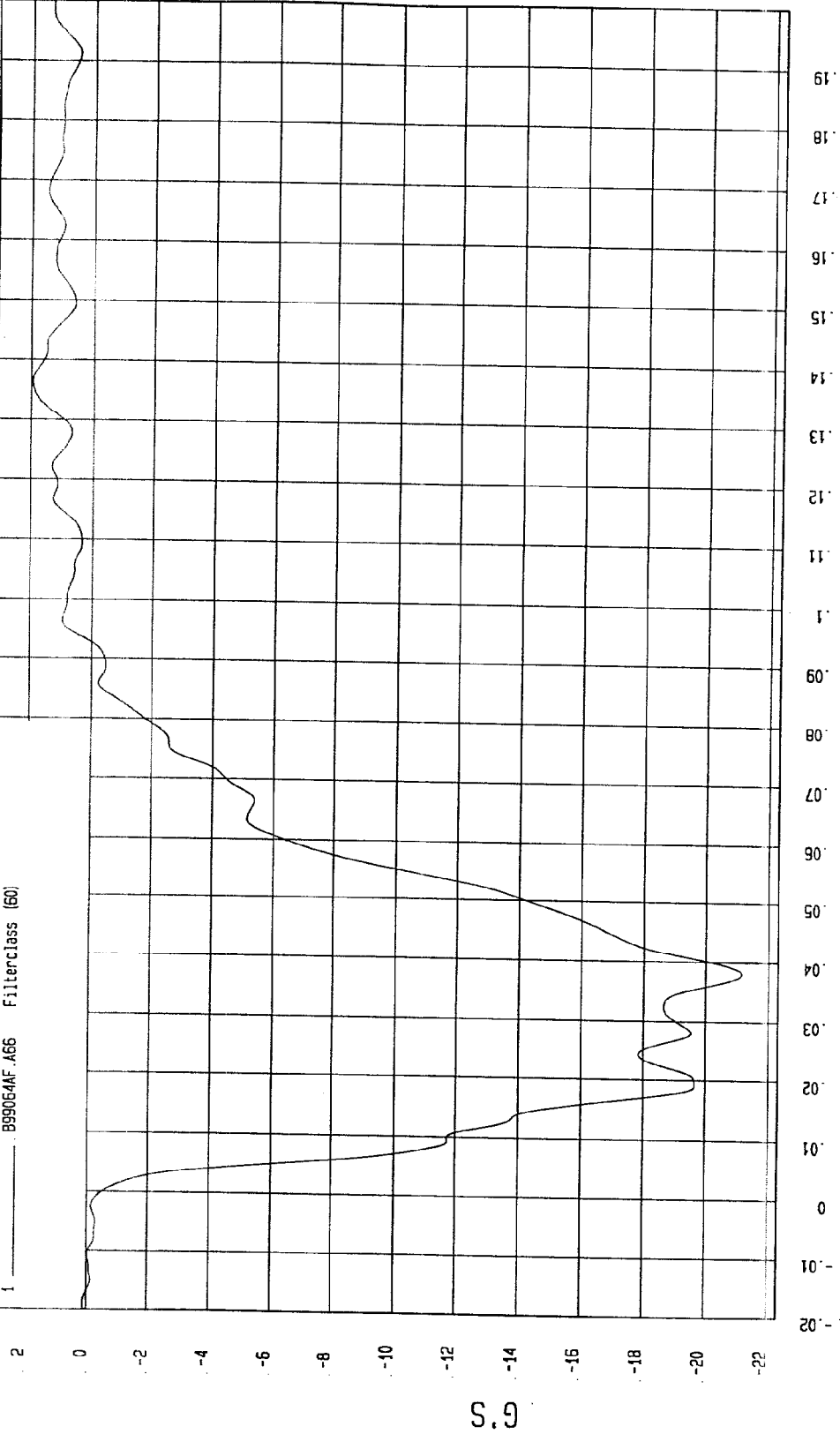
TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST DATE: 09-21-1999

COMPONENT: 2000 NISSAN FRONTIER (CY5200) Speed: 32.8 MPH 52.8 KPH

Minimum = -21.15 G'S at 38 msec Maximum = 1.95 G'S at 136 msec

MOVING BARRIER REAR AXLE X ACCELERATION

1 B99064AF.A66 FilterClass (60)



TEST: FMVSS 214 DYNAMIC SIDE IMPACT

TEST DATE: 09-21-1999

Speed: 32.8 MPH 52.8 KPH

COMPONENT: 2000 NISSAN FRONTIER (CY5200)

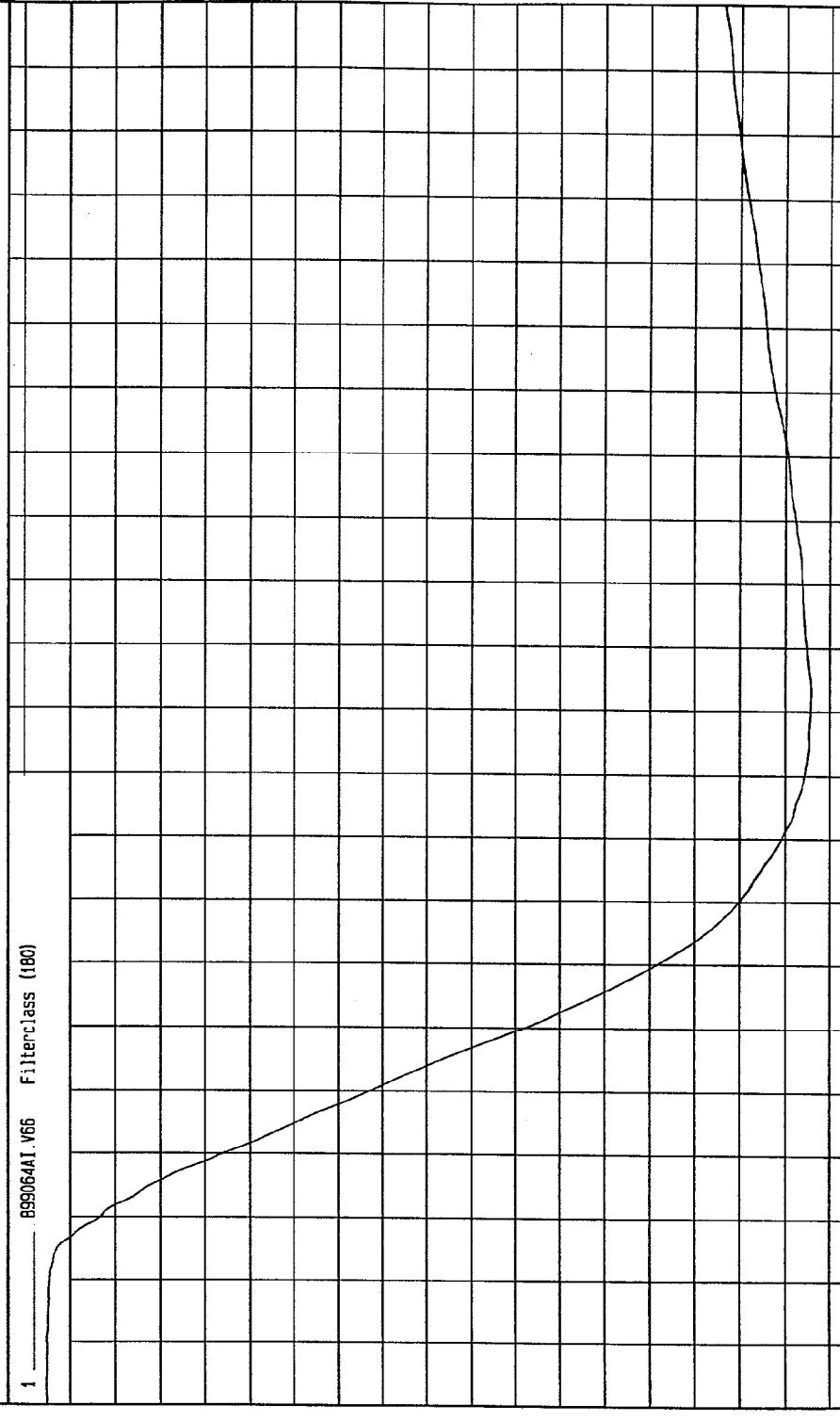
Maximum = 47.02 KPH at ~16 msec

Minimum = 12.84 KPH at 93 msec

MOVING BARRIER REAR AXLE X VELOCITY

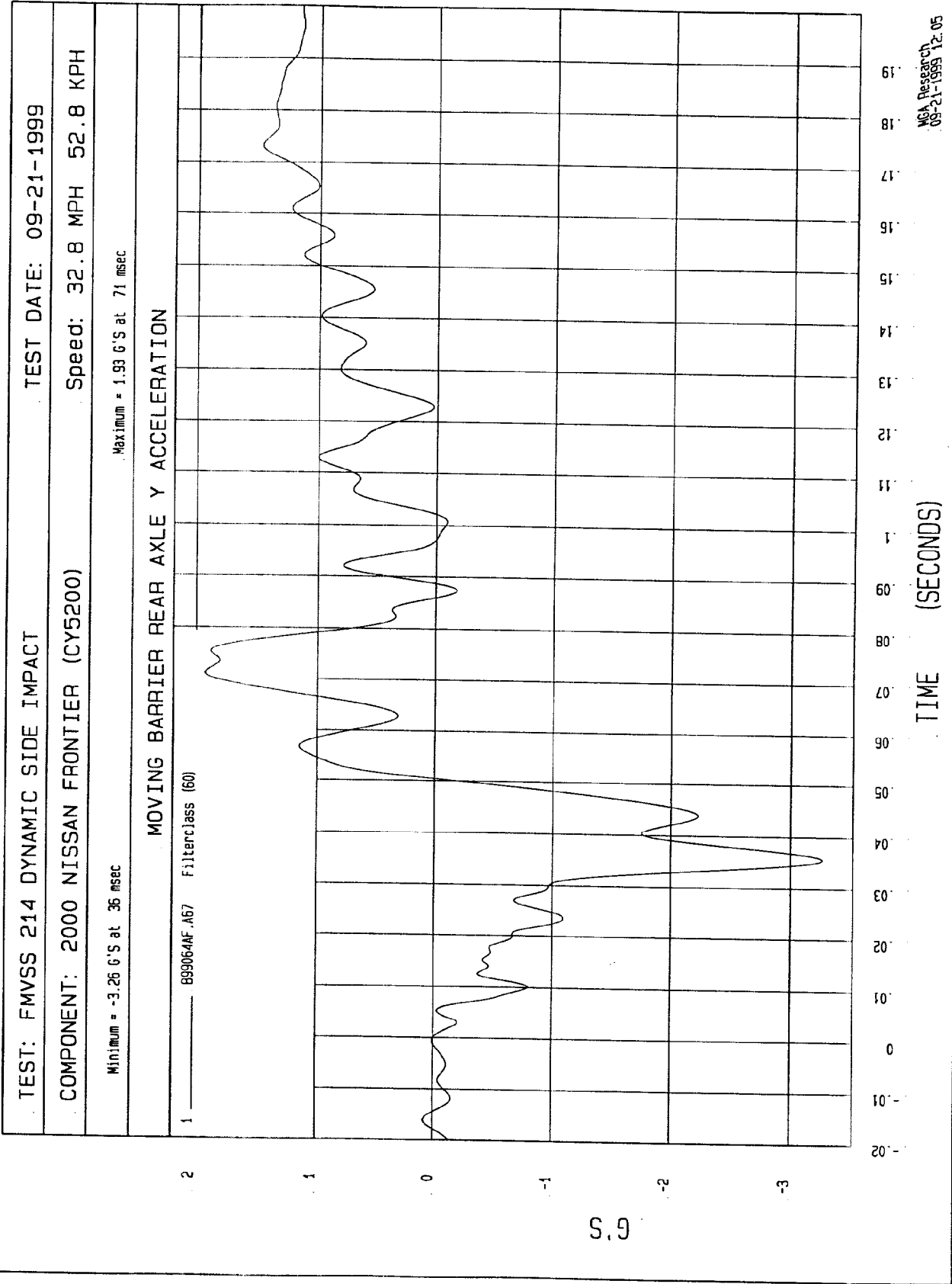
1 899064A1.V66 FilterClass (160)

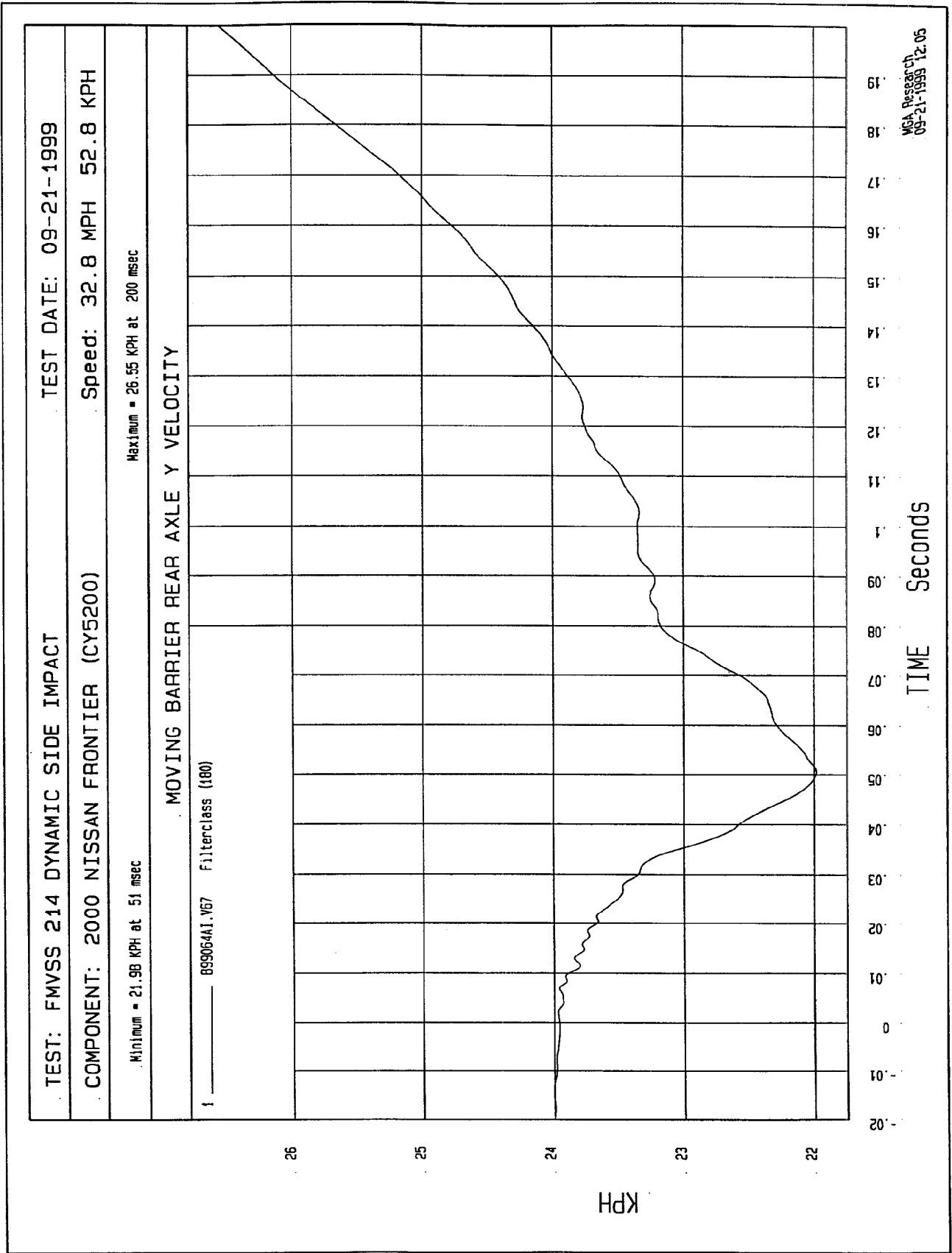
KPH



TIME Seconds

MECA Research
09-21-1999 12:05





TEST: FMVSS 214 DYNAMIC SIDE IMPACT

TEST DATE: 09-21-1999

Speed: 32.8 MPH 52.8 KPH

COMPONENT: 2000 NISSAN FRONTIER (CY5200)

Maximum = 7.75E-02 VOLTS at 61 msec

Minimum = -4.03 VOLTS at 0 msec

LEFT BARRIER CONTACT

1 ——— B990640T.071 Filter: class (1000)

0

-1

-2

-3

-4

VOLTS

-0.02

-0.01

0

.01

.02

.03

.04

.05

.06

.07

.08

.09

.1

.11

.12

.13

.14

.15

.16

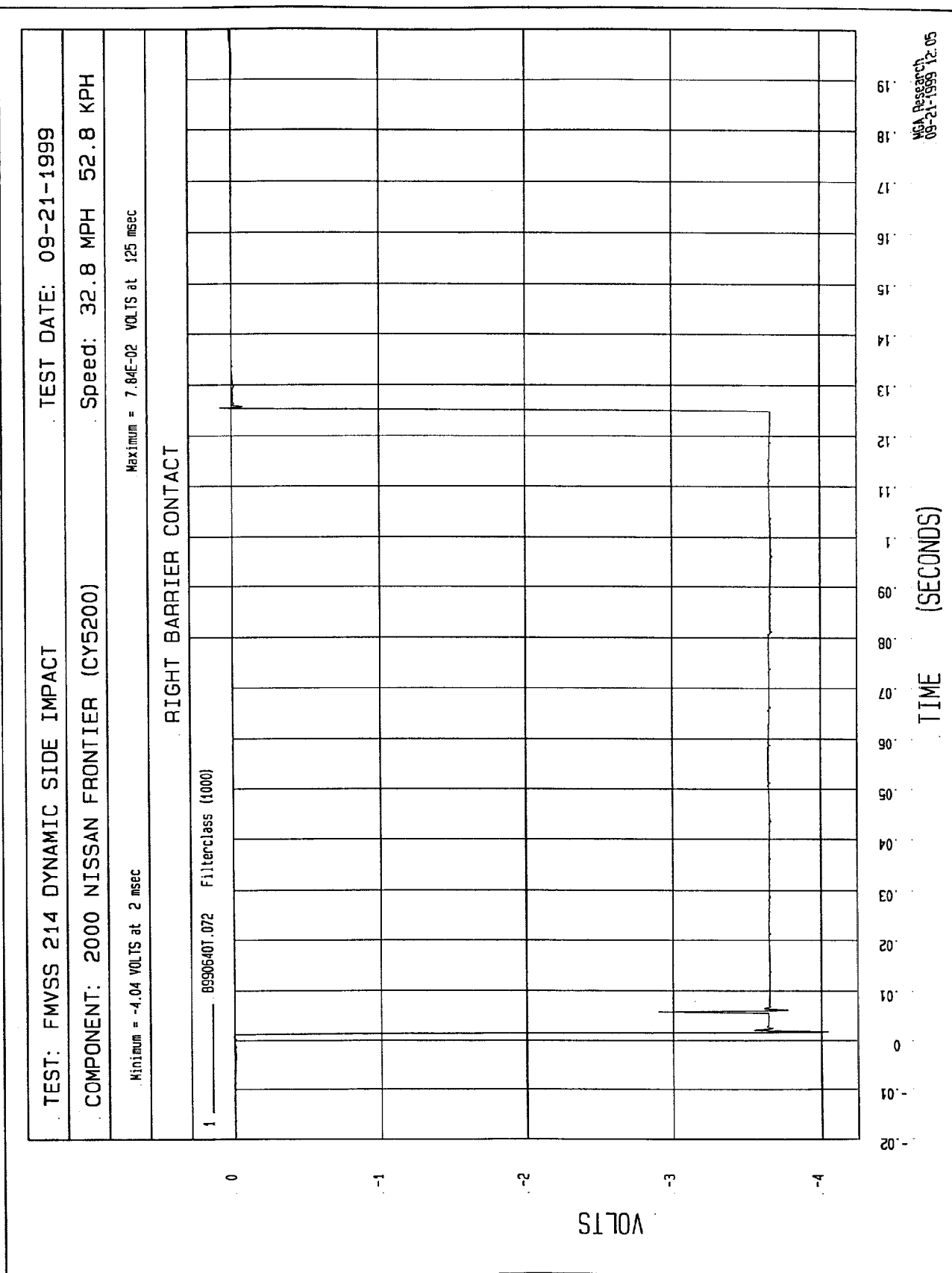
.17

.18

.19

TIME (SECONDS)

NSA Research
09-21-1999 12.05



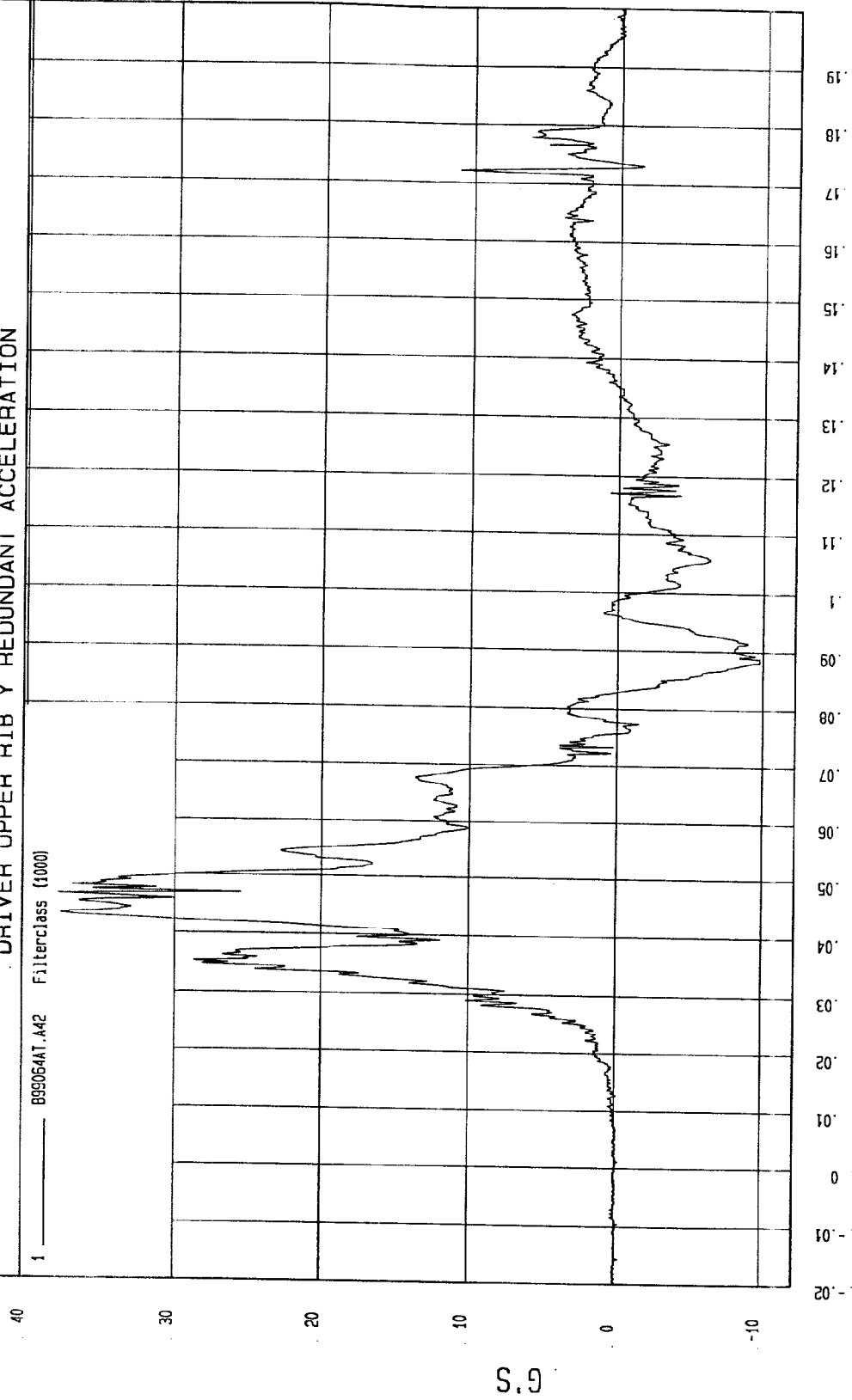
TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST DATE: 09-21-1999

COMPONENT: 2000 NISSAN FRONTIER (CY5200) Speed: 32.8 MPH 52.8 KPH

Minimum = -9.78 G'S at 88 msec Maximum = 37.86 G'S at 47 msec

DRIVER UPPER RIB Y REDUNDANT ACCELERATION

1 B99064AT.A42 Filterclass (1000)



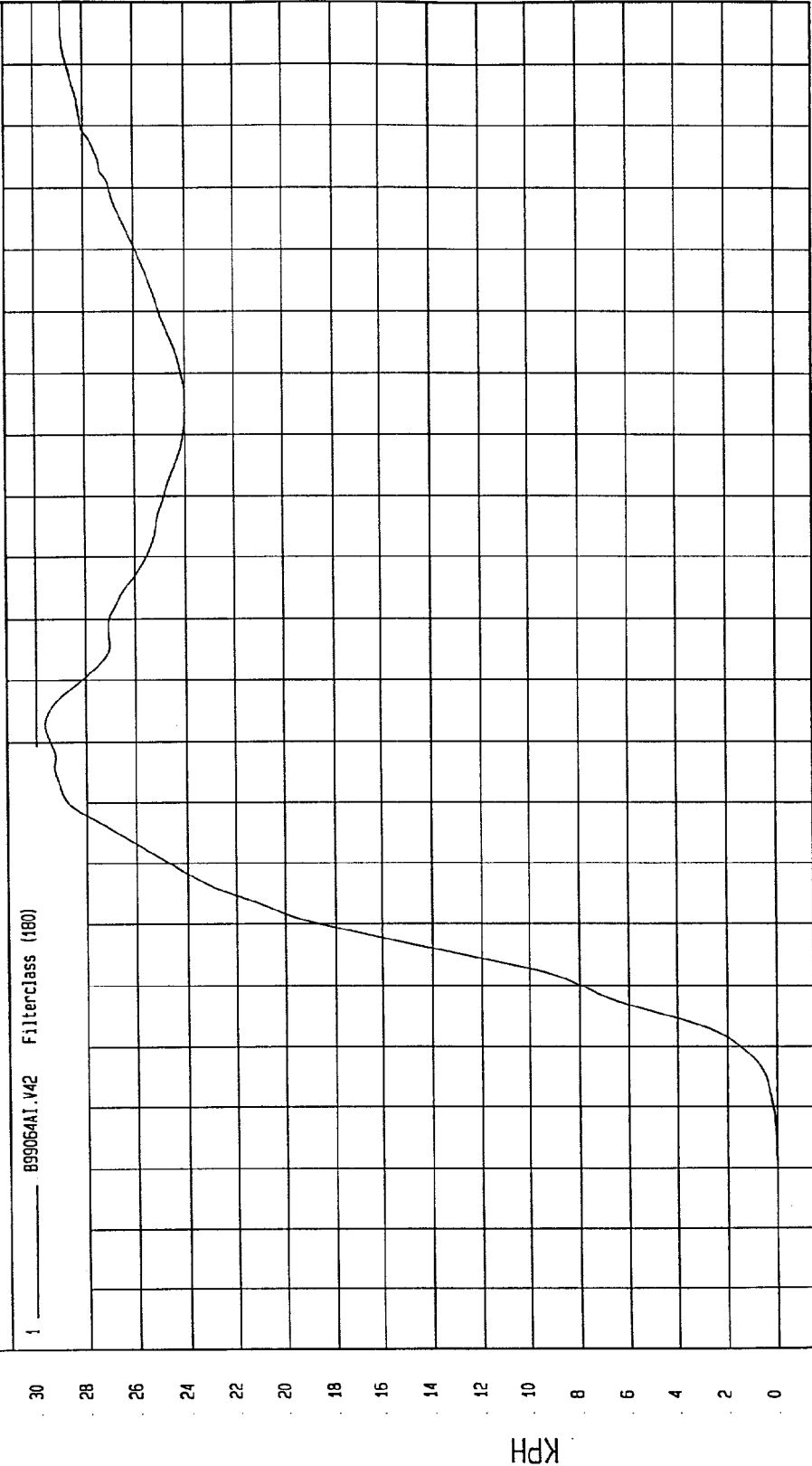
NSA Research
09-21-1999 12:06

TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST DATE: 09-21-1999

COMPONENT: 2000 NISSAN FRONTIER (CY5200) Speed: 32.8 MPH 52.8 KPH

Minimum = -.01 KPH at -9 msec Maximum = 29.65 KPH at 83 msec

DRIVER UPPER RIB Y REDUNDANT VELOCITY



TIME Seconds

MSA Research
09-21-1999 12:06

TEST: FMVSS 214 DYNAMIC SIDE IMPACT

TEST DATE: 09-21-1999

Speed: 32.8 MPH 52.8 KPH

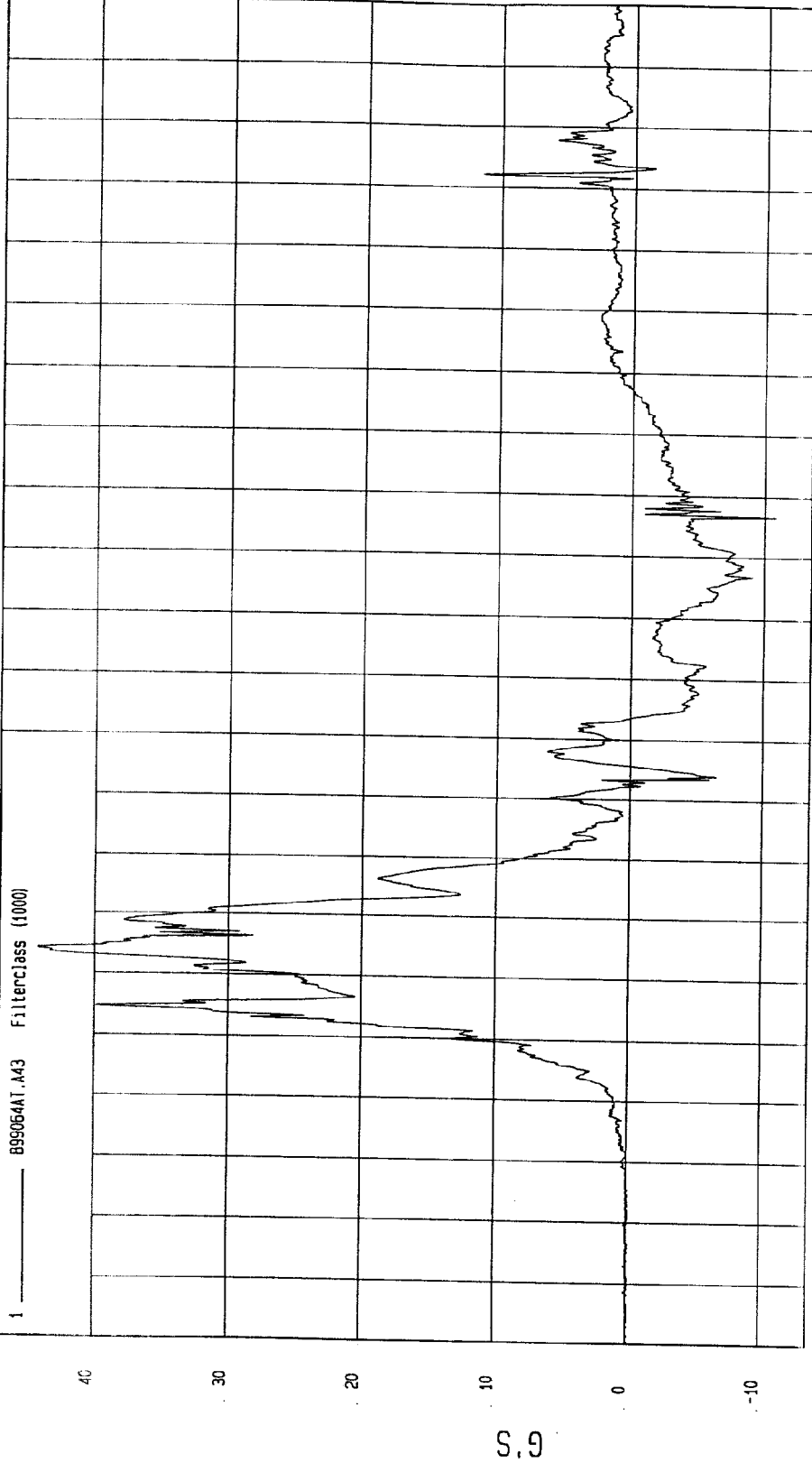
COMPONENT: 2000 NISSAN FRONTIER (CY5200)

Maximum = 44.19 G'S at 44 msec

Minimum = -10.83 G'S at 117 msec

DRIVER LOWER RIB Y REDUNDANT ACCELERATION

1 ——— 899064AT.A43 FilterClass (1000)



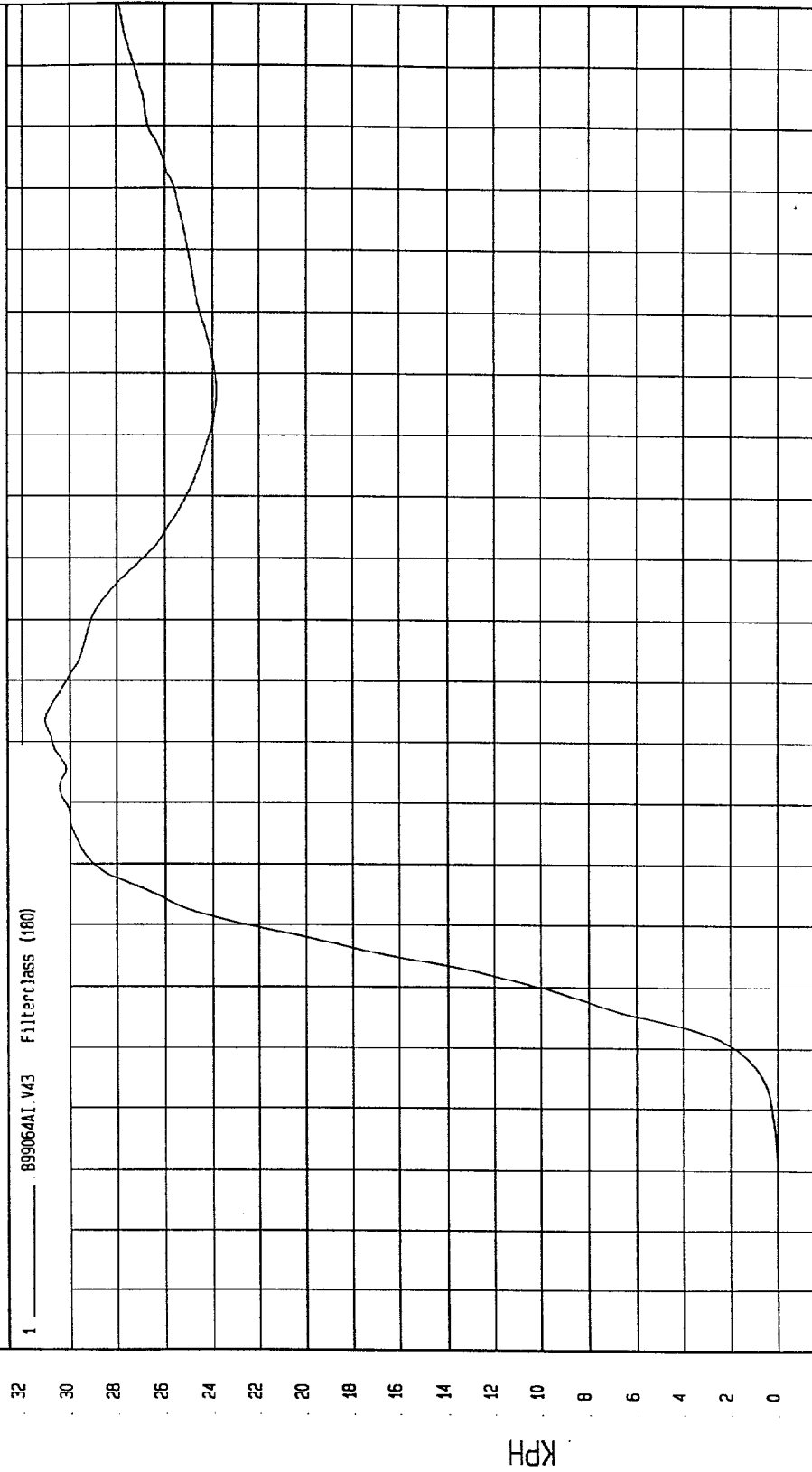
NSA Research
09-21-1999 12:06

TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST DATE: 09-21-1999

COMPONENT: 2000 NISSAN FRONTIER (CY5200) Speed: 32.8 MPH 52.8 KPH

Minimum = -1.02E-03 KPH at -9 msec Maximum = 31.04 KPH at 84 msec

DRIVER LOWER RIB Y REDUNDANT VELOCITY



M&A Research
09-21-1999 12:06

TEST: FMVSS 214 DYNAMIC SIDE IMPACT

TEST DATE: 09-21-1999

Speed: 32.8 MPH 52.8 KPH

COMPONENT: 2000 NISSAN FRONTIER (CY5200)

Minimum = -10.51 G'S at 108 msec

Maximum = 56.93 G'S at 43 msec

DRIVER LOWER SPINE Y REDUNDANT ACCELERATION

1 ——— B99064AF.A44 Filterclass (180)

60

50

40

30

20

10

0

-10

G.S

-02

-01

0

01

02

03

04

05

06

07

08

09

1

11

12

13

14

15

16

17

18

19

TIME (SECONDS)

MCA Research
09-21-1999 12:06

TEST: FMVSS 214 DYNAMIC SIDE IMPACT

TEST DATE: 09-21-1999

Speed: 32.8 MPH 52.8 KPH

COMPONENT: 2000 NISSAN FRONTIER (CY5200)

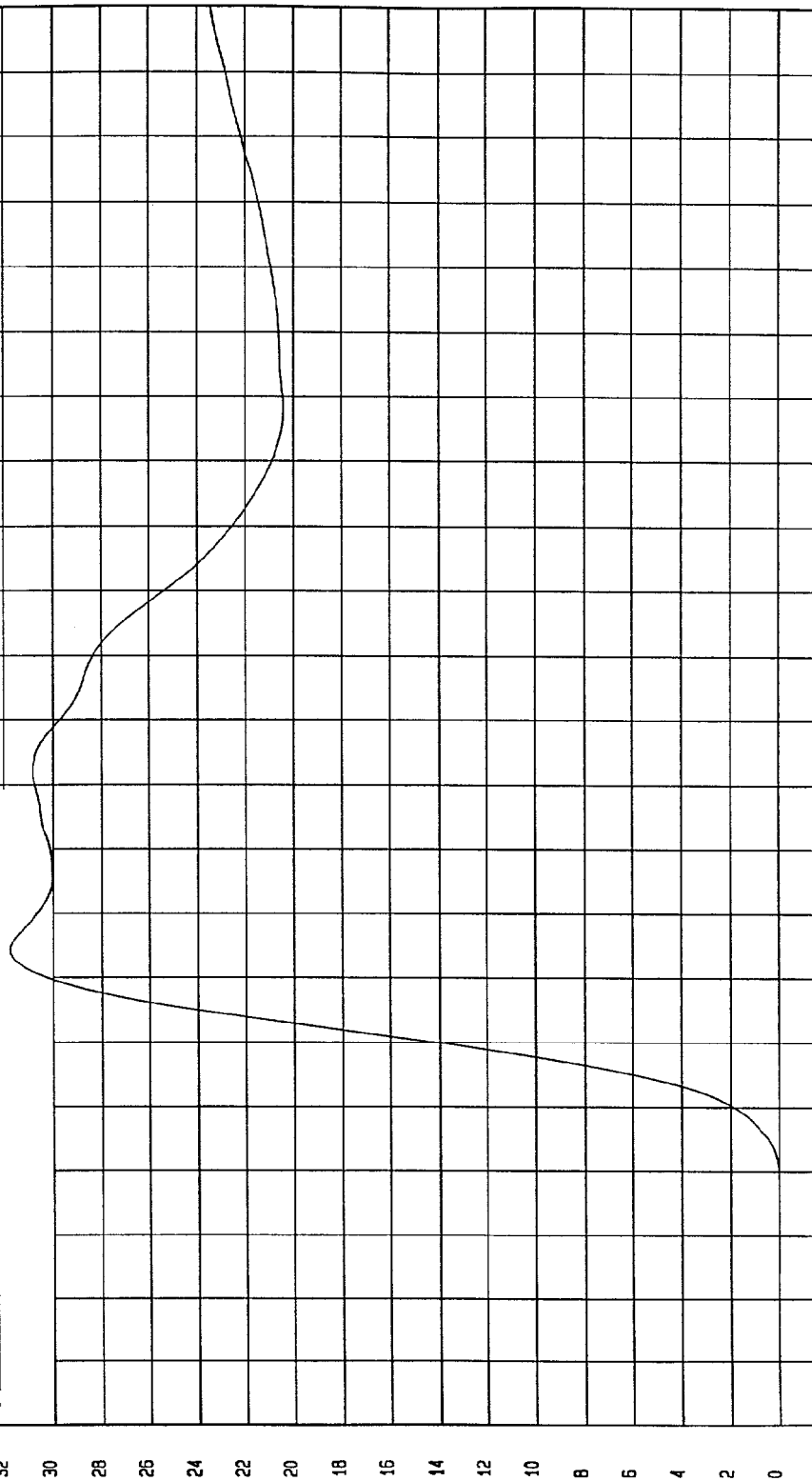
Maximum = 31.76 KPH at 54 msec

Minimum = -1.44E-02 KPH at 16 msec

DRIVER LOWER SPINE Y REDUNDANT VELOCITY

1 B99054A1.V44 Filterclass (180)

KPH



MCA Research
09-21-1999 12:06

TIME Seconds

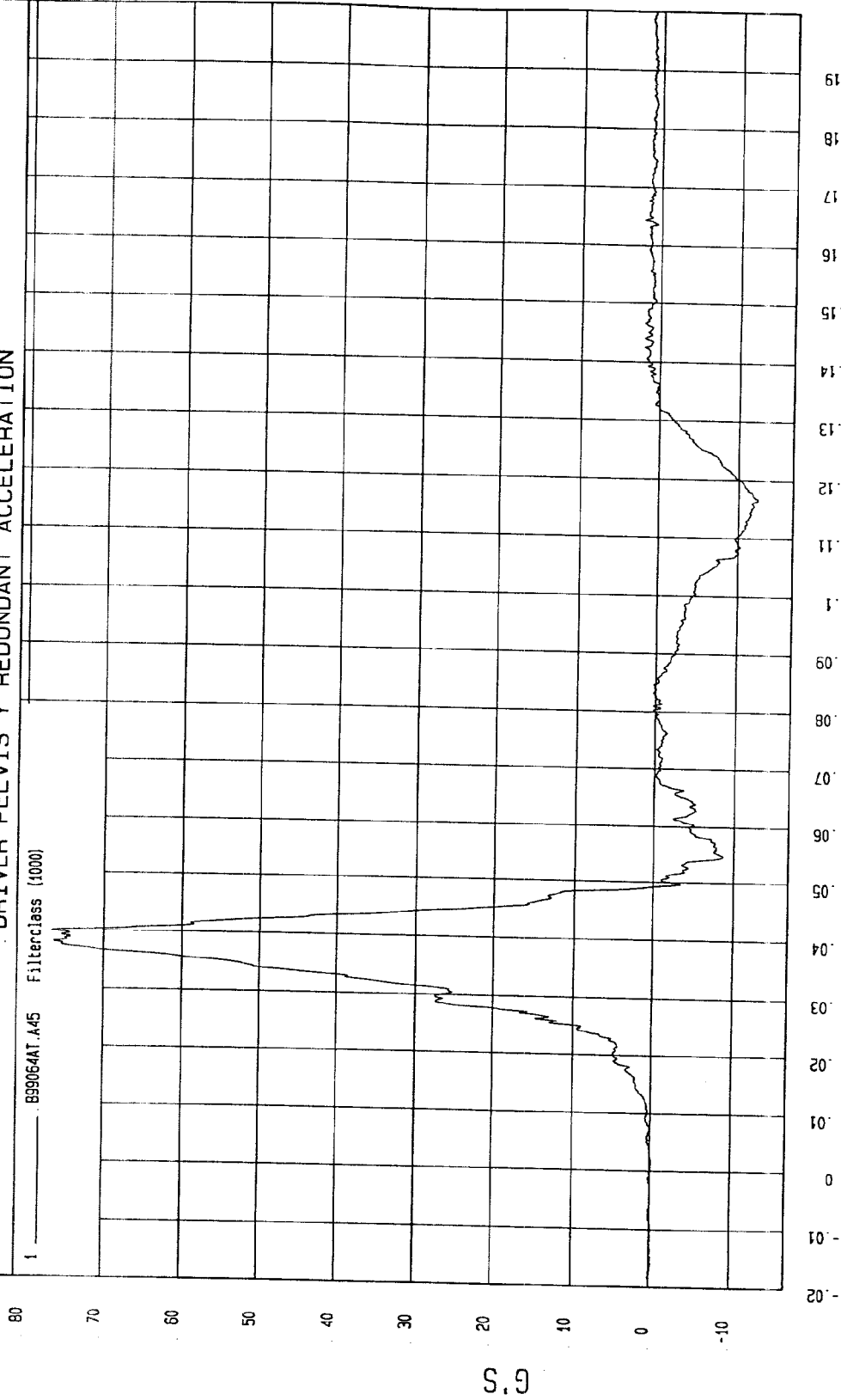
TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST DATE: 09-21-1999

COMPONENT: 2000 NISSAN FRONTIER (CY5200) Speed: 32.8 MPH 52.8 KPH

Minimum = -12.41 G'S at 116 msec Maximum = 76.7 G'S at 40 msec

DRIVER PELVIS Y REDUNDANT ACCELERATION

1 B99064AT.A45 Filterclass (1000)



MGA Research
09-21-1999 12:07

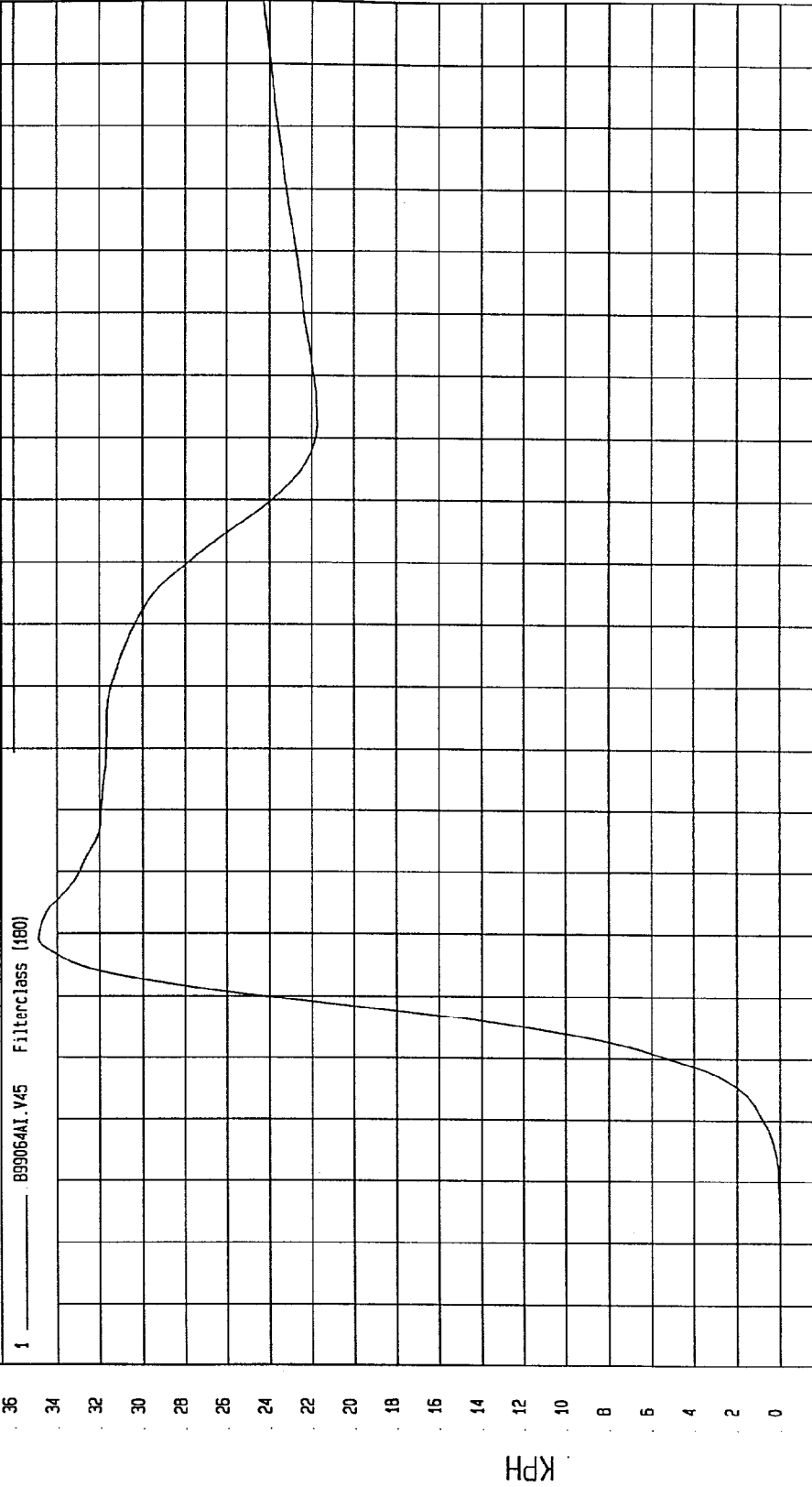
TIME (SECONDS)

TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST DATE: 09-21-1999

COMPONENT: 2000 NISSAN FRONTIER (CY5200) Speed: 32.8 MPH 52.8 KPH

Minimum = -1.70E-02 KPH at -9 msec Maximum = 34.87 KPH at 49 msec

DRIVER PELVIS Y REDUNDANT VELOCITY



WCA Research
09-21-1999 12:07

TIME Seconds

FINITE IMPULSE RESPONSE (FIR) FILTERED DATA

TEST: FMVSS 214 DYNAMIC SIDE IMPACT

TEST DATE: 09-21-1999

Speed: 32.8 MPH 52.8 KPH

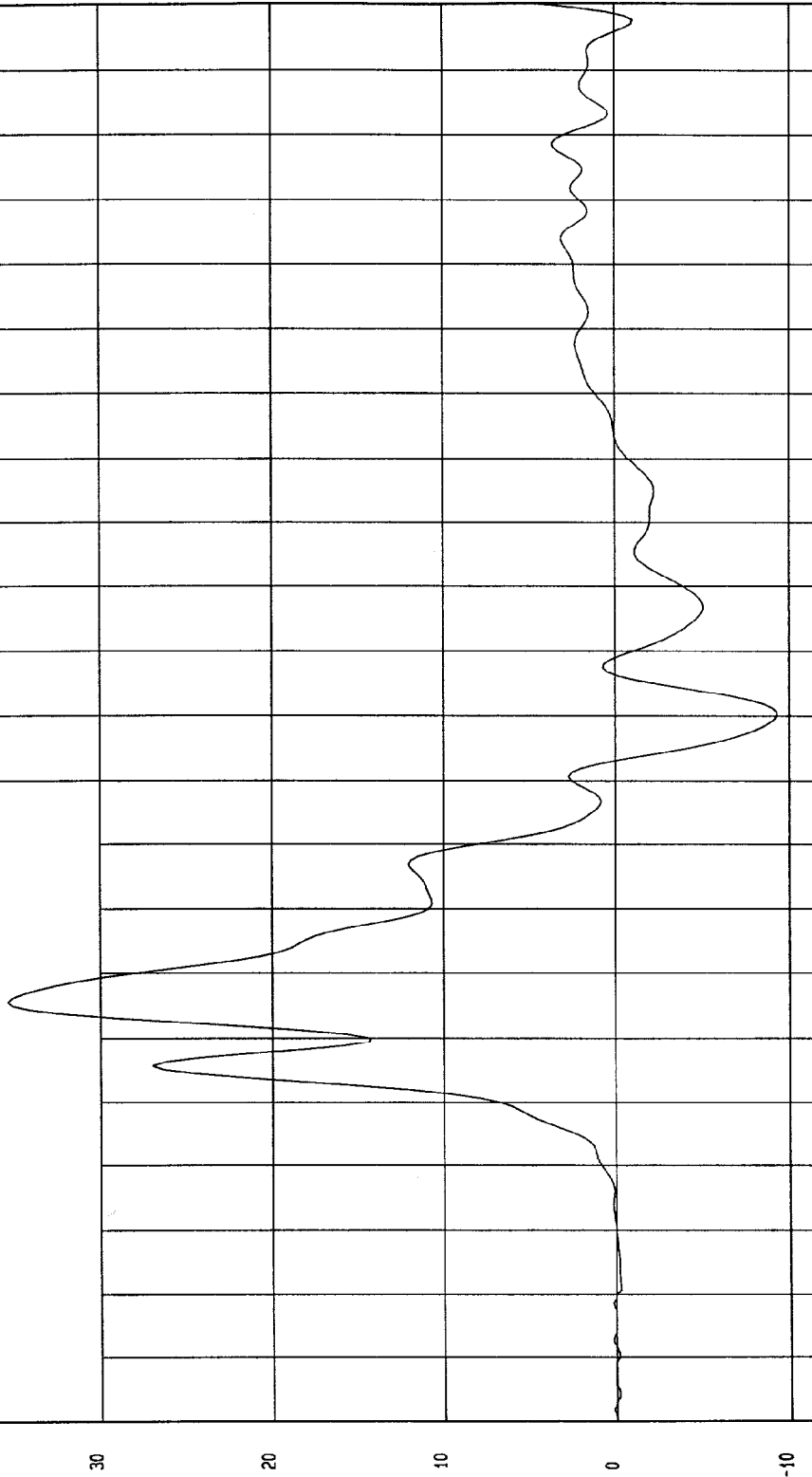
COMPONENT: 2000 NISSAN FRONTIER (CY5200)

Maximum = 35.39 G'S at 46 msec

Minimum = -9.28 G'S at 90 msec

DRIVER UPPER RIB Y ACCELERATION

1 ——— B99064F1.R15 Filterclass (FIR Filtered)



WCA Research
09-22-1999 11:27

TEST: FMVSS 214 DYNAMIC SIDE IMPACT

TEST DATE: 09-21-1999

Speed: 32.8 MPH 52.8 KPH

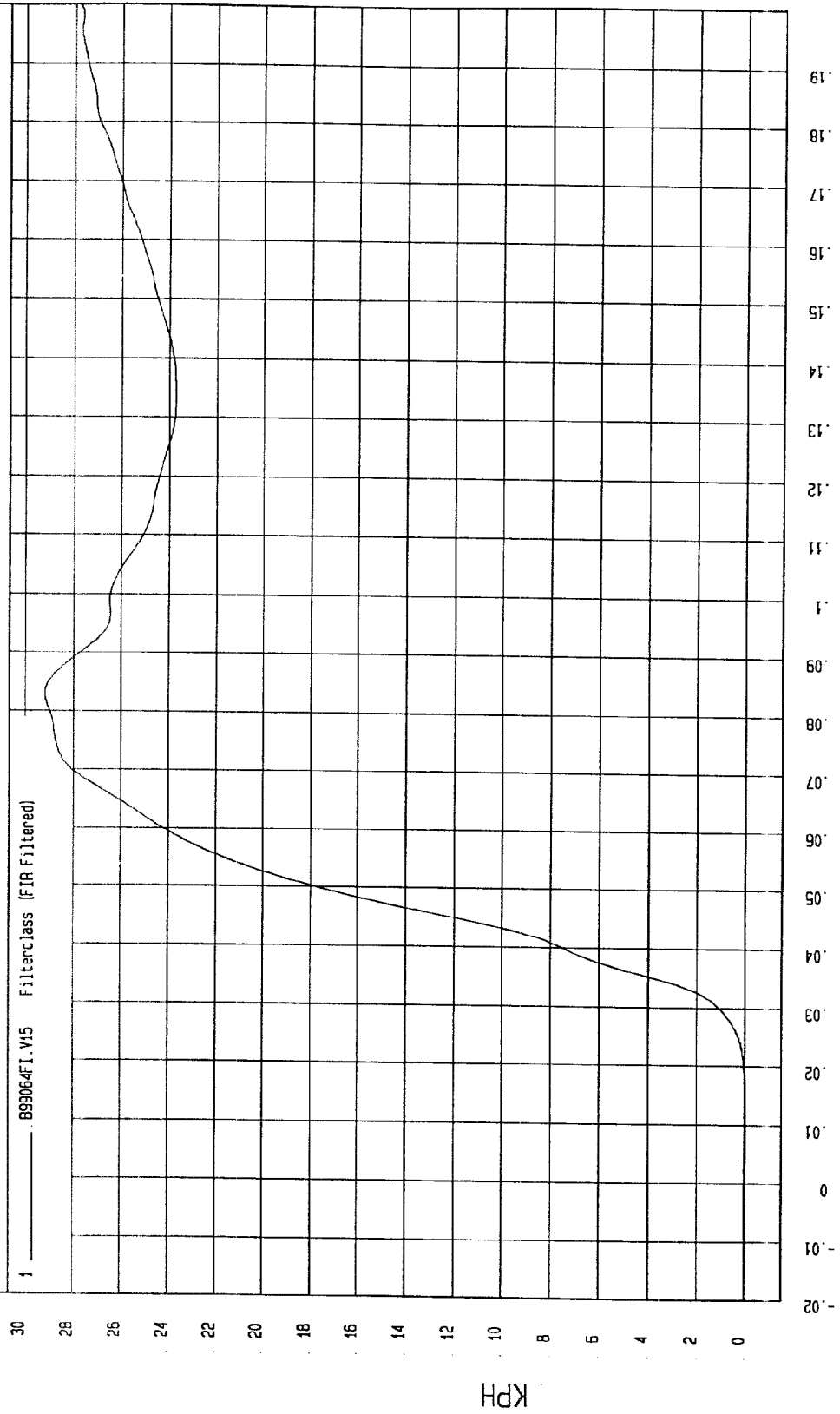
COMPONENT: 2000 NISSAN FRONTIER (CY5200)

Maximum = 29.2 KPH at 83 msec

Minimum = -.04 KPH at 10 msec

DRIVER UPPER RIB Y VELOCITY

1. B99064F1.VI5 Filterclass (FIR Filtered)



MGA Research
09-21-1999 13:53

TEST: FMVSS 214 DYNAMIC SIDE IMPACT

TEST DATE: 09-21-1999

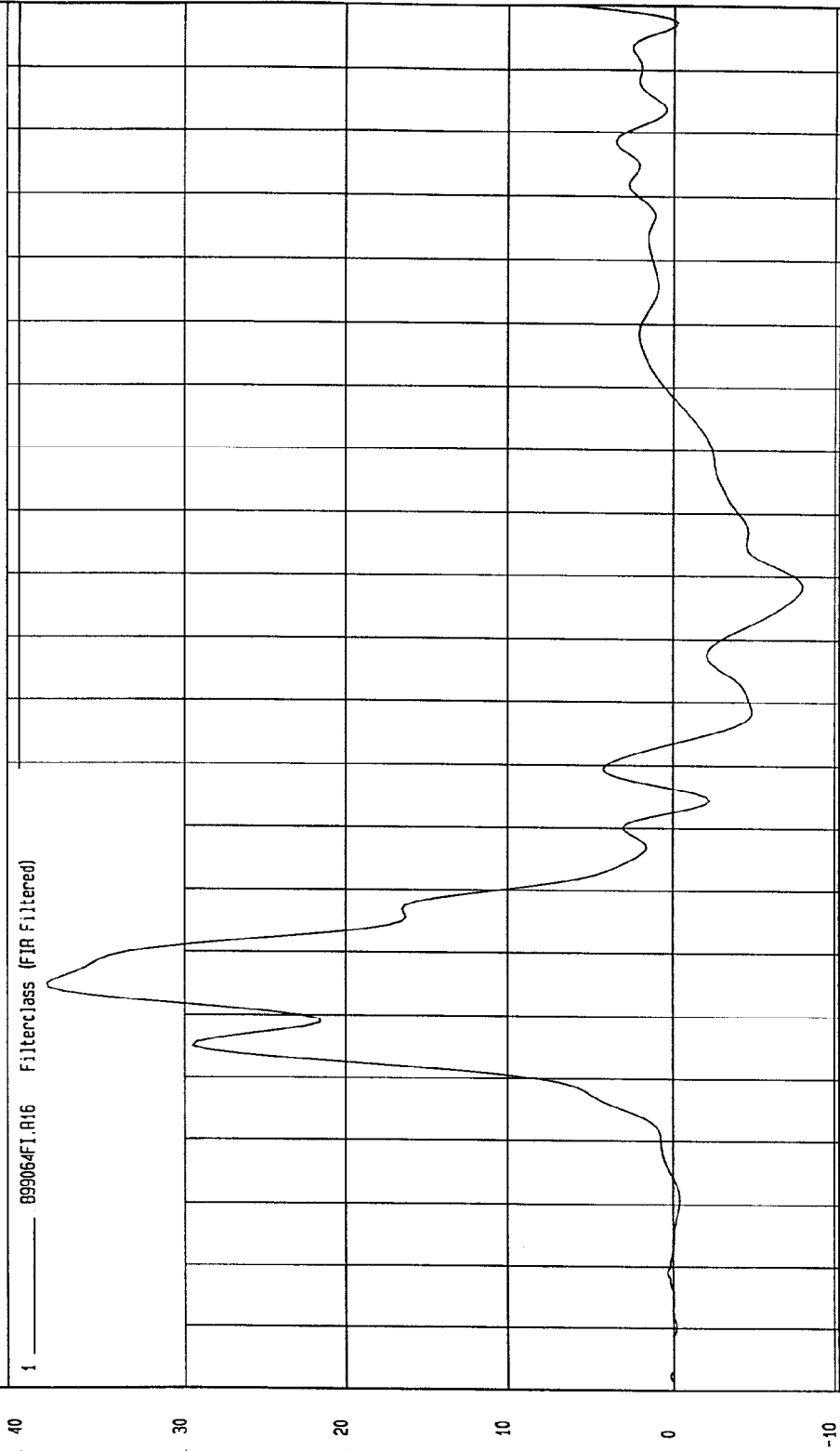
Speed: 32.8 MPH 52.8 KPH

COMPONENT: 2000 NISSAN FRONTIER (CY5200)

Maximum = 38.42 G'S at 45 msec

Minimum = -7.98 G'S at 108 msec

DRIVER LOWER RIB Y ACCELERATION



McA Research
09-22-1999 11:27

TEST: FMVSS 214 DYNAMIC SIDE IMPACT

TEST DATE: 09-21-1999

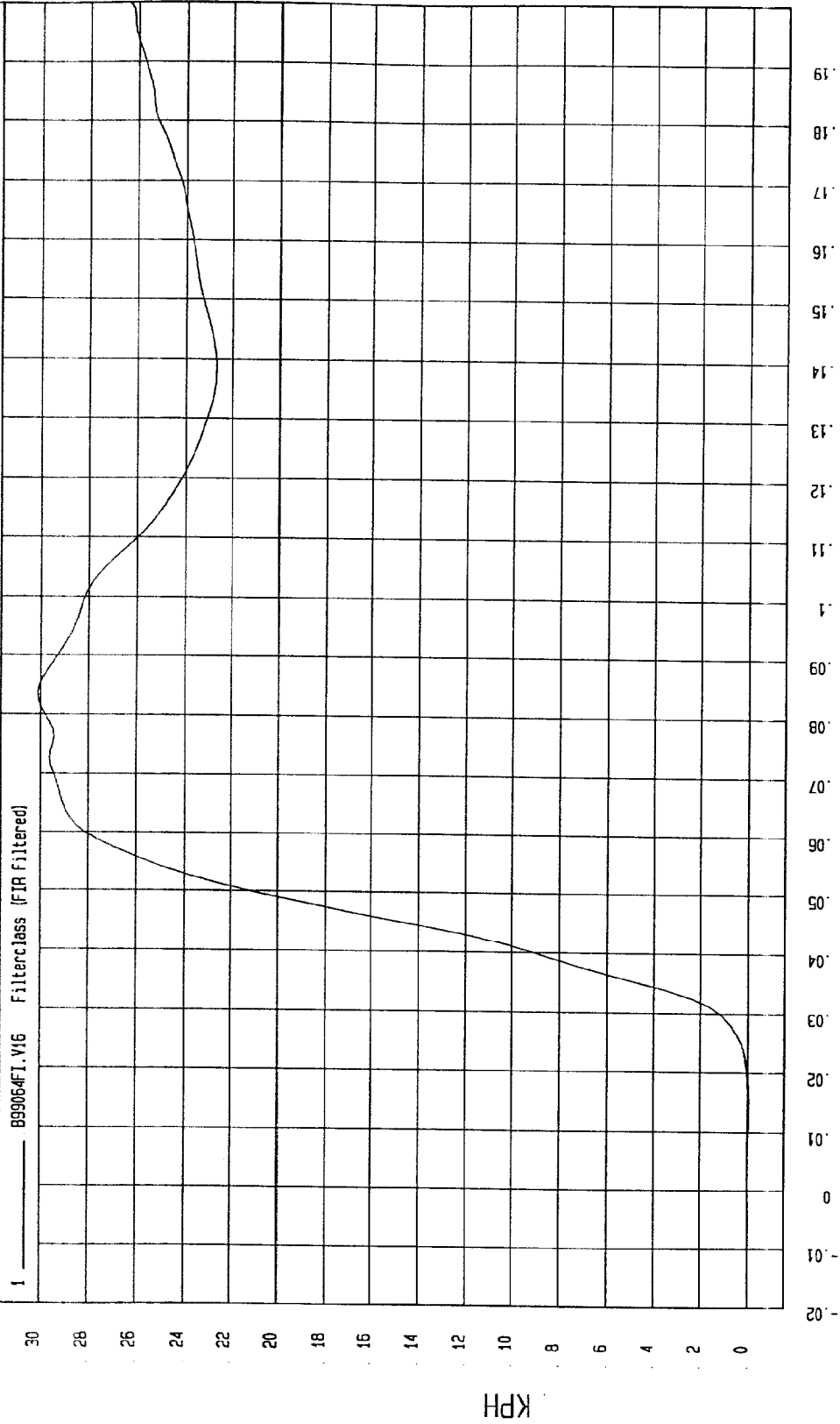
Speed: 32.8 MPH 52.8 KPH

COMPONENT: 2000 NISSAN FRONTIER (CY5200)

Minimum = -6.17E-02 KPH at 14 msec

Maximum = 30.11 KPH at 84 msec

DRIVER LOWER RIB Y VELOCITY



TEST: FMVSS 214 DYNAMIC SIDE IMPACT

TEST DATE: 09-21-1999

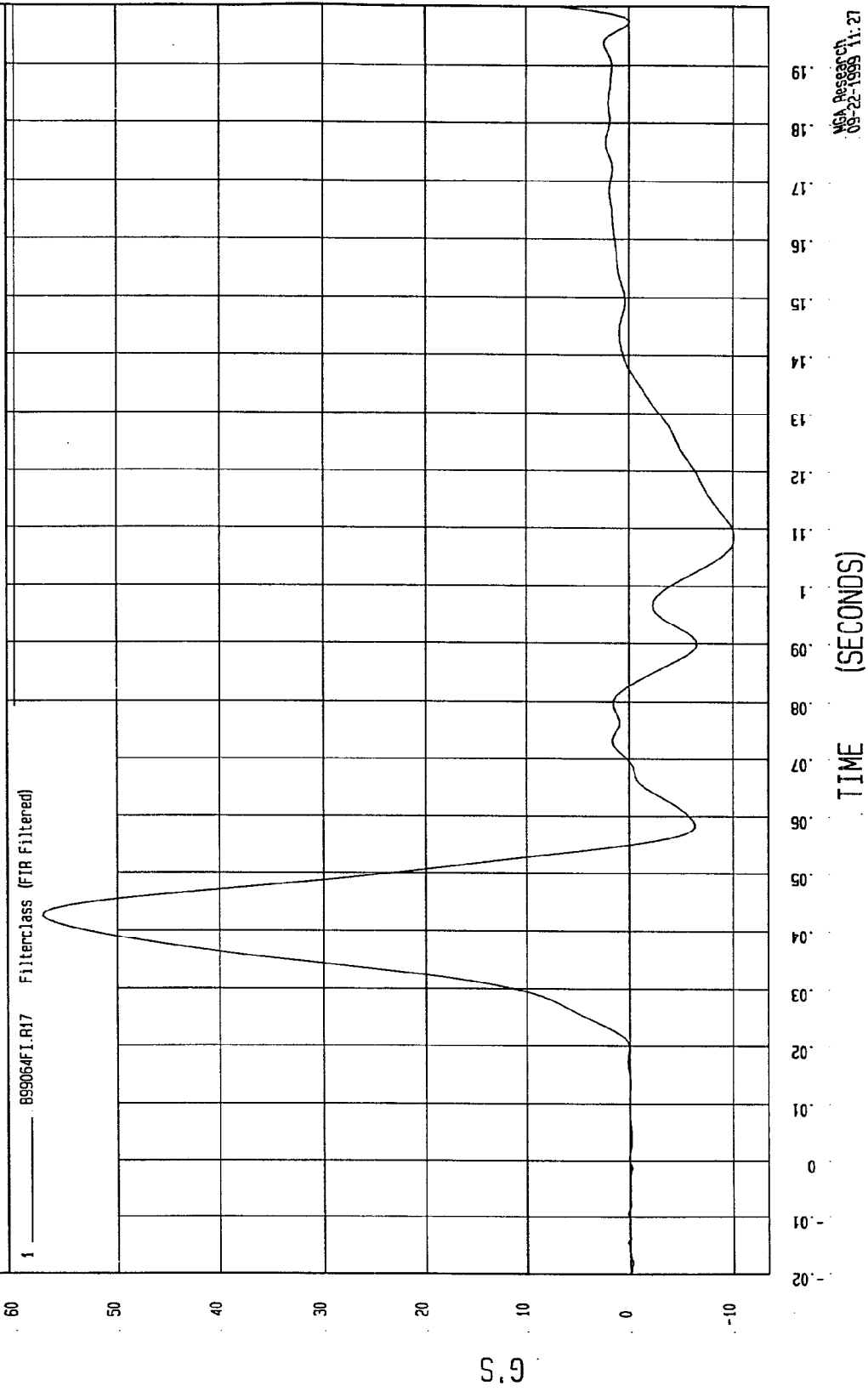
Speed: 32.8 MPH 52.8 KPH

COMPONENT: 2000 NISSAN FRONTIER (CY5200)

Maximum = 57.36 G's at 42 msec

Minimum = -10.16 G's at 109 msec

DRIVER LOWER SPINE Y ACCELERATION



MCA Research
09-22-1999 11:27

TEST: FMVSS 214 DYNAMIC SIDE IMPACT

TEST DATE: 09-21-1999

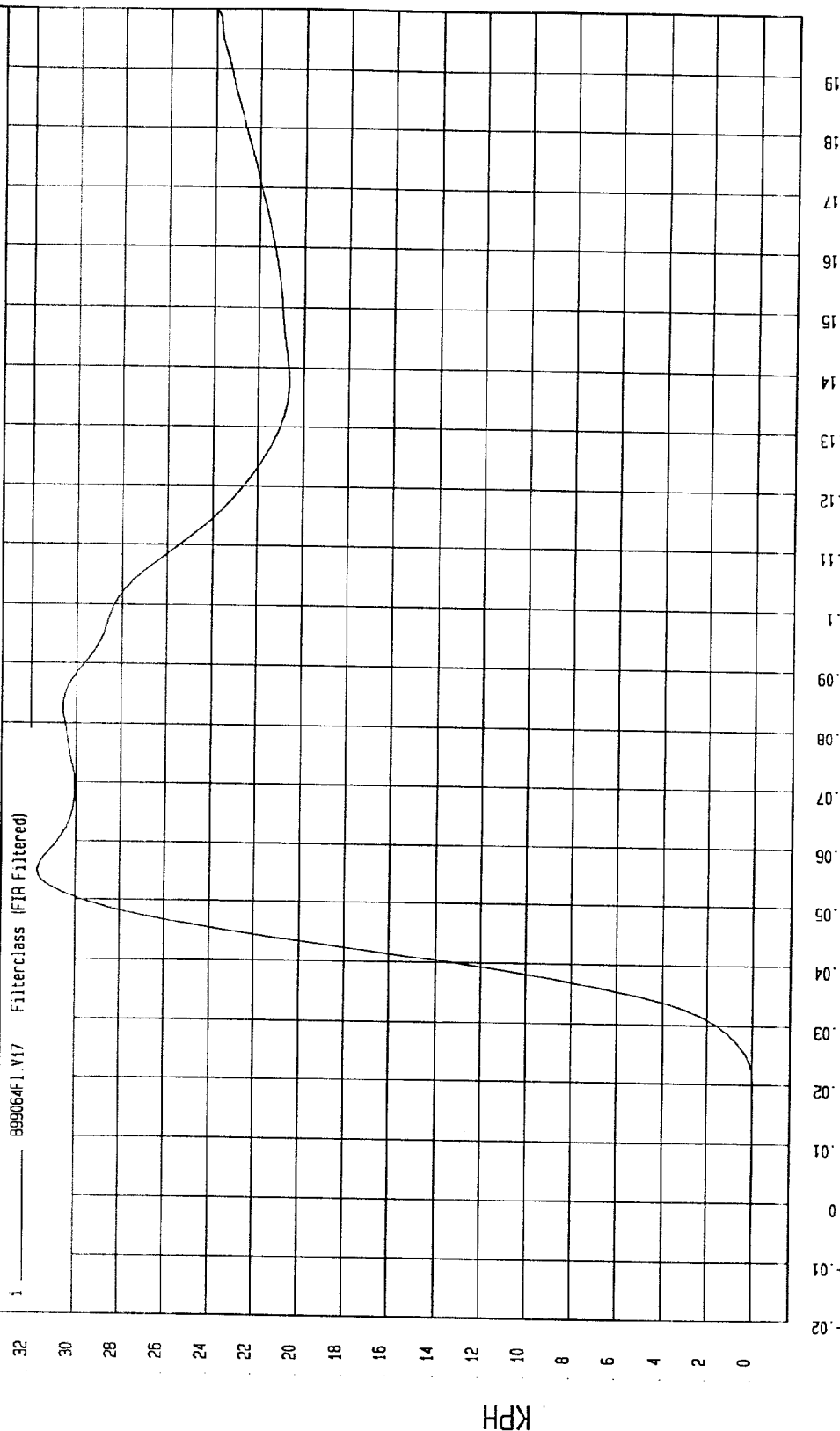
Speed: 32.8 MPH 52.8 KPH

COMPONENT: 2000 NISSAN FRONTIER (CY5200)

Minimum = -3.09E-02 KPH at 15 msec

Maximum = 31.7 KPH at 55 msec

DRIVER LOWER SPINE Y VELOCITY



TEST: FMVSS 214 DYNAMIC SIDE IMPACT

TEST DATE: 09-21-1999

Speed: 32.8 MPH 52.8 KPH

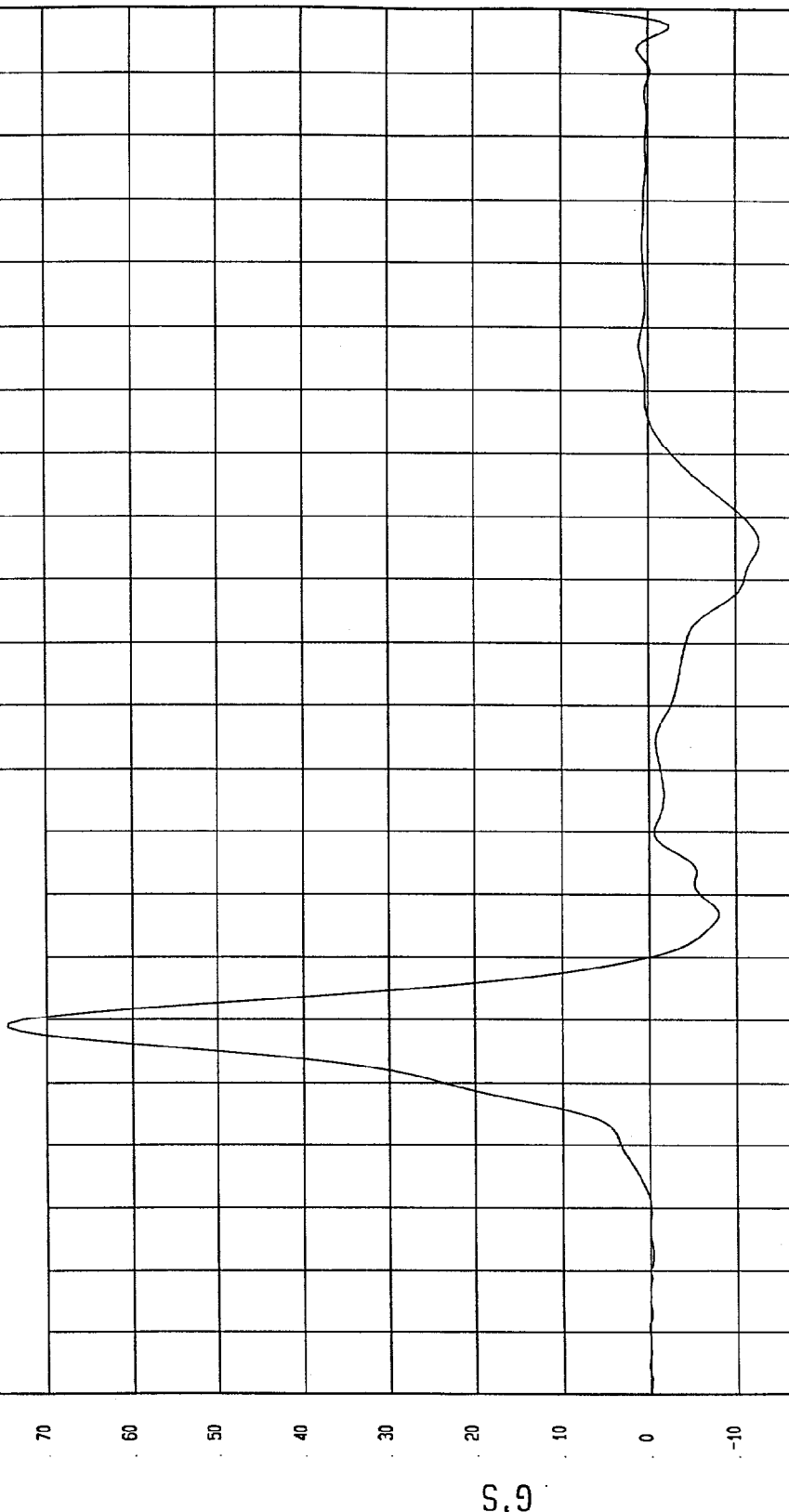
COMPONENT: 2000 NISSAN FRONTIER (CY5200)

Maximum = 74.59 G'S at 39 msec

Minimum = -12.72 G'S at 116 msec

DRIVER PELVIS Y ACCELERATION

1 899064F1.R18 Filterclass (FIR Filtered)



MCA Research
09-22-1999 11:27

TIME (SECONDS)

TEST: FMVSS 214 DYNAMIC SIDE IMPACT

TEST DATE: 09-21-1999

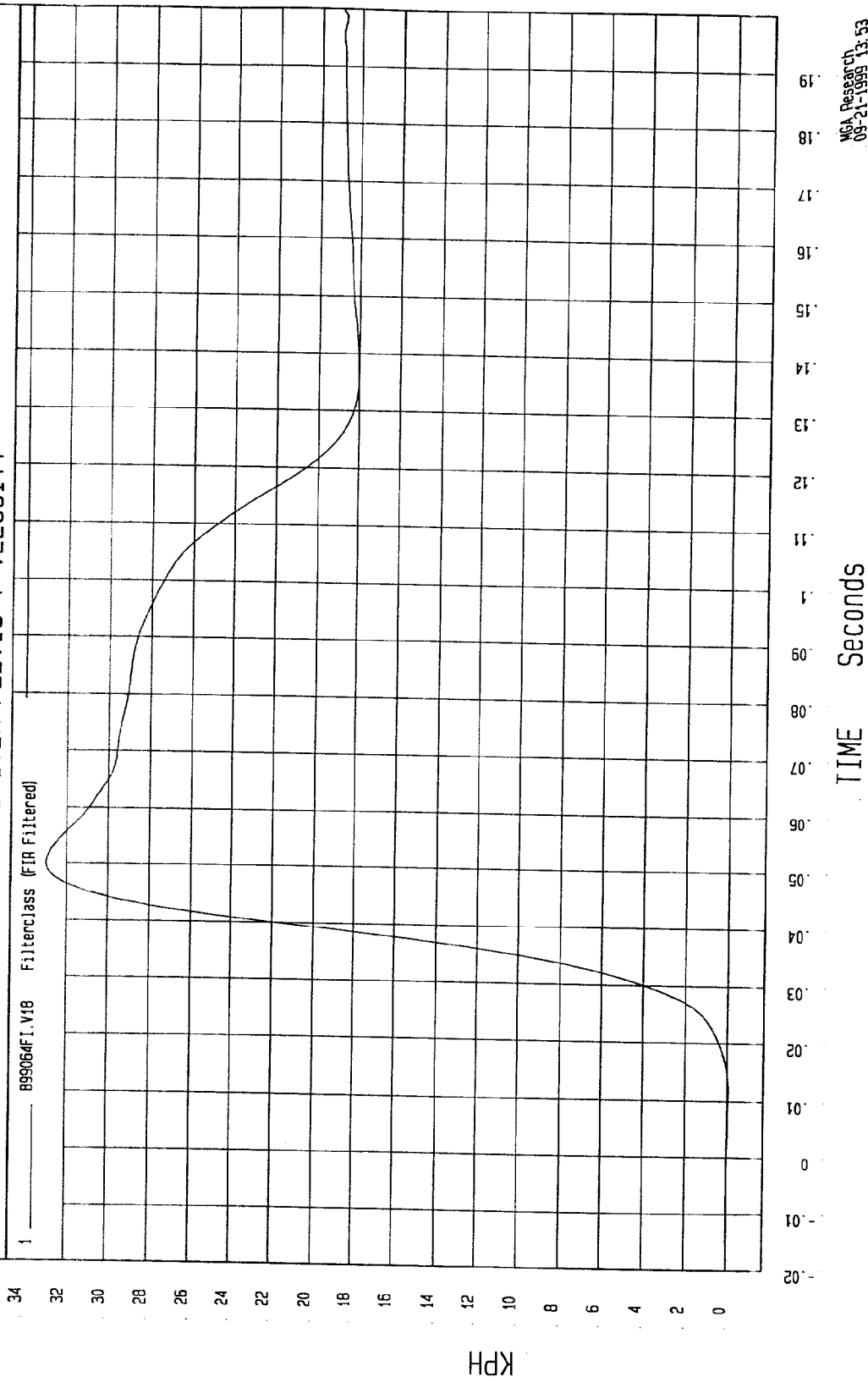
COMPONENT: 2000 NISSAN FRONTIER (CY5200)

Speed: 32.8 MPH 52.8 KPH

Minimum = -5.96E-02 KPH at 11 msec

Maximum = 33.02 KPH at 50 msec

DRIVER PELVIS Y VELOCITY



MCA Research
09-21-1999 13:53

TEST: FMVSS 214 DYNAMIC SIDE IMPACT

TEST DATE: 09-21-1999

Speed: 32.8 MPH 52.8 KPH

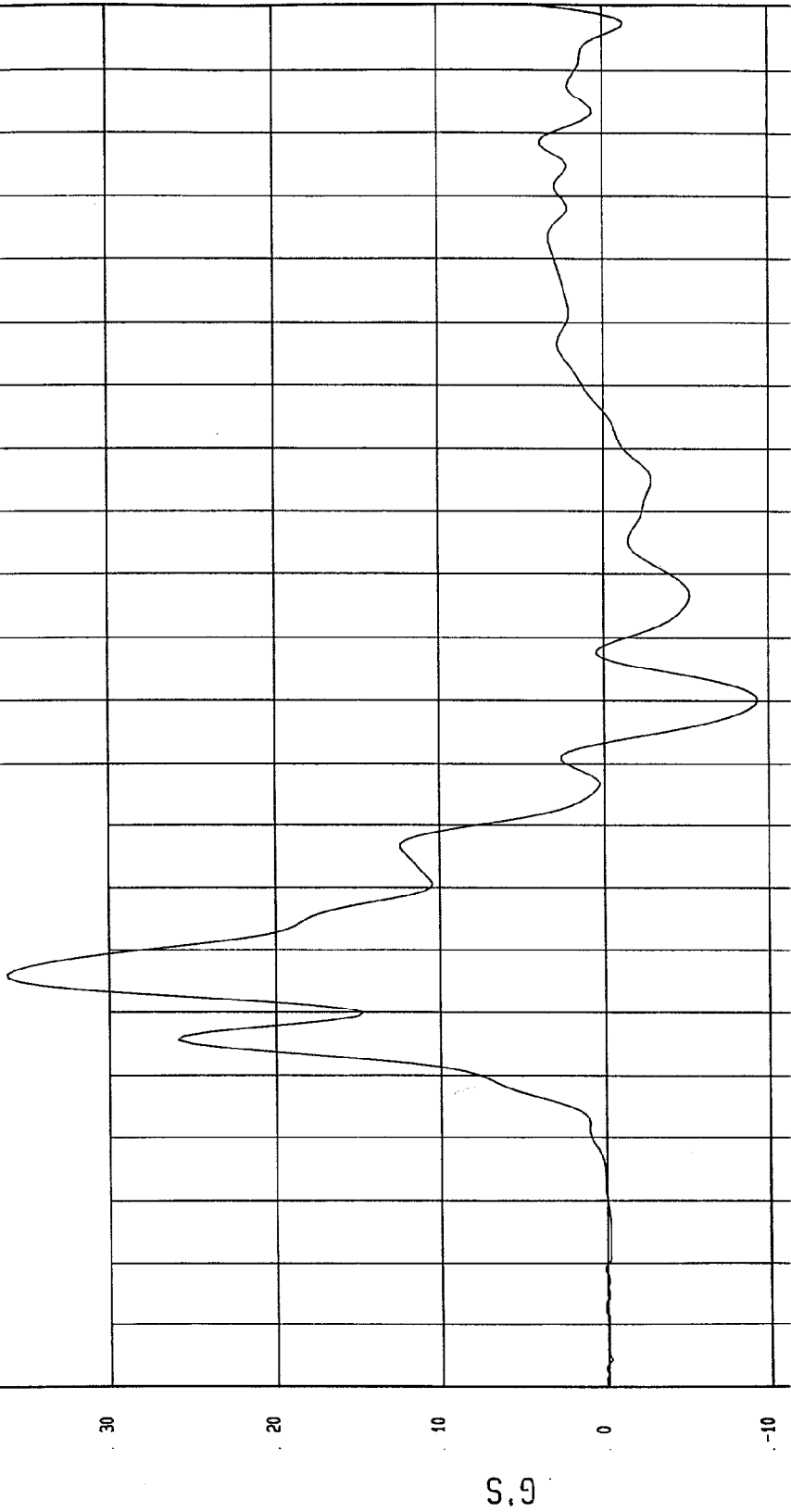
COMPONENT: 2000 NISSAN FRONTIER (CY5200)

Maximum = 35.96 G'S at 46 msec

Minimum = -9.31 G'S at 90 msec

DRIVER UPPER RIB Y REDUNDANT ACCELERATION

1 _____ B99064F1.R42 FilterClass (FIR Filtered)



MCA Research
09-22-1999 11:27

TIME (SECONDS)

TEST: FMVSS 214 DYNAMIC SIDE IMPACT

TEST DATE: 09-21-1999

Speed: 32.8 MPH 52.8 KPH

COMPONENT: 2000 NISSAN FRONTIER (CY5200)

Maximum = 29.01 KPH at 83 msec

Minimum = -7.91E-02 KPH at 11 msec

DRIVER UPPER RIB Y REDUNDANT VELOCITY

1 899064F1.V42 Filterclass (FIR Filtered)

30

28

26

24

22

20

18

16

14

12

10

8

6

4

2

0

KPH

-0.02

-0.01

0

0.01

0.02

0.03

0.04

0.05

0.06

0.07

0.08

0.09

0.1

0.11

0.12

0.13

0.14

0.15

0.16

0.17

0.18

0.19

TIME Seconds

NCA Research
09-21-1999 13:53

TEST DATE: 09-21-1999

TEST: FMVSS 214 DYNAMIC SIDE IMPACT

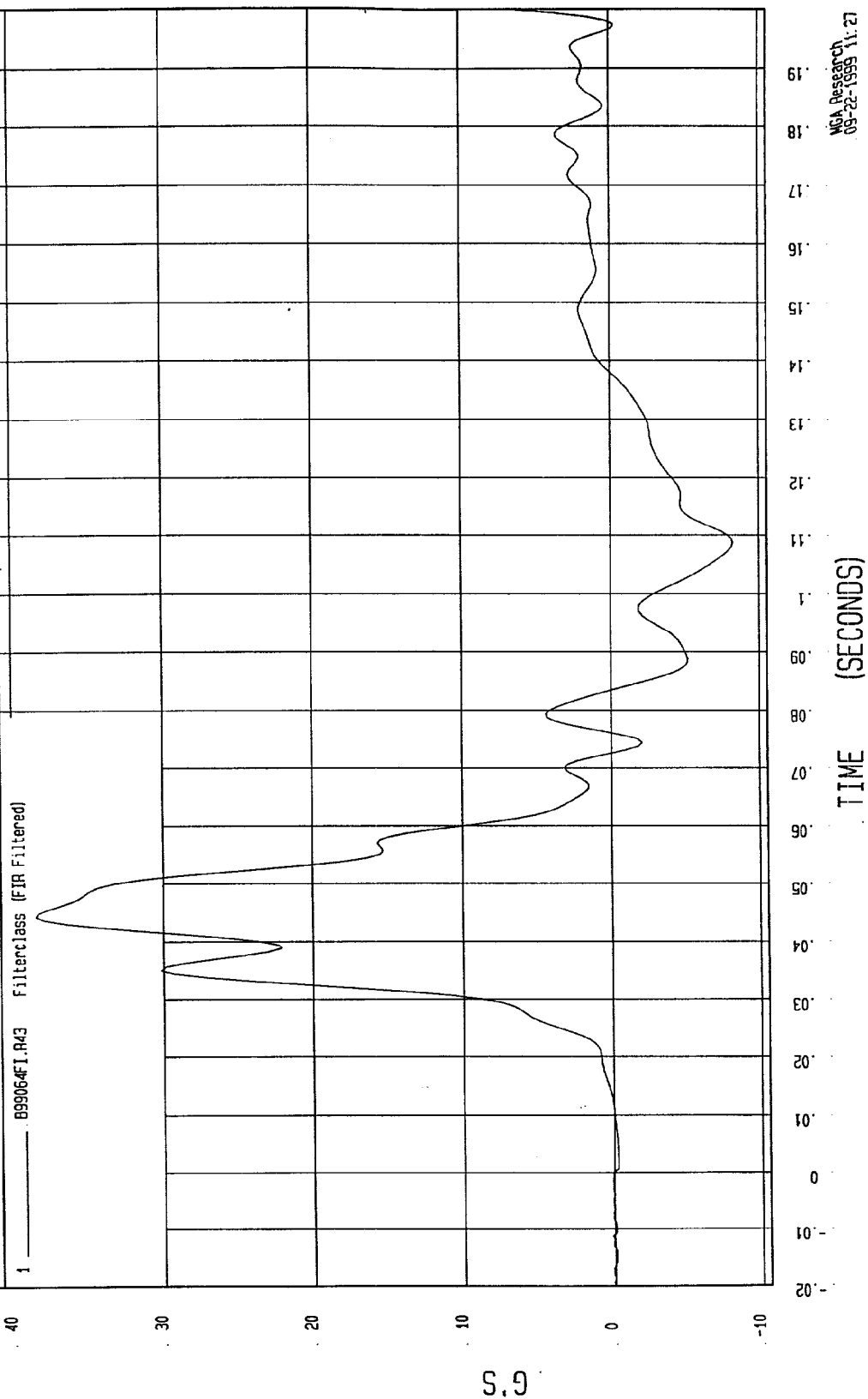
Speed: 32.8 MPH 52.8 KPH

COMPONENT: 2000 NISSAN FRONTIER (CY5200)

Maximum = 38.42 G'S at 44 msec

Minimum = -8.21 G'S at 109 msec

DRIVER LOWER RIB Y REDUNDANT ACCELERATION



TEST: FMVSS 214 DYNAMIC SIDE IMPACT

TEST DATE: 09-21-1999

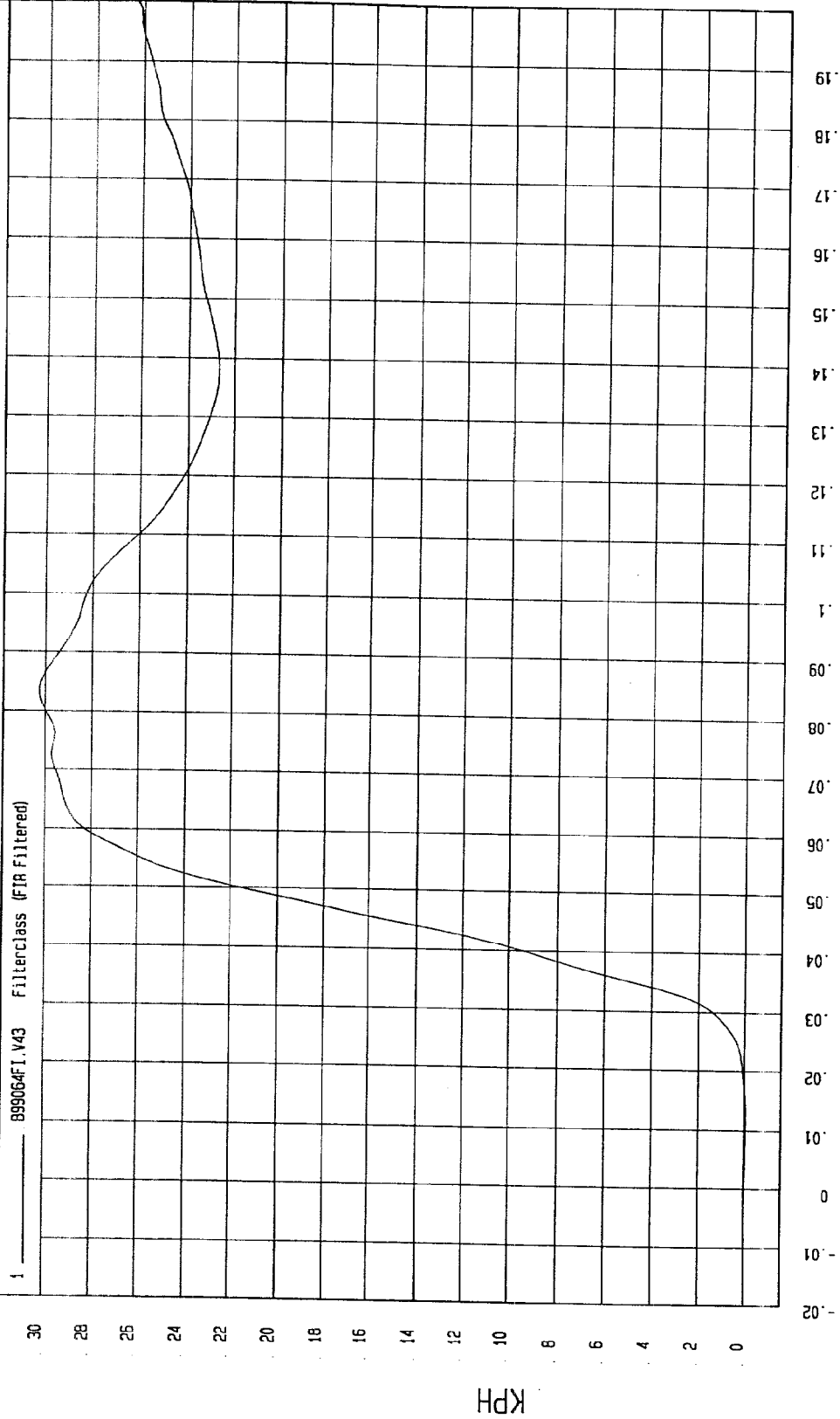
Speed: 32.8 MPH 52.8 KPH

COMPONENT: 2000 NISSAN FRONTIER (CY5200)

Minimum = -5.69E-02 KPH at 11 msec

Maximum = 30.27 KPH at 84 msec

DRIVER LOWER RIB Y REDUNDANT VELOCITY



NGA Research
09-21-1999 13:53

TIME Seconds

TEST: FMVSS 214 DYNAMIC SIDE IMPACT

TEST DATE: 09-21-1999

Speed: 32.8 MPH 52.8 KPH

COMPONENT: 2000 NISSAN FRONTIER (CY5200)

Maximum = 57.66 G's at 42 msec

Minimum = -10.42 G's at 109 msec

DRIVER LOWER SPINE Y REDUNDANT ACCELERATION

1 B99064FI.R44 Filterclass (FIR Filtered)

60

50

40

30

20

10

0

-10

G's

19

18

17

16

15

14

13

12

11

10

09

08

07

06

05

04

03

02

01

0

-01

-02

TIME (SECONDS)

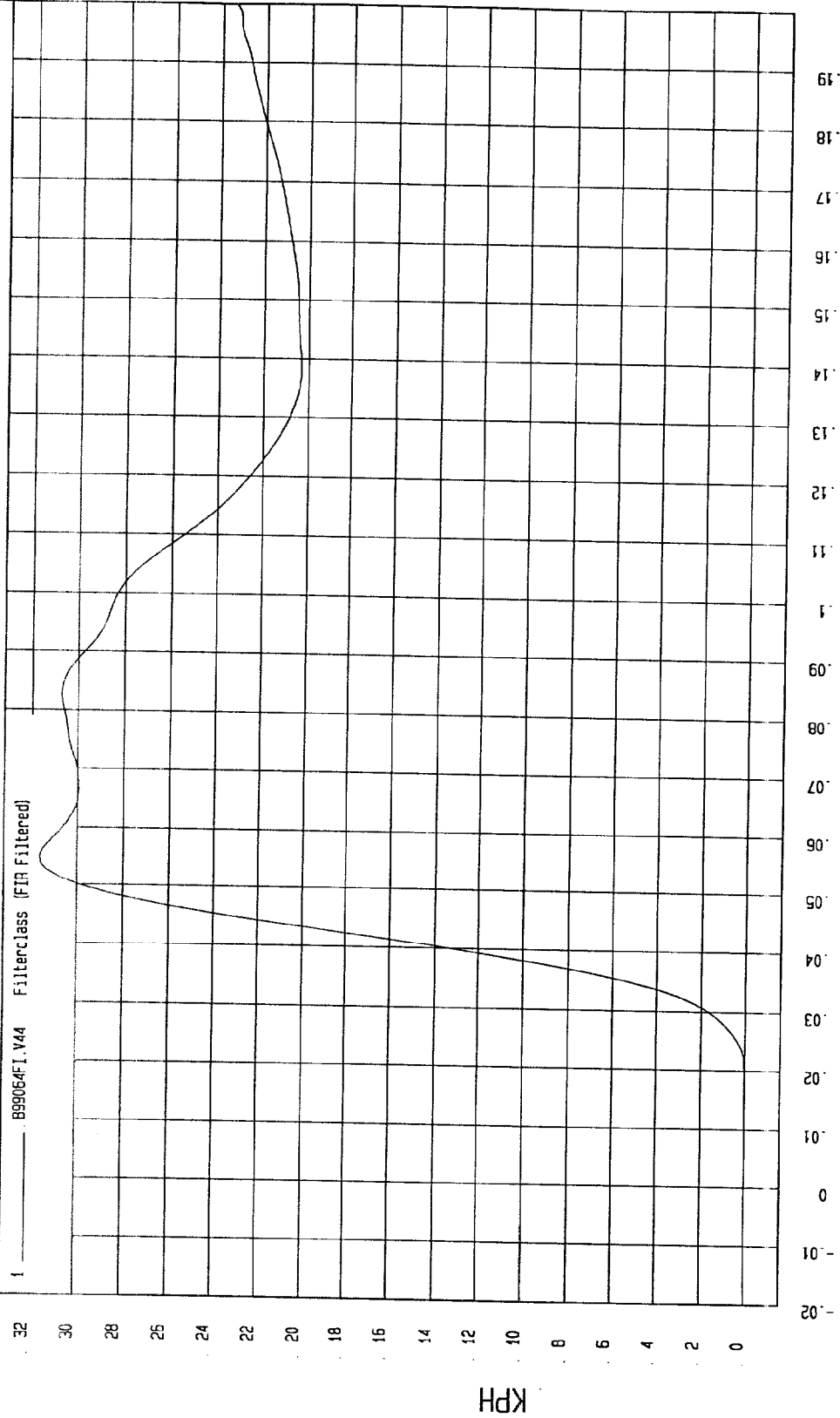
NSA Research
09-22-1999 11:27

TEST: FMVSS 214 DYNAMIC SIDE IMPACT TEST DATE: 09-21-1999

COMPONENT: 2000 NISSAN FRONTIER (CY5200) Speed: 32.8 MPH 52.8 KPH

Minimum = -1.93E-02 KPH at 16 msec Maximum = 31.65 KPH at 54 msec

DRIVER LOWER SPINE Y REDUNDANT VELOCITY



NCA Research
09-21-1999 13:53

TEST: FMVSS 214 DYNAMIC SIDE IMPACT

TEST DATE: 09-21-1999

Speed: 32.8 MPH 52.8 KPH

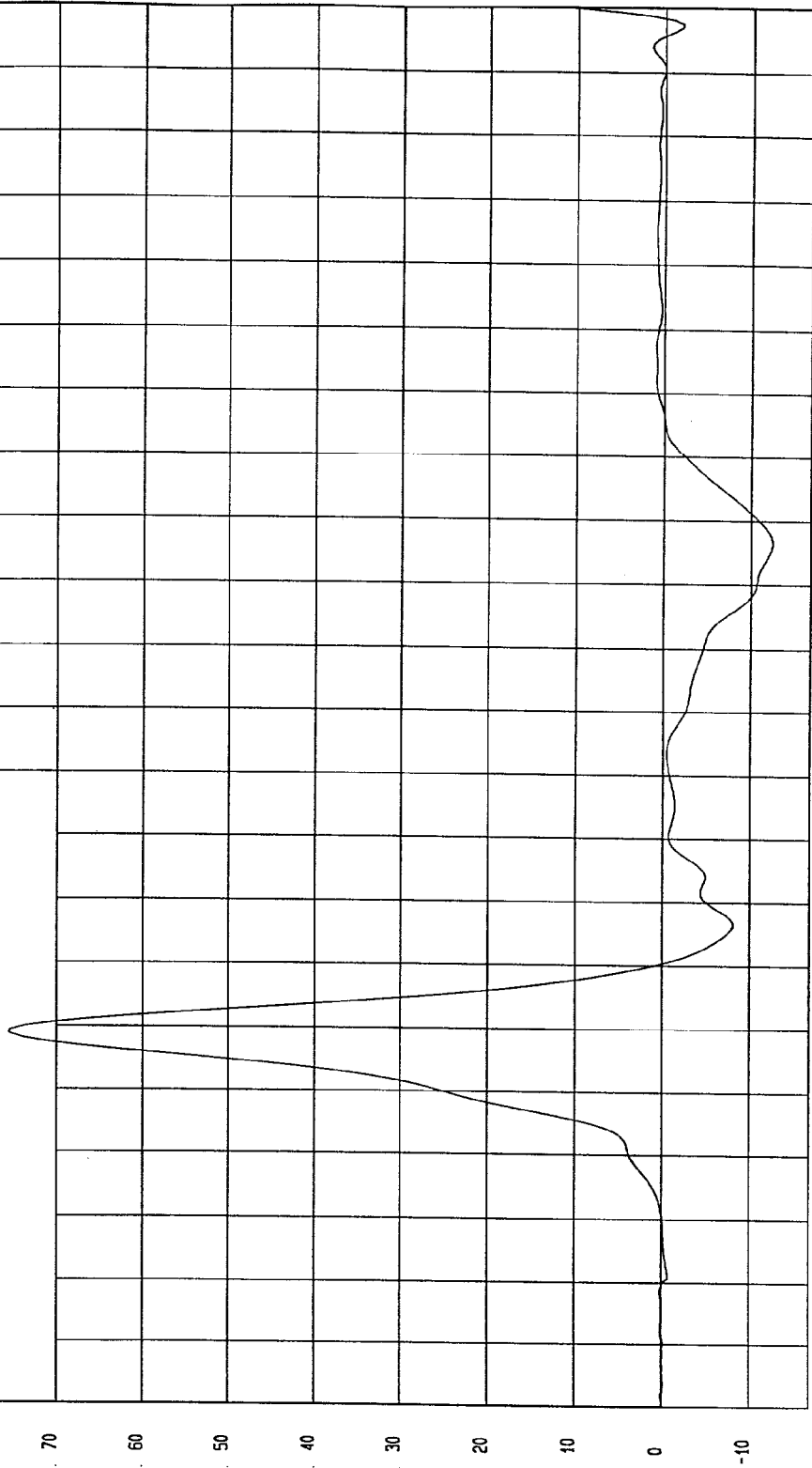
COMPONENT: 2000 NISSAN FRONTIER (CY5200)

Maximum = 75.49 G'S at 39 msec

Minimum = -12.44 G'S at 116 msec

DRIVER PELVIS Y REDUNDANT ACCELERATION

1 ——— B99064F1.R45 Filter: class (FIR Filtered)



MCA Research
09-22-1999 11:21

TEST: FMVSS 214 DYNAMIC SIDE IMPACT

TEST DATE: 09-21-1999

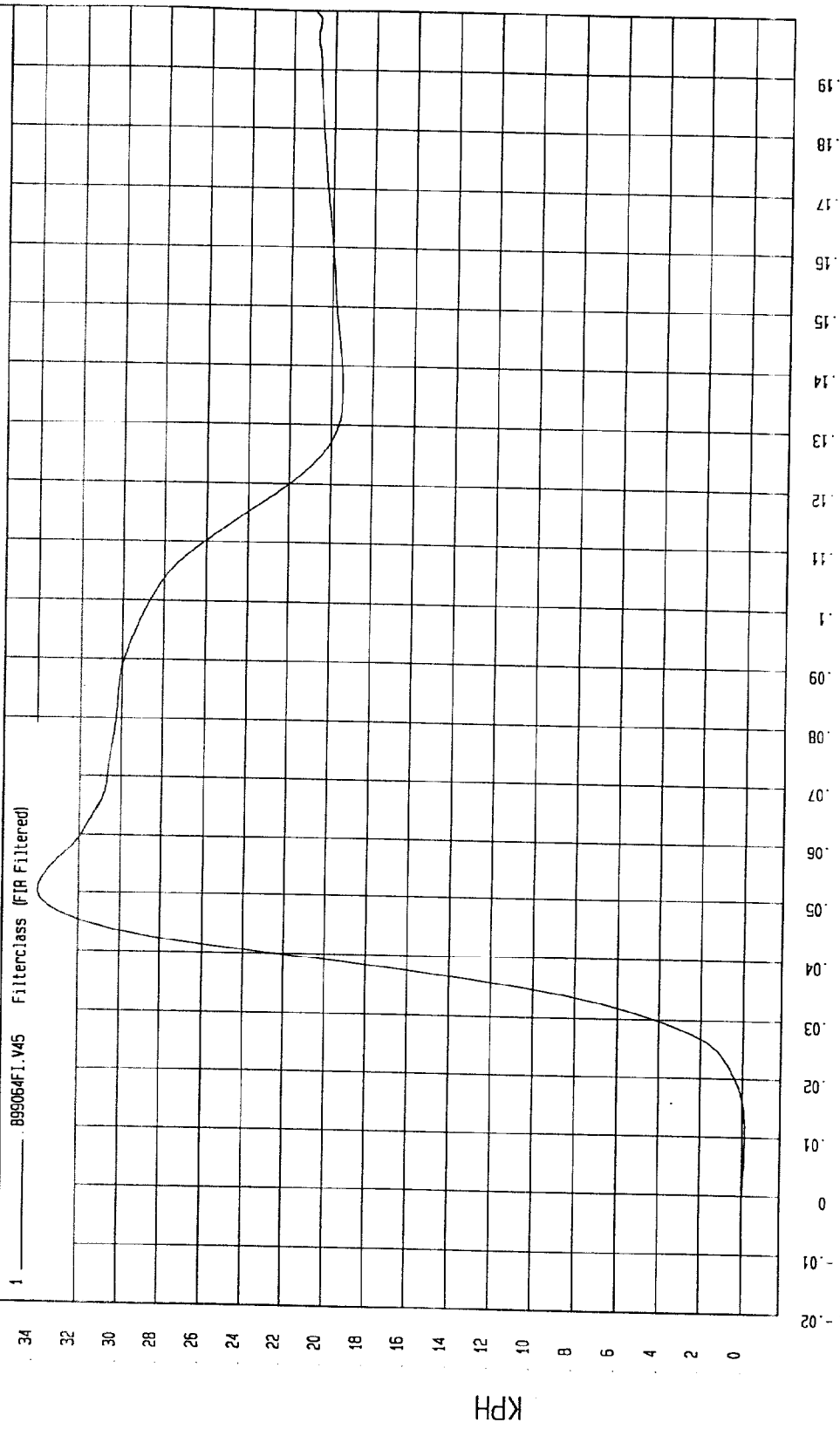
COMPONENT: 2000 NISSAN FRONTIER (CY5200)

Speed: 32.8 MPH 52.8 KPH

Minimum = -.11 KPH at 11 msec

Maximum = 33.93 KPH at 51 msec

DRIVER PELVIS Y REDUNDANT VELOCITY



MCA Research
09-21-1999 13:53

APPENDIX C

SID CONFIGURATION AND PERFORMANCE VERIFICATION

SUMMARY
SIDE PRE & POST-TEST CALIBRATION
CONFIGURED TO LEFT SIDE IMPACT

Report Date: September 22, 1999

Technician: Tim Michnay

Test Date: September 21, 1999

Test Parameter	Specification	Dummy Serial No: 048	
		Pre-Test	Post-Test
SH-Seated Height (mm)	889 - 909	905	905
RH-Rib Height (mm)	501 - 521	518	518
HP-Hip Pivot Height (mm)	99 ref.	99	99
RD-Rib from Back Line (mm)	229 - 241	236	236
KV-Knee Pivot from Back Line (mm)	511 - 526	521	521
SW-Knee Pivot to Floor (mm)	490 - 505	493	493
HW-Hip Width (mm)	356 - 391	368	368
Thorax Impacts			
Temperature (°C)	18.9 - 25.5	21.0	21.0
Relative Humidity (%)	10 - 70	45	34
Probe Speed (m/s)	4.27 - 4.33	4.28	4.31
Upper Rib (g's)	37 - 46	43	43
Lower Rib (g's)	37 - 46	37	41
Lower Spine (g's)	15 - 22	22	22
Pelvis Impact			
Temperature (°C)	18.9 - 25.5	21.0	21.0
Relative Humidity (%)	10 - 70	45	34
Probe Speed (m/s)	4.27 - 4.33	4.27	4.29
Pelvis ('gs)	40 - 60	51	51

REMARKS:

PRE-TEST CERTIFICATION DATA

Dummy Serial Number: 048

Calibration Test Results Summary

Dummy Serial Number: 048

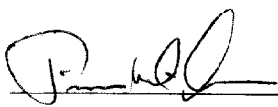
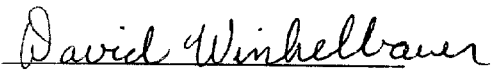
Pre-Test Calibration

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 NO.: 048DATE OF VERIFICATION: September 20, 1999

DESCRIPTION	SPECIFICATION	TEST RESULTS
SH - Seated Height (mm)	889 - 909	905
RH - Rib Height (mm)	501 - 521	518
HP - Hip Pivot Height (mm)	99 ref.	99
RD - Rib From Back Line (mm)	229 - 241	236
KV - Knee Pivot From Back Line (mm)	511 - 526	521
SW - Knee Pivot to Floor (mm)	490 - 505	493
HW - Hip Width (mm)	356 - 391	368

TECHNICIAN: APPROVED BY: 

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

DATE: September 20, 1999

DUMMY SERIAL NUMBER: 048

TEST NUMBER: D991046/7/8

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)		18.9 - 25.5	21.0
RELATIVE HUMIDITY (%)		10 - 70	45
VELOCITY 3.05 m/s	FORCE (N)	836 - 1125	989
	DISPLACEMENT (mm)	30 - 35	31
VELOCITY 4.27 m/s	FORCE (N)	1730 - 2099	1730
	DISPLACEMENT (mm)	32 - 37	34
VELOCITY 6.1 m/s	FORCE (N)	3741 - 4448	3932
	DISPLACEMENT (mm)	33 - 40	38

TEST MEETS SPECIFICATIONS

TECHNICIAN: 

APPROVED BY: 

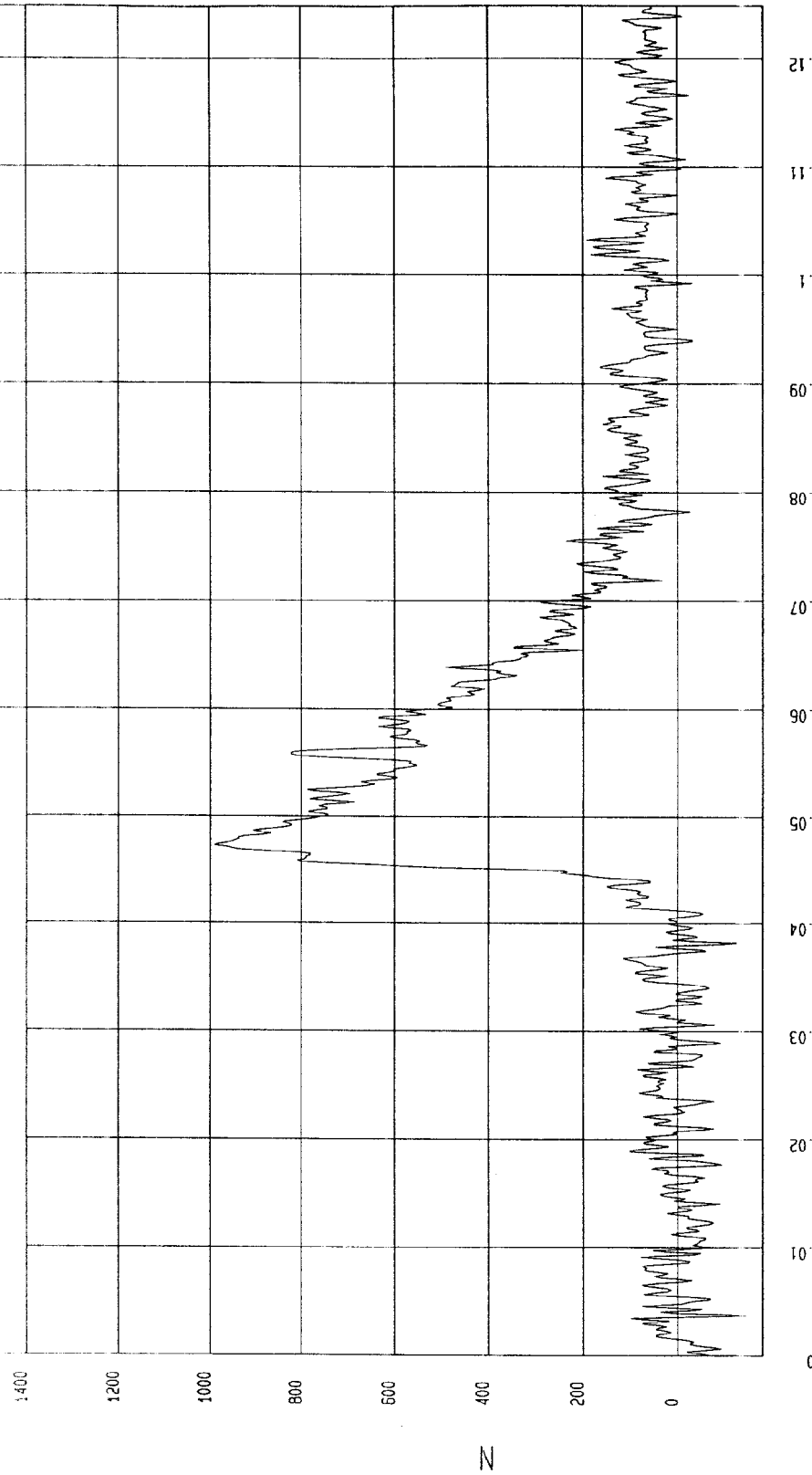
TEST: DAMPENER BENCH TEST TEST DATE: 09-20-1999 - 09:01

COMPONENT: DUMMY # 048 Velocity: 10 FT/SEC 3.05 M/SEC

Minimum = -145.23 N at 3.74 msec Maximum = 988.99 N at 47.3 msec

PEAK FORCE

1 ——— D99046FF.F04 Filterclass (1000)



MECA Research
09-20-1999 09:27

TEST: DAMPENER BENCH TEST TEST DATE: 09-20-1999 - 09:01

COMPONENT: DUMMY # 048 Velocity: 10 FT/SEC 3.05 M/SEC

Minimum = -.34 mm at 16.2 msec
Maximum = 31.34 mm at 75.7 msec

PEAK DISPLACEMENT

1 ——— 095046DF.005 Filterclass (1000)

50

40

30

20

10

0

mm

12

11

10

9

8

7

6

5

4

3

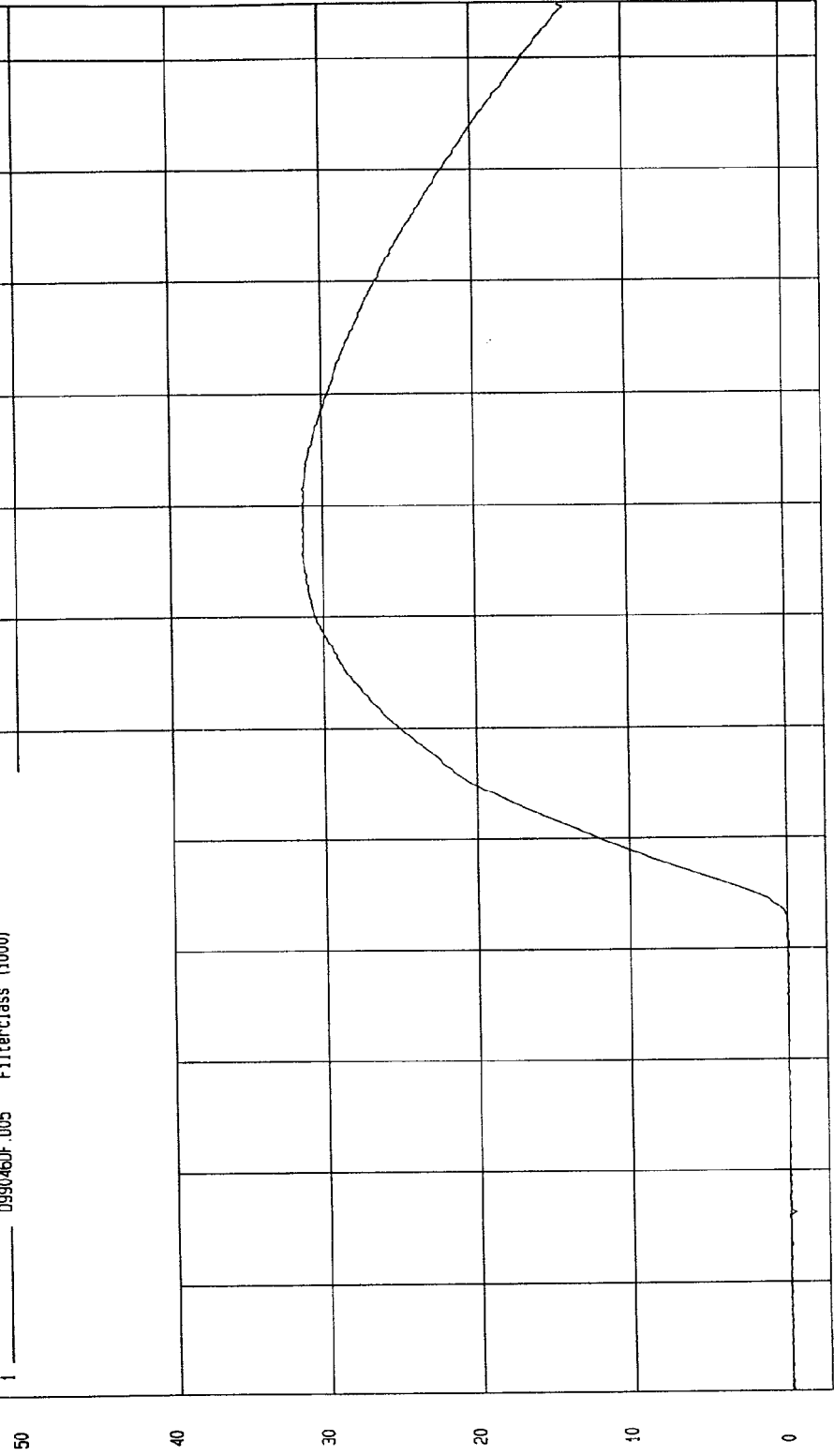
2

1

0

TIME (SECONDS)

MOA Research
09-20-1999 09:28



TEST: DAMPENER BENCH TEST

TEST DATE: 09-20-1999 - 09:03

COMPONENT: DUMMY # 048

Velocity: 14 FT/SEC 4.27 M/SEC

Minimum = -173.53 N at 4.49 msec

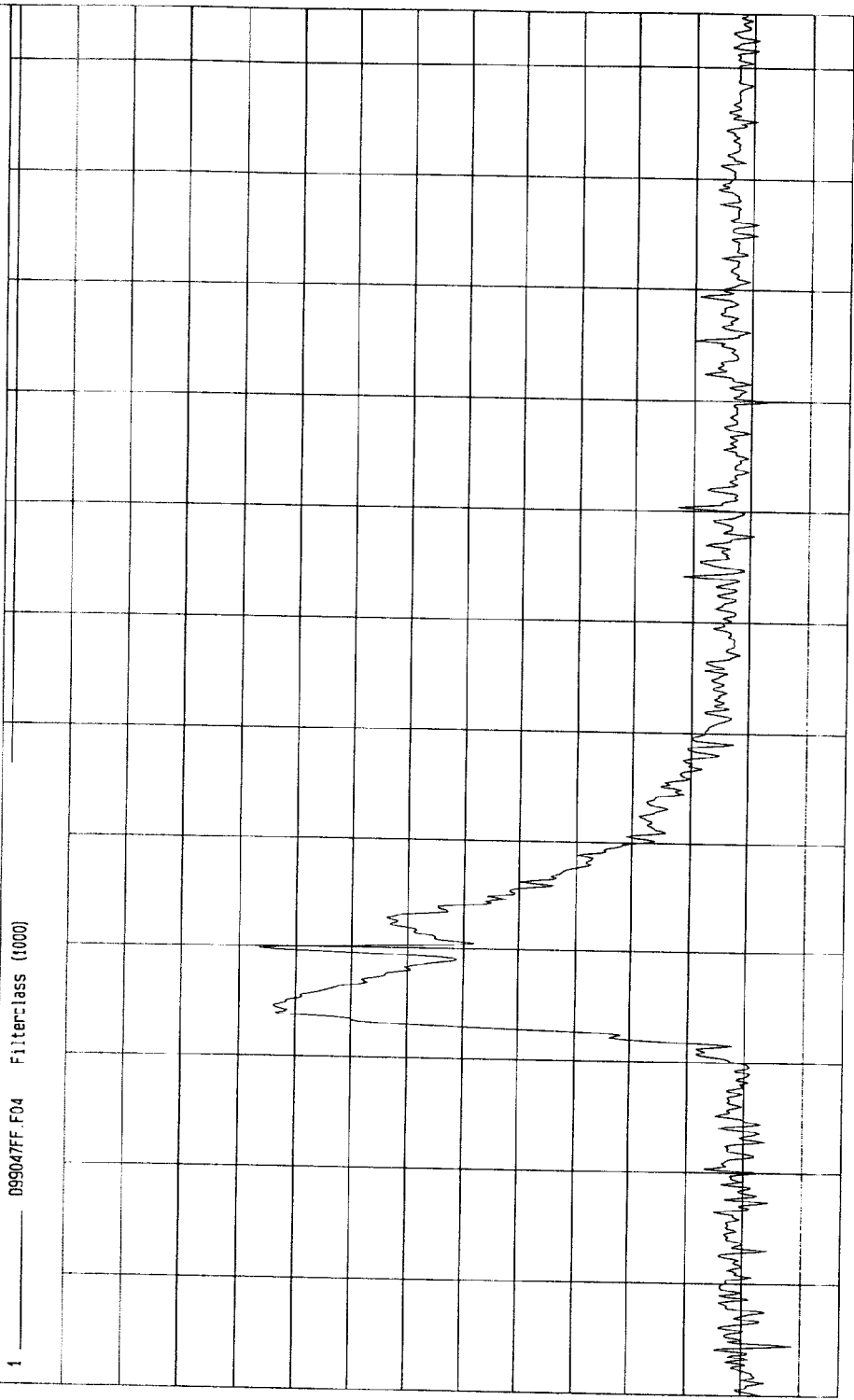
Maximum = 1730.13 N at 39.8 msec

PEAK FORCE

1 099047FF.F04 Filterclass (1000)

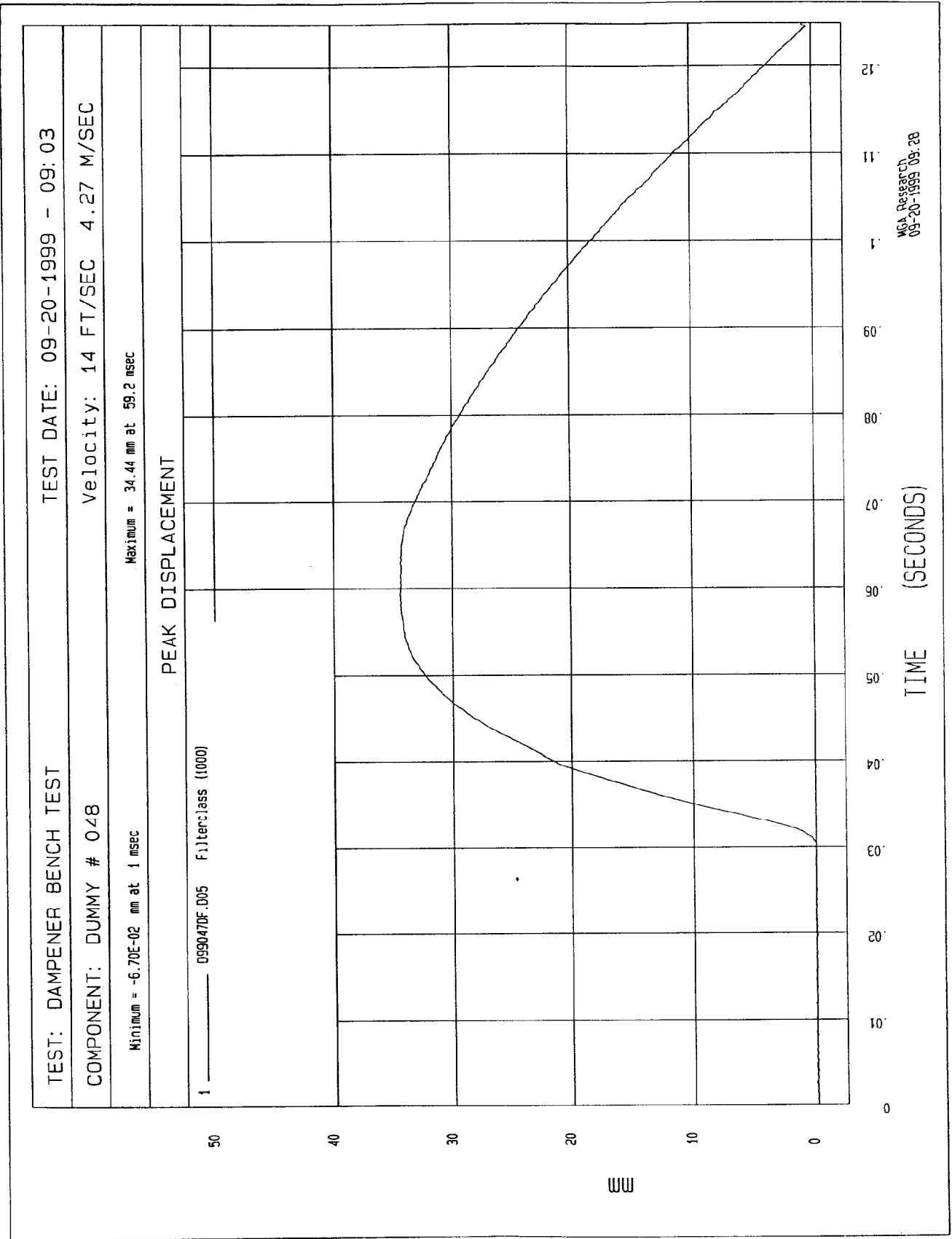
2600
2400
2200
2000
1800
1600
1400
1200
1000
800
600
400
200
0
-200

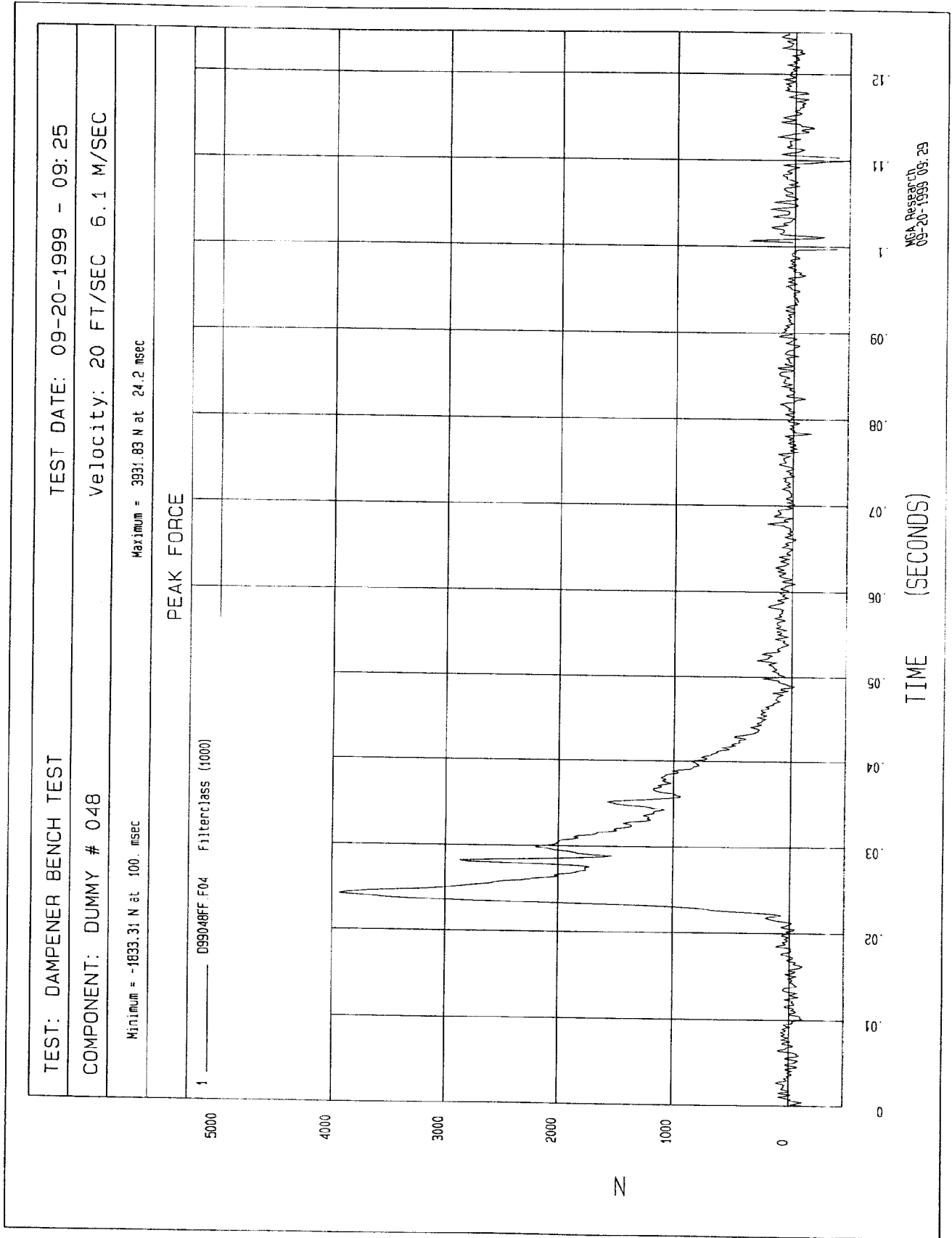
N

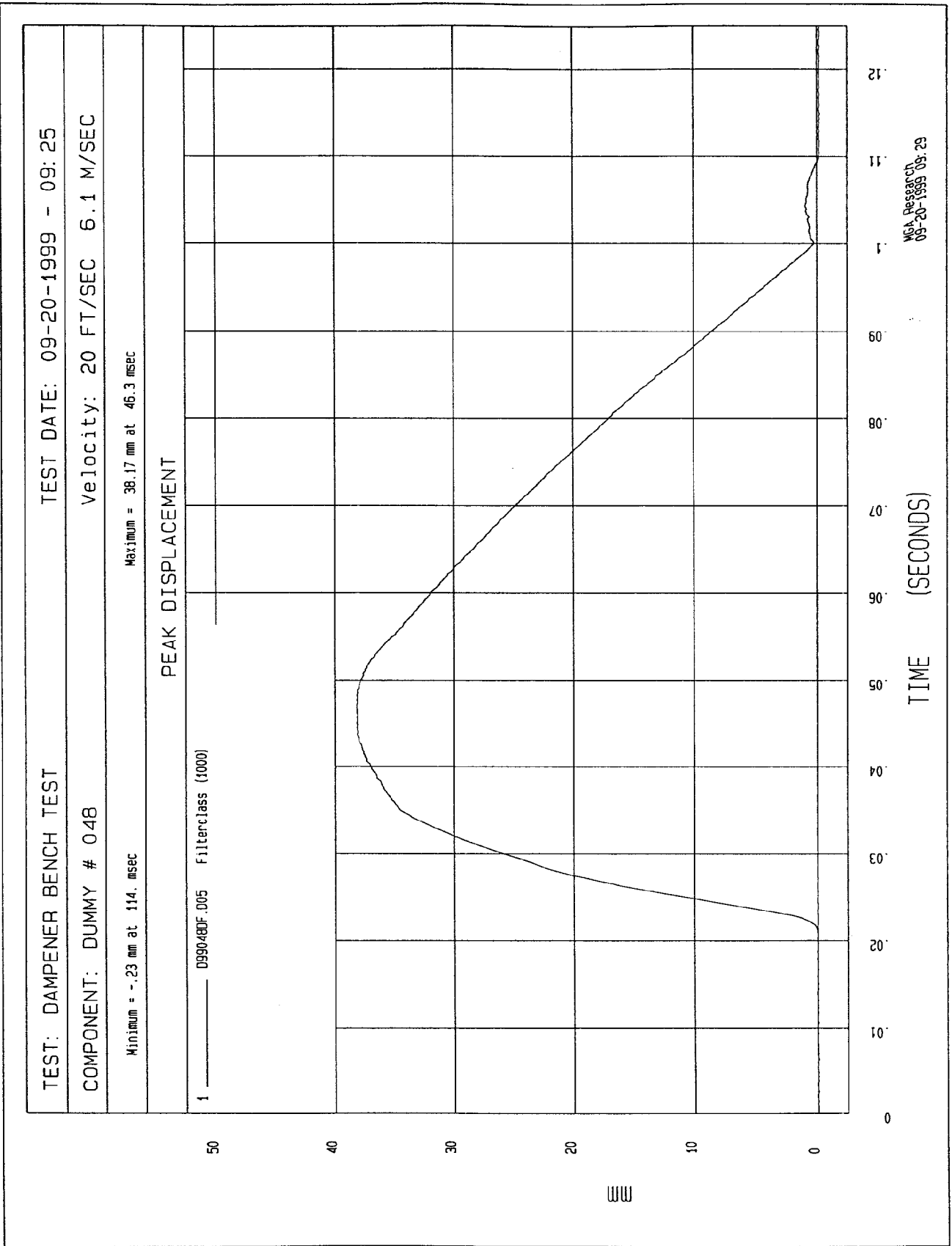


TIME (SECONDS)

MCA Research
09-20-1999 09:28







MGA RESEARCH CORPORATION

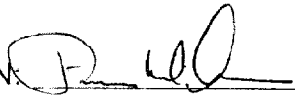
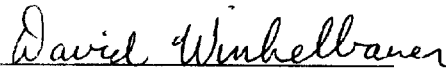
THORAX IMPACT TEST

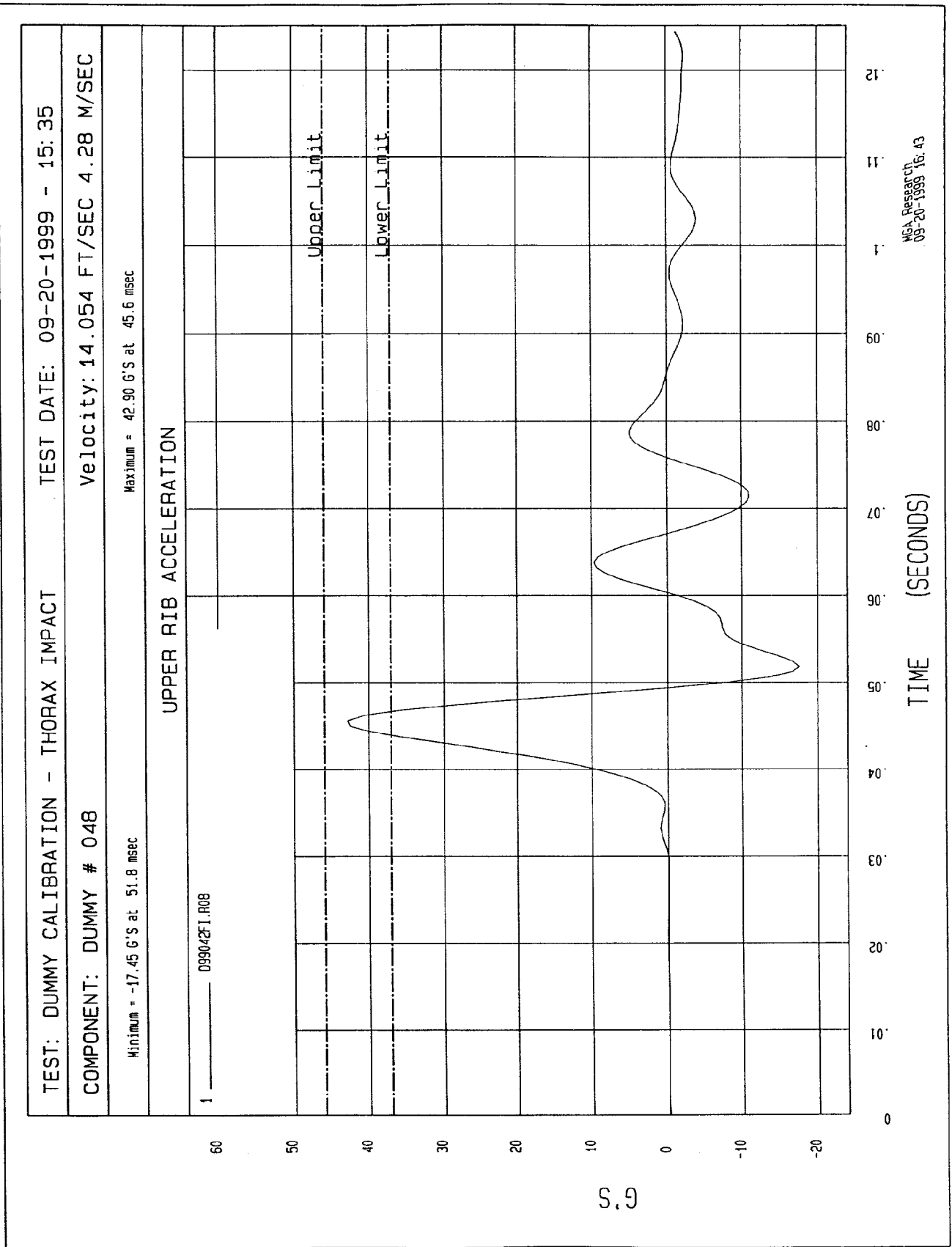
SIDE IMPACT DUMMY (SID)

DATE: September 20, 1999DUMMY SERIAL NUMBER: 048TEST NUMBER: D991042

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

TEST MEETS SPECIFICATIONS

TECHNICIAN: APPROVED BY: 



MGA Research
09-20-1999 16:43

TEST: DUMMY CALIBRATION - THORAX IMPACT TEST DATE: 09-20-1999 - 15:36:21

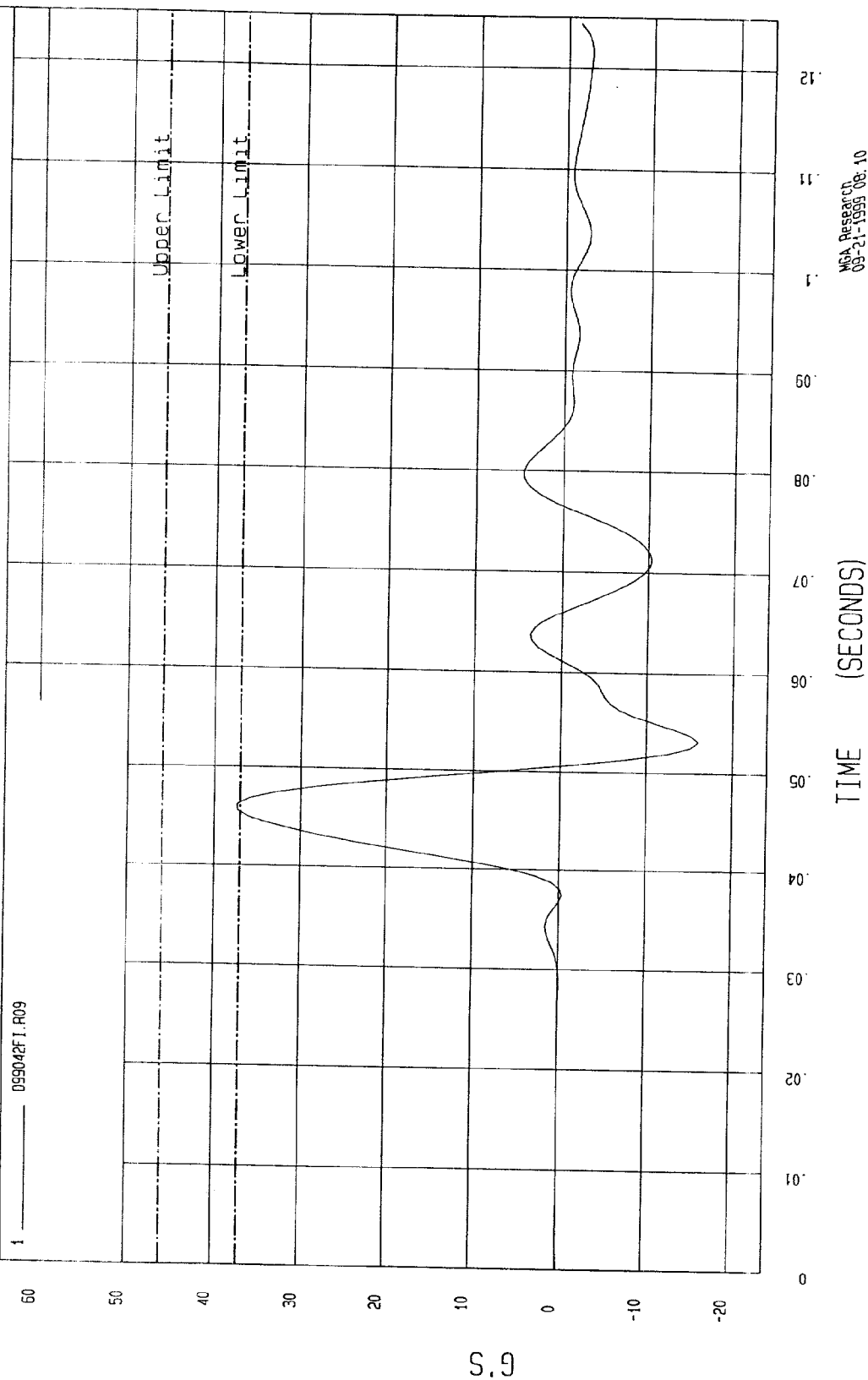
COMPONENT: DUMMY # 048

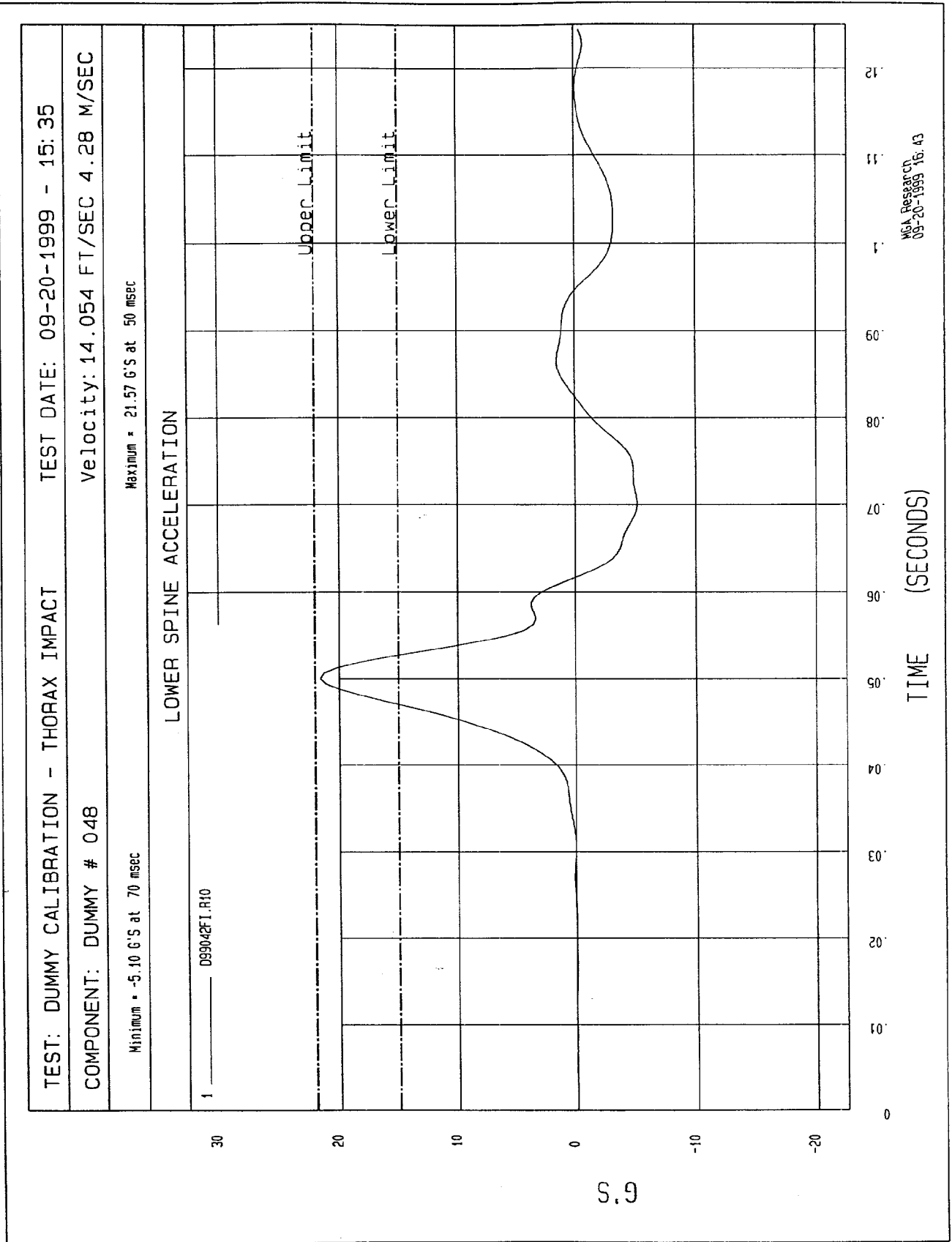
Velocity: 14.054 FT/SEC 4.28 M/SEC

Minimum = -15.95 G'S at 53.1 msec

Maximum = 37.34 G'S at 46.2 msec

LOWER RIB ACCELERATION

MCA Research
09-21-1999 08:10



MGA RESEARCH CORPORATION

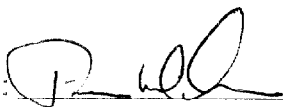
PELVIS IMPACT TEST

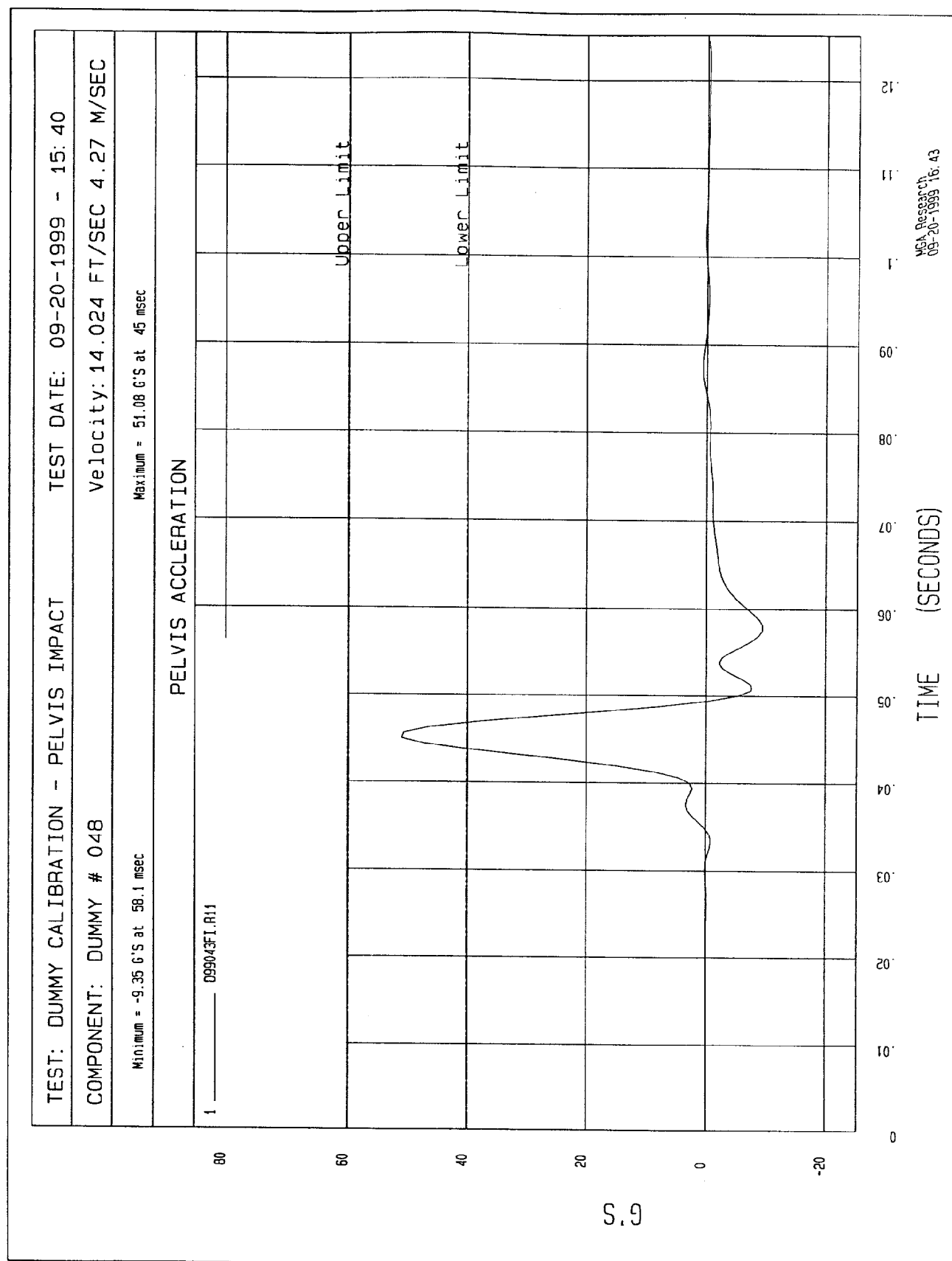
SIDE IMPACT DUMMY (SID)

DATE: September 20, 1999DUMMY SERIAL NUMBER: 048TEST NUMBER: D991043

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.0
RELATIVE HUMIDITY (%)	10 - 70	45
PROBE SPEED (m/s)	4.27 - 4.33	4.27
PELVIS ACCELERATION (g's)	40 - 60	51

TEST MEETS SPECIFICATIONS

TECHNICIAN: APPROVED BY: David Winkelbauer



MGA RESEARCH CORPORATION

ABDOMINAL COMPRESSION TEST
(PRELOAD = 10 LBS)

SIDE IMPACT DUMMY (SID)

DATE: September 20, 1999DUMMY SERIAL NUMBER: 048TEST NUMBER: D991044

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.0
RELATIVE HUMIDITY (%)	10 - 70	45
FORCE @ 12.7 mm	104 - 162	150
FORCE @ 19.0 mm	163 - 222	206
FORCE @ 25.4 mm	222 - 280	272
FORCE @ 33 mm	325 - 391	377

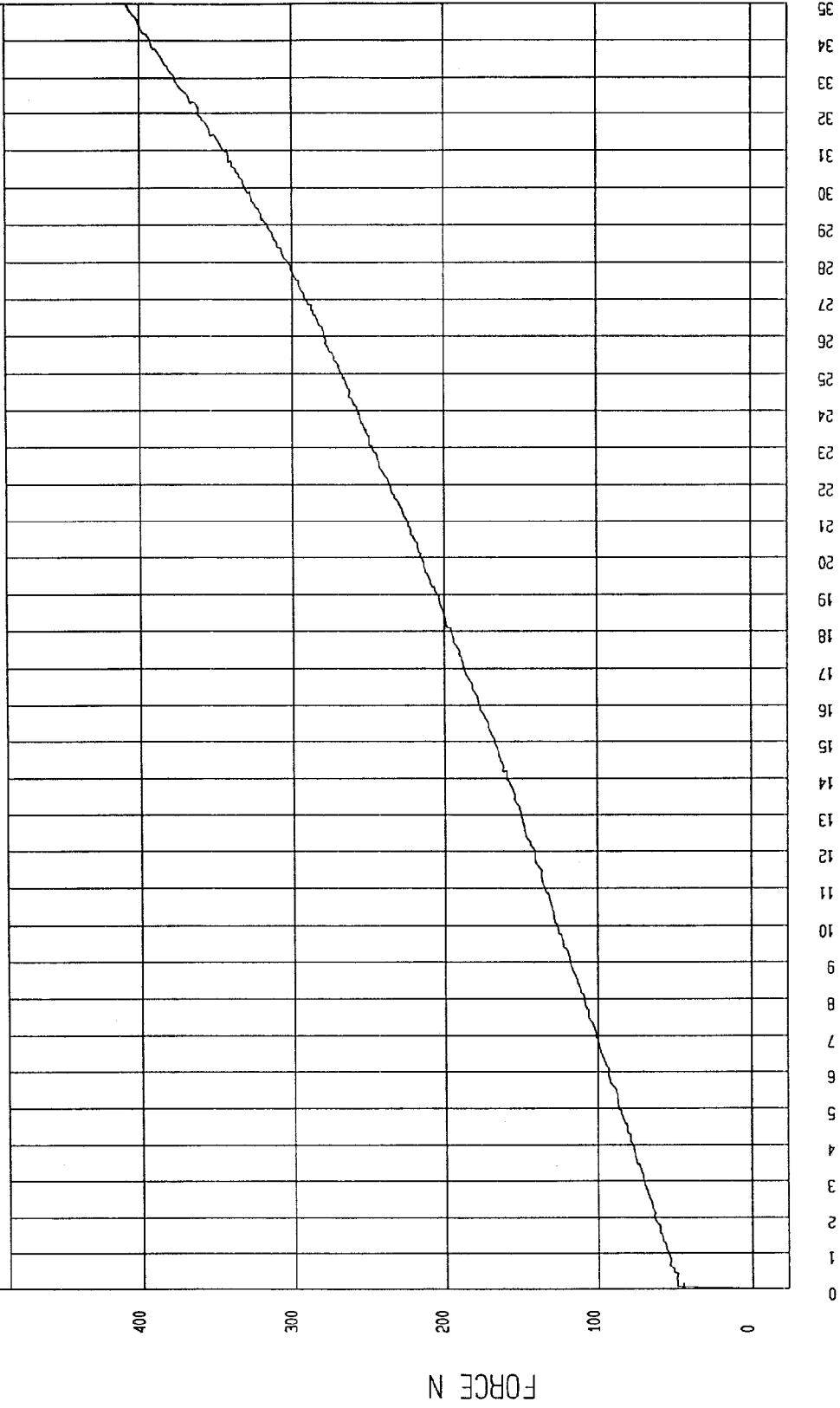
TEST MEETS SPECIFICATIONS

TECHNICIAN: APPROVED BY: David Winkelbauer

TEST: DUMMY CALIBRATION - ABDOMEN COMPRESSION TEST DATE: 09-20-1999 - 14:11:03

COMPONENT: DUMMY # 048

FORCE as a function of DISPLACEMENT



WCA Research
09-20-1999 14:15

DISPLACEMENT mm

FORCE N

MGA RESEARCH CORPORATION

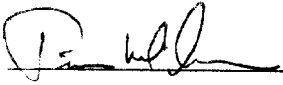
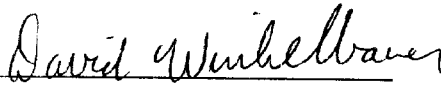
LUMBAR FLEXION TEST

SIDE IMPACT DUMMY (SID)

DATE: September 20, 1999DUMMY SERIAL NUMBER: 048TEST NUMBER: D991045

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.0
RELATIVE HUMIDITY (%)	10 - 70	45
FORCE @ 0°	0 - 26.7	0
FORCE @ 20°	97.9 - 151.2	98.4
FORCE @ 30°	151.2 - 204.6	162.8
FORCE @ 40°	204.6 - 258.0	227.2
RETURN ANGLE	12° maximum	5

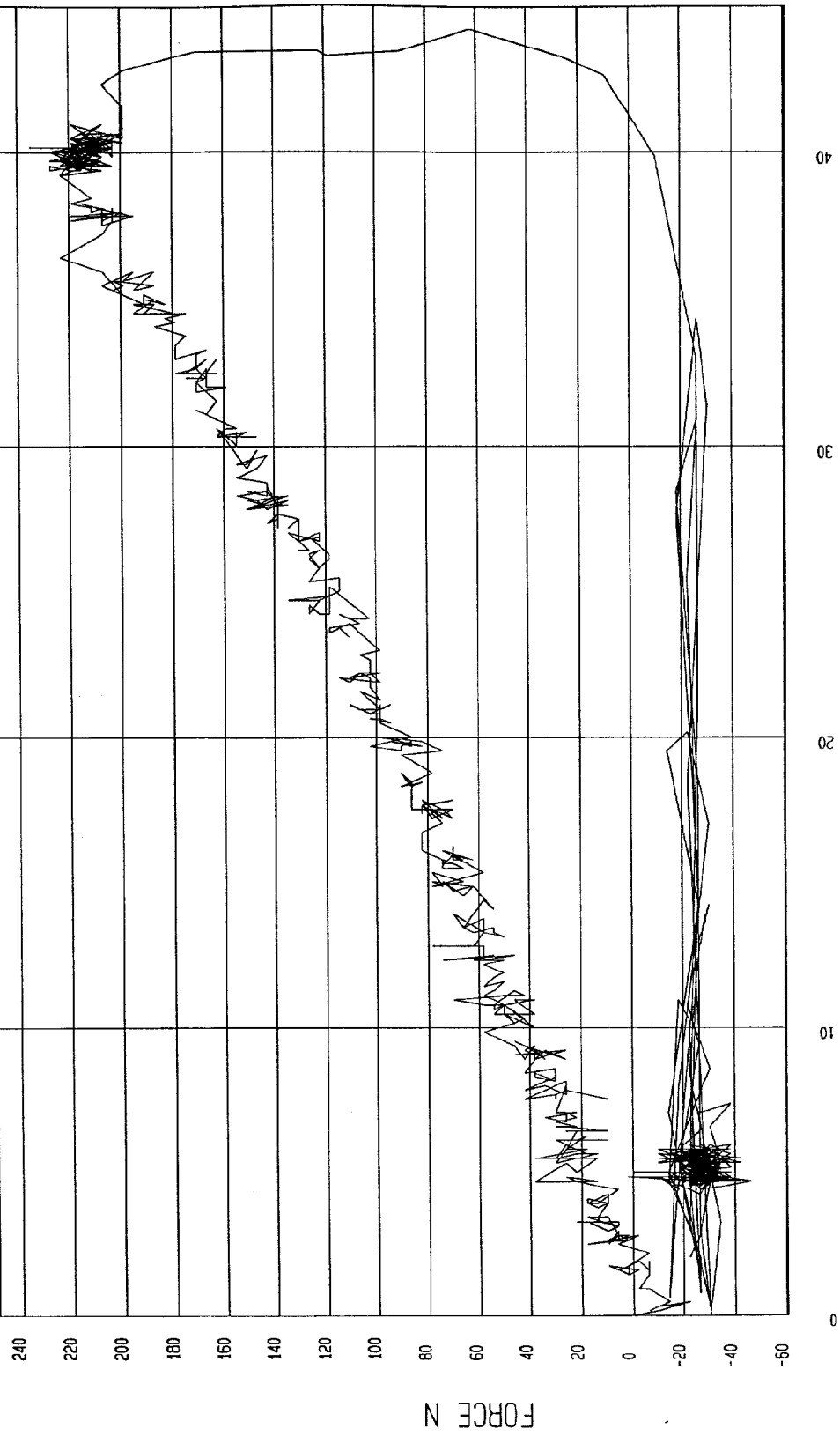
TEST MEETS SPECIFICATIONS

TECHNICIAN: APPROVED BY: 

TEST: DUMMY CALIBRATION - LUMBAR FLEXION TEST DATE: 09-20-1999 - 14:26:28

COMPONENT: DUMMY # 04B

FORCE as a function of TORSO ROTATION



MCA Research
09-20-1999 14:44

POST-TEST CERTIFICATION DATA

Dummy Serial Number: 048

Calibration Test Results Summary

Dummy Serial Number: 048

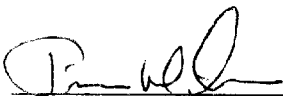
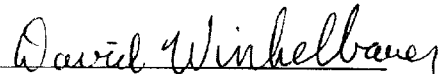
Post-Test Calibration

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 NO.: 048DATE OF VERIFICATION: September 21, 1999

DESCRIPTION	SPECIFICATION	TEST RESULTS
SH - Seated Height (mm)	889 - 909	905
RH - Rib Height (mm)	501 - 521	518
HP - Hip Pivot Height (mm)	99 ref.	99
RD - Rib From Back Line (mm)	229 - 241	236
KV - Knee Pivot From Back Line (mm)	511 - 526	521
SW - Knee Pivot to Floor (mm)	490 - 505	493
HW - Hip Width (mm)	356 - 391	368

TECHNICIAN: APPROVED BY: 

MGA RESEARCH CORPORATION

THORAX IMPACT TEST

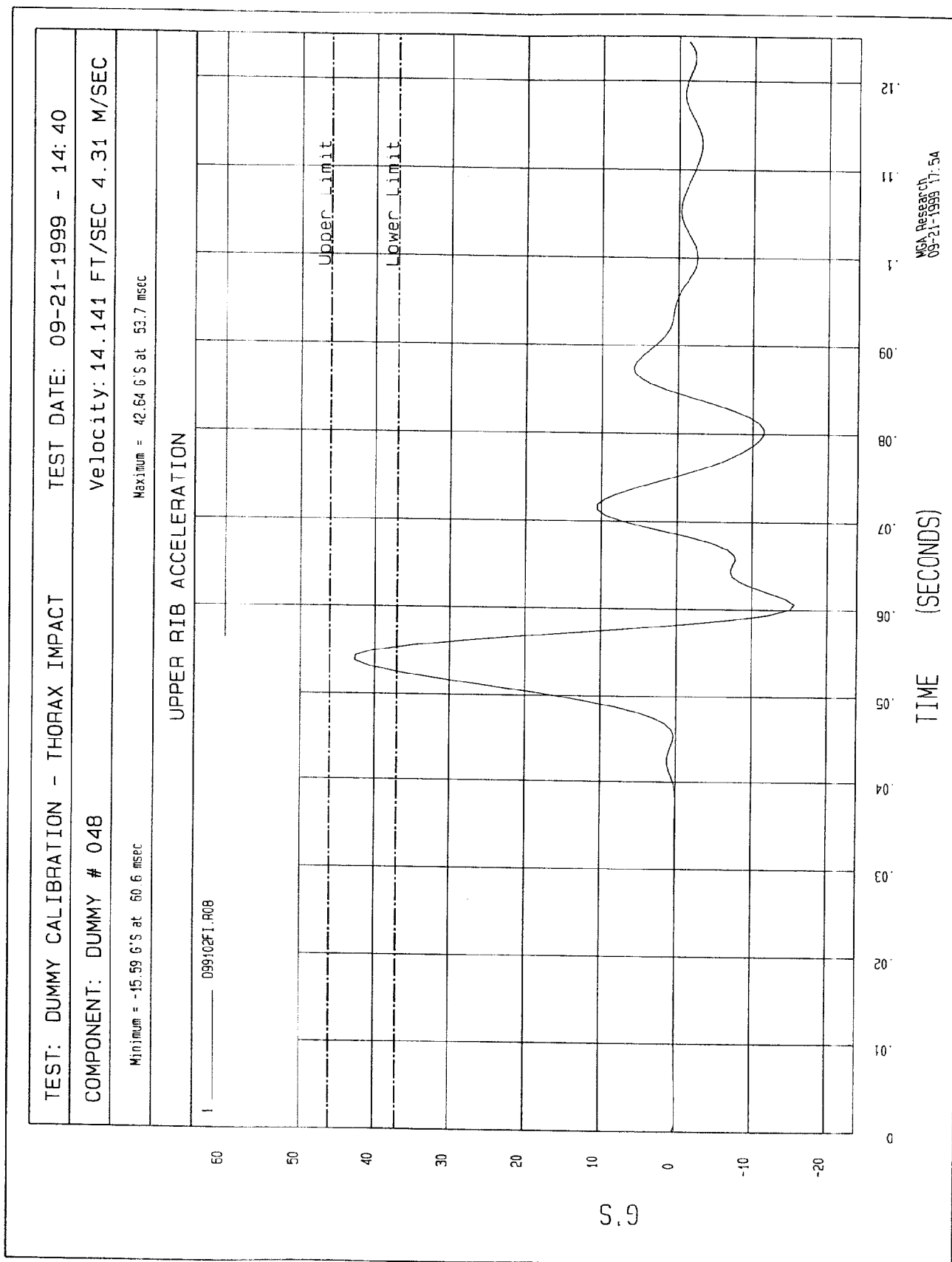
SIDE IMPACT DUMMY (SID)

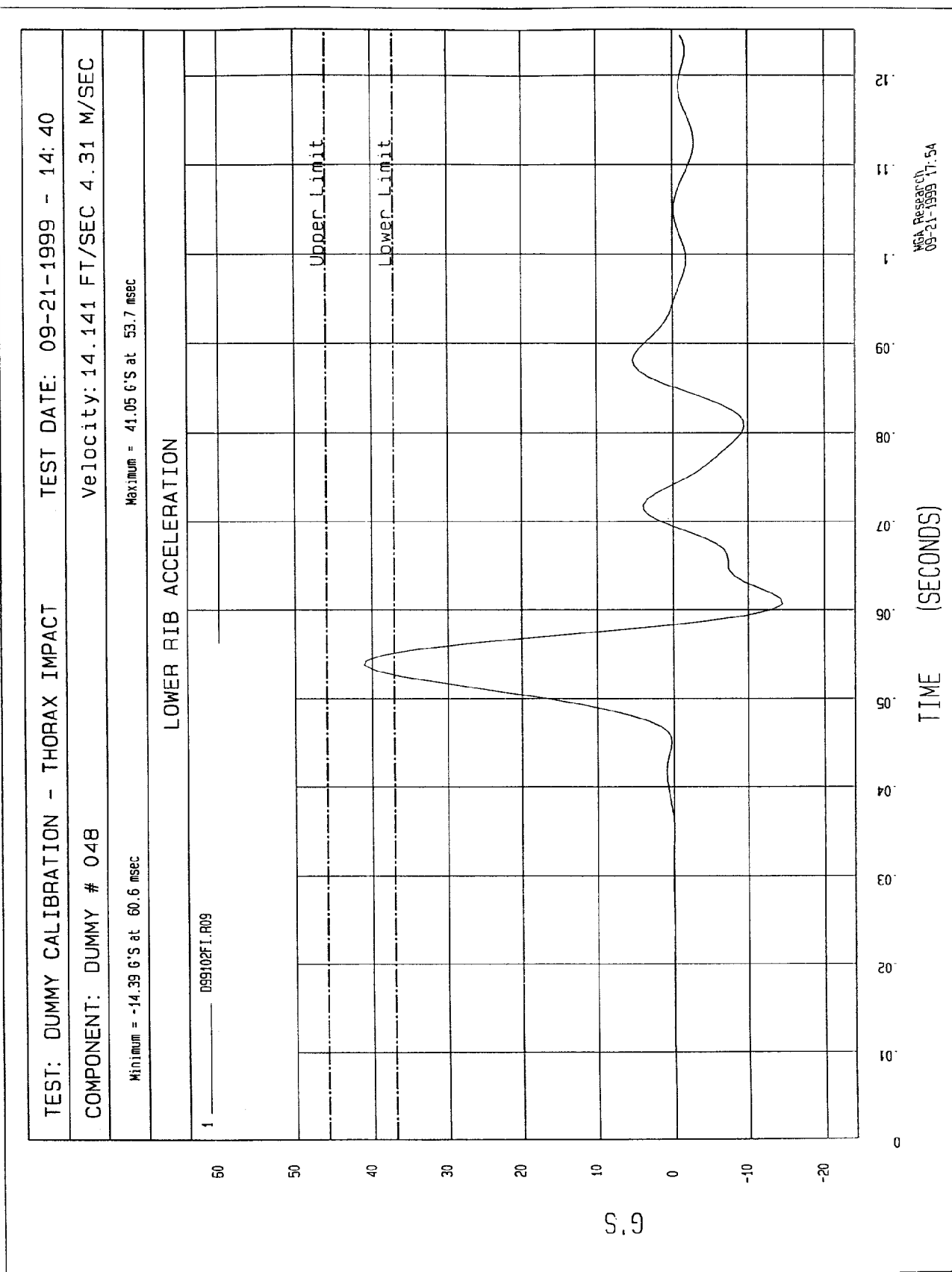
DATE: September 21, 1999DUMMY SERIAL NUMBER: 048TEST NUMBER: D991102

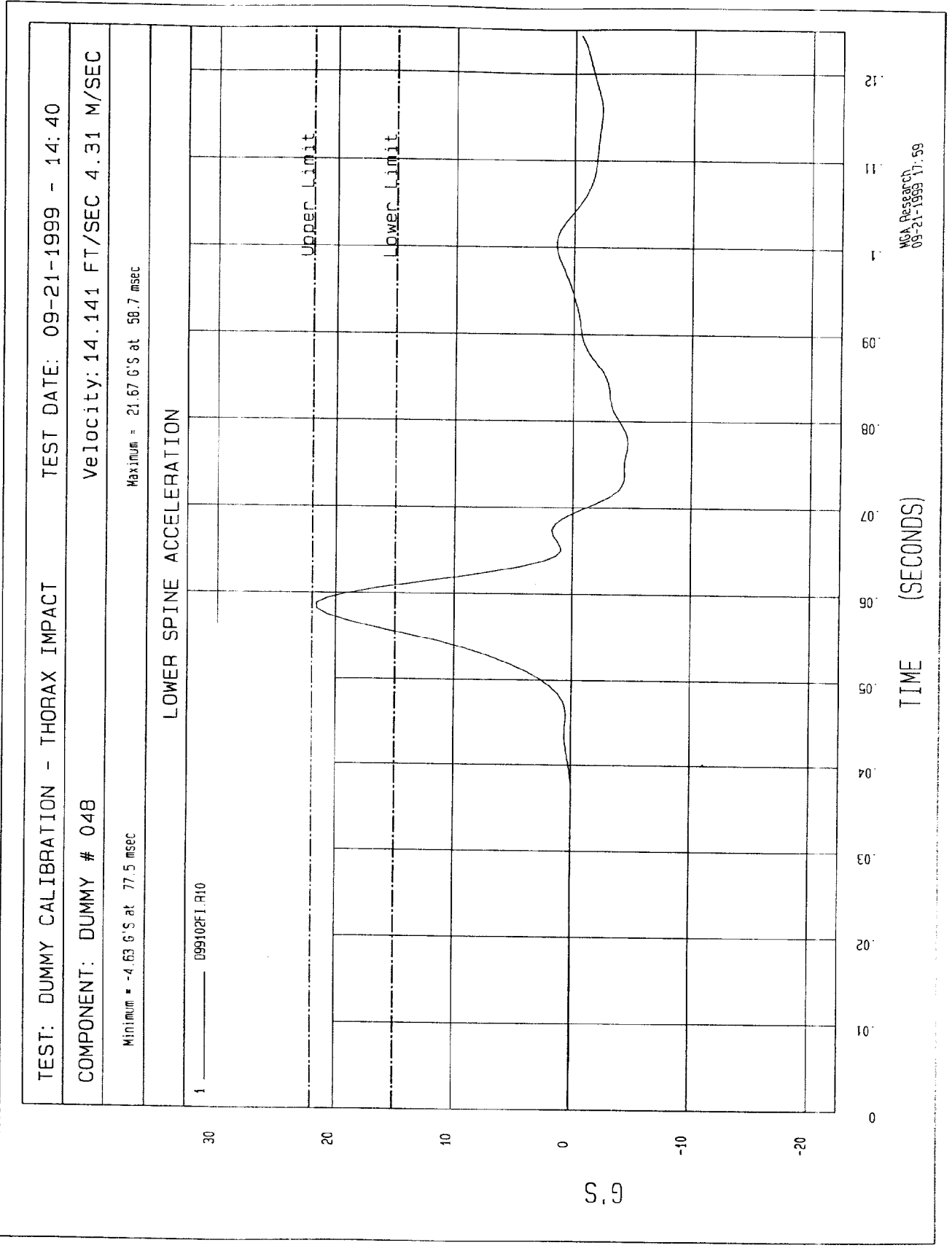
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.0
RELATIVE HUMIDITY (%)	10 - 70	34
PROBE SPEED (m/s)	4.27 - 4.33	4.31
UPPER RIB (g's)	37 - 46	43
LOWER RIB (g's)	37 - 46	41
LOWER SPINE (g's)	15 - 22	22

TEST MEETS SPECIFICATIONS

TECHNICIAN: APPROVED BY: David Winhelbauer







MGA RESEARCH CORPORATION

PELVIS IMPACT TEST

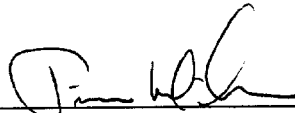
SIDE IMPACT DUMMY (SID)

DATE: September 21, 1999DUMMY SERIAL NUMBER: 048TEST NUMBER: D991103

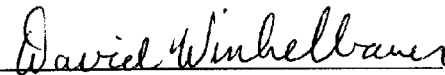
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.0
RELATIVE HUMIDITY (%)	10 - 70%	34
PROBE SPEED (m/s)	4.27 - 4.33	4.29
PELVIS ACCELERATION (g's)	40 - 60	51

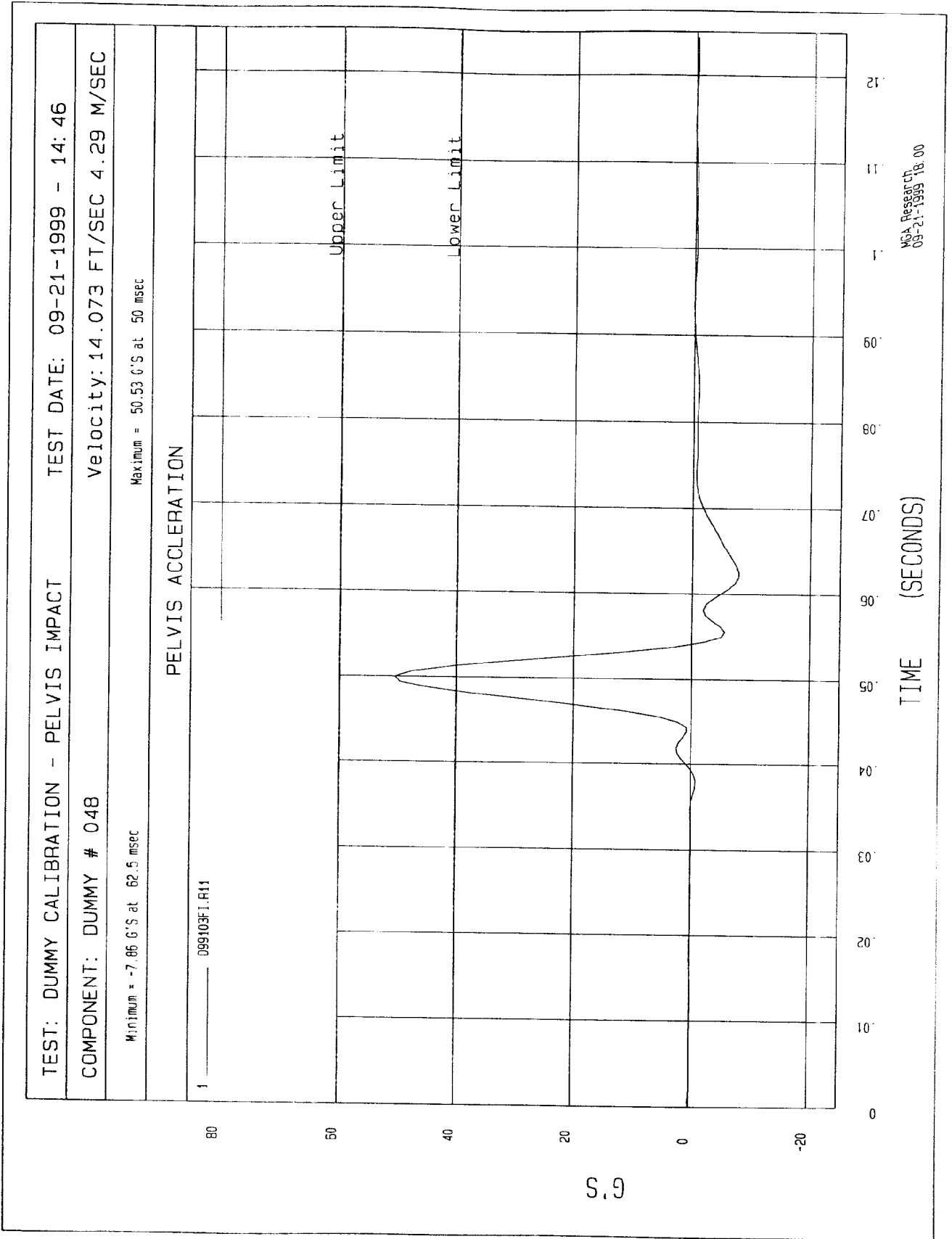
TEST MEETS SPECIFICATIONS

TECHNICIAN



APPROVED BY





MGA RESEARCH CORPORATION

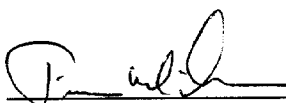
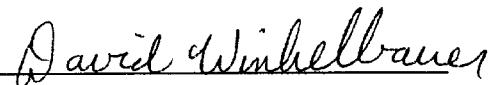
ABDOMINAL COMPRESSION TEST
(PRELOAD = 10 LBS)

SIDE IMPACT DUMMY (SID)

DATE: September 21, 1999DUMMY SERIAL NUMBER: 048TEST NUMBER: D991104

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.0
RELATIVE HUMIDITY (%)	10 - 70	34
FORCE @ 12.7 mm	104 - 162	139
FORCE @ 19.0 mm	163 - 222	187
FORCE @ 25.4 mm	222 - 280	246
FORCE @ 33 mm	325 - 391	336

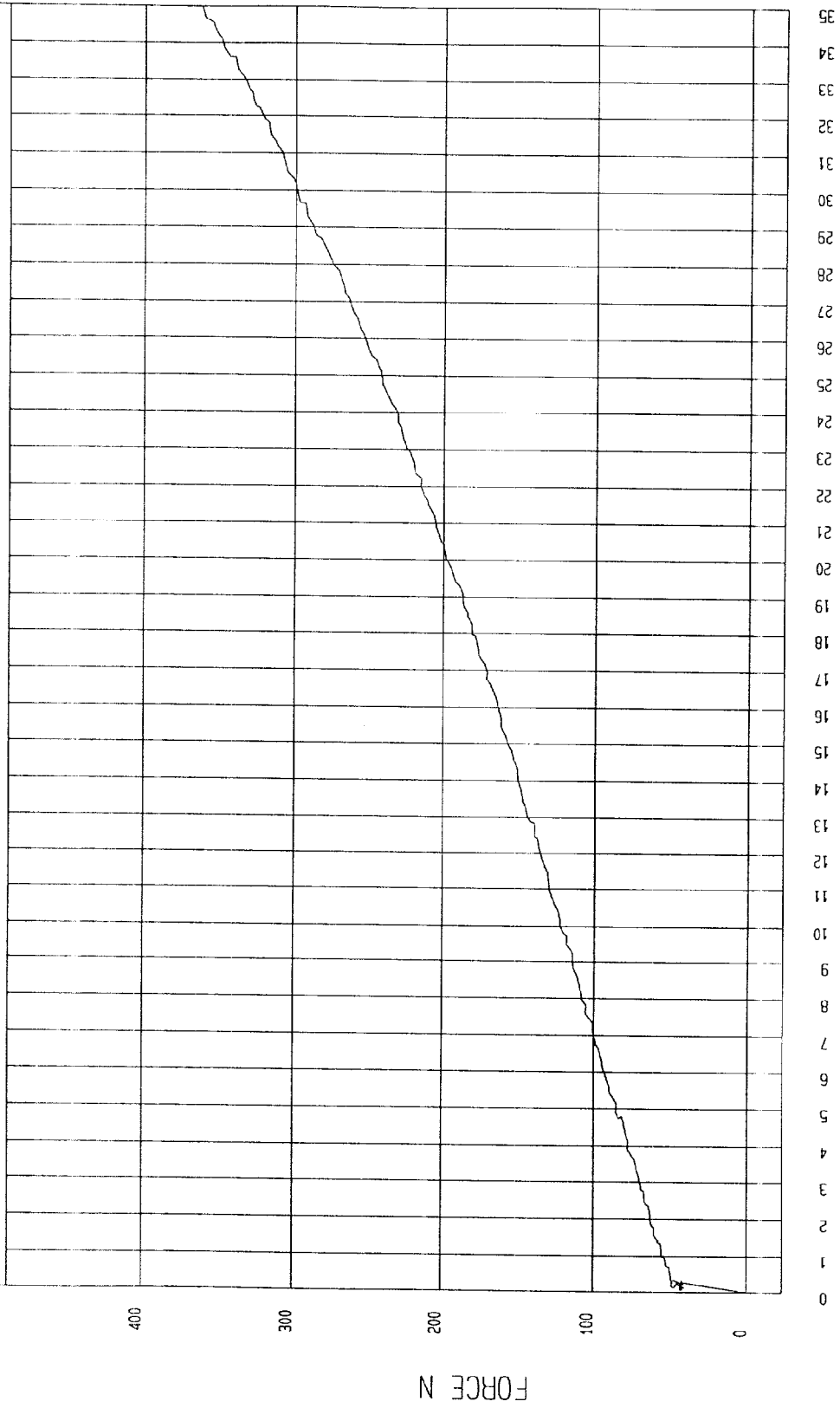
TEST MEETS SPECIFICATIONS

TECHNICIAN APPROVED BY 

TEST: DUMMY CALIBRATION - ABDOMEN COMPRESSION TEST DATE: 09-21-1999 - 16:24:07

COMPONENT: DUMMY # 048

FORCE as a function of DISPLACEMENT



NSA Research
09-21-1999 16:20

DISPLACEMENT mm

MGA RESEARCH CORPORATION

LUMBAR FLEXION TEST

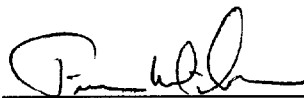
SIDE IMPACT DUMMY (SID)

DATE: September 21, 1999DUMMY SERIAL NUMBER: 048TEST NUMBER: D991105

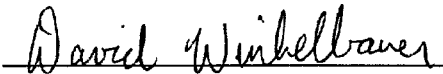
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.0
RELATIVE HUMIDITY (%)	10 - 70	34
FORCE @ 0°	0 - 26.7	0
FORCE @ 20°	97.9 - 151.2	118.0
FORCE @ 30°	151.2 - 204.6	177.8
FORCE @ 40°	204.6 - 258.0	221.7
RETURN ANGLE	12° maximum	3

TEST MEETS SPECIFICATIONS

TECHNICIAN



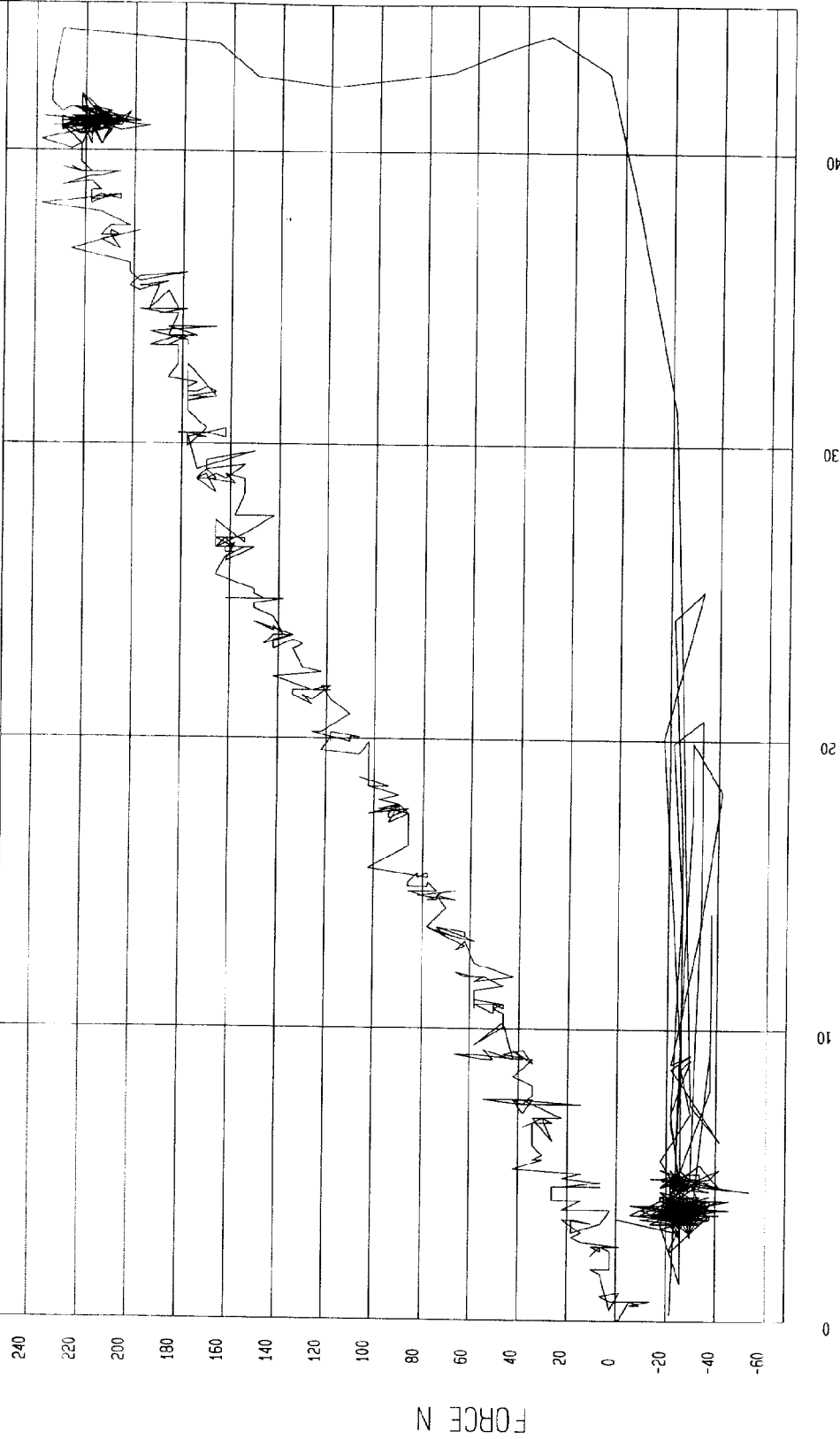
APPROVED BY



TEST: DUMMY CALIBRATION - LUMBAR FLEXION TEST DATE: 09-21-1999 - 15:37:26

COMPONENT: DUMMY # 048

FORCE as a function of TORSO ROTATION



NSA Research
09-20-1999 15:38

POST-TEST DRIVER DUMMY INSPECTION CHECKLIST

Type: Side Impact Dummy

Dummy Serial Number: 048

Inspected By: Tim Michnay

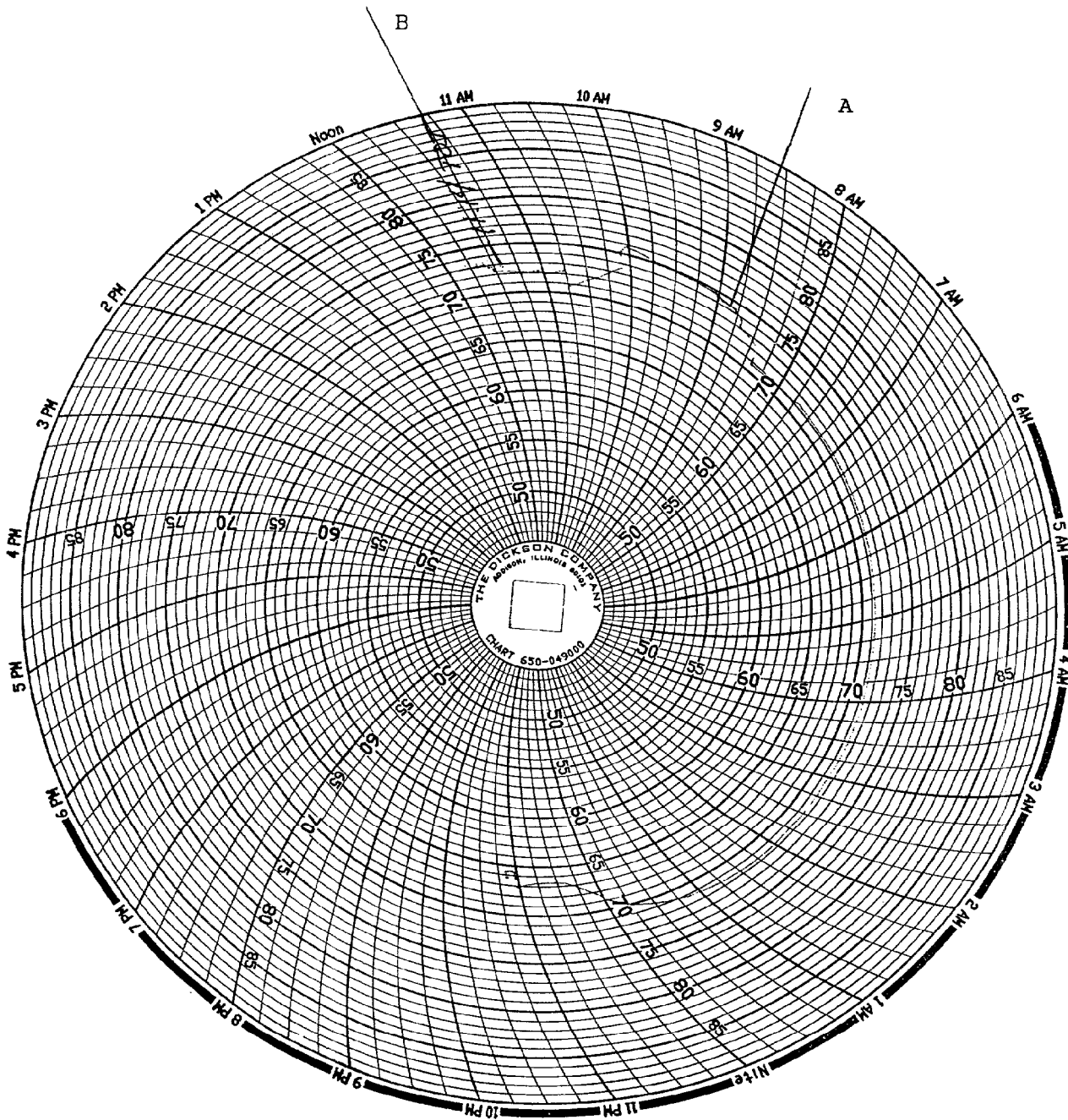
Date: September 21, 1999

<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

C-36



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. 048

	LEFT FRONT PASSENGER		
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Upper Rib Y	ANBP7	Endevco	August 3, 1999
Lower Rib Y	J14120	Endevco	August 2, 1999
Lower Spine Y	J10431	Endevco	August 2, 1999
Pelvis Y	AJ417	Endevco	August 2, 1999
Upper Rib Redundant Y	AP1C6	Endevco	August 2, 1999
Lower Rib Redundant Y	APY16	Endevco	August 2, 1999
Lower Spine Redundant Y	AN9E3	Endevco	August 2, 1999
Pelvis Redundant Y	AGP20	Endevco	July 30, 1999

VEHICLE INSTRUMENT CALIBRATION

VEHICLE AND MDB ACCELEROMETERS			
	SERIAL NO.	MANUFACTURER	CALIBRATION DATE
Moving Barrier CG X	J10-E05	Entran	August 17, 1999
Moving Barrier CG Y	J04-F10	Entran	August 6, 1999
Moving Barrier CG Z	I18-E18	Entran	August 17, 1999
Moving Barrier Rear Axle X	C25-A17	Entran	August 6, 1999
Moving Barrier Rear Axle Y	I25-J12	Entran	August 6, 1999
Left Mid A-Post Y	J10-E03	Entran	August 16, 1999
Left Lower A-Post Y	F12-G02	Entran	August 16, 1999
Left Mid B-Post Y	D05-R08	Entran	May 6, 1999
Left Lower B-Post Y	K11-J10	Entran	August 16, 1999
Rear Floorpan Above Axle X	J13-F18	Entran	August 16, 1999
Rear Floorpan Above Axle Y	F18-G03	Entran	August 16, 1999
Rear Floorpan Above Axle Z	G01-J05	Entran	May 5, 1999
Driver Seat Track Y	F07-A24	Entran	August 16, 1999
Right Side Sill at Front Seat X	E10-F17	Entran	August 16, 1999
Right Side Sill at Front Seat Y	E10-F07	Entran	March 19, 1999
Right Side Sill at Front Seat Z	I26-D09	Entran	August 16, 1999
Right Side Sill at Rear Seat X	H02-J15	Entran	August 17, 1999
Right Side Sill at Rear Seat Y	B14-R14	Entran	May 12, 1999
Right Side Sill at Rear Seat Z	G01-J10	Entran	August 6, 1999
Left Side Sill at Front Seat Y	G01-J15	Entran	May 12, 1999

VEHICLE INSTRUMENT CALIBRATION

VEHICLE AND MDB ACCELEROMETERS		
	SERIAL NO.	CALIBRATION DATE
Left Side Sill at Rear Seat Y	K16-X08	May 12, 1999
Rear Occupant Compartment Y	F18-G02	May 12, 1999
Vehicle CG X	G01-J04	May 12, 1999
Vehicle CG Y	B13-Z02	May 6, 1999
Vehicle CG Z	F10-D02	August 17, 1999

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